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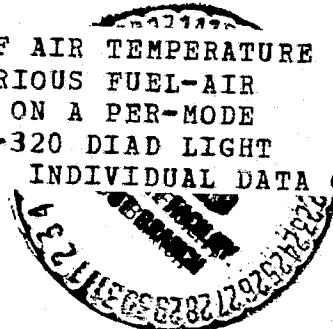
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Volume II

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(NASA-TM-X-73507) EFFECT OF AIR TEMPERATURE
AND RELATIVE HUMIDITY AT VARIOUS FUEL-AIR
RATIOS ON EXHAUST EMISSIONS ON A PER-MODE
BASIS OF AN AVCO LYCOMING 0-320 DIAD LIGHT
AIRCRAFT ENGINE. VOLUME 2: INDIVIDUAL DATA G3/07

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EFFECT OF AIR TEMPERATURE AND RELATIVE HUMIDITY AT
VARIOUS FUEL-AIR RATIOS ON EXHAUST EMISSIONS
ON A PER-MODE BASIS OF AN AVCO LYCOMING
0-320 DIAD LIGHT AIRCRAFT ENGINE:
PRELIMINARY DATA REPORT
VOLUME II - INDIVIDUAL DATA POINTS

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16. Abstract A carburetted four-cylinder air-cooled 0-320 DIAD Lycoming aircraft engine was tested to establish the effects of air temperature and humidity at various fuel-air ratios on the exhaust emissions on a per-mode basis. The test conditions included carburetor lean-out at air temperatures of 50, 59, 80, and 100 F at relative humidities of 0, 30, 60, and 80 percent. Temperature-humidity effects at the higher values of air temperature and relative humidity tested indicated that the HC and CO emissions increased significantly, while the NO _x emissions decreased. Even at a fixed fuel-air ratio, the HC emissions increase and the NO _x emissions decrease at the higher values of air temperature and humidity. The report is divided in two volumes: Volume I contains the results and plotted data, and Volume II contains the data taken at each of the individual test points.			
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Appendix B

The data from individual test points which make up this report were taken on a carbureted, four-cylinder, O-320 DIAD Lycoming light-aircraft engine. These data points represent all of the environmental and engine conditions tested in the individual seven modes in the EPA emissions test cycle as discussed in Volume I. The test data presented herein, representing over 800 data points (readings), were taken at air temperatures of 50°, 59°, 80°, and 100° F at values of 0, 30, 60, and 80 percent relative humidity over a range of fuel-air ratios from 0.06 to 0.113. The data points included in this Appendix are all of those for which the exhaust emissions are plotted on a per-mode basis in Volume I of this report. Data point reading number listings are included in tabular form for each series of test conditions and the data symbols which were used for the curves plotted in Volume I. Because of the large number of data points, the data points are arranged numerically by reading number for easy reference.

Star category 07

TABLE I

LISTING OF READING NUMBERS FOR

TEMP. 50°F REL HUM. 0, 30, 60, 80%

IDLE	TAXI	TAKE-OFF	CLIMB	APPROACH	IDLE	TAXI	TAKE-OFF	CLIMB	APPROACH
2406	2403	2431	2433	2434	2412	2405	2435	2436	2437
2413	2409	2438	2439	2441	2414	2411	2442	2443	2444
2418	2415	2445	2446	2447	2424	2417	2448	2449	2450
2425	2420	2452	2453	2454	2426	2423	2455	2456	2457
2430	2427	2458	2459	2460	2464	2429	2461	2462	2453
2477	2465	2494	2495	2496	2487	2469	2498	2499	3561
2488	2490	2501	2502	3562	2489	3577	2504	2505	3563
3576	3578	2507	2512	3564	3579	3581	2511	2515	3565
3583	3582	2514	2519	3566	3584	3587	2517	2522	3567
3585	3588	2521	2525	3568	3586	3591	2524	3637	3569
3589	3592	3639	3641	3570	3593	3609	3640	3644	3571
3594	3610	3643	3647	3638	3605	3613	3649	3650	3642
3607	3614	3652	3653	3645	3608	3620	3655	3656	3648
3611	3623	3658	3659	3651	3618	3626	3661	3662	3654
3619	3627	3664	3665	3657	3624	3630	3667	3669	3660
3625	3631	3668	3672	3663	3628	3634	3671	3675	3655
3629	3635	3674	3678	3670	3632	0	3680	3681	3673
3633	0	3686	3684	3676	0	0	3689	3687	3679
0	0	3692	3690	3685	0	0	3695	3693	3688
0	0	0	3696	3691	0	0	0	0	3694
0	0	0	0	3697					

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REL. HUMIDITY
 88 + X Y Z
 85 B B B B
 88 1 O O O
 88 2 A A A
 88 3 M M M
 OUT OF RANGE -

TABLE II

LISTING OF READING NUMBERS FOR

TEMP. 59°F REL HUM. 0, 30, 60, 80%

IDLE	TAXI	TAKE-OFF	CITMR	APPROACH	IDLE	TAXI	TAKE-OFF	CLIMB	APPROACH
2703	2704	2724	2725	2726	2706	2705	2728	2729	2730
2702	2710 I	2731 I	2732 I	2733 I	2711 I	2714 I	2735 I	2736 I	2737 I
2712 I	2717 I	2738 I	2739 I	2740 I	3541 I	2718 I	2741 I	2742 I	2743 I
3542	2721	2744	2745	2746	3543	2722	2747	2748	2749
3545	2750	2752	2751	2752	3549	2759	2753	2754	2755
3550	2765	2778	2779	2780	3551	2764	2781	2782	2783
2757	2767 O	2784	2786	2787	2761	2770 O	2785	2789	2790
2755	2771	2789 O	2792 O	2793 O	2766 O	2774	2791 O	2795 O	2796 O
2768 O	2775	2794	2798	2799	2769	2858	2797	2801	2802
2773	2859	2800	2804	2805	2776	2862	2802	2807	2808
2777	2863	2806	2810	2811	2857	2866 V	2812	2813	2814
2863	2867 V	2810	2820	2822	2861 V	2870	2823	2824	2825
2864	2871	2825	2836	2837	2865	2874	2838	2839	2840
2868 V	2875	2841	2842	2843	2869	2960	2844	2845	2846
2872	2961	2848	2849	2847	2873	2955	2850	2851 V	2852
2876	2967	2877	3552 V	2870 V	2959	2971 X	2880 V	3553	2892 V
2963	2972 X	2883	3554	2885	2964	2975	2886	3555	2889
2968	2976	2890	3556	2892	2970 X	2980	2893	3557	2895
2973 X	2981	2895	2913	2898	2974	0	2899	2916	2901
2978	0	2902	2920	2904	2979	0	2905	2923	2908
2982	0	2915	2926 X	2914	0	0	2918	2929 X	2917
0	0	2919	2932	2921	0	0	2922	2936	2924
0	0	2925 X	2942	2927 X	0	0	2928 X	2945	2930 X
0	0	2931	0	2934	0	0	2935	0	2940
0	0	2941	0	2943	0	0	2944	0	2946

REL. HUMIDITY

TEMP. DEG. F	8	38	68	88
53	0	0	0	+
59	1	0	0	X
68	2	Δ	0	Y
108	3	X	0	Z

OUT OF RANGE -

TABLE III

LISTING OF READING NUMBERS FOR
TEMP. 80°F REL HUM. 0, 30, 60, 80%

IDLE	TAXI	TAKE-OFF	CLIMB	APPROACH	IDLE	TAXI	TAKE-OFF	CLIMB	APPROACH
3293	3291	3260	3261	3262	3295	3292	3263	3264	3265
3296	3297	3266	3267	3268	3300	3298	3269	3270	3274
3301	3302	3272 2	3273 2	3277 2	3304	3303	3275 2	3276 2	3280 2
3305	3306	3278	3279	3283	3308	3307	3281	3282	3286
3309	3311	3284	3285	3287	3310 2	3312 2	3287	3288	3378
3313 2	3315 2	3376	3377	3381	3314	3316	3379	3380	3384
3320	3319	3382	3383	3387	3321	3323	3385	3386	3390
3322	3324	3388 Δ	3389 Δ	3393 Δ	3326	3327	3391 Δ	3392 Δ	3396 Δ
3328	3329	3394	3395	3399	3331	3330	3397	3398	3402
3332	3333	3400	3401	3405	3335	3334	3403	3404	3499
3343	3342	3497	3498	3502	3346	3343	3500	3501	3505
3346	3344	3503	3504	3508	3349	3347	3506	3507	3511
3350	3352	3509 ◊	3510 ◊	3514 ◊	3351	3353	3512 ◊	3513 ◊	3517
3356 Δ	3354 Δ	3515	3516	3520	3358 Δ	3355	3518	3519	3523
3372	3361	3521	3525	3527	3374	3352 Δ	3524	3525	3469
3406	3363	3467	3468	3472	3410	3364	3470	3471	3475
3411	3407	3473	3474	3478	3414	3408	3476 Y	3477	3481 Y
3419	3412	3479 Y	3480 Y	3484 Y	3420	3413	3482	3483 Y	3487
3422	3417	3485	3486	3490	3425	3421	3488	3489	3493
3431 ◊	3423	3491	3492	3496	3432 ◊	3424	0	3495	0
3433	3427 ◊	0	0	0	3437	3429 ◊	0	0	0
3439	3434	0	0	0	3442	3435	0	0	0
3446	3440	0	0	0	3447	3441	0	0	0
3451	3444	0	0	0	3452	3445	0	0	0
3453 Y	3449	0	0	0	3457 Y	3450	0	0	0
3458	3455 Y	0	0	0	3462	3456 Y	0	0	0
3463	3459	0	0	0	3466	3460	0	0	0
0	3464	0	0	0	0	3465	0	0	0

REL. HUMIDITY

TEMP. DEG.F	8	38	68	88
53	8	◊	◻	+
59	1	◊	◻	X
65	2	Δ	◻	Y
88	3	✱	◻	Z

OUT OF RANGE =

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TABLE V

LISTING OF READING NUMBERS FOR

TEMP: 50, 59, 80, 100°F REL. HUM. 0%

IDLE	TAXI	TAKE-OFF	CLIMB	APPROACH	IDLE	TAXI	TAKE-OFF	CLIMB	APPROACH			
2406	2408	2431	2433	2434	2412	2405	2435	2435	2437			
2417	2409	2438	2439	2441	2414	2411	2442	2443	2444			
2418	φ	2445	φ	2446	φ	2417	φ	2448	φ			
2425	2426	2452	2453	2454	2424	2423	2455	2456	2457			
2430	2427	2458	2459	2460	2426	2429	2461	2462	2463			
2706	2704	2724	2725	2726	2703	2705	2728	2729	2730			
2711	2710	2731	2732	2733	2718	2714	2735	2736	2737			
2741	1	2720	1	2739	1	2718	1	2741	1			
2743	2721	2744	2745	2746	3542	2722	2747	2748	2749			
2749	2741	2750	2751	2752	3545	2722	2747	2748	2749			
3251	3247	3263	3261	3262	3550	3292	2753	2754	2755			
3295	3302	3266	3267	3268	3293	3298	3263	3264	3265			
3300	3306	3272	2	3273	2	3303	3269	3270	3274			
3304	3311	3278	3279	3280	3301	3307	3275	2	3276	2		
3308	3315	2	3284	3285	3287	3312	2	3281	3282	3296		
3310	2	3319	3010	3529	3016	3309	3316	3287	3288	3013		
3314	3324	3017	3532	3023	3313	2	3323	3014	3531	3019		
3321	3329	3024	3	3534	3	3320	3327	3020	3533	3	3026	3
3326	3333	3032	3537	3037	3322	3330	3027	3	3536	3	3034	
3331	2984	3038	0	3043	3328	3334	3035	3538	3040			
3335	2991	0	0	0	3332	2985	3041	0	0			
2988	2996	3	0	0	2983	2992	0	0	0			
2993	3001	0	0	0	2990	2997	3	0	0			
2998	3	3004	0	0	2995	3	3004	0	0			
3002	0	0	0	0	2999	3007	0	0	0			
3008	0	0	0	0	3005	0	0	0	0			

REL. HUMIDITY

TEMP. DEG.F	8	38	68	88
58	8	0	0	+
59	1	0	0	X
88	2	Δ	0	Y
108	3	X	0	Z

OUT OF RANGE =

TABLE VI

LISTING OF READING NUMBERS FOR

TEMP. 50, 59, 80, 100°F REL. HUM. 30%

IDLE	TAXI	TAKE-OFF	CLIMB	APPROACH	IDLE	TAXI	TAKE-OFF	CLIMB	APPROACH
2464	2465	2494	2495	2495	2477	2467	2498	2499	3561
2487	2469	2501	2502	3562	2488	2472	2504	2505	3563
2489	2478	2507	2508	3564	3345	2490	2511	2512	3565
3346	3342	2514	2515	3565	3348	3343	2517	2519	3567
3349	3344	2521	2522	3568	3350	3347	2524	2525	3569
3351	3352	3376	3377	3570	3356	3353	3379	3380	3571
3358	3354	3382	3383	3378	3372	3355	3385	3386	3381
3374	3361	3388	3389	3384	3406	3362	3391	3392	3387
3410	3363	3394	3395	3390	3411	3364	3397	3398	3393
3414	3407	3400	3401	3396	2757	3408	3403	3404	3399
2761	3412	2778	2779	3402	2765	3413	2781	2782	3405
2766	2758	2784	2786	2780	2768	2759	2785	2789	2783
2769	2763	2788	2792	2787	2773	2764	2791	2795	2790
2776	2767	2794	2798	2793	2777	2770	2797	2801	2796
3154	2771	2800	2804	2799	3157	2774	2803	2807	2802
3158	2775	2806	3122	2805	3161	3155	3121	3124	2808
3162	3156	3123	3127	3125	3165	3159	3126	3130	3128
3166	3160	3129	3133	3131	3169	3163	3132	3136	3134
3170	3164	3135	3139	3137	3173	3167	3138	3142	3140
0	3168	3141	3145	3143	0	3171	3144	3151	3146
0	3172	3147	3153	3149	0	0	3150	0	3152

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TEMP. DEG. F	REL. HUMIDITY				
	50	8	8	68	88
59	1	0	0	0	X
80	2	Δ	0	0	Y
100	3	*	*	*	Z

OUT OF RANGE -

TABLE VII

LISTING OF READING NUMBERS FOR

TEMP. 50, 59, 80, 100°F REL. HUM. 60%

IDLE	TAXI	TAKE-OFF	CLIMB	APPROACH	IDLE	TAXI	TAKE-OFF	CLIMB	APPROACH
257A	3577	3639	3637	3638	3579	3578	3640	3641	3642
3583	3581	3643	3644	3645	3584	3582	3649	3647	3648
3585	3587	3652	3650	3651	3586	3588	3655	3653	3654
3589	3591	3658	3656	3657	3593	3592	3661	3659	3660
359	3609	3664	3662	3663	3605	3610	3667	3665	3666
3607	2858	2812	2810	2811	3606	2859	2819	2813	2814
2857	2862	2823	2820	2822	2860	2863	2835	2824	2825
2861	2866	2838	2836	2837	2864	2867	2841	2839	2840
2865	2870	2844	2842	2843	2868	2871	2848	2845	2846
2869	2874	2850	2849	2847	2872	2875	2877	2851	2852
2873	3417	2880	3552	2870	2876	3421	2883	3553	2852
3419	3423	2884	3554	2885	3420	3424	2890	3555	2889
3422	3427	2892	3556	2892	3425	3429	2895	3557	2895
3431	3434	2899	3498	2898	3432	3435	2902	3501	2901
3433	3440	2905	3504	2904	3437	3441	3497	3507	2908
3439	3177	3500	3510	3499	3442	3180	3503	3513	3502
317A	3185	3506	3516	3505	3183	3187	3509	3519	3508
3184	3188	3512	3525	3511	3190	3193	3515	3526	3514
3192	3194	3518	3515	3517	3195	3199	3521	3214	3520
3198	3200	3524	3218	3523	3201	3203	3200	3223	3527
3202	3204	3212	3227	3211	3205	0	3217	3232	3214
0	0	3220	3236	3219	0	0	3224	3237	3222
0	0	3225	0	3225	0	0	3233	0	3231
0	0	3239	0	3235	0	0	3240	0	3238
0	0	3247	0	3244	0	0	0	0	3251

TEMP. DEG.F	REL. HUMIDITY			
	8	38	68	88
53	8	0	0	+
59	1	0	0	X
68	2	Δ	0	Y
108	3	⊗	0	Z
				OUT OF RANGE

TABLE VIII

LISTING OF READING NUMBERS FOR

TEMP. 50, 59, 80, 100°F REL. HUM. 80%

IDLE	TAXI	TAKE-OFF	CLIMB	APPROACH	IDLE	TAXI	TAKE-OFF	CLIMB	APPROACH
3611	3613	3668	3669	3670	3618	3614	3671	3672	3673
3619	3620	3674	3675	3676	3624	3623	3680	3678	3679
3625	3626	3686	3681	3685	3628	3627	3689	3684	3688
3629	3630	3692	3687	3691	3632	3631	3695	3690	3694
3633	3634	2915	3693	3697	2959	3635	2918	3696	2914
2963	2960	2919	2913	2917	2964	2961	2922	2916	2921
2968	2965	2925	2920	2924	2970	2967	2928	2916	2927
2973	2971	2931	2926	2930	2974	2972	2935	2929	2934
2978	2975	2941	2932	2940	2979	2976	2944	2936	2943
2982	2980	3467	2942	2946	3446	2981	3470	2945	3459
3447	3444	3473	3468	3472	3451	3445	3476	3471	3475
3452	3449	3479	3474	3478	3453	3450	3482	3477	3481
3457	3455	3485	3480	3484	3458	3456	3488	3483	3487
3462	3459	3491	3486	3490	3463	3460	3076	3489	3493
3466	3464	3079	3492	3496	3053	3465	3082	3495	3078
3056	3054	3085	3077	3081	3057	3055	3090	3080	3084
3060	3058	3099	3087	3089	3061	3059	3102	3088	3098
3064	3062	3105	3097	3101	3066	3063	3110	3100	3104
3069	3067	0	3106	3107	3071	3068	0	3108	3113
3075	3072	0	3109	3116	0	3073	0	3111	0
0	0	0	3112	0					

TEMP. DEG. F	REL. HUMIDITY				
	50	59	80	100	
50	8	0	0	0	+
59	1	0	0	0	X
80	2	Δ	0	0	Y
100	3	K	0	0	Z

OUT OF RANGE =

TABLE IX

LISTING OF READING NUMBERS FOR

TEMP. 50°F REL. HUM. 0%

TEMP. 100°F REL. HUM. 80%

IDLE	TAXI	TAKE-OFF	CLIMB	APPROACH	IDLE	TAXI	TAKE-OFF	CLIMB	APPROACH
2406	2403	2431	2433	2434	2412	2405	2435	2436	2437
2413	2409	2438	2439	2441	2414	2411	2442	2443	2444
2418	2415	2445	2446	2447	2424	2417	2448	2449	2450
2425	2420	2452	2453	2454	2426	2423	2455	2456	2457
2430	2427	2458	2459	2460	3053	2429	2461	2462	2463
3056	3054	3076	3077	3078	3057	3055	3079	3080	3081
3060	3058	3082	3087	3084	3061	3059	3085	3088	3089
3064	3062	3090	3097	3098	3066	3063	3099	3100	3101
3069	3067	3102	3106	3104	3071	3068	3105	3108	3107
3075	3072	3110	3109	3113	0	3073	0	3111	3116
0	0	0	3112	0					

TEMP. DEG. F	REL. HUMIDITY			
	8	38	68	88
58	8	◇	□	+
59	1	○	◊	X
68	2	△	◊	Y
88	3	※	▲	Z
				OUT OF RANGE

NASA-LEWIS PRELIMINARY DATA 03/25/76 CADDE11 REC 03/25/76 15:56:21.631 FAC SEX15 PGM C003 RDG 2403

LEANOUT 25 BTDC I & T 50 DEG HUM = 0 % NEUTRAL MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.080 RATED HP. = 160.00 HC RATIO = 2.1250

COMR. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	52.820	29.080	18.986	86.524	0.010353	14.291

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	77.900	5.6928	44.703	13.852	8.3978	6.1122

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	58.750	-0.010517	0.81477	2171.8	1.3895	-24.416

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	1.3895	10.101	0.83756	0.019233	1.1558

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.097058	0.097046	1.4486	1202.3	1201.8	5.0838	1.1638

WET CORRECTION FACTOR = 0.87249 EXHAUST MOLE. WT. = 26.421 EXHAUST DENSITY = 0.068412 EXHAUST FLOW RATE = 1387.7

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	C2 DRY	
	8589.5	21.081	11.0840	8.2035	0.33273	
CORRECTED CONC. TO WET BASIS						
			9.6705	7.1575	0.29031	

EMISSION RATE	HC	NOX	CO
	0.42790	0.0034812	9.7425
	0.078448	0.00063821	1.7861
	0.00049030	3.9888E-06	0.011163
EMISSION MASS/MODE			
0.00049030			
EMISSION MASS/RATED HP			
0.00049030			
MODE EMIS./STD. CYCLE %	25.805	0.26592	26.579

CAL. FUEL AIR RATIO = 0.096758 MEAS. FUEL AIR RATIO = 0.097058 DIFF MEAS. & CAL. F/A PERCENT = -0.30933

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	249.60	265.17	253.11	268.21

EXT GAS TEMP DEG.F	FXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	595.17	-322.79	-454.00	850.79	660.14	653.14

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 8.2034
	139.32	144.68	56.434	

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.239
	7.8344	1193.8	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	51.719	52.820	93.426	47.767

ORIFIC AIR	TEMP	DELTA P	DRFP	FLOW
	86.655	2.0659	54.399	1998.0

CELL TEMP. = 77.679 HEATER TEMP = 85.850 COOLER TEMP = 42.791

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NASA-LEWIS PRELIMINARY DATA 03/25/76 CADDEII REC 03/25/76 16:06:06.657 FAC SEX15 PGM C003 RDG 2405

LEANOUT 25 BTDC I & T 50 DEG HUM = 0 % NEUTRAL MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.080 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 54.184 PRESS 29.076 CFM 19.297 DRY FLOW 87.990 VAPOR FLOW 0.011639 PRESS TOTAL 14.283

COMB. FUEL TEMP 79.755 PRESS 5.6874 DENSITY 44.654 TURBO FLOW 13.623 FLOW TRON 8.3168 FPIP 6.1065

COOLING AIR TEMP 60.709 UDEL-HOOD -0.0071957 DEL-HOOD 0.75108 FLOW 2188.6 REL-HUM 1.4616 DEW-POINT -23.591

REL-HUM 1 1.4616 2 32.763 HUMIDITY 0.92597 % H2O VAPOR 0.021263 CORRECTED HP 1.7697

ENG. COND. F/A DRY 0.094520 F/A WET 0.094507 EQU. RATIO 1.4107 RPM-1 1199.4 RPM-2 1199.7 TORQUE 7.7924 BHP 1.7796

WET CORRECTION FACTOR = 0.86575 EXHAUST MLE. WT. = 26.595 EXHAUST DENSITY = 0.068862 EXHAUST FLOW RATE = 1398.7

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 7631.8 NOX PPM 23.092 CO DRY 11.032 CO2 DRY 8.1823 O2 DRY 0.31779
CORRECTED CONC. TO WET BASIS CO DRY 9.5507 CO2 DRY 7.0838 O2 DRY 0.27513

EMISSION RATE HC 0.38322 NOX 0.0038437 CO 9.6985
EMISSION MASS/MODE 0.070257 0.00070467 1.7781
EMISSION MASS/RATED HP 0.00043911 4.4042E-06 0.011113
MODE EMIS./STD. CYCLE % 23.111 0.29361 26.459

CAL. FUEL AIR RATIO = 0.096302 MEAS. FUEL AIR RATIO = 0.094520 DIFF MEAS. & CAL. F/A PERCENT = 1.8855

CYL TEMP DEG.F CYL-1 256.14 CYL-2 271.41 CYL-3 258.81 CYL-4 272.22

EXT GAS TEMP DEG.F EXT-1 1218.6 EXT-2 -185.16 EXT-3 -454.00 EXT-4 821.00 SEXT-1 650.47 SEXT-2 646.99

ENGINE OIL EOILT 140.70 SOILT 146.54 OILP 56.106 MANIFOLD PRESSURE = 8.2482

DYNO COND. TORQUE 6.6247 RPM 1189.7 CYL. BACK PRESSURE = 29.230

INDUCTION AIR IAIRT1 53.075 IAIRT2 54.184 TAIRT1 82.340 TAIRT2 47.580

ORIFICE AIR TEMP 88.482 DELTAP 1.0274 OREFP 54.535 FLOW 1422.0

CELL TEMP. = 79.508 HEATER TEMP = 87.030

1/2

NASA-LEWIS PPELIMINARY DATA 03/25/76 CADDEII REC 03/25/76 16:25:00.752 FAC SEX15 PGM C003 RDG 2406

LEANOUT 25 BTDC I & T 50 DEG HUM = 0 % NEUTRAL MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARDMETRIC PRESSURE = 29.090 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 53.366 PRESS 29.089 CFM 11.933 DRY FLOW 54.540 VAPOR FLOW 0.010585 PRESS TOTAL 14.284

COMB. FUEL TEMP 79.172 PRESS 5.7327 DENSITY 44.670 TURBO FLOW 3.9616 FLOW TRON 5.0495 FPIP 6.0999

COOLING AIR TEMP 57.194 UDEL-HOOD -0.0033211 DEL-HOOD 0.86791 FLOW 2208.2 REL-HUM 2.2094 DEW-POINT -19.541

REL-HUM 1 2 HUMIDITY 1.3585 % H2O VAPOR CORRECTED HP 0.031197 0.51015

ENG. COND. F/A DRY 0.092584 F/A WET 0.092566 EQU. RATIO 1.3818 RPM-1 592.68 RPM-2 588.18 TORQUE 4.5504 BHP 0.51351

WET CORRECTION FACTOR = 0.87528 EXHAUST MOLE. WT. = 26.731 EXHAUST DENSITY = 0.069214 EXHAUST FLOW RATE = 861.10

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 28867. NOX PPM 3.3903 CO DRY 9.67640 CO2 DRY 6.9476 O2 DRY 3.1296
CORRECTED CONC. TO WET BASIS HC 8.4596 NOX 6.0811 CO 2.7393

EMISSION RATE HC 0.89240 NOX 0.00034741 CO 5.2948
EMISSION MASS/MODE 0.014873 5.7902E-06 0.088247
EMISSION MASS/RATED HP 9.2959E-05 3.6188E-08 0.00055154
MODE FMIS./STD. CYCLE % 4.8926 0.0024126 1.3132

CAL. FUEL AIR RATIO = 0.096161 MEAS. FUEL AIR RATIO = 0.092584 DIFF MEAS. & CAL. F/A PERCENT = 3.8633

CYL TEMP DEG.F CYL-1 248.22 CYL-2 263.43 CYL-3 245.10 CYL-4 259.34

EXT GAS TEMP DEG.F EXT-1 1003.4 EXT-2 -39.226 EXT-3 -454.00 EXT-4 813.49 SEXT-1 753.95 SEXT-2 758.90

ENGINE OIL EOILT 142.19 SOILT 155.04 OILP 46.989 MANIFOLD PRESSURE = 11.722

DYNO COND. TORQUE 5.3429 RPM 576.18 CYL. BACK PRESSURE = 29.061

INDUCTION AIR IAIRT1 51.910 IAIRT2 53.366 TAIRT1 154.55 TAIRT2 46.340

ORIFICE AIR TEMP 88.517 DELTAP 2.9498 ORFP 54.501 FLOW 2359.5

CELL TEMP. = 79.508 HEATER TEMP = 87.425 COOLER TEMP = 41.694

NASA-LEWIS PRELIMINARY DATA 03/25/76 CADDEII REC 03/25/76 16:46:35.687 FAC SEX15 PGM C003 RDG 2409

LEANOUT 25 BTDC I & T 50 DEG HUM = 0 % 3/4 T CLOSED MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.090 RATED RPM = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 52.456 PRESS 29.084 CFM 17.766 DRY FLOW 81.345 VAPOR FLOW 0.017832 PRESS TOTAL 14.286

COMB. FUEL TEMP 80.628 PRESS 5.7135 DENSITY 44.532 TURBO FLOW 11.401 FLOW TRON 6.8587 FPIP 6.1017

COOLING AIR TEMP 58.967 UDEL-HOOD -0.011901 DEL-HOOD 0.87206 FLOW 2164.7 REL-HUM 2.5807 DEW-POINT -17.941

REL-HUM 1 2.5807 2 0.27203 HUMIDITY 1.5345 % H2O VAPOR 0.035238 CORRECTED HP 1.2171

ENG. CONJ. F/A DRY 0.084316 F/A WET 0.084298 EQU. RATIO 1.2585 RPM-1 1201.4 RPM-2 1201.3 TORQUE 5.3589 BHP 1.2259

WET CORRECTION FACTOR = 0.85722 EXHAUST MOLE. WT. = 27.342 EXHAUST DENSITY = 0.070795 EXHAUST FLOW RATE = 1246.2

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 4038.1 NOX PPM 48.983 CO DRY 8.20430 CO2 DRY 9.7873
CORRECTED CONC. TO WET BASIS 7.0329 CO DRY 8.3899 CO2 DRY 0.21068

EMISSION RATE HC 0.18065 NOX 0.0072638 CO 6.3627
EMISSION MASS/MODE 0.033119 0.0013317 1.1665
EMISSION MASS/RATED HP 0.00020700 8.3231E-06 0.0072906
MODE EMIS./STD. CYCLE % 10.895 0.55487 17.359

CAL. FUEL AIR RATIO = 0.086745 MEAS. FUEL AIR RATIO = 0.084316 DIFF MEAS. & CAL. F/A PERCENT = 2.8610

CYL TEMP DEG.F CYL-1 246.56 CYL-2 261.34 CYL-3 253.16 CYL-4 263.54

EXT GAS TEMP DEG.F EXT-1 1264.8 EXT-2 -454.00 EXT-3 -454.00 EXT-4 -1.5274 SEXT-1 601.31 SEXT-2 596.72

ENGINE OIL EOILT 139.17 SOILT 145.21 OILP 57.102 MANIFOLD PRESSURE = 7.6822

DYNO COND. TORQUE 6.6679 RPM 1196.3 CYL. BACK PRESSURE = 29.163

INDUCTION AIR IAIRT1 51.263 IAIRT2 52.456 TAIRT1 160.55 TAIRT2 45.517

ORIFICE AIR TEMP 89.146 DELTAP 2.9448 ORFP 54.600 FLOW 2356.3

CELL TEMP. = 79.305 HEATER TEMP = 87.861 COOLER TEMP = 60.300

NASA-LEWIS PRELIMINARY DATA 03/25/76 CADDEII REC 03/25/76 17:00:48.593 FAC SEX15 PGM C003 RDG 2411

LEANOUT 25 BTDC I & T 50 DEG HUM = 0 % 3/4 T CLOSED MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.100 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 50.598 PRESS 29.096 CFM 17.538 DRY FLOW 80.447 VAPOR FLOW 0.019401 PRESS TOTAL 14.295

COMB. FUEL TEMP 79.473 PRESS 5.7198 DENSITY 44.562 TURBO FLOW 11.909 FLOW TRON 6.7777 FPIP 6.0963

COOLING AIR TEMP 58.171 UDEL-HOOD -0.013561 DEL-HOOD 0.78599 FLOW 2156.3 REL-HUM 3.0427 DEW-POINT -16.586

REL-HUM 1 3.0427 2 9.0009 HUMIDITY 1.6882 % H2O VAPOR 0.038766 CORRECTED HP 1.2199

ENG. COND. F/A DRY 0.084250 F/A WET 0.084230 EQU. RATIO 1.2575 RPM-1 1198.9 RPM-2 1200.2 TORQUE 5.3922 BHP 1.2309

WET CORRECTION FACTOR = 0.85678 EXHAUST MOLE. WT. = 27.347 EXHAUST DENSITY = 0.070808 EXHAUST FLOW RATE = 1232.1

MEASURED CONC. HC PPM 3867.6 NOX PPM 49.027 CO DRY 8.1843 PER CENT 9.9323 O2 DRY 0.19306
CORRECTED CONC. TO WET BASIS 7.0121 8.5097 0.16541

EMISSION RATE HC 0.17107 NOX 0.0071884 CO 6.2725
EMISSION MASS/MODE 0.031364 0.0013179 1.1500
EMISSION MASS/RATED HP 0.00019602 8.2367E-06 0.0071872
MODE EMIS./STD. CYCLE % 10.317 0.54911 17.112

CAL. FUEL AIR RATIO = 0.086461 MEAS. FUEL AIR RATIO = 0.084250 DIFF MEAS. & CAL. F/A PERCENT = 2.6244

CYL TEMP DEG.F CYL-1 258.05 CYL-2 273.02 CYL-3 262.30 CYL-4 277.68

EXT GAS TEMP DEG.F EXT-1 1423.6 EXT-2 -251.97 EXT-3 -454.00 EXT-4 816.97 SEXT-1 652.75 SEXT-2 650.86

ENGINE OIL EOILT 145.98 SOILT 153.13 OILP 55.978 MANTFOLD PRESSURE = 7.7156

DYNO COND. TORQUE 3.2115 RPM 1195.8 CYL. BACK PRESSURE = 29.291

INDUCTION AIR IAIRT1 49.375 IAIRT2 50.598 TAIRT1 145.90 TAIRT2 44.884

ORIFICE AIR TEMP 88.325 DELTAP 2.9758 ORFP 54.631 FLOW 2369.9

CELL TEMP. = 78.483 HEATER TEMP = 88.006 COOLER TEMP = 39.762

NASA-LEWIS PRELIMINARY DATA 03/25/76 CADDEII REC 03/25/76 17:05:48.896 FAC SEX15 PGM C005 RDG 2412

LEANOUT 25 BTDC I & T 50 DEG HUM = 0 % 3/4 T CLOSED MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.100 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 51.974 PRESS 29.096 CFM 9.4000 DRY FLOW 43.081 VAPOR FLOW 0.011121 PRESS TOTAL 14.291

CCMB. FUEL TEMP 80.267 PRESS 5.7789 DENSITY 44.541 TURBO FLOW 3.9607 FLOW TRON 3.9124 FPIP 6.1275

CCCLING AIR TEMP 59.455 UDEL-HOOD -0.029336 DEL-HOOD 0.85985 FLOW 2075.9 REL-HUM 3.0942 DEW-POINT -15.586

REL-HUM 1 3.0942 2 8.0908 HUMIDITY 1.8070 % H2O VAPOR 0.041496 CORRECTED HP 0.42491

ENG. COND. F/A DRY 0.090815 F/A WET 0.090792 EQU. RATIO 1.3554 RPM-1 606.60 RPM-2 607.62 TORQUE 3.7087 BHP 0.42835

WET CORRECTION FACTOR = 0.89382 EXHAUST MOLE. WT. = 26.858 EXHAUST DENSITY = 0.069541 EXHAUST FLOW RATE = 675.92

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 19646. NOX PPM 13.391 CO DRY 7.65810 CO2 DRY 8.6016 O2 DRY 2.4586
CORRECTED CONC. TO WET BASIS CO DRY 6.8539 CO2 DRY 7.6883 O2 DRY 2.1976

EMISSION RATE HC 0.47674 NOX 0.0010771 CO 3.3633
EMISSION MASS/MODE 0.0079457 1.7952E-05 0.056055
EMISSION MASS/RATED HP 4.9661E-05 1.1220E-07 0.00035035
MODE EMIS./STD. CYCLE % 2.6137 0.0074800 0.83416

CAL. FUEL AIR RATIO = 0.086887 MEAS. FUEL AIR RATIO = 0.090815 DIFF MEAS. & CAL. F/A PERCENT = -4.3248

CYL TEMP DEG.F CYL-1 268.17 CYL-2 283.43 CYL-3 267.47 CYL-4 286.97

EXT GAS TEMP DEG.F EXT-1 1240.7 EXT-2 -237.57 EXT-3 -454.00 EXT-4 712.74 SEXT-1 744.40 SEXT-2 744.66

ENGINE OIL EOILT 151.04 SOILT 162.17 OILP 46.633 MANIFOLD PRESSURE = 10.913

DYNO COND. TORQUE 4.6157 RPM 605.94 CYL. BACK PRESSURE = 29.176

INDUCTION AIR IAIRT1 50.279 IAIRT2 51.974 TAIRT1 124.82 TAIRT2 45.145

ORIFICE AIR TEMP 89.111 DELTAP 2.9407 DRFP 54.601 FLOW 2354.8

CELL TEMP. = 78.969 HEATER TEMP = 89.041

NASA-LEWIS PRELIMINARY DATA 03/25/76 CADDEII REC 03/25/76 17:14:36.527 FAC SEX15 PGM C003 RDG 2413

LEANOUT 25 BTDC I & T 50 DEG HUM = 0 % 3/4 T CLOSED MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.100 RATED HP = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 53.611 PRESS 29.097 CFM 9.7633 DRY FLOW 44.771 VAPOR FLOW 0.011837 PRESS TOTAL 14.291

COMB. FUEL TEMP 81.157 PRESS 5.7708 DENSITY 44.518 TURBO FLOW 3.9621 FLOW TRON 3.9814 FPIP 6.1119

COOLING AIR TEMP 60.114 UDEL-HOOD -0.031827 DEL-HOOD 0.80675 FLOW 2063.2 RFL-HUM 2.9838 DEW-POINT -15.226

REL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP
2.9838 37.840 1.8507 0.042498 0.55923

ENG. COND. F/A DRY 0.088928 F/A WET 0.088904 EQU. RATIO 1.3273 RPM-1 616.80 RPM-2 615.78 TORQUE 4.7921 BHP 0.56279

WET CORRECTION FACTOR = 0.87983 EXHAUST MOLE. WT. = 26.995 EXHAUST DENSITY = 0.069897 EXHAUST FLOW RATE = 697.66

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 15858. NOX PPM 16.821 CO DRY 7.6520D CO2 DRY 9.1884 O2 DRY 1.6342
CORRECTED CONC. TO WET BASIS CO DRY 6.7325 CO2 DRY 8.0842 O2 DRY 1.4378

EMISSION RATE HC 0.39719 NOX 0.0013965 CO 3.4100
EMISSION MASS/MODE 0.0066199 2.3275E-05 0.056833
EMISSION MASS/RATED HP 4.1374E-05 1.4547E-07 0.00035521
MODE FMS./STD. CYCLE % 2.1776 0.0096977 0.84573

CAL. FUEL AIR RATIO = 0.087338 MEAS. FUEL AIR RATIO = 0.088928 DIFF MEAS. & CAL. F/A PERCENT = -1.7872

CYL TEMP DEG.F CYL-1 265.33 CYL-2 280.50 CYL-3 259.92 CYL-4 277.08

EXT GAS TEMP DEG.F EXT-1 1120.7 EXT-2 -454.00 EXT-3 -454.00 EXT-4 788.95 SEXT-1 727.36 SEXT-2 727.07

ENGINE OIL EOILT 141.63 SOILT 151.20 OILP 47.581 MANIFOLD PRESSURE = 10.792

DYNO COND. TORQUE 4.8677 RPM 607.38 CYL. BACK PRESSURE = 29.208

INDUCTION AIR IAIRT1 52.010 IAIRT2 53.611 TAIRT1 109.16 TAIRT2 44.854

ORIFICE AIR TEMP 90.489 DELTAP 2.9572 DRFP 54.590 FLOW 2358.1

CELL TEMP. = 80.407 HEATER TEMP = 89.075 COOLFR TEMP = 39.399

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NASA-LEWIS PRELIMINARY DATA 03/25/76 CADDEII REC 03/25/76 17:21:42.261 FAC SEX15 PGM C003 RDG 2414

LEANOUT 25 BTDC I & T 50 DEG HUM = 0 % 1 1/2 T CLOSE MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.110 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	50.999	29.107	11.305	51.871	0.013886	14.296

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	78.625	5.7681	44.584	3.9663	3.4953	6.1110

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	57.755	-0.022417	0.80619	2111.2	3.3276	-15.031

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	3.3276	18.008	1.8739	0.043030	0.44634

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.067385	0.067367	1.0058	621.00	620.58	3.8087	0.45035

WET CORRECTION FACTOR = 0.88538 EXHAUST WOLF. WT. = 28.659 EXHAUST DENSITY = 0.074204 EXHAUST FLOW RATE = 746.32

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	14170.	39.033	2.0146	10.889	3.6811
CORRECTED CONC. TO WET BASIS			1.7837	9.6405	3.2591

	HC	NOX	CO
EMISSION RATE	0.37967	0.0034666	0.96646
EMISSION MASS/MODE	0.0063278	5.7776E-05	0.016108
EMISSION MASS/RATED HP	3.9548E-05	3.6110E-07	0.00010067
MODE EMIS./STD. CYCLE %	2.0815	0.024074	0.23970

CAL. FUEL AIR RATIO = 0.067298 MEAS. FUEL AIR RATIO = 0.067385 DIFF MEAS. & CAL. F/A PERCENT = -0.12897

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	235.17	274.23	258.78	280.60

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1277.0	-454.00	-454.00	961.77	718.22	716.64

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 11.479
	141.91	152.39	47.713	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.051
	4.1116	624.30	

INDUCTION AIR	IAIRT1	IAIPT2	TAIRT1	TAIRT2
	49.366	50.999	150.08	44.730

ORIFICE AIR	TEMP	DELTAP	DRFP	FLOW
	88.159	3.0001	54.417	2379.5

CELL TEMP. = 78.280 HEATER TEMP = 88.048

NASA-LEWIS PRELIMINARY DATA 03/25/76 CADDEII REC 03/25/76 17:25:00.252 FAC SEX15 PGM C003 RDG 2415

LEANOUT 25 BTDC I & T 50 DEG HUM = 0 % 1 1/2 T CLOSE MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.110 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	50.954	29.109	17.855	81.971	0.020277	14.299

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	79.967	5.7261	44.549	11.325	6.3186	6.1068

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	57.737	-0.024078	0.85380	2102.8	3.0809	-16.211

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	3.0809	0.44204	1.7315	0.039762	1.0679

ENG. COND.	F/A DRY	F/A WFT	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.077083	0.077064	1.1505	1201.5	1202.2	4.7088	1.0772

WET CORRECTION FACTOR = 0.86290 EXHAUST MOLE. WT. = 27.917 EXHAUST DENSITY = 0.072283 EXHAUST FLOW RATE = 1221.7

MEASURED CONC.	PART PER MILLION WET	PER CENT			
	HC PPM	CO DRY	CO2 DRY	C2 DRY	
	2050.3	66.725	4.70250	11.753	0.13417
CORRECTED CONC. TO WET BASIS		4.0578	10.141	0.11578	

EMISSION RATE	HC	NOX	CO
	0.089926	0.0097008	3.5992
EMISSION MASS/MODE	0.016486	0.0017785	0.65985
EMISSION MASS/RATED HP	0.00010304	1.1115E-05	0.0041240
MODE EMIS./STD. CYCLE %	5.4232	0.74103	9.8191

CAL. FUEL AIR RATIO = 0.077464 MEAS. FUEL AIR RATIO = 0.077083 DIFF MEAS. & CAL. F/A PERCENT = 0.49418

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	246.26	269.85	258.58	271.82

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1685.8	-454.00	-454.00	997.28	662.77	658.21

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 7.8703
	140.03	146.46	56.178	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.104
	6.6031	1212.8	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	49.686	50.954	123.07	44.587

ORIFICE AIR	TEMP	DEL TAP	ORFP	FLOW
	88.805	2.9663	54.458	2365.2

CELL TEMP. = 79.022 HFATER TEMP = 88.054 COOLER TEMP = 39.172

NASA-LEWIS PRELIMINARY DATA		03/25/76	CADDEII	REC 03/25/76 17:32:47.709	FAC SEX15	PGM C003	RDG 2417
LEANOUT 25 BTDC I & T 50 DEG HUM = 0 % 1 1/2 T CLOSE MODE = 2.0300				NO. SCANS = 5			
ENGINE TIMING = 25.000		DEG.	BAROMETRIC PRESSURE = 29.110		RATED HP. = 160.00		HC RATIO = 2.1250
COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL	
	51.965	29.113	17.553	80.581	0.020724	14.297	
COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP	
	81.580	5.7279	44.507	3.9577	6.1896	6.1053	
COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT	
	59.292	-0.020480	0.73811	2121.1	3.0850	-15.636	
REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP		
	3.0850	23.436	1.8002	0.041340	1.0412		
ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.076812	0.076792	1.1465	1197.9	1197.8	4.6005	1.0493
WET CORRECTION F. TOR = 0.86456		EXHAUST MOLE. WT. = 27.939		EXHAUST DENSITY = 0.072341		EXHAUST FLOW RATE = 1199.8	
MEASURED CONC.	PART PER MILLION WET		PER CENT				
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY		
	1940.3	66.759	4.42730	11.860	0.11351		
CORRECTED CONC. TO WET BASIS			3.8277	10.254	0.098138		
EMISSION RATE	HC	NOX	CO				
	0.083571	0.0095312	3.3340				
EMISSION MASS/MODE	0.015321	0.0017474	0.61123				
EMISSION MASS/RATED HP	9.5758E-05	1.0921E-05	0.0038202				
MODE EMIS./STD. CYCLE %	5.0399	0.72807	9.0957				
CAL. FUEL AIR RATIO = 0.076893		MEAS. FUEL AIR RATIO = 0.076812		DIFF MEAS. & CAL. F/A PERCENT = 0.10483			
CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4			
	255.81	279.86	266.95	284.88			
FXT GAS TEMP DEG. F	FXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2	
	1107.3	-454.00	-454.00	1041.9	701.28	696.10	
ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 7.9070			
	146.03	152.98	55.962				
DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.134				
	-0.41044	1199.0					
INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2			
	50.616	51.965	133.39	44.538			
ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW			
	90.010	2.8373	54.553	2313.0			
CFL TEMP. = 80.381	HEATER TEMP = 88.020		COOLER TEMP = 30.027				

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NASA-LEWIS PRELIMINARY DATA 03/25/76 CADDEII REC 03/25/76 17:35:47.843 FAC SEX15 PGM C003 RDG 2418

LEANOUT 25 BTDC I & T 50 DEG HUM = 0 % 1 1/2 T CLOSE MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.110 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	52.875	29.115	10.739	49.311	0.013479	14.295

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	80.928	5.7840	44.624	3.9575	3.2223	6.1020

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	60.312	-0.022694	0.84466	2109.8	3.1706	-14.711

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	3.1706	0.32003	1.9135	0.043940	0.090434

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.065347	0.065329	0.97533	591.72	590.16	0.80841	0.091080

WET CORRECTION FAC. \bar{R} = 0.88197 EXHAUST MOLE. WT. = 28.760 EXHAUST DENSITY = 0.074466 EXHAUST FLOW RATE = 705.65

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	18041.	31.803	1.08270	10.584	3.6813
CORRECTED CONC. TO WET BASIS			0.95488	9.3344	3.2468

EMISSION RATE	HC	NOX,	CO
	0.45705	0.0026706	0.48919
EMISSION MASS/MODE	0.0076175	4.4510E-05	0.0081531
EMISSION MASS/RATED HP	4.7609E-05	2.7818E-07	5.0957E-05
MODE EMIS./STD. CYCLE %	2.5057	0.018546	0.12133

CAL. FUEL AIR RATIO = 0.067473 MEAS. FUEL AIR RATIO = 0.065347 DIFF MEAS. & CAL. F/A PERCENT = 3.2535

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	269.90	300.61	288.01	309.92

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1689.3	-454.00	-454.00	922.07	750.03	749.09

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 12.103
	147.14	159.05	46.565	

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.191
	0.47525	588.90	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	51.218	52.875	104.09	44.350

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	90.420	2.9603	54.506	2359.5

CELL TEMP. = 80.628 HEATER TEMP = 88.013 COOLER TEMP = 38.954

NASA-LEWIS PRELIMINARY DATA 03/25/76 CADDEII REC 03/25/76 17:45:25.755 FAC SEX15 PGM C003 RDG 2420

LEANOUT 25 BTDC I & T 50 DEG HUM = 0 $\frac{3}{4}$ T OPEN MODE = 2.000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.110 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 50.069 PRESS 29.108 CFM 19.515 DRY FLOW 89.706 VAPOR FLOW 0.021775 PRESS TOTAL 14.300

COMB. FUEL TEMP 79.596 PRESS 5.6646 DENSITY 44.659 TURBO FLOW 13.969 FLOW TRON 9.1509 FPIP 6.0988

COOLING AIR TEMP 57.855 UDEL-HOOD -0.020757 DEL-HOOD 0.81505 FLOW 2119.7 REL-HUM 3.1246 DEW-POINT -16.486

REL-HUM 1 3.1246 2 0.37004 HUMIDITY 1.6992 $\frac{3}{4}$ H2O VAPOR CORRECTED HP 0.039019 1.4254

ENG. COND. F/A DRY 0.10201 F/A WET 0.10199 EQU. RATIO 1.5225 RPM-1 1201.2 RPM-2 1202.4 TORQUE 6.2923 BHP 1.4391

WET CORRECTION FACTOR = 0.87698 EXHAUST MOLE. WT. = 26.095 EXHAUST DENSITY = 0.067567 EXHAUST FLOW RATE = 1463.4

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 11271. CO DRY 12.0640 CO2 DRY 7.5080 O2 DRY 0.39104
CORRECTED CONC. TO WET BASIS NOX PPM 15.117 CO 10.580 CO2 6.5844 O2 0.34293

EMISSION RATE HC 0.59214 NOX 0.0026325 CO 11.240
EMISSION MASS/MODE 0.10856 0.00048262 2.0607
EMISSION MASS/RATED HP 0.00067849 3.0164E-06 0.012879
MODE EMIS./STD. CYCLE $\frac{3}{4}$ 35.710 0.20109 30.665

CAL. FUEL AIR RATIO = 0.10151 MEAS. FUEL AIR RATIO = 0.10201 DIFF MEAS. & CAL. F/A PERCENT = -0.49309

CYL TEMP DEG.F CYL-1 253.44 CYL-2 272.97 CYL-3 257.43 CYL-4 276.61

EXT GAS TEMP DEG.F EXT-1 1286.7 EXT-2 -454.00 EXT-3 -454.00 EXT-4 1057.3 SEXT-1 698.54 SEXT-2 692.54

ENGINE OIL EOILT 147.70 SOILT 155.06 OILP 55.574 MANIFOLD PRESSURE = 8.4755

DYNO COND. TORQUE 7.5247 RPM 1197.5 CYL. BACK PRESSURE = 29.070

INDUCTION AIR IAIRT1 48.782 IAIRT2 50.069 TAIRT1 101.62 TAIRT2 44.007

ORIFICE AIR TEMP 88.666 DELTAP 2.9759 ORFP 54.580 FLOW 2369.2

CELL TEMP. = 79.058 HEATER TEMP = 87.992

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NASA-LEWIS PRELIMINARY DATA 03/25/76 CADDEII REC 03/25/76 17:56:22.139 FAC SEX15 PGM C003 RDG 2423

LEANOUT 25 BTDC I & T 50 DEG HUM = 0 % 3/4 T OPEN MDE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.120 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 51.655 PRESS 29.117 CFM 20.315 DRY FLOW 93.386 VAPOR FLOW 0.022649 PRESS TOTAL 14.303

COMB. FUEL TEMP 80.945 PRESS 5.6634 DENSITY 44.623 TURBO FLOW 14.440 FLOW TRON 9.2829 FPIP 6.0903

COOLING AIR TEMP 59.184 UDEL-HOOD -0.018266 DEL-HOOD 0.80370 FLOW 2132.4 REL-HUM 2.9441 DEW-POINT -16.495

REL-HUM 1 2 HUMIDITY 1.6977 % H2O VAPOR CORRECTED HP 0.038985 1.4052

ENG. COND. F/A DRY 0.099403 F/A WET 0.099379 EQU. RATIO 1.4836 RPM-1 1206.2 RPM-2 1206.8 TORQUE 6.1673 BHP 1.4165

WET CORRECTION FACTOR = 0.86657 EXHAUST MOLE. WT. = 26.265 EXHAUST DENSITY = 0.068006 EXHAUST FLOW RATE = 1510.0

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 11940. NOX PPM 13.829 CO DRY 12.1330 CO2 DRY 7.4546 O2 DRY 0.38500
CORRECTED CONC. TO WFT BASIS CO 10.514 CO2 6.4599 O2 0.33449

EMISSION RATE HC 0.64728 NOX 0.0024851 CO 11.526
EMISSION MASS/MODE 0.11867 0.00045560 2.1132
EMISSION MASS/RATED HP 0.00074168 2.8475E-06 0.013207
MODE EMIS./STD. CYCLE % 39.036 0.18983 31.446

CAL. FUEL AIR RATIO = 0.10226 MEAS. FUEL AIR RATIO = 0.099403 DIFF. MEAS. & CAL. F/A PERCENT = 2.8779

CYL TEMP DEG.F CYL-1 247.12 CYL-2 265.46 CYL-3 249.16 CYL-4 266.89

EXT GAS TEMP DEG.F EXT-1 961.77 EXT-2 -454.00 EXT-3 -454.00 EXT-4 954.99 SEXT-1 682.81 SEXT-2 676.16

ENGINE OIL EOILT 143.91 SOILT 150.62 OILT 56.078 MANIFOLD PRESSURE = 8.4706

DYNO COND. TORQUE 9.1089 RPM 1207.1 CYL. BACK PRESSURE = 29.191

INDUCTION AIR IAIRT1 50.397 IAIRT2 51.655 TAIRT1 119.20 TAIRT2 44.074

ORIFICE AIR TEMP 90.106 DELTAP 2.9804 ORFP 54.512 FLOW 2367.8

CELL TEMP. = 80.752 HEATER TEMP = 87.895 COOLER TEMP = 38.564

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NASA-LEWIS PRELIMINARY DATA 03/25/76 CADDEII REC 03/25/76 17:59:43.962 FAC SEX15 PGM C003 RDG 2424

LEANOUT 25 BTDC I & T 50 DEG HUM = 0 % 3/4 T OPEN MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.120 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 50.124 PRESS 29.117 CFM 12.685 DRY FLOW 58.346 VAPOR FLOW 0.015461 PRESS TOTAL 14.300

COMB. FUEL TEMP 78.837 PRESS 5.7072 DENSITY 44.678 TURBO FLOW 3.9692 FLOW TRON 6.2496 FPIP 6.0999

COOLING AIR TEMP 57.882 UDEL-HOOD -0.022417 DEL-HOOD 0.87566 FLOW 2111.2 REL-HUM 3.4038 DEW-POINT -15.181

REL-HUM 1 3.4038 2 0.39004 HUMIDITY 1.8549 % H2O VAPOR 0.042595 CORRECTED HP 0.44514

ENG. COND. F/A DRY 0.10711 F/A WET 0.10708 EQU. RATIO 1.5987 RPM-1 606.54 RPM-2 604.38 TORQUE 3.8921 BHP 0.44948

WET CORRECTION FACTOR = 0.90653 EXHAUST MOLE. WT. = 25.778 EXHAUST DENSITY = 0.066745 EXHAUST FLOW RATE = 968.02

MEASURED CONC. HC PPM 38202. NOX PPM 3.9074 CO DRY 10.7000 PER CENT CO2 DRY 5.8811 O2 DRY 3.5042
CORRECTED CONC. TO WET BASIS CO 9.7000 PER CENT CO2 5.3314 O2 3.1767

EMISSION RATE HC 1.3276 NOX 0.00045011 CO 6.8170
EMISSION MASS/MODE 0.022127 7.5018E-06 0.11362
EMISSION MASS/RATED HP 0.00013829 4.6887E-08 0.00071011
MODE FMS./STD. CYCLE % 7.2786 0.0031258 1.6907

CAL. FUEL AIR RATIO = 0.10381 MEAS. FUEL AIR RATIO = 0.10711 DIFF MEAS. & CAL. F/A PERCENT = -3.0843

CYL TEMP DEG. F CYL-1 259.02 CYL-2 280.80 CYL-3 262.39 CYL-4 278.80

EXT GAS TEMP DEG. F EXT-1 875.24 EXT-2 -454.00 EXT-3 -454.00 EXT-4 847.29 SEXT-1 734.63 SEXT-2 732.58

ENGINE OIL FOILT 145.58 SOILT 156.26 OILP 47.057 MANIFOLD PRESSURE = 12.422

DYNO COND. TORQUE 2.6427 RPM 596.10 CYL. BACK PRESSURE = 29.258

INDUCTION AIR IAIRT1 48.599 IAIRT2 50.124 TAIRT1 81.829 TAIRT2 43.678

ORIFICE AIR TEMP 88.325 DELTAP 2.9858 ORFP 54.591 FLOW 2373.7

CELL TEMP. = 78.678 HEATER TEMP = 87.847 COOLER TEMP = 38.455

NASA-LEWIS PRELIMINARY DATA 03/25/76 CADDE11 REC 03/25/76 18:03:13.813 FAC SEX15 PGM C003 RDG 2425

LEANOUT 25 BTDC I & T 50 DEG HUM = 0 % 3/4 T OPEN MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.120 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 49.366 PRESS 29.116 CFM 12.244 DRY FLOW 56.324 VAPOR FLOW 0.014521 PRESS TOTAL 14.299

COMB. FUEL TEMP 77.944 PRESS 5.7087 DENSITY 44.702 TURBO FLOW 3.9678 FLOW TRON 6.1116 FPIP 6.1017

COOLING AIR TEMP 57.991 UNEL-HOOD -0.019927 DEL-HOOD 0.80730 FLOW 2123.9 RFL-HUM 3.4063 DEW-POINT -15.596

REL-HUM 1 3.4063 2 16.212 HUMIDITY 1.8047 % H2O VAPOR CORRECTED HP 0.041442 0.33460

ENG. COND. F/A DRY 0.10851 F/A WET 0.10848 EQU. RATIO 1.6195 RPM-1 595.20 RPM-2 595.62 TORQUE 2.9836 BHP 0.33813

WET CORRECTION FAC R = 0.90802 EXHAUST MOLE. WT. = 25.695 EXHAUST DENSITY = 0.066529 EXHAUST FLOW RATE = 938.69

MEASURED CONC. PART PER MILLION WET HC PPM 38470. NOX PPM 3.8044 CO DRY 10.9140 PER CENT CO2 DRY 5.7642 O2 DRY 3.4619

CORRECTED CONC. TO WET BASIS HC 9.9104 NOX 5.2340 CO 3.1435

EMISSION RATE HC 1.2964 NOX 0.00042496 CO 6.7538
EMISSION MASS/MODE 0.021607 7.0827E-06 0.11256
EMISSION MASS/RATED HP 0.00013504 4.4267E-08 0.00070352
MODE EMIS./STD. CYCLE % 7.1076 0.0029511 1.6750

CAL. FUEL AIR RATIO = 0.10491 MEAS. FUEL AIR RATIO = 0.10851 DIFF MEAS. & CAL. F/A PERCENT = -3.3165

CYL TEMP DEG.F CYL-1 291.33 CYL-2 314.05 CYL-3 292.52 CYL-4 309.25

EXT GAS TEMP DEG.F EXT-1 824.85 EXT-2 -454.00 EXT-3 -454.00 EXT-4 917.35 SEXT-1 800.52 SEXT-2 802.17

ENGINE OIL FOILT 148.00 SOILT 159.60 OILP 46.377 MANIFOLD PRESSURE = 12.542

DYNO COND. TORQUE -0.15121 RPM 590.46 CYL. BACK PRESSURE = 29.118

INDUCTION AIR IAIRT1 47.822 IAIRT2 49.366 TAIRT1 99.583 TAIRT2 43.589

ORIFICE AIR TEMP 87.740 DELTAP 3.0267 ORFP 54.588 FLOW 2390.5

CFLR TEMP. = 78.527 HEATER TEMP = 87.785 COOLFR TEMP = 38.609

NASA-LEWIS PRELIMINARY DATA		03/25/76	CADDE11	REC 03/25/76 18:08:35.151	FAC SEX15	PGM C003	RDG 2426
LEANOUT 25 BTDC I & T 50 DEG HUM = 0 % 1 1/2 T OPEN				MODE = 1.0000	NO. SCANS = 5		
ENGINE TIMING = 25.000		DEG.	BAROMETRIC PRESSURE = 29.120		RATED HP. = 160.00		HC RATIO = 2.1250
COMB. AIR	TEMP 50.397	PRESS 29.118	CFM 13.806	DRY FLOW 63.426	VAPOR FLOW 0.016481	PRESS TOTAL 14.301	
COMB. FUEL	TEMP 78.607	PRESS 5.6859	DENSITY 44.584	TURBO FLOW 8.9228	FLOW TRON 7.0327	FPIP 6.0921	
COOLING AIR	TEMP 59.256	UDEL-HOOD -0.018543	DEL-HOOD 0.82695	FLOW 2131.0	REL-HUM 3.3043	DEW-POINT -15.476	
REL-HUM	1 3.3043	2 18.894	HUMIDITY 1.8190	% H2O VAPOR 0.041769	CORRECTED HP 0.51748		
ENG. CONC.	F/A DRY 0.11088	F/A WET 0.11085	EQU. RATIO 1.6549	RPM-1 592.08	RPM-2 595.32	TORQUE 4.6338	BHP 0.52239
WET CORRECTION FACTOR = 0.91590		EXHAUST MOLE. WT. = 25.556		EXHAUST DENSITY = 0.066170		EXHAUST FLOW RATE = 1065.1	
MEASURED CONC.	PART PER MILLION WET		PER CENT				
	HC PPM 42916.	NOX PPM 4.0724	CO DRY 11.0860	CO2 DRY 5.2691	O2 DRY 4.0383		
CORRECTED CONC. TO WET BASIS			10.154	4.8260	3.6987		
EMISSION RATE	HC 1.6409	NOX 0.00051614	CO 7.8511				
EMISSION MASS/MODE	0.027349	8.6024E-06	0.13085				
EMISSION MASS/RATED HP	0.00017093	5.3765E-08	0.00081783				
MODE EMIS./STD. CYCLE %	8.9963	0.0035843	1.9472				
CAL. FUEL AIR RATIO = 0.10635		MEAS. FUEL AIR RATIO = 0.11088		DIFF MEAS. & CAL. F/A PERCENT = -4.0833			
CYL TEMP DEG.F	CYL-1 289.89	CYL-2 309.54	CYL-3 295.31	CYL-4 309.81			
EXT GAS TEMP DEG.F	FXT-1 1329.9	FXT-2 -454.00	FXT-3 -317.66	FXT-4 972.27	SEXT-1 739.11	SEXT-2 733.17	
ENGINE OIL	EOILT 152.89	SOILT 164.68	OILP 46.161	MANIFOLD PRESSURE = 13.449			
DYNO COND.	TORQUE 13.797	RPM 590.10	CYL. BACK PRESSURE = 29.305				
INDUCTION AIR	IAIRT1 48.873	IAIRT2 50.397	TAIRT1 113.67	TAIRT2 44.327			
ORIFICE AIR	TEMP 88.736	DELTA P 2.9765	ORIF 54.701	FLOW 2369.2			
CELL TEMP. = 79.199	HEATER TEMP = 87.750		COOLER TEMP = 38.328				

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NASA-LEWIS PRELIMINARY DATA 03/25/76 CADDEII REC 03/25/75 18:12:38.948 FAC SEX15 PG4 C003 RDG 2427

LEANOUT 25 BTDC I & T 50 DEG HUM = 0 % 1 1/2 T OPEN MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.120 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 50.507 PRESS 29.120 CFM 21.072 DRY FLOW 96.914 VAPOR FLOW 0.024084 PRESS TOTAL 14.301

COMB. FUEL TEMP 80.073 PRESS 5.6487 DENSITY 44.646 TURBO FLOW 14.982 FLOW TRON 10.276 FPIP 6.0813

COOLING AIR TEMP 58.596 UDEL-HOOD -0.027952 DEL-HOOD 0.76717 FLOW 2083.0 REL-HUM 3.1473 DEW-POINT -16.141

REL-HUM 1 3.1473 2 15.486 HUMIDITY 1.7396 % H2O VAPOR 0.039946 CORRECTED HP 1.4067

ENG. CC:D. F/A DRY 0.10603 F/A WET 0.10601 EQU. RATIO 1.5825 RPM-1 1199.2 RPM-2 1199.7 TORQUE 6.2173 BHP 1.4196

WET CORRECTION FACTOR = 0.88028 EXHAUST MOLE. WT. = 25.844 EXHAUST DENSITY = 0.066915 EXHAUST FLOW RATE = 1602.2

MEASURED CONC. PART PER MILLION WET HC PPM 14247. NOX PPM 9.0619 CO DRY 12.5680 PER CENT CO2 DRY 7.0889 O2 DRY 0.42936
CORRECTED CONC. TO WET BASIS HC 11.152 NOX 6.2402 CO 0.37796

EMISSION RATE HC 0.81951 NOX 0.0017278 CO 12.972
EMISSION MASS/MODE 0.15024 0.00031676 2.3782
EMISSION MASS/RATED HP 0.00093902 1.9798E-06 0.0148803
MODE EMIS./STD. CYCLE % 49.422 0.13198 35.389

CAL. FUEL AIR RATIO = 0.10531 MEAS. FUEL AIR RATIO = 0.10603 DIFF MEAS. & CAL. F/A PERCENT = -0.67715

CYL TEMP DEG.F CYL-1 251.99 CYL-2 267.85 CYL-3 255.71 CYL-4 274.16

EXT GAS TEMP DEG.F EXT-1 822.16 EXT-2 -454.00 EXT-3 -391.16 EXT-4 1112.1 SEXT-1 629.29 SEXT-2 616.00

ENGINE OIL FOILT 148.23 SOILT 156.06 OILP 56.594 MANIFOLD PRESSURE = 8.7581

DYNO COND. TORQUE 10.347 RPM 1196.8 CYL. BACK PRESSURE = 29.207

INDUCTION AIR TAIRT1 49.238 TAIRT2 50.507 TAIRT1 116.98 TAIRT2 43.772

ORIFICE AIR TFMP 89.163 DELTAP 2.9701 DRFP 54.517 FLOW 2365.9

CELL TEMP. = 80.090 HEATER TEMP = 87.646 COOLER TEMP = 38.355

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NASA-LEWIS PRELIMINARY DATA 03/25/76 CADDEII REC 03/25/76 18:19:14.560 FAC SEX15 PGM C003 RDG 2429

LEANOUT 25 BTDC I & T 50 DEG HUM = 0 % 1 1/2 T OPEN MCDE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.120 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	51.546	29.119	20.891	96.109	0.023829	14.305

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	81.007	5.6463	44.622	15.263	10.231	6.0834

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	60.015	-0.026292	0.72593	2091.5	3.0223	-16.171

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	3.0223	19.600	1.7355	0.039854	0.84315

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10645	0.10643	1.5888	1198.3	1197.4	3.7254	0.85000

WET CORRECTION FACTOR = 0.88185 EXHAUST MOLE WT. = 25.818 EXHAUST DENSITY = 0.066849 EXHAUST FLOW RATE = 1591.1

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	14184.	9.1019	12.6550	7.0590	0.43458
CORRECTED CONC. TO WET BASIS			11.160	6.2250	0.38324

	HC	NOX	CO
EMISSION RATE	0.81022	0.0017234	12.891
EMISSION MASS/MODE	0.14854	0.00031595	2.3633
EMISSION MASS/RATED HP	0.00092838	1.9747E-06	0.014771
MODE EMIS./STD. CYCLE %	48.862	0.13165	35.169

CAL. FUEL AIR RATIO = 0.10533 MEAS. FUEL AIR RATIO = 0.10645 DIFF MEAS. & CAL. F/A PERCENT = -1.0583

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	255.98	277.95	261.38	282.03

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	884.92	-454.00	-274.49	1104.4	637.39	625.45

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 8.8575
	151.39	158.81	54.801	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.096
	0.80648	1212.4	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	50.270	51.546	102.30	43.751

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	90.245	2.9906	54.598	2371.4

CELL TEMP. = 81.007 HEATER TEMP = 87.605 COOLER TEMP = 38.309

NASA-LEWIS PRELIMINARY DATA 03/25/76 CADDEII REC 03/25/76 18:22:47.001 FAC SEX15 PGM C003 RDG 2430

LEANOUT 25 BTDC I & T 50 DEG HUM = 0 % 1 1/2 T OPEN MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.120 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 49.302 PRESS 29.120 CFM 13.869 DRY FLOW 63.727 VAPOR FLOW 0.017116 PRESS TOTAL 14.300

COMB. FUEL TEMP 77.537 PRESS 5.6916 DENSITY 44.712 TURBO FLOW 3.9722 FLOW TRON 7.0357 FPIP 6.0921

COOLING AIR TEMP 58.280 UDEL-HOOD -0.014668 DEL-HOOD 0.76856 FLOW 2150.7 REL-HUM 3.5571 DEW-POINT -14.976

REL-HUM 1 3.5571 2 33.677 HUMIDITY 1.8801 % H2O VAPOR CORRECTED HP 0.043173 0.43897

ENG. CON. F/A DRY 0.11040 F/A WET 0.11037 EQU. RATIO 1.6478 RPM-1 606.42 RPM-2 604.08 TORQUE 3.8420 BHP 0.44362

WET CORRECTION FACTOR = 0.90304 EXHAUST MOLE. WT. = 25.583 EXHAUST DENSITY = 0.066241 EXHAUST FLOW RATE = 1068.5

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 41683. NOX PPM 5.5125 CO DRY 11.4720 CO2 DRY 5.4143 O2 DRY 3.4354
CORRECTED CONC. TO WFT BASIS CO DRY 10.360 CO2 DRY 4.8893 O2 DRY 3.1023

EMISSION RATE HC 1.5989 NOX 0.00070093 CO 8.0367
EMISSION MASS/MODE 0.026649 1.1682E-05 0.13395
EMISSION MASS/RATED HP 0.00016656 7.3014E-08 0.00083716
MODE FMIS./STD. CYCLE % 8.7661 0.0048676 1.9932

CAL. FUEL AIR RATIO = 0.10924 MEAS. FUEL AIR RATIO = 0.11040 DIFF MEAS. & CAL. F/A PERCENT = -1.0539

CYL TEMP DEG.F CYL-1 292.08 CYL-2 316.77 CYL-3 298.37 CYL-4 319.44

EXT GAS TEMP DEG.F EXT-1 898.95 EXT-2 -319.96 EXT-3 -135.27 EXT-4 968.53 SEXT-1 717.75 SEXT-2 712.06

ENGINE OIL EOILT 155.90 SOILT 168.31 OILP 45.949 MANIFOLD PRESSURE 13.154

DYNO COND. TORQUE 9.3537 RPM 601.62 CYL. BACK PRESSURE = 29.238

INDUCTION AIR IAIRT1 47.739 IAIRT2 49.302 TAIRT1 103.84 TAIRT2 44.151

ORIFICE AIR TEMP 87.521 DELTAP 2.9892 DRFP 54.569 FLOW 2376.7

CELL TEMP. = 78.360 HEATER TEMP = 87.556 COOLER TEMP = 38.073

NASA-LEWIS PRELIMINARY DATA 03/25/76 CADDEII REC 03/25/76 18:31:08.330 FAC SEX15 PGM C003 RDG 2431

LEANOUT 25 BTDC TO CI APP 50 DEG HUM = 0 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.120 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 46.943 PRESS 29.142 CFM 207.95 DRY FLOW 989.65 VAPOR FLOW 0.25662 PRESS TOTAL 14.782

COMB. FUFL TEMP 75.793 PRESS 5.3195 DENSITY 44.758 TURBO FLOW 82.482 FLOW TRON 80.582 FPIP 5.9544

COOLING AIR TEMP 50.808 UDEL-HOOD 3.0537 DEL-HOOD 3.8960 FLOW 10057. REL-HUM 3.8787 DEW-POINT -15.006

REL-HUM 1 3.8787 2 35.694 HUMIDITY 1.8151 % H2O VAPOR 0.041682 CORRECTED HP 157.57

ENG. COND. F/A DRY 0.081425 F/A WET 0.081404 EQU. RATIO 1.2153 RPM-1 2708.5 RPM-2 2709.4 TORQUE 300.44 BHP 154.94

WET CORRECTION FACTOR = 0.85577 EXHAUST MILE. WT. = 27.567 EXHAUST DENSITY = 0.071378 EXHAUST FLOW RATE = 14997.

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 1571.4 NOX PPM 412.10 CO DRY 7.41160 CO2 DRY 10.298 CO DRY 0.060046
CORRECTED CONC. TO WET BASIS 6.3426 8.8130 0.051386

EMISSION RATE HC 0.84603 NOX 0.73547 CO 69.059
EMISSION MASS/MODE 0.0042301 0.0036774 0.34530
EMISSION MASS/RATED HP 2.6438E-05 2.2983E-05 0.0021581
MODE EMIS./STD. CYCLE % 1.3915 1.5322 5.1383

CAL. FUEL AIR RATIO = 0.083853 MEAS. FUEL AIR RATIO = 0.081425 DIFF. MEAS. & CAL. F/A PERCENT = 2.9827

CYL TEMP DEG. F CYL-1 392.29 CYL-2 412.38 CYL-3 383.91 CYL-4 415.54

EXT GAS TEMP DEG. F FXT-1 982.92 EXT-2 489.14 FXT-3 650.48 EXT-4 1314.7 SEXT-1 1306.3 SEXT-2 1313.8

ENGINE OIL EOILT 157.97 SOILT 174.26 OILP 73.627 MANIFOLD PRESSURE = 28.203

DYNO COND. TORQUE 303.32 RPM 2629.3 CYL. BACK PRESSURE = 29.249

INDUCTION AIR IAIRT1 46.486 IAIRT2 46.943 TAIRT1 60.886 TAIRT2 43.218

ORIFICE AIR TEMP 88.578 DELTAP 2.9565 DRFP 54.460 FLOW 2361.9

CELL TEMP. = 80.293 HFATER TEMP = 88.566 COOLER TEMP = 28.754

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NASA-LEWIS PRELIMINARY DATA 03/25/76 CADDELI REC 03/25/76 18:37:21.900 FAC SEX15 PGM C003 RDG 2433

LEANOUT 25 BTDC TO CI APP 50 DEG HUM = 0 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.120 RATED HP. = 160.00 FC RATIO = 2.1250

COMB. AIR	TEMP.	PRESS.	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	48.891	29.134	162.90	762.72	0.18903	14.579

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	76.271	5.3738	44.746	66.910	62.400	5.9604

COOLING AIR	TEMP.	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	52.256	3.0059	3.8118	9969.2	3.3984	-15.896

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	3.3984	21.760	1.7349	0.039839	118.07

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.081813	0.081793	1.2211	2434.0	2434.7	257.72	119.44

WET CORRECTION FAC, \bar{r} = 0.86685 EXHAUST MOLE. WT. = 27.537 EXHAUST DENSITY = 0.071299 EXHAUST FLOW RATE = 11575.

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1578.5	762.16	6.56410	10.703	0.14131
CORRECTED CONC. TO WET BASIS			5.6901	9.2775	0.12250

	HC	NOX	CO
EMISSION RATE	0.65593	1.0498	47.817
EMISSION MASS/MODE	0.054661	0.087486	3.9848
EMISSION MASS/RATED HP	0.00034163	0.00054679	0.024905
MODE EMIS./STD. CYCLE %	17.981	36.453	59.297

CAL. FUEL AIR RATIO = 0.081533 MEAS. FUEL AIR RATIO = 0.081813 DIFF. MEAS. & CAL. F/A PERCENT = -0.34183

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	348.87	376.78	377.24	404.91

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1262.1	-192.44	740.59	1571.2	1267.2	1272.1

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 25.914
	170.12	183.74	72.455	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.251
	250.84	2357.8	

INDUCTION AIR	IAIPT1	IAIRT2	TAIRT1	TAIRT2
	48.416	48.891	31.492	44.447

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	89.373	2.0230	54.385	1973.4

CELL TEMP. = 82.546 HEATER TEMP = 87.491 COOLER TEMP = 43.959

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NASA-LEWIS PRELIMINARY DATA 03/25/76 CADDELL REC 03/25/76 18:40:32.077 FAC SEX15 PGM C003 RDG 2434

LEANOUT 25 BTDC TO CL APP 50 DEG HUM = 0 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.120 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	50.023	29.114	101.96	471.66	0.10925	14.415

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	77.537	5.4515	44.712	44.854	41.572	5.9853

COOLING AIR	TEMP	INLET-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	52.775	2.9389	3.7202	9844.1	3.0106	-17.046

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	3.0106	24.150	1.6214	0.037233	64.088

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.088141	0.088120	1.3155	2349.3	2349.8	144.93	64.830

WET CORRECTION FACTOR = 0.86823 EXHAUST MOLE. WT. = 27.053 EXHAUST DENSITY = 0.070048 EXHAUST FLOW RATE = 7328.4

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	2033.0	209.70	8.94840	9.4383	0.12939
CORRECTED CONC. TO WET BASIS			7.7693	8.1946	0.11234

EMISSION RATE	HC	NOX	CO	
	0.53486	0.18288	41.336	
	EMISSION MASS/MODE	0.053486	0.018288	4.1336
	EMISSION MASS/RATED HP	0.00033429	0.00011430	0.025835
MODE EMIS./STD. CYCLE	17.594	7.5198	61.512	

CAL. FUEL AIR RATIO = 0.087825 MEAS. FUEL AIR RATIO = 0.088141 DIFF. MEAS. & CAL. F/A PERCENT = -0.35841

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	307.27	324.97	317.19	336.23

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1066.0	55.330	541.60	1433.0	1116.9	1117.1

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE =
	172.35	184.73	71.579	18.144

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE =
	150.51	2290.7	29.190

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	49.393	50.023	-52.770	44.840

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	84.228	2.0903	52.518	2006.2

CELL TEMP. * 83.110 HEATIP TEMP = 87.307 COOLER TEMP * 42.492

NASA-LEWIS PPFLIMINARY DATA 03/25/76 CADDEIL REC 03/25/76 18:46:12.179 FAC SEX15 PGM C003 R05 2435

LEANOUT 25 BTDC TO CL APP 50 DEG HUM = 0.3 MCDE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.120 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	47.081	29.126	206.36	977.60	0.25102	14.767

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	72.880	5.3102	44.835	81.779	78.788	5.9451

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	52.384	3.0084	3.9538	9973.8	3.8172	-15.171

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	3.8172	15.232	1.7974	0.041274	155.12

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.080593	0.080572	1.2029	2698.8	2700.0	296.58	152.40

WET CORRECTION FACTOR = 0.85118 EXHAUST MOLE. WT. = 27.633 EXHAUST DENSITY = 0.071549 EXHAUST FLOW RATE = 14768.

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1448.9	277.83	7.5085D	10.245	0.028023
CORRECTED CONC. TO WET BASIS			6.3911	8.7204	0.023852

	HC	NOX	CO
EMISSION RATE	0.76819	0.48826	68.523
EMISSION MASS/MCDE	0.0038410	0.0024413	0.34261
EMISSION MASS/RATED HP	2.4006F-05	1.5258F-05	0.0021413
MCDE EMLS./STD. CYCLE %	1.2635	1.0172	5.0984

CAL. FUEL AIR RATIO = 0.084157 MEAS. FUEL AIR RATIO = 0.080593 DIFF MEAS. & CAL. F/A PERCENT = 4.4222

CYL TEMP. DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	411.06	436.34	399.68	429.64

FXT GAS TFMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1078.3	277.89	970.54	1749.7	1371.6	1374.8

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.214
	183.83	199.91	73.347	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.231
	295.83	2597.3	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	46.660	47.081	-75.287	45.002

ORIFICE AIR	TFMP	DELTAP	ORFP	FLOW
	87.836	2.9673	54.903	2367.7

CELL TEMP. = 81.721 HEATER TFMP = 88.490 COOLER TFMP = 45.181

NASA-LEWIS PRELIMINARY DATA 03/25/76 CADDELL REC 03/25/76 18:49:27.498 FAC SEX15 PGM C003 RDG 2436

LEANOUT 25 RTDC TO CL APP 50 DEG HUM = 0 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.120 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	48.416	29.130	163.38	763.96	0.19751	14.590

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIF
	74.409	5.3801	44.795	62.769	61.758	5.9070

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	52.948	3.0023	3.7769	9962.5	3.6112	-15.251

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	3.6112	18.918	1.8097	0.041557	118.34

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.080839	0.080818	1.2066	2431.4	2432.3	258.73	119.78

WET CORRECTION FACTOR = 0.86165 EXHAUST MOLE. WT. = 27.614 EXHAUST DENSITY = 0.071498 EXHAUST FLOW RATE = 11551.

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1473.5	706.39	6.59580	10.729	0.077648
CORRECTED CONC. TO WET BASIS			5.6833	9.2450	0.066905

	HC	NOX	CO
EMISSION RATE	0.61108	0.97103	47.663
EMISSION MASS/MODE	0.050423	0.080919	3.9719
EMISSION MASS/RATED HP	0.00031827	0.00050575	0.024824
MODE EMIS./STD. CYCLE %	16.751	33.716	59.105

CAL. FUEL AIR RATIO = 0.081745 MEAS. FUEL AIR RATIO = 0.080839 DIFF MEAS. & CAL. F/A PERCENT = 1.1204

CYL TEMP. DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	365.99	390.16	394.56	422.47

EXT GAS TEMP DEG. F	FXT-1	EXT-2	EXT-3	FXT-4	SEXT-1	SEXT-2
	1222.4	-402.25	1048.3	1839.3	1308.3	1310.9

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE =
	188.20	201.72	71.695	26.251

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE =
	254.10	2381.5	29.242

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	47.941	48.416	-47.114	45.466

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	87.879	0.099610	53.640	347.12

CELL TEMP. = 82.671 HEATER TEMP = 87.764 COOLER TEMP = 44.439

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NASA-LEWIS PRELIMINARY DATA 03/25/76 CADDETT REC 03/25/76 18:53:08.679 FAC SEX15 PGM C003 RDG 2437

LEANOUT 25 BTDC TO CI APP 50 DEG HUM = 0 % MDEF = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.120 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	49.932	29.120	102.33	472.02	0.11540	14.409

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	76.493	5.4611	44.740	42.879	40.642	6.0147

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	53.048	2.8725	3.6020	9718.4	3.1870	-16.271

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	3.1870	11.235	1.7114	0.039300	63.967

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.086103	0.086082	1.2851	2350.1	2351.4	144.62	64.713

WET CORRECTION FAC $\lambda = 0.86024$ EXHAUST MOLE. WT. = 27.206 EXHAUST DENSITY = 0.070442 EXHAUST FLOW RATE = 7279.3

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	1989.8	199.72	8.90220	9.5233	0.088959	
CORRECTED CONC. TO WET BASIS			7.6580	8.1923	0.076534	

EMISSION RATE	HC	NOX	CO	
	0.51999	0.17301	40.471	
	EMISSION MASS/MODE	0.051999	0.017301	4.0471
	EMISSION MASS/RATED HP	0.00032499	0.00010813	0.025294
MDEF EMIS./STD. CYCLE %	17.105	7.2085	60.224	

CAL. FUEL AIR RATIO = 0.087748 MEAS. FUEL AIR RATIO = 0.086103 DIFF. MEAS. & CAL. F/A PERCENT = 1.9113

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	310.31	327.09	320.55	336.71

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1211.0	-277.42	802.54	1661.2	1139.1	1136.0

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 18.288
	186.36	197.93	72.191	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.166
	151.27	2319.7	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	49.311	49.932	19.114	46.068

OPIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	88.779	1.0422	53.522	1431.6

CELL TEMP. = 83.234 HEATFP TEMP = 97.660 COOLER TEMP = 44.248

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NASA-LEWIS PRELIMINARY DATA 03/25/76 CADDEII REC 03/25/76 18:56:09.728 FAC SEX15 PGM C003 RDG 2438

LEANOUT 25 BTDC TO CL APP 50 DEG HUM = 0 % MCDE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.120 RATED HP = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 49.549 PRESS 29.140 CFM 207.00 DRY FLOW 980.26 VAPOR FLOW 0.25328 PRESS TOTAL 14.777

COMB. FUEL TEMP 75.021 PRESS 5.3234 DENSITY 44.779 TURBO FLOW 78.822 FLOW TRON 76.817 FPIP 5.9979

COOLING AIR TEMP 54.156 UDEL-HOOD 2.9386 DEL-HOOD 3.7653 FLOW 9843.5 REL-HUM 3.5039 DEW-POINT -15.066

REL-HUM 1 3.5039 2 27.595 HUMIDITY 1.8087 % H2O VAPOR 0.041533 CORRECTED HP 156.32

ENG. COND. F/A DRY 0.078364 F/A WET 0.078343 EQU. RATIO 1.1696 RPM-1 2701.2 RPM-2 2702.5 TORQUE 297.95 BHP 153.25

WET CORRECTION FACTOR = 0.85449 EXHAUST MOLE. WT. = 27.812 EXHAUST DENSITY = 0.072013 EXHAUST FLOW RATE = 14682.

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 1301.6 NOX PPM 590.66 CO DRY 6.2513 CO2 DRY 10.930 O2 DRY 0.057506
CORRECTED CONC. TO WET BASIS 5.3416 9.3396 0.049138

EMISSION RATE HC 0.68609 NOX 1.0320 CO 56.939
EMISSION MASS/MODE 0.0034305 0.0051600 0.28470
EMISSION MASS/RATED HP 2.1440E-05 3.2250E-05 0.0017793
MODE EMLS./STD. CYCLE % 1.1284 2.1500 4.2365

CAL. FUEL AIR RATIO = 0.080893 MEAS. FUEL AIR RATIO = 0.078364 DIFF MEAS. & CAL. F/A PERCENT = 3.2284

CYL TEMP DEG.F CYL-1 407.50 CYL-2 431.48 CYL-3 402.78 CYL-4 431.60

EXT GAS TEMP DEG.F EXT-1 914.00 EXT-2 532.31 EXT-3 818.87 EXT-4 1758.4 SEXT-1 1377.5 SEXT-2 1380.9

ENGINE OIL FOILT 187.30 SOILT 202.97 OILP 73.531 MANIFOLD PRESSURE = 28.209

DYNO COND. TORQUE 292.87 RPM 2643.8 CYL. BACK PRESSURE = 29.261

INDUCTION AIR IAIRT1 49.056 IAIRT2 49.549 TAIRT1 107.02 TAIRT2 45.518

ORIFICE AIR TEMP 89.233 DELTAP 1.0332 ORFP 53.535 FLOW 1424.9

CELL TEMP. = 83.927 HEATER TEMP = 87.581

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NASA-LEWIS PRELIMINARY DATA 03/25/76 CADDEII REC 03/25/76 18:59:54.916 FAC SEX15 PGM C003 RDG 2439

LEANOUT 25 BTDC TO CL APP 50 DEG HUM = 0 % MCDE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.120 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 50.680 PRESS 29.107 CFM 164.10 DRY FLOW 766.07 VAPOR FLOW 0.19382 PRESS TOTAL 14.586

COMB. FUEL TEMP 76.254 PRESS 5.3696 DENSITY 44.746 TURBO FLOW 64.060 FLOW TRON 60.312 FPIP 5.9850

COOLING AIR TEMP 53.929 UDEL-HOOD 2.9051 DEL-HOOD 3.7888 FLOW 9780.4 REL-HUM 3.2471 DEW-POINT -15.581

REL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP
3.2471 31.483 1.7710 0.040669 118.88

ENG. COND. F/A DRY 0.078729 F/A WET 0.078709 EQU. RATIO 1.1751 RPM-1 2435.6 RPM-2 2437.0 TORQUE 258.78 BHP 120.01

WET CORRECTION FA. CR = 0.86276 EXHAUST MOLE. WT. = 27.783 EXHAUST DENSITY = 0.071936 EXHAUST FLOW RATE = 11490.

MEASURED CONC. PART PER MILLION WET PER CFMT
HC PPM 1358.6 NOX PPM 882.79 CO DRY 5.66390 CO2 DRY 11.200 O2 DRY 0.11351
CORRECTED CONC. TO WET BASIS 4.8866 9.6631 0.097932

EMISSION RATE HC 0.56045 NOX 1.2071 CO 40.764
EMISSION MASS/MODE 0.046704 0.10059 3.3970
EMISSION MASS/RATED HP 0.00029190 0.00062869 0.021231
MODE FMS./STD. CYCLE % 15.363 41.913 50.551

CAL. FUEL AIR RATIO = 0.079383 MEAS. FUEL AIR RATIO = 0.078729 DIFF MEAS. & CAL. F/A PERCENT = 0.83121

CYL TEMP. DEG. F CYL-1 373.54 CYL-2 397.82 CYL-3 399.31 CYL-4 427.85

EXT GAS TEMP DEG. F FXT-1 1042.2 FXT-2 91.700 FXT-3 862.70 FXT-4 1885.5 SEXT-1 1317.7 SEXT-2 1320.1

ENGINE OIL FOILT 187.22 SOILT 203.60 OILP 71.807 MANIFOLD PRESSURE = 26.140

DYNO COND. TORQUE 254.38 RPM 2343.1 CYL. BACK PRESSURE = 29.190

INDUCTION AIR IAIRT1 50.215 IAIRT2 50.680 TAIRT1 142.59 TAIRT2 46.186

ORIFICE AIR TEMP 89.696 DELTAP 2.0346 DRFP 53.538 FLOW 1978.2

CFLT TEMP. = 84.630 HEAVY TEMP = 87.625 COOLER TEMP = 42.637

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NASA-LEWIS PRELIMINARY DATA 03/25/76 CADDEII REC 03/25/76 19:11:48.404 FAC SEX15 PGM C003 RDG 2441

LEANOUT 25 BTDC TO CI APP 50 DEG HUM = 0 % MCDF = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.120 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	49.604	29.126	101.00	465.96	0.11664	14.410

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	75.775	5.4761	44.759	42.774	39.565	6.0117

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	50.808	2.9688	3.7310	9900.1	3.3036	-15.921

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	3.3036	13.105	1.7522	0.040237	63.639

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.084910	0.084889	1.2673	2350.2	2351.2	143.92	64.403

WET CORRECTION FACTOR = 0.86547 EXHAUST MOLE. WT. = 27.296 EXHAUST DENSITY = 0.070677 EXHAUST FLOW RATE = 7154.3

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	C2 DRY	
	1856.8	307.38	7.87960	10.072	0.11721	
CORRECTED CONC. TO WET BASIS			6.8195	8.7171	0.10144	

	HC	NOX	CO
EMISSION RATE	0.47689	0.26169	35.421
EMISSION MASS/MODE	0.047689	0.026169	3.5421
EMISSION MASS/RATED HP	0.00029806	0.00016356	0.022138
MODE EMIS./STD. CYCLE %	15.687	10.904	52.709

CAL. FUEL AIR RATIO = 0.084915 MEAS. FUEL AIR RATIO = 0.084910 DIFF MEAS. & CAL. F/A PERCENT = 0.0053350

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	347.42	364.52	350.82	376.08

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1494.8	209.24	683.05	1599.7	1176.8	1177.2

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE =
	183.43	196.05	70.695	18.296

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE =
	155.05	2296.8	29.195

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	49.046	49.604	142.65	46.048

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	88.194	2.9804	53.495	2371.9

CELL TEMP. = 82.970 HEATER TEMP = 87.542 COOLER TEMP = 41.096

NASA-LEWIS PRELIMINARY DATA 03/25/76 CADDELL REC 03/25/76 19:15:23.985 FAC SEX15 PGM C003 R0G 2442

LEANOUT 25 BTDC TO CL APP 50 DEG HUM = 0 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.120 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	48.352	29.134	206.56	979.90	0.26116	14.777

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	74.595	5.3348	44.790	78.141	77.171	5.9412

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	52.283	2.9893	3.8079	9938.3	3.7794	-14.591

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	3.7794	9.9930	1.8556	0.042840	156.43

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TOFQUE	BHP
	0.078753	0.078732	1.1754	2701.1	2702.1	298.51	153.53

WET CORRECTION FACTOR = 0.85788 EXHAUST MOLE. WT. = 27.781 EXHAUST DENSITY = 0.071931 EXHAUST FLOW RATE = 14699.

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	1237.1	584.94	6.10970	10.977	0.068147	
CORRECTED CONC. TO WET BASIS			5.2414	9.4168	0.058462	

EMISSION RATE	HC	NOX	CO
	0.65283	1.0232	55.934
EMISSION MASS/MODE	0.0032642	0.0051159	0.27967
EMISSION MASS/RATED HP	2.0401E-05	3.1974E-05	0.0017479
MODE EMIS./STD. CYCLE	1.0737	2.1316	4.1618

CAL. FUEL AIR RATIO = 0.080513 MEAS. FUEL AIR RATIO = 0.078753 DIFF. MEAS. & CAL. F/A PERCENT = 2.2342

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	413.20	432.69	407.67	445.44

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SFXT-1	SEXT-2
	1430.2	606.44	846.63	1697.2	1388.1	1391.2

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.249
	188.30	200.31	73.583	

DYNO COMD.	TORQUE	RPM	CYL. BACK PRESSURE = 29.268
	293.82	2647.3	

INDUCTION AIR	IAIRT1	IAIPT2	TAIRT1	TAIRT2
	47.836	48.352	98.369	44.612

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	88.736	2.0280	53.588	1976.9

CELL TEMP. = 83.822 HEATER TEMP = 87.529 COOLER TEMP = 41.477

NASA-LEWIS PRELIMINARY DATA 03/25/76 CADDELT REC 03/25/76 19:20:06.816 FAC SE/15 PGM C003 RDG 2443

LEANOUT 25 BTDC TO CI APP 50 DEG HUM = 0 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.120 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	50.434	29.167	162.26	758.12	0.19788	14.600

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	76.094	5.3705	44.750	61.289	58.653	5.9178

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	53.184	2.9757	3.7871	9913.0	3.3837	-15.096

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	3.3837	19.542	1.8271	0.041955	117.75

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.077366	0.077346	1.1547	2428.3	2429.6	257.18	118.91

WET CORRECTION FACTOR = 0.85728 EXHAUST MOLE. WT. = 27.894 EXHAUST DENSITY = 0.072223 EXHAUST FLOW RATE = 11311.

MEASURED CONC.	PART PER MILLION WET	PER CENT
	HC PPM NOX PPM CO DRY CO2 DRY O2 DRY	
	1350.7 897.19 5.65830 11.204 0.13005	
CORRECTED CONC. TO WET BASIS	4.8507 9.6051 0.11149	

EMISSION RATE	HC	NOX	CO
	0.54852 1.2077 39.836		
EMISSION MASS/MODE	0.045710 0.10064 3.3197		
EMISSION MASS/RATED HP	0.00028569 0.00062901 0.020748		
MODE EMIS./STD. CYCLE %	15.036 41.934 49.400		

CAL. FUEL AIR RATIO = 0.079310 MEAS. FUEL AIR RATIO = 0.077366 DIFF. MEAS. & CAL. F/A PERCENT = 2.5131

CYL TEMP. DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	370.94 392.74 397.63 425.54			

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1471.7 94.107 927.65 1720.2 1315.4 1317.8					

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE =
	187.37 200.43 71.995 25.977			

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE =
	255.29 2336.3 29.169		

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	49.941 50.434 81.980 46.202			

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	89.417 3.0101 53.592 2380.6			

CELL TEMP. = 84.753 HEATER TEMP = 87.542 COOLER TEMP = 42.655

NASA-LEWIS PRELIMINARY DATA 03/25/76 CADDELL REC 03/25/76 19:25:52.228 FAC SEX15 PGM C003 RDG 2444

LEANOUT 25 BTDC TO 'CL APP 50 DEG HUM = 0 % MODE = 5.000J NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.120 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 49.485 PRESS 29.128 CFM 101.76 DRY FLOW 469.00 VAPOR FLOW 0.11793 PRESS TOTAL 14.413

COMB. FUEL TEMP 75.704 PRESS 5.4701 DENSITY 44.761 TURBO FLOW 42.381 FLOW TRON 39.871 FPIP 6.0141

COOLING AIR TEMP 49.923 UDEL-HOOD 2.9873 DEL-HOOD 3.7252 FLOW 9934.7 REL-HUM 3.3340 DEW-POINT -15.851

REL-HUM 1 3.3340 2 11.275 HUMIDITY 1.7602 % H2O VAPOR CORRECTED HP 0.040420 64.499

ENG. COND F/A DRY 0.085012 F/A WET 0.084991 EQU. RATIO 1.2688 RPM-1 2354.5 RPM-2 2355.5 TORQUE 145.61 BHP 65.280

WET CORRECTION FACTOR = 0.86749 EXHAUST MOL.F. WT. = 27.289 EXHAUST DENSITY = 0.070657 EXHAUST FLOW RATE = 7203.7

MEASURED CONC. PART PER MILLION WET PER CENT HC PPM NOX PPM CO DRY CO2 DRY O2 DRY

1811.7 306.27 7.7460D 10.128 0.13593

CORRECTED CONC. TO WET BASIS 6.7196 8.7863 0.11792

EMISSION RATE HC 0.46852 NOX 0.26255 CO 35.143

EMISSION MASS/MODE 0.046852 0.026255 3.5143

EMISSION MASS/RATED HP 0.00029283 0.00016409 0.021964

MODE EMIS./STD. CYCLE % 15.412 10.939 52.296

CAL. FUEL AIR RATIO = 0.084501 MEAS. FUEL AIR RATIO = 0.085012 DIFF MEAS. & CAL. F/A PERCENT = -0.60059

CYL TEMP DEG.F CYL-1 307.48 CYL-2 324.16 CYL-3 317.18 CYL-4 332.56

EXT GAS TEMP DEG.F EXT-1 1088.8 EXT-2 143.59 EXT-3 843.44 EXT-4 1641.9 SEXT-1 1127.6 SEXT-2 1126.0

ENGINE OIL FOILT 184.31 SOILT 198.48 OILP 72.035 MANIFOLD PRESSURE = 18.171

DYNO COND. TORQUE 139.08 RPM 2285.2 CYL. BACK PRESSURE = 29.228

INDUCTION AIR IAIRT1 48.946 IAIRT2 49.485 TAIRT1 63.168 TAIRT2 46.602

ORIFICE AIR TEMP 87.495 DELTAP 2.0256 ORFP 53.414 FLOW 1978.0

CELL TEMP. = 82.926 HEATER TEMP = 87.577 COOLER TEMP = 41.295

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NASA-LEWIS PRELIMINARY DATA 03/25/76 CADDEII REC 03/25/76 19:33:34.374 FAC SEX15 PGM C003 RDG 2445

LEANOUT 25 BTDC TO CL APP 50 DEG HUM = 0 % MODE = 3.0000 ND. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.120 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 47.474 PRESS 29.122 CFM 205.53 DRY FLOW 974.58 VAPOR FLOW 0.26039 PRESS TOTAL 14.778

COMB. FUEL TEMP 73.743 PRESS 5.3477 DENSITY 44.812 TURBO FLOW 75.741 FLOW TRON 72.895 FPIP 5.9754

COOLING AIR TEMP 51.491 UDEL-HOOD 3.0668 DEL-HOOD 3.8599 FLOW 10081. REL-HUM 3.9163 DEW-POINT -14.551

REL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP
3.9163 40.578 1.8702 0.042947 154.38

ENG. COND. F/A DRY 0.074796 F/A WET 0.074777 EQU. RATIO 1.1164 RPM-1 2697.6 RPM-2 2698.4 TORQUE 295.12 BHP 151.59

WET CORRECTION FACTOR = 0.85550 EXHAUST MOLE. WT. = 28.106 EXHAUST DENSITY = 0.072774 EXHAUST FLOW RATE = 14397.

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM NOX PPM CO DRY CO2 DRY O2 DRY
1091.0 893.69 4.70700 11.664 0.085608
CORRECTED CONC. TO WET BASIS 4.0269 9.9789 0.073238

EMISSION RATE HC NOX CO
EMISSION MASS/MODE 0.56389 1.5140 42.090
EMISSION MASS/RATED HP 1.7622E-05 4.7312E-05 0.0013153
MODE EMIS./STD. CYCLE % 0.92745 3.1541 3.1317

CAL. FUEL AIR RATIO = 0.077199 MEAS. FUEL AIR RATIO = 0.074796 DIFF MEAS. & CAL. F/A PERCENT = 3.2115

CYL TEMP DEG.F CYL-1 415.91 CYL-2 440.43 CYL-3 418.31 CYL-4 449.74

EXT GAS TEMP DEG.F EXT-1 1123.8 EXT-2 637.21 EXT-3 1013.9 EXT-4 1794.7 SEXT-1 1422.0 SEXT-2 1425.2

ENGINE OIL FOILT 188.54 SOILT 204.67 OILP 73.123 MANIFOLD PRESSURE = 28.285

DYNO COND. TORQUE 293.59 RPM 2647.6 CYL. BACK PRESSURE = 29.257

INDUCTION AIR IAIRT1 47.008 IAIRT2 47.474 TAIRT1 75.705 TAIRT2 44.897

ORIFICE AIR TEMP 87.704 DELTAP 1.9960 ORFP 53.556 FLOW 1963.9

CFLI TEMP. = 83.084 HEATER TEMP = 87.577

NASA-LEWIS PRELIMINARY DATA 03/25/76 CADDEII REC 03/25/76 19:35:09.670 FAC SFX15 PGM C003 RDG 2446

LEANOUT 25 BTDC TO CL APP 50 DEG HUM = 0 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.130 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	49.110	29.145	163.00	761.93	0.20291	14.597

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	75.278	5.3759	44.772	59.663	57.438	6.0039

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	51.746	3.0883	3.9114	10121.	3.6263	-14.791

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	3.6263	9.3609	1.8541	0.042807	118.20

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.075385	0.075364	1.1251	2431.2	2432.8	258.23	119.54

WET CORRECTION FAC. $\bar{r} = 0.86143$ EXHAUST MOLE. WT. = 28.057 EXHAUST DENSITY = 0.072647 EXHAUST FLOW RATE = 11281.

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1218.8	1218.8	4.49380	11.745	0.15718
CORRECTED CONC. TO WET BASIS			3.8711	10.117	0.13540

EMISSION RATE	HC	NOX	CO
	0.49363	1.6363	31.706
	0.041136	0.13636	2.6421
	0.00025710	0.00085222	0.016513

MODE EMIS./STD. CYCLE %

13.532	56.815	39.317
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CAL. FUEL AIR RATIO = 0.076560 MEAS. FUEL AIR RATIO = 0.075385 DIFF. MEAS. & CAL. F/A PERCENT = 1.5587

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	377.59	396.56	400.27	425.52

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1258.1	205.53	1098.5	1865.3	1341.8	1344.1

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 26.076
	187.31	202.93	71.815	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.220
	258.08	2332.0	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	48.626	49.110	45.202	45.916

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	88.482	1.0429	53.735	1432.5

CELL TEMP. = 84.112 HEATER TEMP = 87.577 COOLER TEMP = 42.338

NASA-LEWIS PRELIMINARY DATA 03/25/76 CADDEII REC 03/25/76 19:49:05.098 FAC SEX15 PGM C003 RDG 2447

LEANOUT 25 BTDC TO CL APP 50 DEG HUM = 0 % MODE = 5.0/100 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.130 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 49.823 PRESS 29.129 CFM 101.39 DRY FLOW 466.98 VAPOR FLOW 0.12864 PRESS TOTAL 14.417

COMB. FUEL TEMP 75.748 PRESS 5.4803 DENSITY 44.759 TURBO FLOW 40.502 FLOW TRON 37.546 FPIP 6.0354

COOLING AIR TEMP 49.539 UDEL-HOOD 2.9840 DEL-HOOD 3.7722 FLOW 9928.5 REL-HUM 3.6076 DEW-POINT -14.461

REL-HUM 1 3.6076 2 42.348 HUMIDITY 1.9283 % H2O VAPOR CORRECTED HP 0.044279 64.880

ENG. CO. D. F/A DRY 0.080400 F/A WET 0.080378 EQU. RATIO 1.2000 RPM-1 2351.8 RPM-2 2352.4 TORQUE 146.57 BHP 65.634

WET CORRECTION FACTOR = 0.86239 EXHAUST MOLE. WT. = 27.648 EXHAUST DENSITY = 0.071589 EXHAUST FLOW RATE = 7049.4

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 1760.7 NOX PPM 483.95 CO DRY 6.3546D CO2 DRY 10.851 O2 DRY 0.15198
CORRECTED CONC. TO WET BASIS 5.4801 9.3575 0.13106

EMISSION RATE HC 0.44558 NOX 0.40597 CO 28.047
EMISSION MASS/MODE 0.044558 0.040597 2.8047
EMISSION MASS/RATED HP 0.00027849 0.00025373 0.017529
MODE EMIS./STD. CYCLE % 14.657 16.916 41.736

CAL. FUEL AIR RATIO = 0.081058 MEAS. FUEL AIR RATIO = 0.080400 DIFF MEAS. & CAL. F/A PERCENT = 0.81771

CYL TEMP DEG.F CYL-1 307.58 CYL-2 323.85 CYL-3 316.15 CYL-4 334.99

EXT GAS TEMP DEG.F EXT-1 1306.8 EXT-2 315.93 EXT-3 863.00 EXT-4 1615.2 SEXT-1 1113.0 SEXT-2 1114.5

ENGINE OIL EOILT 177.41 SOILT 174.96 OILP 71.875 MANIFOLD PRESSURE = 18.158

DYKO COND. TORQUE 139.77 RPM 2310.7 CYL. BACK PRESSURE = 29.185

INDUCTION AIR IAIRT1 49.257 IAIRT2 49.823 TAIRT1 142.30 TAIRT2 47.089

ORIFICE AIR TEMP 87.276 DELTAP 2.0338 DRFP 53.754 FLOW 1982.2

CELL TEMP. = 82.046 HEATER TEMP = 87.542 COOLER TEMP = 41.730

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NASA-LEWIS PRELIMINARY DATA 03/25/76 CADDELL REC 03/25/76 19:52:38.240 FAC SEX15 PGM C003 RDG 2448

LEANOUT 25 BTDC TO CI APP 50 DEG HUM = 0 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.130 RATED HP = 160.00 FC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	47.950	29.138	206.01	976.32	0.27701	14.785

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	73.911	5.3531	44.808	74.695	72.976	5.9631

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	51.427	3.0388	3.8713	10030.	4.0868	-13.605

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	4.0868	11.793	1.9861	0.045607	156.19

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.074746	0.074725	1.1156	2700.0	2701.2	298.36	153.38

WET CORRECTION FACTOR = 0.85563 EXHAUST MOLE. WT. = 28.111 EXHAUST DENSITY = 0.072785 EXHAUST FLOW RATE = 14420.

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1115.3	971.40	4.70080	11.676	0.10879
CORRECTED CONC. TO WET BASIS			4.0221	9.9906	0.093084

	HC	NOX	CO
EMISSION RATE	0.57738	1.6669	42.107
EMISSION MASS/MODE	0.0028869	0.0083345	0.21054
EMISSION MASS/RATED HP	1.8043E-05	5.2091E-05	0.0013159
MODE EMIS./STD. CYCLE %	0.94963	3.4727	3.1330

CAL. FUEL AIR RATIO = 0.077110 MEAS. FUEL AIR RATIO = 0.074746 DIFE MEAS. & CAL. F/A PERCENT = 3.1617

CYL TEMP. DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	416.41	432.26	413.33	451.38

FXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	FXT-4	SEXT-1	SEXT-2
	1117.4	670.53	944.65	1747.7	1401.5	1405.4

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.273
	181.67	198.79	73.511	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.303
	291.78	2644.0	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	47.465	47.950	83.240	45.388

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	87.591	0.14811	53.323	464.24

CELL TEMP. = 83.374 HEATER TEMP = 87.494 COOLER TEMP = 41.703

NASA-LEWIS PRELIMINARY DATA 03/25/76 CADDELL REC 03/25/76 19:56:47.099 FAC SEX15 PGM C003 RDG 2449

LEANOUT 25 BTDC TO CL APP 50 DEG HUM = 0 % MCDE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.130 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS.	CFM	DRY FLOW	VAPOR FLOW	PRESS. TOTAL
	49.101	29.096	164.67	769.71	0.20832	14.598

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	75.119	5.3930	44.776	59.676	57.732	6.0336

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	51.582	2.9857	3.9324	9931.6	3.6869	-14.541

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	3.6869	16.610	1.8946	0.043505	118.46

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.075004	0.074984	1.1195	2430.8	2432.3	258.83	119.80

WET CORRECTION FACTOR = 0.86004 EXHAUST MOLE. WT. = 28.089 EXHAUST DENSITY = 0.072729 EXHAUST FLOW RATE = 11379.

MEASURED CONC.	PART PER MILLION WET		PER CENT	
	HC PPM	NOX PPM	CO DRY	O2 DRY
	1222.6	1266.0	4.49020	11.732
CORRECTED CONC. TO WET BASIS				
			CO DRY	O2 DRY
			3.8518	10.090

EMISSION RATE	HC	NOX	CO	
	0.49949	1.7145	31.905	
	EMISSION MASS/MODE	0.041624	0.14287	2.6588
	EMISSION MASS/RATED HP	0.00026015	0.00089295	0.016617
MODE EMIS./STD. CYCLE %	13.692	59.530	39.565	

CAL. FUEL AIR RATIO = 0.076531 MEAS. FUEL AIR RATIO = 0.075004 DIFF. MEAS. & CAL. F/A PERCENT = 2.0362

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	380.05	398.88	402.20	429.16

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1496.6	223.45	1065.9	1767.0	1340.0	1342.9

ENGINE OIL	EDILT	SOILT	OILP	MANIFOLD PPESSURE = 26.322
	188.82	195.58	71.215	

DYNO COND.	TORQUE	RPM	CYL. BACK PPESSURE = 29.231
	265.80	2334.8	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	48.654	49.101	53.663	45.941

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	88.264	2.0051	53.384	1967.1

CELL TEMP. = 84.094 HEATER TEMP = 87.473 COOLER TEMP = 41.839

NASA-LEWIS PRELIMINARY DATA 03/25/76 CADDEII REC 03/25/76 20:00:28.955 FAC SEX15 PGM C003 RDG 2450

LEANOUT 25 BIDC TO CL APP 50 DEG HUM = 0 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.130 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR TEMP 50.926 PRESS 29.118 CFM 105.85 DRY FLOW 488.27 VAPOR FLOW 0.12754 PRESS TOTAL 14.426

COMP. FUEL TEMP 77.148 PRESS 5.4887 DENSITY 44.723 TURBO FLOW 42.170 FLOW TRON 38.938 FPIP 6.0357

COOLING AIR TEMP 51.710 UDEL-HOOD 2.9486 DEL-HOOD 3.7586 FLOW 9862.3 RFL-HUM 3.2854 DEW-POINT -15.266

REL-HUM 1 2 HUMIDITY 1.8285 % H2O VAPOR CORRECTED HP 0.041989 68.876

ENG. COND. F/A DRY 0.079747 F/A WET 0.079726 EQU. RATIO 1.1903 RPM-1 2353.2 RPM-2 2354.0 TORQUE 155.27 BHP 69.571

WET CORRECTION COR = 0.86677 EXHAUST MOLE. WT. = 27.701 EXHAUST DENSITY = 0.071724 EXHAUST FLOW RATE = 7352.2

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 1585.8 NOX PPM 593.66 CO DRY 5.6798 CO2 DRY 11.153 O2 DRY 0.14829
CORRECTED CONC. TO WET BASIS 4.9231 9.6668 0.12854

EMISSION RATE HC 0.41855 NOX 0.51940 CO 26.278
EMISSION MASS/MODE 0.041855 0.051940 2.6278
EMISSION MASS/RATED HP 0.00026160 0.00032463 0.016424
MODE EMISS./STD. CYCLE % 13.768 21.642 39.104

CAL. FUEL AIR RATIO = 0.079450 MEAS. FUEL AIR RATIO = 0.079747 DIFF. MEAS. & CAL. F/A PERCENT = -0.37259

CYL TEMP DEG.F CYL-1 326.35 CYL-2 340.22 CYL-3 338.09 CYL-4 354.56

EXT GAS TEMP DEG.F EXT-1 925.88 EXT-2 339.85 EXT-3 1007.6 EXT-4 1292.1 SEXT-1 1191.9 SEXT-2 1190.9

ENGINE OIL EOILT 186.63 SOILT 196.76 OILP 71.079 MANIFOLD PRESSURE = 18.981

DYMO COND. TORQUE 158.62 RPM 2312.0 CYL. BACK PRESSURE = 29.192

INDUCTION AIR IAIRT1 50.397 IAIRT2 50.926 TAIRT1 91.600 TAIRT2 46.607

ORIFICE AIR TEMP 88.753 DELTAP 2.0530 ORFP 53.574 FLOW 1988.3

CELL TEMP. = 84.446 HEATFR TEMP = 87.494 COOLER TEMP = 41.830

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NASA-LEWIS PRELIMINARY DATA 03/25/76 CADDELI REC 03/25/76 20:07:48.271 FAC SEX15 PGM C003 RDG 2452

LEANOUT 25 BTDC TO CL APP 50 DEG HUM = 0 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.140 RATED HP = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	49.996	29.107	205.36	974.39	0.27394	14.798

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	76.200	5.3657	44.748	73.212	70.708	5.9559

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	54.347	3.1260	3.9731	10189.	3.7548	-13.735

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	3.7548	16.156	1.9680	0.045191	155.71

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	RHP
	0.072566	0.072546	1.0831	2702.1	2703.6	296.14	152.36

WET CORRECTION FACTOR = 0.85707 EXHAUST MOLE WT. = 28.295 EXHAUST DENSITY = 0.073262 EXHAUST FLOW RATE = 14268.

MEASURED CONC.	PART PER MILLION WFT		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	C2 DRY
	1020.2	1207.2	3.67640	12.118	0.10473
CORRECTED CONC. TO WET BASIS			3.1509	10.386	0.089761

EMISSION RATE	HC	NOX	CO
	0.52260	2.0499	32.641
EMISSION MASS/MODE	0.0026130	0.010249	0.16320
EMISSION MASS/RATED HP	1.6331E-05	6.4058E-05	0.0010200
MODE EMISS./STD. CYCLE %	0.85954	4.2705	2.4286

CAL. FUEL AIR RATIO = 0.074867 MEAS. FUEL AIR RATIO = 0.072566 DIFF. MEAS. & CAL. F/A PERCENT = 3.1705

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	433.59	450.37	435.58	461.53

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	886.12	695.82	1147.4	1379.8	1458.8	1461.1

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.302
	188.46	204.06	72.955	

DYNO COND.	TORQUE	RPM	CYL BACK PRESSURE = 29.320
	290.19	2609.3	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	49.539	49.996	185.74	45.242

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	89.958	0.058406	53.550	225.18

CELL TEMP. = 85.603 HEATER TEMP = 87.494 COOLER TEMP = 61.005

NASA-LEWIS PRELIMINARY DATA 03/25/76 CADDEII REC 03/25/76 20:12:02.879 FAC SEX15 PGM C003 RDG 2453

LEANOUT 25 BTDC TO CL APP 50 DEG HUM = 0 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.140 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	47.895	29.068	163.75	765.36	0.21791	14.599

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	74.213	5.3840	44.800	57.692	55.377	5.9961

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	50.680	3.1005	3.9009	10143.	4.0577	-13.750

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	4.0577	26.573	1.9930	0.045766	118.02

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.072354	0.072333	1.0799	2431.0	2432.0	258.19	119.51

WET CORRECTION FACTOR = 0.85668 EXHAUST MOLE. WT. = 28.313 EXHAUST DENSITY = 0.073309 EXHAUST FLOW RATE = 11198.

MEASURED CONC.	PART PER MILLION WET	PER CENT		
HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
1126.8	1498.1	3.70000	12.131	0.17256
CORRECTED CONC. TO WET BASIS		3.1697	10.393	0.14783

EMISSION RATE	HC	NOX	CO
	0.45300	1.9964	25.770
EMISSION MASS/MODE	0.037750	0.16637	2.1475
EMISSION MASS/RATED HP	0.00023594	0.0010398	0.013422
MODE EMIS./STD. CYCLE %	12.418	69.321	31.957

CAL. FUEL AIR RATIO = 0.074730 MEAS. FUEL AIR RATIO = 0.072354 DIFF MEAS. & CAL. F/A PERCENT = 3.2845

CYL TEMP. DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	384.61	404.14	405.10	427.43

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SXT-1	SXT-2
	1273.8	392.01	1226.1	1436.6	1368.0	1369.5

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE =
	197.13	204.58	71.311	26.259

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE =
	280.96	2375.0	29.235

INDUCTION AIR	IAIRT1	IAIPT2	TAIRT1	TAIRT2
	47.456	47.895	119.32	45.965

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	87.328	1.0343	53.282	1428.2

CELL TEMP. = 82.952 HEATER TEMP = 87.619 COOLER TEMP = 41.948

NASA-LEWIS PRELIMINARY DATA 03/25/76 CADDEII REC 03/25/76 20:16:25.373 FAC SEX15 PGM C003 RDG 2454

LEANOUT 25 BTDC TO CL APP 50 DEG HUM = 0 % MODE = 5.0030 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.140 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 50.197 PRESS 29.145 CFM 100.80 DRY FLOW 464.55 VAPOR FLOW 0.12909 PRESS TOTAL 14.422

COMB. FUEL TEMP 76.484 PRESS 5.5034 DENSITY 44.740 TURBO FLOW 38.039 FLOW TRON 36.559 FPIP 5.9937

COOLING AIR TEMP 50.808 UDEL-HOOD 2.9228 DEL-HOOD 3.8256 FLOW 9813.8 REL-HUM 3.5900 DEW-POINT -14.321

REL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP
3.5900 54.969 1.9451 0.044666 64.727

ENG. COND. F/A DRY 0.078696 F/A WET 0.078674 EQU. RATIO 1.1745 RPM-1 2351.9 RPM-2 2352.7 TORQUE 146.16 BHP 65.449

WET CORRECTION FAC CR = 0.86676 EXHAUST MOLE WT. = 27.785 EXHAUST DENSITY = 0.071943 EXHAUST FLOW RATE = 6967.2

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 1502.0 NOX PPM 662.77 CO DRY 5.2348D CO2 DRY 11.381 O2 DRY 0.13633
CORRECTED CONC. TO WET BASIS 4.5373 9.8647 0.11817

EMISSION RATE HC 0.37570 NOX 0.54950 CO 22.951
EMISSION MASS/MODE 0.037570 0.054950 2.2951
EMISSION MASS/RATED HP 0.00023481 0.00034344 0.014344
MODE EMIS./STD. CYCLE % 12.358 22.896 34.153

CAL. FUEL AIR RATIO = 0.078431 MEAS. FUEL AIR RATIO = 0.078696 DIFF MEAS. & CAL. F/A PERCENT = -0.33651

CYL TEMP DEG.F CYL-1 321.10 CYL-2 334.96 CYL-3 332.27 CYL-4 347.31

EXT GAS TEMP DEG.F FXT-1 869.68 FXT-2 456.28 FXT-3 1242.0 FXT-4 1383.6 SEXT-1 1189.2 SEXT-2 1186.8

ENGINE OIL EOILT 186.08 SOILT 192.29 OILP 71.439 MANIFOLD PRESSURE = 18.226

DYNO COND. TORQUE 152.75 RPM 2313.0 CYL. BACK PRESSURE = 29.202

INDUCTION AIR IAIRT1 49.631 IAIRT2 50.197 TAIRT1 121.64 TAIRT2 46.936

ORIFICE AIR TEMP 88.150 DELTAP 1.9591 DRFP 53.554 FLOW 1945.9

CELL TEMP. = 83.207 HEATER TEMP = 87.930 COOLER TEMP = 41.957

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NASA-LEWIS PRELIMINARY DATA 03/25/76 CADDEII REC 03/25/76 20:20:41.661 FAC SEX15 PGM C003 RDG 2455

LEANOUT 25 BTDC TD CL APP 50 DEG HUM = 0 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.140 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	48.800	29.110	205.51	973.50	0.29475	14.781

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	74.773	5.3657	44.785	75.695	72.349	6.0186

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	52.729	2.9942	3.9471	9947.6	4.2231	-12.575

RFL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	4.2231	13.375	2.1194	0.048668	154.93

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.074318	0.074296	1.1092	2697.9	2699.4	295.53	151.81

WET CORRECTION FACTOR = 0.86398 EXHAUST MOLE. WT. = 28.147 EXHAUST DENSITY = 0.072878 EXHAUST FLOW RATE = 14354.

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1050.6	1279.7	3.74770	12.125	0.10865
CORRECTED CONC. TO WET BASIS			3.2379	10.476	0.093872

	HC	NOX	CO
EMISSION RATE	0.54141	2.1860	33.744
EMISSION MASS/MODE	0.0027071	0.010930	0.16872
EMISSION MASS/RATED HP	1.6919E-05	6.8314E-05	0.0010545
MODE EMIS./STD. CYCLE %	0.89048	4.5543	2.5107

CAL. FUEL AIR RATIO = 0.074995 MEAS. FUEL AIR RATIO = 0.074318 DIFF MEAS. & CAL. F/A PERCENT = 0.91101

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	426.03	442.10	428.26	426.76

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	FXT-4	SEXT-1	SEXT-2
	1646.1	716.31	1115.6	1346.0	1441.4	1444.1

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.381
	189.70	203.03	72.931	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.258
	296.57	2621.5	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	48.380	48.800	81.303	45.466

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	88.777	1.0409	53.469	1430.8

CELL TEMP. = 83.778 HEATER TEMP = 87.833 COOLER TEMP = 41.912

NASA-LEWIS PRELIMINARY DATA 03/25/76 CADDEII REC 03/25/76 20:24:03.066 FAC SEX15 PGM C003 RDG 2456

LEANOUT 25 BTDC TO CI APP 50 DEG HUM = 0 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.140 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	49.896	29.191	163.36	763.80	0.22364	14.606

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	75.846	5.3855	44.757	56.874	55.554	5.9799

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	52.611	2.9965	3.7921	9951.7	3.8740	-13.300

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	3.8740	6.3166	2.0496	0.047065	118.49

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.072733	0.072712	1.0856	2429.2	2430.7	258.83	119.72

WET CORRECTION FACTOR = 0.85867 EXHAUST MOLE. WT. = 28.281 EXHAUST DENSITY = 0.073226 EXHAUST FLOW RATE = 11192.

MEASURED CONC.	PART PER MILLION WET		CO DRY	PER CENT	
	HC PPM	NOX PPM		CO2 DRY	O2 DRY
	1117.8	1541.7	3.70610	12.111	0.18354
CORRECTED CONC. TO WET BASIS			3.1823	10.399	0.15760

	HC	NOX	CO
EMISSION RATE	0.44915	2.0533	25.859
EMISSION MASS/MODE	0.037429	0.17111	2.1549
EMISSION MASS/RATED HP	0.00073393	0.0010694	0.013468
MODE EMIS./STD. CYCLE %	12.312	71.296	32.067

CAL. FUEL AIR RATIO = 0.074710 MEAS. FUEL AIR RATIO = 0.072733 DIFF MEAS. & CAL. F/A PERCENT = 2.7178

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	388.41	408.33	407.65	431.58

FXT GAS TEMP DEG.F	FXT-1	FXT-2	FXT-3	FXT-4	SXT-1	SXT-2
	1218.6	424.91	1320.2	1437.0	1363.9	1366.0

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PPESSURE = 26.180
	187.17	198.85	71.207	

DYNO COND.	TORQUE	RPM	CYL. BACK PPESSURE = 29.199
	256.74	2387.3	

INDUCTION AIR	TAIPT1	TAIPT2	TAIRT1	TAIRT2
	49.421	49.896	51.539	46.059

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	89.268	2.0378	53.562	1980.4

CELL TEMP. = 84.674 HEATER TEMP = 87.833 COOLER TEMP = 41.984

NASA-LEWIS PRELIMINARY DATA 03/25/76 CADDEII REC 03/25/76 20:27:42.013 FAC SEX15 PGM C003 RDG 2457

LEANOUT 25 BTDC TO CI APP 50 DEG HUM = 0 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.140 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	51.938	29.148	101.46	467.52	0.13453	14.426

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	78.041	5.4965	44.699	38.854	36.367	6.0186

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	52.611	2.9176	3.7293	9803.9	3.4863	-13.770

REL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP
	3.4863	8.5669	2.0143	0.046256 64.733

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.077786	0.077763	1.1510	2354.4	2355.7	145.69	65.310

WET CORRECTION FACTOR = 0.86368 EXHAUST MOL. WT. = 27.859 EXHAUST DENSITY = 0.072134 EXHAUST FLOW RATE = 6987.3

MEASURED CONC.	PART PER MILLION WET	PER CENT			
	HC PPM	CO DRY	CO2 DRY	O2 DRY	
	141.5	712.85	5.18090	11.393	0.14653
CORRECTED CONC. TO WET BASIS			4.4746	9.8402	0.12656

EMISSION RATE	HC	NOX	CO
	0.37916	0.59273	22.599
EMISSION MASS/MODE	0.037916	0.059273	2.2699
EMISSION MASS/RATED HP	0.00023698	0.00037045	0.014187
MODE EMIS./STD. CYCLE %	12.472	24.697	33.778

CAL. FUEL AIR RATIO = 0.078294 MEAS. FUEL AIR RATIO = 0.077766 DIFF. MEAS. & CAL. F/A PERCENT = 0.65355

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	327.66	339.64	338.80	352.84

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	768.88	475.61	1147.9	1264.4	1197.7	1195.8

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 18.351
	186.67	204.57	71.375	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.212
	146.44	2334.5	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	51.391	51.938	54.160	47.122

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	90.402	1.0467	53.968	1432.6

CELL TEMP. = 84.446 HEATER TEMP = 88.061 COILFR TEMP = 42.021

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NASA-LFWIS PRELIMINARY DATA 03/25/76 CADDEII REC 03/25/76 20:31:25.219 FAC SEX15 PGM C003 RDG 2458

LEANOUT 25 BTDC TO CL APP 50 DEG HUM = 0 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.140 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	50.497	29.159	205.95	976.10	0.30516	14.793

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	76.572	5.3924	44.738	65.685	64.887	5.9799

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	54.229	3.0596	3.9014	10068.	4.0966	-12.045

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	4.0966	4.7685	2.1884	0.050253	152.51

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.066476	0.066455	0.99218	2696.9	2698.3	291.01	149.44

WET CORRECTION FACTOR = 0.85906 EXHAUST MOLE. WT. = 28.710 EXHAUST DENSITY = 0.074338 EXHAUST FLOW RATE = 14007.

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	700.57	2579.0	1.4396	13.087	0.35942
CORRECTED CONC. TO WET BASIS			1.2367	11.243	0.30876

EMISSION RATE	HC	NOX	CO
	0.35229	4.2988	12.577
EMISSION MASS/MODE	0.0017615	0.021494	0.062883
EMISSION MASS/RATED HP	1.1009E-05	0.00013434	0.00039302
MODE EMIS./STD. CYCLE %	0.57943	8.9559	0.93576

CAL. FUEL AIR RATIO = 0.069153 MEAS. FUEL AIR RATIO = 0.066476 DIFF MEAS. & CAL. F/A PERCENT = 4.0263

CYL. TEMP. DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	420.94	427.18	433.13	453.65

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	854.32	692.79	1295.8	1440.7	1472.8	1475.5

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.353
	188.27	202.02	73.355	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.315
	289.88	2633.2	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	50.042	50.497	49.599	45.617

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	90.847	2.9531	53.408	2355.8

CFLT TEMP. = 85.840 HFATEP TEMP = 84.241 COOLER TEMP = 42.057

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NASA-LEWIS PRELIMINARY DATA 03/25/76 CADDEII REC 03/25/76 20:34:49.316 FAC SEX15 PGM C003 RDG 2459

LEANOUT 25 BTDC TO CL APP 50 DEG HUM = 0 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.140 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	48.060	29.114	172.26	806.46	0.24309	14.626

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	74.382	5.4059	44.796	55.745	54.203	6.0129

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	50.844	3.0216	3.8599	9998.4	4.2774	-12.815

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	4.2774	40.818	2.1100	0.048453	118.37

ENG. COM.	F/A DRY	F/A WET	EGU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.067212	0.067191	1.0032	2428.2	2429.5	259.21	119.84

WFT CORRECTION FACTOR = 0.86214 EXHAUST MOLE. WT. = 28.669 EXHAUST DENSITY = 0.074232 EXHAUST FLOW RATE = 11597.

MEASURED CONC.	PART PER MILLION WET		CO DRY	PER CENT	
	HC PPM	NOX PPM		CO2 DRY	O2 DRY
	524.15	2135.5	2.19630	12.467	0.76362
CORRECTED CONC. TO WET BASIS			1.8935	10.748	0.65834

	HC	NOX	CO
EMISSION RATE	0.21823	2.9472	15.942
EMISSION MASS/MODE	0.018186	0.24560	1.3285
EMISSION MASS/RATED HP	0.00011366	0.0015350	0.0083034
MODE EMIS./SID. CYCLE %	5.9822	102.33	19.770

CAL. FUEL AIR RATIO = 0.069391 MEAS. FUEL AIR RATIO = 0.067212 DIFF. MEAS. & CAL. F/A PERCENT = 3.2427

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	396.05	413.11	393.52	398.98

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1224.8	616.39	1128.1	1568.7	1420.7	1423.2

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 27.051
	187.28	206.13	71.255	

DYNO COMD.	TORQUE	PPM	CYL. BACK PRESSURE = 29.220
	263.19	2369.2	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	47.575	48.060	160.00	46.090

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	88.238	1.0806	53.531	1458.1

CELL TEMP. = 83.383 HEATER TEMP = 88.456 COOLER TEMP = 42.066

NASA-LEWIS PRELIMINARY DATA 03/25/76 CADDEII REC 03/25/76 20:38:44.811 FAC SEX15 PGM C003 RDG 2460

LEANOUT 25 BTDC TO CL APP 50 DEG HUM = 0 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.140 RATED HP. = 160.00 FC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	50.060	29.143	103.66	477.90	0.14047	14.426

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	76.617	5.5226	44.737	36.184	34.161	6.0219

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	50.726	2.9273	3.7739	9822.2	3.8178	-13.435

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	3.8178	80.958	2.0575	0.047248	64.996

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.071482	0.071461	1.0569	2354.3	2355.1	146.62	65.726

WET CORRECTION F_W TOR = 0.87182 EXHAUST MOLE. WT. = 28.388 EXHAUST DENSITY = 0.073503 EXHAUST FLOW RATE = 6968.4

MEASURED CONC.	PART PER MILLION WET	PER CENT			
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1011.4	1453.9	2.23470	12.749	0.34263
CORRECTED CONC. TO WET BASIS			1.9482	11.114	0.29871

EMISSION RATE	HC	NOX	CO
	0.25302	1.2057	9.8562
EMISSION MASS/MODE	0.025302	0.12057	0.98562
EMISSION MASS/RATED HP	0.00015814	0.00075355	0.0061601
MODE EMIS./STD. CYCLE %	8.3230	50.236	14.667

CAL. FUEL AIR RATIO = 0.071017 MEAS. FUEL AIR RATIO = 0.071482 DIFF MEAS. & CAL. F/A PERCENT = -0.65106

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	333.47	337.02	340.78	355.44

FXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1475.3	455.14	1384.0	1412.3	1249.4	1248.5

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 18.719
	186.48	200.35	71.343	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.214
	141.41	2309.9	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	49.549	50.060	84.205	46.872

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	89.015	4.2281	53.544	2815.4

CELL TEMP. = 83.084 HEATER TEMP = 88.539 COOLER TEMP = 41.758

NASA-LEWIS PRELIMINARY DATA 03/25/76 CADDEII REC 03/25/76 20:42:32.212 FAC SEX15 PGM C003 RDG 2461

LEANOUT 25 BTDC TO CL APP 50 DEG HUM = 0 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.140 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 48.590 PRESS 29.150 CFM 206.24 DRY FLOW 977.42 VAPOR FLOW 0.31154 PRESS TOTAL 14.785

COMB. FUEL TEMP 75.003 PRESS 5.3891 DENSITY 44.779 TURBO FLOW 67.661 FLOW TRON 66.025 FPIP 5.9532

COOLING AIR TEMP 52.411 UDEL-HOOD 3.0485 DEL-HOOD 3.8957 FLOW 10047. REL-HUM 4.4821 DEW-POINT -11.740

REL-HUM 1 4.4821 2 17.080 HUMIDITY 2.2312 H2O VAPOR 0.051235 CORRECTED HP 151.75

ENG. COND. F/A DRY 0.067550 F/A WET 0.067529 EQU. RATIO 1.0082 RPM-1 2703.3 RPM-2 2704.8 TORQUE 289.39 BHP 148.95

WET CORRECTION FACTOR = 0.86422 EXHAUST MOL. WT. = 28.648 EXHAUST DENSITY = 0.074177 EXHAUST FLOW RATE = 14071.

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 673.87 NOX PPM 2588.5 CO DRY 1.41550 CO2 DRY 13.105 O2 DRY 0.32821
CORRECTED CONC. TO WET BASIS 1.2233 11.325 0.28365

EMISSION RATE HC 0.34041 NOX 4.3343 CO 12.497
EMISSION MASS/MODE 0.0017020 0.021671 0.062485
EMISSION MASS/RATED HP 1.0638E-05 0.00013545 0.00039053
MODE EMIS./STD. CYCLE % 0.55989 9.0297 0.92984

CAL. FUEL AIR RATIO = 0.069185 MEAS. FUEL AIR RATIO = 0.067550 DIFF MEAS. & CAL. F/A PERCENT = 2.4198

CYL TEMP DEG.F CYL-1 427.84 CYL-2 426.10 CYL-3 433.48 CYL-4 458.03

EXT GAS TEMP DEG.F EXT-1 1148.8 EXT-2 782.76 EXT-3 1229.8 EXT-4 1451.8 SEXT-1 1490.9 SEXT-2 1493.2

ENGINE OIL EOILT 189.30 SOILT 203.21 OILP 73.071 MANIFOLD PRESSURE = 28.297

DYMO COND. TORQUE 293.53 RPM 2601.0 CYL. BACK PRESSURE = 29.322

INDUCTION AIR IAIRT1 48.133 IAIRT2 48.590 TAIRT1 112.96 TAIRT2 45.353

ORIFICE AIR TEMP 89.687 DELTAP 4.2394 DRFP 53.573 FLOW 2817.4

CELL TEMP. = 83.787 HEATER TEMP = 88.698 COOLER TEMP = 41.613

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NASA-LEWIS PRELIMINARY DATA 03/25/76 CADDEII REC 01/25/76 20:48:04.395 FAC SEX15 PGM C003 RDG 2462

LEANOUT 25 BTDC TO CL APP 50 DEG HUM = 0 % MCDE = 4.0000 ND. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.140 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	49.813	29.127	170.05	795.71	0.24873	14.613

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	76.120	5.3876	44.750	55.276	53.954	5.9925

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	52.329	2.9610	3.7002	9885.6	4.1505	-12.245

REL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP
	4.1505	2.2102	2.1981	0.050246 118.14

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.067806	0.067785	1.0120	2428.1	2429.9	258.18	119.36

WET CORRECTION FACTOR = 0.86439 EXHAUST MOLE. WT. = 28.631 EXHAUST DENSITY = 0.074132 EXHAUST FLOW RATE = 11464.

MEASURED CONC.	PART PER MILLION WET	PER CENT			
	HC PPM	CO DRY	CO2 DRY	O2 DRY	
	629.76	2332.4	2.08690	12.614	0.69109
CORRECTED CONC. TO WET BASIS		1.8039	10.904	0.59737	

EMISSION RATE	HC	NOX	CO
	0.25920	3.1822	15.015
EMISSION MASS/MODE	0.021600	0.26518	1.2513
EMISSION MASS/RATED HP	0.00013500	0.0016574	0.0078203
MODE EMLS./STD. CYCLE %	7.1053	110.49	18.620

CAL. FUEL AIR RATIO = 0.069432 MEAS. FUEL AIR RATIO = 0.067806 DIFF MEAS. & CAL. F/A PERCENT = 2.3973

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	395.32	413.09	393.68	397.02

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	719.56	615.53	886.17	1399.5	1414.9	1415.8

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 26.782
	187.28	193.46	71.271	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.285
	261.85	2367.2	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	49.385	49.813	191.47	45.884

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	90.690	4.2620	53.631	2822.2

CELL TEMP. = 84.349 HEATER TEMP = 88.878 COOLER TEMP = 41.721

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NASA-LEWIS PRELIMINARY DATA 03/25/76 CADDELI REC 03/25/76 20:53:54.465 FAC SEX15 PGM C003 RDG 2463

LEANOUT 25 RTDC TO CL APP 50 DEG HUM = C % MCDE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.140 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 52.138 PRESS 29.143 CFM 104.17 DRY FLOW 480.50 VAPOR FLOW 0.14693 PRESS TOTAL 14.427

COMB. FUEL TEMP 78.704 PRESS 5.5148 DENSITY 44.582 TURBO FLOW 36.092 FLOW TRON 34.176 FPIP 5.9895

COOLING AIR TEMP 52.484 UDFL-HOOD 2.9372 DEL-HOOD 3.6084 FLOW 9840.9 REL-HUM 3.6776 DEW-POINT -12.805

REL-HUM 1 3.6776 2 15.858 HUMIDITY 2.1405 % H2O VAPOR CORRECTED HP 0.049152 65.673

ENG. COND. F/A DRY 0.071127 F/A WET 0.071106 EQU. RATIO 1.0616 RPM-1 2354.9 RPM-2 2355.0 TORQUE 147.71 BHP 66.233

WET CORRECTION FACTOR = 0.87018 EXHAUST MOLE. WT. = 28.419 EXHAUST DENSITY = 0.073582 EXHAUST FLOW RATE = 6996.5

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 1068.3 NOX PPM 1477.0 CO DRY 2.21860 CO2 DRY 12.770 C2 DRY 0.34725
CORRECTED CONC. TO WET BASIS 1.9306 11.112 0.30218

EMISSION RATE HC 0.26833 NOX 1.2298 CO 9.8065
EMISSION MASS/MODE 0.026833 0.12298 0.98065
EMISSION MASS/RATED HP 0.00016771 0.00076860 0.0061291
MODE EMISS./STD. CYCLE % 8.8266 51.240 14.593

CAL. FUEL AIR RATIO = 0.070996 MEAS. FUEL AIR RATIO = 0.071127 DIFF. MEAS. & CAL. F/A PERCENT = -0.18486

CYL TEMP. DEG. E CYL-1 331.05 CYL-2 333.36 CYL-3 337.66 CYL-4 352.91

EXT GAS TEMP DEG. F EXT-1 1333.6 EXT-2 507.08 EXT-3 1476.7 EXT-4 1391.2 SEXT-1 1240.3 SEXT-2 1239.5

ENGINE OIL EOILT 184.81 SOILT 187.16 OILP 71.191 MANIFOLD PRESSURE = 18.720

DYND COND. TORQUE 139.41 RPM 2313.8 CYL. BACK PRESSURE = 29.209

INDUCTION AIR IAIRT1 51.646 IAIRT2 52.138 TAIRT1 110.65 TAIRT2 46.666

ORIFICE AIR TEMP 91.726 DELTAP 4.1844 ORFP 53.633 FLOW 2794.1

CELL TEMP. = 85.209 HEATER TEMP = 89.099 COOLER TEMP = 41.286

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NASA-LEWIS PRELIMINARY DATA 03/25/76 CADDELL REC 03/25/76 21:25:02.577 FAC SFX15 PGM C003 RDG 2464

LEANOUT 25 BTDC I & T 50 DEG HUM = 30 % NEUTRAL MCDE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.140 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DPY. FLOW	VAPOR FLOW	PRESS TOTAL
	53.666	29.139	11.300	51.336	0.12985	14.311

COMB. FUEL	TEMP	PRESS	DENSITY	TUPRO FLOW	FLOW TRON	FPIP
	75.926	5.7423	44.755	6.4839	5.0855	6.0921

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	RFL-HUM	DEW-POINT
	60.114	-0.019373	0.82391	2126.8	28.427	23.948

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	28.427	57.906	17.706	0.40659	0.19238

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.099064	0.098814	1.4786	601.62	601.98	1.6835	0.19285

WET CORRECTION FACTOR = 0.88868 EXHAUST MOLE WT. = 26.287 EXHAUST DENSITY = 0.068064 EXHAUST FLOW RATE = 830.85

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	32824.	8.8099	9.71810	6.7704	3.1610
CORRECTED CONC. TO WET BASIS			8.6363	6.0167	2.8091

	HC	NOX	CO
EMISSION RATE	0.97906	0.00087104	5.2094
EMISSION MASS/MODE	0.016318	1.4517E-05	0.086823
EMISSION MASS/RATED HP	0.00010199	9.0733E-08	0.00054264
MCDE EMIS./STD. CYCLE %	5.3677	0.0060489	1.2920

CAL. FUEL AIR RATIO = 0.098485 MEAS. FUEL AIR RATIO = 0.099064 DIFF MEAS. & CAL. F/A PERCENT = -0.58411

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	291.60	300.68	287.67	296.68

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SFXT-1	SEXT-2
	1026.7	-454.00	184.56	860.59	615.02	630.06

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 11.636
	133.27	142.58	47.797	

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.047
	4.7381	596.76	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	52.338	53.666	28.612	48.450

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	80.923	0.092609	53.517	327.52

CELL TEMP. = 80.699 HEATER TEMP = 80.514 COOLFF TEMP = 41.259

NASA-LEWIS PRELIMINARY DATA 03/25/76 CADDELI REC 03/25/76 21:27:24.057 FAC SEX15 PGM C003 RDG 2465

LEANOUT 25 BTDC I & T 50 DEG HUM = 30 % NEUTRAL MODE = 2.0010 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.140 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS. TOTAL
	53.875	29.139	19.495	88.505	0.22019	14.314

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	76.847	5.6835	44.731	12.667	8.5298	6.0837

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	60.511	-0.021587	0.80038	2115.5	27.755	23.643

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	27.755	67.257	17.415	0.39992	1.5565

ENG. CORR.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.096377	0.096138	1.4385	1203.0	1203.2	6.8090	1.5596

WET CORRECTION FACTOR = 0.86658 EXHAUST MOLE. WT. = 26.468 EXHAUST DENSITY = 0.068531 EXHAUST FLOW RATE = 1419.1

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	8708.9	24.544	11.0680	8.1105	0.29471
CORRECTED CONC. TO WET BASIS			9.5912	7.0285	0.25539

EMISSION RATE	HC	NOX	CO
	0.44369	0.0041450	9.8817
EMISSION MASS/MODE	0.081343	0.00075991	1.8116
EMISSION MASS/RATED HP	0.00050839	4.7495E-06	0.011323
MODE EMISS./STD. CYCLE %	26.758	0.31663	26.959

CAL. FUEL AIR RATIO = 0.097246 MEAS. FUEL AIR RATIO = 0.096377 DIFF MEAS. & CAL. F/A PERCENT = 0.90208

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	258.66	272.64	259.69	271.66

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	740.83	-391.19	40.847	688.03	569.80	560.24

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 8.3150
	135.21	99.822	57.030	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.193
	1.7858	1201.1	

INDUCTION AIR	IAIRT1	IAIPT2	TAIRT1	TAIRT2
	52.829	53.875	-33.383	48.942

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	90.245	1.0865	53.578	1459.4

CELL TEMP. = 80.414 HEATER TEMP = 89.514 COOLER TEMP = 41.286

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NASA-LEWIS PRELIMINARY DATA 03/25/76 CADDEII REC 03/25/76 21:33:13.793 FAC SEX15 PGM C003 RDG 2467

LEANOUT 25 BTDC I & T 50 DEG HUM = 30 % NEUTRAL MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.140 RATED HP. = 160.00 HC RATIO = 2.1250

CCMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	55.173	29.142	19.199	87.091	0.21658	14.313

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	78.386	5.6886	44.590	12.791	8.4398	6.0849

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	62.115	-0.040960	0.79955	2016.3	26.457	23.633

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	26.457	66.361	17.408	0.39974	1.5366

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.096908	0.096667	1.4464	1206.8	1208.1	6.6923	1.5377

WET CORRECTION FACTOR = 0.86908 EXHAUST MOLE. WT. = 26.432 EXHAUST DENSITY = 0.068438 EXHAUST FLOW RATE = 1399.0

MEASURED CONC.	PART PER MILLION WET	PER CENT
	HC PPM	CO DRY
	8473.8	11.0300
	NOX PPM	CO DRY
	24.098	8.1756
		0.29299
CORRECTED CONC. TO WET BASIS		CO DRY
		9.5856
		7.1053
		0.25463

EMISSION RATE	HC	NOX	CO
	0.42561	0.3040121	9.7362
EMISSION MASS/MODE	0.078028	0.00073554	1.7850
EMISSION MASS/RATED HP	0.00048767	4.5971E-06	0.011156
MODE EMISS./STD. CYCLE %	25.667	0.30648	26.562

CAL. FUEL AIR RATIO = 0.096876 MEAS. FUEL AIR RATIO = 0.096908 DIFF MEAS. & CAL. F/A PERCENT = -0.032783

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	263.01	278.08	264.04	279.12

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	849.44	-255.23	-23.936	726.56	577.96	567.76

ENGINE OIL	EDILT	SOILT	OILP	MANIFOLD PRESSURE = 0.3118
	142.49	82.803	56.322	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.269
	10.254	1208.5	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	54.111	55.173	-59.330	49.315

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	91.186	2.0129	53.414	1965.5

CELL TEMP. = 81.016 HEATER TEMP = 89.548 COOLER TEMP = 41.495

NASA-LEWIS PRELIMINARY DATA 03/25/76 CADDEII REC 03/25/76 21:40:43.575 FAC SEX15 PG4 C003 RDG 2469

LEAN CUT 25 BTDC I & T 50 DEG HUM = 30 % 3/4 T CLOSED MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.140 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	54.801	29.138	18.098	82.056	0.20214	14.310

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	78.430	5.7165	44.689	11.440	6.9607	6.0813

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	61.727	-0.026845	0.80038	2088.6	26.562	23.453

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	26.562	51.879	17.244	0.39597	1.4149

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.084828	0.084620	1.2661	1201.5	1200.9	6.1923	1.4166

WET CORRECTION FACTOR = 0.85565 EXHAUST MOLE. WT. = 27.303 EXHAUST DENSITY = 0.070693 EXHAUST FLOW RATE = 1262.1

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	4023.0	46.089	8.25520	9.8020	0.19852
CORRECTED CONC. TO WET BASIS			7.0635	8.3870	0.16986

	HC	NOX	CO
EMISSION RATE	0.18227	0.0069218	6.4720
EMISSION MASS/MODE	0.033417	0.0012690	1.1865
EMISSION MASS/RATED HP	0.00020885	7.9312E-06	0.0074158
MODE EMIS./STD. CYCLE %	10.992	0.52875	17.657

CAL. FUEL AIR RATIO = 0.086854 MEAS. FUEL AIR RATIO = 0.084828 DIFF MEAS. & CAL. F/A PERCENT = 2.3882

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	257.03	271.23	260.82	275.85

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1571.0	-454.00	-236.00	661.59	552.49	541.77

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 7.8271
	144.90	118.76	56.162	

DYAO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.135
	9.5265	1215.3	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	53.675	54.801	-28.493	49.509

GRIFICE AIR	TEMP	DELTA P	DRFP	FLOW
	90.655	4.5637	53.325	2917.5

CELL TEMP. = 80.249 HEATER TEMP = 89.652 COOLER TEMP = 41.304

NASA-LEWIS PRELIMINARY DATA 03/25/76 CADDEII REC 03/25/76 21:48:37.909 FAC SEX15 PGM C003 RDG 2472

LEANOUT 25 BTDC I & T 50 DEG HUM = 30 % 3/4 T CLOSED MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.140 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	54.828	29.134	18.265	82.817	0.19984	14.314

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	78.660	5.7099	44.683	3.9662	6.9577	6.0864

COOLING AIR	TEMP	INLET-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	61.061	-0.022694	0.73451	2109.8	26.002	23.073

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	26.002	64.684	15.891	0.38788	1.8206

ENG. COND.	F/A DRY	F/A WET	EQ. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.084013	0.083811	1.2539	1202.9	1203.5	7.9591	1.8229

WET CORRECTION FACTOR = 0.85208 EXHAUST MOLE. WT. = 27.365 EXHAUST DENSITY = 0.070855 EXHAUST FLOW RATE = 1269.8

MEASURED CONC.	PART PER MILLION WET			PER CFNT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	4091.6	45.685	8.29890	9.7230	0.19474	
CORRECTED CONC. TO WET BASIS			7.0713	8.2847	0.16593	

	HC	NOX	CO
EMISSION RATE	0.18652	0.0069034	6.5190
EMISSION MASS/MODE	0.034196	0.0012656	1.1952
EMISSION MASS/RATED HP	0.00021372	7.9101E-06	0.0074697
MODE EMIS./STD. CYCLE %	11.249	0.52734	17.785

CAL. FUEL AIR RATIO = 0.087118 MEAS. FUEL AIR RATIO = 0.084013 DIFF MEAS. & CAL. F/A PERCENT = 3.6964

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	252.07	263.54	252.66	264.02

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1407.1	-454.00	-151.32	645.38	554.32	543.34

ENGINE OIL	EOILT	SOILT	OILT	MANIFOLD PRESSURE = 7.8271
	144.17	148.65	56.414	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.069
	2.9307	1206.7	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	53.730	54.828	165.05	49.640

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	89.582	4.6194	53.550	2937.1

CFLT TEMP. = 79.755 HEATER TEMP = 89.382 COOLER TEMP = 41.332

NASA-LEWIS PRELIMINARY DATA 03/25/76 CADDEII REC 03/25/76 22:04:23.431 FAC SEX15 PGM C003 RDG 2477

LEANOUT 25 BTDC I & T 50 DEG HUM = 30 % 1 1/2 T CLOS MCDE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.140 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	53.966	29.136	11.258	51.041	0.12918	14.310

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	76.360	5.7948	44.743	3.9715	3.4053	6.0993

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	58.470	-0.031550	0.83166	2064.6	28.132	23.958

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	28.132	36.332	17.717	0.40684	0.81484

ENG. CORR.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.066718	0.066549	0.99579	606.12	607.86	7.0757	0.81659

WET CORRECTION FACTOR = 0.88556 EXHAUST MOLE. WT. = 28.698 EXHAUST DENSITY = 0.074305 EXHAUST FLOW RATE = 734.47

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	C2 DRY
	15874.	39.180	1.64990	10.717	3.9280
CORRECTED CONC. TO WET BASIS			1.4611	9.4908	3.4785

EMISSION RATE	HC	NOX	CO	
	0.41857	0.0034244	0.77908	
	EMISSION MASS/MODE	0.0069762	5.7073E-05	0.012985
	EMISSION MASS/RATED HP	4.3601E-05	3.5671E-07	8.1154E-05
MODE EMIS./STD. CYCLE	2.2948	0.023781	0.19322	

CAL. FUEL AIR RATIO = 0.066682 MEAS. FUEL AIR RATIO = 0.066718 DIFF MEAS. & CAL. F/A PERCENT = -0.054496

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	256.95	285.05	273.98	62.046

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	FXT-4	SEXT-1	SEXT-2
	1078.2	-454.00	314.55	889.54	672.60	669.29

ENGINE OIL	OILT	SOILT	OILP	MANIFOLD PRESSURE = 11.755
	152.84	165.85	46.273	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.250
	0.91449	599.34	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	52.602	53.966	-93.800	49.469

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	87.949	4.7091	53.631	2967.8

CELL TEMP. = 78.731 HEATER TEMP = 88.366 COOLER TEMP = 41.241

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NASA-LEWIS PRELIMINARY DATA 03/25/76 CADDEIT REC 03/25/76 22:06:56.279 FAC SEX15 PGM C003 RDG 2478

LEANOUT 25 BYDC I & T 50 DEG HUM = 30 % 1 1/2 T CLOS MCDE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.140 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	54.075	29.140	18.322	83.055	0.20677	14.312

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIR
	78.068	5.7300	44.699	10.518	6.3816	6.0867

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	59.816	-0.034871	0.71071	2047.6	27.568	23.653

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	27.568	80.132	17.427	0.40019	0.87524

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.076836	0.076645	1.1468	1201.3	1201.5	3.8337	0.87686

WET CORRECTION FACTOR = 0.85643 EXHAUST MOLE. WT. = 27.937 EXHAUST DENSITY = 0.072336 EXHAUST FLOW RATE = 1239.3

MEASURED CONC.	PART PER MILLION WFT		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	C2 DRY
	2370.0	62.788	4.99830	11.478	0.16712
CORRECTED CONC. TO WET BASIS			4.2807	9.8301	0.14312

EMISSION RATE	HC	NOX	CO	
	0.10544	0.0092595	3.8514	
	EMISSION MASS/MODE	0.019331	0.0016976	0.70608
	EMISSION MASS/RATED HP	0.00012082	1.0610E-05	0.0044130
MODE EMIS./STD. CYCLE %	6.3589	0.70733	10.507	

CAL. FUEL AIR RATIO = 0.078291 MFAS. FUEL AIR RATIO = 0.076836 DIFF MEAS. & CAL. F/A PERCENT = 1.8933

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	249.95	274.63	263.36	458.25

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1158.0	-454.00	342.94	863.71	612.72	604.51

ENGINE OIL	FILT	SOILT	OILP	MANIFOLD PRESSURE = 8.0120
	150.45	120.02	55.021	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.158
	7.2511	1178.6	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	52.975	54.075	-15.528	49.634

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	89.089	4.6034	53.588	2936.3

CELL TEMP. = 79.093 HEATER TEMP = 88.283 COOLER TEMP = 41.250

NASA-LEWIS PRELIMINARY DATA 03/25/76 CADDEII REC 03/25/76 22:28:54.434 FAC SEX15 PGM C003 RDG 2487

LEANOUT 25 BTDC I & T 50 DEG HUM = 30 % 3/4 T OPEN MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.140 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	53.802	29.139	13.246	60.090	0.15802	14.313

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	76.147	5.7102	44.749	7.5506	6.2106	6.0888

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	61.088	-0.027122	0.70407	2087.2	29.407	24.678

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	29.407	55.233	18.408	0.42272	0.22440

ENG. COND.	F/A DRY	F/A WET	FQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10336	0.10308	1.5426	600.42	599.82	1.9669	0.22486

WET CORRECTION F/A RP = 0.89764 EXHAUST MOLE. WT. = 26.010 EXHAUST DENSITY = 0.067346 EXHAUST FLOW RATE = 986.82

MEASURED CONC.	PART PER MILLION WFT	NOX PPM	CO DRY	PER CENT	CO2 DRY	CO2 DRY
	40218.	4.9515	10.5040	5.5715	4.0360	
CORRECTED CONC. TO WET BASIS			9.4286	5.0012	3.6229	

EMISSION RATE	HC	NOX	CO
	1.4248	0.00058146	6.7550
EMISSION MASS/MODE	0.023747	9.6911E-06	0.11258
EMISSION MASS/RATED HP	0.00014842	6.0569E-08	0.00070364
MODE EMIS./STD. CYCLE %	7.8114	0.0040379	1.6753

CAL. FUEL AIR RATIO = 0.10322 MEAS. FUEL AIR RATIO = 0.10336 DIFF MEAS. & CAL. F/A PERCENT = -0.12507

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	297.09	317.57	298.63	242.09

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	982.94	-388.29	226.70	680.38	686.80	683.19

ENGINE OIL	EMILT	SOILT	OILP	MANIFOLD PRESSURE = 12.739
	155.78	169.25	45.709	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.126
	5.2061	591.54	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	52.538	53.802	-21.365	49.179

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	89.216	4.5771	53.554	2925.4

CELL TEMP. = 78.581 HEATER TEMP = 83.954 COOLER TEMP = 40.878

NASA-LEWIS		PRELIMINARY DATA		03/25/76	CADDE11	REC 03/25/76 22:29:15.114		FAC SEX15	PGM C003	RDG 2488
LEANOUT 25 BTDC I & T 50 DEG HUM = 30 % 3/4 T OPEN MODE = 1.0000 NO. SCANS = 5										
ENGINE TIMING = 25.000		DEG.		BAROMETRIC PRESSURE = 29.140			RATED HP. = 160.00		HC RATIO = 2.1250	
COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL				
	53.929	29.141	13.080	59.330	0.15535	14.310				
COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP				
	76.413	5.7084	44.742	7.6112	6.2886	6.0828				
COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	RFL-HUM	DEW-POINT				
	61.025	-0.015498	0.83221	2146.5	29.139	24.593				
REL-HUM	1	2	HUMIDITY	% H2O VAPOF	CORRECTED HP					
	29.139	42.934	18.329	0.42089	0.57061					
ENG. CONC.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP			
	0.10599	0.10572	1.5820	589.68	595.44	5.0922	0.57173			
WET CORRECTION FACTOR = 0.91550		EXHAUST MOLE. WT. = 25.846			EXHAUST DENSITY = 0.066921		EXHAUST FLOW RATE = 982.85			
MEASURED CONC.	PART PER MILLION WET			PER CENT						
	HC PPM	NOX PPM	CO DRY	CO2 DRY	NO2 DRY					
	41727.	4.4304	10.1530	5.4568	4.5215					
CORRECTED CONC. TO WET BASIS				9.2949	4.9957	4.1395				
EMISSION RATE	HC	NOX	CO							
	1.4723	0.00051818	6.6324							
EMISSION MASS/MODE	0.024539	8.6367E-06	0.11054							
EMISSION MASS/PATED HP	0.00015337	5.3977E-08	0.00069087							
MODE EMIS./STD. CYCLE %	8.0719	0.0035985	1.6449							
CAL. FUEL AIR RATIO = 0.10098		MEAS. FUEL AIR RATIO = 0.10599			DIFF MEAS. & CAL. F/A PERCENT = -4.7281					
CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4						
	283.72	305.49	285.25	277.43						
EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2				
	1169.5	-454.00	165.87	292.45	672.56	667.32				
ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 12.613						
	155.84	168.81	45.741							
DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.156							
	4.3276	587.64								
INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIPT2						
	52.638	53.929	17.671	49.141						
ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW						
	89.329	4.5980	53.533	2931.3						
CELL TEMP. = 78.536	HEATER TEMP = 89.981			COOLEP TEMP = 40.724						

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NASA-LEWIS PRELIMINARY DATA 03/25/76 CADDEII REC 03/25/76 22:32:48.096 FAC SEX15 PGM C003 RDG 2489

LEANOUT 25 BTDC I & T 50 DEG HUM = 30 % I 1/2 T OPEN MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.140 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	54.302	29.144	14.583	66.621	0.17675	14.309

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	76.865	5.6910	44.730	8.4481	7.1287	6.0786

COOLING AIR	TEMP	WDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	61.710	-0.033764	0.72953	2053.2	29.122	24.838

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	29.122	76.914	18.571	0.42646	0.68916

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10700	0.10372	1.5971	600.72	600.84	6.0339	0.69016

WET CORRECTION FAC = 0.90175 EXHAUST MOLE. WT. = 25.785 EXHAUST DENSITY = 0.066762 EXHAUST FLOW RATE = 1107.3

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	45022.	5.1185	10.7690	5.2394	4.2206
CORRECTED CONC. TO WET BASIS			9.7107	4.7246	3.8060

EMISSION RATE	HC	NOX	CO	
	1.7897	0.00067446	7.8065	
	EMISSION MASS/MODE	0.029829	1.1251E-05	0.13011
	EMISSION MASS/RATED HP	0.00018643	7.0256E-08	0.00081317
MODE EMIS./STD. CYCLE %	9.8122	0.0046837	1.9361	

CAL. FUEL AIR RATIO = 0.10554 MEAS. FUEL AIR RATIO = 0.10700 DIFF. MEAS. & CAL. F/A PERCENT = -0.42935

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	260.45	284.82	263.74	186.74

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1564.1	-454.00	96.200	568.17	641.26	634.20

ENGINE OIL	EOILT	SOILT	OILT	MANIFOLD PRESSURE = 13.443
	155.79	144.74	46.113	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.073
	2.3402	595.20	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	53.129	54.302	159.41	48.955

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	90.106	4.6044	53.540	2931.2

CELL TEMP. = 78.854 HEATER TEMP = 89.189 COOLER TEMP = 40.941

NASA-LEWIS PRELIMINARY DATA 03/25/76 CADDEJI REC 03/25/76 22:35:14.417 FAC SEX15 PGM C003 RDG 2490

LEANOUT 25 RTDC I & T 50 DEG HUM = 30 % 1 1/2 T OPEN MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.140 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	54.275	29.134	22.671	102.90	0.27052	14.313

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	77.732	5.6394	44.707	12.647	10.897	6.0684

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	61.574	-0.034041	0.83415	2051.8	28.896	24.673

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	28.896	22.194	18.404	0.42261	1.3288

ENG. COE.	F/A DRY	F/A WFT	EQU. RATIO	RPM-1	PPM-2	TORQUE	BHP
	0.10590	0.10563	1.5807	1202.9	1202.5	5.8089	1.3304

WET CORRECTION FACTOR = 0.87383 EXHAUST MOLE. WT. = 25.851 EXHAUST DENSITY = 0.066936 EXHAUST FLOW RATE = 1704.1

MEASURED CONC.	PART PER MILLION WET		CO DRY	PER CENT	
	HC PPM	NOX PPM		CO2 DRY	O2 DRY
	16920.	9.1439	12.7030	6.9018	0.55473
CORRECTED CONC. TO WET BASIS			11.100	6.0309	0.48474

EMISSION RATE	HC	NOX	CO
	1.0351	0.0018542	13.733
EMISSION MASS/MODE	0.18977	0.00033994	2.5176
EMISSION MASS/RATED HP	0.0011861	2.1246E-06	0.015735
MODE EMIS./STD. CYCLE %	62.426	0.14164	37.465

CAL. FUEL AIR RATIO = 0.10599 MEAS. FUEL AIR RATIO = 0.10590 DIFF. MEAS. & CAL. F/A PERCENT = 1.0244

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	245.56	249.77	252.38	409.44

EXT GAS TEMP DEG.F	EXT-1	FXT-2	FXT-3	EXT-4	SEXT-1	SEXT-2
	1570.6	-454.00	-34.897	671.76	597.33	587.41

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 9.1629
	151.40	302.95	55.413	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.170
	6.5743	1195.9	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	53.357	54.275	170.54	48.933

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	90.655	4.5804	53.569	2922.5

CELL TEMP. = 79.075 HEATER TEMP = 89.348 COOLER TEMP = 40.960

NASA-LEWIS PRELIMINARY DATA 03/26/76 CADDEII DEC 03/26/76 14:07:48.579 FAC SEX15 PGM C003 RDG 2494

LEANOUT-TO,CL,APP-25 PTDC-50 DEG.-HUM=30% MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 28.980 RATE HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	51.728	28.957	211.43	987.93	2.4149	14.744

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	75.349	5.3315	44.770	65.894	80.669	6.0606

COOLING AIR	TEMP	UNDER-HOOD	DEI-HOOD	FLOW	REL-HUM	DEW-POINT
	53.802	3.9067	4.6393	11499.	30.397	23.858

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	30.397	39.014	17.111	0.39202	156.48

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	PPM-1	RPM-2	TORQUE	PHP
	0.081655	0.081456	1.2187	2705.7	2707.0	293.60	151.25

WET CORRECTION FACTOR = 0.85330 EXHAUST MOLE. WT. = 27.549 EXHAUST DENSITY = 0.071331 EXHAUST FLOW RATE = 15014.

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1550.3	316.43	7.4814	10.281	0.067587
CORRECTED CONC. TO WET BASIS					
			6.3839	8.7729	0.057672

EMISSION RATE	HC	NOX	CO	
	0.83562	0.56538	69.588	
	EMISSION MASS/MODE	0.0041781	0.0028269	0.34794
	EMISSION MASS/RATED HP	2.6112E-05	1.7668E-05	0.0021746
MODE EMIS./STD. CYCLE	1.3744	1.1779	5.1777	

CAL. FUEL AIR RATIO = 0.083962 MEAS. FUEL AIR RATIO = 0.081655 DIFF MEAS. & CAL. F/A PERCENT = 2.8252

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	394.36	399.62	377.24	150.55

EXT GAS TEMP DEG. F	FXT-1	FXT-2	FXT-3	FXT-4	SFXT-1	SFXT-2
	867.01	346.35	580.09	975.28	1332.9	1340.4

ENGINE OIL	OILT	SOILT	OILP	MANIFOLD PRESSURE = 28.071
	129.13	147.26	77.484	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.103
	303.59	2623.2	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	51.327	51.778	40.778	49.317

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	83.102	0.14721	53.381	464.17

CELL TEMP. = 80.104 HEATER TEMP = 83.059 COOLER TEMP = 43.189

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NASA-Lewis PRELIMINARY DATA 03/26/76 CADDII REC 03/26/76 14:12:57.849 FAC SEX15 PGM C003 RDG 2495

LEANOUT-TO,CL,APP-25 RTDC-50 DEG.-HUM=30% MODE = 4.0000 NO. SCANS = 4

ENGINE TIMING = 25.000 DEG. BAROMETRIC PPESSURE = 28.980 RATED HP. = 160.00 HC RATIO= 2.1250

COMP. AIR	TEMP	PRESS	CFM	DPY FLOW	VAPOR FLOW	PRESS TOTAL
	52.124	28.986	168.36	776.82	1.9110	14.539

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	76.296	5.3777	44.745	64.595	63.048	6.0347

COOLING AIR	TEMP	INLET-HOOD	DEL-HOOD	FLOW	RFL-HUM	DEW-POINT
	54.885	3.8189	4.7921	11362.	29.729	23.726

RFL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	29.729	13.026	17.220	0.39544	120.22

ENG. CORR.	F/A DRY	F/A WET	EQU. RATIO	PPM-1	PPM-2	TORQUE	BHP
	0.081161	0.080962	1.2114	2432.6	2433.7	260.48	120.65

WET CORRECTION FACTOR = 0.85892 EXHAUST MOLE. WT. = 27.588 EXHAUST DENSITY = 0.071432 EXHAUST FLOW RATE = 11784.

MEASURED CONC.	PART PER MILLION WET		PER CENT	
	HC PPM	NOX PPM	CO DRY	O2 DRY
	1559.0	733.00	6.7513	0.094909
CORRECTED CONC. TO WET BASIS				
			5.7988	0.081520

EMISSION RATE	HC	NOX	CO
	0.65956	1.0279	49.611
	0.054963	0.085659	4.1342
	0.00034352	0.0053337	0.025833
EMISSION MASS/MODE			
			61.521
EMISSION MASS/RATED HP			
			15.691
MODE EMISS./STD. CYCLE	13.080		

CAL. FUEL AIR RATIO = 0.082130 MEAS. FUEL AIR RATIO = 0.081161 DIFF MEAS. & CAL. F/A PERCENT = 1.1935

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	343.85	363.50	375.71	286.48

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	839.28	52.251	670.09	1132.6	1313.7	1318.6

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PPESSURE = 26.068
	149.03	163.76	72.277	

DYMO CORR.	TORQUE	RPM	CYL. BACK PPESSURE = 29.061
	256.62	2357.0	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	51.714	52.124	100.34	48.687

CRIFICE AIR	TEMP	DELTA P	PREP	FLOW
	82.848	0.11726	53.154	393.89

CELL TEMP. = 82.431 HEATFF TEMP = 83.117 COOLER TEMP = 43.309

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MASA-LEWIS PRELIMINARY DATA 03/26/76 CADDPII REC 03/26/76 14:24:15.528 FAC SEX15 PGM C003 RDG 2496

LEANOUT-TO,CL,APP-25 RTDC-50 DEG.-HUM=30% MCDE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PPESSURE = 211.970 RATED HP.= 160.00 HC RATIO= 2.1250

COMB. AIR TEMP 53.002 PRESS 282.980 CFM 104.71 DRY FLOW 476.07 VAPOR FLOW 1.1761 PRESS TOTAL 14.342

COMB. FUEL TEMP 78.580 PPESS 5.4974 DENSITY 44.685 TURBO FLOW 43.092 FLOW TRON 40.663 FPIP 6.0801

COOLING AIR TEMP 56.225 UDEL-HOOD 2.9458 DEL-HOOD 3.7268 FLOW 9857.1 REL-HUM 28.513 DEW-POINT 23.548

REL-HUM 1 29.513 HUMIDITY 0.31003 % H2O VAPOR CORRECTED HP 17.293 0.39711 65.326

ENG. COND. F/A DRY 0.085413 F/A WET 0.085203 EQU. RATIO 1.2748 RPM-1 2356.6 RPM-2 2356.6 TORQUE 146.03 BHP 65.524

WET CORRECTION FACTOR = 0.85585 EXHAUST MOLE. WT. = 27.258 EXHAUST DENSITY = 0.070578 EXHAUST FLOW RATE = 7338.2

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 1954.5 CO DRY 8.7903 CO2 DRY 9.5618 O2 DRY 0.087689
CORRECTED CONC. TO WET BASIS NOX PPM 185.10 CO 7.5232 CO 8.1835 O2 0.075049

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EMISSION RATE HC 0.51489 NOX 0.16164 CO 40.080
EMISSION MASS/MODE 0.051489 0.016164 4.0080
EMISSION MASS/RATED HP 0.00032181 0.00010102 0.025050
MODE EMIS./STD. CYCLE % 16.037 6.7348 59.643

CAL. FUEL AIR RATIO = 0.087480 MEAS. FUEL AIR RATIO = 0.085413 DIFF MEAS.& CAL. F/A PERCENT = 2.4196

CYL TEMP DEG.F CYL-1 308.94 CYL-2 326.06 CYL-3 317.88 CYL-4 -147.41

EXT GAS TEMP DEG.F FXT-1 904.60 FXT-2 32.530 FXT-3 340.03 FXT-4 1012.4 SEXT-1 1157.6 SEXT-2 1157.5

ENGINE OIL FOILT 163.74 SOILT 175.62 OILP 70.519 MANIFOLD PRESSURE = 18.329

DYAN COND. TORQUE 144.85 RPM 2300.4 CYL. BACK PRESSURE = 28.971

INDUCTION AIR IAIPT1 52.447 IAIPT2 53.002 TAIPT1 168.44 TAIPT2 49.233

ORIFICE AIR TEMP 84.323 DELTAP 0.10241 ORFP 53.347 FLOW 355.70

CELL TEMP. = 93.673 HEATER TEMP = 83.323 COOLER TEMP = 43.542

NASA-LEWIS PRELIMINARY DATA 03/26/76 CADDEII REC 03/26/76 14:31:39.303 FAC SEX15 PGM C003 RDG 2498

LEANOUT-TO,CL,APP-25 BTDC-50 DEG.-HUM=30% MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. PARAMETRIC PRESSURE = 28.970 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	52.038	28.981	209.11	974.46	2.4508	14.706

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRCN	FPIP
	76.537	5.3537	44.739	80.579	78.614	5.9865

COOLING AIR	TEMP	UDFL-HOOD	DEL-HOOD	FLOW	PFI-HUM	DEW-POINT
	57.312	2.9458	3.7445	9857.1	30.839	24.353

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	30.839	7.6828	17.606	0.40428	155.48

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	RHP
	0.080675	0.080472	1.2041	2704.5	2705.7	291.99	150.36

WET CORRECTION FACTOR = 0.84809 EXHAUST MOLE. WT. = 27.627 EXHAUST DENSITY = 0.071532 EXHAUST FLOW RATE = 14755.

MEASURED CONC.	PART PER MILLION WET	PER CENT
	HC PPM NOX PPM CO DRY CO2 DRY O2 DRY	
	1371.6 167.29 7.5496 10.275 0.024322	
CORRECTED CONC. TO WET BASIS		6.4327 8.7142 0.020628

EMISSION RATE	HC	NOX	CO
EMISSION MASS/MODE	0.72661	0.29375	68.591
EMISSION MASS/RATED HP	0.0036330	0.0014687	0.34295
MODE EMIS./STD. CYCLE %	2.2706E-05	9.1796E-06	0.0021435
	1.1951	0.61197	5.1035

CAL. FUEL AIR RATIO = 0.084163 MEAS. FUEL AIR RATIO = 0.080675 DIFF MEAS. & CAL. F/A PERCENT = 4.3235

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	419.75	437.44	408.28	-67.724

FXT GAS TEMP DEG.F	FXT-1	FXT-2	FXT-3	FXT-4	SEXT-1	SEXT-2
	950.55	222.05	782.60	1118.5	1409.8	1411.9

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.070
	181.63	197.15	71.747	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.159
	294.42	2650.6	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	51.646	52.038	103.87	49.392

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	83.822	0.11731	53.269	394.02

CELL TEMP. = 84.595 HEATED TEMP = 83.371 COOLER TEMP = 43.633

NASA-LEWIS PRELIMINARY DATA 03/26/76 CADDEIT REC 03/26/76 14:35:08.377 FAC SEX15 PGM C003 RDG 2499

LEANOUT-TQ, CL, APP-25 RTNG-50 DEG.-HUM=30% MODE = 4.0000 NO. SCANS = 4

ENGINE TIMING = 25.00C DEG. BAROMETRIC PRESSURE = 28.970 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR TEMP 57.591 PRESS 28.952 CFM 168.27 DRY FLOW 775.95 VAPOR FLOW 1.8035 PRESS TOTAL 14.536

COMP. FUEL TEMP 79.154 PRESS 5.4069 DENSITY 44.596 TURBO FLOW 66.569 FLOW TRON 63.021 FPIP 6.0092

COOLING AIR TEMP 57.457 WDEL-HOOD 3.0139 DEL-HOOD 3.7113 FLOW 9984.1 PEL-HUM 27.610 DEW-POINT 22.663

REL-HUM 1 27.610 2 18.474 HUMIDITY 16.270 % H2O VAPOR CORRECTED HP 0.37361 120.40

ENG. COND. F/A DRY 0.081219 F/A WET 0.081030 EQU. PATIO 1.2122 RPM-1 2435.4 RPM-2 2436.7 TORQUE 260.50 BHP 120.80

WET CORRECTION FACTOR = 0.85855 EXHAUST MOLE. WT. = 27.584 EXHAUST DENSITY = 0.071420 EXHAUST FLOW RATE = 11772.

MEASURED CONC. HC PPM 1466.3 NOX PPM 452.77 CO DRY 6.7671 PER CENT CO2 DRY 10.665 CO DRY 0.068807
CORRECTED CONC. TO WET BASIS HC 1466.3 NOX 452.77 CO 5.8099 PER CENT CO2 DRY 9.1568 CO DRY 0.059074

EMISSION RATE HC 0.61967 NOX 0.53428 CO 49.655
EMISSION MASS/MODE HC 0.051639 NOX 0.052856 CO 4.1379
EMISSION MASS/RATED HP HC 0.00032275 NOX 0.00033035 CO 0.025862
MODE EMIS./STD. CYCLE HC 16.987 NOX 22.024 CO 61.576

CAL. FUEL AIR RATIO = 0.082156 MEAS. FUEL AIR RATIO = 0.081219 DIFF MEAS. & CAL. F/A PERCENT = 1.1545

CYL TEMP DEG.F CYL-1 373.95 CYL-2 396.57 CYL-3 408.03 CYL-4 -90.840

EXT GAS TEMP DEG.F FXT-1 1723.9 FXT-2 -428.56 FXT-3 755.71 EXT-4 1186.6 SFXT-1 1358.0 SEXT-2 1360.0

ENGINE OIL FOILT 189.79 SOILT 170.88 OILP 70.582 MANIFOLD PRESSURE = 26.358

DYNO COND. TORQUE 268.56 RPM 2358.1 CYL. BACK PRESSURE = 29.116

INDUCTION AIR TAIRT1 52.113 TAIRT2 52.591 TAIRT1 79.579 TAIRT2 48.977

CRIPICE AIR TEMP 84.441 DELTAP 0.096010 DRFP 53.280 FLOW 338.48

CELL TEMP. = 84.814 HEATER TEMP = 83.437 COOLER TEMP = 43.751

NASA-LEWIS PRELIMINARY DATA 03/26/76 CADDEII REC 03/26/76 16:18:33.284 FAC SFX15 PGM C003 RDG 2501

LEANOUT-TQ,CL,APP-25 RTCC-50 DEG.-HUM=30% MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. PARAMETRIC PRESSURE = 28.930 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	51.965	28.919	208.41	968.83	2.5087	14.682

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	78.245	5.3732	44.694	78.873	75.923	6.0180

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	RFL-HUM	DEW-POINT
	57.022	3.1365	3.9488	10208.	31.781	24.868

RFL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	31.781	47.209	18.126	0.41624	156.12

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.078365	0.078163	1.1696	2705.8	2706.7	292.33	150.61

WET CORRECTION FACTOR = 0.95172 EXHAUST MOLE. WT. = 27.812 EXHAUST DENSITY = 0.072012 EXHAUST FLOW RATE = 14542.

MEASURED CONC.	PART PER MILLION WET	PER CENT			
	HC PPM	CO DRY	CO2 DRY	CO2 DRY	
	1242.8	376.74	6.2006	10.960	0.041844
CORRECTED CONC. TO WET BASIS		5.2812	5.3346	0.035640	

EMISSION RATE	HC	NOX	CO
	0.64886	0.65198	55.760
EMISSION MASS/MODE	0.0032443	0.0032599	0.27880
EMISSION MASS/RATED HP	2.0277E-05	2.0374E-05	0.0017425
MODE EMTS./STD. CYCLE %	1.0672	1.3583	4.1488

CAL. FUEL AIR RATIO = 0.080799 MEAS. FUEL AIR RATIO = 0.078365 DIFF MEAS. & CAL. F/A PERCENT = 3.1058

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	8.6336	476.90	411.55	-9.7231

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1319.9	187.72	808.88	1433.0	1397.4	1400.9

ENGINE OIL	FOILT	SOILT	OILO	MANIFOLD PRESSURE = 27.989
	164.93	172.26	71.827	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.044
	296.75	2613.2	

INDUCTION AIR	IAIPT1	IAIPT2	TAIRT1	TAIRT2
	51.519	51.965	-71.341	49.760

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	84.027	0.069007	53.324	260.16

CELL TEMP. = 84.376 HEATER TEMP = 84.023 COOLER TEMP = 44.174

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NASA-LEWIS PRELIMINARY DATA 03/26/76 CADDEII REC 03/26/76 16:26:03.164 FAC SEX15 PGM C003 RDG 2502

LEANOUT-TO,CL,APP-25 BTDC-50 DEG.-HUM=30% MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.930 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 53.202 PRESS 28.912 CFM 166.95 DRY FLOW 766.16 VAPOR FLOW 2.0039 PRESS TOTAL 14.487

COMB. FUEL TEMP 80.020 PRESS 5.4230 DENSITY 44.647 TURBO FLOW 63.136 FLOW TRON 60.699 FPIP 5.9973

COOLING AIR TEMP 57.710 DEL-HOOD 3.0048 DEL-HOOD FLOW 3.9446 REL-HUM 70.261 DEW-POINT 24.803

REL-HUM 1 30.261 2 72.011 HUMIDITY 18.308 H2O VAPOR CORRECTED HP 0.42042 119.73

ENG. COND. F/A DRY 0.079225 F/A WET 0.079018 EQU. RATIO 1.1825 RPM-1 2431.3 RPM-2 2431.8 TORQUE 259.18 BHP 119.98

WET CORRECTION FACTOR = 0.86043 EXHAUST MOLE WT. = 27.743 EXHAUST DENSITY = 0.071832 EXHAUST FLOW RATE = 11533.

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 1247.3 CO2 DRY 11.144
NOX PPM 878.15 CO DRY 4.9822
CORRECTED CONC. TO WET BASIS 9.5886 O2 DRY 0.085949
0.673953

EMISSION RATE HC 0.51670 NOX 1.2058 CO 41.737
EMISSION MASS/MODE 0.043058 0.10048 3.4781
EMISSION MASS/RATED HP 0.00026911 0.00062807 0.021738
MODE EMIS./STD. CYCLE % 14.164 41.868 51.757

CAL. FUEL AIR RATIO = 0.079707 MEAS. FUEL AIR RATIO = 0.079225 DIFF MEAS. & CAL. F/A PERCENT = 0.60895

CYL TEMP DEG.F CYL-1 263.64 CYL-2 391.56 CYL-3 404.48 CYL-4 -164.93

EXT GAS TEMP DEG.F EXT-1 711.28 EXT-2 -454.00 EXT-3 883.90 EXT-4 1339.9 SEXT-1 1330.7 SEXT-2 1333.5

ENGINE OIL FOILT 181.46 SOILT 221.66 OILT 72.079 MANIFOLD PRESSURE = 26.308

DYNO COND. TORQUE 239.11 RPM 2349.8 CYL. BACK PRESSURE = 29.065

INDUCTION AIR IAIRT1 52.702 IAIRT2 53.202 TAIRT1 -35.942 TAIRT2 49.461

ORIFICE AIR TEMP 85.147 DELTAP 1.0512 OREF FLOW 53.207 1442.5

CYL TEMP. = 86.262 HEATER TEMP = 84.065 COOLER TEMP = 44.294

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MASA-LEWIS PRELIMINARY DATA 03/26/76 CADDEII PEC 03/26/76 16:40:54.420 FAC. SFX15 PGM C003 RDG 2504

LEANOUT-TO,CL,APP-25 RTDC-50 DFG.-HUM=30% MCDE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.920 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR TEMP 51.901 PRESS 28.940 CFM 207.62 DRY FLOW 964.60 VAPOR FLOW 2.5405 PRESS TOTAL 14.672

COMP. FUEL TEMP 79.437 PRESS 5.3822 DENSITY 44.663 TURBO FLOW 79.263 FLOW TRON 75.190 FPIP 6.0408

COOLING AIR TEMP 57.629 UDEL-HOOD 3.1005 DEL-HOOD 3.8657 FLOW 10143. DEL-HUM 32.376 DEW-POINT 25.173

REL-HUM 1 32.376 2 41.284 HUMIDITY 18.436 % H2O VAPOR CORRECTED HP 0.42336 156.09

ENG. COND. F/A DRY 0.077950 F/A WET 0.077745 EQU. RATIO 1.1634 RPM-1 2706.1 RPM-2 2707.6 TORQUE 292.47 BHP 150.70

WET CORRECTION FACTOR = 0.34962 EXHAUST MOLE. WT. = 27.846 EXHAUST DENSITY = 0.072100 EXHAUST FLOW RATE = 14456.

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 1203.2 NOX PPM 457.99 CO DRY 6.2705 CO2 DRY 10.907 O2 DRY 0.052185
CORRECTED CONC. TO WET BASIS CO DRY 5.3275 CO2 DRY 9.2666 O2 DRY 0.044338

EMISSION RATE HC 0.62447 NOX 0.78790 CO 55.916
EMISSION MASS/MODE 0.0031223 NOX 0.0039395 CO 0.27958
EMISSION MASS/RATED HP 1.9515E-05 NOX 2.4622E-05 CO 0.0017474
MODE EMIS./STD. CYCLE 1.0271 NOX 1.6415 CO 4.1604

CAL. FUEL AIR RATIO = 0.080923 MEAS. FUEL AIR RATIO = 0.077950 DIFF MEAS. & CAL. F/A PERCENT = 3.8136

CYL TEMP DEG. F CYL-1 -3.9753 CYL-2 437.73 CYL-3 416.78 CYL-4 400.89

EXT GAS TEMP DEG. F EXT-1 1253.6 EXT-2 46.929 EXT-3 758.14 EXT-4 1254.6 SEXT-1 1395.0 SEXT-2 1398.1

ENGINE OIL EOILT 186.84 SOILT 222.15 OILP 72.919 MANIFOLD PRESSURE = 27.999

DYNO COND. TORQUE 297.46 RPM 2620.2 CYL. BACK PRESSURE = 29.067

INDUCTION AIR IAIRT1 51.446 IAIRT2 51.901 TAIRT1 -84.227 TAIRT2 49.664

COPIC AIR TEMP 84.077 DELTAP 2.0548 CRFP 53.215 FLOW 1997.6

CELL TEMP. = 85.454 HEATER TEMP = 84.169 COOLER TEMP = 48.260

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NASA-LEWIS PRELIMINARY DATA 03/26/76 CANDEFII REC 03/26/76 16:44:22.397 FAC SEX15 PGM C003 H09 2505

LFANOUT-TO, CL, APP-25 RTDC-50 DEG.-HUM=30% MCDE = 4.000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 21.920 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	53.129	28.925	167.40	768.48	1.9928	14.510

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIF
	80.708	5.4110	44.529	64.607	61.212	6.0282

COOLING AIR	TEMP	INDEL-HOOD	DEL-HOOD	FLOW	PFL-HUM	DEW-POINT
	57.633	2.9345	3.7863	9835.7	30.133	24.673

REL-HUM	1	2	HUMIDITY	H2O VAPOR	CORRECTED HP
	30.133	55.161	19.152	0.41683	110.29

ENG. COND.	F/A DRY	F/A WET	EQU. PATIO	RPM-1	RPM-2	TORQUE	BHP
	0.079653	0.079447	1.1889	2433.4	2434.3	258.04	119.56

WET CORRECTION FACTOR = 0.86173 EXHAUST MOLE. WT. = 27.703 EXHAUST DENSITY = 0.071743 EXHAUST FLOW RATE = 11592.

MEASURED CONC.	PART PER MILLION WFT		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	CO DRY
	1282.2	853.16	5.8481	11.091	0.088969
CORRECTED CONC. TO WFT BASIS			5.0395	9.5576	0.076667

	HC	NOX	CO
EMISSION RATE	0.53363	1.1770	42.413
EMISSION MASS/MODE	0.044469	0.098079	3.5344
EMISSION MASS/RATED HP	0.00027793	0.00061299	0.022090
MODE EMIS./STR. CYCLE %	14.628	40.866	52.596

CAL. FUEL AIR PATIO = 0.079870 MEAS. FUEL AIR PATIO = 0.079653 DIFF MEAS. & CAL. F/A PERCENT = 0.27275

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	-94.084	397.74	409.58	193.90

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SFXT-1	SEXT-2
	1416.9	-454.00	732.20	1187.9	1336.6	1339.2

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 26.401
	187.57	191.92	71.599	

DYNO COND.	TORQUE	RPM	CYL. RACK PRESSURE = 29.099
	266.42	2355.6	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	52.611	53.129	-4.2124	50.151

PPIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	84.639	1.0656	53.271	1452.8

CELL TEMP. = 86.173 HEATER TEMP = 84.190 COOLER TEMP = 44.393

NASA-LEWIS PRELIMINARY DATA 03/26/76 CADDEII REC 03/26/76 16:52:19.208 FAC SEX15 PGM C003 RDG 2507

LEANOUT-TQ,CL,APP-25 PTDC-50 DEG.-HUM=30% MCDE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 28.920 RATED HP.= 160.00 HC RATIO= 2.1250

COMB. AIR	TEMP	PRESS	CFM	DPY FLOW	VAPOR FLOW	PFSS TOTAL
	54.084	28.934	207.32	962.68	2.3545	14.673

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRDN	FPIP
	81.694	5.3915	44.604	75.527	73.399	6.0705

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	RFL-HUM	DEW-POINT
	59.816	2.8774	3.7392	9727.9	27.758	23.788

PFL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	27.758	44.404	17.120	0.39314	156.02

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.076245	0.076059	1.1380	2703.9	2705.4	291.91	150.29

WET CORRECTION FACTOR = 0.85363 EXHAUST MOLE. WT. = 27.986 EXHAUST DENSITY = 0.072462 EXHAUST FLOW RATE = 14330.

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1376.9	722.13	5.1775	11.469	0.053785
CORRECTED CONC. TO WET BASIS			4.4196	9.7901	0.045913

EMISSION RATE	HC	NOX	CO
	0.55404	1.2315	45.982
EMISSION MASS/MODE	0.0027702	0.0061574	0.22991
EMISSION MASS/RATED HP	1.7314E-05	3.8484E-05	0.0014369
MODE EMIS./STD. CYCLE %	0.91124	2.5656	3.4213

CAL. FUEL AIR RATIO = 0.078326 MEAS. FUEL AIR RATIO = 0.076245 DIFF MEAS. & CAL. F/A PERCENT = 2.7291

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	-195.15	438.83	422.96	574.37

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1561.0	200.70	914.22	1224.2	1410.8	1414.3

ENGINE OIL	OILT	SOILT	OILD	MANIFOLD PRESSURE = 27.973
	189.93	207.31	73.031	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.088
	289.76	2670.7	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	53.611	54.084	10.578	50.107

ORIFICE AIR	TEMP	DEL TAP	ORIF	FLOW
	85.858	1.1242	53.203	1490.0

CELL TEMP. = 82.232 HEATED TEMP = 84.245 COOLER TEMP = 44.439

08

LEANOUT-T0,CL,APP-25 RTDC-50 DEG.-HUM=30% MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. PARAMETRIC PRESSURE = 28.920 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	54.565	28.925	167.27	767.77	1.9645	14.495

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FIP
	82.935	5.4341	44.571	58.085	58.296	6.0378

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	59.644	2.8476	3.7744	9661.4	28.183	24.403

PFL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP
	29.183	67.325	17.911	0.41129 119.16

ENG. COND.	F/A DRY	F/A WET	FQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.075928	0.075735	1.1333	2431.6	2432.5	257.56	119.24

WET CORRECTION FACTOR = 0.85660 EXHAUST MOLF. WT. = 28.012 EXHAUST DENSITY = 0.072530 EXHAUST FLOW RATE = 11416.

MEASURED CONC.	PART PER MILLION WFT	PER CENT
	HC PPM	CO2 DRY
	1172.3	11.569
	NOX PPM	O2 DRY
	1155.1	0.11435
	CO DRY	CO CORRECTED CONC. TO WET BASIS
	4.8508	9.9103
	4.1638	0.097953

EMISSION RATE	HC	NOX	CO
	0.48047	1.5693	34.510
EMISSION MASS/MODE	0.040039	0.13077	2.8759
EMISSION MASS/RATED HP	0.00025025	0.00081733	0.017974
MODE EMIS./STD. CYCLE %	13.171	54.489	42.796

CAL. FUEL AIR RATIO = 0.077498 MEAS. FUEL AIR RATIO = 0.075928 DIFF MEAS. & CAL. F/A PERCENT = 2.0671

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	-8.1138	409.00	415.79	444.95

EXT GAS TEMP DEG. F	FXT-1	FXT-2	FXT-3	FXT-4	SFXT-1	SEXT-2
	1723.9	-412.30	812.66	1257.4	1354.8	1357.7

ENGINE OIL	FOILT	SOILT	OILT	MANIFOLD PRESSURE = 26.333
	187.76	206.04	71.315	

DYMO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.065
	250.00	2351.6	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	54.048	54.565	70.171	49.709

ORIFICE AT	TEMP	DELTA P	ORIF	FLOW
	86.427	4.6942	53.366	2967.6

CELL TEMP. = 88.203 HEATER TEMP = 84.294 COOLER TEMP = 44.294

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NASA-LEWIS PRELIMINARY DATA 03/26/76 CADDEII REC 03/26/76 17:42:13.550 FAC SFX15 PGM C003 RDG 2511

LEANOUT-TO,CL,APP-25 BTDC-50 DEG.-HUM=30% MDEF = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.920 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR TEMP 53.757 PRESS 28.930 CFM 208.30 DRY FLOW 968.93 VAPOR FLOW 2.3865 PRESS TOTAL 14.676

COMP. FUEL TEMP 87.521 PRESS 5.3999 DENSITY 44.582 TURBO FLOW 76.409 FLOW TRON 77.939 FPIP 6.0102

COOLING AIR TEMP 58.605 WDEL-HOOD 3.1085 DEL-HOOD 3.9474 FLOW 10157. REL-HUM 28.295 DEW-POINT 23.923

REL-HUM 1 28.295 2 36.024 HUMIDITY 17.241 % H2O VAPOR CORRECTED HP 0.39591 157.25

ENG. COND. F/A DRY 0.076310 F/A WET 0.076122 EQU. RATIO 1.1390 RPM-1 2704.9 RPM-2 2706.0 TORQUE 294.16 BHP 151.50

WET CORRECTION FACTOR = 0.85570 EXHAUST MOLE. WT. = 27.980 EXHAUST DENSITY = 0.072448 EXHAUST FLOW RATE = 14427.

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 1103.6 NOX PPM 802.68 CO DRY 5.0984 CO2 DRY 11.462 O2 DRY 0.098070
CORRECTED CONC. TO WET BASIS CO DRY 4.3542 CO2 DRY 9.8079 O2 DRY 0.083918

EMISSION RATE HC 0.57162 NOX 1.3798 CO 45.608
EMISSION MASS/MODE 0.0028981 0.0068991 0.22804
EMISSION MASS/RATED HP 1.7863E-05 4.3120E-05 0.0014252
MODE EMTS./STD. CYCLE * 0.94015 2.9746 3.3934

CAL. FUEL AIR RATIO = 0.078024 MEAS. FUEL AIR RATIO = 0.076310 DIFF MEAS. & CAL. F/A PERCENT = 2.2466

CYL TEMP DEG.F CYL-1 -123.24 CYL-2 428.36 CYL-3 411.23 CYL-4 -189.35

EXT GAS TEMP DEG.F EXT-1 1096.7 EXT-2 146.30 EXT-3 963.40 EXT-4 1334.4 SFXT-1 1392.1 SFXT-2 1396.2

ENGINE OIL FOILT 177.30 SOILT 237.37 OILP 73.243 MANIFOLD PRESSURE = 28.036

DYMO COND. TORQUE 292.29 RPM 2642.0 CYL. BACK PRESSURE = 29.117

INDUCTION AIR IAIRT1 53.275 IAIRT2 53.757 TAIRT1 -78.322 TAIRT2 49.307

ORIFICE AIR TEMP 96.550 DELTAP 4.6523 ORSEP 53.313 FLOW 2954.9

CELL TEMP. = 87.565 HEATED TEMP = 84.509 COOLER TEMP = 43.204

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NASA-LEWIS PRELIMINARY DATA 03/26/76 CADDEII REC 03/26/76 17:47:58.643 FAC SEX15 PGM C003 RDG 2512

LEANOUT-TO, CL, APP-25 BTDC-50 DEG.-HUM=30% MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.920 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	51.992	28.900	167.69	769.81	1.9215	14.498

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	80.743	5.4119	44.629	61.437	58.401	5.9502

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	RFL-HUM	DEW-POINT
	55.935	3.1005	3.9189	10143.	30.223	23.943

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	30.223	68.155	17.472	0.40122	119.55

ENG. COND.	F/A DRY	F/A WET	EQUI. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.075864	0.075675	1.1323	2434.5	2435.2	258.88	120.00

WET CORRECTION F_W = 0.85648 EXHAUST MOLE. WT. = 28.017 EXHAUST DENSITY = 0.072544 EXHAUST FLOW RATE = 11443.

MEASURED CONC.	PART PER MILLION WET		PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY
	1211.9	1161.9	4.9297	11.487
CORRECTED CONC. TO WET BASIS			CO DRY	CO2 DRY
			4.2227	9.8382

EMISSION RATE	HC	NOX	CO
	0.49783	1.5922	35.077
EMISSION MASS/MODE	0.041485	0.13185	2.9231
EMISSION MASS/RATED HP	0.00025928	0.00082407	0.018269
MODE EMIS./STD. CYCLE %	13.647	54.938	43.498

CAL. FUEL AIR RATIO = 0.077566 MEAS. FUEL AIR RATIO = 0.075864 DIFF MEAS. & CAL. F/A PERCENT = 2.2433

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	-117.77	397.74	406.45	-285.74

EXT GAS TEMP DEG. F	FXT-1	FXT-2	FXT-3	FXT-4	SFXT-1	SEXT-2
	1208.2	-454.00	823.29	1270.8	1343.8	1346.8

ENGINE OIL	FILT	SOILT	OILP	MANIFOLD PRESSURE = 26.346
	188.83	194.36	71.843	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.063
	260.98	2356.5	

INDUCTION AIR	IAIPT1	IAIPT2	TAIRT1	TAIRT2
	51.464	51.992	-9.2061	49.768

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	84.287	4.6711	53.243	2966.6

CELL TEMP. = 85.788 HEATED TEMP = 84.592 COOLER TEMP = 43.778

NASA-LEWIS PRELIMINARY DATA 03/26/76 CADDEII REC 03/26/76 18:06:03.691 FAC SFX15 PGM C003 RDG 2514

LFANOUT-TO,CL,APP-25 BTDC-50 DEG.-HUM=30% MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.920 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR TEMP 54.066 PRESS 28.893 CFM 206.90 DRY FLOW 961.91 VAPOR FLOW 2.4618 PRESS TOTAL 14.678

COMP. FUEL TEMP 82.803 PRESS 5.4041 DENSITY 44.575 TURBO FLOW 72.238 FLOW TRON 71.086 FPIP 6.0342

COOLING AIR TEMP 59.157 UDEL-HOOD 3.0717 DEL-HOOD 3.8776 FLOW 10090. REL-HUM 29.071 DEW-POINT 24.643

REL-HUM 1 29.071 2 50.707 HUMIDITY 17.915 % H2O VAPOR CORRECTED HP 0.41139 155.25

ENG. COND. F/A DRY 0.073901 F/A WET 0.073712 EQN. RATIO 1.1030 PPM-1 2707.5 RPM-2 2709.1 TORQUE 289.53 RHP 149.26

WET CORRECTION FACTOR = 0.85193 EXHAUST MOLE. WT. = 28.182 EXHAUST DENSITY = 0.072969 EXHAUST FLOW RATE = 14190.

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 994.00 NOX PPM 671.03 CO DRY 4.3909 CO2 DRY 11.763 O2 DRY 0.063046
CORRECTED CONC. TO WET BASIS CO DRY 3.7324 CO2 DRY 10.022 O2 DRY 0.053714

EMISSION RATE HC 0.50740 NOX 1.1331 CO 38.452
EMISSION MASS/MODE 0.0025370 0.0056657 0.19226
EMISSION MASS/RATED HP 1.5856E-05 3.5410E-05 0.0012016
MODE EMIS./STD. CYCLE % 0.83453 2.3607 2.8610

CAL. FUEL AIR RATIO = 0.076551 MEAS. FUEL AIR RATIO = 0.073901 DIFF MEAS. & CAL. F/A PERCENT = 3.5863

CYL TEMP DEG.F CYL-1 -118.65 CYL-2 451.50 CYL-3 435.15 CYL-4 -251.72

EXT GAS TEMP DEG.F EXT-1 624.51 EXT-2 303.70 EXT-3 1027.9 EXT-4 1329.1 SFXT-1 1458.5 SEXT-2 1461.1

ENGINE OIL FOILT 198.87 SOILT 205.16 OILP 73.031 MANIFOLD PRESSURE = 28.111

DYNO COND. TORQUE 297.38 RPM 2638.0 CYL. BACK PRESSURE = 29.106

INDUCTION AIR IAIRT1 53.593 IAIRT2 54.066 TAIRT1 115.48 TAIRT2 49.571

ORIFICE AIR TEMP 86.733 DELTAP 4.6525 DRFP 53.317 FLOW 2954.5

CELL TEMP. = 88.602 HEATER TEMP = 84.668 COOLER TEMP = 43.624

NASA-LEWIS PRELIMINARY DATA 03/26/76 CADDEII REC 03/26/76 18:10:18.054 FAC SEX15 PGM C003 R0G 2515

LEAMOUT-TO,CL,APP-25 RTDC-50 DEG.-HUM=30% MODE = 4.000J NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.920 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	52.165	28.943	166.99	766.88	1.9690	14.484

COMP. FUFL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	81.677	5.4425	44.604	57.491	57.084	6.0192

COOLING AIR	TEMP	WDEL-HOOD	DEL-HOOD	FLOW	PFL-HUM	DEW-POINT
	56.859	3.0875	3.8563	10119.	30.858	24.453

PFL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	30.859	69.101	17.973	0.41271	118.65

ENG. COND.	F/A DRY	F/A WET	EQ. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.074437	0.074246	1.1110	2431.7	2432.2	257.16	119.06

WET CORRECTION F_W = 0.85763 EXHAUST MOLE WT. = 28.137 EXHAUST DENSITY = 0.072852 EXHAUST FLOW RATE = 11337.

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1093.8	1255.0	4.2125	11.830	0.14405
CORRECTED CONC. TO WET BASIS			3.6128	10.146	0.12355

EMISSION RATE	HC	NOX	CO
	0.44518	1.6932	29.736
	0.037098	0.14110	2.4780
	0.00023126	0.00088185	0.015487
EMISSION MASS/MODE			
EMISSION MASS/RATED HP			
MODE EMIS./STD. CYCLE %	12.203	58.790	36.875

CAL. FUEL AIR RATIO = 0.075958 MEAS. FUEL AIR RATIO = 0.074427 DIFF MEAS. & CAL. F/A PERCENT = 2.0433

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	-40.101	404.20	410.01	31.642

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1665.6	-421.98	1065.3	1332.8	1374.8	1377.1

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 26.479
	197.58	200.54	71.583	

DYNO COND.	TORQUE	PPM	CYL. BACK PRESSURE = 29.067
	252.10	2348.5	

INDUCTION AIR	IAIPT1	IAIPT2	TAIRT1	TAIRT2
	51.628	52.165	103.27	49.050

PRIFICE AIR	TEMP	DELTA P	DRFP	FLOW
	85.077	4.6811	53.330	2967.4

CFL TEMP. = 87.190 HEATER TEMP = 94.632 COOLER TEMP = 43.551

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NASA-LEWIS PPELIMINARY DATA 03/26/76 CADDEII REC 03/26/76 18:24:37.066 FAC SEX15. PGM C003 PDG 2517

LEANOUT-T0,CL,APP-25 RTDC-50 DEG.-HUM=30% MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.920 RATE HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	52.893	28.905	206.75	961.50	2.4308	14.669

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	82.345	5.4188	44.587	73.152	71.725	5.9853

COOLING AIR	TEMP	INLET-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	58.380	3.2015	3.8513	10325.	29.962	24.403

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	29.962	0.91609	17.697	0.40639	155.57

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.074597	0.074409	1.1134	2700.9	2702.0	291.41	149.86

WET CORRECTION FACTOR = 0.85544 EXHAUST MOLE. WT. = 28.123 EXHAUST DENSITY = 0.072818 EXHAUST FLOW RATE = 14222.

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	1018.7	899.39	4.3686	11.785	0.073037	
CORRECTED CONC. TO WET BASIS			3.7370	10.081	0.067453	

	HC	NOX	CO
EMISSION RATE	0.52014	1.5053	38.587
EMISSION MASS/MODE	0.0026007	0.0075264	0.19294
EMISSION MASS/RATED HP	1.6254E-05	4.7040E-05	0.0012058
MODE EMISS./STD. CYCLE %	0.85549	3.1360	2.8711

CAL. FUEL AIR RATIO = 0.076488 MEAS. FUEL AIR RATIO = 0.074597 DIFF MEAS. & CAL. F/A PERCENT = 2.5350

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	-236.80	446.22	431.04	-134.86

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1334.9	132.34	1052.5	1273.1	1437.8	1440.5

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE =
	190.40	212.16	72.855	28.060

DYNO COND.	TORQUE	RPM	CYL. RACK PRESSURE =
	296.19	2638.9	29.082

INDUCTION AIR	IAIRT1	IAIPT2	TAIRT1	TAIRT2
	52.393	52.893	120.68	49.151

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	85.989	4.6445	53.355	2454.2

CELL TEMP. = 38.36 HEATER TEMP = 84.675 COOLER TEMP = 43.542

NASA-LEWIS PRELIMINARY DATA 03/26/76 CADDEII REC 03/26/76 18:33:34.826 FAC SEX15 PGM C003 RDG 2519

LEANOUT-TO,CL,APP-25 BTDC-50 DEG.-HUM=30% MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.920 RATED HP. = 160.00 HC RATIO= 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	54.238	28.935	166.82	766.80	1.9219	14.503

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW FROM	FPIP
	83.655	5.4140	44.553	60.904	57.831	6.0405

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	58.560	3.1049	3.8314	10151.	27.958	24.028

REL-HUM	1	2	HUMIDITY	H2O VAPOR CORRECTED HP
	27.958	12.707	17.545	0.40289 118.55

ENG. COND.	F/A DRY	F/A WET	EQ. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.075418	0.075229	1.1256	2430.7	2431.6	256.45	118.69

WET CORRECTION FACTOR = 0.86238 EXHAUST MOLE WT. = 28.054 EXHAUST DENSITY = 0.072640 EXHAUST FLOW RATE = 11378.

MEASURED CONC.	PART PER MILLION WET	PER CENT
HC PPM	NOX PPM	CO DRY
1095.0	1320.2	4.2451
CORRECTED CONC. TO WET BASIS	CO DRY	NO2 DRY
	3.6609	0.16030
		0.13824

EMISSION RATE	HC	NOX	CO
	0.44731	1.7877	30.243
EMISSION MASS/MODE	0.037276	0.14897	2.5202
EMISSION MASS/RATED HP	0.00023297	0.00093109	0.015751
MODE EMIS./STD. CYCLE %	12.262	62.073	37.509

CAL. FUEL AIR RATIO = 0.076017 MEAS. FUEL AIR RATIO = 0.075413 DIFF MEAS. & CAL. F/A PERCENT = 0.79404

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	323.89	460.72	410.59	18.129

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1545.5	454.00	903.74	1243.3	1359.8	1362.2

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 26.307
	187.77	190.77	71.907	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.087
	240.57	2321.1	

INDUCTION AIR	TAIPT1	TAIPT2	TAIRT1	TAIRT2
	53.757	54.238	-33.556	49.325

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	87.022	4.6605	53.277	2956.1

CYLL TEMP. = 89.512 HEATER TEMP = 84.675 COOLER TEMP = 43.434

NASA-LE-15 PRELIMINARY DATA 03/26/76 CADDEII REC 03/26/76 18:51:05.812 FAC SEX15 PGM C003 RDG 2521

LEANOUT-TO,CL,APP-25 RTDC-50 DEG.-HUM=30% MCDE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 28.920 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	53.384	28.929	207.10	962.84	2.4157	14.668

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	82.908	5.4209	44.572	71.369	67.444	5.9997

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	58.578	3.0335	4.0761	10020.	29.201	24.258

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	29.201	19.158	17.562	0.40329	152.71

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	PPM-2	TORQUE	RHP
	0.070046	0.069271	1.0455	2707.2	2709.0	285.49	147.16

WFT CORRECTION FACTOR = 0.86533 EXHAUST MOLE. WT. = 28.512 EXHAUST DENSITY = 0.073825 EXHAUST FLOW RATE = 13988.

MEASURED CONC.	PART PER MILLION WET		CO DRY	PER CENT	
	HC PPM	NOX PPM		CO2 DRY	O2 DRY
	763.88	2101.0	1.8976	12.886	0.20294
CORRECTED CONC. TO WFT BASIS			1.6421	11.151	0.17561

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EMISSION RATE	HC	NOX	CO	
	0.38361	3.4974	16.675	
	EMISSION MASS/MODE	0.0019180	0.017487	0.083382
	EMISSION MASS/RATED HP	1.1988E-05	0.00010929	0.00052114
MODE EMIS./STD. CYCLE	0.63093	7.2862	1.2408	

CAL. FUEL AIR RATIO = 0.070642 MEAS. FUEL AIR RATIO = 0.070046 DIFF MEAS. & CAL. F/A PERCENT = 0.85051

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	-146.71	444.85	441.57	-251.88

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1080.6	479.36	1209.4	1349.0	1498.8	1501.2

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.078
	189.48	252.75	73.255	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.080
	291.38	2638.2	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	52.847	53.384	-50.805	49.256

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	86.164	4.6458	53.263	2954.1

CELL TEMP. = 83.605 HEATER TEMP = 84.612 COOLER TEMP = 43.298

NASA-LEWIS PRELIMINARY DATA 03/26/76 CADDEII REC 03/26/76 18:55:18.069 FAC SEX15 PGH C003 RDG 2522

LEANOUT-TO, CL, APP-25 BTDC-50 DEG.-HUM=30% MCDE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.920 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	54.284	28.917	173.99	800.51	2.0010	14.519

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	83.813	5.4224	44.549	57.840	55.280	6.0390

COOLING AIR	TEMP	INDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	58.298	3.0903	3.8832	10124.	27.867	23.998

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	27.867	10.577	17.497	0.40180	119.56

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	RHP
	0.069056	0.068884	1.0307	2431.8	2432.8	258.50	119.69

WET CORRECTION FACTOR = 0.86075 EXHAUST MOLE. WT. = 28.532 EXHAUST DENSITY = 0.073875 EXHAUST FLOW RATE = 11611.

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	566.56	1973.4	2.6244	12.292	0.61124
CORRECTED CONC. TO WET BASIS			2.2590	10.580	0.52612

EMISSION RATE	HC	NOX	CO
	0.23617	2.7267	19.043
EMISSION MASS/MODE	0.015681	0.22723	1.5869
EMISSION MASS/WATER HP	0.00012300	0.0014202	0.0095181
MODE EMIS./STD. CYCLE %	6.4739	94.678	23.615

CAL. FUEL AIR RATIO = 0.070907 MEAS. FUEL AIR RATIO = 0.069056 DIFF MEAS. & CAL. F/A PERCENT = 2.5345

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	-346.00	414.77	404.15	80.112

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1797.5	-250.22	614.04	1276.2	1434.4	1436.2

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 26.931
	187.65	192.60	71.819	

DYMO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.080
	264.09	2366.3	

INDUCTION AIR	TAIPT1	TAIPT2	TAIRT1	TAIRT2
	53.757	54.284	3.2079	49.410

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	86.794	4.5489	53.351	2923.2

CFL TEMP. = 89.797 WATER TEMP = 84.619 COOLER TEMP = 43.262

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NASA-LEWIS PPFLIMINARY DATA 03/26/76 CADDF11 REC 03/26/76 19:02:31.210 FAC SEX15 PGM C003 RDG 2524

LEAKOUT-TO, CL, APP-25 RTDC-50 DEG. - HUM=30% MCDE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.920 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	51.528	28.937	207.35	963.92	2.4192	14.667

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	11.201	5.4269	44.617	69.025	66.583	6.0666

COOLING AIR	TEMP	INFL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	55.560	3.1393	3.7426	10213.	31.274	24.263

REL-HUM	1	2	HUMIDITY	H2O VAPOR	CORRECTED HP
	31.274	3.2663	17.568	0.40343	153.58

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.069075	0.068902	1.0310	2707.2	2707.9	287.81	148.35

WET CORRECTION FACTOR = 0.86080 EXHAUST MOL. WT. = 28.530 EXHAUST DENSITY = 0.073871 EXHAUST FLOW RATE = 13982.

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	747.99	2150.9	1.9039	12.889	0.21294
CORRECTED CONC. TO WET BASIS			1.6389	11.095	0.18330

EMISSION RATE	HC		NOX		CO
	MAX	MODE	MAX	MODE	
	0.38551	0.0019275	3.5790	0.017895	16.637
	0.63406	1.2047E-05	7.4562	0.00051991	0.00051991
MODE EMISS./STD. CYCLE %					1.2379

CAL. FUEL AIR RATIO = 0.070625 MEAS. FUEL AIR RATIO = 0.069075 DIFF MEAS. & CAL. F/A PERCENT = 2.2443

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	62.885	432.54	434.93	13.696

EXT GAS TEMP DEG.F	FXT-1	FXT-2	FXT-3	FXT-4	SEXT-1	SEXT-2
	1405.9	400.54	1219.8	1404.2	1492.1	1494.1

ENGINE OIL	FOILT	SOILT	OILT	MANIFOLD PRESSURE = 28.091
	188.63	207.11	73.203	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.086
	279.62	2630.8	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	51.054	51.528	100.26	49.270

ORIFICE AIR	TEMP	DELTA P	ORIF.	FLOW
	84.551	4.6381	53.410	2956.1

CFL TEMP. = 84.973 HEATER TEMP = 84.675 COOLER TEMP = 43.244

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NASA-LEWIS PRELIMINARY DATA 03/26/76 CADDEII RFC 03/26/76 19:10:07.745 FAC SEX15 PGM C003 RDG 2525

LEANOUT-TQ,CL,APP-25 RTDC-50 DEG.-HUM=30% MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.920 RATED HP. = 160.00 HC RATIO = 2.1250

COMR. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	52.920	28.867	175.08	806.15	2.0131	14.530

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	82.354	5.4296	44.587	58.597	55.593	6.0516

COOLING AIR	TEMP	INDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	56.932	3.0800	3.8714	10105.	29.286	23.993

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	29.286	8.1788	17.480	0.40141	119.79

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.068960	0.068789	1.0293	2433.6	2434.9	259.21	120.11

WET CORRECTION F_W TOR = 0.85983 EXHAUST MOLE. WT. = 28.540 EXHAUST DENSITY = 0.073897 EXHAUST FLOW RATE = 11688.

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	C2 DRY
	574.86	1987.3	2.6997	12.254	0.63702
CORRECTED CONC. TO WET BASIS			2.3213	10.536	0.54773

EMISSION RATE	HC	NOX	CO
	0.24122	2.7587	19.698
	0.020102	0.22989	1.6415
	0.00012564	0.0014368	0.010259
EMISSION MASS/MODE			
0.00012564	95.786	24.427	
EMISSION MASS/RATED HP			
0.00012564			
MODE EMISS./STD. CYCLE %			
6.6124			

CAL. FUEL AIR RATIO = 0.070888 MEAS. FUEL AIR RATIO = 0.068960 DIFF MEAS. & CAL. F/A PERCENT = 2.7960

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	246.38	410.36	397.49	-7.2357

EXT GAS TEMP DEG. F	EXT-1	EXT-2	FXT-3	FXT-4	SEXT-1	SEXT-2
	1501.7	-197.42	322.56	1272.2	1433.9	1436.0

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 26.953
	187.57	195.90	71.943	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.067
	264.20	2376.0	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	52.411	52.920	139.73	49.362

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	85.493	4.6285	53.139	2950.7

CELL TEMP. = 87.897 HEATER TEMP = 84.689 COOLER TEMP = 43.171

NASA-LEWIS PRELIMINARY DATA 04/01/76 CADDEII REC 03/31/76 22:20:45.532 FAC SEX15 PGM C003 RDG 2703

LEANOUT 25 BTDC I & T 59 DEG. HUM=0% MCDE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.960 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	60.375	28.957	15.047	67.231	0.023052	14.225

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	73.431	5.6988	44.821	8.9362	7.5067	6.1329

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	65.287	-0.026015	0.97751	0.00000	3.0172	-11.180

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	3.0172	47.331	2.4001	0.055114	0.81301

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.11166	0.11162	1.6665	612.12	612.42	6.9674	0.81204

WET CORRECTION FACTOR = 0.90972 EXHAUST MOLE. WT. = 25.511 EXHAUST DENSITY = 0.066055 EXHAUST FLOW RATE = 1131.8

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DR:
	42356.	4.3934	11.1900	5.4321	3.5415
CORRECTED CONC. TO WET BASIS			10.180	4.9417	3.2217

EMISSION RATE	HC	NOX	CO
	1.7210	0.00059173	8.3648
	0.028683	9.8671E-06	0.13941
	0.00017927	6.1438E-08	0.00087133
EMISSION MASS/MODE			
EMISSION MASS/RATED HP			
MODE EMIS./STD. CYCLE %	9.4353	0.0041092	2.0746

CAL. FUEL AIR RATIO = 0.10835 MEAS. FUEL AIR RATIO = 0.11166 DIFF MEAS. & CAL. F/A PERCENT = -2.9595

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	234.60	260.68	234.11	179.95

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	763.45	871.43	541.54	493.45	727.79	720.14

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 13.098
	144.95	403.90	47.137	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 28.858
	6.7975	603.96	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	59.662	60.375	89.379	55.693

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	85.919	0.070807	52.626	265.25

CELL TEMP. = 77.316 HEATER TEMP = 84.800 COOLER TEMP = 56.846

NASA-LEWIS PRELIMINARY DATA 04/01/76 CADDEI REC 03/31/76 22:24:19.563 FAC SEX15 PGM C003 RDG 2704

LEANOUT 25 BTDC I & T 59 DEG. HUM=0% MCDE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.960 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	60.664	28.965	21.752	97.228	0.029135	14.227

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	73.512	5.6700	44.818	11.674	10.147	6.1227

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	67.008	-0.0083027	1.0102	0.00000	2.6105	-13.350

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	2.6105	12.475	2.0976	0.048168	1.4805

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10436	0.10433	1.5577	1208.3	1207.6	6.4256	1.4783

WET CORRECTION FACTOR = 0.86998 EXHAUST MOLE. WT. = 25.947 EXHAUST DENSITY = 0.067182 EXHAUST FLOW RATE = 1598.7

MEASURED CONC.	PART PER MILLION WET		CO DRY	PER CENT CO2 DRY	C2 DRY
	HC PPM	NOX PPM			
	15688	8.7999	12.9820	6.7022	0.43104
CORRECTED CONC. TO WET BASIS			11.294	5.8307	0.37500

EMISSION RATE	HC	NOX	CO	
	0.90041	0.0016741	13.109	
	EMISSION MASS/MODE	0.16508	0.00030692	2.4033
	EMISSION MASS/RATED HP	0.0010317	1.9183E-06	0.015020
MODE EMIS./STD. CYCLE %	54.301	0.12788	35.763	

CAL. FUEL AIR RATIO = 0.10818 MEAS. FUEL AIR RATIO = 0.10436 DIFF MEAS. & CAL. F/A PERCENT = 3.6570

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	328.47	346.46	332.18	231.66

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1126.2	1066.7	733.64	637.83	814.20	811.73

ENGINE OIL	EOILT	SOILT	OILT	MANIFOLD PRESSURE = 8.9511
	153.93	250.13	53.473	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.027
	6.6463	1210.3	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIPT2
	60.042	60.664	177.89	55.588

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	86.497	1.0970	53.639	1471.3

CELL TEMP. = 78.165 HEATER TEMP = 84.800 COOL. R TEMP = 52.239

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NASA-LEWIS PRELIMINARY DATA		04/01/76	CADDEII	REC 03/31/76 22:26:21.314	FAC SEX15	PGM C003	RDG 2705
LEANOUT 25 BTDC I & T 59 DEG. HUM=0%		MCDE = 6.0000		NO. SCANS = 5			
ENGINE TIMING = 25.000 DEG.		BARGMETRIC PRESSURE = 28.960		RATED HP. = 160.00		HC RATIO = 2.1250	
COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL	
	60.691	28.960	21.404	95.669	0.028029	14.228	
COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP	
	73.885	5.6775	44.809	11.311	9.8620	6.1230	
COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT	
	67.599	-0.023524	1.0763	0.00000	2.5501	-13.705	
REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP		
	2.5501	12.457	2.0508	0.047094	1.5086		
ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10308	0.10305	1.5386	1198.5	1200.0	6.6007	1.5063
WET CORRECTION FACTOR = 0.86580		EXHAUST MOLE. WT. = 26.027		EXHAUST DENSITY = 0.067390		EXHAUST FLOW RATE = 1566.4	
MEASURED CONC.	PART PER MILLION WET		PER CENT				
	HC PPM	NOX PPM	CO DRY	CC2 DRY	C2 DRY		
	15209.	9.2399	13.0090	6.7394	0.38096		
CORRECTED CONC. TO WET BASIS			11.263	5.8349	0.32983		
EMISSION RATE	HC	NOX	CO				
	0.85528	0.0017223	12.808				
EMISSION MASS/MODE	0.042764	8.6116E-05	0.64040				
EMISSION MASS/RATED HP	0.00026727	5.3822E-07	0.0040025				
MODE EMIS./STD. CYCLE %	14.067	0.035882	9.5298				
CAL. FUEL AIR RATIO = 0.10810		MEAS. FUEL AIR RATIO = 0.10308		DIFF MEAS. & CAL. F/A PERCENT = 4.8685			
CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4			
	340.57	356.33	347.32	245.93			
EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2	
	1239.9	135.92	607.64	715.47	836.47	835.54	
ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 8.9088			
	157.33	249.75	52.649				
DYNO COMD.	TORQUE	RPM	CYL. BACK PRESSURE = 28.955				
	8.7993	1190.3					
INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2			
	60.105	60.691	88.414	55.661			
ORIFIC AIR	TEMP	DELTAP	ORFP	FLOW			
	86.838	1.0263	53.349	1423.3			
CELL TEMP. = 78.633	HEATER TEMP = 84.682		COOLER TEMP = 58.382				

Ab

NASA-LEWIS PRELIMINARY DATA 04/01/76 CADDEII REC 03/31/76 22:29:44.619 FAC SEX15 PGM C003 RDG 2706

LEANOUT 25 BTDC I & T 59 DEG. HUM=0% MCDE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 28.970 RATED HP = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	58.461	28.963	14.351	64.231	0.021596	14.229

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	72.346	5.7051	44.849	3.9792	7.1137	6.1290

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	65.458	-0.023801	0.97529	0.00000	3.1690	-11.495

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	3.1690	24.080	2.3536	0.054046	0.75490

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	RHP
	0.11075	0.11072	1.6530	604.14	605.40	6.5673	0.75544

WET CORRECTION FACTOR = 0.90705 EXHAUST MOLE. WT. = 25.563 EXHAUST DENSITY = 0.066189 EXHAUST FLOW RATE = 1078.2

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	C2 DRY
	42483.	5.1645	11.2950	5.2262	3.6240
CORRECTED CONC. TO WET BASIS			10.245	4.7404	3.2871

EMISSION RATE	HC	NOX	CO
	1.6444	0.00066264	8.0198
EMISSION MASS/MODE	0.027407	1.1044E-05	0.13366
EMISSION MASS/RATED HP	0.00017129	6.9025E-08	0.00083540
MODE EMIS./STD. CYCLE %	9.0155	0.0046017	1.9890

CAL. FUEL AIR RATIO = 0.10908 MEAS. FUEL AIR RATIO = 0.11075 DIFF. MEAS. & CAL. F/A PERCENT = -1.5087

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	283.40	308.21	289.97	236.02

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1550.3	907.05	505.05	711.14	788.57	783.98

ENGINE OIL	EQILT	SOILT	OILP	MANIFOLD PRESSURE = 12.988
	160.08	316.98	45.617	

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.163
	10.398	592.44	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	57.701	58.461	66.506	54.985

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	84.463	1.0181	53.528	1420.8

CELL TEMP. = 76.138 HEATER TEMP = 84.619 COOLER TEMP = 51.799

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C2

NASA-LEWIS PRELIMINARY DATA 04/01/76 CADDEII REC 03/31/76 22:39:23.489 FAC SEX15 PGM C003 RDG 2708

LFANOUT 25 BTDC I & T 59 DEG. HUM=0% MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.950 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 60.096 PRESS 28.948 CFM 13.282 DRY FLOW 59.313 VAPOR FLOW 0.017782 PRESS TOTAL 14.220

COMB. FUEL TEMP 73.849 PRESS 5.7258 DENSITY 44.810 TURBO FLOW 7.5814 FLOW TRON 6.2526 FPIP 6.1476

COOLING AIR TEMP 67.062 UDEL-HOOD -0.023801 DEL-HOOD 0.92603 FLOW 0.00000 REL-HUM 2.6638 DEW-POINT -13.350

REL-HUM 1 2 HUMIDITY 2.0986 % H2O VAPOR CORRECTED HP 0.048191 0.72504

ENG. COND. F/A DRY 0.10542 F/A WET 0.10539 FOU. RATIO 1.5734 RPM-1 607.92 RPM-2 606.96 TORQUE 6.2590 BHP 0.72448

WET CORRECTION FACTOR = 0.89763 EXHAUST MOLE. WT. = 25.881 EXHAUST DENSITY = 0.067013 EXHAUST FLOW RATE = 978.67

MEASURED CONC. PART PER MILLION WET HC PPM 37941. NOX PPM 5.2555 CO DRY 11.0967 PER CENT CO2 DRY 5.6240 CO DRY 3.4865 CORRECTED CONC. TO WET BASIS 9.9605 5.0483 3.1296

EMISSION RATE HC 1.3330 NOX 0.00061206 CO 7.0770 EMISSION MASS/MODE 0.022217 1.0201E-05 0.11795 EMISSION MASS/RATED HP 0.00013886 6.3757E-08 0.00073719 MODE EMIS./STD. CYCLE % 7.3084 0.0042504 1.7552

CAL. FUEL AIR RATIO = 0.10555 MEAS. FUEL AIR RATIO = 0.10542 DIFF MEAS. & CAL. F/A PERCENT = 0.13095

CYL TEMP DEG.F CYL-1 313.40 CYL-2 336.21 CYL-3 314.83 CYL-4 262.94

FXT GAS TEMP DEG.F EXT-1 1310.6 EXT-2 879.98 EXT-3 841.09 EXT-4 1192.5 SEXT-1 860.08 SEXT-2 864.91

ENGINE OIL EOILT 164.48 SOILT 301.53 OILP 45.040 MANIFOLD PRESSURE = 12.295

DYNO COND. TORQUE 11.406 RPM 600.60 CYL. BACK PRESSURE = 29.098

INDUCTION AIR IAIRT1 59.310 IAIRT2 60.096 TAIRT1 60.983 TAIRT2 55.827

ORIFICE AIR TEMP 85.410 DELTAP 0.067307 ORFP 53.461 FLOW 254.54

GELL TEMP. = 77.511 HEATER TEMP = 84.342 COOLER TEMP = 57.313

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NASA-LEWIS PRELIMINARY DATA 04/01/76 CADDEIT REC 03/31/76 22:44:24.082 FAC SEX15 PGM C003 RDG 2710

LEANOUT 25 BTDC I. & T 59 DEG. HUM=0% MODE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.950 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	60.899	28.955	20.657	92.223	0.023505	14.224

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	74.684	5.6883	44.788	10.565	9.1599	6.1296

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	65.763	-0.017712	0.97419	0.00000	2.2018	-15.846

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	2.2018	20.904	1.7841	0.040970	1.4161

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.099324	0.099298	1.4824	1200.7	1202.8	6.1839	1.4138

WET CORRECTION FACTOR = 0.86314 EXHAUST MOLE. WT. = 26.270 EXHAUST DENSITY = 0.068020 EXHAUST FLOW RATE = 1490.8

MEASURED CONC.	PART PER MILLION WFT	PER CENT			
	HC PPM	CO DRY	CO2 DRY	C2 DRY	
	13294.	12.660	12.296	7.1603	0.42014
CORRECTED CONC. TO WET BASIS			10.613	6.1804	0.36264

EMISSION RATE	HC	NOX	CO
	0.71152	0.0022460	11.437
EMISSION MASS/MODE	0.035576	0.00011230	0.57436
EMISSION MASS/RATED HP	0.00022235	7.0189E-07	0.0035897
MODE EMIS./STD. CYCLE %	11.703	0.046793	8.5470

CAL. FUEL AIR RATIO = 0.10414 MEAS. FUEL AIR RATIO = 0.099324 DIFF MEAS. & CAL. F/A PERCENT = 4.8475

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	299.39	313.91	302.17	239.77

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	996.17	889.79	685.39	946.20	823.15	818.65

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 8.5325
	164.18	347.94	55.618	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 28.997
	9.0225	1196.6	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	60.249	60.899	86.808	56.164

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	86.015	1.0120	53.396	1414.6

CELL TEMP. = 77.971 HEATER TEMP = 84.162 COOLER TEMP = 52.708

NASA-LEWIS PRELIMINARY DATA 04/01/76 CADDEII REC 03/31/76 22:46:35.558 FAC SEX15 PGM C003 RDG 2711

LEANOUT 25 BTDC I & T 59 DEG. HUM=0% MCDE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.960 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	61.286	28.964	12.882	57.510	0.014729	14.222

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	74.906	5.7276	44.782	3.9732	6.2256	6.1323

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	67.151	-0.037085	0.88396	0.00000	2.1820	-15.776

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	2.1820	2.4722	1.7928	0.041169	0.22153

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10825	0.10823	1.6157	595.50	594.18	1.9502	0.22112

WET CORRECTION FACTOR = 0.90546 EXHAUST MOLE. WT. = 25.710 EXHAUST DENSITY = 0.066568 EXHAUST FLOW RATE = 957.66

MEASURED CONC.	PART PER MILLION WET		PER CENT
	HC PPM	NOX PPM	CO DRY
	38889.	5.0015	11.014
			5.5790
CORRECTED CONC. TO WET BASIS			CO DRY
			9.9729
			5.0516
			3.1347

EMISSION RATE	HC	NOX	CO
	1.3370	0.00056998	6.9338
EMISSION MASS/MODE	0.022284	9.4996E-06	0.11556
EMISSION MASS/RATED HP	0.00013927	5.9373E-08	0.00072227
MODE EMIS./STD. CYCLE %	7.3302	0.0039582	1.7197

CAL. FUEL AIR RATIO = 0.10607 MEAS. FUEL AIR RATIO = 0.10825 DIFF MEAS. & CAL. F/A PERCENT = -2.0203

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	302.92	318.96	305.45	243.07

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1009.7	335.80	629.80	941.13	843.26	843.30

ENGINE OIL	EOILT	SOILT	OILT	MANIFOLD PRESSURE = 12.615
	164.70	342.52	44.864	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 28.854
	11.716	590.64	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	60.483	61.286	71.586	56.117

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	86.313	2.0247	53.482	1979.7

CELL TEMP. = 78.651 HEATER TEMP = 84.113 COOLER TEMP = 59.378

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NASA-LEWIS		PRELIMINARY DATA		04/01/76	CADDEII	REC 03/31/76 22:50:40.100	FAC SEX15	PGM C003	RDG 2712
LEANOUT 25 BTDC I & T 59 DEG. HUM=0%				MODE = 1.0000	NO. SCANS = 5				
ENGINE TIMING = 25.000		DEG.	BAROMETRIC PRESSURE = 28.960		RATED HP. = 160.00		HC RATIO = 2.1250		
COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL			
	58.642	28.964	11.928	53.401	0.014216	14.225			
COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP			
	72.747	5.7522	44.839	3.9748	5.0885	6.1440			
COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT			
	64.479	-0.035148	0.95146	0.00000	2.4925	-15.191			
REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP				
	2.4925	22.286	1.8635	0.042792	0.80817				
ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP		
	0.095288	0.095262	1.4222	602.46	601.74	7.0507	0.80879		
WET CORRECTION FACTOR = 0.88060		EXHAUST MOLE. WT. = 26.542		EXHAUST DENSITY = 0.068724		EXHAUST FLOW RATE = 851.28			
MEASURED CONC.	PART PER MILLION WET		PER CENT						
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY				
	33077.	5.5996	9.6158D	6.6095	3.2874				
CORRECTED CONC. TO WET BASIS			8.4677	5.8203	2.8949				
EMISSION RATE	HC	NOX	CO						
	1.0109	0.00056725	5.2333						
EMISSION MASS/MODE	0.016848	9.4542E-06	0.087221						
EMISSION MASS/RATED HP	0.00010530	5.9089E-08	0.00054513						
MODE EMIS./STD. CYCLE %	5.5421	0.0039392	1.2979						
CAL. FUEL AIR RATIO = 0.098486		MEAS. FUEL AIR RATIO = 0.095288		DIFF MEAS. & CAL. F/A PERCENT = 3.3564					
CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4					
	259.53	278.46	259.88	216.46					
EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2			
	797.86	152.53	466.98	894.91	756.89	749.01			
ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 11.318					
	153.09	341.06	45.625						
DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.076						
	0.093609	592.92							
INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2					
	57.764	58.642	57.292	54.711					
ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW					
	83.647	2.0071	53.413	1976.4					
CELL TEMP. = 75.899	HEATER TEMP = 83.982		COOLER TEMP = 51.131						

bb

NASA-LEWIS PRELIMINARY DATA 04/01/76 CADDEII REC 03/31/76 22:55:16.417 FAC SEX15 PGM C003 RDG 2714

LEANOUT 25 BTDC I & T 59 DEG. HUM=0% MODE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.960 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 59.085 PRESS 28.959 CFM 18.856 DRY FLOW 84.221 VAPOR FLOW 0.019937 PRESS TOTAL 14.224

COMB. FUEL TEMP 73.716 PRESS 5.7138 DENSITY 44.813 TURBO FLOW 9.3421 FLOW TRON 7.9478 FPIP 6.1380

COOLING AIR TEMP 65.162 UDEL-HOOD -0.023801 DEL-HOOD 0.83470 FLOW 0.00000 REL-HUM 2.1814 DEW-POINT -16.926

REL-HUM 1 2 HUMIDITY 1.6570 % H2O VAPOR CORRECTED HP 0.038051 1.3066

ENG. COND. F/A DRY 0.094368 F/A WET 0.094346 EQU. RATIO 1.4085 RPM-1 1200.5 RPM-2 1201.7 TORQUE 5.7172 BHP 1.3068

WET CORRECTION FACTOR = 0.86116 EXHAUST MOLE. WT. = 26.606 EXHAUST DENSITY = 0.068889 EXHAUST FLOW RATE = 1338.2

MEASURED CONC. HC PPM 8288.8 NOX PPM 23.858 CO DRY 11.2410 PER CENT CO2 DRY 7.9031 O2 DRY 0.24120

CORRECTED CONC. TO WET BASIS CO DRY 9.6800 PER CENT CO2 DRY 6.8058 O2 DRY 0.20772

EMISSION RATE HC 0.39821 NOX 0.0037994 CO 9.4045
EMISSION MASS/MODE 0.019911 0.00018997 0.47023
EMISSION MASS/RATED HP 0.00012444 1.1873E-06 0.0029389
MODE EMIS./STD. CYCLE % 6.5495 0.079154 6.9974

CAL. FUEL AIR RATIO = 0.098137 MEAS. FUEL AIR RATIO = 0.094368 DIFF MEAS. & CAL. F/A PERCENT = 3.9940

CYL TEMP DEG.F CYL-1 296.74 CYL-2 311.27 CYL-3 300.33 CYL-4 229.31

EXT GAS TEMP DEG.F EXT-1 761.81 EXT-2 38.048 EXT-3 399.86 EXT-4 885.29 SEXT-1 725.10 SEXT-2 716.51

ENGINE OIL EOILT 162.66 SOILT 292.55 OILP 53.009 MANIFOLD PRESSURE = 8.1098

DYNO COND. TORQUE 23.258 RPM 1194.1 CYL. BACK PRESSURE = 28.938

INDUCTION AIR IAIRT1 58.470 IAIRT2 59.085 TAIRT1 78.020 TAIRT2 55.930

ORIFICE AIR TEMP 84.200 DELTAP 2.0648 ORFP 53.414 FLOW 2002.0

CELL TEMP. = 76.609 HEATER TEMP = 83.843 COOLER TEMP = 58.813

NASA-LEWIS PRELIMINARY DATA 04/01/76 CADDEII REC 03/31/76 23:04:09.306 FAC SEX15 PGM C003 RDG 2717

LEANOUT 25 BTDC 1.6 T 59 DEG. HUM=0% MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 28.950 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP PRESS CFM DRY FLOW VAPOR FLOW PRESS TOTAL
60.601 28.950 16.796 75.013 0.016398 14.222

COMB. FUEL TEMP PRESS DENSITY TURBO FLOW FLOW TRON FPIP
75.110 5.7522 44.776 7.7870 6.4866 6.1371

COOLING AIR TEMP UDEL-HOOD DEL-HOOD FLOW REL-HUM DEW-POINT
66.211 -0.041514 0.95122 0.00000 1.9083 -18.041

REL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP
1.9083 6.0166 1.5302 0.035139 1.2676

ENG. COND. F/A DRY F/A WET EQU. RATIO RPM-1 RPM-2 TORQUE BHP
0.086474 0.086455 1.2907 1201.6 1202.7 5.5339 1.2660

WFT CORRECTION FACTOR = 0.86404 EXHAUST MOLE. WT. = 27.178 EXHAUST DENSITY = 0.070370 EXHAUST FLOW RATE = 1158.4

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM NOX PPM CO DRY CO2 DRY O2 DRY
3998.4 47.357 8.30850 9.6496 0.14729
CORRECTED CONC. TO WET BASIS 7.1789 8.3377 0.12727

EMISSION RATE HC NOX CO
0.16628 0.0065280 6.0374
EMISSION MASS/MODE 0.030484 0.0011968 1.1069
EMISSION MASS/RATED HP 0.00019053 7.4800E-06 0.0069178
MODE EMIS./STD. CYCLE % 10.028 0.49867 16.471

CAL. FUEL AIR RATIO = 0.087364 MEAS. FUEL AIR RATIO = 0.086474 DIFF MEAS. & CAL. F/A PERCENT = 1.0290

CYL TEMP DEG.F CYL-1 CYL-2 CYL-3 CYL-4
289.58 304.82 293.10 220.02

EXT GAS TEMP DEG.F EXT-1 EXT-2 EXT-3 EXT-4 SEXT-1 SEXT-2
1574.5 -197.35 363.58 935.13 714.37 706.88

ENGINE OIL EOI LT SOILT OILP MANIFOLD PRESSURE = 7.6146
161.16 214.23 53.049

DYNO COND. TORQUE RPM CYL. BACK PRESSURE = 28.972
13.048 1197.4

INDUCTION AIR IA IPT1 IA IPT2 TAIRT1 TAIRT2
59.915 60.601 70.434 55.910

ORIFICE AIR TEMP DELTAP ORFP FLOW
85.332 0.10331 53.383 357.74

CELL TEMP. = 77.944 HEATER TEMP = 83.614 COOLER TEMP = 59.961

ORIGINAL PAGE IS
OF POOR QUALITY

NASA-LEWIS PRELIMINARY DATA 04/01/76 CADDE11 REC 03/31/76 23:06:41.503 FAC SEX15 PGM C003 RDG 2718

LEANOUT 25 BTDC I & T 59 DEG. HUM=0% MODE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.960 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	60.465	28.965	17.086	76.726	0.016895	14.228

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	75.739	5.7456	44.760	8.0708	6.6727	6.1329

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	66.462	-0.021864	0.98581	0.00000	1.9323	-17.936

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	1.9323	0.26403	1.5414	0.035395	1.8919

ENG. CO'D.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.086968	0.086949	1.2980	1205.3	1206.0	8.2341	1.8897

WET CORRECTION FACTOR = 0.86722 EXHAUST MOLE WT. = 27.141 EXHAUST DENSITY = 0.070274 EXHAUST FLOW RATE = 1187.0

MEASURED CONC.	PART PER MILLION WET		CO DRY	PER CENT	
	HC PPM	NOX PPM		CO2 DRY	O2 DRY
	3908.0	49.043	8.21710	9.6712	0.16336
CORRECTED CONC. TO WET BASIS			7.1261	8.3871	0.14167

	HC	NOX	CO
EMISSION RATE	0.16653	0.0069274	6.1410
EMISSION MASS/MODE	0.0083266	0.00034637	0.30705
EMISSION MASS/RATED HP	5.2041E-05	2.1648E-06	0.0019191
MODE EMIS./STD. CYCLE %	2.7390	0.14432	4.5692

CAL. FUEL AIR RATIO = 0.087047 MEAS. FUEL AIR RATIO = 0.086968 DIFF MEAS. & CAL. F/A PERCENT = 0.091496

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	296.03	311.83	300.36	233.69

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	FXT-4	SEXT-1	SEXT-2
	1499.3	-290.33	278.01	811.27	694.25	686.02

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 7.6585
	161.48	271.63	53.117	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.018
	6.3798	1198.9	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	59.798	60.465	86.383	53.342

GRIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	85.726	2.0384	53.501	1987.1

CELL TEMP. = 78.245 HEATER TEMP = 83.580 COOLER TEMP = 46.926

NASA-LEWIS PRELIMINARY DATA 04/01/76 CADDEII REC 03/31/76 23:15:04.557 FAC SEX15 PGM C003 RDG 2721

LEANOUT 25 BTDC I & T 59 DEG. HUM=0% MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.950 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	59.292	28.949	16.765	74.683	0.015141	14.222

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	73.387	5.7657	44.822	7.0179	5.7816	6.1416

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	64.973	-0.022971	1.0484	0.00000	1.8543	-19.041

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	1.8543	42.094	1.4192	0.032590	1.5506

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.077415	0.077399	1.1554	1200.5	1200.5	6.7840	1.5507

WET CORRECTION FACTOR = 0.87157 EXHAUST MOLE. WT. = 27.890 EXHAUST DENSITY = 0.072213 EXHAUST FLOW RATE = 1114.5

MEASURED CONC.	PART PER MILLION WET		CO DRY	PER CENT	
	HC PPM	NOX PPM		CO2 DRY	O2 DRY
	2000.8	67.789	4.12590	11.738	0.12103
CORRECTED CONC. TO WET BASIS			3.5960	10.231	0.10549

EMISSION RATE	HC	NOX	CO
	0.080051	0.0089903	2.9096
EMISSION MASS/MODE	0.014676	0.0016482	0.53342
EMISSION MASS/RATED HP	9.1725E-05	1.0301E-05	0.0033339
MODE FMIS./STD. CYCLE %	4.8277	0.68676	7.9378

CAL. FUEL AIR RATIO = 0.076422 MEAS. FUEL AIR RATIO = 0.077415 DIFF MEAS. & CAL. F/A PERCENT = -1.2825

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	314.97	333.92	325.18	247.07

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1304.4	-349.10	366.96	715.35	726.64	722.15

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE =
	162.18	338.65	52.817	7.7449

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE =
	7.8128	1198.8	28.997

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	58.596	59.292	102.60	57.225

ORIFICE AIR	TFMP	DELTA P	ORFP	FLOW
	83.532	2.0006	53.402	1973.5

CELL TEMP. = 76.174 HEATER TEMP = 103.04 COOLER TEMP = 65.210

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NASA-LEWIS PRELIMINARY DATA 04/01/76 CADDEII REC 03/31/76 23:17:50.341 FAC SEX15 PGM C003 RDG 2723

LEANOUT 25 BTDC I & T 59 DEG. HUM=0% MODE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.950 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	58.922	28.942	17.014	76.336	0.019512	14.222

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	74.284	5.7639	44.798	7.2015	6.0036	6.1371

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	65.081	-0.026015	0.95177	0.00000	1.8834	-19.011

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	1.8834	18.404	1.4224	0.032664	1.3183

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.078647	0.078631	1.1738	1201.1	1201.4	5.7672	1.3189

WET CORRECTION FACTOR = 0.87605 EXHAUST MOLE. WT. = 27.789 EXHAUST DENSITY = 0.071953 EXHAUST FLOW RATE = 1144.6

MEASURED CONC.	PART PER MILLION NET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1858.4	66.195	4.24270	11.720	0.14633
CORRECTED CONC. TO WET BASIS			3.7168	10.267	0.12820

EMISSION RATE	HC	NOX	CO	
	0.076361	0.0090159	3.0885	
	EMISSION MASS/MODE	0.0038180	0.00045080	0.15442
	EMISSION MASS/RATED HP	2.3863E-05	2.8175E-06	0.00096514
MODE EMIS./STD. CYCLE %	1.2559	0.18783	2.2980	

CAL. FUEL AIR RATIO = 0.076481 MEAS. FUEL AIR RATIO = 0.078647 DIFF MEAS. & CAL. F/A PERCENT = -2.7539

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	315.89	333.69	321.41	250.14

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1550.8	-432.41	268.02	525.50	707.95	701.45

ENGINE OIL	EOILT	SOILT	OILT	MANIFOLD PRESSURE = 7.8198
	163.37	311.93	55.626	

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE = 28.936
	6.0198	1192.0	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	58.199	58.922	88.220	53.568

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	83.980	2.0420	53.501	1991.9

CELL TEMP. = 76.652 HEATER TEMP = 95.651 COOLER TEMP = 48.262

NASA-LEWIS PRELIMINARY DATA 04/01/76 CADDEII REC 04/01/76 15:15:25.702 FAC SEX15 PGM C083 RDG 2724

LEANOUT TO CL APP-59 DEG. HUM=0% MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.850 RATED HP. = 160.00 HC RATIO = 2.1250

CCMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	59.518	28.834	209.06	963.58	0.15386	14.655

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	66.193	5.3342	45.313	80.412	78.494	6.0192

COOLING AIR	TEMP	INLET-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	62.727	2.9679	3.5810	9898.5	1.4929	-21.516

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	1.4929	17.408	1.1177	0.025666	157.41

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.081460	0.081447	1.2158	2702.6	2704.5	292.91	150.73

WET CORRECTION FACTOR = 0.85360 EXHAUST MOLE. WT. = 27.564 EXHAUST DENSITY = 0.071371 EXHAUST FLOW RATE = 16603

MEASURED CONC.	PART PER MILLION WET		CO DRY	PER CENT	
	HC PPM	NOX PPM		CO2 DRY	O2 DRY
	1371.8	219.04	7.5985	10.343	0.028543
CORRECTED CONC. TO WET BASIS			6.4861	8.8290	0.024364

EMISSION RATE	HC	NOX	CO	
	0.71918	0.38064	68.764	
	EMISSION MASS/MODE	0.0035959	0.0019032	0.34382
	EMISSION MASS/RATED HP	2.2474E-05	1.1895E-05	0.0021489
MODE EMIS./STO. CYCLE %	1.1829	0.79300	5.1164	

CAL. FUEL AIR RATIO = 0.084135 MEAS. FUEL AIR RATIO = 0.081460 DIFF MEAS. & CAL. F/A PERCENT = 3.2840

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	419.29	437.82	419.36	330.25

EXT GAS TEMP DEG.F	FXT-1	EXT-2	EXT-3	FXT-4	SXT-1	SXT-2
	375.24	-204.89	661.55	1306.1	1370.2	1371.5

ENGINE OIL	FILT	SOILT	OILP	MANIFOLD PRESSURE = 27.948
	179.64	204.38	68.859	

DYMO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 28.998
	295.52	2645.7	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	59.229	59.518	-33.883	55.169

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	86.050	1.0463	54.206	1438.0

CELL TEMP. = 78.748 HEATER TEMP = 84.169 COOLER TEMP = 56.316

NASA-LEWIS PRELIMINARY DATA 04/01/76 CADDET REG 04/01/76 15:26:40.537 FAC SEX15 PGH C003 RDG 2725

LEANOUT TO CL APP 59 DEG. HUM=0% MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.860 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	59.021	28.879	168.44	765.89	0.11393	14.477

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	65.960	5.3825	45.019	61.764	61.548	6.0636

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	60.854	2.9632	3.5716	9889.7	1.3985	-22.376

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	1.3985	0.61206	1.0413	0.023912	119.64

ENG. COND.	F/A DRY	F/A WET	EQ. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.080362	0.080350	1.1994	2432.9	2434.7	258.27	119.64

WET CORRECTION F. TOR = 0.85330 EXHAUST MOLE. WT. = 27.652 EXHAUST DENSITY = 0.071596 EXHAUST FLOW RATE = 11558.

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	C2 DRY
	1564.2	572.36	7.1486	10.617	0.053005
CORRECTED CONC. TO WET BASIS					
			6.0999	9.0598	0.045229

EMISSION RATE	HC	NOX	CO	
	0.64905	0.78725	51.187	
	EMISSION MASS/MODE	0.054087	0.065604	4.2656
	EMISSION MASS/RATED HP	0.00033804	0.00041003	0.026660
MODE EMIS./STD. CYCLE %	17.792	27.335	63.476	

CAL. FUEL AIR RATIO = 0.083005 MEAS. FUEL AIR RATIO = 0.080362 DIFF MEAS. & CAL. F/A PERCENT = 3.2892

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	369.67	385.23	411.30	326.43

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1496.8	-454.00	473.78	1010.6	1293.0	1294.2

ENGINE OIL	EQILT	SOILT	OILP	MANIFOLD PRESSURE = 26.019
	187.12	215.18	70.339	

DYNO COMD.	TORQUE	RPM	CYL. BACK PRESSURE = 28.944
	268.15	2379.4	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	58.723	59.021	70.311	55.863

ORIFICE AIR	TEMP	DELTAP	ORIF	FLOW
	86.471	2.0317	53.271	1982.6

CELL TEMP = 78.757 HEATER TEMP = 85.403 COOLANT TEMP = 54.581

NASA-LEWIS PRELIMINARY DATA 06/01/76 CADD611 REC 06/01/78 15:33:35.146 FAC SEX15 PGM C003 RDB 2726

LEANOUT TO CL APP 59 DEG. HUM=0% MODE = 5.000 NO. SCANS = 4

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.860 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	60.540	28.867	105.08	471.70	0.069619	14.293

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	69.603	5.4722	44.922	45.215	42.379	6.0884

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	61.948	2.9208	3.6058	9810.1	1.2978	-22.579

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	1.2978	0.32753	1.0331	0.023724	65.215

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.089844	0.089830	1.3410	2351.8	2353.2	145.38	65.099

WET CORRECTION FAC. R = 0.87235 EXHAUST MOLE. WT. = 26.928 EXHAUST DENSITY = 0.069724 EXHAUST FLOW RATE = 7374.1

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	2043.7	180.72	9.1579	9.4906	0.13289
CORRECTED CONC. TO WET BASIS			7.9976	8.2791	0.11592

	HC	NOX	CO
EMISSION RATE	0.54103	0.15858	42.816
EMISSION MASS/MODE	0.054103	0.015858	4.2816
EMISSION MASS/RATED HP	0.00033814	9.9114E-05	0.026760
MODE EMIS./STD. CYCLE %	17.797	6.6076	63.714

CAL. FUEL AIR RATIO = 0.088102 MEAS. FUEL AIR RATIO = 0.089844 DIFF MEAS. & CAL. F/A PERCENT = -1.9384

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	317.06	332.25	328.07	246.84

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SXT-1	SXT-2
	1060.9	-454.00	151.64	842.20	1106.8	1105.7

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 18.133
	185.54	184.01	70.647	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 28.923
	142.03	2304.2	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	60.202	60.540	127.06	55.894

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	88.436	2.4954	53.326	2180.0

CELL TEMP. = 80.009 HEATER TEMP = 85.201 COOLER TEMP = 55.570

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NASA-LEWIS PRELIMINARY DATA 04/01/76 CADDEII REC 04/01/76 17:14:49.506 FAC SEX15 PGM C003 RDG 2728

LEANOUT TO CL APP-59 DEG. HUM=0% MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.880 RATED HP = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	59.319	28.876	209.54	967.26	0.14338	14.666

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	66.507	5.3306	45.005	81.315	79.049	5.9241

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	61.313	3.0446	3.7221	10040.	1.3969	-22.281

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	1.3969	35.280	1.0377	0.023828	158.68

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.081724	0.081712	1.2198	2698.9	2700.7	296.28	152.25

WET CORRECTION FACTOR = 0.85504 EXHAUST MOL. WT. = 27.544 EXHAUST DENSITY = 0.071317 EXHAUST FLOW RATE = 14673.

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1397.5	261.24	7.4776	10.665	0.043964
CORRECTED CONC. TO WET BASIS			6.3936	9.1192	0.037591

EMISSION RATE	HC	NOX	CO
	0.73618	0.45615	68.110
EMISSION MASS/MODE	0.0036809	0.0022807	0.34055
EMISSION MASS/RATED HP	2.3006E-05	1.4255E-05	0.0021284
MODE EMIS./STD. CYCLE %	1.2108	0.95031	5.0677

CAL. FUEL AIR RATIO = 0.083459 MEAS. FUEL AIR RATIO = 0.081724 DIFF MEAS. & CAL. F/A PERCENT = 2.1233

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	403.13	430.81	410.77	123.96

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1129.6	-181.88	840.43	1330.8	1359.1	1360.8

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.007
	165.08	190.61	70.979	

DYNO COND.	TURQUE	RPM	CYL. BACK PRESSURE = 28.989
	294.52	2602.8	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	59.039	59.319	23.049	54.791

ORIFICE AIR	TEMP	DELTAP	DRFP	FLOW
	91.552	2.9888	53.321	2367.9

CELL TEMP. = 80.734 HEATER TEMP = 89.362 COOLER TEMP = 53.051

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NASA-LEWIS PRELIMINARY DATA 04/01/76 CADDEII REC 04/01/76 17:17:30.108 FAC SEX15 PGM C003 RDG 2729

LEANOUT TO CL APP 99 DEG. HUM=0% MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.880 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	56.823	28.883	168.49	768.25	0.10892	14.478

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	64.695	5.3831	45.053	64.753	63.405	6.0294

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	59.220	2.9787	3.6828	9918.7	1.4426	-22.841

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	1.4426	27.381	0.99243	0.022790	119.48

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.082532	0.082520	1.2318	2435.2	2436.8	258.34	119.79

WET CORRECTION FACTOR = 0.86328 EXHAUST MOLE. WT. = 27.480 EXHAUST DENSITY = 0.071153 EXHAUST FLOW RATE = 11689.

MEASURED CONC.	PART PER MILLION WET	PER CENT
	HC PPM NOX PPM CO DRY CO2 DRY O2 DRY	
	1526.7 539.51 6.9845 10.880 0.064386	
CORRECTED CONC. TO WET BASIS		6.0297 9.3922 0.055584

EMISSION RATE	HC	NOX	CO
	0.64068 0.75051 51.172		
EMISSION MASS/MODE	0.053390 0.062543 4.2644		
EMISSION MASS/RATED HP	0.00033369 0.00039089 0.026652		
MODE EMIS./STD. CYCLE %	17.563 26.059 63.458		

CAL. FUEL AIR RATIO = 0.082331 MEAS. FUEL AIR RATIO = 0.082532 DIFF MEAS. & CAL. F/A PERCENT = -0.24252

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	378.44 391.81 408.48 118.61			

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1592.4 -454.00 885.81 1307.1 1301.7 1303.2					

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 26.080
	172.54 161.30 67.411			

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.012
	261.27 2356.3		

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	56.506 56.823 136.95 54.493			

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	89.024 2.0017 53.150 1964.2			

CELL TEMP. = 78.704 HEATER TEMP = 89.237 COOLER TEMP = 54.904

NASA-LEWIS PRELIMINARY DATA 04/01/76 CADDETT REC 04/01/76 17:21:05.019 FAC SEX15 PGM C003 RDG 2730

LEANOUT TO CL APP. 25 BTDC 59 DEG. 0% HUM MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.880 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	57.565	28.897	104.57	470.45	0.060002	14.300

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	66.793	5.4650	44.997	45.500	41.497	6.0576

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	59.509	2.8954	3.7321	9762.1	1.2481	-23.891

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	1.2481	29.429	0.89279	0.020501	65.328

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.088207	0.088196	1.3165	2350.2	2352.1	146.27	65.455

WET CORRECTION FACTOR = 0.86556 EXHAUST MOLE. WT. = 27.048 EXHAUST DENSITY = 0.070035 EXHAUST FLOW RATE = 7310.7

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	1950.0	154.06	9.1655	9.6757	0.10107	
CORRECTED CONC. TO WET BASIS			7.9333	8.3749	0.087482	

	HC	NOX	CO
EMISSION RATE	0.51179	0.13402	42.107
EMISSION MASS/MODE	0.051179	0.013402	4.2107
EMISSION MASS/RATED HP	0.00031987	8.3765E-05	0.026317
MODE EMIS./STD. CYCLE %	16.835	5.5843	62.659

CAL. FUEL AIR RATIO = 0.087868 MEAS. FUEL AIR RATIO = 0.088207 DIFF MEAS. & CAL. F/A PERCENT = -0.38510

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	323.18	332.84	333.82	110.68

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1813.8	-454.00	674.52	1116.8	1138.3	1136.8

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 18.179
	177.84	209.59	68.979	

DYAO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 28.961
	141.25	2299.7	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	57.212	57.565	136.27	55.078

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	88.980	1.0716	53.259	1451.1

CELL TEMP. = 78.165 HEATER TEMP = 89.057 COOLER TEMP = 55.489

NASA-LEWIS PRELIMINARY DATA 04/01/76 CADDEII REC 04/01/76 17:26:31.071 FAC SEX15 PGM C003 RDG 2731

LEANOUT TO CL APP-25 BTDC 59 DEG. 0% HUM MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.890 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	58.135	28.890	209.59	967.46	0.11289	14.672

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	F/FID
	65.565	5.3417	45.030	81.274	76.577	6.0687

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	61.205	3.0452	3.6513	10041.	1.1477	-24.401

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	1.1477	43.620	0.81679	0.018756	157.11

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.079152	0.079143	1.1814	2699.6	2702.0	293.85	151.04

WET CORRECTION FACTOR = 0.85383 EXHAUST MOLE. WT. = 27.749 EXHAUST DENSITY = 0.071848 EXHAUST FLOW RATE = 14532.

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1243.5	384.90	6.5277	11.102	0.047985
CORRECTED CONC. TO WET BASIS			5.5735	9.4790	0.040971

EMISSION RATE	HC	NOX	CO
	0.64878	0.66565	58.806
EMISSION MASS/MODE	0.0032439	0.0033282	0.29403
EMISSION MASS/RATED HP	2.0274E-05	2.0801E-05	0.0018377
MODE EMIS./STD. CYCLE %	1.0671	1.3868	4.3754

CAL. FUEL AIR RATIO = 0.081203 MEAS. FUEL AIR RATIO = 0.079152 DIFF MEAS. & CAL. F/A PERCENT = 2.5915

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	411.77	431.76	416.61	124.31

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1470.5	-84.498	877.01	1288.3	1362.0	1363.5

ENGINE OIL	EQ ILY	SOILT	OILP	MANIFOLD PRESSURE = 27.937
	181.30	208.51	70.991	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.020
	292.38	2628.9	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	57.764	58.135	83.863	55.040

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	89.547	2.9920	53.292	2373.4

CELL TEMP. = 79.781 HEATER TEMP = 88.781 COOLEP TEMP = 54.626

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NASA-LEWIS PRELIMINARY DATA 04/01/76 CADDEII REC 04/01/76 17:29:26.234 FAC SEX15 PGM C003 ROG 2732

LEANOUT TO CL APP 25 BTDC 59 DEG. 0% HUM MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.890 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	58.497	28.832	166.54	759.29	0.085422	14.482

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	66.650	5.3873	45.001	60.065	59.886	6.0558

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	61.529	3.0056	3.7775	9968.7	1.0782	-24.777

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	1.0782	0.21602	0.78752	0.018084	119.49

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.078871	0.078862	1.1772	2430.0	2431.1	258.43	119.57

WET CORRECTION FACTOR = 0.85732 EXHAUST MJLE. WT. = 27.771 EXHAUST DENSITY = 0.071906 EXHAUST FLOW RATE = 11393.

MEASURED CONC.	PART PER MILLION WFT		PER CENT	
	HC PPM	NOX PPM	CO DRY	O2 DRY
	1378.7	730.19	6.0833	11.364
CORRECTED CONC. TO WET BASIS			5.2153	9.7423
				0.077543

EMISSION RATE	HC	NOX	CO
	0.56393	0.99000	43.139
EMISSION MASS/MODE	0.046995	0.082500	3.5949
EMISSION MASS/RATED HP	0.00029372	0.00051563	0.022468
MODE EMLS./STO. CYCLE %	15.459	34.375	53.496

CAL. FUEL AIR RATIO = 0.080072 MEAS. FUEL AIR RATIO = 0.078871 DIFF MEAS. & CAL. F/A PERCENT = 1.5222

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	387.64	402.32	414.10	122.10

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1550.4	-400.41	1027.2	1324.2	1309.0	1310.5

ENGINE OIL	EOILT	SOILT	OILT	MANIFOLD PRESSURE = 26.023
	188.41	113.88	69.739	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.020
	244.39	2344.2	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	58.226	58.497	76.893	54.717

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	89.862	1.0779	53.267	1454.2

CELL TEMP. = 80.734 HEATER TEMP = 88.642 COOLER TEMP = 55.300

NASA-LEWIS PRELIMINARY DATA 04/01/76 CADDE11 REC 04/01/76 17:32:36.711 FAC SEX15 PGM C003 RDG 2733

LEANOUT TO CL APP 25 BTDC 59 DEG. 0% HUM MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.890 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 59.608 PRESS 28.885 CFM 103.92 DRY FLOW 467.49 VAPOR FLOW 0.049179 PRESS TOTAL 14.304

COMB. FUEL TEMP 69.253 PRESS 5.4806 DENSITY 44.931 TURBO FLOW 43.683 FLOW TRON 40.246 FPIP 6.1041

COOLING AIR TEMP 61.989 UDEL-HOOD 3.0175 DEL-HOOD 3.5879 FLOW 9990.7 REL-HUM 0.95705 DEW-POINT -25.337

REL-HUM 1 0.95705 2 0.31603 HUMIDITY 0.73639 % H2O VAPOR CORRECTED HP 0.016910 66.396

ENG. COND. F/A DRY 0.086090 F/A WET 0.086081 EQU. RATIO 1.2849 RPM-1 2350.6 RPM-2 2351.9 TORQUE 148.26 BHP 66.358

WET CORRECTION FACTOR = 0.86710 EXHAUST MOLE. WT. = 27.207 EXHAUST DENSITY = 0.070445 EXHAUST FLOW RATE = 7208.2

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 1843.4 NOX PPM 225.24 CO DRY 8.1009 CO2 DRY 10.245 O2 DRY 0.10105
CORRECTED CONC. TO WET BASIS CO 7.0243 CO 8.8831 CO 0.087620

EMISSION RATE HC 0.47702 NOX 0.19321 CO 36.759
EMISSION MASS/MODE 0.047702 0.019321 3.6759
EMISSION MASS/RATED HP 0.00029814 0.00012075 0.022975
MODE EMIS./STD. CYCLE % 15.691 8.0503 54.702

CAL. FUEL AIR RATIO = 0.085107 MEAS. FUEL AIR RATIO = 0.086090 DIFF MEAS. & CAL. F/A PERCENT = -1.1415

CYL TEMP DEG. F CYL-1 335.33 CYL-2 345.98 CYL-3 344.82 CYL-4 114.08

EXT GAS TEMP DEG. F EXT-1 1729.9 EXT-2 -323.56 EXT-3 827.10 EXT-4 1090.3 SEXT-1 1156.5 SEXT-2 1155.1

ENGINE OIL EOILT 187.23 SOILT 123.12 OILP 69.899 MANIFOLD PRESSURE = 18.147

DYND COND. TORQUE 150.37 RPM 2326.9 CYL. RACK PRESSURE = 28.957

INDUCTION AIR IAIRT1 59.283 IAIRT2 59.608 TAIRT1 102.26 TAIRT2 55.228

ORIFICE AIR TEMP 90.254 DELTAP 2.016P ORFP 53.285 FLOW 1969.0

CELL TEMP. = 80.699 HEATER TEMP = 88.525 COOLER TEMP = 55.615

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NASA-LEWIS PRELIMINARY DATA 04/01/76 CADDEII REC 04/01/76 17:44:53.055 FAC SEX15 PGM C003 RDG 2735

LEANOUT TO CL APP 25 BTDC 59 DEG. 0% HUM MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.890 RATED HP = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	57.882	28.840	208.38	961.77	0.11034	14.673

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	64.497	5.3432	45.058	77.798	76.334	5.9601

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	61.223	2.9594	3.6919	9882.5	1.1389	-24.532

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	1.1389	41.136	0.80307	0.018441	157.32

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.079368	0.079359	1.1846	2702.2	2704.2	293.43	150.97

WET CORRECTION FACTOR = 0.85429 EXHAUST MOLE. WT. = 27.731 EXHAUST DENSITY = 0.071803 EXHAUST FLOW RATE = 14459.

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1283.3	254.11	6.4702D	11.227	0.021242
CORRECTED CONC. TO WET BASIS			5.5275	9.5910	0.018147

EMISSION RATE	HC	NOX	CO
	0.66616	0.43723	58.024
EMISSION MASS/MODE	0.0033308	0.0021861	0.29012
EMISSION MASS/RATED HP	2.0817E-05	1.3663E-05	0.0018132
MODE EMISS./STD. CYCLE %	1.0957	0.91089	4.3173

CAL. FUEL AIR RATIO = 0.081087 MEAS. FUEL AIR RATIO = 0.079368 DIFF MEAS. & CAL. F/A PERCENT = 2.1654

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	426.07	444.48	438.33	126.53

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	887.35	50.702	941.31	1216.5	1408.4	1409.2

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 27.989
	187.88	239.11	70.995	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.055
	296.89	2674.8	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	57.565	57.882	61.411	55.141

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	88.587	0.082708	53.231	299.99

CELL TEMP. = 79.093 HEATER TEMP = 89.110 COOLER TEMP = 55.103

NASA-LEWIS PRELIMINARY DATA 04/01/76 CADDEII REC 04/01/76 17:50:21.041 FAC SEX15 PGM C003 RDG 2736

LEANOUT TO CL APP 25 BTDC 59 DEG. 0% HUM MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.890 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 58.840 PRESS 28.832 CFM 156.68 DRY FLOW 759.87 VAPOR FLOW 0.094842 PRESS TOTAL 14.490

COMB. FUEL TEMP 67.142 PRESS 5.3936 DENSITY 44.988 TURBO FLOW 62.076 FLOW TRON 58.959 FPIP 6.0612

COOLING AIR TEMP 61.872 UDEL-HOOD 3.0457 DEL-HOOD 3.5970 FLOW 10042. REL-HUM 1.1822 DEW-POINT -23.961

REL-HUM 1 1.1822 2 13.895 HUMIDITY 0.87370 H2O VAPOR CORRECTED HP 0.020063 119.37

ENG. COND. F/A DRY 0.077591 F/A WET 0.077581 FOU. RATIO 1.1581 RPM-1 2429.9 RPM-2 2431.6 TORQUE 258.08 BHP 119.41

WET CORRECTION FACTOR = 0.85243 EXHAUST MOL. WT. = 27.875 EXHAUST DENSITY = 0.072176 EXHAUST FLOW RATE = 11346.

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 1396.4 NOX PPM 708.89 CO DRY 5.97950 CO2 DRY 11.423 O2 DRY 0.073007
CORRECTED CONC. TO WET BASIS CO DRY 5.0970 CO2 DRY 9.7373 O2 DRY 0.062233

EMISSION RATE HC 0.56881 NOX 0.95714 CO 41.986
EMISSION MASS/MODE HC 0.047401 NOX 0.079762 CO 3.4988
EMISSION MASS/RATED HP HC 0.00029625 NOX 0.00049851 CO 0.021868
MODE EMIS./STD. CYCLE % HC 15.592 NOX 33.234 CO 52.066

CAL. FUEL AIR RATIO = 0.079908 MEAS. FUEL AIR RATIO = 0.077591 DIFF MEAS. & CAL. F/A PERCENT = 2.9858

CYL TEMP DEG.F CYL-1 374.99 CYL-2 383.50 CYL-3 402.33 CYL-4 121.60

EXT GAS TEMP DEG.F EXT-1 1326.7 EXT-2 -325.30 EXT-3 1042.5 EXT-4 1301.5 SEXT-1 1312.3 SEXT-2 1313.4

ENGINE OIL EOILT 187.47 SOILT 146.55 OILP 69.987 MANIFOLD PRESSURE = 26.006

DYNO COND. TORQUE 245.33 RPM 2376.3 CYL. BACK PRESSURE = 28.967

INDUCTION AIR IAIRT1 58.533 IAIRT2 58.840 TAIRT1 183.43 TAIRT2 55.020

ORIFICE AIR TEMP 89.390 DELTAP 2.0405 ORFP 53.220 FLOW 1981.4

CELL TEMP. = 80.161 HEATER TEMP = 87.985 COOLER TEMP = 56.154

NASA-LEWIS PRELIMINARY DATA 04/01/76 CADDEII REC 04/01/76 17:53:14.566 FAC SEX15 PGM C003 RDG 2737

LEANOUT TO CL APP 25 BTDC 59 DEG. OZ HUM MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.890 RATED HP = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	59.852	28.898	104.12	468.11	0.063157	14.303

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	69.431	5.4818	44.927	41.938	39.913	6.0834

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	62.250	2.9151	3.6792	9799.2	1.2166	-23.406

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	1.2166	0.31403	0.94445	0.021688	64.952

ENG. COND.	F/A DRY	F/A WET	EQV. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.085265	0.085253	1.2726	2352.7	2354.5	144.86	64.894

WET CORRECTION FACTOR = 0.86371 EXHAUST MOLE. WT. = 27.269 EXHAUST DENSITY = 0.070607 EXHAUST FLOW RATE = 7195.9

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	1821.0	225.02	8.0896	10.294	0.090689	
CORRECTED CONC. TO WET BASIS			6.9871	8.8911	0.078329	

	HC	NOX	CO
EMISSION RATE	0.47042	0.19269	36.502
EMISSION MASS/MODE	0.047042	0.019269	3.6502
EMISSION MASS/RATED HP	0.00029401	0.00012043	0.022814
MODE EMIS./STD. CYCLE %	15.474	8.8287	54.318

CAL. FUEL AIR RATIO = 0.085049 MEAS. FUEL AIR RATIO = 0.085265 DIFF MEAS. & CAL. F/A PERCENT = -0.25334

CYL TEMP DEG. F.	CYL-1	CYL-2	CYL-3	CYL-4
	336.77	345.45	348.63	114.10

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1188.5	-229.09	895.29	1070.7	1168.6	1167.0

ENGINE OIL	ENILT	SOILT	OILP	MANIFOLD PRESSURE = 18.188
	187.16	149.02	69.651	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 28.954
	143.56	2312.6	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	59.500	59.852	114.14	55.473

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	89.748	3.9794	53.217	2729.9

CELL TEMP. = 81.157 HEATER TEMP = 87.978 COOLER TEMP = 56.379

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NASA-LEWIS PRELIMINARY DATA 04/01/76 CADDEII REC 04/01/76 17:57:13.252 FAC SEX15 PGM C003 R0G 2738

LEANOUT 25 BTDC TO CL APP 59 DEG. 0% HUM MCDE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.890 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 59.644 PRESS 28.893 CFM 208.82 DRY FLOW 963.34 VAPOR FLOW 0.13324 PRESS TOTAL 14.667

COMB. FUEL TEMP 67.062 PRESS 5.3594 DENSITY 44.990 TURBO FLOW 75.799 FLOW TRON 73.240 FPIP 6.0234

COOLING AIR TEMP 63.284 UDEL-HOOD 2.9834 DEL-HOOD 3.6908 FLOW 9927.5 RFL-HUM 1.2885 DEW-POINT -22.951

REL-HUM 1 1.2885 2 4.6185 HUMIDITY 0.96819 % H2O VAPOR CORRECTED HP 0.022233 157.17

ENG. COND. F/A DRY 0.076027 F/A WET 0.076017 EQU. RATIO 1.1347 RPM-1 2704.0 RPM-2 2706.1 TORQUE 292.99 BHP 150.84

WET CORRECTION FACTOR = 0.85202 EXHAUST MOLE. WT. = 28.004 EXHAUST DENSITY = 0.072509 EXHAUST FLOW RATE = 14297.

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM NOX PPM CO DRY CO2 DRY O2 DRY
1120.1 486.27 5.2871 11.841 0.050805
CORRECTED CONC. TO WET BASIS 4.5047 10.088 0.043287

EMISSION RATE HC 0.57494 NOX 0.82735 CO 46.759
EMISSION MASS/MODE 0.0028747 0.0041368 0.23380
EMISSION MASS/RATED HP 1.7967E-05 2.5855E-05 0.0014612
MODE EMISS./STD. CYCLE % 0.94563 1.7237 3.4791

CAL. FUEL AIR RATIO = 0.078245 MEAS. FUEL AIR RATIO = 0.076027 DIFF MEAS. & CAL. F/A PERCENT = 2.9169

CYL TEMP DEG. F CYL-1 431.09 CYL-2 442.50 CYL-3 437.68 CYL-4 128.54

EXT GAS TEMP DEG. F EXT-1 1591.8 EXT-2 114.69 EXT-3 1030.1 EXT-4 1273.2 SEXT-1 1411.5 SEXT-2 1412.3

ENGINE OIL ENTLT 187.72 SOILT 173.97 OILP 71.087 MANIFOLD PRESSURE = 27.980

DYNO COND. TORQUE 292.89 RPM 2607.9 CYL. BACK PRESSURE = 29.063

INDUCTION AIR IAIRT1 59.328 IAIRT2 59.644 TAIRT1 78.099 TAIRT2 55.153

ORIFICE AIR TEMP 90.106 DELTAP 2.0238 ORFP 53.192 FLOW 1972.5

CELL TEMP. = 81.914 HEATER TEMP = 87.902 COOLER TEMP = 55.165

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NASA-LEWIS PRELIMINARY DATA 04/01/76 CADDELL REC 04/01/76 18:00:07.992 FAC SEX15 PGM C003 RDG 2739

LEANOUT 25 BTDC TO CL APP 59 DEG. OZ HUM MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.890 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 56.904 PRESS 28.912 CFM 167.53 DRY FLOW 763.78 VAPOR FLOW 0.10913 PRESS TOTAL 14.487

COMB. FUEL TEMP 65.449 PRESS 5.4044 DENSITY 45.033 TURBO FLOW 59.040 FLOW TRON 57.354 FPIP 6.0597

COOLING AIR TEMP 60.330 UDEL-HOOD 3.0103 DEL-HOOD 3.6535 FLOW 9977.4 RFL-HUM 1.4505 DEW-POINT -22.761

REL-HUM 1 1.4505 2 5.1205 HUMIDITY 1.0002 % H2O VAPOR 0.022967 CORRECTED HP 118.99

ENG. COND. F/A DRY 0.075092 F/A WET 0.075081 EQU. RATIO 1.1208 RPM-1 2433.2 RPM-2 2435.3 TORQUE 257.46 BHP 119.28

WET CORRECTION FACTOR = 0.85409 EXHAUST MOLE. WT. = 28.082 EXHAUST DENSITY = 0.072710 EXHAUST FLOW RATE = 11294.

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 1231.1 NOX PPM 1025.0 CO DRY 4.80320 CO2 DRY 12.045 O2 DRY 0.12507
CORRECTED CONC. TO WET BASIS CO 4.1023 CO2 10.287 O2 0.10682

118

EMISSION RATE HC 0.49920 NOX 1.3777 CO 33.639
EMISSION MASS/MODE 0.041600 0.11481 2.8032
EMISSION MASS/RATED HP 0.00026000 0.00071754 0.017520
MODE EMIS./STD. CYCLE % 13.684 47.836 41.715

CAL. FUEL AIR RATIO = 0.077028 MEAS. FUEL AIR RATIO = 0.075092 DIFF MEAS. & CAL. F/A PERCENT = 2.5779

CYL TEMP DEG.F CYL-1 396.12 CYL-2 406.57 CYL-3 418.28 CYL-4 422.36

EXT GAS TEMP DEG.F EXT-1 1103.0 EXT-2 -290.75 EXT-3 1093.3 EXT-4 1371.3 SEXT-1 1344.9 SEXT-2 1346.0

ENGINE OIL EOILT 187.52 SOILT 251.54 OILP 69.839 MANIFOLD PRESSURE = 26.216

DYNO COND. TORQUE 253.00 RPM 2393.3 CYL. BACK PRESSURE = 28.999

INDUCTION AIR IAIRT1 56.615 IAIRT2 56.904 TAIRT1 90.416 TAIRT2 54.878

ORIFICE AIR TEMP 87.512 DELTAP 2.9752 ORFP 53.301 FLOW 2371.4

CELL TEMP. = 79.825 HEATER TEMP = 87.888 COOLER TEMP = 55.813

NASA-LEWIS PRELIMINARY DATA 04/01/76 CADDEII REC 04/01/76 18:03:05.218 FAC SEX15 PGM C003 RDG 2740

LEANOUT 25 BTDC TO CL APP 59 DEG. 0% HUM MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.890 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	58.063	28.892	103.11	463.34	0.068848	14.296

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	68.118	5.4917	44.962	41.947	37.882	6.1065

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	60.556	2.9857	3.5652	9931.6	1.4277	-22.511

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	1.4277	0.33203	1.0401	0.023885	66.120

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.081758	0.081746	1.2203	2354.0	2354.9	147.71	66.206

WET CORRECTION FACTOR = 0.86198 EXHAUST MOLE. WT. = 27.541 EXHAUST DENSITY = 0.071310 EXHAUST FLOW RATE = 7029.7

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1654.3	352.82	6.7865	10.984	0.096230
CORRECTED CONC. TO WET BASIS			5.8498	9.4683	0.082948

EMISSION RATE	HC	NOX	CO
	0.41748	0.29515	29.855
EMISSION MASS/MODE	0.041748	0.29515	2.9855
EMISSION MASS/RATED HP	0.00026093	0.00018447	0.018659
MODE EMIS./STD. CYCLE %	13.733	12.298	44.427

CAL. FUEL AIR RATIO = 0.081820 MEAS. FUEL AIR RATIO = 0.081758 DIFF MEAS. & CAL. F/A PERCENT = 0.075747

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	342.38	349.50	349.75	113.73

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	909.44	-99.012	1000.6	1177.8	1185.6	1184.0

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 18.117
	187.39	114.75	69.967	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 28.934
	140.66	2327.3	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	57.692	58.063	107.54	55.472

GRIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	87.958	1.0488	53.258	1437.2

CELL TEMP. = 80.663 HEATER TEMP = 87.867 COOLER TEMP = 56.352

NASA-LEWIS PRELIMINARY DATA 04/01/76 CAODE11 REC 04/01/76 18:05:46.063 FAC SEX15 PGM C003 R06 2741

LEANOUT 25 BTDC TO CL APP 59 DEG. OR HUM MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.890 RATED HP = 160.00 HC RATIO = 2.1250

COMP. AIR TEMP 58.714 PRESS 28.870 CFM 209.24 DRY FLOW 963.52 VAPOR FLOW 0.14794 PRESS TOTAL 14.668

COMP. FUEL TEMP 65.987 PRESS 5.3621 DENSITY 45.018 TURBO FLOW 77.581 FLOW TRON 73.678 FPIP 5.9946

COOLING AIR TEMP 62.187 UDEL-HOOD 3.0670 DEL-HOOD 3.7495 FLOW 10082. REL-HUM 1.4788 DEN-POINT -21.921

REL-HUM 1 1.4788 2 16.018 HUMIDITY 1.0748 % H2O VAPOR CORRECTED HP 0.024680 157.78

ENG. COND. F/A DRY 0.076468 F/A WET 0.076456 EQU. RATIO 1.1413 RPM-1 2702.3 RPM-2 2704.4 TORQUE 294.34 BRP 151.45

WET CORRECTION FACTOR = 0.85410 EXHAUST MOLE. WT. = 27.957 EXHAUST DENSITY = 0.072414 EXHAUST FLOW RATE = 14325.

MEASURED CONC. HC PPM 1099.8 NOX PPM 564.50 CO DRY 5.3114 CO2 DRY 11.802 O2 DRY 0.060566
CORRECTED CONC. TO WET BASIS HC 4.5364 NOX 10.080 CO2 0.051729

EMISSION RATE HC 0.56560 NOX 0.96229 CO 47.179
EMISSION MASS/MODE HC 0.0028280 NOX 0.0048115 CO 0.23590
EMISSION MASS/RATED HP HC 1.7675E-05 NOX 3.0072E-05 CO 0.0014743
MODE EMIS./STD. CYCLE HC 0.93026 NOX 2.0048 CO 3.5104

CAL. FUEL AIR RATIO = 0.078274 MEAS. FUEL AIR RATIO = 0.076468 DIFF MEAS. & CAL. F/A PERCENT = 2.3617

CYL TEMP DEG.F CYL-1 415.01 CYL-2 430.38 CYL-3 425.49 CYL-4 126.56

EXE GAS TEMP DEG.F EXT-1 1040.2 EXT-2 177.64 EXT-3 1045.4 EXT-4 1278.6 SEXT-1 1393.3 SEXT-2 1393.9

ENGINE OIL INLET 187.75 SOILT 217.81 OILP 70.087 MANIFOLD PRESSURE = 27.978

DYNO COND. TORQUE 283.92 RPM 2642.0 CYL. BACK PRESSURE = 29.028

INDUCTION AIR IAIQT1 58.407 IAIQT2 58.714 TAIRT1 121.19 TAIRT2 56.112

ORIFICE AIR TEMP 88.334 DELTAP 2.0254 ORFP 53.271 FLOW 1976.4

CELL TEMP. = 81.069 HEATER TEMP = 88.248 COOLER TEMP = 56.720

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LEANOUT 25 BTDC TO CL APP. 59 DEG. CR HUM MODE = 0.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 28.890 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP 58.850	PRESS 28.898	GFM 168.02	DRY FLOW 765.17	VAPOR FLOW 0.12096	PRESS TOTAL 14.486
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COMB. FUEL	TEMP 67.053	PRESS 5.3957	DENSITY 44.990	TURBO FLOW 58.527	FLOW TRON 57.612	FPIP 6.0627
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COOLING AIR	TEMP 62.142	UDEL-HOOD 3.0803	DEL-HOOD 3.8157	FLOW 10106.	REL-HUM 1.4964	DEW-POINT -21.746
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REL-HUM	1 1.4964	2 18.100	HUMIDITY 1.1066	% H2O VAPOR 0.025411	CORRECTED HP 119.66
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ENG. COND.	F/A DRY 0.075293	F/A WET 0.075281	EQU. RATIO 1.1238	RPM-1 2432.0	RPM-2 2433.7	TORQUE 258.47	BHP 119.69
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WET CORRECTION FACTOR = 0.85425 EXHAUST MOLE. WT. = 28.055 EXHAUST DENSITY = 0.072667 EXHAUST FLOW RATE = 11324.

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM 1250.4	NOX PPM 1094.3	CO DRY 4.8585	CO2 DRY 12.046	O2 DRY 0.12267
CORRECTED CONC. TO WET BASIS					
			CO DRY 4.1503	CO2 DRY 10.290	O2 DRY 0.10479

EMISSION RATE	HC	NOX	CO
	0.50835	1.4747	34.122
	0.042362	0.12289	2.8435
	0.00026476	0.00076806	0.017772
EMISSION MASS/RATED HP			
	13.935	51.204	42.313
MODE EMIS./STD. CYCLE %			

CAL. FUEL AIR RATIO = 0.077144 MEAS. FUEL AIR RATIO = 0.075293 DIFF MEAS. & CAL. F/A PERCENT = 2.6577

CYL TEMP DEG.F	CYL-1 395.44	CYL-2 407.76	CYL-3 418.15	CYL-4 123.72
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EXT GAS TEMP DEG.F	EXT-1 1302.3	EXT-2 -117.73	EXT-3 956.32	EXT-4 1299.6	SEXT-1 1341.9	SEXT-2 1342.8
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ENGINE OIL	ENILT 187.52	SOILT 250.90	OILP 69.615	MANIFOLD PRESSURE = 26.124
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DYNO COND.	TORQUE 246.03	RPM 2372.5	CYL. BACK PRESSURE = 28.963
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INDUCTION AIR	IAIRT1 58.524	IAIRT2 58.850	TAIRT1 78.574	TAIRT2 55.421
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ORIFICE AIR	TEMP 88.858	DELTAP 2.0288	ORFP 53.260	FLOW 1977.0
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CELL TEMP. = 82.046 HEATER TEMP = 87.971 COOLER TEMP = 56.785

NASA-LEWIS PRELIMINARY DATA 04/01/76 CADDET REC 04/01/76 18:12:56.792 FAC SEX15 PGM 003 R06 2788

LEANOUT 25 BTDC TO CL APP 59 DEG. O2 HUM MEDE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 28.890 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	60.177	28.895	103.40	466.31	0.078469	14.302

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	70.235	5.4917	44.905	42.659	38.584	6.0889

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	62.673	3.1160	3.6286	10171.	1.5063	-21.161

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	1.5063	0.31003	1.1830	0.027166	65.768

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.083100	0.083086	1.2403	2352.4	2354.2	146.63	65.677

WET CORRECTION FACTOR = 0.86752 EXHAUST MOLE. WT. = 27.436 EXHAUST DENSITY = 0.071098 EXHAUST FLOW RATE = 7080.2

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1679.6	366.47	6.7928	11.027	0.12081
CORRECTED CONC. TO WET BASIS					
			5.8928	9.5665	0.10481

EMISSION RATE	HC	NOX	CO
	0.42691	0.30877	30.291
	0.042691	0.030877	3.0291
	0.00026682	0.00019298	0.018932
EMISSION MASS/RATED HP			
	14.043	12.865	45.075
MODE EMTS./STD. CYCLE %			

CAL. FUEL AIR RATIO = 0.081701 MEAS. FUEL AIR RATIO = 0.083100 DIFF MEAS. & CAL. F/A PERCENT = -1.6831

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	334.34	343.90	346.24	114.24

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1051.0	-16.179	1029.1	1093.6	1167.3	1166.2

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 18.129
	187.11	153.38	69.535	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 28.970
	139.10	2287.2	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	59.843	60.177	63.715	56.048

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	89.705	3.0301	53.361	2387.5

CFLI TEMP. = 81.659 HEATER TEMP = 88.013 COOLER TEMP = 57.215

NASA-LEWIS PRELIMINARY DATA 04/01/76 CADDEII REC 04/01/76 18:22:16.050 FAC SEX15 PGM C003 RDG 2744

LEANOUT 25BTDC TO CL APP 59 DEG OX HUM MCDE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.890 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 57.656 PRESS 28.889 CFM 208.70 DRY FLOW 961.74 VAPOR FLOW 0.17031 PRESS TOTAL 14.666

COMB. FUEL TEMP 65.556 PRESS 5.3672 DENSITY 45.330 TURBO FLOW 73.720 FLOW TRON 71.335 FPIP 6.0084

COOLING AIR TEMP 61.268 UDEL-HOOD 3.0828 DEL-HOOD 3.7235 FLOW 10110. REL-HUM 1.7713 DEW-POINT -20.336

REL-HUM 1 1.7713 2 1.241 HUMIDITY 1.2396 % H2O VAPOR CORRECTED HP 0.028466 156.24

ENG. COND. F/A DRY 0.074173 F/A WET 0.074160 EQU. RATIO 1.1071 RPM-1 2709.7 RPM-2 2711.7 TORQUE 291.21 BHP 150.25

WET CORRECTION FACTOR = 0.85734 EXHAUST MOLE. WT. = 28.159 EXHAUST DENSITY = 0.072910 EXHAUST FLOW RATE = 14171.

MEASURED CONC. HC PPM 996.80 NOX PPM 811.90 CO DRY 3.99000 PER CENT CO2 DRY 12.501 C2 DRY 0.069287
CORRECTED CONC. TO WET BASIS CO 3.4208 PER CENT CO2 DRY 10.718 C2 DRY 0.059403

EMISSION RATE HC 0.50713 NOX 1.3692 CO 35.195
EMISSION MASS/MODE HC 0.0025356 NOX 0.0068460 CO 0.17598
EMISSION MASS/RATED HP HC 1.5848E-05 NOX 4.2787E-05 CO 0.0010999
MODE EMIS./STD. CYCLE % HC 0.83409 NOX 2.8525 CO 2.6187

CAL. FUEL AIR RATIO = 0.075325 MEAS. FUEL AIR RATIO = 0.074173 DIFF MEAS. & CAL. F/A PERCENT = 1.5525

CYL TEMP DEG.F CYL-1 438.99 CYL-2 452.06 CYL-3 445.55 CYL-4 129.45

EXT GAS TEMP DEG.F EXT-1 1082.1 EXT-2 183.40 EXT-3 1086.3 EXT-4 1304.5 SEXT-1 1446.7 SEXT-2 1447.6

ENGINE OIL EOILT 187.74 SOILT 209.02 OILP 70.631 MANIFOLD PRESSURE = 28.065

DYNO COND. TORQUE 294.57 RPM 2598.1 CYL. BACK PRESSURE = 29.019

INDUCTION AIR IAIRT1 57.312 IAIRT2 57.656 TAIRT1 127.50 TAIRT2 55.631

ORIFICE AIR TEMP 88.010 DELTAP 2.0330 DRFP 53.248 FLOW 1980.5

CELL TEMP. = 80.875 HEATER TEMP = 88.200 COOLER TEMP = 55.561

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NASA-LEWIS PRELIMINARY DATA 04/01/76 CADDETT REC 04/01/76 18:26:28.648 FAC SEX15 PGM C003 RDG 2745

LEANOUT 25RTDC TO CL APP 59 DEG 0% HUM MCDE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.890 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 58.352 PRESS 28.889 CFM 169.94 DRY FLOW 773.81 VAPOR FLOW 0.14054 PRESS TOTAL 14.486

COMB. FUEL TEMP 67.151 PRESS 5.4104 DENSITY 44.987 TURBO FLOW 63.082 FLOW TRON 58.605 FPIP 6.0801

COOLING AIR TEMP 61.502 UDEL-HOOD 3.0548 DEL-HOOD 3.7692 FLOW 10059. REL-HUM 1.7501 DEW-POINT -20.181

REL-HUM 1 1.7501 2 31.817 HUMIDITY 1.2714 % H2O VAPOR 0.029195 CORRECTED HP 119.77

ENG. COND. F/A DRY 0.075736 F/A WET 0.075722 EQU. RATIO 1.1304 RPM-1 2434.3 RPM-2 2436.3 TORQUE 258.59 BHP 119.86

WET CORRECTION FACTOR = 0.87011 EXHAUST MOLE. WT. = 28.028 EXHAUST DENSITY = 0.072571 EXHAUST FLOW RATE = 11472.

MEASURED CONC. HC PPM 1067.4 NOX PPM 1476.9 CO DRY 3.74370 PER CENT CO2 DRY 12.511 C2 DRY 0.21688
CORRECTED CONC. TO WET BASIS HC 3.2574 NOX 10.886 CO 0.18871

EMISSION RATE HC 0.43961 NOX 2.0163 CO 27.130
EMISSION MASS/MODE 0.036634 0.16803 2.2609
EMISSION MASS/RATED HP 0.00022896 0.0010502 0.014130
MODE EMIS./STD. CYCLE % 12.051 70.011 33.644

CAL. FUEL AIR RATIO = 0.074411 MEAS. FUEL AIR RATIO = 0.075736 DIFF MEAS. & CAL. F/A PERCENT = -1.749%

CYL TEMP DEG.F CYL-1 399.70 CYL-2 409.45 CYL-3 413.86 CYL-4 124.60

EXT GAS TEMP DEG.F EXT-1 1142.8 EXT-2 -454.00 EXT-3 772.97 EXT-4 1353.8 SEXT-1 1376.9 SEXT-2 1377.6

ENGINE OIL EOILT 187.46 SOILT 262.91 OILP 69.815 MANIFOLD PRESSURE = 26.357

DYNO COND. TORQUE 264.98 RPM 2346.5 CYL. BACK PRESSURE = 28.966

INDUCTION AIR IAIRT1 58.027 IAIRT2 58.352 TAIRT1 192.49 TAIRT2 55.454

ORIFICE AIR TEMP 88.779 DELTAP 2.9619 ORFP 53.279 FLOW 2363.6

CELL TEMP. = 81.712 HEATER TEMP = 88.338 COOLER TEMP = 56.729

NASA-LEWIS	PRELIMINARY DATA	04/01/76	CADDEI	REC 04/01/76 18:32:23.083	FAC SEX15	PGM 0003	RDG 2746
LEANOUT 25RTDC TO CL APP 59 DEG OX HUM		MODE = 5.0000		NO. SCANS = 5			
ENGINE TIMING = 25.000		DEG.	BAROMETRIC PRESSURE = 28.890		RATED HP. = 160.00		HC RATIO = 2.1250
COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL	
	59.897	28.884	103.11	462.98	0.085331	14.300	
COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP	
	71.002	5.5106	44.885	38.823	36.295	6.0396	
COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT	
	62.196	3.0117	3.6067	9980.0	1.6588	-20.161	
REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP		
	1.6588	0.26203	1.2902	0.029626	65.551		
ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.078394	0.078379	1.1701	2352.4	2354.6	146.20	65.483
WET CORRECTION FACTOR = 0.86403		EXHAUST MOLE. WT. = 27.810		EXHAUST DENSITY = 0.072006		EXHAUST FLOW RATE = 6934.9	
MEASURED CONC.	PART PER MILLION WET		PER CENT				
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY		
	1516.9	598.78	5.1959D	11.779	0.12757		
CORRECTED CONC. TO WET BASIS			4.4894	10.177	0.11023		
EMISSION RATE	HC	NOX	CO				
	0.37766	0.49414	22.603				
EMISSION MASS/MODE	0.037766	0.049414	2.2603				
EMISSION MASS/RATED HP	0.00023604	0.00030884	0.014127				
MODE EMIS./STD. CYCLE %	12.423	20.589	33.635				
CAL. FUEL AIR RATIO = 0.078068		MEAS. FUEL AIR RATIO = 0.078394		DIFF MEAS. & CAL. F/A PERCENT = -0.41529			
CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4			
	337.75	344.52	343.59	115.02			
EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2	
	1080.2	-383.55	1191.1	1139.6	1183.4	1182.3	
ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 18.121			
	186.95	189.84	69.903				
DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 28.934				
	150.85	2318.4					
INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2			
	59.527	59.897	149.90	55.959			
ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW			
	89.984	0.074007	53.210	273.98			
CELL TEMP. = -82.240	HEATER TEMP = 88.504		COOLER TEMP = 56.721				

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NASA-LEWIS PRELIMINARY DATA 04/01/76 CADDEII REC 04/01/76 18:41:20.680 FAC SEX15 PGM C003 RDG 2747

LEANOUT 25BTDC TO CL APP 59 DEG OX HUM MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.890 RATED HP = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 57.927 PRESS 28.904 CFM 207.74 DRY FLOW 956.67 VAPOR FLOW 0.17582 PRESS TOTAL 14.657

COMB. FUEL TEMP 65.924 PRESS 5.3714 DENSITY 45.020 TURBO FLOW 72.604 FLOW TRON 71.635 FPIP 6.0021

COOLING AIR TEMP 61.628 UDEL-HOOD 3.1296 DEL-HOOD 3.8323 FLOW 10196. REL-HUM 1.8193 DEW-POINT -19.896

REL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP
1.8193 31.245 1.2865 0.029543 156.33

ENG. COND. F/A DRY 0.074880 F/A WET 0.074866 EQU. RATIO 1.1176 RPM-1 2698.2 RPM-2 2700.3 TORQUE 292.70 BHP 150.37

WET CORRECTION FACTOR = 0.86143 EXHAUST MOLE. WT. = 28.099 EXHAUST DENSITY = 0.072756 EXHAUST FLOW RATE = 14135.

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 997.50 NOX PPM 742.25 CO DRY 3.92780 CO2 DRY 12.460 O2 DRY 0.064626
CORRECTED CONC. TO WET BASIS 3.3835 10.734 0.055671

EMISSION RATE HC NOX CO
EMISSION MASS/MODE 0.50621 1.2486 34.724
EMISSION MASS/RATED HP 0.0025311 0.0062430 0.17362
MODE EMIS./STD. CYCLE % 1.5819E-05 3.9019E-05 0.0010851
0.83258 2.6012 2.5836

CAL. FUEL AIR RATIO = 0.075250 MEAS. FUEL AIR RATIO = 0.074880 DIFF MEAS. & CAL. F/A PERCENT = 0.49424

CYL TEMP DEG.F CYL-1 442.25 CYL-2 452.43 CYL-3 446.46 CYL-4 129.61

EXT GAS TEMP DEG.F EXT-1 1973.9 EXT-2 164.65 EXT-3 1122.6 EXT-4 1280.3 SEXT-1 1452.3 SEXT-2 1452.7

ENGINE OIL EOILT 187.74 SOILT 215.82 OILP 69.875 MANIFOLD PRESSURE = 28.003

DYND COND. TORQUE 290.19 RPM 2658.8 CYL. BACK PRESSURE = 29.000

INDUCTION AIR IAIRT1 57.638 IAIRT2 57.927 TAIRT1 162.43 TAIRT2 55.672

ORIFICE AIR TEMP 89.059 DELTAP 2.0139 ORFP 53.247 FLOW 1969.8

CELL TEMP. = 81.219 HEATER TEMP = 88.878 COOLER TEMP = 55.255

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NASA-LEWIS PRELIMINARY DATA 04/01/76 CADDEII REC 04/01/76 18:48:38.646 FAC SEX15 PGM C003 RDG 2748

LEANOUT 25BTDC TO CL APP 59 DEG OX HUM MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.890 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	58.470	28.886	168.19	765.50	0.12978	14.482

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	67.142	5.4065	44.988	58.775	56.121	5.9910

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	61.691	3.1423	3.7902	10219.	1.6262	-20.986

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	1.6262	12.195	1.1867	0.027251	119.83

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.073312	0.073299	1.0942	2432.7	2434.3	258.87	119.91

WET CORRECTION FACTOR = 0.85788 EXHAUST MOLE. WT. = 28.232 EXHAUST DENSITY = 0.073098 EXHAUST FLOW RATE = 11241.

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1051.6	1439.7	3.7703D	12.550	0.16884
CORRECTED CONC. TO WET BASIS			3.2344	10.766	0.14484

EMISSION RATE	HC	NOX	CO	
	0.42441	1.9260	26.398	
	EMISSION MASS/MODE	0.035367	0.16050	2.1998
	EMISSION MASS/RATED HP	0.00022104	0.0010031	0.013749
MODE EMIS./STD. CYCLE %	11.634	66.876	32.735	

CAL. FUEL AIR RATIO = 0.074597 MEAS. FUEL AIR RATIO = 0.073312 DIFF MEAS. & CAL. F/A PERCENT = 1.7523

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	398.75	404.08	411.72	319.05

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	FXT-4	SEXT-1	SEXT-2
	598.35	-454.00	1143.2	1376.9	1368.9	1369.5

ENGINE OIL	EOILT	SOILT	OILT	MANIFOLD PRESSURE = 26.331
	187.32	271.55	69.811	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 28.973
	246.32	2371.0	

INDUCTIGN AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	58.126	58.470	151.56	55.567

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	89.853	2.0299	53.257	1975.7

CELL TEMP. = 82.838 HEATER TEMP = 89.189 COOLER TEMP = 57.071

NASA-LEWIS PRELIMINARY DATA 04/01/76 CADDEII REC 04/01/76 18:53:10.117 FAC SEX15 PGM C003 RDG 2749

LEANOUT 25BTDC TO CL APP 59 DEG 0% HUM MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.890 RATED HP = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 59.807 PRESS 28.887 CFM 102.66 DRY FLOW 460.93 VAPOR FLOW 0.071021 PRESS TOTAL 14.300

COMB. FUEL TEMP 70.520 PRESS 5.5106 DENSITY 44.898 TURBO FLOW 40.553 FLOW TRON 36.760 FPIP 6.0981

CCCLING AIR TEMP 62.025 UDEL-HOOD 3.0742 DEL-HOOD 3.5547 FLOW 10095. REL-HUM 1.3913 DEW-POINT -22.146

REL-HUM 1 1.3913 2 23.978 HUMIDITY 1.0736 % H2O VAPOR CORRECTED HP 64.979

ENG. COND. F/A DRY 0.079751 F/A WET 0.079738 EQU. RATIO 1.1903 RPM-1 2350.6 RPM-2 2352.3 TORQUE 145.06 BHP 64.922

WET CORRECTION FACTOR = 0.86917 EXHAUST MOL. WT. = 27.700 EXHAUST DENSITY = 0.071723 EXHAUST FLOW RATE = 6940.1

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	1581.1	602.08	5.2533D	11.753	0.13181	
CORRECTED CONC. TO WET BASIS			4.5660	10.215	0.11457	

	HC	NOX	CO
EMISSION RATE	0.39392	0.49724	23.006
EMISSION MASS/MODE	0.039392	0.049724	2.3006
EMISSION MASS/RATED HP	0.00024620	0.00031077	0.014378
MODE EMIS./STD. CYCLE %	12.958	20.718	34.234

CAL. FUEL AIR RATIO = 0.078206 MEAS. FUEL AIR RATIO = 0.079751 DIFF MEAS. & CAL. F/A PERCENT = -1.9373

CYL TEMP DEG. F CYL-1 337.85 CYL-2 342.42 CYL-3 343.89 CYL-4 -136.79

EXT GAS TEMP DEG. F EXT-1 830.20 EXT-2 -454.00 EXT-3 1263.1 EXT-4 1182.7 SEXT-1 1187.3 SEXT-2 1186.0

ENGINE OIL EOILT 186.87 SOILT 89.973 OILP 69.523 MANIFOLD PRESSURE = 18.125

DYNO COND. TORQUE 137.08 RPM 2308.2 CYL. BACK PRESSURE = 28.937

INDUCTION AIR IAIRT1 59.446 IAIRT2 59.807 TAIRT1 103.13 TAIRT2 56.040

ORIFICE AIR TEMP 90.751 DELTAP 1.0374 ORFP 53.271 FLOW 1425.8

CELL TEMP. = 82.345 HEATER TEMP = 89.410 COOLER TEMP = 57.008

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NASA-LEWIS PRELIMINARY DATA 04/01/76 CADDEII REC 04/01/76 18:57:03.048 FAC SEX15 PGM C003 RDG 2750

LEANOUT 25 BTDC TO CL APP 59 DEG 0% HUM MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.900 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 59.906 PRESS 28.927 CFM 209.65 DRY FLOW 965.64 VAPOR FLOW 0.14032 PRESS TOTAL 14.663

COMB. FUEL TEMP 68.949 PRESS 5.3975 DENSITY 44.939 TURBO FLOW 65.299 FLOW TRON 65.364 FPIP 6.0330

COOLING AIR TEMP 63.114 WDEL-HOOD 3.2563 DEL-HOOD 3.8898 FLOW 10423. REL-HUM 1.3407 DEW-POINT -22.481

REL-HUM 1 1.3407 2 16.824 HUMIDITY 1.0172 % H2O VAPOR CORRECTED HP 155.15

ENG. COND. F/A DRY 0.067690 F/A WFT 0.067680 EQU. RATIO 1.0103 RPM-1 2703.7 RPM-2 2705.8 TORQUE 289.55 BHP 149.06

WET CORRECTION FACTOR = 0.85635 EXHAUST MOLE. WT. = 28.639 EXHAUST DENSITY = 0.074153 EXHAUST FLOW RATE = 13905.

MEASURED CONC. PART PER MILLION WET HC PPM 793.08 NOX PPM 2131.0 CO DRY 1.5925D PER CENT CO2 DRY 13.572 O2 DRY 0.20290
CORRECTED CONC. TO WET BASIS CO 1.3638 PER CENT CO2 DRY 11.622 O2 DRY 0.17375

EMISSION RATE HC 0.39592 NOX 3.5263 CO 13.768
EMISSION MASS/MODE 0.0019796 0.017632 0.068840
EMISSION MASS/RATED HP 1.2372E-05 0.00011020 0.00043025
MODE EMIS./STD. CYCLE % 0.65118 7.3466 1.0244

CAL. FUEL AIR RATIO = 0.069907 MEAS. FUEL AIR RATIO = 0.067690 DIFF MEAS. & CAL. F/A PERCENT = 3.2756

CYL TEMP DEG.F CYL-1 421.85 CYL-2 431.95 CYL-3 431.31 CYL-4 330.69

EXT GAS TEMP DEG.F EXT-1 1298.1 EXT-2 246.77 EXT-3 1212.8 EXT-4 1391.2 SEXT-1 1453.0 SEXT-2 1453.0

ENGINE OIL EOILT 187.85 SOILT 144.06 OILP 69.551 MANIFOLD PRESSURE = 27.899

DYNO COND. TORQUE 282.83 RPM 2620.0 CYL. BACK PRESSURE = 29.009

INDUCTION AIR IAIRT1 59.572 IAIRT2 59.906 TAIRT1 65.138 TAIRT2 55.808

ORIFICE AIR TEMP 91.474 DELTAP 1.0587 DRFP 53.292 FLOW 1439.2

CELL TEMP. = 83.489 HEATER TEMP = 89.555 COOLER TEMP = 56.361

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NASA-LEWIS PRELIMINARY DATA 04/01/76 CADDEII REC 04/01/76 19:07:30.479 FAC SEX15 PGM C003 RDG 2751

LEANOUT 25 BTDC TO CL APP 59 DEG 0% HUM MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.900 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TFMP 57.773 PRESS 28.900 CFM 181.34 DRY FLOW 829.03 VAPOR FLOW 0.10212 PRESS TOTAL 14.540

COMB. FUEL TFMP 67.035 PRESS 5.3975 DENSITY 44.990 TURBO FLOW 56.707 FLOW TRON 56.325 FPIP 6.0447

COOLING AIR TEMP 61.142 UDEL-HOOD 3.2281 DEL-HOOD 3.8514 FLOW 10373. REL-HUM 1.2164 DEW-POINT -24.041

REL-HUM 1 2 HUMIDITY 0.86226 % H2O VAPOR CORRECTED HP 0.019800 119.86

ENG. COND. F/A DRY 0.067940 F/A WFT 0.067932 EQU. RATIO 1.0140 RPM-1 2431.4 RPM-2 2432.4 TORQUE 259.30 BHP 120.04

WET CORRECTION FACTOR = 0.85765 EXHAUST MOLE, WT. = 28.621 EXHAUST DENSITY = 0.074108 EXHAUST FLOW RATE = 11948.

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 293.53 NOX PPM 1576.7 CO DRY 2.4547 CO2 DRY 12.905 O2 DRY 0.67889
CORRECTED CONC. TO WET BASIS 2.1053 11.068 0.58225

EMISSION RATE HC 0.12591 NOX 2.2418 CO 18.262
EMISSION MASS/MODE 0.010492 0.18681 1.5219
EMISSION MASS/RATED HP 6.5577E-05 0.0011676 0.0095116
MODE EMIS./STD. CYCLE % 3.4514 77.839 22.647

CAL. FUEL AIR RATIO = 0.069958 MEAS. FUEL AIR RATIO = 0.067940 DIFF MEAS. & CAL. F/A PERCENT = 2.9697

CYL TEMP DEG.F CYL-1 402.51 CYL-2 411.63 CYL-3 374.06 CYL-4 189.95

EXT GAS TEMP DEG.F EXT-1 1285.7 EXT-2 -454.00 EXT-3 1099.3 EXT-4 1343.8 SEXT-1 1491.9 SEXT-2 1492.8

ENGINE OIL EOILT 187.34 SOILT 148.78 OILP 69.707 MANIFOLD PRESSURE = 27.245

DYNO COND. TORQUE 238.35 RPM 2355.7 CYL. BACK PRESSURE = 29.038

INDUCTION AIR IAIRT1 57.411 IAIRT2 57.773 TAIRT1 137.46 TAIRT2 55.351

ORIFICE AIR TEMP 90.149 DELTAP 1.0543 ORFP 53.292 FLOW 1438.0

CELL TEMP. = 82.108 HEATER TEMP = 89.970 COOLER TEMP = 56.658

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NASA-LEWIS PRELIMINARY DATA 04/01/76 CADDEI REC 04/01/76 19:11:46.024 FAC SEX15 PGM C003 RDG 2752

LEANOUT 25 BTDC TO CL APP 59 DEG 0% HUM MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.900 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	59.238	28.904	104.49	469.49	0.054291	14.309

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	70.431	5.5259	44.900	36.294	32.535	6.1176

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	61.628	3.1595	3.8121	10250.	1.0664	-24.662

REL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP
	1.0664	0.31603	0.80946	0.018588 65.116

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.069299	0.069291	1.0343	2353.6	2355.4	145.30	65.112

WET CORRECTION FACTOR = 0.85481 EXHAUST MOLE. WT. = 28.509 EXHAUST DENSITY = 0.073818 EXHAUST FLOW RATE = 6801.6

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	1104.2	1223.8	2.45240	13.112	0.28683	
CORRECTED CONC. TO WET BASIS			2.0963	11.208	0.24518	

	HC	NOX	CO
EMISSION RATE	0.26962	0.999055	10.352
EMISSION MASS/MODE	0.026962	0.099055	1.0352
EMISSION MASS/RATED HP	0.00016851	0.00061909	0.0064698
MODE EMIS./STD. CYCLE %	8.8692	41.273	15.404

CAL. FUEL AIR RATIO = 0.071561 MEAS. FUEL AIR RATIO = 0.069299 DIFF MEAS. & CAL. F/A PERCENT = 3.2639

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	346.51	350.28	355.30	420.22

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	858.04	-114.33	1485.6	1276.2	1263.7	1262.2

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 18.398
	186.78	198.67	69.563	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 28.931
	151.83	2278.2	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	58.868	59.238	67.939	56.048

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	90.899	2.9574	53.276	2357.3

CELL TEMP. = 82.293 HEATER TEMP = 90.074 COOLER TEMP = 56.945

NASA-LEWIS PRELIMINARY DATA 04/01/76 CADDEII REC 04/01/76 19:14:52.241 FAC SEX15- PGM C003 RDG 2753

LEANOUT 25 BTDC TO CL APP 59 DEG O3 HUM MCDE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.900 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	59.093	28.929	209.04	963.50	0.11122	14.668

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	68.279	5.3981	44.957	66.400	65.148	6.0396

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	62.718	3.1066	3.7528	10154.	1.0969	-24.487

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	1.0969	9.9830	0.80807	0.018556	154.64

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.067617	0.067609	1.0092	2701.9	2703.3	289.08	148.72

WET CORRECTION FACTOR = 0.85632 EXHAUST MOLE. WT. = 28.644 EXHAUST DENSITY = 0.074165 EXHAUST FLOW RATE = 13871.

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	820.08	2171.0	1.56900	13.584	0.20824
CORRECTED CONC. TO WFT BASIS			1.3436	11.633	0.17832

	HC	NOX	CO
EMISSION RATE	0.40838	3.5836	13.531
EMISSION MASS/MODE	0.0020419	0.017918	0.067653
EMISSION MASS/RATED HP	1.2762F-05	0.00011199	0.00042283
MODE EMIS./STD. CYCLE %	0.67167	7.4658	1.0067

CAL. FUEL AIR RATIO = 0.069858 MEAS. FUEL AIR RATIO = 0.067617 DIFF MEAS. & CAL. F/A PERCENT = 3.3142

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	429.18	438.35	437.59	355.93

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1454.8	379.83	1398.4	1410.2	1480.0	1479.8

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 27.973
	187.59	189.52	69.491	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.049
	290.88	2619.4	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	58.768	59.093	106.20	55.674

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	91.421	1.9783	53.259	1949.1

CELL TEMP. = 82.996 HEATER TEMP = 90.143 COOLER TEMP = 55.264

NASA-LEWIS PRELIMINARY DATA 04/01/76 CADDEII REC 04/01/76 19:17:51.958 FAC SEX15 P34 C003 RDG 2754

LFANOUT 25 BTDC TO CL APP 59 DEG 0% HUM MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.910 RATED HP = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	59.988	28.933	179.56	818.26	0.091145	14.518

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	68.761	5.4182	44.944	57.342	56.367	6.0807

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	62.448	3.1794	3.6570	10286.	1.0146	-24.832

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	1.0146	33.101	0.77972	0.017905	120.45

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.068886	0.068878	1.0281	2430.0	2431.9	260.09	120.34

WET CORRECTION FACTOR = 0.85970 EXHAUST MOLE. WT. = 28.547 EXHAUST DENSITY = 0.073914 EXHAUST FLOW RATE = 11834.

MEASURED CONC.	PART-PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	428.44	1791.3	2.74250	12.711	0.69909
CORRECTED CONC. TO WET BASIS				10.928	0.60101

EMISSION RATE	HC	NOX	CO	
	0.18202	2.5226	20.257	
	EMISSION MASS/MODE	0.015169	0.21022	1.6881
	EMISSION MASS/RATED HP	9.4804E-05	0.0013139	0.010550
MODE EMIS./STD. CYCLE %	4.9897	87.591	25.120	

CAL. FUEL AIR RATIO = 0.070568 MEAS. FUEL AIR RATIO = 0.068886 DIFF MEAS. & CAL. F/A PERCENT = 2.4420

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	411.28	420.95	391.91	558.64

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1367.6	-131.57	1246.4	1362.2	1456.4	1456.7

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 27.201
	187.38	263.69	69.207	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.109
	247.56	2379.1	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	59.653	59.988	91.093	56.217

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	91.996	0.050505	53.749	198.58

CFLL TEMP. = 83.778 HEATER TEMP = 90.233 COOLER TEMP = 55.660

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NASA-LEWIS PRELIMINARY DATA 04/01/76 CADDEII REC 04/01/76 19:21:02.491 FAC SEX15 PGM C003 RDG 2759

LEANOUT 25 BTDC TO CL APP 59 DEG 0% HUM MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.910 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	60.294	28.902	104.68	471.10	0.048782	14.316

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	71.554	5.5235	44.870	37.788	34.005	6.0498

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	60.366	3.0803	3.6560	10106.	0.92006	-25.437

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	0.92006	11.489	0.72485	0.016645	66.491

ENG. COND.	F/A DRY	F/A WET	EQ. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.072183	0.072175	1.0774	2353.0	2354.7	148.20	66.394

WET CORRECTION FACTOR = 0.86968 EXHAUST MOLE. WT. = 28.328 EXHAUST DENSITY = 0.073347 EXHAUST FLOW RATE = 6887.2

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	C2 DRY
	1076.0	1246.1	2.35580	13.174	0.28893
CORRECTED CONC. TO WET BASIS			2.0488	11.457	0.25128

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EMISSION RATE	HC	NOX	CO
	0.26604	1.0213	10.244
EMISSION MASS/MODE	0.026604	0.10213	1.0244
EMISSION MASS/RATED HP	0.00016628	0.00063890	0.0064027
MODE ERIS./STD. CYCLE %	8.7514	42.553	15.244

CAL. FUEL AIR RATIO = 0.071328 MEAS. FUEL AIR RATIO = 0.072183 DIFF MEAS. & CAL. F/A PERCENT = -1.1365

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	352.05	355.87	356.47	445.97

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	951.99	186.38	1420.9	1196.5	1271.1	1270.2

ENGINE OIL	EQILT	SOILT	OILT	MANIFOLD PRESSURE = 18.535
	187.07	137.23	69.427	

DYMO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 28.965
	150.19	2295.0	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	60.005	60.294	63.035	55.481

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	91.830	2.0605	53.036	1977.6

CELL TEMP. = 89.497 HEATER TEMP = 89.929 COOLER TEMP = 51.168

NASA-LEWIS PRELIMINARY DATA 04/01/76 CADDEII REC 04/01/76 20:09:31.067 FAC SER15 PGM 0003 80G 2757

LEANOUT 25 BTDC I & T 50 DEG. 30% HUM MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.920 RATED HP = 160.00 FC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	60.799	28.926	11.175	49.680	0.17107	14.206

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	74.648	5.8113	44.788	3.9738	3.4143	6.1506

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	66.238	0.012454	0.58562	2287.7	29.861	29.629

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	29.661	32.909	24.104	0.55352	0.50655

ENG. COND.	E/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.068727	0.068491	1.0258	604.08	601.02	4.3754	0.50326

WET CORRECTION FACTOR = 0.89457 EXHAUST MOLE. WT. = 28.560 EXHAUST DENSITY = 0.073949 EXHAUST FLOW RATE = 728.29

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	17617.	37.092	1.5304	10.657	4.0444
CORRECTED CONC. TO WET BASIS			1.3690	9.5335	3.6180

EMISSION RATE	HC	NOX	CO	
	0.45557	0.0031793	0.71589	
	EMISSION MASS/MODE	0.0075928	5.2988E-05	0.011932
	EMISSION MASS/RATED HP	4.7455E-05	3.3118E-07	7.4572E-05
MODE EMIS./STD. CYCLE %	2.4976	0.022078	0.17755	

CAL. FUEL AIR RATIO = 0.066906 MEAS. FUEL AIR RATIO = 0.068727 DIFF MEAS. & CAL. F/A PERCENT = 2.6497

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	231.54	273.56	252.42	-49.595

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1347.0	-454.00	202.08	629.20	734.71	724.03

ENGINE OIL	EDILT	SDILT	ODILT	MANIFOLD PRESSURE = 11.693
	158.50	282.98	45.129	

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE = 28.850
	6.1998	597.18	

INDUCT ICM AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	60.032	60.799	183.70	55.037

OFFICE AIR	TEMP	DELTA P	ORFP	FLOW
	86.409	4.8700	53.479	3017.0

CELL TEMP. = 78.271 HEATER TEMP = 85.396 COOLER TEMP = 46.085

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NASA-LEWIS PRELIMINARY DATA 04/01/76 CADDEII REC 04/01/76 20:12:51.392 FAC SEX15 PGM C003 RDG 2758

LEANOUT 25 BTDC I & T 59 DEG. 30% HUM MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.920 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	58.687	28.919	18.306	81.285	0.27911	14.205

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	72.337	5.7588	44.850	7.2785	6.0276	6.1368

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	64.830	0.017159	0.67972	2311.3	31.890	29.574

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	31.890	23.838	24.035	0.55196	1.0710

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.074154	0.073900	1.1068	1204.1	1205.0	4.6505	1.0662

WET CORRECTION FACTOR = 0.84800 EXHAUST MOLE. WT. = 28.160 EXHAUST DENSITY = 0.072914 EXHAUST FLOW RATE = 1201.3

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1960.2	63.906	4.6196	11.602	0.13053
CORRECTED CONC. TO WET BASIS			3.9174	9.8382	0.11069

EMISSION RATE	HC	NOX	CO	
	0.084536	0.0091357	3.4165	
	EMISSION MASS/MODE	0.015498	0.0016749	0.62637
	EMISSION MASS/RATED HP	9.6864E-05	1.0468E-05	0.0039148
MODE EMIS./STD. CYCLE %	5.0981	0.69786	9.3209	

CAL. FUEL AIR RATIO = 0.077414 MEAS. FUEL AIR RATIO = 0.074154 DIFF MEAS. & CAL. F/A PERCENT = 4.3956

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	290.76	323.35	305.26	-201.09

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	897.63	-454.00	226.54	652.50	731.51	722.11

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 7.8491
	159.42	399.92	56.602	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 28.976
	3.0459	1203.0	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	58.027	58.687	159.57	55.628

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	84.253	4.9015	53.448	3031.5

CELL TEMP. = 76.785 HEATER TEMP = 85.077 COOLER TEMP = 48.263

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NASA-LEWIS PRELIMINARY DATA 04/01/76 CADDET REC 04/01/76 20:15:38.717 FAC SEX15 PGM C003 RDG 2759

LEANOUT 25 BTDC I & T 59 DEG. 30% HUM MODE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.920 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	59.075	28.912	17.637	78.323	6.26595	14.204

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	71.759	5.7633	44.865	7.0367	5.7246	6.1380

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	66.238	0.040130	0.65287	2425.9	31.099	29.359

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	31.099	69.547	23.769	0.54581	1.4998

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.073089	0.072842	1.0909	1207.3	1206.2	6.4923	1.4924

WET CORRECTION FACTOR = 0.84565 EXHAUST MOLE. WT. = 28.250 EXHAUST DENSITY = 0.073147 EXHAUST FLOW RATE = 1152.7

MEASURED CONC.	PART PER MILLION WET	PER CENT
	HC PPM NOX PPM CO DRY CO2 DRY O2 DRY	
	1642.0 67.321 4.3516 11.798 0.082388	
CORRECTED CONC. TO WET BASIS		3.6799 9.9774 0.069672

EMISSION RATE	HC	NOX	CO
	0.067945	0.0092341	3.0794
EMISSION MASS/MODE	0.0033972	0.00046171	0.15397
EMISSION MASS/RATED HP	2.1233E-05	2.8857E-06	0.00096232
MODE EMIS./STD. CYCLE %	1.1175	0.19238	2.2912

CAL. FUEL AIR RATIO = 0.076767 MEAS. FUEL AIR RATIO = 0.073089 DIFF MEAS. & CAL. F/A PERCENT = 5.0316

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	352.60	373.64	357.24	-162.19

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1109.0	-454.00	479.49	633.76	786.10	781.55

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 7.8019
	164.93	273.47	55.466	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 28.850
	11.420	1194.8	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	58.434	59.075	164.20	55.545

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	84.375	4.8237	53.219	3010.0

CELL TEMP. = 77.475 HEATER TEMP = 84.834 COOLER TEMP = 46.754

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NASA-LEWIS PRELIMINARY DATA 04/01/76 CADDEII REC 04/01/76 20:21:11.818 FAC SEX15 PGM C003 RDG 2761

LEANOUT I & T 25 BTDC 59 DEG 30% HUM MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.920 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 60.213 PRESS 28.918 CFM 11.673 DRY FLOW 51.874 VAPOR FLOW 0.17824 PRESS TOTAL 14.204

COMB. FUEL TEMP 73.334 PRESS 5.8068 DENSITY 44.823 TURBO FLOW 3.9769 FLOW TRON 3.3573 FPIP 6.1446

COOLING AIR TEMP 64.093 UDEL-HOOD 0.0099633 DEL-HOOD 0.60970 FLOW 2275.2 REL-HUM 30.215 DEW-POINT 29.584

REL-HUM 1 30.215 2 27.253 HUMIDITY 24.052 % H2O VAPOR CORRECTED HP 0.55231 0.11256

ENG. COND. F/A DRY 0.064720 F/A WET 0.064499 EQU. RATIO 0.96598 RPM-1 602.64 RPM-2 602.04 TORQUE 0.97510 BHP 0.11189

WET CORRECTION FACTOR = 0.86461 EXHAUST MOLE. WT. = 28.781 EXHAUST DENSITY = 0.074521 EXHAUST FLOW RATE = 743.55

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 14262. NOX PPM 36.602 CO DRY 1.76680 CO2 DRY 11.023 O2 DRY 3.3977
CORRECTED CONC. TO WFT BASIS CO DRY 1.5276 CO2 DRY 9.5307 O2 DRY 2.9377

EMISSION RATE HC 0.38071 NOX 0.0032386 CO 0.82461
EMISSION MASS/MODE 0.0063452 5.3977E-05 0.013743
EMISSION MASS/RATED HP 3.9658E-05 3.3736E-07 8.5897E-05
MODE EMIS./STD. CYCLE % 2.0872 0.022490 0.20452

CAL. FUEL AIR RATIO = 0.067880 MEAS. FUEL AIR RATIO = 0.064720 DIFF MEAS. & CAL. F/A PERCENT = 4.8815

CYL TEMP DEG. F CYL-1 255.65 CYL-2 288.15 CYL-3 272.46 CYL-4 421.93

EXT GAS TEMP DEG. F EXT-1 1050.9 EXT-2 -454.00 EXT-3 343.51 EXT-4 705.41 SEXT-1 720.74 SEXT-2 714.46

ENGINE OIL FOILT 159.12 SOILT 440.48 OILP 45.985 MANIFOLD PRESSURE = 11.393

DYNO COND. TORQUE 5.5590 RPM 607.74 CYL. BACK PRESSURE = 28.842

INDUCTION AIR IA IPT1 59.500 IA IPT2 60.213 TAIRT1 151.16 TAIRT2 55.157

ORIFICE AIR TEMP 84.999 DELTAP 4.8945 ORFP 53.401 FLOW 3027.5

CEIL TEMP. = 77.643 HEATER TEMP = 85.566 COOLER TEMP = 45.027

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NASA-LEWIS PRELIMINARY DATA 04/01/76 CADDEII REC 04/01/76 20:28:19.153 FAC SEX15 PGM C003 RDG 2763

LEANOUT I & T 25 BTDC 59 DEG 30% HUM MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 28.920 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 61.079 PRESS 28.918 CFM 17.906 DRY FLOW 79.545 VAPOR FLOW 0.27077 PRESS TOTAL 14.210

COMB. FUEL TEMP 74.968 PRESS 5.7336 DENSITY 44.780 TURBO FLOW 8.1329 FLOW TRON 6.8377 FPIP 6.1287

COOLING AIR TEMP 66.462 UDEL-HOOD 0.026292 DEL-HOOD 0.67031 FLOW 2357.0 REL-HUM 29.041 DEW-POINT 29.414

REL-HUM 1 29.041 2 13.655 HUMIDITY 23.828 % H2O VAPOR CORRECTED HP 0.54716 1.3758

ENG. COND. F/A DRY 0.085959 F/A WET 0.085668 EQU. RATIO 1.2830 RPM-1 1204.3 RPM-2 1204.8 TORQUE 5.9589 BHP 1.3664

WET CORRECTION FACTOR = 0.85844 EXHAUST MOLE. WT. = 27.217 EXHAUST DENSITY = 0.070471 EXHAUST FLOW RATE = 1229.6

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	4006.0	45.935	8.3447	9.6420	0.19706	
CORRECTED CONC. TO WET BASIS			7.1634	8.2770	0.16916	

	HC	NOX	CO
EMISSION RATE	0.17684	0.0067215	6.3949
EMISSION MASS/MODE	0.032421	0.0012323	1.1724
EMISSION MASS/RATED HP	0.00020263	7.7017E-06	0.0073275
MODE EMIS./STD. CYCLE %	10.665	0.51345	17.446

CAL. FUEL AIR RATIO = 0.087257 MEAS. FUEL AIR RATIO = 0.085959 DIFF MEAS. & CAL. F/A PERCENT = 1.5098

CYL TEMP DEG.F CYL-1 286.75 CYL-2 305.30 CYL-3 287.68 CYL-4 -269.95

EXT GAS TEMP DEG.F EXT-1 992.82 EXT-2 -454.00 EXT-3 146.08 EXT-4 689.21 SEXT-1 643.33 SEXT-2 635.36

ENGINE OIL FOILT 155.97 SOILT 266.71 OILP 56.906 MANIFOLD PRESSURE = 7.7506

DYND COND. TORQUE 3.5716 RPM 1197.4 CYL. BACK PRESSURE = 28.958

INDUCTION AIR TAIRT1 60.456 TAIRT2 61.079 TAIRT1 51.280 TAIRT2 55.593

ORIFICE AIR TEMP 85.779 DELTAP 3.9210 ORFP 53.469 FLOW 2719.6

CELL TEMP. = 78.625 HEATER TEMP = 86.352 COOLER TEMP = 47.106

NASA-LEWIS PRELIMINARY DATA 04/01/76 CADDEII REC 04/01/76 20:30:46.197 FAC SEX15 PGM C003 RDG 2764

LEANOUT T & T 25 BTDC 59 DEG 30% HUM MODE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.920 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	61.367	28.917	17.361	77.096	0.26320	14.202

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	75.128	5.7369	44.776	7.9518	6.6517	6.1272

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	67.241	0.016605	0.62464	2308.6	28.813	29.459

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	28.813	43.854	23.897	0.54876	1.2221

ENG. CON.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.086277	0.085984	1.2877	1196.6	1197.6	5.3255	1.2134

WET CORRECTION FACTOR = 0.86014 EXHAUST MOLE. WT. = 27.193 EXHAUST DENSITY = 0.070408 EXHAUST FLOW RATE = 1193.2

MEASURED CONC.	PART PER MILLION WET	PER CENT			
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	4120.4	46.181	8.2552	9.7004	0.19484
CORRECTED CONC. TO WET BASIS			7.1006	8.3437	0.16759

EMISSION RATE	HC	NOX	CO
	0.17650	0.0065572	6.1510
EMISSION MASS/MODE	0.0088251	0.0032786	0.30755
EMISSION MASS/RATED HP	5.5157E-05	2.0491E-06	0.0019222
MODE EMIS./STD. CYCLE %	2.9030	0.13661	4.5766

CAL. FUEL AIR RATIO = 0.087074 MEAS. FUEL AIR RATIO = 0.086277 DIFF MEAS. & CAL. F/A PERCENT = 0.92339

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	315.20	333.12	316.92	-151.36

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	847.41	-454.00	196.31	722.27	669.42	663.97

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 7.7628
	158.95	408.17	56.298	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 28.958
	-1.2025	1190.3	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	60.727	61.367	58.272	55.486

ORIFICE AIR	TEMP	DELTA P	DRFP	FLOW
	85.998	4.8812	53.420	3021.2

CELL TEMP. = 78.845 HEATER TEMP = 86.144 COOLER TEMP = 47.423

NASA-LEWIS PRELIMINARY DATA 04/01/76 CADDEII REC 04/01/76 20:33:32.517 FAC SEX15 PGM C003 RDG 2765

LEANOUT I & T 25 BTDC 59 DEG 30% HUM MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.920 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	58.840	28.920	10.630	47.247	0.16288	14.204

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	72.765	5.7846	44.838	3.9800	4.1014	6.1395

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	64.300	0.010517	0.66422	2278.0	31.839	29.649

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	31.839	76.690	24.132	0.55416	0.68336

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.086808	0.086510	1.2956	602.88	601.50	5.9256	0.68020

WET CORRECTION FACTOR = 0.86228 EXHAUST MOLE. WT. = 27.153 EXHAUST DENSITY = 0.070305 EXHAUST FLOW RATE = 732.58

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	23358.	12.427	8.1484	8.0915	2.4847
CORRECTED CONC. TO WET BASIS			7.0262	6.9771	2.1425

	HC	NOX	CO
EMISSION RATE	0.61440	0.0010835	3.7374
EMISSION MASS/MODE	0.010240	1.8059E-05	0.062290
EMISSION MASS/RATED HP	6.4000E-05	1.1287E-07	0.00038931
MODE FMIS./STD. CYCLE %	3.3684	0.0075244	0.92694

CAL. FUEL AIR RATIO = 0.090958 MEAS. FUEL AIR RATIO = 0.086808 DIFF MEAS. & CAL. F/A PERCENT = 4.7809

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	232.87	299.15	277.11	-208.47

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1029.3	-454.00	155.03	639.46	652.84	646.34

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 10.825
	158.69	401.58	45.913	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.071
	1.4833	598.68	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	58.081	58.840	90.697	55.087

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	83.093	4.8924	53.373	3032.2

CELL TEMP. = 75.828 HEATER TEMP = 84.710 COOLER TEMP = 46.302

NASA-LEWIS PRELIMINARY DATA 04/01/76 CADDEII REC 04/01/76 20:37:26.343 FAC SEX15 PGM C003 RDG 2766

LEANOUT I & T 25 RTDC 59 DEG 30% HUM MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.920 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	59.419	28.919	12.125	53.867	0.18537	14.200

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	73.689	5.7468	44.814	3.9761	5.1425	6.1275

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	64.462	0.015498	0.60776	2303.0	31.123	29.609

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	31.123	0.39204	24.088	0.55315	0.69096

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.095466	0.095139	1.4249	595.86	597.36	6.0589	0.68741

WET CORRECTION FACTOR = 0.88061 EXHAUST MOLE. WT. = 26.530 EXHAUST DENSITY = 0.068693 EXHAUST FLOW RATE = 861.74

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	32975.	6.0366	9.55530	6.5187	3.4532	
CORRECTED CONC. TO WET BASIS			8.4145	5.7404	3.0410	

EMISSION RATE	HC	NOX	CO
	1.0201	0.00061903	5.2643
EMISSION MASS/MODE	0.017002	1.0317E-05	0.087738
EMISSION MASS/RATED HP	0.00010626	6.4483E-08	0.00054836
MODE EMIS./STD. CYCLE %	5.5928	0.0042988	1.3056

CAL. FUEL AIR RATIO = 0.097803 MEAS. FUEL AIR RATIO = 0.095466 DIFF MEAS. & CAL. F/A PERCENT = 2.4477

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	270.61	288.12	265.60	-211.04

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1655.8	-454.00	73.441	641.49	619.71	613.45

ENGINE OIL	OILT	SOILT	OILP	MANIFOLD PRESSURE = 11.808
	155.30	328.52	46.201	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 28.962
	4.4860	587.88	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	58.633	59.419	106.60	55.173

ORIFICE AIR	TFMP	DELTAP	ORFP	FLOW
	83.497	4.8845	53.353	3029.0

CELL TEMP. = 76.041 HEATER TEMP = 84.716 COOLER TEMP = 45.850

NASA-LEWIS		PRELIMINARY DATA		04/01/76	CADDEII	REC 04/01/76 20:40:11.834		FAC SEX15	PGM C003	RDG 2767
LEANOUT I & T 25' BTDC 59 DEG 30% HUM				MODE = 6.0000		NO. SCANS = 5				
ENGINE TIMING = 25.000		DEG.		BAROMETRIC PRESSURE = 28.920		RATED HP. = 160.00		HC RATIO = 2.1250		
COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL				
	59.400	28.916	19.562	86.911	0.29982	14.206				
COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP				
	73.698	5.7000	44.814	9.8148	8.3768	6.1212				
COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT				
	65.135	0.022694	0.58968	2339.0	31.232	29.664				
REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP					
	31.232	10.297	24.148	0.55453	1.5089					
ENG. COND.	F/A DRY	F/A WET	EQV. RATIO	RPM-1	RPM-2	TORQUE	BHP			
	0.096384	0.096052	1.4386	1207.9	1210.0	6.5256	1.5008			
WET CORRECTION FACTOR = 0.86532		EXHAUST MOLE. WT. = 26.467		EXHAUST DENSITY = 0.068530		EXHAUST FLOW RATE = 1394.8				
MEASURED CONC.		PART PER MILLION WET			PER CENT					
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY					
	8538.8	22.330	11.163	7.9457	0.31083					
CORRECTED CONC. TO WET BASIS										
			9.6597	6.8755	0.26897					
EMISSION RATE		HC	NOX	CO						
		0.42758	0.0037065	9.7819						
EMISSION MASS/MODE		0.021379		0.00018532						
		0.48909								
EMISSION MASS/RATED HP		0.00013362		1.1583E-06						
		0.0030568								
MODE EMIS./STD. CYCLE %		7.0325		0.077218						
		7.2782								
CAL. FUEL AIR RATIO = 0.097686		MEAS. FUEL AIR RATIO = 0.096384		DIFF MEAS. & CAL. F/A PERCENT = 1.3510						
CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4						
	293.29	311.42	293.00	-290.20						
EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2				
	1588.2	-454.00	4.6378	627.38	630.10	624.63				
ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 8.1741						
	156.40	333.96	56.854							
DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE = 28.958							
	11.118	1194.2								
INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2						
	58.822	59.400	117.59	55.356						
ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW						
	83.910	4.8660	53.524	3022.9						
CELL TEMP. = 76.289		HEATER TEMP = 84.266		COOLER TEMP = 47.161						

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NASA-LEWIS PRELIMINARY DATA 04/01/76 CADDEII REC 04/01/76 20:42:53.730 FAC SEX15 PGM C003 RDG 2768

LEANOUT 1 & T 25 BTDC 59 DEG 30% HUM MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.920 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TFMP PRESS CFM DRY FLOW VAPOR FLOW PRESS TOTAL
60.114 28.914 11.741 52.185 0.18084 14.205

COMB. FUEL TEMP PRESS DENSITY TURBO FLOW FLOW TRON. FPIP
73.982 5.7459 44.806 3.9754 5.1635 6.1401

COOLING AIR TEMP UDEL-HOOD DEL-HOOD FLOW REL-HUM DEW-POINT
65.440 0.011624 0.65508 2283.6 30.583 29.749

REL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP
30.583 31.235 24.258 0.55704 0.60127

ENG. COND. F/A DRY F/A WET EQU. RATIO RPM-1 RPM-2 TORQUE BHP
0.098946 0.098604 1.4768 604.62 607.74 5.1922 0.59773

WET CORRECTION FACTOR = 0.88915 EXHAUST MOLE. WT. = 26.295 EXHAUST DENSITY = 0.068084 EXHAUST FLOW RATE = 844.97

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM NOX PPM CO DRY CO2 DRY O2 DRY
32398. 5.9806 9.75860 6.5897 3.2579
CORRECTED CONC. TO WET BASIS 8.6858 5.8592 2.8968

EMISSION RATE HC NOX CO
0.98278 0.00060136 5.3283
EMISSION MASS/MODE 0.016380 1.0023E-05 0.088805
EMISSION MASS/RATED HP 0.00010237 6.2641E-08 0.00055503
MODE EMIS./STD. CYCLE % 5.3881 0.0041761 1.3215

CAL. FUFL AIR RATIO = 0.098383 MEAS. FUEL AIR RATIO = 0.098946 DIFF MEAS. & CAL. F/A PERCENT = -0.56872

CYL TEMP DEG.F CYL-1 CYL-2 CYL-3 CYL-4
279.95 298.00 277.24 -245.56

EXT GAS TEMP DEG.F EXT-1 EXT-2 EXT-3 EXT-4 SEXT-1 SEXT-2
1630.2 -454.00 110.71 610.69 635.36 630.41

ENGINE OIL EOILT SOILT OILP MANIFOLD PRESSURE = 11.614
156.80 292.65 46.205

DYNO COND. TORQUE RPM CYL. BACK PRESSURE = 28.813
9.5914 597.30

INDUCTION AIR IAIRT1 IAIRT2 TAIRT1 TAIRT2
59.355 60.114 110.24 55.083

ORIFICE AIR TEMP DELTAP ORFP FLOW
84.121 4.8608 53.223 3020.9

CELL TEMP. = 76.856 HEATER TEMP = 83.919 COOLER TEMP = 46.205

NASA-LEWIS PRELIMINARY DATA 04/01/76 CADDEII REC 04/01/76 20:46:47.069 FAC SEX15 PGM C003 RDG 2769

LEANOUT I & T 25 BTDC 59 DEG 30% HUM MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.920 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 60.655 PRESS 28.922 CFM 13.723 DRY FLOW 60.973 VAPOR FLOW 0.20998 PRESS TOTAL 14.201

COMB. FUEL TEMP 74.764 PRESS 5.7111 DENSITY 44.785 TURBO FLOW 3.9718 FLOW TRON 6.4656 FPIP 6.1359

COOLING AIR TEMP 65.664 UDEL-HOOD 0.021587 DEL-HOOD 0.65754 FLOW 2333.5 REL-HUM 29.806 DEW-POINT 29.624

REL-HUM 1 29.806 2 53.013 HUMIDITY 24.106 % H2O VAPOR CORRECTED HP 0.55356 0.62886

ENG. COND. F/A DRY 0.10604 F/A WET 0.10568 EQU. RATIO 1.5827 RPM-1 618.12 RPM-2 615.78 TORQUE 5.3089 BHP 0.62481

WET CORRECTION FACTOR = 0.89632 EXHAUST MOLE. WT. = 25.843 EXHAUST DENSITY = 0.066914 EXHAUST FLOW RATE = 1011.0

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 37434. NOX PPM 5.2245 CO DRY 10.7840 CO2 DRY 5.8782 C2 DRY 3.3255
CORRECTED CONC. TO WET BASIS CO DRY 9.6657 CO2 DRY 5.2688 C2 DRY 2.9808

EMISSION RATE HC 1.3587 NOX 0.00062854 CO 7.0944
EMISSION MASS/MODE 0.022644 1.0476E-05 0.11824
EMISSION MASS/RATED HP 0.00014153 6.5473E-08 0.00073900
MODE EMIS./STD. CYCLE % 7.4488 0.0043649 1.7595

CAL. FUEL AIR RATIO = 0.10468 MEAS. FUEL AIR RATIO = 0.10604 DIFF MEAS. & CAL. F/A PERCENT = -1.2865

CYL TEMP DEG.F CYL-1 263.83 CYL-2 286.41 CYL-3 263.81 CYL-4 -162.08

EXT GAS TEMP DEG.F EXT-1 943.25 EXT-2 -454.00 EXT-3 50.579 EXT-4 631.11 SEXT-1 600.14 SEXT-2 595.42

ENGINE OIL EOILT 152.46 SOILT 261.58 OILP 46.721 MANIFOLD PRESSURE = 12.523

DYMO COND. TORQUE 8.9433 RPM 608.94 CYL. BACK PRESSURE = 29.209

INDUCTION AIR IAIRT1 59.978 IAIRT2 60.655 TAIRT1 117.76 TAIRT2 55.157

ORIFICE AIR TEMP 84.718 DELTAP 4.7851 ORFP 53.457 FLOW 2998.3

CELL TEMP. = 77.263 HEATER TEMP = 84.370 COOLER TEMP = 46.031

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NASA-LEWIS PRELIMINARY DATA 04/01/76 CADDEII REC 04/01/76 20:49:14.883 FAC SEX15 PGM C003 RDG 2770

LFANOUT I & T 25 BTDC 59 DEG 30% HUM MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.920 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 60.889 PRESS 28.921 CFM 20.751 DRY FLOW 92.130 VAPOR FLOW 0.31777 PRESS TOTAL 14.209

COMB. FUEL TEMP 74.551 PRESS 5.6721 DENSITY 44.791 TURBO FLOW 11.028 FLOW TRON 9.6310 FPIP 6.1161

COOLING AIR TEMP 66.552 UDEL-HOOD 0.013838 DEL-HOOD 0.68553 FLOW 2294.7 RFL-HUM 29.620 DEW-POINT 29.664

REL-HUM 1 29.620 2 31.813 HUMIDITY 24.144 % H2O VAPOR CORRECTED HP 1.2363

ENG. COND. F/A DRY 0.10454 F/A WET 0.10418 EQU. RATIO 1.5502 RPM-1 1205.3 RPM-2 1206.7 TORQUE 5.3505 BHP 1.2280

WET CORRECTION FACTOR = 0.87635 EXHAUST MOLE WT. = 25.936 EXHAUST DENSITY = 0.067154 EXHAUST FLOW RATE = 1520.1

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 13273. CO DRY 12.2540 CO2 DRY 7.2233 O2 DRY 0.41874
CORRECTED CONC. TO WET BASIS NOX PPM 12.512 CO 10.739 6.3301 0.36696

EMISSION RATE HC 0.72433 NOX 0.0022633 CO 11.851
EMISSION MASS/MODE 0.13279 0.00041494 2.1726
EMISSION MASS/RATED HP 0.00082996 2.5934E-06 0.013579
MODE EMIS./STD. CYCLE % 43.682 0.17289 32.331

CAL. FUEL AIR RATIO = 0.10373 MEAS. FUEL AIR RATIO = 0.10454 DIFF MEAS. & CAL. F/A PERCENT = -0.76746

CYL TEMP DEG.F CYL-1 302.15 CYL-2 322.79 CYL-3 303.50 CYL-4 -200.32

EXT GAS TEMP DEG.F EXT-1 677.29 EXT-2 -454.00 EXT-3 300.82 EXT-4 695.56 SEXT-1 650.86 SEXT-2 647.93

ENGINE OIL EDILT 154.94 SDILT 272.38 OILP 56.774 MANIFOLD PRESSURE = 8.6766

DYNO COND. TORQUE 6.3294 RPM 1213.3 CYL. BACK PRESSURE = 29.083

INDUCTION AIR IAIRT1 60.312 IAIRT2 60.889 TAIRT1 82.203 TAIRT2 55.800

ORIFICE AIR TEMP 84.981 DELTAP 4.8483 ORFP 53.442 FLOW 3015.1

CELL TEMP. = 77.794 HEATER TEMP = 85.125 COOLER TEMP = 48.172

NASA-LEWIS PRELIMINARY DATA 04/01/76 CADDEI REC 04/01/76 20:51:51.609 FAC SEX15 PGM C003 R0G 2771

LFANOUT I & T 25 BTDC 59 DEG 30% HUM MODE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 28.920 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP PRESS CFM DRY FLOW VAPOR FLOW PRESS TOTAL
61.079 28.912 20.958 93.135 0.31958 14.208

COMB. FUEL TEMP PRESS DENSITY TURBO FLOW FLOW TRON FPIP
75.092 5.6751 44.777 10.839 9.4269 6.1191

COOLING AIR TEMP UDEL-HOOD DEL-HOOD FLOW REL-HUM DEW-POINT
66.963 0.0088562 0.62021 2269.6 29.259 29.564

REL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP
29.269 8.6869 24.020 0.55157 1.5427

ENG. COND. F/A DRY F/A WET EQU. RATIO RPM-1 RPM-2 TORQUE BHP
0.10122 0.10087 1.5107 1202.3 1203.3 6.6923 1.5320

WET CORRECTION FACTOR = 0.86543 EXHAUST MILE. WT. = 26.146 EXHAUST DENSITY = 0.067699 EXHAUST FLOW RATE = 1519.7

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM NOX PPM CO DRY CO2 DRY O2 DRY
13220. 12.198 12.2780 7.2265 0.40652
CORRECTED CONC. TO WET BASIS 10.626 6.2540 0.35182

EMISSION RATE HC NOX CO
0.72126 0.0022060 11.724
EMISSION MASS/MODE 0.036063 0.00011030 0.58618
EMISSION MASS/RATED HP 0.00022539 6.8936E-07 0.0036636
MODE EMIS./STD. CYCLE % 11.863 0.045957 8.7229

CAL. FUEL AIR RATIO = 0.10389 MEAS. FUEL AIR RATIO = 0.10122 DIFF MEAS. & CAL. F/A PERCENT = 2.6375

CYL TEMP DEG.F CYL-1 CYL-2 CYL-3 CYL-4
301.84 320.42 302.54 -143.78

EXT GAS TEMP DEG.F EXT-1 EXT-2 EXT-3 EXT-4 SEXT-1 SEXT-2
1532.8 -454.00 254.41 744.21 637.99 633.90

ENGINE OIL EOILT SOILT OILP MANIFOLD PRESSURE = 8.7231
155.93 296.81 56.710

DYND COND. TORQUE RPM CYL. BACK PRESSURE = 28.955
5.2421 1202.6

INDUCTION AIR IAIRT1 IAIRT2 TAIRT1 TAIRT2
60.538 61.079 87.813 55.306

ORIFICE AIR TEMP DELTAP ORFP FLOW
85.244 4.8945 53.247 3026.8

CELL TEMP. = 78.139 HEATER TEMP = 83.781 COOLER TEMP = 47.287

NASA-LEWIS PRELIMINARY DATA 04/01/76 CADDEII REC 04/01/76 20:57:39.279 FAC SEX15 PGM C003 RDG 2773

LEANOUT I & T 25 RTDC 59 DEG 30% HUM MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.920 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 58.840 PRESS 28.915 CFM 14.578 DRY FLOW 65.190 VAPOR FLOW 0.22619 PRESS TOTAL 14.206

COMB. FUEL TEMP 72.435 PRESS 5.6958 DENSITY 44.847 TURBO FLOW 8.5527 FLOW TRON 7.2577 FPIP 6.1152

COOLING AIR TEMP 64.138 UDEL-HOOD 0.0063654 DEL-HOOD 0.59641 FLOW 2257.1 REL-HUM 32.047 DFW-POINT 29.774

REL-HUM 1 2 HUMIDITY 24.288 % H2O VAPOR 0.55773 CORRECTED HP 0.50936

ENG. COND. F/A DRY 0.11133 F/A WET 0.11095 EQU. RATIO 1.6617 RPM-1 606.18 RPM-2 610.98 TORQUE 4.3921 BHP 0.50693

WET CORRECTION FACTOR = 0.90748 EXHAUST MOLE. WT. = 25.530 EXHAUST DENSITY = 0.066103 EXHAUST FLOW RATE = 1099.4

MEASURED CONC. HC PPM 43080. NOX PPM 5.4535 CO DRY 11.0990 PER CENT 5.3543 CO2 DRY 3.7484
CORRECTED CONC. TO WET BASIS 10.072 4.8589 3.4016

EMISSION RATE HC 1.7003 NOX 0.00071348 CO 8.0392
EMISSION MASS/MODE 0.028339 1.1891E-05 0.13399
EMISSION MASS/RATED HP 0.00017712 7.4321E-08 0.00083742
MODE EMIS./STD. CYCLE % 9.3219 0.0049547 1.9939

CAL. FUEL AIR RATIO = 0.10788 MEAS. FUEL AIR RATIO = 0.11133 DIFF MEAS. & CAL. F/A PERCENT = 3.1010

CYL TEMP DEG.F CYL-1 264.97 CYL-2 291.42 CYL-3 271.21 CYL-4 -21.962

EXT GAS TEMP DEG.F EXT-1 1249.8 EXT-2 -454.00 EXT-3 317.56 EXT-4 706.43 SEXT-1 627.99 SEXT-2 623.46

ENGINE OIL EOILT 154.15 SOILT 332.56 OILP 46.405 MANIFOLD PRESSURE = 13.235

DYNO COND. TORQUE 6.2718 RPM 587.52 CYL. BACK PRESSURE = 28.549

INDUCTION AIR IAIRT1 58.189 IAIRT2 58.840 TAIRT1 -72.986 TAIRT2 55.524

GRIFICE AIR TEMP 82.821 DELTAP 4.8697 ORFP 53.374 FLOW 3026.9

CELL TEMP. = 75.261 HFATER TEMP = 83.691 COOLER TEMP = 48.082

BH

NASS-LEWIS PRELIMINARY DATA 04/01/76 CADDEII REC 04/01/76 21:00:10.518 FAC SEX15 PGM C003 R0G 2772

LOADOUT I & T 25 BTDC 59 DEG 30% HUM MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.920 RATED HP = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 58.967 PRESS 28.920 CFM 22.702 DRY FLOW 100.84 VAPOR FLOW 0.34851 PRESS TOTAL 14.210

COMB. FUEL TEMP 72.542 PRESS 5.6514 DENSITY 44.844 TURBO FLOW 12.364 FLOW TRON 10.900 FPIP 6.1131

COOLING AIR TEMP 64.821 UDEL-HOOD 0.019650 DEL-HOOD 0.65758 FLOW 2323.8 REL-HUM 31.786 DEW-POINT 29.704

REL-HUM 31.786 HUMIDITY 24.192 % H2O VAPOR CORRECTED HP 1.2286

ENG. CONJ. F/A DRY 0.10809 F/A WET 0.10772 EQU. RATIO 1.6133 RPM-1 1203.7 RPM-2 1205.5 TORQUE 5.3255 BHP 1.2205

WET CORRECTION FACTOR = 0.87788 EXHAUST MOLE. WT. = 25.719 EXHAUST DENSITY = 0.066593 EXHAUST FLOW RATE = 1683.2

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	17069	4.6849	12.7780	6.7576	0.50589	
CORRECTED CONC. TO WET BASIS			11.217	5.9324	0.44411	

	HC	NOX	CO
EMISSION RATE	1.0315	0.0017396	13.707
EMISSION MASS/MODE	0.18910	0.00031892	2.5130
EMISSION MASS/RATED HP	0.0011819	1.9932E-06	0.015706
MODE EMIS./STD. CYCLE %	62.204	0.13288	37.396

CAL. FUEL AIR RATIO = 0.10796 MEAS. FUEL AIR RATIO = 0.10809 DIFF MEAS. & CAL. F/A PERCENT = -0.12572

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	294.42	317.01	299.26	150.95

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1545.6	-454.00	469.37	735.69	666.89	669.71

ENGINE OIL OILT 155.83 SOILT 223.86 OILP 56.730 MANIFOLD PRESSURE = 9.2229

DYND COND. TORQUE 11.658 RPM 1204.6 CYL. BACK PRESSURE = 29.023

INDUCTION AIR IAIRT1 58.407 IAIRT2 58.967 TAIRT1 59.568 TAIRT2 55.604

ORIFICE AIR TEMP 83.234 DELTAP 4.8838 ORFP 53.437 FLOW 3029.5

CELL TEMP = 75.739 HEATER TEMP = 83.392 COOLER TEMP = 48.515

NASA-LEWIS		PRELIMINARY DATA		04/01/76	CADDEII	REC 04/01/76 21:02:27.173		FAC SEX15	PGM C003	RDG 2775
LEANOUT I & T 25 BTDC 59 DEG 30% HUM				MODE = 6.0000		NO. SCANS = 5				
ENGINE TIMING = 25.000		DEG.	BAROMETRIC PRESSURE = 28.920		RATED HP. = 160.00		HC RATIO = 2.1250			
COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL				
	59.337	28.919	22.084	98.053	0.33732	14.205				
COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP				
	72.827	5.6586	44.837	11.832	10.393	6.1170				
COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT				
	65.503	0.011347	0.69605	2282.2	31.213	29.609				
REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP					
	31.213	1.8162	24.081	0.55298	1.2621					
ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP			
	0.10599	0.10563	1.5820	1200.4	1200.7	5.4922	1.2553			
WET CORRECTION F _W = 0.87288		EXHAUST MOLE. WT. = 25.846		EXHAUST DENSITY = 0.066922		EXHAUST FLOW RATE = 1625.5				
MEASURED CONC.	PART PER MILLION WET			PER CENT						
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY					
	16601.	8.8499	12.7750	6.7667	0.54333					
CORRECTED CONC. TO WET BASIS			11.151	5.9065	0.47426					
EMISSION RATE	HC	NOX	CO							
	0.96882	0.0017119	13.159							
EMISSION MASS/MODE	0.048441	8.5596E-05	0.65797							
EMISSION MASS/RATED HP	0.00030276	5.3497E-07	0.0041123							
MODE EMIS./STD. CYCLE %	15.935	0.035665	9.7913							
CAL.FUEL AIR RATIO = 0.10751		MEAS. FUEL AIR RATIO = 0.10599		DIFF MEAS.& CAL. F/A PERCENT = 1.4276						
CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4						
	308.10	328.11	312.47	-6.6423						
EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2				
	1551.5	-454.00	565.23	754.97	681.61	678.61				
ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 9.0961						
	157.44	325.33	56.514							
DYNO COND.	TORQUE	RPM	CYL.BACK PRESSURE = 29.031							
	4.5797	1206.3								
INDUCT ION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2						
	58.877	59.337	-84.893	55.657						
ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW						
	83.436	4.8383	53.386	3016.6						
CFLI TEMP. = 76.324		HEATER TEMP = 83.240		COOLER TEMP = 48.262						

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NASA-LEWIS PRELIMINARY DATA 04/01/76 CADDEII REC 04/01/76 21:04:43.173 FAC SEX15 PGM C003 RDG 2776

LEANOUT I & T 25 BTDC 59 DEG 30% HUM MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.920 RATED HP = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	60.069	28.913	14.320	63.603	0.22202	14.206

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	73.245	5.7009	44.826	8.3956	7.1197	6.1275

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	65.655	0.0099633	0.67750	2275.2	30.856	29.889

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	30.856	53.897	24.435	0.56111	0.59828

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.11194	0.11155	1.6707	588.36	589.20	5.3089	0.59473

WET CORRECTION FACTOR = 0.91164 EXHAUST MOLE. WT. = 25.495 EXHAUST DENSITY = 0.066013 EXHAUST FLOW RATE = 1074.7

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	43868.	5.3355	11.0230	5.2266	3.9306	
CORRECTED CONC. TO WET BASIS						
			10.049	4.7648	3.5833	

	HC	NOX	CO
EMISSION RATE	1.6925	0.00068236	7.8405
EMISSION MASS/MODE	0.028709	1.1373E-05	0.13068
EMISSION MASS/RATED HP	0.00017631	7.1079E-08	0.00081672
MODE EMIS./STD. CYCLE %	9.2792	0.0047386	1.9446

CAL. FUEL AIR RATIO = 0.10763 MEAS. FUEL AIR RATIO = 0.11194 DIFF MEAS. & CAL. F/A PERCENT = -3.8460

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	283.21	307.05	286.01	18.941

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1477.2	-454.00	457.07	732.75	656.62	652.36

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 13.443
	156.65	212.68	45.733	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 28.913
	1.0153	592.56	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	59.373	60.069	43.856	55.469

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	83.822	4.8116	53.495	3008.1

CELL TEMP. = 76.413 HEATER TEMP = 83.115 COOLER TEMP = 47.396

NASA-LEWIS PRELIMINARY DATA 04/01/76 CADDEIT REC 04/01/76 21:08:51.820 FAC SEX15 PGM C003 RDG 2777

LFANOUT I & T 25 BTDC .59 DEG 30% HUM MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.920 RATED HP = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	60.745	28.921	13.422	59.661	0.20641	14.206

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	73.814	5.7189	44.811	7.7053	6.4776	6.1308

COOLING AIR	TEMP	UNEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	66.793	0.013838	0.65204	2294.7	29.857	29.719

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	29.857	25.613	24.217	0.55611	0.38664

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10857	0.10820	1.6205	593.28	595.62	3.4003	0.38411

WET CORRECTION FACTOR = 0.90591 EXHAUST MOLE. WT. = 25.691 EXHAUST DENSITY = 0.066519 EXHAUST FLOW RATE = 997.39

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	CO2 DRY	
	39929.	5.0465	10.733	5.6538	3.6491	
CORRECTED CONC. TO WET BASIS			9.7227	5.1218	3.3057	

EMISSION RATE	HC	NOX	CO
	1.4297	0.00059896	7.0402
EMISSION MASS/MODE	0.023829	9.9827E-06	0.11734
EMISSION MASS/RATED HP	0.00014893	6.2392E-08	0.00073336
MODE EMIS./STD. CYCLE %	7.8385	0.0041595	1.7461

CAL. FUEL AIR RATIO = 0.10492 MEAS. FUEL AIR RATIO = 0.10857 DIFF MEAS. & CAL. F/A PERCENT = -3.3677

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	291.48	317.24	296.33	2.2663

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1420.1	-454.00	504.61	693.24	680.28	676.46

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 12.743
	161.67	288.87	45.429	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.160
	4.8029	586.08	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	60.051	60.745	116.26	55.117

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	84.279	3.9208	53.312	2723.3

CELL TEMP. = 77.298 HEATER TEMP = 82.907 COOLER TEMP = 45.805

NASA-LEWIS PRELIMINARY DATA 04/02/76 CADDEIT REC 04/01/76 10:29:08.166 FAC SEX15 PGM C003 RDG 2778

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 30 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.060 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR TEMP 58.371 PRESS 29.066 CFM 210.83 DRY FLOW 471.60 VAPOR FLOW 3.4294 PRESS TOTAL 14.765

COMP. FUEL TEMP 63.069 PRESS 5.3405 DENSITY 45.097 TURBO FLOW 80.201 FLOW TRON 78.818 FPIP 5.9199

COOLING AIR TEMP 59.328 UNDEL-HOOD 3.2605 DEL-HOOD 3.8181 FLOW 10430. REL-HUM 34.455 DEW-POINT 30.844

REL-HUM 1 34.455 2 9.8470 HUMIDITY 24.707 % H2O VAPOR CORRECTED HP 0.56736 158.31

ENG. COND. F/A DRY 0.081121 F/A WET 0.080836 EQU. RATIO 1.2108 RPM-1 2701.1 RPM-2 2702.8 TORQUE 295.74 RHP 152.10

WET CORRECTION FACTOR = 0.94812 EXHAUST MOLE. WT. = 27.591 EXHAUST DENSITY = 0.071440 EXHAUST FLOW RATE = 14751.

MEASURED CONC. HC PPM 1468.5 NOX PPM 188.32 CO DRY 7.5566 CO2 DRY 10.5770 O2 DRY 0.091029
CORRECTED CONC. TO WET BASIS HC 6.4089 NOX 8.9706 CO 0.077204

EMISSION RATE HC 0.77771 NOX 0.33060 CO 68.636
EMISSION MASS/MODE HC 0.0038885 NOX 0.0015530 CO 0.34318
EMISSION MASS/RATED HP HC 2.4303E-05 NOX 1.0331E-05 CO 0.0021449
MODE EMIS./STD. CYCLE % HC 1.2791 NOX 0.58874 CO 5.1069

CAL. FUEL AIR RATIO = 0.083578 MEAS. FUEL AIR RATIO = 0.081121 DIFF MEAS. & CAL. F/A PERCENT = 3.0278

CYL TEMP DEG. F CYL-1 407.80 CYL-2 424.43 CYL-3 400.16 CYL-4 341.85

EXT GAS TEMP DEG. F FXT-1 439.38 FXT-2 -454.00 FXT-3 678.95 FXT-4 1090.8 SEXT-1 1399.6 SEXT-2 1399.3

ENGINE OIL EOILT 151.98 SOILT 154.06 OILP 74.811 MANIFOLD PRESSURE = 28.104

DYND COND. TORQUE 300.66 RPM 2620.4 CYL. BACK PRESSURE = 29.191

INDUCTION AIR IAIRT1 58.081 IAIRT2 58.371 TAIRT1 1.6166 TAIRT2 56.300

ORIFICE AIR TEMP 80.646 DELTAP 4.9088 ORFP 54.234 FLOW 3043.5

CELL TEMP. = 74.551 HEATER TEMP = 81.234 COOLER TEMP = 49.634

ORIGINAL PAGE IS
OF POOR QUALITY

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NASA-LEWIS PRELIMINARY DATA 04/02/76 CADDEII REC 04/31/75 10:32:11.828 FAC SFX15 PGM C003 RDG 2779

LEANOUT 25 RTDC TO CL APP 50 DEG HUM = 30 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.060 RATED HP. = 150.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	59.238	29.017	170.16	772.71	2.7530	14.567

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	63.213	5.4005	45.093	64.605	62.430	6.0414

COOLING AIR	TEMP	WDEL-HOOD	DFL-HOOD	FLOW	REL-HUM	DEW-POINT
	60.619	3.0197	3.6349	9994.8	33.262	30.764

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	33.262	24.630	24.940	0.57270	121.12

ENG. COND.	F/A DRY	F/A WET	EGU. RATIO	RPM-1	RPM-2	TORQUE	RHP
	0.080744	0.080507	1.2059	2430.7	2432.3	259.92	120.29

WET CORRECTION FACTOR = 0.85093 EXHAUST MOLE. WT. = 27.517 EXHAUST DENSITY = 0.071508 EXHAUST FLOW RATE = 11717.

MEASURED CONC.	PART PER MILLION WFT			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	1460.5	505.71	7.1015	10.7900	0.066197	
CORRECTED CONC. TO WFT BASIS			6.0420	9.1815	0.056320	

	HC	NOX	CO
EMISSION RATE	0.61439	0.70516	51.406
EMISSION MASS/MODE	0.051109	0.058763	4.2938
EMISSION MASS/RATED HP	0.00032000	0.00036727	0.026774
MODE EMIS./STD. CYCLE %	15.842	24.485	63.747

CAL. FUEL AIR RATIO = 0.082610 MEAS. FUEL AIR RATIO = 0.080794 DIFF MEAS. & CAL. F/A PERCENT = 2.2482

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	368.43	393.08	398.59	325.37

EXT GAS TEMP DEG.F	FXT-1	FXT-2	FXT-3	FXT-4	SFXT-1	SFXT-2
	1210.4	-454.00	862.45	1147.2	1366.3	1367.1

ENGINE OIL	FOILT	SOILT	OILT	MANIFOLD PRESSURE =
	157.54	132.54	72.491	26.309

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE =
	238.15	2342.3	29.086

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	59.030	59.238	120.37	56.914

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	80.945	4.8183	54.190	3013.0

CELL TEMP. = 75.890 HEATER TEMP = 81.040 COOLER TEMP = 52.627

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NASA-LEWIS PRELIMINARY DATA 04/02/76 CANDEII REC 04/01/76 10:36:00.363 FAC SEX15 PGM C003 RDG 2780

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 30 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.070 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	60.303	29.073	104.43	477.41	1.7139	14.397

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	65.709	5.4851	45.026	45.863	41.941	6.0309

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	61.187	3.0250	3.6947	10004.	31.891	30.684

PFL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	31.891	22.624	25.131	0.57709	65.770

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	PPM-1	PPM-7	TORQUE	RHP
	0.087852	0.087537	1.3112	2353.1	2354.6	145.53	65.203

WET CORRECTION FACTOR = 0.85941 EXHAUST MOLE WT. = 27.075 EXHAUST DENSITY = 0.070103 EXHAUST FLOW RATE = 7432.8

MEASURED CONC.	PART PER MILLION WFT	PER CFMT			
	CO DRY	CO2 DRY			
	40 PPM	NOX PPM	CO DRY	CO2 DRY	NO2 DRY
	2038.8	137.95	9.1330	9.66760	0.064186
CORRECTED CONC. TO WET BASIS			7.8490	8.3084	0.055162

EMISSION RATE	HC	NOX	CO
	0.54403	0.12202	4.2355
EMISSION MASS/MODE	0.054403	0.012202	4.2355
EMISSION MASS/RATED HP	0.00034002	7.6263E-05	0.026472
MODE EMISS./STD. CYCLE	17.896	5.0842	63.028

CAL. FUEL AIR RATIO = 0.098027 MFAS. FUEL AIR RATIO = 0.097852 DIFF MEAS. & CAL. F/A PERCENT = 0.19981

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	319.27	330.93	332.91	444.94

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1226.6	-454.00	670.10	1038.4	1220.6	1221.5

ENGINE OIL	EOILT	SOILT	OILT	MANIFOLD PRESSURE = 18.312
	165.40	253.45	71.487	

DYNO COND.	TORQUE	RPM	CYL. RACK PRESSURE = 29.143
	150.50	2311.9	

INDUCTION AIR	TAIPT1	TAIPT2	TAIRT1	TAIRT2
	59.997	60.303	157.48	57.177

SPECIFIC AIR	TEMP	DELTA P	ORFP	FLOW
	81.439	4.8940	54.252	5037.3

CELL TEMP. = 76.511 HEATER TEMP = 80.880 COOLER TEMP = 52.159

NASA-LEWIS PRELIMINARY DATA 04/02/76 CADDEII REC 04/01/76 10:55:07.549 FAC SEX15 PGM C003 RDG 2781

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 30 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.070 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 57.547 PRESS 29.059 CFM 209.35 DRY FLOW 967.01 VAPOR FLOW 3.7721 PRESS TOTAL 14.760

COMP. FUEL TEMP 53.042 PRESS 5.3441 DENSITY 45.097 TURBO FLOW 82.240 FLOW TRON 78.824 FPIP 5.9793

COOLING AIR TEMP 60.709 INDEL-HOOD 2.8727 DEL-HOOD 3.5422 FLOW 9719.0 REL-HUM 39.185 DEW-POINT 32.914

REL-HUM 1 39.185 2 19.575 HUMIDITY 27.306 % H2O VAPOR CORRECTED HP 156.27

ENG. COND. F/A DRY 0.081513 F/A WET 0.081196 EQU. RATIO 1.2166 PPM-1 2699.5 RPM-2 2701.6 TORQUE 292.32 RHP 150.25

WET CORRECTION FACTOR = 0.84650 EXHAUST MOLE WT. = 27.560 EXHAUST DENSITY = 0.071360 EXHAUST FLOW RATE = 14708.

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 1426.7 CO DRY 7.8154 CO2 DRY 10.4140 O2 DRY 0.044384
CORRECTED CONC. TO WET BASIS NOX PPM 254.27 CO 6.6158 CO2 8.8154 O2 0.037571

EMISSION RATE HC 0.75337 NOX 0.44504 CO 70.646
EMISSION MASS/MODE HC 0.0037669 NOX 0.0022252 CO 0.35323
EMISSION MASS/RATED HP HC 2.3543E-05 NOX 1.3908E-05 CO 0.0022077
MODE FMIS./STD. CYCLE % HC 1.2391 NOX 0.92718 CO 5.2564

CAL. FUEL AIR RATIO = 0.084393 MFAS. FUEL AIR RATIO = 0.081513 DIFF MEAS. & CAL. F/A PFCENT = 3.5334

CYL. TEMP DEG. F CYL-1 420.33 CYL-2 436.10 CYL-3 419.71 CYL-4 391.82

EXT GAS TEMP DEG. F EXT-1 1673.4 EXT-2 -454.00 EXT-3 721.13 EXT-4 978.13 SFXT-1 1321.1 SEXT-2 1320.8

ENGINE OIL FOILT 189.08 SOILT 212.92 OILP 73.187 MANIFOLD PRESSURE = 28.087

DYNO COND. TORQUE 289.26 RPM 2602.9 CYL. BACK PRESSURE = 29.278

INDUCTION AIR IAIPT1 57.203 IAIPT2 57.547 IAIPT1 150.44 IAIPT2 54.636

ORIFICE AIR TEMP 83.954 DELTAP 4.8584 DRFP 54.237 FLOW 3029.0

CELL TEMP. = 80.029 HEATER TEMP = 10.304 COOLER TEMP = 48.254

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NASA-LEWIS PRELIMINARY DATA 04/02/76 CADDEII REC 04/01/76 11:07:33.233 FAC SEX15 PGM C003 RDG 2782

LEANOUT 25 RTDC TO CL APP 59 DEG HUM = 30 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.080 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	57.529	29.090	158.69	769.41	2.9743	14.593

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	64.138	5.4092	45.068	61.914	61.548	6.0132

COOLING AIR	TEMP	INDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	63.132	2.9278	3.5336	9823.2	38.422	32.409

REL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP
	39.422	0.22202	27.260	0.62140 119.82

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.079994	0.079686	1.1939	2430.6	2432.5	257.52	119.18

WET CORRECTION FACTOR = 0.84808 EXHAUST MOLE. WT. = 27.681 EXHAUST DENSITY = 0.071672 EXHAUST FLOW RATE = 11635.

MEASURED CONC.	PAFT PER MILLION WET	PER CENT
	HC PPM NOX PPM CO DRY CO2 DRY O2 DRY	
	1614.4 710.75 7.0920 10.7670 0.12497	
CORRECTED CONC. TO WET BASIS		6.0145 9.1310 0.10599

	HC	NOX	CO
EMISSION RATE	0.67433	0.98410	50.806
EMISSION MASS/MODE	0.056194	0.082008	4.2338
EMISSION MASS/RATED HP	0.00035121	0.00051255	0.026461
MODE EMIS./STD. CYCLE %	18.485	34.170	63.003

CAL. FUEL AIR RATIO = 0.082490 MEAS. FUEL AIR RATIO = 0.079994 DIFF MEAS. & CAL. F/A PERCENT = 3.1204

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	368.46	391.65	411.63	608.89

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1425.3	-454.00	911.42	875.61	1239.9	1239.9

ENGINE OIL	EQILT	SOILT	OILP	MANIFOLD PRESSURE = 26.420
	187.31	152.34	72.947	

DYND COND.	TORQUE	PPM	CYL. BACK PRESSURE = 29.163
	275.04	2386.5	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	57.230	57.520	172.83	55.344

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	70.957	2.8125	51.691	2324.6

CELL TEMP. = 80.945 HEATER TEMP = 80.151 COOLER TEMP = 50.951

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NASA-LEWIS PRELIMINARY DATA 04/02/76 CADDEII REC 04/01/76 11:13:54.784 FAC SEX15 PGM C003 RDG 2783

LEANOUT 25 BTDC TO CL APP 53 DEG. HUM=30% MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.080 RATED HP. = 160.00 HC RATIO= 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	59.217	29.083	104.58	470.29	1.6604	14.394

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	66.489	5.4887	45.005	45.957	41.464	6.0351

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	59.987	2.8072	3.5494	9593.4	33.784	30.359

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	33.784	40.018	24.714	0.56752	65.338

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.088168	0.087857	1.3159	2349.5	2350.4	145.20	64.956

WET CORRECTION FACTOR = 0.86001 EXHAUST MOLE. WT. = 27.051 EXHAUST DENSITY = 0.070042 EXHAUST FLOW RATE = 7330.0

MEASURED CONC.	PART PER MILLION WET		CO DRY	PER CENT	O2 DRY
	HC PPM	NOX PPM			
	2140.9	171.00	9.3363	9.54570	0.14719
CORRECTED CONC. TO WET BASIS			8.0293	8.2094	0.12659

EMISSION RATE	HC	NOX	CO
	0.56337	0.14916	42.729
	0.056337	0.014916	4.2729
	0.00035211	9.3222E-05	0.026705
MODE EMIS./STD. CYCLE %	18.532	6.2148	63.584

CAI FUEL AIR RATIO = 0.088307 MEAS. FUEL AIR RATIO = 0.088168 DIFF MEAS. & CAL. F/A PERCENT = 0.15758

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	326.07	337.24	341.69	562.53

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1370.4	-454.00	766.49	806.87	1086.0	1084.7

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 18.343
	187.05	224.63	72.903	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.277
	139.25	2310.7	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	57.837	53.217	117.41	55.816

ORFICE AIR	TEMP	DELTA P	ORFP	FLOW
	80.549	4.9090	54.194	3043.8

CFLL TEMP. = 80.743 HEATER TEMP = 80.540 COOLER TEMP = 51.222

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NASA-LEWIS PRELIMINARY DATA 04/02/76 CADDEII REC 04/01/76 11:22:16.956 FAC SEX15 PGM C003 RDG 2784

LEANOUT 25 BTDC TO CL APP 59 DEG. HUM=30% MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.090 RATED HP. = 160.00 HC RATIO= 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	59.229	29.087	208.69	964.30	3.2782	14.768

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	65.009	5.3528	45.045	66.051	79.781	6.0213

COOLING AIR	TEMP	INLET-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	62.376	2.8858	3.4794	9743.7	32.194	30.129

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	32.194	12.723	23.797	0.54645	156.21

ENG. COND.	F/A DRY	F/A WFT	EQV. RATIO	RPM-1	RPM-2	TORQUE	RHP
	0.082734	0.082454	1.2348	2699.2	2701.2	292.29	150.22

WET CORRECTION FACTOR = 0.95306 EXHAUST MOLE. WT. = 27.454 EXHAUST DENSITY = 0.071112 EXHAUST FLOW RATE = 14728.

MEASURED CONC.	PART PER MILLION WFT			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1464.2	297.51	7.7480	10.4740	0.074047
CORRECTED CONC. TO WFT BASIS			6.6095	8.9349	0.063167

EMISSION RATE	HC	NOX	CO
	0.77421	0.52144	70.673
	0.0038711	0.0026072	0.35337
	2.4194E-05	1.6295E-05	0.0022085
MODE FMIS./STD. CYCLE %	1.2734	1.0863	5.2584

CAL. FUEL AIR RATIO = 0.084099 MEAS. FUEL AIR RATIO = 0.082734 DIFF MEAS. & CAL. F/A PERCENT = 1.6492

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	428.78	439.78	425.13	292.69

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	889.39	-454.00	900.82	860.38	1322.5	1322.1

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.131
	188.89	217.12	73.007	

DYMO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.255
	295.06	2597.1	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	58.904	59.229	157.06	55.161

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	83.119	4.8751	53.984	3027.5

CELL TEMP. = 82.319 HEATER TEMP = 81.199 COOLER TEMP = 50.266

NASA-LEWIS PRELIMINARY DATA 04/02/76 CADDETI RFC 04/02/76 11:32:56.645 FAC SEX15 PGM C003 RDG 2785

LEANOUT 25 BTDC TO CL APP 59 DEG. HUM=30% MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.090 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	57.429	29.089	208.80	965.03	3.4061	14.768

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	63.985	5.3690	45.372	80.656	76.814	6.0381

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	RFL-HUM	DEW-POINT
	63.826	2.7773	3.3374	9535.7	35.649	30.849

PFL-HUM	1	?	HUMIDITY	% H2O VAPOR	CORRECTED HP
	35.649	1.5542	24.707	0.56736	156.75

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	PPM-1	PPM-2	TORQUE	BHP
	0.079597	0.079317	1.1880	2701.2	2703.7	293.65	151.03

WET CORRECTION FACTOR = 0.85034 EXHAUST MOLE. WT. = 27.713 EXHAUST DENSITY = 0.071755 EXHAUST FLOW RATE = 14566.

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1305.5	427.68	6.6848	10.9740	0.073267
CORRECTED CONC. TO WET BASIS			5.6843	9.3319	0.062302

EMISSION RATE	HC	NOX	CO	
	0.68273	0.74137	60.115	
	EMISSION MASS/MODE	0.0034136	0.0037069	0.30057
	EMISSION MASS/RATED HP	2.1335E-05	2.3168E-05	0.0018786
MODE EMIS./STD. CYCLE %	1.1229	1.5445	4.4728	

CAL. FUEL AIR RATIO = 0.081561 MFAS. FUEL AIR RATIO = 0.079597 DIFF MEAS. & CAL. F/A PERCENT = 2.4675

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	428.19	444.11	430.27	380.03

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SFXT-1	SEXT-2
	886.67	-376.31	979.86	1111.3	1332.2	1331.8

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.155
	188.94	228.59	73.299	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.233
	294.97	2620.5	

INDUCTION AIR	IAIRT1	IAIPT2	TAIRT1	TAIRT2
	57.059	57.429	125.36	54.940

ORIFICE AIR	TEMP	DELTA P	DIFF P	FLOW
	91.483	4.8734	54.222	3031.6

CELL TEMP. = 80.972 HEATER TEMP = 91.790 COOLER TEMP = 48.254

NASA-LEWIS PRELIMINARY DATA 04/02/76 CADDEII REC 04/02/76 11:38:14.769 FAC SEX15 PGM C003 ROG 2786

LEANOUT 25 BTDC TO CL APP 59 DEG. HUM=30% MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.090 RATED HP.= 160.00 HC RATIO= 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	58.714	29.093	158.63	769.36	2.7841	14.591

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	66.516	5.4098	45.004	62.750	60.498	6.0177

COOLING AIR	TEMP	INLET-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	61.682	2.9475	3.5062	9860.2	34.476	31.094

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	34.476	5.7366	25.331	0.58168	121.32

ENG. COND.	F/A DRY	F/A WET	EQV. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.078634	0.078350	1.1734	2434.2	2436.2	260.15	120.57

WET CORRECTION FACTOR = 0.85243 EXHAUST MOLE. WT. = 27.790 EXHAUST DENSITY = 0.071956 EXHAUST FLOW RATE = 11571.

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	1465.3	868.99	6.1575	11.2230	0.15604	
CORRECTED CONC. TO WET BASIS			5.2489	9.5672	0.13301	

	HC	NOX	CO
EMISSION RATE	0.60873	1.1966	44.095
EMISSION MASS/MODE	0.050728	0.099717	3.6746
EMISSION MASS/RATED HP	0.00031705	0.00062323	0.022966
MODE EMIS./STD. CYCLE %	16.687	41.549	54.682

CAL. FUEL AIR RATIO = 0.080158 MEAS. FUEL AIR RATIO = 0.078634 DIFF MEAS. & CAL. F/A PERCENT = 1.9379

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	379.79	397.04	414.91	467.54

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1212.4	-454.00	1014.1	977.38	1259.7	1260.1

ENGINE OIL	EOILT	SOILT	NOILT	MANIFOLD PRESSURE = 26.400
	187.46	171.74	73.147	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.218
	256.93	2376.4	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	58.389	58.714	158.11	55.295

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	82.961	4.8361	53.967	3017.3

CYLL TEMP. = 82.310 HEATER TEMP = 81.998 COOLER TEMP = 52.078

NASA-LFWIS PRELIMINARY DATA 04/02/76 CADDE11 REC 04/02/76 11:42:58.865 FAC SEX15 PGM C003 RDG 2787

LEANOUT 25 BTDC TO CL APP 59 DEG. HUM=30% MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.090 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	60.150	29.092	104.61	470.63	1.6867	14.403

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	70.020	5.5079	44.911	44.340	39.562	6.0198

COOLING AIR	TEMP	INDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	62.259	2.8393	3.5425	9655.0	32.023	30.659

PFL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	32.023	0.31403	25.388	0.57610	65.492

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.084062	0.083761	1.2547	2354.6	2356.0	144.86	64.947

WET CORRECTION FACTOR = 0.85427 EXHAUST MOLE. WT. = 27.362 EXHAUST DENSITY = 0.070846 EXHAUST FLOW RATE = 7225.3

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1934.9	245.65	8.1991	10.1420	0.13305
CORRECTED CONC. TO WET BASIS			7.0042	8.6642	0.11366

	HC	NOX	CO
EMISSION RATE	0.50188	0.21121	36.741
EMISSION MASS/MODE	0.050188	0.021121	3.6741
EMISSION MASS/RATED HP	0.00031368	0.00013201	0.022963
MODE EMIS./STD. CYCLE %	16.509	8.8006	54.674

CAL. FUEL AIR RATIO = 0.085364 MEAS. FUEL AIR RATIO = 0.084062 DIFF MEAS. & CAL. F/A PERCENT = 1.5495

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	331.58	339.30	343.37	550.98

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1400.4	-454.00	1044.2	861.67	1093.6	1092.7

ENGINE OIL	EOILT	SOILT	OILT	MANIFOLD PRESSURE = 18.444
	197.03	199.96	72.739	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.122
	154.65	2314.0	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	59.761	60.150	91.636	55.881

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	84.130	4.8625	53.696	3021.3

CELL TEMP. = 82.847 HEATER TEMP = 82.171 COOLER TEMP = 51.618

NASA-LEWIS PPELIMINARY DATA 04/02/76 CANDEIT RFC 04/02/76 11:51:22.849 FAC SEX15 DGB C093 RDG 2788

EXHAUST 25 BTDC TO CL APP 59 DEG. HUM=30% MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.090 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	56.932	29.082	209.22	967.12	3.5982	14.773

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIR
	64.542	5.3E09	45.357	76.141	76.604	5.9448

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	60.105	3.1027	3.7736	10147.	38.259	31.869

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	38.259	6.6487	26.343	0.59805	155.99

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	RHP
	0.079208	0.078914	1.1922	2701.4	2704.0	292.17	150.28

WET CORRECTION FACTOR = 0.84749 EXHAUST MOLE. WT. = 27.744 EXHAUST DENSITY = 0.071836 EXHAUST FLOW RATE = 14578.

MEASURED CONC.	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1341.9	440.32	6.7462	10.9970	0.069467
CORRECTED CONC. TO WET BASIS			5.7173	9.3198	0.058873

	HC	NOX	CO
EMISSION RATE	0.70237	0.76394	60.515
EMISSION MASS/MODE	0.0035118	0.0038197	0.30258
EMISSION MASS/RATED HP	2.1949E-05	2.3873E-05	0.0018911
MODE EMIS./STD. CYCLE %	1.1552	1.5915	4.5027

CAL. FUEL AIR RATIO = 0.081680 MEAS. FUEL AIR RATIO = 0.079208 DIFF MEAS. & CAL. F/A PERCENT = 3.1210

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	429.00	442.10	425.49	351.63

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1050.3	-183.75	1054.9	1184.2	1333.9	1333.6

ENGINE OIL	FILT	SOILT	OILP	MANIFOLD PRESSURE = 28.203
	188.44	186.09	73.067	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.286
	296.35	2623.2	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	55.569	56.932	68.911	54.881

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	82.416	4.8598	54.036	3025.3

CELL TEMP. = 81.342 HFATEP TEMP = 82.518 COOLER TEMP = 49.671

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NASA-LEWIS PRELIMINARY DATA 04/02/76 CADDEIT PFC 04/01/76 12:00:49.500 FAC SEX15 PGM C003 RDG 2789

LEANOUT 25 BTDC TO CL APP 59 DEG. HUM=30% MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.100 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	58.840	29.150	167.87	766.13	2.5672	14.585

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRDN	FPIP
	67.563	5.4005	44.974	66.332	61.806	5.0480

COOLING AIR	TEMP	INLET-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	61.953	3.0822	3.6402	10109.	31.781	29.614

REL-HUM	1	2	HUMIDITY	% H ₂ O VAPOR	CORRECTED H ₂ O
	31.781	23.518	23.456	0.53863	121.14

ENG. COND.	F/A DRY	F/A WET	F/O ₂ RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.080673	0.080404	1.2041	2430.2	2431.9	260.28	120.44

WET CORRECTION FACTOR = 0.86120 EXHAUST MOLE. WT. = 27.627 EXHAUST DENSITY = 0.071532 EXHAUST FLOW RATE = 11610.

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO ₂ DRY	O ₂ DRY
	1492.3	823.38	6.1395	11.2670	0.14771
CORRECTED CONC. TO WET BASIS			5.2873	9.7034	0.12721

EMISSION RATE	HC	NOX	CO	
	0.62207	1.1376	44.567	
	EMISSION MASS/MODE	0.051835	0.094799	3.7139
	EMISSION MASS/RATED HP	0.00032397	0.00059249	0.023212
MODE EMIS./STD. CYCLE %	17.051	39.500	55.266	

CAL. FUEL AIR RATIO = 0.080118 MEAS. FUEL AIR RATIO = 0.080673 DIFF MEAS. & CAL. F/A PERCENT = -0.68764

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	377.16	399.80	413.50	345.17

EXT GAS TEMP DEG.F	FXT-1	FXT-2	FXT-3	FXT-4	SFXT-1	SFXT-2
	1131.0	-454.00	1092.6	1073.4	1257.5	1258.1

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 26.463
	187.24	190.78	73.019	

DYNC COND.	TORQUE	RPM	CYL. RACK PRESSURE = 29.223
	248.99	2370.6	

INDUCTION AIR	TAIPT1	TAIPT2	TAIPT1	TAIPT2
	58.488	58.840	131.21	55.166

ORIFICE AIR	TEMP	DELTA P	PRES	FLOW
	84.121	4.9017	54.102	3031.9

CFLI TEMP. = 83.198 HEATER TEMP = 82.747 COOLER TEMP = 51.573

NASA-LEWIS PRELIMINARY DATA 04/02/76 CADDEII REC 04/01/76 12:04:19.052 FAC SEX15 PGM C003 RDG 2790

LEANOUT 25 BTDC TO CL APP 59 DEG. HUM=30% MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PPESSURE = 29.100 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	60.195	29.100	104.26	469.45	1.5427	14.408

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	70.484	5.5031	44.899	45.911	40.375	6.0540

COOLING AIR	TEMP	WFL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	62.295	2.9898	3.5931	9939.3	29.340	29.009

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	29.340	9.8790	23.004	0.52825	65.278

ENG. COND.	F/A DRY	F/A WET	EQV. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.086005	0.085723	1.2837	2352.7	2354.6	144.60	64.773

WET CORRECTION FACTOR = 0.86247 EXHAUST MOLE. WT. = 27.213 EXHAUST DENSITY = 0.070462 EXHAUST FLOW RATE = 7257.4

MEASURED CONC.	PART PER MILLION WFT			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1883.5	245.46	8.1907	10.1890	0.14059
CORRECTED CONC. TO WFT BASIS			7.0642	8.7879	0.12126

EMISSION RATE	HC	NOX	CO
	0.49072	0.21199	37.220
	0.049072	0.021199	3.7220
	0.00030670	0.0013249	0.023263
EMISSION MASS/RATED HP			55.387
MODE EMIS./STD. CYCLE %	16.142	8.8329	

CAL. FUEL AIR RATIO = 0.085216 MEAS. FUEL AIR RATIO = 0.086005 DIFF MEAS. & CAL. F/A PERCENT = -0.91737

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	332.21	338.61	344.70	440.61

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1540.9	-454.00	1045.2	997.30	1098.5	1097.7

ENGINE OIL	EQILT	SOILT	OILP	MANIFOLD PRESSURE = 18.371
	187.05	205.76	72.567	

CYAN COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.154
	149.90	2301.8	

INDUCTION AIR	TAIPT1	TAIRT2	TAIPT1	TAIPT2
	50.771	50.195	115.45	55.879

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	64.753	4.8841	54.129	3025.4

CELL TEMP. = 83.603 HEATER TEMP = 92.837 COOLER TEMP = 52.006

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NASA-LEWIS PRELIMINARY DATA 04/02/76 CADDEIT REC 04/02/76 12:14:07.334 FAC SEX15 PGM C003 RDG 2791

LEANOUT 25 BTDC-10 CL APP 59 DEG. HUM=30% MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.100 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 57.375 PRESS 29.099 CFM 208.41 DRY FLOW 962.55 VAPOR FLOW 3.4257 PRESS TOTAL 14.765

COMB. FUEL TEMP 65.502 PRESS 5.3849 DENSITY 45.029 TURBO FLOW 76.192 FLOW TRON 72.802 FPIP 6.0420

COOLING AIR TEMP 60.114 UDEL-HOOD 3.180 DEL-HOOD 3.9358 FLOW 10704. REL-HUM 36.006 DEW-POINT 31.004

REL-HUM 1 36.006 2 15.015 HUMIDITY 24.913 H2O VAPOR CORRECTED HP 0.57208 157.88

ENG. COND. F/A DRY 0.075634 F/A WET 0.075366 EQU. RATIO 1.1289 RPM-1 2693.6 RPM-2 2696.4 TORQUE 296.75 BHP 152.19

WET CORRECTION FACTOR = 0.84739 EXHAUST MOLE. WT. = 28.036 EXHAUST DENSITY = 0.072593 EXHAUST FLOW RATE = 14309.

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 1203.8 CO DRY 5.2389 CO2 DRY 11.7600 O2 DRY 0.086409
CORRECTED CONC. TO WET BASIS NOX PPM 724.27 CO 4.4394 CO2 9.9649 O2 0.073222

EMISSION RATE HC 0.61842 NOX 1.2333 CO 46.120
EMISSION MASS/MODE 0.0030921 0.0061666 0.23060
EMISSION MASS/RATED HP 1.9326E-05 3.9541E-05 0.0014413
MODE EMIS./STD. CYCLE % 1.0171 2.5694 3.4316

CAL. FUEL AIR RATIO = 0.078151 MEAS. FUEL AIR RATIO = 0.075634 DIFF MEAS. & CAL. F/A PERCENT = 3.3271

CYL TEMP DEG.F CYL-1 424.04 CYL-2 435.93 CYL-3 428.68 CYL-4 213.92

EXT GAS TEMP DEG.F EXT-1 909.98 EXT-2 -20.736 EXT-3 1174.6 EXT-4 1244.3 SEXT-1 1355.6 SEXT-2 1355.6

ENGINE OIL FOILT 189.40 SOILT 192.44 OILP 73.507 MANIFOLD PRESSURE = 28.169

DYAN COND. TORQUE 292.72 RPM 2550.2 CYL. RACK PRESSURE = 29.279

INDUCTION AIR IAIRT1 56.986 IAIRT2 57.375 TAIRT1 139.54 TAIRT2 55.161

ORIFICE AIR TEMP 83.031 DELTAP 3.9235 ORFP 54.081 FLOW 2727.3

CELL TEMP. = 82.142 HEATER TEMP = 82.990 COOLER TEMP = 50.194

991

NASA-LEWIS PRELIMINARY DATA 04/02/76 CADDPII REC 04/02/76 12:27:00.819 FAC SEX15 PGM C003 RDG 2792

LEANOUT 25 BTDC TO CL APP 59 DEG. HUM=30% MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. PARAMETRIC PRESSURE = 29.110 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	59.608	29.047	167.25	763.58	2.6078	14.594

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	69.369	5.4080	44.928	57.369	57.276	6.0480

COOLING AIR	TEMP	INLET-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	62.871	2.9906	3.5832	9940.9	31.531	29.989

REL-HUM	1	2	HUMIDITY	% H ₂ O VAPOR	CORRECTED HP
	31.531	8.5749	23.907	0.54899	120.50

ENG. COND.	F/A DRY	F/A WET	EQV. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.075010	0.074754	1.1195	2429.1	2430.2	258.75	119.67

WET CORRECTION FACTOR = 0.85154 EXHAUST MOLE. WT. = 28.089 EXHAUST DENSITY = 0.072728 EXHAUST FLOW RATE = 11322.

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO ₂ DRY	O ₂ DRY
	1283.0	1159.4	4.7319	11.9860	0.18192
CORRECTED CONC. TO WET BASIS			4.0294	10.206	0.15491

	HC	NOX	CO
EMISSION RATE	0.52152	1.5622	33.122
EMISSION MASS/MODE	0.043460	0.13018	2.7601
EMISSION MASS/RATED HP	0.00027162	0.00091363	0.017251
MODE FMS./STD. CYCLE %	14.296	54.242	41.074

CAL. FUEL AIR RATIO = 0.076778 MEAS. FUEL AIR RATIO = 0.075010 DIFF MEAS. & CAL. F/A PERCENT = 2.3583

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	390.15	406.14	418.18	340.14

EXT GAS TEMP DEG.F	FXT-1	EXT-2	EXT-3	EXT-4	SFXT-1	SEXT-2
	1327.3	-454.00	1079.2	1141.3	1286.3	1286.9

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 26.379
	187.24	236.11	72.707	

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.223
	233.94	2347.7	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	59.292	59.508	135.46	55.233

ORIFICE AIR	TEMP	DELTA P	ORIF P	FLOW
	85.086	4.2051	54.164	3030.1

CFL. TEMP. = 84.893 HEATER TEMP = 83.094 COOLER TEMP = 51.699

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NASA-LEWIS PRELIMINARY DATA 04/02/76 CADDEII REC 04/02/76 12:30:56.466 FAC SEX15 PGM C003 RDG 2793

LEANOUT 25 BTDC TO CL APP 59 DEG. HUM=30% MONE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.110 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	60.511	29.111	103.95	468.08	1.5842	14.411

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	72.186	5.5181	44.854	46.236	38.047	6.0792

COOLING AIR	TEMP	INLET-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	62.673	2.9417	3.5447	9849.3	29.881	29.574

REL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP
	29.881	0.30003	23.590	0.54401 66.544

ENG. COND.	F/A DRY	F/A WFT	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.081282	0.081008	1.2132	2359.5	2361.0	146.88	65.987

WFT CORRECTION FACTOR = 0.85788 EXHAUST MOLE WT. = 27.579 EXHAUST DENSITY = 0.071407 EXHAUST FLOW RATE = 7110.1

MEASURED CONC.	PART PER MILLION WFT			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1751.9	433.48	6.6580	11.0150	0.15284
CORRECTED CONC. TO WFT BASIS			5.7118	9.4491	0.13111

EMISSION RATE	HC	NOX	CO
	0.44717	0.34139	29.484
	0.044717	0.034138	2.9484
	0.00027948	0.00021337	0.018427
MODE EMISS./STD. CYCLE	14.710	14.724	43.87%

CAL. FUEL AIR RATIO = 0.081413 MEAS. FUEL AIR RATIO = 0.081282 DIFF MEAS. & CAL. F/A PERCENT = 0.16155

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	333.99	341.51	347.32	494.94

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1072.6	-454.00	1153.0	916.10	1113.7	1112.8

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 18.377
	186.76	189.50	72.607	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.166
	151.76	2311.4	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	60.150	50.511	122.78	55.858

ORIFICE AIR	TEMP	DEL TAP	ORIF	FLOW
	85.367	4.8355	54.175	3010.5

CELL TEMP. = 84.270 HEATFP TEMP = 83.136 COOLER TEMP = 51.690

891

NASA-LEWIS PRELIMINARY DATA 04/02/76 CADDEII REC 04/02/76 12:35:05.511 FAC SEX15 PGM C003 R0G 2794

LEANOUT 25 BTDC TO CL APP 59 DEG. HUM=30% MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.110 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	57.520	29.112	208.57	963.81	3.4555	14.776

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIF
	66.739	5.3675	44.998	75.139	72.628	5.9597

COOLING AIR	TEMP	WHEEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	60.601	3.0161	3.5846	9988.2	36.108	31.159

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	36.108	19.460	25.097	0.57631	157.60

ENG. COND.	F/A DRY	F/A WET	EQUL. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.075355	0.075086	1.1247	2694.1	2696.5	296.25	151.97

WET CORRECTION FACTOR = 0.84635 EXHAUST MOLE. WT. = 28.050 EXHAUST DENSITY = 0.072653 EXHAUST FLOW RATE = 14313.

MEASURED CONC.	PART PER MILLION WET		PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY
	1209.3	724.95	5.2568	11.7650
CORRECTED CONC. TO WET BASIS			CO DRY	CO2 DRY
			4.4491	9.9574

EMISSION RATE	HC	NOX	CO
	0.62139	1.2348	46.232
EMISSION MASS/MODE	0.0031070	0.0061739	0.23116
EMISSION MASS/RATED HP	1.9419E-05	3.8587E-05	0.0014448
MODE EMIS./STD. CYCLE %	1.0220	2.5724	3.4399

CAL. FUEL AIR RATIO = 0.078056 MFAS. FUEL AIR RATIO = 0.075355 DIFF MEAS. & CAL. F/A PERCENT = 3.5838

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	428.04	441.18	429.74	225.69

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1076.3	-7.3621	1191.1	1298.8	1354.3	1354.3

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.237
	188.33	254.44	73.215	

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.258
	292.55	2616.0	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	57.122	57.520	133.47	55.231

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	83.216	4.8529	54.143	3021.2

CELL TEMP. = 82.381 HEATER TEMP = 83.157 COOLER TEMP = 50.176

NASA-LEWIS		PRELIMINARY DATA		04/02/76	CADDE11	REC 04/02/76 12:48:27.901	FAC SEX15	PGM C003	RDG 2795
LEANOUT 25 BTDC TO CL APP 59 DEG. HUM=30%				MODE = 4.2000	NO. SCANS = 5				
ENGINE TIMING = 25.000		DEG.	BAROMETRIC PRESSURE = 29.110		RATED HP. = 160.00		HC RATIO = 2.1250		
COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL			
	59.572	29.107	167.35	763.62	2.6259	14.585			
COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP			
	69.601	5.4170	44.922	59.915	56.595	6.0534			
COOLING AIR	TEMP	INLET-HOOD	DEL-HOOD	FLOW	PFL-HUM	DEW-POINT			
	62.835	2.9870	3.5544	9934.2	31.769	30.109			
PFL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP				
	31.769	11.769	24.071	0.55275	121.06				
ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	PPM-1	PPM-2	TORQUE	RHP		
	0.074113	0.073859	1.1062	2433.6	2435.4	259.50	120.24		
WET CORRECTION FACTOR = 0.84753		EXHAUST MOLE. WT. = 28.164		EXHAUST DENSITY = 0.072923		EXHAUST FLOW RATE = 11283.			
MEASURED CONC.	PART PER MILLION WET		PER CENT						
	HC PPM	NOX PPM	CO DRY	CO2 DRY	CO DRY				
	1253.7	1163.7	4.7176	11.9840	0.17032	170			
CORRECTED CONC. TO WET BASIS			3.9983	10.157	0.14435				
EMISSION RATE	HC	NOX	CO						
	0.50787	1.5626	32.754						
EMISSION MASS/MODE	0.042322	0.13022	2.7295						
EMISSION MASS/RATED HP	0.00026451	0.00081385	0.017059						
MODE EMIS./STO. CYCLE %	13.922	54.257	40.617						
CAL. FUEL AIR RATIO = 0.076781		MEAS. FUEL AIR RATIO = 0.074113		DIFF MEAS. & CAL. F/A PERCENT = 3.5997					
CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4					
	390.24	401.51	419.01	415.08					
EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SFXT-1	SEXT-2			
	1674.2	-454.00	1122.1	1125.0	1285.1	1285.7			
ENGINE OIL	FOILT	SOILT	OILT	MANIFOLD PPESSURE = 26.354					
	187.32	85.342	72.703						
DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.266						
	254.84	2385.4							
INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2					
	59.193	59.572	148.35	55.185					
ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW					
	85.112	3.8800	54.141	2707.0					
CELL TEMP. = 84.279	HEATER TEMP = 83.191		COOLER TEMP = 52.249						

NASA-LEWIS PRELIMINARY DATA 04/02/76 CADDEII REC 04/02/76 12:53:55.583 FAC SEX15 PGM C003 R0G 2796

LEANOUT 25 BTDC TO CL APP 59 DEG. HUM=30% MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.110 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	58.090	29.105	103.23	465.77	1.4684	14.414

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	70.957	5.5160	44.886	43.300	38.365	6.0717

COOLING AIR	TEMP	WDFL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	60.817	2.9801	3.6881	9921.3	30.367	28.229

REL-HUM	1	2	HUMIDITY	H2O VAPOR	CORRECTED HP
	30.367	47.213	22.068	0.50677	66.233

ENG. COND.	F/A DRY	F/A WET	F0U. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.082368	0.082109	1.2294	2354.2	2355.8	147.03	65.907

WET CORRECTION FACTOR = 0.86275 EXHAUST MOLE. WT. = 27.493 EXHAUST DENSITY = 0.071186 EXHAUST FLOW RATE = 7102.6

MEASURED CONC.	PART PER MILLION WFT			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	1757.2	407.48	6.6488	11.0000	0.15045	
CORRECTED CONC. TO WET BASIS						
			5.7363	9.4905	0.12981	

	HC	NOX	CO
EMISSION RATE	0.44805	0.34441	29.579
EMISSION MASS/MODE	0.044805	0.034441	2.9579
EMISSION MASS/PATED HP	0.00028003	0.00021525	0.018487
MODE EMIS./STD. CYCLE %	14.738	14.350	44.017

CAL. FUEL AIR RATIO = 0.081419 MEAS. FUEL AIR RATIO = 0.082368 DIFF MEAS. & CAL. F/A PERCENT = -1.1520

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	326.22	333.34	337.66	596.91

EXT GAS TEMP DEG.F	FXT-1	FXT-2	FXT-3	FXT-4	SEXT-1	SEXT-2
	1330.6	-454.00	1117.0	948.24	1093.1	1092.4

ENGINE OIL	F0ILT	SOILT	OILP	MANIFOLD PRESSURE = 18.240
	186.95	208.73	72.319	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.202
	152.48	2304.7	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	57.729	58.090	105.58	55.120

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	93.471	4.9372	54.121	3043.1

CELL TEMP. = 81.807 HEATER TEMP = 83.240 COOLER TEMP = 52.330

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NASA-LEWIS PRELIMINARY DATA 04/02/76 CADDETT REC 04/02/76 12:59:53.712 FAC SFX15 PGM C003 RDG 2797

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 30 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.110 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CEM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	59.063	29.124	208.84	964.70	3.3198	14.773

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	67.116	5.3912	44.989	73.017	71.302	5.9925

COOLING AIR	TEMP	INLET-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	61.250	3.1420	3.7094	10219.	33.989	30.369

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	33.989	3.28203	24.089	0.55317	155.73

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	PPV-2	TORQUE	BHP
	0.073911	0.073658	1.1032	2703.0	2705.5	293.66	151.14

WET CORRECTION FACTOR = 0.85322 EXHAUST MOL.F. WT. = 28.181 EXHAUST DENSITY = 0.072967 EXHAUST FLOW RATE = 14243.

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1089.1	1019.0	4.0095	12.3180	0.10431
CORRECTED CONC. TO WET BASIS			3.4211	10.510	0.089000

	HC	NOX	CO
EMISSION RATE	0.55691	1.7272	35.377
EMISSION MASS/MODE	0.0027846	0.0086360	0.17689
EMISSION MASS/(RATE) HP	1.7404E-05	5.3975E-05	0.0011055
MODE EMTS./STD. CYCLE %	0.91598	3.5983	2.6322

CAL. FUEL AIR RATIO = 0.075406 MEAS. FUEL AIR RATIO = 0.073911 DIFF MEAS. & CAL. F/A PERCENT = 2.0221

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	437.82	446.14	439.82	554.09

EXT GAS TEMP DEG.F	FXT-1	FXT-2	FXT-3	FXT-4	SEXT-1	SEXT-2
	1014.4	163.06	1135.9	1207.9	1384.5	1384.3

ENGINE OIL	SOILT	SOILT	OIL P	MANIFOLD PRESSURE = 28.174
	188.67	166.26	73.479	

DYNO COND.	TORQUE	QOM	CYL. BACK PRESSURE = 29.288
	287.01	2501.9	

INDUCTION AIR	TAIPT1	TAIPT2	TAIRT1	TAIPT2
	57.665	58.063	137.41	55.437

CRUISE AIR	TEMP	DELTA P	QRP	FLOW
	83.506	0.083108	54.069	302.54

CELL TEMP. = 82.319 HEATER TEMP = 83.254 COOLER TEMP = 50.527

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NASA-LEWIS PRELIMINARY DATA 04/02/76 GARDETT REC 04/02/76 13:03:18.532 FAC SEX15 PGM C003 RDG 2798

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 30 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.110 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CEM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	58.615	29.105	168.83	770.93	2.7159	14.600

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	68.699	5.4299	44.245	56.695	55.869	6.0261

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	62.088	3.1584	3.6885	10248.	33.723	30.599

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	33.723	6.6727	24.559	0.56649	119.90

ENG. COND.	F/A DRY	F/A WET	FOU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.072469	0.072215	1.0915	2432.0	2434.8	257.33	119.20

WET CORRECTION FACTOR = 0.95206 EXHAUST MOLE. WT. = 28.303 EXHAUST DENSITY = 0.073284 EXHAUST FLOW RATE = 11319.

MEASURED CONC.	PART PER MILLION WFT			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	1088.7	1509.8	3.7073	12.4340	0.23116	
CORRECTED CONC. TO WET BASIS			3.1589	10.594	0.19697	

	HC	NOX	CO
EMISSION RATE	0.44240	2.0337	25.959
EMISSION MASS/MODE	3.036867	0.16948	2.1632
EMISSION MASS/RATED HP	0.00023042	0.0010592	0.013520
MODE EMIS./STD. CYCLE %	12.127	70.616	32.191

CAL. FUEL AIR RATIO = 0.074362 MEAS. FUEL AIR RATIO = 0.072469 DIFF MEAS. & CAL. F/A PERCENT = 2.6110

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	400.29	409.81	420.60	587.57

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1740.7	-402.50	1000.9	1140.0	1315.1	1315.5

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 26.605
	187.14	205.75	72.463	

DYNO COND.	TORQUE	PPM	CYL. BACK PRESSURE = 29.220
	277.49	2377.3	

INDUCTION AIR	TAIPT1	TAIPT2	TAIRT1	TAIRT2
	58.225	58.615	197.62	55.289

ORIFICE AIR	TEMP	DELTA P	CFD	FLOW
	84.086	1.0947	54.037	1473.0

CELL TEMP. = 82.873 HEATER TEMP = 83.247 COOLER TEMP = 52.933

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NASA-LEWIS PRELIMINARY DATA 04/02/76 CADDEII REC 04/02/76 13:09:01.292 FAC SEX15 PGM C003 R0G 2799

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 30 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.120 RATE HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	59.997	29.099	102.67	462.59	1.5819	14.417

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRCN	FPIP
	72.498	5.5271	44.845	39.834	35.440	6.0590

COOLING AIR	TEMP	INLET-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	62.745	2.9929	3.5962	9945.0	30.759	29.779

REL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP
	30.759	13.885	23.937	0.54967 65.494

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.075610	0.076349	1.1434	2351.9	2354.0	145.11	64.985

WET CORRECTION FACTOR = 0.85220 EXHAUST MOL. WT. = 27.956 EXHAUST DENSITY = 0.072384 EXHAUST FLOW RATE = 6902.3

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1581.1	600.66	5.2410	11.6710	0.14399
CORRECTED CONC. TO WET BASIS			4.4564	9.9463	0.12271

EMISSION RATE	HC	NOX	CO	
	0.39177	0.49336	27.381	
	EMISSION MASS/MODE	0.039177	0.049336	2.2381
	EMISSION MASS/PATED HP	0.00024486	0.00030835	0.013988
MODE EMIS./STD. CYCLE %	12.687	20.557	33.306	

CAL. FUEL AIR RATIO = 0.079226 MEAS. FUEL AIR RATIO = 0.076610 DIFF MEAS. & CAL. F/A PERCENT = 2.1082

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	334.96	341.09	348.41	479.32

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1178.1	-381.10	1289.4	1032.3	1125.9	1124.9

ENGINE OIL	EQILT	SOILT	OILP	MANIFOLD PRESSURE = 18.273
	186.83	256.07	72.411	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.183
	139.46	2352.3	

INDUCTION AIR	TAIPT1	TAIPT2	TAIPT1	TAIPT2
	59.590	59.997	132.44	55.747

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	84.859	0.037804	54.174	155.17

CELL TEMP. = 83.262 HEATER TEMP = 83.268 COOLER TEMP = 53.501

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NASA-LEWIS PRELIMINARY DATA 04/02/76 CADDETT REC 04/02/76 13:14:14.390 FAC SFX15 PGM C003 PDG 2800

LEANOUT 25 BTDC ID CL APP 59 DEG HUM = 30 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.120 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CEM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	60.294	29.142	208.07	962.02	3.0584	14.782

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	69.422	5.3903	44.927	74.056	70.477	6.0066

COOLING AIR	TEMP	INFL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	63.491	3.0944	3.6474	10132.	29.023	28.869

REL-HUM	1	2	HUMIDITY	H2O VAPOR	CORRECTED HP
	22.023	12.681	22.254	0.51102	157.35

ENG. COND.	F/A DRY	F/A WET	F/O. RATIO	RPM-1	PPM-2	TORQUE	RHP
	0.073260	0.073028	1.0934	2696.4	2698.3	295.19	151.55

WET CORRECTION FACTOR = 0.9500 EXHAUST MOLE WT. = 28.236 EXHAUST DENSITY = 0.073110 EXHAUST FLOW RATE = 14164.

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
CORRECTED CONC. TO WET BASIS	1091.0	991.30	3.9345	12.3970	0.091709	
			3.3479	10.549	0.078035	

EMISSION RATE	HC	NOX	CO
	0.54969	1.5709	34.427
	0.0027485	0.0083544	0.17214
	1.7178E-05	5.2215E-05	0.0010759
MODE EMIS./STD. CYCLE %	0.90410	3.4810	2.5616

CAL. FUEL AIR RATIO = 0.075260 MEAS. FUEL AIR RATIO = 0.073260 DIFF MEAS. & CAL. F/A PERCENT = 2.7311

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	441.46	462.55	445.39	311.63

EXT GAS TEMP DEG.F	FXT-1	FXT-2	FXT-3	FXT-4	SEXT-1	SEXT-2
	1233.0	372.61	1345.7	1305.2	1395.7	1395.4

ENGINE OIL	EGILT	SOILT	OILP	MANIFOLD PRESSURE = 28.164
	188.75	226.34	73.315	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.304
	302.00	2626.2	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	59.942	60.294	52.875	55.537

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	85.735	1.0393	54.151	1433.6

CELL TEMP. = 84.612 HEATER TEMP = 83.261 COOLER TEMP = 50.500

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NASA-LEWIS PRELIMINARY DATA 04/02/76 CADDE11 RFC 04/02/76 13:22:56.872 FAC SEX15 PGM C003 RDG 2801

LEANOUT 25 RTDC TO CL APP 59 DFG HUM = 30.7 MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.120 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS. TOTAL
	59.112	29.042	166.40	758.01	2.5993	14.596

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	69.600	5.4209	44.949	54.701	54.461	5.9982

COOLING AIR	TEMP	INLET-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	60.890	3.0175	3.6432	9990.7	32.229	30.069

REL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP
	32.229	2.6783	24.004	120.22

ENG. COND.	F/A DRY	F/A WET	FOW. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.071847	0.071602	1.0724	2429.0	2430.4	258.31	119.46

WET CORRECTION FACTOR = 0.84933 EXHAUST MOLE. WT. = 28.355 EXHAUST DENSITY = 0.073422 EXHAUST FLOW RATE = 11101.

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1117.5	1448.1	3.6160	12.5240	0.19902
CORRECTED CONC. TO WET BASIS			3.0712	10.637	0.16818

	HC	NOX	CO
EMISSION RATE	0.44541	1.9131	24.752
EMISSION MASS/MODE	0.037117	0.15942	2.0627
EMISSION MASS/RATED HP	0.00023198	0.00099639	0.012892
MODE EMIS./STD. CYCLE %	12.210	66.425	30.695

CAL. FUEL AIR RATIO = 0.074273 MEAS. FUEL AIR RATIO = 0.071847 DIFF MEAS. & CAL. F/A PERCENT = 3.3754

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	395.48	403.81	417.57	418.61

FXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SFXT-1	SEXT-2
	810.64	-145.61	1154.5	1177.7	1308.6	1309.3

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 26.374
	186.96	167.62	72.603	

DYMO COND.	TORQUE	RPM	CYL. PACK PRESSURE = 29.117
	241.61	2340.5	

INDUCTION AIR	IAIPT1	IAIPT2	TAIRT1	TAIRT2
	58.777	59.112	39.690	56.425

CRIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	83.822	2.9868	54.133	2383.8

CELI TEMP. = 83.048 HEATER TEMP = 83.337 COOLER TEMP = 50.816

NASA-LEWIS PRELIMINARY DATA 04/02/76 CANDELL REC 04/02/76 13:29:20.242 FAC SEX15 PGM C003 RDG 2802

LEANOUT 25 RTDC TO CL APP 59 DEG HUM = 30 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.120 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 60.420 PRESS 29.121 CFM 103.84 DRY FLOW 466.86 VAPOR FLOW 1.5320 PRESS TOTAL 14.406

COMB. FUEL TEMP 72.693 PRESS 5.5277 DENSITY 44.840 TURBO FLOW 42.384 FLOW TRON 36.499 FPIP 6.0951

COOLING AIR TEMP 61.466 WDEL-HOOD 3.0454 DEL-HOOD 3.5489 FLOW 10042. REL-HUM 29.060 DEW-POINT 28.979

REL-HUM 1 29.060 2 12.639 HUMIDITY 22.970 % H2O VAPOR CORRECTED HP 0.52747 65.862

ENG. COND. F/A DRY 0.078179 F/A WET 0.077924 FOU. RATIO 1.1669 RPM-1 2358.7 PPM-2 2360.8 TORQUE 145.47 BHP 65.333

WET CORRECTION FACTOR = 0.95863 EXHAUST MOLE. WT. = 27.827 EXHAUST DENSITY = 0.072052 EXHAUST FLOW RATE = 7007.3

MEASURED CONC. HC PPM 1612.7 NOX PPM 628.48 CO DRY 4.5418 PER CENT CO2 DRY 11.7100 O2 DRY 0.16160
CORRECTED CONC. TO WET BASIS HC 1612.7 NOX 628.48 CO 4.5418 PER CENT CO2 DRY 11.7100 O2 DRY 0.13875

EMISSION RATE HC 0.40569 NOX 0.52407 CO 23.105
EMISSION MASS/MODE HC 0.040568 NOX 0.052407 CO 2.3105
EMISSION MASS/RATED HP HC 0.00025355 NOX 0.00032755 CO 0.014441
MODE EMISS./STD. CYCLE % HC 13.345 NOX 21.836 CO 34.383

CAL. FUEL AIR RATIO = 0.078229 MFAS. FUEL AIR RATIO = 0.078179 DIFF MEAS. & CAL. F/A PERCENT = 0.063737

CYL TEMP DEG.F CYL-1 332.02 CYL-2 339.65 CYL-3 344.37 CYL-4 481.05

EXT GAS TEMP DEG.F EXT-1 1072.1 EXT-2 -139.11 EXT-3 1313.0 EXT-4 1036.4 SEXT-1 1115.4 SEXT-2 1114.7

ENGINE OIL EQILT 196.95 SQILT 244.71 OIIP 71.975 MANIFOLD PRESSURE = 18.352

DYNO COND. TORQUE 149.20 RPM 2273.0 CYL. BACK PRESSURE = 29.184

INDUCTION AIR TAIRT1 60.033 TAIRT2 60.420 TAIRT1 166.18 TAIRT2 56.600

ORIFICE AIR TEMP 84.805 DELTAP 2.0269 DRFP 54.094 FLOW 1983.4

CELL TEMP. = 93.031 HEATER TEMP = 93.351 COOLER TEMP = 57.403

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NASA-LEWIS PRELIMINARY DATA 04/02/76 CADDEII REC 04/02/76 13:36:13.331 FAC SEX15 PGM C003 RDG 2803

LEANOUT 25 BTDC TO CI APP 59 DEG HUM = 30 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.120 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 60.231 PRESS 29.143 CFM 207.50 FRY FLOW 957.04 VAPOR FLOW 3.6110 PRESS TOTAL 14.773

COMB. FUEL TEMP 70.458 PRESS 5.4098 DENSITY 44.899 TURBO FLOW 65.809 FLOW TRON 64.959 FPIP 6.0018

COOLING AIR TEMP 63.275 INDEL-HOOD 3.0958 DEL-HOOD 3.6612 FLOW 10134. REL-HUM 34.441 DEW-POINT 32.094

REL-HUM 1 34.441 2 39.144 HUMIDITY 26.390 % H2O VAPOR CORRECTED HP 0.60599 154.43

ENG. COND. F/A DRY 0.067819 F/A WET 0.067564 EQU. RATIO 1.0122 PPM-1 2688.0 RPM-2 2690.2 TORQUE 290.28 BHP 148.56

WET CORRECTION FACTOR = 0.84954 EXHAUST MOLE. WT. = 28.530 EXHAUST DENSITY = 0.074130 EXHAUST FLOW RATE = 13846.

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 841.68 NOX PPM 2070.0 CO DRY 1.8391 CO2 DRY 13.4240 O2 DRY 0.19952
CORRECTED CONC. TO WET BASIS 1.5524 11.404 0.16950

EMISSION RATE HC 0.41828 NOX 3.4107 CO 15.705
EMISSION MASS/MODE 0.0020919 0.017054 0.078525
EMISSION MASS/RATED HP 1.3074E-05 0.00010658 0.00049078
MODE EMISS./STD. CYCLE % 0.68012 7.1056 1.1685

CAL. FUEL AIR RATIO = 0.070451 MEAS. FUEL AIR RATIO = 0.067819 DIFF MEAS. & CAL. F/A PERCENT = 3.9809

CYL TEMP DEG.F CYL-1 442.86 CYL-2 449.00 CYL-3 447.22 CYL-4 426.24

EXT GAS TEMP DEG.F EXT-1 1378.4 EXT-2 543.65 EXT-3 1469.9 EXT-4 1430.9 SEXT-1 1418.6 SEXT-2 1417.9

ENGINE OIL FOILT 188.40 SOILT 172.55 OILP 73.391 MANIFOLD PRESSURE = 28.386

DYNO COND. TORQUE 287.51 RPM 2589.7 CYL. PACK PRESSURE = 29.230

INDUCTION AIR TAIRT1 59.924 TAIRT2 60.231 TAIRT1 141.43 TAIRT2 55.550

ORIFICE AIR TEMP 85.779 DELTAP 1.9998 ORFP 54.259 FLOW 1969.1

CELL TEMP. = 84.084 HEATER TEMP = 83.392 COOLER TEMP = 50.951

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NASA-LEWIS PPELIMINARY DATA 04/02/76 CADDFII REC 04/02/76 13:40:11.682 FAC SEX15 PGM C003 RDG 2804

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 30 ? MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.120 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DPY FLOW	VAPOR FLOW	PRESS TOTAL
	57.375	29.104	172.74	789.76	3.0570	14.624

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRCN	FPIP
	68.270	5.4425	44.957	55.099	54.479	6.0621

COOLING AIR	TEMP	WDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	60.881	3.1846	3.7963	10295.	38.768	32.494

REL-HUM	1	2	HUMIDITY	H2O VAPOR	CORRECTED HP
	38.749	2.0243	27.095	0.62220	120.80

ENG. COND.	F/A DRY	F/A WET	F/O. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.068982	0.068716	1.0296	2429.9	2432.5	259.78	120.19

WET CORRECTION FACTOR = 0.85928 EXHAUST MOLE. WT. = 28.538 EXHAUST DENSITY = 0.073892 EXHAUST FLOW RATE = 11466.

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	737.97	1994.6	2.3693	12.8600	0.71261
CORRECTED CONC. TO WET BASIS			2.0359	11.050	0.61233

	HC	NOX	CO
EMISSION RATE	0.30379	2.7217	16.948
EMISSION MASS/MODE	0.025316	0.22681	1.4124
EMISSION MASS/PATED HP	0.00015822	0.0014175	0.0088273
MODE EMIS./STD. CYCLE %	8.3276	94.503	21.017

CAL. FUEL AIR RATIO = 0.069932 MEAS. FUEL AIR RATIO = 0.068982 DIFF MEAS. & CAL. F/A PERCENT = 1.3780

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	405.35	417.00	405.30	553.81

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SFXT-1	SEXT-2
	1240.6	-39.093	965.25	1271.5	1344.8	1345.0

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE =
	196.98	187.28	72.343	26.969

DYND COND.	TORQUE	RPM	CYL. RACK PRESSURE =
	265.73	2335.7	29.228

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	56.941	57.375	134.69	55.203

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	83.023	1.0260	54.098	1428.1

CELL TEMP. = 82.169 HEATER TEMP = 83.358 COOLER TEMP = 53.204

NASA-LEWIS PPELIMINARY DATA 04/02/76 CADDELI RFC 04/02/76 13:44:06.659 FAC SEX15 PGM C003 RDG 2805

LEANOUT 25 BTDC TO CL APP 5% DFG HUM = 30 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.120 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	58.723	29.116	104.00	468.23	1.6386	14.408

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	71.833	5.5427	44.863	39.263	33.063	6.0453

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	61.556	3.0532	3.6776	10056.	32.919	30.209

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	32.919	5.7827	24.496	0.56252	66.412

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	RHP
	0.070613	0.070367	1.0539	2357.2	2358.5	147.03	65.991

WET CORRECTION FACTOR = 0.95545 EXHAUST MOLE. WT. = 28.453 EXHAUST DENSITY = 0.073698 EXHAUST FLOW RATE = 6824.3

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1115.9	1168.5	2.6270	12.935	0.28609
CORRECTED CONC. TO WET BASIS			2.2473	11.065	0.24474

EMISSION RATE	HC	NOX	CO
	0.27339	0.94894	11.134
EMISSION MASS/MODE	0.027339	0.094894	1.1134
EMISSION MASS/PATED HP	0.00017087	0.00059308	0.0069587
MODE EMIS./STD. CYCLE %	8.9930	30.539	16.568

CAL. FUEL AIR RATIO = 0.071958 MEAS. FUEL AIR RATIO = 0.070613 DIFF MEAS. & CAL. F/A PERCENT = 1.9045

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	345.21	347.15	359.13	443.30

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1215.0	254.31	1429.3	1158.1	1185.5	1185.1

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 18.518
	197.07	298.93	72.119	

DYNO COND.	TORQUE	RPM	CYL. RACK PRESSURE = 29.224
	144.15	2323.2	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	58.307	58.723	135.54	55.773

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	83.568	1.0437	54.106	1439.5

CELL TEMP. = 82.152 HEATER TEMP = 83.344 COOLER TEMP = 53.717

MASA-LFWTS PRELIMINARY DATA 04/02/76 CADDEII REC 04/02/76 13:49:21.032 FAC SFX15 PGM C003 RDG 2806

LFANOUT 25 BTDC TO CL APP 59 DEG HUM = 30 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DES. BAROMETRIC PRESSURE = 29.130 RATED HP. = 150.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	59.066	29.140	209.07	965.49	3.6683	14.784

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	70.217	5.4086	44.906	68.312	65.412	5.9676

COOLING AIR	TEMP	INDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	62.340	3.0900	3.6668	10105.	36.207	32.304

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	36.207	1.2641	26.596	0.61073	156.41

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.068785	0.068525	1.0266	2703.6	2705.8	292.65	150.65

WET CORRECTION FACTOR = 0.85539 EXHAUST MOLE. WT. = 28.555 EXHAUST DENSITY = 0.073937 EXHAUST FLOW RATE = 14005.

MEASURED CONC.	PART PER MILLION WET		PER CENT	
	HC PPM	NOX PPM	CO DRY	O2 DRY
	865.09	2142.1	1.7629	13.4560
CORRECTED CONC. TO WET BASIS			1.5079	0.18235

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EMISSION RATE	HC	NOX	CO
	0.43498	3.5703	15.334
EMISSION MASS/MODE	0.0021749	0.017852	0.076668
EMISSION MASS/RATED HP	1.3593E-05	0.00011157	0.00047917
MODE EMIS./STD. CYCLE %	0.71543	7.4382	1.1409

CAL. FUEL AIR RATIO = 0.070264 MEAS. FUEL AIR RATIO = 0.068785 DIFF MEAS. & CAL. F/A PERCENT = 2.1505

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	431.21	439.56	440.09	607.19

FXT GAS TEMP DEG.F	FXT-1	FXT-2	FXT-3	FXT-4	SFXT-1	SFXT-2
	1019.2	573.69	1494.9	1371.6	1416.9	1416.0

ENGINE OIL	FOILT	STILT	DILT	MANIFOLD PRESSURE = 28.236
	198.11	249.20	74.003	

DYMO COND.	TOPDIF	RPM	CYL. BACK PRESSURE = 29.292
	297.78	2516.4	

INDUCTION AIR	TAIPT1	TAIPT2	TAIRT1	TAIRT2
	58.696	59.066	84.544	55.674

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	84.331	2.0407	54.174	1990.7

CELL TEMP. = 83.462 HEATER TEMP = 83.330 COOLER TEMP = 51.654

NASA-LEWIS PRELIMINARY DATA 04/02/76 CADDEII REC 04/02/76 13:54:48.487 FAC SEX15 PGM C003 RDG 2807

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 30 MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.130 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	59.536	29.145	176.32	807.19	2.4978	14.623

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	71.090	5.4335	44.893	56.016	54.224	5.0954

COOLING AIR	TEMP	WDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	63.258	3.1074	3.9566	10155.	28.714	28.149

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	28.714	20.794	21.661	0.49740	121.36

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.067176	0.066969	1.0026	2435.5	2437.0	260.14	120.63

WET CORRECTION FACTOR = 0.85075 EXHAUST MOLE. WT. = 28.572 EXHAUST DENSITY = 0.074238 EXHAUST FLOW RATE = 11637.

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	693.67	1978.2	2.5734	12.7060	0.80280
CORRECTED CONC. TO WET BASIS			2.1894	10.810	0.68299

	HC	NOX	CO
EMISSION RATE	0.28980	2.7394	18.497
EMISSION MASS/MODE	0.024150	0.22929	1.5414
EMISSION MASS/PATED HP	0.00015094	0.0014268	0.0096339
MODE EMIS./STD. CYCLE %	7.9440	95.120	22.938

CAI FUEL AIR RATIO = 0.070062 MEAS. FUEL AIR RATIO = 0.067176 DIFF MEAS. & CAL. F/A PERCENT = 4.2957

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	407.83	421.09	406.64	490.40

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1104.3	227.78	1001.1	1205.3	1346.1	1346.4

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 27.191
	187.09	180.34	72.579	

DYNO COND.	TORQUE	RPM	CYL BACK PRESSURE = 29.276
	260.23	2363.7	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	59.130	59.536	76.914	55.100

REFRESH AIR	TEMP	DELTA P	DRIP	FLOW
	86.112	1.9979	54.136	1969.4

CELL TEMP. = 84.217 HEATER TEMP = 83.316 COOLER TEMP = 53.267

NASA-LEWIS PRELIMINARY DATA 04/02/76 CADDFFI RFC 04/02/76 13:59:34.014 FAC SEX15 PGM C003 RDG 2808

LEANDIT 25 BTDC TO CL APP 59 DFG HUM = 30 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.130 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 60.186 PRESS 29.124 CFM 103.12 DRY FLOW 463.91 VAPOR FLOW 1.5225 PRESS TOTAL 14.397

COMB. FUEL TEMP 73.867 PRESS 5.5493 DENSITY 44.809 TURBO FLOW 39.113 FLOW TRON 33.816 FPIP 6.0582

COOLING AIR TEMP 63.204 UDEL-HOOD 2.9821 DEL-HOOD 3.5098 FLOW 9924.9 REL-HUM 29.288 DEW-POINT 28.969

REL-HUM 1 20.288 2 15.063 HUMIDITY 22.973 % H2O VAPOR CORRECTED HP 0.52753 65.506

ENG. COND. F/A DRY 0.072894 F/A WET 0.072656 FOU. RATIO 1.0880 RPM-1 2353.5 RPM-2 2355.5 TORQUE 145.06 BHP 65.002

WET CORRECTION FACTOR = 0.86392 EXHAUST MOLE. WT. = 28.267 EXHAUST DENSITY = 0.073190 EXHAUST FLOW RATE = 6821.2

MEASURED CONC. PART PER MILLION WGT PER CENT
HC PPM 1165.1 NOX PPM 1143.2 CO DRY 2.8044 CO2 DRY 12.8770 O2 DRY 0.26621
CORRECTED CONC. TO WET BASIS 2.4228 11.124 0.22998

EMISSION RATE HC 0.28532 NOX 0.92798 CO 11.998
EMISSION MASS/MODE 0.028532 0.92798 1.1998
EMISSION MASS/RATED HP 0.00017832 0.00057998 0.0074928
MODE EMIS./STD. CYCLE % 9.3854 38.666 17.854

CAL. FUEL AIR RATIO = 0.072397 MEAS. FUEL AIR RATIO = 0.072894 DIFF MEAS. & CAL. F/A PERCENT = -0.68170

CYL TEMP DEG. F CYL-1 343.12 CYL-2 346.61 CYL-3 359.50 CYL-4 392.74

EXT GAS TEMP DEG. F EXT-1 1751.1 EXT-2 383.50 EXT-3 1505.7 EXT-4 1113.1 SEXT-1 1170.8 SEXT-2 1169.8

ENGINE OIL FOILT 187.07 SOILT 285.92 OILP 71.819 MANIFOLD PRESSURE = 18.447

DYMO COND. TORQUE 147.91 RPM 2296.1 CYL. BACK PRESSURE = 29.176

INDUCTION AIR TAIRT1 59.762 TAIRT2 60.186 TAIRT1 165.78 TAIRT2 55.948

CRACK AIR TEMP 85.717 DELTAP 2.8471 DREF 53.308 FLOW 2325.9

CELL TEMP. = 83.611 HEATER TEMP = 83.254 COOLER TEMP = 54.257

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NASA-LEWIS PRELIMINARY DATA 04/02/76 CADDEII REC 04/02/76 14:52:35.528 FAC SEX15 PGM C003 RDG 2810
 LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 60 % MODE = 4.0000 NO. SCANS = 5
 ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.130 RATED HP. = 160.00 HC RATIO = 2.1250
 COMB. AIR TEMP 58.244 PRFSS 29.164 CFM 167.02 DRY FLOW 759.03 VAPOR FLOW 4.8984 PRESS TOTAL 14.600
 COMP. FUEL TEMP 67.903 PRFSS 5.3843 DENSITY 44.967 TURBO FLOW 54.446 FLOW TRON 61.536 FPIP 6.0534
 COOLING AIR TEMP 62.079 UDEL-HOOD 2.9428 DEL-HOOD 3.5259 FLOW 9851.3 REL-HUM 62.285 DEW-POINT 45.420
 REL-HUM 1 62.285 2 10.737 HUMIDITY 45.175 % H2O VAPOR CORRECTED HP 1.0374 120.81
 ENG. CMD. F/A DRY 0.081072 F/A WFT 0.080552 EQU. RATIO 1.2100 RPM-1 2433.6 PPM-2 2435.3 TORQUE 257.88 BHP 119.49
 WET CORRECTION FACTOR = 0.85004 EXHAUST MOLE. WT. = 27.595 EXHAUST DENSITY = 0.071450 EXHAUST FLOW RATE = 11552.
 MEASURED CONC. PART PER MILLION WFT PER CENT
 HC PPM 1586.2 NOX PPM 754.09 CO DRY 7.0325 CO2 DRY 10.8240 O2 DRY 0.13803
 CORRECTED CONC. TO WFT BASIS 5.9779 9.2005 0.11733
 EMISSION RATE HC 0.65786 NOX 1.0367 CO 50.140
 EMISSION MASS/MODE 0.054822 0.086394 4.1783
 EMISSION MASS/RATED HP 0.00034263 0.00053996 0.026114
 MODE EMIS./STD. CYCLE % 18.033 35.997 62.177
 CAL. FUEL AIR RATIO = 0.082255 MEAS. FUEL AIR RATIO = 0.081072 DIFF MEAS. & CAL. F/A PERCENT = 1.4589
 CYL TEMP DEG.F CYL-1 374.50 CYL-2 391.22 CYL-3 414.15 CYL-4 286.95
 EXT GAS TEMP DEG.F EXT-1 1177.8 EXT-2 -454.00 EXT-3 1311.1 EXT-4 1124.9 SEXT-1 1238.6 SEXT-2 1238.7
 ENGINE OIL FOILT 187.22 SOILT 352.93 OILP 72.475 MANIFOLD PRESSURE = 26.188
 DYNO CMD. TORQUE 259.20 RPM 2371.0 CYL. BACK PRESSURE = 29.189
 INDUCTION AIR TAIRT1 57.891 TAIRT2 58.244 TAIRT1 18.589 TAIRT2 55.292
 ORIFICE AIR TEMP 84.525 DELTAP 0.051505 ORFP 54.002 FLOW 203.33
 CELL TEMP. = 83.77° HEATER TEMP = 83.538 COOLER TEMP = 53.258

h84

NASA-LEWIS PRELIMINARY DATA 04/02/76 CADDET REC 04/02/76 14:55:49.302 FAC SEX15 PGM C003 RDG 2811

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 60 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.130 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 59.428 PRESS 29.139 CFM 103.85 DRY FLOW 465.75 VAPOR FLOW 2.7756 PRESS TOTAL 14.411

COMB. FUEL TEMP 70.636 PRESS 5.4905 DENSITY 44.895 TURBO FLOW 46.446 FLOW TRON 41.333 FPIP 6.0330

COOLING AIR TEMP 62.547 INDEL-HOOD 2.9419 DEL-HOOD 3.4275 FLOW 9849.8 REL-HUM 54.462 DEW-POINT 43.015

REL-HUM 1 54.462 2 50.29803 HUMIDITY 41.716 % H2O VAPOR 0.95795 CORRECTED HP 66.517

ENG. COND. F/A DRY 0.088853 F/A WET 0.088326 F/OJ. RATIO 1.3262 RPM-1 2355.2 RPM-2 2357.2 TORQUE 146.51 BHP 65.704

WET CORRECTION FACTOR = 0.86092 EXHAUST MLE. WT. = 27.001 EXHAUST DENSITY = 0.069912 EXHAUST FLOW RATE = 7293.5

MEASURED CONC. HC PPM 2125.5 NOX PPM 189.97 CO DRY 9.7186 PER CENT 9.57470 CO2 DRY 0.16238
CORRECTED CONC. TO WET BASIS HC 7.9365 NOX 8.2431 CO 0.13979

EMISSION RATE HC 0.55654 NOX 0.16484 CO 42.025
EMISSION MASS/MODE 0.055654 0.016484 4.2025
EMISSION MASS/RATED HP 0.00034784 0.00010302 0.026266
MODE FMIS./STD. CYCLE % 18.307 6.8692 62.537

CAL. FUEL AIR RATIO = 0.087986 MFAS. FUEL AIR RATIO = 0.088853 DIFF MEAS. & CAL. F/A PERCENT = -0.97538

CYL TEMP DEG.F CYL-1 328.17 CYL-2 341.99 CYL-3 345.32 CYL-4 401.16

EXT GAS TEMP DEG.F EXT-1 841.11 EXT-2 745.00 EXT-3 745.80 EXT-4 935.20 SEXT-1 1083.9 SEXT-2 1083.0

ENGINE OIL FOILT 187.37 SOILT 170.74 OILO 71.599 MANIFOLD PRESSURE = 18.336

DYNO COND. TORQUE 146.84 RPM 2337.6 CYL. BACK PRESSURE = 29.188

INDUCTION AIR IAIRT1 59.030 IAIRT2 59.428 TAIRT1 132.94 TAIRT2 55.824

ORIFICE AIR TEMP 85.156 DELTAP 2.0095 ORFP 55.227 FLOW 1974.8

CELL TEMP. = 84.156 HEATED TEMP = 83.441 COOLER TEMP = 53.036

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NASA-LFVTS PRELIMINARY DATA 04/02/76 CADDFII REC 04/02/76 15:07:03.516 FAC SEX15 PGM C003 R0G 2812
 LEANCUT 25 RTDC TO CL APP 59 DEG HUM = 60 % MODE = 3.0000 NO. SCANS = 5
 ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.140 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL	
	59.093	29.117	210.33	968.44	6.2898	14.802	
COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW FROM	FPIP	
	67.590	5.3306	44.976	83.210	80.327	6.0204	
COOLING AIR	TEMP	INLET-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT	
	62.556	3.0421	3.5904	10036.	61.632	45.945	
REL-HUM	1	2	HUMIDITY	% H ₂ O VAPOR	CORRECTED HP		
	61.632	17.026	45.456	1.0438	159.39		
ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	RHP
	0.082945	0.082410	1.2380	2713.9	2716.4	295.29	152.59
WET CORRECTION FACTOR = 0.85085		EXHAUST MOLE WT. = 27.448		EXHAUST DENSITY = 0.071070		EXHAUST FLOW RATE = 14845.	
MEASURED CONC.	PART PER MILLION WET		PPM CFMT				
	HC PPM	NOX PPM	CO DRY	CO ₂ DRY	O ₂ DRY		
	1512.3	350.71	7.6621	10.4790	0.072997		
CORRECTED CONC. TO WET BASIS			6.5192	8.9161	0.062101		
EMISSION RATE	HC	NOX	CO				
	0.80648	0.61957	70.262				
EMISSION MASS/MODE	0.0040324	0.0030978	0.35131				
EMISSION MASS/RATED HP	2.5203E-05	1.9362E-05	0.0021957				
MODE EMIS./STD. CYCLE %	1.3264	1.2908	5.2278				
CAL. FUEL AIR RATIO = 0.083976		MEAS. FUEL AIR RATIO = 0.082945		DIFF MEAS. & CAL. F/A PERCENT = 1.2429			
CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4			
	424.63	441.19	419.56	249.23			
FXT GAS TEMP DEG.F	FXT-1	FXT-2	FXT-3	FXT-4	SFXT-1	SFXT-2	
	1187.3	-345.91	840.62	1116.8	1313.8	1313.5	
ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.264			
	186.83	257.88	73.299				
DYMO COND.	TORQUE	RPM	CYL. PACK PRESSURE = 29.283				
	295.83	2636.6					
INDUCTION AIR	TAIPT1	TAIPT2	TAIRT1	TAIRT2			
	59.763	59.093	135.43	55.623			
ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW			
	85.349	2.0562	55.302	1995.9			
CELL TEMP. = 82.559	HEATER TEMP = 83.795		COOLER TEMP = 51.754				

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NASA-LEWIS PRELIMINARY DATA 04/02/76 CADDEII REC 04/02/76 15:09:44.706 FAC SEX15 PGM C003 R9G 2813

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 60 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.140 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	57.493	29.145	168.35	765.02	5.3144	14.609

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	66.793	5.3888	44.997	61.104	60.996	5.9610

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	60.989	2.9679	3.6286	9898.5	68.874	47.366

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	69.874	50.501	48.628	1.1167	121.52

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.079731	0.079181	1.1900	2434.3	2436.7	259.29	120.18

WET CORRECTION FACTOR = 0.84393 EXHAUST MOLE WT. = 27.702 EXHAUST DENSITY = 0.071777 EXHAUST FLOW RATE = 11590.

MEASURED CONC.	PART PER MILLION WFT			PER CFMT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	1555.8	744.17	6.9974	10.8220	0.11589	
CORRECTED CONC. TO WFT BASIS			5.9053	9.1328	0.098648	

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	HC	NOX	CO
EMISSION RATE	0.64733	1.0264	49.490
EMISSION MASS/MODE	0.053944	0.085532	4.1409
EMISSION MASS/PATED HP	0.00033715	0.00053458	0.025880
MODE EMIS./STD. CYCLE	17.745	35.638	61.620

CAL. FUEL AIR RATIO = 0.082263 MEAS. FUEL AIR RATIO = 0.079731 DIFF MEAS. & CAL. F/A PERCENT = 3.1758

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	382.19	399.92	415.54	651.06

FXT GAS TEMP DEG.F	FXT-1	FXT-2	FXT-3	FXT-4	SEXT-1	SEXT-2
	1106.5	-454.00	878.02	1003.3	1251.7	1252.0

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE =
	187.02	231.22	71.971	26.392

DYNO COND.	TORQUE	RPM	CYL. RACK PRESSURE =
	255.79	2336.0	29.160

INDUCTION AIR	IAIRT1	IAIPT2	TAIRT1	TAIRT2
	57.131	57.493	151.89	55.282

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	83.568	1.9813	54.130	1964.5

CELL TEMP. = 81.879 HEATER TEMP = 83.746 COOLER TEMP = 52.978

NASA-LEWIS PRELIMINARY DATA 04/02/76 CADDEII REC 04/02/76 15:13:12.385 FAC SEX15 PGM C003 RDG 2814

LEANOUT 25 RTDC TO CL APP 59 DEG HUM = 60 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.140 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	58.678	29.129	103.33	463.37	2.9632	14.418

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	69.815	5.4908	44.916	43.946	40.588	6.1179

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	DEL-HUM	DEW-POINT
	61.529	3.0496	3.6574	10050.	60.019	44.855

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	60.019	5.4925	44.765	1.0280	65.534

ENG. COND.	F/A DRY	F/A WET	EQV. RATIO	PPM-1	RPM-2	TORQUE	BHP
	0.087593	0.067637	1.3074	2348.5	2349.8	144.75	64.732

WET CORRECTION FACTOR = 0.85480 EXHAUST MOLE. WT. = 27.094 EXHAUST DENSITY = 0.070153 EXHAUST FLOW RATE = 7225.9

MEASURED CONC.	PART PER MILLION WET			PER CFMT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	2065.3	187.44	9.2813	9.55330	0.13953	
CORRECTED CONC. TO WET BASIS			7.9337	8.1662	0.11927	

EMISSION RATE	HC	NOX	CO
	0.53576	0.16118	41.620
	0.053576	0.016117	4.1620
	0.00033485	0.00010073	0.026013
MODE EMIS./STD. CYCLE %	17.624	6.7156	61.935

CAL. FUEL AIR RATIO = 0.088196 MEAS. FUEL AIR RATIO = 0.087593 DIFF MEAS. & CAL. F/A PERCENT = 0.68829

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	321.95	335.26	337.16	547.97

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	801.72	-454.00	706.18	975.32	1082.7	1081.4

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 18.287
	187.19	257.57	71.551	

DYND COND.	TOPQUE	RPM	CYL. BACK PRESSURE = 29.239
	145.55	2315.2	

INDUCTION AIR	IAIPT1	IAIPT2	IAIRT1	TAIRT2
	58.289	58.678	112.20	55.812

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	84.244	2.9906	54.645	2384.4

CELL TEMP. = 82.618 HEATER TEMP = 83.829 COOLER TEMP = 53.492

NASA-LEWIS PRELIMINARY DATA 04/02/76 CADDEII REC 04/02/76 16:41:44.652 FAC SFX15 PGM C003 RDG 2819

LEANOUT 25 BTDC TO CL APP 59 DEG 4UM = 60 ° MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.160 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR TEMP 57.855 PRESS 29.158 CFM 211.31 DRY FLOW 973.02 VAPOR FLOW 6.5058 PRESS TOTAL 14.808

COMP. FUEL TEMP 69.306 PRESS 5.3534 DENSITY 44.930 TURBO FLOW 81.894 FLOW TRON 78.095 FPIP 5.9817

COOLING AIR TEMP 59.762 INDEL-HOOD 3.3014 DEL-HOOD 3.7999 FLOW 10502. REI-HUM 66.348 DEW-POINT 45.721

REF-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP
66.348 54.705 45.903 1.0748 157.37

ENG. COND. F/A DRY 0.080260 F/A WET 0.079727 EQU. RATIO 1.1979 PPM-1 2698.3 PPM-2 2700.3 TORQUE 294.00 BHP 151.04

WET CORRECTION FACTOR = 0.84586 EXHAUST W/F. WT. = 27.660 EXHAUST DENSITY = 0.071617 EXHAUST FLOW RATE = 14767.

MEASURED CONC.	PART PER MILLION WGT			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	1479.0	451.74	7.0462	10.8320	0.11997	
CORRECTED CONC. TO WET BASIS			5.9501	9.1621	0.10148	

	HC	NOX	CO
EMISSION RATE	0.78412	0.79387	63.900
EMISSION MASS/MODE	0.0039206	0.0039693	0.31950
EMISSION MASS/FATED HP	2.4504E-05	2.4808E-05	0.0019969
MODE EMIS./STD. CYCLE %	1.2897	1.5539	4.7545

CAL. FUEL AIR RATIO = 0.082282 MEAS. FUEL AIR RATIO = 0.080260 DIFF MEAS. & CAL. F/A PERCENT = 2.5187

CYL TEMP DEG.F CYL-1 420.92 CYL-2 416.14 CYL-3 393.13 CYL-4 432.55

EXT GAS TEMP DEG.F EXT-1 1275.0 EXT-2 -390.17 EXT-3 884.83 EXT-4 709.68 SEXT-1 1257.2 SEXT-2 1257.3

ENGINE OIL FOILT 141.54 SOILT 134.99 OILP 76.372 MANIFOLD PRESSURE = 28.223

EXH. COND. TORQUE 299.83 RPM 2588.4 CYL. BACK PRESSURE = 29.280

INDUCTION AIR IAIRT1 57.574 IAIRT2 57.855 IAIRT3 -23.838 IAIRT4 55.640

ORIFICE AIR TEMP 83.119 DELTAP 2.0153 ORIF FLOW 1981.1

CELL TEMP. = 79.605 HEATER TEMP = 23.232 COOLER TEMP = 51.312

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NASA-LEWIS PRELIMINARY DATA 04/02/76 CADDEII REC 04/02/76 16:44:08.175 FAC SEX15 PGM C003 RDG 2820

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 60 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.160 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	58.389	29.195	166.81	757.83	5.0611	14.608

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	68.967	5.4041	44.939	65.830	62.076	5.9823

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	60.691	3.3089	3.8680	10515.	64.137	46.331

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	64.137	11.165	46.748	1.0735	120.16

ENG. COND.	F/A DRY	F/A WET	EQ. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.081913	0.081369	1.2226	2429.0	2430.9	256.80	118.77

WET CORRECTION FACTOR = 0.85927 EXHAUST MOLE. WT. = 27.529 EXHAUST DENSITY = 0.071279 EXHAUST FLOW RATE = 11573.

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	1468.7	595.90	6.4277	11.1230	0.15091	
CORRECTED CONC. TO WET BASIS			5.5231	9.5579	0.12068	

EMISSION RATE	HC	NOX	CO
	0.61027	0.92210	46.409
EMISSION MASS/MODE	0.050956	0.068509	3.8674
EMISSION MASS/RATED HP	0.00031785	0.00042818	0.024171
MODE EMIS./STD. CYCLE %	16.729	28.545	57.550

CAL. FUEL AIR RATIO = 0.080749 MEAS. FUEL AIR RATIO = 0.081913 DIFF MEAS. & CAL. F/A PERCENT = -1.4202

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	378.26	399.86	395.23	513.88

EXT GAS TEMP DEG. F	FXT-1	FXT-2	FXT-3	FXT-4	SFXT-1	SFXT-2
	1400.5	-454.00	947.52	846.15	1209.7	1210.7

ENGINE OIL	OIL T	SOILT	OIL P	MANIFOLD PRESSURE = 26.272
	154.45	197.91	72.471	

DYNO COND.	TORQUE	PPM	CYL. BACK PRESSURE = 29.361
	265.72	2386.0	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	58.090	58.389	23.410	55.589

ORIFICE AIR	TEMP	DEL TAP	ORIF	FLOW
	83.453	1.0397	53.378	1436.9

CELL TEMP. = 80.002 HEATER TEMP = 83.184 COOLER TEMP = 51.835

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NASA-I EWIS PRELIMINARY DATA 04/02/76 CADREII REC 04/02/76 16:50:49.345 FAC SEX15 PGM C003 RDG 2822

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 60 % MODE = 5.0000 NO. SCANS = 4

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.160 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	60.112	29.159	104.36	467.69	3.1255	14.429

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	71.220	5.5022	44.879	42.114	36.742	6.0505

COOLING AIR	TEMP	INLET-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	67.049	2.9897	3.6414	9939.1	59.606	46.022

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	59.606	2.3877	46.780	1.0742	66.682

ENG. COND.	F/A DRY	F/A WET	FQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.078562	0.078040	1.1726	2351.3	2352.5	146.78	65.712

WET CORRECTION FACTOR = 0.84433 EXHAUST MOLE. WT. = 27.796 EXHAUST SENSITV = 0.071971 EXHAUST FLOW RATE = 7052.2

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
CORRECTED CONC. TO WET BASIS	1672.3	420.32	6.4363	11.1330	0.14739
			5.4343	9.3998	0.12445

EMISSION RATE	HC	NOX	CO	
	0.42338	0.35273	27.923	
	MASS/MODE	0.042338	0.035273	2.7823
	MASS/RATED HP	0.00026461	0.00022046	0.017390
MODE EMIS./STD. CYCLE %	13.927	14.697	41.404	

CAL. FUEL AIR RATIO = 0.080891 MEAS. FUEL AIR RATIO = 0.078562 DIFF MEAS. & CAL. F/A PERCENT = 2.9639

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	338.04	349.35	342.64	309.39

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	937.54	-454.00	1055.0	974.66	1098.5	1099.1

ENGINE OIL	EQILT	SOILT	OILP	MANTFOLD PRESSURE = 18.404
	169.39	225.74	72.227	

DYND COND.	TROUPE	RPM	CYL. BACK PRESSURE = 29.247
	149.58	2301.0	

INDUCTION AIR	IAIRT1	IAIPT2	TAIRT1	TAIPT2
	69.750	65.112	88.049	56.235

REFRIG AIR	TEMP	DELTA P	CRFP	FLOW
	94.244	2.5500	53.337	2210.7

CELL TEMP. = 82.134 WATER TEMP = 82.969 COOLER TEMP = 51.790

NASA-LEWIS PRELIMINARY DATA 04/02/76 CADDEII REC 04/02/76 16:55:00.923 FAC SEX15 PGM C003 RDG 2823

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 60 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.160 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	59.960	29.136	209.50	964.63	6.5515	14.810

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW FROM	FPIP
	68.404	5.3417	44.954	78.555	77.450	5.9148

COOLING AIR	TEMP	WDEL-HOOD	DEL-HOOD	FLOW	PFL-HUM	DEW-POINT
	62.934	3.0429	3.6621	10037.	62.503	47.136

PFL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	62.503	15.888	47.542	1.0917	157.76

ENG. COND.	F/A DRY	F/A WET	FUEL RATIO	PPM-1	RPM-2	TORQUE	RHP
	0.080290	0.079748	1.1984	2701.4	2704.1	293.40	150.91

WET CORRECTION FACTOR = 0.84437 EXHAUST MOLE. WT. = 27.657 EXHAUST DENSITY = 0.071611 EXHAUST FLOW RATE = 14643.

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	1484.9	378.78	7.1524	10.7760	0.090629	
CORRECTED CONC. TO WET BASIS			6.0392	9.0991	0.076524	

EMISSION RATE	HC	NOX	CO
	0.78063	0.56004	64.203
EMISSION MASS/MODE	0.0039031	0.0033002	0.37102
EMISSION MASS/PATED HP	2.4295E-05	2.0626E-05	0.0020064
MODE EMIS./STD. CYCLE %	1.2839	1.3751	4.7770

CAL. FUEL AIR RATIO = 0.082644 MEAS. FUEL AIR RATIO = 0.080290 DIFF MEAS. & CAL. F/A PERCENT = 2.9327

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	418.16	436.56	418.00	677.19

FXT GAS TEMP DEG.F	FXT-1	FXT-2	FXT-3	FXT-4	SEXT-1	SEXT-2
	1506.3	-321.25	948.87	1249.8	1314.8	1314.5

ENGINE OIL	OILT	SOILT	OILP	MANIFOLD PRESSURE = 28.232
	192.48	233.73	73.467	

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.319
	291.92	2632.2	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	59.617	59.960	119.08	55.668

ORIFICE AIR	TEMP	DELTA P	ORIF P	FLOW
	84.762	1.0164	53.396	1419.3

CELL TEMP. = 82.979 WATER TEMP = 82.893 COOLER TEMP = 50.464

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NASA-LEWIS PRELIMINARY DATA 04/02/76 CADDÉII REC 04/02/76 16:58:14.873 FAC SEX15 PGM C003 RDG 2824

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 60 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.160 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR TEMP 60.321 PRESS 29.181 CFM 156.38 DRY FLOW 756.40 VAPOR FLOW 5.0186 PRESS TOTAL 14.620

COMP. FUEL TEMP 69.512 PRESS 5.4083 DENSITY 44.924 TURBO FLOW 61.295 FLOW TRON 58.560 FPIP 6.0639

COOLING AIR TEMP 63.356 UDEL-HOOD 3.0025 DEL-HOOD 3.6745 FLOW 9963.0 REL-HUM 59.519 DEW-POINT 46.180

REL-HUM 1 59.519 2 19.692 HUMIDITY 46.444 % H2O VAPOR CORRECTED HP 1.0665 122.30

ENG. COND. F/A DRY 0.077419 F/A WET 0.076909 EQU. RATIO 1.1555 RPM-1 2431.6 RPM-2 2433.4 TORQUE 260.56 BHP 120.64

WET CORRECTION F. COR = 0.83948 EXHAUST MOLF. WT. = 27.889 EXHAUST DENSITY = 0.072212 EXHAUST FLOW RATE = 11355.

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 1513.2 CO DRY 6.4376 CO2 DRY 11.1240 O2 DRY 0.12091
CORRECTED CONC. TO WET BASIS NOX PPM 492.73 CO 5.4042 CO2 9.3382 O2 0.10150

EMISSION RATE HC 0.61688 NOX 0.56581 CO 44.552
EMISSION MASS/MODE HC 0.051406 NOX 0.055484 CO 3.7126
EMISSION MASS/RATED HP HC 0.00032129 NOX 0.00034677 CO 0.023204
MODE FMS./STD. CYCLE % HC 16.910 NOX 23.118 CO 55.247

CAL. FUEL AIR RATIO = 0.080917 MEAS. FUEL AIR RATIO = 0.077419 DIFF MEAS. & CAL. F/A PERCENT = 4.5176

CYL TEMP DEG.F CYL-1 393.64 CYL-2 411.26 CYL-3 404.27 CYL-4 475.72

EXT GAS TEMP DEG.F EXT-1 1530.5 EXT-2 -454.00 EXT-3 886.32 EXT-4 1104.8 SFXT-1 1250.8 SFXT-2 1250.9

ENGINE OIL F1ILT 188.38 S1ILT 276.43 O1LP 71.863 MANIFOLD PRESSURE = 26.134

DYNO COND. TORQUE 262.52 RPM 2406.8 CYL. BACK PRESSURE = 29.224

INDUCTION AIR TAIRT1 60.023 TAIRT2 63.321 TAIRT1 123.13 TAIRT2 55.673

ORIFICE AIR TEMP 84.920 DELTAP 2.0258 ORFD 53.386 FLOW 1982.7

CELL TEMP. = 83.445 HEATER TEMP = 82.903 COOLER TEMP = 52.294

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NASA-LEWIS PRELIMINARY DATA 04/02/76 CADDEIT REC 04/02/76 17:01:40.745 FAC SEX15 PGM C003 RDG 2825

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 60 % MCFE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.160 RATED HP = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	58.488	29.148	104.21	467.20	3.0766	14.433

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	70.101	5.5376	44.909	42.039	34.377	6.0351

COOLING AIR	TEMP	INLET-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	60.772	2.9605	3.6460	9884.6	62.272	45.645

REL-HUM	1	2	HUMIDITY	H2O VAPOR	CORRECTED HP
	62.272	0.25002	46.097	1.0585	65.924

ENG. COND.	F/A DRY	F/A WET	EQV. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.073582	0.073101	1.0982	2349.8	2350.5	145.52	65.109

WET CORRECTION FACTOR = 0.85690 EXHAUST MOLE. WT. = 28.209 EXHAUST DENSITY = 0.073039 EXHAUST FLOW RATE = 6909.4

MEASURED CONC.	PART PER MILLION WET	PER CENT
	HC PPM	CO2 DRY
	NOX PPM	O2 DRY
	1243.6	3.2421
	963.30	12.7220
		0.22490
CORRECTED CONC. TO WET BASIS		
		2.7781
		10.901
		0.19272

EMISSION RATE	HC	NOX	CO
	0.30848	0.79203	13.936
EMISSION MASS/MODE			
	0.030848	0.079203	1.3936
EMISSION MASS/RATED HP			
	0.00019280	0.00049502	0.0087097
MODE EMIS./STD. CYCLE %			
	10.147	33.001	20.737

CAL. FUEL AIR RATIO = 0.073459 MEAS. FUEL AIR RATIO = 0.073582 DIFF MEAS. & CAL. F/A PERCENT = -0.16768

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	345.54	352.64	349.09	291.06

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SPXT-1	SEXT-2
	1492.0	128.51	1274.3	1175.1	1151.6	1151.7

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 18.599
	187.19	295.90	71.271	

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.373
	142.50	2343.4	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	59.072	58.488	137.01	56.295

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	82.284	1.0286	53.290	1430.9

CELL TEMP. = 81.254 HEATED TEMP = 82.678 COOLER TEMP = 52.204

NASA-LEWIS PRELIMINARY DATA 04/02/76 CADDILLAC REC 04/02/75 19:21:13.770 FAC SEX15 PGM C003 RDG 2835

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 60 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.190 RATED HP. = 150.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	58.488	29.206	209.84	967.25	6.1677	14.813

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	69.609	5.4149	44.920	69.236	68.767	6.0240

COOLING AIR	TEMP	WDEL-HOOD	DEL-HOOD	FLOW	RFL-HUM	DEW-POINT
	60.511	1.2776	3.7550	10460.	61.906	45.490

REL-HUM	I	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	61.906	31.033	44.636	1.0250	157.67

ENG. COND.	F/A DRY	F/A WET	EQV. RATIO	RPM-1	RPM-2	TORQUE	RHP
	0.071095	0.070645	1.0611	2703.2	2704.9	294.55	151.61

WET CORRECTION FACTOR = 0.84709 EXHAUST MOLE. WT. = 28.421 EXHAUST DENSITY = 0.073590 EXHAUST FLOW RATE = 14162.

MEASURED CONC.	PART PER MILLION WET	NOX PPM	CO DRY	PER CENT	CO2 DRY	O2 DRY
	HC PPM	1562.7	3.0608	12.7940		0.11520
CORRECTED CONC. TO WET BASIS			2.5927	10.837		0.097662

EMISSION RATE	HC	NOX	CO
	0.50710	2.6335	26.658
EMISSION MASS/MODE	0.0025355	0.013168	0.13329
EMISSION MASS/PATED HP	1.5847E-05	8.2298E-05	0.0003306
MODE EMIS./STD. CYCLE %	0.83404	5.4865	1.9835

CAL. FUEL AIR RATIO = 0.073323 MEAS. FUEL AIR RATIO = 0.071095 DIFF MEAS. & CAL. F/A PERCENT = 3.1342

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	431.73	442.25	432.27	515.39

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SFXT-1	SEXT-2
	1909.9	975.72	1192.4	1356.2	1385.7	1388.7

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.189
	155.28	211.34	73.779	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.311
	290.02	2644.8	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	58.189	58.488	42.740	55.537

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	62.812	2.0261	53.290	1986.7

CELL TEMP. = 79.728 HEATER TEMP = 81.998 COOLER TEMP = 51.177

NASA-LEWIS PRELIMINARY DATA 04/02/76 CADDELL REC 04/02/76 19:24:33.364 FAC SEX15 PGM C003 RDG 2836

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 60 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.180 RATED HP. = 150.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	59.283	29.112	168.90	768.65	4.9910	14.633

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	70.342	5.4416	44.907	56.952	54.857	5.0054

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	61.529	3.1877	3.7999	10300.	60.513	45.640

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	60.513	16.342	45.453	1.0437	120.36

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	RHP
	0.071369	0.070908	1.0652	2426.7	2429.9	257.28	118.88

WET CORRECTION FACTOR = 0.85053 EXHAUST MOLE. WT. = 28.398 EXHAUST DENSITY = 0.073528 EXHAUST FLOW RATE = 11257.

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	986.90	1969.4	3.2234	12.6040	0.32255
CORRECTED CONC. TO WET BASIS			2.7416	10.720	0.27434

EMISSION RATE	HC	NOX	CO
	0.39921	2.5066	22.427
EMISSION MASS/MODE	0.033267	0.20888	1.8689
EMISSION MASS/PATED HP	0.00020792	0.0013055	0.011681
MODE FMS./STD. CYCLE %	13.943	87.034	27.812

CAL. FUEL AIR RATIO = 0.073025 MEAS. FUEL AIR RATIO = 0.071369 DIFF MEAS. & CAL. F/A PERCENT = 2.3213

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	395.22	413.43	411.72	513.18

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1213.4	277.14	985.52	1253.0	1315.7	1318.0

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 26.442
	165.58	400.05	71.455	

DYND COND.	TORQUE	RPM	CYL. RACK PRESSURE = 29.161
	280.33	2346.5	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	58.985	59.283	154.49	55.723

OPTIFIC AIR	TEMP	DELTA P	DRFD	FLOW
	83.251	1.0369	53.341	1435.3

CELL TEMP. = 81.421 HEATER TEMP = 82.033 COOLER TEMP = 53.258

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NASA-Lewis PRELIMINARY DATA 04/02/76 CADDEII REC 04/02/76 19:29:32.720 FAC SEX15 PGM C003 RDG 2837

LEANDUT 25 BTDC TO CL APP 59 DEG HUM = 60 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.180 RATE) HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	60.493	29.168	103.72	465.45	3.1849	14.440

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	73.076	5.5136	44.830	42.634	35.491	6.0053

COOLING AIR	TEMP	WET-HOOD	DEL-HOOD	FLOW	PFL-HUM	DEW-POINT
	62.223	3.1404	3.8234	10215.	60.241	46.561

PFL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP
	60.241	0.24802	47.898	1.0999 66.597

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.076250	0.075732	1.1381	2350.6	2352.2	146.51	65.573

WET CORRECTION FACTOR = 0.84948 EXHAUST MOLE. WT. = 27.985 EXHAUST DENSITY = 0.072461 EXHAUST FLOW RATE = 6957.2

MEASURED CONC.	PART PER MILLION WET	PER CENT
	HC PPM NOX PPM CO DRY CO2 DRY	
	1558.7 691.27 4.9348 11.8190 0.14527	
CORRECTED CONC. TO WET BASIS		CO DRY CO2 DRY
		4.1920 10.039 0.12341

EMISSION RATE	HC	NOX	CO
	0.38929 0.057230 21.173		
EMISSION MASS/MODE	0.038929 0.057230 2.1173		
EMISSION MASS/RATED HP	0.00024331 0.00035769 0.013233		
MODE EMIS./STD. CYCLE %	12.806 23.846 31.508		

CAL. FUEL AIR RATIO = 0.077544 MEAS. FUEL AIR RATIO = 0.076250 DIFF MEAS. & CAL. F/A PERCENT = 1.6972

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	332.32 344.97 343.34 492.21			

EXT GAS TEMP DEG.F	FXT-1	FXT-2	FXT-3	FXT-4	SEXT-1	SEXT-2
	1432.5 193.56 1067.7 1098.1 1129.3 1129.2					

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 18.380
	174.23 193.91 71.895			

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.225
	149.92 2313.0		

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	60.150 60.493 81.339 55.850			

CRUISE AIR	TEMP	DELTA P	ORFP	FLOW
	84.103 1.0475 53.365 1441.3			

CFLI TEMP. = 81.835 HEATER TEMP = 82.054 COOLER TEMP = 53.249

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NASA-LEWIS PRELIMINARY DATA 04/02/76 CADDEII REC 04/02/76 19:33:19.298 FAC SEX15 PGM C003 R0G 2838
 LEANOUT 25 RTDC TO CL APP 59 DEG HUM = 60 % MODE = 3.0000 NO. SCANS = 5
 ENGINE TIMING = 25.000 DEG. PARAMETRIC PRESSURE = 29.180 RATED HP. = 160.00 HC RATIO = 2.1250
 COMP. AIR TEMP 58.397 PRESS 29.150 CFM 209.78 DRY FLOW 966.91 VAPOR FLOW 6.5013 PRESS TOTAL 14.824
 COMP. FUEL TEMP 60.324 PRESS 5.3948 DENSITY 44.929 TURBO FLOW 69.964 FLOW TRON 69.637 FPIP 6.0759
 COOLING AIR TEMP 61.547 UDFL-HOOD 3.2403 DEL-HOOD 3.7545 FLOW 10394. REL-HUM 65.499 DEW-POINT 46.896
 REL-HUM 1 65.499 2 52.119 HUMIDITY 47.066 % H2O VAPOR CORRECTED HP 157.95
 ENG. COND. F/A DRY 0.072020 F/A WET 0.071539 EQU. RATIO 1.0749 RPM-1 2702.6 RPM-2 2705.9 TORQUE 294.33 BHP 151.46
 WET CORRECTION FACTOR = 0.84970 EXHAUST MOLE. WT. = 28.342 EXHAUST DENSITY = 0.073383 EXHAUST FLOW RATE = 14213.
 MEASURED CONC. PART PER MILLION WET HC PPM 1014.7 NOX PPM 1540.4 CO DRY 3.2110 PPM CFMT CO2 DRY 12.7050 O2 DRY 0.13181
 CORRECTED CONC. TO WET BASIS CO 2.7284 CO 10.795 CO 0.11200
 EMISSION RATE HC 3.51777 NOX 2.6054 CO 28.154
 EMISSION MASS/MODE 0.0025889 0.013027 0.14077
 EMISSION MASS/RATED HP 1.6180E-05 8.1418E-05 0.00087982
 MODE EMISS./STD. CYCLE 0.85160 5.4279 2.0948
 CAL. FUEL AIR RATIO = 0.073597 MEAS. FUEL AIR RATIO = 0.072020 DIFF MEAS. & CAL. F/A PERCENT = 2.1894
 CYL TEMP DEG.F CYL-1 421.87 CYL-2 435.18 CYL-3 427.24 CYL-4 331.79
 EXT GAS TEMP DEG.F FXT-1 1663.7 FXT-2 946.27 FXT-3 1202.3 FXT-4 1421.4 SEXT-1 1390.4 SEXT-2 1391.7
 ENGINE OIL EOILT 191.71 SOILT 229.83 OILP 73.935 MANIFOLD PRESSURE = 28.328
 DYNM COND. TORQUE 291.01 RPM 2613.9 CYL. PACK PRESSURE = 29.324
 INDUCTION AIR TAIRT1 58.072 TAIRT2 58.397 TAIRT1 68.914 TAIRT2 55.551
 ORIFICE AIR TEMP 92.627 DELTAP 1.0903 ORFP 53.411 FLOW 1472.0
 CELL TEMP. = 90.531 HEATER TEMP = 92.067 COOLER TEMP = 51.772

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NASA-LEWIS PRELIMINARY DATA 04/02/76 CADDPII REC 04/02/76 19:35:13.067 FAC SEX15 PGM C003 RDG 2839

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 60 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.180 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	57.475	29.178	168.52	767.01	5.0487	14.624

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	69.029	5.4347	44.937	58.434	55.175	5.9778

COOLING AIR	TEMP	WDEL-HOOD	DEL-HOOD	FLOW	RFL-HUM	DEW-POINT
	60.682	3.0006	3.6214	9959.4	65.406	45.980

PFL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	65.406	14.737	46.076	1.0581	171.89

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.071936	0.071465	1.0737	2431.4	2433.4	263.57	120.63

WFT CORRECTION FACTOR = 0.85435 EXHAUST MOLE. WT. = 28.349 EXHAUST DENSITY = 0.073402 EXHAUST FLOW RATE = 11269.

MEASURED CONC.	PART PER MILLION WFT	PER CENT			
	HC PPM	CO DRY	CO2 DRY	O2 DRY	
	1370.3	1871.3	3.0576	12.6940	0.29613
CORRECTED CONC. TO WFT BASIS		2.6123	10.845	0.25300	

EMISSION RATE	HC	NOX	CO
	0.41280	2.5096	21.373
EMISSION MASS/MODE	0.034400	0.20913	1.7811
EMISSION MASS/RATED HP	0.00021500	0.0013071	0.011132
MODE EMIS./STD. CYCLE	11.316	87.139	26.504

CAL. FUEL AIR RATIO = 0.072778 MEAS. FUEL AIR RATIO = 0.071936 DIFF MEAS. & CAL. F/A PERCENT = 1.1705

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	398.63	421.51	415.57	601.18

EXT GAS TEMP DEG. F	FXT-1	FXT-2	EXT-3	FXT-4	SFXT-1	SFXT-2
	1069.3	372.62	1222.4	1376.2	1324.6	1326.7

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 26.482
	189.82	262.31	71.715	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.360
	243.96	2349.0	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	57.140	57.475	74.999	55.284

POI/TICE AIR	TEMP	DELTA P	DPF2	FLOW
	81.888	2.0462	53.336	1997.7

CELL TEMP. = 79.903 HEATED TEMP = 82.091 COOLER TEMP = 52.996

NASA-LEWIS PPELIMINARY DATA 04/02/76 CADDEII REC 04/02/76 19:39:47.962 FAC SEX15 PGM C003 RDG 2840

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 60 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.180 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	59.949	29.161	102.75	460.75	3.0322	14.431

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	71.676	5.5286	44.867	41.837	36.295	5.0129

COOLING AIR	TEMP	INLET-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	61.466	2.8307	3.5013	9638.6	61.204	45.625

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	61.204	6.0446	46.067	1.0578	65.638

ENG. COND.	F/A DRY	F/A WET	EQV. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.078773	0.078258	1.1757	2349.5	2350.3	144.82	64.788

WET CORRECTION FACTOR = 0.86037 EXHAUST MOLE. WT. = 27.779 EXHAUST DENSITY = 0.071927 EXHAUST FLOW RATE = 6952.6

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	1521.4	727.07	4.9482	11.8640	0.13719	
CORRECTED CONC. TO WET BASIS			4.2573	10.208	0.11804	

	HC	NOX	CO
EMISSION RATE	0.37975	0.60155	21.489
EMISSION MASS/MODE	0.037975	0.060155	2.1489
EMISSION MASS/RATED HP	0.00023734	0.00037597	0.013430
MODE EMIS./STD. CYCLE %	12.492	25.064	31.977

CAL. FUEL AIR RATIO = 0.077530 MEAS. FUEL AIR RATIO = 0.078773 DIFF MEAS. & CAL. F/A PERCENT = -1.5775

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	341.86	351.86	351.69	439.89

EXT GAS TEMP DEG.F	FXT-1	FXT-2	FXT-3	FXT-4	SEXT-1	SEXT-2
	1603.9	315.30	1120.0	1165.5	1148.8	1148.2

ENGINE OIL	FOILT	SOILT	PILT	MANIFOLD PRESSURE =
	187.33	214.44	71.307	18.419

DYNO COND.	TORQUE	PPM	CYL. PACK PRESSURE =
	140.68	2298.9	29.314

INDUCTION AIR	TAIPT1	TAIPT2	TAIRT1	TAIRT2
	58.560	58.949	77.861	56.107

ORIFICE AIR	TEMP	DELTA P	ORFD	FLOW
	82.442	1.0245	53.362	1427.8

CELL TEMP. = 80.864 HEATER TEMP = 82.074 COOLER TEMP = 53.888

NASA-Lewis PRELIMINARY DATA 04/02/76 CADDETT REC 04/02/76 19:46:43.818 FAC SEX15 PGM C003 R06 2841

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 60 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.180 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	59.283	29.196	207.99	957.66	6.3912	14.807

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	70.270	5.4182	44.904	67.059	65.848	6.0138

COOLING AIR	TEMP	INLET-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	62.412	2.9912	3.6383	9941.9	62.918	46.571

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	62.918	24.378	46.716	1.0728	155.16

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.068759	0.068303	1.0263	2699.2	2701.7	289.74	148.91

WET CORRECTION FACTOR = 0.85149 EXHAUST MOLE. WT. = 28.558 EXHAUST DENSITY = 0.073942 EXHAUST FLOW RATE = 13928.

MEASURED CONC.	PART PER MILLION WET	PER CENT
	CO PPM NOX PPM CO DRY CO2 DRY O2 DRY	
	798.08 2321.8 1.8358 13.3140 0.19382	
CORRECTED CONC. TO WET BASIS		1.5632 11.337 0.15652

EMISSION RATE	HC	NOX	CO
	0.39906 3.8484 15.807		
EMISSION MASS/MODE	0.0019953 0.019242 0.079036		
EMISSION MASS/RATED HP	1.2471E-05 0.00012026 0.00049397		
MODE EMIS./STD. CYCLE %	0.65635 8.0174 1.1761		

CAL. FUEL AIR RATIO = 0.070497 MEAS. FUEL AIR RATIO = 0.068759 DIFF MEAS. & CAL. F/A PERCENT = 2.5284

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	448.81 452.68 453.57 678.75			

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1146.1 1189.0 1487.3 1447.8 1445.6 1446.7					

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE =
	188.76 197.57 73.167 28.377			

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE =
	297.19 2662.6 29.322		

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	58.949 59.283 82.351 55.674			

ORIFICE AIR	TEMP	DELT AP	ORFP	FLOW
	83.515 3.9947 53.473 2750.7			

CELL TEMP. = 82.697 HEATED TEMP = 82.102 COOLER TEMP = 50.987

NASA-LEWIS PRELIMINARY DATA 04/02/76 CADDEII REC 04/02/76 19:49:34.077 FAC SEX15 PGM C003 RDG 2842

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 60% MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.190 RATED HP = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 59.518 PRESS 29.194 CFM 173.63 DRY FLOW 791.96 VAPOR FLOW 5.3388 PRESS TOTAL 14.658

COMB. FUEL TEMP 71.518 PRESS 5.4386 DENSITY 44.871 TURBO FLOW 54.620 FLOW TRON 53.771 FPIP 6.0813

COOLING AIR TEMP 52.898 UDEL-HOOD 2.9436 DEL-HOOD 3.5566 FLOW 9852.9 PEL-HUM 62.381 DEW-POINT 46.666

PEL-HUM 1 52.381 2 35.091 HUMIDITY 47.189 % H2O VAPOR CORRECTED HP 1.0836 120.82

ENG. COND. F/A DRY 0.067895 F/A WET 0.067442 EQU. RATIO 1.0134 RPM-1 2434.1 RPM-2 2435.9 TORQUE 257.34 BHP 119.27

WET CORRECTION FACTOR = 0.84999 EXHAUST MOLE WT. = 29.525 EXHAUST DENSITY = 0.074116 EXHAUST FLOW RATE = 11483.

MEASURED CONC. PART PER MILLION WET HC PPM 721.77 NOX PPM 2158.5 CO DRY 2.3884 PER CENT CO2 DRY 12.7520 O2 DRY 0.64812
CORRECTED CONC. TO WET BASIS CO DRY 2.0301 CO2 DRY 10.839 O2 DRY 0.55090

EMISSION RATE HC 0.29754 NOX 2.3496 CO 16.925
EMISSION MASS/MODE 0.024795 0.24580 1.4104
EMISSION MASS/PATED HP 0.00015497 0.0015362 0.0088149
MODE EMIS./STD. CYCLE % 8.1563 102.42 20.988

CAL. FUEL AIR RATIO = 0.070192 MEAS. FUEL AIR RATIO = 0.067896 DIFF MEAS. & CAL. F/A PERCENT = 3.3806

CYL TEMP DEG.F CYL-1 414.60 CYL-2 427.88 CYL-3 418.82 CYL-4 555.57

EXT GAS TEMP DEG.F EXT-1 1317.3 EXT-2 663.79 EXT-3 1146.7 EXT-4 1401.0 SEXT-1 1362.9 SEXT-2 1353.9

ENGINE OIL FOILT 187.44 SOILT 177.64 OILP 71.751 MANIFOLD PRESSURE = 27.125

DYNO COND. TORQUE 255.27 RPM 2342.1 CYL. BACK PRESSURE = 29.354

INDUCTION AIR IAIRT1 59.139 IAIRT2 59.518 TAIRT1 85.332 TAIRT2 55.225

ORIFICE AIR TEMP 83.927 DELTAP 1.0499 CRFP 53.358 FLOW 1443.2

CELL TEMP. = 83.216 HEATER TEMP = 82.130 COOLER TEMP = 52.916

NASA-Lewis PRELIMINARY DATA 04/02/76 CADDEN REC 04/02/76 19:53:14.825 FAC SEX15 PGM C003 RDG 2843
 LEANOU: 25 BTDC TO CL APP 59 DEG HUM = 60 % MODE = 5.0000 NO. SCANS = 5
 ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.190 RATED HP. = 160.00 HC RATIO = 2.1250
 COMB. AIR TEMP 60.962 PRESS 29.190 CFM 103.87 DRY FLOW 466.39 VAPOR FLOW 3.1526 PRESS TOTAL 14.446
 COMB. FUEL TEMP 74.631 PRESS 5.5358 DENSITY 44.789 TURBO FLOW 41.415 FLOW TRON 34.446 FPIP 6.0516
 COOLING AIR TEMP 63.689 UDEL-HOOD 2.8899 DEL-HOOD 3.4199 FLOW 9751.6 REL-HUM 58.556 DEW-POINT 46.351
 REL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP
 59.556 0.29803 47.316 1.0865 67.296
 ENG. COND. F/A DRY F/A WET EQU. RATIO RPM-1 RPM-2 TORQUE RHP
 0.073857 0.073361 1.1023 2352.1 2354.0 147.91 66.244
 WET CORRECTION FACTOR = 0.85789 EXHAUST MOLE. WT. = 28.185 EXHAUST DENSITY = 0.072979 EXHAUST FLOW RATE = 6906.0
 MEASURED CONC. PART PER MILLION WET PER CENT
 HC PPM NOX PPM CO DRY CO2 DRY O2 DRY
 1282.4 1141.1 3.2338 12.6630 0.18524
 CORRECTED CONC. TO WET BASIS 2.7742 10.863 0.15891
 EMISSION RATE HC NOX CO
 0.31795 0.93778 13.909
 EMISSION MASS/MODE 0.031795 0.093778 1.3909
 EMISSION MASS/RATED HP 0.00019872 0.00058611 0.0086933
 MODE EMIS./STD. CYCLE * 10.459 39.074 20.698
 CAL. FUEL AIR RATIO = 0.073621 MEAS. FUEL AIR RATIO = 0.073857 DIFF MEAS. & CAL. F/A PERCENT = -0.31894
 CYL TEMP DEG.F CYL-1 CYL-2 CYL-3 CYL-4
 348.63 357.04 359.03 422.35
 EXT GAS TEMP DEG.F EXT-1 EXT-2 EXT-3 EXT-4 SFXT-1 SEXT-2
 882.27 698.54 1358.2 1203.6 1190.5 1190.4
 ENGINE OIL EOILT SOILT OILP MANIFOLD PRESSURE = 18.626
 187.59 198.28 71.379
 DYN COND. TORQUE RPM CYL. BACK PRESSURE = 29.265
 138.46 2302.8
 INDUCTION AIR IAIRT1 IAIRT2 TAIRT1 TAIRT2
 60.538 60.962 106.83 55.819
 ORIFICE AIR TEMP DELTAP ORFP FLOW
 84.516 0.10571 53.422 364.30
 CELL TEMP. = 83.067 HEATER TEMP = 82.123 COOLER TEMP = 52.969

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NASA-LEWIS PRELIMINARY DATA C4/02/76 CADDEII REC 04/02/76 19:56:45.780 FAC SEX15 PGM C003 RDG 2844

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 60 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.180 RATE) HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	57.475	29.151	209.40	964.72	6.5806	14.817

COMP. FUEL	TEMP	PRESS	DENSITY	TIPON FLOW	FLOW TRON	FPIP
	52.333	5.4134	44.929	67.741	66.382	5.9949

COOLING AIR	TEMP	INDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	60.890	2.9904	3.5760	9940.4	68.646	47.261

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	68.646	38.202	47.749	1.0965	155.37

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.068809	0.068343	1.0270	2705.2	2707.3	289.46	149.10

WET CORRECTION FACTOR = 0.85166 EXHAUST MOLE WT. = 28.553 EXHAUST DENSITY = 0.073931 EXHAUST FLOW RATE = 14035.

MEASURED CONC.	PART PER MILLION WFT	NOX PPM	CO DRY	PER CENT CO2 DRY	O2 DRY
	HC PPM	2302.8	1.8203	13.3150	0.17744
CORRECTED CONC. TO WET BASIS			1.5503	11.340	0.15112

EMISSION RATE	HC	NOX	CO
	0.40456	3.9463	15.797
EMISSION MASS/MODE	0.0020228	0.019231	0.078985
EMISSION MASS/RATED HP	1.2642E-05	0.00012020	0.00049365
MODE EMIS./STD. CYCLE %	0.66539	8.0131	1.1754

CAL. FUEL AIR RATIO = 0.070490 MEAS. FUEL AIR RATIO = 0.068809 DIFF MEAS. & CAL. F/A PERCENT = 2.4423

CYL TEMP. DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	435.85	440.83	444.60	231.18

EXT GAS TEMP. DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	931.45	1218.9	1603.1	1490.8	1429.6	1429.7

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.310
	188.36	237.01	73.615	

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.356
	296.11	2617.3	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	57.149	57.475	121.14	55.575

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	81.800	2.0298	53.345	1990.3

CELL TEMP. = 81.095 HEATER TEMP = 82.123 COOLER TEMP = 51.402

NASA-LEWIS PRELIMINARY DATA 04/02/76 CADDEII REC 04/02/76 20:00:02.941 FAC SEX15 PGM C003 RDG 2845

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 60 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.180 PATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	57.900	29.136	175.43	799.76	5.5141	14.655

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	70.360	5.4329	44.902	56.736	54.803	6.0141

COOLING AIR	TEMP	WDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	61.313	3.0211	3.6964	9997.4	67.577	47.251

REL-HUM	1	2	HUMIDITY	H2O VAPOR	CORRECTED HP
	67.577	26.451	48.263	1.1083	121.31

ENG. COND.	F/A DRY	F/A WET	EQV. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.068525	0.068056	1.0228	2432.7	2434.4	258.92	119.93

WET CORRECTION FACTOR = 0.85319 EXHAUST MOL. WT. = 28.577 EXHAUST DENSITY = 0.073992 EXHAUST FLOW RATE = 11623.

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	631.96	2042.1	2.5415	12.6310	0.75081
CORRECTED CONC. TO WET BASIS			2.1684	10.777	0.64059

	HC	NOX	CO
EMISSION RATE	0.26371	2.3247	18.299
EMISSION MASS/MODE	0.021976	0.23539	1.5249
EMISSION MASS/RATED HP	0.00013735	0.0014712	0.0095307
MODE EMIS./STP. CYCLE %	7.2290	98.080	22.692

CAL. FUEL AIR RATIO = 0.070146 MEAS. FUEL AIR RATIO = 0.068525 DIFF MEAS. & CAL. F/A PERCENT = 2.3645

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	407.32	421.56	411.43	655.39

EXT GAS TEMP DEG.F	FXT-1	FXT-2	FXT-3	FXT-4	SEXT-1	SEXT-2
	1007.6	589.75	1190.1	1322.2	1355.0	1356.5

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 27.187
	187.41	293.38	72.071	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.332
	235.14	2363.2	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	57.493	57.900	116.54	55.268

ORIFICE AIR	TEMP	DELTA P	DREP	FLOW
	82.354	0.091009	53.372	325.33

CELL TEMP. = 81.712 HEATED TEMP = 82.123 COOL ER TEMP = 53.294

NASA-LEWIS PRELIMINARY DATA 04/02/76 CADDEII REC 04/02/76 20:03:09.771 FAC SEX15 PGM C003 RDG 2846

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 60 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.190 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	59.256	29.188	104.04	467.09	3.1242	14.449

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	73.227	5.5424	44.826	40.828	35.329	6.0402

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	PFL-HUM	DEW-POINT
	61.917	3.0114	3.4913	9979.4	61.589	46.081

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	61.589	8.5749	46.820	1.0752	65.641

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	PPM-1	RPM-2	TORQUE	BHP
	0.075635	0.075133	1.1289	2351.9	2354.3	144.60	64.753

WFT CORRECTION FACTOR = 0.86805 EXHAUST MOLE. WT. = 28.036 EXHAUST DENSITY = 0.072593 EXHAUST FLOW RATE = 6964.0

MEASURED CONC.	PART PER MILLION WET	PER CENT
	HC PPM NOX PPM CO DRY CO2 DRY O2 DRY	
	1209.5 1196.1 3.0909 12.6980 0.19524	
CORRECTED CONC. TO WET BASIS	2.6831 11.022 0.16948	

	HC	NOX	CO
EMISSION RATE	0.30239	0.39125	13.565
EMISSION MASS/MODE	0.030239	0.099124	1.3565
EMISSION MASS/RATED HP	0.00018899	0.00061953	0.0084783
MODE EMIS./STD. CYCLE %	9.9470	41.302	20.186

CAL. FUEL AIR RATIO = 0.073260 MEAS. FUEL AIR RATIO = 0.075636 DIFF MEAS. & CAL. F/A PERCENT = -3.1415

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	349.66	356.13	340.11	475.52

EXT GAS TEMP DEG.F	FXT-1	FXT-2	FXT-3	FXT-4	SEXT-1	SEXT-2
	1528.2	807.68	1481.6	1247.9	1193.4	1193.4

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 18.632
	187.65	273.14	71.199	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.310
	148.15	2310.7	

INDUCTION AIR	TAIPT1	TAIRT2	TAIRT1	TAIRT2
	59.849	59.256	125.42	56.035

ORIFICE AIR	TEMP	DELTAP	OPFP	FLOW
	82.812	2.0356	53.413	1991.1

CELL TEMP. = 81.958 HEATER TEMP = 82.144 COOLER TEMP = 54.221

NASA-LEWIS PRELIMINARY DATA 04/02/76 CADDEII REC 04/02/76 20:07:09.663 FAC SEX15 PGM C003 RDG 2847

LEANOUT 25 RTDC TR CL APP 59 DEG HUM = 60 ? MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.190 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TFMP 59.744 PRESS 29.181 CFM 102.76 DRY FLOW 461.48 VAPOR FLOW 3.1212 PRESS TOTAL 14.448

COMB. FUEL TEMP 73.414 PRESS 5.5193 DENSITY 44.821 TURBO FLOW 44.920 FLOW TRON 37.672 FPIP 6.0693

COOLING AIR TEMP 62.421 INLET-HOOD 3.0742 DEL-HOOD 3.5712 FLOW 10095. REL-HUM 61.195 DEW-POINT 46.371

REL-HUM 1 61.195 2 20.578 HUMIDITY 47.344 % H2O VAPOR 1.0872 CORRECTED HP 65.686

ENG. COND. F/A DRY 0.081633 F/A WET 0.081085 EQU. RATIO 1.2184 PPM-1 2350.0 RPM-2 2352.1 TORQUE 144.71 BHP 64.749

WET CORRECTION FACTOR = 0.85431 EXHAUST MOL. WT. = 27.551 EXHAUST DENSITY = 0.071336 EXHAUST FLOW RATE = 7040.9

MEASURED CONC. HC PPM 1741.3 NOX PPM 434.72 CO DRY 6.6517 PER CENT CO2 DRY 10.9560 O2 DRY 0.077828
CORRECTED CONC. TO WET BASIS HC 5.6826 NOX 9.3506 CO 0.066489

EMISSION RATE HC 0.44014 NOX 0.36424 CO 29.048
EMISSION MASS/MODE HC 0.044014 NOX 0.036424 CO 2.9048
EMISSION MASS/RATED HP HC 0.00027509 NOX 0.00022765 CO 0.018155
MODE EMIS./STD. CYCLE ? HC 14.478 NOX 15.177 CO 43.226

CAL. FUEL AIR RATIO = 0.081738 MEAS. FUEL AIR RATIO = 0.081633 DIFF MEAS. & CAL. F/A PERCENT = 0.12887

CYL TEMP DEG.F CYL-1 355.66 CYL-2 363.43 CYL-3 364.26 CYL-4 377.45

EXT GAS TEMP DEG.F FXT-1 1255.5 FXT-2 509.64 FXT-3 1152.3 FXT-4 1216.2 SEXT-1 1156.3 SEXT-2 1156.4

ENGINE OIL EOILT 197.77 SOILT 265.56 OILP 71.311 MANIFOLD PRESSURE = 18.369

DYMO COND. TORQUE 139.85 RPM 2296.1 CYL. BACK PRESSURE = 29.291

INDUCTION AIR IAIRT1 59.337 IAIRT2 59.744 TAIRT1 147.23 TAIRT2 55.805

ORIFICE AIR TEMP 83.409 DELTAP 1.9718 DREP 53.368 FLOW 1960.3

CELL TEMP. = 81.985 HEATER TEMP = 82.158 COOLER TEMP = 52.546

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NASA-LEWIS		PRELIMINARY DATA		04/02/76	CADDEII	REC 04/02/76 20:15:43.271	FAC SEX15	PGM C003	RDG 2848
LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 60 %				MODE = 3.0000	NO. SCANS = 5				
ENGINE TIMING = 25.000		DEG.	BAROMETRIC PRESSURE = 29.190		RATED HP = 160.00		HC RATIO = 2.1250		
COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL			
	59.644	29.213	209.61	966.21	6.3004	14.814			
COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP			
	71.661	5.3846	44.867	76.725	73.450	6.0087			
COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT			
	63.221	3.1448	3.7091	10223.	60.730	46.076			
REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP				
	60.730	4.0564	45.645	1.0482	158.73				
ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP		
	0.076019	0.075527	1.1345	2701.6	2704.1	296.36	152.45		
WET CORRECTION FACTOR = 0.85095		EXHAUST MOL. WT. = 28.005		EXHAUST DENSITY = 0.072511		EXHAUST FLOW RATE = 14424.			
MEASURED CONC.	PART PER MILLION WET		PER CENT						
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY				
	1184.1	863.58	4.7107	11.9380	0.067067				
CORRECTED CONC. TO WET BASIS			4.0086	10.158	0.057070				
EMISSION RATE	HC	NOX	CO						
	0.61320	1.4824	41.980						
EMISSION MASS/MODE	0.0030660		0.0074120		0.20990				
EMISSION MASS/RATED HP	1.9162E-05		4.5325E-05		0.0013119				
MODE EMIS./STD. CYCLE %	1.0085		3.0893		3.1235				
CAL. FUEL AIR RATIO = 0.077117		MEAS. FUEL AIR RATIO = 0.076019		DIFF MEAS. & CAL. F/A PERCENT = 1.4440					
CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4					
	423.52	435.71	426.58	361.84					
EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2			
	1240.7	773.88	1189.3	1370.6	1355.8	1357.5			
ENGINE OIL	F OILT	S OILT	OILP	MANIFOLD PRESSURE = 28.253					
	178.08	238.60	73.819						
DYMO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.350						
	295.56	2641.9							
INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2					
	59.310	59.644	109.30	55.440					
ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW					
	83.989	0.088909	53.321	318.96					
CELL TEMP. = 82.539	HEATED TEMP = 82.178		COOLER TEMP = 53.231						

NASA-LEWIS PRELIMINARY DATA 04/02/76 CADDET REC 04/02/76 20:18:24.217 FAC SEX15 PGM C003 RDG 2849
 LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 60 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.200 RATED HP. = .160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	57.520	29.218	166.66	759.37	5.0130	14.643

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	69.860	5.4311	44.915	57.828	57.618	6.0249

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	60.754	3.1501	3.5410	10233.	65.572	46.091

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	65.572	12.337	46.211	1.0612	121.17

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.075876	0.075379	1.1325	2430.9	2433.4	259.07	119.91

WET CORRECTION FACTOR = 0.85516 EXHAUST MOLE. WT. = 28.016 EXHAUST DENSITY = 0.072541 EXHAUST FLOW RATE = 11331.

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1217.0	1349.6	4.3905	12.0820	0.14641
CORRECTED CONC. TO 1 FT BASIS					
			3.7460	10.332	0.12521

EMISSION RATE	HC	NOX	CO
	0.49508	1.8199	30.817
EMISSION MASS/MODE	0.041257	0.15166	2.5601
	EMISSION MASS/RATED HP	0.00025785	0.00094786
MODE EMISS./STD. CYCLE %		13.571	63.191

CAL. FUEL AIR RATIO = 0.076158 MEAS. FUEL AIR RATIO = 0.075876 DIFF MEAS. & CAL. F/A PERCENT = 0.37204

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	396.56	415.69	417.26	710.04

EXT GAS TEMP DEG. F	FXT-1	FXT-2	FXT-3	FXT-4	SEXT-1	SEXT-2
	753.25	282.02	1229.1	1371.5	1294.5	1296.5

ENGINE OIL	EQILT	SOILT	OILT	MANIFOLD PRESSURE = 26.432
	187.06	252.81	72.163	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.248
	264.14	2388.4	

INDUCTION AIR	TAIPT1	TAIPT2	TAIRT1	TAIRT2
	57.176	57.520	93.850	55.357

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	81.861	1.9935	53.393	1973.3

CFL TEMP. = 80.962 HEATED TEMP = 82.185 COOLER TEMP = 53.078

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NASA-LEWIS PRELIMINARY DATA 04/02/76 CADDEII REC 04/02/76 20:21:13.886 FAC SEX15 PGM C003 R9G 2850

LEANOUT 25 RTDC TO CL APP 59 DEG HUM = 60 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.200 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	58.081	29.156	209.16	964.38	6.4748	14.831

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	68.904	5.3783	44.941	75.723	72.982	5.9955

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	RFL-HUM	DEW-POINT
	61.061	3.1423	3.7254	10219.	66.184	46.871

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	66.184	36.458	46.998	1.0792	159.15

ENG. COND.	F/A DRY	F/A WET	EQV. RATIO	RPM-1	RPM-2	TORQUE	RHP
	0.075678	0.075173	1.1295	2705.1	2707.6	296.50	152.71

WET CORRECTION FACTOR = 0.84696 EXHAUST MOLE. WT. = 28.033 EXHAUST DENSITY = 0.072584 EXHAUST FLOW RATE = 14381.

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	1142.9	736.57	4.8628	11.9280	0.043944	
CORRECTED CONC. TO WET BASIS			4.1186	10.102	0.037219	

EMISSION RATE	HC	NOX	CO
	0.59006	1.2605	43.001
	0.0029503	0.0063026	0.21500
	1.8439E-05	3.9392E-05	0.0013438
EMISSION MASS/MODE			
1.8439E-05	3.9392E-05	0.0013438	
EMISSION MASS/PATED HP			
0.97050	2.6261	3.1995	
MODE EMIS./STD. CYCLE %			

CAL. FUEL AIR RATIO = 0.077459 MEAS. FUEL AIR RATIO = 0.075678 DIFF MEAS. & CAL. F/A PERCENT = 2.3530

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	433.10	451.06	436.58	434.72

EXT GAS TEMP DEG.F	FXT-1	FXT-2	FXT-3	FXT-4	SEXT-1	SEXT-2
	1339.4	745.86	1229.9	1330.4	1374.9	1376.2

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.383
	188.90	207.26	73.367	

DYN COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.366
	296.95	2646.1	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	57.701	58.081	157.44	55.761

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	82.152	1.0305	53.339	1432.3

CELL TEMP. = 81.615 HEATER TEMP = 82.185 COOLER TEMP = 52.600

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LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 60 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.200 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	58.615	29.205	166.38	757.00	5.2342	14.530

COMP. FUEL	TEMP	PRESS	DENSITY	TUPRO FLOW	FLOW TRON	FPIP
	70.645	5.4281	44.894	61.943	57.951	6.0075

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	61.890	3.0537	3.6380	10057.	65.942	47.281

REL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP
	65.942	23.988	48.401	1.1114 120.21

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.076554	0.076028	1.1426	2433.6	2435.2	256.27	118.75

WET CORRECTION FACTOR = 0.85882 EXHAUST MOLE. WT. = 27.950 EXHAUST DENSITY = 0.072396 EXHAUST FLOW RATE = 11329.

MEASURED CONC.	PART PER MILLION WET		CO DRY	PER CENT	CO2 DRY	O2 DRY
	HC PPM	NOX PPM	4.2595	12.1840	0.14587	0.12528
CORRECTED CONC. TO WET BASIS	1190.3	1343.8	3.6582	10.464	0.12528	

EMISSION RATE	HC	NOX	CO
	0.48005	1.8117	30.088
EMISSION MASS/MODE	0.040004	0.15097	2.5073
EMISSION MASS/RATED HP	0.00025003	0.00094359	0.015671
MODE EMIS./STD. CYCLE	13.159	62.906	37.312

CAL. FUEL AIR RATIO = 0.075850 MEAS. FUEL AIR RATIO = 0.076554 DIFF MEAS. & CAL. F/A PERCENT = -0.91890

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	395.10	408.11	419.47	613.99

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	625.24	289.03	1260.2	1337.3	1299.5	1301.0

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 26.318
	197.33	259.75	71.891	

DYNO COMP.	TORQUE	RPM	CYL. BACK PRESSURE = 29.262
	261.80	2328.5	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	58.235	58.615	123.89	55.405

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	82.926	2.0508	53.412	1997.9

CELL TEMP. = 82.284 HEATER TEMP = 82.185 COOLER TEMP = 53.465

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NASA-LF-115 PRELIMINARY DATA 04/02/76 CANDEFI REC 04/02/76 20:33:17.330 FAC SFX15 PGM C003 RDG 2852

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 60% MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.200 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	59.409	29.181	102.01	458.73	3.1296	14.450

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	73.742	5.5208	44.812	41.350	36.451	6.0927

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	61.944	2.9917	3.5812	9942.9	62.470	46.601

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	62.470	9.5009	47.756	1.0966	66.351

ENG. COND.	F/A DRY	F/A WET	EQV. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.079460	0.078921	1.1860	2350.0	2351.0	146.22	65.426

WET CORRECTION FACTOR = 0.84950 EXHAUST MOLE. WT. = 27.724 EXHAUST DENSITY = 0.071783 EXHAUST FLOW RATE = 6941.8

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1664.6	481.55	6.2705	11.1660	0.11919
CORRECTED CONC. TO WET BASIS			5.3267	9.4855	0.10125

EMISSION RATE	HC	NOX	CO
	0.41483	0.39780	26.846
	0.041483	0.039780	2.6846
	0.00025927	0.00024862	0.016778
MODE EMISS./STD. CYCLE %	13.646	16.575	39.949

CAL. FUEL AIR RATIO = 0.080657 MEAS. FUEL AIR RATIO = 0.079460 DIFF MEAS. & CAL. F/A PERCENT = 1.5062

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	330.79	341.90	345.51	593.41

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1361.7	233.02	1283.5	1066.0	1110.8	1109.6

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 18.236
	186.84	223.09	71.443	

DYNO COND.	TORQUE	PPM	CYL. BACK PRESSURE = 29.373
	150.93	2306.4	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	58.994	59.409	121.27	55.126

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	83.673	2.0053	53.455	1975.5

CELL TEMP. = 82.644 HEATER TEMP = 82.171 COOLER TEMP = 52.465

NASA-LFWIS PRELIMINARY DATA 04/02/76 CADDELI REC 04/02/76 20:56:12.647 FAC SEX15 PGM C003 RDG 2857

LEANOUT 25 BTDC-I & T 59 DEG HUM = 60 % 1 1/2 T CLOS MODF = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.200 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	61.637	29.198	11.082	45.532	0.32857	14.341

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	78.395	5.8233	44.590	3.9651	3.4143	6.1569

COOLING AIR	TEMP	UNFL-HOOD	REL-HOOD	FLOW	REL-HUM	DEW-POINT
	66.471	0.00027676	0.55569	2226.4	55.707	45.665

REL-HUM	1	2	HUMIDITY	H2O VAPOR	CORRECTED HP
	55.707	44.756	46.434	1.0663	1.1872

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.068931	0.068477	1.0288	613.26	616.62	10.043	1.1727

WET CORRECTION FACTOR = 0.86530 EXHAUST MOLE. WT. = 28.543 EXHAUST DENSITY = 0.073904 EXHAUST FLOW RATE = 720.87

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	17612.	33.713	1.2542	10.9650	2.3267
CORRECTED CONC. TO WET BASIS			1.0953	9.4879	2.0133

EMISSION RATE	HC	NOX	CO	
	0.45580	0.0028921	0.56799	
	EMISSION MASS/MODE	0.0075967	4.8201E-05	0.0094665
	EMISSION MASS/RATED HP	4.7480E-05	3.0126E-07	5.9166E-05
MODE EMIS./STD. CYCLE %	2.4989	0.020084	0.14087	

CAL. FUEL AIR RATIO = 0.072304 MEAS. FUEL AIR RATIO = 0.068931 DIFF MEAS. & CAL. F/A PERCENT = 4.8931

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	262.99	290.92	277.44	402.64

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1202.7	-454.00	228.65	745.12	543.90	536.31

ENGINE OIL	ERTLT	STILT	DILP	MANIFOLD PRESSURE = 11.873
	161.25	340.19	46.241	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.354
	4.3636	604.38	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	60.808	61.637	68.626	54.480

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	84.323	0.082708	53.471	301.15

CELL TEMP. = 79.826 HEATER TEMP = 82.185 COOLER TEMP = 40.552

NASA-LEWIS PRELIMINARY DATA 04/02/76 CADDETT REC 04/02/76 20:58:42.291 FAC SEX15 PGM C003 RDG 2858

LEANOUT 25 BTDC I & T 59 DEG HUM = 60 % 1 1/2 T CLNS MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.190 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	61.538	29.190	17.552	78.746	0.52697	14.338

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	78.527	5.7792	44.587	7.4218	5.8806	6.1314

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	66.766	0.012454	0.62630	2287.7	56.382	45.891

REL-HUM	1	2	HUMIDITY	H2O VAPOR CORRECTED HP
	56.382	7.6628	46.844	1.0757
				1.1635

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.074678	0.074181	1.1145	1202.9	1204.9	5.0172	1.1491

WET CORRECTION FACTOR = 0.84685 EXHAUST MOLF. WT. = 28.116 EXHAUST DENSITY = 0.072800 EXHAUST FLOW RATE = 1169.7

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	2164.3	52.958	4.2415	12.2310	0.11897
CORRECTED CONC. TO WET BASIS			3.5919	10.358	0.10075

EMISSION RATE	HC	NOX	CO
	0.090884	0.0087634	3.0503
EMISSION MASS/MODE	0.016662	0.0016066	0.55921
EMISSION MASS/RATED HP	0.00010414	1.0041E-05	0.0034951
MODE EMIS./STD. CYCLE	5.4809	0.66942	8.3216

CAL. FUEL AIR RATIO = 0.075418 MFAS. FUEL AIR RATIO = 0.074678 DIFF MEAS. & CAL. F/A PERCENT = 2.3301

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	291.80	316.13	305.90	358.72

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SFXT-1	SEXT-2
	1957.0	-454.00	219.26	750.82	560.54	552.49

ENGINE OIL	TEMP	SOILT	OILP	MANIFOLD PRESSURE = 7.9322
	161.59	353.34	56.730	

DYNO COND.	TORQUE	RPM	CYL. PACK PRESSURE = 29.267
	4.0108	1210.5	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	60.853	61.538	49.245	55.354

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	84.595	3.0081	53.386	2390.3

CELL TEMP. = 80.681 HEATER TEMP = P2.164 COOLER TEMP = 51.582

NASA-LEWIS PRELIMINARY DATA 04/02/76 CADRE11 REC 04/02/76 21:03:18.548 FAC SEX15 PGM C003 RDG 2859

LEANOUT 25 BTDC 1 & T 59 DEG HUM = 60 % 1 1/2 T CLOS MODE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.200 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	58.669	29.198	17.486	78.146	0.52313	14.341

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	76.803	5.7750	44.732	7.6969	6.0276	6.1323

COOLING AIR	TEMP	INDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	63.518	-0.014115	0.60305	0.00000	62.482	45.906

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	62.482	22.988	46.860	1.0761	1.2917

ENG. COND.	F/A DRY	F/A WET	EQV. RATIO	RPM-1	PPM-2	TORQUE	BHP
	0.077133	0.076620	1.1512	1205.0	1206.8	5.5755	1.2792

WET CORRECTION FACTOR = 0.85773 EXHAUST MOLE. WT. = 27.913 EXHAUST DENSITY = 0.072273 EXHAUST FLOW RATE = 1171.9

MEASURED CONC.	PART PER MILLION WET			PER CFMT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	2114.0	63.196	4.3260	12.1450	0.14837	
CORRECTED CONC. TO WET BASIS			3.7106	10.417	0.12727	

	HC	NOX	CO
EMISSION RATE	0.088939	0.0088131	3.1569
EMISSION MASS/MODE	0.0044469	0.00044065	0.15785
EMISSION MASS/RATED HP	2.7793E-05	2.7541E-06	0.00098655
MODE EMIS./STD. CYCLE %	1.4628	0.18361	2.3489

CAL. FUEL AIR RATIO = 0.076487 MEAS. FUEL AIR RATIO = 0.077133 DIFF MEAS. & CAL. F/A PERCENT = -0.83689

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	285.37	302.83	293.47	388.56

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1241.4	-454.00	80.294	685.86	513.37	505.81

ENGINE OIL	FOILT	SOILT	OIL2	MANIFOLD PRESSURE = 7.9542
	159.65	280.78	57.078	

DYNO COND.	TOPOUF	RPM	CYL. BACK PRESSURE = 29.222
	5.1413	1199.0	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	57.964	58.669	110.19	54.539

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	82.143	1.0182	53.668	1423.9

CELL TEMP. = 77.537 HEATER TEMP = 82.164 COOLER TEMP = 47.287

NASA-LEWIS PRELIMINARY DATA 04/02/76 CADDET REC 04/02/76 21:06:10.720 FAC SEX15 PGM C003 RDG 2860

LEANOUT 25 BTDC I-C T-59 DEG HUM = 60 * 1 1/2 T CLOS MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.200 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	59.671	29.199	10.983	9.074	0.32784	14.343

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	76.484	5.8227	44.740	3.9678	3.3303	6.1434

COOLING AIR	TEMP	WDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	64.327	-0.0016605	0.51754	0.00000	60.168	45.855

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	60.168	21.026	46.763	1.0738	0.35486

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	PPM-2	TORQUE	BHP
	0.067864	0.067413	1.0129	601.32	603.72	3.0670	0.35115

WET CORRECTION FACTOR = 0.88899 EXHAUST MOLE. WT. = 28.627 EXHAUST DENSITY = 0.074122 EXHAUST FLOW RATE = 711.43

MEASURED CONC.	PART PER MILLION WET		PER CENT	
	HC PPM	NOX PPM	CO DRY	O2 DRY
	16017	34.243	1.4072	11.1200
CORRECTED CONC. TO WET BASIS			1.2509	9.8854
				3.6408

EMISSION RATE	HC	NOX	CO
	0.40909	0.0028990	0.64610
EMISSION MASS/MODE	0.0068182	4.8317E-05	0.010768
EMISSION MASS/RATED HP	4.2614E-05	3.0198E-07	6.7302E-05
MODE EMIS./STD. CYCLE %	2.2428	0.020132	0.16024

CAL. FUEL AIR RATIO = 0.065731 MEAS. FUEL AIR RATIO = 0.067864 DIFF MEAS. & CAL. F/A PERCENT = -3.1418

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	265.94	298.03	283.97	402.48

FXT GAS TEMP DEG.F	FXT-1	FXT-2	FXT-3	FXT-4	SEXT-1	SEXT-2
	1315.0	-454.00	154.51	699.94	510.07	504.80

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 12.061
	159.44	295.21	46.101	

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.134
	2.9091	599.58	

INDUCTION AIR	IAIPT1	IAIPT2	TAIRT1	TAIRT2
	58.822	59.671	61.141	54.725

ORIFICE AIR	TEMP	DELTA P	DRFP	FLOW
	82.759	2.0539	54.146	1999.6

CELL TEMP. = 77.679 HEATER TEMP = 82.178 COOLER TEMP = 41.050

NASA-LEWIS PRELIMINARY DATA 04/02/76 CADDEII RFC 04/02/76 21:11:13.158 FAC SFX15 PGM C003 RDG 2861

LEANOUT 25 BTDC I-G T-59 DEG HUM = 60 3/4 T CLOSED MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DFG. BAROMETRIC PRESSURE = 29.200 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 60.502 PRESS 29.201 CFM 10.059 DRY FLOW 44.999 VAPOR FLOW 0.30201 PRESS TOTAL 14.340

COMB. FUEL TEMP 77.484 PRESS 5.7951 DENSITY 44.714 TURB FLOW 3.9638 FLOW TRON 3.9394 FPIP 6.1437

COOLING AIR TEMP 64.668 UDEL-HOOD -0.0041514 DEL-HOOD 0.63793 FLOW 0.00000 RFL-HUM 58.671 DEW-POINT 45.971

REL-HUM 1 58.671 2 15.182 HUMIDITY 46.980 % H2O VAPOR 1.0788 CORRECTED HP 0.40557

ENG. COND. F/A DRY 0.087544 F/A WET 0.086960 EQU. RATIO 1.3066 RPM-1 597.42 RPM-2 598.52 TORQUE 3.5254 BHP 0.40101

WET CORRECTION FACTOR = 0.86139 EXHAUST MOLE. WT. = 27.098 EXHAUST DENSITY = 0.070162 EXHAUST FLOW RATE = 701.80

MEASURED CONC. PART PER MILLION WET HC PPM 20361. NOX PPM 13.259 CO DRY 7.9330 PER CENT CO2 DRY 8.84980
CORRECTED CONC. TO WET BASIS HC 6.8334 NOX 7.6231 CO 1.8075

EMISSION RATE HC 0.51299 NOX 0.0011073 CO 3.4817
EMISSION MASS/MODE HC 0.0085498 NOX 1.8456E-05 CO 0.058028
EMISSION MASS/RATED HP HC 5.3437E-05 NOX 1.1535E-07 CO 0.00036267
MODE EMIS./STR. CYCLE % HC 2.8124 NOX 0.0076899 CO 0.86351

CAL. FUEL AIR RATIO = 0.089140 MEAS. FUEL AIR RATIO = 0.087544 DIFF MEAS. & CAL. F/A PERCENT = 1.8233

CYL TEMP DEG.F CYL-1 261.26 CYL-2 280.73 CYL-3 260.67 CYL-4 412.73

FXT GAS TEMP DEG.F EXT-1 1470.4 EXT-2 -454.00 EXT-3 136.52 EXT-4 549.17 SFXT-1 497.54 SFXT-2 491.41

ENGINE OIL EOILT 156.25 SOILT 327.08 OILP 46.361 MANIFOLD PRESSURE = 10.892

DYNO COND. TORQUE 6.0558 RPM 592.98 CYL. BACK PRESSURE = 28.885

INDUCTION AIR IAIRT1 59.608 IAIRT2 50.502 TAIRT1 70.398 TAIRT2 53.990

ORIFICE AIR TEMP 82.979 DELTAP 0.075207 ORFP 53.429 FLOW 279.36

CELL TEMP. = 77.097 HEATED TEMP = 81.063 COOLER TEMP = 40.805

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NASA-LEWIS PRELIMINARY DATA 04/02/76 CADDETT REC 04/02/76 21:13:56.132 FAC SEX15 PGM C003 RDG 2862

LEANOUT 25 BTDC I & T 59 DEG HUM = 60 % 3/4 T CLOSED MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.200 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS. TOTAL
	60.610	29.196	17.465	77.856	0.53336	14.345

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	77.422	5.7549	44.715	8.2155	6.5097	6.1329

COOLING AIR	TEMP	INLET-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	65.009	-0.0652584	0.53829	0.00000	59.664	46.516

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	59.664	15.055	47.954	1.1012	2.0562

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	RHP
	0.084896	0.084318	1.2571	1204.6	1207.1	8.8592	2.0319

WFT CORRECTION FACTOR = 0.84969 EXHAUST MOLE. WT. = 27.298 EXHAUST DENSITY = 0.070680 EXHAUST FLOW RATE = 1202.6

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	3831.9	47.253	8.1768	10.1820	0.15552
CORRECTED CONC. TO WFT BASIS			6.9477	8.6514	0.13214

EMISSION RATE	HC	NOX	CO
	0.16543	0.0067622	6.0659
	0.030329	0.0017397	1.1121
	0.00018956	7.7484E-06	0.006950R
EMISSION MASS/RATED HP			
MODE EMIS./STD. CYCLE %	9.9768	0.51656	16.549

CAL. FUEL AIR RATIO = 0.086212 MEAS. FUEL AIR RATIO = 0.084896 DIFF MEAS. & CAL. F/A PERCENT = 1.5504

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	283.40	299.95	288.23	409.48

FXT GAS TEMP DEG. F	FXT-1	FXT-2	FXT-3	FXT-4	SEXT-1	SEXT-2
	1316.0	-454.00	104.53	524.73	514.24	509.41

ENGINE OIL	FOILT	SOILT	OILT	MANIFOLD PRESSURE = 7.7726
	156.01	349.38	57.327	

DYNO COND.	TORQUE	RPM	CYL. RACK PRESSURE = 29.192
	7.9784	1221.7	

INDUCTION AIR	TAIPT1	TAIPT2	TAIRT1	TAIPT2
	59.960	53.610	87.946	55.848

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	82.207	2.0367	53.342	1990.7

CELL TEMP. = 79.757 HEATED TEMP = 81.824 COOLER TEMP = 53.177

2/8

NASA-LEWIS PRELIMINARY DATA 04 02/76 CADDFIT REC 04/02/76 21:14:17.293 FAC SEX15 PGM C003 RDG 2863

LEANOUT 25 BTDC I & T 59 DEG HUM = 60 % 3/4 T CLOSED MODE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. PARAMETRIC PRESSURE = 29.200 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	60.835	29.201	17.746	79.056	0.54070	14.346

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	77.493	5.7528	44.714	8.0540	6.6997	6.1263

COOLING AIR	TEMP	INDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT.
	65.260	0.0033211	0.62630	2241.8	59.098	46.476

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	59.098	0.22002	47.877	1.0994	1.8314

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.084746	0.084170	1.2549	1205.3	1206.6	7.8941	1.8094

WET CORRECTION FACTOR = 0.84920 EXHAUST MOLE. WT. = 27.309 EXHAUST DENSITY = 0.070710 EXHAUST FLOW RATE = 1220.4

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	3801.6	46.693	8.1620	10.2050	0.15234	
CORRECTED CONC. TO WET BASIS			6.9311	8.6664	0.12936	

EMISSION RATE	HC	NOX	CO
	0.16656	0.0067812	6.1412
	0.0083280	0.00033906	0.30706
	5.2050E-05	2.1191E-06	0.0019191
MODE EMISS./STD. CYCLE %	2.7395	0.14127	4.5693

CAL. FUEL AIR RATIO = 0.086149 MEAS. FUEL AIR RATIO = 0.084746 DIFF MEAS. & CAL. F/A PERCENT = 1.6554

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	280.60	297.44	286.08	355.24

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1296.9	-454.00	76.973	155.13	507.53	502.38

ENGINE OIL	EQILT	SOILT	OILP	MANIFOLD PRESSURE = 7.7750
	155.67	-29.612	57.382	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.320
	2.5851	1197.7	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	60.195	50.835	112.76	56.226

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	83.286	3.0206	53.377	2397.9

CELL TEMP. = 78.854 HEATER TEMP = 81.810 COOLER TEMP = 53.753

b7c

NASA-LFWIS PRELIMINARY DATA 04/02/76 CADDFIT REC 04/02/76 21:19:35.628 FAC SFX15 PGM C003 RDG 2864

LFANOUT 25 BTDC I & T 59 DEG HUM = 60 % 3/4 T CLOSED MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.200 RATED H_i = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	61.710	29.195	9.7944	43.776	0.29640	14.343

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	77.758	5.7921	44.707	3.9683	3.8944	6.1317

COOLING AIR	TEMP	WDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	66.058	0.0016605	0.51025	2233.4	56.713	46.206

REL-HUM	1	2	HUMIDITY	H ₂ O VAPOR	CORRECTED H _p
	56.713	18.370	47.395	1.0884	0.68256

ENG. COND.	F/A DRY	F/A WET	FQU. RATIO	PPM-1	RPM-2	TORQUE	BHP
	0.088961	0.088363	1.3278	595.68	594.12	5.9423	0.67397

WET CORRECTION FACTOR = 0.86343 EXHAUST MOLE. WT. = 26.993 EXHAUST DENSITY = 0.069891 EXHAUST FLOW RATE = 686.31

MEASURED CONC.	PART PER MILLION WET	PER CENT
	HC PPM	CO ₂ DRY
	NO _x PPM	O ₂ DRY
	19921.	8.2928
	12.223	8.7325
		2.0319
CORRECTED CONC. TO WET BASIS		
	7.1602	7.5399
		1.7544

EMISSION RATE	HC	NO _x	CO
	0.49085	0.00099828	3.5677
EMISSION MASS/MODE			
	0.0081808	1.5638E-05	0.059461
EMISSION MASS/RATED HP			
	5.1130E-05	1.0399E-07	0.00037163
MODE EMIS./STD. CYCLE %			
	2.6911	0.0069325	0.88484

CAL. FUEL AIR RATIO = 0.089955 MEAS. FUEL AIR RATIO = 0.088961 DIFF MEAS. & CAL. F/A PERCENT = 1.1171

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	289.03	302.58	288.48	380.98

FXT GAS TEMP DEG. F	FXT-1	FXT-2	FXT-3	FXT-4	SEXT-1	SEXT-2
	1171.1	-454.00	117.33	518.94	503.66	499.70

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 10.982
	153.73	311.85	45.225	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.427
	5.5085	591.36	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	60.917	51.710	69.923	54.491

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	83.752	2.0248	53.430	1984.4

CELL TEMP. = 79.305 HEATER TEMP = 81.547 COOLER TEMP = 41.631

NASA-LEWIS PPELIMINARY DATA 04/02/76 CADDEIT REC 04/02/76 21:23:38.362 FAC SEX15 PGM C003 RDG 2865

LEANOUT 25 BTDC I. & T 59 DEG HUM = 60 % NEUTRAL MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.200 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	59.048	29.199	11.761	52.533	0.35760	14.343

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	75.270	5.7576	44.772	3.9758	4.9715	6.1404

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	63.311	-0.0013838	0.57621	0.00000	62.675	46.346

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	62.675	30.001	47.650	1.0942	0.42091

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.094636	0.093996	1.4125	610.62	610.14	3.5837	0.41665

WET CORRECTION FACTOR = 0.85842 EXHAUST MOLE. WT. = 26.587 EXHAUST DENSITY = 0.068841 EXHAUST FLOW RATE = 840.51

MEASURED CONC.	PART PER MILLION WET	PER CENT
	HC PPM	CO2 DRY
	31586.	7.09820
	NOX PPM	O2 DRY
	5.3805	3.1239
CORRECTED CONC. TO WET BASIS		
	CO DRY	
	8.3817	6.1556
	CO	2.7129

EMISSION RATE	HC	NOX	CO
	0.95309	0.00053816	5.1146
EMISSION MASS/MODE	0.015885	8.9594E-06	0.085243
EMISSION MASS/RATED HP	9.9280E-05	5.6059E-08	0.00053277
MODE FMS./STD. CYCLE %	5.2253	0.0037372	1.2685

CAL. FUEL AIR RATIO = 0.097405 MEAS. FUEL AIR RATIO = 0.094635 DIFF MEAS. & CAL. F/A PERCENT = 2.9258

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	269.13	285.56	268.29	402.30

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1421.3	-454.00	49.350	527.56	482.89	479.18

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 11.617
	151.48	349.12	46.629	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.532
	6.4230	597.00	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	58.253	59.048	62.865	54.805

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	60.910	1.0236	53.400	1429.2

CELL TEMP. = 76.581 HEATER TEMP = 81.350 COOLER TEMP = 43.941

NASA-LEWIS PRELIMINARY DATA 04/02/76 CADDEII REC 04/02/75 21:25:08.766 FAC SEX15 PGM C003 RDG 2866

LEANOUT 25 BTDC I & T 59 DEG HUM = 60 % NEUTRAL MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.200 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	59.103	29.701	19.271	85.847	0.58888	14.342

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	75.110	5.7102	44.776	9.9252	8.2778	6.1209

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	63.824	0.0066422	0.60970	2258.5	63.027	46.546

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	63.027	7.0367	48.018	1.1026	1.7207

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	RHP
	0.096425	0.095768	1.4392	1201.6	1202.5	7.4424	1.7028

WET CORRECTION FACTOR = 0.95913 EXHAUST MOLE. WT. = 26.454 EXHAUST DENSITY = 0.068523 EXHAUST FLOW RATE = 1382.2

MEASURED CONC.	PART PER MILLION WFT		CO DRY	PER CENT	O2 DRY
	HC PPM	NOX PPM			
	8230.8	20.450	11.401	8.21270	0.29819
CORRECTED CONC. TO WET BASIS			9.7949	7.0558	0.25618

EMISSION RATE	HC	NOX	CO
	0.40843	0.0033637	9.8291
	0.074878	0.00061668	1.8020
	0.00046799	3.8542E-06	0.011263
EMISSION MASS/MODE			
	24.631	0.25695	26.816

CAL. FUEL AIR RATIO = 0.097277 MEAS. FUEL AIR RATIO = 0.096425 DIFF MEAS. & CAL. F/A PERCENT = 0.88339

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	293.27	309.49	298.41	369.34

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	724.00	-454.00	107.64	529.43	523.54	521.17

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 8.2637
	153.91	372.79	56.922	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.238
	9.7858	1189.0	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	58.479	59.103	79.597	56.108

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	81.095	0.063706	53.410	244.16

CELL TEMP. = 77.316 HEATER TEMP = 81.241 COOLER TEMP = 53.330

NASA-LEWIS PRELIMINARY DATA 04/02/76 CADDFII REC 04/02/76 21:26:29.274 FAC SEX15 PG4 C003 RDG 2867

LEANOUT 25 BTDC I & T 59 DEG HUM = 60 % NEUTRAL MODE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.200 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	59.310	29.200	19.531	86.951	0.59979	14.342

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	75.163	5.7105	44.775	9.9953	8.3258	6.1203

COOLING AIR	TEMP	INLET-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	64.003	0.0016605	0.56763	2233.4	62.905	46.691

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	62.905	18.624	48.286	1.1088	1.4492

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	PPM-2	TORQUE	BHP
	0.095753	0.095097	1.4292	1201.4	1201.7	6.2673	1.4337

WET CORRECTION FACTOR = 0.85585 EXHAUST MOLE. WT. = 26.510 EXHAUST DENSITY = 0.068642 EXHAUST FLOW RATE = 1396.8

MEASURED CONC.	PART PER MILLION WET	PER CENT
	HC PPM NOX PPM CO DRY CO2 DRY O2 DRY	
	8622.9 19.348 11.392 8.23140 0.28625	
CORRECTED CONC. TO WET BASIS		9.7494 7.0449 0.24499

	HC	NOX	CO
EMISSION RATE	0.43228	0.0032159	9.8864
EMISSION MASS/MODE	0.021619	0.00016080	0.49432
EMISSION MASS/RATED HP	0.00013512	1.0050E-06	0.0030895
MODE EMIS./STD. CYCLE %	7.1116	0.066998	7.3560

CAL. FUEL AIR RATIO = 0.097500 MEAS. FUEL AIR RATIO = 0.095753 DIFF MEAS. & CAL. F/A PERCENT = 1.8246

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	289.38	305.43	294.67	371.79

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1523.6	-454.00	66.528	180.18	513.80	510.79

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 8.3215
	153.86	7.3282	55.406	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.210
	11.003	1214.4	

INDUCTIVE AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	53.687	59.310	106.67	56.365

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	81.174	2.0323	53.451	1992.6

CELL TEMP. = 77.343 HEATER TEMP = 81.213 COOLER TEMP = 51.645

NASA-LEWIS PRELIMINARY DATA 04/02/76 CADDEII REC 04/02/76 21:30:15.890 FAC SEX15 PGM C003 R0G 2868

LEANOUT 25 BTDC I & T 59 DEG HUM = 60 ° NEUTRAL MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.200 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS. TOTAL
	60.042	29.198	11.108	49.542	0.34099	14.343

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRCN	FPIP
	75.801	5.7621	44.758	3.9694	4.7675	6.1296

COOLING AIR	TEMP	INLET-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	64.695	-0.0060887	0.58562	0.00000	61.158	46.636

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	61.158	9.4969	48.180	1.1064	0.88685

ENG. COND.	F/A DRY	F/A WET	EQV. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.096232	0.095574	1.4363	583.56	581.83	7.8924	0.87694

WET CORRECTION FACTOR = 0.87275 EXHAUST MOLE. WT. = 26.478 EXHAUST DENSITY = 0.068557 EXHAUST FLOW RATE = 797.15

MEASURED CONC.	PART PER MILLION WFT		PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY
	32248.	5.8816	9.7319	7.00280
CORRECTED CONC. TO WET BASIS			CO DRY	CO2 DRY
			8.4935	6.1117

EMISSION RATE	HC	NOX	CO	
	0.92287	0.00055793	4.9154	
	EMISSION MASS/MODE	0.015381	9.2988E-06	0.081924
	EMISSION MASS/PATED HP	9.6132E-05	5.8118E-08	0.00051202
MODE EMIS./STD. CYCLE S	5.0596	0.0038745	1.2191	

CAL. FUEL AIR RATIO = 0.097952 MEAS. FUEL AIR RATIO = 0.096232 DIFF MEAS. & CAL. F/A PERCENT = 1.7874

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	291.09	296.55	279.12	409.87

EXT GAS TEMP DEG. F	FXT-1	FXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1192.3	-454.00	68.995	481.27	509.90	506.25

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 11.810
	152.67	288.90	45.169	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.353
	5.3573	577.56	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	59.238	60.042	74.203	55.477

OPTIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	81.588	1.0202	53.387	1426.0

CELL TEMP. = 77.413 HEATER TEMP = 81.033 COOLER TEMP = 47.160

NASA-LEWIS PRELIMINARY DATA 04/02/76 CADDEIT REC 04/02/76 21:35:48.487 FAC SEX15 PG4 C003 RDG 2869

LEANOUT 25 BYDC I & T 59 DEG HUM = 60 % 3/4 T OPEN MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.200 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	60.736	29.200	13.313	59.454	0.41073	14.342

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	76.466	5.7237	44.741	3.9696	6.2376	6.1308

COOLING AIR	TEMP	WDEL-HOOD	DFL-HOOD	FLOW	REL-HUM	DEW-POINT
	65.054	-0.0058119	0.59281	0.00000	59.880	46.731

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	59.880	34.841	48.359	1.1105	0.46194

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10492	0.10420	1.5559	591.84	588.66	4.0504	0.45643

WET CORRECTION FACTOR = 0.89503 EXHAUST MOLE. WT. = 25.912 EXHAUST DENSITY = 0.067093 EXHAUST FLOW RATE = 985.22

MEASURED CONC.	PART PER MILLION WFT	PER CENT	
HC PPM	NOX PPM	CO DRY	CO2 DRY
39848.	4.7725	10.465	6.03310
CORRECTED CONC. TO WET BASIS		9.3669	5.3997
		3.4460	

EMISSION RATE	HC	NOX	CO
	1.4094	0.00055953	6.6998
EMISSION MASS/MODE	0.023491	9.3255E-06	0.11166
EMISSION MASS/RATED HP	0.00014682	5.8285E-08	0.00069790
MODE FMIS./STD. CYCLE %	7.7272	0.0038856	1.6617

CAL. FUEL AIR RATIO = 0.10237 MEAS. FUEL AIR RATIO = 0.10492 DIFF MEAS. & CAL. F/A PERCENT = -2.4299

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	256.65	277.75	255.08	411.55

FXT GAS TEMP DEG. F	FXT-1	FXT-2	FXT-3	FXT-4	SFXT-1	SFXT-2
	1125.7	-454.00	6.2250	383.63	487.22	484.04

ENGINE OIL	FOILT	SOILT	OIL2	MANIFOLD PRESSURE = 12.976
	147.58	419.62	46.817	

DYMO COND.	TORQUE	PPM	CYL. PACK PRESSURE = 29.458
	4.7525	578.40	

INDUCTION AIR	IAIPT1	IAIPT2	TAIRT1	TAIRT2
	59.978	60.736	43.373	54.775

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	82.240	1.0286	53.425	1430.9

CELL TEMP. = 77.944 HEATER TEMP = 80.783 COOLIR TEMP = 44.565

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NASA-LEWIS PRELIMINARY DATA 04/02/76 CADDEII PFC 04/02/76 21:37:59.523 FAC SEX15 PGM C003 RDG 2870

LEANOUT 25 BTDC I & T 59 DEG HUM = 60 % 3/4 T OPEN MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.200 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	60.971	29.199	21.321	94.949	0.66189	14.344

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	76.289	5.6805	44.745	11.078	9.4989	6.1179

COOLING AIR	TEMP	INDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	65.539	-0.013838	0.63322	0.00000	59.925	46.971

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	59.925	18.416	48.797	1.1205	1.2908

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10004	0.099350	1.4932	1199.0	1198.4	5.5839	1.2748

WET CORRECTION FACTOR = 0.85672 EXHAUST MOLE. WT. = 26.723 EXHAUST DENSITY = 0.067897 EXHAUST FLOW RATE = 1548.1

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	12887.	12.404	12.334	7.5687	0.38856
CORRECTED CONC. TO WET BASIS			10.567	6.4842	0.33288

EMISSION RATE	HC	NOX	CO
	0.71622	0.0022851	11.876
EMISSION MASS/MODE	0.13131	0.00041894	2.1773
EMISSION MASS/RATED HP	0.0002067	2.5154E-06	0.013608
MODE EMIS./STD. CYCLE %	43.193	0.17456	32.401

CAL. FUEL AIR RATIO = 0.10281 MEAS. FUEL AIR RATIO = 0.10004 DIFF MEAS. & CAL. F/A PERCENT = 2.7669

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	289.63	309.18	291.63	404.95

FXT GAS TEMP DEG.F	FXT-1	FXT-2	FXT-3	FXT-4	SEXT-1	SEXT-2
	1312.3	-454.00	53.168	527.92	539.41	537.97

ENGINE OIL	OIL1	OIL2	OILP	MANIFOLD PRESSURE = 8.8118
	149.26	319.92	57.418	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.297
	0.72007	1202.4	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	60.393	60.971	56.572	56.250

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	82.460	1.0298	53.442	1438.3

CELL TEMP. = 78.757 HEATER TEMP = 80.713 COOLER TEMP = 51.924

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NASA-LEWIS PRELIMINARY DATA 04/02/76 CADDEII REC 04/02/76 21:38:20.441 FAC SEX15 PGM C003 RDG 2871

LEANOUT 25 BTDC/I & T 59 DEG HUM = 60 7/8 T 7PEN MODE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.200 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	61.007	29.193	20.569	91.677	0.53785	14.344

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	76.360	5.6844	44.743	11.028	9.4689	6.1131

COOLING AIR	TEMP	INLET-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	65.673	0.0058119	0.63018	2254.3	59.735	46.921

REL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP
	59.735	19.850	48.703	1.1184 1.7374

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	PPM-1	RPM-2	TORQUE	BHP
	0.10329	0.10257	1.5416	1200.1	1199.6	7.5091	1.7159

WET CORRECTION FACTOR = 0.84769 EXHAUST MOLE. WT. = 26.014 EXHAUST DENSITY = 0.067357 EXHAUST FLOW RATE = 1511.1

MEASURED CONC.	PART PER MILLION WET		PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY
	12547.	12.535	12.388	7.5843
CORRECTED CONC. TO WET BASIS			10.749	6.5808

	HC	NOX	CO
EMISSION RATE	0.68067	0.0022541	11.792
EMISSION MASS/MODE	0.034034	0.0011271	0.58961
EMISSION MASS/RATED HP	0.00021271	7.0441E-07	0.0036851
MODE EMIS./STD. CYCLE %	11.195	0.046961	8.7740

CAL. FUEL AIR RATIO = 0.10257 MEAS. FUEL AIR RATIO = 0.10329 DIFF MEAS. & CAL. F/A PERCENT = -0.69406

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	286.80	305.08	288.32	362.72

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1636.9	-454.00	9.3841	217.46	528.44	526.25

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 8.7418
	149.41	42.802	57.506	

DYMO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.299
	4.4572	1204.2	

INDUCTION AIR	IAIRT1	IAIRT2	IAIRT1	IAIRT2
	60.411	61.007	89.235	55.819

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	82.530	2.0332	53.441	1990.5

CELL TEMP. = 79.722 HEATER TEMP = 80.700 COOLER TEMP = 47.829

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NASA-LEWIS PRELIMINARY DATA 04/02/76 CADDEII REC 04/02/76 21:43:09.863 FAC SEX15 PGM C003 RDG 2872

LEANOUT 25 BTDC I-8 T 59 DEG HUM = 60 7/8 T OPEN MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.200 RATED HP. = 160.00 HC RATIO = 2.1250

COMR. AIR TEMP 59.274 PRESS 29.197 CFM 12.971 DRY FLOW 57.843 VAPOR FLOW 0.40271 PRESS TOTAL 14.341

COMR. FUEL TEMP 74.329 PRESS 5.7237 DENSITY 44.797 TURBO FLOW 3.9746 FLOW TRON 6.2346 FPIP 6.1323

COOLING AIR TEMP 63.869 UDEL-HOOD -0.0047049 DEL-HOOD 0.64346 FLOW 0.00000 REL-HUM 63.560 DEW-POINT 46.931

REL-HUM 1 63.560 2 0.39004 HUMIDITY 48.734 H2O VAPOR CORRECTED HP 1.1191 0.38753

ENG. COND. F/A DRY 0.10778 F/A WET 0.10704 FOU. RATIO 1.6087 RPM-1 604.02 RPM-2 606.96 TORQUE 3.3337 BHP 0.38340

WET CORRECTION FACTOR = 0.89380 EXHAUST MOLE WT. = 25.738 EXHAUST DENSITY = 0.066641 EXHAUST FLOW RATE = 967.58

MEASURED CONC. PART PER MILLION WET PER CFMT
HC PPM 39374. NOX PPM 5.1185 CO DRY 10.915 CO2 DRY 6.0379 O2 DRY 3.3868
CORRECTED CONC. TO WET BASIS 9.7554 5.3967 3.0272

EMISSION RATE HC 1.3677 NOX 0.00058936 CO 6.8529
EMISSION MASS/MODE 0.022796 9.9226E-06 0.11421
EMISSION MASS/RATED HP 0.00014247 5.1391E-08 0.00071384
MODE EMIS./STD. CYCLE % 7.4086 0.0040928 1.6996

CAL. FUEL AIR RATIO = 0.10513 MEAS. FUEL AIR RATIO = 0.10778 DIFF MEAS. & CAL. F/A PERCENT = -2.4596

CYL TEMP DEG.F CYL-1 273.99 CYL-2 290.42 CYL-3 272.38 CYL-4 389.26

EXT GAS TEMP DEG.F EXT-1 1240.6 EXT-2 -454.00 EXT-3 -62.706 EXT-4 429.38 SEXT-1 493.35 SEXT-2 490.66

ENGINE OIL F OIL 147.19 S OIL 276.60 D OIL 46.913 MANIFOLD PRESSURE = 12.608

DYNO COND. TORQUE 5.9406 RPM 593.46 CYL. BACK PRESSURE = 29.145

INDUCTION AIR I AIR1 58.569 I AIR2 59.274 I AIR1 64.122 I AIR2 55.406

ORIFICE AIR TEMP 80.549 DELTAP 2.0057 MPFD 53.413 FLOW 1981.4

CELL TEMP. = 76.733 HEATER TEMP = 80.526 COOLER TEMP = 47.179

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NASA-LEWIS PRELIMINARY DATA 04/02/76 CADDELL REC 04/02/76 21:47:36.768 FAC SFX15 PGM C003 R9G 2873

LEANOUT 25 BTDC I-E T.59 DEG HUM = 60 % 1 1/2 T OPEN MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.210 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	59.211	29.211	15.078	67.290	0.47114	14.349

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	73.991	5.7009	44.806	3.9788	7.3267	6.1107

COOLING AIR	TEMP	INLET-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	63.662	-0.011347	0.59032	0.00000	64.101	47.096

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	64.101	23.432	49.012	1.1255	0.27227

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	RHP
	0.10888	0.10813	1.6251	610.62	610.14	2.3159	0.25937

WET CORRECTION FACTOR = 0.89604 EXHAUST MOLE. WT. = 25.572 EXHAUST DENSITY = 0.066472 EXHAUST FLOW RATE = 1129.6

MEASURED CONC.	PART PER MILLION WET	NOX PPM	CO DRY	PER CENT	CO2 DRY
	43954.	4.9495	11.100	5.5847	3.9041
CORRECTED CONC. TO WET BASIS			9.9456	5.0041	3.4982

EMISSION RATE	HC	NOX	CO
EMISSION MASS/MODE	1.7825	0.00066534	8.1565
EMISSION MASS/RATED HP	0.029708	1.1089E-05	0.13594
MODE EMIS./STD. CYCLE %	0.00018568	6.9306E-08	0.0004963
	9.7725	0.3046204	2.0229

CAL. FUEL AIR RATIO = 0.10694 MEAS. FUEL AIR RATIO = 0.10888 DIFF MEAS. & CAL. F/A PERCENT = -1.7849

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	246.72	269.56	244.98	443.77

EXT GAS TEMP DEG.F	FXT-1	FXT-2	FXT-3	FXT-4	SEXT-1	SEXT-2
	343.56	-454.00	-118.66	467.96	460.55	457.04

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 13.244
	144.96	292.46	47.333	

DYMO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.013
	6.0918	602.82	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	58.488	59.211	102.65	55.297

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	80.319	1.0505	53.389	1448.4

CELL TEMP. = 76.241 HEATER TEMP = 80.773 COOLER TEMP = 47.793

NASA-LEWIS PRELIMINARY DATA 04/02/76 CADDEII PFC 04/02/76 21:53:17.480 FAC SEX15 PGM C003 R05 2874

LEANOUT 25 BTDC T & T 59 DEG HUM = 60 ± 1 1/2 T OPEN MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. PARAMETRIC PRESSURE = 29.210 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	59.292	29.203	22.209	99.067	0.69131	14.348

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	74.160	5.6715	44.891	11.869	10.279	6.1157

COOLING AIR	TEMP	WDEL-HOOD	DEL-HOOD	FLOW	RFL-HUM	DEW-POINT
	64.515	0.0088562	0.52861	2269.6	63.698	47.005

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	63.698	0.21002	48.847	1.1217	1.2761

ENG. COND.	F/A DRY	F/A WET	EQV. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10376	0.10304	1.5486	1199.8	1200.7	5.5255	1.2522

WET CORRECTION FACTOR = 0.85027 EXHAUST MOLE. WT. = 25.995 EXHAUST DENSITY = 0.067280 EXHAUST FLOW RATE = 1635.5

MEASURED CONC.	PART PER MILLION WFT		CO DRY	PER CENT	CO2 DRY
	HC PPM	NOX PPM			
	15526.	9.3830	12.919	7.1708	0.42345
CORRECTED CONC. TO WFT BASIS			11.114	6.1689	0.36429

EMISSION RATE	HC	NOX	CO
	0.91163	0.0018263	13.196
	0.16713	0.00033403	2.4193
	0.0010446	2.0927E-06	0.015121
EMISSION MASS/MODE			
0.0010446	2.0927E-06	0.015121	
EMISSION MASS/RATED HP			
0.0010446	2.0927E-06	0.015121	
MODE EMISS./STD. CYCLE %	54.978	0.13951	36.002

CAL. FUEL AIR RATIO = 0.10634 MEAS. FUEL AIR RATIO = 0.10376 DIFF MEAS. & CAL. F/A PERCENT = 2.4912

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	297.47	317.09	299.66	416.49

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	909.77	-454.00	293.30	648.12	555.32	555.75

ENGINE OIL	ECILT	SOILT	OILP	MANIFOLD PRESSURE = 9.0880
	148.10	393.01	55.406	

DYMO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.279
	6.0558	1201.0	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	59.741	59.292	114.23	55.531

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	80.672	1.0709	53.431	1451.7

CYL TEMP. = 77.635 HEATER TEMP = 80.290 COOLER TEMP = 48.867

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NASA-LEWIS PRELIMINARY DATA, 04/02/76 CADDEII REC 04/02/75 21:50:38.628 FAC SFX15 PGM C003 R0G 2875

LEANOUT 25 BTDC I & T 59 DEG HUM = 60 % 1 1/2 T OPEN MODE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.210 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	59.373	29.211	22.235	99.221	0.69018	14.350

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	74.400	5.6715	44.795	11.752	10.177	6.1179

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	64.605	0.0030443	0.59P90	2240.4	63.322	46.926

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	63.322	25.038	48.692	1.1181	1.5409

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10257	0.10186	1.5309	1199.1	1199.6	6.6757	1.5241

WET CORRECTION FACTOR = 0.85785 EXHAUST MOLE. WT. = 25.050 EXHAUST DENSITY = 0.067475 EXHAUST FLOW RATE = 1631.5

MEASURED CONC.	PART PER MILLION WET		CO DRY	PER CENT	
	HC PPM	NOX PPM		CO2 DRY	O2 DRY
	15332.	9.4209	12.816	7.2249	0.44498
CORRECTED CONC. TO WET BASIS					
			10.994	6.1979	0.38173

EMISSION RATE	HC	NOX	CO
	0.89806	0.0018201	13.022
	0.044903	9.1455E-05	0.65112
	0.00028064	5.7159E-07	0.0040695
MODE EMIS./STO. CYCLE *			
	14.771	0.038106	9.6892

CAL. FUEL AIR RATIO = 0.10590 MEAS. FUEL AIR RATIO = 0.10257 DIFF MEAS. & CAL. F/A PERCENT = 3.1497

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	293.72	312.90	295.49	394.90

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1387.5	-454.00	242.62	327.87	544.73	543.42

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 9.0318
	148.48	-8.4828	55.526	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.147
	9.3681	1192.7	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	58.705	59.373	111.41	55.421

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	80.734	2.0057	53.385	1981.0

CELL TEMP. = 77.405 HEATER TEMP = 89.292 COOLER TEMP = 48.199

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NASA-LEWIS PRELIMINARY DATA 04/02/76 CADDEII REC 04/02/76 21:55:55.642 FAC SFY15 PGM C003 R0G 2876

LEANOUT 25 BTDC I-6 T 59 DEG HUM = 60 % I 1/2-T OPEN MODE = 7.0000 NO. SCANS = 4

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.210 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	60.484	29.212	15.171	67.717	0.47573	14.350

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	74.910	5.7002	44.782	3.9741	7.2645	6.1172

COOLING AIR	TEMP	WDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	65.353	-0.0027676	0.72164	0.00000	61.463	47.184

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	61.463	24.755	49.177	1.1293	0.66758

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10728	0.10653	1.6012	612.44	614.61	5.6558	0.65964

WET CORRECTION FACTOR = 0.88330 EXHAUST MOLE. WT. = 25.758 EXHAUST DENSITY = 0.066720 EXHAUST FLOW RATE = 1131.0

MEASURED CONC.	PART PER MILLION WFT		PER CENT	
	HC PPM	NOX PPM	CO DRY	O2 DRY
	42799	5.3668	11.428	3.5113
CORRECTED CONC. TO WET BASIS			10.094	4.9441

EMISSION RATE	HC	NOX	CO
	1.7377	0.00072228	8.2880
	0.028962	1.2038E-05	0.13813
	0.00018101	7.5237E-08	0.00086334
MODE EMIS./STD. CYCLE %	9.5268	0.0050158	2.0556

CAI FUEL AIR RATIO = 0.10916 MEAS. FUEL AIR RATIO = 0.10728 DIFF MEAS. & CAL. F/A PERCENT = 1.7517

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	274.40	294.13	273.35	490.81

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1783.6	-454.00	178.99	625.79	511.69	509.33

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 13.107
	147.22	334.64	47.000	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.627
	2.6193	612.74	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	59.741	60.484	123.55	55.214

ORIFICE AIR	TEMP	DELTA P	DIFF	FLOW
	P1.452	1.2948	53.449	1603.6

CELL TEMP. = 77.359 HEATED TEMP. = 90.000

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NASA-LEWIS PRELIMINARY DATA 04/06/76 CADDEJI REC 04/06/76 17:26:58.803 FAC SEX15 PGM C003 RDG 2877

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 60 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.030 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CEM	DRY FLOW	VAPOR FLOW	PRESS. TOTAL
	59.094	29.043	211.43	969.15	6.4569	14.751

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	71.759	5.3426	44.865	82.086	78.536	6.0414

COOLING AIR	TEMP	INDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	61.574	3.0994	3.9092	10141.	63.001	46.526

REL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP
	63.001	12.689	46.637	1.0709 157.14

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.081036	0.080499	1.2095	2703.8	2706.1	291.24	149.93

WET CORRECTION FACTOR = 0.84279 EXHAUST MOLE. WT. = 27.598 EXHAUST DENSITY = 0.071458 EXHAUST FLOW RATE = 14751.

MEASURED CONC.	PART PER MILLION WFT	PER CENT
	HC PPM NOX PPM CO DRY CO2 DRY O2 DRY	
	1527.2 285.65 7.8229 10.074 0.088509	
CORRECTED CONC. TO WET BASIS		
	6.5930 8.4901 0.074594	

EMISSION RATE	HC	NOX	CO
	0.80877	0.50145	70.611
EMISSION MASS/MODE	0.0040438	0.0025072	0.35305
EMISSION MASS/RATED HP	2.5274E-05	1.5670E-05	0.0022066
MODE EMIS./STD. CYCLE %	1.3302	1.0447	5.2538

CAL. FUEL AIR RATIO = 0.084768 MEAS. FUEL AIR RATIO = 0.081036 DIFF MEAS. & CAL. F/A PERCENT = 4.6052

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	390.50	420.81	398.54	405.03

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1293.1	-454.00	578.65	793.82	1293.8	1295.4

ENGINE OIL	EOILT	SOILT	OILT	MANIFOLD PRESSURE = 27.909
	135.02	105.17	75.996	

DYMO COND.	TORQUE	RPM	CYL. RACK PRESSURE = 29.143
	293.81	2646.1	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	58.777	59.094	1.9730	56.032

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	79.772	1.9985	57.968	1979.4

CELL TEMP. = 74.586 HEATER TEMP. = 79.836 COOLER TEMP. = 52.609

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NASA LEWIS PRELIMINARY DATA 04/06/76 CADDF1 REC 04/06/76 17:33:10.566 FAC SEX1 PGM C003 RDG 2879

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 60 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.030 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	60.123	29.014	118.68	531.55	3.5437	14.400

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	74.932	5.5686	44.781	41.600	33.723	6.0993

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	62.448	3.0122	3.8256	9981.0	59.320	45.906

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	59.320	36.036	46.667	1.0716	65.358

ENG. COND.	F/A DRY	F/A WET	EQV. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.063444	0.063023	0.94692	2353.0	2355.2	143.74	64.397

WET CORRECTION FACTOR = 0.87164 EXHAUST MOL.F. WT. = 28.812 EXHAUST DENSITY = 0.074601 EXHAUST FLOW RATE = 7624.7

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	271.83	1411.4	0.42113	12.917	1.5486	
CORRECTED CONC. TO WET BASIS						
			0.36708	11.259	1.3498	

	HC	NOX	CO
EMISSION RATE	0.074406	1.2807	2.0320
EMISSION MASS/MODE	0.0074406	0.12807	0.20320
EMISSION MASS/RATED HP	4.6504E-05	0.00080041	0.0012700
MODE EMIS./STD. CYCLE %	2.4476	53.361	3.0238

CAL. FUEL AIR RATIO = 0.063150 MEAS. FUEL AIR RATIO = 0.063444 DIFF MEAS. & CAL. F/A PERCENT = -0.46307

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	334.56	334.20	356.60	668.73

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1547.3	800.26	1272.9	1428.1	1243.9	1246.0

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 20.285
	152.01	90.069	72.175	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.161
	140.62	2298.8	

INDUCTION AIR	TAIRT1	TAIPT2	TAIRT1	TAIRT2
	59.807	60.123	146.74	55.548

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	80.796	1.0167	53.000	1424.6

CELL TEMP. = 75.822 HEATER TEMP = 79.491 COOLER TEMP = 53.195

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NASA-LEWIS PRELIMINARY DATA 04/06/76 CANDELL REC 04/06/76 17:38:20.950 FAC SEX15 PGM C003 RDG 2880

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 60 % MODE = 3.0000 NO. SCANS = 5.

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.040 RATE HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	57.855	29.015	208.50	956.10	6.3967	14.737

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	71.295	5.2346	44.877	82.914	79.865	5.8923

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	60.898	3.0928	3.8314	10129.	66.073	46.611

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	66.073	39.196	46.833	1.0754	154.43

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.083532	0.082977	1.2467	2703.2	2705.6	285.30	147.36

WET CORRECTION FACTOR = 0.84827 EXHAUST MOLE. WT. = 27.402 EXHAUST DENSITY = 0.070952 EXHAUST FLOW RATE = 14691.

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1474.3	178.94	8.1971	9.8822	0.0058005
CORRECTED CONC. TO WET BASIS			6.9534	8.3828	0.0049205

EMISSION RATE	HC	NOX	CO
	0.77759	0.31283	74.164
EMISSION MASS/MODE	0.0038879	0.0015641	0.37082
EMISSION MASS/RATED HP	2.4300E-05	9.7759E-06	0.0023176
MODE EMIS./STD. CYCLE %	1.2789	0.55172	5.5181

CAL. FUEL AIR RATIO = 0.085998 MEAS. FUEL AIR RATIO = 0.083532 DIFF MEAS. & CAL. F/A PERCENT = 2.9523

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	395.99	421.48	405.34	473.18

EXT GAS TEMP DEG.F	FXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1592.7	-454.00	475.16	1133.3	1342.8	1343.4

ENGINE OIL	EOILT	SOILT	OILP	MANTFOLD PRESSURE = 27.949
	164.72	232.88	72.579	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.191
	290.53	2635.0	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	57.574	57.855	104.55	55.314

ORIFICE AIR	TFMP	DELTAP	ORFP	FLOW
	74.119	1.0342	52.993	1438.9

CFLI TEMP. = 76.324 HEATER TEMP = 79.331 COOLER TEMP = 50.545

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NASA-LEWIS PRELIMINARY DATA 04/06/76 CADDE11 REC 04/06/76 17:45:41.851 FAC SEX15 PGM C003 RDG 2882

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 60 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.040 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	58.858	29.048	118.09	528.83	3.5362	14.403

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	74.231	5.5908	44.799	42.402	33.294	6.1026

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	61.574	3.1085	3.9145	10157.	62.259	45.990

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	62.259	11.687	46.808	1.0749	65.360

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.062959	0.062540	0.93968	2350.4	2354.3	144.13	64.503

WET CORRECTION FACTOR = 0.87194 EXHAUST MOLE. WT. = 28.820 EXHAUST DENSITY = 0.074623 EXHAUST FLOW RATE = 7580.2

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC_PPM	NOX_PPM	CO DRY	CO2 DRY	O2 DRY
	243.22	1416.9	0.39239	12.852	1.6575
CORRECTED CONC. TO WET BASIS			0.34214	11.206	1.4452

EMISSION RATE	HC	NOX	CO
	0.066189	1.2781	1.8829
EMISSION MASS/MODE	0.0066189	0.12781	0.18829
EMISSION MASS/RATED HP	4.1368E-05	0.00079884	0.0011768
MODE EMIS./STD. CYCLE %	2.1773	53.256	2.8019

CAL. FUEL AIR RATIO = 0.062737 MEAS. FUEL AIR RATIO = 0.062959 DIFF MEAS. & CAL. F/A PERCENT = -0.35190

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	336.79	330.71	359.02	571.91

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1094.9	748.91	957.01	1266.5	1271.7	1272.4

ENGINE OIL	FILT	SOILT	OILP	MANIFOLD PRESSURE = 20.299
	190.25	121.56	72.083	

DYMO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.097
	141.67	2295.5	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	58.479	58.858	60.281	55.711

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	79.305	1.0351	53.051	1439.3

CFLT TEMP. = 78.254 HEATER TEMP. = 79.129 COOLER TEMP. = 53.618

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NASA-LEWIS PRELIMINARY DATA 04/06/76 CADDEII REC 04/06/76 17:52:56.538 FAC SEX15 PGM C003 RDG 2883

LEANDUT 25 BTDC TO CL APP 59 DEG HUM = 60 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.040 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	59.915	29.043	203.94	932.46	6.2478	14.710

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON.	FPIP
	73.156	4.5529	44.828	79.051	76.514	5.0957

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	62.970	3.2231	3.9200	10364.	61.353	46.601

REL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP
	61.353	53.609	45.902	1.0770 152.60

ENG. COND.	F/A DRY	F/A WET	EQU. PATIO	RPM-1	RPM-2	TORQUE	BHP
	0.082055	0.081509	1.2247	2707.9	2710.5	282.06	145.43

WET CORRECTION FACTOR = 0.84757 EXHAUST MOLE. WT. = 27.518 EXHAUST DENSITY = 0.071250 EXHAUST FLOW RATE = 14248.

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1422.2	197.28	7.6378	10.155	0.0016602
CORRECTED CONC. TO WET BASIS			6.24736	8.6068	0.0014071

	HC	NOX	CO
EMISSION RATE	0.72752	0.33451	66.967
EMISSION MASS/MODE	0.0036376	0.0016725	0.33483
EMISSION MASS/RATED HP	2.2735E-05	1.3453E-05	0.0020927
MODE EMIS./STD. CYCLE %	1.1966	0.69689	4.9826

CAL. FUEL AIR PATIO = 0.084601 MEAS. FUEL AIR RATIO = 0.082055 DIFF MEAS. & CAL. F/A PERCENT = 3.1019

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	406.00	421.54	411.68	587.27

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1034.1	-454.00	624.58	1108.1	1348.6	1348.6

ENGINE OIL	FILT	SJILT	OIL P	MANIFOLD PRESSURE = 27.652
	188.50	208.16	73.735	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.216
	275.88	2638.0	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	59.635	59.915	83.831	55.870

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	80.469	2.0226	53.045	1989.4

CELL TEMP. = 79.393 HEATER TEMP = 78.976 COOLER TEMP = 52.105

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NASA-LEWIS PRELIMINARY DATA 04/06/76 CADDF11 REC 04/06/76 18:01:26.070 FAC SEX15 PGM C003 RDG 2885

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 60 % MODE = 5,000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.040 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	58.189	29.045	115.01	514.95	3.4560	14.400

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	74.799	5.5830	44.785	43.953	33.117	6.1110

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	61.088	3.1968	3.8765	10317.	63.988	46.081

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	63.988	3.9604	45.979	1.0788	65.678

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.064311	0.053883	0.95987	2358.1	2360.0	144.47	64.867

WET CORRECTION FACTOR = 0.86974 EXHAUST MOLE. WT. = 28.792 EXHAUST DENSITY = 0.074551 EXHAUST FLOW RATE = 7398.0

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	312.13	1551.3	0.38658	13.052	1.1741
CORRECTED CONC. TO WET BASIS			0.33622	11.352	1.0212

EMISSION RATE	HC	NOX	CO
	0.082898	1.3657	1.8058
EMISSION MASS/MODE	0.0082898	0.13657	0.18058
EMISSION MASS/RATED HP	5.1811E-05	0.00085354	0.0011286
MODE EMIS./STD. CYCLE %	2.7269	56.902	2.6873

CAL. FUEL AIR RATIO = 0.064231 MEAS. FUEL AIR RATIO = 0.064311 DIFF MEAS. & CAL. F/A PERCENT = -0.12419

CYL. TEMP. DEG. F.	CYL-1	CYL-2	CYL-3	CYL-4
	337.37	336.64	350.62	643.05

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	978.05	792.47	1138.4	1312.1	1259.8	1260.4

ENGINE OIL	FILT	SOILT	OILD	MANIFOLD PRESSURE = 20.005
	186.49	183.92	71.727	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.096
	149.57	2317.9	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	57.819	58.189	148.21	55.687

ORIFICE AIR	TEMP	DELTAP	DRFP	FLOW
	73.386	2.9498	53.068	2381.5

CELL TEMP. = 77.847 HEATER TEMP = 78.837 COOLER TEMP = 53.294

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NASA-LEWIS PRELIMINARY DATA 04/06/76 CADDEIT REC 04/06/76 18:07:00.021 FAC SEX15 PGM C003 RDS 2886

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 60 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.040 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	58.922	29.051	203.69	931.59	6.2820	14.714

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	72.871	4.3489	44.835	79.288	76.688	3.8443

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	62.169	3.1127	3.8671	10165.	63.990	46.776

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	63.990	22.220	47.203	1.0839	152.33

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.082319	0.081767	1.2286	2698.7	2700.7	282.90	145.37

WET CORRECTION FACTOR = 0.85439 EXHAUST MOLE. WT. = 27.497 EXHAUST DENSITY = 0.071196 EXHAUST FLOW RATE = 14250.

MEASURED CONC.	PART PER MILLION WET	PER CENT
	HC PPM NOX PPM CO DRY CO2 DRY O2 DRY	
	1455.5 311.74 7.2107 10.138 0.063246	
CORRECTED CONC. TO WET BASIS		8.6615 0.054037

EMISSION RATE	HC	NOX	CO
	0.74463 0.52864 63.736		
EMISSION MASS/MODE	0.0037232 0.0026432 0.31868		
EMISSION MASS/RATED HP	2.3270E-05 1.6520E-05 0.0019918		
MODE EMT S./STD. CYCLE %	1.2247 1.1013 4.7423		

CAL. FUEL AIR RATIO = 0.083634 MEAS. FUEL AIR RATIO = 0.082319 DIFF MEAS. & CAL. F/A PERCENT = 1.5979

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	398.28 430.12 399.41 648.33			

EXT GAS TEMP DEG.F	FXT-1	FXT-2	FXT-3	FXT-4	SXT-1	SXT-2
	1127.7 -335.59 767.31 1124.2 1347.4 1345.8					

ENGINE OIL	EOILT	SOILT	OILP	MANTFOLD PRESSURE =
	187.78 210.90 73.891 27.681			

DYNO COND.	TORQUE	RPM	CYL. RACK PRESSURE =
	275.06 2621.6 29.197		

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	58.642 58.922 156.75 55.835			

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	79.305 1.0488 53.058 1448.6			

CELL TEMP. = 78.254 HEATER TEMP = 78.747 COOLER TEMP = 51.916

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NASA-I FWIS PRELIMINARY DATA 04/06/76 CADDEII REC 04/06/76 19:51:14.933 FAC SEX15 PGM C003 RDG 2889

LEANOUT 25 B.TDC TO CL APP 59 DEG HUM = 60 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.040 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 59.202 PRESS 29.026 CFM 107.27 DRY FLOW 479.60 VAPOR FLOW 3.1900 PRESS TOTAL 14.378

COMB. FUEL TEMP 73.271 PRESS 5.5424 DENSITY 44.825 TURBO FLOW 43.055 FLOW TRON 34.293 FPIP 6.0843

COOLING AIR TEMP 61.133 UDEL-HOOD 3.2716 DEL-HOOD 4.0368 FLOW 10450. REL-HUM 61.070 DEW-POINT 45.805

REL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP
61.070 0.26403 46.560 1.0692 65.931

ENG. COND. F/A DRY F/A WET EQU. RATIO RPM-1 RPM-2 TORQUE BHP
0.071504 0.071032 1.0672 2351.3 2352.5 145.28 65.041

WET CORRECTION FACTOR = 0.85920 EXHAUST MOLE. WT. = 28.386 EXHAUST DENSITY = 0.073498 EXHAUST FLOW RATE = 7035.3

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM NOX PPM CO DRY CO2 DRY O2 DRY
1146.8 1077.5 2.5019 12.480 0.20136
CORRECTED CONC. TO WET BASIS 2.1497 10.723 0.17301

EMISSION RATE HC NOX CO
0.28965 0.90209 10.980
EMISSION MASS/MODE 0.028965 0.090209 1.0980
EMISSION MASS/RATED HP 0.00018103 0.00056380 0.0068623
MODE EMIS./STD. CYCLE % 9.5279 37.587 16.339

CAL. FUEL AIR RATIO = 0.072180 MEAS. FUEL AIR RATIO = 0.071504 DIFF MEAS. & CAL. F/A PERCENT = 0.94561

CYL TEMP DEG. F CYL-1 CYL-2 CYL-3 CYL-4
338.67 343.78 341.13 455.09

EXT GAS TEMP DEG. F EXT-1 EXT-2 EXT-3 EXT-4 SEXT-1 SEXT-2
1202.9 333.73 803.30 1190.8 1155.1 1158.0

ENGINE OIL FOILT SOILT OILP MANIFOLD PRESSURE = 18.716
146.67 187.85 72.767

DYND COND. TORQUE RPM CYL. BACK PRESSURE = 29.092
143.95 2300.0

INDUCTION AIR TAIRT1 TAIRT2 TAIRT1 TAIRT2
58.886 59.202 12.799 55.663

ORIFICE AIR TFMP DELTAP DRFP FLOW
79.181 0.10571 53.006 366.09

CELL TEMP. = 77.192 HEATER TEMP = 89.230 COOLER TEMP = 51.853

NASA-LEWIS PRELIMINARY DATA 04/06/76 CADDEII REC 04/06/76 20:05:27.950 FAC SFX15 PGM C003 RDG 2890

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 60 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.040 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 57.801 PRESS 29.065 CFM 206.15 DRY FLOW 943.84 VAPOR FLOW 6.3166 PRESS TOTAL 14.727

COMB. FUEL TEMP 70.118 PRESS 5.3741 DENSITY 44.908 TURBO FLOW 75.388 FLOW TRON 72.859 FPIP 5.9625

COOLING AIR TEMP 60.790 UDEL-HOOD 3.0870 DEL-HOOD 3.9169 FLOW 10118. REL-HUM 66.177 DEW-POINT 46.601

REL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP
66.177 52.061 46.847 1.0758 154.96

ENG. COND. F/A DRY 0.077194 F/A WET 0.076681 EQU. RATIO 1.1522 RPM-1 2697.0 RPM-2 2698.9 TORQUE 288.56 BHP 148.18

WET CORRECTION FACTOR = 0.84982 EXHAUST MOLE. WT. = 27.908 EXHAUST DENSITY = 0.072260 EXHAUST FLOW RATE = 14157.

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM NOX PPM CO DRY CO2 DRY O2 DRY
1174.6 422.98 5.5151 11.002 0.030253
CORRECTED CONC. TO WET BASIS 4.6868 9.3497 0.025718

EMISSION RATE HC NOX CO
0.59700 0.71262 48.173
EMISSION MASS/MODE 0.0029850 0.3035631 0.24086
EMISSION MASS/RATED HP 1.8656E-05 2.2269E-05 0.0015054
MODE EMIS./STD. CYCLE % 0.98191 1.4846 3.5843

CAL. FUEL AIR RATIO = 0.079515 MEAS. FUEL AIR RATIO = 0.077194 DIFF MEAS. & CAL. F/A PERCENT = 3.0063

CYL TEMP DEG.F. CYL-1 413.35 CYL-2 434.71 CYL-3 421.70 CYL-4 579.84

EXT GAS TEMP DEG.F EXT-1 1728.4 EXT-2 -253.23 EXT-3 858.29 EXT-4 1208.7 SEXT-1 1394.1 SEXT-2 1393.4

ENGINE OIL EOILT 183.87 SOILT 173.04 OILP 73.447 MANIFOLD PRESSURE = 27.886

DYNO COND. TORQUE 284.26 RPM 2624.4 CYL BACK PRESSURE = 29.192

INDUCTION AIR IAIRT1 57.502 IAIRT2 57.801 TAIRT1 100.38 TAIRT2 55.771

ORIFICE AIR TEMP 77.520 DELTAP 0.084908 ORFP 52.945 FLW 309.43

CFLT TEMP. = 78.200 HEATER TEMP = 79.109 COOLER TEMP = 51.835

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NASA-LFWIS PRELIMINARY DATA 04/06/76 CADDEII REC 04/06/76 20:12:27.771 FAC SEX15 PGM C003 RDG 2892

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 60 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.040 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CEM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	60.114	29.038	104.11	464.12	3.1270	14.375

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	73.769	5.5439	44.812	44.712	37.285	6.0540

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	61.142	2.9350	3.7811	9836.8	59.859	46.136

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	59.859	30.707	47.162	1.0830	65.838

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.080334	0.079796	1.1990	2345.8	2347.7	145.22	64.862

WET CORRECTION FACTOR = 0.85982 EXHAUST MOLE. WT. = 27.554 EXHAUST DENSITY = 0.071602 EXHAUST FLOW RATE = 7046.3

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	1611.0	429.82	5.8292	10.791	0.085789	
CORRECTED CONC. TO WET BASIS			5.0121	9.2779	0.073763	

	HC	NOX	CO
EMISSION RATE	0.40751	0.36041	25.640
EMISSION MASS/MODE	0.040751	0.036041	2.5640
EMISSION MASS/RATED HP	0.00025470	0.00022526	0.016025
MODE EMIS./STD. CYCLE %	13.405	15.017	38.155

CAL. FUEL AIR RATIO = 0.080335 MEAS. FUEL AIR RATIO = 0.080334 DIFF MEAS. & CAL. F/A PERCENT = 0.0023001

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	337.02	345.99	357.39	609.38

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1699.9	-454.00	764.68	1084.7	1195.1	1194.9

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 18.475
	186.84	207.46	71.407	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.072
	146.03	2319.8	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	59.852	60.114	190.42	57.010

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	78.466	1.0670	53.007	1462.1

CELL TEMP. = 78.554 HEATER TEMP = 104.39 COOLER TEMP = 55.183

NASA-LEWIS PRELIMINARY DATA 04/06/76 CADDELL REC 04/06/76 20:17:05.289 FAC SEX15 PGM C003 RDG 2893

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 60 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.040 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	59.690	29.025	205.04	938.18	6.3137	14.721

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	72.444	5.3255	44.847	76.979	74.437	5.9706

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	62.916	3.0958	3.7216	10134.	62.165	46.736

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	62.165	39.950	47.108	1.0818	154.00

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.079343	0.078812	1.1842	2699.7	2702.0	285.39	146.70

WET CORRECTION FACTOR = 0.85334 EXHAUST MOLE. WT. = 27.733 EXHAUST DENSITY = 0.071808 EXHAUST FLOW RATE = 14189.

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1284.3	399.48	6.0299	10.753	0.023762
CORRECTED CONC. TO WET BASIS					
			5.1455	9.1760	0.020277

EMISSION RATE	HC	NOX	CO
	0.65425	0.67455	53.007
	0.0032712	0.0033727	0.26504
	2.0445E-05	2.1080E-05	0.0016565
EMISSION MASS/MODE			
MODE EMISS./STD. CYCLE %	1.0761	1.4053	3.9440

CAL. FUEL AIR RATIO = 0.080800 MEAS. FUEL AIR RATIO = 0.079343 DIFF MEAS. & CAL. F/A PERCENT = 1.8372

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	416.14	437.31	423.66	652.29

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1193.7	-250.55	826.69	1235.1	1374.5	1373.6

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 27.871
	187.77	241.56	73.275	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.217
	292.54	2656.3	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	59.391	59.690	102.71	55.852

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	79.075	2.0204	53.063	1990.9

CEIL TEMP. = 80.214 HEATER TEMP = 80.422 COOLER TEMP = 51.546

NASA-LEWIS PRELIMINARY DATA 04/06/76 CADDELL REC 04/06/75 20:22:39.519 FAC SEX15 PGM C003 RDG 2895

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 60 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.040 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	61.565	29.043	104.25	465.18	3.1570	14.378

COMB. FUFL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	75.890	5.5430	44.756	46.122	36.877	6.0351

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	62.412	2.8470	3.7412	9669.9	57.274	46.331

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	57.274	0.22602	47.506	1.0909	66.742

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.079273	0.078739	1.1832	2351.8	2353.0	146.58	65.638

WET CORRECTION FACTOR = 0.85254 EXHAUST MOLE. WT. = 27.739 EXHAUST DENSITY = 0.071822 EXHAUST FLOW RATE = 7034.3

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1600.8	355.94	6.1475	10.684	0.11969
CORRECTED CONC. TO WET BASIS			5.2410	9.1087	0.10204

	HC	NOX	CO
EMISSION RATE	0.40424	0.29794	26.765
EMISSION MASS/MODE	0.040424	0.029794	2.6765
EMISSION MASS/RATED HP	0.00025265	0.00018622	0.016728
MODE EMIS./STD. CYCLE %	13.297	12.414	39.829

CAL. FUEL AIR RATIO = 0.080908 MEAS. FUEL AIR RATIO = 0.079273 DIFF MEAS. & CAL. F/A PERCENT = 2.0615

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	338.45	349.22	357.68	569.18

EXT GAS TEMP DEG. F	FXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1523.0	-454.00	790.13	1063.8	1184.8	1184.9

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 18.424
	186.94	122.64	71.431	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.143
	148.49	2292.3	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	61.214	61.565	84.994	56.633

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	79.905	2.0193	53.014	1988.9

CELL TEMP. = 81.060 HEATER TEMP = 94.313 COOLER TEMP = 51.726

NASA-LEWIS PRELIMINARY DATA 04/06/76 CADDEJJ REC 04/06/76 20:30:38.744 FAC SEX15 PGM C003 RDG 2896

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 60 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.040 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	58.488	29.029	204.32	935.11	6.3499	14.724

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	71.661	5.3654	44.867	72.621	70.111	5.9991

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	61.403	3.0227	3.9288	10000.	65.485	46.975

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	65.485	7.3487	47.534	1.0915	153.84

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.074976	0.074470	1.1190	2698.9	2701.5	285.58	146.75

WET CORRECTION FACTOR = 0.85119 EXHAUST MOLE. WT. = 28.091 EXHAUST DENSITY = 0.072735 EXHAUST FLOW RATE = 13907.

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1080.5	666.57	4.4928	11.538	0.067787
CORRECTED CONC. TO WET BASIS			3.8242	9.8211	0.057700

	HC	NOX	CO
EMISSION RATE	0.53948	1.1032	38.613
EMISSION MASS/MODE	0.0026974	0.0055158	0.19306
EMISSION MASS/RATED HP	1.6859E-05	3.4474E-05	0.0012066
MODE EMIS./STD. CYCLE %	0.88729	2.2983	2.8730

CAL. FUEL AIR RATIO = 0.076958 MEAS. FUEL AIR RATIO = 0.074976 DIFF MEAS. & CAL. F/A PERCENT = 2.6428

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	420.93	434.92	438.12	581.06

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	957.55	-368.49	946.97	1235.9	1396.0	1394.5

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 27.942
	189.13	164.38	73.179	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.185
	285.20	2625.7	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	58.144	58.488	83.913	55.766

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	77.705	0.041404	52.978	169.26

CELL TEMP. = 79.022 HEATER TEMP = 79.282 COOLER TEMP = 51.501

NASA-LEWIS PRELIMINARY DATA 04/06/76 CADDEII REC 04/06/76 20:35:51.355 FAC SEX15 PGM C003 RDG 2898

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 60 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.040 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	59.400	29.042	104.30	466.64	3.1606	14.376

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	74.462	5.5487	44.793	46.576	37.531	6.0624

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	60.105	2.9239	3.6637	9815.9	61.726	46.276

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	61.726	13.043	47.412	1.0887	67.253

ENG. COND.	E/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.080428	0.079887	1.2004	2351.5	2353.3	148.12	66.318

WET CORRECTION FACTOR = 0.86395 EXHAUST MOLE. WT. = 27.646 EXHAUST DENSITY = 0.071583 EXHAUST FLOW RATE = 7087.3

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1560.6	460.65	5.5171	10.930	0.12145
CORRECTED CONC. TO WET BASIS			4.7665	9.4431	0.10493

	HC	NOX	CO
EMISSION RATE	0.39706	0.38850	24.525
EMISSION MASS/MODE	0.039706	0.038850	2.4525
EMISSION MASS/RATED HP	0.00024816	0.00024281	0.015328
MODE EMIS./STD. CYCLE %	13.061	16.188	36.496

CAL. FUEL AIR RATIO = 0.079454 MEAS. FUEL AIR RATIO = 0.080428 DIFF MEAS. & CAL. F/A PERCENT = -1.2115

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	338.14	352.99	360.87	618.78

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	923.16	-454.00	874.54	1066.9	1212.2	1212.9

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 18.487
	187.07	222.09	71.315	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.113
	152.27	2328.4	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	59.066	59.400	141.12	55.149

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	78.527	1.0898	53.068	1477.3

CYLL TEMP. = 79.834 HEATER TEMP = 78.657 COOLER TEMP = 46.410

NASA-LEWIS PRELIMINARY DATA 04/06/76 CADDELL REC 04/06/76 20:39:41.393 FAC SEX15 PGM C003 R0G 2899

LEANOUT 25 BTDC TO CL APP 59 C/G HUM = 60 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.040 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	59.996	29.044	203.00	928.59	6.3539	14.718

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	73.209	5.3402	44.826	72.959	70.387	5.9328

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	62.799	2.9962	3.7498	9951.2	62.494	47.166

RFL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP
	62.494	27.151	47.898	1.0999 152.88

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.075799	0.075284	1.1313	2691.5	2694.4	284.23	145.66

WET CORRECTION FACTOR = 0.85502 EXHAUST MOLE. WT. = 28.023 EXHAUST DENSITY = 0.072558 EXHAUST FLOW RATE = 13855.

MEASURED CONC.	PART PER MILLION WET	PER CENT			
	HC PPM	CO2 DRY	O2 DRY		
	1096.2	NOX PPM	4.5078	11.468	0.076088
CORRECTED CONC. TO WET BASIS		CO DRY	3.8543	9.8052	0.065057

EMISSION RATE	HC	NOX	CO
	0.54527	1.1425	38.771
EMISSION MASS/MODE	0.0027264	0.0057127	0.19385
EMISSION MASS/RATED HP	1.7040E-05	3.5705E-05	0.0012116
MODE EMIS./STD. CYCLE %	0.89683	2.3803	2.8847

CAL. FUEL AIR RATIO = 0.077016 MEAS. FUEL AIR RATIO = 0.075799 DIFF MEAS. & CAL. F/A PERCENT = 1.6050

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	417.00	429.43	433.01	589.79

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1224.5	-454.00	1101.9	1355.0	1399.5	1398.1

ENGINE OIL	EOILT	SOILT	OILT	MANIFOLD PRESSURE = 27.806
	187.72	212.25	73.379	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.199
	284.18	2641.9	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	59.698	59.996	78.931	55.801

ORIFICE AIR	TFMP	DELTAP	ORFP	FLOW
	79.058	1.0472	53.002	1447.8

CELL TEMP. = 79.579 HEATER TFMP = 81.095 COOLER TEMP = 52.051

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NASA-Lewis PRELIMINARY DATA 04/06/76 CADDETI REC 04/06/76 20:48:21.222 FAC SEX15 PGM C003 RDG 2901

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 60 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.040 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	58.515	29.041	104.78	468.21	3.2224	14.379

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	73.245	5.5463	44.826	49.293	37.573	6.0537

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	58.795	2.8888	3.7301	9749.5	64.746	46.701

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	64.746	17.830	48.177	1.1063	65.276

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.080248	0.079699	1.1977	2357.6	2360.6	143.51	64.418

WET CORRECTION FACTOR = 0.86069 EXHAUST MOLE. WT. = 27.661 EXHAUST DENSITY = 0.071620 EXHAUST FLOW RATE = 7107.0

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	1637.2	481.19	5.7626	10.803	0.13313	
CORRECTED CONC. TO WET BASIS			4.9598	9.2978	0.11200	

	HC	NOX	CO
EMISSION RATE	0.41771	0.40696	25.591
EMISSION MASS/MODE	0.041771	0.040696	2.5591
EMISSION MASS/RATED HP	0.00026107	0.00025435	0.015994
MODE EMIS./STD. CYCLE %	13.740	16.956	38.081

CAL. FUEL AIR RATIO = 0.080048 MEAS. FUEL AIR RATIO = 0.080248 DIFF MEAS. & CAL. F/A PERCENT = -0.24905

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	324.69	339.54	350.99	616.56

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1358.3	-454.00	945.27	1085.6	1189.4	1190.1

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 18.453
	186.78	297.99	71.531	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.105
	150.19	2292.6	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	58.171	58.515	114.91	55.827

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	77.051	2.0395	53.047	2003.5

CELL TEMP. = 77.687 HEATER TEMP = 83.018 COOLER TEMP = 51.068

NASA-LEWIS PRELIMINARY DATA 04/06/76 CADDEII REC 04/06/76 20:52:35.882 FAC SEX15 PGM C003 RDG 2902

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 60 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.040 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	58.768	29.059	201.78	922.48	6.3862	14.715

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	72.266	5.4131	44.851	68.382	65.641	6.0060

COOLING AIR	TEMP	INLET-DOOD	DEL-DOOD	FLOW	REL-HUM	DEW-POINT
	61.556	2.9934	3.6557	9946.0	66.038	47.466

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	66.038	30.277	48.460	1.1128	151.91

ENG. COND.	F/A DRY	F/A WFT	EQ. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.071155	0.070667	1.0620	2690.9	2693.1	282.99	144.99

WET CORRECTION FACTOR = 0.85514 EXHAUST MOLE. WT. = 28.416 EXHAUST DENSITY = 0.073576 EXHAUST FLOW RATE = 13516.

MEASURED CONC.	PART PFR MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	966.00	1413.0	2.6929	12.356	0.13333
CORRECTED CONC. TO WFT BASIS			2.3078	10.566	0.11402

	HC	NOX	CO
EMISSION RATE	0.46875	2.2729	22.598
EMISSION MASS/MODE	0.0023438	0.011364	0.11299
EMISSION MASS/RATED HP	1.4648E-05	7.1027E-05	0.00070618
MODE EMIS./STD. CYCLE %	0.77097	4.7351	1.6814

CAL. FUEL AIR RATIO = 0.072736 MFAS. FUEL AIR RATIO = 0.071156 DIFF MEAS. & CAL. F/A PERCENT = 2.2194

CYL TEMP DEG. F.	CYL-1	CYL-2	CYL-3	CYL-4
	424.61	430.60	434.88	541.43

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1104.5	-245.57	1272.1	1451.9	1429.1	1427.8

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 27.700
	187.96	202.95	73.283	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.204
	279.15	2600.5	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	58.479	58.768	55.604	55.910

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	77.670	1.0602	53.005	1458.5

CELL TEMP. = 78.969 HEATER TEMP = 78.705 COOLER TEMP = 51.826

ORIGINAL PAGE IS
OF POOR QUALITY

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NASA-LEWIS PRELIMINARY DATA 04/06/76 CADDEII REC 04/06/76 20:59:46.238 FAC SEX15 PGM C003 RDG 2904

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 60 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.040 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CEM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	60.051	29.032	104.60	467.82	3.2066	14.380

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	75.562	5.5434	44.764	47.690	36.961	6.0591

COOLING AIR	TEMP	UDEL-HOOD	DFL-HOOD	FLOW	REL-HUM	DEW-POINT
	60.438	2.9331	3.7456	9833.1	61.046	46.596

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	61.046	19.284	47.981	1.1018	67.294

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.079005	0.078468	1.1792	-2355.1	2357.8	147.84	66.295

WET CORRECTION FACTOR = 0.86365 EXHAUST M3LE. WT. = 27.760 EXHAUST DENSITY = 0.071878 EXHAUST FLOW RATE = 7067.4

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1506.2	563.40	5.0141	11.136	0.13489
CORRECTED CONC. TO WET BASIS			4.3304	9.6176	0.11650

	HC	NOX	CO
EMISSION RATE	0.38216	0.47382	22.219
EMISSION MASS/MODE	0.038216	0.047382	2.2219
EMISSION MASS/RATED HP	0.00023885	0.00029614	0.013887
MODE EMIS./STD. CYCLE %	12.571	19.743	33.064

CAL. FUEL AIR RATIO = 0.078247 MEAS. FUEL AIR RATIO = 0.079006 DIFF. MEAS. & CAL. F/A PERCENT = -0.96032

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	341.09	354.03	357.18	603.74

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1171.3	-410.08	1196.5	1203.4	1222.2	1223.0

ENGINE OIL	F OILT	S OILT	O ILP	MANIFOLD PRESSURE = 18.681
	186.92	195.94	71.343	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.015
	144.95	2320.4	

INDUCTION AIR	TAIRT1	TAIPT2	TAIRT1	TAIPT2
	59.707	60.051	114.35	55.419

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	79.713	1.0502	53.008	1450.3

CELL TEMP. = 80.628 HEATER TEMP = 91.925 COOLER TEMP = 49.517

NASA-LEWIS PRELIMINARY DATA 04/06/76 CADDET REC 04/06/76 21:06:17.990 FAC SEX15 PGM C003 RDG 2905

LEANOUT 25 BTDC TO CL APP 59 DEG HJM = 60 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.040 RATED HP = 160.00 HC RATIO = 2.1250

COMP. AIR TEMP 58.506 PRESS 29.022 CFM 200.37 DRY FLOW 915.89 VAPOR FLOW 6.1292 PRESS TOTAL 14.709

COMP. FUEL TFMP 72.427 PRESS 5.4026 DENSITY 44.847 TURBO FLOW 66.890 FLOW TRON 64.552 FPIP 5.9445

COOLING AIR TEMP 61.286 UDEL-HOOD 2.9508 DEL-HOOD 3.5037 FLOW 9866.4 RFL-HUM 64.437 DEW-POINT 46.566

REL-HUM 1 64.437 2 29.715 HUMIDITY 46.844 % H2O VAPOR CORRECTED HP 1.0757 149.52

ENG. COND. F/A DRY 0.070600 F/A WET 0.070131 EQU. RATIO 1.0537 RPM-1 2703.5 RPM-2 2706.0 TORQUE 276.99 BHP 142.58

WET CORRECTION FACTOR = 0.85439 EXHAUST MOLE. WT. = 28.464 EXHAUST DENSITY = 0.073701 EXHAUST FLOW RATE = 13387.

MEASURED CONC. HC PPM 907.39 NOX PPM 1587.3 CO DRY 2.6011 CO2 DRY 12.418 O2 DRY 0.15860
CORRECTED CONC. TO WET BASIS HC 2.2224 CO 10.610 O2 0.13550

EMISSION RATE HC 0.43611 NOX 2.5287 CO 21.600
EMISSION MASS/MODE HC 0.0021805 NOX 0.012644 CO 0.10800
EMISSION MASS/RATED HP HC 1.3628E-05 NOX 7.9022E-05 CO 0.00067501
MODE EMIS./STD. CYCLE % HC 0.71728 NOX 5.2682 CO 1.6072

CAL. FUEL AIR RATIO = 0.072412 MEAS. FUEL AIR RATIO = 0.070500 DIFF MEAS. & CAL. F/A PERCENT = 2.5666

CYL. TEMP DEG. F CYL-1 418.40 CYL-2 434.58 CYL-3 431.03 CYL-4 719.80

EXT GAS TEMP DEG. F EXT-1 1201.5 EXT-2 203.22 EXT-3 1258.2 EXT-4 1375.9 SEXT-1 1426.8 SEXT-2 1424.6

ENGINE OIL EOILT 189.22 SOILT 247.60 OILP 73.527 MANIFOLD PRESSURE = 27.574

DYNO COND. TORQUE 271.82 RPM 2659.9 CYL. BACK PRESSURE = 29.184

INDUCTION AIR IAIRT1 58.226 IAIRT2 58.506 TAIRT1 81.213 TAIRT2 55.956

ORIFICE AIR TEMP 77.307 DELTAP 2.0406 ORFP 53.047 FLOW 2003.6

CELL TEMP. = 79.499 HEATER TEMP = 80.234 COOLER TEMP = 52.465

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NASA-LEWIS PRELIMINARY DATA 04/06/76 CADDELI REC 04/06/76 21:25:09.603 FAC SEX15 PGM C003 RDG 2908
 LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 60 % MODE = 5.0000 NO. SCANS = 5
 ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.050 RATED HP. = 160.00 HC RATIO = 2.1250
 COMB. AIR TEMP 61.052 PRESS 29.046 CFM 105.31 DRY FLOW 471.20 VAPOR FLOW 3.1351 PRESS TOTAL 14.387
 COMB. FUEL TEMP 77.148 PRESS 5.5707 DENSITY 44.723 TURBO FLOW 44.950 FLOW TRON 33.393 FPIP 6.0588
 COOLING AIR TEMP 61.142 UDEL-HOOD 2.8830 DEL-HOOD 3.6477 FLOW 9738.4 REL-HUM 57.231 DEW-POINT 45.830
 REL-HUM 1 57.231 2 0.25403 HUMIDITY 46.574 % H2O VAPOR CORRECTED HP 1.0695 67.067
 ENG. COND. F/A DRY 0.070869 F/A WET 0.070401 EQU. RATIO 1.0577 RPM-1 2352.5 RPM-2 2355.1 TORQUE 147.38 BHP 66.015
 WET CORRECTION FACTOR = 0.85825 EXHAUST MOLE. WT. = 28.441 EXHAUST DENSITY = 0.073640 EXHAUST FLOW RATE = 6894.7
 MEASURED CONC. PART PER MILLION WET PER CENT
 HC PPM 1028.2 NOX PPM 1273.2 CO DRY 1.7615 CO2 DRY 12.712 O2 DRY 0.35894
 CORRECTED CONC. TO WET BASIS CO DRY 1.5294 CO2 DRY 11.037 O2 DRY 0.31164
 EMISSION RATE HC 0.25450 NOX 1.0446 CO 7.6554
 EMISSION MASS/MODE HC 0.025450 NOX 0.10446 CO 0.76554
 EMISSION MASS/RATED HP HC 0.00015906 NOX 0.00065290 CO 0.0047846
 MODE EMIS./STD. CYCLE % HC 8.3716 NOX 43.526 CO 11.392
 CAL. FUEL AIR RATIO = 0.070048 MEAS. FUEL AIR RATIO = 0.070869 DIFF MEAS. & CAL. F/A PERCENT = -1.1591
 CYL TEMP DEG.F CYL-1 340.31 CYL-2 346.45 CYL-3 350.64 CYL-4 613.25
 EXT GAS TEMP DEG.F FXT-1 1211.9 FXT-2 200.40 FXT-3 1219.9 FXT-4 1137.1 SEXT-1 1206.1 SEXT-2 1206.4
 ENGINE OIL EOILT 182.04 SOILT 296.03 OILP 71.439 MANIFOLD PRESSURE = 18.707
 DYMO COND. TORQUE 146.49 RPM 2333.5 CYL. BACK PRESSURE = 29.139
 INDUCTION AIR IAIRT1 60.735 IAIRT2 61.052 TAIRT1 93.523 TAIRT2 55.621
 ORIFICE AIR TEMP 79.305 DELTAP 0.10281 ORFP 53.035 FLJW 358.40
 CELL TEMP. = 80.364 HEATER TEMP = 77.440 COOLER TEMP = 48.497

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NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDEII REC. 04/07/76 17:10:29.909 FAC SEX15 PGM C003 RDG 2913

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 80 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.150 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 59.075 PRESS 29.159 CFM 172.32 DRY FLOW 782.72 VAPOR FLOW 6.7446 PRESS TOTAL 14.640

COMB. FUEL TEMP 71.090 PRESS 5.3987 DENSITY 44.883 TURBO FLOW 68.206 FLOW TRON 65.500 FPIP 6.0126

COOLING AIR TEMP 62.187 UDEL-HOOD 3.0479 DEL-HOOD 3.9950 FLOW 10046. REL-HUM 80.669 DEW-POINT 53.146

REL-HUM 1 80.669 2 21.548 HUMIDITY 60.318 % H2O VAPOR 1.3851 CORRECTED HP 122.21

ENG. COND. F/A DRY 0.083682 F/A WET 0.082967 EQU. RATIO 1.2490 RPM-1 2432.5 RPM-2 2434.6 TORQUE 259.68 BHP 120.27

WET CORRECTION FACTOR = 0.85603 EXHAUST MOLE. WT. = 27.391 EXHAUST DENSITY = 0.070922 EXHAUST FLOW RATE = 12055.

MEASURED CONC. PART PER MILLION WET HC PPM 1568.1 NOX PPM 755.16 CO DRY 7.3804 PER CENT CO2 DRY 10.2820 O2 DRY 0.12341
CORRECTED CONC. TO WET BASIS HC 6.3178 CO 8.8014 O2 DRY 0.10564

EMISSION RATE HC 0.67861 NOX 1.0833 CO 55.293
EMISSION MASS/MODE 0.056551 0.090275 4.6078
EMISSION MASS/RATED HP 0.00035344 0.00056422 0.028798
MCDE EMIS./STD. CYCLE % 18.602 37.615 68.568

CAL. FUEL AIR RATIO = 0.083576 MEAS. FUEL AIR RATIO = 0.083682 DIFF MEAS. & CAL. F/A PERCENT = -0.12735

CYL TEMP DEG.F CYL-1 355.91 CYL-2 376.09 CYL-3 406.92 CYL-4 622.93

EXT GAS TEMP DEG.F EXT-1 1274.2 EXT-2 -454.00 EXT-3 470.12 EXT-4 995.51 SEXT-1 1249.6 SEXT-2 1249.6

ENGINE OIL EOILT 186.99 SOILT 217.17 OILP 71.547 MANIFOLD PRESSURE = 26.567

DYNO COND. TORQUE 242.52 RPM 2348.8 CYL. BACK PRESSURE = 29.229

INDUCTION AIR IAIRT1 58.705 IAIRT2 59.075 TAIRT1 97.116 TAIRT2 55.236

ORIFICE AIR TEMP 80.655 DELTAP 0.094109 DRFD 53.283 FLOW 334.45

CELL TEMP. = 79.861 HEATER TEMP = 79.546 COOLER TEMP = 50.248

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NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDELI REC 04/07/76 17:14:45.979 FAC SEX15 PGM C003 RDG 2914

LEANOUT 25 BTDC TO CI APP 59 DEG HUM = 80 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.160 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	60.222	29.147	105.39	472.02	4.0655	14.441

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	74.444	5.5737	44.794	41.253	37.078	6.1200

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	62.367	3.0067	3.8497	9970.7	76.349	52.761

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	76.349	27.105	60.291	1.3845	66.290

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.078551	0.077881	1.1724	2352.9	2355.2	145.21	65.056

WET CORRECTION FACTOR = 0.83754 EXHAUST MOLE. WT. = 27.797 EXHAUST DENSITY = 0.071973 EXHAUST FLOW RATE = 7129.9

MEASURED CONC.	PAPT PER MILLION WET	PER CENT		
	HC PPM	CO DRY	CO2 DRY	O2 DRY
	1653.8	6.9044	10.7850	0.12575
	277.25	5.7827	9.0326	0.10474
CORRECTED CONC. TO WET BASIS				

EMISSION RATE	HC	NOX	CO
	0.42330	0.23523	29.933
EMISSION MASS/MODE	0.042330	0.23523	2.9933
EMISSION MASS/RATED HP	0.00026456	0.00014702	0.018708
MODE EMIS./STD. CYCLE %	13.924	9.8013	44.543

CAL. FUEL AIR RATIO = 0.082174 MEAS. FUEL AIR RATIO = 0.078551 DIFE MEAS. & CAL. F/A PERCENT = 4.6117

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	320.86	332.95	338.31	403.08

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1159.0	-454.00	502.20	816.11	1114.3	1114.2

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 18.553
	186.07	372.39	71.067	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.234
	149.44	2288.1	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	59.843	60.222	18.43	55.443

ORIFICE AIR	TEMP	DELTAP	ORFP	FLDW
	81.289	1.0638	53.278	1456.1

CELL TEMP. = 79.967 HEATER TEMP = 79.400 COOLER TEMP = 49.183

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NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDEII REC 04/07/76 17:17:54.358 FAC SEX15 PGM C003 RDG 2915

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 80 % MODE = 3.0000 ND SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.160 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 59.789 PRESS 29.168 CEM 208.88 DRY FLOW 958.90 VAPOR FLOW 8.2849 PRESS TOTAL 14.801

COMB. FUEL TEMP 71.652 PRESS 4.4290 DENSITY 44.868 TURBO FLOW 82.109 FLOW TRON 79.979 FPIP 4.8515

COOLING AIR TEMP 63.033 UDEL-HOOD 2.9494 DEL-HOOD 3.9884 FLOW 9863.8 REL-HUM 79.713 DEW-POINT 53.516

REL-HUM 1 79.713 2 9.6690 HUMIDITY 60.480 % H2O VAPOR CORRECTED HP 1.3888 154.30

ENG. COND. F/A DRY 0.083407 F/A WET 0.082692 EQU. RATIO 1.2449 RPM-1 2702.1 RPM-2 2704.4 TORQUE 286.40 BHP 147.35

WET CORRECTION FACTOR = 0.84731 EXHAUST MOLE. WT. = 27.412 EXHAUST DENSITY = 0.070977 EXHAUST FLOW RATE = 14753.

MEASUREL CONC. PART PER MILLION WET HC PPM 1535.3 NOX PPM 259.68 CO DRY 8.0830 PER CENT CO2 DRY 9.89180 O2 DRY 0.060546
CORRECTED CONC. TO WET BASIS CO DRY 6.8489 PER CENT CO2 DRY 8.3814 O2 DRY 0.051302

EMISSION RATE HC 0.81315 NOX 0.45591 CO 73.359
EMISSION MASS/MODE 0.0040658 0.0022795 0.36680
EMISSION MASS/RATED HP 2.5411E-05 1.4247E-05 0.0022925
MODE EMIS./STD. CYCLE % 1.3374 0.94981 5.4583

CAL. FUEL AIR RATIO = 0.085602 MEAS. FUEL AIR RATIO = 0.083407 DIFF MEAS. & CAL. F/A PERCENT = 2.6314

CYL TEMP DEG. F CYL-1 401.38 CYL-2 421.22 CYL-3 401.17 CYL-4 338.98

FXT GAS TEMP DEG. F EXT-1 1671.3 EXT-2 -454.00 EXT-3 408.30 EXT-4 931.16 SEXT-1 1300.4 SEXT-2 1298.9

ENGINE OIL EOILT 187.64 SOILT 177.27 OILP 73.095 MANIFOLD PRESSURE = 28.069

DYND COND. TORQUE 280.61 RPM 2641.9 CYL. BACK PRESSURE = 29.357

INDUCTION AIR IAIRT1 59.455 IAIRT2 59.789 TAIRT1 80.702 TAIRT2 55.372

ORIFICE AIR TEMP 81.307 DELTAP 1.0773 ORFP 53.244 FLOW 1465.1

CELL TEMP. = 81.271 HEATER TEMP = 79.345 COOLER TEMP = 49.472

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NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDEII REC 04/07/76 17:20:23.983 FAC SEX15 PGM C003 RDG 2916

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 80 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.160 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 57.484 PRESS 29.160 CFM 172.25 DRY FLOW 782.82 VAPOR FLOW 6.7770 PRESS. TOTAL 14.653

COMB. FUEL TEMP 69.708 PRESS 5.4353 DENSITY 44.919 TURBO FLOW 65.652 FLOW TRON 64.278 FPIP 6.0891

COOLING AIR TEMP 60.583 UDEL-HOOD 3.0341 DEL-HOOD 3.9045 FLOW 10021. REL-HUM 85.883 DEW-POINT 53.296

REL-HUM 1 85.883 2 0.24802 HUMIDITY 60.600 % H2O VAPOR 1.3916 CORRECTED HP 120.78

ENG. COND. F/A DRY 0.082111 F/A WET 0.081406 EQU. RATIO 1.2255 RPM-1 2430.5 RPM-2 2432.5 TORQUE 257.27 BHP 119.06

WET CORRECTION FACTOR = 0.85022 EXHAUST MOLE. WT. = 27.513 EXHAUST DENSITY = 0.071238 EXHAUST FLOW RATE = 11986.

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 1613.2 NOX PPM 745.07 CO DRY 7.2864 CO2 DRY 10.339D O2 DRY 0.11021
CORRECTED CONC. TO WET BASIS 6.1950 8.7901 0.093703

EMISSION RATE HC 0.69415 NOX 1.0627 CO 53.909
EMISSION MASS/MODE 0.057846 0.088562 4.4924
EMISSION MASS/RATED HP 0.00036154 0.00055351 0.028077
MODE EMIS./STD. CYCLE % 19.028 36.901 66.851

CAL. FUEL AIR RATIO = 0.083415 MEAS. FUEL AIR RATIO = 0.082111 DIFF. MEAS. & CAL. F/A PERCENT = 1.5888

CYL TEMP. DEG. F CYL-1 361.33 CYL-2 385.80 CYL-3 406.14 CYL-4 411.88

EXT GAS TEMP DEG. F EXT-1 1437.1 EXT-2 -454.00 EXT-3 483.99 EXT-4 1008.1 SEXT-1 1255.4 SEXT-2 1255.4

ENGINE OIL EOILT 187.47 SOILT 178.03 OILP 71.231 MANIFOLD. PRESSURE = 26.646

DYNO COND. TORQUE 249.09 RPM 2386.0 CYL. BACK PRESSURE = 29.291

INDUCTION AIR IAIRT1 57.122 IAIRT2 57.484 TAIRT1 67.572 TAIRT2 55.370

ORIFICE AIR TEMP 78.783 DELTAP 2.0584 DRFP 53.272 FLOW 2009.0

CELL TEMP. = 78.483 HEATER TEMP = 79.261 COOLER TEMP = 50.798

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NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDEII REC 04/07/76 17:23:10.457 FAC SEX15 PGM C003 RDG 2917

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 80 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.160 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 58.497 PRESS 29.148 CFM 105.73 DRY FLOW 473.02 VAPOR FLOW 4.0881 PRESS TOTAL 14.440

COMB. FUEL TEMP 72.293 PRESS 5.5553 DENSITY 44.851 TURBO FLOW 44.396 FLOW TRON 39.826 FPIP 6.0771

COOLING AIR TEMP 60.826 UDEL-HOOD 3.0031 DEL-HOOD 3.8680 FLOW 9964.0 REL-HUM 81.471 DEW-POINT 52.851

REL-HUM 1 81.471 2 11.617 HUMIDITY 60.499 % H2O VAPOR CORRECTED HP 1.3893 66.214

ENG. COND. F/A DRY 0.084195 F/A WET 0.083474 EQU. RATIO 1.2566 RPM-1 2354.8 RPM-2 2356.5 TORQUE 145.23 BHP 65.117

WET CORRECTION FACTOR = 0.85717 EXHAUST MOLE. WT. = 27.351 EXHAUST DENSITY = 0.070819 EXHAUST FLOW RATE = 7299.3

MEASURED CONC. HC PPM 2055.5 NOX PPM 239.30 CO DRY 7.3985 PER CENT CO2 DRY 10.0720 O2 DRY 0.12669
CORRECTED CONC. TO WET BASIS 6.3418 8.6332 0.10860

EMISSION RATE HC 0.53864 NOX 0.20786 CO 33.607
EMISSION MASS/MODE 0.053864 0.020786 3.3607
EMISSION MASS/RATED HP 0.00033665 0.00012992 0.021004
MODE EMIS./STD. CYCLE % 17.718 8.6610 50.010

CAL. FUEL AIR RATIO = 0.084145 MEAS. FUEL AIR RATIO = 0.084195 DIFF MEAS. & CAL. F/A PERCENT = -0.060104

CYL TEMP. DEG. F CYL-1 323.05 CYL-2 344.29 CYL-3 349.04 CYL-4 430.43

EXT GAS TEMP DEG. F EXT-1 1466.6 EXT-2 -454.00 EXT-3 572.07 EXT-4 941.30 SEXT-1 1123.0 SEXT-2 1123.1

ENGINE OIL EOILT 186.70 SOILT 254.01 OILP 70.935 MANIFOLD PRESSURE = 18.726

DYNO COND. TORQUE 146.79 RPM 2313.9 CYL. BACK PRESSURE = 29.212

INDUCTION AIR IAIRT1 58.108 IAIRT2 58.497 TAIRT1 89.523 TAIRT2 55.905

ORIFICE AIR TEMP 79.058 DELTAP 2.0219 ORFP 53.190 FLOW 1991.6

CELL TEMP. = 78.315 HEATER TEMP = 79.199 COOLER TEMP = 50.735

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NASA-LEWIS..... PRELIMINARY DATA 04/07/76 CADDEII REC 04/07/76 17:26:42.058 FAC SEX15 PGM C003 RDG 2918

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 80 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.160 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 58.569 PRESS 29.144 CFM 207.54 DRY FLOW 951.35 VAPOR FLOW 8.2772 PRESS TOTAL 14.788

COMB. FUEL TEMP 70.101 PRESS 4.3246 DENSITY 44.909 TURBO FLOW 82.082 FLOW TRON 79.964 FPIP 4.2361

COOLING AIR TEMP 61.782 UDEL-HOOD 3.0878 DEL-HOOD 3.9164 FLOW 10120. REL-HUM 83.771 DEW-POINT 53.681

REL-HUM 1 83.771 2 30.283 HUMIDITY 60.903 % H2O VAPOR CORRECTED HP 1.3985 153.57

ENG. COND. F/A DRY 0.084053 F/A WET 0.083328 EQU. RATIO 1.2545 RPM-1 2698.6 RPM-2 2700.9 TORQUE 285.32 BHP 146.61

WET CORRECTION FACTOR = 0.84856 EXHAUST MOLE. WT. = 27.362 EXHAUST DENSITY = 0.070847 EXHAUST FLOW RATE = 14673.

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 1571.8 NOX PPM 223.76 CO DRY 8.2032 CO2 DRY 9.8559D O2 DRY 0.064546
CORRECTED CONC. TO WET BASIS 6.9609 8.3634 0.054772

EMISSION RATE HC 0.82797 NOX 0.39072 CO 74.155
EMISSION MASS/MODE 0.0041399 0.0019536 0.37077
EMISSION MASS/RATED HP 2.5874E-05 1.2210E-05 0.0023173
MODE EMIS./STD. CYCLE % 1.3618 0.91401 5.5175

CAL. FUEL AIR RATIO = 0.085871 MEAS. FUEL AIR RATIO = 0.084053 DIFF. MEAS. & CAL. F/A PERCENT = 2.1621

CYL TEMP DEG.F CYL-1 399.10 CYL-2 425.70 CYL-3 401.75 CYL-4 337.45

EXT GAS TEMP DEG.F EXT-1 1239.8 EXT-2 -454.00 EXT-3 664.59 EXT-4 1038.4 SEXT-1 1302.7 SEXT-2 1301.2

ENGINE OIL EOILT 187.56 SOILT 163.06 OILP 73.043 MANIFOLD PRESSURE = 28.112

DYND COND. TORQUE 283.71 RPM 2616.4 CYL. BACK PRESSURE = 29.328

INDUCTION AIR IAIRT1 58.289 IAIRT2 58.569 TAIRT1 89.678 TAIRT2 55.642

ORIFICE AIR TEMP 79.614 DELTAP 1.0543 DRFP 53.270 FLOW 1451.9

CELL TEMP. = 79.720 HEATED TEMP. 77.000

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NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDEII REC 04/07/76 17:51:32.604 FAC SEX15 PGM C003 RDG 2919

LEANOUT 25. BTDC TO CL APP 59. DEG HUM = 80. % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARDOMETRIC PRESSURE = 29.160 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS.	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	59.247	29.166	208.96	958.70	8.1540	14.802

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	71.296	5.3729	44.877	78.930	76.718	5.9511

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	62.349	3.0701	3.9914	10087.	80.029	53.096

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	80.029	16.992	59.537	1.3672	157.51

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.080022	0.079347	1.1944	2701.6	2703.9	292.52	150.47

WET CORRECTION FACTOR = 0.84704 EXHAUST MOLE. WT. = 27.679 EXHAUST DENSITY = 0.071667 EXHAUST FLOW RATE = 14561.

MEASURED CONC.	PART PER MILLION WET		PER CENT	
	HC PPM	NOX PPM	CO DRY	O2 DRY
	1399.7	288.65	6.6351	10.6230
CORRECTED CONC. TO WET BASIS			5.6202	8.9981
				0.022381

EMISSION RATE	HC	NOX	CO
	0.73172	0.50017	59.415
EMISSION MASS/MODE	0.0036586	0.0025009	0.29707
EMISSION MASS/RATED HP	2.2866E-05	1.5630E-05	0.0018567
MODE EMIS./STD. CYCLE %	1.2035	1.0420	4.4207

CAL. FUEL AIR RATIO = 0.082104 MEAS. FUEL AIR RATIO = 0.080022 DIFF MEAS. & CAL. F/A PERCENT = 2.6014

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	411.43	428.95	407.87	242.69

EXT GAS TEMP DEG.F	FXT-1	FXT-2	FXT-3	FXT-4	SEXT-1	SEXT-2
	1272.3	11.888	805.43	1055.0	1348.2	1347.1

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.209
	187.90	186.21	72.795	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.338
	294.58	2644.3	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	58.922	59.247	163.24	55.819

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	79.675	0.093209	53.258	332.26

CELL TEMP. = 80.875 HEATER TEMP = 87.383 COOLER TEMP = 48.362

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NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDE11 REC 04/07/76 17:54:04.904 FAC SEX15 PGM C003 RDG 2920

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 80 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.160 RATED HP = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 59.897 PRESS 29.153 CFM 168.58 DRY FLOW 763.58 VAPOR FLOW 6.5368 PRESS TOTAL 14.616

COMB. FUEL TEMP 72.435 PRESS 5.4626 DENSITY 44.847 TURBO FLOW 59.073 FLOW TRON 59.316 FPIP 6.0861

COOLING AIR TEMP 62.898 UDEL-HOOD 3.0407 DEL-HOOD 3.8981 FLOW 10033. REL-HUM 77.707 DEW-POINT 52.926

REL-HUM 1 77.707 2 24.794 HUMIDITY 59.925 % H2O VAPOR 1.3761 CORRECTED HP 122.93

ENG. COND. F/A DRY 0.077681 F/A WET 0.077022 EQU. RATIO 1.1594 RPM-1 2436.1 RPM-2 2438.2 TORQUE 260.61 BHP 120.88

WET CORRECTION FACTOR = 0.84397 EXHAUST MOLE. WT. = 27.868 EXHAUST DENSITY = 0.072156 EXHAUST FLOW RATE = 11494.

MEASURED CONC. PART PER MILLION WET HC PPM 1371.8 NOX PPM 383.62 CO DRY 6.0059 PER CENT CO2 DRY 10.8930 O2 DRY 0.056606
CORRECTED CONC. TO WET BASIS HC 5.0688 CO 9.1937 O2 0.047773

EMISSION RATE HC 0.56611 NOX 0.52475 CO 42.300
EMISSION MASS/MODE HC 0.047176 NOX 0.043729 CO 3.5250
EMISSION MASS/RATED HP HC 0.00029485 NOX 0.00027331 CO 0.022031
MODE EMIS./STD. CYCLE % HC 15.518 NOX 18.220 CO 52.456

CAL. FUEL AIR RATIO = 0.080541 MEAS. FUEL AIR RATIO = 0.077681 DIFF. MEAS. & CAL. F/A PERCENT = 3.6814

CYL TEMP DEG.F CYL-1 389.50 CYL-2 407.13 CYL-3 404.15 CYL-4 679.68

EXT GAS TEMP DEG.F EXT-1 1071.8 EXT-2 -454.00 EXT-3 773.37 EXT-4 1091.7 SEXT-1 1283.1 SEXT-2 1283.7

ENGINE OIL EDILT 187.27 SOILT 162.92 OILP 71.051 MANIFOLD PRESSURE = 26.409

DYNO COND. TORQUE 264.80 RPM 2343.5 CYL. BACK PRESSURE = 29.324

INDUCTION AIR IAIRT1 59.536 IAIRT2 59.897 TAIRT1 107.62 TAIRT2 55.870

ORIFICE AIR TEMP 80.082 DELTAP 2.0185 DRFP 53.268 FLOW 1988.2

CELL TEMP. = 81.069 HEATER TEMP = 81.463 COOLER TEMP = 51.005

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NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDEII REC 04/07/76 17:57:50.688 FAC SEX15 PGM C003 RDG 2921

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 80 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.160 RATED HP = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS. TOTAL
	60.899	29.169	105.10	470.03	3.9949	14.436

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	75.296	5.5716	44.771	43.526	39.331	6.1497

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	63.123	2.9785	3.7633	9918.2	73.541	52.396

REL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP
	73.541	23.694	59.495	1.3662 66.280

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.083677	0.082972	1.2489	2351.0	2353.2	145.22	65.007

WET CORRECTION FACTOR = 0.85400 EXHAUST MLE. WT. = 27.391 EXHAUST DENSITY = 0.070923 EXHAUST FLOW RATE = 7238.3

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	2017.5	233.30	7.4552	10.227	0.11573	
CORRECTED CONC. TO WET BASIS			6.3667	8.7334	0.098834	

	HC	NOX	CO
EMISSION RATE	0.52425	0.20096	33.457
EMISSION MASS/MODE	0.052425	0.020096	3.3457
EMISSION MASS/RATED HP	0.00032766	0.00012560	0.020910
MODE EMIS./STD. CYCLE %	17.245	8.3732	49.787

CAL. FUEL AIR RATIO = 0.084060 MEAS. FUEL AIR RATIO = 0.083677 DIFF MEAS & CAL. F/A PERCENT = 0.45688

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	327.90	341.77	340.06	413.47

EXT GAS TEMP DEG.F	FXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1202.1	454.00	736.28	895.51	1126.6	1126.9

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 18.500
	186.71	190.42	70.839	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.193
	136.96	2292.5	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	60.547	50.899	55.860	56.093

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	80.566	1.0603	53.324	1454.7

CELL TEMP. = 81.817 HEATER TEMP = 80.019 COOLER TEMP = 50.338

NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDEII REC. 04/07/76 18:00:14.721 FAC SEX15 PGM C003 RDG 2922

LEANOUT 25 BTDC IQ CL APP 59 DEG HUM = 80.2 MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.160 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 60.619 PRESS 29.099 CEM 210.21 DRY FLOW 965.57 VAPOR FLOW 8.1906 PRESS TOTAL 14.817

COMB. FUFL TEMP 73.191 PRESS 5.2913 DENSITY 44.827 TURBO FLOW 79.933 FLOW TRON 77.576 FPIP 5.9163

COOLING AIR TEMP 63.500 UDEL-HOOD 2.9989 DEL-HOOD 3.8143 FLOW 9956.3 REL-HUM 76.086 DEW-POINT 53.051

REL-HUM 1 76.086 2 7.1127 HUMIDITY 59.379 % H2O VAPOR CORRECTED HP 1.3635 158.60

ENG. COND. F/A DRY 0.080342 F/A WET 0.079666 EQU. RATIO 1.1991 RPM-1 2705.5 RPM-2 2707.8 TORQUE 292.90 BHP 150.89

WET CORRECTION FACTOR = 0.84740 EXHAUST MOLE. WT. = 27.653 EXHAUST DENSITY = 0.071601 EXHAUST FLOW RATE = 14683.

MEASURED CONC. PART PER MILLION WET HC PPM 1427.7 NOX PPM 357.26 CO DRY 6.8171 PER CENT CO2 DRY 10.5510 O2 DRY 0.084108
CORRECTED CONC. TO WET BASIS HC 5.7768 CO 8.9411 O2 0.071274

EMISSION RATE HC 0.75261 NOX 0.62424 CO 61.581
EMISSION MASS/MODE HC 0.0037630 NOX 0.0031212 CO 0.30791
EMISSION MASS/RATED HP HC 2.3519E-05 NOX 1.9507E-05 CO 0.0019244
MODE EMIS./STD. CYCLE % HC 1.2378 NOX 1.3005 CO 4.5819

CAL. FUEL AIR RATIO = 0.082313 MEAS. FUEL AIR RATIO = 0.080342 DIFF MEAS. & CAL. F/A PERCENT = 2.4539

CYL TEMP DEG.F CYL-1 397.45 CYL-2 416.57 CYL-3 400.12 CYL-4 383.16

EXT GAS TEMP DEG.F EXT-1 1300.2 EXT-2 -129.10 EXT-3 788.88 EXT-4 1132.0 SFXT-1 1319.0 SEXT-2 1317.2

ENGINE OIL EOILT 187.39 SOILT 232.49 OILP 73.695 MANIFOLD PRESSURE = 28.157

DYNO COND. TORQUE 284.86 RPM 2672.7 CYL. BACK PRESSURE = 29.336

INDUCTION AIR IAIRT1 50.294 IAIRT2 60.619 TAIRT1 78.430 TAIRT2 55.739

ORIFICE AIR TEMP 80.901 DELTAP 2.0069 ORFP 53.254 FLOW 1981.3

CELL TEMP. = 82.618 HEATER TEMP = 79.637 COOLER TEMP = 51.068

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NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDEII REC 04/07/76 18:02:43.710 FAC SEX15 PGM C003 RDG 2923

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 80 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.160 RATED HP = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 58.135 PRESS 29.164 CFM 168.97 DRY FLOW 765.43 VAPOR FLOW 6.5306 PRESS TOTAL 14.622

COMB. FUEL TEMP 70.823 PRESS 5.4701 DENSITY 44.890 TURBO FLOW 62.818 FLOW TRON 60.552 FPIP 6.0372

COOLING AIR TEMP 61.174 UDEL-HOOD 3.0283 DEL-HOOD 3.9485 FLOW 10010. REL-HUM 82.518 DEW-POINT 52.846

REL-HUM 1 82.518 2 13.929 HUMIDITY 59.723 % H2O VAPOR CORRECTED HP 1.3715 121.88

ENG. COND. F/A DRY 0.079108 F/A WET 0.078439 EQU. RATIO 1.1807 RPM-1 2432.6 RPM-2 2435.0 TORQUE 259.27 BHP 120.09

WET CORRECTION FACTOR = 0.84845 EXHAUST MOLE. WT. = 27.752 EXHAUST DENSITY = 0.071857 EXHAUST FLOW RATE = 11585.

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 1439.1 NOX PPM 524.81 CO DRY 6.2270 CO2 DRY 10.7980 O2 DRY 0.10181
CORRECTED CONC. TO WET BASIS CO 5.2833 9.1612 0.086381

EMISSION RATE HC 0.59858 NOX 0.72356 CO 44.439
EMISSION MASS/MODE 0.049881 0.060296 3.7032
EMISSION MASS/RATED HP 0.00031176 0.00037685 0.023145
MODE EMIS./STD. CYCLE % 16.408 25.124 55.107

CAL. FUEL AIR RATIO = 0.080910 MEAS. FUEL AIR RATIO = 0.079108 DIFF MEAS. & CAL. F/A PERCENT = 2.2767

CYL TEMP DEG. F CYL-1 379.75 CYL-2 407.30 CYL-3 402.75 CYL-4 308.27

EXT GAS TEMP DEG. F EXT-1 1426.3 EXT-2 -454.00 EXT-3 815.70 EXT-4 1072.5 SEXT-1 1269.2 SEXT-2 1269.1

ENGINE OIL EDILT 187.35 SOILT 257.32 OILP 70.927 MANIFOLD PRESSURE = 26.447

DYNO COND. TORQUE 254.36 RPM 2369.3 CYL. BACK PRESSURE = 29.299

INDUCTION AIR IAIRT1 57.819 IAIRT2 58.135 TAIRT1 74.772 TAIRT2 56.032

ORIFICE AIR TEMP 78.156 DELTAP 2.0347 ORFP 53.237 FLOW 1999.2

CELL TEMP. = 79.481 HEATER TEMP = 79.407 COOLER TEMP = 52.663

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NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDEII REC 04/07/76 18:05:33.996 FAC SEX15 PGM C003 RDG 2924

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 80 % MODE = 5.0000 ND. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.160 RATED HP = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 58.542 PRESS 29.165 CFM 105.55 DRY FLOW 472.41 VAPOR FLOW 4.0052 PRESS TOTAL 14.439

COMB. FUEL TEMP 72.827 PRESS 5.5512 DENSITY 44.837 TURBO FLOW 44.817 FLOW TRON 40.915 FPIP 6.0486

COOLING AIR TEMP 60.691 UDEL-HOOD 2.9358 DEL-HOOD 3.7808 FLOW 9838.3 REL-HUM 79.811 DEW-POINT 52.336

REL-HUM 1 79.811 2 47.513 HUMIDITY 59.348 H2O VAPOR CORRECTED HP 1.3628 66.880

ENG. COND. F/A DRY 0.086609 F/A WET 0.085881 EQU. RATIO 1.2927 RPM-1 2353.0 RPM-2 2355.4 TORQUE 146.85 BHP 65.791

WET CORRECTION FACTOR = 0.85699 EXHAUST MOLE. WT. = 27.158 EXHAUST DENSITY = 0.070344 EXHAUST FLOW RATE = 7354.3

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 1968.2 NOX PPM 160.18 CO DRY 8.4546 CO2 DRY 9.5749 O2 DRY 0.12519
CORRECTED CONC. TO WET BASIS CO 7.2455 CO 8.2056 CO 0.10729

EMISSION RATE HC 0.51964 NOX 0.14018 CO 38.686
EMISSION MASS/MODE HC 0.051964 NOX 0.014018 CO 3.8686
EMISSION MASS/RATED HP HC 0.00032478 NOX 8.7613E-05 CO 0.024179
MODE EMISS./STD. CYCLE % HC 17.094 NOX 5.8409 CO 57.568

CAL. FUEL AIR RATIO = 0.086725 MEAS. FUEL AIR RATIO = 0.086609 DIFF MEAS. & CAL. F/A PERCENT = 0.13427

CYL TEMP. DEG. F CYL-1 329.25 CYL-2 340.45 CYL-3 344.99 CYL-4 510.23

EXT GAS TEMP. DEG. F EXT-1 1357.7 EXT-2 -454.00 EXT-3 782.39 EXT-4 919.16 SEXT-1 1117.3 SEXT-2 1117.8

ENGINE OIL EOILT 186.77 SOILT 187.66 OILP 70.699 MANIFOLD PRESSURE = 18.597

DYNO COND. TORQUE 149.83 RPM 2319.6 CYL. BACK PRESSURE = 29.259

INDUCTION AIR IAIRT1 58.181 IAIRT2 58.542 TAIRT1 64.119 TAIRT2 55.832

ORIFICE AIR TFMP 78.386 DELTAP 2.0115 ORFP 53.307 FLOW 1988.0

CELL TEMP. = 78.377 HEATER TEMP = 79.192 COOLER TEMP = 50.735

NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDEII REC 04/07/76 18:12:10.352 FAC SEX15 PGM C003 RDG 2925

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 80 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.160 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	58.732	29.178	209.42	961.27	8.2102	14.796

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	71.340	5.4005	44.876	75.158	72.343	5.9805

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	61.872	2.9325	3.9751	9832.1	81.816	53.196

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	81.816	24.852	59.787	1.3729	155.38

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.075257	0.074620	1.1232	2699.8	2702.7	289.02	148.57

WET CORRECTION FACTOR = 0.84131 EXHAUST MOLE. WT. = 28.068 EXHAUST DENSITY = 0.072674 EXHAUST FLOW RATE = 14335.

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	1247.1	547.53	5.2910	11.2530	0.084468	
CORRECTED CONC. TO WET BASIS						
			4.4514	9.4675	0.071064	

	HC	NOX	CO
EMISSION RATE	0.64183	0.93405	46.328
EMISSION MASS/MODE	0.0032091	0.0046703	0.23164
EMISSION MASS/RATED HP	2.0057E-05	2.9189E-05	0.0014478
MODE EMIS./STD. CYCLE %	1.9556	1.9459	3.4470

CAL. FUEL AIR RATIO = 0.078716 MEAS. FUEL AIR RATIO = 0.075257 DIFF MEAS. & CAL. F/A PERCENT = 4.5956

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	418.67	434.97	421.26	606.92

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	746.89	127.16	841.98	1244.2	1361.4	1359.0

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.199
	189.04	211.38	72.735	

DYN COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.347
	287.62	2634.1	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	58.398	58.732	104.05	55.327

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	79.269	2.9777	53.272	2390.3

CFL TEMP. = 81.386 HEATER TEMP = 84.030 COOLER TEMP = 48.822

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NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDEII REC 04/07/76 18:15:04.324 FAC SEX15 PGM C003 RDG 2926

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 80 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.160 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	59.482	29.188	167.50	758.89	6.5193	14.609

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	72.773	5.4596	44.838	58.300	56.670	6.0429

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	62.646	2.8774	3.8826	9727.9	79.098	53.006

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	79.098	5.9546	60.134	1.3809	120.66

ENG. COND.	F/A DRY	F/A WET	EQV. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.074675	0.074039	1.1145	2427.8	2429.7	256.78	118.70

WET CORRECTION FACTOR = 0.84603 EXHAUST MOLE. WT. = 28.117 EXHAUST DENSITY = 0.072801 EXHAUST FLOW RATE = 11292.

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1251.1	802.52	4.6484	11.5370	0.11719
CORRECTED CONC. TO WET BASIS			3.9327	9.7603	0.099148

	HC	NOX	CO
EMISSION RATE	0.50719	1.0784	32.240
EMISSION MASS/MODE	0.042266	0.089866	2.6867
EMISSION MASS/RATED HP	0.00026416	0.00056166	0.016792
MODE EMIS./STD. CYCLE %	13.903	37.444	39.980

CAL. FUEL AIR RATIO = 0.077172 MEAS. FUEL AIR RATIO = 0.074675 DIFF MEAS. & CAL. F/A PERCENT = 3.3449

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4		
	393.20	411.76	411.61	269.01		
EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1277.0	-417.06	867.06	1104.2	1299.7	1299.2

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 26.269
	187.13	183.30	70.967	

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.360
	249.50	2348.9	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	59.121	59.482	136.08	55.454

ORIFICE AIR	TEMP	DELTA P	DRFP	FLOW
	79.684	1.0360	53.229	1439.4

CFLT TEMP. = 81.315 HEATER TEMP = 80.706 COOLER TEMP = 50.807

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NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDÉII REC 04/07/76 18:18:15.627 FAC SEX15 PG# C003 RDG 2927

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 80 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.160 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	60.718	29.165	104.32	466.62	3.9938	14.440

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	75.429	5.5767	44.768	42.178	37.243	6.0897

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	62.970	2.8913	3.7717	9754.2	74.547	52.591

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	74.547	38.146	59.913	1.3758	66.820

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.079814	0.079137	1.1913	2349.5	2351.9	146.53	65.552

WET CORRECTION FACTOR = 0.85456 EXHAUST MOLE. WT. = 27.695 EXHAUST DENSITY = 0.071710 EXHAUST FLOW RATE = 7082.1

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1602.3	380.22	5.9193	10.8860	0.12943
CORRECTED CONC. TO WET BASIS			5.0584	9.3029	0.11061

	HC	NOX	CO
EMISSION RATE	0.40737	0.32043	26.008
EMISSION MASS/MODE	0.040737	0.032043	2.6008
EMISSION MASS/RATED HP	0.00025460	0.00020027	0.016255
MODE EMISS./STD. CYCLE %	13.400	13.351	38.702

CAL. FUEL AIR RATIO = 0.080239 MEAS. FUEL AIR RATIO = 0.079814 DIFF MEAS. & CAL. F/A PERCENT = 0.53254

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	337.75	347.89	350.80	445.43

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	995.13	-385.85	866.25	982.21	1147.1	1147.5

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 18.581
	187.06	337.40	70.323	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.210
	139.04	2308.0	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	60.276	60.718	111.19	56.109

ORIFICE AIR	TEMP	DELTAP	ORIFP	FLOW
	80.161	0.073007	53.329	273.41

CELL TEMP. = 81.483 HEATER TEMP = 79.866 COOLER TEMP = 51.492

NASA-LFWIS PRELIMINARY DATA 04/07/76 CADDEII REC 04/07/76 18:21:07.278 FAC SEX15 PGM C003 RDG 2928

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 80 % MCDE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.160 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	60.330	29.170	209.85	962.84	8.2830	14.799

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	73.662	5.4398	44.814	76.140	73.453	6.0471

COOLING AIR	TEMP	INDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	63.338	2.8445	3.6654	9665.1	77.849	53.396

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	77.849	29.685	60.218	1.3828	157.02

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.076288	0.075637	1.1386	2697.9	2701.2	291.67	149.83

WET CORRECTION FACTOR = 0.84583 EXHAUST MOLE. WT. = 27.982 EXHAUST DENSITY = 0.072453 EXHAUST FLOW RATE = 14417.

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	1238.6	600.68	5.3233	11.2040	0.094769	
CORRECTED CONC. TO WET BASIS			4.5026	9.4764	0.080159	

	HC	NOX	CO
EMISSION RATE	0.64109	1.0306	47.129
EMISSION MASS/MODE	0.0032054	0.0051528	0.23564
EMISSION MASS/RATED HP	2.0034E-05	3.2205E-05	0.0014728
MODE EMIS./STD. CYCLE %	1.0544	2.1470	3.5066

CAL. FUEL AIR RATIO = 0.078774 MEAS. FUEL AIR RATIO = 0.076288 DIFF MEAS. & CAL. F/A PERCENT = 3.2589

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	393.34	413.13	403.74	324.31

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1675.0	135.06	923.93	1261.2	1338.6	1336.3

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.229
	186.60	225.58	73.723	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.300
	290.99	2609.2	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	59.987	60.330	58.855	55.617

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	80.513	2.0285	53.236	1992.0

CELL TEMP. = 81.958 HEATER TEMP = 79.470 COOLER TEMP = 51.285

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NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDEII REC 04/07/76 18:23:59.881 FAC SEX15 PGM C003 RDG 2929

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 80 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.160 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 57.773 PRESS 29.188 CFM 167.67 DRY FLOW 761.48 VAPOR FLOW 6.5662 PRESS TOTAL 14.646

COMB. FUEL TEMP 71.616 PRESS 5.4752 DENSITY 44.869 TURBO FLOW 59.369 FLOW TRON 57.717 FPIP 6.0504

COOLING AIR TEMP 61.079 UDEL-HOOD 2.8855 DEL-HOOD 3.8375 FLOW 9743.2 REL-HUM 84.618 DEW-POINT 53.176

REL-HUM 1 84.618 2 0.22202 HUMIDITY 60.361 % H2O VAPOR 1.3861 CORRECTED HP 120.51

ENG. COND. F/A DRY 0.075796 F/A WET 0.075148 EQU. RATIO 1.1313 RPM-1 2430.1 RPM-2 2432.3 TORQUE 256.68 BHP 118.76

WET CORRECTION FACTOR = 0.85006 EXHAUST MOLE. WT. = 28.023 EXHAUST DENSITY = 0.072558 EXHAUST FLOW RATE = 11380.

MEASURED CONC. PAPT PER MILLION WFT PER CENT
HC PPM 1276.6 NOX PPM 803.82 CO DRY 4.7428 CO2 DRY 11.4620 O2 DRY 0.11627
CORRECTED CONC. TO WET BASIS 4.0317 9.7433 0.098838

EMISSION RATE HC 0.52158 NOX 1.0886 CO 33.311
EMISSION MASS/MODE 0.043465 0.090717 2.7759
EMISSION MASS/RATED HP 0.00027166 0.00056698 0.017349
MODE EMIS./STD. CYCLE % 14.298 37.799 41.308

CAL. FUEL AIR RATIO = 0.077421 MEAS. FUEL AIR RATIO = 0.075796 DIFF MEAS. & CAL. F/A PERCENT = 2.1442

CYL TEMP DEG.F CYL-1 391.03 CYL-2 412.80 CYL-3 408.58 CYL-4 540.14

EXT GAS TEMP DEG.F EXT-1 785.47 EXT-2 -436.53 EXT-3 900.48 EXT-4 1117.8 SEXT-1 1290.2 SEXT-2 1289.6

ENGINE OIL EOILT 187.59 SOILT 178.49 OILP 70.775 MANIFOLD PRESSURE = 26.405

DYNO COND. TORQUE 238.90 RPM 2379.8 CYL. BACK PRESSURE = 29.278

INDUCTION AIR IAIRT1 57.466 IAIRT2 57.773 TAIRT1 48.691 TAIRT2 55.501

ORIFICE AIR TEMP 77.997 DELTAP 1.0207 DRFP 53.243 FLOW 1431.1

CFLT TEMP. = 79.596 HEATER TEMP = 79.192 COOLER TEMP = 50.690

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NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDEII REC 04/07/76 18:27:12.990 FAC SEX15 PGM C003 RDG 2930

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 80 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.160 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 58.642 PRESS 29.145 CFM 105.13 DRY FLOW 470.33 VAPOR FLOW 4.0542 PRESS TOTAL 14.442

COMB. FUEL TEMP 74.054 PRESS 5.5962 DENSITY 44.804 TURBO FLOW 41.339 FLOW TRON 35.515 FPIP 6.1047

COOLING AIR TEMP 60.953 UDEL-HOOD 2.9973 DEL-HOOD 3.8314 FLOW 9953.2 REL-HUM 80.854 DEW-POINT 52.786

REL-HUM 1 80.854 2 1.1441 HUMIDITY 60.340 % H2O VAPOR 1.3856 CORRECTED HP 66.251

ENG. COND. F/A DRY 0.075510 F/A WET 0.074865 EQU. RATIO 1.1270 RPM-1 2353.2 RPM-2 2355.3 TORQUE 145.40 BHP 65.146

WET CORRECTION FACTOR = 0.87004 EXHAUST MOLE. WT. = 28.047 EXHAUST DENSITY = 0.072620 EXHAUST FLOW RATE = 7021.4

MEASURED CONC. PART PER MILLION WFT PER CENT
HC PPM 1314.2 NOX PPM 843.08 CO DRY 2.8506 CO2 DRY 12.2640 O2 DRY 0.17012
CORRECTED CONC. TO WET BASIS 2.4802 10.670 0.14801

EMISSION RATE HC 0.33128 NOX 0.70444 CO 12.643
EMISSION MASS/MODE 0.033128 0.070444 1.2643
EMISSION MASS/RATED HP 0.00020705 0.00044027 0.0079017
MODE EMIS./STD. CYCLE % 10.897 29.351 18.814

CAL. FUEL AIR RATIO = 0.073141 MEAS. FUEL AIR RATIO = 0.075510 DIFF MEAS. & CAL. F/A PERCENT = -3.1379

CYL TEMP DEG.F CYL-1 339.43 CYL-2 348.23 CYL-3 352.77 CYL-4 443.74

EXT GAS TEMP DEG.F EXT-1 1492.5 EXT-2 -28.752 EXT-3 1053.5 EXT-4 1072.2 SEXT-1 1168.9 SEXT-2 1169.6

ENGINE OIL FOILT 187.00 SOILT 180.14 OILP 70.491 MANIFOLD PRESSURE = 18.561

DYN COND. TORQUE 146.48 RPM 2322.1 CYL. BACK PRESSURE = 29.207

INDUCTION AIR IAIRT1 58.235 IAIRT2 58.642 TAIRT1 57.274 TAIRT2 56.039

ORIFICE AIR TEMP 78.068 DELTAP 2.0344 DRFP 53.290 FLOW 1999.3

CELL TEMP. = 78.995 HEATFR TEMP = 78.983 COOLER TEMP = 51.429

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NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDEII REC 04/07/76 18:36:19.486 FAC SEX15 PGM C003 RDG 2931

LFANOUT 25 BTDC TO CL APP 59 DEG HUM = 80 % MCDE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.160 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	59.256	9.171	210.02	964.87	8.0853	14.805

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	73.067	5.4488	44.830	74.483	70.993	6.0366

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	62.502	3.1036	3.9538	10148.	78.850	52.701

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	78.850	0.45805	58.658	1.3470	157.66

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.073578	0.072966	1.0982	2698.8	2760.9	293.28	150.70

WET CORRECTION FACTOR = 0.85018 EXHAUST MOLE. WT. = 28.209 EXHAUST DENSITY = 0.073040 EXHAUST FLOW RATE = 14292.

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	1092.9	935.29	3.8264	11.9440	0.10487	
CORRECTED CONC. TO WET BASIS			3.2531	10.155	0.089159	

	HC	NOX	CO
EMISSION RATE	0.56079	1.5908	33.756
EMISSION MASS/MODE	0.0028039	0.0079539	0.16878
EMISSION MASS/RATED HP	1.7525E-05	4.9712E-05	0.0010549
MODE FMIS./STD. CYCLE %	0.92234	3.3141	2.5116

CAL. FUEL AIR RATIO = 0.075299 MEAS. FUEL AIR RATIO = 0.073578 DIFF MEAS. & CAL. F/A PERCENT = 2.3403

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	403.22	418.16	410.21	468.08

EXT GAS TEMP DEG.F	FXT-1	EXT-2	FXT-3	EXT-4	SXT-1	SXT-2
	1244.9	260.84	1055.5	1405.3	1357.2	1354.2

ENGINE OIL	ENTLT	SOILT	OILP	MANIFOLD PRESSURE = 28.310
	168.21	177.79	72.655	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.302
	295.82	2602.8	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	58.849	59.256	85.010	55.321

OPTIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	79.314	1.0626	53.252	1457.9

CELL TEMP. = 80.628 HEATER TEMP = 79.637 COOLER TEMP = 51.636

NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDEII REC 04/07/76 18:38:33.791 FAC SEX15 PGM C003 RDG 2932

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 80 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.160 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 59.924 PRESS 29.137 CFM 167.48 DRY FLOW 759.18 VAPOR FLOW 6.3929 PRESS TOTAL 14.620

COMB. FUEL TEMP 73.521 PRESS 5.4611 DENSITY 44.818 TURBO FLOW 57.427 FLOW TRON 55.352 FPIP 6.0699

COOLING AIR TEMP 62.799 UDEL-HOOD 3.0651 DEL-HOOD 3.9776 FLOW 10078. REL-HUM 76.400 DEW-POINT 52.491

REL-HUM 1 76.400 2 3.5343 HUMIDITY 58.945 % H2O VAPOR CORRECTED HP 1.3536 120.47

ENG. COND. F/A DRY 0.072910 E/A WFT 0.072302 EQU. RATIO 1.0882 RPM-1 2427.9 RPM-2 2430.4 TORQUE 256.30 BHP 118.48

WET CORRECTION FACTOR = 0.85366 EXHAUST MOLE. WT. = 28.266 EXHAUST DENSITY = 0.073186 EXHAUST FLOW RATE = 11216.

MEASURED CONC. PART PER MILLION WET PFR CENT
HC PPM 1122.3 NOX PPM 1089.8 CO DRY 3.2792 CO2 DRY 12.2000 O2 DRY 0.14823
CORRECTED CONC. TO WET BASIS 2.7993 10.415 0.12654

EMISSION RATE HC 0.45194 NOX 1.4547 CO 22.796
EMISSION MASS/MODE 0.037662 0.12122 1.8997
EMISSION MASS/RATED HP 0.00023539 0.00075765 0.011873
MODE EMIS./STD. CYCLE % 12.389 50.510 28.269

CAL. FUEL AIR RATIO = 0.073978 MEAS. FUEL AIR RATIO = 0.072910 DIFF MEAS. & CAL. F/A PERCENT = 1.4647

CYL TEMP DEG. F CYL-1 398.61 CYL-2 416.37 CYL-3 407.61 CYL-4 296.04

EXT GAS TEMP DEG. F EXT-1 895.06 EXT-2 -149.71 EXT-3 999.33 EXT-4 1265.3 SEXT-1 1311.5 SEXT-2 1310.9

ENGINE OIL OIL1 173.74 OIL2 169.31 OILP 69.539 MANIFOLD PRESSURE = 26.335

DYNO COND. TORQUE 263.81 RPM 2328.5 CYL. BACK PRESSURE = 29.342

INDUCTION AIR IAIRT1 59.590 IAIRT2 59.924 TAIRT1 71.917 TAIRT2 55.736

ORIFICE AIR TEMP 79.658 DELTAP 1.0626 DRFP 53.366 FLOW 1457.5

CELL TEMP. = 81.086 HEATER TEMP = 78.907 COOLER TEMP = 52.438

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NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDEII REC 04/07/76 18:46:07.391 FAC SEX15 PGM C003 RDG 2934

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 80 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.160 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	58.389	29.162	105.16	470.18	3.9624	14.435

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	73.191	5.5899	44.827	42.818	35.082	6.1074

COOLING AIR	TEMP	UNEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	60.024	3.0521	4.0025	10054.	79.751	52.166

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	79.751	8.8809	58.991	1.3546	66.071

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.074615	0.073991	1.1137	2349.1	2350.9	145.36	65.013

WET CORRECTION FACTOR = 0.86189 EXHAUST MOLE. WT. = 28.122 EXHAUST DENSITY = 0.072814 EXHAUST FLOW RATE = 6993.5

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1280.7	770.88	3.2064	12.1950	0.16586
CORRECTED CONC. TO WET BASIS			2.7535	10.511	0.14295

	HC	NOX	CO
EMISSION RATE	0.32155	0.54155	14.031
EMISSION MASS/MODE	0.032155	0.064155	1.4031
EMISSION MASS/RATED HP	0.00020097	0.00040097	0.0087696
MODE EMIS./STD. CYCLE %	10.577	26.731	20.880

CAL. FUEL AIR RATIO = 0.073863 MEAS. FUEL AIR RATIO = 0.074615 DIFF MEAS. & CAL. F/A PERCENT = -1.0080

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	350.87	356.39	356.33	389.93

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1260.2	122.39	1149.2	1089.7	1192.9	1194.4

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 18.721
	184.42	195.77	70.943	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.261
	138.06	2327.0	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	59.027	58.389	82.153	56.218

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	77.599	1.0887	53.357	1477.8

CELL TEMP. = 78.704 HEATFR TEMP = 99.240 COOLER TEMP = 54.158

NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDEII REC 04/07/76 18:49:04.373 FAC SEX15 PGM C003 RDG 2935

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 80 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.170 RATED HP = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	57.954	29.183	209.16	960.38	8.1359	14.809

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	71.055	5.4401	44.984	73.095	70.270	6.1362

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	RFL-HUM	DEW-POINT
	60.826	3.1888	4.1060	10302.	83.531	53.001

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	83.531	25.641	59.301	1.3617	157.08

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	PPM-2	TORQUE	BHP
	0.073168	0.072554	1.0921	2701.6	2703.5	292.36	150.39

WET CORRECTION FACTOR = 0.84620 EXHAUST MOLE. WT. = 28.244 EXHAUST DENSITY = 0.073130 EXHAUST FLOW RATE = 14204.

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1062.1	792.38	4.0433	11.8140	0.11499
CORRECTED CONC. TO WET BASIS			3.4214	9.9969	0.097306

EMISSION RATE	HC	NOX	CO	
	0.54162	1.3394	35.284	
	EMISSION MASS/MODE	0.0027081	0.0066970	0.17642
	EMISSION MASS/RATED HP	1.6926E-05	4.1856E-05	0.0011026
MODE FMIS./STD. CYCLE %	0.89082	2.7904	2.6253	

CAL. FUEL AIR RATIO = 0.075743 MEAS. FUEL AIR RATIO = 0.073168 DIFF MEAS. & CAL. F/A PERCENT = 3.5183

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	417.65	427.55	417.97	382.03

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1280.7	350.83	1168.9	1308.8	1383.4	1382.0

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.202
	187.75	281.07	72.971	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.339
	284.51	2618.1	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	57.638	57.954	90.434	55.682

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	77.732	3.9629	53.260	2754.4

CELL TEMP. = 79.367 HEATER TEMP = 79.984 COOLER TEMP = 50.942

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NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDEII REC 04/07/76 18:52:31.515 FAC SEX15 PGM C003 RDG 2936

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 80 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.170 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	58.551	29.184	169.15	768.25	6.5253	14.644

COMP. FUEL	TEMP	PRESS	DENSITY	TUPRO FLOW	FLOW TRON	FPIP
	72.346	5.4758	44.849	57.472	55.683	6.0420

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	RFL-HUM	DEW-POINT
	61.484	3.0770	4.0044	10100.	81.059	52.766

RFL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP
	81.059	10.595	59.455	1.3653 120.56

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.072479	0.071869	1.0818	2426.7	2428.9	256.98	118.74

WET CORRECTION FACTOR = 0.85085 FXHAUST MOLE. WT. = 28.302 EXHAUST DENSITY = 0.073282 EXHAUST FLOW RATE = 11332.

MEASURED CONC.	PART PER MILLION WET	PER CENT	
	HC PPM	CO DRY	CO2 DRY
	1112.4	3.4606	12.068
CORRECTED CONC. TO WET BASIS	NOX PPM	CO DRY	O2 DRY
	1218.4	2.9445	10.268
			0.17034

EMISSION RATE	HC	NOX	CO
	0.45257	1.5431	24.225
EMISSION MASS/MODE	0.037714	0.13693	2.0188
EMISSION MASS/PATED HP	0.00023571	0.00085579	0.012617
MODE EMIS./STD. CYCLE %	12.406	57.052	30.041

CAL. FUEL AIR RATIO = 0.074214 MEAS. FUEL AIR RATIO = 0.072479 DIFF MEAS. & CAL. F/A PERCENT = 2.3928

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	392.43	410.63	407.50	317.34

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SXT-1	SXT-2
	1242.8	-91.893	1088.1	1221.5	1328.4	1328.9

ENGINE OIL	EQILT	SOILT	OILP	MANIFOLD PRESSURE = 26.563
	187.24	203.38	71.023	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.328
	252.47	2370.2	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	58.217	58.551	50.391	55.493

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	78.280	2.0338	53.243	1998.6

CELL TEMP. = 80.319 HEATER TEMP = 78.955 COOLER TEMP = 51.456

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NASA-LEWIS		PRELIMINARY DATA		04/07/76	CADDEII	REC 04/07/76 19:16:49.506	FAC SEX15	PGM C003	RDG 2940
LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 80 %				MODE = 5.0000	NO. SCANS = 5				
ENGINE TIMING = 25.000		DEG.	BAROMETRIC PRESSURE = 29.180		RATED HP. = 160.00		HC RATIO = 2.1250		
COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL			
	59.617	29.174	105.19	471.02	4.0286	14.453			
COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP			
	74.950	5.5899	44.781	43.588	35.248	6.0702			
COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT			
	61.637	2.9743	3.8702	9910.4	77.540	52.596			
REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP				
	77.540	12.075	59.871	1.3748	66.007				
ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP		
	0.074832	0.074198	1.1169	2355.6	2358.8	144.55	64.832		
WET CORRECTION FACTOR = 0.85870		EXHAUST MOLE. WT. = 28.103		EXHAUST DENSITY = 0.072766		EXHAUST FLOW RATE = 7012.8			
MEASURED CONC.	PART PER MILLION WET			PER CENT					
	HC PPM	NOX PPM	CO DRY	CO2 DRY	NO2 DRY				
	1348.2	706.37	3.6253	11.845	0.14975				
CORRECTED CONC. TO WET BASIS				3.1131	10.172	0.12859			
EMISSION RATE	HC	NOX	CO						
	0.33943	0.58948	15.849						
EMISSION MASS/MODE	0.033943	0.058948	1.5849						
EMISSION MASS/RATED HP	0.00021214	0.00036843	0.0099059						
MODE EMIS./STD. CYCLE %	11.165	24.562	23.586						
CAL. FUEL AIR RATIO = 0.074957		MEAS. FUEL AIR RATIO = 0.074832		DIFF MEAS. & CAL. F/A PERCENT = 0.16655					
CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4					
	346.87	355.77	356.16	527.24					
EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SFXT-1	SEXT-2			
	1429.1	275.19	1184.6	1129.7	1164.2	1164.7			
ENGINE OIL	F OILT	S OILT	OILT	MANIFOLD PRESSURE = 18.705					
	182.86	234.68	70.051						
DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.229						
	148.44	2312.6							
INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2					
	59.265	59.617	91.896	56.015					
ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW					
	78.492	1.0445	53.350	1446.8					
CELL TEMP. = 79.057	HEATER TEMP = 78.365		COOLER TEMP = 51.537						

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NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDEII REC 04/07/76 19:20:53.091 FAC SEX15 PGM C003 RDG 2941

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 80 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.180 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	59.418	29.154	208.30	956.36	8.2865	14.805

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	72.871	5.4449	44.835	68.956	66.619	6.0054

COOLING AIR	TEMP	INLET-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	62.511	3.0922	3.9228	10128.	81.027	53.601

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	81.027	15.518	60.652	1.3928	154.91

ENG. COND.	F/A DRY	F/A WET	FOU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.069658	0.069060	1.0397	2698.8	2701.2	287.70	147.84

WET CORRECTION FACTOR = 0.84709 EXHAUST MOLE. WT. = 28.474 EXHAUST DENSITY = 0.073727 EXHAUST FLOW RATE = 13987.

MEASURED CONC.	PART PER MILLION WFT			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	951.59	1416.1	2.5315	12.5180	0.12609
CORRECTED CONC. TO WFT BASIS			2.1444	10.604	0.10681

EMISSION RATE	HC	NOX	CO
	0.47765	2.3572	21.776
EMISSION MASS/MODE	0.0023892	0.011786	0.10888
EMISSION MASS/RATED HP	1.4933E-05	7.3662E-05	0.00068051
MODE EMIS./STD. CYCLE %	0.78593	4.9108	1.6203

CAL. FUEL AIR RATIO = 0.072375 MEAS. FUEL AIR RATIO = 0.069658 DIFF MEAS. & CAL. F/A PERCENT = 3.9002

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	421.20	438.34	427.21	377.18

EXT GAS TEMP DEG.F	EXT-1	FXT-2	FXT-3	FXT-4	SEXT-1	SEXT-2
	1025.8	566.38	1429.6	1455.3	1409.0	1406.2

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.226
	187.17	165.75	72.999	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.340
	281.02	2646.3	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	59.075	59.418	83.521	55.435

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	79.013	0.095209	53.284	337.99

CELL TEMP. = 80.028 HEATER TEMP = 78.149 COOLER TEMP = 50.248

ORIGINAL PAGE IS
OF POOR QUALITY

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NASA-LEWIS		PRELIMINARY DATA		04/07/76	CADDELL	REC 04/07/76 19:23:41.758	FAC SEX15	PGM C003	RDG 2942
LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 80 %				MODE = 4.0000	NO. SCANS = 5				
ENGINE TIMING = 25.000		DEG.	BAROMETRIC PRESSURE = 29.180		RATED HP. = 160.00		HC RATIO = 2.1250		
COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL			
	59.987	29.131	173.44	787.88	6.8349	14.650			
COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP			
	73.698	5.5031	44.814	55.693	54.764	5.3738			
COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	RFL-HUM	DEW-POINT			
	62.997	3.0623	3.8929	10073.	78.660	53.346			
REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP				
	78.660	46.389	60.726	1.3945	121.43				
ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP		
	0.069509	0.068911	1.0374	2427.1	2429.4	258.29	119.36		
WET CORRECTION FACTOR = 0.85283		EXHAUST MOLE. WT. = 28.489		EXHAUST DENSITY = 0.073765		EXHAUST FLOW RATE = 11515.			
MEASURED CONC.	PART PER MILLION WET			PER CENT					
	HC PPM	NOX PPM	CO DRY	CO2 DRY	CO DRY	O2 DRY			
	802.38	1696.3	2.4394	12.4190	0.38418				
CORRECTED CONC. TO WET BASIS			2.0804	10.591	0.32764				
EMISSION RATE	HC	NOX	CO						
	0.33172	2.3245	17.393						
EMISSION MASS/MODE	0.027643	0.19371	1.4494						
EMISSION MASS/RATED HP	0.00017277	0.0012107	0.0090589						
MODE EMIS./STD. CYCLE %	9.0932	80.713	21.569						
CAL. FUEL AIR RATIO = 0.071281		MEAS. FUEL AIR RATIO = 0.069509		DIFF MEAS. & CAL. F/A PERCENT = 2.5494					
CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4					
	404.98	414.33	409.77	280.15					
EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2			
	1145.2	131.33	1024.0	1337.0	1354.8	1354.0			
ENGINE OIL	EOILT	SOILT	NOILP	MANIFOLD PRESSURE = 27.103					
	187.69	198.42	70.399						
DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.349						
	261.71	2368.2							
INDUCTION AIR	TAIPT1	TAIRT2	TAIRT1	TAIPT2					
	59.608	59.987	52.047	55.467					
GRIFICE AIR	TEMP	DELTA P	ORFP	FLOW					
	79.428	0.092109	53.246	329.28					
CELL TEMP. = 80.610	HEATER TEMP = 78.052		COOLER TEMP = 51.411						

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NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDEI1 RFC 04/07/76 19:28:21.425 FAC SEX15 PGM C003 RDG 2943

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 80 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.180 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	59.310	29.178	113.86	510.09	4.4208	14.469

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	74.710	5.6142	44.787	43.752	33.738	6.1260

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	61.412	2.9724	3.9045	9906.8	79.512	52.981

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	79.512	28.677	60.666	1.3931	65.670

ENG. COND.	F/A DRY	F/A WET	EQV. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.066142	0.065573	0.98719	2343.1	2343.9	144.60	64.509

WET CORRECTION FACTOR = 0.86623 EXHAUST MOLE. WT. = 28.727 EXHAUST DENSITY = 0.074380 EXHAUST FLOW RATE = 7370.9

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	568.35	1282.3	0.74719	12.9160	0.86649
CORRECTED CONC. TO WET BASIS			0.64724	11.188	0.75058

	HC	NOX	CO
EMISSION RATE	0.15040	1.1248	3.4636
EMISSION MASS/MODE	0.015040	0.11248	0.34636
EMISSION MASS/RATED HP	9.3998E-05	0.00070299	0.0021647
MODE EMIS./STD. CYCLE %	4.9472	46.866	5.1541

CAL. FUEL AIR RATIO = 0.066064 MEAS. FUEL AIR RATIO = 0.066142 DIFF MEAS. & CAL. F/A PERCENT = -0.11661

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	328.21	330.94	338.92	450.66

FXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1179.5	554.05	1220.4	1286.0	1218.0	1218.0

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 19.892
	185.65	226.18	70.695	

DYNO COND.	TOPOUE	RPM	CYL. BACK PRESSURE = 29.255
	148.33	2272.7	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	59.976	59.310	181.03	56.271

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	78.103	1.0028	53.288	1418.6

CELL TEMP. = 78.899 HEATER TEMP = 77.940 COOLER TEMP = 53.240

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NASA-LFWIS PRELIMINARY DATA 04/07/76 CADDEII REC 04/07/76 19:31:15.050 FAC SEX15 PGM C003 RDG 2944

LEANOUT 25 BTDC TO CL APP 59 DEG HUM = 80 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.180 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	58.099	29.187	209.56	961.12	8.3724	14.811

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	71.447	5.4587	44.873	69.200	67.555	6.0033

COOLING AIR	TEMP	DEW-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	60.628	2.9967	3.9269	9952.2	85.430	53.756

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	85.430	22.278	60.977	1.4002	155.36

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.070287	0.069680	1.0491	2700.4	2703.8	289.16	148.68

WET CORRECTION FACTOR = 0.85243 EXHAUST MOLE. WT. = 28.491 EXHAUST DENSITY = 0.073771 EXHAUST FLOW RATE = 14057.

MEASURED CONC.	PART PER MILLION WET		PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY
	958.30	1534.0	2.4111	12.4890
CORRECTED CONC. TO WET BASIS			2.0553	0.12921

EMISSION RATE	HC	NOX	CO
	0.48362	2.5661	20.976
EMISSION MASS/MODE	0.0024181	0.012830	0.10488
EMISSION MASS/RATED HP	1.5113E-05	8.0190E-05	0.00065549
MODE EMIS./STD. CYCLE %	0.79543	5.3460	1.5607

CAL. FUEL AIR RATIO = 0.072066 MEAS. FUEL AIR RATIO = 0.070287 DIFF MEAS. & CAL. F/A PERCENT = 2.5307

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	399.14	414.42	408.09	441.75

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1342.9	693.72	1477.8	1397.3	1405.0	1402.3

ENGINE OIL	EOILT	SOILT	OILT	MANIFOLD PRESSURE = 28.289
	185.02	249.25	73.751	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.324
	283.13	2620.2	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	57.755	58.099	178.53	56.168

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	77.227	0.071507	53.342	269.55

CELL TEMP. = 79.013 HEATER TEMP = 87.016 COOLER TEMP = 51.915

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NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDEIT REC 04/07/76 19:33:27.649 FAC SEX15 PGM C003 RDG 2945

LEANOUT 25 BT0C TO CL APP 59 DEG HUM = 80 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.180 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 58.262 PRESS 29.219 CFM 170.97 DRY FLOW 776.22 VAPOR FLOW 6.7566 PRESS TOTAL 14.650

COMB. FUEL TEMP 72.115 PRESS 5.5076 DENSITY 44.855 TURBO FLOW 54.455 FLOW TRON 53.168 FPIP 6.0738

COOLING AIR TEMP 61.142 UDEL-HOOD 3.1249 DEL-HOOD 3.8929 FLOW 10187. REL-HUM 83.943 DEW-POINT 53.436

REL-HUM 1 83.943 2 10.763 HUMIDITY 60.931 % H2O VAPOR 1.3992 CORRECTED HP 120.48

ENG. COND. F/A DRY 0.068495 F/A WET 0.067905 EQU. RATIO 1.0223 RPM-1 2428.4 RPM-2 2431.3 TORQUE 256.61 BHP 118.65

WET CORRECTION FACTOR = 0.85081 EXHAUST MOLE WT. = 28.579 EXHAUST DENSITY = 0.073998 EXHAUST FLOW RATE = 11299.

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 914.69 NOX PPM 1760.7 CO DRY 2.0257 CO2 DRY 12.5930 O2 DRY 0.26349
CORRECTED CONC. TO WET BASIS 1.7235 10.714 0.22418

EMISSION RATE HC 0.37105 NOX 2.3675 CO 14.138
EMISSION MASS/MODE 0.030920 0.19729 1.1782
EMISSION MASS/RATED HP 0.00019325 0.0012331 0.0073637
MODE EMIS./STD. CYCLE % 10.171 82.204 17.533

CAL. FUEL AIR RATIO = 0.070870 MEAS. FUEL AIR RATIO = 0.068496 DIFF MEAS. & CAL. F/A PERCENT = 3.4661

CYL TEMP DEG.F CYL-1 404.11 CYL-2 416.32 CYL-3 411.08 CYL-4 329.19

EXT GAS TEMP DEG.F EXT-1 1336.8 EXT-2 437.00 EXT-3 1178.2 EXT-4 1409.4 SEXT-1 1357.2 SEXT-2 1356.1

ENGINE OIL FOILT 188.08 SOILT 219.84 OILT 70.955 MANIFOLD PRESSURE = 26.989

DYNO COND. TORQUE 265.86 RPM 2367.7 CYL. BACK PRESSURE = 29.311

INDUCTION AIR TAIRT1 57.936 TAIRT2 58.262 TAIRT1 159.28 TAIRT2 55.717

ORIFICE AIR TFMP 77.626 DELTAP 2.0146 ORFP 53.310 FLOW 1990.9

CELL TEMP. = 79.031 HEATER TEMP = 79.574 COOLER TEMP = 51.916

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NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDII REC 04/07/76 19:36:07.043 FAC SEX15 PGM C003 RDG 2946

LEANOUT 25 BTDC TO CL APE 59 DEG HUM = 80 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.180 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	59.202	29.165	110.71	495.77	4.3065	14.458

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	74.338	5.6043	44.797	41.863	33.786	6.0978

COOLING AIR	TEMP	INDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	61.367	2.9804	3.7681	9921.8	79.938	53.021

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	79.938	32.331	60.805	1.3963	67.353

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.068149	0.067562	1.0171	2355.9	2358.2	147.52	66.174

WET CORRECTION FACTOR = 0.86783 EXHAUST MOLE. WT. = 28.505 EXHAUST DENSITY = 0.074068 EXHAUST FLOW RATE = 7207.7

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	663.17	1285.6	1.0368	12.8880	0.63376
CORRECTED CONC. TO WET BASIS			0.89980	11.185	0.55000

	HC	NOx	CO
EMISSION RATE	0.17160	1.1027	4.7085
EMISSION MASS/MODE	0.017160	0.11027	0.47085
EMISSION MASS/RATED HP	0.00010725	0.00068919	0.0029428
MODE EMIS./STD. CYCLE %	5.6447	45.946	7.0067

CAL. FUEL AIR RATIO = 0.067454 MEAS. FUEL AIR RATIO = 0.068149 DIFF MEAS. & CAL. F/A PERCENT = -1.0189

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	347.63	351.58	356.60	467.00

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1731.3	584.42	1323.4	1333.7	1236.5	1237.0

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 19.491
	187.04	186.85	70.559	

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.222
	150.62	2303.6	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	58.840	59.202	112.79	56.061

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	78.086	3.0139	53.285	2406.9

CELL TEMP. = 78.810 HEATER TEMP = 78.761 COOLER TEMP = 51.681

NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDELL RFC 04/07/76 21:02:28.252 FAC SEX15 PGM C003 RDG 2959

LEANOUT 25 BTDC I & T 59 DEG HUM = 80 % 1 1/2 T CLOS MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.220 RATED HP = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	59.726	29.219	10.786	48.140	0.41606	14.352

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	73.538	5.8437	44.819	3.9764	3.5073	5.1752

COOLING AIR	TEMP	WDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	63.293	-0.025185	0.95035	0.00000	77.496	52.686

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	77.496	0.37204	60.499	1.3893	0.21604

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.072858	0.072233	1.0874	591.54	591.36	1.8919	0.21308

WET CORRECTION FACTOR = 0.87836 EXHAUST MOLE. WT. = 28.270 EXHAUST DENSITY = 0.073198 EXHAUST FLOW RATE = 711.26

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	14850.	30.594	2.7633	10.7850	3.0248
CORRECTED CONC. TO WET BASIS			2.4272	9.4727	2.6569

	HC	NOX	CO
EMISSION RATE	0.37920	0.0025895	1.2533
EMISSION MASS/MODE	0.0063199	4.3158E-05	0.020889
EMISSION MASS/RATED HP	3.9500E-05	2.6974E-07	0.00013056
MODE. EMISS./STR. CYCLE %	2.0789	0.017983	0.31085

CAL. FUEL AIR RATIO = 0.071321 MEAS. FUEL AIR RATIO = 0.072858 DIFF MEAS. & CAL. F/A PERCENT = -2.1089

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	259.69	272.42	267.39	441.90

EXT GAS TEMP DEG.F	FXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1236.2	454.00	63.850	532.77	533.12	531.68

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 11.834
	131.10	306.21	44.540	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.610
	5.3501	588.78	

INDUCTION AIR	TAIPT1	TAIRT2	TAIRT1	TAIRT2
	59.003	59.726	137.08	54.007

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	80.840	1.0517	53.306	1448.5

CELL TEMP. = 75.376 HEATER TEMP = 80.561 COOLER TEMP = 42.764

ORIGINAL PAGE IS
OF POOR QUALITY.

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NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDEII REC 04/07/76 21:05:19.611 FAC SEX15 PGM C003 RDG 2960
 LEANOUT 25 BTDC I & T 59 DEG HUM = 80 % 1 1/2 T CLOS MODE = 2.0000 NJ. SCANS = 5
 ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.220 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL	
	59.500	29.213	17.953	80.169	0.69182	14.350	
COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP	
	74.293	5.7918	44.798	7.3561	6.3546	6.1599	
COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT	
	64.363	-0.031827	0.94042	0.00000	77.993	52.641	
REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP		
	77.993	0.31803	60.407	1.3871	1.3970		
ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.079266	0.078587	1.1831	1199.5	1200.2	6.0339	1.3780
WET CORRECTION FACTOR = 0.85744		EXHAUST M/L. WT. = 27.739		EXHAUST DENSITY = 0.071824		EXHAUST FLOW RATE = 1214.3	
MEASURED CONC.	PART PER MILLION WET		PER CFM				
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY		
	2217.3	59.556	5.1517	11.4190	0.13907		
CORRECTED CONC. TO WET BASIS			4.4173	9.7912	0.11925		
EMISSION RATE	HC	NOX	CO				
	0.096660	0.0086059	3.8942				
EMISSION MASS/MODE	0.017721	0.0015777	0.71393				
EMISSION MASS/RATED HP	0.00011076	9.8609E-06	0.0044621				
MODE. EMIS./STD. CYCLE %	5.8293	0.65739	10.624				
CAL. FUEL AIR RATIO = 0.078636		MEAS. FUEL AIR RATIO = 0.079266		DIFF MEAS. & CAL. F/A PERCENT = -0.79437			
CYL TEMP. DEG. F	CYL-1	CYL-2	CYL-3	CYL-4			
	270.43	286.54	278.06	404.27			
EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2	
	1486.8	-454.00	-74.512	534.12	525.16	523.32	
ENGINE OIL	EQILT	SOILT	OILP	MANIFOLD PRESSURE = 7.8662			
	135.82	325.58	56.398				
DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.265				
	4.1980	1190.3					
INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2			
	58.904	59.500	95.983	53.688			
ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW			
	81.404	1.0415	53.337	1440.8			
CELL TEMP. = 75.908	HEATER TEMP = 81.804		COOLER TEMP = 43.108				

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NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDEII REC 04/07/76 21:06:42.815 FAC SEX15 PGM C003 RDG 2961

LEANOUT 25 BTDC I & T 59 DEG HUM = 80 % 1 1/2 T CLOS MODE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.220 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	OPY FLOW	VAPOR FLOW	PRESS TOTAL
	59.545	29.220	18.150	81.097	0.69856	14.357

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	74.497	5.7954	44.792	7.3071	6.2916	6.1704

COOLING AIR	TEMP	INEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	64.417	-0.042897	0.88396	0.00000	77.768	52.606

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	77.768	0.32003	60.297	1.3846	0.92045

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.077581	0.076919	1.1579	1199.5	1200.5	3.9754	0.90790

WET CORRECTION FACTOR = 0.84860 EXHAUST MOLE. WT. = 27.876 EXHAUST DENSITY = 0.072178 EXHAUST FLOW RATE = 1220.4

MEASURED CONC.	PART PER MILLION WET	PER CENT
	HC PPM NOX PPM CO DRY CO2 DRY O2 DRY	
	2610.0 58.412 5.2746 11.3580 0.16870	
CORRECTED CONC. TO WET BASIS	4.4760 9.6383 0.14316	

EMISSION RATE	HC	NOX	CO
	0.11435	0.0084832	3.9659
EMISSION MASS/MODE	0.0057175	0.00042416	0.19829
EMISSION MASS/RATED HP	3.5735E-05	2.6510E-06	0.0012393
MODE EMIS./STD. CYCLE. %	1.8808	0.17673	2.9508

CAL. FUEL AIR RATIO = 0.079035 MEAS. FUEL AIR RATIO = 0.077581 DIFF MEAS. & CAL. F/A PERCENT = 1.8739

CYL TEMP. DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	268.32	284.65	275.83	422.19

EXT GAS TEMP DEG. F	FXT-1	FXT-2	FXT-3	FXT-4	SFXT-1	SEXT-2
	849.64	-454.00	-301.66	58.210	517.97	515.95

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 7.9004
	135.79	-108.46	56.410	

DYAO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.179
	4.8821	1194.0	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	58.976	59.545	135.93	53.662

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	81.492	2.0194	53.364	1986.0

CELL TEMP. = 75.810 HEATER TEMP. = 81.616 COOLER TEMP = 43.995

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NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDEII REC 04/07/76 21:15:25.443 FAC SEX15 PGM C003 RDG 2963

LEANOUT 25 BTDC I 6 T 59 DEG HUM = 80 % 1 1/2 T CLOS MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.220 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	58.841	29.219	11.097	49.497	0.43149	14.354

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	72.907	5.8509	44.834	3.9779	3.2883	6.1677

COOLING AIR	TEMP	UPFL-HOOD	REL-HOOD	FLOW	REL-HUM	DEW-POINT
	63.725	-0.029613	0.95647	0.00000	80.681	52.921

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	80.681	0.30603	61.023	1.4013	0.42975

ENG. COND.	E/A DRY	E/A WET	EQU. RATIO	PPM-1	RPM-2	TORQUE	BHP
	0.066435	0.065861	0.99157	577.32	585.72	3.8587	0.42416

WET CORRECTION FACTOR = 0.86255 EXHAUST MOLE. WT. = 28.712 EXHAUST DENSITY = 0.074343 EXHAUST FLOW RATE = 715.82

MEASURED CONC.	PART PER MILLION WFT			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	16483.	33.789	1.9110	10.8270	3.5714
CORRECTED CONC. TO WFT BASIS			1.6484	9.3385	3.0805

	HC	NOX	CO
EMISSION RATE	0.42360	0.0028783	0.85663
EMISSION MASS/MODE	0.0070529	4.7971E-05	0.014277
EMISSION MASS/PATED HP	4.4125E-05	2.9982E-07	8.9232E-05
MODE FMIS./STD. CYCLE %	2.3223	0.019988	0.21246

CAL. FUEL AIR RATIO = 0.068882 MEAS. FUEL AIR RATIO = 0.066435 DIFF MEAS. & CAL. F/A PERCENT = 3.6833

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	269.48	289.90	281.83	274.47

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1313.5	-454.00	0.52075	456.47	519.99	518.15

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 11.897
	139.27	364.46	46.857	

DYNO COND.	TORQUE	RPM	CYL BACK PRESSURE = 29.337
	5.5301	569.46	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	58.126	58.841	130.12	54.358

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	80.258	2.0646	53.338	2009.1

CELL TEMP. = 74.320 HEATER TEMP = 80.665 COOLER TEMP = 43.524

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NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDEII REC 04/07/76 21:19:21.857 FAC SEX15 PGM C003 RDG 2954

LEANOUT 25 BTDC I & T 59 DEG HUM = 80 % 3/4 T CLOSED MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.220 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 58.750 PRESS 29.218 CFM 10.552 DRY FLOW 47.076 VAPOR FLOW 0.40869 PRESS TOTAL 14.350

COMB. FUEL TEMP 72.782 PRESS 5.8278 DENSITY 44.838 TURBO FLOW 3.9765 FLOW TRON 3.9724 FPIP 6.1794

COOLING AIR TEMP 63.518 UDEL-HOOD -0.024078 DEL-HOOD 0.83719 FLOW 0.00000 REL-HUM 80.586 DEW-POINT 52.801

REL-HUM 1 80.586 2 0.27803 HUMIDITY 60.770 % H2O VAPOR CORRECTED HP 1.3955 0.58412

ENG. COND. F/A DRY 0.084382 F/A WFT 0.083655 EQU. RATIO 1.2594 PPM-1 616.92 RPM-2 616.74 TORQUE 4.9088 BHP 0.57661

WET CORRECTION FACTOR = 0.84925 EXHAUST MOL. WT. = 27.337 EXHAUST DENSITY = 0.070782 EXHAUST FLOW RATE = 726.99

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 16151. NOX PPM 18.446 CO DRY 7.6893 CO2 DRY 9.12450 O2 DRY 1.6120
CORRECTED CONC. TO WFT BASIS 6.5301 7.7490 1.3690

EMISSION RATE HC 0.42154 NOX 0.0015958 CO 3.4465
EMISSION MASS/MODE 0.0070256 2.6596E-05 0.057442
EMISSION MASS/RATED HP 4.3910E-05 1.5623E-07 0.00035902
MODE EMIS./STD. CYCLE % 2.3111 0.011082 0.85480

CAL. FUEL AIR RATIO = 0.088063 MEAS. FUEL AIR RATIO = 0.084382 DIFF MEAS. & CAL. F/A PERCENT = 4.3629

CYL TEMP DEG.F CYL-1 265.79 CYL-2 281.53 CYL-3 264.75 CYL-4 310.26

EXT GAS TEMP DEG.F EXT-1 1439.2 EXT-2 -454.00 EXT-3 -55.959 EXT-4 381.80 SEXT-1 508.36 SEXT-2 506.51

ENGINE OIL EOILT 139.12 SOILT 196.00 OILP 47.569 MANIFOLD PRESSURE = 10.697

DYNO COND. TORQUE 5.6958 RPM 604.38 CYL. BACK PRESSURE = 29.331

INDUCTION AIR IAIRT1 58.045 IAIRT2 58.750 TAIRT1 129.13 TAIRT2 54.117

ORIFICE AIR TEMP 80.099 DELTAP 0.10961 ORFP 53.436 FLOW 375.90

CELL TEMP. = 73.671 HEATER TEMP = 80.491 COOLER TEMP = 43.488

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NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDE11 REC 04/07/76 21:22:11.552 FAC SEX15 PGM C003 RDG 2965

LEANOUT 25 BTDC I & T 59 DEG HUM = 80 7/8 T CLOSED MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.220 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	58.795	29.212	18.322	81.658	0.71469	14.351

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	72.969	5.7804	44.833	8.2852	6.9907	6.1674

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	64.201	-0.029613	0.97391	0.00000	81.110	53.021

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	81.110	28.947	61.266	1.4069	1.4007

ENG. COND.	F/A DRY	F/A WET	EQU. PATIO	RPM-1	RPM-2	TORQUE	BHP
	0.085609	0.084866	1.2777	1199.9	1200.1	6.0506	1.3823

WET CORRECTION FACTOR = 0.84626 EXHAUST MOLE WT. = 27.243 EXHAUST DENSITY = 0.070539 EXHAUST FLOW RATE = 1266.9

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	4181.4	43.726	8.6593	9.60430	0.16008	
CORRECTED CONC. TO WET BASIS			7.3281	8.1278	0.13547	

EMISSION RATE	HC	NOX	CO
	0.19017	0.0065920	6.7399
	0.034865	0.0012085	1.2357
	0.00021791	7.5534E-06	0.0077228
EMISSION MASS/MODE			
MODE EMIS./STD. CYCLE %	11.469	0.50356	18.388

CAL. FUEL AIR RATIO = 0.088140 MEAS. FUEL AIR RATIO = 0.085609 DIFF. MEAS. & CAL. F/A PERCENT = 2.9568

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	298.80	312.91	300.63	299.95

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1482.8	-454.00	14.493	485.57	560.15	559.50

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 7.9086
	144.23	324.54	54.993	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.289
	4.6157	1194.3	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	58.189	58.795	96.698	54.598

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	80.425	1.0676	53.355	1459.8

CELL TEMP. = 74.116 HEATED TEMP = 83.420 COOLER TEMP = 45.714

NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDET1 REC 04/07/76 21:26:17.210 FAC SEX15 PGM C003 RDG 2967

LEANOUT 25 BTDC I.G. T 59 DEG HUM = 80 % 3/4 T CLOSED MODE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.220 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS.	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	59.193	29.226	18.332	81.842	0.71088	14.355

COMB. FUEL	TFMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	74.178	5.7762	44.801	3.9732	7.0267	6.1599

COOLING AIR	TEMP	WDEL-HOOD	DFL-HOOD	FLOW	REL-HUM	DEW-POINT
	64.991	-0.023801	0.94374	0.00000	79.393	52.826

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	79.393	35.031	60.302	1.3962	1.3975

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.085857	0.085118	1.2915	1200.2	1201.3	6.0339	1.3789

WET CORRECTION FACTOR = 0.84915 EXHAUST MOLE. WT. = 27.224 EXHAUST DENSITY = 0.070491 EXHAUST FLOW RATE = 1270.8

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	4143.3	43.636	8.4719	9.71800	0.16984
CORRECTED CONC. TO WET BASIS			7.1939	8.2520	0.14422

EMISSION RATE	HC	NOX	CO	
	0.18902	0.0065989	6.6371	
	EMISSION MASS/MODE	0.0094512	0.00032994	0.33186
	EMISSION MASS/RATED HP	5.9070E-05	2.0622E-06	0.0020741
MODE EMIS./STD. CYCLE %	3.1090	0.13748	4.9383	

CAL. FUEL AIR RATIO = 0.087560 MEAS. FUEL AIR RATIO = 0.085857 DIFF MEAS. & CAL. F/A PERCENT = 1.9833

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	278.92	292.96	280.55	375.49

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	895.42	-454.00	13.738	401.73	545.26	543.56

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 7.9004
	147.31	397.34	54.993	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.222
	3.9964	1188.5	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	58.578	59.193	158.87	53.955

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	81.051	1.0482	53.369	1445.9

CELL TEMP. = 75.074 HEATER TEMP = 81.866 COOLER TEMP = 44.266

NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDEII REC 04/07/76 21:29:38.925 FAC SEX15 PGM C003 RDG 2968

LEANOUT 25 BTDC I & T 59 DEG HUM = 80 3/4 T CLOSED MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.220 RATED HP = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	60.339	29.223	9.6180	42.875	0.37471	14.353

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	74.755	5.8236	44.786	3.9753	3.9394	6.1767

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	65.431	-0.035978	1.0071	0.00000	76.662	52.986

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	76.662	50.563	61.177	1.4048	0.31382

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.091881	0.091085	1.3714	590.64	592.50	2.7503	0.30930

WET CORRECTION FACTOR = 0.87667 EXHAUST MOLE WT. = 26.781 EXHAUST DENSITY = 0.069343 EXHAUST FLOW RATE = 680.51

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	19560.	13.597	7.7981	8.70850	1.9240
CORRECTED CONC. TO WET BASIS			6.8276	7.6345	1.6867

	HC	NOX	CO
EMISSION RATE	0.47788	0.0011011	3.3732
EMISSION MASS/MODE	0.0079647	1.8352E-05	0.056220
EMISSION MASS/RATED HP	4.9779E-05	1.1470E-07	0.00035137
MODE EMIS./STD. CYCLE %	2.6200	0.0076467	0.83660

CAL. FUEL AIR RATIO = 0.089241 MEAS. FUEL AIR RATIO = 0.091881 DIFF MEAS. & CAL. F/A PERCENT = -2.8727

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	270.17	281.64	265.00	320.13

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1201.3	-454.00	-38.034	395.20	525.68	523.01

ENGINE OIL	EQ ILT	SOILT	OILP	MANIFOLD PRESSURE =
	143.84	276.07	46.753	10.914

DYNO COND.	TORQUE	RPM	CYL BACK PRESSURE =
	8.8353	585.48	29.029

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	59.590	60.339	127.77	54.584

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	81.500	2.9890	53.342	2389.7

CELL TEMP. = 75.615 HEATER TEMP = 81.769 COOLER TEMP = 44.819

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NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDEII REC 04/07/76 21:36:46.420 FAC SEX15 PGM C003 RDG 2970

LEANOUT I. & I. 25 BTDC, 59 DEG. HUM=80% NEUTRAL MCR = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.220 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 58.135 PRESS. 29.213 CFM 11.767 DRY FLOW 52.473 VAPOR FLOW 0.45812 PRESS TOTAL 14.352

COMB. FUEL TEMP 72.320 PRESS 5.7960 DENSITY 44.850 TURBO FLOW 5.6960 FLOW TRON 5.0645 FPIP 6.1749

COOLING AIR TEMP 63.204 UDEL-HOOD -0.037639 DEL-HOOD 0.89171 FLOW 0.00000 REL-HUM 82.854 DEW-POINT 52.956

REL-HUM 1 82.854 2 0.28403 HUMIDITY 61.114 % H2O VAPOR 1.4034 CORRECTED HP 0.79851

ENG. COND. F/A DRY 0.096516 F/A WET 0.095681 EQU. RATIO 1.4405 RPM-1 584.70 RPM-2 580.38 TORQUE 7.0840 BHP 0.78866

WET CORRECTION FACTOR = 0.87684 EXHAUST MOLE. WT. = 26.458 EXHAUST DENSITY = 0.068507 EXHAUST FLOW RATE = 846.57

MEASURED CONC. PART PER MILLION WET HC PPM 33881. NOX PPM 6.5737 CO DRY 9.2158 PER CENT CO2 DRY 6.82780 O2 DRY 3.3597
CORRECTED CONC. TO WET BASIS. CO DRY 8.0808 PER CENT CO2 DRY 5.9869 O2 DRY 2.9466

EMISSION RATE HC 1.0297 NOX 0.00066224 CO 4.9665
EMISSION MASS/MODE 0.017162 1.1037E-05 0.082775
EMISSION MASS/RATED HP 0.00010726 6.8993E-09 0.00051735
MODE EMIS./STD. CYCLE % 5.6454 0.0045989 1.2318

CAL. FUEL AIR RATIO = 0.097405 MEAS. FUEL AIR RATIO = 0.096516 DIFF MEAS. & CAL. F/A PERCENT = 0.92134

CYL TEMP DEG.F CYL-1 262.68 CYL-2 275.90 CYL-3 252.28 CYL-4 522.41

EXT GAS TEMP DEG.F EXT-1 1474.5 EXT-2 -454.00 EXT-3 -80.574 EXT-4 392.28 SEXT-1 529.49 SEXT-2 526.91

ENGINE OIL EOILT 143.33 SOILT 218.16 OILP 46.757 MANIFOLD PRESSURE = 11.884

DYNO COND. TORQUE 4.2124 RPM 574.26 CYL. BACK PRESSURE = 29.672

INDUCTION AIR IAIRT1 57.420 IAIRT2 58.135 TAIRT1 148.69 TAIRT2 54.353

ORIFICE AIR TEMP 79.296 DELTAP 1.1066 DRFP 53.297 FLOW 1487.4

CELL TEMP. = 73.183 HEATER TEMP = 80.838 COOLER TEMP = 45.253

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NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDEII REC 04/07/76 21:40:08.408 FAC SEX15 PGM C003 RDG 2971

LEANOUT I & T 25 BTDC, 59 DEG HUM=80% NEUTRAL MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.220 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 57.973 PRESS 29.215 CFM 19.956 DRY FLOW 89.056 VAPOR FLOW 0.77936 PRESS TOTAL 14.357

COMB. FUEL TEMP 72.542 PRESS 5.7441 DENSITY 44.844 TURBO FLOW 9.9488 FLOW TRON 8.5118 FPIP 6.1581

COOLING AIR TEMP 63.707 UDEL-HOOD -0.030443 DEL-HOOD 0.99190 FLOW 0.00000 REL-HUM 83.568 DEW-POINT 53.031

REL-HUM 1 83.568 2 0.28003 HUMIDITY 61.259 % H2O VAPOR 1.4067 CORRECTED HP 1.1647

ENG. COND. F/A DRY 0.095578 F/A WET 0.094749 EQU. RATIO 1.4265 RPM-1 1208.1 RPM-2 1210.3 TORQUE 5.0005 BHP 1.1502

WET CORRECTION FACTOR = 0.85404 EXHAUST MOLE. WT. = 26.522 EXHAUST DENSITY = 0.068673 EXHAUST FLOW RATE = 1432.1

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 9126.9 NOX PPM 20.811 CO DRY 11.160 CO2 DRY 8.09350 O2 DRY 0.27347
CORRECTED CONC. TO WET BASIS CO DRY 9.5310 CO2 DRY 6.9122 O2 DRY 0.23355

EMISSION RATE HC 0.46924 NOX 0.0035467 CO 9.9095
EMISSION MASS/MODE 0.086027 CO2 0.0065022 1.8167
EMISSION MASS/RATED HP 0.00053767 CO 4.0639E-06 0.011355
MODE EMISS./STD. CYCLE % 28.298 CO 0.27092 27.035

CAL. FUEL AIR RATIO = 0.097846 MFAS. FUEL AIR RATIO = 0.095578 DIFF MEAS. & CAL. F/A PERCENT = 2.3726

CYL TEMP DEG.F CYL-1 279.32 CYL-2 294.12 CYL-3 280.11 CYL-4 473.15

EXT GAS TEMP DEG.F EXT-1 1222.6 EXT-2 -454.00 EXT-3 -65.929 EXT-4 479.42 SEXT-1 562.85 SEXT-2 560.89

ENGINE OIL EOILT 145.82 SOILT 283.27 OILP 55.265 MANIFOLD PRESSURE = 8.3509

DYNO COND. TORQUE 2.5851 RPM 1210.4 CYL. BACK PRESSURE = 29.123

INDUCTION AIR IAIRT1 57.420 IAIRT2 57.973 TAIRT1 139.13 TAIRT2 54.189

ORIFICE AIR TEMP 79.631 DELTAP 2.0596 ORFP 53.296 FLOW 2008.0

CELL TEMP. = 73.671 HEATER TEMP = 81.102 COOLER TEMP = 44.710

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NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDEII REC 04/07/76 21:42:52.889 FAC SEX15 PGM C003 RDG 2972

LEANOUT I & Y 25 BTDC, 59 DEG HUM=80% NEUTRAL MODE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.220 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 58.596 PRESS 29.221 CFM 20.180 DRY FLOW 89.948 VAPOR FLOW 0.79064 PRESS TOTAL 14.353

COMB. FUEL TEMP 72.738 PRESS 5.7459 DENSITY 44.839 TURBO FLOW 9.6828 FLOW TRON 8.4368 FPIP 6.1506

COOLING AIR TEMP 64.435 WDEL-HOOD -0.027953 DEL-HOOD 0.84937 FLOW 0.00000 REL-HUM 82.049 DEW-POINT 53.141

REL-HUM 1 82.049 2 34.629 HUMIDITY 61.530 % H2O VAPOR 1.4129 CORRECTED HP 1.5376

ENG. COND. F/A DRY 0.093797 F/A WET 0.092980 EQU. RATIO 1.4000 RPM-1 1196.9 RPM-2 1197.1 TORQUE 6.6590 BHP 1.5176

WET CORRECTION FACTOR = 0.84725 EXHAUST MLE. WT. = 26.646 EXHAUST DENSITY = 0.058993 EXHAUST FLOW RATE = 1437.5

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 9246.8 NOX PPM 19.606 CO DRY 11.179 CO2 DRY 8.0531 O2 DRY 0.26687
CORRECTED CONC. TO WET BASIS CO DRY 9.4712 CO2 DRY 6.8229 O2 DRY 0.22610

EMISSION RATE HC 0.47719 NOX 0.0033538 CO 9.8842
EMISSION MASS/MODE HC 0.023859 NOX 0.00016769 CO 0.49421
EMISSION MASS/RATED HP HC 0.00014912 NOX 1.0481E-06 CO 0.0030888
MODE EMIS./STD. CYCLE % HC 7.8485 NOX 0.069870 CO 7.3543

CAL. FUEL AIR RATIO = 0.098127 MEAS. FUEL AIR RATIO = 0.093797 DIFF MEAS. & CAL. F/A PERCENT = 4.6163

CYL TEMP DEG.F CYL-1 292.59 CYL-2 305.21 CYL-3 294.16 CYL-4 332.91

EXT GAS TEMP DEG.F EXT-1 1211.0 EXT-2 -454.00 EXT-3 -26.055 EXT-4 512.08 SEXT-1 576.79 SEXT-2 574.93

ENGINE OIL EOILT 148.02 SOILT 227.68 OILP 54.533 MANIFOLD PRESSURE = 8.4071

DYNO COND. TORQUE 10.175 RPM 1189.8 CYL. BACK PRESSURE = 29.330

INDUCTION AIR IAIRT1 58.018 IAIRT2 58.596 TAIRT1 71.755 TAIRT2 54.603

ORIFICE AIR TEMP 79.993 DELTAP 1.0392 ORFP 53.308 FLOW 1441.1

CELL TEMP. = 73.858 HEATER TEMP = 82.269 COOLER TEMP = 45.398

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NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDEII REC. 04/07/76 21:46:11.041 FAC SEX15 PGM C003 RDG 2973

LEANOUT I & I 25 BTDC, 59 DEG HUM=80% NEUTRAL MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.210 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 59.554 PRESS 29.215 CEM 11.637 DRY FLOW 51.865 VAPOR FLOW 0.45302 PRESS TOTAL 14.342

COMB. FUEL TEMP 73.876 PRESS 5.7930 DENSITY 44.809 TURBO FLOW 3.9756 FLOW TRON 5.0675 FPIP 6.1647

COOLING AIR TEMP 64.695 UDEL-HOOD -0.030167 DEL-HOOD 0.93710 FLOW 0.00000 REL-HUM 78.736 DEW-POINT 52.951

REL-HUM 1 78.736 2 13.395 HUMIDITY 61.142 % H2O VAPOR CORRECTED HP 1.4040 0.52262

ENG. COND. F/A DRY 0.097706 F/A WET 0.096860 EQU. PATIO 1.4583 RPM-1 598.26 RPM-2 602.22 TORQUE 4.5254 BHP 0.51550

WET CORRECTION FACTOR = 0.89499 EXHAUST MOLE. WT. = 26.378 EXHAUST DENSITY = 0.068299 EXHAUST FLOW RATE = 840.21

MEASURED CONC. PART PER MILLION WFT PER CENT
HC PPM 30953. NOX PPM 6.6487 CO DRY 9.1569 CO2 DRY 6.9373 O2 DRY 3.1974
CORRECTED CONC. TO WET BASIS CO 8.1038 CO 6.1394 CO 2.8297

EMISSION RATE HC 0.93366 NOX 0.00066477 CO 4.9433
EMISSION MASS/MODE 0.015561 1.1079E-05 0.082387
EMISSION MASS/RATED HP 9.7256E-05 6.9247E-08 0.00051492
MODE EMIS./STD. CYCLE 5.1187 0.0046164 1.2760

CAL. FUEL AIR RATIO = 0.095973 MEAS. FUEL AIR RATIO = 0.097706 DIFF MEAS. & CAL. F/A PERCENT = -1.7738

CYL TEMP DEG.F CYL-1 250.79 CYL-2 261.73 CYL-3 240.42 CYL-4 501.14

EXT GAS TEMP DEG.F EXT-1 1426.3 EXT-2 -454.00 EXT-3 -151.68 EXT-4 463.56 SEXT-1 520.47 SEXT-2 516.61

ENGINE OIL EOILT 145.21 SOILT 358.91 OILO 46.737 MANIFOLD PRESSURE = 11.531

DYNO COND. TORQUE 2.1170 RPM 592.86 CYL. BACK PRESSURE = 29.394

INDUCTION AIR IAIRT1 58.786 IAIRT2 59.554 IAIRT1 67.964 IAIRT2 54.307

ORIFICE AIR TEMP 80.408 DELTAP 1.0872 ORFP 53.301 FLOW 1473.0

CELL TEMP. = 74.134 HEATER TEMP = 80.658 COOLER TEMP = 45.579

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NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDEII REC 04/07/76 21:57:00.676 FAC SEX15 PGM C003 RDG 2974

LEANOUT 25 BLOC I & I 59 DEG HUM = RO 7/4 I OPEN MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.210 RATED HP = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	57.855	29.209	13.355	59.595	0.51954	14.346

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	71.500	5.7621	44.872	3.9829	6.3516	6.1500

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	63.347	-0.0058119	0.88064	0.00000	83.538	52.906

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	83.538	0.32003	61.025	1.4013	0.74357

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10658	0.10566	1.5907	605.94	613.98	6.3673	0.73462

WET CORRECTION FACTOR = 0.89100 EXHAUST MOLE. WT. = 25.810 EXHAUST DENSITY = 0.066829 EXHAUST FLOW RATE = 994.57

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	38113.	5.4285	10.560	5.97400	3.3323
CORRECTED CONC. TO WET BASIS			9.4976	5.3228	2.9691

EMISSION RATE	HC	NOX	CO
	1.3609	0.00064249	6.8578
EMISSION MASS/MODE	0.022681	1.0708E-05	0.11430
EMISSION MASS/RATED HP	0.00014176	5.5926E-08	0.00071436
MODE FMIS./STD. CYCLE %	7.4608	0.0044617	1.7008

CAL. FUEL AIR RATIO = 0.10460 MEAS. FUEL AIR RATIO = 0.10658 DIFF MEAS. & CAL. F/A PERCENT = -1.8554

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	287.77	302.70	282.03	256.57

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1062.9	-454.00	136.29	494.76	577.83	576.92

ENGINE CIL	EDILT	SJILT	DILP	MANIFOLD PRESSURE = 12.365
	146.32	295.91	46.873	

DYNO COND.	TORQUE	RPM	CYL. RACK PRESSURE = 29.176
	9.4041	606.84	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	57.140	57.855	107.97	53.813

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	78.713	2.0089	53.325	1586.2

CELL TEMP. = 73.005 HEATER TEMP = 79.602 COOLER TEMP = 44.574

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NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDETT REC 04/07/76 22:00:42.863 FAC SEX15 PGM C003 RDG 2975

LEANOUT 25 BTDC I & T 59 DEG HUM = 80 % 3/4 T OPEN MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.210 RATED HP = 160.00 HC RATIO = 2.1250

CCMB. AIR TEMP 57.855 PRESS 29.212 CFM 23.564 DRY FLOW 105.11 VAPOR FLOW 0.91566 PRESS TOTAL 14.346

CCMB. FUEL TEMP 71.964 PRESS 5.6915 DENSITY 44.859 TURBO FLOW 12.882 FLOW TRON 11.416 FPIP 6.1449

CCCLING AIR TEMP 64.003 UDEL-HOOD -0.042067 DEL-HOOD 0.95288 FLOW 0.00000 REL-HUM 83.476 DEW-POINT 52.886

REL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP
83.476 15.068 60.978 1.4003 1.1353

ENG. COND. F/A DRY 0.10861 F/A WET 0.10767 EQU. RATIO 1.6210 RPM-1 1199.9 RPM-2 1202.1 TORQUE 4.9088 BHP 1.1215

WET CORRECTION FACTOR = 0.87200 EXHAUST MOLE WT. = 25.689 EXHAUST DENSITY = 0.066514 EXHAUST FLOW RATE = 1765.7

MEASURED CONC. HC PPM 19324. NOX PPM 7.8338 CO DRY 12.748 CO2 DRY 6.71470 O2 DRY 0.68475
CORRECTED CONC. TO WET BASIS HC 11.117 NOX 5.8553 CO2 0.59710 O2 0.59710

EMISSION RATE HC 1.2250 NOX 0.0016460 CO 14.251
EMISSION MASS/MODE HC 0.22458 NOX 0.00030177 CO 2.6126
EMISSION MASS/RATED HP HC 0.0014036 NOX 1.9861E-06 CO 0.016329
MODE EMIS./STD. CYCLE % HC 73.876 NOX 0.12574 CO 38.878

CAL. FUEL AIR RATIO = 0.10850 MEAS. FUEL AIR RATIO = 0.10861 DIFF MEAS. & CAL. F/A PERCENT = -0.099335

CYL TEMP. DEG.F CYL-1 285.09 CYL-2 304.78 CYL-3 290.88 CYL-4 362.15

EXT GAS TEMP DEG.F EXT-1 1571.8 EXT-2 -454.00 EXT-3 185.27 EXT-4 618.43 SEXT-1 590.62 SEXT-2 597.98

ENGINE OIL EDILT 149.91 SDILT 271.62 OILP 54.597 MANIFOLD PRESSURE = 9.5270

DYNO COND. TORQUE 6.6103 RPM 1196.5 CYL. BACK PRESSURE = 29.291

INDUCTION AIR IAIRT1 57.303 IAIRT2 57.855 TAIRT1 78.005 TAIRT2 54.007

ORIFICE AIR TEMP 79.066 DELTAP 1.0494 OPEP 53.298 FLOW 1449.3

CELL TEMP. = 73.414 HEATED TEMP = 80.665 COOLER TEMP = 45.398

NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDEII REC 04/07/76 22:01:07.579 FAC SEX15 PGM C003 RDG 2976

LEANOUT 25 BTDC I & T 59 DEG HUM = 80 % 3/4 T OPEN MODE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.220 RATED HP = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 59.054 PRESS 29.220 CFM 23.984 DRY FLOW 107.03 VAPOR FLOW 0.93323 PRESS TOTAL 14.359

COMB. FUEL TEMP 72.044 PRESS 5.6880 DENSITY 44.857 TURBO FLOW 12.994 FLOW TRON 11.566 FPIP 6.1452

COOLING AIR TEMP 64.048 UDEL-HOOD -0.019927 DEL-HOOD 0.97612 FLOW 0.00000 RFL-HUM 83.034 DEW-POINT 52.936

REL-HUM 1 83.034 2 0.27603 HUMIDITY 61.035 % H2O VAPOR 1.4016 CORRECTED HP 1.2566

WAG. COND. F/A DRY 0.10807 F/A WET 0.10713 EQU. RATIO 1.6129 RPM-1 1203.2 RPM-2 1204.0 TORQUE 5.4172 BHP 1.2410

WET CORRECTION FACTOR = 0.86908 EXHAUST MOLE. WT. = 25.721 EXHAUST DENSITY = 0.066597 EXHAUST FLOW RATE = 1794.8

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	19127.	7.6988	12.819	6.6923	0.61778
CORRECTED CONC. TO WET BASIS			11.141	5.8161	0.53690

	HC	NOX	CO
EMISSION RATE	1.2325	0.0016443	14.517
EMISSION MASS/MODE	0.061623	8.2215E-05	0.72593
EMISSION MASS/RATED HP	0.00038515	5.1384E-07	0.0045364
MODE EMISS./STD. CYCLE %	20.271	0.034256	10.801

CAL. FUEL AIR RATIO = 0.10898 MEAS. FUEL AIR RATIO = 0.10807 DIFF MEAS. & CAL. F/A PERCENT = 0.84223

CYL TEMP DEG.F CYL-1 279.05 CYL-2 299.14 CYL-3 285.74 CYL-4 424.20

EXT GAS TEMP DEG.F EXT-1 991.65 EXT-2 -454.00 EXT-3 118.30 EXT-4 193.57 SEXT-1 590.23 SEXT-2 588.32

ENGINE OIL EOILT 149.44 SOILT -318.70 OILT 54.861 MANIFOLD PRESSURE = 9.5294

DYNO COND. TORQUE 4.2412 RPM 1195.9 CYL. BACK PRESSURE = 29.215

INDUCTION AIR IAIRT1 57.484 IAIRT2 58.054 TAIRT1 121.57 TAIRT2 54.278

ORIFICE AIR TEMP 79.181 DELTAP 1.0517 DRFP 53.342 FLOW 1450.7

CELL TEMP. = 73.405 HEATER TEMP = 80.456 COOLER TEMP = 47.160

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NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDE11 REC 04/07/76 22:07:22.032 FAC SEX15 PGM C003 RDG 2978

LEANOUT 25. BTDC I & I 59 DEG HUM = 80 % 3/4 I OPEN MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.220 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	59.554	29.218	13.588	60.616	0.53108	14.354

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIF
	73.183	5.7561	44.827	3.9755	6.5286	6.1731

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	64.955	-0.032104	0.92797	0.00000	79.040	53.056

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	79.040	13.317	61.329	1.4083	0.31056

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	PPM-1	RPM-2	TORQUE	BHP
	0.10770	0.10677	1.6075	608.88	611.82	2.6419	0.30629

WET CORRECTION FACTOR = 0.89860 EXHAUST MOLE. WT. = 25.742 EXHAUST DENSITY = 0.056653 EXHAUST FLOW RATE = 1015.3

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	41073.	5.1615	10.351	5.78050	3.7364
CORRECTED CONC. TO WET BASIS			9.3018	5.1943	3.3575

EMISSION RATE	HC	NOX	CO
	1.4971	0.00062364	6.8567
EMISSION MASS/MODE	0.024952	1.0394E-05	0.11428
EMISSION MASS/RATED HP	0.00015595	5.4963E-08	0.00071424
MODE EMIS./STD. CYCLE %	8.2080	0.0043309	1.7006

CAL. FUEL AIR RATIO = 0.10421 MEAS. FUEL AIR RATIO = 0.10770 DIFF MEAS. & CAL. F/A PERCENT = -3.2477

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	269.97	287.01	265.47	358.46

EXT GAS TEMP DEG.F	FXT-1	FXT-2	FXT-3	FXT-4	SEXT-1	SEXT-2
	1388.4	-454.00	159.70	632.14	597.37	595.25

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 12.794
	147.13	266.40	46.841	

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.526
	10.967	604.44	

INDUCTION AIR	IAIPT1	IAIPT2	TAIRT1	TAIPT2
	59.858	59.554	80.947	54.267

ORIFICE AIR	TEMP	DELTAP	ORIF	FLOW
	80.090	2.0642	53.301	2009.3

CELL TEMP. = 74.133 HEATER TEMP = 80.783 COOLER TEMP = 45.018

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NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDEII REC 04/07/76 22:11:21.643 FAC SEX15 PGM C003 RDG 2979

LEANOUT 25 BTDC L&T 59 DEG HUM = 80 % 1 1/2 T OPEN MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.220 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	60.240	29.213	15.182	67.700	0.59215	14.352

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	73.734	5.7402	44.813	3.9777	7.3417	6.1524

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	65.485	-0.027122	0.84439	0.00000	76.989	53.006

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	76.989	41.102	61.226	1.4060	1.0897

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10845	0.10750	1.6186	614.70	615.12	9.1759	1.0740

WET CORRECTION FACTOR = 0.90101 EXHAUST MOLE. WT. = 25.698 EXHAUST DENSITY = 0.066539 EXHAUST FLOW RATE = 1136.7

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	45614.	4.7495	10.467	5.34400	4.2908
CORRECTED CONC. TO WET BASIS			9.4312	4.8150	3.8661

EMISSION RATE	HC	NOX	CO	
	1.8614	0.00064244	7.7829	
	EMISSION MASS/MODE	0.031023	1.0707E-05	0.12972
	EMISSION MASS/RATED HP	0.00019389	6.5921E-08	0.00081072
MODE EMIS./STD. CYCLE %	10.205	0.0044614	1.9303	

CAL. FUEL AIR RATIO = 0.10563 MEAS. FUEL AIR RATIO = 0.10845 DIFF MEAS. & CAL. F/A PERCENT = -2.5968

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	259.48	278.89	258.95	396.53

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	FXT-4	SEXT-1	SEXT-2
	999.76	-454.00	176.20	644.63	569.32	566.67

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 13.147
	144.62	423.16	47.161	

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE = 28.915
	6.1134	607.92	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	59.563	60.240	53.570	54.362

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	80.646	2.0433	53.427	1998.6

CELL TEMP. = 75.181 HEATER TEMP = 79.560 COOLER TEMP = 46.790

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NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDEII REC 04/07/76 22:14:04.855 FAC SEX15 PGM C003 RDG 2980

LEANOUT 25 BTDC I & T 59 DEG HUM = 80 % 1 1/2 T OPEN MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.220 RATED HP = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 60.303 PRESS 29.233 CFM 25.297 DRY FLOW 112.79 VAPOR FLOW 0.99219 PRESS TOTAL 14.360

COMB. FUEL TEMP 73.716 PRESS 5.6811 DENSITY 44.813 TURBO FLOW 13.648 FLOW TRON 12.214 FPIP 6.1446

COOLING AIR TEMP 66.274 UDEL-HOOD -0.021310 DEL-HOOD 0.95426 FLOW 0.00000 REL-HUM 77.297 DEW-POINT 53.176

REL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP 77.297 30.189 61.578 1.4140 1.4863

ENG. COND. F/A DRY 0.10829 F/A WET 0.10735 EQU. RATIO 1.6163 RPM-1 1201.7 RPM-2 1203.2 TORQUE 6.4006 BHP 1.4645

WET CORRECTION FACTOR = 0.86538 EXHAUST MOLE. WT. = 25.707 EXHAUST DENSITY = 0.066562 EXHAUST FLOW RATE = 1892.9

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 20971. NOX PPM 7.2437 CO DRY 13.004 CO2 DRY 6.57830 O2 DRY 0.64160
CORRECTED CONC. TO WET BASIS 11.254 5.6927 0.55523

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EMISSION RATE HC 1.4251 NOX 0.0016317 CO 15.465
EMISSION MASS/MODE 0.26126 0.00029914 2.8353
EMISSION MASS/RATED HP 0.0016329 1.8696E-06 0.017721
MODE EMIS./STD. CYCLE % 85.942 0.12464 42.192

CAL. FUEL AIR RATIO = 0.11071 MEAS. FUEL AIR RATIO = 0.10829 DIFF MEAS. & CAL. F/A PERCENT = 2.2339

CYL TEMP DEG.F CYL-1 298.13 CYL-2 315.39 CYL-3 303.24 CYL-4 264.07

EXT GAS TEMP DEG.F EXT-1 942.65 EXT-2 454.00 EXT-3 459.39 EXT-4 747.86 SEXT-1 640.87 SEXT-2 639.84

ENGINE OIL EOILT 148.98 SOILT 322.16 OILP 54.577 MANIFOLD PRESSURE = 9.8609

DYNO COND. TORQUE 0.34563 RPM 1202.2 CYL. BACK PRESSURE = 29.239

INDUCTION AIR IAIRT1 59.780 IAIRT2 60.303 TAIRT1 105.57 TAIRT2 54.713

ORIFICE AIR TFMP 80.893 DELTAP 1.0644 ORFP 53.432 FLOW 1457.0

CELL TEMP. = 75.447 HEATED TEMP = 79.338 COOLER TEMP = 47.965

NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDE11 REC 04/07/76 22:14:25.836 FAC. SEX15 PGM C003 RDG 2981

LEANOUT 25 BTDC I & T 59 DEG HUM = 80 % 1 1/2 T OPEN MODE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.220 RATED HP = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	60.330	29.227	25.665	114.41	1.0057	14.357

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	73.938	5.6781	44.807	14.130	12.655	5.1419

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	66.327	-0.021864	0.87704	0.00000	77.153	53.151

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	77.153	16.442	61.535	1.4131	1.8085

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.11061	0.10965	1.6510	1202.2	1202.3	7.7841	1.7818

WET CORRECTION FACTOR = 0.87407 EXHAUST MOLE. WT. = 25.571 EXHAUST DENSITY = 0.066210 EXHAUST FLOW RATE = 1934.3

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	21260.	7.0897	12.958	6.54460	0.75371	
CORRECTED CONC. TO WET BASIS			11.327	5.7205	0.65880	

EMISSION RATE	HC	NOX	CO
	1.4763	0.0016319	15.906
	0.073817	8.1596E-05	0.79530
	0.00046135	5.0998E-07	0.0049706
MODE EMIS./STD. CYCLE %	24.282	0.033998	11.835

CAL. FUEL AIR RATIO = 0.11022 MEAS. FUEL AIR RATIO = 0.11061 DIFF MEAS. & CAL. F/A PERCENT = -0.35246

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	291.80	313.44	297.09	386.28

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1349.4	-454.00	406.67	548.05	628.25	626.74

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 9.9603
	149.14	-101.64	55.021	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.323
	8.0432	1195.4	

INDUCTION AIR	IAIPT1	IAIRT2	TAIRT1	TAIRT2
	59.843	60.330	57.350	54.706

ORIFICE AIR	TEMP	DELTA P	ORFD	FLOW
	80.822	2.0122	53.282	1983.9

CELL TEMP. = 75.642 HEATER TEMP = 79.303 COOLER TEMP = 47.702

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NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDEII RFC 04/07/76 22:18:52.611 FAC SEX15 PGM C003 RDG 2982

LEANOUT 25 BTDC I & T 59 DEG HUM = 80 % I 1/2 T OPEN MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.220 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	58.117	29.216	15.374	68.482	0.60265	14.350

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	71.322	5.7390	44.876	3.9851	7.4047	6.1758

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	63.662	-0.022694	0.92880	0.00000	83.549	53.166

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	83.549	0.27403	61.501	1.4146	0.68427

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10813	0.10718	1.6138	622.55	622.56	5.7006	0.67573

WET CORRECTION FACTOR = 0.89524 EXHAUST MOLE. WT. = 25.717 EXHAUST DENSITY = 0.066588 EXHAUST FLOW RATE = 1148.7

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	42940.	5.3135	10.714	5.43090	3.8528
CORRECTED CONC. TO WET BASIS			9.5913	4.8620	3.4492

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EMISSION RATE	HC	NOX	CO	
	1.7708	0.00072633	7.9987	
	EMISSION MASS/MODE	0.029513	1.2106E-05	0.13331
	EMISSION MASS/RATED HP	0.00018446	7.5659E-08	0.00083319
MODE EMISS./STD. CYCLE %	9.7082	0.0050440	1.9838	

CAL. FUEL AIR RATIO = 0.10664 MEAS. FUEL AIR RATIO = 0.10813 DIFF MEAS. & CAL. F/A PERCENT = -1.3707

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	248.66	273.70	249.57	498.77

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1316.2	-454.00	356.47	722.03	569.63	567.06

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 13.062
	146.14	318.32	46.945	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 28.696
	7.7768	617.46	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	57.448	58.117	52.302	54.813

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	78.192	1.0382	53.265	1442.9

CELL TEMP. = 72.622 HEATER TEMP = 79.039 COOLER TEMP = 48.443

NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDEII REC 04/07/76 22:52:43.636 FAC_SFX15 PGM_C003 RDG_2983

LEANOUT 25 BIDC I & T 100 DEG HUM = 0 % 1 1/2 T CLOS MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP = 160.00 HC RATIO = 2,1250

COMB. AIR TEMP 97.547 PRESS 29.228 CFM 11.543 DRY FLOW 47.922 VAPOR FLOW -8.5138E-05 PRESS TOTAL 14.358

COMB. FUEL TEMP 75.669 PRESS 5.8559 DENSITY 44.762 TURBO FLOW 3.9714 FLOW TRON 3.0423 FPIP 6.1962

COOLING AIR TEMP 99.179 IDEL-HOOD -0.024355 DEL-HOOD 0.91496 FLOW 0.00000 REL-HUM -0.0046485 DEW-POINT -31.592

REL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP
-0.0046485 44.898 -0.012436 -0.00028558 0.58324

ENG. COND. F/A DRY 0.063484 F/A WET 0.063485 EQU. RATIO 0.94753 RPM-1 579.66 RPM-2 582.78 TORQUE 5.0922 BHP 0.56202

WET CORRECTION FACTOR = 0.89143 EXHAUST MOLE. WT. = 28.811 EXHAUST DENSITY = 0.074599 EXHAUST FLOW RATE = 683.17

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 17697. NOX PPM 36.570 CO DRY 1.1560 CO2 DRY 10.5040 O2 DRY 4.8257
CORRECTED CONC. TO WET BASIS 1.0305 9.3635 4.3018

EMISSION RATE HC 0.43405 NOX 0.0029730 CO 0.51112
EMISSION MASS/MODE 0.0072342 4.9550E-05 0.0085186
EMISSION MASS/RATED HP 4.5214E-05 3.0969E-07 5.3241E-05
MODE EMIS./STD. CYCLE % 2.3797 0.020646 0.12676

CAL. FUEL AIR RATIO = 0.063821 MEAS. FUEL AIR RATIO = 0.063484 DIFF MEAS. & CAL. F/A PERCENT = 0.53085

CYL TEMP DEG.F CYL-1 248.48 CYL-2 283.26 CYL-3 271.18 CYL-4 418.74

EXT GAS TEMP DEG.F EXT-1 572.01 EXT-2 326.65 EXT-3 122.42 EXT-4 554.93 SFXT-1 548.88 SEXT-2 545.34

ENGINE OIL OIL1 153.72 OIL2 220.46 OIL3 45.937 MANIFOLD PRESSURE = 11.758

DYNO COND. TORQUE 5.0405 RPM 575.76 CYL. BACK PRESSURE = 29.400

INDUCTION AIR IAIRT1 99.920 IAIRT2 97.547 TAIRT1 122.19 TAIRT2 100.49

ORIFICE AIR TEMP 79.455 DELTAP 0.092209 ORFP 53.287 FLOW 329.55

CELL TEMP. = 75.323 HEATER TEMP = 129.42 COOLER TEMP = 129.46

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NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDELI REC 04/07/76 22:56:36.073 FAC SEX15 PGM C003 RDS 2984

LEANDUT 25 BTDC I.G.T 100 DEG MM = 0.8 1 1/2 T CLOS MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.220 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 97.719 PRESS 29.210 CFM 19.002 DRY FLOW 78.524 VAPOR FLOW -0.0016524 PRESS TOTAL 14.355

COMB. FUEL TEMP 74.107 PRESS 5.8047 DENSITY 44.803 TURBO FLOW 7.3586 FLOW TRON 6.0036 FPIP 6.1635

COOLING AIR TEMP 97.607 UDEL-HOOD -0.035425 DEL-HOOD 1.0539 FLOW 0.00000 REL-HUM -0.054691 DEW-POINT -32.577

RFL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP
-0.054691 43.816 -0.14711 -0.0033792 1.1992

ENG. COND. F/A DRY 0.076359 F/A WET 0.076360 EQU. RATIO 1.1397 RPM-1 1207.7 RPM-2 1209.1 TORQUE 5.0255 BHP 1.1556

WET CORRECTION FACTOR = 0.85402 EXHAUST MLE. WT. = 27.976 EXHAUST DENSITY = 0.072438 EXHAUST FLOW RATE = 1168.2

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 2319.6 NOX PPM 62.400 CO DRY 5.3013 CO2 DRY 11.3940 O2 DRY 0.14599
CORRECTED CONC. TO WET BASIS 4.5274 9.7309 0.12469

EMISSION RATE HC 0.097285 NOX 0.0086750 CO 3.8399
EMISSION MASS/MODE 0.017836 0.0015904 0.70399
EMISSION MASS/RATED HP 0.00011147 9.9401E-06 0.0043999
MODE EMIS./STD. CYCLE % 5.8670 0.66267 10.476

CAL. FUEL AIR RATIO = 0.078964 MEAS. FUEL AIR RATIO = 0.076359 DIFF. MEAS. & CAL. F/A PERCENT = 3.4121

CYL TEMP DEG.F CYL-1 273.09 CYL-2 297.95 CYL-3 287.13 CYL-4 554.22

FXT GAS TEMP DEG.F FXT-1 785.62 EXT-2 -418.20 EXT-3 21.507 EXT-4 572.46 SFXT-1 533.47 SEXT-2 531.85

ENGINE OIL OIL1 153.45 OIL2 350.70 OIL3 54.949 MANIFOLD PRESSURE = 7.7131

DYNO COND. TORQUE 10.009 RPM 1201.1 CYL. BACK PRESSURE = 29.383

INDUCTION AIR IAIRT1 98.920 IAIRT2 97.719 TAIRT1 173.86 TAIRT2 102.23

ORIFICE AIR TEMP 77.811 DELTAP 2.0050 OPEP 53.279 FLOW 1986.0

CELL TEMP. = 73.334 HEATER TEMP = 156.64 COOLER TEMP = 137.70

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NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDETT REC 04/07/76 22:56:57.406 FAC SEX15 PGM C003 ROG 2985

LEANDUT 25 BTDC I & T 100 DEG HUM = 0 % 1 1/2 T CLOS MODE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.220 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 97.650 PRESS 29.216 CFM 19.323 DRY FLOW 79.833 VAPOR FLOW -0.0016860 MASS TOTAL 14.352

COMB. FUEL TEMP 73.716 PRESS 5.8047 DENSITY 44.813 TURBO FLOW 7.4497 FLOW TRON 6.0576 FPIP 6.1671

COOLING AIR TEMP 97.495 IDEL-HOOD -0.035978 DEL-HOOD 0.92382 FLOW 0.00000 REL-HUM -0.055065 DEW-POINT -32.582

REL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP
-0.055065 14.939 -0.14783 -0.0033948 1.2754

ENG. COND. F/A DRY 0.075878 F/A WET 0.075880 EQU. RATIO 1.1325 RPM-1 1206.4 RPM-2 1207.6 TORQUE 5.3505 BHP 1.2290

WET CORRECTION FACTOR = 0.85161 EXHAUST MOLE. WT. = 28.016 EXHAUST DENSITY = 0.072541 EXHAUST FLOW RATE = 1184.0

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 2236.4 VOX PPM 63.332 CO DRY 5.2860 CO2 DRY 11.4140 O2 DRY 0.10649
CORRECTED CONC. TO WET BASIS 4.5016 9.7205 0.090699

EMISSION RATE HC 0.095061 NOX 0.0089233 CO 3.8695
EMISSION MASS/MODE 0.0047530 0.00044617 0.19348
EMISSION MASS/RATED HP 2.9707E-05 2.7885E-06 0.0012092
MODE EMIS./STD. CYCLE % 1.5635 0.18590 2.8791

CAL. FUEL AIR RATIO = 0.079018 MEAS. FUEL AIR RATIO = 0.075878 DIFF. MEAS. & CAL. F/A PERCENT = 4.1378

CYL TEMP DEG. F. CYL-1 274.23 CYL-2 297.64 CYL-3 287.03 CYL-4 414.69

EXT GAS TEMP DEG. F. EXT-1 1069.2 EXT-2 -454.00 EXT-3 -80.023 EXT-4 81.777 SEXT-1 526.73 SEXT-2 525.07

ENGINE OIL EILT 153.06 SOILT -26.756 OILP 55.109 MANIFOLD PRESSURE = 7.7213

DYND COND. TORQUE 7.7696 RPM 1210.7 CYL. BACK PRESSURE = 29.575

INDUCTION AIR IAIRT1 98.212 IAIRT2 97.650 TAIRT1 168.28 TAIRT2 103.00

ORIFICE AIR TEMP 77.360 DELTAP 1.0568 DRFP 53.201 FLOW 1456.7

CELL TEMP. = 72.880 HEATER TEMP. = 152.78 COOLER TEMP. = 139.50

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NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDETT REC 04/07/76 23:06:42.918 FAC SEX15 PGM C003 RDG 2988

LEANOUT 25 BTDC I & T 100 DEG HUM = 0 % I 1/2 T CLOS MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 97.495 PRESS 29.228 CFM 11.751 DRY FLOW 48.908 VAPOR FLOW -0.0010332 PRESS TOTAL 14.358

COMB. FUEL TEMP 73.716 PRESS 5.8626 DENSITY 44.813 TURBO FLOW 3.9794 FLOW TRON 3.1113 FPIP 5.1577

COOLING AIR TEMP 97.927 UDEL-HOOD -0.028506 DEL-HOOD 0.93074 FLOW 0.00000 REL-HUM -0.053757 DEW-POINT -32.552

REL-HUM 1 -0.053757 2 17.932 HUMIDITY -0.14359 % H2O VAPOR -0.0032972 CORRECTED HP 0.65287

ENG. COND. F/A DRY 0.063616 F/A WET 0.063617 EQU. RATIO 0.9494 RPM-1 501.56 RPM-2 601.02 TORQUE 5.4922 BHP 0.62907

WET CORRECTION FACTOR = 0.87210 EXHAUST MOLE. WT. = 28.809 EXHAUST DENSITY = 0.074593 EXHAUST FLOW RATE = 697.36

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 15942. NOX PPM 33.495 CO DRY 1.5501 CO2 DRY 10.8240 O2 DRY 3.9136
CORRECTED CONC. TO WET BASIS CO DRY 1.3518 CO2 DRY 9.4393 O2 DRY 3.4130

EMISSION RATE HC 0.39913 NOX 0.0027796 CO 0.68441
EMISSION MASS/MODE 0.0066521 4.5327E-05 0.011407
EMISSION MASS/RATED HP 4.1576E-05 2.8955E-07 7.1292E-05
MODE EMIS./STD. CYCLE % 2.1882 0.019303 0.16974

CAL. FUEL AIR RATIO = 0.066684 MEAS. FUEL AIR RATIO = 0.063615 DIFF MEAS. & CAL. F/A PERCENT = 4.8225

CYL TEMP DEG.F CYL-1 258.10 CYL-2 292.19 CYL-3 283.18 CYL-4 380.72

EXT GAS TEMP DEG.F EXT-1 1306.6 EXT-2 454.00 EXT-3 -52.210 EXT-4 504.94 SEXT-1 500.00 SEXT-2 497.58

ENGINE OIL EOILT 151.41 SOILT 404.89 OILT 46.537 MANIFOLD PRESSURE = 11.349

DYNO COND. TORQUE 1.7642 RPM 598.92 CYL. BACK PRESSURE = 29.401

INDUCTION AIR IAIRT1 99.015 IAIRT2 97.495 TAIRT1 137.08 TAIRT2 99.078

ORIFICE AIR TEMP 77.882 DELTAP 1.0679 ORFP 53.339 FLOW 1463.5

CELL TEMP. = 73.822 HEATER TEMP = 147.71 COOLER TEMP = 124.64

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NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDETT REC 04/07/76 23:14:30.876 FAC SEX15 PGM C003 RDG 2990

LEANOUT 25 BIDC I & T 100 DEG HUM = 0% 3/4 T CLOSED MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 100.49 PRESS 29.236 CFM 10.474 DRY FLOW 43.209 VAPOR FLOW -0.00028837 PRESS. TOTAL 14.359

COMB. FUEL TEMP 75.207 PRESS 5.8278 DENSITY 44.774 TURBO FLOW 3.9708 FLOW TRON 3.9784 FPIP 6.1743

COOLING AIR TEMP 100.70 DEL-HOOD -0.0044281 DEL-HOOD 0.95588 FLOW 0.00000 REL-HUM -0.015978 DEW-POINT -31.847

REL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP
-0.015978 37.264 -0.046716 -0.0010728 0.82533

ENG. COND. F/A DRY 0.092073 F/A WET 0.092073 EQU. RATIO 1.3742 RPM-1 601.44 RPM-2 603.06 TORQUE 6.9257 BHP 0.79310

WET CORRECTION FACTOR = 0.89638 EXHAUST MOLE. WT. = 26.768 EXHAUST DENSITY = 0.059308 EXHAUST FLOW RATE = 680.84

MEASURED CONC. PART PER MILLION WET PEP CENT
HC PPM 21838. NOX PPM 13.714 CO DRY 8.0488 CO2 DRY 8.0989D O2 DRY 2.7543
CORRECTED CONC. TO WET BASIS 7.2148 7.2597 2.4689

EMISSION RATE HC 0.53377 NOX 0.0011111 CO 3.5662
EMISSION MASS/MODE 0.0088961 1.8519E-05 0.059436
EMISSION MASS/RATED HP 5.5601E-05 1.1574E-07 0.00037148
MODE EMIS./STD. CYCLE % 2.9264 0.0077162 0.88447

CAL. FUEL AIR RATIO = 0.088343 MEAS. FUEL AIR RATIO = 0.092073 DIFF MEAS. & CAL. F/A PERCENT = -4.0503

CYL TEMP DEG. F. CYL-1 276.03 CYL-2 289.20 CYL-3 256.89 CYL-4 362.59

EXT GAS TEMP DEG. F. EXT-1 757.15 EXT-2 -394.19 EXT-3 -198.16 EXT-4 329.71 SEXT-1 479.18 SEXT-2 476.92

ENGINE OIL OIL1 148.64 OIL2 330.92 OIL3 46.753 MANIFOLD PRESSURE = 10.617

DYNO COND. TORQUE 1.7786 RPM 586.62 CYL. BACK PRESSURE = 29.341

INDUCTION AIR IAIRT1 102.02 IAIRT2 100.49 TAIRT1 74.999 TAIRT2 104.10

ORIFICE AIR TEMP 78.828 DELTAP 0.094009 ORFP 53.299 FLOW 334.74

CELL TEMP. = 75.296 HEATER TEMP = 132.17 COOLER TEMP = 135.61

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NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDELL REC. 04/07/76 23:17:28.668 FAC SEX15 PGM C003 RDG 2991

LEANOUT 25 BTDC I & T 100 DEG HJM = 0% 3/4 T CLOSED MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP. 99.843 PRESS 29.219 CFM 19.090 DRY FLOW 78.827 VAPOR FLOW -0.00073987 PRESS TOTAL 14.360

COMB. FUEL TEMP 72.622 PRESS 5.7837 DENSITY 44.842 TURBO FLOW 8.1903 FLOW TRON 6.7477 FPIP 6.1565

COOLING AIR TEMP 99.455 UDEL-HOOD -0.036809 DEL-HOOD 0.95896 FLOW 0.00000 REL-HUM -0.022914 DEW-POINT -31.987

PFL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP
-0.022914 52.777 -0.055701 -0.0015087 1.2029

ENG. COND. F/A DRY 0.085600 F/A WET 0.085601 EQU. RATIO 1.2776 RPM-1 1202.9 RPM-2 1203.4 TORQUE 5.0505 BHP 1.1568

WET CORRECTION FACTOR = 0.85550 EXHAUST MILE. WT. = 27.244 EXHAUST DENSITY = 0.070541 EXHAUST FLOW RATE = 1213.1

MEASURED CONC. PART PER MILLION WFT PER CENT
HC PPM 4294.2 NOX PPM 44.046 CO DRY 8.8447 CO2 DRY 9.48770 O2 DRY 0.16166
CORRECTED CONC. TO WET BASIS 7.5666 8.1168 0.13830

EMISSION RATE HC 0.18702 NOX 0.0063586 CO 6.6641
EMISSION MASS/MODE 0.034286 0.0011657 1.2217
EMISSION MASS/RATED HP 0.00021429 7.2858E-06 0.0076359
MODE EMIS./STD. CYCLE % 11.278 0.48572 18.181

CAL. FUEL AIR RATIO = 0.088690 MEAS. FUEL AIR RATIO = 0.085600 DIFF MEAS. & CAL. F/A PERCENT = 3.6099

CYL TEMP DEG. F. CYL-1 287.04 CYL-2 300.46 CYL-3 286.52 CYL-4 387.45

EXT GAS TEMP DEG. F. EXT-1 1413.1 EXT-2 -407.22 EXT-3 -425.84 EXT-4 412.17 SEXT-1 473.11 SEXT-2 472.36

ENGINE OIL FOILT 148.89 SOILT 411.59 OILP 54.969 MANIFOLD PRESSURE = 7.6805

DYNO COND. TORQUE 1.2745 RPM 1189.4 CYL. BACK PRESSURE = 29.346

INDUCTION AIR IAIRT1 101.22 IAIRT2 99.843 TAIRT1 55.175 TAIRT2 103.59

OPIFICE AIR TEMP 76.191 DELTAP 1.0315 DREF 53.267 FLOW 1440.9

CELL TEMP. = 72.702 HEATER TEMP = 112.39 COOLER TEMP = 126.34

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NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDE11 REC 04/07/76 23:17:50.146 FAC SEX15 PGM C003 R0G 2992

LEANOUT 25 BTDC I & T 100 DEG HUM = 03 3/4 T CLOSED MODE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	99.611	29.235	18.908	78.081	-0.0010687	14.356

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	72.667	5.7846	44.841	8.1267	6.6007	6.1668

COOLING AIR	TEMP	UDEL-HOOD	DEL-4000	FLOW	REL-HUM	DEW-POINT
	99.334	-0.0085795	0.94845	0.00000	-0.033639	-32.207

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	-0.033639	19.464	-0.095806	-0.0022000	1.4017

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.084536	0.084537	1.2617	1201.7	1202.9	5.8922	1.3482

WET CORRECTION FACTOR = 0.85132 EXHAUST MOLE WT. = 27.325 EXHAUST DENSITY = 0.070751 EXHAUST FLOW RATE = 1196.9

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	4404.4	44.270	8.7776	9.57740	0.14787
CORRECTED CONC. TO WET BASIS			7.4726	8.1535	0.12589

	HC	NOX	CO
EMISSION RATE	0.18925	0.0063054	6.4931
EMISSION MASS/MODE	0.0094625	0.00031527	0.32466
EMISSION MASS/RATED HP	5.9140E-05	1.9704E-06	0.0020291
MODE EMIS./STD. CYCLE %	3.1126	0.13136	4.8312

CAL. FUEL AIR RATIO = 0.088547 MEAS. FUEL AIR RATIO = 0.084536 DIFF MEAS. & CAL. F/A PERCENT = 4.7448

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	285.46	299.23	285.50	351.29

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1086.8	-454.00	-454.00	-73.821	466.24	465.17

ENGINE OIL	EOILT	SOILT	OILP	MANTFOLD PRESSURE = 7.6480
	148.90	0.77603	55.269	

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.231
	1.9298	1201.3	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	101.01	99.611	50.135	103.42

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	76.103	3.0116	53.302	2410.4

CELL TEMP. = 72.453 HEATER TEMP = 122.86 COOLER TEMP = 126.87

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NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDELL REC 04/07/76 23:20:21.198 FAC SEX15 PGM C003 RCG 2993

LEANOUT 25 BTDC I & T 100 DEG HUM = 0% 3/4 T CLOSED MODE = 7.0000 NO. SCANS = 5
ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATE HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 99.247 PRESS 29.229 CFM 10.687 DRY FLOW 44.205 VAPOR FLOW 0.00020644 PRESS TOTAL 14.355

COMB. FUEL TEMP 73.067 PRESS 5.8287 DENSITY 44.830 TURBO FLOW 3.9792 FLOW TRON 3.9544 FPIP 6.1728

COOLING AIR TEMP 98.825 UDEL-HOOD -0.018543 DEL-HOOD 0.95343 FLOW 0.00000 REL-HUM 0.011960 DEW-POINT -31.252

REL-HUM 1 0.011960 2 6.2006 HUMIDITY 0.032691 % H2O VAPOR CORRECTED HP 0.00075069 0.54922

ENG. COND. F/A DRY 0.089455 F/A WET 0.089455 EQU. RATIO 1.3352 RPM-1 603.66 RPM-2 602.58 TORQUE 4.6005 BHP 0.52877

WET CORRECTION FACTOR = 0.87224 EXHAUST MOLE. WT. = 26.957 EXHAUST DENSITY = 0.069797 EXHAUST FLOW RATE = 690.00

MEASURED CONC. PART PER MILLION WET
HC PPM 22428. NOX PPM 12.316 CO DRY 8.2649 PER CENT CO2 DRY 8.35110 O2 DRY 2.1456
CORRECTED CONC. TO WET BASIS. CO DRY 7.2090 CO 7.2841 O2 DRY 1.8715

EMISSION RATE HC 0.55557 NOX 0.0010113 CO 3.6112
EMISSION MASS/MODE 0.0092594 1.5855E-05 0.060187
EMISSION MASS/RATED HP 5.7871E-05 1.0534E-07 0.00037617
MODE EMIS./STD. CYCLE % 3.0459 0.0070228 0.89564

CAL. FUEL AIR RATIO = 0.091415 MEAS. FUEL AIR RATIO = 0.089455 DIFF. MEAS. & CAL. F/A PERCENT = 2.1911

CYL TEMP DEG.F CYL-1 267.65 CYL-2 280.17 CYL-3 261.30 CYL-4 532.80

EXT GAS TEMP DEG.F EXT-1 1836.1 EXT-2 -426.72 EXT-3 -454.00 EXT-4 292.13 SEXT-1 435.86 SEXT-2 433.45

ENGINE OIL EDILT 147.65 SDILT 56.858 OILT 46.849 MANIFOLD PRESSURE = 10.734

DYMO COND. TORQUE -0.20882 RPM 591.84 CYL. BACK PRESSURE = 29.479

INDUCTION AIR IAIRT1 99.895 IAIRT2 98.247 TAIRT1 43.892 TAIRT2 102.41

ORIFICE AIR TEMP 76.245 DELTAP 1.0315 DRFP 53.350 FLW 1440.9

CELL TEMP. = 72.916 HEATER TEMP = 151.77 COOLER TEMP = 128.68

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NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDEII REC 04/07/76 23:28:13.729 FAC SEX15 PGM C003 RDG 2995

LEANOUT 25 BTDC I & T 100 DEG HUM = 0% NEUTRAL MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 99.956 PRESS 29.229 CFM 12.415 DRY FLOW 51.319 VAPOR FLOW 0.00061316 PRESS TOTAL 14.357

COMB. FUEL TEMP 74.293 PRESS 5.7957 DENSITY 44.798 TURBO FLOW 3.9764 FLOW TRON 5.0495 FPIP 6.1719

COOLING AIR TEMP 99.654 UDEL-HOOD -0.028229 DEL-HOOD 0.94679 FLOW 0.00000 REL-HUM 0.029062 DEW-POINT -30.862

REL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP
0.029062 43.350 0.083636 0.0019206 0.39140

ENG. COND. F/A DRY 0.098394 E/A WET 0.098393 EQU. RATIO 1.4686 RPM-1 603.30 RPM-2 605.64 TORQUE 3.2753 BHP 0.37624

WET CORRECTION FACTR = 0.88611 EXHAUST MOLE. WT. = 26.332 EXHAUST DENSITY = 0.068179 EXHAUST FLOW RATE = 826.78

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 31719. NOX PPM 6.3406 CO DRY 9.8615 CO2 DRY 6.8313 CO2 DRY 2.9002
CORRECTED CONC. TO WET BASIS 8.7384 6.0533 2.5699

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EMISSION RATE HC 0.94147 NOX 0.00062383 CO 5.2451
EMISSION MASS/MODE 0.015691 1.0397E-05 0.087419
EMISSION MASS/RATED HP 9.8069E-05 6.4982E-08 0.00054637
MODE EMIS./STD. CYCLE % 5.1615 0.0043322 1.3009

CAL. FUEL AIR RATIO = 0.099216 MEAS. FUEL AIR RATIO = 0.098394 DIFF. MEAS. & CAL. F/A PERCENT = 0.83579

CYL TEMP DEG. F CYL-1 263.70 CYL-2 277.24 CYL-3 255.51 CYL-4 428.35

EXT GAS TEMP DEG. F EXT-1 1402.0 EXT-2 177.46 EXT-3 -454.00 EXT-4 271.52 SEXT-1 419.47 SEXT-2 417.50

ENGINE OIL EOILT 145.89 SOILT 309.98 OILT 47.049 MANIFOLD PRESSURE = 11.478

DYNO COND. TORQUE 0.77768 RPM 605.82 CYL. BACK PRESSURE = 29.320

INDUCTION AIR IAIRT1 101.63 IAIRT2 99.956 TAIRT1 86.419 TAIRT2 102.87

ORIFICE AIR TEMP 77.396 DELTAP 1.0245 ORFP 53.298 FLOW 1434.5

CELL TEMP. = 74.036 HEATER TEMP = 147.18 COOLER TEMP = 127.06

NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDEII REC 04/07/76 23:30:42.614 FAC SFX15 PGM C003 RDG 2996

LEANOUT 25 BTDC I & T 100 DEG HUM = 0% NEUTRAL MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP = 160.00 HC RATIO = 2.1250

COMP. AIR TEMP 102.09 PRESS 29.233 CFM 21.114 DRY FLOW 87.214 VAPOR FLOW 0.0015866 PRESS TOTAL 14.360

COMP. FUEL TEMP 74.213 PRESS 5.7438 DENSITY 44.800 TURBO FLOW 9.6108 FLOW TRON 8.1968 FPIP 6.1581

COOLING AIR TEMP 100.58 UDEL-HOOD -0.027676 DEL-HOOD 0.97446 FLOW 0.00000 REL-HUM 0.041516 DEW-POINT -30.522

REL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP
0.041516 38.128 0.12735 0.0029243 1.7355

ENG. COND. F/A DRY 0.093985 F/A WET 0.093984 EQU. PATIO 1.4028 RPM-1 1202.3 RPM-2 1203.4 TORQUE 7.2757 BHP 1.6655

WET CORRECTION FACTOR = 0.85804 EXHAUST MOLE. WT. = 26.633 EXHAUST DENSITY = 0.068958 EXHAUST FLOW RATE = 1383.6

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 8562.9 NOX PPM 24.190 CO DRY 11.391 CO2 DRY 7.9683D O2 DRY 0.24606
CORRECTED CONC. TO WET BASIS 9.7739 6.8371 0.21113

EMISSION RATE HC 0.43030 NOX 0.0039829 CO 9.8179
EMISSION MASS/MODE 0.078888 0.00073021 1.8000
EMISSION MASS/RATED HP 0.00049305 4.5638E-06 0.011250
MODE EMISS./STD. CYCLE % 25.950 0.30425 26.785

CAL. FUEL AIR RATIO = 0.098407 MEAS. FUEL AIR RATIO = 0.093985 DIFF MEAS. & CAL. F/A PERCENT = 4.7043

CYL TEMP DEG. F CYL-1 277.49 CYL-2 290.33 CYL-3 276.38 CYL-4 458.16

EXT GAS TEMP DEG. F EXT-1 1036.0 EXT-2 484.39 EXT-3 -454.00 EXT-4 265.26 SEXT-1 432.82 SEXT-2 432.33

ENGINE OIL EOILT 146.07 SOILT 188.90 OILP 55.714 MANIFOLD PRESSURE = 8.1024

DYNO COND. TORQUE 7.0711 RPM 1198.5 CYL. BACK PRESSURE = 29.368

INDUCTION AIR IAIRT1 103.44 IAIRT2 102.09 TAIRT1 72.601 TAIRT2 103.38

OPIFICE AIR TEMP 77.909 DELTAP 1.0258 ORFP 53.507 FLOW 1434.7

CELL TEMP. = 74.506 HEATER TEMP = 109.49 COOLER TEMP = 122.30

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NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDEIT REC 04/07/76 23:31:04.427 FAC SFX15 PGM C003 RDG 2997

LEANOUT 25 BTDC I & T 100 DEG HUM = 07 NEUTRAL MODE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP. 101.99 PRESS. 29.228 CFM 20.963 DRY FLOW 86.657 VAPOR FLOW 0.0010270 PRESS TOTAL 14.361

COMB. FUEL TEMP. 74.258 PRESS. 5.7405 DENSITY 44.799 TURBO FLOW 9.7652 FLOW TRON 8.3528 FPIP 6.1545

COOLING AIR TEMP. 100.61 UDEL-HOOD -0.022141 DEL-HOOD 0.91911 FLOW 0.00000 REL-HUM 0.027132 DEW-POINT -30.867

REL-HUM 1 0.027132 2 10.111 HUMIDITY 0.082961 % H2O VAPOR CORRECTED HP 0.0019051 1.1923

ENG. COND. F/A DRY 0.096389 F/A WET 0.096388 EQU. RATIO 1.4386 RPM-1 1201.9 RPM-2 1203.0 TORQUE 5.0005 BHP 1.1444

WET CORRECTION FACTOR = 0.86672 EXHAUST MOL. WT. = 26.467 EXHAUST DENSITY = 0.068529 EXHAUST FLOW RATE = 1386.4

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	8400.8	24.214	11.385	8.01140	0.23156
CORRECTED CONC. TO WET BASIS			9.8574	6.9437	0.20070

EMISSION RATE	HC	NOX	CO
	0.41813	0.0039950	9.9320
EMISSION MASS/MODE	0.020907	0.00019975	0.49660
EMISSION MASS/RATED HP	0.00013067	1.2484E-06	0.0031037
MODE EMIS./STD. CYCLE %	6.8772	0.083229	7.3898

CAL. FUEL AIR RATIO = 0.098149 MEAS. FUEL AIR RATIO = 0.096389 DIFF MEAS. & CAL. F/A PERCENT = 1.8259

CYL TEMP DEG.F CYL-1 277.42 CYL-2 289.76 CYL-3 276.91 CYL-4 385.98

EXT GAS TEMP DEG.F EXT-1 1132.6 EXT-2 476.30 EXT-3 -454.00 EXT-4 -288.56 SEXT-1 428.70 SEXT-2 428.12

ENGINE OIL EQILT 145.91 SOILT 9.8598 OILP 55.770 MANIFOLD PRESSURE = 8.1228

DYNO COND. TORQUE 2.7579 RPM 1210.6 CYL. BACK PRESSURE = 29.238

INDUCTION AIR IAIRT1 103.37 IAIRT2 101.99 TAIRT1 73.660 TAIRT2 103.01

ORIFICE AIR TEMP 77.900 DELTAP 1.9567 ORFP 53.285 FLOW 1963.1

CELL TEMP. = 74.639 HEATER TEMP = 115.45 COOLER TEMP = 122.69

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NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDEII REC 04/07/76 23:34:07.754 FAC SEX15 PGM C003 RDG 2998

LEANOUT 25 BTDC I & T 100 DEG HUM = 0% NEUTRAL MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CEM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	101.94	29.225	12.368	49.704	0.0030512	14.355

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	74.710	5.8002	44.787	3.9754	4.8455	6.1590

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	101.40	-0.026845	0.92880	0.00000	0.14068	-28.042

REL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP
	0.14068	28.103	0.42971	0.0098675 0.31372

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.097486	0.097480	1.4550	589.08	588.84	2.6836	0.30100

WET CORRECTION FACTOR = 0.89005 EXHAUST MOLE. WT. = 26.393 EXHAUST DENSITY = 0.068337 EXHAUST FLOW RATE = 798.29

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	31658.	5.5255	9.5927	6.79650	3.1769	
CORRECTED CONC. TO WET BASIS			8.5380	6.0492	2.8276	

EMISSION RATE	HC	NOX	CO
	0.90728	0.00052491	4.9483
EMISSION MASS/MODE	0.015121	8.7485E-06	0.082471
EMISSION MASS/RATED HP	9.4509E-05	5.4678E-08	0.00051544
MODE EMIS./STD. CYCLE %	4.9741	0.0036452	1.2272

CAL. FUEL AIR RATIO = 0.097463 MEAS. FUEL AIR RATIO = 0.097486 DIFF MEAS. & CAL. F/A PERCENT = -0.023050

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	276.17	287.29	268.91	366.14

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1359.4	364.21	-454.00	249.48	434.97	433.71

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 11.794
	146.96	155.02	46.461	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.177
	4.0252	575.10	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	103.67	101.94	48.940	104.76

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	78.253	2.9718	45.730	2390.3

CELL TEMP. = 75.402 HEATER TEMP. = 146.52 COOLER TEMP. = 127.95

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NASA-LEWIS PRELIMINARY DATA 04/07/76 CARDETT REC 04/07/76 23:37:33.250 FAC SEX15 PGM C003 RDG 2999

LEANOUT 25 BTDC I & T 100 DEG HJM = 0% 3/4 T OPEN MODE = 1.0000 NO. SCANS = 4

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	99.871	29.222	14.555	60.004	0.0020853	14.354

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	72.099	5.7591	44.856	3.9785	6.2959	6.1552

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	98.868	-0.022141	0.92229	0.00000	0.084731	-29.598

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	0.084731	44.029	0.24327	0.0055864	0.51435

ENG. COND.	E/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10494	0.10494	1.5563	596.68	597.21	5.1984	0.59060

WET CORRECTION FACTOR = 0.89777 EXHAUST WGT. = 25.911 EXHAUST DENSITY = 0.067089 EXHAUST FLOW RATE = 988.28

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	39701.	4.3654	10.739	5.68680	3.5861	
CORRECTED CONC. TO WET BASIS						
			9.6412	5.1055	3.2195	

EMISSION RATE	HC	NOX	CO
	1.4086	0.00051339	6.9175
	0.023476	8.5566E-06	0.11529
	0.00014673	5.3479E-08	0.00072057
EMISSION MASS/MODE			
	0.00014673	5.3479E-08	0.00072057
EMISSION MASS/RATED HP			
	0.00014673	5.3479E-08	0.00072057
MODE EMIS./STD. CYCLE %	7.7224	0.0035652	1.7156

CAL. FUEL AIR RATIO = 0.10520 MEAS. FUEL AIR RATIO = 0.10494 DIFF MEAS. & CAL. F/A PERCENT = 0.24991

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	269.65	284.48	266.67	338.82

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	892.54	486.88	-454.00	293.57	434.32	433.37

ENGINE OIL	EDILT	SOILT	DILP	MANIFOLD PRESSURE = 12.575
	145.66	426.89	46.795	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.193
	9.1359	596.83	

INDUCTION AIR	IAIRT1	IAIPT2	TAIRT1	TAIRT2
	101.50	99.871	155.89	104.24

ORIFICE AIR	TEMP	DELTA P	ORFD	FLOW
	75.841	3.7457	53.264	2682.7

CFLT TEMP. = 72.600 HEATER TEMP = 148.49 COOLER TEMP = 129.13

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NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDELL REC 04/07/76 23:43:05.375 FAC SEX15 PGM C003 P06 3001

LEANOUT 25 BTDC I & T 100 DEG HUM = 0% 3/4 T OPEN MODE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATE) HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 101.41 PRESS 29.225 CFM 23.237 DRY FLOW 95.814 VAPOR FLOW 0.0015856 PRESS TOTAL 14.358

COMB. FUEL TEMP 71.946 PRESS 5.7162 DENSITY 44.860 TURBO FLOW 11.152 FLOW TRON 9.6580 FPIP 6.1503

COOLING AIR TEMP 99.326 UDEL-HOOD -0.0099633 DEL-HOOD 0.95149 FLOW 0.00000 REL-HUM 0.038536 DEW-POINT -30.612

REL-HUM 1 0.038536 2 15.428 HUMIDITY 0.11584 % H2O VAPOR 0.0026602 CORRECTED HP 0.97546

ENG. COND. F/A DRY 0.10080 F/A WET 0.10080 FOU. RATIO 1.5045 RPM-1 1207.2 RPM-2 1206.1 TORQUE 4.0754 BHP 0.93675

WET CORRECTION FACTOR = 0.86423 EXHAUST MOLE. WT. = 26.173 EXHAUST DENSITY = 0.067769 EXHAUST FLOW RATE = 1556.4

MEASURED CONC. PART PER MILLION WET PER CENT
HC RPM 13901. NOX PPM 12.083 CO DRY 12.555 CO2 DRY 7.13210 O2 DRY 0.35882
CORRECTED CONC. TO WET BASIS 10.850 6.1638 0.31010

EMISSION RATE HC 0.77671 NOX 0.0022379 CO 12.260
EMISSION MASS/MODE 0.038836 0.00011189 0.61298
EMISSION MASS/RATED HP 0.00024272 6.9934E-07 0.0038311
MODE EMISS./STD. CYCLE % 12.775 0.046622 9.1218

CAL. FUEL AIR RATIO = 0.10529 MEAS. FUEL AIR RATIO = 0.10080 DIFF MEAS. & CAL. F/A PERCENT = 4.4563

CYL TEMP DEG.F CYL-1 281.81 CYL-2 297.68 CYL-3 286.50 CYL-4 396.77

EXT GAS TEMP DEG.F EXT-1 1283.2 EXT-2 678.26 EXT-3 -454.00 EXT-4 -227.72 SEXT-1 461.35 SEXT-2 461.31

ENGINE OIL EOILT 147.33 SOILT 120.66 OILP 55.329 MANIFOLD PRESSURE = 8.7117

DYNO COND. TORQUE 7.7264 RPM 1207.4 CYL. BACK PRESSURE = 29.232

INDUCTION AIR IAIRT1 102.72 IAIRT2 101.41 TAIRT1 70.067 TAIRT2 104.30

ORIFICE AIR TEMP 77.077 DELTAP 2.9807 ORFP 53.504 FLOW 2395.3

CELL TEMP. = 72.738 HEATER TEMP. = 141.15 COOLER TEMP = 128.91

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NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDEII REC 04/07/75 23:43:42.698 FAC SEX15 PGM C003 RCG 3002

LEANOUT 25 BTDC 1.6 T 100 DEG HUM = 0% 3/4 T OPEN MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 101.47 PRESS 29.228 CFM 14.471 DRY FLOW 59.548 VAPOR FLOW 0.0013806 PRESS TOTAL 14.359

COMB. FUEL TEMP 72.667 PRESS 5.7618 DENSITY 44.841 TURBO FLOW 7.6263 FLOW TRON 6.3306 FPIP 6.1632

COOLING AIR TEMP 100.24 UDEL-HOOD -0.014668 DEL-HOOD 1.0619 FLOW 0.00000 REL-HUM 0.053891 DEW-POINT -30.247

REL-HUM 1 2 HUMIDITY 0.16229 % H2O VAPOR 0.0037268 CORRECTED HP 0.79075

ENG. COND. F/A DRY 0.10631 E/A WET 0.10631 EQU. RATIO 1.5867 RPM-1 604.74 RPM-2 607.44 TORQUE 6.5923 BHP 0.75907

WET CORRECTION FACTOR = 0.89066 EXHAUST MOLE. WT. = 25.827 EXHAUST DENSITY = 0.066871 EXHAUST FLOW RATE = 985.17

MEASURED CONC. PART PER MILLION WET HC PPM 37405. NOX PPM 4.8815 CO DRY 11.248 PFR CFNT CO2 DRY 5.87610 O2 DRY 2.8930
CORRECTED CONC. TO WET BASIS CO DRY 10.918 PFR CFNT 5.2337 O2 DRY 2.5767

EMISSION RATE HC 1.3230 NOX 0.00057228 CO 7.1653
EMISSION MASS/MODE 0.022049 9.5380E-06 0.11942
EMISSION MASS/RATED HP 0.00013781 5.9613E-08 0.00074639
MODE EMISS./STD. CYCLE % 7.2530 0.0039742 1.7771

CAL. FUEL AIR RATIO = 0.10780 MEAS. FUEL AIR RATIO = 0.10631 DIFF MEAS. & CAL. F/A PERCENT = 1.3964

CYL TEMP DEG.F CYL-1 289.12 CYL-2 305.10 CYL-3 289.94 CYL-4 378.43

EXT GAS TEMP DEG.F FXT-1 1280.1 EXT-2 548.68 EXT-3 -424.55 EXT-4 223.89 SEXT-1 484.97 SEXT-2 484.53

ENGINE OIL EOILT 151.79 SOILT 389.94 OILP 46.477 MANIFOLD PRESSURE = 12.304

DYNO COND. TORQUE 8.7129 RPM 609.84 CYL. BACK PRESSURE = 29.161

INDUCTION AIR IAIRT1 103.16 IAIRT2 101.47 TAIRT1 57.681 TAIRT2 105.46

ORIFICE AIR TEMP 77.201 DELTAP 2.0177 DRFP 53.311 FLW 1993.1

GFL TEMP. = 73.147 HEATER TEMP. = 153.95 COOLER TEMP. = 132.98

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MASA-LEWIS PRELIMINARY DATA 04/07/76 CADDEII REC 04/07/76 23:48:29.540 FAC SFX15 PGM C003 RDG 3004

LEANOUT 25 BTDC I & T 100 DEG HUM = 0% 3/4 T OPEN MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 103.85 PRESS 29.216 CFM 22.204 DRY FLOW 91.258 VAPOR FLOW 0.0026058 PRESS TOTAL 14.364

COMP. FUEL TEMP 73.600 PRESS 5.7231 DENSITY 44.816 TURBO FLOW 10.699 FLOW TRON 9.3219 FPIP 6.1527

COOLING AIR TEMP 101.70 UDEL-HOOD -0.014668 DEL-HOOD 0.95675 FLOW 0.00000 REL-HUM 0.051852 DEW-POINT -29.947

REL-HUM 1 0.061852 2 25.715 HUMIDITY 0.19988 % H2O VAPOR CORRECTED HP 0.0045899 1.4713

ENG. COND. F/A DRY 0.10215 F/A WET 0.10215 EQU. RATIO 1.5246 RPM-1 1202.1 RPM-2 1203.8 TORQUE 6.1589 BHP 1.4097

WET CORRECTION FACTOR = 0.86903 EXHAUST MOL. WT. = 26.087 EXHAUST DENSITY = 0.067544 EXHAUST FLOW RATE = 1489.1

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 13559. NOX PPM 12.222 CO DRY 12.532 CO2 DRY 7.17590 O2 DRY 0.33469
CORRECTED CONC. TO WET BASIS 10.891 6.2361 0.29086

EMISSION RATE HC 0.72488 NOX 0.0021659 CO 11.775
EMISSION MASS/MODE 0.13289 0.00039707 2.1587
EMISSION MASS/RATED HP 0.00083059 2.4817E-06 0.013492
MODE EMIS./STD. CYCLE % 43.715 0.16545 32.123

CAL. FUEL AIR RATIO = 0.10498 MEAS. FUEL AIR RATIO = 0.10215 DIFF. MEAS. & CAL. F/A PERCENT = 2.7762

CYL TEMP DEG.F CYL-1 290.12 CYL-2 302.84 CYL-3 294.49 CYL-4 471.33

EXT GAS TEMP DEG.F EXT-1 1350.8 EXT-2 757.74 EXT-3 454.00 EXT-4 217.06 SEXT-1 482.27 SEXT-2 481.96

ENGINE OIL EOILT 150.31 SOILT 328.14 OILP 54.837 MANIFOLD PRESSURE = 8.6001

DYMO COND. TORQUE 3.1395 RPM 1203.2 CYL. BACK PRESSURE = 29.291

INDUCTION AIR IAIRT1 105.28 IAIRT2 103.85 TAIRT1 45.102 TAIRT2 106.37

ORIFICE AIR TFMP 78.086 DELTAP 1.0524 OREP 53.320 FLOW 1452.7

CELL TEMP. = 74.231 HEATER TEMP = 141.22 COOLER TEMP = 128.44

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NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDEII REC 04/07/76 23:52:07.565 FAC SEX15 PGM C003 RDG 3005

LEANOUT 25 BIDC I & T 100 DEG HUM = 0% 1 1/2 T OPEN MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 103.31 PRESS 29.239 CFM 15.306 DRY FLOW 62.907 VAPOR FLOW 0.0032853 PRESS TOTAL 14.354

COMB. FUEL TEMP 74.267 PRESS 5.7465 DENSITY 44.799 TURBO FLOW 3.9764 FLOW TRON 7.0297 FPIP 6.1632

COOLING AIR TEMP 101.94 JDEL-HOOD -0.024631 DEL-HOOD 0.91966 FLJW 0.00000 REL-HUM 0.11487 DEW-POINT -28.587

REL-HUM 1 0.11487 2 27.915 HUMIDITY 0.35557 % H2O VAPOR 0.0083946 CORRECTED HP 0.28222

ENG. COND. F/A DRY 0.11175 F/A WET 0.11174 EQU. RATIO 1.5579 RPM-1 606.54 RPM-2 608.34 TORQUE 2.3419 BHP 0.27046

WET CORRECTION FACTOR = 0.90965 EXHAUST MOLE. WT. = 25.506 EXHAUST DENSITY = 0.066041 EXHAUST FLOW RATE = 1059.0

MEASURED CONC. PART PER MILLION WET HC PPM 42738 NOX PPM 4.6335 CO DRY 11.209 PER CENT CO2 DRY 5.3739D O2 DRY 3.5517
CORRECTED CONC. TO WET BASIS CO DRY 10.197 4.8884 3.2308

EMISSION RATE HC 1.6249 NOX 0.00058393 CO 7.8399
EMISSION MASS/MODE 0.027081 9.7322E-06 0.13066
EMISSION MASS/RATED HP 0.00016926 6.0826E-08 0.00081665
MODE. EMISS./STD. CYCLE % 8.9083 0.0040551 1.9444

CAL. FUEL AIR RATIO = 0.10879 MEAS. FUEL AIR RATIO = 0.11175 DIFF MEAS. & CAL. F/A PERCENT = -2.6504

CYL TEMP DEG.F CYL-1 272.43 CYL-2 290.24 CYL-3 272.55 CYL-4 455.96

EXT GAS TEMP DEG.F EXT-1 645.05 EXT-2 504.54 EXT-3 454.00 EXT-4 294.05 SEXT-1 455.66 SEXT-2 454.55

ENGINE OIL EJILT 148.78 SJILT 245.49 QILT 46.725 MANIFOLD PRESSURE = 13.138

DYNO COND. TORQUE -0.66967 RPM 502.82 CYL. BACK PRESSURE = 29.071

INDUCTION AIR IAIRT1 104.98 IAIRT2 103.31 IAIRT3 77.300 TAIRT2 105.97

ORIFICE AIR TEMP 79.322 DELTAP 3.0106 DRFP 54.133 FLOW 2402.8

CELL TEMP. = 74.506 HEATER TEMP. = 147.27 COOLER TEMP. = 135.26

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NASA-Lewis PRELIMINARY DATA 04/07/76 CADDELL REC 04/07/76 23:54:35.981 FAC SEX15 PGM C003 RDG 3006

LEANOUT 25 BTDC I & T 100 DEG HUM = 02 1 1/2 T OPEN MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	104.11	29.226	24.145	99.657	0.0049062	14.359

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	74.551	5.7027	44.791	11.818	10.318	6.1455

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLJW	REL-HUM	DEW-POINT
	101.76	-0.019650	0.95038	0.00000	0.10578	-28.762

REL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP
	0.10578	42.174	0.34462	0.0079136 0.81099

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10354	0.10353	1.5453	1202.9	1203.9	3.3920	0.77692

WET CORRECTION FACTOR = 0.86583 EXHAUST MOLE. WT. = 25.999 EXHAUST DENSITY = 0.067317 EXHAUST FLOW RATE = 1633.8

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
CORRECTED CONC. TO WET BASIS	17346.	8.7119	12.988	6.74580	0.50387
			11.245	5.8407	0.43626

EMISSION RATE	HC	NOX	CO
	1.0174	0.0016937	13.338
	0.18653	0.00031052	2.4454
	0.0011658	1.9407E-06	0.015284
EMISSION MASS/MODE			
0.0011658			
EMISSION MASS/RATED HP			
0.0011658			
MODE EMIS./STD. CYCLE %	61.358	0.12938	36.389

CAL. FUEL AIR RATIO = 0.10863 MEAS. FUEL AIR RATIO = 0.10354 DIFF MEAS. & CAL. F/A PERCENT = 4.9220

CYL TEMP. DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	288.06	307.69	295.82	419.23

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1168.2	808.41	-252.70	371.54	499.56	499.43

ENGINE OIL	EJILT	SJILT	OILP	MANIFOLD PRESSURE = 9.0863
	150.64	438.13	54.557	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.415
	0.52565	1195.0	

INDUCT. AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	105.40	104.11	47.726	103.73

ORIFICE AIR	TEMP	DELTA P	DRFP	FLOW
	79.349	1.0523	53.358	1450.9

CELL TEMP. = 75.269 HEATER TEMP. = 158.86 COOLER TEMP. = 131.92

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NASA-LEWIS PRELIMINARY DATA 04/07/76 CADDEII REC 04/07/76.23:54:57.399 FAC SEX15 PGM C003 RDG 3007

LEANOUT 25 BTDC I & T 100 DEG HUM = 0% I 1/2 T OPEN MODE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 104.43 PRESS 29.230 CFM 24.498 DRY FLOW 101.02 VAPOR FLOW 0.0049894 PRESS TOTAL 14.362

COMB. FUEL TEMP 74.684 PRESS 5.6931 DENSITY 44.788 TURBO FLOW 12.453 FLOW TRON 10.903 FPIP 6.1434

COOLING AIR TEMP 101.99 UDEL-HOOD -0.018266 DEL-HOOD 0.91164 FLOW 0.00000 REL-HUM 0.10516 DEW-POINT -28.752

REL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP
0.10516 9.8950 0.34572 0.0079389 1.8107

ENG. COND. F/A DRY 0.10793 F/A WET 0.10792 EQU. RATIO 1.6109 RPM-1 1202.2 RPM-2 1202.3 TORQUE 7.5757 BHP 1.7341

WET CORRECTION FACTOR = 0.88006 EXHAUST MLE. WT. = 25.729 EXHAUST DENSITY = 0.066619 EXHAUST FLOW RATE = 1680.2

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 16903. NOX PPM 8.2958 CO DRY 12.963 CO2 DRY 6.77700 O2 DRY 0.47253
CORRECTED CONC. TO WET BASIS 11.408 5.9642 0.41585

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EMISSION RATE HC 1.0196 NOX 0.0016587 CO 13.916
EMISSION MASS/MODE 0.050980 8.2933E-05 0.69580
EMISSION MASS/RATED HP 0.00031862 5.1833E-07 0.0043487
MODE EMIS./SID. CYCLE % 16.770 0.034555 10.354

CAL. FUEL AIR RATIO = 0.10822 MEAS. FUEL AIR RATIO = 0.10793 DIFF. MEAS. & CAL. F/A PERCENT = 0.27310

CYL TEMP DEG.F CYL-1 287.00 CYL-2 305.60 CYL-3 294.14 CYL-4 355.89

FXT GAS TEMP DEG.F EXT-1 868.22 EXT-2 794.01 EXT-3 299.65 EXT-4 56.833 SFXT-1 494.50 SEXT-2 494.06

ENGINE OIL EOILT 150.45 SOILT 137.35 OILT 54.833 MANIFOLD PRESSURE = 9.1971

DYND COND. TORQUE 4.0252 RPM 1195.1 CYL. BACK PRESSURE = 29.161

INDUCTION AIR IAIRT1 135.75 IAIRT2 104.43 TAIRT1 73.177 TAIRT2 104.39

ORIFICE AIR TEMP 79.384 DELTAP 2.0027 DRP 53.333 FLOW 1982.1

CELL TEMP. = 74.995 HEATER TEMP. = 158.21 COOLER TEMP. = 133.71

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NASA-LEWIS PRELIMINARY DATA 04/08/76 CADDE11 REC 04/07/76 23:58:43.813 FAC SEX15 PGM C003 RDG 3008

LEANOUT 25 BTDC I & T 100 DEG HUM = 0% 1 1/2 T OPEN MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.240 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	101.29	29.232	16.028	65.993	0.0042573	14.362

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	71.794	5.7471	44.864	3.9822	6.9067	6.1590

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	99.567	-0.014945	0.96876	0.00000	0.15079	-27.852

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	0.15079	9.1329	0.45159	0.010370	0.46007

ENG. COND.	E/A DRY	E/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10466	0.10465	1.5621	602.46	602.94	3.8534	0.44168

WET CORRECTION FACTOR = 0.89615 EXHAUST MOLE. WT. = 25.928 EXHAUST DENSITY = 0.067135 EXHAUST FLOW RATE = 1085.9

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	45140.	4.3694	10.801	5.15520	4.1851
CORRECTED CONC. TO WET BASIS			9.6796	4.6288	3.7505

EMISSION RATE	HC	NOX	CO
	1.7598	0.00056464	7.6313
EMISSION MASS/MODE	0.029330	9.4107E-06	0.12719
EMISSION MASS/RATED HP	0.00018331	5.8817E-08	0.00079492
MODE EMIS./STD. CYCLE %	9.6480	0.0039211	1.8927

CAL. FUEL AIR RATIO = 0.10731 MEAS. FUEL AIR RATIO = 0.10466 DIFF MEAS. & CAL. F/A PERCENT = 2.5343

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	274.18	295.73	275.00	404.10

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1076.9	687.55	-206.97	285.37	491.90	490.79

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 13.153
	151.58	315.55	46.277	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.475
	10.722	601.80	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	102.98	101.29	65.575	105.22

DRIFICE AIR	TEMP	DELTA P	ORF ²	FLOW
	76.820	2.9575	53.264	2388.0

CELL TEMP. = 72.355 HEATER TEMP. = 134.09 COOLER TEMP. = 130.49

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LEANOUT 25 BTDC TO CL APP 100 DEG HUM=0% MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.00C DEG. BAROMETRIC PRESSURE = 29.330 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP 102.30	PRESS 29.343	CFM 218.65	DRY FLOW 941.74	VAPOR FLOW 0.26880	PRESS TOTAL 14.884
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COMB. FUEL	TEMP 71.919	PRESS 5.3678	DENSITY 44.861	TURBO FLOW 82.815	FLOW TRON 80.561	FPIP 6.0201
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COOLING AIR	TEMP 103.50	DEL-HOOD 3.2170	DEL-HOOD 3.9864	FLOW 10353.	REL-HUM 0.67068	DEW-POINT -13.405
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REL-HUM	1 0.67068	2 15.400	HUMIDITY 1.9980	% H2O VAPOR 0.045880	CORRECTED HP 157.47
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ENG. COND.	F/A DRY 0.085545	F/A WET 0.085521	FQU. RATIO 1.2768	RPM-1 2704.4	RPM-2 2705.9	TORQUE 285.21	BHP 146.86
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WET CORRECTION FACTOR = 0.85685 EXHAUST MOLE. WT. = 27.248 EXHAUST DENSITY = 0.070552 EXHAUST FLOW RATE = 14493.

MEASURED CONC.	PART PER MILLION WET		PER CENT	
	HC PPM 1695.0	NOX PPM 240.80	CO DRY 8.9566	O2 DRY 0.099790
CORRECTED CONC. TO WET BASIS		CO DRY 7.6830	PER CENT 8.5484	O2 DRY 0.085505

EMISSION RATE	HC 0.88194	NOX 0.41533	CO 80.845
EMISSION MASS/MODE	0.0044097	0.0020766	0.40422
EMISSION MASS/RATED HP	2.7561E-05	1.2979E-05	0.0025264
MODE EMIS./STD. CYCLE %	1.4506	0.86527	6.0152

CAL. FUEL AIR RATIO = 0.085921 MEAS. FUEL AIR RATIO = 0.085545 DIFF MEAS. & CAL. F/A PERCENT = 1.6081

CYL TEMP DEG.F	CYL-1 425.17	CYL-2 446.87	CYL-3 426.40	CYL-4 440.31
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EXT GAS TEMP DEG.F	EXT-1 681.38	EXT-2 -454.00	EXT-3 -349.24	EXT-4 43.082	SEXT-1 1279.8	SEXT-2 1274.1
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ENGINE OIL	EQILT 153.43	SOILT 179.39	OILP 73.803	MANIFOLD PRESSURE = 28.345
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DYND COND.	TORQUE 274.13	RPM 2651.5	CYL. BACK PRESSURE = 29.449
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INDUCTION AIR	TAIRT1 102.40	TAIRT2 102.30	TAIRT1 -15.085	TAIRT2 99.783
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ORIFICE AIR	TEMP 82.345	DELTA P 1.1039	DRFP 52.358	FLOW 1481.4
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CELL TEMP. = 76.059 HEATER TEMP = 118.88 COOLER TEMP = 120.02

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NASA-LEWIS PRELIMINARY DATA 04/08/76 CADDETT REC 04/08/76 11:19:40.324 FAC SEX15 PGM C003 RDG 3013

LEANOUT 25 BTDC TO CL APP 100 DEG HUM=0% MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.330 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 102.80 PRESS 29.332 CFM 112.67 DRY FLOW 473.75 VAPOR FLOW 0.14196 PRESS TOTAL 14.526

COMB. FUEL TEMP 72.142 PRESS 5.5361 DENSITY 44.855 TURBO FLOW 42.344 FLOW TRON 41.236 FPIP 6.1185

COOLING AIR TEMP 102.90 UDEL-HOOD 3.1434 DEL-HOOD 3.8641 FLOW 10221. REL-HUM 0.67682 DEW-POINT -13.020

REL-HUM 1 2 HUMIDITY 2.0975 % H2O VAPOR CORRECTED HP 69.746

ENG. COND. F/A DRY 0.087041 F/A WET 0.087015 EQU. RATIO 1.2991 RPM-1 2355.8 RPM-2 2357.9 TORQUE 147.51 BHP 66.169

WET CORRECTION FACTOR = 0.85646 EXHAUST MOLE. WT. = 27.135 EXHAUST DENSITY = 0.070260 EXHAUST FLOW RATE = 7331.8

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 1774.2 NOX PPM 217.30 CO DRY 9.7484 CO2 DRY 9.6159 O2 DRY 0.15790
CORRECTED CONC. TO WET BASIS 8.3491 8.2356 0.13523

EMISSION RATE HC 0.46698 NOX 0.18959 CO 44.441
EMISSION MASS/MODE 0.046698 0.018959 4.4441
EMISSION MASS/RATED HP 0.00029186 0.00011850 0.027776
MODE EMIS./STD. CYCLE % 15.361 7.8997 66.133

CAL. FUEL AIR RATIO = 0.088649 MEAS. FUEL AIR RATIO = 0.087041 DIFF MEAS. & CAL. F/A PERCENT = 1.8465

CYL TEMP DEG.F CYL-1 345.92 CYL-2 361.86 CYL-3 357.94 CYL-4 353.96

EXT GAS TEMP DEG.F EXT-1 1364.5 EXT-2 -454.00 EXT-3 -191.33 EXT-4 556.26 SEXT-1 1071.8 SEXT-2 1072.1

ENGINE OIL EOILT 183.09 SOILT 254.18 OILP 70.647 MANIFOLD PRESSURE = 18.928

DYAC COND. TORQUE 141.26 RPM 2303.9 CYL. BACK PRESSURE = 29.471

INDUCTION AIR IAIRT1 103.27 IAIRT2 102.80 TAIRT1 130.09 TAIRT2 99.585

ORIFICE AIR TEMP 83.058 DELTAP 1.0977 DPFP 52.402 FLOW 1476.4

CELL TEMP. = 77.387 HEATER TEMP = 107.35 COOLER TEMP = 109.92

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NASA-LEWIS PRELIMINARY DATA 04/08/76 CADDETT REC 04/08/76 11:30:53.025 FAC SEX15 PGM C003 RDG 3014

LEANOUT 25 BTDC TO CL APP 100 DEG HUM=0% MCDE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.330 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP 102.83	PRESS 29.333	CFM 217.99	DRY FLOW 937.62	VAPOR FLOW 0.30918	PRESS TOTAL 14.891
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COMB. FUEL	TEMP 66.292	PRESS 5.3744	DENSITY 45.010	TURBO FLOW 82.663	FLOW TRON 80.306	FPIP 6.0486
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COOLING AIR	TEMP 102.75	UDEL-HOOD 3.1833	DEL-HOOD 3.8444	FLOW 10292.	REL-HUM 0.76291	DEW-POINT -11.070
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REL-HUM	1 0.76291	2 9.1789	HUMIDITY 2.3083	% H2O VAPOR CORRECTED HP 0.053005	155.36
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ENG. COND.	F/A DRY 0.085648	F/A WET 0.085620	EQU. RATIO 1.2783	RPM-1 2686.9	RPM-2 2689.6	TORQUE 282.91	BHP 144.74
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WET CORRECTION FACTOR = 0.85381 EXHAUST MOLE. WT. = 27.240 EXHAUST DENSITY = 0.070532 EXHAUST FLOW RATE = 14436.

MEASURED CONC.	PART PER MILLION WET HC PPM 1691.1	NOX PPM 172.54	CO DRY 9.2303	PER CENT CO2 DRY 10.003	O2 DRY 0.06146
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CORRECTED CONC. TO WET BASIS	HC 7.8809	NOX 8.5406	CO 0.052207
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EMISSION RATE	HC 0.87644	NOX 0.29641	CO 82.599
EMISSION MASS/MODE	0.0043822	0.0014821	0.41300
EMISSION MASS/RATED HP	2.7389E-05	9.2628E-06	0.0025812
MODE EMIS./STD. CYCLE %	1.4415	0.51752	6.1458

CAL. FUEL AIR RATIO = 0.087471 MEAS. FUEL AIR RATIO = 0.085648 DIFF MEAS. & CAL. F/A PERCENT = 2.1281

CYL TEMP DEG.F	CYL-1 416.23	CYL-2 440.44	CYL-3 416.78	CYL-4 427.15
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EXT GAS TEMP DEG.F	EXT-1 911.85	EXT-2 -454.00	EXT-3 400.46	EXT-4 791.92	SEXT-1 1303.4	SEXT-2 1300.3
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ENGINE OIL	EJILT 188.50	SOILT 185.90	OILP 73.027	MANIFOLD PRESSURE = 28.292
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DYNO COMD.	TORQUE 278.73	RPM 2598.9	CYL. BACK PRESSURE = 29.489
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INDUCTION AIR	IAIRT1 103.00	IAIRT2 102.83	TAIRT1 124.38	TAIRT2 100.75
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ORIFICE AIR	TEMP 81.201	DELTA P 2.9451	ORFP 53.853	FLOW 2373.5
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CELL TEMP. = 76.386 HEATER TEMP = 166.59 COOLER TEMP = 124.42

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NASA-LEWIS PRELIMINARY DATA 04/08/76 CADDEII REC 04/08/76 11:40:16.195 FAC SEX15 PGM C003 RDG 3016

LEANOUT 25 BTDC TO CL APP 100 DEG HUM=0% MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.330 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 103.35 PRESS 29.329 CFM 112.50 DRY FLOW 472.71 VAPOR FLOW 0.15405 PRESS TOTAL 14.528

COMB. FUEL TEMP 70.779 PRESS 5.5325 DENSITY 44.891 TURBO FLOW 46.301 FLOW TRON 42.430 FPIP 6.0162

COOLING AIR TEMP 103.42 UNEL-HOOD 3.0504 DEL-HOOD 3.8641 FLOW 10051. REL-HUM 0.72442 DEW-POINT -11.665

REL-HUM 1 0.72442 2 35.450 HUMIDITY 2.2811 % H2O VAPOR 0.052382 CORRECTED HP 70.278

FNG. COND. F/A DRY 0.089759 F/A WET 0.089730 EQU. RATIO 1.3397 RPM-1 2356.0 RPM-2 2357.2 TORQUE 148.54 BHP 66.634

WET CORRECTION FACTOR = 0.86561 EXHAUST MOLE WT. = 26.934 EXHAUST DENSITY = 0.069740 EXHAUST FLOW RATE = 7388.8

MEASURED CONC. PART PER MILLION WET HC PPM 2075.2 NOX PPM 168.34 CO DRY 9.8314 PER CENT CO2 DRY 9.6689 O2 DRY 0.16112
CORRECTED CONC. TO WET BASIS CO DRY 8.4842 PER CENT CO2 DRY 8.3695 O2 DRY 0.13946

EMISSION RATE HC 0.55047 NOX 0.14801 CO 45.512
EMISSION MASS/MODE 0.055047 NOX 0.014801 CO 4.5512
EMISSION MASS/RATED HP 0.00034404 NOX 9.2509E-05 CO 0.028445
MODE EMIS./STD. CYCLE % 18.107 NOX 6.1672 CO 67.725

CAL. FUEL AIR RATIO = 0.088780 MEAS. FUEL AIR RATIO = 0.089759 DIFF MEAS. & CAL. F/A PERCENT = -1.0908

CYL TEMP DEG.F CYL-1 354.64 CYL-2 371.68 CYL-3 373.39 CYL-4 373.15

EXT GAS TEMP DEG.F EXT-1 1310.1 EXT-2 454.00 EXT-3 459.03 EXT-4 781.61 SEXT-1 1118.4 SEXT-2 1118.2

ENGINE OIL EOILT 188.21 SOILT 230.14 OILT 69.827 MANIFOLD PRESSURE = 18.999

OYAO COND. TORQUE 135.99 RPM 2305.4 CYL. BACK PRESSURE = 29.446

INDUCTION AIR IAIRT1 103.83 IAIRT2 103.35 TAIRT1 57.404 TAIRT2 100.04

ORIFICE AIR TEMP 82.293 DELTAP 2.0449 ORFP 52.246 FLOW 1996.3

CELL TEMP. = 78.351 HEATER TEMP = 115.67 COOLER TEMP = 121.09

826

NASA-LEWIS PRELIMINARY DATA 04/08/76 CADDELL REC 04/08/76 12:29:56.906 FAC SEX15 PGM C003 RDG 3017

LEANOUT 25 BTDC TO CL APP 100 DEG. HUM=0% MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.330 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 99.438 PRESS 29.327 CFM 216.85 DRY FLOW 938.14 VAPOR FLOW 0.35257 PRESS TOTAL 14.884

COMB. FUEL TEMP 66.677 PRESS 5.3903 DENSITY 45.000 TURBO FLOW 79.458 FLOW TRON 76.751 FPIP 6.0414

COOLING AIR TEMP 100.30 UDEL-HOOD 3.2998 DEL-HOOD 3.9928 FLOW 10499. RFL-HUM 0.96208 DEW-POINT -8.9150

KEL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP
0.96208 0.26003 2.6307 0.060410 155.63

ENG. COND. F/A DRY 0.081811 F/A WET 0.081781 EQU. RATIO 1.2211 RPM-1 2700.7 RPM-2 2703.1 TORQUE 282.87 BHP 145.46

WET CORRECTION FACTOR = 0.85239 EXHAUST MOLE. WT. = 27.537 EXHAUST DENSITY = 0.071299 EXHAUST FLOW RATE = 14239.

MEASURED CONC. PART PER MILLION WFT PER CENT
HC PPM 1485.3 NOX PPM 283.44 CO DRY 7.9237 CO2 DRY 10.038 O2 DRY 0.047705
CORRECTED CONC. TO WET BASIS 6.7542 8.5565 0.040663

EMISSION RATE HC 0.75929 NOX 0.48027 CO 69.022
EMISSION MASS/MODE 0.0037964 0.0024014 0.34911
EMISSION MASS/RATED HP 2.3728E-05 1.5009E-05 0.0021819
MODE EMIS./STD. CYCLE % 1.2488 1.0006 5.1951

CAL. FUEL AIR RATIO = 0.085122 MEAS. FUEL AIR RATIO = 0.081811 DIFF MEAS. & CAL. F/A PERCENT = 4.0472

CYL TEMP DEG. F CYL-1 435.99 CYL-2 457.19 CYL-3 435.46 CYL-4 443.85

EXT GAS TEMP DEG. F EXT-1 1746.0 EXT-2 -454.00 EXT-3 561.59 EXT-4 1075.0 SEXT-1 1326.8 SEXT-2 1322.8

ENGINE OIL FOILT 184.86 SOILT 147.93 OILP 72.803 MANIFOLD PRESSURE = 28.407

DYNO COND. TORQUE 283.84 RPM 2641.5 CYL. BACK PRESSURE = 29.493

INDUCTION AIR IAIRT1 99.498 IAIRT2 99.438 TAIRT1 86.585 TAIRT2 97.237

ORIFICE AIR TEMP 79.261 DELTAP 2.0140 ORFP 52.448 FLOW 1987.6

CELL TEMP. = 76.050 HEATER TEMP. = 128.83 COOLER TEMP. = 122.38

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NASA-LEWIS PRELIMINARY DATA 04/08/76 CADDEII REC 04/08/76 12:41:54.024 FAC SEX15 PGM C003 RDG 3019

LEANOUT 25 BIDC TO CL APP 100 DEG. HUMIDITY = 0.84304 MCDF = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.330 RATED HP = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 100.79 PRESS 29.346 CFM 110.56 DRY FLOW 466.67 VAPOR FLOW 0.16405 PRESS. TOTAL 14.523

COMB. FUEL TEMP 71.394 PRESS 5.5589 DENSITY 44.875 TURBO. FLOW 50.599 FLOW TRON 39.607 FPIP 6.1233

COOLING AIR TEMP 100.99 UDEL-HOOD 3.2306 DEL-HOOD 3.9955 FLOW 10377.0 REL-HUM 0.84304 DEW-POINT -10.430

REL-HUM 1 0.84304 2 12.495 HUMIDITY 2.4607 % H2O VAPOR CORRECTED HP 0.056506 67.985

ENG. COND. F/A DRY 0.084872 F/A WET 0.084842 EQU. RATIO 1.2667 RPM-1 2349.5 RPM-2 2351.8 TORQUE 144.47 BHP 64.630

WET CORRECTION FACTOR = 0.85804 EXHAUST MOLE. WT. = 27.299 EXHAUST DENSITY = 0.070685 EXHAUST FLOW RATE = 7164.8

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 1957.5 NOX PPM 231.90 CO DRY 8.7518 CO2 DRY 9.4570 O2 DRY 0.14599
CORRECTED CONC. TO WET BASIS 7.5095 8.1145 0.12527

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EMISSION RATE HC 0.50350 NOX 0.19772 CO 39.061
EMISSION MASS/MODE 0.050350 0.019772 3.9061
EMISSION MASS/RATED HP 0.00031468 0.00012358 0.024413
MODE EMISS./STD. CYCLE % 16.562 8.2384 58.127

CAL. FUEL AIR RATIO = 0.087353 MEAS. FUEL AIR RATIO = 0.084872 DIFF MEAS. & CAL. F/A PERCENT = 2.9235

CYL TEMP DEG.F CYL-1 350.09 CYL-2 365.62 CYL-3 364.19 CYL-4 360.82

EXT GAS TEMP DEG.F EXT-1 1618.4 EXT-2 1454.00 EXT-3 1480.38 EXT-4 985.48 SEXT-1 1112.7 SEXT-2 1112.2

ENGINE OIL EOILT 187.91 SOILT 201.77 OILP 70.375 MANIFOLD PRESSURE = 18.850

DYNO COND. TORQUE 150.05 RPM 2305.1 CYL. BACK PRESSURE = 29.393

INDUCTION AIR TAIRT1 101.20 TAIRT2 100.79 TAIRT1 137.59 TAIRT2 97.286

ORIFICE AIR TEMP 81.527 DELTAP 3.9597 ORFP 52.693 FLOW 2743.7

CELL TEMP. = 78.766 HEATER TEMP = 106.69 COOLER TEMP = 111.27

NASA-Lewis PRELIMINARY DATA 04/08/76 CADDEII REC 04/08/76 12:47:06.530 FAC SEX15 PGM C003 RDG 3020

LEANOUT 25 BTDC TO CL APP 100 DEG. HUM=C MCDE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.340 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 100.96 PRESS 29.311 CEM 216.93 DRY FLOW 938.67 VAPOR FLOW 0.36104 PRESS TOTAL 14.892

COMP. FUEL TEMP 69.011 PRESS 5.3855 DENSITY 44.238 TURBO FLOW 78.924 FLOW TRON 76.961 FPIP 6.0654

COOLING AIR TEMP 101.32 UDEL-HOOD 3.3712 DEL-HOOD 4.0371 FLOW 10623. PEL-HUM 0.94116 DEW-POINT -8.5199

REL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP
0.94116 7.1627 2.6924 0.061826 157.54

ENG. COND. F/A DRY 0.081989 F/A WET 0.081957 EQU. RATIO 1.2237 RPM-1 2693.5 RPM-2 2695.5 TORQUE 286.50 BHP 146.93

WFT CORRECTION FACTOR = 0.85476 EXHAUST MOLE. WT. = 27.523 EXHAUST DENSITY = 0.071263 EXHAUST FLOW RATE = 14256.

MEASURED CONC. PART PER MILLION WET PER CFNT
HC PPM 1476.3 NOX PPM 347.91 CO DRY 7.8974 CO2 DRY 9.9341 O2 DRY 0.11007
CORRECTED CONC. TO WET BASIS CO DRY 6.7504 CO2 DRY 8.4912 O2 DRY 0.094084

EMISSION RATE HC 0.75563 NOX 0.59026 CO 69.870
EMISSION MASS/MODE 0.0037781 0.0029513 0.34935
EMISSION MASS/RATED HP 2.3613E-05 1.8446E-05 0.0021834
MODE EMIS./STD. CYCLE % 1.2428 1.2297 5.1987

CAL. FUEL AIR RATIO = 0.084976 MFAS. FUEL AIR RATIO = 0.081989 DIFF MEAS. & CAL. F/A PERCENT = 3.6437

CYL TEMP. DEG. F CYL-1 407.59 CYL-2 432.00 CYL-3 421.64 CYL-4 426.16

EXT GAS TEMP DEG. F EXT-1 1501.8 EXT-2 -454.00 EXT-3 778.92 EXT-4 1144.8 SEXT-1 1301.1 SEXT-2 1297.8

ENGINE OIL EOILT 188.05 SOILT 199.03 OILP 73.199 MANIFOLD PRESSURE = 28.413

DYNO COND. TORQUE 287.78 RPM 2615.7 CYL. RACK PRESSURE = 29.502

INDUCTION AIR IAIRT1 101.06 IAIRT2 100.96 TAIRT1 63.474 TAIRT2 97.420

ORIFICE AIR TEMP 81.342 DELTAP 2.9468 DRFP 52.690 FLOW 2373.9

CELL TEMP. = 77.750 HEATER TEMP = 101.31 COOLER TEMP = 109.63

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NASA-LEWIS PRELIMINARY DATA 04/08/76 CADDEII REC 04/08/76 13:04:17.564 FAC SEX15 PGM C003 RDG 3023

LEANDUT 25 BTDC TO CL APP 100 DEG. HUM=0% MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.340 RATED HP = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 99.938 PRESS 29.332 CEM 111.31 DRY FLOW 471.10 VAPOR FLOW 0.15135 PRESS TOTAL 14.530

COMB. FUEL TEMP 71.081 PRESS 5.5493 DENSITY 44.883 TURBO FLOW 42.689 FLOW TRON 40.675 FPIP 6.0432

COOLING AIR TEMP 100.07 DEL-HOOD 2.8813 DEL-HOOD 3.5303 FLOW 9735.3 REL-HUM 0.79087 DEW-POINT -11.895

REL-HUM 1 0.79097 2 4.0924 HUMIDITY 2.2488 % H2O VAPOR CORRECTED HP 69.106

ENG. COND. F/A DRY 0.086340 F/A WET 0.086312 EQU. RATIO 1.2887 RPM-1 2359.9 RPM-2 2361.7 TORQUE 146.38 BHP 65.774

WET CORRECTION FACTOR = 0.86367 EXHAUST MJLE. WT. = 27.188 EXHAUST DENSITY = 0.070396 EXHAUST FLOW RATE = 7272.1

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 1961.1 NOX PPM 235.20 CO DRY 8.6501 CO2 DRY 9.5926 O2 DRY 0.10487
CORRECTED CONC. TO WET BASIS 7.4794 8.2848 0.090573

EMISSION RATE HC 0.51198 NOX 0.20354 CO 39.488
EMISSION MASS/MODE 0.051198 0.020354 3.9488
EMISSION MASS/RATED HP 0.00031999 0.0012721 0.024680
MODE EMIS./STD. CYCLE % 16.841 8.4808 58.762

CAL. FUEL AIR RATIO = 0.087126 MEAS. FUEL AIR RATIO = 0.086340 DIFF MEAS. & CAL. F/A PERCENT = 0.91077

CYL TEMP DEG.F CYL-1 366.38 CYL-2 381.19 CYL-3 382.25 CYL-4 385.44

FXT GAS TEMP DEG.F FXT-1 841.29 FXT-2 -454.00 FXT-3 591.30 FXT-4 964.41 SEXT-1 1147.9 SEXT-2 1147.5

ENGINE OIL EOILT 188.17 SOILT 265.00 OILT 70.187 MANIFOLD PRESSURE = 19.049

DYND COMP. TORQUE 151.30 RPM 2338.5 CYL. BACK PRESSURE = 29.405

INDUCTION AIR IAIRT1 100.27 IAIRT2 99.938 TAIRT1 92.936 TAIRT2 96.077

ORIFICE AIR TEMP 81.712 DELTAP 2.0718 DRFP 52.785 FLOW 2009.7

CELL TEMP = 79.737 HEATER TEMP = 109.53 COOLER TEMP = 105.89

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LEANOUT 25 BTDC TO CL APP LOODEG. HUM=0% MCDE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.350 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 99.533 PRESS 29.368 CFM 215.22 DRY FLOW 934.27 VAPOR FLOW 0.11643 PRESS TOTAL 14.898

COMP. FUEL TEMP 67.420 PRESS 5.4032 DENSITY 44.980 TURBO FLOW 75.222 FLOW TRON 73.387 FPIP 6.0168

COOLING AIR TEMP 100.08 UDEL-HOOD 3.0953 DEL-HOOD 3.6886 FLOW 10133. REL-HUM 0.31853 DEW-POINT -23.741

REL-HUM 1 0.31853 2 0.25603 HUMIDITY 0.87237 % H2O VAPOR CORRECTED HP 0.020033 155.21

ENG. COND. F/A DRY 0.078550 F/A WET 0.078540 EQU. RATIO 1.1724 RPM-1 2689.2 RPM-2 2692.0 TORQUE 283.89 BHP 145.37

WET CORRECTION FACTOR = 0.85132 EXHAUST MOLE. WT. = 27.797 EXHAUST DENSITY = 0.071974 EXHAUST FLOW RATE = 14002.

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	1274.5	457.97	6.7689	10.560	0.082588	
CORRECTED CONC. TO WET BASIS			5.7625	8.9897	0.070309	

EMISSION RATE	HC	NOX	CO
	0.64067	0.76308	58.579
EMISSION MASS/MODE	0.0032033	0.0038154	0.29289
EMISSION MASS/RATED HP	2.0021E-05	2.3846E-05	0.0018306
MODE EMISS./STD. CYCLE %	1.0537	1.5897	4.3585

CAL. FUEL AIR RATIO = 0.082134 MEAS. FUEL AIR RATIO = 0.078550 DIFF. MEAS. & CAL. F/A PERCENT = 4.5626

CYL TEMP DEG.F CYL-1 443.19 CYL-2 464.02 CYL-3 446.99 CYL-4 457.79

EXT GAS TEMP DEG.F EXT-1 1211.4 EXT-2 207.94 EXT-3 1002.4 EXT-4 1187.5 SEXT-1 1336.3 SEXT-2 1333.0

ENGINE OIL FOILT 188.57 SOILT 208.36 OILP 72.135 MANIFOLD PRESSURE = 28.530

DYNO COND. TORQUE 292.90 RPM 2634.9 CYL. BACK PRESSURE = 29.428

INDUCTION AIR TAIRT1 99.576 TAIRT2 99.533 TAIRT1 111.04 TAIRT2 96.074

ORIFICE AIR TEMP 81.351 DELTAP 4.0332 ORFP 53.747 FLOW 2769.4

CELL TEMP. = 77.838 HEATER TEMP = 102.73 COOLER TEMP = 104.31

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NASA-LEWIS PRELIMINARY DATA 04/08/76 CADDELI REC. 04/08/76 13:26:30.851 FAC SEX15 PGM C003 RDG 3026

LEANOUT 25 BIDC TO CL APP 100DEG. HUM=0% MCDE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.350 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 99.809 PRESS 29.343 CEM 109.54 DRY FLOW 463.99 VAPOR FLOW 0.065872 PRESS TOTAL 14.534

COMP. FUEL TEMP 71.269 PRESS 5.5571 DENSITY 44.878 TURBO FLOW 40.591 FLOW TRON 38.500 FPIP 6.0708

COOLING AIR TEMP 100.08 UDEL-HOOD 2.9453 DEL-HOOD 3.7166 FLOW 9856.0 REL-HUM 0.35107 DEW-POINT -22.791

REL-HUM 1 0.35107 2 13.893 HUMIDITY 0.99379 % H2O VAPOR 0.022821 CORRECTED HP 67.966

ENG. COND. F/A DRY 0.082976 F/A WET 0.082964 EQU. RATIO 1.2384 RPM-1 2352.4 RPM-2 2353.8 TORQUE 144.47 BHP 64.709

WET CORRECTION FACTOR = 0.86063 EXHAUST MOLE. WT. = 27.446 EXHAUST DENSITY = 0.071063 EXHAUST FLOW RATE = 7071.9

MEASURED CONC. PART PER MILLION WFT
HC PPM 1823.1 NOX PPM 362.02 CO DRY 7.6565 PER CENT CO2 DRY 10.106 O2 DRY 0.13141
CORRECTED CONC. TO WET BASIS CO DRY 6.5894 CO2 DRY 8.6979 O2 DRY 0.11310

EMISSION RATE HC 0.46284 NOX 0.30466 CO 33.831
EMISSION MASS/MODE 0.046284 0.030466 3.3831
EMISSION MASS/RATED HP 0.00028928 0.00019041 0.021145
MODE EMIS./STD. CYCLE % 15.225 12.694 50.344

CAL. FUEL AIR RATIO = 0.084405 MEAS. FUEL AIR RATIO = 0.082976 DIFF. MEAS. & CAL. F/A PERCENT = 1.7227

CYL TEMP DEG. F. CYL-1 359.74 CYL-2 375.78 CYL-3 373.93 CYL-4 375.52

EXT GAS TEMP DEG. F. EXT-1 1873.2 EXT-2 -454.00 EXT-3 648.14 EXT-4 913.52 SEXT-1 1134.3 SEXT-2 1134.1

ENGINE CIL EDILT 187.72 SDILT 243.69 OILT 69.959 MANIFOLD PRESSURE = 18.825

DYNO COND. TORQUE 134.62 RPM 2288.3 CYL. BACK PRESSURE = 29.424

INDUCTION AIR IAIRT1 100.24 IAIRT2 99.809 TAIRT1 81.397 TAIRT2 95.938

ORIFICE AIR TEMP 81.941 DELTAP 0.10641 ORFP 52.687 FLOW 366.98

CELL TEMP. = 79.605 HEATER TEMP. = 103.85 COOLER TEMP. = 103.81

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NASA-LEWIS PRELIMINARY DATA 04/08/76 CADDEII REC 04/08/76 13:31:28.050 FAC SEX15 PGM C003 RDG 3027

LEANOUT 25 BIDC TO CL APP 100DEG. HUM=0% MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.350 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 98.618 PRESS 29.361 CFM 216.66 DRY FLOW 938.35 VAPOR FLOW 0.18441 PRESS TOTAL 14.888

COMB. FUEL TEMP 56.292 PRESS 5.3990 DENSITY 45.010 TURBO FLOW 76.214 FLOW TRON 73.891 FPIP 5.9931

COOLING AIR TEMP 98.618 WDEL-HOOD 3.1124 DEL-HOOD 3.8389 FLOW 10164. REL-HUM 0.51598 DEW-POINT -18.851

REL-HUM 1 0.51598 2 49.955 HUMIDITY 1.3757 % H2O VAPOR 0.031591 CORRECTED HP 156.34

ENG. COND. F/A DRY 0.078746 F/A WET 0.078730 EQU. RATIO 1.1753 RPM-1 2695.5 RPM-2 2697.8 TORQUE 285.44 BHP 146.49

WET CORRECTION FACTOR = 0.85336 EXHAUST MOLE. WT. = 27.781 EXHAUST DENSITY = 0.071933 EXHAUST FLOW RATE = 14074.

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 1280.2 NOX PPM 507.29 CO DRY 6.6597 CO2 DRY 10.592 O2 DRY 0.092089
CORRECTED CONC. TO WET BASIS CO DRY 5.6831 CO2 DRY 9.0391 O2 DRY 0.078585

EMISSION RATE HC 0.64687 NOX 0.84965 CO 58.071
EMISSION MASS/MODE HC 0.0032344 NOX 0.0042483 CO 0.29036
EMISSION MASS/RATED HP HC 2.0215E-05 NOX 2.6552E-05 CO 0.0018147
MODE EMIS./STD. CYCLE ? HC 1.0639 NOX 1.7701 CO 4.3208

CAL. FUEL AIR RATIO = 0.081865 MEAS. FUEL AIR RATIO = 0.078746 DIFF MEAS. & CAL. F/A PERCENT = 3.9615

CYL TEMP DEG.F CYL-1 418.24 CYL-2 438.94 CYL-3 430.09 CYL-4 432.75

EXT GAS TEMP DEG.F EXT-1 1426.6 EXT-2 -399.45 EXT-3 859.05 EXT-4 1091.1 SEXT-1 1322.0 SEXT-2 1319.3

ENGINE OIL EOILT 188.20 SOILT 172.56 OILT 72.755 MANIFOLD PRESSURE = 28.411

DYNO COND. TORQUE 291.60 RPM 2621.8 CYL. BACK PRESSURE = 29.490

INDUCTION AIR IAIRT1 98.756 IAIRT2 98.618 TAIRT1 70.567 TAIRT2 96.906

ORIFICE AIR TEMP 79.640 DFLTAP 2.9973 ORFP 53.164 FLOW 2397.0

CELL TEMP. = 76.041 HEATER TEMP = 114.85 COOLER TEMP = 106.60

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NASA-LEWIS PRELIMINARY DATA 04/08/76 CARDELL REC 04/08/76 13:43:30.490 FAC SEX15 PGM C003 RDG 3031

LEANOUT 25 BIDC TO CL APP 100DEG. HUM=0%... MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.350 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	98.989	29.363	109.11	462.16	0.10535	14.534

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	70.484	5.5629	44.899	39.792	38.350	6.0570

COOLING AIR	TEMP	WDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	100.67	3.0803	3.7213	10106.	0.57774	-17.156

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	0.57774	54.571	1.5957	0.036643	67.752

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.082980	0.082961	1.2385	2351.9	2353.7	144.16	64.557

WET CORRECTION FACTOR = 0.85972 EXHAUST MOLE. WT. = 27.445 EXHAUST DENSITY = 0.071062 EXHAUST FLOW RATE = 7044.6

MEASURED CONC.	PART PER MILLION WET	PER CENT		
	HC PPM	CO DRY	CO2 DRY	O2 DRY
	1826.2	7.7731	10.056	0.15134
CORRECTED CONC. TO WET BASIS	NOX PPM	CO		
	348.57	6.6827	8.6449	0.13011

EMISSION RATE	HC	NOX	CO
EMISSION MASS/MODE	0.46185	0.29221	34.178
EMISSION MASS/RATED HP	0.046185	0.029221	3.4178
MODE EMIS./STD. CYCLE %	0.00028865	0.00018263	0.021361
	15.192	12.176	50.860

CAL. FUEL AIR RATIO = 0.084608 MEAS. FUEL AIR RATIO = 0.082980 DIFF MEAS. & CAL. F/A PERCENT = 1.9621

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	362.51	376.43	375.61	377.85

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1601.1	-454.00	621.33	821.64	1130.5	1130.3

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE =
	188.08	55.379	70.299	18.779

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE =
	145.99	2297.2	29.393

INDUCTION A/P	IAIRT1	IAIRT2	IAIRT1	TAIRT2
	99.352	98.989	120.94	95.890

ORIFICE A/P	TEMP	DELTA P	ORFP	FLOW
	81.412	2.0216	53.088	1987.2

CELL TEMP. = 78.766 HEATER TEMP. = 110.47 COOLER TEMP. = 112.41

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NASA-LEWIS PRELIMINARY DATA 04/08/76 CADDEII REC 04/08/76 13:47:34.323 FAC SEX15 PGM C003 RDG 3032

LEANOUT 25 BIDC TO CL APP 100 DEG. HUM=0% MCDF = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAPOMETRIC PRESSURE = 29.350 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	101.33	29.364	215.79	934.03	0.25733	14.895

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	68.556	5.4278	44.950	72.181	69.982	6.0195

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	101.51	3.0474	3.6895	10045.	0.66680	-13.950

REL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP
	0.66680	1.8162	1.9286	0.044286 156.33

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.074925	0.074904	1.1183	2691.4	2693.7	285.05	146.08

WET CORRECTION FACTOR = 0.85109 EXHAUST MOLE. WT. = 28.096 EXHAUST DENSITY = 0.072746 EXHAUST FLOW RATE = 13805.

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1122.5	789.48	5.2334	11.335	0.091789
CORRECTED CONC. TO WET BASIS			4.4541	9.6468	0.078121

	HC	NOX	CO
EMISSION RATE	0.55632	1.2970	44.641
EMISSION MASS/MODE	0.0027816	0.0064848	0.22321
EMISSION MASS/RATED HP	1.7385E-05	4.0530E-05	0.0013950
MODE EMISS./STD. CYCLE	0.91500	2.7020	3.3215

CAL. FUEL AIR RATIO = 0.078435 MEAS. FUEL AIR RATIO = 0.074925 DIFF MEAS. & CAL. F/A PERCENT = 4.6853

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	436.34	455.31	447.43	454.36

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	955.62	-351.27	946.74	1274.9	1355.6	1353.5

ENGINE OIL	FQILT	SPILT	OILP	MANIFOLD PRESSURE = 28.260
	188.30	205.63	72.975	

DYMO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.492
	292.09	2627.7	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	101.46	101.33	74.362	97.431

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	81.985	2.9931	53.082	2390.3

CELL TEMP. = 78.952 HEATER TEMP. = 150.75 COOLER TEMP. = 122.86

ORIGINAL PAGE IS
OF POOR QUALITY

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NASA-LEWIS PRELIMINARY DATA 04/08/76 CADDEII REC 04/08/76 13:57:04.485 FAC SEX15 PGM C003 RDG 3034

LEANOUT 25 BTDC TO CL APP 100 DEG. HUM=0% MCDE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.350 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR TEMP 98.022 PRESS 29.347 CFM 109.19 DRY FLOW 462.51 VAPOR FLOW 0.12246 PRESS TOTAL 14.534

COMP. FUEL TEMP 69.163 PRESS 5.5821 DENSITY 44.934 TURBO FLOW 37.100 FLOW TRON 36.058 FPIP 6.0888

COOLING AIR TEMP 98.920 UDEL-HOOD 2.9500 DEL-HOOD 3.7387 FLOW 9864.9 PEL-HUM 0.69095 DEW-POINT -14.946

REL-HUM 1 0.69095 2 32.797 HUMIDITY 1.8535 % H2O VAPOR CORRECTED HP 0.042562 67.980

ENG. COND. F/A DRY 0.077960 F/A WET 0.077939 EQU. RATIO 1.1636 RPM-1 2352.3 RPM-2 2354.1 TORQUE 144.77 BHP 64.842

WET CORRECTION FACTOR = 0.85585 EXHAUST MOLE. WT. = 27.845 EXHAUST DENSITY = 0.072098 EXHAUST FLOW RATE = 6916.9

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 1559.6 NOX PPM 610.18 CO DRY 6.0582 CO2 DRY 10.902 O2 DRY 0.14079
CORRECTED CONC. TO WET BASIS CO DRY 5.1849 CO2 DRY 9.3305 O2 DRY 0.12050

EMISSION RATE HC 0.38726 NOX 0.50225 CO 26.037
EMISSION MASS/MODE HC 0.038726 NOX 0.050225 CO 2.6037
EMISSION MASS/PATED HP HC 0.00024204 NOX 0.00031390 CO 0.016273
MODE EMISS./STD. CYCLE HC 12.739 NOX 20.927 CO 38.746

CAL. FUEL AIR RATIO = 0.080409 MEAS. FUEL AIR RATIO = 0.077960 DIFF MEAS. & CAL. F/A PERCENT = 3.1409

CYL TEMP DEG.F CYL-1 376.43 CYL-2 385.57 CYL-3 388.49 CYL-4 390.95

EXT GAS TEMP DEG.F EXT-1 1600.0 EXT-2 -454.00 EXT-3 839.71 EXT-4 1028.9 SEXT-1 1168.2 SEXT-2 1168.1

ENGINE OIL OIL1 187.00 OIL2 223.98 OIL3 69.771 MANIFOLD PRESSURE = 18.869

DYND COND. TORQUE 136.58 RPM 2269.6 CYL. BACK PRESSURE = 29.386

INDUCTION AIR IAIRT1 99.411 IAIRT2 99.022 IAIRT3 152.05 IAIRT4 95.805

CRIFICE AIR TEMP 79.914 DELTAP 2.0765 ORFP 53.047 FLOW 2015.2

CELL TEMP. = 17.077 HEATER TEMP = 131.81 COOLER TEMP = 114.75

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NASA-LEWIS PRELIMINARY DATA 04/08/76 CADDEII REC 04/08/76 14:04:20.725 FAC SEX15 PGM C003 RDG 3035

LEANOUT 25 BTDC TO CL APP 100 DEG. HUM=0% MODE = 3.0000 NG. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.350 RATED HP. = 160.00 HC RATIO = 2.1250

CCMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS. TOTAL
	99.550	29.339	215.18	933.72	0.28813	14.890

CCMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRCN	FPIP
	67.796	5.4272	44.270	72.646	70.411	6.0954

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	100.15	3.1650	3.8204	10260.	0.78767	-12.150

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	0.78767	25.293	2.1500	0.049602	154.66

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	PPM-2	TORQUE	BHP
	0.075409	0.075386	1.1255	2693.2	2695.2	282.03	144.62

WET CORRECTION FACTOR = 0.85378 EXHAUST MOLE WT. = 28.055 EXHAUST DENSITY = 0.072642 EXHAUST FLOW RATE = 13827.

MEASURED CONC.	PART PER MILLION WET	PER CENT
	HC PPM	CO DRY
	1154.6	5.2475
	NOX PPM	CO2 DRY
	768.74	11.219
	CO DRY	O2 DRY
	4.4802	0.10967
	CO2 DRY	O2 DRY
	9.5788	0.093635

EMISSION RATE	HC	NOX	CO
	0.57314	1.2649	44.974
EMISSION MASS/MODE	0.0028657	0.0063244	0.22487
EMISSION MASS/RATED HP	1.7911E-05	3.9528E-05	0.0014054
MODE EMIS./STD. CYCLE %	0.94266	2.5352	3.3463

CALL FUEL AIR RATIO = 0.078513 MEAS. FUEL AIR RATIO = 0.075409 DIFF MEAS. & CAL. F/A PERCENT = 4.1171

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	441.79	458.62	450.62	460.99

EXT GAS TEMP DEG.F	FXT-1	EXT-2	EXT-3	FXT-4	SEXT-1	SEXT-2
	1255.8	-298.25	1025.7	1223.2	1360.4	1358.8

ENGINE OIL	ERTLT	SOILT	OILT	MANIFOLD PRESSURE = 28.385
	138.18	307.89	72.675	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.483
	292.35	2588.5	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	99.645	99.550	156.42	95.845

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	80.936	0.046905	53.095	188.18

CELL TEMP. = 77.953 HEATER TEMP = 109.63 COOLER TEMP = 116.62

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NASA-LEWIS PRELIMINARY DATA 04/08/76 CADDEII REG 04/08/76 14:12:58.148 FAC SEX15 PGM C003 RDG 3037

LEANOUT 25 BTDC TO CL APP 100 DEG. HUM=0% MODF = 5.0000 NO. SCANS = 5
 ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.350 RATED HP. = 160.00 HC RATIO = 2.1250

CCMB. AIR TEMP 98.316 PRESS 29.350 CFM 109.11 DRY FLOW 461.96 VAPOR FLOW 0.12921 PRESS TOTAL 14.537

CCMR. FUEL TEMP 69.788 PRESS 5.5689 DENSITY 44.917 TURBO FLOW 36.909 FLOW TRON 36.052 FPIP 6.0786

COOLING AIR TEMP 98.825 UDEL-HOOD 3.0786 DEL-HOOD 3.7282 FLOW 10011. REL-HUM 0.72354 DEW-POINT -14.096

REL-HUM 1 0.72354 2 5.6746 HUMIDITY 1.9579 % H2O VAPOR 0.044950 CORRECTED HP 67.472

ENG. COND. F/A DRY 0.078040 F/A WET 0.078018 EQU. RATIO 1.1548 RPM-1 2350.7 RPM-2 2352.5 TORQUE 143.71 BHP 64.323

WET CORRECTION FACTOR = 0.85704 EXHAUST MOLE. WT. = 27.839 EXHAUST DENSITY = 0.072081 EXHAUST FLOW RATE = 6910.9

MEASURED CONC. HC PPM 1538.0 NOX PPM 546.75 CO DRY 5.9520 PER CENT CO2 DRY 11.020 CO DRY 9.4448 O2 DRY 0.15918
 CORRECTED CONC. TO WET BASIS HC 1538.0 NOX 546.75 CO 5.1097 PER CENT CO2 DRY 9.4448 O2 DRY 0.13642

EMISSION RATE HC 0.38157 NOX 0.44965 CO 25.637
 EMISSION MASS/MODE 0.038157 0.044965 2.5637
 EMISSION MASS/RATED HP 0.00023848 0.00028103 0.016023
 MODF EMIS./STD. CYCLE 2 12.552 18.735 38.150

CAL. FUEL AIR RATIO = 0.080034 MEAS. FUEL AIR RATIO = 0.078040 DIFF MEAS. & CAL. F/A PERCENT = 2.5552

CYL TEMP DEG. F CYL-1 368.95 CYL-2 378.78 CYL-3 378.29 CYL-4 382.09

EXT GAS TEMP DEG. F EXT-1 1892.3 EXT-2 1544.00 EXT-3 917.75 EXT-4 1084.7 SFXT-1 1159.0 SEXT-2 1158.9

ENGINE OIL EOILT 188.20 SOILT 208.97 OILT 69.679 MANIFOLD PRESSURE = 18.857

DYNO COND. TORQUE 140.53 PPM 2281.1 CYL. BACK PRESSURE = 29.449

INDUCTION AIR TAIRT1 98.782 TAIRT2 98.316 TAIRT3 99.557 TAIRT4 96.166

ORIFICE AIR TEMP 79.905 DELTAP 1.0604 ORFD 53.205 FLOW 1455.7

CELL TEMP. = 77.192 HEATER IFMP = 102.27 COOLER TEMP = 114.39

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NASA-LEWIS PRELIMINARY DATA 04/08/76 CADDEII REC 04/08/76 14:35:25.684 FAC SEX15 PGM C003 RDG 3038

LEANOUT 25 BIDC TO CL APP 100 DEG HUM=0.2% MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.350 RATED HP = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 98.290 PRESS 29.335 CFM 214.84 DRY FLOW 930.88 VAPOR FLOW 0.31289 PRESS TOTAL 14.887

COMB. FUEL TEMP 67.787 PRESS 5.4605 DENSITY 44.970 TURBO FLOW 67.896 FLOW TRON 65.647 FPIP 6.3879

COOLING AIR TEMP 98.782 UDEL-HOOD 3.0668 DEL-HOOD 3.8223 FLOW 10081. REL-HUM 0.89107 DEW-POINT -10.760

REL-HUM 1 0.89107 2 18.962 HUMIDITY 2.3529 % H2O VAPOR CORRECTED HP 0.054030 154.14

ENG. COND. F/A DRY 0.070521 F/A WET 0.070497 EQU. RATIO 1.0525 RPM-1 2683.9 RPM-2 2685.7 TORQUE 282.34 BHP 144.28

WET CORRECTION FACTOR = 0.85183 EXHAUST MOLE. WT. = 28.471 EXHAUST DENSITY = 0.073718 EXHAUST FLOW RATE = 13522.

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 958.00 NOX PPM 1547.6 CO DRY 3.3365 CO2 DRY 12.292 O2 DRY 0.12787
CORRECTED CONC. TO WET BASIS HC 2.8421 NOX 10.471 CO2 0.10893

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EMISSION RATE HC 0.46506 NOX 2.4902 CO 27.902
EMISSION MASS/MODE 0.0023253 0.012451 0.13951
EMISSION MASS/RATED HP 1.4533E-05 7.7820E-05 0.00087193
MODE FMIS./STD. CYCLE % 0.76490 5.1880 2.0760

CAL. FUEL AIR RATIO = 0.074019 MEAS. FUEL AIR RATIO = 0.070521 DIFF MEAS. & CAL. F/A PERCENT = 4.9607

CYL TEMP DEG.F CYL-1 441.37 CYL-2 460.64 CYL-3 453.65 CYL-4 461.96

EXT GAS TEMP DEG.F FXT-1 928.60 FXT-2 292.32 FXT-3 1195.7 FXT-4 1246.5 SEXT-1 1377.5 SEXT-2 1376.0

ENGINE OIL FOILT 188.23 SOILT 195.61 OILP 72.543 MANIFOLD PRESSURE = 28.425

DYNO COND. TORQUE 280.48 PPM 2610.0 CYL. BACK PRESSURE = 29.523

INDUCTION AIR IA IPT1 93.428 IA IPT2 98.290 TA IPT1 117.31 TA IPT2 96.512

ORIFICE AIR TEMP 79.943 DELTAP 1.1014 ORFP 53.222 FLOW 1484.4

CELL TEMP. = 75.917 HEATER TEMP = 99.226 COOLER TEMP = 105.34

NASA-LEWIS PRELIMINARY DATA 04/08/76 CADDEII REC 04/08/76 14:47:06.819 FAC SEX15 PGM C003 RDG 3040

LEANOUT 25 BTDC TO CL APP 100 DEG HUM=0% MCDE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.350 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 99.024 PRESS 29.350 CFM 110.65 DRY FLOW 468.59 VAPOR FLOW 0.13683 PRESS TOTAL 14.535

COMB. FUEL TEMP 72.142 PRESS 5.5886 DENSITY 44.855 TURBO FLOW 36.860 FLOW TRON 34.656 FPIP 6.0846

COOLING AIR TEMP 99.248 UDEL-HOOD 3.0391 DEL-HOOD 3.7420 FLOW 10030. REL-HUM 0.73925 DEW-POINT -13.420

REL-HUM 1 2 HUMIDITY 2.0441 % H2O VAPOR CORRECTED HP 67.867

ENG. COND. F/A DRY 0.073959 F/A WET 0.073937 EQU. RATIO 1.1039 RPM-1 2359.2 RPM-2 2361.4 TORQUE 143.92 BHP 64.650

WFT CORRECTION FACTOR = 0.86776 EXHAUST MOLE. WT. = 28.177 EXHAUST DENSITY = 0.072956 EXHAUST FLOW RATE = 6899.8

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 1169.3 NOX PPM 1256.7 CO DRY 3.4590 CO2 DRY 12.191 O2 DRY 0.21671
CORRECTED CONC. TO WET BASIS 3.0016 10.579 0.22276

EMISSION RATE HC 0.28964 NOX 1.0319 CO 15.035
EMISSION MASS/MODE 0.028964 0.10319 1.5035
EMISSION MASS/RATED HP 0.00018103 0.00064491 0.0093971
MODE EMIS./STD. CYCLE % 9.5277 42.994 22.374

CAL. FUEL AIR RATIO = 0.073972 MEAS. FUEL AIR RATIO = 0.073959 DIFF MEAS. & CAL. F/A PERCENT = 0.017085

CYL TEMP DEG. F CYL-1 377.43 CYL-2 382.95 CYL-3 385.11 CYL-4 385.23

EXT GAS TEMP DEG. F EXT-1 1120.7 EXT-2 1128.5 EXT-3 1128.5 EXT-4 1088.7 SEXT-1 1196.5 SEXT-2 1196.7

ENGINE OIL EOILT 188.17 SOILT 202.39 OILP 70.143 MANIFOLD PRESSURE = 19.068

DYNO COND. TORQUE 149.03 RPM 2310.3 CYL. BACK PRESSURE = 29.413

INDUCTION AIR IAIRT1 99.412 IAIRT2 99.024 IAIRT3 108.75 IAIRT4 95.933

ORIFICE AIR TEMP 80.584 DELTAP 2.0137 DRFP 53.532 FLOW 1985.0

CELL TEMP. = 79.013 HEATER TEMP = 103.92 COOLER TEMP = 104.45

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LEANOUT 25 BTDC TO CL APP 100 DEG HUM=0% MCDE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.350 RATED HP = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	101.19	29.322	215.46	932.80	0.32275	14.881

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	71.153	5.4578	44.081	67.589	66.181	6.0783

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	101.48	3.1459	3.7686	10225.	0.84019	-10.290

REL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP
	0.84019	25.365	2.4220	0.055618 155.20

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.070948	0.070924	1.0589	2697.2	2700.2	281.89	144.77

WET CORRECTION FACTOR = 0.85472 EXHAUST MOLE. WT. = 28.434 EXHAUST DENSITY = 0.073622 EXHAUST FLOW RATE = 13573.

MEASURED CONC.	PART PER MILLION WET		CO DRY	PER CENT CO2 DRY	O2 DRY
	HC PPM	NOX PPM			
	936.49	1630.1	3.2395	12.353	0.11593
CORRECTED CONC. TO WET BASIS			2.7689	10.558	0.099089

EMISSION RATE	HC	NOX	CO
	0.45634	2.6329	27.285
	0.0022817	0.013165	0.13642
	1.4260E-05	8.2278E-05	0.00085265
EMISSION MASS/MODE			
EMISSION MASS/RATED HP			
MODE EMISS./STD. CYCLE %	0.75055	5.4852	2.0301

CAL. FUEL AIR RATIO = 0.073821 MEAS. FUEL AIR RATIO = 0.070948 DIFF MEAS. & CAL. F/A PERCENT = 4.0625

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	450.55	459.50	456.13	461.56

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1423.2	166.46	1329.8	1306.3	1397.0	1395.0

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.389
	138.24	245.33	72.923	

DYMO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.520
	283.45	2617.0	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	101.31	101.19	104.24	96.726

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	81.500	2.9985	53.125	2393.4

CELL TEMP. = 78.298 HEATER TEMP. = 105.80 COOLER TEMP. = 105.86

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NASA-LEWIS PRELIMINARY DATA 04/08/76 CADDEII REC 04/08/76 15:03:31.445 FAC SEX15 PGM C003 RDG 3043

LEANOUT 25 BTDC TO CL APP 100 DEG HUM=0% MCDE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.340 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 98.264 PRESS 29.340 CEM 109.86 DRY FLOW 464.96 VAPOR FLOW 0.14501 PRESS TOTAL 14.529

COMB. FUEL TEMP 71.233 PRESS 5.5917 DENSITY 44.879 TURBO FLOW 35.807 FLOW TRON 34.044 FPIP 6.1209

COOLING AIR TEMP 99.886 UDEL-HOOD 3.0524 DEL-HOOD 3.7135 FLOW 10055. REL-HUM 0.80758 DEW-POINT -12.375

REL-HUM 1 0.80758 2 31.333 HUMIDITY 7 H2O VAPOR CORRECTED HP 2.1831 0.050132 67.976

ENG. COND. F/A DRY 0.073219 F/A WET 0.073197 EQU. RATIO 1.0928 RPM-1 2350.7 PPM-2 2352.8 TORQUE 144.81 BHP 64.812

WET CORRECTION FACTOR = 0.86293 EXHAUST MOLE. WT. = 28.239 EXHAUST DENSITY = 0.073118 EXHAUST FLOW RATE = 6826.6

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	1145.2	1260.1	3.6221	12.055	0.24552	
CORRECTED CONC. TO WET BASIS			3.1256	10.403	0.21187	

	HC	NOX	CO
EMISSION RATE	0.28066	1.0237	15.491
EMISSION MASS/MODE	0.028066	0.10237	1.5491
EMISSION MASS/RATED HP	0.00017542	0.00063980	0.0096819
MODE EMIS./STD. CYCLE %	9.2324	42.653	23.052

CAL. FUEL AIR RATIO = 0.074383 MEAS. FUEL AIR RATIO = 0.073219 DIFF MEAS. & CAL. F/A PERCENT = 1.5888

CYL TEMP DEG. E CYL-1 378.43 CYL-2 384.83 CYL-3 388.24 CYL-4 389.86

EXT GAS TEMP DEG. F EXT-1 942.49 EXT-2 -258.95 EXT-3 1202.9 EXT-4 1128.9 SFXT-1 1205.6 SEXT-2 1205.7

ENGINE OIL OILT 188.17 SOILT 185.82 OILP 70.063 MANIFOLD PRESSURE = 19.029

DYNO COND. TORQUE 144.36 RPM 2303.0 CYL. BACK PRESSURE = 29.418

INDUCTION AIR IAIRT1 98.679 IAIRT2 98.264 IAIRT1 113.05 IAIRT2 96.074

ORIFICE AIR TEMP 80.064 DELTAP 1.0387 DRFP 52.794 FLOW 1440.7

CELL TEMP. = 78.395 HEATER TEMP = 103.87 COOLER TEMP = 107.27

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NASA-LEWIS PRELIMINARY DATA 04/08/76 CADDEII RFC 04/08/75 18:04:36.670 FAC SEX15 PGM C003 RDG 3053

LEAKOUT 25 BTDC I & T 100 DEG HUM = 80 % 1 1/2 T CLO MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARROMETRIC PRESSURE = 29.370 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	99.886	29.372	11.466	45.472	1.6035	14.426

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	72.782	5.8347	44.838	3.9799	3.5254	6.1850

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	99.074	-0.012454	0.72095	0.00000	81.734	93.280

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	81.734	36.654	246.84	5.6683	0.55891

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	PPM-2	TORQUE	BHP
	0.077528	0.074888	1.1571	612.30	612.42	4.3671	0.50914

WET CORRECTION FACTOR = 0.82392 EXHAUST MOLE. WT. = 27.880 EXHAUST DENSITY = 0.072189 EXHAUST FLOW RATE = 700.95

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	15321.	16.768	4.7634	10.472	2.0826
CORRECTED CONC. TO WET BASIS			3.9246	8.6284	1.7161

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	HC	NOX	CO
EMISSION RATE	0.38555	0.0013986	1.9972
EMISSION MASS/MODE	0.0064258	2.3311E-05	0.033286
EMISSION MASS/RATED HP	4.0161E-05	1.4569E-07	0.00020804
MODE EMIS./STD. CYCLE	2.1138	0.0097127	0.49533

CAL. FUEL AIR RATIO = 0.079276 MEAS. FUEL AIR RATIO = 0.077528 DIFF MEAS. & CAL. F/A PERCENT = 2.2536

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	306.15	320.16	306.85	315.53

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	922.71	-454.00	-454.00	597.15	625.91	624.28

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 11.577
	155.48	295.85	46.289	

DYND COND.	TORQUE	PPM	CYL. BACK PRESSURE = 29.711
	2.9019	606.90	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	100.12	99.886	124.22	97.868

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	82.266	1.5070	53.482	1725.5

CELL TEMP. = 73.591 HEATER TEMP = 116.16 COOLER TEMP = 80.693

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NASA-LFWIS 1 PRELIMINARY DATA 04/08/76 CADDII REC 04/08/75 18:06:31.103 FAC SEX15 PGM C003 RDG 3054

LEANOUT 25 BTDC I & T 100 DEG HUM = 80 % 1/2 T CLO MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.370 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	100.47	29.366	23.626	93.582	3.3702	14.431

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	74.693	5.7315	44.787	3.9772	8.6199	6.1548

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	99.343	0.0063654	0.76634	2257.1	81.948	93.935

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	81.948	25.235	252.09	5.7889	1.5628

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.092110	0.088909	1.3748	1203.9	1204.7	6.2006	1.4213

WET CORRECTION FACTOR = 0.82659 EXHAUST MOLE. WT. = 26.755 EXHAUST DENSITY = 0.069301 EXHAUST FLOW RATE = 1523.4

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	8821.9	18.895	9.2596	9.3089	0.40622
CORRECTED CONC. TO WET BASIS			7.6539	7.6947	0.33578

EMISSION RATE	HC	NOX	CO
	0.48246	0.0034253	8.4650
	0.088451	0.00062797	1.5519
	0.00055282	3.9248E-06	0.0096995
MODE EMIS./STD. CYCLE	9	29.096	0.26165

CAL. FUEL AIR RATIO = 0.091357 MEAS. FUEL AIR RATIO = 0.092110 DIFF MEAS. & CAL. F/A PERCENT = -0.91806

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	292.80	307.65	293.72	297.10

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SFXT-1	SFXT-2
	1025.9	-454.00	-454.00	561.67	581.13	576.49

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 9.2802
	155.27	-13.915	57.282	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.346
	3.8020	1209.2	

INDUCTION AIR	IAIRT1	IAIFT2	TAIRT1	TAIRT2
	130.58	130.47	140.32	98.111

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	82.565	1.4827	53.433	1711.4

CELL TEMP. = 75.030 HEATER TEMP = 134.88 COOLER TEMP = 94.643

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NASA-Lewis PRELIMINARY DATA 04/08/76 CADDEII REC 04/08/76 18:06:52.186 FAC SEX15 PGM C003 RDG 3055

LEANOUT 25 BTDC I & T 100 DEG HUM = 80 % 1 1/2 T CLD MODE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARGMETRIC PRESSURE = 29.370 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	100.61	29.363	23.698	93.837	3.3850	14.430

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	75.030	5.7348	44.778	3.9764	8.5298	6.1602

COOLING AIR	TEMP	INLET-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	99.481	-0.016605	0.71514	0.00000	81.734	93.985

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	81.734	51.257	252.51	5.7985	1.8342

ENG. COND.	F/A DRY	F/A WFT	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.090900	0.087735	1.3567	1205.3	1205.5	7.2674	1.6679

WET CORRECTION FACTOR = 0.92300 EXHAUST MOLE. WT. = 26.852 EXHAUST DENSITY = 0.069525 EXHAUST FLOW RATE = 1521.1

MEASURED CONC.	PART PER MILLION WFT	PER CFMT
	HC PPM	CO DRY
	8732.9	9.3208
CORRECTED CONC. TO WFT BASIS	NOX PPM	CO DRY
	18.827	7.6145
		7.6710
		0.46019
		0.38367

EMISSION RATE	HC	NOX	CO
	0.47687	0.0034078	8.4086
EMISSION MASS/MODE	0.023843	0.00017039	0.42043
EMISSION MASS/RATED HP	0.00014902	1.0649E-06	0.0026277
MODE EMIS./STD. CYCLE %	7.8432	0.070995	6.2564

CAL. FUEL AIR RATIO = 0.091045 MEAS. FUEL AIR RATIO = 0.090900 DIFF MEAS. & CAL. F/A PERCENT = 0.15934

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	293.44	308.13	293.68	296.64

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1995.3	-454.00	-454.00	134.87	575.49	570.93

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 9.2614
	155.08	44.298	57.286	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.474
	3.2547	1199.1	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	100.71	100.61	185.86	98.230

SPECIFIC AIR	TEMP	DELTA P	ORFP	FLOW
	82.680	1.5015	53.486	1721.7

CFLI TEMP. = 75.145 HEATER TEMP = 137.14 COOLER TEMP = 96.786

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NASA-LEWIS PRELIMINARY DATA 04/08/76 CADDEII REC 04/08/76 18:10:05.626 FAC SEX15 PGM C003 RDG 3056

LEANOUT 25 BTDC I & T 100 DEG HUM = 80 % 1 1/2 T CLD MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.370 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	100.79	29.370	11.751	46.514	1.7217	14.428

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	76.652	5.8344	44.736	3.9709	3.6274	6.1695

COOLING AIR	TEMP	INLET-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	99.999	0.00083027	0.68055	2229.2	83.282	94.770

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	83.282	43.816	259.10	5.9498	0.41518

ENG. COMP.	F/A DRY	F/A WET	EQ. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.077994	0.075201	1.1639	604.38	605.88	3.2753	0.37691

WET CORRECTION FACTOR = 0.82067 EXHAUST MOLE. WT. = 27.843 EXHAUST DENSITY = 0.072093 EXHAUST FLOW RATE = 719.40

MEASURED CONC.	PART PER MILLION WET		CO DRY	PER CENT	
	HC PPM	NOX PPM		CO2 DRY	O2 DRY
	17030.	15.926	4.8776	10.425	2.2569
CORRECTED CONC. TO WET BASIS					
			4.0029	8.5552	1.8522

EMISSION RATE	HC	NOX	CO	
	0.43984	0.0013634	2.0906	
	EMISSION MASS/MODE	0.0073307	2.2723E-05	0.034844
	EMISSION MASS/RATED HP	4.5817E-05	1.4202E-07	0.00021778
MOLE EMISS./STD. CYCLE %				
	2.4114	0.0094678	0.51851	

CAL. FUEL AIR RATIO = 0.079893 MEAS. FUEL AIR RATIO = 0.077984 DIFF MEAS. & CAL. F/A PERCENT = 2.6483

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	289.73	304.25	289.90	297.96

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SFXT-1	SEXT-2
	1768.1	-454.00	-454.00	441.85	559.76	556.15

ENGINE OIL	EMILT	SMILT	OILP	MANIFOLD PRESSURE = 11.711
	153.47	357.63	46.529	

DYMO COND.	TORQUE	RPM	CYL. RACK PRESSURE = 29.413
	3.4059	586.50	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIPT2
	100.96	100.79	185.15	97.544

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	83.181	1.5272	53.466	1735.1

CELL TEMP. = 76.448 HEATER TEMP = 116.18 COOLER TEMP = 73.688

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NASA-LEWIS PRELIMINARY DATA 04/08/76 CADDEII REC 04/08/76 18:32:26.248 FAC SEX15 PGM C003 RDG 3057

LEANOUT 25 BTDC I & T 100 DEG HUM = 80 % 3/4 T CLOSE MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.370 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 101.93 PRESS 29.368 CFM 12.680 DRY FLOW 50.199 VAPOR FLOW 1.8153 PRESS TOTAL 14.430

COMB. FUEL TEMP 75.003 PRESS 5.8065 DENSITY 44.779 TURBO FLOW 3.9730 FLOW TRON 4.3774 FPIP 6.1608

COOLING AIR TEMP 100.61 UDEL-HOOD -0.0060887 DFL-HOOD 0.68608 FLOW 0.00000 REL-HUM 78.755 DEW-POINT 94.060

REL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP 78.755 27.163 253.13 5.8127 0.76345

ENG. COND. F/A DRY 0.087202 F/A WET 0.084159 EOU. RATIO 1.3015 RPM-1 617.04 RPM-2 616.80 TORQUE 5.9006 BHP 0.69324

WET CORRECTION FACTOR = 0.84248 EXHAUST MOLE. WT. = 27.123 EXHAUST DENSITY = 0.070228 EXHAUST FLOW RATE = 802.97

MEASURED CONC. PART PER MILLION WET PER CENT HC PPM 19569. NOX PPM 11.104 CO DRY 6.6373 CO2 DRY 9.3011 CO2 DRY 2.4392 CORRECTED CONC. TO WET BASIS 5.5918 7.8360 2.0550

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EMISSION RATE HC 0.56413 NOX 0.0010610 CO 3.2598 EMISSION MASS/MODE 0.0094022 1.7684E-05 0.054330 EMISSION MASS/RATED HP 5.8764E-05 1.1052E-07 0.00033956 MODE EMIS./STD. CYCLE % 3.0928 0.0073683 0.80848

CAL. FUEL AIR RATIO = 0.084713 MEAS. FUEL AIR RATIO = 0.087202 DIFF MEAS. & CAL. F/A PERCENT = -2.8548

CYL TEMP DEG.F CYL-1 258.14 CYL-2 270.94 CYL-3 244.36 CYL-4 252.76

EXT GAS TEMP DEG.F EXT-1 1064.5 EXT-2 -454.00 EXT-3 -454.00 EXT-4 158.46 SEXT-1 511.43 SEXT-2 508.18

ENGINE OIL EQILT 149.00 SOILT 232.19 OILP 47.337 MANIFOLD PRESSURE = 11.757

DYNO COND. TORQUE 6.1710 RPM 604.56 CYL. BACK PRESSURE = 28.962

INDUCT. AIR IAIRT1 102.13 IAIRT2 101.93 TAIRT1 136.47 TAIRT2 98.268

ORIFICE AIR TEMP 83.945 DELTAP 1.3018 DPFP 53.407 FLOW 1604.2

CELL TEMP. = 73.849 HEATER TEMP = 141.74 COOLER TEMP = 65.666

MASA-LEWIS PRELIMINARY DATA 04/08/76 CADDEII REC 04/08/76 18:34:37.731 FAC SEX15 PGM C003 RDG 3058

LEANOUT 25 BTDC I & T 100 DEG HUM = 80 % 3/4 T CLOSE MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.370 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	102.07	29.366	26.563	105.22	3.8161	14.430

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	74.826	5.6985	44.784	11.694	10.399	6.1584

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	100.64	-0.0041514	0.73490	0.00000	78.630	94.150

RFL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	78.630	11.209	253.88	5.8299	1.1183

ENG. COND.	F/A DRY	F/A WET	EQ. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.098832	0.095373	1.4751	1198.2	1200.4	4.4504	1.0153

WET CORRECTION FACTOR = 0.83152 EXHAUST MOLE WT. = 26.303 EXHAUST DENSITY = 0.068104 EXHAUST FLOW RATE = 1753.7

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	157.73	11.032	10.564	8.3309	0.77058
CORRECTED CONC. TO WET BASIS			8.7840	6.9273	0.64075

EMISSION RATE	HC	NOX	CO	
	0.98678	0.0023023	11.184	
	EMISSION MASS/MODE	0.18091	0.00042209	2.0503
	EMISSION MASS/RATED HP	0.0011307	2.6381E-06	0.012815
MODE EMIS./STD. CYCLE %	59.509	0.17587	30.511	

CAL. FUEL AIR RATIO = 0.097901 MEAS. FUEL AIR RATIO = 0.098832 DIFF MEAS. & CAL. F/A PERCENT = -0.94179

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	283.14	294.15	271.86	271.92

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1472.2	-454.00	-454.00	200.53	538.93	536.88

ENGINE OIL	FILT	SOILT	OILP	MANIFOLD PRESSURE = 10.047
	148.60	350.12	57.550	

DYN COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.229
	6.2718	1195.6	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	102.13	102.07	106.73	97.863

ORIFICE ATP	TEMP	DELTA P	ORFP	FLOW
	84.375	1.3384	53.488	1625.4

CELL TEMP. = 74.480 HEATED TEMP = 122.99 COOLER TEMP = 66.873

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NASA-LEWIS PRELIMINARY DATA 04/08/76 CADDEII RFC 04/08/76 18:34:58.454 FAC SEX15 PGM C003 RDG 3059

LEANOUT 25 BTDC I & T 100 DEG HUM = 80 % 3/4 T CLOSF MODE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.370 RATED HP = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	102.13	29.370	26.750	105.96	3.8318	14.430

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	74.755	5.6919	44.786	11.856	10.501	6.1476

COOLING AIR	TEMP	UNEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	100.71	-0.0088562	0.73645	0.00000	78.291	94.060

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	78.291	0.27603	253.14	5.8130	1.6793

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.099104	0.095645	1.4792	1196.6	1198.4	6.6923	1.5248

WET CORRECTION FACTOR = 0.93442 EXHAUST MOLE. WT. = 26.285 EXHAUST DENSITY = 0.068057 EXHAUST FLOW RATE = 1767.5

MEASURED CONC.	PART PER MILLION WET	PER CENT			
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	15078.	10.370	10.616	8.2520	0.83338
CORRECTED CONC. TO WET BASIS			8.8580	6.8856	0.69539

EMISSION RATE	HC	NOX	CO
EMISSION MASS/MODE	0.95679	0.0021812	11.367
EMISSION MASS/RATED HP	0.047840	0.00010906	0.56834
MODE EMIS./STD. CYCLE %	0.00029900	6.8162E-07	0.0035521
	15.737	0.045441	8.4574

CAL. FUEL AIR RATIO = 0.097538 MEAS. FUEL AIR RATIO = 0.099104 DIFF MEAS. & CAL. F/A PERCENT = -1.5806

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	285.14	295.43	273.11	274.56

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1144.3	-454.00	-454.00	-203.47	533.73	531.72

ENGINE OIL	FILT	SOILT	OILP	MANIFOLD PRESSURE = 10.070
	148.43	2.8081	57.567	

DYMO COND.	TORQUE	RPM	CYL. RACK PRESSURE = 29.698
	3.8452	1184.0	

INDUCTION AIR	IAIPT1	IAIPT2	TAIPT1	TAIPT2
	102.19	102.13	94.020	97.930

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	84.419	1.3412	53.500	1627.1

CELL TEMP. = 74.471 HEATER TEMP = 123.50 COOLER TEMP = 68.374

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NASA-LEWIS PRELIMINARY DATA 04/08/76 CADDETT REC 04/08/76 18:38:13.266 FAC SEX15 PGM C003 RDG 3060

LEANOUT 25 BTDC I & T 100 DEG HUM = RO % 3/4 T CLOSE MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.380 RATED HP. = 160.00 HC RATIO = 2.1250

CCMR. AIR TFMP 102.53 PRESS 29.378 CFM 12.742 DRY FLOW 50.490 VAPOR FLOW 1.8096 PRESS TOTAL 14.436

CCMR. FUEL TEMP 74.826 PRFSS 5.8065 DENSITY 44.784 TURBO FLOW 3.9717 FLOW TRON 4.2604 FPIP 6.1698

COOLING AIR TEMP 101.34 INEL-HOOD -0.013008 DEL-HOOD 0.74226 FLOW 0.00000 REL-HUM 76.735 DEW-POINT 93.800

REL-HUM 1 76.735 2 13.477 HUMIDITY 250.89 % H2O VAPOR 5.7613 CORRECTED HP 0.38917

ENG. COND. F/A DRY 0.084381 F/A WET 0.081461 EQU. RATIO 1.2594 RPM-1 597.00 RPM-2 596.34 TORQUE 3.1086 BHP 0.35336

WET CORRECTION FACTOR = 0.82740 EXHAUST MOLE. WT. = 27.337 EXHAUST DENSITY = 0.070782 EXHAUST FLOW RATE = 799.08

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 23954. NOX PPM 9.9560 CO DRY 6.7339 CO2 DRY 8.9818 O2 DRY 2.8994
CORRECTED CONC. TO WET BASIS CO DRY 5.5716 CO2 DRY 7.4315 O2 DRY 2.3989

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EMISSION RATE HC 0.68717 NOX 0.00094671 CO 3.2323
EMISSION MASS/MODE J.011453 1.5779E-05 0.053871
EMISSION MASS/RATED HP 7.1581E-05 9.8616E-08 0.00033669
MODE EMIS./STD. CYCLE % 3.7674 0.0065744 0.80165

CAL. FUEL AIR RATIO = 0.086211 MEAS. FUEL AIR RATIO = 0.084381 DIFF MEAS. & CAL. F/A PERCENT = 2.1685

CYL TEMP-DEG.F CYL-1 279.81 CYL-2 291.08 CYL-3 267.01 CYL-4 278.39

EXT GAS TEMP DEG.F EXT-1 959.35 EXT-2 -454.00 EXT-3 -454.00 EXT-4 315.69 SEXT-1 520.78 SEXT-2 517.80

ENGINE OIL EOILT 148.47 SOILT 292.28 OILP 46.849 MANIFOLD PRESSURE = 12.029

DYMO COND. TORQUE 2.8083 RPM 592.80 CYL. BACK PRESSURE = 29.311

INDUCTION AIR IA IPT1 102.74 IAIRT2 102.53 TAIRT1 93.141 TAIRT2 98.254

SPECIFIC AIR TEMP 85.016 DELTAP 1.3379 DRFP 53.456 FLOW 1624.2

CELL TEMP. = 74.826 HEATER TEMP = 104.23 COOLER TEMP = 72.370

NASA-LEWIS PRELIMINARY DATA 04/08/76 CADDEII REC 04/08/76 18:42:44.753 FAC SEX15 PGM C003 RDG 3061

LFANOUT 25 RTDC I & T 100 DEG HUM = 80 % NEUTRAL MCDE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.380 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	99.930	29.383	14.917	59.181	2.1074	14.437

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	72.711	5.7669	44.840	3.9801	5.7396	6.1695

COOLING AIR	TEMP	UNDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	98.748	-0.017159	0.71127	0.00000	82.452	93.605

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	82.452	27.569	249.27	5.7240	0.56402

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	RHP
	0.096983	0.093649	1.4475	593.76	593.52	4.5421	0.51350

WET CORRECTION FACTOR = 0.85534 EXHAUST MOLE. WT. = 26.427 EXHAUST DENSITY = 0.068425 EXHAUST FLOW RATE = 979.59

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	37483.	4.8895	8.6882	6.8479	4.2444
CORRECTED CONC. TO WET BASIS			7.4313	5.8573	3.6304

EMISSION RATE	HC	NOX	CO
	1.3182	0.00056997	5.2850
EMISSION MASS/MODE	0.021970	9.4995E-06	0.088083
EMISSION MASS/PATED HP	0.00013731	5.9372E-08	0.00055052
MODE EMIS./STD. CYCLE %	7.2269	0.0039581	1.3108

CAL. FUEL AIR RATIO = 0.094977 MEAS. FUEL AIR RATIO = 0.096983 DIFF MEAS. & CAL. F/A PERCENT = -2.0688

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	280.00	292.80	273.07	282.49

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1625.1	-454.00	-454.00	159.34	507.92	505.59

ENGINE OIL	EOILT	SOILT	DILP	MANIFOLD PRESSURE = 13.463
	146.53	392.91	46.869	

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.588
	5.7678	581.58	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	100.11	99.93C	80.655	97.810

CRIFICE AIR	TEMP	DELTA P	DRFP	FLOW
	82.618	1.3276	53.518	1621.6

CFLT TFMP. = 72.649 HEATER TEMP = 103.43 COOLER TEMP = 63.080

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NASA-Lewis PRELIMINARY DATA 04/08/76 CANDELL REC 04/08/76 18:45:52.638 FAC SEX15 PGM C003 RDG 3062

IFANOUT 25 BTDC I & T 100 DEG HUM = 80 % NEUTRAL MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.380 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	100.91	29.380	28.878	114.69	3.9041	14.434

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	72.311	5.6784	44.850	13.193	11.608	6.1461

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	RFL-HUM	DEW-POINT
	99.421	0.0016605	0.65647	2233.4	76.689	92.220

RFL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	76.689	9.3609	238.27	5.4715	1.4608

ENG. COND.	F/A DRY	F/A WFT	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10121	0.097878	1.5106	1216.6	1218.1	5.7506	1.3321

WFT CORRECTION FACTOR = 0.83492 EXHAUST MOLE. WT. = 26.147 EXHAUST DENSITY = 0.067701 EXHAUST FLOW RATE = 1923.3

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	18482.	8.4448	11.145	7.8463	0.9409
CORRECTED CONC. TO WFT BASIS			9.3052	6.5510	0.78515

EMISSION RATE	HC	NOX	CO
	1.2761	0.0019328	12.993
	0.23396	0.00035434	2.3820
	0.0014623	2.2146E-06	0.014888
EMISSION MASS/MODE			
EMISSION MASS/RATED HP			
MODE EMIS./STD. CYCLE %	76.961	0.14764	35.447

CAL. FUEL AIR RATIO = 0.10091 MEAS. FUEL AIR RATIO = 0.10121 DIFF MEAS. & CAL. F/A PERCENT = -0.29788

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	291.67	305.25	284.71	293.70

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1563.3	-454.00	-454.00	314.33	536.22	535.52

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 10.410
	147.33	176.88	56.466	

RYAN COND.	TORQUE	RPM	CYL. RACK PRESSURE = 29.414
	4.0900	1215.6	

INDUCTION AIR	IAIPT1	IAIPT2	TAIRT1	TAIPT2
	101.02	100.91	115.07	98.424

COEFFICE AIR	TEMP	DELTA P	ORFP	FLOW
	83.067	1.3638	53.498	1642.4

CELL TEMP. = 72.960 HEATER TEMP = 123.28 COOLER TEMP = 77.629

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NASA-LEWIS PRELIMINARY DATA 04/08/76 CADDEII REC 04/08/76 18:46:17.577 FAC SEX15 PGM C003 RDG 3063

LEANOUT 25 BTDC I & T 100 DEG HUM = 80 % NEUTRAL MODE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.380 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	101.08	29.379	28.946	114.98	3.9092	14.437

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	72.435	5.6757	44.847	13.156	11.644	6.1464

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	99.593	0.0058119	0.70712	2254.3	76.243	92.190

REL-HUM	1	2	HUMIDITY	H2O VAPOR	CORRECTED HP
	76.243	12.945	237.99	5.4651	1.9135

ENC. COND.	F/A DRY	F/A WET	EQV. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10127	0.097940	1.5115	1217.6	1217.7	7.5257	1.7448

WET CORRECTION FACTOR = 0.83664 EXHAUST MOL.F. WT. = 26.143 EXHAUST DENSITY = 0.067691 EXHAUST FLOW RATE = 1928.4

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	17639.	8.2798	11.183	7.8651	0.95249	
CORRECTED CONC. TO WET BASIS			9.3561	6.5803	0.79690	

EMISSION RATE	HC	NOX	CO
	1.2212	0.0019000	13.099
EMISSION MASS/MODE	0.061060	9.5002 F-05	0.65493
EMISSION MASS/RATED HP	0.00038162	5.9376 F-07	0.0040933
MODE EMIS./STD. CYCLE %	20.085	0.039584	9.7460

CAL. FUEL AIR RATIO = 0.10035 MEAS. FUEL AIR RATIO = 0.10127 DIFF MEAS. & CAL. F/A PERCENT = -0.90452

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	292.03	305.40	284.65	294.71

FXT GAS TEMP DEG.F	FXT-1	FXT-2	FXT-3	FXT-4	SEXT-1	SEXT-2
	1833.7	-454.00	-454.00	-104.71	533.47	532.68

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 10.445
	147.13	35.259	56.434	

DYNO COND.	TORQUE	RPM	CYL. PACK PRESSURE = 29.440
	2.8299	1225.7	

INDUCTION AIR	TAIPT1	TAIPT2	TAIRT1	TAIRT2
	101.14	101.08	150.90	98.470

OFFICE AIR	TEMP	DELTA P	ORFP	FLOW
	83.111	1.3195	53.444	1616.0

CELL TEMP. = 72.827 HEATER TEMP = 116.54 COOLER TEMP = 76.295

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NASA-LEWIS PRELIMINARY DATA 04/08/76 CADDELL REC 04/08/76 18:52:44.108 FAC SEX15 PGM C003 RDG 3064

LEAN CUT 25 BTDC I & T 100 DEG HUM = 80 % NEUTRAL MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.380 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	101.76	29.377	15.310	59.550	2.0485	14.430

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	72.871	5.7699	44.935	3.9780	5.7756	6.1653

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	130.43	-0.0024908	0.66837	0.00000	75.481	92.530

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	75.481	12.477	240.79	5.5294	0.53531

ENG. COND.	F/A DRY	F/A WET	FOU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.096987	0.093762	1.4476	603.54	609.48	4.2421	0.48748

WET CORRECTION FACTOR = 0.84743 EXHAUST MOLE. WT. = 26.426 EXHAUST DENSITY = 0.068424 EXHAUST FLOW RATE = 984.65

MEASURED CONC.	PART PER MILLION WET	PER CENT
	HC PPM	CO DRY
	37255	9.0292
	NOX PPM	CO2 DRY
	4.4094	6.8907
CORRECTED CONC. TO WET BASIS		CO DRY
		7.6516
		5.8394
		3.2731

EMISSION RATE	HC	NOX	CO
	1.3170	0.00051667	5.4698
EMISSION MASS/MODE	0.021949	8.6112E-06	0.091164
EMISSION MASS/RATED HP	0.00013718	5.3820E-08	0.00056977
MODE EMIS./STD. CYCLE %	7.2201	0.0035880	1.3566

CAL. FUEL AIR RATIO = 0.097202 MEAS. FUEL AIR RATIO = 0.096987 DIFF MEAS. & CAL. F/A PERCENT = 0.22198

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	290.06	307.39	283.17	296.07

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1100.2	-454.00	-454.00	293.95	576.49	574.92

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 13.274
	151.16	223.96	46.557	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.395
	8.2448	595.26	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	101.94	101.76	132.09	98.552

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	84.314	1.3796	53.348	1649.8

CELL TEMP. = 73.938 HEATER TEMP = 175.23 COOLER TEMP = 81.660

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NASA-LEWIS PRELIMINARY DATA 04/08/76 CADDEII REC 04/08/76 19:01:57.218 FAC SEX15 PGM C003 RDG 3066

LEANOUT 25 BTDC I & T 100 DEG HUM = 80 % 3/4 T OPEN MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.380 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	100.30	29.381	17.958	71.099	2.5939	14.432

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	74.311	5.7390	44.797	3.9763	7.1157	6.1458

COOLING AIR	TEMP	UDEL-HOOD	DFL-HOOD	FLOW	REL-HUM	DEW-POINT
	99.378	-0.00027676	0.71680	0.00000	83.396	94.335

RFL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	83.396	22.018	255.38	5.8643	0.45414

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10010	0.096573	1.4940	609.24	611.28	3.5587	0.41281

WET CORRECTION FACTOR = 0.85383 EXHAUST MOLE WT. = 26.219 EXHAUST DENSITY = 0.067888 EXHAUST FLOW RATE = 1190.3

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	42246.	3.8574	9.2907	6.2363	4.4258
CORRECTED CONC. TO WET BASIS			7.9327	5.3247	3.7789

	HC	NOX	CO
EMISSION RATE	1.8053	0.00054639	6.8553
EMISSION MASS/MODE	0.030088	9.1066E-06	0.11426
EMISSION MASS/RATED HP	0.00018805	5.6916E-08	0.00071409
MODE EMIS./STD. CYCLE %	9.8975	0.0037944	1.7002

CAL. FUEL AIR RATIO = 0.099486 MEAS. FUEL AIR RATIO = 0.10010 DIFF MEAS. & CAL. F/A PERCENT = -0.60911

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	262.01	283.94	258.51	274.86

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	950.92	-454.00	-454.00	441.13	503.88	501.10

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 14.388
	146.53	413.26	47.317	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 28.990
	7.0567	602.28	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	100.41	100.30	109.97	98.036

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	82.688	1.3584	53.433	1639.8

CELL TEMP. = 76.997 HEATER TEMP = 131.53 COOLER TEMP = 58.077

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NASA-LEWIS PRELIMINARY DATA 04/08/76 CADDEII REC 04/08/76 19:04:35.056 FAC SEX15 PGM C003 RDG 3067

LEANOUT 25 BTDC I & T 100 DEG HUM = 80 % 3/4 T OPEN MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.380 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	100.36	29.383	29.926	118.51	4.3516	14.438

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	74.391	5.6751	44.795	14.161	12.556	6.1536

COOLING AIR	TEMP	WDFL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	99.110	0.0071957	0.76413	2261.3	83.786	94.545

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	83.786	61.244	257.02	5.9022	1.6162

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10595	0.10220	1.5813	1206.6	1210.1	6.3923	1.4686

WET CORRECTION FACTOR = 0.84349 EXHAUST MOLE WT. = 25.849 EXHAUST DENSITY = 0.066929 EXHAUST FLOW RATE = 2023.4

MEASURED CONC.	PART PER MILLION WET		PER CENT	
	HC PPM	NOX PPM	CO DRY	O2 DRY
	21018.	6.2816	11.400	7.4825
CORRECTED CONC. TO WET BASIS			9.6155	6.3114

	HC	NOX	CO
EMISSION RATE	1.5267	0.0015125	14.125
EMISSION MASS/MODE	0.27990	0.00027729	2.5895
EMISSION MASS/RATED HP	0.0017494	1.7331E-06	0.016185
MODE EMIS./STD. CYCLE %	92.072	0.11554	38.535

CAL. FUEL AIR RATIO = 0.10299 MEAS. FUEL AIR RATIO = 0.10595 DIFF MEAS. & CAL. F/A PERCENT = -2.7924

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	294.98	317.36	296.41	307.15

FXT GAS TEMP DEG.F	FXT-1	EXT-2	EXT-3	FXT-4	SEXT-1	SEXT-2
	1005.7	-439.14	-454.00	451.17	597.29	597.50

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 10.840
	146.77	372.18	55.253	

DYAP COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.396
	2.1602	1201.0	

INDUCTION AIR	TAIPT1	TAIPT2	TAIRT1	TAIPT2
	100.41	100.36	126.28	97.901

ORIFICE AIR	TEMP	DEL TAP	ORIF	FLOW
	82.952	1.56	53.387	1643.6

CELL TEMP. = 76.563 HEATER TEMP = 147.01 COOLER TEMP = 68.418

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NASA-LEWIS PPELIMINARY DATA 04/08/76 CADDEII REC 04/08/76 19:04:56.192 FAC SEX15 PGM C003 R0G 3U08

LEANOUT 25 BTDC I & T 100 DEG HUM = 80 % 3/4 T OPEN MODE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.380 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	100.48	29.373	29.885	118.34	4.3385	14.439

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	74.480	5.6739	44.793	13.891	12.310	6.1503

COOLING AIR	TEMP	WDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	99.239	0.016329	0.74974	2307.2	83.365	94.500

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	83.365	65.248	256.63	5.8930	1.1549

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10402	0.10034	1.5526	1208.9	1210.4	4.5588	1.0493

WET CORRECTION FACTOR = 0.83933 EXHAUST MOL. WT. = 25.968 EXHAUST DENSITY = 0.067237 EXHAUST FLOW RATE = 2003.7

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	20562.	6.2876	11.382	7.4965	1.1785	
CORRECTED CONC. TO WET BASIS			9.5531	6.2920	0.98916	

EMISSION RATE	HC	NOX	CO
		1.4820	0.0015022
EMISSION MASS/MODE	0.074100	7.5109E-05	0.69622
EMISSION MASS/RATED HP	0.00046313	4.5943E-07	0.0043513
MODE FMIS./STD. CYCLE %	24.375	0.031296	10.360

CAL. FUEL AIR RATIO = 0.10233 MEAS. FUEL AIR RATIO = 0.10402 DIFF MEAS. & CAL. F/A PERCENT = -1.6305

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	294.08	316.26	294.53	306.99

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	592.74	-454.00	-454.00	-91.569	590.06	589.88

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 10.890
	148.84	-9.1099	55.402	

DYND COND.	TOPOJE	PPM	CYL. BACK PRESSURE = 29.407
	1.5049	1202.9	

INDUCTION AIR	IAIPT1	IAIPT2	TAIPT1	TAIPT2
	100.58	100.48	107.01	98.034

CRUISE AIR	TEMP	DELTA P	ORFP	FLOW
	83.049	1.3284	53.488	1621.5

CELL TEMP. = 76.085 HEATER TEMP = 155.13 COOLER TEMP = 70.979

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NASA-LEWIS PRELIMINARY DATA 04/08/76 CADDEII REC 04/08/76 19:09:07.728 FAC SEX15 PGM C003 RDG 3069

LEANOUT 25 BTDC I & T 100 DEG HUM = 80 % 3/4 T OPEN MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.380 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	100.65	29.380	16.630	65.963	2.4102	14.438

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	73.671	5.7453	44.814	7.9930	6.8287	6.1731

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	99.395	-0.0060887	0.65702	0.00000	82.668	94.395

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	82.668	17.048	255.77	5.8733	0.56147

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10352	0.099874	1.5451	582.42	583.74	4.6005	0.51017

WET CORRECTION FACTOR = 0.86294 EXHAUST MOLE. WT. = 25.999 EXHAUST DENSITY = 0.067319 EXHAUST FLOW RATE = 1117.1

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	45324.	3.4953	9.1195	5.9088	4.4523
CORRECTED CONC. TO WET BASIS			7.8696	5.0989	3.8421

EMISSION RATE	HC	NOX	CO
	1.8177	0.00046465	6.3823
	0.030295	7.7442E-06	0.10637
	0.00018934	4.8401E-08	0.00066483
MODE EMTS./STD. CYCLE %	9.9654	0.0032268	1.5829

CAL. FUEL AIR RATIO = 0.10159 MEAS. FUEL AIR RATIO = 0.10352 DIFF MEAS. & CAL. F/A PERCENT = -1.8705

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	289.03	310.45	289.46	310.59

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1292.1	-311.71	-454.00	97.867	590.40	588.67

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 14.576
	150.03	290.72	46.385	

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.597
	12.378	584.88	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	100.76	100.65	56.295	97.164

ORIFICE AIR	TEMP	DELTA P	ORF5	FLOW
	83.717	1.3422	53.447	1628.7

CELL TEMP. = 74.204 HEATER TEMP = 144.17 COOLER TEMP = 55.543

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NASA-LEWIS PRELIMINARY DATA 04/08/76 CADDEII REC 04/08/76 19:19:18.525 FAC SEX15 PGM C003 RDG 3071

LEANOUT 25 BTDC I & T 100 DEG HUM = 80 % 1 1/2 T OPE MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.380 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR TEMP 102.50 PRESS 29.370 CFM 18.898 DRY FLOW 74.908 VAPOR FLOW 2.6911 PRESS TOTAL 14.433

COMP. FUEL TEMP 74.568 PRESS 5.7240 DENSITY 44.791 TURBO FLOW 3.9740 FLOW TRON 7.8668 FPIP 6.1569

COOLING AIR TEMP 101.13 UNEL-HOOD DEL-HOOD 0.69272 FLOW 0.00000 REL-HUM 76.967 DEW-POINT 93.865

REL-HUM 1 76.967 2 36.242 HUMIDITY 251.48 % H2O VAPOR CORRECTED HP 5.7747 0.83575

EAG. COND. F/A DRY 0.10502 F/A WFT 0.10138 FOU. RATIO 1.5575 RPM-1 612.30 RPM-2 616.02 TORQUE 6.5090 BHP 0.75884

WET CORRECTION FACTOR = 0.86912 EXHAUST MLE. WT. = 25.906 EXHAUST DENSITY = 0.067077 EXHAUST FLOW RATE = 1274.1

MEASURED CONC. HC PPM 46072. NOX PPM 3.4983 CO DRY PER CENT 5.7854 CO2 DRY 4.7871
CORRECTED CONC. TO WET BASIS CO DRY 8.2889 PER CENT 5.0283 CO2 DRY 4.1606

EMISSION RATE HC 2.1074 NOX 0.00053043 CO 7.6675
EMISSION MASS/MODE HC 0.035124 NOX 8.8405E-06 CO 0.12779
EMISSION MASS/RATED HP HC 0.00021953 NOX 5.5253E-08 CO 0.00079870
MODE EMIS./STD. CYCLE % HC 11.554 NOX 0.0036835 CO 1.9017

CAL. FUEL AIR RATIO = 0.10126 MEAS. FUEL AIR RATIO = 0.10502 DIFF MEAS. & CAL. F/A PERCENT = -3.5803

CYL TEMP DEG.F CYL-1 278.80 CYL-2 304.10 CYL-3 280.11 CYL-4 298.93

EXT GAS TEMP DEG.F FXT-1 916.98 FXT-2 -454.00 FXT-3 -454.00 FXT-4 329.22 SFXT-1 588.06 SEXT-2 586.16

ENGINE OIL FOILT 150.40 SOILT 286.23 OILP 46.985 MANIFOLD PPESSURE = 14.725

DYMO COND. TORQUE 0.29523 RPM 614.82 CYL. BACK PRESSURE = 29.413

INDUCTION AIR TAIRT1 102.62 TAIRT2 102.50 TAIRT1 -49.872 TAIRT2 97.864

ORIFICE AIR TEMP 85.472 DELTAP 1.3695 DRFP 53.429 FLOW 1642.1

CELL TEMP. = 75.429 HEATER TEMP = 179.10 COOLER TEMP = 72.441

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ORIGINAL PAGE IS OF POOR QUALITY

NASA-LEWIS PRELIMINARY DATA 04/08/76 CADDEII REC 04/08/76 19:26:08.697 FAC SEX15 PGM C003 RDG 3072

LEANOUT 25 BTDC I & T 100 DEG HUM = 80 % 1 1/2 T OPE MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.380 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	100.67	29.376	31.556	125.21	4.4075	14.435

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	72.151	5.6562	44.854	14.825	13.468	6.1491

COOLING AIR	TEMP	UPFL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	99.214	0.0083027	0.73119	2266.9	79.742	93.245

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	79.742	16.808	246.39	5.6581	0.71949

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10756	0.10390	1.6054	1203.6	1204.9	2.8586	0.65511

WET CORRECTION FACTOR = 0.84473 EXHAUST MOLE WT. = 25.751 EXHAUST DENSITY = 0.066675 EXHAUST FLOW RATE = 2146.1

MEASURED CONC.	PART PER MILLION VET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	25056.	4.8925	11.624	7.1607	1.3299
CORRECTED CONC. TO WET BASIS			9.8196	6.0489	1.1234

EMISSION RATE	HC	NOX	CO
	1.9304	0.0012495	15.299
	0.35392	0.0022907	2.8049
	0.0022120	1.4317E-06	0.017531
EMISSION MASS/MODE	0.0022120	1.4317E-06	0.017531
	116.42	0.095444	41.739
MODE EMIS./STO. CYCLE %			

CAL. FUEL AIR RATIO = 0.10555 MEAS. FUEL AIR RATIO = 0.10756 DIFF MEAS. & CAL. F/A PERCENT = -1.8750

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	286.02	314.10	290.08	309.45

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SFXT-1	SFXT-2
	1385.2	-454.00	-454.00	421.91	608.27	605.68

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 11.282
	151.61	341.67	57.306	

DYNO COFD.	TORQUE	PPM	CYL. BACK PRESSURE = 29.356
	3.8668	1199.6	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	100.71	100.67	80.360	97.980

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	83.234	1.3617	53.495	1640.9

CELL TEMP. = 73.440 HEATER TEMP = 176.31 COOLER TEMP = 74.133

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NASA-LEWIS PRELIMINARY DATA 04/08/76 CADDEII REC 04/08/76 19:26:30.662 FAC SEX15 PGM C003 RDG 3073

LEANOUT 25 BTDC I & T 100 DEG HUM = 80 ° 1 1/2 T OPE MODE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.380 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	100.89	29.375	31.945	126.76	4.4601	14.440

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	72.248	5.6616	44.852	14.611	13.207	6.1485

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	99.369	0.0047049	0.73894	2248.7	79.228	93.245

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	79.223	0.91809	246.30	5.6558	1.3736

ENG. COND.	F/A DRY	F/A WET	FQI. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10419	0.10065	1.5551	1201.2	1202.6	5.4672	1.2504

WET CORRECTION FACTOR = 0.83583 EXHAUST MOLE. WT. = 25.957 EXHAUST DENSITY = 0.067210 EXHAUST FLOW RATE = 2148.9

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	25394	4.7795	11.544	7.1431	1.4878
CORRECTED CONC. TO WET BASIS			9.6492	5.9704	1.2436

	HC	NOX	CO
EMISSION RATE	1.9591	0.0012222	15.054
EMISSION MASS/MODE	0.097954	6.1110E-05	0.75269
EMISSION MASS/RATED HP	0.00061221	3.8194E-07	0.0047043
MODE EMIS./STD. CYCLE %	32.222	0.025463	11.201

CAL. FUEL AIR RATIO = 0.10505 MEAS. FUEL AIR RATIO = 0.10419 DIFF MEAS. & CAL. F/A PERCENT = 0.82630

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	286.92	313.25	288.82	308.25

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	715.82	-454.00	-454.00	-212.03	603.82	601.35

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 11.263
	151.43	-124.78	57.314	

RYAN COND.	TORQUE	RPM	CYL. RACK PRESSURE = 29.487
	7.3879	1202.5	

INDUCTION AIR	IAIPT1	IAIPT2	TAIPT1	TAIPT2
	100.93	100.89	84.648	98.191

BRIEFING AIR	TEMP	DELTA P	ORFP	FLOW
	83.301	1.3066	53.479	1608.0

CELL TEMP. = 73.485 HEATER TEMP = 176.94 COOLER TEMP = 77.033

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MASA-LEWIS PRELIMINARY DATA 04/08/76 CADDEIT REC 04/08/76 19:34:50.224 FAC SEX15 PGM C003 RDG 3075

LEAFOUT 25 BTDC I & T 100 DEG HUM = 80 % 1 1/2 T OPE MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.380 RATED HP = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	102.24	29.377	18.617	73.805	2.6332	14.433

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	73.165	5.7300	44.828	3.9756	7.6778	6.1443

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	100.88	-0.021034	0.72372	0.00000	77.060	93.655

REL-HUM	1	2	HUMIDITY	H2O VAPOR	CORRECTED HP
	77.060	43.286	249.75	5.7350	0.57897

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10403	0.10044	1.5526	594.06	594.72	4.6505	0.52602

WET CORRECTION FACTOR = 0.87039 EXHAUST MOLE. WT. = 25.968 EXHAUST DENSITY = 0.067237 EXHAUST FLOW RATE = 1251.0

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	46056.	3.3583	9.3386	5.7445	4.9315
CORRECTED CONC. TO WET BASIS					
			8.1283	4.9999	4.2923

EMISSION RATE	HC	NOX	CO	
	2.0685	0.00049997	7.3826	
	EMISSION MASS/MODE	0.034475	8.3328E-06	0.12304
	EMISSION MASS/RATED HP	0.00021547	5.2080E-08	0.00076902
MODE EMIS./STP. CYCLE %				
	11.341	0.0034720	1.8310	

CAL. FUEL AIR RATIO = 0.10032 MEAS. FUEL AIR RATIO = 0.10403 DIFF MEAS. & CAL. F/A PERCENT = -3.5670

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	267.48	293.05	266.59	287.13

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1054.6	-454.00	-454.00	402.42	537.23	534.04

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 15.124
	146.86	284.19	46.957	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.196
	3.9078	580.44	

INDUCTION AIR	TAIPT1	TAIPT2	TAIRT1	TAIPT2
	102.34	102.24	86.542	98.031

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	84.867	1.3269	53.501	1617.9

CELL TEMP. = 73.983 HEATER TEMP = 126.03 COOLER TEMP = 66.587

NASA-LEWIS PRELIMINARY DATA 04/08/76 CADDE11 REC. 04/08/76 19:50:46.439 FAC SEX15 PGM C003 RDG 3075

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 80.3 MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.380 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	100.94	29.383	219.01	902.40	29.188	14.910

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	63.743	5.3471	45.079	80.309	78.797	5.9790

COOLING AIR	TEMP	JDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	100.19	2.7548	3.4044	9492.2	75.411	91.705

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	75.411	24.850	226.41	5.1992	144.17

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.087319	0.084583	1.3033	2712.1	2715.1	245.37	126.71

WET CORRECTION FACTOR = 0.81876 EXHAUST MOLE. WT. = 27.115 EXHAUST DENSITY = 0.070206 EXHAUST FLOW RATE = 14391.

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	2028.3	47.983	9.4812	9.5372	0.036524
CORRECTED CONC. TO WET BASIS			7.7628	7.8087	0.029904

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	HC	NOX	CO
EMISSION RATE	1.0479	0.082176	81.109
EMISSION MASS/MODE	0.0052397	0.00041088	0.40555
EMISSION MASS/RATED HP	3.2748E-05	2.5680E-06	0.0025347
MODE EMIS./STD. CYCLE %	1.7236	0.17120	6.0349

CAL. FUEL AIR RATIO = 0.089004 MEAS. FUEL AIR RATIO = 0.087319 DIFF MEAS. & CAL. F/A PERCENT = 1.9299

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	400.76	417.75	387.84	404.42

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	156.68	1466.7	-454.00	703.71	1313.4	1311.6

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.224
	186.01	238.98	73.395	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.523
	241.48	2655.1	

INDUCT ION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	100.88	100.94	27.467	97.457

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	84.182	1.7250	53.390	1838.2

CELL TEMP. = 76.369 HEATER TEMP = 179.21 COOLER TEMP = 97.904

NASA-LEWIS PRELIMINARY DATA 04/08/76 CADDEIT REC 04/08/76 19:55:20.169 FAC SEX15 PGM C003 RDG 3077

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 80 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.380 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	101.62	29.364	203.09	829.28	28.696	14.821

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	65.108	5.3735	45.342	73.785	71.872	6.0117

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	101.08	2.7214	3.4354	9426.9	78.306	93.575

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	78.306	27.103	242.22	5.5622	129.06

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.086668	0.083769	1.2936	2447.5	2449.7	247.94	115.54

WET CORRECTION FACTOR = 0.81061 EXHAUST MOLE. WT. = 27.163 EXHAUST DENSITY = 0.070332 EXHAUST FLOW RATE = 13220.

MEASURED CONC.	PART PER MILLION WET	PER CENT		
	HC PPM	CO2 DRY		
	NOX PPM	O2 DRY		
	2121.5	9.8477	9.3027	0.056406
CORRECTED CONC. TO WET BASIS	46.733	7.9826	7.5408	0.045723

	HC	NOX	CO
EMISSION RATE	1.0069	0.073523	76.619
EMISSION MASS/MODE	0.083910	0.0061269	6.3849
EMISSION MASS/RATED HP	0.00052444	3.9293E-05	0.039906
MODE EMIS./STD. CYCLE %	27.602	2.5529	95.014

CAL. FUEL AIR RATIO = 0.090039 MEAS. FUEL AIR RATIO = 0.086668 DIFF MEAS. & CAL. F/A PERCENT = 3.8894

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	382.79	403.99	377.25	394.52

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	156.12	1224.3	-454.00	589.13	254.5	1253.4

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.425
	188.14	150.79	71.495	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.490
	233.45	2391.5	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	101.58	101.62	73.894	97.222

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	84.955	1.7196	53.431	1834.1

CELL TEMP. = 77.643 HEATER TEMP = 142.46 COOLER TEMP = 63.966

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NASA-LEWIS		PRELIMINARY DATA		04/08/76	CADDEII	REC 04/08/76 19:59:18.273		FAC SEX15	PGM C003	RDG 3078
LFANOUT 25 BTDC TO CL APP 100 DEG HUM = 80 %				MODE = 5.0000		NO. SCANS = 5				
ENGINE TIMING = 25.000		DEG.	BAROMETRIC PRESSURE = 29.380		RATED HP = 160.00		HC RATIO = 2.1250			
COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL				
	103.19	29.377	25.96	506.21	16.943	14.590				
COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP				
	68.377	5.5190	44.355	46.982	45.266	6.0552				
COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT				
	103.28	2.6580	3.3391	9302.2	71.266	92.050				
REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP					
	71.266	13.531	234.29	5.3800	72.124					
ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP			
	0.089421	0.086525	1.3346	2347.8	2350.5	143.22	64.025			
WET CORRECTION FACTOR = 0.82915		EXHAUST MOLE. WT. = 26.959		EXHAUST DENSITY = 0.069804		EXHAUST FLOW RATE = 8143.1				
MEASURED CONC.	PART PER MILLION WET			PER CENT						
	HC PPM	NOX PPM	CO DRY	CO2 DRY	02 DRY					
	1982.9	60.720	9.1630	9.6429	0.067487					
CORRECTED CONC. TO WET BASIS				7.5975	7.9953	0.055956				
EMISSION RATE	HC	NOX	CO							
	0.57967	0.058839	44.915							
EMISSION MASS/MODE	0.057967	0.0058839	4.4915							
EMISSION MASS/RATED HP	0.00036230	3.6774E-05	0.028072							
MODE EMIS./STD. CYCLE %	19.068	2.4516	66.838							
CAL. FUEL AIR PATIO = 0.088116		MEAS. FUEL AIR RATIO = 0.089421		DIFF MEAS. & CAL. F/A PERCENT = -1.4587						
CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4						
	343.60	355.73	354.65	351.92						
EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2				
	154.95	899.76	-454.00	684.49	1149.6	1149.4				
ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 20.847						
	187.93	190.68	71.327							
DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.376							
	135.99	2314.8								
INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2						
	103.18	103.19	32.302	98.312						
ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW						
	85.595	1.5561	53.468	1747.0						
CELL TEMP. = 78.368	HEATER TEMP = 179.19		COOLER TEMP = 103.74							

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NASA-LEWIS		PRELIMINARY DATA		04/08/76	CADDEII	REC 04/08/76 20:02:54.168	FAC SEX15	PGM C003	RDG 3079
LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 80 %				MODE = 3.0000	NO. SCANS = 5				
ENGINE TIMING = 25.000		DEG.	BARDOMETRIC PRESSURE = 29.380		RATED HP. = 160.00		HC RATIO = 2.1250		
COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL			
	99.723	29.360	218.50	900.16	29.214	14.911			
COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP			
	63.230	5.3405	45.092	80.965	78.674	5.9892			
COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT			
	98.937	2.7059	3.3388	9396.5	78.474	91.810			
REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP				
	78.474	73.015	227.18	5.2169	144.58				
ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP		
	0.087403	0.084653	1.3045	2712.9	2714.8	246.03	127.09		
WET CORRECTION FACTOR = 0.82123		EXHAUST MOLE. WT. = 27.108		EXHAUST DENSITY = 0.070190		EXHAUST FLOW RATE = 14361.			
MEASURED CONC.	PART PER MILLION WET		PER CENT						
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY				
	1744.8	46.337	9.3283	9.5685	0.044864				
CORRECTED CONC. TO WET BASIS			7.6507	7.8579	0.036844				
EMISSION RATE	HC	NOX	CO						
	0.89957	0.079191	79.874						
EMISSION MASS/MODE	0.0044979		0.00039595		0.39937				
EMISSION MASS/RATED HP	2.8112E-05		2.4747E-06		0.0024961				
MODE EMISS./STD. CYCLE %	1.4796		0.16498		5.9430				
CAL. FUEL AIR RATIO = 0.088493		MEAS. FUEL AIR RATIO = 0.087400		DIFF MEAS. & CAL. F/A PERCENT = 1.2501					
CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4					
	393.05	409.24	383.08	395.52					
EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SXT-1	SXT-2			
	155.64	968.55	126.50	1076.7	1296.9	1295.0			
ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.304					
	188.50	243.93	73.451						
DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.540						
	239.16	2633.9							
INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2					
	99.705	99.723	40.007	97.472					
ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW					
	82.785	1.7276	53.359	1841.9					
CELL TEMP. = 75.846	HEATER TEMP = 146.17		COOLER TEMP = 88.232						

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NASA-LEWIS PRELIMINARY DATA 04/08/76 CADDELT REC.04/08/76 20:05:54.886 FAC SEX15 PGM C003 RDG 3080

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 80 % MCDE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.380 RATED HP.= 160.00 HC RATIO= 2.1250

COMB. AIR TEMP PRESS CFM DRY FLOW VAPOR FLOW PRESS TOTAL
100.42 29.406 202.54 827.23 27.307 14.801

COMB. FUEL TEMP PRESS DENSITY TURBO FLOW FLOW TRON FPIP
63.806 5.3744 45.377 74.174 71.182 6.0339

COOLING AIR TEMP UDEL-HOOD DEL-HOOD FLOW REL-HUM DEW-POINT
99.999 2.6798 3.4279 9345.4 77.514 92.090

REL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP
77.514 46.617 231.08 5.3063 125.71

ENG. COND. F/A DRY F/A WET EQU. RATIO RPM-1 RPM-2 TORQUE BHP
0.086049 0.083299 1.2843 2434.4 2436.0 243.82 113.02

WET CORRECTION FACTOR = 0.81042 EXHAUST MOLE. WT. = 27.210 EXHAUST DENSITY = 0.070453 EXHAUST FLOW RATE = 13139.

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM NOX PPM CO DRY CO2 DRY O2 DRY
1894.3 42.964 9.8567 9.2855 0.052125
CORRECTED CONC. TO WET BASIS 7.9880 7.5251 0.042243

EMISSION RATE HC NOX CO
0.89355 0.067179 76.200
EMISSION MASS/MODE 0.074462 0.0055982 6.3500
EMISSION MASS/RATED HP 0.00046539 3.4989E-05 0.039687
MODE EMIS./STD. CYCLE % 24.494 2.3326 94.494

CAL.FUEL AIR RATIO = 0.089974 MEAS. FUEL AIR RATIO = 0.086049 DIFF MEAS.& CAL. F/A PERCENT = 4.5615

CYL TEMP DEG.F CYL-1 CYL-2 CYL-3 CYL-4
397.05 405.83 377.56 396.84

EXT GAS TEMP DEG.F EXT-1 EXT-2 EXT-3 EXT-4 SEXT-1 SEXT-2
154.43 765.54 -454.00 822.43 1252.5 1251.4

ENGINE OIL EOILT SOILT OILP MANIFOLD PRESSURE = 28.402
188.08 145.79 70.695

DYNO COND. TORQUE RPM CYL.BACK PRESSURE = 29.596
244.28 2346.4

INDUCTION AIR IAIRT1 IAIRT2 TAIRT1 TAIRT2
100.39 100.42 33.671 97.672

ORIFICE AIR TEMP DELTAP DRFP FLOW
83.242 1.7111 53.432 1832.7

CELL TEMP. = 76.227 HEATER TEMP = 126.93 COOLER TEMP = 79.219

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NASA-LEWIS PRELIMINARY DATA 04/08/76 CADDEII REC 04/08/76 20:09:37.610 FAC SEX15 PGM C003 RDG 3081

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 80% MCDE = 5.0000 NO. SCANS = 5
 ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.380 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	101.08	29.377	126.54	509.27	16.982	14.594

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	65.999	5.5151	44.991	44.915	44.896	6.1335

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	101.08	2.6541	3.3867	9294.6	75.644	91.945

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	75.644	27.337	233.42	5.3601	74.119

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.088158	0.085313	1.3158	2351.6	2353.9	147.42	66.010

WET CORRECTION FACTOR = 0.82510 EXHAUST MOLE. WT. = 27.052 EXHAUST DENSITY = 0.070044 EXHAUST FLOW RATE = 8154.1

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1808.1	58.254	9.1176	9.6910	0.065647
CORRECTED CONC. TO WET BASIS					
			7.5230	7.9960	0.054165

EMISSION RATE	HC	NOX	CO
	0.52929	0.056526	44.535
	0.052929	0.0056526	4.4535
	0.00033080	3.5329E-05	0.027834
EMISSION MASS/MODE			
	0.00033080	3.5329E-05	0.027834
EMISSION MASS/RATED HP			
	0.00033080	3.5329E-05	0.027834
MODE EMIS./STD. CYCLE %	17.411	2.3553	66.272

CAL. FUEL AIR RATIO = 0.087872 MEAS. FUEL AIR RATIO = 0.088158 DIFF MEAS. & CAL. F/A PERCENT = -0.32399

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	348.48	356.57	354.83	350.78

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	152.99	542.74	-454.00	649.44	1149.3	1149.3

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 20.976
	188.14	209.04	70.739	

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.430
	146.66	2266.5	

INDUCTION AIR	IAIRT1	IAIRT2	IAIRT1	TAIRT2
	101.06	101.08	66.851	97.736

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	83.866	1.5720	53.383	1758.4

CELL TEMP. = 77.458 HEATER TEMP = 111.40 COOLER TEMP = 78.829

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NASA-LEWIS PRELIMINARY DATA 04/08/76 CADDEI REC 04/08/76 20:21:00.477 FAC SEX15 PGM C03 RDG 3082

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 80 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.390 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	100.01	29.390	218.18	898.31	29.237	14.901

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	64.444	5.3513	45.060	78.124	76.085	5.9730

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	99.550	2.7222	3.4177	9428.5	77.962	91.875

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	77.962	22.358	227.83	5.2317	145.02

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.084698	0.082028	1.2641	2711.9	2714.5	247.09	127.59

WET CORRECTION FACTOR = 0.81927 EXHAUST MOLE. WT. = 27.313 EXHAUST DENSITY = 0.070719 EXHAUST FLOW RATE = 14191.

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1608.2	60.196	8.3891	10.029	0.045485
CORRECTED CONC. TO WET BASIS			6.8729	8.2164	0.037264

	HC	NOX	CO
EMISSION RATE	0.81933	0.10166	70.813
EMISSION MASS/MODE	0.0040966	0.00050830	0.35406
EMISSION MASS/RATED HP	2.5604E-05	3.1769E-06	0.0022129
MODE EMIS./STD. CYCLE %	1.3476	0.21179	5.2688

CAL. FUEL AIR RATIO = 0.086057 MEAS. FUEL AIR RATIO = 0.084698 DIFF MEAS. & CAL. F/A PERCENT = 1.5053

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	393.92	411.47	390.71	398.26

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SFXT-1	SEXT-2
	254.96	841.42	-454.00	776.61	1305.8	1303.9

ENGINE OIL	EDILT	SOILT	OILP	MANIFOLD PRESSURE = 28.192
	188.47	122.62	73.891	

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.535
	250.84	2664.4	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	100.02	100.01	154.73	97.374

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	83.225	1.7200	53.456	1837.2

CELL TEMP. = 76.023 HEATER TEMP = 123.85 COOLER TEMP = 90.318

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NASA-LEWIS		PRELIMINARY DATA		04/08/76	CADDEII	REC 04/08/76 20:31:22.090	FAC SEX15	PGM C003	RDG 3084
LEANOUT 25 BTDC TO CL APP 100 DEG HUM = -80 %				MODE = 5.0000		NO. SCANS = 5			
ENGINE TIMING = 25.000		DEG.	BAROMETRIC PRESSURE = 29.390		RATED HP. = 160.00		HC RATIO = 2.1250		
COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL			
	101.26	29.391	125.65	506.38	16.409	14.590			
CCMR. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP			
	68.145	5.5184	44.961	43.277	43.273	6.1221			
COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT			
	101.19	2.6959	3.4025	9377.0	73.219	91.065			
REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP				
	73.219	0.29603	226.83	5.2088	74.054				
ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP		
	0.085455	0.082773	1.2755	2354.0	2356.0	147.38	66.059		
WET CORRECTION FACTOR = 0.82407		EXHAUST MJLE. WT. = 27.255		EXHAUST DENSITY = 0.070569		EXHAUST FLOW RATE = 8021.4			
MEASURED CONC.	PART PER MILLION WET		PER CENT						
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY				
	1834.7	75.281	8.1640	10.230	0.078268				
CORRECTED CONC. TO WET BASIS			6.7277	8.4300	0.064498				
EMISSION RATE	HC	NOX	CO						
	0.52833	0.071859	39.179						
EMISSION MASS/MODE	0.052833	0.0071859	3.9179						
EMISSION MASS/RATED HP	0.00033021	4.4912E-05	0.024487						
MODE EMIS./STD. CYCLE %	17.379	2.9941	58.302						
CAL. FUEL AIR RATIO = 0.085359		MEAS. FUEL AIR RATIO = 0.085455		DIFF MEAS. & CAL. F/A PERCENT = -0.10086					
CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4					
	342.57	357.96	355.82	351.73					
EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2			
	1364.5	451.30	-163.11	703.66	1151.7	1151.7			
ENGINE OIL	EOILT	SOILT	OIL?	MANIFOLD PRESSURE = 20.874					
	187.91	191.33	70.871						
DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.492						
	148.50	2317.5							
INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2					
	101.26	101.26	105.22	97.653					
ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW					
	84.130	1.5882	53.423	1766.7					
CELL TEMP. = 77.484	HEATER TEMP = 157.28		COOLER TEMP = 90.009						

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NASA-LEWIS		PRELIMINARY DATA		04/08/76	CADDEII	REC 04/08/76 20:35:38.865	FAC SEX15	PGM C003	RDG 3085
LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 80 %				MODE = 3.0000		NO. SCANS = 5			
ENGINE TIMING = 25.000		DEG.	BAROMETRIC PRESSURE = 29.390		RATED HP. = 160.00		HC RATIO = 2.1250		
COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL			
	101.94	29.383	218.20	899.57	28.274	14.903			
COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP			
	66.005	5.3429	45.018	78.299	76.076	5.9580			
COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT			
	101.30	2.6671	3.4512	9320.3	71.186	90.815			
REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP				
	71.186	24.796	220.01	5.0522	144.76				
ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP		
	0.084568	0.081992	1.2622	2716.8	2718.8	246.12	127.32		
WET CORRECTION FACTOR = 0.82005		EXHAUST MOLE. WT. = 27.323		EXHAUST DENSITY = 0.070745		EXHAUST FLOW RATE = 14190.			
MEASURED CONC.	PART PER MILLION WET		PER CENT						
	HC PPM	NOX PPM	CO DRY	CO2 DRY	CO DRY				
	1670.5	56.270	8.3387	10.114	0.043064				
CORRECTED CONC. TO WET BASIS			6.8381	8.2937	0.035315				
EMISSION RATE	HC	NOX	CO						
	0.85101	0.095022	70.450						
EMISSION MASS/MODE	0.0042551	0.00047511	0.35225						
EMISSION MASS/RATED HP	2.6594E-05	2.9694E-06	0.0022016						
MODE EMIS./STD. CYCLE %	1.3997	0.19796	5.2418						
CAL. FUEL AIR RATIO = 0.084568		MEAS. FUEL AIR RATIO = 0.084568		DIFF MEAS. & CAL. F/A PERCENT = 1.5592					
CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4					
	403.31	416.71	396.63	407.21					
EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2			
	153.73	823.41	329.72	1017.8	1317.4	1316.0			
ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.292					
	188.29	105.62	73.555						
DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.519						
	244.31	2649.5							
INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2					
	101.87	101.94	136.06	97.650					
ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW					
	84.919	1.7217	53.362	1835.3					
CELL TEMP. = 78.360	HEATER TEMP = 118.43		COOLER TEMP = 93.373						

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NASA-LEWIS		PRELIMINARY DATA		04/08/76	CADDEI	REC 04/08/76 20:43:47.741		FAC SEX15	PGM C003	RDG 3087
LEANDUT 25 BTDC TO CL APP 100 DEG HUM = 80 %				MODE = 4.0000		NO. SCANS = 5				
ENGINE TIMING = 25.000		DEG.	BAROMETRIC PRESSURE = 29.390			RATED HP. = 160.00		HC RATIO = 2.1250		
COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL				
	99.412	29.406	202.09	829.21	26.418	14.827				
COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP				
	63.725	5.3855	45.079	71.643	69.127	6.0366				
COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT				
	98.799	2.6771	3.4387	9339.9	77.393	91.065				
REL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP						
	77.393	13.931	223.02	5.1212	127.54					
ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP			
	0.083365	0.080791	1.2442	2431.1	2433.2	249.53	115.04			
WET CORRECTION FACTOR = 0.80987		EXHAUST MOLE. WT. = 27.415		EXHAUST DENSITY = 0.070985		EXHAUST FLOW RATE = 13027.				
MEASURED CONC.	PART PER MILLION WET		PER CENT							
	HC PPM	NOX PPM	CO DRY	CO2 DRY	CO DRY					
	1949.2	58.566	8.8721	9.7703	0.068987					
CORRECTED CONC. TO WET BASIS			7.1852	7.9127	0.055870					
EMISSION RATE	HC	NOX	CO							
	0.91161	0.090792	67.957							
EMISSION MASS/MODE	0.075967	0.3075660	5.6631							
EMISSION MASS/RATED HP	0.00047479	4.7288E-05	0.035394							
MODE EMIS./STD. CYCLE %	24.989	3.1525	84.272							
CAL. FUEL AIR RATIO = 0.087407		MEAS. FUEL AIR RATIO = 0.083365		DIFF MEAS. & CAL. F/A PERCENT = 4.8495						
CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4						
	385.85	405.38	382.06	403.60						
EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2				
	159.41	66.958	-454.00	609.84	1265.9	1265.0				
ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.586						
	187.79	254.16	71.003							
DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.551							
	258.53	2356.1								
INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2						
	99.369	99.412	86.473	97.098						
ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW						
	82.776	1.6415	53.373	1797.0						
CELL TEMP. = 77.059	HEATER TEMP = 144.47		COOLER TEMP = 86.834							

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NASA-LEWIS PRELIMINARY DATA 04/08/76 CADDEII REC 04/08/76 20:48:24.001

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 80 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.390 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	100.25	29.437	202.21	829.56	26.218	14.822

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	64.354	5.3900	45.062	70.007	68.962	6.0645

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	99.731	2.7144	3.3200	9413.3	74.869	90.810

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	74.869	23.520	221.23	5.0802	127.58

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.083130	0.080584	1.2408	2429.9	2432.3	248.65	115.04

WET CORRECTION FACTOR = 0.80920 EXHAUST MOLE. WT. = 27.434 EXHAUST DENSITY = 0.071032 EXHAUST FLOW RATE = 13018.

MEASURED CONC.	PART PER MILLION WET		PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY
	1935.9	57.178	8.8564	9.7898
CORRECTED CONC. TO WET BASIS			O2 DRY	
			7.1666	7.9219
				0.059966
				0.048524

EMISSION RATE	HC	NOX	CO
	0.90477	0.088580	67.735
EMISSION MASS/MODE			
	0.075398	0.0073817	5.6446
EMISSION MASS/RATED HP			
	0.00047124	4.6136E-05	0.035279
MODE EMIS./STD. CYCLE %			
	24.802	3.0757	83.997

CAL. FUEL AIR RATIO = 0.087378 MEAS. FUEL AIR RATIO = 0.083130 DIFF MEAS. & CAL. F/A PERCENT = 5.1093

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	385.87	405.53	382.09	402.77

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SFXT-1	SEXT-2
	153.77	-441.81	-454.00	689.86	1263.8	1263.0

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.571
	187.98	296.61	70.803	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.559
	258.87	2346.4	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	100.21	100.25	60.158	97.220

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	83.673	1.6902	53.389	1821.2

CELL TEMP. = 77.803 HEATER TEMP = 138.39 COOLER TEMP = 88.586

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NASA-LEWIS PRELIMINARY DATA 04/08/76 CADDEII REC 04/08/76 20:52:14.464 FAC SEX15 PGM C003 RDG 3089

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 80 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.390 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 100.58 PRESS 29.391 CFM 124.95 DRY FLOW 504.48 VAPOR FLOW 16.355 PRESS TOTAL 14.597

COMB. FUEL TEMP 67.653 PRESS 5.5079 DENSITY 44.974 TURBO FLOW 45.605 FLOW TRON 43.684 FPIP 6.1200

COOLING AIR TEMP 100.42 UDEL-HOOD 2.6774 DEL-HOOD 3.2945 FLOW 9340.5 REL-HUM 74.798 DEW-POINT 91.095

REL-HUM 1 74.798 2 19.116 HUMIDITY 226.94 % H2O VAPOR 5.2113 CORRECTED HP 74.803

ENG. COND. F/A DRY 0.086593 F/A WET 0.083874 EQU. RATIO 1.2924 RPM-1 2353.4 RPM-2 2354.5 TORQUE 149.06 BHP 66.791

WET CORRECTION FACTOR = 0.82866 EXHAUST MOLE. WT. = 27.159 EXHAUST DENSITY = 0.070347 EXHAUST FLOW RATE = 8024.8

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 1843.5 NOX PPM 67.667 CO DRY 8.1596 CO2 DRY 10.153 O2 DRY 0.057726
CORRECTED CONC. TO WET BASIS CO DRY 6.7615 CO2 DRY 8.4132 O2 DRY 0.047835

EMISSION RATE HC 0.53109 NOX 0.064618 CO 39.392
EMISSION MASS/MODE 0.053109 0.0064618 3.9392
EMISSION MASS/RATED HP 0.00033193 4.0386E-05 0.024620
MODE EMIS./STD. CYCLE % 17.470 2.5924 58.619

CAL. FUEL AIR RATIO = 0.085551 MEAS. FUEL AIR RATIO = 0.086593 DIFF MEAS. & CAL. F/A PERCENT = -1.2031

CYL TEMP DEG.F CYL-1 347.01 CYL-2 360.20 CYL-3 357.54 CYL-4 359.59

EXT GAS TEMP DEG.F EXT-1 436.07 EXT-2 -454.00 EXT-3 -454.00 EXT-4 497.75 SEXT-1 1163.1 SEXT-2 1162.9

ENGINE OIL EOILT 187.90 SOILT 161.09 OILP 71.331 MANIFOLD PRESSURE = 20.807

DYNO COND. TORQUE 140.48 RPM 2310.8 CYL. BACK PRESSURE = 29.464

INDUCTION AIR IAIRT1 100.59 IAIRT2 100.58 TAIRT1 84.559 TAIRT2 96.893

ORIFICE AIR TEMP 84.305 DELTAP 1.5533 ORFP 53.414 FLOW 1747.6

CELL TEMP. = 78.474 HEATER TEMP = 141.09 COOLER TEMP = 76.207

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NASA-LFWIS		PRELIMINARY DATA		04/08/76	CADDÉII	REC 04/08/76 21:02:34.919	FAC SEX15	PGM C003	RDG 3090
LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 80 %				MODE = 3.0000		NO. SCANS = 5			
ENGINE TIMING = 25.000		DEG.		BAROMETRIC PRESSURE = 29.390		RATED HP. = 160.00		HC RATIO = 2.1250	
COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL			
	99.196	29.366	217.40	898.35	28.197	14.908			
COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP			
	65.637	5.3636	45.028	75.053	72.904	5.9946			
COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT			
	98.540	2.6137	3.4838	9214.3	77.221	90.785			
REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP				
	77.221	47.995	219.71	5.0453	144.77				
ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	8HP		
	0.081153	0.078684	1.2112	2709.9	2711.9	247.33	127.62		
WET CORRECTION FACTOR = 0.81868		EXHAUST MOLE WT. = 27.589		EXHAUST DENSITY = 0.071434		EXHAUST FLOW RATE = 13991.			
MEASURED CONC.	PART PER MILLION WET			PER CENT					
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY				
	1611.0	80.438	7.0023	10.774	0.043384				
CORRECTED CONC. TO WET BASIS				5.7326	8.8204	0.035518			
		HC	NOX	CO					
EMISSION RATE	3.80917		0.13393	58.230					
EMISSION MASS/MODE	0.0040458		0.00066963	0.29115					
EMISSION MASS/RATED HP	2.5286E-05		4.1852E-06	0.0018197					
MODE EMIS./STD. CYCLE %	1.3309		0.27901	4.3326					
CAL. FUEL AIR RATIO = 0.082656		MEAS. FUEL AIR RATIO = 0.081153		DIFF MEAS. & CAL. F/A PERCENT = 1.8521					
CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4					
	393.07	401.73	390.25	389.75					
EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2			
	154.90	693.88	701.66	1094.1	1323.2	1321.3			
ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.316					
	188.34	210.14	73.435						
DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.553						
	253.90	2650.3							
INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2					
	99.205	99.196	102.44	96.603					
ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW					
	83.216	1.7236	53.430	1839.1					
CELL TEMP. = 76.723	HEATER TEMP = 134.36		COOLER TEMP = 81.296						

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NASA-LEWIS PRELIMINARY DATA 04/08/76 CADDEII REC 04/08/76 21:33:09.327 FAC SEX15 PGM C003 RDG 3097

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 80 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.390 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP PRESS CFM DRY FLOW VAPOR FLOW PRESS TOTAL
99.611 29.402 201.17 825.89 27.019 14.828

COMB. FUEL TEMP PRESS DENSITY TURBO FLOW FLOW TRON FPIP
65.027 5.3768 45.044 68.436 66.331 6.0056

COOLING AIR TEMP UDEL-HOOD DEL-HOOD FLOW REL-HUM DEW-POINT
99.093 2.6486 3.3867 9283.6 78.899 91.875

REL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP
78.899 58.218 229.01 5.2588 131.71

ENG. COND. F/A DRY F/A WET EQU. RATIO RPM-1 RPM-2 TORQUE BHP
0.080314 0.077770 1.1987 2440.1 2442.8 255.32 118.62

WET CORRECTION FACTOR = 0.80601 EXHAUST MOLE. WT. = 27.555 EXHAUST DENSITY = 0.071606 / EXHAUST FLOW RATE = 12837.

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM NOX PPM CO DRY CO2 DRY O2 DRY
1826.6 90.669 7.8053 10.296 0.049835
CORRECTED CONC. TO WET BASIS 6.2911 8.2990 0.040143

EMISSION RATE HC NOX CO
0.84180 0.13851 58.633
EMISSION MASS/MODE 0.070150 0.011542 4.8861
EMISSION MASS/RATED HP 0.00043844 7.2141E-05 0.030538
MODE EMIS./STD. CYCLE % 23.076 4.8094 72.709

CAL. FUEL AIR RATIO = 0.084784 MEAS. FUEL AIR RATIO = 0.080314 DIFF MEAS. & CAL. F/A PERCENT = 5.5652

CYL TEMP DEG.F CYL-1 CYL-2 CYL-3 CYL-4
394.33 412.03 395.42 413.44

EXT GAS TEMP DEG.F EXT-1 EXT-2 EXT-3 EXT-4 SEXT-1 SEXT-2
1562.1 -72.374 -454.00 596.12 1282.1 1281.4

ENGINE OIL EOILT SOILT OILP MANIFOLD PRESSURE = 28.491
188.03 226.25 71.287

DYNO COND. TORQUE RPM CYL. BACK PRESSURE = 29.547
250.60 2367.7

INDUCTION AIR IAIRT1 IAIRT2 TAIRT1 TAIRT2
99.602 99.611 107.55 96.082

ORIFICE AIR TFMP DELTAP ORFP FLOW
84.033 1.6494 53.330 1799.3

CELL TEMP. = 79.084 HEATER TEMP = 120.88 COOLER TEMP = 56.559

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NASA-LEWIS		PRELIMINARY DATA		04/08/76	CADDEII	REC 04/08/76 21:35:30.081	FAC SEX15	PGM C003	RDG 3098
LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 80 %				MODE = 5.0000		NO. SCANS = 5			
ENGINE TIMING = 25.000		DEG.	BAROMETRIC PRESSURE = 29.390		RATED HP. = 160.00		HC RATIO = 2.1250		
COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL			
	101.27	29.390	122.87	495.43	16.061	14.593			
COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP			
	68.270	5.5172	44.958	42.907	41.419	6.0150			
COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT			
	101.25	2.6898	3.3244	9365.0	73.227	91.085			
REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP				
	73.227	20.398	226.93	5.2110	73.215				
ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP		
	0.083602	0.080977	1.2478	2350.5	2352.2	145.88	65.288		
WET CORRECTION FACTOR = 0.82799		EXHAUST MOLE. WT. = 27.397		EXHAUST DENSITY = 0.070938		EXHAUST FLOW RATE = 7794.3			
MEASURED CONC.	PART PER MILLION WET		PER CENT						
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY				
	1740.9	105.97	6.9755	10.741	0.054545				
CORRECTED CONC. TO WET BASIS			5.7757	8.8932	0.045163				
EMISSION RATE	HC	NOX	CO						
	0.48712	0.098290	32.683						
EMISSION MASS/MODE	0.048712	0.0098290	3.2682						
EMISSION MASS/RATED HP	0.00030445	6.1431E-05	0.020427						
MODE EMIS./STD. CYCLE %	16.024	4.0954	48.635						
CAL. FUEL AIR RATIO = 0.082670		MEAS. FUEL AIR RATIO = 0.083602		DIFF MEAS. & CAL. F/A PERCENT = -1.1150					
CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4					
	355.47	366.03	362.19	364.08					
EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2			
	1783.6	-111.63	-454.00	650.86	1179.4	1179.3			
ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 20.611					
	188.20	174.83	70.591						
DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.511						
	144.11	2277.0							
INDUCTION AIR	IAIPT1	IAIRT2	TAIRT1	TAIRT2					
	101.34	101.27	124.82	97.496					
ORIFICE AIR	TEMP	DFLTAP	ORFP	FLJW					
	84.604	1.5468	53.443	1743.6					
CFLI TEMP. = 79.305	HEATER TEMP = 163.86		COOLER TEMP = 87.409						

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NASA-LEWIS		PRELIMINARY DATA		04/08/76	CADDEII	REC 04/08/76 21:40:39.778		FAC SEX15	PGM C003	RJG 3099
LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 80 %				MODE = 3.0000		NO. SCANS = 5				
ENGINE TIMING = 25.000		DEG.		BAROMETRIC PRESSURE = 29.390		RATED HP. = 160.00		HC RATIO = 2.1250		
COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL				
	101.31	29.386	217.17	896.66	28.390	14.908				
COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP				
	66.614	5.3045	45.002	75.008	72.844	5.9898				
COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT				
	100.60	2.7045	3.4135	9393.8	73.071	91.050				
REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP					
	73.071	9.6610	221.64	5.0895	146.97					
ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP			
	0.081240	0.078746	1.2125	2708.8	2710.9	250.80	129.35			
WET CORRECTION FACTOR = 0.81667		EXHAUST MOLE. WT. = 27.582		EXHAUST DENSITY = 0.071416		EXHAUST FLOW RATE = 13972.				
MEASURED CONC.	PART PER MILLION WET		PER CENT							
	HC PPM	NOX PPM	CO DRY	CO2 DRY	CO DRY					
	1654.6	91.169	7.1897	10.686	0.031823					
CORRECTED CONC. TO WET BASIS										
		HC	NOX	CO						
EMISSION RATE		0.82998	0.15159	59.563						
EMISSION MASS/MODE		0.0041499	0.00075797	0.22782						
EMISSION MASS/RATED HP		2.5937E-05	4.7373E-06	0.0018613						
MODE EMIS./STD. CYCLE %		1.3651	0.31582	4.4318						
CAL. FUEL AIR RATIO = 0.083160		MEAS. FUEL AIR RATIO = 0.081240		DIFF MEAS. & CAL. F/A PERCENT = 2.3639						
CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4						
	407.47	422.30	405.13	415.57						
EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2				
	1916.3	31.181	-19.575	950.68	1340.6	1339.3				
ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.292						
	188.37	213.42	73.711							
DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.555							
	240.70	2649.7								
INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2						
	101.32	101.31	85.506	96.807						
ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW						
	85.165	1.6956	53.301	1821.5						
CELL TEMP. = 79.216	HEATER TEMP = 154.07		COOLER TEMP = 85.312							

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NASA-LEWIS	PRELIMINARY DATA	04/08/76	CADDEI	REC 04/08/76 21:43:58.315	FAC SEX15	PGM C003	RDG 3100
LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 80%				MODE = 4.0000	NO. SCANS = 5		
ENGINE TIMING = 25.000		DEG.	BAROMETRIC PRESSURE = 29.390		RATED HP. = 160.00	HC RATIO = 2.1250	
COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL	
	100.93	29.400	202.01	827.07	27.551	14.809	
COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP	
	66.551	5.3741	45.003	68.588	66.484	6.0285	
COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT	
	130.47	2.6810	3.4730	9347.6	77.044	92.385	
REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP		
	77.044	19.520	233.18	5.3546	131.12		
ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.080384	0.077793	1.1998	2442.1	2444.5	253.35	117.81
WET CORRECTION FACTOR = 0.80508		EXHAUST MOLE. WT. = 27.650		EXHAUST DENSITY = 0.071592		EXHAUST FLOW RATE = 12866.	
MEASURED CONC.	PART PER MILLION WET		PER CENT				
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY		
	1795.1	85.858	7.8213	10.346	0.040034		
CORRECTED CONC. TO WET BASIS			6.2968	8.3290	0.032271		
EMISSION RATE	HC	NOX	CO				
	0.82913	0.13145	58.817				
EMISSION MASS/MODE	0.069094	0.310955	4.9014				
EMISSION MASS/RATED HP	0.00043184	6.8466E-05	0.030634				
MODE EMIS./STD. CYCLE %	22.728	4.5644	72.937				
CAL. FUEL AIR RATIO = 0.084764		MEAS. FUEL AIR RATIO = 0.080384		DIFF MEAS. & CAL. F/A PERCENT = 5.4483			
CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4			
	395.74	413.50	394.68	413.81			
EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2	
	1195.8	-111.01	-454.00	677.74	1289.6	1289.2	
ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.521			
	187.98	199.06	71.303				
DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.554				
	249.49	2401.4					
INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2			
	100.91	100.93	84.760	96.385			
ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW			
	85.340	1.6398	53.394	1792.2			
CELL TEMP. = 80.143	HEATER TEMP = 131.49		COOLER TEMP = 69.909				

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NASA-LEVIS PRELIMINARY DATA 04/08/76 CADDE11 REC 04/08/76 21:51:30.348 FAC SEX15 PGM C003 RDG 3101

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 80 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.390 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	100.21	29.398	122.87	495.58	15.961	14.588

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	68.324	5.5175	44.956	42.833	40.903	6.0858

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	100.37	2.6356	3.2323	9257.8	75.098	90.875

REL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP
	75.098	0.26003	225.46	5.1772 72.213

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.082536	0.079961	1.2319	2348.8	2351.3	144.19	64.485

WET CORRECTION FACTOR = 0.82470 EXHAUST MOLE. WT. = 27.480 EXHAUST DENSITY = 0.071152 EXHAUST FLOW RATE = 7764.2

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1778.6	114.55	6.9228	10.763	0.082888
CORRECTED CONC. TO WET BASIS			5.7092	8.8766	0.068358

	HC	NOX	CO
EMISSION RATE	0.49575	0.10584	32.182
EMISSION MASS/MODE	0.049575	0.010584	3.2182
EMISSION MASS/RATED HP	0.00030984	5.5149E-05	0.020114
MODE EMIS./STD. CYCLE %	16.308	4.4099	47.890

CAL. FUEL AIR RATIO = 0.082471 MEAS. FUEL AIR RATIO = 0.082536 DIFF MEAS. & CAL. F/A PERCENT = -0.079799

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	348.05	360.50	357.34	355.11

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1211.2	-390.26	-341.98	675.69	1157.6	1157.7

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 20.611
	187.72	272.19	70.987	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.435
	148.67	2291.3	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	100.26	100.21	139.48	97.302

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	83.594	1.5705	53.398	1758.1

CELL TEMP. = 77.714 HEATER TEMP = 124.19 COOLER TEMP = 74.060

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NASA-LEWIS PRELIMINARY DATA 04/08/76 CADDEII REC 04/08/76 22:05:32.924 FAC SEX15 PGM C003 RDG 3102

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 80% MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.390 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	101.51	29.425	217.12	897.42	27.839	14.917

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	66.614	5.2778	45.002	72.196	70.162	5.9172

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	100.91	2.6223	3.3086	9231.4	71.278	90.445

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	71.278	22.058	217.14	4.9864	146.35

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.078181	0.075829	1.1669	2716.5	2718.5	249.63	129.12

WET CORRECTION FACTOR = 0.81594 EXHAUST MOLE. WT. = 27.827 EXHAUST DENSITY = 0.072051 EXHAUST FLOW RATE = 13815.

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1515.0	103.45	6.0589	11.185	0.033763
CORRECTED CONC. TO WET BASIS			4.9437	9.1266	0.027549

	HC	NOX	CO
EMISSION RATE	0.75138	0.17008	49.586
EMISSION MASS/MODE	0.0037569	0.00085038	0.24793
EMISSION MASS/RATED HP	2.3481E-05	5.3149E-06	0.0015496
MODE EMIS./STD. CYCLE %	1.2358	0.35433	3.6894

CAL. FUEL AIR RATIO = 0.080525 MEAS. FUEL AIR RATIO = 0.078181 DIFF MEAS. & CAL. F/A PERCENT = 2.9972

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	419.88	432.63	416.31	430.66

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1179.5	-19.369	28.012	874.49	1377.7	1376.1

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.284
	188.42	153.35	73.323	

DYNO COND.	TORQUE	PPM	CYL. BACK PRESSURE = 29.543
	243.79	2662.2	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	101.47	101.51	131.17	97.079

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	85.165	1.6818	53.464	1814.3

CELL TEMP. = 78.722 HEATER TEMP = 133.00 COOLER TEMP = 86.808

ORIGINAL PAGE IS
OF POOR QUALITY

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NASA-LEWIS PRELIMINARY DATA 04/08/76 CADDEII REC 04/08/76 22:11:57.729 FAC SEX15 PGM C003 RDG 3104

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 80% MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.390 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	99.438	29.381	122.55	494.52	15.972	14.578

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	67.509	5.5229	44.978	40.339	38.683	6.0795

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	99.395	2.6533	3.2951	9292.9	77.032	9C.940

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	77.032	32.605	226.09	5.1919	73.085

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.078224	0.075776	1.1675	2344.7	2347.2	146.35	65.335

WET CORRECTION FACTOR = 0.81945 EXHAUST MOLE. WT. = 27.824 EXHAUST DENSITY = 0.072042 EXHAUST FLOW RATE = 7622.9

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1568.6	143.82	5.6103	11.421	0.076268
CORRECTED CONC. TO WET BASIS			4.5974	9.3590	0.062498

EMISSION RATE	HC	NOX	CO	
	0.42925	0.13047	25.443	
	EMISSION MASS/MODE	0.042925	0.013047	2.5443
	EMISSION MASS/RATED HP	0.00026828	8.1542E-05	0.015902
MODE EMIS./STD. CYCLE %	14.120	5.4361	37.862	

CAL. FUEL AIR RATIO = 0.079371 MEAS. FUEL AIR RATIO = 0.078224 DIFF MEAS. & CAL. F/A PERCENT = 1.4670

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	360.47	371.90	370.28	375.87

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	811.87	-454.00	-454.00	470.12	1220.3	1220.4

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 20.623
	188.11	39.114	70.887	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.465
	147.83	2297.7	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	99.473	99.438	129.96	96.598

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	83.673	1.3948	53.464	1659.6

CELL TEMP. = 77.670 HEATER TEMP = 107.78 COOLER TEMP = 60.652

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NASA-LEWIS		PRELIMINARY DATA		04/08/76	CADDEII	REC 04/08/76 22:15:23.394		FAC SEX15	PGM C003	RDG 3105
LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 80 %				MODE = 3.0000		NO. SCANS = 5				
ENGINE TIMING = 25.000		DEG.	BAROMETRIC PRESSURE = 29.390			RATED HP. = 160.00		HC RATIO = 2.1250		
COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL				
	100.44	29.357	216.69	895.61	27.471	14.911				
COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP				
	65.601	5.2016	45.329	72.083	70.039	5.8842				
COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT				
	99.973	2.7360	3.3875	9455.5	72.784	90.090				
REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP					
	72.784	33.411	214.71	4.9305	145.86					
ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP			
	0.078202	0.075875	1.1672	2703.6	2705.9	249.74	128.56			
WET CORRECTION FACTOR = 0.81592		EXHAUST MOLE. WT. = 27.825			EXHAUST DENSITY = 0.072047		EXHAUST FLOW RATE = 13784.			
MEASURED CONC.	PART PER MILLION WET		PER CENT							
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY					
	1476.8	120.45	6.1348	11.183	0.059466					
CORRECTED CONC. TO WET BASIS			5.0056	9.1248	0.048520					
		HC	NOX	CO						
EMISSION RATE		0.73083	0.19758	50.093						
EMISSION MASS/MODE		0.0036542	0.00098791	0.25046						
EMISSION MASS/RATED HP		2.2838E-05	6.1744E-06	0.0015654						
MODE EMIS./STD. CYCLE %		1.2020	0.41163	3.7271						
CAL. FUEL AIR RATIO = 0.080547		MEAS. FUEL AIR RATIO = 0.078202			DIFF MEAS. & CAL. F/A PERCENT = 2.9975					
CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4						
	411.04	423.34	408.30	418.07						
EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2				
	168.76	-8.5496	216.67	896.12	1362.4	1360.8				
ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.347						
	188.29	189.40	73.335							
DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.533							
	244.82	2636.1								
INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2						
	100.47	100.44	138.84	97.193						
ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW						
	84.156	1.6966	53.414	1823.7						
CFLT TEMP. = 78.156	HEATER TEMP = 156.39			COOLER TEMP = 87.542						

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NASA-LEWIS PRELIMINARY DATA 04/08/76 CADDEII REC 04/08/76 22:18:59.058 FAC SEX15 PGM C003 RDG 3106

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 80 % MCDE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.390 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	100.04	29.396	201.16	826.12	26.257	14.814

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	66.085	5.3741	45.316	65.289	63.570	6.0255

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	99.481	2.6616	3.4503	9309.3	75.701	90.965

REL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP
	75.701	37.150	222.49	5.1090 130.55

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.076953	0.074580	1.1485	2435.6	2437.3	253.87	117.73

WET CORRECTION FACTOR = 0.80368 EXHAUST MOLE. WT. = 27.928 EXHAUST DENSITY = 0.072312 EXHAUST FLOW RATE = 12666.

MEASURED CONC.	PART PER MILLION WET	PER CENT
	HC PPM NOX PPM	CO DRY CO2 DRY O2 DRY
	1622.7 122.05	6.6759 10.896 0.067987
CORRECTED CONC. TO WET BASIS		5.3553 8.7571 0.054640

EMISSION RATE	HC	NOX	CO
EMISSION MASS/MODE	0.73788	0.18397	49.339
EMISSION MASS/RATED HP	0.061490	0.015331	4.1116
MODE EMIS./STD. CYCLE %	0.00038431	9.5820E-05	0.025698
	20.227	6.3880	61.185

CAL. FUEL AIR RATIO = 0.081875 MEAS. FUEL AIR RATIO = 0.076950 DIFF MEAS. & CAL. F/A PERCENT = 5.4003

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	401.71	416.18	402.16	418.57

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	687.31	-448.58	-454.00	610.96	1310.3	1309.6

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.587
	187.88	196.26	70.987	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.546
	251.69	2382.1	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	100.02	100.04	136.85	96.182

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	84.788	1.7028	53.460	1825.8

CELL TEMP. = 78.792 HEATER TEMP = 150.17 COOLER TEMP = 69.079

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NASA-LEWIS PRELIMINARY DATA 04/08/76 CADDEII REC 04/08/76 22:22:45.534 FAC SEX15 PGM C003

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 80% MCDE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.390 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	101.31	29.383	123.06	496.93	15.865	14.586

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	69.324	5.5340	44.929	40.474	38.752	6.1845

Cooling AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	101.28	2.6095	3.3150	9206.0	72.062	90.605

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	72.062	43.816	223.49	5.1320	73.403

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.077983	0.075570	1.1639	2347.9	2349.8	146.59	65.533

WET CORRECTION FACTOR = 0.81980 EXHAUST MOLE. WT. = 27.843 EXHAUST DENSITY = 0.072093 EXHAUST FLOW RATE = 7650.5

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1495.4	162.30	5.5601	11.428	0.089089
CORRECTED CONC. TO WET BASIS			4.5587	9.3689	0.072215

EMISSION RATE	HC	NOX	CO
	0.41073	0.14775	25.317
	0.041073	0.014775	2.5317
	0.00025670	9.2347E-05	0.015823
EMISSION MASS/MODE			37.674
EMISSION MASS/RATED HP	13.511	6.1564	
MODE EMIS./STD. CYCLE %			

CAL. FUEL AIR RATIO = 0.079191 MEAS. FUEL AIR RATIO = 0.077983 DIFF MEAS. & CAL. F/A PERCENT = 1.5490

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	358.26	369.54	368.26	368.97

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	482.60	-310.72	-454.00	570.45	1209.3	1209.1

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 20.687
	188.10	347.90	70.915	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.527
	142.12	2309.4	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	101.27	101.31	141.56	96.816

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	85.507	1.4631	53.496	1695.8

CELL TEMP. = 79.428 HEATER TEMP = 127.93 COOLER TEMP = 56.936

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NASA-LEWIS PRELIMINARY DATA		04/08/76	CADDEII	REC: 04/08/76 22:27:23.297	FAC SEX15	PGM C003	RDG 3108
LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 80%		MCDE = 4.0000		NO. SCANS = 5			
ENGINE TIMING = 25.000 DEG.		BAROMETRIC PRESSURE = 29.390		RATED HP. = 160.00		HC RATIO = 2.1250	
COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL	
	101.10	29.391	201.81	827.90	25.194	14.806	
COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP	
	65.238	5.3666	45.012	65.659	63.501	5.9685	
COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT	
	100.83	2.6851	3.4359	9355.7	70.314	89.625	
REL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP			
	70.314	55.242	213.02	4.8916	127.89		
ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.076702	0.074437	1.1448	2426.0	2427.4	249.96	115.46
WET CORRECTION FACTOR = 0.80361		EXHAUST MOLE. WT. = 27.948		EXHAUST DENSITY = 0.072364		EXHAUST FLOW RATE = 12666.	
MEASURED CONC.	PART PER MILLION WET		PER CENT				
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY		
	1712.6	123.96	6.7473	10.839	0.084088		
CORRECTED CONC. TO WET BASIS			CO DRY	CO2 DRY	O2 DRY		
			5.4222	8.7101	0.067574		
EMISSION RATE	HC	NOX	CO				
	0.77874	0.18685	49.861				
EMISSION MASS/MODE	0.064895	0.015571	4.1551				
EMISSION MASS/RATED HP	0.00040559	9.7316E-05	0.025969				
MODE EMIS./STD. CYCLE %	21.347	6.4877	61.832				
CAL. FUEL AIR RATIO = 0.082059		MEAS. FUEL AIR RATIO = 0.076702		DIFF MEAS. & CAL. F/A PERCENT = 6.9839			
CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4			
	395.99	414.43	399.31	414.08			
EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2	
	602.07	-454.00	-210.38	764.36	1303.0	1302.0	
ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.530			
	187.91	214.49	71.091				
DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.547				
	260.45	2374.5					
INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2			
	101.13	101.10	141.49	97.629			
ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW			
	84.604	1.6464	53.554	1796.8			
CELL TEMP. = 78.351	HEATER TEMP = 172.54		COOLER TEMP = 91.926				

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NASA-LEWIS PRELIMINARY DATA 04/08/76 CADDEI REG 04/08/76 22:30:55.801 FAC SEX15 PGM C003 RDG 3109

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 80% MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.390 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	98.713	29.405	201.95	830.88	25.695	14.825

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	64.578	5.3249	45.056	65.931	63.909	5.9760

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	98.203	2.6580	3.3687	9302.2	76.827	90.155

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	76.827	57.764	216.47	4.9709	129.38

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.076918	0.074610	1.1480	2440.6	2442.2	251.76	116.99

WET CORRECTION FACTOR = 0.80532 EXHAUST MOLE. WT. = 27.930 EXHAUST DENSITY = 0.072318 EXHAUST FLOW RATE = 12728.

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1813.5	132.46	6.6169	10.839	0.074967
CORRECTED CONC. TO WET BASIS			5.3287	8.7286	0.060372

EMISSION RATE	HC	NOX	CO
	0.82865	0.20063	49.241
EMISSION MASS/MODE	0.069054	0.016720	4.1034
EMISSION MASS/RATED HP	0.00043159	0.00010450	0.025646
MODE EMIS./STD. CYCLE %	22.715	6.9665	61.062

CAL. FUEL AIR RATIO = 0.081919 MEAS. FUEL AIR RATIO = 0.076918 DIFF MEAS. & CAL. F/A PERCENT = 6.5019

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	394.92	412.03	398.22	416.58

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	741.58	-454.00	-174.70	680.26	1305.0	1304.2

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.509
	187.70	236.80	71.407	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.546
	252.72	2379.1	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	98.713	98.713	85.681	96.313

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	83.357	1.6380	53.415	1794.5

CELL TEMP. = 77.458 HEATER TEMP = 151.29 COOLER TEMP = 71.603

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NASA-LEWIS PRELIMINARY DATA 04/08/76 CADDEIT REC 04/08/76 22:35:11.126 FAC SEX15 PGM C003 RDG 3110

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 80 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.390 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	99.429	29.386	216.24	894.49	27.509	14.901

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	65.072	5.2073	45.043	68.002	66.052	5.8473

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	98.730	2.7014	3.4359	9387.8	75.169	90.150

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	75.169	46.957	215.28	4.9435	144.75

ENG. COND.	F/A DRY	F/A WET	EQ. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.073843	0.071640	1.1021	2712.4	2714.5	247.52	127.83

WET CORRECTION FACTOR = 0.81574 EXHAUST MOLE. WT. = 28.187 EXHAUST DENSITY = 0.072982 EXHAUST FLOW RATE = 13538.

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1331.1	247.59	4.3051	11.982	0.047285
CORRECTED CONC. TO WET BASIS			3.5118	9.7741	0.038572

EMISSION RATE	HC	NOX	CO
	0.64696	0.39889	34.517
EMISSION MASS/MODE	0.0032348	0.0019944	0.17258
EMISSION MASS/RATED HP	2.0218E-05	1.2465E-05	0.0010787
MODE EMIS./STD. CYCLE %	1.0641	0.83102	2.5682

CAL. FUEL AIR RATIO = 0.076527 MEAS. FUEL AIR RATIO = 0.073843 DIFF MEAS. & CAL. F/A PERCENT = 3.6347

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	425.87	435.64	423.52	436.86

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	196.31	295.92	386.20	1066.3	1409.3	1407.4

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.319
	188.37	190.34	73.323	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.565
	245.36	2635.8	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	99.395	99.429	87.402	96.308

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	84.024	1.7109	53.442	1831.2

CELL TEMP. = 77.935 HEATER TEMP = 131.84 COOLER TEMP = 66.480

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NASA-LEWIS PRELIMINARY DATA 04/08/76 CADDEII REC. 04/08/76 22:38:49.215 FAC SEXID

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 80.3 MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.390 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	100.27	29.349	200.68	825.12	25.337	14.818

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	66.363	5.4035	45.008	62.276	59.832	6.0663

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	99.921	2.6887	3.3991	9362.8	72.783	89.925

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	72.783	61.300	214.95	4.9359	130.09

FNG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.072513	0.070352	1.0823	2433.0	2435.2	253.67	117.51

WET CORRECTION FACTOR = 0.80470 EXHAUST MOL. WT. = 28.300 EXHAUST DENSITY = 0.073274 EXHAUST FLOW RATE = 12423.

MEASURED CONC.	PART PER MILLION WET		CO DRY	PER CENT	O2 DRY
	HC PPM	NOX PPM			
	1488.5	262.02	4.8056	11.678	0.066727
CORRECTED CONC. TO WET BASIS			3.8671	9.3972	0.053695

EMISSION RATE	HC	NOX	CO
	0.66387	0.38735	34.877
EMISSION MASS/MODE	0.055323	0.032279	2.9065
EMISSION MASS/RATED HP	0.00034577	0.00020174	0.018165
MODE EMIS./STD. CYCLE %	18.198	13.450	43.251

CAL. FUEL AIR RATIO = 0.077703 MEAS. FUEL AIR RATIO = 0.072513 DIFF. MEAS. & CAL. F/A PERCENT = 7.1583

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	409.72	422.69	417.04	430.73

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	433.44	-264.95	-430.09	758.17	1351.3	1350.6

ENGINE OIL	ETILT	SOILT	OILP	MANIFOLD PRESSURE = 28.600
	187.77	266.65	71.075	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.513
	249.92	2384.8	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	100.21	100.27	166.83	96.581

ORIFICE AIR	TEMP	DELTAP	DRFP	FLOW
	84.542	1.6636	53.452	1805.9

CELL TEMP. = 78.978 HEATER TEMP = 116.65 COOLER TEMP = 67.186

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NASA-LEWIS PRELIMINARY DATA 04/08/76 CADDEII REC 04/08/76 22:39:08.844 FAC SEX15 PGM C003 RDG 3112

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 80 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.390 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	100.19	29.350	200.70	825.74	25.457	14.827

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	66.390	5.3990	45.008	61.205	59.382	6.0627

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	99.757	2.6450	3.3551	9276.5	73.276	90.065

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	73.276	52.727	215.80	4.9556	129.91

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.071913	0.059762	1.0733	2431.6	2432.6	253.41	117.32

WET CORRECTION FACTOR = 0.80093 EXHAUST MOLE. WT. = 28.351 EXHAUST DENSITY = 0.073407 EXHAUST FLOW RATE = 12404.

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	1401.9	279.92	4.8438	11.752	0.074707	
CORRECTED CONC. TO WET BASIS			3.8796	9.4122	0.059836	

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EMISSION RATE	HC	NOX	CO
	0.62431	0.41320	34.938
	0.052026	0.034433	2.9115
	0.00032516	0.00021521	0.018197
EMISSION MASS/MODE			
0.00032516	0.00021521	0.018197	
EMISSION MASS/RATED HP			
0.00032516	0.00021521	0.018197	
MODE EMIS./STD. CYCLE %	17.114	14.347	43.326

CAL. FUEL AIR RATIO = 0.077640 MEAS. FUEL AIR RATIO = 0.071913 DIFF MEAS. & CAL. F/A PERCENT = 7.9631

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	408.75	422.38	416.93	430.42

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	326.74	-352.36	-454.00	316.50	1351.1	1350.5

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.513
	187.79	18.201	71.063	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.542
	233.43	2370.9	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	100.13	100.19	134.92	96.454

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	84.551	1.6456	53.419	1796.5

CELL TEMP. = 78.881 HEATER TEMP = 113.63 COOLER TEMP = 66.953

NASA-LEWIS		PRELIMINARY DATA		04/08/76	CADDEII	REC 04/08/76 22:43:46.700	FAC SEX15	PGM C003	RDG 3113
LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 80 %				MODE = 5.0000	NO. SCANS = 5				
ENGINE TIMING = 25.000		DEG.	BAROMETRIC PRESSURE = 29.390		RATED HP. = 160.00		HC RATIO = 2.1250		
COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL			
	100.93	29.371	124.49	503.86	15.541	14.587			
COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP			
	70.110	5.5466	44.309	39.718	37.381	6.0522			
COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT			
	100.96	2.6555	3.3222	9297.3	70.534	89.560			
REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP				
	70.534	18.872	215.91	4.9580	71.567				
ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP		
	0.074189	0.071969	1.1773	2349.3	2351.8	143.11	64.013		
WET CORRECTION FACTOR = 0.82913		EXHAUST MJLE. WT. = 28.157		EXHAUST DENSITY = 0.072906		EXHAUST FLOW RATE = 7636.9			
MEASURED CONC.	PART PER MILLION WET		PFR CENT						
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY				
	1253.4	350.30	3.4237	12.351	0.18316				
CORRECTED CONC. TO WET BASIS			2.8387	10.240	0.15186				
EMISSION RATE	HC	NOX	CO						
	0.34364	0.31835	15.739						
EMISSION MASS/MODE	0.034364	0.031835	1.5739						
EMISSION MASS/RATED HP	0.00021478	0.00019897	0.0098368						
MODE EMIS./STD. CYCLE %	11.304	13.265	23.421						
CAL. FUEL AIR RATIO = 0.074147		MEAS. FUEL AIR RATIO = 0.074189		DIFF MEAS. & CAL. F/A PERCENT = -0.057123					
CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4					
	363.82	369.38	372.74	372.93					
EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2			
	206.88	440.45	-92.222	714.34	1255.2	1255.2			
ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 20.939					
	188.05	189.76	70.907						
DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.426						
	148.15	2293.5							
INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2					
	100.93	100.93	148.20	96.508					
ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW					
	85.262	1.5689	53.439	1754.5					
CELL TEMP. = 79.269	HEATER TEMP = 100.22		COOLER TFMP = 69.686						

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NASA-LEWIS PRELIMINARY DATA 04/08/76 CADDEII REC 04/08/76 22:54:43.565 FAC SEX15 PGM C003 RDC 3116

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 80 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.390 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	99.335	29.371	124.55	503.89	15.607	14.586

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	68.583	5.5487	44.949	38.253	36.898	6.1056

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	99.360	2.6131	3.2970	9213.2	74.293	89.685

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	74.293	12.705	216.81	4.9788	74.014

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.073225	0.071025	1.0929	2350.9	2353.0	148.23	66.352

WET CORRECTION FACTOR = 0.82399 EXHAUST MOLE. WT. = 28.239 EXHAUST DENSITY = 0.073117 EXHAUST FLOW RATE = 7609.7

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	1241.7	346.79	3.4485	12.350	0.16670	
CORRECTED CONC. TO WET BASIS			2.8415	10.176	0.13736	

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	HC	NOX	CO
EMISSION RATE	0.33922	0.31404	15.698
EMISSION MASS/MODE	0.033922	0.031404	1.5698
EMISSION MASS/RATED HP	0.00021201	0.00019627	0.0098114
MODE EMIS./STD. CYCLE %	11.159	13.085	23.360

CAL. FUEL AIR RATIO = 0.074247 MEAS. FUEL AIR RATIO = 0.073225 DIFF MEAS. & CAL. F/A PERCENT = 1.3949

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	365.51	372.65	375.22	377.31

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	256.77	-110.51	-15.355	724.63	1260.5	1260.5

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 20.944
	188.08	120.52	70.983	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.516
	147.64	2298.5	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	99.395	99.335	84.504	96.561

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	83.532	1.6029	53.357	1775.6

CELL TEMP. = 77.502 HEATER TEMP = 109.27 COOLER TEMP = 73.323

NASA-LEWIS		PRELIMINARY DATA		04/09/76	CADDEII	REC 04/09/76 15:16:42.101		FAC SEX15	PGM C003	RDG 3121
LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 30 %				MODE = 3.0000		NO. SCANS = 5				
ENGINE TIMING = 25.000		DEG.		BAROMETRIC PRESSURE = 29.400		RATED HP. = 160.00		HC RATIO = 2.1250		
COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL				
	99.886	29.396	219.39	937.24	11.121	14.942				
COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP				
	70.047	5.3462	44.910	82.116	80.912	5.9703				
COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT				
	99.904	3.2768	4.2120	10459.	29.538	62.467				
REL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP						
	29.538	4.5444	83.061	1.9074	154.67					
ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP			
	0.086330	0.085318	1.2885	2690.8	2693.0	276.62	141.72			
WET CORRECTION FACTOR = 0.83799		EXHAUST MOLE. WT. = 27.189		EXHAUST DENSITY = 0.070398		EXHAUST FLOW RATE = 14620.				
MEASURED CONC.	PART PER MILLION WET		PER CENT							
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY					
	1702.6	171.89	9.3602	10.820	0.090509					
CORRECTED CONC. TO WET BASIS			7.8438	9.0669	0.075846					
EMISSION RATE	HC	NOX	CO							
	0.89365	0.29906	83.259							
EMISSION MASS/MODE	0.0044682	0.0014953	0.41629							
EMISSION MASS/RATED HP	2.7927E-05	9.3456E-06	0.0026018							
MODE EMIS./STD. CYCLE %	1.4698	0.62304	6.1949							
CAL. FUEL AIR RATIO = 0.086364		MEAS. FUEL AIR RATIO = 0.086330		DIFF MEAS. & CAL. F/A PERCENT = 0.039078						
CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4						
	390.25	409.32	386.14	386.75						
EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2				
	559.87	-454.00	-297.52	551.85	1248.4	1245.8				
ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.403						
	159.40	219.29	73.379							
DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.523							
	275.79	2656.9								
INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2						
	99.921	99.886	106.52	96.214						
ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW						
	90.646	1.0794	54.246	1454.1						
CELL TEMP. = 76.493		HEATER TEMP = 128.35		COOLER TEMP = 103.31						

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NASA-LEWIS PRELIMINARY DATA 04/09/76 CADDETI REC.04/09/76 15:21:20.728 FAC SEX15 PGM C003 RDG 3122

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 30.8 MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.400 RATED HP = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 100.84 PRESS 29.395 CFM 195.93 DRY FLOW 829.37 VAPOR FLOW 9.9783 PRESS TOTAL 14.811

COMB. FUEL TEMP 68.162 PRESS 5.3705 DENSITY 44.960 TURBO FLOW 72.109 FLOW TRON 70.066 FPIP 6.0345

COOLING AIR TEMP 100.06 UDEL-HOOD 3.0081 DEL-HOOD 3.9164 FLOW 9973.3 REL-HUM 28.838 DEW-POINT 62.602

REL-HUM 1 28.838 2 47.805 HUMIDITY 84.217 % H2O VAPOR CORRECTED HP 1.9339 129.57

ENG. COND. F/A DRY 0.084481 F/A WET 0.083476 EQU. RATIO 1.2509 RPM-1 2436.9 RPM-2 2439.2 TORQUE 260.95 BHP 121.08

WET CORRECTION FACTOR = 0.83058 EXHAUST MOLE. WT. = 27.329 EXHAUST DENSITY = 0.070762 EXHAUST FLOW RATE = 12851.

MEASURED CONC. PART PER MILLION WET PER CENT
 HC PPM 1889.6 NOX PPM 384.16 CO DRY 9.2750 CO2 DRY 10.954 O2 DRY 0.11427
 CORRECTED CONC. TO WET BASIS CO DRY 7.7037 CO2 DRY 9.0984 O2 DRY 0.094911

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EMISSION RATE HC 0.87181 NOX 0.58751 CO 71.878
 EMISSION MASS/MODE 0.072651 0.048959 5.9898
 EMISSION MASS/RATED HP 0.00045407 0.00030600 0.037436
 MODE EMIS./STD. CYCLE % 23.898 20.400 89.134

CAL. FUEL AIR RATIO = 0.086060 MEAS. FUEL AIR RATIO = 0.084481 DIFF MEAS. & CAL. F/A PERCENT = 1.8697

CYL TEMP DEG.F CYL-1 372.73 CYL-2 394.65 CYL-3 429.18 CYL-4 434.55

EXT GAS TEMP DEG.F EXT-1 1355.3 EXT-2 -342.27 EXT-3 -373.10 EXT-4 601.39 SEXT-1 1263.6 SEXT-2 1261.8

ENGINE OIL EOILT 174.57 SOILT 226.09 OILP 68.299 MANIFOLD PRESSURE = 28.038

DYNO COND. TORQUE 269.33 RPM 2407.1 CYL. BACK PRESSURE = 29.553

INDUCTION AIR IAIRT1 100.95 IAIRT2 100.84 TAIRT1 72.850 TAIRT2 96.271

ORIFICE AIR TEMP 92.353 DELTAP 2.0126 ORFP 53.607 FLOW 1963.3

CELL TEMP. = 78.103 HEATER TEMP = 115.71 COOLER TEMP = 112.81

NASA-LEWIS PRELIMINARY DATA 04/09/76 CADDEII REC 04/09/76 15:33:15.406 FAC SEX15 PGM C003 RDG 3123

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 30 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.390 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	99.136	29.399	218.06	930.32	11.238	14.919

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	66.112	5.3120	45.015	81.842	80.087	5.9772

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	99.067	3.0061	3.9178	9969.7	30.703	62.922

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	30.703	30.079	84.561	1.9418	153.33

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.086085	0.085058	1.2849	2697.1	2699.4	273.67	140.54

WET CORRECTION FACTOR = 0.83564 EXHAUST MOLE. WT. = 27.207 EXHAUST DENSITY = 0.070446 EXHAUST FLOW RATE = 14502.

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1560.2	146.35	9.4382	10.825	0.053545
CORRECTED CONC. TO WET BASIS			7.8869	9.0458	0.044745

EMISSION RATE	HC	NOX	CO
	0.81228	0.25258	83.040
EMISSION MASS/MODE	0.0040614	0.0012629	0.41520
EMISSION MASS/RATED HP	2.5384E-05	7.8931E-06	0.0025950
MODE EMIS./STD. CYCLE %	1.3360	0.52621	6.1786

CAL. FUEL AIR RATIO = 0.086542 MEAS. FUEL AIR RATIO = 0.086085 DIFF MEAS. & CAL. F/A PERCENT = 0.53051

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	420.04	443.27	415.43	429.92

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	469.60	-422.56	-120.83	596.05	1309.0	1306.9

ENGINE OIL	OILT	SOILT	OILP	MANIFOLD PRESSURE = 28.366
	189.15	176.99	73.183	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.546
	278.90	2621.1	

INDUCTION AIR	IAIRT1	IAIPT2	TAIRT1	TAIRT2
	99.248	99.136	74.319	95.912

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	90.193	1.0992	52.949	1467.8

CELL TEMP. = 77.077 HEATER TEMP = 103.31 COOLER TEMP = 105.96

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NASA-LEWIS

PRELIMINARY DATA

04/09/76

CADDE11

REC 04/09/76 15:40:35.671

FAC SEX15

PGM C003

RDG 3124

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 30 %

MODE = 4.0000

NO. SCANS = 5

ENGINE TIMING = 25.000

DEG.

BAROMETRIC PRESSURE = 29.390

RATED HP. = 160.00

HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	100.63	29.323	194.25	820.69	9.9589	14.785

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	66.739	5.3738	44.998	69.799	69.127	6.0330

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	99.921	2.9754	3.8572	9912.5	29.220	62.792

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	29.220	31.757	84.944	1.9506	128.82

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.084231	0.083221	1.2572	2429.5	2431.6	260.24	120.38

WET CORRECTION FACTOR = 0.82913	EXHAUST MOLE. WT. = 27.349	EXHAUST DENSITY = 0.070812	EXHAUST FLOW RATE = 12706.

MEASURED CONC.	PART PER MILLION WET	PER CENT	O2 DRY
HC PPM	NOX PPM	CO DRY	CO2 DRY
1758.6	356.73	9.2307	10.974
		7.6535	9.0989
CORRECTED CONC. TO WET BASIS			0.049285
			0.040864

EMISSION RATE	HC	NOX	CO
	0.80219	0.53939	70.602
EMISSION MASS/MODE	0.066849	0.044949	5.8835
EMISSION MASS/RATED HP	0.00041781	0.00028093	0.036772
MODE EMIS./STD. CYCLE %	21.990	18.729	87.553

CAL. FUEL AIR RATIO = 0.086128	MEAS. FUEL AIR RATIO = 0.084231	DIFF MEAS. & CAL. F/A PERCENT = 2.2528

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	372.93	397.45	436.26	442.42

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	705.63	-288.55	-86.649	790.84	1280.9	1279.8

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 27.866
	187.56	330.20	71.107	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.464
	270.36	2331.5	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	100.76	100.63	168.37	96.784

ORIFICE AIR	TEMP	DELTA P	DRFP	FLOW
	90.768	0.087309	52.762	312.51

CELL TEMP. = 78.324

HEATER TEMP = 110.40

COOLER TEMP = 104.03

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LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 30 % MCDE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG: BAROMETRIC PRESSURE = 29.390 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	98.540	29.405	115.57	481.40	5.8503	14.565

COMR. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	68.010	5.4935	44.964	44.955	42.433	6.0480

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	98.601	2.9370	3.8336	9840.4	30.699	62.407

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	30.699	53.743	85.068	1.9534	70.485

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.088145	0.087086	1.3156	2350.9	2352.7	146.56	65.600

WET CORRECTION FACTOR = 0.84232 EXHAUST MOLE. WT. = 27.053 EXHAUST DENSITY = 0.070047 EXHAUST FLOW RATE = 7561.9

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	2021.8	120.41	9.6176	10.647	0.097690
CORRECTED CONC. TO WET BASIS			8.1011	8.9581	0.082286

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EMISSION RATE	HC	NOX	CO	
	0.54886	0.10835	44.475	
	EMISSION MASS/MODE	0.054886	0.010835	4.4474
	EMISSION MASS/RATED HP	0.00034304	6.7721E-05	0.027797
MODE EMIS./STD. CYCLE %	18.055	4.5148	66.182	

CAL. FUEL AIR RATIO = 0.087152 MEAS. FUEL AIR RATIO = 0.088145 DIFF MEAS. & CAL. F/A PERCENT = -1.1262

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	346.24	361.95	364.59	365.04

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1611.5	-210.04	-27.147	671.44	1155.2	1155.3

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 19.512
	187.71	329.55	71.055	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.476
	151.45	234.2	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	98.929	98.540	180.93	95.829

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	89.347	1.1048	52.217	1472.6

CFLL TEMP. = 77.050 HEATER TEMP = 107.57 COOLER TEMP = 104.12

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NASA-LEWIS PRELIMINARY DATA 04/09/76 CADDEII REC 04/09/76 15:49:13.752 FAC SEX15 PGM C003 RDG 3126

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 30 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.380 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	98.273	29.393	217.91	929.03	11.306	14.908

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	64.982	5.2655	45.045	82.310	80.177	5.9355

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	98.169	2.9848	3.9106	9930.1	31.721	63.107

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	31.721	26.953	85.191	1.9563	153.57

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.086302	0.085264	1.2881	2694.7	2696.2	274.50	140.84

WET CORRECTION FACTOR = 0.83658 EXHAUST MOLE. WT. = 27.191 EXHAUST DENSITY = 0.070404 EXHAUST FLOW RATE = 14495.

MEASURED CONC.	PART PER MILLION WET		CO DRY	PER CENT	
	HC PPM	NOX PPM		CO2 DRY	O2 DRY
	1646.6	143.65	9.4293	10.776	0.061146
CORRECTED CONC. TO WET BASIS			7.8884	9.0152	0.051154

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	HC	NOX	CO
EMISSION RATE	0.85683	0.24779	83.013
EMISSION MASS/MODE	0.0042842	0.0012390	0.41507
EMISSION MASS/RATED HP	2.6776E-05	7.7435E-06	0.0025042
MODE EMIS./STD. CYCLE %	1.4093	0.51623	6.1766

CAL. FUEL AIR RATIO = 0.086614 MEAS. FUEL AIR RATIO = 0.086302 DIFF MEAS. & CAL. F/A PERCENT = 0.36128

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	412.91	430.62	412.20	419.72

EXT G/S TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	519.87	-454.00	241.20	814.12	1304.1	1302.1

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.339
	188.26	255.98	73.279	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.541
	275.18	2613.7	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	98.342	98.273	195.45	95.808

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	88.674	2.0205	52.602	1973.5

CELL TEMP. = 77.307 HEATER TEMP = 112.57 COOLER TEMP = 106.74

NASA-LEWIS PRELIMINARY DATA 04/09/76 CADDEII REC 04/09/76 15:52:57.108 FAC SEX15 PCM C003 RDG 3127

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 30 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.380 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	98.704	29.346	193.15	817.82	9.9294	14.804

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	65.655	5.3687	45.027	70.500	68.833	6.0057

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	98.886	2.9043	3.9598	9778.8	31.019	62.842

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	31.019	15.674	84.989	1.9516	128.19

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.084167	0.083157	1.2562	2432.3	2434.7	259.16	120.02

WET CORRECTION FACTOR = 0.83004 EXHAUST MOLE. WT. = 27.354 EXHAUST DENSITY = 0.070825 EXHAUST FLOW RATE = 12659.

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1967.2	365.89	9.0885	11.052	0.077888
CORRECTED CONC. TO WET BASIS			7.5438	9.1738	0.064650

EMISSION RATE	HC	NOX	CO
	0.89401	0.55118	69.331
	0.074501	0.045932	5.7776
	0.00046563	0.00028707	0.036110
MODE EMIS./STD. CYCLE %	24.507	19.138	85.976

CAL. FUEL AIR RATIO = 0.085801 MEAS. FUEL AIR RATIO = 0.084167 DIFF MEAS. & CAL. F/A PERCENT = 1.9422

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	376.60	402.86	434.45	441.18

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1063.0	-336.68	105.21	838.98	1279.4	1278.3

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 27.904
	187.53	205.50	71.263	

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.481
	262.33	2356.3	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	98.843	98.704	194.29	95.771

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	89.312	2.9960	53.098	2375.4

CFLI TEMP. = 78.757 HEATER TEMP = 101.89 COOLER TEMP = 105.41

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NASA-LEWIS PRELIMINARY DATA 04/09/76 CADDEIT REC 04/09/76 15:56:38.467 FAC SEX15 PGM C003 RDG 3128

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 30 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.380 RATE) HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	98.756	29.383	115.75	482.18	5.9582	14.566

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	68.833	5.4956	44.943	44.508	43.144	6.0603

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	99.110	2.9273	3.9042	9822.2	31.003	62.872

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	31.003	35.528	86.497	1.9863	70.297

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.089477	0.088385	1.3355	2353.7	2355.5	145.88	65.376

WET CORRECTION FACTOR = 0.84783 EXHAUST MOLE. WT. = 26.955 EXHAUST DENSITY = 0.069793 EXHAUST FLOW RATE = 7612.3

MEASURED CONC.	PART PER MILLION WET	NOX PPM	CO DRY	PER CENT	CO2 DRY	O2 DRY
	2222.4	121.49	9.5459	10.693		0.11623
CORRECTED CONC. TO WET BASIS			8.0933	9.0659		0.098545

	HC	NOX	CO
EMISSION RATE	0.60735	0.11005	44.728
EMISSION MASS/MODE	0.060735	0.011005	4.4728
EMISSION MASS/RATED HP	0.00037959	6.8784E-05	0.027955
MODE EMIS./STD. CYCLE %	19.978	4.5856	66.559

CAL. FUEL AIR RATIO = 0.086998 MEAS. FUEL AIR RATIO = 0.089477 DIFF MEAS. & CAL. F/A PERCENT = -2.7708

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	349.82	363.72	364.82	361.64

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1070.0	-389.34	119.51	678.81	1147.5	1147.7

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE =
	187.84	174.26	71.027	19.507

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE =
	151.20	2315.3	29.495

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	99.127	98.756	150.00	95.612

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	89.905	4.0070	51.428	2739.0

CELL TEMP. = 78.686 HEATER TEMP = 127.95 COOLER TEMP = 108.91

006

NASA-LEWIS PRELIMINARY DATA 04/09/76 CADDETT REC 04/09/76 16:03:41.156 FAC SEX15 PGM C003 RDG 3129

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 30 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.380 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	100.44	29.384	217.62	926.71	11.885	14.907

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	67.769	5.2817	44.971	79.198	77.315	5.9175

COOLING AIR	TEMP	INDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	100.33	2.9735	3.9845	9908.9	31.279	64.572

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	31.279	30.405	89.775	2.0615	154.94

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.083429	0.082373	1.2452	2696.9	2699.4	275.67	141.56

WET CORRECTION FACTOR = 0.83300 EXHAUST MOLE. WT. = 27.410 EXHAUST DENSITY = 0.070972 EXHAUST FLOW RATE = 14314.

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1703.4	205.31	8.3415	11.443	0.079448
CORRECTED CONC. TO WET BASIS			6.9485	9.5324	0.066180

	HC	NOX	CO
EMISSION RATE	0.87532	0.34972	72.209
EMISSION MASS/MODE	0.0043766	0.0017486	0.36105
EMISSION MASS/RATED HP	2.7354E-05	1.0929E-05	0.0022565
MODE EMIS./STD. CYCLE %	1.4397	0.72859	5.3727

CAL. FUEL AIR RATIO = 0.083979 MEAS. FUEL AIR RATIO = 0.083429 DIFF MEAS. & CAL. F/A PERCENT = 0.65921

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	418.90	420.31	420.42	427.40

EXT GAS TEMP DEG. F	FXT-1	FXT-2	FXT-3	FXT-4	SEXT-1	SEXT-2
	678.73	-454.00	145.73	734.47	1318.7	1316.4

ENGINE OIL	FOILT	SOILT	OILT	MANIFOLD PRESSURE = 28.381
	188.30	150.23	73.295	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.508
	277.31	2667.0	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	100.55	100.44	113.62	95.855

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	90.899	0.12871	48.141	418.93

CELL TEMP. = 79.358 HEATER TEMP = 118.52 COOLER TEMP = 110.69

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NASA-LEWIS PRELIMINARY DATA 04/09/76 CADDEII REC 04/09/76 16:06:40.092 FAC SEX15 PGM C003 RDG 3130

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 30.3 MCDE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.380 RATED HP = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	98.126	29.381	194.22	820.16	10.404	14.793

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	65.036	5.3870	45.044	68.570	66.670	6.0402

COOLING AIR	TEMP	UNEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	97.936	2.9641	3.8790	9891.3	32.931	64.047

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	32.931	29.111	88.799	2.0391	128.95

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	PPM-2	TORQUE	BHP
	0.081289	0.080271	1.2133	2438.5	2440.2	259.95	120.69

WET CORRECTION FACTOR = 0.82528 EXHAUST MOLE. WT. = 27.578 EXHAUST DENSITY = 0.071406 EXHAUST FLOW RATE = 12565.

MEASURED CONC.	PART PER MILLION WET		CO DRY	PER CENT	O2 DRY
	HC PPM	NOX PPM		CO2 DRY	
	1798.0	453.19	8.1587	11.579	0.085729
CORRECTED CONC. TO WET BASIS			6.7415	9.5560	0.070750

EMISSION RATE	HC	NOX	CO
	0.81105	0.67763	61.498
EMISSION MASS/MODE	0.067587	0.356469	5.1248
EMISSION MASS/RATED HP	0.00042242	0.00035293	0.032030
MODE EMIS./STD. CYCLE %	22.233	23.529	76.262

CAL. FUEL AIR RATIO = 0.083579 MEAS. FUEL AIR RATIO = 0.081289 DIFF MEAS. & CAL. F/A PERCENT = 2.8176

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	388.75	411.97	436.39	437.79

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	996.24	-454.00	75.295	819.56	1296.9	1295.7

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.083
	187.51	227.41	70.875	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.499
	266.50	2345.9	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	98.255	98.126	66.488	96.366

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	88.430	0.069407	49.365	260.35

CELL TEMP. = 76.404 HEATER TEMP = 115.80 COOLER TEMP = 111.27

405

NASA-LEWIS PRELIMINARY DATA 04/09/76 CADDEII REC 04/09/76 16:12:02.068 FAC SEX15 PGM C003 RDG 3131

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 30 % MCDE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG., BAROMETRIC PRESSURE = 29.380 RATED HP = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	98.773	29.363	114.34	474.95	5.8144	14.560

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	69.065	5.4947	44.936	41.516	41.239	6.0246

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	99.817	2.9768	3.8417	9915.1	30.693	62.602

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	30.693	16.984	85.694	1.9678	71.176

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.086828	0.085778	1.2959	2351.6	2353.0	147.91	66.225

WET CORRECTION FACTOR = 0.84469 EXHAUST MOLE WT. = 27.151 EXHAUST DENSITY = 0.070301 EXHAUST FLOW RATE = 7425.3

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	2064.2	158.40	8.7153	11.141	0.10701
CORRECTED CONC. TO WET BASIS			7.3617	9.4108	0.090391

EMISSION RATE	HC	NOX	CO
	0.55025	0.13996	39.685
EMISSION MASS/MODE	0.055025	0.013996	3.9685
EMISSION MASS/RATED HP	0.00034391	8.7475E-05	0.024803
MODE EMIS./STD. CYCLE %	18.100	5.8317	59.055

CAL FUEL AIR RATIO = 0.085023 MEAS. FUEL AIR RATIO = 0.086828 DIFF MEAS. & CAL. F/A PERCENT = -2.0786

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	345.66	362.38	363.26	355.01

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1194.4	-454.00	255.12	896.23	1141.3	1141.4

ENGINE OIL	EOILT	SOILT	OILT	MANIFOLD PRESSURE = 19.377
	187.85	117.41	71.127	

DYMO COND.	TORQUE	RPM	CYL BACK PRESSURE = 29.403
	149.67	2313.6	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	99.119	98.773	77.051	97.114

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	89.303	1.1212	52.364	1483.4

CELL TEMP. = 77.732 HEATER TEMP = 123.81 COOLER TEMP = 108.04

403

NASA-LEWIS PRELIMINARY DATA 04/09/76 CADDEII REC 04/09/76 16:19:46.526 FAC SEX15 PGM C003 RDG 3132

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 30 % MCDE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.380 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	99.567	29.388	216.88	925.37	11.314	14.913

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	68.180	5.2169	44.960	79.017	77.087	5.8791

COOLING AIR	TEMP	UNEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	100.15	2.9727	3.8765	9907.3	30.654	63.247

RFL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	30.654	19.060	85.585	1.9653	153.66

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.083303	0.082297	1.2433	2688.4	2690.7	274.86	140.70

WET CORRECTION FACTOR = 0.83314 EXHAUST MOLE. WT. = 27.420 EXHAUST DENSITY = 0.070997 EXHAUST FLOW RATE = 14278.

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	C2 DRY
	1739.2	197.58	8.3488	11.378	0.064886
CORRECTED CONC. TO WET BASIS			6.9557	9.4797	0.054060

EMISSION RATE	HC	NOX	CO	
	0.89152	0.33573	72.106	
	EMISSION MASS/MODE	0.0044576	0.0016786	0.36053
	EMISSION MASS/RATED HP	2.7860E-05	1.0491E-05	0.0022533
MODE FMIS./STD. CYCLE %	1.4663	0.69943	5.3651	

CAL. FUEL AIR RATIO = 0.084198 MEAS. FUEL AIR RATIO = 0.083303 DIFF MEAS. & CAL. F/A PERCENT = 1.0019

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	417.63	435.45	420.24	424.09

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	616.04	-454.00	248.22	772.19	1314.7	1312.6

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.256
	188.27	149.16	73.231	

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.552
	274.31	2606.6	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	99.654	99.567	84.742	95.532

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	90.454	0.083008	52.489	300.34

CELL TEMP. = 78.801 HEATER TEMP = 123.81 COOLER TEMP = 110.42

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NASA-LEWIS PRELIMINARY DATA 04/09/76 CADDEII REC 04/09/76 16:23:47.988 FAC SEX15 PGM C003 RDG 3133

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 30 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG; BAROMETRIC PRESSURE = 29.380 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	99.912	29.412	192.74	815.66	9.9248	14.782

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	68.654	5.3828	44.947	67.508	65.872	6.0183

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	100.21	3.0131	3.7811	998.5	29.929	62.862

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	29.929	27.699	85.174	1.9559	129.73

ENG. COND.	F/A DRY	F/A WET	FQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.080758	0.079787	1.2053	2440.1	2441.5	261.14	121.33

WET CORRECTION FACTOR = 0.82606 EXHAUST MOLE. WT. = 27.620 EXHAUST DENSITY = 0.071515 EXHAUST FLOW RATE = 12465.

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1752.4	513.03	7.9269	11.719	0.10079
CORRECTED CONC. TO WET BASIS			6.5481	9.6803	0.083259

EMISSION RATE	HC	NOX	CO	
	0.78420	0.76102	59.260	
	EMISSION MASS/MODE	0.065350	0.063418	4.9383
	EMISSION MASS/RATED HP	0.00040844	0.00039636	0.030864
MODE EMIS./STD. CYCLE %	21.497	26.424	73.487	

CAL. FUEL AIR RATIO = 0.082961 MEAS. FUEL AIR RATIO = 0.080758 DIFF MEAS. & CAL. F/A PERCENT = 2.7283

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	390.59	412.12	439.44	441.28

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1273.1	-454.00	292.26	879.65	1298.4	1297.3

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.003
	187.55	179.49	71.175	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.492
	249.43	2372.2	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	100.01	99.912	88.875	95.215

ORIFICE AIR	TEMP	DELTAP	ORF>	FLOW
	90.873	0.10391	52.496	357.52

CFLI TEMP. = 80.126 HEATER TEMP = 112.80 COOLER TEMP = 111.73

405

NASA-LEWIS PRELIMINARY DATA 04/09/76 CADDEII REC 04/09/76 16:26:48.389 FAC SEX15 PGM C003 RDG 3134

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 30 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.380 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	97.140	29.375	114.29	476.18	5.7721	14.560

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	68.439	5.5055	44.953	44.308	41.212	6.0840

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	97.866	2.8888	3.9169	9749.5	31.942	62.327

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	31.942	19.770	84.852	1.9485	70.868

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.086548	0.085511	1.2918	2356.6	2357.8	147.24	66.068

WET CORRECTION FACTOR = 0.84393 EXHAUST MOLE. WT. = 27.172 EXHAUST DENSITY = 0.070356 EXHAUST FLOW RATE = 7436.0

MEASURED CONC.	PART PER MILLION WET	PER CENT
	HC PPM	CO2 DRY
	NOX PPM	O2 DRY
	CO DRY	0.11157
CORRECTED CONC. TO WET BASIS		0.094158
		9.4689

EMISSION RATE	HC	NOX	CO
	0.54007	0.14374	39.559
EMISSION MASS/MODE	0.054007	0.14374	3.9559
EMISSION MASS/RATED HP	0.00033754	8.9835E-05	0.024724
MODE EMIS./STD. CYCLE %	17.765	5.9890	58.868

CAL. FUEL AIR RATIO = 0.084834 MEAS. FUEL AIR RATIO = 0.086548 DIFF MEAS. & CAL. F/A PERCENT = -1.9797

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	352.60	367.62	371.97	370.13

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1089.4	-404.41	338.13	835.36	1165.9	1165.9

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 19.452
	187.83	247.02	71.375	

DYMO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.385
	144.19	2322.2	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	97.512	97.140	96.716	95.531

ORIFICE AIR	TFMP	DELTAP	DRFP	FLOW
	88.308	1.0818	53.324	1458.8

CELL TEMP. = 77.564 HEATER TEMP = 120.50 COOLER TEMP = 111.70

NASA-LEWIS PRELIMINARY DATA 04/09/76 CADDEIJ REC 04/09/76 16:32:49.244 FAC SEX15 PGM C003 RDG 3135

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 30 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.380 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CEM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	99.101	29.405	216.85	923.03	11.157	14.902

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	66.363	5.3096	45.008	75.002	73.186	5.9229

COOLING AIR	TEMP.	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	99.266	2.9630	3.8049	9889.2	30.719	62.907

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	30.719	19.992	84.612	1.9430	155.22

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.079289	0.078342	1.1834	2698.4	2700.1	277.04	142.34

WET CORRECTION FACTOR = 0.83066 EXHAUST MOLE. WT. = 27.738 EXHAUST DENSITY = 0.071819 EXHAUST FLOW RATE = 14026.

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1442.8	312.47	6.6473	12.394	0.024582
CORRECTED CONC. TO WET BASIS			5.5217	10.295	0.020420

	HC	NOX	CO
EMISSION RATE	0.72655	0.52157	56.229
EMISSION MASS/MODE	0.0036327	0.0026078	0.28114
EMISSION MASS/RATED HP	2.2705E-05	1.5299E-05	0.0017571
MODE EMIS./STD. CYCLE %	1.1950	1.0866	4.1837

CAL. FUEL AIR RATIO = 0.080327 MEAS. FUEL AIR RATIO = 0.079289 DIFF MEAS. & CAL. F/A PERCENT = 1.3095

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	431.22	445.02	432.43	438.92

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	600.79	378.83	349.20	931.55	1358.1	1356.2

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.491
	188.44	171.77	72.975	

DYMO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.514
	278.34	2639.5	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	99.205	99.101	85.632	96.569

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	88.814	1.0917	53.166	1464.7

CELL TEMP. = 78.925 HEATER TEMP = 107.47 COOLER TEMP = 111.68

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OF POOR QUALITY

407

NASA-LEWIS PRELIMINARY DATA 04/09/76 CADDE11 REC 04/09/76 16:36:06.631 FAC SEX15 PGM C003 RDG 3136

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 30 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.380 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 98.679 PRESS 29.411 CFM 190.65 DRY FLOW 806.45 VAPOR FLOW 9.7497 PRESS TOTAL 14.777

COMB. FUEL TEMP 67.518 PRESS 5.4134 DENSITY 44.978 TURBO FLOW 63.403 FLOW TRON 61.428 FPIP 6.3279

COOLING AIR TEMP 98.989 UDEL-HOOD 3.0244 DEL-HOOD 3.8627 FLOW 10003. REL-HUM 30.858 DEW-POINT 62.672

REL-HUM 1 30.858 2 28.127 HUMIDITY 84.627 % H2O VAPOR CORRECTED HP 1.9433 127.99

ENG. COND. F/A DRY 0.076171 F/A WET 0.075261 EQU. RATIO 1.1369 RPM-1 2437.0 RPM-2 2439.1 TORQUE 258.32 BHP 119.86

WET CORRECTION FACTOR = 0.82116 EXHAUST MOLE. WT. = 27.992 EXHAUST DENSITY = 0.072478 EXHAUST FLOW RATE = 12108.

MEASURED CONC. HC PPM 1530.8 NOX PPM 747.97 CO DRY 6.1853 PER CENT CO2 DRY 12.666 O2 DRY 0.073487
CORRECTED CONC. TO WET BASIS CO DRY 5.0791 PER CENT CO2 DRY 10.401 O2 DRY 0.060345

804

EMISSION RATE HC 0.66543 NOX 1.0778 CO 44.651
EMISSION MASS/MODE 0.055453 0.089816 3.7209
EMISSION MASS/PATED HP 0.00034658 0.00056135 0.023256
MODE EMIS./STD. CYCLE % 18.241 37.424 55.371

CAL. FUEL AIR RATIO = 0.079241 MEAS. FUEL AIR RATIO = 0.076171 DIFF MEAS. & CAL. F/A PERCENT = 4.0301

CYL TEMP DEG.E CYL-1 401.37 CYL-2 421.79 CYL-3 441.94 CYL-4 442.79

FXT GAS TEMP DEG.F EXT-1 636.80 EXT-2 -387.82 EXT-3 448.18 EXT-4 1012.1 SEXT-1 1332.5 SEXT-2 1331.3

ENGINE OIL EOILT 187.64 SOILT 255.04 OILP 71.083 MANIFOLD PRESSURE = 27.937

DYNO COND. TORQUE 259.13 RPM 2365.1 CYL. BACK PRESSURE = 29.600

INDUCTION AIR IAIRT1 98.791 IAIRT2 98.679 TAIRT1 62.895 TAIRT2 95.348

ORIFICE AIR TEMP 89.277 DELTAP 1.0573 DRFP 53.217 FLOW 1441.2

CELL TEMP. = 79.278 HEATER TEMP = 109.91 COOLER TEMP = 108.53

NASA-LEWIS PRELIMINARY DATA 04/09/76 CADDEII REC 04/09/76 16:38:54.223 FAC SEX15 PGM C003 RDG 3137

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 30 % MCDE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.380 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 98.843 PRESS 29.381 CFM 112.50 DRY FLOW 468.58 VAPOR FLOW 5.6497 PRESS TOTAL 14.557

COMB. FUEL TEMP 70.449 PRESS 5.5157 DENSITY 44.900 TURBO FLOW 40.582 FLOW TRON 38.410 FPIP 6.0867

COOLING AIR TEMP 99.861 UDEL-HOOD 2.8968 DEL-HOOD 3.8682 FLOW 9764.7 REL-HUM 30.169 DEW-POINT 62.172

REL-HUM 1 30.169 2 41.036 HUMIDITY 84.400 % H2O VAPOR 1.9381 CORRECTED HP 69.808

ENG. COND. F/A DRY 0.081971 E/A WET 0.080994 EQU. RATIO 1.2234 RPM-1 2351.3 RPM-2 2352.5 TORQUE 145.08 BHP 64.953

WET CORRECTION FACTOR = 0.83788 EXHAUST MOLE. WT. = 27.524 EXHAUST DENSITY = 0.071267 EXHAUST FLOW RATE = 7193.2

MEASURED CONC. HC PPM 1847.8 NOX PPM 256.06 CO DRY 7.2153 CO2 DRY 12.016 O2 DRY 0.099250

CORRECTED CONC. TO WET BASIS HC 1847.8 NOX 256.06 CO 6.0455 CO2 10.068 O2 0.083159

EMISSION RATE HC 0.47716 NOX 0.21918 CO 31.571

EMISSION MASS/MODE HC 0.047716 NOX 0.021918 CO 3.1571

EMISSION MASS/RATED HP HC 0.00029823 NOX 0.00013699 CO 0.019732

MCDE EMIS./STD. CYCLE % HC 15.696 NOX 9.1325 CO 46.981

CAL. FUEL AIR RATIO = 0.081551 MEAS. FUEL AIR RATIO = 0.081971 DIFF MEAS. & CAL. F/A PERCENT = -0.51213

CYL TEMP DEG.F CYL-1 363.04 CYL-2 375.52 CYL-3 380.17 CYL-4 382.00

EXT GAS TEMP DEG.F EXT-1 1467.1 EXT-2 -286.98 EXT-3 495.95 EXT-4 937.25 SEXT-1 1195.6 SEXT-2 1195.9

ENGINE OIL EOILT 187.85 SOILT 316.37 OILP 70.727 MANIFOLD PRESSURE = 19.280

DYND COND. TORQUE 146.34 RPM 2313.1 CYL. BACK PRESSURE = 29.460

INDUCTION AIR JAIRT1 99.188 JAIRT2 98.843 TAIRT1 42.027 TAIRT2 95.637

ORIFICE AIR TEMP 89.722 DELTAP 3.0063 ORFP 53.203 FLOW 2378.5

CELL TEMP. = 80.143 HEATER TEMP = 112.25 COOLER TEMP = 107.98

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NASA-LEWIS PRELIMINARY DATA 04/09/76 CADDELL REC 04/09/76 16:44:46.353 FAC SEX15 PGM C003 RDG 3138

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 30 % MCDE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.380 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	101.30	29.410	217.36	924.46	11.210	14.905

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	69.583	5.2640	44.923	74.937	73.114	5.8827

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	101.03	2.9453	3.8754	9856.0	28.850	63.002

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	28.850	1.8802	84.883	1.9492	156.57

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.079089	0.078141	1.1804	2702.8	2704.9	278.39	143.27

WET CORRECTION FACTOR = 0.83097 EXHAUST MOLE WT. = 27.754 EXHAUST DENSITY = 0.071861 EXHAUST FLOW RATE = 14038.

MEASURED CONC.	PART PER MILLION WET	PER CENT
	HC PPM NOX PPM CO DRY	CO2 DRY
	1443.0 349.13 6.5988	12.410
CORRECTED CONC. TO WET BASIS		0.078548
		0.065271

EMISSION RATE	HC	NOX	CO
EMISSION MASS/MODE	0.72724	0.58324	55.885
EMISSION MASS/RATED HP	0.0036362	0.0029162	0.27942
MODE EMIS./STD. CYCLE %	2.2726E-05	1.8226E-05	0.0017464
	1.1961	1.2151	4.1581

CAL. FUEL AIR RATIO = 0.080058 MEAS. FUEL AIR RATIO = 0.079089 DIFF MEAS. & CAL. F/A PERCENT = 1.2257

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	418.84	438.09	429.11	433.39

EXT GAS TEMP DEG.F	FXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1143.9	-351.86	534.80	1002.7	1350.2	1347.9

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.412
	188.30	156.38	73.571	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.529
	278.57	2623.9	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	101.44	101.30	199.70	97.089

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	90.777	0.071507	53.332	266.22

CFLT TEMP. = 80.566 HEATER TEMP = 139.61 COOLER TEMP = 115.98

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NASA-LEWIS PPELIMINARY DATA 04/09/76 CADDEII REC 04/09/76 16:48:02.152 FAC SEX15 PGM C003 RDG 3139

LEANOUT 25 RTDC TO CL APP 100 DEG HUM = 30 % MCDE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.380 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	97.512	29.397	190.96	807.47	9.8091	14.775

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	65.972	5.4044	44.992	64.426	62.370	6.0720

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	97.892	2.9350	3.8018	9836.8	32.116	62.802

REL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP
	32.116	25.441	85.035	1.9527 128.89

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.077242	0.076315	1.1529	2441.0	2442.5	259.98	120.83

WET CORRECTION FACTOR = 0.82638 EXHAUST MOLE. WT. = 27.904 EXHAUST DENSITY = 0.072250 EXHAUST FLOW RATE = 12175.

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1496.0	835.06	6.2462	12.666	0.13429
CORRECTED CONC. TO WET BASIS			5.1617	10.467	0.11098

EMISSION RATE	HC	NOX	CO
	0.65390	1.2099	45.625
EMISSION MASS/MODE	0.054492	0.10082	3.8021
EMISSION MASS/RATED HP	0.00034057	0.00063014	0.023763
MODE. EMIS./STD. CYCLE %	17.925	42.009	56.578

CAL. FUEL AIR RATIO = 0.079121 MEAS. FUEL AIR RATIO = 0.077242 DIFF MEAS. & CAL. F/A PERCENT = 2.4331

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	397.18	423.25	441.24	445.38

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1294.8	-270.12	594.96	1078.5	1330.6	1329.3

ENGINE OIL	EOILT	SOILY	OILP	MANIFOLD PRESSURE = 27.876
	187.65	328.01	71.063	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.514
	266.20	2386.2	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	97.624	97.512	167.45	95.411

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	88.325	0.12671	53.239	415.17

CELL TEMP. = 78.695 HEATER TEMP = 119.16 COOLER TEMP = 112.16

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NASA-LEWIS PRELIMINARY DATA 04/09/76 CADDEII REC 04/09/76 16:51:59.434 FAC SEX15 PGM C003 RDG 3140

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = .30 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.380 RATE) HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	98.376	29.381	112.96	469.44	5.6807	14.559

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	69.967	5.5196	44.912	40.059	38.689	6.1338

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	99.110	2.9516	3.7542	9868.0	30.711	62.277

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	30.711	54.911	84.707	1.9452	70.842

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.082414	0.081429	1.2301	2353.4	2354.6	147.20	65.958

WET CORRECTION FACTOR = 0.84102 EXHAUST MOLE. WT. = 27.489 EXHAUST DENSITY = 0.071177 EXHAUST FLOW RATE = 7218.8

MEASURED CONC.	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1845.7	294.43	7.0878	12.128	0.1733
CORRECTED CONC. TO WET BASIS			5.9610	10.200	0.098678

	HC	NOX	CO
EMISSION RATE	0.47832	0.25293	31.241
EMISSION MASS/MODE	0.047832	0.025293	3.1241
EMISSION MASS/RATED HP	0.00029895	0.00015808	0.019525
MODE EMISS./STD. CYCLE %	15.734	10.539	46.489

CAL. FUEL AIR RATIO = 0.081171 MEAS. FUEL AIR RATIO = 0.082414 DIFF MEAS. & CAL. F/A PERCENT = -1.5085

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	354.04	369.68	370.78	370.25

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	762.91	-454.00	710.16	959.71	1181.7	1181.8

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE =
	198.00	237.85	70.923	19.319

DYMO COND.	TORQUE	RPM	CYL. BACK PRESSURE =
	151.60	2298.1	29.433

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	98.722	98.376	85.739	96.901

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	88.640	1.0850	53.183	1460.5

CELL TEMP. = 78.748 HEATER TEMP = 117.23 COOLER TEMP = 114.13

NASA-LEWIS PRELIMINARY DATA 04/09/76 CADDEII REC 04/09/76 17:06:03.087 FAC SEX15 PGM C003 RDG 3141

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 30 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.370 RATE HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	100.75	29.346	215.58	917.56	11.011	14.893

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	70.101	5.2787	44.909	72.719	70.888	5.9022

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	101.26	2.9724	3.7675	9906.8	29.007	62.687

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	29.007	9.7650	84.000	1.9289	155.19

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.077257	0.076341	1.1531	2696.1	2697.7	276.14	141.76

WET CORRECTION FACTOR = 0.82784 EXHAUST MOLE. WT. = 27.903 EXHAUST DENSITY = 0.072246 EXHAUST FLOW RATE = 13833.

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	1360.0	356.24	5.9955	12.8020	0.057446	
CORRECTED CONC. TO WET BASIS			4.9633	10.598	0.047556	

	HC	NOX	CO
EMISSION RATE	0.67545	0.58645	49.849
EMISSION MASS/MODE	0.0033772	0.0029323	0.24924
EMISSION MASS/RATED HP	2.1108E-05	1.8327E-05	0.0015578
MODE EMIS./STD. CYCLE %	1.1109	1.2218	3.7090

CAL. FUEL AIR RATIO = 0.078783 MEAS. FUEL AIR RATIO = 0.077257 DIFF MEAS. & CAL. F/A PERCENT = 1.9749

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	446.07	459.93	448.04	460.64

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	767.04	-454.00	843.47	1125.4	1382.2	1380.0

ENGINE OIL	EOILT	SOILT	OILP	MANTFOLD PRESSURE =
	188.64	206.83	73.107	28.408

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE =
	271.20	2642.3	29.531

INDUCTION AIR	IAIPT1	IAIRT2	TAIRT1	TAIRT2
	100.82	100.75	136.51	96.351

ORIFICE AIR	TEMP	DELTAP	OREP	FLOW
	91.108	0.085208	53.174	306.46

CFLI TEMP. = 81.183 HEATER TEMP = 110.94 COOLER TEMP = 112.24

413

NASA-LEWIS		PRELIMINARY DATA		04/09/76	CADDEII	REC 04/09/76 17:08:59.707	FAC SEX15	PGM C003	RDG 3142
LEANOUT 25 RTDC TO CL APP 100 DEG HUM = 30 %				MODE = 4.0000	NO. SCANS = 5				
ENGINE TIMING = 25.000		DEG.	BAROMETRIC PRESSURE = 29.370		RATED HP. = 160.00		HC RATIO = 2.1250		
COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL			
	97.737	29.297	189.00	799.29	9.5874	14.771			
COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP			
	67.975	5.4179	44.965	61.942	60.375	6.0258			
COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT			
	98.229	2.9605	3.8259	9884.6	31.495	62.442			
REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP				
	31.495	10.683	83.965	1.9281	128.69				
ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP		
	0.075536	0.074641	1.1274	2431.4	2433.6	260.61	120.65		
WET CORRECTION FACTOR = 0.82595		EXHAUST MOLE. WT. = 28.045		EXHAUST DENSITY = 0.072614		EXHAUST FLOW RATE = 11970.			
MEASURED CONC.	PART PER MILLION WET		PER CENT						
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY				
	1399.2	913.69	5.4520	13.1150	0.12353				
CORRECTED CONC. TO WET BASIS			4.5231	10.832	0.10203				
EMISSION RATE	HC	NOX	CO						
	0.60132	1.3016	39.135						
EMISSION MASS/MODE	0.050110		0.10846		3.2613				
EMISSION MASS/RATED HP	0.00031319		0.00067790		0.020383				
MODE EMIS./STD. CYCLE %	16.484	45.193	48.531						
CAL. FUEL AIR RATIO = 0.077481		MEAS. FUEL AIR RATIO = 0.075536		DIFF MEAS.& CAL. F/A PERCENT = 2.5754					
CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4					
	406.30	424.21	444.59	448.31					
FXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2			
	683.95	-454.00	774.98	1140.3	1350.8	1349.3			
ENGINE OIL	EOILT	SOILT	OILT	MANIFOLD PRESSURE = 27.766					
	187.63	252.48	70.871						
DYNO COND.	TORQUE	RPM	CYL. RACK PRESSURE = 29.463						
	265.71	2338.3							
INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2					
	97.884	97.737	60.508	95.321					
ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW					
	89.163	0.11801	53.356	393.83					
CELL TEMP. = 79.208	HEATER TEMP = 112.50		COOLER TEMP = 111.06						

HP

NASA-LEWIS PRELIMINARY DATA 04/09/76 CADDEI REC 04/09/76 17:12:34.069 FAC SEX15 PGM C003 RDG 3143

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 30 % MCDE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.370 RATED HP = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	97.858	29.364	112.57	468.25	5.5962	14.555

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	70.413	5.5202	44.901	38.359	37.240	6.0402

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	98.368	2.9275	3.8538	9822.7	30.809	61.922

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	30.809	36.426	83.658	1.9211	69.569

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.079529	0.078590	1.1870	2351.1	2353.3	144.78	64.812

WET CORRECTION FACTOR = 0.83578 EXHAUST MOLE. WT. = 27.718 EXHAUST DENSITY = 0.071769 EXHAUST FLOW RATE = 7121.3

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	1714.0	358.58	6.3047	12.5760	0.11481	
CORRECTED CONC. TO WET BASIS						
		5.2693	10.511	0.095957		

EMISSION RATE	HC	NOX	CO	
	0.43818	0.30387	27.242	
	EMISSION MASS/MODE	0.043818	0.030387	2.7242
	EMISSION MASS/RATED HP	0.00027386	0.00018992	0.017027
MODE EMIS./STD. CYCLE %	14.414	12.661	40.539	

CAL. FUEL AIR RATIO = 0.079452 MEAS. FUEL AIR RATIO = 0.079529 DIFF MEAS. & CAL. F/A PERCENT = -0.096307

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	363.84	374.47	376.17	379.09

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1133.8	-454.00	867.51	1027.2	1206.2	1206.5

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 19.282
	188.06	217.79	70.519	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.379
	149.62	2317.3	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	98.221	97.858	79.968	96.347

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	88.989	1.0416	53.201	1431.0

CELL TEMP. = 78.430 HEATER TEMP = 131.14 COOLER TEMP = 113.65

MS

NASA-LEWIS PRELIMINARY DATA 04/09/76 CADDEII REC 04/09/76 17:18:08.072 FAC SEX15 PGM C003 RDG 3144

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 30 % MCOE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.370 RATE) HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 98.877 PRESS 29.409 CFM 216.25 DRY FLOW 921.90 VAPOR FLOW 10.985 PRESS TOTAL 14.899

COMB. FUEL TEMP 63.636 PRESS 5.1935 DENSITY 44.948 TURBO FLOW 72.987 FLOW TRON 70.849 FPIP 5.8593

COOLING AIR TEMP 99.498 UDEL-HOOD 2.9441 DEL-HOOD 3.9203 FLOW 9853.9 REL-HUM 30.490 DEW-POINT 62.502

REL-HUM 1 2 HUMIDITY ? H2O VAPOR CORRECTED HP
30.490 0.25403 83.411 1.9154 154.76

ENG. COND. F/A DRY 0.076851 F/A WET 0.075946 EQU. RATIO 1.1470 RPM-1 2699.7 RPM-2 2701.7 TORQUE 276.28 BHP 142.01

WET CORRECTION FACTOR = 0.82701 EXHAUST MOLE. WT. = 27.936 EXHAUST DENSITY = 0.072333 EXHAUST FLOW RATE = 13876.

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 1345.6 NOX PPM 398.62 CO DRY 5.9248 CO2 DRY 12.819D O2 DRY 0.065687
CORRECTED CONC. TO WET BASIS 4.8999 10.602 0.055150

EMISSION RATE HC 0.67035 NOX 0.55825 CO 49.363
EMISSION MASS/MODE 0.0033518 0.0032912 0.24682
EMISSION MASS/RATED HP 2.0949E-05 2.0570E-05 0.0015426
MODE EMIS./STD. CYCLE % 1.1026 1.3713 3.6729

CAL. FUEL AIR RATIO = 0.078619 MEAS. FUEL AIR RATIO = 0.076851 DIFF MEAS. & CAL. F/A PERCENT = 2.3001

CYL TEMP DEG.F CYL-1 435.07 CYL-2 449.19 CYL-3 442.25 CYL-4 448.72

EXT GAS TEMP DEG.F EXT-1 888.12 EXT-2 -437.02 EXT-3 866.54 EXT-4 1153.1 SEXT-1 1378.3 SEXT-2 1378.1

ENGINE OIL EOILT 188.50 SOILT 138.78 OILP 73.407 MANIFOLD PRESSURE = 28.429

DYND COND. TORQUE 278.09 RPM 2619.7 CYL. BACK PRESSURE = 29.511

INDUCTION AIR IAIRT1 98.963 IAIRT2 98.877 TAIRT1 80.187 TAIRT2 95.728

ORIFICE AIR TEMP 89.958 DELTAP 1.0627 DRFP 53.223 FLOW 1443.9

CFLL TEMP. = 79.825 HEATER TEMP = 115.73 COOLER TEMP = 109.70

415

NASA-LEWIS PRELIMINARY DATA 04/09/76 CADDEII REC 04/09/76 17:21:37.179 FAC SEX15 PGM C003 RDG 3145

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 30 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.370 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 99.662 PRESS 29.242 CFM 189.33 DRY FLOW 799.94 VAPOR FLOW 9.5513 PRESS TOTAL 14.778

COMB. FUEL TEMP 69.369 PRESS 5.4161 DENSITY 44.928 TURBO FLOW 62.148 FLOW TRON 59.958 FPIP 5.9958

COOLING AIR TEMP 99.938 UDEL-HOOD 3.0172 DEL-HOOD 3.9228 FLOW 9990.2 REL-HUM 29.592 DEW-POINT 62.327

REL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP 29.592 18.062 83.580 1.9193 128.10

ENG. COND. F/A DRY 0.074953 F/A WET 0.074069 EQU. RATIO 1.1187 RPM-1 2430.6 RPM-2 2431.6 TORQUE 259.01 BHP 119.87

WET CORRECTION FACTOR = 0.82335 EXHAUST MOLE. WT. = 28.093 EXHAUST DENSITY = 0.072740 EXHAUST FLOW RATE = 11952.

MEASURED CONC. PART PER MILLION WET PER CENT NO2 DRY 1384.0 NOX PPM 950.19 CO DRY 5.4610 CO2 DRY 13.0740 O2 DRY 0.11979 CORRECTED CONC. TO WET BASIS 4.4963 10.764 0.098631

EMISSION RATE HC 0.59390 NOX 1.3515 CO 39.018 EMISSION MASS/MODE 0.049491 0.11263 3.2515 EMISSION MASS/RATED HP 0.00030932 0.00070392 0.020322 MODE EMIS./STD. CYCLE % 16.280 46.928 48.385

CAL. FUEL AIR RATIO = 0.077531 MEAS. FUEL AIR RATIO = 0.074953 DIFF MEAS. & CAL. F/A PERCENT = 3.4396

CYL TEMP DEG.F CYL-1 406.45 CYL-2 423.80 CYL-3 443.98 CYL-4 446.25

EXT GAS TEMP DEG.F EXT-1 1106.8 EXT-2 -454.00 EXT-3 750.26 EXT-4 1179.6 SEXT-1 1351.3 SEXT-2 1350.4

ENGINE OIL EQILT 187.52 SQILT 190.23 OILP 71.015 MANIFOLD PRESSURE = 27.981

DYND COND. TORQUE 239.91 RPM 2342.1 CYL. RACK PRESSURE = 29.349

INDUCTION AIR IAIRT1 99.766 IAIRT2 99.662 TAIRT1 86.643 TAIRT2 96.156

ORIFICE AIR TEMP 90.524 DELTAP 1.0375 DRFP 53.185 FLOW 1426.2

CELL TEMP. = 80.989 HEATER TEMP = 105.42 COOLER TEMP = 110.09

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417

NASA-Lewis PRELIMINARY DATA 04/09/76 CADDETT REC 04/09/76 17:25:05.713 FAC SEX15 PGM C003 RDG 3146
 LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 30 % MODE = 5.0000 NO. SCANS = 5
 ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.370 RATED HP. = 160.00 HC RATIO = 2.1250
 COMB. AIR TEMP 99.291 PRESS 29.374 CFM 113.14 DRY FLOW 471.25 VAPOR FLOW 5.6465 PRESS TOTAL 14.554
 COMB. FUEL TEMP 72.391 PRESS 5.5289 DENSITY 44.848 TURBO FLOW 39.699 FLOW TRON 37.927 FPIP 6.1491
 COOLING AIR TEMP 100.32 UDEL-HOOD 2.9259 DEL-HOOD 3.8292 FLOW 9819.6 REL-HUM 29.573 DEW-POINT 61.992
 REL-HUM 1 29.573 2 43.118 HUMIDITY 83.874 % H2O VAPOR 1.9260 CORRECTED HP 70.172
 ENG. COND. F/A DRY 0.080481 F/A WET 0.079528 EQU. RATIO 1.2012 RPM-1 2354.0 RPM-2 2356.3 TORQUE 145.62 BHP 65.269
 WET CORRECTION FACTOR = 0.83980 EXHAUST MOLE. WT. = 27.642 EXHAUST DENSITY = 0.071572 EXHAUST FLOW RATE = 7193.1
 MEASURED CONC. PART PER MILLION WET HC PPM 1640.4 NOX PPM 371.81 CO DRY 6.3123 PER CENT CO2 DRY 12.5900 O2 DRY 0.098970
 CORRECTED CONC. TO WET BASIS HC 5.3011 CO 10.573 O2 DRY 0.083115
 EMISSION RATE HC 0.42359 NOX 0.31826 CO 27.683
 EMISSION MASS/MODE HC 0.042359 NOX 0.031826 CO 2.7683
 EMISSION MASS/RATED HP HC 0.00026475 NOX 0.00019891 CO 0.017302
 MODE FMIS./STD. CYCLE % HC 13.934 NOX 13.261 CO 41.195
 CAL. FUEL AIR RATIO = 0.079464 MEAS. FUEL AIR RATIO = 0.080481 DIFF MEAS. & CAL. F/A PERCENT = -1.2644
 CYL TEMP DEG.F CYL-1 364.95 CYL-2 376.26 CYL-3 377.60 CYL-4 377.96
 EXT GAS TEMP DEG.F EXT-1 1209.5 EXT-2 -454.00 EXT-3 894.46 EXT-4 1005.8 SEXT-1 1205.9 SEXT-2 1206.2
 ENGINE OIL EOILT 187.98 SOILT 270.21 OILP 70.487 MANIFOLD PRESSURE = 19.354
 DYNO COND. TORQUE 150.29 RPM 2322.8 CYL. BACK PRESSURE = 29.457
 INDUCTION AIR IAIRT1 99.654 IAIRT2 99.291 TAIRT1 92.968 TAIRT2 95.561
 ORIFICE AIR TEMP 91.177 DFLTAP 2.0459 ORFP 53.323 FLOW 1980.7
 CELL TEMP. = 81.069 HEATER TEMP = 113.08 COOLER TEMP = 108.28

418

NASA-LEWIS PRELIMINARY DATA 04/09/76 CADDELL REC 04/09/76 17:31:03.390 FAC SEX15 PGM C003 RDG 3147

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 30 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.370 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	98.402	29.337	215.31	915.99	11.035	14.888

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	68.386	5.3756	44.954	67.370	65.506	5.9679

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	98.756	3.0014	3.9211	9961.0	31.243	62.787

REL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP
	31.243	19.810	84.333	1.9366 154.17

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.071513	0.070662	1.0674	2688.9	2690.2	275.60	141.10

WET CORRECTION FACTOR = 0.82431 EXHAUST MOLE. WT. = 28.385 EXHAUST DENSITY = 0.073496 EXHAUST FLOW RATE = 13504.

MEASURED CONC.	PART PER MILLION WFT			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	1107.0	921.19	3.5864	14.1570	0.10621	
CORRECTED CONC. TO WET BASIS			2.9563	11.670	0.087550	

	HC	NOX	CO
EMISSION RATE	0.53669	1.4804	28.984
EMISSION MASS/MODE	0.0026835	0.0074019	0.14492
EMISSION MASS/RATED HP	1.6772E-05	4.6262E-05	0.00090575
MODE EMIS./STD. CYCLE %	0.88271	3.0841	2.1565

CAL. FUEL AIR RATIO = 0.073736 MEAS. FUEL AIR RATIO = 0.071513 DIFF MEAS. & CAL. F/A PERCENT = 3.1084

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	440.45	453.22	447.18	451.86

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1168.0	47.497	1156.8	1263.6	1415.5	1412.9

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.476
	188.47	194.29	73.263	

DYNO COND.	TORQUE	RPM	CYL. RACK PRESSURE = 29.548
	269.38	2628.9	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	98.515	98.402	78.445	96.353

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	89.382	0.067907	53.233	255.49

CELL TEMP. = 79.128 HEATER TEMP = 119.40 COOLER TEMP = 111.87

blh

NASA-LEWIS PRELIMINARY DATA 04/09/76 CADDELL REC 04/09/76 17:37:10.903 FAC SEX15 PGM C003 RDG 3149

LEANOUT 25 RTDC TO CL APP 100 DEG HUM = 30 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.370 RATED HP. = 160.00 HC RATIO = 2.1250

CCMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	97.737	29.372	114.36	476.43	5.7160	14.553

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	71.607	5.5463	44.869	37.258	34.629	6.0717

COOLING AIR	TEMP	WDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	98.817	2.8974	3.8461	9765.7	31.038	62.027

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	31.038	13.877	83.984	1.9286	70.216

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.072685	0.071824	1.0849	2357.5	2359.6	145.75	65.423

WET CORRECTION FACTOR = 0.83284 EXHAUST MOLE. WT. = 28.285 EXHAUST DENSITY = 0.073236 EXHAUST FLOW RATE = 7056.3

MEASURED CONC.	PART PER MILLION WET	PER CENT
	HC PPM	CO DRY
	1199.0	3.4995
	NOX PPM	CO2 DRY
	757.88	14.1410
	CO DRY	O2 DRY
	2.9145	11.777
	NO2 DRY	0.22384
	CO CORRECTED	0.18642

EMISSION RATE	HC	NOX	CO
	0.30373	0.53638	14.931
EMISSION MASS/MODE	0.030373	0.063638	1.4930
EMISSION MASS/RATED HP	0.00018983	0.00039774	0.0093316
MODE EMIS./STD. CYCLE %	9.9913	26.516	22.218

CAL. FUEL AIR RATIO = 0.073290 MEAS. FUEL AIR RATIO = 0.072686 DIFF MEAS. & CAL. F/A PERCENT = 0.83192

CYL TEMP DEG. F.	CYL-1	CYL-2	CYL-3	CYL-4
	373.16	384.72	387.73	389.11

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SXT-1	SXT-2
	1597.8	-339.26	1141.1	1111.9	1266.0	1266.5

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 19.661
	188.01	214.36	70.719	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.394
	139.90	2333.6	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	98.091	97.737	78.365	95.409

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	89.931	1.0636	53.229	1444.5

CELL TEMP. = 80.027 HEATER TEMP = 121.95 COOLER TEMP = 109.18

420

NASA-LEWIS PRELIMINARY DATA 04/09/76 CANDELI REC 04/09/76 17:41:35.429 FAC SEX15 PGM C003 RDG 3150

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 30 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.370 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	99.102	29.389	215.80	919.71	11.133	14.897

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	70.529	5.3624	44.897	67.938	66.073	5.9613

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	99.990	2.9790	3.9056	9919.2	30.751	62.937

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	32.751	11.891	84.731	1.9457	154.71

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.071841	0.070982	1.0723	2695.5	2697.4	276.24	141.77

WET CORRECTION FACTOR = 0.82692 EXHAUST MOLE. WT. = 28.357 EXHAUST DENSITY = 0.073423 EXHAUST FLOW RATE = 13577.

MEASURED CONC.	PART PER MILLION WET		PER CENT	
	HC PPM	NOX PPM	CO DRY	O2 DRY
	1129.3	1033.7	3.5074	14.2120
CORRECTED CONC. TO WET BASIS			2.9003	11.752
				0.10491

EMISSION RATE	HC	NOX	CO
	0.55047	1.5702	28.589
EMISSION MASS/MODE	0.0027523	0.0083509	0.14295
EMISSION MASS/RATED HP	1.7202E-05	5.2193E-05	0.00089341
MODE EMIS./STD. CYCLE %	0.90537	3.4796	2.1272

CAL. FUEL AIR RATIO = 0.073530 MEAS. FUEL AIR RATIO = 0.071841 DIFF MEAS. & CAL. F/A PERCENT = 2.3506

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	428.69	443.69	437.70	436.42

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1246.3	72.898	1148.0	1292.2	1415.3	1412.6

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.419
	188.37	227.70	73.363	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.523
	270.70	2599.5	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	99.179	99.102	87.111	95.669

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	90.629	2.0758	53.226	1995.3

CELL TEMP. = 79.605 HEATER TEMP. = 116.25 COOLER TEMP = 108.04

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421

NASA-LEWIS PRELIMINARY DATA 04/09/76 CADDEII REC 04/09/76 17:45:16.282 FAC SEX15 PGM C003 RDG 3151

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 30% MCDE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.370 RATED HP. = 160.00 MC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	99.869	29.320	195.46	826.67	9.9658	14.792

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	70.841	5.4335	44.889	59.783	57.990	6.0654

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	100.32	2.9533	3.8796	9871.1	29.715	62.622

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	29.715	18.928	84.388	1.9378	130.30

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.070148	0.069313	1.0470	2442.7	2444.2	262.05	121.88

WET CORRECTION FACTOR = 0.82036 EXHAUST MOLE. WT. = 28.503 EXHAUST DENSITY = 0.073802 EXHAUST FLOW RATE = 12121.

MEASURED CONC.	PART PER MILLION WET				
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1010.4	1503.9	3.6586	14.0420	0.29653
CORRECTED CONC. TO WET BASIS			3.0013	11.520	0.24326

EMISSION RATE	HC	NOX	CO
	0.43970	2.1695	26.413
EMISSION MASS/MCDE	0.036642	0.18079	2.2011
EMISSION MASS/RATED HP	0.00022901	0.0011299	0.013757
MODE EMIS./STD. CYCLE %	12.051	75.328	32.755

CAL. FUEL AIR RATIO = 0.073298 MEAS. FUEL AIR RATIO = 0.070148 DIFF MEAS. & CAL. F/A PERCENT = 4.6892

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	420.80	439.35	441.31	442.32

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	682.12	-454.00	861.24	1191.4	1397.1	1395.6

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.250
	187.57	177.21	71.043	

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.459
	263.81	2383.0	

INDUCTION AIR	TAIRT1	TAIPT2	TAIRT1	TAIRT2
	99.964	99.869	69.354	96.032

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	91.186	1.0475	53.201	1432.1

CELL TEMP. = 81.465 HEATER TEMP. = 106.33 COOLER TEMP. = 110.33

422

NASA-LEWIS PRELIMINARY DATA 04/09/76 CADDELL REC 04/09/76 17:48:14.933 FAC SEX15 PGM C003 RDG 3152

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 30 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.370 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	99.559	29.379	114.38	476.40	5.7211	14.555

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	73.751	5.5457	44.812	37.457	35.488	6.1089

COOLING AIR	TEMP	INLET-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	130.87	2.8921	3.8082	9755.8	29.403	62.057

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	29.403	0.68807	84.064	1.9304	69.691

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.074491	0.073607	1.1118	2355.9	2357.2	144.45	64.795

WET CORRECTION FACTOR = 0.84188 EXHAUST MOLE. WT. = 28.132 EXHAUST DENSITY = 0.072840 EXHAUST FLOW RATE = 7106.0

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1210.5	749.37	3.5183	14.1400	0.25407
CORRECTED CONC. TO WET BASIS			2.9520	11.904	0.21389

	HC	NOX	CO
EMISSION RATE	0.30881	0.63368	15.2811
EMISSION MASS/MODE	0.030881	0.063368	1.5281
EMISSION MASS/RATED HP	0.00019301	0.00039605	0.0095506
MODE EMIS./STD. CYCLE %	10.158	26.403	22.740

CAL. FUEL AIR RATIO = 0.073233 MEAS. FUEL AIR RATIO = 0.074491 DIFF MEAS. & CAL. F/A PERCENT = -1.5898

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	390.07	385.07	392.51	390.10

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1448.4	187.11	1243.6	1179.7	1265.4	1265.6

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 19.685
	188.11	208.43	70.751	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.441
	143.83	2307.0	

INDUCTION AIR	TAIPT1	TAIPT2	TAIRT1	TAIRT2
	99.869	99.559	80.882	95.627

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	91.630	1.0585	53.237	1438.9

CELL TEMP. = 80.505 HEATER TEMP = 112.23 COOLER TEMP = 106.67

423

NASA-Lewis PPELIMINARY DATA 04/09/76 CADDELL REC 04/09/76 17:51:29.409 FAC SEX15 PGM C003 RDG 3153

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 30 ? MCOE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.370 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	100.36	29.363	194.64	822.29	9.9139	14.778

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	71.848	5.4266	44.862	59.591	57.765	6.0102

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM.	DEW-POINT
	100.64	2.9461	3.8312	9857.6	29.254	62.597

REL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP
	29.254	11.373	84.394	1.9380 128.41

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.070248	0.069411	1.0485	2435.3	2437.4	258.88	120.04

WET CORRECTION FACTOR = 0.82330 EXHAUST MOLE. WT. = 28.495 EXHAUST DENSITY = 0.073780 EXHAUST FLOW RATE = 12062.

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	956.09	1561.2	3.5909	13.991	0.36620
CORRECTED CONC. TO WET BASIS			2.9564	11.519	0.30149

EMISSION RATE	HC	NOX	CO
	0.41403	2.2409	25.891
EMISSION MASS/MODE	0.034503	0.18675	2.1575
EMISSION MASS/PATED HP	0.00021564	0.0011672	0.013485
MODE EMIS./STD. CYCLE %	11.350	77.810	32.106

CAL. FUEL AIR RATIO = 0.072971 MEAS. FUEL AIR RATIO = 0.070248 DIFF MEAS. & CAL. F/A PERCENT = 3.8755

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	411.99	429.72	427.49	425.72

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	854.09	-454.00	843.38	1239.1	1383.0	1381.0

ENGINE OIL	EQILT	SOILT	OILP	MANIFOLD PRESSURE = 28.123
	197.78	223.55	71.191	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.479
	258.62	2368.1	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	100.46	100.36	114.87	96.113

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	91.578	0.068107	53.273	255.60

CELL TEMP. = 81.474 HEATER TEMP = 118.92 COOLER TEMP = 112.35

hch

NASA-LEWIS PRELIMINARY DATA 04/09/76 CADDEII REC 04/09/76 18:25:13.304 FAC SEX15 PGM C003 RDG 3154

LEANOUT 25 BTDC I & T 100 DEG HUM = 30 % 1 1/2 T CLO MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.360 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	94.238	29.351	11.907	49.426	0.60740	14.425

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	76.776	5.8116	44.732	3.9689	3.5854	6.1683

COOLING AIR	TEMP	WDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	95.088	-0.049540	0.83941	0.00000	35.266	62.612

PFL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	35.266	30.047	86.549	1.9875	0.10444

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.072983	0.072091	1.0893	617.58	617.70	0.84175	0.098981

WET CORRECTION FACTOR = 0.85909 EXHAUST MOL.F. WT. = 28.259 EXHAUST DENSITY = 0.073171 EXHAUST FLOW RATE = 728.69

MEASURED CONC.	PART PER MILLION WET		PER CENT	
	HC PPM	NOX PPM	CO DRY	O2 DRY
	15730.	23.932	2.5958	12.6800
CORRECTED CONC. TO WET BASIS			2.2300	10.893
				2.5323

	HC	NOX	CO
EMISSION RATE	0.41151	0.0020753	1.1797
EMISSION MASS/MODE	0.0068585	3.4588E-05	0.019662
EMISSION MASS/RATED HP	4.2866E-05	2.1617E-07	0.00012289
MODE EMIS./STD. CYCLE %	2.2561	0.014412	0.29259

CAL. FUEL AIR RATIO = 0.071291 MEAS. FUEL AIR RATIO = 0.072983 DIFF MEAS. & CAL. F/A PERCENT = -2.3187

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	221.33	256.38	242.68	246.81

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1398.6	-454.00	-454.00	350.27	440.11	434.34

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 11.658
	144.12	243.47	47.833	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.494
	4.2052	605.04	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	95.521	94.238	165.95	95.539

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	89.268	1.0478	53.225	1448.2

CELL TEMP. = 76.183 HEATER TEMP = 171.69 COOLER TEMP = 119.84

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NASA-LEWIS PRELIMINARY DATA 04/09/76 CADDELL REC 04/09/76 18:31:28.384 FAC SEX15 PGM C003 RDG 3155

LEANOUT 25 BTDC I & T 100 DEG HUM = 30 % 1 1/2 T CLO MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.360 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	99.171	29.363	19.713	80.282	0.99895	14.426

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	76.696	5.7591	44.735	7.4023	6.3486	6.1326

COOLING AIR	TEMP	UDEL-HOOD	DFL-HOOD	FLOW	REL-HUM	DEW-POINT
	98.687	-0.064208	0.81560	0.00000	30.531	62.792

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	30.531	15.832	87.101	2.0001	1.7491

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.079079	0.078107	1.1803	1198.2	1199.9	7.2340	1.6504

WET CORRECTION FACTOR = 0.83570 EXHAUST MOLE WT. = 27.754 EXHAUST DENSITY = 0.071863 EXHAUST FLOW RATE = 1219.4

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	2667.3	47.761	5.7988	12.9340	0.17080	
CORRECTED CONC. TO WET BASIS			4.8461	10.809	0.14273	

	HC	NOX	CO
EMISSION RATE	0.11676	0.0069305	4.2902
EMISSION MASS/MODE	0.021407	0.0012706	0.78653
EMISSION MASS/RATED HP	0.00013379	7.9412E-06	0.0049158
MODE EMIS./STD. CYCLE %	7.0417	0.52941	11.704

CAL. FUEL AIR RATIO = 0.078644 MEAS. FUEL AIR RATIO = 0.079079 DIFF MEAS. & CAL. F/A PERCENT = -0.54955

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	280.79	292.20	284.33	283.49

EXT GAS TEMP DEG. F	FXT-1	FXT-2	FXT-3	FXT-4	SEXT-1	SEXT-2
	1735.4	-390.54	-454.00	318.40	417.41	412.56

ENGINE OIL	FOILT	SOILT	OILT	MANIFOLD PRESSURE = 8.0536
	144.00	295.86	57.258	

DYMO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.547
	8.0216	1198.1	

INDUCTION AIR	IAIPT1	IAIPT2	TAIRT1	TAIRT2
	100.27	99.171	107.22	102.79

ORIFICE AIR	TEMP	DELTA P	DP/DP	FLOW
	89.914	1.0948	53.187	1465.3

CELL TEMP. = 77.502 HEATER TEMP = 152.40 COOLER TEMP = 118.61

726

NASA-LEWIS PRELIMINARY DATA 04/09/76 CADDEII REC 04/09/76 18:31:51.650 FAC SEX15 PGM C003 RDG 3156

LEANOUT 25 BTDC J & T 100 DEG HUM = 30 % 1 1/2 T CLO MODE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.360 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	98.411	29.360	20.159	82.597	1.0259	14.427

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	76.679	5.7567	44.735	7.3475	6.3156	6.1485

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	98.825	-0.054521	0.85269	0.00000	31.186	62.742

PEI-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	31.186	18.096	86.939	1.9964	1.4930

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.076463	0.075525	1.1412	1199.0	1198.8	6.1756	1.4098

WET CORRECTION FACTOR = 0.82306 EXHAUST MOLE. WT. = 27.958 EXHAUST DENSITY = 0.072416 EXHAUST FLOW RATE = 1242.0

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	2577.5	48.483	5.8475	12.8980	0.15314	
CORRECTED CONC. TO WET BASIS			4.8128	10.616	0.12604	

EMISSION RATE	HC	NOX	CO
	0.11492	0.0071655	4.3396
EMISSION MASS/MODE	0.0057461	0.00035828	0.21698
EMISSION MASS/RATED HP	3.5913E-05	2.2392E-06	0.0013561
MODE EMIS./STD. CYCLE %	1.8901	0.14928	3.2289

CAL. FUEL AIR RATIO = 0.078782 MEAS. FUEL AIR RATIO = 0.076463 DIFF MEAS. & CAL. F/A PERCENT = 3.0324

CYL TEMP. DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	281.99	293.51	285.23	284.59

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1089.2	-388.32	-454.00	-320.51	415.69	412.02

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 8.0747
	144.00	-16.753	57.258	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.358
	3.0675	1189.4	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	99.455	98.411	105.74	99.456

ORIFICE AIR	TFMP	DELTAP	ORFP	FLOW
	89.966	2.0684	53.160	1993.1

CELL TEMP. = 77.608 HEATER TEMP = 141.93 COOLER TEMP = 97.085

427

NASA-LEWIS PRELIMINARY DATA 04/09/76 CADDEII REC 04/09/76 18:38:45.036 FAC SEX15 PGM C003 RDG 3157

LEANDUT 25 BTDC I & T 100 DEG HUM = 30 % 1 1/2 T CLO MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.360 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	96.465	29.359	12.301	50.071	0.62104	14.421

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	74.915	5.8101	44.781	3.9732	3.4893	6.1428

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	97.417	-0.045942	0.86072	0.00000	33.029	62.692

REL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP
	33.029	48.047	86.823	1.9937 0.21615

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.069688	0.068834	1.0401	622.32	621.36	1.7252	0.20442

WET CORRECTION FACTOR = 0.84390 EXHAUST MOLE. WT. = 28.471 EXHAUST DENSITY = 0.073719 EXHAUST FLOW RATE = 734.97

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	13736.	25.975	2.4820	12.9020	2.7816	
CORRECTED CONC. TO WET BASIS			2.0946	10.888	2.3474	

EMISSION RATE	HC	NOX	CO
	0.36244	0.0022718	1.1176
	0.0060406	3.7863E-05	0.018627
	3.7754E-05	2.3664E-07	0.00011642
EMISSION MASS/PATED HP			
MODE EMS./STD. CYCLE %	1.9870	0.015776	0.27719

CAL. FUEL AIR RATIO = 0.070666 MEAS. FUEL AIR RATIO = 0.069688 DIFF MEAS. & CAL. F/A PERCENT = 1.4042

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	238.82	267.98	254.09	258.07

FXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1642.5	-378.99	-454.00	286.29	359.97	357.22

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 11.417
	141.10	241.67	48.105	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.280
	6.5670	620.94	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	97.780	96.465	93.566	102.92

ORIFICE AIR	TEMP	DELTA P	CRFP	FLOW
	87.346	0.096410	53.183	338.67

CELL TEMP. = 75.119 HEAT FR TEMP = 158.07 COOLER TEMP = 136.83

428

NASA-LEWIS PRELIMINARY DATA 04/09/76 CADDELL REC 04/09/76 16:48:24.887 EAC SEX15 PGM C003 RDG 3158

LEANOUT 25 BTDC I & T 100 DEG HUM = 30 % 3/4 T CLOSE MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.360 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CEM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	99.619	29.363	11.481	46.834	0.58310	14.420

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	75.527	5.7951	54.755	3.9735	3.9604	6.1661

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	100.98	-0.052030	0.88950	0.00000	30.126	62.797

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	30.126	15.298	87.153	2.0013	0.77197

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.084562	0.083522	1.2621	617.34	620.10	6.1923	0.72787

WET CORRECTION FACTOR = 0.83583 EXHAUST MOLE. WT. = 27.323 EXHAUST DENSITY = 0.070746 EXHAUST FLOW RATE = 726.23

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	18518.	14.615	7.7230	10.5390	1.7479
CORRECTED CONC. TO WET BASIS			6.4552	8.8085	1.4609

EMISSION RATE	HC	NOX	CO
	0.48281	0.0012631	3.4034
EMISSION MASS/MODE	0.0080469	2.1051E-05	0.056724
EMISSION MASS/RATED HP	5.0293E-05	1.3157E-07	0.00035452
MODE EMIS./STD. CYCLE %	2.6470	0.0087714	0.84410

CAL. FUEL AIR RATIO = 0.086825 MEAS. FUEL AIR RATIO = 0.084562 DIFF. MEAS. & CAL. F/A PERCENT = 2.6765

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	281.65	293.40	281.99	293.63

EXT GAS TEMP DEG.F	FXT-1	FXT-2	FXT-3	FXT-4	SEXT-1	SEXT-2
	772.05	-336.30	-454.00	279.00	496.04	495.60

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 10.904
	147.58	266.73	47.157	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.051
	5.1197	611.46	

INDUCTION AIR	IAIRT1	IAIPT2	TAIRT1	TAIRT2
	101.09	99.619	64.918	101.65

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	88.500	0.093309	53.236	329.86

CELL TEMP. = 76.493 HEATER TEMP = 143.61 COOLER TEMP = 96.301

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NASA-LEWIS PRELIMINARY DATA 04/09/76 CADDELL REC 04/09/76 18:51:52.422 FAC SEX15 PG4 C003 RDG 3159

LEANOUT 25 BTDC I & T 100 DEG HUM = 30 % 3/4 T CLOSE MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.360 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	102.53	29.354	21.249	86.113	1.0746	14.421

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	76.625	5.7291	44.736	9.0635	7.6448	6.1368

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	101.26	-0.049816	0.86570	0.00000	27.672	62.862

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	27.672	11.555	87.349	2.0058	1.9951

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.088776	0.087681	1.3250	1201.8	1203.2	8.2008	1.8766

WET CORRECTION FACTOR = 0.83718 EXHAUST MOLE. WT. = 27.006 EXHAUST DENSITY = 0.069926 EXHAUST FLOW RATE = 1356.2

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	6487.6	28.451	9.7126	10.5380	0.28185
CORRECTED CONC. TO WET BASIS			8.1312	8.8222	0.23596

EMISSION RATE	HC	NOX	CO	
	0.31586	0.0045915	8.0058	
	EMISSION MASS/MODE	0.057908	0.00084178	1.4677
	EMISSION MASS/RATED HP	0.00036193	5.2611E-06	0.0091734
MODE EMIS./STD. CYCLE %	19.049	0.35074	21.841	

CAL. FUEL AIR RATIO = 0.089066 MEAS. FUEL AIR RATIO = 0.088776 DIFF MEAS. & CAL. F/A PERCENT = 0.32738

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	270.32	281.21	267.98	264.17

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1342.0	-454.00	-454.00	261.11	461.89	460.07

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 8.3476
	144.57	370.15	56.286	

DYMO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.377
	12.652	1197.4	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	103.76	102.53	108.99	105.35

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	88.919	2.0521	53.199	1987.6

CELL TEMP. = 76.927 HEATER TEMP = 154.21 COOLER TEMP = 127.62

430

NASA-LEWIS PRELIMINARY DATA 04/09/76 CADDEII REC. 04/09/76 18:52:15.694 FAC SEX15 PGM C003 RDG 3160

LEANOUT 25 BTDC I & T 100 DEG HUM = 30 % 3/4 T CLOSE MODE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.360 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	101.82	29.369	21.321	86.872	1.0839	14.424

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	76.590	5.7291	44.737	9.0311	7.6298	6.1320

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	101.31	-0.048156	0.93904	0.00000	28.260	62.862

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	28.260	11.893	87.335	2.0055	1.1924

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.087827	0.086745	1.3109	1202.8	1203.4	4.9005	1.1223

WET CORRECTION FACTOR = 0.83401 EXHAUST MOLE. WT. = 27.077 EXHAUST DENSITY = 0.070108 EXHAUST FLOW RATE = 1363.4

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	6313.6	28.605	9.6665	10.5600	0.27911
CORRECTED CONC. TO WET BASIS			8.0620	8.8069	0.23278

	HC	NOX	CO
EMISSION RATE	0.30903	0.0046410	7.9801
EMISSION MASS/MODE	0.015451	0.00023205	0.39900
EMISSION MASS/RATED HP	9.6572E-05	1.4503E-06	0.0024938
MODE EMIS./STD. CYCLE %	5.0827	0.096688	5.9376

CAL. FUEL AIR RATIO = 0.088895 MEAS. FUEL AIR RATIO = 0.087827 DIFF MEAS. & CAL. F/A PERCENT = 1.2165

CYL. TEMP. DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	272.89	283.35	270.59	266.59

EXT GAS TEMP DEG. F	FXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	387.45	-454.00	-454.00	-358.03	459.53	457.75

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE =
	144.05	89.398	56.390	8.3631

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE =
	6.9559	1198.5	29.386

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	102.97	101.82	171.41	102.42

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	89.041	2.0154	53.251	1970.5

CELL TEMP. = 77.024 HEATER TEMP = 142.76 COOLER TEMP = 102.26

1431

NASA-LEWIS PPELIMINARY DATA 04/09/76 CADDELL REC 04/09/76 18:58:34.740 FAC SEX15 PGM C003 RDG 3161

LEANOUT 25 BTDC I & T 100 DEG HUM = 30 % 3/4 T CLOSE MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.360 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	98.273	29.344	12.000	48.818	0.61289	14.422

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	74.746	5.7984	44.786	3.9736	3.9754	6.1452

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	98.627	-0.044004	0.86985	0.00000	31.638	63.032

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	31.638	34.597	87.882	2.0181	0.53671

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.081433	0.080424	1.2154	620.94	622.38	4.2838	0.50647

WET CORRECTION FACTOR = 0.83007 EXHAUST MOLE. WT. = 27.567 EXHAUST DENSITY = 0.071376 EXHAUST FLOW RATE = 748.23

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	15903.	14.637	7.1156	10.9980	1.5952	
CORRECTED CONC. TO WET BASIS			5.9064	9.1290	1.3241	

	HC	NOX	CO
EMISSION RATE	0.42719	0.0013033	3.2085
EMISSION MASS/MODE	0.0071199	2.1722E-05	0.053474
EMISSION MASS/RATED HP	4.4499E-05	1.3576E-07	0.00033421
MODE EMIS./STD. CYCLE %	2.3421	0.0090507	0.79575

CAL. FUEL AIR RATIO = 0.084567 MEAS. FUEL AIR RATIO = 0.081433 DIFF MEAS. & CAL. F/A PERCENT = 3.8486

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	249.75	260.66	244.11	249.15

EXT GAS TEMP DEG.F	FXT-1	EXT-2	EXT-3	EXT-4	SXT-1	SXT-2
	421.41	-454.00	-454.00	116.58	393.12	390.78

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 10.822
	139.51	374.80	48.157	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.458
	6.5454	607.68	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	99.973	98.273	132.49	103.15

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	86.523	1.1078	53.168	1478.4

CELL TEMP. = 74.506 HEATER TEMP. = 137.27 COOLER TEMP. = 111.75

432

NASA-LEWIS PRELIMINARY DATA 04/09/76 CADDELL REC 04/09/76 19:08:17.885 FAC SEX15 PGM C003 RDG 3162

LEANOUT 25 BTDC I & T 100 DEG HUM = 30 % NEUTRAL MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.360 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CEM	DRY. FLOW	VAPOR FLOW	PRESS TOTAL
	100.86	29.362	13.100	53.348	0.66757	14.422

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	74.986	5.7630	44.780	6.3415	5.2175	6.1329

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	100.20	-0.055351	0.84134	0.00000	29.170	62.942

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	29.170	0.40204	87.594	2.0115	0.67064

ENG. COND.	F/A DRY	F/A WET	EQV. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.097801	0.096592	1.4597	619.80	621.54	5.3505	0.63143

WET CORRECTION FACTOR = 0.87385 EXHAUST MOLE. WT. = 26.371 EXHAUST DENSITY = 0.068282 EXHAUST FLOW RATE = 867.48

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	33187.	6.0566	9.4906	7.88830	3.3739	
CORRECTED CONC. TO WET BASIS			8.2933	6.8932	2.9483	

	HC	NOX	CO
EMISSION RATE	1.0335	0.00062522	5.2231
EMISSION MASS/MODE	0.017226	1.0420E-05	0.087051
EMISSION MASS/RATED HP	0.00010766	6.5127E-08	0.00054407
MODE EMIS./STD. CYCLE %	5.6663	0.0043418	1.2954

CAL. FUEL AIR RATIO = 0.094865 MEAS. FUEL AIR RATIO = 0.097801 DIFF MEAS. & CAL. F/A PERCENT = -3.0022

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	273.83	286.65	267.53	281.05

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1791.4	-454.00	-454.00	56.677	550.27	549.18

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 11.836
	150.93	282.17	46.977	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.218
	7.2223	614.94	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	102.56	100.86	83.337	102.63

ORIFICE AIR	TEMP	DELTAP	DRFP	FLOW
	87.766	1.0739	53.210	1454.3

CELL TEMP. = 75.331 HEATER TEMP. = 129.00 COOLER TEMP. = 123.27

433

NASA-LEWIS PRELIMINARY DATA 04/09/76 CADDEII REC 04/09/76 19:10:54.313 FAC SEX15 PGM C003 RDG 3163

LEANOUT 25 RTDC I & T 100 DEG HUM = 30 % NEUTRAL MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.360 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	102.11	29.371	24.254	98.894	1.2455	14.428

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	75.589	5.6865	44.764	10.903	9.5649	6.1221

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	100.17	-0.056182	0.84909	0.00000	28.289	63.132

REL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP
	28.289	37.810	88.159	2.0244

ENG. COND.	E/A DRY	E/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.096720	0.095517	1.4436	1205.3	1207.3	8.3008	1.9050

WET CORRECTION FACTOR = 0.84027 EXHAUST MOLE. WT. = 26.444 EXHAUST DENSITY = 0.068471 EXHAUST FLOW RATE = 1602.2

MEASURED CONC.	PART PER MILLION WET		PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY
	14312.	12.068	11.9280	8.70510
CORRECTED CONC. TO WET BASIS			CO DRY	O2 DRY
			10.023	7.3146
				0.50873

EMISSION RATE	HC	NOX	CO
	0.82323	0.0023009	11.659
EMISSION MASS/MODE	0.15093	0.00042184	2.1374
EMISSION MASS/RATED HP	0.00094329	2.6365E-06	0.013359
MODE EMS./STD. CYCLE %	49.647	0.17577	31.807

CAL. FUEL AIR RATIO = 0.098871 MEAS. FUEL AIR RATIO = 0.096720 DIFF MEAS. & CAL. F/A PERCENT = 2.2248

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	261.46	275.39	254.80	255.00

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	460.39	-378.37	-454.00	18.042	516.31	513.50

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 9.0603
	146.93	180.03	56.194	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.604
	3.3195	1192.4	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	103.37	102.11	135.70	102.06

ORIFICE AIR	TFMP	DELTAP	ORFP	FLOW
	83.299	2.0704	53.296	1997.1

CELL TEMP. = 75.917 HEATER TEMP. = 130.33 COOLER TEMP. = 120.43

h34

NASA-LEWIS PRELIMINARY DATA 04/09/76 CADDEII REC 04/09/76 19:11:17.044 FAC SEX15 PG4 C003 RDG 3164

LEANOUT 25 BTDC I & T 100 DEG HUM = 30 % NEUTRAL MODE = 6.0000 ND. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.360 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	102.29	29.368	23.496	95.723	1.2020	14.426

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	75.562	5.6913	44.764	10.771	9.3039	6.1281

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	RFL-HUM	DEW-POINT
	100.28	-0.044558	0.87815	0.00000	28.053	63.047

RFL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP
	29.053	0.29403	87.902	2.0185 1.8855

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	PPM-2	TORQUE	BMP
	0.097196	0.095991	1.4507	1207.0	1208.2	7.7174	1.7735

WET CORRECTION FACTOR = 0.84616 EXHAUST MOLE. WT. = 26.412 EXHAUST DENSITY = 0.068387 EXHAUST FLOW RATE = 1553.3

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	12711.	12.898	11.664	8.89420	0.53295
CORRECTED CONC. TO WET BASIS			9.8695	7.5260	0.45097

	HC	NOX	CO
EMISSION RATE	0.70884	0.0023842	11.130
EMISSION MASS/MODE	0.035442	0.00011921	0.55651
EMISSION MASS/RATED HP	0.00022151	7.4507E-07	0.0034782
MODE EMISS./STD. CYCLE %	11.659	0.049671	8.2813

CAL. FUEL AIR RATIO = 0.097430 MEAS. FUEL AIR RATIO = 0.097196 DIFF. MEAS. & CAL. F/A PERCENT = 0.24076

CYL TEMP. DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	264.65	277.46	258.54	257.64

EXT GAS TEMP DEG. F	FXT-1	EXT-2	EXT-3	EXT-4	SFXT-1	SEXT-2
	1014.8	-454.00	-454.00	-454.00	515.03	512.60

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE =
	146.20	96.252	56.286	8.9014

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE =
	7.7552	1202.0	29.197

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	103.56	102.29	159.12	102.50

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	89.273	2.0292	53.353	1978.3

CELL TEMP. = 76.129 HEATER TEMP = 129.66 COOLER TEMP = 120.86

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435

NASA-LEWIS PRELIMINARY DATA 04/09/76 CADDEII REC 04/09/76 19:17:39.240 FAC SEX15 PGM C003 RDG 3165

LEANOUT 25 BTDC I & T 100 DEG HUM = 30 % NEUTRAL MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.360 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	99.542	29.371	13.261	53.955	0.67735	14.417

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	74.666	5.7624	44.788	3.9755	5.1575	6.1464

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	98.774	-0.045665	0.86155	0.00000	30.436	63.022

RFL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP
	30.436	33.119	87.878	2.0180 0.17527

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.095588	0.094403	1.4267	594.90	594.24	1.4585	0.16520

WET CORRECTION FACTOR = 0.86623 EXHAUST MOLE. WT. = 26.522 EXHAUST DENSITY = 0.068671 EXHAUST FLOW RATE = 870.68

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	34493.	5.0285	9.1705	7.97610	3.4300	
CORRECTED CONC. TO WET BASIS			7.9437	6.9091	2.9712	

EMISSION RATE	HC	NOX	CO		
	1.0782	0.00052101	5.0213		
	EMISSION MASS/MODE	0.017970	8.5834E-06	0.083689	
	EMISSION MASS/RATED HP	0.00011231	5.4271E-08	0.00052306	
MODE EMIS./STD. CYCLE %	5.9110	0.0036181	1.2454		

CAL. FUEL AIR RATIO = 0.094775 MEAS. FUEL AIR RATIO = 0.095588 DIFF MEAS. & CAL. F/A PERCENT = -0.85109

CYL TEMP. DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	242.94	255.94	232.61	242.03

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1096.5	-454.00	-454.00	-27.563	429.60	426.33

ENGINE OIL	EOILT	SOILT	OILT	MANIFOLD PRESSURE = 11.932
	139.67	365.23	47.761	

DYMO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.102
	3.5420	591.18	

INDUCTION AIR	IAIRT1	IAIPT2	TAIRT1	TAIRT2
	101.29	99.542	108.52	102.91

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	86.873	1.0328	53.187	1427.7

CELL TEMP. = 74.613 HEATER TEMP = 128.33 COOLER TEMP = 118.46

436

NASA-LEWIS PRELIMINARY DATA 04/09/76 CADDEII REC 04/09/76 19:26:05.243 FAC SEX15 PGM C003 RDG 3166

LEANOUT 25 BTDC I & T 100 DEG HUM = 30 % 3/4 T OPEN MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.360 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CEM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	100.83	29.358	14.554	59.265	0.73930	14.421

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	73.512	5.7381	44.818	7.4712	6.2496	6.1266

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	99.102	-0.045388	0.86293	0.00000	29.101	62.852

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	29.101	36.060	87.322	2.0052	0.34895

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	RHP
	0.10545	0.10415	1.5739	591.66	591.84	2.9170	0.32861

WET CORRECTION FACTOR = 0.89229 EXHAUST MOLE. WT. = 25.879 EXHAUST DENSITY = 0.067008 EXHAUST FLOW RATE = 988.75

MEASURED CONC.	PART PER MILLION WET		PER CENT	
	HC PPM	NOX PPM	CO DRY	O2 DRY
	44982.	4.3834	10.179	6.39000
CORRECTED CONC. TO WET BASIS			9.0826	5.7017
				3.9825

EMISSION RATE	HC	NOX	CO
	1.5967	0.00051576	6.5198
EMISSION MASS/MODE	0.026612	8.5960F-06	0.10866
EMISSION MASS/RATED HP	0.00016632	5.3725F-08	0.00067914
MODE EMISS./STD. CYCLE %	8.7539	0.0035817	1.6170

CAL. FUEL AIR RATIO = 0.10071 MEAS. FUEL AIR RATIO = 0.10545 DIFF MEAS. & CAL. F/A PERCENT = -4.4941

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	291.93	306.34	288.25	305.01

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	485.38	-333.46	-454.00	107.74	571.06	570.63

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 13.047
	148.09	328.97	46.573	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.420
	5.1629	586.14	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	102.45	100.83	74.189	102.62

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	87.136	1.0867	53.250	1463.6

CELL TEMP. = 74.595 HEATER TEMP = 109.18 COOLER TEMP = 115.12

437

NASA-LEWIS PRELIMINARY DATA 04/09/76 CADDELL REC 04/09/76 19:43:45.052 FAC SEK15 PGM C003 RDG 3167

LEANOUT 25 BTDC I & T 100 DEG HUM = 30 3/4 T OPEN MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.360 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 101.26 PRESS 29.355 CFM 25.489 DRY FLOW 103.91 VAPOR FLOW 1.2984 PRESS TOTAL 14.431

COMB. FUEL TEMP 72.062 PRESS 5.6901 DENSITY 44.857 TURBO FLOW 12.274 FLOW TRON 10.936 FPIP 6.1488

COOLING AIR TEMP 94.481 UDEL-HOOD -0.085795 DEL-HOOD 0.79346 FLOW 0.00000 REL-HUM 28.793 DEW-POINT 62.917

REL-HUM 1 28.793 2 19.158 HUMIDITY 87.465 % H2O VAPOR CORRECTED HP 2.0085 1.2037

ENG. COND. F/A DRY 0.10524 F/A WET 0.10394 EQU. RATIO 1.5708 RPM-1 1206.5 RPM-2 1207.4 TORQUE 4.9338 BHP 1.1334

WET CORRECTION FACTOR = 0.85574 EXHAUST MOLE. WT. = 25.892 EXHAUST DENSITY = 0.067041 EXHAUST FLOW RATE = 1732.5

MEASURED CONC. PART PER MILLION WET HC PPM 17779. NOX PPM 7.7978 CO DRY 12.933 PER CENT CO2 DRY 7.99170 O2 DRY 0.55593
CORRECTED CONC. TO WET BASIS HC 11.067 CO 6.8388 O2 0.47574

EMISSION RATE HC 1.1058 NOX 0.0016076 CO 13.920
EMISSION MASS/MODE HC 0.20274 NOX 0.00029474 CO 2.5521
EMISSION MASS/RATED HP HC 0.0012671 NOX 1.8421E-06 CO 0.015950
MODE EMIS./STD. CYCLE % HC 66.690 NOX 0.12281 CO 37.977

CAL. FUEL AIR RATIO = 0.10423 MEAS. FUEL AIR RATIO = 0.10524 DIFF MEAS. & CAL. F/A PERCENT = -0.95664

CYL TEMP DEG.F CYL-1 331.42 CYL-2 342.48 CYL-3 338.48 CYL-4 350.32

EXT GAS TEMP DEG.F EXT-1 1537.1 EXT-2 -454.00 EXT-3 -454.00 EXT-4 92.286 SEXT-1 694.68 SEXT-2 695.80

ENGINE OIL EOILT 143.36 SOILT 297.29 OILP 55.402 MANIFOLD PRESSURE = 9.6882

CYND COND. TORQUE 14.884 RPM 1201.7 CYL. BACK PRESSURE = 29.438

INDUCTION AIR IAIRT1 102.44 IAIRT2 101.26 TAIRT1 185.89 TAIRT2 102.34

ORIFICE AIR TEMP 86.830 DELTAP 1.0079 DRFP 53.211 FLOW 1410.7

CELL TEMP. = 74.045 HEAT EX. TEMP = 117.40 COOLER TEMP = 123.73

438

NASA-LEWIS PRELIMINARY DATA 04/09/76 CADDELL REC 04/09/76 19:44:07.335 FAC SEX15 PGM C003 RDG 3168

LEAN CUT 25 BTDC I & T 100 DEG HUM = 30 % 3/4 T OPEN MODE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.360 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	101.08	29.355	25.598	104.45	1.3013	14.424

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	72.124	5.6814	44.855	12.539	11.269	6.1395

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	94.784	-0.079983	0.84715	0.00000	28.852	62.822

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	28.852	24.028	87.210	2.0026	2.0725

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10789	0.10656	1.6103	1204.8	1205.8	8.5092	1.9520

WET CORRECTION FACTOR = 0.86553 EXHAUST MOLE. WT. = 25.731 EXHAUST DENSITY = 0.066624 EXHAUST FLOW RATE = 1756.4

MEASURED CONC.	PART PER MILLION WET	PER CENT
	HC PPM	CO2 DRY
	17990.	7.97190
	NOX PPM	O2 DRY
	7.8448	0.62252
	CO DRY	
	11.166	6.8999
		0.53881

EMISSION RATE	HC	NOX	CO
	1.1344	0.0016397	14.239
	0.056720	8.1983E-05	0.71193
	0.00035450	5.1239E-07	0.0044496
	18.658	0.034160	10.594

CAL. FUEL AIR RATIO = 0.10395 MEAS. FUEL AIR RATIO = 0.10789 DIFF MEAS. & CAL. F/A PERCENT = -3.6534

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	324.39	336.15	331.13	343.34

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1630.8	-454.00	-454.00	-454.00	681.52	681.82

ENGINE OIL	EDILT	SOILT	OILP	MANIFOLD PRESSURE = 9.7216
	143.55	10.833	55.485	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.451
	4.3924	1189.7	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	102.25	101.08	55.561	101.61

CRIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	86.926	2.0322	53.291	1982.1

CELL TEMP. = 74.242 HEATER TEMP. = 117.35 COOLER TEMP. = 121.37

439

NASA-LEWIS PRELIMINARY DATA 04/09/76 CADDEII REC 04/09/76 19:49:19.959 FAC SEX15 PG4 C003 RDG 3169

LEANOUT 25 BTDC I.6 T 100 DEG HUM = 30 & 3/4 T OPEN MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.360 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS. TOTAL
	100.61	29.360	14.984	61.148	0.76458	14.421

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	73.991	5.7549	44.806	7.2577	6.3306	6.1536

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	96.742	-0.10406	0.82944	0.00000	29.364	62.917

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	29.364	0.32003	87.525	2.0099	0.26089

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10353	0.10225	1.5452	600.12	603.12	2.1502	0.24569

WFT CORRECTION FACTOR = 0.87912 EXHAUST MOL. WT. = 25.999 EXHAUST DENSITY = 0.067318 EXHAUST FLOW RATE = 1013.8

MEASURED CONC.	PART PER MILLION WET		PER CENT	
	HC PPM	NOX PPM	CO DRY	O2 DRY
	40794	4.4974	10.4390	6.7587
CORRECTED CONC. TO WET BASIS				
			9.1775	5.9417

EMISSION RATE	HC	NOX	CO	
	1.4846	0.00054256	6.7545	
	EMISSION MASS/MODE	0.024744	9.0426E-06	0.11258
	EMISSION MASS/RATED HP	0.00015465	5.6516E-08	0.00070360
MODE EMIS./STD. CYCLE %	8.1395	0.0037678	1.6752	

CAL. FUEL AIR RATIO = 0.10132 MEAS. FUEL AIR RATIO = 0.10353 DIFF MEAS. & CAL. F/A PERCENT = -2.1292

CYL. TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	261.27	277.55	259.06	271.45

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SFXT-1	SEXT-2
	1152.7	-454.00	-454.00	78.806	554.63	551.60

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 13.224
	139.88	340.19	47.625	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.386
	3.0603	592.80	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	102.31	100.61	74.417	101.41

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	87.775	0.10221	53.300	354.05

CFL TEMP. = 74.426 HEATER TEMP = 120.57 COOLER TEMP = 117.85

Ohh

NASA-LEWIS PRELIMINARY DATA 04/09/76 CADDEII REC 04/09/76 19:57:45.003 FAC SEX15 PGM C003 RDG 3170

LEANOUT 25 BTDC I & T 100 DEG HUM = 30 % 1 1/2 T OPE MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.360 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 101.51 PRESS 29.357 CFM 16.500 DRY FLOW 67.344 VAPOR FLOW 0.83541 PRESS TOTAL 14.424

COMB. FUEL TEMP 73.343 PRESS 5.7339 DENSITY 44.823 TURBO FLOW 8.4037 FLOW TRON 7.3177 FPIP 6.1590

COOLING AIR TEMP 97.391 UDEL-HOOD -0.091883 DEL-HOOD 0.81007 FLOW 0.00000 REL-HUM 28.370 DEW-POINT 62.702

REL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP
28.370 10.561 86.836 1.9940 0.15993

ENG. COND. F/A DRY 0.10866 F/A WET 0.10733 EQU. RATIO 1.6218 RPM-1 608.10 RPM-2 609.54 TORQUE 1.3001 BHP 0.15053

WET CORRECTION FACTOR = 0.88918 EXHAUST MOLE. WT. = 25.685 EXHAUST DENSITY = 0.066506 EXHAUST FLOW RATE = 1135.2

MEASURED CONC. ART PER MILLION WET PER CENT
CO PPM NOX PPM CO DRY CO2 DRY O2 DRY
45388. 4.5785 10.9600 6.20030 4.0574
CORRECTED CONC. TO WET BASIS 9.7450 5.5132 3.6077

EMISSION RATE HC NOX CO
EMISSION MASS/MODE 1.8497 0.00061849 8.0313
EMISSION MASS/RATED HP 0.030829 1.0308F-05 0.13386
MODE EMIS./STD. CYCLE % 0.00019268 6.4426F-C8 0.00083660
10.141 0.0042951 1.9919

CAL. FUEL AIR RATIO = 0.10470 MFAS, FUEL AIR RATIO = 0.10866 DIFF MEAS. & CAL. F/A PERCENT = -3.6464

CYL TEMP DEG. F CYL-1 293.77 CYL-2 307.11 CYL-3 287.54 CYL-4 307.89

EXT GAS TEMP DEG. F EXT-1 1723.7 EXT-2 787.58 EXT-3 331.42 EXT-4 970.19 SEXT-1 635.15 SEXT-2 633.34

ENGINE OIL EOILT 148.55 SOILT 287.08 OILP 46.813 MANIFOLD PRESSURE = 13.900

DYMO COND. TORQUE 11.197 RPM 607.56 CYL. BACK PRESSURE = 29.250

INDUCTION AIR IAIRT1 103.08 IAIRT2 101.51 TAIRT1 100.80 TAIRT2 101.51

ORIFICE AIR TEMP 87.958 DELTAP 0.095609 DRFP 53.196 FLOW 336.31

CELL TEMP. = 74.666 HEATER TEMP = 120.25 COOL FR TEMP = 114.13

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NASA-LEWIS PRELIMINARY DATA 04/09/76 CADDELL REC 04/09/76 20:00:14.974 FAC SEX15 PGM C003 RDG 3171

LEANOUT 25 BTDC I & T 100 DEG HUM = 30 % 1 1/2 T OPE MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.360 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 100.76 PRESS 29.361 CFM 25.688 DRY FLOW 108.86 VAPOR FLOW 1.3580 PRESS TOTAL 14.423

COMB. FUEL TEMP 72.079 PRESS 5.6742 DENSITY 44.856 TURBO FLOW 12.407 FLOW TRON 11.251 FPIP 6.1368

COOLING AIR TEMP 95.798 INDEL-HOOD -0.094098 DEL-HOOD 0.79485 FLOW 0.00000 REL-HUM 29.173 DEW-POINT 62.857

REL-HUM 1 29.173 2 27.169 HUMIDITY 87.323 % H2O VAPOR CORRECTED HP 2.0052 1.3855

ENG. COND. F/A DRY 0.10335 F/A WET 0.10208 EQU. RATIO 1.5426 RPM-1 1204.3 RPM-2 1204.6 TORQUE 5.6922 BHP 1.3052

WET CORRECTION FACTOR = 0.84931 EXHAUST MOLE. WT. = 26.010 EXHAUST DENSITY = 0.067346 EXHAUST FLOW RATE = 1803.7

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 19809. NOX PPM 7.2007 CO DRY 12.8640 CO2 DRY 7.86870 O2 DRY 0.76348
CORRECTED CONC. TO WET BASIS 10.926 6.6830 0.64843

447

EMISSION RATE HC 1.2827 NOX 0.0015455 CO 14.307
EMISSION MASS/MODE 0.23517 0.00028335 2.6230
EMISSION MASS/RATED HP 0.0014698 1.7709F-06 0.016393
MODE EMIS./STD. CYCLE % 77.358 0.11806 39.032

CAL. FUEL AIR RATIO = 0.10472 MEAS. FUEL AIR RATIO = 0.10335 DIFF MEAS. & CAL. F/A PERCENT = 1.3266

CYL TEMP DEG. F CYL-1 271.12 CYL-2 292.39 CYL-3 275.41 CYL-4 281.91

EXT GAS TEMP DEG. F EXT-1 650.25 EXT-2 1091.5 EXT-3 1136.6 EXT-4 1161.7 SEXT-1 603.73 SEXT-2 600.49

ENGINE OIL EOILT 146.13 SOILT 276.02 OILP 55.910 MANIFOLD PRESSURE = 9.9073

DYNO COND. TORQUE 8.1224 RPM 1195.5 CYL. RACK PRESSURE = 29.270

INDUCTION AIR TAIRT1 102.00 TAIRT2 100.76 TAIRT1 171.41 TAIRT2 101.76

ORIFICE AIR TEMP 86.322 DELTAP 1.0794 ORFP 53.242 FLOW 1459.8

CELL TEMP. = 73.022 HEATER TEMP = 121.96 COOLER TEMP = 116.49

NASA-LEWIS PRELIMINARY DATA 04/09/76 CADDEII REC 04/09/76 20:00:37.197 FAC SEX15 PGM C003 RDG 3172

LEANOUT 25 BTDC I & T 100 DEG HUM = 30 % I 1/2 T OPE MODE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.360 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	100.52	29.356	25.915	105.82	1.3199	14.426

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	72.062	5.6772	44.857	12.508	11.215	6.1353

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	95.798	-0.098802	0.83387	0.00000	29.378	62.857

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	29.378	5.8986	87.308	2.0049	0.84481

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10598	0.10467	1.5818	1203.0	1204.1	3.4753	0.79605

WET CORRECTION FACTOR = 0.86031 EXHAUST MOLE. WT. = 25.847 EXHAUST DENSITY = 0.066924 EXHAUST FLOW RATE = 1768.6

MEASURED CONC.	PART PER MILLION WET	PER CENT
	HC PPM	CO DRY
	NOX PPM	CO2 DRY
	18519.	12.7940
	7.2987	7.96380
		0.70487
CORRECTED CONC. TO WET BASIS		
	11.007	6.8514
		0.60641

EMISSION RATE	HC	NOX	CO
	1.1758	0.0015361	14.132
EMISSION MASS/MODE	0.058792	7.6804E-05	0.70661
EMISSION MASS/RATED HP	0.00036745	4.8002E-07	0.0044163
MODE EMIS./STD. CYCLE %	19.339	0.032002	10.515

CAL. FUEL AIR RATIO = 0.10378 MFAS. FUEL AIR RATIO = 0.10598 DIFF MEAS. & CAL. F/A PERCENT = -2.0761

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	272.39	292.80	276.73	282.41

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	623.12	1092.9	1144.6	1202.3	600.27	596.98

ENGINE OIL	EQILT	SDILT	DILT	MANIFOLD PRESSURE = 9.6939
	145.53	21.091	56.006	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.404
	3.1107	1196.8	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	101.75	100.52	189.14	101.24

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	86.357	0.10141	53.225	352.39

CELL TEMP. = 73.067 HEATER TEMP = 127.57 COOLER TEMP = 119.29

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NASA-LEWIS PRELIMINARY DATA 04/09/76 CADDETT REC 04/09/76 20:06:25.732 FAC SEX15 PGM C003 RDG 3173

LEANOUT 25 BTDC I & T 100 DEG HUM = 30 * 1 1/2 T OPE MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.360 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	100.38	29.366	15.820	64.484	0.80355	14.421

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	73.512	5.7468	44.818	7.7187	6.7117	6.1458

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	96.318	-0.097142	0.78461	0.00000	29.471	62.822

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	29.471	11.203	87.228	2.0031	0.39694

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10408	0.10280	1.5535	602.70	604.14	3.2587	0.37395

WET CORRECTION FACTOR = 0.87800 EXHAUST MOLE. WT. = 25.964 EXHAUST DENSITY = 0.067228 EXHAUST FLOW RATE = 1071.0

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	41972.	4.5024	10.697	6.69880	3.8555
CORRECTED CONC. TO WET BASIS			9.3921	5.8816	3.3851

EMISSION RATE	HC	NOX	CO
	1.6138	0.00057382	7.3027
EMISSION MASS/MODE	0.026896	9.5637E-06	0.12171
EMISSION MASS/RATED HP	0.00016810	5.9773E-08	0.00076069
MODE EMIS./STD. CYCLE %	8.8473	0.0039849	1.8112

CAL. FUEL AIR RATIO = 0.10216 MEAS. FUEL AIR RATIO = 0.10408 DIFF MEAS. & CAL. F/A PERCENT = -1.8514

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	242.22	265.56	243.26	255.46

EXT GAS TEMP DEG.F	FXT-1	EXT-2	EXT-3	FXT-4	SFXT-1	SEXT-2
	1123.7	871.00	501.35	803.54	497.14	493.88

ENGINE OIL	FOILT	SOILT	OTLP	MANIFOLD PRESSURE = 13.147
	138.70	231.72	47.325	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.203
	2.7507	593.64	

INDUCTION AIR	IAIPT1	IAIPT2	TAIPT1	TAIPT2
	102.01	100.38	97.883	102.08

ORIFICE AIR	TEMP	DELTAP	ORIF	FLOW
	87.495	1.0567	53.307	1443.1

CELL TEMP. = 73.698 HEATER TEMP = 147.06 COOLER TEMP = 125.43

hth

NASA-LEWIS PRELIMINARY DATA 04/09/76 CARDELL REC 04/09/76 20:49:51.018 FAC SEX15 PGM C003 RDG 3176

LEANOUT 25 BTDC I & T 100 DEG HUM = 60 % 1 1/2 T QPF MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.370 RATED HP = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 99.360 PRESS 29.366 CEM 17.092 DRY FLOW 68.517 VAPOR FLOW 1.6802 PRESS TOTAL 14.429

COMP. FUFL TEMP 72.284 PRESS 5.7408 DENSITY 44.851 TURBO FLOW 8.1475 FLOW TRON 7.0267 FPIP 6.1383

COOLING AIR TEMP 94.316 UDEL-HOOD -0.089669 DEL-HOOD 0.78267 FLOW 0.00000 REL-HUM 58.721 DEW-POINT 82.334

REL-HUM 1 58.721 2 0.33803 HUMIDITY 171.66 % H2O VAPOR CORRECTED HP 3.9419 0.023316

ENG. COND. F/A DRY 0.10255 F/A WET 0.10010 EQU. RATIO 1.5307 RPM-1 591.18 RPM-2 589.56 TORQUE 0.19169 BHP 0.021577

WET CORRECTION FACTOR = 0.86282 EXHAUST MOLE. WT. = 26.061 EXHAUST DENSITY = 0.067477 EXHAUST FLOW RATE = 1144.4

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 45588. NOX PPM 4.2454 CO DRY 9.99640 CO2 DRY 6.68830 O2 DRY 4.3520
CORRECTED CONC. TO WET BASIS HC 8.6251 NOX 5.7708 CO 3.7550

EMISSION RATE HC 1.8730 NOX 0.00057818 CO 7.1663
EMISSION MASS/MODE 0.031217 9.6363E-06 0.11944
EMISSION MASS/RATED HP 0.00019511 6.0227E-08 0.00074649
MODE EMIS./STD. CYCLE % 12.269 0.0040151 1.7773

CAL. FUEL AIR RATIO = 0.10112 MEAS. FUEL AIR RATIO = 0.10255 DIFF MEAS. & CAL. F/A PERCENT = -1.3256

CYL TEMP DEG.F CYL-1 205.25 CYL-2 244.82 CYL-3 211.89 CYL-4 224.28

EXT GAS TEMP DEG.F FXT-1 727.63 EXT-2 884.63 EXT-3 759.36 EXT-4 714.29 SEXT-1 451.03 SEXT-2 448.40

ENGINE OIL EOILT 132.71 SOILT 212.52 OILP 44.768 MANIFOLD PRESSURE = 14.030

DYNO COND. TORQUE 6.9199 RPM 588.18 CYL. BACK PRESSURE = 29.456

INDUCTION AIR IAIRT1 100.93 IAIRT2 99.360 JAIRT1 102.38 JAIRT2 101.18

ORIFICE AIR TEMP 86.987 DELTAP 4.7491 DRFP 53.266 FLOW 2.981.9

CFL. TEMP. = 72.311 HEATER TEMP = 105.10 COOLER TEMP = 113.09

ORIGINAL PAGE IS
OF POOR QUALITY

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NASA-LEWIS		PRELIMINARY DATA		04/09/76	CADDELL	REC 04/09/76 20:55:12.179	FAC SEX15	PGM C003	RDG 3177
LEANOUT 25 BTDC I & T 100 DEG HUM = 60 % 1 1/2 T OPE MODE = 2.0000 NO. SCANS = 5									
ENGINE TIMING = 25.000		DEG.	BAROMETRIC PRESSURE = 29.360			RATED HP. = 160.00		HC RATIO = 2.1250	
COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL			
	102.54	29.360	28.764	115.10	2.9789	14.426			
COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP			
	73.885	5.6610	44.809	13.584	12.376	6.1401			
COOLING AIR	TEMP	INLET-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT			
	96.699	-0.097972	0.87013	0.00000	56.212	83.934			
REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP				
	56.212	22.392	181.17	4.1603	1.1908				
ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP		
	0.10753	0.10481	1.6049	1200.1	1199.5	4.8005	1.0969		
WET CORRECTION FACTOR = 0.84821		EXHAUST MOLE. WT. = 25.753			EXHAUST DENSITY = 0.066681		EXHAUST FLOW RATE = 1956.4		
MEASURED CONC.	PART PER MILLION WET			PER CENT					
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY				
	21580.	6.2186	12.4790	8.06010	0.90659				
CORRECTED CONC. TO WET BASIS				10.585	6.8366		0.76897		
EMISSION RATE	HC	NOX	CO						
	1.5157	0.0014478	15.034						
EMISSION MASS/MODE	0.27787	0.00026542	2.7563						
EMISSION MASS/RATED HP	0.0017367	1.5589E-06	0.017227						
MODE EMIS./STD. CYCLE %	91.405	0.11059	41.016						
CAL. FUEL AIR RATIO = 0.10389		MEAS. FUEL AIR RATIO = 0.10753			DIFF MEAS. & CAL. F/A PERCENT = -3.3854				
CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4					
	270.69	290.84	278.39	285.54					
EXT GAS TEMP DEG.F	FXT-1	EXT-2	EXT-3	FXT-4	SEXT-1	SEXT-2			
	421.43	1145.2	1164.8	777.64	501.72	502.56			
ENGINE OIL	EOILT	SOILT	COILT	MANIFOLD PRESSURE = 10.473					
	130.23	287.00	58.770						
DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.190						
	2.7579	1204.4							
INDUCTION AIR	IAIRT1	IAIRT2	IAIRT1	IAIRT2					
	103.66	102.54	200.18	100.93					
ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW					
	89.652	4.2348	53.327	2816.0					
CELL TEMP. = 74.950	HEATER TEMP = 114.50			COOLER TEMP = 111.07					

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NASA-LEWIS PRELIMINARY DATA 04/09/76 CADDET REC 04/09/76 21:01:07.366 FAC SEX15 PGM C003 RDG 3180

LEANOUT 25 BTDC I.E.T 100 DEG HUM = 60 % I 1/2 T OPE MODE = 6.0000 NO. SCANS = 4

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.360 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CEM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	100.10	29.356	28.503	113.96	2.9526	14.425

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	71.509	5.6601	44.871	13.572	12.357	6.1472

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	94.281	-0.093752	0.82543	0.00000	60.530	83.963

REL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP
	60.530	15.469	181.36	4.1647 1.0992

EAG. COND.	E/A DRY	E/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10844	0.10570	1.6185	1198.0	1199.6	4.4484	1.0147

WET CORRECTION FACTOR = 0.85053 EXHAUST MFL. WT. = 25.699 EXHAUST DENSITY = 0.066540 EXHAUST FLOW RATE = 1942.7

MEASURED CONC.	PART PER MILLION WET	PER CENT
	HC PPM 22509. NOX PPM 6.4819	CO DRY 12.4410 CO2 DRY 8.05340 O2 DRY 0.95184
CORRECTED CONC. TO WET BASIS		10.581 6.8496 0.80957

EMISSION RATE	HC	NOX	CO
	1.5699	0.0014985	14.924
EMISSION MASS/MODE	0.078496	7.4925E-05	0.74621
EMISSION MASS/RATED HP	0.00049060	4.5829E-07	0.0046638
MODE EMIS./STD. CYCLE %	25.821	0.031219	11.104

CAL. FUEL AIR RATIO = 0.10411 MEAS. FUEL AIR RATIO = 0.10844 DIEF MEAS. & CAL. E/A PERCENT = -3.9909

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	267.90	289.44	277.59	285.34

EXT GAS TEMP DEG. F	FXT-1	EXT-2	EXT-3	FXT-4	SFXT-1	SEXT-2
	1286.9	1148.1	1120.2	844.22	505.54	506.31

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 10.509
	130.82	-123.70	59.546	

DYMO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.317
	10.837	1186.4	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	101.24	100.10	24.930	101.32

ORIFICE AIR	TEMP	DFLTAP	ORFP	FLOW
	87.409	4.2880	53.292	2839.1

CELL TEMP. = 72.600 HEATFR TEMP. = 153.82 COOLER TEMP. = 118.81

NASA-LEWIS PRELIMINARY DATA 04/09/76 CADDEII REC 04/09/76 21:09:18.994 FAC SEX15 PGM C003 RDG 3183

LEANOUT 25 BYDC. I & T 100 DEG HUM = 60 % 1 1/2 T OPE MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.360 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	99.895	29.374	17.782	71.198	1.8340	14.418

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	73.307	5.7345	44.824	8.3093	7.1887	6.1581

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	95.036	-0.096588	0.82446	0.00000	60.531	83.774

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	60.531	7.8948	180.31	4.1406	0.66937

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10097	0.098433	1.5070	583.92	585.36	5.5589	0.61804

WET CORRECTION FACTOR = 0.85695 EXHAUST MOLE. WT. = 26.163 EXHAUST DENSITY = 0.067741 EXHAUST FLOW RATE = 1184.2

MEASURED CONC.	PART PER MILLION WFT		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	45234	4.4054	10.0120	6.62710	4.4340
CORRECTED CONC. TO WET BASIS			8.5798	5.6791	3.7997

	HC	NOX	CO
EMISSION RATE	1.9231	0.00062082	7.3764
EMISSION MASS/MODE	0.032051	1.2347E-05	0.12294
EMISSION MASS/RATED HP	0.00020032	6.4669F-08	0.00076838
MODE EMIS./STD. CYCLE	10.543	0.0043113	1.8295

CAL. FUEL AIR RATIO = 0.10100 MEAS. FUEL AIR RATIO = 0.10097 DIFF MEAS. & CAL. F/A PERCENT = 0.030225

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	203.35	239.58	208.21	224.07

EXT GAS TEMP DEG.F	FXT-1	EXT-2	EXT-3	FXT-4	SEXT-1	SEXT-2
	925.25	900.79	519.51	550.85	380.59	378.97

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE =
	126.37	-154.62	48.537	14.285

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE =
	8.9361	575.22	29.403

INDUCTION AIR	IAIRT1	IAIPT2	TAIRT1	TAIRT2
	101.35	99.895	135.36	100.36

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	RR.884	4.3136	53.235	2843.6

CELL TEMP. = 73.645 HEATER TEMP = 124.21 COOLER TEMP = 115.73

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NASA-LEWIS PRELIMINARY DATA 04/09/76 CARDELL REC 04/09/76 21:16:58.688 FAC SEX15 PGM C003 RDG 3184

LEANOUT 25 BTDC I & T 100 DEG HUM = 60 % 3/4 T OPEN MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.360 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	100.43	29.351	17.419	69.700	1.7994	14.420

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	72.027	5.7486	44.856	7.8559	6.7717	6.1530

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	94.802	-0.078599	0.84107	0.00000	59.700	83.844

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	59.700	16.762	180.71	4.1498	0.60419

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.097154	0.094709	1.4501	599.52	601.20	4.8838	0.55749

WET CORRECTION FACTOR = 0.84137 EXHAUST MOLE. WT. = 26.415 EXHAUST DENSITY = 0.068395 EXHAUST FLOW RATE = 1144.4

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	44730.	4.2514	10.016	6.65650	4.3684
CORRECTED CONC. TO WET BASIS			8.4270	5.6006	3.6755

EMISSION RATE	HC	NOX	CO	
	1.8377	0.00057898	7.0015	
	EMISSION MASS/MODE	0.030629	9.6496E-06	0.11669
	EMISSION MASS/RATED HP	0.00019143	6.0310E-08	0.00072932
MODE EMIS./STD. CYCLE %	10.075	0.0040207	1.7365	

CAL. FUEL AIR RATIO = 0.10139 MEAS. FUEL AIR RATIO = 0.097154 DIFF MEAS. & CAL. F/A PERCENT = 4.3619

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	286.31	307.28	295.53	314.22

EXT GAS TEMP DEG. F	FXT-1	FXT-2	FXT-3	FXT-4	SFXT-1	SEXT-2
	890.04	914.57	299.14	888.61	604.21	604.94

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 13.895
	138.93	324.92	47.365	

DYNO COND.	TOPQUE	RPM	CYL. BACK PRESSURE = 29.494
	5.9478	596.04	

INDUCTION AIR	IAIPT1	IAIPT2	TAIPT1	TAIPT2
	101.92	100.43	104.30	100.72

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	88.814	4.2081	53.441	2809.3

CFL TEMP. = 73.600 HEATER TEMP = 130.95 COOLER TEMP = 106.37

NASA-LEWIS PRELIMINARY DATA 04/09/76 CADDEII REC 04/09/76 21:19:59.336 FAC SEX15 PGM C003 RDG 3185

LEANOUT 25 BTDC I & T 100 DEG HUM = 60 % 3/4 T OPEN MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.360 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CEM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	99.921	29.365	29.968	119.98	3.1086	14.425

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	71.420	5.6556	44.874	14.256	12.868	6.1347

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	93.778	-0.096588	0.82335	0.00000	60.855	83.964

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	60.855	20.888	181.37	4.1649	1.7859

ENG. COND.	F/A DRY	E/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	RHP
	0.10726	0.10455	1.6008	1201.3	1202.5	7.2090	1.6490

WET CORRECTION FACTOR = 0.84757 EXHAUST MOLE. WT. = 25.759 EXHAUST DENSITY = 0.066723 EXHAUST FLOW RATE = 2037.6

MEASURED CONC.	PART PER MILLION WET	PER CENT			
	HC PPM	CO DRY	CO2 DRY	O2 DRY	
	23148.	6.6197	12.3730	8.00980	1.0609
	CORRECTED CONC. TO WET BASIS		10.487	6.7889	0.89919

EMISSION RATE	HC	NOX	CO
	1.6933	0.0016051	15.513
EMISSION MASS/MODE	0.31043	0.00029426	2.8440
EMISSION MASS/RATED HP	0.0019402	1.8391E-06	0.017775
MODE EMISS./STD. CYCLE %	102.12	0.12261	42.321

CAL. FUEL AIR RATIO = 0.10403 MEAS. FUEL AIR RATIO = 0.10726 DIFF MEAS. & CAL. F/A PERCENT = -3.0079

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	254.41	282.10	262.23	268.15

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1962.0	1126.7	986.88	917.87	568.67	567.93

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 10.561
	138.10	273.64	57.050	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.341
	8.6121	1210.1	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	101.04	99.921	128.28	100.57

OPTIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	87.547	4.2762	53.285	2834.9

CELL TEMP. = 72.168 HEATER TEMP = 118.09 COOLER TEMP = 115.70

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NASA-LFWTS PPELIMINARY DATA 04/09/76 CADDETT REC 04/09/76 21:23:44.237 FAC SEX15 PGM C003 RDG 3187

LEANOUT 25 BTDC I & T 100 DEG HUM = 60 % 3/4 I OPEN MODE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.360 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	100.38	29.351	29.797	119.33	3.0905	14.424

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	72.177	5.6622	44.854	13.885	12.511	6.1356

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	94.472	-0.083304	0.87123	0.00000	59.996	83.949

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	59.996	12.323	181.30	4.1632	0.77009

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	RHP
	0.10485	0.10220	1.5649	1204.0	1203.7	3.1003	0.71074

WET CORRECTION FACTOR = 0.84034 EXHAUST MOLE. WT. = 25.916 EXHAUST DENSITY = 0.067104 EXHAUST FLOW RATE = 2010.7

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	22450.	6.6067	12.3450	7.97690	1.0270	
CORRECTED CONC. TO WET BASIS			10.374	6.7033	0.86303	

	HC	NOX	CO
EMISSION RATE	1.6206	0.0015808	15.144
EMISSION MASS/MODE	0.081028	7.9040E-05	0.75720
EMISSION MASS/PATED HP	0.00050643	4.9400E-07	0.0047325
MODE EMIS./STD. CYCLE %	26.654	0.032933	11.268

CAL. FUEL AIR RATIO = 0.10398 MEAS. FUEL AIR RATIO = 0.10485 DIFF MEAS. & CAL. F/A PERCENT = -0.82941

CYL. TEMP. DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	268.28	291.88	272.51	282.54

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1138.9	1131.2	1176.7	988.81	554.23	553.71

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 10.485
	134.30	29.360	58.250	

DYNG COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.279
	9.5770	1204.9	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	101.50	100.38	80.497	100.37

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	88.291	4.2785	53.322	2933.8

CELL TEMP. = 72.951 HEATER TEMP = 113.34 COOLER TEMP = 112.71

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NASA-LEWIS PRELIMINARY DATA 04/09/76 CADDEII REC 04/09/76 21:24:04.181 FAC SEX15 PGM C003 RDG 3188

LEANOUT 25 BTDC I & T 100 DEG HUM = 60 % 3/4 T OPEN MODE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.360 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	100.47	29.349	29.387	117.70	3.0457	14.429

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	72.186	5.6622	44.854	13.987	12.577	6.1395

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	94.429	-0.082197	0.84107	0.00000	59.796	83.934

REL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP
	59.796	18.158	181.14	4.1595 1.8062

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10686	0.10416	1.5949	1203.2	1204.9	7.2757	1.6669

WET CORRECTION FACTOR = 0.84809 EXHAUST MOLE. WT. = 25.793 EXHAUST DENSITY = 0.066785 EXHAUST FLOW RATE = 1996.3

MEASURED CONC.	PART PER MILLION WET	PER CENT		
HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
22834.	5.4636	12.3290	7.95430	1.1170
CORRECTED CONC. TO WET BASIS		10.456	6.7459	0.94732

EMISSION RATE	HC	NOX	CO
	1.6365	0.0015355	15.154
EMISSION MASS/MODE	0.081823	7.6775E-05	0.75772
EMISSION MASS/RATED HP	0.00051139	4.7984E-07	0.0047358
MODE EMISS./STD. CYCLE %	26.915	0.031990	11.276

CAL. FUEL AIR RATIO = 0.10371 MEAS. FUEL AIR RATIO = 0.10686 DIFF MEAS. & CAL. F/A PERCENT = -2.9463

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	268.76	292.46	272.71	283.14

EXT GAS TEMP DEG.F	FXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1287.1	1126.0	1090.3	919.81	552.71	552.23

ENGINE OIL	EMILT	SMILT	OILP	MANIFOLD PRESSURE = 10.499
	134.21	-30.502	58.166	

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.196
	5.0117	1200.5	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	101.60	100.47	97.998	100.51

CRIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	88.351	4.2288	53.268	2817.3

CELL TEMP. = 73.111 HEATER TEMP = 114.35 COOLER TEMP = 113.09

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NASA-LEWIS PRELIMINARY DATA 04/09/76 CADDETT REC 04/09/76 21:29:31.183 FAC SEX15 PGM C003 RDG 3190

LEANOUT 25 BTDC I & T 100 DEG HUM = 60 & 3/4 T OPEN MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARGMETRIC PRESSURE = 29.360 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 100.24 PRESS 29.347 CFM 18.249 DRY FLOW 73.002 VAPOR FLOW 1.8854 PRESS TOTAL 14.421

COMB. FUEL TEMP 73.423 PRESS 5.7408 DENSITY 44.821 TURBO FLOW 3.9801 FLOW TRON 6.9607 FPIP 6.1242

COOLING AIR TEMP 95.157 UDEL-HOOD -0.094928 DEL-HOOD 0.83304 FLOW 0.00000 REL-HUM 60.071 DEW-POINT 83.859

REL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP 60.071 28.729 180.79 4.1516 0.80782

ENG. COND. F/A DRY 0.095350 F/A WET 0.092949 EQU. RATIO 1.4231 RPM-1 596.94 RPM-2 600.96 TORQUE 6.5590 BHP 0.74549

WET CORRECTION FACTOR = 0.83827 EXHAUST MOLE. WT. = 26.538 EXHAUST DENSITY = 0.068713 EXHAUST FLOW RATE = 1191.1

MEASURED CONC. PART PER MILLION WET PER CENT HC PPM 42436. NOX PPM 4.2874 CO DRY 9.89970 CO2 DRY 6.84110 C2 DRY 4.2860 CORRECTED CONC. TO WET BASIS 8.2986 5.7347 3.5929

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EMISSION RATE HC 1.8147 NOX 0.00060773 CO 7.1764 EMISSION MASS/MODE 0.030244 1.0129E-05 0.11961 EMISSION MASS/RATED HP 0.00018903 6.3305E-08 0.00074755 MODE EMIS./STD. CYCLE % 9.9488 0.0042203 1.7799

CAL. FUEL AIR RATIO = 0.099897 MEAS. FUEL AIR RATIO = 0.095350 DIFF MEAS. & CAL. F/A PERCENT = 4.7696

CYL TEMP DEG. F CYL-1 223.17 CYL-2 255.29 CYL-3 223.52 CYL-4 240.56

FXT GAS TEMP DEG. F FXT-1 526.94 FXT-2 891.15 FXT-3 593.15 EXT-4 669.06 SFXT-1 448.18 SEXT-2 446.26

ENGINE OIL FOILT 130.71 SOILT -101.04 OILP 48.437 MANIFOLD PRESSURE = 13.671

DYNO COND. TORQUE 5.6598 RPM 597.66 CYL. BACK PRESSURE = 30.070

INDUCTION AIR TAIRT1 101.75 TAIRT2 100.24 TAIRT1 89.120 TAIRT2 100.92

ORIFICE AIR TEMP 89.460 DELTAP 4.2467 ORFP 53.316 FLOW 2820.4

CELL TEMP. = 73.423 HEATER TEMP = 110.96 COOLER TEMP = 110.06

NASA-LEWIS PRELIMINARY DATA 04/09/76 GADDETT REC 04/09/76 21:41:50.603 FAC SEX15 PGM C003 RDG 3192

LEANOUT 25 BTDC I & T 100 DEG HUM = 60 % NEUTRAL MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.360 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	98.955	29.360	14.943	59.818	1.5505	14.422

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	72.168	5.7798	44.854	6.5877	5.5235	6.1572

COOLING AIR	TEMP	WDEL-HOOD	DEL-HOOD	FLOW	DEL-HUM	DEW-POINT
	93.934	-0.084134	0.81643	0.00000	62.666	83.969

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	62.666	10.881	181.44	4.1665	0.77964

ENG. COND.	F/A DRY	F/A WET	EQV. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.092339	0.090006	1.3782	609.96	609.48	6.2006	0.72013

WFT CORRECTION FACTOR = 0.83046 EXHAUST MOLE. WT. = 26.749 EXHAUST DENSITY = 0.069259 EXHAUST FLOW RATE = 965.83

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	33779.	5.0635	9.43560	8.08990	3.2991
CORRECTED CONC. TO WET BASIS			7.8360	6.7103	2.7398

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	HC	NOX	CO
EMISSION RATE	1.1712	0.00058197	5.4945
EMISSION MASS/MODE	0.019521	9.6994E-06	0.091575
EMISSION MASS/RATED HP	0.00012200	6.0621E-08	0.00057234
MODE EMIS./STD. CYCLE %	6.4213	0.0040414	1.3627

CAL. FUEL AIR RATIO = 0.095842 MEAS. FUEL AIR RATIO = 0.092339 DIFF MEAS. & CAL. F/A PERCENT = 3.7940

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	247.24	266.95	242.45	253.66

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SFXT-1	SEXT-2
	1473.2	816.96	623.41	626.38	539.06	537.31

ENGINE CIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 12.386
	138.41	12.556	44.248	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.213
	3.9316	508.58	

INDUCTION AIR	IAIRT1	IAIRT2	IAIRT1	IAIRT2
	100.60	98.955	167.66	100.49

ORIFICE AIR	TEMP	DELTA P	ORFP.	FLOW
	98.325	4.3009	53.214	2841.0

CELL TEMP. = 72.204 HEATER TEMP = 113.24 COOLER TEMP = 111.23

NASA-LEWIS PPELIMINARY DATA 04/09/76 CADDEIT REC 04/09/76 21:44:16.994 FAC SEX15 PGM C003 RDG 3193

LEAN CUT 25 BTDC I & T 100 DEG HUM = 60 % NEUTRAL MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG., BAROMETRIC PRESSURE = 29.360 RATED HP = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	100.17	29.361	27.446	109.98	2.8450	14.429

CCMR. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	72.658	5.6829	44.841	12.426	11.137	6.1326

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	94.133	-0.081920	0.85016	0.00000	60.322	83.924

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	60.322	19.670	131.07	4.1580	0.96095

ENG. COND.	F/A DRY	F/A WET	EQV. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10126	0.098708	1.5114	1199.6	1199.3	3.8837	0.88706

WET CORRECTION FACTOR = 0.83682 EXHAUST M/L E. WT. = 26.144 EXHAUST DENSITY = 0.067692 EXHAUST FLOW RATE = 1831.3

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	18189.	8.4558	11.841	8.60260	0.85688
CORRECTED CONC. TO WET BASIS			9.9091	7.1988	0.71705

	HC	NOX	CO
EMISSION RATE	1.1959	0.0018428	13.175
EMISSION MASS/MODE	0.21924	0.00033784	2.4153
EMISSION MASS/RATED HP	0.0013703	2.1115E-06	0.015096
MODE EMIS./STD. CYCLE %	72.120	0.14077	35.943

CAL. FUEL AIR RATIO = 0.10002 MEAS. FUEL AIR RATIO = 0.10126 DIFF MEAS. & CAL. F/A PERCENT = -1.2298

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	246.93	256.38	244.12	243.65

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	724.83	1077.4	1287.1	873.40	522.09	520.12

ENGINE OIL	FOILT	STJLT	OILP	MANIFOLD PRESSURE =
	135.44	-109.95	57.790	9.9538

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE =
	4.6589	1203.9	29.293

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	101.36	100.17	184.48	100.24

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	88.762	4.2552	53.333	2824.9

CELL TEMP. = 73.014 HEATER TEMP = 111.97 COOLER TEMP = 110.13

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NASA-LEWIS PRELIMINARY DATA 04/09/76 CADDEII REC 04/09/76 21:44:39.262 FAC SFX15 PGM C003 RDG 3194

LEANOUT 25 BTDC I & T 100 DEG HUM = 60 % NEUTRAL MODE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.360 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	100.29	29.371	27.290	109.35	2.8270	14.433

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	72.676	5.6838	44.841	12.507	11.146	6.1470

COOLING AIR	TEMP	WDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	94.246	-0.091883	0.85265	0.00000	60.083	83.914

RFL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	60.083	43.142	180.96	4.1555	0.84915

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10193	0.099357	1.5213	1198.9	1201.5	3.4337	0.78379

WET CORRECTION FACTOR = 0.83781 EXHAUST MLE. WT. = 26.101 EXHAUST DENSITY = 0.067581 EXHAUST FLOW RATE = 1824.9

MEASURED CONC.	PART PER MILLION WET			PPM CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	17729.	8.3998	11.890	8.70630	0.73867
CORRECTED CONC. TO WET BASIS			9.9615	7.2942	0.61887

	HC	NOX	CO
EMISSION RATE	1.1615	0.0018241	13.198
EMISSION MASS/MODE	0.058077	9.1206E-05	0.65988
EMISSION MASS/RATED HP	0.00036298	5.7004E-07	0.0041243
MODE EMIS./STD. CYCLE %	19.104	0.038002	9.8197

CAL. FUEL AIR RATIO = 0.10007 MEAS. FUEL AIR RATIO = 0.10193 DIFF MEAS. & CAL. F/A PERCENT = -1.8247

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	251.04	269.94	248.37	247.52

EXT GAS TEMP DEG. F	FXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1124.2	1084.8	1268.3	981.97	523.19	521.74

ENGINE OIL	EOILT	SOILT	QOILP	MANIFOLD PRESSURE = 9.9391
	135.01	34.946	57.974	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.365
	5.4725	1208.8	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	101.49	100.29	173.84	100.42

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	88.841	4.1928	53.350	2804.2

CELL TEMP. = 73.565 HEATER TEMP = 117.98 COOLER TEMP = 111.08

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NASA-LEWIS PRELIMINARY DATA 04/09/76 CADDEIT REC 04/09/76 21:51:01.172 FAC SEX15 PGM C003 RDG 3195

LEANOUT 25 BTDC I & T 100 DEG HUM = 60 % NEUTRAL MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.350 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 100.50 PRESS 29.350 CFM 14.974 DRY FLOW 59.895 VAPOR FLOW 1.5673 PRESS TOTAL 14.414

COMB. FUEL TEMP 76.351 PRESS 5.7759 DENSITY 44.744 TURBO FLOW 3.9698 FLOW TRON 5.5445 FPIP 6.1566

COOLING AIR TEMP 96.370 UDEL-HOOD -0.085518 DEL-HOOD 0.83387 FLOW 0.00000 REL-HUM 60.329 DEW-POINT 84.234

REL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP
60.329 10.905 183.17 4.2062 0.66438

ENG. COND. E/A DRY 0.092571 E/A WET 0.090211 EQU. RATIO 1.3817 RPM-1 612.96 RPM-2 612.72 TORQUE 5.2505 BHP 0.61279

WET CORRECTION FACTOR = 0.82642 EXHAUST MOLF. WT. = 26.732 EXHAUST DENSITY = 0.069216 EXHAUST FLOW RATE = 968.08

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	33025.	4.7705	9.5447	8.24150	2.9859
CORRECTED CONC. TO WET BASIS			7.8879	6.8109	2.4676

	HC	NOX	CO
EMISSION RATE	1.1478	0.00054956	5.5438
EMISSION MASS/MODE	0.019129	9.1594E-06	0.092397
EMISSION MASS/RATED HP	0.00011956	5.7246E-08	0.00057748
MODE EMIS./STD. CYCLE %	6.2925	0.0038164	1.3749

CAL. FUEL AIR RATIO = 0.096643 MEAS. FUEL AIR RATIO = 0.092571 DIFE MEAS. & CAL. F/A PERCENT = 4.3983

CYL TEMP DEG.F CYL-1 241.98 CYL-2 260.21 CYL-3 234.34 CYL-4 248.39

EXT GAS TEMP DEG.F EXT-1 1063.8 EXT-2 832.27 EXT-3 805.97 EXT-4 963.42 SEXT-1 445.02 SEXT-2 442.92

ENGINE OIL EOILT 131.18 SOILT 396.25 OILT 48.617 MANIFOLD PRESSURE = 12.422

DYNO COND. TORQUE 9.0369 RPM 606.84 CYL. BACK PRESSURE = 29.210

INDUCTION AIR IAIRT1 101.80 IAIRT2 100.50 IAIRT1 121.54 IAIRT2 100.41

ORIFICE AIR TEMP 89.949 DELTAP 4.2983 ORFP 53.204 FLOW 2.835.9

CELL TEMP. = 78.934 HEATER TEMP = 108.89 COOLER TEMP = 108.16

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NASA-LEWIS PRELIMINARY DATA 04/09/76 CADDEII REC 04/09/76 22:04:50.497 FAC SEX15 PGM C003 RDG 3198

LEANOUT 25 BTDC I & T 100 DEG HUM = 60 % 3/4 T CLOSE MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.350 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	99.032	29.354	12.192	48.688	1.2661	14.414

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRCN	FPIP
	75.305	5.8200	44.771	3.9723	4.0294	6.1587

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	95.036	-0.088009	0.84162	0.00000	62.680	84.049

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	62.680	13.431	182.04	4.1802	0.72765

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.082759	0.080662	1.2352	604.92	604.32	5.8339	0.67194

WET CORRECTION FACTOR = 0.81962 EXHAUST MOLE WT. = 27.462 EXHAUST DENSITY = 0.071107 EXHAUST FLOW RATE = 759.19

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	18901.	12.507	6.8399	10.9520	1.9604
CORRECTED CONC. TO WET BASIS			5.6061	8.9763	1.6068

	HC	NOX	CO
EMISSION RATE	0.51517	0.0011299	3.0899
EMISSION MASS/MODE	0.0085861	1.3832E-05	0.051499
EMISSION MASS/RATED HP	5.3663E-05	1.1770E-07	0.00032187
MODE EMIS./STD. CYCLE %	2.8244	0.0078468	0.76635

CAL. FUEL AIR RATIO = 0.084577 MEAS. FUEL AIR RATIO = 0.082759 DIFF MEAS. & CAL. F/A PERCENT = 2.1962

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	235.47	250.04	227.66	235.37

FXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	983.24	757.96	577.22	451.16	503.92	500.93

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 11.250
	136.51	-90.979	44.500	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.732
	9.6274	592.74	

INDUCTION AIR	IA IPT1	IA IPT2	TA IPT1	TA IPT2
	100.74	99.032	89.091	101.46

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	89.190	4.3128	53.277	2842.6

CELL TEMP. = 73.147 HEATED TEMP = 109.86 COOLER TEMP = 111.07

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NASA-LEWIS PRELIMINARY DATA 04/09/76 CADDEII REC 04/09/76 22:07:35.150 FAC SEX15 PGM C003 RDG 3199

LEANOUT 25 BTDC I & T 100 DEG HUM = 60 % 3/4 T CLOSE MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.350 RATED HP. = 160.00 HC RATIO = 2.1250

CMR. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	100.66	29.353	24.378	97.460	2.5264	14.423

CMR. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	75.447	5.7063	44.767	3.9737	9.6670	6.1377

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	RFL-HUM	DEW-POINT
	95.452	-0.081090	0.86874	0.00000	59.533	83.974

RFL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	59.533	4.1764	181.46	4.1669	1.7792

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.099189	0.096682	1.4804	1208.3	1207.9	7.1340	1.6413

WET CORRECTION FACTOR = 0.84174 EXHAUST MOLE. WT. = 26.279 EXHAUST DENSITY = 0.068043 EXHAUST FLOW RATE = 1611.5

MEASURED CONC.	PART PER MILLION WET	PER CENT
HC PPM	NOX PPM	CO DRY
12433.	14.840	11.0380
CO2 DRY	NO2 DRY	
9.46590	0.55145	
CORRECTED CONC. TO WET BASIS		
9.2909	7.9678	0.46418

EMISSION RATE	HC	NOX	CO
EMISSION MASS/MODE	0.71932	0.0028460	10.870
EMISSION MASS/PATED HP	0.13187	0.00052177	1.9929
MODE EMIS./STD. CYCLE %	0.00082422	3.2610E-06	0.012455
	43.380	0.21740	29.656

CAL. FUEL AIR RATIO = 0.095019 MEAS. FUEL AIR RATIO = 0.099189 DIFF MEAS. & CAL. F/A PERCENT = -4.2037

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	247.43	259.98	242.86	237.67

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1529.0	1054.1	1067.0	718.08	480.50	478.69

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 9.2663
	132.63	-260.94	58.910	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.251
	1.4905	1206.1	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	102.03	100.66	94.142	101.28

ORIFICE AIR	TEMP	DELTA P	DRFD	FLOW
	89.704	4.2461	53.321	2819.5

CFLT TEMP. = 73.512 HEATER TEMP = 111.31 COOLER TEMP = 111.04

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NASA-LEWIS PRELIMINARY DATA 04/09/76 CADDEII REC 04/09/76 22:07:57.655 FAC SEX15 PGM C003 RDG 3200

LEANOUT 25 BTDC I & T 100 DEG HUM = 60 % 3/4 T CLOSE MODE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.350 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	100.46	29.348	24.010	96.094	2.4887	14.422

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	75.305	5.7102	44.771	3.9723	9.4269	6.1413

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	95.521	-0.090776	0.85850	0.00000	59.831	83.944

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	59.831	5.0105	181.29	4.1630	1.2814

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	RHP
	0.098101	0.095625	1.4642	1209.5	1209.8	5.1338	1.1823

WET CORRECTION FACTOR = 0.83931 EXHAUST MOLE. WT. = 26.351 EXHAUST DENSITY = 0.068230 EXHAUST FLOW RATE = 1583.0

MEASURED CONC.	PART PER MILLION WET		CO DRY	PER CENT CO2 DRY	O2 DRY
	HC PPM	NOX PPM			
	11867.	15.135	10.9370	9.57700	0.53215
CORRECTED CONC. TO WET BASIS			9.1798	8.0381	0.44748

EMISSION RATE	HC	NOX	CO	
	0.67442	0.0028510	10.550	
	EMISSION MASS/MODE	0.033721	0.0014255	0.52751
	EMISSION MASS/RATED HP	0.00021076	8.9095E-07	0.0032969
MODE EMIS./STD. CYCLE %	11.092	0.059397	7.8498	

CAL. FUEL AIR RATIO = 0.094437 MEAS. FUEL AIR RATIO = 0.098101 DIFF MEAS. & CAL. F/A PERCENT = -3.7351

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	252.17	264.04	248.31	242.40

FXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	FXT-4	SFXT-1	SEXT-2
	473.60	1059.7	1062.7	691.18	481.70	480.11

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 9.1547
	132.25	-25.000	58.790	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.195
	4.4644	1211.7	

INDUCTION AIR	TAIPT1	TAIPT2	TAIRT1	TAIRT2
	101.82	100.46	-75.239	100.64

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	89.827	4.2672	53.316	2826.1

CELL TEMP. = 73.716 HEATER TEMP = 106.30 COOLER TEMP = 108.14

09h

NASA-LEWIS PRELIMINARY DATA 04/09/76 CADDET REC 04/09/76 22:12:38.365 FAC SEX15 PGM C003 RDG 3201

LEANOUT 25 BTDC I & T 100 DEG HUM = 60 * 3/4 T CLOSE MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.350 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	99.757	29.348	11.782	47.098	1.2139	14.420

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	75.021	5.8170	44.779	3.9747	4.0204	6.1773

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	96.223	-0.088009	0.81588	0.00000	60.823	83.794

RFL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	60.823	50.879	180.41	4.1428	0.17164

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.085362	0.083218	1.2741	601.50	599.40	1.3835	0.15845

WET CORRECTION FACTOR = 0.83746 EXHAUST MOLE. WT. = 27.262 EXHAUST DENSITY = 0.070588 EXHAUST FLOW RATE = 741.38

MEASURED CONC.	PART PER MILLION WET		PER CENT	
	HC PPM	NOX PPM	CO DRY	O2 DRY
	18515.	12.156	6.79390	10.8080
CORRECTED CONC. TO WET BASIS				
			CO DRY	O2 DRY
			5.6996	9.0514

	HC	NOX	CO
EMISSION RATE	0.49281	0.0010725	3.0624
EMISSION MASS/MODE	0.0082134	1.7874E-05	0.051040
EMISSION MASS/RATED HP	5.1334E-05	1.1172E-07	0.00031900
MODE EMIS./STD. CYCLE %	2.7018	0.0074477	0.75952

CAL. FUEL AIR RATIO = 0.083463 MEAS. FUEL AIR RATIO = 0.085362 DIFF MEAS. & CAL. F/A PERCENT = -2.2257

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	256.48	267.27	251.81	258.26

FXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SFXT-1	SEXT-2
	1016.8	792.95	812.69	754.22	434.83	432.51

ENGINE OIL	F OILT	S OILT	OIL P	MANIFOLD PRESSURE = 11.363
	130.06	203.82	48.377	

DYMO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.272
	6.9055	600.06	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	101.50	99.757	-22.754	101.34

ORIFICE AIR	TEMP	DELTA P	ORIF. FLOW
	90.672	4.2914	53.320

CELL TEMP. = 74.338 HEATER TEMP = 153.23 COOLER TEMP = 118.79

ORIGINAL PAGE IS
OF POOR QUALITY

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NASA-LEWIS PRELIMINARY DATA 04/09/76 CADDETT REC 04/09/76 22:20:01.381 FAC SEX15 PGM C003 RDG 3202

LEANOUT 25 BTDC I & T 100 DEG HUM = 60 % 1 1/2 T CLD MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.350 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	97.910	29.350	11.512	46.178	1.1928	14.417

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	71.759	5.8527	44.865	3.9823	3.1533	6.1716

COOLING AIR	TEMP	WDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	94.307	-0.078046	0.83830	0.00000	64.443	83.854

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	64.443	25.058	180.81	4.1519	0.71658

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.068285	0.066566	1.0192	594.78	592.26	5.8506	0.66257

WET CORRECTION FACTOR = 0.81969 EXHAUST MOLE. WT. = 28.596 EXHAUST DENSITY = 0.074041 EXHAUST FLOW RATE = 682.38

MEASURED CONC.	PART PER MILLION WET	PER CENT
HC PPM	NOX PPM	CO DRY
15285.	24.261	2.58270
CORRECTED CONC. TO WET BASIS		12.6000
		3.1933
		2.1170
		10.328
		2.6175

EMISSION RATE	HC	NOX	CO
EMISSION MASS/MODE	0.37446	0.0019701	1.0488
EMISSION MASS/RATED HP	0.0062409	3.2835E-05	0.017480
MODE EMIS./STD. CYCLE %	3.9006E-05	2.0522E-07	0.00010925
	2.0529	0.013681	0.26011

CAL. FUEL AIR RATIO = 0.070722 MFAS. FUEL AIR RATIO = 0.068285 DIFF MEAS. & CAL. F/A PERCENT = 3.5682

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	294.97	318.86	313.70	328.51

FXT GAS TEMP DEG. F	FXT-1	FXT-2	FXT-3	FXT-4	SEXT-1	SEXT-2
	905.45	899.98	870.47	685.91	608.79	609.39

ENGINE OIL	FOILT	SOILT	OILT	MANIFOLD PRESSURE = 11.791
	142.36	291.14	46.849	

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.705
	7.6328	587.88	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	99.602	97.910	-26.401	99.256

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	88.727	4.2698	53.374	2829.8

CELL TEMP. = 72.329 HEATER TEMP = 145.35 COOLER TEMP = 104.08

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NASA-LEWIS PPELIMINARY DATA 04/09/76 CADDEII REC 04/09/76 22:23:16.025 FAC SEX15 PGM C003 RDG 3203

LEANOUT 25 9TDC I & T 100 DEG HUM = 60 % 1 1/2 T CLO MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.350 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	98.912	29.356	21.192	85.081	2.1944	14.419

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	73.325	5.7513	44.823	3.9786	7.3387	6.1497

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	95.192	-0.083581	0.84826	0.00000	62.436	83.814

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	62.436	0.31803	180.55	4.1460	1.1071

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.086256	0.084087	1.2874	1205.0	1205.5	4.4588	1.0230

WET CORRECTION FACTOR = 0.82264 EXHAUST MOLE. WT. = 27.194 EXHAUST DENSITY = 0.070412 EXHAUST FLOW RATE = 1343.7

MEASURED CONC.	PART PER MILLION WET	PER CENT		
HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
5305.1	31.765	8.42120	11.3860	0.29127
CORRECTED CONC. TO WET BASIS		6.9276	9.3664	0.23961

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EMISSION RATE	HC	NOX	CO
	0.25591	0.0050793	6.7581
EMISSION MASS/MODE	0.046918	0.00093120	1.2390
EMISSION MASS/RATED HP	0.00029323	5.8200E-06	0.0077436
MODE EMIS./STD. CYCLE %	15.433	0.38800	18.437

CAL. FUEL AIR RATIO = 0.085287 MFAS. FUEL AIR RATIO = 0.086256 DIFF. MEAS. & CAL. F/A PERCENT = -1.1234

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	257.31	298.12	278.21	281.00

EXT GAS TEMP DEG.F	FXT-1	FXT-2	FXT-3	FXT-4	SEXT-1	SEXT-2
	1199.0	1034.3	992.86	764.31	545.92	544.78

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 8.4787
	141.57	284.15	56.766	

DYMO COND.	TORQUE	RPM	CYL. RACK PRESSURE = 29.455
	6.1278	1198.5	

INDUCTION AIR	TAIPT1	TAIRT2	TAIRT1	TAIRT2
	100.29	98.912	-27.698	98.839

CPIFICE AIR	TEMP	DELTA P	DPFP	FLOW
	82.216	4.3206	53.229	2845.0

CELL TEMP. = 72.560 HEATER TEMP = 153.15 COOLER TEMP = 100.82

NASA-LEWIS PRELIMINARY DATA 04/09/76 CADDEII REC 04/09/76 22:23:37.794 FAC SEX15 PGM C003 RDG 3204

LEANOUT 25 BTDC I & T 100 DEG HUM = 60 % 1 1/2 T CLO MODE = 6.0000 NO. SCANS = 4

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.350 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	98.858	29.351	20.971	84.193	2.1768	14.419

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIF
	73.478	5.7546	44.819	3.9774	7.3657	6.1559

COOLING AIR	TEMP	INLET-HOOD	DEL-HOOD	FLOW	RFI-HUM	DEW-POINT
	95.094	-0.093752	0.84273	0.00000	62.687	83.888

REF-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	62.687	14.976	180.98	4.1560	1.8365

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.087486	0.085281	1.3058	1201.5	1201.6	7.4174	1.6969

WET CORRECTION FACTOR = 0.83025 EXHAUST MOLE. WT. = 27.102 EXHAUST DENSITY = 0.070174 EXHAUST FLOW RATE = 1335.8

MEASURED CONC.	PART PER MILLION WET		PER CENT	
	HC PPM	NOX PPM	CO DRY	O2 DRY
	4491.7	33.082	8.24540	11.5560
CORRECTED CONC. TO WET BASIS			6.8458	9.5943
				0.21271

EMISSION RATE	HC	NOX	CO
	0.21539	0.0052586	6.6388
EMISSION MASS/MODE	0.010770	0.00026293	0.33194
EMISSION MASS/RATED HP	6.7311E-05	1.6433E-06	0.0020746
MODE EMISS./STD. CYCLE %	3.5427	0.10955	4.9396

CAL. FUEL AIR RATIO = 0.084492 MEAS. FUEL AIR RATIO = 0.087486 DIFF MEAS. & CAL. F/A PERCENT = -3.4231

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	260.86	299.08	279.75	281.34

EXT GAS TEMP DEG.F	FXT-1	FXT-2	FXT-3	FXT-4	SFXT-1	SEXT-2
	855.28	1036.4	1051.0	637.48	541.50	540.52

ENGINE OIL	FOILT	SOILT	OILP	MANTIFOLD PRESSURE = 8.4258
	141.12	-161.66	56.751	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.473
	0.24302	1191.9	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	100.27	98.858	139.32	98.833

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	89.364	4.2923	53.279	2835.5

CELL TEMP. = 72.756 HEATER TEMP = 165.28 COOLER TEMP = 108.09

49h

NASA-LEWIS PRELIMINARY DATA 04/09/76 GADDFII REC 04/09/76 22:28:58.962 FAC SEX15 PGM C003 RDG 3205

LEANOUT 25 BTDC I & T 100 DEG HUM = 60 % 1 1/2 T CLO MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.350 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	99.274	29.349	12.192	48.633	1.2595	14.420

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW FROM	FPIP
	74.950	5.8311	44.781	3.9731	3.6064	6.1719

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	96.050	-0.10268	0.84439	0.00000	62.004	83.939

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	62.004	10.385	181.22	4.1630	0.85911

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.074154	0.072282	1.1068	608.88	606.90	6.8423	0.79325

WET CORRECTION FACTOR = 0.82952 EXHAUST MOLE. WT. = 28.150 EXHAUST DENSITY = 0.072914 EXHAUST FLOW RATE = 733.73

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	14535	19.611	3.85440	12.2080	2.6203	
CORRECTED CONC. TO WET BASIS			3.1973	10.127	2.1736	

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	HC	NOX	CO
EMISSION RATE	0.38288	0.0017123	1.7031
EMISSION MASS/MODE	0.0063813	2.8538E-05	0.028386
EMISSION MASS/RATED HP	3.9883E-05	1.7836E-07	0.00017741
MODE EMIS./STD. CYCLE %	2.0991	0.011891	0.42240

CAL. FUEL AIR RATIO = 0.074269 MEAS. FUEL AIR RATIO = 0.074154 DIFF MEAS. & CAL. F/A PERCENT = 0.15465

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	247.09	273.76	261.10	269.53

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1468.2	863.00	751.73	628.58	462.33	460.60

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE =
	135.69	362.11	48.073	11.404

DYNO COND.	TORQUE	RPM	CYL. RACK PRESSURE =
	6.3510	603.06	29.880

INDUCTION AIR	TAIPT1	TAIPT2	TAIRT1	TAIRT2
	101.02	99.274	100.41	102.43

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	90.402	4.2559	53.310	2821.0

CELL TEMP. = 73.521 HEATER TEMP = 174.90 COOLER TEMP = 132.09

NASA-LEWIS PRELIMINARY DATA 04/12/76 CADDEII REC 04/12/76 17:47:48.315 FAC SEX15 PGM C003 RDG 3209

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 60 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.430 RATED HP = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	101.78	29.424	221.51	924.11	23.097	14.943

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	67.125	5.3819	44.988	82.867	79.814	6.0426

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	101.41	3.0822	4.0305	10109.	57.589	83.984

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	57.589	47.131	174.96	4.0176	148.25

ENG. COND.	F/A DRY	F/A WET	EQU. PATIO	RPM-1	RPM-2	TORQUE	BHP
	0.086369	0.084263	1.2391	2709.9	2711.3	256.32	132.25

WET CORRECTION FACTOR = 0.82589 EXHAUST MOLE. WT. = 27.186 EXHAUST DENSITY = 0.070390 EXHAUST FLOW RATE = 14590.

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	1989.6	89.599	9.3393	9.5569	0.080608	
CORRECTED CONC. TO WET BASIS			7.7132	7.8929	0.066574	

	HC	NOX	CO
EMISSION RATE	1.0421	0.15557	81.703
EMISSION MASS/MODE	0.0052107	0.00077783	0.40851
EMISSION MASS/RATED HP	3.2567E-05	4.8614E-06	0.0025532
MODE EMIS./STD. CYCLE %	1.7140	0.32409	6.0791

CAL. FUEL AIR RATIO = 0.088521 MEAS. FUEL AIR RATIO = 0.086369 DIFF MEAS. & CAL. F/A PERCENT = 2.4913

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	392.86	405.13	388.07	390.38

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	760.46	1414.1	-273.37	566.05	1285.4	1284.8

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.506
	189.02	249.16	75.315	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.574
	251.27	2643.7	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	102.02	101.78	-47.658	98.041

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	79.517	4.5288	53.982	2936.6

CELL TEMP. = 77.926 HEATER TEMP = 162.49 COOLER TEMP = 114.50

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NASA-LEWIS PRELIMINARY DATA 04/12/76 CADDEII REC 04/12/76 17:53:13.361 FAC SEX15 PGM C003 RDG 3211

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 60 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.430 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	96.708	29.431	121.06	496.07	12.452	14.598

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	66.292	5.5592	45.010	46.047	44.224	6.0558

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	97.529	3.0513	3.9402	10053.	65.851	83.389

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	65.851	42.476	175.72	4.0350	71.934

ENG. COND.	F/A DRY	F/A WET	FQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.089149	0.086966	1.3306	2357.8	2359.4	145.63	65.377

WET CORRECTION FACTOR = 0.83773 EXHAUST MLE. WT. = 26.979 EXHAUST DENSITY = 0.069855 EXHAUST FLOW RATE = 7912.8

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	2111.1	82.908	9.1901	9.6631	0.099950
CORRECTED CONC. TO WET BASIS			7.6988	8.0950	0.083731

EMISSION RATE	HC	NOX	CO
	0.59970	0.078068	44.227
EMISSION MASS/MODE	0.059970	0.0078068	4.4227
EMISSION MASS/RATED HP	0.00037481	4.8792E-05	0.027642
MODE EMIS./STD. CYCLE %	19.727	3.2528	65.814

CAL. FUEL AIR RATIO = 0.088058 MEAS. FUEL AIR RATIO = 0.089149 DIFF MEAS. & CAL. F/A PERCENT = -1.2237

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	345.27	347.42	355.09	357.04

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1067.2	1349.8	-162.47	528.73	1156.2	1157.5

ENGINE OIL	EOILT	SOILT	OIL ²	MANIFOLD PRESSURE = 20.180
	188.29	174.88	72.355	

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.451
	150.32	2294.9	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	97.036	96.708	-53.301	94.952

ORIFICE AIR	TEMP	DEL TAP	ORFP	FLOW
	77.015	4.5389	53.908	2946.6

CELL TEMP. = 75.535 HEATER TEMP = 107.68 COOLER TEMP = 103.94

ORIGINAL PAGE IS
OF POOR QUALITY

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NASA-LEWIS PRELIMINARY DATA 04/12/76 CADDEII REC 04/12/76 17:56:39.280 FAC SEX15 PGM C003 RDG 3212

LEANOUT 25 RTDC TO CL APP 100 DEG HUM = 60 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.430 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	98.929	29.437	220.48	921.94	23.169	14.938

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP.
	64.210	5.3909	45.066	80.660	80.063	6.0393

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	98.972	3.0626	3.9529	10073.	63.059	84.139

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	63.059	24.770	175.91	4.0396	148.59

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.086842	0.084713	1.2961	2709.1	2710.4	257.87	133.01

WET CORRECTION FACTOR = 0.82780 EXHAUST MOLE. WT. = 27.150 EXHAUST DENSITY = 0.070298 EXHAUST FLOW RATE = 14583.

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1940.1	82.658	9.3094	9.5895	0.074107
CORRECTED CONC. TO WET BASIS			7.7063	7.9382	0.061346

	HC	NOX	CO
EMISSION RATE	1.0157	0.14344	81.589
EMISSION MASS/MODE	0.0050785	0.00071722	0.40795
EMISSION MASS/RATED HP	3.1741E-05	4.4826E-06	0.0025497
MODE EMIS./STD. CYCLE %	1.6706	0.29884	6.0706

CAL. FUEL AIR RATIO = 0.088409 MEAS. FUEL AIR RATIO = 0.086842 DIFF MEAS. & CAL. F/A PERCENT = 1.8042

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	393.99	409.32	398.46	405.52

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	909.85	1410.4	-132.55	672.01	1305.5	1305.0

ENGINE OIL	EOILT	SOILT	OILT ^o	MANIFOLD PRESSURE = 28.352
	188.96	231.97	75.259	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.566
	254.08	2645.5	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	99.041	98.929	6.0270	96.484

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	77.590	4.4877	53.953	2929.0

CELL TEMP. = 76.138 HEATER TEMP = 106.71 COOLER TEMP = 108.64

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NASA-LEWIS PRELIMINARY DATA 04/12/76 CADDEII REC 04/12/76 18:02:58.289 FAC SEX15 PGM C003 RDG 3214

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 60 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.430 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	98.290	29.423	120.64	494.12	12.515	14.597

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	67.832	5.5590	44.969	47.394	44.056	6.0678

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	98.894	3.0515	3.9947	10053.	63.295	83.654

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	63.295	63.454	177.29	4.0712	71.468

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.089161	0.086958	1.3308	2354.2	2355.1	144.56	64.801

WET CORRECTION FACTOR = 0.83654 EXHAUST MOL. WT. = 26.978 EXHAUST DENSITY = 0.069853 EXHAUST FLOW RATE = 7883.6

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	2090.7	79.828	9.2106	9.6959	0.052965	
CORRECTED CONC. TO WET BASIS			7.7051	8.1110	0.044308	

	HC	NOX	CO
EMISSION RATE	0.59171	0.074890	44.100
EMISSION MASS/MODE	0.059171	0.0074890	4.4100
EMISSION MASS/RATED HP	0.00036982	4.5806E-05	0.027562
MODE EMIS./STD. CYCLE %	19.464	3.1204	65.625

CAL. FUEL AIR RATIO = 0.088214 MEAS. FUEL AIR RATIO = 0.089161 DIFF MEAS. & CAL. F/A PERCENT = -1.0622

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	342.03	352.48	350.83	349.22

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SFXT-1	SEXT-2
	446.15	1347.0	-41.235	597.01	1148.1	1149.0

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE =
	188.15	140.48	72.539	20.066

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE =
	148.35	2300.0	29.517

INDUCTION AIR	IAIRT1	IAIPT2	TAIRT1	TAIRT2
	98.635	98.290	-95.877	94.960

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	78.527	4.4922	53.805	2927.9

CELL TEMP. = 77.210 HEATER TEMP = 107.59 COOLER TEMP = 103.34

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NASA-LEWIS PRELIMINARY DATA 04/12/76 CADDEII REC 04/12/76 18:07:34.501 FAC SEX15 PGM C003 RDG 3215

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 60 % MODE = 4.0000 NO. SCANS = 4

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.430 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	99.343	29.418	203.50	848.15	21.465	14.849

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIR
	66.103	5.4339	45.015	74.949	72.581	6.0235

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	99.613	3.1083	3.9358	10157.	62.323	84.163

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	62.323	39.671	177.15	4.0680	130.12

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.085576	0.083464	1.2773	2428.1	2430.2	257.00	118.82

WET CORRECTION FACTOR = 0.81794 EXHAUST MOLE. WT. = 27.246 EXHAUST DENSITY = 0.070546 EXHAUST FLOW RATE = 13355.

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	2081.0	88.296	9.7938	9.3330	0.066232	
CORRECTED CONC. TO WET BASIS			8.0107	7.6338	0.054173	

	HC	NOX	CO
EMISSION RATE	0.99776	0.14033	77.674
EMISSION MASS/MODE	0.083147	0.011694	6.4728
EMISSION MASS/RATED HP	0.00051967	7.3090E-05	0.040455
MODE EMIS./STD. CYCLE %	27.351	4.8726	96.321

CAL. FUEL AIR RATIO = 0.089817 MEAS. FUEL AIR RATIO = 0.085576 DIFF MEAS. & CAL. F/A PERCENT = 4.9560

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	367.97	391.13	399.44	399.02

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	378.65	1323.7	-25.706	683.23	1244.6	1244.3

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.553
	188.57	446.47	73.312	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.527
	262.05	2373.6	

INDUCTION AIR	IAIRT1	IAIPT2	TAIRT1	TAIRT2
	99.408	99.343	-36.240	94.844

ORIFICE AIR	TEMP	DELTAP	ORF ²	FLOW
	79.303	4.4699	54.314	2918.8

CELL TEMP. = 77.756 HEATER TEMP. = 102.02 COOLER TEMP. = 101.86

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NASA-LEWIS PRELIMINARY DATA 04/12/76 CADDEII REC 04/12/76 18:10:37.831 FAC SEX15 PGM C003 RDG 3216

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 60 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.430 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	98.635	29.473	203.72	848.03	21.486	14.843

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	64.812	5.4365	45.050	74.662	72.535	6.1362

COOLING AIR	TEMP	UNEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	98.782	3.0045	3.8151	9966.6	63.714	84.184

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	63.714	70.127	177.35	4.0726	130.05

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.085533	0.083420	1.2766	2429.3	2431.7	256.91	118.83

WET CORRECTION FACTOR = 0.81762 EXHAUST MOLE. WT. = 27.249 EXHAUST DENSITY = 0.070554 EXHAUST FLOW RATE = 13352.

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	2042.9	83.168	9.7997	9.3443	0.060126	
CORRECTED CONC. TO WFT BASIS			8.0124	7.640%	0.049160	

	HC	NOX	CO
EMISSION RATE	0.97925	0.13215	77.670
EMISSION MASS/MODE	0.081604	0.011012	6.4725
EMISSION MASS/RATED HP	0.00051003	6.8826E-05	0.040453
MODE EMIS./STD. CYCLE %	26.844	4.5884	96.316

CAL. FUEL AIR RATIO = 0.089809 MEAS. FUEL AIR RATIO = 0.085533 DIFF MEAS. & CAL. F/A PERCENT = 4.9991

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	368.20	388.10	397.91	399.15

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	643.39	1323.5	149.91	687.81	1248.6	1248.4

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE =
	188.75	134.14	73.087	28.553

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE =
	256.83	2365.9	29.628

INDUCTION AIR	IAIRT1	IAIPT2	TAIRT1	TAIRT2
	98.782	98.635	-20.332	95.271

ORIFICE AIR	TEMP	DELTAP	DRFP	FLOW
	78.727	4.5127	53.900	2935.1

CFL TEMP. = 77.068 HEATER TEMP = 110.78 COOLER TEMP = 102.83

471

NASA-LEWIS PRELIMINARY DATA 04/12/76 CADDEIT REC 04/12/76 18:16:57.563 FAC SEX15 PGM C003 RDG 3217

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 60 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.420 GATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	98.696	29.409	220.01	920.67	23.357	14.947

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	63.383	5.4113	45.088	78.061	77.753	5.0708

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	98.920	3.1005	3.9978	10143.	64.120	84.439

RFL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	64.120	17.854	177.59	4.0780	150.79

ENG. COND.	F/A DRY	F/A WET	EOU. RATIO	PPM-1	RPM-2	TORQUE	BHP
	0.084452	0.082363	1.2605	2715.8	2716.9	260.73	134.82

WET CORRECTION FACTOR = 0.82810 EXHAUST MOLE. WT. = 27.332 EXHAUST DENSITY = 0.070768 EXHAUST FLOW RATE = 14438.

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1785.8	108.60	8.1272	10.260	0.030563
CORRECTED CONC. TO WET BASIS			6.7301	8.4962	0.025309

	HC	NOX	CO
EMISSION RATE	0.92564	0.18659	70.547
EMISSION MASS/MODE	0.0046282	0.00093297	0.35274
EMISSION MASS/RATED HP	2.8926E-05	5.8311E-06	0.0022046
MODE EMIS./STD. CYCLE %	1.5224	0.38874	5.2491

CAL. FUEL AIR RATIO = 0.085413 MEAS. FUEL AIR RATIO = 0.084452 DIFF MEAS. & CAL. F/A PERCENT = 1.1379

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	409.70	433.07	406.99	417.17

EXT GAS TEMP DEG.F	FXT-1	EXT-2	FXT-3	FXT-4	SEXT-1	SEXT-2
	400.08	1444.7	447.75	922.78	1336.1	1335.2

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.492
	189.56	233.10	75.011	

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.564
	258.15	2633.8	

INDUCTION AIR	TAIPT1	TAIPT2	TAIRT1	TAIRT2
	98.782	98.696	-57.973	96.157

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	77.281	4.5405	53.369	2946.3

CELL TEMP. = 76.723 HEATER TEMP = 105.76 COOLER TEMP = 101.43

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NASA-LEWIS PRELIMINARY DATA 04/12/76 CADDETT REC 04/12/76 18:21:17.181 FAC SEX15 PGM C003 RDG 3218

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 60 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.420 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	98.601	29.432	202.97	845.32	21.436	14.850

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	64.578	5.4293	45.056	72.254	70.519	5.0201

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	98.661	3.0922	3.9939	10128.	63.862	84.224

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	63.862	39.270	177.51	4.0763	131.55

ENG. COND.	F/A DRY	F/A WET	EQV. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.083423	0.081359	1.2451	2435.9	2436.9	259.20	120.22

WET CORRECTION FACTOR = 0.81699 EXHAUST MOLE. WT. = 27.411 EXHAUST DENSITY = 0.070974 EXHAUST FLOW RATE = 13206.

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	2033.3	109.46	8.8551	9.8836	0.052205	
CORRECTED CONC. TO WET BASIS			7.2426	8.0748	0.042651	

	HC	NOX	CO
EMISSION RATE	0.96398	0.17202	69.439
EMISSION MASS/MODE	0.080331	0.014335	5.7866
EMISSION MASS/RATED HP	0.00050207	8.9593E-05	0.036166
MODE EMIS./STD. CYCLE %	26.425	5.9729	86.110

CAL. FUEL AIR RATIO = 0.087315 MEAS. FUEL AIR RATIO = 0.083423 DIFF MEAS. & CAL. F/A PERCENT = 4.6658

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	372.09	395.30	407.78	412.21

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	386.33	1339.3	141.51	722.89	1276.8	1276.8

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE =
	189.53	252.73	73.031	28.438

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE =
	250.64	2383.1	29.597

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	98.661	98.601	29.559	95.194

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	77.944	4.5695	53.926	2953.4

CFLT TEMP. = 78.033 HEATER TEMP = 118.54 COOLER TEMP = 102.51

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NASA-LEWIS PRELIMINARY DATA 04/12/76 CADDEII REC 04/12/76 18:24:14.327 FAC SFX15 PGM C003 RDG 3219

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 60 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.420 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	98.592	29.416	120.21	492.07	12.443	14.593

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	68.109	5.5652	44.962	44.749	42.253	6.1224

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	99.179	3.0742	3.9510	10095.	62.607	83.599

REL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP
	62.607	57.356	177.01	4.0648 71.754

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.085869	0.083751	1.2816	2356.7	2359.0	144.95	65.042

WET CORRECTION FACTOR = 0.83199 EXHAUST MOLE. WT. = 27.224 EXHAUST DENSITY = 0.070488 EXHAUST FLOW RATE = 7756.8

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	2046.3	96.540	8.3094	10.203	0.067587
CORRECTED CONC. TO WET BASIS			6.9133	8.4884	0.056231

EMISSION RATE	HC	NOX	CO
	0.56983	0.089111	38.932
EMISSION MASS/MODE	0.056983	0.0089111	3.8932
EMISSION MASS/RATED HP	0.00035614	5.5695E-05	0.024332
MODE EMIS./STD. CYCLE %	18.744	3.7130	57.934

CAL. FUEL AIR RATIO = 0.085805 MEAS. FUEL AIR RATIO = 0.085869 DIFF MEAS. & CAL. F/A PERCENT = -0.074758

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	343.30	354.78	359.00	358.65

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	936.87	1369.4	505.98	843.53	1168.7	1169.5

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 20.017
	188.37	178.44	72.763	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.471
	137.94	2316.5	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	98.955	98.592	-52.187	95.183

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	78.448	4.4640	53.919	2919.3

CELL TEMP. = 77.360 HEATER TEMP = 111.20 COOLER TEMP = 101.93

474

NASA-LEWIS PRELIMINARY DATA 04/12/76 CADDEII REC 04/12/76 18:28:09.554 FAC SEX15 PGM C003 RDG 3220

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 60 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.420 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	99.921	29.421	219.59	919.69	23.376	14.939

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	66.247	5.4140	45.012	78.557	77.705	6.0669

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	100.75	3.0518	3.9369	10054.	61.870	84.479

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	61.870	31.057	177.92	4.0857	151.74

ENG. COND.	F/A DRY	F/A WFT	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.084490	0.082396	1.2610	2716.1	2717.6	262.13	135.56

WET CORRECTION FACTOR = 0.82837 EXHAUST MOLE. WT. = 27.329 EXHAUST DENSITY = 0.070760 EXHAUST FLOW RATE = 14425.

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1751.3	115.72	8.1089	10.335	0.047025
CORRECTED CONC. TO WET BASIS			6.7172	8.5615	0.038954

	HC	NOX	CO
EMISSION RATE	0.90695	0.19865	70.349
EMISSION MASS/MODE	0.0045348	0.00099327	0.35175
EMISSION MASS/RATED HP	2.8342E-05	6.2079E-06	0.0021984
MODE EMIS./STD. CYCLE %	1.4917	0.41386	5.2343

CAL. FUEL AIR RATIO = 0.085192 MEAS. FUEL AIR RATIO = 0.084490 DIFF MEAS. & CAL. F/A PERCENT = 0.93054

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	408.59	424.04	410.03	415.08

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	641.05	1440.8	83.963	773.61	1331.1	1329.6

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE =
	189.32	226.64	74.755	28.372

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE =
	253.52	2661.9	29.611

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIPT2
	100.01	99.921	4.9829	95.340

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	78.978	4.4699	53.850	2919.7

CELL TEMP. = 78.872 HEATER TEMP = 105.47 COOLER TEMP = 99.832

475

NASA-LEWIS PRELIMINARY DATA 04/12/76 CADDEII REC 04/12/76 18:38:49.900 FAC SEX15 PGM C003 RDG 3223

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 60 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.420 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	97.815	29.471	198.88	827.22	20.967	14.821

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	65.583	5.4335	45.029	70.695	68.107	6.0666

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	DEL-HUM	DEW-POINT
	97.996	3.0850	3.8970	10115.	65.246	84.149

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	65.246	40.542	177.42	4.0742	130.18

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	9HP
	0.082332	0.080297	1.2288	2431.3	2433.4	257.23	119.08

WET CORRECTION FACTOR = 0.81781 EXHAUST MOLE. WT. = 27.496 EXHAUST DENSITY = 0.071193 EXHAUST FLOW RATE = 12870.

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1869.1	249.48	8.3303	10.215	0.073267
CORRECTED CONC. TO WET BASIS			6.8125	8.3535	0.059918

	HC	NOX	CO
EMISSION RATE	0.86361	0.38211	63.656
EMISSION MASS/MODE	0.071967	0.031842	5.3047
EMISSION MASS/RATED HP	0.00044980	0.00019901	0.033154
MODE EMIS./STD. CYCLE %	23.673	13.268	78.938

CAL. FUEL AIR RATIO = 0.085722 MEAS. FUEL AIR RATIO = 0.082332 DIFF MEAS. & CAL. F/A PERCENT = 4.1170

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	365.06	384.72	413.61	412.52

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	422.40	1304.4	130.69	704.29	1264.3	1263.2

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.122
	188.29	279.57	74.023	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.508
	250.84	2380.4	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	97.892	97.815	-4.4753	94.860

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	77.157	4.5066	53.919	2936.1

CELL TEMP. = 76.741 HEATER TEMP = 104.07 COOLER TEMP = 100.40

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NASA-LEWIS PRELIMINARY DATA 04/12/76 CADDELI REC 04/12/76 18:51:15.083 FAC SEX15 PGM C003 RDG 3224

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 60% MCDE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.410 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	100.65	29.443	218.76	913.86	23.263	14.917

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	66.175	5.4356	45.313	75.508	73.708	6.1146

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	101.02	3.1025	3.9111	10146.	60.538	84.479

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	60.538	-17.066	178.19	4.0918	150.75

ENG. COND.	F/A DRY	F/A WET	EQV. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.080656	0.078654	1.2038	2705.5	2707.6	261.49	134.70

WET CORRECTION FACTOR = 0.82442 EXHAUST MOLE. WT. = 27.628 EXHAUST DENSITY = 0.071536 EXHAUST FLOW RATE = 14130.

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	CO DRY
	1582.2	138.32	6.8025	11.029	0.017802
CORRECTED CONC. TO WET BASIS			5.6081	9.0924	0.014676

	HC	NOX	CO
EMISSION RATE	0.80260	0.23259	57.532
EMISSION MASS/MODE	0.0040130	0.0011630	0.28766
EMISSION MASS/RATED HP	2.5081E-05	7.2685E-06	0.0017979
MODE EMIS./STD. CYCLE %	1.3201	0.48457	4.2806

CAL. FUEL AIR RATIO = 0.082083 MEAS. FUEL AIR RATIO = 0.080656 DIFF MEAS. & CAL. F/A PERCENT = 1.7689

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	425.05	441.92	423.17	434.40

EXT GAS TEMP DEG. F	FXT-1	EXT-2	FXT-3	EXT-4	SEXT-1	SEXT-2
	568.57	1459.0	566.39	882.56	1375.7	1374.7

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.391
	190.05	147.51	74.503	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.562
	260.96	2649.2	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	100.75	100.65	-71.824	95.949

OPTIFICE AIR	TEMP	DELTAP	DRFP	FLOW
	78.987	4.4829	54.016	2923.8

CELL TEMP. = 80.176 HEATER TEMP = 103.01 COOLER TEMP = 99.586

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NASA-LEWIS PRELIMINARY DATA 04/12/76 CADDEII REC 04/12/76 18:59:45.142 FAC SEX15 PGM C003 RDG 3226

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 60 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.410 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 98.238 PRESS 29.417 CFM 117.38 DRY FLOW 479.31 VAPOR FLOW 12.172 PRESS TOTAL 14.585

COMB. FUEL TEMP 67.975 PRESS 5.5770 DENSITY 44.965 TURBO FLOW 39.757 FLOW TRON 38.821 FPIP 6.1419

COOLING AIR TEMP 99.179 UDEL-HOOD 2.9823 DEL-HOOD 3.9911 FLOW 9925.4 REL-HUM 63.508 DEW-POINT 83.709

REL-HUM 1 63.508 2 61.402 HUMIDITY 177.77 % H2O VAPOR 4.0822 CORRECTED HP 69.159

ENG. COND. F/A DRY 0.080993 F/A WET 0.078987 EQU. PATIO 1.2089 RPM-1 2349.3 RPM-2 2350.8 TORQUE 140.10 BHP 62.667

WET CORRECTION FACTOR = 0.82477 EXHAUST MOLE. WT. = 27.601 EXHAUST DENSITY = 0.071467 EXHAUST FLOW RATE = 7420.3

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 1798.8 CO DRY 11.016
NOX PPM 145.83 CO2 DRY 0.055786
CORRECTED CONC. TO WET BASIS 5.6954 9.0856 0.046010

EMISSION RATE HC 0.47917 NOX 0.12877 CO 30.682
EMISSION MASS/MODE 0.047917 0.012877 3.0682
EMISSION MASS/RATED HP 0.00029948 8.0483E-05 0.019176
MODE EMIS./STD. CYCLE % 15.762 5.3656 45.658

CAL. FUEL AIR RATIO = 0.082256 MEAS. FUEL AIR RATIO = 0.080993 DIFF MEAS. & CAL. F/A PERCENT = 1.5590

CYL TEMP DEG.F CYL-1 347.71 CYL-2 357.13 CYL-3 361.68 CYL-4 361.30

EXT GAS TEMP DEG.F EXT-1 1177.4 EXT-2 1397.9 EXT-3 908.10 EXT-4 928.86 SEXT-1 1187.4 SEXT-2 1188.2

ENGINE OIL EOILT 188.26 SOILT 269.14 OILP 72.263 MANIFOLD PRESSURE = 19.791

DYNO COND. TORQUE 145.79 RPM 2317.6 CYL. BACK PRESSURE = 29.484

INDUCTION AIR IAIRT1 98.558 IAIRT2 98.238 TAIRT1 -4.5905 TAIRT2 96.174

ORIFICE AIR TEMP 77.033 DELTAP 4.5000 DRFP 53.929 FLOW 2934.4

CELL TEMP. = 77.847 HEATER TEMP = 102.16 COOLER TEMP = 100.97

478

NASA-LEWIS PRELIMINARY DATA 04/12/76 CADDEII REG 04/12/76 19:03:53.266 FAC SEX15 PGM C003 RDG 3227

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 60 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.410 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	98.730	29.387	198.80	824.72	21.071	14.795

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	66.695	5.4761	45.300	65.712	64.848	6.1887

COOLING AIR	TEMP	UDEL-HOOD	DFL-HOOD	FLOW	REL-HUM	DEW-POINT
	98.825	3.1127	3.8557	10165.	63.838	84.334

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	63.838	40.696	178.85	4.1069	130.58

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.078630	0.076671	1.1736	2430.7	2431.9	257.73	119.28

WET CORRECTION FACTOR = 0.81443 EXHAUST MJLF. WT. = 27.791 EXHAUST DENSITY = 0.071957 EXHAUST FLOW RATE = 12655.

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1695.9	348.21	6.9741	10.961	0.087589
CORRECTED CONC. TO WET BASIS			5.6961	8.9269	0.071334

EMISSION RATE	HC	NOX	CO	
	0.77048	0.52441	52.335	
	EMISSION MASS/MODE	0.064207	0.043701	4.3613
	EMISSION MASS/RATED HP	0.00040129	0.0027313	0.027258
MODE EMIS./STD. CYCLE %	21.121	18.209	64.900	

CAL. FUEL AIR RATIO = 0.082311 MEAS. FUEL AIR RATIO = 0.078630 DIFF MEAS. & CAL. F/A PERCENT = 4.6813

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	374.77	396.80	418.09	419.28

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SFXT-1	SEXT-2
	589.74	1340.5	849.25	1100.7	1293.5	1292.4

ENGINE OIL	EMILT	SOILT	OIIP	MANIFOLD PRESSURE = 28.321
	188.88	175.45	73.147	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.554
	253.96	2340.2	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	98.782	98.730	-19.622	95.185

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	77.705	4.4220	53.983	2908.0

CELL TEMP. = 78.306 HEATER TEMP = 113.79 COOLER TEMP = 102.10

479

NASA-LEWIS PRELIMINARY DATA 04/12/76 CADDEYI REC 04/12/76 19:11:58.186 FAC SEX15 PGM C003 RDG 3229

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 60 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.410 RATED HP = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	100.48	29.401	218.65	914.25	23.273	14.924

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	66.310	5.4299	45.010	74.811	73.291	6.0318

COOLING AIR	TEMP	JDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	100.89	3.1060	3.9507	10153.	60.865	84.494

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	60.865	-15.360	178.19	4.0919	151.79

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.080165	0.078175	1.1965	2710.0	2711.5	262.47	135.43

WET CORRECTION FACTOR = 0.82291 EXHAUST MOLE. WT. = 27.667 EXHAUST DENSITY = 0.071637 EXHAUST FLOW RATE = 14110.

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	1555.6	145.26	6.7360	11.000	0.029163	
CORRECTED CONC. TO WET BASIS			5.5843	9.0518	0.023998	

	HC	NOX	CO
EMISSION RATE	0.78792	0.24392	57.206
EMISSION MASS/MODE	0.0039399	0.0012196	0.28603
EMISSION MASS/RATED HP	2.4624E-05	7.5224E-06	0.0017877
MODE EMIS./STD. CYCLE %	1.2960	0.50816	4.2564

CAL. FUEL AIR RATIO = 0.082033 MEAS. FUEL AIR RATIO = 0.080165 DIFF MEAS. & CAL. F/A PERCENT = 2.3299

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	425.79	443.42	423.56	431.83

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	787.27	1456.0	596.48	1073.3	1372.0	1370.5

ENGINE OIL	FOILT	SOILT	OILT	MANIFOLD PRESSURE = 28.454
	189.91	174.80	74.559	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.602
	263.65	2648.9	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	100.53	100.48	-39.003	95.690

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	78.854	4.5285	53.822	2938.3

CELL TEMP. = 80.417 HEATER TEMP = 102.36 COOLFR TEMP = 100.66

48h

NASA-LEWIS PRELIMINARY DATA 04/12/76 CADDEI REC 04/12/76 19:18:38.878 FAC SEX15 PGM C003 RDG 3231

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 60 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.400 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	97.123	29.387	118.82	485.96	12.342	14.580

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	67.474	5.5749	44.979	41.028	40.003	6.1380

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	98.229	3.0471	3.9543	10045.	65.675	83.699

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	65.675	56.962	177.78	4.0825	71.219

ENG. COND.	F/A DRY	F/A WFT	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.082317	0.080278	1.2286	2360.6	2362.3	143.82	64.643

WET CORRECTION FACTOR = 0.83214 EXHAUST MOLE. WT. = 27.497 EXHAUST DENSITY = 0.071197 EXHAUST FLOW RATE = 7550.9

MEASURED CONC.	PART PER MILLION WET	PER CENT		
	HC PPM	CO DRY	CO2 DRY	O2 DRY
	1750.9	6.7510	11.003	0.047205
CORRECTED CONC. TO WET BASIS	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	166.31	5.6261	9.1560	0.039281

	HC	NOX	CO
EMISSION RATE	0.47525	0.14963	30.883
EMISSION MASS/MODE	0.047525	0.014963	3.0883
EMISSION MASS/RATED HP	0.00029703	9.3521E-05	0.019302
MODE EMIS./STD. CYCLE %	15.633	6.2347	45.956

CAL. FUEL AIR RATIO = 0.082017 MEAS. FUEL AIR RATIO = 0.082317 DIFF MEAS. & CAL. F/A PERCENT = -0.36378

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	351.25	360.86	365.00	363.52

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	726.77	1406.4	874.69	1034.6	1196.9	1197.8

ENGINE OIL	EOILT	SOILT	DILP	MANIFOLD PRESSURE = 20.014
	188.36	118.83	72.631	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.465
	150.68	2324.1	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	97.434	97.123	-59.946	95.029

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	76.572	4.4529	54.051	2920.8

CELL TEMP. = 77.829 HEATER TEMP = 99.776 COOLER TEMP = 97.711

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NASA-LEWIS PRELIMINARY DATA 04/12/76 CADDEII REC 04/12/76 19:21:55.438 FAC SEX15 PGM C003 RDG 3232

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 60 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.400 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	98.117	29.373	197.92	822.78	20.997	14.824

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPTP
	66.462	5.4503	45.006	64.680	64.677	6.0759

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	98.134	3.1052	3.9969	10151.	65.087	84.359

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	65.087	64.816	178.64	4.1022	132.14

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.078608	0.076652	1.1733	2441.2	2443.3	259.83	120.77

WET CORRECTION FACTOR = 0.81642 EXHAUST MOLE. WT. = 27.792 EXHAUST DENSITY = 0.071961 EXHAUST FLOW RATE = 12624.

MEASURED CONC.	PART PER MILLION WET	PER CENT
	HC PPM NOX PPM CO DRY CO2 DRY O2 DRY	
	1672.5 403.54 6.8287 10.948 0.074427	
CORRECTED CONC. TO WET BASIS		5.5751 8.9379 0.060764

EMISSION RATE	HC	NOX	CO
	0.75798 0.60623 51.096		
EMISSION MASS/MODE	0.063165 0.050519 4.2580		
EMISSION MASS/RATED HP	0.00039478 0.00031574 0.026613		
MODE EMIS./STD. CYCLE %	20.778 21.050 63.364		

CAL. FUEL AIR RATIO = 0.082073 MEAS. FUEL AIR RATIO = 0.078608 DIFF MEAS. & CAL. F/A PERCENT = 4.4078

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	374.43 394.43 417.18 413.53			

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	846.34 1338.2 836.62 1118.2 1293.5 1291.8					

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.170
	188.41 169.76 73.731			

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.533
	251.95 2384.9		

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	98.204 98.117 -5.8362 95.100			

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	77.157 4.4738 53.973 2925.9			

CELL TEMP. = 78.085 HEATER TEMP = 115.30 COOLER TEMP = 102.72

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NASA-LEWIS PRELIMINARY DATA 04/12/76 CADDEII REC 04/12/76 19:37:16.419 FAC SEX15 PGM C003 RDG 3233

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 60 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.400 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	97.702	29.421	238.14	912.71	22.724	14.917

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	64.686	5.4491	45.053	72.858	70.792	6.1089

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	98.195	3.1215	3.9576	10181.	64.767	83.814

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	64.767	45.627	174.28	4.0020	149.62

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.077562	0.075678	1.1576	2708.4	2709.3	260.05	134.11

WET CORRECTION FACTOR = 0.82331 EXHAUST MOLE. WT. = 27.878 EXHAUST DENSITY = 0.072182 EXHAUST FLOW RATE = 13940.

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1428.7	246.42	5.7139	11.564	0.061806
CORRECTED CONC. TO WET BASIS			4.7042	9.5207	0.050885

	HC	NOX	CO
EMISSION RATE	0.71502	0.40879	47.610
EMISSION MASS/MODE	0.0035751	0.0020439	0.23805
EMISSION MASS/RATED HP	2.2344E-05	1.2775E-05	0.0014878
MODE EMIS./STD. CYCLE %	1.1760	0.85164	3.5424

CAL. FUEL AIR RATIO = 0.079392 MEAS. FUEL AIR RATIO = 0.077562 DIFF MEAS. & CAL. F/A PERCENT = 2.3585

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	425.79	437.82	427.29	434.10

FXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	610.99	1466.3	729.30	1146.5	1378.4	1375.7

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRFSSURE = 28.381
	189.96	200.51	74.363	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.548
	253.66	2645.4	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	97.771	97.702	-35.501	95.536

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	76.200	4.4907	53.852	2933.8

CELL TEMP. = 77.351 HEATER TEMP = 119.78 COOLER TEMP = 106.68

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NASA-LEWIS PRELIMINARY DATA 04/12/76 CADDEII REC 04/12/76 19:43:47.429 FAC SEX15 PGM C003 RDG 3235

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 60 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.400 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	97.763	29.395	117.83	482.25	11.995	14.578

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	69.074	5.5872	44.936	39.477	37.804	6.1347

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	98.765	3.0421	3.9100	10036.	63.123	83.074

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	63.123	60.440	174.12	3.9983	71.063

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.078390	0.076487	1.1700	2357.1	2357.5	143.77	64.525

WET CORRECTION FACTOR = 0.82966 EXHAUST MOLE. WT. = 27.810 EXHAUST DENSITY = 0.072007 EXHAUST FLOW RATE = 7388.9

MEASURED CONC.	PART PER MILLION WET	PER CENT
	HC PPM NOX PPM	CO DRY CO2 DRY O2 DRY
	1597.9 276.83	5.4822 11.633 0.098190
CORRECTED CONC. TO WET BASIS		4.5483 9.6514 0.081464

	HC	NOX	CO
EMISSION RATE	0.42385	0.24341	24.399
EMISSION MASS/MODE	0.042385	0.024341	2.4399
EMISSION MASS/RATED HP	0.00026491	0.00015213	0.015249
MODE EMIS./STD. CYCLE %	13.942	10.142	36.308

CAL. FUEL AIR RATIO = 0.078880 MEAS. FUEL AIR RATIO = 0.078390 DIFF MEAS. & CAL. F/A PERCENT = 0.62509

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	355.17	364.80	370.50	366.38

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	837.37	407.44	1085.4	1118.8	1211.9	1212.6

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 19.876
	188.63	180.70	72.067	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.495
	146.02	2305.4	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	98.074	97.763	-25.930	95.061

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	77.298	4.4979	53.976	2933.0

CELL TEMP. = 78.324 HEATER TEMP = 100.92 COOLER TEMP = 101.28

NASA-LEWIS PRELIMINARY DATA 04/12/76 CADDEII REC 04/12/76 19:51:00.589 FAC SEX15 PGM C003 RDG 3237

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 60 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.400 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 99.265 PRESS 29.410 CFM 196.86 DRY FLOW 818.51 VAPOR FLOW 20.452 PRESS TOTAL 14.812

COMB. FUEL TEMP 67.849 PRESS 5.4755 DENSITY 44.969 TURBO FLOW 64.315 FLOW TRON 61.761 FPIP 6.1128

COOLING AIR TEMP 99.628 UDEL-HOOD 3.0773 DEL-HOOD 3.9491 FLOW 10100. REL-HUM 61.553 DEW-POINT 83.704

REL-HUM 1 61.553 2 73.447 HUMIDITY 174.91 % H2O VAPOR 4.0166 CORRECTED HP 131.82

ENG. COND. F/A DRY 0.075456 F/A WET 0.073616 EQU. RATIO 1.1262 RPM-1 2439.8 RPM-2 2441.3 TORQUE 259.33 BHP 120.47

WET CORRECTION FACTOR = 0.81640 EXHAUST MOLE. WT. = 28.051 EXHAUST DENSITY = 0.072632 EXHAUST FLOW RATE = 12401.

MEASURED CONC. PART PER MILLION WET HC PPM 1500.8 NOX PPM 609.60 CO DRY 5.5705 PER CENT CO2 DRY 11.523 O2 DRY 0.092369
CORRECTED CONC. TO WET BASIS HC 4.5478 NOX 9.4074 CO 0.075411

EMISSION RATE HC 0.66818 NOX 0.89961 CO 40.945
EMISSION MASS/MODE HC 0.055682 NOX 0.074968 CO 3.4121
EMISSION MASS/RATED HP HC 0.00034801 NOX 0.00046855 CO 0.021325
MODE EMIS./STD. CYCLE % HC 18.316 NOX 31.237 CO 50.775

CAL. FUEL AIR RATIO = 0.079115 MEAS. FUEL AIR RATIO = 0.075456 DIFF MEAS. & CAL. F/A PERCENT = 4.8496

CYL TEMP DEG.F CYL-1 387.92 CYL-2 407.34 CYL-3 430.46 CYL-4 430.49

EXT GAS TEMP DEG.F EXT-1 746.09 EXT-2 -384.24 EXT-3 830.61 EXT-4 1171.1 SEXT-1 1328.1 SEXT-2 1326.6

ENGINE OIL OILT 188.59 SOILT 250.32 OILP 73.907 MANIFOLD PRESSURE = 28.204

DYND COND. TORQUE 258.76 RPM 2377.4 CYL. BACK PRESSURE = 29.502

INDUCTION AIR TAIRT1 99.352 IAIRT2 99.265 TAIRT1 -45.415 TAIRT2 95.029

ORIFICE AIR TEMP 78.421 DELTAP 4.5057 ORF² 53.871 FLOW 2932.4

CELL TEMP. = 79.737 HEATER TEMP = 91.718 COOLER TEMP = 99.674

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NASA-LEWIS PRELIMINARY DATA 04/12/76 CADDEII REC 04/12/76 19:47:25.042 FAC SEX15 PGM C003 RDG 3236

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 60 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.400 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 99.162 PRESS 29.422 CFM 197.41 DRY FLOW 819.33 VAPOR FLOW 20.495 PRESS TOTAL 14.801

COMB. FUEL TEMP 67.885 PRESS 5.4695 DENSITY 44.968 TURBO FLOW 64.662 FLOW TRON 61.983 FPIP 6.1050

COOLING AIR TEMP 99.058 UDEL-HOOD 3.0540 DEL-HOOD 4.0526 FLOW 10058. REL-HUM 61.766 DEW-POINT 83.714

REL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP
61.766 53.433 175.10 4.0210 132.13

ENG. COND. F/A DRY 0.075651 F/A WET 0.073805 EQU. RATIO 1.1291 RPM-1 2439.7 RPM-2 2440.6 TORQUE 259.97 BHP 120.76

WET CORRECTION FACTOR = 0.81749 EXHAUST MOLE. WT. = 28.035 EXHAUST DENSITY = 0.072589 EXHAUST FLOW RATE = 12423.

MEASURED CONC. PART PER MILLION WET HC PPM 1505.2 NOX PPM 636.68 CO DRY 5.5416 PER CENT CO2 DRY 11.576 O2 DRY 0.10593
CORRECTED CONC. TO WET BASIS HC 4.5302 NOX 9.4634 CO 0.086597

EMISSION RATE HC 0.67134 NOX 0.94126 CO 40.860
EMISSION MASS/MODE 0.055945 0.078438 3.4050
EMISSION MASS/RATED HP 0.00034965 0.00049024 0.021281
MODE EMIS./STD. CYCLE % 18.403 32.683 50.669

CAL. FUEL AIR RATIO = 0.078969 MEAS. FUEL AIR RATIO = 0.075651 DIFF MEAS. & CAL. F/A PERCENT = 4.3862

CYL TEMP DEG.F CYL-1 383.35 CYL-2 402.64 CYL-3 423.29 CYL-4 418.15

EXT GAS TEMP DEG.F EXT-1 424.70 EXT-2 -454.00 EXT-3 830.48 EXT-4 1131.4 SEXT-1 1318.1 SEXT-2 1316.4

ENGINE OIL EOILT 188.31 SOILT 248.34 OILP 73.847 MANIFOLD PRESSURE = 28.234

DYNO COND. TORQUE 250.22 RPM 2354.5 CYL. BACK PRESSURE = 29.523

INDUCTION AIR IAIRT1 99.300 IAIRT2 99.162 TAIRT1 38.625 TAIRT2 95.609

ORIFICE AIR TEMP 77.856 DELTAP 4.4488 DRFP 53.912 FLOW 2916.1

CELL TEMP. = 79.376 HEATED TEMP = 113.00 COOLER TEMP = 104.96

9.84

NASA-LEWIS PRELIMINARY DATA 04/12/76 CADDEII REC 04/12/76 19:54:32.169 FAC SEX15 PGM C003 RDG 3238

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 60 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.400 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP PRESS CFM DRY FLOW VAPOR FLOW PRESS TOTAL
99.188 29.404 118.49 485.14 12.089 14.578

COMB. FUEL TEMP PRESS DENSITY TURBO FLOW FLOW TRON FPIP
70.957 5.5941 44.886 38.518 37.498 6.1179

COOLING AIR TEMP UDEL-HOOD DEL-HOOD FLOW RFL-HUM DEW-POINT
99.938 2.9882 3.9009 9936.2 60.565 83.129

REL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP
60.565 52.777 174.43 4.0056 72.558

ENG. COND. F/A DRY F/A WET EQU. RATIO RPM-1 RPM-2 TORQUE BHP
0.077293 0.075413 1.1536 2358.2 2359.5 146.53 65.793

WET CORRECTION FACTOR = 0.82842 EXHAUST MOLE. WT. = 27.900 EXHAUST DENSITY = 0.072239 EXHAUST FLOW RATE = 7402.2

MEASURED CONC. PART PER MILLION WET PPM CENT
HC PPM NOX PPM CO DRY CO2 DRY O2 DRY
1566.8 302.91 5.1629 11.763 0.11253
CORRECTED CONC. TO WET BASIS 4.2771 9.7451 0.093224

EMISSION RATE HC NOX CO
0.41635 0.26682 22.985
EMISSION MASS/MODE 0.041635 0.026682 2.2985
EMISSION MASS/RATED HP 0.00026022 0.00016676 0.014366
MODE EMIS./STD. CYCLE % 13.696 11.118 34.204

CAL. FUEL AIR RATIO = 0.078136 MEAS. FUEL AIR RATIO = 0.077293 DIFF MEAS. & CAL. F/A PERCENT = 1.0910

CYL TEMP DEG.F CYL-1 CYL-2 CYL-3 CYL-4
353.57 366.90 371.15 365.54

EXT GAS TEMP DEG.F EXT-1 EXT-2 EXT-3 EXT-4 SEXT-1 SEXT-2
429.79 -454.00 846.20 1055.9 1207.3 1207.8

ENGINE OIL EOILT SOILT OILP MANIFOLD PRESSURE = 19.955
187.97 62.933 72.183

DYNO COND. TORQUE RPM CYL. BACK PRESSURE = 29.529
138.40 2353.4

INDUCTION AIR IAIRT1 IAIRT2 TAIRT1 TAIRT2
99.533 99.188 10.445 94.795

ORIFICE AIR TEMP DELTAP ORFP FLOW
78.907 4.5010 53.857 2929.6

CELL TEMP. = 80.117 HEATER TEMP = 111.26 COOLER TEMP = 101.13

487

NASA-LEWIS PRELIMINARY DATA 04/12/76 CADDEII REC 04/12/76 20:02:22.514 FAC SEX15 PGM C003 R0G 3239

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 60 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.400 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	98.393	29.396	217.84	910.47	22.837	14.911

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	65.099	5.4452	45.042	71.128	70.486	6.0891

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	98.791	3.0728	3.9347	10092.	63.853	84.024

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	63.853	13.393	175.58	4.0319	150.75

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.077417	0.075522	1.1555	2702.0	2703.3	262.13	134.86

WET CORRECTION FACTOR = 0.82183 EXHAUST MOLE. WT. = 27.889 EXHAUST DENSITY = 0.072212 EXHAUST FLOW RATE = 13900.

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	1453.6	205.86	5.7209	11.547	0.022542	
CORRECTED CONC. TO WET BASIS						
			4.7015	9.4895	0.018526	

EMISSION RATE	HC	NOX	CO
	0.72541	0.34053	47.447
	0.0036271	0.0017026	0.23724
	2.2669E-05	1.0641E-05	0.0014827
EMISSION MASS/MODE			
	1.1931	0.70943	3.5303
EMISSION MASS/RATED HP			
MODE EMIS./STD. CYCLE %			

CAL. FUEL AIR RATIO = 0.079574 MEAS. FUEL AIR RATIO = 0.077417 DIFF MEAS. & CAL. F/A PERCENT = 2.7862

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	428.32	439.64	429.98	437.09

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	747.83	-358.07	379.42	1036.5	1390.3	1388.5

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.398
	190.00	133.42	74.075	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.560
	257.49	2638.0	

INDUCTION AIR	IAIPT1	IAIRT2	TAIPT1	TAIRT2
	98.471	98.393	-9.0973	95.733

ORIFICE AIR	TEMP	DELTA P	ORFD	FLOW
	76.811	4.4748	53.880	2927.1

CELL TEMP. = 77.484 HEATER TEMP = 112.40 COOLER TEMP = 101.62

48h

NASA-LEWIS PRELIMINARY DATA 04/12/76 CADDEII REC 04/12/76 20:11:29.053 FAC SEX15 PGM C003 RDG 3240

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 60 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.400 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	99.697	29.410	217.15	908.78	22.739	14.922

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	67.223	5.4842	44.985	67.481	65.535	6.0720

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	100.46	3.0787	4.0412	10103.	61.288	83.974

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	61.288	-14.471	175.15	4.0221	149.29

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.072113	0.070353	1.0763	2699.1	2700.3	259.68	133.45

WET CORRECTION FACTOR = 0.82004 EXHAUST MOLE. WT. = 28.334 EXHAUST DENSITY = 0.073363 EXHAUST FLOW RATE = 13590.

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1227.2	541.05	3.6407	12.556	0.045805
CORRECTED CONC. TO WET BASIS			2.9856	10.296	0.037562

	HC	NOX	CO
EMISSION RATE	0.59877	0.87505	29.458
EMISSION MASS/MODE	0.0029939	0.0043752	0.14729
EMISSION MASS/RATED HP	1.8712E-05	2.7345E-05	0.00092057
MODE EMIS./STD. CYCLE %	0.98482	1.9230	2.1918

CAL. FUEL AIR RATIO = 0.074889 MEAS. FUEL AIR RATIO = 0.072113 DIFF MEAS. & CAL. F/A PERCENT = 3.8498

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	436.29	445.72	437.98	446.03

EXT GAS TEMP DEG.F	FXT-1	FXT-2	EXT-3	EXT-4	SFXT-1	SEXT-2
	671.25	-178.78	440.29	1051.1	1425.8	1422.9

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE =
	190.00	201.98	74.055	28.496

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE =
	252.45	2644.3	29.534

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	99.740	99.697	-29.040	95.464

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	78.315	4.5337	53.868	2941.4

CELL TEMP. = 79.146 HEATER TEMP = 99.957 COOLER TEMP = 102.15

bsh

NASA-LEWIS PRELIMINARY DATA 04/12/76 CADDEII REC 04/12/76 20:28:30.097 FAC SEX15 PGM C003 RDG 3244

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 60 % MCDE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.390 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	98.592	29.379	120.38	491.79	12.338	14.579

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	70.038	5.5908	44.310	37.713	36.037	6.0927

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	99.542	3.0108	3.9582	9978.4	62.074	83.334

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	62.074	56.184	175.62	4.0329	71.982

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.073276	0.071483	1.0937	2355.0	2356.4	145.59	65.282

WET CORRECTION FACTOR = 0.83312 EXHAUST MOLE. WT. = 28.235 EXHAUST DENSITY = 0.073106 EXHAUST FLOW RATE = 7388.8

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	1208.0	501.45	3.2861	12.532	0.22280	
CORRECTED CONC. TO WET BASIS			2.7377	10.441	0.18562	

	HC	NOX	CO
EMISSION RATE	0.32044	0.44091	14.686
EMISSION MASS/MODE	0.032044	0.044091	1.4686
EMISSION MASS/RATED HP	0.00020027	0.00027557	0.0091786
MODE EMIS./STD. CYCLE %	10.541	18.371	21.854

CAL. FUEL AIR RATIO = 0.073637 MEAS. FUEL AIR RATIO = 0.073276 DIFF MEAS. & CAL. F/A PERCENT = 0.49188

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	362.97	368.60	378.90	376.24

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SFXT-1	SFXT-2
	734.81	181.53	966.09	1132.3	1265.0	1265.4

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 20.305
	188.29	215.37	72.027	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.535
	139.35	2269.5	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	98.946	98.592	-70.725	95.922

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	77.723	4.5140	53.882	2936.9

CELL TEMP. = 78.740 HEATER TEMP = 95.037 COOLER TEMP = 95.993

NASA-LEWIS PRELIMINARY DATA 04/12/76 CADDEII REC 04/12/76 20:44:25.621 FAC SEX15 PGM C003 RDG 3247

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 60 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.390 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	97.987	29.335	217.76	911.31	22.826	14.924

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	66.426	5.4797	45.007	67.521	65.791	6.0483

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	98.635	3.0299	3.9067	10013.	64.613	84.009

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	64.613	23.958	175.33	4.0262	151.81

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.072193	0.070429	1.0775	2708.8	2709.7	262.79	135.54

WET CORRECTION FACTOR = 0.82107 EXHAUST WLE. WT. = 28.327 EXHAUST DENSITY = 0.073345 EXHAUST FLOW RATE = 13633.

MEASURED CONC.	PART PER MILLION WET	PER CENT
	HC PPM NOX PPM CO DRY CO2 DRY O2 DRY	
	1237.0 621.56 3.6294 12.520 0.060986	
CORRECTED CONC. TO WET BASIS		2.9800 10.280 0.050074

EMISSION RATE	HC	NOX	CO
	0.60544	1.0084	29.495
EMISSION MASS/MODE	0.0030272	0.0050420	0.14748
EMISSION MASS/RATED HP	1.8920E-05	3.1512E-05	0.00092172
MODE EMIS./STD. CYCLE %	0.99579	2.1008	2.1946

CAL.FUEL AIR RATIO = 0.074843 MEAS. FUEL AIR RATIO = 0.072193 DIFF MEAS.& CAL. F/A PERCENT = 3.6707

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	425.84	437.57	433.59	439.08

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1126.9	-454.00	350.59	978.95	1421.7	1418.5

ENGINE OIL	FOILT	SOILT	OIL ²	MANIFOLD PRESSURE = 28.464
	189.52	211.00	74.703	

DYND COND.	TORQUE	RPM	CYL.BACK PRESSURE = 29.554
	261.22	2670.2	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	98.065	97.987	-9.1665	95.552

ORIFICE AIR	TEMP	DEL TAP	ORFP	FLOW
	76.820	4.4672	53.911	2924.7

CELL TEMP. = 77.679 HEATER TEMP = 90.170 COOLER TEMP = 97.367

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NASA-LEWIS PRELIMINARY DATA 04/12/76 CADDE11 REC 04/12/76 21:05:03.815 FAC SEX15 PGM C003 RDG 3251

LEANOUT 25 BTDC TO CL APP 100 DEG HUM = 60 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.390 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 96.984 PRESS 29.393 CFM 120.43 DRY FLOW 492.56 VAPOR FLOW 12.390 PRESS TOTAL 14.578

COMB. FUEL TEMP 69.065 PRESS 5.5947 DENSITY 44.936 TURBO FLOW 37.720 FLOW TRON 35.863 FPIP 6.0609

COOLING AIR TEMP 97.676 UDEL-HOOD 2.9491 DEL-HOOD 3.9574 FLOW 9863.3 REL-HUM 65.340 DEW-POINT 83.409

REL-HUM 1 65.340 2 61.640 HUMIDITY 176.08 % H2O VAPOR 4.0434 CORRECTED HP 73.201

ENG. COND. F/A DRY 0.072809 F/A WET 0.071022 EQU. RATIO 1.0867 RPM-1 2360.6 RPM-2 2361.7 TORQUE 148.00 BHP 66.519

WET CORRECTION FACTOR = 0.83408 EXHAUST MOLE. WT. = 28.274 EXHAUST DENSITY = 0.073209 EXHAUST FLOW RATE = 7387.2

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 1187.4 NOX PPM 537.55 CO DRY 3.0860 CO2 DRY 12.634 O2 DRY 0.29475
CORRECTED CONC. TO WET BASIS 2.5740 10.537 0.24584

492

EMISSION RATE HC 0.31490 NOX 0.47255 CO 13.804
EMISSION MASS/MODE 0.0031490 0.047255 1.3804
EMISSION MASS/RATED HP 0.00019681 0.00029534 0.0086277
MODE EMIS./STD. CYCLE % 10.359 19.690 20.542

CAL. FUEL AIR RATIO = 0.072967 MEAS. FUEL AIR RATIO = 0.072809 DIFF MEAS. & CAL. F/A PERCENT = 0.21678

CYL TEMP DEG.F CYL-1 359.35 CYL-2 365.67 CYL-3 376.69 CYL-4 371.03

EXT GAS TEMP DEG.F EXT-1 493.44 EXT-2 454.00 EXT-3 887.24 EXT-4 1013.8 SEXT-1 1266.5 SEXT-2 1267.5

ENGINE OIL E OILT 188.38 S OILT 244.73 O ILP 72.155 MANIFOLD PRESSURE = 20.245

DYNO COND. TORQUE 145.71 RPM 2318.3 CYL. BACK PRESSURE = 29.496

INDUCTION AIR IAIRT1 97.348 IAIRT2 96.984 TAIRT1 -73.624 TAIRT2 95.198

ORIFICE AIR TEMP 76.856 DELTAP 4.5018 ORFP 53.850 FLOW 2935.5

CELL TEMP. = 77.484 HEATER TEMP = 103.47 COOLER TEMP = 98.116

NASA-EVIS PRELIMINARY DATA 04/13/76 CADDELI REC 04/13/76 10:34:36.053 FAC SEX15 PGM C003 RDG 3260
 LEANOUT TO CL APP 25 BTDC --80 DEG HUM=0% MODE = 3.0000 NO. SCANS = 5
 ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.360 RATED HP. = 160.00 HC RATIO = 2.1250
 COMB. AIR TEMP 80.602 PRESS 29.376 CFM 214.34 DRY FLOW 965.70 VAPOR FLOW 0.25461 PRESS. TOTAL 14.908
 COMB. FUEL TEMP 71.046 PRESS 5.4164 DENSITY 44.884 TURBO FLOW 82.097 FLOW TRON 80.363 FPIP 6.0596
 COOLING AIR TEMP 81.721 UDEL-HOOD 3.2375 DEL-HOOD 4.1641 FLOW 10389. REL-HUM 1.2210 DEW-POINT -14.621
 REL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP
 1.2210 80.968 1.8456 0.042381 155.31
 ENG. COND. F/A DRY F/A WET EQU. RATIO RPM-1 RPM-2 TORQUE BHP
 0.083217 0.083195 1.2420 2695.9 2697.0 289.15 148.43
 WET CORRECTION FACTOR = 0.84384 EXHAUST MOLE. WT. = 27.427 EXHAUST DENSITY = 0.071015 EXHAUST FLOW RATE = 14733.
 MEASURED CONC. PART PER MILLION WET PER CENT
 HC PPM NOX PPM CO DRY CO2 DRY O2 DRY
 1548.8 295.50 8.1229 13.952 0.12097
 CORRECTED CONC. TO WET BASIS 6.8544 11.774 0.10208
 EMISSION RATE HC NOX CO
 0.81920 0.51811 73.320
 EMISSION MASS/MODE 0.0040960 0.0025905 0.36660
 EMISSION MASS/RATED HP 2.5600E-05 1.6191E-05 0.0022912
 MODE FMS./STD. CYCLE % 1.3474 1.0794 5.4553
 CAL. FUEL AIR RATIO = 0.080917 MEAS. FUEL AIR RATIO = 0.083217 DIFF MEAS. & CAL. F/A PERCENT = -2.7633
 CYL TEMP DEG.F CYL-1 CYL-2 CYL-3 CYL-4
 415.04 436.38 410.62 417.01
 EXT GAS TEMP DEG.F EXT-1 EXT-2 EXT-3 EXT-4 SEXT-1 SEXT-2
 190.57 -454.00 -3.5413 76.387 1301.8 1294.1
 ENGINE OIL FOILT SOILT OILP MANIFOLD PRESSURE = 28.276
 157.19 239.66 74.591
 DYNO COND. TORQUE RPM CYL. BACK PRESSURE = 29.501
 282.87 2615.7
 INDUCTION AIR TAIRT1 TAIRT2 TAIRT1 TAIRT2
 80.540 80.607 -44.259 76.018
 ORIFICE AIR TEMP DELTAP ORFP FLOW
 80.681 0.040304 53.314 164.84
 CELL TEMP. = 78.041 HEATER TEMP = 87.812 COOLER TEMP = 84.966

493

NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDELL REC 04/13/76 10:37:57.864 FAC SEX15 PGM C003 RDG 3261

LEANOUT TO CL APP 25 RTDC --80 DEG HUM=0% MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.360 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	77.882	29.388	175.22	780.46	0.20936	14.738

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	67.286	5.4827	44.984	63.293	62.730	6.1230

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	78.899	3.2217	4.1336	10361.	1.3427	-14.531

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	1.3427	70.571	1.8778	0.043120	122.63

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.080376	0.080355	1.1996	2431.6	2433.2	259.32	120.06

WET CORRECTION FACTOR = 0.83665 EXHAUST MOLE. WT. = 27.550 EXHAUST DENSITY = 0.071594 EXHAUST FLOW RATE = 11780.

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	1624.1	660.31	7.4015	14.478	0.15718	
CORRECTED CONC. TO WET BASIS			6.1925	12.113	0.13150	

EMISSION RATE	HC	NOX	CO
	0.68684	0.92566	52.962
EMISSION MASS/MODE	0.057237	0.077138	4.4135
EMISSION MASS/RATED HP	0.00035773	0.00048211	0.027584
MODE EMIS./STD. CYCLE %	18.828	32.141	65.677

CAL. FUEL AIR RATIO = 0.079432 MEAS. FUEL AIR RATIO = 0.080376 DIFF MEAS. & CAL. F/A PERCENT = -1.1748

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	374.80	386.75	412.29	410.88

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1012.7	-376.52	511.68	579.50	1266.9	1263.1

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 26.809
	173.69	203.22	73.727	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.517
	266.19	2356.5	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	77.820	77.882	-73.591	76.025

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	78.068	2.0352	53.346	1999.6

CELL TEMP. = 75.961 HEATER TEMP = 87.168 COOLER TEMP = 84.089

NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDEII REC 04/13/76 10:41:57.580 FAC SEX15 PGM C003 RDG 3262
 LEANOUT TO CL APP 25 BTDC --80 DEG HUM=0% MODE = 5.0000 NO. SCANS = 5
 ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.360 RATED HP. = 160.00 HC RATIO = 2.1250
 COMB. AIR TEMP 78.139 PRESS 29.358 CFM 108.60 DRY FLOW 477.85 VAPOR FLOW 0.12417 PRESS TOTAL 14.544
 COMB. FUEL TEMP 69.637 PRESS 5.5548 DENSITY 44.921 TURBO FLOW 43.361 FLOW TRON 41.839 FPIP 6.1194
 COOLING AIR TEMP 78.925 UDEL-HOOD 3.2569 DEL-HOOD 4.1206 FLOW 10424. REL-HUM 1.2728 DEW-POINT -15.221
 REL-HUM 1 1.2728 2 68.083 HUMIDITY 1.8190 % H2O VAPOR CORRECTED HP 0.041770 66.643
 ENG. COND. F/A DRY 0.087558 F/A WET 0.087535 EQU. RATIO 1.3068 RPM-1 2354.5 RPM-2 2355.8 TORQUE 145.16 BHP 65.078
 WET CORRECTION F-TR = 0.85370 EXHAUST MOLE. WT. = 27.097 EXHAUST DENSITY = 0.070160 EXHAUST FLOW RATE = 7408.9
 MEASURED CONC. PART PER MILLION WET HC PPM 2115.7 NOX PPM 189.52 CO DRY 9.3254 PER CENT CO2 DRY 12.949 O2 DRY 0.16274
 CORRECTED CONC. TO WET BASIS HC 7.9611 NOX 7.9611 CO 11.055 PER CENT CO2 DRY 0.13893 O2 DRY 0.13893
 EMISSION RATE HC 0.56274 NOX 0.16709 CO 42.822
 EMISSION MASS/MODE HC 0.056274 NOX 0.016709 CO 4.2822
 EMISSION MASS/RATED HP HC 0.00035171 NOX 0.00010443 CO 0.026764
 MODE EMLS./STD. CYCLE % HC 18.511 NOX 6.9621 CO 63.723
 CAL. FUEL AIR RATIO = 0.083660 MEAS. FUEL AIR RATIO = 0.087558 DIFF MEAS. & CAL. F/A PERCENT = -4.4522
 CYL TEMP DEG.F CYL-1 329.06 CYL-2 338.91 CYL-3 339.48 CYL-4 338.11
 EXT GAS TEMP DEG.F EXT-1 1061.3 EXT-2 -454.00 EXT-3 50.640 EXT-4 451.78 SEXT-1 1114.3 SEXT-2 1114.8
 ENGINE OIL EOILT 187.46 SOILT 198.92 OILP 72.927 MANIFOLD PRESSURE = 18.659
 DYMO COND. TORQUE 141.60 RPM 2303.4 CYL. BACK PRESSURE = 29.404
 INDUCTION AIR IAIRT1 78.192 IAIRT2 78.139 TAIRT1 -63.118 TAIRT2 75.490
 ORIFICE AIR TEMP 78.713 DELTAP 0.086308 ORFP 53.477 FLOW 295.68
 CELL TEMP. = 76.599 HEATER TEMP = 92.863 COOLER TEMP = 83.230

4/5

NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDELL REC 04/13/76 10:47:18.851 FAC SEX15 PGM C003 RDG 3263

LEANOUT TO CL APP 25 RTDC --80 DEG HUM=0% MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.360 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 79.004 PRESS 29.370 CFM 213.53 DRY FLOW 963.16 VAPOR FLOW 0.26847 PRESS TOTAL 14.907

COMB. FUEL TEMP 67.975 PRESS 5.4146 DENSITY 44.965 TURBO FLOW 82.805 FLOW TRON 80.474 FPIP 6.0690

COOLING AIR TEMP 80.602 UDEL-HOOD 3.2962 DEL-HOOD 4.1981 FLOW 10493. REL-HUM 1.3600 DEW-POINT -13.755

REL-HUM 1 1.3600 2 38.128 HUMIDITY 1.9512 % H2O VAPOR 0.044805 CORRECTED HP 154.30

ENG. COND. F/A DRY 0.083552 F/A WET 0.083529 EQU. RATIO 1.2470 RPM-1 2693.5 RPM-2 2695.1 TORQUE 287.95 BHP 147.68

WET CORRECTION FACTOR = 0.84443 EXHAUST MOLE. WT. = 27.401 EXHAUST DENSITY = 0.070948 EXHAUST FLOW RATE = 14713.

MEASURED CONC. HC PPM 1588.0 NOX PPM 316.91 CO DRY 8.17990 PER CENT CO2 DRY 13.953 O2 DRY 0.094970
CORRECTED CONC. TO WET BASIS HC 6.9074 CO 11.782 CO2 0.084418

EMISSION RATE HC 0.83879 NOX 0.55489 CO 73.785
EMISSION MASS/MODE 0.0041940 0.0027744 0.36893
EMISSION MASS/RATED HP 2.6212E-05 1.7340E-05 0.0023058
MODE EMIS./STD. CYCLE % 1.3796 1.1560 5.4900

CAL. FUEL AIR RATIO = 0.081073 MEAS. FUEL AIR RATIO = 0.083552 DIFF MEAS. & CAL. F/A PERCENT = -2.9655

CYL TEMP DEG.F CYL-1 406.22 CYL-2 420.21 CYL-3 409.71 CYL-4 408.30

EXT GAS TEMP DEG.F EXT-1 1820.2 EXT-2 -219.45 EXT-3 460.72 EXT-4 805.82 SEXT-1 1311.4 SEXT-2 1306.8

ENGINE OIL EOILT 187.86 SOILT 211.88 OILP 74.315 MANIFOLD PRESSURE = 28.341

DYNO COND. TORQUE 293.57 RPM 2603.0 CYL. BACK PRESSURE = 29.510

INDUCTION AIR IAIRT1 78.925 IAIRT2 79.004 TAIRT1 -39.921 TAIRT2 75.359

ORIFICE AIR TEMP 79.755 DELTAP 4.9293 ORFP 53.626 FLOW 3051.4

CELL TEMP. = 77.528 HEATER TEMP = 97.332 COOLER TEMP = 83.451

NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDEII REC 04/13/76 10:50:21.953 FAC SEX15 PGM C003 RDG 3264

LEANOUT TO CL APP. 25 BTDC --80 DEG HUM=0% MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.360 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 79.799 PRESS 29.406 CFM 174.64 DRY FLOW 777.53 VAPOR FLOW 0.22013 PRESS TOTAL 14.728

COMB. FUEL TEMP 68.520 PRESS 5.4809 DENSITY 44.951 TURBO FLOW 64.105 FLOW TRON 62.556 FPIP 6.0993

COOLING AIR TEMP 81.016 UDEL-HOOD 3.2441 DEL-HOOD 4.2289 FLOW 10401. REL-HUM 1.3296 DEW-POINT -13.700

REL-HUM 1.3296 HUMIDITY 38.266 % H2O VAPOR CORRECTED HP 1.9918 0.045508 122.85

ENG. COND. F/A DRY 0.080455 F/A WET 0.080433 EQU. RATIO 1.2008 RPM-1 2430.4 RPM-2 2431.3 TORQUE 259.36 BHP 120.02

WET CORRECTION FACTOR = 0.83671 EXHAUST MOLE. WT. = 27.644 EXHAUST DENSITY = 0.071577 EXHAUST FLOW RATE = 11739.

MEASURED CONC. PART PER MILLION WET HC PPM 1565.9 NOX PPM 654.39 CO DRY 7.3562 CO2 DRY 14.608 O2 DRY 0.12691
CORRECTED CONC. TO WET BASIS HC 6.1550 NOX 12.222 CO 0.10619

EMISSION RATE HC 0.65994 NOX 0.91420 CO 52.459
EMISSION MASS/MODE 0.054995 0.076183 4.3716
EMISSION MASS/RATED HP 0.00034372 0.00047614 0.027323
MODE EMIS./STD. CYCLE % 18.090 31.743 65.054

CAL. FUEL AIR RATIO = 0.079333 MEAS. FUEL AIR RATIO = 0.080455 DIFF MEAS. & CAL. F/A PERCENT = -1.3945

CYL TEMP DEG. F CYL-1 380.70 CYL-2 392.12 CYL-3 418.92 CYL-4 415.19

EXT GAS TEMP DEG. F EXT-1 1521.3 EXT-2 -339.34 EXT-3 485.74 EXT-4 891.32 SEXT-1 1277.3 SEXT-2 1275.2

ENGINE OIL FOILT 188.11 SOILT 180.89 OILP 73.095 MANIFOLD PRESSURE = 26.901

DYNO COND. TORQUE 271.78 RPM 2373.2 CYL. BACK PRESSURE = 29.468

INDUCTION AIR IAIRT1 79.764 IAIRT2 79.799 TAIRT1 -11.802 TAIRT2 75.872

ORIFICE AIR TEMP 80.099 DELTAP 1.0361 ORFP 53.363 FLOW 1438.9

CELL TEMP. = 78.757 HEATER TEMP = 100.04 COOLER TEMP = 87.480

497

NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDELL REC 04/13/76 10:53:58.168 FAC SEX15 PGM C003 RDG 3265

LEANOUT TO CL APP 25 BTDC --80 DEG HUM=08 MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.360 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	80.725	29.353	108.33	475.50	0.12988	14.536

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	71.358	5.5530	44.875	43.522	41.644	6.0894

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	81.721	3.1215	4.1110	10181.	1.2283	-14.465

REL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP
	1.2283	56.286	1.9120	0.043906 67.762

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.087579	0.087555	1.3072	2351.3	2352.2	147.36	65.975

WET CORRECTION FACTOR = 0.85280 EXHAUST MOLE. WT. = 27.095 EXHAUST DENSITY = 0.070156 EXHAUST FLOW RATE = 7373.3

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	2142.6	178.26	9.3758	12.902	0.12607
CORRECTED CONC. TO WET BASIS			7.9957	11.003	0.10751

EMISSION RATE	HC	NOX	CO	
	0.56715	0.15641	42.801	
	EMISSION MASS/MODE	0.056715	0.015641	4.2801
	EMISSION MASS/RATED HP	0.00035447	9.7754E-05	0.026750
MODE EMIS./STD. CYCLE %	18.656	6.5169	63.691	

CAL. FUEL AIR RATIO = 0.083905 MEAS. FUEL AIR RATIO = 0.087579 DIFF MEAS. & CAL. F/A PERCENT = -4.1958

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	332.62	340.86	344.55	341.68

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1287.3	-62.775	288.52	780.42	1125.7	1126.7

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 18.604
	186.97	256.13	72.771	

DYNO COND.	TORQUE	RPM	CYL BACK PRESSURE = 29.405
	141.31	2290.3	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	80.752	80.725	14.722	76.429

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	80.787	2.0192	53.339	1987.2

CELL TEMP. = 79.658 HEATER TEMP = 93.713 COOLER TEMP = 87.754

8/bh

NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDELL REC 04/13/76 11:01:05.064 FAC SEX15 PGH C003 RDG 3266

LEANOUT 25 BTDC TO CL APP 80 DEG. HUM=0% MCDE = 3.0000 NO. SCANS =

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.360 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP PRESS CFM DRY FLOW VAPOR FLOW PRESS TOTAL
78.492 29.351 212.54 956.48 0.28121 14.897

COMB. FUEL TEMP PRESS DENSITY TURBO FLOW FLOW TRON FPIP
66.641 5.4347 45.001 78.588 77.081 6.0219

COOLING AIR TEMP UDEL-HOOD DEL-HOOD FLOW REL-HUM DEW-POINT
80.319 2.9956 3.8245 9950.1 1.4578 -12.920

REL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP
1.4578 16.280 2.0580 0.047259 153.67

ENG. COND. F/A DRY F/A WET FQU. RATIO RPM-1 RPM-2 TORQUE BHP
0.080588 0.080564 1.2028 2693.8 2695.5 286.65 147.03

WET CORRECTION FACTOR = 0.83927 EXHAUST MOLE. WT. = 27.634 EXHAUST DENSITY = 0.071550 EXHAUST FLOW RATE = 14449.

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM NOX PPM CO DRY CO2 DRY O2 DRY
1338.8 369.54 6.99670 14.935 0.058866
CORRECTED CONC. TO WET BASIS 5.8721 12.534 0.049404

499

EMISSION RATE HC NOX CO
0.69449 0.63540 61.599
EMISSION MASS/MODE 0.0034724 0.0031770 0.30799
EMISSION MASS/RATED HP 2.1703E-05 1.9856E-05 0.0019250
MODE EMISS./STD. CYCLE % 1.1423 1.3238 4.5833

CAL. FUEL AIR RATIO = 0.078694 MEAS. FUEL AIR RATIO = 0.080588 DIFF MEAS. & CAL. F/A PERCENT = -2.3499

CYL TEMP DEG. F CYL-1 CYL-2 CYL-3 CYL-4
427.29 439.47 426.15 428.33

EXT GAS TEMP DEG. F EXT-1 EXT-2 EXT-3 EXT-4 SEXT-1 SEXT-2
1425.8 -454.00 650.25 943.59 1349.1 1344.9

ENGINE OIL EOILT SOILT OILP MANIFOLD PRESSURE = 28.342
188.76 185.18 73.823

DYNO COND. TORQUE RPM CYL. BACK PRESSURE = 29.510
292.89 2632.8

INDUCTION AIR IAIRT1 IAIRT2 IAIRT1 IAIRT2
78.413 78.492 13.199 76.233

ORIFICE AIR TEMP DELTAP DRFP FLOW
78.545 1.0484 53.391 1449.3

CELL TEMP. = 77.882 HEATER TEMP = 92.215 COOLER TEMP = 88.250

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OF POOR QUALITY

NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDEII REC 04/13/76 11:04:35.475 FAC SEX15 PGM C003 RDG 3267

LEANOUT 25 BTDC TO CL APP 80 DEG. HUM=0% MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.360 RATED HP. = 160.00 HC RATIO = 2.1250

COND. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	78.669	29.303	174.56	777.68	0.22586	14.730

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	67.751	5.4656	44.971	61.107	61.989	6.0324

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	80.522	2.9859	3.8785	9932.1	1.4157	-13.295

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	1.4157	53.087	2.0330	0.046694	123.23

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.079710	0.079687	1.1897	2431.3	2432.2	260.39	120.54

WET CORRECTION FACTOR = 0.83960 EXHAUST MOLE. WT. = 27.704 EXHAUST DENSITY = 0.071731 EXHAUST FLOW RATE = 11708.

MEASURED CONC.	PART PER MILLION WET		CO DRY	PER CENT	
	HC PPM	NOX PPM		CO2 DRY	O2 DRY
	1498.7	792.48	6.48670	15.344	0.10695
CORRECTED CONC. TO WET BASIS			5.4463	12.883	0.089796

EMISSION RATE	HC	NOX	CO
	0.63000	1.1042	46.297
EMISSION MASS/MODE	0.052500	0.092017	3.8581
EMISSION MASS/RATED HP	0.00032812	0.00057511	0.024113
MODE EMTS./STD. CYCLE %	17.270	38.340	57.412

CAL. FUEL AIR RATIO = 0.077662 MEAS. FUEL AIR RATIO = 0.079710 DIFF MEAS. & CAL. F/A PERCENT = -2.5696

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	390.12	403.79	425.04	422.39

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	689.47	-454.00	704.38	999.13	1305.0	1303.3

ENGINE OIL	OILT	SOILT	OILP	MANIFOLD PRESSURE = 26.900
	188.72	248.69	72.715	

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.409
	250.61	2358.2	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	78.616	78.669	-95.355	75.573

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	79.261	1.0458	53.384	1446.6

CELL TEMP. = 79.013 HEATER TEMP = 91.702 COOLER TEMP = 86.383

500

NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDEII REC 04/13/76 11:09:00.745 FAC SEX15 PGM C003 RDG 3268

LEANOUT 25 BTDC TO CL APP 80 DEG. HUM=0% MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARGMETRIC PRESSURE = 29.360 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	79.464	29.352	107.39	471.79	0.13396	14.536

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	70.805	5.5577	44.890	42.205	40.042	6.0882

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	80.787	2.9729	3.8638	9907.9	1.3307	-13.860

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	1.3307	46.663	1.9876	0.045643	66.231

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.084873	0.084849	1.2668	2350.9	2352.8	144.26	64.572

WET CORRECTION FACTOR = 0.84739 EXHAUST MOLE. WT. = 27.299 EXHAUST DENSITY = 0.070685 EXHAUST FLOW RATE = 7242.9

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1964.5	241.42	8.45330	13.848	0.11013
CORRECTED CONC. TO WET BASIS			7.1532	11.734	0.093324

	HC	NOX	CO
EMISSION RATE	0.51081	0.20809	37.667
EMISSION MASS/MODE	0.051081	0.020809	3.7667
EMISSION MASS/RATED HP	0.00031926	0.00013005	0.023542
MODE EMIS./STD. CYCLE %	16.803	8.5702	56.052

CAL. FUEL AIR RATIO = 0.081674 MEAS. FUEL AIR RATIO = 0.084873 DIFF MEAS. & CAL. F/A PERCENT = -3.7687

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	340.34	350.05	352.53	352.35

EXT GAS TEMP DEG. F	FXT-1	EXT-2	EXT-3	EXT-4	SXT-1	SXT-2
	834.89	-454.00	653.61	862.54	1152.4	1154.0

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 18.636
	187.46	214.33	72.791	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.429
	137.09	2301.4	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	79.473	79.464	-36.501	75.988

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	79.728	1.0352	53.247	1438.8

CELL TEMP. = 79.561 HEATER TEMP = 97.746 COOLER TEMP = 87.852

501

NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDEII REC 04/13/76 11:12:38.920 FAC SEX15 PGM C003 RDG 3269

LEANOUT 25 BTDC TO CL APP 80 DEG. HUM=02 MCDE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.360 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	79.896	29.381	212.69	959.02	0.29697	14.908

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	69.163	5.4401	44.934	79.570	77.216	6.0882

COOLING AIR	TEMP	UNEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	81.949	2.9536	3.9673	9871.6	1.4673	-12.075

REL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP
	1.4673	32.507	2.1676	0.049775 154.82

ENG. COND.	F/A DRY	F/A WET	EQV. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.080515	0.080490	1.2017	2695.3	2696.4	288.58	148.10

WET CORRECTION FACTOR = 0.83909 EXHAUST MOLE. WT. = 27.539 EXHAUST DENSITY = 0.071565 EXHAUST FLOW RATE = 14483.

MEASURED CONC.	PART PFR MILLION WET	PER CENT	NO2 DRY
	HC PPM	CO DRY	CO2 DRY
	1409.6	6.95210	15.029
	NOX PPM	5.8335	0.073587
CORRECTED CONC. TO WET BASIS		12.611	0.061746

EMISSION RATE	HC	NOX	CO
	0.73297	0.68308	61.340
EMISSION MASS/MODE	0.0036648	0.0034154	0.30670
EMISSION MASS/RATED HP	2.2905E-05	2.1346E-05	0.0019169
MODE EMIS./STD. CYCLE %	1.2055	1.4231	4.5640

CAL. FUEL AIR RATIO = 0.078559 MEAS. FUEL AIR RATIO = 0.080515 DIFF MEAS. & CAL. F/A PERCENT = -2.4301

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	422.20	446.35	426.51	427.21

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1366.7	-454.00	876.54	1002.8	1350.3	1346.5

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.491
	188.52	185.58	74.227	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.508
	284.74	2596.0	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	79.746	79.896	-50.167	75.543

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	80.575	2.0070	53.296	1981.9

CELL TEMP. = 80.575 HEATER TEMP = 96.851 COOLER TEMP = 86.170

SOR

NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDEII REC 04/13/76 11:15:53.352 FAC SEX15 PGM C003 RDG 3270

LEANOUT 25 BTDC TO CL APP 80 DEG. HUM=02 MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.360 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	79.817	29.367	174.02	773.95	0.23595	14.716

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	69.422	5.4770	4.327	63.424	61.803	6.0738

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	81.615	3.0225	3.8503	9999.9	1.4298	-12.535

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	1.4298	63.826	2.1340	0.049004	122.89

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.079854	0.079829	1.1918	2431.3	2432.0	259.33	120.05

WET CORRECTION FACTOR = 0.84023 EXHAUST MOLE. WT. = 27.692 EXHAUST DENSITY = 0.071702 EXHAUST FLOW RATE = 11659.

MEASURED CONC.	PART PER MILLION WET	PER CENT	
	HC PPM	CO2 DRY	O2 DRY
	1475.7	15.485	0.10635
CORRECTED CONC. TO WET BASIS	NOX PPM	CO	0.089359
	781.18	13.011	
	6.44530		
	5.4155		

EMISSION RATE	HC	NOX	CO
	0.61770	1.0838	45.841
EMISSION MASS/MODE	0.051475	0.090321	3.8201
EMISSION MASS/RATED HP	0.00032172	0.00056450	0.023875
MODE EMIS./STD. CYCLE %	16.933	37.634	56.846

CAL. FUEL AIR RATIO = 0.077512 MEAS. FUEL AIR RATIO = 0.079854 DIFF MEAS. & CAL. F/A PERCENT = -2.9331

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	390.93	404.13	424.27	424.59

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1314.6	-454.00	1001.8	1134.3	1305.6	1304.3

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 26.845
	188.78	173.55	72.887	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.480
	257.94	2347.3	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	79.764	79.817	-61.706	75.998

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	80.355	1.9843	53.215	1971.7

CFL TEMP. = 80.223 HEATER TEMP = 99.233 COOLER TEMP = 87.162

503

NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDELL REC 04/13/76 11:23:31.369 FAC SEX15 PGM C003 RDG 3272

LEANOUT 25 BTDC TO CL APP 80 DEG. HUM=0% MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.360 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	78.360	29.350	212.02	955.55	0.29584	14.901

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	68.046	5.4518	44.964	76.890	73.954	6.1002

COOLING AIR	TEMP	WDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	80.611	2.9577	3.8680	9879.4	1.5423	-12.085

REL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP
	1.5423	-10.785	2.1672	0.049766 154.15

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.077394	0.077370	1.1551	2692.8	2694.0	287.73	147.52

WET CORRECTION FACTOR = 0.83414 EXHAUST MOLE. WT. = 27.891 EXHAUST DENSITY = 0.072217 EXHAUST FLOW RATE = 14259.

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	1309.6	585.70	5.63410	16.049	0.073507	
CORRECTED CONC. TO WET BASIS			4.6996	13.387	0.061315	

	HC	NOX	CO
EMISSION RATE	0.67043	0.99388	48.653
EMISSION MASS/MODE	0.0033522	0.0049694	0.24327
EMISSION MASS/RATED HP	2.0951E-05	3.1059E-05	0.0015204
MODE EMISS./STD. CYCLE %	1.1027	2.0706	3.6200

CAL. FUEL AIR RATIO = 0.076104 MEAS. FUEL AIR RATIO = 0.077394 DIFF MEAS. & CAL. F/A PERCENT = -1.6664

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	427.68	440.49	433.41	431.38

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	887.86	-454.00	922.96	1104.7	1378.9	1374.7

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.497
	188.79	191.57	74.035	

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.486
	290.77	2621.1	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	78.192	78.360	-1.7786	75.570

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	79.367	3.0407	53.481	2414.3

CELL TEMP. = 79.278 HEATER TEMP = 94.672 COOLER TEMP = 84.763

505

NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDETT REC 04/13/76 11:26:06:120 FAC SEX15 PGM C003 RDG 3273

LEANOUT 25 BTDC TO CL APP 80 DEG. HUM=0% MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.360 RATE) HP. = 160.00 HC RATIO= 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	78.713	29.335	174.53	778.52	0.23993	14.744

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	69.065	5.4773	44.936	60.884	59.199	6.0546

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	80.813	2.9513	3.8624	9867.4	1.5015	-12.330

REL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP
	1.5015	35.122	2.1573	0.049539 123.34

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.076040	0.076016	1.1349	2431.0	2431.9	260.63	120.64

WFT CORRECTION FACTOR = 0.83138 EXHAUST MOLE. WT. = 28.003 EXHAUST DENSITY = 0.072506 EXHAUST FLOW RATE = 11557.

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1324.8	1108.3	5.23820	16.356	0.13283
CORRECTED CONC. TO WFT BASIS			4.3550	13.598	0.11044

EMISSION RATE	HC	NOX	CO
	0.54967	1.5243	36.540
EMISSION MASS/MODE	0.045806	0.12702	3.0450
EMISSION MASS/RATED HP	0.00028629	0.00079388	0.019031
MODE EMIS./STD. CYCLE %	15.068	52.925	45.313

CAL. FUEL AIR RATIO = 0.075267 MEAS. FUEL AIR RATIO = 0.076040 DIFF MEAS. & CAL. F/A PERCENT = -1.0164

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	403.28	415.32	428.67	427.11

FXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1719.1	-454.00	842.79	1131.4	1332.7	1331.2

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE =
	188.96	141.18	72.927	26.981

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE =
	243.46	2368.8	29.429

INDUCTION AIR	IAIRT1	IAIRT2	IAIRI1	TAIRT2
	78.660	78.713	-58.041	75.396

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	79.808	0.074207	53.177	277.15

CELL TEMP. = 79.287 HEATER TEMP = 85.921 COOLER TEMP = 83.797

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NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDELL REC 04/13/76 11:29:35.165 FAC SEX15 PGM C003 RDG 3274
 LEANOUT 25 BTDC TO CL APP 80 DEG. HUM=0% MODE = 5.0000 NO. SCANS = 5
 ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.360 RATED HP. = 160.00 HC RATIO = 2.1250
 COMB. AIR TEMP 79.393 PRESS 29.360 CFM 106.24 DRY FLOW 466.92 VAPOR FLOW 0.13649 PRESS TOTAL 14.534
 COMB. FUEL TEMP 72.266 PRESS 5.5781 DENSITY 44.851 TURBO FLOW 39.541 FLOW TRON 38.008 FPIP 6.0919
 COOLING AIR TEMP 80.875 UDEL-HOOD 2.8589 DEL-HOOD 3.7808 FLOW 9692.6 REL-HUM 1.3728 DEW-POINT -13.405
 REL-HUM 1 1.3728 2 42.368 HUMIDITY 2.0462 % H2O VAPOR 0.046987 CORRECTED HP 67.073
 ENG. COND. F/A DRY 0.081401 F/A WET 0.081377 EQU. RATIO 1.2149 RPM-1 2351.2 RPM-2 2352.2 TORQUE 146.10 BHP 65.405
 WET CORRECTION FACTOR = 0.84241 EXHAUST MOLE. WT. = 27.559 EXHAUST DENSITY = 0.071383 EXHAUST FLOW RATE = 7075.4
 MEASURED CONC. PART PER MILLION WET HC PPM 1797.5 NOX PPM 372.60 CO DRY 7.04240 PER CENT CO2 DRY 14.998 O2 DRY 0.11849
 CORRECTED CONC. TO WET BASIS HC 5.9325 CO 12.634 O2 DRY 0.099818
 EMISSION RATE HC 0.45657 NOX 0.31372 CO 30.474
 EMISSION MASS/MODE 0.045657 0.331372 3.0474
 EMISSION MASS/RATED HP 0.00028536 0.00019607 0.019066
 MODE PMS./STD. CYCLE % 13.019 13.072 45.348
 CAL. FUEL AIR RATIO = 0.078743 MEAS. FUEL AIR RATIO = 0.081401 DIFF MEAS. & CAL. F/A PERCENT = -3.2650
 CYL TEMP DEG.F CYL-1 347.72 CYL-2 360.11 CYL-3 358.30 CYL-4 357.34
 EXT GAS TEMP DEG.F EXT-1 794.85 EXT-2 -454.00 EXT-3 930.45 EXT-4 963.23 SEXT-1 1173.4 SEXT-2 1175.2
 ENGINE OIL EOILT 187.72 SOILT 175.86 OILP 72.707 MANIFOLD PRESSURE = 18.520
 DYNO COND. TORQUE 137.49 RPM 2301.0 CYL. BACK PRESSURE = 29.419
 INDUCTION AIR IAIRT1 79.367 IAIRT2 79.393 TAIRT1 -105.68 TAIRT2 75.680
 ORIFICE AIR TEMP 80.699 DELTAP 1.9863 ORFP 53.275 FLOW 1972.0
 CELL TEMP. = 80.434 HEATER TEMP = 97.037 COOLER TEMP = 85.073

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NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDEII REC 04/13/76 11:34:18.466 FAC SEX15 PGM C003 RDG 3275
 LEANOUT 25 BTDC TO CL APP 80 DEG. HUM=0% MODE = 3.0000 NO. SCANS = 5
 ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.350 RATED HP. = 160.00 HC RATIO = 2.1250
 COMB. AIR TEMP 80.337 PRESS 29.339 CFM 212.90 DRY FLOW 958.96 VAPOR FLOW 0.30268 PRESS TOTAL 14.903
 COMB. FUEL TEMP 71.010 PRESS 5.4554 DENSITY 44.885 TURBO FLOW 76.574 FLOW TRON 74.404 FPIP 6.0858
 COOLING AIR TEMP 82.398 UDEL-HOOD 2.9298 DEL-HOOD 3.9186 FLOW 9826.9 REL-HUM 1.4738 DEW-POINT -11.770
 REL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP
 1.4738 52.285 2.2094 0.050735 154.98
 ENG. COND. F/A DRY F/A WET EQU. RATIO RPM-1 RPM-2 TORQUE BHP
 0.077588 0.077564 1.1580 2697.1 2698.5 288.05 147.92
 WET CORRECTION FACTOR = 0.83557 EXHAUST MOLE. WT. = 27.875 EXHAUST DENSITY = 0.072176 EXHAUST FLOW RATE = 14321.
 MEASURED CONC. PART PER MILLION WET PER CENT
 HC PPM NOX PPM CO DRY CO2 DRY O2 DRY
 1290.9 661.79 5.59350 16.150 0.096130
 CORRECTED CONC. TO WET BASIS 4.6738 13.495 0.080323
 EMISSION RATE HC NOX CO
 0.66372 1.1278 48.595
 EMISSION MASS/MODE 0.0033186 0.0056392 0.24298
 EMISSION MASS/RATED HP 2.0741E-05 3.5245E-05 0.0015186
 MODE EMIS./STD. CYCLE % 1.0916 2.3497 3.6157
 CAL. FUEL AIR RATIO = 0.075931 MEAS. FUEL AIR RATIO = 0.077588 DIFF MEAS. & CAL. F/A PERCENT = -2.1361
 CYL TEMP DEG.F CYL-1 CYL-2 CYL-3 CYL-4
 415.17 436.20 428.24 422.04
 EXT GAS TEMP DEG.F EXT-1 EXT-2 EXT-3 EXT-4 SEXT-1 SEXT-2
 946.76 -454.00 1026.0 1107.9 1369.6 1365.2
 ENGINE OIL EOILT SOILT OILP MANIFOLD PRESSURE = 28.454
 188.05 212.51 74.451
 DYNO COND. TORQUE RPM CYL BACK PRESSURE = 29.484
 289.86 2627.3
 INDUCTION AIR IAIRT1 IAIRT2 TAIRT1 TAIRT2
 80.214 80.337 -51.510 75.951
 ORIFICE AIR TEMP DELTAP ORFP FLOW
 81.738 2.0028 53.411 1977.8
 CELL TEMP. = 81.033 HEATER TEMP = 86.130 COOLER TEMP = 83.469

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MASA-LEWIS PRELIMINARY DATA 04/13/76 CADDELL REC 04/13/76 11:37:04.956 FAC SEX15 PGM C003 RDG 3276

LEANOUT 25 BTDC TO CL APP 80 DEG. HUM=0% MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.350 RATE HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	79.614	29.347	174.26	775.46	0.24022	14.723

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	70.591	5.4782	44.896	61.502	58.938	6.0099

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	81.835	2.9198	3.8013	9808.1	1.4632	-12.270

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	1.4632	64.186	2.1684	0.049795	123.55

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.076004	0.075981	1.1344	2434.2	2435.6	260.48	120.73

WET CORRECTION FACTOR = 0.83169 EXHAUST MOLE. WT. = 28.006 EXHAUST DENSITY = 0.072514 EXHAUST FLOW RATE = 11510.

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1328.5	1144.1	5.18970	16.423	0.14961
CORRECTED CONC. TO WET BASIS			4.3163	13.659	0.12443

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	HC	NOX	CO
EMISSION RATE	0.54896	1.5671	36.068
EMISSION MASS/MODE	0.045747	0.13059	3.0057
EMISSION MASS/RATED HP	0.00028592	0.00081619	0.018785
MODE EMIS./STD. CYCLE %	15.048	54.412	44.727

CAL. FUEL AIR RATIO = 0.075129 MEAS. FUEL AIR RATIO = 0.076004 DIFF MEAS. & CAL. F/A PERCENT = -1.1516

CYL. TEMP. DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	400.59	414.25	426.94	427.14

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1546.8	454.00	904.83	1172.3	1329.8	1327.6

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 26.849
	188.78	213.78	72.823	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.445
	246.44	2379.7	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	79.552	79.614	-32.580	75.918

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	81.262	1.0718	53.524	1461.5

CELL TEMP. = 80.425 HEATER TEMP = 86.019 COOLER TEMP = 83.832

NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDELL REC 04/13/76 11:41:38.274 FAC SEX15 PGM C003 RDG 3277

LEANOUT 25 BTDC TO CL APP 80 DEG. HUM=0% MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.350 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 77.979 PRESS 29.346 CFM 106.33 DRY FLOW 467.40 VAPOR FLOW 0.14070 PRESS TOTAL 14.537

COMB. FUEL TEMP 71.581 PRESS 5.5704 DENSITY 44.870 TURBO FLOW 40.383 FLOW TRON 38.161 FPIP 6.1032

COOLING AIR TEMP 79.358 WDEL-HOOD 2.9151 DEL-HOOD 3.7390 FLOW 9799.2 REL-HUM 1.4813 DEW-POINT -12.935

REL-HUM 1 1.4813 2 44.330 HUMIDITY 2.1071 % H2O VAPOR CORRECTED HP 0.048386 66.709

ENG. COND. E/A DRY 0.081644 E/A WET 0.081620 EQU. RATIO 1.2186 RPM-1 2353.7 RPM-2 2355.2 TORQUE 145.39 BHP 65.158

WET CORRECTION FACTOR = 0.84261 EXHAUST MOLE. WT. = 27.550 EXHAUST DENSITY = 0.071333 EXHAUST FLOW RATE = 7089.3

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 1828.2 NOX PPM 372.64 CO DRY 7.17940 CO2 DRY 14.977 O2 DRY 0.15272
CORRECTED CONC. TO WET BASIS 6.0494 12.620 0.12868

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EMISSION RATE HC 0.46528 NOX 0.31437 CO 31.135
EMISSION MASS/MODE 0.046528 0.031437 3.1135
EMISSION MASS/RATED HP 0.00029080 0.00019648 0.019460
MODE EMIS./STD. CYCLE % 15.305 13.099 46.332

CAL. FUEL AIR RATIO = 0.078866 MEAS. FUEL AIR RATIO = 0.081644 DIFF MEAS. & CAL. F/A PERCENT = -3.4035

CYL TEMP DEG. F CYL-1 338.26 CYL-2 351.22 CYL-3 351.34 CYL-4 349.05

FXT GAS TEMP DEG. F FXT-1 1046.1 FXT-2 -454.00 FXT-3 1037.5 FXT-4 908.40 SEXT-1 1158.2 SEXT-2 1159.4

ENGINE OIL EOILT 187.18 SOILT 184.14 OILP 72.655 MANIFOLD PRESSURE = 18.492

DYNO COND. TORQUE 150.06 RPM 2294.3 CYL. BACK PRESSURE = 29.447

INDUCTION AIR IAIRT1 77.935 IAIRT2 77.979 TAIRT1 -24.580 TAIRT2 75.680

ORIFICE AIR TEMP 79.614 DELTAP 2.0376 DRFP 53.054 FLOW 1997.9

CELL TEMP. = 78.430 HEATER TEMP = 97.050 COOLER TEMP = 84.160

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NASA-LEWIS		PRELIMINARY DATA		04/13/76	CADDELL	REC 04/13/76 12:54:28.964	FAC SEX15	PGM C003	RDG 3278
LEANOUT 25 BTDC TO CL APP 80 DEG. HUM=03				MODE = 3.0000	NO. SCANS = 5				
ENGINE TIMING = 25.000		DEG.	BAROMETRIC PRESSURE = 29.320		RATED HP. = 160.00	HC RATIO = 2.1250			
COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL			
	79.755	29.301	213.52	960.00	0.25047	14.880			
COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP			
	74.089	5.4398	44.803	73.498	70.546	6.1077			
COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	RFL-HUM	DEW-POINT			
	80.998	2.9704	3.9020	9903.2	1.2399	-14.811			
REL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP					
	1.2399	57.198	1.8264	0.041940	156.47				
ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP		
	0.073486	0.073466	1.0968	2698.2	2699.3	290.49	149.24		
WET CORRECTION FACTOR = 0.82827		EXHAUST MOLE. WT. = 28.217		EXHAUST DENSITY = 0.073060		EXHAUST FLOW RATE = 14108.			
MEASURED CONC.	PART PER MILLION WET		PER CENT						
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY				
	1103.8	1127.3	3.8495	17.649	0.14955				
CORRECTED CONC. TO WET BASIS			3.1884	14.618	0.12387				
EMISSION RATE	HC	NOX	CO						
	0.55909	1.8927	32.659						
EMISSION MASS/MODE	0.0027954	0.0094635	0.16329						
EMISSION MASS/RATED HP	1.7471E-05	5.9147E-05	0.0010206						
MODE EMIS./STD. CYCLE %	0.91955	3.9431	2.4300						
CAL. FUEL AIR RATIO = 0.072743		MEAS. FUEL AIR RATIO = 0.073486		DIFF MEAS. & CAL. F/A PERCENT = -1.0106					
CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4					
	430.14	443.56	434.85	437.56					
EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2			
	901.37	-48.006	871.22	1007.3	1358.3	1358.4			
ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.318					
	150.27	224.22	75.596						
DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.479						
	294.42	2641.9							
INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2					
	79.658	79.755	8.0396	76.124					
ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW					
	83.172	2.9639	53.225	2376.5					
CELL TEMP. = 78.766	HEATER TEMP = 84.737		COOLER TEMP = 80.223						

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NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDEII REC 04/13/76 12:57:36.719 FAC SEX15 PGM C003 RDG 3279
 LEANOUT 25 BTDC TO CL APP 80 DEG. HUM=0% MODE = 4.0000 NO. SCANS = 5
 ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.320 RATED HP. = 160.00 HC RATIO = 2.1250
 COMB. AIR TEMP 79.949 PRESS 29.281 CFM 179.01 DRY FLOW 797.36 VAPOR FLOW 0.20201 PRESS TOTAL 14.727
 COMB. FUEL TEMP 73.529 PRESS 5.4818 DENSITY 44.818 TURBO FLOW 57.908 FLOW TRON 57.153 FPIP 6.0483
 COOLING AIR TEMP 81.333 UDEL-HOOD 2.9870 DEL-HOOD 3.8879 FLOW 9934.2 REL-HUM 1.1840 DEW-POINT -15.416
 REL-HUM 1 1.1840 2 55.493 HUMIDITY 1.7734 % H2O VAPOR CORRECTED HP 0.040724 123.47
 ENG. COND. F/A DRY 0.071678 F/A WET 0.071660 EQU. RATIO 1.0698 RPM-1 2433.8 RPM-2 2435.0 TORQUE 260.29 BHP 120.62
 WET CORRECTION FACTOR = 0.82204 EXHAUST MOLE. WT. = 28.371 EXHAUST DENSITY = 0.073460 EXHAUST FLOW RATE = 11635.
 MEASURED CONC. PART PER MILLION WET PER CENT
 HC PPM 979.40 NOX PPM 1807.8 CO DRY 3.8202 CO2 DRY 17.515 O2 DRY 0.30523
 CORRECTED CONC. TO WET BASIS 3.1403 14.398 0.25091
 EMISSION RATE HC 0.40909 NOX 2.5030 CO 26.527
 EMISSION MASS/MODE 0.034091 0.20858 2.2106
 EMISSION MASS/RATED HP 0.00021307 0.0013036 0.013816
 MODE EMIS./STD. CYCLE % 11.214 86.910 32.895
 CAL. FUEL AIR RATIO = 0.072324 MEAS. FUEL AIR RATIO = 0.071678 DIFF MEAS. & CAL. F/A PERCENT = 0.90108
 CYL TEMP DEG.F CYL-1 407.83 CYL-2 418.02 CYL-3 421.03 CYL-4 420.48
 EXT GAS TEMP DEG.F EXT-1 1450.7 EXT-2 -454.00 EXT-3 1021.3 EXT-4 1173.7 SEXT-1 1342.3 SEXT-2 1336.5
 ENGINE OIL EOILT 164.12 SOILT 255.56 OILP 73.083 MANIFOLD PRESSURE = 27.131
 DYND COND. TORQUE 264.53 RPM 2356.4 CYL. BACK PRESSURE = 29.439
 INDUCTION AIR IAIRT1 79.878 IAIRT2 79.949 TAIRT1 -75.064 TAIRT2 75.601
 ORIFICE AIR TEMP 83.647 DELTAP 2.0409 ORFP 53.351 FLOW 1992.0
 CELL TEMP. = 79.622 HEATER TEMP = 83.066 COOLER TEMP = 79.015

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NASA-LE, IS PRELIMINARY DATA 04/13/76 CADDELL REC 04/13/76 13:00:22.790 FAC SEX15 PGM C003 RDG 3280

LEANOUT 25 BTDC TO CL APP 80 DEG. HUM=03 MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.320 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 80.593 PRESS 29.325 CFM 106.65 DRY FLOW 467.76 VAPOR FLOW 0.11231 PRESS. TOTAL 14.512

COMB. FUEL TEMP 75.128 PRESS 5.5929 DENSITY 44.776 TURBO FLOW 38.818 FLOW TRON 36.289 FPIP 6.1374

COOLING AIR TEMP 81.782 UDEL-HOOD 3.0072 DEL-HOOD 3.8320 FLOW 9971.7 REL-HUM 1.0827 DEW-POINT -16.431

REL-HUM 1 1.0827 2 49.717 HUMIDITY 1.6808 % H2O VAPOR CORRECTED HP 0.038596 67.107

ENG. COND. F/A DRY 0.077579 F/A WET 0.077560 EQU. RATIO 1.1579 RPM-1 2351.3 RPM-2 2352.2 TORQUE 145.97 BHP 65.351

WET CORRECTION FACTOR = 0.83924 EXHAUST MOLE. WT. = 27.876 EXHAUST DENSITY = 0.072178 EXHAUST FLOW RATE = 6985.0

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 1564.5 NOX PPM 710.69 CO DRY 5.1170 CO2 DRY 16.614 O2 DRY 0.15136
CORRECTED CONC. TO WET BASIS CO DRY 4.2944 CO2 DRY 13.943 O2 DRY 0.12702

EMISSION RATE HC 0.39231 NOX 0.59074 CO 21.777
EMISSION MASS/MODE 0.039231 0.059074 2.1777
EMISSION MASS/RATED HP 0.00024519 0.00036921 0.013611
MODE EMIS./STD. CYCLE % 12.905 24.614 32.407

CAL. FUEL AIR RATIO = 0.075032 MEAS. FUEL AIR RATIO = 0.077579 DIFF MEAS. & CAL. F/A PERCENT = -3.2831

CYL TEMP DEG.F CYL-1 358.99 CYL-2 363.17 CYL-3 369.78 CYL-4 368.25

EXT GAS TEMP DEG.F EXT-1 946.08 EXT-2 -454.00 EXT-3 1107.4 EXT-4 1007.3 SEXT-1 1190.1 SEXT-2 1190.3

ENGINE OIL EOILT 177.47 SOILT 186.50 OILP 73.211 MANIFOLD PRESSURE = 18.632

DYNO COND. TORQUE 149.03 RPM 2308.4 CYL. BACK PRESSURE = 29.379

INDUCTION AIR IAIRT1 80.593 IAIRT2 80.593 TAIRT1 -75.593 TAIRT2 76.013

ORIFICE AIR TEMP 84.130 DELTAP 2.0264 ORFP 53.251 FLOW 1984.4

CELL TEMP. = 80.346 HEATER TEMP = 82.678 COOLER TEMP = 79.921

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NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDELL REC 04/13/76 13:14:19.746 FAC SEX15 PGM C003 RDG 3281

LEANOUT 25 BTDC TO CL APP 80 DEG. HUM=0% MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.320 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	80.478	29.318	211.73	949.75	0.27402	14.869

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	71.937	5.4581	44.860	70.674	69.412	6.0780

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	82.697	2.9239	3.9205	9815.9	1.3380	-13.250

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	1.3380	22.088	2.0196	0.046377	152.98

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.073084	0.073063	1.0908	2692.0	2693.5	284.60	145.88

WET CORRECTION FACTOR = 0.82379 EXHAUST MOLE. WT. = 28.251 EXHAUST DENSITY = 0.073148 EXHAUST FLOW RATE = 13936.

MEASURED CONC.	PART PER MILLION WET		PER CENT	
	HC PPM	NOX PPM	CO DRY	O2 DRY
	1134.1	902.79	4.0183	17.454
CORRECTED CONC. TO WET BASIS			3.3103	14.378
				0.068645

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	HC	NOX	CO
EMISSION RATE	0.56742	1.4972	33.493
EMISSION MASS/MODE	0.0028371	0.0074861	0.16746
EMISSION MASS/RATED HP	1.7732E-05	4.6788E-05	0.0010467
MODE EMIS./STD. CYCLE %	0.93326	3.1192	2.4920

CAL. FUEL AIR RATIO = 0.073210 MEAS. FUEL AIR RATIO = 0.073084 DIFF MEAS. & CAL. F/A PERCENT = 0.17135

CYL TEMP DEG.F.	CYL-1	CYL-2	CYL-3	CYL-4
	439.39	457.72	443.06	444.42

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	961.39	-240.33	1289.1	1173.7	1420.2	1415.6

ENGINE OIL	OILTY	SOILT	OILP	MANIFOLD PRESSURE = 28.468
	188.68	228.72	73.987	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.492
	276.58	2623.8	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	80.355	80.478	-104.75	76.979

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	83.084	2.0153	53.265	1981.2

CELL TEMP. = 79.773 HEATER TEMP = 82.116 COOLER TEMP = 81.021

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NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDE11 REC 04/13/76 13:17:24.397 FAC SEX15 PGM C003 RDG 3282
 LEANOUT 25 BTDC TO CL APP 80 DEG. HUM=03 MODE = 4.0000 NO. SCANS = 5
 ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.310 RATED HP. = 160.00 HC RATIO = 2.1250
 COMB. AIR TEMP 81.333 PRESS 29.275 CFM 182.11 DRY FLOW 808.78 VAPOR FLOW 0.23676 PRESS TOTAL 14.733
 COMB. FUEL TEMP 72.515 PRESS 5.4962 DENSITY 44.345 TURBO FLOW 59.851 FLOW TRON 59.220 FPIP 6.0945
 COOLING AIR TEMP 83.286 UDEL-HOOD 2.9815 DEL-HOOD 3.8779 FLOW 9923.9 REL-HUM 1.3082 DEW-POINT -13.165
 REL-HUM 1 1.3082 2 20.682 HUMIDITY 2.0492 % H2O VAPOR CORRECTED HP 124.13
 ENG. COND. F/A DRY 0.073221 F/A WET 0.073199 EQU. RATIO 1.0928 RPM-1 2437.5 RPM-2 2438.8 TORQUE 260.86 BHP 121.07
 WET CORRECTION FACTOR = 0.82986 EXHAUST M/L. WT. = 28.239 EXHAUST DENSITY = 0.073118 EXHAUST FLOW RATE = 11874.
 MEASURED CONC. PART PER MILLION WET PER CENT
 HC PPM 962.80 NOX PPM 1869.9 CO DRY 4.0515 CO2 DRY 17.261 O2 DRY 0.33679
 CORRECTED CONC. TO WET BASIS 3.3522 14.324 0.27949
 EMISSION RATE HC 0.41043 NOX 2.6473 CO 28.985
 EMISSION MASS/MODE 0.034203 0.22019 2.4154
 EMISSION MASS/RATED HP 0.00021377 0.0013762 0.015096
 MODE EMIS./STD. CYCLE % 11.251 91.745 35.944
 CAL. FUEL AIR RATIO = 0.072632 MEAS. FUEL AIR RATIO = 0.073221 DIFF MEAS. & CAL. F/A PERCENT = -0.80411
 CYL TEMP DEG. CYL-1 438.97 CYL-2 420.03 CYL-3 426.20 CYL-4 424.10
 EXT GAS TEMP DEG.F EXT-1 1404.7 EXT-2 -454.00 EXT-3 1220.8 EXT-4 1420.4 SEXT-1 1376.9 SEXT-2 1375.1
 ENGINE OIL FOILT 188.85 SOILT 207.36 OILP 72.719 MANIFOLD PRESSURE = 27.388
 DYMO COND. TORQUE 263.82 RPM 2378.3 CYL. BACK PRESSURE = 29.424
 INDUCTION AIR IAIRT1 81.289 IAIRT2 81.333 TAIRT1 -45.512 TAIRT2 77.397
 ORIFICE AIR TEMP 83.559 DELTAP 0.057506 ORFP 53.230 FLOW 223.54
 CELL TEMP. = 80.716 HEATER TEMP = 82.109 COOLER TEMP = 81.500

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NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDELL REC 04/13/76 13:20:12.163 FAC SEX15 PGM C003 RDG 3283

LEANOUT 25 BTDC TO CL APP 80 DEG, HUM=0% MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.310 RATED HP.= 160.00 HC RATIO= 2.1250

COMB. AIR TEMP 82.011 PRESS 29.311 CFM 105.90 DRY FLOW 462.82 VAPOR FLOW 0.12041 PRESS TOTAL 14.507

COMB. FUEL TEMP 75.012 PRESS 5.5968 DENSITY 44.779 TURBO FLOW 37.340 FLOW TRON 35.299 FPIP 6.1932

COOLING AIR TEMP 83.752 UDEL-HOOD 2.9378 DEL-HOOD 3.8181 FLOW 9842.0 REL-HUM 1.1200 DEW-POINT -15.241

REL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP 1.1200 47.903 1.8212 0.041821 67.427

ENG. COND. F/A DRY 0.076268 F/A WET 0.076249 EQU. RATIO 1.1383 RPM-1 2351.9 RPM-2 2352.8 TORQUE 146.38 BHP 65.550

WET CORRECTION FACTOR = 0.83110 EXHAUST MOLE. WT. = 27.984 EXHAUST DENSITY = 0.072457 EXHAUST FLOW RATE = 6876.3

MEASURED CONC. PART PER MILLION WET PER CENT HC PPM NOX PPM CO DRY CO2 DRY O2 DRY 1485.7 693.81 5.23210 16.537 0.12703 CORRECTED CONC. TO WET BASIS 4.3484 13.744 0.10558

515

EMISSION RATE HC 0.36677 NOX 0.56773 CO 21.708 EMISSION MASS/MODE 0.036677 0.056773 2.1708 EMISSION MASS/RATED HP 0.00022923 0.00035483 0.013567 MODE FMS./STD. CYCLE % 12.065 23.655 32.304

CAL. FUEL AIR RATIO = 0.075258 MEAS. FUEL AIR RATIO = 0.076268 DIFF MEAS. & CAL. F/A PERCENT = -1.3245

CYL TFMP DEG.F CYL-1 359.87 CYL-2 364.51 CYL-3 368.76 CYL-4 370.77

EXT GAS TEMP DEG.F EXT-1 1550.6 EXT-2 -454.00 EXT-3 1317.6 EXT-4 1182.7 SEXT-1 1221.1 SEXT-2 1223.6

ENGINE OIL EJILT 188.04 SOILT 265.26 OILP 72.239 MANIFOLD PRESSURE = 18.578

DYNO COND. TORQUE 139.76 RPM 2301.5 CYL. BACK PRESSURE = 29.340

INDUCTION AIR IAIRT1 82.020 IAIRT2 82.011 TAIRT1 -109.18 TAIRT2 77.763

ORIFICE AIR TEMP 83.963 DELTAP 1.0707 DRFP 53.287 FLOW 1457.2

CELL TEMP. = 81.412 HEATER TEMP = 82.047 COOLER TEMP = 81.909

NASA-Lewis PRELIMINARY DATA 04/13/76 CADDEII REC 04/13/76 13:24:42.338 FAC SEX15 PGM C003 RDG 3284

LEANOUT 25 BTDC TO CL APP 80 DEG HUM=0% MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.310 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 80.020 PRESS 29.301 CFM 211.54 DRY FLOW 946.04 VAPOR FLOW 0.24832 PRESS TOTAL 14.858

COMB. FUEL TEMP 70.466 PRESS 5.4761 DENSITY 44.899 TURBO FLOW 69.285 FLOW TRON 66.802 FPIP 6.0546

COOLING AIR TEMP 82.249 UDEL-HOOD 3.0103 DEL-HOOD 3.8630 FLOW 9977.4 REL-HUM 1.2348 DEW-POINT -14.741

REL-HUM 1 1.2348 2 19.690 HUMIDITY 1.8374 % H2O VAPOR CORRECTED HP 0.042192 152.92

ENG. COND. F/A DRY 0.070612 F/A WET 0.070593 EQU. RATIO 1.0539 RPM-1 2682.4 RPM-2 2683.5 TORQUE 285.47 BHP 145.80

WET CORRECTION FACTOR = 0.82083 EXHAUST MOLE. WT. = 28.463 EXHAUST DENSITY = 0.073698 EXHAUST FLOW RATE = 13746.

MEASURED CONC. PART PER MILLION WGT PER CENT
HC PPM 1007.8 NOX PPM 1605.6 CO DRY 2.80740 CO2 DRY 18.389 O2 DRY 0.12797
CORRECTED CONC. TO WET BASIS CO DRY 2.3044 CO2 DRY 15.095 O2 DRY 0.10504

EMISSION RATE HC 0.49735 NOX 2.5264 CO 22.998
EMISSION MASS/MODE 0.0024867 0.013132 0.11499
EMISSION MASS/RATED HP 1.5542E-05 8.2076E-05 0.00071868
MODE EMIS./STD. CYCLE % 0.81801 5.4717 1.7112

CAL. FUEL AIR RATIO = 0.071140 MFAS. FUEL AIR RATIO = 0.070612 DIFF MEAS. & CAL. F/A PERCENT = 0.74831

CYL TEMP DEG.F CYL-1 436.96 CYL-2 451.81 CYL-3 442.02 CYL-4 444.78

EXT GAS TEMP DEG.F EXT-1 844.02 EXT-2 -201.85 EXT-3 1324.0 EXT-4 1267.3 SEXT-1 1436.5 SEXT-2 1431.5

ENGINE OIL EOILT 188.62 SOILT 153.67 OILP 73.787 MANIFOLD PRESSURE = 28.421

DYNO COND. TORQUE 282.42 RPM 2610.0 CYL. BACK PRESSURE = 29.473

INDUCTION AIR IAIRT1 79.905 IAIRT2 80.020 TAIRT1 -54.999 TAIRT2 78.220

ORIFICE AIR TEMP 81.439 DELTAP 1.0310 ORFP 53.361 FLOW 1433.6

CELL TEMP. = 78.943 HEATER TEMP = 82.026 COOLER TEMP = 82.494

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NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDEII REC 04/13/76 13:27:42.926 FAC SEX15 PGM C003 RDG 3285
 LEANOUT 25 BTDC TO CL APP 80 DEG HUM=0% MODE = 4.0000 NO. SCANS = 5
 ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.310 RATED HP. = 160.00 HC RATIO = 2.1250
 COMB. AIR TEMP 80.849 PRESS 29.309 CFM 186.29 DRY FLOW 826.14 VAPOR FLOW 0.21570 PRESS TOTAL 14.744
 COMB. FUEL TEMP 71.197 PRESS 5.4845 DENSITY 44.880 TURBIN FLOW 61.625 FLOW TRON 57.450 FPIP 6.0417
 COOLING AIR TEMP 82.865 UDEL-HOOD 3.0100 DEL-HOOD 3.8807 FLOW 9976.9 REL-HUM 1.1862 DEW-POINT -14.941
 REL-HUM 1 1.1862 2 61.274 HUMIDITY 1.8276 % H2O VAPOR CORRECTED HP 0.041968 124.48
 ENG. COND. F/A DRY 0.069540 F/A WET 0.069521 EQU. RATIO 1.0379 RPM-1 2438.4 RPM-2 2439.6 TORQUE 261.66 BHP 121.48
 WET CORRECTION FACTR = 0.81878 EXHAUST MOLE. WT. = 28.486 EXHAUST DENSITY = 0.073758 EXHAUST FLOW RATE = 11982.
 MEASURED CONC. PART PER MILLION WET PER CENT
 HC PPM 697.07 NOX PPM 2010.9 CO DRY 3.45300 CO2 DRY 17.518 O2 DRY 0.58736
 CORRECTED CONC. TO WET BASIS 2.8272 14.343 0.48091
 EMISSION RATE HC 0.29986 NOX 2.8674 CO 24.595
 EMISSION MASS/MODE 0.024988 0.23895 2.0496
 EMISSION MASS/RATED HP 0.00015618 0.0014934 0.012810
 MODE EMIS./STD CYCLE % 8.2199 99.562 30.500
 CAL. FUEL AIR RATIO = 0.071031 MEAS. FUEL AIR RATIO = 0.069540 DIFF MEAS. & CAL. F/A PERCENT = 2.1445
 CYL TEMP DEG.F CYL-1 415.92 CYL-2 426.68 CYL-3 414.70 CYL-4 420.98
 EXT GAS TEMP DEG.F EXT-1 1472.9 EXT-2 -454.00 EXT-3 885.78 EXT-4 1298.1 SEXT-1 1402.7 SEXT-2 1400.3
 ENGINE OIL EOILT 189.09 SOILT 184.57 OILT 72.851 MANIFOLD PRESSURE = 27.634
 DYND COND. TORQUE 267.24 RPM 2359.2 CYL. BACK PRESSURE = 29.433
 INDUCTION AIR IAIRT1 80.769 IAIRT2 80.849 TAIRT1 -59.723 TAIRT2 78.591
 ORIFICE AIR TEMP 81.914 DELTAP 2.0179 DRFP 53.358 FLOW 1984.5
 CELL TEMP. = 80.205 HEATER TEMP = 81.998 COOLER TEMP = 82.893

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NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDEI REC 04/13/76 13:31:03.481 FAC SEX15 PGM C003 RDG 3286

LEANOUT 25 BTDC TO CL APP 80 DEG HUM=0% MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.310 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 81.650 PRESS 29.303 CFM 107.28 DRY FLOW 467.87 VAPOR FLOW 0.12433 PRESS TOTAL 14.510

COMB. FUEL TEMP 74.116 PRESS 5.6202 DENSITY 44.803 TURBO FLOW 35.528 FLOW TRON 34.329 FPIP 6.1026

COOLING AIR TEMP 83.436 IDEL-HOOD 2.9671 DEL-HOOD 3.7921 FLOW 9897.0 REL-HUM 1.1576 DEW-POINT -14.916

REL-HUM 1 1.1576 2 43.992 HUMIDITY 1.8601 % H2O VAPOR CORRECTED HP 0.042714 66.761

ENG. COND. F/A DRY 0.073373 F/A WET 0.073354 EQU. RATIO 1.0951 RPM-1 2354.3 RPM-2 2355.6 TORQUE 144.84 BHP 64.926

WET CORRECTION FACTOR = 0.83051 EXHAUST MOLE. WT. = 28.226 EXHAUST DENSITY = 0.073085 EXHAUST FLOW RATE = 6873.2

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 1228.5 NOX PPM 1091.4 CO DRY 3.5450 CO2 DRY 17.801 O2 DRY 0.16984
CORRECTED CONC. TO WET BASIS CO DRY 2.9441 CO2 DRY 14.784 O2 DRY 0.14105

5/8

EMISSION RATE HC 0.30313 NOX 0.89267 CO 14.691
EMISSION MASS/MODE 0.030313 0.089267 1.4691
EMISSION MASS/RATED HP 0.00018946 0.00055792 0.0091819
MODE EMIS./STD. CYCLE % 9.9715 37.195 21.862

CAL. FUEL AIR RATIO = 0.072283 MEAS. FUEL AIR RATIO = 0.073373 DIFF MEAS. & CAL. F/A PERCENT = -1.4863

CYL TEMP DEG.F CYL-1 366.71 CYL-2 369.30 CYL-3 372.51 CYL-4 373.68

EXT GAS TEMP DEG.F EXT-1 1762.6 EXT-2 -454.00 EXT-3 1303.3 EXT-4 1216.5 SEXT-1 1251.1 SEXT-2 1253.4

ENGINE OIL EOILT 188.13 SOILT 90.461 OILP 72.203 MANIFOLD PRESSURE = 18.788

DYNO COND. TORQUE 138.02 RPM 2338.5 CYL. BACK PRESSURE = 29.380

INDUCTION AIR IAIRT1 81.641 IAIRT2 81.650 TAIRT1 -79.150 TAIRT2 78.966

ORIFICE AIR TEMP 82.425 DELTAP 2.0293 DRFP 53.258 FLOW 1988.9

CELL TEMP. = 80.223 HEATER TEMP = 81.970 COOLER TEMP = 83.292

NASA-LEWIS		PRELIMINARY DATA		04/13/76	CADDETI	REC 04/13/76 13:34:31.244	FAC SEX15	PGM C003	RDG 3287
LEANOUT 25 BTDC TO CL APP 80 DEG HUM=0%				MODE = 3.0000		NO. SCANS = 5			
ENGINE TIMING = 25.000		DEG.	BAROMETRIC PRESSURE = 29.310		RATED HP. = 160.00		HC RATIO = 2.1250		
COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL			
	82.609	29.322	212.29	948.59	0.26480	14.875			
COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW YRON	FPIP			
	72.809	5.4809	44.837	68.476	66.829	6.0411			
CORLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT			
	84.709	3.0034	3.8104	9964.6	1.2084	-13.765			
REL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP					
	1.2084	23.492	1.9541	0.044872	153.39				
ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP		
	0.070451	0.070431	1.0515	2694.5	2695.6	284.49	145.95		
WET CORRECTION FACTOR = 0.82087		EXHAUST MOLE. WT. = 28.477		EXHAUST DENSITY = 0.073734		EXHAUST FLOW RATE = 13774.			
MEASURED CONC.	PART PER MILLION WET			PER CENT					
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY				
	1030.8	1669.0	2.7486	18.386	0.14663				
CORRECTED CONC. TO WET BASIS				2.2563	15.092	0.12037			
EMISSION RATE	HC	NOX	CO						
	0.50975	2.7358	22.564						
EMISSION MASS/MODE	0.0025487	0.013679	0.11282						
EMISSION MASS/RATED HP	1.5930E-05	8.5493E-05	0.00070513						
MODE EMIS./STD. CYCLE %	0.83840	5.5995	1.6789						
CAL. FUEL AIR RATIO = 0.071027		MEAS. FUEL AIR RATIO = 0.070451		DIFF MEAS. & CAL. F/A PERCENT = 0.81754					
CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4					
	424.23	436.37	433.19	429.38					
EXT GAS TEMP DEG.F	EXT-1	FXT-2	FXT-3	FXT-4	SEXT-1	SEXT-2			
	1737.4	-311.29	1451.9	1269.8	1427.4	1422.6			
ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.310					
	188.18	240.42	74.215						
DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.517						
	276.11	2619.6							
INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2					
	82.504	82.609	-108.81	79.271					
ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW					
	82.970	3.9468	53.206	2735.6					
CELL TEMP. = 80.919	HEATER TEMP = 81.977		COOLER TEMP = 83.699						

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NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDE11 REC 04/13/76 13:38:07.831 FAC SEX15 PGM C003 RDG 3288

LFANOUT 25 BTDC TO CL APP 80 DEG HUM=08 MCDE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.300 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	83.612	29.291	185.40	819.44	0.21896	14.724

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW FROM	FPIP
	73.378	5.4974	44.822	59.401	56.952	6.0441

COOLING AIR	TEMP	INLET-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	85.498	2.9691	3.7692	9900.6	1.1086	-14.606

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	1.1086	35.872	1.8705	0.042952	123.08

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.069501	0.069482	1.0373	2430.0	2431.1	258.86	119.77

WET CORRECTION FACTOR = 0.81963 EXHAUST MOL. WT. = 28.490 EXHAUST DENSITY = 0.073767 EXHAUST FLOW RATE = 11893.

MEASURED CONC.	PART PER MILLION WET	PER CENT
HC PPM	NOX PPM	CO DRY
672.27	2002.3	3.4809
CORRECTED CONC. TO WET BASIS		CO2 DRY
		17.385
		0.62958
		2.8531
		16.249
		0.51603

EMISSION RATE	HC	NOX	CO
EMISSION MASS/MODE	0.28680	2.8315	24.615
EMISSION MASS/RATED HP	0.023900	0.23596	2.0512
MODE EMIS./STD. CYCLE %	0.00014937	0.0014747	0.012820
	7.8618	98.316	30.524

CAL. FUEL AIR RATIO = 0.070990 MEAS. FUEL AIR RATIO = 0.069501 DIFF MEAS. & CAL. F/A PERCENT = 2.1419

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	414.25	426.79	411.73	416.91

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1235.0	-454.00	960.90	1297.3	1402.7	1399.7

ENGINE OIL	EOILT	SOILT	OILT	MANIFOLD PRESSURE = 27.589
	188.75	251.96	72.723	

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.420
	250.20	2378.7	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	83.462	83.612	-30.308	79.655

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	83.506	1.0449	53.295	1440.4

CELL TEMP. = 82.125 HEATER TEMP = 81.963 COOLER TEMP = 84.125

520

NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDEII REC 04/13/76 13:40:55.860 FAC SEX15 PGM C003 RDG 3289

LEANOUT 25 BTDC TO CL APP 80 DEG HUM=0% MCR = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.300 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 84.086 PRESS 29.300 CFM 106.70 DRY FLOW 464.53 VAPOR FLOW 0.11583 PRESS TOTAL 14.511

COMB. FUEL TEMP 75.121 PRESS 5.6073 DENSITY 44.750 TURBO FLOW 35.883 FLOW TRON 34.809 FPIP 6.1104

COOLING AIR TEMP 85.998 UDEL-HOOD 2.9073 DEL-HOOD 3.7492 FLOW 9784.6 REL-HUM 1.0040 DEW-POINT -15.876

REL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP
1.0040 46.673 1.7454 0.040081 66.047

ENG. COND. F/A DRY 0.074935 F/A WET 0.074916 EQU. RATIO 1.1184 RPM-1 2350.7 RPM-2 2352.3 TORQUE 143.09 BHP 64.043

WET CORRECTION FACTOR = 0.83811 EXHAUST MOLE WT. = 28.095 EXHAUST DENSITY = 0.072744 EXHAUST FLOW RATE = 6865.9

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 1230.2 NOX PPM 1044.6 CO DRY 3.67590 CO2 DRY 17.697 O2 DRY 0.16696
CORRECTED CONC. TO WET BASIS 3.0808 14.832 0.13993

521

EMISSION RATE HC 0.30323 NOX 0.85348 CO 15.357
EMISSION MASS/MODE 0.030323 0.085348 1.5357
EMISSION MASS/RATED HP 0.00018952 0.00053343 0.0095980
MODE FMIS./STD. CYCLE % 9.9747 35.562 22.852

CAL.FUFL AIR RATIO = 0.072495 MEAS. FUEL AIR RATIO = 0.074935 DIFF MEAS.& CAL. F/A PERCENT = -3.2557

CYL TEMP DEG.F CYL-1 356.58 CYL-2 369.54 CYL-3 371.65 CYL-4 373.70

EXT GAS TEMP DEG.F EXT-1 1844.0 EXT-2 -454.00 EXT-3 1395.5 EXT-4 1173.3 SEXT-1 1244.3 SEXT-2 1246.8

ENGINE CIL EOILT 188.04 SOILT 161.95 OILP 72.183 MANIFOLD PRESSURE = 18.687

DYMO COND. TORQUE 136.44 RPM 2326.1 CYL.BACK PRESSURE = 29.350

INDUCTION AIR TAIRT1 84.112 TAIRT2 84.086 TAIRT1 -66.113 TAIRT2 79.926

ORIFICE AIR TEMP 83.971 DELTAP 2.0450 DRFP 53.277 FLOW 1993.3

CELL TEMP. = 82.460 HEATER TEMP = 81.956 COOLER TEMP = 84.382

NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDEII REC 04/13/76 18:15:21.511 FAC SEX15 PGM C003 RDG 3291

LEANOUT 25 BTDC I. & T 80 DEG. HUM=0% MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	79.596	29.232	18.538	81.134	0.0061212	14.356

COMP. FUEL	TEMP	PRESS	DNFSITY	TURBO FLOW	FLOW TRON	FPIP
	79.878	5.8071	44.551	3.9599	6.0396	6.1857

COOLING AIR	TEMP	UNEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	81.809	-0.065868	0.80785	0.00000	0.34781	-27.187

REL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRCTED HP
	0.34781	67.333	0.52812	0.012127 0.83255

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.074443	0.074434	1.1110	1196.2	1197.1	3.5837	0.81619

WET CORRECTION FACTOR = 0.85133 EXHAUST MOLE. WT. = 28.136 EXHAUST DENSITY = 0.072852 EXHAUST FLOW RATE = 1196.7

MEASURED CONC.	PART PER MILLION WET	PER CENT
	HC PPM NOX PPM CO DRY	CO2 DRY
	2326.8 66.731 4.7006	11.569
CORRECTED CONC. TO WET BASIS		CO DRY
		4.0317 9.8493 0.083200

	HC	NOX	CO
EMISSION RATE	0.099962	0.0095027	3.4766
EMISSION MASS/MODE	0.018326	0.0017427	0.63738
EMISSION MASS/RATED HP	0.00011454	1.0888E-05	0.0039836
MODE EMIS./STD. CYCLE %	6.0284	0.72590	9.4848

CAL. FUEL AIR RATIO = 0.077904 MEAS. FUEL AIR RATIO = 0.074440 DIFF MEAS. & CAL. F/A PERCENT = 4.6531

CYL TEMP. DEG. F.	CYL-1	CYL-2	CYL-3	CYL-4
	258.60	281.99	273.70	274.24

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1404.0	-454.00	-454.00	457.33	586.03	585.20

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 7.7563
	146.29	306.93	57.598	

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.357
	10.182	1187.7	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	79.861	79.596	-93.660	74.415

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	84.402	4.9546	53.314	3045.0

CELL TEMP. = 77.077 HEATER TEMP = 157.84 COOLER TEMP = 84.780

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NASA-LWIS		PRELIMINARY DATA		04/13/76	CADDEII	REC 04/13/76 18:15:42.878	FAC SEX15	PGM C003	RDG 3292
LFANOUT 25 BTDC. I & T 80 DEG. HUM=0%				MODE = 6.0000		NO. SCANS = 5			
ENGINE TIMING = 25.000		DEG.	BAROMETRIC PRESSURE = 29.230		RATED HP. = 160.00		HC RATIO = 2.1250		
COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL			
	79.861	29.226	18.566	80.731	0.0071064	14.363			
COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP			
	79.923	5.8104	44.550	3.9650	6.1206	6.1836			
COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT			
	81.826	-0.075001	0.82501	0.00000	0.40247	-26.402			
REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP				
	0.40247	39.516	0.61619	0.014150	1.3500				
ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP		
	0.075815	0.075809	1.1316	1194.5	1194.9	5.8172	1.3231		
WET CORRECTION FACTOR = 0.85781		EXHAUST MOLE. WT. = 28.021		EXHAUST DENSITY = 0.072554		EXHAUST FLOW RATE = 1197.1			
MEASURED CONC.	PART PER MILLION WET		PER CENT						
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY				
	2213.1	66.761	4.6813	11.579	0.096310				
CORRECTED CONC. TO WET BASIS			4.0156	9.9327	0.082615				
EMISSION RATE	HC	NOX	CO						
	0.095114	0.0095108	3.4901						
EMISSION MASS/MODE	0.0047557	0.00047554	0.17451						
EMISSION MASS/RATED HP	2.9723E-05	2.9721E-06	0.0010907						
MODE EMIS./STD. CYCLE %	1.5644	0.19814	2.5968						
CAL. FUEL AIR RATIO = 0.077793		MEAS. FUEL AIR RATIO = 0.075815		DIFF MEAS. & CAL. F/A PERCENT = 2.6091					
CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4					
	261.88	283.52	274.75	274.86					
EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2			
	1548.9	-454.00	-454.00	39.389	579.79	579.09			
ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 7.7579					
	145.78	-14.641	57.762						
DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.459						
	6.9559	1188.2							
INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2					
	80.134	79.861	-67.496	75.218					
ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW					
	84.366	1.9897	53.221	1967.0					
CELL TEMP. = 77.104	HEATER TEMP = 163.29		COOLER TEMP = 89.134						

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NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDEII REC 04/13/76 18:20:17.424 FAC SEX15 PGM C003 RDG 3293

LEANOUT 25 BTDC I & T 80 DEG. MIN=0% MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 77.555 PRESS 29.220 CFM 11.907 DRY FLOW 51.565 VAPOR FLOW 0.0037596 PRESS TOTAL 14.359

COMB. FUEL TEMP 77.803 PRESS 5.8698 DENSITY 44.706 TURBO FLOW 3.9682 FLOW TRON 3.4263 FPIP 6.1914

COOLING AIR TEMP 78.801 UDEL-HOOD -0.077769 DEL-HOOD 0.81726 FLOW 0.00000 REL-HUM 0.35953 DEW-POINT -27.342

REL-HUM 1 0.35953 2 46.399 HUMIDITY 0.51036 % H2O VAPOR 0.011720 CORRECTED HP 0.89109

ENG. CO. ID. F/A DRY 0.066447 F/A WET 0.066442 EQU. RATIO 0.99175 RPM-1 613.50 RPM-2 611.34 TORQUE 7.4924 BHP 0.87521

NET CORRECTION FACTOR = 0.86355 EXHAUST WOLF. WT. = 28.712 EXHAUST DENSITY = 0.074342 EXHAUST FLOW RATE = 739.76

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 10317. NOX PPM 35.460 CO DRY 1.9596 CO2 DRY 11.612 O2 DRY 2.2674
CORRECTED CONC. TO WET BASIS CO DRY 1.7009 CO2 DRY 10.028 O2 DRY 1.9580

EMISSION RATE HC 0.27399 NOX 0.0031215 CO 0.91347
EMISSION MASS/MODE 0.0045665 5.2026E-05 0.015225
EMISSION MASS/RATED HP 2.8541E-05 3.2516E-07 9.5154E-05
MODE EMIS./STD. CYCLE % 1.5021 0.021677 0.22656

CAL. FUEL AIR RATIO = 0.069638 MEAS. FUEL AIR RATIO = 0.066447 DIFF MEAS. & CAL. F/A PERCENT = 4.8024

CYL TEMP DEG. F CYL-1 226.39 CYL-2 255.67 CYL-3 241.06 CYL-4 246.49

EXT GAS TEMP DEG. F EXT-1 1121.0 EXT-2 -454.00 EXT-3 -454.00 EXT-4 399.77 SEXT-1 496.17 SEXT-2 494.85

ENGINE OIL EOILT 140.10 SOILT 320.61 OILP 47.865 MANIFOLD PRESSURE = 11.074

DYNO COND. TORQUE 5.8830 RPM 609.48 CYL. BACK PRESSURE = 28.694

INDUCTION AIR IAIRT1 77.873 IAIRT2 77.555 TAIRT1 -63.672 TAIRT2 77.274

ORIFICE AIR TEMP 81.729 DELTAP 1.0052 ORFP 53.360 FLOW 1415.5

CELL TEMP. = 74.240 HEATER TEMP = 151.80 COOLER TEMP = 97.094

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NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDEII REC 04/13/76 18:26:43.148 FAC SEX15 PGM C003 RDG 3295
 LFANOUT 25 BTDC I & T 80 DEG. HUM=0% MODE = 1.0000 NO. SCANS = 5
 ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250
 COMB. AIR TEMP 77.979 PRESS 29.225 CFM 11.320 DRY FLOW 49.262 VAPOR FLOW 0.0042362 PRESS TOTAL 14.356
 COMB. FUEL TEMP 76.962 PRESS 5.8791 DENSITY 44.728 TURBO FLOW 3.9650 FLOW TRON 3.2223 FPIP 6.1824
 COOLING AIR TEMP 80.143 UDEL-HOOD -0.076385 DEL-HOOD 0.81118 FLOW 0.00000 REL-HUM 0.41807 DEW-POINT -26.532
 REL-HUM 1 0.41807 2 44.826 HUMIDITY 0.60196 % H2O VAPOR 0.013823 CORRECTED HP 0.51590
 ENG. COND. F/A DRY 0.065412 F/A WET 0.065406 FOU. RATIO 0.97630 RPM-1 610.32 RPM-2 610.56 TORQUE 4.3588 BHP 0.50652
 WET CORRECTION FACTOR = 0.87674 EXHAUST MOLE. WT. = 28.757 EXHAUST DENSITY = 0.074460 EXHAUST FLOW RATE = 704.92
 MEASURED CONC. PART PER MILLION WET PER CENT
 HC PPM 12216. NOX PPM 31.613 CO DRY 1.5716 CO2 DRY 11.228 O2 DRY 3.1703
 CORRECTED CONC. TO WET BASIS 1.3779 9.8443 2.7795
 EMISSION RATE HC 0.30915 NOX 0.0026687 CO 0.70516
 EMISSION MASS/MODE 0.0051525 4.4478E-05 0.011753
 EMISSION MASS/RATED HP 3.2203E-05 2.7799E-07 7.3455E-05
 MODE EMIS./STD. CYCLE % 1.6949 0.018532 0.17489
 CAL. FUEL AIR RATIO = 0.066963 MEAS. FUEL AIR RATIO = 0.065412 DIFF MEAS. & CAL. F/A PERCENT = 2.3711
 CYL TEMP DEG.F CYL-1 263.94 CYL-2 293.56 CYL-3 293.10 CYL-4 296.36
 EXT GAS TEMP DEG.F EXT-1 1129.7 EXT-2 -454.00 EXT-3 -450.25 EXT-4 534.25 SEXT-1 578.05 SEXT-2 577.40
 ENGINE OIL EOILT 147.94 SOILT 363.69 OILT 46.945 MANIFOLD PRESSURE = 11.291
 DYNO COND. TORQUE 5.5878 RPM 607.92 CYL. BACK PRESSURE = 28.993
 INDUCTION AIR IAIRT1 78.236 IAIRT2 77.979 TAIRT1 -64.104 TAIRT2 74.580
 ORIFICE AIR TEMP 82.705 DELTAP 2.9990 ORFP 53.497 FLOW 2390.9
 CELL TEMP. = 75.261 HEATER TEMP = 105.45 COOLER TEMP = 76.882

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NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDEII REC 04/13/76 18:27:02.944 FAC SEX15 PGM C003 RDG 3296
 LEANOUT 25 BTDC I & T 80 DEG. HUM=0% MODE = 1.0000 NO. SCANS = 5
 ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO= 2.1250
 COMP. AIR TEMP 77.820 PRESS 29.222 CFM 11.139 DRY FLOW 48.523 VAPOR FLOW 0.0039122 PRESS TOTAL 14.355
 COMB. FUFL TEMP 77.077 PRESS 5.8779 DENSITY 44.725 TURBO FLOW 3.9681 FLOW TRON 3.1803 FPIP 6.1785
 COOLING AIR TEMP 80.055 UDEL-HOOD -0.062824 DEL-HOOD 0.84411 FLOW 0.00000 REL-HUM 0.39402 DEW-POINT -26.867
 REL-HUM 1 0.39402 2 31.639 HUMIDITY 0.56439 % H2O VAPOR CORRECTED HP 0.012960 0.24064
 ENG. COND. F/A DRY 0.065543 F/A WET 0.065538 EQU. RATIO 0.97825 RPM-1 595.62 RPM-2 596.34 TORQUE 2.0835 BHP 0.23629
 WET CORRECTION FACTOR = 0.88306 EXHAUST WOLF. WT. = 28.752 EXHAUST DENSITY = 0.074446 EXHAUST FLOW RATE = 694.55
 MEASURED CONC. PART PER MILLION WET PER CENT
 HC PPM 12771. NOX PPM 33.267 CO DRY 1.5224 CO2 DRY 11.141 O2 DRY 3.4937
 CORRECTED CONC. TO WET BASIS CO 1.3267 CO2 9.8384 O2 3.0852
 EMISSION RATE HC 0.31844 NOX 0.0027496 CO 0.66898
 EMISSION MASS/MODE 0.0053074 4.5827E-05 0.011150
 EMISSION MASS/RATED HP 3.3171E-05 2.8642E-07 6.9685E-05
 MODE EMIS./STD. CYCLE % 1.7459 0.019094 0.16592
 CAL. FUEL AIR RATIO = 0.066077 MEAS. FUEL AIR RATIO = 0.065543 DIFF MEAS. & CAL. F/A PERCENT = 0.81519
 CYL TEMP DEG.F CYL-1 255.48 CYL-2 287.52 CYL-3 276.77 CYL-4 289.50
 EXT GAS TEMP DEG.F EXT-1 1845.9 EXT-2 -454.00 EXT-3 -454.00 EXT-4 52.639 SEXT-1 569.85 SEXT-2 568.85
 ENGINE OIL EOILT 147.75 SOILT 4.1944 OILP 45.729 MANIFOLD PRESSURE = 11.399
 DYNO COND. TORQUE 3.1251 RPM 590.64 CYL. BACK PRESSURE = 29.517
 INDUCTION AIR TAIRT1 79.130 TAIRT2 77.820 TAIRT1 -56.497 TAIRT2 73.994
 ORIFICE AIR TEMP 82.688 DELTAP 1.0483 ORFP 53.486 FLOW 1443.8
 CELL TEMP. = 75.394 HEATER TEMP = 109.92 COOLER TEMP = 77.922

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NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDEII REC 04/13/76 18:29:46.542 FAC SEX15 PGM C003 RDG 3297
 LEANOUT 25 BTDC.] & T 80 DEG. HUM=0% MODE = 2.0000 NO. SCANS = 5
 ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250
 COMB. AIR TEMP 78.625 PRESS 29.229 CFM 18.477 DRY FLOW 80.355 VAPOR FLOW 0.0060340 PRESS TOTAL 14.362
 COMB. FUEL TEMP 78.466 PRESS 5.8152 DENSITY 44.688 TURBO FLOW 3.9666 FLOW TRON 6.0276 FPIP 6.1815
 COOLING AIR TEMP 80.531 UDEL-HOOD -0.079153 DEL-HOOD 0.83553 FLOW 0.00000 REL-HUM 0.35753 DEW-POINT -27.207
 RFL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP
 0.35753 63.300 0.52565 0.012071 1.0929
 ENG. COND. F/A DRY 0.075012 F/A WET 0.075007 EQU. RATIO 1.1196 RPM-1 1202.5 RPM-2 1203.4 TORQUE 4.6838 BHP 1.0724
 WET CORRECTION FACTOR = 0.85477 EXHAUST MDLE. WT. = 28.088 EXHAUST DENSITY = 0.072727 EXHAUST FLOW RATE = 1187.8
 MEASURED CONC. PART PER MILLION WET PER CENT
 HC PPM 2126.3 NOX PPM 64.222 CO DRY 4.6251 CO2 DRY 11.670 O2 DRY 0.098930
 CORRECTED CONC. TO WET BASIS 3.9534 9.9755 0.084562
 EMISSION RATE HC 0.090673 NOX 0.0090780 CO 3.4093
 EMISSION MASS/MODE 0.016623 0.3016643 0.62504
 EMISSION MASS/RATED HP 0.00010390 1.0402E-05 0.0039065
 MODE EMIS./STD. CYCLE % 5.4682 0.69346 9.3011
 CAL. FUEL AIR RATIO = 0.077564 MEAS. FUEL AIR RATIO = 0.075012 DIFF MEAS. & CAL. F/A PERCENT = 3.4020
 CYL TEMP DEG.F CYL-1 263.60 CYL-2 286.11 CYL-3 273.31 CYL-4 274.66
 EXT GAS TEMP DEG.F EXT-1 982.54 EXT-2 -454.00 EXT-3 -454.00 EXT-4 422.02 SEXT-1 525.86 SEXT-2 525.46
 ENGINE OIL EOILT 145.58 SOILT -24.941 OILT 57.562 MANIFOLD PRESSURE = 7.6341
 DYNO COND. TORQUE 9.2961 RPM 1194.3 CYL. BACK PRESSURE = 29.360
 INDUCTION AIR IAIRT1 78.854 IAIRT2 78.625 TAIRT1 -35.238 TAIRT2 75.140
 ORIFICE AIR TEMP 83.093 DELTAP 2.0433 ORFP 53.270 FLOW 1994.1
 CELL TEMP. = 76.076 HEATER TEMP = 104.86 COOLER TEMP = 78.633

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NASA-LEWIS		PRELIMINARY DATA		04/13/76	CADDELL	REC 04/13/76 18:30:09.183	FAC SEX15	PGM C003	RDG 3298
LEANOUT 25 BTDC I & T 80 DEG. HUM=0%				MODE = 6.0000		NO. SCANS = 5			
ENGINE TIMING = 25.000		DEG.	BAROMETRIC PRESSURE = 29.230		RATED HP. = 160.00		HC RATIO = 2.1250		
COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL			
	78.519	29.235	18.680	81.290	0.0056682	14.357			
COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP			
	78.545	5.8128	44.686	3.9647	6.0636	6.1791			
COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT			
	80.505	-0.075832	0.82889	0.00000	0.33304	-27.537			
REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP				
	0.33304	-2.8983	0.48810	0.011208	1.6709				
ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP		
	0.074593	0.074587	1.1133	1201.7	1202.0	7.1674	1.6399		
WET CORRECTION FACTOR = 0.85288		EXHAUST MOLE. WT. = 28.123		EXHAUST DENSITY = 0.072818		EXHAUST FLOW RATE = 1199.7			
MEASURED CONC.	PART PER MILLION WET			PER CENT					
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY				
	2232.3	62.962	4.6908	11.594	0.14255				
CORRECTED CONC. TO WET BASIS			4.0007	9.8882	0.12158				
EMISSION RATE	HC	NOX	CO						
	0.096143	0.0089886	3.4844						
EMISSION MASS/MODE	0.0048071	0.00044943	0.17422						
EMISSION MASS/RATED HP	3.0045E-05	2.8089E-06	0.0010889						
MODE EMIS./STD. CYCLE %	1.5813	0.18726	2.5926						
CAL. FUEL AIR RATIO = 0.077652		MEAS. FUEL AIR RATIO = 0.074593		DIFF MEAS. & CAL. F/A PERCENT = 4.1011					
CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4					
	265.89	286.62	273.66	274.71					
EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2			
	869.21	-454.00	-454.00	109.81	520.30	520.16			
ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 7.6520					
	145.54	155.55	57.686						
DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.404						
	3.7804	1196.6							
INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2					
	78.669	78.519	85.524	74.612					
ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW					
	83.190	2.9652	53.442	2376.9					
CELL TEMP. = 76.174	HEATER TEMP = 110.97		COOLER TEMP = 80.764						

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NASA-LEWIS		PRELIMINARY DATA		04/13/76	CADDEII	REC 04/13/76 18:42:15.111	FAC SEX15	PGM C003	RDG 3300
LEANOUT 25 BTDC I & T 80 DEG. HUM=0%				MODE = 7.0000		NO. SCANS = 5			
ENGINE TIMING = 25.000		DEG.		BAROMETRIC PRESSURE = 29.230		RATED HP. = 160.00		HC RATIO = 2.1250	
COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL			
	77.431	29.226	11.710	50.793	0.0035632	14.354			
COMB. FUEL	TFMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP			
	76.785	5.8776	44.732	3.9705	3.2733	6.2112			
COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT			
	79.243	-0.068636	0.78737	0.00000	0.34724	-27.512			
REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP				
	0.34724	47.355	0.49107	0.011277	0.76802				
ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP		
	0.064445	0.064440	0.95186	595.80	602.04	6.6507	0.75447		
WET CORRECTION FACTOR = 0.87737		EXHAUST MOLE. WT. = 28.789		EXHAUST DENSITY = 0.074541		EXHAUST FLOW RATE = 725.36			
MEASURED CONC.	PART PER MILLION WFT			PER CENT					
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY				
	14156.	33.735	1.5739	10.965	3.7407				
CORRECTED CONC. TO WET BASIS				1.3809	9.6207	3.2820			
EMISSION RATE	HC	NOX	CO						
	0.36864	0.0029120	0.72719						
EMISSION MASS/MODE	0.0061440	4.8533E-05	0.012120						
EMISSION MASS/RATED HP	3.8400E-05	3.0333E-07	7.5749E-05						
MODE FMIS./STD. CYCLE %	2.0211	0.020222	0.18035						
CAL. FUEL AIR RATIO = 0.066257		MEAS. FUEL AIR RATIO = 0.064445		DIFF MEAS. & CAL. F/A PERCENT = 2.8118					
CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4					
	233.00	266.82	255.26	263.30					
FXT GAS TEMP DEG.F	FXT-1	EXT-2	EXT-3	EXT-4	SFXT-1	SEXT-2			
	1354.4	-454.00	-454.00	297.00	480.33	479.13			
ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 11.308					
	142.97	176.18	45.197						
DYMO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.415						
	6.4302	591.90							
INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2					
	77.679	77.431	-52.194	76.229					
ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW					
	81.580	2.0111	53.389	1982.0					
CELL TEMP. = 74.693	HEATER TEMP = 99.584		COOLER TEMP = 90.105						

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NASA-LEVIS PRELIMINARY DATA 04/13/76 CADDEII REC 04/13/76 18:54:42.981 FAC SEX15 PGM C003 RDG 3301

LEANOUT 25 BTDC I. & T 80 DEG HUM=0% 3/4T LEAN MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 79.429 PRESS 29.226 CFM 9.8930 DRY FLOW 42.917 VAPOR FLOW 0.0023711 PRESS TOTAL 14.360

COMB. FUEL TEMP 78.651 PRESS 5.8461 DENSITY 44.583 TURBO FLOW 3.9645 FLOW TRON 3.9304 FPIP 6.1993

COOLING AIR TEMP 81.897 UDEL-HOOD -0.076385 DEL-HOOD 0.83691 FLOW 0.00000 REL-HUM 0.25617 DEW-POINT -28.407

REL-HUM 1 0.25617 2 42.576 HUMIDITY 0.38674 % H2O VAPOR 0.0088808 CORRECTED HP 0.43621

ENG. COND. F/A DRY 0.091580 F/A WET 0.091575 EQU. RATIO 1.3569 PPM-1 618.24 RPM-2 615.12 TORQUE 3.6337 BHP 0.42774

WET CORRECTION FACTOR = 0.88855 EXHAUST MOLE. WT. = 26.803 EXHAUST DENSITY = 0.069399 EXHAUST FLOW RATE = 675.09

MEASURED CONC. HC PPM 21048. NOX PPM 15.226 CO DRY 7.7379 CO2 DRY 8.5605 O2 DRY 2.1658
CORRECTED CONC. TO WFT BASIS HC 6.8755 NOX 7.6066 CO2 DRY 1.9244

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EMISSION RATE HC 0.51011 NOX 0.0012231 CO 3.3698
EMISSION MASS/MODE 0.0085019 2.0386E-05 0.056163
EMISSION MASS/RATED HP 5.3137E-05 1.2741E-07 0.00035102
MODE EMIS./STD. CYCLE % 2.7967 0.0084940 0.83576

CAL. FUEL AIR RATIO = 0.089078 MEAS. FUEL AIR RATIO = 0.091580 DIFF MEAS. & CAL. F/A PERCENT = -2.7326

CYL TEMP DEG.F CYL-1 260.24 CYL-2 274.31 CYL-3 251.99 CYL-4 260.54

FXT GAS TEMP DEG.F EXT-1 894.04 EXT-2 -454.00 EXT-3 -454.00 EXT-4 330.75 SEXT-1 519.07 SEXT-2 517.71

ENGINE OIL EOILT 149.98 SOILT 314.63 OILP 45.993 MANIFOLD PRESSURE = 10.346

DYNO COND. TORQUE 7.1647 RPM 609.42 CYL. BACK PRESSURE = 29.604

INDUCTION AIR IAIRT1 79.640 IAIRT2 79.429 TAIRT1 -59.435 TAIRT2 76.407

ORIFICE AIR TEMP 83.453 DELTAP 3.0295 ORFS 53.367 FLOW 2400.9

CELL TEMP. = 76.847 HEATER TEMP = 112.68 COOLER TEMP = 93.867

NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDET REC 04/13/76 18:57:11.468 FAC SEX15 PGM C003 RDG 3302
 LEANOUT 25 BTDC I & T 80 DEG HUM=0% 3/4T LEAV MODE = 2.0000 NO. SCANS = 5
 ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP = 160.00 HC RATIO = 2.1250
 COMB. AIR TEMP 79.684 PRESS 29.226 CFM 18.700 DRY FLOW 81.126 VAPOR FLDW 0.0053765 PRESS TOTAL 141.357
 COMB. FUEL TEMP 79.534 PRESS 5.7930 DENSITY 44.560 TURBO FLDW 3.9641 FLOW TRON 6.8377 FPIP 6.1754
 COOLING AIR TEMP 81.650 UDEL-HOOD -0.084964 DEL-HOOD 0.77907 FLOW 0.00000 REL-HUM 0.30465 DEW-POINT -27.747
 PFL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP
 0.30465 56.050 0.45191 0.010653 1.3934
 ENG. COND. F/A DRY F/A WET EQU. RATIO RPM-1 RPM-2 TORQUE BHP
 0.084284 0.084279 1.2580 1207.3 1208.2 5.9422 1.3660
 WET CORRECTION FACTOR = 0.85522 EXHAUST MOLE. WT. = 27.344 EXHAUST DENSITY = 0.070801 EXHAUST FLOW RATE = 1242.5
 MEASURED CONC. PART PER MILLION WET PER CENT
 HC PPM NOX PPM CO DRY CO2 DRY O2 DRY
 4179.4 43.018 8.3935 9.6007 0.18610
 CORRECTED CONC. TO WET BASIS 7.1782 8.2107 0.15915
 EMISSION RATE HC NOX CO
 0.18642 0.0063605 6.4751
 EMISSION MASS/MODE 0.034178 0.0011661 1.1871
 EMISSION MASS/RATED HP 0.00021361 7.2880E-06 0.0074193
 MODE EMIS./STD. CYCLE % 11.243 0.48587 17.665
 CAL. FUEL AIR RATIO = 0.087559 MEAS. FUEL AIR RATIO = 0.084284 DIFF MEAS. & CAL. F/A PERCENT = 3.8851
 CYL TEMP DEG.F CYL-1 CYL-2 CYL-3 CYL-4
 259.42 271.58 257.56 253.71
 EXT GAS TEMP DEG.F EXT-1 EXT-2 EXT-3 EXT-4 SEXT-1 SEXT-2
 1583.0 -454.00 -454.00 254.14 482.45 482.05
 ENGINE OIL FOILT SOILT OILP MANIFOLD PRESSURE = 7.5836
 147.23 233.39 57.822
 DYNO COND. TORQUE RPM CYL. BACK PRESSURE = 29.378
 7.9136 1209.5
 INDUCTION AIR IAIRT1 IAIRT2 TAIRT1 TAIRT2
 79.879 79.684 -55.211 76.271
 ORIFICE AIR TEMP DELTAP ORFP FLOW
 83.620 0.99940 53.337 1409.0
 CELL TEMP. = 76.723 HEATER TEMP = 119.29 COOLER TEMP = 94.114

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NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDEII REC 04/13/76 18:57:34.393 FAC SEX15 PGM C003 RDG 3303

LEANOUT 25 BTDC I & T 80 DEG HUM=0% 3/4T. LEAN MODE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.730 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR TEMP 78.996 PRESS 29.715 CFM 18.586 DRY FLOW 80.630 VAPOR FLOW 0.0042157 PRESS TOTAL 14.361

COMB. FUEL TEMP 78.872 PRESS 5.7930 DENSITY 44.677 TURBO FLOW 3.9657 FLOW TRON 6.7527 FPIP 6.1809

COOLING AIR TEMP 80.989 UDEL-HOOD -0.085795 DEL-HOOD 0.81699 FLOW 0.00000 REL-HUM 0.24592 DEW-POINT -28.592

REL-HUM 1 2 HUMIDITY 0.35599 % H2O VAPOR CORRECTED HP 0.0084044 1.8776

ENG. COND. F/A DRY 0.083873 F/A WET 0.083869 EQU. RATIO 1.2518 RPM-1 1207.8 RPM-2 1208.9 TORQUE 8.0091 BHP 1.8419

WET CORRECTION FACTOR = 0.85346 EXHAUST MOLE. WT. = 27.376 EXHAUST DENSITY = 0.070885 EXHAUST FLOW RATE = 1233.0

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 4150.4 NOX PPM 42.374 CO DRY 8.4112 CO2 DRY 9.6496 O2 DRY 0.19550
CORRECTED CONC. TO WET BASIS CO DRY 7.1787 CO2 DRY 8.2356 O2 DRY 0.16685

532

EMISSION RATE HC 0.18371 NOX 0.0062172 CO 6.4258
EMISSION MASS/MODE HC 0.0091855 NOX 0.00031086 CO 0.32129
EMISSION MASS/RATED HP HC 5.7410E-05 NOX 1.9429E-06 CO 0.002081
MODE EMIS./STD. CYCLE % HC 3.0216 NOX 0.12953 CO 4.7811

CAL. FUEL-AIR RATIO = 0.087459 MEAS. FUEL-AIR RATIO = 0.083873 DIFF MEAS. & CAL. F/A PERCENT = 4.2746

CYL. TEMP. DEG. F CYL-1 259.25 CYL-2 270.99 CYL-3 257.88 CYL-4 254.11

EXT GAS. TEMP. DEG. F EXT-1 894.54 EXT-2 -454.00 EXT-3 -454.00 EXT-4 -307.02 SEXT-1 478.12 SEXT-2 477.76

ENGINE OIL EOILT 147.08 SOILT 146.66 OILP 57.870 MANIFOLD PRESSURE = 7.5633

DYNO COND. TORQUE 11.096 RPM 1202.9 CYL. BACK PRESSURE = 29.160

INDUCTION AIR IAIRT1 79.216 IAIRT2 78.996 IAIRT1 -44.209 IAIRT2 76.461

ORIFICE AIR TEMP 82.917 DELTAP 0.035904 ORIF. FLOW 53.273 148.49

CELL TEMP. = 75.855 HEATER TEMP = 108.61 COOLER TEMP = 89.813

NASA-LEWIS		PRELIMINARY DATA		04/13/76	CADDEII	REC 04/13/76 19:00:41.597	FAC SEX15	PGM C003	RDG 3304
LFANOUT 25 BTDC I & T		80 DEG HUM=0%		3/4T LEAN	MODE = 7.0000	NO. SCANS = 5			
ENGINE TIMING = 25.000		DEG.	BAROMETRIC PRESSURE = 29.230		RATED HP. = 160.00		HC RATIO = 2.1250		
COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL			
	76.874	29.230	10.241	44.481	0.0041962	14.354			
COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP			
	76.997	5.8443	44.727	3.9701	3.9274	6.2001			
COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT			
	78.872	-0.087732	0.86182	0.00000	0.47564	-26.007			
REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP				
	0.47564	24.980	0.65035	0.015164	0.52495				
ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	PPM-1	RPM-2	TORQUE	BHP		
	0.088294	0.088285	1.3178	510.02	610.14	4.4421	0.51595		
WET CORRECTION FACTOR = 0.87405		EXHAUST MOLE. WT. = 27.042		EXHAUST DENSITY = 0.070018		EXHAUST FLOW RATE = 691.53			
MEASURED CONC.	PART PER MILLION WET			PER CENT			533		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY				
	19942.	13.149	7.5400	8.8487	1.8262				
CORRECTED CONC. TO WET BASIS			6.5903	7.7342	1.5962				
EMISSION RATE	HC	NOX	CO						
	0.49503	0.0010819	3.3082						
EMISSION MASS/MODE	0.0082505	1.3032E-05	0.055136						
EMISSION MASS/RATED HP	5.1565E-05	1.1270E-07	0.00034460						
MODE EMIS./STD. CYCLE %	2.7140	0.0075133	0.82048						
CAL. FUEL AIR RATIO = 0.089216		MEAS. FUEL AIR RATIO = 0.088294		DIFF MEAS. & CAL. F/A PERCENT = 1.0449					
CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4					
	239.53	249.23	229.57	234.90					
EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2			
	996.80	-454.00	-454.00	233.71	435.91	434.34			
ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 10.398					
	143.36	-189.79	47.509						
DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.206						
	6.1782	501.80							
INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2					
	77.086	76.874	1.9338	75.509					
ORIFICE AIR	TEMP	DEL TAP	ORIF	FLOW					
	80.954	3.0013	53.298	2395.7					
CFL TEMP. = 73.956		HEATER TEMP = 102.51		COOLER TEMP = 79.610					

NASA-LEWIS PPFLIMINARY DATA 04/13/76 CADDEII REC 04/13/76 19:01:03.015 FAC SEX15 PGM C003 RRG 3305

LEANDUT 25 BTDC I & T 80 DEG HUM=0% 3/4T LEAN MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.220 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 76.723 PRESS 29.224 CFM 10.293 DRY FLOW 44.754 VAPOR FLOW 0.3046266 PRESS TOTAL 14.350

COMB. FUEL TEMP 77.104 PRESS 5.8413 DENSITY 44.724 TURBO FLOW 3.9698 FLOW TRON 3.9394 FPIP 5.1902

COOLING AIR TEMP 78.801 UDEL-HOOD -0.082197 DEL-HOOD 0.81256 FLOW 0.00000 REL-HUM 0.52370 DEW-POINT -25.432

REL-HUM 1 0.52370 2 -16.908 HUMIDITY 0.72365 % H2O VAPOR 0.016618 CORRECTED HP 0.54672

ENG. COND. F/A DRY 0.088024 F/A WET 0.088015 FOU. RATIO 1.3138 RPM-1 596.22 RPM-2 595.26 TORQUE 4.7338 BHP 0.53739

WET CORRECTION FACTOR = 0.87711 EXHAUST MOLE. WT. = 27.062 EXHAUST DENSITY = 0.070070 EXHAUST FLOW RATE = 694.98

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	19823.	12.345	7.5513	8.7684	2.0689	
CORRECTED CONC. TO WET BASIS			6.6321	7.6909	1.8147	

EMISSION RATE	HC	NOX	CO
		0.49461	0.0010210
EMISSION MASS/MODE	0.0082434	1.7016E-05	0.055771
EMISSION MASS/ATED HP	5.1521E-05	1.0635E-07	0.00034857
MODE EMIS./STD. CYCLE %	2.7117	0.0070902	0.82993

CAL. FUEL AIR RATIO = 0.088291 MEAS. FUEL AIR RATIO = 0.088024 DIFF MEAS. & CAL. F/A PERCENT = 0.30268

CYL TEMP DEG.F CYL-1 236.63 CYL-2 246.26 CYL-3 225.59 CYL-4 231.06

EXT GAS TEMP. DEG.F EXT-1 677.76 EXT-2 -454.00 EXT-3 -454.00 EXT-4 -403.05 SEXT-1 431.16 SEXT-2 428.93

ENGINE OIL EOILT 142.96 SOILT 72.360 OILT 47.425 MANIFOLD PRESSURE = 10.464

DYNC COND. TORQUE 7.2367 RPM 591.42 CYL. BACK PRESSURE = 29.579

INDUCTION AIR IAIRT1 76.980 IAIRT2 75.723 TAIRT1 86.973 TAIRT2 74.789

ORIFICE AIR TEMP 81.042 DELTAP 1.0477 OREF 53.280 FLOW 1445.5

CELL TEMP. = 73.956 HEATER TEMP = 102.31 COOLER TEMP = 79.246

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NASA-LEWIS PRELIMINARY DATA 04/13/76 CARDEII REC 04/13/76 19:04:06.270 FAC SEX15 PGM C003 RDG 3306
 LEANOUT 25 BTDC I & T RO DEG HUM=0% 3/4T LFAN MODE = 2.0000 NO. SCANS = 5
 ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.220 RATED HP. = 160.00 HC RATIO = 2.1250
 COMB. AIR TEMP 77.192 PRESS 29.214 CFM 18.617 DRY FLOW 81.004 VAPOR FLOW 0.0042655 PRESS TOTAL 14.352
 COMB. FUEL TEMP 77.378 PRESS 5.7879 DENSITY 44.717 TURBO FLOW 3.9674 FLOW TRON 6.9307 FPIP 6.1731
 COOLING AIR TEMP 78.996 UDEL-HOOD -0.078322 DEL-HOOD 0.84024 FLOW 0.00000 REL-HUM 0.26268 DEW-POINT -28.562
 REL-HUM 1 0.26268 2 31.047 HUMIDITY 0.35860 % H2O VAPOR CORRECTED HP 0.0084644 1.9744
 ENG. COND. F/A DRY 0.085559 F/A WET 0.085555 EQU. RATIO 1.2770 RPM-1 1205.8 RPM-2 1206.7 TORQUE 8.4508 BHP 1.9402
 WET CORRECTION FACTOR = 0.85864 EXHAUST MOLE. WT. = 27.247 EXHAUST DENSITY = 0.070549 EXHAUST FLOW RATE = 1246.5
 MEASURED CONC. PART PER MILLION WET PER CFMT
 HC PPM 4614.5 NOX PPM 41.158 CO DRY 8.4258 CO2 DRY 9.6640 O2 DRY 0.17698
 CORRECTED CONC. TO WET BASIS 7.2348 8.2979 0.15196
 EMISSION RATE HC 0.20649 NOX 0.0061091 CO 6.5472
 EMISSION MASS/MODE 0.037857 0.0011193 1.2003
 EMISSION MASS/RATED HP 0.00023661 6.9954E-06 0.0075019
 MODE EMIS./STD. CYCLE % 12.453 0.46636 17.862
 CAL. FUEL AIR RATIO = 0.087775 MEAS. FUEL AIR RATIO = 0.085559 DIFF MEAS. & CAL. F/A PERCENT = 2.5897
 CYL TEMP DEG.F CYL-1 252.53 CYL-2 263.22 CYL-3 249.65 CYL-4 243.82
 EXT GAS TEMP DEG.F EXT-1 1424.2 EXT-2 -454.00 EXT-3 -454.00 EXT-4 207.88 SEXT-1 410.04 SEXT-2 409.41
 ENGINE OIL EOILT 141.12 SOILT -37.932 OILP 58.482 MANIFOLD PRESSURE = 7.6040
 DYNO COND. TORQUE 5.1773 RPM 1200.8 CYL. BACK PRESSURE = 29.133
 INDUCTION AIR IAIRT1 77.369 IAIRT2 77.192 TAIRT1 -7.5535 TAIRT2 74.533
 ORIFICE AIR TEMP 81.492 DELTAP 1.0244 ORFP 53.239 FLOW 1429.0
 CELL TEMP. = 74.675 HEATER TEMP = 114.78 COOLER TEMP = 82.627

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NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDÉII REC 04/13/76 19:04:28.861 FAC SEX15 PGM C003 RDG 3307

LFANOUT 25 BTDC I & T 80 DEG HUM=0% 3/4T LEAN MODE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DFG. BAROMETRIC PRESSURE = 29.220 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR TEMP 77.298 PRESS 29.215 CFM 18.820 DRY FLOW 81.843 VAPOR FLOW 0.0046361 PRESS TOTAL 14.355

COMP. FUEL TEMP 77.431 PRESS 5.7891 DENSITY 44.715 TURBO FLOW 3.9690 FLOW TRON 6.9277 FPIP 6.1761

COOLING AIR TEMP 78.987 UDEL-HOOD -0.084964 DEL-HOOD 0.79900 FLOW 0.00000 REL-HUM 0.27982 DEW-POINT -28.347

REL-HUM 1 0.27982 2 20.992 HUMIDITY 0.39395 % H2O VAPOR 0.0090466 CORRECTED HP 1.6186

ENG. COND. F/A DRY 0.084646 F/A WET 0.084641 EQU. RATIO 1.2534 RPM-1 1204.5 RPM-2 1205.4 TORQUE 6.9340 BHP 1.5903

WET CORRECTION FACTOR = 0.85563 EXHAUST M/L E. WT. = 27.317 EXHAUST DENSITY = 0.070729 EXHAUST FLOW RATE = 1255.1

MEASURED CONC. PART PER MILLION WGT HC PPM 4238.4 NOX PPM 41.074 CO DRY 8.4387 PER CENT CO2 DRY 9.6599 O2 DRY 0.17036
CORRECTED CONC. TO WET BASIS CO 7.2205 8.2657 0.14576

EMISSION RATE HC 0.19098 NOX 0.0061349 CO 6.5795
EMISSION MASS/MODE 0.0095490 0.00030674 0.32897
EMISSION MASS/RATED HP 5.9681E-05 1.9171E-06 0.0020561
MODE EMIS./STD. CYCLE % 3.1411 0.12781 4.8954

CAL. FUEL AIR RATIO = 0.087633 MEAS. FUEL AIR RATIO = 0.084646 DIFF MEAS. & CAL. F/A PERCENT = 3.5282

CYL TEMP DEG.F CYL-1 254.21 CYL-2 264.95 CYL-3 251.66 CYL-4 246.24

EXT GAS TEMP DEG.F EXT-1 1355.3 EXT-2 -454.00 EXT-3 -454.00 EXT-4 -353.67 SEXT-1 407.88 SEXT-2 407.52

ENGINE OIL EOILT 141.24 SOILT -29.583 OILP 58.454 MANIFOLD PRESSURE = 7.5918

DYNO COND. TORQUE 9.8290 RPM 1200.7 CYL. RACK PRESSURE = 29.401

INDUCTION AIR IAIRT1 77.511 IAIRT2 77.298 TAIRT1 -53.376 TAIRT2 74.904

ORIFICE AIR TEMP 81.606 DELTAP 2.0258 DRFP 53.281 FLOW 1988.8

CELL TEMP. = 74.790 HEATER TEMP = 125.68 COOLER TEMP = 87.374

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NASA-LEWIS		PRELIMINARY DATA		04/13/76	CADDEII	REC 04/13/76 19:07:23.203		FAC SEX15	PGM C003	RDG 3308
LEANOUT 25 BTDC I & T		80 DEG HUM=0%		3/4T LEAN	MODE = 7.0000		NO. SCANS = 5			
ENGINE TIMING = 25.000		DEG.		BAROMETRIC PRESSURE = 29.220		RATED HP. = 160.00		HC RATIO = 2.1250		
COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL				
	77.688	29.223	10.085	43.848	0.0034903	14.351				
COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP				
	77.918	5.8434	44.702	3.9679	3.9514	6.1545				
COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT				
	79.411	-0.079983	0.81754	0.00000	0.39061	-26.932				
REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP					
	0.39061	67.527	0.55721	0.012795	0.79798					
ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP			
	0.090116	0.090109	1.3450	584.45	578.04	7.3424	0.78369			
WET CORRECTION FACTOR = 0.88412		EXHAUST MOLE. WT. = 26.908		EXHAUST DENSITY = 0.069672		EXHAUST FLOW RATE = 685.10				
MEASURED CONC.	PART PER MILLION WET		PER CENT							
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY					
	23581.	9.0649	7.6599	8.3654	2.4878					
CORRECTED CONC. TO WET BASIS										
			6.7722	7.3960	2.1996					
EMISSION RATE	HC	NOX	CO							
	0.58084	0.00074012	3.3733							
EMISSION MASS/MODE	0.0096806	1.2335E-05	0.056222							
EMISSION MASS/RATED HP	6.0504E-05	7.7095E-08	0.00035139							
MODE EMIS./STD. CYCLE %	3.1844	0.0051397	0.83664							
CAL. FUEL AIR RATIO = 0.089388		MEAS. FUEL AIR RATIO = 0.090115		DIFF MEAS. & CAL. F/A PERCENT = -0.80792						
CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4						
	237.92	248.02	226.46	232.73						
EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SFXT-1	SEXT-2				
	577.26	-454.00	-454.00	47.469	373.28	371.29				
ENGINE OIL	EOILT	SOILT	DILT	MANIFOLD PRESSURE = 10.818						
	138.90	-204.11	47.409							
DYAD COND.	TOROUF	RPM	CYL. BACK PRESSURE = 28.933							
	5.9406	575.94								
INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2						
	77.944	77.588	-138.06	74.880						
ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW						
	82.029	1.0577	53.338	1451.0						
CELL TEMP. = 75.172	HEATER TEMP = 136.59		COOLER TEMP = 88.409							

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NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDE11 REC 04/13/76 19:18:00.395 FAC SEX15 PGM C003 RDG 3309

LFANOUT 25 BTDC I & T 80 DEG HUM=0% NEUTRAL MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.220 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 78.068 PRESS 29.222 CFM 11.398 DRY FLOW 49.503 VAPOR FLOW 0.0028864 PRESS TOTAL 14.352

COMB. FUEL TEMP 77.139 PRESS 5.8137 DENSITY 44.723 TURBO FLOW 6.1362 FLOW TRON 4.8695 FPIP 6.1884

COOLING AIR TEMP 80.866 UDEL-HOOD -0.073064 DEL-HOOD 0.83387 FLOW 0.00000 REL-HUM 0.28256 DEW-POINT -28.227

REL-HUM 1 0.28256 2 73.509 HUMIDITY 0.40816 % H2O VAPOR CORRECTED HP 0.0093727 0.62778

ENG. COND. F/A DRY 0.098368 F/A WET 0.098362 EQU. RATIO 1.4582 RPM-1 614.58 RPM-2 614.04 TORQUE 5.2672 BHP 0.61636

WET CORRECTION FACTOR = 0.89216 EXHAUST MOLE. WT. = 26.334 EXHAUST DENSITY = 0.068184 EXHAUST FLOW RATE = 797.48

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 31781. NOX PPM 4.8245 CO DRY 9.4910 CO2 DRY 6.8972 O2 DRY 3.0761
CORRECTED CONC. TO WET BASIS 8.4675 6.1533 2.7444

EMISSION RATE HC 0.90988 NOX 0.00045784 CO 4.9024
EMISSION MASS/MODE 0.015165 7.6307E-06 0.081707
EMISSION MASS/RATED HP 9.4779E-05 4.7692E-08 0.00051067
MODE EMIS./STD. CYCLE % 4.9884 0.0031795 1.2159

CAL. FUEL AIR RATIO = 0.097514 MEAS. FUEL AIR RATIO = 0.098368 DIFF MEAS. & CAL. F/A PERCENT = -0.86770

CYL TEMP DEG.F CYL-1 255.10 CYL-2 265.70 CYL-3 243.91 CYL-4 255.89

EXT GAS TEMP DEG.F EXT-1 119.10 EXT-2 -454.00 EXT-3 -454.00 EXT-4 248.28 SEXT-1 524.63 SEXT-2 524.02

ENGINE OIL EOILT 151.17 SOILT 266.95 OILT 45.909 MANIFOLD PRESSURE = 11.013

DYMO COND. TORQUE 4.3132 RPM 608.58 CYL. RACK PRESSURE = 29.318

INDUCTION AIR IAIRT1 78.307 IAIRT2 78.068 TAIRT1 -2.0318 TAIRT2 75.487

ORIFICE AIR TEMP 82.029 DELTAP 1.9873 ORFP 53.367 FLOW 1970.1

CELL TEMP. = 75.225 HEATER TEMP = 128.51 COOLER TEMP = 89.195

538

NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDEII REC 04/13/76 19:18:20.290 FAC SEX15 PGM C003 RDG 3310

LEANOUT 25 BTDC I & T 80 DEG HUM=0% NEUTRAL MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.220 RATED HP.* 160.00 HC RATIO= 2.1250

COMB. AIR TEMP 77.670 PRESS 29.224 CFM 11.388 DRY FLOW 49.405 VAPOR FLOW 0.0027480 PRESS TOTAL 14.351

COMB. FUEL TEMP 76.696 PRESS 5.8137 DENSITY 44.735 TURBO FLOW 6.0537 FLOW TRON 4.8575 FPIP 6.1701

COOLING AIR TEMP 80.267 UDEL-HOOD -0.095205 DEL-HOOD 0.83287 FLOW 0.00000 REF-HUM 0.27309 DEW-POINT -28.387

REL-HUM 1 0.27309 2 48.965 HUMIDITY 0.38935 % H2O VAPOR 0.0089408 CORRECTED HP 0.56729

ENG. COND. F/A DRY 0.098320 F/A WET 0.098315 EQU. RATIO 1.4575 RPM-1 611.70 RPM-2 611.28 TORQUE 4.7838 BHP 0.55717

WET CORRECTION FACTOR = 0.89188 EXHAUST MOLE. WT. = 26.337 EXHAUST DENSITY = 0.068192 EXHAUST FLOW RATE = 795.76

MEASURED CONC. PART PER MILLION WET HC PPM 32096. NOX PPM 4.6995 CO DRY 9.4447 PFR CENT CO2 DRY 6.9296 O2 DRY 3.0826
CORRECTED CONC. TO WET BASIS CO DRY 8.4235 CO2 DRY 6.1803 O2 DRY 2.7493

S39

EMISSION RATE HC 0.91692 NOX 0.00044502 CO 4.8665
EMISSION MASS/MODE 0.015282 7.4170E-06 0.081108
EMISSION MASS/RATED HP 9.5513E-05 4.5356E-08 0.00050693
MODE EMIS./STD. CYCLE % 5.0270 0.0030904 1.2070

CAL. FUEL AIR RATIO = 0.097497 MEAS. FUEL AIR RATIO = 0.098320 DIFF MEAS. & CAL. F/A PERCENT = -0.83726

CYL TEMP DEG.F CYL-1 250.21 CYL-2 250.95 CYL-3 238.18 CYL-4 248.93

EXT GAS TEMP DEG.F EXT-1 1102.1 EXT-2 -454.00 EXT-3 -454.00 EXT-4 -421.98 SEXT-1 518.10 SEXT-2 517.14

ENGINE OIL EDILT 150.56 SOILT 67.556 OILP 46.845 MANIFOLD PRESSURE = 11.156

DYNO COND. TORQUE 4.3348 RPM 604.08 CYL. BACK PRESSURE = 29.047

INDUCTION AIR IAIRT1 77.909 IAIRT2 77.670 TAIRT1 -83.640 TAIRT2 76.033

ORIFICE AIR TEMP 81.509 DELTAP 1.0061 DRFP 53.304 FLOW 1416.4

CELL TEMP. = 74.817 HEATER TEMP = 140.76 COOLER TEMP = 93.417

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NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDELL REC 04/13/76 19:21:14.727 FAC SEX15 PGM C003 RDG 3311

LEANOUT 25 STD I & T 80 DEG HUM=0% NEUTRAL MODE = 2.0000 NO. SCANS = 5
 ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.220 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	77.440	29.214	20.045	86.901	0.0043989	14.352

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	76.360	5.7588	44.743	9.6038	8.2928	6.1743

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	79.234	-0.073617	0.78461	0.00000	0.25045	-28.682

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	0.25045	60.546	0.35434	0.0081368	1.3329

FNG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.095428	0.095423	1.4243	1195.9	1197.0	5.7506	1.3094

WET CORPECTION FACTOR = 0.86632 EXHAUST MJLF. WT. = 26.533 EXHAUST DENSITY = 0.068700 EXHAUST FLOW RATE = 1385.7

MEASURED CONC.	PART PER MILLION WET	PER CENT
HC PPM	NOX PPM	CO DRY
8853.9	19.064	11.056
CORRECTED CONC. TO WET BASIS		CO2 DRY
		8.0724
		0.29905
		9.5784
		6.9933
		0.25907

EMISSION RATE	HC	NOX	CO
EMISSION MASS/MODE	0.44046	0.0031437	9.6362
EMISSION MASS/RATED HP	0.080751	0.00057634	1.7666
MODE EMIS./STD. CYCLE %	0.00050469	3.5021E-06	0.011041
	26.563	0.24014	26.289

CAL. FUEL AIR RATIO = 0.097392 MEAS. FUEL AIR RATIO = 0.095428 DIFF MEAS. & CAL. F/A PERCENT = 2.0581

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	244.22	255.80	235.92	232.92

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1355.1	-454.00	-454.00	169.83	481.61	480.95

ENGINE OIL	EDILT	SOILT	OILP	MANIFOLD PRESSURE = 8.1130
	145.05	192.59	57.098	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.412
	8.7777	1185.7	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	77.643	77.440	-60.403	76.442

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	80.893	0.096010	53.338	339.59

CELL TEMP. = 74.355 HEATER TEMP = 145.84 COOLER TEMP = 95.622

SHO

NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDELI REC 04/13/76 19:21:35.766 FAC SEX15 PGM C003 RDG 3312

LEAFOUT 25 BTDC I & T 80 DEG HUM=0% NEUTRAL MODE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.220 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 77.794 PRESS 29.226 CFM 20.185 DRY FLOW 87.406 VAPOR FLOW 0.0052560 PRESS TOTAL 14.355

COMB. FUEL TEMP 76.510 PRESS 5.7576 DENSITY 44.739 TURBO FLOW 9.5789 FLOW TRON 8.2838 FPIP 6.1728

COOLING AIR TEMP 79.367 UDEL-HOOD -0.081643 DEL-HOOD 0.84217 FLOW 0.00000 REL-HUM 0.29414 DEW-POINT -28.117

REL-HUM 1 0.29414 2 -7.9208 HUMIDITY 0.42094 % H2O VAPOR CORRECTED HP 0.0096661 1.2195

ENG. COND. F/A DRY 0.094774 F/A WET 0.094758 EQU. RATIO 1.4145 RPM-1 1198.0 RPM-2 1197.7 TORQUE 5.2505 BHP 1.1976

WET CORRECTION FACTOR = 0.86451 EXHAUST MOLE WT. = 26.578 EXHAUST DENSITY = 0.068816 EXHAUST FLOW RATE = 1390.6

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 9113.9 NOX PPM 19.450 CO DRY 11.335 CO2 DRY 8.0543 O2 DRY 0.34941
CORRECTED CONC. TO WET BASIS 9.5399 6.9631 0.30207

EMISSION RATE HC 0.45498 NOX 0.0032186 CO 9.6311
EMISSION MASS/MODE 0.022749 0.00016093 0.48156
EMISSION MASS/RATED HP 0.00014218 1.0058E-06 0.0030097
MODE EMIS./STD. CYCLE % 7.4833 0.067053 7.1660

CAL. FUEL AIR RATIO = 0.097330 MEAS. FUEL AIR RATIO = 0.094774 DIFF MEAS. & CAL. F/A PERCENT = 2.6968

CYL TEMP DEG.F CYL-1 246.86 CYL-2 258.10 CYL-3 239.69 CYL-4 236.06

EXT GAS TEMP DEG.F EXT-1 954.79 EXT-2 -454.00 EXT-3 -454.00 EXT-4 -406.03 SEXT-1 479.31 SEXT-2 478.65

ENGINE OIL FOILT 144.59 SOILT 71.333 OILP 57.258 MANIFOLD PRESSURE = 8.1000

DYNO COND. TORQUE 5.9190 RPM 1184.3 CYL. BACK PRESSURE = 28.873

INDUCTION AIR IAIRT1 78.006 IAIRT2 77.794 TAIRT1 46.992 TAIRT2 77.210

ORIFICE AIR TEMP 80.928 DELTAP 1.0531 ORFP 53.313 FLOW 1449.4

CELL TEMP. = 74.099 HEATER TEMP = 140.37 COOLER TEMP = 98.450

NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDEII REC 04/13/76 19:27:37.608 FAC SEX15 PGM C003 RDG 3313

LEANOUT 25 BTDC I & T 80 DEG HUM=0% NEUTRAL MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.220 RATED HP = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 79.084 PRESS 29.218 CFM 11.595 DRY FLOW 50.071 VAPOR FLOW 0.0040585 PRESS TOTAL 14.351

COMB. FUEL TEMP 77.511 PRESS 5.8125 DENSITY 44.713 TURBO FLOW 5.6632 FLOW TRON 4.8875 FPIP 6.2001

COOLING AIR TEMP 80.655 UDEL-HOOD -0.086072 DEL-HOOD 0.82446 FLOW 0.00000 REL-HUM 0.37985 DEW-POINT -26.842

REL-HUM 1 0.37985 2 53.591 HUMIDITY 0.55738 % H2O VAPOR 0.013029 CORRECTED HP 0.49931

ENG. COND. F/A DRY 0.097610 F/A WET 0.097602 EQU. RATIO 1.4569 RPM-1 613.56 RPM-2 616.98 TORQUE 4.1921 BHP 0.48974

WET CORRECTION FACTOR = 0.89000 EXHAUST MFL. WT. = 26.384 EXHAUST DENSITY = 0.068315 EXHAUST FLOW RATE = 804.55

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 31807. CO2 DRY 7.0226 O2 DRY 3.0420
CORRECTED CONC. TO WET BASIS NOX PPM 3.5163 CO DRY 6.2501 CO2 DRY 2.7074

SHZ

EMISSION RATE HC 0.91869 NOX 0.00033666 CO 4.8584
EMISSION MASS/MODE 0.015312 5.6110E-06 0.080972
EMISSION MASS/RATED HP 9.5697E-05 3.5069E-08 0.00050608
MODE EMIS./STD. CYCLE % 5.0367 0.0023379 1.2049

CAL. FUEL AIR RATIO = 0.097151 MEAS. FUEL AIR RATIO = 0.097610 DIFF MEAS. & CAL. F/A PERCENT = -0.47092

CYL TEMP DEG.F CYL-1 238.47 CYL-2 249.99 CYL-3 227.00 CYL-4 233.82

EXT GAS TEMP DEG.F EXT-1 597.03 EXT-2 -454.00 EXT-3 -454.00 EXT-4 189.13 SEXT-1 405.77 SEXT-2 404.20

ENGINE OIL EQILT 140.82 SOILT 330.98 OILT 47.757 MANIFOLD PRESSURE = 11.018

DYNO COND. TORQUE 6.5310 RPM 607.26 CYL. BACK PRESSURE = 29.231

INDUCTION AIR IAIRT1 79.331 IAIRT2 79.084 TAIRT1 73.559 TAIRT2 78.525

ORIFICE AIR TEMP 81.914 DELTAP 2.0219 DPFP 53.307 FLOW 1986.4

CELL TEMP. = 75.021 HEATER TEMP = 156.41 COOLER TEMP = 101.88

NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDEII REC 04/13/76 19:27:57.801 FAC SEX15 PGM C003 RDG 3314

LEANOUT 25 BTDC I.C.T. 80 DEG HUM=0% NEUTRAL MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.220 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 79.358 PRESS 29.214 CFM 11.227 DRY FLOW 48.410 VAPOR FLOW 0.0041100 PRESS TOTAL 14.352

COMB. FUEL TEMP 77.590 PRESS 5.8119 DENSITY 44.711 TURBO FLOW 5.8173 FLOW TRON 4.8905 FPIP 6.1881

COOLING AIR TEMP 80.893 UNEL-HOOD -0.084688 DEL-HOOD 0.82031 FLOW 0.00000 PEL-HUM 0.39434 DEW-POINT -26.602

REL-HUM 1 0.39434 2 25.571 HUMIDITY 0.59429 % H2O VAPOR 0.013647 CORRECTED HP 0.45515

ENG. COND. F/A DRY 0.10102 F/A WFT 0.10101 EQU. RATIO 1.5378 RPM-1 610.08 RPM-2 608.46 TORQUE 3.8420 BHP 0.44630

WET CORRECTION FACTOR = 0.90489 EXHAUST MOLE. WT. = 26.159 EXHAUST DENSITY = 0.067732 EXHAUST FLOW RATE = 786.99

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 31575. NOX PPM 3.6744 CO DRY 9.2564 CO2 DRY 7.0820 O2 DRY 3.1346
CORRECTED CONC. TO WFT BASIS CO DRY 8.3851 CO2 DRY 6.4084 O2 DRY 2.8365

EMISSION RATE HC 0.89209 NOX 0.00034411 CO 4.7909
EMISSION MASS/MODE 0.014868 5.7352E-06 0.079848
EMISSION MASS/RATED HP 9.2926E-05 3.5845E-08 0.00049905
MODE EMIS./STD. CYCLE % 4.8909 0.0023897 1.1882

CAL. FUEL AIR RATIO = 0.096031 MEAS. FUEL AIR RATIO = 0.10102 DIFF MEAS. & CAL. F/A PERCENT = -4.9400

CYL TEMP DEG.F CYL-1 235.69 CYL-2 247.53 CYL-3 222.93 CYL-4 229.67

FXT GAS TEMP DEG.F EXT-1 1446.4 EXT-2 -454.00 EXT-3 -454.00 EXT-4 -454.00 SEXT-1 401.27 SEXT-2 399.56

ENGINE OIL EOILT 140.30 SOILT -280.60 OILP 47.821 MANIFOLD PRESSURE = 10.987

DYNO COND. TORQUE 8.4536 RPM 601.20 CYL. BACK PRESSURE = 29.659

INDUCTION AIR IAIRT1 79.623 IAIRT2 79.358 TAIRT1 178.46 TAIRT2 79.346

ORIFICE AIR TEMP 82.020 DELTAP 1.984C DRFP 53.326 FLOW 1968.5

CELL TEMP. = 75.190 HEATER TEMP = 147.13 COOLER TEMP = 104.17

543

NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDET REC 04/13/76 19:30:51.336 FAC SEX15 PGM C003 RDG 3315

LEANOUT 25 BTDC I & T 80 DEG HUM=0% NEUTRAL MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.220 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 80.337 PRESS 29.217 CFM 20.278 DRY FLOW 87.469 VAPOR FLOW 0.0085620 PRESS TOTAL 14.353

COMB. FUEL TEMP 17.537 PRESS 5.7576 DENSITY 44.712 TURBO FLOW 9.4874 FLOW TRON 8.1128 FPIP 6.1728

COOLING AIR TEMP 81.289 DEL-HOOD -0.078876 DEL-HOOD 0.80260 FLOW 0.00000 REL-HUM 0.44034 DEW-POINT -25.782

REL-HUM 1 0.44034 2 64.518 HUMIDITY 0.68520 % H2O VAPOR CORRECTED HP 1.7740

ENG. COND. F/A DRY 0.092751 F/A WET 0.092742 FOU. RATIO 1.3843 RPM-1 1194.4 RPM-2 1194.2 TORQUE 7.6424 BHP 1.7380

WET CORRECTION FACTOR = 0.85786 EXHAUST MOL. WT. = 26.720 EXHAUST DENSITY = 0.069183 EXHAUST FLOW RATE = 1381.7

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 8291.8 CO2 DRY 8.1379 O2 DRY 0.26589
NOX PPM 20.310 CO DRY 6.9812 O2 DRY 0.22809
CORRECTED CONC. TO WET BASIS 9.4303

h/s

EMISSION RATE HC 0.41130 NOX 0.0033394 CO 9.4595
EMISSION MASS/MODE 0.075405 0.00061222 1.7343
EMISSION MASS/RATED HP 0.00047128 3.9264E-06 0.010839
MODE EMIS./STD. CYCLE % 24.804 0.25509 25.807

CAL. FUEL AIR RATIO = 0.096998 MEAS. FUEL AIR RATIO = 0.092751 DIFF MEAS. & CAL. F/A PERCENT = 4.5788

CYL TEMP DEG.F CYL-1 249.52 CYL-2 260.28 CYL-3 246.87 CYL-4 240.50

EXT GAS TEMP DEG.F EXT-1 1174.6 EXT-2 -454.00 EXT-3 -454.00 EXT-4 96.384 SEXT-1 396.18 SEXT-2 395.78

ENGINE OIL EOILT 138.83 SOILT 13.316 OILT 58.198 MANIFOLD PRESSURE = 8.0194

DYNO COND. TORQUE 7.8848 RPM 1192.9 CYL. BACK PRESSURE = 29.272

INDUCTION AIR IAIRT1 80.584 IAIRT2 80.337 TAIRT1 158.49 TAIRT2 79.185

ORIFICE AIR TEMP 82.486 DELTAP 2.0414 ORFP 53.331 FLOW 1994.4

CELL TEMP. = 75.810 HEATER TEMP = 152.44 COOLER TEMP = 103.93

NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDET REC 04/13/76 19:31:14.832 FAC SEX15 PGM C003 RDG 3316

LEANOUT 25 BTDC I & T 80 DEG HUM=0% NEUTRAL MODE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.220 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 80.637 PRESS 29.212 CFM 20.045 DRY FLOW 86.435 VAPOR FLOW 0.0066969 PRESS TOTAL 14.355

COMB. FUEL TEMP 77.581 PRESS 5.7576 DENSITY 44.711 TURBO FLOW 9.4066 FLOW TRON 8.0978 FPIP 6.1740

COOLING AIR TEMP 81.562 UDEL-HOOD -0.076385 DEL-HOOD 0.77077 FLOW 0.00000 REL-HUM 0.34521 DEW-POINT -27.062

REL-HUM 1 2 HUMIDITY 0.54235 % H2O VAPOR 0.012454 CORRECTED HP 0.98081

ENG. COND. F/A DRY 0.093687 F/A WFT 0.093680 EQU. RATIO 1.3983 RPM-1 1194.1 RPM-2 1195.1 TORQUE 4.2254 BHP 0.96066

WET CORRECTION FACTOR = 0.86236 EXHAUST MOLE. WT. = 26.654 EXHAUST DENSITY = 0.069013 EXHAUST FLOW RATE = 1369.9

MEASURED CONC. PART PER MILLION WET NOX PPM 8010.8 21.481 CO DRY 10.892 PER CENT CO2 DRY 8.2068 O2 DRY 0.25228

CORRECTED CONC. TO WFT BASIS CO DRY 9.3931 PER CENT CO2 DRY 7.0772 O2 DRY 0.21756

EMISSION RATE HC 0.39396 NOX 0.0035018 CO 9.3417
 EMISSION MASS/MODE 0.019698 0.00017509 0.46709
 EMISSION MASS/RATED HP 0.00012311 1.0943E-06 0.0029193
 MODE EMIS./STD. CYCLE % 6.4796 0.072953 6.9507

CAL. FUEL AIR RATIO = 0.096533 MEAS. FUEL AIR RATIO = 0.093687 DIFF MEAS. & CAL. F/A PERCENT = 3.0373

CYL TEMP DEG.F CYL-1 251.56 CYL-2 261.98 CYL-3 249.56 CYL-4 243.49

EXT GAS TEMP DEG.F EXT-1 1576.8 EXT-2 -454.00 EXT-3 -454.00 EXT-4 -424.48 SEXT-1 395.10 SEXT-2 394.74

ENGINE OIL EOILT 138.91 SOILT 138.73 OILT 58.106 MANIFOLD PRESSURE = 8.0218

DYNO COND. TORQUE 4.1332 RPM 1193.2 CYL. BACK PRESSURE = 29.254

INDUCTION AIR IAIRT1 80.857 IAIRT2 80.637 TAIRT1 54.351 TAIRT2 79.449

ORIFICE AIR TEMP 82.504 DELTAP 1.0179 DRFP 53.331 FLOW 1423.2

CELL TEMP. = 75.775 HEATER TEMP = 136.48 COOLER TEMP = 93.541

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NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDE11 REC 04/13/76 19:42:20.157 FAC SFX15 PGM C003 RDG 3319

LFANOUT 25 BTDC I & T 80 DEG HUM=0% 3/4T RICH MODE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.220 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TFMP 78.581 PRESS 29.222 CFM 21.903 DRY FLOW 94.954 VAPOR FLOW 0.0056847 PRESS TOTAL 14.359

COMB. FUEL TEMP 75.270 PRESS 5.7351 DENSITY 44.772 TURBO FLOW 11.051 FLOW TRON 9.4719 FPIP 6.1644

COOLING AIR TEMP 80.575 UDEL-HOOD -0.071127 DEL-HOOD 0.81726 FLOW 0.00000 RFL-HUM 0.28541 DEW-POINT -28.132

REL-HUM 1 0.28541 2 -0.61206 HUMIDITY 0.41907 % H2O VAPOR CORRECTED HP 0.0096233 1.2799

ENG. COND. F/A DRY 0.099753 F/A WET 0.099747 EQU. RATIO 1.4888 RPM-1 1206.6 RPM-2 1205.3 TORQUE 5.4672 BHP 1.2560

WET CORRECTION FACTOR = 0.86492 EXHAUST MOLE. WT. = 26.242 EXHAUST DENSITY = 0.067946 EXHAUST FLOW RATE = 1537.0

MEASURED CONC. HC PPM 12548. NOX PPM 11.395 CO DRY 12.302 PER CENT CO2 DRY 7.2402 O2 DRY 0.34359
CORRECTED CONC. TO WET BASIS HC 10.640 PER CENT CO2 DRY 6.2622 O2 DRY 0.29718

546

EMISSION RATE HC 0.69238 NOX 0.0020842 CO 11.872
EMISSION MASS/MODE 0.034619 0.00010421 0.59362
EMISSION MASS/RATED HP 0.00021637 6.5130E-07 0.0037101
MODE EMIS./STD. CYCLE % 11.388 0.043420 8.8337

CAL. FUEL AIR RATIO = 0.10381 MEAS. FUEL AIR RATIO = 0.099753 DIFF MEAS. & CAL. F/A PERCENT = 4.0694

CYL TEMP DEG.F CYL-1 273.80 CYL-2 285.73 CYL-3 276.14 CYL-4 280.18

EXT GAS TEMP DEG.F FXT-1 1777.9 EXT-2 -454.00 FXT-3 -454.00 FXT-4 -312.42 SEXT-1 505.33 SEXT-2 505.15

ENGINE OIL EOILT 149.07 SOILT 47.734 OILT 57.138 MANIFOLD PRESSURE = 8.5162

DYNO COND. TORQUE 4.6733 RPM 1204.6 CYL. BACK PRESSURE = 29.255

INDUCTION AIR IAIRT1 78.819 IAIRT2 78.581 TAIRT1 -37.545 TAIRT2 76.729

ORIFICE AIR TEMP 80.945 DELTAP 2.0119 DRFP 53.293 FLOW 1983.5

CELL TEMP. = 73.956 HEATER TEMP = 109.73 COOLER TEMP = 90.221

NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDEII REC 04/13/76 19:45:19.825 FAC SEX15 PGM C003 RDG 3320

LEANOUT 25 BTDC I & I 80 DEG HUM=0% 3/4T RICH MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 79.322 PRESS 29.240 CFM 13.459 DRY FLOW 58.213 VAPOR FLOW 0.0041359 PRESS TOTAL 14.355

COMB. FUEL TEMP 76.439 PRESS 5.7801 DENSITY 44.741 TURBO FLOW 7.3760 FLOW TRON 6.1026 FPIP 6.1764

COOLING AIR TEMP 81.086 UDEL-HOOD -0.07555 DEL-HOOD 0.84494 FLOW 0.00000 REL-HUM 0.33047 DEW-POINT -27.457

REL-HUM 1 0.33047 2 40.660 HUMIDITY 0.49734 % H2O VAPOR CORRECTED HP 0.011421 0.43196

ENG. COND. F/A DRY 0.10483 F/A WET 0.10483 EQU. RATIO 1.5547 RPM-1 585.36 RPM-2 586.32 TORQUE 3.8004 BHP 0.42357

WET CORRECTION FACTOR = 0.89637 EXHAUST MOL.F. WT. = 25.918 EXHAUST DENSITY = 0.067107 EXHAUST FLOW RATE = 958.47

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 41058. NOX PPM 3.6144 CO DRY 10.490 CO2 DRY 5.7996 O2 DRY 3.5557
CORRECTED CONC. TO WET BASIS CO DRY 9.4024 CO2 DRY 5.1986 O2 DRY 3.1872

EMISSION RATE HC 1.4128 NOX 0.00041224 CO 6.5426
EMISSION MASS/MODE 0.023546 5.8707E-06 0.10904
EMISSION MASS/RATED HP 0.00014716 4.2942E-08 0.00068153
MODE EMIS./STD. CYCLE % 7.7454 0.0028628 1.6227

CAL. FUEL AIR RATIO = 0.10534 MEAS. FUEL AIR RATIO = 0.10483 DIFF MEAS. & CAL. F/A PERCENT = 0.48283

CYL TEMP DEG.F CYL-1 243.97 CYL-2 256.00 CYL-3 235.64 CYL-4 243.10

EXT GAS TEMP DEG.F EXT-1 869.10 EXT-2 -454.00 EXT-3 -454.00 EXT-4 91.168 SEXT-1 442.34 SEXT-2 441.36

ENGINE OIL OILT 145.48 SOILT 12.558 OILP 46.949 MANIFOLD PRESSURE = 12.383

DYNO COND. TORQUE 2.6499 RPM 586.02 CYL. BACK PRESSURE = 28.973

INDUCTION AIR IAIRT1 79.631 IAIRT2 79.322 TAIRT1 60.889 TAIRT2 77.806

ORIFICE AIR TEMP 81.342 DELTAP 1.0340 DRFP 53.302 FLOW 1435.8

CELL TEMP. = 74.471 HEATED TEMP = 103.76 COOLER TEMP = 90.583

547

NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDET REC 04/13/76 19:52:10.388 FAC SEX15 PGM C003 RDG 3321

LEANOUT 25 BTDC I.C.T 80 DEG HUM=0% 3/4T RICH MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 80.954 PRESS 29.224 CFM 13.817 DRY FLOW 59.738 VAPOR FLOW 0.0064232 PRESS TOTAL 14.358

COMB. FUEL TEMP 77.387 PRESS 5.7741 DENSITY 44.716 TURBO FLOW 7.4508 FLOW TRON 6.1896 FPIP 6.1863

COOLING AIR TEMP 82.891 UDEL-HOOD -0.090223 DEL-HOOD 0.82889 FLOW 0.00000 REL-HUM 0.47421 DEW-POINT -25.162

REL-HUM 1 0.47421 2 52.435 HUMIDITY 0.75267 % H2O VAPOR 0.017284 CORRECTED HP 0.76656

ENG. COND. F/A DRY 0.10361 F/A WET 0.10360 EQU. RATIO 1.5465 RPM-1 608.64 RPM-2 608.04 TORQUE 6.4756 BHP 0.75044

WET CORRECTION FACTOR = 0.89553 EXHAUST MOLE. WT. = 25.994 EXHAUST DENSITY = 0.067304 EXHAUST FLOW RATE = 979.64

MEASURED CONC.	PART PER MILLION WFT		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	39969.	3.5404	10.496	5.7589	3.6343
CORRECTED CONC. TO WET BASIS			9.3992	5.1573	3.2546

548

	HC	NOX	CO
EMISSION RATE	1.4057	0.00041272	6.6848
EMISSION MASS/MODE	0.023428	5.8787E-06	0.11141
EMISSION MASS/RATED HP	0.00014643	4.2992E-08	0.00069634
MODE EMISS./STD. CYCLE %	7.7067	0.0028661	1.6579

CAL. FUEL AIR RATIO = 0.10450 MEAS. FUEL AIR RATIO = 0.10361 DIFF MEAS. & CAL. F/A PERCENT = 0.85587

CYL TEMP DEG.F CYL-1 252.82 CYL-2 269.58 CYL-3 244.32 CYL-4 254.71

EXT GAS TEMP DEG.F EXT-1 -163.19 EXT-2 -454.00 EXT-3 -454.00 EXT-4 251.11 SFXT-1 539.37 SEXT-2 538.84

ENGINE OIL EOILT 152.59 SOILT 314.59 OILP 46.753 MANIFOLD PRESSURE = 11.992

DYAO COND. TORQUE 7.8128 RPM 607.08 CYL. RACK PRESSURE = 29.706

INDUCTION AIR IAIRT1 81.333 IAIPT2 80.954 TAIRT1 -39.536 TAIRT2 78.097

ORIFICE AIR TEMP 82.504 DELTAP 0.073307 DRFP 53.328 FLOW 273.73

CELL TEMP. = 75.607 HEATER TEMP = 90.917 COOLER TEMP = 89.010

NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDE11 REC 04/13/76 19:52:30.020 FAC SEX15 PGM C003 RDG 3322

LFANOUT 25 BTDC I & T 80 DEG HUM=07 3/4T RICH MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 WC RATIO = 2.1250

COMB. AIR TEMP 80.963 PRESS 29.231 CFM 13.806 DRY FLOW 59.722 VAPOR FLOW 0.0053157 PRESS TOTAL 14.358

COMB. FUEL TEMP 77.555 PRESS 5.7774 DENSITY 44.712 TURBO FLOW 7.5975 FLOW TRON 6.2106 FPIP 6.1716

COOLING AIR TEMP 82.847 UDEL-HOOD -0.076662 DEL-HOOD 0.81948 FLOW 0.00000 REL-HUM 0.39246 DEW-POINT -26.342

REL-HUM 1 0.39246 2 40.108 HUMIDITY 0.62305 % H2O VAPOR CORRECTED HP 0.014307 0.75746

ENG. COND. F/A DRY 0.10399 F/A WET 0.10398 EQU. RATIO 1.5521 RPM-1 604.56 RPM-2 602.64 TORQUE 6.4423 BHP 0.74158

WET CORRECTION FACTOR = 0.89440 EXHAUST MOLE. WT. = 25.970 EXHAUST DENSITY = 0.067242 EXHAUST FLOW RATE = 980.60

MEASURED CONC. PART PER MILLION WET HC PPM 40691. NOX PPM 3.5674 CO DRY 10.485 PER CNT CO2 DRY 5.8365 O2 DRY 3.5663
CORRECTED CONC. TO WET BASIS CO 9.3779 PER CNT CO2 DRY 5.2202 O2 DRY 3.1897

EMISSION RATE HC 1.4325 NOX 0.00041628 CO 6.6762
EMISSION MASS/MODE 0.023874 5.9380E-06 0.11127
EMISSION MASS/RATED HP 0.00014921 4.3362E-08 0.00069544
MODE EMIS./STD. CYCLE % 7.8534 0.0028908 1.6558

CAL. FUEL AIR RATIO = 0.10499 MEAS. FUEL AIR RATIO = 0.10399 DIFF MEAS. & CAL. F/A PERCENT = 0.95414

CYL TEMP DEG.F CYL-1 248.44 CYL-2 264.96 CYL-3 239.11 CYL-4 248.73

EXT GAS TEMP DEG.F FXT-1 720.30 EXT-2 -454.00 EXT-3 -454.00 EXT-4 -413.81 SEXT-1 533.42 SEXT-2 532.55

ENGINE OIL EOILT 151.87 SOILT 59.744 OILT 46.737 MANIFOLD PRESSURE = 12.170

DYNO COND. TORQUE 6.7255 RPM 595.20 CYL. BACK PRESSURE = 29.294

INDUCTION AIR IAIRT1 81.298 IAIRT2 80.963 TAIRT1 -55.802 TAIRT2 77.865

ORIFICE AIR TEMP 82.635 DELTAP 0.048005 ORFP 53.386 FLOW 191.70

CELL TEMP. = 75.580 HEATER TEMP = 97.124 COOLER TEMP = 90.265

bhs

NASA-LEVIS PRELIMINARY DATA 04/13/76 CADDETT REC 04/13/76 19:55:25.038 FAC SEX15 PGM C003 RDG 3523

LEANOUT 25. BTDC I & T 80 DEG HUM=0X 3/4T RICH MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.230 RATED HP = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 81.606 PRESS 29.234 CFM 21.903 DRY FLOW 94.756 VAPOR FLOW 0.0067844 PRESS TOTAL 14.360

COMB. FUEL TEMP 77.900 PRESS 5.7369 DENSITY 44.703 TURBO FLOW 10.907 FLOW TRON 9.5139 FPIP 6.1665

COOLING AIR TEMP 82.926 UDEL-HOOD -0.07859 DEL-HOOD 0.81976 FLOW 0.00000 REL-HUM 0.30920 DEW-POINT -27.422

REL-HUM 1 0.30920 2 45.085 HUMIDITY 0.50119 % H2O VAPOR 0.011509 CORRECTED HP 1.2206

ENG. COND. F/A DRY 0.10040 F/A WET 0.10040 EQU. RATIO 1.4986 RPM-1 1202.4 RPM-2 1202.1 TORQUE 5.2172 BHP 1.1944

WET CORRECTION FACTOR = 0.86673 EXHAUST MOLE. WT. = 26.199 EXHAUST DENSITY = 0.067836 EXHAUST FLOW RATE = 1537.2

MEASURED CONC.	PART PER MILLION WET		CO DRY	PER CENT	
	HC PPM	NOX PPM		CO2 DRY	O2 DRY
	13386.	11.121	12.196	7.3001	0.36690
CORRECTED CONC. TO WET BASIS			10.571	6.3272	0.31800

EMISSION RATE	HC	NOX	CO
	EMISSION MASS/MODE	0.73872	0.0020343
EMISSION MASS/RATED HP	0.13543	0.00037296	2.1627
MODE EMIS./STD. CYCLE %	0.00084645	2.3310E-06	0.013517
	44.550	0.15540	32.183

CAL. FUEL AIR RATIO = 0.10379 MEAS. FUEL AIR RATIO = 0.10040 DIFF MEAS. & CAL. F/A PERCENT = 3.3689

CYL TEMP DEG.F CYL-1 256.18 CYL-2 268.54 CYL-3 256.10 CYL-4 252.44

EXT GAS TEMP DEG.F EXT-1 163.54 EXT-2 -454.00 EXT-3 -454.00 EXT-4 225.33 SEXT-1 511.26 SEXT-2 510.47

ENGINE OIL EOILT 147.08 SOILT 48.382 OILT 57.630 MANIFOLD PRESSURE = 8.4690

DYNO COND. TORQUE 11.471 RPM 1189.1 CYL. BACK PRESSURE = 29.300

INDUCTION AIR IAIRT1 81.879 IAIRT2 81.606 TAIRT1 -56.158 TAIRT2 77.860

ORIFICE AIR TEMP 83.031 DELTAP 2.0232 DRFP 53.306 FLOW 1985.0

CELL TEMP. = 76.059 HEATER TEMP = 102.67 COOLER TEMP = 91.484

550

NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDE11 REC 04/13/76 19:55:45.130 FAC SEX15 PGM C003 RDG 3324

LEANOUT 25 BTDC I.C.T. 80 DEG HUM=0% 3/4T RICH MODE = 2.0000 ND. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR TEMP 81.694 PRESS 29.229 CFM 21.929 DRY FLOW 94.835 VAPOR FLOW 0.0083943 PRESS TOTAL 14.361

COMP. FUEL TEMP 77.900 PRESS 5.7366 DENSITY 44.703 TURBO FLOW 10.893 FLOW TRON 9.4659 FPIP 6.1629

COOLING AIR TEMP 82.996 UDEL-HOOD -0.07555 DEL-HOOD 0.80924 FLOW 0.00000 REL-HUM 0.38118 DEW-POINT -26.372

REL-HUM 1 0.38118 2 -7.9148 HUMIDITY 0.61960 % H2O VAPOR CORRECTED HP 0.014228 1.8151

ENG. COND. F/A DRY 0.099815 F/A WFT 0.099806 EQU. RATIO 1.4898 RPM-1 1202.0 RPM-2 1202.6 TORQUE 7.7591 BHP 1.7758

WET CORRECTION FACTOR = 0.86442 EXHAUST MOLE. WT. = 26.238 EXHAUST DENSITY = 0.067936 EXHAUST FLOW RATE = 1535.6

MEASURED CONC. HC PPM 13392. NOX PPM 10.640 CO DRY 12.210 PER CENT CO2 DRY 7.3075 O2 DRY 0.35327
CORRECTED CONC. TO WET BASIS CO 10.554 PER CENT CO2 DRY 6.3168 O2 DRY 0.30538

EMISSION RATE HC 0.73820 NOX 0.0019441 CO 11.765
EMISSION MASS/MODE 0.13534 0.00035641 2.1569
EMISSION MASS/RATED HP 0.00084585 2.2276E-06 0.013481
MODE FMIS./STD. CYCLE % 44.518 0.14851 32.097

CAL. FUEL AIR RATIO = 0.10388 MEAS. FUEL AIR RATIO = 0.099815 DIFF MEAS. & CAL. F/A PERCENT = 4.0677

CYL TEMP DEG.F CYL-1 257.51 CYL-2 269.48 CYL-3 257.76 CYL-4 254.39

EXT GAS TEMP DEG.F EXT-1 1349.4 EXT-2 -454.00 EXT-3 -454.00 EXT-4 -251.65 SEXT-1 507.53 SEXT-2 506.82

ENGINE OIL EOILT 147.01 SOILT -26.279 OILT 57.638 MANIFOLD PRESSURE = 8.4926

DYNO COND. TORQUE 2.9163 RPM 1205.3 CYL. BACK PRESSURE = 29.283

INDUCTION AIR IAIRT1 82.002 IAIRT2 81.694 TAIRT1 79.547 TAIRT2 78.084

ORIFICE AIR TEMP 83.119 DELTAP 0.046705 DRFP 53.409 FLOW 187.11

CELL TEMP. = 76.245 HEATER TEMP = 105.10 COOLER TEMP = 92.817

ORIGINAL PAGE IS
OF POOR QUALITY

551

NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDEII REC 04/13/76 20:00:48.826 FAC SEX15 PGM C003 RDG 3326

LEANOUT 25 BTDC I & T 80 DEG HUM=0% 3/4T RICH MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 78.925 PRESS 29.232 CFM 13.754 DRY FLOW 59.477 VAPOR FLOW 0.0024423 PRESS TOTAL 14.356

COMB. FUEL TEMP 75.447 PRESS 5.7822 DENSITY 44.767 TURBO FLOW 7.3185 FLOW TRON 6.0366 FPIP 6.1863

COOLING AIR TEMP 80.284 UDEL-HOOD -0.078046 DEL-HOOD 0.83913 FLOW 0.00000 REL-HUM 0.19352 DEW-POINT -29.237

REL-HUM 1 0.19352 2 45.054 HUMIDITY 0.28744 % H2O VAPOR CORRECTED HP 0.0066006 0.57574

ENG. COND. F/A DRY 0.10150 F/A WET 0.10149 EQU. RATIO 1.5149 RPM-1 580.56 RPM-2 581.70 TORQUE 5.1088 BHP 0.56473

WET CORRECTION FACTOR = 0.88812 EXHAUST MOLE. WT. = 26.128 EXHAUST DENSITY = 0.067653 EXHAUST FLOW RATE = 968.41

MEASURED CONC. PART PER MILLION WFT HC PPM 41718. NOX PPM 3.3843 CO DRY 10.266 PER CFNT CO2 DRY 5.7958 O2 DRY 3.7098
CORRECTED CONC. TO WFT BASIS CO 9.1172 PER CFNT CO2 DRY 5.1473 O2 DRY 3.2947

EMISSION RATE HC 1.4504 NOX 0.00039001 CO 6.4100
EMISSION MASS/MODE 0.024173 5.5002E-06 0.10683
EMISSION MASS/RATED HP 0.00015108 4.0626E-08 0.00066771
MODE EMIS./STD. CYCLE % 7.9515 0.0027084 1.5898

CAL. FUEL AIR RATIO = 0.10479 MEAS. FUEL AIR RATIO = 0.10150 DIFF MEAS. & CAL. F/A PERCENT = 3.2433

CYL TEMP DEG.F CYL-1 239.84 CYL-2 252.54 CYL-3 234.73 CYL-4 240.17

EXT GAS TEMP DEG.F EXT-1 -250.61 EXT-2 -454.00 EXT-3 -454.00 EXT-4 163.32 SEXT-1 431.75 SEXT-2 430.18

ENGINE OIL FOILT 143.69 SOILT -104.80 OILT 47.017 MANIFOLD PRESSURE = 12.621

DYNO COND. TORQUE 7.5535 RPM 573.84 CYL. BACK PRESSURE = 29.148

INDUCTION AIR IAIRT1 79.340 IAIRT2 78.925 IAIRT3 11.323 TAIRT2 78.015

ORIFICE AIR TEMP 80.549 DELTAP 1.0185 DRFP 53.240 FLOW 1426.2

CELL TEMP. = 73.245 HEATER TEMP = 105.85 COOLER TEMP = 91.970

SSA

NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDEII REC 04/13/76 20:03:01.369 FAC SEX15 PGM C003 RDG 3327

LEANOUT 25 BTDC I & T 80 DEG HUM=0% 3/4T RICH MODE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 79.446 PRESS 29.220 CFM 21.882 DRY FLOW 94.663 VAPOR FLOW 0.0089426 PRESS TOTAL 14.358

COMB. FUEL TEMP 75.553 PRESS 5.7333 DENSITY 44.765 TURBO FLOW 10.887 FLOW TRON 9.3309 FPIP 6.1632

COOLING AIR TEMP 80.566 UDEL-HOOD -0.085795 DEL-HOOD 0.80979 FLOW 0.00000 REL-HUM 0.43770 DEW-POINT -25.997

REL-HUM 1 0.43770 2 31.841 HUMIDITY 0.66127 % H2O VAPOR CORRECTED HP 0.015185 1.5240

ENG. COND. F/A DRY 0.098569 F/A WET 0.098560 EQU. RATIO 1.4712 RPM-1 1208.7 RPM-2 1208.6 TORQUE 6.4923 BHP 1.4941

WET CORRECTION FACTOR = 0.86349 EXHAUST MOLE. WT. = 26.320 EXHAUST DENSITY = 0.068149 EXHAUST FLOW RATE = 1526.1

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 11784. NOX PPM 11.451 CO DRY 12.089 CO2 DRY 7.3910 O2 DRY 0.31077
CORRECTED CONC. TO WET BASIS CO DRY 10.439 CO2 DRY 6.3821 O2 DRY 0.26835

EMISSION RATE HC 0.64563 NOX 0.0020796 CO 11.565
EMISSION MASS/MODE 0.032281 0.00010398 0.57827
EMISSION MASS/RATED HP 0.00020176 6.4988E-07 0.0036142
MODE EMISS./STD. CYCLE % 10.619 0.043325 8.6052

CAL. FUEL AIR RATIO = 0.10271 MEAS. FUEL AIR RATIO = 0.098569 DIFF MEAS. & CAL. F/A PERCENT = 4.1961

CYL TEMP DEG.F CYL-1 244.93 CYL-2 258.03 CYL-3 244.03 CYL-4 240.10

EXT GAS TEMP DEG.F EXT-1 -117.16 EXT-2 -454.00 EXT-3 -454.00 EXT-4 170.78 SEXT-1 432.33 SEXT-2 431.70

ENGINE OIL FOILT 141.88 SOILT -20.134 OILP 58.270 MANIFOLD PRESSURE = 8.3509

DYNO COND. TORQUE 6.2574 RPM 1207.3 CYL. BACK PRESSURE = 29.115

INDUCTION AIR IAIRT1 79.772 IAIRT2 79.446 TAIRT1 83.013 TAIRT2 77.811

ORIFICE AIR TEMP 80.831 DELTAP 1.0339 ORFP 53.216 FLOW 1436.4

CELL TEMP. = 73.822 HEATER TEMP = 103.23 COOLER TEMP = 89.868

553

NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDEII REC 04/13/76 20:13:17.573 FAC SEX15 PGM C003 RDG 3328

LFANOUT 25 BTDC I & T 80 DEG HUM=0% 1 1/2T RICH MODE = 1.0000 NO. SCANS = 5
 ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR TEMP 81.289 PRESS 29.234 CFM 15.114 DRY FLOW 65.330 VAPOR FLOW 0.0056122 PRESS TOTAL 14.358

COMB. FUEL TEMP 76.687 PRESS 5.7627 DENSITY 44.735 TURBO FLOW 8.1762 FLOW TRON 6.9937 FPIP 6.1689

COOLING AIR TEMP 82.961 UDEL-HOOD -0.088839 DEL-HOOD 0.82418 FLOW 0.00000 REL-HUM 0.37477 DEW-POINT -26.537

REL-HUM 1 0.37477 2 65.435 HUMIDITY 0.60134 % H2O VAPOR 0.013809 CORRECTED HP 0.73816

ENG. COND. F/A DRY 0.10705 F/A WET 0.10704 EQU. RATIO 1.5978 RPM-1 603.00 RPM-2 600.78 TORQUE 6.2923 BHP 0.72244

WET CORRECTION FACTOR = 0.90128 EXHAUST MOLE WT. = 25.782 EXHAUST DENSITY = 0.066755 EXHAUST FLOW RATE = 1083.5

MEASURED CONC. PART PER MILLION WET HC PPM 46496. NOX PPM 3.4113 CO DRY 10.730 PER CENT CO2 DRY 5.1897 O2 DRY 4.1283
 CORRECTED CONC. TO WET BASIS CO DRY 9.6709 PER CENT CO2 DRY 4.6774 O2 DRY 3.7208

EMISSION RATE HC 1.8086 NOX 0.00043985 CO 7.6073
 EMISSION MASS/MODE 0.030144 7.3308E-06 0.12679
 EMISSION MASS/PATED HP 0.00018840 4.5817E-08 0.00079243
 MODE EMIS./STD. CYCLE % 9.9156 0.0030545 1.8867

CAL. FUEL AIR RATIO = 0.10802 MFAS. FUEL AIR RATIO = 0.10705 DIFF MEAS. & CAL. F/A PERCENT = 0.90705

CYL TEMP DEG. F CYL-1 254.14 CYL-2 276.70 CYL-3 253.49 CYL-4 266.42

EXT GAS TEMP DEG. F EXT-1 -454.00 EXT-2 -454.00 EXT-3 134.89 EXT-4 386.85 SEXT-1 533.47 SEXT-2 533.03

ENGINE OIL EOILT 152.41 SOILT 305.53 OILP 46.485 MANIFOLD PRESSURE = 13.116

DYNO COND. TORQUE 7.7552 RPM 592.32 CYL. BACK PRESSURE = 29.389

INDUCTION AIR IAIRT1 81.668 IAIRT2 81.289 TAIRT1 -59.528 TAIRT2 78.244

ORIFICE AIR TEMP 82.548 DELTAP 1.0359 ORFP 53.340 FLOW 1435.5

CELL TEMP. = 75.553 HEATER TEMP = 109.35 COOLER TEMP = 94.044

554

NASA-LFWIS PRELIMINARY DATA 04/13/76 CADDEII REC 04/13/76 20:15:47.657 FAC SEX15 PGM C003 RDG 3329

LEANOUT 25 BTDC I & T 80 DEG HUM=0% 1 1/2T RICH MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 81.826 PRESS 29.228 CFM 23.050 DRY FLOW 99.668 VAPOR FLOW 0.0066282 PRESS TOTAL 14.361

COMB. FUEL TEMP 77.174 PRESS 5.7183 DENSITY 44.722 TURBO FLOW 11.767 FLOW TRON 10.363 FPIP 6.1617

COOLING AIR TEMP 83.049 UDEL-HOOD -0.083027 DEL-HOOD 0.85795 FLOW 0.00000 REL-HUM 0.28517 DEW-POINT -27.732

REL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP
0.28517 50.001 0.46552 0.010690 1.7008

ENG. COND. F/A DRY 0.10398 F/A WET 0.10397 EQU. RATIO 1.5519 RPM-1 1199.7 RPM-2 1201.3 TORQUE 7.2841 BHP 1.6639

WET CORRECTION FACTOR = 0.86981 EXHAUST MOLE. WT. = 25.971 EXHAUST DENSITY = 0.067245 EXHAUST FLOW RATE = 1636.4

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 16619. NOX PPM 7.3587 CO DRY 12.684 CO2 DRY 6.8703 O2 DRY 0.43844
CORRECTED CONC. TO WET BASIS 11.033 5.9759 0.38136

EMISSION RATE HC 0.97633 NOX 0.0014329 CO 13.107
EMISSION MASS/MODE 0.17899 0.00026271 2.4029
EMISSION MASS/RATED HP 0.0011187 1.6419E-06 0.015018
MODE EMISS./STD. CYCLE % 58.880 0.10946 35.758

CAL. FUEL AIR RATIO = 0.10756 MEAS. FUEL AIR RATIO = 0.10398 DIFF MEAS. & CAL. F/A PERCENT = 3.4479

CYL TEMP DEG.F CYL-1 253.79 CYL-2 271.37 CYL-3 257.74 CYL-4 257.28

EXT GAS TEMP DEG.F EXT-1 -170.69 EXT-2 199.63 EXT-3 518.36 EXT-4 513.11 SEXT-1 522.66 SEXT-2 522.00

ENGINE OIL EOILT 147.78 SOILT 336.86 OILP 57.226 MANIFOLD PRESSURE = 8.8966

DYND COND. TORQUE 1.4545 RPM 1196.7 CYL. BACK PRESSURE = 29.060

INDUCTION AIR IAIRT1 82.178 IAIRT2 81.826 TAIRT1 -54.178 TAIRT2 78.170

ORIFICE AIR TEMP 82.979 DELTAP 2.0190 ORFP 53.326 FLOW 1983.1

CELL TEMP. = 75.988 HEATER TEMP = 108.48 COOLER TEMP = 93.744

555

NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDET REC 04/13/76 20:15:10.367 FAC SEX15 PGM C003 RDG 3330
 LEANOUT 25 BTDC I & T 80 DEG HUM=0% 1 1/2T RICH MODE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR TFMP 81.985 PRESS 29.234 CFM 22.889 DRY FLOW 98.918 VAPOR FLOW 0.0081618 PRESS TOTAL 14.363

COMB. FUEL TEMP 77.183 PRESS 5.7225 DENSITY 44.722 TURBO FLOW 11.597 FLOW TRON 10.126 FPIP 6.1692

COOLING AIR TEMP 83.093 UDEL-HOOD -0.073894 DEL-HOOD 0.83747 FLOW 0.00000 REL-HUM 0.35206 DEW-POINT -26.747

PFL-HUM 1 0.35206 2 1.8682 HUMIDITY 0.57757 % H2O VAPOR CORRECTED HP 0.013263 1.0468

ENG. COND. F/A DRY 0.10237 F/A WET 0.10236 EQU. RATIO 1.5279 RPM-1 1199.3 RPM-2 1201.4 TORQUE 4.4838 BHP 1.0239

WET CORRECTION FACTOR = 0.86507 EXHAUST MOLE. WT. = 26.073 EXHAUST DENSITY = 0.067508 EXHAUST FLOW RATE = 1615.4

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	16423.	7.5958	12.658	6.9141	0.43120	
CORRECTED CONC. TO WET BASIS			10.950	5.9811	0.37302	

EMISSION RATE	HC	NOX	CO	PER CENT	
				CO2 DRY	O2 DRY
EMISSION MASS/MODE	0.95245	0.0014601	12.842	6.9141	0.43120
EMISSION MASS/RATED HP	0.047622	7.3007E-05	0.64209	5.9811	0.37302
MODE EMIS./STD. CYCLE %	0.00029764	4.5629E-07	0.0040131		
	15.665	0.030420	9.5549		

CAL. FUEL AIR RATIO = 0.10733 MEAS. FUEL AIR RATIO = 0.10237 DIFF MEAS. & CAL. F/A PERCENT = 4.8463

CYL TEMP DEG.F CYL-1 255.43 CYL-2 272.04 CYL-3 259.37 CYL-4 259.07

EXT GAS TEMP DEG.F EXT-1 1345.4 EXT-2 240.90 EXT-3 563.51 EXT-4 345.15 SEXT-1 519.46 SEXT-2 518.76

ENGINE OIL EOILT 147.43 SOILT 41.680 OILP 57.326 MANIFOLD PRESSURE = 8.8200

DYNO COND. TORQUE 2.2394 RPM 1194.2 CYL. BACK PRESSURE = 29.424

INDUCTION AIR IAIRT1 82.328 IAIRT2 81.985 TAIRT1 -42.358 TAIRT2 78.560

ORIFICE AIR TEMP 83.031 DELTAP 1.0266 DRFP 53.336 FLOW 1428.5

CELL TEMP. = 75.952 HEATER TEMP = 108.44 COOLER TEMP = 94.987

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LEANOUT 25 BTDC I & T 80 DEG HUM=0% 1 1/2T RICH MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 80.443 PRESS 29.228 CFM 14.824 DRY FLOW 64.079 VAPOR FLOW 0.0059420 PRESS TOTAL 14.359

COMB. FUEL TEMP 75.872 PRESS 5.7603 DENSITY 44.756 TURBO FLOW 8.2659 FLOW TRON 6.9547 FPIP 6.1863

COOLING AIR TEMP 81.465 UDEL-HOOD -0.091053 DEL-HOOD 0.82667 FLOW 0.00000 REL-HUM 0.41997 DEW-POINT -26.107

REL-HUM 1 0.41997 2 -15.952 HUMIDITY 0.64911 % H2O VAPOR 0.014906 CORRECTED HP 0.37980

ENG. COND. F/A DRY 0.10853 F/A WFT 0.10852 EQU. RATIO 1.6199 RPM-1 605.88 RPM-2 605.40 TORQUE 3.2253 BHP 0.37208

WET CORRECTION FACTOR = 0.90302 EXHAUST MOLE. WT. = 25.693 EXHAUST DENSITY = 0.066525 EXHAUST FLOW RATE = 1067.9

MEASURED CONC.	HC PPM	CO DRY	PER CENT CO2 DRY	PER CENT O2 DRY
43880.	3.4043	10.864	5.4267	3.7237
CORRECTED CONC. TO WET BASIS		9.8102	4.9004	3.3626

EMISSION RATE	HC	NOX	CO
EMISSION MASS/MODE	1.6822	0.00043260	7.6055
EMISSION MASS/RATED HP	0.028037	7.2101E-06	0.12676
MODE EMIS./STD. CYCLE %	0.00017523	4.5063E-08	0.00079223
	9.2226	0.0030042	1.8863

CAL. FUEL AIR RATIO = 0.10791 MEAS. FUEL AIR RATIO = 0.10853 DIFF MEAS. & CAL. F/A PERCENT = -0.57373

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	234.96	253.01	231.01	240.02

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	215.29	162.35	271.72	433.17	466.42	465.53

ENGINE OIL EOILT 144.62 SOILT -46.497 OILP 47.393 MANIFOLD PRESSURE = 12.860

DYNO COND. TORQUE 3.7444 PPM 594.54 CYL. BACK PRESSURE = 29.328

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	80.593	80.143	60.464	78.241

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	81.588	2.9708	53.365	2382.6

CELL TEMP. = 73.929 HEATER TEMP = 139.37 COOLER TEMP = 94.229

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NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDEII REC 04/13/76 20:18:46.928 FAC SEX15 PGM C003 RDG 3332

LEANOUT 25 BTDC I & T 80 DEG HUM=0% 1 1/2T RICH MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 79.711 PRESS 29.227 CFM 15.010 DRY FLOW 64.825 VAPOR FLOW 0.0055284 PRESS TOTAL 14.355

COMB. FUEL TEMP 75.323 PRESS 5.7585 DENSITY 44.771 TURBO FLOW 8.3029 FLOW TRON 7.0147 FPIP 6.1797

COOLING AIR TEMP 80.884 UDEL-HOOD -0.082750 DEL-HOOD 0.82391 FLOW 0.00000 REL-HUM 0.39164 DEW-POINT -26.577

REL-HUM 1 0.39164 2 -59.720 HUMIDITY 0.59697 H2O VAPOR CORRECTED HP 0.013708 0.45526

ENG. COND. F/A DRY 0.10821 F/A WET 0.10820 EQU. RATIO 1.6151 RPM-1 604.68 RPM-2 606.54 TORQUE 3.8754 BHP 0.44619

WET CORRECTION FACTOR = 0.90614 EXHAUST MOLE. WT. = 25.712 EXHAUST DENSITY = 0.066575 EXHAUST FLOW RATE = 1079.2

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	44352.	3.2323	10.721	5.3818	3.9460
CORRECTED CONC. TO WET BASIS			9.7149	4.8767	3.5756

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	HC	NOX	CO
EMISSION RATE	1.7183	0.00041510	7.6113
EMISSION MASS/MODE	0.028638	6.9183E-06	0.12686
EMISSION MASS/RATED HP	0.00017899	4.3239E-08	0.00079285
MODE EMISS./STD. CYCLE ?	9.4205	0.0028826	1.8877

CAL. FUEL AIR RATIO = 0.10686 MEAS. FUEL AIR RATIO = 0.10821 DIFF MEAS. & CAL. F/A PERCENT = -1.2506

CYL TEMP DEG.F CYL-1 230.26 CYL-2 250.16 CYL-3 226.01 CYL-4 235.25

EXT GAS TEMP DEG.F EXT-1 670.51 EXT-2 195.93 EXT-3 269.10 EXT-4 144.39 SEXT-1 459.93 SEXT-2 458.87

ENGINE OIL FOILT 144.05 SOILT 292.09 OILP 47.413 MANIFOLD PRESSURE = 12.873

DYNO COND. TORQUE 11.031 RPM 604.20 CYL. BACK PRESSURE = 29.914

INDUCTION AIR IAIRT1 80.170 IAIRT2 79.711 TAIRT1 90.243 TAIRT2 78.624

ORIFICE AIR TEMP 81.033 DELTAP 1.0396 DRFP 53.325 FLOW 1440.0

CELL TEMP. = 73.369 HEATER TEMP = 108.34 COOLER TEMP = 95.217

NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDEII REC 04/13/76 20:22:16.208 FAC SEX15 PGM C003 RDG 3333

LEANOUT 25 BTDC 1 & T 80 DEG HUM=0% 1 1/2T RICH MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 79.517 PRESS 29.227 CFM 22.100 DRY FLOW 95.558 VAPOR FLOW 0.0084955 PRESS TOTAL 14.362

COMB. FUEL TEMP 74.666 PRESS 5.7279 DENSITY 44.788 TURBO FLOW 11.144 FLOW TRON 9.6760 FPIP 6.1614

COOLING AIR TEMP 80.302 UDEL-HOOD -0.079429 DEL-HOOD 0.82031 FLOW 0.00000 REL-HUM 0.41109 DEW-POINT -26.347

REL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP 0.41109 42.822 0.62233 0.014291 1.8496

ENG. COND. F/A DRY 0.10126 F/A WET 0.10125 EQU. RATIO 1.5113 RPM-1 1192.8 RPM-2 1194.2 TORQUE 7.9841 BHP 1.8133

WET CORRECTION FACTOR = 0.86707 EXHAUST MOLE. WT. = 26.144 EXHAUST DENSITY = 0.067693 EXHAUST FLOW RATE = 1554.7

MEASURED CONC. PART PER MILLION WFT PER CENT HC PPM NOX PPM CO DRY CO2 DRY O2 DRY 14185. 9.2289 12.284 7.2139 0.34703 0.30090

EMISSION RATE HC NOX CO 0.79174 0.0017074 12.022 EMISSION MASS/MODE 0.14515 0.00031303 2.2040 EMISSION MASS/RATED HP 0.00090720 1.9564E-06 0.013775 MODE EMISS./STD. CYCLE % 47.748 0.13043 32.798

CAL. FUEL AIR RATIO = 0.10478 MEAS. FUEL AIR RATIO = 0.10126 DIFF MEAS. & CAL. F/A PERCENT = 3.4742

CYL TEMP DEG.F CYL-1 245.03 CYL-2 259.73 CYL-3 247.01 CYL-4 244.81

EXT GAS TEMP DEG.F EXT-1 -391.35 EXT-2 780.53 EXT-3 287.22 EXT-4 544.62 SEXT-1 455.44 SEXT-2 454.95

ENGINE OIL FOILT 141.25 SOILT -41.273 OILP 57.970 MANIFOLD PRESSURE = 8.5382

DYNO COND. TORQUE 2.0666 RPM 1184.8 CYL. BACK PRESSURE = 29.369

INDUCTION AIR IAIRT1 79.852 IAIRT2 79.517 TAIRT1 -61.019 TAIRT2 78.230

ORIFICE AIR TEMP 80.522 DELTAP 3.0019 ORFP 53.313 FLOW 2396.9

CELL TEMP. = 73.138 HEATER TEMP = 94.148 COOLER TEMP = 86.728

SS9

NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDEII REC 04/13/76 20:22:38.410 FAC SEX15 PGM C003 RDG 3334

LEANOUT 25 BTDC I & T 80 DEG HUM=0% 1 1/2T RICH MCDE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	79.393	29.229	21.949	94.952	0.0076247	14.356

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	74.702	5.7312	44.787	10.941	9.5679	6.1632

COOLING AIR	TEMP	INDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	80.320	-0.085795	0.79485	0.00000	0.37265	-26.887

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	0.37265	14.725	0.56211	0.012908	0.65352

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10077	0.10076	1.5040	1194.7	1195.3	2.8169	0.64076

WET CORRECTION FACTOR = 0.86657 EXHAUST MOLE. WT. = 26.176 EXHAUST DENSITY = 0.06775 EXHAUST FLOW RATE = 1542.3

MEASURED CONC.	PART PER MILLION WET		CO DRY	PER CENT	
	HC PPM	NOX PPM		CO2 DRY	O2 DRY
	13839.	9.3789	12.262	7.2394	0.36634
CORRECTED CONC. TO WET BASIS			10.526	6.2734	0.31745

EMISSION RATE	HC	NOX	CO	
	0.76625	0.0017213	11.897	
	EMISSION MASS/MODE	0.038312	8.6066E-05	0.59487
	EMISSION MASS/PATED HP	0.00023945	5.3791E-07	0.0037179
MODE EMISS./STD. CYCLE %	12.603	0.035861	8.8522	

CAL. FUEL AIR RATIO = 0.10436 MEAS. FUEL AIR RATIO = 0.10077 DIFF MEAS. & CAL. F/A PERCENT = 3.5678

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	247.02	260.91	249.15	247.15

EXT GAS TEMP DEG.F	FXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	295.76	774.36	302.43	261.89	453.62	452.99

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 8.5194
	141.30	33.059	58.086	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.178
	8.6409	1199.0	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	79.728	79.393	-117.97	77.753

GRIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	80.619	2.0394	53.301	1996.9

CELL TEMP. = 73.245 HEATER TEMP = 99.776 COOLER TEMP = 88.453

560

NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDEII REC 04/13/76 20:26:23.948 FAC SEX15 PGM C003 RDG 3335

LEANOUT 25 BTDC I & T 80 DEG HUM=0% 1 1/2T RICH MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	80.037	29.229	15.093	65.174	0.0046944	14.355

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	75.092	5.7573	44.777	8.4809	7.1827	6.1605

COOLING AIR	TEMP	UDEL-HOOD	DFL-HOOD	FLOW	RFL-HUM	DEW-POINT
	80.760	-0.081090	0.84494	0.00000	0.32728	-27.397

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	0.32728	35.502	0.50421	0.011578	0.56522

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.11021	0.11020	1.6449	595.56	596.94	4.8838	0.55381

WET CORRECTION FACTOR = 0.90725 EXHAUST MOLE. WT. = 25.595 EXHAUST DENSITY = 0.066271 EXHAUST FLOW RATE = 1091.9

MEASURED CONC.	PART PER MILLION WET		PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY
	45144.	3.4403	10.766	5.4820
CORRECTED CONC. TO WET BASIS				
			CO DRY	CO2 DRY
			9.7678	4.9735

EMISSION RATE	HC	NOX	CO	
	1.7696	0.00044703	7.7431	
	EMISSION MASS/MODE	0.029494	7.4504E-06	0.12905
	EMISSION MASS/RATED HP	0.00019434	4.6565E-08	0.00080657
MODE EMIS./STD. CYCLE %	9.7019	0.0031043	1.9204	

CAL. FUEL AIR RATIO = 0.10804 MEAS. FUEL AIR RATIO = 0.11021 DIFF MEAS. & CAL. F/A PERCENT = -1.9657

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	221.49	240.38	216.42	225.12

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	-454.00	592.73	72.476	400.49	395.15	393.89

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 13.049
	137.74	75.407	45.889	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.408
	5.1341	590.28	

INDUCTION AIR	IAIPT1	IAIRT2	TAIRT1	TAIRT2
	80.469	80.037	-42.092	78.721

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	81.271	1.0360	53.275	1437.3

CELL TEMP. = 73.547 HEATER TEMP = 116.68 COOLER TEMP = 95.957

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NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDEII REC 04/13/76 20:54:01.745 FAC SEX15 PGM C003 RDG 3342

LEANOUT 25 BTDC I & I 80 DEG HUM=30% 1 1/2T LEAN MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 81.448 PRESS 29.229 CFM 18.399 DRY FLOW 78.790 VAPOR FLOW 0.52638 PRESS TOTAL 14.359

COMB. FUEL TEMP 78.183 PRESS 5.8137 DENSITY 44.696 TURBO FLOW 3.9656 FLOW TRON 6.1626 FPIP 6.1836

COOLING AIR TEMP 82.838 UDEL-HOOD -0.079706 DEL-HOOD 0.80785 FLOW 0.00000 REL-HUM 28.693 DEW-POINT 45.885

REL-HUM 1 28.693 2 35.324 HUMIDITY 46.765 % H2O VAPOR CORRECTED HP 1.0739 1.2617

ENG. COND. F/A DRY 0.078215 F/A WET 0.077696 EQU. RATIO 1.1674 PPM-1 1201.1 RPM-2 1202.5 TORQUE 5.3422 BHP 1.2217

WFT CORRECTION FACTOR = 0.85471 EXHAUST MOLE. WT. = 27.824 EXHAUST DENSITY = 0.072044 EXHAUST FLOW RATE = 1186.5

MEASURED CONC. PART PER MILLION WET PER CENT
 HC PPM 3039.1 NOX PPM 50.067 CO DRY 5.1241 CO2 DRY 11.396 O2 DRY 0.18926
 CORRECTED CONC. TO WET BASIS CO 4.3796 CO2 9.7401 O2 0.16176

562

EMISSION RATE HC 0.12945 NOX 0.0070691 CO 3.7726
 EMISSION MASS/MODE 0.023733 0.0012960 0.69164
 EMISSION MASS/RATED HP 0.00014833 8.1000E-06 0.0043227
 MODE EMIS./STD. CYCLE 3 7.8068 0.54000 10.292

CAL. FUEL AIR RATIO = 0.078880 MEAS. FUEL AIR RATIO = 0.078215 DIFF. MEAS. & CAL. F/A PERCENT = 0.84954

CYL TEMP DEG.F CYL-1 278.44 CYL-2 290.06 CYL-3 277.82 CYL-4 276.74

EXT GAS TEMP DEG.F EXT-1 876.85 EXT-2 -454.00 EXT-3 -83.090 EXT-4 526.84 SEXT-1 457.49 SEXT-2 457.09

ENGINE OIL EOILT 147.66 SOILT -93.066 OILP 57.674 MANIFOLD PRESSURE = 7.7563

DYNO COND. TORQUE 4.5004 RPM 1209.6 CYL. BACK PRESSURE = 29.150

INDUCTION AIR IAIRT1 81.853 IAIRT2 81.448 TAIRT1 62.905 TAIRT2 77.653

ORIFICE AIR TEMP 82.398 DELTAP 3.0176 ORFP 53.266 FLOW 2398.7

CELL TEMP. = 75.695 HEATER TEMP = 99.026 COOLER TEMP = 80.613

NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDET REC 04/13/76 20:57:08.902 FAC SEX15 PGM C003 RDG 3343

LEANOUT 25 BTDC I & I 80 DEG HUM=30% 1 1/2T LEAN MODE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 81.677 PRESS 29.233 CFM 18.654 DRY FLOW 79.996 VAPOR FLOW 0.53726 PRESS TOTAL 14.360

COMB. FUEL TEMP 78.625 PRESS 5.8122 DENSITY 44.584 TURBO FLOW 3.9628 FLOW TRON 6.2076 FPIP 6.1740

COOLING AIR TEMP 83.049 UDEL-HOOD -0.073617 DEL-HOOD 0.85629 FLOW 0.00000 REL-HUM 28.632 DEW-POINT 46.026

REL-HUM 1 28.632 2 58.302 HUMIDITY 47.013 H2O VAPOR CORRECTED HP 1.0796 1.3206

ENG. COND. F/A DRY 0.077599 F/A WET 0.077081 EQU. RATIO 1.1582 RPM-1 1200.6 RPM-2 1201.3 TORQUE 5.5922 BHP 1.2784

WET CORRECTION FACTOR = 0.85105 EXHAUST MOLE. WT. = 27.875 EXHAUST DENSITY = 0.072174 EXHAUST FLOW RATE = 1201.8

MEASURED CONC. PART PER MILLION WET HC PPM 3001.1 NOX PPM 49.959 CO DRY 5.2373 PER CENT CO2 DRY 11.285 O2 DRY 0.17428
CORRECTED CONC. TO WET BASIS CO DRY 4.4572 PER CENT CO2 DRY 9.6044 O2 DRY 0.14832

EMISSION RATE HC 0.12948 NOX 0.0071450 CO 3.8890
EMISSION MASS/MODE HC 0.0064742 NOX 0.00035725 CO 0.19445
EMISSION MASS/RATED HP HC 4.0464E-05 NOX 2.2328E-06 CO 0.0012153
MODE EMIS./STD. CYCLE % HC 2.1297 NOX 0.14885 CO 2.8936

CAL. FUEL AIR RATIO = 0.079225 MEAS. FUEL AIR RATIO = 0.077599 DIFF. MEAS. & CAL. F/A PERCENT = 2.0956

CYL TEMP DEG.F CYL-1 279.32 CYL-2 290.79 CYL-3 278.38 CYL-4 275.98

EXT GAS TEMP DEG.F EXT-1 436.65 EXT-2 -454.00 EXT-3 -137.44 EXT-4 490.02 SEXT-1 432.46 SEXT-2 432.28

ENGINE OIL EOILT 147.26 SOILT 71.064 OILP 58.042 MANIFOLD PRESSURE = 7.7538

DYNO COND. TORQUE 3.3195 RPM 1211.3 CYL. BACK PRESSURE = 29.479

INDUCTION AIR IAIRT1 82.081 IAIRT2 81.677 TAIRT1 88.450 TAIRT2 76.884

ORIFICE AIR TEMP 82.952 DELTAP 1.0343 ORFP 53.292 FLOW 1433.9

CELL TEMP. = 76.254 HEATER TEMP = 120.29 COOLER TEMP = 78.686

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NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDEIJ REC 04/13/76 20:57:28.676 FAC SEX15 PGM C003 RDG 3344

LEANOUT 25 BTDC I C T 80 DEG HUM=30% 1/2T LEAN MODE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TFMP 81.791 PRESS 29.232 CFM 18.607 DRY FLOW 79.737 VAPOR FLOW 0.53586 PRESS TOTAL 14.359

COMB. FUEL TFMP 78.651 PRESS 5.8137 DENSITY 44.583 TURBO FLOW 3.9645 FLOW TRON 6.1446 FPIP 6.1788

COOLING AIR TFMP 83.067 UDEL-HOOD -0.071680 DEL-HOOD 0.83924 FLOW 0.00000 REL-HUM 28.542 DEW-POINT 46.041

REL-HUM 1 28.542 2 4.2044 HUMIDITY 47.342 % H2O VAPOR 1.0802 CORRECTED HP 1.6891

ENG. COND. F/A DRY 0.077061 F/A WET 0.076547 EQU. RATIO 1.1502 RPM-1 1200.8 RPM-2 1201.0 TORQUE 7.1507 BHP 1.6349

WET CORRECTION FACTOR = 0.84976 EXHAUST MOL. WT. = 27.919 EXHAUST DENSITY = 0.072288 EXHAUST FLOW RATE = 1195.5

MEASURED CONC. PART PER MILLION WET HC PPM 2511.8 VOX PPM 49.655 CO DRY 5.1906 PER CENT CO2 DRY 11.430 O2 DRY 0.17026
CORRECTED CONC. TO WET BASIS CO 4.4022 PER CENT CO2 9.7126 O2 0.14468

EMISSION RATE HC 0.10780 NOX 0.0070639 CO 3.8207
EMISSION MASS/MODE 0.0053900 0.00035319 0.19103
EMISSION MASS/RATED HP 3.3688E-05 2.2075E-06 0.0011940
MODE EMISS./STD. CYCLE % 1.7730 0.14716 2.8428

CAL. FUEL AIR RATIO = 0.078739 MEAS. FUEL AIR RATIO = 0.077061 DIFF MEAS. & CAL. F/A PERCENT = 2.1775

CYL TEMP DEG.F CYL-1 279.43 CYL-2 291.08 CYL-3 278.35 CYL-4 275.84

EXT GAS TEMP DEG.F EXT-1 1483.0 EXT-2 -454.00 EXT-3 -196.74 EXT-4 152.92 SEXT-1 430.31 SEXT-2 430.09

ENGINE OIL FOILT 147.29 SOILT 93.252 OILP 58.070 MANIFOLD PRESSURE = 7.7180

DYNO COND. TORQUE 11.996 RPM 1188.8 CYL. BACK PRESSURE = 29.324

INDUCTION AIR IAIRT1 82.169 IAIRT2 81.791 TAIRT1 183.01 TAIRT2 77.250

ORIFICE AIR TFMP 82.970 DELTAP 0.075007 ORFP 53.330 FLOW 278.76

CELL TEMP. = 76.094 HEATER TEMP = 129.53 COOLER TEMP = 82.600

564

NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDEII REC 04/13/76 21:00:57.386 FAC SEX15 PGM C003 RDG 3345

LFANOUT 25 BTDC I.C.T 80 DEG HUM=30% 1.1/2T LFAN MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 78.828 PRESS 29.229 CFM 11.559 DRY FLOW 49.522 VAPOR FLOW 0.33303 PRESS TOTAL 14.358

COMB. FUEL TEMP 76.289 PRESS 5.8632 DENSITY 44.745 TURBO FLOW 3.9700 FLOW TRON 3.4773 FPIP 6.1893

COOLING AIR TEMP 80.029 UDEL-HOOD -0.079429 DEL-HOOD 0.82972 FLOW 0.00000 REL-HUM 31.462 DEW-POINT 46.056

REL-HUM 1 31.462 2 32.649 HUMIDITY 47.074 % H2O VAPOR 1.0810 CORRECTED HP 0.53640

ENG. COND. F/A DRY 0.070219 F/A WET 0.069749 EQU. RATIO 1.0480 RPM-1 614.34 RPM-2 613.20 TORQUE 4.4504 BHP 0.52058

WET CORRECTION FACTOR = 0.87689 EXHAUST MOLE WT. = 28.497 EXHAUST DENSITY = 0.073786 EXHAUST FLOW RATE = 722.79

MEASURED CONC. PART PER MILLION WET HC PPM 14172. NOX PPM 27.411 CO DRY 2.1441 PER CENT CO2 DRY 10.995 O2 DRY 2.9743
CORRECTED CONC. TO WET BASIS CO DRY 1.8801 PER CENT CO2 DRY 9.6418 O2 DRY 2.6081

EMISSION RATE HC 0.36775 NOX 0.0023576 CO 0.98657
EMISSION MASS/MODE 0.0061291 3.9294E-05 0.016443
EMISSION MASS/RATED HP 3.8307E-05 2.4559E-07 0.00010277
MODE EMIS./STD. CYCLE % 2.0162 0.016373 0.24469

CAL. FUEL AIR RATIO = 0.069838 MEAS. FUEL AIR RATIO = 0.070219 DIFF MEAS. & CAL. F/A PERCENT = -0.54148

CYL TEMP DEG.F CYL-1 238.41 CYL-2 250.75 CYL-3 249.86 CYL-4 251.87

EXT GAS TEMP DEG.F EXT-1 241.08 EXT-2 -11.951 EXT-3 -349.13 EXT-4 462.21 SEXT-1 384.38 SEXT-2 383.57

ENGINE OIL EQILT 144.16 SQILT -12.11C OILP 47.441 MANIFOLD PRESSURE = 11.145

DYND COND. TORQUE 7.6328 RPM 602.28 CYL. BACK PRESSURE = 29.087

INDUCTION AIR IA IPT1 79.296 IA IPT2 78.828 TAIRT1 157.49 TAIRT2 77.330

ORIFICE AIR TEMP 80.249 DELTAP 2.9549 DRFP 53.392 FLOW 2379.4

CELL TEMP. = 73.005 HEATER TEMP = 145.63 COOLER TEMP = 83.274

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NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDEII REC 04/13/76 21:01:18.483 FAC SEX15 PGM C003 R0G 3346

LEANOUT 25 BTDC I. & T 80 DEG HUM=30% 1 1/2T LEAN MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 79.040 PRESS 29.227 CFM 11.673 DRY FLOW 49.960 VAPOR FLOW 0.33584 PRESS TOTAL 14.361

COMB. FUEL TEMP 76.360 PRESS 5.8620 DENSITY 44.743 TURBO FLOW 3.9698 FLOW TRON 3.4563 FPIP 6.1893

COOLING AIR TEMP 80.090 UDEL-HOOD -0.077769 DEL-HOOD 0.86348 FLOW 0.00000 REL-HUM 31.237 DEW-POINT 46.050

REL-HUM 1 31.237 2 28.331 HUMIDITY 47.055 % H2O VAPOR 1.0805 CORRECTED HP 0.44247

ENG. COND. F/A DRY 0.069182 F/A WET 0.068720 FOU. RATIO 1.0326 RPM-1 594.66 RPM-2 598.74 TORQUE 3.7920 BHP 0.42935

WET CORRECTION FACTOR = 0.87289 EXHAUST MOLE. WT. = 28.520 EXHAUST DENSITY = 0.073846 EXHAUST FLOW RATE = 727.90

MEASURED CONC. HC PPM 14434. NOX PPM 28.503 CO DRY 2.2116 PER CENT CO2 DRY 10.978 O2 DRY 3.1600
CORRECTED CONC. TO WET BASIS CO 1.9305 PER CENT CO2 DRY 9.5826 O2 DRY 2.7584

EMISSION RATE HC 0.37719 NOX 0.0024689 CO 1.0202
EMISSION MASS/MODE 0.0062866 4.1149E-05 0.017003
EMISSION MASS/RATED HP 3.9291E-05 2.5718E-07 0.00010627
MODE EMIS./STD. CYCLE % 2.0679 0.017145 0.25302

CAL. FUEL AIR RATIO = 0.069560 MEAS. FUEL AIR RATIO = 0.069182 DIFF. MEAS. & CAL. F/A PERCENT = 0.54640

CYL TEMP DEG. F CYL-1 232.79 CYL-2 258.20 CYL-3 246.97 CYL-4 249.36

EXT GAS TEMP DEG. F EXT-1 915.79 EXT-2 76.160 EXT-3 -319.50 EXT-4 60.607 SEXT-1 381.22 SEXT-2 379.96

ENGINE OIL FOILT 143.77 SOILT 101.90 OILP 47.361 MANIFOLD PRESSURE = 11.325

DYNO COND. TORQUE 1.0441 RPM 601.14 CYL. BACK PRESSURE = 29.645

INDUCTION AIR TAIRT1 79.464 TAIRT2 79.040 TAIRT1 69.102 TAIRT2 77.987

ORIFICE AIR TEMP 80.267 DELTAP 1.0697 ORFP 53.346 FLOW 1461.4

CELL TEMP. = 73.067 HEATER TEMP = 148.64 COOLER TEMP = 87.356

566

NASA-Lewis PRELIMINARY DATA 04/13/76 CADDEII REC 04/13/76 21:04:27.482 FAC SEX15 PGM C003 RDG 3347

LEANOUT 25 BTDC I & I 80 DEG HUM=30% 1 1/2T LEAN MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TFMP 79.658 PRESS 29,224 CFM 19.173 DRY FLOW 82.113 VAPOR FLOW 0.55382 PRESS TOTAL 14.363

COMB. FUEL TEMP 70.740 PRESS 5.8017 DENSITY 44.733 TURBO FLOW 3.9655 FLOW TRON 6.5046 FPIP 6.1752

COOLING AIR TEMP 80.425 UDEL-HOOD -0.079983 DEL-HOOD 0.84909 FLOW 0.00000 REL-HUM 30.715 DEW-POINT 46.141

REL-HUM 1 30.715 2 38.516 HUMIDITY 47.212 % H2O VAPOR CORRECTED HP 1.0842 1.1617

ENG. COND. F/A DRY 0.079215 F/A WET 0.078685 FOU, RATIO 1.1923 RPM-1 1205.4 RPM-2 1206.4 TORQUE 4.9088 BHP 1.1266

WET CORRECTION FACTOR = 0.85504 EXHAUST MILE. WT. = 27.743 EXHAUST DENSITY = 0.071834 EXHAUST FLOW RATE = 1241.3

MEASURED CONC. PART PER MILLION WET HC PPM 2623.2 NOX PPM 49.193 CO DRY 5.5765 CO2 DRY 11.144 O2 DRY 0.15792
CORRECTED CONC. TO WET BASIS HC 4.7681 NOX 9.5289 CO2 0.13502

EMISSION RATE HC 0.11690 NOX 0.0072668 CO 4.2971
EMISSION MASS/MODE 0.021432 0.0013322 0.78780
EMISSION MASS/RATED HP 0.00013395 8.3265E-06 0.0049237
MODE EMIS./STD. CYCLE % 7.0499 0.55510 11.723

CAL. FUEL AIR RATIO = 0.079816 MEAS. FUEL AIR RATIO = 0.079216 DIFF MEAS. & CAL. F/A PERCENT = 0.75748

CYL TEMP DEG.F CYL-1 258.60 CYL-2 276.05 CYL-3 263.72 CYL-4 260.26

EXT GAS TEMP DEG.F EXT-1 255.73 EXT-2 -454.00 EXT-3 -304.93 EXT-4 384.33 SEXT-1 382.93 SEXT-2 382.62

ENGINE OIL EOILT 143.23 SOILT -43.997 OILP 58.274 MANIFOLD PRESSURE = 7.7742

DYMO COND. TORQUE 6.5598 RPM 1206.8 CYL. BACK PRESSURE = 29.428

INDUCTION AIR IAIRT1 80.029 IAIRT2 79.658 TAIRT1 201.91 TAIRT2 77.662

ORIFICE AIR TFMP 80.787 DELTAP 1.0620 ORFP 53.381 FLOW 1455.6

CELL TEMP. = 73.547 HEATER TEMP = 151.39 COOLER TEMP = 85.347

567

NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDEII REC 04/13/76 21:07:16.645 FAC SEX15 PGM C003 RDG 3348

LEANOUT 25 BTDC I & T 80 DEG HUM=30% L 1/2T LEAN MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	79.737	29.225	11.736	50.312	0.33897	14.356

COMB. FUEL	TFMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	76.997	5.8632	44.727	3.9701	3.3783	6.1992

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	80.796	-0.081643	0.82723	0.00000	30.589	46.100

RFL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	30.589	45.861	47.162	1.0830	0.46072

ENG. COND.	F/A DRY	F/A WET	FOU. RATIO	RPM-1	PPM-2	TORQUE	BHP
	0.067148	0.066698	1.0222	596.46	600.84	3.9337	0.44675

WET CORRECTION FACTOR = 0.87454 EXHAUST MOLE. WT. = 28.673 EXHAUST DENSITY = 0.074242 EXHAUST FLOW RATE = 727.74

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	16703.	27.631	1.8501	10.665	3.7916	
CORRECTED CONC. TO WET BASIS			1.6180	9.3267	3.3159	

EMISSION RATE	HC	NOX	CO
	0.43640	0.0023929	0.85483
	0.0072733	3.9881E-05	0.014247
	4.5458E-05	2.4926E-07	8.9045E-05
MODE EMIS./STD. CYCLE %	2.3925	0.016617	0.21201

CAL. FUEL AIR RATIO = 0.068078 MEAS. FUEL AIR RATIO = 0.067148 DIFF. MEAS. & CAL. F/A PERCENT = 1.3859

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	233.94	251.85	245.95	250.35

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	FXT-4	SEXT-1	SEXT-2
	75.014	-223.93	-454.00	368.40	347.83	346.98

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 11.393
	141.26	48.121	47.453	

DYND COND.	TORQUE	PPM	CYL. BACK PRESSURE = 29.830
	7.6832	593.40	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	80.196	79.737	125.44	76.873

ORIFICE AIR	TEMP	DELTAP	OPFP	FLOW
	81.298	0.060006	53.372	232.19

CELL TEMP. = 74.142 HEATER TEMP = 141.39 COOLER TEMP = 78.491

895

NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDEII REC 04/13/76 21:07:37.903 FAC SEX15 PGM C003 RDG 3349

LEANOUT 25 BTDC I & T 80 DEG HUM=30% I 1/2T LEAN MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 79.887 PRESS 29.228 CFM 11.549 DRY FLOW 49.469 VAPOR FLOW 0.33336 PRESS TOTAL 14.356

COMB. FUEL TEMP 77.139 PRESS 5.8653 DENSITY 44.723 TURBO FLOW 3.9697 FLOW TRON 3.3813 FPIP 6.1776

COOLING AIR TEMP 80.840 UDEL-HOOD -0.072234 DEL-HOOD 0.82778 FLOW 0.00000 REL-HUM 30.444 DEW-POINT 46.106

REL-HUM 1 30.444 2 12.017 HUMIDITY 47.171 % H2O VAPOR CORRECTED HP 1.0832 0.21872

ENG. COND. F/A DRY 0.068352 F/A WET 0.067894 EQU. RATIO 1.0202 RPM-1 591.30 RPM-2 590.40 TORQUE 1.8835 BHP 0.21206

WET CORRECTION FACTOR = 0.88143 EXHAUST MOLE. WT. = 28.591 EXHAUST DENSITY = 0.074028 EXHAUST FLOW RATE = 718.43

MEASURED CONC. HC PPM 17528. NOX PPM 26.917 CO DRY 1.7838 PER CENT CO2 DRY 10.748 O2 DRY 3.9358
 CORRECTED CONC. TO WET BASIS CO DRY 1.5722 PER CENT CO2 DRY 9.4732 O2 DRY 3.4690

EMISSION RATE HC 0.45210 NOX 0.0023012 CO 0.82003
 EMISSION MASS/MODE 0.0075349 3.8353E-05 0.013667
 EMISSION MASS/RATED HP 4.7093E-05 2.3971E-07 8.5420E-05
 MODE EMIS./STD. CYCLE % 2.4786 0.015981 0.20338

CAL. FUEL AIR RATIO = 0.067856 MEAS. FUEL AIR RATIO = 0.068352 DIFF MEAS. & CAL. F/A PERCENT = -0.72614

CYL TEMP DEG.F CYL-1 227.83 CYL-2 250.08 CYL-3 243.03 CYL-4 248.06

EXT GAS TEMP DEG.F EXT-1 828.96 EXT-2 100.87 EXT-3 -454.00 EXT-4 -68.589 SFXT-1 343.01 SEXT-2 342.11

ENGINE OIL EOILT 140.83 SOILT 67.999 OILP 47.365 MANIFOLD PRESSURE = 11.544

DYNO COND. TORQUE 7.0351 RPM 582.84 CYL. BACK PRESSURE = 29.087

INDUCTION AIR IAIRT1 80.346 IAIRT2 79.887 TAIRT1 57.634 TAIRT2 77.317

ORIFICE AIR TEMP 81.368 DELTAP 2.0172 ORFP 53.415 FLOW 1985.2

CELL TEMP. = 74.169 HEATER TEMP = 147.75 COOLER TEMP = 82.999

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NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDEII REC 04/13/76 21:18:06.676 FAC SEX15 PGM C003 RDG 3350

LEANOUT 25 BTDC I & T 80 DEG. HUM=30% 3/4T LEAN MCDE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	80.743	29.232	9.9865	47.658	0.28813	14.358

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW IRON	FPIP
	76.776	5.8407	44.732	3.9689	3.9544	6.1947

COOLING AIR	TEMP	JDFL-HOOD	DFL-HOOD	FLOW	REL-HUM	DEW-POINT
	82.345	-0.076108	0.85601	0.00000	29.678	46.171

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	29.678	59.784	47.280	1.0857	0.57953

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	PPM-2	TORQUE	BHP
	0.092700	0.092078	1.3336	608.94	611.40	4.8421	0.56142

WET CORRECTION FACTOR = 0.88582 EXHAUST MOLE. WT. = 26.723 EXHAUST DENSITY = 0.069193 EXHAUST FLOW RATE = 677.83

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	CO2 DRY
	21887.	13.447	7.5958	8.5333	2.2925
CORRECTED CONC. TO WET BASIS			6.7286	7.5590	2.0308

570

EMISSION RATE	HC	NOX	CO	
	0.53260	0.0010847	3.3111	
	EMISSION MASS/MODE	0.0088767	1.8078E-05	0.055186
	EMISSION MASS/RATED HP	5.5479E-05	1.1299E-07	0.00034491
MCDE EMIS./STD. CYCLE %	2.9200	0.0075325	0.82121	

CAL. FUEL AIR RATIO = 0.088847 MEAS. FUEL AIR RATIO = 0.092700 DIFF MEAS. & CAL. F/A PERCENT = -4.1566

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	258.65	270.61	250.91	260.95

EXT GAS TEMP. DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SFXT-1	SEXT-2
	-15.948	-22.725	-300.84	325.56	509.46	509.06

ENGINE OIL	EOILT	SOILT	OILD	MANIFOLD PRESSURE = 10.405
	151.24	230.64	45.833	

DYMO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.488
	6.5670	606.60	

INDUCTION AIR	IAIRT1	IAIPT2	TAIRT1	TAIRT2
	81.192	80.743	-25.084	78.905

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	81.659	3.0220	53.277	2402.0

CELL TEMP. = 74.418 HEATER TEMP = 113.03 COOLER TEMP = 76.097

NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDEII REC 04/13/76 21:18:26.246 FAC SEX15 PGM C003 RDG 3351

LEANOUT 25 BTDC I & J 80 DEG. HUM=30% 3/4T LEAN MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 79.940 PRESS 29.228 CFM 9.9450 DRY FLOW 42.567 VAPOR FLOW 0.28758 PRESS TOTAL 14.358

COMB. FUEL TEMP 76.315 PRESS 5.8443 DENSITY 44.745 TURBO FLOW 3.9899 FLOW TRON 3.9094 FPIP 6.2166

COOLING AIR TEMP 81.633 DEL-HOOD -0.083304 DEL-HOOD 0.83313 FLOW 0.00000 REL-HUM 30.473 DEW-POINT 46.176

REL-HUM 1 30.473 2 55.476 HUMIDITY 47.292 % H2O VAPOR 1.0860 CORRECTED HP 0.47231

ENG. COND. F/A DRY 0.091841 F/A WFT 0.091225 EQU. RATIO 1.3708 RPM-1 603.66 RPM-2 604.56 TORQUE 3.9837 BHP 0.45789

WET CORRECTION FACTOR = 0.89017 EXHAUST MOLE. WT. = 26.784 EXHAUST DENSITY = 0.069351 EXHAUST FLOW RATE = 674.31

MEASURED CONC. PART PER MILLION WFT PER CENT
HC PPM 21024. CO2 DRY 8.6124
NOX PPM 13.663 CO DRY 7.7157
CORRECTED CONC. TO WFT BASIS 6.7911 CO2 DRY 2.1212
7.5804 CO DRY 1.8670

EMISSION RATE HC 0.50894 CO 3.3246
EMISSION MASS/MODE 0.0084824 1.8273E-05 0.055410
EMISSION MASS/RATED HP 5.3015E-05 1.1421E-07 0.00034631
MODE EMIS./STD. CYCLE % 2.7903 0.0076138 0.82455

CAL. FUEL AIR RATIO = 0.089226 MEAS. FUEL AIR RATIO = 0.091841 DIFF MEAS. & CAL. F/A PERCENT = -2.8479

CYL TEMP DEG.F CYL-1 253.50 CYL-2 255.50 CYL-3 245.14 CYL-4 254.53

EXT GAS TEMP DEG.F EXT-1 825.17 EXT-2 -200.61 EXT-3 -347.62 EXT-4 -218.43 SEXT-1 502.43 SEXT-2 501.99

ENGINE OIL FRIILT 150.74 SJILT -68.705 DILT 45.845 MANIFOLD PRESSURE = 10.624

DYNO COND. TORQUE 4.2556 RPM 601.20 CYL. BACK PRESSURE = 29.142

INDUCTION AIR IAIRT1 80.408 IAIRT2 79.94C TAIRT1 106.15 TAIRT2 77.790

ORIFICE AIR TEMP 81.016 DELTAP 1.0397 ORIF FLOW 53.236 1440.1

CRIL TEMP. = 73.876 HEATER TEMP = 106.60 COOLER TEMP = 69.016

571

NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDEIJ REC 04/13/76 21:21:08.946 FAC SEX15 PGM C003 RDG 3352

LEAN CUT 25 BTDC I & T 90 DEG. HUM=30% 3/4T LEAN MODE = 2.0000 NO. SCANS = 5
 ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 79.861 PRESS 29.232 CFM 19.152 DRY FLOW 81.632 VAPOR FLOW 0.55344 PRESS TOTAL 14.357

COMB. FUEL TEMP 75.527 PRESS 5.7831 DENSITY 44.765 TURBO FLOW 3.9718 FLOW TRON 7.2397 FPIP 6.1752

COOLING AIR TEMP 80.469 INLET-HOOD -0.089116 DEL-HOOD 0.85020 FLOW 0.00000 REL-HUM 30.656 DEW-POINT 46.266

REL-HUM 1 30.656 2 55.552 HUMIDITY 47.458 % H2O VAPOR CORRECTED HP 1.0298 1.0190

ENG. COND. F/A DRY 0.088687 F/A WET 0.088090 EQU. RATIO 1.3237 RPM-1 1199.6 RPM-2 1199.8 TORQUE 4.3254 BHP 0.98799

WET CORRECTION FACTOR = 0.85755 EXHAUST MOLE. WT. = 27.013 EXHAUST DENSITY = 0.069943 EXHAUST FLOW RATE = 1278.5

MEASURED CONC. HC PPM 5078.5 CO DRY 8.9208 PER CENT CO2 DRY 9.3513 O2 DRY 0.21800
 CORRECTED CONC. TO WET BASIS VOX PPM 34.116 CO DRY 7.6500 PER CENT CO2 DRY 8.0192 O2 DRY 0.18695

EMISSION RATE HC 0.23310 NOX 0.0051907 CO 7.1009
 EMISSION MASS/MODE 0.042735 0.00095162 1.3018
 EMISSION MASS/RATED HP 0.00026709 5.9476E-06 0.0081364
 MODE EMIS./STD. CYCLE % 14.058 0.39651 19.372

CAL. FUEL AIR RATIO = 0.089251 MEAS. FUEL AIR RATIO = 0.088687 DIFF MEAS. & CAL. F/A PERCENT = 0.64714

CYL TEMP DEG.F CYL-1 257.15 CYL-2 267.98 CYL-3 255.52 CYL-4 253.66
 EXT GAS TEMP DEG.F EXT-1 1043.0 EXT-2 95.384 EXT-3 -454.00 EXT-4 270.97 SEXT-1 474.26 SEXT-2 474.09

ENGINE OIL EOILT 147.14 SOILT -130.03 OILT 57.414 MANIFOLD PRESSURE = 7.9021

DYNO COND. TORQUE 4.1980 RPM 1208.5 CYL. BACK PRESSURE = 29.382

INDUCTION AIR IAIRT1 83.275 IAIRT2 79.861 TAIRT1 138.37 TAIRT2 79.995

ORIFICE AIR TEMP 80.055 DELTAP 0.11281 DRFP 53.182 FLOW 384.08

CELL TEMP. = 73.138 HEATER TEMP = 135.40 COOLER TEMP = 89.405

572

LEANOUT 25 BTDC I & I 80 DEG. HUM=30% 3/4T LEAN MODE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 79.720 PRESS 29.228 CFM 19.048 DRY FLOW 81.362 VAPOR FLOW 0.55121 PRESS TOTAL 14.362

COMB. FUEL TFMP 75.544 PRESS 5.7840 DENSITY 44.765 TURBO FLOW 3.9734 FLOW TRON 7.1467 FPIP 6.1773

COOLING AIR TEMP 80.584 UDEL-HOOD -0.081090 DEL-HOOD 0.77437 FLOW 0.00000 REL-HUM 30.786 DEW-POINT 46.256

REL-HUM 1 2 HUMIDITY 7 H2O VAPOR CORRECTED HP
30.786 -0.35203 47.424 1.0890 1.1369

ENG. COND. F/A DRY 0.087838 F/A WET 0.087247 EQU. RATIO 1.3110 RPM-1 1199.9 RPM-2 1200.5 TORQUE 4.8255 BHP 1.1024

WET CORRECTION FACTOR = 0.85442 EXHAUST MJLE. WT. = 27.076 EXHAUST DENSITY = 0.070106 EXHAUST FLOW RATE = 1270.4

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	5107.5	33.867	8.8919	9.3921	0.21468
CORRECTED CONC. TO WET BASIS			7.5974	8.0248	0.18343

573

	HC	NOX	CO
EMISSION RATE	0.23293	0.0051198	7.0070
EMISSION MASS/MODE	0.011647	0.00025599	0.35035
EMISSION MASS/RATED HP	7.2792E-05	1.5999E-06	0.0021897
MODE EMIS./STD./CYCLE	3.8311	0.10666	5.2135

CAL. FUEL AIR RATIO = 0.089178 MEAS. FUEL AIR RATIO = 0.087838 DIFF MEAS. & CAL. F/A PERCENT = 1.5247

CYL TEMP DEG.F CYL-1 258.85 CYL-2 259.12 CYL-3 257.42 CYL-4 255.24

EXT GAS TFMP DEG.F FXT-1 1753.4 EXT-2 131.12 EXT-3 -454.00 EXT-4 -84.993 SEXT-1 471.12 SEXT-2 470.81

ENGINE OIL EOILT 146.81 SOILT -36.111 OILP 57.522 MANIFOLD PRESSURE = 7.8679

DYNO COND. TORQUE 1.4041 RPM 1203.5 CYL. BACK PRESSURE = 29.537

INDUCTION AIR IAIRT1 80.090 IAIRT2 79.720 TAIRT1 186.14 TAIRT2 79.038

ORIFICE AIR TEMP 80.196 DELTAP 2.0465 DRFP 53.276 FLOW 2000.9

CELL TEMP. = 73.360 HEATED TEMP = 123.18 COOLER TEMP = 73.169

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NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDEIJ RE 04/13/76 2124:52.530 FAC SEX15 PGM C003 RDG 3354

LEANOUT 25 BTDC I & T 80 DEG. HUM=30% 3/4T LEAN MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 80.029 PRESS 29.229 CFM 19.012 DRY FLOW 81.324 VAPOR FLOW 0.55056 PRESS TOTAL 14.361

COMB. FUEL TEMP 76.103 PRESS 5.7861 DENSITY 44.750 TURBO FLOW 3.9721 FLOW TRON 7.1677 FPIP 6.1794

COOLING AIR TEMP 80.980 UDEL-HOOD -0.081643 DEL-HOOD 0.73350 FLOW 0.00000 REL-HUM 30.454 DEW-POINT 46.236

REL-HUM 1 2 HUMIDITY 47.390 % H2O VAPOR CORRECTED HP 1.0882 1.5911

ENG. COND. F/A DRY 0.088138 F/A WET 0.087545 EQU. RATIO 1.3155 RPM-1 1200.1 RPM-2 1201.1 TORQUE 6.7507 BHP 1.5425

WET CORRECTION FACTOR = 0.85726 EXHAUST MOLE. WT. = 27.054 EXHAUST DENSITY = 0.070048 EXHAUST FLOW RATE = 1271.2

MEASURED CONC. PART PER MILLION WET HC PPM 5376.5 NOX PPM 35.326 CO DRY 8.6571 PER CENT CO2 DRY 9.4829 O2 DRY 0.22792
CORRECTED CONC. TO WET BASIS CO DRY 7.4299 PER CENT CO2 DRY 8.1293 O2 DRY 0.19539

EMISSION RATE HC 0.24535 NOX 0.0053436 CO 6.8568
EMISSION MASS/MODE 0.044982 0.00097966 1.2571
EMISSION MASS/RATED HP 0.00028114 6.1229E-06 0.0078567
MODE EMIS./STD. CYCLE 7 14.797 6.40819 18.706

CAL. FUEL AIR RATIO = 0.088717 MEAS. FUEL AIR RATIO = 0.088138 DIFF MEAS. & CAL. F/A PERCENT = 0.65631

CYL TEMP DEG.F CYL-1 264.67 CYL-2 274.97 CYL-3 254.95 CYL-4 262.82

EXT GAS TEMP DEG.F EXT-1 808.81 EXT-2 -335.15 EXT-3 -454.00 EXT-4 302.22 SEXT-1 438.54 SEXT-2 438.32

ENGINE OIL FOILT 145.59 SOILT 140.38 OILO 57.534 MANIFOLD PRESSURE = 7.9198

DYNO COND. TORQUE 2.1602 RPM 1206.7 CYL. BACK PRESSURE = 28.955

INDUCTION AIR IAIRT1 80.399 IAIRT2 80.029 TAIRT1 135.93 TAIRT2 78.235

ORIFICE AIR TEMP 80.796 DELTAP 1.0133 ORFP 53.276 FLOW 1422.3

CELL TEMP. = 74.098 HEATER TEMP = 117.87 COOLER TEMP = 69.605

574

NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDEIJ REC 04/13/76 21:25:14.611 FAC SEX13
 LEANOUT 25 BTDC I.L & T 80 DEG. HUM=30% 3/4T LEAN MODE = 6.0000 NO. SCANS = 5
 ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 79.773 PRESS 29.226 CFM 18.590 DRY FLOW 80.089 VAPOR FLOW 0.54138 PRESS TOTAL 14.358

COMB. FUEL TEMP 76.183 PRESS 5.7858 DENSITY 44.748 TURBO FLOW 3.9702 FLOW TRON 6.9427 FPIP 6.1683

COOLING AIR TEMP 80.893 UDEL-HOOD -0.073054 DEL-HOOD 0.83249 FLOW 0.00000 RFL-HUM 30.657 DEW-POINT 46.191

REL-HUM 1 30.657 2 22.650 HUMIDITY 47.318 % H2O VAPOR 1.0866 CORRECTED HP 0.81257

ENG. COND. F/A DRY 0.086687 F/A WET 0.086105 EQU. RATIO 1.2938 RPM-1 1199.4 RPM-2 1199.5 TORQUE 3.4503 BHP 0.78795

WET CORRECTION FACTOR = 0.85337 EXHAUST MOLE. WT. = 27.162 EXHAUST DENSITY = 0.070329 EXHAUST FLOW RATE = 1245.2

MEASURED CONC.	PART PER MILLION WET	PER CENT
HC PPM	NDX PPM	CO2 DRY
4753.5	34.895	9.4864
		8.0954
CORRECTED CONC. TO WET BASIS	CO DRY	O2 DRY
	7.4214	0.27265
		0.23267

EMISSION RATE	HC	NDX	CO
EMISSION MASS/MODE	0.21249	0.0051708	6.7090
EMISSION MASS/RATED HP	0.010625	0.00025854	0.33545
MODE EMIS./STD. CYCLE %	6.6404E-05	1.5159E-06	0.0020966
	3.4949	0.10772	4.9918

CAL. FUEL AIR RATIO = 0.088248 MEAS. FUEL AIR RATIO = 0.086687 DIFF MEAS. & CAL. F/A PERCENT = 1.8005

CYL TEMP DEG.F CYL-1 254.79 CYL-2 275.34 CYL-3 265.43 CYL-4 262.94

EXT GAS TEMP DEG.F EXT-1 1598.4 EXT-2 -345.05 EXT-3 -454.00 EXT-4 -165.95 SEXT-1 435.46 SEXT-2 435.28

ENGINE OIL EJILT 145.50 SOILT 161.07 OILP 57.634 MANIFOLD PRESSURE = 7.7400

DYNO COND. TORQUE 5.7318 RPM 1199.6 CYL. BACK PRESSURE = 29.368

INDUCTION AIR IAIRT1 80.117 IAIRT2 79.773 TAIRT1 122.73 TAIRT2 77.186

ORIFICE AIR TEMP 80.875 DELTAP 2.0329 DRFP 53.316 FLOW 1993.4

CELL TEMP. = 74.169 HEATER TEMP = 115.20 COOLER TEMP = 69.802

575

NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDEI REC 04/13/76 21:33:39.786 FAC SEX15 PGM C003 RDG 3356

LEANOUT 25 BTDC I & I 80 DEG. HUM=30% 3/4T LEAN MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP = 160.00 HC RATIO = 2.1250

COMP. AIR TEMP 81.307 PRESS 29.233 CFM 10.121 DRY FLOW 43.186 VAPOR FLOW 0.29147 PRESS TOTAL 14.358

COMP. FUEL TEMP 78.165 PRESS 5.8389 DENSITY 44.596 TURBO FLOW 3.9673 FLOW TRON 3.9364 FPIP 6.1554

COOLING AIR TEMP 81.949 JDEL-HOOD -0.090500 DEL-HOOD 0.79845 FLOW 0.00000 REL-HUM 29.117 DEW-POINT 46.151

REL-HUM 1 29.117 2 62.266 HUMIDITY 47.244 H2O VAPOR CORRECTED HP 1.0849 0.31911

ENG. COND. F/A DRY 0.091150 F/A WET 0.090539 EQU. RATIO 1.3504 PPM-1 582.96 RPM-2 580.62 TORQUE 2.7836 BHP 0.30897

WET CORRECTION FACTOR = 0.88787 EXHAUST MOLE. WT. = 26.834 EXHAUST DENSITY = 0.069479 EXHAUST FLOW RATE = 682.42

MEASURED CONC.	PART PER MILLION WET	PER CENT
HC PPM 25598.	NOX PPM 9.2469	CO DRY 7.0451
CORRECTED CONC. TO WET BASIS		CO2 DRY 8.4375
		O2 DRY 2.8821
		6.2552
		7.4914
		2.5589

EMISSION RATE	HC	NOX	CO
EMISSION MASS/MODE	0.62713	0.00075092	3.0990
EMISSION MASS/RATED HP	0.010452	1.2515E-05	0.051651
MODE EMISS./STD. CYCLE %	6.5326E-05	7.3221F-08	0.00032282
	3.4382	0.0052147	0.76861

CAL. FUEL AIR RATIO = 0.087615 MEAS. FUEL AIR RATIO = 0.091150 DIFF MEAS. & CAL. F/A PERCENT = -3.8785

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	237.97	248.44	226.43	228.25

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SFXT-1	SEXT-2
	-39.084	-126.15	-454.00	184.89	354.51	353.07

ENGINE OIL OILT 139.78 SOILT 283.43 OILP 47.433 MANIFOLD PRESSURE = 10.787

DYNO COND. TORQUE 2.4338 RPM 579.36 CYL. BACK PRESSURE = 28.492

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	81.773	81.307	37.721	79.519

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	82.302	2.0199	53.391	1984.8

CELL TEMP. = 75.057 HEATER TEMP = 145.73 COOLER TEMP = 92.526

576

NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDEII REC 04/13/76 21:37:07.399 FAC SEX15 PGM C003 RDG 3358

LEANOUT 25 BTDC I & T 80 DEG. HUM=30% 3/4T LEAN MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	81.756	29.225	10.552	45.040	0.30376	14.358

COMB. FUEL	TFMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	79.084	5.8419	44.572	3.9618	3.9214	6.2100

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	RFL-HUM	DEW-POINT
	82.125	-0.089116	0.79291	0.00000	28.673	46.131

RFL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	28.673	35.740	47.210	1.0841	0.39334

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.087065	0.086482	1.2995	596.76	595.92	3.3503	0.38068

WET CORRECTION FACTOR = 0.87400 EXHAUST MOLE. WT. = 27.133 EXHAUST DENSITY = 0.070255 EXHAUST FLOW RATE = 701.23

MEASURED CONC.	PART PER MILLION WET		PFR CFMT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	17030.	13.021	6.9081	9.2393	1.9210
CORRECTED CONC. TO WET BASIS			6.0377	8.0751	1.6789

EMISSION RATE	HC	NOX	CO
	0.42873	0.0010866	3.0737
EMISSION MASS/MODE	0.0071455	1.8110E-05	0.051229
EMISSION MASS/RATED HP	4.4659E-05	1.1318E-07	0.00032018
MODE EMIS./STD. CYCLE %	2.3505	0.0075456	0.76233

CAL. FUEL AIR RATIO = 0.085531 MEAS. FUEL AIR RATIO = 0.087065 DIFF MEAS. & CAL. F/A PERCENT = -1.7624

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	225.68	234.03	209.14	212.15

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	262.52	-237.60	-454.00	104.09	324.42	323.29

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 10.637
	134.69	-101.20	48.081	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 28.589
	1.0441	600.24	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	82.258	81.756	159.69	79.311

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	82.882	3.9882	53.430	2750.1

CELL TEMP. = 75.314 HEATER TEMP = 153.33 COOLER TEMP = 92.676

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577

NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDELL REC 04/13/76 21:59:39.810 FAC SEX15 PGM C003 RDG 3361

LEANOUT 25 BTDC I & T 80 DEG HUM=30% NEUTRAL MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.240 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR TEMP 79.587 PRESS 29.233 CFM 20.740 DRY FLOW 88.646 VAPOR FLOW 0.59817 PRESS TOTAL 14.370

COMP. FUEL TEMP 74.000 PRESS 5.7423 DENSITY 44.806 TURBO FLOW 10.267 FLOW TRON 8.7699 FPIP 6.1683

COOLING AIR TEMP 80.037 UDEL-HOOD -0.077492 DEL-HOOD 0.80869 FLOW 0.00000 REL-HUM 30.815 DEW-POINT 46.166

REL-HUM 1 30.815 2 58.890 HUMIDITY 47.234 % H2O VAPOR CORRECTED HP 1.0847 1.0711

ENG. COND. F/A DRY 0.098931 F/A WET 0.098268 EQU. RATIO 1.4766 RPM-1 1205.6 RPM-2 1206.4 TORQUE 4.5254 BHP 1.0388

WET CORRECTION FACTOR = 0.85697 EXHAUST MOLE. WT. = 26.295 EXHAUST DENSITY = 0.068087 EXHAUST FLOW RATE = 1439.5

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM NOX PPM CO DRY CO2 DRY O2 DRY
10166. 15.612 11.210 7.8789 0.34763
CORRECTED CONC. TO WET BASIS 9.7189 6.8308 0.30139

EMISSION RATE HC 0.52538 NOX 0.0026744 CO 10.157
EMISSION MASS/MODE 0.096319 0.00049030 1.8622
EMISSION MASS/RATED HP 0.00060199 3.0644E-06 0.011639
MODE EMIS./STD. CYCLE % 31.684 0.20429 27.711

CAL. FUEL AIR RATIO = 0.098681 MEAS. FUEL AIR RATIO = 0.098931 DIFF MEAS. & CAL. F/A PERCENT = -0.25244

CYL TEMP DEG.F CYL-1 266.42 CYL-2 278.22 CYL-3 264.16 CYL-4 264.73

EXT GAS TEMP DEG.F EXT-1 1435.6 EXT-2 -268.71 EXT-3 -454.00 EXT-4 14.610 SEXT-1 478.38 SEXT-2 479.47

ENGINE OIL EOILT 143.14 SOILT 60.702 OILT 58.018 MANIFOLD PRESSURE = 8.3118

DYMO COND. TORQUE 5.0549 RPM 1200.0 CYL. BACK PRESSURE = 29.059

INDUCTION AIR IAIRT1 79.993 IAIRT2 79.587 TAIRT1 119.70 TAIRT2 79.008

ORIFICE AIR TEMP 79.896 DELTAP 4.9318 ORFP 53.312 FLOW 3051.7

CELL TEMP. = 72.969 HEATER TEMP = 128.87 COOLER TEMP = 88.020

578

LEANOUT 25 BTDC I & T 80 DEG HUM=30% NEUTRAL MODE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.240 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP PRESS CFM DRY FLOW VAPOR FLOW PRESS TOTAL
 79.728 29.237 20.911 89.300 0.60360 14.365

COMB. FUEL TEMP PRESS DENSITY TURBO FLOW FLOW TRON FPIP
 73.983 5.7408 44.806 10.251 8.7249 6.1641

COOLING AIR TEMP UDFL-HOOD DFL-HOOD FLOW REL-HUM DEW-POINT
 80.161 -0.081090 0.82584 0.00000 30.714 46.201

REL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP
 30.714 -10.235 47.315 1.0865 0.95825

ENG. COND. F/A DRY F/A WET EQU. RATIO RPM-1 RPM-2 TORQUE BHP
 0.097702 0.097046 1.4582 1204.9 1204.6 4.0504 0.92920

WET CORRECTION FACTOR = 0.86188 EXHAUST MOLE. WT. = 26.378 EXHAUST DENSITY = 0.068299 EXHAUST FLOW RATE = 1444.1

MEASURED CONC.	PART PER MILLION WET		CO DRY	PER CENT	
	HC PPM	NOX PPM		CO2 DRY	O2 DRY
	10380.	15.697	11.259	7.9281	0.34453
CORRECTED CONC. TO WET BASIS			9.7340	6.8330	0.29695

579

	HC	NOX	CO
EMISSION RATE	0.53812	0.0024974	10.174
EMISSION MASS/MODE	0.026906	0.0001487	0.50868
EMISSION MASS/RATED HP	0.00016816	8.4293E-07	0.0031793
MODE EMISS./STD. CYCLE %	8.8507	0.056195	7.5697

CAL. FUEL AIR RATIO = 0.098791 MEAS. FUEL AIR RATIO = 0.097702 DIFF MEAS. & CAL. F/A PERCENT = 1.1138

CYL. TEMP DEG.F CYL-1 CYL-2 CYL-3 CYL-4
 266.50 277.79 264.45 265.01

EXT GAS TEMP DEG.F EXT-1 EXT-2 EXT-3 EXT-4 SEXT-1 SEXT-2
 646.24 -286.06 -454.00 -454.00 475.37 475.28

ENGINE OIL EOILT SOILT OILP MANIFOLD PRESSURE = 8.3256
 142.83 22.034 58.098

DYND COND. TORQUE RPM CYL. BACK PRESSURE = 29.302
 5.6526 1190.3

INDUCTION AIR IAIRT1 IAIRT2 TAIRT1 TAIRT2
 80.143 79.728 187.70 79.281

ORIFICE AIR TEMP DELTAP DRFP FLOW
 79.932 1.0166 53.307 1425.7

CELL TEMP. = 72.827 HEATER TEMP = 117.19 COOLER TEMP = 84.575

NASA-LEWIS		PRELIMINARY DATA		04/13/76	CADDETI	REC 04/13/76 22:03:07.095		FAC SEX15	PG# C003	RDG 3363
LEANOUT 25 BTDC I & T 80 DEG		HUM=30% NEUTRAL		MODE = 2.0000		NO. SCANS = 5				
ENGINE TIMING = 25.000		DEG.	BAROMETRIC PRESSURE = 29.240		RATED HP. = 160.00		HC RATIO = 2.1250			
COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL				
	80.178	29.230	20.465	87.342	0.58915	14.361				
COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP				
	74.595	5.7447	44.790	9.9935	8.4998	6.1659				
COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	RFL-HUM	DEW-POINT				
	80.452	-0.077769	0.77824	0.00000	30.195	46.141				
REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP					
	30.196	55.173	47.217	1.0843	1.6039					
ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP			
	0.097317	0.096665	1.4525	1205.1	1205.0	6.7757	1.5547			
WET CORRECTION FACTOR = 0.86211		EXHAUST MOLE. WT. = 26.404		EXHAUST DENSITY = 0.068366		EXHAUST FLOW RATE = 1410.5				
MEASURED CONC.	PART PER MILLION WFT		PER CENT							
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY					
	9795.0	17.450	11.154	7.9838	0.31567					
CORRECTED CONC. TO WET BASIS			9.6160	6.8829	0.27214					
EMISSION RATE	HC	NOX	CO							
	0.49599	0.0029289	9.8470							
EMISSION MASS/MODE	0.090931	0.00053697	1.8053							
EMISSION MASS/RATED HP	0.00056832	3.3561E-06	0.011283							
MODE EMIS./STD. CYCLE %	29.911	0.22374	26.864							
CAL. FUEL AIR RATIO = 0.098268		MEAS. FUEL AIR RATIO = 0.097317		DIFF MEAS. & CAL. F/A PERCENT = 0.97758						
CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4						
	266.67	275.55	266.44	267.19						
EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2				
	1339.9	3.4651	-454.00	74.899	449.65	449.47				
ENGINE OIL	FOILT	SOILT	DILP	MANIFOLD PRESSURE = 8.2507						
	141.69	82.306	58.314							
DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.104							
	3.3267	1203.5								
INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2						
	80.584	80.178	150.92	79.487						
ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW						
	80.328	0.070107	53.419	264.46						
CELL TEMP. = 73.474	HEATER TEMP = 123.01		COOLER TEMP = 86.913							

580

NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDEII REC 04/13/76 22:03:28.930 FAC SEX15 PG4 C003 RDG 3364

LEANOUT 25 BTDC I & T 80 DEG HUM=30% NEUTRAL MODE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.240 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 80.073 PRESS 29.230 CFM 20.792 DRY FLOW 88.820 VAPOR FLOW 0.60129 PRESS TOTAL 14.359

COMB. FUEL TEMP 74.639 PRESS 5.7417 DENSITY 44.789 TURBO FLOW 10.144 FLOW TRON 8.6679 FPIP 6.1659

COOLING AIR TEMP 80.610 UDEL-HOOD -0.084411 DFL-HOOD 0.80177 FLOW 0.00000 REL-HUM 30.404 DEW-POINT 46.231

REL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP
30.404 1.2701 47.388 1.0882 1.5141

ENG. COND. F/A DRY 0.097589 F/A WET 0.096933 EQU. RATIO 1.4565 RPM-1 1204.4 RPM-2 1205.5 TORQUE 6.4006 BHP 1.4678

WET CORRECTION FACTOR = 0.85198 EXHAUST MOLE. WT. = 26.386 EXHAUST DENSITY = 0.068319 EXHAUST FLOW RATE = 1435.8

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 10484. NOX PPM 16.855 CO DRY 11.210 CO2 DRY 7.9481 O2 DRY 0.36392
CORRECTED CONC. TO WET BASIS 9.6628 6.8511 0.31369

EMISSION RATE HC 0.54039 NOX 0.0028797 CO 10.072
EMISSION MASS/MODE 0.027019 0.00014399 0.50360
EMISSION MASS/PATED HP 0.00016887 8.9991E-07 0.0031475
MODE EMIS./STD. CYCLE % 8.8879 0.059994 7.4941

CAL. FUEL AIR RATIO = 0.098622 MEAS. FUEL AIR RATIO = 0.097589 DIFF MEAS. & CAL. F/A PERCENT = 1.0590

CYL TEMP DEG. F CYL-1 266.65 CYL-2 275.50 CYL-3 266.50 CYL-4 267.40

EXT GAS TEMP DEG. F EXT-1 731.27 EXT-2 7.3079 EXT-3 -454.00 EXT-4 -454.00 SEXT-1 446.84 SEXT-2 446.75

ENGINE OIL FOILT 141.67 SOILT -36.296 OILP 58.314 MANIFOLD PRESSURE = 8.2710

DYNO COND. TORQUE 10.167 RPM 1201.3 CYL. BACK PRESSURE = 29.602

INDUCTION AIR IAIRT1 80.452 IAIRT2 80.073 TAIRT1 195.57 TAIRT2 78.873

ORIFICE AIR TEMP 80.267 DELTAP 2.0031 DRFP 53.232 FLOW 1980.7

CELL TEMP. = 73.645 HEATER TEMP = 112.75 COOLER TEMP = 75.075

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NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDEII REC 04/13/76 22:26:47.046 FAC SEX15 PGM C003 RDG 3372

LEANOUT 25 BTDC I & T 80 DEG HUM=30% NEUTRAL MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.240 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP PRESS CFM DRY FLOW VAPOR FLOW PRESS TOTAL
80.434 29.237 12.057 51.549 0.34835 14.362

COMB. FUEL TEMP PRESS DENSITY TURBO FLOW FLOW TRON FPIP
74.009 5.8062 44.805 6.1853 5.0165 6.1890

COOLING AIR TEMP UDEL-HOOD DEL-HOOD FLOW REL-HUM DEW-POINT
81.773 -0.070573 0.85376 0.00000 30.002 46.191

REL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP
30.002 49.849 47.304 1.0862 0.89445

ENG. COND. F/A DRY F/A WET EQU. RATIO RPM-1 RPM-2 TORQUE BHP
0.097316 0.096662 1.4525 598.92 599.64 7.6008 0.86676

WET CORRECTION FACTOR = 0.87714 EXHAUST MOLE. WT. = 26.404 EXHAUST DENSITY = 0.068367 EXHAUST FLOW RATE = 832.48

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM NOX PPM CO DRY CO2 DRY O2 DRY
33807. 5.2345 9.6751 6.6161 3.2801
CORRECTED CONC. TO WET BASIS 8.4864 5.8032 2.8771

582

EMISSION RATE HC NOX CO
1.0104 0.00051856 5.1290
EMISSION MASS/MODE 0.016839 8.6426E-06 0.085483
EMISSION MASS/RATED HP 0.00010525 5.4016E-08 0.00053427
MODE EMIS./STD. CYCLE % 5.5393 0.0036011 1.2721

CAL. FUEL AIR RATIO = 0.099082 MEAS. FUEL AIR RATIO = 0.097316 DIFF MEAS. & CAL. F/A PERCENT = 1.8157

CYL TEMP DEG.F CYL-1 CYL-2 CYL-3 CYL-4
305.88 317.59 303.52 320.92

EXT GAS TEMP DEG.F EXT-1 EXT-2 EXT-3 EXT-4 SEXT-1 SEXT-2
330.93 -46.731 -430.97 383.33 634.11 634.76

ENGINE OIL FOILT SOILT OILP MANIFOLD PRESSURE = 11.633
153.42 349.72 45.965

DYNO COND. TORQUE RPM CYL. BACK PRESSURE = 29.318
7.6184 597.66

INDUCTION AIR IAIRT1 IAIRT2 TAIRT1 TAIRT2
80.857 80.434 166.52 78.581

ORIFICE AIR TEMP DELTAP ORFP FLOW
80.849 2.0152 53.270 1985.2

CELL TEMP. = 73.965 HEATER TEMP = 95.375 COOLER TEMP = 86.330

NASA-LEWIS PRELIMINARY DATA 04/13/76 CADDETT REC 04/13/76 22:29:58.077 FAC SFX15 PGM C003 RDG 3374

LEANOUT 25 BTDC I.G.T 80 DEG HUM=30% NEUTRAL MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.240 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 80.857 PRESS 29.244 CFM 12.369 DRY FLOW 52.907 VAPOR FLOW 0.35740 PRESS TOTAL 14.362

COMB. FUEL TFMP 76.103 PRESS 5.8017 DENSITY 44.750 TURBO FLOW 5.8704 FLOW TRON 5.1185 FPIP 5.1977

COOLING AIR TEMP 82.064 UDEL-HOOD -0.088839 DEL-HOOD 0.82944 FLOW 0.00000 REL-HUM 29.579 DEW-POINT 46.181

REL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP
29.579 50.755 47.286 1.0859 0.67464

ENG. COND. F/A DRY 0.096745 F/A WET 0.096096 EQU. RATIO 1.4440 RPM-1 602.04 RPM-2 598.44 TORQUE 5.7006 BHP 0.65346

WET CORRECTION FACTOR = 0.87954 EXHAUST MOLE WT. = 26.443 EXHAUST DENSITY = 0.068466 EXHAUST FLOW RATE = 852.72

MEASURED CONC. PART PER MILLION WET PFR CENT
HC PPM 34654. NOX PPM 4.9165 CO DRY 9.3305 CO2 DRY 6.7535 O2 DRY 3.4669
CORRECTED CONC. IN WET BASIS 8.2065 5.9400 3.0493

EMISSION RATE HC 1.0609 NOX 0.00049890 CO 5.0805
EMISSION MASS/MODE 0.017681 8.3149F-06 0.084675
EMISSION MASS/RATED HP 0.00011051 5.1968F-08 0.00052922
MODE EMIS./STD. CYCLE % 5.8162 0.0034646 1.2600

CAL. FUEL AIR RATIO = 0.097670 MEAS. FUEL AIR RATIO = 0.096745 DIFF MEAS. & CAL. F/A PERCENT = 0.95569

CYL TEMP DEG.F CYL-1 244.94 CYL-2 256.10 CYL-3 230.34 CYL-4 239.17

EXT GAS TEMP DEG.F EXT-1 856.85 EXT-2 -172.26 EXT-3 -454.00 EXT-4 261.31 SEXT-1 51.27 SEXT-2 550.18

ENGINE OIL EOILT 148.94 SOILT -217.39 OILT 46.973 MANIFOLD PRESSURE = 11.367

DYNO COND. TORQUE 6.3150 RPM 595.38 CYL. BACK PRESSURE = 28.960

INDUCTION AIR IAIRT1 81.351 IAIRT2 80.857 TAIRT1 153.72 TAIRT2 78.297

ORIFICE AIR TEMP 81.439 DELTAP 3.9645 DRFP 53.347 FLOW 2745.6

CELL TEMP. = 74.453 HEATER TEMP = 91.331 COOLER TEMP = 79.725

583

NASA-LEWIS PRELIMINARY DATA 04/14/76 CADDELL REQ 04/14/76 10:42:29.391 FAC SEX15 PGM C003 RDG 3376

LFANOUT 25 RTDC TO CL APP 80 DEG. HUM=30% MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.200 RATED HP = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	80.249	29.232	215.05	952.85	6.3289	14.843

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	77.599	5.3828	44.711	82.088	79.757	6.0306

COOLING AIR	TEMP	INDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	81.183	3.0394	3.9499	10031.	30.667	46.611

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	30.667	55.758	45.495	1.0677	155.98

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.083704	0.083151	1.2493	2687.9	2689.1	286.23	146.49

WET CORRECTION FACTOR = 0.84702 EXHAUST MOLE. WT. = 27.389 EXHAUST DENSITY = 0.070917 EXHAUST FLOW RATE = 14649.

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1592.4	271.95	8.2395	10.656	0.12311
CORRECTED CONC. TO WET BASIS					
			6.9791	9.0252	0.10428

EMISSION RATE	HC	NOX	CO
	0.89007	0.47410	74.228
	0.0044503	0.0023705	0.37114
	2.7815E-05	1.4815E-05	0.0023196
EMISSION MASS/MODE			
	1.4639	0.98770	5.5229

CAL. FUEL AIR RATIO = 0.084636 MEAS. FUEL AIR RATIO = 0.083704 DIFF MEAS. & CAL. F/A PERCENT = 1.1136

CYL. TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	399.22	412.89	393.94	393.00

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1326.7	85.579	92.419	685.14	1227.5	1216.3

ENGINE OIL	EOILT	SOILT	OILT	MANIFOLD PRESSURE = 18.011
	143.20	165.57	76.024	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.286
	294.50	2634.4	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	80.134	80.249	-6.4663	77.193

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	86.900	2.0099	54.506	1971.8

CELL TEMP. = 78.095 HEATER TEMP = 89.735 COOLER TEMP = 78.980

484

NASA-LEWIS PRELIMINARY DATA 04/14/76 CADDEII REC 04/14/76 10:49:50.152 FAC SEX15 PGM C003 RDG 3377

LEANOUT 25 BTDC TO CL APP 80 DEG. HUM=3.0% MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.200 RATE) HP. = 160.00 HC RATIO= 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	81.007	29.227	181.04	794.02	5.3059	14.666

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	77.873	5.4620	44.704	67.979	65.283	6.1128

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	82.354	2.9522	3.9059	9869.0	29.738	46.451

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	29.738	62.456	46.776	1.0741	125.48

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.082219	0.081673	1.2272	2438.3	2439.7	260.56	120.97

WET CORRECTION FACTOR = 0.84681 EXHAUST MOLE. WT. = 27.505 EXHAUST DENSITY = 0.071216 EXHAUST FLOW RATE = 12140.

MEASURED CONC.	PART PFR MILLION WET	PER CENT
	HC PPM	CO DRY
	1782.7	7.5973
	NOX PPM	CO2 DRY
	695.11	10.995
	CO DRY	O2 DRY
	6.4335	0.12765
	NOX PPM	CO DRY
	6.4335	9.3106
	NOX PPM	CO DRY
	6.4335	0.10810

EMISSION RATE	HC	NOX	CO
	0.77697	1.3042	56.705
EMISSION MASS/MODE	0.064748	0.083687	4.7254
EMISSION MASS/RATED HP	0.00040467	0.00052304	0.029534
MODE FMIS./STD. CYCLE %	21.299	34.869	70.319

CAL. FUEL AIR RATIO = 0.083163 MEAS. FUEL AIR RATIO = 0.082219 DIFF MEAS. & CAL. F/A PERCENT = 1.1480

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	356.29	379.82	417.57	414.65

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1344.6	-454.00	-8.9022	718.03	1243.4	1239.0

ENGINE OIL	FOILT	SOILT	OTLP	MANIFOLD PRESSURE = 27.097
	174.37	109.49	73.599	

DYND COND.	TORQUE	RP4	CYL. RACK PRESSURE = 29.392
	260.08	2384.3	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	80.831	81.007	-47.939	76.173

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	89.770	1.0202	54.366	1416.7

CELL TEMP. = 80.769 HEATER TEMP = 89.659 COOLER TEMP = 76.482

585

NASA-LEWIS PRELIMINARY DATA 04/14/76 CADDEII REC 04/14/76 10:53:07.510 FAC SEX15 PGM C003 RDG 3378

LEAN CUT 25 BTDC TO CL APP 80 DEG. HUM=30% MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.200 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	79.737	29.188	110.12	476.93	3.1830	14.463

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	79.146	5.5830	44.570	44.233	42.016	6.1452

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	80.725	2.9123	3.8464	9794.0	30.531	46.051

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	30.531	71.625	46.718	1.0728	67.517

ENG. COND.	F/A DRY	F/A WET	FQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.088098	0.087514	1.3149	2357.0	2357.5	144.74	64.956

WET CORRECTION FACTOR = 0.85568 EXHAUST MILE. WT. = 27.057 EXHAUST DENSITY = 0.070056 EXHAUST FLOW RATE = 7453.0

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	2242.0	167.09	9.2006	10.012	0.14965
CORRECTED CONC. TO WET BASIS			7.8727	8.5557	0.12806

EMISSION RATE	HC	NOX	CO
	0.59988	0.14819	42.598
	0.059988	0.014819	4.2598
	0.00037492	9.2618E-05	0.026624
MODE EMIS./STD. CYCLE %	19.733	6.1746	63.390

CAL. FUEL AIR RATIO = 0.087356 MEAS. FUEL AIR RATIO = 0.088098 DIFF MEAS. & CAL. F/A PERCENT = -0.84213

CYL TEMP. DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	331.67	340.96	345.59	345.94

EXT GAS TEMP DEG. F	FXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1487.5	-454.00	-264.66	505.27	1097.0	1097.6

ENGINE OIL	F OILT	S OILT	OIL P.	MANIFOLD PRESSURE = 18.759
	185.27	138.31	73.171	

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.337
	151.38	2326.1	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	79.640	79.737	-81.098	75.490

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	88.596	1.0503	54.364	1437.3

CELL TEMP. = 80.602 HEATER TEMP = 90.910 COOLER TEMP = 75.557

986

NASA-LEWIS PRELIMINARY DATA 04/14/76 CADDELY REC 04/14/76 10:59:07.214 FAC SEX15 PGM C003 RDG 3379

LEANOUT 25 BTDC TO CL APP 80 DEG. HUM=30% MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.200 RATED HP = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	78.686	29.206	213.13	945.32	6.3501	14.826

COMB. FUEL	TFMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	76.510	5.4257	44.739	80.683	79.406	6.0384

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	RFL-HUM	DEW-POINT
	80.416	2.9688	3.9136	9900.1	32.603	46.876

REL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP
	32.603	42.500	47.022	153.87

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.083999	0.083438	1.2537	2691.9	2693.1	282.06	144.57

WET CORRECTION FACTOR = 0.84788 EXHAUST MOLE. WT. = 27.366 EXHAUST DENSITY = 0.070858 EXHAUST FLOW RATE = 14551.

MEASURED CONC.	PART PER MILLION WET	PER CENT
	HC PPM	CO2 DRY
	1727.7	10.645
	NOX PPM	O2 DRY
	228.98	0.086869
	CO DRY	
	6.9598	0.073654

EMISSION RATE	HC	NOX	CO
	0.90252	0.39651	73.525
	0.0045126	0.0019825	0.36762
	2.8204E-05	1.2391E-05	0.0022976
	1.4844	0.82606	5.4706

CAL. FUEL AIR RATIO = 0.084750 MFAS. FUEL AIR RATIO = 0.083999 DIFF MEAS. & CAL. F/A PERCENT = 0.89479

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	407.35	426.62	408.14	412.64

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1523.9	288.05	130.98	989.03	1303.2	1298.5

ENGINE OIL	EOILT	SOILT	OILT	MANIFOLD PRESSURE = 28.112
	188.06	200.71	73.639	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.310
	297.75	2623.3	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	78.501	78.686	-79.489	75.940

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	87.678	0.070207	54.272	262.99

GELL TFMP = 80.099 HEATER TEMP = 89.949 COOLFR TEMP = 76.909

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NASA-LEWIS PRELIMINARY DATA 04/14/76 CADDEII REC 04/14/76 11:01:56.789 FAC SEX15 PGM C003 RDG 3380

LEANOUT 25 BTDC TO CL APP 80 DEG. HUM=30% MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.200 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	79.234	29.255	179.55	787.17	5.2997	14.657

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	77.157	5.4830	44.722	65.179	63.420	6.0969

COOLING AIR	TEMP	INLET-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	80.760	3.0111	3.8691	9978.9	31.727	46.631

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	31.727	54.569	47.128	1.0822	124.65

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.080567	0.080029	1.2025	2431.3	2431.7	260.08	120.39

WET CORRECTION F. TOR = 0.84038 EXHAUST MOLE. WT. = 27.635 EXHAUST DENSITY = 0.071554 EXHAUST FLOW RATE = 11961.

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1678.6	623.54	7.4888	11.127	0.11581
CORRECTED CONC. TO WET BASIS			6.2934	9.3510	0.097325

	HC	NOX	CO
EMISSION RATE	0.72080	0.88756	54.652
EMISSION MASS/MODE	0.060057	0.073963	4.5543
EMISSION MASS/RATED HP	0.00037542	0.00046227	0.028464
MODE EMIS./STD. CYCLE %	19.759	30.818	67.772

CAL. FUEL AIR RATIO = 0.082819 MEAS. FUEL AIR RATIO = 0.080567 DIFF MEAS. & CAL. F/A PERCENT = 2.7947

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	374.77	393.57	417.75	421.22

EXT GAS TEMP DEG.F	FXT-1	EXT-2	EXT-3	EXT-4	SFXT-1	SEXT-2
	1627.1	-454.00	264.62	981.41	1260.5	1258.4

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 27.193
	186.76	212.49	72.851	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.347
	268.72	2367.5	

INDUCTION AIR	IAIPT1	IAIRT2	TAIRT1	TAIRT2
	79.084	79.234	-83.355	76.036

ORIFICE AIR	TEMP	DELTAP	OPF2	FLOW
	88.378	1.0670	54.309	1448.8

CELL TEMP. = 81.404 HFATED TEMP = 89.500 COOLER TEMP = 77.300

588

NASA-LEWIS PRELIMINARY DATA 04/14/76 CADDEII REC 04/14/76 11:05:15.699 FAC SEX15 PGM C003 RDG 3381

LEANOUT 25 BTDC TO CL APP 80 DEG. HUM=30% MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. PARAMETRIC PRESSURE = 29.200 RATED HP = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CEM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	79.967	29.186	109.54	473.83	3.1572	14.463

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	79.534	5.5655	44.660	43.567	42.178	6.0585

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	81.210	2.9566	3.8414	9877.3	30.251	46.006

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	30.251	56.952	46.641	1.0710	67.017

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.089015	0.088426	1.3286	2351.1	2352.4	144.00	64.461

WET CORRECTION FACTOR = 0.85886 EXHAUST MOLE. WT. = 26.989 EXHAUST DENSITY = 0.069881 EXHAUST FLOW RATE = 7429.3

MEASURED CONC.	PART PER MILLION WFT	PER CENT		
	HC PPM	CO DRY	CO2 DRY	O2 DRY
	2060.3	9.2474	10.073	0.14357
	154.78	7.9422	8.6509	0.12331
CORRECTED CONC. TO WET BASIS				

EMISSION RATE	HC	NOX	CO
	0.54951	0.13684	42.838
	0.054951	0.013684	4.2838
	0.00034344	8.5522E-05	0.026774
	18.076	5.7015	63.747

CAL. FUEL AIR RATIO = 0.087262 MEAS. FUEL AIR RATIO = 0.089015 DIFF MEAS. & CAL. F/A PERCENT = -1.9697

CYL TEMP. DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	336.32	350.95	349.41	351.16

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	952.20	-454.00	140.92	822.26	1112.3	1113.8

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 18.781
	197.48	189.51	72.351	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.236
	147.25	2301.6	

INDUCTION AIR	IAIRT1	IAIPT2	TAIRT1	TAIPT2
	79.808	79.967	-69.538	76.091

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	89.207	1.1226	54.839	1484.4

CELL TEMP. = 82.433 HEATFR TEMP. = 89.279 COOLER TEMP. = 78.838

589

NASA-LEWIS PRELIMINARY DATA 04/14/76 CADDEII REC 04/14/76 11:13:34.923 FAC SEX15 PGM C003 RDG 3382
 LEANOUT 25 BTDC TO CI APP 80 DEG. HUM=30% MODE = 3.0000 NO. SCANS = 5
 ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.200 RATED HP. = 160.00 HC RATIO = 2.1250
 COMB. AIR TEMP 79.931 PRESS 29.188 CFM 212.35 DRY FLOW 941.83 VAPOR FLOW 6.2994 PRESS TOTAL 14.823
 COMB. FUEL TEMP 77.909 PRESS 5.4314 DENSITY 44.703 TURBO FLOW 62.702 FLOW TRON 76.733 FPIP 6.0198
 COOLING AIR TEMP 82.381 UDEL-HOOD 2.9868 DEL-HOOD 3.9986 FLOW 9933.7 REL-HUM 31.157 DEW-POINT 46.756
 REL-HUM 1 31.157 2 -16.106 HUMIDITY 46.819 % H2O VAPOR CORRECTED HP 1.0751 154.36
 ENG. COND. F/A DRY 0.081472 F/A WET 0.080931 EQU. RATIO 1.2160 RPM-1 2698.2 RPM-2 2699.1 TORQUE 281.73 BHP 144.74
 WFT CORRECTION FACTOR = 0.84654 EXHAUST MOLE. WT. = 27.554 EXHAUST DENSITY = 0.071369 EXHAUST FLOW RATE = 14360.
 MEASURED CONC. PART PER MILLION WFT PER CENT
 HC PPM 1532.4 NOX PPM 261.36 CO DRY 7.1258 CO2 DRY 11.343 O2 DRY 0.046185
 CORRECTED CONC. TO WET BASIS 6.0323 9.6026 0.039097
 EMISSION RATE HC 0.78997 NOX 0.44662 CO 62.889
 EMISSION MASS/MODE 0.0039498 0.3022331 0.31445
 EMISSION MASS/RATED HP 2.4687E-05 1.3957E-05 0.0019653
 MODE EMIS./STD. CYCLE % 1.2993 0.93045 4.6792
 CAL. FUEL AIR RATIO = 0.082129 MEAS. FUEL AIR RATIO = 0.081472 DIFF MEAS. & CAL. F/A PERCENT = 0.80651
 CYL. TEMP DEG. F. CYL-1 425.31 CYL-2 446.88 CYL-3 422.16 CYL-4 434.57
 EXT GAS TEMP DEG. F. EXT-1 1193.2 EXT-2 -454.00 EXT-3 379.85 EXT-4 1069.9 SEXT-1 1341.0 SEXT-2 1337.8
 ENGINE OIL EOILT 188.42 SOILT 213.00 OILP 73.499 MANIFOLD PRESSURE = 28.341
 DYNO COND. TORQUE 289.24 RPM 2624.0 CYL. BACK PRESSURE = 29.334
 INDUCTION AIR IAIRT1 79.737 IAIRT2 79.931 TAIRT1 -70.568 TAIRT2 75.854
 ORIFICE AIR TEMP 90.254 DELTAP 2.0101 DRFP 55.154 FLOW 1965.9
 CELL TEMP. = 84.454 HEATER TEMP = 89.382 COOLER TEMP = 78.748

590

NASA-LEWIS PRELIMINARY DATA 04/14/76 CADDETT REC 04/14/76 11:16:38.436 FAC SEX15 PGM C003 RDG 3383

LEANOUT 25 BTDC TO CL APP 80 DEG. HUM=30% MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.210 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CEM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	78.430	29.211	180.51	792.24	5.3154	14.677

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	76.608	5.4710	44.737	61.343	62.619	6.0954

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	80.152	2.9948	3.9114	9948.6	32.508	46.576

REL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP
	32.508	75.887	46.965	1.0785 124.39

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.079041	0.078514	1.1797	2435.2	2436.5	259.33	120.25

WET CORRECTION FACTOR = 0.84300 EXHAUST MOLE. WT. = 27.757 EXHAUST DENSITY = 0.071871 EXHAUST FLOW RATE = 11968.

MEASURED CONC.	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1600.4	801.62	6.4967	11.707	0.11713
CORRECTED CONC. TO WET BASIS			5.4767	9.8688	0.098742

	HC	NOX	CO
EMISSION RATE	0.68761	1.1417	47.587
EMISSION MASS/MODE	0.057301	0.095141	3.9656
EMISSION MASS/RATED HP	0.00035813	0.00059463	0.024785
MODE EMIS./STD. CYCLE %	18.849	39.642	59.011

CAL. FUEL AIR RATIO = 0.080485 MEAS. FUEL AIR RATIO = 0.079041 DIFF MEAS. & CAL. F/A PERCENT = 1.8273

CYL TEMP DEG. E.	CYL-1	CYL-2	CYL-3	CYL-4
	382.21	395.42	421.64	422.61

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1253.0	-454.00	603.99	1114.7	1291.6	1290.7

ENGINE OIL	EDILT	SDILT	OILP	MANIFOLD PRESSURE = 27.181
	186.85	284.14	73.039	

DYNO COND.	TORQUE	RP	CYL. BACK PRESSURE = 29.355
	261.13	2374.0	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	78.236	78.430	-58.571	76.170

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	88.491	0.091909	54.946	326.01

CELL TEMP. = 82.812 HEATER TEMP = 89.479 COOLFR TEMP = 79.530

ORIGINAL PAGE IS
OF POOR QUALITY

591

NASA-LEWIS PRELIMINARY DATA 04/14/76 CADDETT REC 04/14/76 11:20:13.347 FAC SEX15 PGM C003 RDG 3384

LEANOUT 25 BTDC TO CL APP 80 DEG. HUM=30% MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.210 RATED HP = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	79.305	29.219	109.08	471.49	3.1635	14.464

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	79.525	5.5724	44.660	42.980	40.450	6.1254

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	80.311	2.9643	3.7905	9891.8	31.131	46.191

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	31.131	58.836	46.967	1.0785	68.273

ENG. COND.	E/A DRY	E/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.085793	0.085221	1.2805	2352.2	2352.8	146.75	65.723

WET CORRECTION FACTOR = 0.85497 EXHAUST MOLE. WT. = 27.229 EXHAUST DENSITY = 0.070503 EXHAUST FLOW RATE = 7306.0

MEASURED CONC.	PART PER MILLION WET				
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1940.4	199.00	8.2248	10.675	0.12555
CORRECTED CONC. TO WET BASIS			7.0319	9.1266	0.10734

EMISSION RATE	HC	NOX	CO
	0.50894	0.17301	37.299
	0.050894	0.017301	3.7299
	0.00031809	0.00010813	0.023312
EMISSION MASS/MODE			
EMISSION MASS/RATED HP			
MODE EMIS./STD. CYCLE %	16.741	7.2089	55.504

CAL. FUEL AIR RATIO = 0.084698 MEAS. FUEL AIR RATIO = 0.085793 DIFF. MEAS. & CAL. F/A PERCENT = -1.2757

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	337.81	352.77	350.57	349.61

FXT GAS TEMP DEG. F	FXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1157.4	-454.00	462.11	857.81	1126.9	1129.0

ENGINE CIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 18.776
	187.26	209.96	72.735	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.276
	147.74	2284.1	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	79.181	79.305	24.734	76.531

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	89.259	3.0326	54.994	2389.4

CELL TEMP. = 83.225 HEATER TEMP = 89.645 COOLER TEMP = 81.288

592

NASA-LEWIS PRELIMINARY DATA 04/14/76 CADDEVI REC 04/14/76 11:25:01.875 FAC SEX15 PGM C003 RDG 3385

LEANOUT 25 BTDC TO CL APP 80 DEG. HUM=30% MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.210 RATED HP = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP.	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS. TOTAL
	79.561	29.218	213.18	945.86	6.3564	14.831

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	78.678	5.4368	44.683	76.983	75.470	5.9511

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	81.580	2.9547	3.9241	9873.7	31.704	46.896

REL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP
	31.704	50.013	47.042	1.0802 154.77

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.079789	0.079257	1.1909	2700.9	2702.1	282.63	145.34

WET CORRECTION FACTOR = 0.84055 EXHAUST MOLE. WT. = 27.697 EXHAUST DENSITY = 0.071715 EXHAUST FLOW RATE = 14330.

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1560.6	368.70	7.1064	11.352	0.12197
CORRECTED CONC. TO WET BASIS			5.9733	9.5420	0.10252

	HC	NOX	CO
EMISSION RATE	0.80283	0.62873	62.144
EMISSION MASS/MODE	0.0040141	0.0031437	0.31072
EMISSION MASS/RATED HP	2.5088E-05	1.9648E-05	0.0019420
MODE EMIS./STD. CYCLE %	1.3204	1.3099	4.6238

CAL. FUEL AIR RATIO = 0.081841 MEAS. FUEL AIR RATIO = 0.079789 DIFF MEAS. & CAL. F/A PERCENT = 2.5710

CYL TEMP. DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	406.66	427.33	415.31	415.88

EXT GAS TEMP DEG. F	FXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1645.1	-454.00	510.89	1135.6	1316.1	1311.7

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.267
	187.59	194.22	74.519	

DYMO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.330
	283.79	2631.6	

INDUCTION AIR	IAIRT1	IAIRT2	IAIRT1	TAIRT2
	79.367	79.561	-37.530	75.939

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	90.594	2.9850	55.086	2368.5

CELL TEMP. = 84.928 HEATER TEMP. = 89.887 COOLER TEMP. = 79.938

593

NASA-LEWIS PRELIMINARY DATA 04/14/76 CADDE11 REC 04/14/76 11:27:52.192 FAC SEX15 PGM C003 RDG 3386

LEANOUT 25 BTDC TO CL APP 80 DEG. HUM=30% MCDE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.210 RATED HP. = 160.00 HC RATIO= 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	79.976	29.229	179.01	786.83	5.2996	14.687

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLCW TRON	FPIP
	79.490	5.4782	44.661	65.186	62.817	5.9975

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	82.037	2.9383	3.8586	9843.0	31.042	46.696

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	31.042	86.621	47.148	1.0827	124.42

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	PPM-1	RPM-2	TORQUE	BHP
	0.079836	0.079301	1.1916	2431.7	2433.0	259.33	120.07

WET CORRECTION FACTOR = 0.84666 EXHAUST MOLE. WT. = 27.594 EXHAUST DENSITY = 0.071705 EXHAUST FLOW RATE = 11923.

MEASURED CONC.	HC PPM	NOX PPM	CO DRY	PER CENT CO2 DRY	O2 DRY
	1593.2	846.48	6.5191	11.686	0.13933
CORRECTED CONC. TO WET BASIS			5.5195	9.8941	0.11797

	HC	NOX	CO
EMISSION RATE	0.68193	1.2010	47.777
EMISSION MASS/MODE	0.056828	0.10009	3.9814
EMISSION MASS/RATED HP	0.00035517	0.00062553	0.024884
MODE EMIS./STD. CYCLE %	18.693	41.702	59.247

CAL. FUEL AIR RATIO = 0.080460 MEAS. FUEL AIR RATIO = 0.079836 DIFF MEAS. & CAL. F/A PERCENT = 0.78168

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	383.28	403.29	422.29	420.98

EXT GAS TEMP DEG.F	FXT-1	FXT-2	FXT-3	EXT-4	SEXT-1	SEXT-2
	731.69	-454.00	672.92	1087.1	1275.7	1273.7

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 27.033
	186.32	79.159	72.871	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.409
	235.90	2358.8	

INDUCTION AIR	IAIRT1	IAIPT2	TAIRT1	TAIRT2
	79.808	79.976	-48.533	75.740

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	91.256	1.0549	55.067	1437.0

CELL TEMP. = 85.270 HEATER TEMP = 90.053 COOLER TEMP = 80.063

594

NASA-Lewis PRELIMINARY DATA 04/14/76 CADDETT REC 04/14/76 11:31:02.963 FAC SEX15 PGM CG03 RDG 3387

LEANOUT 25 BTDC TO CL APP 80 DEG. HUM=30% MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.210 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CEM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	80.752	29.204	108.05	467.40	3.1438	14.465

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	81.756	5.5760	44.602	40.010	39.406	6.1253

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	82.25A	2.9309	3.9059	9829.0	29.766	46.256

REL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP
	29.766	62.632	47.083	1.0812 67.105

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.084308	0.083745	1.2583	2349.5	2349.7	144.13	64.478

WET CORRECTION FACTOR = 0.84867 EXHAUST MOLE. WT. = 27.343 EXHAUST DENSITY = 0.070797 EXHAUST FLOW RATE = 7203.1

MEASURED CONC.	PART PER MILLION WFT			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	1983.5	207.22	8.2592	10.693	0.14309	
CORRECTED CONC. TO WET BASIS			7.0093	9.0749	0.12144	

	HC	NOX	CO
EMISSION RATE	0.51291	0.17762	36.655
EMISSION MASS/MODE	0.051291	0.017762	3.6655
EMISSION MASS/RATED HP	0.00032057	0.00011101	0.022909
MODE EMIS./STD. CYCLE %	16.872	7.4009	54.546

CAL. FUEL AIR RATIO = 0.084697 MEAS. FUEL AIR RATIO = 0.084308 DIFF MEAS. & CAL. F/A PERCENT = 0.46110

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	342.46	351.12	353.49	357.69

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1145.7	454.00	588.74	856.45	1121.4	1122.8

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 18.719
	187.70	112.87	72.339	

DYMO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.378
	150.32	2274.4	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	80.619	80.752	-53.174	76.092

ORIFICE AIR	TEMP	DELTA P	DRFP	FLOW
	91.909	1.0949	55.166	1462.7

CELL TEMP. = 85.893 HEATER TEMP = 90.219 COOLER TEMP = 81.163

595

NASA-LEWIS PRELIMINARY DATA 04/14/76 CADDEII REC 04/14/76 11:37:31.562 FAC SEX15 PGM C003 RDG 3388

LEANOUT 25 BTDC TO CL APP 80 DEG. HUM=30% MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.210 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	78.183	29.215	212.40	941.44	6.3669	14.817

COMB. FUEL	TFMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	78.015	5.4491	44.700	78.330	73.678	6.0042

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	80.558	2.9774	3.8546	9916.1	33.349	47.036

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	33.349	-0.11201	47.341	1.0871	153.83

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.078262	0.077736	1.1581	2701.7	2702.8	281.19	144.65

WET CORRECTION FACTOR = 0.84662 EXHAUST MOLE. WT. = 27.821 EXHAUST DENSITY = 0.072034 EXHAUST FLOW RATE = 14180.

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	1401.8	490.75	5.7508	12.131	0.12157	
CORRECTED CONC. TO WET BASIS			4.8587	10.270	0.10292	

	HC	NOX	CO
EMISSION RATE	0.71365	0.82813	50.124
EMISSION MASS/MODE	0.0035682	0.0041406	0.25062
EMISSION MASS/RATED HP	2.2301E-05	2.5879E-05	0.0015664
MODE EMIS./STD. CYCLE %	1.1738	1.7253	3.7294

CAL. FUEL AIR RATIO = 0.078719 MEAS. FUEL AIR RATIO = 0.078262 DIFF MEAS. & CAL. F/A PERCENT = 0.58499

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	426.15	436.61	430.20	436.52

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1035.4	-454.00	655.79	1144.2	1356.2	1351.6

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.277
	188.74	234.74	73.551	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.356
	279.98	2637.6	

INDUCTION AIR	IAIRT1	IAIPT2	TAIRT1	TAIRT2
	77.962	78.183	-36.616	75.936

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	89.853	1.0203	55.004	1415.4

CELL TEMP. = 84.463 HEATER TEMP = 90.425 COOLER TEMP = 80.995

596

NASA-LEWIS PRELIMINARY DATA 04/14/76 CADDETT REC 04/14/76 11:40:55.928 FAC SEX15 PGM C003 RDG 3389

LEANOUT 25 BTDC TO CL APP 80 DEG. HUM=30% MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.210 RATED HP = 160.00 HC RATIO = 2.1250

C.C.M.B. AIR	TEMP	PRESS	CFM	DRY-FLOW	VAPOR FLOW	PRESS TOTAL
	78.881	29.176	178.69	783.72	5.3126	14.666

C.C.M.B. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	79.367	5.4911	44.565	62.413	60.705	6.1032

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	80.937	2.9046	3.9375	9779.4	32.334	46.826

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	32.334	69.861	47.451	1.0896	123.70

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.077458	0.076936	1.1561	2432.8	2434.3	258.00	119.51

WET CORRECTION FACTOR = 0.85031 EXHAUST MILE. WT. = 27.886 EXHAUST DENSITY = 0.072204 EXHAUST FLOW RATE = 11768.

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1442.0	1177.2	5.1761	12.428	0.20990
CORRECTED CONC. TO WET BASIS			4.4013	10.567	0.17848

	HC	NOX	CO
EMISSION RATE	0.60925	1.6486	37.605
EMISSION MASS/MODE	0.050771	0.13739	3.1337
EMISSION MASS/RATED HP	0.00031732	0.00085867	0.019586
MODE EMIS./SID. CYCLE %	16.701	57.244	46.633

CAL. FUEL AIR RATIO = 0.077233 MEAS. FUEL AIR RATIO = 0.077458 DIFF MEAS. & CAL. F/A PERCENT = -0.29026

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	390.82	411.50	425.22	423.30

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SFXT-1	SEXT-2
	1297.5	454.00	723.70	1275.0	1308.3	1306.1

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 27.102
	186.79	302.76	72.835	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.284
	255.24	2367.8	

INDUCTION AIR	IAIRT1	IAIPT2	TAIRT1	TAIRT2
	78.678	78.881	-65.415	76.099

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	90.481	1.0796	55.015	1454.5

CELL TEMP. = 84.568 HEATER TEMP. = 90.551 COOLER TEMP. = 80.640

597

NASA-LEWIS PRELIMINARY DATA 04/14/76 CADDELL REC 04/14/76 11:43:51.809 FAC SEX15 PGM C003 RDG 3390

LEANOUT 25 RTDC TO CL APP 80 DEG. HUM=30% MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.210 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRFSS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	79.623	29.205	107.97	467.10	3.1530	14.468

COMB. FUEL	TEMP	PRFSS	DENSITY	TURBD FLOW	FLOW TRON	FPIP
	81.932	5.6040	44.598	39.546	38.020	6.0675

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	80.655	2.8722	3.9352	9717.9	31.001	46.356

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	31.001	55.938	47.252	1.0851	67.753

ENG. COND.	F/A DRY	F/A WET	EQV. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.081396	0.080850	1.2149	2354.6	2355.2	145.41	65.190

WET CORRECTION FACTOR = 0.84965 EXHAUST MOLE. WT. = 27.569 EXHAUST DENSITY = 0.071384 EXHAUST FLOW RATE = 7120.2

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	1871.7	326.19	6.7991	11.544	0.13723	
CORRECTED CONC. TO WET BASIS			5.7769	9.8083	0.11660	

EMISSION RATE	HC	NOX	CO
	0.47843	0.27638	29.852
EMISSION MASS/MODE	0.047843	0.027638	2.9862
EMISSION MASS/PATED HP	0.00029902	0.00017274	0.018664
MODE EMIS./STD. CYCLE %	15.738	11.515	44.438

CAL. FUEL AIR RATIO = 0.081221 MEAS. FUEL AIR RATIO = 0.081396 DIFF MEAS. & CAL. F/A PERCENT = -0.21544

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	348.20	356.85	360.26	362.06

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1485.0	-454.00	693.96	1053.6	1153.8	1155.7

ENGINE OIL	F OILT	S OILT	OILP	MANIFOLD PRESSURE = 18.726
	187.96	200.58	72.407	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.256
	135.66	2303.1	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	79.455	79.623	-51.251	76.188

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	91.003	2.0093	55.052	1964.2

CELL TEMP. = 84.858 HEATER TEMP = 95.003 COOLER TEMP = 81.492

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NASA-LEWIS PRELIMINARY DATA 04/14/76 CADDELT REC 04/14/76 11:50:34.390 FAC SEX15 PGM C003 RDG 3391

LEANOUT 25 BTDC TO CL APP 80 DEG. HUM=30% MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.210 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	80.187	29.228	213.25	944.90	6.3692	14.812

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	81.914	5.4518	44.598	72.950	71.182	6.0000

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	82.389	2.9920	3.7747	9943.5	31.114	46.941

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	31.114	50.141	47.184	1.0835	156.17

ENG. COND.	F/A DRY	F/A WET	EQV. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.075333	0.074828	1.1244	2706.4	2707.1	284.54	146.63

WET CORRECTION FACTOR = 0.93363 EXHAUST MOLE. WT. = 28.062 EXHAUST DENSITY = 0.072658 EXHAUST FLOW RATE = 14072.

MEASURED CONC.	PART PER MILLION WET	PER CENT
	HC PPM	CO2 DRY
	1397.7	12.162
	NOX PPM	O2 DRY
	560.44	0.10655
	CO DRY	
	4.7532	10.139
		0.088823

EMISSION RATE	HC	NOX	CO
	0.70612	0.93849	48.560
	0.0035306	0.0046924	0.24280
	2.2066E-05	2.9328E-05	0.0015175
	1.1614	1.9552	3.6131

CAL. FUEL AIR RATIO = 0.078659 MEAS. FUEL AIR RATIO = 0.075333 DIFF MEAS. & CAL. F/A PERCENT = 4.4292

CYL. TEMP. DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	411.30	424.08	422.07	421.37

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	FXT-4	SEXT-1	SEXT-2
	1130.4	-454.00	730.00	1301.5	1334.9	1329.7

ENGINE OIL	EOILT	SOILT	DILP	MANIFOLD PRESSURE = 28.327
	188.70	208.45	74.235	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.336
	275.92	2633.6	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	79.940	80.187	-28.961	75.945

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	91.700	1.0750	55.332	1449.8

CELL TEMP. = 86.094 HEATED TEMP = 93.148 COOLER TEMP = 79.326

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NASA-LEWIS PRELIMINARY DATA 04/14/76 CADREII REC 04/14/76 11:53:24.224 FAC SEX15 PGM C003 RDG 3392

LEANOUT 25 BTDC TO CL APP 80 DEG. HUM=30% MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.210 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CEM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	80.655	29.162	178.41	782.89	5.3050	14.666

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	82.618	5.4968	44.580	60.361	59.472	6.0579

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	82.873	2.9851	3.8029	9930.6	30.499	46.816

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	30.499	44.260	47.433	1.0892	123.64

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.075965	0.075453	1.1338	2432.9	2433.3	257.37	119.22

WET CORRECTION FACTOR = 0.84197 EXHAUST MOL. WT. = 28.009 EXHAUST DENSITY = 0.072522 EXHAUST FLOW RATE = 11688.

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1463.4	1177.2	5.2584	12.448	0.18660
CORRECTED CONC. TO WET BASIS			4.4274	10.481	0.15711

	HC	NOX	CO
EMISSION RATE	0.61408	1.6374	37.570
EMISSION MASS/MODE	0.051173	0.13645	3.1308
EMISSION MASS/RATED HP	0.00031983	0.00085282	0.019568
MODE EMIS./STD. CYCLE %	16.833	56.854	46.590

CAL. FUEL AIR RATIO = 0.077453 MEAS. FUEL AIR RATIO = 0.075965 DIFF MEAS. & CAL. F/A PERCENT = 1.9595

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	392.70	413.12	425.97	423.74

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1324.8	-454.00	738.00	1218.0	1297.1	1294.4

ENGINE OIL	FOILT	SOILT	OILP	MANTFOLD PRESSURE = 27.192
	187.07	178.73	72.611	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.298
	255.88	2373.9	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	80.452	80.655	72.612	75.806

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	92.083	1.0591	55.158	1438.7

CELL TEMP. = 86.935 HEATER TEMP = 91.801 COOLER TEMP = 81.128

NASA-LEWIS PRELIMINARY DATA 04/14/76 CADDEII REC 04/14/76 11:59:23.239 FAC SEX15 PGM C003 RDG 3393

LEANOUT 25 BTDC TO CL APP 80 DEG. HUM=30% MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP, = 160.00 HC RATIO= 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	78.262	29.234	107.46	465.36	3.1458	14.469

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	82.556	5.6052	44.581	40.959	38.344	6.0777

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	79.905	2.8871	3.8049	9746.3	32.468	46.396

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	32.468	65.060	47.320	1.0866	67.328

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.082397	0.081843	1.2298	2350.1	2350.9	145.01	64.885

WET CORRECTION F/DR = 0.85296 FXHAUST MOLE. WT. = 27.491 EXHAUST DENSITY = 0.071180 EXHAUST FLOW RATE = 7120.6

MEASURED CONC.	PART PER MILLION WET	PER CENT			
	HC PPM	CO DRY	CO2 DRY	O2 DRY	
	1883.2	309.93	6.8773	11.544	0.13761
CORRECTED CONC. TO WET BASIS		5.8661	9.8469	0.11738	

EMISSION RATE	HC	NOX	CO
	0.48140	0.26262	30.325
EMISSION MASS/MODE	0.048140	0.026262	3.0325
EMISSION MASS/RATED HP	0.00030087	0.00016414	0.018953
MODE EMIS./STD. CYCLE %	15.835	10.942	45.126

CAL. FUEL AIR RATIO = 0.081352 MEAS. FUEL AIR RATIO = 0.082397 DIFF MEAS. & CAL. F/A PERCENT = -1.2677

CYL. TEMP. DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	337.87	346.25	349.09	342.01

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1143.1	-454.00	738.42	981.48	1106.4	1107.0

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 18.643
	187.96	204.61	72.339	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.317
	134.02	2292.6	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	79.086	78.262	81.152	75.677

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	89.713	1.0408	55.197	1429.5

CELL TEMP. = 84.331 HEATER TEMP. = 92.347 COOLER TEMP = 79.246

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NASA-LEWIS PRELIMINARY DATA 04/14/76 CADDEII REC 04/14/76 12:07:32.925 FAC SEX15 PGM C003 RDG 3394
 LEANOUT 25 BTDC TO CL APP 80 DEG. HUM=30% MODE = 3.0000 NO. SCANS = 5
 ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.240 RATED HP. = 160.00 HC RATIO = 2.1250
 COMB. AIR TEMP 79.128 PRESS 29.241 CFM 211.31 DRY FLOW 938.09 VAPOR FLOW 6.4186 PRESS TOTAL 14.833
 COMB. FUEL TEMP 82.161 PRESS 5.4716 DENSITY 44.592 TURBO FLOW 70.458 FLOW TRON 69.142 FPIP 6.0810
 COOLING AIR TEMP 81.641 UDEL-HOOD 2.8799 DEL-HOOD 3.8544 FLOW 9732.6 REL-HUM 32.738 DEW-POINT 47.371
 REL-HUM 1 32.738 2 0.65006 HUMIDITY 47.895 % H2O VAPOR CORRECTED HP 1.0998 154.07
 ENG. COND. F/A DRY 0.073705 F/A WET 0.073204 EQU. RATIO 1.1001 RPM-1 2695.2 RPM-2 2696.4 TORQUE 282.29 BHP 144.87
 WET CORRECTION FACTOR = 0.83751 EXHAUST MOLE. WT. = 28.198 EXHAUST DENSITY = 0.073012 EXHAUST FLOW RATE = 13883.
 MEASURED CONC. PART PER MILLION WET PER CENT
 HC PPM 1250.9 NOX PPM 726.13 CO DRY 4.5036 CO2 DRY 12.873 O2 DRY 0.10861
 CORRECTED CONC. TO WET BASIS CO 3.7718 CO2 10.781 O2 0.090962
 EMISSION RATE HC 0.62347 NOX 1.1996 CO 38.017
 EMISSION MASS/MODE 0.0031174 0.3059982 0.19008
 EMISSION MASS/RATED HP 1.9484E-05 3.7489E-05 0.0011880
 MODE EMIS./STD. CYCLE % 1.0254 2.4993 2.8286
 CAL. FUEL AIR RATIO = 0.076020 MEAS. FUEL AIR RATIO = 0.073705 DIFF MEAS. & CAL. F/A PERCENT = 3.1405
 CYL TEMP DEG.F CYL-1 436.69 CYL-2 446.43 CYL-3 438.39 CYL-4 449.16
 EXT GAS TEMP DEG.F EXT-1 1380.1 EXT-2 -454.00 EXT-3 895.05 EXT-4 1305.9 SEXT-1 1381.9 SEXT-2 1376.9
 ENGINE OIL FOILT 188.79 SOILT 215.20 OILP 73.483 MANIFOLD PRESSURE = 28.252
 DYNO COND. TORQUE 275.65 RPM 2637.3 CYL. BACK PRESSURE = 29.418
 INDUCTION AIR TAIRT1 78.872 TAIRT2 79.178 TAIRT1 -46.564 TAIRT2 75.595
 ORIFICE AIR TEMP 91.247 DELTAP 2.9940 ORFP 54.833 FLOW 2370.5
 CELL TEMP. = 86.523 HEATED TEMP = 90.834 COOLER TEMP = 80.036

602

NASA-LEWIS PRELIMINARY DATA 04/14/76 CADDEII REC 04/14/76 12:10:40.929 FAC SEX15 PGM C003 RDG 3395

LEANOUT 25 BTDC TO CL APP 80 DEG. HUM=30% MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.240 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	79.587	29.260	180.59	793.66	5.4148	14.678

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	82.979	5.4824	44.570	60.425	57.777	6.0597

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	81.949	2.9123	3.8577	9794.0	31.821	47.016

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	31.821	61.816	47.758	1.0967	124.34

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.072798	0.072305	1.0865	2433.1	2433.5	259.11	120.04

WET CORRECTION FACTOR = 0.83946 EXHAUST MOLE. WT. = 28.275 EXHAUST DENSITY = 0.073211 EXHAUST FLOW RATE = 11703.

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1183.0	1496.0	4.2785	12.858	0.28003
CORRECTED CONC. TO WET BASIS			3.5916	10.794	0.23507

EMISSION RATE	HC	NOX	CO	
	0.49706	2.0836	30.518	
	EMISSION MASS/MODE	0.041422	0.17363	2.5431
	EMISSION MASS/RATED HP	0.00025889	0.0010852	0.015895
MODE EMISS./STD. CYCLE %	13.626	72.348	37.844	

CAL. FUEL AIR RATIO = 0.075054 MEAS. FUEL AIR RATIO = 0.072798 DIFF MEAS. & CAL. F/A PERCENT = 3.0989

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	400.71	416.96	425.11	423.05

FXT GAS TEMP DEG.F	FXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1210.9	-454.00	792.45	1241.7	1335.1	1333.0

ENGINE OIL	EOILT	SOILT	OILP	MANTFOLD PRESSURE = 27.301
	188.49	307.32	72.763	

DYNO/COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.336
	251.17	2373.1	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	79.349	79.587	-38.535	75.388

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	92.065	0.089409	55.035	318.03

CELL TEMP. = 86.733 HEATER TEMP = 91.062 COOLER TEMP = 80.214

603

NASA-LEWIS PRELIMINARY DATA 04/14/76 CADDEII REC 04/14/76 12:14:27.487 FAC SEX15 PGM C003 RDG 3396

LEANOUT 25 BTDC TO CL APP 80 DEG. HUM=30% MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PPESSURE = 29.240 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 80.416 PRESS 29.241 CFM 107.35 DRY FLOW 465.30 VAPOR FLOW 3.1594 PRESS TOTAL 14.482

COMB. FUEL TEMP 85.445 PRESS 5.5992 DENSITY 44.506 TURBO FLOW 37.978 FLOW TRON 36.574 FPIP 6.1167

COOLING AIR TEMP 82.293 UDEL-HOOD 2.9264 DEL-HOOD 3.7573 FLOW 9820.6 REL-HUM 30.413 DEW-POINT 46.536

REL-HUM 1 30.413 2 62.172 HUMIDITY 47.529 % H2O VAPOR CORRECTED HP 1.0914 67.643

ENG. COND. F/A DRY 0.078602 F/A WET 0.078072 EQU. RATIO 1.1732 RPM-1 2351.7 RPM-2 2352.6 TORQUE 145.21 BHP 65.019

WET CORRECTION FACTOR = 0.85270 EXHAUST MOLE. WT. = 27.793 EXHAUST DENSITY = 0.071963 EXHAUST FLOW RATE = 7018.0

MEASURED CONC. PART PER MILLION WET HC PPM 1606.4 NOX PPM 552.21 CO DRY 5.2444 CO2 DRY 12.458 O2 DRY 0.15384
CORRECTED CONC. TO WET BASIS CO DRY 4.4719 CO2 DRY 10.623 O2 DRY 0.13118

EMISSION RATE HC 0.40472 NOX 0.46118 CO 22.785
EMISSION MASS/MODE 0.040471 0.046118 2.2785
EMISSION MASS/RATED HP 0.00025295 0.00028824 0.014240
MODE EMIS./STD. CYCLE % 13.313 19.216 33.906

GAL. FUEL AIR RATIO = 0.077593 MEAS. FUEL AIR RATIO = 0.078602 DIFF MEAS. & CAL. F/A PERCENT = -1.2837

CYL TEMP DEG.F CYL-1 352.29 CYL-2 357.50 CYL-3 362.42 CYL-4 359.69

EXT GAS TEMP DEG.F EXT-1 960.35 EXT-2 -454.00 EXT-3 968.46 EXT-4 1039.7 SEXT-1 1164.1 SEXT-2 1165.6

ENGINE OIL EOILT 188.11 SOILT 245.40 OILP 72.151 MANIFOLD PRESSURE = 18.717

DYNO COND. TORQUE 138.96 RPM 2301.7 CYL. BACK PRESSURE = 29.309

INDUCTION AIR IAIRT1 80.240 IAIRT2 80.416 IAIRT1 -100.03 IAIRT2 75.659

ORIFICE AIR TEMP 92.891 DFLTAP 0.078408 ORFP 55.082 FLOW 286.33

CELL TEMP. = 87.127 HEATER TEMP = 91.359 COOLER TEMP = 80.276

GOY

NASA-LEWIS PRELIMINARY DATA 04/14/76 CADDEII REC 04/14/76 12:18:55.870 FAC SEX15 PGM C003 RDG 3397

LEANOUT 25 BTDC TO CL APP 80 DEG. HUM=30% MCDE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.240 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	80.637	29.235	212.15	942.86	6.4221	14.846

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	84.244	5.4824	44.537	72.564	70.441	6.0426

COOLING AIR	TEMP	UREL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	83.128	2.9314	3.7869	9830.0	31.056	47.281

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	31.056	18.924	47.689	1.0951	155.85

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	PPM-1	RPM-2	TORQUE	BHP
	0.074726	0.074220	1.1153	2697.9	2698.8	284.78	146.29

WET CORRECTION FACTOR = 0.84256 EXHAUST MOLE. WT. = 28.112 EXHAUST DENSITY = 0.072790 EXHAUST FLOW RATE = 14006.

MEASURED CONC.	PART PER MILLION WET	PER CENT			
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1262.1	822.52	4.4970	12.892	0.11931
	CORRECTED CONC. TO WET BASIS		3.7890	10.862	0.10053

EMISSION RATE	HC	NOX	CO
	0.63464	1.3709	38.529
EMISSION MASS/MODE	0.0031732	0.0068547	0.19265
EMISSION MASS/RATED HP	1.9832E-05	4.2842E-05	0.0012040
MCDE EMISS./STD. CYCLE %	1.0438	2.8561	2.8668

CAL. FUEL AIR RATIO = 0.075964 MEAS. FUEL AIR RATIO = 0.074726 DIFF MEAS. & CAL. F/A PERCENT = 1.6572

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	426.54	442.59	433.49	436.95

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1309.8	-454.00	1108.3	1371.8	1372.2	1367.5

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.247
	188.39	205.22	74.047	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.393
	277.21	2617.4	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	80.364	80.637	-19.978	75.611

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	93.778	1.9939	55.068	1952.2

CELL TEMP. = 88.290 HEATER TEMP. = 91.656 COOLER TEMP. = 79.459

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605

NASA-LEWIS PRELIMINARY DATA 04/14/76 CADDEII REC 04/14/76 12:22:13.604 FAC SEX15 PGM C003 RDG 3398

LEANOUT 25 BTDC TO CL APP 80 DEG. HUM=30% MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.300 DEG. BAROMETRIC PRESSURE = 29.240 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY-FLOW	VAPOR FLOW	PRESS TOTAL
	78.015	29.252	180.81	795.85	5.4257	14.699

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	82.029	5.4923	44.595	61.281	58.932	6.0696

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	RFL-HUM	DEW-POINT
	80.434	2.9015	3.8688	9773.6	33.534	47.036

RFL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	33.534	62.869	47.723	1.0959	123.62

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.074049	0.073548	1.1052	2432.3	2432.7	258.13	119.54

WET CORRECTION FACTOR = 0.84498 EXHAUST MOLE. WT. = 28.169 EXHAUST DENSITY = 0.072937 EXHAUST FLOW RATE = 11793.

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1181.7	1497.3	4.3035	12.938	0.30255
CORRECTED CONC. TO WET BASIS			3.6364	10.933	0.25565

	HC	NOX	CO
EMISSION RATE	0.50034	2.1015	31.136
EMISSION MASS/MODE	0.041695	0.17512	2.5946
EMISSION MASS/RATED HP	0.00026059	0.0010945	0.016216
MODE EMIS./STD. CYCLE %	13.715	72.968	38.611

CAL. FUEL AIR RATIO = 0.074977 MEAS. FUEL AIR RATIO = 0.074049 DIFF MEAS. & CAL. F/A PERCENT = 1.2528

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	397.21	417.09	422.05	426.18

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1531.7	-454.00	1166.2	1376.6	1331.0	1329.0

ENGINE OIL	OIL1	OIL2	OILP	MANIFOLD PRESSURE = 27.420
	187.32	190.44	72.955	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.348
	255.84	2364.9	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	77.732	78.015	-31.446	75.362

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	91.404	1.0372	55.064	1424.9

CELL TEMP. = 85.288 HEATER TEMP = 91.794 COOLER TEMP = 79.716

606

NASA-LEWIS PRELIMINARY DATA 04/14/76 CADDEII REC 04/14/76 12:27:11.722 FAC SEX15 PGM C003 RDG 3399

LEANOUT 25 BTDC TO CL APP 80 DEG. HUM=30% MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.240 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 79.084 PRESS 29.236 CEM 107.43 DRY FLOW 465.16 VAPOR FLOW 3.1735 PRESS TOTAL 14.471

COMB. FUFL TEMP 84.797 PRESS 5.6082 DENSITY 44.523 TURBO FLOW 38.141 FLOW TRON 36.529 FPIP 6.0855

COOLING AIR TEMP 80.937 UDEL-HOOD 2.8517 DEL-HOOD 3.8215 FLOW 9678.9 REL-HUM 31.896 DEW-POINT 46.641

REL-HUM 1 31.896 2 58.714 HUMIDITY 47.757 % H2O VAPOR CORRECTED HP 1.0967 66.631

ENG. COND. F/A DRY 0.078530 F/A WET 0.077998 EQU. RATIO 1.1721 RPM-1 2351.6 RPM-2 2352.5 TORQUE 143.25 BHP 64.139

WET CORPECTION FACTOR = 0.85368 EXHAUST MJLF. WT. = 27.799 EXHAUST DENSITY = 0.071978 EXHAUST FLOW RATE = 7014.1

MEASURED CONC. PART PER MILLION WET HC PPM 1280.0 NOX PPM 545.97 CO DRY 5.2034 PER CENT CO2 DRY 12.494 O2 DRY 0.17308
CORRECTED CONC. TO WET BASIS HC 4.4420 NOX 10.666 CO 0.14775

EMISSION RATE HC 0.32232 NOX 0.45571 CO 22.620
EMISSION MASS/MODE 0.032232 0.045571 2.2620
EMISSION MASS/RATED HP 0.00020145 0.00028482 0.014137
MODE EMIS./STD. CYCLE % 10.603 18.988 33.660

CAL.FUFL AIR RATIO = 0.077267 MEAS. FUEL AIR RATIO = 0.078530 DIFF MEAS.& CAL. F/A PERCENT = -1.6081

CYL TEMP DEG.F CYL-1 345.41 CYL-2 351.79 CYL-3 353.40 CYL-4 353.95

EXT GAS TEMP DEG.F EXT-1 1314.9 EXT-2 -454.00 EXT-3 1093.9 EXT-4 1072.3 SFXT-1 1147.4 SEXT-2 1148.5

ENGINE OIL EOILT 188.04 SOILT 234.80 OILP 72.575 MANIFOLD PRESSURE = 18.639

DYND COND. TORQUE 147.72 RPM 2287.5 CYL. BACK PRESSURE = 29.299

INDUCTION AIR TAIRT1 78.863 TAIRT2 79.084 TAIRT1 -83.186 TAIRT2 75.776

ORIFICE AIR TEMP 92.318 DELTAP 0.050505 DRFP 55.078 FLOW 198.53

CELL TEMP. = 86.050 HEATER TEMP = 92.002 COOLER TEMP = 80.649

607

NASA-LEWIS PRELIMINARY DATA 04/14/76 CADDEII REC 04/14/76 12:39:17.470 FAC SEX15 PGM C003 RDG 3400

LEANOUT 25 BTDC TO CL APP 80 DEG. HUM=30% MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.240 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CEM	DRY FLOW	VAPOR FLOW	PRESS. TOTAL
	80.108	29.231	211.54	940.21	6.1139	14.835

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	85.209	5.4998	44.512	58.122	65.931	6.0399

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	82.697	2.9967	3.8887	9952.2	30.151	46.040

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	30.151	-7.0707	45.518	1.0453	154.27

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.070124	0.069671	1.0466	2695.4	2697.5	282.40	144.93

WET CORRECTION FACTOR = 0.83861 EXHAUST MOLE. WT. = 28.506 EXHAUST DENSITY = 0.073808 EXHAUST FLOW RATE = 13714.

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	1098.7	1347.4	2.8846	13.716	0.17018	
CORRECTED CONC. TO WET BASIS			2.4190	11.503	0.14271	

EMISSION RATE	HC	NOX	CO
	0.54096	2.1991	24.086
EMISSION MASS/MODE	0.0027048	0.010995	0.12043
EMISSION MASS/RATED HP	1.6905E-05	6.8722E-05	0.00075268
MODE EMIS./STD. CYCLE %	0.88974	4.5814	1.7921

CAL. FUEL AIR RATIO = 0.072508 MEAS. FUEL AIR RATIO = 0.070124 DIFF MEAS. & CAL. F/A PERCENT = 3.3992

CYL TEMP. DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	435.11	442.81	439.40	440.87

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1415.0	-95.939	1259.0	1345.7	1406.4	1400.9

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE
	187.72	197.45	73.819	28.323

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE
	280.34	2635.6	29.362

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	79.861	80.108	-2.2070	75.320

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	93.986	0.083208	55.171	299.97

CELL TEMP. = 88.788 HEATER TEMP. = 92.126 COOLER TEMP. = 78.509

608

NASA-LEWIS PRELIMINARY DATA 04/14/76 CADDEII REC 04/14/76 12:41:01.178 FAC SEX15 PGM C003 RDG 3401

LEANOUT 25 BTDC TO CI APP 90 DEG. HUM=30% MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.240 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CEM	DRY FLOW	VAPOR FLOW	PRESS. TOTAL
	80.769	29.220	186.50	821.21	5.3826	14.699

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	85.665	5.5127	44.501	59.704	57.891	6.0750

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	82.970	3.0167	3.9311	9989.2	29.469	46.006

REL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP
	29.469	56.755	45.881	1.0536 123.80

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.070494	0.070035	1.0522	2431.9	2432.0	257.90	119.42

WET CORRECTION FACTOR = 0.84336 EXHAUST MOLE. WT. = 28.473 EXHAUST DENSITY = 0.073724 EXHAUST FLOW RATE = 11997.

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	863.58	1649.7	3.5028	13.056	0.60774
CORRECTED CONC. TO WET BASIS			2.9541	11.011	0.51254

EMISSION RATE	HC	NOX	CO
	0.37194	2.3552	25.730
EMISSION MASS/MODE	0.030995	0.19626	2.1442
EMISSION MASS/RATED HP	0.00019372	0.0012266	0.013401
MODE EMIS./STD. CYCLE %	10.196	81.776	31.907

CAL. FUEL AIR RATIO = 0.072393 MEAS. FUEL AIR RATIO = 0.070494 DIFF MEAS. & CAL. F/A PERCENT = 2.6933

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	409.23	426.53	412.90	417.06

EXT GAS TEMP DEG.F	FXT-1	FXT-2	FXT-3	FXT-4	SEXT-1	SEXT-2
	1508.6	-454.00	1180.6	1239.3	1361.7	1358.8

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 27.762
	186.45	285.23	72.675	

DYNO COND.	TORQUE	RPM	CYL. RACK PRESSURE = 29.323
	278.06	2373.8	

INDUCTION AIR	IAIPT1	IAIPT2	TAIRT1	TAIRT2
	80.505	80.769	-61.937	75.391

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	94.298	2.0506	54.768	1977.3

CELL TEMP. = 97.381 HEATER TEMP = 92.174 COOLER TEMP = 80.258

609

NASA-LEWIS PRELIMINARY DATA 04/14/76 CADDELI REC 04/14/76 12:44:02.964 FAC SEX15 PGM C003 R06 3402

LEANOUT 25 BTDC TO CL APP 80 DEG. HUM=30% MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.240 RATE) HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	78.386	29.238	108.66	471.14	3.0752	14.483

COMB. FUFL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	84.841	5.6277	44.522	36.415	34.617	6.1548

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	80.337	2.9505	3.8644	9865.9	31.263	45.505

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	31.263	59.214	45.690	1.0492	68.063

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.073476	0.072999	1.0967	2352.8	2352.7	146.49	65.624

WET CORRECTION FACTOR = 0.85230 EXHAUST MOLE. WT. = 28.218 EXHAUST DENSITY = 0.073062 EXHAUST FLOW RATE = 6954.4

MEASURED CONC.	PART PER MILLION WET	PER CENT			
	HC PPM	CO DRY	CO2 DRY	O2 DRY	
	1282.8	890.19	3.2626	13.433	0.27343
CORRECTED CONC. TO WET BASIS		2.7807	11.449	0.23304	

EMISSION RATE	HC	NOX	CO
	0.32073	0.73775	14.060
EMISSION MASS/MODE	0.032073	0.073775	1.4060
EMISSION MASS/RATED HP	0.00020046	0.00046109	0.0087873
MODE EMIS./STD. CYCLE %	10.550	30.740	20.922

CAL. FUEL AIR RATIO = 0.073053 MEAS. FUEL AIR RATIO = 0.073476 DIFF MEAS. & CAL. F/A PERCENT = -0.57499

CYL TEMP. DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	360.61	362.51	366.36	369.04

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1159.2	-454.00	1212.9	1138.8	1213.6	1215.1

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 18.948
	187.59	237.79	72.131	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.259
	138.84	2305.7	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	78.148	78.386	-102.39	75.712

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	91.970	0.094509	55.167	332.11

CELL TEMP. = 85.761 HEATER TEMP = 92.264 COOLER TEMP = 80.160

010

NASA-LEWIS PRELIMINARY DATA 04/14/76 CADDELI REC 04/14/76 12:48:25.742 FAC SEX15 PGM C003 RDG 3403
 LEANOUT 25 BTDC TO CL APP 80 DEG. HUM=30% MCDE = 3.0000 NO. SCANS = 5
 ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO= 2.1250
 COMB. AIR TEMP PRESS CFM DRY FLOW VAPOR FLOW PRESS TOTAL
 78.422 29.247 211.70 940.51 6.1770 14.835
 COMB. FUEL TEMP PRESS DENSITY TURBO FLOW FLOW TRON FPIP
 83.453 5.5010 44.558 66.523 66.331 6.0795
 COOLING AIR TEMP UDEL-HOOD DEL-HOOD FLOW REL-HUM DEW-POINT
 80.866 2.9976 3.9114 9953.8 32.181 46.301
 REL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP
 32.181 27.765 45.974 1.0557 153.09
 ENG. COND. F/A DRY F/A WET EQU. RATIO RPM-1 RPM-2 TORQUE BHP
 0.070526 0.070066 1.0526 2695.6 2696.4 280.87 144.16
 WET CORRECTION FACTOR = 0.84168 EXHAUST MOLE. WT. = 28.471 EXHAUST DENSITY = 0.073717 EXHAUST FLOW RATE = 13741.
 MEASURED CONC. PART PER MILLION WET PER CENT
 HC PPM NOX PPM CO DRY CO2 DRY O2 DRY
 1084.7 1376.3 2.8186 13.726 0.18594
 CORRECTED CONC. TO WET BASIS 2.3724 11.553 0.15650
 EMISSION RATE HC NOX CO
 0.53513 2.2507 23.668
 EMISSION MASS/MODE 0.0026756 0.011254 0.11834
 EMISSION MASS/RATED HP 1.6723E-05 7.0335E-05 0.00073963
 MODE EMIS./STD. CYCLE % 0.88014 4.5890 1.7610
 CAL. FUEL AIR RATIO = 0.072330 MEAS. FUEL AIR RATIO = 0.070526 DIFF MEAS.& CAL. F/A PERCENT = 2.5580
 CYL TEMP DEG.F CYL-1 CYL-2 CYL-3 CYL-4
 427.07 441.77 434.84 433.74
 EXT GAS TEMP DEG.F EXT-1 EXT-2 EXT-3 EXT-4 SEXT-1 SEXT-2
 1097.1 64.861 1319.5 1441.3 1411.4 1406.1
 ENGINE OIL EOILT SOILT OILP MANIFOLD PRESSURE = 28.376
 188.80 245.93 74.035
 DYNO COND. TORQUE RPM CYL. BACK PRESSURE = 29.339
 276.53 2638.8
 INDUCTION AIR IAIRT1 IAIRT2 TAIRT1 TAIRT2
 78.156 78.422 -22.513 75.501
 ORIFICE AIR TEMP DELTAP ORFP FLOW
 92.396 0.99990 55.061 1398.2
 CELL TEMP. = 86.996 HEATER TEMP. = 92.291 COOLER TEMP. = 80.294

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NASA-Lewis PRELIMINARY DATA 04/14/76 CADDELL REC 04/14/76 12:53:11.766 FAC SEX15 PGM C003 RDG 3404

LEANOUT 25 BTDC TO C1 APP 80 DEG. HUM=30% MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATE HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	79.261	29.239	180.57	795.32	5.2311	14.704

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	84.498	5.5163	44.531	57.477	55.220	6.0999

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	81.404	3.0443	3.8154	10040.	31.076	46.105

REL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP
	31.076	57.106	46.041	1.0573 121.70

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.069432	0.068978	1.0363	2429.4	2431.0	254.18	117.58

WET CORRECTION FACTOR = 0.84017 EXHAUST MOLE. WT. = 28.497 EXHAUST DENSITY = 0.073785 EXHAUST FLOW RATE = 11598.

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	841.98	1609.7	3.2682	13.248	0.62456
CORRECTED CONC. TO WET BASIS			2.7458	11.131	0.52474

	HC	NOX	CO
EMISSION RATE	0.35058	2.2216	23.121
EMISSION MASS/MODE	0.029215	0.18514	1.9267
EMISSION MASS/RATED HP	0.00018259	0.0011571	0.012042
MODE EMIS./STD. CYCLE %	9.6102	77.140	28.672

CAL. FUEL AIR RATIO = 0.071840 MEAS. FUEL AIR RATIO = 0.069432 DIFF MEAS. & CAL. F/A PERCENT = 3.4690

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	400.98	422.11	407.10	402.58

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1303.7	-454.00	1154.0	1365.0	1358.5	1356.6

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 27.418
	187.84	164.87	72.847	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.379
	278.63	2342.3	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	78.969	79.261	-41.836	75.396

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	93.204	3.0104	55.025	2372.6

CELL TEMP. = 87.293 HEATER TEMP. = 92.340 COOLER TEMP = 80.933

C12

NASA-LEWIS PRELIMINARY DATA 04/14/76 CADDELI REC 04/14/76 12:56:00.431 FAC SEX15 PGM C003 RDG 3405

LEANOUT 25 BTDC TO CL APP 80 DEG. HUM=30% MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP. 80.046 PRESS 29.214 CFM 108.36 DRY FLOW 469.37 VAPOR FLOW 3.0884 PRESS. TOTAL 14.472

COMB. FUEL TEMP 86.585 PRESS 5.6493 DENSITY 44.477 TURBO FLOW 36.351 FLOW TRON 34.341 FPIP 6.1176

COOLING AIR TEMP 81.967 UDEL-HOOD 2.9317 DEL-HOOD 3.7999 FLOW 9830.5 REL-HUM 29.820 DEW-POINT 45.695

REL-HUM 1 29.820 2 55.319 HUMIDITY 46.059 % H2O VAPOR 1.0577 CORRECTED HP 67.840

ENG. COND. F/A DRY 0.073164 E/A WET 3.072686 EQU. RATIO 1.0920 RPM-1 2353.9 RPM-2 2355.5 TORQUE 145.63 BHP 65.269

WET CORRECTION FACTOR = 0.84823 EXHAUST MOLE. WT. = 28.244 EXHAUST DENSITY = 0.073131 EXHAUST FLOW RATE = 6930.1

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 1332.9 NOX PPM 875.69 CO DRY 3.3710 CO2 DRY 13.438 O2 DRY 0.21304
CORRECTED CONC. TO WET BASIS 2.8594 11.399 0.18071

EMISSION RATE HC 0.33162 NOX 0.72216 CO 14.386
EMISSION MASS/MODE 0.033162 0.072216 1.4386
EMISSION MASS/RATED HP 0.00020726 0.00045135 0.0089914
MODE EMIS./STD. CYCLE % 10.909 30.090 21.408

CAL. FUEL AIR RATIO = 0.073457 MEAS. FUEL AIR RATIO = 0.073164 DIFF MEAS. & CAL. F/A PERCENT = 0.40041

CYL TEMP DEG.F CYL-1 361.42 CYL-2 364.85 CYL-3 367.69 CYL-4 368.74

EXT GAS TEMP DEG.F EXT-1 1454.8 EXT-2 -454.00 EXT-3 1284.0 EXT-4 1137.6 SEXT-1 1215.9 SEXT-2 1218.1

ENGINE OIL EDILT 186.87 SDILT 217.58 OILP 71.995 MANIFOLD PRESSURE = 18.892

DYNO COND. TORQUE 152.84 RPM 2302.7 CYL. BACK PRESSURE = 29.274

INDUCTION AIR IAIRT1 79.817 IAIRT2 80.046 TAIRT1 -73.235 TAIRT2 75.814

ORIFICE AIR TFMP 93.673 DELTAP 1.9954 ORFP 55.027 FLOW 1953.1

CELL TEMP. = 87.844 HEATER TEMP = 92.409 COOLER TEMP = 80.915

613

NASA-LEWIS PRELIMINARY DATA 04/15/76 CADDE11 REC-04/15/76 17:57:47.239 FAC SEX15 PGM C003 RDG 3406

LEANOUT 25 BTDC I & T 80 DEG HUM = 30 % 3/4 T OPEN MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.100 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	80.681	29.098	14.268	61.331	0.40488	14.294

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	96.127	5.8098	44.232	7.8026	6.1506	6.2127

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	84.990	-0.051477	0.80536	0.00000	28.943	45.455

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	28.943	41.240	46.211	1.0611	0.64020

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10028	0.099627	1.4968	617.22	624.18	5.2839	0.62097

WET CORRECTION FACTOR = 0.87839 EXHAUST MOLE. WT. = 26.207 EXHAUST DENSITY = 0.067856 EXHAUST FLOW RATE = 1000.5

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	39962.	7.7378	9.9574	6.5183	3.5826
CORRECTED CONC. TO WET BASIS					
			8.7465	5.7256	3.1469

H19

EMISSION RATE	HC	NOX	CO
	1.4353	0.00092121	6.3528
	0.023922	1.5353E-05	0.10588
	0.00014951	9.5959E-08	0.00066175
EMISSION MASS/RATED HP			
	0.00014951	9.5959E-08	0.00066175
MODE EMIS./STD. CYCLE %	7.8691	0.0063973	1.5756

CAL. FUEL AIR RATIO = 0.10178 MEAS. FUEL AIR RATIO = 0.10028 DIFF MEAS. & CAL. F/A PERCENT = 1.4862

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	215.14	233.00	204.61	205.46

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	-31.902	-345.58	-454.00	469.54	611.64	607.19

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 12.071
	162.59	203.56	46.885	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.095
	4.3564	612.78	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	80.117	80.681	-50.178	73.281

ORIFICE AIR	TEMP	DELTAP	DRFP	FLOW
	91.587	2.0272	53.056	1971.4

CELL TEMP. = 92.344 HEATER TEMP = 93.196 COOLER TEMP = 67.623

NASA-LEWIS PRELIMINARY DATA 04/15/76 CADDEII REC 04/15/76 18:00:21.416 FAC SEX15 PGM C003 RDG 3407

LEANOUT 25 BTDC I & T 80 DEG HUM = 30 % 3/4 T OPEN MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.100 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 79.746 PRESS 29.100 CFM 21.757 DRY FLOW 93.544 VAPOR FLOW 0.61708 PRESS TOTAL 14.296

COMB. FUEL TEMP 94.758 PRESS 5.7678 DENSITY 44.267 TURBO FLOW 10.819 FLOW TRON 9.1929 FPIP 6.1977

COOLING AIR TEMP 84.305 UDEL-HOOD -0.057289 DEL-HOOD 0.80315 FLOW 0.00000 REL-HUM 29.823 DEW-POINT 45.440

REL-HUM 1 29.823 2 63.850 HUMIDITY 46.177 % H2O VAPOR CORRECTED HP 1.0604 1.6807

ENG. COND. F/A DRY 0.098274 F/A WET 0.097630 EQU. RATIO 1.4668 RPM-1 1203.8 RPM-2 1203.7 TORQUE 7.1174 BHP 1.6314

WET CORRECTION FACTOR = 0.85914 EXHAUST MOLE. WT. = 26.340 EXHAUST DENSITY = 0.068200 EXHAUST FLOW RATE = 1515.4

MEASURED CONC. PART PER MILLION WET HC PPM 12824 NOX PPM 16.239 CO DRY 11.544 CO2 DRY 7.9950 O2 DRY 0.49347
CORRECTED CONC. TO WET BASIS CO 9.9180 PER CENT 6.8688 O2 DRY 0.42396

EMISSION RATE HC 0.69770 NOX 0.0029284 CO 10.912
EMISSION MASS/MODE 0.12791 0.00053688 2.0005
EMISSION MASS/RATED HP 0.00079945 3.3555E-06 0.012503
MODE EMIS./STD. CYCLE % 42.076 0.22370 29.770

CAL. FUEL AIR RATIO = 0.099743 MEAS. FUEL AIR RATIO = 0.098274 DIFF MEAS. & CAL. F/A PERCENT = 1.4951

CYL TEMP DEG.F CYL-1 237.64 CYL-2 250.67 CYL-3 232.17 CYL-4 227.79

EXT GAS TEMP DEG.F EXT-1 1191.0 EXT-2 -454.00 EXT-3 -454.00 EXT-4 250.88 SEXT-1 552.45 SEXT-2 546.39

ENGINE OIL EOILT 158.84 SOILT 207.20 OILT 56.838 MANIFOLD PRESSURE = 8.5789

DYNO COND. TORQUE 11.363 RPM 1207.8 CYL. BACK PRESSURE = 29.214

INDUCTION AIR IAIRT1 79.296 IAIRT2 79.746 TAIRT1 -90.754 TAIRT2 73.248

ORIFICE AIR TEMP 91.439 DELTAP 0.075007 DRFP 53.091 FLOW 276.62

CELL TEMP. = 92.118 HEATER TEMP = 97.360 COOLER TEMP = 69.436

615

NASA-LEWIS		PRELIMINARY DATA		04/15/76	CADDEII	REC 04/15/76 18:00:44.070	FAC SEX15	PGM C003	RDG 3408	
LEANOUT 25 BTDC. I & T 80 DEG HUM = 30 % 3/4 T OPEN MODE = 6.0000 NO. SCANS = 5										
ENGINE TIMING = 25.000		DEG.		BAROMETRIC PRESSURE = 29.100		RATED HP. = 160.00		HC RATIO = 2.1250		
COMB. AIR		TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL			
		78.934	29.104	22.069	94.873	0.62652	14.298			
COMB. FUEL		TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP			
		93.838	5.7630	44.290	10.823	9.1929	6.1953			
COOLING AIR		TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT			
		83.532	-0.053691	0.73285	0.00000	30.664	45.470			
REL-HUM		1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP				
		30.664	46.553	46.226	1.0615	1.5462				
ENG. COND.		F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP		
		0.096897	0.096262	1.4462	1204.2	1204.1	6.5506	1.5020		
WET CORRECTION FACTOR = 0.85534		EXHAUST MOLE. WT. = 26.432		EXHAUST DENSITY = 0.068440		EXHAUST FLOW RATE = 1529.7				
MEASURED CONC.		PART PER MILLION WET			PER CENT					
		HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY				
		12300.	16.434	11.493	8.0506	0.47021				
CORRECTED CONC. TO WET BASIS					9.8304	6.8860	0.40219			
EMISSION RATE		HC	NOX	CO						
		0.67548	0.0029915	10.917						
EMISSION MASS/MODE		0.033774	0.00014957	0.54586						
EMISSION MASS/RATED HP		0.00021109	9.34E-07	0.0034116						
MODE EMIS./STD. CYCLE %		11.110	0.062322	8.1229						
CAL. FUEL AIR RATIO = 0.099354		MEAS. FUEL AIR RATIO = 0.096897		DIFF MEAS. & CAL. F/A PERCENT = 2.5356						
CYL TEMP DEG.F		CYL-1	CYL-2	CYL-3	CYL-4					
		240.17	252.87	235.55	232.11					
EXT GAS TEMP DEG.F		EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2			
		1600.5	-454.00	-454.00	-399.90	549.62	543.08			
ENGINE OIL		EOILT	SOILT	OILP	MANIFOLD PRESSURE = 8.5822					
		158.49	-165.51	56.886						
DYNO COND.		TORQUE	RPM	CYL. BACK PRESSURE = 29.219						
		1.3177	1204.4							
INDUCTION AIR		IAIRT1	IAIRT2	TAIRT1	TAIRT2					
		78.536	78.934	-134.39	73.350					
ORIFICE AIR		TEMP	DELTA P	ORFP	FLOW					
		90.655	0.080608	53.117	293.34					
CELL TEMP. = 91.317		HEATER TEMP = 95.086		COOLER TEMP = 69.150						

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NASA-LEWIS PRELIMINARY DATA 04/15/76 CADDEII REC 04/15/76 18:05:43.587 FAC SEX15 PGM C003 RDG 3410

LEANOUT 25 BTDC I & T 80 DEG HUM = 30 % 3/4 T OPEN MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.100 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 77.909 PRESS 29.099 CFM 14.113 DRY FLOW 60.689 VAPOR FLOW 0.40112 PRESS TOTAL 14.294

COMB. FUEL TEMP 91.700 PRESS 5.7978 DENSITY 44.345 TURBO FLOW 7.8311 FLOW TRON 6.2796 FPIP 6.2055

COOLING AIR TEMP 81.624 UDEL-HOOD -0.050647 DEL-HOOD 0.82114 FLOW 0.00000 REL-HUM 31.735 DEW-POINT 45.485

REL-HUM 1 31.735 2 45.411 HUMIDITY 46.266 % H2O VAPOR 1.0624 CORRECTED HP 0.72457

ENG. COND. F/A DRY 0.10347 F/A WET 0.10279 EQU. RATIO 1.5444 RPM-1 621.00 RPM-2 621.30 TORQUE 5.9589 BHP 0.70459

WET CORRECTION FACTOR = 0.88590 EXHAUST MOLE. WT. = 26.003 EXHAUST DENSITY = 0.067327 EXHAUST FLOW RATE = 1000.6

MEASURED CONC. PART PER MILLION WET
HC PPM 36395. NOX PPM 6.5276 CO DRY 10.256 PER CENT CO2 DRY 6.6703 O2 DRY 3.0560
CORRECTED CONC. TO WET BASIS CO DRY 9.0859 PER CENT CO2 DRY 5.9093 O2 DRY 2.7427

EMISSION RATE HC 1.3074 NOX 0.00077728 CO 6.6006
EMISSION MASS/MODE 0.021790 1.2955E-05 0.11001
EMISSION MASS/RATED HP 0.00013619 8.0967E-08 0.00068756
MODE EMIS./STD. CYCLE % 7.1679 0.0053978 1.6370

CAL. FUEL AIR RATIO = 0.10197 MEAS. FUEL AIR RATIO = 0.10347 DIFF MEAS. & CAL. F/A PERCENT = -1.4535

CYL TEMP DEG.F CYL-1 214.79 CYL-2 232.73 CYL-3 206.39 CYL-4 209.53

EXT GAS TEMP DEG.F EXT-1 1526.8 EXT-2 -454.00 EXT-3 -454.00 EXT-4 -139.80 SEXT-1 473.33 SEXT-2 469.61

ENGINE OIL EDILT 150.46 SOILT 232.28 OILP 47.761 MANIFOLD PRESSURE = 12.159

DYNO COND. TORQUE 11.298 RPM 620.52 CYL. BACK PRESSURE = 29.164

INDUCTION AIR IAIRT1 77.360 IAIRT2 77.909 TAIRT1 -79.046 TAIRT2 73.024

ORIFICE AIR TEMP 89.251 DELTAP 2.0444 DRFP 53.143 FLOW 1983.5

CELL TEMP. = 89.783 HEATER TEMP = 91.746 COOLER TEMP = 68.025

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617

NASA-LEWIS PRELIMINARY DATA 04/15/76 CADDETI REC 04/15/76 18:13:57.303 FAC SEX15 PGM C003 RDG 3411

LEANOUT 25 BTDC I & T 80 DEG HUM = 30 % 1 1/2 T OPEN MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.00C DEG. BAROMETRIC PRESSURE = 29.100 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 78.183 PRESS 29.102 CFM 14.735 DRY FLOW 63.402 VAPOR FLOW 0.42039 PRESS TOTAL 14.292

COMB. FUEL TEMP 91.021 PRESS 5.7720 DENSITY 44.362 TURBO FLOW 8.2918 FLOW TRON 6.6607 FPIP 6.2016

COOLING AIR TEMP 83.550 UDEL-HOOD -0.051754 DEL-HOOD 0.79402 FLOW 0.00000 REL-HUM 31.545 DEW-POINT 45.565

REL-HUM 1 31.545 2 42.530 HUMIDITY 46.414 % H2O VAPOR CORRECTED HP 1.0658 0.84396

ENG. COND. F/A DRY 0.10505 F/A WET 0.10436 EQU. RATIO 1.5580 RPM-1 604.80 RPM-2 607.20 TORQUE 7.1257 BHP 0.82057

WET CORRECTION FACTOR = 0.88422 EXHAUST MOLE. WT. = 25.904 EXHAUST DENSITY = 0.067071 EXHAUST FLOW RATE = 1050.9

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 43386. NOX PPM 4.7575 CO DRY 10.880 CO2 DRY 5.6548 O2 DRY 3.7791
CORRECTED CONC. TO WET BASIS CO 9.6199 CO2 5.0001 O2 3.3415

EMISSION RATE HC 1.6368 NOX 0.00059494 CO 7.3393
EMISSION MASS/MODE 0.027280 9.9156E-06 0.12232
EMISSION MASS/RATED HP 0.00017050 6.1973E-08 0.00076451
MODE EMIS./STD. CYCLE % 8.9737 0.0041315 1.8203

CAL. FUEL AIR RATIO = 0.10698 MEAS. FUEL AIR RATIO = 0.10505 DIFF MEAS. & CAL. F/A PERCENT = 1.8316

CYL TEMP DEG. F CYL-1 311.69 CYL-2 331.16 CYL-3 317.37 CYL-4 334.30

EXT GAS TEMP DEG. F EXT-1 1317.5 EXT-2 -454.00 EXT-3 -454.00 EXT-4 -145.28 SEXT-1 648.84 SEXT-2 648.45

ENGINE OIL EOILT 161.39 SOILT 177.80 OILP 45.721 MANIFOLD PRESSURE = 13.329

DYNO COND. TORQUE 7.2943 RPM 598.62 CYL. BACK PRESSURE = 29.026

INDUCTION AIR IAIRT1 77.484 IAIRT2 78.183 TAIRT1 -59.662 TAIRT2 72.646

ORIFICE AIR TEMP 90.175 DELTAP 2.0105 DRFP 53.117 FLOW 1966.2

CELL TEMP. = 90.359 HEATER TEMP = 90.793 COOLER TEMP = 66.667

618

NASA-LEWIS PRELIMINARY DATA 04/15/76 CADDEII REC 04/15/76 18:16:39.346 FAC SEX15 PGM C003 RDG 3412

LEANOUT 25 BTDC I & T 80 DEG HUM = 30 % 1 1/2 T OPEN MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.100 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	78.139	29.096	22.624	97.363	0.64794	14.300

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	91.717	5.7447	44.345	11.651	9.9340	6.1758

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	83.901	-0.053691	0.82889	0.00000	31.723	45.675

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	31.723	51.073	46.585	1.0697	1.6206

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10203	0.10136	1.5228	1204.8	1205.7	6.8673	1.5754

WET CORRECTION FACTOR = 0.86109 EXHAUST MOLE. WT. = 26.094 EXHAUST DENSITY = 0.067564 EXHAUST FLOW RATE = 1597.7

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	15050	9.8590	12.258	7.5460	0.42940
CORRECTED CONC. TO WET BASIS			10.555	6.4978	0.36975

	HC	NOX	CO
EMISSION RATE	0.86324	0.0018744	12.243
EMISSION MASS/MODE	0.15826	0.00034364	2.2445
EMISSION MASS/RATED HP	0.00098913	2.1478E-06	0.014028
MODE EMIS./STD. CYCLE %	52.059	0.14318	33.400

CAL. FUEL AIR RATIO = 0.10374 MEAS. FUEL AIR RATIO = 0.10203 DIFF MEAS. & CAL. F/A PERCENT = 1.6755

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	277.11	293.81	281.86	288.95

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1314.3	-454.00	-454.00	-227.97	584.90	582.82

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 8.9723
	157.61	340.35	57.146	

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.197
	6.6535	1209.4	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	77.652	78.139	-80.443	72.814

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	90.463	2.9759	52.855	2365.3

CELL TEMP. = 91.082 HEATER TEMP = 90.564 COOLER TEMP = 67.606

619

NASA-Lewis		PRELIMINARY DATA		04/15/76	CADDE11	REC 04/15/76 18:17:00.571	FAC SEX15	PGM C003	RDG 3413
LEANOUT 25 BTDC I & T 80 DEG HUM = 30 % 1 1/2 T OPEN MODE = 6.0000									
NO. SCANS = 5									
ENGINE TIMING = 25.000		DEG.		BAROMETRIC PRESSURE = 29.100		RATED HP. = 160.00		HC RATIO = 2.1250	
COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL			
	78.201	29.099	22.484	96.720	0.64424	14.295			
COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP			
	91.752	5.7474	44.344	11.418	9.7570	6.1770			
COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT			
	83.901	-0.046772	0.80592	0.00000	31.676	45.690			
REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP				
	31.676	32.799	46.626	1.0707	1.2434				
ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP		
	0.10088	0.10021	1.5057	1207.0	1207.4	5.2589	1.2086		
WET CORRECTION FACTOR = 0.85793		EXHAUST MOLE. WT. = 26.168		EXHAUST DENSITY = 0.067756		EXHAUST FLOW RATE = 1581.0			
MEASURED CONC.	PART PER MILLION WET		PER CENT						
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY				
	14568.	9.5709	12.300	7.5573	0.44152				
CORRECTED CONC. TO WET BASIS			10.552	6.4837	0.37880				
EMISSION RATE	HC	NOX	CO						
	0.82686	0.0018006	12.112						
EMISSION MASS/MODE	0.041343	9.0032E-05	0.60559						
EMISSION MASS/RATED HP	0.00025839	5.5270E-07	0.0037850						
MODE EMIS./STD. CYCLE %	13.600	0.037513	9.0118						
CAL. FUEL AIR RATIO = 0.10347		MEAS. FUEL AIR RATIO = 0.10088		DIFF MEAS. & CAL. F/A PERCENT = 2.5674					
CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4					
	275.89	291.99	280.60	287.39					
EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2			
	1534.0	-454.00	-454.00	-454.00	579.26	576.88			
ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 8.8607					
	157.35	219.18	57.230						
DYNO COND.	TORQUE	RPM	CYL. BACK PPESSURE = 29.093						
	3.1971	1213.6							
INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2					
	77.705	78.201	-68.072	72.858					
ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW					
	90.489	1.0924	52.906	1462.9					
CELL TEMP. = 91.082	HEATER TEMP = 90.544		COOLER TEMP = 68.293						

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NASA-LEWIS		PRELIMINARY DATA		04/15/76	CADDEII	REC 04/15/76 18:20:23.340	FAC SEX15	PGM C003	RDG 34.4
LEANOUT 25 BYDC I & T 80 DEG HUM = 30 % 1 1/2 T OPEN MODE = 7.0000					NO. SCANS = 5				
ENGINE TIMING = 25.00C		DEG.		BAROMETRIC PRESSURE = 29.100		RATED HP. = 160.00		HC RATIO = 2.1250	
COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL			
	79.066	29.104	15.182	65.246	0.43466	14.288			
COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP			
	92.570	5.7612	44.323	8.4374	6.8857	6.1815			
COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT			
	83.735	-0.065591	0.75416	0.00000	30.775	45.680			
REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP				
	30.775	40.262	46.633	1.0708	0.29481				
ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP		
	0.10553	0.10484	1.5751	605.58	607.98	2.4836	0.28637		
WET CORRECTION FACTOR = 0.89268		EXHAUST MOLE. WT. = 25.874		EXHAUST DENSITY = 0.066995		EXHAUST FLOW RATE = 1083.2			
MEASURED CONC.	PART PER MILLION WET			PER CENT					
	HC PPM	NOX PPM	CO DRY	CO2 DRY	CO DRY				
	41940.	4.0224	10.566	5.8725	3.8568				
CORRECTED CONC. TO WET BASIS									
		HC	NOX	CO					
EMISSION RATE		1.6309	0.00051848	7.4173					
EMISSION MASS/MODE		0.027181	8.6413E-06	0.12362					
EMISSION MASS/RATED HP		0.00016988	5.4008E-08	0.00077263					
MODE EMIS./STD. CYCLE %		8.9412	0.0036005	1.8396					
CAL. FUEL AIR RATIO = 0.10425		MEAS. FUEL AIR RATIO = 0.10553		DIFF MEAS. & CAL. F/A PERCENT = -1.2167					
CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4					
	247.37	263.03	249.06	258.47					
EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2			
	1087.0	-454.00	-454.00	-252.61	516.70	515.17			
ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 13.338					
	154.74	255.78	46.833						
DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 28.905						
	8.1512	597.12							
INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2					
	78.448	79.066	-7.9568	73.087					
ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW					
	90.847	1.0218	53.123	1415.1					
CELL TEMP. = 91.291	HEATER TEMP = 90.343		COOLER TEMP = 69.436						

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NASA-LEWIS PRELIMINARY DATA 04/15/76 CADDEII REC 04/15/76 19:13:51.699 FAC SEX15 PGM C003 RDG 3417

LEANOUT 25 BTDC I & T 80 DEG HUM = 60 % 1 1/2 T CLOS MODE = 2.0000 NO. SCANS = 4

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.100 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	78.629	29.094	19.589	83.351	1.1199	14.293

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	91.978	5.8247	44.338	3.9347	6.2331	6.1787

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	84.035	-0.045665	0.80536	0.00000	62.319	64.674

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	62.319	47.162	94.051	2.1597	1.6846

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.074782	0.073790	1.1161	1207.7	1207.4	7.0424	1.6194

WET CORRECTION FACTOR = 0.82718 EXHAUST MOLE. WT. = 28.108 EXHAUST DENSITY = 0.072777 EXHAUST FLOW RATE = 1246.3

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	2384.0	50.643	5.2973	11.984	0.20387	
CORRECTED CONC. TO WET BASIS			4.3818	9.9129	0.16864	

	HC	NOX	CO
EMISSION RATE	0.10667	0.0075109	3.9647
EMISSION MASS/MODE	0.019555	0.0013770	0.72687
EMISSION MASS/RATED HP	0.00012222	8.5062E-06	0.0045429
MODE EMIS./STD. CYCLE %	6.4327	0.57375	10.816

CAL. FUEL AIR RATIO = 0.078324 MEAS. FUEL AIR RATIO = 0.074782 DIFF MEAS. & CAL. F/A PERCENT = 4.7365

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	267.83	291.57	284.53	290.70

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1154.0	1054.7	-286.73	-160.18	588.18	586.67

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 7.9870
	152.64	148.61	56.261	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.019
	5.6166	1191.2	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	78.099	78.629	-112.73	72.904

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	94.021	0.029753	53.555	124.21

CELL TEMP. = 90.018 HEATER TEMP = 93.469 COOLER TEMP = 65.825

NASA-LEWIS PRELIMINARY DATA		04/15/76	CADDEII	REC 04/15/76 19:19:38.186	FAC SEX15	PGM C003	RDG 3419
LEANOUT 25 BTDC I & T 80 DEG HUM = 60 % 1 1/2 T CLOS MODE = 7.0000				NO. SCANS = 5			
ENGINE TIMING = 25.000		DEG.	BAROMETRIC PRESSURE = 29.100		RATED HP. = 160.00		HC RATIO = 2.1250
COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL	
	76.865	29.099	11.767	50.128	0.67254	14.293	
COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP	
	90.733	5.8575	44.370	3.9384	3.5013	6.1851	
COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT	
	80.619	-0.064208	0.81643	0.00000	65.962	64.632	
REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP		
	65.962	58.284	93.915	2.1566	0.61600		
ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.069849	0.068924	1.0425	615.84	611.04	5.0588	0.59319
WET CORRECTION FACTOR = 0.85879		EXHAUST MOLE. WT. = 28.455		EXHAUST DENSITY = 0.073677		EXHAUST FLOW RATE = 737.02	
MEASURED CONC.	PART PER MILLION WET		PER CENT				
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY		
	12459.	32.279	2.1962	11.901	2.7329		
CORRECTED CONC. TO WET BASIS			1.8861	10.220	2.3470		
	HC	NOX	CO				
EMISSION RATE	0.32966	0.0028311	1.0092				
EMISSION MASS/MODE	0.0054943	4.7184E-05	0.016820				
EMISSION MASS/RATED HP	3.4340E-05	2.9490E-07	0.00010513				
MODE EMIS./STD. CYCLE %	1.8073	0.019660	0.25030				
CAL. FUEL AIR RATIO = 0.069747		MEAS. FUEL AIR RATIO = 0.069849		DIFF MEAS. & CAL. F/A PERCENT = -0.14515			
CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4			
	227.84	256.65	244.11	254.11			
EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2	
	715.58	912.16	-345.27	-33.686	481.65	479.88	
ENGINE OIL	EOILT	SOILT	OTLP	MANIFOLD PRESSURE = 11.355			
	148.85	189.45	47.281				
DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.155				
	3.6148	606.42					
INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2			
	76.289	76.865	-65.909	72.250			
ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW			
	91.926	0.075908	53.540	279.18			
CELL TEMP. = 87.740	HEATER TEMP = 93.099		COOLER TEMP = 62.247				

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NASA-LEWIS		PRELIMINARY DATA		04/15/76	CADDEII	REC 04/15/76 19:19:59.147	FAC SEX15	PGM C003	RDG 3420
LEANOUT 25 BTDC I & T 80 DEG HUM = 60 % 1 1/2 T CLOS MODE = 1.0000					NO. SCANS = 5				
ENGINE TIMING = 25.000		DEG.	BAROMETRIC PRESSURE = 29.100		RATED HP. = 160.00		HC RATIO = 2.1250		
COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL			
	76.732	29.097	11.492	48.932	0.65718	14.291			
COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP			
	90.559	5.8587	44.374	3.9354	3.4383	6.1869			
COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT			
	80.319	-0.059503	0.82142	0.00000	66.311	64.657			
REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP				
	66.311	39.790	94.014	2.1589	0.50492				
ENG. COND.	F/A DRY	F/A WET	FQU. RATIO	RPM-1	RPM-2	TORQUE	BHP		
	0.070268	0.069337	1.0488	599.70	600.84	4.2588	0.48629		
WET CORRECTION FACTOR = 0.86354		EXHAUST MOLE. WT. = 28.493		EXHAUST DENSITY = 0.073775		EXHAUST FLOW RATE = 718.77			
MEASURED CONC.	PART PER MILLION WET		PER CENT						
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY				
	12425.	31.729	2.1296	11.915	2.8321				
CORRECTED CONC. TO WET BASIS			1.8390	10.289	2.4456				
	HC	NOX	CO						
EMISSION RATE	0.32062	0.0027139	0.95964						
EMISSION MASS/MODE	0.0053436	4.5232E-05	0.015994						
EMISSION MASS/RATED HP	3.3398E-05	2.8270E-07	9.9963E-05						
MODE EMIS./STD. CYCLE %	1.7578	0.018846	0.23801						
CAL. FUEL AIR RATIO = 0.069262		MEAS. FUEL AIR RATIO = 0.070268		DIFF MEAS. & CAL. F/A PERCENT = -1.4312					
CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4					
	223.19	254.53	241.69	251.45					
EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2			
	671.24	905.35	-390.89	-454.00	474.35	477.16			
ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 11.707					
	148.49	165.75	47.165						
DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.284						
	6.0198	595.74							
INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2					
	76.129	76.732	14.117	72.418					
ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW					
	91.735	2.0250	53.505	1970.1					
CELL TEMP. = 87.687	HEATER TEMP = 93.072		COOLER TEMP = 62.785						

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NASA-LEWIS PRELIMINARY DATA 04/15/76 CADDEII REC 04/15/76 19:23:41.375 FAC SEX15 PGM C003 RDG 3421

LEANOUT 25 BTDC I & T 80 DEG HUM = 60 % 1 1/2 T CLOS MODE = 6.0000 NO. SCANS = 3

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.100 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	77.826	29.104	19.116	80.884	1.1057	14.297

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	90.382	5.8136	44.379	3.9369	6.3706	6.1741

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	81.121	-0.072879	0.87870	0.00000	65.101	65.167

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	65.101	48.128	95.693	2.1974	2.0738

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.078763	0.077701	1.1756	1198.8	1199.1	8.7370	1.9943

WET CORRECTION FACTOR = 0.84083 EXHAUST MOLE. WT. = 27.780 EXHAUST DENSITY = 0.071929 EXHAUST FLOW RATE = 1228.4

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	2518.6	51.522	5.6355	11.828	0.18085
CORRECTED CONC. TO WET BASIS			4.7385	9.9455	0.15207

EMISSION RATE	HC	NOX	CO
	0.11107	0.0075316	4.2260
	0.0055536	0.00037658	0.21130
	3.4710E-05	2.3536E-06	0.0013206
EMISSION MASS/MODE			
EMISSION MASS/RATED HP			
MODE EMIS./STD. CYCLE %	1.8268	0.15691	3.1443

CAL. FUEL AIR RATIO = 0.079170 MEAS. FUEL AIR RATIO = 0.078763 DIFF MEAS. & CAL. F/A PERCENT = 0.51755

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	272.64	272.24	259.78	263.82

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	918.27	1065.8	-454.00	294.91	449.38	448.94

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 7.9955
	144.76	253.72	57.992	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.042
	4.1164	1179.7	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	77.340	77.826	-39.239	75.833

ORIFICE AIR	TEMP	DELTAP	ORFP.	FLOW
	91.761	3.3258	53.532	2493.1

CELL TEMP. = 87.850 HEATER TEMP = 129.15 COOLER TEMP = 79.867

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NASA-LEWIS		PRELIMINARY DATA		04/15/76	CADDEII	REC 04/15/76 19:32:25.733	FAC SEX15	PGM C003	RDG 3422
LEANOUT 25 BTDC I & T 80 DEG HUM = 60 % 3/4 T CLOSED MODE = 1.0000					NO. SCANS = 5				
ENGINE TIMING = 25.000		DEG.		BAROMETRIC PRESSURE = 29.100		RATED HP. = 160.00		HC RATIO = 2.1250	
COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL			
	80.267	29.102	10.313	43.590	0.58127	14.290			
COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP			
	90.262	5.8374	44.382	3.9394	3.8974	6.1851			
COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT			
	84.735	-0.073617	0.81256	0.00000	58.617	64.457			
REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP				
	58.617	61.976	93.346	2.1435	0.71815				
ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP		
	0.089411	0.088234	1.3345	593.58	594.30	6.1006	0.68949		
WET CORRECTION FACTOR = 0.85627		EXHAUST MOLE. WT. = 26.960		EXHAUST DENSITY = 0.069805		EXHAUST FLOW RATE = 688.60			
MEASURED CONC.	PART PER MILLION WET			PER CENT					
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY				
	20497.	11.111	8.0156	9.0662	1.9675				
CORRECTED CONC. TO WET BASIS			6.8636	7.7632	1.6847				
	HC	NOX	CO						
EMISSION RATE	0.50670	0.00091048	3.4313						
EMISSION MASS/MODE	0.0084450	1.5175E-05	0.057188						
EMISSION MASS/RATED HP	5.2781E-05	9.4842E-08	0.00035742						
MODE EMIS./STD. CYCLE %	2.7780	0.0063228	0.85101						
CAL. FUEL AIR RATIO = 0.089559		MEAS. FUEL AIR RATIO = 0.089411		DIFF MEAS. & CAL. F/A PERCENT = 0.16499					
CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4					
	283.83	298.99	286.79	302.73					
EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2			
	523.08	687.74	-377.70	-75.984	627.00	626.01			
ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 11.092					
	160.57	169.50	45.581						
DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.280						
	4.5941	591.24							
INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2					
	79.649	80.267	-71.078	76.466					
ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW					
	92.614	4.0066	53.538	2732.2					
CELL TEMP. = 88.919		HEATER TEMP = 106.62		COOLER TEMP = 74.730					

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NASA-LEWIS PRELIMINARY DATA 04/15/76 CADDEII REC 04/15/76 19:37:41.182 FAC SEX15 PGM C003 RDG 3423

LEANOUT 25 BTDC I & T 80 DEG HUM = 60 % 3/4 T CLOSED MODE = 2.0000 NO. SCANS = 3

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.100 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	80.740	29.098	19.029	80.544	1.0941	14.298

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	91.891	5.7936	44.340	3.9363	7.0157	6.1671

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	84.814	-0.062732	0.75047	0.00000	58.806	64.992

REL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP
	58.806	68.844	95.091	2.1836 2.0178

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.087104	0.085936	1.3001	1201.5	1202.3	8.4592	1.9352

WET CORRECTION FACTOR = 0.84527 EXHAUST MOLE. WT. = 27.131 EXHAUST DENSITY = 0.070248 EXHAUST FLOW RATE = 1252.0

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	4748.8	35.464	8.5584	10.195	0.25122	
CORRECTED CONC. TO WET BASIS						
			7.2342	8.6176	0.21235	

	HC	NOX	CO
EMISSION RATE	0.21515	0.0053259	6.6282
EMISSION MASS/MODE	0.039444	0.00097642	1.2152
EMISSION MASS/RATED HP	0.00024653	6.1026E-06	0.0075948
MODE EMIS./STD. CYCLE %	12.975	0.40684	18.083

CAL. FUEL AIR RATIO = 0.086965 MEAS. FUEL AIR RATIO = 0.087104 DIFF MEAS. & CAL. F/A PERCENT = -0.15944

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	271.23	281.79	274.57	278.22

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	552.71	985.66	-370.10	148.23	534.01	532.99

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 8.0647
	154.71	223.79	56.066	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.170
	15.386	1196.3	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	80.328	80.740	-72.830	75.763

ORIFICE AIR	TEMP	DEL TAP	ORFP	FLOW
	93.109	3.2983	53.545	2480.0

CELL TEMP. = 89.335 HEATER TEMP = 114.25 COOLER TEMP = 72.946

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NASA-LEWIS PRELIMINARY DATA 04/15/76 CADDEII REC 04/15/76 19:37:55.595 FAC SEX15 PGM C003 RDG 3424

LEANOUT 25 BTDC I & T 80 DEG HUM = 60 % 3/4 T CLOSED MODE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.100 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	80.928	29.100	19.469	82.331	1.1202	14.296

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	91.917	5.7963	44.339	3.9357	7.1617	6.1686

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	84.972	-0.074171	0.77658	0.00000	58.529	65.032

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	58.529	36.892	95.244	2.1871	1.8333

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.086987	0.085819	1.2983	1201.6	1202.1	7.6841	1.7580

WET CORRECTION FACTOR = 0.84485 EXHAUST MOLE. WT. = 27.139 EXHAUST DENSITY = 0.070270 EXHAUST FLOW RATE = 1289.5

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	4941.5	34.723	8.5246	10.192	0.25825	
CORRECTED CONC. TO WET BASIS			7.2020	8.6103	0.21818	

	HC	NOX	CO
EMISSION RATE	0.22875	0.0053283	6.7423
EMISSION MASS/MODE	0.011438	0.00026641	0.33711
EMISSION MASS/RATED HP	7.1486E-05	1.5651E-06	0.0021070
MODE EMIS./STD. CYCLE %	3.7624	0.11101	5.0166

CAL. FUEL AIR RATIO = 0.086992 MEAS. FUEL AIR RATIO = 0.086987 DIFF MEAS. & CAL. F/A PERCENT = 0.0054817

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	271.16	281.72	274.40	278.21

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1507.9	985.40	-454.00	-454.00	529.75	528.44

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE =
	154.46	280.64	56.150	8.0674

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE =
	3.3627	1184.7	29.147

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	80.514	80.928	-38.376	76.124

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	93.135	0.025102	53.466	106.55

CELL TEMP. = 89.469 HEATER TEMP = 110.24 COOLER TEMP = 74.133

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NASA-LEWIS PRELIMINARY DATA 04/15/76 CADDEII REC 04/15/76 19:41:57.236 FAC SEX15 PGM C003 RDG 3425

LEANOUT 25 BTDC I & T 80 DEG HUM = 60 % 3/4 T CLOSED MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.100 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	81.439	29.097	10.542	44.635	0.60669	14.292

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	92.527	5.8389	44.324	3.9343	3.8944	6.1827

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	84.858	-0.066422	0.81118	0.00000	57.492	64.997

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	57.492	47.443	95.147	2.1849	0.68239

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.087250	0.086080	1.3022	611.58	612.24	5.6172	0.65411

WET CORRECTION FACTOR = 0.86411 EXHAUST MJLE. WT. = 27.120 EXHAUST DENSITY = 0.070219 EXHAUST FLOW RATE = 699.75

MEASURED CONC.	PART PER MILLION WET		PER CENT	
	HC PPM	NOX PPM	CO DRY	O2 DRY
	18020.	12.527	7.0732	9.5579
CORRECTED CONC. TO WET BASIS			CO DRY	O2 DRY
			6.1120	8.2591

	HC	NOX	CO
EMISSION RATE	0.45270	0.0010431	3.1050
EMISSION MASS/MODE	0.0075450	1.7386E-05	0.051750
EMISSION MASS/RATED HP	4.7156E-05	1.0866E-07	0.00032344
MODE EMIS./STD. CYCLE %	2.4819	0.0072440	0.77008

CAL. FUEL AIR RATIO = 0.085137 MEAS. FUEL AIR RATIO = 0.087250 DIFF MEAS. & CAL. F/A PERCENT = -2.4222

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	250.27	260.76	248.65	254.92

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1266.7	733.05	-454.00	-145.25	467.39	465.40

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 10.802
	151.46	246.05	47.073	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 28.853
	4.0108	604.14	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	80.937	81.439	-65.419	75.361

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	93.552	1.0276	53.498	1415.6

CELL TEMP. = 89.739 HEATER TEMP = 99.034 COOLER TEMP = 66.614

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NASA-LEWIS		PRELIMINARY DATA		04/15/76	CADDEII	REC 04/15/76 20:01:20.262	FAC SEX15	PGM C003	RDG 3427
LEANOUT 25 BTDC, I & T 80 DEG HUM = 60 % NEUTRAL				MODE = 2.0000	NO. SCANS = 5				
ENGINE TIMING = 25.000		DEG.	BAROMETRIC PRESSURE = 29.100		RATED HP. = 160.00		HC RATIO = 2.1250		
COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL			
	80.540	29.095	22.141	93.697	1.2546	14.298			
COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP			
	90.603	5.7396	44.373	10.809	9.1509	6.1602			
COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT			
	84.226	-0.069743	0.80675	0.00000	58.361	64.587			
REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP				
	58.361	62.770	93.730	2.1524	1.1095				
ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP		
	0.097665	0.096374	1.4577	1206.6	1205.7	4.6338	1.0646		
WET CORRECTION FACTOR = 0.85439		EXHAUST MOLE. WT. = 26.381		EXHAUST DENSITY = 0.068306		EXHAUST FLOW RATE = 1524.1			
MEASURED CONC.	PART PER MILLION WET			PER CENT					
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY				
	11286.	12.987	11.101	8.3969	0.46939				
CORRECTED CONC. TO WET BASIS				9.4846	7.1742	0.40104			
EMISSION RATE	HC	NOX	CO						
	0.61751	0.0023554	10.494						
EMISSION MASS/MODE	0.11321	0.00043183			1.9240				
EMISSION MASS/RATED HP	0.00070756	2.6989E-06			0.012025				
MODE EMIS./STD. CYCLE %	37.240	0.17993	28.631						
CAL. FUEL AIR RATIO = 0.097265		MEAS. FUEL AIR RATIO = 0.097665		DIFF MEAS. & CAL. F/A PERCENT = -0.40945					
CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4					
	252.04	263.27	246.77	249.77					
EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2			
	1343.3	1018.8	-447.28	-142.28	493.84	493.00			
ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 8.7149					
	148.73	217.12	58.158						
DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.137						
	6.0990	1210.7							
INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2					
	80.214	80.540	-91.359	76.033					
ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW					
	92.213	3.0078	53.503	2373.7					
CELL TEMP. = 88.474	HEATER TEMP = 112.20		COOLER TEMP = 69.837						

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NASA-EWIS PRELIMINARY DATA 04/15/76 CADDEII REC 04/15/76 20:04:00.001 FAC SEX15 PGM C003 RDG 3429

LEANOUT 25 BTDC I & T 80 DEG HUM = 60 % NEUTRAL MODE = 6.0000 NO. SCANS = 4

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.100 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	80.791	29.099	22.158	93.750	1.2608	14.296

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	90.803	5.7414	44.368	10.770	9.1472	6.1551

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	84.375	-0.079568	0.83442	0.00000	58.123	64.705

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	58.123	34.826	94.140	2.1618	0.97438

ENG. COND.	F/A DRY	F/A WET	EQ. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.097569	0.096274	1.4563	1205.1	1205.4	4.0733	0.93462

WET CORRECTION FACTOR = 0.85503 EXHAUST MOLE. WT. = 26.387 EXHAUST DENSITY = 0.068322 EXHAUST FLOW RATE = 1524.5

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	10341.	16.763	11.010	8.4942	0.37289	
CORRECTED CONC. TO WET BASIS			9.4140	7.2628	0.31883	

	HC	NOX	CO
EMISSION RATE	0.56597	0.0030411	10.419
EMISSION MASS/MODE	0.028298	0.00015205	0.52097
EMISSION MASS/RATED HP	0.00017686	9.5034E-07	0.0032561
MODE EMIS./STD. CYCLE %	9.3086	0.063356	7.7525

CAL. FUEL AIR RATIO = 0.096781 MEAS. FUEL AIR RATIO = 0.097569 DIFF MEAS. & CAL. F/A PERCENT = -0.80803

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	261.75	272.84	260.94	266.16

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	840.23	1027.0	-454.00	-72.096	473.43	472.82

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE =
	146.72	369.35	58.626	8.6742

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE =
	10.540	1221.9	29.317

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	80.450	80.791	4.8173	76.000

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	92.577	3.7426	53.517	2640.9

CELL TEMP. = 88.720 HEATER TEMP = 108.07 COOLER TEMP = 74.300

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NASA-LEWIS PRELIMINARY DATA 04/15/76 CADDEII REC 04/15/76 20:12:15.944 FAC SEX15 PGM C003 RDG 3431

LEANOUT 25 BTDC I & T 80 DEG HUM = 60 % NEUTRAL MODE = 1.0000 NO. SCANS = 4

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.100 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	78.629	29.098	12.336	52.266	0.69875	14.291

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	88.819	5.7947	44.419	3.9440	5.0443	6.1765

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	81.650	-0.071957	0.75935	0.00000	62.006	64.530

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	62.006	61.161	93.584	2.1490	0.41627

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.096511	0.095238	1.4405	607.64	608.91	3.4587	0.40015

WET CORRECTION FACTOR = 0.86768 EXHAUST MOLE. WT. = 26.459 EXHAUST DENSITY = 0.068508 EXHAUST FLOW RATE = 846.75

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	26318.	4.6992	9.2144	7.9623	2.3375
CORRECTED CONC. TO WET BASIS			7.9951	6.9087	2.0282

	HC	NOX	CO
EMISSION RATE	0.80005	0.00047351	4.9149
EMISSION MASS/MODE	0.013334	7.8918E-06	0.081915
EMISSION MASS/RATED HP	8.3338E-05	4.9324E-08	0.00051197
MODE EMIS./STD. CYCLE %	4.3862	0.0032883	1.2190

CAL. FUEL AIR RATIO = 0.095164 MEAS. FUEL AIR RATIO = 0.096511 DIFF MEAS. & CAL. F/A PERCENT = -1.3959

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	219.42	228.02	204.34	207.61

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1608.6	779.45	-454.00	-169.57	365.67	364.37

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 11.588
	140.28	302.30	48.065	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 28.526
	4.7705	587.68	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	78.242	78.629	-15.867	75.153

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	90.138	2.5440	53.562	2196.5

CELL TEMP. = 86.184 HEATER TEMP = 93.434 COOLER TEMP = 69.755

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NASA-LEWIS PRELIMINARY DATA 04/15/76 CADDEII REC 04/15/76 20:12:34.653 FAC SEX15 PGM C003 RDG 3432
 LEANOUT 25 BTDC I & T 80 DEG HUM = 60 % NEUTRAL MODE = 7.0000 NO. SCANS = 4
 ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.100 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL	
	78.728	29.101	12.609	53.423	0.71666	14.293	
COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP	
	88.764	5.7947	44.420	3.9420	5.0105	6.1907	
COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT	
	81.683	-0.067806	0.85864	0.00000	62.021	64.630	
REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP		
	62.021	54.565	93.904	2.1563	0.99196		
ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.093789	0.092548	1.3998	605.39	606.06	8.2717	0.95345
WET CORRECTION FACTOR = 0.85484		EXHAUST MOLE. WT. = 26.646		EXHAUST DENSITY = 0.068994		EXHAUST FLOW RATE = 857.32	
MEASURED CONC.	PART PER MILLION WET		PER CENT				
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY		
	26365.	4.9205	9.3428	8.0364	2.2825		
CORRECTED CONC. TO WET BASIS			7.9866	6.8699	1.9512		
EMISSION RATE	HC	NOX	CO				
	0.81146	0.00050199	4.9710				
EMISSION MASS/MODE	0.013524	8.3666E-06	0.082850				
EMISSION MASS/RATED HP	8.4527E-05	5.2291E-08	0.00051781				
MODE EMIS./STD. CYCLE %	4.4488	0.0034861	1.2329				
CAL. FUEL AIR RATIO = 0.095671		MEAS. FUEL AIR RATIO = 0.093789		DIFF MEAS. & CAL. F/A PERCENT = 2.0062			
CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4			
	218.62	227.21	203.53	206.70			
EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2	
	1104.5	774.76	-454.00	-454.00	362.68	361.32	
ENGINE OIL	EQILT	SOILT	OILP	MANIFOLD PRESSURE = 11.543			
	139.89	157.11	48.115				
DYNO COND.	TMPQUF	RPM	CYL. BACK PRESSURE = 29.199				
	1.4041	573.81					
INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2			
	78.287	78.728	40.559	75.173			
ORIFICE AIR	TEMP	DEL TAP	ORFP	FLOW			
	90.128	2.4941	53.550	2176.1			
CELL TEMP. = 86.184	HEATER TEMP = 93.348		COOLER TEMP = 69.911				

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NASA-LEWIS PRELIMINARY DATA 04/15/76 CADDEII REC 04/15/76 20:28:14.137 FAC SEX15 PGM C003 RDG 3433

LEANOUT 25 BTDC I & T 80 DEG HUM = 60 % 3/4 T OPEN MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.100 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	80.434	29.097	13.417	56.840	0.76515	14.293

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	89.504	5.7639	44.401	7.6060	6.1146	6.1704

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	84.709	-0.051477	0.81588	0.00000	58.850	64.727

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	58.850	79.036	94.231	2.1639	0.75947

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10758	0.10615	1.6056	597.24	594.42	6.4090	0.72881

WET CORRECTION FACTOR = 0.89159 EXHAUST MOLE. WT. = 25.750 EXHAUST DENSITY = 0.066673 EXHAUST FLOW RATE = 955.70

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	39695.	3.4283	10.355	6.3087	3.5622
CORRECTED CONC. TO WET BASIS			9.2322	5.6248	3.1760

634

EMISSION RATE	HC	NOX	CO
	1.3619	0.00038990	6.4057
	0.022699	6.4983E-06	0.10676
	0.00014187	4.0614E-08	0.00066725
EMISSION MASS/MODE			
0.00014187	4.0614E-08	0.00066725	
EMISSION MASS/RATED HP			
0.00014187	4.0614E-08	0.00066725	
MODE EMIS./STD. CYCLE %	7.4668	0.0027076	1.5887

CAL. FUEL AIR RATIO = 0.10269 MEAS. FUEL AIR RATIO = 0.10758 DIFF MEAS. & CAL. F/A PERCENT = -4.5420

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	272.35	292.08	272.18	290.75

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1108.3	842.24	-454.00	-112.14	569.72	569.54

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 12.833
	155.75	267.57	46.141	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.227
	10.391	592.14	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	79.949	80.434	-37.455	75.212

ORIFICE AIR	TEMP	DELTAP	DRFP	FLOW
	91.839	1.0482	53.565	1431.7

CELL TEMP. = 88.063 HEATER TEMP = 91.988 COOLER TEMP = 71.220

NASA-LE: IS PRELIMINARY DATA 04/15/76 CADDEII REC 04/15/76 20:30:40.236 FAC 55X15 PGM C003 RDG 3434

LEANOUT 25 BTDC I & T 80 DEG HUM = 60 % 3/4 T OPEN MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.100 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	80.531	29.101	23.558	99.829	1.3461	14.298

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	89.984	5.7177	44.389	11.828	10.171	6.1554

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	84.981	-0.068082	0.80509	0.00000	58.776	64.782

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	58.776	48.087	94.386	2.1674	1.3525

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10188	0.10053	1.5207	1202.5	1201.2	5.6672	1.2975

WET CORRECTION FACTOR = 0.85575 EXHAUST MOLE. WT. = 26.104 EXHAUST DENSITY = 0.067588 EXHAUST FLOW RATE = 1647.4

MEASURED CONC.	PART PER MILLION WET		PER CENT	
	HC PPM	NOX PPM	CO DRY	O2 DRY
	15156.	8.5528	12.011	7.7236
CORRECTED CONC. TO WET BASIS				
			CO DRY	O2 DRY
			10.278	6.6095
				0.48312

	HC	NOX	CO
EMISSION RATE	0.89639	0.0016767	12.293
EMISSION MASS/MODE	0.16434	0.00030740	2.2537
EMISSION MASS/RATED HP	0.0010271	1.9212E-06	0.014086
MODE EMIS./STD. CYCLE %	54.059	0.12808	33.537

CAL. FUEL AIR RATIO = 0.10226 MEAS. FUEL AIR RATIO = 0.10188 DIFF MEAS. & CAL. F/A PERCENT = 0.36798

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	264.33	279.99	263.82	271.66

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1316.9	1053.6	-454.00	-181.76	546.91	546.17

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 9.1881
	150.28	339.02	56.822	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.164
	13.451	1181.5	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	80.231	80.531	-59.021	75.210

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	92.083	2.0125	53.528	1963.8

CFLT TEMP. = 88.334 HEATER TEMP = 91.559 COOLER TEMP = 70.738

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NASA-LEWIS PRELIMINARY DATA 04/15/76 CADDEII REC 04/15/76 20:31:02.111 FAC SEX15 PGM C003 RDG 3435

LEANOUT 25 BTDC I & T 80 DEG HUM = 60 % 3/4 T OPEN MODE = 6.0000 NO. SCANS = 4

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.100 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 80.549 PRESS 29.099 CFM 23.067 DRY FLOW 97.786 VAPOR FLOW 1.3182 PRESS TOTAL 14.300

COMB. FUEL TEMP 90.073 PRESS 5.7197 DENSITY 44.387 TURBO FLOW 11.832 FLOW TRON 10.149 FPIP 6.1532

COOLING AIR TEMP 84.946 UDEL-HOOD -0.064346 DEL-HOOD 0.73756 FLOW 0.00000 REL-HUM 58.737 DEW-POINT 64.780

REL-HUM 1 58.737 2 45.547 HUMIDITY 94.363 % H2O VAPOR CORRECTED HP 2.1896

ENG. COND. F/A DRY 0.10378 F/A WET 0.10240 EQU. RATIO 1.5490 RPM-1 1202.1 RPM-2 1203.7 TORQUE 9.1780 BHP 2.1006

WET CORRECTION FACTOR = 0.86250 EXHAUST MOLE. WT. = 25.983 EXHAUST DENSITY = 0.067276 EXHAUST FLOW RATE = 1623.9

MEASURED CONC. HC PPM 15520. NOX PPM 8.6359 CO DRY 11.980 PER CENT CO2 DRY 7.7496 O2 DRY 0.61836
CORRECTED CONC. TO WET BASIS CO DRY 10.332 PER CENT CO2 DRY 6.6840 O2 DRY 0.53334

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EMISSION RATE HC 0.90482 NOX 0.0016689 CO 12.182
EMISSION MASS/MODE HC 0.045241 NOX 8.3443E-05 CO 0.60908
EMISSION MASS/RATED HP HC 0.00028276 NOX 5.2152E-07 CO 0.0038068
MODE EMIS./STD. CYCLE % HC 14.882 NOX 0.034768 CO 9.0637

CAL. FUEL AIR RATIO = 0.10201 MEAS. FUEL AIR RATIO = 0.10378 DIFF MEAS. & CAL. F/A PERCENT = -1.7075

CYL TEMP DEG.F CYL-1 264.90 CYL-2 280.01 CYL-3 264.32 CYL-4 272.30

EXT GAS TEMP DEG.F EXT-1 1858.4 EXT-2 1054.5 EXT-3 -454.00 EXT-4 -454.00 SEXT-1 543.90 SEXT-2 542.87

ENGINE OIL EOILT 149.85 SOILT 135.30 OILP 56.711 MANIFOLD PRESSURE = 9.1517

DYNO COND. TORQUE 1.9802 RPM 1204.0 CYL. BACK PRESSURE = 29.224

INDUCTION AIR IAIRT1 80.207 IAIRT2 80.549 TAIRT1 39.975 TAIRT2 75.070

ORIFICE AIR TEMP 92.174 DELTAP 1.2889 ORFP 53.562 FLOW 1584.4

CELL TEMP. = 88.480 HEATER TEMP = 91.518 COOLER TEMP = 69.565

NASA-LEWIS PRELIMINARY DATA 04/15/76 CADDEII REC 04/15/76 20:38:37.504 FAC SEX15 PGM C003 RDG 3437

LEANOUT 25 BTDC I & T 80 DEG HUM = 60 % 3/4 T OPEN MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.100 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	78.660	29.097	14.850	62.853	0.85033	14.293

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	89.002	5.7531	44.440	7.9126	6.3666	6.1698

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	81.765	-0.065591	0.77797	0.00000	62.678	64.867

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	62.678	45.611	94.702	2.1747	0.62062

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10129	0.099942	1.5118	591.90	590.34	5.2922	0.59643

WET CORRECTION FACTOR = 0.87260 EXHAUST MOLE. WT. = 26.141 EXHAUST DENSITY = 0.067687 EXHAUST FLOW RATE = 1035.2

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	38247.	4.1404	10.087	6.5441	3.4480
CORRECTED CONC. TO WET BASIS			8.8017	5.7104	3.0087

	HC	NOX	CO
EMISSION RATE	1.4214	0.00051006	6.6150
EMISSION MASS/MODE	0.023691	8.5009E-06	0.11025
EMISSION MASS/RATED HP	0.00014807	5.3131E-08	0.00068907
MODE EMIS./STD. CYCLE %	7.7930	0.0035421	1.6406

CAL. FUEL AIR RATIO = 0.10174 MEAS. FUEL AIR RATIO = 0.10129 DIFF MEAS. & CAL. F/A PERCENT = 0.43762

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	214.36	232.50	206.64	215.99

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	884.59	837.79	-454.00	-180.80	415.97	414.94

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 12.906
	141.43	150.01	47.609	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 28.918
	11.348	576.12	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	78.271	78.660	7.2871	75.626

ORIFICE AIR	TEMP	DELTA P	ORFP	FLDW
	89.713	3.0029	53.521	2377.2

CELL TEMP. = 85.840 HEATER TEMP = 94.548 COOLER TEMP = 73.786

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NASA-LEWIS PRELIMINARY DATA 04/15/76 CADDEII REC 04/15/76 20:48:21.419 FAC SEX15 PGM C003 RDG 3439

LEANOUT 25 BTDC I & T 80 DEG HUM = 60 % 1 1/2 T OPEN MODE = 1.0000 NO. SCANS = 3

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.100 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP 79.770	PRESS 29.093	CFM 15.232	DRY FLOW 64.515	VAPOR FLOW 0.87242	PRESS TOTAL 14.291
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COMB. FUEL	TEMP 88.826	PRESS 5.7441	DENSITY 44.419	TURBO FLOW 8.2962	FLOW TRON 6.8457	FPIP 6.1571
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COOLING AIR	TEMP 84.331	UDEL-HOOD -0.062732	DFL-HOOD 0.78507	FLOW 0.00000	REL-HUM 60.402	DEW-POINT 64.851
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REL-HUM	1 60.402	2 47.121	HUMIDITY 94.659	% H2O VAPOR 2.1737	CORRECTED HP 0.72933
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ENG. COND.	F/A DRY 0.10611	F/A WET 0.10469	EQU. RATIO 1.5837	RPM-1 594.96	RPM-2 593.06	TORQUE 6.1812	BHP 0.70022
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WET CORRECTION FACTOR = 0.88945 EXHAUST MOLE. WT. = 25.839 EXHAUST DENSITY = 0.066903 EXHAUST FLOW RATE = 1079.7

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM 44691.	NOX PPM 4.1804	CO DRY 10.317	CO2 DRY 5.7740	O2 DRY 4.2774	

CORRECTED CONC. TO WET BASIS	HC			NOX			CO		
		1.7322	0.00053710		7.1928				

EMISSION RATE	0.028870	8.9517E-06	0.11988
EMISSION MASS/MODE	0.00018044	5.5948E-08	0.00074925
EMISSION MASS/RATED HP	9.4969	0.0037299	1.7839
MODE EMIS./STD. CYCLE %			

CAL. FUEL AIR RATIO = 0.10370 MEAS. FUEL AIR RATIO = 0.10611 DIFF MEAS. & CAL. F/A PERCENT = -2.2689

CYL TEMP DEG. F	CYL-1 253.98	CYL-2 280.27	CYL-3 257.68	CYL-4 275.66
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EXT GAS TEMP DEG. F	EXT-1 714.47	EXT-2 887.37	EXT-3 -426.26	EXT-4 -54.293	SEXT-1 612.39	SEXT-2 611.31
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ENGINE OIL	EOILT 157.59	SOILT 255.83	OILP 46.045	MANIFOLD PRESSURE = 13.184
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DYNO COND.	TORQUE 12.433	RPM 592.06	CYL. BACK PRESSURE = 29.058
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INDUCTION AIR	IAIRT1 79.328	IAIRT2 79.770	TAIRT1 -45.128	TAIRT2 75.196
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ORIFICE AIR	TEMP 90.876	DELTA P 0.044338	ORFP 53.577	FLOW 177.57
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CELL TEMP. = 87.238 HEATER TEMP = 90.839 COOLER TEMP = 71.163

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NASA-LEWIS PRELIMINARY DATA 04/15/76 CADDEII REC 04/15/76 20:50:44.133 FAC SEX15 PGM C003 KDC 3440

LEANOUT 25 BTDC I & T 80 DEG HUM = 60 % 1 1/2 T OPEN MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.100 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	79.861	29.107	24.877	105.42	1.4262	14.296

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	89.469	5.7084	44.402	12.627	10.933	5.1521

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	84.419	-0.073894	0.81311	0.00000	60.267	64.872

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	60.267	45.403	94.702	2.1747	0.80244

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10371	0.10232	1.5479	1201.5	1202.5	3.3670	0.77027

WET CORRECTION FACTOR = 0.85596 EXHAUST MOLE. WT. = 25.988 EXHAUST DENSITY = 0.067288 EXHAUST FLOW RATE = 1750.4

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	18131.	7.1687	12.266	7.4410	0.66917	
CORRECTED CONC. TO WET BASIS			10.500	6.3693	0.57278	

	HC	NOX	CO
EMISSION RATE	1.1394	0.0014932	13.343
EMISSION MASS/MODE	0.20889	0.00027375	2.4462
EMISSION MASS/RATED HP	0.0013055	1.7110E-06	0.015289
MODE EMIS./STD. CYCLE %	68.712	0.11406	36.401

CAL. FUEL AIR RATIO = 0.10471 MEAS. FUEL AIR RATIO = 0.10371 DIFF MEAS. & CAL. F/A PERCENT = 0.96825

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	255.98	277.30	259.69	265.83

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1493.5	1084.4	-454.00	-155.42	586.85	564.86

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 9.4300
	152.13	360.40	56.070	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.091
	15.734	1200.6	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	79.526	79.861	-30.347	75.078

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	91.108	1.0758	53.539	1451.1

CELL TEMP. = 87.705 HEATER TEMP = 90.634 COOLER TEMP = 71.336

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NASA-LEWIS PRELIMINARY DATA 04/15/76 CADDEII REC 04/15/76 20:51:06.495 FAC SEX15 PGM C003 RDG 3441

LEANOUT 25 BTDC I & T 80 DEG HUM = 60 % 1 1/2 T OPEN MODE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.100 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	79.958	29.097	24.482	103.70	1.4031	14.295

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	89.486	5.7057	44.402	12.662	10.900	6.1446

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	84.393	-0.072234	0.72732	0.00000	60.075	64.872

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	60.075	9.4289	94.706	2.1748	1.4723

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10511	0.10370	1.5588	1201.8	1201.8	6.1756	1.4131

WET CORRECTION FACTOR = 0.85048 EXHAUST MDLE. WT. = 25.901 EXHAUST DENSITY = 0.067063 EXHAUST FLOW RATE = 1729.8

MEASURED CONC.	PART PER MILLION WET	PER CENT			
	HC PPM	CO DRY	CO2 DRY	O2 DRY	
	17441.	NOX PPM	12.306	7.4681	0.60276
CORRECTED CONC. TO WET BASIS		10.589	6.4262	0.51866	

EMISSION RATE	HC	NOX	CO
	1.0832	0.0014160	13.299
EMISSION MASS/MODE	0.054158	7.0799E-05	0.66494
EMISSION MASS/RATED HP	0.00033848	4.4249E-07	0.0041559
MODE EMIS./STD. CYCLE %	17.815	0.029500	9.8949

CAL. FUEL AIR RATIO = 0.10457 MEAS. FUEL AIR RATIO = 0.10511 DIFF MEAS. & CAL. F/A PERCENT = -0.51276

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	257.60	277.87	261.01	267.06

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1641.6	1092.0	-454.00	-454.00	582.73	581.09

ENGINE OIL	EQILT	SOILT	OILP	MANIFOLD PRESSURE = 9.4072
	151.64	-71.330	56.182	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.137
	8.9001	1205.8	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	79.649	79.958	60.169	75.284

ORIFICE AIR	TEMP	DEL TAP	ORFP	FLOW
	91.151	1.0526	53.511	1435.6

CELL TEMP. = 87.783 HEATER TEMP = 90.592 COOLER TEMP = 72.789

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NASA-LEVIS PRELIMINARY DATA 04/15/76 CADDEII REC 04/15/76 20:55:37.351 FAC SEX15 PGM C003 RDG 3442

LEANOUT 25 BTDC I & T 80 DEG HUM = 60 % 1 1/2 T OPEN MODE = 7.0000 NO. SCANS = 4

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.100 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP PRESS CFM DRY FLOW VAPOR FLOW PRESS TOTAL
80.813 29.096 15.087 63.915 0.86455 14.292

COMB. FUEL TEMP PRESS DENSITY TURBO FLOW FLOW TRON FPIP
90.095 5.7448 44.386 8.3652 6.8257 6.1724

COOLING AIR TEMP UDEL-HOOD DEL-HOOD FLOW REL-HUM DEW-POINT
84.716 -0.059849 0.73998 0.00000 58.398 64.861

REL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP
58.398 54.510 94.586 2.1743 0.086325

ENG. COND. F/A DRY F/A WET EQU. RATIO RPM-1 RPM-2 TORQUE BHP
0.10679 0.10537 1.5939 587.91 590.98 0.73966 0.082797

WET CORRECTION FACTOR = 0.89499 EXHAUST MOL. WT. = 25.797 EXHAUST DENSITY = 0.066796 EXHAUST FLOW RATE = 1072.0

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM NOX PPM CO DRY CO2 DRY O2 DRY
44974. 3.7341 10.205 5.7462 4.4319
CORRECTED CONC. TO WET BASIS 9.1336 5.1428 3.9665

EMISSION RATE HC NOX CO
1.7308 0.00047636 7.1084
EMISSION MASS/MODE 0.028847 7.9393E-06 0.11847
EMISSION MASS/RATED HP 0.00018030 4.9620E-08 0.00074046
MODE EMIS./STD. CYCLE % 9.4893 0.0033080 1.7630

CAL. FUEL AIR RATIO = 0.10286 MEAS. FUEL AIR RATIO = 0.10679 DIFF MEAS. & CAL. F/A PERCENT = -3.6862

CYL TEMP DEG.F CYL-1 CYL-2 CYL-3 CYL-4
241.90 260.89 240.75 254.39

EXT GAS TEMP DEG.F EXT-1 EXT-2 EXT-3 EXT-4 SEXT-1 SEXT-2
1213.4 897.98 -454.00 7.2314 501.69 500.31

ENGINE OIL OILT OILT OILP MANIFOLD PRESSURE = 13.368
147.99 241.82 47.020

DYNO COND. TORQUE RPM CYL. BACK PRESSURE = 29.697
3.6724 586.48

INDUCTION AIR IAIRT1 IAIRT2 TAIRT1 TAIRT2
80.394 80.813 6.6264 75.119

ORIFICE AIR TEMP DELTAP ORFP FLOW
91.619 2.5012 53.513 2176.1

CELL TEMP. = 88.043 HEATER TEMP = 90.300 COOLER TEMP = 71.338

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NASA-LEWIS		PRELIMINARY DATA		04/15/76	CADDEII	REC 04/15/76 21:23:54.810	FAC SEX15	PGM C003	RDG 3444
LEANOUT 25 BTDC I & T 80 DEG HUM = 80 % 1 1/2 T CLOS MODE = 2.0000					NO. SCANS = 5				
ENGINE TIMING = 25.000		DEG.		BAROMETRIC PRESSURE = 29.100		RATED HP. = 160.00		HC RATIO = 2.1250	
COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL			
	78.377	29.098	18.431	77.651	1.3675	14.295			
COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP			
	88.613	5.8146	44.424	3.9415	6.0216	6.1677			
COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT			
	83.286	-0.068082	0.83747	0.00000	81.840	72.368			
REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP				
	81.840	55.141	123.28	2.8309	1.4051				
ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP		
	0.077547	0.076205	1.1574	1203.0	1203.4	5.8589	1.3420		
WET CORRECTION FACTOR = 0.83273		EXHAUST MOLE. WT. = 27.879		EXHAUST DENSITY = 0.072185		EXHAUST FLOW RATE = 1178.1			
MEASURED CONC.		PART PER MILLION WET		PER CENT					
	HC PPM	NOX PPM	CO DRY	CO2 DRY	CO2 DRY				
	2520.3	45.987	5.4295	11.966	0.21038				
CORRECTED CONC. TO WET BASIS									
		4.5213	9.9644	0.17519					
EMISSION RATE		HC	NOX	CO					
		0.10659	0.0064470	3.8670					
EMISSION MASS/MODE									
		0.019541	0.0011819	0.70896					
EMISSION MASS/RATED HP									
		0.00012213	7.3871E-06	0.0044310					
MODE EMIS./STD. CYCLE %									
		6.4281	0.49248	10.550					
CAL. FUEL AIR RATIO = 0.078610		MEAS. FUEL AIR RATIO = 0.077547		DIFF MEAS. & CAL. F/A PERCENT = 1.3707					
CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4					
	268.33	295.81	286.45	299.41					
EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2			
	1217.6	1088.3	-406.72	-4.1942	604.29	604.08			
ENGINE OIL	ENILT	SOILT	OILP	MANIFOLD PRESSURE = 8.0071					
	155.96	303.23	55.381						
DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.032						
	5.8974	1199.0							
INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2					
	77.997	78.377	-41.307	74.755					
ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW					
	89.233	2.0250	53.547	1974.6					
CELL TEMP. = 85.481	HEATER TEMP = 99.610		COOLER TEMP = 66.944						

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NASA-LEVIS PRELIMINARY DATA 04/15/76 CADDEII REC 04/15/76 21:24:17.194 FAC SEX15 PGM C003 RDG 3445

LEANOUT 25 BTDC I & T 80 DEG HUM = 80 % 1 1/2 T CLOS MODE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.100 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	78.183	29.100	18.586	78.283	1.3776	14.296

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	88.412	5.8095	44.430	3.9403	6.2976	6.1683

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	82.970	-0.067806	0.81505	0.00000	82.310	72.348

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	82.310	60.614	123.18	2.8287	1.9142

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.080447	0.079056	1.2007	1200.4	1202.3	8.0008	1.8287

WET CORRECTION FACTR = 0.84457 EXHAUST MOLE. WT. = 27.645 EXHAUST DENSITY = 0.071579 EXHAUST FLOW RATE = 1200.9

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	2573.3	45.685	5.4458	11.993	0.17908
CORRECTED CONC. TO WET BASIS			4.5994	10.129	0.15124

EMISSION RATE	HC	NOX	CO
	0.11094	0.0065285	4.0099
EMISSION MASS/MODE	0.0055469	0.00032643	0.20050
EMISSION MASS/RATED HP	3.4668E-05	2.0402E-06	0.0012531
MODE FMIS./STD. CYCLE %	1.8246	0.13601	2.9836

CAL. FUEL AIR RATIO = 0.078731 MEAS. FUEL AIR RATIO = 0.080447 DIFF MEAS. & CAL. F/A PERCENT = -2.1332

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	259.41	294.88	285.14	297.27

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1878.9	1082.7	-386.76	-454.00	597.07	596.72

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 8.0096
	155.53	-40.314	55.354	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.133
	11.752	1182.7	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	77.811	78.183	-7.9316	74.966

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	88.937	2.0149	53.526	1970.5

CELL TEMP. = 85.288 HEATER TEMP = 104.53 COOLER TEMP = 69.561

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NASA-LEWIS		PPELIMINARY DATA		04/15/76	CADDEII	REC 04/15/76 21:30:49.416	FAC SEX15	PGM C003	RDG 3446
LEANOUT 25 BTDC I & T 80 DEG HUM = 80 % 1 1/2 T CLOS MODE = 7.0000					NO. SCANS = 5				
ENGINE TIMING = 25.000		DEG.	BAROMETRIC PRESSURE = 29.100		RATED HP. = 160.00		HC RATIO = 2.1250		
COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL			
	78.863	29.098	11.736	49.368	0.90829	14.295			
COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP			
	89.809	5.8533	44.394	3.9405	3.4143	6.1824			
COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT			
	82.354	-0.074171	0.78848	0.00000	84.035	73.628			
REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP				
	84.035	50.069	128.79	2.9574	0.95037				
ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP		
	0.069162	0.067912	1.0323	595.50	599.82	7.9925	0.90623		
WET CORRECTION FACTOR = 0.85803		EXHAUST MOLE. WT. = 28.522		EXHAUST DENSITY = 0.073850		EXHAUST FLOW RATE = 727.01			
MEASURED CONC.	PART PER MILLION WET		PER CENT						
	HC PPM	NOX PPM	CO DRY	CO2 DRY					
	13987.	25.361	1.9328	11.691	3.2355				
CORRECTED CONC. TO WET BASIS			CO DRY	CO2 DRY					
			1.6584	10.031	2.7762				
EMISSION RATE	HC	NOX	CO						
	0.36507	0.0021940	0.87532						
EMISSION MASS/MODE	0.0060844	3.6567E-05	0.014589						
EMISSION MASS/RATED HP	3.8028E-05	2.2855E-07	9.1179E-05						
MODE EMIS./STD. CYCLE %	2.0015	0.015236	0.21709						
CAL. FUEL AIR RATIO = 0.068555		MEAS. FUEL AIR RATIO = 0.069162		DIFF MEAS. & CAL. F/A PERCENT = -0.87715					
CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4					
	218.87	254.96	243.60	249.78					
EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2			
	1458.1	944.23	-435.58	18.914	475.37	473.95			
ENGINE OIL	EDILT	SOILT	OILP	MANIFOLD PRESSURE = 11.408					
	150.19	394.67	47.173						
DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.249						
	2.6859	600.96							
INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2					
	78.448	78.863	-40.976	74.888					
ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW					
	89.312	2.0189	53.523	1971.6					
CELL TEMP. = 85.630	HEATER TEMP = 105.85		COOLER TEMP = 66.426						

4/17/76

NASA-LEWIS PRELIMINARY DATA 04/15/76 CADDEII REC 04/15/76 21:31:10.774 FAC SEX15 PGM C003 RDG 3447

LEANOUT 25 BTDC I & T 80 DEG HUM = 80 % 1 1/2 T CLOS MODE = 1.0000 NO. SCANS = 4

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.100 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	79.005	29.098	11.882	49.941	0.92340	14.290

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	89.909	5.8543	44.391	3.9415	3.3341	6.1784

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	82.398	-0.070919	0.75247	0.00000	84.021	73.762

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	84.021	48.287	129.43	2.9721	0.10404

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.066760	0.065548	0.93642	595.26	595.86	0.87509	0.099182

WET CORRECTION FACTOR = 0.84317 EXHAUST MJLE. WT. = 28.695 EXHAUST DENSITY = 0.074299 EXHAUST FLOW RATE = 729.46

MEASURED CONC.	PART PER MILLION WET		CO DRY	PER CENT	
	HC PPM	NOX PPM		CO2 DRY	O2 DRY
	14572.	25.950	1.9510	11.733	3.2951
CORRECTED CONC. TO WET BASIS			1.6450	9.8925	2.7783

	HC	NOX	CO
EMISSION RATE	0.38163	0.0022526	0.87117
EMISSION MASS/MODE	0.0063604	3.7544E-05	0.014520
EMISSION MASS/RATED HP	3.9753E-05	2.3465E-07	9.0747E-05
MODE EMIS./STD. CYCLE %	2.0922	0.015643	0.21606

CAL. FUEL AIR RATIO = 0.068846 MEAS. FUEL AIR RATIO = 0.066760 DIFF MEAS. & CAL. F/A PERCENT = 3.1244

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	215.25	253.00	241.46	247.64

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1314.9	946.94	-454.00	-454.00	469.83	468.67

ENGINE OIL	EJILT	SOILT	OILP	MANIFOLD PRESSURE = 11.660
	149.67	-93.495	47.000	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.215
	3.5644	592.03	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	78.585	79.005	25.182	75.102

ORIFICE AIR	TEMP	DELTA P	DRFP	FLOW
	89.342	1.2633	53.539	1572.9

CELL TEMP. = 85.866 HEATER TEMP = 106.03 COOLER TEMP = 68.215

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NASA-LEWIS PRELIMINARY DATA 04/15/76 CADDEII REC 04/15/76 22:03:36.019 FAC SEX15 PGM C003 RDG 3449

LEANOUT 25 BTDC I & T 80 DEG HUM = 80 % 3/4 T-CLOSED MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.100 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	80.081	29.099	18.415	77.499	1.4074	14.297

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	92.553	5.8131	44.323	3.9342	6.8227	6.1605

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	85.516	-0.061440	0.75472	0.00000	79.746	73.258

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	79.746	69.737	127.12	2.9192	0.87768

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.088036	0.086466	1.3140	1200.5	1200.4	3.6587	0.83629

WET CORRECTION FACTOR = 0.84590 EXHAUST MOLE. WT. = 27.061 EXHAUST DENSITY = 0.070068 EXHAUST FLOW RATE = 1223.5

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	5044.5	36.730	8.2164	10.384	0.27143
CORRECTED CONC. TO WET BASIS			6.9503	8.7840	0.22960

	HC	NOX	CO
EMISSION RATE	0.22157	0.3053477	6.1737
EMISSION MASS/MODE	0.040622	0.00098042	1.1318
EMISSION MASS/RATED HP	0.00025389	6.1276E-06	0.0070740
MODE EMIS./STD. CYCLE %	13.363	0.40851	16.843

CAL. FUEL AIR RATIO = 0.086196 MEAS. FUEL AIR RATIO = 0.088036 DIFF MEAS. & CAL. F/A PERCENT = -2.0903

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	276.41	291.69	278.14	285.21

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1484.9	992.45	-367.63	-169.13	644.62	641.00

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 8.0031
	183.16	305.72	52.925	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.056
	3.5067	1192.6	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	79.649	80.081	-65.786	74.964

ORIFICE AIR	TEMP	DELTA P	DRFP	FLOW
	90.062	0.089809	53.599	319.72

CELL TEMP. = 87.460 HEATER TEMP. = 89.445 COOLER TEMP. = 68.811

NASA-LEWIS PRELIMINARY DATA 04/15/76 CADDEII REC 04/15/76 22:03:57.360 FAC SEX15 PGM C003 RDG 3450
 LEANOUT 25 BTDC I & T 80 DEG HUM = 80 % 3/4 T CLOSED MODE = 6.0000 NO. SCANS = 4
 ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.100 RATED HP. = 160.00 HC RATIO = 2.1250
 COMB. AIR TEMP 80.108 PRESS 29.099 CFM 18.720 DRY FLOW 78.764 VAPOR FLOW 1.4318 PRESS TOTAL 14.295
 COMB. FUEL TEMP 92.598 PRESS 5.8135 DENSITY 44.322 TURBO FLOW 3.9333 FLOW TRON 6.7507 FPIP 6.1619
 COOLING AIR TEMP 85.472 UDEL-HOOD -0.065384 DEL-HOOD 0.82854 FLOW 0.00000 REL-HUM 79.738 DEW-POINT 73.281
 REL-HUM 1 79.738 2 61.344 HUMIDITY 127.25 % H2O VAPOR 2.9220 CORRECTED HP 0.86333
 ENG. COND. F/A DRY 0.085708 F/A WET 0.084178 EQU. RATIO 1.2792 RPM-1 1202.0 RPM-2 1203.3 TORQUE 3.5941 BHP 0.82256
 WET CORRECTION FACTOR = 0.83603 EXHAUST MOLE. WT. = 27.236 EXHAUST DENSITY = 0.070520 EXHAUST FLOW RATE = 1232.9
 MEASURED CONC. PART PER MILLION WFT PER CENT
 HC PPM 5480.5 NOX PPM 36.479 CO DRY 8.2244 CO2 DRY 10.396 O2 DRY 0.30856
 CORRECTED CONC. TO WET BASIS CO DRY 6.8758 CO2 DRY 8.6916 O2 DRY 0.25796
 EMISSION RATE HC 0.24258 NOX 0.0053521 CO 6.1545
 EMISSION MASS/MODE HC 0.012129 NOX 0.00026760 CO 0.30773
 EMISSION MASS/RATED HP HC 7.5806E-05 NOX 1.6725E-06 CO 0.0019233
 MODE EMIS./STD. CYCLE % HC 3.9898 NOX 0.11150 CO 4.5793
 CAL. FUEL AIR RATIO = 0.086317 MEAS. FUEL AIR RATIO = 0.085708 DIFF MEAS. & CAL. F/A PERCENT = 0.71011
 CYL TEMP DEG. F CYL-1 275.89 CYL-2 290.98 CYL-3 277.92 CYL-4 285.06
 EXT GAS TEMP DEG. F EXT-1 1645.7 EXT-2 993.17 EXT-3 -433.84 EXT-4 -454.00 SEXT-1 638.33 SEXT-2 635.15
 ENGINE OIL EOILT 182.57 SOILT 119.03 OILP 52.995 MANIFOLD PRESSURE = 8.0114
 DYNO COND. TORQUE 0.045005 RPM 1201.4 CYL. BACK PRESSURE = 29.171
 INDUCTION AIR IAIRT1 79.700 IAIRT2 80.108 TAIRT1 -76.398 TAIRT2 74.982
 ORIFICE AIR TEMP 90.138 DELTAP 0.047505 ORFP 53.608 FLOW 188.67
 CELL TEMP. = 87.69% HEATER TEMP = 89.419 COOLER TEMP = 68.438

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NASA-LEWIS PRELIMINARY DATA 04/15/76 CADDEII REC 04/15/76 22:09:32.200 FAC SEX15 PGM C003 RDG 3451

LEANOUT 25 BTDC I & T 80 DEG HUM = 80 % 3/4 T CLOSED MODE = 7.0000 NO. SCANS = 4

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.100 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	81.254	29.105	10.325	43.439	0.79029	14.296

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	93.576	5.8416	44.297	3.9332	3.9116	6.1727

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	85.307	-0.051546	0.86833	0.00000	76.878	73.306

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	76.878	61.001	127.35	2.9244	0.63399

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.090049	0.088441	1.3440	595.33	592.48	5.3234	0.60343

WET CORRECTION FACTOR = 0.86608 EXHAUST MOLE. WT. = 26.913 EXHAUST DENSITY = 0.069685 EXHAUST FLOW RATE = 690.83

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	22317.	12.291	7.0907	9.2966	2.4852
CORRECTED CONC. TO WET BASIS			6.1411	8.0516	2.1524

EMISSION RATE	HC	NOX	CO	
	0.55349	0.0010104	3.0800	
	EMISSION MASS/MODE	0.0092248	1.6841E-05	0.051334
	EMISSION MASS/RATED HP	5.7655E-05	1.0526E-07	0.00032084
MODE EMIS./STD. CYCLE %	3.0345	0.0070170	0.76390	

CAL. FUEL AIR RATIO = 0.086474 MEAS. FUEL AIR RATIO = 0.090049 DIFF MEAS. & CAL. F/A PERCENT = -3.9704

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	243.33	255.49	237.16	247.49

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1256.4	741.79	-454.00	-171.62	526.26	523.80

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 10.875
	171.72	210.19	45.355	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.404
	8.3618	591.51	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	80.780	81.254	-55.219	75.040

ORIFICE AIR	TEMP	DELTA P	DRFP	FLOW
	90.814	1.2879	53.605	1585.8

CELL TEMP. = 88.316 HEATER TEMP = 89.203 COOLER TEMP = 65.747

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NASA-LEWIS PRELIMINARY DATA 04/15/76 CADDEII REC 04/15/76 22:09:51.194 FAC SEX15 PGM C003 RDG 3452

LEANOUT 25 BTDC I & T 80 DEG HUM = 80 % 3/4 T CLOSED MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.100 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	81.245	29.094	10.303	43.360	0.78801	14.292

CCMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	93.821	5.8407	44.291	3.9296	3.9094	6.1881

COOLING AIR	TEMP	UNEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	85.314	-0.071403	0.78987	0.00000	76.803	73.268

REL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP
	76.803	54.571	127.22	2.9213 0.65343

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.090161	0.088552	1.3457	591.18	591.24	5.5255	0.62197

WET CORRECTION FACTOR = 0.87056 EXHAUST MOLE. WT. = 26.905 EXHAUST DENSITY = 0.069664 EXHAUST FLOW RATE = 689.84

MEASURED CONC.	PART PER MILLION WET	PER CENT
	HC PPM NOX PPM CO DRY CO2 DRY O2 DRY	
	22990. 12.160 6.9517 9.2518 2.7214	
CORRECTED CONC. TO WET BASIS		6.0519 8.0542 2.3691

EMISSION RATE	HC	NOX	CO
	0.56936	0.00099825	3.0310
EMISSION MASS/MODE	0.0094894	1.6637E-05	0.050516
EMISSION MASS/RATED HP	5.9309E-05	1.0398E-07	0.00031572
MODE EMIS./STD. CYCLE %	3.1215	0.0069323	0.75172

CAL. FUEL AIR RATIO = 0.085698 MEAS. FUEL AIR RATIO = 0.090161 DIFF MEAS. & CAL. F/A PERCENT = -4.9506

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	240.29	252.15	232.61	242.62

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1645.2	734.75	-405.10	-454.00	519.46	516.26

ENGINE OIL	EQILT	SOILT	OILP	MANIFOLD PRESSURE = 11.032
	171.02	241.63	45.453	

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.248
	5.5013	586.32	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	80.752	81.245	-36.205	74.763

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	90.847	2.0197	53.636	1969.3

CELL TEMP. = 88.229 HEATER TEMP = 89.210 COOLER TEMP = 65.443

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NASA-LFWIS PRELIMINARY DATA 04/15/76 CADDEII REC 04/15/76 22:18:50.815 FAC SEX15 PGM C003 RDG 3453

LEANOUT 25 BTDC I & T 80 DEG HUM = 80 % NEUTRAL MODE = 1.0000 NO. SCANS = 4

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.100 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	78.894	29.091	11.512	48.463	0.87860	14.290

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	88.633	5.7977	44.424	5.9018	4.7442	6.1592

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	83.947	-0.055351	0.76904	0.00000	82.730	73.193

REL-HUM	i	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	82.730	57.861	126.90	2.9141	0.35136

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.097893	0.096150	1.4511	584.76	579.73	3.0107	0.33521

WET CORRECTION FACTOR = 0.85657 EXHAUST MOL. WT. = 26.365 EXHAUST DENSITY = 0.068266 EXHAUST FLOW RATE = 792.28

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	34790.	4.1417	9.4454D	7.0151	3.4601
CORRECTED CONC. TO WET BASIS			9.1851	6.0790	2.9984

EMISSION RATE	HC	NOX	CO
	0.98956	0.00039048	4.7080
EMISSION MASS/MODE	0.016493	5.5080E-06	0.078467
EMISSION MASS/RATED HP	0.00010308	4.0675E-08	0.00049042
MODE EMIS./STD. CYCLE %	5.4252	0.0027117	1.1677

CAL. FUEL AIR RATIO = 0.097545 MEAS. FUEL AIR RATIO = 0.097893 DIFF MEAS. & CAL. F/A PERCENT = -0.35595

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	323.76	338.77	331.18	355.17

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1118.5	828.99	-171.16	-101.64	724.44	724.22

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 11.891
	170.14	356.71	44.364	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.006
	9.9730	581.91	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	78.364	78.894	-77.334	74.572

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	88.688	3.7446	53.564	2650.9

CELL TEMP. = 86.195 HEATER TEMP = 89.246 COOLER TEMP = 67.724

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NASA-LEWIS PRELIMINARY DATA 04/15/76 CADDEII REC 04/15/76 22:21:52.556 FAC SEX15 PGM C003 RDG 3455

LEANOUT 25 BTDC I & T 80 DEG HUM = 80 % NEUTRAL MODE = 6.0000 NO. SCANS = 3

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.100 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	79.063	29.099	21.339	89.829	1.6375	14.298

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	90.193	5.7506	44.384	10.117	8.4558	6.1606

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	84.302	-0.053968	0.77953	0.00000	82.757	73.368

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	82.757	7.968	127.60	2.9302	0.84571

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.094133	0.092448	1.4050	1205.2	1205.7	3.5142	0.80644

WET CORRECTION FACTOR = 0.83909 EXHAUST MOLE. WT. = 26.522 EXHAUST DENSITY = 0.068932 EXHAUST FLOW RATE = 1449.6

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	10352.	17.123	10.804	8.6314	0.42298
CORRECTED CONC. TO WET BASIS			9.0652	7.2425	0.35491

	HC	NOX	CO
EMISSION RATE	0.53875	0.0029538	9.5401
EMISSION MASS/MODE	0.026938	0.00014769	0.47701
EMISSION MASS/RATED HP	0.00016836	9.2305E-07	0.0029813
MODE EMIS./STD. CYCLE %	8.8611	0.061537	7.0983

CAL. FUEL AIR RATIO = 0.096012 MEAS. FUEL AIR RATIO = 0.094133 DIFF MEAS. & CAL. F/A PERCENT = 1.9960

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	281.47	296.87	284.93	295.89

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1862.3	1015.0	-363.18	-454.00	636.32	633.45

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 8.6593
	170.47	234.66	55.079	

DYKO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.060
	3.8524	1216.2	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	78.710	79.063	6.0054	74.779

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	89.277	0.036504	53.455	149.82

CELL TEMP. = 86.742 HEATER TEMP = 89.041 COOLER TEMP = 69.082

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NASA-LEWIS PRELIMINARY DATA 04/15/76 CADDEII REC 04/15/76 22:25:01.278 FAC SEX15 PGM C003 RDG 3456

LEANOUT 25 BTDC I & T 80 DEG HUM = 80 % NEUTRAL MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.100 RATE HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	79.622	29.097	21.280	89.529	1.6317	14.299

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	90.603	5.7459	44.373	10.494	8.7759	6.1542

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	84.366	-0.071403	0.79789	0.00000	81.240	73.363

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	81.240	53.317	127.57	2.9296	0.87947

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.098023	0.096268	1.4630	1205.9	1206.3	3.6504	0.83818

WET CORRECTION FACTOR = 0.85222 EXHAUST MOLE WT. = 26.357 EXHAUST DENSITY = 0.068243 EXHAUST FLOW RATE = 1464.4

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	10368.	16.393	10.844	8.6520	0.39456
CORRECTED CONC. TO WET BASIS			9.2416	7.3734	0.33625

	HC	NOX	CO
EMISSION RATE	0.54507	0.0028567	9.8253
EMISSION MASS/MODE	0.099930	0.00052372	1.8013
EMISSION MASS/RATED HP	0.00062456	3.2732E-06	0.011258
MODE EMIS./STD. CYCLE %	32.872	0.21822	26.805

CAL. FUEL AIR RATIO = 0.096069 MEAS. FUEL AIR RATIO = 0.098023 DIFF MEAS. & CAL. F/A PERCENT = -1.9930

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	273.05	284.88	274.33	284.52

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1497.1	1028.7	-434.67	-179.08	578.83	576.01

ENGINE OIL	EDILT	SOILT	OILP	MANIFOLD PRESSURE = 8.6481
	167.62	309.01	56.010	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.138
	4.2700	1209.9	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	79.305	79.622	-13.170	75.119

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	89.617	2.0377	53.734	1979.7

C.F.L. TEMP. = 87.223 HEAT FR. TEMP = 88.940 COOLER TEMP = 71.336

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NASA-LEWIS PRELIMINARY DATA 04/15/76 CADDEII REC 04/15/76 22:30:50.898 FAC SEX15 PGM C003 RDG 3457

LEANOUT 25 BTDC I & T 80 DEG HUM = 80 % NEUTRAL MODE = 7.0000 NO. SCANS = 4

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.100 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	80.736	29.098	11.778	49.509	0.90470	14.291

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	91.576	5.8033	44.348	3.9335	4.7405	6.1649

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	84.584	-0.069881	0.78288	0.00000	78.498	73.424

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	78.498	60.276	127.91	2.9373	0.31256

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.095750	0.094032	1.4291	586.03	586.11	2.6659	0.29758

WET CORRECTION FACTOR = 0.87703 EXHAUST MOLE. WT. = 26.511 EXHAUST DENSITY = 0.068642 EXHAUST FLOW RATE = 803.50

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	34223.	3.8229	8.38100	7.3533	3.9079
CORRECTED CONC. TO WET BASIS			7.3504	6.4491	3.4273

EMISSION RATE	HC	NOX	CO	
	0.98719	0.00036553	4.2878	
	EMISSION MASS/MODE	0.016453	6.0921E-06	0.071463
	EMISSION MASS/RATED HP	0.00010283	3.8076E-08	0.00046665
MODE EMIS./STD. CYCLE %	5.4122	0.0025384	1.0634	

CAL. FUEL AIR RATIO = 0.092499 MEAS. FUEL AIR RATIO = 0.095750 DIFF MEAS. & CAL. F/A PERCENT = -3.3951

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	237.75	249.38	227.41	238.46

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	761.94	782.00	-454.00	10.699	475.54	473.43

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 11.886
	159.74	358.53	46.295	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 28.555
	0.49505	586.71	

INDUCTION AIR	IAIPT1	IAIRT2	TAIRT1	TAIRT2
	80.317	80.736	-54.121	75.291

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	90.182	1.3213	53.474	1606.7

CELL TEMP. = 87.541 HEATER TEMP = 91.777 COOLER TEMP = 71.316

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NASA-LEWIS PRELIMINARY DATA 04/15/76 CADDEII REC 04/15/76 22:39:35.618 FAC SEX15 PGM C003 RDG 3458

LEANOUT 25 BTDC. I & T 80 DEG HUM = 80 % NEUTRAL MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.100 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	78.254	29.100	13.962	58.716	1.0743	14.288

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	87.503	5.7540	44.453	7.8433	6.2946	6.1686

COOLING AIR	TEMP	INLET-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	83.401	-0.063654	0.77575	0.00000	85.234	73.453

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	85.234	48.963	128.07	2.9410	0.25015

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10721	0.10528	1.6001	589.92	588.66	2.1252	0.23871

WET CORRECTION FACTOR = 0.88594 EXHAUST MOLE. WT. = 25.772 EXHAUST DENSITY = 0.066731 EXHAUST FLOW RATE = 990.31

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	41314.	4.5865	10.2710	6.1299	3.8198
CORRECTED CONC. TO WET BASIS			9.0998	5.4307	3.3841

	HC	NOX	CO
EMISSION RATE	1.4688	0.00054050	6.5425
EMISSION MASS/MODE	0.024480	9.0083E-06	0.10904
EMISSION MASS/RATED HP	0.00015300	5.6302E-08	0.00068151
MODE EMIS./STD. CYCLE %	8.0526	0.3037535	1.6226

CAL. FUEL AIR RATIO = 0.10292 MEAS. FUEL AIR RATIO = 0.10721 DIFF MEAS. & CAL. F/A PERCENT = -4.0014

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	291.04	311.55	296.90	320.06

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1838.4	862.32	-454.00	311.76	669.04	668.18

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 13.158
	165.33	319.12	45.201	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.244
	2.9451	582.18	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	77.820	78.254	-56.457	74.888

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	88.089	1.9939	53.574	1962.3

CELL TEMP. = 83.866 HEATER TEMP = 90.053 COOLER TEMP = 69.525

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01 NASA-LEWIS PRELIMINARY DATA 04/15/76 CADDEII REC 04/15/76 22:42:20.156 FAC SFX15 PGM C003 RDG 3459 ✓

02 LEANOUT 25 BTDC I & T 80 DEG HUM = 80 % NEUTRAL MODE = 2.0000 NO. SCANS = 4

03 ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.100 RATED HP. = 160.00 HC RATIO = 2.1250

04 COMB. AIR TEMP PRESS CFM DRY FLOW VAPOR FLOW PRESS TOTAL
78.485 29.099 23.417 98.521 1.8006 14.299

05 COMB. FUEL TEMP PRESS DENSITY TURBO FLOW FLOW TRON FPIP
88.043 5.7133 44.439 11.558 10.006 6.1585

06 COOLING AIR TEMP UDEL-HOOD DEL-HOOD FLOW REL-HUM DEW-POINT
83.728 -0.064692 0.78807 0.00000 84.558 73.443

07 REL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP
84.558 46.965 127.93 2.9377 1.1849

08 ENG. COND. F/A DRY F/A WET EQU. RATIO RPM-1 RPM-2 TORQUE BHP
0.10156 0.099739 1.5159 1197.1 1197.5 4.9588 1.1303

09 WET CORRECTION FACTOR = 0.84759 EXHAUST MOLE. WT. = 26.124 EXHAUST DENSITY = 0.067642 EXHAUST FLOW RATE = 1631.1

10 MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM NOX PPM CO DRY CO2 DRY O2 DRY
17918. 9.3209 11.856 7.6919 0.75007
CORRECTED CONC. TO WET BASIS 10.049 6.5196 0.63576

11 EMISSION RATE HC NOX CO
1.0492 0.0018091 11.899
EMISSION MASS/MODE 0.19235 0.00033168 2.1816
EMISSION MASS/RATED HP 0.0012022 2.0730E-06 0.013635
MODE EMIS./STD. CYCLE % 63.273 0.13820 32.464

12 CAL. FUEL AIR RATIO = 0.10287 MEAS. FUEL AIR RATIO = 0.10156 DIFF MEAS.& CAL. F/A PERCENT = 1.2895

13 CYL TEMP DEG.F CYL-1 CYL-2 CYL-3 CYL-4
270.52 287.40 270.94 282.71

14 EXT GAS TEMP DEG.F EXT-1 EXT-2 EXT-3 EXT-4 SEXT-1 SEXT-2
1578.5 1055.1 -454.00 483.40 611.38 608.73

15 ENGINE OIL EOILT SOILT OILP MANIFOLD PRESSURE = 9.2708
163.24 396.75 55.190

16 DYAO COND. TORQUE RPM CYL.BACK PRESSURE = 29.008
-1.5392 1198.5

17 INDUCTION AIR IAIRT1 IAIRT2 TAIRT1 TAIRT2
78.198 78.485 -39.652 75.067

18 ORIFICE AIR TEMP DELTAP ORFP FLOW
88.349 1.3089 53.702 1602.0

19 CFLL TEMP. = 84.244 HEATER TEMP = 89.410 COOLER TEMP = 70.758

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NASA-Lewis PRELIMINARY DATA 04/15/76 CADDEII REC 04/15/76 22:42:38.210 FAC SEX15 PGM C003 RDG 3460

LEANOUT 25 BTDC I & T 80 DEG HUM = 80 % NEUTRAL MODE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.100 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	78.519	29.103	23.922	100.59	1.8462	14.295

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	88.045	5.7114	44.439	11.822	10.222	6.1467

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	RFL-HUM	DEW-POINT
	83.848	-0.055905	0.79983	0.00000	84.792	73.558

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	84.792	25.152	128.48	2.9502	1.0395

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10162	0.099789	1.5167	1196.9	1199.3	4.3504	0.99147

WET CORRECTION FACTOR = 0.84925 EXHAUST MOLE. WT. = 26.120 EXHAUST DENSITY = 0.067632 EXHAUST FLOW RATE = 1665.8

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	17450.	9.3789	11.832	7.6933	0.78078
CORRECTED CONC. TO WET BASIS			10.048	6.5335	0.66307

	HC	NOX	CO
EMISSION RATE	1.0436	0.0018591	12.152
EMISSION MASS/MODE	0.052178	9.2956E-05	0.60760
EMISSION MASS/RATED HP	0.00032611	5.8098E-07	0.0037975
MODE EMIS./STD. CYCLE %	17.164	0.38732	9.0416

CAL. FUEL AIR RATIO = 0.10241 MEAS. FUEL AIR RATIO = 0.10162 DIFF MEAS. & CAL. F/A PERCENT = 0.77247

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	270.38	286.92	270.56	281.93

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	2017.3	1056.5	-454.00	-386.59	605.16	602.74

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 9.2614
	163.03	186.43	55.281	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.389
	3.0531	1203.2	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	78.271	78.519	48.972	75.147

ORIFICE AIR	TFMP	DELTAP	ORFP	FLOW
	88.281	1.0119	53.359	1411.6

CELL TFMP. = 84.235 HEATER TEMP = 89.535 COOLER TEMP = 70.997

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NASA-LFWIS PRELIMINARY DATA 04/15/76 CADDEII REC 04/15/76 22:50:36.163 FAC SEX15 PGM C003 RDG 3462

LEANOUT 25 BTDC I & T 80 DEG HUM = 80 % NEUTRAL MODE = 7.0000 NO. SCANS = 4

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.100 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	79.876	29.109	15.061	63.337	1.1583	14.293

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	89.059	5.7478	44.413	8.0296	6.4544	6.1626

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	83.750	-0.066076	0.78461	0.00000	80.802	73.449

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	80.802	43.369	128.01	2.9396	0.36998

ENG. COND.	F/A DRY	F/A WFT	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10191	0.10008	1.5210	594.36	596.83	3.1149	0.35251

WET CORRECTION FACTOR = 0.87092 EXHAUST MOLE. WT. = 26.102 EXHAUST DENSITY = 0.067585 EXHAUST FLOW RATE = 1049.8

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	39778.	4.7517	9.9227	6.4816	3.6882
CORRECTED CONC. TO WET BASIS			8.6419	5.6450	3.2122

	HC	NOX	CO
EMISSION RATE	1.4992	0.00059361	6.5864
EMISSION MASS/MODE	0.024986	9.8934E-06	0.10977
EMISSION MASS/RATED HP	0.00015616	6.1834E-08	0.00068608
MODE EMIS./STD. CYCLE %	8.2191	0.0041223	1.6335

CAL. FUEL AIR RATIO = 0.10141 MEAS. FUEL AIR RATIO = 0.10191 DIFF MEAS. & CAL. F/A PERCENT = -0.48219

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	214.77	235.26	205.06	214.62

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	883.59	830.69	-454.00	651.99	454.23	452.45

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 12.718
	151.78	219.49	47.175	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.136
	5.4275	591.73	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	79.534	79.876	73.382	75.078

ORIFICE AIR	TEMP	DELTA P	DRFP	FLOW
	89.506	1.2831	53.559	1584.8

CELL TEMP. = 85.001 HEATER TEMP = 88.779 COOLER TEMP = 69.911

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NASA-LEWIS PRELIMINARY DATA 04/15/76 CADDEII REC 04/15/76 22:58:24.800 FAC SEX15 PGM C003 RDG 3463

LEANOUT 25 BTDC I & T 80 DEG HUM = 80 % 1 1/2 T OPEN MODE = 1.0000 NO. SCANS = 4

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.100 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	80.681	29.098	15.288	64.292	1.1739	14.293

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	89.720	5.7324	44.422	8.6062	6.9719	6.1750

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	85.603	-0.058465	0.86729	0.00000	78.590	73.406

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	78.590	54.333	127.81	2.9350	0.41261

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10844	0.10650	1.6185	584.23	584.91	3.5316	0.39286

WET CORRECTION FACTOR = 0.88854 EXHAUST MOLE. WT. = 25.698 EXHAUST DENSITY = 0.066539 EXHAUST FLOW RATE = 1088.6

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	CO2 DRY
	47637.	4.4317	10.330	5.5419	4.4657
CORRECTED CONC. TO WET BASIS			9.1787	4.9242	3.9680

EMISSION RATE	HC	NOX	CO
	1.8618	0.00057412	7.2544
	0.031030	9.5686E-06	0.12091
	0.00019393	5.9804E-08	0.00075567
MODE EMIS./STD. CYCLE %	10.207	0.0039869	1.7992

CAL. FUEL AIR RATIO = 0.10526 MEAS. FUEL AIR RATIO = 0.10844 DIFF MEAS. & CAL. F/A PERCENT = -2.9314

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	305.15	325.17	316.10	338.97

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1339.1	903.16	133.83	683.03	688.33	688.11

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 14.015
	162.82	326.56	45.204	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.101
	5.4545	575.98	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	80.295	80.681	-63.824	75.126

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	90.422	3.7165	53.577	2636.8

CELL TEMP. = 87.573 HEATER TEMP = 88.511 COOLER TEMP = 70.569

NASA-LEWIS PRELIMINARY DATA 04/15/76 CADDEII REC 04/15/76 23:00:47.660 FAC SEX15 PGM C003 RDG 3464							
LEANOUT 25 BTDC I & T 80 DEG HUM = 80 % 1 1/2 T OPEN MODE = 2.0000 NO. SCANS = 5							
ENGINE TIMING = 25.000		DEG.	BAROMETRIC PRESSURE = 29.100		RATED HP. = 160.00		HC RATIO = 2.1250
COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL	
	77.838	29.098	24.856	104.54	1.9116	14.296	
COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP	
	86.768	5.7030	44.472	12.752	11.119	6.1497	
COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT	
	83.014	-0.076108	0.80730	0.00000	86.410	73.453	
REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP		
	86.410	52.321	128.00	2.9393	1.0673		
ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10636	0.10445	1.5875	1197.8	1198.6	4.4671	1.0188
WET CORRECTION FACTOR = 0.85836		EXHAUST MOLE. WT. = 25.823		EXHAUST DENSITY = 0.066863		EXHAUST FLOW RATE = 1758.4	
MEASURED CONC.	PART PER MILLION WET			PER CENT			
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY		
	20460.	7.3457	12.205	7.2878	0.88649		
CORRECTED CONC.	TO WET BASIS						
		10.476	6.2556	0.76092			
		HC	NOX	CO			
EMISSION RATE		1.2915	0.0015371	13.374			
EMISSION MASS/MODE		0.23678	0.00028179	2.4519			
EMISSION MASS/RATED HP		0.0014799	1.7612E-06	0.015324			
MODE EMIS./STD. CYCLE %		77.889	0.11741	36.486			
CAL. FUEL AIR RATIO = 0.10535		MEAS. FUEL AIR RATIO = 0.10636		DIFF MEAS. & CAL. F/A PERCENT = -0.95232			
CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4			
	272.83	292.97	279.19	291.89			
EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SXT-1	SXT-2	
	1346.3	1077.8	74.243	517.31	633.17	631.35	
ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 9.6907			
	159.34	339.07	55.093				
DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 28.980				
	-1.0729	1209.2					
INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2			
	77.502	77.838	9.4329	75.132			
ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW			
	87.722	2.9741	53.591	2370.5			
CELL TEMP. = 84.612	HEATER TEMP = 88.442		COOLER TEMP = 70.123				

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10	NASA-LEWIS PRELIMINARY DATA		04/15/76	CADDEII	REC 04/15/76 23:01:09.319	FAC SEX15	PGM C003	RDG 3465
20	LEANOUT 25 BTDC. I & T 80 DEG HUM = 80 % I 1/2 T OPEN MODE = 6.0000				NO. SCANS = 5			
30	ENGINE TIMING = 25.000		DEG.	BAROMETRIC PRESSURE = 29.100		RATED HP. = 160.00		HC RATIO = 2.1250
40	COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL	
50		77.811	29.104	25.058	105.41	1.9239	14.298	
60	COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP	
70		86.716	5.7015	44.473	12.852	11.185	6.1455	
80	COOLING AIR	TEMP	UDEL-HOOD	DFL-HOOD	FLOW	REL-HUM	DEW-POINT	
90		82.882	-0.068359	0.83702	0.00000	86.340	73.403	
100	REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP		
110		86.340	3.2883	127.76	2.9337	0.82390		
120	ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
130		0.10611	0.10421	1.5837	1200.1	1200.0	3.4420	0.78652
140	WET CORPECTION FACTOR = 0.85795		EXHAUST MOLE. WT. = 25.839		EXHAUST DENSITY = 0.066904		EXHAUST FLOW RATE = 1771.5	
150	PART PER MILLION WET			PER CENT				
160	MEASURED CONC.	HC PPM	NOX PPM	CO DRY	CO2 DRY	CO DRY		
170		19529.	7.5187	12.252	7.3506	0.82628		
180	CORRECTED CONC. TO WET BASIS			10.511	6.3065	0.70891		
190		HC	NOX	CO				
200	EMISSION RATE	1.2421	0.0015851	13.519				
210	EMISSION MASS/MODE	0.062103	7.9253E-05	0.67594				
220	EMISSION MASS/RATED HP	0.00038815	4.9533E-07	0.0042246				
230	MODE FMIS./STD. CYCLE %	20.429	0.033022	10.059				
240	CAL. FUEL AIR RATIO = 0.10498		MEAS. FUEL AIR RATIO = 0.10611		DIFF MEAS.& CAL. F/A PERCENT = -1.0574			
250	CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4			
260		271.73	291.52	277.20	289.81			
270	EXT GAS TEMP DEG.F	FXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2	
280		1913.0	1077.3	44.195	-91.039	626.74	624.72	
290	ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 9.6622			
300		159.19	-6.7747	55.073				
310	DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.234				
320		3.5716	1203.7					
330	INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2			
340		77.484	77.811	91.219	75.135			
350	ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW			
360		87.713	2.0504	53.631	1989.0			
370	CELL TEMP. = 84.586	HEATER TEMP = 88.456		COOLER TEMP = 70.765				

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NASA-LEWIS PRELIMINARY DATA 04/15/76 CADDEII REC 04/15/76 23:07:40.658 FAC SEX15 PGM C003 RDG 3466

LEANOUT 25 BTDC I & T 80 DEG HUM = 80 % 1 1/2 T OPEN MODE = 7.0000 NO. SCANS = 4

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.100 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	78.960	29.093	15.963	67.116	1.2334	14.293

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	88.065	5.7336	44.438	8.6073	7.0957	6.1686

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	83.003	-0.047741	0.80363	0.00000	83.668	73.593

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	83.668	66.114	128.64	2.9541	0.32055

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10572	0.10382	1.5780	611.46	611.24	2.6253	0.30564

WET CORRECTION FACTOR = 0.87884 EXHAUST MOLE. WT. = 25.863 EXHAUST DENSITY = 0.066964 EXHAUST FLOW RATE = 1126.6

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	42314.	4.6380	10.315	6.1177	3.8515	
CORRECTED CONC. TO WET BASIS			9.0651	5.3764	3.3048	

	HC	NOX	CO
EMISSION RATE	1.7115	0.00062181	7.4147
EMISSION MASS/MODE	0.028524	1.0364E-05	0.12358
EMISSION MASS/RATED HP	0.00017828	6.4772E-08	0.00077236
MODE EMIS./STD. CYCLE %	9.3830	0.0043181	1.8390

CAL. FUEL AIR RATIO = 0.10361 MEAS. FUEL AIR RATIO = 0.10572 DIFF MEAS. & CAL. F/A PERCENT = -2.0008

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	222.29	245.47	221.28	235.18

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1132.1	885.23	-171.97	628.01	498.44	497.12

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE =
	152.18	274.83	47.220	13.121

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE =
	-0.0090008	611.01	29.113

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	78.530	78.960	-22.059	75.135

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	88.371	1.3064	52.744	1600.4

CELL TEMP. = 85.592 HEATER TEMP = 88.269 COOLER TEMP = 69.989

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NASA-LEWIS PRELIMINARY DATA 04/16/76 CADDELI REC 04/16/76 13:51:27.838 FAC SEX15 PGM C003 RDG 3467

LEANOUT 25 BTDC TO CL APP 80 DEG HUM=80% MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP.= 160.00 HC RATIO= 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	81.122	29.249	213.87	932.45	16.101	14.835

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	91.273	5.4245	44.356	82.053	78.557	5.9418

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	82.600	3.0582	3.9961	10065.	76.157	72.898

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	76.157	82.336	120.87	2.7757	153.29

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.084248	0.082818	1.2574	2697.1	2698.0	274.63	141.03

WET CORRECTION FACTOR = 0.83704 EXHAUST MOLE. WT. = 27.347 EXHAUST DENSITY = 0.070809 EXHAUST FLOW RATE = 14505.

MEASURED CONC.	PART PER MILLION WET		PER CENT	
	HC PPM	NOX PPM	CO DRY	O2 DRY
	1683.1	149.64	8.2568	10.005
CORRECTED CONC. TO WET BASIS			CO DRY	O2 DRY
			8.9196	0.040734

EMISSION RATE	HC	NOX	CO
	0.87645	0.25831	72.870
EMISSION MASS/MODE	0.0043822	0.0012915	0.36435
EMISSION MASS/RATED HP	2.7389E-05	8.0721E-06	0.0022772
MODE EMISS./STD. CYCLE %	1.4415	0.53814	5.4219

CAL. FUEL AIR RATIO = 0.085892 MEAS. FUEL AIR RATIO = 0.084248 DIFF MEAS. & CAL. F/A PERCENT = 1.9524

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	396.48	419.54	389.78	404.74

EXT GAS TEMP DEG.F	EXT-1	EXT-2	FXT-3	FXT-4	SEXT-1	SEXT-2
	1108.0	1450.1	-454.00	1072.0	1289.5	1282.1

ENGINE OIL	FOILT	SOILT	OILT	MANIFOLD PRESSURE = 28.307
	171.43	220.79	73.947	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.422
	278.84	2547.0	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	80.866	81.122	-30.338	76.534

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	91.230	2.0144	54.041	1966.2

CELL TEMP. = 90.629 HEATER TEMP = 91.732 COOLER TEMP = 71.568

NASA-LEWIS PRELIMINARY DATA 04/16/76 CADDEII REC 04/16/76 13:55:19.289 FAC SEX15 PGM C003 RDG 3468

LEANOUT 25 BTDC TO CL APP 80 DEG HUM=80% MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARGMETRIC PRESSURE = 29.230 RATED ~~HP~~ = 160.00 HC RATIO= 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	78.863	29.255	190.23	822.20	14.170	14.711

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	89.530	5.4764	44.401	70.873	68.320	6.0888

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	80.293	3.0521	3.8893	10054.	81.156	72.593

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	81.156	51.923	120.64	2.7703	127.18

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.083094	0.081686	1.2402	2437.1	2437.4	259.69	120.51

WET CORRECTION FACTOR = 0.83067 EXHAUST MJLE. WT. = 27.436 EXHAUST DENSITY = 0.071040 EXHAUST FLOW RATE = 12735.

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1852.5	338.36	8.4885	9.8922	0.081188
CORRECTED CONC. TO WET BASIS			7.0512	8.2172	0.067440

EMISSION RATE	HC	NOX	CO
EMISSION MASS/MODE	0.84693	0.51278	65.192
EMISSION MASS/RATED HP	0.070577	0.242731	5.4327
MODE EMIS./STD. CYCLE %	0.00044111	0.00026707	0.033954
	23.216	17.805	80.843

CAL. FUEL AIR RATIO = 0.086423 MEAS. FUEL AIR RATIO = 0.083094 DIFF MEAS. & CAL. F/A PERCENT = 4.0072

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	349.91	378.51	404.61	411.02

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	455.20	1294.2	121.65	1709.6	1255.9	1252.5

ENGINE OIL	FILT	SOILT	OILP	MANIFOLD PRESSURE = 27.826
	186.02	198.00	73.699	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.283
	251.75	2350.4	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	78.572	78.863	-67.856	76.718

ORIFICE AIR	TEMP	DELTA P	ORIF. FLOW
	88.806	1.0159	54.120 1413.7

CIL TEMP. = 88.334 HEATFR TEMP = 90.530 COOLER TEMP = 70.836

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NASA-LEW:S PRELIMINARY DATA 04/16/76 CADDEII REC 04/16/76 14:01:27.825 FAC SEX15 PGM C003 RDG 3469
 LEANOUT 25 BTQG TO CL APP 80 DEG HUM=80% MODE = 5.0000 NO. SCANS = 5
 ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250
 COMB. AIR TEMP 79.764 PRESS 29.222 CEM 112.88 DRY FLOW 480.59 VAPOR FLOW 8.2241 PRESS TOTAL 14.486
 COMB. FUEL TEMP 91.987 PRESS 5.5914 DENSITY 44.338 TURBO FLOW 44.165 FLOW TRON 41.902 FPIP 6.1158
 COOLING AIR TEMP 81.051 UDEL-HOOD 3.0164 DEL-HOOD 3.8981 FLOW 9938.7 REL-HUM 77.056 DEW-POINT 71.933
 PEL-HUM 1 77.056 2 56.616 HUMIDITY 119.79 % H2O VAPOR 2.7508 CORRECTED HP 69.346
 ENG. COND. F/A DRY 0.087190 F/A WET 0.085723 EQU. RATIO 1.3013 RPM-1 2350.4 RPM-2 2351.3 TORQUE 146.01 BHP 65.344
 WET CORRECTION FACTOR = 0.84427 EXHAUST MJLF. WT. = 27.124 EXHAUST DENSITY = 0.070231 EXHAUST FLOW RATE = 7556.7
 MEASURED CONC. PART PER MILLION WET PER CENT
 HC PPM 2029.0 NOX PPM 127.23 CO DRY 8.8470 CO2 DRY 9.6366 O2 DRY 0.13375
 CORRECTED CONC. TO WET BASIS 7.4693 8.1359 0.11292
 EMISSION RATE HC 0.55044 NOX 0.11441 CO 40.977
 EMISSION MASS/MODE 0.055044 0.311441 4.0977
 EMISSION MASS/RATED HP 0.00034402 7.1508E-05 0.025611
 MODE EMIS./STD. CYCLE % 13.106 4.7672 60.978
 CAL. FUEL AIR RATIO = 0.087326 MEAS. FUEL AIR RATIO = 0.087190 DIFF MEAS. & CAL. F/A PERCENT = 0.15655
 CYL TEMP DEG.F CYL-1 322.81 CYL-2 333.90 CYL-3 332.01 CYL-4 327.83
 EXT GAS TEMP DEG.F EXT-1 1055.4 EXT-2 1348.5 EXT-3 -146.81 EXT-4 1512.7 SEXT-1 1098.1 SEXT-2 1098.5
 ENGINE OIL EOILT 188.11 SOILT 149.83 OILP 72.579 MANIFOLD PRESSURE = 19.319
 DYAO COND. TORQUE 139.04 RPM 2301.2 CYL. BACK PRESSURE = 29.296
 INDUCTION AIR IAIRT1 79.464 IAIRT2 79.764 TAIRT1 -46.297 TAIRT2 76.659
 ORIFICE AIR TEMP 89.408 DELTAP 2.0112 ORFP 54.280 FLOW 1967.9
 CELL TEMP. = 89.111 HEATER TEMP = 90.053 COOLER TEMP = 71.460

7.9%

NASA-LEWIS PRELIMINARY DATA 04/16/76 CADDEII REC 04/16/76 14:07:32.542 FAC SEX15 PGM C003 RDG 3470

LEANOUT. 25 BTDC TO CL APP 80 DEG HUM=80% MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO= 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	80.020	29.213	213.12	930.08	15.944	14.840

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	91.491	5.4428	44.350	80.412	77.417	6.0330

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	82.521	3.0858	3.9734	10116.	78.415	72.698

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	78.415	38.252	120.00	2.7556	152.88

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.083236	0.081833	1.2423	2700.3	2700.8	273.54	140.64

WET CORRECTION FACTOR = 0.83393 EXHAUST MOLE. WT. = 27.425 EXHAUST DENSITY = 0.071011 EXHAUST FLOW RATE = 14412.

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1643.2	154.48	8.1863	10.056	0.049845
CORRECTED CONC. TO WET BASIS			6.8268	8.3884	0.041567

	HC	NOX	CO
EMISSION RATE	0.85018	0.26494	71.432
EMISSION MASS/MODE	0.0042509	0.0013247	0.35716
EMISSION MASS/RATED HP	2.6568E-05	8.2793E-06	0.0022322
MODE EMISS./STD. CYCLE ?	1.3983	0.55195	5.3149

CAL. FUEL AIR RATIO = 0.085652 MEAS. FUEL AIR RATIO = 0.083236 DIFF MEAS. & CAL. F/A PERCENT = 2.9025

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	400.82	429.04	396.00	410.80

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	646.90	1453.8	-263.71	1541.6	1311.8	1306.7

ENGINE OIL	EQILT	SOILT	OILP	MANIFOLD PRESSURE = 28.312
	189.02	210.46	74.227	

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.380
	279.48	2638.9	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	79.711	80.020	-130.22	76.303

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	90.167	2.0205	53.881	1970.9

CELL TEMP. = 91.491 HEATER TEMP. = 89.804 COOLER TEMP. = 70.712

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NASA-LEWIS PRELIMINARY DATA 04/16/76 CADDEII RFC 04/16/76 14:11:05.432 FAC SEX15 PGM C003 RDG 3471

LEANOUT 25 BTDC TO CL APP 80 DEG HUM=80% MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	80.566	29.206	189.97	821.82	14.107	14.708

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	92.387	5.5208	44.327	71.485	69.256	6.0372

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	82.908	3.0496	3.8854	10050.	76.442	72.473

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	76.442	39.038	120.16	2.7592	126.72

ENG. COND.	F/A DRY	F/A WFT	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.084271	0.082849	1.2578	2431.7	2431.0	258.89	119.87

WET CORRECTION FACTOR = 0.83419 EXHAUST MOLE. WT. = 27.345 EXHAUST DENSITY = 0.070804 EXHAUST FLOW RATE = 12784.

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1853.3	325.69	8.6340	9.8518	0.091209
CORRECTED CONC. TO WET BASIS			7.2224	8.2183	0.076085

	HC	NOX	CO
EMISSION RATE	0.85058	0.49549	66.848
EMISSION MASS/MODE	0.070882	0.041291	5.5707
EMISSION MASS/RATED HP	0.00044301	0.00025807	0.034817
MODE EMIS./STD. CYCLE %	23.316	17.204	82.897

CAL. FUEL AIR RATIO = 0.086695 MEAS. FUEL AIR RATIO = 0.084271 DIFF MEAS. & CAL. F/A PERCENT = 2.8757

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	354.57	383.67	409.14	414.43

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	771.10	1292.2	94.681	1765.9	1261.0	1258.9

ENGINE OIL	OILT	SOILT	OILP	MANIFOLD PRESSURE =
	189.37	160.49	72.911	27.849

DYND COND.	TORQUE	RPM	CYL BACK PRESSURE =
	250.12	2357.5	29.477

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	80.222	80.566	-52.248	76.197

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	90.794	2.0347	54.275	1976.3

CELL TEMP. = 92.196 HEATER TEMP = 89.756 COOLER TEMP = 71.746

NASA-LEWIS PRELIMINARY DATA 04/16/76 CADDEII REC 04/16/76 14:16:17.222 FAC SEX15 PGM C003 RDG 3472

LEANOUT 25 BTDC TO CL APP 80 DEG HUM=80% MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	81.518	29.233	112.48	478.88	8.2439	14.480

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	94.394	5.6208	44.276	44.033	41.764	6.0696

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	83.357	2.9915	3.9532	9942.4	73.166	72.093

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	73.166	66.263	120.50	2.7672	69.234

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.087212	0.085736	1.3017	2350.6	2351.8	145.44	65.092

WET CORRECTION FACTOR = 0.84357 EXHAUST MOLE. WT. = 27.122 EXHAUST DENSITY = 0.070227 EXHAUST FLOW RATE = 7531.2

MEASURED CONC.	PART PER MILLION WET	PER CENT			
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1928.8	108.67	8.8449	9.7013	0.088289
CORRECTED CONC. TO WET BASIS			7.4513	8.1837	0.074478

	HC	NOX	CO
EMISSION RATE	0.52149	0.097392	40.796
EMISSION MASS/MODE	0.052149	0.0097392	4.0796
EMISSION MASS/PATFD HP	0.00032593	6.0870E-05	0.025497
MODE EMIS./STD. CYCLE %	17.154	4.0580	60.708

CAL. FUEL AIR RATIO = 0.087342 MEAS. FUEL AIR RATIO = 0.087212 DIFF MEAS. & CAL. F/A PERCENT = 0.14933

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	337.45	355.99	355.64	362.84

EXT GAS TEMP DEG.F	FXT-1	EXT-2	FXT-3	EXT-4	SEXT-1	SEXT-2
	1488.3	1349.4	88.302	1601.5	1143.2	1144.9

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE =
	188.27	201.92	72.479	19.328

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE =
	151.20	2314.5	29.271

INDUCTION AIR	IAIPT1	IAIPT2	TAIRT1	TAIPT2
	81.192	81.518	-56.212	76.354

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	91.639	2.9917	54.205	2368.8

CELL TEMP. = 92.570 HEATER TEMP = 89.673 COOLFR TEMP = 71.220

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NASA-LEWIS PRELIMINARY DATA 04/16/76 CADDEII RFC 04/16/76 14:25:05.834 FAC SEX15 PGM C003 RDG 3473

LEANOUT 25 BTDC TO CL APP 80 DEG. HUM=80% MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO= 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	78.881	29.242	212.78	928.87	16.136	14.843

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	91.125	5.4593	44.360	79.311	75.427	6.0534

COOLING AIR	TEMP	WDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	81.844	3.0117	3.8923	9980.0	82.473	73.088

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	82.473	-40.486	121.60	2.7924	152.31

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.081204	0.079817	1.2120	2696.8	2697.8	273.43	140.40

WET CORRECTION FACTOR = 0.83115 EXHAUST MOLE. WT. = 27.585 EXHAUST DENSITY = 0.071423 EXHAUST FLOW RATE = 14287.

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1535.6	166.26	7.5209	10.451	0.031183
CORRECTED CONC. TO WET BASIS					
			5.2510	8.6864	0.025918

EMISSION RATE	HC	NOX	CO
	0.78759	0.28266	64.838
	0.0039380	0.0014133	0.32419
	2.4612E-05	8.8332E-06	0.0020262
EMISSION MASS/RATED HP			
MODE FMS./STD. CYCLE %	1.2954	0.58888	4.8242

CAL. FUEL AIR RATIO = 0.083957 MEAS. FUEL AIR RATIO = 0.081204 DIFF MEAS. & CAL. F/A PERCENT = 3.3908

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	409.53	437.30	404.21	421.38

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1252.8	1467.4	187.85	1692.7	1340.6	1337.0

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.390
	189.46	214.40	73.523	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.379
	278.22	2611.0	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	78.572	78.881	-41.332	76.068

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	89.739	2.0552	53.258	1987.5

CFL TEMP. = 92.231 HEATER TEMP = 91.138 COOLER TEMP = 71.086

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NASA-LELIS PRELIMINARY DATA 04/16/76 CADDEII REC 04/16/76 14:29:21.668 FAC SEX15 PGM C003 RDG 3474

LEANOUT 25 BTDC TO CL APP 80 DEG. HUM=80% MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CEM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	79.720	29.172	187.45	811.47	14.092	14.721

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	92.083	5.5217	44.335	67.857	66.058	6.0216

COOLING AIR	TEMP	INLET-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	82.293	3.0504	3.9219	10051.	79.550	72.833

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	79.550	42.786	121.56	2.7914	125.39

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.081405	0.080015	1.2150	2428.3	2428.1	255.63	118.66

WFT CORRECTION FACTOR = 0.83211 EXHAUST MOLE. WT. = 27.559 EXHAUST DENSITY = 0.071382 EXHAUST FLOW RATE = 12490.

MEASURED CONC.	PART PER MILLION WFT			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1738.2	436.76	7.5542	10.474	0.091989
CORRECTED CONC. TO WET BASIS			6.2860	8.7155	0.076545

	HC	NOX	CO
EMISSION RATE	0.77943	0.64920	57.003
EMISSION MASS/MODE	0.064952	0.054100	4.7502
EMISSION MASS/RATED HP	0.00040595	0.00033813	0.029689
MODE EMIS./STD. CYCLE %	21.366	22.542	70.688

CAL. FUEL AIR RATIO = 0.083867 MEAS. FUEL AIR RATIO = 0.081405 DIFF MEAS. & CAL. F/A PERCENT = 3.0247

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	359.74	383.05	411.54	414.18

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1626.6	1306.3	342.32	1881.7	1283.0	1281.8

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 27.727
	188.76	250.79	72.783	

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.465
	240.27	2366.5	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	79.367	79.720	-79.218	76.149

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	89.980	2.0497	52.130	1986.4

CELL TEMP. = 92.213 HEATER TEMP = 89.929 COOLER TEMP = 73.047

ORIGINAL PAGE IS
OF POOR QUALITY

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NASA-LEWIS PRELIMINARY DATA 04/16/76 CADDEII REC 04/16/76 14:32:49.665 FAC SEX15 PGM C003 RDG 3475

LEANOUT 25 BTDC TO CL APP 80 DEG. HUM=80% MDE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	80.610	29.227	113.09	481.68	8.1581	14.484

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	94.064	5.6540	44.284	43.102	40.744	6.1044

COOLING AIR	TEMP	INLET-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	82.495	2.9740	3.7611	9909.9	74.195	71.633

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	74.195	73.827	118.56	2.7225	68.758

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.084588	0.083179	1.2625	2357.4	2357.0	144.23	64.739

WET CORRECTION FACTOR = 0.84070 EXHAUST MOLE. WT. = 27.321 EXHAUST DENSITY = 0.070741 EXHAUST FLOW RATE = 7500.3

MEASURED CONC.	PART PER MILLION WET		PER CFMT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1857.6	143.84	8.0644	10.192	0.10463
CORRECTED CONC. TO WET BASIS			6.7797	8.5584	0.087963

	HC	NOX	CO
EMISSION RATE	0.50017	0.12839	36.917
EMISSION MASS/MODE	0.050017	0.012839	3.6917
EMISSION MASS/RATED HP	0.00031261	8.0241E-05	0.023073
MODE EMIS./STD. CYCLE %	16.453	5.3494	54.936

CAL. FUEL AIR RATIO = 0.085143 MEAS. FUEL AIR RATIO = 0.084588 DIFF MEAS. & CAL. F/A PERCENT = 0.65708

CYL TEMP. DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	332.34	344.23	345.79	344.94

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1422.9	1365.6	337.69	1665.6	1145.4	1147.2

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE =
	187.82	204.58	72.287	19.415

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE =
	143.86	2296.1	29.230

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	80.302	80.610	-42.452	76.498

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	91.212	1.9985	56.487	1958.8

CELL TEMP. = 92.370 HEATER TEMP = 90.274 COOLER TEMP = 73.902

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NASA-LEWIS PRELIMINARY DATA 04/16/76 CADDEII REC 04/16/76 14:38:47.496 FAC SEX15 PGM C003 RDG 3476

LEANOUT 25 BTQC TO CL APP 80 DEG. HUN-30% MODJ = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	80.857	29.196	213.09	* 29.47	16.395	14.840

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	93.257	5.4638	44.305	80.491	77.414	6.0372

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	83.875	3.0604	3.8782	10069.	78.448	73.523

REL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP
	78.448	-18.102	123.48	2.8354 153.36

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.083288	0.081844	1.2431	2701.6	2701.8	273.59	140.74

WET CORRECTION FACTOR = 0.84033 EXHAUST MOLE. WT. = 27.421 EXHAUST DENSITY = 0.071001 EXHAUST FLOW RATE = 14412.

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1535.2	190.93	7.4413	10.563	0.068367
CORRECTED CONC. TO WET BASIS			6.2532	8.8768	0.057451

	HC	NOX	CO
EMISSION RATE	0.79429	0.32745	65.429
EMISSION MASS/MODE	0.0039714	0.0016373	0.32714
EMISSION MASS/RATED HP	2.4821E-05	1.0233E-05	0.0020446
MODE EMIS./STD. CYCLE %	1.3064	0.58220	4.8682

CAL. FUEL AIR RATIO = 0.083523 MEAS. FUEL AIR RATIO = 0.083288 DIFF MEAS. & CAL. F/A PERCENT = 0.28251

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	439.03	427.69	404.98	417.67

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	422.61	1468.5	124.87	1797.9	1330.9	1326.5

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.343
	189.52	219.09	73.419	

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.406
	274.63	2639.9	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	80.513	80.857	-72.176	76.167

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	91.395	2.0313	51.365	1973.6

CELL TEMP. = 94.203 HEATER TEMP = 89.777 COOLER TEMP = 71.755

NASA-LEWIS PRELIMINARY DATA 04/16/76 CADDEII REC 04/16/76 14:41:41.951 FAC SEX15 PGM C003 RDG 3477

LEANOUT 25 BTDC TO CL APP 80 DEG. HUM=80% MCDE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATE HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	80.337	29.234	188.30	812.79	14.602	14.689

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	93.013	5.4938	44.311	67.824	65.869	6.0825

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	83.084	3.0322	3.8270	10017.	80.396	73.748

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	80.396	54.425	125.75	2.8877	126.65

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.081043	0.079610	1.2095	2427.7	2428.9	258.88	119.67

WET CORRECTION FACTOR = 0.82752 EXHAUST MOLE. WT. = 27.598 EXHAUST DENSITY = 0.071457 EXHAUST FLOW RATE = 12500.

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	1740.2	436.90	7.7640	10.441	0.090549	
CORRECTED CONC. TO WET BASIS			6.4249	8.6405	0.074931	

	HC	NOX	CO
EMISSION RATE	0.78094	0.54993	58.309
EMISSION MASS/MODE	0.065079	0.054161	4.8591
EMISSION MASS/RATED HP	0.00040674	0.00033850	0.030369
MODE EMIS./STD. CYCLE %	21.407	22.567	72.308

CAL. FUEL AIR RATIO = 0.084285 MEAS. FUEL AIR RATIO = 0.081040 DIFF MEAS. & CAL. F/A PERCENT = 4.0041

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	363.60	390.94	410.55	414.74

EXT GAS TEMP DEG.F	FXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	909.49	1306.4	402.78	1854.6	1279.0	1277.0

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 27.655
	188.99	215.28	72.807	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.389
	263.49	2363.6	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	79.993	80.337	-32.022	76.022

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	92.344	3.0082	51.405	2373.6

CELL TEMP. = 93.682 HEATER TEMP = 92.678 COOLER TEMP = 73.083

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NASA-LEWIS PRELIMINARY DATA 04/16/76 CADDETT REC 04/16/76 14:44:40.951 FAC SEX15 PGM C003 RDG 3+78

LEANOUT 25 RTDC TO CL APP 80 DEG. HUM=80% MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	78.589	29.235	113.10	481.82	8.3712	14.485

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	92.396	5.6094	44.327	42.868	40.810	6.1155

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	80.619	2.9508	3.7213	9866.4	61.270	72.368

RFL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	81.270	73.405	121.62	2.7927	70.323

ENG. COND.	F/A DRY	F/A WFT	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.084699	0.083253	1.2642	2357.0	2356.7	147.91	66.336

WET CORRECTION FACTOR = 0.84010 EXHAUST MOLE. WT. = 27.313 EXHAUST DENSITY = 0.070719 EXHAUST FLOW RATE = 7508.7

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1869.5	142.38	8.0878	10.229	0.099250
CORRECTED CONC. TO WET BASIS			6.7345	8.5932	0.083379

EMISSION RATE	HC	NOX	CO
	0.50394	0.12722	37.039
	0.050394	0.012722	3.7039
	0.00031496	7.9515E-05	0.023149
EMISSION MASS/MODE			
0.00031496	7.9515E-05	0.023149	
EMISSION MASS/RATED HP			
0.00031496	7.9515E-05	0.023149	
MODE EMISS./STD. CYCLE %	16.577	5.3010	55.118

CAL. FUEL AIR RATIO = 0.085159 MEAS. FUEL AIR RATIO = 0.084699 DIFF MEAS. & CAL. F/A PERCENT = 0.54327

CYL TEMP. DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	333.57	345.57	347.09	349.15

EXT GAS TEMP. DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	728.40	1367.4	298.69	1720.6	1148.5	1150.0

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 19.457
	189.18	158.86	72.499	

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.216
	140.70	2306.9	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	79.236	78.589	-4.1260	76.084

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	89.390	3.0186	53.249	2383.8

CELL TEMP. = 91.160 HEATER TEMP = 90.226 COOLER TEMP = 72.396

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NASA-LFWIS PRELIMINARY DATA 05/05/76 CADDFTT REC 04/16/76 14:55:15.476 FAC SEX15 PGM C003 RDG 3479

LEANOUT 25 BTDC TO CL APP 80 DEG. HUM= 80% MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO= 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	79.437	29.245	212.72	928.62	16.022	14.834

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	92.849	5.4746	44.316	75.353	72.982	6.0102

COOLING AIR	TEMP	WEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	82.600	3.103P	4.0016	10149.	80.396	72.873

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	80.396	-60.390	120.77	2.7734	153.77

ENG. COND.	F/A DRY	F/A WET	EOU. RATIO	RPM-1	RPM-2	TORQUE	RHP
	0.078592	0.077259	1.1730	2703.2	2705.2	275.35	141.72

WET CORRECTION FACTOR = 0.83215 EXHAUST MOLE. WT. = 27.794 EXHAUST DENSITY = 0.071965 EXHAUST FLOW RATE = 14140.

MEASURED CONC.	PART PER MILLION WFT			PPM CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	NO2 DRY	
	1414.3	306.82	6.2603	11.276	0.075207	
CORRECTED CONC. TO WET BASIS			5.2095	9.3829	0.062584	

	HC	NOX	CO
EMISSION RATE	0.71798	0.51629	53.481
EMISSION MASS/MODE	0.0035899	0.0025815	0.26740
EMISSION MASS/RATED HP	2.2437E-05	1.6134E-05	0.0016713
MODE EMIS./STD. CYCLE *	1.1809	1.0756	3.9792

CAL. FUEL AIR RATIO = 0.080566 MEAS. FUEL AIR RATIO = 0.078592 DIFF MEAS. & CAL. F/A PERCENT = 2.5117

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	412.95	430.60	414.65	425.23

EXT GAS TEMP DEG. F	FXT-1	FXT-2	FXT-3	FXT-4	SFXT-1	SEXT-2
	1473.3	1488.1	229.31	1922.8	1354.6	1349.6

ENGINE OIL	EQILT	SOILT	OILP	MANIFOLD PRESSURE = 28.343
	158.21	153.82	73.795	

DYND COND.	TORQUE	RPM	CYL. PACK PRESSURE = 29.454
	279.51	2633.2	

INDUCTION AIR	IAIPT1	IAIPT2	TAIRT1	TAIRT2
	79.093	79.437	-63.935	75.857

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	90.803	0.060906	53.304	232.76

CYLL TEMP. = 93.578 HEATER TEMP = 90.101 COOLER TEMP = 72.281

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NASA-1 FWIS PRELIMINARY DATA 05/05/76 CADDEIT REC 04/16/76 14:57:57.204 FAC SEX15 PGM C003 RDG 3480

LEANOUT 25 BTDC TO CL APP 80 DEG. HUM= 80% MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. PARAMETRIC PPESSURE = 29.230 RATED HP. = 160.00 HC RATIO= 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	79.817	29.232	180.40	815.83	14.196	14.715

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	93.491	5.5136	44.299	64.944	63.672	6.0609

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	82.556	3.0994	3.9377	10141.	79.417	72.878

RFL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	79.417	36.738	121.80	2.7970	127.81

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.078046	0.076711	1.1649	2435.3	2435.6	260.85	120.96

WET CORRECTION FACTOR = 0.82735 EXHAUST MOLE. WT. = 27.838 EXHAUST DENSITY = 0.072079 EXHAUST FLOW RATE = 12398.

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	1615.6	645.08	6.5490	11.123	0.12521	
CORRECTED CONC. TO WET BASIS			5.4183	9.2025	0.10359	

	HC	NOX	CO
EMISSION RATE	0.71911	0.95179	48.773
EMISSION MASS/MODE	0.059926	0.079316	4.0644
EMISSION MASS/RATED HP	0.00037454	0.00049572	0.025407
MODE EMIS./STD. CYCLE %	19.712	33.048	60.482

CAL. FUEL AIR RATIO = 0.081165 MEAS. FUEL AIR RATIO = 0.078046 DIFF MEAS. & CAL. F/A PERCENT = 3.9963

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	376.04	399.29	415.18	419.30

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	959.93	1331.4	523.53	1959.8	1303.1	1301.0

ENGINE OIL	OILT	SOILT	OILP	MANIFOLD PRESSURE = 27.872
	188.32	130.05	72.571	

DYMO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.379
	248.12	2362.4	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	79.420	79.817	-44.331	75.717

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	91.274	0.055606	52.726	215.75

CFL TAMP. = 93.503 HEATFP TEMP = 90.129 COOLFR TAMP = 72.949

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NASA-LEWIS PRELIMINARY DATA 05/05/76 CADDEII REC 04/16/76 15:00:54.793 FAC SFX15 PGM C003 RDG 3481

LEANOUT 25 RTDC TO CL APP 80 DEG. HUM= 80% MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO= 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	83.822	29.225	112.11	476.72	8.5426	14.480

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	95.374	5.6754	44.251	42.360	39.535	6.0984

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	83.014	3.0216	3.8869	9998.4	77.816	73.248

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	77.816	75.375	125.44	2.8805	69.471

ENG. COND.	F/A DRY	F/A WET	EDU. RATIO	RPM-1	RPM-2	TORQUE	RHP
	0.082932	0.081472	1.2378	2351.7	2352.4	145.79	65.280

WET CORRECTION FACTOR = 0.84246 EXHAUST MOLE. WT. = 27.449 EXHAUST DENSITY = 0.071072 EXHAUST FLOW RATE = 7384.0

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1754.5	223.70	6.9902	10.888	0.11103
CORRECTED CONC. TO WET BASIS			5.8890	9.1724	0.093539

	HC	NOX	CO
EMISSION RATE	0.46508	0.19656	31.569
EMISSION MASS/MODE	0.046508	0.019656	3.1569
EMISSION MASS/RATED HP	0.00029068	0.00012285	0.019731
MODE EMTS./STD. CYCLE %	15.299	8.1902	46.978

CAL. FUEL AIR RATIO = 0.082304 MEAS. FUEL AIR RATIO = 0.082932 DIFF MEAS. & CAL. F/A PERCENT = -0.75631

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	342.52	352.43	354.40	357.12

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1326.5	1389.5	465.15	1779.5	1165.2	1166.9

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE =
	187.93	175.71	72.103	19.362

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE =
	139.32	2327.8	29.353

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	80.461	80.822	16.155	76.379

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	89.739	2.8642	38.945	2362.4

CELL TEMP. = 94.185 HEATER TEMP = 89.631 COOLER TEMP = 70.399

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NASA-LEWIS PRELIMINARY DATA 05/05/76 CADDEII RFC 04/16/76 15:05:52.414 FAC SFX15 PG4 C003 RDG 3482

LEANOUT 25 RTDC TO CL APP RO DEG. HUM= 80% MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.90G DEG. PARAMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO= 2.1250

COMP. AIR TEMP PRESS CFM DRY FLOW VAPOR FLOW PRESS TOTAL
80.522 29.239 212.77 929.10 15.949 14.827

COMP. FUEL TEMP PRESS DENSITY TURBO FLOW FLOW TRON FPIP
94.776 5.4884 44.266 75.772 72.874 6.0489

COOLING AIR TEMP UDEL-HOOD DEL-HOOD FLOW REL-HUM DEW-POINT
83.726 3.061R 3.9134 10072. 77.177 72.713

REL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP
77.177 -20.14C 120.16 2.7594 155.43

ENG. COND. F/A DRY F/A WET EQU. RATIO RPM-1 RPM-2 TORQUE RHP
0.078435 0.077111 1.1707 2707.7 2707.7 277.54 143.09

WET CORRECTION FACTOR = 0.83222 EXHAUST MOLE WT. = 27.806 EXHAUST DENSITY = 0.071998 EXHAUST FLOW RATE = 14138.

PART PER MILLION WGT PFR CFNT
MEASURED CONC. HC PPM NOX PPM CO DRY CO2 DRY
1399.4 326.03 6.2204 11.316 0.098750
CORRECTED CONC. TO WGT BASIS 5.1768 9.4176 0.082182

HC NOX CO
EMISSION RATE 0.71031 0.54854 53.137
EMISSION MASS/MODE 0.0035515 0.0027427 0.26568
EMISSION MASS/PATED HP 2.2197E-05 1.7142E-05 0.0016605
MODE EMIS./STG. CYCLE % 1.1683 1.1428 3.9536

CAL. FUEL AIR RATIO = 0.080363 MEAS. FUEL AIR RATIO = 0.078435 DIFF MEAS. & CAL. F/A PERCENT = 2.4582

CYL TEMP DEG. F CYL-1 CYL-2 CYL-3 CYL-4
414.13 429.50 414.75 422.44

EX. GAS TEMP DEG. F EXT-1 EXT-2 EXT-3 EXT-4 SFXT-1 SEXT-2
1345.5 1486.6 211.26 1852.0 1352.6 1347.7

ENGINE OIL FOILT SOILT OILP MANIFOLD PRESSURE = 28.262
189.15 217.41 74.087

DYMO COND. TORQUE RPM CYL. RACK PRESSURE = 29.419
273.54 2679.3

INDUCTION AIR IAIRT1 IAIRT2 TAIRT1 TAIRT2
80.178 80.522 -44.810 75.506

ORIFICE AIR TEMP DELTAP DRFP FLOW
91.743 2.0134 54.086 1964.8

CELL TEMP. = 95.512 HEATFP TEMP = 90.799 COOLER TEMP = 71.541

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NASA-LEWIS PRELIMINARY DATA 05/05/76 CADDEII REC 04/16/76 15:10:09.881 FAC SEX15 PGM C003 R0G 3483

LEANCUT 25 BTDC TO CL APP 80 DEG. HUM= 803 MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	77.997	29.207	188.11	814.75	14.098	14.713

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIF
	92.283	5.5364	44.330	65.131	63.540	6.0257

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	80.840	3.0299	3.8691	10013.	83.842	72.713

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	83.842	47.157	121.13	2.7815	127.68

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.077986	0.076660	1.1640	2434.9	2435.0	261.18	121.09

WET CORRECTION FACTOR = 0.82755 EXHAUST MOLE. WT. = 27.843 EXHAUST DENSITY = 0.072092 EXHAUST FLOW RATE = 12378.

MEASURED CONC.	PART PER MILLION WET	CO DRY	PER CENT
	HC PPM	NOX PPM	CO2 DRY
	1584.7	684.21	6.5033
CORRECTED CONC. TO WET BASIS		5.3818	9.2672
			0.13199
			0.10923

EMISSION RATE	HC	NOX	CO
	0.70421	1.0079	48.366
EMISSION MASS/MODE	0.058684	0.083989	4.0305
EMISSION MASS/RATED HP	0.0003667*	0.00052493	0.025190
MODE EMIS./STD. CYCLE %	19.304	34.996	59.977

CAL. FUEL AIR RATIO = 0.080964 MEAS. FUEL AIR RATIO = 0.077986 DIFF MEAS. & CAL. F/A PERCENT = 3.8186

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	370.78	391.90	414.71	418.29

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	601.48	1331.8	475.01	1938.2	1303.6	1301.2

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 27.794
	188.32	334.90	72.735	

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.429
	271.28	2356.6	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	77.608	77.997	-11.388	75.614

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	90.036	3.9694	54.579	2725.8

CELL TEMP. = 92.926 HEATER TEMP = 92.554 COOLER TEMP = 71.924

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NASA-LEWIS PRELIMINARY DATA 05/05/76 CADDEII REC 04/16/76 15:12:59.063 FAC SEX15 PGM C003 RDG 3484

LEANOUT 25 RTDC TO CL APP 80 DEG. HUM= 80% MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO= 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	79.084	29.217	112.03	476.98	8.2074	14.482

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	93.873	5.6307	44.289	41.867	39.445	6.0894

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	81.192	2.9635	3.9507	9890.3	79.194	72.083

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	79.194	62.064	120.45	2.7659	69.446

ENG. COND.	F/A DRY	F/A WET	EQV. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.082697	0.081298	1.2343	2354.4	2355.1	146.06	65.478

WET CORRECTION FACTOR = 0.84264 EXHAUST MOLE. WT. = 27.467 EXHAUST DENSITY = 0.071120 EXHAUST FLOW RATE = 7376.8

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	1693.5	221.60	6.9781	10.969	0.13659	
CORRECTED CONC. TO WET BASIS			5.8901	9.2426	0.11510	

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	HC	NOX	CO
EMISSION RATE	0.44847	0.19453	31.491
EMISSION MASS/MODE	0.044847	0.019453	3.1491
EMISSION MASS/RATED HP	0.00029030	0.00012158	0.019682
MODE EMIS./STD. CYCLE %	14.752	8.1054	46.861

CAL. FUEL AIR RATIO = 0.082064 MEAS. FUEL AIR RATIO = 0.082697 DIFF MEAS. & CAL. F/A PERCENT = -0.76451

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	344.30	353.31	358.85	361.69

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1372.5	1393.2	494.40	1879.2	1171.8	1173.9

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE =
	187.66	220.09	72.007	19.393

DYMO COND.	TORQUE	RPM	CYL. BACK PRESSURE =
	155.90	2327.6	29.340

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	78.784	79.084	46.250	76.421

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	89.382	2.0169	54.289	1970.6

CELL TEMP. = 92.692 HEATER TEMP = 92.540 COOLER TEMP = 74.810

NASA-LEWIS PRELIMINARY DATA 04/16/76 CADDEII REC 04/16/76 15:17:50.181 FAC SEX15 PGM C003 RDG 3485

LEANOUT 25 BTDC TO CL APP 80 DEG HUM = 80 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	79.163	29.221	213.02	929.42	16.078	14.834

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	93.300	5.5106	44.304	74.865	71.353	6.0825

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	82.354	3.0784	3.9529	10102.	81.328	72.948

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	81.328	-18.300	121.09	2.7807	154.22

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.076772	0.075466	1.1458	2710.0	2710.2	275.23	142.02

WET CORRECTION FACTOR = 0.83588 EXHAUST MOLE. WT. = 27.942 EXHAUST DENSITY = 0.072350 EXHAUST FLOW RATE = 14054.

MEASURED CONC.	PART PER MILLION WET		CO DRY	PFR CFNT	CO2 DRY	O2 DRY
	HC PPM	NOX PPM				
	1298.4	479.45	5.0851	11.964	0.10681	
CORRECTED CONC. TO WET BASIS			4.2505	10.001	0.089281	

EMISSION RATE	HC	NOX	CO
	0.65514	0.80188	43.371
	0.0032757	0.0040094	0.21685
	2.0473E-05	2.5059E-05	0.0013553
EMISSION MASS/RATED HP			
MCDF EMIS./STD. CYCLE %	1.0775	1.6706	3.2270

CAL. FUEL AIR RATIO = 0.077703 MEAS. FUEL AIR RATIO = 0.076772 DIFF MEAS. & CAL. F/A PERCENT = 1.2129

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	416.31	434.81	419.64	429.85

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1215.8	1510.4	335.54	1884.5	1375.5	1370.2

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.358
	188.77	194.52	74.355	

DYAN COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.389
	271.21	2665.5	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	78.845	79.163	-26.423	76.097

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	89.809	1.0936	53.524	1464.6

CFL TEMP. = 93.760 HEATER TEMP = 90.661 COOLER TEMP = 72.601

NASA-LEWIS PRELIMINARY DATA 04/16/76 CADDEII REC 04/16/76 15:21:06.110 FAC SEX15 PGM C003 RDG 3486

LEANOUT 25 BT0C TO CL APP 80 DEG HUM = 80 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	79.614	29.192	188.72	816.67	14.143	14.706

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	93.943	5.5463	44.288	64.562	61.749	6.0738

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	82.372	3.0584	3.8533	10066.	79.530	72.723

REL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP
	79.530	25.154	121.22	2.7836 126.99

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	PPM-1	RPM-2	TORQUE	BHP
	0.075611	0.074324	1.1285	2434.9	2435.7	259.30	120.22

WET CORRECTION FACTOR = 0.82857 EXHAUST MOLE. WT. = 28.038 EXHAUST DENSITY = 0.072598 EXHAUST FLOW RATE = 12294.

MEASURED CONC.	PART PER MILLION WET		PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY O2 DRY
	1435.2	919.39	5.2930	11.859 0.10461
CORRECTED CONC. TO WET BASIS			4.3856	9.8262 0.086677

EMISSION RATE	HC	NOX	CO
EMISSION MASS/MODE	0.63348	1.3451	39.145
EMISSION MASS/RATED HP	0.052790	0.11209	3.2621
MODE EMIS./STD. CYCLE %	0.00032993	0.00070058	0.020388
	17.365	46.705	48.543

CAL. FUEL AIR RATIO = 0.078243 MEAS. FUEL AIR RATIO = 0.075611 DIFF MEAS. & CAL. F/A PERCENT = 3.4808

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	380.42	406.83	417.61	419.76

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SFXT-1	SEXT-2
	1083.6	1364.3	650.92	1952.1	1329.3	1326.8

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 27.841
	188.62	168.75	72.847	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.287
	264.60	2347.6	

INDUCTION AIR	IAIPT1	IAIRT2	TAIRT1	TAIRT2
	79.216	79.614	16.054	75.846

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	91.003	3.9701	54.337	2723.6

CELL TEMP. = 94.455 HEATER TEMP = 90.447 COOLER TEMP = 73.118

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NASA-LEWIS PRELIMINARY DATA 04/16/76 CADDELL REC 04/16/76 15:23:58.427 FAC SEX15 PGM C003 RDG 3487

LEANOUT 25 BTDC TO CL APP 80 DEG HUM = 80 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	80.646	29.227	111.73	475.43	8.1777	14.477

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	95.564	5.6352	44.246	39.390	37.435	6.1245

COOLING AIR	TEMP	UDFL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	82.600	2.9890	3.7883	9937.8	75.197	72.063

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	75.197	68.711	120.40	2.7649	68.826

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.078739	0.077407	1.1752	2353.9	2354.5	144.51	64.770

WET CORRECTION FACTOR = 0.83943 EXHAUST MOLE. WT. = 27.782 EXHAUST DENSITY = 0.071934 EXHAUST FLOW RATE = 7243.3

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1560.5	331.53	5.5454	11.753	0.11849
CORRECTED CONC. TO WET BASIS			4.6549	9.8654	0.099465

EMISSION RATE	HC	NOX	CO
	0.40577	0.28577	24.479
	0.040577	0.028577	2.4479
	0.00025361	0.00017860	0.015299
MODE EMIS./STD. CYCLE %	13.348	11.907	36.427

CAL. FUEL AIR RATIO = 0.078786 MEAS. FUEL AIR RATIO = 0.078739 DIFF MEAS. & CAL. F/A PERCENT = 0.059651

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	348.28	357.93	360.85	363.64

EXT GAS TFMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1518.6	1433.5	679.13	1846.8	1194.1	1196.0

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 19.392
	188.50	224.21	72.207	

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.346
	145.82	2288.5	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	80.319	80.646	64.536	76.557

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	90.890	1.1063	54.446	1471.5

CELL TFMP. = 94.133 HEATER TEMP = 90.350 COOLER TFMP = 75.575

68.2

NASA-Lewis PRELIMINARY DATA 04/16/76 CADDEII REC 04/16/76 15:41:06.389 FAC SEX15 PGM C003 RDG 3488

LEANOUT 25 BTDC TO CL APP 80 DEG HUM = 80 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	78.722	29.218	212.78	928.72	15.902	14.842

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	93.482	5.5238	44.299	74.714	71.179	6.0666

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	81.492	3.0103	3.8505	9977.4	81.740	72.668

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	81.740	11.629	119.86	2.7523	154.49

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.076642	0.075352	1.1439	2702.5	2703.3	276.69	142.38

WET CORRECTION FACTOR = 0.83452 EXHAUST MOLE. WT. = 27.953 EXHAUST DENSITY = 0.072377 EXHAUST FLOW RATE = 14034.

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1280.4	490.37	5.1047	12.078	0.098150
CORRECTED CONC. TO WET BASIS			4.2600	10.079	0.081908

	HC	NOX	CO
EMISSION RATE	0.64514	0.81898	43.406
EMISSION MASS/MODE	0.0032257	0.0040949	0.21703
EMISSION MASS/RATED HP	2.0161E-05	2.5593E-05	0.0013564
MODE EMIS./STD. CYCLE %	1.0611	1.7062	3.2296

CAL. FUEL AIR RATIO = 0.077670 MEAS. FUEL AIR RATIO = 0.076642 DIFF MEAS. & CAL. F/A PERCENT = 1.3412

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	417.54	434.90	419.30	429.57

FXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1446.7	1507.7	451.18	1926.2	1375.8	1370.8

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE =
	189.07	155.63	73.719	28.317

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE =
	271.90	2617.5	29.391

INDUCTION AIR	IAIPT1	IAIRT2	TAIRT1	TAIRT2
	78.421	78.722	-65.429	76.316

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	89.617	1.0670	53.966	1447.2

CELL TEMP. = 93.665 HEATER TEMP = 97.608 COOLER TEMP = 75.379

NASA-LEW'S PRELIMINARY DATA 04/16/76 CADDEII REC 04/16/76 15:45:02.277 FAC SEX15 PGM C003 RDG 3489

LEANOUT 25 BTDC TO CL APP 80 DEG HUM = 80 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	78.978	29.235	188.30	815.77	13.947	14.711

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FIP
	94.186	5.5806	44.281	63.906	61.443	6.0837

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	81.694	3.0535	3.9230	10057.	80.225	72.363

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	80.225	66.282	119.68	2.7482	126.62

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.075320	0.074053	1.1242	2435.0	2435.7	258.82	120.00

WET CORRECTION FACTOR = 0.82781 EXHAUST MOL. WT. = 28.063 EXHAUST DENSITY = 0.072661 EXHAUST FLOW RATE = 12264.

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	1444.4	1000.0	5.2701	11.987	0.15820	
CORRECTED CONC. TO WET BASIS			4.3626	9.9228	0.13096	

	HC	NOX	CO
EMISSION RATE	0.63598	1.4595	38.845
EMISSION MASS/MODE	0.052999	0.12162	3.2371
EMISSION MASS/RATED HP	0.00033124	0.00076014	0.020232
MODE EMIS./STD. CYCLE %	17.434	50.676	48.171

CAL. FUEL AIR RATIO = 0.077922 MEAS. FUEL AIR RATIO = 0.075320 DIFF MEAS. & CAL. F/A PERCENT = 3.4553

CYL TFMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	378.52	405.82	418.03	418.84

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1369.5	1363.7	797.82	2185.0	1328.6	1326.1

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 27.848
	188.43	238.67	72.367	

DYAO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.356
	256.45	2350.5	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	78.599	78.978	-35.464	75.600

ORIFICE AIR	TEMP	DELTAP	ORIF	FLOW
	90.236	1.0212	54.173	1415.5

CELL TEMP. = 94.047 HEATER TEMP = 90.641 COOLER TEMP = 72.869

NASA-LEWIS PRELIMINARY DATA 04/16/76 CADDEII REC 04/16/76 15:47:31.341 FAC SEX15 PGM C003 RDG 3490

LEANOUT 25 BTDC TO CL APP 80 DEG HUM = 80 % MODE = 5.0000 NO. SCANS = 4

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	79.843	29.235	110.80	471.92	8.0482	14.478

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	95.820	5.6702	44.240	38.765	37.230	6.0824

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	81.947	2.9942	3.8594	9947.4	76.558	71.818

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	76.558	84.893	119.38	2.7414	69.428

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.078891	0.077568	1.1775	2350.4	2350.4	146.20	65.430

WFT CORRECTION FACTOR = 0.83998 EXHAUST MJLE. WT. = 27.770 EXHAUST DENSITY = 0.071902 EXHAUST FLOW RATE = 7193.0

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1517.7	386.86	5.5562	11.813	0.12904
CORRECTED CONC. TO WFT BASIS			4.6755	9.9229	0.10839

	HC	NOX	CO
EMISSION RATE	0.39190	0.33114	24.416
EMISSION MASS/MODE	0.039190	0.033114	2.4416
EMISSION MASS/RATED HP	0.00024494	0.00020696	0.015260
MODE EMIS./STD. CYCLE %	12.891	13.798	36.333

CAL. FUEL AIR RATIO = 0.078710 MEAS. FUEL AIR RATIO = 0.078891 DIFF MEAS. & CAL. F/A PERCENT = -0.22930

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	348.64	362.53	364.36	370.95

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1203.7	1428.7	737.25	1939.0	1199.1	1201.3

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 19.301
	189.12	129.58	72.002	

OYAO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.364
	139.84	2331.2	

INDUCTION AIR	IAIPT1	IAIPT2	TAIRT1	TAIRT2
	79.512	79.843	16.464	76.170

ORIFICE AIR	TEMP	DELTA P	DRFP	FLOW
	90.400	0.083258	53.961	301.08

CELL TEMP. = 94.227 HEATER TEMP = 90.343 COOLER TEMP = 74.100

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685

NASA-LEWIS PRELIMINARY DATA 04/16/76 CADDEII REC 04/16/76 15:52:15.194 FAC SEX15 PGM C003 RDG 3491

LEANOUT 25 BTDC TO CL APP 80 DEG HUM = 80 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	79.755	29.237	212.16	925.65	15.881	14.821

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	95.296	5.5466	44.253	69.851	67.453	6.0720

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	82.900	3.0612	3.9122	10071.	79.058	72.683

PFL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	79.058	-2.1962	120.10	2.7578	152.66

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TOPQUE	BHP
	0.072871	0.071641	1.0876	2703.9	2704.9	273.14	140.62

WET CORRECTION FACTOR = 0.84091 EXHAUST MOLE. WT. = 28.269 EXHAUST DENSITY = 0.073195 EXHAUST FLOW RATE = 13784.

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1076.5	1144.6	2.9851	13.084	0.14485
CORRECTED CONC. TO WET BASIS			2.5102	11.003	0.12181

	HC	NOX	CO
EMISSION RATE	0.53273	1.8776	25.122
EMISSION MASS/MODE	0.0026637	0.0093881	0.12561
EMISSION MASS/RATED HP	1.6648E-05	5.8675E-05	0.00078505
MODE EMIS./STD. CYCLE %	0.87621	3.9117	1.8692

CAL. FUEL AIR RATIO = 0.073007 MEAS. FUEL AIR RATIO = 0.072871 DIFF MEAS. & CAL. F/A PERCENT = 0.18682

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	423.80	441.14	427.97	431.30

FXT GAS TEMP DEG. F	FXT-1	FXT-2	FXT-3	FXT-4	SXT-1	SXT-2
	647.03	1560.3	821.95	2046.5	1416.5	1410.4

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.350
	190.00	241.93	74.171	

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.448
	279.85	2612.7	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	79.402	79.755	-34.081	75.754

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	91.064	1.9926	53.949	1956.4

GELL TEMP. = 95.140 HEATER TEMP = 90.157 COOLER TEMP = 71.309

789

NASA-LEWIS PRELIMINARY DATA 04/16/76 CADDETI REC 04/16/76 15:54:36.001 FAC SEX15 PGM C003 RDG 3492

LFANOUT 25 BTDC TO CL APP 80 DEG HUM = 80 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	80.073	29.224	190.65	826.76	14.192	14.728

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	95.764	5.5482	44.241	62.628	58.794	6.0753

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	82.917	3.0382	3.8890	10029.	77.791	72.513

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	77.791	39.928	120.16	2.7593	125.94

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.071114	0.069914	1.0514	2431.5	2431.8	257.45	119.19

WET CORRECTION FACTOR = 0.82895 EXHAUST MOLE. WT. = 28.420 EXHAUST DENSITY = 0.073585 EXHAUST FLOW RATE = 12227.

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	1038.4	1484.5	3.6129	12.695	0.30077	
CORRECTED CONC. TO WET BASIS			2.9949	10.523	0.24932	

EMISSION RATE	HC	NOX	CO	
	0.45581	2.1601	26.586	
EMISSION MASS/MODE	0.037984	0.18001	2.2155	
EMISSION MASS/RATED HP	0.00023740	0.0011250	0.013847	
MODE EMIS./STD. CYCLE %	12.495	75.002	32.968	

CAL. FUEL AIR RATIO = 0.073816 MEAS. FUEL AIR RATIO = 0.071114 DIFF MEAS. & CAL. F/A PERCENT = 3.7997

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	399.71	421.50	418.12	418.75

FXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1455.1	1417.0	805.70	2120.8	1369.3	1366.6

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.031
	189.72	202.94	72.399	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.283
	238.20	2357.9	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	79.675	80.073	30.520	75.619

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	91.369	3.9327	54.009	2709.9

CFL TEMP. = 95.452 HEATER TEMP = 90.115 COOLER TEMP = 73.564

687

NASA-LEWIS PRELIMINARY DATA 04/16/76 CADDEII REC 04/16/76 15:57:49.325 FAC SEX15 PGM C003 RDG 3493

LEANOUT 25 ATDC TO CL APP 80 DEG HUM = 80 % MODE = 5.0000 NO. SCANS = 4

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 81.000 PRESS 29.220 CFM 112.65 DRY FLOW 479.89 VAPOR FLOW 8.2363 PRESS TOTAL 14.483

COMB. FUEL TEMP 97.551 PRESS 5.6586 DENSITY 44.196 TURBO FLOW 35.807 FLOW TRON 34.631 FPIP 6.1176

COOLING AIR TEMP 83.146 UNFL-HOOD 3.0104 DEL-HOOD 3.8172 FLOW 9977.6 REL-HUM 74.205 DEW-POINT 72.012

REL-HUM 1 74.205 2 75.560 HUMIDITY 120.14 % H2O VAPOR 2.7588 CORRECTED HP 69.468

ENG. COND. F/A DRY 0.072164 F/A WET 0.070947 EQU. RATIO 1.0771 RPM-1 2352.8 RPM-2 2353.1 TORQUE 145.90 BHP 65.361

WET CORRECTION FACTOR = 0.83845 EXHAUST MOLE WT. = 28.329 EXHAUST DENSITY = 0.073351 EXHAUST FLOW RATE = 7126.8

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 1180.7 NOX PPM 798.70 CO DRY 3.0368 CO2 DRY 13.002 O2 DRY 0.25850
CORRECTED CONC. TO WET BASIS 2.5462 10.902 0.21674

EMISSION RATE HC 0.30209 NOX 0.57737 CO 13.174
EMISSION MASS/MODE 0.030209 0.067737 1.3174
EMISSION MASS/RATED HP 0.00018881 0.00042335 0.0082339
MODE EMIS./STD. CYCLE % 9.9373 28.224 19.605

CAL. FUEL AIR RATIO = 0.072830 MEAS. FUEL AIR RATIO = 0.072164 DIFF MEAS. & CAL. F/A PERCENT = 0.92218

CYL TEMP DEG.F CYL-1 355.12 CYL-2 359.26 CYL-3 364.64 CYL-4 365.45

EXT GAS TEMP DEG.F EXT-1 1551.6 EXT-2 1482.3 EXT-3 1043.9 EXT-4 2014.9 SEXT-1 1236.2 SEXT-2 1237.8

ENGINE OIL FOILT 188.69 SOILT 139.72 OILO 72.117 MANIFOLD PRESSURE = 19.603

DYMO COND. TORQUE 139.71 RPM 2294.5 CYL. BACK PRESSURE = 29.258

INDUCTION AIR IAIRT1 83.648 IAIRT2 81.000 TAIRT1 40.312 TAIRT2 76.172

ORIFICE AIR TEMP 91.402 DELTAP 0.093759 DRFP 53.946 FLOW 330.23

CELL TEMP. = 95.755 HEATER TEMP = 90.041 COOLER TEMP = 74.601

689

NASA-LEWIS PRELIMINARY DATA 04/16/76 CADDEII REC.04/16/76 16:07:16.791 FAC SEX15 PGM C003 RDG 3495

LEANOUT 25 BTDC TO CL APP RO DEG HJM = 80 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	78.501	29.258	191.02	826.87	14.247	14.709

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	94.316	5.5767	44.278	61.112	58.395	6.0921

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	81.359	2.9533	3.8591	9871.1	82.102	72.583

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	82.102	63.912	120.61	2.7697	126.26

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	PPM-1	RPM-2	TORQUE	BHP
	0.070622	0.069425	1.0541	2431.4	2432.0	258.55	119.70

WET CORRECTION FACTOR = 0.82596 EXHAUST MOLE. WT. = 28.462 EXHAUST DENSITY = 0.073696 EXHAUST FLOW RATE = 12205.

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1069.8	1494.7	3.6683	12.637	0.29553
CORRECTED CONC. TO WET BASIS			3.0299	10.437	0.24409

EMISSION RATE	HC	NOX	CO
	0.46877	2.1711	26.849
	0.039064	0.18092	2.2374
	0.00024415	0.0011308	0.013984
MODE EMIS./STD. CYCLE %	12.850	75.385	33.294

CAL. FUEL AIR RATIO = 0.073982 MEAS. FUEL AIR RATIO = 0.070622 DIFF MEAS. & CAL. F/A PERCENT = 4.7581

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	392.39	416.62	415.61	414.23

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1592.6	1399.3	821.06	2038.7	1371.5	1369.0

ENGINE OIL	EQILT	SOILT	OILP	MANIFOLD PRESSURE = 27.934
	188.73	219.05	72.559	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.459
	267.62	2381.5	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	78.103	78.501	19.932	75.849

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	89.347	1.0906	53.779	1463.2

CELL TEMP. = 94.108 HEATER TEMP = 89.859 COOLER TEMP = 73.448

689

NASA-LEWIS PRELIMINARY DATA 04/16/76 CADDEII REC 04/16/76 16:09:55.442 FAC SEX15 PGM C003 RDG 3496

LEANOUT 25 BTDC TO CL APP 80 DEG HUM = 80 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 79.376 PRESS 29.230 CFM 112.44 DRY FLOW 478.79 VAPOR FLOW 8.2336 PRESS TOTAL 14.483

COMB. FUEL TEMP 95.920 PRESS 5.6901 DENSITY 44.237 TURBO FLOW 36.671 FLOW TRON 34.671 FPIP 6.1191

COOLING AIR TEMP 81.677 UDEL-HOOD 3.0280 DEL-HOOD 3.7550 FLOW 10010. REL-HUM 78.399 DEW-POINT 72.068

REL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP 78.399 80.290 120.38 2.7643 68.221

ENG. COND. F/A DRY 0.072415 F/A WET 0.071190 EQU. RATIO 1.0908 RPM-1 2351.8 RPM-2 2352.8 TORQUE 143.58 BHP 64.293

WET CORRECTION FACTOR = 0.83932 EXHAUST MJLE. WT. = 28.308 EXHAUST DENSITY = 0.073296 EXHAUST FLOW RATE = 7117.6

MEASURED CONC. HC PPM 1154.8 NOX PPM 807.58 CO DRY 3.0372 PER CENT CO2 DRY 13.019 O2 DRY 0.24186
CORRECTED CONC. TO WET BASIS 2.5492 10.927 0.20300

EMISSION RATE HC 0.29508 NOX 0.58402 CO 13.173
EMISSION MASS/MODE 0.029508 0.068402 1.3173
EMISSION MASS/RATED HP 0.00018443 0.00042751 0.0082328
MODE EMISS./STD. CYCLE % 9.7066 28.501 19.602

CAL. FUEL AIR RATIO = 0.072862 MEAS. FUEL AIR RATIO = 0.072415 DIFF MEAS. & CAL. F/A PERCENT = 0.61774

CYL TEMP DEG.F CYL-1 359.95 CYL-2 366.63 CYL-3 371.77 CYL-4 375.08

EXT GAS TEMP DEG.F EXT-1 1560.3 EXT-2 1402.5 EXT-3 1044.5 EXT-4 1905.6 SEXT-1 1256.2 SEXT-2 1258.3

ENGINE OIL OIL1T 187.95 OIL2T 206.90 OILP 71.947 MANIFOLD PRESSURE = 19.584

DYNO COND. TORQUE 146.76 RPM 2335.1 CYL. BACK PRESSURE = 29.337

INDUCTION AIR IAIRT1 79.031 IAIRT2 79.376 TAIRT1 70.578 TAIRT2 76.389

ORIFICE AIR TEMP 89.722 DELTAP 1.0293 ORFP. 54.211 FLOW 1421.7

CELL TEMP. = 94.255 HEATER TEMP = 89.887 COOLER TEMP = 74.739

0.6

NASA-Lewis PRELIMINARY DATA 04/16/76 CARDEII REC 04/16/76 16:43:53.985 FAC SEX15 PGM C003 RDG 3497

LEANOUT 25 BTDC TO CL APP 80 DEG HUM = 60 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	79.499	29.235	213.36	936.65	12.568	14.838

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	93.361	5.4368	44.302	81.501	78.605	6.0030

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	82.777	2.9965	3.7863	9951.7	62.795	65.712

PFL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	62.795	38.468	93.930	2.1570	153.36

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.083921	0.082810	1.2526	2702.1	2702.5	276.59	142.30

WET CORRECTION FACTOR = 0.84133 EXHAUST MOLE. WT. = 27.372 EXHAUST DENSITY = 0.070874 EXHAUST FLOW RATE = 14502.

MEASURED CONC.	PART PER MILLION WFT		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1651.8	247.26	8.1412	10.4370	0.12573
CORRECTED CONC. TO WET BASIS			6.8495	8.7808	0.10578

	HC	NOX	CO
EMISSION RATE	0.85995	0.42672	72.115
EMISSION MASS/MODE	0.0042998	0.0021336	0.36058
EMISSION MASS/RATED HP	2.6873E-05	1.3335E-05	0.0022536
MODE EMIS./STD. CYCLE %	1.4144	0.88899	5.3657

CAL. FUEL AIR RATIO = 0.084741 MEAS. FUEL AIR RATIO = 0.083921 DIFF MEAS. & CAL. F/A PERCENT = 0.97715

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	412.00	429.73	404.96	418.85

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1473.5	1366.1	501.80	1737.9	1286.5	1282.0

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.275
	189.53	187.98	73.375	

CYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.449
	269.93	2616.7	

INDUCTION AIR	IAIRT1	IAIPT2	TAIRT1	TAIRT2
	79.199	79.499	-42.528	76.213

OPTIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	90.324	1.0422	54.076	1429.6

CELL TEMP. = 98.463 HEATER TEMP = 91.939 COOLER TEMP = 75.450

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NASA-LEWIS PRELIMINARY DATA 04/16/76 CADDF11 REC 04/16/76 16:50:47.112 FAC SEX15 PGM C003 RDG 3498

LEANOUT 25 BTDC TO CL APP 80 DEG HUM = 60 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	80.725	29.202	187.68	816.35	11.029	14.714

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	94.255	5.4932	44.280	68.878	66.958	6.0498

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	83.445	3.0709	3.8051	10089.	60.223	65.662

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	60.223	69.513	94.575	2.1718	127.01

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.082020	0.080927	1.2242	2440.7	2441.5	260.24	120.94

WET CORRECTION FACTOR = 0.83359 EXHAUST MOLE. WT. = 27.520 EXHAUST DENSITY = 0.071257 EXHAUST FLOW RATE = 12550.

MEASURED CONC.	PART PER MILLION WET	PER CENT
	HC PPM NOX PPM CO DRY CO2 DRY O2 DRY	
	1824.9 513.69 8.1452 10.4330 0.15430	
CORRECTED CONC. TO WET BASIS		6.7897 8.6968 0.12862

	HC	NOX	CO
EMISSION RATE	0.82225	0.76723	61.868
EMISSION MASS/MODE	0.068521	0.063936	5.1556
EMISSION MASS/RATED HP	0.00042826	0.00039960	0.032223
MODE EMIS./STD. CYCLE %	22.540	26.640	76.721

CAL. FUEL AIR RATIO = 0.084749 MEAS. FUEL AIR RATIO = 0.082020 DIFF MEAS. & CAL. F/A PERCENT = 3.3265

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	364.45	388.44	416.31	420.21

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	872.11	1219.9	582.76	1842.8	1239.2	1237.2

ENGINE OIL	FOILT	SOILT	OILT	MANIFOLD PRESSURE = 27.636
	188.97	207.93	72.527	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.367
	251.19	2343.2	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	80.381	80.725	-56.266	76.568

ORIFICE AJR	TEMP	DELTA P	ORIF	FLOW
	91.143	3.0069	54.063	2375.6

CELL TEMP. = 98.860 HEATER TEMP = 90.889 COOLER TEMP = 75.771

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NASA-LEWIS PRELIMINARY DATA 04/16/76 CADDEII REC 04/16/76 16:53:23.829 FAC SEX15 PGM C003 RDG 3499

LEANOUT 25 BTDC TO CL APP 80 DEG HUM = 60 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	80.928	29.236	112.03	480.17	6.4628	14.484

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	95.773	5.6283	44.241	44.576	41.704	6.1032

COOLING AIR	TEMP	WDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	82.372	2.9751	3.6836	9912.0	58.672	65.102

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	58.672	81.330	94.215	2.1635	67.934

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.086852	0.085699	1.2963	2360.1	2361.1	143.26	64.375

WET CORRECTION FACTOR = 0.84846 EXHAUST MOLE. WT. = 27.149 EXHAUST DENSITY = 0.070296 EXHAUST FLOW RATE = 7515.9

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	2033.1	159.92	8.6442	10.1230	0.17128	
CORRECTED CONC. TO WET BASIS			7.3342	8.5893	0.14532	

	HC	NOX	CO
EMISSION RATE	0.54857	0.14303	40.019
EMISSION MASS/MODE	0.054857	0.014303	4.0019
EMISSION MASS/RATED HP	0.00034286	8.9392E-05	0.025012
MODE FMIS./STD. CYCLE %	18.045	5.9595	59.553

CAL. FUEL AIR RATIO = 0.086066 MEAS. FUEL AIR RATIO = 0.086852 DIFF MEAS. & CAL. F/A PERCENT = -0.90465

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	338.92	350.02	355.14	362.28

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1753.3	1267.7	485.18	1700.4	1108.4	1110.6

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 19.319
	189.02	83.945	71.899	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.290
	148.54	2319.8	

INDUCTION AIR	TAIPT1	TAIRT2	TAIRT1	TAIRT2
	80.699	80.928	-43.467	76.038

ORIFICE AIR	TEMP	DFLTAP	ORFP	FLOW
	91.360	0.064406	53.302	244.10

CELL TEMP. = 99.032 HEATER TEMP. = 108.00 COOLER TEMP. = 74.418

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NASA-LEI IS PRELIMINARY DATA 04/16/76 CADDEII REC 04/16/76 17:10:44.727 FAC SEX15 PGM C003 RDG 3500

LEANOUT 25 BTDC TO CL APP 80 DEG HUM = 60 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.220 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	79.040	29.218	212.94	935.04	12.717	14.836

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	92.352	5.4434	44.328	79.117	76.904	6.0639

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	81.271	2.9433	3.8079	9852.4	64.584	66.087

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	64.584	20.832	95.202	2.1862	154.03

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.082246	0.081143	1.2276	2702.5	2703.4	277.61	142.85

WET CORRECTION FACTOR = 0.83373 EXHAUST MOLE. WT. = 27.503 EXHAUST DENSITY = 0.071211 EXHAUST FLOW RATE = 14389.

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	1689.8	217.24	8.1903	10.4020	0.12849	
CORRECTED CONC. TO WET BASIS			6.8286	8.6723	0.10713	

	HC	NOX	CO
EMISSION RATE	0.87288	0.37198	71.334
EMISSION MASS/MODE	0.0043644	0.0018599	0.35667
EMISSION MASS/RATED HP	2.7277E-05	1.1624E-05	0.0022292
MODE EMIS./STD. CYCLE %	1.4357	0.77496	5.3076

CAL. FUEL AIR RATIO = 0.084891 MEAS. FUEL AIR RATIO = 0.082246 DIFF MEAS. & CAL. F/A PERCENT = 3.2161

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	413.08	430.90	402.06	416.14

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1418.2	1436.9	556.00	1760.6	1287.6	1282.2

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.269
	186.62	223.74	74.555	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.403
	279.35	2598.9	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	78.739	79.040	-80.752	75.861

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	90.167	1.0707	54.105	1449.0

CELL TEMP. = 97.728 HEATER TEMP = 103.37 COOLER TEMP = 72.824

644

NASA-LEWIS PPELIMINARY DATA 04/16/76 CADDEII REC 04/16/76 17:13:31.791 FAC SEX15 PGM C003 RDG 3501

LEANOUT 25 BTDC TO CL APP 80 DEG HUM = 60 % MCDE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.220 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	80.117	29.205	185.72	806.43	11.010	14.697

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	93.083	5.4965	44.310	69.949	65.808	6.0627

COOLING AIR	TEMP	INLET-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	82.187	3.0158	3.8312	9987.7	61.989	65.922

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	61.989	54.701	95.566	2.1945	125.57

ENG. COND.	F/A DRY	F/A WET	FQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.081604	0.080505	1.2180	2435.0	2435.7	257.99	119.61

WET CORRECTION FACTOR = 0.83336 EXHAUST MOLE. WT. = 27.553 EXHAUST DENSITY = 0.071342 EXHAUST FLOW RATE = 12380.

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	1816.1	544.69	7.9538	10.5840	0.16450	
CORRECTED CONC. TO WET BASIS			6.6283	8.8202	0.13708	

695

	HC	NOX	CO
EMISSION RATE	0.80718	0.80249	59.577
EMISSION MASS/MODE	0.067265	0.066874	4.9648
EMISSION MASS/RATED HP	0.00042041	0.00041796	0.031030
MODE EMIS./STD. CYCLE %	22.127	27.864	73.881

CAL. FUEL AIR RATIO = 0.084179 MEAS. FUEL AIR RATIO = 0.081604 DIFF MEAS. & CAL. F/A PERCENT = 3.1557

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	371.29	389.81	411.86	417.70

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1685.3	1282.4	662.15	1761.3	1238.5	1235.9

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE =
	187.97	185.33	72.607	27.477

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE =
	258.81	2365.0	29.318

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	79.781	90.117	-41.073	76.728

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	90.507	2.9983	54.090	2373.7

CELL TEMP. = 98.100 HEATER TEMP. = 97.409 COOLER TEMP. = 75.646

NASA-LEWIS PPELIMINARY DATA 04/16/76 CADDEII REC 04/16/76 17:16:14.275 FAC SEX15 PGM C003 RDG 3502

LEANOUT 25 BTDC TO CL APP 80 DEG HUM = 60 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.220 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	80.381	29.210	111.12	475.88	6.4599	14.476

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	94.654	5.6097	44.269	44.226	41.578	6.0936

COOLING AIR	TEMP	INLET-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	81.333	2.9458	3.7052	9857.1	60.197	65.327

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	60.197	73.597	95.023	2.1821	67.717

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.087372	0.086202	1.3041	2350.9	2350.7	143.44	64.205

WET CORRECTION FACTOR = 0.84914 EXHAUST MOLE. WT. = 27.111 EXHAUST DENSITY = 0.070196 EXHAUST FLOW RATE = 7463.6

MEASURED CONC.	PART PFR MILLION WET	PER CENT
	HC PPM NOX PPM CO DRY CO2 DRY O2 DRY	
	2028.5 147.63 8.7718 10.0720 0.16950	
CORRECTED CONC. TO WET BASIS		7.4485 8.5522 0.14393

	HC	NOX	CO
EMISSION RATE	0.54352	0.13112	40.360
EMISSION MASS/MODE	0.054352	0.013112	4.0360
EMISSION MASS/RATED HP	0.00033970	8.1953E-05	0.025225
MODE EMIS./STD. CYCLE %	17.879	5.4635	60.060

CAL. FUEL AIR RATIO = 0.086364 MEAS. FUEL AIR RATIO = 0.087372 DIFF MEAS. & CAL. F/A PERCENT = -1.1538

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	335.71	349.23	350.97	355.51

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1796.6	1334.6	665.50	1721.9	1100.3	1102.4

ENGINE OIL	FOILT	SOILT	OTLP	MANIFOLD PRESSURE = 19.153
	189.58	201.09	71.887	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.301
	136.82	2310.5	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	80.081	80.381	-30.704	76.121

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	90.873	1.0567	54.063	1438.7

CELL TEMP. = 97.970 HEATER TEMP = 104.53 COOLER TEMP = 74.214

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NASA-LEWIS PRELIMINARY DATA 04/16/76 CADDETT REC 04/16/76 17:24:50.890 FAC SEX15 PGM C003 RDG 3503

LEANOUT 25 BTDC TO CL APP 80 DEG HUM = 60 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.220 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CEM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	80.381	29.236	212.97	935.20	12.664	14.832

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	94.620	5.4470	44.270	79.878	76.745	5.9628

COOLING AIR	TEMP	INDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	83.251	3.0313	3.7359	10016.	61.530	65.957

REL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP
	61.530	-22.862	94.790	2.1767 154.59

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.082063	0.080966	1.2248	2704.8	2705.9	278.22	143.29

WET CORRECTION FACTOR = 0.93762 EXHAUST MOLE. WT. = 27.517 EXHAUST DENSITY = 0.071248 EXHAUST FLOW RATE = 14380.

MEASURED CONC.	PART PER MILLION WFT			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1572.7	273.19	7.6956	10.7060	0.12785
CORRECTED CONC. TO WET BASIS			6.4459	8.9678	0.10709

	HC	NOX	CO
EMISSION RATE	0.81191	0.46751	67.298
EMISSION MASS/MODE	0.0040596	0.0023375	0.33649
EMISSION MASS/RATED HP	2.5372E-05	1.4610E-05	0.0021031
MODE EMIS./STD. CYCLE %	1.3354	0.97397	5.0073

CAL. FUEL AIR RATIO = 0.083582 MEAS. FUEL AIR RATIO = 0.082063 DIFF MEAS. & CAL. F/A PERCENT = 1.8519

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	415.73	435.14	409.49	427.67

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1153.4	1443.2	702.29	1656.3	1299.3	1293.9

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.229
	188.31	129.83	73.587	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.411
	270.88	2676.9	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	80.081	80.381	-38.704	75.758

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	91.700	0.042304	54.042	170.29

CELL TEMP. = 99.516 HEATER TEMP = 97.636 COOLER TEMP = 71.496

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NASA-LEWIS PRELIMINARY DATA 04/16/76 CADDEI REC 04/16/76 17:27:02.187 FAC SEX15 PGM C003 RDG 3504

LEANOUT 25 BTDC TO CL APP 80 DEG HUM = 60 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.220 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 81.227 PRESS 29.200 CFM 186.89 DRY FLOW 812.72 VAPOR FLOW 11.044 PRESS TOTAL 14.708

COMB. FUEL TEMP 95.122 PRESS 5.5055 DENSITY 44.257 TURBO FLOW 70.539 FLOW TRON 66.718 FPIP 6.0576

COOLING AIR TEMP 87.892 UDEL-HOOD 2.9555 DEL-HOOD 3.7783 FLOW 9875.2 REL-HUM 59.557 DEW-POINT 65.812

REL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP
59.557 45.787 95.121 2.1843 127.34

ENG. COND. F/A DRY F/A WET EQU. RATIO RPM-1 RPM-2 TORQUE BHP
0.082092 0.080991 1.2252 2443.0 2443.7 260.51 121.18

WET CORRECTION FACTOR = 0.83838 EXHAUST MOLE WT. = 27.515 EXHAUST DENSITY = 0.071242 EXHAUST FLOW RATE = 12499.

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM NOX PPM CO DRY CO2 DRY O2 DRY
1753.3 609.44 7.6456 10.7500 0.15900
CORRECTED CONC. TO WET BASIS 6.4099 9.0128 0.13339

EMISSION RATE HC NOX CO
0.78674 0.90649 58.167
EMISSION MASS/MODE 0.065562 0.075541 4.8473
EMISSION MASS/RATED HP 0.00040976 0.00047213 0.030295
MODE EMIS./STD. CYCLE % 21.566 31.475 72.132

CAL. FUEL AIR RATIO = 0.083424 MEAS. FUEL AIR RATIO = 0.082092 DIFF MEAS. & CAL. F/A PERCENT = 1.6235

CYL TEMP DEG.F CYL-1 CYL-2 CYL-3 CYL-4
383.44 401.52 414.95 423.53

EXT GAS TEMP DEG.F FXT-1 FXT-2 EXT-3 EXT-4 SEXT-1 SEXT-2
1320.6 1290.1 692.04 1832.8 1252.4 1249.9

ENGINE OIL EOILT SOILT OILP MANIFOLD PRESSURE = 27.656
189.90 237.84 72.199

DYNO COND. TORQUE RPM CYL. BACK PRESSURE = 29.301
260.73 2376.4

INDUCTION AIR IAIRT1 IAIRT2 TAIRT1 TAIRT2
80.893 31.227 -57.818 76.413

ORIFICE AIR TEMP DELTAP ORFP FLOW
91.917 1.0632 54.064 1441.7

CELL TEMP. = 99.723 HEATER TEMP = 95.045 COOLER TEMP = 72.129

869

NASA-LEWIS PRELIMINARY DATA 04/16/76 CADDEII REC 04/16/76 17:29:49.935 FAC SEX15 PGM C003 RDG 3505

LEANOUT 25 BTDC TO CL APP 80 DEG HUM = 60 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.220 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	79.773	29.221	111.05	475.60	6.4519	14.473

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	94.906	5.6115	44.263	43.096	41.182	6.1110

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	81.095	2.9295	3.6737	9826.4	61.354	65.302

RFL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	61.354	72.559	94.961	2.1806	67.933

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.086590	0.085431	1.2924	2353.1	2353.7	143.86	64.456

WET CORRECTION FACTOR = 0.85078 EXHAUST MOLE. WT. = 27.159 EXHAUST DENSITY = 0.070347 EXHAUST FLOW RATE = 7437.8

MEASURED CONC.	PART PER MILLION WET	PER CENT		
	HC PPM	CO DRY	CO2 DRY	O2 DRY
	1932.0	8.2584	10.3760	0.17036
	176.94	7.0261	8.8274	0.14494
CORRECTED CONC. TO WET BASIS				

	HC	NOX	CO
EMISSION RATE	0.51588	0.15661	37.940
EMISSION MASS/MODE	0.051588	0.015661	3.7940
EMISSION MASS/RATED HP	0.00032242	9.7880E-05	0.023712
MODE EMIS./STD. CYCLE %	16.970	6.5253	56.458

CAL. FUEL AIR RATIO = 0.084997 MEAS. FUEL AIR RATIO = 0.086590 DIFF MEAS. & CAL. F/A PERCENT = -1.8402

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	337.80	349.18	349.78	355.08

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1632.0	1340.9	744.12	1800.1	1108.8	1110.6

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE =
	189.27	297.23	71.779	19.165

DYMO COND.	TORQUE	RPM	CYL. BACK PRESSURE =
	146.53	2318.6	29.298

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	79.508	79.773	21.159	75.969

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	90.489	1.0247	54.030	1417.6

CFLL TEMP. = 98.005 HEATED TEMP = 98.393 COOLER TEMP = 72.815

69

NASA-LEI-15 PPELIMINARY DATA 04/16/76 CADDEII REC 04/16/76 17:35:21.475 FAC SEX15 PGM C003 RDG 3506

LEANOUT 25 BTDC TO CL APP 80 DEG HUM = 60 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.220 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	78.580	29.203	213.13	935.41	12.652	14.834

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	92.648	5.4569	44.321	80.938	77.798	6.0303

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	81.280	2.9978	3.8621	9954.3	65.204	65.927

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	65.204	-18.924	94.678	2.1741	153.27

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.083169	0.082060	1.2413	2707.5	2707.6	275.70	142.13

WET CORRECTION FACTOR = 0.84247 EXHAUST MOLE. WT. = 27.431 EXHAUST DENSITY = 0.071024 EXHAUST FLOW RATE = 14443.

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1606.8	265.37	7.6702	10.7040	0.12887
CORRECTED CONC. TO WET BASIS			6.4619	9.0177	0.10857

	HC	NOX	CO
EMISSION RATE	0.83315	0.45611	67.760
EMISSION MASS/MODE	0.0041658	0.0022806	0.33880
EMISSION MASS/RATED HP	2.6036E-05	1.4254E-05	0.0021175
MODE EMIS./STD. CYCLE %	1.3703	0.95024	5.0417

CAL. FUEL AIR RATIO = 0.083552 MEAS. FUEL AIR RATIO = 0.083169 DIFF MEAS. & CAL. F/A PERCENT = 0.45938

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	413.64	433.05	406.76	420.63

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1406.4	1437.5	666.46	1757.1	1301.5	1296.8

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.229
	189.40	240.36	73.363	

DYMO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.327
	271.51	2631.3	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	78.289	78.580	-37.393	76.105

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	89.661	0.097910	54.066	342.01

CELL TEMP. = 97.676 HEATER TEMP = 119.53 COOLER TEMP = 73.278

700

NASA-LEWIS PRELIMINARY DATA 04/16/76 CADDELI REC 04/16/76 17:38:16.564 FAC SEX15 PGM C003 RDG 3507

LEANOUT 25 BTDC TO CL APP 80 DEG HUM = 60 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.220 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	79.526	29.238	184.86	802.76	10.929	14.693

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	93.291	5.4941	44.304	67.919	64.578	6.0168

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	81.941	2.9616	3.7860	9886.6	63.014	65.837

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	63.014	40.450	95.300	2.1884	125.80

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.080446	0.079365	1.2007	2436.5	2436.6	258.51	119.93

WFT CORRECTION FACTOR = 0.83417 EXHAUST MOLE. WT. = 27.645 EXHAUST DENSITY = 0.071579 EXHAUST FLOW RATE = 12269.

MEASURED CONC.	PART PER MILLION WFT			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1710.0	641.72	7.3981	10.8480	0.17646
CORRECTED CONC. TO WET BASIS			6.1713	9.0493	0.14720

	HC	NOX	CO
EMISSION RATE	0.75322	0.93699	54.973
EMISSION MASS/MODE	0.062768	0.078082	4.5811
EMISSION MASS/RATED HP	0.00039230	0.00048801	0.028632
MODE FMIS./STD. CYCLE %	20.647	32.534	68.171

CAL. FUEL AIR RATIO = 0.082800 MEAS. FUEL AIR RATIO = 0.080446 DIFF MEAS. & CAL. F/A PERCENT = 2.9270

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	372.50	395.79	415.40	422.92

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1598.9	1289.8	710.46	1906.8	1249.5	1247.4

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 27.573
	190.07	240.10	72.215	

DYMO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.395
	248.22	2337.0	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	79.146	79.526	36.760	76.630

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	89.975	2.0009	54.025	1962.1

CELL TEMP. = 97.866 HEATER TEMP = 99.048 COOLER TEMP = 74.231

701

NASA-LEWIS PRELIMINARY DATA 04/16/76 CADDELL REC 04/16/76 17:41:30.121 FAC SEX15 PGM C003 RDG 3508

LEANOUT 25 BTDC TO CL APP 80 DEG HUM = 60 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.220 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	80.020	29.216	111.16	475.84	6.4559	14.476

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	94.828	5.6184	44.265	43.718	41.251	6.1556

COOLING AIR	TEMP	INLET-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	81.104	2.9198	3.6654	9808.1	60.881	65.312

REL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP
	60.881	66.361	94.971	2.1809 68.840

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.086691	0.085530	1.2939	2355.9	2356.3	145.59	65.307

WET CORRECTION FACTOR = 0.85135 EXHAUST MOLE. WT. = 27.152 EXHAUST DENSITY = 0.070328 EXHAUST FLOW RATE = 7444.6

MEASURED CONC.	PART PER MILLION WET	PER CENT
	HC PPM NOX PPM CO DRY CO2 DRY O2 DRY	
	1961.9 176.32 8.2640 10.3470 0.18438	
CORRECTED CONC. TO WET BASIS		7.0356 8.8089 0.15697

EMISSION RATE	HC	NOX	CO
	0.52432	0.15620	38.025
EMISSION MASS/MODE	0.052432	0.015620	3.8025
EMISSION MASS/RATED HP	0.00032770	9.7623E-05	0.023765
MODE EMIS./STD. CYCLE %	17.248	6.5082	56.584

CAL. FUEL AIR RATIO = 0.085009 MEAS. FUEL AIR RATIO = 0.086691 DIFF MEAS. & CAL. F/A PERCENT = -1.9401

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	335.72	346.66	346.41	353.49

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1146.4	1338.7	717.10	1838.4	1101.1	1103.1

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 19.170
	189.35	185.24	71.607	

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.289
	153.32	2307.6	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	79.728	80.020	81.516	76.346

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	90.306	0.048905	54.094	193.44

CELL TEMP. = 97.806 HEATER TEMP = 100.43 COOLER TEMP = 73.474

702

NASA-LEWIS PRELIMINARY DATA 04/16/76 CADDEII REC 04/16/76 17:46:50.746 FAC SEX15 PGM C003 RDG 3509

LEANOUT 25 BTDC TO CL APP 80 DEG HUM = 60 % MCDE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.220 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	79.772	29.222	212.28	930.82	12.942	14.827

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	93.986	5.5058	44.286	79.124	75.175	6.0132

COOLING AIR	TEMP	INLET-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	32.671	2.9350	3.8422	9836.8	64.387	66.692

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	64.387	-41.230	97.325	2.2349	154.55

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.080763	0.079655	1.2054	2709.6	2710.3	277.50	143.17

WET CORRECTION FACTOR = 0.84745 EXHAUST MOLE. WT. = 27.620 EXHAUST DENSITY = 0.071514 EXHAUST FLOW RATE = 14248.

MEASURED CONC.	PART PER. MILLION WET	PER CENT
	HC PPM NOX PPM CO DRY	CO2 DRY O2 DRY
	1363.6 410.36 6.0930	11.5360 0.14123
CORRECTED CONC. TO WET BASIS	5.1635	9.7758 0.11969

EMISSION RATE	HC	NOX	CO
	0.69751	0.69577	53.412
EMISSION MASS/MODE	0.0034875	0.0034789	0.26706
EMISSION MASS/RATED HP	2.1797E-05	2.1743E-05	0.0016691
MODE EMIS./STD. CYCLE %	1.1472	1.4495	3.9741

EAL. FUEL AIR RATIO = 0.079766 MEAS. FUEL AIR RATIO = 0.080763 DIFF MEAS. & CAL. F/A PERCENT = -1.2586

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	425.44	441.67	421.52	433.92

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1679.7	1456.7	749.81	1780.3	1333.1	1327.5

ENGINE OIL	EQILT	SOILT	OILT	MANIFOLD PRESSURE = 28.226
	188.29	210.97	73.775	

DYMO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.311
	275.49	2656.2	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	79.437	79.772	-14.182	76.043

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	91.803	3.9537	54.059	2716.1

CELL TEMP. = 99.291 HEATER TEMP = 94.224 COOLER TEMP = 71.924

ORIGINAL PAGE IS
OF POOR QUALITY

703

NASA-LEWIS PRELIMINARY DATA 04/16/76 CADDEII REC 04/16/76 17:52:02.851 FAC SEX15 PGM C003 RDG 3511

LEANOUT 25 BTDC TO CI APP 80 DEG HUM = 60 % MCDE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.220 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	80.672	29.220	110.51	473.58	6.4107	14.473

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	96.266	5.6325	44.228	40.647	38.578	6.0774

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	81.861	2.8708	3.7191	9715.3	59.451	65.242

REL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP
	59.451	58.110	94.757	2.1759 68.529

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.081460	0.080372	1.2158	2355.4	2356.3	144.86	64.965

WET CORRECTION FACTOR = 0.84509 EXHAUST MOLE. WT. = 27.564 EXHAUST DENSITY = 0.071371 EXHAUST FLOW RATE = 7265.8

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	1761.7	308.19	6.6399	11.2110	0.15532	
CORRECTED CONC. TO WET BASIS			5.6113	9.4741	0.13125	

	HC	NOX	CO
EMISSION RATE	0.45952	0.26647	29.599
EMISSION MASS/MODE	0.045952	0.026647	2.9599
EMISSION MASS/RATED HP	0.00028720	0.00016654	0.018500
MODE EMIS./STD. CYCLE %	15.116	11.103	44.066

CAL. FUEL AIR RATIO = 0.081181 MEAS. FUEL AIR RATIO = 0.081460 DIFF MEAS. & CAL. F/A PERCENT = -0.34236

CYL TEMP. DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	346.20	357.25	359.48	366.15

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1398.3	1362.7	795.40	1866.6	1139.1	1141.5

ENGINE OIL	FILTY	SOILT	OILP	MANIFOLD PRESSURE = 19.182
	188.54	160.53	71.951	

DYMO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.316
	143.70	2296.8	

INDUCTION AIR	TAIRT1	TAIPT2	TAIRT1	TAIRT2
	80.355	80.672	90.495	75.669

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	91.177	2.9701	53.571	2361.6

CELL TEMP. = 99.334 HEATER TEMP. = 107.16 COOLER TEMP. = 70.979

704

NASA-LEWIS PRELIMINARY DATA 04/16/76 CADDELI REC 04/16/76 17:54:45.883 FAC SEX15 PGM C003 RSG 3512

LEANOUT 25 BTDC TO CL APP 90 DEG HUM = 60 % MODE = 3.0000 NO. SCANS = 4

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.220 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	80.130	29.188	213.20	937.12	12.753	14.840

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	95.181	5.4857	44.256	74.179	73.369	6.0516

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	82.816	3.0084	3.7833	9973.8	62.369	66.111

RFL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	62.369	-0.85759	95.261	2.1875	155.57

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.078292	0.077241	1.1585	2713.4	2714.4	278.57	143.92

WET CORRECTION FACTOR = 0.83873 EXHAUST MOLE. WT. = 27.818 EXHAUST DENSITY = 0.072028 EXHAUST FLOW RATE = 14206.

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1356.4	493.45	5.9164	11.6330	0.12934
CORRECTED CONC. TO WET BASIS			4.9523	9.7569	0.10848

	HC	NOX	CO
EMISSION RATE	0.69176	0.83419	51.179
EMISSION MASS/MODE	0.0034588	0.0041709	0.25590
EMISSION MASS/RATED HP	2.1617E-05	2.5068E-05	0.0015994
MODE EMIS./STD. CYCLE %	1.1378	1.7379	3.8080

CAL. FUEL AIR RATIO = 0.079394 MEAS. FUEL AIR RATIO = 0.078292 DIFF MEAS. & CAL. F/A PERCENT = 1.4078

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	402.97	423.64	412.21	415.34

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1951.8	1462.3	819.34	1869.2	1320.7	1315.4

ENGINE OIL	F OILT	S OILT	OILP	MANIFOLD PRESSURE = 28.265
	189.03	42.937	74.072	

DYMO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.330
	271.56	2627.7	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	79.865	80.130	46.640	75.421

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	92.261	3.7196	54.532	2633.5

CELL TEMP. = 99.763 HEATER TEMP = 109.03 COOLER TEMP = 70.725

705

NASA-Lewis PRELIMINARY DATA 04/16/76 CADDEII REC 04/16/76 17:57:11.989 FAC SEX15 PGM C003 RDG 3513

LEANOUT 25 BTDC TO CL APP 80 DEG HUM = 60 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.220 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	81.139	29.242	183.42	797.07	10.837	14.692

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	95.608	5.5403	44.245	62.056	60.576	6.0885

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	83.647	2.9245	3.8508	9817.0	59.696	65.797

REL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP
	59.696	35.348	95.177	2.1856 126.59

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.075998	0.074979	1.1343	2434.7	2435.6	259.89	120.48

WET CORRECTION FACTOR = 0.83194 EXHAUST MOLE. WT. = 28.006 EXHAUST DENSITY = 0.072515 EXHAUST FLOW RATE = 11976.

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1488.4	1026.6	5.6762	11.7310	0.18808
CORRECTED CONC. TO WET BASIS				9.7594	0.15647

	HC	NOX	CO
EMISSION RATE	0.63997	1.4631	41.060
EMISSION MASS/MODE	0.053331	0.12193	3.4217
EMISSION MASS/RATED HP	0.00033332	0.00076204	0.021385
MODE EMIS./STD. CYCLE %	17.543	50.803	50.918

CAL. FUEL AIR RATIO = 0.078752 MEAS. FUEL AIR RATIO = 0.075998 DIFF MEAS. & CAL. F/A PERCENT = 3.6365

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	386.59	406.80	420.08	424.44

EXT GAS TEMP DEG.F	FXT-1	FXT-2	FXT-3	FXT-4	SEXT-1	SEXT-2
	1244.1	1318.0	785.53	1857.3	1278.2	1275.2

ENGINE OIL	EQILT	SOILT	OILP	MANIFOLD PRESSURE = 27.533
	198.11	124.78	72.095	

DYMO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.359
	251.83	2377.4	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	83.787	81.139	62.311	76.191

ORIFICE ATP	TEMP	DELTAP	ORFP	FLOW
	91.891	4.0682	53.821	2734.5

CELL TEMP. = 100.14 HEATER TEMP = 105.97 COOLER TEMP = 71.817

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NASA-LEWIS PRELIMINARY DATA 04/16/76 CADDEII REC 04/16/76 18:06:36.157 FAC SEX15 PGM C003 RDG 3514

LEANOUT 25 ATDC TO CL APP 80 DEG HUM = 60% MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.220 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	78.925	29.219	110.34	473.13	6.4163	14.477

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	94.706	5.6349	44.268	39.693	38.251	6.1002

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	80.267	2.9690	3.6944	9937.8	63.083	65.302

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	63.083	30.385	94.931	2.1799	69.041

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.080847	0.079765	1.2067	2355.0	2356.2	146.27	65.589

WET CORRECTION FACTOR = 0.84232 EXHAUST MOLE. WT. = 27.613 EXHAUST DENSITY = 0.071497 EXHAUST FLOW RATE = 7242.2

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1758.7	310.25	6.6829	11.1950	0.17534
CORRECTED CONC. TO WET BASIS			5.6291	9.4302	0.14769

	HC	NOX	CO
EMISSION RATE	0.45725	0.26738	29.597
EMISSION MASS/MODE	0.045725	0.026738	2.9597
EMISSION MASS/RATED HP	0.00028578	0.00016711	0.018498
MODE EMIS./STD. CYCLE %	15.041	11.141	44.043

CAL. FUEL AIR RATIO = 0.081202 MEAS. FUEL AIR RATIO = 0.080847 DIFF MEAS. & CAL. F/A PERCENT = 0.43940

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	340.10	352.08	350.96	352.64

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1355.9	1365.6	863.80	1676.1	1099.1	1099.4

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 19.135
	185.76	207.79	71.555	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.375
	139.32	2356.6	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	78.607	78.925	-69.735	75.514

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	89.800	1.0540	54.163	1438.3

CELL TEMP. = 97.331 HEATER TEMP = 102.39 COOLER TEMP = 63.635

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NASA-LEWIS		PRELIMINARY DATA		04/16/76	CADDEII	REC 04/16/76 18:13:31.878		FAC SEX15	PGM C003	RDG 3515
LEANOUT 25 BTDC TO CL APP 90 DEG HUM = 60 %				MODE = 3.0000		NO. SCANS = 4				
ENGINE TIMING = 25.000		DFG. . .	BAROMETRIC PRESSURE = 29.200		RATED HP. = 160.00		HC RATIO = 2.1250			
COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL				
	79.380	29.206	211.94	928.85	12.656	14.815				
COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP				
	93.804	5.5202	44.291	77.300	73.095	6.0265				
COOLING AIR	TEMP	INLET-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT				
	82.167	2.9893	3.7930	9938.4	63.893	66.099				
REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP					
	63.893	-21.280	95.381	2.1903	153.79					
ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP			
	0.078694	0.077636	1.1745	2701.7	2702.0	277.01	142.50			
WET CORRECTION FACTOR = 0.85024		EXHAUST MFL. WT. = 27.786		EXHAUST DENSITY = 0.071943		EXHAUST FLOW RATE = 14102.				
MEASURED CONC.	PART PER MILLION WET			PER CENT						
	HC PPM	NOX PPM	CO DRY	CO2 DRY	CO DRY	O2 DRY				
	1274.4	645.61	4.9434	12.1820	0.14521					
CORRECTED CONC. TO WET BASIS			4.2031	10.357	0.12347					
EMISSION RATE	HC	NOX	CO							
	0.64520	1.0835	43.034							
	0.0032260	0.0054174	0.21517							
	2.0163E-05	3.3859E-05	0.0013448							
MODE FMIS./STD. CYCLE %	1.0612	2.2573	3.2019							
CAL. FUEL AIR RATIO = 0.077134		MEAS. FUEL AIR RATIO = 0.078694		DIFF MEAS. & CAL. F/A PERCENT = -1.9818						
CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4						
	428.37	442.97	428.37	439.07						
EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2				
	836.74	1469.8	799.48	1965.6	1348.9	1342.9				
ENGINE OIL	EOILT	SOILT	NOILP	MANIFOLD PRESSURE = 28.328						
	186.61	250.43	73.822							
DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.353							
	277.53	2551.1								
INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2						
	79.093	79.380	-61.114	76.095						
ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW						
	90.585	2.5219	54.193	2186.6						
CELL TEMP. = 98.870	HEATER TEMP = 95.753		COOLER TEMP = 73.610							

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NASA-LEWIS PRELIMINARY DATA 04/16/76 CADDEII REC 04/16/76 18:15:26.594 FAC SEX15 PGM C003 RDG 3516

LEANOUT 25 BTDC TO CL APP 90 DEG HUM = 60 % MODE = 4.0000 NO. SCANS = 3

ENGINE TIMING = 25.000 DEG. BARDMETRIC PRESSURE = 29.200 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 80.181 PRESS 29.152 CFM 185.91 DRY FLOW 807.80 VAPOR FLOW 11.034 PRESS TOTAL 14.700

COMB. FUEL TEMP 94.455 PRESS 5.5411 DENSITY 44.274 TURBO FLOW 63.589 FLOW TRON 60.701 FPIP 6.0946

COOLING AIR TEMP 82.574 UDEL-HOOD 3.0665 DEL-HOOD 3.8063 FLOW 10081. REL-HUM 61.901 DEW-POINT 65.942

REL-PUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP
61.901 50.238 95.612 2.1956 125.76

ENG. COND. F/A DRY 0.075143 F/A WET 0.074131 EQU. RATIO 1.1215 RPM-1 2436.7 RPM-2 2436.7 TORQUE 258.15 BHP 119.77

WFT CORRECTION FACTOR = 0.83729 EXHAUST MOLE. WT. = 28.077 EXHAUST DENSITY = 0.072699 EXHAUST FLOW RATE = 12098.

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 1320.0 NOX PPM 1280.8 CO DRY 4.8518 CO2 DRY 12.2140 O2 DRY 0.25789
CORRECTED CONC. TO WFT BASIS 4.0624 10.227 0.21593

EMISSION RATE HC 0.57330 NOX 1.8440 CO 35.681
EMISSION MASS/MODE 0.047775 0.15366 2.9734
EMISSION MASS/RATED HP 0.00029859 0.0096039 0.018584
MODE EMIS./STD. CYCLE % 15.715 64.026 44.248

CAL. FUEL AIR RATIO = 0.076608 MEAS. FUEL AIR RATIO = 0.075143 DIFF MEAS. & CAL. F/A PERCENT = 1.9486

CYL TEMP DEG.F CYL-1 392.02 CYL-2 413.59 CYL-3 421.79 CYL-4 425.27

EXT GAS TEMP DEG.F EXT-1 1034.7 EXT-2 1336.6 EXT-3 821.48 EXT-4 1970.7 SEXT-1 1302.5 SEXT-2 1299.6

ENGINE OIL FOILT 185.22 SOILT 170.75 OILP 72.574 MANIFOLD PRESSURE = 27.698

DYNO COND. TORQUE 250.48 RPM 2400.6 CYL. PACK PRESSURE = 29.520

INDUCTION AIR IAIRT1 79.873 IAIRT2 80.181 TAIRT1 -33.547 TAIRT2 76.482

ORIFICE AIR TEMP 90.803 DELTAP 3.2960 ORFP 54.012 FLOW 2484.3

CELL TEMP. = 98.926 HEATER TEMP = 92.669 COOLER TEMP = 73.555

ORIGINAL PAGE IS
OF POOR QUALITY

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NASA-LEVIS		PRELIMINARY DATA		04/16/76	CADDEII	REC 04/16/76 18:21:27.773	FAC SEX15	PGM C003	RDG 3518
LEANOUT 25 BTDC TO CL APP 80 DEG HUM = 60 %				MODE = 3.0000	NO. SCANS = 5				
ENGINE TIMING = 25.000		DEG.	BAROMETRIC PRESSURE = 29.200		RATED HP. = 160.00		HC RATIO = 2.1250		
COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL			
	79.993	29.231	212.35	930.65	12.726	14.806			
COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPTP			
	94.802	5.5262	44.266	72.358	70.930	6.0186			
COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT			
	82.512	2.9646	3.8018	9892.3	62.804	66.182			
REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP				
	62.804	14.645	95.724	2.1981	154.73				
ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP		
	0.076216	0.075188	1.1375	2704.5	2704.8	278.50	143.42		
WET CORRECTION FACTOR = 0.84117		EXHAUST MOLE. WT. = 27.988		EXHAUST DENSITY = 0.072468		EXHAUST FLOW RATE = 13996.			
MEASURED CONC.	PART PER MILLION WET		PER CENT						
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY				
	1219.7	718.69	4.7902	12.221	0.14913				
CORRECTED CONC. TO WET BASIS			4.0294	10.280	0.12545				
EMISSION RATE	HC	NOX	CO						
	0.61288	1.1970	40.945						
EMISSION MASS/MODE	0.0030644	0.0059852	0.20472						
EMISSION MASS/RATED HP	1.9152E-05	3.7407E-05	0.0012795						
MODE EMS./STD. CYCLE %	1.0090	2.4938	3.0465						
CAL. FUEL AIR RATIO = 0.076801		MEAS. FUEL AIR RATIO = 0.076216		DIFF MEAS. & CAL. F/A PERCENT = 0.76774					
CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4					
	407.61	424.66	415.31	416.89					
EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2			
	1141.3	1471.3	898.50	1949.6	1340.3	1334.6			
ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.235					
	186.45	207.94	73.911						
DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.290						
	282.83	2668.2							
INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2					
	79.720	79.993	56.306	75.731					
OFFICE AIR	TEMP	DELTAP	ORFP	FLOW					
	91.273	0.053105	53.932	207.45					
CELL TEMP. = 99.385	HEATER TEMP = 108.51		COOLER TEMP = 72.396						

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NASA-LEWIS		PRELIMINARY DATA		04/16/76	CADDEIT	REC 04/16/76 18:18:54.372	FAC SEX15	PGM C003	RDG 3517
LEANOUT 25 BTDC TO CL APP 80 DEG HUM = 60 %				MODE = 5.0000		NO. SCANS = 5			
ENGINE TIMING = 25.000		DEG.	BAROMETRIC PRESSURE = 29.200			RATED HP. = 160.00		HC RATIO = 2.1250	
COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL			
	80.275	29.203	110.37	472.79	6.4404	14.467			
COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP			
	95.963	5.6463	44.236	37.783	36.379	6.1320			
COOLING AIR	TEMP	INLET-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT			
	81.227	2.9624	3.7800	9888.2	60.574	65.407			
REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP				
	60.574	72.547	95.354	2.1896	69.280				
ENG. COND.	F/A DRY	F/A WFT	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP		
	0.076944	0.075910	1.1484	2359.1	2359.0	146.27	65.702		
WET CORRECTION FACTOR = 0.83927			EXHAUST MOLE WT. = 27.928		EXHAUST DENSITY = 0.072313		EXHAUST FLOW RATE = 7130.3		
MEASURED CONC.	PART PER MILLION WET		PER CENT						
	HC PPM	NOX PPM	CO DRY	CO2 DRY	NO2 DRY				
	1569.7	485.89	5.2810	11.9900	0.20244				
CORRECTED CONC. TO WET BASIS			4.4322	10.063	0.16990				
EMISSION RATE	HC	NOX	CO						
	0.40180	0.41228	22.943						
EMISSION MASS/MODE	0.040180	0.041228	2.2943						
EMISSION MASS/PATED HP	0.00025112	0.00025767	0.014340						
MODE EMIS./STD. CYCLE %	13.217	17.178	34.142						
CAL. FUEL AIR RATIO = 0.077845		MEAS. FUEL AIR RATIO = 0.076944			DIFF MEAS. & CAL. F/A PERCENT = 1.1710				
CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4					
	351.19	361.77	363.97	370.34					
EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2			
	1524.2	1378.3	910.17	1845.1	1159.1	1161.2			
ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 19.183					
	184.46	274.27	71.995						
DYNO COMP.	TORQUE	RPM	CYL. BACK PRESSURE = 29.247						
	152.06	2310.6							
INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2					
	79.967	80.275	40.706	75.616					
ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW					
	91.169	1.0209	54.044	1414.1					
CELL TEMP. = 98.653		HEATER TEMP = 111.03			COOLER TEMP = 70.988				

711

NASA-LEWIS PRELIMINARY DATA 04/16/76 CADDEII REC 04/16/76 18:24:04.796 FAC SEX15 PGM C003 RDG 3519

LEANOUT 25 BTDC TO CL APP 80 DEG HUM = 60 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.200 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR TEMP 81.007 PRESS 29.207 CFM 185.86 DRY FLOW 806.61 VAPOR FLOW 11.088 PRESS TOTAL 14.684

COMP. FUEL TEMP 95.252 PRESS 5.5640 DENSITY 44.254 TURBO FLOW 61.709 FLOW TRON 60.000 FPIP 6.0900

COOLING AIR TEMP 83.348 UDEL-HOOD 2.9735 DEL-HOOD 3.7456 FLOW 9908.9 REL-HUM 60.571 DEW-POINT 66.092

REL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP
60.571 38.016 96.226 2.2097 127.14

ENG. COND. F/A DRY 0.074385 F/A WET 0.073377 EQU. RATIO 1.1102 RPM-1 2439.5 RPM-2 2439.0 TORQUE 260.47 BHP 120.99

WET CORRECTION FACTOR = 0.83330 EXHAUST MOLE. WT. = 28.141 EXHAUST DENSITY = 0.072863 EXHAUST FLOW RATE = 12045.

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 1317.6 NOX PPM 1307.2 CO DRY 4.8812 CO2 DRY 12.195 O2 DRY 0.24780
CORRECTED CONC. TO WET BASIS 4.0575 10.162 0.20650

EMISSION RATE HC 0.56980 NOX 1.8738 CO 35.571
EMISSION MASS/MODE 0.047483 0.15615 2.9642
EMISSION MASS/RATED HP 0.00029677 0.00097596 0.018527
MODE FMS./STD. CYCLE % 15.619 65.064 44.111

CAL. FUEL AIR RATIO = 0.076708 MEAS. FUEL AIR RATIO = 0.074385 DIFF MEAS. & CAL. F/A PERCENT = 3.1230

CYL TEMP DEG. F CYL-1 392.67 CYL-2 410.84 CYL-3 422.33 CYL-4 424.41

EXT GAS TEMP DEG. F EXT-1 1646.3 EXT-2 1325.7 EXT-3 825.31 EXT-4 2005.8 SEXT-1 1302.1 SEXT-2 1298.9

ENGINE OIL FOILT 184.65 SOILT 286.97 OILP 72.647 MANIFOLD PRESSURE = 27.732

DYNO COND. TORQUE 251.17 RPM 2331.7 CYL. BACK PRESSURE = 29.219

INDUCTION AIR IAIRT1 80.672 IAIRT2 81.007 TAIRT1 77.562 TAIRT2 76.492

CRIFICE AIR TFMP 91.343 DELTAP 2.0601 DRFP 53.846 FLOW 1986.9

CELL TEMP. = 99.731 HEATER TEMP = 93.886 COOLER TEMP = 73.661

712

NASA-LEWIS PRELIMINARY DATA 04/16/76 CADDEII REC 04/16/76 18:26:40.914 FAC SEX15 PGM C003 RDG 3520

LEANOUT 25 BTDC TO CL APP 80 DEG HUM = 60 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.200 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	81.148	29.197	109.70	469.72	6.4024	14.464

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	96.708	5.6490	44.217	38.291	36.997	6.1104

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	82.134	2.8852	3.7697	9742.6	58.896	65.417

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	58.896	61.252	95.412	2.1910	68.754

ENG. COND.	F/A DRY	F/A WET	EQV. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.078763	0.077704	1.1756	2353.0	2353.2	145.38	65.132

WET CORRECTION FACTOR = 0.84566 EXHAUST MOLE. WT. = 27.780 EXHAUST DENSITY = 0.071929 EXHAUST FLOW RATE = 7133.7

MEASURED CONC.	PART PER MILLION WET	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1598.0	469.37	5.4112	11.945	0.18848
CORRECTED CONC. TO WET BASIS			4.5760	10.101	0.15939

713

EMISSION RATE	HC	NOX	CO
	0.40924	0.39845	23.699
EMISSION MASS/MODE			
	0.040924	0.039845	2.3699
EMISSION MASS/RATED HP			
	0.00025577	0.00024903	0.014812
MODE EMIS./STD. CYCLE %			
	13.462	16.602	35.267

CAL. FUEL AIR RATIO = 0.079164 MEAS. FUEL AIR RATIO = 0.078763 DIFF MEAS. & CAL. F/A PERCENT = -0.76039

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	351.84	361.74	362.51	369.74

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1345.1	1380.5	903.32	1859.4	1155.3	1157.0

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE =
	186.47	166.65	71.487	19.092

DYNA COND.	TORQUE	RPM	CYL. RACK PRESSURE =
	147.48	2286.6	29.218

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	80.849	81.148	103.94	75.715

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	91.917	1.0482	54.212	1431.6

CELL TEMP. = 99.481 HEATER TEMP = 109.25 COOLER TEMP = 71.416

NASA-LEWIS PRELIMINARY DATA 04/16/76 CADDEII REC 04/16/76 18:32:07.317 FAC SEX15 PGM C003 RDG 3521

LEAN OUT 25 BTDC TO CL APP 80 DEG HUM = 60 % MCR = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.200 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	78.254	29.193	211.19	924.21	12.811	14.801

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	92.900	5.5415	44.314	68.712	65.743	6.0573

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	81.254	3.0247	3.8292	10004.	67.365	66.557

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	67.365	-40.420	97.034	2.2282	153.01

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	PPM-1	RPM-2	TORQUE	BHP
	0.071134	0.070161	1.0617	2698.0	2698.8	276.05	141.81

WET CORRECTION FACTOR = 0.83690 EXHAUST MOLE. WT. = 28.418 EXHAUST DENSITY = 0.073581 EXHAUST FLOW RATE = 13627.

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
CORRECTED CONC. TO WET BASIS	1042.2	1270.5	2.9486	13.2040	0.16740
			2.4577	11.051	0.14009

EMISSION RATE	HC	NOX	CO
	0.50989	2.0604	24.415
	0.0025495	0.010302	0.12207
	1.5934E-05	6.4389E-05	0.00076296
MODE EMIS./STD. CYCLE %	0.93864	4.2926	1.8166

CAL. FUEL AIR RATIO = 0.072902 MEAS. FUEL AIR RATIO = 0.071134 DIFF MEAS. & CAL. F/A PERCENT = 2.3455

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	434.47	445.35	433.65	441.66

EXT GAS TEMP DEG.F	FXT-1	FXT-2	FXT-3	FXT-4	SXT-1	SXT-2
	1504.9	1472.6	1080.5	1926.8	1395.4	1389.5

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.306
	185.82	214.38	73.295	

DYN COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.381
	291.32	2641.2	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	77.971	78.254	10.352	76.205

PRIFICE AIR	TEMP	DELTA P	DRFD	FLDW
	69.300	1.9892	53.962	1957.8

CELL TEMP. = 97.616 HEATER TEMP = 94.107 COOLER TEMP = 73.599

714

NASA-LEWIS PRELIMINARY DATA 04/16/76 CADDPII REC 04/16/76 18:37:53.328 FAC SEX15 PGM C003 RDG 3523

LEANOUT 25 BTDC TO CL APP 80 DFG HUM = 60 % MCDE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.200 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	79.225	29.208	111.19	476.13	6.5241	14.472

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	95.131	5.6652	44.257	36.499	34.452	6.1014

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	80.460	2.9530	3.7249	9870.6	63.075	65.582

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	63.075	68.969	95.916	2.2026	68.410

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.072359	0.071381	1.0800	2355.6	2356.5	144.78	64.936

WET CORRECTION FACTOR = 0.84535 EXHAUST MOLE WT. = 28.313 EXHAUST DENSITY = 0.073308 EXHAUST FLOW RATE = 7093.9

MEASURED CONC.	PART PER MILLION WET	CO DRY	PER CENT	CO2 DRY	CO DRY
	HC PPM 1179.6	NOX PPM 893.19	CO DRY 2.9209	PER CENT 13.1160	CO2 DRY 0.30855
CORRECTED CONC. TO WET BASIS		2.4591	11.087	0.26083	

EMISSION RATE	HC	NOX	CO
	0.29872	0.74975	12.645
EMISSION MASS/MODE	0.029872	0.074975	1.2645
EMISSION MASS/RATED HP	0.00018670	0.00046859	0.0079030
MODE EMIS./STD. CYCLE %	9.8263	31.240	18.817

CAL. FUEL AIR RATIO = 0.072407 MEAS. FUEL AIR RATIO = 0.072359 DIFF MEAS. & CAL. F/A PERCENT = 0.066063

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	355.07	364.89	366.16	372.02

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1415.0	387.53	1054.0	1889.0	1205.1	1207.4

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 19.429
	184.99	145.93	71.495	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.249
	144.61	2298.3	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	78.952	79.225	111.83	75.896

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	89.460	1.0361	54.661	1426.6

CELL TEMP. = 97.944 HEATER TEMP = 108.11 COOLER TEMP = 72.691

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NASA-LEWIS PRELIMINARY DATA 04/16/76 CADD11 REC 04/16/76 18:42:23.284 FAC SEX15 PGM C003 RDG 3524

LEANOUT 25 BTDC TO CL APP 80 DEG HUM = 60 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.200 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	79.296	29.194	211.73	927.82	12.761	14.817

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	94.238	5.5385	44.280	66.754	64.515	6.0537

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	RFL-HUM	DEW-POINT
	81.976	2.9674	3.7517	9897.5	64.668	66.368

RFL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP
	64.668	4.2884	96.278	2.2109 155.19

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.069534	0.068591	1.0378	2702.7	2703.5	279.29	143.72

WET CORRECTION FACTOR = 0.82976 EXHAUST MOLE WT. = 28.487 EXHAUST DENSITY = 0.073759 EXHAUST FLOW RATE = 13626.

MEASURED CONC.	PART PER MILLION WET		PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY
	1015.3	1332.6	2.9229	13.1850
CORRECTED CONC. TO WET BASIS			2.4253	10.940
				0.16510
				0.13699

EMISSION RATE	HC	NOX	CO
	0.49665	2.1610	23.993
	0.0024834	0.010805	0.11997
	1.5521E-05	6.7530E-05	0.00074979
EMISSION MASS/MODE			
EMISSION MASS/RATED HP			
MODE EMIS./STD. CYCLE %	0.81692	4.5020	1.7852

CAL. FUEL AIR RATIO = 0.072761 MEAS. FUEL AIR RATIO = 0.069534 DIFF MEAS. & CAL. F/A PERCENT = 4.6410

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	427.75	439.49	430.49	436.06

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	493.73	650.11	1033.8	1996.5	1394.3	1388.6

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.279
	186.11	160.28	73.619	

DYMO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.385
	270.82	2524.7	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	78.960	78.296	25.541	76.129

DIFFUSE AIR	TEMP	DELTA P	DRFP	FLOW
	89.687	1.0424	54.024	1430.6

CELL TEMP. = 98.652 HEATER TEMP = 106.02 COOLER TEMP = 74.178

716

NASA-LFW'S PRELIMINARY DATA 04/16/76 CADDEII RFC 04/16/76 18:49:18.080 FAC SEX15 PGM C003 RDG 3525

LEANOUT 25 RTDC TO CL APP 80 DEG HUM = 60 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.200 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 80.487 PRESS 29.182 CFM 190.45 DRY FLOW 827.89 VAPOR FLOW 11.513 PRESS TOTAL 14.711

COMP. FUEL TEMP 95.018 PRESS 5.5451 DENSITY 44.260 TURBO FLOW 60.668 FLOW TRON 57.615 FPIP 6.0837

COOLING AIR TEMP 83.031 UNDEL-HOOD 2.9464 DEL-HOOD 3.7847 FLOW 9858.1 REL-HUM 62.423 DEW-POINT 66.473

REL-HUM 1 62.423 2 48.131 HUMIDITY 97.348 % H2O VAPOR CORRECTED HP 2.2354 126.15

ENG. COND. F/A DRY 0.069592 F/A WET 0.028638 EQU. RATIO 1.0387 RPM-1 2439.1 RPM-2 2439.2 TORQUE 258.51 BHP 120.06

WET CORRECTION FACTOR = 0.83012 EXHAUST MOLE. WT. = 28.481 EXHAUST DENSITY = 0.073744 EXHAUST FLOW RATE = 12163.

MEASURED CONC.	PART PER MILLION WET	PER CENT
	HC PPM	CO DRY
	930.69	12.7900
CORRECTED CONC. TO WET BASIS	1650.8	10.517

EMISSION RATE	HC	NOX	CO
	0.40642	2.3895	24.898
EMISSION MASS/MODE	0.033868	0.19912	2.0748
EMISSION MASS/RATED HP	0.00021168	0.0012445	0.012968
MODE EMIS./STD. CYCLE %	11.141	82.968	30.875

CAL. FUEL AIR RATIO = 0.072904 MEAS. FUEL AIR RATIO = 0.069592 DIFF MEAS. & CAL. F/A PERCENT = 4.7590

CYL TEMP DEG.F CYL-1 399.99 CYL-2 418.80 CYL-3 417.07 CYL-4 414.46

EXT GAS TEMP DEG.F EXT-1 1317.7 EXT-2 -93.431 EXT-3 741.89 EXT-4 1920.0 SEXT-1 1340.7 SEXT-2 1338.3

ENGINE OIL EOILT 184.52 SOILT 157.76 OILT 72.515 MANIFOLD PRESSURE = 27.992

DYMO COND. TORQUE 256.26 RPM 2360.0 CYL. BACK PRESSURE = 29.269

INDUCTION AIR IAIRT1 80.125 IAIRT2 80.487 TAIRT1 76.466 TAIRT2 76.466

ORIFICE AIR TEMP 90.297 DELTAP 1.0488 DRFP 53.765 FLOW 1434.1

CELL TEMP. = 99.240 HEATER TEMP = 91.200 COOLER TEMP = 72.780

717

NASA-LEWIS PRELIMINARY DATA 04/16/76 CADDEII REC 04/16/76 18:49:39.479 FAC SEX15 PGM C003 RDG 3526

LEANOUT 25 BTDC TO CL APP 80 DEG HUM = 60 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.200 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TFMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	80.531	29.142	190.62	828.11	11.485	14.702

COMP. FUEL	TEMP	PRESS	DENSITY	TURBIN FLOW	FLOW TRON	FPIP
	95.027	5.5514	44.260	60.587	58.107	6.0885

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	82.979	2.9181	3.7395	9805.0	62.129	66.377

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	62.129	52.535	97.085	2.2294	126.95

ENG. COND.	F/A DRY	F/A WET	FOL. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.070158	0.069208	1.0473	2439.2	2439.8	260.15	120.82

WET CORRECTION FACTOR = 0.83319 EXHAUST MOLE. WT. = 28.502 EXHAUST DENSITY = 0.073798 EXHAUST FLOW RATE = 12164.

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	C2 DRY	
	913.39	1641.7	3.3729	12.8290	0.43490	
CORRECTED CONC. TO WET BASIS						
			2.8103	10.689	0.36236	

EMISSION RATE	HC	NOX	CO
	0.39888	2.3764	24.819
	0.033240	0.19803	2.0682
	0.00020775	0.0012377	0.012926
EMISSION MASS/MODE			
EMISSION MASS/RATED HP			
MODE EMIS./STD. CYCLE %	10.934	82.514	30.777

CAL. FUEL AIR RATIO = 0.072817 MEAS. FUEL AIR RATIO = 0.070168 DIFF MEAS. & CAL. F/A PERCENT = 3.7752

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	400.14	418.79	417.36	414.03

EXT GAS TEMP DEG.F	FXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1052.6	-166.40	719.62	1774.1	1340.9	1338.4

ENGINE OIL	COILT	SOILT	OILP	MANIFOLD PRESSURE = 27.924
	185.39	284.16	72.607	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.284
	266.57	2376.0	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	80.187	80.531	148.14	76.493

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	90.437	0.056406	54.014	219.54

CELL TEMP. = 99.248 HEATEP TEMP = 91.124 COOLER TEMP = 73.234

718

LEANOUT 25 BTDC TO CL APP 80 DEG HUM = 60 ? MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. . . BAROMETRIC PRESSURE = 29.200 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	80.505	29.199	111.65	478.58	6.5519	14.467

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	96.656	5.6553	44.218	36.842	34.467	6.1284

COOLING AIR	TEMP	UNEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	81.941	2.9707	3.7108	9903.7	60.416	65.547

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	60.416	72.469	95.832	2.2006	67.417

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.072023	0.071047	1.0749	2358.0	2358.1	142.30	63.887

WET CORRECTION FACTOR = 0.84369 EXHAUST MOL. WT. = 28.342 EXHAUST DENSITY = 0.073383 EXHAUST FLOW RATE = 7080.6

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1172.4	937.79	2.9298	13.1130	0.30929
CORRECTED CONC. TO WET BASIS			2.4719	11.064	0.26095

EMISSION RATE	HC	NOX	CO
	0.29802	0.79018	12.707
EMISSION MASS/MODE	0.029802	0.079018	1.2707
	0.00018626	0.0049386	0.0079417
EMISSION MASS/RATED HP	9.8033	32.924	18.909

CAL. FUEL AIR RATIO = 0.072419 MEAS. FUEL AIR RATIO = 0.072020 DIFF MEAS. & CAL. F/A PERCENT = 0.55467

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	364.16	372.63	376.57	382.40

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1094.2	-211.86	982.69	1976.7	1218.3	1220.9

ENGINE OIL	FOILT	SOILT	OILT	MANIFOLD PRESSURE = 19.471
	134.98	344.82	71.923	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.193
	136.76	2314.2	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	80.222	80.505	117.05	75.215

GRIFICE AIR	TEMP	DELTA P	DRFP	FLOW
	90.655	1.0774	54.230	1452.8

CELL TEMP. = 99.421 HEATER TEMP = 101.83 COOLER TEMP = 68.400

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NASA-LEWIS PRELIMINARY DATA 04/21/76 CADDEII REC 04/21/76 13:30:39.779 FAC SEX15 PGM C003 RDG 3529

CLIMB LEANOUT RE-RUNS 100 DEG. HUM=0% MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.970 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	98.393	29.026	188.08	799.87	0.15105	14.586

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	80.725	5.4623	44.529	66.864	64.479	6.0582

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	98.851	3.0626	3.8516	10073.	0.48908	-19.621

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	0.48908	55.057	1.3219	0.030356	125.47

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.080613	0.080597	1.2332	2427.5	2430.5	260.08	120.21

WET CORRECTION FACTOR = 0.85285 EXHAUST MOLE. WT. = 27.632 EXHAUST DENSITY = 0.071545 EXHAUST FLOW RATE = 12083.

MEASURED CONC.	PART PER MILLION WET	PER CENT
	HC PPM	CO2 DRY
	1399.9	10.890
	NOX PPM	CO DRY
	937.69	7.3182
	CO DRY	O2 DRY
	6.2413	0.11277
CORRECTED CONC. TO WET BASIS		0.096177

EMISSION RATE	HC	NOX	CO
	0.60728	1.3483	54.751
EMISSION MASS/MODE	0.050606	0.11236	4.5626
EMISSION MASS/RATED HP	0.00031629	0.00070225	0.078516
MODE EMIS./STD. CYCLE %	16.647	46.817	67.896

CAL. FUEL AIR RATIO = 0.082662 MEAS. FUEL AIR RATIO = 0.080613 DIFF MEAS. & CAL. F/A PERCENT = 2.5418

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	389.49	408.94	441.15	442.94

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1005.0	1247.9	1197.7	2009.6	1247.5	1237.6

ENGINE OIL	EOILT	SOILT	OIL ³	MANIFOLD PRESSURE = 27.286
	161.57	108.61	71.947	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.034
	249.77	2366.3	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	98.420	98.393	82.920	95.649

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	93.039	3.9751	54.394	2720.4

CELL TEMP. = 80.302 HEATER TEMP = 108.13 COOLER TEMP = 115.05

720

CLIMB LEANOUT RE-RUNS 100 DEG. HUM=0% MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.940 RATED HP.= 160.00 HC RATIO= 2.1250

COMB. AIR TEMP 99.654 PRESS 28.921 CFM 189.09 DRY FLOW 804.17 VAPOR FLOW 0.14635 PRESS TOTAL 14.578

COMB. FUEL TEMP 82.055 PRESS 5.4401 DENSITY 44.594 TURBO FLOW 64.077 FLOW TRON 63.258 FPIP 6.0252

COOLING AIR TEMP 100.53 UDEL-HOOD 2.9666 DEL-HOOD 3.8054 FLOW 9896.0 REL-HUM 0.45348 DEW-POINT -20.081

REL-HUM 1 0.45348 2 25.709 HUMIDITY 1.2739 % H2O VAPOR CORRECTED HP 0.029253 125.43

ENG. COND. F/A DRY 0.078663 F/A WET 0.078648 EQU. RATIO 1.1741 RPM-1 2429.9 RPM-2 2432.0 TORQUE 259.41 BHP 120.02

WET CORRECTION FACTOR = 0.84809 EXHAUST MOLE. WT. = 27.788 EXHAUST DENSITY = 0.071950 EXHAUST FLOW RATE = 12058.

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	1376.5	768.98	6.7537	11.221	0.024662	
CORRECTED CONC. TO WET BASIS			5.7362	9.5168	0.020916	

EMISSION RATE	HC	NOX	CO
	0.59588	1.1034	50.215
EMISSION MASS/MODE	0.049657	0.091951	4.1846
EMISSION MASS/RATED HP	0.00031035	0.00057469	0.026154
MODE EMIS./STD. CYCLE %	16.334	38.313	62.271

CAL. FUEL AIR RATIO = 0.081642 MEAS. FUEL AIR RATIO = 0.078663 DIFF MEAS. & CAL. F/A PERCENT = 3.7876

CYL TEMP DEG.F CYL-1 408.57 CYL-2 428.71 CYL-3 449.35 CYL-4 453.72

EXT GAS TEMP DEG.F EXT-1 1278.9 EXT-2 1250.6 EXT-3 1195.4 EXT-4 2107.3 SEXT-1 1312.5 SEXT-2 1308.6

ENGINE OIL EJILT 186.84 SOILT 132.87 OIL? 72.163 MANIFOLD PRESSURE = 27.443

DYNO COND. TORQUE 243.59 RPM 2381.5 CYL. BACK PRESSURE = 29.080

INDUCTION AIR IAIRT1 99.611 IAIRT2 99.654 TAIRT1 -8.0432 TAIRT2 95.364

ORIFICE AIR TEMP 94.463 DELTAP 1.9918 ORFP 54.077 FLOW 1950.0

CELL TEMP. = 83.638 HEATER TEMP = 101.37 COOLER TEMP = 109.78

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NASA-LEWIS PRELIMINARY DATA 04/21/76 CADDEII REC 04/21/76 13:43:15.212 FAC SEX15 PGM C003 RDG 3532

CLIMB LEANOUT RE-RUNS 100 DEG. HUM=0% MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.940 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	100.11	28.982	188.51	801.17	0.14088	14.570

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	82.451	5.4296	44.584	67.306	63.429	6.0975

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	101.16	2.9663	3.8145	9895.4	0.43195	-20.496

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	0.43195	19.310	1.2309	0.028266	125.59

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.079171	0.079157	1.1817	2430.5	2433.0	259.55	120.12

WET CORRECTION FACTOR = 0.85174 EXHAUST MOLE. WT. = 27.747 EXHAUST DENSITY = 0.071844 EXHAUST FLOW RATE = 12036.

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1333.2	805.88	6.6177	11.271	0.013521
CORRECTED CONC. TO WET BASIS			5.6366	9.5998	0.012369

EMISSION RATE	HC	NOX	CO	
	0.57610	1.1543	49.255	
	EMISSION MASS/MODE	0.048008	0.095190	4.1045
	EMISSION MASS/RATED HP	0.00030005	0.00060119	0.025653
MODE EMIS./STD. CYCLE %	15.792	40.079	61.080	

CAL. FUEL AIR RATIO = 0.081348 MEAS. FUEL AIR RATIO = 0.079171 DIFF MEAS. & CAL. F/A PERCENT = 2.7497

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	400.06	421.76	448.08	454.12

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	2104.8	1246.6	1286.3	2149.1	1316.9	1313.5

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 27.367
	186.57	213.23	72.111	

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.083
	239.98	2350.3	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	100.11	100.11	11.788	95.422

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	94.862	2.9905	54.109	2361.5

CELL TEMP. = 84.375 HEATER TEMP = 102.62 COOLER TEMP = 108.27

722

NASA-LEWIS PRELIMINARY DATA 04/21/76 CADDEII REC 04/21/76 13:50:14.436 FAC SEX15 PGW C003 RDG 3533

CLIMB LEANOUT RE-RUNS 100 DEG. HUM=0% MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.940 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	98.039	28.973	189.88	806.10	0.14636	14.558

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	80.787	5.4515	44.627	61.475	60.813	6.1281

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEL-POINT
	99.050	2.9239	3.8591	9815.9	0.47440	-20.126

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	0.47440	22.368	1.2710	0.029185	124.82

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.075441	0.075427	1.1260	2432.3	2434.6	258.31	119.63

WET CORRECTION FACTOR = 0.84842 EXHAUST MOLE. WT. = 28.053 EXHAUST DENSITY = 0.072635 EXHAUST FLOW RATE = 11937.

MEASURED CONC.	PART PER MILLION WET	NOX PPM	CO DRY	PER CENT	O2 DRY
	HC PPM	1199.1	5.3938	11.920	0.066807
CORRECTED CONC. TO WET BASIS			4.5762	10.113	0.056680

EMISSION RATE	HC	NOX	CO
	0.48456	1.7034	39.659
EMISSION MASS/MODE	0.040380	0.14195	3.3050
EMISSION MASS/RATED HP	0.00025238	0.00088718	0.020656
MODE EMIS./STD. CYCLE %	13.283	59.145	49.181

CAL. FUEL AIR RATIO = 0.078320 MEAS. FUEL AIR RATIO = 0.075441 DIFF MEAS. & CAL. F/A PERCENT = 3.8166

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	413.29	435.47	444.37	450.18

FXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	FXT-4	SEXT-1	SEXT-2
	1453.4	1266.9	689.15	1947.4	1337.5	1334.5

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 27.516
	186.28	13.094	72.047	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.079
	250.38	2339.6	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	98.057	98.039	-13.735	95.577

ORIFICE AIR	TEMP	DELTA P	ORFP	FLJW
	92.813	2.9923	54.465	2366.5

CELL TEMP. = 82.794 HEATER TEMP = 133.09 COOLER TEMP = 115.09

725

NASA-LEWIS PRELIMINARY DATA 04/21/76 CADDEII REC 04/21/76 13:50:37.514 FAC SEX15 PGM C003 RDG 3534

CLIMB LEANOUT RE-RUNS 100 DEG. HUM=0% MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.940 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	98.333	28.901	189.84	805.18	0.14544	14.554

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	80.690	5.4533	44.630	61.417	60.261	6.0378

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	99.369	2.9862	3.8098	9932.6	0.46765	-20.191

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	0.46765	56.072	1.2644	0.029035	125.40

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.074841	0.074828	1.1170	2433.7	2435.9	259.28	120.15

WET CORRECTION FACTOR = 0.84481 EXHAUST MOLE. WT. = 28.103 EXHAUST DENSITY = 0.072764 EXHAUST FLOW RATE = 11895.

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1117.5	1216.2	5.4562	11.925	0.058456
CORRECTED CONC. TO WET BASIS			4.6095	10.075	0.049392

EMISSION RATE	HC	NOX	CO	
	0.47724	1.7217	39.809	
	EMISSION MASS/MODE	0.039770	0.14347	3.3174
	EMISSION MASS/RATED HP	0.00024856	0.00089671	0.020734
MODE EMIS./STD. CYCLE %	13.082	59.780	49.366	

CAL. FUEL AIR RATIO = 0.078449 MEAS. FUEL AIR RATIO = 0.074841 DIFF MEAS. & CAL. F/A PERCENT = 4.8209

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	411.51	434.18	445.09	450.92

FXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1039.6	1269.1	642.21	1641.6	1339.2	1335.8

ENGINE OIL	EOILT	SOILT	OIL P	MANIFOLD PRESSURE = 27.587
	187.32	217.47	71.887	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.033
	260.76	2353.8	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	98.368	98.333	119.63	95.959

ORIFICE AIR	TEMP	DELTAP	DRFP	FLOW
	92.848	2.0300	54.639	1970.5

CELL TEMP. = 82.838 HEATER TEMP = 123.97 COOLER TEMP = 115.00

724

NASA-LEWIS PRELIMINARY DATA 04/21/76 CADDEII REC 04/21/76 14:00:32.408 FAC SEX15 PGM C003 RDG 3536

CLIMB LEANOUT RE-RUNS 100 DEG. HUM=0% MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.940 RATED HP. = 140.00 HC RATIO = 2.1250

COMB. AIR TEMP 99.058 PRESS 28.997 CFM 191.86 DRY FLOW 815.16 VAPOR FLOW 0.14280 PRESS TOTAL 14.551

COMB. FUEL TEMP 83.075 PRESS 5.4689 DENSITY 44.568 TURBO FLOW 59.825 FLOW TRON 57.759 FPIP 6.0345

COOLING AIR TEMP 100.46 UDEL-HOOD 2.9785 DEL-HOOD 3.9217 FLOW 9918.2 REL-HUM 0.44360 DEW-POINT -20.556

REL-HUM 1 0.44360 2 57.468 HUMIDITY 1.2262 % H2O VAPOR CORRECTED HP 0.028158 125.61

ENG. COND. F/A DRY 0.070856 F/A WET 0.070843 EQU. RATIO 1.0575 RPM-1 2427.2 RPM-2 2429.6 TORQUE 260.27 BHP 120.28

WET CORRECTION FACTOR = 0.84906 EXHAUST MOLE. WT. = 28.442 EXHAUST DENSITY = 0.073643 EXHAUST FLOW RATE = 11855.

MEASURED CONC. PART PER MILLION WET HC PPM 750.77 NOX PPM 1901.3 CO DRY 3.8118 PER CENT CO2 DRY 12.605 O2 DRY 0.34729
CORRECTED CONC. TO WET BASIS CO DRY 3.2364 PER CENT CO2 DRY 10.702 O2 DRY 0.29488

EMISSION RATE HC 0.31953 NOX 2.6823 CO 27.856
EMISSION MASS/MODE 0.026628 0.22352 2.3213
EMISSION MASS/RATED HP 0.00016642 0.0013970 0.014508
MODE EMIS./STD. CYCLE % 8.7591 93.135 34.543

CAL. FUEL AIR RATIO = 0.073907 MEAS. FUEL AIR RATIO = 0.070856 DIFF MEAS. & CAL. F/A PERCENT = 4.3068

CYL TEMP DEG.F CYL-1 421.34 CYL-2 447.30 CYL-3 443.90 CYL-4 445.91

EXT GAS TEMP DEG.F EXT-1 896.78 EXT-2 1273.4 EXT-3 1301.9 EXT-4 2179.5 SEXT-1 1359.3 SEXT-2 1365.0

ENGINE OIL EOILT 186.65 SOILT 264.04 OTLP 71.771 MANIFOLD PRESSURE = 27.801

DYNO COND. TORQUE 259.83 RPM 2370.7 CYL. BACK PRESSURE = 29.062

INDUCTION AIR IAIRT1 99.006 IAIRT2 99.058 TAIRT1 175.63 TAIRT2 94.877

ORIFICE AIR TEMP 93.951 DELTAP 1.0972 DRFP 54.365 FLOW 1461.5

CELL TEMP. = 85.209 HEATER TEMP = 118.29 COOLER TEMP = 115.39

725

NASA-LEWIS PRELIMINARY DATA 04/21/76 CADDEII REC 04/21/76 15:38:59.553 FAC SEX15 PGM C003 RDG 3537

CLIMB LEANOUT RE-RUNS 100 DEG. HUM=0% MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.870 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 100.36 PRESS 28.756 CFM 188.54 DRY FLOW 798.41 VAPOR FLOW 0.10044 PRESS TOTAL 14.516

COMB. FUEL TEMP 85.638 PRESS 5.4359 DENSITY 44.501 TURBO FLOW 67.917 FLOW TRON 66.277 FPIP 6.0591

COOLING AIR TEMP 100.99 UDEL-HOOD 3.0709 DEL-HOOD 3.7661 FLOW 10089. REL-HUM 0.30558 DEW-POINT -23.881

REL-HUM 1 0.30558 2 80.688 HUMIDITY 0.88061 % H2O VAPOR CORRECTED HP 0.020222 125.34

ENG. COND. F/A DRY 0.083010 F/A WET 0.083000 EQU. RATIO 1.2390 RPM-1 2429.3 RPM-2 2431.6 TORQUE 259.13 BHP 119.86

WET CORRECTION FACTOR = 0.85172 EXHAUST MOLE. WT. = 27.443 EXHAUST DENSITY = 0.071056 EXHAUST FLOW RATE = 12170.

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 1508.0 NOX PPM 634.26 CO DRY 8.3407 CO2 DRY 10.772 O2 DRY 0.11157
CORRECTED CONC. TO WET BASIS 7.1039 9.1750 0.095027

EMISSION RATE HC 0.65889 NOX 0.91859 CO 62.768
EMISSION MASS/MODE 0.054908 0.076549 5.2307
EMISSION MASS/RATED HP 0.00034317 0.00047843 0.032692
MODE EMIS./STD. CYCLE % 18.062 31.895 77.837

CAL. FUEL AIR RATIO = 0.084592 MEAS. FUEL AIR RATIO = 0.083010 DIFF MEAS. & CAL. F/A PERCENT = 1.9056

CYL TEMP DEG.F CYL-1 382.47 CYL-2 403.06 CYL-3 440.46 CYL-4 444.08

EXT GAS TEMP DEG.F EXT-1 1198.0 EXT-2 1101.6 EXT-3 1061.2 EXT-4 1746.1 SEXT-1 1248.0 SEXT-2 1241.0

ENGINE OIL EOILT 163.10 SOILT 324.41 OILP 71.803 MANIFOLD PRESSURE = 27.188

DYNO COND. TORQUE 271.00 RPM 2364.4 CYL. BACK PRESSURE = 28.827

INDUCTION AIR IAIRT1 100.32 IAIRT2 100.36 TAIRT1 -60.832 TAIRT2 95.391

ORIFICE AIR TEMP 94.576 DELTAP 1.0669 ORFP 54.396 FLOW 1440.7

CELL TEMP. = 87.250 HEATER TEMP = 112.95 COOLER TEMP = 113.87

726

NASA-LEWIS PRELIMINARY DATA 04/21/76 CADDEI REC 04/21/76 15:39:20.028 FAC SEX15 PGM C003 RDG 3538

CLIMB LEANOUT RE-RUNS 100 DEG. HUM=0% MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.870 RATED HP. = 160.00 HC RATIO= 2.1250

COMB. AIR TEMP 100.48 PRESS 28.846 CFM 188.34 DRY FLOW 797.44 VAPOR FLOW 0.10066 PRESS TOTAL 14.518

COMB. FUEL TEMP 85.603 PRESS 5.4323 DENSITY 44.502 TURBO FLOW 67.850 FLOW TRON 65.938 FPIP 6.0012

COOLING AIR TEMP 101.06 UDEL-HOOD 2.9973 DEL-HOOD 3.9172 FLOW 9953.2 REL-HUM 0.30557 DEW-POINT -23.851

REL-HUM 1 0.30557 2 38.410 HUMIDITY 0.88363 % H2O VAPOR CORRECTED HP 0.020291 125.55

ENG. COND. F/A DRY 0.082686 F/A WET 0.082676 EQU. RATIO 1.2341 RPM-1 2431.4 RPM-2 2432.7 TORQUE 259.31 BHP 120.05

WET CORRECTION FACTOR = 0.85016 EXHAUST MOLE. WT. = 27.468 EXHAUST DENSITY = 0.071122 EXHAUST FLOW RATE = 12140.

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 1515.3 NOX PPM 635.58 CO DRY 8.3568 CO2 DRY 10.795 O2 DRY 0.11651
CORRECTED CONC. TO WET BASIS 7.1047 9.1777 0.099054

EMISSION RATE HC 0.66043 NOX 0.91827 CO 62.622
EMISSION MASS/MODE 0.055036 0.076522 5.2185
EMISSION MASS/RATED HP 0.00034397 0.00047826 0.032616
MODE EMIS./STD. CYCLE % 18.104 31.884 77.657

CAL. FUEL AIR RATIO = 0.084576 MEAS. FUEL AIR RATIO = 0.082686 DIFF MEAS. & CAL. F/A PERCENT = 2.2859

CYL TEMP DEG.F CYL-1 382.27 CYL-2 403.25 CYL-3 440.78 CYL-4 444.59

EXT GAS TEMP DEG.F EXT-1 1557.1 EXT-2 1042.7 EXT-3 1038.3 EXT-4 1399.9 SEXT-1 1250.7 SEXT-2 1244.6

ENGINE OIL FOILT 164.22 SOILT 147.10 OILP 71.531 MANIFOLD PRESSURE = 27.292

DYNO COND. TORQUE 246.55 RPM 2350.5 CYL. BACK PRESSURE = 29.068

INDUCTION AIR IAIRT1 100.47 IAIRT2 100.48 TAIRT1 -115.56 TAIRT2 95.558

ORIFICE AIR TEMP 94.602 DELTAP 1.0540 ORFP 54.339 FLOW 1432.1

CELL TEMP. = 87.538 HEATER TEMP = 115.15 COOLER TEMP = 114.22

ORIGINAL PAGE IS
OF POOR QUALITY

727

NASA-LEWIS PRELIMINARY DATA 04/21/76 CADDEII REC 04/21/76 16:35:28.386 FAC SEX15 PGM C003 RDG 3541

IDLE LEANOUT RE-RUNS 59 DEG. HUM=0% MODE = 1.000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.870 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	61.836	28.870	12.073	53.784	0.010431	14.179

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	85.805	5.8350	44.497	3.9462	3.3333	6.1836

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	69.324	-0.016329	0.82391	0.00000	1.6158	-19.641

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	1.6158	70.973	1.3577	0.031176	0.46953

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.061977	0.061965	0.92503	623.15	623.58	3.9534	0.46872

WET CORRECTION FACTOR = 0.85889 EXHAUST MOLE. WT. = 28.832 EXHAUST DENSITY = 0.074653 EXHAUST FLOW RATE = 765.24

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	10420.	35.910	1.2963	12.207	3.8960	
CORRECTED CONC. TO WET BASIS			1.1264	10.606	3.3852	

EMISSION RATE	HC	NOX	CO	
	0.28626	0.0032700	0.62577	
	EMISSION MASS/MODE	0.0047710	5.4501E-05	0.010429
	EMISSION MASS/RATED HP	2.9819E-05	3.4063F-07	6.5184E-05
MODE EMIS./STD. CYCLE %	1.5694	0.022709	0.15520	

CAL. FUEL AIR RATIO = 0.063544 MEAS. FUEL AIR RATIO = 0.061977 DIFF MEAS. & CAL. F/A PERCENT = 2.5282

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	253.37	285.81	279.65	291.54

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1420.1	543.67	-61.140	1443.9	755.36	752.16

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 11.258
	166.10	294.48	45.945	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 28.875
	3.3555	621.60	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	60.393	61.836	-127.28	55.671

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	93.535	3.3752	54.127	2507.2

CELL TEMP. = 84.560 HEATER TEMP = 93.851 COOLER TEMP = 52.231

728

NASA-LEWIS PRELIMINARY DATA 04/21/76 CADDEIT REC 04/21/76 16:39:11.825 FAC SEX15 PGM C003 RDG 3542

IDLE LEANOUT RE-RUNS 59 DEG. HUM=0% MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.870 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 62.466 PRESS 28.869 CFM 11.912 DRY FLOW 53.073 VAPOR FLOW 0.0098276 PRESS TOTAL 14.180

COMB. FUEL TEMP 86.392 PRESS 5.8368 DENSITY 44.482 TURBO FLOW 3.9466 FLOW TRON 3.2973 FPIP 6.1716

COOLING AIR TEMP 69.904 UDEL-HOOD -0.048433 DEL-HOOD 0.87455 FLOW 0.00000 REL-HUM 1.5088 DEW-POINT -20.205

REL-HUM 1 1.5088 2 66.739 HUMIDITY 1.2962 % H2O VAPOR CORRECTED HP 0.029765 0.69175

ENG. COND. F/A DRY 0.062128 F/A WET 0.062116 EQU. RATIO 0.92728 RPM-1 606.60 RPM-2 606.84 TORQUE 5.9756 BHP 0.69017

WET CORRECTION FACTOR = 0.86575 EXHAUST MOLE. WT. = 28.831 EXHAUST DENSITY = 0.074650 EXHAUST FLOW RATE = 755.27

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 11850. NOX PPM 39.432 CO DRY 1.4391 CO2 DRY 12.055 O2 DRY 3.9724
CORRECTED CONC. TO WET BASIS CO DRY 1.2459 CO2 DRY 10.436 O2 DRY 3.4391

EMISSION RATE HC 0.32131 NOX 0.0035440 CO 0.68315
EMISSION MASS/MODE HC 0.0053551 NOX 5.3067E-05 CO 0.011386
EMISSION MASS/RATED HP HC 3.3469E-05 NOX 3.6917E-07 CO 7.1161E-05
MODE EMIS./STD. CYCLE % HC 1.7615 NOX 0.024611 CO 0.16943

CAL. FUEL AIR RATIO = 0.064329 MEAS. FUEL AIR RATIO = 0.062128 DIFF MEAS. & CAL. F/A PERCENT = 3.5439

CYL TEMP DEG.F CYL-1 249.89 CYL-2 284.37 CYL-3 278.95 CYL-4 292.32

FXT GAS TEMP DEG.F EXT-1 1543.6 EXT-2 361.87 EXT-3 -428.65 EXT-4 1213.2 SEXT-1 722.32 SEXT-2 719.59

ENGINE OIL EOILT 164.44 SOILT 363.09 OILP 45.893 MANIFOLD PRESSURE = 11.377

DYNO COND. TORQUE 4.4860 RPM 599.52 CYL. BACK PRESSURE = 29.072

INDUCTION AIR IAIRT1 61.061 IAIRT2 62.466 TAIRT1 -80.166 TAIRT2 55.634

ORIFICE AIR TEMP 94.134 DELTAP 3.3152 DRFP 54.421 FLOW 2483.9

CELL TEMP. = 84.928 HEATER TEMP = 93.948 COOLER TEMP = 52.204

729

NASA-LEWIS PRELIMINARY DATA 04/21/76 CADDEII REC 04/21/76 16:39:33.466 FAC SEX15 PGM C003 RDG 3543

IDLE LEANOUT RE-RUNS 59 DEG. HUM=0% MCDE = 1.0000 ND. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.870 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	62.574	28.868	11.642	51.881	0.0095102	14.180

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRCN	FPIP
	86.620	5.8380	44.476	3.9427	3.2673	6.1785

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	69.949	-0.026845	0.81643	0.00000	1.4880	-20.326

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	1.4880	48.353	1.2831	0.029465	0.30813

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	PPM-2	TORQUE	BHP
	0.062977	0.062965	0.93995	597.90	599.94	2.7003	0.30740

WET CORRECTION FACTOR = 0.87407 EXHAUST MOLE. WT. = 28.820 EXHAUST DENSITY = 0.074622 EXHAUST FLOW RATE = 739.17

MEASURED CONC.	PART PER MILLION WET		CO DRY	PER CENT	
	HC PPM	NOX PPM		CO2 DRY	O2 DRY
	12174.	36.628	1.3898	11.968	4.1210
CORRECTED CONC. TO WET BASIS			1.2148	10.461	3.6020

EMISSION RATE	HC	NOX	CO	
	0.32306	0.0032218	0.65191	
	EMISSION MASS/MODE	0.0053843	5.3697E-05	0.010865
	EMISSION MASS/RATED HP	3.3652E-05	3.3560E-07	6.7907E-05
MODE EMISS./STD. CYCLE %	1.7711	0.022374	0.16168	

CAL. FUEL AIR RATIO = 0.063917 MEAS. FUEL AIR RATIO = 0.062977 DIFF MEAS. & CAL. F/A PERCENT = 1.4926

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	238.95	277.28	271.80	284.80

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1868.3	237.47	-454.00	712.99	709.37	736.28

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE =
	163.87	97.643	45.777	11.611

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE =
	4.3924	595.86	28.990

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	61.160	62.574	-27.852	55.555

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	94.264	3.3214	54.282	2485.9

CELL TEMP. = 84.955 HEATER TEMP = 93.927 COOLER TEMP = 52.213

730

NASA-LEWIS PRELIMINARY DATA 04/21/76 CADDEII REC 04/21/76 16:46:37.518 FAC SEX15 PGM C003 RDG 3545

IDLE LEANOUT RE-RUNS 59 DEG. HUM=0% MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.870 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 63.635 PRESS 28.868 CFM 10.204 DRY FLOW 45.474 VAPOR FLOW 0.0088208 PRESS TOTAL 14.177

COMB. FUEL TEMP 87.390 PRESS 5.8020 DENSITY 44.455 TURBO FLOW 3.9460 FLOW TRON 4.0804 FPIP 6.1623

COOLING AIR TEMP 70.618 UDEL-HOOD -0.030167 DEL-HOOD 0.87345 FLOW 0.00000 REL-HUM 1.5166 DEW-POINT -19.641

REL-HUM 1 1.5166 2 35.314 HUMIDITY 1.3578 % H2O VAPOR CORRECTED HP 0.031180 0.55487

ENG. COND. F/A DRY 0.089731 F/A WET 0.089713 EQU. RATIO 1.3393 RPM-1 609.24 RPM-2 609.24 TORQUE 4.7671 BHP 0.55300

WET CORRECTION FACTOR = 0.87912 EXHAUST MOLE. WT. = 26.936 EXHAUST DENSITY = 0.069745 EXHAUST FLOW RATE = 710.63

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	21206.	14.104	8.2342	8.8968	2.3996
CORRECTED CONC. TO WET BASIS			7.2125	7.8214	2.1096

EMISSION RATE	HC	NOX	CO
	MASS/MODE	MASS/MODE	MASS/MODE
	0.54100	0.3011927	3.7210
EMISSION MASS/MODE	0.0090167	1.9879E-05	0.062017
EMISSION MASS/RATED HP	5.6354E-05	1.2424E-07	0.00038761
MODE EMIS./STD. CYCLE %	2.9660	0.0082829	0.92288

CAL. FUEL AIR RATIO = 0.089530 MFAS. FUEL AIR RATIO = 0.089731 DIFF MEAS. & CAL. F/A PERCENT = -1.3387

CYL TEMP DEG. F CYL-1 262.84 CYL-2 279.90 CYL-3 267.60 CYL-4 280.12

EXT GAS TEMP DEG. F EXT-1 1411.1 EXT-2 -116.60 EXT-3 -135.43 EXT-4 621.99 SEXT-1 688.25 SEXT-2 684.65

ENGINE OIL EOILT 161.28 SOILT -15.771 OILT 46.049 MANIFOLD PRESSURE = 10.482

DYNO COND. TORQUE 9.2385 RPM 603.66 CYL. BACK PRESSURE = 28.902

INDUCTION AIR IAIRT1 52.196 IAIRT2 63.635 TAIRT1 -28.486 TAIRT2 55.453

ORIFICE AIR TEMP 95.408 DELTAP 3.2994 ORFP 54.403 FLOW 2475.3

CELL TEMP. = 85.840 HEATER TEMP = 93.996 COOLER TEMP = 52.231

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NASA-LEWIS PRELIMINARY DATA 04/21/76 CADDEII REC 04/21/76 16:55:55.021 FAC SEX15 PGM C003 RDG 3549

IDLE LEANOUT RE-RUNS, 59 DEG. HUM=0% MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.870 RATED HP. = 160.00 HC RATIO= 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	61.331	28.867	10.059	44.820	0.0090299	14.179

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP.
	84.972	5.8410	44.518	3.9482	3.1473	6.1665

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	68.583	-0.032381	0.84162	0.00000	1.7086	-19.161

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	1.7086	45.363	1.4103	0.032385	0.89481

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.070221	0.070207	1.0481	571.80	576.00	8.2091	0.89375

WET CORRECTION FACTOR = 0.88575 EXHAUST MOLE. WT. = 28.497 EXHAUST DENSITY = 0.073786 EXHAUST FLOW RATE = 650.21

MEASURED CONC.	PART PER MILLION WET		CO DRY	PER CENT	
	HC PPM	NOX PPM		CO2 DRY	O2 DRY
	11261.	34.907	2.3443	12.036	3.1715
CORRECTED CONC. TO WET BASIS			2.0765	10.661	2.8092

EMISSION RATE	HC	NOX	CO
	0.26286	0.3027010	0.98021
EMISSION MASS/MODE	0.0043810	4.5016E-05	0.016337
EMISSION MASS/RATED HP	2.7382E-05	2.8135E-07	0.00010210
MODE EMIS./STD. CYCLE %	1.4411	0.018757	0.24311

CAL. FUEL AIR RATIO = 0.067922 MEAS. FUEL AIR RATIO = 0.070221 DIFF MEAS. & CAL. F/A PERCENT = -3.2740

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	255.31	288.99	279.01	290.88

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1566.3	103.91	-429.60	568.57	701.11	699.01

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE =
	162.39	117.95	45.485	11.153

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE =
	4.5797	572.46	29.098

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	59.897	61.331	138.02	55.565

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	93.630	3.3308	54.528	2490.7

CELL TEMP. = 82.996 HEATER TEMP = 94.093 COOLER TEMP = 52.76

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NASA-LEWIS PRELIMINARY DATA 04/21/76 CADDEII REC 04/21/76 16:59:13.956 FAC SEX15 PGM C003 RDG 3550

IDLE LEANOUT RE-RUNS 59 DEG. HUM=0% MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.870 RATED HP.= 160.00 HC RATIO= 2.1250

COMB. AIR TEMP 61.646 PRESS 28.868 CFM 10.514 DRY FLOW 47.307 VAPOR FLOW 0.0093110 PRESS TOTAL 14.180

COMB. FUEL TEMP 85.270 PRESS 5.8401 DENSITY 44.511 TURBO FLOW 3.9509 FLOW TRON 3.1383 FPIP 6.1800

COOLING AIR TEMP 69.244 UDEL-HOOD -0.047326 DEL-HOOD 0.81367 FLOW 0.00000 REL-HUM 1.6508 DEW-POINT -19.456

REL-HUM 1 1.6508 2 38.806 HUMIDITY 1.3777 % H2O VAPOR CORRECTED HP 0.031638 0.60181

ENG. COND. F/A DRY 0.066343 F/A WET 0.066327 EQU. RATIO 0.99014 RPM-1 600.12 RPM-2 601.80 TORQUE 5.2589 BHP 0.60090

WET CORRECTION FACTOR = 0.85825 EXHAUST MOLE. WT. = 28.717 EXHAUST DENSITY = 0.074356 EXHAUST FLOW RATE = 678.55

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 10962. CO DRY 2.6939 CO2 DRY 11.941 O2 DRY 3.0195
CORRECTED CONC. TO WET BASIS NOX PPM 32.555 CO DRY 2.3120 CO2 DRY 10.248 O2 DRY 2.5915

EMISSION RATE HC 0.26704 NOX 0.0026288 CO 1.1390
EMISSION MASS/MODE 0.0044506 4.3813E-05 0.018983
EMISSION MASS/RATED HP 2.7816E-05 2.7383E-07 0.00011864
MODE EMIS./STD. CYCLE % 1.4640 0.018255 0.28248

CAL. FUEL AIR RATIO = 0.069057 MEAS. FUEL AIR RATIO = 0.066340 DIFF MEAS. & CAL. F/A PERCENT = 4.1113

CYL TEMP DEG.F CYL-1 275.09 CYL-2 308.70 CYL-3 297.24 CYL-4 312.81

EXT GAS TEMP DEG.F EXT-1 1288.7 EXT-2 -230.50 EXT-3 -331.66 EXT-4 1272.9 SEXT-1 736.46 SEXT-2 734.75

ENGINE OIL EOILT 162.97 SOILT 219.59 OILP 45.561 MANIFOLD PRESSURE = 10.790

DYNO COND. TORQUE 6.5022 RPM 596.70 CYL. BACK PRESSURE = 29.126

INDUCTION AIR IAIRT1 60.231 IAIRT2 61.646 TAIRT1 118.29 TAIRT2 55.496

ORIFICE AIR TEMP 94.160 DELTAP 3.3014 ORFP 54.555 FLOW 2478.8

CELL TEMP. = 84.103 HEATER TEMP = 94.114 COOLER TEMP = 52.303

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NASA-LEWIS PRELIMINARY DATA 04/21/76 CADDEII REC 04/21/76 16:59:35.180 FAC SEX15 PGM C003 ROG 3551

IDLE LEANOUT RE-RUNS 59 DEG. HUM=0% MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.870 RATED HP. = 160.00 HC RATIO= 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	61.727	28.856	10.360	46.171	0.0090679	14.177

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	85.586	5.8332	44.503	3.9450	3.2343	6.1647

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	69.190	-0.037362	0.83885	0.00000	1.6422	-19.486

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	1.6422	54.727	1.3748	0.031569	0.53525

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.070050	0.070036	1.0455	623.64	624.96	4.5004	0.53440

WET CORRECTION FACTOR = 0.86440 EXHAUST MOLE. WT. = 28.512 EXHAUST DENSITY = 0.073824 EXHAUST FLOW RATE = 669.36

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	9941.0	32.641	3.2412	12.002	2.5017
CORRECTED CONC. TO WET BASIS			2.8017	10.374	2.1625

EMISSION RATE	HC	NOX	CO
	0.23888	0.0026000	1.3615
EMISSION MASS/MODE	0.0039813	4.3333E-05	0.022692
EMISSION MASS/RATED HP	2.4883E-05	2.7083E-07	0.00014182
MODE EMIS./STD. CYCLE %	1.3096	0.018055	0.33767

CAL. FUEL AIR RATIO = 0.071062 MEAS. FUEL AIR RATIO = 0.070050 DIFF MEAS. & CAL. F/A PERCENT = 1.4439

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	263.23	299.40	287.23	302.15

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1329.6	-454.00	-454.00	637.12	722.07	720.53

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 10.435
	162.70	22.550	45.997	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 28.875
	3.0675	611.34	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	60.330	61.727	187.88	55.405

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	94.212	3.3106	54.540	2482.1

CELL TEMP. = 84.174 HEATER TEMP = 94.107 COOLER TEMP = 52.240

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NASA-LEWIS PRELIMINARY DATA 04/22/76 CADDEI REC 04/21/76 18:34:37.177 FAC SEX15 PGM C003 RDG 3552

CLIMB LEANOUT RE-RUNS 59 DEG HUM = 60 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 28.890 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 58.687 PRESS 28.752 CFM 174.43 DRY FLOW 785.65 VAPOR FLOW 5.2661 PRESS TOTAL 14.470

COMB. FUEL TEMP 78.466 PRESS 5.3990 DENSITY 44.588 TURBO FLOW 64.303 FLOW TRON 63.609 FPIP 5.0987

COOLING AIR TEMP 61.890 UNDEL-HOOD 2.9419 DEL-HOOD 3.7301 FLOW 9849.8 REL-HUM 63.084 DEW-POINT 46.176

REL-HUM 1 63.084 2 78.366 HUMIDITY 46.920 % H2O VAPOR CORRECTED HP 1.0774 120.85

ENG. COND. F/A DRY 0.080964 F/A WET 0.080425 EQU. RATIO 1.2084 RPM-1 2429.6 RPM-2 2431.6 TORQUE 258.13 BHP 119.41

WET CORRECTION FACTOR = 0.84508 EXHAUST MOLE. WT. = 27.604 EXHAUST DENSITY = 0.071473 EXHAUST FLOW RATE = 11955.

MEASURED CONC. PART PER MILLION WET HC PPM 1406.9 NOX PPM 640.12 CO DRY 7.1387 PER CENT CO2 DRY 11.514 O2 DRY 0.11591
CORRECTED CONC. TO WET BASIS CO DRY 6.0328 PER CENT CO2 DRY 9.7300 O2 DRY 0.097955

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EMISSION RATE HC 0.60388 NOX 0.91074 CO 52.365
EMISSION MASS/MODE HC 0.050324 NOX 0.075895 CO 4.3637
EMISSION MASS/RATED HP HC 0.00031452 NOX 0.00047434 CO 0.027273
MODE EMIS./STD. CYCLE % HC 16.554 NOX 31.623 CO 64.936

CAL. FUEL AIR RATIO = 0.081659 MEAS. FUEL AIR RATIO = 0.080964 DIFF MEAS. & CAL. F/A PERCENT = 0.85825

CYL TEMP DEG.F CYL-1 354.74 CYL-2 371.91 CYL-3 395.65 CYL-4 400.81

EXT GAS TEMP DEG.F EXT-1 1058.3 EXT-2 -75.276 EXT-3 -337.80 EXT-4 1395.2 SEXT-1 1272.7 SEXT-2 1267.2

ENGINE OIL FOILT 154.47 SOILT 180.04 OILP 72.591 MANIFOLD PRESSURE = 26.452

DYNO COND. TORQUE 236.62 RPM 2343.7 CYL. BACK PRESSURE = 28.914

INDUCTION AIR IAIRT1 58.343 IAIRT2 58.687 TAIRT1 -68.338 TAIRT2 55.117

ORIFICE AIR TEMP 94.906 DELTAP 2.8829 ORFS 54.484 FLOW 2320.4

CELL TEMP. = 83.023 HEATED TEMP = 99.309 COOLER TEMP = 51.546

NASA-LEWIS PRELIMINARY DATA 04/22/76 CADDEII PEC 04/21/76 18:34:57.433 FAC SEX15 PGM C003 R9G 3553

CLIMR LEANOUT RE-RUNS 59 DEG HUM = 60 ? MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 28.890 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	58.723	28.775	174.23	784.76	5.2638	14.469

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	78.501	5.4008	44.687	67.294	63.225	6.0093

COOLING AIR	TEMP	INDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	61.962	2.9732	3.7562	9908.4	63.037	46.191

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	63.037	32.135	46.952	1.0782	120.88

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	PPM-1	RPM-2	TORQUE	RHP
	0.080566	0.080030	1.2025	2430.6	2432.0	258.06	119.43

WET CORRECTION FACTOR = 0.84300 EXHAUST MOLE. WT. = 27.635 EXHAUST DENSITY = 0.071554 EXHAUST FLOW RATE = 11924.

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1348.6	648.70	7.1569	11.536	0.10305
CORRECTED CONC. TO WET BASIS			6.0333	9.7249	0.086871

EMISSION RATE	HC	NOX	CO
	0.57733	0.92052	52.231
	0.048111	0.076710	4.3526
	0.00030070	0.0047944	0.027204
MODE FMIS./STD. CYCLE %	15.826	31.962	64.771

CAL. FUEL AIR RATIO = 0.081682 MEAS. FUEL AIR RATIO = 0.080565 DIFF MEAS. & CAL. F/A PERCENT = 1.3844

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	354.81	372.12	395.71	401.11

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1448.3	-406.86	-454.00	818.58	1274.2	1269.0

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 26.463
	155.29	158.96	72.319	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.003
	247.48	2350.1	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	58.371	58.723	-53.573	55.071

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	94.992	2.9803	54.496	2357.4

CELL TEMP. = 83.260 HEATER TEMP = 98.593 COOLER TEMP = 51.140

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NASA-LEWIS PRELIMINARY DATA 04/22/76 CADDEII REC 04/21/76 18:39:46.682 FAC SEX15 PSM C003 RDG 3554

CLIMP LFANOUT RE-RUNS 59 DEG HUM = 60 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.890 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 59.518 PRESS 28.930 CFM 173.46 DRY FLOW 782.49 VAPOR FLOW 5.2522 PRESS TOTAL 14.497

COMP. FUEL TEMP 78.978 PRESS 5.3927 DENSITY 44.675 TURBO FLOW 66.770 FLOW TRDN 62.925 FPIP 6.0189

COOLING AIR TEMP 62.475 IJDEL-HOOD 2.9486 DEL-HOOD 3.7365 FLOW 9862.3 RFL-HUM 61.433 DEW-POINT 46.261

RFL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP
61.433 50.611 46.985 1.0789 121.48

ENG. COND. F/A DRY 0.080416 F/A WET 0.079880 EQU. RATIO 1.2007 RPM-1 2430.1 RPM-2 2432.9 TORQUE 259.18 BHP 119.93

WET CORRECTION FACTOR = 0.84229 EXHAUST MOL. WT. = 27.647 EXHAUST DENSITY = 0.071585 EXHAUST FLOW RATE = 11883.

MEASURED CONC. PART PER MILLION WET HC PPM 1469.5 NOX PPM 581.04 CO DRY 7.1167 PER CENT CO2 DRY 11.498 O2 DRY 0.077788
CORRECTED CONC. TO WET BASIS CO DRY 5.9943 PER CENT CO2 DRY 9.6842 O2 DRY 0.065519

EMISSION RATE HC 0.62692 NOX 0.92165 CO 51.714
EMISSION MASS/MODE HC 0.052244 NOX 0.0368471 CO 4.3095
EMISSION MASS/RATED HP HC 0.00032652 NOX 0.00042794 CO 0.026934
MODE EMIS./STD. CYCLE % HC 17.185 NOX 28.530 CO 64.130

CAL. FUEL AIR RATIO = 0.081806 MEAS. FUEL AIR RATIO = 0.080416 DIFF MEAS. & CAL. F/A PERCENT = 1.7283

CYL TEMP DEG.F CYL-1 355.63 CYL-2 374.83 CYL-3 397.57 CYL-4 404.81

FXT GAS TEMP DEG.F EXT-1 928.34 EXT-2 -382.62 EXT-3 -454.00 FXT-4 1489.1 SFXT-1 1290.0 SEXT-2 1286.3

ENGINE OIL FOILT 166.40 SOILT -11.133 OILP 73.527 MANIFOLD PRESSURE = 26.306

DYNO COND. TORQUE 243.61 RPM 2343.2 CYL. BACK PRESSURE = 28.960

INDUCTION AIR IAIRT1 59.121 IAIRT2 59.518 TAIRT1 27.556 TAIRT2 55.262

ORIFICE AIR TEMP 95.443 DFLTAP 2.9636 DRFD 54.550 FLOW 2350.1

CELL TEMP. = 93.892 HEATER TEMP = 95.837 COOLER TEMP = 49.544

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NASA-LEWIS PRELIMINARY DATA 04/22/76 CADDET1 REC 04/21/76 18:42:54.141 FAC SEX15 PGM C003 RDG 3555

CLIMB LEANOUT RE-RUNS 59 DEG HUM = 60 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.890 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	59.969	28.855	172.49	777.72	5.2347	14.490

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	79.534	5.4203	44.560	63.928	61.341	5.0513

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	62.961	2.8871	3.8082	9746.3	60.589	46.321

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	60.589	28.899	47.116	1.0820	120.63

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.078873	0.078346	1.1772	2429.9	2432.3	257.24	119.02

WET CORRECTION FACTOR = 0.84955 EXHAUST MOLE. WT. = 27.771 EXHAUST DENSITY = 0.071906 EXHAUST FLOW RATE = 11741.

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	1266.7	848.08	5.7995	12.210	0.089269	
CORRECTED CONC. TO WET BASIS			4.9212	10.361	0.075749	

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	HC	NOX	CO
EMISSION RATE	0.53396	1.1850	41.950
EMISSION MASS/MODE	0.044496	0.099749	3.4958
EMISSION MASS/RATED HP	0.00027810	0.00051718	0.021849
MODE FMIS./STD. CYCLE %	14.637	41.145	52.021

CAL. FUEL AIR RATIO = 0.078773 MEAS. FUEL AIR RATIO = 0.078873 DIFF MEAS. & CAL. F/A PERCENT = -0.12771

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	365.41	383.96	400.85	406.35

EXT GAS TEMP DEG.F	FXT-1	FXT-2	FXT-3	FXT-4	SEXT-1	SEXT-2
	1453.5	-306.78	-454.00	1508.8	1313.4	1310.2

ENGINE OIL	EOILT	SOILT	OILT	MANIFOLD PRESSURE = 26.469
	172.14	148.07	73.127	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 28.961
	245.49	2386.1	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	59.563	59.969	111.42	55.271

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	95.712	2.9532	54.372	2345.6

CELL TEMP. = 84.744 HEATER TEMP = 95.314 COOLER TEMP = 49.553

NASA-LEWIS PPELIMINARY DATA 04/22/76 CADDEII RFC 04/21/76 18:45:51.600 FAC SEX15 PGM C003 RDG 3556

CLIMB LFANOUT RE-RUNS 59 DEG HUM = 60 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.890 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PPRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	59.834	28.914	172.67	779.73	5.2533	14.490

COMB. FUEL	TEMP	PRESS	DENSITY	TURBN FLOW	FLOW TRON	FPIP
	80.081	5.4305	44.646	60.005	57.861	6.2279

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	63.006	2.9156	3.7490	9800.3	60.941	46.346

RFL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	60.941	27.341	47.161	1.0830	120.28

ENG. COND.	F/A DRY	F/A WET	FOLL. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.074206	0.073709	1.1075	2430.5	2432.3	256.48	118.69

WET CORRECTION FAC. AIR = 0.84233 EXHAUST MOLF. WT. = 28.156 EXHAUST DENSITY = 0.072903 EXHAUST FLOW RATE = 11561.

MEASURED CONC.	PART PER MILLION WFT			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	1046.9	1206.1	4.3938	12.979	0.15122	
CORRECTED CONC. TO WET BASIS						
			3.7010	10.932	0.12737	

EMISSION RATE	HC	NOX	CO
	0.43452	1.6594	31.064
	0.036210	0.13828	2.5887
	0.00022631	0.00086425	0.016179
EMISSION MASS/MODE			
	0.00022631	0.00086425	0.016179
EMISSION MASS/RATED HP			
	11.911	57.617	38.522
MODE EMIS./STD. CYCLE %			

CAL. FUEL AIR RATIO = 0.075522 MEAS. FUEL AIR RATIO = 0.074206 DIFF MEAS. & CAL. F/A PERCENT = 1.7739

CYL TEMP. DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	376.28	393.12	404.29	405.42

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1869.3	-287.04	-454.00	1553.1	1342.7	1338.9

ENGINE OIL	FILT	SOILT	OILP	MANIFOLD PRESSURE = 26.636
	177.55	197.08	72.783	

DYND COND.	TORQUE	PPW	CYL. BACK PRESSURE = 29.104
	263.17	2398.6	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	59.419	59.834	144.91	54.482

ORIFICE AIR	TEMP	DELTA P	ORF P	FLOW
	95.998	2.9831	54.462	2356.3

CELL TEMP. = 85.603 HEATER TEMP = 94.983 COOLER TEMP = 45.995

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NASA-LEWIS PRELIMINARY DATA 04/22/76 CADDEII REC 04/21/76 18:49:24.834 FAC SEX15 PGM C003 RDG 3557

CLIMP LEANOUT RE-RUNS 59 DEG HUM = 60 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 28.890 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	57.973	28.864	177.00	800.17	5.4285	14.514

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	79.625	5.4386	44.684	57.798	57.045	6.0381

COOLING AIR	TEMP	WDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	61.295	2.9940	3.7717	9947.1	65.695	46.571

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	65.695	69.319	47.489	1.0905	120.38

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.071291	0.070811	1.0640	2428.1	2430.5	257.44	119.02

WET CORRECTION FACTOR = 0.84449 EXHAUST MOLE. WT. = 28.404 EXHAUST DENSITY = 0.073546 EXHAUST FLOW RATE = 11729.

MEASURED CONC.	PART PER MILLION WFT		CO DRY	PER CENT	
	HC PPM	NOX PPM		CO2 DRY	O2 DRY
	733.87	1708.1	3.3506	13.358	0.39956
CORRECTED CONC. TO WET BASIS			2.8295	11.281	0.33742

EMISSION RATE	HC	NOX	CO	
	0.30902	2.3841	24.095	
	EMISSION MASS/MODE	0.025752	0.19867	2.0079
	EMISSION MASS/RATED HP	0.00016095	0.0012417	0.012549
MODE EMIS./STD. CYCLE %	8.4709	82.781	29.879	

CAL. FUEL AIR RATIO = 0.072576 MEAS. FUEL AIR RATIO = 0.071291 DIFF MEAS. & CAL. F/A PERCENT = 1.8024

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	382.92	399.22	400.84	391.56

EXT GAS TEMP DEG.F	EXT-1	EXT-2	FXT-3	FXT-4	SEXT-1	SEXT-2
	1457.8	-278.84	-405.12	1779.3	1377.4	1373.3

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 26.932
	183.73	306.42	72.455	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.027
	277.80	2342.5	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	57.592	57.973	153.04	54.701

ORIFICE AIR	TEMP	DELTA P	DIFF	FLOW
	94.194	2.9863	54.463	2361.3

CFL TEMP. = 83.901 HEATER TEMP = 94.665 COOLER TEMP = 47.974

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NASA-LEWIS PRELIMINARY DATA		04/22/76 CADDEII		REC 04/22/76 15:49:19.154		FAC SEX15		PGM C003		RDG 3561	
APPROACH LFANOUT RE-RUNS		50 DEG. HUM=30%		MODE = 5.0000		NJ. SCANS = 5					
ENGINE TIMING = 25.000		DEG.		BAROMETRIC PRESSURE = 29.000		RATED HP. = 160.00		MC RATIO = 2.1250			
COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL					
	49.868	28.996	104.50	479.64	1.1689	14.364					
COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP					
	80.910	5.5659	44.624	41.884	40.551	6.0825					
COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT					
	52.311	3.0250	3.9225	10004.	31.634	23.323					
REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP						
	31.634	69.579	17.060	0.39175	64.402						
ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP				
	0.084753	0.084547	1.2550	2349.9	2352.8	144.95	64.857				
WFT CORRECTION FACTOR = 0.85382		EXHAUST MOLE. WT. = 27.300		EXHAUST DENSITY = 0.070708		EXHAUST FLOW RATE = 7374.8					
MEASURED CONC.	PART PER MILLION WET			PER CENT							
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY						
	1785.6	206.04	8.3247	11.391	0.16162						
CORRECTED CONC. TO WFT BASIS				7.1077	9.7262	0.13799					
EMISSION RATE	HC	NOX	CO								
	0.47274	0.18082	38.056								
EMISSION MASS/MODE	0.047274	0.018082	3.8056								
EMISSION MASS/RATED HP	0.00029546	0.00011301	0.023785								
MODE EMIS./STD. CYCLE %	15.551	7.5342	56.630								
CAL. FUEL AIR RATIO = 0.083752		MEAS. FUEL AIR RATIO = 0.084753		DIFF MEAS. & CAL. F/A PERCENT = -1.1807							
CYL TEMP DEG.F.	CYL-1	CYL-2	CYL-3	CYL-4							
	302.81	316.80	308.04	310.48							
EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2					
	465.83	-207.76	479.04	1550.8	1015.5	1011.4					
ENGINE OIL	EOILT	SOILT	OILT	MANIFOLD PRESSURE = 18.208							
	142.09	139.65	73.355								
DYNO COND.	TORQUE	RPM			CYL. BACK PRESSURE = 29.050						
	147.00	2293.5									
INDUCTION AIR	IAIRT1	IAIPT2	TAIRT1	TAIRT2							
	49.302	49.868	-88.958	45.191							
ORIFICE AIR	TEMP	DELTA P	ORFS	FLOW							
	94.966	1.0457	55.058	1426.0							
CELL TEMP. =	82.345	HEATER TEMP =	93.244	COOLER TEMP = 38.664							

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NASA-LEWIS PRELIMINARY DATA 04/22/76 CADDEII REC 04/22/76 16:49:39.328 FAC SEX15 PGM C003 RDG 3562

APPROACH LEANOUT. RE-RUNS 50 DEG. HUM=30% MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.000 RATED HP. = 160.00 HC RATIO= 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLW	PRESS TOTAL
	49.941	28.999	104.33	478.80	1.1664	14.362

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	81.069	5.5721	44.620	45.162	41.329	6.1110

COOLING AIR	TEMP	UNFL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	52.338	3.0939	3.9491	10131.	21.531	23.313

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	31.531	36.102	17.052	0.39158	65.249

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.086319	0.086109	1.2883	2350.5	2353.1	146.81	65.704

WET CORRECTION FACTOR = 0.85174 EXHAUST MOLE WT. = 27.190 EXHAUST DENSITY = 0.070400 EXHAUST FLOW RATE = 7404.7

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1732.3	207.10	8.2064	11.415	0.17142
CORRECTED CONC. TO WET BASIS			7.0717	9.8369	0.14772

	HC	NOX	CO
EMISSION RATE	0.46049	0.18249	38.016
EMISSION MASS/MODE	0.046049	0.018249	3.8016
EMISSION MASS/RATED HP	0.00028780	0.00011405	0.023760
MODE EMIS./STD. CYCLE %	15.148	7.6037	56.571

CAL. FUEL AIR RATIO = 0.083467 MEAS. FUEL AIR RATIO = 0.086319 DIFF MEAS. & CAL. F/A PERCENT = -3.3036

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	302.69	316.34	307.99	310.09

FXT GAS TEMP DEG.F	FXT-1	FXT-2	FXT-3	FXT-4	SEXT-1	SEXT-2
	1471.3	-244.67	443.10	1055.1	1016.6	1012.8

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 18.226
	142.58	101.57	73.459	

DYNO COND.	TORQUE	RPM	CYL. RACK PRESSURE = 29.051
	147.97	2299.1	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	49.375	49.941	-32.385	45.204

ORIFICE AIR	TEMP	DELTA P	ORIF FLOW	FLOW
	95.018	1.0335	55.002	1417.8

CFLI TEMP. = 92.583 HEATER TEMP = 93.258 COOLER TEMP = 38.673

NASA-LEWIS PRELIMINARY DATA 04/22/76 CADDFII REC 04/22/76 16:54:53.941 FAC SEX15 PGM C003 RDG 3563

APPROACH LEANOUT RE-RUNS 50 DEG. HUM=30% MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.000 RATED HP. = 150.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	50.224	28.993	103.31	473.99	1.1343	14.360

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	81.993	5.5602	44.596	41.394	39.115	6.0873

COOLING AIR	TEMP	WDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	52.302	3.0225	3.9341	10000.	30.647	22.978

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	30.647	57.964	16.751	0.38467	64.944

ENG. CO. D.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.082522	0.082325	1.2317	2350.2	2353.0	145.10	65.377

WET CORRECTION FACTOR = 0.85928 EXHAUST MOLE. WT. = 27.481 EXHAUST DENSITY = 0.071155 EXHAUST FLOW RATE = 7227.1

MEASURED CONC.	PAPT PER MILLION WET	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1651.0	340.52	6.6417	12.364	0.13671	
CORRECTED CONC. TO WET BASIS		5.7071	10.624	0.11747		

EMISSION RATE	HC	NOX	CO
	0.42834	0.29286	29.944
EMISSION MASS/MODE	0.042834	0.29286	2.9944
EMISSION MASS/RATED HP	0.00026772	0.00018304	0.018715
MODE EMIS./STD. CYCLE %	14.090	12.202	44.560

CAL. FUEL AIR RATIO = 0.080056 MEAS. FUEL AIR RATIO = 0.082522 DIFF MEAS. & CAL. F/A PERCENT = -2.9883

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	306.60	318.96	313.62	313.74

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1464.8	-144.31	657.40	1543.9	1042.1	1039.2

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 18.107
	149.95	215.20	72.367	

DYMO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.032
	147.05	2288.5	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	49.686	50.224	8.7561	45.317

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	95.227	2.9779	55.050	2356.0

CELL TEMP. = 83.225 HEATER TEMP = 93.237 COOLIR TEMP = 37.719

ORIGINAL PAGE IS
OF POOR QUALITY

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NASA-LEWIS PRELIMINARY DATA 04/22/76 CADDEIT REC 04/22/76 17:03:37.784 FAC SEX15 PGM C003 R06 3564

APPROACH LEANOUT RE-RUNS 50 DEG. HUM=30% MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.000 RATED HP. = 160.00 HC RATIO= 2.1250

COMB. AIR TEMP 48.471 PRESS 29.001 CFM 102.50 DRY FLOW 470.06 VAPOR FLOW 1.1265 PRESS TOTAL 14.355

COMB. FUEL TEMP 80.892 PRESS 5.5980 DENSITY 44.625 TURBO FLOW 39.169 FLOW TRON 37.522 FPIP 6.1005

COOLING AIR TEMP 50.388 UDEL-HOOD 3.0155 DEL-HOOD 4.0152 FLOW 9987.1 REL-HUM 32.754 DEW-POINT 22.998

REL-HUM 1 32.754 2 51.217 HUMIDITY 16.775 % H2O VAPOR CORRECTED HP 0.38521 64.643

ENG. COND. F/A DRY 0.079823 F/A WET 0.079632 EQUI. RATIO 1.1914 RPM-1 2351.2 RPM-2 2353.6 TORQUE 145.70 RHP 65.224

WET CORRECTION FACTOR = 0.85441 EXHAUST MOLE. WT. = 27.595 EXHAUST DENSITY = 0.071708 EXHAUST FLOW RATE = 7094.2

MEASURED CONC. HC PPM 1495.9 NOX PPM 437.28 CO DRY 5.8222 PER CENT CO2 DRY 13.002 O2 DRY 0.12773
CORRECTED CONC. TO WET BASIS CO DRY 4.9745 PER CENT CO2 DRY 11.110 O2 DRY 0.10914

EMISSION RATE HC 0.38099 NOX 0.036916 CO 25.621
EMISSION MASS/MODE HC 0.038099 NOX 0.036916 CO 2.5621
EMISSION MASS/RATED HP HC 0.00023812 NOX 0.00023072 CO 0.016013
MODE EMIS./STD. CYCLE % HC 12.533 NOX 15.382 CO 38.126

CAL. FUEL AIR RATIO = 0.078171 MEAS. FUEL AIR RATIO = 0.079823 DIFF MEAS. & CAL. F/A PERCENT = -2.0687

CYL TEMP DEG.F CYL-1 310.23 CYL-2 320.77 CYL-3 317.52 CYL-4 316.89

EXT GAS TEMP DEG.F EXT-1 1594.9 EXT-2 -454.00 EXT-3 766.26 EXT-4 1658.0 SEXT-1 1053.3 SEXT-2 1050.8

ENGINE OIL FOILT 156.30 SOILT 273.36 OILP 71.603 MANIFOLD PRESSURE = 18.093

DYNO COND. TORQUE 140.67 RPM 2291.4 CYL. PACK PRESSURE = 29.077

INDUCTION AIR IAIRT1 47.859 IAIRT2 48.471 TAIRT1 -84.864 TAIRT2 45.369

ORIFICE AIR TEMP 93.344 DELTAP 1.0839 ORFP 55.013 FLOW 1453.6

CELL TEMP. = 81.420 HEAT TEMP = 93.175 COOLED TEMP = 37.819

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NASA-LEWIS PRELIMINARY DATA 04/22/76 CADDEII REC 04/22/76 17:05:40.633 FAC SEX15 PGM C003 RDG 3565

APPROACH LEANOUT RE-RUNS 50 DEG. HUM=30% MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.000 RATED HP. = 160.00 HC RATIO= 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	49.311	29.001	102.61	470.52	1.1244	14.352

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	82.328	5.5857	44.587	37.724	36.796	6.1047

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	51.300	3.0477	3.9740	10046.	31.647	22.943

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	31.647	23.610	16.728	0.38414	65.305

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.078202	0.078016	1.1572	2350.1	2352.9	147.10	65.821

WET CORRECTION FACTOR = 0.85716 EXHAUST MOLE. WT. = 27.825 EXHAUST DENSITY = 0.072047 EXHAUST FLOW RATE = 7057.1

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1373.3	576.58	4.8389	13.589	0.17700
CORRECTED CONC. TO WET BASIS			4.1477	11.648	0.15171

	HC	NOX	CO
EMISSION RATE	0.34793	0.048420	21.250
EMISSION MASS/MODE	0.034793	0.048420	2.1250
EMISSION MASS/RATED HP	0.00021746	0.00030263	0.013281
MODE EMIS./STD. CYCLE %	11.445	20.175	31.622

CAL. FUEL AIR RATIO = 0.075979 MEAS. FUEL AIR RATIO = 0.078202 DIFF MEAS. & CAL. F/A PERCENT = -2.9430

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	313.84	324.07	322.53	320.85

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1195.6	-454.00	865.75	1689.6	1080.5	1078.0

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 18.143
	160.53	67.650	71.415	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.022
	140.07	2313.2	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	48.718	49.311	-24.929	45.345

ORIFICE AIR	TEMP	DELTA P	ORIF. FLOW
	94.116	2.0157	55.054

CELL TEMP. = 82.803 HEAT FR TEMP = 93.199 COOLER TEMP = 37.928

NASA-LEWIS PRELIMINARY DATA 04/22/76 CADDEII REC 04/22/76 17:08:57.428 FAC SEX15 PGM C003 R0G 3566

APPROACH LEANOUT RE-RUNS 50 DEG. HUM=30% MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.000 RATE) HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 49.914 PRESS 29.003 CFM 103.07 DRY FLOW 472.73 VAPOR FLOW 1.1255 PRESS TOTAL 14.356

COMB. FUEL TEMP 83.163 PRESS 5.5947 DENSITY 44.565 TURBO FLOW 37.521 FLOW TRON 35.142 FPIP 6.1085

COOLING AIR TEMP 51.910 UDEL-HOOD 2.9976 DEL-HOOD 3.9421 FLOW 9953.8 REL-HUM 30.837 DEW-POINT 22.878

REL-HUM 1 30.837 2 43.102 HUMIDITY 16.666 % H2O VAPOR 0.38270 CORRECTED HP 65.078

ENG. COND. F/A DRY 0.074339 F/A WET 0.074163 FOU. RATIO 1.1095 RPM-1 2350.6 RPM-2 2353.1 TORQUE 146.46 BHP 65.547

WET CORRECTION FACTOR = 0.85359 EXHAUST MOLE. WT. = 28.145 EXHAUST DENSITY = 0.072874 EXHAUST FLOW RATE = 6984.7

MEASURED CONC. PART PER MILLION WFT HC PPM 1114.1 NOX PPM 834.38 CO DRY 3.4090 PER CFNT CO2 DRY 14.423 O2 DRY 0.20514
CORRECTED CONC. TO WET BASIS HC PPM 1114.1 NOX PPM 834.38 CO DRY 2.9099 PER CFNT CO2 DRY 12.311 O2 DRY 0.17511

EMISSION RATE HC 0.27936 NOX 0.69352 CO 14.756
EMISSION MASS/MODE HC 0.027936 NOX 0.069352 CO 1.4756
EMISSION MASS/RATED HP HC 0.00017460 NOX 0.00043345 CO 0.0092224
MODE EMISS./STD. CYCLE % HC 9.1896 NOX 28.897 CO 21.958

CAL. FUEL AIR RATIO = 0.073028 MEAS. FUEL AIR RATIO = 0.074339 DIFF MEAS. & CAL. F/A PERCENT = -1.7641

CYL TEMP DEG. F CYL-1 320.73 CYL-2 326.84 CYL-3 328.22 CYL-4 325.41

FXT GAS TEMP DEG. F FXT-1 1483.4 FXT-2 -454.00 FXT-3 972.69 FXT-4 1758.9 SEXT-1 1103.2 SEXT-2 1100.2

ENGINE OIL EOILT 163.01 SOILT 83.555 OILP 73.023 MANIFOLD PRESSURE = 18.276

DYNO COND. TORQUE 150.02 RPM 2304.0 CYL. BACK PRESSURE = 29.078

INDUCTION AIR IAIRT1 49.275 IAIRT2 49.914 TAIRT1 -63.346 TAIRT2 45.380

OPIFICE AIR TEMP 94.550 DELTAP 1.0557 DRFP 55.026 FLOW 1433.3

CELL TEMP. = 83.251 HEATER TEMP = 93.175 COOLER TEMP = 37.737

NASA-LEWIS PRELIMINARY DATA 04/22/76 CADDEII REC 04/22/76 17:12:30.893 FAC SEX15 PGM C003 RDG 3567

APPROACH LEANOUT RE-RUNS 50 DEG. HUM=30% MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.000 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 50.407 PRESS 29.001 CFM 103.81 DRY FLOW 476.30 VAPOR FLOW 1.1320 PRESS TOTAL 14.362

COMP. FUEL TEMP R4.209 PRESS 5.6256 DENSITY 44.538 TURBO FLOW 35.740 FLOW TRON 33.798 FPIP 6.1038

COOLING AIR TEMP 52.511 UDEL-HOOD 3.0092 DEL-HOOD 3.8832 FLOW 9975.3 REL-HUM 30.237 DEW-POINT 22.853

REL-HUM 1 30.237 2 32.997 HUMIDITY % H2O VAPOR CORRECTED HP 16.636 0.38202 65.278

ENG. COND. F/A DRY 0.070961 F/A WET 0.070792 EQU. RATIO 1.0591 RPM-1 2351.2 RPM-2 2353.7 TORQUE 146.77 BHP 65.706

WET CORRECTION F_{OR} = 0.85083 EXHAUST MOLE. WT. = 28.433 EXHAUST DENSITY = 0.073620 EXHAUST FLOW RATE = 6944.2

MEASURED CONC. HC PPM 928.69 NOX PPM 1166.1 CO DRY 2.0932 CO2 DRY 15.186 O2 DRY 0.24230
CORRECTED CONC. TO WET BASIS CO DRY 1.7810 CO2 DRY 12.921 O2 DRY 0.20616

EMISSION RATE HC 0.23152 NOX 0.96362 CO 8.9787
EMISSION MASS/MODE HC 0.023152 NOX 0.096362 CO 0.89787
EMISSION MASS/RATED HP HC 0.00014470 NOX 0.00060226 CO 0.0056117
MODE FMS./STD. CYCLE % HC 7.6157 NOX 40.151 CO 13.361

CAL. FUEL AIR RATIO = 0.070414 MEAS. FUEL AIR RATIO = 0.070461 DIFF MEAS. & CAL. F/A PERCENT = -0.77017

CYL TEMP DEG.F CYL-1 326.18 CYL-2 328.43 CYL-3 333.72 CYL-4 330.28

EXT GAS TEMP DEG.F EXT-1 1570.6 EXT-2 -454.00 EXT-3 1126.9 EXT-4 1801.8 SEXT-1 1131.6 SEXT-2 1128.1

ENGINE OIL FOILT 164.88 SOILT 135.15 OILP 71.043 MANIFOLD PRESSURE = 18.436

DYMO COND. TORQUE 149.96 RPM 2294.3 CYL. BACK PRESSURE = 29.007

INDUCTION AIR IAIRT1 49.795 IAIRT2 50.407 TAIRT1 -35.161 TAIRT2 45.379

ORIFICE AIR TEMP 95.088 DELTAP 1.0429 DRPS 55.056 FLOW 1424.0

CELL TEMP. = 84.753 HEATER TEMP = 93.134 COOLER TEMP = 37.655

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NASA-LEWIS		PRELIMINARY DATA		04/22/76	CADDEII	REC 04/22/76 17:17:33.093	FAC SEX15	PGM C003	ROG 3568
APPROACH LEANOUT RE-RUNS		50 DEG.	HUM=30%	MODE = 5.0000		NO. SCANS = 5			
ENGINE TIMING = 25.000		DEG.	BAROMETRIC PRESSURE = 29.000		RATED HP. = 160.00		HC RATIO = 2.1250		
COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL			
	48.325	29.009	106.01	486.37	1.1575	14.362			
COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP			
	82.741	5.6133	44.576	35.810	33.414	6.0975			
COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT			
	50.507	3.0515	3.9568	10053.	32.723	22.878			
REL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP					
	32.723	43.514	16.659	0.38255	64.080				
ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	PPM-1	RPM-2	TORQUE	BHP		
	0.068702	0.068539	1.0254	2349.4	2352.4	144.56	64.669		
WET CORRECTION FACTOR = 0.85367		EXHAUST MOLF. WT. = 28.562		EXHAUST DENSITY = 0.073955		EXHAUST FLOW RATE = 7044.0			
MEASURED CONC.	PART PER MILLION WET		PER CENT						
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY				
	691.87	1444.0	1.0936	15.703	0.45927				
CORRECTED CONC. TO WET BASIS			0.92507	13.405	0.39206				
	HC	NOX	CO						
EMISSION RATE	0.17496	162105	4.7308						
EMISSION MASS/MODE	0.017496	0.12105	0.47308						
EMISSION MASS/RATED HP	0.00010935	0.00075653	0.0029567						
MODE EMIS./STD. CYCLE %	5.7553	50.435	7.0398						
CAL. FUEL AIR RATIO = 0.067923		MEAS. FUEL AIR RATIO = 0.068702		DIFF MEAS. & CAL. F/A PERCENT = -1.1337					
CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4					
	324.24	322.88	334.24	330.97					
EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SFXT-1	SEXT-2			
	1442.6	-454.00	1236.5	2011.5	1163.6	1159.8			
ENGINE OIL	OILT	SOILT	OILP	MANIFOLD PRESSURE = 18.725					
	167.57	86.279	70.435						
DYMO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.095						
	141.29	2315.7							
INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2					
	47.740	48.325	11.870	45.410					
ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW					
	92.057	2.0127	55.061	1962.2					
CELL TEMP. = 82.724	HEATER TEMP = 93.099		COOLER TEMP = 37.864						

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NASA-Lewis PRELIMINARY DATA 04/22/76 CADDEII REC 04/22/76 17:21:55.977 FAC SEX15 PGM C003 RDG 3569

APPROACH LEANOUT. RE-RUNS 50 DEG. HUM=30% MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.000 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	48.443	29.012	109.86	504.48	1.1991	14.372

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	83.436	5.6139	44.558	34.924	32.766	6.1299

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	50.653	3.0363	3.8840	10025.	32.561	22.868

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	32.561	39.474	16.638	0.38207	63.672

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.064951	0.064797	0.96942	2351.9	2353.6	143.48	64.251

WET CORRECTION FACTOR = 0.85258 EXHAUST MOLE. WT. = 28.774 EXHAUST DENSITY = 0.074502 EXHAUST FLOW RATE = 7227.2

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	401.54	1599.2	0.24785	15.874	0.97520
CORRECTED CONC. TO WET BASIS			0.21131	13.534	0.83143

	HC	NOX	CO
EMISSION RATE	0.10418	1.3753	1.1087
EMISSION MASS/MODE	0.010418	0.13753	0.11087
EMISSION MASS/RATED HP	6.5114E-05	0.00085959	0.00069296
MODE EMIS./STD. CYCLE %	3.4270	57.306	1.6499

CAL. FUEL AIR RATIO = 0.064982 MEAS. FUEL AIR RATIO = 0.064951 DIFF MEAS. & CAL. F/A PERCENT = 0.047169

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	324.88	317.09	333.99	330.98

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1466.1	-161.93	1279.4	2106.7	1195.8	1192.7

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 19.284
	169.30	290.86	72.531	

DYNO COND.	TORQUE	RPM	CYL. RACK PRESSURE = 29.143
	141.97	2312.5	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	47.822	48.443	69.652	45.337

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	93.126	1.0836	55.038	1453.7

CELL TEMP. = 82.908 HEATER TEMP = 93.037 COOLER TEMP = 37.801

ORIGINAL PAGE IS
OF POOR QUALITY

749

NASA-LEWIS PRELIMINARY DATA 04/22/76 CADDEII REC 04/22/76 17:25:21.526 FAC SEX15 PGM C003 RDG 3570

APPROACH LEANOUT RE-RUNS 50 DEG. HUM=30% MCDE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.000 RATED HP. = 160.00 HC RATIO= 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	48.754	28.996	131.16	604.75	1.4403	14.428

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	83.998	5.6466	44.544	37.440	34.767	6.1131

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	51.345	2.9704	3.9396	9903.2	32.374	22.978

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	32.374	49.053	16.672	0.38284	65.348

ENG. COND.	F/A DRY	F/A WET	EQV. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.057491	0.057354	0.85807	2353.3	2354.0	147.09	65.906

WET CORRECTION FACTOR = 0.85613 EXHAUST MFL. WT. = 28.842 EXHAUST DENSITY = 0.074679 EXHAUST FLOW RATE = 8582.8

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	86.909	905.99	0.073201	14.508	3.2151	
CORRECTED CONC. TO WET BASIS			0.052670	12.421	2.7526	

	HC	NOX	CO
EMISSION RATE	0.026778	0.92534	0.39050
EMISSION MASS/MODE	0.0026778	0.092533	0.039050
EMISSION MASS/RATED HP	1.6737E-05	0.00657833	0.00024406
MORE EMIS./STD. CYCLE %	0.88087	38.556	0.58110

CAL. FUEL AIR RATIO = 0.058656 MEAS. FUEL AIR RATIO = 0.057491 DIFF MEAS. & CAL. F/A PERCENT = 2.0267

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	309.02	303.65	309.76	324.90

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	777.62	233.18	1418.2	2182.0	1251.9	1246.1

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 22.095
	168.97	74.385	72.951	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.095
	142.96	2282.8	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	48.206	48.754	121.79	45.200

TRIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	93.795	2.9953	55.093	2365.6

CELL TEMP. = 82.910 HEATER TEMP = 93.030 COILER TEMP = 38.237

750

NASA-Lewis PRELIMINARY DATA 04/22/76 CADDEII REC 04/22/76 17:28:42.399 FAC SEX15 PGM C003 RDG 3571

APPROACH LEANOUT RE-RUNS 50 DEG. HUM=30% MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.000 RATE HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 49.010 PRESS 29.019 CFM 145.54 DRY FLOW 673.41 VAPOR FLOW 1.5933 PRESS TOTAL 14.472

COMB. FUEL TEMP 84.612 PRESS 5.6046 DENSITY 44.528 TURBO FLOW 39.761 FLOW TRON 36.520 FPIP 6.0909

COOLING AIR TEMP 51.956 UDEL-HOOD 3.0247 DEL-HOOD 3.8840 FLOW 10004. RFL-HUM 31.955 DEW-POINT 22.913

REL-HUM 1 31.955 2 74.107 HUMIDITY 16.563 % H2O VAPOR 0.38033 CORRECTED HP 64.024

ENG. COND. F/A DRY 0.054231 F/A WET 0.054103 EQU. RATIO 0.80942 RPM-1 2350.6 RPM-2 2353.6 TORQUE 144.22 BHP 64.549

WET CORRECTION FACTOR = 0.85458 EXHAUST MOLF. WT. = 28.865 EXHAUST DENSITY = 0.074738 EXHAUST FLOW RATE = 9520.2

MEASURED CONC. PART PER MILLION WFT. HC PPM 95.209 NOX PPM 576.46 CO DRY 0.059287 PFR CENT 13.847 O2 DRY 4.0864

CORRECTED CONC. TO WFT BASIS CO DRY 0.050665 PFR CENT 11.833 O2 DRY 3.4922

EMISSION RATE HC 0.032540 NOX 0.055307 CO 0.35018
EMISSION MASS/MODE HC 0.0032540 NOX 0.065307 CO 0.035018
EMISSION MASS/RATED HP HC 2.0338E-05 NOX 0.00040817 CO 0.00021886
MODE EMIS./STD. CYCLE % HC 1.0704 NOX 27.211 CO 0.52110

CAL. FUEL AIR RATIO = 0.055286 MEAS. FUEL AIR RATIO = 0.054231 DIFF MEAS. & CAL. F/A PERCENT = 3.7885

CYL TEMP DEG.F CYL-1 299.53 CYL-2 300.46 CYL-3 306.20 CYL-4 317.24

EXT GAS TEMP DEG.F EXT-1 1537.0 EXT-2 485.67 EXT-3 1512.4 EXT-4 1909.6 SEXT-1 1299.3 SEXT-2 1292.8

ENGINE OIL EOILT 167.61 SOILT 143.81 OILP 73.159 MANIFOLD PRESSURE = 23.895

DYMO COND. TORQUE 155.01 RPM 2338.4 CYL. BACK PRESSURE = 29.159

INDUCTION AIR IAIRT1 48.517 IAIRT2 49.010 TAIRT1 143.27 TAIRT2 45.002

CRIFICE AIR TEMP 93.873 DELTAP 1.0364 ORFP 55.309 FLOW 1421.2

CELL TEMP. = 84.393 HEATER TEMP = 92.975 COOLER TEMP = 38.028

751

NASA-LEWIS PRELIMINARY DATA 04/22/76 CADDEII REC 04/22/76 18:29:06.740 FAC SEX15 PGM C003 RDG 3576

LEANOUT RE-RUNS Y & T 50 DEG HUM = 60 % 1 1/2 T CLOS MODE = 1.000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.000 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR TEMP 51.883 PRESS 29.003 CFM 11.185 DRY FLOW 50.736 VAPOR FLOW 0.25141 PRESS TOTAL 14.245

COMP. FUEL TEMP 83.848 PRESS 5.8290 DENSITY 44.548 TURBO FLOW 3.9542 FLOW TRON 3.1173 FPIP 6.1788

COOLING AIR TEMP 59.536 UDEL-HOOD -0.049263 DEL-HOOD 0.87151 FLOW 0.00000 REL-HUM 58.962 DEW-POINT 38.005

REL-HUM 1 2 HUMIDITY 34.687 % H2O VAPOR 0.79653 CORRECTED HP 0.72099

ENG. COND. F/A DRY 0.061442 F/A WET 0.061139 EQU. RATIO 0.91705 RPM-1 583.74 RPM-2 581.22 TORQUE 6.4923 BHP 0.72159

WET CORRECTION FACTOR = 0.85120 EXHAUST MOLE. WT. = 28.835 EXHAUST DENSITY = 0.074664 EXHAUST FLOW RATE = 724.64

MEASURED CONC. PART PER MILLION WFT PER CENT
HC PPM 12279. NOX PPM 37.074 CO DRY 0.88710 CO2 DRY 13.367 O2 DRY 4.0917
CORRECTED CONC. TO WFT BASIS 0.75510 11.378 3.4829

EMISSION RATE HC 3.31944 NOX 0.0031969 CO 0.39725
EMISSION MASS/MODE 0.0053240 5.3282E-05 0.0066203
EMISSION MASS/RATED HP 3.3275E-05 3.3301E-07 4.1380E-05
MODE EMIS./STD. CYCLE 1.7513 0.022201 0.098523

CAL. FUEL AIR RATIO = 0.063501 MEAS. FUEL AIR RATIO = 0.061442 DIFF MEAS. & CAL. F/A PERCENT = 3.3513

CYL TEMP DEG. F CYL-1 229.45 CYL-2 270.07 CYL-3 257.47 CYL-4 278.55

FXT GAS TEMP DEG. F EXT-1 1268.1 FXT-2 -269.80 EXT-3 -454.00 EXT-4 1082.2 SEXT-1 622.56 SEXT-2 621.09

ENGINE OIL EOILT 152.37 SOILT 321.80 OILP 46.221 MANIFOLD PRESSURE = 11.618

DYNO COND. TORQUE 9.1449 RPM 576.30 CYL. BACK PRESSURE = 29.256

INDUCTION AIR IAIRT1 49.978 IAIRT2 51.883 TAIRT1 -33.130 TAIRT2 44.973

ORIFICE AIR TEMP 88.884 DELTAP 1.9998 DPFP 55.133 FLOW 1963.6

CELL TEMP. = 81.754 HEATER TEMP = 88.760 COOLER TEMP = 33.360

752

NASA-LEWIS PRELIMINARY DATA 04/22/76 CADDEII REC 04/22/76 18:33:12.317 FAC SEX15 PGM C003 RDG 3577

LEANOUT RE-RUNS I & T 50 DEG HUM = 60 % 1 1/2 T CLOS MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.000 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR TEMP 51.108 PRESS 29.004 CFM 17.553 DRY FLOW 79.703 VAPOR FLOW 0.38911 PRESS TOTAL 14.246

COMP. FUEL TEMP 84.226 PRESS 5.7906 DENSITY 44.538 TURBO FLOW 7.0110 FLOW TRON 5.6466 FPIP 6.1716

COOLING AIR TEMP 63.447 WDEL-HOOD -0.030997 DEL-HOOD 0.86376 FLOW 0.00000 RFL-HUM 59.787 DEW-POINT 37.630

REL-HUM 1 59.787 2 39.796 HUMIDITY 34.174 % H2O VAPOR CORRECTED HP 0.78476 1.2506

ENG. COI. F/A DRY 0.070845 F/A WET 0.070501 EQU. RATIO 1.0574 RPM-1 1195.7 RPM-2 1196.3 TORQUE 5.5005 BHP 1.2523

WFT CORRECTION FACTOR = 0.82839 EXHAUST MOL. WT. = 28.443 EXHAUST DENSITY = 0.073646 EXHAUST FLOW RATE = 1164.2

MEASURED CONC. PART PER MILLION WFT HC PPM 1760.2 NOX PPM 67.751 CO DRY 3.4430 CO2 DRY 14.661 O2 DRY 0.21292
CORRECTED CONC. TO WFT BASIS HC 2.8521 CO 12.145 O2 0.17638

EMISSION RATE HC 0.073566 NOX 0.0093862 CO 2.4107
EMISSION MASS/MODE 0.013487 0.0017208 0.44195
EMISSION MASS/RATED HP 8.4294E-05 1.0755E-05 0.0027622
MODE EMIS./STD. CYCLE % 4.4366 0.71700 6.5767

CAL. FUEL AIR RATIO = 0.073298 MEAS. FUEL AIR RATIO = 0.070845 DIFF MEAS. & CAL. F/A PERCENT = 3.4628

CYL TEMP DEG.F CYL-1 307.99 CYL-2 327.96 CYL-3 317.01 CYL-4 333.26

EXT GAS TEMP DEG.F EXT-1 1183.3 EXT-2 -454.00 EXT-3 -402.45 EXT-4 1185.8 SEXT-1 691.25 SEXT-2 690.27

ENGINE OIL COILT 153.99 SOILT 278.70 OILP 56.474 MANIFOLD PRESSURE = 7.7571

DYNO COND. TORQUE 6.5382 RPM 1189.4 CYL. BACK PRESSURE = 29.032

INDUCTION AIR TAIRT1 49.550 TAIRT2 51.108 TAIRT1 -77.415 TAIRT2 44.539

ORIFICE AIR TEMP 89.373 DELTAP 0.051505 ORFP 55.121 FLOW 202.44

CELL TEMP. = 82.873 HEATER TEMP = 83.636 COOLER TEMP = 33.305

753

NASA-LEWIS PRELIMINARY DATA 04/22/76 CADDEII REC 04/22/76 18:33:33.985 FAC SEX15 PGM C003 RDG 3578

LEANOUT RE-RUNS I & T 50 DEG HUM = 60 % 1 1/2 T CLOS MODE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.000 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 51.345 PRESS 29.002 CFM 17.434 DRY FLOW 79.131 VAPOR FLOW 0.38625 PRESS TOTAL 14.243

COMP. FUEL TEMP 84.367 PRESS 5.7897 DENSITY 44.534 TURBO FLOW 6.9814 FLOW TRON 5.6886 FPIP 6.1737

COOLING AIR TEMP 60.366 INDEL-HOOD -0.033498 DEL-HOOD 0.91192 FLOW 0.00000 REL-HUM 59.242 DEW-POINT 37.620

REL-HUM 1 59.242 2 38.186 HUMIDITY 34.168 % H2O VAPOR CORRECTED HP 0.78462 1.4102

ENG. CON. F/A DRY 0.071888 F/A WET 0.071538 FOU. RATIO 1.0729 RPM-1 1197.4 RPM-2 1198.3 TORQUE 6.1923 BHP 1.4118

WET CORRECTION FACTOR = 0.83087 EXHAUST MOLE. WT. = 28.353 EXHAUST DENSITY = 0.073413 EXHAUST FLOW RATE = 1160.6

MEASURED CONC. PART PER MILLION WET HC PPM 1674.2 NOX PPM 65.040 CO DRY 3.5606 PER CENT CO2 DRY 14.717 O2 DRY 0.12311
CORRECTED CONC. TO WET BASIS HC 2.9584 CO2 DRY 12.228 O2 DRY 0.10229

754

EMISSION RATE HC 0.069757 NOX 0.0089831 CO 3.4928
EMISSION MASS/MODE HC 0.0034879 NOX 0.00044916 CO 0.12464
EMISSION MASS/RATED HP HC 2.1799E-05 NOX 2.8072E-06 CO 0.00077400
MODE EMIS./STD. CYCLE HC 1.1473 NOX 0.16715 CO 1.8548

CAL. FUEL AIR RATIO = 0.073678 MEAS. FUEL AIR RATIO = 0.071888 DIFF. MEAS. & CAL. F/A PERCENT = 2.4906

CYL TEMP DEG.F CYL-1 301.80 CYL-2 320.98 CYL-3 310.06 CYL-4 327.13

EXT GAS TEMP DEG.F EXT-1 1555.4 EXT-2 -454.00 EXT-3 -454.00 EXT-4 580.13 SEXT-1 676.29 SEXT-2 674.74

ENGINE OIL FRIIT 154.06 SOILT -5.0762 OTLP 55.425 MANIFOLD PRESSURE = 7.7815

DYND COND. TORQUE 1.9145 RPM 1190.0 CYL. BACK PRESSURE = 29.011

INDUCTION AIR IAIRT1 49.777 IAIRT2 51.345 TAIRT1 50.027 TAIRT2 44.617

ORIFICE AIR TEMP 89.443 DELTAP 2.9807 ORFP 55.115 FLOW 2369.3

CFL TEMP. = 82.986 HEATER TEMP = 88.622 COOLER TEMP = 33.260

NASA-LEWIS PRELIMINARY DATA 04/22/76 CADDEII REC 04/22/76 18:37:28.217 FAC SEX15 PGM C003 RDG 3579

LEANOUT RE-PUNTS : & T 50 DEG HUM = 60 % 1 1/2 T CLOS MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DES. BAROMETRIC PRESSURE = 29.000 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	52.420	29.001	11.040	50.179	0.24258	14.245

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	84.955	5.8365	44.519	3.9515	3.0363	6.1902

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	60.772	-0.030167	0.81422	0.00000	56.404	7.380

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	56.404	47.841	33.340	0.77708	0.51127

ENG. COND.	F/A DRY	F/A WET	F/OJ. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.060509	0.050218	0.90312	591.48	588.90	4.5421	0.51153

WET CORRECTION FACTOR = 0.85031 EXHAUST MOLE. WT. = 28.840 EXHAUST DENSITY = 0.074674 EXHAUST FLOW RATE = 715.88

MEASURED CONC.	PART PER MILLION WET	PER CENT
	HC PPM NOX PPM CO DRY CO2 DRY O2 DRY	
	12135. 33.813 0.77861 13.167 4.1252	
CORRECTED CONC. TO WET BASIS		0.65206 11.196 3.5077

EMISSION RATE	HC	NOX	CO
EMISSION MASS/MODE	0.31188	0.0028805	0.34409
EMISSION MASS/RATED HP	0.0051979	4.8009E-05	0.0057348
MODE EMIS./STD. CYCLE %	3.2487E-05	3.0006E-07	3.5843E-05
	1.7098	0.020004	0.085340

CAL. FUEL AIR RATIO = 0.053105 MEAS. FUEL AIR RATIO = 0.060505 DIFF MEAS. & CAL. F/A PERCENT = 4.2890

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	267.45	294.08	282.38	301.04

EXT GAS TEMP DEG.F	FXT-1	FXT-2	FXT-3	FXT-4	SEXT-1	SEXT-2
	1363.6	-454.00	-454.00	1155.6	644.15	642.51

ENGINE OIL	FILT	SOILT	OIL	MANIFOLD PRESSURE =
	157.44	361.95	45.757	11.687

DYMO COND.	TORQUE	RPM	CYL. BACK PRESSURE =
	4.2988	576.30	29.351

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	50.507	52.420	76.583	44.023

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	87.931	1.023	55.135	1402.9

CELL TEMP. = 83.286 HEATER TEMP = 88.497 COOLER TEMP = 33.132

755

NASA-LEWIS PRELIMINARY DATA 04/22/76 CADDPII REC 04/22/76 18:44:23.538 FAC SFX15 PGM C003 RDG 3581

LEANOUT RE-RUNS I & T 50 DEG HUM = 60 % 3/4 T CLOSED MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DES. BAROMETRIC PRESSURE = 29.000 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR TEMP 50.315 PRESS 29.001 CFM 16.946 DRY FLOW 77.084 VAPOR FLOW 0.37011 PRESS TOTAL 14.243

COMP. FUEL TEMP 84.077 PRESS 5.7723 DENSITY 44.542 TURBO FLOW 7.5942 FLOW TRON 6.2286 FPIP 6.1794

COOLING AIR TEMP 59.960 UDEL-HOOD -0.032934 DFL-HOOD 0.82418 FLOW 0.00000 REL-HUM 60.551 DEW-POINT 37.205

PFL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP
60.551 44.386 33.509 0.77178 0.74745

ENG. COND. F/A DRY 0.080803 F/A WFT 0.080417 EQU. RATIO 1.2060 RPM-1 1198.3 RPM-2 1199.6 TORQUE 3.2837 BHP 0.74918

WET CORRECTION FACTOR = 0.83647 EXHAUST MOL. WT. = 27.616 EXHAUST DENSITY = 0.071506 EXHAUST FLOW RATE = 1170.3

MEASURED CONC. HC PPM 3419.3 NOX PPM 44.986 CO DRY 7.4162 CO2 DRY 12.249 O2 DRY 0.16198
CORRECTED CONC. TO WET BASIS CO DRY 6.2034 CO2 DRY 10.246 O2 DRY 0.13549

EMISSION RATE HC 0.14366 NOX 0.0062650 CO 5.2706
EMISSION MASS/MODE HC 0.026337 NOX 0.0011486 CO 0.96628
EMISSION MASS/RATED HP HC 0.00016461 NOX 7.1787E-06 CO 0.0060393
MODE EMISS./STD. CYCLE % HC 8.6636 NOX 0.47858 CO 14.379

CAL. FUEL AIR RATIO = 0.082202 MEAS. FUEL AIR RATIO = 0.080803 DIFF MEAS. & CAL. F/A PERCENT = 1.7315

CYL TEMP DEG.F CYL-1 296.58 CYL-2 311.18 CYL-3 297.47 CYL-4 310.89

EXT GAS TEMP DEG.F EXT-1 1346.2 EXT-2 -454.00 EXT-3 -454.00 EXT-4 1228.8 SEXT-1 648.49 SEXT-2 647.24

ENGINE OIL EOILT 156.99 SOILT 344.06 OILP 53.977 MANIFOLD PRESSURE = 7.5690

DYNO COND. TORQUE 7.2871 RPM 1197.5 CYL. PACK PRESSURE = 28.866

INDUCTION AIR TAIRT1 48.754 TAIRT2 50.315 TAIRT1 115.37 TAIRT2 43.602

ORIFICE AIR TEMP 89.015 DEL TAP 2.0072 WKF 55.178 FLOW 1966.8

CELL TEMP. = 82.213 HEATFD TEMP = 88.359 COOLER TEMP = 32.886

756

NASA-LEWIS PRELIMINARY DATA 04/22/76 CADDEII REC 04/22/76 18:44:45.333 FAC SEX15 PGM C003 RDG 3582

LEANOUT RF-RUNS I & T 50 DEG HUM = 60 % 3/4 T CLOSED MODE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.000 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	49.932	29.003	17.081	77.690	0.37245	14.245

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	83.620	5.7687	44.554	7.6851	6.3156	6.1683

COOLING AIR	TEMP	WDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	59.346	-0.042067	0.87234	0.00000	61.335	37.170

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	61.335	-0.81008	33.559	0.77062	0.93937

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.081293	0.080905	1.2133	1199.1	1198.9	4.1254	0.94188

WET CORRECTION FACTOR = 0.83858 EXHAUST MOL. WT. = 27.578 EXHAUST DENSITY = 0.071405 EXHAUST FLOW RATE = 1181.7

MEASURED CONC.	PART PER MILLION WFT			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	3383.3	44.280	7.4487	12.227	0.16756	
CORRECTED CONC. TO WFT BASIS						
			6.2463	10.253	0.14051	

EMISSION RATE	HC	NOX	CO
	0.14353	0.0062267	5.3587
	0.0071764	0.00031133	0.26793
	4.4853E-05	1.7458E-06	0.0016746
EMISSION MASS/MODE			
MODE EMIS./STD. CYCLE %	2.3607	0.12972	3.9871

CAL. FUEL AIR RATIO = 0.082235 MEAS. FUEL AIR RATIO = 0.081293 DIFF MEAS. & CAL. F/A PERCENT = 1.1593

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	289.90	304.38	291.05	305.83

FXT GAS TEMP DEG.F	FXT-1	FXT-2	FXT-3	FXT-4	SFXT-1	SFXT-2
	1437.3	-454.00	-454.00	510.91	635.58	634.03

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 7.6089
	156.91	-139.10	53.377	

DYMO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 28.931
	2.7651	1193.1	

INDUCTION AIR	IAIPT1	IAIPT2	TAIRT1	TAIRT2
	48.370	49.932	158.79	43.716

ORIFICE AIR	TEMP	DELTA P	DRY F	FLOW
	83.482	2.0014	55.183	1965.0

CELL TEMP. = 81.085 WATER TEMP = 89.359 COOLER TEMP = 32.913

ORIGINAL PAGE IS
OF POOR QUALITY.

757

NASA-LEWIS PRELIMINARY DATA 04/22/76 CADDEII REC 04/22/76 18:48:29.246 FAC SEX15 PGM C003 RDG 3583

LEANOUT PE-RUNS T R T 50 DEG HUM = 60 % 3/4 T CLOSED MODE = 7.000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.000 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	50.945	28.995	10.064	45.706	0.21945	14.243

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	83.559	5.8029	44.555	3.9548	3.8944	6.1875

COOLING AIR	TEMP	INDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	58.849	-0.030443	0.83313	0.00000	59.154	37.205

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	59.154	29.689	33.511	0.77183	0.44358

ENG. COND.	F/A DRY	F/A WET	FUEL RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.085205	0.084798	1.2717	580.48	588.84	3.9671	0.44450

WET CORRECTION F/A DRY = 0.85791 EXHAUST MOLE WT. = 27.274 EXHAUST DENSITY = 0.070619 EXHAUST FLOW RATE = 705.48

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
CORRECTED CONC. TO WET BASIS	20284.	10.777	7.5520	10.120	2.3337	
			6.4789	8.6818	2.0021	

EMISSION RATE	HC	NOX	CO	
	0.51372	0.00090475	3.3184	
	EMISSION MASS/MODE	0.0085621	1.5079E-05	0.055306
	EMISSION MASS/RATED HP	5.3513E-05	9.4245E-08	0.00034566
MODE EMIS./STD. CYCLE %	2.8165	0.0062830	0.82300	

CAL. FUEL AIR RATIO = 0.085673 MEAS. FUEL AIR RATIO = 0.085205 DIFF MEAS. & CAL. F/A PERCENT = 0.54900

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	268.03	278.68	259.08	279.52

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1291.7	-454.00	-454.00	1047.7	630.36	628.64

ENGINE OIL	FOILT	SOILT	OILT	MANIFOLD PRESSURE = 10.992
	159.45	272.15	45.525	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.256
	9.0045	596.34	

INDUCTION AIR	IAIPT1	IAIRT2	TAIRT1	TAIPT2
	48.955	50.945	135.15	44.385

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	88.106	1.0411	55.147	1431.8

CELL TEMP. = 81.245 HEATER TEMP = 88.200 COOLER TEMP = 32.795

758

NASA-LEWIS PRELIMINARY DATA 04/22/76 CADDEII REC 04/22/76 18:48:49.722 FAC SEX15 PGM C003 RDG 3584

LEANOUT RE-RUNS I & T 50 DEG HUM = 60 % 3/4 T CLOSED MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.000 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 51.145 PRESS 28.999 CFM 10.007 DRY FLOW 45.433 VAPOR FLOW 0.21824 PRESS TOTAL 14.242

COMB. FUEL TEMP 83.866 PRESS 5.8041 DENSITY 44.547 TURBO FLOW 3.9507 FLOW TRON 3.8734 FPIP 5.1731

COOLING AIR TEMP 58.913 UDEL-HOOD -0.041790 DEL-HOOD 0.87677 FLOW 0.00000 REL-HUM 58.739 DEW-POINT 37.215

REL-HUM 1 2 HUMIDITY 33.625 % H2O VAPOR CORRECTED HP 0.77214 0.41831

ENG. COND. F/A DRY 0.085254 F/A WET 0.084847 EQU. RATIO 1.2725 RPM-1 584.34 RPM-2 582.66 TORQUE 3.7670 BHP 0.41912

WET CORRECTION FACTOR = 0.86429 EXHAUST MOLE WT. = 27.270 EXHAUST DENSITY = 0.070609 EXHAUST FLOW RATE = 701.40

MEASURED CONC. PART PER MILLION WET PER CFMT
HC PPM 20933. NOX PPM 10.181 CO DRY 7.2964 CO2 DRY 10.094 O2 DRY 2.6303
CORRECTED CONC. TO WET BASIS 6.3062 R.7238 2.2733

759

EMISSION RATE HC 0.52710 NOX 0.00084977 CO 3.2112
EMISSION MASS/MODE 0.0087849 1.4163E-05 0.053520
EMISSION MASS/RATED HP 5.4906E-05 8.3517E-08 0.00033450
MODE EMIS./STD. CYCLE % 2.8898 0.0059012 0.79643

CAL. FUEL AIR RATIO = 0.084498 MEAS. FUEL AIR RATIO = 0.085254 DIFF MEAS. & CAL. F/A PERCENT = -0.88658

CYL TEMP DEG.F CYL-1 259.38 CYL-2 269.92 CYL-3 250.04 CYL-4 268.99

FXT GAS TEMP DEG.F FXT-1 779.93 FXT-2 -454.00 FXT-3 -454.00 FXT-4 361.63 SFXT-1 621.22 SEXT-2 618.98

ENGINE OIL FOILT 158.94 SOILT -11.328 OILP 45.525 MANIFOLD PRESSURE = 11.001

DYND COND. TORQUE 4.1044 RPM 573.54 CYL. BACK PRESSURE = 28.773

INDUCTION AIR IAIRT1 49.110 IAIRT2 51.145 TAIRT1 111.68 TAIRT2 44.530

ORIFICE AIR TEMP 88.124 DELTAP 2.9693 DREP 55.127 FLOW 2367.8

CELL TEMP. = 81.298 HEATER TEMP = 88.269 COOLER TEMP = 32.849

NASA-LEWIS PRELIMINARY DATA 04/22/76 CADDEII REC 04/22/76 18:54:41.680 FAC SEX15 PGM C003 RDG 3585

LEANOUT RE-PURNS I & T 50 DEG HUM = 60 % NEUTRAL MODE = 1.000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.000 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 51.537 PRESS 28.997 CFM 11.502 DRY FLOW 52.313 VAPOR FLOW 0.25061 PRESS TOTAL 14.242

COMB. FUEL TEMP 84.718 PRESS 5.7768 DENSITY 44.525 TURBO FLOW 3.9522 FLOW TRON 4.7795 FPIP 6.1707

COOLING AIR TEMP 59.274 DDEL-HOOD -0.023524 DEL-HOOD 0.92633 FLOW 0.00000 REL-HUM 57.735 DEW-POINT 37.145

REL-HUM 1 57.735 2 47.243 HUMIDITY 33.533 % H2O VAPOR CORRECTED HP 0.77004 0.59111

ENG. COND. F/A DRY 0.091362 F/A WET 0.090927 EQU. RATIO 1.3536 RPM-1 604.62 RPM-2 604.68 TORQUE 5.1422 BHP 0.59198

WET CORRECTION F/A DR = 0.87459 EXHAUST MOLE WT. = 26.818 EXHAUST DENSITY = 0.069439 EXHAUST FLOW RATE = 825.81

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 26904. NOX PPM 6.2546 CO DRY 8.5712 CO2 DRY 8.6631
CORRECTED CONC. TO WET BASIS 7.4963 7.5767 2.6599

EMISSION RATE HC 0.79763 NOX 0.00061465 CO 4.4943
EMISSION MASS/MODE 0.013294 1.0244E-05 0.074904
EMISSION MASS/RATED HP 8.3086E-05 5.4026E-08 0.00046815
MODE FMS./STD. CYCLE % 4.3729 0.0042684 1.1146

CAL. FUEL AIR RATIO = 0.089957 MEAS. FUEL AIR RATIO = 0.091362 DIFF MEAS. & CAL. F/A PERCENT = -1.5386

CYL TEMP DEG.F CYL-1 258.10 CYL-2 256.88 CYL-3 243.68 CYL-4 260.12

EXT GAS TEMP DEG.F EXT-1 843.97 EXT-2 -454.00 EXT-3 -454.00 EXT-4 1015.3 SEXT-1 584.51 SEXT-2 583.38

ENGINE OIL OILT 157.95 SOILT 373.18 OILP 46.125 MANIFOLD PRESSURE = 11.294

DYMO COND. TORQUE 6.5670 RPM 607.68 CYL. BACK PRESSURE = 28.883

INDUCTION AIR IAIRT1 49.604 IAIRT2 51.537 TAIRT1 147.67 TAIRT2 43.604

ORIFICE AIR TEMP 88.937 DELTAP 2.9728 DRFD 55.092 FLOW 2367.4

CELL TEMP. = 82.249 HEATER TEMP = 89.172 COOLER TEMP = 32.630

760

NASA-LFWIS PRELIMINARY DATA 04/22/76 CADDEII REC 04/22/76 18:55:03.167 FAC SEX15 PGM C003 RDG 3586

LFANOUT RE-RUNS I & T 50 DEG HUM = 60 % NEUTRAL MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.000 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TFMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	51.628	28.999	11.424	51.958	0.24946	14.241

COMP. FUEL	TFMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	84.867	5.7744	44.521	3.9518	4.7645	6.1713

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	RFL-HUM	DEW-POINT
	59.410	-0.022694	0.95490	0.00000	57.666	37.200

RFL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	57.666	49.205	33.508	0.77176	0.43583

ENG. COND.	F/A DRY	F/A WET	FOL. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.091698	0.091260	1.3586	601.80	601.08	3.8087	0.43642

WET CORRECTION FACTOR = 0.87393 EXHAUST MOLE. WT. = 26.794 EXHAUST DENSITY = 0.059377 EXHAUST FLOW RATE = 821.20

MEASURED CONC.	PART PER MILLION WET		PER CENT	
	HC PPM	NOX PPM	CO DRY	O2 DRY
	28451.	6.3176	8.4597	3.0681
CORRECTED CONC. TO WET BASIS				
			7.4019	2.6813

EMISSION RATE	HC	NOX	CO
	0.83879	0.00061737	4.4129
	EMISSION MASS/MODE	1.0200E-05	0.073549
	0.013980	5.4310E-08	0.00045960
EMISSION MASS/RATED HP	8.7373E-05	0.0042873	1.0945
MODE EMIS./STD. CYCLE %	4.5986		

CAL. FUEL AIR RATIO = 0.090492 MEAS. FUEL AIR RATIO = 0.091698 DIFF MEAS. & CAL. F/A PERCENT = -1.3146

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	250.23	260.54	234.68	251.10

EXT GAS TEMP DEG.F	FXT-1	FXT-2	EXT-3	EXT-4	SFXT-1	SFXT-2
	598.59	-100.99	-454.00	415.13	574.75	573.15

ENGINE OIL	FILT	SOILT	OILP	MANIFOLD PRESSURE = 11.349
	157.39	17.121	46.317	

DYMO COND.	TORQUE	RPM	CYL. PACK PRESSURE = 28.989
	7.9568	607.62	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	49.713	51.628	196.66	43.588

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	89.024	2.9861	55.174	2372.3

CELL TEMP. = 82.227 HEATER TEMP = 88.158 COOLER TEMP = 32.640

761

NASA-LEWIS PRELIMINARY DATA 04/22/76 CADDEIT PEC 04/22/76 18:59:36.818 FAC SEX15 PGM C003 RDG 3587

LEANOUT RE-RJNS I & T 50 DEG HUM = 60 % NEUTRAL MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.000 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 50.671 PRESS 28.997 CFM 17.927 DRY FLOW 81.604 VAPOR FLOW 0.39342 PRESS TOTAL 14.244

COMB. FUEL TEMP 85.025 PRESS 5.7480 DENSITY 44.517 TURBO FLOW 8.7185 FLOW TRON 7.2967 FPIP 6.1665

COOLING AIR TEMP 61.304 INLET-HOOD DEL-HOOD FLOW 0.00000 REL-HUM 60.004 DEW-POINT 37.310

REL-HUM 1 60.004 2 50.189 HUMIDITY 33.748 % H2O VAPOR CORRECTED HP 0.77497 0.50563

ENG. COND. F/A DRY 0.089415 F/A WET 0.088987 FOU. RATIO 1.3345 RPM-1 1204.7 RPM-2 1204.5 TORQUE 2.2086 BHP 0.50661

WET CORRECTION FACTOR = 0.84351 EXHAUST MILE. WT. = 26.959 EXHAUST DENSITY = 0.059805 EXHAUST FLOW RATE = 1279.2

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 7253.7 NOX PPM 24.267 CO DRY 10.341 CO2 DRY 10.060 O2 DRY 0.27953
CORRECTED CONC. TO WET BASIS CO DRY 8.7229 CO2 DRY 8.4858 O2 DRY 0.23578

EMISSION RATE HC 0.33312 NOX 0.0036941 CO 8.1010
EMISSION MASS/MODE 0.061071 0.00067725 1.4852
EMISSION MASS/RATED HP 0.00038169 4.2328E-06 0.0092824
MODE EMISS./STD. CYCLE % 20.089 0.28219 22.101

CAL. FUEL AIR RATIO = 0.091211 MEAS. FUEL AIR RATIO = 0.089416 DIFF MEAS. & CAL. F/A PERCENT = 2.0069

CYL TEMP DEG.F CYL-1 331.80 CYL-2 348.01 CYL-3 332.55 CYL-4 353.40

EXT GAS TEMP DEG.F EXT-1 1197.2 EXT-2 -454.00 EXT-3 -454.00 EXT-4 1091.1 SEXT-1 713.26 SEXT-2 712.70

ENGINE OIL OIL1 163.64 OIL2 269.30 OIL3 52.505 MANIFOLD PRESSURE = 7.9338

DYNO COND. TORQUE 4.4932 RPM 1202.7 CYL. BACK PRESSURE = 29.059

INDUCTION AIR IA IPT1 49.674 IA IPT2 53.671 IA IRT1 142.00 IA IRT2 43.252

ORIFICE AIR TEMP 89.574 DELTAP 1.0420 ORIF. FLOW 55.116 1430.5

CELL TEMP. = 83.515 HEATED TEMP = 88.075 COOLER TEMP = 33.269

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NASA-LEWIS PRELIMINARY DATA 04/22/76 CADDEII REC 04/22/76 18:59:58.589 FAC SEX15 PGM C003 RDG 3588

LFANOUT PE-RUNS I & T 50 DEG HUM = 60 % NEUTRAL MODE = 6.0060 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.000 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TFMP 50.899 PRESS 29.004 CFM 18.041 DRY FLOW 82.079 VAPOR FLOW 0.39693 PRESS TOTAL 14.243

COMB. FUEL TFMP 85.323 PRESS 5.7447 DENSITY 44.509 TURBO FLOW 8.9971 FLOW TRON 7.4947 FPIP 6.1683

COOLING AIR TFMP 61.322 UDEL-HOOD -0.037639 DEL-HOOD 0.84439 FLOW 0.00000 RFL-HUM 59.676 DEW-POINT 37.385

RFL-HUM 1 59.676 2 43.356 HUMIDITY 33.851 % H2O VAPOR CORRECTED HP 0.77734 1.2612

ENG. COND. F/A DRY 0.091311 F/A WET 0.090871 EQU. RATIO 1.3529 RPM-1 1202.7 RPM-2 1204.0 TORQUE 5.5172 BHP 1.2634

WET CORRECTION FACTOR = 0.85003 EXHAUST MOLE WT. = 26.822 EXHAUST DENSITY = 0.069449 EXHAUST FLOW RATE = 1295.5

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 7800.8 NOX PPM 23.720 CO DRY 10.298 CO2 DRY 10.086 O2 DRY 0.26343
CORRECTED CONC. TO WET BASIS CO 8.7540 CO 8.5737 O2 0.22392

EMISSION RATE HC 0.36280 NOX 0.0036568 CO 8.2334
EMISSION MASS/MODE 0.018140 0.00018284 0.41167
EMISSION MASS/RATED HP 0.00011338 1.1428E-06 0.0025729
MODE EMIS./STD. CYCLE % 5.9671 0.076184 6.1260

CAL. FUEL AIR RATIO = 0.091408 MEAS. FUEL AIR RATIO = 0.091311 DIFF MEAS. & CAL. F/A PERCENT = 0.10588

CYL TEMP DEG. F CYL-1 319.65 CYL-2 335.94 CYL-3 321.37 CYL-4 342.13

EXT GAS TEMP DEG. F EXT-1 898.85 EXT-2 -454.00 EXT-3 -454.00 EXT-4 459.99 SEXT-1 697.51 SEXT-2 696.39

ENGINE OIL FOILT 163.25 SOILT 22.494 OILO 52.641 MANIFOLD PRESSURE = 7.9469

DYNO COND. TORQUE 13.170 RPM 1201.1 CYL. BACK PRESSURE = 29.004

INDUCTION AIR IAIRT1 49.257 IAIRT2 50.899 TAIRT1 199.17 TAIRT2 43.473

ORIFICE AIR TEMP 89.696 DELTAP 2.0423 OROF 55.140 FLOW 1981.7

CELL TEMP. = 83.524 HEATER TEMP = 89.103 COOLER TEMP = 33.342

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NASA-LEWIS PRELIMINARY DATA 04/22/76 CADDEII REC 04/22/76 19:08:28.761 FAC SEX15 PGM C003 RDG 3589

LEANOUT RE-RUNS I & T 50 DEG HUM = 60 % 3/4 T OPEN MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.000 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TFMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	50.379	29.003	13.651	61.944	0.30065	14.244

COMP. FUEL	TEMP	PRFSS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	83.576	5.7315	44.555	3.9531	6.1866	6.1605

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	58.868	-0.037362	0.87289	0.00000	61.066	37.480

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	61.066	63.368	33.975	0.78019	0.26771

ENG. COND.	F/A DRY	F/A WET	FQIL. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.099874	0.099391	1.4907	593.40	598.62	2.3752	0.26837

WET CORRECTION FAC. TR = 0.88622 EXHAUST MOLE. WT. = 26.234 EXHAUST DENSITY = 0.067926 EXHAUST FLOW RATE = 1007.4

MEASURED CONC.	PART PER MILLION WFT			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	39201.	4.0484	9.9946	6.8368	3.9343	
CORRECTED CONC. TO WET BASIS			8.8574	6.0589	3.4867	

EMISSION RATE	HC	NOX	CO	
	1.4178	0.00048534	6.4783	
	EMISSION MASS/MODE	0.023630	8.0891E-06	0.10797
	EMISSION MASS/RATED HP	0.00014769	5.0557E-08	0.00067483
MODE FMIS./STD. CYCLE %	7.7731	0.0033705	1.6067	

CAL. FUEL AIR RATIO = 0.098679 MEAS. FUEL AIR RATIO = 0.099874 DIFF MEAS. & CAL. F/A PERCENT = -1.1960

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	261.98	281.01	262.15	280.39

EXT GAS TEMP DEG.F	FXT-1	FXT-2	FXT-3	EXT-4	SEXT-1	SEXT-2
	907.26	-454.00	-454.00	1093.1	604.55	603.99

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 12.573
	159.23	403.27	45.785	

PYNG COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.211
	1.3321	591.60	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	48.489	50.379	75.734	44.808

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	87.582	2.9676	55.114	2368.3

CELL TEMP. = 81.104 HEATED TEMP = 87.985 COOLER TEMP = 34.371

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NASA-LEW'S PRELIMINARY DATA 04/22/76 CADDEII REC 04/22/76 19:11:45.754 FAC SFX15 PGM C003 RDG 3591

LFANOUT PE-RUNS I & T 50 DEG HUM = 60 3/4 T JPFN MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.000 LATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TFMP 49.987 PRESS 29.007 CFM 19.645 DRY FLOW 89.148 VAPOR FLOW 0.43103 PRESS TOTAL 14.248

COMB. FUEL TFMP 83.638 PRESS 5.7204 DENSITY 44.553 TURBO FLOW 10.221 FLOW TRON 8.7189 FPIP 6.1635

COOLING AIR TEMP 60.024 UNFL-HOOD -0.026845 DEL-HOOD 0.82833 FLOW 0.00000 REL-HUM 61.744 DEW-POINT 37.390

REL-HUM 1 61.744 2 54.279 HUMIDITY 33.845 % H2O VAPOR CORRECTED HP 0.77720 1.3876

ENG. COND. F/A DRY 0.097803 F/A WFT 0.097332 EQU. RATIO 1.4797 RPM-1 1199.2 RPM-2 1198.9 TORQUE 6.0923 BHP 1.3910

WET CORRECTION FACTOR = 0.85568 EXHAUST MOLE WT. = 26.371 EXHAUST DENSITY = 0.068282 EXHAUST FLOW RATE = 1439.6

MEASURED CONC. HC PPM 12198. NOX PPM 12.763 CO DRY 11.797 PER CENT 9.0079 CO2 DRY 0.35628
CORRECTED CONC. TO WET BASIS HC 10.095 NOX 7.7079 CO 0.30486

EMISSION RATE HC 0.63042 NOX 0.0021865 CO 10.550
EMISSION MASS/MODE HC 0.11558 NOX 0.00340085 CO 1.9342
EMISSION MASS/RATED HP HC 0.00072235 NOX 2.5053E-06 CO 0.012089
MODE EMIS./STD. CYCLE % HC 39.019 NOX 0.16702 CO 28.783

CAL. FUEL AIR RATIO = 0.097752 MEAS. FUEL AIR RATIO = 0.097803 DIFF MEAS. & CAL. F/A PERCENT = -0.051437

CYL TEMP DEG.F CYL-1 328.55 CYL-2 349.33 CYL-3 328.33 CYL-4 346.58

EXT GAS TEMP DEG.F FXT-1 1133.2 FXT-2 -454.00 FXT-3 -384.50 FXT-4 1161.8 SEXT-1 715.74 SEXT-2 715.99

ENGINE OIL FOILT 161.98 SOILT 287.17 OILP 55.637 MANIFOLD PRESSURE = 8.4551

DYNO COND. TORQUE 5.5590 PPM 1195.0 CYL. BACK PRESSURE = 28.957

INDUCTION AIR TAIRT1 48.535 TAIRT2 49.987 TAIRT1 147.97 TAIRT2 44.949

ORIFICE AIR TEMP 89.019 DELTAP 2.0344 ORIF. FLOW 55.233 1981.1

CELL TEMP. = 82.143 HEATER TEMP = 87.964 COOLER TEMP = 34.681

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NASA-LEWIS PRELIMINARY DATA 04/22/76 CADDE11 REC 04/22/76 19:12:06.486 FAC SEX15 PGM C003 RDG 3592

LEANOUT RF-RUNS I & T 50 DEG HUM = 60 % 3/4 T OPEN MODE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.000 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	50.197	29.008	19.541	88.676	0.42840	14.249

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	83.699	5.7165	44.552	10.489	8.9139	6.1659

COOLING AIR	TEMP	UDFL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	60.033	-0.049540	0.87565	0.00000	61.216	37.370

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	61.216	35.912	33.817	0.77656	1.3288

ENG. CO. D.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10052	0.10004	1.5003	1197.4	1198.6	5.8422	1.3319

WET CORRECTION FACTOR = 0.86776 EXHAUST MOLE. WT. = 25.192 EXHAUST DENSITY = 0.067816 EXHAUST FLOW RATE = 1445.4

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	12387.	12.519	11.579	9.0357	0.41316	
CORRECTED CONC. TO WET BASIS			10.049	7.8408	0.35852	

	HC	NOX	CO
EMISSION RATE	0.64275	0.0021533	10.543
EMISSION MASS/MODE	0.032138	0.00010766	0.52716
EMISSION MASS/RATED HP	0.00020086	6.7290E-07	0.0032947
MODE EMIS./STD. CYCLE *	13.572	0.044860	7.8446

CAL. FUEL AIR RATIO = 0.097136 MEAS. FUEL AIR RATIO = 0.10052 DIFF MEAS. & CAL. F/A PERCENT = -3.3679

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	318.25	338.50	318.21	338.40

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SFXT-1	SEXT-2
	891.03	-454.00	-454.00	619.18	696.65	696.09

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE =
	162.07	73.489	55.766	8.4795

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE =
	8.3960	1201.8	29.136

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	48.681	50.197	56.054	44.972

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	88.045	1.0288	55.187	1423.5

CYLL TEMP. = 82.345 HEATER TEMP = 87.978 COOLER TEMP = 34.699

NASA-LEWIS PRELIMINARY DATA 04/22/76 CADDEII REC 04/22/76 19:16:28.721 FAC SEX15 PGM C003 RDG 3593

LEANOUT RE-RUNS I & T 50 DEG HUM = 60 % 3/4 T OPEN MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.000 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	51.664	28.997	13.230	60.011	0.29068	14.242

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	84.849	5.7378	44.522	7.5054	6.1206	6.1629

COOLING AIR	TEMP	WFL-HOOD	DFL-HOOD	FLOW	RFL-HUM	DEW-POINT
	60.736	-0.036532	0.85601	0.00000	58.100	37.425

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	58.100	43.378	33.906	0.77861	0.20982

ENG. COND.	F/A DRY	F/A WET	F/O. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10199	0.10150	1.5223	598.98	602.52	1.8419	0.21006

WET CORRECTION FACTOR = 0.89197 EXHAUST MOLE. WT. = 26.097 EXHAUST DENSITY = 0.067570 EXHAUST FLOW RATE = 983.00

MEASURED CONC.	PART PER MILLION NET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	36924.	4.2994	10.061	7.0733	3.5863
CORRECTED CONC. TO WET BASIS			8.9741	6.3092	3.1988

EMISSION RATE	HC	NOX	CO
	1.3031	0.00050294	6.4045
EMISSION MASS/MODE	0.021718	8.3823E-06	0.10674
EMISSION MASS/RATED HP	0.00013574	5.2389E-08	0.00066713
MODE EMISS./STD. CYCLE	7.1440	0.0034926	1.5984

CAL. FUEL AIR RATIO = 0.098380 MEAS. FUEL AIR RATIO = 0.10199 DIFF MEAS. & CAL. F/A PERCENT = -3.5407

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	265.50	285.26	261.93	282.93

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1295.7	-454.00	-454.00	1018.1	648.49	647.55

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 12.479
	163.72	276.69	45.361	

DYNO COND.	TORQUE	RPM	CYL. RACK PRESSURE = 28.930
	7.5536	594.96	

INDUCTION AIR	IAIRT1	IAIFT2	TAIRT1	TAIRT2
	49.841	51.664	182.10	44.959

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	88.666	2.9687	55.197	2366.4

CELL TEMP. = 82.302 HEATED TEMP = 87.916 COOLER TEMP = 34.271

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NASA-LEWIS PRELIMINARY DATA 04/22/76 CADDEII REC 04/22/76 19:16:48.278 FAC SEX15 PGM C003 RDG 3594

LEANOUT PE-RUNS I & T 50 DEG HUM = 60 ? 3/4 T OPEN MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.000 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 51.846 PRESS 29.001 CFM 13.303 DRY FLOW 60.339 VAPOR FLOW 0.29211 PRESS TOTAL 14.247

COMP. FUEL TEMP 85.069 PRESS 5.7387 DENSITY 44.515 DRY FLOW 7.5574 FLOW TRON 6.1536 FPIP 6.1716

COOLING AIR TEMP 60.781 DELT-HOOD -0.035148 DEL-HOOD 0.84134 FLOW 0.00000 REL-HUM 57.700 DEW-POINT 37.420

REL-HUM 1 57.700 2 41.214 HUMIDITY 33.888 % H2O VAPOR 0.77818 CORRECTED HP 0.86433

ENG. COND. F/A DRY 0.10198 F/A WFT 0.10149 EQU. RATIO 1.5221 RPM-1 601.14 RPM-2 602.76 TORQUE 7.5591 BHP 0.86521

WET CORRECTION FACTOR = 0.89095 EXHAUST MOLE. WT. = 26.097 EXHAUST DENSITY = 0.067572 EXHAUST FLOW RATE = 988.36

MEASURED CONC. PART PER MILLION WFT PER CENT
HC PPM 37402. NOX PPM 4.3364 CO DRY 10.122 CO2 DRY 7.0972 O2 DRY 3.6157
CORRECTED CONC. TO WFT BASIS CO 9.0182 CO2 6.3233 O2 3.2214

EMISSION RATE HC 1.3271 NOX 0.00051003 CO 6.4710
EMISSION MASS/MODE 0.022119 8.5004E-06 0.10785
EMISSION MASS/PATED HP 0.00013824 5.3128E-08 0.00067406
MODE EMIS./STD. CYCLE % 7.2759 0.0035418 1.6049

CAL. FUEL AIR RATIO = 0.098550 MEAS. FUEL AIR RATIO = 0.10198 DIFF MEAS. & CAL. F/A PERCENT = -3.3663

CYL TEMP DEG. F CYL-1 257.03 CYL-2 277.04 CYL-3 252.41 CYL-4 272.80

EXT GAS TEMP DEG. F EXT-1 781.02 EXT-2 -454.00 EXT-3 -454.00 EXT-4 389.92 SEXT-1 637.47 SEXT-2 636.44

ENGINE OIL EOILT 163.09 SOILT -79.520 OTLP 45.529 MANIFOLD PRESSURE = 12.501

DYNO COND. TORQUE 4.1404 RPM 593.76 CYL. BACK PRESSURE = 28.846

INDUCTION AIR IAIRT1 49.987 IAIRT2 51.846 TAIRT1 73.678 TAIRT2 45.146

ORIFICE AIR TEMP 88.762 DELTAP 2.0568 ORFP 55.195 FLOW 1990.0

CELL TEMP. = 82.275 HEATER TEMP = 87.937 COOLER TEMP = 34.253

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NASA-LEWIS PRELIMINARY DATA 04/22/76 CADDETT REC 04/22/76 19:53:56.143 FAC SEX15 PGM C003 RDG 3605

LEANOUT PE-RJNS I & T 50 DEG HUM = 60 % 1 1/2 T OPEN MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.000 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	49.859	28.999	14.242	64.572	0.31445	14.245

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	82.812	5.7225	44.575	8.2854	6.7957	6.1629

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLD	REL-HUM	DEW-POINT
	59.473	-0.045942	0.85570	0.00000	62.369	37.525

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	62.369	39.490	34.036	0.78157	0.19205

ENG. CO. D.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10508	0.10457	1.5583	592.02	594.42	1.7085	0.19259

WET CORRECTION FACTOR = 0.89355 EXHAUST MJLF. WT. = 25.902 EXHAUST DENSITY = 0.067067 EXHAUST FLOW RATE = 1070.3

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	46832.	4.3894	10.073	6.3614	4.1522
CORRECTED CONC. TO WET BASIS			9.0005	5.6843	3.7102

EMISSION RATE	HC	NOX	CO
	1.7995	0.00055906	6.9937
EMISSION MASS/MODE	0.029991	9.3177E-06	0.11656
EMISSION MASS/RATED HP	0.00018745	5.3236E-08	0.00072851
MODE EMIS./STD. CYCLE %	9.8656	0.0038824	1.7345

CAL. FUEL AIR RATIO = 0.10303 MEAS. FUEL AIR RATIO = 0.10508 DIFF MEAS. & CAL. F/A PERCENT = -1.9468

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	261.54	283.61	252.10	283.56

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	649.20	-454.00	499.30	593.27	667.92	667.19

ENGINE OIL	FOILT	SOILT	OIL3	MANIFOLD PRESSURE = 13.108
	160.86	5.7917	45.589	

DYNO COMP.	TORQUE	RPM	CYL. BACK PRESSURE = 29.000
	13.268	586.32	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	49.124	49.859	80.180	44.477

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	87.451	1.9766	55.156	1955.3

CELL TEMP. = 81.421 HEATED TEMP = 87.702 COOLLR TEMP = 34.753

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NASA-LEWIS PRELIMINARY DATA 04/22/76 CADDEII REC 04/22/76 19:59:55.784 FAC SEX15 PGM C003 RDG 3507

LEANOUT RE-RUNS I & T 50 DEG HUM = 60 % 1 1/2 T OPEN MODE = 1.000C NO. SCANS = 5

ENGINE TIMING = 25.000 DFG. BAROMETRIC PRESSURE = 29.000 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	51.719	29.005	15.067	68.396	0.33261	14.248

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	83.963	5.7090	44.545	3.9505	7.1557	6.1677

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	59.437	-0.053137	0.89922	0.00000	58.235	37.535

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	58.235	40.156	34.341	0.78170	0.48860

ENG. COND.	F/A DRY	F/A WET	EQU. PATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10462	0.10412	1.5515	620.15	624.12	4.1421	0.48910

WET CORRECTION FACTOR = 0.90005 EXHAUST WJLF. WT. = 25.931 EXHAUST DENSITY = 0.067141 EXHAUST FLOW RATE = 1130.2

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	41868.	4.6505	9.5475	6.7363	3.8004
CORRECTED CONC. TO WET BASIS			8.5932	6.0629	3.4205

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EMISSION RATE	HC	NOX	CO
	1.6988	0.00062547	7.0511
	0.028313	1.0425E-05	0.11752
	0.00017696	5.5153E-08	0.00073449
EMISSION MASS/MODE			
MODE EMIS./STD. CYCLE %	9.3136	0.0043436	1.7488

CAL. FUEL AIR RATIO = 0.099949 MEAS. FUEL AIR RATIO = 0.10462 DIFF MEAS. & CAL. F/A PERCENT = -4.4664

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	217.94	245.10	221.48	234.01

EXT GAS TEMP DEG.F	FXT-1	FXT-2	FXT-3	FXT-4	SFXT-1	SEXT-2
	1354.3	-354.00	234.33	1022.5	582.99	582.52

ENGINE OIL	OILT	SOILT	OILP	MANIFOLD PRESSURE = 12.785
	150.22	323.03	47.165	

DYMO COND.	TORQUE	RPM	CYL. PACK PRESSURE = 29.025
	4.8317	515.90	

INDUCTIOM AIR	IAIPT1	IAIPT2	TAIRT1	TAIRT2
	49.941	51.719	151.00	44.757

CPIFACE AIR	TEMP	DELTA P	ORFP	FLOW
	88.421	2.0480	55.174	1986.6

CELL TEMP. = 82.169 HEATER TEMP = 87.632 COOLER TEMP = 34.016

NASA-LEWIS PRELIMINARY DATA 04/22/76 CADDEII REC (4/22/76 20:00:17.804 FAC SEX15 PGM C003 RDG 3608

LEANOUT RE-RUNS 1 & T 50 DEG HUM = 60 * 1 1/2 T OPEN MODF = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.000 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	51.819	28.999	15.104	68.545	0.33317	14.247

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	84.024	5.7126	44.543	3.9520	7.0117	6.1527

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	59.391	-0.027953	0.85048	0.00000	57.986	37.520

REL-HUM	1	2	HUMIDITY	H2O VAPOR	CORRECTED HP
	57.986	32.331	34.024	0.78130	0.42850

ENG. COND.	F/A DRY	F/A WET	FOU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10229	0.10180	1.5268	599.28	600.42	3.7587	0.42889

WET CORRECTION FACTOR = 0.89173 EXHAUST MOLE. WT. = 26.077 EXHAUST DENSITY = 0.067520 EXHAUST FLOW RATE = 1124.0

MEASURED CONC.	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	44150.	4.4304	9.5899	6.6161	4.0820
CORRECTED CONC. TO WET BASIS			8.5517	5.8998	3.6401

EMISSION RATE	HC	NOX	CO
	1.7815	0.00059257	6.9781
EMISSION MASS/MODE	0.029691	9.3762E-06	0.11630
EMISSION MASS/RATED HP	0.00018557	5.1726E-08	0.00072684
MODE FMS./STD. CYCLE %	9.7668	0.0041151	1.7307

CAL. FUEL AIR RATIO = 0.10048 MEAS. FUEL AIR RATIO = 0.10229 DIFF MEAS. & CAL. F/A PERCENT = -1.7762

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	212.30	240.24	215.50	228.49

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	877.91	-454.00	207.01	451.03	571.15	570.54

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 12.945
	149.63	-17.309	47.013	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.016
	8.4824	595.02	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	50.069	51.819	65.184	44.835

ORIFICE AIR	TEMP	DELTA P	DRP	FLOW
	88.465	1.0262	55.247	1421.2

FUEL TEMP. = 82.134 HEATER TEMP = 87.660 COOLER TEMP = 34.007

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NASA-LEWIS PRELIMINARY DATA 04/22/76 CADDEII REC 04/22/76 20:03:38.322 FAC SEX15 PGM C003 RDG 3609

LEANOUT RE-RUNS I & T 50 DEG HUM = 60 % 1 1/2 T OPFN MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.000 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 51.127 PRESS 29.000 CFM 20.714 DRY FLOW 94.124 VAPOR FLOW 0.45483 PRESS TOTAL 14.245

COMB. FUEL TEMP 84.200 PRESS 5.7045 DENSITY 44.539 TURBO FLOW 10.906 FLOW TRON 9.3939 FPIP 6.1623

COOLING AIR TEMP 60.628 UDEL-HOOD -0.045388 DEL-HOOD 0.84605 FLOW 0.00000 REL-HUM 59.139 DEW-POINT 37.370

REL-HUM 1 2 HUMIDITY 33.825 % H2O VAPOR CORRECTED HP 0.83789

ENG. COND. F/A DRY 0.099804 F/A WET 0.099324 EQU. RATIO 1.4895 RPM-1 1196.2 RPM-2 1195.6 TORQUE 3.5837 BHP 0.83901

WET CORRECTION FACTOR = 0.85918 EXHAUST MOLE. WT. = 26.238 EXHAUST DENSITY = 0.067938 EXHAUST FLOW RATE = 1530.4

MEASURED CONC. PART PER MILLION WET HC PPM 14387. NOX PPM 10.021 CO DRY 12.001 CO2 DRY 8.6679 O2 DRY 0.47339
CORRECTED CONC. TO WET BASIS CO DRY 10.311 CO2 DRY 7.4472 O2 DRY 0.40672

EMISSION RATE HC 0.79047 NOX 0.0018250 CO 11.456
EMISSION MASS/MODE HC 0.14492 NOX 0.0033458 CO 2.1002
EMISSION MASS/RATED HP HC 0.00090574 NOX 2.0912E-06 CO 0.013126
MODE EMIS./STD. CYCLE % HC 47.671 NOX 0.13941 CO 31.253

CAL. FUEL AIR RATIO = 0.099512 MEAS. FUEL AIR RATIO = 0.099804 DIFF MEAS. & CAL. F/A PERCENT = -0.29204

CYL TEMP DEG.F CYL-1 306.67 CYL-2 325.76 CYL-3 309.59 CYL-4 327.10

EXT GAS TEMP DEG.F EXT-1 1318.2 EXT-2 -454.00 EXT-3 119.66 EXT-4 859.25 SEXT-1 709.75 SEXT-2 709.41

ENGINE OIL EOILT 155.67 SOILT 328.57 OILT 56.510 MANIFOLD PRESSURE = 8.7247

DYNO COND. TORQUE 4.4428 RPM 1181.9 CYL. BACK PRESSURE = 29.042

INDUCTION AIR IAIRT1 49.658 IAIRT2 51.127 TAIRT1 155.67 TAIRT2 44.177

ORIFICE AIR TEMP 88.867 DELTAP 3.9651 ORIF. FLOW 55.116 FLOW 2727.2

CELL TEMP. = 83.067 HEATER TEMP = 87.612 COOLER TEMP = 33.788

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NASA-LEWIS PRELIMINARY DATA 04/22/76 CADDEII RFC 04/22/76 20:03:59.483 FAC SEX15 PS4 C003 RDG 3610

LEANOUT RE-RUNS I & T 50 DEG HUM = 60 % 1 1/2 T OPEN MODE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PPESSURE = 29.000 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	51.245	28.996	21.389	97.160	0.46918	14.244

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	84.305	5.7042	44.536	10.979	9.4719	6.1599

COOLING AIR	TEMP	UNDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	60.718	-0.013284	0.92216	0.00000	58.833	37.350

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	58.833	48.607	33.803	0.77622	1.0680

ENG. COND.	F/A DRY	F/A WET	FQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.097488	0.097019	1.4550	1196.9	1198.8	4.6921	1.0693

WET CORRECTION F_W TORP = 0.84983 EXHAUST MOLE WT. = 26.392 EXHAUST DENSITY = 0.068336 EXHAUST FLOW RATE = 1557.3

MEASURED CONC.	PART PER MILLION WET		PER CFMT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY
	14336.	9.8980	12.058	8.7367
CORRECTED CONC. TO WET BASIS			10.247	0.37321

	HC	NOX	CO
	EMISSION RATE	0.80663	0.0018460
EMISSION MASS/MODE	0.040332	9.2301E-05	0.58299
EMISSION MASS/RATED HP	0.00025207	5.7688E-07	0.0036437
MODE EMIS./STD. CYCLE %	13.267	0.038459	8.6754

CAL. FUEL AIR RATIO = 0.099618 MEAS. FUEL AIR RATIO = 0.097488 DIFF MEAS. & CAL. F/A PERCENT = 2.1846

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	298.03	317.23	301.33	320.13

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SFXT-1	SEXT-2
	1039.3	-454.00	40.180	279.83	694.25	693.22

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 8.7109
	155.60	-33.922	56.634	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.147
	10.031	1197.1	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	49.722	51.245	60.199	44.276

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	88.989	2.0177	55.176	1971.7

CELL TEMP. = 83.34R HEATER TEMP = 87.432 COOLER TEMP = 33.733

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NASA-LEWIS PRELIMINARY DATA 04/22/76 CADDEII REC 04/22/76 20:24:40.789 FAC SEX15 PGM C003 R0G 3611

LEANOUT RE-RUNS I & T 50 DEG HUM = 80 % 1 1/2 T CLOS MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.000 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	52.847	28.997	10.760	48.657	0.31427	14.245

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPI
	85.551	5.8347	44.503	3.9485	3.1263	6.1884

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	59.545	-0.039853	0.88258	0.00000	73.991	44.795

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	73.991	65.352	45.212	1.0382	0.22716

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	PPM-1	RPM-2	TORQUE	BHP
	0.064252	0.063839	0.95898	592.50	595.34	2.0085	0.22659

WET CORRECTION FACTOR = 0.87284 EXHAUST MOLE WT. = 28.794 EXHAUST DENSITY = 0.074555 EXHAUST FLOW RATE = 698.79

MEASURED CONC.	PART PER MILLION WFT		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	15198.	31.753	1.0103	12.730	4.7519
CORRECTED CONC. TO WET BASIS			0.88181	11.112	4.1476

EMISSION RATE	HC	NOX	CO
	0.38128	0.0026405	0.44736
EMISSION MASS/MODE	0.0063546	4.4008E-05	0.0074550
EMISSION MASS/RATED HP	3.9716E-05	2.7505E-07	4.6600E-05
MODE FMS2/STD. CYCLE	2.0903	0.019336	0.11095

CAL. FUEL AIR RATIO = 0.063153 VEAS. FUEL AIR RATIO = 0.064252 DIFF MEAS. & CAL. F/A PERCENT = -1.7093

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	220.40	257.35	245.82	263.49

EXT GAS TEMP DEG.F	FXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	417.85	-454.00	189.57	1205.7	709.15	708.51

ENGINE OIL	ENTLT	SOILT	OILP	MANIFOLD PRESSURE = 11.545
	175.07	220.64	44.636	

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.248
	5.3645	586.86	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	50.963	57.847	-53.872	45.283

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	88.631	3.960E	55.042	2725.1

CFLI TEMP. = 82.451 HEATED TEMP = 87.508 COOLER TEMP = 34.435

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NASA-LEWIS PRELIMINARY DATA 04/22/76 CADDEII RFC 04/22/76 20:29:03.578 FAC SEX15 PGM C033 RDG 3613

LEANOUT RE-RUNS I & T 50 DEG HUM = 80 % 1 1/2 T CLNS MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.000 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	52.629	28.997	15.074	72.697	0.46765	14.245

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	85.121	5.7936	44.515	7.0979	5.6976	6.1746

COOLING AIR	TEMP	INDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	63.087	-0.027676	0.90998	0.00000	74.290	44.690

REL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP
	74.290	45.521	45.030	1.0340 1.0245

FNG. CO. D.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.078374	0.077873	1.1698	1203.7	1204.6	4.4588	1.0219

WET CORRECTION FACTOR = 0.83242 EXHAUST MOLE WT. = 27.811 EXHAUST DENSITY = 0.072010 EXHAUST FLOW RATE = 1095.1

MEASURED CONC.	PART PER MILLION WGT			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
CORRECTED CONC. TO WET BASIS	3085.3	54.657	6.2824	13.153	0.13999
			5.2296	10.949	0.11653

EMISSION RATE	HC	NOX	CO
	0.12130	0.0071231	4.1579
	0.022238	0.0013059	0.76228
	0.00013899	8.1618E-06	0.0047643
EMISSION MASS/MODE			
0.00013899			
MODE EMIS./STD. CYCLE %	7.3153	0.54412	11.343

CAL. FUEL AIR RATIO = 0.079535 MEAS. FUEL AIR RATIO = 0.078374 DIFF MEAS. & CAL. F/A PERCENT = 1.4809

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	358.76	379.65	365.78	390.99

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1384.0	-454.00	-90.659	1086.0	853.89	854.15

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 7.5747
	176.84	329.69	53.985	

DYMO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.058
	6.1926	1208.8	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	50.981	52.629	95.388	45.255

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	89.879	2.9718	55.452	2365.0

CELL TEMP. = 83.471 HEATER TEMP = 87.528 COOLER TEMP = 34.881

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NASA-LEWIS PRELIMINARY DATA 04/22/76 CADDELL REC 04/22/76 20:29:24.991 FAC SEX15 PGM C003 RDG 3614

LEANOUT RF-RUNS I & T 50 DEG HUM = 80 % 1 1/2 T CLOS MODE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.000 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 52.802 PRESS 29.005 CFM 15.355 DRY FLOW 73.978 VAPOR FLOW 0.47476 PRESS TOTAL 14.248

COMB. FUEL TEMP 85.410 PRESS 5.7984 DENSITY 44.507 TURBO FLOW 7.0642 FLOW TRON 5.6136 FPIP 6.1743

COOLING AIR TEMP 63.141 INDEL-HOOD -3.031274 DEL-HOOD 0.87787 FLOW 0.00000 REL-HUM 73.662 DEW-POINT 44.635

REL-HUM 1 73.662 2 64.764 HUMIDITY 44.923 % H2O VAPOR 1.0316 CORRECTED HP 0.91107

ENG. COND. F/A DRY 0.075881 F/A WET 0.075397 EQU. RATIO 1.1326 RPM-1 1203.0 RPM-2 1204.7 TORQUE 3.9671 BHP 0.90868

WET CORRECTION FACTOR = 0.82407 EXHAUST MOLE. WT. = 28.016 EXHAUST DENSITY = 0.072540 EXHAUST FLOW RATE = 1103.8

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 2393.2 NOX PPM 56.176 CO DRY 5.8841 CO2 DRY 13.618 O2 DRY 0.11605
CORRECTED CONC. TO WET BASIS 4.8489 11.222 0.095635

EMISSION RATE HC 0.094831 NOX 0.0073785 CO 3.8856
EMISSION MASS/MODE 0.0047416 0.00036892 0.19428
EMISSION MASS/RATED HP 2.9635E-05 2.3058E-06 0.0012142
MODE EMIS./STD. CYCLE % 1.5597 0.15372 2.8910

CAL. FUEL AIR RATIO = 0.079319 MEAS. FUEL AIR RATIO = 0.075881 DIFF MEAS. & CAL. F/A PERCENT = 3.2125

CYL TEMP DEG.F CYL-1 344.98 CYL-2 365.29 CYL-3 352.05 CYL-4 377.33

EXT GAS TEMP DEG.F EXT-1 1734.7 EXT-2 -454.00 EXT-3 -224.62 EXT-4 493.08 SEXT-1 833.04 SEXT-2 832.82

ENGINE OIL OILT 177.06 SOILT 45.410 OILP 54.205 MANIFOLD PRESSURE = 7.6528

DYNO COND. TORQUE 11.298 RPM 1178.9 CYL. BACK PRESSURE = 29.054

INDUCTION AIR IAIRT1 51.136 IAIRT2 52.802 TAIRT1 150.26 TAIRT2 45.291

ORIFICE AIR TEMP 89.748 DELTAP 2.0207 DRFP 55.964 FLOW 1971.7

CELL TEMP. = 83.778 HEATER TEMP = 87.591 COOLFR TEMP = 34.835

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NASA-LEWIS PRELIMINARY DATA 04/22/76 CANDETT RFC 04/22/76 20:40:42.452 FAC SEX15 PGM C033 RDG 3618

LEANOUT PE-RUNS I & T 50 DEG HUM = 80 7/8 T CLOSED MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.000 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR TEMP 52.966 PRESS 28.992 CFM 9.3377 DRY FLOW 42.110 VAPOR FLOW 0.27936 PRESS TOTAL 14.244

COMP. FUEL TEMP 82.979 PRESS 5.8005 DENSITY 44.570 TURBO FLOW 3.9579 FLOW TRON 3.8524 FPIP 6.1749

COOLING AIR TEMP 61.538 WDEL-HOOD -0.039300 DEL-HOOD 0.85269 FLOW 0.00000 REL-HUM 75.642 DEW-POINT 45.490

RFL-HUM 1 75.642 2 36.550 HUMIDITY 46.439 % H2O VAPOR CORRECTED HP 1.0664 0.62587

ENG. COND. F/A DRY 0.091484 F/A WET 0.090881 EQU. RATIO 1.3654 RPM-1 614.46 RPM-2 616.50 TORQUE 5.3339 BHP 0.62404

WET CORRECTION FA. TR = 0.87626 EXHAUST MOLE. Wt. = 26.810 EXHAUST DENSITY = 0.069417 EXHAUST FLOW RATE = 666.14

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 14321. NOX PPM 15.837 CO DRY 8.0940 CO2 DRY 8.9182 O2 DRY 1.6279
CORRECTED CONC. TO WET BASIS CO DRY 7.0925 CO2 DRY 7.8147 O2 DRY 1.4264

EMISSION RATE HC 0.39022 NOX 0.0012550 CO 3.4301
EMISSION MASS/MODE C.0065054 2.0916E-05 0.057163
EMISSION MASS/RATED HP 4.0659E-05 1.3073E-07 0.00035730
MODE EMIS./STO. CYCLE % 2.1399 0.0087152 0.85671

CAL. FUEL AIR RATIO = 0.088954 MEAS. FUEL AIR RATIO = 0.091484 DIFF MEAS. & CAL. F/A PERCENT = -2.8745

CYL TEMP DEG. F CYL-1 233.40 CYL-2 296.23 CYL-3 276.81 CYL-4 298.21

EXT GAS TEMP DEG. F EXT-1 866.10 EXT-2 -454.00 EXT-3 -375.66 EXT-4 694.38 SFXT-1 722.15 SEXT-2 720.23

ENGINE OIL EOILT 172.59 SOILT 264.05 OILP 45.028 MANIFOLD PRESSURE = 10.507

DYMO COND. TORQUE 1.9442 RPM 609.12 CYL. BACK PRESSURE = 28.930

INDUCTION AIR IAIRT1 51.090 IAIRT2 52.966 TAIRT1 111.34 TAIRT2 46.502

ORIFICE AIR TEMP 87.573 DELTAP 1.0620 ORFP 55.139 FLOW 1446.5

CELL TEMP. = 81.210 HEATER TEMP = 87.342 CONDENSER TEMP = 35.409

NASA-LFWIS PRELIMINARY DATA 04/22/76 CADDEII RFC 04/22/76 20:41:03.687 FAC SFX15 PGM C003 RDG 3619

LEANOUT RE-RUNS T & T 50 DEG HUM = 80 % 3/4 T CLOSED MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.000 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	53.129	29.004	9.4985	42.824	0.28393	14.241

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	83.181	5.8026	44.565	3.9557	3.8614	6.1839

COOLING AIR	TEMP	WDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	61.493	-0.039023	0.90085	0.00000	75.133	45.470

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	75.133	60.614	46.412	1.0658	0.58188

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.090159	0.089576	1.3458	607.26	608.46	5.0172	0.58011

WET CORRECTION FACTOR = 0.87099 EXHAUST MOLE. WT. = 26.905 EXHAUST DENSITY = 0.069662 EXHAUST FLOW RATE = 674.24

MEASURED CONC.	PART PER MILLION WET		PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY
	19197.	14.689	8.0187	8.8133
CORRECTED CONC. TO WET BASIS			CO DRY	CO2 DRY
			6.9942	7.5753

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EMISSION RATE	HC	NOX	CO
	0.44048	0.0011786	3.4187
EMISSION MASS/MODE	0.0073413	1.9643E-05	0.056979
EMISSION MASS/RATED HP	4.5883E-05	1.2277E-07	0.00035612
MODE EMIS./STD. CYCLE %	2.4149	0.0081847	0.84790

CAL. FUEL AIR RATIO = 0.089302 MEAS. FUEL AIR RATIO = 0.090169 DIFF MEAS. & CAL. F/A PERCENT = -0.96252

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	272.43	295.68	265.62	286.99

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1025.9	-454.00	-454.00	6.3167	708.34	706.16

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 10.632
	171.98	-28.194	44.940	

DYMO COND.	TORQUE	RPM	CYL. RACK PRESSURE = 28.832
	1.4113	598.74	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	51.227	53.129	155.45	46.556

CRITICE AIR	TEMP	DELTAP	ORFP	FLOW
	87.582	4.9451	55.188	3033.7

CELL TEMP. = 81.267 HEATER TEMP = 87.356 COOLER TEMP = 35.427

NASA-LEWIS PRELIMINARY DATA 04/22/76 CADDEII REC 04/22/76 20:46:48.536 FAC SEX15 PGM C033 RDG 3620

LEANOUT RE-RUNS I & T 50 DEG HUM = 80 % 3/4 T CLOSED MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.000 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	53.266	29.000	17.730	79.977	0.52811	14.245

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	83.506	5.7537	44.557	8.5486	6.9007	6.1626

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	62.523	-0.050647	0.83221	0.00000	74.474	45.370

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	74.474	55.083	44.223	1.0614	0.86771

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.086283	0.085717	1.2878	1208.1	1208.3	3.7587	0.86460

WFT CORRECTION FACTOR = 0.84814 EXHAUST MOLE. WT. = 27.192 EXHAUST DENSITY = 0.070407 EXHAUST FLOW RATE = 1241.4

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	5286.5	31.933	9.0134	9.0968	0.22774
CORRECTED CONC. TO WFT BASIS			7.6446	7.7153	0.19316

EMISSION RATE	HC	NOX	CO
	0.23561	0.0047175	6.8899
EMISSION MASS/MODE	0.043195	0.00086487	1.2632
EMISSION MASS/RATED HP	0.00026997	5.4055E-06	0.0078447
MODE EMISS./STD. CYCLE %	14.209	0.36036	18.797

CAL. FUEL AIR RATIO = 0.090006 MEAS. FUEL AIR RATIO = 0.086283 DIFF MEAS. & CAL. F/A PERCENT = 4.3145

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	288.65	302.83	292.11	310.07

EXT GAS TEMP DEG.F	FXT-1	FXT-2	EXT-3	EXT-4	SFXT-1	SFXT-2
	1068.0	-454.00	-432.41	699.76	670.15	668.05

ENGINE OIL	EOILT	SOILT	NOILP	MANIFOLD PRESSURE = 7.7986
	172.43	291.26	55.518	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.127
	5.8830	1196.7	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	51.819	53.266	106.58	46.424

CRIPICF AIR	TEMP	DELTA P	ORFP	FLOW
	88.299	3.0047	55.168	2380.9

CELL TEMP. = 82.029 HEATER TEMP = 87.189 COOLER TEMP = 35.582

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NASA-LEWIS PRELIMINARY DATA 04/22/76 CARDELL REC 04/22/76 20:55:57.921 FAC SEX15 PGM C003 RDG 3623

LEANOUT RE-RUNS T & T 50 DEG HUM = 80 & 3/4 T CLOSED MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.000 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	53.802	28.995	18.124	81.781	0.54421	14.247

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	84.279	5.7423	44.536	8.9428	7.5127	6.1626

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	RFL-HUM	DEW-POINT
	62.907	-0.040130	0.84134	0.00000	73.596	45.575

RFL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	73.596	49.939	46.581	1.0697	1.2711

ENG. CO. J.	F/A DRY	F/A WFT	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.091854	3.091257	1.3711	1203.1	1203.8	5.5255	1.7657

WET CORRECTION FACTOR = 0.85711 EXHAUST MOLE. WT. = 26.783 EXHAUST DENSITY = 0.069346 EXHAUST FLOW RATE = 1295.5

MEASURED CONC.	PART PER MILLION WFT		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	7027.7	23.913	10.060	8.5170	0.27935
CORRECTED CONC. TO WET BASIS			8.5227	7.3000	0.23943

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EMISSION RATE	HC	NOX	CO
	0.32685	0.0036866	8.1098
EMISSION MASS/MODE	0.016342	0.00018433	0.40549
EMISSION MASS/RATED HP	0.00010214	1.1521E-06	0.0025343
MODE EMIS./STD. CYCLE %	5.3757	0.076803	6.0341

CAL. FUEL AIR RATIO = 0.093741 MEAS. FUEL AIR RATIO = 0.091864 DIFF MEAS. & CAL. F/A PERCENT = 2.0429

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	259.75	285.38	271.76	290.44

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	754.49	-454.00	254.52	-92.019	608.96	606.84

ENGINE OIL	FOILT	SOILT	NOILP	MANIFOLD PRESSURE = 7.9192
	170.53	343.22	54.561	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.133
	3.1251	1211.0	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	52.429	53.802	-115.86	46.303

OPTIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	88.709	2.9564	55.177	2361.6

CELL TEMP. = 82.609 HEATER TEMP = 85.981 COOLER TEMP = 35.682

NASA-LEWIS PRELIMINARY DATA 04/22/76 CADDII REC 04/22/76 21:01:03.331 FAC SEX15 PGM C03 RDG 3624

LEANOUT RE-RUNS I & T 50 DEG HUM = 80 % NEUTRAL MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.000 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR TEMP 51.810 PRESS 28.997 CFM 11.440 DRY FLOW 51.687 VAPOR FLOW 0.34701 PRESS TOTAL 14.245

COMP. FUEL TEMP 91.474 PRESS 5.7717 DENSITY 44.609 TURBO FLOW 3.9579 FLOW TRON 4.7825 FPIP 6.1932

COOLING AIR TEMP 58.379 WDEL-HOOD -0.035702 DEL-HOOD 0.03029 FLOW 0.00000 REL-HUM 79.881 DEW-POINT 45.805

REL-HUM 1 79.881 2 52.753 HUMIDITY 47.001 % H2O VAPOR 1.0793 CORRECTED HP 0.50665

ENG. COND. F/A DRY 0.002536 F/A WET 0.091919 EQU. RATIO 1.3811 RPM-1 600.00 RPM-2 599.16 TORQUE 4.4254 BHP 0.50557

WET CORRECTION FACTOR = 0.87943 EXHAUST MOLE. WT. = 26.735 EXHAUST DENSITY = 0.069223 EXHAUST FLOW RATE = 820.71

MEASURED CONC. PART PER MILLION WFT PER CENT
HC PPM 30509. CO2 DRY 6.8746
NOX PPM 4.9465 CO DRY 7.6549
CORRECTED CONC. TO WET BASIS 7.6549 CO2 DRY 6.0457
CO DRY 3.1042

EMISSION RATE HC 0.89890 NOX 0.00048310 CO 4.5611
EMISSION MASS/MODE 0.014982 8.0516E-05 0.076018
EMISSION MASS/PATED HP 9.3636E-05 5.0323E-08 0.00047511
MODE EMIS./STD. CYCLE % 4.9282 0.0033548 1.1312

CAL. FUEL AIR RATIO = 0.093703 MEAS. FUEL AIR RATIO = 0.092536 DIFF MEAS. & CAL. F/A PERCENT = 1.2611

CYL TEMP DEG.F CYL-1 277.88 CYL-2 292.45 CYL-3 271.40 CYL-4 293.26

EXT GAS TEMP DEG.F FXT-1 1197.1 EXT-2 -454.00 FXT-3 314.73 FXT-4 720.25 SEXT-1 721.81 SEXT-2 721.38

ENGINE OIL EOILT 170.22 SOILT 284.54 OILP 44.624 MANIFOLD PRESSURE = 11.400

DYND COND. TORQUE 7.9712 RPM 592.56 CYL. BACK PRESSURE = 28.701

INDUCTION AIR TAIRT1 50.151 TAIRT2 51.810 TAIRT1 -36.608 TAIRT2 45.547

OPTIC AIR TEMP 26.786 DELTAP 3.0170 DRFP 55.258 FLOW 2388.9

CELL TEMP. = 80.769 HEATER TEMP = 85.815 COOLER TEMP = 35.727

NASA-LEWIS PRELIMINARY DATA 04/22/76 CADDEII REC 04/22/76 21:01:24.089 FAC SEX15 PGM C003 RDG 3525

LEANOUT PE-RUNS I & T 50 DEG HUM = 80 NEUTRAL MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.000 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	52.047	28.999	11.697	51.921	0.34915	14.244

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	81.580	5.7599	44.507	3.9611	4.7825	6.1821

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	58.813	-0.034871	0.89448	0.00000	79.304	45.845

FUEL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	79.304	41.090	47.073	1.0810	0.37465

ENG. COND.	F/A DRY	F/A WET	EQJ. RATIO	PPM-1	RPM-2	TORQUE	BHP
	0.092111	0.091495	1.2748	585.96	587.10	3.3503	0.37379

WET CORRECTION FACTOR = 0.88299 EXHAUST MFL. WT. = 26.765 EXHAUST DENSITY = 0.069301 EXHAUST FLOW RATE = 823.26

MEASURED CONC.	PART PER MILLION WET		PER CENT	
	HC PPM	NOX PPM	CO DRY	O2 DRY
	30309.	4.7675	8.5411	6.8264
CORRECTED CONC. TO WET BASIS			7.5417	6.0276

	HC	NOX	CO
EMISSION RATE	0.89578	0.00046706	4.5075
EMISSION MASS/MODE	0.014930	7.7843E-06	0.075125
EMISSION MASS/RATED HP	9.3311E-05	4.3652E-08	0.00046953
MODE EMIS./STD. CYCLE	4.9111	0.0022435	1.1170

CAL. FUEL AIR RATIO = 0.092558 MEAS. FUEL AIR RATIO = 0.092111 DIFF MEAS. & CAL. F/A PERCENT = 0.48590

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	266.51	281.77	259.00	280.26

EXT GAS TEMP DEG.F	FXT-1	EXT-2	EXT-3	EXT-4	SXT-1	SXT-2
	1540.9	-454.00	195.20	58.999	707.14	705.99

ENGINE OIL	FRIT	SOILT	OIL	MANIFOLD PRESSURE = 11.583
	159.79	88.279	44.508	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.231
	7.3303	585.48	

INDUCTION AIR	TAIPT1	TAIFT2	TAIRT1	TAIPT2
	50.289	52.047	-78.139	45.725

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	85.795	2.9729	55.316	2372.1

CELL TEMP. = 80.904 HEATER TEMP = 85.802 COOLER TEMP = 35.727

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NASA-LEWIS PRELIMINARY DATA 04/22/76 CADDETI REC 04/22/76 21:04:58.282 FAC SEX15 PGM C003 RDG 3525

LEANOUT RE-RUNS I & T 50 DEG HUM = 80 % NEUTRAL MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.000 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR TFMP 51.345 PRESS 29.000 CFM 23.455 DRY FLOW 105.99 VAPOR FLOW 0.70580 PRESS TOTAL 14.248

COMP. FUEL TFMP 82.187 PRESS 5.6616 DENSITY 44.591 TURBO FLOW 12.901 FLOW TRON 11.326 FPIP 6.1455

COOLING AIR TFMP 60.745 DEL-HOOD -0.036809 DEL-HOOD 0.97262 FLOW 0.00000 RFL-HUM 80.618 DEW-POINT 45.595

RFL-HUM 1 80.618 2 32.655 HUMIDITY 46.513 % H2O VAPOR CORRECTED HP 1.0704 1.1906

ENG. COND. F/A DRY 0.10686 F/A WET 0.10615 EQU. RATIO 1.5949 RPM-1 1196.1 RPM-2 1198.0 TORQUE 5.2172 BHP 1.1882

WET CORRECTION FACTOR = 0.87235 EXHAUST MILE. WT. = 25.793 EXHAUST DENSITY = 0.066785 EXHAUST FLOW RATE = 1767.2

MEASURED CONC. HC PPM 20828. NOX PPM 7.3187 CO DRY 12.213 PER CENT CO2 DRY 6.6597 CO DRY 0.80114 CORRECTED CONC. TO WET BASIS HC 10.554 NOX 5.8096 CO 0.69888

EMISSION RATE HC 1.3214 NOX 0.0015391 CO 13.669
EMISSION MASS/MODE 0.24226 NOX 0.0028217 CO 2.5061
EMISSION MASS/RATED HP 0.0015141 NOX 1.7636E-06 CO 0.015663
MODE EMIS./STD. CYCLE % 79.690 NOX 0.11757 CO 37.293

CAL. FUEL AIR RATIO = 0.10815 MFAS. FUEL AIR RATIO = 0.10686 DIFF MEAS. & CAL. F/A PERCENT = 1.2095

CYL TEMP DEG.F CYL-1 278.44 CYL-2 289.00 CYL-3 274.11 CYL-4 288.06

EXT GAS TEMP DEG.F EXT-1 1399.1 EXT-2 -454.00 EXT-3 477.99 EXT-4 751.17 SEXT-1 657.44 SEXT-2 655.93

ENGINE OIL EJILT 168.85 SJILT 282.25 OILT 55.778 MANIFOLD P.PRESSURE = 9.4708

DYNO COND. TORQUE 8.2160 RPM 1190.7 CYL. BACK P.PRESSURE = 29.098

INDUCTION AIR IAIRT1 50.169 IAIRT2 51.345 TAIRT1 -32.500 TAIRT2 45.571

ORIFICE AIR TEMP 87.162 DELTAP 1.0310 OPRP 55.106 FLOW 1426.1

CELL TEMP. = 81.430 HEATER TEMP = 85.739 COOLER TEMP = 35.181

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NASA-LEWIS PRELIMINARY DATA 04/22/76 CADDEII REC 04/22/76 21:05:18.883 FAC SEX15 PGM C003 RDG 3527

LEANOUT RE-RUNS T & T 50 DEG HUM = 80 % NEUTRAL MODE = 6.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.000 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	DEW	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	51.546	28.998	22.989	103.44	0.69074	14.252

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	82.249	5.5667	44.589	12.541	11.023	6.1488

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	60.844	-0.037639	0.87704	0.00000	80.267	45.675

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	80.267	45.233	45.744	1.0734	1.1426

ENG. COND.	F/A DRY	F/A WET	EQV. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10657	0.10585	1.5905	1195.4	1197.9	5.0088	1.1400

WET CORRECTION FACTOR = 0.86806 EXHAUST MOLE WT. = 25.811 EXHAUST DENSITY = 0.066831 EXHAUST FLOW RATE = 1723.0

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	21532.	7.3427	11.947	6.6887	0.53817
CORRECTED CONC. TO WET BASIS			10.371	5.8051	0.46717

EMISSION RATE	HC	NOX	CO
	1.3319	0.0015056	12.973
EMISSION MASS/MODE	0.066596	7.5278E-05	0.64866
EMISSION MASS/PATED HP	0.00041522	4.7049E-07	0.0040541
MODE EMIS./STD. CYCLE %	21.906	0.031366	9.6526

CAL. FUEL AIR RATIO = 0.10954 MEAS. FUEL AIR RATIO = 0.10657 DIFF MEAS. & CAL. F/A PERCENT = 2.7926

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	274.78	286.31	269.97	285.91

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1517.2	-454.00	302.63	177.90	646.60	644.92

ENGINE OIL	FILT	SOILT	OILP	MANIFOLD PRESSURE = 9.3706
	168.37	30.025	55.918	

DYMO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 28.958
	3.3195	1186.6	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	50.306	51.546	95.175	45.668

DRYICE AIR	TEMP	DELTA P	DRFP	FLOW
	87.214	2.0128	55.078	1972.6

CELL TEMP. = 81.483 HEATER TEMP = 85.691 COOLER TEMP = 35.108

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NASA-LEWIS PRELIMINARY DATA 04/22/76 CADDEII REC 04/22/75 21:12:43.944 FAC SEX15 PG4 C003 RDR 3628

LEANOUT RE-RUNS T & T 50 DEG HUM = 80 % 3/4 T OPEN MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.000 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	53.484	29.004	13.635	61.682	0.40623	14.244

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIB
	83.058	5.7297	44.568	7.6431	6.3185	5.1900

COOLING AIR	TEMP	INDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	61.927	-0.043728	0.81145	0.00000	73.585	45.300

REL-HUM	1	2	HUMIDITY	% H2O VAPOF	CORRECTED HP
	73.685	61.678	46.101	1.0586	0.89561

ENG. COND.	F/A DRY	F/A WET	FUEL RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10244	0.10177	1.5289	602.76	604.74	7.7941	0.89336

WET CORRECTION FACTOR = 0.89729 EXHAUST MOLE WT. = 26.058 EXHAUST DENSITY = 0.067496 EXHAUST FLOW RATE = 1013.5

MEASURED CONC.	PART PER MILLION WET	PER CENT
	HC PPM NOX PPM CO DRY	CO2 DRY
	38098. 4.7585 9.7382	3.9760
CORRECTED CONC. TO WET BASIS		5.2819 3.4779

EMISSION RATE	HC	NOX	CO
	1.3867	0.00057389	6.4293
EMISSION MASS/MODE	0.023103	9.5649E-06	0.10715
EMISSION MASS/RATED HP	0.00014439	5.9781E-08	0.00066577
MODE EMIS./STD. CYCLE %	7.5947	0.0039854	1.5946

CAL. FUEL AIR RATIO = 0.10048 MEAS. FUEL AIR RATIO = 0.10244 DIFF MEAS. & CAL. F/A PERCENT = -1.9106

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	251.87	269.17	250.75	269.46

FXT GAS TEMP DEG.F	FXT-1	FXT-2	FXT-3	FXT-4	SEXT-1	SEXT-2
	1534.5	-454.00	321.25	643.36	563.89	563.46

ENGINE OIL	FOILT	SOILT	OILT	MANIFOLD PRESSURE = 12.606
	161.01	180.44	46.005	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 28.844
	3.7084	593.10	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	51.883	53.484	25.427	44.970

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	88.229	1.0154	55.131	1414.1

CELL TEMP. = 92.311 HEATER TEMP = 86.552 COOLER TEMP = 34.116

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NASA-LEWIS PRELIMINARY DATA 04/22/76 CADDEIT REC 04/22/76 21:13:06.636 FAC SEX15 PGM C003 RDG 3629

LEANOUT RE-RUNS I & T 50 DEG HUM = 80 % 3/4 T JPEV MODE = 7.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEF. BAROMETRIC PRESSURE = 29.000 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	53.693	29.999	13.396	60.556	0.40075	14.246

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	83.225	5.7267	44.564	7.7586	6.3336	6.1556

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	61.872	-0.03930	0.85131	0.00000	73.483	45.430

PFL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	73.483	47.109	45.325	1.0638	0.47170

ENG. COND.	F/A DRY	F/A WET	EQU. PATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10459	0.10390	1.5511	505.52	603.84	4.0754	0.46987

WET CORRECTION FACTOR = 0.90095 EXHAUST MOLE. WT. = 25.932 EXHAUST DENSITY = 0.067145 EXHAUST FLOW RATE = 1002.2

MEASURED CONC.	PART PER MILLION WET			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	38890.	4.6825	9.6906	5.9889	3.7332
CORRECTED CONC. TO WET BASIS			8.7307	5.3957	3.3634

EMISSION RATE	HC	NOX	CO	
	1.3992	0.00055841	6.3522	
	EMISSION MASS/MODE	0.023320	9.3069E-06	0.10587
	EMISSION MASS/PATED HP	0.00014575	5.9158E-08	0.0005158
MODE EMIS./STD. CYCLE %	7.6710	0.0038779	1.5754	

CAL. FUEL AIR RATIO = 0.10114 MEAS. FUEL AIR RATIO = 0.10450 DIFF MEAS. & CAL. F/A PERCENT = -3.3024

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	242.81	261.22	241.44	259.50

EXT GAS TEMP DEG. F	FXT-1	FXT-2	FXT-3	FXT-4	SFXT-1	SEXT-2
	1349.0	-454.00	250.70	28.098	553.49	552.71

ENGINE OIL	FOILT	SOILT	OILT	MANIFOLD PRESSURE = 12.493
	160.35	-12.021	46.137	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.204
	4.8821	592.56	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	52.111	53.693	136.38	45.391

ORIFICE AIR	TEMP	DELTA P	DRP	FLOW
	89.351	1.0582	55.210	1443.0

CELL TEMP. = 82.134 HEATER TEMP = 86.545 COOLER TEMP = 34.052

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NASA-LEWIS PRELIMINARY DATA 04/22/76 CADDEII REC 34/22/76 21:16:26.468 FAC SEX15 PGM C003 RDG 3630

LEANOUT RE-RUNS I & T 50 DEG HUM = 80 % 3/4 T OPEN MODE = 2.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.000 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	53.339	29.009	20.543	92.880	0.61407	14.246

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	83.198	5.7000	44.565	10.584	9.1559	6.1553

COOLING AIR	TEMP	UDEL-HOOD	DFL-HOOD	FLOW	REL-HUM	DEW-POINT
	62.223	-0.039853	0.85542	0.00000	74.375	45.405

REL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP
	74.375	33.903	46.280	1.0627
				0.98942

ENG. CORR.	F/A DRY	F/A WET	FUEL RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.098589	0.097941	1.4715	1194.5	1195.7	4.3338	0.98564

WET CORRECTION FACTOR = 0.85018 EXHAUST MOLE WT. = 26.319 EXHAUST DENSITY = 0.068146 EXHAUST FLOW RATE = 1506.3

MEASURED CONC.	PART PER MILLION WET		CO DRY	PER CENT CO2 DRY	O2 DRY
	HC PPM	NOX PPM			
	12880.	12.374	11.400	7.5669	0.38956
CORRECTED CONC. TO WET BASIS			9.8059	6.5089	0.33509

EMISSION RATE	HC	NOX	CO	
	0.69653	0.0022181	10.724	
	EMISSION MASS/MODE	0.12770	0.0040666	1.9660
	EMISSION MASS/RATED HP	0.00079811	2.5415E-06	0.012288
MODE EMIS./STD. CYCLE %	42.006	0.16944	29.256	

CAL. FUEL AIR RATIO = 0.10131 MEAS. FUEL AIR RATIO = 0.098589 DIFF MEAS. & CAL. F/A PERCENT = 2.7612

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	282.07	298.28	285.03	300.30

EXT GAS TEMP DEG.F	FXT-1	FXT-2	EXT-3	EXT-4	SFXT-1	SEXT-2
	1102.3	-454.00	514.66	517.22	601.52	600.36

ENGINE OIL	FOILT	SOILT	OIL?	MANIFOLD PRESSURE = 8.6286
	160.46	242.95	56.518	

DYMO COND.	TORQUE	PPM	CYL. BACK PRESSURE = 28.984
	5.4437	1191.6	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	52.056	53.339	129.99	45.307

ORIFICE AIR	TEMP	DELTA P	DRY?	FLOW
	88.744	0.073307	55.303	272.18

CELL TEMP. = 82.903 HEATER TEMP = 86.483 COOLER TEMP = 33.715

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NASA-LEIS PRELIMINARY DATA 04/22/76 CADDEII REC 04/22/76 21:15:47.778 FAC SEX15 PGM C003 R0G 3631

LEANOUT RE-RUNS I & T 50 DEG HUM = 80 ± 3/4 T OPFN MODE = 6.0J00 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.000 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	53.402	28.998	20.548	92.907	0.61405	14.245

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	83.348	5.7015	44.561	10.684	9.2319	6.1539

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	62.349	-0.037085	0.91468	0.00000	74.173	45.395

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	74.173	46.919	46.265	1.0624	1.6350

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	PPM-1	PPM-2	TORQUE	BHP
	0.099367	0.098715	1.4831	1192.1	1195.1	7.1757	1.6287

WET CORRECTION FACTOR = 0.85217 EXHAUST MOL. WT. = 25.257 EXHAUST DENSITY = 0.068012 EXHAUST FLOW RATE = 1510.8

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	13347.	11.976	11.440	7.5849	0.42922	
CORRECTED CONC. TO WET BASIS			9.8634	6.5395	0.37006	

	HC	NOX	CO
EMISSION RATE	0.72393	0.0021531	10.819
EMISSION MASS/MODE	0.036196	0.00010766	0.54093
EMISSION MASS/RATED HP	0.00022623	6.7286E-07	0.0033108
MODE EMISS./STD. CYCLE %	11.907	0.044857	8.0495

CAL. FUEL AIR RATIO = 0.10138 MEAS. FUEL AIR RATIO = 0.099367 DIFF MEAS. & CAL. F/A PERCENT = 2.0213

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	277.27	293.91	280.24	296.09

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1670.2	-454.00	486.97	-185.68	591.36	590.01

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 8.5797
	160.02	-138.98	56.638	

DYMO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 28.972
	8.2232	1188.9	

INDUCTION AIR	TAIPT1	TAIRT2	TAIRT1	TAIRT2
	52.101	53.402	154.09	45.251

ORIFICE AIR	TEMP	DELTAP	ORFP	FLOW
	88.771	2.9835	55.303	2371.8

CELL TEMP. = 82.944 HEATER TEMP = 86.462 COOLER TEMP = 33.624

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NASA-LEWIS PRELIMINARY DATA 04/22/76 CADDEII REC 04/22/76 21:24:12.441 FAC SEX15 PGM C003 RDG 3632

LEANOUT RE-RUNS I & T 50 DEG HUM = 80 % 1 1/2 T OPEN MODE = 1.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.000 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR TEMP 50.981 PRESS 28.494 CFM 14.336 DRY FLOW 64.861 VAPOR FLOW 0.43272 PRESS TOTAL 14.246

COMP. FUEL TEMP 80.893 PRESS 5.7153 DENSITY 44.625 TURBO FLOW 8.2536 FLOW TRON 6.8227 FPIP 5.1521

COOLING AIR TEMP 60.718 UNDEL-HOOD -0.027399 DEL-HOOD 0.85435 FLOW 0.00000 REI-HUM 81.854 DEW-POINT 45.640

RFL-HUM 1 2 HUMIDITY 46.700 % H2O VAPOR 1.0724 CORRECTED HP 0.67514

ENG. COND. F/A DRY 0.10519 F/A WFT 0.10449 FOU. RATIO 1.5700 RPM-1 608.76 RPM-2 608.28 TORQUE 5.8172 SHP 0.67428

WET CORRECTION FACTOR = 0.89655 EXHAUST MOLE. WT. = 25.895 EXHAUST DENSITY = 0.067050 EXHAUST FLOW RATE = 1075.5

MEASURED CONC. PART PER MILLION WET HC PPM 44376. NOX PPM 4.2754 CO DRY 10.162 PER CENT CO2 DRY 5.2616 O2 DRY 4.2186
CORRECTED CONC. TO WFT BASIS HC 9.1105 NOX 4.8069 CO 3.7822

EMISSION RATE HC 1.7135 NOX 0.00054722 CO 7.1140
EMISSION MASS/MODE 0.028558 9.1204E-06 0.11857
EMISSION MASS/RATED HP 0.00017849 5.7062E-08 0.00074105
MODE EMIS./STD. CYCLE % 9.3942 0.0039002 1.7644

CAL. FUEL AIR RATIO = 0.10486 MEAS. FUEL AIR RATIO = 0.10519 DIFF MEAS. & CAL. F/A PERCENT = -0.31273

CYL TEMP DEG.F CYL-1 277.89 CYL-2 297.69 CYL-3 276.61 CYL-4 297.18

EXT GAS TEMP DEG.F EXT-1 1315.7 EXT-2 -454.00 EXT-3 283.22 EXT-4 872.99 SEXT-1 621.39 SEXT-2 621.74

ENGINE OIL FOILT 165.51 SOILT 158.94 OILP 45.369 MANIFOLD PRESSURE = 12.940

DYNO COND. TORQUE 1.7426 RPM 608.58 CYL. BACK PRESSURE = 29.522

INDUCTION AIR IAIRT1 49.348 IAIRT2 50.981 TAIRT1 65.394 TAIRT2 44.889

ORIFICE AIR TEMP 86.418 DELTAP 2.9748 ORIF5 55.229 FLOW 2373.6

CELL TEMP. = 80.231 HEATER TEMP = 86.310 COOLER TEMP = 34.207

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NASA-LEWIS PPELIMINARY DATA 04/22/76 CADDEII REC 04/22/76 21:24:33.631 FAC SEX15 PGM C003 RDG 3633

LEANOUT RE-RUNS I & T 50 DEG HUM = 80 % 1 1/2 T OPEN MODE = 7.00:0 NO. SPANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.000 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	51.154	28.997	13.812	62.481	0.41727	14.245

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	81.130	5.7189	44.518	8.2561	6.8617	6.1680

COOLING AIR	TEMP	INDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	60.655	-0.039853	0.87345	0.00000	81.409	45.665

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	81.409	50.785	46.748	1.0735	0.42875

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.10982	0.10909	1.6391	604.92	604.26	3.7170	0.42812

WET CORRECTION FACTOR = 0.90865 EXHAUST MILE. WT. = 25.617 EXHAUST DENSITY = 0.066329 EXHAUST FLOW RATE = 1551.7

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	44444.	4.5465	10.106	5.4628	4.0142
CORRECTED CONC. TO WET BASIS			9.1825	4.9637	3.6475

EMISSION RATE	HC	NOX	CO
	1.6781	0.00056901	7.0113
	0.027968	9.4835E-06	0.11685
	0.00017480	5.9272E-08	0.00073034
EMISSION MASS/RATED HP	0.00017480	5.9272E-08	0.00073034
MODE EMIS./STD. CYCLE %	9.2000	0.0039514	1.7389

CAL. FUEL AIR RATIO = 0.10516 MEAS. FUEL AIR RATIO = 0.10982 DIFF MEAS. & CAL. F/A PERCENT = -4.2436

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	265.37	287.04	264.54	285.46

EXT GAS TEMP DEG.F	FXT-1	FXT-2	FXT-3	FXT-4	SEXT-1	SEXT-2
	1669.5	-454.00	250.37	235.12	610.26	610.04

ENGINE OIL	F OILT	S OILT	OILT	MANIFOLD PRESSURE = 13.220
	164.72	-53.624	45.317	

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE = 28.961
	6.1134	595.32	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	49.512	51.154	156.23	44.921

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	86.444	3.0803	55.219	2728.4

CELL TEMP. = 80.205 HEATER TEMP = 86.310 COOLER TEMP = 34.289

090

NASA-LEWIS PRELIMINARY DATA 04/22/76 CADDELI REC 04/22/76 21:29:01.145 FAC SEX15 PSM C003 RDG 3534

LFANGUT RE-RUNS I & T 50 DEG HUM = 80 ± 1 1/2 T OPEN MODE = 2.0030 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.000 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR TEMP 50.999 PRESS 29.000 CFM 21.321 DRY FLOW 96.477 VAPOR FLOW 0.63937 PRESS TOTAL 14.248

COMP. FUEL TEMP 81.729 PRESS 5.6892 DENSITY 44.603 TURBO FLOW 11.259 FLOW TRON 9.7930 FPTP 6.1581

COOLING AIR TEMP 60.835 UDEL-HOOD -0.033211 DEL-HOOD 0.84356 FLOW 0.00000 REL-HUM 81.273 DEW-POINT 45.470

REL-HUM 1 81.273 2 32.925 HUMIDITY 46.390 % H2O VAPOR CORRECTED HP 1.0653 1.1426

ENG. COND. F/A DRY 0.10151 F/A WET 0.10084 EQU. RATIO 1.5150 RPM-1 1200.2 RPM-2 1201.8 TORQUE 4.9922 BHP 1.1408

WET CORRECTION FACTOR = 0.85454 EXHAUST MOLE. WT. = 26.128 EXHAUST DENSITY = 0.067651 EXHAUST FLOW RATE = 1580.3

MEASURED CONC. PART PER MILLION WET PER CFMT
HC PPM 15050. NOX PPM 8.9029 CO DRY 11.768 CO2 DRY 7.2768 O2 DRY 0.49623
CORRECTED CONC. TO WET BASIS 15.174 6.2911 0.42901

EMISSION RATE HC 0.85386 NOX 0.0016742 CO 11.673
EMISSION MASS/MODE 0.15654 0.00030694 2.1400
EMISSION MASS/RATED HP 0.00097838 1.9184E-06 0.013375
MODE EMIS./STD. CYCLE % 51.493 0.12789 31.845

CAL. FUEL AIR RATIO = 0.10352 MEAS. FUEL AIR RATIO = 0.10151 DIFF MEAS. & CAL. F/A PERCENT = 1.9849

CYL TEMP DEG.F CYL-1 269.38 CYL-2 298.63 CYL-3 273.28 CYL-4 289.00

EXT GAS TEMP DEG.F EXT-1 1294.9 EXT-2 -454.00 EXT-3 612.57 EXT-4 1110.3 SEXT-1 603.00 SEXT-2 601.52

ENGINE OIL EOILT 163.18 SOILT 275.91 OILP 55.986 MANIFOLD PRESSURE = 8.8558

DYNO COND. TORQUE 3.4635 RPM 1207.9 CYL. BACK PRESSURE = 29.006

INDUCTION AIR IAIRT1 49.722 IAIRT2 50.999 TAIRT1 127.65 TAIRT2 44.948

ORIFICE AIR TEMP 86.900 DELTAP 1.0431 ORIF FLOW 55.273 1434.7

CFLI TEMP. = 80.805 HEATED TEMP = 86.255 COOLER TEMP = 34.362

NASA-LEWIS PRELIMINARY DATA 04/22/76 CADDFII REC 04/22/75 21:28:21.896 FAC SEX15 PGM C003 RDG 3635

LEANOUT RE-RUNS I & T 50 DEG HUM = 80 % 1 1/2 T OPEN MODE = 6.0000 NJ. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PPESSURE = 29.000 RATED HP. = 160.00 I/C RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	51.109	29.002	21.586	97.677	0.64850	14.249

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	81.844	5.6898	44.600	11.260	9.7630	6.1551

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	60.880	-0.045111	0.87511	0.00000	81.097	45.520

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	81.097	45.785	46.474	1.0672	1.3724

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.099951	0.099292	1.4918	1199.1	1200.2	6.0005	1.3700

WET CORRECTION FACTOR = 0.85973 EXHAUST MOLE. WT. = 26.229 EXHAUST DENSITY = 0.067913 EXHAUST FLOW RATE = 1591.6

MEASURED CONC.	PART PER MILLION WFT		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	14851.	8.7329	11.719	7.3312	0.46881
CORRECTED CONC. TO WFT BASIS			10.075	6.3029	0.40305

EMISSION RATE	HC	NOX	CO	
	0.84858	0.0016540	11.642	
	EMISSION MASS/MODE	0.042429	8.2699E-05	0.58208
	EMISSION MASS/RATED HP	0.00026518	5.1697E-07	0.0036380
MODE EMISS./STD. CYCLE	13.957	0.034458	8.6619	

CAL. FUEL AIR RATIO = 0.10333 MEAS. FUEL AIR RATIO = 0.099951 DIFF MEAS. & CAL. F/A PERCENT = 3.3804

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	266.42	285.18	270.44	286.29

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1077.5	-454.00	542.71	603.23	595.30	593.69

ENGINE OIL	FOILT	SOILT	OILT	MANIFOLD PRESSURE = 8.8428
	162.81	-49.356	56.230	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 28.978
	-1.4473	1201.3	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	49.850	51.109	134.64	44.972

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	86.987	1.9957	55.241	1965.1

CELL TEMP. = 80.963 HEATER TEMP = 86.241 COOLER TEMP = 34.408

792

NASA-LFWIS PRELIMINARY DATA 04/23/76 CADD11 REC 04/23/76 09:59:07.055 FAC SEX15 PGM C003 RDG 3637

LEANOUT RE-RUNS TO CL APP 50 DEG., HUM=60% MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR TEMP 48.791 PRESS 29.217 CFM 163.00 DRY FLOW 760.01 VAPOR FLOW 3.5053 PRESS TOTAL 14.637

COMP. FUEL TEMP 69.985 PRESS 5.4161 DENSITY 44.912 TURBO FLOW 61.536 FLOW TRON 60.984 FPIP 6.0822

COOLING AIR TEMP 51.418 UDEL-HOOD 3.0061 DEL-HOOD 3.9706 FLOW 9969.7 RFL-HUM 63.288 DEW-POINT 36.885

REL-HUM 1 63.288 2 65.152 HUMIDITY 32.285 % H2O VAPOR CORRECTED HP 0.74137 118.95

ENG. COND. F/A DRY 0.080241 F/A WET 0.079872 EQU. RATIO 1.1976 RPM-1 2430.4 RPM-2 2432.9 TORQUE 257.89 RHP 119.34

WET CORRECTION F/A DRY = 0.85786 EXHAUST MOLE WT. = 27.551 EXHAUST DENSITY = 0.071622 EXHAUST FLOW RATE = 11511.

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	1332.8	432.96	6.1366	10.916	0.044484	
CORRECTED CONC. TO WET BASIS			5.2644	9.3646	0.038161	

	HC	NOX	CO
EMISSION RATE	0.55083	3.59312	43.998
EMISSION MASS/MODE	0.045903	0.049427	3.6665
EMISSION MASS/RATED HP	0.00028689	0.00030892	0.022916
MODE EMIS./STD. CYCLE %	15.100	20.595	54.561

CAL. FUEL AIR RATIO = 0.080764 REAS. FUEL AIR RATIO = 0.080241 DIFF MEAS. & CAL. F/A PERCENT = 0.55264

CYL TEMP DEG.F CYL-1 360.94 CYL-2 379.71 CYL-3 378.88 CYL-4 390.95

EXT GAS TEMP DEG.F EXT-1 1252.1 EXT-2 -256.26 EXT-3 961.41 EXT-4 1962.4 SEXT-1 1313.6 SEXT-2 1310.1

ENGINE OIL EOILT 165.43 SOILT 81.927 OILP 72.691 MANIFOLD PRESSURE = 26.070

DYMO COND. TORQUE 250.92 RPM 2313.7 CYL. BACK PRESSURE = 29.371

INDUCTION AIR IAIRT1 48.389 IAIRT2 48.791 TAIRT1 -77.883 TAIRT2 45.048

BRIFICE AIR TEMP 90.158 DELTAP 4.0826 ORFP 54.512 FLOW 2764.0

CELL TEMP. = 77.590 HEAT FP TEMP = 88.975 COOLER TEMP = 37.155

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NASA-LEWIS PRELIMINARY DATA 04/23/76 CADDEII REC 04/23/76 10:02:30.823 FAC SEX15 PGM C003 RDG 3638

LEANOUT RE-RUNS TO CL APP 50 DEG., HUM=60% MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CEM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	50.142	29.219	102.47	471.24	2.1899	14.469

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	72.159	5.4986	44.854	41.568	39.466	6.1095

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	51.437	2.9062	3.7351	9782.5	59.859	36.750

REL-HUM	1	2	HUMIDITY	H2O VAPOR CORRECTED HP
	59.859	65.999	32.488	0.74604 65.121

ENG. COND.	F/A DRY	F/A WET	F/O. RATIO	RPM-1	PPM-2	TORQUE	BHP
	0.083642	0.083256	1.2484	2351.3	2353.7	145.75	65.257

WET CORRECTION FACTOR = 0.86234 EXHAUST MOLE. WT. = 27.394 EXHAUST DENSITY = 0.070930 EXHAUST FLOW RATE = 7239.5

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1527.8	240.64	7.0579	10.466	0.055986
CORRECTED CONC. TO WET BASIS			6.0963	9.0254	0.048279

EMISSION RATE	HC	NOX	CO	
	0.39706	9.20732	31.989	
	EMISSION MASS/MODE	0.0039706	0.020732	3.1989
	EMISSION MASS/PATED HP	0.00024816	0.00012957	0.019992
MODE EMIS./STD. CYCLE %	13.061	8.5381	47.603	

CAL. FUEL AIR RATIO = 0.082994 MEAS. FUEL AIR RATIO = 0.083642 DIFF MEAS. & CAL. F/A PERCENT = -0.77504

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	315.82	326.96	321.07	325.36

EXT GAS TEMP DEG.F	FXT-1	FXT-2	FXT-3	FXT-4	SFXT-1	SFXT-2
	1370.7	-375.36	409.79	1619.2	1176.8	1178.3

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 18.332
	168.21	140.27	72.503	

DYND COND.	TORQUE	RPM	CYL. RACK PRESSURE = 29.294
	141.54	2277.9	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	49.613	50.142	-76.906	45.507

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	90.385	4.0937	53.777	2767.2

CYL TEMP. = 78.324 HEATER TEMP = 88.808 COOLER TEMP = 36.573

794

NASA-LEWIS PRELIMINARY DATA 04/23/76 CADDFII 3FC 04/23/76 10:16:14.091 FAC SEX15 PGM C003 RDG 3639.

LEANOUT RE-RUNS TO CL APP 50 DEG., HUM=60% MODF = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 49.330 PRESS 29.234 CFM 205.40 DRY FLOW 967.95 VAPOR FLOW 4.3092 PRESS TOTAL 14.828

COMB. FUEL TEMP 69.974 PRESS 5.3597 DENSITY 44.339 TURBO FLOW 83.513 FLOW TRON 79.562 FPIP 6.0144

COOLING AIR TEMP 53.039 WDEL-HOOD 2.9505 DEL-HOOD 3.9103 FLOW 9865.9 REL-HUM 60.670 DEW-POINT 36.325

REL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP
60.670 47.905 31.163 0.71561 154.49

ENG. COND. F/A DRY 0.082197 F/A WET 0.081832 EQU. RATIO 1.2268 RPM-1 2692.9 RPM-2 2696.8 TORQUE 294.15 BHP 150.87

WET CORRECTION FACTOR = 0.85665 EXHAUST MOLE. WT. = 27.507 EXHAUST DENSITY = 0.071221 EXHAUST FLOW RATE = 14768.

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 1262.1 NOX PPM 176.93 CO DRY 7.0371 CO2 DRY 10.521 O2 DRY 0.0066407
CORRECTED CONC. TO WET BASIS CO DRY 6.0283 CO2 DRY 9.0176 O2 DRY 0.0056887

EMISSION RATE HC NOX CO
EMISSION MASS/MODE 0.66915 0.31094 64.634
EMISSION MASS/PATED HP 0.0033458 0.0015547 0.32317
MODE EMIS./STD. CYCLE % 2.0911E-05 9.7168E-06 0.0020108
1.1006 0.64779 4.8091

CAL. FUEL AIR RATIO = 0.082936 MEAS. FUEL AIR RATIO = 0.082197 DIFF MEAS. & CAL. F/A PERCENT = 0.89947

CYL TEMP DEG.F CYL-1 394.69 CYL-2 419.99 CYL-3 395.79 CYL-4 402.85

EXT GAS TEMP DEG.F EXT-1 909.26 EXT-2 51.410 EXT-3 -226.63 EXT-4 1486.7 SEXT-1 1380.2 SEXT-2 1374.3

ENGINE OIL EOILT 178.27 SOILT 185.86 OILP 73.555 MANIFOLD PRESSURE = 28.156

DYMO COND. TORQUE 301.86 RPM 2626.6 CYL. BACK PRESSURE = 29.411

INDUCTION AIR IAIPT1 48.955 IAIPT2 49.330 TAIRT1 -49.949 TAIRT2 46.353

CRIPICE AIR TEMP 93.646 DELTAP 4.3402 ORFP 46.543 FLOW 2847.7

CELL TEMP. = 78.663 HEATER TEMP = 89.293 COOLER TEMP = 60.688

795

NASA-LFV1S PRELIMINARY DATA 04/23/76 CADDILLAC REC 04/23/76 10:16:46.930 FAC SFX15 PGM C003 RDG 3640

LEANOUT RE-RUNS TO CL APP 50 DEG., HUM=60% MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. PARAMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR TEMP 49.366 PRESS 29.255 CFM 205.32 DRY FLOW 967.82 VAPOR FLOW 4.2895 PRESS TOTAL 14.829

COMP. FUEL TEMP 59.092 PRESS 5.3567 DENSITY 44.936 TURBO FLOW 81.468 FLOW TRON 79.487 FPIP 6.0528

COOLING AIR TEMP 53.230 UDEL-HOOD 2.9743 DEL-HOOD 3.8204 FLOW 9910.4 REL-HUM 60.324 DEW-POINT 36.215

REL-HUM 1 60.324 2 21.818 HUMIDITY 31.025 % H2O VAPOR CORRECTED HP 0.71244 155.26

ENG. COND. F/A DRY 0.082133 F/A WET 0.081768 EQU. RATIO 1.2258 RPM-1 2695.0 RPM-2 2698.8 TORQUE 295.63 BHP 151.70

WET CORRECTION FACTOR = 0.85669 EXHAUST MOLE. WT. = 27.512 EXHAUST DENSITY = 0.071235 EXHAUST FLOW RATE = 14762.

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 1165.4 NOX PPM 164.42 CO DRY 7.0439 CO2 DRY 10.512 O2 DRY 0.015141
CORRECTED CONC. TO WET BASIS CO DRY 6.0344 CO2 DRY 9.0053 O2 DRY 0.012972

EMISSION RATE HC 0.61764 NOX 0.28983 CO 64.674
EMISSION MASS/MODE HC 0.0030982 NOX 0.0014442 CO 0.32337
EMISSION MASS/RATED HP HC 1.9301E-05 NOX 9.3261E-06 CO 0.0020210
MODE EMIS./STD. CYCLE % HC 1.0158 NOX 0.60174 CO 4.8120

CAL. FUEL AIR RATIO = 0.082874 MEAS. FUEL AIR RATIO = 0.082130 DIFF MEAS. & CAL. F/A PERCENT = 0.90601

CYL TEMP DEG. F CYL-1 396.22 CYL-2 420.81 CYL-3 396.89 CYL-4 403.44

EXT GAS TEMP DEG. F EXT-1 602.25 EXT-2 -245.56 EXT-3 -334.63 EXT-4 1023.9 SEXT-1 1382.5 SEXT-2 1376.9

ENGINE OIL FOILT 179.94 STILT 176.18 OILP 73.643 MANIFOLD PRESSURE = 29.196

DYND COND. TORQUE 298.50 RPM 2643.7 CYL. BACK PRESSURE = 29.378

INDUCTION AIR TAIRT1 49.937 TAIRT2 49.366 TAIRT1 -39.978 TAIRT2 46.262

ORIFICE AIR TEMP 90.742 DELTAP 4.3006 DREP 54.899 FLOW 2863.5

CELL TEMP. = 78.704 HEATER TEMP = 89.417 COOLER TEMP = 39.907

796

NASA-LEWIS PRELIMINARY DATA 04/23/76 CADDEII REC 04/23/76 10:23:55.254 FAC SEX15 PGM C003 RDG 3641

LEANOUT RE-RUNS TO CL APP 50 DEG., HUM=60% MODE = 4.000) NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR TEMP 50.890 PRESS 29.229 CFM 165.24 DRY FLOW 769.49 VAPOR FLOW 3.4639 PRESS TOTAL 14.652

COMP. FUEL TEMP 71.465 PRESS 5.4062 DENSITY 44.873 TURBO FLOW 63.806 FLOW TRON 62.211 FPIB 6.0915

COOLING AIR TEMP 54.055 UDEL-HOOD 2.9464 DEL-HOOD 3.8530 FLOW 9858.1 REL-HUM 57.195 DEW-POINT 36.300

REL-HUM 1 57.195 2 50.183 HUMIDITY 31.511 H2O VAPOR 0.72359 CORRECTED HP 120.55

ENG. CO. D. F/A DRY 0.080847 F/A WET 0.080485 EQU. RATIO 1.2067 RPM-1 2433.7 RPM-2 2436.6 TORQUE 260.42 RHP 120.67

WET CORRECTION FACTOR = 0.85843 EXHAUST MOLE WT. = 27.613 EXHAUST DENSITY = 0.071497 EXHAUST FLOW RATE = 11681.

MEASURED CONC. PART PER MILLION WFT PER CENT
HC PPM 1370.2 NOX PPM 428.78 CO DRY 6.3692 CO2 DRY 10.758 O2 DRY 0.050035
CORRECTED CONC. TO WET BASIS 5.4575 9.2353 0.042995

EMISSION RATE HC 0.57461 NOX 0.59603 CO 46.367
EMISSION MASS/MODE 0.047884 0.049669 3.8639
EMISSION MASS/RATED HP 0.00029928 0.00031043 0.024150
MODE EMIS./STD. CYCLE % 15.751 20.696 57.499

CAL. FUEL AIR RATIO = 0.091355 MEAS. FUEL AIR RATIO = 0.080847 DIFF MEAS. & CAL. F/A PERCENT = 0.62799

CYL TEMP DEG.F CYL-1 356.46 CYL-2 378.46 CYL-3 389.51 CYL-4 399.97

EXT GAS TEMP DEG.F EXT-1 747.24 EXT-2 -454.00 EXT-3 68.143 EXT-4 1597.7 SFXT-1 1317.1 SEXT-2 1314.7

ENGINE OIL EOILT 195.12 SOILT 134.06 OILP 72.135 MANIFOLD PRESSURE = 26.273

DYMO COND. TORQUE 269.29 RPM 2359.3 CYL. BACK PRESSURE = 29.375

INDUCTION AIR IAIRT1 50.507 IAIRT2 50.890 TAIRT1 37.015 TAIRT2 46.268

ORIFICE AIR TEMP 91.439 DELTAP 4.4282 ORFP 54.447 FLOW 2873.6

CELL TEMP. = 81.095 HEATER TEMP = 80.410 COOLER TEMP = 38.664

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NASA-LEWIS PRELIMINARY DATA 04/23/76 CADDEII RES 04/23/76 10:26:50.398 FAC SEX15 PGM C003 RDG 3642

LEANOUT PF-RUNS TO CL APP 50 DEG., HUM=60% MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR TEMP 49.677 PRESS 29.226 CFM 102.30 DRY FLOW 470.37 VAPOR FLOW 2.1107 PRESS TOTAL 14.470

COMP. FUEL TEMP 71.931 PRESS 5.5022 DENSITY 44.861 TURBO FLOW 40.413 FLOW TRON 38.836 FPIP 6.0801

COOLING AIR TEMP 51.591 UOEL-HOOD 2.9414 DEL-HOOD 3.7329 FLOW 9848.7 PFL-HUM 58.903 DEW-POINT 35.905

REL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP
59.903 53.499 31.411 0.72129 65.277

ENG. COND. F/A DRY 0.082564 F/A WET 0.082195 EQU. RATIO 1.2323 RPM-1 2351.3 RPM-2 2354.1 TORQUE 146.23 BHP 65.468

WET CORRECTION FACTOR = 0.86233 EXHAUST MOLE WT. = 27.473 EXHAUST DENSITY = 0.071147 EXHAUST FLOW RATE = 7186.8

MEASURED CONC. PAPT PER MILLION WET PFR CFMT
HC PPM 1633.2 NOX PPM 222.20 CO DRY 6.7040 CO2 DRY 10.485 O2 DRY 0.082388
CORRECTED CONC. TO WET BASIS 5.7811 9.0414 0.071046

EMISSION RATE HC 0.42137 NOX 70.19003 CO 30.164
EMISSION MASS/MODE 0.042137 0.019003 3.0164
EMISSION MASS/RATED HP 0.00026335 0.00011877 0.018352
MODE EMIS./STD. CYCLE % 13.861 7.9181 44.887

CAL. FUEL AIR RATIO = 0.082295 MEAS. FUEL AIR RATIO = 0.082564 DIFF MEAS. & CAL. F/A PERCENT = -0.32537

CYL TEMP DEG.F CYL-1 325.11 CYL-2 330.24 CYL-3 331.72 CYL-4 337.51

EXT GAS TEMP DEG.F FXT-1 1647.8 EXT-2 -454.00 FXT-3 241.53 EXT-4 1604.3 SEXT-1 1189.6 SEXT-2 1192.2

ENGINE OIL EOILT 184.80 SOILT 229.79 OILP 71.747 MANIFOLD PRESSURE = 18.357

DYMO COND. TORQUE 147.10 RPM 2278.0 CYL. BACK PRESSURE = 29.299

INDUCTION AIR IAIRT1 49.211 IAIRT2 49.677 TAIRT1 91.611 TAIRT2 46.392

ORIFICE AIR TEMP 90.027 DELTAP 4.4163 OREF 54.659 FLOW 2873.5

CELL TEMP. = 70.163 HEATER TEMP = 89.452 COOLER TEMP = 37.719

798

NASA-LEWIS PRELIMINARY DATA 04/23/76 CADDEII REC 04/23/76 10:32:44.587 FAC SEX15 PGM C003 RDG 3643

LEANOUT RE-RUNS TO CL APP 50 DEG. HUM=60% MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO= 2.1250

COMB. AIR TEMP 47.684 PRESS 29.224 CFM 203.55 DRY FLOW 961.16 VAPOR FLOW 4.3704 PRESS TOTAL 14.825

COMB. FUEL TEMP 69.172 PRESS 5.3756 DENSITY 44.934 TURBO FLOW 80.051 FLOW TRON 77.012 FPIP 6.0591

COOLING AIR TEMP 51.955 UDEL-HOOD 2.9381 DEL-HOOD 3.7418 FLOW 9842.5 REL-HUM 65.880 DEW-POINT 36.850

REL-HUM 1 2 HUMIDITY 31.829 H2O VAPOR CORRECTED HP 0.73091 154.23

ENG. COND. F/A DRY 0.080123 F/A WET 0.079761 EQU. RATIO 1.1959 RPM-1 2697.2 RPM-2 2700.4 TORQUE 293.56 BHP 150.76

WET CORRECTION FACTOR = 3.85591 EXHAUST MOLE. WT. = 27.671 EXHAUST DENSITY = 0.071646 EXHAUST FLOW RATE = 14551.

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 1171.7 NOX PPM 233.76 CO DRY 6.2647 CO2 DRY 10.870 O2 DRY 0.014961
CORRECTED CONC. TO WET BASIS CO DRY 5.3620 O2 DRY 0.012906

EMISSION RATE HC 0.61210 NOX 0.40479 CO 56.646
EMISSION MASS/MODE 0.0030605 0.0020739 0.28323
EMISSION MASS/RATED HP 1.9128E-05 1.2650E-05 0.0017702
MODE EMIS./STD. CYCLE % 1.0067 0.84330 4.2147

CAL. FUEL AIR RATIO = 0.081068 MEAS. FUEL AIR RATIO = 0.080123 DIFF MEAS. & CAL. F/A PERCENT = 1.1786

CYL TEMP DEG.F CYL-1 396.34 CYL-2 422.53 CYL-3 405.55 CYL-4 405.29

FXT GAS TEMP DEG.F FXT-1 1533.5 FXT-2 25.655 FXT-3 -148.48 FXT-4 1600.2 SFXT-1 1398.0 SEXT-2 1392.7

ENGINE OIL EOILT 185.34 SOILT 252.14 OILP 72.975 MANIFOLD PRESSURE = 28.047

DYNO COND. TORQUE 297.95 RPM 2640.3 CYL. BACK PRESSURE = 29.407

INDUCTION AIR TAIRT1 47.264 IAIRT2 47.684 TAIRT1 53.897 TAIRT2 45.129

ORIFICE AIR TEMP 89.774 DELTAP 4.385C ORFP 54.314 FLOW 2864.3

CYLL TEMP. = 79.021 HEATER TEMP = 89.376 COOLER TEMP = 37.846

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NASA-LEWIS PRELIMINARY DATA 04/23/76 CADDEIT REC 04/23/76 10:36:10.311 FAC SEX15 PGM C003 RDG 3644

LEANOUT PF-RUNS TO CL APP 50 DEG. HUM=60% MODE = 4.0C00 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. PARAMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	49.110	29.215	166.87	777.58	3.5714	14.651

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	70.716	5.4119	44.893	63.920	61.446	6.1248

COOLING AIR	TEMP	INLET-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	52.556	3.0006	3.8433	9959.4	62.340	36.905

REL-HUM	1	2	HUMIDITY	H2O VAPOR	CORRECTED HP
	62.340	52.661	32.151	0.73830	119.89

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.079022	0.078661	1.1794	2432.8	2435.6	259.58	120.24

WET CORRECTION FACTOR = 0.85975 EXHAUST MOLE. WT. = 27.759 EXHAUST DENSITY = 0.071875 EXHAUST FLOW RATE = 11723.

MEASURED CONC.	PART PER MILLION WET	PER CENT
	HC PPM NOX PPM CO DRY CO2 DRY O2 DRY	
	1246.3 768.30 5.4892 11.334 0.085148	
CORRECTED CONC. TO WET BASIS		4.7193 9.7441 0.073206

EMISSION RATE	HC	NOX	CO
	0.52453	1.0718	40.166
EMISSION MASS/MODE	0.043711	0.089318	3.3471
EMISSION MASS/RATED HP	0.00027319	0.00055823	0.020923
MODE FMIS./STD. CYCLE %	14.378	37.216	49.809

CAL. FUEL AIR RATIO = 0.078987 MEAS. FUEL AIR RATIO = 0.079022 DIFF MEAS. & CAL. F/A PERCENT = -0.044879

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	354.38	383.63	395.75	399.15

EXT GAS TEMP DEG.F	FXT-1	FXT-2	FXT-3	FXT-4	SFXT-1	SFXT-2
	999.72	454.00	175.18	1689.0	1349.2	1346.9

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 26.539
	185.08	193.12	72.011	

DYAO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.333
	252.10	2368.1	

INDUCTION AIR	TAIPT1	TAIPT2	TAIRT1	TAIPT2
	48.727	49.110	109.15	45.835

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	51.047	4.4310	53.783	2875.5

CELL TEMP. = 80.602 HEATED TEMP = 89.778 COOLER TEMP = 38.654

008

NASA-LEWIS PRELIMINARY DATA 04/23/76 CADDEII REC 04/23/76 10:40:05.545 FAC SEX15 PGH C003 RDG 3645

LEANOUT RE-RUNS TO CL APP 50 DEG. HUM=60% MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 50.671 PRESS 29.227 CFM 103.16 DRY FLOW 474.28 VAPOR FLOW 2.1785 PRESS TOTAL 14.475

COMB. FUEL TEMP 73.360 PRESS 5.4971 DENSITY 44.822 TURBO FLOW 39.869 FLOW TRON 40.360 FPIP 6.1482

COOLING AIR TEMP 52.566 UDEL-HOOD 2.8351 DEL-HOOD 3.7083 FLOW 9647.1 REL-HUM 58.117 DEW-POINT 36.500

RFL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP
58.117 46.117 32.153 0.73834 65.497

ENG. COND. F/A DRY 0.085098 F/A WET 0.084708 EQU. RATIO 1.2701 RPM-1 2352.8 RPM-2 2355.3 TORQUE 145.42 BHP 65.594

WET CORRECTION FACTOR = 0.85420 EXHAUST MOLE WT. = 27.282 EXHAUST DENSITY = 0.070640 EXHAUST FLOW RATE = 7316.2

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 1764.5 NOX PPM 177.08 CO DRY 7.4564 CO2 DRY 10.250 O2 DRY 0.076388
CORRECTED CONC. TO WET BASIS 6.4438 8.8578 0.066014

EMISSION RATE HC 0.46344 NOX 0.15417 CO 34.227
EMISSION MASS/MODE 0.046344 0.015417 3.4227
EMISSION MASS/RATED HP 0.00028965 9.5355E-05 0.021332
MODE EMIS./STD. CYCLE % 15.245 6.4237 50.932

CAL. FUEL AIR RATIO = 0.084031 MEAS. FUEL AIR RATIO = 0.085078 DIFF MEAS. & CAL. F/A PERCENT = -1.2530

CYL TEMP DEG.F CYL-1 313.63 CYL-2 327.51 CYL-3 326.20 CYL-4 325.36

EXT GAS TEMP DEG.F EXT-1 1296.5 EXT-2 454.00 EXT-3 234.25 EXT-4 1599.9 SEXT-1 1178.6 SEXT-2 1182.0

ENGINE OIL OIL1 183.61 OIL2 243.81 OIL3 72.039 MANIFOLD PRESSURE = 18.454

DYNO COND. TORQUE 140.70 RPM 2298.0 CYL. BACK PRESSURE = 29.316

INDUCTION AIR IAIRT1 50.179 IAIRT2 50.671 TAIRT1 139.61 TAIRT2 46.524

ORIFICE AIR TEMP 92.387 DELTAP 4.3569 ORFP 53.962 FLOW 2848.6

CELL TEMP. = 80.813 HEATER TEMP = 90.330 COOLER TEMP = 38.246

108

NASA-LEWIS PRELIMINARY DATA 04/23/76 CADDEII REC 04/23/76 10:50:54.398 FAC SEX15 PGM C003 RDG 3647

LEANOUT RE-RUNS TO CL APP 50 DEG. HUM=60% MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR TEMP 48.498 PRESS 29.244 CFM 155.06 DRY FLOW 773.19 VAPOR FLOW 3.5526 PRESS TOTAL 14.649

COMP. FUEL TEMP 70.529 PRESS 5.4203 DENSITY 44.897 TURBO FLOW 61.217 FLOW TRON 60.996 FPIP 6.0774

COOLING AIR TEMP 51.919 UDFL-HOOD 2.9098 DEL-HOOD 3.8447 FLOW 9789.3 REL-HUM 63.797 DEW-POINT 36.810

REL-HUM 1 63.797 2 35.380 HUMIDITY 32.163 H2O VAPOR CORRECTED HP 0.73857 119.56

ENG. COND. F/A DRY 0.078889 F/A WET 0.078528 EQU. RATIO 1.1774 RPM-1 2433.3 RPM-2 2436.7 TORQUE 259.00 BHP 120.00

WET CORRECTION FACTOR = 0.86246 EXHAUST MOLE. WT. = 27.770 EXHAUST DENSITY = 0.071903 EXHAUST FLOW RATE = 11650.

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 1152.6 NOX PPM 741.21 CO DRY 5.1302 CO2 DRY 11.554 O2 DRY 0.068467
CORRECTED CONC. TO WET BASIS CO 4.4246 CO2 9.9645 O2 0.059050

EMISSION RATE HC 0.48210 NOX 1.0277 CO 37.426
EMISSION MASS/MODE 0.040175 0.085639 3.1188
EMISSION MASS/RATED HP 0.00025110 0.00053524 0.019493
MODE EMISS./STD. CYCLE % 13.216 35.683 46.411

CAL. FUEL AIR RATIO = 0.078150 MEAS. FUEL AIR RATIO = 0.078889 DIFF MEAS. & CAL. F/A PERCENT = -0.93620

CYL TEMP DEG.F CYL-1 363.82 CYL-2 388.37 CYL-3 391.23 CYL-4 401.47

EXT GAS TEMP DEG.F EXT-1 1924.2 EXT-2 -454.00 EXT-3 416.31 EXT-4 1751.6 SEXT-1 1342.8 SEXT-2 1339.1

ENGINE OIL OILT 184.58 SOILT 325.62 OILP 72.319 MANIFOLD PRESSURE = 26.392

DYNO COND. TORQUE 268.47 RPM 2355.8 CYL. BACK PRESSURE = 29.371

INDUCTION AIR TAIRT1 48.087 TAIRT2 48.498 TAIRT1 150.98 TAIRT2 46.170

ORIFICE AIR TEMP 91.656 DELTAP 4.6093 DRFP 53.820 FLOW 2928.6

CELL TEMP. = 79.755 HEATER TEMP = 91.559 COOLER TEMP = 38.954

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NASA-LFWIS		PRELIMINARY DATA		04/23/76	CADDEII	REC 04/23/76 10:54:47.653		FAC SEX15	PGM C003	RDG 3648
LFANOUT RE-RUNS TO CL APP		50 DEG.	HUM=60%	MODE = 5.0000		NO. SCANS = 5				
ENGINE TIMING = 25.000		DEG.	BAROMETRIC PRESSURE = 29.230		RATED HP. = 160.00		HC RATIO = 2.1250			
COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL				
	50.078	29.224	102.63	471.46	2.1596	14.472				
COMB. FUEL	TEMP	PRESS	DENSITY	TIPRO FLOW	FLOW TRON	FPIP				
	73.414	5.5151	44.821	38.835	37.387	6.0492				
COOLING AIR	TEMP	INDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT				
	51.837	3.0723	4.0500	10091.	59.236	36.425				
REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP					
	59.236	49.295	32.065	0.73633	66.121					
ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP			
	0.079301	0.078939	1.1836	2353.9	2356.6	147.86	66.270			
WET CORRECTION	COR = 0.86140		EXHAUST MOL.F. WT. = 27.737		EXHAUST DENSITY = 0.071817		EXHAUST FLOW RATE = 7115.4			
MEASURED CONC.	PART PER MILLION WFT		PER CFMT							
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY					
	1441.7	385.52	5.3769	11.412	0.10195					
CORRECTED CONC. TO WET BASIS			4.6316	9.8301	0.087820					
EMISSION RATE	HC	NOX	CO							
	0.36828	0.32643	23.926							
EMISSION MASS/MODE	0.036828	0.32643	2.3926							
EMISSION MASS/RATED HP	0.00023018	0.00020402	0.014054							
MODE EMIS./STD. CYCLE	12.114	13.601	35.604							
CAL. FUEL AIR RATIO = 0.078758		MEAS. FUEL AIR RATIO = 0.079301		DIFF MEAS. & CAL. F/A PERCENT = -0.68481						
CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4						
	322.91	328.64	324.30	331.07						
EXT GAS TEMP DEG.F	FXT-1	FXT-2	FXT-3	FXT-4	SFXT-1	SEXT-2				
	1162.6	-454.00	455.63	1675.8	1199.1	1201.0				
ENGINE OIL	FILT	SOILT	OILP	MANIFOLD PRESSURE = 18.383						
	184.19	273.52	71.711							
DYND COND.	TORQUE	RPM	CYL. RACK PRESSURE = 29.311							
	147.05	2290.2								
INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2						
	49.576	50.078	172.53	46.923						
ORIFICE AIR	TEMP	DELTA P	ORFD	FLOW						
	92.396	4.5956	53.519	2922.5						
CELL TEMP. = 90.170	HEATED TEMP = 91.694		COOLER TEMP = 38.573							

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NASA-LEWIS PPFLIMINARY DATA 04/23/76 CADDEII REC 04/23/76 10:58:03.416 FAC SEX15 PGM C003 RDG 3649

LEANOUT PF-RUNS TO CL APP 50 DEG. HUM=60% MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. PARAMETRIC PRESSURE = 29.230 RATED HP.= 160.00 HC RATIO= 2.1250

COMB. AIR TEMP 49.202 PRESS 29.230 CFM 205.10 DRY FLOW 967.49 VAPOR FLOW 4.4250 PRESS TOTAL 14.824

COMB. FUEL TEMP 71.848 PRESS 5.3978 DENSITY 44.862 TURBO FLOW 72.813 FLOW TRON 72.313 FPIP 6.0339

COOLING AIR TEMP 57.838 DEL-HOOD 3.0723 DEL-HOOD 3.9764 FLOW 10091. REL-HUM 62.596 DEW-POINT 36.995

REL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP
62.596 -14.965 32.016 0.73519 154.44

ENG. COND. F/A DRY 0.074743 F/A WET 0.074403 EQU. RATIO 1.1156 RPM-1 2700.9 RPM-2 2704.6 TORQUE 293.14 BHP 150.75

WET CORRECTION FACTOR = 0.95414 EXHAUST MOLE. WT. = 28.111 EXHAUST DENSITY = 0.072786 EXHAUST FLOW RATE = 14346.

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 940.99 NOX PPM 735.27 CO DRY 4.1933 CO2 DRY 12.058 O2 DRY 0.062146
CORRECTED CONC. TO WET BASIS CO DRY 3.5817 CO2 DRY 10.299 O2 DRY 0.053081

EMISSION RATE HC 0.48465 NOX 1.2553 CO 37.305
EMISSION MASS/MODE HC 0.0024232 NOX 0.0062764 CO 0.18653
EMISSION MASS/RATED HP HC 1.5145E-05 NOX 3.2228E-05 CO 0.0011658
MODE EMIS./STR. CYCLE % HC 0.79712 NOX 2.6152 CO 2.7757

CAL. FUEL AIR RATIO = 0.075972 MEAS. FUEL AIR RATIO = 0.074743 DIFF MEAS. & CAL. F/A PERCENT = 1.6438

CYL TEMP DEG.F CYL-1 387.36 CYL-2 411.06 CYL-3 384.22 CYL-4 395.27

EXT GAS TEMP DEG.F EXT-1 1540.5 EXT-2 252.36 EXT-3 426.39 EXT-4 1683.0 SEXT-1 1411.2 SEXT-2 1402.1

ENGINE OIL FOILT 192.82 SOILT 171.37 OILP 73.427 MANIFOLD PRESSURE = 28.104

DYNO COND. TORQUE 298.69 RPM 2631.3 CYL. BACK PRESSURE = 29.391

INDUCTION AIR IAIRT1 48.736 IAIRT2 49.202 TAIRT1 167.15 TAIRT2 45.593

ORIFICE AIR TEMP 93.456 DELTAP 4.6020 ORFD 54.512 FLOW 2921.7

CELL TEMP. = 80.540 HEATER TEMP = 91.912 COOLER TEMP = 38.309

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NASA-LEWIS PRELIMINARY DATA 04/23/76 CADDETT REC 04/23/76 11:01:35.707 FAC SEX15 PGM C003 RDG 3650

LEANOUT RE-RUNS TO CL APP 50 DEG. HUM=60% MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP.= 160.00 HC RATIO= 2.1250

COMB. AIR TEMP 50.151 PRESS 29.226 CFM 168.51 DRY FLOW 786.02 VAPOR FLOW 3.5412 PRESS TOTAL 14.666

COMB. FUEL TEMP 73.031 PRESS 5.4239 DENSITY 44.831 TURBO FLOW 62.983 FLOW TRON 58.662 FPIP 6.0597

COOLING AIR TEMP 53.311 JDEL-HOOD 3.0250 DFL-HOOD 3.9331 FLOW 10004. REL-HUM 58.889 DEW-POINT 36.345

REL-HUM 1 58.889 2 47.793 HUMIDITY 31.537 % H2O VAPOR CORRECTED HP 0.72419 119.75

ENG. COND. F/A DRY 0.074631 F/A WET 0.074297 FOU. RATIO 1.1139 RPM-1 2435.9 RPM-2 2438.9 TORQUE 258.70 BHP 119.99

WET CORRECTION F/WR = 0.85874 EXHAUST MILE. WT. = 28.120 EXHAUST DENSITY = 0.072810 EXHAUST FLOW RATE = 11649.

MEASURED CONC. PART PER MILLION WPT PER CENT
HC PPM 955.69 CO2 DRY 12.173
NOX PPM 1260.5 CO DRY 0.18864
CORRECTED CONC. TO WET BASIS 3.3785 10.453 0.16199

EMISSION RATE HC 0.39970 NOX 1.7476 CO 28.575
EMISSION MASS/MODE 0.033308 0.14564 2.3812
EMISSION MASS/RATED HP 0.00020818 0.00091023 0.014883
MODE EMIS./STD. CYCLE % 10.957 60.682 35.435

CAL. FUEL AIR RATIO = 0.074995 MEAS. FUEL AIR RATIO = 0.074631 DIFF MEAS. & CAL. F/A PERCENT = 0.48702

CYL TEMP DEG.F CYL-1 372.90 CYL-2 335.92 CYL-3 393.53 CYL-4 397.72

EXT GAS TEMP DEG.F EXT-1 885.63 EXT-2 -454.00 EXT-3 710.66 EXT-4 1826.0 SEXT-1 1374.8 SEXT-2 1370.4

ENGINE OIL FOILT 184.01 SOILT 253.14 OILO 72.371 MANIFOLD PRESSURE = 26.623

DYMO COND. TORQUE 257.74 RPM 2354.6 CYL. BACK PRESSURE = 29.380

INDUCT ION AIR TAIRT1 49.704 TAIRT2 50.151 TAIRT1 148.37 TAIRT2 45.889

ORIFICE AIR TEMP 93.833 DELTAP 4.7847 OPEP 54.143 FLOW 2973.5

CELL TEMP. = 81.527 HEATER TEMP = 91.953 COOLER TEMP = 38.782

305

NASA-LEWIS PRELIMINARY DATA 04/23/76 CADDEI REC 04/23/76 11:07:50.421 FAC SEX15 PGM C003 RDG 3651

LEANOUT RE-RUNS TO CL APP 50 DEG. HUM=60% MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.230 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 49.813 PRESS 29.220 CFM 132.67 DRY FLOW 471.80 VAPOR FLOW 2.0929 PRESS TOTAL 14.472

COMB. FUEL TEMP 73.787 PRESS 5.5034 DENSITY 44.811 TURBO FLOW 42.994 FLOW TRON 39.079 FPIP 6.0837

COOLING AIR TEMP 51.637 JDEL-HOOD 2.9704 DEL-HOOD 3.9303 FLOW 9903.2 REL-HUM 57.944 DEW-POINT 35.619

REL-HUM 1 57.944 2 46.633 HUMIDITY 31.351 % H2O VAPOR CORRECTED HP 0.71304 65.030

ENG. COND. F/A DRY 0.082829 F/A WET 0.082463 EQU. RATIO 1.2362 RPM-1 2350.1 RPM-2 2353.1 TORQUE 145.76 BHP 65.222

WET CORRECTION FACTOR = 0.86165 EXHAUST MOLE WT. = 27.457 EXHAUST DENSITY = 0.071093 EXHAUST FLOW RATE = 7215.5

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 1673.2 CO DRY 6.8916 CO2 DRY 10.575
CORRECTED CONC. TO WET BASIS N2X PPM 228.68 CO 5.9382 CO2 9.1117 O2 DRY 0.13297 0.11458

EMISSION RATE HC 0.43341 NOX 0.19636 CO 31.107
EMISSION MASS/MODE 3.043341 0.019636 3.1107
EMISSION MASS/RATED HP 0.00027088 0.00012272 0.019442
MODE EMIS./STD. CYCLE 14.257 8.1816 46.290

CAL. FUEL AIR RATIO = 0.082355 MEAS. FUEL AIR RATIO = 0.082829 DIFF MEAS. & CAL. F/A PERCENT = -0.57224

CYL TEMP DEG. F CYL-1 312.56 CYL-2 320.97 CYL-3 319.95 CYL-4 316.79

EXT GAS TEMP DEG. F FXT-1 1309.1 EXT-2 -454.00 EXT-3 492.11 EXT-4 1685.9 SEXT-1 1160.5 SEXT-2 1163.0

ENGINE OIL OILT 181.04 SOILT 128.12 OIL2 71.999 MANIFOLD PRESSURE = 18.348

DYNO COND. TORQUE 143.49 RPM 2326.4 CYL. BACK PRESSURE = 29.307

INDUCTION AIR IAIRT1 47.275 IAIPT2 49.812 TAIRT1 176.68 TAIPT2 46.801

ORIFICE AIR TEMP 92.344 DELTAP 4.7369 ORFP 55.274 FLOW 2964.0

CELI TEMP. = 80.443 HEATER TEMP = 92.098 COOLER TEMP = 38.573

NASA-LEWIS PRELIMINARY DATA 04/23/76 CADDEII REC 04/23/76 11:11:56.341 FAC SEX15 PGM C003 RDG 3652

LEANOUT RE-RUNS TO CL APP 50 DEG. HUM=60% MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.250 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	48.297	29.276	203.84	961.41	4.3110	14.828

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	71.420	5.3885	44.874	74.706	73.264	6.0447

COOLING AIR	TEMP	INDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	51.992	3.0584	3.8873	10066.	63.510	36.505

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	63.510	17.620	31.388	0.72078	153.63

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.076205	0.075865	1.1374	2698.0	2701.9	292.80	150.41

WET CORRECTION FACTOR = 0.85802 EXHAUST MOLE. WT. = 27.989 EXHAUST DENSITY = 0.072471 EXHAUST FLOW RATE = 14336.

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	999.60	740.57	4.4535	11.932	0.078528
CORRECTED CONC. TO WET BASIS					
			CO DRY		
			3.8298	10.238	0.067378

EMISSION RATE	HC	NOX	CO	
	0.51448	1.2635	39.862	
	EMISSION MASS/MODE	0.0025724	0.0063173	0.19931
	EMISSION MASS/RATED HP	1.6077E-05	3.9483E-05	0.0012457
MODE EMIS./STD. CYCLE %	0.84618	2.6322	2.9659	

CAL. FUEL AIR RATIO = 0.076528 MEAS. FUEL AIR RATIO = 0.076205 DIFF MEAS. & CAL. F/A PERCENT = 0.42346

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	387.50	415.49	392.41	395.09

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	910.75	176.94	544.18	1708.3	1397.9	1388.3

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 28.020
	179.17	186.24	73.303	

DYMO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.443
	282.70	2601.9	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	47.794	48.297	190.69	45.893

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	92.553	4.7593	54.885	2969.8

CELL TEMP. = 80.214 HEATER TEMP = 92.105 COOLER TEMP = 38.755

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NASA-LEWIS PRELIMINARY DATA 04/23/76 CADD11 REC 04/23/76 11:15:33.629 FAC SEX15 PGM C003 RDG 3653

LEANOUT RE-RUNS TO CL APP 50 DEG. HUM=607 MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.250 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 49.092 PRESS 29.191 CFM 166.23 DRY FLOW 774.74 VAPOR FLOW 3.5433 PRESS TOTAL 14.658

COMP. FUEL TEMP 72.462 PRESS 5.4266 DENSITY 44.846 TURBO FLOW 60.259 FLOW TRON 57.672 FPIP 6.0462

COOLING AIR TEMP 52.311 UDEL-HOOD 2.9790 DEL-HOOD 3.9773 FLOW 9919.2 REL-HUM 62.150 DEW-POINT 36.710

REL-HUM 1 62.150 2 48.943 HUMIDITY 32.315 % H2O VAPOR CORRECTED HP 119.81

ENG. COND. F/A DRY 0.074440 F/A WET 0.074101 EQU. RATIO 1.1110 RPM-1 2428.4 RPM-2 2432.6 TORQUE 259.88 BHP 120.17

WET CORRECTION FACTOR = 0.95435 EXHAUST MOLE WT. = 28.136 EXHAUST DENSITY = 0.072852 EXHAUST FLOW RATE = 11474.

MEASURED CONC. HC PPM 1059.6 NOX PPM 1181.3 CO DRY 4.2510 PER CENT CO2 DRY 11.966 O2 DRY 0.17896
CORRECTED CONC. TO WET BASIS CO DRY 3.6326 PER CENT CO2 DRY 10.224 O2 DRY 0.15289

EMISSION RATE HC 0.43650 NOX 1.6131 CO 30.262
EMISSION MASS/MODE HC 0.036375 NOX 0.13442 CO 2.5218
EMISSION MASS/RATED HP HC 0.00022734 NOX 0.00084015 CO 0.015761
MODE EMIS./STD. CYCLE % HC 11.965 NOX 56.010 CO 37.527

CAL. FUEL AIR RATIO = 0.075803 MEAS. FUEL AIR RATIO = 0.074440 DIFF MEAS. & CAL. F/A PERCENT = 1.8316

CYL TEMP DEG.F CYL-1 371.97 CYL-2 378.78 CYL-3 394.39 CYL-4 394.38

EXT GAS TEMP DEG.F EXT-1 1444.9 EXT-2 -454.00 EXT-3 751.30 EXT-4 1910.0 SEXT-1 1357.5 SEXT-2 1352.5

ENGINE OIL FOILT 183.56 SOILT 311.83 OILP 72.015 MANIFOLD PRESSURE = 26.407

DYNO COND. TORQUE 275.69 RPM 2375.0 CYL. RACK PRESSURE = 29.309

INDUCTION AIR IAIRT1 48.643 IAIRT2 49.092 TAIRT1 160.90 TAIRT2 46.002

ORIFICE AIR TEMP 92.448 DELTAP 4.8427 ORFP 52.955 FLOW 2993.2

CELL TEMP. = 81.113 HEATER TEMP = 91.850 COOLER TEMP = 38.509

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NASA-LEWIS PRELIMINARY DATA 04/23/76 CADDEII REC 04/23/76 11:23:28.971 FAC SEX15 PGM C003 RDG 3654

LEANOUT RE-RUNS TO CL APP 50 DEG. HUM=60% MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.250 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 51.628 PRESS 29.243 CFM 103.85 DRY FLOW 477.56 VAPOR FLOW 2.0707 PRESS TOTAL 14.486

COMB. FUEL TEMP 75.137 PRESS 5.4860 DENSITY 44.774 TURBO FLOW 45.153 FLOW TRON 42.814 FPIP 6.0654

COOLING AIR TEMP 53.193 INLET-ROOM 2.9062 DEL-ROOM 3.8004 FLOW 9782.5 REL-HUM 53.013 DEW-POINT 35.074

REL-HUM 1 53.013 2 51.283 HUMIDITY 30.351 % H2O VAPOR CORRECTED HP 0.69697 66.429

ENG. COND. F/A DRY 0.089651 F/A WET 0.089254 EQU. RATIO 1.3381 RPM-1 2351.9 RPM-2 2354.7 TORQUE 148.46 BHP 66.483

WET CORRECTION FACTOR = 0.87138 EXHAUST MOLE WT. = 26.942 EXHAUST DENSITY = 0.069760 EXHAUST FLOW RATE = 7489.2

MEASURED CONC. PART PER MILLION WET HC PPM 1980.0 NOX PPM 75.507 CO DRY 8.5548 PER CENT CO2 DRY 9.7050 O2 DRY 0.095629
CORRECTED CONC. TO WET BASIS HC 7.4532 NOX 4.2058 F-05 60.385 CO2 DRY 0.083329

EMISSION RATE HC 0.53235 NOX 0.067293 CO 40.579
EMISSION MASS/MODE HC 0.053235 NOX 0.0067293 CO 4.0579
EMISSION MASS/RATED HP HC 0.00033272 NOX 4.2058 F-05 60.385 CO 0.025362
MODE EMIS./STD. CYCLE ? HC 17.511 NOX 2.8039 CO 60.385

CAL. FUEL AIR RATIO = 0.085815 MEAS. FUEL AIR RATIO = 0.089651 DIFF MEAS. & CAL. F/A PERCENT = -3.1640

CYL TEMP DEG.F CYL-1 307.84 CYL-2 318.23 CYL-3 310.25 CYL-4 313.38

FXT GAS TEMP DEG.F FXT-1 1440.8 FXT-2 -454.00 FXT-3 516.35 FXT-4 1665.4 SFXT-1 1125.4 SEXT-2 1127.0

ENGINE OIL FOILT 178.19 SOILT 245.31 OILO 71.867 MANIFOLD PRESSURE = 18.436

DYNO COND. TORQUE 147.51 RPM 2297.3 CYL. BACK PRESSURE = 29.366

INDUCTION AIR IAIPT1 51.127 IAIPT2 51.628 TAIRT1 169.58 TAIRT2 46.995

ORIFICE AIR TEMP 93.925 DELTAP 4.7694 ORIF P 54.104 FLOW 2969.0

CELL TEMP. = 81.835 WATER TEMP = 91.925 COOLER TEMP = 38.764

608

NASA-LFWIS PRELIMINARY DATA 04/23/76 CADDEIT REC 04/23/76 11:27:52.592 FAC SFX15 PGM C003 R0G 3655

LFANOUT 2F RUNS TO CL APP 50 DEG HUM = 60 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.250 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	50.625	29.258	200.80	946.54	4.1160	14.817

COMB. FUEL	TEMP	PRESS	DENSITY	TUBING FLOW	FLOW FROM	FPIF
	73.858	5.4095	44.809	69.160	68.209	6.0441

COOLING AIR	TEMP	WDEL-HOOD	DEL-HOOD	FLOW	PFL-HUM	DEW-POINT
	54.883	3.0573	3.8862	10064.	56.434	35.714

PFL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	56.434	6.1266	30.439	0.69899	150.03

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	RHP
	0.072061	0.071749	1.0755	2700.6	2704.6	284.72	144.41

WFT CORRECTION FACTOR = 0.85120 EXHAUST MOLE. WT. = 28.338 EXHAUST DENSITY = 0.073374 EXHAUST FLOW RATE = 13885.

MEASURED CONC.	PART PER MILLION WFT			PER CENT	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	854.08	932.69	3.3421	12.518	0.063625
CORRECTED CONC. TO WET BASIS			2.8448	10.655	0.054159

EMISSION RATE	HC	NOX	CO	
	3.42576	1.5412	28.679	
	EMISSION MASS/MODE	0.0021288	0.007050	0.14339
	EMISSION MASS/RATED HP	1.3305E-05	4.8162E-05	0.00089622
MODE EMIS./STD. CYCLE ?	0.70027	3.2108	2.1339	

CAL. FUEL AIR RATIO = 0.074072 MEAS. FUEL AIR RATIO = 0.072061 DIFF MEAS. & CAL. F/A PERCENT = 2.7909

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	408.70	426.76	405.03	421.73

EXT GAS TEMP DEG.F	FXT-1	FXT-2	FXT-3	FXT-4	SEXT-1	SEXT-2
	785.79	296.41	750.42	1986.9	1440.3	1430.9

ENGINE OIL	F011T	S011T	O11P	MANIFOLD PRESSURE = 27.838
	182.04	168.08	73.247	

DYMO COND.	TORQUE	RPM	CYL. PACK PRESSURE = 29.408
	276.80	2633.5	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	50.197	50.625	150.72	45.875

PPIFIC AIR	TEMP	DELTA P	DP DP	FLOW
	94.194	4.8144	54.110	2980.8

CELL TEMP. = 83.662 HEATER TEMP = 61.884 COOLER TEMP = 38.627

012

NASA-LEWIS PRELIMINARY DATA 04/23/76 CADDEII REC 04/23/76 11:31:02.465 FAC SEX15 PGM C003 RDG 3656

LEANOUT RE RUNS TO CL APP 50 DEG HUM = 60 MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.250 RATED HP. = 150.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	48.206	29.258	172.68	807.33	3.5208	14.698

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW FROM	FPIP
	71.688	5.4215	44.867	61.639	59.166	6.1092

COOLING AIR	TEMP	WDEL-HUMID	DEL-HUMID	FLOW	REL-HUM	DEW-POINT
	51.546	2.9945	3.9001	9948.1	61.448	35.584

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	61.448	47.053	30.527	0.70101	118.56

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.073286	0.072968	1.0938	2420.4	2433.5	257.46	119.09

WEY CORRECTION F_w = 0.85667 EXHAUST MOLE. WT. = 28.234 EXHAUST DENSITY = 0.073104 EXHAUST FLOW RATE = 11901.

MEASURED CONC.	PART PER MILLION WET	PER CENT
	HC PPM	CO DRY
	783.90	11.949
	NOX PPM	O2 DRY
	1243.6	0.36208
	CO DRY	
	3.9690	
CORRECTED CONC. TO WET BASIS		
	3.4002	10.236
		0.31018

EMISSION RATE	HC	NOX	CO
	0.33492	1.7613	29.378
EMISSION MASS/MODE	0.027910	0.14677	2.4482
EMISSION MASS/RATED HP	0.00017444	0.00091732	0.015301
MODE EMIS./STD. CYCLE %	9.1809	61.155	36.431

CAL. FUEL AIR RATIO = 0.074510 MEAS. FUEL AIR RATIO = 0.073286 DIFF MEAS. & CAL. F/A PERCENT = 1.6710

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	375.95	382.34	395.27	379.48

FXT GAS TEMP DEG. F	FXT-1	FXT-2	FXT-3	FXT-4	SFXT-1	SFXT-2
	1375.6	-454.00	732.58	1885.1	1405.6	1400.8

ENGINE OIL	FOILT	SOILT	OIL P	MANIFOLD PRESSURE = 27.000
	184.37	108.14	71.963	

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.363
	261.38	2359.9	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	47.721	48.206	153.47	45.955

ORIFICE AIR	TEMP	DELTA P	DIFF	FLOW
	91.613	4.7623	54.347	2973.2

CELL TEMP. = 80.001 HEATER TEMP = 91.905 COOLER TEMP = 38.482

NASA-LEWIS PRELIMINARY DATA 04/23/76 CADDEII REC 04/23/76 11:34:18.537 FAC SEX15 PGM C003 RDG 3657

LEANOUT RE RUNS TO CL APP 50 DEG HUM = 60 % MODE = 5.0003 NO. SCANS = 5

ENGINE TIMING = 25.000 DFG. BAROMETRIC PRESSURE = 29.250 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	49.558	29.243	102.78	472.81	2.0714	14.481

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	73.751	5.5055	44.912	43.071	40.663	5.0530

COOLING AIR	TEMP	UNEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	51.500	2.9342	3.8893	9835.2	57.818	35.324

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	57.818	30.845	30.668	0.70424	65.392

ENG. COND.	F/A DRY	F/A WET	EQV. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.086004	0.085628	1.2936	2351.6	2354.6	146.54	65.514

WET CORRECTION FACTOR = 0.87167 EXHAUST MOLE. WT. = 27.213 EXHAUST DENSITY = 0.070462 EXHAUST FLOW RATE = 7316.6

MEASURED CONC.	PART PER MILLION WFT	PER CENT		
HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
1566.1	222.64	7.0305	10.507	0.055955
CORRECTED CONC. TO WFT BASIS		6.1282	9.1587	0.048783

EMISSION RATE	HC	NOX	CO
	0.43762	0.19385	32.552
EMISSION MASS/MODE	0.043762	0.019385	3.2552
EMISSION MASS/RATED HP	0.00027351	0.00012116	0.020345
MODE EMIS./STD. CYCLE %	14.395	8.0770	48.440

CAL. FUEL AIR RATIO = 0.082960 MEAS. FUEL AIR RATIO = 0.086004 DIFF MEAS. & CAL. F/A PERCENT = -3.5395

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	319.77	326.65	325.03	329.24

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1729.4	-454.00	648.97	1740.2	1204.3	1209.6

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 18.432
	184.26	188.47	71.775	

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.355
	150.69	2293.6	

INDUCTION AIR	TAIPT1	TAIPT2	TAIRT1	TAIRT2
	49.001	49.558	103.67	46.629

ORIFICE AIR	TEMP	DELTA P	ORF	FLOW
	92.065	4.8132	54.111	2986.2

CELL TEMP. = 80.549 HEATER TEMP = 91.843 COOLER TEMP = 38.164

SIR

MASA-LEWIS PRELIMINARY DATA 04/23/76 CADDEII REC 04/23/76 11:39:10.544 FAC SEX15 PGM C003 RDG 3658

LEANOUT RE RUNS TO CL APP 50 DEG HUM = 60 ? MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.250 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP 48.955	PRESS 29.270	CFM 108.06	DRY FLOW 933.43	VAPOR FLOW 4.0927	PRESS TOTAL 14.809
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COMB. FUEL	TEMP 72.569	PRESS 5.4155	DENSITY 44.343	TURBO FLOW 72.097	FLOW TRON 69.193	FPIP 5.0753
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COOLING AIR	TEMP 53.148	INLET-HOOD 2.9920	DEL-HOOD 3.9438	FLOW 9943.5	REL-HUM 60.523	DEW-POINT 35.910
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REL-HUM	1 60.523	2 5.6546	HUMIDITY 30.692	% H2O VAPOR 0.70490	CORRECTED HP 148.31
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ENG. COND.	F/A DRY 0.074128	F/A WET 0.073804	EGU. RATIO 1.1064	RPM-1 2696.0	RPM-2 2699.5	TORQUE 282.50	RHP 145.07
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WET CORRECTION FACTOR = 0.85465 EXHAUST MOL.F. WT. = 28.153 EXHAUST DENSITY = 0.072920 EXHAUST FLOW RATE = 13805.

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM 853.19	NOX PPM 1077.4	CO DRY 3.0310	CO2 DRY 12.598	O2 DRY 0.078728
CORRECTED CONC. TO WET BASIS			2.6208	10.393	0.068072

EMISSION RATE	HC 0.42286	NOX 1.7701	CO 26.268
EMISSION MASS/MODE	0.0021143	0.0088503	0.13134
EMISSION MASS/RATED HP	1.3214E-05	5.5314E-05	0.00082088
MODE EMIS./STD. CYCLE %	0.69549	3.5876	1.9545

CAL. FUEL AIR RATIO = 0.073391 MEAS. FUEL AIR RATIO = 0.074128 DIFF MEAS. & CAL. F/A PERCENT = -0.99376

CYL TEMP DEG.F	CYL-1 407.71	CYL-2 424.49	CYL-3 398.67	CYL-4 419.54
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EXT GAS TEMP DEG.F	EXT-1 975.04	EXT-2 312.14	EXT-3 853.00	EXT-4 1932.7	SEXT-1 1454.5	SEXT-2 1447.0
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ENGINE OIL	SOILT 185.60	SOILT 123.02	OILP 73.071	MANIFOLD PRESSURE = 27.718
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DYND COND.	TORQUE 277.73	RPM 2613.1	CYL. BACK PRESSURE = 29.416
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INDUCTION AIR	TAIRT1 48.526	TAIRT2 48.55	TAIRT1 128.85	TAIRT2 45.703
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ORIFICE AIR	TEMP 92.648	DELTA P 4.8029	ORIF. 54.350	FLOW 2981.7
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CELL TEMP. = 91.324 HEATER TEMP = 91.822 COOLER TEMP = 38.646

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NASA-LEWIS PRELIMINARY DATA 04/23/76 CADDEII REC 04/23/76 11:41:51.867 FAC SEX15 PG4 C003 RDG 3659

LFANOUT RE RUNS TO CL APP 50 DEG HUM = 60 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.250 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	49.813	29.255	173.12	808.99	3.5719	14.690

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	73.423	5.4191	44.821	63.579	60.354	6.0672

COOLING AIR	TEMP	UNFL-HOOD	DEL-HOOD	FLOW	REL-HUM	DFW-POINT
	53.266	3.0045	3.8353	9966.6	58.545	35.880

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	58.545	70.047	30.907	0.70972	119.78

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	PPM-2	TORQUE	RMP
	0.074604	0.074276	1.1135	2433.8	2437.3	259.12	120.08

WET CORRECTION F TOP = 0.85927 EXHAUST MOLE. WT. = 28.122 EXHAUST DENSITY = 0.072816 EXHAUST FLOW RATE = 11987.

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	887.99	1023.5	4.2566	11.788	0.36464
CORRECTED CONC. TO WET BASIS			3.6576	10.129	0.31332

EMISSION RATE	HC	NOX	CO
	MASS/MODE	MASS/MODE	MASS/MODE
	0.38216	1.4601	31.835
	0.031847	0.12157	2.6528
EMISSION MASS/RATED HP	0.00019904	0.00076046	0.016580
MODE EMIS./STD. CYCLE	10.476	50.697	39.475

CAL. FUEL AIR RATIO = 0.075194 MEAS. FUEL AIR RATIO = 0.074604 DIFF MEAS. & CAL. F/A PERCENT = 0.79024

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	362.19	390.55	400.14	369.24

FXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1445.5	-454.00	934.67	1970.1	1415.2	1411.8

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 27.032
	185.05	298.47	71.703	

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.387
	269.62	2343.1	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	49.339	49.813	105.06	45.874

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	93.152	4.7515	54.200	2966.0

CELL TEMP. = 82.644 HEATER TEMP = 91.781 COOLER TEMP = 38.491

H18

NASA-LEWIS PRELIMINARY DATA 04/23/76 CADDEII REC 04/23/76 11:47:15.392 FAC SEX15 PG4 C003 RDG 0660

LEANOUT RE RUNS TO CL APP 50 DEG HUM = 60 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.250 RATED HP. = 150.00 HC RATIO = 2.1250

COMP. AIR TEMP 51.573 PRESS 29.248 CFM 103.86 DRY FLOW 477.88 VAPOR FLOW 2.1071 PRESS TOTAL 14.481

COMP. FUEL TEMP 75.819 PRESS 5.4851 DENSITY 44.758 TURBO FLOW 45.914 FLOW TRON 43.135 FPIP 6.0585

COOLING AIR TEMP 53.375 UDEL-HOOD 2.9749 DEL-HOOD 3.8157 FLOW 9911.5 REL-HUM 53.993 DEW-POINT 35.484

REL-HUM 1 53.993 2 47.611 HUMIDITY 30.844 % H2O VAPOR 0.70875 CORRECTED HP 65.542

ENG. COND. F/A DRY 0.090265 F/A WET 0.089868 EQU. RATIO 1.3472 PPM-1 2348.6 PPM-2 2351.8 TORQUE 145.69 BHP 65.598

WET CORRECTION FACTOR = 0.87130 EXHAUST MOLE. WT. = 25.898 EXHAUST DENSITY = 0.069644 EXHAUST FLOW RATE = 7511.3

MEASURED CONC. HC PPM 2060.7 CO2 DRY 9.4623 NO2 DRY 0.073507
CORRECTED CONC. TO WET BASIS CO DRY 8.7925 CO2 DRY 9.4623
NOX PPM 37.804 CO DRY 7.6529 CO2 DRY 9.4623
PER CENT CO2 DRY 9.4623 NO2 DRY 0.073507

EMISSION RATE HC 0.55568 NOX 0.033790 CO 41.732
EMISSION MASS/MODE 0.055568 NOX 0.033790 CO 4.1732
EMISSION MASS/RATED HP 0.00034730 NOX 2.1119E-05 CO 0.026083
MODE EMIS./STD. CYCLE % HC 19.279 NOX 1.4079 CO 62.107

CAL. FUEL AIR RATIO = 0.087731 VEAS. FUEL AIR RATIO = 0.090265 DIFF MEAS. & CAL. F/A PERCENT = -2.8071

CYL TEMP DEG.F CYL-1 309.84 CYL-2 316.20 CYL-3 311.79 CYL-4 312.22

EXT GAS TEMP DEG.F FXT-1 1257.9 EXT-2 -454.00 EXT-3 620.46 FXT-4 1737.6 SEXT-1 1155.2 SEXT-2 1160.5

ENGINE OIL EOILT 180.95 SOILT 332.10 OILP 72.003 MANIFOLD PRESSURE = 18.459

DYNO COND. TORQUE 149.75 RPM 2297.1 CYL. PACK PRESSURE = 29.321

INDUCTION AIR IAIRT1 50.990 IAIRT2 51.573 TAIRT1 188.13 TAIRT2 46.475

ORIFICE AIR TEMP 93.899 DELTAP 4.7129 ORIF 54.298 FLOW 2953.0

CELL TEMP. = 83.400 HEATER TEMP = 91.760 COOLER TEMP = 37.828

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NASA-LFWIS PRELIMINARY DATA 04/23/76 CADDFIT REC 04/23/76 11:50:53.974 FAC SEX15 PGM C003 ROD 3661

LEANOUT PE RUNS TO CL APP 50 DEG HUM = 60 ? MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.250 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	47.813	29.249	196.00	923.74	4.0930	14.802

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPID
	72.231	5.4293	44.352	65.105	65.166	6.0255

COOLING AIR	TEMP	WDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	52.001	3.0554	3.8912	10060.	63.799	36.160

REL-HUM	1	2	HUMIDITY	% H2O VAPOR CORRECTED HP
	63.799	23.202	31.016	0.71223 145.45

ENG. COND.	F/A DRY	F/A WET	EQV. RATIO	RPM-1	RPM-2	TORQUE	RHP
	0.070545	0.070235	1.0529	2692.6	2696.1	277.58	142.31

WET CORRECTION FACTOR = 0.86157 EXHAUST MOLE. WT. = 28.469 EXHAUST DENSITY = 0.073713 EXHAUST FLOW RATE = 1347L.

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	697.31	1566.2	1.9307	13.123	0.11881
CORRECTED CONC. TO WET BASIS			1.6534	11.306	0.10737

916

	HC	NOX	CO
EMISSION RATE	0.33723	2.5107	16.268
EMISSION MASS/MODE	0.0016862	0.012553	0.081342
EMISSION MASS/RATED HP	1.0538E-05	7.8458E-05	0.00050839
MODE EMIS./STD. CYCLE ?	0.55465	5.2305	1.2104

CAL. FUEL AIR RATIO = 0.070880 MEAS. FUEL AIR RATIO = 0.070546 DIFF MEAS. & CAL. F/A PERCENT = 0.47314

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	422.84	416.34	404.50	410.59

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SFXT-1	SEXT-2
	1616.3	216.91	1013.6	1927.5	1456.4	1447.2

ENGINE OIL	FOILT	SOILT	OILT	MANIFOLD PRESSURE = 27.504
	181.64	213.35	73.267	

DYNO COND.	TORQUE	RPM	CYL. PACK PRESSURE = 29.405
	294.39	2631.4	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	47.410	47.813	158.40	45.390

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	91.761	4.7817	54.223	2978.2

CFLI TEMP. = 91.624 HEATER TEMP = 91.732 COOLER TEMP = 39.282

NASA-LEWIS PRELIMINARY DATA 04/23/76 CADDEII REC 04/23/76 11:57:11.496 FAC SEX15 PGM C003 RDG 3662

LEANOUT RE RUNS TO CL APP 50 DEG HUM = 60 * MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.250 LATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	49.092	29.281	173.22	808.83	3.5942	14.689

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	72.515	5.4158	44.845	64.413	60.852	6.0432

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	52.538	2.9727	4.0014	9907.3	60.525	36.040

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	60.525	39.778	31.106	0.71429	119.70

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	PPM-1	PPM-2	TORQUE	BHP
	0.075234	0.074902	1.1229	2435.0	2438.0	259.03	120.09

WET CORRECTION FACTOR = 0.86116 EXHAUST MOLE. WT. = 28.070 EXHAUST DENSITY = 0.072679 EXHAUST FLOW RATE = 12015.

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	852.29	870.79	4.3200	11.795	0.36944
CORRECTED CONC. TO WET BASIS			3.7202	10.158	0.31814

EMISSION RATE	HC	NOX	CO	
	0.37195	1.2451	32.452	
	EMISSION MASS/MODE	0.030996	0.10376	2.7043
	EMISSION MASS/PATED HP	0.00019372	0.00064848	0.016902
MODE EMIS./STD. CYCLE %	10.196	43.232	40.243	

CAL. FUEL AIR RATIO = 0.075277 MEAS. FUEL AIR RATIO = 0.075234 DIFF MEAS. & CAL. F/A PERCENT = 0.056645

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	356.26	388.14	397.92	363.07

EXT GAS TEMP DEG.F	FXT-1	FXT-2	FXT-3	FXT-4	SEXT-1	SEXT-2
	548.22	-454.00	968.41	1911.3	1409.1	1406.2

ENGINE OIL	FILT	SOILT	OILP	MANIFOLD PRESSURE = 26.995
	135.75	310.34	72.067	

DYNO COND.	TORQUE	RPM	CYL. PACK PRESSURE = 29.366
	251.46	2354.4	

INDUCTION AIR	IAIPT1	IAIPT2	TAIRT1	TAIRT2
	49.681	49.092	153.70	46.241

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	92.093	4.9151	54.301	2985.6

CELL TEMP. = 82.117 HEATED TEMP = 91.704 COOLER TEMP = 39.127

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NASA-LEWIS PRELIMINARY DATA 04/23/76 CADDE11 REC 04/23/76 12:01:03.415 FAC SEX15 PGM C003 RDG 3663

LEANOUT RF RUNS TO CL APP 50 DEG HUM = 60 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.253 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CF4	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	50.507	29.251	103.10	474.11	2.1063	14.481

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIF
	74.702	5.4968	44.787	43.110	40.753	5.9997

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	57.411	2.9325	3.8923	9832.1	56.594	35.674

PFL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	56.594	42.418	31.099	0.71414	66.126

ENG. CON.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.085957	0.085577	1.2329	2351.8	2354.9	147.98	66.263

WET CORRECTION FACTOR = 0.86587 EXHAUST MOLE WT. = 27.217 EXHAUST DENSITY = 0.070471 EXHAUST FLOW RATE = 7335.9

MEASURED CONC.	PART PER MILLION WET		PER CENT	
	HC PPM	NOX PPM	CO DRY	O2 DRY
	1788.7	161.97	7.6414	10.162
CORRECTED CONC. TO WET BASIS			6.6165	8.7990
				0.073407
				0.063551

EMISSION RATE	HC	NOX	CO
	0.47093	0.14139	35.239
EMISSION MASS/MODE	0.047093	0.014139	3.5239
EMISSION MASS/RATED HP	0.00029433	8.8370E-05	0.022024
MODE EMIS./STD. CYCLE %	15.491	5.8913	52.438

CAL. FUEL AIR RATIO = 0.084501 MEAS. FUEL AIR RATIO = 0.085957 DIFF MEAS. & CAL. F/A PERCENT = -1.6944

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	319.35	319.50	325.10	315.67

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1416.4	1454.00	774.88	1684.7	1188.9	1194.7

ENGINE OIL	ERTLT	STILT	OILT	MANIFOLD PRESSURE
	133.10	73.337	71.347	18.438

DYNO COND.	TORQUE	RPM	CYL. RACK PRESSURE
	143.15	2300.4	29.303

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	49.953	50.507	99.312	46.734

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	97.735	4.7919	54.266	2978.5

CELL TEMP. = 81.897 HEATER TEMP = 91.497 COOLEI TEMP = 39.282

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NASA-LEWIS PRELIMINARY DATA 04/23/76 CADDEII REC 04/23/76 12:09:29.126 FAC SEX15 PGM C003 RDG 3655

LEANOUT PE RUNS TO CL APP 50 DFG HUM = 60 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.250 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	50.871	29.249	177.80	830.78	3.7057	14.698

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	75.039	5.4383	44.778	59.277	55.836	6.0444

COOLING AIR	TEMP	INLET-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	54.465	2.9300	3.8508	9827.4	56.894	36.150

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	56.894	51.755	31.224	0.71700	120.32

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.067209	0.056910	1.0031	2430.5	2434.4	260.31	120.47

WET CORRECTION FACTOR = 0.85290 EXHAUST MOLE. WT. = 28.670 EXHAUST DENSITY = 0.074233 EXHAUST FLOW RATE = 11993.

MEASURED CONC.	PART PER MILLION WET			PER CFM	
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	303.45	1417.4	1.8587	12.980	0.43402
CORRECTED CONC. TO WET BASIS			1.5934	11.071	0.37018

	HC	NOX	CO
EMISSION RATE	0.13066	2.0230	13.874
EMISSION MASS/MODE	0.010888	0.16859	1.1567
EMISSION MASS/RATED HP	5.8050E-05	0.0010537	0.0072261
MODE EMIS./STD. CYCLE %	3.5816	70.244	17.205

CAL. FUEL AIR RATIO = 0.059570 MEAS. FUEL AIR RATIO = 0.067209 DIFF MEAS. & CAL. F/A PERCENT = 3.5129

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	386.67	401.59	376.26	377.75

EXT GAS TEMP DEG.F	EXT-1	EXT-2	FXT-3	FXT-4	SFXT-1	SEXT-2
	1415.2	-434.82	878.21	2003.9	1521.9	1513.8

ENGINE OIL	FILT	SOILT	OIL	MANIFOLD PRESSURE = 27.336
	195.67	347.29	71.963	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.423
	261.16	2370.9	

INDUCTION AIR	TAIPT1	TAIPT2	TAIRT1	TAIRT2
	50.425	50.871	159.04	46.162

ORIFICE AIR	TEMP	DELTA P	DIFF	FLOW
	93.925	4.7434	54.292	2961.6

CELL TEMP. = 83.834 HEATER TEMP = 91.697 COOLER TEMP = 39.172

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NASA-LEWIS		PRELIMINARY DATA		04/23/76	CADDEII	REC 04/23/76 12:06:08.682		FAC SEX15	PGM C003	RDG 3554
LEANOUT RE RUNS TO CL APP 50 DEG HUM = 60 %				MODE = 3.0000		NO. SCANS = 5				
ENGINE TIMING = 25.000		DEG.		BAROMETRIC PRESSURE = 29.250		PATED HP. = 160.00		HC RATIO = 2.1250		
COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL				
	49.512	29.242	205.87	973.08	4.3281	14.842				
COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP				
	74.178	5.4323	44.801	59.051	65.908	6.0435				
COOLING AIR	TEMP	INLET-HOOD	DEL-HOOD	FLOW	RFL-HUM	DEW-POINT				
	53.720	3.0028	3.9507	9963.5	60.259	36.325				
REL-HUM	1	2	HUMIDITY	* H2O VAPOR CORRECTED HP						
	60.259	42.704	31.135	0.71495		152.55				
ENG. COND.	F/A DRY	F/A WET	F/O. RATIO	PPM-1	PPM-2	TORQUE	BHP			
	0.067731	0.057431	1.0109	2701.1	2704.6	289.60	148.94			
WET CORRECTION FACTOR = 0.85681		EXHAUST MOLE. WT. = 28.636		EXHAUST DENSITY = 0.074146		EXHAUST FLOW RATE = 14071.				
MEASURED CONC.		PART PER MILLION WET		PER CENT						
		HC PPM	NOX PPM	CO DRY	CO2 DRY	NO2 DRY				
		643.62	1917.6	1.2150	13.537	0.17640				
CORRECTED CONC. TO WET BASIS				1.0410	11.599	0.15114				
EMISSION RATE		HC	NOX	CO						
		0.32513	3.2109	10.635						
EMISSION MASS/MODE		0.0016256	0.016055	0.053174						
EMISSION MASS/RATED HP		1.0160E-05	0.00010034	0.00033234						
MODE EMIS./STD. CYCLE %		0.53475	6.6895	0.79128						
CAL. FUEL AIR RATIO = 0.069197		MEAS. FUEL AIR RATIO = 0.067731		DIFF MEAS. & CAL. F/A PERCENT = 2.1499						
CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4						
	399.97	413.29	435.21	409.24						
EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2				
	1554.6	370.91	1045.8	2011.9	1486.8	1477.0				
ENGINE OIL	FILT	STILT	OILP	MANIFOLD PRESSURE = 28.262						
	184.78	68.142	73.387							
DYNO COND.	TORQUE	RPM	CYL. PACK PRESSURE = 29.440							
	290.72	2637.3								
INDUCTION AIR	IAIPT1	IAIRT2	TAIRT1	TAIPT2						
	49.101	49.512	175.48	45.292						
ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW						
	93.396	4.7465	54.230	2963.9						
CELL TEMP. = 85.111	HEATER TEMP = 91.677		COOLER TEMP = 37.466							

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NASA-LEWIS PRELIMINARY DATA 04/23/76 CANDELI REC 04/23/76 12:13:09.751 FAC SEX15 PGM C003 RDG 3666

LEANOUT RE PUNS TO CL APP 50 DEG HUM = 60 % MODF = 5.0000 NO. SCANS = 5
 ENGINE TIMING = 25.000 OFS. BAROMETRIC PRESSURE = 29.250 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR TEMP 49.202 PRESS 29.248 CFM 111.62 DRY FLOW 513.93 VAPOR FLOW 2.2902 PRESS TOTAL 14.501

COMP. FUEL TEMP 74.808 PRESS 5.5530 DENSITY 44.784 TURBO FLOW 35.239 FLOW TRON 33.465 FPIP 6.1608

COOLING AIR TEMP 51.364 UDEL-HOOD 2.9715 DEL-HOOD 3.8530 FLOW 9905.3 RFL-HUM 59.671 DEW-POINT 35.784

REL-HUM 1 59.671 2 44.642 HUMIDITY 31.194 % H2O VAPOR 0.71632 CORRECTED HP 64.863

ENG. COND. F/A DRY 0.065117 F/A WET 0.064828 FOU. RATIO 0.97190 RPM-1 2353.5 RPM-2 2357.0 TORQUE 145.28 BHP 65.102

WET CORRECTION FACTOR = 0.87356 EXHAUST MOLE. WT. = 28.768 EXHAUST DENSITY = 0.074487 EXHAUST FLOW RATE = 7379.5

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	NO2 DRY	
	292.91	1360.0	0.29135	13.476	1.1254	
CORRECTED CONC. TO WET BASIS			0.25451	11.772	0.98311	

EMISSION RATE	HC	NOX	CO
	0.077599	1.1943	1.3635
EMISSION MASS/MODE	0.0077599	0.11943	0.13635
EMISSION MASS/PATED HP	4.8499E-05	0.00074646	0.00085221
MODE EMIS./STD. CYCLE %	2.5526	49.764	2.0291

CAL. FUEL AIR RATIO = 0.064242 MEAS. FUEL AIR RATIO = 0.065117 DIFF MEAS. & CAL. F/A PERCENT = -1.3446

CYL TEMP DEG.F CYL-1 332.93 CYL-2 324.15 CYL-3 338.66 CYL-4 342.07

EXT GAS TEMP DEG.F EXT-1 1373.0 EXT-2 181.97 EXT-3 1205.6 EXT-4 1919.9 SEXT-1 1331.5 SEXT-2 1333.3

ENGINE OIL F OILT 194.12 S OILT 136.63 OILP 71.491 MANIFOLD PRESSURE = 19.711

DYNO COND. TORQUE 149.24 RPM 2324.5 CYL. BACK PRESSURE = 29.399

INDUCTION AIR IAIPT1 48.654 IAIPT2 49.202 TAIRT1 102.22 TAIRT2 46.783

ORIFICE AIR TEMP 91.578 DELTAP 4.8247 ORFP 54.277 FLOW 2990.6

CFLI TEMP. = 81.342 HEATER TEMP = 91.704 COOLER TEMP = 39.163

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NASA-LEWIS PRELIMINARY DATA 04/23/76 CADDEIT REC 04/23/76 12:21:11.444 FAC SEX15 PGM C003 RDG 3667

LEANOUT RE RUNS TO CL APP 50 DEG HUM = 60 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.250 RATED HP = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 49.019 PRESS 29.282 CFM 205.79 DRY FLOW 970.75 VAPOR FLOW 4.3505 PRESS TOTAL 14.836

COMB. FUEL TEMP 72.257 PRESS 5.3822 DENSITY 44.852 TURBO FLOW 80.158 FLOW TRON 77.192 FPIP 6.1257

COOLING AIR TEMP 53.902 IDEL-HOOD 2.9824 DEL-HOOD 3.8505 FLOW 9927.5 REL-HUM 61.817 DEW-POINT 36.505

REL-HUM 1 61.817 2 55.889 HUMIDITY 31.371 % H2O VAPOR CORRECTED HP 0.72038 153.82

ENG. COND. F/A DRY 0.079518 F/A WET 0.079153 EQU. RATIO 1.1368 PPM-1 2702.3 PPM-2 2706.1 TORQUE 292.50 BHP 150.50

WET CORRECTION FACTOR = 0.86127 EXHAUST MOLE WT. = 27.719 EXHAUST DENSITY = 0.071771 EXHAUST FLOW RATE = 14661.

MEASURED CONC.	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	1072.2	242.20	5.4863	11.295	0.028723
CORRECTED CONC. TO WET BASIS			4.7251	9.7284	0.024738

EMISSION RATE	HC	NOX	CO
	0.56436	0.42258	50.295
EMISSION MASS/MODE	0.0028218	0.0021129	0.25148
EMISSION MASS/FATED HP	1.7636E-05	1.3206E-05	0.0015718
MODE EMIS./STD. CYCLE %	0.92822	0.88038	3.7423

CAL. FUEL AIR RATIO = 0.379124 MEAS. FUEL AIR RATIO = 0.079518 DIFF MEAS. & CAL. F/A PERCENT = -0.49502

CYL TEMP DEG.F CYL-1 412.59 CYL-2 434.20 CYL-3 405.78 CYL-4 422.97

EXT GAS TEMP DEG.F EXT-1 1518.7 EXT-2 214.39 EXT-3 799.82 EXT-4 1853.4 SFXT-1 1435.6 SEXT-2 1431.9

ENGINE OIL OILT 185.04 SOILT 246.53 OIIP 72.851 MANIFOLD PRESSURE = 28.143

DYNO COND. TORQUE 276.43 RPM 2628.7 CYL. BACK PRESSURE = 29.417

INDUCTION AIR IAIRT1 48.581 IAIRT2 49.019 TAIRT1 144.61 TAIRT2 46.076

ORIFICE AIR TEMP 92.474 DELTAP 4.8130 ORFP 54.255 FLOW 2985.0

CELL TEMP. = 82.715 HEATER TEMP = 92.878 COOLER TEMP = 39.072

822

NASA-LFWIS PRELIMINARY DATA 04/23/76 CADDEII REC 04/23/76 12:55:54.949 FAC SEX15 PGM C003 R0G 3658

LEANOUT RE-RUNS TO CL APP 50 DEG HUM = 80 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.250 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	49.877	29.266	201.54	946.75	5.9459	14.814

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	72.400	5.3522	44.948	84.047	80.237	6.0813

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLW	PFL-HUM	DEW-POINT
	54.302	2.8558	3.8386	9705.8	83.531	45.095

PFL-HUM	1	2	HUMIDITY	H2O VAPOR CORRECTED HP
	83.531	43.922	43.762	1.0095 149.71

ENG. COND.	F/A DRY	F/A WET	EQV. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.084750	0.084221	1.2549	2708.4	2712.4	282.61	145.74

WET CORRECTION FACTOR = 0.85221 EXHAUST MOLE WT. = 27.309 EXHAUST DENSITY = 0.070709 EXHAUST FLOW RATE = 14608.

MEASURED CONC.	PART PER MILLION WET	PER CENT
	HC PPM	CO2 DRY
	NOX PPM	O2 DRY
	CO DRY	
CORRECTED CONC. TO WET BASIS		
	1424.7	9.7500
	128.24	0.0089409
	8.3766	0.0076195
	7.1386	

EMISSION RATE	HC	NOX	CO
EMISSION MASS/MODE	0.74718	0.22293	75.708
EMISSION MASS/PATED HP	0.0037259	0.0011147	0.37854
MODE FMS./STD. CYCLE %	2.3349E-05	5.9567E-06	0.0023659
	1.2289	0.46444	5.6331

CAL.FUFL AIR RATIO = 0.085475 MEAS. FUFL AIR RATIO = 0.084750 DIFF MEAS.& CAL. F/A PERCENT = 2.0358

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	372.93	411.93	380.43	410.50

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1316.4	1454.00	556.28	1773.0	1349.3	1344.0

ENGINE OIL	FILT	SOILT	OIL?	MANIFOLD PRESSURE = 27.691
	176.96	228.90	74.219	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.439
	273.50	2641.0	

INDUCTIVE AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	49.403	49.877	-15.262	45.982

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	93.665	3.6979	54.343	2622.5

CELL TEMP. = 85.251 HEATER TEMP = 92.934 COOLER TEMP = 37.137

823

NASA-LEWIS PRELIMINARY DATA 04/23/76 CADDEII REC 04/23/76 13:00:10.674 FAC SEX15 PGM C003 RDG 3659

LEANOUT RE-RUNS TO CL APP 50 DFS HUM = 80 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.250 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	49.019	29.264	157.69	778.96	4.9497	14.671

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	71.313	5.3894	44.377	66.414	65.139	6.0657

COOLING AIR	TEMP	INLET-HUMID	DEL-HUMID	FLOW	REL-HUM	DEW-POINT
	57.465	2.9649	3.8735	9892.8	86.414	45.145

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	86.414	46.587	44.480	1.0214	119.43

ENG. COND.	F/A DRY	F/A WET	EQV. RATIO	RPM-1	PPM-2	TORQUE	BHP
	0.083623	0.083095	1.2481	2433.4	2436.4	257.68	119.39

WET CORRECTION F_W = 0.85599 EXHAUST MILE. WT. = 27.395 EXHAUST DENSITY = 0.070933 EXHAUST FLOW RATE = 11969.

MEASURED CONC.	PART PER MILLION WET	PER CENT
	HC ppm	CO2 DRY
	1550.7	10.129
	NOX ppm	O2 DRY
	333.99	0.033263
		6.4345
		8.6703
		0.028473

EMISSION RATE	HC	NOX	CO
	0.66633	0.47574	55.915
	0.055528	0.039645	4.6597
	0.00034705	0.00024778	0.029123
	18.266	16.519	69.340

CAL. FUEL AIR RATIO = 0.084363 MEAS. FUEL AIR RATIO = 0.083623 DIFF MEAS. & CAL. F/A PERCENT = 0.88427

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	339.48	381.60	381.43	402.87

EXT GAS TEMP DEG.F	FXT-1	FXT-2	FXT-3	FXT-4	SEXT-1	SEXT-2
	1344.9	454.00	495.50	1681.3	1302.6	1300.1

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 26.456
	181.88	228.95	71.879	

DYMO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.431
	246.99	2371.3	

INDUCTION AIR	IAIPT1	IAIPT2	TAIRT1	TAIRT2
	49.635	49.019	109.00	46.677

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	91.970	3.6741	54.385	2618.1

CELL TEMP. = 80.769 HEATER TEMP = 92.630 COOLER TEMP = 38.000

824

NASA-LEWIS PRELIMINARY DATA 04/23/76 CADDEII REC 04/23/76 13:03:46.623 FAC SEX15 PGM C003 RDG 3670

LEANOUT PF-RUNS TO CL APP 50 DEG HUM = 80 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.250 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR TEMP PRESS CFM DRY FLOW VAPOR FLOW PRESS TOTAL
50.516 29.234 108.65 497.95 3.1605 14.493

COMP. FUEL TEMP PRESS DENSITY TURBO FLOW FLOW TRON FPIP
74.773 5.5421 44.785 34.099 32.835 6.0705

COOLING AIR TEMP JDEL-HOOD DEL-HOOD FLOW REL-HUM DEW-POINT
52.675 2.9541 3.5965 9872.5 80.646 44.795

REL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP
80.646 56.426 44.430 1.0203 65.074

ENG. COND. F/A DRY F/A WET EQU. RATIO RPM-1 RPM-2 TORQUE BHP
0.065941 0.065525 0.99420 2348.6 2352.5 145.25 64.953

WET CORRECTION FACTOR = 0.86327 EXHAUST MOLE. WT. = 28.736 EXHAUST DENSITY = 0.074404 EXHAUST FLOW RATE = 7176.3

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM NOX PPM CO DRY CO2 DRY O2 DRY
434.44 1433.3 0.75460 13.038 0.60276
CORRECTED CONC. TO WET BASIS 0.65006 11.255 0.52034

EMISSION RATE HC NOX CO
0.11192 1.2240 3.4389
EMISSION MASS/MODE 0.011192 0.12240 0.34389
EMISSION MASS/RATED HP 5.9953E-05 0.00076503 0.0021453
MODE EMIS./STD. CYCLE % 3.6817 51.002 5.1174

CAL. FUEL AIR RATIO = 0.066855 MEAS. FUEL AIR RATIO = 0.065941 DIFF MEAS. & CAL. F/A PERCENT = 1.3860

CYL TEMP DEG.F CYL-1 CYL-2 CYL-3 CYL-4
326.46 333.53 338.23 341.34

EXT GAS TEMP DEG.F EXT-1 EXT-2 EXT-3 EXT-4 SEXT-1 SEXT-2
1509.4 -410.23 1004.9 2013.4 1274.2 1272.0

ENGINE OIL FOILT SOILT OIL? MANIFOLD PRESSURE = 19.466
181.87 174.29 71.503

DYNO COND. TORQUE RPM CYL. BACK PRESSURE = 29.303
149.75 2332.4

INDUCTION AIR TAIP1 TAIP2 TAIRT1 TAIRT2
49.950 50.516 121.94 47.361

ORIFICE AIR TEMP DELTAP ORIF FLOW
92.483 3.6428 54.380 2605.8

CELL TEMP. = 82.187 HEATED TEMP = 92.506 COOLER TEMP = 37.664

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825

NASA-LEWIS PRELIMINARY DATA 04/23/76 CADDEII REC 04/23/76 13:14:23.184 FAC SEX15 PGM C003 RDG 3671

LEANOUT RE-RUNS TO CL APP 50 DEG HUM = 80 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.250 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	50.169	29.261	207.00	973.89	6.2398	14.841

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FIP
	72.969	5.3651	44.833	82.667	80.162	6.0693

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	55.010	2.8990	3.8335	9770.4	84.420	45.660

REL-HUM	1	2	HUMIDITY	H2O VAPOR	CORRECTED HP
	84.420	60.346	44.843	1.0297	155.58

ENG. COND.	F/A DRY	F/A WET	FQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.082311	0.081787	1.2295	2704.4	2708.4	293.90	151.35

WET CORRECTION FACTOR = 0.85635 EXHAUST MOLE WT. = 27.498 EXHAUST DENSITY = 0.071198 EXHAUST FLOW RATE = 14892.

MEASURED CONC.	PART PER MILLION WET	PER CENT
	HC PPM NOX PPM CO DRY CO2 DRY O2 DRY	
	1260.0 211.13 6.9352 10.426 0.013761	
CORRECTED CONC. TO WET BASIS		5.9390 8.0287 0.011785

EMISSION RATE	HC	NOX	CO
EMISSION MASS/MODE	0.67364	0.37416	64.211
EMISSION MASS/RATED HP	0.0033682	0.0018708	0.32105
MODE EMISS./STD. CYCLE	2.1051F-05	1.1692F-05	0.0020066
	1.1080	0.77950	4.7776

CAL. FUEL AIR RATIO = 0.082844 MEAS. FUEL AIR RATIO = 0.082311 DIFF MEAS. & CAL. F/A PERCENT = 0.64796

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	385.15	414.74	383.32	408.95

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1544.8	1554.00	705.63	1848.4	1388.4	1383.9

ENGINE OIL	EQILT	SOILT	OILP	MANIFOLD PRESSURE = 28.243
	135.09	277.06	73.150	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.472
	300.49	2563.4	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	49.722	50.169	54.399	46.041

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	93.813	3.6584	53.723	2608.2

CELL TEMP. = 84.042 HEATER TEMP = 92.091 COOLER TEMP = 37.001

928

NASA-LEWIS PRELIMINARY DATA 04/23/76 CADDILLAC REC 04/23/76 13:21:43.005 FAC SEX15 PGM C003 RDG 3672

LEANOUT RE-RUNS TO CL APP 50 DEG HUM = 80 % MODE = 4.0000 NR. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.250 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	43.964	29.257	166.07	770.99	4.9538	14.668

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	72.035	5.4056	44.958	61.869	60.639	6.0261

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	RFL-HUM	DEL-POINT
	52.629	2.9491	3.8339	9863.3	87.532	45.430

REL-HUM	1	2	HUMIDITY	H2O VAPOR	CORRECTED HP
	87.532	49.113	44.977	1.0328	119.99

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	PPM-1	PPM-2	TORQUE	BHP
	0.078650	0.078148	1.1739	2433.0	2436.8	258.93	119.95

WET CORRECTION FACTOR = 0.84724 EXHAUST MOLE. WT. = 27.799 EXHAUST DENSITY = 0.071952 EXHAUST FLOW RATE = 11626.

MEASURED CONC.	PART PER MILLION WET		PER CENT	
	HC PPM	NOX PPM	CO DRY	O2 DRY
	1233.9	378.70	6.3575	10.712
CORRECTED CONC. TO WET BASIS			5.3363	9.0752
				0.043104
				0.036520

EMISSION RATE	HC	NOX	CO
	0.55675	0.52341	45.467
EMISSION MASS/MODE	0.046396	0.343618	3.7889
EMISSION MASS/RATED HP	0.00028997	0.00027261	0.023680
MODE EMIS./STD. CYCLE %	15.262	18.174	56.382

CAL. FUEL AIR RATIO = 0.081402 MEAS. FUEL AIR RATIO = 0.078650 DIFF MEAS. & CAL. F/A PERCENT = 3.4989

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	362.86	380.40	386.83	374.23

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	891.77	-454.00	699.51	1804.6	1317.5	1315.1

ENGINE OIL	SOILT	SOILT	OILP	MANIFOLD PRESSURE = 26.376
	185.24	171.19	71.955	

DYMO COND.	TORQUE	PPM	CYL. BACK PRESSURE = 29.364
	271.25	2354.4	

INDUCTION AIR	TAIPT1	TAIPT2	TAIPT1	TAIPT2
	49.503	48.964	71.258	46.834

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	91.569	3.6067	54.291	2595.1

CELL TEMP. = 82.469 HEATER TEMP = 92.008 COOLER TEMP = 38.691

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NASA-LEWIS PRELIMINARY DATA 04/23/76 CANNETT REC 04/23/76 13:25:57.201 FAC SEX15 PGM C003 RDG 3673

LEANOUT RE-RUNS TO CL APP 50 DEG HUM = 80 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.250 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	50.306	29.257	115.94	531.93	3.4171	14.508

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	75.482	5.5566	44.767	34.502	32.679	6.1154

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	52.738	2.8694	3.8134	9712.6	82.335	45.135

RFL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	82.335	51.235	44.968	1.0326	65.841

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.061435	0.061043	0.91694	2349.5	2351.8	146.91	65.722

WET CORRECTION FACTOR = 0.87049 EXHAUST MOLE. WT. = 28.835 EXHAUST DENSITY = 0.074664 EXHAUST FLOW RATE = 7607.8

MEASURED CONC.	PART PER MILLION WET	PER CENT
	HC PPM NOX PPM CO DRY CO2 DRY O2 DRY	
	153.32 1485.7 0.094938 12.855 1.7102	
CORRECTED CONC. TO WET BASIS		0.082642 11.190 1.4887

EMISSION RATE	HC	NOX	CO
EMISSION MASS/MODE	0.041873	1.3451	0.45645
EMISSION MASS/RATED HP	2.6171E-05	0.00084067	0.00028528
MODE EMIS./STD. CYCLE %	1.3774	55.045	0.67925

CAL. FUEL AIR RATIO = 0.061877 VEAS. FUEL AIR RATIO = 0.06143% DIFF MEAS. & CAL. F/A PERCENT = 0.71853

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	326.54	323.60	332.65	336.56

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1257.6	-380.71	1023.7	1936.0	1273.2	1270.2

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 20.379
	184.33	239.53	71.575	

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.359
	141.88	2302.7	

INDUCTION AIR	TAIPT1	TAIRT2	TAIRT1	TAIPT2
	49.786	50.206	83.942	47.229

ORIFICE AIR	TEMP	DELTAP	ORIF	FLOW
	92.248	3.7076	54.667	2629.3

CELL TEMP. = 82.532 HEATER TEMP = 91.960 COOLER TEMP = 37.664

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NASA-LEWIS PRELIMINARY DATA 04/23/76 CADDPII REC 04/23/76 13:33:38.683 FAC SEX15. PCM C003 RDG 3674

LEANOUT RE-RUNS TO CL APP 50 DEG HUM = 80 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.250 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR TEMP 49.686 PRESS 29.277 CFM 206.00 DRY FLOW 969.76 VAPOR FLOW 6.0396 PRESS TOTAL 14.843

COMP. FUEL TEMP 73.556 PRESS 5.3753 DENSITY 44.817 TURBO FLOW 79.266 FLOW TRCN 77.048 FPIP 6.0657

COOLING AIR TEMP 54.329 INLET-HOOD 3.0125 DEL-HOOD 3.8301 FLOW 9981.5 REL-HUM 83.587 DEW-POINT 44.925

REL-HUM 1 ? HUMIDITY 43.588 % H2O VAPOR CORRECTED HP 154.18

ENG. COND. F/A DRY 0.079450 F/A WET 0.078956 EQU. RATIO 1.1859 RPM-1 2702.8 RPM-2 2706.4 TORQUE 291.29 BHP 149.91

WET CORRECTION FACTOR = 0.85110 EXHAUST MOLE. WT. = 27.725 EXHAUST DENSITY = 0.071785 EXHAUST FLOW RATE = 14686.

MEASURED CONC. PART PER MILLION WET HC PPM 1193.0 NOX PPM 299.95 CO DRY 6.3269 PER CENT CO2 DRY 10.693 O2 DRY 0.013621
CORRECTED CONC. TO WET BASIS CO DRY 5.3848 PER CENT CO2 DRY 9.1005 O2 DRY 0.011593

EMISSION RATE HC 0.62816 NOX 0.52176 CO 57.337
EMISSION MASS/MODE 0.0031468 0.0025088 0.28668
EMISSION MASS/RATED HP 1.9630E-05 1.6305E-05 0.0017918
MODE EMIS./STD. CYCLE % 1.0332 1.0870 4.2561

CAL. FUEL AIR RATIO = 0.081397 MEAS. FUEL AIR RATIO = 0.079450 DIFF MEAS. & CAL. F/A PERCENT = 2.4503

CYL TEMP DEG.F CYL-1 388.19 CYL-2 411.60 CYL-3 398.72 CYL-4 404.98

FXT GAS TEMP DEG.F EXT-1 1376.4 EXT-2 -337.82 EXT-3 719.77 EXT-4 1795.8 SEXT-1 1392.4 SEXT-2 1386.6

ENGINE OIL EOILT 185.62 SOILT 279.34 OILT 73.283 MANIFOLD PRESSURE = 28.209

DYNO COND. TORQUE 288.93 RPM 2636.8 CYL. BACK PRESSURE = 29.402

INDUCTION AIR IAIRT1 49.266 IAIRT2 49.686 TAIRT1 32.255 TAIRT2 45.949

CPIFIC AIR TEMP 93.092 DELTAP 3.6557 PREP 54.192 FLOW 2639.0

CELL TEMP. = 83.901 HEATED TEMP = 91.956 COOLER TEMP = 36.855

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NASA-LEWIS PRELIMINARY DATA 04/23/76 CADDEII REC 04/23/76 13:37:23.445 FAC SEK15 PGM C003 RDG 3675

LEANOUT RE-RUNS TO CL APP 50 DEG HUM = 80 % MODE = 4.11000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.250 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR TEMP 50.799 PRESS 29.221 CFM 164.83 DRY FLOW 765.78 VAPOR FLOW 4.8027 PRESS TOTAL 14.654

COMP. FUEL TEMP 74.861 PRESS 5.4209 DENSITY 44.783 TURBO FLOW 60.945 FLOW TRON 60.093 FPIP 6.0357

COOLING AIR TEMP 54.429 UNEL-HOOD 2.9334 DEL-HOOD 3.8367 FLOW 9833.7 REL-HUM 79.743 DEW-POINT 44.775

REL-HUM 1 79.743 2 38.538 HUMIDITY 43.901 % H2O VAPOR CORRECTED HP 1.0091 119.78

ENG. COND. F/A DRY 0.078473 F/A WET 0.077994 FOU. RATIO 1.1712 RPM-1 2429.6 RPM-2 2433.1 TORQUE 258.38 BHP 119.52

WET CORRECTION FACTOR = 0.85463 EXHAUST MOLE. WT. = 27.803 EXHAUST DENSITY = 0.071990 EXHAUST FLOW RATE = 11538.

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 1232.7 CO DRY 5.6261 CO2 DRY 11.014 O2 DRY 0.058426
CORRECTED CONC. TO WET BASIS NOX PPM 496.85 CO 4.8082 CO2 9.4129 O2 0.049932

830

EMISSION RATE HC 0.51064 NOX 0.66850 CO 40.279
EMISSION MASS/MODE 0.042554 0.055708 3.3560
EMISSION MASS/RATED HP 0.00026596 0.00034818 0.020079
MODE EMIS./STD. CYCLE 7 13.998 23.212 49.940

CAL. FUEL AIR RATIO = 0.079632 MEAS. FUEL AIR RATIO = 0.078473 DIFF MEAS. & CAL. F/A PERCENT = 1.4770

CYL TEMP DEG.F CYL-1 349.19 CYL-2 390.76 CYL-3 391.76 CYL-4 402.08

EXT GAS TEMP DEG.F EXT-1 1196.8 EXT-2 -454.00 EXT-3 783.69 EXT-4 1803.6 SEXT-1 1332.8 SEXT-2 1330.1

ENGINE OIL FOIT 185.87 SOILT 352.77 OIIP 71.859 MANIFOLD PRESSURE = 26.243

DYNO COND. TORQUE 268.38 RPM 2366.6 CYL. BACK PRESSURE = 29.380

INDUCTION AIR IAIRT1 50.333 IAIRT2 50.799 TAIRT1 82.553 TAIRT2 46.103

ORIFICE AIR TEMP 93.404 DELTAP 3.6270 OREP 54.438 FLOW 2598.0

CELL TEMP. = 84.340 HEATER TEMP = 91.559 COOLER TEMP = 36.719

NASA-LEWIS PRELIMINARY DATA 04/23/76 CADDEII RFC 04/23/76 13:41:50.922 FAC SEX15 PGM C003 RDG 3676

LEANOUT RE-RUNS TO CL APP 50 DEG HUM = 80 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.250 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR TEMP 49.594 PRESS 29.256 CFM 110.72 DRY FLOW 508.21 VAPOR FLOW 3.2074 PRESS TOTAL 14.503

COMP. FUEL TEMP 75.518 PRESS 5.5583 DENSITY 44.766 TURBO FLOW 35.852 FLOW TRCN 32.691 FPIP 6.1215

COOLING AIR TEMP 51.974 WDEL-HOOD 2.8827 DEL-HOOD 3.7797 FLOW 9737.9 REL-HUM 83.046 DEW-POINT 44.665

REL-HUM 1 83.046 2 48.193 HUMIDITY 44.178 % H2O VAPOR 1.0145 CORRECTED HP 66.333

ENG. COND. F/A DRY 0.064326 F/A WET 0.063923 FOU. RATIO 0.96010 RPM-1 2353.0 RPM-2 2355.8 TORQUE 147.96 RHP 66.290

WET CORRECTION FACTOR = 0.87108 EXHAUST MOLE. WT. = 28.792 EXHAUST DENSITY = 0.074550 EXHAUST FLOW RATE = 7298.6

MEASURED CONC. PART PER MILLION WET HC PPM 321.49 NOX PPM 1635.4 CO DRY 0.16566 PER CENT CO2 DRY 13.153 O2 DRY 1.0352
CORRECTED CONC. TO WET BASIS CO DRY 0.14430 PER CENT CO2 DRY 11.457 O2 DRY 0.90174

EMISSION RATE HC 0.0084237 NOX 1.4204 CO 0.76462
EMISSION MASS/MODE 0.0084237 0.14204 0.076462
EMISSION MASS/RATED HP 5.2648E-05 0.00088773 0.00047789
MODE EMIS./STD. CYCLE % 2.7710 59.182 1.1378

CAL. FUEL AIR RATIO = 0.064195 MEAS. FUEL AIR RATIO = 0.064326 DIFF MEAS. & CAL. F/A PERCENT = -0.20459

CYL TEMP DEG.F CYL-1 330.24 CYL-2 324.55 CYL-3 339.01 CYL-4 341.63

EXT GAS TEMP DEG.F EXT-1 1189.8 EXT-2 -54.691 EXT-3 1107.9 EXT-4 1991.5 SFXT-1 1282.8 SEXT-2 1280.7

ENGINE OIL FOILT 184.55 SOILT 248.31 OILP 71.519 MANIFOLD PRESSURE = 19.747

DYNO COND. TORQUE 140.95 RPM 2294.8 CYL. RACK PRESSURE = 29.414

INDUCTION AIR IAIRT1 49.056 IAIRT2 47.594 TAIRT1 139.66 TAIRT2 46.962

ORIFICE AIR TEMP 91.038 DELTAP 3.7205 DRFD 54.357 FLOW 2636.7

CELL TEMP. = 82.407 HEATER TEMP = 91.262 COOLER TEMP = 36.928

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NASA-LEWIS PRELIMINARY DATA 04/23/76 CADDEII RFC 04/23/76 13:50:47.695 FAC SEX15 PGM C003 RDG 3678

LEANOUT RE-RUNS TO CL APP 50 DEG HUM = 80 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PPESSURE = 29.260 RATED HP. = 160.00 HC RATIO= 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	49.731	29.244	155.20	768.28	4.8900	14.675

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	73.431	5.4191	44.821	65.655	60.720	6.0485

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	53.366	2.8921	3.8890	9755.8	84.306	45.195

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	84.306	51.107	44.554	1.0231	119.78

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	RHP
	0.079033	0.078534	1.1796	2428.9	2433.1	258.73	119.65

WET CORRECTION COR = 0.85637 EXHAUST MOLE. WT. = 27.758 EXHAUST DENSITY = 0.071872 EXHAUST FLOW RATE = 11602.

MEASURED CONC.	PART PER MILLION WET			PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY	
	1286.7	549.49	5.6744	10.995	0.064226	
CORRECTED CONC. TO WET BASIS			4.8594	9.4157	0.055002	

EMISSION RATE	HC	NOX	CO	
	0.53596	5.75868	40.922	
	EMISSION MASS/MODE	0.044663	0.063223	3.4110
	EMISSION MASS/RATED HP	0.00027914	0.00039514	0.021319
MODE EMIS./STD. CYCLE	14.692	26.343	50.799	

CAL. FUEL AIR RATIO = 0.079747 WET. FUEL AIR RATIO = 0.079033 DIFF MEAS. & CAL. F/A PERCENT = 0.90244

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	364.13	397.84	387.53	407.34

FXT GAS TEMP DEG.F	FXT-1	FXT-2	FXT-3	FXT-4	SFXT-1	SFXT-2
	1731.3	-454.00	700.27	1811.0	1336.0	1333.4

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 26.431
	184.98	162.73	71.639	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.364
	284.05	2403.4	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	49.293	49.731	156.20	46.505

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	91.317	3.6761	54.431	2620.4

CELL TEMP. = 83.664 HEATER TEMP = 91.449 COOLER TEMP = 37.701

832

NASA-LFWIS PRELIMINARY DATA 04/23/76 CADDE11 REC 04/23/76 13:54:28.349 FAC SEX15 PGM C003 RDG 3679

LEANOUT RE-RUNS TO CL APP 50 DFG HUM = 80 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.260 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 51.072 PRESS 29.253 CFM 102.45 DRY FLOW 469.76 VAPOR FLOW 2.9845 PRESS TOTAL 14.488

COMP. FUEL TEMP 74.290 PRESS 5.5187 DENSITY 44.746 TURBO FLOW 39.322 FLOW TRON 37.297 FPIP 6.0459

COOLING AIR TEMP 53.166 UNDER-HOOD 2.8871 DEL-HOOD 3.8300 FLOW 9746.3 REL-HUM 79.045 DEW-POINT 44.910

REL-HUM 1 2 HUMIDITY 44.472 % H2O VAPOR 1.0212 CORRECTED HP 65.049

ENG. COND. F/A DRY 0.079395 F/A WET 0.078894 EQU. RATIO 1.1850 PPM-1 2352.4 PPM-2 2356.0 TORQUE 143.85 BHP 64.986

WET CORRECTION F/A = 0.86078 EXHAUST MOLE WT. = 27.729 EXHAUST DENSITY = 0.071797 EXHAUST FLOW RATE = 7103.9

MEASURED CONC. HC PPM 1492.3 NOX PPM 398.74 CO DRY 5.4466 PER CENT CO2 DRY 10.997 O2 DRY 0.11367
CORRECTED CONC. TO WET BASIS CO 4.6983 PER CENT CO2 DRY 9.4659 O2 DRY 0.097846

EMISSION RATE HC 0.38060 NOX 0.333708 CO 24.180
EMISSION MASS/MODE HC 0.038060 NOX 0.333708 CO 2.4180
EMISSION MASS/RATED HP HC 0.00023787 NOX 0.0021068 CO 0.015112
MODE F/IS./STD. CYCLE % HC 12.520 NOX 14.045 CO 35.982

CAL. FUEL AIR RATIO = 0.079253 MEAS. FUEL AIR RATIO = 0.079305 DIFF MEAS. & CAL. F/A PERCENT = -0.17928

CYL TEMP DEG.F CYL-1 328.12 CYL-2 335.54 CYL-3 331.93 CYL-4 339.15

EXT GAS TEMP DEG.F EXT-1 1482.3 EXT-2 -311.85 EXT-3 837.47 EXT-4 1714.5 SEXT-1 1212.0 SEXT-2 1215.1

ENGINE OIL FOILT 184.12 SOILT 260.11 OILP 71.311 MANIFOLD PRESSURE = 18.480

DYNO COND. TORQUE 148.34 RPM 2311.5 CYL. PACK PRESSURE = 29.351

INDUCTION AIR IAIRT1 50.470 IAIRT2 51.072 TAIRT1 195.08 TAIRT2 46.892

ORIFICE AIR TEMP 91.787 DELTAP 3.6547 CPEP 54.385 FLOW 2611.7

CELL TEMP. = 83.524 HEATER TEMP = 90.993 COOLER TEMP = 36.519

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NASA-LFWIS PPFLIMINARY DATA 04/23/76 CADDETT REC 04/23/76 13:59:40.173 FAC SEX15 PGM C003 RDG 3680

LEANOUT RE-RUNS TO CL APP 50 DEG HUM = 80 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.260 RATED HP. = 160.00 HC RATIO= 2.1250

COMP. AIR TEMP 50.124 PRESS 29.257 CFM 199.96 DRY FLOW 939.08 VAPOR FLOW 5.9705 PRESS TOTAL 14.811

COMP. FUEL TEMP 74.231 PRESS 5.3804 DENSITY 44.799 TURBO FLOW 74.157 FLOW TRON 71.641 FPIP 6.0855

COOLING AIR TEMP 54.974 UDFL-HOOD 2.9566 DEL-HOOD 3.7927 FLOW 9877.3 REL-HUM 83.766 DEW-POINT 45.410

REL-HUM 1 83.766 2 -13.507 HUMIDITY 44.505 % H2O VAPOR CORRECTED HP 1.0220 150.19

ENG. COND. F/A DRY 0.076289 F/A WET 0.075807 EQU. RATIO 1.1386 RPM-1 2690.8 RPM-2 2694.7 TORQUE 285.12 BHP 146.08

WET CORRECTION FACTOR = 0.94852 EXHAUST MOLE. WT. = 27.992 EXHAUST DENSITY = 0.072453 EXHAUST FLOW RATE = 14032.

MEASURED CONC. PART PER MILLION WFT PER CENT
CO DRY CO2 DRY O2 DRY
1093.7 547.73 5.3160 11.139 0.037164
CORRECTED CONC. TO WET BASIS 4.5107 9.4514 0.031534

EMISSION RATE HC NOX CO
0.55097 0.91464 45.953
EMISSION MASS/MODE 0.0027549 0.0045732 0.22977
EMISSION MASS/RATED HP 1.7218E-05 2.8592E-05 0.0014360
MODE EMISS./STD. CYCLE * 0.90620 1.7055 3.4191

CAL. FUEL AIR RATIO = 0.078947 MEAS. FUEL AIR RATIO = 0.076289 DIFF MEAS. & CAL. F/A PERCENT = 3.4847

CYL TEMP DEG.F CYL-1 392.67 CYL-2 428.45 CYL-3 401.20 CYL-4 420.61

EXT GAS TEMP DEG.F EXT-1 1182.5 EXT-2 299.64 EXT-3 836.11 EXT-4 1866.8 SFXT-1 1414.7 SFXT-2 1407.8

ENGINE OIL FOILT 184.85 SOILT 92.763 OILP 72.455 MANIFOLD PRESSURE = 27.887

DYNO COND. TORQUE 286.79 RPM 2557.0 CYL. BACK PRESSURE = 29.430

INDUCTION AIR IAIRT1 49.704 IAIRT2 50.124 TAIRT1 158.48 TAIRT2 45.954

ORIFICE AIR TEMP 92.344 DELTAP 3.6931 DPOF 54.375 FLOW 2624.0

CELL TEMP. = 84.762 HEATER TEMP = 90.758 COOLER TEMP = 37.366

834

NASA-LEWIS PRELIMINARY DATA 04/23/76 CADDEII R-C 04/23/76 14:03:44.040 FAC SEX15 PGM C003 RDG 3681

LEANOUT RE-RUNS TO CL APP 50 DEG HUM = 80 ° MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.270 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 49.813 PRESS 29.268 CFM 172.21 DRY FLOW 802.09 VAPOF FLOW 5.1351 PRESS TOTAL 14.698

COMB. FUEL TEMP 74.071 PRESS 5.4113 DENSITY 44.804 TURBO FLOW 64.459 FLOW TRON 61.950 FPIP 6.0300

COOLING AIR TEMP 53.820 WDEL-HOOD 2.9068 DEL-HOOD 3.9117 FLOW 9783.5 PFL-HUM 84.674 DEW-POINT 45.390

RFL-HUM 1 84.674 2 22.732 HUMIDITY 44.816 % H2O VAPOR 1.0201 CORRECTED HP 120.57

ENG. COND. F/A DRY 0.077236 F/A WET 0.076745 EQU. RATIO 1.1528 RPM-1 2438.8 RPM-2 2442.1 TORQUE 259.33 BHP 120.42

WET CORRECTION FACTOR = 0.86175 EXHAUST MOLE WT. = 27.904 EXHAUST DENSITY = 0.072251 EXHAUST FLOW RATE = 12029.

MEASURED CONC. PART PER MILLION WFT HC PPM 1323.6 NOX PPM 1044.2 CO DRY 4.9560 PER CENT CO2 DRY 11.172 CO2 WRY 0.32673
CORRECTED CONC. TO WET BASIS HC 4.2708 NOX 9.5278 CO 0.28156

EMISSION RATE HC 0.44207 NOX 11.4948 CO 37.300
EMISSION MASS/MODE HC 0.036839 NOX 0.12457 CO 3.1083
EMISSION MASS/PATED HP HC 0.00023024 NOX 0.00077856 CO 0.019427
MODE EMIS./STD. CYCLE % HC 12.11% NOX 51.904 CO 46.255

CAL. FUEL AIR RATIO = 0.077149 MEAS. FUEL AIR RATIO = 0.077236 DIFF MEAS. & CAL. F/A PERCENT = 0.11313

CYL TEMP DEG.F CYL-1 355.04 CYL-2 404.62 CYL-3 396.61 CYL-4 384.23

FXT GAS TEMP DEG.F FXT-1 570.90 FXT-2 -196.55 FXT-3 947.01 FXT-4 1848.1 SEXT-1 1374.8 SEXT-2 1371.7

ENGINE OIL EOILT 195.06 SOILT 207.65 OILP 71.499 MANIFOLD PRESSURE = 27.042

DYNO COND. TORQUE 257.14 RPM 2348.5 CYL. RACK PRESSURE = 29.417

INDUCTION AIR IAIRT1 49.357 IAIRT2 49.813 TAIRT1 195.76 TAIRT2 46.233

ORIFICE AIR TEMP 91.352 DELTAP 3.6689 DRFP 54.356 FLOW 2617.7

CELL TEMP. = 84.200 HEATER TEMP = 90.502 COOLER TEMP = 37.119

835

NASA-Lewis PRELIMINARY DATA 04/23/76 CADDEII REC 04/23/76 14:15:29.870 FAC SEX15 PGM C003 RDG 3684

LEANOUT PER-RUNS TO CL APP. 50 DEG HUM = 80 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.270 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DPY FLOW	VAPOR FLOW	PRESS TOTAL
	49.585	29.273	164.04	762.32	4.9022	14.662

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TPOW	FPIP
	74.364	5.4383	44.796	59.654	56.496	6.0927

COOLING AIR	TEMP	INLET-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	53.466	2.9870	3.9410	9934.2	85.559	45.440

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	85.559	44.412	45.015	1.0337	120.20

ENG. COND.	F/A DPY	F/A WET	FUEL RATIO	PPM-1	PPM-2	TORQUE	BHP
	0.074110	0.073637	1.1061	2430.1	2433.3	259.55	120.09

WET CORRECTION FACTOR = 0.86192 EXHAUST MOLE. WT. = 28.164 EXHAUST DENSITY = 0.072923 EXHAUST FLOW RATE = 11295.

MEASURED CONC.	PART PER MILLION WET		CO DRY	PPM CENT	
	HC PPM	NOX PPM		CO2 DRY	CO DRY
	999.70	821.18	3.4072	11.643	0.058386
CORRECTED CONC. TO WET BASIS			2.9367	10.036	0.050324

EMISSION RATE	HC	NOX	CO	
	0.40539	1.1038	24.083	
	EMISSION MASS/MODE	0.033782	0.091984	2.0069
	EMISSION MASS/RATED HP	0.00021114	0.00057490	0.012543
MODE EMIS./STD. CYCLE %	11.113	38.327	29.854	

CAL. FUEL AIR RATIO = 0.074781 MEAS. FUEL AIR RATIO = 0.074110 DIFF MEAS. & CAL. F/A PERCENT = 0.90440

CYL. TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	386.49	410.25	392.03	409.27

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	487.24	94.672	913.25	1887.6	1380.3	1377.4

ENGINE OIL	EQILT	SPILT	OILP	MANIFOLD PRESSURE = 26.182
	184.64	439.92	71.759	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.415
	256.50	2382.1	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	48.983	49.585	85.177	46.106

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	91.204	3.6458	54.443	2609.9

COIL TEMP. = 93.000 HEATER TEMP = 90.357 COOLER TEMP = 37.864

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NASA-LEWIS PRELIMINARY DATA 04/23/76 CADDF11 RFC 04/23/76 14:21:00.226 FAC SEX15 PGM C003 RDG 3685

LEANOUT RE-RUNS TO CL APP 50 DEG HUM = 80 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.270 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 51.291 PRESS 29.268 CFM 103.65 DRY FLOW 475.59 VAPOR FLOW 3.0612 PRESS TOTAL 14.491

COMB. FUEL TEMP 77.484 PRESS 5.5361 DENSITY 44.714 TURBO FLOW 35.773 FLOW TRON 33.804 FPIP 6.0846

COOLING AIR TEMP 53.475 UDEL-HOOD 2.9145 DEL-HOOD 3.7592 FLOW 0798.2 REL-HUM 79.443 DEW-POINT 45.155

REL-HUM 1 79.443 2 47.813 HUMIDITY 45.056 H2O VAPOR 1.0346 CORRECTED HP 65.910

ENG. COND. F/A DRY 0.071079 F/A WET 3.070624 EQU. RATIO 1.0609 RPM-1 2352.4 RPM-2 2355.5 TORQUE 146.72 BHP 65.717

WET CORRECTION FACTOR = 0.85593 EXHAUST MOLE WT. = 28.423 EXHAUST DENSITY = 0.073593 EXHAUST FLOW RATE = 6963.4

MEASURED CONC. PART PER MILLION WGT. PER CENT
HC PPM 1056.8 NOX PPM 750.81 CO DRY 2.8427 CO2 DRY 11.908 O2 DRY 0.15884
CORRECTED CONC. TO WET BASIS 2.4332 10.192 0.13595

EMISSION RATE HC 0.26419 NOX 0.062215 CO 12.301
EMISSION MASS/MODE 0.026418 0.062215 1.2301
EMISSION MASS/RATED HP 0.00016512 0.00038885 0.0076880
MODE EMIS./STD. CYCLE % 8.6903 25.923 18.305

CAL. FUEL AIR RATIO = 0.073198 MEAS. FUEL AIR RATIO = 0.071079 DIFF MEAS. & CAL. F/A PERCENT = 2.9824

CYL TEMP DEG.F CYL-1 325.36 CYL-2 327.65 CYL-3 328.77 CYL-4 333.51

EXT GAS TEMP DEG.F EXT-1 752.22 EXT-2 126.81 EXT-3 1091.4 EXT-4 1813.7 SEXT-1 1243.5 SEXT-2 1245.8

ENGINE OIL EOILT 182.73 SOILT 266.73 OILP 71.755 MANIFOLD PRESSURE = 18.639

DYNO COND. TORQUE 149.22 RPM 2276.7 CYL. BACK PRESSURE = 29.312

INDUCTION AIR TAIRT1 50.689 TAIRT2 51.291 TAIRT1 99.352 TAIRT2 46.572

ORIFICE AIR TEMP 91.952 DELTAP 3.6886 DRFP 54.363 FLOW 2623.3

CFL TEMP. = 84.015 HEATER TEMP = 90.295 COOLER TEMP = 36.000

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NASA-LEWIS PRELIMINARY DATA 04/23/76 CADDEII PFC 04/23/76 14:25:56.222 FAC SEX15 PGM C003 RDG 3686

LEANOUT RE-RUNS TO CL APP 50 DEG HUM = 90 ° MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.270 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	49.886	29.278	204.78	964.69	6.1648	14.843

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRAM.	FPIP
	75.359	5.4146	44.770	72.381	70.384	6.0381

COOLING AIR	TEMP	WDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	54.865	2.9904	3.8264	9940.4	85.121	45.600

PFL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	85.121	12.359	44.733	1.0272	153.39

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	RHP
	0.072963	0.072497	1.0890	2705.1	2708.7	289.96	149.35

WET CORRECTION FACTOR = 0.86039 EXHAUST VOL. WT. = 28.261 EXHAUST DENSITY = 0.073176 EXHAUST FLOW RATE = 14229.

MEASURED CONC.	PART PER MILLION WET		CO DRY	PER CENT	
	HC PPM	NOX PPM		CO2 DRY	O2 DRY
	932.70	951.59	3.1712	11.827	0.048505
CORRECTED CONC. TO WET BASIS			2.6582	10.176	0.041733

EMISSION RATE	HC	NOX	CO
	0.42537	1.5113	27.564
EMISSION MASS/MODE	0.0021269	0.0080566	0.13782
EMISSION MASS/RATED HP	1.3292E-05	5.0354E-05	0.0086138
MODE EMISS./STD. CYCLE %	0.69962	3.3569	2.0509

CAL. FUEL AIR RATIO = 0.074012 MFAS. FUEL AIR RATIO = 0.072960 DIFF MEAS. & CAL. F/A PERCENT = 1.4418

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	421.30	433.74	415.27	420.55

EXT GAS TEMP DEG. F	EXT-1	EXT-2	EXT-3	EXT-4	SFXT-1	SFXT-2
	761.62	550.07	938.35	1898.0	1462.5	1454.0

ENGINE OIL	OILT	SOILT	OILP	MANIFOLD PRESSURE = 28.135
	195.04	202.17	73.095	

DYNO COND.	TORQUE	RPM	CYL. RACK PRESSURE = 29.414
	295.79	2644.2	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	49.540	49.896	195.09	45.464

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	97.544	3.6821	54.404	2619.6

CELL TEMP. = 85.104 HEATED TEMP = 90.302 COOLER TEMP = 36.410

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NASA-LEWIS PRELIMINARY DATA 04/23/76 CADDEII REC 04/23/76 14:31:30.024 FAC SEX15 PGM C003 RDG 3687

LEANOUT RE-RUNS TO CL APP 50 DEG HUM = 80 ° MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.270 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	49.229	29.276	169.47	787.99	5.1398	14.692

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	73.414	5.4329	44.821	60.112	57.444	6.0630

COOLING AIR	TEMP	INFL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	52.857	2.8600	3.8497	9694.7	88.113	45.365

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	88.113	63.364	45.559	1.0485	120.07

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.072899	0.072427	1.0381	2434.7	2438.0	258.87	120.00

WET CORRECTION F. = 0.85844 EXHAUST MOL. WT. = 28.267 EXHAUST DENSITY = 0.073189 EXHAUST FLOW RATE = 11621.

MEASURED CONC.	PART PER MILLION WET	CO DRY	PEP CENT		
	HC PPM	NOX PPM	CO2 PPM		
	938.28	1637.6	3.5347	11.741	0.27583
CORRECTED CONC. TO WET BASIS				CO DRY	CO2 DRY
			3.0344	10.079	0.23678

EMISSION RATE	HC	NOX	CO
	0.34974	2.2647	25.602
EMISSION MASS/MODE		0.18972	2.1335
EMISSION MASS/RATED HP		0.0011795	0.013334
MODE EMIS./STD. CYCLE %	9.5872	78.635	31.748

CAL. FUEL AIR RATIO = 0.074116 MEAS. FUEL AIR RATIO = 0.072899 DIFF MEAS. & CAL. F/A PERCENT = 1.6685

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	375.34	401.17	394.95	390.38

EXT GAS TEMP DEG. F	FXT-1	FXT-2	FXT-3	FXT-4	SFXT-1	SEXT-2
	697.59	-199.60	973.19	1955.2	1397.8	1394.2

ENGINE OIL	FILT	SILT	OILP	MANIFOLD PRESSURE = 26.814
	185.83	342.16	71.582	

DYMO COND.	TIPONE	RPM	CYL. BACK PRESSURE = 29.375
	252.90	2371.6	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	48.517	49.229	172.29	46.779

ORIFICE AIR	TEMP	DEL IAP	ORFP	FLOW
	92.149	3.6681	54.300	2620.3

CELL TEMP. = 82.775 HEATED TEMP = 97.395 COOLER TEMP = 39.989

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NASA-LEWIS PRELIMINARY DATA 04/23/76 CADDET1 RFC 04/23/76 14:34:38.195 FAC SEX15 PGM C003 RDG 3688

LFANOUT RE-RUNS TO CL APP 50 DEG HUM = 80 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.270 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 50.169 PRESS 29.268 CFM 104.92 DRY FLOW 481.18 VAPOR FLOW 3.1185 PRESS TOTAL 14.494

COMP. FUEL TEMP 75.784 PRESS 5.5467 DENSITY 44.759 TURBO FLOW 35.591 FLOW TRON 33.471 FPIP 6.1095

COOLING AIR TEMP 52.511 HOEL-HOOD 2.9237 DEL-HOOD 3.7714 FLOW 9815.4 RFL-HUM 83.402 DEW-POINT 45.340

RFL-HUM 1 83.402 2 47.619 HUMIDITY 45.367 % H2O VAPOR CORRECTED HP 1.0418 66.275

ENG. COEFF. F/A DRY 0.069561 F/A WET 0.059113 EQU. RATIO 1.0382 PPM-1 2352.6 RPM-2 2355.5 TORQUE 147.72 9HP 66.171

WET CORRECTION FACTOR = 0.86096 EXHAUST MOL. WT. = 29.484 EXHAUST DENSITY = 0.073752 EXHAUST FLOW RATE = 7020.4

MEASURED CONC. HC PPM 816.99 NOX PPM 1218.1 CO DRY 1.9418 PER CENT CO2 DRY 12.456 O2 DRY 0.18174
CORRECTED CONC. TO WET BASIS CO DRY 1.5957 PER CENT CO2 DRY 10.724 O2 DRY 0.15647

EMISSION RATE HC 0.20591 NOX 1.0177 CO 8.0821
EMISSION MASS/MODE 0.020591 0.10176 0.80921
EMISSION MASS/RATED HP 0.00012869 0.00063603 0.0050513
MODE EMIS./STD. CYCLE % 6.7732 42.402 17.027

CAL. FUEL AIR RATIO = 0.070753 MEAS. FUEL AIR RATIO = 0.069561 DIFF MEAS. & CAL. F/A PERCENT = 1.7143

CYL TEMP DEG.F CYL-1 327.08 CYL-2 335.98 CYL-3 334.21 CYL-4 338.58

EXT GAS TEMP DEG.F EXT-1 1339.2 EXT-2 27.507 EXT-3 1122.9 EXT-4 1917.8 SEXT-1 1273.9 SEXT-2 1276.4

ENGINE OIL OILT 184.26 S OILT 356.55 OILO 71.527 MANIFOLD PRESSURE = 18.925

DYNO COND. TORQUE 148.90 RPM 2321.0 CYL. PACK PRESSURE = 29.315

INDUCTION AIR IART1 47.521 IART2 50.169 TART1 133.94 TART2 46.929

ORIFICE AIR TEMP 97.655 DELTAP 3.6472 DRFP 54.449 FLOW 2611.7

CELL TEMP. = 83.409 HEATED TEMP = 90.855 COOLER TEMP = 33.464

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MASA-LEWIS PRELIMINARY DATA 04/23/76 CADDEIT REC 04/23/76 14:45:30.786 FAC SFX15 PGM C003 R0G 3689

LEANOUT RE-RUNS TO CL APP 50 DEG HUM = 80 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.270 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 49.558 PRESS 29.258 CFM 205.43 DRY FLOW 068.70 VAPOR FLOW 6.0432 PRESS TOTAL 14.855

COMB. FUEL TEMP 74.817 PRESS 5.4104 DENSITY 44.784 TURBO FLOW 73.252 FLOW TRON 70.084 FPIP 6.0507

COOLING AIR TEMP 54.211 DREF-HOOD 2.8744 DFL-HOOD 3.8145 FLOW 9722.1 REL-HUM 84.210 DEW-POINT 44.995

REL-HUM 1 2 HUMIDITY 43.570 H2O VAPOR CORRECTED HP 1.0029 154.76

ENG. COND. F/A DRY 0.072349 F/A WET 0.071900 EQU. RATIO 1.0798 RPM-1 2710.0 RPM-2 2713.8 TORQUE 291.97 BHP 150.65

WET CORRECTION FACTOR = 0.85394 EXHAUST MOLE WT. = 28.314 EXHAUST DENSITY = 0.073311 EXHAUST FLOW RATE = 14252.

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 925.09 CO2 DRY 11.874
NOX PPM 992.70 CO DRY 2.9719
CORRECTED CONC. TO WET BASIS 3.4901 10.139 0.15742 0.13442

EMISSION RATE HC 0.42215 CO 30.749
EMISSION MASS/MODE NOX 0.0021108 CO2 0.15375
EMISSION MASS/RATED HP 1.3192E-05 5.2615E-05 0.00096092
MODE EMIS./STD. CYCLE 0.69433 3.5075 2.2879

CAL. FUEL AIR RATIO = 0.074344 MEAS. FUEL AIR RATIO = 0.072349 DIFF MEAS. & CAL. F/A PERCENT = 2.7576

CYL TEMP DEG.F CYL-1 405.53 CYL-2 422.03 CYL-3 409.22 CYL-4 416.53

EXT GAS TEMP DEG.F EXT-1 1931.0 EXT-2 502.77 EXT-3 982.52 EXT-4 1973.9 SEXT-1 1452.3 SEXT-2 1443.7

ENGINE OIL FOILT 184.56 STILT 106.71 OILP 73.255 MANIFOLD PRESSURE = 28.219

DYNO COND. TORQUE 290.94 RPM 2652.7 CYL. BACK PRESSURE = 29.439

INDUCTORY AIR TAIRT1 49.229 TAIRT2 49.558 TAIRT1 151.18 TAIRT2 45.515

ORIFICE AIR TEMP 92.152 DELTAP 3.6670 DREF 54.330 FLOW 2615.2

CELL TEMP. = 84.797 HEATER TEMP = 90.406 COOLER TEMP = 35.864

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NASA-LEWIS PPFLIMINARY DATA 04/23/76 CADDEII REC 04/23/76 14:48:47.702 FAC SEX15 PGM C003 RDG 3690

LEANOUT RE-RUNS TO CL APP 50 DEG HUM = 80 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.970 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	51.145	29.310	165.52	769.27	4.8848	14.663

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	75.793	5.4473	44.758	57.527	54.329	6.0855

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	RFL-HUM	DEW-POINT
	54.819	2.9441	3.7750	9853.9	79.752	45.115

PFL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	79.752	72.281	44.452	1.0208	120.23

ENG. COND.	F/A DRY	F/A WET	F/O. RATIO	PPM-1	PPM-2	TORQUE	BHP
	0.070629	0.070183	1.0547	2431.1	2433.5	259.11	119.94

WET CORRECTION FACTOR = 0.85272 EXHAUST MOLE. WT. = 28.462 EXHAUST DENSITY = 0.073694 EXHAUST FLOW RATE = 11241.

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
CORRECTED CONC. TO WET BASIS	878.29	1460.5	2.9109	12.069	0.14447
			2.4827	10.792	0.12320

EMISSION RATE	HC	NOX	CO	
	0.35445	1.9538	20.256	
	EMISSION MASS/MODE	0.029538	0.16282	1.6881
	EMISSION MASS/RATED HP	0.00018461	0.0010176	0.010551
MODE EMIS./STD. CYCLE %	9.7163	67.941	75.121	

CAL. FUEL AIR RATIO = 0.073206 MEAS. FUEL AIR RATIO = 0.070629 DIFF MEAS. & CAL. F/A PERCENT = 3.6490

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	389.30	408.11	399.05	409.73

EXT GAS TEMP DEG.F	FXT-1	FXT-2	FXT-3	FXT-4	SFXT-1	SFXT-2
	1029.7	102.43	1050.8	1830.4	1399.0	1394.9

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 26.638
	195.97	214.30	71.447	

DYNO COND.	TORQUE	PPH	CYL. BACK PRESSURE = 29.466
	249.30	2349.6	

INDUCTION AIR	IAIPT1	IAIPT2	TAIPT1	TAIPT2
	50.534	51.145	126.44	46.183

SPECIFIC AIR	TEMP	DELTA P	DPF2	FLOW
	92.766	3.6285	54.249	2600.3

CELL TEMP. = 84.77 HEATED TEMP = 90.475 COOLER TEMP = 37.446

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MASA-LEWIS PRELIMINARY DATA 04/23/76 CADDEII REC 04/23/76 14:53:52.365 FAC SEX15 PGM C003 RDG 3691

LEANOUT PE-RUNS TO CL APP 5C DEG HUM = 80 % MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.270 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	49.530	29.270	119.22	547.76	3.4825	14.524

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	75.296	5.5599	44.771	34.530	33.411	6.0693

COOLING AIR	TEMP	INFL-HOOD	DFL-HOOD	FLOW	REL-HUM	DEW-POINT
	51.919	2.8359	3.6889	9648.7	83.976	44.895

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	83.976	39.356	44.504	1.0220	66.288

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.060996	0.060611	0.91039	2355.8	2359.4	147.67	66.240

WET CORRECTION FACTOR = 0.87371 EXHAUST MOLE WT. = 28.839 EXHAUST DENSITY = 0.074670 EXHAUST FLOW RATE = 7829.8

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	147.13	1432.8	0.15298	12.400	1.8199
CORRECTED CONC. TO WET BASIS					
			0.13366	10.834	1.5900

EMISSION RATE	HC	NOX	CO	
	EMISSION MASS/MODE	0.041358	1.3350	0.75981
		0.0041358	0.13350	0.075981
EMISSION MASS/RATED HP	2.5849E-05	0.00083441	0.00047488	
MODE EMIS./STD. CYCLE %	1.3605	55.627	1.1307	

CAL. FUEL AIR RATIO = 0.061514 MEAS. FUEL AIR RATIO = 0.060996 DIFF MEAS. & CAL. F/A PERCENT = 0.84935

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	317.05	313.18	340.35	346.70

FXT GAS TEMP DEG.F	FXT-1	FXT-2	FXT-3	FXT-4	SFXT-1	SEXT-2
	1652.2	337.70	1211.1	1942.1	1316.0	1313.9

ENGINE OIL	EQILT	SOILT	OILT	MANIFOLD PRESSURE = 20.673
	193.51	226.17	71.487	

DYNO COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.407
	137.74	2306.1	

INDUCTION AIR	TAIRT1	TAIRT2	TAIRT1	TAIRT2
	49.028	49.530	117.15	47.133

CRIFICE AIR	TEMP	DELTA P	DEFP	FLOW
	89.844	3.6777	54.685	2624.4

CELL TEMP. = 82.354 HEATED TEMP = 95.872 COOLER TEMP = 38.909

NASA-LEWIS PRELIMINARY DATA 04/23/76 CADDEII REC 04/23/76 14:57:35.770 FAC SEX15 PGM C003 RDG 3692

LEANOUT RE-RUNS TO CL APP 50 DEG HUM = 80 % MODE = 3.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BARMETRIC PRESSURE = 29.270 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	49.046	29.270	203.49	956.84	6.0891	14.845

COMP. FUEL	TEMP	PRESS	DENSITY	THROU FLOW	FLOW TRON	FPIP
	73.369	5.4284	44.922	69.077	66.811	6.0222

COOLING AIR	TEMP	INLET-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	53.566	2.9536	3.7967	9871.6	87.490	45.495

REL-HUM	1	2	HUMIDITY	H2O VAPOR	CORRECTED HP
	87.480	15.926	44.546	1.0229	150.58

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPV-1	RPV-2	TORQUE	BHP
	0.069824	0.069382	1.0421	2697.3	2701.2	285.34	146.54

WET CORRECTION FACTOR = 0.85995 EXHAUST WTL. WT. = 28.458 EXHAUST DENSITY = 0.073683 EXHAUST FLOW RATE = 13975.

MEASURED CONC.	PART PER MILLION WET	PER CENT
	HC PPM	CO DRY
	NOX PPM	CO2 DRY
	635.38	12.308
	1090.4	0.23302
CORRECTED CONC. TO WET BASIS		1.8938
		10.585
		0.20039

EMISSION RATE	HC	NOX	CO
	3.31878	3.3101	19.714
EMISSION MASS/MODE	0.0015939	0.016551	0.096071
EMISSION MASS/WATER HP	0.9618E-06	0.00010344	0.00060044
MODE EMIS./STD. CYCLE %	0.52431	6.8961	1.4296

CAL. FUEL AIR RATIO = 0.071252 MEAS. FUEL AIR RATIO = 0.069824 DIFF MEAS. & CAL. F/A PERCENT = 2.0452

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	410.10	422.34	415.76	425.18

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	1443.2	593.78	1202.5	2074.6	1481.5	1472.8

ENGINE OIL	FOILT	SOILT	DILP	MANIFOLD PRESSURE = 27.994
	184.78	90.039	72.911	

SYNC COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.440
	279.76	2640.6	

INDUCTION AIR	TAIPT1	TAIPT2	TAIPT1	TAIPT2
	48.507	48.046	83.129	46.489

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	90.620	3.5523	54.553	2613.6

CELL TEMP. = 22.530 HEATER TEMP = 95.989 COOLER TEMP = 30.391

644

NASA-LEWIS PRELIMINARY DATA 04/23/76 CADDEII REC 04/23/76 15:00:59.314 FAC SEX15 PGM C003 RDG 3693

LEANOUT RE-RUNS TO CL APP 50 DEG HUM = 80 % MODE = 4.00DC NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.270 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR TEMP 50.270 PRESS 29.290 CFM 169.05 DRY FLOW 786.38 VAPOR FLOW 5.0204 PRESS TOTAL 14.698

COMB. FUEL TEMP 74.533 PRESS 5.4503 DENSITY 44.792 TURBO FLOW 56.202 FLOW TRON 53.120 FPIP 6.0609

COOLING AIR TEMP 53.839 UNDEL-HOOD 2.9165 DEL-HOOD 3.7598 FLOW 9801.8 REL-HUM 83.013 DEW-POINT 45.315

REL-HUM 1 83.013 2 57.360 HUMIDITY 44.589 * H2O VAPOR CORRECTED HP 1.0262 120.46

ENG. COND. F/A DRY 0.067550 F/A WET 0.067121 EQU. RATIO 1.0082 RPM-1 2433.3 RPM-2 2436.1 TORQUE 259.54 BHP 120.25

WET CORRECTION FACTOR = 0.96288 EXHAUST MOLE. WT. = 28.648 EXHAUST DENSITY = 0.074177 EXHAUST FLOW RATE = 11385.

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 642.44 NOX PPM 2237.2 CO DRY 1.1205 CO2 DRY 12.740 O2 DRY 0.25643
CORRECTED CONC. TO WET BASIS 0.96688 10.993 0.22125

EMISSION RATE HC 0.26259 NOX 3.0311 CO 7.9920
EMISSION MASS/MODE 0.021882 0.25259 0.65600
EMISSION MASS/RATED HP 0.00013676 0.0015787 0.0041625
MODE EMIS./STD. CYCLE % 7.1981 105.25 9.9107

CAL. FUEL AIR RATIO = 0.069856 MEAS. FUEL AIR RATIO = 0.067550 DIFF MEAS. & CAL. F/A PERCENT = 1.9341

CYL TEMP DEG. F CYL-1 387.85 CYL-2 405.08 CYL-3 392.52 CYL-4 388.72

EXT GAS TEMP DEG. F EXT-1 1472.7 EXT-2 330.64 EXT-3 1152.9 EXT-4 2078.9 SEXT-1 1430.2 SEXT-2 1425.1

ENGINE OIL FOILT 135.53 SOILT 120.10 OILP 71.339 MANIFOLD PRESSURE = 26.850

DYNO COND. TORQUE 246.72 RPM 2350.1 CYL. RACK PRESSURE = 29.382

INDUCTION AIR IAIRT1 49.823 IAIRT2 53.273 TAIRT1 89.549 TAIRT2 46.869

ORIFICE AIR TEMP 49.698 DELTAP 3.6933 DRFD 54.522 FLOW 2627.9

CELL TEMP. = 83.700 HEATER TEMP = 91.083 COOL. FR TEMP = 39.236

ORIGINAL PAGE IS
OF POOR QUALITY

845

MASA-LEWIS PRELIMINARY DATA 04/23/76 CADDFII REC 04/23/76 15:04:41.292 FAC SEX15 PGM C003 RDG 3694

LEANOUT PE-RUNS TO CL APP 50 DEG HUM = 80 ° MODE = 5.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.270 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	51.373	29.270	122.32	562.53	3.5761	14.539

COMP. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	76.988	5.5544	44.727	37.032	34.077	6.0372

COOLING AIR	TEMP	DEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	53.666	2.8921	3.8287	9755.8	78.497	44.920

PFL-HUM	1	2	HUMIDITY	* H2O VAPOR	CORRECTED HP
	78.497	29.783	44.500	1.0219	66.231

ENG. COND.	F/A DRY	F/A WET	FQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.060579	0.060196	0.90417	2353.9	2357.5	147.33	66.031

WET CORRECTION FACTOR = 0.87683 EXHAUST WLF. WT. = 28.840 EXHAUST DENSITY = 0.074674 EXHAUST FLOW RATE = 8037.3

MEASURED CONC.	PART PER MILLION WET		PER CENT		
	HC PPM	NOX PPM	CO DRY	CO2 DRY	O2 DRY
	99.030	1359.8	0.17940	12.276	2.1096
CORRECTED CONC. TO WET BASIS			0.15730	10.764	1.8498

EMISSION RATE	HC	NOX	CO
	0.028574	1.3006	0.091797
	0.0028574	0.13006	0.091797
	1.7859E-05	0.00081288	0.00057367
MODE EMIS./STD. CYCLE %	0.93994	54.192	1.3650

CAL. FUEL AIR RATIO = 0.060654 MEAS. FUEL AIR RATIO = 0.060579 DIFF MEAS. & CAL. F/A PERCENT = 0.12337

CYL TEMP DEG.F	CYL-1	CYL-2	CYL-3	CYL-4
	316.30	316.37	341.09	349.53

EXT GAS TEMP DEG.F	EXT-1	EXT-2	EXT-3	EXT-4	SEXT-1	SEXT-2
	801.80	389.15	1193.4	1982.8	1333.6	1332.2

ENGINE OIL	FOILT	SOILT	OILP	MANIFOLD PRESSURE = 21.218
	183.23	195.53	71.535	

DYNO COND.	TORQUE	RPM	CYL. PACK PRESSURE = 29.355
	143.98	2296.5	

INDUCTION AIR	TAIPT1	TAIPT2	TAIRT1	TAIRT2
	50.853	51.373	99.111	47.199

ORIFICE AIR	TEMP	DELTA P	ORIF	FLOW
	91.230	3.6704	54.483	2618.5

CELL TEMP. = 82.629 HEATER TEMP = 90.516 COOLER TEMP = 38.282

846

MASA-LEWIS PRELIMINARY DATA 04/23/76 CADDEII REC 04/23/76 15:08:22.366 FAC SEX15 PGM C003 RDG 3695

LEANOUT RE-RUNS TO CL APP 50 DEG HUM = 80 % MODE = 3.0000 NR. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.270 RATED HP. = 160.00 HC RATIO = 2.1250

COMP. AIR TEMP 50.215 PRESS 29.290 CFM 207.75 DRY FLOW 953.62 VAPOR FLOW 6.0383 PRESS TOTAL 14.835

COMP. FUEL TEMP 75.154 PRESS 5.4260 DENSITY 44.775 TURBO FLOW 71.055 FLOW FROM 67.873 FIP 6.0945

COOLING AIR TEMP 54.638 INLET-HOOD 2.9815 DEL-HOOD 3.8240 FLOW 9923.9 REL-HUM 83.276 DEW-POINT 45.345

REL-HUM 1 2 HUMIDITY % H2O VAPOR CORRECTED HP
83.276 12.681 44.324 1.0178 148.67

ENG. COND. F/A DRY 0.071174 F/A WET 0.070726 EQU. RATIO 1.0523 RPM-1 2694.6 RPM-2 2698.5 TORQUE 282.09 BHP 144.73

WET CORRECTION FACTOR = 0.95697 EXHAUST MOLE. WT. = 29.414 EXHAUST DENSITY = 0.073572 EXHAUST FLOW RATE = 13966.

MEASURED CONC. PART PER MILLION WET PER CENT
HC PPM 635.30 NOX PPM 1996.6 CO DRY 2.1869 CO2 DRY 12.300 O2 DRY 0.26639
CORRECTED CONC. TO WET BASIS CO DRY 1.8960 CO2 DRY 10.664 O2 DRY 0.23095

EMISSION RATE HC 0.31853 NOX 3.3183 CO 19.225
EMISSION MASS/MODE HC 0.0015927 NOX 0.016592 CO 0.096123
EMISSION MASS/RATED HP HC 9.9542E-06 NOX 0.00010370 CO 0.00060077
MODE EMIS./STD. CYCLE % HC 0.52390 NOX 6.9132 CO 1.4304

CAL. FUEL AIR RATIO = 0.071108 MEAS. FUEL AIR RATIO = 0.071174 DIFF MEAS. & CAL. F/A PERCENT = -0.093124

CYL TEMP DEG.F CYL-1 400.44 CYL-2 417.94 CYL-3 414.09 CYL-4 409.89

EXT GAS TEMP DEG.F EXT-1 1291.7 EXT-2 620.82 EXT-3 1299.4 EXT-4 2048.5 SEXT-1 1479.1 SEXT-2 1470.5

ENGINE OIL OIL1 183.13 OIL2 249.36 OILP 72.787 MANIFOLD PRESSURE = 27.825

DYMO COND. TORQUE 282.44 RPM 2652.4 CYL. BACK PRESSURE = 29.444

INDUCTION AIR IAIRT1 49.740 IAIRT2 50.215 TAIRT1 77.581 TAIRT2 46.027

ORIFICE AIR TEMP 91.961 DELTAP 3.6782 DREP 54.446 FLOW 2619.6

CELL TEMP. = 84.481 HEATER TEMP = 90.440 COOLER TEMP = 37.091

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NASA-LEWIS PRELIMINARY DATA 04/23/76 CADDEII REC 04/23/76 15:12:52.956 FAC SEX15 PGM C003 RDG 3696

LFANOUT RE-RUNS TO CL APP 50 DEG HUM = 80 % MODE = 4.0000 NO. SCANS = 5

ENGINE TIMING = 25.000 DEG. BAROMETRIC PRESSURE = 29.270 RATED HP. = 160.00 HC RATIO = 2.1250

COMB. AIR	TEMP	PRESS	CFM	DRY FLOW	VAPOR FLOW	PRESS TOTAL
	49.457	29.265	168.87	785.99	4.9965	14.682

COMB. FUEL	TEMP	PRESS	DENSITY	TURBO FLOW	FLOW TRON	FPIP
	74.746	5.4518	44.786	54.257	52.847	6.0756

COOLING AIR	TEMP	UDEL-HOOD	DEL-HOOD	FLOW	REL-HUM	DEW-POINT
	53.102	2.9882	3.8768	9936.2	85.107	45.175

REL-HUM	1	2	HUMIDITY	% H2O VAPOR	CORRECTED HP
	85.107	36.546	44.499	1.0218	120.17

ENG. COND.	F/A DRY	F/A WET	EQU. RATIO	RPM-1	RPM-2	TORQUE	BHP
	0.067236	0.066812	1.0035	2431.3	2434.0	259.38	120.08

WET CORRECTION FACTOR = 0.85265 EXHAUST MOLE. WT. = 28.658 EXHAUST DENSITY = 0.074228 EXHAUST FLOW RATE = 11368.

MEASURED CONC.	PART PER MILLION WET		PER CENT	
	HC PPM	NOX PPM	CO DRY	O2 DRY
	639.60	2193.7	1.1378	0.31341
CORRECTED CONC. TO WET BASIS			0.98152	10.919
				0.27036

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EMISSION RATE	HC	NOX	CO
	0.26103	2.9677	8.1007
EMISSION MASS/MODE	0.021753	0.24731	0.67506
	0.00013595	0.0015457	0.0042191
MODE EMIS./STD. CYCLE %	7.1555	103.04	10.046

CAL. FUEL AIR RATIO = 0.068713 MEAS. FUEL AIR RATIO = 0.067236 DIFF MEAS. & CAL. F/A PERCENT = 2.1967

CYL TEMP DEG. F	CYL-1	CYL-2	CYL-3	CYL-4
	386.20	401.20	396.03	395.42

FXT GAS TEMP DEG. F	FXT-1	FXT-2	FXT-3	FXT-4	SEXT-1	SEXT-2
	1144.0	420.78	1263.9	1972.8	1431.7	1427.0

ENGINE OIL	EOILT	SOILT	OILP	MANIFOLD PRESSURE = 26.860
	185.56	179.93	71.559	

DYND COND.	TORQUE	RPM	CYL. BACK PRESSURE = 29.498
	255.15	2347.9	

INDUCTION AIR	IAIRT1	IAIRT2	TAIRT1	TAIRT2
	49.001	49.457	59.532	46.049

ORIFICE AIR	TEMP	DELTA P	ORFP	FLOW
	91.256	3.6859	54.485	2624.0

CELL TEMP. = 93.214 HEATER TEMP = 90.468 COOLER TEMP = 36.710