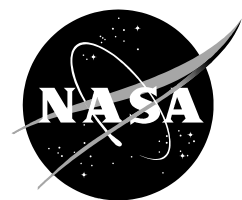


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Tests of Full-Scale Helicopter Rotors at High Advancing Tip Mach Numbers and Advance Ratios

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May 2015

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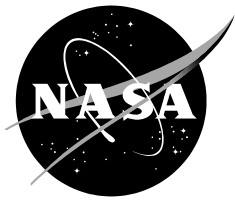
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INTRODUCTION

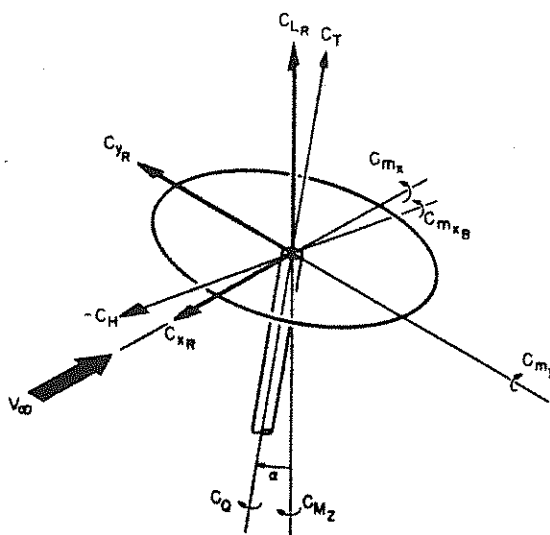
As a continuation of the studies of reference 1, three full-scale helicopter rotors have been tested in the Ames Research Center 40- by 80-foot wind tunnel. All three of them were two-bladed, teetering rotors.

One of the rotors incorporated the NACA 0012 airfoil section over the entire length of the blade. This rotor was tested at advance ratios up to 1.05. Both of the other rotors were tapered in thickness and incorporated leading-edge camber over the outer 20 percent of the blade radius. The larger of these rotors was tested at advancing tip Mach numbers up to 1.02.

Data were obtained for a wide range of lift and propulsive force, and are presented without discussion.

NOTATION

Positive direction of forces and moments are shown in the following sketch.



A_{1s}, B_{1s}

coefficients in the representation of rotor blade cyclic pitch, that is, $\theta_c = -A_{1s} \cos \psi - B_{1s} \sin \psi$, deg

a_{1s}, b_{1s}

first harmonic flapping coefficients relative to shaft normal plane, deg

ALPHA CONTROL	angle of attack of control axis (swash plate) relative to tunnel centerline; positive tilted aft, ALPHA CONTROL = ALPHA SHAFT - B_{1s} , deg
ALPHA SHAFT	angle of rotor shaft from vertical, positive is shaft tilted aft, deg
$C_{D_{tare}}$	$\frac{(\text{Drag})_{tare}}{qS}$
$C_{L_{tare}}$	$\frac{(\text{Lift})_{tare}}{qS}$
CH	rotor propulsive force coefficient in shaft axes system, $\frac{C_H}{\sigma}$
CLR	rotor lift coefficient in wind axes system, $\frac{\text{LIFT}}{\rho S (\Omega R)^2}$
$C_{l_{tare}}$	$\frac{(\text{Rolling moment})_{tare}}{q S R}$
$C_{m_{tare}}$	$\frac{(\text{Pitching moment})_{tare}}{q S R}$
CMX	resultant rolling moment coefficient about rotor center in wind axes system, $\frac{\text{rolling moment}}{\rho S (\Omega R)^2 R}, \frac{C_{m_x}}{\sigma}$
CMXB	rolling moment coefficient about rotor center in shaft axes system
CMY	resultant pitching moment coefficient about rotor center, $\frac{\text{pitching moment}}{\rho S (\Omega R)^2 R}, \frac{C_{m_y}}{\sigma}$

CMZ	resultant yawing moment coefficient about rotor center in wind axes system, $\frac{\text{yawing moment}}{\rho S (\Omega R)^2 R}, \frac{C_{mz}}{\sigma}$
$C_{n_{tare}}$	$\frac{(\text{Yawing moment}_{tare})}{q S R}$
CP	rotor power coefficient, $\frac{\text{power}}{\rho S (\Omega R)^3}$
CPO	profile power coefficient, $CPO = CP - (CLR)^2 \frac{\sigma}{2(V/OR)} - CXR (V/OR)$
CQ	rotor torque coefficient (shaft axes yawing moment coefficient)
CT	rotor thrust coefficient (shaft axes lift coefficient)
CXR	rotor propulsive force coefficient in wind axes system, $-\frac{\text{Drag}}{\rho S (\Omega R)^2}$
$C_{y_{tare}}$	$\frac{(\text{Side force}_{tare})}{qS}$
CYR	rotor side force coefficient, $\frac{\text{side force}}{\rho S (\Omega R)^2}, \frac{C_{YR}}{\sigma}$ (same in both wind axes and shaft axes systems)
M(1)(90), M,AT	rotor blade tip Mach no. at 90° azimuth position
q	free stream dynamic pressure, $1/2 \rho V^2$, lb/ft ²
R	rotor radius, ft
S	reference area, (no. of blades)x(blade chord)x(rotor radius)ft ²

T	free stream temperature, deg R
THETA	collective pitch at .75R, deg*
V	free stream velocity, ft/sec
V/OR	advance ratio, $V/\Omega R$
ρ	air density, slug/ft ³
Ω	rotor rotational speed, radians/sec
σ	rotor solidity, $\frac{S}{\pi R^2}$
θ_c	cyclic pitch, deg*
θ_1	blade twist, deg*, from center of shaft to blade tip
θ_{grip}	collective pitch at 2.33 ft radial distance from hub center, deg

*Pitch angles are measured from a plane perpendicular to the rotor shaft to the line of zero lift of the airfoil section.

MODEL DESCRIPTION

General

Figure 1 is a general view of the rotor system installed in the wind tunnel test section. Rotor shaft angle-of-attack was remotely controlled using an extendable tail strut. Rotor power was provided by a 1500 HP variable frequency electric motor inside the faired body. Collective and cyclic pitch were remotely controlled and monitored from the control

room. First harmonic rotor flapping coefficients relative to the shaft were obtained from electronic flapping resolvers.

Rotors

Three sets of blades were used for these investigations. The 34 ft blades had NACA 0012 airfoil sections. The 44 ft and the 48 ft blades were tapered linearly in thickness from .8R to the tip, which was approximately the NACA 21006 airfoil. The tip airfoil is described in detail in figure 2. The dimensional information related to the rotors is given below.

Parameter	Rotor No. 1	No. 2	No. 3
Rotor radius, ft	24.0	22.0	17.0
Blade chord, ft	1.75	1.75	1.75
Cutout radius, ft	2.04	2.04	2.04
Rotor solidity	.0464	.0506	.0656
Reference area, ft ²	84.0	77.0	59.5
Blade twist, linear, deg	-10.9	-1.83	-1.42
Blade taper ratio	1.0	1.0	1.0
Hub precone angle, deg	2.75	2.75	2.75
Moment of inertia about flapping hinge, ft-lb-sec ² , per rotor	2289	1995.2	1361.6
Number of blades	2	2	2
Airfoil	NACA 0012*	NACA 0012*	NACA 0012

A standard UH-1D transmission and rotor shaft were used in conjunction with a speed increasing transmission to match the motor speed

to the UH-1D transmission. The rotor was controlled by a modified UH-1B control system.

*These thin tip blades were NACA 0012 from the root to .8R, and linearly tapered in thickness from .8R to the 6% thick tip. The zero lift line of the cambered tip sections was varied such that the linear twist distribution was maintained. (See figure 2.)

OPERATING PROCEDURES

Tunnel speed and rotor rotational speed were adjusted to obtain the desired advance ratio and advancing tip Mach number. At each combination of shaft angle and collective pitch, the cyclic pitch was adjusted to minimize first harmonic blade flapping, and data were then recorded. Collective pitch or shaft angle was then changed and the above procedure repeated until a limit was reached in motor power, control position, or structural loading.

Data Reduction

Six-component forces and moments were measured by the wind tunnel balance system. Tare corrections were applied to the balance data to account for forces and moments produced by the exposed model support struts, the faired body and the rotating hub. All rotating hardware inboard of the 2.66 ft radius station were included in the tares. The tares were applied based on wind tunnel dynamic pressure and shaft angle.

Rotor downwash effects on the tares were neglected because of a lack of confidence in any known technique for assessing their magnitude. The tares used are listed below in equation form.

For Rotor No. 1:

$$C_{L_{tare}} = -0.8898 + 1.0521 \cos \alpha_s + 0.3913 \sin \alpha_s$$

$$C_{D_{tare}} = 0.9456 - 0.7869 \cos \alpha_s + 0.1288 \sin \alpha_s$$

$$C_{m_{tare}} = 0.4623 - 0.4933 \cos \alpha_s + 0.1732 \sin \alpha_s$$

$$C_{y_{tare}} = 0.0178 - 0.0215 \cos \alpha_s + 0.0257 \sin \alpha_s$$

$$C_{n_{tare}} = 0.$$

$$C_{l_{tare}} = 0.00246 - 0.000446 \cos \alpha_s - 0.01813 \sin \alpha_s$$

For Rotors No. 2 & 3:

$$C_{L_{tare}} = \frac{1}{s} (-29.740 + 39.39 \cos \alpha_s + 29.33 \sin \alpha_s + .0311q + 240.54 \alpha_s^3 \text{ radians} - 90.96 \alpha_s^4 \text{ radians} - 1046.3 \alpha_s^5 \text{ radians} + 193.68 \alpha_s^6 \text{ radians})$$

$$C_{D_{tare}} = \frac{1}{s} (59.895 - 49.767 \cos \alpha_s + 6.456 \sin \alpha_s + .0466q + 38.975 \alpha_s^3 + 336.69 \alpha_s^4 + 102.92 \alpha_s^5 - 754.89 \alpha_s^6)$$

$$C_{m_{tare}} = \frac{1}{s} (-419.97 + 470.78 \cos \alpha_s + 292.20 \sin \alpha_s - 2.312q - 2072.3 \alpha_s^3 + 4381.0 \alpha_s^4 + 10514.9 \alpha_s^5 - 9448.1 \alpha_s^6)$$

$$C_{y_{tare}} = \frac{1}{s} (2.989 - 3.983 \cos \alpha_s - 2.191 \sin \alpha_s + .009q + 126.06 \alpha_s^3 + 160.65 \alpha_s^4 - 1301.7 \alpha_s^5 - 2634.1 \alpha_s^6)$$

$$C_{n_{tare}} = \frac{1}{s} (-72.312 + 79.817 \cos \alpha_s + 15.230 \sin \alpha_s - .1695q - 642.46 \alpha_s^3 - 1237.31 \alpha_s^4 + 1215.98 \alpha_s^5 + 4080.31 \alpha_s^6)$$

$$C_{l_{tare}} = \frac{1}{s} (-27.709 + 41.964 \cos \alpha_s - 4.227 \sin \alpha_s - .210q - 351.91 \alpha_s^3 - 812.0 \alpha_s^4 + 637.27 \alpha_s^5 + 1063.68 \alpha_s^6)$$

The control axis angle of attack (ALPHA CONTROL) was determined by the equation

$$ALPHA CONTROL = ALPHA SHAFT - B_{1S}$$

where longitudinal cyclic, B_{1s} , was obtained from model instrumentation. The total torque coefficient, C_Q , was derived from tunnel balance moment data. The term $\frac{C_{P_0}}{\sigma}$ was computed by the equation

$$C_{P_0} = C_P - \frac{\sigma (CLR)^2}{2(V/OR)} - CXR(V/OR)$$

This equation is based on the assumption of uniform downwash distribution over the rotor disk.

Tabulated data are presented in both the wind and shaft axes systems. All data are referenced to the rotor hub center.

Data Presentation

Test conditions for the rotors are illustrated on the Rotor Velocity Diagrams shown in Figure 3. Numbers adjacent to the symbols on these diagrams refer to table numbers which present the data for that condition.

Tabulated data are presented in both the wind axes and shaft axes systems.

Although the technique used in these tests was directed toward obtaining data with $a_{1s} = b_{1s} = 0$, some data were recorded wherein flapping was not zero. Of those data, only those for which $|a_{1s}|$ or $|b_{1s}|$ was greater than $.2^\circ$ are so noted and listed in the tabulated data.

References

1. McCloud, John L. III, Biggers, James C., and Stroub, Robert H.:
An Investigation of Full-Scale Helicopter Rotors at High Advance Ratios and Advancing Tip Mach Numbers. NASA TN D-4632, July, 1968.

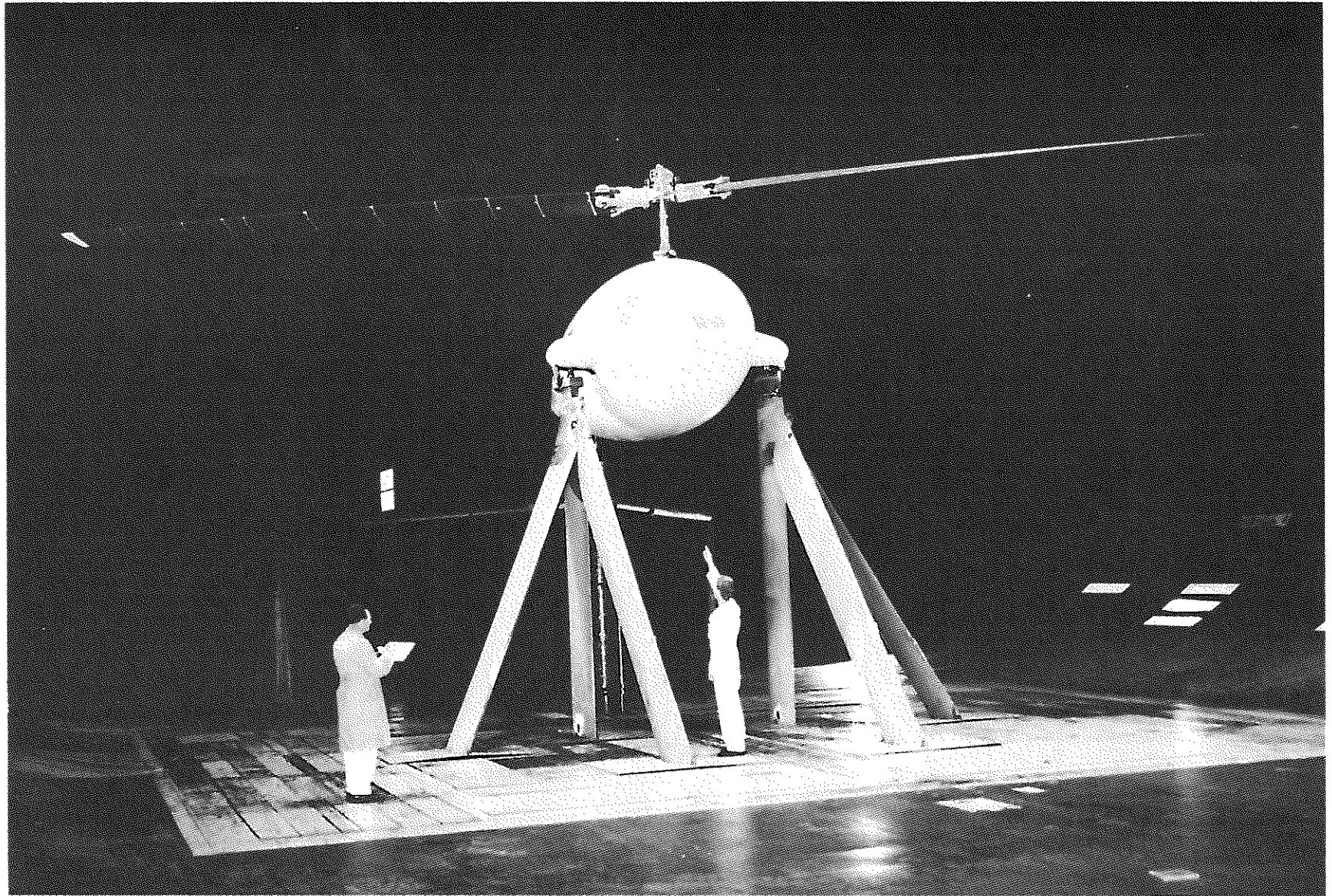
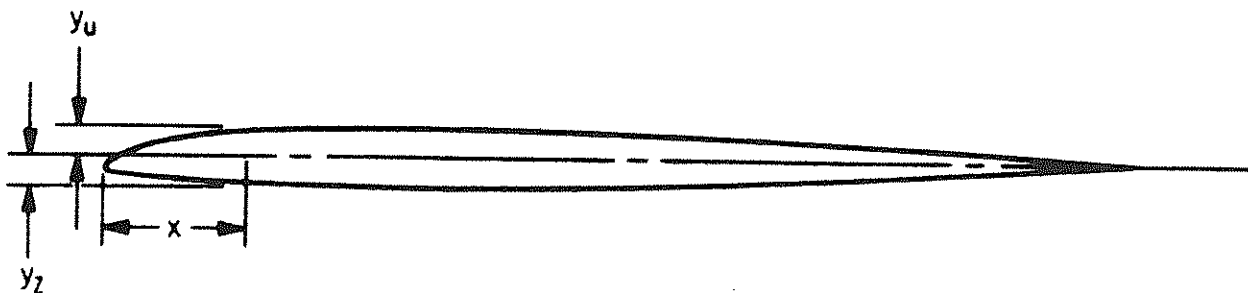


Figure 1.- GENERAL VIEW OF ROTOR SYSTEM.

Figure 2.- UPPER AND LOWER SURFACE COORDINATES OF BLADE TIP AIRFOIL SECTION

FOR ROTORS NO. 1 AND 2

All dimensions are in inches



x	y_{upper}	y_{lower}
0	-0.25	-0.25
.105	-.082	-.343
.210	-.002	-.373
.420	.110	-.398
.630	.193	-.417
.840	.260	-.435
1.050	.318	-.451
1.575	.415	-.490
2.100	.485	-.520
2.625	.532	-.545
3.150	.562	-.562
4.200	.603	-.603
5.250	.623	-.623
6.300	.630	-.630
7.350	.625	-.625
8.400	.609	-.609
10.500	.556	-.556
12.600	.479	-.479
14.700	.385	-.385
18.900	.152	-.152
19.950	.085	-.085
21.000	.020	-.020

Leading-edge radius = 0.062 at $y = -0.250$.

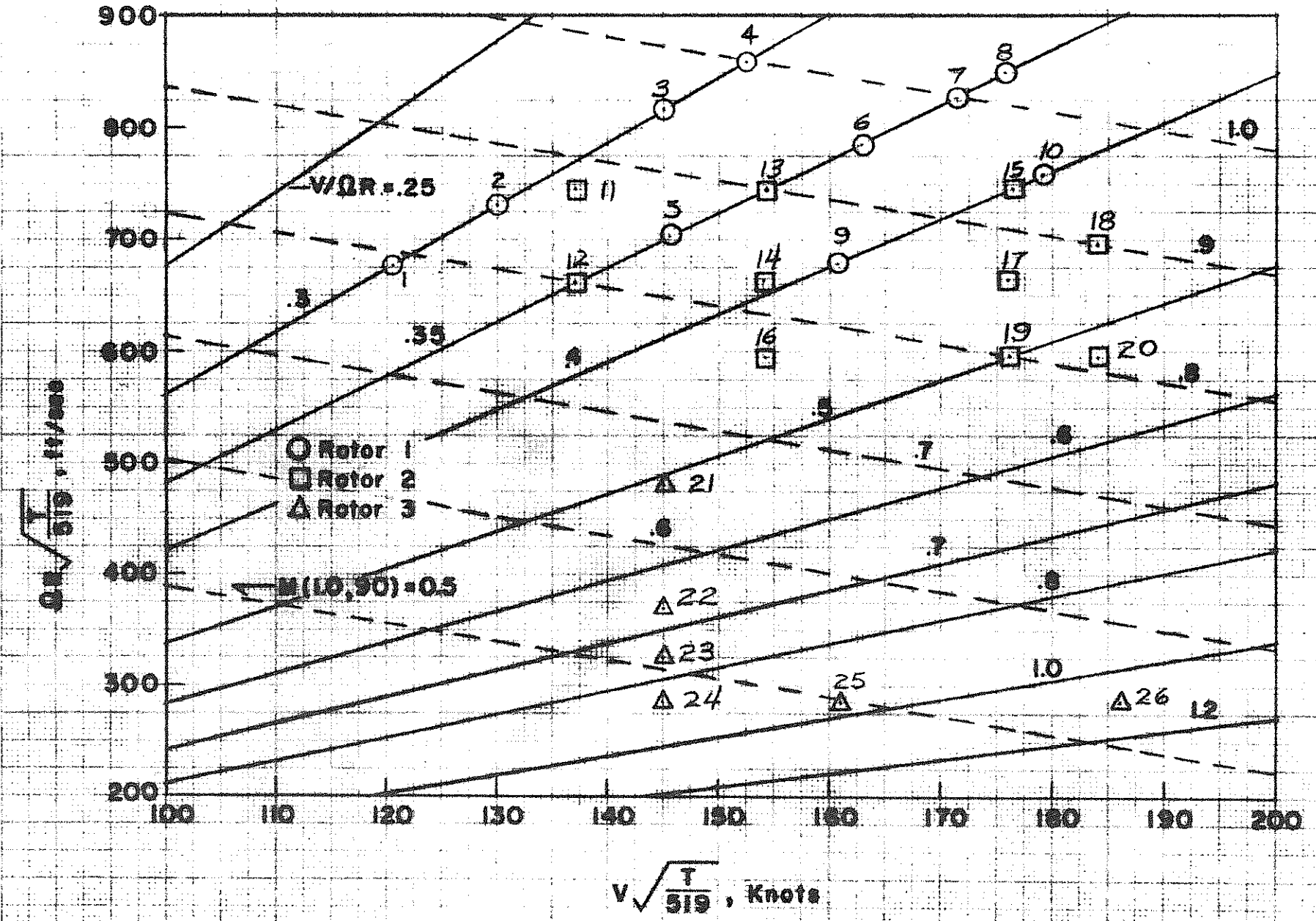


Figure 3. Rotor velocity diagram

ROTOR SCALE DATA * PROGRAM LA2430 * WIND AXES

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TIME 478.35

Table I - 1. Rotor No. 1, V/OR = .30, M(1.0, 90) = .79

TEST 288.0 RUN 7

WIND AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	ALPHA SHAFT	ALPHA CONTROL	CLR	CXR	CYR	CMX	CMY	CMZ	CP	CPU	V/OR	M,AT	A ₁₅	Θ _{9m}
14.	-5.0	-8.4	0.051042	0.002568	-0.001276	0.000074	-0.001055	0.002799	0.0026220	0.0016538	0.298	0.790	.6	14.
15.	-5.0	-10.0	0.069612	0.004637	-0.001616	-0.000009	-0.001229	0.003850	0.0035134	0.0017465	0.300	0.788	.2	16.
16.	-5.0	-11.7	0.083975	0.006965	-0.002005	-0.000068	0.000475	0.005119	0.0048717	0.0022472	0.298	0.790	.1	18.
17.	-10.0	-14.1	0.041437	0.005676	-0.000734	-0.000403	-0.001072	0.003689	0.0034549	0.0016240	0.299	0.787	.8	16.
18.	-10.0	-15.4	0.060330	0.009626	-0.000829	-0.000664	-0.001308	0.005212	0.0049584	0.0017851	0.300	0.786	.6	18.
19.	-10.0	-12.5	0.024051	0.002354	-0.000851	-0.000148	-0.000851	0.002502	0.0022614	0.0015147	0.298	0.786	.8	14.
20.	-10.0	-11.0	0.005556	-0.000825	-0.000783	-0.000087	-0.000559	0.001460	0.0012243	0.0014666	0.297	0.789	.8	12.
21.	-15.0	-18.2	0.017512	0.002733	-0.000712	-0.000497	-0.000837	0.002596	0.0023464	0.0015057	0.299	0.788	.7	16.
22.	-15.0	-19.3	0.034167	0.007581	-0.000511	-0.000848	-0.001018	0.004228	0.0040008	0.0016396	0.300	0.788	.9	18.
23.	-15.0	-20.9	0.050058	0.012464	-0.000577	-0.001292	-0.001320	0.005888	0.0056643	0.0017362	0.300	0.786	.6	20.
24.	-5.0	-6.9	0.030671	0.000862	-0.000943	0.000094	-0.000838	0.002030	0.0018685	0.0015376	0.299	0.788	.7	12.
25.	-5.0	-5.6	0.012428	-0.000611	-0.000849	0.000075	-0.000655	0.001498	0.0013534	0.0015223	0.296	0.790	.8	10.
26.	0.0	-1.5	0.040323	-0.001729	-0.001402	0.000250	-0.000789	0.001265	0.0011344	0.0015245	0.299	0.788	.8	10.
27.	0.0	-2.8	0.059234	-0.001814	-0.001919	0.000384	-0.001146	0.001558	0.0013702	0.0016352	0.297	0.791	.7	12.
28.	0.0	-4.5	0.078254	-0.001343	-0.002413	0.000440	-0.001197	0.002139	0.0019386	0.0018645	0.299	0.789	0.0	14.
29.	0.0	-6.4	0.094102	-0.000070	-0.002997	0.000428	-0.001402	0.003168	0.0029558	0.0022886	0.299	0.789	.3	16.
30.	0.0	-0.3	0.019694	-0.001579	-0.001315	0.000192	-0.000589	0.001205	0.0010828	0.0015209	0.297	0.792	.7	8.
31.	4.0	3.4	0.042841	-0.004535	-0.002352	0.000482	-0.000721	0.000380	0.0003431	0.0015473	0.297	0.791	.2	8.
32.	4.0	1.8	0.061487	-0.005792	-0.002753	0.000535	-0.000950	0.000286	0.0002490	0.0016790	0.298	0.789	.1	10.
33.	4.0	0.2	0.080812	-0.006906	-0.003299	0.000555	-0.001244	0.000494	0.0004407	0.0019920	0.298	0.789	.1	12.
34.	4.0	-1.6	0.096365	-0.006799	-0.003751	0.000715	-0.001163	0.001163	0.0010647	0.0022855	0.300	0.786	.5	14.

Table I - 2. Rotor No. 1, V/OR = .30, M(1.0, 90) = .85

TEST 288.0 RUN 3

WIND AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	ALPHA SHAFT	ALPHA CONTROL	CLR	CXR	CYR	CMX	CMY	CMZ	CP	CPO	V/OR	M,AT	A _{1s}	θ _{grip}
1.	-5.0	-7.3	0.029615	0.001078	-0.001282	0.000380	-0.000334	0.002062	0.0019000	0.0015069	0.302	0.848	1.0	12.
2.	-5.0	-8.7	0.048920	0.002887	-0.001518	0.000359	-0.000430	0.002843	0.0026723	0.0016161	0.302	0.848	.7	14.
3.	-5.0	-10.3	0.067184	0.005046	-0.001743	0.000265	-0.000415	0.003836	0.0036739	0.0018091	0.301	0.852	.6	16.
4.	-5.0	-12.0	0.084405	0.007658	-0.001996	0.000063	-0.000319	0.005237	0.0050028	0.0021308	0.304	0.844	.3	18.
5.	-7.0	-13.6	0.073726	0.008862	-0.001443	-0.000263	-0.000327	0.005302	0.0050733	0.0019787	0.302	0.848	.5	18.
6.	-12.0	-17.2	0.048236	0.009409	-0.000319	-0.000807	-0.000379	0.004811	0.0046283	0.0016049	0.302	0.848	1.0	18.
7.	-10.0	-15.6	0.057903	0.009732	-0.000621	-0.000571	-0.000347	0.005053	0.0049216	0.0017150	0.303	0.846	.8	18.
8.	-10.0	-16.6	0.066472	0.011672	-0.000599	-0.000731	-0.000328	0.005890	0.0056886	0.0018204	0.302	0.848	.8	19.
9.	-8.0	-15.0	0.074956	0.011075	-0.000899	-0.000574	-0.000233	0.005943	0.0057666	0.0019840	0.303	0.847	.6	19.
10.	-6.0	-13.5	0.085678	0.009954	-0.001652	-0.000285	-0.000276	0.005923	0.0057435	0.0021661	0.303	0.846	.3	19.
11.	-7.0	-14.4	0.081135	0.010534	-0.001227	-0.000488	-0.000404	0.005948	0.0057604	0.0020651	0.303	0.846	.5	19.
12.	-7.0	-10.1	0.037511	0.003332	-0.000888	0.000059	-0.000419	0.002708	0.0025894	0.0014714	0.303	0.846	.9	14.
13.	-7.0	-8.5	0.019135	0.000972	-0.000895	0.000170	-0.000288	0.001883	0.0017432	0.0014205	0.303	0.846	1.1	12.
14.	-7.0	-7.2	0.001754	-0.001026	-0.000771	0.000057	-0.000508	0.001245	0.0010493	0.0013602	0.303	0.846	.9	10.
15.	-7.0	-7.2	0.002315	-0.001203	-0.000864	0.000176	-0.000566	0.001261	0.0010714	0.0014367	0.304	0.844	1.0	10.
16.	-3.0	-2.8	0.003543	-0.000988	-0.001381	0.000329	-0.000468	0.001328	0.0012148	0.0015131	0.303	0.847	1.0	8.
17.	-3.0	-1.4	-0.015453	-0.001743	-0.001444	0.000309	-0.000434	0.001247	0.0010429	0.0015516	0.302	0.848	.8	6.
18.	-3.0	-8.8	0.077304	0.003725	-0.002054	0.000280	-0.000355	0.003690	0.0034991	0.0019128	0.303	0.846	.5	16.
19.	-3.0	-10.6	0.092614	0.005961	-0.002367	0.000178	-0.000330	0.005048	0.0048308	0.0023621	0.305	0.843	.1	18.
20.	0.0	-6.5	0.091997	0.000460	-0.003254	0.000647	-0.000524	0.003244	0.0030821	0.0022953	0.303	0.846	.1	16.
21.	0.0	-7.7	0.096586	0.001739	-0.003494	0.000568	-0.000490	0.004078	0.0038343	0.0025935	0.304	0.845	.2	17.
22.	0.0	-2.9	0.056426	-0.001257	-0.002227	0.000668	-0.000322	0.001600	0.0014321	0.0015721	0.304	0.843	.8	12.
23.	3.0	-0.7	0.073508	-0.004801	-0.003199	0.000902	-0.000413	0.000870	0.0007465	0.0017912	0.304	0.845	.3	12.
24.	3.0	0.8	0.053559	-0.004026	-0.002717	0.000829	-0.000404	0.000695	0.0006247	0.0016243	0.303	0.847	.7	10.
25.	3.0	2.2	0.034665	-0.003034	-0.002469	0.000807	-0.000321	0.000770	0.0006969	0.0015270	0.304	0.844	.8	8.
26.	3.0	3.6	0.016667	-0.001996	-0.002354	0.000791	-0.000312	0.001041	0.0009736	0.0015603	0.305	0.843	.8	6.
27.	3.0	-2.4	0.089094	-0.004410	-0.003860	0.000977	-0.000439	0.001500	0.0013870	0.0021163	0.303	0.846	.1	14.
28.	3.0	-4.5	0.099900	-0.002802	-0.004146	0.000897	-0.000413	0.003114	0.0029625	0.0030441	0.302	0.848	.2	15.

Table I - 3. Rotor No. 1, V/OR = .30, M(1.0, 90) = .95

TEST 288.0 RUN 8

WIND AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	ALPHA SHAFT	ALPHA CONTROL	CLR	CXR	CYR	CMX	CMY	CMZ	CP	CPO	V/OR	M,AT	A _{1s}	θ _{grip}
1.	-5.0	-7.8	0.049643	0.002083	-0.001365	0.000120	-0.000400	0.003044	0.0028280	0.0020170	0.297	0.952	.5	14.
2.	-5.0	-6.5	0.031727	0.000432	-0.001188	0.000260	-0.000411	0.002413	0.0021827	0.0019755	0.300	0.953	.7	12.
3.	-5.0	-9.2	0.067771	0.003868	-0.001843	0.000083	-0.000422	0.004109	0.0038730	0.0023585	0.300	0.953	.3	16.
4.	-5.0	-10.2	0.075513	0.005012	-0.002260	0.000101	-0.000431	0.004774	0.0045508	0.0026049	0.300	0.951	.1	17.
5.	-5.0	-10.8	0.083909	0.006477	-0.002516	0.000161	-0.000503	0.005633	0.0053803	0.0028925	0.300	0.950	0.0	18.
6.	-10.0	-13.3	0.040517	0.004937	-0.000655	-0.000317	-0.000534	0.003784	0.0034776	0.0018744	0.299	0.952	.9	16.
7.	-10.0	-14.8	0.056865	0.008451	-0.000808	-0.000598	-0.000608	0.005304	0.0050772	0.0022950	0.300	0.952	.6	18.
8.	-10.0	-14.1	0.049363	0.006779	-0.000641	-0.000469	-0.000533	0.004574	0.0043715	0.0021451	0.301	0.948	.8	17.
9.	-15.0	-17.6	0.017051	0.002301	-0.000505	-0.000399	-0.000407	0.002769	0.0025684	0.0018567	0.299	0.948	1.1	16.
10.	-15.0	-18.8	0.033473	0.006913	-0.000349	-0.000868	-0.000436	0.004328	0.0041427	0.0019783	0.301	0.948	1.0	18.
11.	-15.0	-19.4	0.041103	0.009203	-0.000262	-0.001092	-0.000455	0.005129	0.0048732	0.0019820	0.300	0.951	1.0	19.
12.	-17.0	-20.5	0.022761	0.004843	-0.000102	-0.000825	-0.000250	0.003521	0.0034500	0.0019624	0.299	0.950	1.2	18.
13.	-17.0	-21.1	0.028974	0.006998	0.000119	-0.001116	-0.000374	0.004181	0.0041537	0.0019900	0.300	0.950	1.1	19.
14.	-17.0	-21.5	0.037228	0.009667	0.000123	-0.001422	-0.000489	0.005098	0.0050920	0.0020825	0.300	0.950	1.0	20.
15.	-17.0	-20.0	0.015199	0.002473	-0.000301	-0.000637	-0.000268	0.002751	0.0026388	0.0018826	0.298	0.949	1.2	17.
16.	-17.0	-19.3	0.007663	0.000048	-0.000529	-0.000230	-0.000280	0.002109	0.0019419	0.0019230	0.298	0.948	1.1	16.

TEST 288.0 RUN 9

WIND AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	ALPHA SHAFT	ALPHA CONTROL	CLR	CXR	CYR	CMX	CMY	CMZ	CP	CPO	V/OR	M,AT	A _{1s}	θ _{grip}
1.	-3.0	-4.1	0.029093	-0.001945	-0.001531	0.000369	0.000361	0.002054	0.0018774	0.0023919	0.298	0.955	.8	11.
2.	-3.0	-3.5	0.024576	-0.000904	-0.001385	0.000323	-0.000543	0.001823	0.0016829	0.0019072	0.300	0.950	.7	10.
3.	-3.0	-6.9	0.070846	0.001570	-0.002267	0.000372	-0.000610	0.003386	0.0031878	0.0023283	0.301	0.949	.3	15.
4.	-3.0	-7.7	0.077569	0.002401	-0.002366	0.000302	-0.000713	0.003975	0.0037550	0.0025696	0.300	0.951	.2	16.
5.	-3.0	-8.5	0.085398	0.003338	-0.002623	0.000400	-0.000952	0.004721	0.0045009	0.0029370	0.299	0.953	.2	17.
6.	-3.0	-9.2	0.090634	0.004667	-0.003090	0.000306	-0.000660	0.005621	0.0053979	0.0033668	0.298	0.955	.1	18.
7.	-5.0	-9.8	0.077246	0.004883	-0.002283	0.000084	-0.000789	0.004824	0.0045965	0.0026670	0.301	0.952	.1	17.
8.	-5.0	-10.5	0.085093	0.006108	-0.002491	-0.000161	-0.000731	0.005638	0.0053857	0.0029917	0.300	0.953	0.0	18.
9.	2.0	1.0	0.051233	-0.004198	-0.002344	0.000578	-0.000531	0.001124	0.0010242	0.0020710	0.298	0.950	.5	10.
10.	2.0	1.5	0.043925	-0.004130	-0.002307	0.000631	-0.000526	0.001064	0.0009865	0.0020823	0.301	0.951	.6	9.
11.	0.0	-4.3	0.086392	-0.001878	-0.003119	0.000563	-0.000286	0.003007	0.0028442	0.0028381	0.302	0.951	.1	15.
12.	0.0	-5.2	0.091684	-0.000793	-0.003345	0.000715	-0.000118	0.003839	0.0036533	0.0032455	0.301	0.954	0.0	16.
13.	0.0	-5.9	0.097128	-0.000299	-0.003257	0.000532	-0.000233	0.004874	0.0046408	0.0040022	0.300	0.953	.2	17.
14.	5.0	4.1	0.060445	-0.008006	-0.003105	0.000746	-0.000933	0.000158	0.0001551	0.0022705	0.300	0.947	.3	9.
15.	5.0	3.4	0.070897	-0.008840	-0.003332	0.000794	-0.000441	0.000233	0.0002345	0.0024855	0.299	0.950	.3	10.
16.	5.0	1.7	0.085032	-0.009209	-0.003742	0.000950	-0.000579	0.000730	0.0007587	0.0029783	0.301	0.951	.1	12.

Table I - 4. Rotor No. 1, V/OR = .31, M(1.0, 90) = 1.0

TEST 288.0 RUN 11

WIND AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	ALPHA SHAFT	ALPHA CONTROL	CLR	CXR	CYR	CMX	CMY	CMZ	CP	CPO	V/OR	M,AT	θ_{grip}	A_s
1.	-5.0	-6.1	0.032471	-0.000348	-0.001252	0.000168	-0.000477	0.002870	0.0027214	0.0027498	0.309	0.990	12.	.9
2.	-6.0	-6.9	0.026653	-0.000282	-0.001064	0.000165	-0.000500	0.002857	0.0026933	0.0027274	0.309	0.989	12.	.9
3.	-6.0	-7.2	0.035456	0.000491	-0.001079	0.000057	-0.000547	0.003216	0.0030847	0.0028387	0.308	0.992	13.	.7
4.	-6.0	-7.9	0.045178	0.001292	-0.001303	0.000067	-0.000820	0.003626	0.0034651	0.0029119	0.310	0.989	14.	.6
5.	-6.0	-8.6	0.053029	0.002146	-0.001232	-0.000075	-0.000894	0.004182	0.0039924	0.0031173	0.310	0.991	15.	.6
6.	-6.0	-9.5	0.060671	0.003230	-0.001512	-0.000079	-0.000802	0.004711	0.0044980	0.0032202	0.310	0.989	16.	.5
7.	-9.0	-10.6	0.029126	0.001277	-0.000692	-0.000161	-0.000669	0.003415	0.0032531	0.0027946	0.309	0.990	14.	.9
8.	-9.0	-11.2	0.037116	0.002580	-0.000648	-0.000282	-0.000707	0.003940	0.0037705	0.0028688	0.310	0.990	15.	.9
9.	-9.0	-11.8	0.046723	0.003991	-0.000773	-0.000374	-0.000844	0.004601	0.0044456	0.0030483	0.309	0.992	16.	.8
10.	-9.0	-12.5	0.055362	0.005366	-0.000870	-0.000416	-0.001114	0.005302	0.0050958	0.0032046	0.310	0.991	17.	.7
11.	-12.0	-13.8	0.022260	0.001529	-0.000591	-0.000376	-0.000627	0.003402	0.0032316	0.0027240	0.308	0.992	15.	1.0
12.	-12.0	-14.3	0.030262	0.003301	-0.000534	-0.000493	-0.000696	0.003974	0.0038187	0.0027296	0.309	0.990	16.	1.0
13.	-12.0	-15.0	0.039006	0.005051	-0.000547	-0.000672	-0.000811	0.004819	0.0045337	0.0028584	0.309	0.993	17.	.9
14.	-12.0	-13.2	0.013491	-0.000154	-0.000576	-0.000282	-0.000418	0.002845	0.0026525	0.0026861	0.308	0.990	14.	1.1
15.	-9.0	-9.9	0.020624	0.000150	-0.000567	-0.000169	-0.000632	0.002926	0.0028093	0.0027311	0.307	0.991	13.	1.1
16.	-3.0	-6.7	0.052676	-0.000639	-0.001710	0.000281	-0.000713	0.003062	0.0029527	0.0029403	0.308	0.991	13.	.6
17.	-3.0	-4.7	0.054202	-0.000924	-0.001690	0.000312	-0.000808	0.003355	0.0032226	0.0032787	0.304	1.002	13.	.6
18.	-6.0	-7.2	0.038219	0.000291	-0.000987	0.000024	-0.000698	0.003461	0.0033327	0.0031327	0.304	1.002	13.	.7
19.	-6.0	-7.7	0.046604	0.001107	-0.001026	-0.000067	-0.000767	0.003866	0.0037212	0.0032181	0.305	1.000	14.	.6
20.	-6.0	-8.5	0.054744	0.001993	-0.001240	-0.000066	-0.000832	0.004425	0.0042687	0.0034332	0.305	1.002	15.	.3
21.	-6.0	-9.2	0.062730	0.003023	-0.001423	0.000065	-0.000491	0.004965	0.0046917	0.0034693	0.305	1.000	16.	.2
22.	-9.0	-11.8	0.047482	0.003988	-0.000623	-0.000445	-0.000664	0.004803	0.0046979	0.0033135	0.304	1.002	16.	.6
23.	-9.0	-11.1	0.039178	0.002597	-0.000481	-0.000368	-0.000699	0.004174	0.0040509	0.0031449	0.304	1.002	15.	.9
24.	-9.0	-10.4	0.029298	0.001196	-0.000414	-0.000316	-0.000542	0.003519	0.0034077	0.0029777	0.305	0.999	14.	.9
25.	-9.0	-9.8	0.022933	0.000131	-0.000338	-0.000301	-0.000567	0.003134	0.0030505	0.0029707	0.304	1.000	13.	.9
26.	-6.0	-7.1	0.038329	0.000282	-0.000872	-0.000048	-0.000687	0.003516	0.0033902	0.0031924	0.303	1.004	13.	.7

Table I - 5. Rotor No. 1, V/OR = .35, M(1.0, 90) = .85

TEST 288.0 RUN 4

WIND AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	ALPHA SHAFT	ALPHA CONTROL	CLR	CXR	CYR	CMX	CMY	CMZ	CP	CPO	V/OR	M,AT	A _{1s}	grip
1.	-5.0	-7.6	0.023610	0.000516	-0.000707	0.000124	-0.000444	0.001898	0.0018362	0.0016202	0.347	0.849	.7	12.
2.	-5.0	-6.1	0.007668	-0.000897	-0.000589	0.000122	-0.000394	0.001369	0.0013124	0.0016195	0.346	0.849	1.1	10.
3.	-5.0	-11.0	0.056771	0.004128	-0.000982	0.000024	-0.000586	0.003675	0.0035842	0.0019385	0.346	0.848	.9	16.
4.	-5.0	-13.0	0.071727	0.006495	-0.001353	-0.000147	-0.000661	0.004958	0.0048405	0.0022280	0.350	0.844	.5	18.
5.	-5.0	-14.5	0.082621	0.008897	-0.001686	-0.000320	-0.000170	0.006433	0.0062898	0.0027458	0.347	0.848	.3	20.
6.	-10.0	-14.7	0.030283	0.003654	-0.000058	-0.000373	-0.000540	0.003073	0.0029696	0.0016416	0.347	0.849	1.1	16.
7.	-10.0	-16.2	0.045940	0.007054	0.000137	-0.000611	-0.000737	0.004490	0.0044772	0.0018932	0.346	0.851	1.0	18.
8.	-10.0	-17.8	0.060293	0.010363	-0.000107	-0.000924	-0.000751	0.006030	0.0059742	0.0021438	0.346	0.850	.8	20.
9.	-12.0	-16.2	0.020177	0.002349	0.000071	-0.000388	-0.000468	0.002571	0.0025652	0.0017222	0.347	0.848	1.1	16.
10.	-12.0	-17.7	0.035338	0.006238	0.000111	-0.000730	-0.000591	0.004027	0.0040242	0.0017763	0.347	0.848	1.1	18.
11.	-12.0	-19.2	0.048421	0.009760	-0.000172	-0.000991	-0.000652	0.005553	0.0055407	0.0020063	0.346	0.850	.9	20.
12.	-15.0	-19.9	0.020873	0.003682	0.000031	-0.000651	-0.000376	0.003124	0.0031337	0.0018318	0.346	0.850	1.1	18.
13.	-15.0	-21.4	0.033549	0.007583	-0.000072	-0.000957	-0.000471	0.004705	0.0046752	0.0019655	0.347	0.846	1.0	20.
14.	-15.0	-18.4	0.005736	-0.000667	-0.000049	-0.000327	-0.000236	0.001562	0.0015097	0.0017384	0.346	0.849	1.1	16.
15.	-12.0	-14.5	0.003187	-0.001340	0.000293	-0.000230	-0.000552	0.001207	0.0011524	0.0016164	0.347	0.849	1.2	14.
16.	0.0	-5.4	0.067680	-0.000392	-0.002576	0.000702	-0.000641	0.002186	0.0021002	0.0019293	0.346	0.850	.6	14.
17.	0.0	-7.5	0.082532	0.000561	-0.003145	0.000557	-0.000761	0.003168	0.0028951	0.0022445	0.346	0.849	.2	16.
18.	0.0	-9.5	0.091155	0.002701	-0.003595	0.000576	-0.000125	0.004880	0.0046932	0.0032014	0.346	0.849	.1	18.
19.	0.0	-3.9	0.050050	-0.000953	-0.002197	0.000643	-0.000781	0.001630	0.0015132	0.0016755	0.346	0.848	.7	12.
20.	2.0	-2.1	0.061886	-0.002824	-0.003126	0.000876	-0.000813	0.001216	0.0011312	0.0018499	0.346	0.849	.5	12.
21.	2.0	-3.0	0.068944	-0.002808	-0.003491	0.000829	-0.000844	0.001396	0.0013174	0.0019719	0.346	0.847	.3	14.
22.	2.0	-6.1	0.089849	-0.001365	-0.004242	0.000854	-0.000225	0.003067	0.0029179	0.0028476	0.346	0.850	0.0	16.
23.	2.0	-0.8	0.044836	-0.002526	-0.002663	0.000712	-0.000696	0.001040	0.0009221	0.0016651	0.347	0.847	.7	10.
24.	-5.0	-7.8	*****	*****233.518621*****	*****	*****	*****	*****-26.993653	0.0000000*****	*****277.075	0.219			

Table I - 6. Rotor No. 1, V/OR = .35, M(1.0, 90) = .95

TEST 288.0 RUN 10

WIND AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	ALPHA SHAFT	ALPHA CONTROL	CLR	CXR	CYR	CMX	CMY	CMZ	CP	CPD	V/OR	M,AT	A _{1s}	θ _{grip}
1.	-10.0	-10.3	-0.000000	-0.000000	0.000000	-0.000000	-0.000000	0.000000	0.0011350	0.0011350	0.000	0.713	.5	6.
2.	-10.0	-10.3	0.000000	0.000000	0.000000	-0.000000	-0.000000	0.000000	0.0010218	0.0010218	0.000	0.714	.5	8.
3.	-10.0	-10.3	0.000000	0.000000	0.000000	-0.000000	-0.000000	0.000000	0.0011444	0.0011444	0.000	0.714	.5	10.
4.	-10.0	-10.2	0.000000	0.000000	0.000000	-0.000000	-0.000000	0.000000	0.0017257	0.0017257	0.000	0.715	.3	12.
5.	-10.0	-10.3	0.000000	0.000000	0.000000	-0.000000	-0.000000	0.000000	0.0025385	0.0025385	0.000	0.717	0.0	14.
6.	-10.0	-10.4	0.000000	0.000000	0.000000	-0.000000	-0.000000	0.000000	0.0038112	0.0038112	0.000	0.716	0.0	16.
7.	-12.0	-15.2	0.023934	0.001967	-0.000972	-0.000167	-0.000568	0.003405	0.0030851	0.0023583	0.350	0.948	1.2	16.
8.	-12.0	-16.5	0.040197	0.005603	-0.000893	-0.000541	-0.000704	0.004901	0.0045926	0.0025190	0.351	0.948	1.1	18.
9.	-12.0	-17.2	0.046198	0.007090	-0.000688	-0.000660	-0.000766	0.005523	0.0052292	0.0025921	0.352	0.946	1.2	19.
10.	-15.0	-17.5	0.008784	-0.000722	-0.001054	-0.000109	-0.000384	0.002349	0.0020440	0.0022918	0.350	0.948	1.4	16.
11.	-15.0	-19.1	0.024610	0.003490	-0.001042	-0.000554	-0.000562	0.004067	0.0036510	0.0023864	0.351	0.948	1.4	18.
12.	-15.0	-19.7	0.030797	0.005285	-0.000819	-0.000663	-0.000542	0.004718	0.0043856	0.0024607	0.352	0.946	1.4	19.
13.	-15.0	-20.2	0.037121	0.007096	-0.000720	-0.001002	-0.000621	0.005476	0.0051423	0.0025442	0.353	0.942	1.4	20.
14.	-12.0	-13.7	0.007753	-0.001318	-0.001049	0.000083	-0.000501	0.002138	0.0018648	0.0023229	0.351	0.949	1.4	14.
15.	-10.0	-12.0	0.017538	0.000217	-0.000848	-0.000012	-0.000439	0.002618	0.0023659	0.0022693	0.352	0.944	1.2	14.
16.	-5.0	-9.7	0.062710	0.002421	-0.001729	0.000130	-0.000877	0.004213	0.0038612	0.0027506	0.352	0.948	.8	16.
17.	-5.0	-11.5	0.076562	0.004513	-0.002254	-0.000013	-0.000830	0.005617	0.0053103	0.0033419	0.350	0.949	.5	18.
18.	-2.0	-5.9	0.062374	-0.000711	-0.002381	0.000568	-0.000803	0.002948	0.0027114	0.0027041	0.351	0.947	.6	14.
19.	-2.0	-7.5	0.079165	0.000283	-0.003070	0.000578	-0.000705	0.004019	0.0037632	0.0032504	0.352	0.945	.3	16.
20.	-2.0	-4.4	0.045218	-0.001351	-0.002061	0.000592	-0.000553	0.002353	0.0021384	0.0024768	0.351	0.947	.9	12.
21.	0.0	-2.6	0.058889	-0.003087	-0.002742	0.000706	-0.000630	0.002012	0.0018369	0.0026923	0.351	0.945	.6	12.
22.	0.0	-4.6	0.073448	-0.002651	-0.003250	0.000789	-0.000838	0.002670	0.0024273	0.0030013	0.351	0.948	.5	14.
23.	0.0	-6.2	0.088303	-0.001686	-0.003768	0.000776	-0.000327	0.003905	0.0036678	0.0037513	0.353	0.943	.2	16.

TEST 288.0 RUN 9

WIND AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	ALPHA SHAFT	ALPHA CONTROL	CLR	CXR	CYR	CMX	CMY	CMZ	CP	CPD	V/OR	M,AT	A _{1s}	θ _{grip}
17.	-5.0	-6.7	0.031134	-0.000297	-0.001281	0.000228	-0.000600	0.002520	0.0023505	0.0023903	0.350	0.952	1.0	12.
18.	-5.0	-7.3	0.039128	0.000390	-0.001436	0.000259	-0.000629	0.002841	0.0026562	0.0024181	0.350	0.952	.9	13.
19.	-5.0	-8.0	0.047723	0.000977	-0.001703	0.000260	-0.000724	0.003201	0.0030121	0.0025194	0.350	0.953	.7	14.
20.	-5.0	-8.8	0.054762	0.001740	-0.001519	0.000139	-0.000879	0.003638	0.0034247	0.0026168	0.350	0.952	1.0	15.
21.	-7.0	-9.5	0.035794	0.001404	-0.001157	0.000140	-0.000782	0.003157	0.0029789	0.0024025	0.350	0.951	1.0	14.
22.	-7.0	-11.0	0.052213	0.003468	-0.001222	-0.000087	-0.000798	0.004248	0.0040282	0.0026320	0.351	0.952	.8	16.
23.	-7.0	-12.7	0.067350	0.005770	-0.001482	-0.000247	-0.000935	0.005531	0.0053056	0.0029793	0.351	0.951	.7	18.
24.	-7.0	-8.3	0.018210	-0.000447	-0.000932	0.000119	-0.000618	0.002282	0.0021117	0.0022457	0.349	0.949	1.0	12.
25.	-7.0	-7.5	0.009631	-0.001367	-0.000894	0.000129	-0.000481	0.001992	0.0018379	0.0023117	0.351	0.949	1.1	11.
26.	-10.0	-13.5	0.034463	0.003144	-0.000529	-0.000209	-0.000585	0.003847	0.0036614	0.0024824	0.350	0.955	.9	16.
27.	-10.0	-14.1	0.041936	0.004585	-0.000576	-0.000395	-0.000670	0.004478	0.0042771	0.0025484	0.352	0.952	.9	17.
28.	-10.0	-15.0	0.049159	0.006084	-0.000493	-0.000620	-0.000690	0.005135	0.0049765	0.0026772	0.352	0.952	1.0	18.
29.	-10.0	-15.6	0.058559	0.007722	-0.000939	-0.000748	-0.000684	0.006082	0.0058661	0.0029206	0.352	0.953	.8	19.

Table I - 7. Rotor No. 1, V/OR = .35, M(1.0, 90) = 1.00

TEST 288.0 RUN 12

WIND AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	ALPHA SHAFT	ALPHA CONTROL	CLR	CXR	CYR	CMX	CMY	CMZ	CP	CPO	V/OR	M _{AT}	A _{1s}	θ _{grip}
1.	-9.0	-11.8	0.033323	0.000827	-0.000727	-0.000219	-0.001077	0.004215	0.0039455	0.0035807	0.353	0.996	1.1	15.
2.	-9.0	-11.0	0.025396	-0.000811	-0.000785	0.000069	-0.001559	0.003927	0.0034541	0.0036952	0.350	1.003	1.1	14.
3.	-9.0	-12.2	0.042084	0.001623	-0.000843	-0.000028	-0.001649	0.005144	0.0046901	0.0040024	0.352	0.998	.9	16.
4.	-9.0	-13.0	0.049369	0.002692	-0.001037	-0.000157	-0.001827	0.005831	0.0052669	0.0041622	0.350	1.002	.7	17.
5.	-9.0	-10.0	0.017947	-0.001739	-0.000718	0.000038	-0.001351	0.003414	0.0030550	0.0036407	0.349	1.003	1.2	13.
6.	-9.0	-9.9	0.009032	-0.002730	-0.000649	-0.000013	-0.000928	0.002947	0.0026392	0.0035910	0.351	1.003	1.2	12.
7.	-12.0	-14.6	0.025147	0.000798	-0.000556	-0.000371	-0.001070	0.004279	0.0039233	0.0036021	0.350	1.002	1.2	16.
8.	-12.0	-15.3	0.032855	0.002395	-0.000609	-0.000435	-0.001171	0.005009	0.0046374	0.0037264	0.351	1.003	1.0	17.
9.	-12.0	-14.0	0.017319	-0.000546	-0.000522	-0.000345	-0.000835	0.003585	0.0033202	0.0034907	0.349	1.002	1.0	15.
10.	-12.0	-13.2	0.010439	-0.001898	-0.000706	-0.000117	-0.000667	0.002998	0.0027449	0.0034045	0.351	1.001	1.4	14.
11.	-12.0	-12.5	0.002874	-0.003202	-0.000578	-0.000086	-0.000557	0.002472	0.0022915	0.0034094	0.349	1.003	1.2	13.
12.	-15.0	-17.1	0.010694	-0.001387	-0.000536	-0.000467	-0.000468	0.003271	0.0030216	0.0035011	0.351	1.002	1.2	16.
13.	-15.0	-17.7	0.018403	0.000538	-0.000664	-0.000597	-0.000643	0.004085	0.0037167	0.0035061	0.350	1.005	1.1	17.
14.	-15.0	-18.4	0.026390	0.002529	-0.000558	-0.000729	-0.000816	0.004939	0.0046215	0.0036841	0.353	0.999	1.1	18.
15.	-15.0	-16.4	0.003068	-0.003257	-0.000691	-0.000311	-0.000352	0.002608	0.0024016	0.0035458	0.351	1.001	1.4	15.
16.	-12.0	-16.0	0.038999	0.003802	-0.000569	-0.000645	-0.001069	0.005695	0.0054239	0.0039863	0.352	1.002	1.0	17.7
17.	-13.0	-16.8	0.038004	0.003998	-0.000693	-0.000687	-0.001030	0.005746	0.0054200	0.0039164	0.352	1.000	1.0	18.
18.	-14.0	-17.8	0.030445	0.003164	-0.000471	-0.000834	-0.000891	0.005150	0.0048459	0.0036754	0.351	1.003	1.0	18.
19.	-6.0	-8.1	0.041862	-0.000306	-0.001239	0.000229	-0.001047	0.004123	0.0038953	0.0038879	0.352	0.999	.9	14.
20.	-6.0	-8.9	0.051300	0.000467	-0.001388	0.000118	-0.001171	0.004731	0.0044717	0.0041339	0.352	1.000	.8	15.
21.	-6.0	-9.7	0.059704	0.001236	-0.001691	0.000101	-0.001216	0.005413	0.0050797	0.0044094	0.353	1.000	.6	16.
22.	-6.0	-7.4	0.035716	-0.000961	-0.001114	0.000122	-0.000943	0.003733	0.0035176	0.0037708	0.351	1.001	.9	13.
23.	-6.0	-6.7	0.026919	-0.001558	-0.001070	0.000143	-0.000898	0.003338	0.0031455	0.0036451	0.351	0.999	1.0	12.
24.	-6.0	-6.2	0.018195	-0.002151	-0.000954	0.000157	-0.000889	0.003034	0.0028604	0.0035936	0.351	1.002	1.0	11.
25.	-3.0	-6.0	0.059447	-0.001873	-0.002166	0.000539	-0.001310	0.004080	0.0037743	0.0041984	0.351	1.002	.7	14.
26.	-3.0	-6.5	0.067565	-0.001496	-0.002150	0.000481	-0.001221	0.004678	0.0043512	0.0045747	0.351	1.001	.5	15.
27.	-3.0	-5.1	0.050920	-0.002331	-0.002049	0.000610	-0.001306	0.003675	0.0034094	0.0040369	0.351	1.001	.6	13.
28.	-3.0	-4.3	0.043578	-0.002687	-0.001780	0.000532	-0.001225	0.003412	0.0031367	0.0039571	0.352	1.001	.7	12.
29.	-3.0	-3.7	0.034536	-0.002878	-0.001442	0.000469	-0.001178	0.003158	0.0028711	0.0038061	0.352	1.001	.8	11.

Table I - 8. Rotor No. 1, V/OR = .35, M(1.0, 90) = 1.02

TEST 288.0 RUN 15

WIND AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	ALPHA SHAFT	ALPHA CONTROL	CLR	CXR	CYR	CMX	CMY	CMZ	CP	CPO	V/OR	M, AT	A _{1s}	grip
1.	-12.0	-15.4	0.033266	0.002486	-0.000149	-0.000682	-0.000636	0.005051	0.0048940	0.0039453	0.352	1.017	1.1	17.
2.	-12.0	-15.2	0.033456	0.002440	-0.000254	-0.000711	-0.000565	0.005221	0.0050280	0.0041001	0.350	1.024	1.0	17.
3.	-12.0	-14.4	0.027293	0.001019	-0.000078	-0.000628	-0.000575	0.004575	0.0044401	0.0040337	0.351	1.022	1.1	16.
4.	-12.0	-13.5	0.019153	-0.000654	-0.000094	-0.000480	-0.000619	0.003890	0.0037679	0.0039728	0.350	1.020	1.2	15.
5.	-12.0	-12.8	0.012027	-0.002102	-0.000037	-0.000441	-0.000679	0.003352	0.0032532	0.0039835	0.352	1.020	1.2	14.
6.	-9.0	-10.2	0.027565	-0.000529	-0.000209	-0.000366	-0.000641	0.004066	0.0039589	0.0040952	0.352	1.022	1.1	14.
7.	-9.0	-9.6	0.019757	-0.001608	-0.000113	-0.000287	-0.000752	0.003633	0.0035342	0.0040719	0.351	1.023	1.0	13.
8.	-9.0	-11.2	0.034926	0.000655	-0.000228	-0.000387	-0.000508	0.004618	0.0044838	0.0041728	0.352	1.020	0.9	15.
9.	-9.0	-12.1	0.043378	0.001949	-0.000182	-0.000581	-0.000592	0.005289	0.0051267	0.0043174	0.352	1.022	0.8	16.
10.	-15.0	-16.7	0.011735	-0.001590	0.000151	-0.000711	-0.000492	0.003573	0.0034880	0.0040354	0.350	1.024	1.4	16.
11.	-15.0	-17.3	0.019647	0.000485	0.000070	-0.000818	-0.000460	0.004332	0.0042214	0.0040258	0.350	1.024	1.2	17.
12.	-15.0	-18.1	0.026347	0.002357	0.000275	-0.001081	-0.000405	0.004974	0.0048822	0.0040085	0.351	1.022	1.1	18.
13.	-13.0	-16.8	0.031172	0.003843	0.000278	-0.001248	-0.000586	0.005724	0.0056354	0.0042210	0.351	1.024	1.0	18.8
14.	-13.0	-15.9	0.029001	0.001986	-0.000060	-0.000803	-0.000390	0.005001	0.0048362	0.0040849	0.350	1.023	1.1	17.

Table I - 9. Rotor No. 1, V/OR = .40, M(1.0, 90) = .85

TEST 288.0 RUN 7

WIND AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	ALPHA SHAFT	ALPHA CONTROL	CLR	CXR	CYR	CMX	CMY	CMZ	CP	CPO	V/OR	M,AT	A _{1s}	θ _{grip}
1.	-4.0	-12.2	0.076035	0.002944	-0.002899	0.000536	-0.001161	0.004894	0.0046721	0.0031566	0.401	0.845	.7	18.
2.	-4.0	-13.1	0.081044	0.004087	-0.002909	0.000369	-0.001344	0.005704	0.0054607	0.0034570	0.396	0.853	.6	19.
3.	-4.0	-14.0	0.085398	0.005007	-0.003104	0.000360	-0.001309	0.006660	0.0063572	0.0039386	0.398	0.850	-1.2	20.
4.	-4.0	-3.3	-0.001140	-0.002049	-0.001617	0.000459	-0.001158	0.001326	0.0012329	0.0020498	0.399	0.849	1.1	8.
5.	-2.0	-5.0	0.043550	-0.001147	-0.002479	0.000723	-0.000340	0.001950	0.0018345	0.0021776	0.396	0.853	.8	12.
6.	-2.0	-3.5	0.027193	-0.001475	-0.002198	0.000757	-0.000144	0.001537	0.0014878	0.0020319	0.398	0.848	1.0	10.
7.	-2.0	-2.0	0.010925	-0.001746	-0.001868	0.000520	-0.000159	0.001451	0.0012590	0.0019500	0.400	0.847	1.1	8.
8.	-2.0	-9.9	0.080477	0.001158	-0.003413	0.000652	-0.000710	0.004190	0.0039995	0.0031609	0.398	0.850	.6	17.
9.	-2.0	-11.0	0.084170	0.002159	-0.003762	0.000639	-0.000697	0.005017	0.0047251	0.0034531	0.398	0.851	.3	18.
10.	0.0	-7.6	0.083656	-0.001384	-0.004335	0.000830	-0.000698	0.003334	0.0031181	0.0032624	0.399	0.848	.3	16.
11.	0.0	-8.8	0.087839	-0.000399	-0.004628	0.000848	-0.000786	0.004182	0.0039876	0.0036971	0.398	0.849	.2	17.
12.	0.0	-9.7	0.092076	0.000599	-0.004998	0.001015	-0.000711	0.005188	0.0049452	0.0042128	0.398	0.849	0.0	18.
13.	0.0	-9.7	0.071532	-0.002381	-0.004007	0.000971	-0.000722	0.002217	0.0020522	0.0027009	0.398	0.849	.5	14.

TEST 288.0 RUN 5

WIND AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	ALPHA SHAFT	ALPHA CONTROL	CLR	CXR	CYR	CMX	CMY	CMZ	CP	CPO	V/OR	M,AT	A _{1s}	θ _{grip}
1.	-4.0	-8.7	0.039962	0.000916	-0.001126	0.000163	-0.000660	0.002682	0.0025519	0.0020923	0.401	0.852	.9	14.
2.	-4.0	-10.6	0.054461	0.002205	-0.001486	0.000197	-0.000724	0.003519	0.0034048	0.0023582	0.396	0.859	.9	16.
3.	-4.0	-12.5	0.069525	0.003919	-0.001811	0.000052	-0.000767	0.004812	0.0046558	0.0028052	0.401	0.850	.8	18.
4.	-8.0	-15.2	0.047449	0.004913	-0.000205	-0.000535	-0.000592	0.004555	0.0045079	0.0024145	0.399	0.852	1.1	18.
5.	-8.0	-16.8	0.058799	0.007126	-0.000214	-0.000687	-0.000841	0.005803	0.0057593	0.0027279	0.397	0.857	1.0	20.
6.	-12.0	-17.8	0.025729	0.002908	0.000153	-0.000588	-0.000624	0.003415	0.0034310	0.0022373	0.397	0.856	1.4	18.
7.	-12.0	-19.4	0.038319	0.005997	0.000133	-0.000789	-0.000652	0.005017	0.0049311	0.0024533	0.399	0.853	1.4	20.

Table I - 10. Rotor No. 1, V/OR = .40, M(1.0, 90) = .95

TEST 288.0 RUN 13

WIND AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	ALPHA SHAFT	ALPHA CONTROL	CLR	CXR	CYR	CMX	CMY	CMZ	CP	CPO	V/OR	M,AT	A _{1s}	θ _{grip}
1.	-9.0	-12.4	0.026799	0.000248	-0.000476	0.000015	-0.000510	0.003153	0.0029692	0.0028278	0.404	0.947	1.4	15.
2.	-9.0	-13.1	0.034482	0.001380	-0.000664	0.000062	-0.000378	0.003801	0.0035756	0.0029505	0.404	0.948	1.2	16.
3.	-9.0	-11.6	0.019715	-0.000792	-0.000632	0.000142	-0.000491	0.002677	0.0024827	0.0027799	0.403	0.948	1.4	14.
4.	-9.0	-10.9	0.012847	-0.001753	-0.000612	0.000167	-0.000265	0.002235	0.0020720	0.0027713	0.404	0.948	1.4	13.
5.	-12.0	-14.6	0.011369	-0.001578	-0.000292	-0.000029	-0.000289	0.002349	0.0022478	0.0028776	0.404	0.947	1.4	15.
6.	-12.0	-15.2	0.018260	-0.000168	-0.000298	-0.000088	-0.000302	0.002997	0.0028871	0.0029358	0.404	0.948	1.4	16.
7.	-12.0	-16.1	0.025255	0.001360	-0.000231	-0.000294	-0.000323	0.003587	0.0034642	0.0028801	0.402	0.949	1.2	17.
8.	-12.0	-16.8	0.031335	0.002680	-0.000377	-0.000302	-0.000301	0.004371	0.0041741	0.0030321	0.405	0.947	1.4	18.
9.	-12.0	-17.7	0.038236	0.003964	-0.000419	-0.000564	-0.000720	0.005229	0.0049655	0.0032789	0.404	0.947	1.2	19.
10.	-12.0	-13.9	0.003491	-0.003199	-0.000383	0.000065	-0.000448	0.001716	0.0016124	0.0029049	0.404	0.946	1.4	14.
11.	-15.0	-18.3	0.009813	-0.001550	-0.000400	-0.000282	-0.000137	0.002576	0.0023729	0.0029920	0.403	0.948	1.5	17.
12.	-15.0	-19.0	0.015745	0.000067	-0.000369	-0.000449	-0.000137	0.003244	0.0030826	0.0030413	0.402	0.951	1.5	18.
13.	-15.0	-19.7	0.022658	0.001875	-0.000356	-0.000616	-0.000160	0.003992	0.0038494	0.0030683	0.401	0.952	1.4	19.
14.	-15.0	-17.8	0.001979	-0.003535	-0.000298	-0.000125	-0.000077	0.001663	0.0015594	0.0029771	0.401	0.950	1.4	16.
15.	-7.0	-9.8	0.031850	-0.000098	-0.000798	0.000127	-0.000559	0.003122	0.0028643	0.0028453	0.403	0.949	1.2	14.
16.	-7.0	-10.8	0.038698	0.000707	-0.000805	0.000029	-0.000632	0.003640	0.0034714	0.0031002	0.403	0.946	1.1	15.
17.	-8.0	-13.1	0.068878	0.008818	-0.000989	-0.000472	-0.000410	0.004788	0.0045908	0.0017941	0.271	0.899	.1	17.5
18.	-8.0	-13.1	0.076147	0.009367	-0.001240	-0.000553	-0.000322	0.005175	0.0049512	0.0019266	0.270	0.903	.1	18.
19.	-9.0	-14.1	0.070359	0.010038	-0.001078	-0.000646	-0.000306	0.005169	0.0049530	0.0018057	0.271	0.900	0	18.
20.	-9.0	-14.1	0.078458	0.010825	-0.001114	-0.000747	-0.000350	0.005673	0.0054274	0.0019662	0.271	0.902	0	18.5
21.	-9.0	-14.1	0.060821	0.008900	-0.001040	-0.000561	-0.000274	0.004643	0.0044128	0.0016777	0.272	0.900	0	17.4
22.	-8.0	-13.1	0.061572	0.008165	-0.001137	-0.000495	-0.000215	0.004414	0.0042123	0.0016780	0.271	0.899	0	17.
23.	-7.0	-12.1	0.068607	0.007654	-0.001374	-0.000317	-0.000242	0.004458	0.0042473	0.0017745	0.270	0.900	0	17.
24.	-7.0	-12.1	0.060242	0.007002	-0.001329	-0.000281	-0.000224	0.004072	0.0038749	0.0016750	0.270	0.901	0	16.5
25.	-7.0	-12.1	0.078066	0.008292	-0.001473	-0.000359	-0.000386	0.004914	0.0046655	0.0018986	0.271	0.898	0	17.5
26.	-8.0	-14.1	0.058392	0.009050	-0.001354	-0.000501	-0.000145	0.004618	0.0044192	0.0016665	0.272	0.901	.2	17.5
27.	-8.0	-15.1	0.053097	0.008906	-0.001399	-0.000495	-0.000140	0.004452	0.0042676	0.0016138	0.271	0.904	.3	17.5
28.	-9.0	-16.1	0.048024	0.008864	-0.001313	-0.000533	-0.000216	0.004359	0.0041729	0.0015741	0.271	0.902	.3	17.5
29.	-9.0	-13.8	0.063446	0.009130	-0.000433	-0.000601	-0.000402	0.004719	0.0045097	0.0016916	0.271	0.901	.7	17.5
30.	-9.0	-12.8	0.072598	0.008736	-0.000308	-0.000619	-0.000508	0.004857	0.0046241	0.0018186	0.269	0.904	.6	17.5
31.	-9.0	-11.8	0.082280	0.008238	-0.000331	-0.000585	-0.000569	0.005049	0.0048281	0.0020242	0.270	0.902	.6	17.5
32.	-8.0	-10.8	0.088077	0.007250	-0.000288	-0.000474	-0.000577	0.005038	0.0048064	0.0021886	0.269	0.904	.6	17.5
33.	-8.0	-12.8	0.069151	0.008831	-0.000780	-0.000531	-0.000255	0.004823	0.0045954	0.0017889	0.272	0.902	.2	17.5

Table I - 11. Rotor No. 2.

TEST 310.0 RUN 4

44 FT. TAPERED TIP ROTOR V/CR = .31 M(1.0)(90) = .87

WIND AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	THETA	ALPHA SHAFT	ALPHA CENTRCL	CLR	CXR	CYR	CMX	CMY	CMZ	CP	CPD	V/CR M(1.0)(90)	A _{1s}	
1.	8.0	-1.0	-14.8	.235538	.005554	.000115	-.000744	-.001566	0.003618	0.0037269	0.0020327	0.315	0.871	.2
2.	8.0	-1.0	-13.1	.017023	.001594	.000171	-.000349	-.000530	0.002133	0.0022866	0.0017574	0.318	0.873	.3
3.	1.0	-1.0	-16.2	.05949	.008489	-.000280	-.001751	-.000784	0.005510	0.0052081	0.0023282	0.315	0.878	
4.	12.0	-1.0	-17.8	.065884	.012123	-.000311	-.001553	-.000639	0.006724	0.0069399	0.0027607	0.316	0.874	
5.	13.0	-1.0	-18.5	.072477	.013746	-.000598	-.001848	-.000791	0.007827	0.0079959	0.0032097	0.318	0.874	.2
6.	10.0	-15.0	-20.1	.027827	.006362	.000675	-.001284	-.000678	0.003826	0.0040787	0.0019922	0.318	0.871	.5
7.	8.0	-15.0	-18.8	.011840	.001735	.000718	-.000686	-.000617	0.002324	0.0024187	0.0018551	0.318	0.872	.5
8.	12.0	-15.0	-21.5	.043130	.011132	.000265	-.001758	-.000687	0.005655	0.0059767	0.0022824	0.319	0.872	.3
9.	13.0	-15.0	-22.9	.057129	.015756	.000228	-.002284	-.000808	0.007670	0.0079627	0.0026766	0.319	0.872	.2
10.	10.0	-5.0	-12.5	.077466	.006873	-.001661	-.000623	-.000771	0.005491	0.0055846	0.0029232	0.318	0.873	.0
11.	10.0	-5.0	-12.5	.068790	.007411	-.001837	-.000646	-.000369	0.005610	0.0056548	0.0039951	0.317	0.870	

TEST 310.0 RUN 4

44 FT. TAPERED TIP ROTOR V/CR = M(1.0)(90) =

WIND AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	THETA	ALPHA SHAFT	ALPHA CENTRCL	CLR	CXR	CYR	CMX	CMY	CMZ	CP	CPD	V/CR M(1.0)(90)	A _{1s}	
1.	1.0	-5.0	-12.5	.078224	.006735	-.001817	-.001741	-.000652	0.005757	0.0057858	0.0031134	0.326	0.882	
2.	12.0	-5.0	-14.4	.084345	.00894	-.002134	-.000963	-.000949	0.007364	0.0072771	0.0038450	0.323	0.882	
3.	8.0	-5.0	-1.0	.06134	.004494	-.001314	-.000509	-.000552	0.004041	0.0045263	0.0022803	0.323	0.881	
4.	6.0	-5.0	-3.7	.044557	.00240	-.000748	-.000361	-.000468	0.002815	0.0028483	0.0019121	0.322	0.881	.1
5.	4.0	-5.0	-7.5	.029168	.001734	-.000397	-.000288	-.000307	0.001922	0.0019223	0.0016364	0.322	0.880	.3
6.	2.0	-5.0	-5.9	.018178	-.000763	-.000212	-.0002179	-.000228	0.001314	0.0013165	0.0015470	0.322	0.883	.0
7.	6.0	0.0	-5.3	.073473	.0026471	-.0002323	-.000338	-.0007803	0.002296	0.0023414	0.0040285	0.326	0.880	-.4
8.	8.0	0.0	-7.5	.084615	.005439	-.0003430	-.000330	-.0011950	0.003910	0.0039516	0.0055000	0.327	0.878	.6
9.	1.0	0.0	-9.4	.09981	.00217	-.0003830	-.000254	-.000926	0.005768	0.0057726	0.0044232	0.324	0.881	
10.	4.0	0.0	-3.5	.054761	.001819	-.0001516	-.0002052	-.0001530	0.001475	0.0014429	0.0017978	0.325	0.881	
11.	2.0	0.0	-1.7	.03845	-.0001872	-.0000951	-.000014	-.0000421	0.001084	0.0010775	0.0015840	0.325	0.880	
12.	0.0	0.0	-0.4	.019507	-.000182	-.0000552	-.0000122	-.0000299	0.000968	0.0009577	0.0009516	0.327	0.880	.1
13.	-1.0	0.0	0.0	.011728	-.0001655	-.0000445	-.0000123	-.0000281	0.000998	0.0009591	0.0009866	0.325	0.878	
14.	-2.0	0.0	0.7	.00325	-.0001431	-.0000334	-.0000114	-.0000161	0.000932	0.0009185	0.0009564	0.325	0.878	
15.	2.0	0.0	0.0	.067227	-.0008721	-.0002475	-.0000773	-.0002923	-.0000392	-.00003863	0.0023872	0.324	0.879	
16.	4.0	0.0	0.1	.083424	-.0009301	-.0002759	-.0000140	-.0000951	-.0000266	-.00003056	0.0027927	0.326	0.879	-.3
17.	0.0	0.0	0.0	.04127	-.0007004	-.0001913	-.000028	-.0000810	-.0000350	-.00003061	0.0017859	0.325	0.878	.0
18.	-2.0	0.0	0.0	.03293	-.0005821	-.0001270	-.0000223	-.0000325	-.0000457	-.00004203	0.0016483	0.327	0.881	

Table I - 12. Rotor No. 2.

TEST 312. RUN 5

44 FT. TAPERED TIP ROTOR V/CR = .36 M(1.0)(90) = .80

WIND AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	THETA	ALPHA SHAFT	ALPHA CONTROL	CLR	CXR	CYR	CMX	CMY	CMZ	CP	CPO	V/CR	M(1.0)(90)	A _{1s}
1.	4.0	-11.0	-11.6	0.002547	-0.001193	0.000338	-0.000301	-0.000364	0.001209	0.0012286	0.0015727	0.315	0.877	.4
2.	8.0	-11.0	-14.5	0.003385	0.004273	0.001181	-0.000761	-0.000512	0.003411	0.0034630	0.0018952	0.340	0.832	.4
3.	8.0	-12.0	-14.5	0.002959	0.003464	0.000164	-0.000666	-0.000544	0.003228	0.0033354	0.0020004	0.360	0.797	.4
4.	10.0	-11.0	-16.1	0.0044578	0.006685	0.000114	-0.001081	-0.000622	0.004784	0.0048156	0.0022669	0.360	0.798	.2
5.	12.0	-11.0	-17.5	0.0058819	0.009745	-0.000162	-0.001384	-0.000767	0.006341	0.0063762	0.0026317	0.359	0.797	.2
6.	13.7	-11.0	-19.7	0.0065765	0.013185	-0.000314	-0.001876	-0.000768	0.008220	0.0080951	0.0030287	0.359	0.800	.1
7.	13.7	-15.0	-22.8	0.004058	0.012167	0.000425	-0.002136	-0.000839	0.0076869	0.0069876	0.0024439	0.360	0.796	.5
8.	12.0	-15.0	-21.3	0.003385	0.007618	0.000687	-0.001631	-0.000794	0.004826	0.0050413	0.0022428	0.357	0.798	.7
9.	10.0	-15.0	-20.1	0.0019238	0.003211	0.000757	-0.001116	-0.000886	0.003076	0.0032915	0.0020677	0.362	0.794	.7
10.	8.0	-15.0	-18.8	0.003249	-0.001286	0.000676	-0.000485	-0.000644	0.001359	0.0014925	0.0019559	0.361	0.796	.7
11.	6.0	-15.0	-17.1	0.0012248	-0.0005843	0.000836	-0.000140	-0.000131	-0.000170	0.0001790	0.00020237	0.362	0.794	.6
12.	6.0	-11.0	-13.1	0.0011503	0.000215	0.000352	-0.000422	-0.000446	0.001886	0.0019225	0.0018355	0.363	0.795	.5
13.	4.0	-11.0	-11.6	0.0008155	-0.0002724	0.000398	-0.000305	-0.000431	0.000771	0.0008077	0.0017858	0.360	0.797	.5
14.	4.0	-5.0	-7.2	0.0022682	0.000262	-0.000361	-0.000122	-0.000327	0.001846	0.0019017	0.0017715	0.359	0.797	.3
15.	2.0	-5.0	-6.0	0.0013834	-0.0001322	-0.000165	-0.000270	-0.000172	0.001213	0.0011936	0.0016713	0.362	0.791	.4
16.	6.0	-5.0	-9.0	0.004163	0.001943	-0.000764	-0.00023	-0.000515	0.002785	0.0028382	0.0020129	0.362	0.792	.1
17.	8.0	-5.0	-11.8	0.005928	0.003714	-0.001175	-0.000420	-0.000494	0.003860	0.0038872	0.0023132	0.357	0.801	.1
18.	12.0	-5.0	-12.5	0.0074771	0.005883	-0.001619	-0.000603	-0.000611	0.005471	0.0054037	0.0028822	0.362	0.790	
19.	12.0	-5.0	-14.5	0.0084792	0.008389	-0.002030	-0.0008786	-0.000923	0.007329	0.0071613	0.0036164	0.363	0.790	
20.	8.0	-5.0	-7.5	0.006325	-0.00038	-0.0002336	0.000012	-0.000434	0.003497	0.0034880	0.0031338	0.358	0.799	
21.	10.0	-5.0	-9.3	0.0091238	0.001275	-0.0003661	-0.000085	-0.0001053	0.005367	0.0052965	0.0042520	0.358	0.799	
22.	6.0	-5.0	-5.5	0.006596	-0.0001577	-0.000217	0.000142	-0.0001602	0.002287	0.0020565	0.0023175	0.358	0.798	
23.	4.0	-5.0	-3.6	0.0052281	-0.0001577	-0.0001330	-0.000026	-0.0001458	0.001329	0.0014235	0.0019371	0.358	0.798	.1
24.	2.0	-5.0	-2.0	0.0030659	-0.0001927	-0.0000812	-0.000038	-0.0000427	0.0001018	0.00011152	0.00017313	0.359	0.798	
25.	-5.0	-5.0	-1.5	0.0017333	-0.0001928	-0.0000495	0.000021	-0.0000191	0.0000955	0.00009885	0.00016659	0.362	0.789	.2
26.	5.0	-5.0	3.7	0.0047161	-0.0006507	-0.001825	0.000033	-0.0001452	-0.0000532	-0.00024409	0.00018985	0.359	0.798	-.2
27.	2.0	-5.0	2.0	0.0064779	-0.0008559	-0.002587	0.000084	-0.0000631	-0.0000593	-0.0004898	0.00022740	0.358	0.800	
28.	3.0	-5.0	1.9	0.0073148	-0.0008973	-0.002836	0.0000111	-0.0000717	-0.0000463	-0.0003371	0.00024995	0.358	0.798	
29.	4.0	-5.0	-1.1	0.0081389	-0.0009195	-0.003707	0.0000205	-0.0000653	-0.0000170	0.00000773	0.00028920	0.357	0.800	
30.	6.0	-5.0	-2.3	0.0092988	-0.0008433	-0.004618	0.0000363	-0.0000448	0.0001457	0.00015848	0.00040187	0.359	0.798	

Table I-12. (Concluded)

TEST 310.0 RUN 13

44 FT. TAPERED TIP ROTOR V/OR = M(1.0)(90) =

WIND AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	THETA	ALPHA SHAFT	ALPHA CONTROL	CLR	CXR	CYR	CMX	CMY	CMZ	CP	CPO	V/OR M(1.0)(90)	A _{1s}	
1.	0.0	0.0	-1.0	0.010839	-0.001700	-0.000294	-0.000017	-0.000156	0.000977	0.0009120	0.0015105	0.357	0.801	.2
2.	0.0	2.0	1.0	0.025145	-0.003071	-0.000796	0.000113	-0.000605	0.000652	0.0005910	0.0016373	0.355	0.804	.2
3.	0.0	4.0	3.0	0.039969	-0.005558	-0.001162	0.000014	-0.000450	-0.000006	-0.0000360	0.0018180	0.354	0.804	.2
4.	0.0	6.0	5.0	0.056740	-0.010104	-0.001785	-0.000095	-0.000703	-0.001192	-0.0010753	0.0022838	0.355	0.803	.2
5.	-2.0	6.0	5.0	0.028082	-0.005137	-0.001210	0.000052	-0.000388	0.000020	-0.0000121	0.0017575	0.355	0.803	.2
6.	-2.0	4.0	3.0	0.015648	-0.003010	-0.000822	0.000177	-0.000286	0.000635	0.0005438	0.0015986	0.356	0.803	.2
7.	2.0	4.0	3.0	0.077471	-0.012480	-0.002996	0.000046	-0.000873	-0.001225	-0.0010776	0.0029511	0.357	0.803	.5
8.	2.0	6.0	5.0	0.091362	-0.018321	-0.003691	-0.000060	-0.001063	-0.001959	-0.0017555	0.0041860	0.357	0.803	.5
9.	2.0	2.0	1.0	0.059997	-0.007083	-0.002311	0.000129	-0.000903	-0.000138	-0.0000849	0.0021819	0.356	0.802	.5
10.	2.0	0.0	-1.0	0.043201	-0.003374	-0.001509	-0.000007	-0.000478	0.000722	0.0006671	0.0017378	0.357	0.802	.5
11.	4.0	0.0	-1.0	0.076896	-0.007397	-0.002507	0.000085	-0.000818	0.000446	0.0003979	0.0026024	0.355	0.803	.5
12.	4.0	2.0	1.0	0.091649	-0.012877	-0.003290	0.000221	-0.001318	-0.000005	0.0000362	0.0040152	0.355	0.804	.5

For the following data points
a_{1s} and/or b_{1s} ≠ 0° ± .2°

PT.	THETA	ALPHA SHAFT	a _{1s}	b _{1s}
1	0	0	-.8	0
2	0	2	-.5	0
3	0	4	0	0
4	0	6	.8	0
5	-2	6	-1.0	0
6	-2	4	-1.4	0
7	2	4	2.4	0
8	2	6	3.6	0
9	2	2	1.8	0
10	2	0	1.2	0
11	4	0	3.4	0
12	4	2	4.3	0

Table I - 13. Rotor No. 2.

TEST 311. KUN 6

44 FT. TAPERED TIP ROTOR V/DR = .36 M(1.0)(90) = .90

WIND AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED.

PT.	THETA	ALPHA SHAFT	ALPHA CONTRL	CLR	CXR	CYR	CMX	CMY	CMZ	CP	CPO	V/DR	M(1.0)(90)	A _{1s}
1.	0.0	-5.0	-9.2	0.04090	0.01854	-0.000444	-0.000466	-0.000231	0.002853	0.0028525	0.0020750	0.358	0.903	.2
2.	8.0	-5.0	-11.0	0.05222	0.03478	-0.000953	-0.000595	-0.000329	0.003994	0.0039511	0.0024877	0.356	0.907	.1
3.	1.0	-5.0	-12.9	0.06294	0.05613	-0.001424	-0.000614	-0.000217	0.005591	0.0054739	0.0031286	0.357	0.905	.1
4.	4.0	-5.0	-7.5	0.02318	0.00275	-0.000285	-0.000192	-0.000051	0.001914	0.0019744	0.0018377	0.359	0.900	.3
5.	2.0	-5.0	-6.0	0.02430	0.001229	-0.000165	-0.000103	-0.0000576	0.001379	0.0013427	0.0017731	0.363	0.893	.4
6.	2.0	0.0	-1.9	0.03448	0.002184	-0.000928	0.000041	-0.000266	0.001080	0.0010856	0.0017731	0.356	0.908	.1
7.	0.0	0.0	0.0	0.04462	0.001953	-0.000959	0.000721	-0.000012	0.003604	0.0036092	0.0016831	0.357	0.907	.1
8.	4.0	0.0	-3.6	0.03813	0.002156	-0.001465	-0.000221	-0.000192	0.001453	0.0014933	0.0029562	0.356	0.907	.1
9.	6.0	0.0	-5.7	0.07068	0.001585	-0.0002415	0.000742	-0.000424	0.002315	0.0024211	0.0026348	0.355	0.906	.1
10.	8.0	0.0	-7.7	0.08655	0.000321	-0.0003212	0.000006	-0.000479	0.003806	0.0037816	0.0034366	0.358	0.904	.1
11.	4.0	5.0	-0.5	0.08656	0.0009178	-0.000400	0.000371	-0.000517	0.000444	0.0004573	0.0032226	0.357	0.903	.1
12.	6.0	5.0	-2.0	0.08493	0.0007870	-0.0004628	0.000384	-0.000636	0.002146	0.0021423	0.0043830	0.356	0.906	.1
13.	2.0	5.0	1.5	0.067758	0.0009206	-0.0002980	0.0005133	-0.000581	-0.000497	-0.0007818	0.0028936	0.358	0.902	.1
14.	0.0	5.0	3.3	0.031862	0.0007964	-0.0002270	0.0000059	-0.000411	-0.000459	-0.0004889	0.0021703	0.358	0.903	.1
15.	-2.0	5.0	5.0	0.034353	0.0006280	-0.0001540	0.0001800	-0.000731	-0.000252	-0.0002026	0.0019528	0.357	0.905	.1
16.	-2.0	7.0	6.4	0.045904	0.0009233	-0.0002117	0.0000114	-0.000326	-0.000969	-0.0010133	0.0021338	0.357	0.905	-.2
17.	0.0	7.0	4.6	0.063938	0.0011611	-0.0003206	0.0000143	-0.000572	-0.001302	-0.0014262	0.0024432	0.358	0.903	-.2
18.	2.0	7.0	2.6	0.078887	0.0012933	-0.0004211	0.0000150	-0.000939	-0.001042	-0.0009731	0.0032122	0.357	0.905	-.5
19.	4.0	7.0	0.8	0.080014	0.0012375	-0.0004916	0.0000171	-0.001586	0.000359	0.0003250	0.0042195	0.359	0.905	-.5
20.	6.0	-1.0	-13.0	0.10294	0.000922	-0.000321	-0.000554	-0.000298	0.002165	0.0022513	0.0019464	0.356	0.908	.5
21.	8.0	-1.0	-14.4	0.03982	0.0008852	0.0000201	-0.000839	-0.000312	0.003520	0.0034992	0.0023440	0.357	0.903	.5
22.	10.0	-1.0	-16.1	0.044177	0.0005851	-0.0001310	-0.0003055	-0.0002185	0.004399	0.0043323	0.0026110	0.356	0.907	.4
23.	11.0	-1.0	-17.0	0.050661	0.0008413	-0.0000243	-0.0001152	-0.0000717	0.005762	0.0056255	0.0024181	0.358	0.903	.4
24.	11.0	-15.0	-2.0	0.028465	0.0005456	0.000006	-0.0001311	-0.0000632	0.004178	0.0041990	0.0021842	0.358	0.903	.6
25.	12.0	-15.0	-21.3	0.03747	0.0007839	0.0000044	-0.0001545	-0.0000546	0.005146	0.0051325	0.0022590	0.356	0.906	.6
26.	10.0	-15.0	-2.0	0.02279	0.0003771	0.00000718	-0.0001228	-0.0000515	0.002437	0.0024827	0.0021347	0.358	0.906	.7
27.	8.0	-15.0	-18.0	0.03811	0.0000941	0.0000052	-0.0000567	-0.0000520	0.001716	0.0018218	0.0019765	0.356	0.905	.6

Table I - 14. Rotor No. 2.

TEST 310.0 RUN 16

44 FT. TAPERED TIP ROTOR V/OR = .40 M(1.0)(90) = .83

WIND AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	THETA	ALPHA SHAFT	ALPHA CONTROL	CLR	CXR	CYR	CMX	CMY	CMZ	CP	CPO	V/OR	M(1.0)(90)	A ₁₈
1.	6.0	-5.0	-9.6	0.033264	0.000880	-0.000562	-0.000270	-0.000112	0.002611	0.0023882	0.0019644	0.403	0.828	.1
2.	6.0	5.0	-3.4	0.085627	-0.007955	-0.004783	0.000416	-0.000415	0.001639	0.0014509	0.0041671	0.400	0.828	
3.	4.0	5.0	-1.1	0.077941	-0.009243	-0.004298	0.000289	-0.000651	0.000181	0.0001584	0.0034826	0.401	0.829	
4.	2.0	5.0	0.9	0.065253	-0.008990	-0.003287	0.000101	-0.000716	-0.000538	-0.0005005	0.0028421	0.402	0.829	
5.	0.0	5.0	2.9	0.050752	-0.007822	-0.002481	0.000152	-0.000432	-0.000617	-0.0005503	0.0024275	0.401	0.828	-.4
6.	-2.0	5.0	4.4	0.034677	-0.006290	-0.001983	0.000112	-0.000537	-0.000302	-0.0003045	0.0021379	0.400	0.829	-.5
7.	-2.0	7.0	5.9	0.048515	-0.009527	-0.002722	0.000051	-0.000433	-0.001271	-0.0011591	0.0025112	0.401	0.828	-.6
8.	0.0	7.0	4.2	0.063026	-0.011335	-0.003502	-0.000030	-0.000528	-0.001575	-0.0014301	0.0028616	0.401	0.828	-.7
9.	2.0	0.0	-2.5	0.035811	-0.002685	-0.001246	0.000114	-0.000282	0.001021	0.0009319	0.0019232	0.399	0.831	
10.	4.0	0.0	-4.1	0.051287	-0.002630	-0.001867	0.000065	-0.000674	0.001428	0.0012754	0.0021603	0.400	0.830	
11.	6.0	0.0	-6.3	0.064734	-0.002315	-0.002533	0.000083	-0.000674	0.002136	0.0019315	0.0025932	0.400	0.830	-.2
12.	8.0	0.0	-8.4	0.075657	-0.001243	-0.003039	0.000081	-0.000558	0.003502	0.0031032	0.0032394	0.400	0.829	.0
13.	8.0	-5.0	-11.5	0.049971	0.002350	-0.000919	-0.000482	-0.000294	0.003661	0.0032982	0.0021984	0.401	0.830	.1
14.	10.0	-5.0	-13.2	0.062628	0.003936	-0.001376	-0.000705	-0.000621	0.005033	0.0044486	0.0026255	0.400	0.831	.1
15.	10.0	-15.0	-20.2	0.008687	-0.000341	0.000168	-0.000655	-0.000713	0.002348	0.0021498	0.0022819	0.401	0.831	.6
16.	12.0	-15.0	-21.6	0.021605	0.003585	0.000024	-0.001091	-0.000382	0.004031	0.0036863	0.0022194	0.401	0.830	.7
17.	13.7	-15.0	-23.3	0.036263	0.007933	-0.000192	-0.001663	-0.000492	0.006273	0.0055607	0.0022912	0.402	0.830	.6
18.	12.0	-10.0	-18.3	0.048055	0.007067	-0.000307	-0.001163	-0.000443	0.005929	0.0052535	0.0022694	0.402	0.829	.4
19.	10.0	-10.0	-16.6	0.035311	0.004415	-0.000027	-0.000822	-0.000218	0.004347	0.0038960	0.0020523	0.400	0.830	.5
20.	8.0	-10.0	-15.0	0.022223	0.001870	0.000061	-0.000587	-0.000225	0.003032	0.0027113	0.0019328	0.400	0.829	.6
21.	4.0	-5.0	-7.7	0.018561	-0.000366	-0.000299	-0.000149	-0.000012	0.001837	0.0016420	0.0017676	0.402	0.830	.3

Table I - 15. Rotor No. 2.

TEST 310... RDN 8

44 FT. TAPERED TIP ROTOR V/CR = .41 M(1.0)(90) = .91

WIND AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	THETA	ALPHA SHAFT	ALPHA CONTROL	CLR	CXR	CYR	CMX	CMY	CMZ	CP	CPC	V/CR M(1.0)(90)	A _{1s}	
1.	8.	-3.2	-11.4	.051193	0.011613	-0.007921	-0.000599	-0.001659	0.004168	0.0041631	0.0033364	0.417	0.928	.3
2.	11.1	-5.1	-13.1	.064623	0.013287	-0.001776	-0.000564	-0.000682	0.005612	0.0055777	0.0039782	0.408	0.939	.2
3.	12.2	-5.1	-14.7	.072438	0.015052	-0.002253	-0.000733	-0.000958	0.007417	0.0071139	0.0047169	0.408	0.938	.0
4.	6.3	-5.	-9.4	.037659	0.007141	-0.000715	-0.000337	-0.000792	0.003021	0.0030777	0.0028259	0.407	0.937	.4
5.	4.	-5.	-7.4	.021138	0.004176	-0.000328	-0.000131	-0.000382	0.0012137	0.0022196	0.0026356	0.412	0.938	.3
6.	4.1	0.	-4.7	.051326	0.013739	-0.001797	-0.000704	-0.001072	0.001653	0.0017630	0.0031442	0.411	0.938	.0
7.	6.0	0.0	-6.7	.068519	0.013761	-0.002636	-0.000991	-0.001177	0.002655	0.0027095	0.0039800	0.414	0.934	.1
8.	8.	0.	-8.1	.077569	0.012495	-0.003429	-0.000763	-0.001097	0.004196	0.0042144	0.0048772	0.413	0.934	.1
9.	1.0	0.0	-1.7	.048281	0.0091643	-0.0003361	-0.000136	-0.0001282	0.0005843	0.0005828	0.0007487	0.410	0.939	.1
10.	2.1	0.0	-2.2	.036037	0.003785	-0.0001141	-0.0000125	-0.000098	0.0001239	0.0001368	0.00028022	0.408	0.940	.1
11.	0.0	0.0	-0.5	.022348	0.0013577	-0.0000664	-0.0000044	0.0000253	0.000059	0.00011567	0.00025459	0.407	0.945	.1
12.	0.0	5.0	3.1	.054152	0.009817	-0.0002451	-0.0000073	-0.0001463	-0.0007523	-0.0004256	0.0003939	0.408	0.946	-.2
13.	2.	5.0	1.1	.068795	0.011979	-0.003498	-0.0000144	-0.0001656	-0.0000361	-0.0002653	0.00039311	0.409	0.944	-.4
14.	4.0	5.0	-1.1	.057836	0.011121	-0.004385	0.0000220	0.0001420	0.0000702	0.00008311	0.00049570	0.407	0.946	.1
15.	6.0	5.0	-3.3	.035701	0.0009619	-0.0004714	0.0000441	-0.0001507	0.0000242	0.000025210	0.00059719	0.407	0.948	.1
16.	8.0	5.0	-5.2	.013312	0.0007788	-0.0004256	0.00000475	-0.0000744	0.0000437	0.000043823	0.00069852	0.400	0.947	.1
17.	2.0	7.0	2.2	.084694	0.0115423	-0.0005171	0.0000200	-0.0001909	-0.0000919	-0.00007020	0.00052983	0.417	0.930	-.5

TEST 310... RDN 9

44 FT. TAPERED TIP ROTOR V/CR = M(1.0)(90) =

WIND AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	THETA	ALPHA SHAFT	ALPHA CONTROL	CLR	CXR	CYR	CMX	CMY	CMZ	CP	CPC	V/CR M(1.0)(90)	A _{1s}	
1.	1.0	7.0	4.2	.068213	0.013504	-0.003587	0.0000181	-0.0001141	-0.0001447	-0.00014909	0.0037970	0.413	0.938	.1
2.	-2.0	7.0	0.	.05091	0.012442	-0.002866	0.0000325	-0.0001121	-0.0001462	-0.00013211	0.0035740	0.411	0.939	.1
3.	2.0	7.0	2.3	.03119	0.014142	-0.004863	0.0000521	-0.0001594	-0.0000834	-0.00006992	0.0047063	0.410	0.941	.1
4.	4.0	7.0	0.3	.039962	0.013492	-0.005270	0.0000065	-0.0001258	0.00007395	0.00007395	0.0007822	0.411	0.941	.1
5.	8.0	-1.0	-14.0	.02281	0.00061	-0.000468	-0.0000697	-0.0000739	0.0000375	0.00003277	0.00030520	0.410	0.941	.6
6.	10.0	-1.0	-16.1	.030632	0.00254	-0.000336	-0.0000814	-0.0000707	0.00004798	0.000047757	0.00034884	0.411	0.940	.8
7.	12.0	-1.0	-17.0	.047146	0.00571	-0.000222	-0.0001391	-0.0000769	0.00006479	0.000061342	0.00036553	0.411	0.940	.5
8.	13.7	-1.0	-19.4	.061141	0.00837	-0.000252	-0.0001536	-0.0001688	0.00008267	0.000078363	0.00041706	0.412	0.938	.5
9.	13.7	-1.0	-22.9	.084101	0.010610	-0.000936	-0.0001866	-0.0001877	0.00006239	0.000062308	0.00035937	0.413	0.937	.8
10.	12.0	-1.0	-21.0	.07804	0.008242	-0.001216	-0.0001431	-0.000035	0.00004311	0.000044523	0.00035044	0.413	0.936	.9
11.	1.0	-1.0	-19.0	.07292	0.00812	-0.001134	-0.0001111	-0.0000518	0.00002694	0.000028712	0.00032024	0.413	0.936	1.0

Table I - 15. Rotor No. 2.

TEST 310.3 RUN 7

44 FT. TAPERED TIP RCTCR V/CR = .45 M(1.0)(90) = .77

WIND AXES COEFFICIENTS, BASED ON RCTCR BLADE AREA AND RCTCR TIP SPEED

PT.	THETA	ALPHA SHAFT	ALPHA CENTRCL	CLR	CXR	CYR	CMX	CNY	CMZ	CP	CPO	V/CR	M(1.0)(90)	A ₁ B
1.	8.0	-5.0	-11.4	0.042977	0.001221	-0.001187	-0.000255	-0.000089	0.003451	0.003520	0.0028684	0.448	0.769	.1
2.	6.0	-5.0	-9.5	0.028078	0.001020	-0.000731	-0.000125	0.000000	0.002429	0.0025258	0.0024721	0.445	0.772	.3
3.	4.0	-5.0	-7.7	0.013605	-0.001048	-0.000437	-0.000138	0.000015	0.001654	0.0017110	0.001660	0.444	0.771	.2
4.	10.0	-5.0	-13.4	0.055426	0.002568	-0.001658	-0.000347	-0.000231	0.004702	0.0047417	0.0034208	0.447	0.773	.1
5.	12.0	-5.0	-15.1	0.064586	0.003972	-0.002219	-0.000666	-0.000488	0.006305	0.0062827	0.0042697	0.447	0.772	.0
6.	13.7	-5.0	-16.7	0.073549	0.005947	-0.002256	-0.000626	-0.000323	0.008286	0.0081782	0.0052135	0.447	0.772	.0
7.	12.0	-10.0	-18.2	0.039206	0.004437	-0.001313	-0.000946	-0.000310	0.005281	0.0052070	0.0031542	0.446	0.771	.3
8.	10.0	-10.0	-16.6	0.028748	0.002505	-0.000833	-0.000793	-0.000172	0.003936	0.0039253	0.0027639	0.445	0.771	.6
9.	8.0	-10.0	-15.1	0.014700	-0.000050	-0.000049	-0.000346	-0.000165	0.002500	0.0024687	0.0024787	0.444	0.771	.6
10.	13.7	-10.0	-20.1	0.052335	0.007295	-0.000713	-0.001450	-0.000838	0.007213	0.0071897	0.0037747	0.446	0.770	.2
11.	14.0	-15.0	-23.2	0.025387	0.003815	0.000584	-0.002561	-0.000431	0.004761	0.0050870	0.0033365	0.449	0.772	.7
12.	13.7	-15.0	-21.7	0.014591	0.000863	0.000607	-0.000961	-0.000394	0.003127	0.0032820	0.0028876	0.443	0.771	.8
13.	10.0	-15.0	-20.4	0.002191	-0.002842	0.000703	-0.000596	-0.000844	0.001436	0.0015904	0.0028616	0.447	0.771	.8
14.	6.0	-5.0	-6.3	0.0057434	-0.000260	-0.000230	0.000140	-0.000322	0.001861	0.0019756	0.0029533	0.448	0.770	
15.	8.0	-5.0	-8.4	0.0368457	-0.002335	-0.0003045	0.000345	-0.0001264	0.0030227	0.0031285	0.0039098	0.448	0.770	
16.	10.0	-5.0	-10.3	0.0178450	-0.000627	-0.0003958	0.0003119	-0.0001461	0.005063	0.0051379	0.0050691	0.447	0.772	
17.	4.0	-5.0	-4.3	0.043344	-0.002716	-0.0001705	0.000167	-0.000104	0.001256	0.0014003	0.0025030	0.446	0.770	.1
18.	2.0	-5.0	-2.2	0.028589	-0.002693	-0.0001089	0.000175	-0.000268	0.000914	0.0010835	0.0022387	0.446	0.769	
19.	11.0	-5.0	-11.2	0.082471	0.000197	-0.0004063	0.000223	-0.0001780	0.006058	0.0060661	0.0055945	0.444	0.768	
20.	2.0	5.0	1.0	0.061420	-0.0009155	-0.0003272	0.000211	-0.000885	-0.000685	-0.0006993	0.0031625	0.445	0.770	
21.	5.0	5.0	2.8	0.047992	-0.0008195	-0.0002523	0.000215	-0.000635	-0.000791	-0.0006384	0.0029101	0.449	0.770	
22.	-2.0	5.0	4.0	0.033195	-0.0006723	-0.0001903	0.000155	-0.000406	-0.000409	-0.0002553	0.0026981	0.449	0.770	-.4
23.	4.0	5.0	-1.3	0.073613	-0.0009448	-0.0004024	0.000261	-0.000808	-0.0007090	0.0000638	0.0039916	0.448	0.770	-.5
24.	6.0	5.0	-3.5	0.058196	-0.0008971	-0.0004875	0.000350	-0.0001497	0.001462	0.0015349	0.0051759	0.449	0.770	.0
25.	8.0	5.0	-5.5	0.049197	-0.0007339	-0.0005514	0.000504	-0.0001247	0.003479	0.0036047	0.0064158	0.447	0.773	-.8
26.	10.0	5.0	-7.0	0.010347	-0.0006324	-0.0003510	0.000621	-0.0001389	0.005673	0.0056914	0.0080356	0.447	0.773	.4
27.	12.0	7.0	4.0	0.063952	-0.0012275	-0.0003570	0.000303	-0.0001096	0.001837	-0.0017735	0.0034745	0.446	0.772	-.5
28.	-2.0	7.0	6.0	0.047245	-0.0010323	-0.0002706	0.000151	-0.000777	-0.0001480	-0.00013959	0.0030814	0.446	0.771	.0
29.	2.0	7.0	2.0	0.070143	-0.0013201	-0.0004339	0.000113	-0.0001067	-0.0001566	-0.00014593	0.0041032	0.446	0.771	-.7

Table I - 17. Rotor No. 2.

TEST 310.0 RUN 12

44 FT. TAPERED TIP ROTOR V/OR = .46 M(1.0)(90) = .86

WIND AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	THETA	ALPHA SHAFT	ALPHA CONTROL	CLR	CXR	CYR	CMX	CMY	CMZ	CP	CPO	V/OR	M(1.0)(90)	A ₁₈
1.	8.0	-5.0	-12.0	0.042112	0.000632	-0.000775	-0.000409	-0.000512	0.003547	0.0035693	0.0031800	0.462	0.865	.4
2.	10.0	-5.0	-14.0	0.055047	0.001821	-0.001248	-0.000510	-0.001084	0.004943	0.0049690	0.0039595	0.464	0.862	.4
3.	12.0	-5.0	-15.6	0.064233	0.003308	-0.001719	-0.000655	-0.001216	0.006596	0.0066279	0.0048700	0.463	0.864	.3
4.	6.0	-5.0	-10.0	0.030752	-0.000370	-0.000552	-0.000325	-0.000427	0.002606	0.0026246	0.0027439	0.462	0.865	.4
5.	4.0	-5.0	-7.7	0.017345	-0.001358	-0.000264	-0.000241	-0.000429	0.001827	0.0018407	0.0024554	0.465	0.863	.4
6.	2.0	-5.0	-6.2	0.001750	-0.002306	-0.000004	-0.000168	-0.000092	0.001216	0.0012260	0.0022907	0.462	0.866	.2
7.	4.0	0.0	-4.5	0.048240	-0.003354	-0.001811	-0.000018	-0.000487	0.001433	0.0014333	0.0028566	0.462	0.865	
8.	6.0	0.0	-6.8	0.060819	-0.003221	-0.002618	0.000078	-0.000973	0.002186	0.0021862	0.0034834	0.465	0.861	
9.	8.0	0.0	-8.9	0.071453	-0.002525	-0.003268	0.000078	-0.000856	0.003611	0.0036113	0.0045046	0.464	0.862	
10.	10.0	0.0	-10.9	0.078060	-0.001221	-0.003679	0.000024	-0.001342	0.005454	0.0054543	0.0056902	0.465	0.864	
11.	2.0	0.0	-2.6	0.033921	-0.003243	-0.001368	0.000040	-0.000737	0.001049	0.0010490	0.0024960	0.466	0.864	
12.	0.0	0.0	-0.8	0.020528	-0.003110	-0.000742	-0.000055	-0.000643	0.000901	0.0009013	0.0023275	0.466	0.863	
13.	-2.0	0.0	0.5	0.006242	-0.002703	-0.000535	0.000070	-0.000366	0.001048	0.0010477	0.0023029	0.465	0.862	
14.	0.0	2.0	0.5	0.034769	-0.004748	-0.001552	0.000054	-0.000597	0.000400	0.0004019	0.0025496	0.466	0.861	
15.	-2.0	2.0	2.0	0.019580	-0.003850	-0.000923	0.000125	-0.000586	0.000637	0.0006415	0.0024077	0.464	0.864	
16.	2.0	2.0	-1.5	0.048690	-0.005373	-0.002278	0.000144	-0.000717	0.000470	0.0004749	0.0028610	0.468	0.858	
17.	4.0	2.0	-3.7	0.061234	-0.005628	-0.002973	0.000234	-0.000992	0.000918	0.0009259	0.0033336	0.464	0.864	
18.	4.0	5.0	-1.8	0.079080	-0.009620	-0.004812	0.000315	-0.000831	0.000423	0.0004489	0.0046117	0.468	0.857	
19.	6.0	5.0	-4.0	0.086294	-0.008614	-0.005320	0.000550	-0.000985	0.002002	0.0020426	0.0056678	0.468	0.857	
20.	2.0	5.0	0.3	0.066916	-0.009601	-0.003912	0.000179	-0.000900	-0.000588	-0.0005697	0.0036768	0.468	0.856	
21.	0.0	5.0	2.1	0.054723	-0.008751	-0.003071	0.000083	-0.000622	-0.000806	-0.0007952	0.0031401	0.468	0.856	
22.	-2.0	5.0	4.0	0.039578	-0.007233	-0.002374	0.000106	-0.000559	-0.000519	-0.0005083	0.0027835	0.467	0.862	
23.	10.0	-10.0	-16.8	0.027762	0.001798	-0.000005	-0.000738	-0.000466	0.004120	0.0041852	0.0033086	0.464	0.864	.8
24.	8.0	-10.0	-15.3	0.014579	-0.000450	0.000120	-0.000599	-0.000362	0.002723	0.0027858	0.0029826	0.463	0.863	.7
25.	6.0	-10.0	-12.9	0.002109	-0.002465	0.000143	-0.000310	-0.000239	0.001524	0.0015549	0.0026931	0.462	0.864	.7
26.	12.0	-10.0	-18.3	0.039514	0.003995	-0.000296	-0.000731	-0.000583	0.005620	0.0056620	0.0037220	0.464	0.863	.8
27.	13.7	-10.0	-20.3	0.050493	0.006411	-0.000692	-0.001307	-0.000705	0.007347	0.0074625	0.0043477	0.464	0.863	.7
28.	13.7	-12.0	-21.5	0.039784	0.005450	-0.000384	-0.001353	-0.000580	0.006617	0.0067538	0.0041380	0.464	0.863	.9
29.	12.0	-12.0	-20.0	0.028883	0.002723	-0.000203	-0.000900	-0.000897	0.004998	0.0050761	0.0037710	0.463	0.864	.9
30.	10.0	-12.0	-18.3	0.016342	0.000193	-0.000020	-0.000687	-0.000260	0.003369	0.0034378	0.0033340	0.463	0.863	.9
31.	13.7	-15.0	-23.3	0.024399	0.002945	0.000090	-0.001421	-0.000722	0.005133	0.0053257	0.0039278	0.464	0.864	.9
32.	12.0	-15.0	-21.9	0.012386	-0.000433	0.000139	-0.000870	-0.000472	0.003232	0.0033469	0.0035397	0.464	0.862	1.1
33.	10.0	-15.0	-20.4	0.000799	-0.003389	-0.000034	-0.000384	-0.000530	0.001681	0.0017230	0.0032886	0.462	0.868	1.0

ROTOR SCALE DATA * PROGRAM LA3530 * WIND AXES

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TIME 854.40

Table I - 18. Rotor No. 2.

TEST 310.0 RUN 11

44 FT. TAPERED TIP ROTOR V/OR = .45 M(1.0)(90) = .90

WIND AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	THETA	ALPHA SHAFT	ALPHA CONTROL	CLR	CXR	CYR	CMX	CMY	CMZ	CP	CPO	V/OR	M(1.0)(90)	A ₁₈
1.	6.0	-5.0	-9.9	0.030915	-0.000277	-0.000785	-0.000140	-0.000622	0.002660	0.0026625	0.0027315	0.445	0.900	.3
2.	8.0	-5.0	-11.9	0.045028	0.000870	-0.001154	-0.000266	-0.000894	0.003698	0.0037076	0.0032047	0.445	0.901	.4
3.	10.0	-5.0	-13.9	0.057773	0.002382	-0.001619	-0.000533	-0.000992	0.005229	0.0052551	0.0040013	0.447	0.897	.2
4.	12.0	-5.0	-15.5	0.066193	0.003740	-0.002060	-0.000575	-0.001229	0.006724	0.0067484	0.0048325	0.446	0.899	.3
5.	13.0	-5.0	-16.4	0.068578	0.005170	-0.002315	-0.000673	-0.001003	0.007508	0.0075383	0.0049439	0.451	0.906	.1
6.	13.0	-5.0	-16.4	0.068780	0.004408	-0.002277	-0.000691	-0.001153	0.007515	0.0075462	0.0053269	0.442	0.900	.1
7.	4.0	-5.0	-7.9	0.017890	-0.001385	-0.000538	-0.000222	-0.000512	0.001837	0.0018497	0.0024400	0.439	0.900	.3
8.	2.0	-5.0	-6.0	0.003947	-0.002349	-0.000392	-0.000041	-0.000435	0.001251	0.0012496	0.0022807	0.439	0.898	.2
9.	2.0	0.0	-2.6	0.033034	-0.003844	-0.001544	0.000090	-0.001046	0.001098	0.0010981	0.0027372	0.443	0.898	.1
10.	4.0	0.0	-4.6	0.048232	-0.003731	-0.002289	0.000234	-0.000822	0.001493	0.0014929	0.0030181	0.444	0.900	
11.	6.0	0.0	-6.6	0.061392	-0.003614	-0.002827	0.000073	-0.000961	0.002386	0.0023863	0.0037850	0.446	0.898	
12.	8.0	0.0	-8.8	0.070868	-0.002786	-0.003527	0.000142	-0.001227	0.003811	0.0038110	0.0047665	0.445	0.897	
13.	10.0	0.0	-10.8	0.078276	-0.001353	-0.003850	0.000028	-0.002037	0.005775	0.0057746	0.0060310	0.446	0.896	
14.	0.0	0.0	-0.9	0.019831	-0.003758	-0.001036	0.000120	-0.000854	0.000970	0.0009703	0.0026184	0.445	0.899	.1
15.	-2.0	0.0	0.6	0.005797	-0.003457	-0.000656	0.092029	-0.000729	0.001080	0.0010803	0.0026221	0.447	0.895	.1
16.	2.0	2.0	-1.4	0.049390	-0.006664	-0.002192	0.000121	-0.001323	0.000478	0.0004817	0.0039093	0.445	0.895	
17.	4.0	2.0	-3.6	0.062949	-0.006718	-0.003137	0.000224	-0.001308	0.001028	0.0010352	0.0037998	0.445	0.896	
18.	0.0	2.0	0.5	0.034283	-0.005984	-0.001636	0.000042	-0.001262	0.000485	0.0004865	0.0030953	0.447	0.894	
19.	-2.0	2.0	2.1	0.015937	-0.005252	-0.001216	-0.000710	-0.004135	0.000634	0.0006085	0.0029382	0.446	0.895	
20.	-2.0	5.0	4.1	0.042758	-0.009036	-0.002332	0.000146	-0.001570	-0.000595	-0.0005797	0.0033647	0.448	0.895	
21.	0.0	5.0	2.4	0.047327	-0.010316	-0.003152	0.000071	-0.003754	-0.000770	-0.0007607	0.0037393	0.448	0.894	
22.	2.0	5.0	0.5	0.069948	-0.011536	-0.003867	0.000096	-0.001839	-0.000577	-0.0005667	0.0043149	0.447	0.893	
23.	4.0	5.0	-1.7	0.081038	-0.011081	-0.004826	0.000378	-0.001671	0.000510	0.0005406	0.0051259	0.447	0.894	
24.	8.0	-10.0	-15.1	0.017404	0.000041	0.000140	-0.000506	-0.000259	0.002874	0.0029178	0.0028822	0.450	0.893	.6
25.	6.0	-10.0	-13.2	0.004177	-0.002296	0.000035	-0.000257	-0.000510	0.001631	0.0016512	0.0026805	0.449	0.892	.6
26.	10.0	-10.0	-16.8	0.031380	0.002419	0.000009	-0.000837	-0.000594	0.004374	0.0044527	0.0033154	0.447	0.895	
27.	12.0	-10.0	-18.5	0.043406	0.004764	-0.000195	-0.001011	-0.000768	0.005873	0.0059597	0.0037296	0.446	0.899	.8
28.	13.7	-10.0	-20.3	0.047177	0.007281	-0.000478	-0.002452	-0.002625	0.007614	0.0079245	0.0045279	0.449	0.896	.5
29.	13.7	-12.0	-21.4	0.040569	0.005532	-0.000340	-0.001357	0.000287	0.007029	0.0071578	0.0046045	0.445	0.897	.8
30.	12.0	-12.0	-19.8	0.032481	0.003865	-0.000079	-0.001247	-0.000466	0.005262	0.0054065	0.0036095	0.450	0.887	.7
31.	10.0	-12.0	-18.0	0.021134	0.001315	0.000222	-0.000802	-0.000745	0.003684	0.0037706	0.0031525	0.451	0.888	.9
32.	13.7	-15.0	-23.2	0.029179	0.004589	0.000588	-0.001734	-0.001043	0.005508	0.0057694	0.0036791	0.445	0.897	1.0
33.	12.0	-15.0	-21.7	0.017472	0.001315	0.000666	-0.001386	-0.000756	0.003760	0.0039904	0.0033791	0.452	0.887	1.0
34.	10.0	-15.0	-20.1	0.004897	-0.002100	0.000561	-0.001582	-0.000729	0.002008	0.0023486	0.0032939	0.451	0.886	.9

Table I - 19. Rotor No. 2.

TEST 310.0 RUN 1:

44 FT. TAPERED TIP ROTOR V/CR = .51 M(1.0)(90) = .81

WIND AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	THETA	ALPHA SHAFT	ALPHA CENTRL	CLR	CXR	CYR	CMX	CMY	CMZ	CP	CPO	V/CR M(1.0)(90)	A ₁	
1.	6.0	-5.0	-9.6	0.022667	-0.002319	-0.001946	-0.000715	-0.000537	0.002409	0.002408	0.0034135	0.514	0.805	.4
2.	6.0	-5.0	-6.8	0.052422	-0.004565	-0.002712	0.000218	-0.001374	0.002079	0.0020787	0.0043092	0.518	0.802	.1
3.	6.0	-5.0	-9.0	0.062578	-0.004779	-0.003698	0.000253	-0.001068	0.003304	0.0033042	0.0052291	0.519	0.802	.0
4.	4.0	0.0	-4.9	0.038421	-0.004191	-0.001805	-0.000078	-0.001078	0.001393	0.0013932	0.0034628	0.511	0.809	.2
5.	2.0	0.0	-2.8	0.025717	-0.003992	-0.002232	0.001218	-0.001040	0.000698	0.0006978	0.0027096	0.512	0.808	.1
6.	2.0	5.0	2.2	0.063394	-0.001822	-0.003824	0.000273	-0.002681	-0.000572	-0.0005522	0.0048861	0.521	0.799	.1
7.	0.0	5.0	2.1	0.051865	-0.009857	-0.002415	-0.000931	-0.001806	-0.000868	-0.0009431	0.0040640	0.521	0.799	.1
8.	-2.0	5.0	4.1	0.039291	-0.008956	-0.001981	-0.000074	-0.002073	-0.000721	-0.0007247	0.0037819	0.512	0.809	.1
9.	8.0	-5.0	-11.8	0.034465	-0.001424	-0.001367	-0.000033	-0.001366	0.003326	0.0033167	0.0039870	0.512	0.808	.6
10.	10.0	-5.0	-13.7	0.045155	-0.000521	-0.001683	-0.000322	-0.001681	0.004409	0.0044203	0.0045834	0.508	0.811	.5
11.	11.0	-10.0	-16.8	0.018796	-0.001034	-0.000526	-0.000347	-0.000688	0.003547	0.0035537	0.0040631	0.509	0.810	.8
12.	12.0	-10.0	-18.5	0.029770	0.000892	-0.000625	-0.001044	-0.000750	0.004935	0.0049413	0.0045432	0.509	0.812	.9
13.	13.7	-10.0	-21.4	0.039634	0.002499	-0.000828	-0.000695	-0.001959	0.006449	0.0064716	0.0051189	0.510	0.809	.7
14.	13.7	-12.0	-21.5	0.029564	0.001489	-0.000210	-0.001360	-0.001734	0.005536	0.0056983	0.0048936	0.512	0.810	.9
15.	12.0	-8.0	-17.4	0.041251	0.001331	-0.001075	-0.001073	-0.001123	0.005371	0.0054686	0.0047975	0.512	0.809	.8
16.	10.0	-8.0	-15.7	0.030722	-0.001031	-0.000931	-0.000248	-0.000745	0.004061	0.0040563	0.0040254	0.510	0.808	.8
17.	8.0	-8.0	-13.1	0.017003	-0.001686	-0.000720	-0.000056	-0.000711	0.002808	0.0027890	0.0036351	0.510	0.808	.8
18.	8.0	-3.0	-10.3	0.045486	-0.002271	-0.002260	-0.000130	-0.001549	0.003418	0.0034198	0.0044805	0.512	0.809	.6
19.	6.0	-3.0	-9.8	0.033009	-0.002384	-0.001793	0.000227	-0.001625	0.002457	0.0024422	0.0036042	0.510	0.810	.5
20.	4.0	-3.0	-6.0	0.022859	-0.002774	-0.001762	0.000423	-0.000729	0.001865	0.0018396	0.0032283	0.510	0.810	.4
21.	4.0	2.0	-3.7	0.053653	-0.001649	-0.001366	-0.001943	-0.001497	0.002153	0.0021807	0.0052496	0.516	0.811	.1
22.	2.0	2.0	-1.6	0.043028	-0.0016145	-0.0012170	0.000027	-0.001077	0.001549	0.0015495	0.0036067	0.512	0.808	.1
23.	6.0	0.0	-5.3	0.069472	-0.0006759	-0.000938	0.000035	-0.001869	0.001848	0.0018577	0.0050986	0.511	0.810	.1

Table I - 19. Rotor No. 2.

TEST 310.0 RUN 10

44 FT. TAPERED TIP RCTCR V/CR = .51 M(1.0)(90) = .81

WIND AXES COEFFICIENTS, BASED ON RCTCR BLADE AREA AND RCTCR TIP SPEED

PT.	THETA	ALPHA SHAFT	ALPHA CONTROL	CLR	CXR	CYR	CMX	CMY	CMZ	CP	CPO	V/CR	M(1.0)(90)	A _{1s}
1.	6.0	-5.0	-9.6	0.022667	-0.012919	-0.001946	-0.000915	-0.000537	0.002409	0.0024008	0.0034135	0.514	0.805	.4
2.	6.0	0.0	-6.8	0.052422	-0.004565	-0.002712	0.000218	-0.001374	0.002079	0.0020787	0.0043092	0.518	0.802	.1
3.	8.0	0.0	-9.0	0.062578	-0.004079	-0.003698	0.002253	-0.001068	0.003304	0.0033042	0.0052291	0.519	0.802	.0
4.	4.0	0.0	-4.9	0.038421	-0.004191	-0.001809	-0.000078	-0.001078	0.001353	0.0013932	0.0034628	0.511	0.809	.2
5.	2.0	0.0	-2.8	0.025717	-0.003992	-0.002232	0.001218	-0.001840	0.000698	0.0006978	0.0027096	0.512	0.808	.1
6.	2.0	5.0	0.2	0.063394	-0.010822	-0.003824	0.000273	-0.002681	-0.000572	-0.0005522	0.0048861	0.521	0.799	
7.	0.0	5.0	2.1	0.051865	-0.009857	-0.002415	-0.000911	-0.001806	-0.000868	-0.0009431	0.0040640	0.521	0.799	
8.	-2.0	5.0	4.1	0.039291	-0.008956	-0.001981	-0.000974	-0.002073	-0.000721	-0.0007247	0.0037819	0.512	0.809	
9.	8.0	-5.0	-11.8	0.034465	-0.011424	-0.001367	-0.000033	-0.001366	0.003326	0.0033167	0.0039870	0.512	0.808	.6
10.	10.0	-5.0	-13.7	0.045155	-0.007521	-0.001683	-0.000322	-0.001601	0.004409	0.0044203	0.0045834	0.508	0.811	.5
11.	10.0	-1.0	-16.8	0.018796	-0.011034	-0.001526	-0.000347	-0.000668	0.003547	0.0035537	0.0040631	0.509	0.810	.8
12.	12.0	-1.0	-18.5	0.029770	-0.010892	-0.001625	-0.001244	-0.000750	0.004935	0.0051413	0.0045432	0.509	0.812	.9
13.	13.7	-10.0	-20.4	0.039634	-0.002499	-0.001828	-0.000695	-0.001959	0.006449	0.0064716	0.0051189	0.510	0.809	.7
14.	13.7	-12.0	-21.5	0.029564	-0.001489	-0.002032	-0.001360	-0.001734	0.005536	0.0056983	0.0048936	0.512	0.810	.9
15.	12.0	-8.0	-17.4	0.041251	-0.001331	-0.001975	-0.001978	-0.001123	0.005371	0.0054686	0.0047075	0.512	0.809	.8
16.	10.0	-8.0	-15.7	0.030722	-0.001031	-0.001931	-0.000248	-0.000745	0.004061	0.0040563	0.0040254	0.510	0.808	.8
17.	8.0	-8.0	-13.0	0.017003	-0.001686	-0.000720	-0.000056	-0.000711	0.002808	0.0027897	0.0036351	0.510	0.808	.8
18.	8.0	-3.0	-10.8	0.045488	-0.002271	-0.002262	-0.000130	-0.001549	0.003418	0.0034198	0.0044805	0.512	0.809	.6
19.	6.0	-3.0	-3.8	0.033009	-0.002384	-0.001793	0.000227	-0.001625	0.002457	0.0024422	0.0036142	0.510	0.810	.5
20.	4.0	-3.0	-6.6	0.022859	-0.002774	-0.001762	0.000743	-0.000729	0.001865	0.0018396	0.0032283	0.510	0.810	.4
21.	4.0	2.0	-3.7	0.053653	-0.006409	-0.001368	-0.001943	-0.001497	0.002150	0.0020807	0.0052496	0.516	0.811	
22.	2.0	2.0	-1.6	0.043028	-0.0016145	-0.002177	0.000027	-0.001097	0.000549	0.0005495	0.0036067	0.512	0.808	
23.	6.0	2.0	-5.8	0.069472	-0.006759	-0.003538	0.000205	-0.001869	0.001848	0.0018577	0.0050986	0.511	0.810	

Table I-19. (Concluded)

TEST 310.0 RUN 14

44 FT. TAPERED TIP ROTOR V/OR = .51 M(1.0)(90) = .81

WIND AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	THETA	ALPHA SHAFT	ALPHA CONTROL	CLR	CXR	CYR	CMX	CMY	CMZ	CP	CPO	V/OR	M(1.0)(90)	A _{1s}
1.	2.0	-2.0	-4.0	0.015670	-0.002709	-0.000687	-0.000078	-0.000283	0.001275	0.0012825	0.0026617	0.514	0.805	.3
2.	2.0	-2.0	-3.0	0.026319	-0.003368	-0.000901	-0.000069	-0.000609	0.001129	0.0011118	0.0028208	0.517	0.803	.2
3.	2.0	0.0	-1.0	0.048181	-0.006329	-0.001738	-0.000017	-0.001039	0.000157	0.0002447	0.0033858	0.514	0.805	.2
4.	2.0	2.0	1.0	0.076086	-0.012457	-0.002878	0.000059	-0.001250	-0.001070	-0.0009358	0.0052405	0.518	0.799	.2
5.	0.0	0.0	-1.0	0.016944	-0.003288	-0.000729	-0.000041	-0.000148	0.000999	0.0009423	0.0026076	0.511	0.806	.2
6.	0.0	2.0	1.0	0.038727	-0.006067	-0.001637	-0.000120	-0.000629	0.000078	0.0001221	0.0031617	0.513	0.805	.2
7.	0.0	4.0	3.0	0.062579	-0.011672	-0.002527	-0.000223	-0.001235	-0.001653	-0.0014673	0.0043300	0.513	0.805	.2
8.	0.0	6.0	5.0	0.085738	-0.018666	-0.003391	-0.000281	-0.001471	-0.003029	-0.0026958	0.0065611	0.515	0.805	.2
9.	-2.0	6.0	5.0	0.050839	-0.010246	-0.002825	-0.000192	-0.000564	-0.001529	-0.0013806	0.0037603	0.514	0.804	.1
10.	-2.0	4.0	3.0	0.028585	-0.005644	-0.001678	-0.000077	-0.000571	0.000122	0.0001206	0.0029580	0.510	0.809	.1
11.	4.0	0.0	-1.0	0.087023	-0.012557	-0.003416	0.000492	-0.001488	0.000251	0.0003019	0.0063242	0.510	0.808	.1
12.	4.0	-2.0	-3.0	0.066455	-0.007678	-0.002664	0.000053	-0.001630	0.000649	0.0006424	0.0043658	0.513	0.804	.1
13.	4.0	-4.0	-5.0	0.041972	-0.003379	-0.001503	-0.000091	-0.000751	0.001491	0.0013890	0.0030255	0.510	0.808	.1

For the following data points
a_{1s} and/or b_{1s} ≠ 0° ± .2°

PT.	THETA	ALPHA SHAFT	a _{1s}	b _{1s}
1	2	-2	0	0
2	2	-2	1.4	0
3	2	0	2.9	0
4	2	2	4.8	0
5	0	0	0	0
6	0	2	1.4	0
7	0	4	2.9	0
8	0	6	4.3	0
9	-2	6	.8	0
10	-2	4	-.7	0
11	4	0	6.7	0
12	4	-2	5.3	0
13	4	-4	3.4	0

ROTOR SCALE DATA * PROGRAM LA3530 * WIND AXES

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TIME 854.40

Table I - 20. Rotor No. 2.

TEST 310.0 RUN 15

44 FT. TAPERED TIP ROTOR V/OR = .52 M(1.0)(90) = .81

WIND AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	THETA	ALPHA SHAFT	ALPHA CONTROL	CLR	CXR	CYR	CMX	CMY	CMZ	CP	CPO	V/OR	M(1.0)(90)	A ₁₈
1.	6.0	-5.0	-10.1	0.023890	-0.001968	-0.000595	-0.000408	-0.000715	0.002443	0.0022069	0.0032143	0.526	0.811	.5
2.	8.0	-5.0	-12.0	0.036611	-0.001253	-0.001154	-0.000312	-0.001052	0.003290	0.0029701	0.0035596	0.522	0.814	.5
3.	10.0	-5.0	-14.1	0.047761	-0.000502	-0.001646	-0.000465	-0.001049	0.004600	0.0040518	0.0042038	0.523	0.812	.4
4.	12.0	-5.0	-15.8	0.055655	0.000587	-0.002035	-0.000669	-0.001370	0.005998	0.0053004	0.0048435	0.522	0.812	.4
5.	12.0	-7.0	-17.0	0.046380	0.000987	-0.001258	-0.000707	-0.000993	0.005675	0.0049301	0.0043093	0.524	0.810	.7
6.	12.0	-10.0	-18.6	0.030306	0.000467	-0.000419	-0.000933	-0.000729	0.004777	0.0041751	0.0038868	0.522	0.811	1.0
7.	10.0	-7.0	-15.3	0.037174	0.000003	-0.000904	-0.000544	-0.000655	0.004331	0.0037786	0.0037098	0.521	0.811	.9
8.	8.0	-7.0	-13.3	0.026670	-0.001163	-0.000735	-0.000757	-0.000810	0.003183	0.0028128	0.0033849	0.521	0.810	.8
9.	8.0	0.0	-9.3	0.064825	-0.003386	-0.003196	-0.000070	-0.001430	0.003407	0.0030012	0.0045620	0.521	0.809	.2
10.	6.0	0.0	-7.1	0.055322	-0.004117	-0.002799	-0.000056	-0.001243	0.002016	0.0018455	0.0038420	0.521	0.814	.3
11.	4.0	0.0	-4.9	0.044657	-0.004084	-0.002104	-0.000051	-0.000709	0.001354	0.0012606	0.0033063	0.524	0.809	.2
12.	2.0	0.0	-2.9	0.032504	-0.003744	-0.001441	-0.000026	-0.000600	0.001047	0.0009530	0.0028641	0.524	0.809	.2
13.	2.0	2.0	-1.6	0.046001	-0.005610	-0.002286	0.000028	-0.000686	0.000484	0.0004264	0.0032517	0.522	0.812	.1
14.	0.0	2.0	0.2	0.033584	-0.005049	-0.001713	0.000075	-0.000594	0.000430	0.0003959	0.0029725	0.521	0.811	.1
15.	0.0	5.0	2.0	0.053466	-0.008962	-0.003315	-0.000010	-0.000626	-0.000948	-0.0007831	0.0037155	0.518	0.814	.1
16.	0.0	7.0	3.2	0.067547	-0.012421	-0.004557	-0.000104	-0.000851	-0.001932	-0.0016774	0.0045585	0.520	0.810	
17.	2.0	5.0	0.2	0.063885	-0.009539	-0.004078	-0.000032	-0.000820	-0.000716	-0.0005722	0.0041648	0.518	0.814	
18.	4.0	5.0	-2.1	0.075076	-0.009704	-0.005293	0.000311	-0.001029	0.000316	0.0002781	0.0050921	0.524	0.807	
19.	4.0	2.0	-3.7	0.055160	-0.005478	-0.003134	-0.000091	-0.000802	0.001007	0.0009034	0.0036444	0.527	0.805	
20.	6.0	2.0	-5.9	0.065907	-0.005580	-0.003932	0.000256	-0.001247	0.001926	0.0017418	0.0044419	0.522	0.810	
21.	6.0	-3.0	-8.8	0.038569	-0.002215	-0.001499	-0.000058	-0.000776	0.002470	0.0021692	0.0032504	0.521	0.809	.4
22.	4.0	-3.0	-6.8	0.025216	-0.004019	-0.134523	0.189577	-0.002960	0.051591	0.0016847	0.0037697	0.526	0.804	.5
23.	8.0	-3.0	-10.9	0.049530	-0.001816	-0.002005	-0.000143	-0.001167	0.003293	0.0029619	0.0037843	0.519	0.813	.5
24.	10.0	-3.0	-12.8	0.056892	-0.001078	-0.002600	-0.000176	-0.001599	0.004672	0.0040871	0.0044885	0.519	0.812	.4

Table I - 21. Rotor No. 3.

TEST 310.0 RUN 19

34 FT. 0012 ROTOR VZOR = .5/ M(1.0)(90) = .63

WIND AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

RT.	THETA	ALPHA SHAFT	ALPHA CONTROL	CLR	QXR	CYR	CMX	CMY	CMZ	CP	CPQ	VZOR M(1.0)(90)	A _s	
1.	8.0	-2.0	-9.6	0.046128	-0.002715	-0.002206	-0.000310	0.006463	0.003015	0.0028436	0.0040947	0.511	0.648	.0
2.	10.0	-2.0	-11.6	0.056642	-0.002633	-0.002827	-0.000117	0.006402	0.003963	0.0037217	0.0048651	0.512	0.647	.0
3.	6.0	-2.0	-7.8	0.037260	-0.002936	-0.002568	0.001134	0.006751	0.002707	0.0022558	0.0036767	0.514	0.644	.0
4.	4.0	-2.0	-5.8	0.023637	-0.002850	-0.001259	-0.000291	0.006514	0.001788	0.0017716	0.0031824	0.508	0.643	.0
5.	2.0	-2.0	-3.7	0.012685	-0.003122	-0.000668	0.000766	0.007035	0.001333	0.0013811	0.0029683	0.512	0.644	.4
6.	0.0	-2.0	-2.0	0.000790	-0.003366	-0.000252	-0.000120	0.006589	0.001123	0.0011443	0.0028651	0.511	0.644	.5
7.	0.0	2.0	0.7	0.023335	-0.004688	-0.002350	0.001438	0.006673	0.001103	0.0006763	0.0030295	0.512	0.641	.0
8.	2.0	2.0	-1.2	0.036099	-0.005268	-0.002182	-0.000029	0.006361	0.000790	0.0006718	0.0032641	0.508	0.642	.0
9.	4.0	2.0	-3.3	0.048393	-0.005751	-0.003036	0.000347	0.006589	0.001220	0.0010761	0.0038726	0.512	0.641	.0
10.	6.0	2.0	-5.5	0.058285	-0.006364	-0.003638	0.000243	0.005049	0.001762	0.0016368	0.0046639	0.511	0.640	.0
11.	8.0	2.0	-7.2	0.068211	-0.006441	-0.004321	0.000155	0.005222	0.002674	0.0024352	0.0056209	0.511	0.640	.0
12.	10.0	2.0	-8.8	0.078962	-0.006637	-0.005278	0.000468	0.004484	0.004177	0.0037196	0.0067122	0.511	0.639	.0
13.	10.0	0.0	-10.2	0.068045	-0.004457	-0.003828	-0.000121	0.005080	0.004008	0.0036887	0.0058594	0.509	0.641	.0
14.	12.0	-2.0	-15.7	0.068407	-0.002004	-0.003666	-0.000338	0.005353	0.005772	0.0051166	0.0058953	0.509	0.641	.0
15.	12.0	-4.0	-14.6	0.056992	-0.000886	-0.002757	-0.000394	0.005471	0.005433	0.0049261	0.0051658	0.507	0.643	.0
16.	10.0	-4.0	-12.7	0.046899	-0.001340	-0.002082	-0.000301	0.005905	0.004283	0.0038069	0.0043643	0.512	0.639	.0
17.	8.0	-4.0	-11.1	0.036428	-0.001771	-0.001515	-0.000294	0.005875	0.003276	0.0029804	0.0038068	0.510	0.641	.0
18.	6.0	-4.0	-9.1	0.025109	-0.002136	-0.001145	0.000013	0.006067	0.002545	0.0022832	0.0033298	0.509	0.638	.0
19.	4.0	-4.0	-7.2	0.012107	-0.002654	-0.000585	-0.000395	0.006091	0.001744	0.0017114	0.0030488	0.507	0.639	.0
20.	6.0	-6.0	-10.9	0.012714	-0.002425	-0.000451	-0.000327	0.005962	0.002109	0.0020298	0.0032499	0.507	0.639	.0
21.	8.0	-6.0	-12.1	0.025259	-0.001573	-0.000874	-0.000402	0.005629	0.003075	0.0028311	0.0035893	0.508	0.639	.0
22.	10.0	-6.0	-13.8	0.034121	-0.000881	-0.001108	-0.000448	0.005533	0.004087	0.0037397	0.0041153	0.511	0.638	.0
23.	12.0	-6.0	-15.8	0.047435	0.000117	-0.001865	-0.000652	0.005280	0.005531	0.0050262	0.0048217	0.510	0.637	.0
24.	14.0	-6.0	-17.8	0.061678	0.001358	-0.001935	-0.001060	0.005154	0.007227	0.0066486	0.0057088	0.511	0.637	.0
25.	8.0	0.0	-8.5	0.056982	-0.004081	-0.003142	0.000168	0.005772	0.002922	0.0026991	0.0045754	0.511	0.637	.0
26.	6.0	0.0	-6.7	0.046701	-0.003978	-0.002521	0.000051	0.006070	0.002210	0.0020543	0.0039432	0.510	0.637	.0
27.	4.0	0.0	-4.7	0.035182	-0.003859	-0.001982	-0.000195	0.005902	0.001823	0.0014904	0.0033797	0.510	0.637	.0
28.	2.0	0.0	-2.5	0.025141	-0.003805	-0.001369	-0.000088	0.006094	0.001162	0.0010876	0.0029890	0.510	0.637	.0
29.	0.0	0.0	-0.5	0.012107	-0.003608	-0.000774	-0.000070	0.006164	0.001023	0.0009986	0.0028209	0.508	0.638	.0
30.	0.0	4.0	2.0	0.036310	-0.007106	-0.002292	0.000098	0.005563	0.000824	0.0000400	0.0035655	0.508	0.638	.0
31.	0.0	6.0	3.1	0.046460	-0.009814	-0.003002	-0.000195	0.005651	-0.000824	-0.0006863	0.0042112	0.513	0.637	.0
32.	2.0	6.0	1.5	0.058647	-0.010736	-0.003858	0.000105	0.006239	-0.000800	-0.0006055	0.0046832	0.513	0.637	.0
33.	2.0	4.0	0.1	0.047105	-0.007965	-0.002766	-0.000107	0.005517	0.000187	0.0001201	0.0040490	0.511	0.639	.0
34.	4.0	4.0	-2.1	0.059128	-0.008394	-0.003687	-0.000014	0.006040	0.000628	0.0004412	0.0045126	0.512	0.639	.6
35.	4.0	6.0	-0.9	0.068953	-0.010935	-0.004547	0.000299	0.005817	0.000035	0.0000398	0.0053060	0.510	0.641	.0
36.	6.0	6.0	-2.9	0.080700	-0.011746	-0.005350	0.000193	0.005714	0.000999	0.0008493	0.0064657	0.514	0.637	.0
37.	6.0	4.0	-4.2	0.070018	-0.008894	-0.004576	0.000119	0.005874	0.001524	0.0013347	0.0055917	0.514	0.637	.0
38.	6.0	8.0	-1.7	0.092874	-0.015077	-0.006294	0.000569	0.005636	0.000548	0.0005257	0.0077084	0.513	0.637	.0
39.	4.0	8.0	0.2	0.083009	-0.014777	-0.005358	0.000177	0.005779	-0.000692	-0.0006075	0.0064895	0.510	0.635	.0
40.	4.0	10.0	1.5	0.095287	-0.018864	-0.006016	0.000059	0.005776	-0.001515	-0.0011745	0.0078669	0.510	0.635	.0

Table I-21. (Concluded)

TEST 310.0 RUN 24

34 FT. 0012 ROTOR V/OR = .51 M(1.0)(90) = .63

WIND AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	THETA	ALPHA SHAFT	ALPHA CONTROL	CLR	CXR	CYR	CMX	CMY	CMZ	CP	CPO	V/OR	M(1.0)(90)	A _{1s}
36.	2.0	-4.0	-5.2	0.002667	-0.003105	-0.000724	-0.000249	0.004948	0.001406	0.0012160	0.0027834	0.505	0.621	...
37.	4.0	-6.0	-8.6	0.003011	-0.003077	-0.000607	-0.000283	0.004956	0.001504	0.0013768	0.0029309	0.505	0.623	.1
38.	6.0	10.0	-0.5	0.101994	-0.019034	-0.005766	0.000315	0.003558	0.000092	0.0002915	0.0091958	0.503	0.623	0
39.	8.0	8.0	-3.6	0.097067	-0.014866	-0.004902	0.000519	0.004210	0.002034	0.0017908	0.0086799	0.505	0.623	.1
40.	8.0	6.0	-4.8	0.087236	-0.011638	-0.004895	0.000543	0.004307	0.002198	0.0018743	0.0072623	0.505	0.623	0
41.	8.0	4.0	-6.1	0.080157	-0.009377	-0.004952	0.000186	0.004033	0.002365	0.0019577	0.0062838	0.506	0.624	0
42.	10.0	4.0	-7.5	0.087047	-0.008878	-0.004439	0.000536	0.004201	0.003950	0.0033742	0.0073812	0.507	0.624	.2
43.	12.0	0.0	-12.1	0.078739	-0.003302	-0.003746	0.000694	0.003920	0.005844	0.0051221	0.0063816	0.504	0.623	.5

For the following data points

a_{1s} and/or b_{1s} ≠ 0° ± .2°

PT.	THETA	ALPHA SHAFT	a _{1s}	b _{1s}
39	8	8	0	.7
40	8	6	0	.4
42	10	4	0	.6
43	12	0	0	.6

ROTOR SCALE DATA * PROGRAM LA3530 * WIND AXES

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TIME 785.85

Table I - 22. Rotor No. 3.

TEST 310.0 RUN 23

34 FT. 0012 ROTOR VZOR = .65 M(1.0)(90) = .54

WIND AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

RT.	THETA	ALPHA SHAFT	ALPHA CONTROL	CLR	CXR	CYR	CMX	CMY	CMZ	CP	CPO	VZOR	M(1.0)(90)	A _T
1.	0.0	0.0	-0.9	0.010147	-0.004985	-0.001162	-0.000035	0.009854	0.001320	0.0011998	0.0044359	0.650	0.540	-1.0
2.	0.0	2.0	-0.0	0.022483	-0.006042	-0.001985	-0.000114	0.010279	0.000875	0.0007986	0.0047150	0.652	0.541	-.7
3.	0.0	4.0	0.9	0.037459	-0.008408	-0.002577	-0.000581	0.010399	0.000057	0.0001331	0.0055556	0.653	0.542	-1.4
4.	0.0	6.0	2.0	0.047077	-0.010030	-0.003570	-0.000573	0.010700	-0.000684	-0.0006656	0.0057831	0.654	0.542	-1.4
5.	0.0	7.0	2.4	0.051923	-0.012493	-0.004197	-0.000875	0.007905	-0.001327	-0.0010346	0.0069161	0.650	0.540	-1.1
6.	0.0	8.0	3.0	0.060443	-0.014482	-0.004864	-0.000393	0.007609	-0.002008	-0.0015968	0.0076118	0.649	0.540	-1.0
7.	0.0	5.0	1.6	0.040322	-0.009311	-0.003115	-0.000557	0.008926	-0.000149	-0.0002661	0.0057073	0.650	0.541	-1.0
8.	2.0	5.0	-0.5	0.046860	-0.010144	-0.003810	-0.000834	0.008776	0.000049	-0.0001345	0.0063825	0.653	0.539	-1.0
9.	2.0	6.0	-0.2	0.050666	-0.010776	-0.004735	-0.000355	0.008947	-0.000387	-0.0003992	0.0064737	0.650	0.540	-1.0
10.	2.0	7.0	0.1	0.056556	-0.012295	-0.005338	-0.000522	0.008260	-0.000937	-0.0007984	0.0070266	0.650	0.540	-1.1
11.	2.0	8.0	0.6	0.065347	-0.014536	-0.005516	-0.000472	0.007830	-0.001868	-0.0013306	0.0078928	0.649	0.540	-.8
12.	2.0	4.0	-1.4	0.042469	-0.009225	-0.003465	-0.000315	0.008659	0.000429	0.0002661	0.0061742	0.650	0.541	-.7
13.	2.0	2.0	-2.3	0.029816	-0.007067	-0.002813	0.000059	0.008281	0.001001	0.0009315	0.0054820	0.650	0.541	-.6
14.	2.0	0.0	-3.2	0.017574	-0.005761	-0.001695	-0.000500	0.008892	0.001333	0.0013308	0.0050657	0.651	0.541	-.5
15.	2.0	-2.0	-4.2	0.008193	-0.005309	-0.001097	-0.000141	0.008906	0.001407	0.0014637	0.0049083	0.649	0.540	-.4
16.	4.0	-2.0	-6.5	0.014088	-0.005532	-0.001745	-0.000140	0.008630	0.001794	0.0017299	0.0053166	0.650	0.541	-.3
17.	4.0	-4.0	-7.5	0.004067	-0.005402	-0.000847	-0.000604	0.008830	0.001679	0.0016142	0.0051498	0.655	0.539	-.4
18.	4.0	0.0	-5.7	0.024088	-0.006170	-0.002373	-0.000230	0.008901	0.001728	0.0016141	0.0056222	0.654	0.539	-.6
19.	4.0	2.0	-4.5	0.037528	-0.007674	-0.003885	0.000226	0.008861	0.001997	0.0010760	0.0060227	0.654	0.539	-.7
20.	4.0	3.0	-4.1	0.044141	-0.008722	-0.004132	0.000203	0.009377	0.001148	0.0008071	0.0064174	0.654	0.539	-.7
21.	4.0	4.0	-3.6	0.050881	-0.009872	-0.004709	0.000015	0.008952	0.000797	0.0005380	0.0068627	0.654	0.539	-.7
22.	4.0	5.0	-3.1	0.053976	-0.010619	-0.005235	0.000309	0.009715	0.000575	0.0004035	0.0071963	0.653	0.539	-.8
23.	4.0	6.0	-2.5	0.058981	-0.011881	-0.005619	-0.000188	0.009287	0.000207	-0.0001347	0.0074617	0.654	0.538	-.9
24.	4.0	7.0	-2.0	0.066281	-0.014205	-0.006063	-0.000246	0.008313	-0.000446	-0.0006737	0.0083967	0.654	0.538	-1.0
25.	4.0	8.0	-1.5	0.071390	-0.015049	-0.006685	0.000326	0.007480	-0.000695	-0.0008084	0.0087688	0.653	0.538	-.6
26.	6.0	7.0	-3.9	0.072951	-0.014447	-0.006615	-0.000036	0.008697	0.000567	0.0004042	0.0095789	0.654	0.538	-.8
27.	6.0	8.0	-3.5	0.077654	-0.015319	-0.006134	0.000156	0.009455	0.000344	0.0002695	0.0099827	0.654	0.538	-.8
28.	6.0	6.0	-4.5	0.064735	-0.012742	-0.006552	0.000043	0.007916	0.000752	0.0004042	0.0085295	0.654	0.538	-.8
29.	6.0	4.0	-5.6	0.055625	-0.010494	-0.005583	0.000277	0.008272	0.001413	0.0009434	0.0076794	0.657	0.539	-.2
30.	6.0	2.0	-6.6	0.042896	-0.008218	-0.004558	0.000773	0.008431	0.001929	0.0014821	0.0067624	0.654	0.538	-.2
31.	6.0	0.0	-7.6	0.032187	-0.006672	-0.003426	0.000350	0.009060	0.001974	0.0018864	0.0062350	0.654	0.538	-.2
32.	6.0	-2.0	-8.7	0.021724	-0.006038	-0.002208	-0.000267	0.009245	0.002103	0.0018864	0.0058111	0.654	0.538	.0
33.	6.0	-4.0	-9.5	0.008660	-0.005405	-0.001188	-0.000118	0.009395	0.001923	0.0018897	0.0054209	0.654	0.538	.0
34.	8.0	-4.0	-11.6	0.016060	-0.005794	-0.001297	-0.000852	0.009294	0.002450	0.0024297	0.0062082	0.654	0.538	.0
35.	8.0	-6.0	-12.6	0.007338	-0.006192	-0.001012	0.549288	0.009290	0.002172	0.0018898	0.0059403	0.655	0.538	.0

ROTOR SCALE DATA * PROGRAM LA3530 * WIND AXES

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TIME 705.05

Table I-22. (Concluded)

TEST 310.0 RMN 23

34 FT. 0012 ROTOR VZOR * .65 M41.0(90) * .54

WIND AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	THETA	ALPHA SHAFT	ALPHA CONTROL	CLR	CXR	CYR	CMX	CMY	CMZ	CP	CPO	V/OR M(1.0)(90)	A ₁	
36.	8.0	-2.0	-10.7	0.027809	-0.006252	-0.002432	-0.000117	0.009607	0.002527	0.0024298	0.0064837	0.655	0.538	.1
37.	8.0	0.0	-9.7	0.033534	-0.006920	-0.003765	0.000290	0.009177	0.002524	0.0022947	0.0067517	0.654	0.538	.1
38.	8.0	2.0	-8.7	0.049291	-0.008325	-0.004949	0.000818	0.008972	0.002420	0.0020248	0.0073516	0.655	0.538	.1
39.	8.0	4.0	-7.5	0.061964	-0.010795	-0.006614	0.000437	0.008481	0.002046	0.0017547	0.0085816	0.654	0.538	.0
40.	8.0	6.0	-6.0	0.074285	-0.013998	-0.005741	0.000472	0.007690	0.001984	0.0017548	0.0106362	0.654	0.538	.4
41.	8.0	8.0	-4.0	0.099529	-0.021385	-0.006365	0.000627	0.005711	0.002073	0.0018898	0.0152902	0.655	0.538	.4
42.	10.0	6.0	-6.0	0.102562	-0.021474	-0.006245	0.001195	0.004153	0.004141	0.0036441	0.0171360	0.653	0.538	.0
43.	10.0	4.0	-8.0	0.080400	-0.014919	-0.006284	0.000475	0.005463	0.003596	0.0031164	0.0125999	0.657	0.538	.3
44.	10.0	2.0	-10.0	0.058472	-0.010159	-0.005109	0.000601	0.008090	0.003206	0.0028405	0.0093426	0.657	0.538	.5
45.	10.0	0.0	-11.5	0.044512	-0.008054	-0.004379	0.000743	0.008408	0.003279	0.0029750	0.0081488	0.655	0.538	.1
46.	10.0	-2.0	-12.5	0.035409	-0.007286	-0.003269	-0.000080	0.008604	0.003237	0.0029748	0.0076784	0.654	0.538	.2
47.	10.0	-4.0	-13.5	0.022676	-0.006194	-0.001849	-0.000369	0.009311	0.003040	0.0028399	0.0068734	0.655	0.538	.3
48.	10.0	-6.0	-14.5	0.013116	-0.006206	-0.001178	0.000587	0.009518	0.002735	0.0025695	0.0066298	0.656	0.538	.4
49.	10.0	-8.0	-15.4	0.003851	-0.007262	-0.000367	-0.000466	0.008758	0.002048	0.0018931	0.0066483	0.655	0.538	.4

For the following data points
a_{1s} and/or b_{1s} ≠ 0° ± .2°

PT.	THETA	ALPHA SHAFT	a _{1s}	b _{1s}
40	8	6	1.0	0
41	8	8	2.9	0
42	10	6	4.8	0
43	10	4	2.9	0
43	10	2	.5	0

Table I - 23. Rotor No. 3.

TEST 310.0 RUN 20

34 FT. 0012 ROTOR VZOR = .75 M(1.0)(90) = .50

WIND AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	THETA	ALPHA SHAFT	ALPHA CONTROL	CLR	CXR	CYR	CMX	CMY	CHZ	CP	CPO	V/OR M(1.0)(90)	A ₁
1.	8.0	0.0	-9.5	0.042433	-0.007378	-0.003689	0.000086	0.011269	0.002507	0.0023610	0.0072555	0.675	0.538
2.	6.0	0.0	-7.6	0.034035	-0.006486	-0.003241	-0.000209	0.011667	0.002138	0.0018053	0.0061226	0.674	0.537
3.	6.0	0.0	-7.8	0.025665	-0.007874	-0.003312	0.000025	0.012568	0.001803	0.0017341	0.0075900	0.747	0.502
4.	8.0	0.0	-9.8	0.034513	-0.008471	-0.004429	0.000067	0.016331	0.002015	0.0021107	0.0084432	0.754	0.500
5.	8.0	-2.0	-11.1	0.021555	-0.008527	-0.002841	0.000155	0.015036	0.001978	0.0021108	0.0085221	0.754	0.500
6.	10.0	-2.0	-12.9	0.024571	-0.009255	-0.003354	-0.000160	0.016476	0.002424	0.0022988	0.0092434	0.754	0.500
7.	6.0	-2.0	-9.1	0.013661	-0.007842	-0.001913	-0.000159	0.013371	0.001849	0.0017656	0.0076667	0.756	0.500
8.	6.0	-4.0	-9.8	0.004121	-0.007621	-0.001079	-0.000449	0.013045	0.001536	0.0015891	0.0073510	0.756	0.500
9.	8.0	-4.0	-11.9	0.008192	-0.008782	-0.001291	-0.000584	0.013948	0.001841	0.0017458	0.0084123	0.757	0.500
10.	10.0	-4.0	-13.8	0.012340	-0.009237	-0.001868	-0.000401	0.015318	0.002232	0.0022955	0.0092801	0.757	0.500
11.	10.0	-4.0	-8.0	-0.004284	-0.006792	-0.000497	-0.000283	0.013878	0.001260	0.0012361	0.0063788	0.757	0.500
12.	4.0	-2.0	-6.6	0.007763	-0.006507	-0.001258	-0.000476	0.013830	0.001446	0.0015892	0.0065138	0.757	0.500
13.	2.0	-2.0	-4.1	0.004178	-0.005738	-0.000898	-0.000254	0.014519	0.001277	0.0014126	0.0057555	0.757	0.500
14.	2.0	0.0	-3.3	0.014783	-0.006337	-0.001688	0.000161	0.014325	0.001389	0.0014128	0.0062075	0.758	0.500
15.	0.0	0.0	-1.1	0.008686	-0.005992	-0.001049	-0.000159	0.014338	0.001091	0.0012360	0.0057684	0.757	0.500
16.	0.0	2.0	-0.1	0.022668	-0.006735	-0.002303	0.000005	0.014860	0.001890	0.0008846	0.0059683	0.758	0.500
17.	0.0	4.0	0.7	0.023302	-0.008075	-0.003314	-0.000090	0.000545	0.000105	0.0003538	0.0064473	0.758	0.500
18.	0.0	6.0	1.9	0.043995	-0.008164	-0.004136	-0.000266	0.017446	-0.000462	-0.0003538	0.0057500	0.758	0.500
19.	0.0	8.0	2.4	0.069857	-0.013652	-0.005547	-0.000627	0.017723	-0.002218	-0.0017690	0.0083605	0.757	0.500
20.	2.0	8.0	0.5	0.077460	-0.012668	-0.006270	-0.000714	0.020643	-0.002131	-0.0015921	0.0077414	0.757	0.500
21.	2.0	6.0	-0.6	0.059174	-0.011942	-0.005508	-0.000833	0.015205	-0.000728	-0.0005307	0.0083668	0.758	0.500
22.	2.0	4.0	-1.8	0.044084	-0.007786	-0.004394	-0.000014	0.017847	0.000470	0.0003538	0.0061730	0.758	0.500
23.	4.0	4.0	-3.9	0.049453	-0.010625	-0.005402	0.000424	0.013595	0.000891	0.0005307	0.0084834	0.758	0.500
24.	4.0	2.0	-4.8	0.034527	-0.008925	-0.004611	0.000879	0.012571	0.001287	0.0012384	0.0079558	0.758	0.500
25.	4.0	0.0	-5.8	0.022084	-0.007645	-0.003065	0.000553	0.012943	0.001502	0.0014153	0.0071924	0.758	0.500
26.	6.0	2.0	-7.0	0.040999	-0.009735	-0.004883	0.000455	0.012802	0.001598	0.0012719	0.0086843	0.769	0.496
27.	2.0	2.0	-2.8	0.029932	-0.008096	-0.003177	-0.000174	0.012784	0.001264	0.0008862	0.0069888	0.759	0.500
28.	4.0	6.0	-3.0	0.061068	-0.012662	-0.006819	0.000566	0.012702	0.000019	0.0000000	0.0094442	0.759	0.500

ROTOR SCALE DATA * PROGRAM LA3530 * WIND AXES

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Table I - 24. Rotor No. 3.

TEST 310.0 RUN 21

34 FT. 0012 ROTOR V/OR = .86 M(1.0)(90) = .47

WIND AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	THETA	ALPHA SHAFT	ALPHA CONTROL	CLR	CXR	CYR	CMX	CMY	CMZ	CP	CPD	V/OR	M(1.0)(90)	A ₁
1.	0.0	0.0	-1.1	0.009157	-0.007066	-0.000928	-0.000609	0.019990	0.001227	0.0014035	0.0075418	0.869	0.462	-1.
2.	0.0	2.0	-0.4	0.025285	-0.007946	-0.002131	-0.001057	0.018328	0.000885	0.0011213	0.0078475	0.850	0.467	-1.
3.	0.0	4.0	0.3	0.044369	-0.010758	-0.003270	-0.000794	0.018133	0.000358	0.0004548	0.0095867	0.856	0.465	-1.
4.	0.0	6.0	1.3	0.054647	-0.013275	-0.004359	-0.000654	0.016965	-0.000846	-0.0006728	0.0104929	0.850	0.467	-1.
5.	0.0	8.0	2.0	0.077753	-0.015555	-0.006229	-0.000520	0.020133	-0.002354	-0.0017940	0.0111936	0.850	0.467	-1.
6.	2.0	6.0	-1.0	0.059741	-0.013436	-0.005632	-0.000740	0.018068	-0.000753	-0.0004548	0.0108932	0.855	0.465	-1.
7.	2.0	4.0	-2.1	0.045267	-0.012326	-0.004386	-0.000361	0.016314	0.000170	0.0004557	0.0109444	0.857	0.465	-1.
8.	2.0	2.0	-2.9	0.027029	-0.009406	-0.002906	-0.000627	0.016881	0.001093	0.0009113	0.0089407	0.857	0.465	-1.
9.	2.0	0.0	-3.4	0.013687	-0.007142	-0.001837	-0.000715	0.019224	0.001087	0.0013644	0.0074707	0.856	0.465	-1.
10.	2.0	-2.0	-4.2	-0.002154	-0.007212	-0.000710	-0.000968	0.018179	0.001157	0.0015919	0.0077696	0.857	0.466	-.
11.	4.0	-2.0	-6.6	0.002573	-0.008071	-0.002013	-0.000178	0.018512	0.001372	0.0015918	0.0085009	0.856	0.465	-.
12.	4.0	-4.0	-7.5	-0.013518	-0.008901	0.000086	-0.001055	0.017211	0.000723	0.0011371	0.0087550	0.857	0.466	-.
13.	4.0	0.0	-6.0	0.014054	-0.008878	-0.003038	-0.000111	0.017350	0.001504	0.0015919	0.0091897	0.857	0.466	-.
14.	4.0	2.0	-5.1	0.030507	-0.009361	-0.004190	-0.000304	0.019339	0.001139	0.0011371	0.0091239	0.857	0.466	-.
15.	4.0	4.0	-4.3	0.044482	-0.010418	-0.005873	0.000292	0.019743	0.000550	0.0006822	0.0095164	0.855	0.465	-.
16.	4.0	6.0	-3.4	0.059869	-0.013269	-0.007381	-0.000040	0.019467	-0.000016	0.0000000	0.0112302	0.857	0.466	-1.
17.	4.0	8.0	-2.4	0.087129	-0.016728	-0.008449	-0.000737	0.020044	-0.000731	-0.0006822	0.0133489	0.856	0.465	-1.
18.	6.0	6.0	-5.0	0.074493	-0.016773	-0.009339	0.000586	0.016632	0.000787	0.0009096	0.0150440	0.855	0.465	-.
19.	6.0	4.0	-6.6	0.049443	-0.014345	-0.006794	0.000166	0.015839	0.001338	0.0011370	0.0133230	0.856	0.465	-.
20.	6.0	2.0	-7.5	0.036642	-0.012173	-0.005773	0.000310	0.016996	0.001303	0.0011371	0.0115101	0.856	0.466	-.
21.	6.0	0.0	-8.4	0.016861	-0.010392	-0.003967	0.000220	0.017821	0.001262	0.0015919	0.0104820	0.857	0.466	-.
22.	6.0	-2.0	-9.2	0.001999	-0.010986	-0.002194	-0.000301	0.016006	0.001053	0.0015919	0.0110050	0.857	0.466	-.
23.	6.0	-4.0	-10.0	-0.012185	-0.011411	-0.000839	-0.000730	0.016735	0.000505	0.0009097	0.0106852	0.857	0.466	-.
24.	6.0	-6.0	-10.8	-0.042337	-0.012749	0.000001	-0.006094	0.003029	0.000095	0.0002274	0.0110705	0.856	0.465	-.
25.	8.0	-6.0	-12.7	-0.020121	-0.013683	-0.000182	-0.000842	0.017438	-0.000478	0.0000000	0.0117022	0.856	0.466	-.
26.	8.0	-4.0	-12.0	-0.010774	-0.012739	-0.000748	-0.000896	0.017636	0.000588	0.0009097	0.0118227	0.857	0.466	-.
27.	8.0	-2.0	-11.2	0.005842	-0.012090	-0.002571	-0.000297	0.017488	0.001092	0.0013644	0.0117105	0.856	0.465	-.
28.	8.0	0.0	-10.3	0.017837	-0.011751	-0.003784	-0.000809	0.018193	0.001039	0.0015919	0.0116404	0.856	0.465	-.
29.	8.0	2.0	-9.7	0.032029	-0.012296	-0.005867	0.000005	0.018325	0.001610	0.0015919	0.0120805	0.856	0.465	-.
30.	10.0	0.0	-12.1	0.032562	-0.013828	-0.006097	0.000271	0.018403	0.001969	0.0020468	0.0138570	0.857	0.466	-.
31.	10.0	-2.0	-13.3	0.010328	-0.013647	-0.003584	-0.000254	0.018052	0.001573	0.0015920	0.0132835	0.857	0.466	-.
32.	10.0	-4.0	-14.1	-0.003352	-0.014224	-0.002418	-0.000110	0.017204	0.001268	0.0011371	0.0133263	0.857	0.466	-.
33.	10.0	-6.0	-15.0	-0.013660	-0.014925	-0.001386	0.000239	0.018022	-0.000007	0.0004548	0.0132331	0.857	0.466	-.
34.	10.0	-8.0	-15.8	-0.024691	-0.016487	-0.000103	-0.000591	0.017118	-0.001364	-0.0008971	0.0131075	0.851	0.467	-.

For the following data points
a_{1s} and/or b_{1s} ≠ 0° ± .2°

PT.	THETA	ALPHA SHAFT	a _{1s}	b _{1s}
18	6	6	1.2	0
30	10	0	1.2	.6

ROTOR SCALE DATA * PROGRAM LA3530 * WIND AXES

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Table I - 25. Rotor No. 3.

TEST 310.0 RUN 22

34 FT. 0012 ROTOR V/OR = .94 M(1.0)(90) = .49

WIND AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	THETA	ALPHA SHAFT	ALPHA CONTROL	CLR	CXR	CYR	CMX	CMY	CMZ	CP	CPD	V/OR	M(1.0)(90)	A _s
1.	0.0	0.0	-1.4	0.016292	-0.009670	-0.001045	0.004606	0.035292	0.001309	0.0015265	0.0106550	0.945	0.500	-1.4
2.	0.0	2.0	-0.6	0.032574	-0.010043	-0.002956	0.005006	0.036825	0.000949	0.0010966	0.0105714	0.947	0.499	
3.	0.0	4.0	0.2	0.048434	-0.010786	-0.003729	0.004376	0.039295	0.000276	0.0004394	0.0105729	0.947	0.499	-1.8
4.	0.0	6.0	1.1	0.065219	-0.014055	-0.005639	0.005099	0.034809	-0.001133	-0.0006599	0.0123810	0.938	0.496	
5.	2.0	4.0	-2.5	0.046688	-0.010841	-0.005357	0.005620	0.035258	0.000439	0.0006556	0.0107033	0.934	0.496	-1.5
6.	2.0	6.0	-1.4	0.061049	-0.012904	-0.006331	0.005703	0.035255	-0.000439	0.0000000	0.0119237	0.934	0.496	
7.	2.0	8.0	-0.7	0.090781	-0.017473	-0.007170	0.005149	0.035502	-0.002595	-0.0015297	0.0144739	0.933	0.496	-1.8
8.	2.0	2.0	-3.0	0.031664	-0.010052	-0.004002	0.005371	0.034674	0.001117	0.0010989	0.0104735	0.936	0.496	
9.	2.0	0.0	-3.9	0.011960	-0.008421	-0.002032	0.004230	0.035754	0.001351	0.0015657	0.0095133	0.944	0.493	-1.2
10.	2.0	5.0	-1.9	0.051355	-0.011579	-0.005627	0.005474	0.036380	0.000020	0.0004497	0.0112771	0.943	0.492	-1.4
11.	2.0	7.0	-1.2	0.076214	-0.016296	-0.007694	0.006277	0.035118	-0.000947	-0.0006761	0.0146094	0.950	0.493	
12.	4.0	7.0	-3.4	0.076074	-0.017715	-0.009071	0.005690	0.031610	-0.000283	-0.0002257	0.0162916	0.944	0.491	-1.1
13.	4.0	8.0	-3.0	0.086372	-0.017158	-0.007570	0.005631	0.037296	-0.000624	-0.0004516	0.0155919	0.950	0.492	
14.	4.0	6.0	-4.0	0.064593	-0.015600	-0.008583	0.005736	0.034049	-0.000275	0.0000000	0.0146797	0.950	0.492	
15.	4.0	5.0	-4.5	0.050625	-0.012742	-0.007456	0.005772	0.036362	0.000430	0.0004470	0.0123911	0.944	0.494	-1.1
16.	4.0	4.0	-5.0	0.046599	-0.013040	-0.006599	0.005947	0.033738	0.000999	0.0006805	0.0128913	0.942	0.489	-1.1
17.	4.0	2.0	-5.8	0.028182	-0.011534	-0.004876	0.005831	0.032874	0.001186	0.0011342	0.0119801	0.943	0.489	- .9
18.	4.0	0.0	-6.4	0.011544	-0.010247	-0.003813	0.005781	0.032772	0.001215	0.0013637	0.0110375	0.944	0.489	- .6
19.	6.0	0.0	-8.6	0.008460	-0.013235	-0.004009	0.005886	0.031466	0.000893	0.0011363	0.0136210	0.943	0.489	
20.	6.0	2.0	-7.9	0.030758	-0.014543	-0.006390	0.006517	0.031249	0.001047	0.0009107	0.0146009	0.944	0.489	
21.	6.0	4.0	-7.0	0.039885	-0.014295	-0.007371	0.006391	0.033900	0.001454	0.0009106	0.0143426	0.943	0.489	- .4
22.	6.0	5.0	-6.5	0.052430	-0.015486	-0.008258	0.006240	0.033543	0.001081	0.0006830	0.0152159	0.945	0.489	
23.	6.0	6.0	-6.0	0.060495	-0.016417	-0.008561	0.006366	0.033640	0.000989	0.0006830	0.0160568	0.944	0.489	.4
24.	8.0	2.0	-9.9	0.027558	-0.016400	-0.006503	0.006469	0.032069	0.001354	0.0011425	0.0166249	0.946	0.488	.2
25.	8.0	1.0	-10.4	0.017816	-0.016220	-0.005715	0.006583	0.031191	0.001334	0.0011425	0.0164700	0.946	0.488	
26.	8.0	0.0	-10.8	0.009641	-0.016465	-0.004516	0.005866	0.030658	0.000839	0.0011445	0.0167131	0.946	0.488	

Table I - 26. Rotor No. 3.

TEST 310.0 RUN 24

34 FT. 0012 ROTOR V/OR = 1.1 M(1.0)(90) = .52

WIND AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	THETA	ALPHA SHAFT	ALPHA CONTROL	CLR	CXR	CYR	CMX	CMY	CMZ	CP	CPD	V/OR	M(1.0)(90)	A _{1s}
1.	0.0	0.0	-1.0	0.011358	-0.007943	-0.001043	-0.000773	0.032879	0.001505	0.0016873	0.0090945	0.933	0.489	-1.3
2.	0.0	0.0	-1.2	0.012140	-0.009380	-0.001286	-0.000491	0.046411	0.001561	0.0016927	0.0110084	0.994	0.505	-1.4
3.	0.0	0.0	-1.2	0.014520	-0.010062	-0.001343	-0.000403	0.057483	0.001564	0.0017077	0.0121070	1.034	0.514	-1.4
4.	0.0	0.0	-1.3	0.018777	-0.011240	-0.001123	-0.001098	0.076990	0.001568	0.0017319	0.0140077	1.093	0.526	-1.5
5.	0.0	0.0	-1.4	0.018883	-0.011155	-0.000991	-0.001193	0.076622	0.001378	0.0017483	0.0139616	1.096	0.524	-1.4
6.	0.0	2.0	-0.6	0.047906	-0.012696	-0.003014	-0.000209	0.075720	0.001512	0.0013017	0.0151879	1.099	0.521	-1.8
7.	0.0	4.0	-0.2	0.069374	-0.015749	-0.004502	-0.001548	0.079923	0.000512	0.0005861	0.0178105	1.103	0.525	-2.0
8.	0.0	6.0	0.5	0.087370	-0.019777	-0.006727	-0.001764	0.077742	-0.000835	-0.0005963	0.0211573	1.111	0.522	-2.3
9.	0.0	6.0	0.6	0.089867	-0.018441	-0.006787	-0.001161	0.074320	-0.001243	-0.0010755	0.0188888	1.096	0.517	-2.2
10.	2.0	6.0	-1.7	0.084591	-0.018434	-0.007993	-0.000847	0.070420	-0.000611	-0.0005982	0.0192796	1.090	0.516	-1.6
11.	2.0	7.0	-1.4	0.099758	-0.022567	-0.008670	-0.000755	0.069761	-0.001661	-0.0013166	0.0230994	1.095	0.517	-1.8
12.	2.0	5.0	-2.3	0.070154	-0.017612	-0.007001	-0.000438	0.070148	0.000462	0.0001197	0.0192018	1.092	0.516	-1.5
13.	2.0	4.0	-2.6	0.059979	-0.015556	-0.006349	0.000226	0.071808	0.000975	0.0006004	0.0175112	1.094	0.516	-1.4
14.	2.0	3.0	-3.1	0.047212	-0.012895	-0.005277	0.000343	0.072380	0.001444	0.0008405	0.0148672	1.093	0.515	-1.2
15.	2.0	2.0	-3.5	0.035843	-0.012671	-0.004838	-0.000072	0.070665	0.001605	0.0013254	0.0151535	1.094	0.515	-1.2
16.	2.0	1.0	-3.7	0.024251	-0.013024	-0.003789	-0.000270	0.068807	0.001760	0.0015691	0.0158153	1.095	0.515	-1.1
17.	2.0	0.0	-4.1	0.013370	-0.012627	-0.003006	-0.000077	0.068954	0.001739	0.0015688	0.0153719	1.094	0.514	-1.1
18.	2.0	-1.0	-4.3	0.004248	-0.012316	-0.002103	-0.001297	0.069510	0.001656	0.0015689	0.0150419	1.094	0.514	-1.2
19.	1.0	0.0	-3.0	0.013696	-0.011292	-0.002549	-0.000720	0.068814	0.001671	0.0018131	0.0141458	1.093	0.514	-1.2
20.	1.0	2.0	-2.0	0.042760	-0.012857	-0.004154	0.000015	0.070348	0.001572	0.0013294	0.0153056	1.091	0.513	-1.4
21.	1.0	4.0	-1.4	0.069081	-0.015253	-0.005233	-0.000571	0.071078	0.000756	0.0006043	0.0171052	1.091	0.513	-1.6
22.	1.0	6.0	-0.8	0.088362	-0.018668	-0.007899	-0.000615	0.070838	-0.000851	-0.0008489	0.0193109	1.092	0.513	-1.8
23.	3.0	6.0	-3.2	0.076078	-0.018667	-0.008400	-0.000724	0.069008	-0.000217	-0.0001213	0.0200896	1.092	0.512	-1.3
24.	3.0	7.0	-2.7	0.085803	-0.019579	-0.008884	-0.000912	0.069324	-0.000373	-0.0006074	0.0205761	1.093	0.512	-1.5
25.	4.0	7.0	-3.5	0.092317	-0.022889	-0.009389	-0.000479	0.067476	-0.000467	-0.0003651	0.0244342	1.095	0.512	-1.6
26.	4.0	6.0	-4.3	0.069839	-0.018768	-0.008729	-0.000701	0.069936	0.000330	-0.0001219	0.0202955	1.096	0.512	-1.7
27.	4.0	4.0	-5.1	0.050287	-0.016977	-0.007666	0.000291	0.069084	0.000791	0.0006095	0.0191405	1.096	0.512	-1.0
28.	4.0	2.0	-6.0	0.033820	-0.014827	-0.005848	-0.001510	0.069234	0.000743	0.0008546	0.0170388	1.094	0.511	-1.7
29.	4.0	0.0	-6.7	0.009104	-0.015327	-0.004345	-0.000060	0.067295	0.000912	0.0010988	0.0178618	1.094	0.511	-1.6
30.	5.0	0.0	-7.9	0.000770	-0.016904	-0.005155	-0.000346	0.067701	0.000565	0.0008545	0.0193303	1.093	0.511	-1.5
31.	6.0	0.0	-8.9	0.001113	-0.018485	-0.005240	-0.000418	0.068165	0.000315	0.0003663	0.0205879	1.094	0.511	-1.2
32.	6.0	2.0	-8.3	0.020529	-0.017801	-0.007167	-0.000402	0.066896	0.000746	0.0003669	0.0198036	1.094	0.511	-1.5
33.	6.0	1.0	-8.8	0.007938	-0.017515	-0.005828	0.000100	0.067005	0.000648	0.0003674	0.0195144	1.093	0.510	-1.5
34.	7.0	0.0	-10.1	-0.000393	-0.019516	-0.005506	-0.000029	0.068122	0.000422	-0.0001225	0.0212060	1.093	0.510	-1.5
35.	3.0	0.0	-5.8	0.006914	-0.013469	-0.003994	0.000207	0.066448	0.001608	0.0013497	0.0160974	1.095	0.510	-1.5

For the following data point
a_{1s} and/or b_{1s} ≠ 0° ± .2°

PT.	THETA	ALPHA SHAFT	a _{1s}	b _{1s}
25	4	7	0	.7

Table II - 1. Rotor No. 1, V/OR = .30, M(1.0, 90) = .79

TEST 208.0 RUN 7

SHAFT AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	ALPHA SHAFT	ALPHA CONTROL	CX	-CY	CZR	CMXB	CMY	CQ	CP	CPO	V/OR	M,AT	A _{1s}	θ _{grip}
14.	-5.0	-8.6	0.0051072	-0.001891	-0.001276	0.000317	-0.001055	0.002782	0.0026320	0.0016538	0.298	0.790	.6	14.
15.	-5.0	-10.0	0.0069781	-0.001447	-0.001618	0.000328	-0.001229	0.003837	0.0035134	0.0017465	0.300	0.788	.2	16.
16.	-5.0	-11.7	0.0084262	-0.000381	-0.002005	0.000378	0.000475	0.005106	0.0048717	0.0022472	0.298	0.790	.1	18.
17.	-10.0	-14.1	0.0091793	-0.001606	-0.000734	0.000245	-0.001072	0.003703	0.0034549	0.0016240	0.299	0.787	.8	16.
18.	-10.0	-15.4	0.0061085	-0.000997	-0.000829	0.000251	-0.001308	0.005248	0.0049584	0.0017851	0.300	0.786	.6	18.
19.	-10.0	-12.8	0.0024894	-0.001858	-0.000851	0.000289	-0.000851	0.002489	0.0022614	0.0015147	0.298	0.786	.8	14.
20.	-10.0	-11.0	0.005328	-0.001777	-0.000783	0.000168	-0.000559	0.001453	0.0012243	0.0014866	0.297	0.789	.8	12.
21.	-15.0	-18.2	0.0017823	-0.001893	-0.000712	0.000192	-0.000837	0.002637	0.0023484	0.0015057	0.299	0.788	.7	16.
22.	-15.0	-19.3	0.0034985	-0.001520	-0.000511	0.000275	-0.001018	0.004303	0.0040008	0.0016396	0.300	0.788	.9	18.
23.	-15.0	-20.9	0.0051578	-0.000917	-0.000577	0.000278	-0.001320	0.006022	0.0058643	0.0017362	0.300	0.786	.6	20.
24.	-5.0	-6.9	0.0030830	-0.001814	-0.000943	0.000271	-0.000838	0.002014	0.0018685	0.0015376	0.299	0.788	.7	12.
25.	-5.0	-5.6	0.0022328	-0.001692	-0.000849	0.000208	-0.000655	0.001486	0.0013534	0.0015223	0.296	0.790	.8	10.
26.	0.0	-1.8	0.0040323	-0.001729	-0.001402	0.000250	-0.000789	0.001265	0.0011344	0.0015245	0.299	0.788	.8	10.
27.	0.0	-2.8	0.0069234	-0.001814	-0.001919	0.000384	-0.001146	0.001558	0.0013702	0.0016352	0.297	0.791	.7	12.
28.	0.0	-4.5	0.0078254	-0.001343	-0.002413	0.000440	-0.001197	0.002139	0.0019386	0.0018645	0.299	0.789	0.0	14.
29.	0.0	-6.4	0.0094102	-0.000870	-0.002997	0.000428	-0.001402	0.003168	0.0029558	0.0022886	0.299	0.789	.3	16.
30.	0.0	-0.8	0.0019894	-0.001579	-0.001315	0.000192	-0.000589	0.001205	0.0010828	0.0015209	0.297	0.792	.7	8.
31.	4.0	3.4	0.0043063	-0.001536	-0.002352	0.000454	-0.000721	0.000413	0.0003431	0.0015473	0.297	0.791	.2	8.
32.	4.0	1.8	0.0061741	-0.001489	-0.002753	0.000513	-0.000950	0.000922	0.0002490	0.0016790	0.298	0.789	.1	10.
33.	4.0	0.2	0.0081097	-0.001252	-0.003299	0.000519	-0.001244	0.000531	0.0004407	0.0019920	0.298	0.789	.2	12.
34.	4.0	-1.6	0.0096605	-0.000860	-0.003751	0.000632	-0.001163	0.001210	0.0010647	0.0023855	0.300	0.786	.5	14.

ROTOR SCALE DATA * PROGRAM LA2430 * BODY AXES

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TIME 731117

Table II - 2. Rotor No. 1, V/OR = .30, M(1.0, 90) = .85

TEST 288.0 RUN 3

SHAFT AXES DEFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TLP SPEED													A _{1s}	θ grip
PT.	ALPHA SHAFT	ALPHA CONTROL	CT	-CH	CYR	CMXB	CNY	CQ	CP	CPO	M/OR	M,AT		
1.	-5.0	-7.3	01029896	-0.001507	-01001282	0.000558	-01000834	0.002021	0.0019000	0.0015069	0.302	0.848	1.0	12.
2.	-5.0	-8.7	01048985	-0.001388	-01001518	0.000605	-01000830	0.002801	010026723	0.0016151	0.302	0.848	.7	14.
3.	-5.0	-10.3	01067868	-0.000829	-01001743	0.000598	-01000815	0.003798	010036739	0.0018091	0.301	0.852	.6	16.
4.	-5.0	-12.0	01084851	0.000274	-01001996	0.000519	-01000819	0.005212	010050028	0.0021208	0.304	0.844	.3	18.
5.	-7.0	-13.6	01074257	-0.000189	-01001443	0.000388	-01000827	0.005294	010050733	0.0019787	0.302	0.848	.5	18.
6.	-12.0	-17.2	01049238	-0.000828	-01000819	0.000211	-01000879	0.004874	010046283	0.0018049	0.302	0.848	1.0	18.
7.	-10.0	-15.6	01088114	-0.000470	-01000821	0.000316	-01000847	0.005076	010049216	0.0017250	0.303	0.846	.8	18.
8.	-20.0	-28.6	01067489	-0.000049	-01000599	0.000303	-01000828	0.005928	010056886	0.0018284	0.302	0.848	.8	19.
9.	-8.0	-15.0	01075868	0.000535	-01000899	0.000259	-01000233	0.005965	010057468	0.0019840	0.303	0.847	.6	19.
10.	-6.0	-13.5	01086250	0.000248	-01001852	0.000335	-01000876	0.005921	010057435	0.0021551	0.303	0.848	.3	19.
11.	+7.0	-14.4	01001814	0.000588	-01001227	0.000240	-01000804	0.005963	010058604	0.0020551	0.303	0.846	.5	19.
12.	-7.0	-10.1	01037838	-0.001268	-01000888	0.000389	-01000819	0.002680	010025894	0.0014714	0.303	0.846	.9	14.
13.	-7.0	-8.5	01019211	-0.001368	-01000895	0.000398	-01000288	0.001848	010017432	0.0014205	0.303	0.848	1.1	12.
14.	-7.0	-7.2	01001818	-0.001232	-01000771	0.000208	-01000508	0.001229	010018493	0.0013602	0.303	0.848	.9	10.
15.	-7.0	-7.2	01002151	-0.001478	-01000864	0.000328	-01000566	0.001230	010018714	0.0014267	0.304	0.844	1.0	10.
16.	-2.0	-2.8	01003487	-0.001172	-01001281	0.000398	-01000868	0.001309	010012148	0.0015131	0.303	0.847	1.0	8.
17.	-3.0	-1.4	-01015823	-0.000932	-01001444	0.000374	-01000834	0.001229	010018429	0.0015516	0.302	0.848	.8	6.
18.	-3.0	-8.8	01077393	-0.000328	-01002054	0.000472	-01000855	0.003670	010034991	0.0019128	0.303	0.846	.5	16.
19.	-3.0	-10.6	01092799	0.001105	-01002367	0.000442	-01000830	0.005032	010048308	0.0023621	0.305	0.843	.1	18.
20.	0.0	-6.5	01091997	0.000468	-01003254	0.000648	-01000824	0.002244	010038821	0.0022953	0.303	0.846	.1	16.
21.	0.0	-7.7	01096886	0.001739	-01003494	0.000568	-01000890	0.004078	010038343	0.0025925	0.304	0.845	.2	17.
22.	0.0	-2.9	01056428	-0.001258	-01002227	0.000668	-01000822	0.001600	010014321	0.0015721	0.304	0.843	.8	12.
23.	3.0	-0.7	01073658	-0.000948	-01003199	0.000856	-01000813	0.000916	010008465	0.0017912	0.304	0.845	.3	12.
24.	3.0	0.8	01053896	-0.001218	-01002717	0.000792	-01000804	0.000738	010008247	0.0016283	0.303	0.847	.7	10.
25.	3.0	2.2	01034776	-0.001215	-01002469	0.000766	-01000821	0.000811	010008969	0.0015270	0.304	0.844	.8	8.
26.	3.0	3.6	01018848	-0.001121	-01002354	0.000735	-01000812	0.001080	010009736	0.0015803	0.305	0.843	.8	6.
27.	3.0	-2.4	01089203	0.000259	-01003860	0.000897	-01000839	0.001549	010013870	0.0021183	0.303	0.846	.1	14.
28.	3.0	-4.5	01099910	0.002436	-01004146	0.000735	-01000813	0.002157	010029625	0.0030441	0.302	0.848	.2	15.

ROTOR SCALE DATA * PROGRAM LA2430 * BODY AXES

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TIME 675.54

Table II - 3. Rotor No. 1, V/OR = .30, M(1.0, 90) = .95

TEST 200.0 RUN 8

SHAFT AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	ALPHA SHAFT	ALPHA CONTROL	CT	-CH	CYR	CMXB	CMY	CQ	CP	CPO	V/OR	M ₀ AT	A _{1s}	θ _{grip}
1.	-5.0	-7.8	0.049835	-0.002251	-0.001385	0.000285	-0.000400	0.003022	0.002828	0.0020170	0.297	0.952	.5	14.
2.	-5.0	-6.5	0.031644	-0.002335	-0.001188	0.000470	-0.000411	0.002382	0.0021827	0.0019755	0.300	0.953	.7	12.
3.	-5.0	-9.2	0.067850	-0.002053	-0.001843	0.000441	-0.000422	0.004086	0.0038730	0.0023585	0.300	0.953	.3	16.
4.	-5.0	-10.2	0.075883	-0.001988	-0.002260	0.000517	-0.000431	0.004747	0.0045508	0.0026049	0.300	0.951	.1	17.
5.	-5.0	-10.8	0.084154	-0.000860	-0.002516	0.000651	-0.000503	0.005597	0.0053803	0.0028925	0.300	0.950	0.0	18.
6.	-10.0	-13.3	0.040759	-0.002174	-0.000656	0.000345	-0.000534	0.003781	0.0034776	0.0018744	0.299	0.952	.9	16.
7.	-10.0	-14.8	0.057469	-0.001952	-0.000808	0.000332	-0.000608	0.005327	0.0050772	0.0022950	0.300	0.952	.6	18.
8.	-10.0	-14.1	0.049790	-0.001898	-0.000641	0.000333	-0.000533	0.004586	0.0043715	0.0021451	0.301	0.948	.8	17.
9.	-15.0	-17.6	0.017865	-0.002190	-0.000505	0.000331	-0.000407	0.002778	0.0025684	0.0018567	0.299	0.948	1.1	16.
10.	-15.0	-18.8	0.034121	-0.001986	-0.000349	0.000282	-0.000436	0.004305	0.0041427	0.0019783	0.301	0.948	1.0	18.
11.	-15.0	-19.4	0.042084	-0.001749	-0.000282	0.000273	-0.000455	0.005237	0.0048732	0.0019820	0.300	0.951	1.0	19.
12.	-17.0	-20.6	0.023182	-0.002023	-0.000102	0.000248	-0.000250	0.003608	0.0034500	0.0019624	0.299	0.950	1.2	18.
13.	-17.0	-21.1	0.029754	-0.001779	0.000119	0.000155	-0.000374	0.004324	0.0041537	0.0019900	0.300	0.950	1.1	19.
14.	-17.0	-21.5	0.038427	-0.001540	0.000123	0.000130	-0.000389	0.005291	0.0050920	0.0020825	0.300	0.950	1.0	20.
15.	-17.0	-20.0	0.025258	-0.002078	-0.000381	0.000195	-0.000268	0.002817	0.0026388	0.0018826	0.298	0.949	1.2	17.
16.	-17.0	-19.3	0.007342	-0.002194	-0.000529	0.000397	-0.000280	0.002084	0.0019419	0.0019230	0.298	0.948	1.1	16.

TEST 200.0 RUN 9

SHAFT AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	ALPHA SHAFT	ALPHA CONTROL	CT	-CH	CYR	CMXB	CMY	CQ	CP	CPO	V/OR	M ₀ AT	A _{1s}	θ _{grip}
1.	-3.0	-4.1	0.028952	-0.003465	-0.001531	0.000476	0.000361	0.002032	0.0018774	0.0023919	0.298	0.955	.8	11.
2.	-3.0	-3.5	0.024595	-0.002189	-0.001385	0.000418	-0.000543	0.001804	0.0016829	0.0019072	0.300	0.950	.7	10.
3.	-3.0	-6.9	0.070831	-0.002140	-0.002267	0.000549	-0.000610	0.003362	0.0031878	0.0023283	0.301	0.949	.3	15.
4.	-3.0	-7.7	0.077588	-0.001862	-0.002368	0.000510	-0.000713	0.003953	0.0037550	0.0025696	0.300	0.951	.2	16.
5.	-3.0	-8.5	0.085456	-0.001136	-0.002623	0.000647	-0.000952	0.004694	0.0045009	0.0029370	0.299	0.953	.2	17.
6.	-3.0	-9.2	0.090754	-0.000883	-0.003090	0.000608	-0.000860	0.005598	0.0053979	0.0033668	0.298	0.955	.1	18.
7.	-5.0	-9.8	0.077378	-0.001868	-0.002283	0.000504	-0.000789	0.004798	0.0045965	0.0026670	0.301	0.952	.1	17.
8.	-5.0	-10.5	0.085301	-0.001331	-0.002491	0.000331	-0.000731	0.005631	0.0053857	0.0029917	0.300	0.953	0.0	18.
9.	2.0	1.0	0.051348	-0.002408	-0.002344	0.000539	-0.000531	0.001143	0.0010242	0.0020710	0.298	0.950	.5	10.
10.	2.0	1.5	0.044042	-0.002594	-0.002307	0.000594	-0.000526	0.001086	0.0009865	0.0020823	0.301	0.951	.6	9.
11.	0.0	-4.3	0.086392	-0.001878	-0.003119	0.000563	-0.000286	0.003007	0.0028442	0.0028381	0.302	0.951	.1	15.
12.	0.0	-5.2	0.091884	-0.000793	-0.003345	0.000715	-0.000118	0.003839	0.0036533	0.0032455	0.301	0.954	0.0	16.
13.	0.0	-5.9	0.097128	-0.000299	-0.003257	0.000532	-0.000233	0.004874	0.0046408	0.0040022	0.300	0.953	.2	17.
14.	5.0	4.1	0.060912	-0.002707	-0.003105	0.000729	-0.000933	0.000222	0.0001551	0.0022705	0.300	0.947	.3	9.
15.	5.0	3.4	0.071398	-0.002627	-0.003332	0.000771	-0.000441	0.000302	0.0002345	0.0024855	0.299	0.950	.3	10.
16.	5.0	1.7	0.085611	-0.001763	-0.003742	0.000883	-0.000579	0.000810	0.0007587	0.0029783	0.301	0.951	.1	12.

ROTOR SCALE DATA * PROGRAM LA2430 * BODY AXES

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TIME 675.54

Table II - 4. Rotor No. 1, V/OR = .31, M(1.0, 90) = 1.0

TEST 298.0 RUN 11

SHAFT AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED														
PT.	ALPHA SHAFT	ALPHA CONTROL	CT	-CH	CYR	CMXB	CMY	CQ	CP	CPO	V/OR	M/GAT	A _{1s}	θ _{grip}
1.	-5.0	-6.1	0.032918	-0.003176	-0.001252	0.000418	-0.000477	0.002844	0.0027214	0.0027498	0.309	0.990	.9	12.
2.	-6.0	-6.9	0.026477	-0.003067	-0.001064	0.000463	-0.000500	0.002824	0.0026983	0.0027274	0.309	0.989	.9	12.
3.	-6.0	-7.2	0.035913	-0.003218	-0.001079	0.000393	-0.000547	0.003193	0.0030847	0.0026387	0.308	0.992	.7	13.
4.	-5.0	-7.9	0.045065	-0.003437	-0.001303	0.000448	-0.000820	0.003599	0.0034651	0.0029119	0.310	0.989	.6	14.
5.	-5.0	-8.6	0.052969	-0.003409	-0.001232	0.000363	-0.000894	0.004167	0.0039924	0.0031173	0.310	0.991	.6	15.
6.	-5.0	-9.5	0.040676	-0.003129	-0.001512	0.000414	-0.000802	0.004593	0.0044980	0.0032202	0.310	0.989	.5	16.
7.	-9.0	-10.6	0.028967	-0.003295	-0.000692	0.000378	-0.000669	0.003398	0.0032531	0.0027946	0.309	0.990	.9	14.
8.	-9.0	-11.2	0.037063	-0.003258	-0.000648	0.000338	-0.000707	0.003935	0.0037705	0.0028688	0.310	0.990	.9	15.
9.	-9.0	-11.8	0.046372	-0.003867	-0.000773	0.000350	-0.000844	0.004803	0.0044458	0.0030483	0.309	0.992	.8	16.
10.	-9.0	-12.6	0.055519	-0.003860	-0.000870	0.000419	-0.001114	0.005901	0.0050938	0.0032046	0.310	0.991	.7	17.
11.	-12.0	-13.6	0.022092	-0.003133	-0.000591	0.000348	-0.000627	0.003406	0.0032318	0.0027248	0.308	0.992	1.0	15.
12.	-12.0	-14.3	0.030287	-0.003063	-0.000534	0.000348	-0.000696	0.003990	0.0038187	0.0027296	0.309	0.990	1.0	16.
13.	-12.0	-15.0	0.039203	-0.003169	-0.000547	0.000345	-0.000811	0.004853	0.0045337	0.0028584	0.309	0.993	.9	17.
14.	-12.0	-13.2	0.013165	-0.002955	-0.000576	0.000316	-0.000418	0.002841	0.0026525	0.0028861	0.308	0.988	1.1	14.
15.	-9.0	-9.9	0.020393	-0.003078	-0.000587	0.000291	-0.000632	0.002916	0.0028093	0.0027811	0.307	0.991	1.1	13.
16.	-3.0	-6.7	0.052871	-0.003895	-0.001710	0.000441	-0.000713	0.003043	0.0029527	0.0029403	0.308	0.991	.6	13.
17.	-3.0	-4.7	0.054879	-0.003759	-0.001890	0.000488	-0.000808	0.003334	0.0032226	0.0032787	0.304	1.002	.6	13.
18.	-6.0	-7.2	0.038040	-0.003705	-0.000987	0.000388	-0.000698	0.003439	0.0033327	0.0031327	0.304	1.002	.7	13.
19.	-6.0	-7.8	0.046465	-0.003770	-0.001026	0.000337	-0.000767	0.003852	0.0037212	0.0032181	0.305	1.000	.6	14.
20.	-6.0	-8.5	0.054652	-0.003740	-0.001240	0.000397	-0.000832	0.004407	0.0042687	0.0034332	0.305	1.002	.3	15.
21.	-6.0	-9.2	0.062702	-0.003550	-0.001423	0.000584	-0.000491	0.004931	0.0046917	0.0034693	0.305	1.000	.2	16.
22.	-9.0	-11.8	0.047521	-0.003489	-0.000823	0.000312	-0.000864	0.004814	0.0046979	0.0033135	0.304	1.002	.6	16.
23.	-9.0	-11.1	0.039102	-0.003564	-0.000481	0.000290	-0.000699	0.004180	0.0040509	0.0031449	0.304	1.002	.9	15.
24.	-9.0	-10.4	0.029124	-0.003402	-0.000414	0.000238	-0.000542	0.003526	0.0034077	0.0029777	0.305	0.999	.9	14.
25.	-9.0	-9.8	0.022671	-0.003458	-0.000338	0.000193	-0.000567	0.003142	0.0030505	0.0029707	0.304	1.000	.9	13.
26.	-6.0	-7.1	0.038148	-0.003726	-0.000872	0.000320	-0.000687	0.003502	0.0033902	0.0031924	0.303	1.004	.7	13.

Table II - 5. Rotor No. 1, V/OR = .35, M(1.0, 90) = .85

TEST 200.0 RUN 4

SHAFT AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	ALPHA SHAFT	ALPHA CONTROL	CT	-CH	CYR	CMXB	CMY	CMZ	CP	CPO	N/OR	M,AT	A _{1s}	θ _{grip}
1.	-5.0	-7.6	0.023665	-0.001544	-0.000707	0.000289	-0.000544	0.001880	0.0018262	0.0016202	0.347	0.849	.7	12.
2.	-5.0	-6.1	0.007661	-0.001562	-0.000589	0.000241	-0.000394	0.001353	0.0013124	0.0016195	0.346	0.849	1.1	10.
3.	-5.0	-11.0	0.0058915	-0.000836	-0.000982	0.000344	-0.000586	0.003659	0.0035842	0.0019385	0.346	0.848	.9	16.
4.	-5.0	-13.0	0.072020	0.000219	-0.001853	0.000266	-0.000861	0.004952	0.0048405	0.0022280	0.350	0.844	.5	18.
5.	-5.0	-14.5	0.083882	0.001667	-0.001686	0.000242	-0.000170	0.006436	0.0062898	0.0027458	0.347	0.848	.3	20.
6.	-10.0	-14.7	0.030457	-0.001668	-0.000050	0.000166	-0.000640	0.003091	0.0029698	0.0016416	0.347	0.849	1.1	16.
7.	-10.0	-16.2	0.044567	-0.001030	0.0000137	0.000170	-0.000237	0.004528	0.0044772	0.0018932	0.346	0.851	1.0	18.
8.	-10.0	-17.8	0.061176	-0.000265	-0.000107	0.000137	-0.000751	0.006099	0.0059742	0.0021438	0.346	0.850	.8	20.
9.	-12.0	-16.2	0.020225	-0.001898	0.000071	0.000155	-0.000568	0.002596	0.0025652	0.0017222	0.347	0.848	1.1	16.
10.	-12.0	-17.7	0.035862	-0.001246	0.0000111	0.000125	-0.000591	0.004090	0.0040242	0.0017763	0.347	0.848	1.1	18.
11.	-12.0	-19.2	0.049892	-0.000521	-0.0000172	0.000185	-0.000852	0.005638	0.0055407	0.0020063	0.346	0.850	.9	20.
12.	-15.0	-19.9	0.021115	-0.001848	0.000031	0.000180	-0.000876	0.003166	0.0031337	0.0018318	0.346	0.850	1.1	18.
13.	-15.0	-21.4	0.034869	-0.001359	-0.000072	0.000294	-0.000871	0.004793	0.0046752	0.0019665	0.347	0.846	1.0	20.
14.	-25.0	-18.4	0.005868	-0.002129	-0.000049	0.000088	-0.000236	0.001593	0.0015097	0.0017384	0.346	0.849	1.1	16.
15.	-22.0	-14.5	0.002839	-0.001973	0.0000293	0.000026	-0.000852	0.001229	0.0011524	0.0016154	0.347	0.849	1.2	14.
16.	0.0	-5.4	0.067580	-0.000392	-0.0002576	0.000702	-0.000841	0.002186	0.0021002	0.0019293	0.346	0.850	.6	14.
17.	0.0	-7.5	0.082632	0.000581	-0.0003145	0.000557	-0.000861	0.003168	0.0028951	0.0022445	0.346	0.849	.2	16.
18.	0.0	-9.5	0.091155	0.002701	-0.0003695	0.000578	-0.000125	0.004880	0.0046932	0.0032014	0.346	0.849	.1	18.
19.	0.0	-3.9	0.050050	-0.000953	-0.0002197	0.000643	-0.000781	0.001630	0.0015132	0.0014755	0.346	0.848	.7	12.
20.	2.0	-2.1	0.061946	-0.000668	-0.0003126	0.000833	-0.000813	0.001246	0.0011312	0.0018499	0.346	0.849	.5	12.
21.	2.0	-3.0	0.069000	-0.000401	-0.0003491	0.000780	-0.000844	0.001424	0.0013174	0.0019719	0.346	0.847	.3	14.
22.	2.0	-6.1	0.089842	0.001772	-0.0004242	0.000743	-0.000225	0.003095	0.0029179	0.0028476	0.346	0.850	0.0	16.
23.	2.0	-0.8	0.044897	-0.000959	-0.0002663	0.000675	-0.000896	0.001064	0.0009221	0.0016651	0.347	0.847	.7	10.
24.	-5.0	-7.8	*****	*****	*****	233151862	*****	*****	*****	*****	277.075	0.219		

ROTOR SCALE DATA * PROGRAM LA2430 * BODY AXES

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TIME 675.54

Table II - 6. Rotor No. 1, V/OR = .35, M(1.0, 90) = .95

TEST 200.0 RUN 10

SHAFT AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	ALPHA SHAFT	ALPHA CONTROL	CT	-CH	CYR	CMXB	CMY	CQ	CP	CPO	V/OR	M _{AT}	A _{1s}	θ _{grip}
1.	-10.0	-10.3	0.000000	-0.000000	0.000000	0.000000	-0.000000	0.000000	0.0011350	0.0011350	0.000	0.713	.5	6.
2.	-10.0	-10.3	0.000000	-0.000000	0.000000	0.000000	-0.000000	0.000000	0.0010218	0.0010218	0.000	0.714	.5	8.
3.	-10.0	-10.3	0.000000	-0.000000	0.000000	0.000000	-0.000000	0.000000	0.0011444	0.0011444	0.000	0.714	.5	10.
4.	-10.0	-10.2	0.000000	-0.000000	0.000000	0.000000	-0.000000	0.000000	0.0017257	0.0017257	0.000	0.715	.3	12.
5.	-10.0	-10.3	0.000000	0.000000	0.000000	0.000000	-0.000000	0.000000	0.0025385	0.0025385	0.000	0.717	0.0	14.
6.	-10.0	-10.4	0.000000	0.000000	0.000000	-0.000000	-0.000000	0.000000	0.0038112	0.0038112	0.000	0.716	0.0	16.
7.	-12.0	-15.2	0.023820	-0.003052	-0.000972	0.000545	-0.000568	0.003368	0.0030851	0.0023583	0.350	0.948	1.2	16.
8.	-12.0	-16.6	0.040484	-0.002877	-0.000893	0.000490	-0.000704	0.004907	0.0045926	0.0025190	0.351	0.948	1.1	18.
9.	-12.0	-17.2	0.046862	-0.002670	-0.000688	0.000503	-0.000766	0.005639	0.0052292	0.0025921	0.352	0.946	1.2	19.
10.	-15.0	-17.6	0.088298	-0.002971	-0.001054	0.000502	-0.000384	0.002298	0.0020440	0.0022918	0.350	0.948	1.4	16.
11.	-15.0	-19.1	0.024875	-0.002999	-0.001042	0.000518	-0.000562	0.004072	0.0036510	0.0023864	0.351	0.948	1.4	18.
12.	-15.0	-19.7	0.031115	-0.002866	-0.000819	0.000581	-0.000542	0.004729	0.0043856	0.0024607	0.352	0.946	1.4	19.
13.	-15.0	-20.2	0.037893	-0.002753	-0.000720	0.000449	-0.000521	0.005649	0.0051423	0.0025442	0.353	0.942	1.4	20.
14.	-12.0	-13.7	0.007309	-0.002901	-0.001049	0.000525	-0.000501	0.002074	0.0018648	0.0023229	0.351	0.949	1.4	14.
15.	-10.0	-12.0	0.017310	-0.002832	-0.000848	0.000443	-0.000439	0.002580	0.0023689	0.0022693	0.352	0.944	1.2	14.
16.	-5.0	-9.7	0.082882	-0.003054	-0.001729	0.000497	-0.000877	0.004186	0.0038612	0.0027506	0.352	0.948	.8	16.
17.	-5.0	-11.5	0.076864	-0.002177	-0.002254	0.000478	-0.000830	0.005597	0.0053103	0.0039419	0.350	0.949	.5	18.
18.	-2.0	-5.9	0.062311	-0.002888	-0.002381	0.000671	-0.000803	0.002926	0.0027114	0.0027041	0.351	0.947	.6	14.
19.	-2.0	-7.6	0.079127	-0.002480	-0.003070	0.000718	-0.000705	0.003997	0.0037632	0.0032504	0.352	0.945	.3	16.
20.	-2.0	-4.4	0.048144	-0.002928	-0.002081	0.000675	-0.000553	0.002331	0.0021384	0.0024768	0.351	0.947	.9	12.
21.	0.0	-2.6	0.058889	-0.003087	-0.002742	0.000706	-0.000630	0.002012	0.0018369	0.0026923	0.351	0.945	.6	12.
22.	0.0	-4.6	0.073448	-0.002651	-0.003250	0.000789	-0.000838	0.002670	0.0024273	0.0030013	0.351	0.948	.5	14.
23.	0.0	-6.2	0.088903	-0.001886	-0.003768	0.000776	-0.000327	0.003905	0.0036678	0.0037513	0.353	0.943	.2	16.

TEST 200.0 RUN 9

SHAFT AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	ALPHA SHAFT	ALPHA CONTROL	CT	-CH	CYR	CMXB	CMY	CQ	CP	CPO	V/OR	M _{AT}	A _{1s}	θ _{grip}
17.	-5.0	-6.7	0.030990	-0.003010	-0.001281	0.000447	-0.000600	0.002491	0.0023505	0.0023903	0.350	0.952	1.0	12.
18.	-5.0	-7.3	0.039013	-0.003021	-0.001436	0.000506	-0.000629	0.002808	0.0026582	0.0024181	0.350	0.952	.9	13.
19.	-5.0	-8.0	0.047627	-0.003187	-0.001703	0.000538	-0.000724	0.003166	0.0030121	0.0025194	0.350	0.953	.7	14.
20.	-5.0	-8.8	0.054705	-0.003040	-0.001519	0.000455	-0.000879	0.003612	0.0034247	0.0026168	0.350	0.952	1.0	15.
21.	-7.0	-9.5	0.035698	-0.002968	-0.001157	0.000523	-0.000782	0.003117	0.0029789	0.0024025	0.350	0.951	1.0	14.
22.	-7.0	-11.0	0.052346	-0.002921	-0.001222	0.000432	-0.000798	0.004227	0.0040282	0.0026320	0.351	0.952	.8	16.
23.	-7.0	-12.7	0.087551	-0.002480	-0.001482	0.000428	-0.000935	0.005520	0.0053056	0.0029793	0.351	0.951	.7	18.
24.	-7.0	-8.3	0.018020	-0.002663	-0.000932	0.000396	-0.000618	0.002250	0.0021117	0.0022457	0.349	0.949	1.0	12.
25.	-7.0	-7.5	0.009392	-0.002531	-0.000894	0.000370	-0.000481	0.001961	0.0018379	0.0023117	0.351	0.949	1.1	11.
26.	-10.0	-13.6	0.034486	-0.002888	-0.000529	0.000462	-0.000585	0.003825	0.0036614	0.0024824	0.350	0.955	.9	16.
27.	-10.0	-14.1	0.042095	-0.002767	-0.000576	0.000388	-0.000670	0.004479	0.0042771	0.0025484	0.352	0.952	.9	17.
28.	-10.0	-15.0	0.049468	-0.002544	-0.000493	0.000281	-0.000690	0.005164	0.0049765	0.0026772	0.352	0.952	1.0	18.
29.	-10.0	-15.6	0.059010	-0.002564	-0.000939	0.000319	-0.000684	0.006120	0.0058661	0.0029206	0.352	0.953	.8	19.

ROTOR SCALE DATA * PROGRAM LA2430 * BODY AXES

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Table II - 7. Rotor No. 1, V/OR = .35, M(1.0, 90) = 1.00

TEST 288.0 RUN 12

SHAFT AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

BT.	ALPHA SHAFT	ALPHA CONTROL	CT	-CH	CYR	CMXB	CMY	CQ	CP	CPO	V/OR	M ₀ AT	A _{1s}	θ _{grip}
1.	-9.0	-11.8	0.003042	-0.004396	-0.000727	0.000443	-0.001077	0.004197	0.0039455	0.0035807	0.353	0.996	1.1	15.
2.	-9.0	-11.0	0.024956	-0.004773	-0.000765	0.000682	-0.001559	0.003868	0.0034541	0.0036952	0.350	1.003	1.1	14.
3.	-9.0	-12.2	0.041820	-0.004980	-0.000843	0.000777	-0.001649	0.005088	0.0046901	0.0040024	0.352	0.998	.9	16.
4.	-9.0	-13.0	0.049182	-0.005064	-0.001037	0.000757	-0.001827	0.005784	0.0052649	0.0041622	0.350	1.002	.7	17.
5.	-9.0	-10.0	0.017454	-0.004525	-0.000718	0.000571	-0.001351	0.003366	0.0030550	0.0036407	0.349	1.003	1.2	13.
6.	-9.0	-9.9	0.008694	-0.004109	-0.000649	0.000448	-0.000928	0.002913	0.0026392	0.0035910	0.351	1.003	1.2	12.
7.	-12.0	-14.6	0.024764	-0.004448	-0.000556	0.000527	-0.001070	0.004263	0.0039283	0.0036021	0.350	1.002	1.2	16.
8.	-12.0	-15.3	0.032835	-0.004489	-0.000609	0.000616	-0.001171	0.004998	0.0046374	0.0037264	0.351	1.003	1.0	17.
9.	-12.0	-14.0	0.016827	-0.004135	-0.000522	0.000488	-0.000835	0.003578	0.0033202	0.0034987	0.349	1.002	1.0	15.
10.	-12.0	-13.2	0.009816	-0.004027	-0.000706	0.000509	-0.000667	0.002956	0.0027449	0.0024046	0.351	1.001	1.4	14.
11.	-12.0	-12.5	0.002145	-0.003730	-0.000578	0.000430	-0.000557	0.002436	0.0022915	0.0034094	0.349	1.003	1.2	13.
12.	-15.0	-17.1	0.009971	-0.004107	-0.000536	0.000396	-0.000468	0.003281	0.0030216	0.0035011	0.351	1.002	1.2	16.
13.	-15.0	-17.7	0.017913	-0.004243	-0.000664	0.000481	-0.000643	0.004100	0.0037157	0.0035061	0.350	1.005	1.1	17.
14.	-15.0	-18.4	0.026145	-0.004387	-0.000558	0.000574	-0.000816	0.004959	0.0046215	0.0036841	0.353	0.999	1.1	18.
15.	-15.0	-16.4	0.002120	-0.003941	-0.000691	0.000375	-0.000352	0.002600	0.0024016	0.0035458	0.351	1.001	1.4	15.
16.	-12.0	-16.0	0.038937	-0.004389	-0.000589	0.000553	-0.001069	0.005705	0.0054239	0.0039863	0.352	1.002	1.0	17.7
17.	-13.0	-16.8	0.037929	-0.004353	-0.000593	0.000623	-0.001030	0.005754	0.0054200	0.0039164	0.352	1.000	1.0	18.
18.	-14.0	-17.8	0.030306	-0.004296	-0.000471	0.000436	-0.000891	0.005199	0.0048459	0.0036754	0.351	1.003	1.0	18.
19.	-6.0	-8.1	0.041601	-0.004380	-0.001239	0.000659	-0.001047	0.004076	0.0038953	0.0038879	0.352	0.999	.9	14.
20.	-6.0	-8.9	0.051058	-0.004898	-0.001388	0.000612	-0.001171	0.004693	0.0044717	0.0041339	0.352	1.000	.8	15.
21.	-6.0	-9.7	0.059506	-0.005012	-0.001691	0.000668	-0.001216	0.005373	0.0050797	0.0044094	0.353	1.000	.6	16.
22.	-6.0	-7.4	0.035420	-0.004389	-0.001114	0.000511	-0.000943	0.003699	0.0035176	0.0037708	0.351	1.001	.9	13.
23.	-6.0	-6.7	0.026608	-0.004363	-0.001070	0.000491	-0.000898	0.003405	0.0031485	0.0036451	0.351	0.999	1.0	12.
24.	-6.0	-6.2	0.017871	-0.004042	-0.000954	0.000473	-0.000889	0.003001	0.0028604	0.0035936	0.351	1.002	1.0	11.
25.	-3.0	-6.0	0.059267	-0.004982	-0.002186	0.000752	-0.001310	0.004046	0.0037743	0.0041984	0.351	1.002	.7	14.
26.	-3.0	-6.5	0.067395	-0.005038	-0.002150	0.000725	-0.001221	0.004646	0.0043512	0.0045747	0.351	1.001	.5	15.
27.	-3.0	-5.1	0.050728	-0.004992	-0.002049	0.000801	-0.001306	0.003638	0.0034094	0.0040569	0.351	1.001	.6	13.
28.	-3.0	-4.3	0.043378	-0.004964	-0.001780	0.000710	-0.001225	0.003380	0.0031367	0.0039571	0.352	1.001	.7	12.
29.	-3.0	-3.7	0.034338	-0.004581	-0.001442	0.000634	-0.001178	0.003129	0.0028711	0.0038061	0.352	1.001	.8	11.

ROTOR SCALE DATA * PROGRAM LA2430 * BODY AXES

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Table II - 8. Rotor No. 1, V/OR = .35, M(1.0, 90) = 1.02

TEST 208.0 RUN 15

SHAFT AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED														
PT.	ALPHA SHAFT	ALPHA CONTROL	OT	-OH	CYR	CMXB	CMY	CQ	OP	CPO	V/OR	M _z AT	A ₁ _B	θ _{grip}
1.	-12.0	-15.4	0.033056	-0.004485	-0.000149	0.000383	-0.000636	0.005083	0.0048940	0.0039453	0.352	1.017	1.1	17.
2.	-12.0	-15.2	0.043332	-0.004570	-0.000254	0.000390	-0.000565	0.005255	0.0050280	0.0041001	0.350	1.024	1.0	17.
3.	-12.0	-14.4	0.026908	-0.004678	-0.000078	0.000337	-0.000575	0.004806	0.0044401	0.0040337	0.351	1.022	1.1	16.
4.	-12.0	-13.6	0.028599	-0.004822	-0.000094	0.000339	-0.000619	0.003908	0.0037679	0.0039728	0.350	1.020	1.2	15.
5.	-12.0	-12.8	0.011327	-0.004557	-0.000037	0.000268	-0.000679	0.003371	0.0032532	0.0039835	0.352	1.020	1.2	14.
6.	-9.0	-10.2	0.027143	-0.004835	-0.000209	0.000275	-0.000641	0.004073	0.0039589	0.0040952	0.352	1.022	1.1	14.
7.	-9.0	-9.6	0.029262	-0.004679	-0.000113	0.000285	-0.000752	0.003633	0.0035342	0.0040719	0.351	1.023	1.0	13.
8.	-9.0	-11.2	0.034598	-0.004817	-0.000228	0.000340	-0.000508	0.004821	0.0044838	0.0041728	0.352	1.020	.9	15.
9.	-9.0	-12.1	0.043149	-0.004861	-0.000182	0.000254	-0.000592	0.005315	0.0051267	0.0043174	0.352	1.022	.8	16.
10.	-15.0	-16.7	0.010923	-0.004573	0.000151	0.000238	-0.000492	0.003636	0.0034880	0.0040354	0.350	1.024	1.4	16.
11.	-15.0	-17.3	0.019103	-0.004818	0.000070	0.000332	-0.000460	0.004398	0.0042214	0.0040258	0.350	1.024	1.2	17.
12.	-15.0	-18.1	0.026059	-0.004543	0.000275	0.000243	-0.000405	0.005085	0.0048822	0.0040085	0.351	1.022	1.1	18.
13.	-13.0	-16.8	0.031288	-0.003268	0.000278	0.000072	-0.000686	0.005858	0.0056354	0.0042210	0.351	1.024	1.0	18.8
14.	-13.0	-15.9	0.028705	-0.004589	-0.000080	0.000342	-0.000490	0.005053	0.0048362	0.0040849	0.350	1.023	1.1	17.

ROTOR SCALE DATA * PROGRAM LA2430 * BODY AXES

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TIME 675.54

Table II - 9. Rotor No. 1, V/OR = .40, M(1.0, 90) = .85

TEST 208.0 RUN 7

SHAFT AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	ALPHA SHAFT	ALPHA CONTROL	CT	-CH	CYR	CMXB	CMY	CQ	CP	CPO	V/OR	M,AT	A _{1s}	θ _{grip}
1.	-4.0	-12.2	0.076055	-0.002867	-0.002899	0.000878	-0.001161	0.004845	0.0046721	0.0031566	0.401	0.845	.7	18.
2.	-4.0	-13.1	0.081232	-0.001578	-0.002909	0.000768	-0.001344	0.005864	0.0054607	0.0034570	0.396	0.853	.6	19.
3.	-4.0	-14.0	0.085539	-0.000962	-0.003104	0.000824	-0.001309	0.006619	0.0063572	0.0039386	0.398	0.850	-1.2	20.
4.	-4.0	-21.3	-0.001280	-0.001964	-0.001817	0.000550	-0.001250	0.001290	0.0012329	0.0020498	0.399	0.849	1.1	8.
5.	-2.0	-3.0	0.043583	-0.002666	-0.002479	0.000790	-0.000340	0.001924	0.0018345	0.0021776	0.396	0.853	.8	12.
6.	-2.0	-3.5	0.027125	-0.002428	-0.002198	0.000810	-0.000144	0.001509	0.0014878	0.0020319	0.398	0.848	1.0	10.
7.	-2.0	-2.0	0.010858	-0.002127	-0.001868	0.000570	-0.000159	0.001432	0.0012590	0.0019500	0.400	0.847	1.1	8.
8.	-2.0	-9.9	0.080468	-0.001651	-0.003413	0.000798	-0.000710	0.004164	0.0039995	0.0031609	0.398	0.850	.6	17.
9.	-2.0	-11.0	0.084194	-0.000780	-0.003762	0.000814	-0.000697	0.004991	0.0047261	0.0034531	0.398	0.851	.3	18.
10.	0.0	-7.6	0.083656	-0.001384	-0.004335	0.000830	-0.000698	0.003334	0.0031181	0.0032624	0.399	0.848	.3	16.
11.	0.0	-8.8	0.087839	-0.000399	-0.004628	0.000848	-0.000786	0.004182	0.0039876	0.0036971	0.398	0.849	.2	17.
12.	0.0	-9.2	0.092078	0.000599	-0.004998	0.001015	-0.000711	0.005188	0.0049452	0.0042128	0.398	0.849	0.0	18.
13.	0.0	-9.7	0.071582	-0.002981	-0.004007	0.000971	-0.000722	0.002217	0.0020522	0.0027009	0.398	0.849	.5	14.

TEST 208.0 RUN 5

SHAFT AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	ALPHA SHAFT	ALPHA CONTROL	CT	-CH	CYR	CMXB	CMY	CQ	CP	CPO	V/OR	M,AT	A _{1s}	θ _{grip}
1.	-4.0	-8.7	0.039928	-0.001875	-0.001126	0.000349	-0.000660	0.002664	0.0026519	0.0020923	0.401	0.852	.9	14.
2.	-4.0	-10.6	0.054582	-0.001600	-0.001486	0.000442	-0.000824	0.003497	0.0034048	0.0023682	0.396	0.859	.9	16.
3.	-4.0	-12.5	0.069829	-0.000948	-0.001811	0.000388	-0.000867	0.004796	0.0046558	0.0028052	0.401	0.850	.8	18.
4.	-8.0	-15.2	0.047871	-0.001738	-0.000205	0.000105	-0.000892	0.004585	0.0045879	0.0024135	0.399	0.852	1.1	18.
5.	-8.0	-16.8	0.059219	-0.001127	-0.000214	0.000128	-0.000841	0.005842	0.0057593	0.0027279	0.397	0.857	1.0	20.
6.	-12.0	-17.8	0.025871	-0.002504	0.000153	0.000136	-0.000824	0.008463	0.0084310	0.0022373	0.397	0.856	1.4	18.
7.	-12.0	-19.4	0.038729	-0.002101	0.000133	0.000271	-0.000852	0.005072	0.0049311	0.0024533	0.399	0.853	1.4	20.

ROTOR SCALE DATA * PROGRAM LA2430 * BODY AXES

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TIME 675.54

Table II - 10. Rotor No. 1, V/OR = .40, M(1.0, 90) = .95

TEST 200.0 RUN 13

SHAFT AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	ALPHA SHAFT	ALPHA CONTROL	CT	-CH	CYR	CMXB	CMY	CQ	CP	CPO	V/OR	M,AT	A _{1s}	θ _{grip}
1.	-9.0	-12.4	0.026508	-0.003947	-0.000478	0.000508	-0.000510	0.003112	0.0029692	0.0028278	0.404	0.947	1.4	15.
2.	-9.0	-13.1	0.034273	-0.004032	-0.000684	0.000658	-0.000378	0.003745	0.0035758	0.0029505	0.404	0.948	1.2	16.
3.	-9.0	-11.6	0.019348	-0.003867	-0.000632	0.000659	-0.000491	0.002622	0.0024827	0.0027799	0.403	0.948	1.4	14.
4.	-9.0	-10.9	0.012415	-0.003741	-0.000612	0.000516	-0.000265	0.002181	0.0020720	0.0027713	0.404	0.948	1.4	13.
5.	-12.0	-14.6	0.010793	-0.003908	-0.000292	0.000460	-0.000289	0.002803	0.0022478	0.0028776	0.404	0.947	1.4	15.
6.	-12.0	-15.2	0.017826	-0.003981	-0.000298	0.000537	-0.000302	0.002949	0.0028871	0.0029358	0.404	0.948	1.4	16.
7.	-12.0	-16.1	0.024986	-0.003920	-0.000231	0.000459	-0.000323	0.003569	0.0034642	0.0028801	0.402	0.949	1.2	17.
8.	-12.0	-16.8	0.031208	-0.003893	-0.000377	0.000613	-0.000301	0.004338	0.0041741	0.0030321	0.405	0.947	1.4	18.
9.	-12.0	-17.3	0.038225	-0.004072	-0.000419	0.000536	-0.000720	0.005232	0.0049655	0.0032789	0.404	0.947	1.2	19.
10.	-12.0	-17.9	0.062750	-0.003855	-0.000383	0.000420	-0.000348	0.001665	0.0016124	0.0029049	0.404	0.946	1.4	14.
11.	-15.0	-18.3	0.069077	-0.004036	-0.000400	0.000396	-0.000137	0.002561	0.0023729	0.0029920	0.403	0.948	1.5	17.
12.	-15.0	-19.0	0.015226	-0.004010	-0.000369	0.000408	-0.000137	0.003250	0.0030826	0.0030413	0.402	0.951	1.5	18.
13.	-15.0	-19.7	0.022972	-0.004053	-0.000356	0.000438	-0.000160	0.004018	0.0038494	0.0030683	0.401	0.952	1.4	19.
14.	-15.0	-19.8	0.060997	-0.003927	-0.000298	0.000310	-0.000077	0.001639	0.0015594	0.0029771	0.401	0.950	1.4	16.
15.	-7.0	-9.8	0.031801	-0.003978	-0.000798	0.000507	-0.000559	0.003083	0.0028643	0.0028453	0.403	0.949	1.2	14.
16.	-7.0	-10.8	0.038896	-0.004014	-0.000805	0.000473	-0.000832	0.003610	0.0034714	0.0031002	0.403	0.946	1.1	15.
17.	-8.0	-13.1	0.069635	-0.000854	-0.000989	0.000199	-0.000410	0.004808	0.0045908	0.0017941	0.271	0.899	.1	17.5
18.	-8.0	-13.1	0.036709	-0.001921	-0.001240	0.000173	-0.000322	0.005202	0.0049512	0.0019266	0.270	0.903	.1	18.
19.	-9.0	-14.1	0.071063	-0.001092	-0.001878	0.000171	-0.000306	0.005206	0.0049530	0.0018057	0.271	0.900	0	18.
20.	-9.0	-14.1	0.079185	-0.001582	-0.001114	0.000150	-0.000350	0.005720	0.0054274	0.0019662	0.271	0.902	0	18.5
21.	-9.0	-14.1	0.081267	-0.000893	-0.001040	0.000172	-0.000274	0.006874	0.0044128	0.0016777	0.272	0.900	0	17.4
22.	-8.0	-13.1	0.062109	-0.000483	-0.001137	0.000124	-0.000215	0.004440	0.0042123	0.0016780	0.271	0.899	0	17.
23.	-7.0	-12.1	0.069929	-0.000764	-0.001374	0.000229	-0.000242	0.004463	0.0042473	0.0017745	0.270	0.900	0	17.
24.	-7.0	-12.1	0.060646	-0.000392	-0.001329	0.000217	-0.000224	0.004076	0.0038749	0.0016750	0.270	0.901	0	16.5
25.	-7.0	-12.1	0.078495	-0.001284	-0.001473	0.000242	-0.000386	0.004922	0.0046655	0.0018986	0.271	0.898	0	17.5
26.	-8.0	-14.1	0.059083	0.000836	-0.001354	0.000147	-0.000145	0.004643	0.0044192	0.0016665	0.272	0.901	-.2	17.5
27.	-8.0	-15.1	0.053820	0.001430	-0.001399	0.000129	-0.000140	0.004477	0.0042676	0.0016138	0.271	0.904	-.3	17.5
28.	-9.0	-16.1	0.048820	0.001242	-0.001313	0.000156	-0.000216	0.004388	0.0041729	0.0015741	0.271	0.902	-.3	17.5
29.	-9.0	-13.8	0.064093	-0.000907	-0.000433	0.000146	-0.000402	0.004755	0.0045097	0.0016916	0.271	0.901	.7	17.5
30.	-9.0	-12.8	0.073071	-0.002728	-0.000308	0.000148	-0.000508	0.004894	0.0046241	0.0018186	0.269	0.904	.6	17.5
31.	-9.0	-11.8	0.082566	-0.004735	-0.000331	0.000212	-0.000569	0.005078	0.0048281	0.0020242	0.270	0.902	.6	17.5
32.	-8.0	-10.8	0.088229	-0.005078	-0.000288	0.000231	-0.000577	0.005055	0.0048064	0.0021886	0.269	0.904	.6	17.5
33.	-8.0	-12.8	0.089707	-0.000879	-0.000780	0.000148	-0.000255	0.004850	0.0045984	0.0017889	0.272	0.902	.2	17.5

Table II - 11. Rotor No. 2.

TEST 310.7 RUN 3

44 FT. TAPERED TIP ROTOR V/CR = .32 M(1.0)(90) = .87

SHAFT AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	THETA	ALPHA SHAFT	ALPHA CONTROL	CT	CH	CYR	CMXB	CMY	CC	CP	CPC	V/CR	M(1.0)(90)	A _{1s}
1.	8.0	-12.0	-14.8	0.035846	0.001189	0.001115	-0.000145	-0.001566	0.003692	0.0037269	0.0020327	0.315	0.871	.2
2.	6.0	-11.0	-13.1	0.017041	0.001387	0.001171	0.000227	-0.000501	0.002161	0.0022866	0.0017574	0.318	0.873	.3
3.	10.0	-13.0	-16.2	0.051649	0.000487	-0.000385	-0.000165	-0.000784	0.005116	0.0052081	0.0023282	0.315	0.878	
4.	12.0	-14.0	-17.8	0.066988	-0.000498	-0.000311	-0.000262	-0.000639	0.006892	0.0069399	0.0027607	0.316	0.874	
5.	13.0	-14.0	-18.5	0.073783	-0.000948	-0.000598	-0.000464	-0.000791	0.008009	0.0079959	0.0032097	0.318	0.874	.2
6.	10.0	-15.0	-20.1	0.028525	0.001057	0.000605	-0.000286	-0.000768	0.0014008	0.0040787	0.0019922	0.318	0.871	.5
7.	8.0	-15.0	-18.8	0.011886	0.001388	0.000718	-0.000332	-0.000617	0.002184	0.0024187	0.0018551	0.318	0.872	.5
8.	12.0	-15.0	-21.5	0.044542	0.000410	0.000265	-0.000235	-0.000687	0.005918	0.0059767	0.0022824	0.319	0.872	.3
9.	13.7	-15.0	-22.9	0.055260	-0.000433	0.000028	-0.000221	-0.000808	0.008000	0.0079627	0.0026766	0.319	0.872	.2
10.	10.0	-5.0	-12.5	0.077771	-0.000095	-0.0001661	-0.000152	-0.000771	0.005525	0.0055846	0.0029232	0.318	0.873	.0
11.	10.0	-5.0	-12.5	0.066894	0.001727	-0.001837	-0.000154	0.003699	0.005645	0.0056548	0.0039951	0.317	0.870	

TEST 310.7 RUN 4

44 FT. TAPERED TIP ROTOR V/CR = .32 M(1.0)(90) = .87

SHAFT AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	THETA	ALPHA SHAFT	ALPHA CONTROL	CT	CH	CYR	CMXB	CMY	CC	CP	CPC	V/CR	M(1.0)(90)	A _{1s}
1.	10.0	-5.0	-12.5	0.073513	0.001018	-0.001813	-0.000236	-0.000652	0.005799	0.0057858	0.0031134	0.325	0.882	
2.	12.0	-5.0	-14.4	0.084800	-0.001519	-0.002134	-0.000217	-0.000452	0.007420	0.0072771	0.0038450	0.323	0.882	
3.	8.0	-5.0	-11.8	0.061498	0.001869	-0.001314	-0.000155	-0.000552	0.004070	0.0040263	0.0022803	0.323	0.881	
4.	6.0	-5.0	-8.7	0.044598	0.001473	-0.000748	-0.000114	-0.000468	0.002839	0.0028483	0.0019121	0.322	0.881	.1
5.	4.0	-5.0	-7.5	0.025136	0.001463	-0.000397	-0.000121	-0.000337	0.001940	0.0019223	0.0016364	0.322	0.880	.3
6.	2.0	-5.0	-5.9	0.017911	0.001458	-0.000212	-0.000064	-0.000228	0.001325	0.0013065	0.0015470	0.322	0.883	.0
7.	6.0	0.0	-5.3	0.073473	0.0006471	-0.0002323	-0.000038	-0.0007803	0.002296	0.0023414	0.0040285	0.326	0.880	.4
8.	8.0	0.0	-7.5	0.084615	0.0006439	-0.000343	-0.000030	-0.0011950	0.003910	0.0039516	0.0055000	0.327	0.878	.6
9.	10.0	0.0	-9.4	0.090981	-0.0002173	-0.0003830	-0.000154	-0.000926	0.005768	0.0057726	0.0044232	0.324	0.881	
10.	4.0	0.0	-3.5	0.054761	0.001819	-0.001516	-0.000052	-0.000530	0.001475	0.0014409	0.0017978	0.325	0.881	
11.	2.0	0.0	-1.7	0.036045	0.001872	-0.000951	-0.000134	-0.000431	0.001084	0.0010775	0.0015840	0.325	0.880	
12.	0.0	0.0	-1.4	0.019817	0.001812	-0.000552	-0.000122	-0.000299	0.000966	0.0009577	0.0015167	0.327	0.880	.1
13.	-1.0	0.0	0.0	0.011728	0.001655	-0.000445	-0.000123	-0.000281	0.000998	0.0009591	0.0014866	0.325	0.878	
14.	-2.0	0.0	0.7	0.003325	0.001461	-0.000334	-0.000114	-0.000161	0.001082	0.0010815	0.0015564	0.325	0.878	
15.	2.0	5.0	2.0	0.067731	0.002829	-0.002475	-0.000137	-0.000933	-0.000393	-0.0002863	0.0020872	0.324	0.879	
16.	4.0	5.0	0.1	0.083918	0.001994	-0.0003799	-0.000117	-0.000951	-0.000277	-0.0003056	0.0027927	0.326	0.879	.3
17.	0.0	5.0	3.5	0.043697	0.002771	-0.001912	0.000059	-0.000910	-0.000347	-0.0003061	0.0017859	0.325	0.878	.0
18.	-2.0	5.0	5.0	0.031642	0.002660	-0.001274	0.000123	-0.000825	-0.000054	-0.0000202	0.0016483	0.327	0.881	

Table II - 12. Rotor No. 2.

TEST 310.0 RUN 5

44 FT. TAPERED TIP ROTOR V/CR = .36 M(1.0)(90) = .80

SHAFT AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	THETA	ALPHA SHAFT	ALPHA CENTRCL	CT	CF	CYR	CMXB	CMY	CC	CP	CPD	V/CR M(1.0)(90)	A _{1s}	
1.	4.0	-10.0	-11.6	0.002319	0.001519	0.000336	-0.000786	-0.000364	0.001243	0.001228	0.0015727	0.315	0.877	.4
2.	8.0	-10.0	-14.5	0.003342	0.001438	0.000181	-0.000158	-0.000512	0.003491	0.0034630	0.0018952	0.340	0.832	.4
3.	8.0	-10.0	-14.5	0.029215	0.001635	0.000164	-0.000596	-0.000544	0.003294	0.0033054	0.0020004	0.360	0.797	.4
4.	17.0	-10.0	-16.1	0.045062	0.001158	0.000114	-0.000234	-0.000620	0.004899	0.0048156	0.0022669	0.360	0.798	.2
5.	12.0	-10.0	-17.5	0.059618	0.000617	-0.000162	-0.000262	-0.000767	0.006485	0.0063762	0.0026317	0.359	0.797	.2
6.	13.7	-10.0	-19.7	0.070610	-0.001044	-0.000314	-0.000420	-0.000768	0.006421	0.0060951	0.0030287	0.359	0.800	.1
7.	13.7	-15.0	-22.8	0.049570	0.000686	0.0007425	-0.000285	-0.000839	0.007188	0.0066876	0.0024439	0.360	0.796	.5
8.	12.0	-15.0	-21.3	0.034668	0.001403	0.000687	-0.000226	-0.000794	0.005083	0.0050413	0.0022428	0.357	0.798	.7
9.	10.0	-15.0	-20.1	0.019439	0.001780	0.000757	-0.000282	-0.000886	0.003260	0.0032915	0.0020677	0.362	0.794	.7
10.	8.0	-15.0	-18.8	0.022805	0.002283	0.000676	-0.000117	-0.000644	0.001438	0.0014920	0.0019559	0.361	0.796	.7
11.	6.0	-15.0	-17.1	0.013343	0.002474	0.000836	-0.000179	-0.0001031	-0.000128	-0.0000790	0.0020237	0.362	0.794	.6
12.	6.0	-10.0	-13.0	0.011366	0.001786	0.000952	-0.000088	-0.000446	0.001931	0.0019225	0.0018355	0.363	0.795	.5
13.	4.0	-10.0	-11.6	0.005452	0.001875	0.000358	-0.000166	-0.000431	0.000812	0.0008077	0.0017858	0.360	0.797	.5
14.	4.0	-5.0	-7.2	0.022618	0.001716	-0.000360	0.000039	-0.000327	0.001850	0.0019017	0.0017715	0.359	0.797	.3
15.	2.0	-5.0	-6.0	0.003714	0.001651	-0.000169	0.000036	-0.000173	0.001214	0.0011936	0.0016713	0.362	0.791	.4
16.	6.0	-5.0	-9.0	0.041641	0.001693	-0.000764	0.000040	-0.000515	0.002792	0.0028382	0.0020129	0.362	0.792	.1
17.	8.0	-5.0	-10.8	0.059128	0.001445	-0.001075	-0.000082	-0.000494	0.003882	0.0038872	0.0023132	0.357	0.801	.1
18.	12.0	-5.0	-12.5	0.074999	0.000656	-0.001619	-0.000124	-0.000611	0.005503	0.0054037	0.0028822	0.362	0.790	.1
19.	12.0	-5.0	-14.5	0.085201	-0.000967	-0.002130	-0.000144	-0.000923	0.007370	0.0071613	0.0036164	0.363	0.790	.1
20.	8.0	0.0	-7.5	0.083250	0.0007380	-0.0002836	0.000012	-0.000434	0.003497	0.0034880	0.0031338	0.358	0.799	.2
21.	10.0	0.0	-9.3	0.091238	-0.001275	-0.0003661	-0.000085	-0.001053	0.005367	0.0052969	0.0042520	0.358	0.799	.2
22.	6.0	0.0	-5.5	0.069596	0.001577	-0.002170	0.000042	-0.000602	0.002087	0.0020965	0.0023175	0.358	0.798	.2
23.	4.0	0.0	-3.6	0.052280	0.001977	-0.001130	-0.000026	-0.000458	0.001329	0.0014235	0.0019371	0.358	0.798	.1
24.	2.0	0.0	-2.0	0.032659	0.001927	-0.000813	-0.000038	-0.000407	0.001018	0.0011152	0.0017313	0.359	0.798	.1
25.	0.0	0.0	-0.5	0.017333	0.001928	-0.000495	0.000020	-0.000191	0.000955	0.0009885	0.0016659	0.362	0.789	.2
26.	0.0	5.0	3.7	0.047588	0.002821	-0.001825	0.000079	-0.000452	-0.000527	-0.0004405	0.0018985	0.359	0.798	-.2
27.	2.0	5.0	2.0	0.065279	0.002881	-0.002587	0.000135	-0.000631	-0.000583	-0.0004898	0.0022740	0.358	0.800	.2
28.	3.0	5.0	1.9	0.073652	0.002563	-0.002836	0.000151	-0.0005717	-0.000452	-0.0003371	0.0024955	0.358	0.798	.2
29.	4.0	5.0	-0.1	0.081880	0.002057	-0.003707	0.000210	-0.000653	0.000052	0.0000773	0.0028920	0.357	0.800	.2
30.	6.0	5.0	-2.3	0.093374	0.001346	-0.004618	0.000235	-0.000448	0.001483	0.0015848	0.0040187	0.359	0.798	.2

Table II-12. (Concluded)

TEST 310.0 RUN 13

44 FT. TAPERED TIP ROTOR V_{OR} * .36 M(1.0)(90) * .80

SHAFT AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

RT.	THETA	ALPHA SHAFT	ALPHA CONTROL	CT	CH	CYR	CMXB	CMY	CQ	CP	CPO	V/OR M(1.0)(90)	A _{1s}	
1.	0.0	0.0	-1.0	0.010889	0.001700	-0.000294	-0.000017	-0.000158	0.000977	0.0009120	0.0015105	0.357	0.801	.2
2.	0.0	2.0	1.0	0.025297	0.002192	-0.000796	0.000090	-0.000605	0.000656	0.0005910	0.0016373	0.355	0.804	.2
3.	0.0	4.0	3.0	0.040259	0.002757	-0.001162	0.000015	-0.000450	-0.000805	-0.000360	0.0018100	0.354	0.804	.2
4.	0.0	6.0	5.0	0.057485	0.004118	-0.001785	0.000030	-0.000703	-0.001196	-0.0010753	0.0022838	0.355	0.803	.2
5.	-2.0	6.0	5.0	0.028465	0.002173	-0.001210	0.000050	-0.000388	0.000025	-0.0000121	0.0017575	0.355	0.803	.2
6.	-2.0	4.0	3.0	0.015820	0.001911	-0.000822	0.000133	-0.000286	0.000845	0.0005438	0.0015986	0.356	0.803	.2
7.	2.0	4.0	3.0	0.078153	0.007045	-0.002996	0.000131	-0.000873	-0.001219	-0.0010776	0.0029511	0.357	0.803	.5
8.	2.0	6.0	5.0	0.092777	0.008670	-0.003691	0.000145	-0.001063	-0.001954	-0.0017555	0.0041060	0.357	0.803	.5
9.	2.0	2.0	1.0	0.060208	0.004985	-0.002311	0.000134	-0.000903	-0.000183	-0.0000849	0.0021819	0.356	0.802	.5
10.	2.0	0.0	-1.0	0.049201	0.003374	-0.001509	-0.000007	-0.000478	0.000322	0.0006671	0.0017378	0.357	0.802	.5
11.	4.0	0.0	-1.0	0.076896	0.007397	-0.002507	0.000085	-0.000818	0.000446	0.0003979	0.0026024	0.355	0.803	.5
12.	4.0	2.0	1.0	0.092042	0.009671	-0.003290	0.000221	-0.001318	0.000002	0.0000362	0.0040152	0.355	0.804	.5

For the following data points
a_{1s} and/or b_{1s} ≠ 0.0 ± .2°

PT.	THETA	ALPHA SHAFT	a _{1s}	b _{1s}
1	0	0	-.8	0
2	0	2	-.5	0
3	0	4	0	0
4	0	6	.8	0
5	-2	6	-1.0	0
6	-2	4	-1.4	0
7	2	4	2.4	0
8	2	6	3.6	0
9	2	2	1.8	0
10	2	0	1.2	0
11	4	0	3.4	0
12	4	2	4.3	0

Table II - 13. Rotor No. 2.

TEST 310. RUN 6

44 FT. TAPERED TIP RCTCR V/CR = 1.36 M(I.0)(90) = 1.90

SHAFT AXES COEFFICIENTS, BASED ON RCTCR BLADE AREA AND RCTCR TIP SPEED

PT.	THETA	ALPHA SHAFT	ALPHA CENTRL	CT	CF	CYR	CMXE	CMY	CC	CP	CPC	V/CR M(1.0)(90)	A _{1s}	
1.	6.0	-5.0	-9.2	0.047099	0.001647	-0.000444	-0.000216	-0.000231	0.002883	0.0028525	0.0020750	0.358	0.903	.2
2.	8.0	-5.0	-11.1	0.056309	0.001435	-0.000953	-0.000155	-0.000329	0.004022	0.0039511	0.0024877	0.356	0.907	.1
3.	10.0	-5.0	-12.9	0.069519	0.000447	-0.001424	-0.000124	-0.000217	0.005623	0.0054739	0.0031286	0.357	0.905	.1
4.	4.0	-5.0	-7.5	0.023116	0.001746	-0.000285	-0.000024	-0.000051	0.001924	0.0019744	0.0018377	0.359	0.900	.3
5.	2.0	-5.0	-6.	0.002314	0.001436	-0.000165	0.000018	0.0002576	0.001382	0.0013427	0.0017883	0.363	0.893	.4
6.	2.0	0.0	-1.9	0.035448	0.002184	-0.000728	0.000041	-0.000266	0.001080	0.0010856	0.0017731	0.356	0.908	.1
7.	0.0	0.0	-0.6	0.018462	0.001953	-0.000959	0.0000721	-0.000012	0.000604	0.0010092	0.0016831	0.357	0.907	.1
8.	4.0	0.0	-3.6	0.053813	0.002156	-0.001465	-0.0000221	-0.000192	0.001453	0.0014933	0.0020562	0.356	0.907	.1
9.	6.0	0.0	-5.7	0.070068	0.001585	-0.002415	0.000042	-0.000424	0.002315	0.0024211	0.0026348	0.355	0.906	.1
10.	8.0	0.0	-7.7	0.080655	0.000321	-0.003212	0.000006	-0.000479	0.003806	0.0037816	0.0034366	0.358	0.904	.1
11.	4.0	5.0	-0.5	0.081149	0.002113	-0.004000	0.0000331	-0.000517	0.000474	0.0004073	0.0032226	0.357	0.903	.1
12.	6.0	5.0	-2.6	0.089340	0.000083	-0.004628	0.0000196	-0.000636	0.002172	0.0021403	0.0043830	0.356	0.906	.1
13.	2.0	5.0	1.5	0.068302	0.002265	-0.002930	0.0000176	-0.000581	-0.000483	-0.0000818	0.0028936	0.358	0.902	.1
14.	0.0	5.0	3.3	0.052359	0.003414	-0.002270	0.0000195	-0.000411	-0.000453	-0.0004889	0.0021703	0.358	0.903	.1
15.	-2.0	5.0	5.1	0.034770	0.003262	-0.001540	0.0000201	-0.000701	-0.000235	-0.0002026	0.0019528	0.357	0.905	.1
16.	-2.0	7.0	6.4	0.046687	0.003570	-0.002117	0.0000231	-0.000826	-0.000948	-0.0010133	0.0021338	0.357	0.905	-.2
17.	0.0	7.0	4.6	0.064876	0.003733	-0.003276	0.0000301	-0.000572	-0.001275	-0.0014262	0.0024432	0.358	0.903	.1
18.	2.0	7.0	2.8	0.079677	0.003247	-0.004211	0.0000276	-0.000939	-0.001016	-0.0009731	0.0032122	0.357	0.905	-.5
19.	4.0	7.0	0.8	0.088866	0.001556	-0.004916	0.0000126	-0.001586	0.0000377	0.00003250	0.0042195	0.359	0.905	.1
20.	6.0	-10.0	-13.0	0.015222	0.001748	0.000321	-0.0000175	-0.000298	0.002228	0.0022913	0.0019464	0.356	0.908	.5
21.	8.0	-10.0	-14.4	0.031186	0.001557	0.000201	-0.0000215	-0.000312	0.003612	0.0034992	0.0020440	0.357	0.903	.5
22.	10.0	-10.0	-16.1	0.044521	0.001909	0.001316	-0.0002245	-0.0002185	0.004863	0.0048323	0.0026110	0.356	0.907	.4
23.	11.0	-10.0	-17.0	0.053321	0.001859	-0.001245	-0.000134	-0.000717	0.005875	0.0056255	0.0024181	0.358	0.903	.4
24.	11.0	-15.0	-20.6	0.026983	0.001551	0.000660	-0.000185	-0.000632	0.004375	0.0041990	0.0021842	0.358	0.903	.6
25.	12.0	-15.0	-21.3	0.034626	0.001162	0.000440	-0.000160	-0.000546	0.005370	0.0051325	0.0022590	0.356	0.906	.6
26.	10.0	-15.0	-20.1	0.027564	0.001606	0.000718	-0.000297	-0.000315	0.003637	0.0034827	0.0021047	0.358	0.906	.7
27.	8.0	-15.0	-18.4	0.035499	0.001930	0.000552	-0.000103	-0.000520	0.001804	0.0018218	0.0019765	0.356	0.905	.6

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Table II - 14. Rotor No. 2.

TEST 310.0 RUN 16

44 FT. TAPERED TIP ROTOR VZOR = ,40 M(1.0)(90) = ,83

SHAFT AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

RT.	THETA	ALPHA SHAFT	ALPHA CONTROL	CT	CH	CYR	CMXB	CMY	CQ	CP	CPO	V/OR M(1.0)(90)	A _{1s}	
1.	6.0	-5.0	-9.6	0.039214	0.002022	-0.000562	-0.000041	-0.000112	0.002624	0.0023882	0.0019644	0.403	0.828	.1
2.	6.0	5.0	-3.4	0.085994	0.000462	-0.004783	0.000272	-0.000415	0.001669	0.0014509	0.0041671	0.400	0.828	.1
3.	4.0	5.0	-1.1	0.078450	0.002415	-0.004298	0.000273	-0.000651	0.000205	0.0001584	0.0034826	0.401	0.829	.1
4.	2.0	5.0	0.9	0.065788	0.003268	-0.003287	0.000148	-0.000716	-0.000628	-0.0005005	0.0028421	0.402	0.829	.1
5.	0.0	5.0	2.9	0.051240	0.003369	-0.002481	0.000206	-0.000432	-0.000602	-0.0005503	0.0024275	0.401	0.828	-.4
6.	-2.0	5.0	4.4	0.035093	0.003244	-0.001983	0.000138	-0.000537	-0.000291	-0.0003045	0.0021379	0.400	0.829	-.5
7.	-2.0	7.0	5.9	0.049314	0.003543	-0.002722	0.000206	-0.000433	-0.001256	-0.0011591	0.0025112	0.401	0.828	-.6
8.	0.0	7.0	4.2	0.063937	0.003570	-0.003502	0.000162	-0.000528	-0.001567	-0.0014301	0.0028616	0.401	0.828	-.7
9.	2.0	0.0	-2.5	0.035811	0.002685	-0.001246	0.000114	-0.000282	0.001021	0.0009319	0.0019232	0.399	0.831	-.7
10.	4.0	0.0	-4.1	0.051287	0.002630	-0.001867	0.000065	-0.000674	0.001428	0.0012754	0.0021603	0.400	0.830	-.7
11.	6.0	0.0	-6.3	0.064734	0.002315	-0.002533	0.000083	-0.000674	0.002136	0.0019315	0.0025932	0.400	0.830	-.2
12.	8.0	0.0	-8.4	0.075657	0.001243	-0.003039	0.000081	-0.000558	0.003502	0.0031032	0.0032394	0.400	0.829	.0
13.	8.0	-5.0	-11.5	0.049986	0.002014	-0.000919	-0.000161	-0.000294	0.003689	0.0032982	0.0021984	0.401	0.830	.1
14.	10.0	-5.0	-13.2	0.062732	0.001587	-0.001376	-0.000264	-0.000621	0.003075	0.0044486	0.0026255	0.400	0.831	.1
15.	10.0	-15.0	-20.2	0.008303	0.002578	0.000168	-0.000025	-0.000713	0.002487	0.0021498	0.0022819	0.401	0.831	.6
16.	12.0	-15.0	-21.6	0.021797	0.002129	0.000024	-0.000011	-0.000382	0.004176	0.0036863	0.0022194	0.401	0.830	.7
17.	13.7	-15.0	-23.3	0.037080	0.001723	-0.000192	0.000017	-0.000492	0.006490	0.0055607	0.0022912	0.402	0.830	.6
18.	12.0	-10.0	-18.3	0.048552	0.001385	-0.000307	-0.000116	-0.000443	0.006061	0.0052635	0.0022694	0.402	0.829	.4
19.	10.0	-10.0	-16.6	0.035541	0.001784	-0.000027	-0.000055	-0.000218	0.004424	0.0038960	0.0020523	0.400	0.830	.5
20.	8.0	-10.0	-15.0	0.022210	0.002017	0.000061	-0.000052	-0.000225	0.003087	0.0027113	0.0019328	0.400	0.829	.6
21.	4.0	-5.0	-7.7	0.018459	0.001983	-0.000299	0.000011	-0.000012	0.001843	0.0016420	0.0017676	0.402	0.830	.3

Table II - 15. Rotor No. 2

TEST 310.0 RUN 8

44 FT. TAPERED TIP ROTOR V/CR = .41 M(1.0)(90) = .94

SHAFT AXES CCEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	THETA	ALPHA SHAFT	ALPHA CCNTRCL	CT	CF	CYR	CMXB	CMY	CC	CP	CPO	V/CR M(1.0)(90)	A _{1s}	
1.	8.0	-5.2	-11.4	0.051028	0.003034	-0.000920	-0.000218	-0.000659	0.004205	0.0041631	0.0033364	0.417	0.928	.3
2.	10.0	-5.0	-13.1	0.064664	0.002358	-0.001776	-0.000072	-0.000680	0.005640	0.0055777	0.0039782	0.408	0.939	.2
3.	12.0	-5.0	-14.7	0.073599	0.001368	-0.002253	-0.000054	-0.000958	0.007450	0.0071139	0.0047169	0.408	0.938	.0
4.	6.0	-5.0	-9.4	0.037550	0.002883	-0.000715	-0.000043	-0.000792	0.003036	0.0030770	0.0028259	0.407	0.937	.4
5.	4.0	-5.0	-7.4	0.024963	0.002914	-0.0007328	-0.000123	-0.000820	0.002156	0.0022198	0.0026356	0.412	0.938	.3
6.	4.0	5.0	-4.0	0.051326	0.003739	-0.001797	-0.000204	-0.001070	0.001653	0.0017630	0.0031442	0.411	0.938	.0
7.	6.0	5.0	-6.0	0.068079	0.003761	-0.002636	-0.000090	-0.001177	0.002650	0.0027095	0.0039000	0.414	0.934	.1
8.	8.0	5.0	-8.1	0.077569	0.002495	-0.003429	-0.000163	-0.001097	0.004196	0.0042144	0.0048772	0.413	0.934	.0
9.	10.0	5.0	-10.0	0.080281	0.001643	-0.003860	-0.000126	-0.001282	0.006043	0.0058828	0.0057487	0.410	0.939	.0
10.	2.0	5.0	-2.2	0.036037	0.003785	-0.001141	-0.000125	-0.001398	0.001239	0.0013368	0.0028022	0.408	0.940	.0
11.	0.0	5.0	-3.5	0.023448	0.003510	-0.000664	-0.000044	-0.002253	0.001059	0.0011567	0.0025459	0.407	0.945	.1
12.	0.0	5.0	3.0	0.054702	0.005069	-0.002451	0.000043	-0.001463	-0.000522	-0.0004256	0.0033939	0.408	0.946	-.2
13.	2.0	5.0	1.1	0.065490	0.004941	-0.003498	0.000175	-0.001656	-0.000356	-0.0002652	0.0039311	0.409	0.944	-.4
14.	4.0	5.0	-1.0	0.081497	0.004033	-0.004385	0.000158	-0.001420	0.000719	0.0008311	0.0049570	0.407	0.946	.0
15.	6.0	5.0	-3.3	0.086212	0.002113	-0.004714	0.000230	-0.001507	0.002431	0.0025210	0.0059719	0.407	0.948	.0
16.	8.0	5.0	-5.2	0.090647	-0.000113	-0.004256	0.000098	-0.000744	0.004332	0.0043623	0.0069852	0.400	0.947	.0
17.	2.0	7.0	2.2	0.085543	0.004986	-0.005070	0.000310	-0.001909	-0.000888	-0.0007020	0.0052983	0.417	0.930	-.5

TEST 310.0 RUN 9

44 FT. TAPERED TIP ROTOR V/CR = .41 M(1.0)(90) = .94

SHAFT AXES CCEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	THETA	ALPHA SHAFT	ALPHA CCNTRCL	CT	CF	CYR	CMXB	CMY	CC	CP	CPO	V/CR M(1.0)(90)	A _{1s}	
1.	0.0	7.0	4.2	0.069350	0.005090	-0.003580	0.000256	-0.001140	-0.001414	-0.0014909	0.0037970	0.413	0.938	.0
2.	-2.0	7.0	6.0	0.057988	0.005375	-0.002886	0.000501	-0.001121	-0.001412	-0.0013211	0.0035740	0.411	0.939	.0
3.	2.0	7.0	2.3	0.081236	0.004274	-0.004663	0.0003619	-0.001594	-0.000764	-0.0006982	0.0047063	0.410	0.941	.0
4.	4.0	7.0	0.3	0.090937	0.002434	-0.005278	0.0003780	-0.001258	0.000747	0.0007395	0.0057822	0.411	0.941	.0
5.	8.0	-1.0	-14.0	0.021079	0.002921	-0.001468	-0.000100	-0.000739	0.003445	0.0033277	0.0030520	0.410	0.941	.6
6.	10.0	-1.0	-16.1	0.033635	0.002922	-0.001736	0.000000	-0.000707	0.004866	0.0047757	0.0034884	0.411	0.940	.8
7.	12.0	-10.0	-17.6	0.047420	0.002572	-0.002222	-0.000245	-0.000609	0.006622	0.0061342	0.0036553	0.411	0.940	.5
8.	13.7	-10.0	-19.4	0.058714	0.001836	-0.002252	-0.000159	-0.000688	0.008524	0.0078363	0.0041706	0.412	0.938	.5
9.	13.7	-15.0	-22.9	0.034548	0.002823	0.000936	-0.000188	-0.000870	0.006509	0.0062308	0.0035937	0.413	0.937	.8
10.	12.0	-15.0	-21.3	0.018972	0.002762	0.001216	-0.000257	-0.000350	0.004532	0.0044523	0.0035044	0.413	0.936	.9
11.	10.0	-15.0	-19.8	0.007799	0.002931	0.001134	-0.000279	-0.000518	0.002864	0.0028712	0.0032024	0.413	0.936	1.0

Table II - 16. Rotor No. 2.

TEST 310.7 RLN 7

44 FT. TAPERED TIP RCTCR V/UR = .45 M(I.O)(90) = .77

SHAFT AXES CCEFFICIENTS, BASED ON RCTCR BLADE AREA AND RCTCR TIP SPEED

PT.	THETA	ALPHA SHAFT	ALPHA CCNTRCL	CT	CF	CYR	CMXB	CMY	CC	CP	CPO	V/UR	M(1.0)(90)	A ₁₅
1.	8.0	-5.0	-11.4	0.042920	0.102529	-0.001187	0.000046	-0.000089	0.003460	0.003520	0.002868	0.448	0.769	.1
2.	6.0	-5.0	-9.5	0.027972	0.002427	-0.000731	0.000087	0.001001	0.002431	0.002528	0.002472	0.445	0.772	.3
3.	4.0	-5.0	-7.7	0.013462	0.002230	-0.000437	0.000107	0.000015	0.001651	0.001710	0.002166	0.444	0.771	.2
4.	10.0	-5.0	-13.4	0.055439	0.002273	-0.001658	0.000064	-0.000231	0.004714	0.004747	0.003420	0.447	0.773	.1
5.	12.0	-5.0	-15.1	0.064687	0.001673	-0.002219	-0.000114	-0.000488	0.006339	0.006282	0.004269	0.447	0.772	.0
6.	13.7	-5.0	-16.7	0.073788	0.000486	-0.002296	-0.000898	-0.001323	0.008390	0.008178	0.005213	0.447	0.772	.0
7.	12.0	-10.0	-18.2	0.039376	0.002468	-0.000312	0.000014	-0.000310	0.005365	0.005207	0.003154	0.446	0.771	.3
8.	10.0	-10.0	-16.6	0.028747	0.002525	-0.000930	-0.000097	-0.000172	0.004014	0.003523	0.002763	0.445	0.771	.6
9.	8.0	-10.0	-15.1	0.014468	0.002602	-0.000049	0.000093	-0.000165	0.002522	0.002468	0.002478	0.444	0.771	.6
10.	13.7	-10.0	-20.0	0.052807	0.001904	-0.000713	-0.000175	-0.000838	0.007355	0.007180	0.003774	0.446	0.770	.2
11.	14.0	-15.0	-23.2	0.025509	0.002886	0.000584	-0.001242	-0.000431	0.005261	0.005087	0.003336	0.445	0.772	.7
12.	13.7	-15.0	-21.7	0.014317	0.002943	0.000637	-0.000119	-0.000394	0.002269	0.002280	0.002887	0.443	0.771	.8
13.	10.0	-15.0	-20.4	0.001381	0.003312	0.000703	-0.000204	-0.000844	0.001542	0.001590	0.002861	0.447	0.771	.8
14.	6.0	0.0	-6.3	0.057434	0.002682	-0.000207	0.000140	-0.000322	0.001861	0.001975	0.002953	0.448	0.770	
15.	8.0	0.0	-8.4	0.066457	0.002335	-0.000045	0.000045	-0.001264	0.003027	0.003128	0.003909	0.448	0.770	
16.	10.0	0.0	-10.3	0.078450	0.000627	-0.000395	0.000119	-0.001461	0.005063	0.005137	0.005069	0.447	0.772	
17.	4.0	0.0	-4.3	0.043844	0.002716	-0.001705	0.000167	-0.000104	0.001256	0.001400	0.002500	0.446	0.770	.1
18.	2.0	0.0	-2.2	0.028589	0.002693	-0.001089	0.000075	-0.000268	0.000914	0.001083	0.002238	0.446	0.769	
19.	11.0	0.0	-11.2	0.082471	-0.000190	-0.000406	0.000223	-0.001780	0.006058	0.006066	0.005595	0.444	0.768	
20.	2.0	5.0	1.2	0.061984	0.003771	-0.000272	0.000270	-0.000885	-0.000664	-0.000699	0.003162	0.445	0.770	
21.	0.0	5.0	2.8	0.048524	0.003981	-0.000252	0.000284	-0.000635	-0.000770	-0.000638	0.002910	0.449	0.770	
22.	-2.0	5.0	4.6	0.033655	0.003805	-0.001903	0.000190	-0.000406	-0.000394	-0.000255	0.002698	0.449	0.770	
23.	4.0	5.0	-1.3	0.074156	0.002996	-0.000424	0.000268	-0.000808	-0.000067	0.000063	0.003951	0.448	0.770	-4
24.	6.0	5.0	-3.5	0.083662	0.001686	-0.000487	0.000221	-0.001497	0.001487	0.001534	0.005175	0.449	0.770	-5
25.	8.0	5.0	-5.5	0.091390	0.000628	-0.000551	0.000199	-0.001247	0.002509	0.002604	0.006415	0.447	0.773	-8
26.	10.0	5.0	-7.1	0.100534	-0.002247	-0.000351	0.000124	-0.001389	0.005706	0.005691	0.008035	0.447	0.773	.4
27.	0.0	7.0	4.0	0.063978	0.004511	-0.000357	0.000221	-0.001096	0.001824	-0.001773	0.003474	0.446	0.772	-5
28.	-2.0	7.0	6.0	0.049150	0.004488	-0.000270	0.000031	-0.000777	-0.001488	-0.001395	0.003081	0.446	0.771	.0
29.	2.0	7.0	2.0	0.076192	0.003945	-0.000439	0.000079	-0.001067	-0.001568	-0.001459	0.004103	0.446	0.771	-7

ROTOR SCALE DATA * PROGRAM LA3530 * BODY AXES

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Table II - 17. Rotor No. 2.

TEST 310.0 RUN 12

44 FT. TAPERED TIP ROTOR V/DR = .46 M(1.0)(90) = .86

SHAFT AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	THETA	ALPHA SHAFT	ALPHA CONTROL	CT	CH	CYR	CMXB	CMY	CQ	CP	CPO	V/DR	M(1.0)(90)	A ₁ B
1.	8.0	-5.0	-12.0	0.042006	0.003041	-0.000775	-0.000098	-0.000512	0.003569	0.0035693	0.0031800	0.462	0.865	.4
2.	10.0	-5.0	-14.0	0.054996	0.002984	-0.001248	-0.000077	-0.001084	0.004969	0.0049690	0.0039595	0.464	0.862	.4
3.	12.0	-5.0	-15.6	0.064277	0.002303	-0.001719	-0.000078	-0.001216	0.006828	0.0066279	0.0048700	0.463	0.864	.3
4.	6.0	-5.0	-10.0	0.030602	0.003049	-0.000552	-0.000096	-0.000427	0.002625	0.0026246	0.0027439	0.462	0.865	.4
5.	4.0	-5.0	-7.7	0.017161	0.002864	-0.000264	-0.000081	-0.000429	0.001841	0.0018407	0.0024554	0.465	0.863	.4
6.	2.0	-5.0	-6.2	0.001543	0.002449	-0.000004	-0.000061	-0.000092	0.001226	0.0012260	0.0022907	0.462	0.866	.2
7.	4.0	0.0	-4.5	0.048240	0.003354	-0.001811	-0.000018	-0.000487	0.001433	0.0014333	0.0028586	0.462	0.865	
8.	6.0	0.0	-6.8	0.060819	0.003221	-0.002618	0.000078	-0.000973	0.002186	0.0021862	0.0034834	0.465	0.861	
9.	8.0	0.0	-8.9	0.071453	0.002525	-0.003268	0.000078	-0.000866	0.003611	0.0036113	0.0045046	0.464	0.862	
10.	10.0	0.0	-10.9	0.078060	0.001221	-0.003679	0.000024	-0.001342	0.005454	0.0054543	0.0056902	0.465	0.864	
11.	2.0	0.0	-2.6	0.033921	0.003243	-0.001368	0.000040	-0.000737	0.001049	0.0010490	0.0024960	0.466	0.864	
12.	0.0	0.0	-0.8	0.020528	0.003110	-0.000742	-0.000055	-0.000643	0.000901	0.0009013	0.0023275	0.466	0.863	
13.	-2.0	0.0	0.5	0.006242	0.002703	-0.000535	0.000070	-0.000366	0.001048	0.0010477	0.0023029	0.465	0.862	
14.	0.0	2.0	0.5	0.034914	0.003531	-0.001552	0.000040	-0.000597	0.000402	0.0004019	0.0025496	0.466	0.861	
15.	-2.0	2.0	2.0	0.019702	0.003164	-0.000923	0.000103	-0.000586	0.000641	0.0006415	0.0024077	0.464	0.864	
16.	2.0	2.0	-1.5	0.048848	0.003670	-0.002278	0.000128	-0.000717	0.000475	0.0004749	0.0028610	0.468	0.858	
17.	4.0	2.0	-3.7	0.061393	0.003487	-0.002973	0.000202	-0.000992	0.000926	0.0009259	0.0038336	0.464	0.864	
18.	4.0	5.0	-1.8	0.079617	0.002691	-0.004812	0.000277	-0.000821	0.000449	0.0004489	0.0046117	0.468	0.857	
19.	6.0	5.0	-4.0	0.086717	0.001060	-0.005320	0.000373	-0.000985	0.002043	0.0020426	0.0056678	0.468	0.856	
20.	2.0	5.0	0.3	0.067498	0.003732	-0.003912	0.000229	-0.000900	-0.000670	-0.0006700	0.0036758	0.468	0.856	
21.	0.0	5.0	2.1	0.055278	0.003948	-0.003071	0.000159	-0.000622	-0.000795	-0.0007952	0.0031401	0.468	0.856	
22.	-2.0	5.0	4.0	0.040057	0.003756	-0.002374	0.000151	-0.000559	-0.000508	-0.0005083	0.0027835	0.467	0.862	
23.	10.0	-10.0	-16.8	0.027653	0.003050	-0.000005	-0.000012	-0.000466	0.004185	0.0041852	0.0033086	0.464	0.864	.8
24.	8.0	-10.0	-15.3	0.014280	0.002975	0.000120	-0.000117	-0.000362	0.002786	0.0027858	0.0029826	0.463	0.863	.7
25.	6.0	-10.0	-12.9	0.001649	0.002794	0.000143	-0.000041	-0.000239	0.001555	0.0015549	0.0026931	0.462	0.864	.7
26.	12.0	-10.0	-18.3	0.039607	0.002928	-0.000296	0.000256	-0.000583	0.005662	0.0056620	0.0037220	0.464	0.863	.8
27.	13.7	-10.0	-20.3	0.050839	0.002454	-0.000692	-8.000012	-0.000705	0.007563	0.0074625	0.0043477	0.464	0.863	.7
28.	13.7	-12.0	-21.5	0.040048	0.002940	-0.000384	0.000053	-0.000580	0.006754	0.0067538	0.0041380	0.464	0.863	.9
29.	12.0	-12.0	-20.0	0.028818	0.003341	-0.000203	0.000159	-0.000897	0.005076	0.0050761	0.0037710	0.463	0.864	.9
30.	10.0	-12.0	-18.3	0.016025	0.003209	-0.000020	0.000028	-0.000260	0.003528	0.0034878	0.0033340	0.463	0.863	.9
31.	13.7	-15.0	-23.3	0.024380	0.003470	0.000090	-0.000044	-0.000722	0.006326	0.0053257	0.0039278	0.464	0.864	.9
32.	12.0	-15.0	-21.9	0.011852	0.003624	0.000139	-0.000004	-0.000472	0.003347	0.0033469	0.0035397	0.464	0.862	1.1
33.	10.0	-15.0	-20.4	-0.000105	0.003480	-0.000034	0.000064	-0.000530	0.001723	0.0017230	0.0032886	0.462	0.868	1.0

ROTOR SCALE DATA * PROGRAM LA3530 * BODY AXES

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TIME 910.93

Table II - 18. Rotor No. 2.

TEST 310.0 RUN 11

44 FT. TAPERED TIP ROTOR V/OR = .45 M(1.0)(90) = .90

SHAFT AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	THETA	ALPHA SHAFT	ALPHA CONTROL	CT	CH	CYR	OMXB	CMY	CQ	CP	CPO	V/OR	M(1.0)(90)	A ₁ S
1.	6.0	-5.0	-9.9	0.030773	0.002970	-0.000785	0.000093	-0.000622	0.002462	0.0026625	0.0027315	0.445	0.900	.3
2.	8.0	-5.0	-11.9	0.044993	0.003057	-0.001154	0.000058	-0.000894	0.003708	0.0037076	0.0032047	0.445	0.901	.4
3.	10.0	-5.0	-13.9	0.057761	0.002662	-0.001619	-0.000075	-0.000992	0.005255	0.0052551	0.0040013	0.447	0.897	.2
4.	12.0	-5.0	-15.5	0.066267	0.002043	-0.002060	0.000013	-0.001229	0.006748	0.0067484	0.0048325	0.446	0.899	.3
5.	13.0	-5.0	-16.4	0.068768	0.000827	-0.002315	-0.000016	-0.001003	0.007588	0.0075383	0.0049439	0.451	0.906	.1
6.	13.0	-5.0	-16.4	0.068903	0.001603	-0.002277	-0.000034	-0.001153	0.007546	0.0075462	0.0053269	0.442	0.900	.1
7.	4.0	-5.0	-7.9	0.017701	0.002939	-0.000538	-0.000061	-0.000512	0.001850	0.0018497	0.0024400	0.439	0.900	.3
8.	2.0	-5.0	-6.0	0.003727	0.002684	-0.000392	0.000068	-0.000435	0.001250	0.0012496	0.0022807	0.439	0.898	.2
9.	2.0	0.0	-2.6	0.032034	0.003844	-0.001544	0.000090	-0.001046	0.001098	0.0010981	0.0027372	0.443	0.898	.1
10.	4.0	0.0	-4.6	0.048232	0.003731	-0.002289	0.000234	-0.000822	0.001493	0.0014929	0.0030181	0.444	0.900	
11.	6.0	0.0	-6.6	0.061392	0.003614	-0.002827	0.000073	-0.000961	0.002386	0.0023863	0.0037850	0.446	0.898	
12.	6.0	0.0	-8.8	0.070868	0.002786	-0.003527	0.000142	-0.001227	0.003811	0.0038110	0.0047685	0.445	0.897	
13.	10.0	0.0	-10.8	0.078276	0.001353	-0.003850	0.000028	-0.002037	0.005775	0.0057746	0.0060310	0.446	0.896	
14.	0.0	0.0	-0.9	0.019831	0.003758	-0.001036	0.000120	-0.000854	0.000970	0.0009703	0.0026184	0.445	0.899	.1
15.	-2.0	0.0	0.6	0.005797	0.003457	-0.000656	0.002029	-0.000729	0.001080	0.0010803	0.0026221	0.447	0.895	.1
16.	2.0	2.0	-1.4	0.049593	0.004936	-0.002192	0.000104	-0.001323	0.000482	0.0004817	0.0033093	0.445	0.895	
17.	4.0	2.0	-3.6	0.063145	0.004517	-0.003137	0.000188	-0.001308	0.001035	0.0010352	0.0037998	0.445	0.896	
18.	0.0	2.0	0.5	0.034470	0.004784	-0.001636	0.000025	-0.001262	0.000486	0.0004865	0.0030953	0.447	0.894	
19.	-2.0	2.0	2.1	0.016110	0.004692	-0.001216	-0.000731	-0.004185	0.000609	0.0006085	0.0029382	0.446	0.895	
20.	-2.0	5.0	4.1	0.040382	0.005275	-0.002332	0.000198	-0.001570	-0.000580	-0.0005797	0.0036647	0.448	0.895	
21.	0.0	5.0	2.4	0.048046	0.006152	-0.003152	0.000138	-0.003754	-0.000761	-0.0007607	0.0037393	0.448	0.894	
22.	2.0	5.0	0.5	0.070687	0.005395	-0.003867	0.000146	-0.001839	-0.000567	-0.0005667	0.0043149	0.447	0.893	
23.	4.0	5.0	-1.7	0.081696	0.003976	-0.004826	0.000332	-0.001671	0.000641	0.0006406	0.0051259	0.447	0.894	
24.	8.0	-10.0	-15.1	0.017147	0.002982	0.000140	0.000001	-0.000259	0.002918	0.0029178	0.0028822	0.450	0.893	.6
25.	6.0	-10.0	-13.2	0.003715	0.002987	0.000035	0.000030	-0.000510	0.001651	0.0016512	0.0028805	0.449	0.892	.6
26.	10.0	-10.0	-16.8	0.031324	0.003067	-0.000009	-0.000065	-0.000594	0.003483	0.0034827	0.0033154	0.447	0.895	
27.	12.0	-10.0	-18.5	0.043574	0.002846	-0.000195	0.000024	-0.000768	0.005960	0.0059597	0.0037296	0.446	0.899	.8
28.	13.7	-10.0	-20.3	0.047725	0.001022	-0.000478	-0.001093	-0.002625	0.007924	0.0079245	0.0045279	0.449	0.896	.5
29.	13.7	-12.0	-21.4	0.040832	0.003023	-0.000340	0.000134	0.000287	0.007158	0.0071578	0.0046045	0.445	0.897	.8
30.	12.0	-12.0	-19.8	0.032574	0.002973	-0.000079	-0.000126	-0.000466	0.005406	0.0054065	0.0036095	0.450	0.887	.7
31.	10.0	-12.0	-18.0	0.020946	0.003107	0.000222	-0.000018	-0.000745	0.003771	0.0037706	0.0031525	0.451	0.888	.9
32.	13.7	-15.0	-23.2	0.029372	0.003120	0.000588	-0.000249	-0.001043	0.005769	0.0057694	0.0036791	0.445	0.897	1.0
33.	12.0	-15.0	-21.7	0.017217	0.003252	0.000686	-0.000366	-0.000758	0.003990	0.0039904	0.0033791	0.452	0.887	1.0
34.	10.0	-15.0	-20.1	0.004187	0.003295	0.000361	-0.001008	-0.000729	0.002349	0.0023486	0.0032939	0.451	0.886	.9

Table II - 19. Rotor No. 2.

TEST 310.1 RUN 1.

44 FT. TAPERED TIP ROTOR V/CR = .51 M(1.0)(90) = .81

SHAFT AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	THETA	ALPHA SHAFT	ALPHA CENTRCL	CT	CH	CYR	CPXB	CMY	CC	CP	CPO	V/CR M(1.0)(90)	A _{1s}	
1.	6.0	-5.0	-9.6	0.022425	0.003987	-0.001046	0.000195	-0.000537	0.002401	0.0024008	0.0034135	0.514	0.805	.4
2.	6.0	0.0	-6.8	0.052420	0.004565	-0.002712	0.000218	-0.001374	0.002079	0.0020787	0.0043092	0.518	0.802	.1
3.	8.0	0.0	-9.0	0.062578	0.004079	-0.003698	0.000253	-0.001068	0.003314	0.0033042	0.0052291	0.519	0.802	.0
4.	4.0	0.0	-4.9	0.038421	0.004191	-0.001809	0.000078	-0.001078	0.001393	0.0013932	0.0034628	0.511	0.809	.2
5.	2.0	0.0	-2.8	0.025717	0.003992	-0.002232	0.001218	-0.001048	0.000698	0.0006978	0.0027096	0.512	0.808	.1
6.	2.0	5.0	0.2	0.064096	0.005256	-0.003824	0.000252	-0.002681	-0.000552	-0.0005522	0.0048861	0.521	0.799	.1
7.	0.0	5.0	2.1	0.052527	0.005299	-0.002415	-0.000822	-0.001806	-0.000943	-0.0009431	0.0040640	0.521	0.799	.1
8.	-2.0	5.0	4.1	0.039922	0.005497	-0.001981	-0.000011	-0.002473	-0.000725	-0.0007247	0.0037819	0.512	0.809	.1
9.	8.0	-5.0	-11.8	0.034218	0.004422	-0.001367	0.000257	-0.001366	0.003317	0.0033167	0.0039870	0.512	0.808	.6
10.	10.0	-5.0	-13.7	0.044938	0.004454	-0.001683	0.000063	-0.001601	0.004420	0.0044203	0.0045834	0.508	0.811	.5
11.	10.0	-10.0	-16.8	0.018331	0.004282	-0.000526	0.000275	-0.000688	0.003554	0.0035537	0.0040631	0.509	0.810	.8
12.	12.0	-10.0	-18.5	0.029473	0.004291	-0.000625	-0.000171	-0.000750	0.005041	0.0050413	0.0045432	0.509	0.812	.9
13.	13.7	-10.0	-20.4	0.039466	0.004421	-0.000828	0.000436	-0.001959	0.006472	0.0064716	0.0051189	0.510	0.809	.7
14.	13.7	-12.0	-21.5	0.029227	0.004691	-0.001208	-0.000180	-0.000734	0.005698	0.0056983	0.0048936	0.512	0.810	.9
15.	12.0	-8.0	-17.4	0.041044	0.004284	-0.001175	-0.000320	-0.001123	0.005469	0.0054686	0.0047075	0.512	0.809	.8
16.	10.0	-8.0	-15.7	0.031419	0.004307	-0.000931	0.0000319	-0.000745	0.004056	0.0040562	0.0040254	0.510	0.808	.8
17.	8.0	-8.0	-13.9	0.016603	0.004036	-0.000722	0.0000335	-0.000711	0.002789	0.0027890	0.0036351	0.510	0.808	.8
18.	8.0	-3.0	-10.8	0.045307	0.004648	-0.001226	0.0000149	-0.001549	0.003422	0.0034198	0.0044805	0.512	0.809	.6
19.	6.0	-3.0	-8.8	0.032839	0.004108	-0.0011793	0.0000355	-0.001625	0.002442	0.0024422	0.0036042	0.510	0.810	.5
20.	4.0	-3.0	-6.6	0.022683	0.003966	-0.001762	0.0000530	-0.000729	0.001840	0.0018396	0.0032283	0.510	0.810	.4
21.	4.0	2.0	-3.7	0.053844	0.004533	-0.001363	-0.000217	-0.001497	0.0012081	0.00120807	0.0052496	0.516	0.811	.4
22.	2.0	2.0	-1.6	0.043216	0.004641	-0.002170	0.0000078	-0.001007	0.000554	0.0005495	0.0036067	0.512	0.808	.4
23.	0.0	0.0	-5.3	0.065608	0.004471	-0.003538	0.000240	-0.001869	0.001858	0.0018577	0.0050986	0.511	0.810	.4

ROTOR SCALE DATA * PROGRAM LA3530 * BODY AXES

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Table II-19. (Concluded)

TEST 310.0 RUN 14

44 FT. TAPERED TIP ROTOR V/DR * .5 / M(1.0)(90) * .8 /

SHAFT AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	THETA	ALPHA SHAFT	ALPHA CONTROL	CT	CH	CYR	CMXB	CMY	CQ	CP	CPO	V/DR	M(1.0)(90)	A _{1s}
1.	2.0	-2.0	-4.0	0.016586	0.003254	-0.000687	-0.000033	-0.000283	0.001277	0.0012825	0.0026617	0.514	0.805	.3
2.	2.0	-2.0	-3.0	0.026185	0.004285	-0.000901	-0.000029	-0.000689	0.001131	0.0011118	0.0028208	0.517	0.803	.2
3.	2.0	0.0	-1.0	0.048101	0.006329	-0.001738	-0.000017	-0.001039	0.000157	0.0002447	0.0033858	0.514	0.805	.2
4.	2.0	2.0	1.0	0.078474	0.009794	-0.002878	0.000097	-0.001250	-0.001068	-0.0009358	0.0052405	0.518	0.799	.2
5.	0.0	0.0	-1.0	0.016944	0.003288	-0.000729	-0.000041	-0.000148	0.000999	0.0009423	0.0026076	0.511	0.806	.2
6.	0.0	2.0	1.0	0.038915	0.004712	-0.001637	-0.000129	-0.000629	0.000074	0.0001221	0.0031617	0.513	0.805	.2
7.	0.0	4.0	3.0	0.069241	0.007278	-0.002527	-0.000107	-0.001235	-0.001665	-0.0014673	0.0043300	0.513	0.805	.2
8.	0.0	6.0	5.0	0.087219	0.009602	-0.003391	0.000037	-0.001471	-0.003042	-0.0026958	0.0065611	0.515	0.805	.2
9.	-2.0	6.0	5.0	0.051691	0.004876	-0.002825	-0.000031	-0.000564	-0.001541	-0.0013806	0.0037603	0.514	0.804	.1
10.	-2.0	4.0	3.0	0.028909	0.003636	-0.001678	-0.000085	-0.000571	0.000116	0.0001206	0.0029580	0.510	0.809	.1
11.	4.0	0.0	-1.0	0.087023	0.012557	-0.003416	0.000492	-0.001488	0.000251	0.0003019	0.0063242	0.510	0.808	.1
12.	4.0	-2.0	-3.0	0.066146	0.009993	-0.002664	0.000075	-0.001630	0.000646	0.0006424	0.0043658	0.513	0.804	.1
13.	4.0	-4.0	-5.0	0.041634	0.006298	-0.001503	0.000013	-0.000751	0.001494	0.0013890	0.0030255	0.510	0.808	.1

For the following data points

a_{1s} and/or b_{1s} ≠ 0.0 ± .2°

PT.	THETA	ALPHA SHAFT	a _{1s}	b _{1s}
1	2	-2	0	0
2	2	-2	1.4	0
3	2	0	2.9	0
4	2	2	4.8	0
5	0	0	0	0
6	0	2	1.4	0
7	0	4	2.9	0
8	0	6	4.3	0
9	-2	6	.8	0
10	-2	4	.7	0
11	4	0	6.7	0
12	4	-2	5.3	0
13	4	-4	3.4	0

Table II - 20. Rotor No. 2.

TEST 310.0 RUN 15

44 FT. TAPERED TIP ROTOR V/OR = .52 M(1.0)(90) = .81

SHAFT AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	THETA	ALPHA SHAFT	ALPHA CONTROL	CT	CH	CYR	CMXB	CMY	CQ	CP	CPO	V/OR M(1.0)(90)	A _{1s}	
1.	6.0	-5.0	-10.1	0.023627	0.004043	-0.000595	-0.000193	-0.000715	0.002469	0.0022069	0.0032143	0.526	0.811	.5
2.	8.0	-5.0	-12.0	0.036362	0.004439	-0.001154	-0.000024	-0.001052	0.003304	0.0029701	0.0035596	0.522	0.814	.5
3.	10.0	-5.0	-14.1	0.047535	0.004662	-0.001646	-0.000063	-0.001049	0.003823	0.0040518	0.0042038	0.523	0.812	.4
4.	12.0	-5.0	-15.8	0.055494	0.004265	-0.002035	-0.000144	-0.001370	0.006034	0.0053004	0.0048435	0.522	0.812	.4
5.	12.0	-7.0	-17.0	0.046155	0.004673	-0.001258	-0.000011	-0.000993	0.005719	0.0049301	0.0043093	0.524	0.810	.7
6.	12.0	-10.0	-18.6	0.029926	0.004802	-0.000419	-0.000089	-0.000729	0.004867	0.0041751	0.0038868	0.522	0.811	1.0
7.	10.0	-7.0	-15.3	0.036898	0.004527	-0.000904	-0.000012	-0.000655	0.004365	0.0037786	0.0037098	0.521	0.811	.9
8.	8.0	-7.0	-13.3	0.026329	0.004405	-0.000735	-0.000364	-0.000810	0.003252	0.0028128	0.0038849	0.521	0.810	.8
9.	8.0	0.0	-9.3	0.064825	0.003306	-0.003196	-0.000070	-0.001430	0.003507	0.0030012	0.0045620	0.521	0.809	.2
10.	6.0	0.0	-7.1	0.055322	0.004117	-0.002799	-0.000056	-0.001243	0.002016	0.0018455	0.0038420	0.521	0.814	.3
11.	4.0	0.0	-4.9	0.044657	0.004084	-0.002104	-0.000051	-0.000709	0.001854	0.0012606	0.0033063	0.524	0.809	.2
12.	2.0	0.0	-2.9	0.032504	0.003744	-0.001441	-0.000026	-0.000600	0.001847	0.0009530	0.0028641	0.524	0.809	.2
13.	2.0	2.0	-1.6	0.046169	0.004001	-0.002286	0.000012	-0.000686	0.000484	0.0004264	0.0032517	0.522	0.812	.1
14.	0.0	2.0	0.2	0.033740	0.003874	-0.001713	0.000060	-0.000594	0.000402	0.0003959	0.0029725	0.521	0.811	.1
15.	0.0	5.0	2.0	0.054034	0.004268	-0.003315	0.000072	-0.000626	-0.000946	-0.0007831	0.0037155	0.518	0.814	
16.	0.0	7.0	3.2	0.068557	0.004097	-0.004557	0.000132	-0.000851	-0.001930	-0.0016774	0.0045585	0.520	0.810	
17.	2.0	5.0	0.2	0.064473	0.003995	-0.004078	0.000031	-0.000820	-0.000717	-0.0005722	0.0041648	0.518	0.814	
18.	4.0	5.0	-2.1	0.075636	0.003124	-0.005293	0.000283	-0.001029	0.000352	0.0002781	0.0050921	0.524	0.807	
19.	4.0	2.0	-3.7	0.055317	0.003549	-0.003134	-0.000126	-0.000802	0.001003	0.0009034	0.0036444	0.527	0.805	
20.	6.0	2.0	-5.9	0.066061	0.003276	-0.003932	0.000189	-0.001247	0.001984	0.0017418	0.0044419	0.522	0.810	
21.	6.0	-3.0	-8.8	0.038400	0.004230	-0.001499	0.000072	-0.000776	0.002469	0.0021692	0.0032504	0.521	0.809	.4
22.	4.0	-3.0	-6.8	0.024971	0.005334	-0.134523	0.192017	-0.002960	0.041599	0.0016847	0.0037697	0.526	0.804	.5
23.	8.0	-3.0	-10.9	0.049367	0.004406	-0.002005	0.000030	-0.001167	0.003296	0.0029619	0.0037843	0.519	0.813	.5
24.	10.0	-3.0	-12.8	0.056758	0.004054	-0.002600	0.000069	-0.001599	0.004675	0.0040871	0.0044885	0.519	0.812	.4

Table II - 21. Rotor No. 3.

TEST 310.0 RUN 19

34 FT. 0012 ROTOR V/ROR * .51 M(1.0)(90) = .63

SHAFT AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	THETA	ALPHA SHAFT	ALPHA CONTROL	CT	CH	CYR	CMXB	CMY	CQ	CP	CPO	V/DR	M(1.0)(90)	A ₁
1.	8.0	-2.0	-9.6	0.046005	0.004323	-0.002206	-0.000205	0.006463	0.003024	0.0028436	0.0040947	0.511	0.648	.0
2.	10.0	-2.0	-11.6	0.058815	0.004608	-0.002827	0.000021	0.006402	0.003965	0.0037217	0.0048651	0.512	0.647	.0
3.	6.0	-2.0	-7.8	0.037184	0.004234	-0.002568	0.001227	0.006751	0.002865	0.0022558	0.0036787	0.514	0.646	.0
4.	4.0	-2.0	-5.8	0.023564	0.003674	-0.001259	-0.000228	0.006514	0.001797	0.0017716	0.0031824	0.508	0.643	.0
5.	2.0	-2.0	-3.7	0.012549	0.003562	-0.000668	0.000812	0.007035	0.001306	0.0013811	0.0029683	0.512	0.644	.4
6.	0.0	-2.0	-2.0	0.000672	0.003392	-0.000252	-0.000080	0.006589	0.001137	0.0011443	0.0028651	0.511	0.644	.5
7.	0.0	2.0	0.7	0.023484	0.003851	-0.002350	0.001399	0.006673	0.001252	0.0006763	0.0030295	0.512	0.641	
8.	2.0	2.0	-1.2	0.036261	0.004005	-0.002182	-0.000057	0.006361	0.000789	0.0006718	0.0032641	0.508	0.642	
9.	4.0	2.0	-3.3	0.048564	0.004058	-0.003036	0.000304	0.006589	0.001231	0.0010761	0.0038726	0.512	0.641	
10.	6.0	2.0	-5.5	0.058471	0.004315	-0.003638	0.000182	0.005049	0.001769	0.0016368	0.0046639	0.511	0.640	
11.	8.0	2.0	-7.2	0.068394	0.004056	-0.004321	0.000061	0.005222	0.002678	0.0024352	0.0054269	0.511	0.640	
12.	10.0	2.0	-8.8	0.079146	0.003877	-0.005276	0.000322	0.004484	0.004191	0.0037198	0.0067122	0.511	0.639	
13.	10.0	0.0	-10.2	0.068045	0.004457	-0.003628	-0.000121	0.005080	0.004008	0.0036887	0.0056594	0.509	0.641	
14.	12.0	-2.0	-15.7	0.068295	0.004390	-0.003666	-0.000136	0.005353	0.005780	0.0051166	0.0058353	0.509	0.641	
15.	12.0	-4.0	-14.6	0.056791	0.004860	-0.002757	-0.000014	0.005471	0.005447	0.0049261	0.0051658	0.507	0.643	
16.	10.0	-4.0	-12.7	0.044686	0.004485	-0.002082	-0.000005	0.005985	0.004254	0.0038069	0.0043643	0.512	0.639	
17.	8.0	-4.0	-11.1	0.034220	0.004188	-0.001515	-0.000065	0.005875	0.003289	0.0029804	0.0038068	0.510	0.641	
18.	6.0	-4.0	-9.1	0.024899	0.003883	-0.001145	0.000191	0.006067	0.002597	0.0022832	0.0033298	0.509	0.638	
19.	4.0	-4.0	-7.2	0.011893	0.003492	-0.000585	-0.000273	0.006091	0.001768	0.0017114	0.0030488	0.507	0.639	
20.	6.0	-6.0	-10.9	0.012391	0.003741	-0.000451	-0.000105	0.005962	0.002132	0.0020298	0.0032499	0.507	0.639	
21.	8.0	-8.0	-12.1	0.024956	0.004205	-0.000874	-0.000079	0.005629	0.003100	0.0028311	0.0035893	0.508	0.639	
22.	10.0	-6.0	-13.8	0.033842	0.004443	-0.001108	-0.000020	0.005533	0.004091	0.0037397	0.0041153	0.511	0.638	
23.	12.0	-6.0	-15.8	0.047187	0.004842	-0.001865	-0.000070	0.005280	0.005569	0.0050262	0.0048217	0.510	0.637	
24.	14.0	-6.0	-17.8	0.061482	0.005096	-0.001935	-0.000299	0.005154	0.007298	0.0066486	0.0057088	0.511	0.637	
25.	8.0	0.0	-8.5	0.056982	0.004081	-0.003142	0.000168	0.005772	0.002922	0.0026991	0.0045754	0.511	0.637	
26.	6.0	0.0	-6.7	0.046701	0.003978	-0.002521	0.000051	0.006070	0.002210	0.0020543	0.0039432	0.510	0.637	
27.	4.0	0.0	-4.7	0.035182	0.003859	-0.001962	-0.000195	0.005902	0.001623	0.0014904	0.0033797	0.510	0.637	
28.	2.0	0.0	-2.5	0.025141	0.003805	-0.001369	-0.000088	0.006094	0.001162	0.0010876	0.0029890	0.510	0.637	
29.	0.0	0.0	-0.5	0.012107	0.003608	-0.000774	-0.000070	0.006164	0.001023	0.0009986	0.0028209	0.508	0.638	
30.	0.0	4.0	2.0	0.036717	0.004565	-0.002292	0.000096	0.005563	0.000031	0.0000400	0.0035655	0.508	0.638	
31.	0.0	6.0	3.1	0.047231	0.004904	-0.003002	-0.000108	0.005651	-0.000840	-0.0006863	0.0042112	0.513	0.637	
32.	2.0	6.0	1.5	0.059448	0.004547	-0.003858	0.000188	0.006239	-0.000784	-0.0006055	0.0046832	0.513	0.637	
33.	2.0	4.0	0.1	0.047546	0.004860	-0.002766	-0.000120	0.005517	0.000179	0.0001201	0.0040490	0.511	0.639	
34.	4.0	4.0	-2.1	0.059570	0.004249	-0.003887	0.000057	0.006040	0.000626	0.0004412	0.0045126	0.512	0.639	
35.	4.0	6.0	-0.9	0.069718	0.003667	-0.004547	0.000294	0.005817	0.000066	0.0000398	0.0053060	0.510	0.641	.6
36.	6.0	6.0	-2.9	0.081485	0.003246	-0.005350	0.000088	0.005714	0.001014	0.0008493	0.0064657	0.514	0.637	.0
37.	6.0	4.0	-4.2	0.070468	0.003988	-0.004576	0.000012	0.005874	0.001528	0.0013347	0.0055917	0.514	0.637	
38.	6.0	8.0	-1.7	0.094068	0.002004	-0.006294	0.000487	0.005836	0.000622	0.0005257	0.0077084	0.513	0.637	
39.	4.0	8.0	0.2	0.084258	0.003081	-0.005358	0.000271	0.005779	-0.000860	-0.0006075	0.0064895	0.510	0.635	
40.	4.0	10.0	1.5	0.097115	0.002031	-0.006016	0.000321	0.005776	-0.001482	-0.0011745	0.0078669	0.510	0.635	.0

Table II-21. (Concluded) :

TEST 310.0 RMN 24

34 FT. 0012 ROTOR V/DR = .51 M(1.0)(90) = .63

SHAFT AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	THETA	ALPHA SHAFT	ALPHA CONTROL	CT	CH	CYR	CMXB	CMY	CQ	CP	CPO	V/DR M(1.0)(90)	A_{1s}
36.	2.0	-4.0	-5.2	0.002434	0.003283	-0.000724	-0.000150	0.004948	0.001420	0.0012160	0.0027824	0.503	0.621
37.	4.0	-6.0	-8.6	0.002673	0.003375	-0.000607	-0.000124	0.004956	0.001526	0.0013768	0.0029309	0.505	0.623
38.	6.0	10.0	-0.5	0.103749	0.001034	-0.005766	0.000294	0.003558	0.000145	0.0002915	0.0091958	0.503	0.623
39.	8.0	8.0	-3.8	0.098191	0.001212	-0.004902	0.000231	0.004210	0.002087	0.0017908	0.0088799	0.505	0.623
40.	8.0	6.0	-4.8	0.087975	0.002455	-0.004895	0.000310	0.004307	0.002243	0.0018743	0.0072623	0.505	0.623
41.	8.0	4.0	-6.1	0.080616	0.003762	-0.004952	0.000020	0.004033	0.002373	0.0019577	0.0062838	0.506	0.624
42.	10.0	4.0	-7.5	0.087455	0.002784	-0.004439	0.000260	0.004201	0.003978	0.0033742	0.0073812	0.507	0.624
43.	12.0	0.0	-12.1	0.078789	0.003302	-0.003746	0.000694	0.003920	0.005844	0.0051221	0.0063816	0.504	0.623

For the following data points

 a_{1s} and/or $b_{1s} \neq 0^\circ \pm .2^\circ$

PT.	THETA	ALPHA SHAFT	a_{1s}	b_{1s}
25	4	7	0	.7
39	8	8	0	.7
40	8	6	0	.4
42	10	4	0	.6
43	12	0	0	.6

ROTOR SCALE DATA * PROGRAM LA3530 * BODY AXES

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TIME 907.07

Table II - 22. Rotor No. 3.

TEST 310.0 RUN 23

34 FT. 0012 ROTOR V/OR = .65 M(1.0)(90) = .54

SHAFT AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

RT.	THETA	ALPHA SHAFT	ALPHA CONTROL	CT	CH	CYR	CMXB	CMY	CQ	CP	CPO	V/OR	M(1.0)(90)	A ₁ B
1.	0.0	0.0	-0.9	0.010147	0.004985	-0.001162	-0.000035	0.009854	0.001320	0.0011998	0.0044359	0.650	0.540	-1.0
2.	0.0	2.0	-0.0	0.022680	0.005254	-0.001985	-0.0000144	0.010279	0.000870	0.0007986	0.0047150	0.652	0.541	-.7
3.	0.0	4.0	0.9	0.037955	0.005775	-0.002577	-0.0006583	0.010399	0.000016	0.0001331	0.0055556	0.653	0.542	-.7
4.	0.0	6.0	2.0	0.047867	0.005054	-0.003570	-0.0000498	0.010700	-0.000741	-0.0006656	0.0057831	0.654	0.542	-1.4
5.	0.0	7.0	2.4	0.053058	0.006072	-0.004197	-0.0000706	0.007905	-0.001524	-0.0010645	0.0069161	0.650	0.540	-1.4
6.	0.0	8.0	3.0	0.061867	0.005910	-0.004864	-0.0000050	0.007609	-0.002035	-0.0015968	0.0076118	0.649	0.540	-.7
7.	0.0	5.0	1.6	0.040981	0.005761	-0.003115	-0.0000542	0.008926	-0.000196	-0.0002661	0.0057073	0.650	0.541	-1.1
8.	2.0	5.0	-0.6	0.047566	0.006021	-0.003810	-0.0000835	0.008776	-0.000024	-0.0001345	0.0063825	0.653	0.539	-1.0
9.	2.0	6.0	-0.2	0.051515	0.005420	-0.004735	-0.0000314	0.008947	-0.000402	-0.0003992	0.0064737	0.650	0.540	-1.0
10.	2.0	7.0	0.1	0.057683	0.005310	-0.005338	-0.0000404	0.008260	-0.000993	-0.0007984	0.0070246	0.650	0.540	-1.1
11.	2.0	8.0	0.6	0.066735	0.005300	-0.005516	-0.0000236	0.007830	-0.001717	-0.0013306	0.0078928	0.649	0.540	-.8
12.	2.0	4.0	-1.4	0.043009	0.006240	-0.003465	-0.0000345	0.008659	0.000506	0.0002661	0.0061742	0.650	0.541	-.7
13.	2.0	2.0	-2.3	0.030045	0.006023	-0.002813	0.0000024	0.008281	0.001003	0.0009316	0.0054820	0.650	0.541	-.6
14.	2.0	0.0	-3.2	0.017574	0.005761	-0.001695	-0.0000500	0.008892	0.001353	0.0013308	0.0050657	0.651	0.541	-.6
15.	2.0	-2.0	-4.2	0.008002	0.005592	-0.001097	-0.0000091	0.008906	0.001421	0.0014637	0.0049083	0.649	0.540	-.5
16.	4.0	-2.0	-6.5	0.013886	0.006020	-0.001745	-0.0000078	0.008630	0.001798	0.0017299	0.0053166	0.650	0.541	-.4
17.	4.0	-4.0	-7.5	0.003681	0.005673	-0.000847	-0.0000485	0.008830	0.001717	0.0016142	0.0051498	0.655	0.539	-.3
18.	4.0	0.0	-5.7	0.024088	0.006170	-0.002373	-0.0000230	0.008981	0.001728	0.0016141	0.0056222	0.654	0.539	-.4
19.	4.0	2.0	-4.5	0.037773	0.006360	-0.002885	0.0000177	0.008861	0.001404	0.0010760	0.0060227	0.654	0.539	-.6
20.	4.0	3.0	-4.1	0.044587	0.006400	-0.004132	0.0000143	0.009377	0.001157	0.0008071	0.0064176	0.654	0.539	-.5
21.	4.0	4.0	-3.6	0.051446	0.006299	-0.004709	-0.000041	0.008952	0.000796	0.0005380	0.0068627	0.654	0.539	-.7
22.	4.0	5.0	-3.1	0.054698	0.005875	-0.005235	0.0000258	0.009715	0.000599	0.0004035	0.0071963	0.653	0.539	-.7
23.	4.0	6.0	-2.5	0.059899	0.005651	-0.005619	-0.0000208	0.009287	0.000186	-0.0001347	0.0074617	0.654	0.538	-.8
24.	4.0	7.0	-2.0	0.067518	0.006022	-0.006063	-0.0000190	0.008313	-0.000473	-0.0006737	0.0083967	0.654	0.538	-.9
25.	4.0	8.0	-1.5	0.072790	0.004967	-0.006685	0.0000419	0.007480	-0.000642	-0.0008084	0.0087688	0.653	0.538	-1.0
26.	6.0	7.0	-3.9	0.074168	0.005449	-0.006615	-0.0000105	0.008697	0.000558	0.0004042	0.0095789	0.654	0.538	-.6
27.	6.0	8.0	-3.5	0.079090	0.004363	-0.006134	0.0000107	0.009455	0.000363	0.0002695	0.0099827	0.654	0.538	-.6
28.	6.0	6.0	-4.5	0.065712	0.005906	-0.006552	-0.0000036	0.007916	0.000752	0.0004042	0.0085295	0.654	0.538	-.8
29.	6.0	4.0	-5.6	0.056222	0.006588	-0.005583	0.0000178	0.008272	0.001429	0.0009434	0.0076794	0.657	0.539	-.8
30.	6.0	2.0	-6.6	0.043156	0.006716	-0.004556	0.0000706	0.008431	0.001955	0.0014821	0.0067624	0.654	0.538	-.2
31.	6.0	0.0	-7.6	0.032187	0.006727	-0.003426	0.0000350	0.009060	0.001974	0.0018864	0.0062350	0.654	0.538	-.2
32.	6.0	-2.0	-8.7	0.021500	0.006793	-0.002208	-0.0000193	0.009245	0.002111	0.0018864	0.0058111	0.654	0.538	-.2
33.	6.0	-4.0	-9.5	0.008262	0.005996	-0.001188	0.0000016	0.009395	0.001927	0.0018897	0.0054209	0.654	0.538	.0
34.	8.0	-4.0	-11.6	0.015617	0.006900	-0.001297	-0.0000679	0.009294	0.002504	0.0024297	0.0062082	0.654	0.538	.0
35.	8.0	-6.0	-12.6	0.006651	0.006925	-0.001012	0.548506	0.009290	-0.055256	0.0018898	0.0059403	0.655	0.538	.0

ROTOR SCALE DATA * PROGRAM LAB330 * BODY AXES

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TIME 007.07

Table II-22. (Concluded) |

TEST 310.0 RUN 23

34 FT. 0012 ROTOR VZBR * .25 M(1.0)(90) = .54

SHAFT AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	THETA	ALPHA SHAFT	ALPHA CONTROL	CT	CH	CYR	CMXB	CMY	CQ	CP	CPO	V/OR M(1.0)(90)	A _{1s}	
36.	0.0	-2.0	-10.7	0.023573	0.007219	-0.002432	-0.000029	0.009487	0.002229	0.0024298	0.0064837	0.655	0.538	.1
37.	0.0	0.0	-9.7	0.037504	0.006920	-0.003765	0.000290	0.009177	0.002524	0.0022947	0.0067517	0.654	0.538	.1
38.	0.0	2.0	-8.7	0.049552	0.006599	-0.004949	0.000733	0.008972	0.002447	0.0020248	0.0073516	0.655	0.538	.1
39.	0.0	4.0	-7.5	0.062552	0.006387	-0.005614	0.000293	0.008481	0.002072	0.0017547	0.0085816	0.654	0.538	.0
40.	0.0	6.0	-6.0	0.075342	0.006156	-0.005741	0.000262	0.007690	0.002022	0.0017548	0.0106362	0.654	0.538	.4
41.	0.0	8.0	-4.0	0.101536	0.007325	-0.006365	0.000332	0.005711	0.002141	0.0018898	0.0153902	0.655	0.538	.4
42.	10.0	6.0	-6.0	0.104245	0.010636	-0.006245	0.000756	0.004153	0.004243	0.0036441	0.0171360	0.653	0.538	.0
43.	10.0	4.0	-8.0	0.081245	0.009274	-0.006284	0.000223	0.005463	0.003620	0.0031164	0.0125999	0.657	0.538	.3
44.	10.0	2.0	-10.0	0.058790	0.008102	-0.005109	0.000488	0.008090	0.003225	0.0028405	0.0093426	0.657	0.539	.5
45.	10.0	0.0	-11.5	0.044512	0.008064	-0.004379	0.000743	0.008408	0.003279	0.0029750	0.0081488	0.653	0.538	.1
46.	10.0	-2.0	-12.5	0.035133	0.008517	-0.003269	0.000033	0.008604	0.003237	0.0029748	0.0076784	0.654	0.538	.2
47.	10.0	-4.0	-13.5	0.022188	0.007761	-0.001849	-0.000156	0.009311	0.003059	0.0028399	0.0068734	0.655	0.538	.3
48.	10.0	-6.0	-14.5	0.012395	0.007543	-0.001178	0.000969	0.009518	0.002848	0.0025695	0.0066298	0.656	0.538	.4
49.	10.0	-8.0	-15.4	0.002803	0.007728	-0.000367	-0.000177	0.008758	0.002093	0.0018931	0.0065463	0.655	0.538	.4

For the following data points

a_{1s} and/or b_{1s} ≠ 0.0 ± .20

PT.	THETA	ALPHA SHAFT	a _{1s}	b _{1s}
40	8	6	1.0	0
41	8	8	2.9	0
42	10	6	4.8	0
43	10	4	2.9	0
43	10	2	.5	0

ROTOR SCALE DATA * PROGRAM LA3530 * BODY AXES

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TIME 907.07

Table II - 23. Rotor No. 3.

TEST 310.0 RUN 20

34 FT. 0012 ROTOR V/QR = .75 M(1.0)(90) = .50

SHAFT AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

RT.	THETA	ALPHA SHAFT	ALPHA CONTROL	CT	CH	CYR	CMXB	CMY	CQ	CP	CPO	V/QR M(1.0)(90)	A _{1s}
1.	8.0	0.0	-9.5	0.042483	0.007378	-0.003689	0.000086	0.011269	0.002507	0.0023610	0.0072555	0.675	0.538
2.	6.0	0.0	-7.6	0.034085	0.006486	-0.003241	-0.000209	0.011667	0.002138	0.0018053	0.0061226	0.674	0.537
3.	6.0	0.0	-7.8	0.025685	0.007874	-0.003312	0.000025	0.012568	0.001803	0.0017341	0.0073900	0.747	0.502
4.	8.0	0.0	-9.8	0.034513	0.008471	-0.004429	0.000067	0.016331	0.002015	0.0021107	0.0084432	0.754	0.500
5.	8.0	-2.0	-11.1	0.021244	0.009274	-0.002841	0.000223	0.015036	0.001971	0.0021108	0.0085221	0.754	0.500
6.	10.0	-2.0	-12.9	0.024283	0.010106	-0.003354	-0.000076	0.018476	0.002428	0.0022908	0.0092434	0.754	0.500
7.	6.0	-2.0	-9.1	0.019379	0.008314	-0.001913	-0.000098	0.013371	0.001754	0.0017656	0.0076867	0.756	0.500
8.	6.0	-4.0	-9.8	0.003579	0.007889	-0.001079	-0.000341	0.013045	0.001566	0.0015891	0.0073510	0.756	0.500
9.	8.0	-4.0	-11.9	0.005584	0.009192	-0.001291	-0.000488	0.013948	0.001678	0.0017658	0.0084123	0.787	0.500
10.	10.0	-4.0	-13.8	0.011658	0.010074	-0.001868	-0.000245	0.015318	0.002254	0.0022955	0.0092801	0.787	0.500
11.	10.0	-4.0	-8.0	-0.004747	0.008476	-0.000497	-0.000194	0.013878	0.001277	0.0012361	0.0063788	0.757	0.500
12.	8.0	-2.0	-8.6	0.007531	0.006774	-0.001258	-0.000425	0.013880	0.001462	0.0015892	0.0065138	0.757	0.500
13.	2.0	-2.0	-4.1	0.003975	0.005880	-0.000898	-0.000209	0.014519	0.001286	0.0014126	0.0057555	0.757	0.500
14.	2.0	0.0	-3.3	0.014783	0.006337	-0.001688	0.000161	0.014388	0.001389	0.0014128	0.0062075	0.758	0.500
15.	0.0	0.0	-1.1	0.006686	0.003992	-0.001049	-0.000159	0.014338	0.001091	0.0012360	0.0057684	0.787	0.500
16.	0.0	2.0	-0.1	0.022879	0.005940	-0.002303	-0.000033	0.014860	0.001090	0.0008846	0.0059683	0.758	0.500
17.	0.0	4.0	0.7	0.024806	0.006360	-0.003314	-0.000097	0.000546	0.000098	0.0003538	0.0064473	0.758	0.500
18.	0.0	6.0	1.9	0.044807	0.003521	-0.004136	-0.000216	0.017446	-0.000487	-0.0003538	0.0057500	0.758	0.500
19.	0.0	8.0	2.4	0.071077	0.003797	-0.005547	-0.000312	0.017723	-0.002283	-0.0017690	0.0083605	0.757	0.500
20.	2.0	8.0	0.5	0.078469	0.001764	-0.006270	-0.000411	0.020643	-0.002209	-0.0015921	0.0077414	0.757	0.500
21.	2.0	6.0	-0.6	0.060099	0.005691	-0.005508	0.000043	0.015205	-0.000728	-0.0005307	0.0083668	0.758	0.500
22.	2.0	4.0	-1.8	0.044520	0.004692	-0.004394	-0.000046	0.017847	0.000468	0.0003538	0.0061730	0.758	0.500
23.	4.0	4.0	-3.9	0.050074	0.007149	-0.005402	0.000375	0.013595	0.000819	0.0005307	0.0084834	0.758	0.500
24.	4.0	2.0	-4.8	0.034817	0.007714	-0.004611	0.000834	0.012571	0.001316	0.0012384	0.0079558	0.758	0.500
25.	4.0	0.0	-5.8	0.022084	0.007645	-0.003065	0.000553	0.012943	0.001802	0.0014153	0.0071924	0.758	0.500
26.	6.0	2.0	-7.0	0.041314	0.008298	-0.004883	0.000399	0.012802	0.001813	0.0012719	0.0086843	0.769	0.496
27.	2.0	2.0	-2.6	0.030236	0.007045	-0.003177	-0.000214	0.012784	0.001258	0.0008862	0.0069888	0.759	0.500
28.	4.0	6.0	-3.0	0.062057	0.006210	-0.006819	0.000561	0.012702	0.000078	0.0000000	0.0094442	0.759	0.500

Table II - 24. Rotor No. 3.

TEST 310.0 RUN 21

34 FT. 0012 ROTOR V/QR = .86 M(1.0)(90) = .47

SHAFT AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

RT.	THETA	ALPHA SHAFT	ALPHA CONTROL	CT	CH	CYR	CMXB	CMY	CQ	CP	CPO	V/QR	M(1.0)(90)	A _{1s}
1.	0.0	0.0	-1.1	0.009157	0.007066	-0.000928	-0.000609	0.019990	0.001227	0.0014035	0.0075418	0.869	0.462	-1.1
2.	0.0	2.0	-0.4	0.025547	0.007059	-0.002131	-0.001067	0.018328	0.000847	0.0011213	0.0078475	0.850	0.467	-1.4
3.	0.0	4.0	0.3	0.045011	0.007637	-0.003270	-0.000817	0.018133	0.000302	0.0004548	0.0095867	0.856	0.465	-1.5
4.	0.0	6.0	1.3	0.055795	0.007490	-0.004359	-0.000562	0.016965	-0.000910	-0.0006728	0.0104929	0.850	0.467	-1.4
5.	0.0	8.0	2.0	0.079161	0.004583	-0.006229	-0.000187	0.020133	-0.002404	-0.0017940	0.0111936	0.850	0.467	-1.8
6.	2.0	8.0	-1.0	0.060818	0.007118	-0.005632	-0.000858	0.018058	-0.000826	-0.0004548	0.0108952	0.855	0.465	-1.3
7.	2.0	4.0	-2.1	0.046016	0.009138	-0.004386	-0.000372	0.016314	0.000144	0.0004557	0.0109444	0.857	0.465	-1.1
8.	2.0	2.0	-2.9	0.027341	0.006457	-0.002906	-0.000865	0.018881	0.001871	0.0009113	0.0089407	0.857	0.465	-1.0
9.	2.0	0.0	-3.4	0.013887	0.007142	-0.001837	-0.000715	0.019224	0.001087	0.0013644	0.0074707	0.856	0.465	-1.0
10.	2.0	-2.0	-4.2	-0.002404	0.007132	-0.000710	-0.000927	0.018179	0.001190	0.0015919	0.0077696	0.857	0.466	-.8
11.	4.0	-2.0	-6.6	0.002290	0.008156	-0.002013	-0.000130	0.018512	0.001377	0.0015918	0.0085009	0.856	0.465	-.5
12.	4.0	-4.0	-7.5	-0.014106	0.007936	0.000086	-0.001002	0.017211	0.000795	0.0011371	0.0087550	0.857	0.466	-.4
13.	4.0	0.0	-6.0	0.014054	0.008878	-0.003038	-0.000112	0.017350	0.001504	0.0015919	0.0091897	0.857	0.466	-.9
14.	4.0	2.0	-5.1	0.030815	0.008291	-0.004190	-0.000343	0.019339	0.001128	0.0011371	0.0091239	0.857	0.466	-.7
15.	4.0	4.0	-4.3	0.045101	0.007290	-0.005873	0.000253	0.019743	0.000589	0.0006822	0.0095164	0.855	0.465	-.7
16.	4.0	6.0	-3.4	0.040928	0.006939	-0.007381	-0.000038	0.019467	-0.000020	0.0000000	0.0112382	0.857	0.466	-1.0
17.	4.0	8.0	-2.4	0.088609	0.004439	-0.008449	-0.000628	0.020044	-0.000826	-0.0006822	0.0133489	0.856	0.465	-1.1
18.	6.0	6.0	-5.0	0.075888	0.008894	-0.009339	0.000580	0.018632	0.000854	0.0009098	0.0150440	0.855	0.465	-.2
19.	6.0	4.0	-6.6	0.050323	0.010861	-0.006794	0.000072	0.015839	0.001347	0.0011370	0.0138230	0.856	0.465	-.6
20.	6.0	2.0	-7.5	0.037044	0.010887	-0.005773	0.000264	0.016996	0.001313	0.0011371	0.0115101	0.856	0.466	-.4
21.	6.0	0.0	-8.4	0.016861	0.010392	-0.003967	0.000220	0.017821	0.001262	0.0015919	0.0104820	0.857	0.466	-.3
22.	6.0	-2.0	-9.2	0.001615	0.011049	-0.002194	-0.000264	0.016008	0.001063	0.0015919	0.0110050	0.857	0.466	
23.	6.0	-4.0	-10.0	-0.012952	0.010534	-0.000839	-0.000693	0.016735	0.000555	0.0009097	0.0106852	0.857	0.466	
24.	6.0	-6.0	-10.8	-0.043437	0.008254	0.000081	-0.000551	0.003029	0.000732	0.0002274	0.0110705	0.856	0.465	
25.	8.0	-6.0	-12.7	-0.021441	0.011505	-0.000182	-0.000888	0.017438	-0.000388	0.0000000	0.0117022	0.856	0.466	
26.	8.0	-4.0	-12.0	-0.011696	0.011957	-0.000748	-0.000853	0.017636	0.000649	0.0009097	0.0118227	0.857	0.466	
27.	8.0	-2.0	-11.2	0.005416	0.012286	-0.002571	-0.000259	0.017488	0.001101	0.0013644	0.0117105	0.856	0.465	
28.	8.0	0.0	-10.3	0.017897	0.011751	-0.003784	-0.000809	0.018193	0.001039	0.0015919	0.0116404	0.856	0.465	
29.	8.0	2.0	-9.7	0.032439	0.011171	-0.005867	-0.000051	0.018325	0.001609	0.0015919	0.0120805	0.856	0.465	
30.	10.0	0.0	-12.1	0.032562	0.013828	-0.006097	0.000271	0.018403	0.001969	0.0020468	0.0138570	0.857	0.466	.4
31.	10.0	-2.0	-13.3	0.009845	0.014000	-0.003584	-0.000199	0.018052	0.001581	0.0015920	0.0132835	0.857	0.466	.1
32.	10.0	-4.0	-14.1	-0.004396	0.013955	-0.002418	-0.000021	0.017204	0.001273	0.0011371	0.0133263	0.857	0.466	.2
33.	10.0	-6.0	-15.0	-0.015145	0.013415	-0.001386	0.000237	0.018022	-0.000032	0.0004548	0.0132331	0.857	0.466	.2
34.	10.0	-8.0	-15.8	-0.026746	0.012890	-0.000103	-0.000675	0.017116	-0.001269	-0.0008971	0.0131075	0.851	0.467	.4

For the following data points

$$a_{1s} \text{ and/or } b_{1s} \neq 0^\circ \pm .2^\circ$$

PT.	THETA	ALPHA SHAFT	a _{1s}	b _{1s}
18	6	6	1.2	0
30	10	0	1.2	.6

ROTOR SCALE DATA * PROGRAM LA3530 * BODY AXES

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TIME 907.07

Table II - 25. Rotor No. 3.

TEST 310.0 RUN 22

34 FT. 0012 ROTOR VZOR * .94 M(1.0)(90) * .49

SHAFT AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

RT.	THETA	ALPHA SHAFT	ALPHA CONTROL	CT	CH	CYR	CMXB	CMY	CQ	CP	CPO	V/DR M(1.0)(90)	A _{1s}	
1.	0.0	0.0	-1.4	0.016292	0.009670	-0.001045	0.004606	0.035292	0.001309	0.0015265	0.0106550	0.945	0.500	
2.	0.0	2.0	-0.6	0.032904	0.008900	-0.002956	0.004970	0.036825	0.001124	0.0010966	0.0105714	0.947	0.499	-1.4
3.	0.0	4.0	0.2	0.049068	0.007381	-0.003729	0.004346	0.039295	0.000581	0.0004394	0.0105729	0.947	0.499	
4.	0.0	6.0	1.1	0.066391	0.007161	-0.005639	0.005189	0.034809	-0.000694	-0.0006599	0.0123810	0.938	0.496	-1.8
5.	2.0	4.0	-2.5	0.047391	0.007557	-0.005357	0.005575	0.035258	0.000830	0.0006556	0.0107033	0.934	0.496	
6.	2.0	6.0	-1.4	0.062063	0.006452	-0.006331	0.005718	0.035255	0.000159	0.0000000	0.0119237	0.934	0.496	-1.5
7.	2.0	8.0	-0.7	0.092329	0.004668	-0.007170	0.005460	0.035502	-0.001853	-0.0015297	0.0144739	0.923	0.496	
8.	2.0	2.0	-3.0	0.031996	0.008941	-0.004002	0.005329	0.034674	0.001303	0.0010989	0.0104735	0.936	0.496	-1.8
9.	2.0	0.0	-3.9	0.011960	0.008421	-0.002032	0.004230	0.035754	0.001351	0.0015657	0.0095133	0.944	0.493	
10.	2.0	5.0	-1.9	0.052169	0.007059	-0.005627	0.005452	0.036380	0.000497	0.0004497	0.0112771	0.943	0.492	-1.2
11.	2.0	7.0	-1.2	0.077632	0.006886	-0.007694	0.006345	0.035118	-0.000185	-0.0006761	0.0146094	0.950	0.492	-1.4
12.	4.0	7.0	-3.4	0.077636	0.008312	-0.009071	0.006682	0.031610	0.000413	-0.0002257	0.0162916	0.944	0.491	
13.	4.0	8.0	-3.0	0.087919	0.004970	-0.007570	0.005664	0.037296	0.000166	-0.0004516	0.0155919	0.950	0.492	-1.1
14.	4.0	6.0	-4.0	0.065870	0.008763	-0.008583	0.005734	0.034049	0.000326	0.0000000	0.0146797	0.950	0.492	
15.	4.0	5.0	-4.5	0.051543	0.008281	-0.007456	0.005713	0.036362	0.000931	0.0004470	0.0123911	0.944	0.494	
16.	4.0	4.0	-5.0	0.047395	0.009758	-0.006599	0.005863	0.033738	0.001412	0.0006805	0.0128913	0.942	0.489	-1.1
17.	4.0	2.0	-5.8	0.028568	0.010543	-0.004876	0.005786	0.032874	0.001389	0.0011342	0.0119801	0.943	0.489	
18.	4.0	0.0	-6.4	0.011544	0.010247	-0.003813	0.005781	0.032772	0.001215	0.0013637	0.0110375	0.944	0.489	.9
19.	6.0	0.0	-8.6	0.008460	0.013235	-0.004009	0.005886	0.031466	0.000893	0.0011363	0.0136210	0.943	0.489	.6
20.	6.0	2.0	-7.9	0.021247	0.013461	-0.006390	0.006476	0.031249	0.001274	0.0009107	0.0146009	0.944	0.489	
21.	6.0	4.0	-7.0	0.040785	0.011478	-0.007371	0.006274	0.033980	0.001896	0.0009106	0.0143426	0.943	0.489	
22.	6.0	5.0	-6.5	0.053580	0.010857	-0.008258	0.006122	0.033543	0.001621	0.0006830	0.0152159	0.945	0.489	.4
23.	6.0	6.0	-6.0	0.061880	0.010003	-0.008561	0.006228	0.033640	0.001649	0.0006830	0.0160568	0.944	0.489	
24.	8.0	2.0	-9.9	0.028113	0.015428	-0.006503	0.006418	0.032069	0.001579	0.0011425	0.0166249	0.946	0.488	.4
25.	8.0	1.0	-10.4	0.018097	0.015907	-0.005715	0.006559	0.031191	0.001449	0.0011425	0.0164700	0.946	0.488	.2
26.	8.0	0.0	-10.8	0.009641	0.016465	-0.004516	0.005866	0.030658	0.000839	0.0011445	0.0167131	0.946	0.488	

Table II - 26. Rotor No. 3.

TEST 310.0 RUN 24

34 FT. 0012 ROTOR V/OR * /./ M(1.0)(90) * .52

SHAFT AXES COEFFICIENTS, BASED ON ROTOR BLADE AREA AND ROTOR TIP SPEED

PT.	THETA	ALPHA SHAFT	ALPHA CONTROL	CT	CH	CYR	CMXB	CMY	CQ	CP	CPO	V/OR M(1.0)(90)	A _{1s}	
1.	0.0	0.0	-1.0	0.011358	0.007943	-0.001043	-0.000773	0.032879	0.001505	0.0016873	0.0090945	0.933	0.489	-1.3
2.	0.0	0.0	-1.2	0.012140	0.009380	-0.001286	-0.000491	0.046411	0.001561	0.0016927	0.0110084	0.994	0.505	-1.4
3.	0.0	0.0	-1.2	0.014520	0.010062	-0.001343	-0.000403	0.057483	0.001564	0.0017077	0.0121070	1.034	0.514	-1.4
4.	0.0	0.0	-1.3	0.018777	0.011240	-0.001123	-0.001098	0.076990	0.001568	0.0017319	0.0140077	1.093	0.526	-1.5
5.	0.0	0.0	-1.4	0.018883	0.011155	-0.000991	-0.001193	0.074622	0.001378	0.0017483	0.0139616	1.096	0.524	-1.4
6.	0.0	2.0	-0.6	0.048320	0.011016	-0.003014	-0.000262	0.075720	0.001503	0.0013017	0.0151879	1.099	0.521	-1.8
7.	0.0	4.0	-0.2	0.070304	0.010871	-0.004502	-0.001580	0.079923	0.000403	0.0005861	0.0178105	1.103	0.525	-2.0
8.	0.0	6.0	0.5	0.088959	0.010536	-0.006727	-0.001667	0.077742	-0.001015	-0.0005963	0.0211573	1.111	0.522	-2.3
9.	0.0	6.0	0.6	0.091302	0.008946	-0.006787	-0.001025	0.074320	-0.001357	-0.0010755	0.0168888	1.096	0.517	-2.2
10.	2.0	6.0	-1.7	0.086055	0.009491	-0.007993	-0.000779	0.070420	-0.000696	-0.0005982	0.0192796	1.090	0.516	-1.6
11.	2.0	7.0	-1.4	0.101765	0.010242	-0.008670	-0.000547	0.069761	-0.001341	-0.0013166	0.0230994	1.095	0.517	-1.8
12.	2.0	5.0	-2.3	0.071422	0.011431	-0.007001	-0.000477	0.070148	0.000422	0.0001197	0.0192018	1.092	0.516	-1.5
13.	2.0	4.0	-2.6	0.060918	0.011334	-0.006349	0.000157	0.071808	0.000988	0.0006004	0.0175112	1.094	0.516	-1.4
14.	2.0	3.0	-3.1	0.047822	0.010406	-0.005277	0.000267	0.072380	0.001460	0.0008405	0.0148672	1.093	0.515	-1.2
15.	2.0	2.0	-3.5	0.036263	0.011412	-0.004838	-0.000128	0.070665	0.001801	0.0013254	0.0131535	1.094	0.513	-1.2
16.	2.0	1.0	-3.7	0.024475	0.012599	-0.003789	-0.000301	0.068807	0.001755	0.0015691	0.0158153	1.095	0.515	-1.1
17.	2.0	0.0	-4.1	0.019370	0.012627	-0.003006	-0.000077	0.068954	0.001739	0.0015688	0.0153719	1.094	0.514	-1.1
18.	2.0	-1.0	-4.3	0.004092	0.012388	-0.002103	-0.001267	0.069510	0.001678	0.0015689	0.0150419	1.094	0.514	-1.2
19.	1.0	0.0	-3.0	0.013696	0.011292	-0.002549	-0.000720	0.068814	0.001631	0.0018131	0.0141458	1.093	0.514	-1.2
20.	1.0	2.0	-2.0	0.042182	0.011357	-0.004154	-0.000039	0.070348	0.001571	0.0013294	0.0153056	1.091	0.513	-1.4
21.	1.0	4.0	-1.4	0.069977	0.010397	-0.005233	-0.000623	0.071078	0.000715	0.0006043	0.0171052	1.091	0.513	-1.6
22.	1.0	6.0	-0.8	0.089829	0.009330	-0.007899	-0.000523	0.070838	-0.000921	-0.0008489	0.0193109	1.092	0.513	-1.8
23.	3.0	6.0	-3.2	0.077612	0.010612	-0.008400	-0.000698	0.069008	-0.000291	-0.0001213	0.0200896	1.092	0.512	-1.3
24.	3.0	7.0	-2.7	0.087550	0.008976	-0.008884	-0.000860	0.069324	-0.000481	-0.0006074	0.0205761	1.093	0.512	-1.5
25.	4.0	7.0	-3.5	0.094419	0.011468	-0.009389	-0.000419	0.067476	-0.000522	-0.0003651	0.0244342	1.095	0.512	-1.6
26.	4.0	6.0	-4.3	0.071418	0.011365	-0.008729	-0.000732	0.069936	0.000255	-0.0001219	0.0202955	1.096	0.512	-1.7
27.	4.0	4.0	-5.1	0.051348	0.013428	-0.007666	0.000235	0.069084	0.000809	0.0006095	0.0191405	1.096	0.512	-1.0
28.	4.0	2.0	-6.0	0.034317	0.013638	-0.005848	-0.001535	0.069284	0.000690	0.0008546	0.0170388	1.094	0.511	-1.7
29.	4.0	0.0	-6.7	0.009104	0.015327	-0.004345	-0.000060	0.067295	0.000912	0.0010988	0.0178618	1.094	0.511	-1.6
30.	5.0	0.0	-7.9	0.000770	0.016904	-0.005155	-0.000346	0.067701	0.000566	0.0008545	0.0193303	1.093	0.511	-1.5
31.	6.0	0.0	-8.9	0.001113	0.018485	-0.005240	-0.000418	0.068165	0.000315	0.0003663	0.0205879	1.094	0.511	-1.2
32.	6.0	2.0	-8.3	0.021137	0.017074	-0.007167	-0.000428	0.066896	0.000732	0.0003669	0.0198306	1.094	0.511	-1.5
33.	6.0	1.0	-8.8	0.008243	0.017374	-0.005828	0.000089	0.067005	0.000549	0.0003674	0.0195144	1.093	0.510	-1.6
34.	7.0	0.0	-10.1	-0.000393	0.019516	-0.005506	-0.000029	0.066122	0.000422	-0.0001225	0.0212060	1.093	0.510	-1.6
35.	3.0	0.0	-5.8	0.006914	0.013469	-0.003994	0.000207	0.064448	0.001608	0.0013497	0.0160974	1.095	0.510	-1.6

For the following data point
a_{1s} and b_{1s} ≠ 0° ± .2°

PT.	THETA	ALPHA SHAFT	a _{1s}	b _{1s}
25	4	7	0	.7