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David B. Signor, Ames Research Center, Moffett Field, California

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Ames Research Center

SUMMARY

A hover test of a full-scale XV-15 rotor was conducted at the Outdoor Aerodynamic Research Facility at Ames Research Center. The primary objective of the test was to obtain accurate measurements of the hover performance of the original, metal-blade XV-15 rotor system. Data were acquired for rotor tip Mach numbers ranging from 0.60 to 0.73. This report presents data on rotor performance, rotor wake downwash velocities, and rotor loads.

NOMENCLATURE

A	rotor disc area, πR^2, m^2
a	speed of sound, m/s
C_P	rotor power coefficient, $C_P = C_Q$
$C_{P,corrected}$	rotor power coefficient corrected for wind, $C_{P,corrected} = C_{Q,corrected}$
C_{PM}	rotor pitching moment coefficient, pitching moment$/\rho A R V_{tip}^2$
C_Q	rotor torque coefficient, torque$/\rho A R V_{tip}^2$
$C_{Q,corrected}$	rotor torque coefficient corrected for wind, See text for equations
C_T	rotor thrust coefficient, thrust$/\rho A V_{tip}^2$
C_Y	rotor side force coefficient, side force$/\rho A V_{tip}^2$
C_{YM}	rotor yawing moment coefficient, yawing moment$/\rho A R V_{tip}^2$
C_Z	rotor normal force coefficient, normal force$/\rho A V_{tip}^2$
FM	rotor figure of merit, $C_T^{3/2}/C_Q\sqrt{2}$
$FM_{corrected}$	rotor figure of merit corrected for wind, $C_T^{3/2}/C_{Q,corrected}\sqrt{2}$
M_{tip}	rotor tip Mach number, V_{tip}/a
q	dynamic pressure, $\rho V^2/2$, N/m^2
R	rotor radius, m

r	blade radial station, m
V_h	ideal induced hover velocity, $V_{tip}\sqrt{C_T/2}$, m/s
V_i	ideal induced velocity, m/s
V_{tip}	rotor tip speed, ΩR, m/s
V_w	wind speed, m/s
λ_h	ideal induced hover velocity ratio, V_h/V_{tip}
λ_i	ideal induced velocity ratio, V_i/V_{tip}
μ_y	lateral wind velocity ratio, $-V_w \sin\psi_w/V_{tip}$
μ_x	axial wind velocity ratio, $V_w \cos\psi_w/V_{tip}$
ρ	air density, kg/m^3
σ	rotor solidity ratio
ψ_w	wind direction relative to rotor axis
Ω	rotor rotation speed, radians/sec

INTRODUCTION

Hovering flight is a critical operating condition for VTOL aircraft, since the hover performance usually determines the aircraft's maximum payload. The payload is typically 30% of the aircraft's gross weight, and small changes in the hover performance can have a large effect on the size of the payload. Hover performance is particularly important for tilt-rotors, since their basic rotor design (disc loading, solidity ratio, etc.) is a compromise between the requirements of hovering and cruise flight. Analytical predictions of tilt-rotor hover performance have not been sufficiently validated to provide a high level of confidence in the predicted performance.

An experimental investigation was recently conducted at Ames Research Center to accurately measure the hover performance of three tilting prop-rotors (ref. 1). The rotors tested in this investigation were the original metal blades for the XV-15 Tilt Rotor Research Aircraft; a set of composite, Advanced Technology Blades (ATB) for the XV-15; and a 0.658-scale model of the proposed V-22A Osprey (JVX) rotor. All rotors had three blades, and had a diameter of 7.62 m.

This report presents the data obtained with the XV-15 metal blades. Data is presented on rotor aerodynamic forces and moments, rotor wake downwash velocities, and rotor loads.

The authors gratefully acknowledge the efforts of the many people at Ames Research Center, Boeing Vertol Co., and Bell Helicopter, Textron, who made this test possible. Thanks are also due to Rob Faye, for his assistance in the preparation of this report.

DESCRIPTION OF TEST APPARATUS

Outdoor Aerodynamic Research Facility

The test was conducted at the Ames Outdoor Aerodynamic Research Facility, which consists of a 30 m square concrete pad, a below-ground-level frame for attaching model support struts, and an underground control room with a complete data acquisition system. The facility is sufficiently remote from other buildings so that there is no aerodynamic interference (except with the ground), and accurate near- and far-field acoustic data can be obtained. An aerial photograph of the Outdoor Aerodynamic Research Facility with the Prop Test Rig installed is shown in figure 1.

Prop Test Rig

The Ames Prop Test Rig was used to power the rotors, with a maximum power output of 1864 kW at 625 rotor RPM. A three-view drawing of the Prop Test Rig with the XV-15 rotor system installed is shown in figure 2, and a photograph of the Prop Test Rig with the XV-15 rotor installed is shown in figure 3. The rotor axis of rotation was horizontal to minimize interference effects between the ground and the rotor. The rotor shaft was 6.71 m above the ground (1.76 rotor radii). Note that the Prop Test Rig and its supporting structure provide very little blockage of the rotor wake. This minimizes the influence of the test apparatus on the rotor wake, and ensures that high-quality isolated-rotor performance data can be acquired.

Balance Systems

A new rotor balance system was designed and built for this test program. The general arrangement of the balance system is shown in figure 4. This balance system was designed to be very sensitive to rotor thrust and torque, with minimal interactions on the indicated thrust and torque caused by other forces, moments, or thermal effects. An instrumented drive shaft was installed inside the rotor balance, between the gearbox and the rotor mast, to accurately measure shaft torque. This design provided two load paths for thrust: through the rotor balance, and through the instrumented drive shaft. The drive shaft was not as stiff in the axial direction as the rotor balance, and only about 3% of the rotor thrust was carried by the shaft. The shaft was instrumented to measure this axial load. The gages on the balance system were thermally-compensated to minimize errors which were due to thermal effects. (The rotor balance and instrumented drive shaft were designed by J. Mayer and H. Silcox of the Boeing Vertol Co.)

Careful laboratory calibrations were performed on the balance system. The rotor

thrust balance was accurate to within 50 N up to 50,000 N (0.1% error), with no significant interactions caused by other forces or moments. The shaft axial force gage was also accurate to within 50 N, and was corrected for interactions caused by shaft torque. The instrumented drive shaft was accurate to within 70 N-m of torque, which is less than 0.3% of the shaft's maximum capacity of 28,500 N-m. The shaft torque data were corrected for interactions caused by shaft axial load. Because there were two bearings between the instrumented drive shaft and the rotor, the bearing torque was measured by the rotor balance and subtracted from the shaft torque to obtain the actual rotor torque.

A redundant set of load cells were installed between the Prop Test Rig and its support system (see fig. 2). These loads cells were not as accurate as the primary balance system, and were used as a backup. The measurements of the two balance systems were compared throughout the test to ensure that both systems were working properly at all times.

Check loads were performed periodically during the test to assess installed balance system accuracy under simultaneous thrust and torque loading, and to check for adverse effects caused by operational thermal loads. These check loadings demonstrated that the installed balance system was accurate to within 200 N of thrust (0.3% of maximum thrust of test) and 70 N-m of torque (0.3% of maximum torque of test).

Rotor System

The rotor was tested on a Bell Helicopter Model 300 rotor mast and gimballed hub (similar to the XV-15 aircraft's mast and hub). The XV-15 rotor system had three blades with a diameter of 7.62 m. A summary of the rotor system characteristics is provided in table 1. The rotor blades were identical to the flight hardware used on the XV-15 aircraft. This rotor system had a solidity ratio of 0.0891. The twist distribution, thickness distribution, chord distribution, and airfoils used on this rotor system are shown in figures 5, 6, 7, and 8, respectively. Further information on the characteristics of this rotor system are provided in ref. 2.

Wake Rake

The distribution of total pressure and static pressure in the rotor wake was measured with a wake rake. The location of the rake relative to the rotor was chosen to be similar to the location of the wing of a typical tilt-rotor aircraft. The wake rake is visible behind the rotor in figure 3. The dynamic pressure and velocity distributions in the rotor wake were computed from the total and static pressure data. Two types of pressure probes were used on the wake rake: pitot-static probes, and 5-port directional probes. There were 13 pitot-static probes and 9 directional probes. The static pressure data obtained with the pitot-static probes are more accurate than that obtained with the directional probes.

Therefore, the dynamic pressures and velocities computed from data obtained with the pitot-static probes are more accurate than those computed from data obtained with the directional probes. Data obtained with both sets of probes are presented in this report.

TEST CONDITIONS

Data were obtained with rotor tip Mach numbers ranging from 0.6 to 0.73. Cyclic pitch was used to trim the rotor to gimbal angles of 0.1° or less for all data points. Most of the data were obtained with winds of 1.5 m/s or less, with a maximum wind speed of 3.5 m/s. The air density was computed from measured values of temperature, pressure, and humidity. A phototach was driven at the rotor speed and generated 1,024 pulses per revolution. The rotor rotation speed was computed from this signal.

WIND CORRECTIONS

Even very light winds can have significant effects on rotor hover performance (ref. 3). To minimize errors in the performance data caused by winds, all performance testing was conducted in winds of 1.5 m/s or less. Also, the measured rotor torque was corrected for the effect of the wind using a correction procedure based on momentum theory. (The correction procedure was developed by W. Johnson of Ames Research Center and M. A. McVeigh of Boeing Vertol.) The wind speed and direction were measured by a sensor located on the inflow side of the rotor plane approximately 16 rotor radii from the rotor hub at the same height as the rotor axis, and at an angle of 45° from the rotor axis. The location of the wind sensor relative to the rotor, and the sign conventions for the wind speed and direction are shown in figure 9. The following equations describe the wind correction procedure that was used:

$$C_{Q,corrected} = C_Q + (\mu_x C_T + \mu_y C_Y) - K(\lambda_i - \lambda_h)C_T$$

$$\lambda_i^2(\mu_y^2 + (\lambda_i - \mu_x)^2) = \lambda_h^4$$

Note that μ_y is positive in the same direction as C_Y, and μ_x is positive in the same direction as C_T. K is the ratio of actual induced power to ideal induced power: 1.16 was used here.

The magnitude of the correction on C_Q was typically less than 3% for winds of less than 1.5 m/s. The correction procedure reduces scatter in the performance data caused

by winds varying from data point to data point, and reduces any bias in the performance data caused by consistent prevailing winds throughout the test. Rotor figure of merit as a function of thrust coefficient for the XV-15 rotor system, with and without wind corrections, is shown in figure 10. Data obtained with winds of 0.5 m/s or less are presented in figure 10(a), data obtained with winds of 1.5 m/s or less are presented in figure 10(b), and all the data are shown in figure 10(c). The reduction in data scatter caused by the wind corrections can be seen in these figures. Both corrected and uncorrected data are presented in this report.

RESULTS

Performance and Loads Data

Rotor performance and loads data are tabulated in Appendix A. A dictionary of the parameters in Appendix A is provided in table 2. The data are organized by run number, and an index of the test conditions in each run is provided in table 3. Figure 11 shows the orientation of balance forces and moments, and the positive directions of the forces and moments. Thrust and side force are horizontal, and normal force is vertical.

The effect of tip Mach number on corrected rotor figure of merit is shown in figures 12 and 13. $C_{P,corrected}/\sigma$ as a function of C_T/σ is shown in figure 14. $C_{P,corrected}$ as a function of C_T is shown in figure 15. $C_{P,corrected}$ as a function of $C_T^{3/2}$ is shown in figure 16. The curves shown in these figures are polynomial curve fits of the data. There is very little effect on rotor performance due to tip Mach number variations for the range of tip Mach numbers covered in this test.

C_T/σ as a function of collective pitch is shown in figure 17. The collective pitch data were obtained from the collective actuator position, and some errors caused by control system geometric nonlinearities are present in the data. These errors are estimated to be less than $\pm 1^\circ$. The effect of rotor thrust on hub spindle flap bending moment is shown in figure 18. The hub spindle flap bending moment gage was at r/R = 0.06. The effect of rotor thrust on blade flap bending moment at 0.3R is shown in figure 19. The effect of rotor thrust on pitch link load is shown in figure 20. The distance from the pitch link to the blade pitch axis was 0.24 m. The effect of rotor torque on hub spindle chord bending moment is shown in figure 21. The hub spindle chord bending moment gage was at r/R = 0.06. The effect of rotor torque on blade chord bending moment at 0.3R is shown in figure 22.

Wake Rake Data

Data obtained with the rotor wake rake are presented in Appendix B. The location of the pressure taps is presented in table 4. A dictionary of the parameters in Appendix B is provided in table 5. The data are organized by run number. Plots of wake dynamic pressure as a function of radius for several rotor thrusts are presented in figure 23.

REFERENCES

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APPENDIX A

ROTOR PERFORMANCE AND LOADS DATA

PUN	WIND	T,LC	THRUST	CT	CT/S	POWER	SPND FB
POINT	PSIW	SF,LC	SIDE	CY	CY/S	TORQUE,C	SPND CB
RPM	HUM,%	NF,LC	NORMAL	CZ	CZ/S	CQ,C	FB .3R
VTIP	TEMP	PM,LC	PITCH	CPM	CPM/S	CQ/S,C	CB .3R
MTIP	PRESS	YM,LC	YAW	CYM	CYM/S	FM	P LINK
COLL	RHO	Q,LC	TORQUE	CQ	CQ/S	FM,C	CT**3/2
14	1.2	-313.	-83.	-.000027	-.00030	175.	-13127.
15	148.	-273.	-142.	-.000046	-.00051	2840.	-840.
587.6	44.	-27.	25.	0.000008	0.00009	0.000241	-5202.
234.5	12.4	415.	454.	0.000038	0.00043	0.00270	-3378.
0.6922	101.5	405.	28.	0.000002	0.00003	0.0004	-482.
-7.0	1.235	2839.	2839.	0.000241	0.00270	0.0004	0.000000
14	1.7	4134.	4165.	0.001344	0.01508	132.	-11322.
16	140.	-196.	46.	0.000015	0.00017	2187.	-563.
587.8	44.	-463.	242.	0.000078	0.00088	0.000185	-4307.
234.5	12.4	1476.	545.	0.000046	0.00052	0.00206	-3209.
0.6922	101.5	548.	-105.	-.000009	-.00010	0.1912	-332.
-5.0	1.235	2070.	2150.	0.000182	0.00204	0.1880	0.000049
14	1.5	7294.	7185.	0.002319	0.02603	152.	-10164.
17	143.	-417.	-110.	-.000036	-.00040	2525.	-596.
587.8	44.	-343.	129.	0.000042	0.00047	0.000214	-3698.
234.5	12.4	1623.	688.	0.000058	0.00065	0.00240	-3247.
0.6922	101.5	1392.	151.	0.000013	0.00014	0.3782	-154.
-3.0	1.235	2381.	2464.	0.000209	0.00234	0.3691	0.000112
14	1.3	10535.	10282.	0.003320	0.03726	197.	-8877.
18	139.	-128.	122.	0.000039	0.00044	3268.	-757.
587.8	44.	-787.	340.	0.000110	0.00123	0.000277	-3000.
234.5	12.5	2530.	485.	0.000041	0.00046	0.00311	-3284.
0.6921	101.5	779.	-401.	-.000034	-.00038	0.4988	4.
-1.0	1.235	3164.	3199.	0.000271	0.00304	0.4883	0.000191
14	1.5	15011.	14636.	0.004732	0.05311	271.	-7054.
19	125.	-316.	-103.	-.000033	-.00038	4499.	-1062.
587.7	44.	-982.	293.	0.000095	0.00106	0.000382	-2044.
234.5	12.8	3518.	651.	0.000055	0.00062	0.00428	-3234.
0.6917	101.5	1707.	190.	0.000015	0.00018	0.6156	149.
1.0	1.234	4219.	4405.	0.000374	0.00420	0.6028	0.000325

OF POOR QUALITY

RUN	WIND	T,LC	THRUST	CT	CT/S	POWER	SPND FB
POINT	PSIW	SF,LC	SIDE	CY	CY/S	TORQUE,C	SPND CB
RPM	HUM,%	HF,LC	NORMAL	CZ	CZ/S	CQ,C	FB .3R
VTIP	TEMP	PM,LC	PITCH	CPM	CPM/S	CQ/S,C	CB .3R
MTIP	PRESS	YM,LC	YAW	CYM	CYM/S	FM	P LINK
COLL	RHO	Q,LC	TORQUE	CQ	CQ/S	FM,C	CT**3/2
14	1.2	20356.	19795.	0.006405	0.07189	372.	-4849.
20	124.	-429.	129.	0.000042	0.00047	6137.	-1524.
587.5	44.	-1189.	314.	0.000102	0.00114	0.000521	-932.
234.4	12.9	4235.	785.	0.000067	0.00075	0.00585	-3089.
0.6914	101.5	2371.	2.	0.000000	0.00000	0.7059	277.
3.0	1.233	5800.	6045.	0.000513	0.00576	0.6953	0.000513
14	1.0	25896.	25164.	0.008148	0.09145	502.	-2518.
21	134.	-394.	109.	0.000035	0.00040	8274.	-2110.
587.4	44.	-1309.	605.	0.000196	0.00220	0.000703	205.
234.4	12.9	4390.	1115.	0.000095	0.00106	0.00789	-2919.
0.6911	101.5	2623.	206.	0.000017	0.00020	0.7499	420.
5.0	1.233	7802.	8159.	0.000693	0.00778	0.7395	0.000735
14	1.2	28694.	27856.	0.009022	0.10126	582.	-1348.
22	120.	-379.	-53.	-.000017	-.00019	9582.	-2454.
587.3	44.	-1336.	605.	0.000196	0.00220	0.000815	813.
234.3	12.9	4312.	1017.	0.000086	0.00097	0.00914	-2630.
0.6911	101.5	2782.	664.	0.000056	0.00063	0.7532	491.
6.0	1.233	9044.	9463.	0.000804	0.00903	0.7438	0.000857
14	0.9	32064.	31134.	0.010095	0.11330	676.	35.
23	111.	-583.	-187.	-.000060	-.00068	11064.	-2896.
587.2	44.	-1342.	391.	0.000127	0.00142	0.000942	1512.
234.3	13.2	4638.	983.	0.000084	0.00094	0.01057	-2696.
0.6907	101.5	3437.	879.	0.000075	0.00084	0.7667	559.
7.0	1.232	10528.	10991.	0.000935	0.01050	0.7616	0.001014
14	0.6	34805.	33778.	0.010960	0.12301	773.	1197.
24	119.	-471.	-220.	-.000071	-.00080	12636.	-3339.
587.1	44.	-1224.	331.	0.000108	0.00121	0.001070	2123.
234.2	13.2	3977.	618.	0.000053	0.00059	0.01208	-2612.
0.6904	101.5	3835.	1445.	0.000123	0.00138	0.7577	623.
8.0	1.232	12060.	12571.	0.001071	0.01202	0.7538	0.001147

RUN	WIND	T,LC	THRUST	CT	CT/S	POWER	SPND FB
POINT	PSIW	SF,LC	SIDE	CY	CY/S	TORQUE,C	SPND CB
RPM	HUM,%	NF,LC	NORMAL	CZ	CZ/S	CQ,C	FB .3R
VTIP	TEMP	PM,LC	PITCH	CPM	CPM/S	CQ/S,C	CB .3R
MTIP	PRESS	YM,LC	YAW	CYM	CYM/S	FM	P LINK
COLL	RHO	Q,LC	TORQUE	CQ	CQ/S	FM,C	CT**3/2
14	1.1	38038.	36927.	0.011985	0.13452	887.	2543.
25	118.	-1001.	-102.	-.000033	-.00037	14578.	-3896.
586.9	44.	-754.	346.	0.000112	0.00126	0.001242	2843.
234.2	13.2	2869.	1074.	0.000092	0.00103	0.01394	-2479.
0.6903	101.5	4609.	959.	0.000082	0.00092	0.7544	695.
9.0	1.232	13790.	14435.	0.001230	0.01380	0.7470	0.001312
14	1.0	41238.	40043.	0.013014	0.14606	1018.	3937.
26	124.	-1013.	-66.	-.000022	-.00024	16729.	-4506.
586.8	44.	-1294.	226.	0.000074	0.00083	0.001427	3587.
234.1	13.4	5128.	1223.	0.000104	0.00117	0.01602	-2344.
0.6899	101.5	4096.	231.	0.000020	0.00022	0.7427	754.
10.0	1.231	15876.	16567.	0.001413	0.01586	0.7355	0.001485
14	1.3	44301.	42964.	0.013978	0.15688	1150.	5245.
27	118.	-1258.	113.	0.000037	0.00041	18914.	-5117.
586.6	44.	-1187.	436.	0.000142	0.00159	0.001615	4286.
234.0	13.5	4702.	1383.	0.000118	0.00133	0.01813	-2238.
0.6896	101.5	5251.	445.	0.000038	0.00043	0.7310	789.
11.0	1.231	17958.	18[illegible].	0.001598	0.01794	0.7234	0.001653
15	0.7	-997.	-1020.	-.000332	-.00372	177.	-13474.
3	341.	28.	-14.	-.000005	-.00005	2887.	-720.
587.5	89.	-18.	62.	0.000020	0.00023	0.000246	-5698.
234.4	13.4	-34.	-39.	-.000003	-.00004	0.00277	-3064.
0.6907	101.5	356.	320.	0.000027	0.00031	0.0174	-470.
-7.1	1.227	2771.	2883.	0.000246	0.00276	0.0173	0.000006
15	0.7	1560.	1511.	0.000491	0.00551	143.	-12390.
4	354.	156.	-58.	-.000019	-.00021	2322.	-513.
587.5	89.	82.	37.	0.000012	0.00014	0.000198	-5138.
234.4	13.4	-182.	35.	0.000003	0.00003	0.00222	-2946.
0.6907	101.5	-228.	308.	0.000026	0.00030	0.0387	-356.
-6.0	1.227	2188.	2329.	0.000199	0.00223	0.0389	0.000011

RUN POINT RPM VTIP MTIP COLL	WIND PSIW HUM,% TEMP PRESS RHO	T,LC SF,LC NF,LC PM,LC YM,LC Q,LC	THRUST SIDE NORMAL PITCH YAW TORQUE	CT CY CZ CPM CYM CQ	CT/S CY/S CZ/S CPM/S CYM/S CQ/S	POWER TORQUE,C CQ,C CQ/S,C FM FM,C	SPND FB SPND CB FB .3R CB .3R P LINK CT**3/2
15	0.5	5086.	5223.	0.001698	0.01906	140.	-11034.
5	312.	20.	-31.	-.000010	-.00011	2260.	-421.
587.5	89.	-56.	-30.	-.000010	-.00011	0.000193	-4443.
234.4	13.4	-134.	-156.	-.000013	-.00015	0.00216	-2907.
0.6907	101.5	515.	353.	0.000030	0.00034	0.2552	-185.
-4.0	1.227	2211.	2272.	0.000194	0.00218	0.2565	0.000070
15	0.4	8403.	8524.	0.002772	0.03111	171.	-9741.
6	257.	-113.	-119.	-.000039	-.00043	2778.	-523.
587.5	89.	-16.	95.	0.000031	0.00035	0.000237	-3725.
234.4	13.4	-257.	103.	0.000009	0.00010	0.00266	-2937.
0.6907	101.5	1263.	515.	0.000044	0.00049	0.4361	-21.
-2.0	1.227	2727.	2772.	0.000237	0.00266	0.4352	0.000146
15	0.6	12385.	12489.	0.004063	0.04560	227.	-8151.
7	283.	-42.	-20.	-.000006	-.00007	3687.	-747.
587.4	89.	7.	114.	0.000037	0.00042	0.000315	-2851.
234.4	13.5	-502.	-50.	-.000004	-.00005	0.00353	-2925.
0.6905	101.5	1332.	528.	0.000045	0.00051	0.5801	119.
0.0	1.227	3614.	3696.	0.000316	0.00354	0.5816	0.000259
15	0.6	16987.	17148.	0.005581	0.06264	310.	-6267.
8	313.	21.	-69.	-.000023	-.00025	4988.	-1102.
587.3	89.	79.	301.	0.000098	0.00110	0.000426	-1837.
234.3	13.6	-1116.	-22.	-.000002	-.00002	0.00478	-2847.
0.6904	101.5	1303.	715.	0.000061	0.00069	0.6848	263.
2.0	1.227	4888.	5039.	0.000430	0.00483	0.6918	0.000417
15	0.5	22509.	22703.	0.007391	0.08295	427.	-3980.
9	312.	90.	-24.	-.000008	-.00009	6886.	-1622.
587.2	89.	5.	92.	0.000030	0.00034	0.000588	-630.
234.3	13.6	-573.	-85.	-.000007	-.00008	0.00660	-2701.
0.6902	101.5	1580.	794.	0.000068	0.00076	0.7578	402.
4.0	1.227	6694.	6938.	0.000593	0.00665	0.7635	0.000635

RUN	WIND	T,LC	THRUST	CT	CT/S	POWER	SPND FB
POINT	PSIW	SF,LC	SIDE	CY	CY/S	TORQUE,C	SPND CB
RPM	HUM,%	NF,LC	NORMAL	CZ	CZ/S	CQ,C	FB .3R
VTIP	TEMP	PM,LC	PITCH	CPM	CPM/S	CQ/S,C	CB .3R
MTIP	PRESS	YM,LC	YAW	CYM	CYM/S	FM	P LINK
COLL	RHO	Q,LC	TORQUE	CQ	CQ/S	FM,C	CT**3/2
15	0.4	27993.	28269.	0.009208	0.10335	576.	-1673.
10	315.	-71.	-19.	-.000006	-.00007	9312.	-2296.
587.1	89.	-111.	210.	0.000068	0.00077	0.000796	572.
234.2	13.6	-408.	50.	0.000004	0.00005	0.00894	-2541.
0.6901	101.5	2438.	980.	0.000084	0.00094	0.7805	541.
6.0	1.227	8976.	9362.	0.000800	0.00898	0.7847	0.000884
15	0.3	30688.	31006.	0.010104	0.11340	660.	-539.
11	335.	-284.	-169.	-.000055	-.00062	10675.	-2692.
587.0	89.	-125.	158.	0.000052	0.00058	0.000913	1171.
234.2	13.6	-309.	75.	0.000006	0.00007	0.01025	-2458.
0.6899	101.5	3338.	1354.	0.000116	0.00130	0.7819	603.
7.0	1.227	10300.	10738.	0.000918	0.01031	0.7865	0.001016
15	0.3	33597.	33936.	0.011063	0.12416	753.	710.
12	321.	-319.	-211.	-.000069	-.00077	12198.	-3124.
586.9	89.	-206.	266.	0.000087	0.00097	0.001044	1843.
234.2	13.6	66.	321.	0.000027	0.00031	0.01171	-2345.
0.6898	101.5	3584.	1522.	0.000130	0.00146	0.7852	670.
8.0	1.227	11737.	12245.	0.001048	0.01176	0.7882	0.001164
15	0.2	36527.	36901.	0.012035	0.13507	857.	1957.
13	339.	-335.	-188.	-.000061	-.00069	13883.	-3604.
586.8	89.	-397.	242.	0.000079	0.00089	0.001188	2533.
234.1	13.6	668.	234.	0.000020	0.00022	0.01334	-2229.
0.6896	101.5	3911.	1615.	0.000138	0.00155	0.7823	729.
9.0	1.227	13379.	13939.	0.001193	0.01339	0.7855	0.001320
15	0.4	39709.	40109.	0.013089	0.14691	981.	3334.
14	346.	-425.	-196.	-.000064	-.00072	15855.	-4167.
586.7	89.	-514.	224.	0.000073	0.00082	0.001358	3296.
234.1	13.7	953.	89.	0.000008	0.00009	0.01524	-2100.
0.6894	101.5	4318	1715.	0.000147	0.00165	0.7744	794.
10.0	1.226	15318.	15961.	0.001367	0.01534	0.7796	0.001498

RUN	WIND	T,LC	THRUST	CT	CT/S	POWER	SPND FB
POINT	PSIW	SF,LC	SIDE	CY	CY/S	TORQUE,C	SPND CB
RPM	HUM,%	NF,LC	NORMAL	CZ	CZ/S	CQ,C	FB .3R
VTIP	TEMP	PM,LC	PITCH	CPM	CPM/S	CQ/S,C	CB .3R
MTIP	PRESS	YM,LC	YAW	CYM	CYM/S	FM	P LINK
COLL	RHO	Q,LC	TORQUE	CQ	CQ/S	FM,C	CT**3/2
15	0.4	42239.	42664.	0.013929	0.15633	1099.	4410.
15	356.	-335.	-465.	-.000152	-.00170	17769.	-4720.
586.5	89.	-374.	340.	0.000111	0.00125	0.001523	3925.
234.0	13.7	-62.	-34.	-.000003	-.00003	0.01709	-2022.
0.6893	101.5	3845.	2154.	0.000185	0.00207	0.7581	837.
11.0	1.226	17217.	17891.	0.001533	0.01721	0.7633	0.001644
15	0.6	-1070.	-1065.	-.000347	-.00389	178.	-13536.
16	357.	165.	-245.	-.000080	-.00089	2900.	-732.
587.4	89.	-169.	38.	0.000012	0.00014	0.000248	-5725.
234.4	13.7	220.	-66.	-.000006	-.00006	0.00278	-3036.
0.6903	101.5	-912.	615.	0.000053	0.00059	0.0184	-447.
-7.1	1.226	2971.	2897.	0.000248	0.00278	0.0184	0.000006
15	0.7	706.	691.	0.000225	0.00252	154.	-12775.
17	344.	246.	-272.	-.000088	-.00099	2492.	-584.
587.5	89.	-27.	-15.	-.000005	-.00005	0.000213	-5345.
234.4	13.7	96.	22.	0.000002	0.00002	0.00239	-2951.
0.6903	101.5	-1132.	706.	0.000060	0.00068	0.0112	-382.
-6.5	1.226	2541.	2496.	0.000213	0.00239	0.0112	0.000003
15	0.7	4252.	4366.	0.001421	0.01595	137.	-11352.
18	24.	175.	-369.	-.000120	-.00135	2203.	-422.
587.5	89.	98.	67.	0.000022	0.00025	0.000188	-4623.
234.4	13.8	-577.	92.	0.000008	0.00009	0.00211	-2871.
0.6903	101.5	-1061.	826.	0.000071	0.00079	0.1995	-213.
-4.5	1.226	2249.	2222.	0.000190	0.00213	0.2012	0.000054
15	1.0	7920.	8052.	0.002621	0.02942	165.	-9949.
19	51.	181.	-378.	-.000123	-.00138	2662.	-497.
587.5	89.	55.	91.	0.000030	0.00033	0.000228	-3862.
234.4	13.8	-685.	-108.	-.000009	-.00010	0.00255	-2897.
0.6903	101.5	-403.	898.	0.000077	0.00086	0.4128	-51.
-2.5	1.226	2732.	2690.	0.000230	0.00258	0.4171	0.000134

RUN	WIND	T,LC	THRUST	CT	CT/S	POWER	PND FB
POINT	PSIW	SF,LC	SIDE	CY	CY/S	TORQUE,C	SPND CB
RPM	HUM,%	NF,LC	NORMAL	CZ	CZ/S	CQ,C	FB .3R
VTIP	TEMP	PM,LC	PITCH	CPM	CPM/S	CQ/S,C	CB .3R
MTIP	PRESS	YM,LC	YAW	CYM	CYM/S	FM	P LINK
COLL	RHO	Q,LC	TORQUE	CQ	CQ/S	FM,C	CT**3/2
15	0.4	11396.	11541.	0.003760	0.04220	214.	5564.
20	288.	60.	-207.	-.000067	-.00076	3463.	-692.
587.4	89.	80.	36.	0.000012	0.00013	0.000296	-3093.
234.4	13.9	-881.	-224.	-.000019	-.00022	0.00332	-2911.
0.6900	101.5	366.	793.	0.000068	0.00076	0.5488	92.
-0.5	1.225	3485.	3474.	0.000297	0.00333	0.5504	0.000231
15	0.2	15896.	16072.	0.005228	0.05868	296.	-6751.
21	2.	116.	-363.	-.000118	-.00133	4775.	-1032.
587.9	89.	243.	165.	0.000054	0.00060	0.000408	-2094.
234.6	13.9	-1206.	-61.	-.000005	-.00006	0.00458	-2870.
0.6906	101.5	411.	1130.	0.000096	0.00108	0.6521	240.
1.5	1.225	4784.	4801.	0.000410	0.00460	0.6556	0.000378
15	1.0	21110.	21311.	0.006935	0.07784	405.	-4609.
22	36.	-373.	-601.	-.000196	-.00219	6469.	-1515.
587.8	89.	5.	196.	0.000064	0.00072	0.000553	-954.
234.5	13.9	-209.	470.	0.000040	0.00045	0.00620	-2760.
0.6904	101.5	2503.	1558.	0.000133	0.00149	0.7267	373.
3.5	1.225	6383.	6578.	0.000562	0.00631	0.7390	0.000578
15	0.9	26317.	26604.	0.008667	0.09728	542.	-2386.
23	29.	-302.	-732.	-.000238	-.00268	8659.	-2152.
587.7	89.	-515.	161.	0.000052	0.00059	0.000740	198.
234.5	14.1	1800.	417.	0.000036	0.00040	0.00831	-2606.
0.6901	101.5	2275.	1666.	0.000142	0.00160	0.7578	513.
5.5	1.224	8379.	8804.	0.000753	0.00845	0.7705	0.000807
15	0.9	29415.	29711.	0.009683	0.10868	632.	-1122.
24	41.	-372.	-537.	-.000175	-.00197	10146.	-2549.
587.6	89.	-372.	34.	0.000011	0.00012	0.000868	873.
234.4	14.1	1271.	252.	0.000022	0.00024	0.00974	-2525.
0.6899	101.5	2836.	1597.	0.000137	0.00153	0.7661	582.
6.5	1.224	9814.	10279.	0.000879	0.00987	0.7762	0.000953

RUN POINT RPM VTIP MTIP COLL	WIND PSIW HUM,% TEMP PRESS RHO	T,LC SF,LC NF,LC PM,LC YM,LC Q,LC	THRUST SIDE NORMAL PITCH YAW TORQUE	CT CY CZ CPM CYM CQ	CT/S CY/S CZ/S CPM/S CYM/S CQ/S	POWER TORQUE,C CQ,C CQ/S,C FM FM,C	SPND FB SPND CB FB .3R CB .3R P LINK CT**3/2
15	1.0	32069.	32404.	0.010562	0.11854	713.	36.
25	47.	-467.	-730.	-.000238	-.00267	11460.	-2942.
587.5	89.	-706.	113.	0.000037	0.00041	0.000980	1499.
234.4	14.1	2967.	679.	0.000058	0.00065	0.01100	-2407.
0.6899	101.5	2738.	1487.	0.000127	0.00143	0.7737	655.
7.5	1.225	11016.	11594.	0.000992	0.01113	0.7828	0.001085
15	1.2	35002.	35350.	0.011526	0.12936	810.	1295.
26	64.	-574.	-724.	-.000236	-.00265	13056.	-3382.
587.4	89.	-790.	137.	0.000045	0.00050	0.001117	2179.
234.4	14.1	3377.	809.	0.000069	0.00078	0.01254	-2295.
0.6898	101.5	3025.	1454.	0.000124	0.00140	0.7765	714.
8.5	1.225	12535.	13165.	0.001127	0.01264	0.7830	0.001237
15	1.2	38014.	38436.	0.012538	0.14072	921.	2608.
27	69.	-929.	-624.	-.000203	-.00228	14879.	-3892.
587.2	89.	-1072.	73.	0.000025	0.00028	0.001274	2907.
234.3	14.1	4428.	834.	0.000071	0.00080	0.01430	-2160.
0.6896	101.5	3384.	667.	0.000057	0.00064	0.7745	782.
9.5	1.225	14219.	14968.	0.001282	0.01438	0.7792	0.001404
15	0.8	40972.	41381.	0.013507	0.15159	1042.	3868.
28	62.	-847.	-676.	-.000221	-.00248	16851.	-4440.
587.1	89.	-1120.	191.	0.000062	0.00070	0.001444	3631.
234.2	14.1	4007.	520.	0.000045	0.00050	0.01620	-2053.
0.6894	101.5	3135.	593.	0.000051	0.00057	0.7644	826.
10.5	1.224	16158.	16948.	0.001452	0.01630	0.7688	0.001570
15	0.8	43660.	44074.	0.014393	0.16154	1176.	5030.
29	55.	-1005.	-760.	-.000248	-.00279	18996.	-5082.
587.0	89.	-940.	90.	0.000029	0.00033	0.001628	4292.
234.2	14.1	3940.	776.	0.000067	0.00075	0.01827	-1979.
0.6893	101.5	4664.	1503.	0.000137	0.00154	0.7446	866.
11.5	1.224	18276.	19128.	0.001640	0.01840	0.7498	0.001727

RUN	WIND	T,LC	THRUST	CT	CT/S	POWER	SPND FB
POINT	PSIW	SF,LC	SIDE	CY	CY/S	TORQUE,C	SPND CB
RPM	HUM,%	NF,LC	NORMAL	CZ	CZ/S	CQ,C	FB .3R
VTIP	TEMP	PM,LC	PITCH	CPM	CPM/S	CQ/S,C	CB .3R
MTIP	PRESS	YM,LC	YAW	CYM	CYM/S	FM	P LINK
COLL	RHO	Q,LC	TORQUE	CQ	CQ/S	FM,C	CT**3/2
15	0.8	45796.	46214.	0.015101	0.16949	1308.	5922.
30	47.	-861.	-752.	-.000246	-.00276	21125.	-5725.
586.8	89.	-975.	190.	0.000062	0.00070	0.001812	4884.
234.1	14.1	2513.	-237.	-.000020	-.00023	0.02033	-1950.
0.6890	101.5	4053.	1439.	0.000123	0.00138	0.7185	892.
12.5	1.224	20394.	21290.	0.001826	0.02049	0.7242	0.001856
15	1.2	47671.	48143.	0.015746	0.17672	1455.	6725.
31	66.	-1370.	-610.	-.000200	-.00224	23558.	-6416.
586.6	89.	-1097.	160.	0.000052	0.00059	0.002022	5449.
234.0	14.2	4114.	545.	0.000047	0.00053	0.02270	-1947.
0.6887	101.5	5637.	964.	0.000083	0.00093	0.6868	954.
13.5	1.224	22671.	23694.	0.002034	0.02283	0.6908	0.001976
15	1.4	-964.	-870.	-.000283	-.00318	187.	-13543.
32	73.	-159.	-384.	-.000125	-.00140	3054.	-767.
588.0	89.	-57.	-150.	-.000049	-.00055	0.000261	-5737.
234.6	14.1	578.	306.	0.000026	0.00029	0.00293	-3028.
0.6904	101.5	-441.	443.	0.000038	0.00042	0.0130	-451.
-7.2	1.224	3065.	3041.	0.000260	0.00292	0.0129	0.000005
15	1.6	-1081.	-1145.	-.000373	-.00418	169.	-13600.
33	79.	-12.	-329.	-.000107	-.00120	2760.	-667.
588.0	89.	-133.	110.	0.000036	0.00040	0.000236	-5744.
234.6	14.1	576.	487.	0.000042	0.00047	0.00265	-3018.
0.6904	101.5	-728.	427.	0.000036	0.00041	0.0217	-427.
-7.0	1.224	2851.	2745.	0.000234	0.00263	0.0216	0.000007
15	1.7	3916.	4004.	0.001303	0.01462	141.	-11523.
34	69.	-127.	-245.	-.000080	-.00089	2287.	-451.
588.0	89.	-612.	108.	0.000035	0.00039	0.000195	-4698.
234.6	14.1	2031.	346.	0.000030	0.00033	0.00219	-2865.
0.6905	101.5	110.	323.	0.000028	0.00031	0.1699	-246.
-5.0	1.224	2299.	2291.	0.000196	0.00220	0.1703	0.000047

RUN POINT RPM VTIP MTIP COLL	JIND PSIW HUM,% TEMP PRESS RHO	T,LC SF,LC NF,LC PM,LC YM,LC Q,LC	THRUST SIDE NORMAL PITCH YAW TORQUE	CT CY CZ CPM CYM CQ	CT/S CY/S CZ/S CPM/S CYM/S CQ/S	POWER TORQUE,C CQ,C CQ/S,C FM FM,C	SPND FB SPND CB FB .3R CB .3R P LINK CT**3/2
15	1.5	6862.	6987.	0.002273	0.02551	159.	-10381.
35	57.	-148.	-256.	-.000083	-.00094	2551.	-477.
588.0	89.	-550.	96.	0.000031	0.00035	0.000218	-4083.
234.6	14.1	2456.	466.	0.000040	0.00045	0.00245	-2893.
0.6905	101.5	192.	332.	0.000028	0.00032	0.3476	-88.
-3.0	1.225	2570.	2581.	0.000220	0.00247	0.3517	0.000108
15	1.2	10295.	10423.	0.003392	0.03807	206.	-9017.
36	52.	-119.	-273.	-.000089	-.00100	3294.	-648.
587.9	89.	-465.	182.	0.000059	0.00066	0.000281	-3327.
234.6	14.1	1920.	493.	0.000042	0.00047	0.00316	-2934.
0.6904	101.5	208.	287.	0.000024	0.00027	0.4895	69.
-1.0	1.225	3260.	3340.	0.000285	0.00320	0.4964	0.000198
15	1.2	14357.	14547.	0.004735	0.05315	274.	-7353.
37	52.	-189.	-253.	-.000082	-.00093	4382.	-927.
587.8	89.	-622.	107.	0.000035	0.00039	0.000574	-2416.
234.5	14.1	2603.	472.	0.000040	0.00045	0.00420	-2899.
0.6904	101.5	739.	323.	0.000028	0.00031	0.6061	204.
1.0	1.225	4257.	4449.	0.000380	0.00427	0.6154	0.000326
15	0.8	19451.	19666.	0.006404	0.07188	374.	-5257.
38	55.	-180.	-393.	-.000128	-.00143	6027.	-1366.
587.7	89.	-594.	212.	0.000069	0.00077	0.000515	-1294.
234.5	14.1	2061.	384.	0.000033	0.00037	0.00578	-2790.
0.6902	101.5	1005.	586.	0.000050	0.00056	0.6972	343.
3.0	1.225	5770.	6080.	0.000520	0.00583	0.7034	0.000512
15	1.0	25400.	25685.	0.008373	0.09397	513.	-2754.
39	72.	-398.	-532.	-.000174	-.00195	8294.	-1995.
587.6	89.	-601.	129.	0.000042	0.00047	0.000710	-14.
234.5	14.2	2237.	510.	0.000044	0.00049	0.00796	-2609.
0.6899	101.5	2188.	993.	0.000085	0.00095	0.7597	482.
5.0	1.224	7929.	8333.	0.000713	0.00800	0.7633	0.000766

RUN POINT RPM VTIP MTIP COLL	WIND PSIW HUM,% TEMP PRESS RHO	T,LC SF,LC NF,LC PM,LC YM,LC Q,LC	THRUST SIDE NORMAL PITCH YAW TORQUE	CT CY CZ CPM CYM CQ	CT/S CY/S CZ/S CPM/S CYM/S CQ/S	POWER TORQUE,C CQ,C CQ/S,C FM FM,C	SPND FB SPND CB FB .3R CB .3R P LINK CT**3/2
15	0.8	28189.	28491.	0.009291	0.10427	587.	-1598.
40	83.	-511.	-501.	-.000163	-.00183	9526.	-2329.
587.5	89.	-760.	122.	0.000040	0.00045	0.000815	597.
234.4	14.2	3057.	655.	0.000056	0.00063	0.00915	-2503.
0.6898	101.5	2409.	1004.	0.000086	0.00096	0.7759	550.
6.0	1.224	9006.	9534.	0.000816	0.00916	0.7766	0.000896
15	0.8	31455.	31789.	0.010370	0.11638	685.	-234.
41	71.	-457.	-575.	-.000188	-.00211	11088.	-2791.
587.4	89.	-710.	83.	0.000027	0.00030	0.000949	1334.
234.4	14.2	2765.	515.	0.000044	0.00050	0.01065	-2399.
0.6896	101.5	2550.	1206.	0.000103	0.00116	0.7833	623.
7.0	1.224	10590.	11133.	0.000953	0.01070	0.7864	0.001056
15	0.9	33952.	34334.	0.011203	0.12573	761.	880.
42	105.	-713.	-462.	-.000151	-.00169	12442.	-3150.
587.3	89.	-1032.	90.	0.000030	0.00033	0.001066	1919.
234.3	14.2	4251.	842.	0.000072	0.00081	0.01196	-2274.
0.6896	101.5	3104.	704.	0.000060	0.00068	0.7911	687.
8.0	1.224	11747.	12373.	0.001060	0.01189	0.7867	0.001186
15	1.1	37321.	37701.	0.012309	0.13815	875.	2305.
43	103.	-812.	-673.	-.000220	-.00246	14319.	-3673.
587.2	89.	-1095.	63.	0.000021	0.00023	0.001227	2704.
234.3	14.3	4404.	741.	0.000063	0.00071	0.01377	-2139.
0.6893	101.5	3189.	752.	0.000064	0.00072	0.7917	759.
9.0	1.224	13568.	14232.	0.001220	0.01369	0.7869	0.001366
15	1.7	39891.	40342.	0.013177	0.14789	992.	3408.
44	84.	-1073.	-562.	-.000184	-.00206	16123.	-4224.
587.1	89.	-1272.	-38.	-.000012	-.00014	0.001382	3349.
234.2	14.3	5400.	940.	0.000081	0.00090	0.01551	-2052.
0.6892	101.5	4135.	602.	0.000052	0.00058	0.7735	816.
10.0	1.224	15361.	16128.	0.001383	0.01552	0.7737	0.001513

RUN	WIND	T,LC	THRUST	CT	CT/S	POWER	SPND FB
POINT	PSIW	SF,LC	SIDE	CY	CY/S	TORQUE,C	SPND CB
RPM	HUM,%	NF,LC	NORMAL	CZ	CZ/S	CQ,C	FB .3R
VTIP	TEMP	PM,LC	PITCH	CPM	CPM/S	CQ/S,C	CB .3R
MTIP	PRESS	YM,LC	YAW	CYM	CYM/S	FM	P LINK
COLL	RHO	Q,LC	TORQUE	CQ	CQ/S	FM,C	CT**3/2
15	1.8	42932.	43428.	0.014106	0.15832	1131.	4615.
45	86.	-1148.	-612.	-.000199	-.00223	18357.	-4849.
588.9	89.	-1354.	46.	0.000015	0.00017	0.001565	4062.
235.0	14.4	5052.	629.	0.000054	0.00060	0.01756	-1982.
0.6912	101.5	3912.	315.	0.000027	0.00030	0.7575	844.
11.0	1.223	17473.	18341.	0.001564	0.01755	0.7569	0.001675
15	1.3	-828.	-678.	-.000220	-.00246	196.	-13515.
46	62.	-211.	-296.	-.000096	-.00108	3186.	-806.
589.9	89.	-9.	-163.	-.000053	-.00059	0.000271	-5702.
235.4	14.4	367.	163.	0.000014	0.00016	0.00304	-3042.
0.6923	101.5	-236.	286.	0.000024	0.00027	0.0085	-437.
-7.3	1.223	3210.	3176.	0.000270	0.00303	0.0085	0.000003
15	1.0	2852.	2889.	0.000935	0.01049	139.	-11945.
47	59.	-327.	-374.	-.000121	-.00136	2245.	-462.
590.0	89.	-478.	36.	0.000011	0.00013	0.000191	-4912.
235.4	14.3	1469.	305.	0.000026	0.00029	0.00214	-2874.
0.6925	101.5	504.	636.	0.000054	0.00061	0.1058	-300.
-5.5	1.223	2185.	2249.	0.000191	0.00214	0.1060	0.000029
15	1.4	6388.	6556.	0.002131	0.02392	154.	-10570.
48	75.	-181.	-217.	-.000071	-.00079	2497.	-462.
588.6	89.	-520.	11.	0.000004	0.00004	0.000213	-4199.
234.8	14.3	2183.	313.	0.000027	0.00030	0.00239	-2879.
0.6909	101.5	279.	263.	0.000022	0.00025	0.3258	-122.
-3.4	1.223	2448.	2502.	0.000213	0.00240	0.3265	0.000098
15	1.6	9491.	9637.	0.003133	0.03517	193.	-9332.
49	81.	-161.	-381.	-.000124	-.00139	3144.	-588.
588.5	89.	-690.	136.	0.000044	0.00050	0.000268	-3509.
234.8	14.3	2993.	525.	0.000045	0.00050	0.00301	-2923.
0.6908	101.5	385.	403.	0.000034	0.00039	0.4629	30.
-1.5	1.223	3064.	3139.	0.000268	0.00301	0.4622	0.000175

RUN	WIND	T,LC	THRUST	CT	CT/S	POWER	SPND FB
POINT	PSIW	SF,LC	SIDE	CY	CY/S	TORQUE,C	SPND CB
RPM	HUM,%	NF,LC	NORMAL	CZ	CZ/S	CQ,C	FB .3P
VTIP	TEMP	PM,LC	PITCH	CPM	CPM/S	CQ/S,C	CB .3R
MTIP	PRESS	YM,LC	YAW	CYM	CYM/S	FM	P LINK
COLL	RHO	Q,LC	TORQUE	CQ	CQ/S	FM,C	CT**3/2
15	1.6	13686.	13860.	0.004507	0.05058	258.	-7639.
50	78.	-188.	-249.	-.000081	-.00091	4175.	-855.
588.5	89.	-703.	80.	0.000026	0.00029	0.000356	-2585.
234.8	14.3	2938.	374.	0.000032	0.00036	0.00400	-2891.
0.6908	101.5	599.	225.	0.000019	0.00022	0.5985	172.
0.5	1.223	3999.	4188.	0.000357	0.00401	0.6004	0.000303
15	1.1	18417.	18630.	0.006060	0.06801	348.	-5681.
51	82.	-278.	-390.	-.000127	-.00142	5640.	-1245.
588.4	89.	-843.	200.	0.000065	0.00073	0.000482	-1529.
234.8	14.3	3483.	604.	0.000052	0.00058	0.00540	-2796.
0.6907	101.5	1105.	426.	0.000036	0.00041	0.6920	308.
2.5	1.223	5346.	5645.	0.000482	0.00541	0.6926	0.000472
15	0.9	23725.	24033.	0.007821	0.08778	470.	-3440.
52	70.	-536.	-489.	-.000159	-.00179	7589.	-1803.
588.3	89.	-945.	74.	0.000024	0.00027	0.000648	-357.
234.7	14.3	3796.	584.	0.000050	0.00056	0.00727	-2644.
0.6905	101.5	2486.	911.	0.000078	0.00087	0.7505	452.
4.5	1.223	7209.	7628.	0.000652	0.00731	0.7544	0.000692
15	1.5	26830.	27117.	0.008827	0.09907	554.	-2188.
53	82.	-473.	-614.	-.000200	-.00224	8993.	-2183.
588.2	89.	-838.	89.	0.000029	0.00032	0.000768	300.
234.7	14.3	3322.	517.	0.000044	0.00050	0.00862	-2567.
0.6904	101.5	2054.	878.	0.000075	0.00084	0.7626	522.
5.5	1.223	8544.	8999.	0.000769	0.00863	0.7631	0.000829
15	1.6	29661.	30009.	0.009772	0.10967	637.	-980.
54	81.	-613.	-463.	-.000151	-.00169	10331.	-2562.
588.1	89.	-1099.	96.	0.000031	0.00035	0.000883	929.
234.6	14.3	4298.	613.	0.000052	0.00059	0.00991	-2472.
0.6903	101.5	2313.	329.	0.000028	0.00032	0.7721	591.
6.5	1.223	9812.	10350.	0.000885	0.00993	0.7734	0.000966

RUN	WIND	T,LC	THRUST	CT	CT/S	POWER	SPND FB
POINT	PSIW	SF,LC	SIDE	CY	CY/S	TORQUE,C	SPND CB
RPM	HUM,%	NF,LC	NORMAL	CZ	CZ/S	CQ,C	FB .3R
VTIP	TEMP	PM,LC	PITCH	CPM	CPM/S	CQ/S,C	CB .3R
MTIP	PRESS	YM,LC	YAW	CYM	CYM/S	FM	P LINK
COLL	RHO	Q,LC	TORQUE	CQ	CQ/S	FM,C	CT**3/2
15	1.5	32520.	32919.	0.010722	0.12034	721.	258.
55	89.	-667.	-385.	-.000126	-.00141	11736.	-2952.
588.0	89.	-1197.	134.	0.000044	0.00049	0.001003	1585.
234.6	14.3	4461.	610.	0.000052	0.00059	0.01126	-2345.
0.6902	101.5	2364.	47.	0.000004	0.00005	0.7838	650.
7.5	1.223	11103.	11715.	0.001001	0.01124	0.7824	0.001110
15	1.4	35266.	35684.	0.011628	0.13050	822.	1430.
56	82.	-871.	-604.	-.000197	-.00221	13339.	-3430.
587.9	89.	-1233.	130.	0.000042	0.00048	0.001141	2247.
234.5	14.3	4845.	729.	0.000062	0.00070	0.01280	-2255.
0.6900	101.5	3264.	457.	0.000039	0.00044	0.7761	724.
8.5	1.223	12667.	13355.	0.001142	0.01282	0.7770	0.001254
15	1.5	38314.	38751.	0.012629	0.14174	929.	2721.
57	81.	-932.	-624.	-.000203	-.00228	15068.	-3923.
587.8	89.	-1269.	-9.	-.000003	-.00003	0.001289	2962.
234.5	14.3	5009.	560.	0.000048	0.00054	0.01447	-2119.
0.6900	101.5	3308.	373.	0.000032	0.00036	0.7771	785.
9.5	1.224	14364.	15096.	0.001291	0.01449	0.7785	0.001419
15	2.1	40674.	41126.	0.013406	0.15046	1050.	3711.
58	60.	-1013.	-62..	-.000204	-.00229	16810.	-4489.
587.6	89.	-1360.	116.	0.000038	0.00042	0.001438	3569.
234.4	14.2	4995.	556.	0.000048	0.00053	0.01614	-2072.
0.6899	101.5	3414.	230.	0.000020	0.00022	0.7520	836.
10.5	1.224	16231.	17057.	0.001459	0.01638	0.7630	0.001552
15	1.7	43461.	43898.	0.014310	0.16061	1187.	4856.
59	53.	-939.	-719.	-.000234	-.00263	19016.	-5136.
587.4	89.	-1172.	141.	0.000046	0.00052	0.001627	4293.
234.4	14.1	3918.	201.	0.000017	0.00019	0.01826	-2001.
0.6899	101.5	3257.	439.	0.000038	0.00042	0.7330	884.
11.5	1.225	18432.	19299.	0.001651	0.01853	0.7439	0.001712

RUN	WIND	T,LC	THRUST	CT	CT/S	POWER	SPND FB
POINT	PSIW	SF,LC	SIDE	CY	CY/S	TORQUE,C	SPND CB
RPM	HUM,%	NF,LC	NORMAL	CZ	CZ/S	CQ,C	FB .3R
VTIP	TEMP	PM,LC	PITCH	CPM	CPM/S	CQ/S,C	CB .3R
MTIP	PRESS	YM,LC	YAW	CYM	CYM/S	FM	P LINK
COLL	RHO	Q,LC	TORQUE	CQ	CQ/S	FM,C	CT**3/2
15	1.7	45641.	46150.	0.015052	0.16893	1316.	5821.
60	71.	-1342.	-586.	-.000191	-.00215	21270.	-5758.
587.3	89.	-1369.	120.	0.000039	0.00044	0.001821	4879.
234.3	14.1	5010.	527.	0.000045	0.00051	0.02044	-1943.
0.6897	101.5	4128.	-97.	-.000008	-.00009	0.7126	907.
12.5	1.225	20425.	21401.	0.001832	0.02056	0.7170	0.001847
16	0.7	-965.	-898.	-.000388	-.00435	120.	-11490.
3	37.	-278.	-137.	-.000059	-.00066	2238.	-969.
511.3	89.	-110.	-42.	-.000018	-.00020	0.000253	-4844.
204.0	14.8	620.	216.	0.000024	0.00027	0.00284	-2638.
0.5997	101.5	840.	119.	0.000014	0.00015	0.0213	-460.
-7.0	1.221	2120.	2232.	0.000253	0.00284	0.0213	0.000008
16	2.3	18270.	18360.	0.007934	0.08905	321.	-2736.
4	22.	-299.	-154.	-.000067	-.00075	5669.	-1851.
511.1	89.	-297.	226.	0.000098	0.00109	0.000643	-242.
203.9	14.9	1113.	414.	0.000047	0.00053	0.00722	-2332.
0.5993	101.5	2367.	661.	0.000075	0.00084	0.7350	272.
5.0	1.220	5749.	5993.	0.000680	0.00763	0.7771	0.000707
16	2.1	24440.	24585.	0.010633	0.11933	481.	182.
5	19.	-496.	-337.	-.000146	-.00164	8601.	-2686.
510.9	89.	-509.	147.	0.000064	0.00072	0.000976	1267.
203.8	14.9	2046.	350.	0.000040	0.00045	0.01096	-2084.
0.5990	101.5	2953.	908.	0.000103	0.00116	0.7598	433.
8.0	1.220	8569.	8987.	0.001020	0.01145	0.7940	0.001096
16	1.3	28832.	29027.	0.012563	0.14100	604.	2371.
6	38.	-806.	-406.	-.000176	-.00197	11067.	-3346.
510.7	89.	-742.	144.	0.000062	0.00070	0.001257	2400.
203.8	15.0	2828.	358.	0.000041	0.00046	0.01411	-1799.
0.5988	101.5	3583.	692.	0.000079	0.00088	0.7755	550.
10.0	1.220	10698.	11301.	0.001284	0.01441	0.7919	0.001408

RUN	WIND	T,LC	THRUST	CT	CT/S	POWER	SPND FB
POINT	PSIW	SF,LC	SIDE	CY	CY/S	TORQUE,C	SPND CB
RPM	HUM,%	NF,LC	NORMAL	CZ	CZ/S	CQ,C	FB .3R
VTIP	TEMP	PM,LC	PITCH	CPM	CPM/S	CQ/S,C	CB .3R
MTIP	PRESS	YM,LC	YAW	CYM	CYM/S	FM	P LINK
COLL	RHO	Q,LC	TORQUE	CQ	CQ/S	FM,C	CT**3/2
16	2.2	32762.	33015.	0.014320	0.16072	768.	4265.
7	19.	-882.	-116.	-.000050	-.00057	13799.	-4256.
510.5	89.	-717.	183.	0.000079	0.00089	0.001571	3465.
203.7	15.3	2954.	537.	0.000061	0.00069	0.01763	-1602.
0.5982	101.5	4558.	595.	0.000068	0.00075	0.7408	662.
12.0	1.219	13677.	14365.	0.001635	0.01835	0.7712	0.001714
16	2.7	22051.	22238.	0.007847	0.08807	440.	-3299.
8	9.	-430.	-64.	-.000022	-.00025	6971.	-2134.
566.1	89.	-654.	155.	0.000055	0.00061	0.000646	-287.
225.9	15.4	2469.	354.	0.000033	0.00037	0.00725	-2825.
0.6632	101.5	2476.	369.	0.000034	0.00038	0.7153	344.
5.0	1.218	6979.	7419.	0.000687	0.00771	0.7612	0.000695
16	2.0	30315.	30564.	0.010786	0.12106	664.	261.
9	11.	-470.	-147.	-.000052	-.00058	10771.	-3203.
565.8	89.	-522.	124.	0.000044	0.00049	0.000998	1559.
225.8	15.2	1373.	-5.	0.000000	-.00001	0.01120	-2520.
0.6632	101.5	3102.	827.	0.000077	0.00036	0.7629	529.
8.0	1.219	10618.	11200.	0.001038	0.01165	0.7938	0.001120
16	2.6	34977.	35309.	0.012478	0.14005	843.	2768.
10	21.	-1231.	-81.	-.000029	-.00032	13601.	-4079.
565.6	89.	-829.	94.	0.000033	0.00037	0.001262	2720.
225.7	15.4	3986.	796.	0.000074	0.00083	0.01416	-2307.
0.6627	101.5	5568.	296.	0.000027	0.00031	0.7463	659.
10.0	1.218	13437.	14235.	0.001320	0.01482	0.7811	0.001394
16	2.4	40499.	40854.	0.014453	0. 6221	1067.	4813.
11	19.	-1179.	-283.	-.000100	-.00112	17345.	-5167.
565.4	89.	-1133.	136.	0.000048	0.00054	0.001611	4078.
225.6	15.4	4125.	340.	0.000032	0.00035	0.01803	-2061.
0.6624	101.5	4949.	299.	0.000028	0.00031	0.7341	768.
12.0	1.218	17090.	18022.	0.001673	0.01873	0.7628	0.001738

RUN	WIND	T,LC	THRUST	CT	CT/S	POWER	SPND FB
POINT	PSIW	SF,LC	SIDE	CY	CY/S	TORQUE,C	SPND CB
RPM	HUM,%	NF,LC	NORMAL	CZ	CZ/S	CQ,C	FB .3R
VTIP	TEMP	PM,LC	PITCH	CPM	CPM/S	CQ/S,C	CB .3R
MTIP	PRESS	YM,LC	YAW	CYM	CYM/S	FM	P LINK
COLL	RHO	Q,LC	TORQUE	CQ	CQ/S	FM,C	CT**3/2
16	2.6	24747.	24997.	0.008135	0.09131	515.	-3154.
12	23.	-707.	1.	0.000000	0.00000	7921.	-2359.
589.6	89.	-767.	22.	0.000007	0.00008	0.000677	-107.
235.2	15.5	3117.	348.	0.000030	0.00033	0.00759	-2970.
0.6906	101.5	3134.	99.	0.000008	0.00009	0.7282	389.
5.0	1.218	7833.	8340.	0.000712	0.00800	0.7667	0.000734
16	2.4	32828.	33140.	0.010794	0.12115	754.	215.
13	18.	-714.	-184.	-.000060	-.00067	11691.	-3456.
589.3	89.	-1011.	137.	0.000045	0.00050	0.000999	1644.
235.1	15.5	3338.	86.	0.000007	0.00008	0.01122	-2719.
0.6903	101.5	3387.	411.	0.000035	0.00039	0.7589	580.
8.0	1.218	11508.	12221.	0.001045	0.01173	0.7933	0.001121
16	2.4	38512.	38892.	0.012684	0.14235	967.	2662.
14	25.	-746.	-134.	-.000044	-.00049	15093.	-4448.
589.1	89.	-989.	191.	0.000062	0.00070	0.001292	2981.
235.0	15.6	3460.	526.	0.000045	0.00051	0.01450	-2467.
0.6899	101.5	3953.	550.	0.000047	0.00053	0.7526	709.
10.0	1.217	14843.	15678.	0.001342	0.01506	0.7817	0.001428
16	2.5	43326.	43749.	0.014283	0.16030	1212.	4704.
15	25.	-1107.	-197.	-.000064	-.00072	18965.	-5598.
588.8	89.	-1074.	63.	0.000021	0.00023	0.001625	4186.
234.9	15.6	3834.	245.	0.000021	0.00024	0.01824	-2348.
0.6896	101.5	4969.	485.	0.000042	0.00047	0.7166	792.
12.0	1.217	16646.	19653.	0.001634	0.01890	0.7425	0.001707
16	2.1	28994.	29304.	0.008485	0.09523	618.	-2947.
16	48.	-757.	-109.	-.000031	-.00035	9187.	-2542.
625.2	89.	-896.	52.	0.000015	0.00017	0.000698	129.
249.5	15.7	3581.	445.	0.000034	0.00038	0.00784	-3187.
0.7322	101.5	3073.	63.	0.000005	0.00005	0.7702	446.
5.0	1.217	8846.	9441.	0.000718	0.00805	0.7915	0.000782

RUN POINT RPM VTIP MTIP COLL	WIND PSIW HUM,% TEMP PRESS RHO	T,LC SF,LC NF,LC PM,LC YM,LC Q,LC	THRUST SIDE NORMAL PITCH YAW TORQUE	CT CY CZ CPM CYM CQ	CT/S CY/S CZ/S CPM/S CYM/S CQ/S	POWER TORQUE,C CQ,C CQ/S,C FM FM,C	SPND FB SPND CB FB .3R CB .3R P LINK CT**3/2
16	2.5	37666.	38053.	0.011038	0.12388	913.	501.
17	28.	-1090.	70.	0.000020	0.00023	13403.	-3834.
624.9	89.	-1086.	-71.	-.000020	-.00023	0.001020	1977.
249.3	15.8	4647.	582.	0.000044	0.00050	0.01145	-2944.
0.7316	101.5	4625.	-142.	-.000011	-.00012	0.7718	648.
8.0	1.216	13119.	13953.	0.001062	0.01192	0.8035	0.001160
16	2.3	43820.	44225.	0.012846	0.14418	1177.	2934.
18	3.	-827.	-113.	-.000033	-.00037	17321.	-4966.
624.6	89.	-1120.	92.	0.000027	0.00030	0.001321	3348.
249.2	15.9	3255.	-208.	-.000016	-.00018	0.01482	-2814.
0.7311	101.5	4120.	364.	0.000028	0.00031	0.7505	767.
10.0	1.216	17025.	17992.	0.001372	0.01540	0.7795	0.001456
16	2.9	50967.	51434.	0.014962	0.16792	1531.	5780.
19	49.	-1525.	-202.	-.000059	-.00066	22836.	-6537.
624.1	89.	-1169.	127.	0.000037	0.00041	0.001744	4989.
249.0	15.9	4183.	265.	0.000020	0.00023	0.01957	-2632.
0.7306	101.5	5353.	-429.	-.000033	-.00037	0.7235	832.
12.0	1.216	22294.	23424.	0.001788	0.02007	0.7421	0.001830
22	0.3	-942.	-885.	-.000285	-.00320	169.	-13267.
4	68.	-244.	-45.	-.000015	-.00016	2773.	-1061.
583.4	66.	-112.	143.	0.000046	0.00052	0.000234	-5459.
232.8	8.7	489.	343.	0.000029	0.00033	0.00263	-3201.
0.6917	102.0	990.	234.	0.000020	0.00022	0.0145	-450.
-7.2	1.257	2684.	2772.	0.000234	0.00263	0.0145	0.000005
22	0.2	2029.	2071.	0.000667	0.00749	137.	-12025.
5	69.	-116.	-138.	-.000044	-.00050	2247.	-859.
583.4	66.	-348.	161.	0.000052	0.00058	0.000190	-4830.
232.8	8.8	1257.	336.	0.000028	0.00032	0.00213	-3085.
0.6915	102.0	853.	431.	0.000036	0.00041	0.0641	-338.
-6.0	1.257	2162.	2248.	0.000190	0.00213	0.0641	0.000017

RUN	WIND	T,LC	THRUST	CT	CT/S	POWER	SPND FB
POINT	PSIW	SF,LC	SIDE	CY	CY/S	TORQUE,C	SPND CB
RPM	HUM,%	NF,LC	NORMAL	CZ	CZ/S	CQ,C	FB .3R
VTIP	TEMP	PM,LC	PITCH	CPM	CPM/S	CQ/S,C	CB .3R
MTIP	PRESS	YM,LC	YAW	CYM	CYM/S	FM	P LINK
COLL	RHO	Q,LC	TORQUE	CQ	CQ/S	FM,C	CT**3/2
22	0.4	5642.	5822.	0.001875	0.02105	135.	-10639.
6	147.	-39.	-105.	-.000034	-.00038	2225.	-770.
583.4	66.	-342.	137.	0.000044	0.00050	0.000188	-4141.
232.8	8.8	1311.	412.	0.000035	0.00039	0.00211	-3046.
0.6915	102.0	598.	241.	0.000020	0.00023	0.3069	-177.
-4.0	1.257	2142.	2212.	0.000187	0.00210	0.3053	0.000081
22	0.5	8975.	9162.	0.002951	0.03312	167.	-9333.
7	254.	4.	-124.	-.000040	-.00045	2735.	-872.
583.3	66.	-349.	194.	0.000063	0.00070	0.000231	-3433.
232.7	8.8	1406.	553.	0.000047	0.00052	0.00260	-3062.
0.6914	102.0	404.	151.	0.000013	0.00014	0.4917	-23.
-2.0	1.257	2703.	2727.	0.000231	0.00259	0.4902	0.000160
22	0.5	12646.	12814.	0.004128	0.04633	221.	-7840.
8	168.	6.	-261.	-.000084	-.00094	3660.	-1093.
583.3	66.	-419.	153.	0.000049	0.00055	0.000309	-2620.
232.7	8.8	1809.	527.	0.000045	0.00050	0.00347	-3049.
0.6914	102.0	641.	477.	0.000040	0.00045	0.6130	118.
0.0	1.257	3506.	3617.	0.000306	0.00343	0.6059	0.000265
22	0.4	17963.	18158.	0.005855	0.06571	313.	-5698.
9	166.	183.	-254.	-.000082	-.00092	5185.	-1497.
583.2	66.	-305.	292.	0.000094	0.00106	0.000439	-1492.
232.7	8.9	905.	391.	0.000033	0.00037	0.00493	-2949.
0.6911	102.0	341.	619.	0.000052	0.00059	0.7293	258.
2.0	1.256	5041.	5132.	0.000434	0.00487	0.7218	0.000448
22	0.6	23168.	23471.	0.007572	0.08498	425.	-3438.
10	167.	110.	-173.	-.000056	-.00063	7057.	-1984.
583.1	66.	-543.	241.	0.000078	0.00087	0.000598	-359.
232.6	8.9	1871.	602.	0.000051	0.00057	0.00571	-2788.
0.6909	102.0	1050.	554.	0.000047	0.00053	0.7905	400.
4.0	1.256	6703.	6959.	0.000589	0.00661	0.7796	0.000659

RUN	WIND	T,LC	THRUST	CT	CT/S	POWER	SPND FB
POINT	PSIW	SF,LC	SIDE	CY	CY/S	TORQUE,C	SPND CB
RPM	HUM,%	NF,LC	NORMAL	CZ	CZ/S	CQ,C	FB .3R
VTIP	TEMP	PM,LC	PITCH	CPM	CPM/S	CQ/S,C	CB .3R
MTIP	PRESS	YM,LC	YAW	CYM	CYM/S	FM	P LINK
COLL	RHO	Q,LC	TORQUE	CQ	CQ/S	FM,C	CT**3/2
22	0.6	29164.	29510.	0.009528	0.10694	575.	-977.
11	152.	309.	-123.	-.000040	-.00045	9520.	-2660.
582.9	66.	-459.	221.	0.000071	0.00080	0.000807	902.
232.6	9.0	853.	-64.	-.000005	-.00006	0.00906	-2589.
0.6907	102.0	761.	730.	0.000062	0.00069	0.8239	536.
6.0	1.256	9134.	9418.	0.000798	0.00896	0.8150	0.000930
22	0.5	32051.	32404.	0.010466	0.11746	664.	254.
12	138.	8.	-.56.	-.000050	-.00057	10970.	-3077.
582.8	66.	-372.	272.	0.000088	0.00099	0.000930	1553.
232.5	9.0	696.	168.	0.000014	0.00016	0.01044	-2490.
0.6906	102.0	1892.	977.	0.000083	0.00093	0.8203	598.
7.0	1.256	10516.	10385.	0.000923	0.01036	0.8140	0.001071
22	0.5	34972.	35365.	0.011426	0.12824	764.	1544.
13	137.	-132.	-28.	-.000009	-.00010	12611.	-3533.
582.7	66.	-426.	205.	0.000066	0.00074	0.001069	2254.
232.5	9.0	1246.	422.	0.000036	0.00040	0.01200	-2371.
0.6905	102.0	2577.	928.	0.000079	0.00088	0.8137	671.
8.0	1.256	12011.	12514.	0.001061	0.01191	0.8074	0.001221
22	0.4	37542.	37977.	0.012277	0.13779	861.	2681.
14	138.	-31.	-51.	-.000017	-.00019	14190.	-3979.
582.6	66.	-476.	215.	0.000070	0.00078	0.001204	2856.
232.5	9.1	1321.	396.	0.000034	0.00038	0.01351	-2271.
0.6902	102.0	2592.	1070.	0.000091	0.00102	0.8034	737.
9.0	1.255	13567.	14108.	0.001197	0.01344	0.7988	0.001360
22	0.3	40547.	40981.	0.013258	0.14880	977.	3971.
15	134.	-39.	-143.	-.000046	-.00052	16071.	-4533.
582.5	66.	-753.	345.	0.000112	0.00125	0.001365	3550.
232.4	9.1	1964.	262.	0.000022	0.00025	0.01532	-2152.
0.6900	102.0	1880.	638.	0.000054	0.00061	0.7938	801.
10.0	1.255	15362.	16011.	0.001360	0.01526	0.7909	0.001527

RUN POINT RPM VTIP MTIP COLL	WIND PSIW HUM,% TEMP PRESS RHO	T,LC SF,LC NF,LC PM,LC YM,LC Q,LC	THRUST SIDE NORMAL PITCH YAW TORQUE	CT CY CZ CPM CYM CQ	CT/S CY/S CZ/S CPM/S CYM/S CQ/S	POWER TORQUE,C CQ,C CQ/S,C FM FM,C	SPND FB SPND CB FB .3R CB .3R P LINK CT**3/2
22	0.2	42748.	43271.	0.014005	0.15718	1092.	4942.
16	114.	-382.	-232.	-.000075	-.00084	17939.	-5092.
582.3	66.	-815.	152.	0.000049	0.00055	0.001524	4112.
232.3	9.1	2613.	555.	0.000047	0.00053	0.01710	-2073.
0.6899	102.0	2276.	83.	0.000007	0.00008	0.7701	848.
11.0	1.255	17130.	17912.	0.001522	0.01708	0.7689	0.001657
22	0.1	45047.	45576.	0.014761	0.16567	1224.	5941.
17	143.	-405.	-183.	-.000059	-.00066	20105.	-5735.
582.2	66.	-699.	146.	0.000047	0.00053	0.001709	4709.
232.3	9.2	2296.	483.	0.000041	0.00046	0.01918	-2031.
0.6896	102.0	2374.	89.	0.000008	0.00009	0.7429	882.
12.0	1.255	19242.	20077.	0.001707	0.01916	0.7419	0.001793
22	0.1	47440.	47955.	0.015544	0.17445	1374.	6992.
18	171.	-734.	-248.	-.000081	-.00090	22576.	-6435.
582.0	66.	-782.	343.	0.000111	0.00125	0.001921	5340.
232.2	9.2	2469.	693.	0.000059	0.00066	0.02156	-2006.
0.6894	102.0	4107.	820.	0.000070	0.00078	0.7145	911.
13.0	1.254	21597.	22541.	0.001918	0.02152	0.7134	0.001938
22	0.2	49140.	49667.	0.016116	0.18087	1521.	7622.
19	353.	-533.	-12.	-.000004	-.00004	24885.	-7171.
581.8	66.	-666.	208.	0.000067	0.00076	0.002119	5686.
232.1	9.2	1709.	214.	0.000018	0.00020	0.02378	-2018.
0.6891	102.0	3655.	650.	0.000055	0.00062	0.6805	939.
14.0	1.254	23986.	24967.	0.002125	0.02385	0.6828	0.002046
23	0.6	-931.	-921.	-.000297	-.00334	172.	-13260.
3	175.	-248.	-203.	-.000065	-.00073	2803.	-1016.
584.4	66.	-94.	318.	0.000103	0.00115	0.000237	-5414.
233.2	10.2	410.	596.	0.000050	0.00057	0.00266	-3338.
0.6909	102.0	1130.	500.	0.000042	0.00048	0.0152	-440.
-7.3	1.251	2667.	2807.	0.000238	0.00267	0.0153	0.000005

RUN POINT RPM VTIP MTIP COLL	WIND PSIW HUM,% TEMP PRESS RHO	T,LC SF,LC NF,LC PM,LC YM,LC Q,LC	THRUST SIDE NORMAL PITCH YAW TORQUE	CT CY CZ CPM CYM CQ	CT/S CY/S CZ/S CPM/S CYM/S CQ/S	POWER TORQUE,C CQ,C CQ/S,C FM FM,C	SPND FB SPND CB FB .3R CB .3R P LINK CT**3/2
23	0.5	2475.	2496.	0.000805	0.00904	136.	-11836.
4	138.	-198.	-175.	-.000056	-.00063	2224.	-782.
584.4	66.	-238.	197.	0.000064	0.00071	0.000188	-4702.
233.2	10.3	879.	384.	0.000032	0.00036	0.00211	-3197.
0.6909	102.0	1132.	519.	0.000044	0.00049	0.0861	-327.
-6.0	1.250	2045.	2215.	0.000188	0.00211	0.0858	0.000023
23	0.3	5737.	5899.	0.001903	0.02136	138.	-10614.
5	125.	-180.	-106.	-.000034	-.00038	2267.	-729.
584.4	66.	-366.	275.	0.000089	0.00100	0.000192	-4101.
233.2	10.3	1406.	634.	0.000054	0.00060	0.00215	-3187.
0.6908	102.0	1046.	280.	0.000024	0.00027	0.3068	-173.
-4.0	1.250	2137.	2259.	0.000191	0.00215	0.3057	0.000083
23	0.5	9231.	9348.	0.003016	0.03385	173.	-9249.
6	126.	-146.	-221.	-.000071	-.00080	2845.	-839.
584.3	66.	-318.	357.	0.000115	0.00129	0.000241	-3360.
233.1	10.3	1440.	837.	0.000071	0.00080	0.00270	-3198.
0.6908	102.0	966.	356.	0.000030	0.00034	0.4898	-21.
-2.0	1.250	2677.	2824.	0.000239	0.00268	0.4861	0.000166
23	0.6	13055.	13196.	0.004262	0.04784	227.	-7685.
7	123.	-189.	-198.	-.000064	-.00072	3738.	-1059.
584.2	66.	-429.	374.	0.000121	0.00135	0.000317	-2523.
233.1	10.4	1858.	919.	0.000078	0.00087	0.00356	-3166.
0.6905	102.0	1362.	372.	0.000032	0.00035	0.6264	115.
0.0	1.250	3505.	3705.	0.000314	0.00352	0.6209	0.000278
23	0.8	17984.	18212.	0.005884	0.06604	316.	-5673.
8	140.	-167.	-317.	-.000102	-.00115	5252.	-1453.
584.1	66.	-524.	348.	0.000112	0.00126	0.000445	-1455.
233.1	10.4	2098.	892.	0.000076	0.00085	0.00500	-3074.
0.6903	102.0	1284.	445.	0.000038	0.00042	0.7273	253.
2.0	1.250	4909.	5174.	0.000439	0.00492	0.7165	0.000451

RUN POINT RPM VTIP MTIP COLL	WIND PSIW HUM,% TEMP PRESS RHO	T,LC SF,LC NF,LC PM,LC YM,LC Q,LC	THRUST SIDE NORMAL PITCH YAW TORQUE	CT CY CZ CPM CYM CQ	CT/S CY/S CZ/S CPM/S CYM/S CQ/S	POWER TORQUE,C CQ,C CQ/S,C FM FM,C	SPND FB SPND CB FB .3R CB .3R P LINK CT**3/2
23	0.8	23445.	23718.	0.007670	0.08608	428.	-3383.
9	131.	-188.	-325.	-.000105	-.00118	7092.	-1956.
584.0	66.	-606.	332.	0.000107	0.00120	0.000602	-295.
233.0	10.6	2409.	1002.	0.000085	0.00095	0.00676	-2901.
0.6900	102.0	1799.	688.	0.000058	0.00066	0.7990	389.
4.0	1.249	6638.	7003.	0.000594	0.00667	0.7890	0.000672
23	0.7	29107.	29452.	0.009529	0.10694	582.	-1000.
10	136.	-355.	-254.	-.000082	-.00092	9620.	-2636.
583.8	66.	-554.	263.	0.000085	0.00096	0.000817	908.
232.9	10.6	2379.	1035.	0.000088	0.00099	0.00917	-2731.
0.6899	102.0	2602.	728.	0.000062	0.00069	0.8141	529.
6.0	1.249	9015.	9513.	0.000808	0.00907	0.8050	0.000930
23	0.9	32330.	32683.	0.010578	0.11872	677.	369.
11	139.	-424.	-250.	-.000081	-.00091	11233.	-3076.
583.7	66.	-572.	250.	0.000081	0.00091	0.000954	1636.
232.9	10.6	2597.	1138.	0.000097	0.00109	0.01071	-2615.
0.6897	102.0	3004.	858.	0.000073	0.00082	0.8174	606.
7.0	1.249	10523.	11077.	0.000941	0.01056	0.8061	0.001088
23	1.0	34990.	35382.	0.011458	0.12860	763.	1496.
12	140.	-348.	-410.	-.000133	-.00149	12682.	-3496.
583.6	66.	-566.	302.	0.000098	0.00110	0.001078	2215.
232.9	10.6	2172.	956.	0.000081	0.00091	0.01210	-2510.
0.6896	102.0	2590.	989.	0.000084	0.00094	0.8168	655.
8.0	1.249	11923.	12490.	0.001062	0.01191	0.8044	0.001226
23	1.1	38467.	38897.	0.012604	0.14146	882.	3006.
13	140.	-494.	-310.	-.000100	-.00113	14669.	-4010.
583.5	66.	-748.	216.	0.000070	0.00078	0.001248	3027.
232.8	10.7	3217.	1085.	0.000092	0.00104	0.01400	-2360.
0.6893	102.0	3910.	1396.	0.000119	0.00133	0.8152	732.
9.0	1.249	13795.	14428.	0.001227	0.01377	0.8018	0.001415

RUN POINT RPM VTIP MTIP COLL	WIND PSIW HUM,% TEMP PRESS RHO	T,LC SF,LC NF,LC PM,LC YM,LC Q,LC	THRUST SIDE NORMAL PITCH YAW TORQUE	CT CY CZ CPM CYM CQ	CT/S CY/S CZ/S CPM/S CYM/S CQ/S	POWER TORQUE,C CQ,C CQ/S,C FM FM,C	SPND FB SPND CB FB .3R CB .3R P LINK CT**3/2
23	1.1	41426.	41876.	0.013577	0.15238	1002.	4298.
14	147.	-612.	-256.	-.000083	-.00093	16659.	-4567.
583.3	66.	-792.	325.	0.000105	0.00118	0.001418	3744.
232.7	10.7	3279.	1235.	0.000105	0.00118	0.01591	-2232.
0.6891	102.0	4353.	1322.	0.000113	0.00126	0.0013	793.
10.0	1.249	15677.	16403.	0.001396	0.01567	0.7889	0.001582
23	0.9	44453.	44911.	0.014569	0.16351	1138.	5581.
15	151.	-522.	-249.	-.000081	-.00091	18870.	-5215.
583.2	66.	-840.	342.	0.000111	0.00125	0.001607	4460.
232.7	10.7	3271.	1102.	0.000094	0.00105	0.01803	-2125.
0.6890	102.0	4047.	1172.	0.000100	0.00112	0.7836	829.
11.0	1.249	17896.	18633.	0.001587	0.01781	0.7738	0.001758
23	0.6	46197.	46703.	0.015160	0.17015	1262.	6386.
16	145.	-651.	-203.	-.000066	-.00074	20837.	-5836.
583.0	66.	-872.	240.	0.000078	0.00087	0.001775	4972.
232.6	10.7	3194.	922.	0.000079	0.00088	0.01993	-2095.
0.6887	102.0	3922.	641.	0.000055	0.00061	0.7492	858.
12.0	1.249	19796.	20674.	0.001761	0.01977	0.7433	0.001867
23	0.8	47401.	47919.	0.015565	0.17469	1380.	6890.
17	155.	-649.	-198.	-.000064	-.00072	22833.	-6416.
582.9	66.	-736.	359.	0.000116	0.00131	0.001947	5339.
232.6	10.7	2060.	608.	0.000052	0.00058	0.02185	-2119.
0.6885	102.0	3905.	615.	0.000052	0.00059	0.7124	884.
13.0	1.248	21666.	22604.	0.001927	0.02163	0.7053	0.001942
23	0.9	423.	475.	0.000154	0.00172	161.	-12714.
18	154.	-158.	-96.	-.000031	-.00035	2638.	-940.
584.2	66.	-30.	112.	0.000036	0.00041	0.000224	-5168.
233.1	10.8	402.	461.	0.000039	0.00044	0.00251	-3248.
0.6900	102.0	294.	197.	0.000017	0.00019	0.0060	-393.
-7.0	1.248	2607.	2634.	0.000224	0.00251	0.0060	0.000002

RUN	WIND	T,LC	THRUST	CT	CT/S	POWER	SPND FB
POINT	PSIW	SF,LC	SIDE	CY	CY/S	TORQUE,C	SPND CB
RPM	HUM,%	NF,LC	NORMAL	CZ	CZ/S	CQ,C	FB .3R
VTIP	TEMP	PM,LC	PITCH	CPM	CPM/S	CQ/S,C	CB .3R
MTIP	PRESS	YM,LC	YAW	CYM	CYM/S	FM	P LINK
COLL	RHO	Q,LC	TORQUE	CQ	CQ/S	FM,C	CT**3/2
23	1.0	4566.	4707.	0.001523	0.01709	138.	-11082.
19	141.	-220.	-190.	-.000062	-.00069	2286.	-763.
584.2	66.	-195.	54.	0.000017	0.00019	0.000194	-4357.
233.1	10.8	685.	346.	0.000029	0.00033	0.00218	-3131.
0.6900	102.0	197.	350.	0.000030	0.00033	0.2191	-245.
-5.0	1.248	2268.	2259.	0.000192	0.00215	0.2165	0.000059
23	1.2	7791.	7922.	0.002563	0.02876	159.	-9842.
20	154.	-145.	7.	0.000002	0.00003	2653.	-797.
584.2	66.	-328.	269.	0.000087	0.00098	0.000225	-3704.
233.1	10.8	1060.	638.	0.000054	0.00061	0.00253	-3154.
0.6899	102.0	339.	13.	0.000001	0.00001	0.4165	-37.
-3.0	1.248	2654.	2593.	0.000220	0.00247	0.4072	0.000130
23	1.0	11240.	11380.	0.003683	0.04133	202.	-8422.
21	153.	-46.	-3.	-.000001	-.00001	3374.	-957.
584.1	66.	-448.	302.	0.000098	0.00110	0.000287	-2938.
233.1	10.9	1725.	741.	0.000063	0.00071	0.00322	-3162.
0.6898	102.0	439.	29.	0.000002	0.00003	0.5626	57.
-1.0	1.247	3267.	3306.	0.000281	0.00315	0.5513	0.000224
23	1.1	15638.	15830.	0.005124	0.05751	274.	-6629.
22	147.	-147.	-22.	-.000007	-.00008	4580.	-1258.
584.0	66.	-463.	313.	0.000101	0.00114	0.000389	-1981.
233.0	10.9	1967.	859.	0.000073	0.00082	0.00437	-3101.
0.6897	102.0	1011.	84.	0.000007	0.00008	0.6816	192.
1.0	1.247	4325.	4478.	0.000380	0.00427	0.6664	0.000367
23	1.2	20537.	20792.	0.006733	0.07557	370.	-4562.
23	147.	-57.	-345.	-.000112	-.00125	6188.	-1684.
584.0	66.	-586.	522.	0.000169	0.00190	0.000526	-909.
233.0	10.9	1827.	946.	0.000080	0.00090	0.00590	-2968.
0.6896	102.0	539.	248.	0.000021	0.00024	0.7605	326.
3.0	1.247	5723.	6043.	0.000514	0.00576	0.7427	0.000552

RUN	WIND	T,LC	THRUST	CT	CT/S	POWER	SPND FB
POINT	PSIW	SF,LC	SIDE	CY	CY/S	TORQUE,C	SPND CB
RPM	HUM,%	NF,LC	NORMAL	CZ	CZ/S	CQ,C	FB .3R
VTIP	TEMP	PM,LC	PITCH	CPM	CPM/S	CQ/S,C	CB .3R
MTIP	PRESS	YM,LC	YAW	CYM	CYM/S	FM	P LINK
COLL	RHO	Q,LC	TORQUE	CQ	CQ/S	FM,C	CT**3/2
23	1.3	25375.	25681.	0.008320	0.09338	487.	-2503.
25	153.	337.	-151.	-.000049	-.00055	8156.	-2197.
583.8	66.	-285.	380.	0.000123	0.00138	0.000694	114.
232.9	10.9	-46.	444.	0.000038	0.00042	0.00778	-2829.
0.6894	102.0	-288.	169.	0.000014	0.00016	0.7927	456.
5.0	1.247	7563.	7959.	0.000677	0.00760	0.7736	0.000759
23	1.2	30034.	30414.	0.009861	0.11068	613.	-577.
26	149.	-65.	-282.	-.000092	-.00103	10237.	-2780.
583.7	66.	-517.	366.	0.000119	0.00133	0.000871	1119.
232.9	11.0	1567.	835.	0.000071	0.00080	0.00978	-2659.
0.6892	102.0	1315.	594.	0.000051	0.00057	0.8117	557.
6.5	1.247	9529.	10023.	0.000853	0.00957	0.7947	0.000979
23	1.1	32813.	33196.	0.010767	0.12084	701.	638.
27	161.	-167.	-217.	-.000070	-.00079	11714.	-3191.
583.6	66.	-420.	359.	0.000117	0.00131	0.000997	1749.
232.9	11.0	1352.	881.	0.000075	0.00084	0.01119	-2562.
0.6890	102.0	2195.	798.	0.000068	0.00076	0.8084	628.
7.5	1.247	10885.	11477.	0.000977	0.01097	0.7921	0.001117
23	1.1	35724.	36153.	0.011731	0.13166	802.	1835.
28	164.	-225.	-77.	-.000025	-.00028	13387.	-3669.
583.5	66.	-499.	235.	0.000076	0.00086	0.001140	2415.
232.8	11.0	1864.	883.	0.000075	0.00084	0.01280	-2455.
0.6889	102.0	2303.	511.	0.000044	0.00049	0.8033	689.
8.5	1.247	12486.	13130.	0.001118	0.01255	0.7879	0.001271
23	1.1	38675.	39118.	0.012702	0.14256	910.	3094.
29	161.	-107.	-135.	-.000044	-.00049	15178.	-4169.
583.4	66.	-475.	183.	0.000059	0.00067	0.001294	3098.
232.8	11.1	1758.	711.	0.000061	0.00068	0.01452	-2330.
0.6887	102.0	2335.	767.	0.000065	0.00073	0.7973	747.
9.5	1.246	14174.	14895.	0.001269	0.01425	0.7824	0.001432

RUN	WIND	T,LC	THRUST	CT	CT/S	POWER	SPND FB
POINT	PSIW	SF,LC	SIDE	CY	CY/S	TORQUE,C	SPND CB
RPM	HUM,%	NF,LC	NORMAL	CZ	CZ/S	CQ,C	FB .3R
VTIP	TEMP	PM,LC	PITCH	CPM	CPM/S	CQ/S,C	CB .3R
MTIP	PRESS	YM,LC	YAW	CYM	CYM/S	FM	P LINK
COLL	RHO	Q,LC	TORQUE	CQ	CQ/S	FM,C	CT**3/2
23	1.0	42039.	42495.	0.013805	0.15494	1043.	4525.
30	170.	-138.	-152.	-.000049	-.00055	17347.	-4766.
583.3	66.	-614.	352.	0.000114	0.00128	0.001479	3911.
232.7	11.1	1409.	247.	0.000021	0.00024	0.01660	-2190.
0.6885	102.0	2825.	1074.	0.000092	0.00103	0.7876	797.
10.5	1.246	16297.	17075.	0.001456	0.01634	0.7753	0.001622
23	0.9	44100.	44616.	0.014503	0.16277	1165.	5447.
31	156.	-657.	-241.	-.000078	-.00088	19331.	-5382.
583.1	66.	-978.	326.	0.000106	0.00119	0.001649	4451.
232.7	11.2	3801.	1324.	0.000113	0.00127	0.01851	-2129.
0.6883	102.0	4005.	644.	0.000055	0.00062	0.7586	845.
11.5	1.246	18149.	19077.	0.001628	0.01827	0.7487	0.001746
23	1.2	1706.	1807.	0.000586	0.00657	154.	-12206.
32	154.	-219.	104.	0.000034	0.00038	2527.	-891.
584.2	66.	-31.	103.	0.000033	0.00038	0.000215	-4916.
233.1	11.3	441.	494.	0.000042	0.00047	0.00241	-3179.
0.6893	102.0	313.	-235.	-.000020	-.00022	0.0468	-350.
-6.5	1.245	2443.	2515.	0.000214	0.00240	0.0466	0.000014
23	1.2	5078.	5219.	0.001692	0.01899	135.	-10853.
33	149.	-195.	-114.	-.000037	-.00041	2246.	-722.
584.2	66.	-241.	95.	0.000031	0.00035	0.000191	-4247.
233.1	11.4	952.	338.	0.000029	0.00032	0.00214	-3115.
0.6893	102.0	682.	396.	0.000034	0.00038	0.2619	-208.
-4.5	1.245	2075.	2208.	0.000188	0.00211	0.2575	0.000070
23	1.6	8559.	8660.	0.002811	0.03155	163.	-9482.
34	145.	-107.	-74.	-.000024	-.00027	2738.	-801.
584.1	66.	-294.	319.	0.000103	0.00116	0.000233	-3519.
233.1	11.4	1313.	809.	0.000069	0.00077	0.00262	-3124.
0.6891	102.0	374.	111.	0.000009	0.00011	0.4655	-55.
-2.5	1.245	2505.	2659.	0.000226	0.00254	0.4520	0.000149

RUN	WIND	T,LC	THRUST	CT	CT/S	POWER	SPND FB
POINT	PSIW	SP,LC	SIDE	CY	CY/S	TORQUE,C	SPND CB
RPM	HUM,%	NF,LC	NORMAL	CZ	CZ/S	CQ,C	FB .3R
VTIP	TEMP	PM,LC	PITCH	CPM	CPM/S	CQ/S,C	CB .3R
MTIP	PRESS	YM,LC	YAW	CYM	CYM/S	FM	P LINK
COLL	RHO	Q,LC	TORQUE	CQ	CQ/S	FM,C	CT**3/2
23	1.3	25375.	25681.	0.008320	0.09338	487.	-2503.
25	153.	337.	-151.	-.000049	-.00055	8156.	-2197.
583.8	66.	-285.	380.	0.000123	0.00138	0.000694	114.
232.9	10.9	-46.	444.	0.000038	0.00042	0.00778	-2829.
0.6894	102.0	-288.	169.	0.000014	0.00016	0.7927	456.
5.0	1.247	7563.	7959.	0.000677	0.00760	0.7736	0.000759
23	1.2	30034.	30414.	0.009861	0.11063	613.	-577.
26	149.	-65.	-282.	-.000092	-.00103	10237.	-2780.
583.7	66.	-517.	366.	0.000119	0.00133	0.000871	1119.
232.9	11.0	1567.	835.	0.000071	0.00080	0.00978	-2659.
0.6892	102.0	1315.	594.	0.000051	0.00057	0.8117	557.
6.5	1.247	9529.	10023.	0.000853	0.00957	0.7947	0.000979
23	1.1	32813.	33196.	0.010767	0.12084	701.	638.
27	161.	-167.	-217.	-.000070	-.00079	11714.	-3191.
583.6	66.	-420.	359.	0.000117	0.00131	0.000997	1749.
232.9	11.0	1352.	881.	0.000075	0.00084	0.01119	-2562.
0.6890	102.0	2195.	798.	0.000068	0.00076	0.8084	628.
7.5	1.247	10885.	11477.	0.000977	0.01097	0.7921	0.001117
23	1.1	35724.	36153.	0.011731	0.13166	802.	1835.
28	164.	-225.	-77.	-.000025	-.00028	13387.	-3669.
583.5	66.	-499.	235.	0.000076	0.00086	0.001140	2415.
232.8	11.0	1864.	883.	0.000075	0.00084	0.01280	-2455.
0.6889	102.0	2303.	511.	0.000044	0.00049	0.8033	689.
8.5	1.247	12486.	13130.	0.001118	0.01255	0.7879	0.001271
23	1.1	38675.	39118.	0.012702	0.14256	910.	3094.
29	161.	-107.	-135.	-.000044	-.00049	15178.	-4169.
583.4	66.	-475.	183.	0.000059	0.00067	0.001294	3098.
232.8	11.1	1758.	711.	0.000061	0.00068	0.01452	-2330.
0.6887	102.0	2336.	767.	0.000065	0.00073	0.7973	747.
9.5	1.246	14174.	14895.	0.001269	0.01425	0.7824	0.001432

RUN	WIND	T,LC	THRUST	CT	CT/S	POWER	SPND FB
POINT	PSIW	SF,LC	SIDE	CY	CY/S	TORQUE,C	SPND CB
RPM	HUM,%	NF,LC	NORMAL	CZ	CZ/S	CQ,C	FB .3R
VTIP	TEMP	PM,LC	PITCH	CPM	CPM/S	CQ/S,C	CB .3R
MTIP	PRESS	YM,LC	YAW	CYM	CYM/S	FM	P LINK
COLL	RHO	Q,LC	TORQUE	CQ	CQ/S	FM,C	CT**3/2
23	1.0	42039.	42495.	0.013805	0.15494	1043.	4525.
30	170.	-138.	-152.	-.000049	-.00055	17347.	-4766.
583.3	66.	-614.	352.	0.000114	0.00128	0.001479	3911.
232.7	11.1	1409.	247.	0.000021	0.00024	0.01660	-2190.
0.6885	102.0	2825.	1074.	0.000092	0.00103	0.7876	797.
10.5	1.246	16297.	17075.	0.001456	0.01634	0.7753	0.001622
23	0.9	44100.	44616.	0.014503	0.16277	1165.	5447.
31	156.	-657.	-241.	-.000078	-.00088	19331.	-5382.
583.1	66.	-978.	3.6.	0.000106	0.00119	0.001649	4451.
232.7	11.2	3801.	1324.	0.000113	0.00127	0.01651	-2129.
0.6883	102.0	4005.	644.	0.000055	0.00062	0.7586	845.
11.5	1.246	18149.	19077.	0.001628	0.01827	0.7487	0.001746
23	1.2	1706.	1807.	0.000586	0.00657	154.	-12206.
32	154.	-219.	104.	0.000034	0.00038	2527.	-891.
584.2	66.	-31.	103.	0.000033	0.00038	0.000215	-4916.
233.1	11.3	441.	494.	0.000042	0.00047	0.00241	-3179.
0.6893	102.0	313.	-235.	-.000020	-.00022	0.0468	-350.
-6.5	1.245	2443.	2515.	0.000214	0.00240	0.0466	0.000014
23	1.2	5078.	5219.	0.001692	0.01899	135.	-10853.
33	149.	-195.	-114.	-.000037	-.00041	2246.	-722.
584.2	66.	-241.	95.	0.000031	0.00035	0.000191	-4247.
233.1	11.4	952.	338.	0.000029	0.00032	0.00214	-3115.
0.6893	102.0	682.	396.	0.000034	0.00038	0.2619	-208.
-4.5	1.245	2075.	2208.	0.000188	0.00211	0.2575	0.000070
23	1.6	8559.	8668.	0.002811	0.03155	163.	-9482.
34	145.	-107.	-74.	-.000024	-.00027	2738.	-801.
584.1	66.	-294.	319.	0.000103	0.00116	0.000233	-3519.
233.1	11.4	1313.	809.	0.000069	0.00077	0.00262	-3124.
0.6891	102.0	374.	111.	0.000009	0.00011	0.4655	-55.
-2.5	1.245	2505.	2659.	0.000226	0.00254	0.4520	0.000149

RUN	WIND	T,LC	THRUST	CT	CT/S	POWER	SPND FB
PJINT	PSIW	SF,LC	SIDE	CY	CY/S	TORQUE,C	SPND CB
RPM	HUM,%	NF,LC	NORMAL	CZ	CZ/S	CQ,C	FB .3R
VTIP	TEMP	PM,LC	PITCH	CPM	CPM/S	CQ/S,C	CB .3R
MTIP	PRESS	YM,LC	YAW	CYM	CYM/S	FM	P LINK
COLL	RHO	Q,LC	TORQUE	CQ	CQ/S	FM,C	CT**3/2
23	1.6	11990.	12142.	0.003938	0.04420	211.	-8103.
35	161.	146.	-116.	-.000038	-.00042	3569.	-988.
584.1	66.	-319.	254.	0.000082	0.00093	0.000304	-2777.
233.0	11.4	790.	531.	0.000045	0.00051	0.00341	-3127.
0.5891	102.0	-617.	-59.	-.000005	-.00006	0.5953	88.
-0.5	1.245	3318.	3448.	0.000294	0.00329	0.5751	0.000247
23	1.5	16816.	17018.	0.005521	0.06197	294.	-6112.
36	171.	99.	-192.	-.000062	-.00070	4968.	-1337.
584.0	66.	-331.	355.	0.000115	0.00129	0.000423	-1718.
233.0	11.4	683.	304.	0.000026	0.00029	0.00475	-3045.
0.6890	102.0	486.	461.	0.000039	0.00044	0.7097	225.
1.5	1.245	4572.	4799.	0.000409	0.00459	0.6856	0.000410
23	1.6	22308.	22576.	0.007330	0.08226	405.	-3828.
37	170.	-194.	-168.	-.000055	-.00061	6965.	-1838.
583.9	66.	-676.	272.	0.000088	0.00099	0.000585	-545.
233.0	11.6	2461.	851.	0.000072	0.00081	0.00657	-2886.
0.6888	102.0	1355.	243.	0.000021	0.00023	0.7859	366.
3.5	1.244	6205.	6624.	0.000564	0.00634	0.7583	0.000628
23	1.4	27716.	28065.	0.009116	0.10231	535.	-1548.
38	152.	-309.	-160.	-.000052	-.00058	8987.	-2403.
583.8	66.	-792.	427.	0.000139	0.00156	0.000766	607.
232.9	11.6	2650.	956.	0.000082	0.00092	0.00860	-2682.
0.6886	102.0	1796.	98.	0.000008	0.00009	0.8254	501.
5.5	1.244	8199.	8745.	0.000746	0.00837	0.8032	0.000870
23	1.7	30396.	30773.	0.009998	0.11222	615.	-434.
39	152.	-354.	-170.	-.000055	-.00062	10364.	-2778.
583.7	66.	-650.	352.	0.000114	0.00128	0.000884	1195.
232.9	11.6	2159.	911.	0.000078	0.00087	0.00992	-2596.
0.6885	102.0	2144.	302.	0.000026	0.00029	0.8243	567.
6.5	1.244	9444.	10055.	0.000857	0.00962	0.7998	0.001000

RUN	WIND	T,LC	THRUST	CT	CT/S	POWER	SPND FB
POINT	PSIW	SF,LC	SIDE	CY	CY/S	TORQUE,C	SPND CB
RPM	HUM,%	NF,LC	NORMAL	CZ	CZ/S	CQ,C	FB .3P
VTIP	TEMP	PM,LC	PITCH	CPM	CPM/S	CQ/S,C	CB .3R
MTIP	PRESS	YM,LC	YAW	CYM	CYM/S	FM	P LINK
COLL	RHO	Q,LC	TORQUE	CQ	CQ/S	FM,C	CT**3/2
23	1.7	34011.	34373.	0.011173	0.12540	724.	1082.
40	155.	-334.	-229.	-.000074	-.00083	12205.	-3292.
583.6	66.	-545.	359.	0.000117	0.00131	0.001041	1986.
232.8	11.6	2292.	1125.	0.000096	0.00108	0.01169	-2481.
0.6883	102.0	2707.	806.	0.000069	0.00077	0.8260	642.
7.5	1.244	11221.	11849.	0.001011	0.01135	0.8019	0.001181
23	1.8	36437.	36927.	0.012010	0.13479	811.	2172.
41	158.	-781.	-13.	-.000004	-.00005	13674.	-3682.
583.5	66.	-748.	326.	0.000106	0.00119	0.001167	2571.
232.8	11.6	2757.	1131.	0.000097	0.00106	0.01310	-2376.
0.6882	102.0	4108.	664.	0.000057	0.00064	0.8217	699.
8.5	1.244	12570.	13266.	0.001132	0.01271	0.7972	0.001316
23	1.4	38759.	39197.	0.012752	0.14313	910.	3148.
42	159.	-368.	-173.	-.000056	-.00063	15229.	-4166.
583.4	66.	-697.	345.	0.000112	0.00126	0.001300	3126.
232.8	11.6	2276.	896.	0.000077	0.00086	0.01460	-2285.
0.6880	102.0	2481.	377.	0.000032	0.00036	0.8009	748.
9.5	1.244	14102.	14887.	0.001271	0.01427	0.7829	0.001440
23	1.4	42428.	42890.	0.013965	0.15673	1052.	4721.
43	156.	-500.	-172.	-.000056	-.00063	17606.	-4802.
583.2	66.	-704.	220.	0.000072	0.00080	0.001505	4005.
232.7	11.7	2966.	1043.	0.000089	0.00100	0.01689	-2132.
0.6878	102.0	4095.	1233.	0.000105	0.00118	0.7925	816.
10.5	1.244	16374.	17227.	0.001472	0.01652	0.7755	0.001650
23	1.2	45107.	45603.	0.014860	0.16678	1191.	5884.
44	158.	-690.	-39.	-.000013	-.00014	19841.	-5472.
583.0	66.	-916.	153.	0.000050	0.00056	0.001697	4683.
232.6	11.7	3516.	922.	0.000079	0.00088	0.01905	-2055.
0.6875	102.0	4965.	1072.	0.000092	0.00103	0.7677	850.
11.5	1.244	18571.	19505.	0.001668	0.01872	0.7547	0.001811

RUN	WIND	T,LC	THRUST	CT	CT/S	POWER	SPND FB
POINT	PSIW	SF,LC	SIDE	CY	CY/S	TORQUE,C	SPND CB
RPM	HUM,%	NF,LC	NORMAL	CZ	CZ/S	CQ,C	FB .3R
VTIP	TEMP	PM,LC	PITCH	CPM	CPM/S	CQ/S,C	CB .3R
MTIP	PRESS	YM,LC	YAW	CYM	CYM/S	FM	P LINK
COLL	RHO	Q,LC	TORQUE	CQ	CQ/S	FM,C	CT**3/2
23	1.3	46548.	47052.	0.015343	0.17220	1307.	6510.
45	161.	-664.	-129.	-.000042	-.00047	21799.	-6049.
582.9	66.	-871.	305.	0.000099	0.00111	0.001866	5094.
232.6	11.8	2846.	747.	0.000064	0.00072	0.02094	-2063.
0.6873	102.0	3955.	562.	0.000048	0.00054	0.7332	876.
12.5	1.243	20403.	21412.	0.001833	0.02057	0.7202	0.001901
24	0.0	28970.	29261.	0.008407	0.09435	609.	-2929.
3	311.	-49.	-6.	-.000002	-.00002	9313.	-2352.
624.1	66.	-471.	192.	0.000055	0.00062	0.000702	100.
249.0	14.4	1960.	722.	0.000054	0.00061	0.00788	-3017.
0.7325	102.0	2398.	598.	0.000045	0.00051	0.7757	529.
5.0	1.231	8796.	9317.	0.000703	0.00788	0.7759	0.000771
24	0.0	39225.	39626.	0.011405	0.12801	936.	1088.
4	347.	-334.	82.	0.000024	0.00026	14319.	-3773.
623.8	66.	187.	454.	0.000131	0.00147	0.001082	2200.
248.9	14.6	-967.	681.	0.000051	0.00058	0.01214	-2737.
0.7318	102.0	4003.	1308.	0.000099	0.00111	0.7959	729.
8.0	1.230	13804.	14322.	0.001082	0.01214	0.7961	0.001218
24	0.1	46466.	46932.	0.013505	0.15158	1224.	3972.
5	312.	57.	243.	0.000070	0.00078	18721.	-5023.
623.5	66.	-19.	273.	0.000079	0.00088	0.001414	3815.
248.8	14.3	200.	801.	0.000060	0.00068	0.01587	-2482.
0.7319	102.0	2927.	1142.	0.000086	0.00097	0.7840	838.
10.0	1.231	18013.	18740.	0.001415	0.01589	0.7848	0.001569
24	0.7	52240.	52782.	0.015210	0.17071	1551.	6254.
6	156.	-693.	214.	0.000062	0.00069	23980.	-6493.
623.1	66.	134.	312.	0.000090	0.00101	0.001814	5123.
248.6	14.3	-1230.	465.	0.000035	0.00039	0.02036	-2383.
0.7313	102.0	5705.	1313.	0.000099	0.00111	0.7378	889.
12.0	1.231	22910.	23765.	0.001797	0.02017	0.7312	0.001876

RUN	WIND	T,LC	THRUST	CT	CT/S	POWER	SPND FB
POINT	PSIW	SF,LC	SIDE	CY	CY/S	TORQUE,C	SPND CB
RPM	HUM,%	NF,LC	NORMAL	CZ	CZ/S	CQ,C	FB .3R
VTIP	TEMP	PM,LC	PITCH	CPM	CPM/S	CQ/S,C	CB .3R
MTIP	PRESS	YM,LC	YAW	CYM	CYM/S	FM	P LINK
COLL	RHO	Q,LC	TORQUE	CQ	CQ/S	FM,C	CT**3/2
24	1.3	18096.	18203.	0.007803	0.08758	317.	-2771.
10	50.	-121.	-58.	-.000025	-.00028	5801.	-1670.
511.3	66.	126.	374.	0.000160	0.00180	0.000653	-224.
204.0	14.8	-461.	313.	0.000035	0.00039	0.00733	-2592.
0.5997	102.0	806.	-72.	-.000008	-.00009	0.7321	328.
5.0	1.229	4911.	5917.	0.000666	0.00747	0.7467	0.000689
24	1.4	24857.	25018.	0.010732	0.12045	487.	413.
11	50.	-303.	-164.	-.000070	-.00079	8928.	-2568.
511.1	66.	260.	409.	0.000175	0.00197	0.001005	1425.
203.9	14.8	-852.	409.	0.000046	0.00052	0.01128	-2304.
0.5995	102.0	2023.	567.	0.000064	0.00072	0.7671	497.
8.0	1.229	7999.	9101.	0.001025	0.01150	0.7819	0.001112
24	1.8	19883.	20048.	0.008021	0.09002	365.	-2682.
13	37.	-294.	-198.	-.000079	-.00089	6371.	-1834.
529.2	65.	526.	297.	0.000119	0.00133	0.000669	-105.
211.2	14.8	-1385.	425.	0.000045	0.00050	0.00751	-2722.
0.6207	102.0	1290.	164.	0.000017	0.00019	0.7344	359.
5.0	1.229	5158.	6585.	0.000691	0.00776	0.7592	0.000718
24	1.7	21777.	21942.	0.008014	0.08994	425.	-2915.
14	19.	-12.	-71.	-.000026	-.00029	7065.	-1982.
553.8	66.	658.	308.	0.000112	0.00126	0.000677	-92.
221.0	14.7	-2587.	-1.	0.000000	0.00000	0.00760	-2946.
0.6497	102.0	807.	284.	0.000027	0.00031	0.7226	400.
5.0	1.230	6001.	7322.	0.000702	0.00788	0.7489	0.000717
24	1.7	28880.	29111.	0.010631	0.11932	625.	221.
15	36.	-193.	-239.	-.000087	-.00098	10505.	-2968.
553.6	66.	588.	396.	0.000145	0.00162	0.001007	1555.
220.9	14.4	-2730.	-85.	-.000008	-.00009	0.01130	-2693.
0.6497	102.0	1765.	716.	0.000069	0.00077	0.7498	577.
8.0	1.231	9241.	10784.	0.001034	0.01160	0.7697	0.001096

RUN	WIND	T,LC	THRUST	CT	CT/S	POWER	SPND FB
POINT	PSIW	SF,LC	SIDE	CY	CY/S	TORQUE,C	SPND CB
RPM	HUM,%	AF,LC	NORMAL	CZ	CZ/S	CQ,C	FB .3R
VTIP	TEMP	PM,LC	PITCH	CPM	CPM/S	CQ/S,C	CB .3R
MTIP	PRESS	YM,LC	YAW	CYM	CYM/S	FM	P LINK
COLL	RHO	Q,LC	TORQUE	CQ	CQ/S	FM,C	CT**3/2
24	1.6	34111.	34392.	0.012578	0.14117	801.	2587.
16	33.	-307.	-261.	-.000096	-.00107	13504.	-3844.
553.3	66.	458.	424.	0.000155	0.00174	0.001296	2829.
220.8	14.6	-2212.	-63.	-.000006	-.00007	0.01455	-2435.
0.6492	102.0	2500.	877.	0.000084	0.00094	0.7512	705.
10.0	1.230	12161.	13831.	0.001328	0.01490	0.7694	0.001411
24	1.6	38611.	38936.	0.014242	0.15984	974.	4541.
17	20.	-366.	-250.	-.000092	-.00103	15384.	-4708.
553.1	66.	421.	577.	0.000211	0.00237	0.001573	3920.
220.7	14.4	-2566.	-25.	-.000002	-.00003	0.01765	-2229.
0.6492	102.0	2765.	973.	0.000093	0.00105	0.7443	783.
11.5	1.231	15322.	16817.	0.001615	0.01812	0.7639	0.001700
24	2.0	39111.	39488.	0.012764	0.14325	986.	2927.
18	30.	-564.	-252.	-.000081	-.00091	15537.	-4383.
588.8	66.	447.	274.	0.000088	0.00099	0.001318	3157.
234.9	14.8	-1623.	122.	0.000010	0.00012	0.01479	-2741.
0.6906	102.0	1871.	-205.	-.000017	-.00019	0.7512	772.
10.0	1.229	14109.	15997.	0.001357	0.01523	0.7734	0.001442
24	1.8	41502.	41923.	0.013549	0.15206	1093.	3958.
19	35.	-803.	-250.	-.000081	-.00091	17306.	-4879.
588.7	66.	630.	264.	0.000085	0.00096	0.001468	3758.
234.9	14.6	-1721.	392.	0.000033	0.00037	0.01647	-2626.
0.6906	102.0	2414.	-536.	-.000045	-.00051	0.7414	822.
11.0	1.230	15318.	17731.	0.001504	0.01688	0.7596	0.001577
24	1.8	44070.	44495.	0.014385	0.16145	1238.	5030.
20	22.	-867.	-123.	-.000041	-.00046	19583.	-5582.
588.5	66.	-42.	210.	0.000068	0.00076	0.001662	4416.
234.8	14.6	370.	433.	0.000037	0.00041	0.01865	-2568.
0.6905	102.0	3337.	-219.	-.000019	-.00021	0.7157	863.
12.0	1.230	18561.	20086.	0.001704	0.01913	0.7341	0.001725

RUN	WIND	T,LC	THRUST	CT	CT/S	POWER	SPND FB
POINT	PSIW	SF,LC	SIDE	CY	CY/S	TORQUE,C	SPND CB
RPM	HUM,%	NF,LC	NORMAL	CZ	CZ/S	CQ,C	FB .3R
VTIP	TEMP	PM,LC	PITCH	CPM	CPM/S	CQ/S,C	CB .3R
MTIP	PRESS	YM,LC	YAW	CYM	CYM/S	FM	P LINK
COLL	RHO	Q,LC	TORQUE	CQ	CQ/S	FM,C	CT**3/2
25	2.4	-1245.	-1241.	-.000402	-.00451	178.	-13613.
10	2.	0.	17.	0.000005	0.00006	2917.	-1072.
586.4	75.	22.	146.	0.000047	0.00053	0.000248	-5575.
234.0	12.4	-233.	118.	0.000010	0.00011	0.00278	-3162.
0.6906	101.8	35.	-100.	-.000009	-.00010	0.0231	-487.
-7.1	1.237	2781.	2901.	0.000247	0.00277	0.0230	0.000008
25	2.7	2933.	2995.	0.000970	0.01089	137.	-11909.
11	2.	-13.	-7.	-.000002	-.00002	2163.	-793.
586.4	75.	383.	-134.	-.000043	-.00049	0.000184	-4448.
234.0	12.4	-407.	234.	0.000020	0.00022	0.00206	-3013.
0.6906	101.8	132.	208.	0.000018	0.00020	0.1128	-300.
-5.1	1.237	2167.	2228.	0.000189	0.00213	0.1161	0.000030
25	2.3	6320.	6377.	0.002068	0.02321	151.	-10617.
12	2.	-92.	86.	0.000028	0.00031	2343.	-799.
586.3	75.	392.	56.	0.000018	0.00020	0.000199	-3763.
233.9	12.7	-1015.	368.	0.000031	0.00035	0.00274	-3024.
0.6903	101.8	657.	113.	0.000010	0.00011	0.3190	-132.
-3.0	1.236	2324.	2456.	0.000209	0.00235	0.3334	0.000094
25	2.2	9589.	9691.	0.003140	0.03524	194.	-9318.
13	2.	-154.	-24.	-.000008	-.00009	2999.	-950.
586.3	75.	288.	-56.	-.000018	-.00020	0.000255	-3276.
233.9	12.7	-573.	288.	0.000025	0.00028	0.00287	-3068.
0.6902	101.8	1077.	227.	0.000019	0.00022	0.4632	27.
-1.0	1.236	2994.	3155.	0.000269	0.00301	0.4873	0.000176
25	2.3	13705.	13825.	0.004486	0.05035	265.	-7663.
14	2.	-287.	-187.	-.000061	-.00068	4079.	-1247.
586.2	75.	-51.	-54.	-.000018	-.00020	0.000347	-2357.
233.9	12.7	1041.	581.	0.000049	0.00056	0.00390	-3060.
0.6901	101.8	1322.	232.	0.000020	0.00022	0.5780	167.
1.0	1.236	4087.	4315.	0.000367	0.00412	0.6115	0.000300

RUN	WIND	T,LC	THRUST	CT	CT/S	POWER	SPND FB
POINT	PSIW	SF,LC	SIDE	CY	CY/S	TOPQUE,C	SPND CB
RPM	HUM,%	NF,LC	NORMAL	CZ	CZ/S	CQ,C	FB .3R
VTIP	TEMP	PM,LC	PITCH	CPM	CPM/S	CQ/S,C	CB .3R
MTIP	PRESS	YM,LC	YAW	CYM	CYM/S	FM	P LINK
COLL	RHO	Q,LC	TORQUE	CQ	CQ/S	FM,C	CT**3/2
25	3.5	18076.	18218.	0.005913	0.06636	360.	-5865.
15	2.	-173.	11.	0.000003	0.00004	5387.	-1672.
586.1	75.	336.	-42.	-.000014	-.00015	0.000459	-1393.
233.8	12.7	-698.	391.	0.000033	0.00037	0.00515	-3005.
0.6900	101.8	1696.	418.	0.000036	0.00040	0.6428	295.
3.0	1.236	5595.	5870.	0.000500	0.00561	0.7004	0.000455
25	2.9	24309.	24512.	0.007960	0.08934	504.	-3290.
16	2.	-166.	-119.	-.000039	-.00043	7699.	-2318.
585.9	75.	261.	-6.	-.000002	-.00002	0.000656	-164.
233.8	12.7	-634.	325.	0.000026	0.00031	0.00736	-2824.
0.6898	101.8	1602.	469.	0.000040	0.00045	0.7172	431.
5.0	1.236	7818.	8214.	0.000700	0.00786	0.7652	0.000710
25	2.8	26653.	26881.	0.008731	0.09800	584.	-2318.
17	2.	-243.	12.	0.000004	0.00004	8982.	-2697.
585.9	75.	447.	-20.	-.000006	-.00007	0.000766	352.
233.8	12.7	-889.	679.	0.000058	0.00065	0.00859	-2795.
0.6897	101.8	2469.	773.	0.000066	0.00074	0.7103	500.
6.0	1.236	9095.	9526.	0.000812	0.00911	0.7533	0.000816
25	2.3	26912.	27153.	0.008820	0.09899	582.	-2190.
18	2.	-419.	-116.	-.000038	-.00042	9038.	-2687.
585.9	75.	287.	-77.	-.000025	-.00028	0.000771	415.
233.8	12.7	-41.	787.	0.000067	0.00075	0.00865	-2765.
0.6897	101.8	2541.	551.	0.000047	0.00053	0.7236	497.
6.0	1.236	9077.	9493.	0.000809	0.00908	0.7600	0.000828
25	2.2	30484.	30733.	0.009986	0.11208	669.	-666.
19	2.	-580.	-131.	-.000043	-.00048	10409.	-3070.
585.8	75.	264.	-170.	-.000055	-.00062	0.000888	1115.
233.7	12.7	202.	785.	0.000067	0.00075	0.00996	-2594.
0.6896	101.8	2909.	462.	0.000039	0.00044	0.7587	556.
7.0	1.236	10406.	10904.	0.000930	0.01044	0.7948	0.000998

RUN POINT RPM VTIP MTIP COLL	WIND PSIW HUM,% TEMP PRESS RHO	T,LC SF,LC NF,LC PM,LC YM,LC Q,LC	THRUST SIDE NORMAL PITCH YAW TORQUE	CT CY CZ CPM CYM CQ	CT/S CY/S CZ/S CPM/S CYM/S CQ/S	POWER TORQUE,C CQ,C CQ/S,C FM FM,C	SPND FB SPND CB FB .3R CB .3R P LINK CT**3/2
25	2.4	32080.	32396.	0.010530	0.11818	740.	45.
20	2.	-719.	-203.	-.000066	-.00074	11507.	-3417.
585.7	75.	-256.	-47.	-.000015	-.00017	0.000982	1553.
233.7	12.7	1878.	781.	0.000067	0.00075	0.01102	-2559.
0.6895	101.8	2648.	-164.	-.000014	-.00016	0.7417	614.
8.0	1.236	11442.	12073.	0.001030	0.01156	0.7782	0.001081
25	1.8	35885.	36202.	0.011772	0.13212	864.	1656.
21	2.	-621.	-77.	-.000025	-.00028	13631.	-3985.
585.5	75.	303.	-102.	-.000033	-.00037	0.001163	2416.
233.6	12.7	-182.	723.	0.000062	0.00069	0.01306	-2398.
0.6893	101.8	3667.	872.	0.000074	0.00084	0.7510	690.
9.0	1.236	13453.	14089.	0.001202	0.01350	0.7762	0.001277
25	3.3	37954.	38289.	0.012455	0.13978	962.	2555.
22	2.	-757.	-239.	-.000078	-.00087	14785.	-4452.
585.5	75.	-111.	-139.	-.000045	-.00051	0.001262	2913.
233.6	12.7	1409.	698.	0.000060	0.00067	0.01417	-2349.
0.6892	101.8	3139.	222.	0.000019	0.00021	0.7335	751.
10.0	1.236	14972.	15691.	0.001340	0.01504	0.7785	0.001390
25	3.3	41553.	41999.	0.013628	0.15295	1105.	4048.
23	2.	-1282.	-178.	-.000058	-.00065	16982.	-5121.
587.0	75.	-562.	-240.	-.000078	-.00087	0.001446	3618.
234.2	13.4	3507.	823.	0.000070	0.00079	0.01623	-2200.
0.6901	101.8	3905.	-719.	-.000061	-.00069	0.7349	809.
11.0	1.232	17188.	17970.	0.001530	0.01718	0.7777	0.001591
25	2.9	43385.	43795.	0.014217	0.15956	1217.	4837.
24	2.	-995.	-241.	-.000078	-.00088	18891.	-5649.
586.9	75.	-269.	36.	0.000012	0.00013	0.001610	4086.
234.1	13.4	1407.	640.	0.000055	0.00061	0.01806	-2189.
0.6900	101.8	3495.	-72.	-.000006	-.00007	0.7105	832.
12.0	1.232	18968.	19797.	0.001687	0.01893	0.7446	0.001695

RUN	WIND	T,LC	THRUST	CT	CT/S	POWER	SPND FB
POINT	PSIW	SF,LC	SIDE	CY	CY/S	TORQUE,C	SPND CB
RPM	HUM,%	NF,LC	NORMAL	CZ	CZ/S	CQ,C	FB .3R
VTIP	TEMP	PM,LC	PITCH	CPM	CPM/S	CQ/S,C	CB .3R
MTIP	PRESS	YM,LC	YAW	CYM	CYM/S	FM	P LINK
COLL	RHO	Q,LC	TORQUE	CQ	CQ/S	FM,C	CT**3/2
26	3.0	-1031.	-1080.	-.000352	-.00395	190.	-13650.
6	2.	-22.	192.	0.000062	0.00070	3109.	-512.
586.5	75.	144.	174.	0.000057	0.00064	0.000266	-5411.
234.0	14.2	-251.	269.	0.000023	0.00026	0.00299	-3642.
0.6885	101.8	256.	-257.	-.000022	-.00025	0.0176	-548.
-7.0	1.228	2945.	3094.	0.000265	0.00297	0.0176	0.000007
26	2.4	3049.	3054.	0.000996	0.01118	142.	-11883.
7	2.	174.	178.	0.000058	0.00065	2250.	-198.
586.5	75.	399.	77.	0.000025	0.00028	0.000193	-4380.
234.0	14.2	-553.	318.	0.000027	0.00031	0.00216	-3456.
0.6886	101.8	-593.	-342.	-.000029	-.00033	0.1124	-342.
-5.0	1.228	2249.	2310.	0.000198	0.00222	0.1153	0.000031
26	2.4	5724.	5767.	0.001881	0.02111	152.	-10863.
8	2.	61.	121.	0.000039	0.00044	2368.	-189.
586.4	75.	409.	123.	0.000040	0.00045	0.000203	-3869.
234.0	14.2	-950.	412.	0.000035	0.00040	0.00227	-3497.
0.6885	101.8	60.	-64.	-.000006	-.00006	0.2726	-173.
-3.0	1.228	2381.	2472.	0.000212	0.00237	0.2845	0.000082
26	3.3	9062.	9081.	0.002962	0.03321	195.	-9569.
9	2.	36.	184.	0.000060	0.00067	2948.	-342.
586.4	75.	445.	53.	0.000017	0.00019	0.000252	-3117.
234.0	14.2	-1247.	231.	0.000020	0.00022	0.00283	-3549.
0.6884	101.8	226.	-323.	-.000028	-.00031	0.4189	-12.
-1.0	1.228	3042.	3178.	0.000272	0.00305	0.4515	0.000161
26	2.8	13592.	13648.	0.004453	0.04998	261.	-7717.
10	2.	208.	152.	0.000050	0.00056	3969.	-611.
586.3	75.	724.	45.	0.000015	0.00016	0.000340	-2232.
233.9	14.2	-1858.	244.	0.000021	0.00023	0.00382	-3486.
0.6883	101.8	286.	211.	0.000018	0.00020	0.5770	118.
1.0	1.228	4150.	4252.	0.000364	0.00409	0.6181	0.000297

RUN	WIND	T,LC	THRUST	CT	CT/S	POWER	SPND FB
POINT	PSIW	SF,LC	SIDE	CY	CY/S	TORQUE,C	SPND CB
RPM	HUM,%	NF,LC	NORMAL	CZ	CZ/S	CQ,C	FB .3R
VTIP	TEMP	PM,LC	PITCH	CPM	CPM/S	CQ/S,C	CB .3R
MTIP	PRESS	YM,LC	YAW	CYM	CYM/S	FM	P LINK
COLL	RHO	Q,LC	TORQUE	CQ	CQ/S	FM,C	CT**3/2
26	2.8	18779.	18861.	0.006162	0.06916	359.	-5587.
11	2.	139.	140.	0.000046	0.00051	5461.	-1035.
586.2	75.	863.	-5.	-.000002	-.00002	0.000468	-1149.
233.9	14.2	-2384.	326.	0.000028	0.00031	0.00525	-3375.
0.6882	101.8	750.	340.	0.000029	0.00033	0.6829	250.
3.0	1.228	5657.	5847.	0.000501	0.00562	0.7310	0.000484
26	3.0	23716.	23888.	0.007800	0.08754	489.	-3533.
12	2.	0.	114.	0.000037	0.00042	7442.	-1625.
586.1	75.	980.	-21.	-.000007	-.00008	0.000638	-89.
233.8	14.2	-2468.	596.	0.000051	0.00057	0.00716	-3267.
0.6881	101.8	1351.	470.	0.000040	0.00045	0.7132	386.
5.0	1.228	7681.	7968.	0.000683	0.00766	0.7636	0.000689
26	2.8	26789.	27000.	0.008819	0.09898	567.	-2250.
13	2.	-85.	58.	0.000019	0.00021	8699.	-1970.
586.0	75.	801.	-10.	-.000003	-.00004	0.000746	544.
233.8	14.2	-2169.	549.	0.000047	0.00053	0.00837	-3162.
0.6880	101.8	1844.	535.	0.000046	0.00051	0.7387	455.
6.0	1.228	8883.	9246.	0.000793	0.00890	0.7851	0.000828
26	2.4	30131.	30336.	0.009912	0.11125	652.	-860.
14	2.	-8.	72.	0.000023	0.00026	10094.	-2357.
585.9	75.	788.	147.	0.000048	0.00054	0.000866	1246.
233.8	14.2	-2314.	603.	0.000052	0.00058	0.00972	-3026.
0.6878	101.8	1994.	815.	0.000070	0.00078	0.7659	523.
7.0	1.228	10245.	10622.	0.000911	0.01022	0.8059	0.000987
26	2.0	32420.	32690.	0.010684	0.11992	743.	150.
15	2.	-303.	2.	0.000001	0.00001	11650.	-2810.
585.8	75.	343.	67.	0.000022	0.00024	0.000999	1787.
233.7	14.2	-1442.	96.	0.000008	0.00009	0.01122	-2989.
0.6877	101.8	2402.	295.	0.000025	0.00028	0.7513	584.
8.0	1.228	11610.	12115.	0.001039	0.01166	0.7813	0.001104

RUN	WIND	T,LC	THRUST	CT	CT/S	POWER	SPND FB
POINT	PSIW	SF,LC	SIDE	CY	CY/S	TORQUE,C	SPND CB
RPM	HUM,%	NF,LC	NORMAL	CZ	CZ/S	CQ,C	FB .3R
VTIP	TEMP	PM,LC	PITCH	CPM	CPM/S	CQ/S,C	CB .3R
MTIP	PRESS	YM,LC	YAW	CYM	CYM/S	FM	P LINK
COLL	RHO	Q,LC	TORQUE	CQ	CQ/S	FM,C	CT**3/2
26	2.5	34907.	35218.	0.011516	0.12925	834.	1205.
16	2.	-440.	-9.	-.000003	-.00003	12959.	-3232.
585.7	75.	606.	136.	0.000044	0.00050	0.001112	2382.
233.7	14.2	-1873.	556.	0.000048	0.00054	0.01248	-2874.
0.6876	101.8	3500.	957.	0.000082	0.00092	0.7483	650.
9.0	1.228	13094.	13604.	0.001168	0.01310	0.7856	0.001236

APPENDIX B

ROTOR WAKE DATA

RUN	25
POINT	10
CT	-.000402
VTIP	234.0
WIND	2.4
PSIW	2.
PRESS	101.8

PITOT-STATIC PROBES

R/R	PT	PS	Q	V
0.202	101.714	101.717	-.003	2.26
0.221	101.721	101.716	0.005	2.88
0.265	101.727	101.705	0.022	5.99
0.289	101.757	101.737	0.020	5.73
0.334	101.720	101.709	0.011	4.21
0.428	101.829	101.699	0.130	14.51
0.627	101.802	101.765	0.037	7.76
0.720	101.777	101.777	0.000	0.74
0.801	101.788	101.780	0.008	3.60
1.023	101.785	101.782	0.003	2.26
1.070	101.794	101.790	0.004	2.48
1.170	101.790	101.786	0.004	2.50
1.220	101.793	101.791	0.003	2.06

DIRECTIONAL PROBES

R/R	PT	PS	Q	V
0.205	101.705	101.712	-.007	3.25
0.507	101.790	101.718	0.072	10.81
0.655	101.774	101.768	0.006	3.14
0.756	101.743	101.768	-.025	6.31
0.806	101.779	101.777	0.002	1.91
0.858	101.783	101.782	0.001	0.95
0.905	101.780	101.780	0.000	0.38
0.956	101.785	101.782	0.004	2.44
1.107	101.785	101.782	0.003	2.14

RUN	25
POINT	11
CT	0.000970
VTIP	234.0
WIND	2.7
PSIW	2.
PRESS	101.9

PITOT-STATIC PROBES

R/R	PT	PS	Q	V
0.202	102.005	101.753	0.252	20.19
0.221	102.022	101.763	0.259	20.46
0.265	101.990	101.762	0.228	19.21
0.289	102.008	101.761	0.247	19.97
0.334	101.975	101.764	0.211	18.46
0.428	101.911	101.771	0.140	15.07
0.627	101.782	101.763	0.019	5.51
0.720	101.792	101.763	0.028	6.79
0.801	101.773	101.772	0.001	1.53
1.023	101.797	101.786	0.011	4.20
1.070	101.798	101.790	0.008	3.57
1.170	101.793	101.786	0.007	3.45
1.220	101.791	101.787	0.004	2.54

DIRECTIONAL PROBES

R/R	PT	PS	Q	V
0.205	102.051	101.811	0.240	19.70
0.507	101.839	101.764	0.074	10.94
0.655	101.809	101.801	0.009	3.74
0.756	101.699	101.708	-.009	3.90
0.806	101.713	101.714	-.001	1.15
0.858	101.716	101.710	0.006	3.05
0.905	101.738	101.747	-.009	3.64
0.956	101.787	101.788	-.001	1.25
1.107	101.792	101.785	0.008	3.51

OF POOR QUALITY

RUN	25
POINT	12
CT	0.002068
VTIP	233.9
WIND	2.3
PSIW	2.
PRESS	101.8

PITOT-STATIC PROBES

R/R	PT	PS	Q	V
0.202	102.131	101.844	0.287	21.56
0.221	102.141	101.843	0.298	21.98
0.265	102.167	101.852	0.315	22.58
0.289	102.154	101.853	0.301	22.07
0.334	102.136	101.853	0.283	21.39
0.428	102.076	101.829	0.246	19.97
0.627	101.866	101.794	0.072	10.77
0.720	101.792	101.779	0.013	4.63
0.801	101.796	101.783	0.013	4.51
1.023	101.794	101.789	0.005	2.78
1.070	101.795	101.786	0.009	3.90
1.170	101.798	101.787	0.011	4.23
1.220	101.798	101.790	0.007	3.46

DIRECTIONAL PROBES

R/R	PT	PS	Q	V
0.205	102.136	101.877	0.259	20.47
0.507	101.939	101.805	0.134	14.73
0.655	101.708	101.734	-.026	6.46
0.756	101.793	101.791	0.002	1.98
0.806	101.765	101.763	0.002	1.75
0.858	101.771	101.771	0.000	0.89
0.905	101.801	101.791	0.011	4.14
0.956	101.788	101.784	0.004	2.47
1.107	101.796	101.791	0.005	2.95

RUN	25
POINT	13
CT	0.003140
VTIP	233.9
WIND	2.2
PSIW	2.
PRESS	101.8

PITOT-STATIC PROBES

R/R	PT	PS	Q	V
0.202	102.129	101.868	0.261	20.56
0.221	102.175	101.876	0.299	22.01
0.265	102.213	101.891	0.322	22.82
0.289	102.222	101.886	0.336	23.33
0.334	102.195	101.885	0.310	22.39
0.428	102.156	101.863	0.295	21.86
0.627	101.980	101.795	0.185	17.29
0.720	101.775	101.772	0.003	2.22
0.801	101.799	101.794	0.005	2.84
1.023	101.797	101.791	0.006	3.06
1.070	101.795	101.792	0.003	2.21
1.170	101.794	101.792	0.002	1.64
1.220	101.792	101.793	-.001	1.08

DIRECTIONAL PROBES

R/R	PT	PS	Q	V
0.205	102.178	101.918	0.261	20.54
0.507	102.073	101.854	0.219	18.85
0.655	101.891	101.788	0.103	12.89
0.756	101.794	101.792	0.002	1.67
0.806	101.791	101.785	0.005	2.98
0.858	101.792	101.788	0.003	2.36
0.905	101.793	101.789	0.005	2.71
0.956	101.793	101.785	0.008	3.52
1.107	101.796	101.791	0.006	2.99

RUN	25
POINT	14
CT	0.004486
VTIP	233.9
WIND	2.3
PSIW	2.
PRESS	101.8

PITOT-STATIC PROBES

R/R	PT	PS	Q	V
0.202	102.127	101.841	0.286	21.50
0.221	102.154	101.845	0.308	22.34
0.265	102.232	101.885	0.347	23.69
0.289	102.214	101.891	0.323	22.86
0.334	102.229	101.901	0.328	23.04
0.426	102.220	101.885	0.335	23.27
0.627	102.101	101.807	0.293	21.79
0.720	101.945	101.786	0.159	16.04
0.801	101.789	101.786	0.003	2.30
1.023	101.793	101.789	0.005	2.76
1.070	101.792	101.788	0.003	2.35
1.170	101.792	101.786	0.005	2.85
1.220	101.793	101.790	0.003	2.27

DIRECTIONAL PROBES

R/R	PT	PS	Q	V
0.205	102.113	101.887	0.226	19.14
0.507	102.185	101.894	0.292	21.72
0.655	102.063	101.831	0.232	19.39
0.756	101.951	101.876	0.075	11.03
0.806	101.792	101.781	0.011	4.18
0.858	101.792	101.790	0.002	2.00
0.905	101.793	101.788	0.004	2.42
0.956	101.791	101.786	0.005	2.80
1.107	101.793	101.791	0.002	1.79

RUN	25
POINT	15
CT	0.005913
VTIP	233.8
WIND	3.5
PSIW	2.
PRESS	101.8

PITOT-STATIC PROBES

R/R	PT	PS	Q	V
0.202	102.137	101.896	0.241	19.73
0.221	102.125	101.905	0.220	18.85
0.265	102.267	101.950	0.317	22.66
0.289	102.305	101.945	0.360	24.15
0.334	102.311	101.948	0.363	24.24
0.428	102.297	101.923	0.374	24.60
0.627	102.258	101.837	0.421	26.12
0.720	102.136	101.804	0.332	23.19
0.801	101.897	101.750	0.147	15.41
1.023	101.795	101.792	0.003	2.14
1.070	101.799	101.790	0.009	3.79
1.170	101.798	101.794	0.004	2.40
1.220	101.801	101.792	0.009	3.87

DIRECTIONAL PROBES

R/R	PT	PS	Q	V
0.205	102.210	101.957	0.253	20.25
0.507	102.307	101.955	0.352	23.87
0.655	102.223	101.893	0.330	23.12
0.756	102.058	101.823	0.234	19.47
0.806	101.813	101.786	0.027	6.59
0.858	101.817	101.785	0.031	7.10
0.905	101.803	101.795	0.007	3.46
0.956	101.797	101.798	-.001	1.26
1.107	101.802	101.795	0.007	3.41

RUN	25
POINT	16
CT	0.007960
VTIP	233.8
WIND	2.9
PSIW	2.
PRESS	101.8

PITOT-STATIC PROBES

R/R	PT	PS	Q	V
0.202	102.136	101.900	0.235	19.52
0.221	102.227	101.931	0.296	21.89
0.265	102.305	101.959	0.345	23.65
0.289	102.330	101.956	0.374	24.59
0.334	102.390	101.976	0.414	25.88
0.428	102.374	101.963	0.412	25.82
0.627	102.397	101.865	0.532	29.34
0.720	102.289	101.817	0.472	27.64
0.801	102.033	101.682	0.351	23.84
1.023	101.785	101.781	0.004	2.56
1.070	101.787	101.781	0.006	3.10
1.170	101.788	101.787	0.001	1.51
1.220	101.784	101.787	-.003	2.25

DIRECTIONAL PROBES

R/R	PT	PS	Q	V
0.205	102.216	101.954	0.263	20.62
0.507	102.402	101.986	0.416	25.97
0.655	102.342	101.916	0.425	26.24
0.756	102.201	101.825	0.376	24.67
0.806	101.856	101.651	0.205	18.20
0.858	101.824	101.769	0.055	9.44
0.905	101.786	101.760	0.026	6.54
0.956	101.787	101.788	-.001	1.12
1.107	101.790	101.786	0.004	2.48

RUN	25
POINT	17
CT	0.008731
VTIP	233.8
WIND	2.8
PSIW	2.
PRESS	101.8

PITOT-STATIC PROBES

R/R	PT	PS	Q	V
0.202	102.177	101.942	0.236	19.53
0.221	102.275	101.955	0.320	22.76
0.265	102.351	101.972	0.379	24.77
0.289	102.380	101.978	0.402	25.51
0.334	102.414	101.994	0.419	26.06
0.428	102.400	101.979	0.421	26.12
0.627	102.445	101.883	0.562	30.17
0.720	102.391	101.834	0.557	30.03
0.801	102.066	101.710	0.355	23.98
1.023	101.801	101.791	0.010	4.04
1.070	101.801	101.795	0.006	3.21
1.170	101.804	101.795	0.009	3.91
1.220	101.801	101.792	0.009	3.75

DIRECTIONAL PROBES

R/R	PT	PS	Q	V
0.205	102.222	101.961	0.261	20.56
0.507	102.443	102.011	0.432	26.44
0.655	102.438	101.954	0.484	28.00
0.756	102.389	101.883	0.506	28.63
0.806	102.079	101.653	0.426	26.26
0.858	101.760	101.721	0.039	7.96
0.905	101.788	101.780	0.008	3.50
0.956	101.793	101.788	0.005	2.73
1.107	101.793	101.786	0.007	3.38

RUN	25
POINT	18
CT	0.008820
VTIP	233.8
WIND	2.3
PSIW	2.
PRESS	101.8

PITOT-STATIC PROBES

R/R	PT	PS	Q	V
0.202	102.275	101.955	0.320	22.74
0.221	102.325	101.966	0.358	24.09
0.265	102.363	101.970	0.394	25.25
0.289	102.357	101.976	0.381	24.82
0.334	102.397	101.995	0.403	25.53
0.428	102.413	101.976	0.436	26.58
0.627	102.409	101.864	0.544	29.69
0.720	102.271	101.806	0.463	27.38
0.801	101.993	101.714	0.279	21.25
1.023	101.800	101.800	0.001	1.21
1.070	101.783	101.778	0.005	2.93
1.170	101.777	101.779	-.002	1.76
1.220	101.792	101.789	0.003	2.15

DIRECTIONAL PROBES

R/R	PT	PS	Q	V
0.205	102.192	101.924	0.268	20.82
0.507	102.432	101.997	0.435	26.55
0.655	102.426	101.945	0.482	27.92
0.756	102.365	101.838	0.527	29.21
0.806	101.840	101.613	0.227	19.18
0.858	101.775	101.760	0.015	4.96
0.905	101.784	101.781	0.004	2.45
0.956	101.791	101.791	0.000	0.42
1.107	101.791	101.791	-.001	0.94

RUN	25
POINT	19
CT	0.009986
VTIP	233.7
WIND	2.2
PSIW	2.
PRESS	101.8

PITOT-STATIC PROBES

R/R	PT	PS	Q	V
0.202	102.274	101.945	0.329	23.08
0.221	102.263	101.917	0.347	23.69
0.265	102.411	101.955	0.457	27.19
0.289	102.390	101.972	0.418	26.01
0.334	102.410	101.979	0.431	26.42
0.428	102.433	101.959	0.474	27.70
0.627	102.508	101.876	0.632	31.98
0.720	102.462	101.807	0.654	32.54
0.801	101.804	101.710	0.094	12.32
1.023	101.771	101.776	-.005	2.91
1.070	101.779	101.781	-.002	1.76
1.170	101.783	101.787	-.004	2.51
1.220	101.785	101.787	-.001	1.53

DIRECTIONAL PROBES

R/R	PT	PS	Q	V
0.205	102.204	101.949	0.255	20.33
0.507	102.450	102.005	0.445	26.84
0.655	102.406	101.907	0.499	28.42
0.756	102.175	101.784	0.390	25.14
0.806	102.000	101.734	0.266	20.75
0.858	101.723	101.670	0.053	9.27
0.905	101.781	101.789	-.008	3.70
0.956	101.792	101.790	0.001	1.39
1.107	101.790	101.789	0.001	1.21

RUN	25
POINT	20
CT	0.010530
VTIP	233.7
WIND	2.4
PSIW	2.
PRESS	101.8

PITOT-STATIC PROBES

R/R	PT	PS	Q	V
0.202	102.179	101.918	0.261	20.57
0.221	102.272	101.949	0.322	22.84
0.265	102.401	101.974	0.427	26.29
0.289	102.421	101.987	0.434	26.50
0.334	102.432	102.009	0.423	26.17
0.428	102.464	101.998	0.466	27.47
0.627	102.598	101.907	0.691	33.45
0.720	102.575	101.850	0.725	34.26
0.801	102.360	101.629	0.731	34.39
1.023	101.790	101.784	0.006	3.18
1.070	101.791	101.789	0.003	2.05
1.170	101.791	101.790	0.001	1.08
1.220	101.792	101.792	0.000	0.88

DIRECTIONAL PROBES

R/R	PT	PS	Q	V
0.205	102.169	101.930	0.239	19.67
0.507	102.476	101.992	0.484	28.00
0.655	102.551	101.894	0.657	32.60
0.756	102.366	101.800	0.567	30.29
0.806	102.306	101.670	0.637	32.10
0.858	101.660	101.666	-.006	3.05
0.905	101.779	101.771	0.007	3.46
0.956	101.787	101.790	-.003	2.04
1.107	101.793	101.791	0.003	2.09

RUN	25
POINT	21
CT	0.011772
VTIP	233.6
WIND	1.8
PSIW	2.
PRESS	101.8

PITOT-STATIC PROBES

R/R	PT	PS	Q	V
0.202	102.280	101.958	0.322	22.82
0.221	102.341	101.975	0.367	24.36
0.265	102.444	101.990	0.454	27.11
0.289	102.451	101.997	0.454	27.11
0.334	102.426	102.005	0.421	26.10
0.428	102.483	101.990	0.493	28.25
0.627	102.640	101.890	0.750	34.83
0.720	102.646	101.824	0.822	36.47
0.801	101.793	101.481	0.312	22.47
1.023	101.780	101.774	0.005	2.95
1.070	101.777	101.776	0.001	1.40
1.170	101.787	101.786	0.000	0.82
1.220	101.790	101.783	0.007	3.29

DIRECTIONAL PROBES

R/R	PT	PS	Q	V
0.205	102.223	101.978	0.245	19.93
0.507	102.550	102.056	0.494	28.27
0.655	102.658	102.006	0.652	32.49
0.756	102.641	101.884	0.757	35.01
0.806	101.562	101.165	0.397	25.35
0.858	101.660	101.667	-.008	3.53
0.905	101.770	101.769	0.001	1.05
0.956	101.777	101.778	-.002	1.58
1.107	101.780	101.779	0.001	1.53

RUN	25
POINT	22
CT	0.012455
VTIP	233.6
WIND	3.3
PSIW	2.
PRESS	101.8

PITOT-STATIC PROBES

R/R	PT	PS	Q	V
0.202	102.270	101.932	0.338	25.39
0.221	102.326	101.959	0.367	24.37
0.265	102.460	101.987	0.473	27.67
0.289	102.454	102.000	0.454	27.09
0.334	102.457	102.009	0.448	26.94
0.428	102.498	101.997	0.500	28.46
0.627	102.725	101.909	0.816	36.35
0.720	102.739	101.819	0.919	38.58
0.801	102.188	101.370	0.818	36.38
1.023	101.789	101.782	0.007	3.30
1.070	101.791	101.789	0.001	1.52
1.170	101.789	101.784	0.005	2.85
1.220	101.785	101.779	0.006	3.06

DIRECTIONAL PROBES

R/R	PT	PS	Q	V
0.205	102.137	101.903	0.234	19.46
0.507	102.555	102.046	0.510	28.72
0.655	102.714	102.016	0.698	33.60
0.756	102.736	101.911	0.825	36.54
0.806	102.107	101.290	0.817	36.37
0.858	101.664	101.661	0.003	2.04
0.905	101.732	101.730	0.002	1.89
0.956	101.740	101.746	-.007	3.28
1.107	101.787	101.787	0.001	0.90

RUN	25
POINT	23
CT	0.013628
VTIP	234.2
WIND	3.3
PSIW	2.
PRESS	101.8

PITOT-STATIC PROBES

R/R	PT	PS	Q	V
0.202	102.229	101.916	0.313	22.55
0.221	102.308	101.954	0.354	23.97
0.265	102.432	101.990	0.442	26.80
0.289	102.464	102.002	0.462	27.37
0.334	102.517	102.028	0.489	28.16
0.428	102.505	102.017	0.489	28.16
0.627	102.782	101.925	0.857	37.30
0.720	102.834	101.852	0.982	39.92
0.801	102.577	101.507	1.070	41.67
1.023	101.779	101.777	0.002	1.80
1.070	101.790	101.789	0.002	1.59
1.170	101.789	101.793	-.004	2.39
1.220	101.788	101.786	0.002	1.68

DIRECTIONAL PROBES

R/R	PT	PS	Q	V
0.205	102.148	101.902	0.246	19.99
0.507	102.625	102.066	0.559	30.11
0.655	102.739	101.929	0.810	36.26
0.756	102.809	101.900	0.909	38.42
0.806	101.624	101.124	0.500	28.50
0.85.	101.722	101.702	0.020	5.75
0.905	101.713	101.677	0.036	7.62
0.956	101.759	101.767	-.009	3.79
1.107	101.774	101.774	0.000	0.75

RUN	25
POINT	24
CT	0.014217
VTIP	234.1
WIND	2.9
PSIW	2.
PRESS	101.8

PITOT-STATIC PROBES

R/R	PT	PS	Q	V
0.202	102.163	101.915	0.249	20.10
0.221	102.298	101.944	0.354	23.96
0.265	102.512	101.985	0.528	29.27
0.289	102.501	102.001	0.499	28.47
0.334	102.529	102.032	0.497	28.40
0.428	102.558	102.017	0.541	29.64
0.627	102.815	101.906	0.909	38.41
0.720	102.880	101.816	1.063	41.54
0.801	101.595	101.124	0.472	27.67
1.023	101.793	101.785	0.009	3.77
1.070	101.790	101.786	0.004	2.52
1.170	101.795	101.787	0.008	3.62
1.220	101.792	101.786	0.006	3.01

DIRECTIONAL PROBES

R/R	PT	PS	Q	V
0.205	102.237	101.952	0.285	21.53
0.507	102.651	102.076	0.575	30.55
0.655	102.800	102.025	0.775	35.47
0.756	102.752	101.910	0.842	36.96
0.806	102.621	101.567	1.054	41.36
0.858	101.614	101.548	0.066	10.36
0.905	101.733	101.723	0.010	4.00
0.956	101.790	101.793	-.003	2.34
1.107	101.787	101.786	0.001	0.96

RUN	26
POINT	6
CT	-.000352
VTIP	234.0
WIND	3.0
PSIW	2.
PRESS	101.8

PITOT-STATIC PROBES

R/R	PT	PS	Q	V
0.202	101.823	101.710	0.113	13.57
0.221	101.761	101.756	0.005	2.76
0.265	101.568	101.591	-.022	6.05
0.289	101.738	101.716	0.022	5.97
0.334	101.744	101.732	0.012	4.33
0.428	101.668	101.646	0.022	6.00
0.627	101.747	101.715	0.032	7.23
0.720	101.697	101.702	-.004	2.58
0.801	101.766	101.761	0.005	2.82
1.023	101.776	101.770	0.006	3.09
1.070	101.782	101.778	0.004	2.65
1.170	101.783	101.778	0.005	2.96
1.220	101.783	101.782	0.001	1.54

DIRECTIONAL PROBES

R/R	PT	PS	Q	V
0.205	101.789	101.763	0.026	6.48
0.507	101.781	101.784	-.002	1.97
0.655	101.779	101.777	0.002	1.79
0.756	101.778	101.771	0.007	3.30
0.806	101.781	101.779	0.001	1.55
0.858	101.780	101.778	0.002	1.99
0.905	101.774	101.771	0.003	2.04
0.956	101.759	101.758	0.001	1.34
1.107	101.742	101.753	-.011	4.17

RUN	26
POINT	7
CT	0.000996
VTIP	234.0
WIND	2.4
PSIW	2.
PRESS	101.8

PITOT-STATIC PROBES

R/R	PT	PS	Q	V
0.202	102.020	101.743	0.277	21.23
0.221	102.023	101.789	0.234	19.52
0.265	102.038	101.775	0.263	20.68
0.289	102.010	101.793	0.218	18.83
0.334	101.913	101.774	0.139	15.02
0.428	101.938	101.791	0.147	15.48
0.627	101.798	101.773	0.025	6.34
0.720	101.769	101.766	0.003	2.17
0.801	101.724	101.751	-.027	6.66
1.023	101.775	101.769	0.006	3.23
1.070	101.783	101.770	0.013	4.58
1.170	101.788	101.781	0.007	3.39
1.220	101.786	101.786	-.001	1.10

DIRECTIONAL PROBES

R/R	PT	PS	Q	V
0.205	102.118	101.823	0.295	21.93
0.507	101.863	101.756	0.107	13.20
0.655	101.811	101.807	0.003	2.36
0.756	101.773	101.783	-.010	4.05
0.806	101.799	101.794	0.005	2.88
0.858	101.781	101.782	-.002	1.77
0.905	101.753	101.764	-.011	4.24
0.956	101.787	101.787	0.000	0.63
1.107	101.790	101.789	0.001	1.38

RUN	26
POINT	8
CT	0.001881
VTIP	234.0
WIND	2.4
PSIW	2.
PRESS	101.8

PITOT-STATIC PROBES

R/R	PT	PS	Q	V
0.202	102.085	101.836	0.249	20.14
0.221	102.108	101.843	0.264	20.74
0.265	102.144	101.850	0.294	21.88
0.289	102.150	101.849	0.301	22.13
0.334	102.133	101.845	0.288	21.67
0.428	102.031	101.822	0.209	18.44
0.627	101.865	101.781	0.083	11.65
0.720	101.788	101.778	0.010	3.98
0.801	101.785	101.783	0.001	1.49
1.023	101.787	101.783	0.005	2.73
1.070	101.789	101.786	0.003	2.16
1.170	101.780	101.781	-.001	0.94
1.220	101.779	101.782	-.003	2.38

DIRECTIONAL PROBES

R/R	PT	PS	Q	V
0.205	102.129	101.883	0.246	20.03
0.507	101.943	101.808	0.135	14.82
0.655	101.794	101.777	0.017	5.30
0.756	101.739	101.751	-.012	4.43
0.806	101.762	101.759	0.003	2.17
0.858	101.746	101.751	-.005	2.84
0.905	101.779	101.780	-.001	1.47
0.956	101.783	101.783	0.001	0.92
1.107	101.779	101.780	-.001	1.19

RUN	26
POINT	9
CT	0.002962
VTIP	234.0
WIND	3.3
PSIW	2.
PRESS	101.8

PITOT-STATIC PROBES

R/R	PT	PS	Q	V
0.202	102.154	101.871	0.283	21.48
0.221	102.164	101.868	0.295	21.93
0.265	102.190	101.875	0.315	22.64
0.289	102.203	101.878	0.325	23.00
0.334	102.189	101.876	0.313	22.58
0.428	102.153	101.856	0.297	22.00
0.627	101.968	101.794	0.173	16.80
0.720	101.797	101.777	0.020	5.65
0.801	101.793	101.787	0.006	3.23
1.023	101.800	101.786	0.015	4.89
1.070	101.800	101.789	0.011	4.19
1.170	101.794	101.788	0.006	3.02
1.220	101.795	101.789	0.006	3.14

DIRECTIONAL PROBES

R/R	PT	PS	Q	V
0.205	102.161	101.903	0.258	20.49
0.507	102.066	101.856	0.210	18.49
0.655	101.918	101.805	0.113	13.56
0.756	101.795	101.787	0.008	3.63
0.806	101.797	101.788	0.009	3.89
0.853	101.791	101.789	0.002	1.80
0.905	101.797	101.790	0.007	3.38
0.956	101.796	101.792	0.003	2.35
1.107	101.794	101.792	0.002	1.96

RUN	26
POINT	10
CT	0.004453
VTIP	233.9
WIND	2.8
PSIW	2.
PRESS	101.8

PITOT-STATIC PROBES

R/R	PT	PS	Q	V
0.202	102.119	101.898	0.221	18.97
0.221	102.211	101.907	0.304	22.23
0.265	102.252	101.918	0.333	23.30
0.289	102.267	101.913	0.353	23.98
0.334	102.266	101.914	0.352	23.94
0.428	102.231	101.899	0.332	23.24
0.627	102.121	101.814	0.307	22.36
0.720	101.984	101.796	0.188	17.51
0.801	101.798	101.772	0.026	6.55
1.023	101.790	101.790	-.001	1.10
1.070	101.787	101.791	-.004	2.58
1.170	101.789	101.791	-.002	1.64
1.220	101.791	101.790	0.001	1.22

DIRECTIONAL PROBES

R/R	PT	PS	Q	V
0.205	102.225	101.953	0.272	21.05
0.507	102.164	101.895	0.270	20.96
0.655	102.017	101.827	0.190	17.61
0.756	101.840	101.783	0.057	9.64
0.806	101.777	101.778	-.001	1.25
0.858	101.773	101.782	-.009	3.72
0.905	101.777	101.782	-.005	2.84
0.956	101.778	101.783	-.005	2.91
1.107	101.783	101.789	-.006	3.05

RUN	26
POINT	11
CT	0.006162
VTIP	233.9
WIND	2.8
PSIW	2.
PRESS	101.8

PITOT-STATIC PROBES

R/R	PT	PS	Q	V
0.202	102.223	101.925	0.298	22.05
0.221	102.264	101.935	0.329	23.16
0.265	102.321	101.949	0.372	24.62
0.289	102.335	101.944	0.391	25.23
0.334	102.323	101.946	0.376	24.75
0.428	102.303	101.925	0.378	24.82
0.627	102.222	101.813	0.409	25.80
0.720	102.066	101.778	0.288	21.64
0.801	101.860	101.758	0.102	12.91
1.023	101.769	101.771	-.003	2.11
1.070	101.773	101.778	-.005	2.75
1.170	101.777	101.777	0.000	0.74
1.220	101.781	101.781	-.001	0.95

DIRECTIONAL PROBES

R/R	PT	PS	Q	V
0.205	102.258	101.973	0.285	21.55
0.507	102.266	101.928	0.338	23.46
0.655	102.161	101.849	0.312	22.54
0.756	101.923	101.772	0.151	15.67
0.806	101.749	101.738	0.012	4.36
0.858	101.736	101.755	-.019	5.49
0.905	101.746	101.768	-.022	5.93
0.956	101.757	101.772	-.015	4.94
1.107	101.764	101.774	-.010	3.95

RUN	26
POINT	12
CT	0.007800
VTIP	233.8
WIND	3.0
PSIW	2.
PRESS	101.8

PITOT-STATIC PROBES

R/R	PT	PS	Q	V
0.202	102.189	101.934	0.255	20.37
0.221	102.249	101.948	0.301	22.12
0.265	102.357	101.966	0.391	25.25
0.289	102.391	101.971	0.419	26.13
0.334	102.392	101.983	0.409	25.82
0.428	102.377	101.958	0.419	26.12
0.627	102.379	101.858	0.521	29.12
0.720	102.266	101.809	0.456	27.25
0.801	101.973	101.678	0.296	21.94
1.023	101.793	101.787	0.007	3.36
1.070	101.796	101.788	0.009	3.73
1.170	101.795	101.787	0.008	3.57
1.220	101.798	101.790	0.008	3.68

DIRECTIONAL PROBES

R/R	PT	PS	Q	V
0.205	102.302	102.001	0.301	22.15
0.507	102.379	101.972	0.407	25.75
0.655	102.306	101.900	0.406	25.70
0.756	101.991	101.723	0.268	20.88
0.806	101.762	101.689	0.072	10.85
0.858	101.778	101.737	0.041	8.17
0.905	101.760	101.727	0.033	7.31
0.956	101.790	101.786	0.004	2.64
1.107	101.789	101.788	0.001	1.26

RUN	26
POINT	13
CT	0.008819
VTIP	233.8
WIND	2.8
PSIW	2.
PRESS	101.8

PITOT-STATIC PROBES

R/R	PT	PS	Q	V
0.202	102.259	101.950	0.309	22.44
0.221	102.280	101.952	0.328	23.11
0.265	102.373	101.982	0.391	25.24
0.289	102.403	101.979	0.423	26.26
0.334	102.418	101.991	0.427	26.37
0.428	102.402	101.970	0.432	26.53
0.627	102.437	101.871	0.566	30.37
0.720	102.357	101.810	0.547	29.85
0.801	101.944	101.637	0.307	22.37
1.023	101.786	101.781	0.005	2.79
1.070	101.784	101.782	0.002	1.88
1.170	101.791	101.785	0.006	3.03
1.220	101.788	101.786	0.002	1.61

DIRECTIONAL PROBES

R/R	PT	PS	Q	V
0.205	102.292	102.004	0.288	21.64
0.507	102.441	102.002	0.438	26.71
0.655	102.401	101.933	0.468	27.61
0.756	102.178	101.774	0.404	25.65
0.806	101.674	101.608	0.065	10.31
0.858	101.768	101.752	0.016	5.18
0.905	101.787	101.779	0.008	3.60
0.956	101.786	101.785	0.001	1.20
1.107	101.792	101.788	0.004	2.53

RUN	26
POINT	14
CT	0.009912
VTIP	233.8
WIND	2.4
PSIW	2.
PRESS	101.8

PITOT-STATIC PROBES

R/R	PT	PS	Q	V
0.202	102.210	101.958	0.253	20.28
0.221	102.296	101.959	0.337	23.43
0.265	102.371	101.984	0.386	25.08
0.289	102.404	101.975	0.429	26.44
0.334	102.449	101.983	0.464	27.50
0.428	102.418	101.952	0.465	27.53
0.627	102.407	101.812	0.595	31.12
0.720	102.364	101.769	0.595	31.12
0.801	102.289	101.749	0.540	29.67
1.023	101.780	101.779	0.001	1.23
1.070	101.778	101.783	-.005	2.39
1.170	101.778	101.779	-.001	1.24
1.220	101.770	101.771	-.001	1.07

DIRECTIONAL PROBES

R/R	PT	PS	Q	V
0.205	102.332	102.014	0.318	22.76
0.507	102.494	101.993	0.502	28.58
0.655	102.363	101.862	0.521	29.12
0.756	101.879	101.731	0.148	15.54
0.806	101.878	101.751	0.128	14.42
0.858	101.787	101.791	-.004	2.19
0.905	101.794	101.788	0.006	3.22
0.956	101.795	101.790	0.005	2.88
1.107	101.789	101.785	0.001	2.60

RUN	26
POINT	15
CT	0.010684
VTIP	233.7
WIND	2.0
PSIW	2.
PRESS	101.8

PITOT-STATIC PROBES

R/R	PT	PS	Q	V
0.202	102.195	101.948	0.247	20.06
0.221	102.290	101.962	0.328	23.11
0.265	102.390	101.985	0.406	25.70
0.289	102.424	101.989	0.435	26.63
0.334	102.453	102.011	0.442	26.84
0.428	102.443	101.968	0.455	27.21
0.627	102.548	101.896	0.652	32.59
0.720	102.496	101.804	0.692	33.57
0.801	102.061	101.607	0.454	27.19
1.023	101.791	101.776	0.015	4.97
1.070	101.784	101.778	0.006	3.17
1.170	101.792	101.788	0.004	2.52
1.220	101.792	101.790	0.003	2.02

DIRECTIONAL PROBES

R/R	PT	PS	Q	V
0.205	102.227	101.972	0.256	20.41
0.507	102.488	102.025	0.463	27.47
0.655	102.537	101.966	0.571	30.50
0.756	102.364	101.851	0.514	28.93
0.806	101.944	101.637	0.308	22.39
0.858	101.694	101.659	0.035	7.55
0.905	101.763	101.772	-.009	3.87
0.956	101.792	101.793	-.001	1.33
1.107	101.792	101.785	0.007	3.32

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RUN	26
POINT	16
CT	0.011516
VTIP	233.7
WIND	2.5
PSIW	2.
PRESS	101.8

PITOT-STATIC PROBES

R/R	PT	PS	Q	V
0.202	102.232	101.958	0.274	21.11
0.221	102.337	101.979	0.358	24.15
0.265	102.405	101.994	0.411	25.87
0.289	102.464	102.004	0.460	27.37
0.334	102.479	102.016	0.463	27.47
0.428	102.488	102.000	0.489	28.22
0.627	102.594	101.880	0.713	34.09
0.720	102.562	101.812	0.750	34.95
0.801	102.242	101.557	0.685	33.41
1.023	101.782	101.779	0.004	2.49
1.070	101.788	101.783	0.004	2.57
1.170	101.786	101.781	0.005	2.92
1.220	101.787	101.786	0.001	1.09

DIRECTIONAL PROBES

R/R	PT	PS	Q	V
0.205	102.318	102.009	0.308	22.40
0.507	102.504	102.021	0.483	28.04
0.655	101.959	101.525	0.444	25.89
0.756	102.127	101.669	0.458	27.32
0.806	101.797	101.473	0.324	22.96
0.858	101.698	101.697	0.001	1.14
0.905	101.750	101.756	-.005	2.37
0.956	101.793	101.792	0.001	1.36
1.107	101.792	101.792	0.000	0.66

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TABLE 1. - ROTOR SYSTEM CHARACTERISTICS

Number of Blades	3
Rotor Radius	7.62 m
Blade Chord	0.356 m
Rotor Solidity Ratio	0.0891
Blade Twist	-42° (nonlinear)
Blade Precone Angle	2.5°
Rotor Airfoils	NACA 64-series

TABLE 2. - PERFORMANCE AND LOADS DATA PARAMETERS

Label	Parameter
CB .3R	mean blade chordwise bending moment at .3R, N-m
COLL	blade collective pitch angle at .75 R, deg
CPM	rotor pitching moment coefficient, C_{PM}
CPM/S	rotor pitching moment coefficient over solidity, C_{PM}/σ
CQ	rotor torque coefficient, C_Q
CQ,C	rotor torque coefficient, corrected for wind, $C_{Q,corrected}$
CQ/S	rotor torque coefficient over solidity, C_Q/σ
CQ/S,C	rotor torque coefficient over solidity, corrected for wind, $C_{Q,corrected}/\sigma$
CT	rotor thrust coefficient, C_T
CT/S	rotor thrust coefficient over solidity, C_T/σ
CT**3/2	$C_T^{3/2}$
CY	rotor side force coefficient, C_Y
CY/S	rotor side force coefficient over solidity, C_Y/σ
CYM	rotor yawing moment coefficient, C_{YM}
CYM/S	rotor yawing moment coefficient over solidity, C_{YM}/σ
CZ	rotor normal force coefficient, C_Z
CZ/S	rotor normal force coefficient over solidity, C_Z/σ
FB .3R	mean blade flapwise bending moment at .3R, N-m
FM	rotor figure of merit, FM
FM,C	rotor figure of merit, corrected for wind, $FM_{corrected}$
HUM,%	relative humidity, percent
MTIP	rotor tip Mach number, M_{tip}
NF,LC	rotor normal force measured by load cells, N
NORMAL	rotor normal force, N
P LINK	mean pitch link load, N
PITCH	rotor pitching moment, N-m
PM,LC	rotor pitching moment measured by load cells, N-m
POINT	data point number
POWER	rotor power, kW
PRESS	atmospheric pressure, kPa
PSIW	wind direction relative to rotor axis, ψ_w, deg
Q,LC	rotor torque measured by load cells, N-m
RHO	air density, ρ, kg/m^3
RPM	rotor rotation speed, revs/minute
RUN	run number

TABLE 2. - continued

Label	Parameter
SF,LC	rotor side force measured by load cells, N
SIDE	rotor side force, N
SPND CB	mean blade spindle chordwise bending moment, N-m
SPND FB	mean blade spindle flapwise bending moment, N-m
T,LC	rotor thrust measured by load cells, N
TEMP	air temperature, deg celsius
THRUST	rotor thrust, N
TORQUE	rotor torque, N-m
TORQUE,C	rotor torque, corrected for wind, N-m
VTIP	rotor tip speed, V_{tip}, m/s
WIND	wind speed, V_w, m/s
YAW	rotor yawing moment, N-m
YM,LC	rotor yawing moment measured by load cells, N-m

TABLE 3. - INDEX OF RUNS

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RUN NUMBER	POINT NUMBERS	MTIP	CT/S	WIND	WAKE DATA
14	15 - 27	0.69	0.000 - 0.157	0.5 - 1.7	NO
15	3 - 15	0.69	-0.004 - 0.156	0.2 - 0.7	NO
	16 - 31	0.69	-0.004 - 0.177	0.2 - 1.2	NO
	32 - 45	0.69	-0.003 - 0.158	0.3 - 1.8	NO
	46 - 60	0.69	-0.002 - 0.169	0.9 - 2.1	NO
16	3 - 7	0.60	-0.004 - 0.161	0.7 - 2.3	NO
	8 - 11	0.66	0.088 - 0.162	2.0 - 2.7	NO
	12 - 15	0.69	0.091 - 0.160	2.4 - 2.6	NO
	16 - 19	0.73	0.095 - 0.168	2.1 - 2.9	NO
22	4 - 19	0.69	-0.003 - 0.181	0.1 - 0.6	NO
23	3 - 17	0.69	-0.003 - 0.175	0.3 - 1.1	NO
	18 - 31	0.69	0.002 - 0.163	0.9 - 1.3	NO
	32 - 45	0.69	0.007 - 0.172	1.2 - 1.8	NO
24	3 - 6	0.73	0.094 - 0.171	0.0 - 0.7	NO
	10 - 11	0.60	0.088 - 0.120	1.3 - 1.4	NO
	13	0.52	0.090	1.6	NO
	14 - 17	0.65	0.090 - 0.160	1.5 - 1.7	NO
	18 - 20	0.69	0.143 - 0.161	1.8 - 2.0	NO
25	10 - 24	0.69	-0.005 - 0.160	1.3 - 3.5	YES
26	6 - 16	0.69	-0.004 - 0.129	2.0 - 3.3	YES

TABLE 4. - LOCATION OF WAKE RAKE PRESSURE TAPS

Pitot-Static Probes

r/R	z/R
0.202	0.364
0.221	0.366
0.265	0.371
0.289	0.374
0.334	0.380
0.428	0.391
0.627	0.415
0.720	0.427
0.801	0.437
1.023	0.464
1.070	0.469
1.170	0.482
1.220	0.488

Directional Probes

r/R	z/R
0.205	0.292
0.507	0.329
0.655	0.347
0.756	0.359
0.806	0.365
0.858	0.372
0.905	0.377
0.956	0.384
1.107	0.402

TABLE 5. - PRESSURE DATA PARAMETERS

Label	Parameter
CT	rotor thrust coefficient, C_T
POINT	data point number
PRESS	atmospheric pressure, kPa
PSIW	wind direction relative to rotor axis, ψ_w, deg
PS	wake static pressure, P_S, kPa
PT	wake total pressure, P_T, kPa
Q	wake dynamic pressure, $P_T - P_S$, kPa
R/R	pressure tap radial station, r/R
RUN	run number
V	wake velocity, m/s
VTIP	rotor tip speed, V_{tip}, m/s
WIND	wind speed, V_w, m/s

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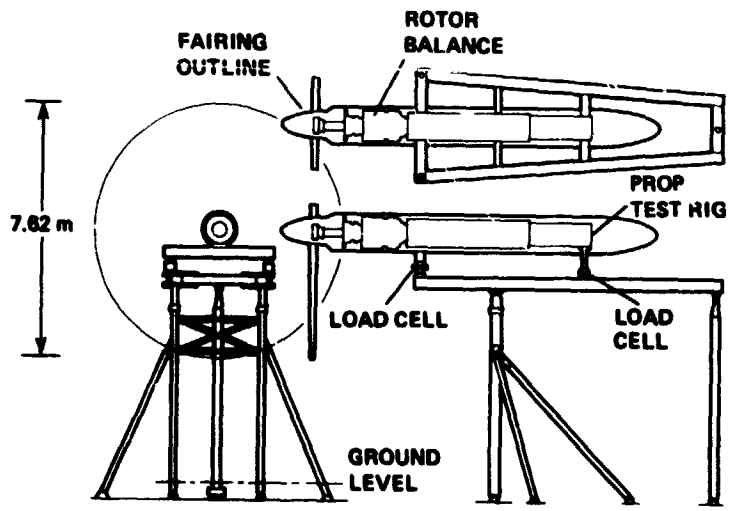
1. Outdoor Aerodynamic Research Facility with Prop Test Rig.



2. Prop Test Rig with XV-15 Rotor.

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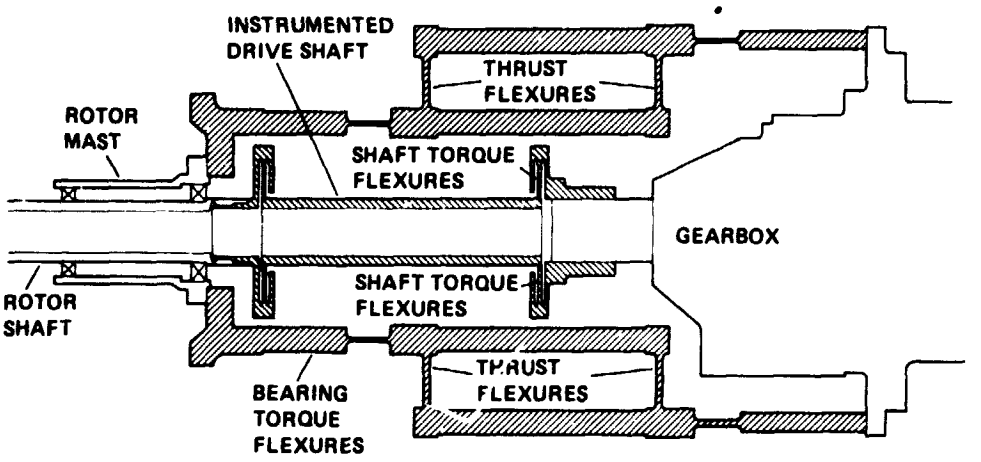
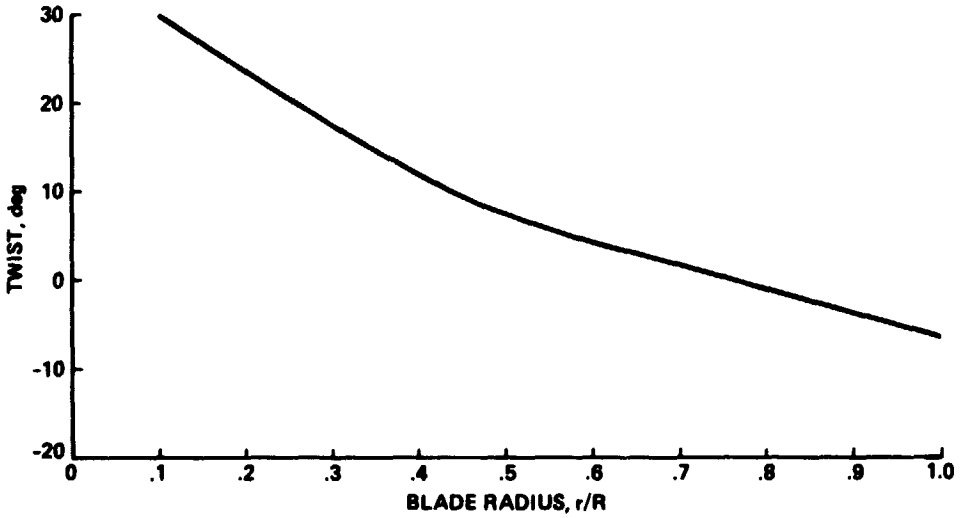
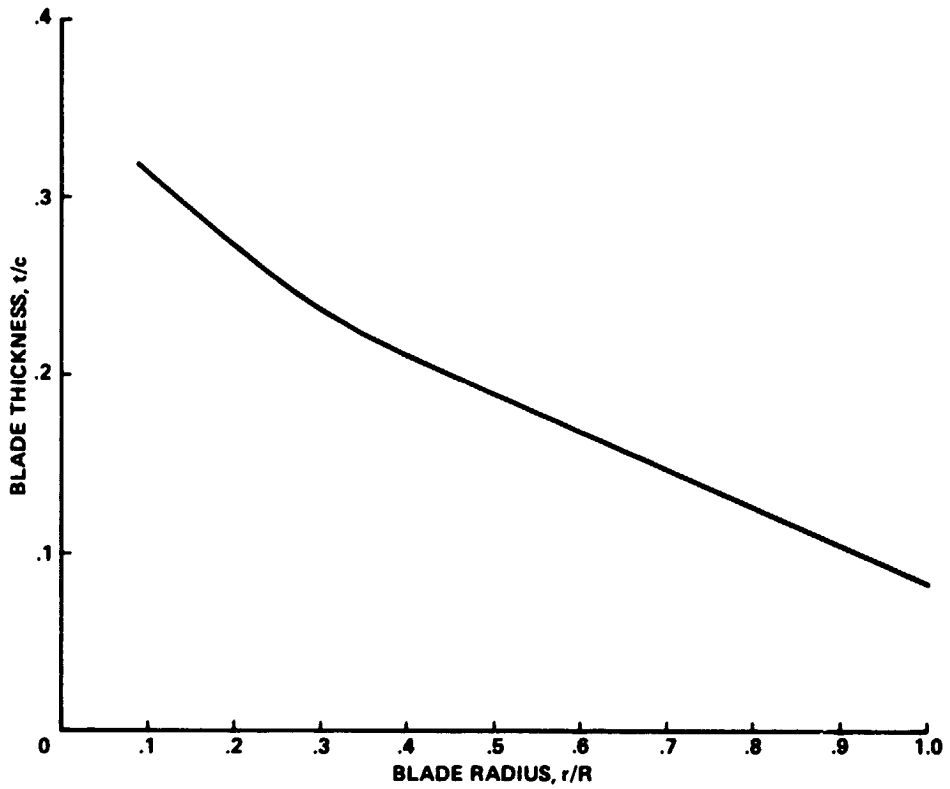
3. Prop Test Rig with XV-15 Rotor.



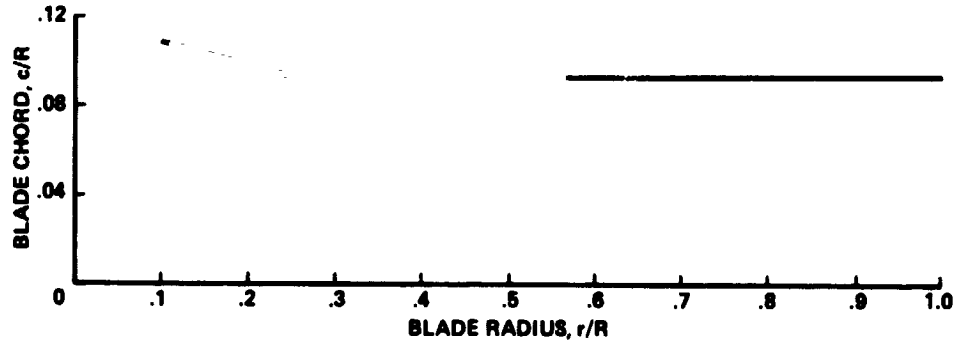
4. Rotor Balance System.



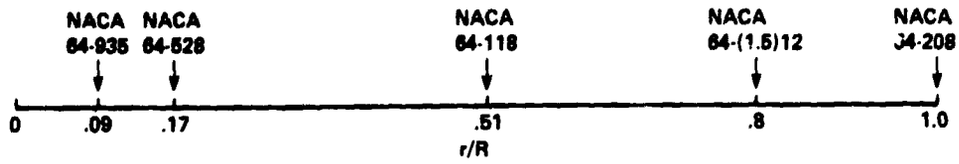
5. Rotor Blade Twist Distribution.



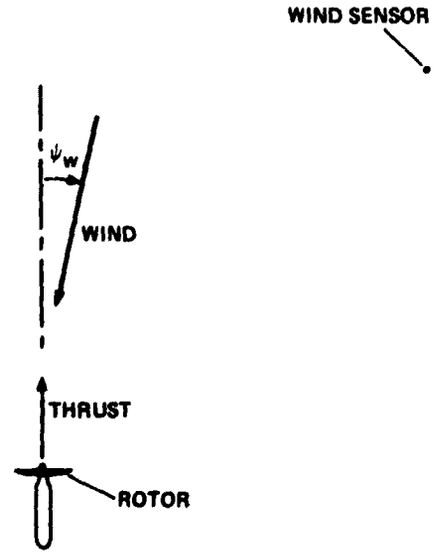
6. Rotor Blade Thickness Distribution.



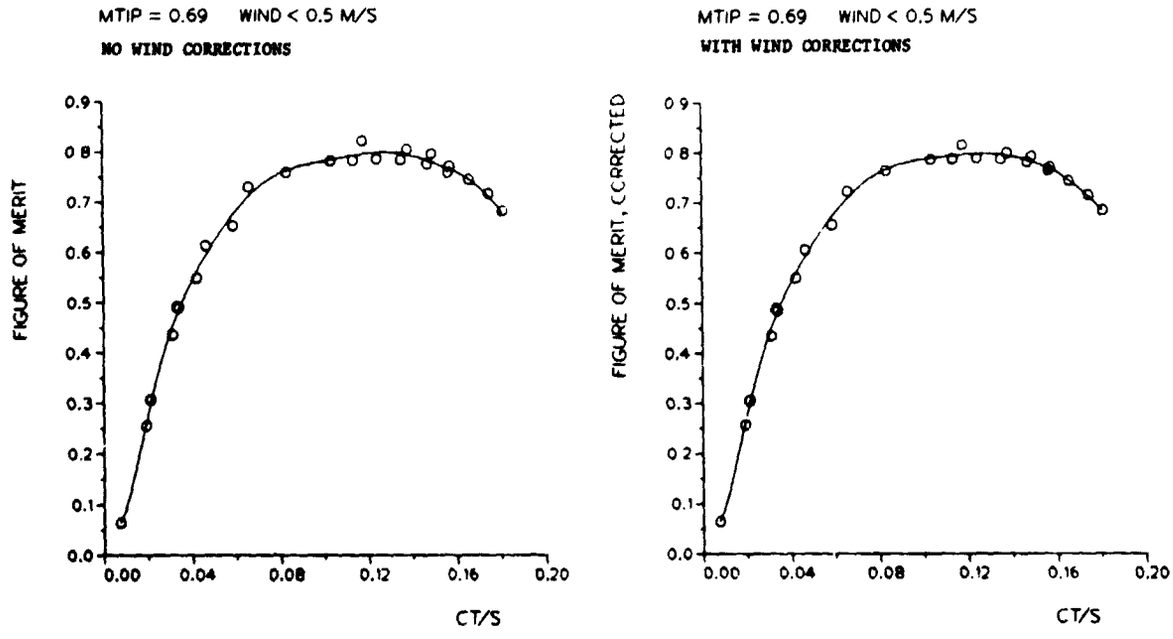
7. Rotor Blade Chord Distribution.



8. Rotor Blade Airfoils.

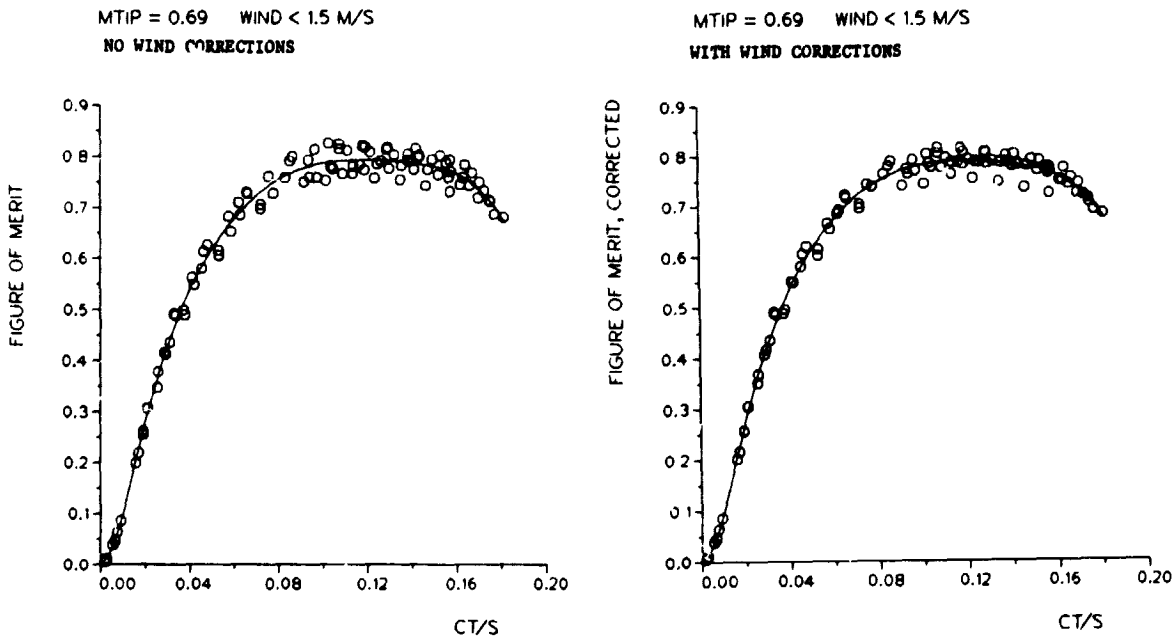


9. Wind Sensor Location.

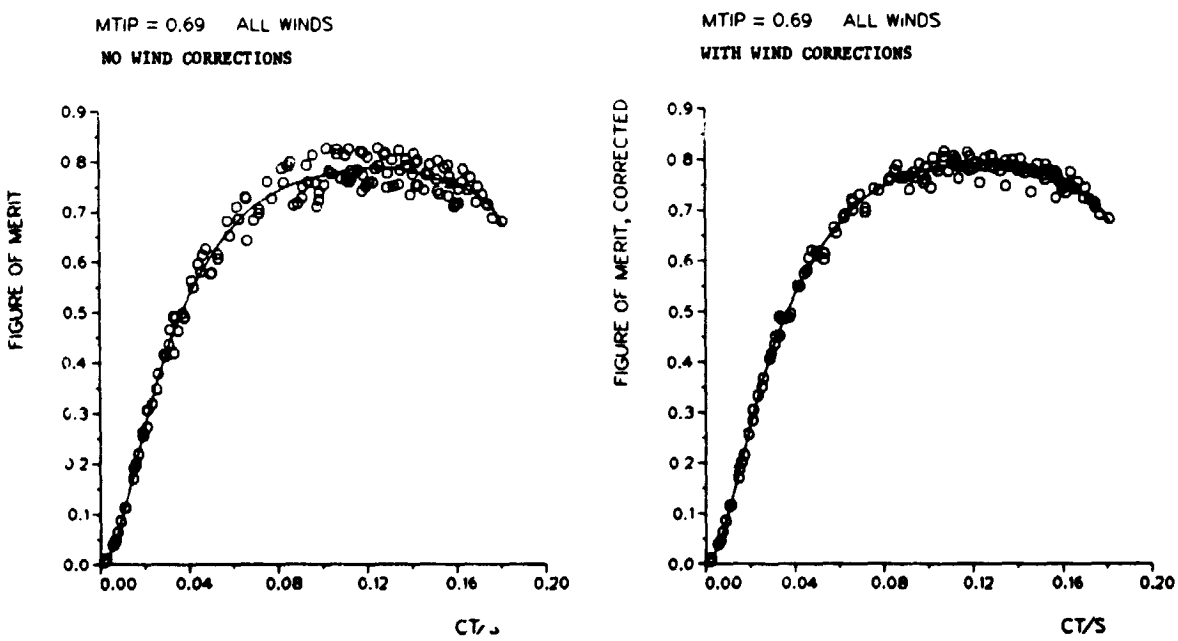


(a) Wind < 0.5 m/s.

10. Effect of Wind Corrections on Rotor Performance.

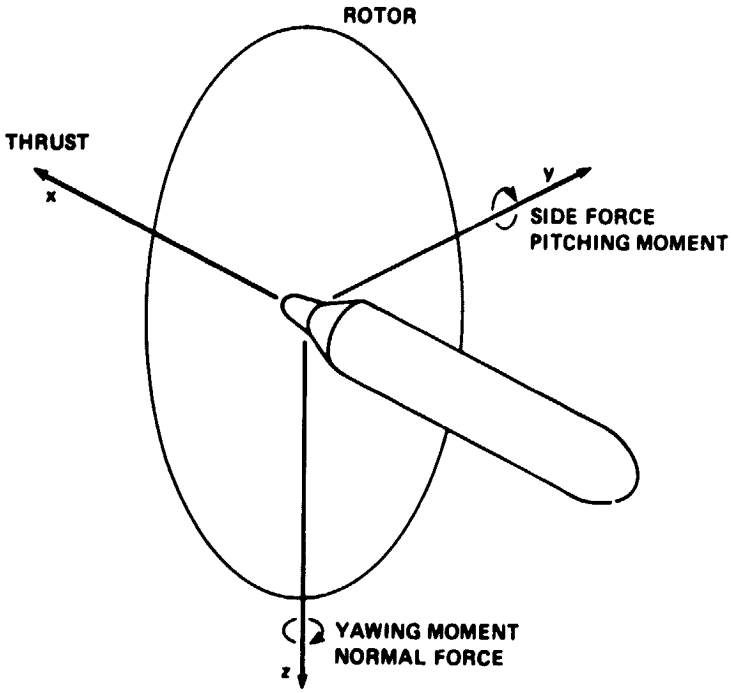


(b) Wind < 1.5 m/s.

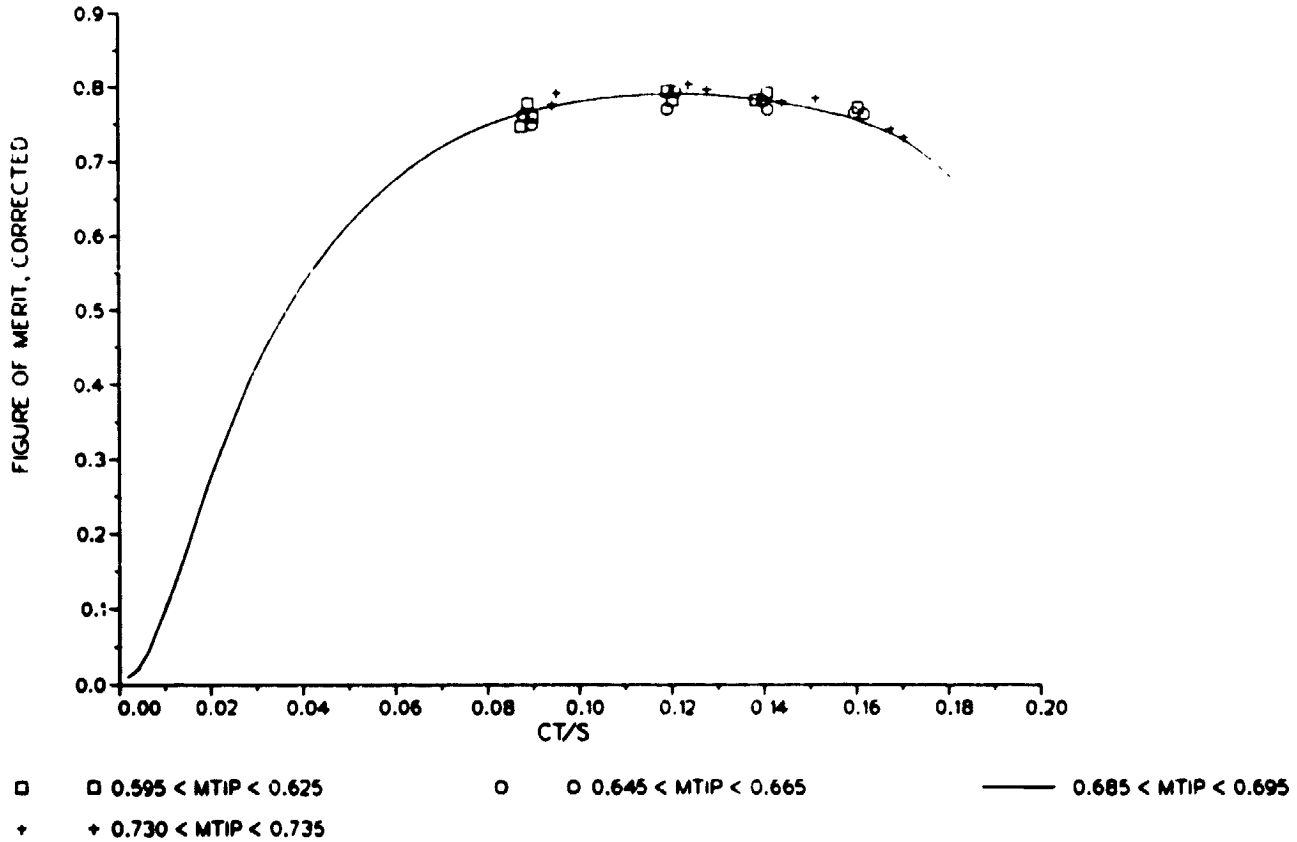


(c) All Winds.

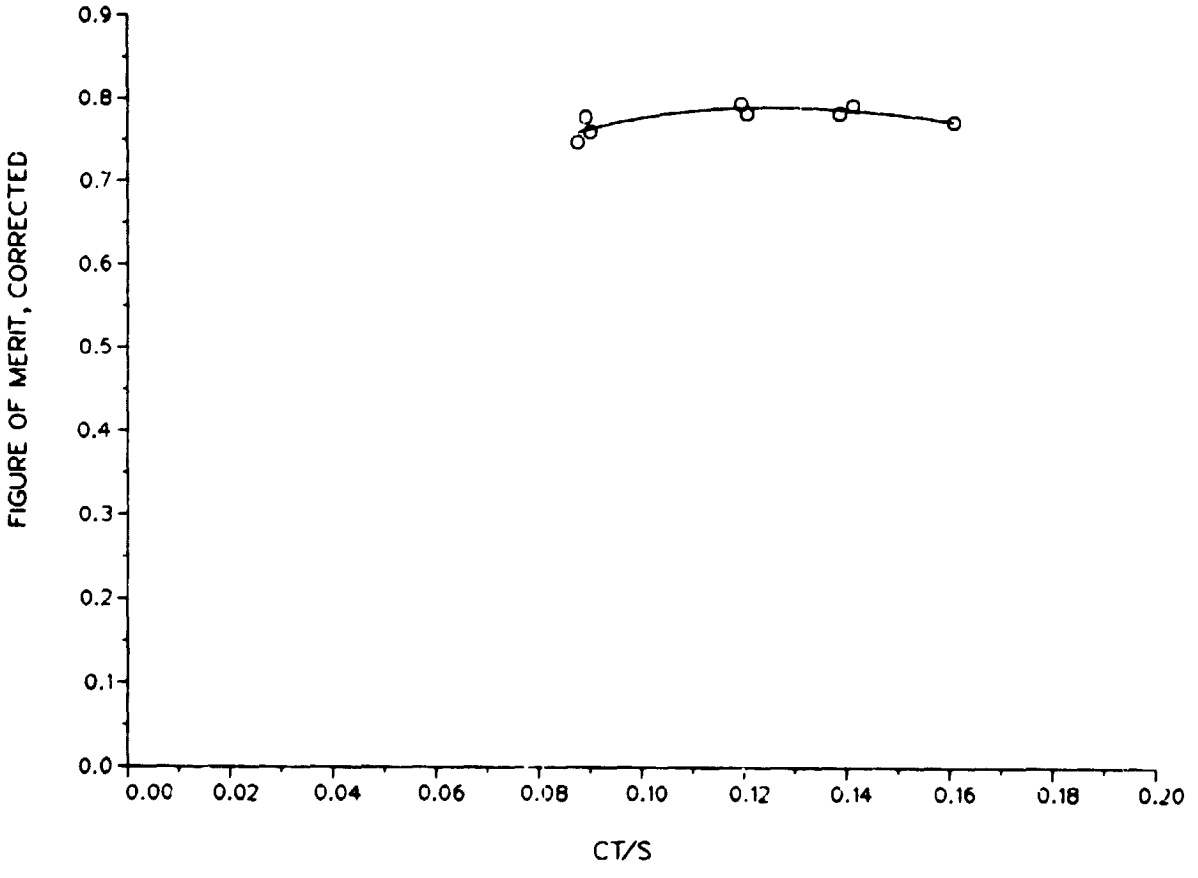
10. Concluded.



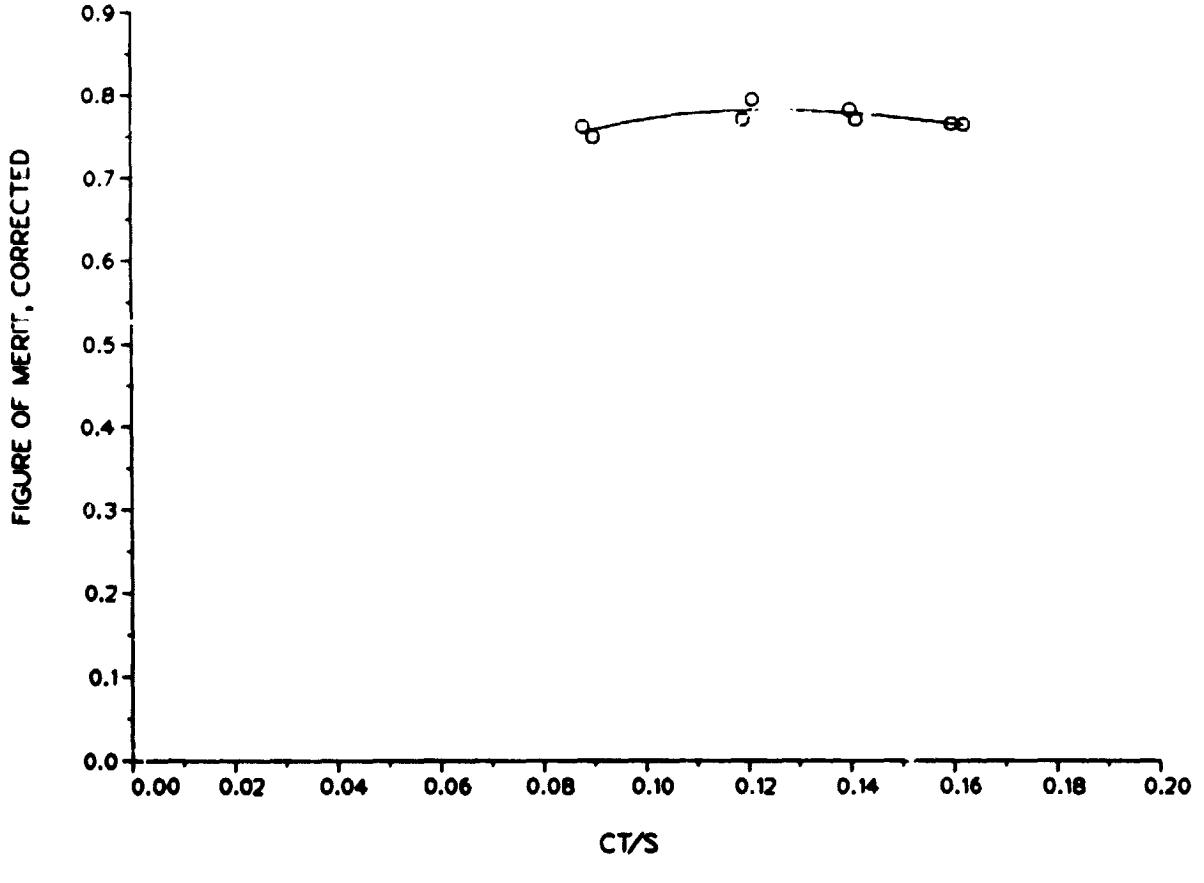
11. Rotor Balance Axis System.



12. Effect of Tip Mach Number on Rotor Performance.

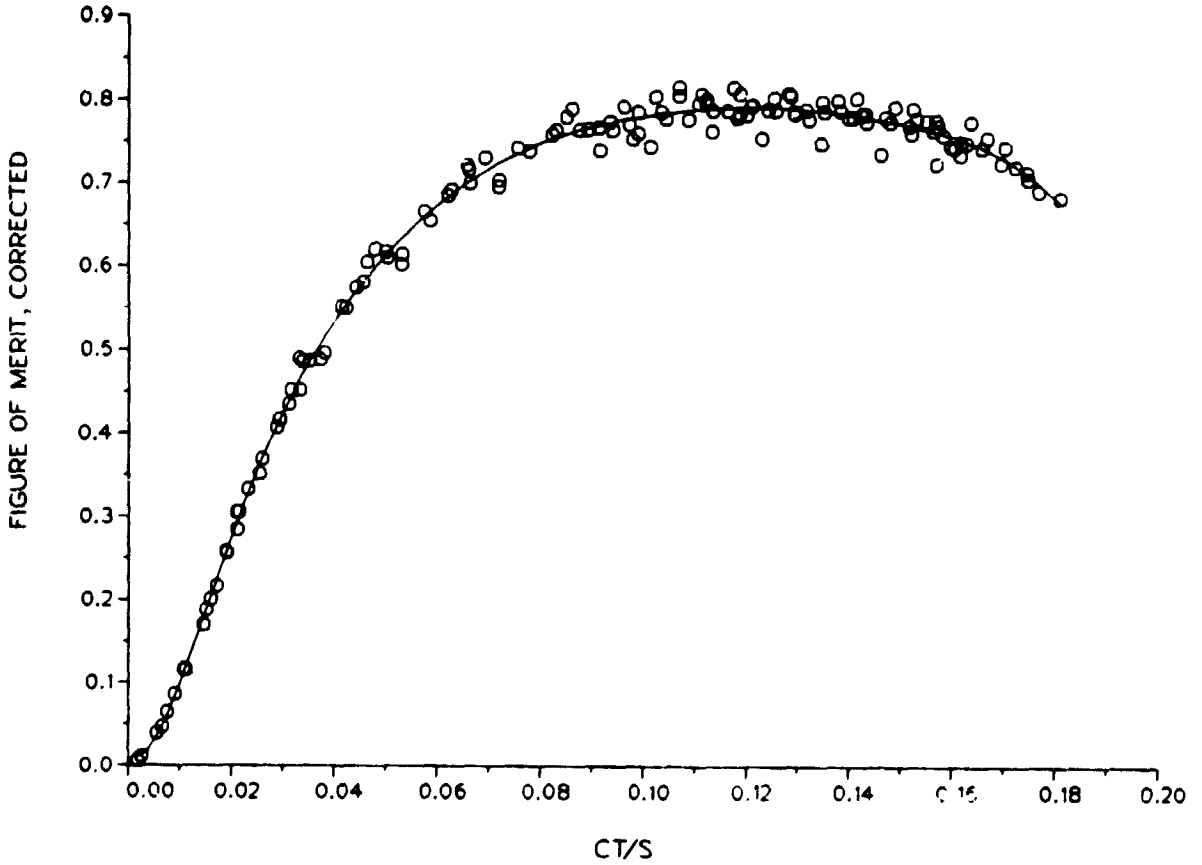


(a) $0.595 < M_{tip} < 0.625$.

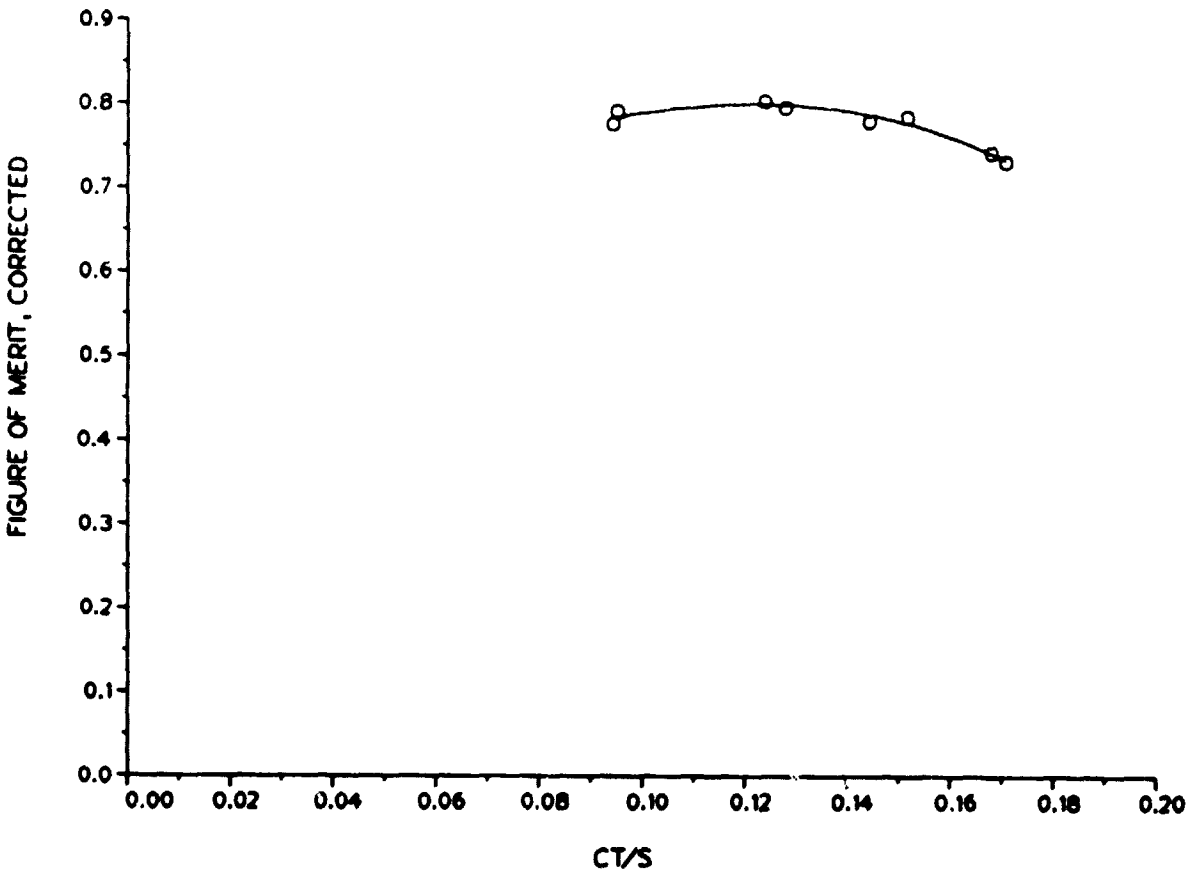


(b) $0.645 < M_{tip} < 0.665$.

13. Effect of C_T/σ on Rotor Performance.

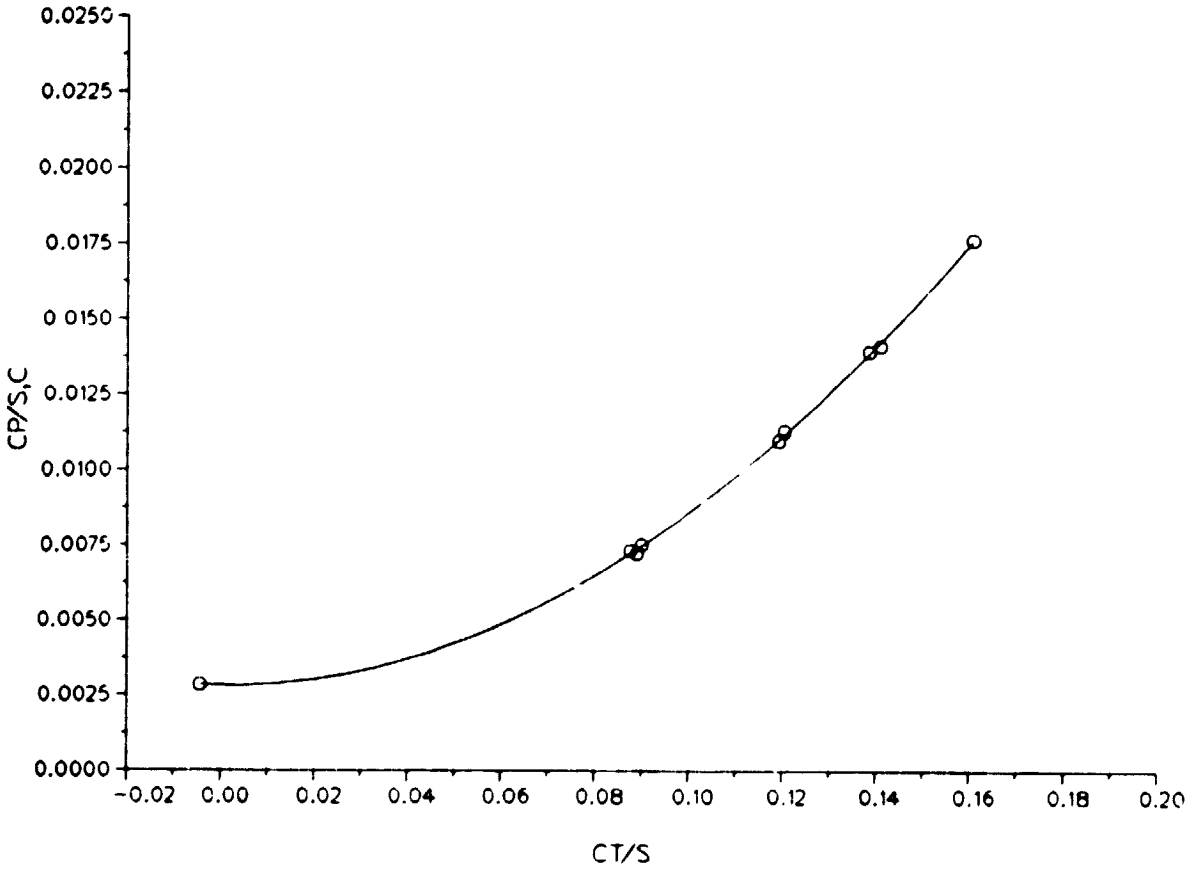


(c) $0.685 < M_{tip} < 0.695$.

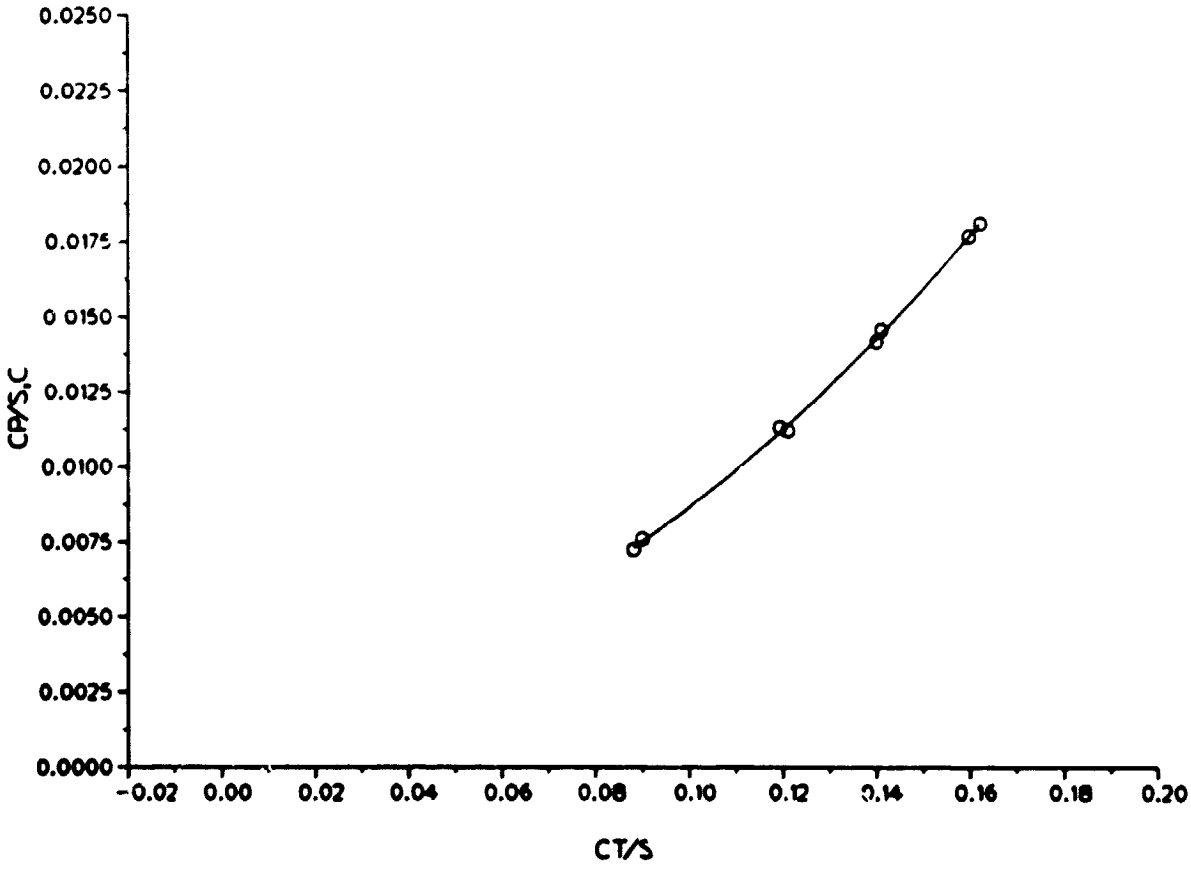


(d) $0.730 < M_{tip} < 0.735$.

13. Concluded.

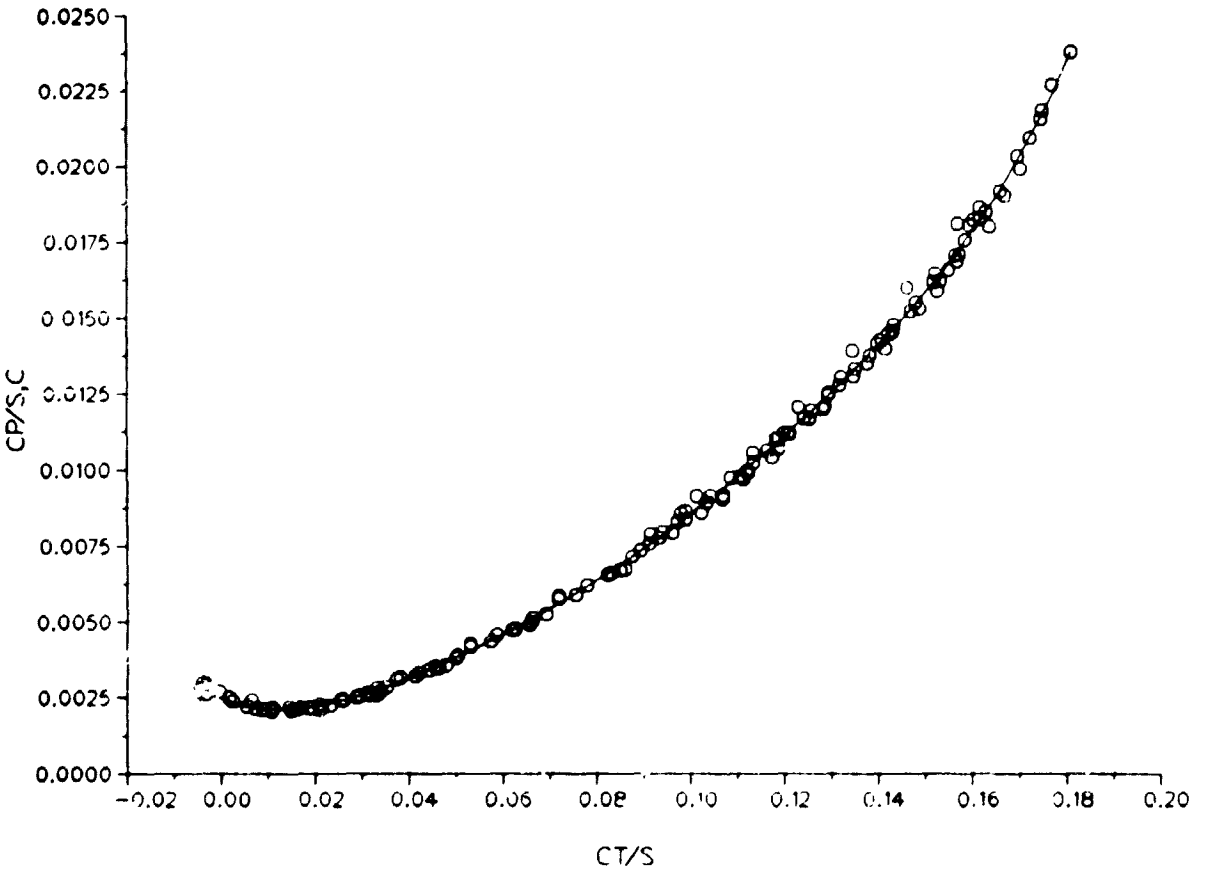


(a) $0.595 < M_{tip} < 0.625$.

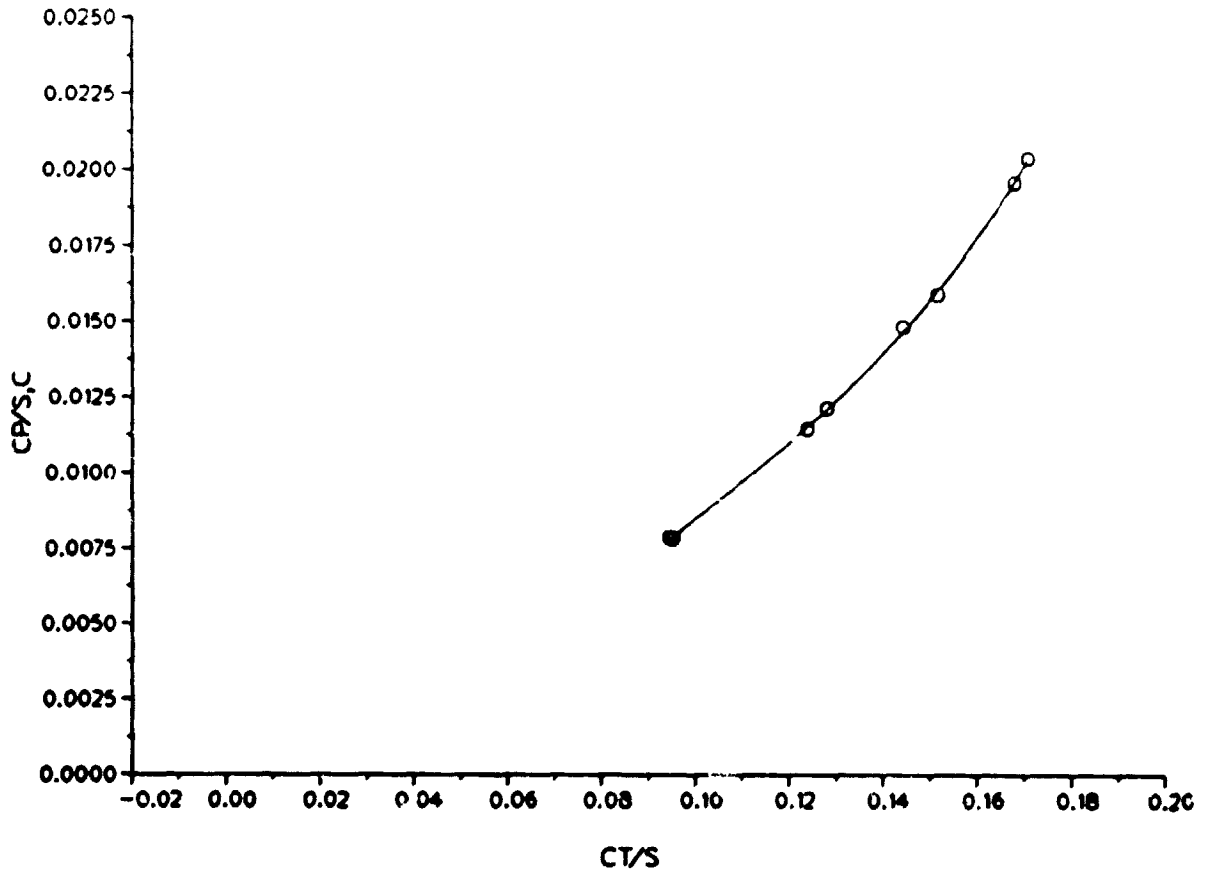


(b) $0.645 < M_{tip} < 0.665$.

14. Effect of C_T/σ on $C_{P,corrected}/\sigma$.

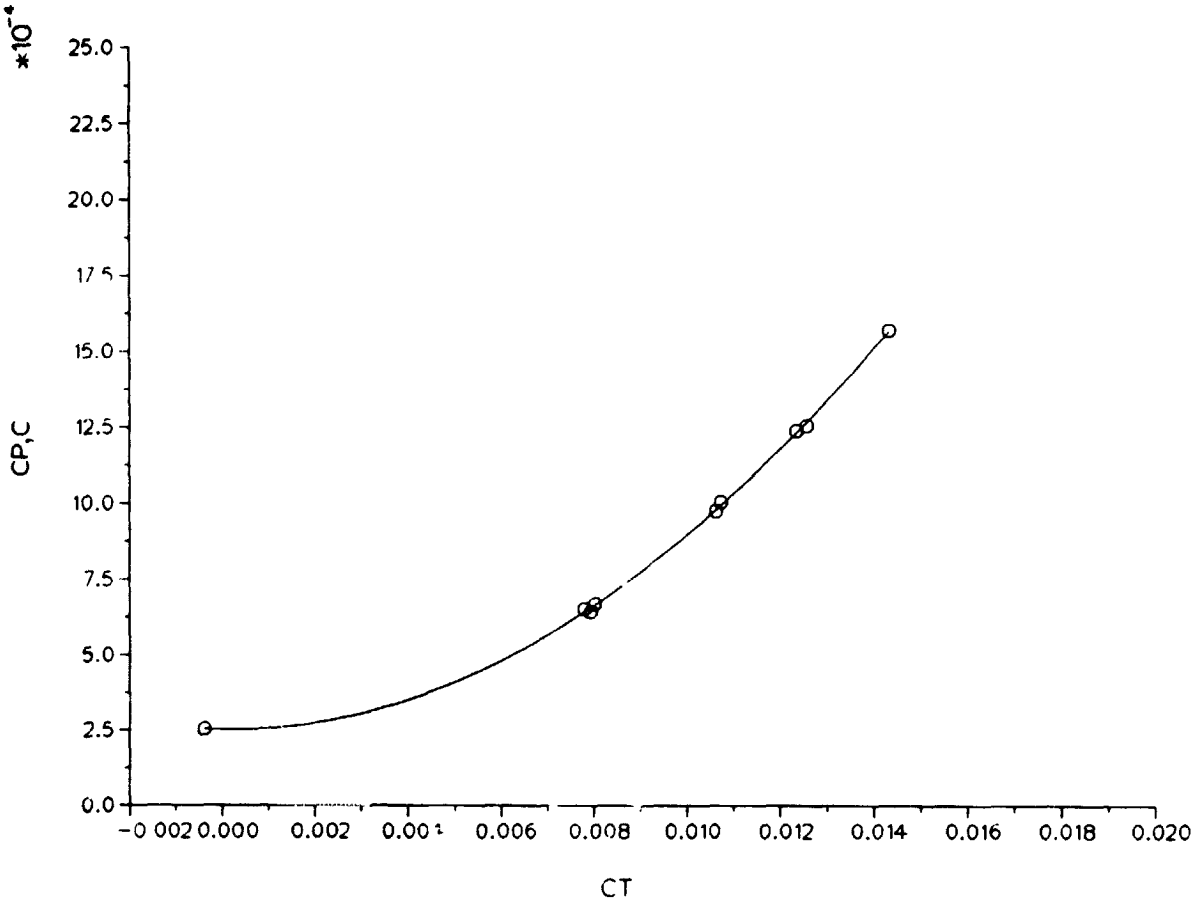


(c) $0.685 < M_{tip} < 0.695$.

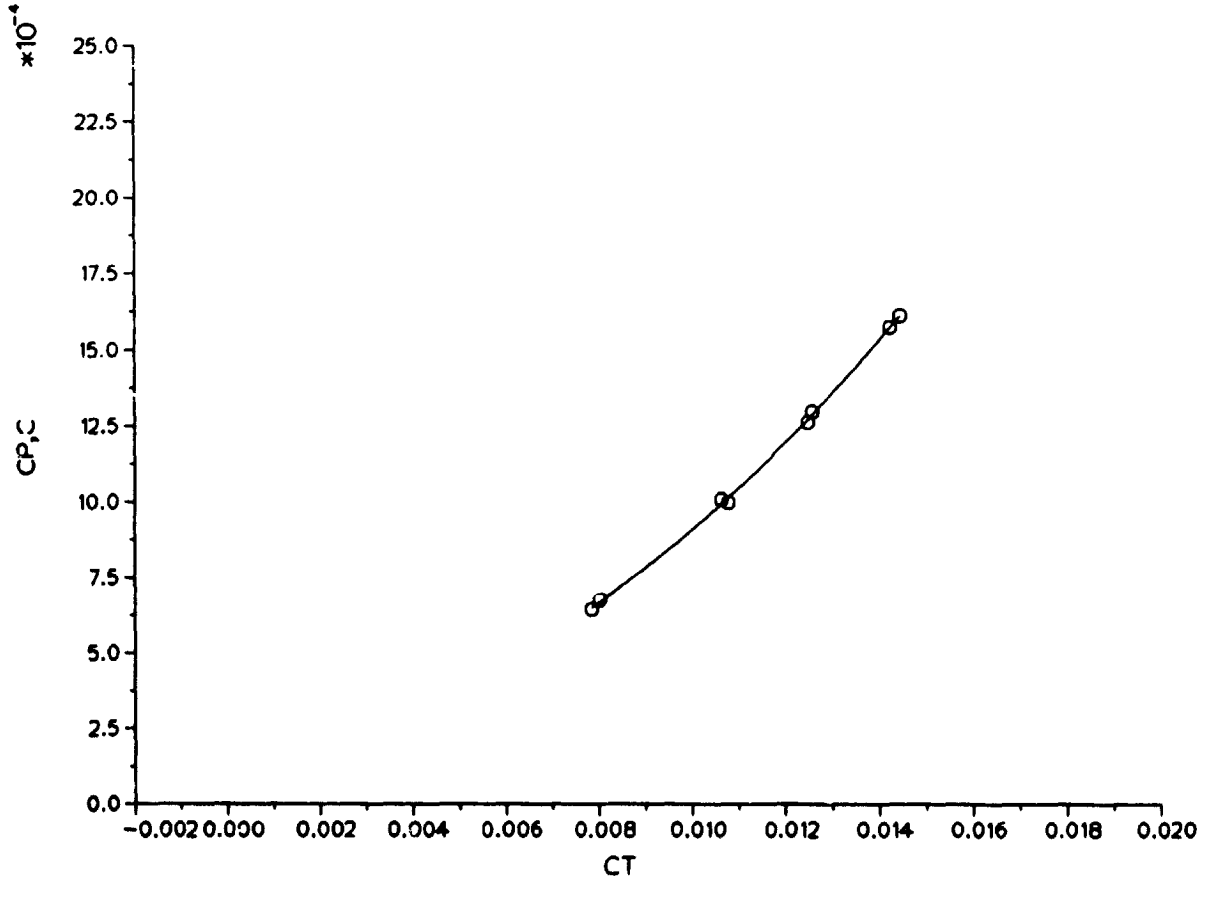


(d) $0.730 < M_{tip} < 0.735$.

14. Concluded.

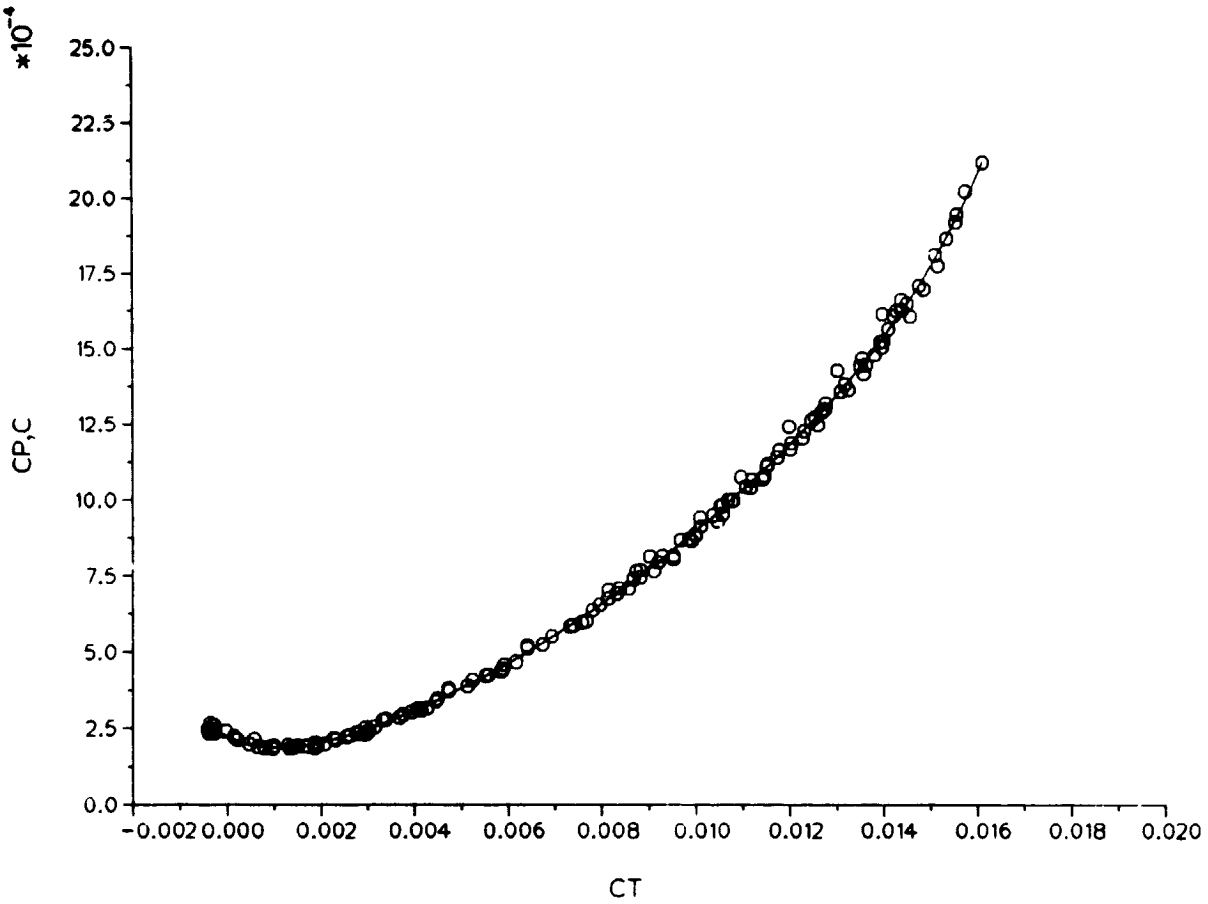


(a) $0.595 < M_{tip} < 0.625$.

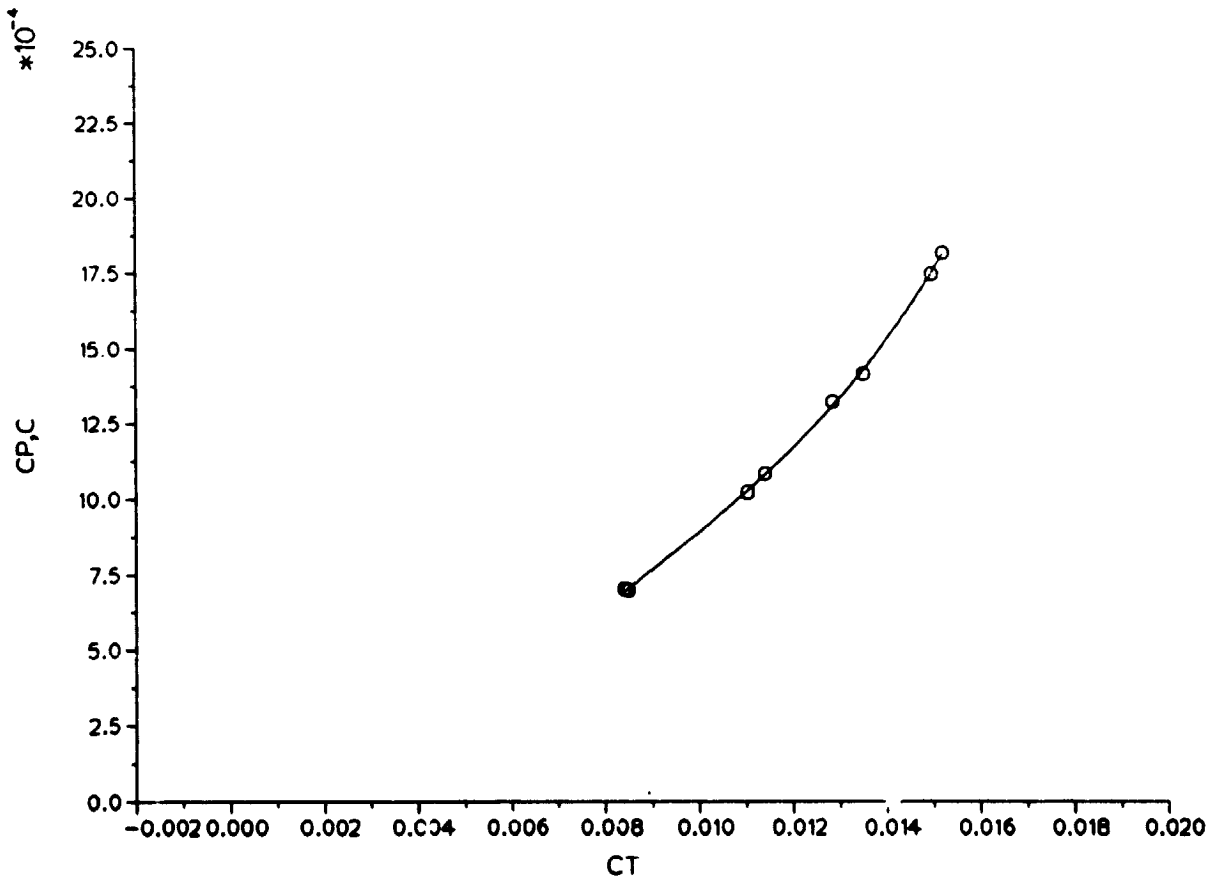


(b) $0.645 < M_{tip} < 0.665$.

15. Effect of C_T on $C_{P,corrected}$.

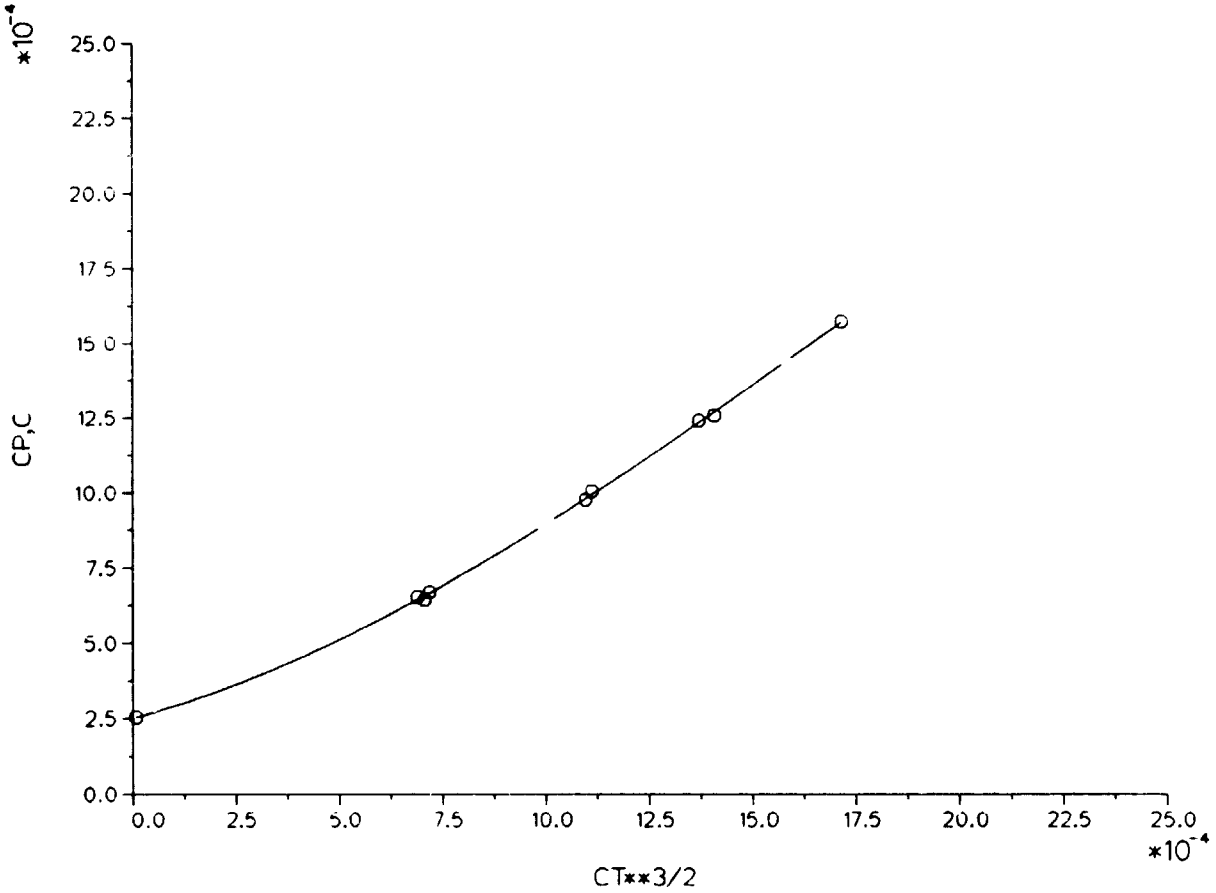


(c) $0.685 < M_{tip} < 0.695$.

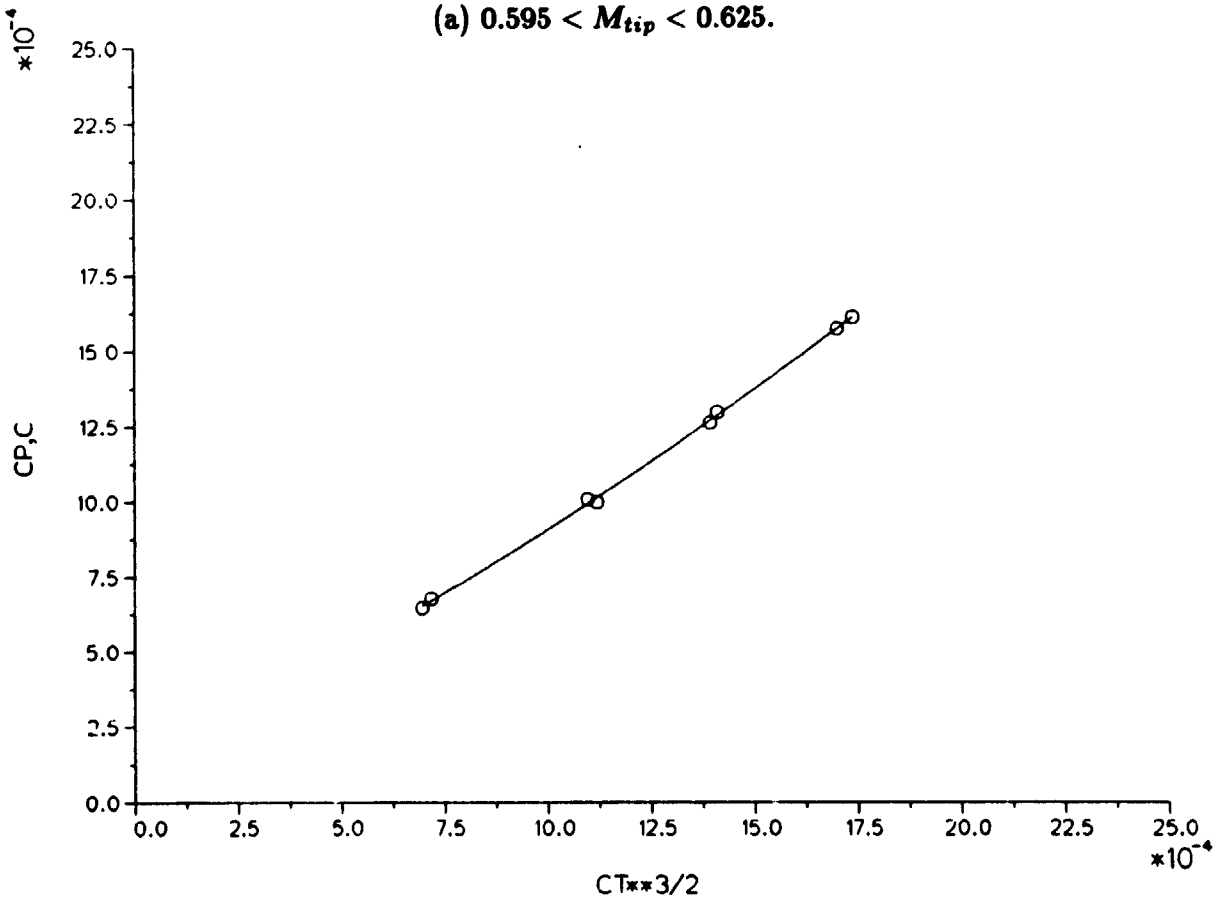


(d) $0.730 < M_{tip} < 0.735$.

15. Concluded.

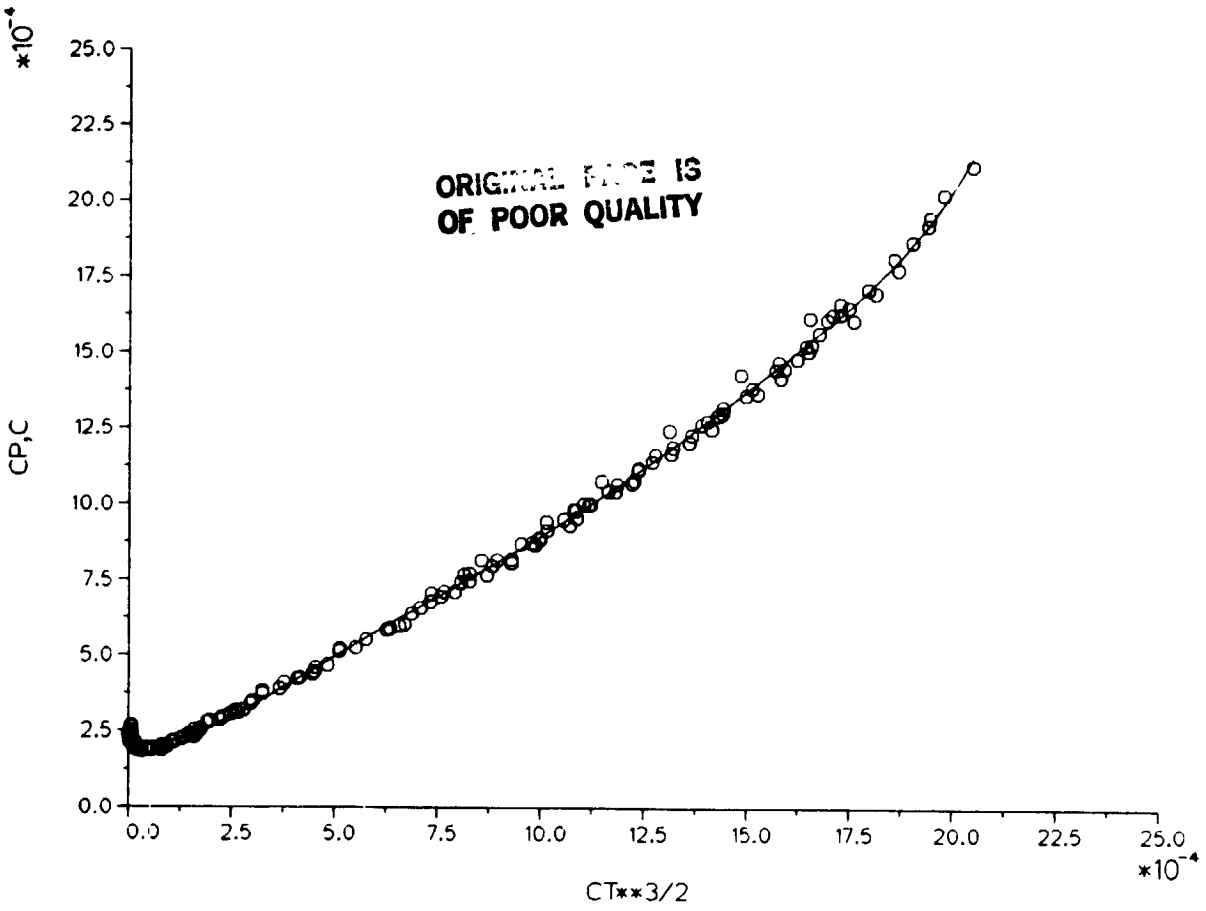


(a) $0.595 < M_{tip} < 0.625$.



(b) $0.645 < M_{tip} < 0.665$.

16. Effect of $C_T^{3/2}$ on $C_{P,corrected}$.



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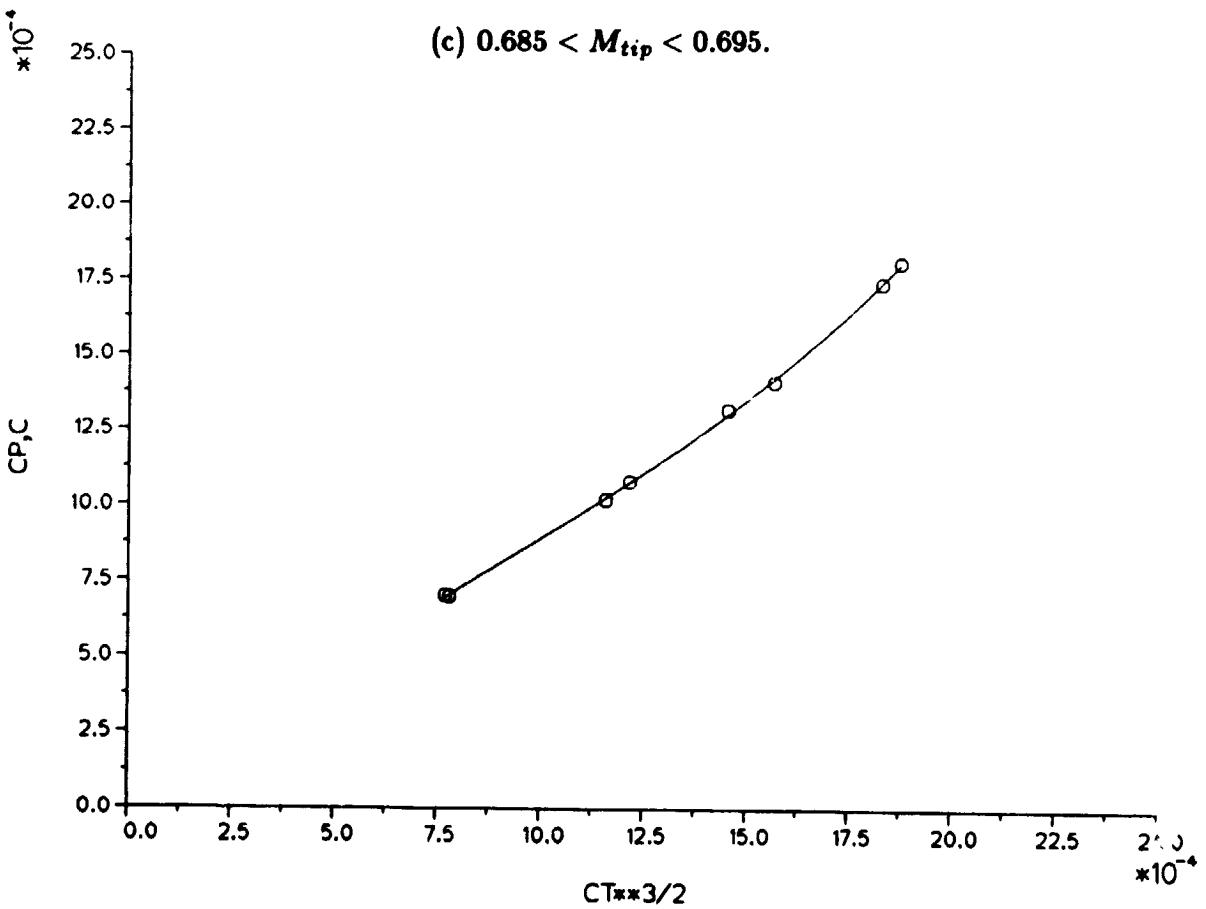
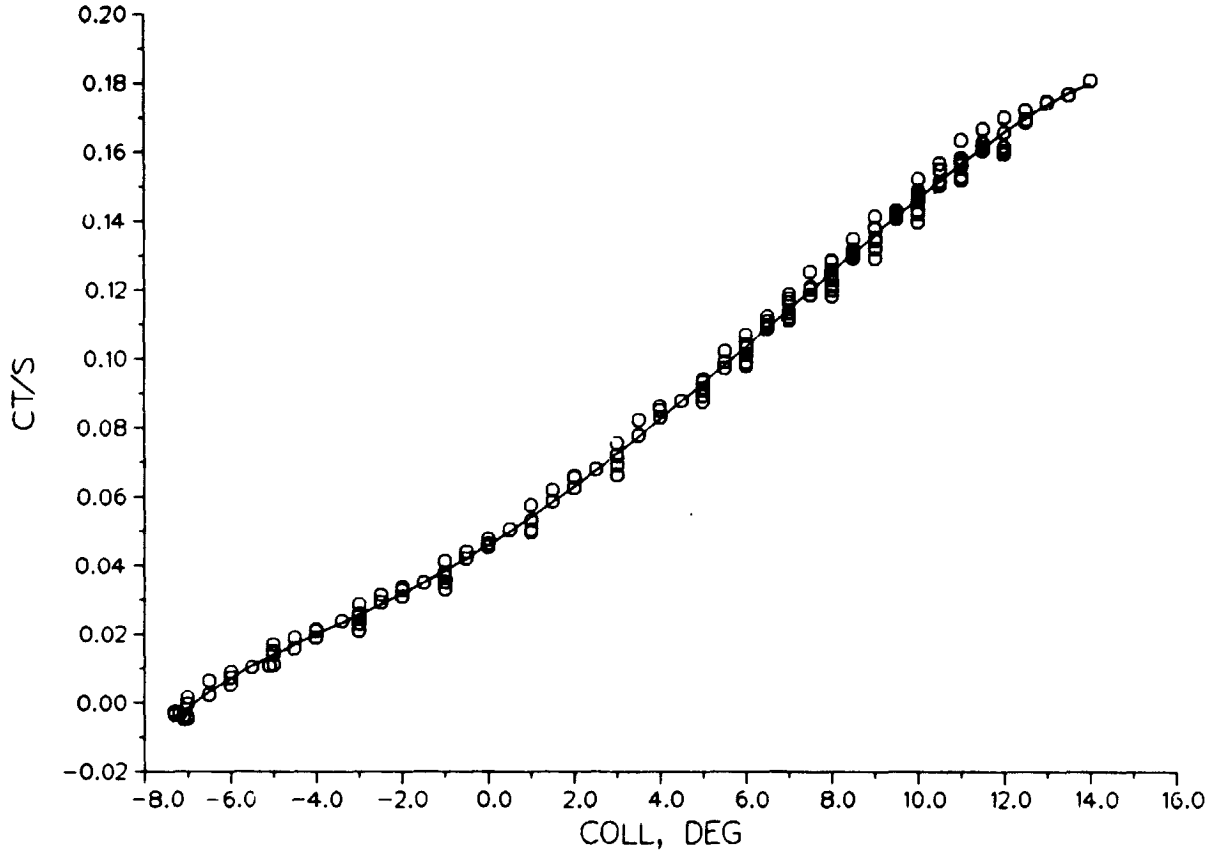
(c) $0.685 < M_{tip} < 0.695$.

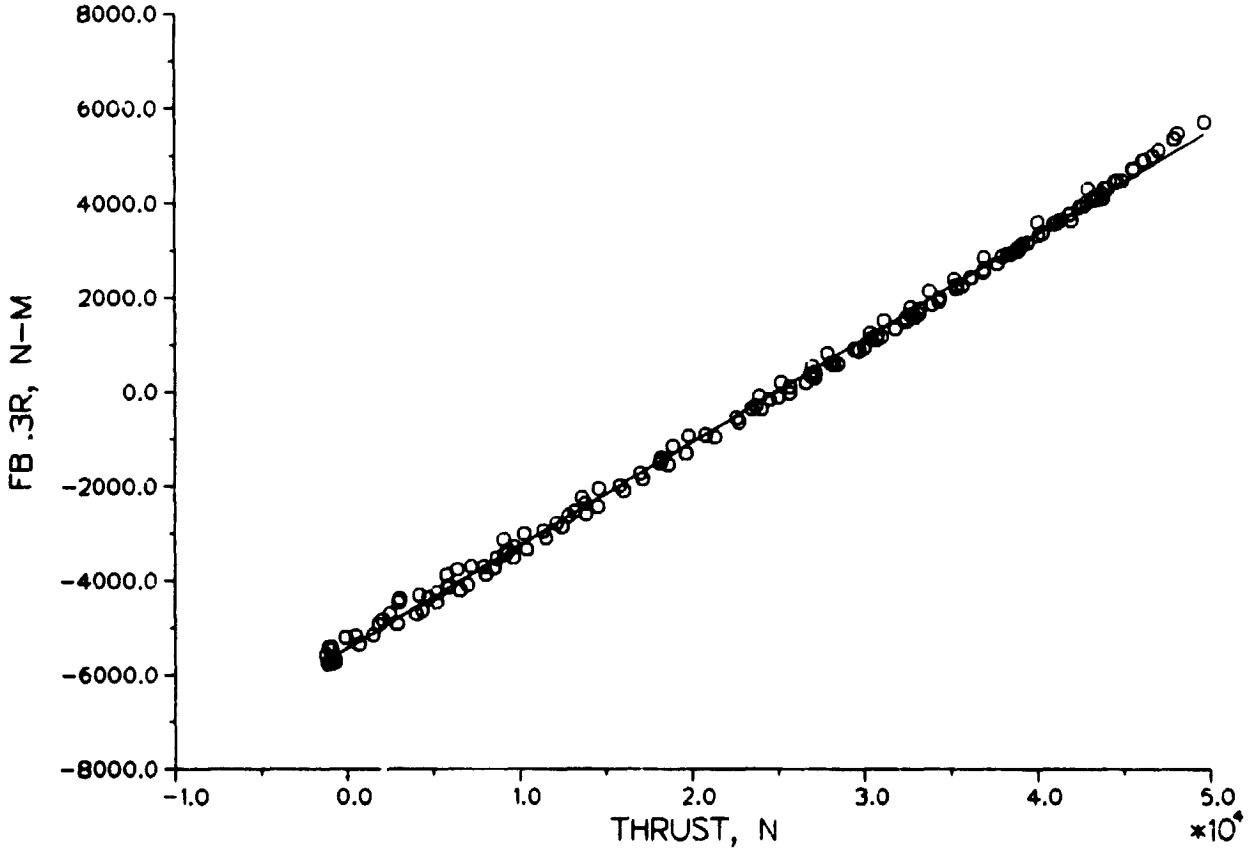


(d) $0.730 < M_{tip} < 0.735$.

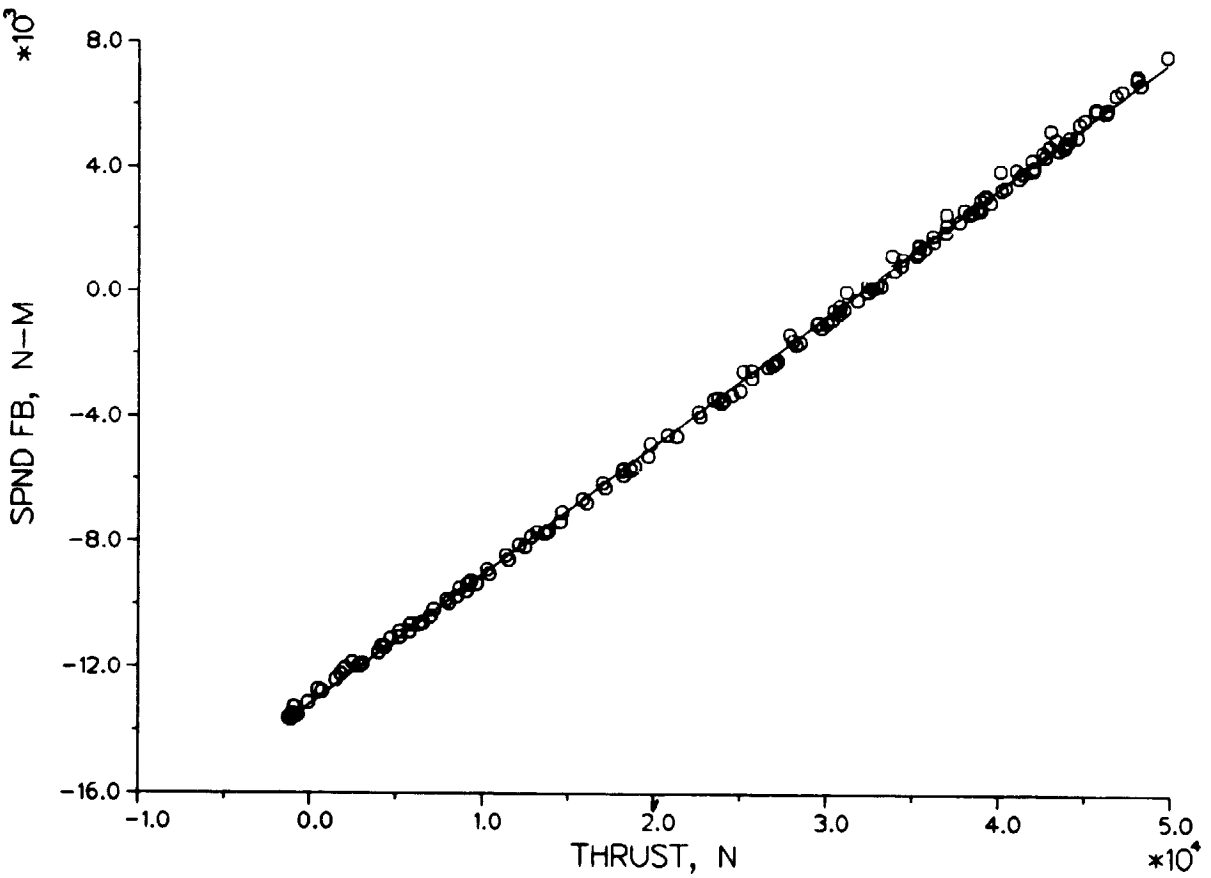
16. Concluded.



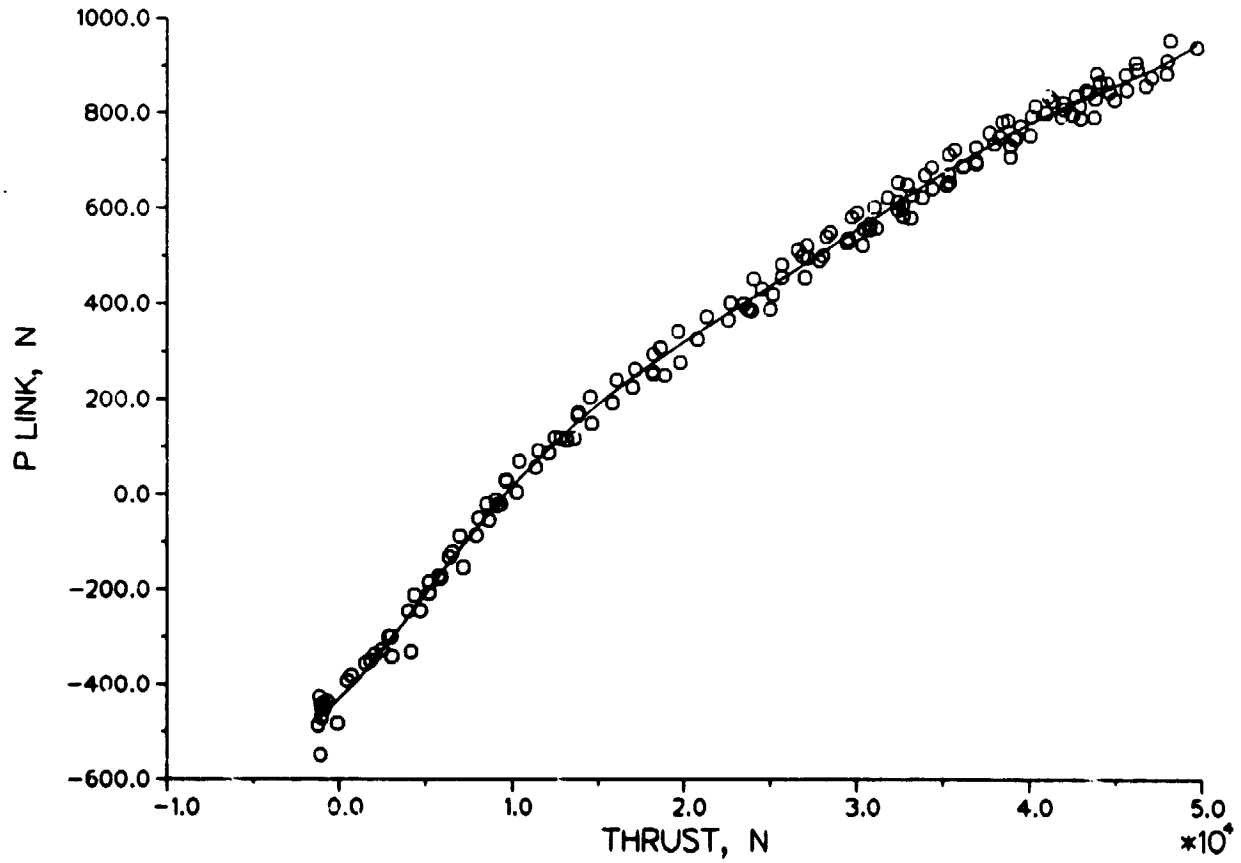
17. Effect of Collective Pitch on C_T/σ.



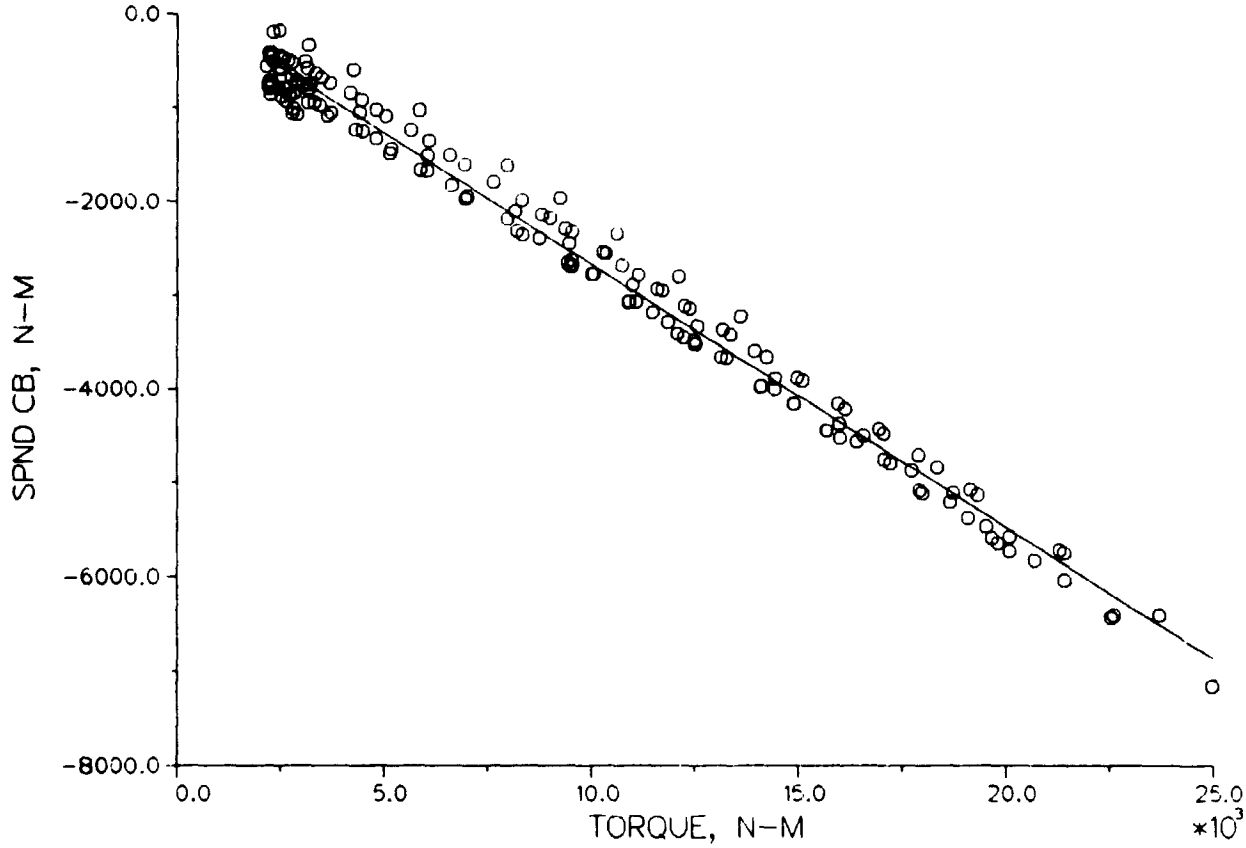
18. Effect of Rotor Thrust on Hub Spindle Flap Bending Moment at 0.06 R.



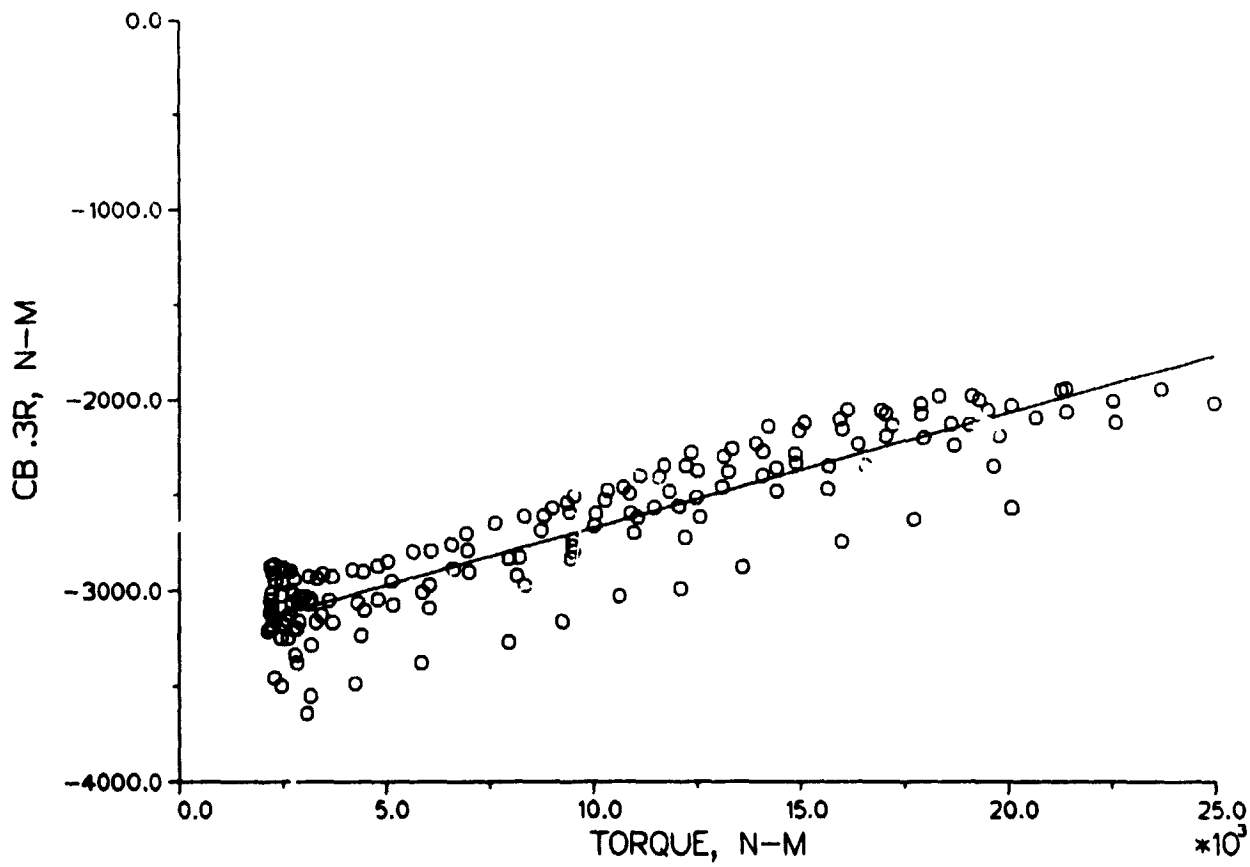
19. Effect of Rotor Thrust on Blade Flap Bending Moment at 0.3 R.



20. Effect of Rotor Thrust on Pitch Link Load.



21. Effect of Rotor Torque on Hub Spindle Chord Bending Moment at 0.06 R.



22. Effect of Rotor Torque on Blade Chord Bending Moment at 0.3 R.

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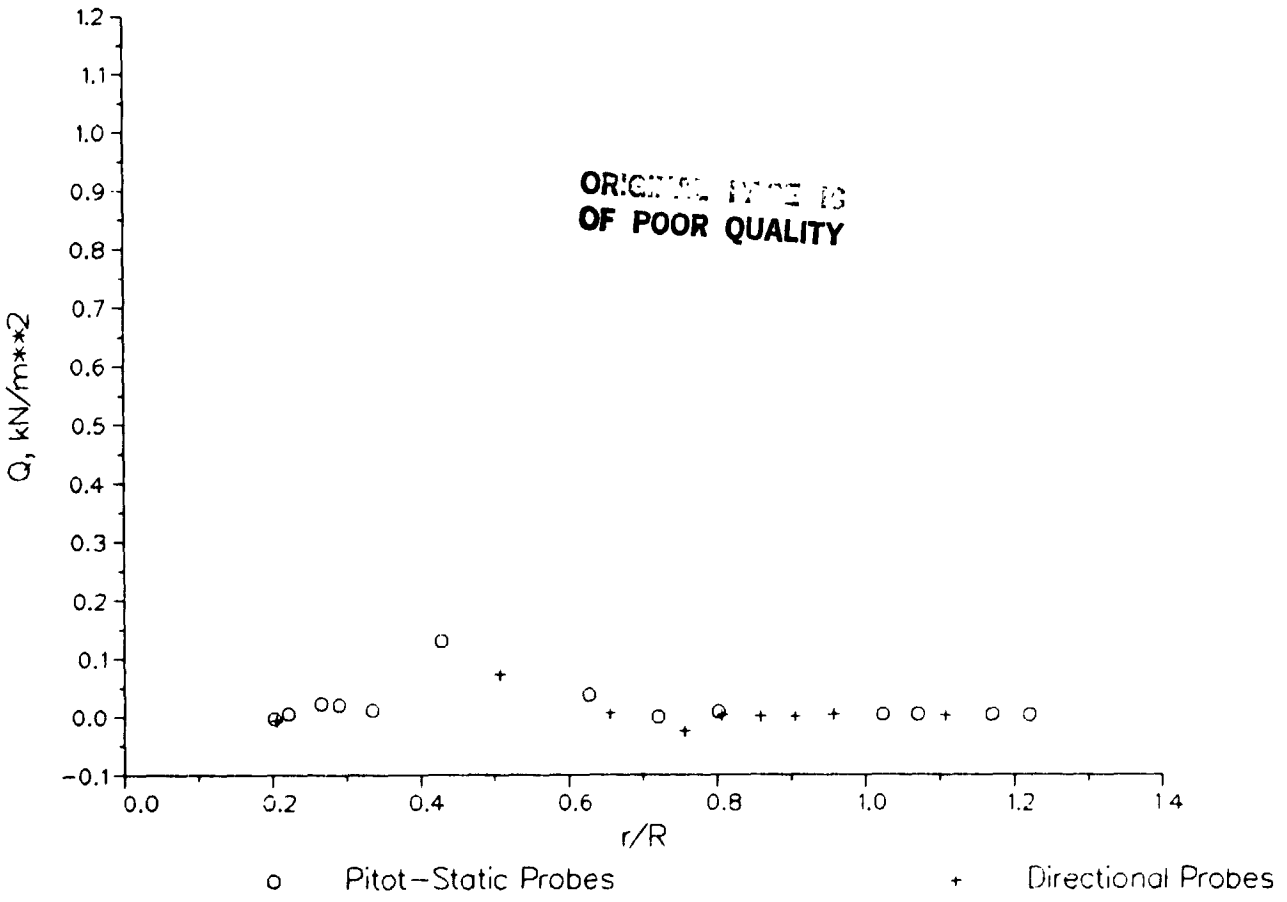
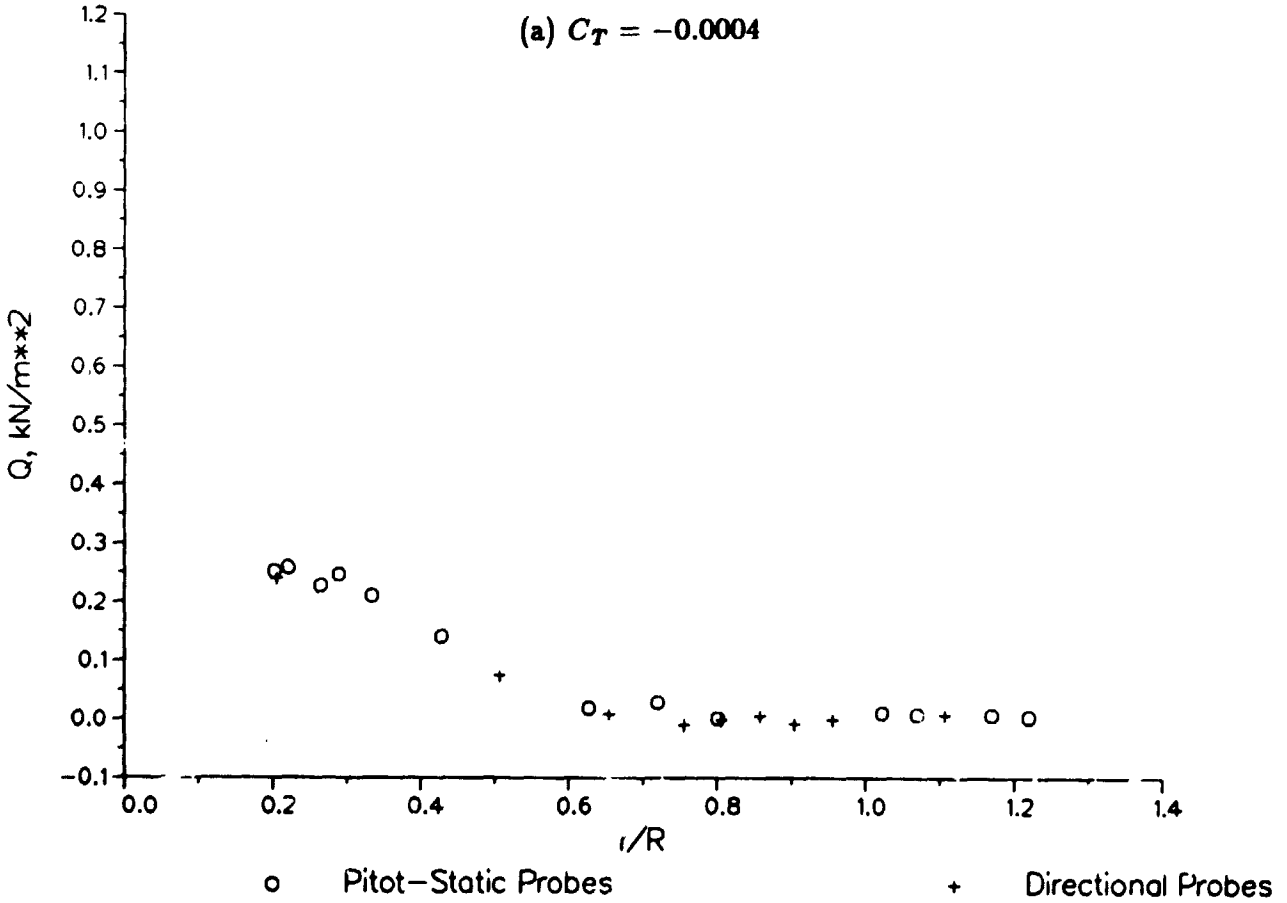
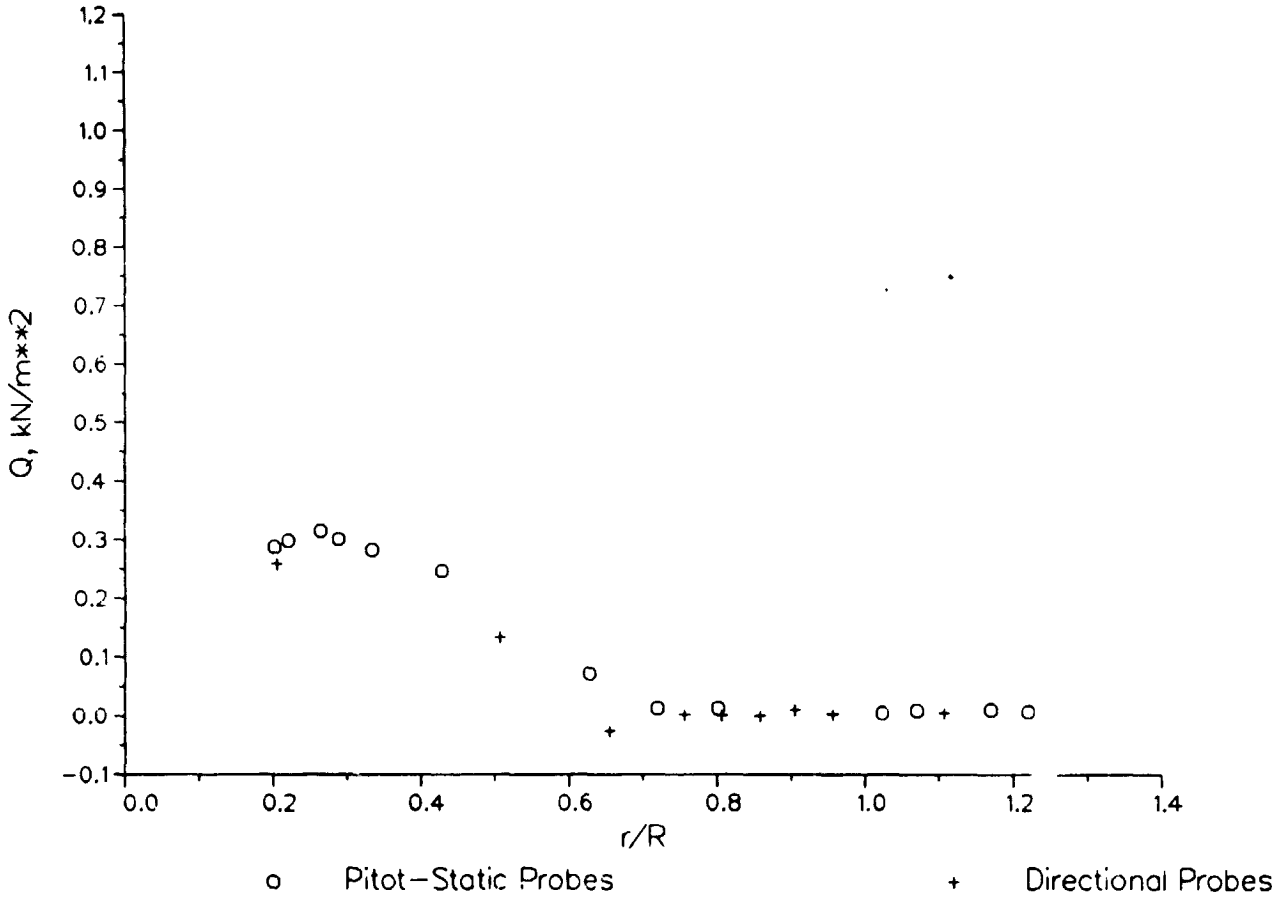


(a) $C_T = -0.0004$

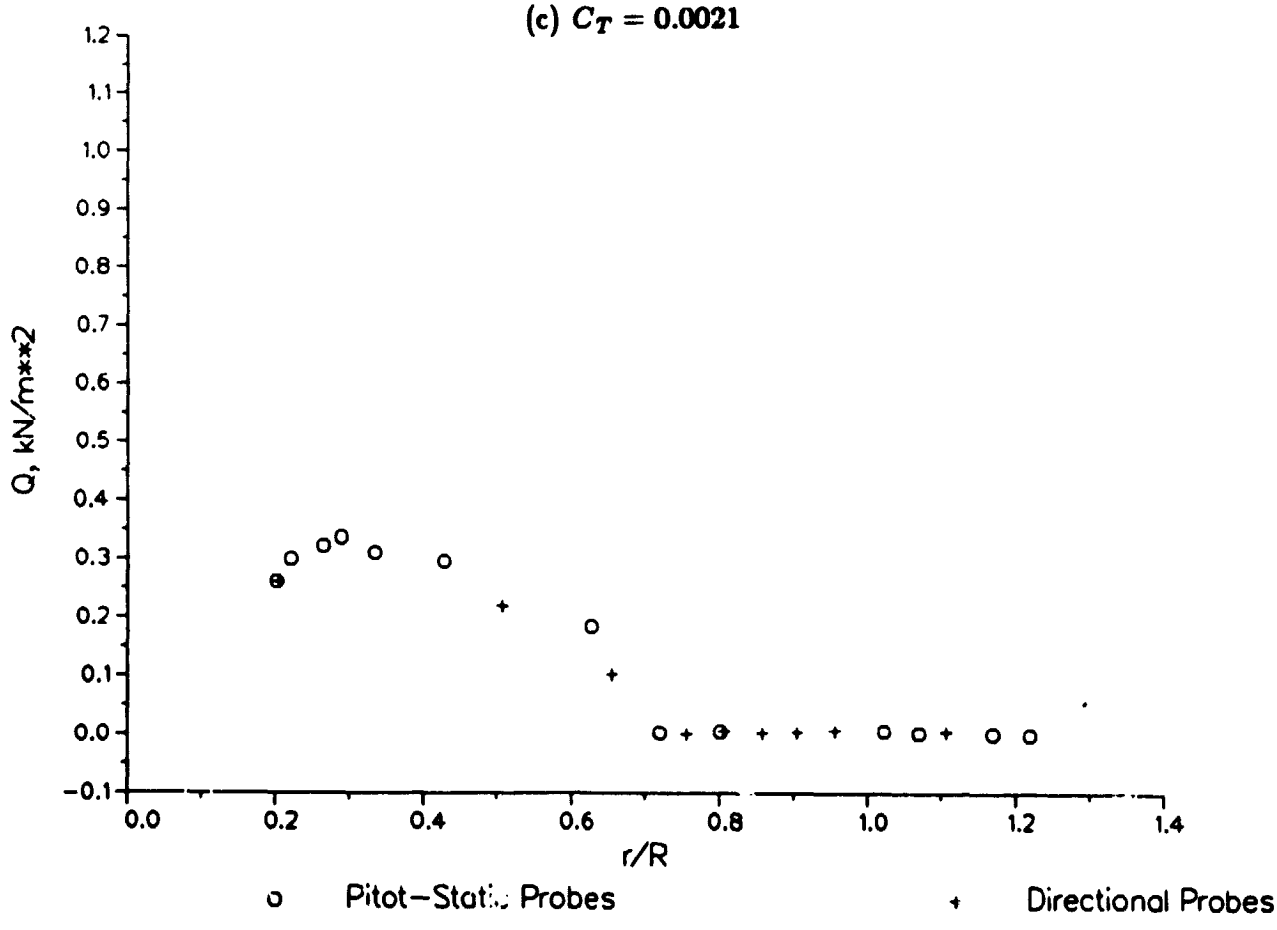


(b) $C_T = 0.0010$

23. Rotor Wake Dynamic Pressure Distribution.

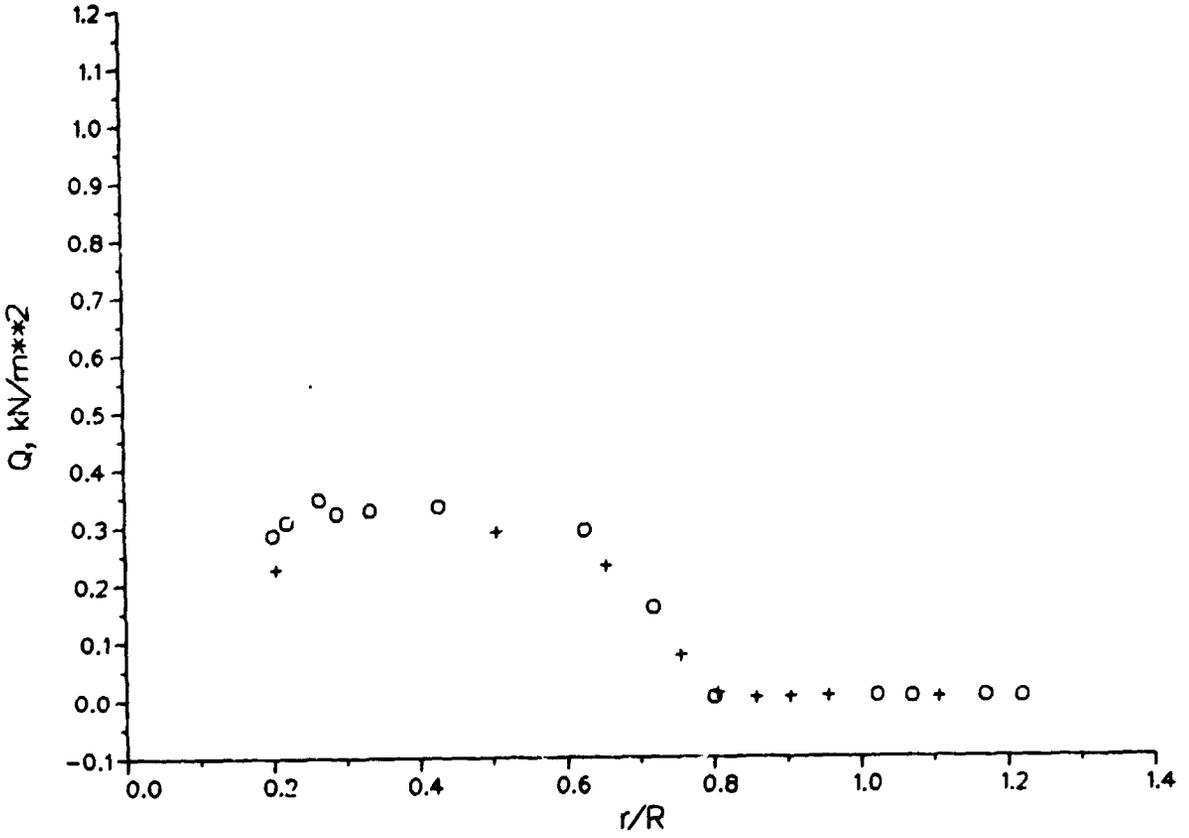


(c) $C_T = 0.0021$

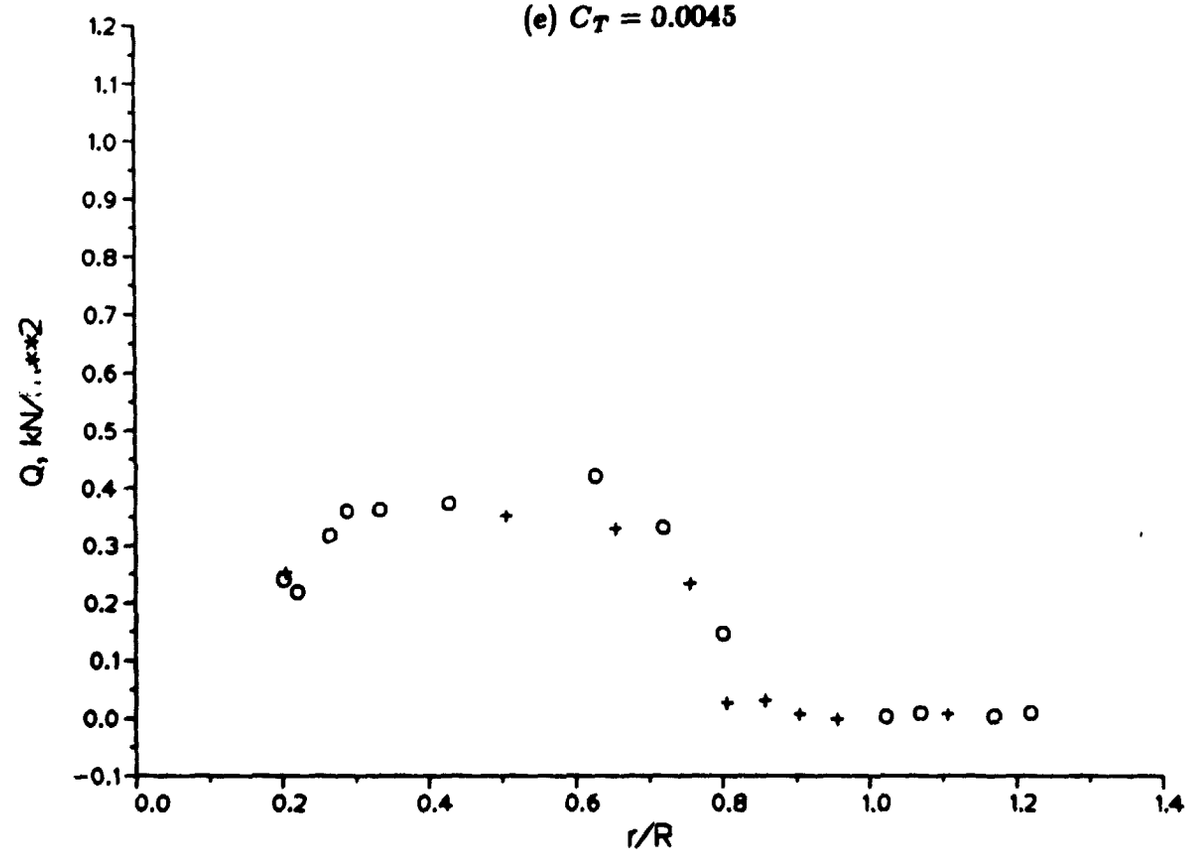


(d) $C_T = 0.0031$

23. Continued.

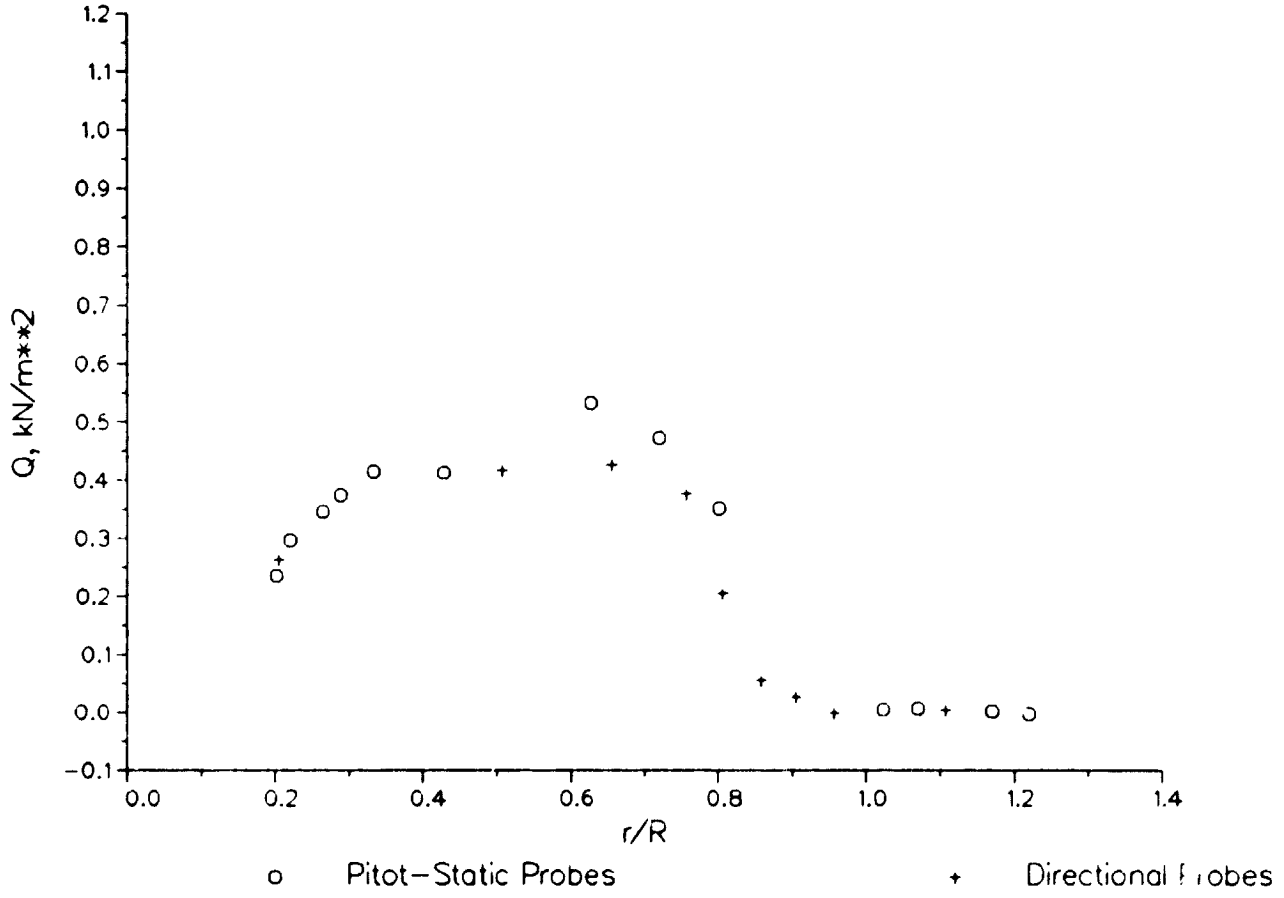


(e) $C_T = 0.0045$

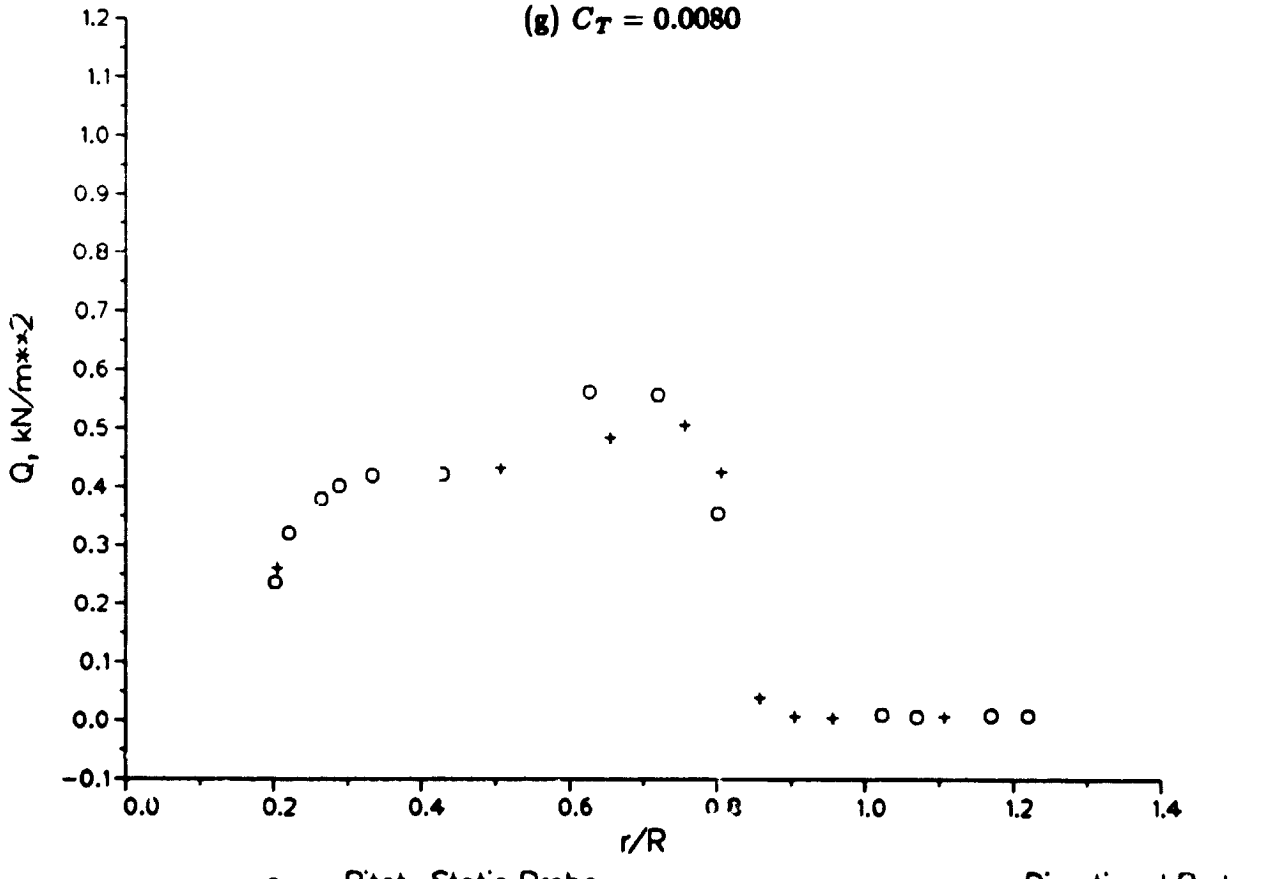


(f) $C_T = 0.0059$

23. Continued.

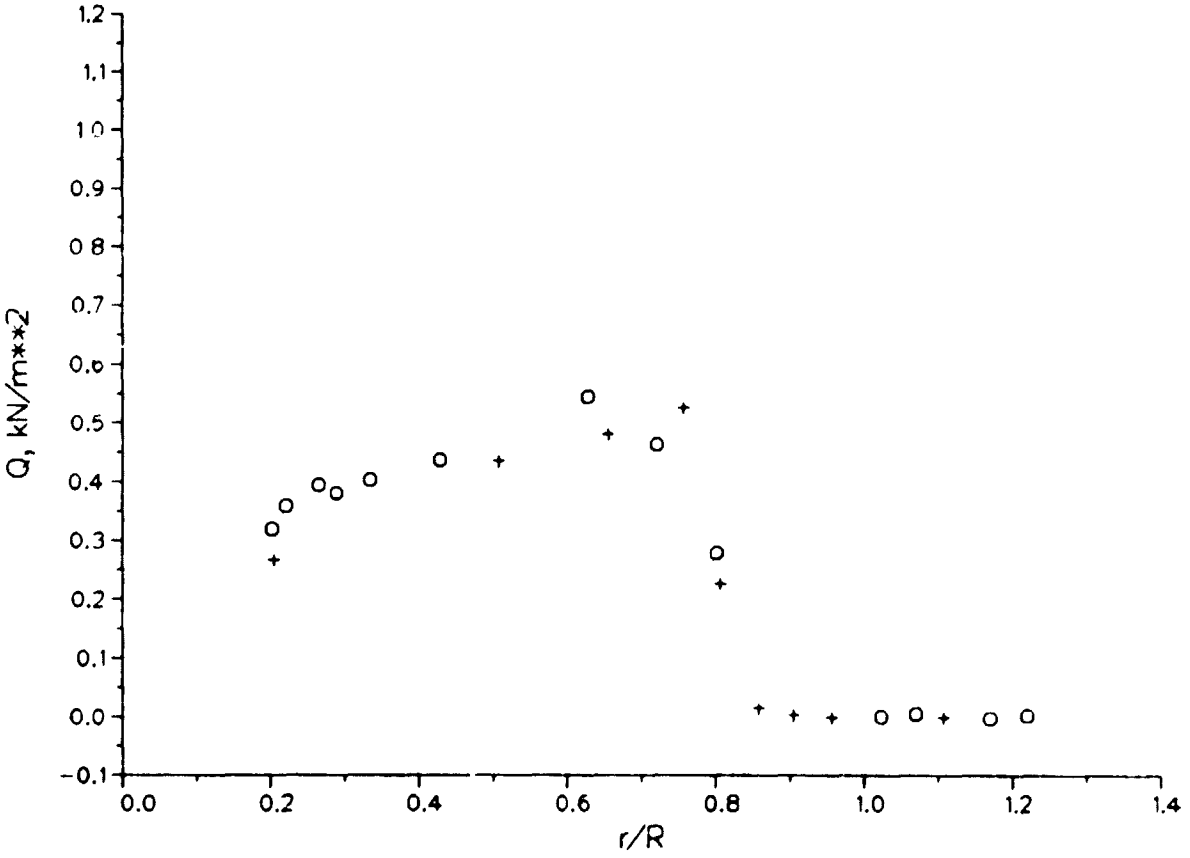


(g) $C_T = 0.0080$

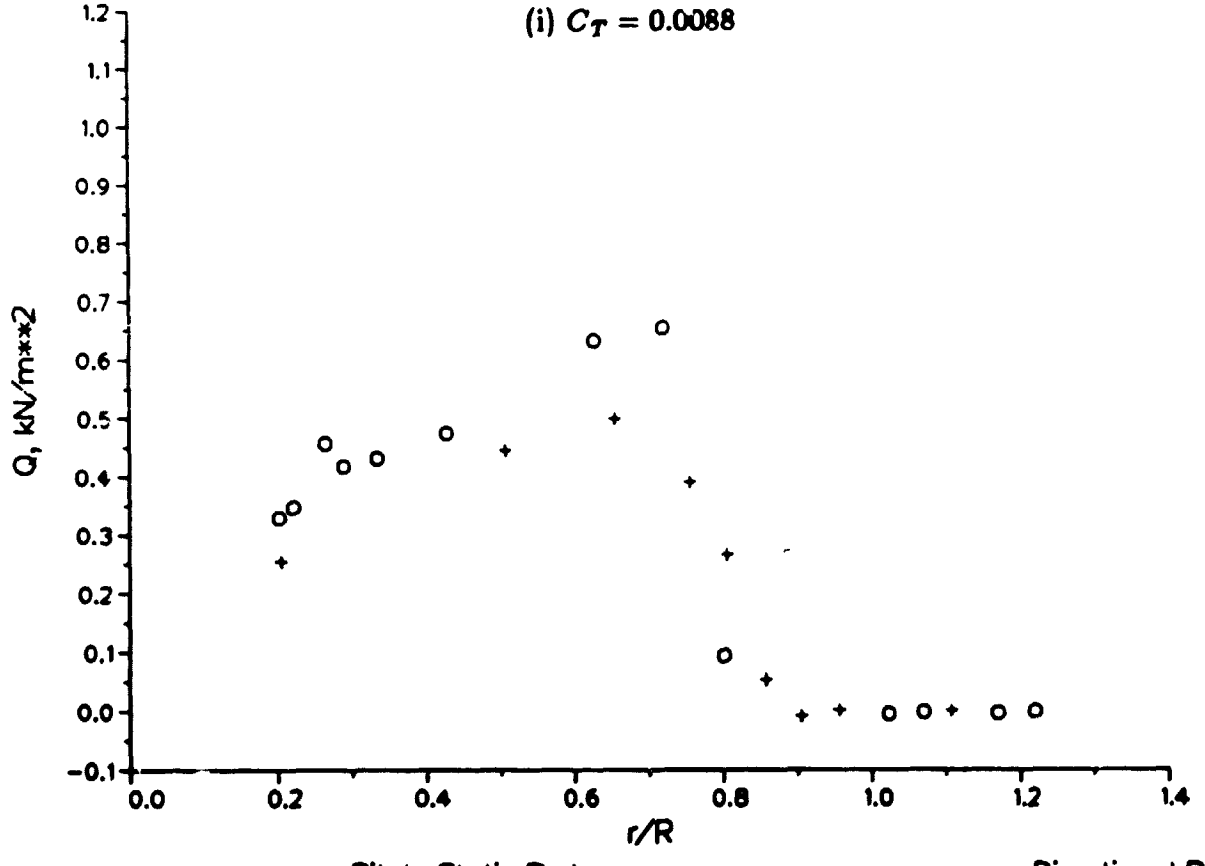


(h) $C_T = 0.0067$

23. Continued.

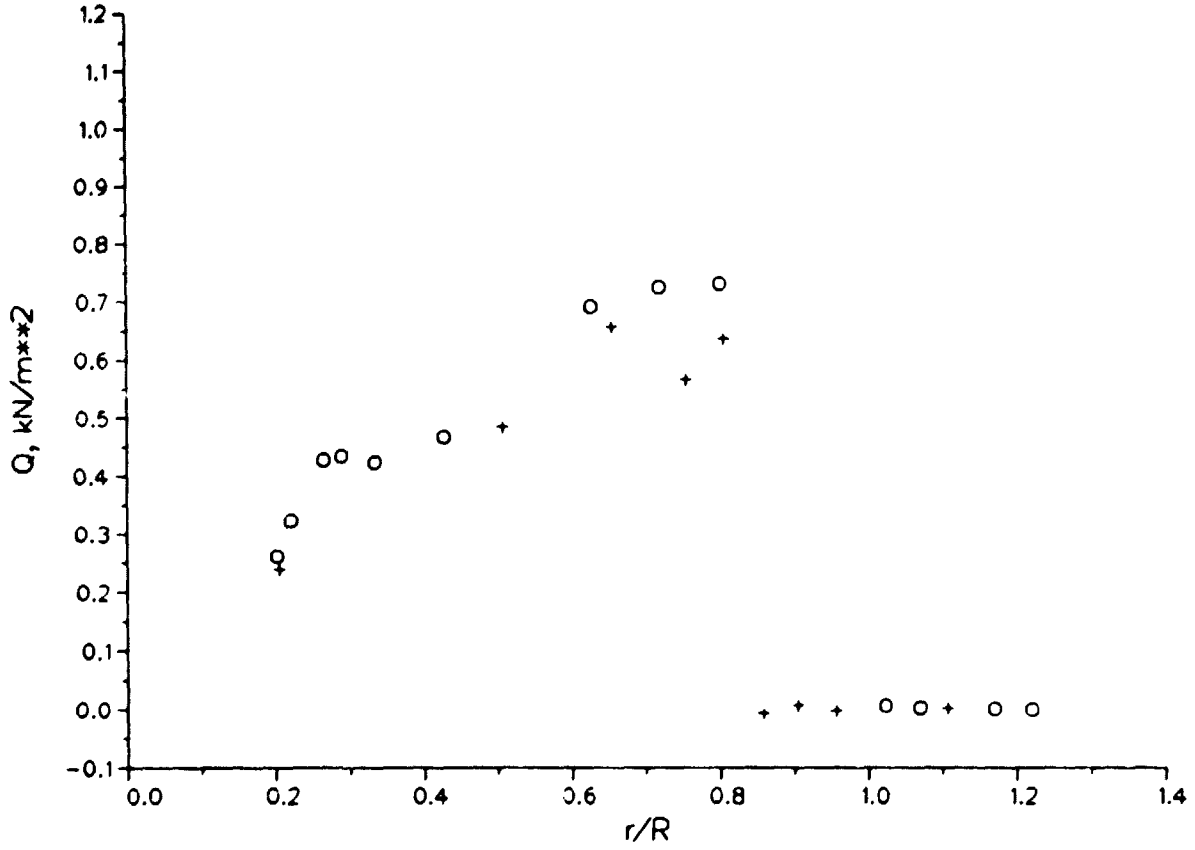


(i) $C_T = 0.0088$

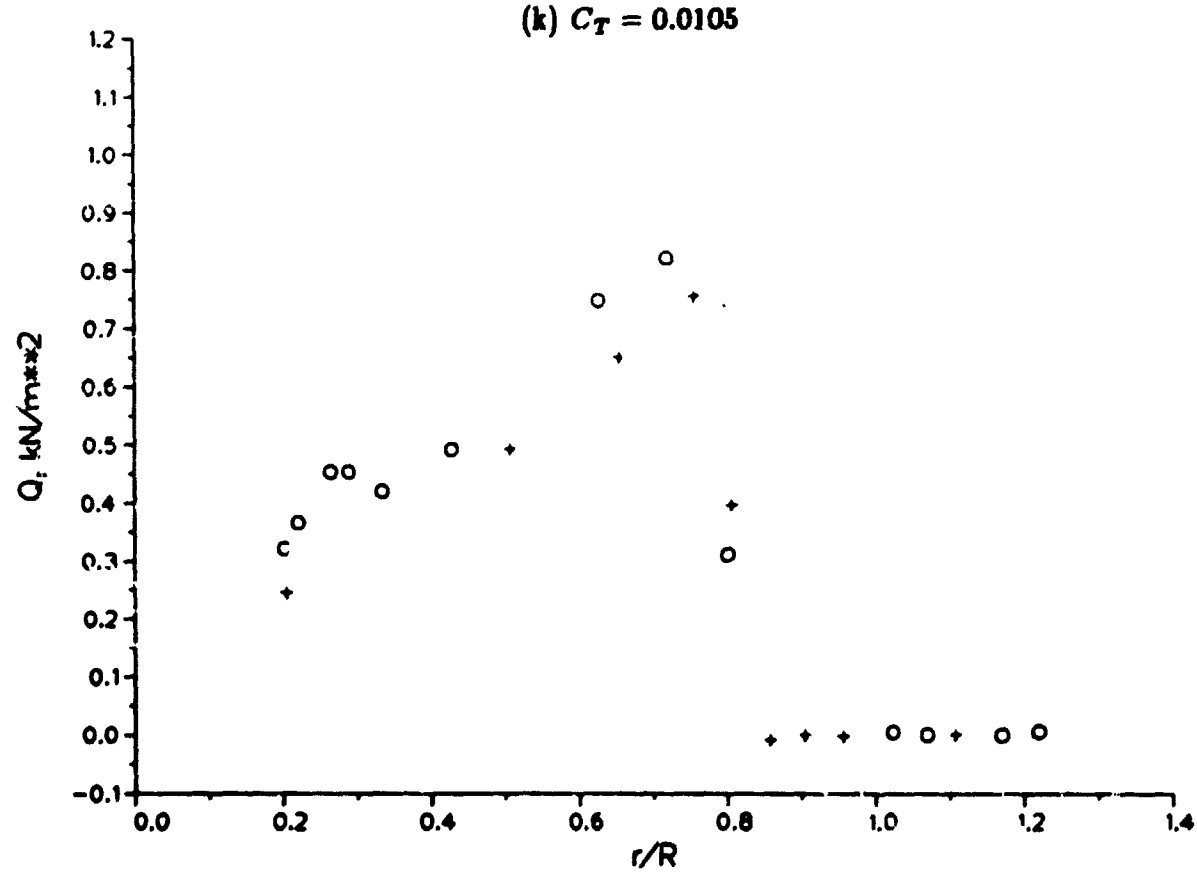


(j) $C_T = 0.0100$

23. Continued.



(k) $C_T = 0.0105$



(l) $C_T = 0.0118$

23. Continued.

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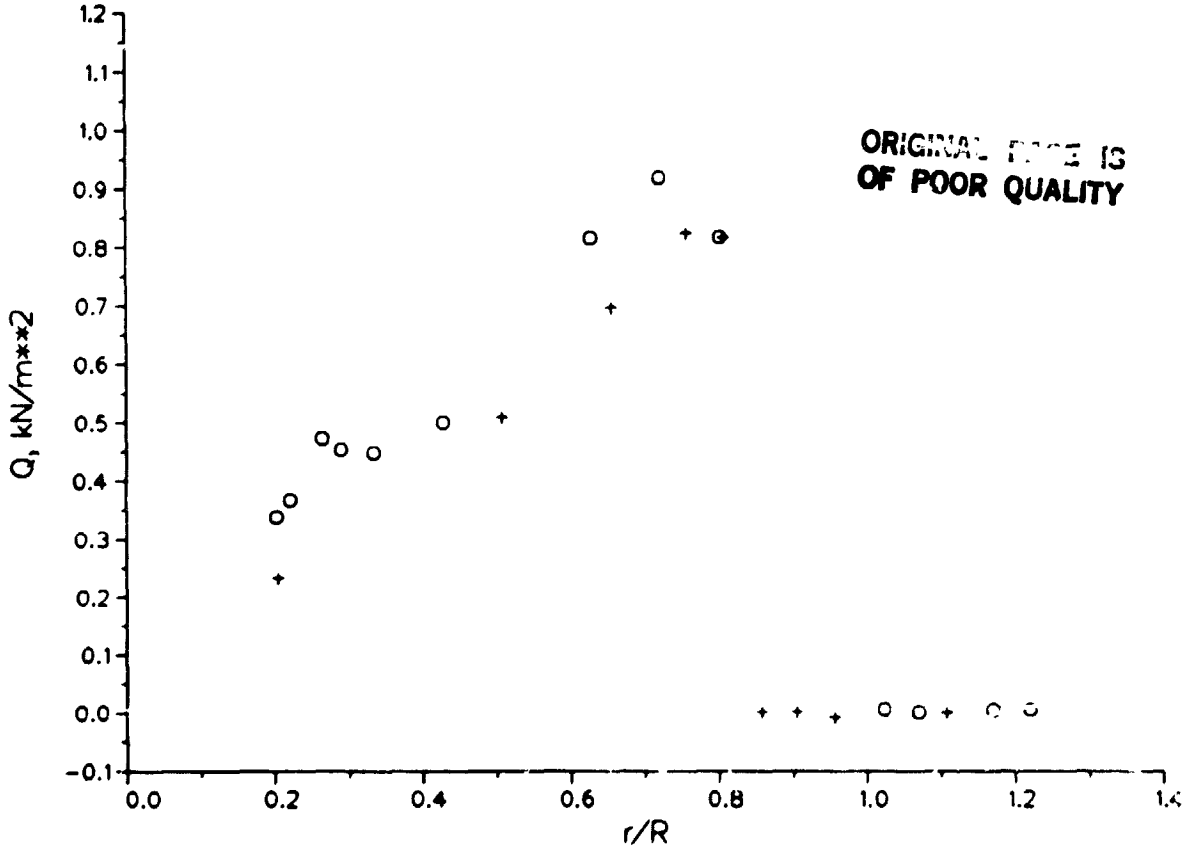
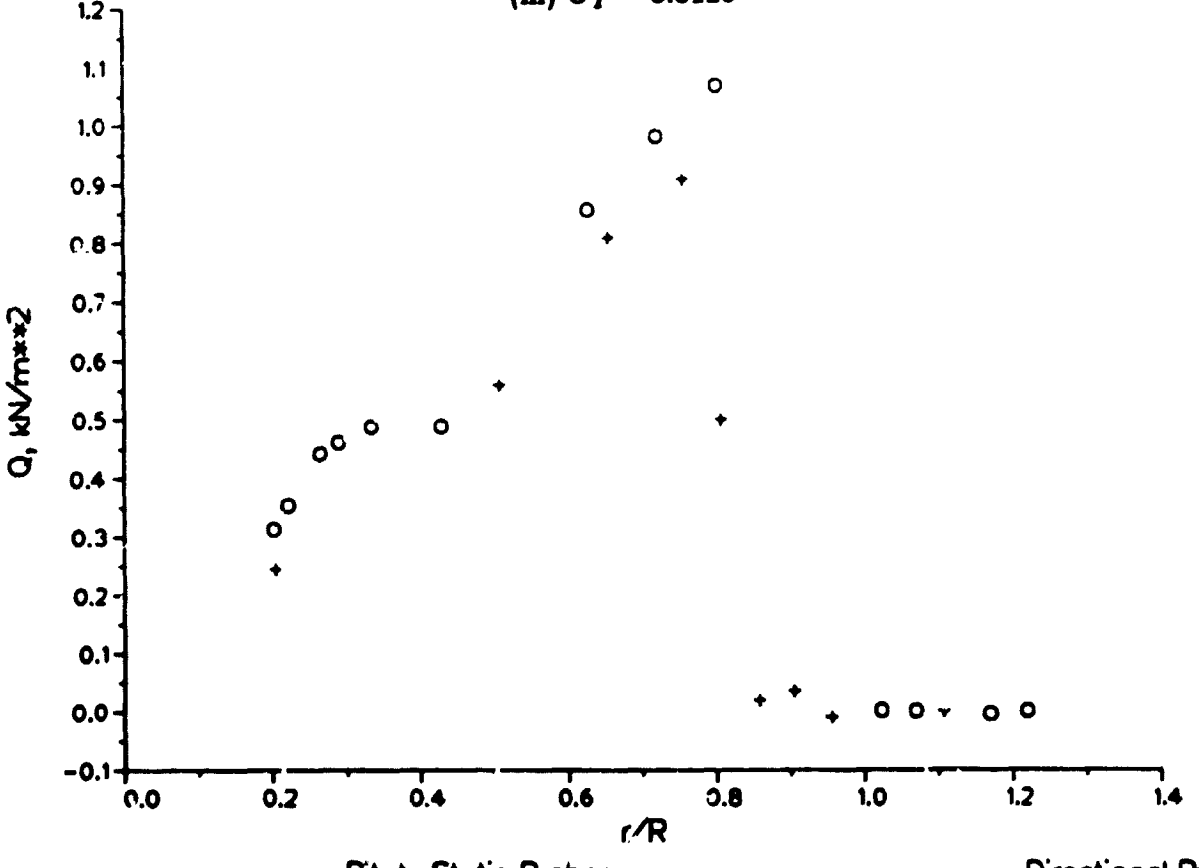


(m) $C_T = 0.0125$



(n) $C_T = 0.0136$

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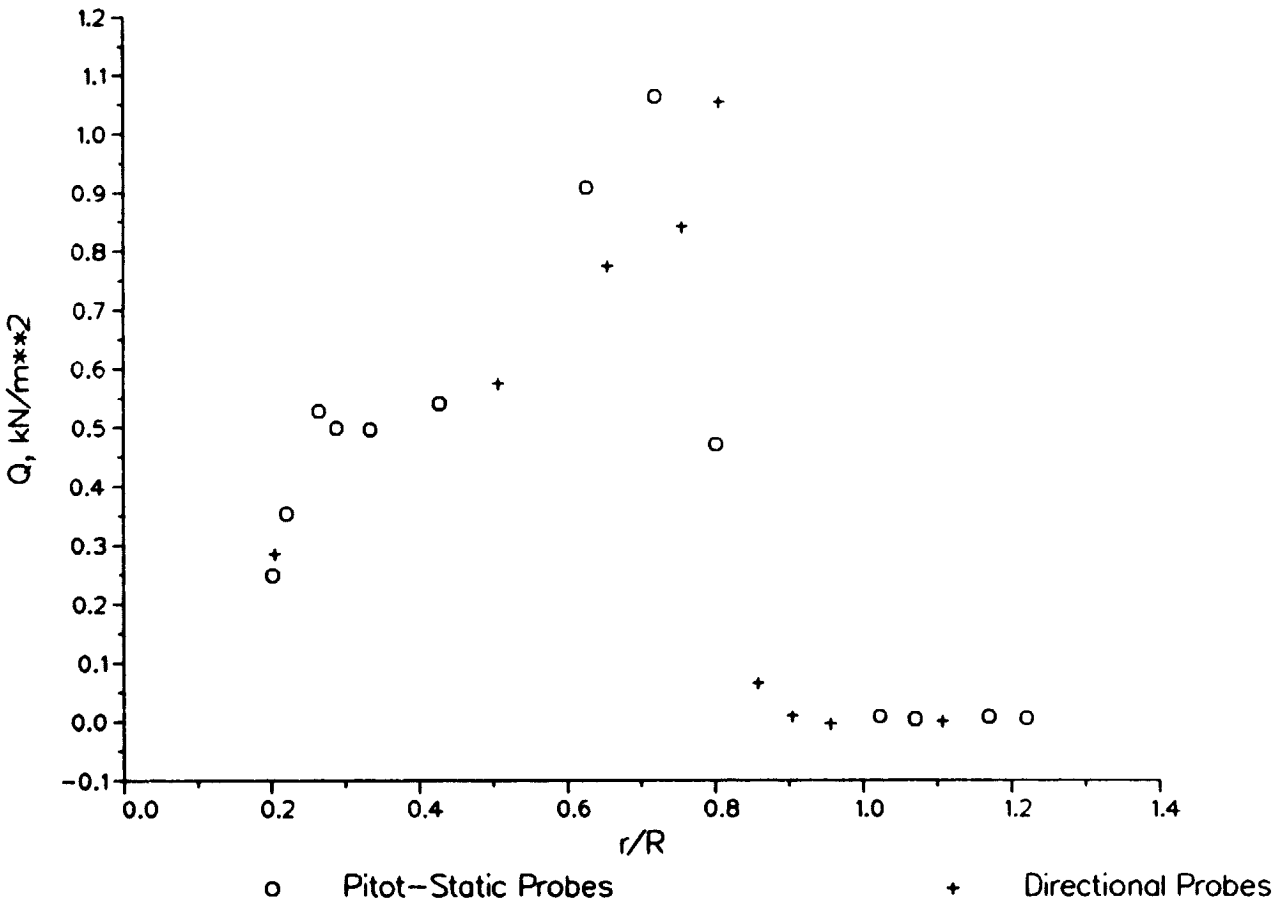

(o) $C_T = 0.0142$

23. Concluded.

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15 Supplementary Notes

Point of Contact: Fort F. Felker, Ames Research Center, MS 247-1, Moffett Field, CA 94035, (415) 694-6096 or FTS 448-6096

16 Abstract

A hover test of a full-scale XV-15 rotor was conducted at the Outdoor Aerodynamic Research Facility at Ames Research Center. The primary objective of the test was to obtain accurate measurements of the hover performance of the original, metal-blade XV-15 rotor system. Data were acquired for rotor tip Mach numbers ranging from 0.60 to 0.73. This report presents data on rotor performance, rotor wake downwash velocities, and rotor loads.

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