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PERFORMANCE AND LOADS DATA FROM A WIND TUNNEL TEST OF A FULL-SC--ETC(U)
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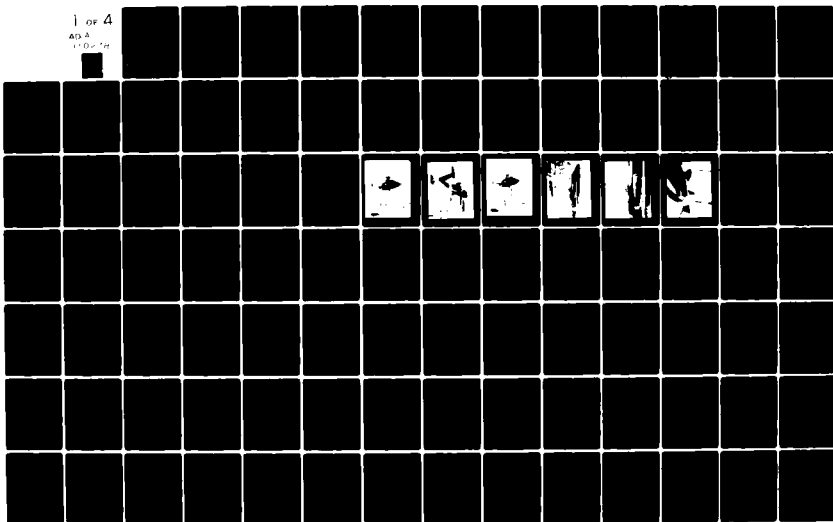
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Performance and Loads Data from a Wind Tunnel Test of a Full-Scale, Coaxial, Hingeless Rotor Helicopter

Fort F. Felker III

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PERFORMANCE AND LOADS DATA FROM A WIND TUNNEL TEST OF
A FULL-SCALE, COAXIAL, HINGELESS ROTOR HELICOPTER

Fort F. Felker, III

Ames Research Center

and

Aeromechanics Laboratory

AVRADCOM Research and Technology Laboratories

SUMMARY

A test of a full-scale XH-59A Advancing Blade Concept Helicopter was conducted in Ames Research Center's 40- by 80-Foot Wind Tunnel. The helicopter was tested with the rotor on and off, rotor hub fairings on and off, inter-rotor shaft fairing on and off, rotor instrumentation module on and off, and auxiliary propulsion thrust on and off. The investigation was accomplished over an advance ratio range of 0.25 to 0.45 with the rotor on and from 60 to 180 knots with the rotor off. This report presents data on aerodynamic forces and moments, rotor loads, rotor control positions and vibration for the XH-59A as well as the aerodynamic performance of the isolated rotor.

List of Symbols

a	speed of sound, ft/sec
A ₁	longitudinal cyclic blade pitch, deg
b	total number of rotor blades
B ₁	lateral cyclic blade pitch, deg
c.75	blade chord at 75% radius, ft
C _{DR} /σ	rotor drag coefficient, rotor drag/ρS(ΩR) ²
C _{LR} /σ	rotor lift coefficient, rotor lift/ρS(ΩR) ²
C _{MX} /σ	rotor rolling moment coefficient, rotor rolling moment/ρS(ΩR) ² R
C _{MY} /σ	rotor pitching moment coefficient, rotor pitching moment/ρS(ΩR) ² R
C _{MZ} /σ	rotor yawing moment coefficient, rotor yawing moment/ρS(ΩR) ² R
C _p /σ	rotor power coefficient, total turboshaft engine power/ρS(ΩR) ³
C _{po} /σ	rotor nonideal power coefficient
C _{YR} /σ	rotor side force coefficient, rotor side force/ρS(ΩR) ²
D	drag, lb
L	lift, lb
ℓ	rolling moment, ft-lb
M	pitching moment, ft-lb
M _{at}	advancing tip Mach number, M _{at} = M _{tun} + M _{tip}
M _{tip}	rotor tip rotational Mach number, ΩR/a
M _{tun}	free stream Mach number, M _{tun} = V/a
N	yawing moment, ft-lb
q	free stream dynamic pressure, ρV ² /2, lb/ft ²

List of Symbols (continued)

r	local blade radius, ft
R	rotor radius, ft
S	rotor reference area, $S = bc .75R$
V	free stream velocity, ft/sec
Y	side force, lb
α	angle of attack, deg
α_s	shaft angle of attack, deg
μ	rotor advance ratio, $V/\Omega R$
Ω	rotor rotational speed, rad/sec
ψ	blade azimuth, deg, counter-clockwise is positive as viewed from above, zero with instrumented blade pointing aft
ρ	air density, slugs/ft ³
σ	rotor solidity, $\sigma = bc .75/\pi R$
θ	rotor blade pitch, deg

Subscripts

u	upper rotor
l	lower rotor
$()'$	prime, differential between upper and lower rotors

INTRODUCTION

The high-speed capability of modern helicopters can be limited by the rapid increase in rotor power requirements that accompanies retreating blade stall and advancing blade compressibility drag. In order to reduce the compressibility drag the rotor's rotational speed must be reduced, but this only aggravates the problem of retreating blade stall.

One solution to this dilemma is to use two counter-rotating rotors with each lifting predominantly on its advancing side. Since the retreating side of each rotor is unloaded, blade stall is less of a problem and the rotor's rotational speed can be reduced, which helps alleviate compressibility drag as well. Two XH-59A Demonstration/Research Helicopters were built by Sikorsky Aircraft under Army Sponsorship using this Advancing Blade Concept (ABC). A three-view drawing of the helicopter as modified for wind tunnel testing is presented as figure 1. Readers who desire additional information on the ABC concept are referred to references 1-6.

One disadvantage of this configuration is the large parasite drag of the rotor hubs and inter-rotor shaft. The hub drag is proportional to the hub's swept frontal area (reference 7) and the ABC, with two hubs instead of one, has twice the hub swept frontal area of a conventional helicopter of similar (hingeless) construction. In addition to this is the drag due to the inter-rotor shaft. In an effort to reduce the hub's parasite drag a 1/5-scale model wind tunnel test was conducted to identify the drag reduction potential of fairing the rotor hubs and inter-rotor shaft of the XH-59A (reference 8). Many fairing configurations were tested and one was selected for full-scale wind tunnel testing.

This report presents the results of a full-scale wind tunnel test of an XH-59A helicopter conducted in Ames Research Center's 40- by 80-Foot Wind Tunnel. The objectives of the test were to (1) provide advanced technology data necessary for assessment of a potentially viable mission-oriented ABC vehicle, including hub drag reduction and rotor/tail/propulsion system interference alleviation, and (2) provide data with which to interpret, clarify, and augment flight test results as well as provide a base for correlation of existing 1/5-scale model test data. The test was conducted over an advance ratio range of 0.25 to 0.45 with the rotor on and from 60 to 180 knots with the rotor off. Data is presented for aerodynamic forces and moments, rotor control positions, rotor structural loads, and vibration of the XH-59A as well as the aerodynamic performance of the isolated rotor.

EXPERIMENTAL EQUIPMENT AND PROCEDURES

Description of Wind Tunnel and Balance

The 40- by 80-Foot Wind Tunnel is of the closed-throat, single-return type with a speed capability extending to 180 knots. Model forces and moments were measured by a six-component mechanical balance. Balance sensitivities were as follows:

Scale	Sensitivity
Lift*, lb	5
Drag, lb	1
Side Force*, lb	1
Pitching Moment, ft-lb	160
Rolling Moment, ft-lb	85
Yawing Moment, ft-lb	24

*two balances used to measure total force

Description of Model

General - Several photographs of the ABC installed in the wind tunnel test section are presented as figure 2. Note the fairings installed over the rotor hubs and inter-rotor shaft in figures 2(a) and 2(b). The helicopter was modified by the addition of two struts and fairings in place of the main landing gear so that it could be mounted on the wind tunnel's strut model support system. Figure 2(f) presents a close-up view of the model support struts. The helicopter's pitch attitude (rotor shaft angle of attack) was remotely controlled using an extendable nose strut. The three struts which support the model on the wind tunnel balance were faired to minimize the extraneous airloads applied to the balance. The midpoint between the two rotors was 5 feet above the tunnel centerline. Power for the rotors was supplied by two PT6T-3 turbo-shaft engines producing a total of 1500 HP. The nacelle-mounted engines for auxiliary propulsion were J60-P3A turbojets which produce 3000 lbs. of thrust each. General specifications of the XH-59A are presented in Table 1.

Six rotor controls were remotely operated from the control room by electro-mechanical actuators. The six rotor controls were collective, lateral cyclic, and longitudinal cyclic for each rotor. The relationships between these controls and the rotor blade pitch were as follows:

Collective:

$$\theta_0 = \frac{\theta_{0u} + \theta_{0l}}{2}$$

Longitudinal Cyclic:

$$A_1 = \frac{A_{1u} + A_{1l}}{2}$$

Lateral Cyclic:

$$B_1 = \frac{B_{1u} + B_{1l}}{2}$$

Differential Collective:

$$\theta_0' = \frac{\theta_{0u} - \theta_{0l}}{2}$$

Differential Longitudinal Cyclic:

$$A_1' = \frac{A_{1u} - A_{1l}}{2}$$

Differential Lateral Cyclic:

$$B_1' = \frac{B_{1u} - B_{1l}}{2}$$

Therefore the blade pitch on the upper rotor was:

$$\theta_u = (\theta_0 + \theta_0') - (A_1 + A_1') \cos \psi_u - (B_1 + B_1') \sin \psi_u$$

blade pitch on the lower rotor was:

$$\theta_l = (\theta_0 - \theta_0') - (A_1 - A_1') \cos \psi_l - (B_1 - B_1') \sin \psi_l$$

Rotor Blades - The XH-59A used three 18-foot radius rotor blades on each rotor. The upper rotor rotated in the counter-clockwise direction, and the lower rotor rotated in the clockwise direction. The upper and lower rotors were indexed such that when the instrumented blade of the upper rotor was at $\psi = 0^\circ$, the instrumented blade of the lower rotor was at $\psi = 300^\circ$. The rotor blades were attached to the hubs without flap or lead-lag hinges, using only pitch bearings. The blades were attached with 3° of precone and 1.4° of prelag. The blades were tapered in both planform and thickness. The planform taper was linear with a rotor chord to tip chord ratio of 2:1. A drawing of the blade in plan view is presented as figure 3. The spanwise variation of blade thickness to chord ratio is presented as figure 4. The airfoil contour at 20% radius was a NACA 63(230)224A airfoil tapering in thickness to a NACA 63(230)-213A airfoil at 62% radius. This transitioned to a NACA 23012(64) airfoil at 72% radius which was held constant to the tip (fig. 3). The blades had -10° of nonlinear twist. The twist distribution is presented as figure 5. The

primary structural element in the blades was a full span titanium spar with boron composite reinforcement bonded to the upper and lower surfaces of the spar to increase the flapwise stiffness. A honeycomb core covered with a fiberglass skin was attached to the spar to give the blades their aerodynamic shape. Figure 6 presents a drawing of a typical blade section. The blade's natural frequency diagram is presented as figure 7. The spanwise distribution of rotor blade properties are given in Table 2.

Description of Hub Fairings

Figure 8 presents a sketch of the rotor hub fairings that were tested. The upper and lower rotor hub fairings were 31.8% thick ellipsoids. These fairings had a diameter of 4.17 feet. The inter-rotor shaft fairing was a 43% thick NACA 4-digit series symmetric airfoil. The inter-rotor shaft fairing was mounted to the upper and lower rotor hubs with bearings and was free to rotate about the rotor centerline. It was expected that the fairing would, therefore, rotate to a trailing edge aft orientation, aligned with the free stream. However, it was noted during the wind tunnel test that the fairing did not align itself with the wind and was skewed about 30° relative to the free stream either to the left or to the right. This failure to align itself was evident when testing both with the hubs rotating and the hubs not rotating when testing with the rotor blades off. The skew also continued when testing with the rotor blades on. In an effort to eliminate the skew of the inter-rotor shaft fairing, an extended trailing edge tab was attached to the fairing (see fig. 8). However, the skew continued in spite of the extended trailing edge tab.

An aerodynamic configuration which is free to pivot about a point aft of its aerodynamic center is inherently unstable about its pivot. The pivot of the inter-rotor shaft fairing was at the 30% chord location. It is to be

expected that the inter-rotor shaft fairing would not line up with the wind if its aerodynamic center is forward of 30% of chord. It was reported in reference 9 that a NACA 0035 airfoil had an aerodynamic center located 16% of chord aft of the leading edge. Although the inter-rotor shaft fairing's airfoil section was a slightly thicker NACA 0043, ref. 9 indicates that the trend is for the aerodynamic center to move forward with increasing thickness. Thus, the available evidence indicates that the aerodynamic center of the inter-rotor shaft fairing was at least as far forward as 16% of chord aft of the leading edge. The failure of the inter-rotor shaft fairing to properly align itself with the free stream was, therefore, a result of the aerodynamic center being forward of the pivot point. The extended trailing edge tab had little effect on the orientation of the inter-rotor shaft fairing. The reason was that the trailing edge tab was not long enough to move the aerodynamic center aft of the pivot point.

Figure 9 presents a sketch of the unfaired rotor hub with the rotor blades off and also shows the instrumentation can. The instrumentation can housed signal conditioning equipment and slip rings used for acquiring data in the rotating frame of reference.

Instrumentation and Data Reduction

Wind tunnel wall corrections have been applied to the forces and moments measured by the wind tunnel balance. This wall correction is based on conventional fixed wing techniques, for a wing of span equal to the rotor diameter (reference 10). The wall correction was an incremental change in the angle of

attack that was proportional to the lift:

$$\Delta\alpha = 0.00235 \frac{L}{q}$$

where the constant, 0.00235 deg/ft², was determined based on rotor and wind tunnel geometric parameters. This incremental angle, $\Delta\alpha$, was added to the geometric angle of attack, α_s , to obtain the corrected rotor disk angle of attack in free air, α .

$$\alpha = \alpha_s + \Delta\alpha$$

Balance forces and moments were then resolved to this new wind-axis system.

Tare corrections were analytically determined to account for forces and moments produced by the exposed model support struts (references 11, 12). The exposed tips of the wind tunnel model support system struts were estimated to have a total parasite drag area of 3.35 ft². The fairings around the model's support struts (extending from the tips of the wind tunnel model support system struts to the ABC's main landing gear wheel wells, see fig. 2(f)) were modelled as low aspect ratio wings (AR = 1.26). An explanation of the equations used to correct the measured forces and moments for the effects of the strut fairings is presented in Appendix I. The forces and moments produced by the J60 auxiliary propulsion engines have also been subtracted out of the data presented here. The thrust was calculated from a thrust versus exhaust pressure ratio calibration which was performed in an engine test cell before the wind tunnel test. An explanation of the equations used to correct for the thrust of the J60 engines is presented in Appendix II.

All aerodynamic forces and moments are presented in wind axes. The axis center for rotor forces and moments was on the centerline of the inter-rotor shaft halfway between the two rotors. In aircraft coordinates this position

would be:

Fuselage Station = 300

Water Line = 215

Butt Line = 0

All other aerodynamic forces and moments were resolved to the aircraft's center of gravity, whose location is shown on fig. 1. In aircraft coordinates, the center of gravity is located at:

Fuselage Station = 294.7

Water Line = 158

Butt Line = 0

Positive directions of forces and moments are shown in figure 10.

Engine torques were measured using pressure transducers plumbed to the engine torque pressure outputs. These torques were multiplied by the engine output shaft's rotational speed to obtain the power output. A nonideal power coefficient was computed as follows:

$$C_{p0}/\sigma = C_p/\sigma - \sigma(C_{LR}/\sigma)^2/2\mu + \mu C_{DR}/\sigma$$

The parameter C_{p0} is obtained by subtracting the propulsive or parasite power and the ideal induced power from C_p ; therefore, it is equal to the sum of the rotor profile power and nonideal induced power losses.

The aerodynamic forces and moments of the isolated rotor were obtained by subtracting the forces and moments due to the fuselage from the total measured.

The forces and moments due to the fuselage were determined from testing with the rotor blades off. This "tare" due to the fuselage was described by polynomial equations in α and q after the forces and moments due to the J60 engines had been removed. These equations are given in Table 3. These tares were obtained with the instrumentation can installed on the inter-rotor shaft, no hub fairings, and the hubs rotating. However, several rotor-on runs were conducted with the hub fairings installed in place of the instrumentation can. The fuselage tares obtained with the instrumentation can were also used to calculate the rotor forces for these runs. Therefore, the effect of substituting the hub fairings for the instrumentation can is included in the rotor forces and moments since the fuselage aerodynamic tares used to calculate the rotor forces and moments were obtained with the instrumentation can installed.

The instrumentation parameters considered in this report are listed in Table 4, including units and positive directions. The actual radial locations of the blade bending gages are given in Table 5 and are shown on a drawing of the rotor blade in fig. 3. The signals from the parameters listed in Table 4 were sampled and digitized 64 times per revolution. The time history was smoothed and filtered by eliminating subharmonics and harmonics above 10/rev; and a correction for the Bessel filters in the amplifiers was applied.

Due to various problems encountered during the wind tunnel test, the mean values of the blade pitch data (θ_0 and $\Delta\theta_0$) are not reliable from run to run. However, the increments of collective and differential collective pitch within a run are reliable.

OPERATING CONDITIONS

The ABC's performance and loads data were acquired over an advance ratio range of 0.25 to 0.45 with the rotor on and from 60 to 180 knots with the rotor off. For the rotor-on runs, the rotor speed was adjusted to give the desired tip Mach number, M_{tip} , and the tunnel speed was adjusted to obtain the desired advance ratio, μ . Data were then acquired for a matrix of shaft angles, α_s , and rotor lift coefficients, C_{LR}/σ . The operating conditions at which the data were acquired are shown in figure 11.

Several hub fairing configurations were tested, and runs were conducted both with the rotor blades on and with the rotor blades off. Table 6 presents a key to the configuration that was tested in each run. Rotor-on testing was conducted over an angle of attack range of 0° to 10° . Rotor-off testing was conducted over an angle of attack range of -10° to $+10^\circ$ and a yaw angle range of -15° to $+14^\circ$. The auxiliary propulsion engines were operated at flight idle for all runs except for run 10.

RESULTS

Performance Data

The performance data are tabulated in Section A. A dictionary of the parameters is provided in Table 7. The data are organized by run number.

Control and Loads Data

The control and loads data are tabulated in Section B. The oscillatory (one-half peak-to-peak) and mean loads, the blade pitch control settings, and the one-half peak-to-peak accelerations are presented. A dictionary of the parameters is presented in Table 8. The data are organized by run number.

Detailed Loads Data

Detailed loads data are given in Section C. The first 10 harmonics and the time history over one revolution are presented for the blade bending moments, pitch link loads, and upper rotor shaft stress. A dictionary of the parameters is provided in Tables 7 and 8. The pitch link load given in the detailed loads presentation is that of the red, instrumented blade. As previously noted, when the instrumented blade of the upper rotor was at $\psi = 0^\circ$, the instrumented blade of the lower rotor was at $\psi = 300^\circ$.

Plotted Data

Selected performance and loads data are plotted in Section D. A dictionary of the parameters is provided in Tables 7 and 8. Fuselage aerodynamic characteristics, rotor performance, rotor loads, and airframe vibration plots are presented. The data points are designated by circles on the plots. The majority of the plots present isograms for a particular quantity as a function of rotor lift and rotor drag, at a given advance ratio. The contours are interpolated from the values of the quantity at the data points. The parameter ϵ_y in the upper left-hand corner of the plots is the rms error of the estimate of the quantity at the data points based on the interpolated contours.

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TABLE 1. XH-59A GENERAL SPECIFICATIONS

Aircraft Length (rotor turning)	41.7	ft
Fuselage Length	40.8	ft
Rotor Radius, R	18.0	ft
Number of Rotors	2	
Blades per Rotor	3	
Rotor Separation	2.5	ft
Blade Tip Chord	0.938	ft
Blade Taper Ratio	2:1	
Blade Twist (nonlinear)	-10	deg
Total Rotor Solidity, σ	0.1267	
Rotor Reference Area, S	128.965	ft ²
Blade Precone Angle	3	deg
Blade Prelag Angle	1.4	deg
Shaft Tilt	0	deg
Design Rotor Tip Speed	650	ft/sec
Rotor Drive System Power	1500	HP
Tail Surface Area - Horizontal	60	ft ²
- Vertical	30	ft ²
Horizontal Tail Incidence	-5	deg
Power Plants - Lift	(2) PT6T-3	
- Thrust	(2) J60-P3A	

TABLE 2. SPANWISE DISTRIBUTION OF ROTOR BLADE PROPERTIES

r/R	Weight, lb/ft	r/R	Flapwise Stiffness $EI_f, \text{lb-ft}^2 \times 10^{-3}$	r/R	Chordwise Stiffness $EI_c, \text{lb-ft}^2 \times 10^{-3}$
0.	0.	0.	5,970	0.	5,970
0.030	116.40	0.092	5,790	0.092	5,970
0.092	116.40	0.144	3,330	0.115	4,380
0.092	26.40	0.202	1,940	0.173	3,190
0.115	21.60	0.259	1,361	0.288	2,290
0.173	16.80	0.345	875	0.403	1,750
0.288	11.40	0.403	667	0.518	1,472
0.403	8.16	0.518	361	0.691	1,000
0.576	5.04	0.634	194	0.864	556
0.737	3.36	0.748	111	1.0	389
0.737	5.04	1.0	56		
0.939	3.84				
0.939	12.24				
0.973	12.23				
0.973	14.88				
1.0	14.88				

TABLE 2. CONTINUED

r/R	<u>Torsional Stiffness</u> $GJ, \text{ lb-ft}^2 \times 10^{-3}$	r/R	<u>Torsional Inertia,</u> $I, \text{ lb-ft}^2/\text{ft}$
0.	4,785	0.	1.458
0.093	4,785	0.116	1.458
0.125	3,993	0.116	1.225
0.174	2,326	0.139	1.225
0.231	1,528	0.139	1.033
0.289	1,111	0.162	1.033
0.347	778	0.162	1.175
0.405	507	0.23	1.125
0.463	330	0.40	0.650
0.521	208	0.60	0.375
0.579	134	0.944	0.151
0.694	67	0.979	0.151
0.810	35	0.979	0.136
0.926	22	1.0	0.136
1.0	21		

TABLE 3. EQUATIONS FOR FUSELAGE AERODYNAMIC TARES

For $q < 50 \text{ lb/ft}^2$

$\begin{bmatrix} L/q \\ D/q \\ M/q \\ Y/q \\ N/q \\ Z/q \end{bmatrix}$	$\begin{bmatrix} 10.76035 \\ 23.46913 \\ -130.64588 \\ -1.40292 \\ -2.68051 \\ 61.30223 \end{bmatrix}$	$\begin{bmatrix} 5.41970 \\ 0.03287 \\ -38.59377 \\ -0.08140 \\ 1.57295 \\ 0.06086 \end{bmatrix}$	$\begin{bmatrix} 0.00009 \\ 0.05235 \\ 0.26388 \\ -0.00874 \\ -0.03260 \\ -0.14750 \end{bmatrix}$	$\begin{bmatrix} 0.00095 \\ 0.00168 \\ -0.04500 \\ 0.00054 \\ -0.00470 \\ 0.00422 \end{bmatrix}$	$\begin{bmatrix} -0.59206 \\ -0.01789 \\ 4.74413 \\ 0.11532 \\ -0.38280 \\ -3.43062 \end{bmatrix}$	$\begin{bmatrix} 0.00638 \\ -0.00057 \\ -0.06653 \\ -0.00160 \\ 0.01217 \\ 0.05991 \end{bmatrix}$	$\begin{bmatrix} 1 \\ \alpha \\ \alpha^2 \\ \alpha^3 \\ q \\ q^2 \end{bmatrix}$
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For $q > 50 \text{ lb/ft}^2$

$\begin{bmatrix} L/q \\ D/q \\ M/q \\ Y/q \\ N/q \\ Z/q \end{bmatrix}$	$\begin{bmatrix} -6.72088 \\ 21.57190 \\ -124.43791 \\ -0.64084 \\ -13.78191 \\ 47.21218 \end{bmatrix}$	$\begin{bmatrix} 5.17748 \\ 0.00113 \\ -42.96387 \\ -0.13112 \\ 1.00925 \\ -0.16395 \end{bmatrix}$	$\begin{bmatrix} 0.01511 \\ 0.05188 \\ -0.08872 \\ -0.00645 \\ 0.01682 \\ 0.04250 \end{bmatrix}$	$\begin{bmatrix} 0.00221 \\ -0.00166 \\ -0.00494 \\ 0.00075 \\ -0.00512 \\ 0.00356 \end{bmatrix}$	$\begin{bmatrix} 0.07984 \\ -0.00328 \\ 2.66738 \\ 0.03859 \\ 0.39236 \\ -1.11131 \end{bmatrix}$	$\begin{bmatrix} 0.00079 \\ -0.00005 \\ -0.01700 \\ -0.00030 \\ -0.00336 \\ 0.00714 \end{bmatrix}$	$\begin{bmatrix} 1 \\ \alpha \\ \alpha^2 \\ \alpha^3 \\ q \\ q^2 \end{bmatrix}$
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TABLE 4. LIST OF INSTRUMENTATION PARAMETERS

Parameter	Units	Positive Direction
Upper rotor chordwise bending moment, .1R	ft-lb	tip aft
Upper rotor normal bending moment, .1R	ft-lb	tip up
.2R	ft-lb	tip up
.3R	ft-lb	tip up
.6R	ft-lb	tip up
Upper rotor red blade pitch link load*	lb	tension, leading edge up
Upper rotor yellow blade pitch link load	lb	tension, leading edge up
Upper rotor blue blade pitch link load	lb	tension, leading edge up
Upper rotor shaft stress	lb/in ²	tension
Upper rotor blade root pitch	deg	leading edge up
Lower rotor chordwise bending moment, .1R	ft-lb	tip aft
Lower rotor normal bending moment, .1R	ft-lb	tip up
.2R	ft-lb	tip up
.3R	ft-lb	tip up
.6R	ft-lb	tip up
Lower rotor red blade pitch link load*	lb	tension, leading edge up
Lower rotor yellow blade pitch link load	lb	tension, leading edge up
Lower rotor blue blade pitch link load	lb	tension, leading edge up
Lower rotor blade root pitch	deg	leading edge up
#1 PT6 torque	ft-lb	power to rotor
#2 PT6 torque	ft-lb	power to rotor
Gearbox vertical acceleration	g's	
Gearbox lateral acceleration	g's	
Gearbox longitudinal acceleration	g's	
Left vertical fin vertical acceleration	g's	
Horizontal stabilizer vertical acceleration	g's	
Left aft support strut lateral acceleration	g's	
#1 J60 vertical acceleration	g's	
#2 J60 vertical acceleration	g's	

*the red blade was the instrumented blade for both rotors.

TABLE 5. BLADE BENDING GAGE LOCATIONS

NOMINAL STATION	r/R
.1R	0.1026
.2R	0.1991
.3R	0.3009
.6R	0.6019

TABLE 6. CONFIGURATION KEY

RUNS	HUB FAIRING	INTER-ROTOR SHAFT FAIRING	INSTRUMENTATION CAN
Rotor Blades off			
10,12	on	on	off
13	on	off	off
15	off	off	off
17,18	off	off	on
Rotor Blades on			
21,23,24,25	off	off	on
28,29,30	on	on	off

TABLE 7. PERFORMANCE DATA PARAMETERS

LABEL	PARAMETER
ALFS,C	angle of attack in free air, α , deg
ALFS,U	shaft angle of attack, α_s , deg
ANXL/R	inclination of thrust vector from vertical, positive forward, deg
BAR	atmospheric barometric pressure, in Hg
CDR/S,R	rotor drag coefficient, C_{DR}/σ
CLR/S,R	rotor lift coefficient, C_{LR}/σ
CMX/S,R	rotor rolling moment coefficient, C_{MX}/σ
CMY/S,R	rotor pitching moment coefficient, C_{MY}/σ
CMZ/S,R	rotor yawing moment coefficient, C_{MZ}/σ
CP/S	rotor power coefficient, C_p/σ
CP0/S	rotor nonideal power coefficient, C_{p0}/σ
CYR/S,R	rotor side force coefficient, C_{YR}/σ
DRAG	aircraft drag, lb
DRAG/Q	aircraft drag/q, ft ²
DRAG,R	rotor drag, lb
E3	upper rotor hub fairing
E4	lower rotor hub fairing
IC	instrumentation can

TABLE 7. CONTINUED

LABEL	PARAMETER
HP	total power output of PT6 engines, horsepower
J THRUST	total thrust of J60 auxiliary propulsion engines, lb
L/DE	effective aircraft lift/drag, including equivalent drag of PT6 power. $L/DE = \text{lift}/(\text{drag} + (550 \times \text{HP}/V))$
L/D,R	effective rotor lift/drag, including equivalent drag of PT6 power. $L/D,R = \text{rotor lift}/(\text{rotor drag} + (550 \times \text{HP}/V))$
LIFT	aircraft lift, lb
LIFT/Q	aircraft lift/q, ft^2
LIFT,R	rotor lift, lb
MAT	advancing tip Mach number, M_{at}
MTUN	free stream Mach number, M_{tun}
OMEG*R	rotor tip speed, ΩR
PITCH	aircraft pitching moment, M , ft-lb
PITCH/Q	aircraft pitching moment/q, ft^3
PITCH,R	rotor pitching moment, ft-lb
PSI	aircraft yaw angle
QPSF	free stream dynamic pressure, q , lb/ft^2
RHO100	free stream density multiplied by 100, slugs/ ft^3

TABLE 7. CONTINUED

LABEL	PARAMETER
ROLL	aircraft rolling moment, l , ft-lb
ROLL/Q	aircraft rolling moment/ q , ft ³
ROLL,R	rotor rolling moment, ft-lb
RPM	rotor rotational speed, rev/min
RPM, %	rotor rotational speed expressed as percent of nominal value, RPM/343.6
S4	inter-rotor shaft fairing
SIDE	aircraft side force, Y , lb
SIDE/Q	aircraft side force/ q , ft ³
SIDE,R	rotor side force, lb
TEMP	free stream temperature, deg fahrenheit
TIPM	rotor rotational Mach number, M_{tip}
TORQ	total rotor shaft torque, except for transmission losses, TORQ = HP \times 550/ Ω , ft-lb
VKTS	free stream velocity, knots
V/OR	rotor advance ratio, μ
YAW	aircraft yawing moment, N , ft-lb
YAW/Q	aircraft yawing moment/ q , ft ³
YAW,R	rotor yawing moment, ft-lb

TABLE 8. CONTROL AND LOADS DATA PARAMETERS

LABEL	PARAMETER
ALPH	angle of attack in free air, α , deg
A1	mean cosine component of blade pitch, A_1 , deg
A1P	differential cosine component of blade pitch, A_1' , deg
B1	mean sine component of blade pitch, B_1 , deg
B1P	differential sine component of blade pitch B_1' , deg
COS	cosine component of fourier series
GB LNAC	gearbox longitudinal acceleration, one-half peak-to-peak, g's
GB LTAC	gearbox lateral acceleration, one-half peak-to-peak, g's
GB VTAC	gearbox vertical acceleration, one-half peak-to-peak, g's
HARMONIC	harmonic number of fourier series
HST VTAC	horizontal stabilizer vertical acceleration, one-half peak-to-peak, g's
LAS LTAC	left aft support strut lateral acceleration, one-half peak-to-peak, g's
LRCB	lower rotor chordwise bending, ft-lb
LRN1	lower rotor normal bending .1R, ft-lb
LRN2	lower rotor normal bending .2R, ft-lb
LRN3	lower rotor normal bending .3R, ft-lb

TABLE 8. CONTINUED

LABEL	PARAMETER
LRN6	lower rotor normal bending .6R, ft-lb
LRGPL	lower rotor green blade pitch link load, lb
LRRPL	lower rotor red blade pitch link load, lb
LYPL	lower rotor yellow blade pitch link load, lb
LVF VTAC	left vertical fin vertical acceleration, one-half peak-to-peak, g's
MN	mean load
OS	one-half peak-to-peak oscillatory load
PSI	blade azimuth angle, ψ , deg
SIN	sine component of fourier series
THETA	mean blade root pitch, θ_0 , deg
THETAP	differential collective, θ_0' , deg
URCB	upper rotor chordwise bending, ft-lb
URN1	upper rotor normal bending .1R, ft-lb
URN2	upper rotor normal bending .2R, ft-lb
URN3	upper rotor normal bending .3R, ft-lb
URN6	upper rotor normal bending .6R, ft-lb

TABLE 8. CONTINUED

LABEL	PARAMETER
URBPL	upper rotor blue blade pitch link load, lb
URRPL	upper rotor red blade pitch link load, lb
URYPL	upper rotor yellow blade pitch link load, lb
URSB	upper rotor shaft bending stress, lb/in ²
VKTS	free stream velocity, knots
V/OR	rotor advance ratio, μ
#1J VTAC	#1 J60 vertical acceleration, one-half peak-to-peak, g's
#2J VTAC	#2 J60 vertical acceleration, one-half peak-to-peak, g's
#1Q	#1 PT6 engine output torque before reduction gearing, ft-lb
#2Q	#2 PT6 engine output torque before reduction gearing, ft-lb

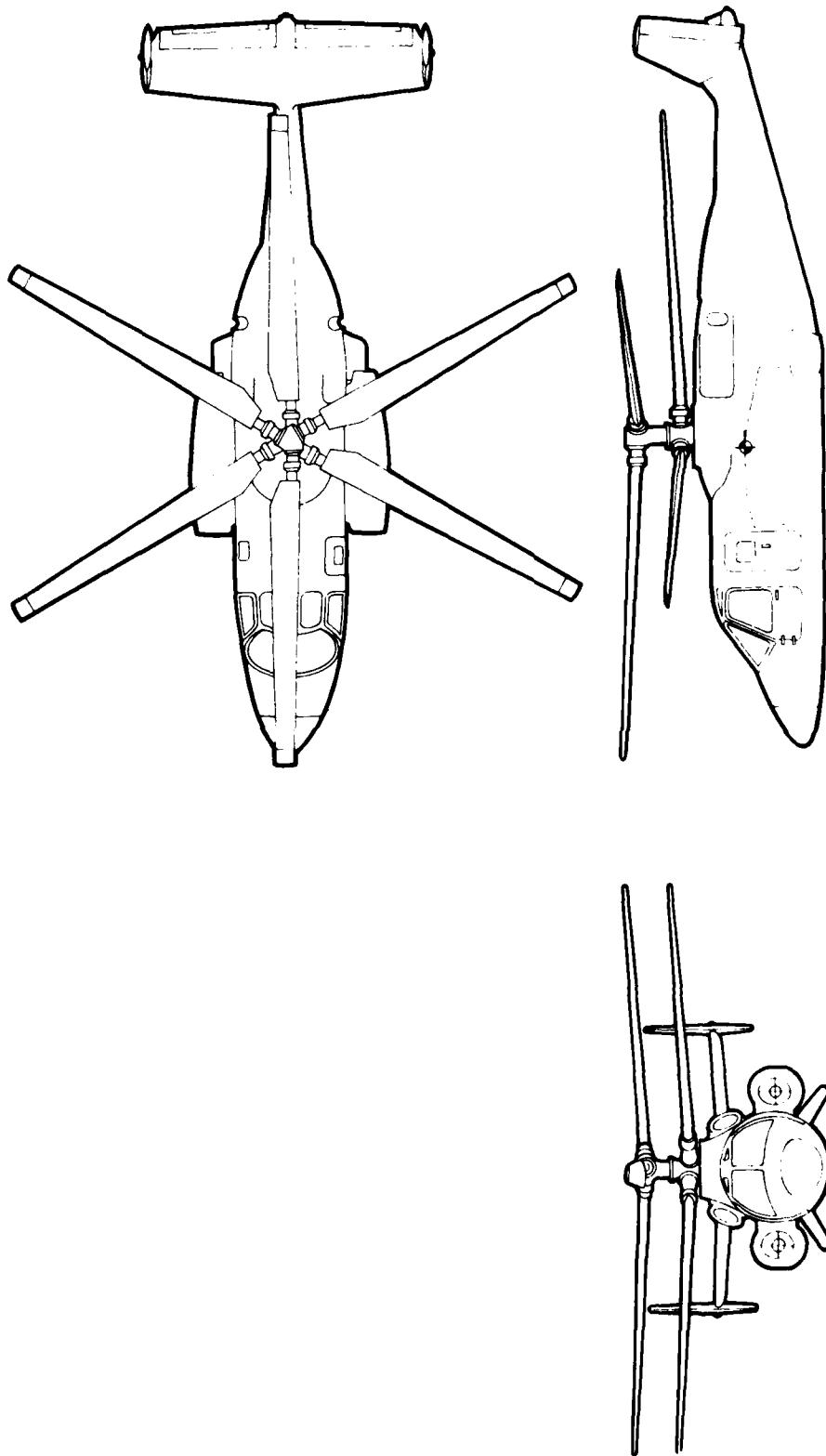


Figure 1. 3-VIEW DRAWING OF ABC

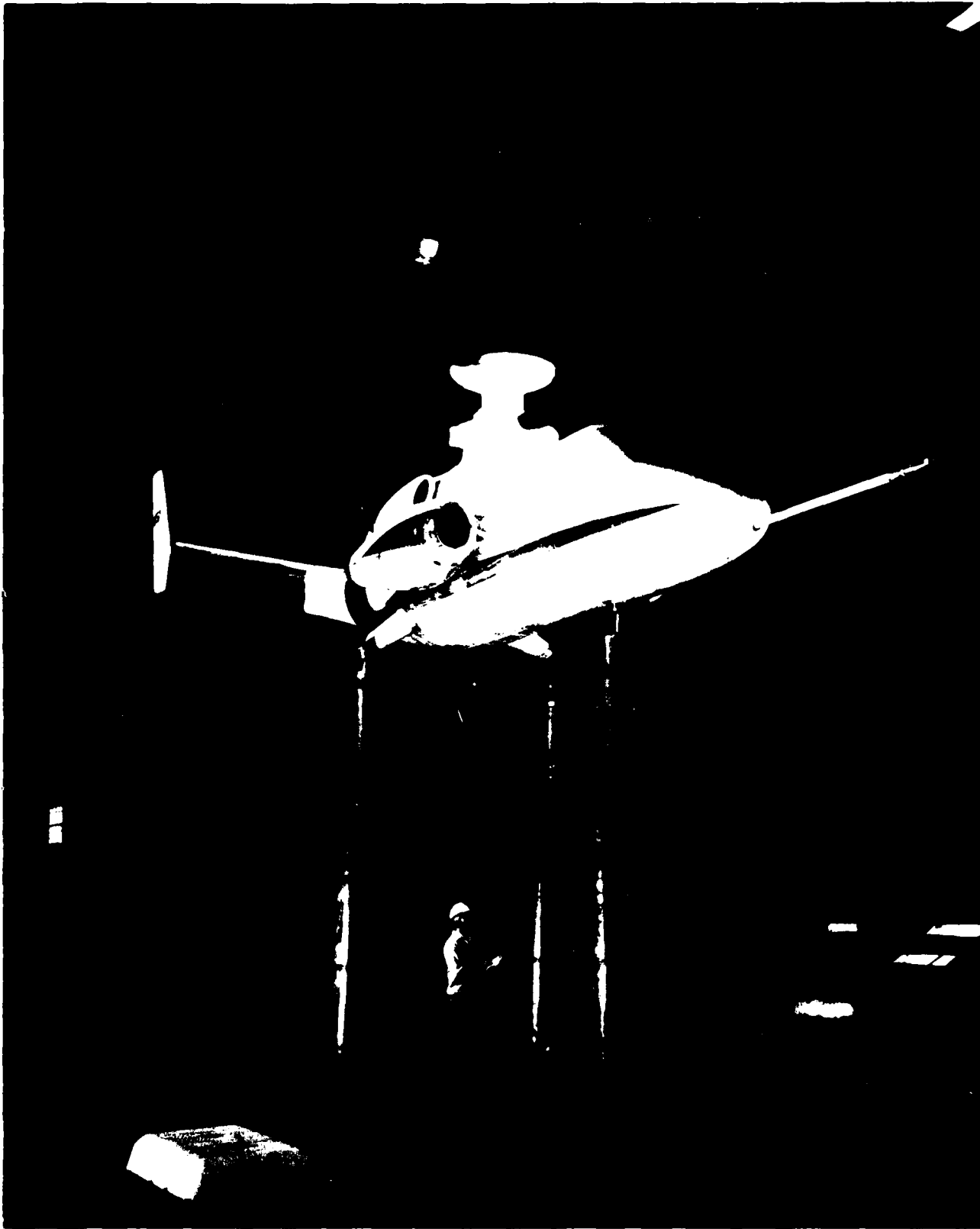


Figure 2(a). Front View of ABC with Hub Fairings Installed

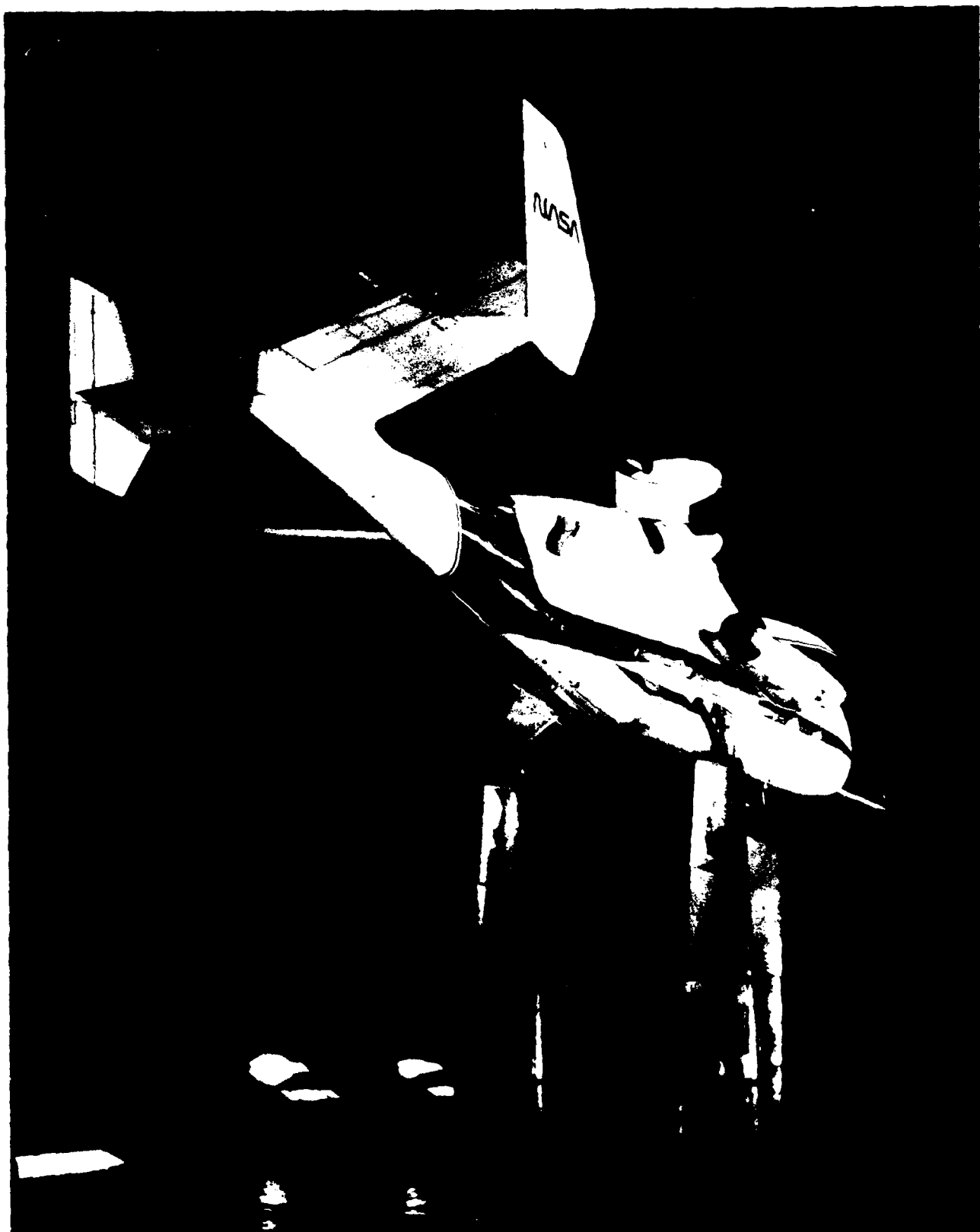


Figure 2(b). Rear View of ABC with Hub Fairings Installed



Figure 2(c). Front View of ABC with Instrumentation Can Installed



Figure 2(d). Side View of ABC with No Hub Fairings Installed

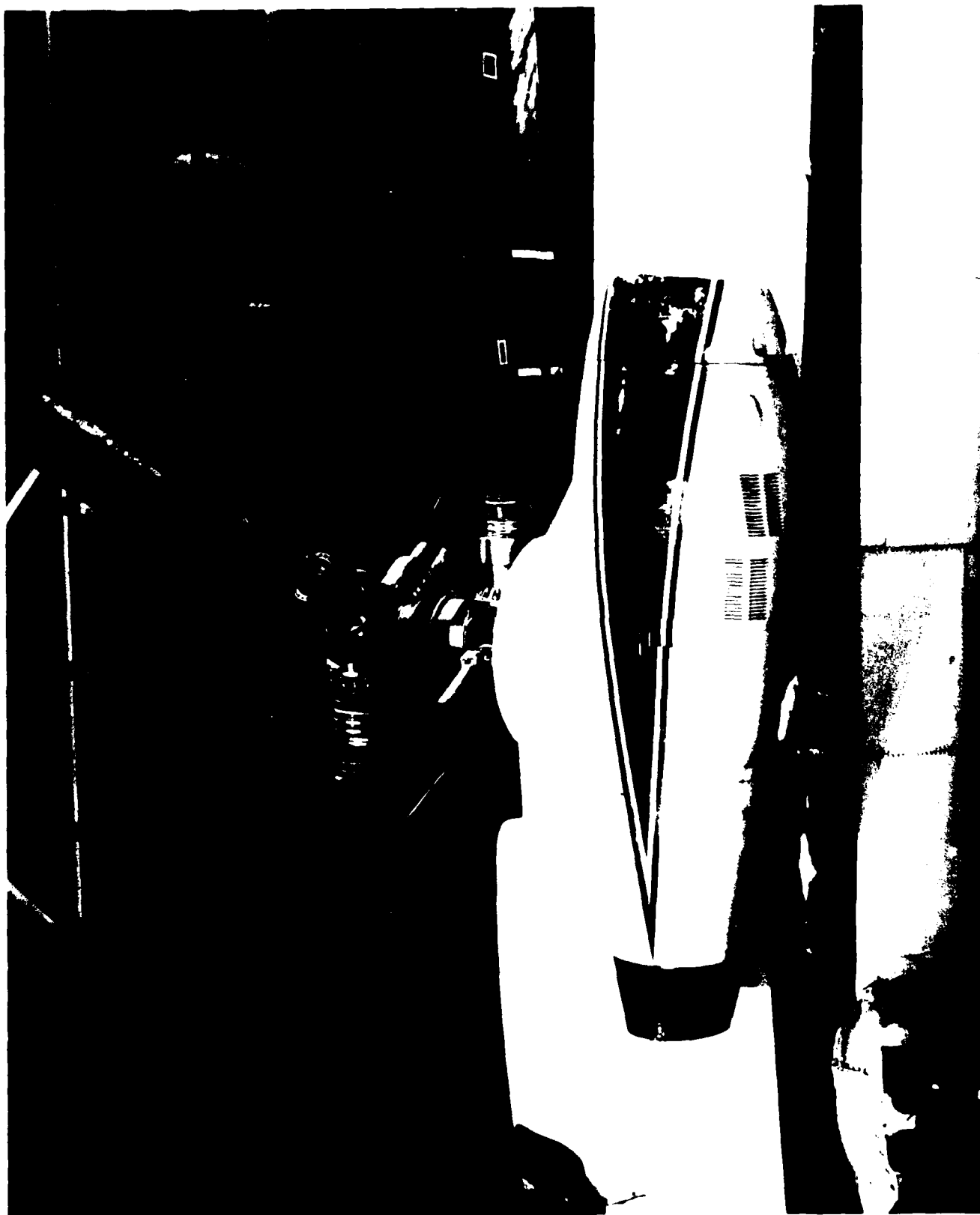
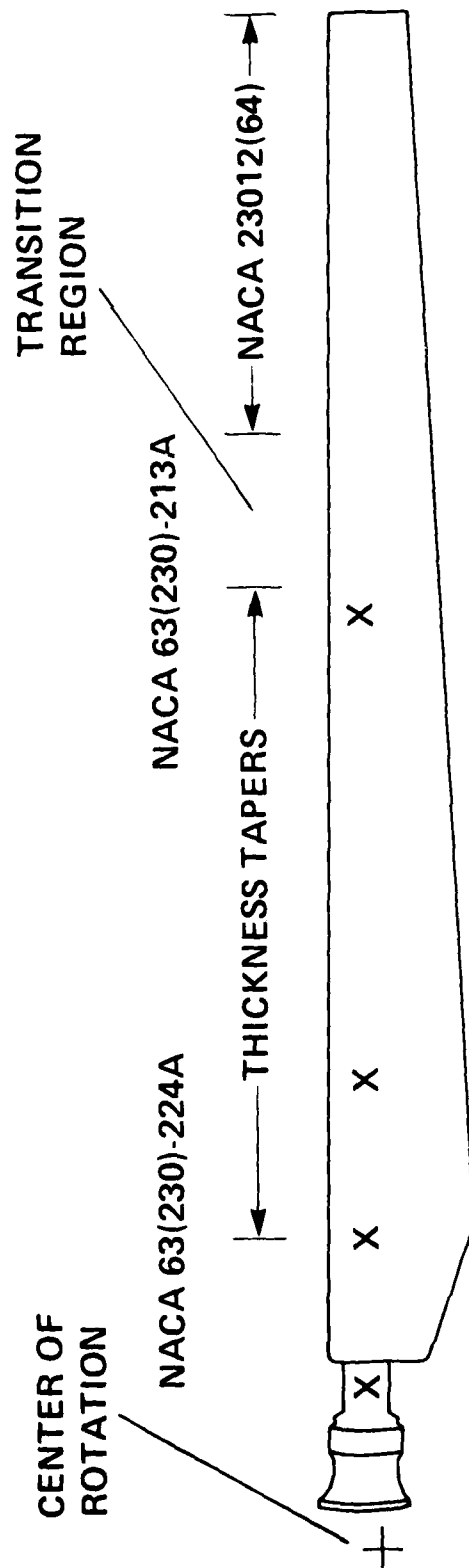


Figure 2(e), Close-up View of Rotor Hubs



Figure 2(f). Close-up View of Model Support Struts



X = BENDING GAGES

Figure 3. SKETCH OF ROTOR BLADE

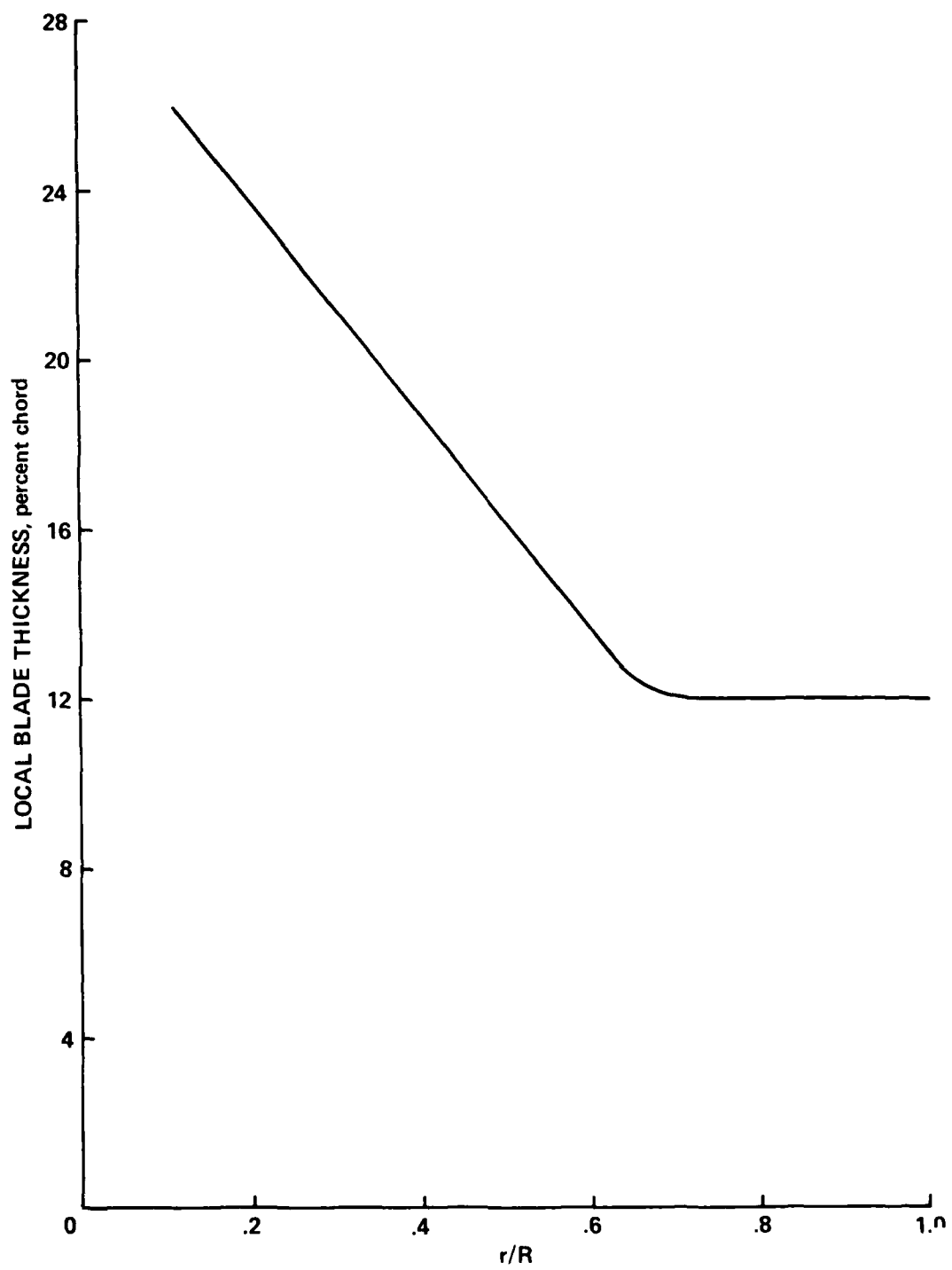


Figure 4. BLADE THICKNESS DISTRIBUTION

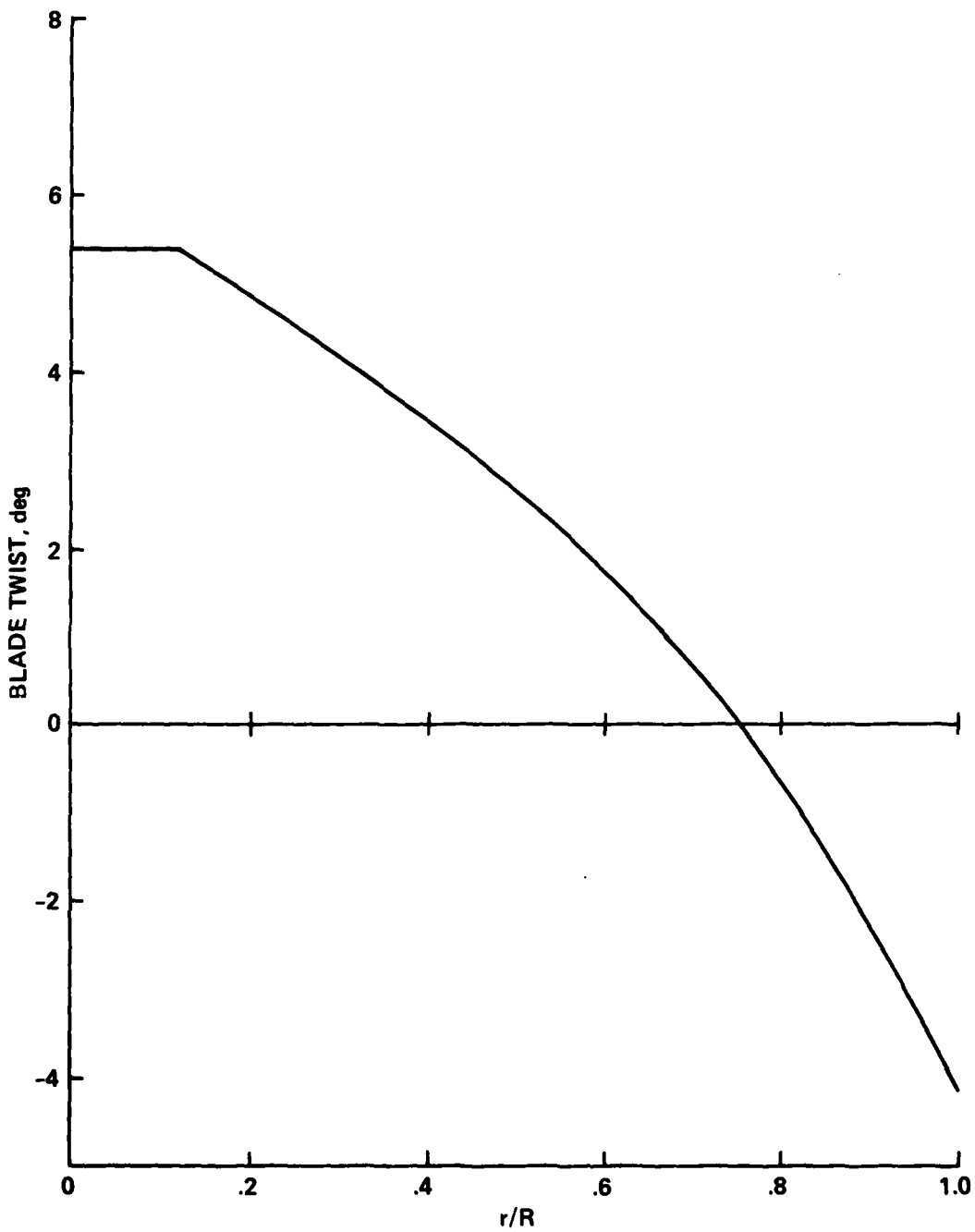


Figure 5. BLADE TWIST DISTRIBUTION

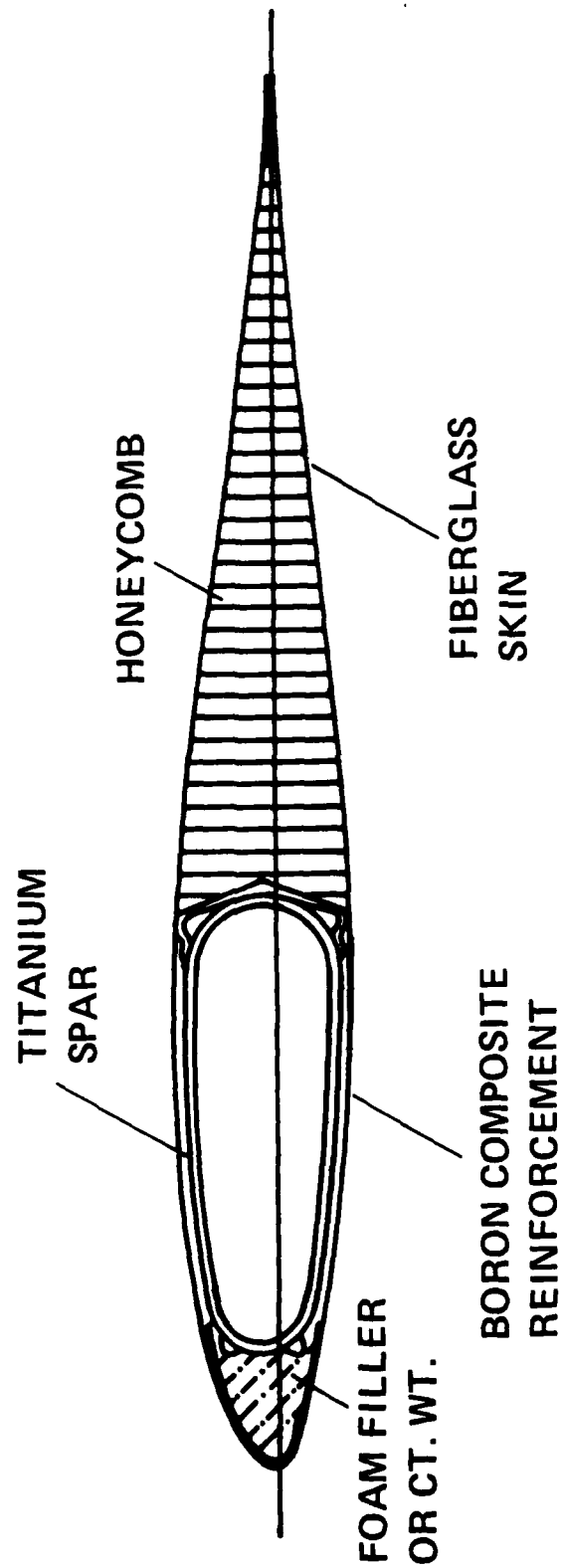


Figure 6. TYPICAL BLADE CROSS SECTION

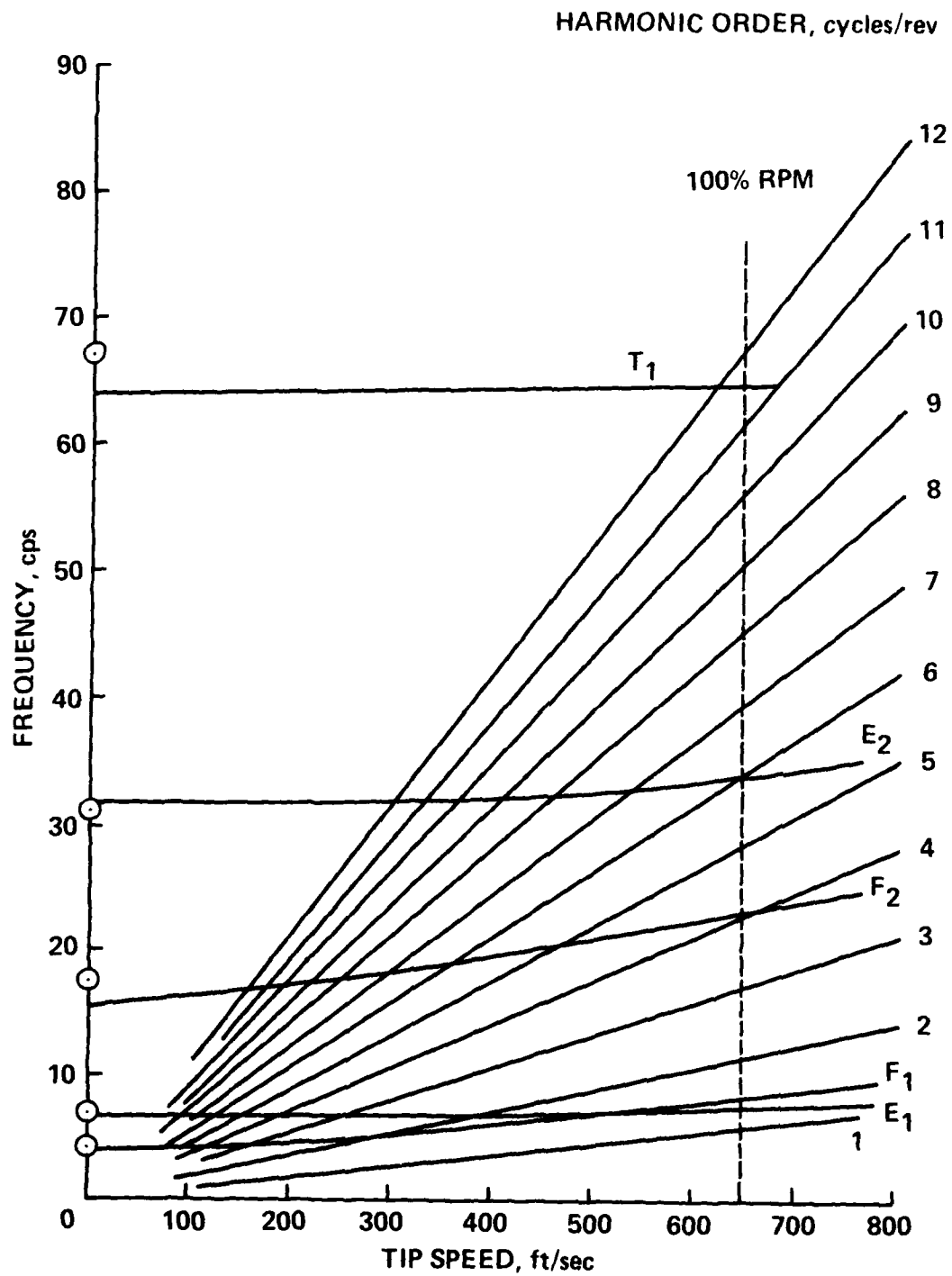


Figure 7. BLADE NATURAL FREQUENCY DIAGRAM

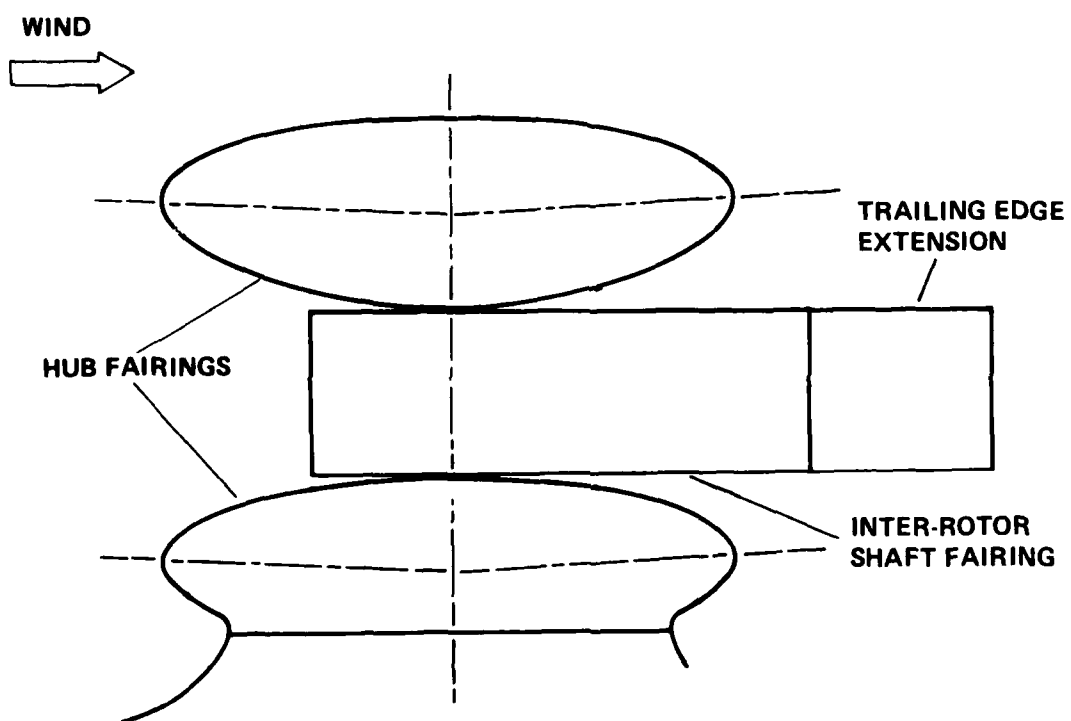


Figure 8. SKETCH OF HUB FAIRINGS

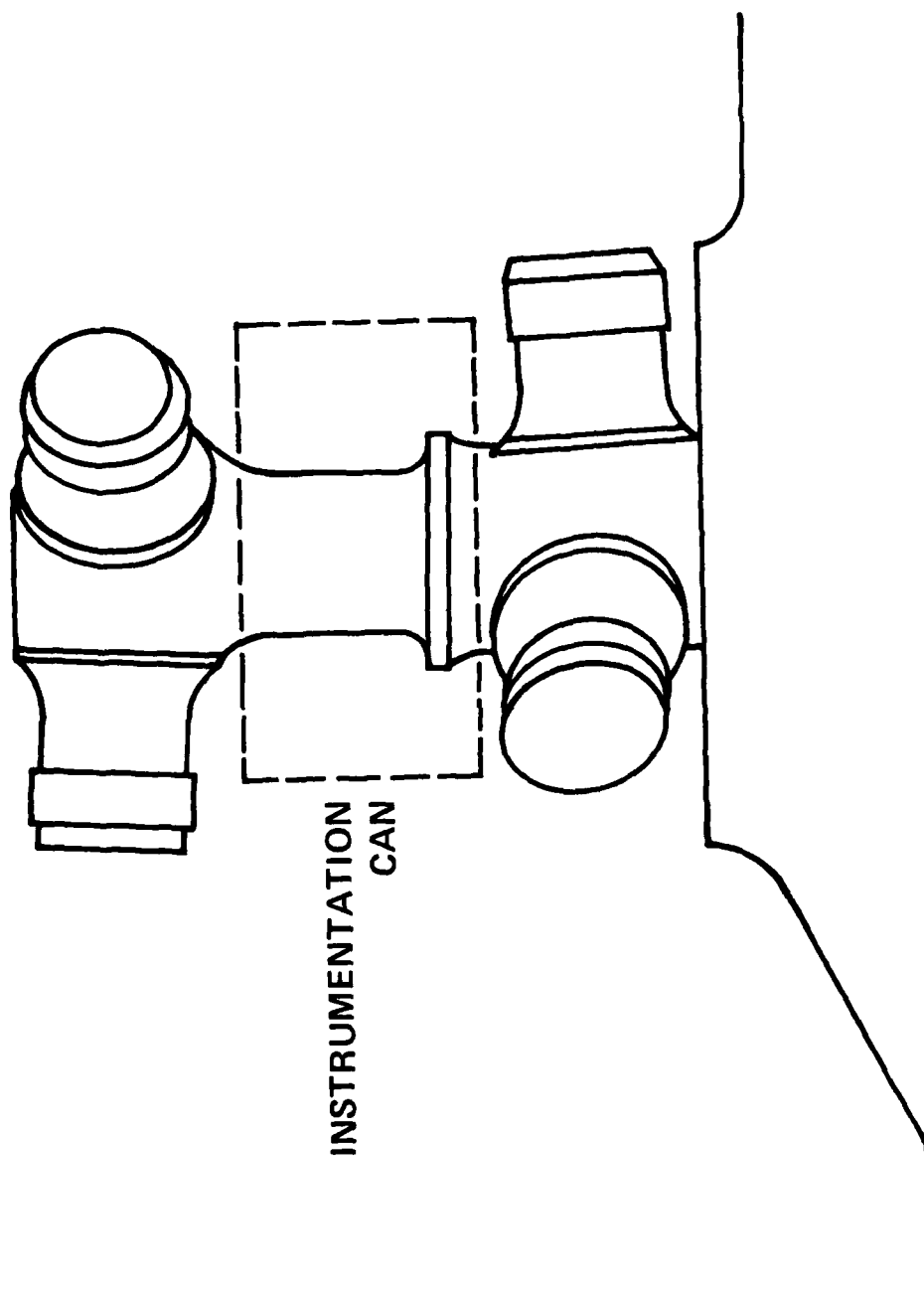


Figure 9. SKETCH OF ROTOR HUB AND INSTRUMENTATION CAN

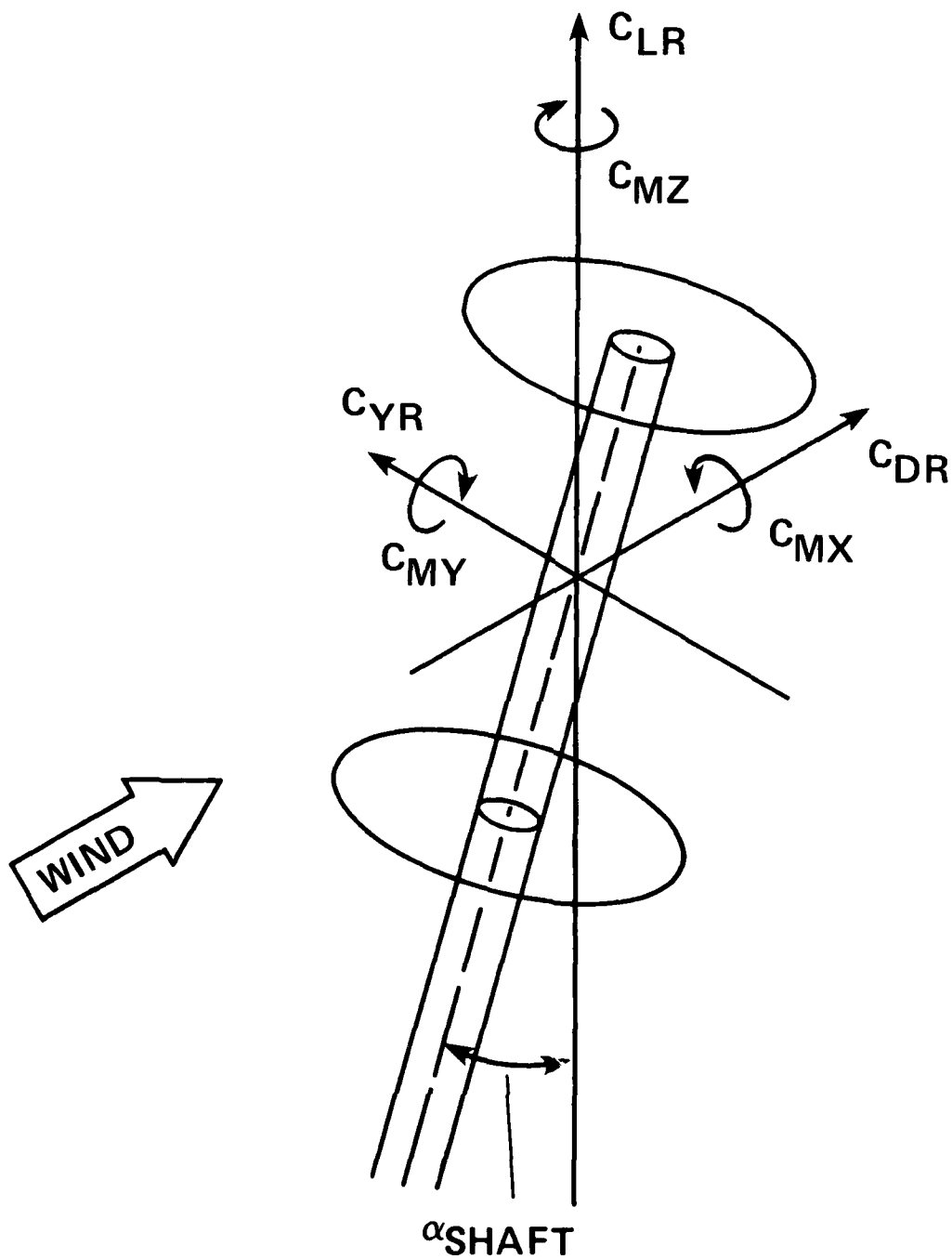


Figure 10. SKETCH OF FORCES AND MOMENTS
SHOWING POSITIVE DIRECTIONS

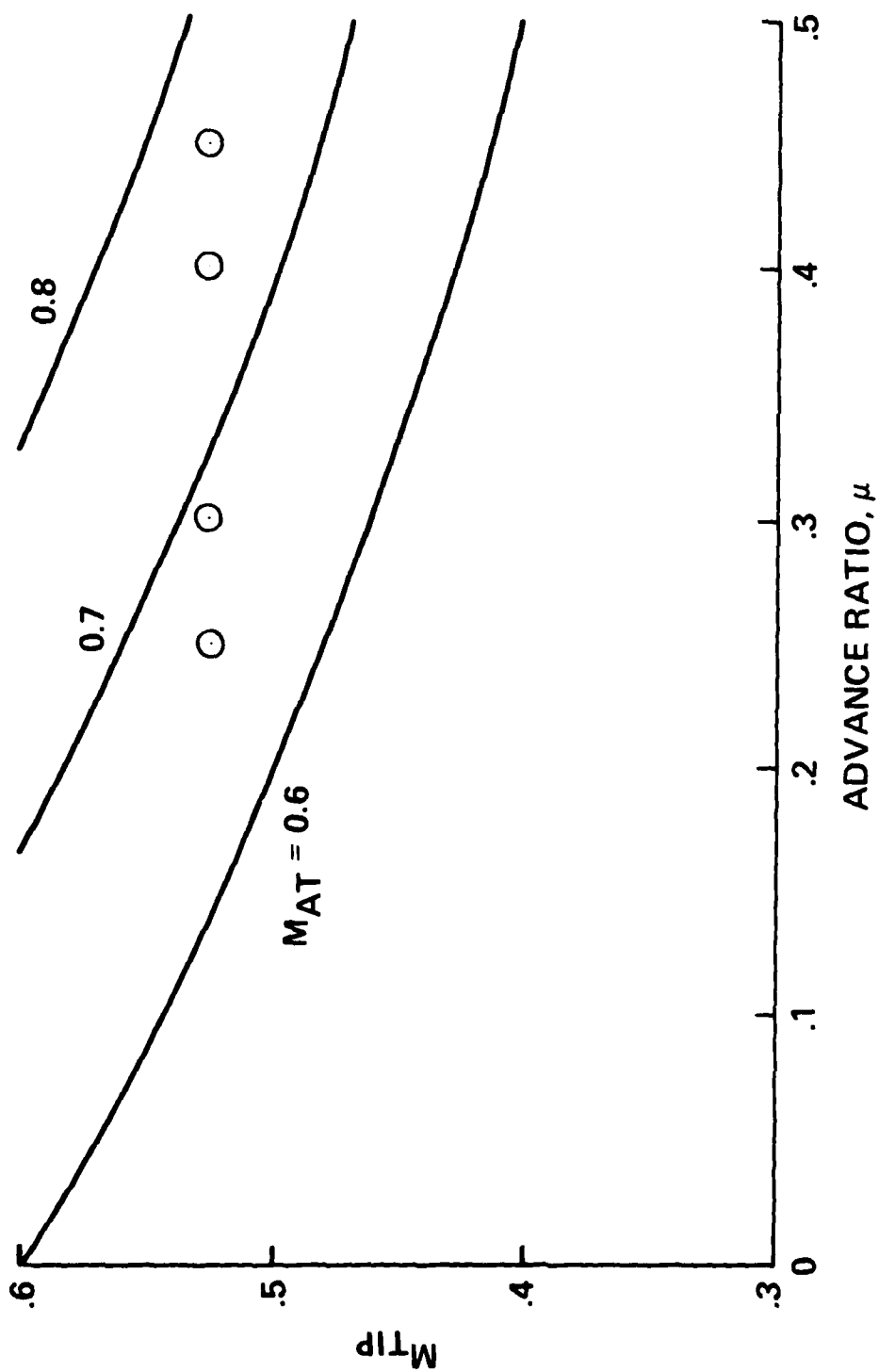


Figure 11. ROTOR OPERATING CONDITIONS

APPENDIX I

Equations Used to Correct for Forces and Moments Produced by Exposed Model Support Struts.

The strut fairings were canted 34° down relative to the horizontal. The lift and drag forces on the fairings were calculated as follows:

ψ = yaw angle, deg, positive nose right

α = corrected angle of attack

"RF" subscript denotes right strut fairing

"LF" subscript denotes left strut fairing

$$\alpha_{RF} = \cos 34^\circ \alpha + \sin 34^\circ \psi$$

$$\alpha_{LF} = \cos 34^\circ \alpha - \sin 34^\circ \psi$$

$$C_{LRF} = 0.02698 \alpha_{RF} + 1.8 \sin \alpha_{RF} |\sin \alpha_{RF}|$$

$$C_{LLF} = 0.02698 \alpha_{LF} + 1.8 \sin \alpha_{LF} |\sin \alpha_{LF}|$$

$$Lift_{RF} = 5.22 q C_{LRF}$$

$$Lift_{LF} = 5.22 q C_{LLF}$$

$$C_{DLF} = 0.02698 \alpha_{RF} \tan (\alpha_{RF}/2) + 1.8 \sin \alpha_{RF} |\sin \alpha_{RF}| \quad (\text{induced})$$

$$+ 0.02002 + 0.016457 C_{LRF}^2 \quad (\text{profile})$$

$$C_{DLF} = 0.02698 \alpha_{LF} \tan (\alpha_{LF}/2) + 1.8 \sin \alpha_{LF} |\sin \alpha_{LF}| \quad (\text{induced})$$

$$+ 0.02002 + 0.016457 C_{LLF}^2 \quad (\text{profile})$$

$$Drag_{RF} = 5.22 q C_{DRF}$$

$$Drag_{LF} = 5.22 q C_{DLF}$$

$$\text{Drag}_{RFI} = 0.2947 q \quad (\text{fuselage/fairing interference})$$

$$\text{Drag}_{LFI} = 0.2947 q \quad (\text{fuselage/fairing interference})$$

$$\text{Drag}_{NT} = 0.75 q \quad (\text{nose strut tip drag})$$

$$\text{Drag}_{RFT} = 1.5 q \quad (\text{strut tip drag})$$

$$\text{Drag}_{LFT} = 1.5 q \quad (\text{strut tip drag})$$

The corrections made to the aircraft forces and moments due to the lift and drag on the fairings were as follow:

"U" subscript means uncorrected

"C" subscript means corrected

$$\text{Lift}_C = \text{Lift}_U - \cos 34^\circ (\text{Lift}_{RF} + \text{Lift}_{LF})$$

$$\text{Drag}_C = \text{Drag}_U - (\text{Drag}_{RF} + \text{Drag}_{RFI} + \text{Drag}_{RFT}$$

$$+ \text{Drag}_{LF} + \text{Drag}_{LFI} + \text{Drag}_{LFT} + \text{Drag}_{NT})$$

$$\text{Side Force}_C = \text{Side Force}_U - \sin 34^\circ (\text{Lift}_{RF} - \text{Lift}_{LF})$$

$$\text{Pitching Moment}_C = \text{Pitching Moment}_U + \cos 34^\circ \text{Lift}_{RF} (X \cos \alpha \cos \psi$$

$$+ Y \sin \psi - Z \sin \alpha) + \cos 34^\circ \text{Lift}_{LF} (X \cos \alpha \cos \psi$$

$$- Y \sin \psi - Z \sin \alpha) + (\text{Drag}_{RF} + \text{Drag}_{LF}) (X \sin \alpha + Z \cos \alpha)$$

$$+ (\text{Drag}_{RFI} + \text{Drag}_{LFI}) (X_I \sin \alpha + Z_I \cos \alpha)$$

$$+ (\text{Drag}_{RFT} + \text{Drag}_{LFT}) (X_T \sin \alpha + Z_T \cos \alpha)$$

$$+ \text{Drag}_{NT} (Z_N \cos \alpha - X_N \sin \alpha)$$

$$\begin{aligned} \text{Rolling Moment}_C &= \text{Rolling Moment}_U + \cos 34^\circ \text{Lift}_{RF} (Y \cos \psi - X \sin \psi \cos \alpha) \\ &\quad - \cos 34^\circ \text{Lift}_{LF} (Y \cos \psi + Y \sin \psi \cos \alpha) + \sin 34^\circ Z \cos \alpha \\ &\quad (\text{Lift}_{RF} - \text{Lift}_{LF}) \end{aligned}$$

$$\begin{aligned} \text{Yawing Moment}_C &= \text{Yawing Moment}_U - \text{Drag}_{RF} (\cos \psi - X \sin \psi \cos \alpha) + \text{Drag}_{LF} \\ &\quad (Y \cos \psi + X \sin \psi \cos \alpha) + 2 \text{Drag}_{RFI} X_I \sin \psi \cos \alpha \\ &\quad - Y_T \cos \psi (\text{Drag}_{RFT} - \text{Drag}_{LFT}) + X_T \sin \psi \cos \psi \\ &\quad (\text{Drag}_{RFT} - \text{Drag}_{LFT}) - \text{Drag}_{NT} X_N \sin \alpha \end{aligned}$$

The dimensions X , X_T , X_N etc. are the distances (in feet) between the aircraft moment resolving center (aircraft c.g.) and the locations of the various lift and drag producing components, such as the strut fairing, the strut fairing tip, etc.

$X = 4.845 \text{ ft}$	$X_T = 4.683 \text{ ft}$
$Y = 2.925 \text{ ft}$	$Y_T = 4.167 \text{ ft}$
$Z = 3.475 \text{ ft}$	$Z_T = 4.4 \text{ ft}$
$X_I = 4.976 \text{ ft}$	$X_N = 8.4 \text{ ft}$
$X_L = 3.055 \text{ ft}$	$Z_N = 4.25 \text{ ft}$

APPENDIX II

Equations Used to Correct for the Thrust of the J60 Engines.

The J60 engines on the ABC were calibrated in an engine test cell before the wind tunnel test. This calibration defined the relationship between static thrust and exhaust pressure ratio (EPR). During the wind tunnel test, the measured EPR and the test cell calibration were used to calculate the static thrust of each engine. This value for the static thrust was analytically corrected to account for the effect on the thrust of the nonzero velocity in the tunnel.

$$\text{Thrust} = \delta (T_{\text{EPR}} + \Delta T_M) \quad (\text{lbs})$$

where δ = barometric pressure (in Hg)/29.92

T_{EPR} = static thrust calculated from thrust vs. EPR calibration, lbs

ΔT_M = correction to thrust due to nonzero wind velocity, lbs

The value of T_{EPR} as a function of the measured EPR was determined by a linear interpolation between the nearest two values of EPR and T_{EPR} in the following table:

EPR	T EPR
1.0	0
1.063	200
1.129	400
1.198	600
1.267	800
1.337	1000
1.410	1200
1.486	1400
1.564	1600
1.641	1800
1.719	2000
1.796	2200
1.873	2400
1.948	2600
2.022	2800
2.098	3000

The value of ΔT_M was also determined by linear interpolation. The interpolation for tunnel Mach number, M_{tun} , was performed first and the interpolation for EPR was performed next.

ΔT_M as a Function of M_{tun} and EPR

		M_{tun}						
		0	0.05	0.1	0.15	0.2	0.25	0.3
EPR	1.0	0	0	0	0	0	0	0
	1.1	0	-22	-40	-54	-64	-72	-72
	1.2	0	-40	-71	-96	-113	-127	-127
	1.3	0	-57	-101	-135	-160	-179	-179
	1.4-2.0	0	-64	-114	-155	-183	-202	-205
	2.1	0	-64	-114	-155	-183	-202	-192

After the thrust of each J60 engine had been calculated by the above method, the forces and moments produced by the engines were removed from the measured forces and moments using the following equations:

"c" means corrected

"u" means uncorrected

$$\text{Lift}_c = \text{Lift}_u - \sin \alpha (T_R + T_L)$$

$$\text{Drag}_c = \text{Drag}_u + \cos \alpha (T_R + T_L)$$

$$\text{Pitching Moment}_c = \text{Pitching Moment}_u - (T_R + T_L) (1.88 \sin \alpha \cos \alpha + \cos \alpha (1.21 + 1.88 \sin \alpha))$$

$$\text{Rolling Moment}_c = \text{Rolling Moment}_u - 4.42 (T_L + T_R) \sin \alpha$$

$$\text{Yawing Moment}_c = \text{Yawing Moment}_u - 4.42 (T_R + T_L) \cos \alpha$$

Three errors are evident in these equations which have not been corrected in the data presented in this paper.

- (1) the underlined "-" sign in the pitching moment equation should be a "+" sign and the underlined "+" sign should be a "-" sign.
- (2) the underlined "-" sign in the yawing moment equation should be a "+" sign.
- (3) the effect on the aircraft forces and moments due to aircraft yaw angle changes have not been included in these equations.

The effect of these errors on the data presented here has been evaluated, and in no case does the effect of any error exceed 2% of the data presented. The only exception to this is in Run 10, where significant amounts of auxiliary propulsion thrust were used.

SECTION A

Aircraft Performance Data

DATA IN THE FOLLOWING GROUP OF POINTS SATISFIED THE FOLLOWING SEQUENCE OF CONSTRAINT CODES -
1A

PT	VTUN QPSF	ALFS,U ALFS,C PSI	J THRUST BAR	DRAG/Q LIFT/Q SIDE/Q	PITCH/Q YAW/Q ROLL/Q	TEMP RHO100
PT 3	113.7 0.1766 45.3	5.0 5.1 0.0	343.0 0. 29.96	16.76 25.71 -0.22	-209.0 20.3 5.5	79.0 0.2261
PT 4	119.0 0.1769 45.5	2.5 2.5 0.0	343.0 0. 29.96	15.96 11.67 -0.37	-106.3 13.7 3.9	80.0 0.2257
PT 5	113.8 0.1767 45.4	0.0 -0.0 0.0	343.0 0. 29.96	15.73 -0.44 -0.22	-5.3 4.4 4.9	80.0 0.2257
PT 6	119.0 0.1769 45.5	-2.5 -2.5 0.0	342.9 0. 29.96	16.05 -14.09 0.31	105.1 -0.3 1.9	80.0 0.2257
PT 7	119.1 0.1771 45.6	-5.0 -5.1 0.0	342.8 0. 29.96	17.14 -28.08 0.59	220.8 -3.6 4.6	80.0 0.2257
PT 8	119.0 0.1770 45.5	-7.5 -7.6 0.0	342.7 0. 29.96	18.90 -44.30 0.53	361.1 -6.4 2.1	80.0 0.2257
PT 9	118.7 0.1765 45.3	-9.8 -10.0 0.0	342.6 0. 29.96	21.93 -57.43 0.95	462.9 -6.3 4.8	80.0 0.2257
PT 10	118.4 0.2639 93.8	-2.5 -2.5 0.0	342.3 0. 29.96	16.11 -15.42 -0.59	110.6 -5.8 7.3	90.0 0.2178
PT 11	118.3 0.2635 98.5	-3.8 -3.9 0.0	342.6 0. 29.96	16.63 -23.04 -0.30	183.6 -5.6 6.4	91.0 0.2174

	VATS MTUN QPSF	ALFS,U ALFS,C PSI	J THRUST BAR	DRAG/Q LIFT/Q SIDE/Q	PITCH/Q YAW/Q ROLL/Q	TEMP RHO100
PT 12	173.5 0.2635 98.5	0.0 -0.0 0.0	342.8 0. 29.96	15.67 -2.23 -0.29	-19.3 -0.8 0.8	92.0 0.2170
PT 12	178.6 0.2634 98.4	2.5 2.5 0.0	342.9 0. 29.96	15.81 9.19 -0.80	-118.2 4.7 6.1	93.0 0.2166
PT 14	178.5 0.2633 98.3	5.0 5.1 0.0	343.0 0. 29.96	16.58 21.15 -0.99	-241.1 8.8 4.9	93.0 0.2166
PUN 12						
PT 2	119.5 0.1787 46.2	10.0 10.1 0.0	343.7 164. 29.82	18.12 51.07 1.00	-430.8 12.0 8.6	74.0 0.2271
PT 4	119.2 0.1782 45.9	7.5 7.6 0.0	343.7 167. 29.82	16.61 39.74 0.91	-312.7 14.0 3.4	74.0 0.2271
PT 5	119.2 0.1782 45.9	5.0 5.1 0.0	343.6 166. 29.81	15.59 26.15 -0.13	-210.4 17.1 9.6	74.0 0.2270
PT 6	119.3 0.1780 45.8	2.5 2.5 0.0	343.4 164. 29.81	14.97 12.96 -0.46	-103.6 11.6 10.5	76.0 0.2262
PT 7	119.4 0.1781 45.9	0.0 -0.0 0.0	343.3 164. 29.81	14.79 -0.22 -0.33	-1.7 3.1 11.9	77.0 0.2258
PT 8	119.4 0.1779 45.7	-2.5 -2.5 0.0	343.3 157. 29.81	15.11 -13.43 0.02	100.9 -1.7 8.6	78.0 0.2254
PT 9	118.5 0.1766 45.1	-5.0 -5.1 0.0	343.1 147. 29.81	15.98 -28.89 -0.13	233.2 -1.9 5.0	78.0 0.2254

	VKTS MTUN QPSF	ALFS,U ALFS,C PSI	J THRUST BAR	RPM	DRAG/Q LIFT/Q SIDE/Q	PITCH/Q YAW/Q ROLL/Q	TEMP RHO100
PT 10	119.0 0.1772 45.4	-7.5 -7.6 0.0	342.9 140. 29.81		17.61 -44.71 0.00	390.5 -9.5 6.4	79.0 0.2250
PT 11	118.8 0.1766 45.1	-9.8 -10.0 0.0	342.9 136. 29.81		21.43 -57.12 0.24	475.3 -3.4 1.2	80.0 0.2246
PT 12	179.2 0.2666 100.2	0.0 -0.0 0.0	343.3 18. 29.81		14.62 -2.89 -0.49	0.5 -1.5 8.6	84.0 0.2190
PT 13	178.6 0.2649 99.0	-3.8 -3.9 0.0	343.1 8. 29.81		15.36 -22.78 -0.44	197.6 -6.7 11.9	87.0 0.2178
PT 14	178.6 0.2647 98.8	-2.5 -2.5 0.0	343.0 12. 29.81		14.96 -15.40 -0.61	120.4 -4.4 7.9	88.0 0.2175
PT 15	178.7 0.2644 98.6	2.5 2.5 0.0	343.2 19. 29.81		14.71 9.31 -0.57	-103.8 3.0 10.9	90.0 0.2167
PT 16	178.9 0.2641 98.4	5.0 5.1 0.0	343.3 19. 29.81		15.09 22.68 -0.60	-219.3 6.0 8.1	92.0 0.2159
PT 17	178.8 0.2637 98.1	7.5 7.6 0.0	343.4 21. 29.81		16.51 34.10 -0.02	-364.9 8.6 10.9	93.0 0.2155
PT 18	178.7 0.2634 97.9	10.0 10.1 0.0	343.4 18. 29.81		17.76 50.01 0.30	-360.5 4.1 14.4	94.0 0.2152
PT 19	178.9 0.2632 97.7	10.0 10.1 0.0	22.2 17. 29.81		17.21 49.76 -0.07	-368.2 -1.3 14.8	96.0 0.2144

	VKTS ATUN QPSF	ALFS,U ALFS,C PSI	J THRUST BAR	DRAG/Q LIFT/Q SIDE/Q	PITCH/Q YAW/Q ROLL/Q	TEMP KHD100
PT 20	179.2 0.2631 97.7	7.5 7.6 0.0	18.0 22. 29.81	16.06 37.23 -0.52	-278.2 4.9 13.5	98.0 0.2136
PT 21	179.1 0.2630 97.6	5.0 5.1 0.0	18.9 23. 29.81	14.91 24.15 -0.15	-169.9 4.0 12.3	98.0 0.2136
PT 22	179.2 0.2629 97.5	2.5 2.5 0.0	24.6 23. 29.81	14.19 8.85 0.31	-97.0 5.0 14.4	99.0 0.2133
PT 23	177.9 0.2639 98.2	0.0 -0.0 0.0	18.3 22. 29.78	14.05 -3.26 -0.92	18.3 -2.6 7.0	87.0 0.2177
PT 24 57	178.3 0.2638 98.1	-2.5 -2.5 0.0	18.3 15. 29.78	14.41 -15.88 -0.60	132.2 -6.3 6.8	90.0 0.2165
PT 25	178.3 0.2635 97.9	-3.8 -3.9 0.0	18.3 9. 29.78	14.86 -23.75 -0.57	205.3 -10.5 7.5	91.0 0.2161
PT 26	119.5 0.1761 44.8	-9.8 -9.9 0.0	18.3 126. 29.78	21.38 -55.56 0.25	450.9 -4.9 4.1	90.0 0.2203
PT 27	119.8 0.1765 45.0	-7.5 -7.6 0.0	18.3 127. 29.78	16.62 -44.92 0.31	389.3 -9.4 9.4	90.0 0.2203
PT 28	120.0 0.1770 45.3	-5.0 -5.1 0.0	18.3 131. 29.78	14.86 -29.03 -0.31	239.5 -7.9 11.3	89.0 0.2206
PT 29	119.6 0.1764 45.0	-2.5 -2.5 0.0	18.3 141. 29.78	14.00 -14.24 -0.49	111.6 -2.2 10.3	89.0 0.2207

	VKIS MTUN JPSF	ALFS,J ALFS,C PSI	J THRUST BAR	DRAG/Q LIFT/Q SIDE/Q	PITCH/Q YAW/Q ROLL/Q	TEMP RHQ100
PT 30	119.8 0.1766 45.1	0.0 -0.0 0.0	18.3 143. 29.78	13.67 -1.11 -0.55	9.1 0.0 11.4	89.0 0.2207
PT 31	119.5 0.1762 44.9	2.5 2.5 0.0	18.3 148. 29.78	13.74 11.37 -0.76	-88.0 4.6 11.1	89.0 0.2207
PT 32	119.3 0.1759 44.7	5.0 5.1 0.0	18.3 148. 29.78	14.49 25.01 0.27	-199.8 8.9 12.2	89.0 0.2207
PT 33	119.4 0.1761 44.8	7.5 7.6 0.0	18.3 148. 29.78	15.69 39.04 -0.11	-312.2 7.0 14.6	89.0 0.2207
PT 34 58	119.5 0.1762 44.8	10.0 10.1 0.0	18.3 147. 29.78	17.01 52.51 -0.27	-435.9 4.9 13.9	90.0 0.2203
PT 35	119.5 0.1762 44.9	0.0 -0.0 0.0	18.3 0. 29.78	14.63 -2.00 0.78	12.8 12.0 11.6	89.0 0.2207
PT 36	6.0 0.0088 0.1	0.0 0.0 0.0	18.3 0. 29.78	161.54 -305.05 95.92	3111.2 2.6 1077.6	89.0 0.2237
RUN 12 PT 3	119.5 0.1784 46.0	10.0 10.1 0.0	344.2 170. 20.79	15.37 25.56 0.48	-288.0 17.1 22.0	76.0 0.2260
PT 4	119.6 0.1784 46.0	10.0 10.1 0.0	344.3 168. 29.79	18.30 51.39 0.57	-413.3 12.3 19.7	77.0 0.2256
PT 5	119.7 0.1783 45.9	7.5 7.6 0.0	344.2 166. 29.79	16.65 38.54 0.26	-285.8 12.8 22.1	78.0 0.2252

PT	VKTS MTUN QPSF	ALFS,U ALFS,C PSI	J THKUST BAR	KPM	DRAG/Q LIFT/Q SIDE/Q	PITCH/Q YAW/Q ROLL/Q	TEMP KHU100
PT 6	119.6 0.1780 45.8	5.0 5.1 0.0	344.1 166. 29.79		15.40 25.57 0.72	-198.6 13.7 20.8	79.0 0.2248
PT 7	119.8 0.1782 45.9	2.5 2.5 0.0	344.0 164. 29.79		14.75 12.08 0.89	-93.0 10.5 19.2	80.0 0.2244
PT 8	119.5 0.1776 45.6	0.0 -0.0 0.0	343.9 161. 29.79		14.63 -0.66 1.01	7.3 6.4 20.7	80.0 0.2244
PT 9	119.4 0.1775 45.5	-2.5 -2.5 0.0	343.8 157. 29.79		15.04 -14.16 1.01	114.9 6.4 19.1	81.0 0.2240
PT 10	119.5 0.1775 45.5	-5.0 -5.1 0.0	343.8 149. 29.79		15.92 -29.83 1.80	242.0 -0.5 17.5	82.0 0.2236
PT 11	119.3 0.1771 45.3	-7.5 -7.6 0.0	343.8 143. 29.79		17.79 -45.22 2.03	387.4 -1.7 21.5	82.0 0.2236
PT 12	118.9 0.1763 44.9	-9.8 -10.0 0.0	343.6 137. 29.79		21.81 -56.81 2.03	469.4 -2.3 11.7	83.0 0.2232
PT 13	178.5 0.2638 98.2	-3.8 -3.9 0.0	343.7 12. 29.79		15.14 -23.98 0.77	206.0 -5.1 17.2	91.0 0.2162
PT 14	178.6 0.2637 98.0	-2.5 -2.5 0.0	343.8 14. 29.79		14.73 -15.28 0.45	138.5 -2.1 21.1	92.0 0.2158
PT 15	178.2 0.2628 97.4	0.0 -0.0 0.0	343.9 21. 29.79		14.27 -3.43 0.45	21.1 -0.2 16.7	93.0 0.2154

	VKTS MTUN QPSF	ALFS,U ALFS,C PSI	RPM J THRUST BAR	DRAG/Q LIFT/Q SIDE/Q	PITCH/Q YAW/Q ROLL/Q	TEMP RH0100
PT 16	178.3 0.2624 97.2	2.5 2.5 0.0	344.0 24. 29.80	14.42 9.76 0.11	-93.8 0.7 18.0	95.0 0.2148
PT 17	178.4 0.2622 97.0	5.0 5.1 0.0	344.1 23. 29.80	15.14 23.99 -0.13	-169.3 4.0 15.2	97.0 0.2140
PT 18	178.3 0.2620 96.9	7.5 7.6 0.0	344.1 24. 29.80	16.35 36.91 -0.34	-266.2 7.2 15.1	97.0 0.2140
PT 19	178.3 0.2618 96.7	10.0 10.1 0.0	344.2 23. 29.80	17.86 49.21 -0.50	-360.6 2.9 14.8	98.0 0.2136
PT 20	178.8 0.2618 96.7	0.0 -0.0 0.0	31.5 21. 29.80	13.55 -4.28 -0.47	30.4 -5.8 12.8	101.0 0.2125
PT 21	178.0 0.2614 96.4	10.0 10.1 0.0	31.5 20. 29.80	17.13 49.42 -1.67	-364.6 -0.7 14.2	102.0 0.2121
PT 22	178.9 0.2616 96.6	7.5 7.6 0.0	2.0 23. 29.80	15.65 36.54 -1.56	-270.1 0.5 13.3	103.0 0.2117
PT 23	178.7 0.2612 96.3	5.0 5.1 0.0	18.6 25. 29.80	14.34 23.04 -1.15	-160.9 -1.8 12.4	103.0 0.2118
PT 24	178.8 0.2611 96.2	2.5 2.5 0.0	18.6 25. 29.80	13.62 8.88 -0.48	-81.1 -3.0 12.3	104.0 0.2114
PT 25	179.0 0.2612 96.3	-2.5 -2.5 0.0	18.6 16. 29.80	13.96 -17.22 -0.43	149.1 -5.9 15.6	105.0 0.2110

	VRIS ATUN JPSF	ALFS,U ALFS,C PSI	J TINUST BAR	RPM	DRAG/Q LIFT/Q SIDE/Q	PITCH/Q YAW/Q ROLL/Q	TEMP RHOL00
PT 21	178.9 0.2609 90.1	-3.8 -3.9 0.0	18.6 14. 29.80	18.6	14.45 -24.14 -0.43	209.2 -4.8 12.1	105.0 0.2110
PT 27	119.0 0.1733 43.5	-9.8 -9.9 0.0	18.6 135. 29.80	18.6	21.26 -54.81 0.64	430.4 -3.6 12.0	103.0 0.2154
PT 20	119.5 0.1741 43.9	-7.5 -7.6 0.0	18.6 139. 29.80	18.6	16.51 -44.85 0.78	376.6 -5.8 16.0	102.0 0.2158
PT 26	119.6 0.1745 44.0	-5.0 -5.1 0.0	18.6 144. 29.80	18.6	14.75 -29.74 0.16	243.5 -4.4 20.1	101.0 0.2162
PT 30	119.7 0.1747 44.1	-2.5 -2.5 0.0	18.6 147. 29.80	18.6	13.88 -15.99 -0.27	122.0 -2.1 19.7	101.0 0.2161
PT 31	119.6 0.1747 44.2	0.0 -0.0 0.0	18.6 149. 29.80	18.6	13.49 -2.26 -0.59	9.1 0.4 14.2	100.0 0.2165
PT 22	119.5 0.1746 44.1	2.5 2.5 0.0	18.6 153. 29.80	18.6	13.55 10.90 -1.04	-97.8 5.4 19.8	100.0 0.2165
PT 25	119.4 0.1746 44.1	5.0 5.1 0.0	18.6 156. 29.80	18.6	14.21 23.68 -1.00	-202.4 5.6 17.6	99.0 0.2169
PT 24	119.4 0.1745 44.1	7.5 7.6 0.0	18.6 157. 29.80	18.6	15.55 37.57 -1.48	-310.6 7.0 23.1	99.0 0.2169
PT 25	119.2 0.1743 43.9	10.0 10.1 0.0	18.6 157. 29.80	18.6	17.18 50.19 -1.14	-417.8 2.6 20.3	99.0 0.2169

	VKTS KTUN WPSF	ALFS,U ALFS,C PSI	J THRUST BAR	KPM	DRAG/Q LIFT/Q SIDE/Q	PITCH/Q YAW/Q ROLL/Q	TEMP RH0100
PT 36	119.4 0.1747 44.1	0.0 -0.0 0.0	18.6 0. 29.80		14.35 -2.72 -0.70	11.6 3.2 20.6	98.0 0.2173
RUN 15							
PT 3	119.1 0.1782 46.3	0.0 -0.0 0.0	344.7 164. 30.07		15.06 -4.10 1.08	5.2 1.2 8.4	73.0 0.2294
PT 4	119.7 0.1790 46.7	10.0 10.1 0.0	344.9 166. 30.07		18.79 49.16 0.83	-455.2 1.8 7.8	74.0 0.2290
PT 5	119.5 0.1785 46.5	7.5 7.6 0.0	344.9 164. 30.07		17.19 36.91 0.67	-315.6 9.5 5.2	75.0 0.2286
PT 6	119.1 0.1780 46.2	5.0 5.1 0.0	344.8 168. 30.07		15.87 22.08 0.45	-206.6 6.8 5.7	75.0 0.2286
PT 7	119.2 0.1779 46.2	2.5 2.5 0.0	344.7 165. 30.07		15.21 8.96 0.65	-106.8 6.3 6.1	76.0 0.2282
PT 8	119.2 0.1778 46.1	0.0 -0.0 0.0	344.6 162. 30.07		15.10 -4.33 0.82	8.1 4.7 6.4	77.0 0.2277
PT 9	119.2 0.1777 46.1	-2.5 -2.5 0.0	344.5 159. 30.07		15.50 -17.13 0.78	119.8 4.0 11.6	77.0 0.2277
PT 10	119.2 0.1775 46.0	-5.0 -5.1 0.0	344.4 151. 30.07		16.56 -31.13 0.89	220.3 6.4 8.5	78.0 0.2273
PT 11	119.2 0.1774 45.9	-7.5 -7.6 0.0	344.3 140. 30.07		18.09 -46.46 1.07	367.1 2.5 8.0	79.0 0.2269

	VKTS ATUN QPSF	ALFS, U ALFS, C PSI	J THKUST BAR	DRAG/Q LIFT/Q SIDE/Q	PITCH/Q YAW/Q ROLL/Q	TEMP RH0100
PT 12	129.2 0.1774 +5.9	-9.8 -9.9 0.0	344.3 137. 30.08	22.56 -55.77 1.15	412.6 11.4 -4.2	79.0 0.2270
PT 13	178.5 0.2653 100.1	-3.8 -3.9 0.0	344.6 9. 30.08	15.81 -25.04 0.55	180.6 -3.5 11.4	85.0 0.2206
PT 14	178.4 0.2648 99.8	-2.5 -2.5 0.0	344.6 13. 30.08	15.34 -18.79 0.52	118.0 -1.5 13.5	86.0 0.2202
PT 15	178.0 0.2641 99.3	0.0 -0.0 0.0	344.8 22. 30.08	14.94 -6.24 0.24	3.6 -0.1 10.5	87.0 0.2199
PT 16	178.2 0.2641 99.3	2.5 2.5 0.0	344.9 24. 30.08	14.95 5.92 0.27	-99.7 4.3 6.8	88.0 0.2195
PT 17	178.3 0.2640 99.2	5.0 5.1 0.0	344.9 23. 30.08	15.65 21.63 -0.18	-179.5 3.7 7.4	89.0 0.2191
PT 18	178.4 0.2639 99.1	7.5 7.6 0.0	344.9 23. 30.07	16.84 35.96 -0.61	-297.5 5.0 2.0	90.0 0.2186
PT 19	178.2 0.2632 98.6	10.0 10.1 0.0	344.9 22. 30.07	18.33 47.85 -0.57	-389.1 2.5 8.4	92.0 0.2178
PT 20	178.4 0.2629 98.4	0.0 -0.0 0.0	18.2 23. 30.07	14.76 -7.66 0.92	24.4 2.7 9.3	94.0 0.2171
RUN 17 PT 2	60.4 0.0906 12.1	-5.0 -5.1 0.0	343.4 249. 30.00	16.75 -24.78 -0.33	123.3 -19.0 28.5	68.0 0.2335

	WTS MTUN WPSF	ALFS,U ALFS,C PSI	J THRUST BAR	RPM	DRAG/Q LIFT/Q SIDE/Q	PITCH/Q YAW/Q ROLL/Q	TEMP RH0100
4	50.2 0.0904 12.1	-2.5 -2.5 0.0	343.5 254. 30.00		16.92 -7.69 0.08	15.9 2.2 27.9	68.0 0.2335
5	50.1 0.0901 12.0	0.0 0.0 0.0	343.6 253. 30.00		16.74 5.41 -0.08	-114.5 0.5 24.0	68.0 0.2335
6	50.1 0.0901 12.0	2.5 2.5 0.0	343.6 255. 30.00		16.42 18.14 -0.42	-174.0 0.4 25.1	69.0 0.2331
7	50.0 0.0899 11.9	5.0 5.1 0.0	343.5 257. 30.00		17.09 30.95 -1.09	-253.7 0.0 29.8	70.0 0.2327
8	50.0 0.0899 11.9	7.5 7.6 0.0	343.4 254. 30.00		18.06 44.10 -1.26	-344.5 5.9 22.4	70.0 0.2327
9	50.0 0.0893 11.8	10.0 10.2 0.0	343.4 257. 30.00		20.35 60.96 -1.27	-114.0 11.1 17.4	70.0 0.2327
10	50.0 0.1345 26.5	10.0 10.1 0.0	343.6 226. 30.00		20.98 53.82 -0.60	-444.1 5.4 9.1	74.0 0.2299
11	50.9 0.1343 26.5	7.5 7.6 0.0	343.6 229. 30.00		18.74 40.81 -0.72	-321.1 5.2 5.2	74.0 0.2299
12	50.0 0.1342 26.4	5.0 5.1 0.0	343.5 225. 30.00		18.41 25.59 0.68	-229.0 5.3 4.8	75.0 0.2295
13	50.8 0.1340 26.4	2.5 2.5 0.0	343.5 223. 30.00		17.61 12.38 -0.08	-121.4 5.4 6.6	75.0 0.2295

	VKTS KTUN PSF	ALFS, J ALFS, C PSI	J THRUST BAR	DRAG/Q LIFT/Q SIDE/Q	PITCH/Q YAW/Q ROLL/Q	TEMP PHU100
PT 14	90.2 0.1340 26.6	0.0 -0.0 0.0	343.4 223. 30.00	17.43 -1.13 0.64	-42.5 4.9 749.5	75.0 0.2294
PT 15	90.0 0.1338 26.3	-2.5 -2.5 0.0	343.3 214. 30.00	17.54 -12.81 0.42	69.2 -4.3 4410.1	78.0 0.2282
PT 16	89.9 0.1337 26.2	-5.0 -5.1 0.0	343.3 208. 29.99	18.20 -27.20 0.61	178.9 -8.7 11.5	79.0 0.2277
PT 17	119.2 0.1770 45.6	-9.8 -9.9 0.0	343.3 126. 29.99	23.51 -54.88 -0.02	392.3 -3.2 12.8	82.0 0.2251
PT 18	119.7 0.1777 45.9	-7.5 -7.6 0.0	343.3 137. 29.99	19.41 -43.73 0.52	312.8 -5.5 16.3	82.0 0.2250
PT 19	119.8 0.1777 45.9	-5.0 -5.1 0.0	343.4 144. 29.99	17.82 -29.22 0.48	180.9 -2.5 17.5	83.0 0.2246
PT 20	119.7 0.1776 45.9	-2.5 -2.5 0.0	343.4 146. 29.99	16.92 -15.36 0.57	77.3 1.3 16.6	83.0 0.2246
PT 21	119.5 0.1771 45.6	0.0 -0.0 0.0	343.4 154. 29.99	16.57 -3.50 0.53	-19.9 2.6 17.9	84.0 0.2242
PT 22	119.4 0.1769 45.6	2.5 2.5 0.0	343.5 157. 29.99	16.68 8.99 0.42	-115.7 6.6 139.0	84.0 0.2242
PT 23	119.3 0.1767 45.4	5.0 5.1 0.0	343.5 157. 29.99	17.39 22.61 0.24	-231.3 9.5 699.1	84.0 0.2243

	PT	VKTS KTUN WPSF	ALFS.U ALFS.C PSI	J THRUST BAR	KPM	DRAG/Q LIFT/Q SIDE/Q	PITCH/Q YAW/Q ROLL/Q	TEMP RH0100
	PT 24	119.4 0.1768 45.5	7.5 7.6 0.0	343.5 156. 29.99		18.64 36.90 -0.46	-344.7 14.8 18.9	85.0 0.2238
	PT 25	119.3 0.1766 45.4	10.0 10.1 0.0	343.5 157. 29.99		20.27 48.86 -0.55	-496.5 14.1 16.2	85.0 0.2238
	PT 26	119.2 0.1762 45.2	0.0 0.0 -15.0	343.3 155. 29.99		23.28 5.85 -40.76	-157.6 295.0 -144.1	86.0 0.2234
	PT 27	119.3 0.1764 45.3	0.0 0.0 -12.5	343.3 157. 29.99		21.03 2.98 -33.18	-111.1 235.4 -107.1	86.0 0.2234
	PT 28	119.3 0.1763 45.2	0.0 0.0 -10.0	343.3 155. 29.99		19.50 0.88 -26.25	-80.2 196.3 -82.2	87.0 0.2230
	PT 29	119.4 0.1764 45.3	0.0 0.0 -7.5	343.3 157. 29.99		18.37 0.00 -19.89	-58.6 148.9 -56.9	87.0 0.2230
	PT 30	119.6 0.1766 45.4	0.0 -0.0 -5.0	343.3 153. 29.99		17.53 -2.20 -12.44	-36.6 101.7 206.9	88.0 0.2226
	PT 31	119.5 0.1764 45.3	0.0 -0.0 -2.5	343.3 154. 29.99		16.89 -2.98 -5.82	-26.0 53.0 -24.9	88.0 0.2226
	PT 32	119.7 0.1767 45.4	0.0 -0.0 2.5	343.3 152. 29.99		16.77 -2.97 7.15	-31.7 -35.0 6.9	88.0 0.2226
	PT 33	119.7 0.1765 45.3	0.0 -0.0 5.0	343.3 154. 29.99		17.23 -1.10 13.65	-55.7 -60.4 22.2	89.0 0.2222

	VKTS MTUN GPSF	ALFS, U ALFS, C PSI	J THRUST BAR	DRAG/Q LIFT/Q SIDE/Q	PITCH/Q YAW/Q ROLL/Q	TEMP RHU100
PT 34	119.3 0.1767 45.4	0.0 0.0 7.5	343.2 151. 29.99	17.99 0.55 20.47	-84.7 -126.1 41.1	89.0 0.2222
PT 35	119.9 0.1767 45.4	0.0 0.0 10.0	343.4 150. 29.99	19.09 1.76 27.36	-101.4 -176.8 69.5	90.0 0.2218
PT 36	120.0 0.1768 45.5	0.0 0.0 12.5	343.4 150. 29.99	20.62 4.39 34.64	-146.1 -225.8 96.8	90.0 0.2218
PT 27	119.3 0.1765 45.3	0.0 0.0 14.0	343.3 150. 29.99	21.90 6.39 38.97	-176.0 -252.8 119.3	90.0 0.2218
PT 28	120.0 0.1768 45.5	0.0 -0.0 0.0	4.6 0. 29.99	17.46 -5.93 0.40	-15.2 -0.1 12.6	90.0 0.2218
RUN 18 PT 2	149.4 0.2230 71.5	10.0 10.1 0.0	344.9 107. 29.99	20.10 47.24 -0.06	-445.7 4.0 5.5	78.0 0.2249
PT 4	149.7 0.2228 71.4	7.5 7.6 0.0	344.7 109. 29.99	18.60 34.81 -0.32	-331.0 8.5 5.9	81.0 0.2236
PT 5	149.3 0.2220 70.9	5.0 5.1 0.0	344.6 113. 29.99	17.44 20.93 0.20	-210.7 4.8 5.4	82.0 0.2233
PT 6	149.5 0.2220 70.9	2.5 2.5 0.0	344.4 108. 29.99	16.87 7.53 0.34	-99.4 3.1 1.9	83.0 0.2229
PT 7	149.4 0.2219 70.8	0.0 -0.0 0.0	344.2 101. 29.99	16.76 -4.16 0.47	9.3 1.6 9.3	83.0 0.2229

PT	VKTS MTUN PSF	ALFS,U ALFS,C PSI	J THRUST BAR	DRAG/Q LIFT/Q SIDE/Q	PITCH/Q YAW/Q ROLL/Q	TEMP PH0100
PT 8	149.3 0.2217 70.7	-2.5 -2.5 0.0	344.1 93. 29.99	17.10 -17.31 0.89	93.0 -5.2 5.1	84.0 0.2225
PT 9	149.5 0.2217 70.7	-5.0 -5.1 0.0	344.1 87. 29.99	18.06 -30.13 0.44	205.7 -5.5 7.0	85.0 0.2220
PT 10	177.9 0.2029 98.2	-3.8 -3.9 0.0	344.0 10. 29.99	17.50 -25.10 0.83	154.7 -5.9 8.7	91.0 0.2177
PT 11	178.5 0.2633 98.4	-2.5 -2.5 0.0	344.0 15. 29.99	17.08 -18.77 0.63	94.1 -6.4 9.7	93.0 0.2169
PT 12	178.9 0.2636 98.7	0.0 -0.0 0.0	344.2 25. 29.99	16.68 -5.82 0.18	-11.1 -0.9 8.2	94.0 0.2165
PT 13	179.0 0.2633 98.4	2.5 2.5 0.0	344.2 24. 29.99	16.80 5.32 0.53	-115.5 -1.3 6.7	96.0 0.2157
PT 14	178.9 0.2629 98.2	5.0 5.0 0.0	344.3 25. 29.99	17.36 17.70 -0.32	-248.4 6.2 8.4	97.0 0.2153
PT 15	178.8 0.2625 97.9	7.5 7.6 0.0	344.3 29. 29.99	18.61 35.20 -0.64	-305.7 5.7 13.8	98.0 0.2150
PT 16	178.8 0.2623 97.7	10.0 10.1 0.0	344.3 25. 29.99	19.98 47.86 -0.21	-399.3 1.0 10.2	99.0 0.2146
PT 17	178.8 0.2614 97.1	10.0 10.1 0.0	14.1 24. 29.99	19.67 47.94 -1.41	-427.2 -5.1 11.9	103.0 0.2131

	VKTS KTUN JPSF	ALFS,U ALFS,C PSI	J THRUST BAR	DRAG/Q LIFT/Q SIDE/Q	PITCH/Q YAW/Q ROLL/Q	TEMP RH0100
PT 18	173.2 0.2605 96.5	7.5 7.6 0.0	14.1 30. 29.99	18.46 34.81 -1.32	-321.4 -3.6 6.3	103.0 0.2131
PT 19	178.4 0.2606 96.5	5.0 5.0 0.0	14.1 28. 29.99	17.53 17.97 -0.83	-265.0 -4.7 5.6	104.0 0.2128
PT 20	177.7 0.2592 95.5	2.5 2.5 0.0	14.1 29. 29.99	16.96 4.29 -0.03	-124.6 -7.5 6.2	105.0 0.2125
PT 21	178.6 0.2604 96.4	0.0 -0.0 0.0	14.1 24. 29.99	16.95 -7.72 0.35	-10.0 -8.8 6.7	106.0 0.2120
PT 22	178.5 0.2602 96.2	-2.5 -2.6 0.0	14.1 15. 29.99	17.29 -19.26 0.61	88.6 -5.8 5.1	106.0 0.2120
PT 23	178.4 0.2599 96.0	-3.8 -2.9 0.0	14.1 8. 29.99	17.55 -24.59 0.53	138.9 -6.2 8.3	107.0 0.2117
PT 24	179.2 0.1735 43.8	-9.8 -9.9 0.0	14.1 136. 29.97	23.60 -54.13 0.91	378.7 -3.4 14.3	104.0 0.2163
PT 25	179.7 0.1742 44.2	-7.5 -7.6 0.0	14.1 141. 29.97	19.42 -43.49 1.34	306.1 -6.4 12.2	103.0 0.2166
PT 26	179.6 0.1743 44.2	-5.0 -5.1 0.0	14.1 144. 29.97	17.71 -30.85 1.22	179.1 -8.8 9.5	102.0 0.2170
PT 27	179.4 0.1742 44.2	-2.5 -2.5 0.0	14.1 153. 29.97	17.09 -17.54 1.00	96.0 -5.3 5.6	101.0 0.2174

	VKTS MTUN GPSF	ALFS.U ALFS.C PSI	J THRUST BAR	DRAU/Q LIFT/Q SIDE/Q	PITCH/Q YAW/Q ROLL/Q	TEMP RHO100
PT 28	119.3 0.1742 44.2	0.0 -0.0 0.0	14.1 158. 29.97	16.77 -5.99 0.72	10.1 -3.4 4.1	100.0 0.2178
PT 29	119.4 0.1744 44.2	2.5 2.5 0.0	14.1 164. 29.97	16.74 6.67 0.36	-104.2 -1.9 3.7	100.0 0.2178
PT 30	119.2 0.1741 44.1	5.0 5.1 0.0	14.1 163. 29.97	17.42 21.03 -0.32	-230.3 -1.2 9.6	99.0 0.2182
PT 31	119.2 0.1742 44.2	7.5 7.6 0.0	14.1 167. 29.97	18.63 35.96 -1.22	-355.5 4.5 23.8	99.0 0.2182
PT 32	119.3 0.1745 44.3	10.0 10.1 0.0	14.1 167. 29.97	19.95 48.11 -1.08	-486.2 4.2 22.5	98.0 0.2186
PT 33	119.2 0.1744 44.2	0.0 -0.0 0.0	344.8 163. 29.97	16.91 -4.29 0.41	-0.7 6.4 3.5	98.0 0.2186
PT 34	118.9 0.1740 44.0	0.0 -0.0 0.0	344.4 0. 29.96	17.70 -5.10 0.82	-12.1 6.8 1.4	98.0 0.2185
PT 35	6.6 0.0097 0.1	0.0 0.0 0.0	4.3 151. 29.96	95.95 -358.87 215.43	1636.7 -2771.7 -4543.9	93.0 0.2235
PT 36	7.2 0.0105 0.2	0.0 0.0 0.0	4.3 593. 29.96	-350.61 -61.01 79.35	744.5 -1304.1 -2452.5	91.0 0.2243
PT 37	3.1 0.0120 0.2	0.0 0.0 0.0	4.3 1176. 29.96	-142.51 117.32 -4.69	-330.3 -2637.9 349.5	88.0 0.2255

	WTS ATUN QPSF	ALFS,J ALFS,C PSI	J THKUST BAR	KPM THKUST BAR	DRAG/Q LIFT/Q SIDE/Q	PITCH/Q YAW/Q ROLL/Q	TEMP RH0100
PT 38	9.5 0.0139 0.3	0.0 0.0 0.0	4.3 1684. 29.96	4.3	-62.73 87.15 -62.78	-325.1 -3063.9 1352.7	89.0 0.2251
PT 39	12.6 0.0185 0.5	0.0 0.0 0.0	4.3 2230. 29.96	4.3	-42.97 68.88 -70.88	-501.1 -2367.2 34980.5	90.0 0.2247
PT 40	14.9 0.0213 0.7	0.0 0.0 0.0	4.3 2651. 29.96	4.3	16.36 49.66 -86.59	-474.4 -2346.2 1415.5	91.0 0.2242
PT 41	8.6 0.0127 0.2	0.0 0.0 0.0	4.3 132. 29.96	4.3	-77.88 -63.11 -8.42	807.7 314.3 256.6	91.0 0.2243
PT 42	7.7 0.0113 0.2	0.0 0.0 0.0	4.3 559. 29.96	4.3	-172.03 0.00 31.84	691.6 -67.9 -1207.3	90.0 0.2247
PT 43	8.6 0.0127 0.2	0.0 0.0 0.0	4.3 1124. 29.96	4.3	-277.53 63.11 -67.35	3157.7 -924.6 -764.4	90.0 0.2247
PT 44	9.5 0.0139 0.3	0.0 0.0 0.0	4.3 1689. 29.96	4.3	-302.25 52.29 -118.58	1279.0 -1700.5 -612.0	89.0 0.2251
PT 45	10.6 0.0156 0.4	0.0 0.0 0.0	4.3 2140. 29.96	4.3	-210.19 41.59 -172.00	789.8 -1570.9 34.8	89.0 0.2251
PT 46	14.0 0.0206 0.6	0.0 0.0 0.0	4.3 2643. 29.96	4.3	-18.97 47.54 -87.20	-183.6 -798.6 -589.5	89.0 0.2251

DATA IN THE FOLLOWING GROUP OF POINTS SATISFIED THE FOLLOWING SEQUENCE OF CONSTRAINT CODES -

1 2

PT	V/VR MAT	CMGCR TIPX PDY RPMZ	VKIS MTUN QPSF ALFS,U ALFS,C PSI	BAR TEMP RHNOOC L/OE L/D,R ANXL/R	LIFT ORAG SIDE PITCH YAW ROLL	LIFT,R ORAG,R SIDE,R PITCH,R YAW,P ROLL,R	CLR/S,R CDR/S,R CYR/S,R CMY/S,R CMZ/S,R CMX/S,R	HP TTPQ J THRUST CP/S CPD/S,R
PT 6	0.2489		89.3	29.78	2697.	2665.	0.025602	258.
	0.6570		0.1309	94.0	600.	137.	0.001314	4211.
	605.6		25.0	0.2200	14.	2.	0.000224	224.
	0.5261		0.0	1.75	5327.	7002.	0.021004	0.002247
	321.3		0.3	2.48	-462.	-401.	-0.000204	0.002574
PT 7	93.5		0.0	-2.9	1736.	1400.	0.000640	
	0.2504		89.4	29.78	8148.	7393.	0.071956	180.
	0.6535		0.1309	94.0	1429.	928.	0.009033	2963.
	602.8		25.0	0.2193	93.	97.	0.000948	229.
	0.5227		5.0	3.90	7373.	15624.	0.111234	0.001602
PT 8	319.8		5.8	4.66	624.	599.	0.001088	0.003864
	93.1		0.0	-7.2	-1309.	-1997.	-0.005280	
	0.2511		90.0	29.78	10389.	9603.	0.003162	263.
	0.6550		0.1314	98.0	1598.	1091.	0.010579	4310.
	604.9		25.2	0.2185	69.	74.	0.000717	229.
PT 9	0.5235		5.0	4.07	7116.	16738.	0.136574	0.002323
	320.9		6.0	4.70	264.	214.	0.000693	0.004979
	93.4		0.0	-6.5	-2897.	-3467.	-0.005045	
	0.2507		89.8	29.78	13233.	12414.	0.120793	448.
	0.6538		0.1311	99.0	1849.	1341.	0.013051	7330.
PT 10	604.5		25.0	0.2181	77.	83.	0.000806	215.
	0.5227		5.0	3.81	12109.	23190.	0.174618	0.003962
	320.7		6.2	4.19	-224.	-269.	0.000504	0.007234
	93.3		0.0	-6.2	-4619.	-5223.	-0.006396	
	0.2498		89.9	29.78	15158.	14317.	0.138755	803.
PT 11	0.6546		0.1308	102.0	1335.	1327.	0.012863	13085.
	607.3		25.0	0.2169	15.	21.	0.000208	215.
	0.5238		5.0	3.19	13027.	26860.	0.190100	0.007045
	322.2		6.4	3.38	-483.	-583.	-0.000146	0.010258
	93.8		0.0	-5.3	-5066.	-6276.	-0.004302	

PT	V/QR WAT CMEG#P TIP# RPM RPM#	VKTS MTUN QPSF ALFS,U ALFS,C PSI	BAR TEMP PHO100 L/DE L/D,R ANXL/R	LIFT ORAG SIDE PITCH YAW ROLL	LIFT,R DRAG,R SIDE,R PITCH,R YAW,R ROLL,R	CLR/S,R CDR/S,R CYR/S,R CMY/S,R CMZ/S,R CMX/S,R	HP TCRQ J THRUST CP/S CPN/S,R
PT 11	0.2485 0.6564 610.2 0.5257 323.7 94.2	89.8 0.1306 24.9 7.5 8.3 0.0	29.78 103.0 0.2165 3.90 4.47 -9.9	8746. 1470. 48. 3769. 448. -552.	7655. 1340. 60. 14479. 380. -975.	0.073627 0.012891 0.000579 0.144598 0.000782 -0.003067	103. 1673. 220. 0.000894 0.004097
PT 12	0.2490 0.6568 610.3 0.5259 323.8 94.2	90.0 0.1309 25.0 7.5 8.3 0.0	29.78 103.0 0.2165 3.92 4.50 -9.9	8756. 1472. 47. 3814. 455. -730.	7661. 1340. 50. 14568. 384. -1148.	0.073642 0.012878 0.000560 0.144594 0.000773 -0.003113	101. 1630. 217. 0.000871 0.004077
PT 13	0.2489 0.6568 610.3 0.5259 323.8 94.2	90.0 0.1309 25.0 7.5 8.5 0.0	29.78 103.0 0.2165 4.10 4.63 -9.7	10456. 2124. 38. 4831. 969. -900.	9340. 1590. 51. 16362. 789. -1271.	0.089785 0.015282 0.000487 0.173484 0.000908 -0.002818	118. 1914. 220. 0.001022 0.004825
PT 14	0.2499 0.6545 608.3 0.5236 322.7 93.9	90.1 0.1309 25.0 7.5 8.8 0.0	29.78 104.0 0.2161 3.97 4.32 -9.2	13383. 2508. 37. 6189. 1520. -1963.	12230. 1971. 50. 19300. 1440. -2323.	0.118578 0.019107 0.000489 0.222691 0.001264 -0.003399	239. 3884. 217. 0.002092 0.006868
PT 15	0.2490 0.6561 610.2 0.5253 323.7 94.2	90.0 0.1308 25.0 7.5 9.0 0.0	29.78 104.0 0.2161 3.59 3.78 -8.8	15772. 2802. 106. 8352. 2071. -942.	14588. 2261. 120. 22844. 2066. -1617.	0.140575 0.021790 0.001157 0.259676 0.002261 -0.005947	440. 7145. 219. 0.003825 0.009252

	V/VR MAT	CMG* R	TIP* PPH	RPM*	VKTS MTUN	QPSF ALFS,U	ALFS,C PSI	BAR TFMP	RHO100 L/DE	L/D,R ANXL/R	LIFT DRAG	DRAG SIDE	PITCH YAW	ROLL	LIFT,R DRAG,R	SIDE,R PITCH,R	YAW,R ROLL,R	CLR/S,R CDR/S,R	CYR/S,R CMY/S,R	CMZ/S,R CMX/S,R	HP TORQ	J THRUST CP/S	CPD/S,R																	
PT 16	0.2424	0.6715	627.9	0.5405	333.1	97.0	90.2	0.1310	25.0	10.0	0.0	29.78	104.0	0.2161	3.69	4.04	-13.1	8972.	2317.	-8.	1734.	105.	88.	7533.	1751.	10.	14879.	7.	-1.	0.068552	0.015932	0.000094	0.166465	0.000116	-0.000410	31.	406.	224.	0.000251	0.004112
PT 17	0.2264	0.7169	679.0	0.5845	360.2	104.8	91.1	0.1323	25.5	10.0	0.0	29.78	104.0	0.2161	3.83	4.12	-13.0	11800.	2960.	189.	7088.	396.	5038.	10301.	2380.	207.	22245.	545.	4060.	0.080180	0.018521	0.001609	0.194973	0.002150	-0.005237	33.	482.	213.	0.000208	0.004402
74	0.2497	0.6550	608.8	0.5241	323.0	94.0	90.1	0.1309	25.0	5.0	0.0	29.78	104.0	0.2161	3.98	4.75	-6.9	8408.	1424.	64.	6119.	-3.	-198.	7651.	923.	68.	14638.	-53.	-740.	0.074042	0.008931	0.000662	0.111838	0.000506	-0.003334	190.	3001.	216.	0.001662	0.003892
PT 19	0.3002	0.6825	600.8	0.5240	323.5	94.2	108.5	0.1576	36.0	5.0	0.0	29.78	105.0	0.2150	3.97	5.32	-7.3	8115.	1615.	41.	2968.	614.	-951.	7154.	917.	39.	13246.	356.	-1567.	0.069378	0.008895	0.000379	0.107164	0.000497	-0.002524	142.	2311.	213.	0.001245	0.003016
RUN 23	0.2002	0.6708	502.1	0.5232	314.1	91.4	105.0	0.1546	35.8	0.0	0.0	29.96	76.0	0.2281	1.60	2.75	-4.8	2527.	858.	34.	5576.	-554.	334.	2576.	215.	10.	6946.	-597.	-261.	0.024990	0.002090	0.000099	0.024646	-0.000280	-0.000584	232.	3884.	222.	0.002093	0.002719
PT 7	0.2002	0.6708	502.1	0.5232	314.1	91.4	105.0	0.1546	35.8	0.0	0.0	29.96	76.0	0.2281	1.60	2.75	-4.8	2527.	858.	34.	5576.	-554.	334.	2576.	215.	10.	6946.	-597.	-261.	0.024990	0.002090	0.000099	0.024646	-0.000280	-0.000584	232.	3884.	222.	0.002093	0.002719

	V/OP WAT CWC#E TIP# ROM RPM#	VKTS "TUN PSF ALFS,U ALFS,C PSI	BAR TEMP RHQ100 L/NF L/N,P ANXL/P	LIFT DRAG SIDE PITCH YAW ROLL	LIFT,R DRAG,R SIDE,R PITCH,R YAW,R ROLL,P	CLR/S,P COP/S,P CYR/S,R CMY/S,R CM7/S,R CMX/S,P	HP TOPQ J THPUST CP/S CPN/S,P
PT 4	0.3010 0.6795 593.2 0.5223 314.7 91.6	105.8 0.1572 36.1 0.0 0.6 0.0	29.96 80.0 0.2263 3.91 5.55 -1.2	8499. 820. 69. 15181. -185. -1969.	8478. 172. 46. 14897. -239. -2748.	0.082535 0.001671 0.000450 0.053569 0.000058 -0.003504	440. 7344. 222. 0.003972 0.004475
PT 8	0.2585 0.6810 597.3 0.5245 316.9 92.2	105.6 0.1566 35.8 5.0 5.8 0.0	29.96 83.0 0.2251 3.91 4.57 -5.4	12862. 1819. 54. 8766. 591. -2569.	11846. 1120. 54. 22478. 343. -3229.	0.114356 0.010816 0.000517 0.157873 0.000601 -0.004022	476. 7807. 210. 0.004235 0.007463
75 PT 10	0.2698 0.6811 597.3 0.5240 316.9 92.2	106.1 0.1571 36.0 5.0 6.0 0.0	29.96 84.0 0.2247 3.56 3.98 -4.9	15031. 1905. 131. 12255. 479. -1216.	13984. 1199. 131. 27671. 288. -2244.	0.135245 0.011601 0.001268 0.181423 0.001178 -0.006828	753. 12476. 211. 0.006703 0.010181
PT 11	0.3002 0.6797 598.1 0.5227 317.3 92.4	106.4 0.1569 36.0 5.0 6.0 0.0	29.96 88.0 0.2231 3.21 3.49 -4.5	15984. 1967. 290. 12867. 39. 1570.	14926. 1162. 290. 29335. -16. -200.	0.145052 0.011295 0.002823 0.188787 0.002268 -0.012619	1016. 16814. 222. 0.009078 0.012469
PT 12	0.3002 0.6800 600.5 0.5230 318.6 92.7	106.8 0.1570 36.0 7.5 8.2 0.0	29.96 92.0 0.2214 4.07 4.86 -9.5	11077. 2358. 91. 4740. 654. -1452.	9601. 1614. 101. 19746. 427. -2220.	0.093217 0.015672 0.000981 0.180742 0.001211 -0.005507	119. 1956. 223. 0.001055 0.005760

	VOPS	MAT	CMFG#R	TIPM	PPM	PPM2	VKTS	MTUN	QPSF	ALFS,U	ALFS,C	PSI	RAP	TFMP	RHO100	L/DE	L/D,R	ANXL/R	LIFT	TRAG	SIDE	PITCH	YAW	ROLL	LIFT,R	DPAG,R	SIDE,R	PITCH,R	YAW,R	ROLL,R	CLR/S,R	CDR/S,R	CYR/S,R	CMY/S,R	CMZ/S,R	CMX/S,R	HP	TORQ	J THRUST	CP/S	CPN/S,R
PT 13	0.3003	0.6807	601.7	0.5235	319.2	92.9	107.0	0.1572	36.1	7.5	8.5	0.0	29.96	93.0	0.2210	2.99	3.16	-6.8	15076.	2356.	364.	5691.	-4106.	3668.	13546.	1605.	375.	25339.	-4046.	1636.	0.131272	0.015558	0.003635	0.221195	0.001454	-0.015090	882.	14517.	218.	0.007816	0.012488
PT 14	0.2989	0.6804	604.1	0.5242	320.5	93.3	107.0	0.1567	35.8	7.5	8.4	0.0	29.96	96.0	0.2198	3.47	3.81	-7.6	13620.	2365.	122.	3961.	-311.	-1857.	12116.	1621.	133.	21804.	-501.	-2757.	0.117088	0.015664	0.001282	0.205606	0.001012	-0.007114	512.	8393.	220.	0.004506	0.009187
PT 15	0.2995	0.6842	607.3	0.5265	322.2	93.8	107.8	0.1577	36.3	2.5	3.1	0.0	29.96	97.0	0.2194	4.06	5.42	-4.2	9355.	1324.	151.	12140.	-391.	1037.	8850.	654.	138.	20008.	-510.	-145.	0.084788	0.006269	0.001322	0.093852	0.000538	-0.005979	324.	5274.	211.	0.002807	0.004684
PT 16	0.2962	0.7365	607.3	0.5275	322.2	93.8	142.6	0.2090	63.0	2.5	2.8	0.0	29.96	97.0	0.2176	3.32	5.32	-5.2	8676.	1831.	162.	9050.	282.	1762.	8084.	736.	149.	18717.	232.	714.	0.078107	0.007109	0.001436	0.093349	0.001004	-0.006024	343.	5586.	166.	0.002008	0.005815
PT 17	0.3992	0.7316	604.7	0.5220	320.8	93.4	143.0	0.2087	62.8	2.5	2.9	0.0	29.96	102.0	0.2157	3.94	5.87	-3.9	11802.	1861.	144.	11351.	-69.	-1205.	11173.	767.	132.	23174.	-138.	-2176.	0.103872	0.007539	0.001295	0.117563	0.000718	-0.006971	499.	8166.	133.	0.004461	0.007471

HP
TORQ
J THRUST
CP/S
CPC/S,P

CLP/S,P
CDR/S,P
CYR/S,P
CMV/S,P
CMZ/S,P
CMX/S,P

LIFT,R
DRAG,R
SIDE,P
PITCH,R
YAW,K
ROLL,R

LIFT
DRAG
SIDE
PITCH
YAW
ROLL

RAP
TEMP
RH100
L/DE
L/D,K
ANXI/P

VKTS
MUN
OPSF
ALFS,U
ALFS,C
PSI

V/PP
"AT
CMC#R
TIP
KPA
OPM

390.
6380.
133.
0.003489
0.006352

0.092908
0.007173
0.001134
0.103684
0.000711
-0.005914

9438.
729.
115.
20113.
31.
-1562.

10045.
1821.
128.
9417.
107.
-670.

29.96
104.0
0.2149
3.71
5.84
-4.4

142.2
0.2096
62.7
2.5
2.9
0.0

0.3901
0.7312
605.4
0.5226
321.2
93.5

254.
4919.
175.
0.002754
0.006836

0.078550
0.010142
0.003704
0.125837
0.003073
-0.012612

7796.
1007.
358.
21861.
153.
6799.

9201.
2142.
358.
5362.
125.
8933.

29.96
90.0
0.2204
3.26
4.63
-7.4

140.9
0.2079
62.4
5.0
5.3
0.0

0.4026
0.7244
590.9
0.5165
313.5
91.2

360.
5898.
173.
0.003186
0.008289

0.113114
0.012953
0.003052
0.169389
0.002479
-0.012812

11632.
1332.
314.
25881.
32.
1326.

13076.
2463.
303.
7328.
55.
3217.

29.95
94.0
0.2188
3.97
5.38
-6.5

140.9
0.2071
61.9
5.0
5.5
0.0

0.3947
0.7329
603.8
0.5258
320.3
93.2

458.
7542.
174.
0.004110
0.009358

0.125296
0.013251
0.002974
0.181223
0.002512
-0.013526

12773.
1351.
303.
26639.
208.
-629.

14223.
2484.
292.
7065.
242.
1213.

29.95
95.0
0.2184
4.02
5.30
-6.0

141.2
0.2073
62.0
5.0
5.5
0.0

0.3960
0.7308
601.7
0.5235
319.2
92.9

101.
1673.
174.
0.000919
0.007414

0.090290
0.016221
-0.001152
0.180383
-0.000663
-0.000412

9129.
1640.
-117.
19149.
888.
-9963.

11426.
2855.
-145.
-4600.
1387.
-9957.

29.95
97.0
0.2175
3.70
4.88
-10.2

142.4
0.2088
62.8
7.5
7.9
0.0

0.4004
0.7302
600.4
0.5214
318.5
92.7

PT 18

PT 24

77

PT 7

PT 3

PT 9

	V/OP MAY CMC#R TIP# RPM RPMX	VKTS MTUN QPSF ALFS,U ALFS,C PSI	BAR TEMP RHQ100 L/DE L/O,R ANXL/R	LIFT DRAG SIDE PITCH YAW ROLL	LIFT,R DRAG,R SIDE,R PITCH,R YAW,R ROLL,R	CLR/S,R CDR/S,R CVR/S,R CMV/S,P CMZ/S,R CMX/S,P	HP THRQ J THRUST CP/S CPO/S,R
PT 10	0.3963 0.7363 607.1 0.5273 322.1 93.8	142.5 0.2090 63.0 7.5 7.0 0.0	29.95 97.0 0.2175 3.74 4.92 -10.1	11645. 2887. -150. -4173. 1372. -9043.	9341. 1670. -121. 19720. 867. -9026.	0.090341 0.016148 -0.001174 0.180147 -0.000707 0.000309	101. 1645. 172. 0.000884 0.007283
PT 11	0.4489 0.7559 603.8 0.5217 320.2 93.2	160.6 0.2342 78.5 2.5 2.8 0.0	29.95 104.0 0.2137 3.15 5.45 -5.1	9185. 2118. 382. 11501. -497. 122.	8506. 766. 369. 22764. -536. -1927.	0.084656 0.007622 0.003669 0.102459 0.001950 -0.017441	392. 6422. 110. 0.003551 0.006973
PT 12	0.4471 0.7580 606.2 0.5238 321.6 93.6	160.6 0.2342 78.5 2.5 2.8 0.0	29.95 104.0 0.2137 3.15 5.42 -5.1	9254. 2112. 415. 11578. -537. 364.	8575. 761. 402. 22914. -405. -1842.	0.084655 0.007512 0.003965 0.101892 0.002206 -0.019708	405. 6606. 119. 0.003623 0.006982
RUN 25 PT 5	0.2094 0.6812 592.8 0.5242 315.0 91.7	105.3 0.1570 36.0 7.5 8.2 0.0	29.97 77.0 0.2277 4.15 4.86 -8.9	12595. 2474. 234. 3808. 205. 1542.	11099. 1728. 244. 20018. 130. 113.	0.107211 0.016695 0.002361 0.199839 0.002429 -0.010313	180. 3706. 232. 0.001613 0.006611
PT 6	0.3017 0.6820 592.9 0.5239 315.1 91.7	106.2 0.1581 36.5 7.5 8.0 0.0	29.97 78.0 0.2272 3.67 4.52 -10.7	8337. 2055. -78. 5211. 514. -226.	6879. 1306. -69. 18660. 94. -236.	0.066537 0.012629 -0.000664 0.139519 -0.000612 0.002789	71. 1177. 229. 0.000632 0.004443

PT	7	V/CPR MAY CMEG#P TIP# RPM RPM	VKTS HTUN QPSF ALFS,U ALFS,C PSI	BAP TFMP RHU100 L/DE L/D,P ANXL/P	LIFT DPAG SIDE PITCH YAW ROLL	LIFT,R DRAG,P SIDE,R PITCH,R YAW,R ROLL,R	CLR/S,R COR/S,R CYR/S,R CMV/S,R CMZ/S,R CMX/S,R	HP TPOO J THRUST CP/S CPN/S,R
PT	7	0.2996 0.6757 590.0 0.5190 313.0 91.1	104.7 0.1558 35.5 7.5 8.3 0.0	29.97 79.0 0.2269 3.88 4.45 -8.7	12252. 2385. 96. 5508. 2348. -132.	10778. 1650. 106. 21544. 2141. -900.	0.105815 0.016198 0.001043 0.197010 0.002210 -0.005074	248. 4154. 238. 0.002266 0.007119
PT	8	0.2988 0.6763 591.0 0.5211 314.0 91.4	104.8 0.1557 35.4 7.5 8.4 0.0	29.97 80.0 0.2265 4.17 4.81 -8.7	13356. 2557. 117. 2929. 2790. 760.	11869. 1821. 128. 19420. 2606. -101.	0.116004 0.017798 0.001247 0.213838 0.002661 -0.005532	208. 3473. 239. 0.001886 0.007203
PT	9	0.2946 0.6812 597.7 0.5262 317.1 92.3	104.3 0.1550 35.1 7.5 8.6 0.0	29.97 80.0 0.2265 4.37 4.95 -9.2	15880. 3051. 26. 1664. 3530. -1361.	14370. 2317. 37. 18657. 3258. -2281.	0.137698 0.022200 0.000356 0.256517 0.002090 -0.002780	187. 3105. 239. 0.001653 0.008193
RUN 23 PT	6	0.2496 0.6561 596.8 0.5251 316.6 92.2	88.3 0.1311 25.2 2.5 3.3 0.0	29.92 80.0 0.2268 3.96 4.70 -3.5	8036. 1008. -156. 10653. 2525. 905.	8500. 527. -160. 17694. 2372. 1367.	0.081592 0.005057 -0.001531 0.084634 0.000327 0.007564	338. 5614. 221. 0.002904 0.004256
PT	7	0.2514 0.6534 595.1 0.5221 315.7 91.9	88.6 0.1313 25.2 2.5 3.6 0.0	29.92 83.0 0.2256 3.00 4.59 -3.3	11689. 1136. -141. 10922. 3609. 711.	11219. 652. -144. 19383. 3458. 1103.	0.108912 0.006326 -0.001396 0.108714 0.001010 0.006826	488. 8123. 219. 0.004381 0.005972

	V/C	WAT	WFO	TIP	FOM	RPM	VKTS	WTUN	QPSF	ALFS,U	ALFS,C	PSI	RAP	TEMP	RH100	L/D,P	ANXI/R	LIFT	DRAG	SIDE	PITCH	YAW	ROLL	LIFT,R	DRAG,R	SIDE,P	PITCH,R	YAW,R	ROLL,R	CLR/S,R	CDR/S,P	CYR/S,R	CMY/S,P	CMZ/S,P	CMX/S,R	HP	TORQ	J THRUST	CP/S	CPD/S,R
PT	0.2505	0.6538	598.1	0.5228	317.3	92.4	88.8	0.1309	25.1	2.5	4.0	0.0	29.92	87.0	0.2239	3.03	3.23	16010.	1456.	-31.	23041.	7275.	-2712.	15486.	970.	-32.	33134.	7186.	-2838.	0.149922	0.309389	-0.000314	0.156479	0.003673	-0.000126	1042.	17253.	231.	0.009279	0.011631
PUN 29																																								
PT	0.2497	0.6560	598.3	0.5249	317.7	92.5	88.6	0.1311	25.2	5.0	6.0	0.0	29.93	84.0	0.2252	3.07	3.33	10495.	1375.	-420.	6589.	6401.	-6376.	9708.	988.	-415.	17253.	5933.	-4651.	0.093200	0.309521	-0.003985	0.126589	-0.000049	0.015183	551.	9116.	196.	0.004862	0.006989
80																																								
PT	0.2490	0.6557	599.4	0.5249	318.0	92.6	88.4	0.1307	25.0	7.5	8.6	0.0	29.93	85.0	0.2248	3.10	-7.6	11494.	1025.	-348.	3481.	7315.	-2084.	10362.	1388.	-335.	17155.	6827.	-657.	0.099471	0.013326	-0.003217	0.173966	0.000427	0.013782	530.	8747.	199.	0.004665	0.007984
PT	0.2439	0.6575	601.7	0.5264	319.2	92.9	88.7	0.1311	25.2	10.0	11.2	0.0	29.93	86.0	0.2244	2.82	2.85	12824.	2666.	-420.	1692.	8840.	-4039.	11329.	2093.	-401.	18538.	8270.	-2218.	0.108137	0.019974	-0.003828	0.235502	-0.000168	0.015457	511.	8407.	107.	0.004458	0.009430
PT	0.2504	0.6549	594.7	0.5237	315.5	91.8	88.2	0.1312	25.2	5.0	6.4	0.0	29.94	79.0	0.2274	3.64	3.93	14655.	1053.	-227.	8130.	6258.	-2715.	13815.	1440.	-221.	20007.	5940.	-1889.	0.133203	0.013886	-0.002130	0.186945	0.001469	0.008428	562.	9357.	240.	0.005012	0.008490

HP
TPO
J THPST
CP/S
CPN/S, R.

CLR/S,R
CDR/S,R
CYP/S,R
CMY/S,R
CMZ/S,P
CMX/S,R

LIFT, R
DRAG, R
SIDE, R
PITCH, R
YAW, P
ROLL, R

LIFT
DRAG
SIDE
PITCH
YAW
ROLL

EAP
 TEMP
 RH7100
 L/DE
 L/N,R
 A'XL/F

VKTS
WTUN
CPSP
ALFS, D
ALFS, C
PSI

VOR
NAT
C-EC*P
TLP
BPA
BPA

520.
8790.
248.
0.004681
0.007578

0.115752
0.011635
0.003138
0.160857
0.000795
0.013976

12074.
1214.
-327.
18505.
6244.
12A.

12889.
1722.
-333.
7142.
6640.
-1191.

29.94
80.0
0.2270
3.50
3.80
-5.7

98.1
0.1308
25.1
5.0
6.2
0.0

0.2490
0.6560
557.0
0.5252
216.7
92.2

493.
8146.
251.
0.004330
0.008743

0.123751
0.017798
0.003630
0.219600
0.000019
0.015726

12966.
1865.
-380.
16154.
6878.
-422.

14129.
2403.
-394.
1695.
7413.
-2069.

$$\begin{array}{r} 29.94 \\ 30.0 \\ 0.2270 \\ 3.34 \\ 3.51 \\ -8.2 \end{array}$$

87.9
0.1305
25.0
7.5
8.8
0.0

0.2480
0.6560
558.3
0.5264
317.4
92.4

81

599.
9966.
252.
0.005362
0.011714

0.161634
0.025334
0.000034
0.298585
0.003747
0.000485

16692.
2616.
3.
23599.
6903.
-628.

17909.
3163.
-11.
8250.
7033.
-504.

29.94
82.0
0.2261
3.33
3.46
-8.9

98.4
0.1310
25.2
7.5
0.2
0.0

0.2507
0.6536
595.1
0.5226
315.7
91.9

10
11

525.
8790.
280.
0.004719
0.008081

0.127927
0.013401
0.003064
0.180103
0.000728
0.013353

13237.
1387.
-317.
19615.
5960.
-428.

14071.
1899.
-323.
7920.
6350.
-1703.

29.99
76.0
9.2299
3.66
3.97
-6.0

88.0
0.1311
25.2
5.0
6.3
0.0

0.2502
0.6538
591.9
0.5227
214.0
91.4

509.
8464.
280.
0.004512
0.007058

00.103501
00.010180
00.004537
00.142945
00.000545
00.020385

10786.
1061.
-473.
16750.
5842.
1449.

11588.
1571.
-478.
5255.
6362.
-550.

29.99
78.0
0.2282
3.26
3.67
-5.6

88.2
r.1312
25.3
5.0
6.1
0.0

0.2501
0.6557
595.1
0.5245
315.7
91.0

15

HP
TORQ
J THPUST
CP/S
CPN/S,P

CLR/S,R
COR/S,R
CYR/S,P
CMV/S,R
CM7/S,R
CMX/S,R

LIFT,P
ORAG,R
SIDE,R
PITCH,R
YAW,R
ROLL,R

LIFT
ORAG
SIDE
PITCH
YAW
ROLL

BAF
TFMP
RHOLD
L/DE
L/O,P
ANXL/R

VKTS
WTUN
CPSE
ALFS,H
ALFS,C
PSI

V/CP
VAT
CMEG*P
TIPM
PPM
PPM*

486.
8166.
312.
0.004529
0.007255

0.110322
0.006710
-0.003282
0.113987
0.000866
0.013152

11050.
672.
-329.
23340.
5221.
-2698.

11685.
1788.
-316.
11062.
5537.
-3913.

30.00
83.0
0.2234
4.02
6.18
-3.5

141.9
0.2107
64.1
2.5
2.9
0.0

0.4062
0.7294
589.6
0.5187
312.2
91.1

PT

604.
10037.
310.
0.005495
0.008118

0.112681
0.005538
-0.004628
0.113217
0.000410
0.010118

11456.
665.
-471.
21208.
5937.
-2817.

12095.
1778.
-453.
8604.
6396.
-4701.

30.00
86.0
0.2222
3.82
5.59
-3.3

142.1
0.2104
63.9
2.5
2.9
0.0

0.4027
0.7330
595.6
0.5225
316.0
92.0

PT

SECTION B

Tabulated Control and Loads Data

RUH PT MAT ALPH V/CR VKTS	THETA AT N1 THETAP APR N12	JPCB MN URN1 MN URN2 MN URN3 MN URN4 MN WIC MN	LRCB MN LKN1 MN LKN2 MN LKN3 MN LKN4 MN #20 MN	URRPL MN URYPL MN URRPL MN URYPL MN LRRPL MN	URCB OS URN1 OS URN2 OS URN3 OS URN4 OS #1Q OS	LRCB US LKN1 US LKN2 US LKN3 US LKN4 US #24 US	URRPL OS URYPL OS URRPL OS URYPL OS LRRPL OS LRYPL OS LRGPL OS	URSB MN URSB OS GB VTAC GB LTAC GB LNAC	LVF VTAC HST VTAC #1J VTAC #2J VTAC LAS LTAC
23	15.06	-27698.	-3816.	-408.	29289.	10523.	575.	6002.	3.290
12	-4.82	1751.	5436.	-152.	5957.	7004.	669.	5571.	0.963
0.6807	-1.10	3220.	4492.	-368.	4060.	4665.	614.	1.010	0.949
3.5	-1.52	1144.	3139.	179.	2904.	3277.	825.	1.265	0.936
0.2002	-0.77	-12.	38.	244.	5694.	876.	796.	0.804	0.792
107.0	10.22	259.	355.	313.	38.	36.	727.		
23	12.22	-19415.	-4732.	-459.	27480.	7255.	580.	5973.	2.378
14	-5.05	1534.	1857.	-166.	3398.	4428.	669.	3345.	1.035
0.6809	-1.02	3274.	2095.	-471.	1837.	3097.	495.	0.953	0.518
3.4	-0.22	1029.	1467.	-20.	1401.	2259.	480.	0.670	0.626
0.2000	0.03	-220.	-122.	53.	5455.	1045.	511.	0.972	0.536
107.0	2.80	176.	222.	126.	27.	33.	406.		
23	11.00	-46197.	-4365.	-502.	18599.	2484.	447.	5547.	2.114
15	-2.61	-2226.	-1934.	-277.	1392.	1949.	420.	4022.	0.415
0.6347	-0.17	451.	-641.	-627.	1272.	1057.	426.	0.583	0.410
3.1	0.10	-742.	-210.	-154.	940.	830.	224.	0.599	0.613
0.2005	-0.12	-1462.	-214.	-72.	3399.	594.	232.	0.511	0.474
107.0	5.02	107.	155.	25.	34.	40.	228.		
23	11.54	-50112.	-2262.	-605.	41.	5634.	387.	5620.	3.512
10	-3.16	-2021.	-2670.	-215.	2244.	4222.	445.	3941.	0.778
0.6345	-0.51	-120.	-1171.	-672.	2640.	2658.	406.	0.630	0.584
2.8	-0.22	-1149.	-674.	-131.	1878.	1852.	234.	0.984	0.684
0.2002	-0.22	-1441.	-207.	-92.	5317.	1057.	250.	0.643	0.764
107.0	1.02	52.	142.	-13.	16.	23.	281.		
23	12.01	-41123.	-4022.	-400.	24429.	4795.	408.	6135.	3.928
17	-4.51	-7.	400.	-207.	7328.	6845.	523.	4809.	0.607
0.6314	-0.01	2047.	1262.	-116.	4700.	4495.	561.	0.622	0.613
2.8	-0.1	350.	222.	-117.	2454.	2750.	308.	0.845	0.574
0.2002	-0.22	-225.	-166.	-15.	4526.	902.	323.	0.552	0.705
107.0	1.02	122.	222.	50.	26.	37.	332.		

[illegible]

RTN PT A	4AT V/UK VKTS	URCB MN URNI MN #1Q MN	URCB MN URNI MN #2Q MN	URCB OS URNI OS #1Q OS	URCB OS URNI OS #2Q OS	GB VTAC GB LTAC	GB LNAC LAS LTAC	LVF VTAC HST VTAC	#1J VTAC #2J VTAC
28 6 3.3	0.6561 0.2496 83.3	4795. 2773. 126.	4165. -6798. 164.	2745. 5731. 29.	2212. 7534. 38.	0.360 0.635	0.608 0.209	2.362 0.342	0.358 0.361
28 7 3.6	0.6534 0.2514 83.6	4716. 4451. 182.	4250. -2677. 235.	3487. 8136. 35.	3076. 9156. 34.	0.448 0.686	0.785 0.197	2.110 0.348	0.376 0.423
28 8 4.0	0.6538 0.2505 83.8	3937. 7517. 432.	4808. 3462. 453.	6793. 11101. 50.	4927. 10641. 66.	1.128 0.914	1.470 0.448	3.930 0.824	0.810 0.786
29 5 6.0	0.6560 0.2497 83.6	4659. 6090. 219.	4108. -7602. 249.	5280. 6329. 71.	2012. 4949. 84.	0.645 0.686	0.689 0.311	0.781 0.564	0.492 0.418
29 6 92.6	0.6557 0.2496 83.4	4662. 6128. 209.	4477. -6063. 240.	6400. 6058. 51.	1946. 5322. 52.	0.677 0.724	0.613 0.390	1.435 0.464	0.336 0.358
29 7 11.2	0.6575 0.2469 83.7	4751. 7003. 205.	4766. -5131. 226.	7089. 6945. 28.	1988. 5202. 30.	0.630 0.498	0.622 0.381	1.599 0.692	0.470 0.389
29 8 6.6	0.6549 0.2504 83.2	4698. 7070. 211.	4509. 58. 206.	4579. 10490. 22.	3906. 9934. 24.	0.415 0.604	0.799 0.210	1.751 0.513	0.301 0.440
29 9 1.2	0.6560 0.2490 83.1	4509. 6821. 217.	4368. -3490. 233.	4642. 5121. 29.	3512. 5877. 22.	0.394 0.868	1.018 0.247	1.811 0.573	0.318 0.483
29 10 3.1	0.6569 0.2480 87.9	5045. 7511. 201.	4707. -2358. 215.	5052. 10024. 73.	3541. 9837. 75.	0.645 0.679	1.022 0.317	1.726 0.601	0.325 0.510
29 11 6.2	0.6530 0.2507 83.4	5014. 7992. 250.	5012. 5213. 250.	5033. 12473. 53.	5514. 11678. 55.	0.600 0.744	1.205 0.171	3.267 0.847	0.317 0.559

SECTION C

Detailed Loads Data

```

RUN 21          PCINT 6
VKTS = 89.3      CMERG#R = 605.6      ALFS.C = J.3      CLR/S,R = 0.02560      CMY/S,R = 0.0210
V/C# = 0.249     RHJ100 = 0.2200      CP/S = 0.002247      CDR/S,R = 0.00131      CMX/S,R = 0.0006

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UPPER ROTOR BLADE NORMAL BENDING MOMENT

HARMONIC	.1R		.2R		.3K		.6R	
	CUS	SIN	CUS	SIN	CUS	SIN	CUS	SIN
0	-6155.6		0.0		-2955.2		-617.3	
1	459.9	-703.3	0.0	0.0	466.0	-665.2	1223.2	-1832.5
2	321.5	-674.3	0.0	0.0	158.7	-247.5	101.8	-235.0
3	203.9	34.6	0.0	0.0	50.5	27.6	-184.4	189.5
4	367.1	-171.7	0.0	0.0	123.7	-22.6	-350.5	245.8
5	23.0	-18.6	0.0	0.0	17.0	-37.6	-39.1	32.4
6	3.4	-80.7	0.0	0.0	-0.7	-37.3	24.5	54.0
7	19.5	-87.9	0.0	0.0	-22.2	-25.5	-40.4	15.1
8	-32.1	48.2	0.0	0.0	7.7	1.0	30.5	-23.2
9	-118.2	138.4	0.0	0.0	-2.8	1.2	71.8	-93.8
10	-21.9	-53.1	0.0	0.0	-9.1	12.5	26.6	22.1

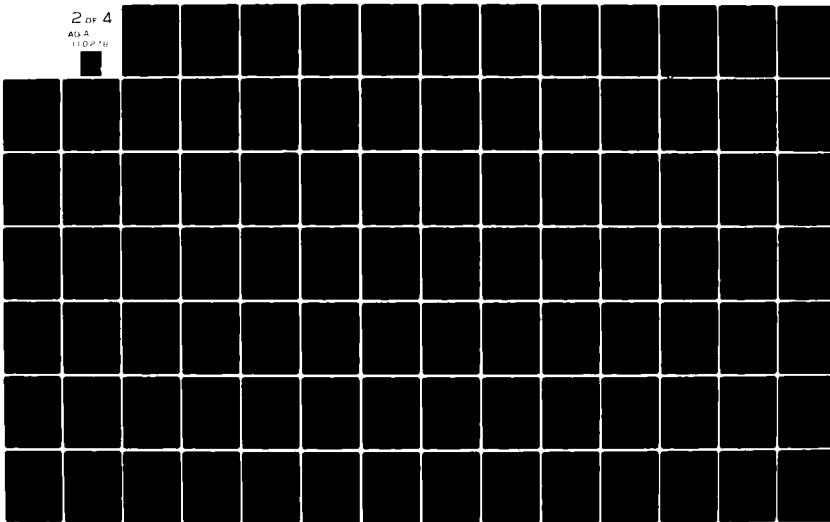
UPPER ROTUR EDGEWISE
BENDING MOMENT .1R

HARMONIC	UPPER KUTJR EDGEWISE BENDING MOMENT .LR		UPPER KUTJR PITCH LINK LOAD		UPPER ROTJR SHAFT STRESS	
	COS	SIN	COS	SIN	COS	SIN
0	0.0		-136.9		2123.2	
1	0.0	0.0	-50.8	189.7	-1186.0	-183.9
2	0.0	0.0	-23.6	25.2	-352.2	-112.4
3	0.0	0.0	-53.2	10.4	-8.0	-44.8
4	0.0	0.0	3.3	-30.4	-196.7	97.3
5	0.0	0.0	-25.8	-22.7	-197.2	40.7
6	0.0	0.0	-5.1	17.7	21.6	18.6
7	0.0	0.0	5.0	15.2	45.0	72.4
8	0.0	0.0	-5.4	18.2	51.0	-57.3
9	0.0	0.0	-3.5	-0.1	19.7	37.0
10	0.0	0.0	8.1	3.1	-15.9	29.5

AD-A110 278 NATIONAL AERONAUTICS AND SPACE ADMINISTRATION MOFFET--ETC F/6 20/4
PERFORMANCE AND LOADS DATA FROM A WIND TUNNEL TEST OF A FULL-SC--ETC(U)
OCT 81 F F FELKER
UNCLASSIFIED NASA-A-8732 NASA-TM-81329 .NL

2 of 4

AD-A
110 278





2.5



WILSON JONES & SONS, LTD. 1950

RUN 21 POINT 6 UMEG#R = 605.6 ALFS,C = 0.3 CLR/S,R = 0.02560 CMY/S,R = 0.0210
 VKTS = 89.3 RH0100 = 0.2200 CP/S = 0.002247 CDR/S,R = 0.00131 CMX/S,R = 0.0006
 V/OP = 0.249

HARMONIC	LOWER ROTOR BLADE NORMAL BENDING MOMENT							
	.1R		.2R		.3R		.6R	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	-11268.2		-7645.3		-4983.3		-943.8	
1	-489.2	527.4	-230.4	524.4	-79.4	510.1	91.2	260.3
2	213.9	813.7	229.8	518.6	119.5	333.2	38.5	57.8
3	159.4	-61.4	97.2	-70.7	62.7	-34.4	28.7	-10.5
4	290.4	-136.9	140.4	-160.3	82.0	-84.2	-47.7	15.1
5	-271.3	-43.7	-166.5	43.0	-91.2	3.6	29.5	0.5
6	-140.3	313.2	12.3	199.8	-16.2	95.6	7.1	-32.0
7	193.2	142.9	104.4	69.7	26.6	56.6	-12.3	-0.2
8	1.7	16.3	9.2	-4.5	5.7	-10.6	-3.6	-4.7
9	-63.1	53.3	10.9	29.6	19.1	-2.6	4.0	-7.2
10	5.0	19.4	6.1	12.9	-1.9	4.7	0.2	-0.6

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HARMONIC	LOWER ROTOR EDGEWISE BENDING MOMENT .1R		LOWER ROTOR PITCH LINK LOAD	
	COS	SIN	COS	SIN
0	-4512.5		-164.0	
1	7.6	-510.2	-45.9	117.1
2	-30.2	-216.8	24.9	11.1
3	-17.8	-9.3	1.3	31.9
4	-38.3	45.1	3.1	-3.3
5	12.4	-15.0	-20.1	24.0
6	-22.0	-2.0	12.4	18.3
7	4.3	685.5	10.5	-4.4
8	-21.1	0.4	-0.9	-2.3
9	4.2	-10.0	-1.2	-0.0
10	-1.3	-0.5	5.7	2.1

FUN 21 PLINT 6
 VKIS = 89.3 UMEC*K = 605.6 ALFS,C = 0.3 CLR/S,R = 0.02560 CMY/S,K = 0.0210
 V/OR = 0.249 RHJLOU = 0.2200 CP/S = J.002247 CDR/S,R = 0.00131 CMX/S,R = 0.0006

PSI	UPPER ROTOR BLADE NORMAL .1K	UPPER ROTOR BLADE NORMAL .2K	UPPER ROTOR BLADE NORMAL .3K	UPPER ROTOR BLADE NORMAL .6K	UR EDGWISE BENDING .1K	UR PITCH LINK LOAD	UPPER ROTOR SHAFT SIKLSS
0.00	-4950.	0.	-2166.	247.	0.	-288.	305.
11.25	-5485.	0.	-2515.	59.	0.	-202.	492.
22.50	-6321.	0.	-2884.	81.	0.	-141.	686.
33.75	-7229.	0.	-3184.	16.	0.	-69.	1063.
45.00	-7418.	0.	-3410.	-720.	0.	37.	1406.
56.25	-7284.	0.	-3626.	-1656.	0.	133.	1374.
67.50	-7516.	0.	-3748.	-2160.	0.	148.	1352.
78.75	-7397.	0.	-3716.	-2631.	0.	78.	1728.
90.00	-6658.	0.	-3676.	-3189.	0.	23.	2190.
101.25	-6493.	0.	-3702.	-3128.	0.	31.	2579.
112.50	-6945.	0.	-3687.	-2562.	0.	15.	3028.
123.75	-6807.	0.	-3614.	-2289.	0.	-37.	3208.
135.00	-6286.	0.	-3543.	-2276.	0.	-34.	2905.
146.25	-6200.	0.	-3455.	-2194.	0.	-6.	2665.
157.50	-6119.	0.	-3351.	-2214.	0.	-25.	2831.
168.75	-5857.	0.	-3259.	-2208.	0.	-43.	3015.
180.00	-6086.	0.	-3184.	-1815.	0.	-31.	2958.
191.25	-6603.	0.	-3186.	-1341.	0.	-66.	2880.
202.50	-6781.	0.	-3269.	-1101.	0.	-158.	2973.
213.75	-6885.	0.	-3268.	-771.	0.	-244.	3131.
225.00	-6986.	0.	-3128.	-286.	0.	-299.	3133.
236.25	-6549.	0.	-2970.	-51.	0.	-300.	2993.
247.50	-5861.	0.	-2791.	14.	0.	-251.	2930.
258.75	-5626.	0.	-2525.	374.	0.	-226.	2843.
270.00	-5589.	0.	-2269.	1008.	0.	-260.	2458.
281.25	-5296.	0.	-2127.	1552.	0.	-314.	2031.
292.50	-5134.	0.	-2102.	1973.	0.	-363.	1992.
303.75	-5418.	0.	-2172.	2355.	0.	-365.	2152.
315.00	-5531.	0.	-2204.	2337.	0.	-286.	2040.
326.25	-4949.	0.	-2052.	1635.	0.	-225.	1513.
337.50	-4311.	0.	-1870.	786.	0.	-277.	786.
348.75	-4412.	0.	-1911.	402.	0.	-334.	305.

PUN 21 POINT 6
 VKTS = 85.3 QMEG*R = 605.6 ALFS,C = 0.3 CLR/S,R = 0.02560 CMY/S,R = 0.0210
 V/OR = 0.249 RHU100 = 0.2200 CP/S = 0.002247 CDR/S,R = 0.00131 CMX/S,R = 0.0006

PSI	LOWER ROTOR BLADE NORMAL BENDING MUMENT			LR EDGEWISE BENDING .LR		LR PITCH LINK LOAD	
	.1K	.2K	.3K	.6R			
300.00	-13483.	-9130.	-6092.	-1167.	-4402.	-281.	
288.75	-13616.	-9392.	-6174.	-1188.	-4270.	-332.	
277.50	-12610.	-8953.	-5821.	-1250.	-3484.	-354.	
266.25	-10998.	-8018.	-5337.	-1327.	-3429.	-288.	
255.00	-10279.	-7348.	-5073.	-1323.	-4366.	-201.	
243.75	-10633.	-7374.	-5066.	-1198.	-4973.	-195.	
232.50	-11338.	-7654.	-5121.	-1049.	-4436.	-237.	
221.25	-10952.	-7617.	-5074.	-993.	-3714.	-252.	
210.00	-10309.	-7314.	-4915.	-1029.	-4013.	-228.	
198.75	-10088.	-7082.	-4770.	-1086.	-4925.	-172.	
187.50	-10232.	-7030.	-4727.	-1108.	-5097.	-98.	
176.25	-10541.	-7095.	-4737.	-1073.	-4353.	-54.	
165.00	-10906.	-7262.	-4782.	-999.	-3967.	-43.	
153.75	-11218.	-7530.	-4913.	-929.	-4624.	-34.	
142.50	-11475.	-7766.	-5028.	-875.	-5294.	-41.	
131.25	-11636.	-7800.	-4965.	-814.	-4897.	-67.	
120.00	-11486.	-7667.	-4809.	-761.	-4124.	-72.	
108.75	-11023.	-7497.	-4720.	-759.	-4355.	-67.	
97.50	-10650.	-7294.	-4624.	-784.	-5376.	-81.	
86.25	-10617.	-7082.	-4446.	-763.	-5687.	-94.	
75.00	-10662.	-6983.	-4334.	-702.	-4926.	-96.	
63.75	-10602.	-7005.	-4385.	-659.	-4431.	-108.	
52.50	-10714.	-7106.	-4486.	-636.	-5018.	-107.	
41.25	-10995.	-7269.	-4541.	-617.	-5671.	-87.	
30.00	-10910.	-7309.	-4547.	-647.	-5237.	-82.	
18.75	-10548.	-7126.	-4550.	-730.	-4292.	-97.	
7.50	-10789.	-7136.	-4671.	-792.	-4176.	-129.	
356.25	-11680.	-7637.	-4969.	-816.	-4850.	-204.	
345.00	-12230.	-8156.	-5263.	-876.	-4983.	-288.	
333.75	-12164.	-8238.	-5371.	-996.	-4032.	-312.	
322.50	-12218.	-8219.	-5439.	-1104.	-3301.	-284.	
311.25	-12781.	-8562.	-5716.	-1154.	-3648.	-264.	

RUN 21 PCINT 7
 VKTS = 89.4 UMEG*P = 602.8 ALFS+C = 5.8 CLK/S,R = 0.07196 CMY/S,R = 0.1112
 V/OP = 0.250 RHU100 = 0.2193 CP/S = 0.001602 CDR/S,R = 0.00903 CMX/S,R = -0.00953

UPPER ROTOR BLADE NORMAL BENDING MOMENT

HARMONIC	.1K		.2K		.3K		.6K	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	-3989.4		0.0		-1933.4		117.9	
1	722.0	1060.7	0.0	0.0	583.6	214.7	1270.8	-1092.7
2	445.1	-492.3	0.0	0.0	172.7	-194.2	-12.6	-312.9
3	65.4	115.5	0.0	0.0	-10.4	58.4	-256.2	142.5
4	328.7	-278.0	0.0	0.0	100.4	-79.2	-348.8	330.2
5	-312.4	239.2	0.0	0.0	-63.9	64.9	204.3	-214.1
6	61.7	-279.0	0.0	0.0	9.6	-98.7	35.9	192.5
7	8.2	158.2	0.0	0.0	50.6	17.2	-29.2	-17.2
8	-43.8	-54.1	0.0	0.0	-4.7	8.2	27.7	18.3
9	120.5	-15.6	0.0	0.0	1.5	0.8	-88.0	67.6
10	-60.9	-91.1	0.0	0.0	-11.2	20.6	11.9	69.3

100

HARMONIC	UPPER ROTOR EDGEWISE BENDING MOMENT .1R		UPPER ROTOR PITCH LINK LOAD		UPPER ROTOR SHAFT STRESS	
	COS	SIN	COS	SIN	COS	SIN
0	0.0		-195.3		2769.9	
1	0.0	0.0	-94.6	186.3	-2620.8	1313.7
2	0.0	0.0	-30.1	17.6	-579.3	-43.3
3	0.0	0.0	-43.9	-31.4	218.6	-63.6
4	0.0	0.0	4.7	-33.1	-27.3	89.0
5	0.0	0.0	65.3	-42.0	1.2	-245.9
6	0.0	0.0	-14.3	26.6	8.9	95.2
7	0.0	0.0	1.7	57.8	-162.9	-118.3
8	0.0	0.0	-8.4	-2.9	14.1	96.1
9	0.0	0.0	-12.9	5.6	23.4	-39.2
10	0.0	0.0	4.9	28.4	-78.5	117.2

HUN 21 POINT 7 UMEU*H = 602.8 ALFS,C = 5.8 CLK/S,R = 0.07196 CMY/S,R = 0.1112
 VKTS = 89.4 RHQ100 = 0.2193 CP/S = 0.001602 CDR/S,R = 0.00903 CMX/S,R = -0.0053
 V/CR = 0.250

LOWER ROTOR BLADE NORMAL BENDING MUMENT

HAPMONIC	.1R		.2R		.3R		.6R	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	-3460.9		-2004.3		-1152.1		-471.7	
1	-1969.3	-174.3	-1283.2	192.8	-778.1	334.3	10.1	285.0
2	152.9	260.2	79.7	115.3	-11.7	46.8	-70.3	-18.2
3	37.0	-124.5	11.4	-79.0	12.0	-43.9	19.5	-16.6
4	286.5	127.7	184.5	7.3	86.9	18.0	-58.5	-19.0
5	-87.7	7.0	-42.2	23.9	-30.2	16.4	13.7	-2.9
6	41.9	403.3	134.3	195.7	43.6	98.4	-9.4	-45.6
7	167.8	9.8	92.4	-99.5	28.8	-37.0	-27.3	-6.7
8	-85.8	-11.7	-21.6	4.0	8.1	-12.6	-0.9	-3.5
9	47.8	131.4	50.8	36.3	0.4	5.2	-6.4	-12.9
10	64.2	13.1	23.1	-13.8	9.1	7.7	-6.0	1.0

LOWER ROTOR EDGEWISE BENDING MUMENT .1R

HAPMONIC

	LOWER ROTOR PITCH LINK LOAD	
	COS	SIN
0	-4999.8	
1	1274.7	-603.4
2	-12.2	-114.2
3	-5.0	42.8
4	-16.7	7.1
5	29.9	-13.4
6	-37.2	-18.1
7	464.7	-443.9
8	-4.0	18.7
9	3.5	-4.8
10	-4.8	8.6

RUN 21 POINT 7
 VKTS = 89.4 OMEG*P = 602.8 A.L.F.S.C = 5.8 CLK/S,R = 0.07196 CMY/S,R = 0.1112
 V/CR = 0.250 RHJ100 = 0.2193 CP/S = 0.001602 CDR/S,R = 0.00903 CMX/S,R = -0.00053

PSI	UPPER ROTOR BLADE NORMAL BENDING MOMENT			UK EDGEWISE BENDING .IN	UR PITCH LINK LOAD	UPPER ROTOR SHAFT STRESS
	.1K	.2K	.3K			
0.00	-2655.	0.	-1105.	934.	0.	-323.
11.25	-2903.	0.	-1206.	1138.	0.	-240.
22.50	-2898.	0.	-1393.	833.	0.	-319.
33.75	-3033.	0.	-1474.	486.	0.	-348.
45.00	-3350.	0.	-1476.	450.	0.	-177.
56.25	-3518.	0.	-1638.	190.	0.	51.
67.50	-3580.	0.	-1874.	-435.	0.	189.
78.75	-3490.	0.	-1916.	-1073.	0.	146.
90.00	-3140.	0.	-1804.	-1603.	0.	-36.
101.25	-2841.	0.	-1755.	-1818.	0.	-113.
112.50	-2930.	0.	-1897.	-1420.	0.	-37.
123.75	-3542.	0.	-2193.	-693.	0.	-11.
135.00	-4294.	0.	-2330.	-382.	0.	-36.
146.25	-4035.	0.	-2092.	-913.	0.	-13.
157.50	-2765.	0.	-1814.	-1771.	0.	-37.
168.75	-2475.	0.	-1892.	-1926.	0.	-122.
180.00	-3862.	0.	-2228.	-1270.	0.	-154.
191.25	-5257.	0.	-2573.	-653.	0.	-152.
202.50	-5883.	0.	-2820.	-346.	0.	-128.
213.75	-6208.	0.	-2868.	-159.	0.	-87.
225.00	-5982.	0.	-2751.	-334.	0.	-201.
236.25	-5381.	0.	-2636.	-616.	0.	-430.
247.50	-5346.	0.	-2515.	-228.	0.	-445.
258.75	-5499.	0.	-2342.	561.	0.	-292.
270.00	-5161.	0.	-2214.	1126.	0.	-283.
281.25	-5030.	0.	-2107.	1825.	0.	-368.
292.50	-5184.	0.	-1922.	2614.	0.	-396.
303.75	-4674.	0.	-1739.	2685.	0.	-430.
315.00	-3821.	0.	-1597.	2244.	0.	-420.
326.25	-3384.	0.	-1395.	1936.	0.	-321.
337.50	-2980.	0.	-1195.	1474.	0.	-322.
348.75	-2561.	0.	-1109.	916.	0.	-394.

RUN 21 POINT 7 CMY/S,R = 0.1112
 VKTS = 89.4 CMX/S,R = -0.0053
 V/OR = 0.250

CLR/S,R = 0.07196
 CUR/S,R = 0.00903

5.8
 ALFS,C = 0.001602
 CP/S =

602.8
 OMEG*R = 0.2193
 RHO100 =

PSI	LOWER ROTOR BLADE NORMAL		BENDING MOMENT		LR EDGEWISE BENDING .LR	LR PITCH LINK LOAD	
	.1K	.2R	.3R	.6R			
300.00	-4602.	-2851.	-1807.	-667.	-3140.	-262.	
288.75	-4415.	-2818.	-1831.	-673.	-3929.	-239.	
277.50	-4167.	-2762.	-1742.	-701.	-4722.	-243.	
266.25	-3174.	-2288.	-1401.	-763.	-4624.	-300.	
255.00	-1994.	-1476.	-1052.	-796.	-4281.	-235.	
243.75	-2086.	-1186.	-970.	-697.	-4761.	-119.	
232.50	-2785.	-1559.	-1020.	-554.	-5813.	-137.	
221.25	-2307.	-1604.	-927.	-554.	-6225.	-128.	
210.00	-1040.	-942.	-656.	-663.	-5714.	16.	
198.75	-508.	-323.	-355.	-715.	-5449.	83.	
187.50	-839.	-260.	-209.	-677.	-6210.	62.	
176.25	-1375.	-544.	-300.	-595.	-7014.	95.	
165.00	-1886.	-860.	-463.	-479.	-6648.	87.	
153.75	-2300.	-1054.	-501.	-355.	-5715.	13.	
142.50	-2538.	-1125.	-455.	-260.	-5671.	28.	
131.25	-2670.	-1210.	-455.	-194.	-6467.	63.	
120.00	-2840.	-1373.	-517.	-153.	-6703.	8.	
108.75	-3116.	-1523.	-587.	-140.	-5884.	-7.	
97.50	-3356.	-1600.	-629.	-145.	-5124.	30.	
86.25	-3487.	-1689.	-693.	-154.	-5369.	-16.	
75.00	-3830.	-1951.	-895.	-162.	-5905.	-65.	
63.75	-4490.	-2373.	-1209.	-180.	-5485.	-30.	
52.50	-5072.	-2748.	-1461.	-211.	-4364.	-37.	
41.25	-5361.	-3007.	-1611.	-253.	-3924.	-126.	
30.00	-5279.	-3166.	-1712.	-339.	-4440.	-206.	
18.75	-4739.	-3052.	-1729.	-490.	-4676.	-235.	
7.50	-4447.	-2771.	-1718.	-617.	-3930.	-203.	
356.25	-5106.	-2874.	-1844.	-577.	-3115.	-176.	
345.00	-5790.	-3357.	-2059.	-486.	-3280.	-244.	
333.75	-5483.	-3540.	-2141.	-524.	-3997.	-303.	
322.50	-4909.	-3268.	-2037.	-635.	-4051.	-254.	
311.25	-4753.	-2984.	-1878.	-675.	-3363.	-230.	

RUN 21 POINT 8
 VKTS = 90.0
 V/OP = 0.251
 UMEGR = 604.9
 RHJ100 = 0.2185
 ALFS,C = 6.0
 CP/S = 0.002323
 CLK/S,R = 0.09316
 CDR/S,R = 0.01058
 CMY/S,R = 0.1366
 CMX/S,R = -0.0050

UPPER ROTOR BLADE NORMAL BENDING MOMENT

HARMONIC	.1R	.2F	.3K	.6K
	COS	SIN	COS	SIN
0	-1977.1	0.0	-907.6	841.7
1	-296.2	0.0	44.5	695.1
2	685.0	0.0	280.0	46.8
3	12.8	0.0	-33.2	-342.1
4	385.5	0.0	105.3	-411.6
5	-333.4	0.0	-66.7	227.1
6	69.1	0.0	13.7	53.7
7	5.7	0.0	49.1	-52.4
8	-101.0	0.0	0.9	66.0
9	80.8	0.0	13.7	-35.5
10	-17.8	0.0	-25.5	-0.1
				106.9

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UPPER ROTOR EDGEWISE BENDING MOMENT .1R

HARMONIC	COS	SIN
0	0.0	0.0
1	0.0	0.0
2	0.0	0.0
3	0.0	0.0
4	0.0	0.0
5	0.0	0.0
6	0.0	0.0
7	0.0	0.0
8	0.0	0.0
9	0.0	0.0
10	0.0	0.0

UPPER ROTOR PITCH LINK LOAD

COS	SIN
-195.9	213.3
-105.0	18.7
-32.7	-39.8
-56.3	-36.0
-8.3	-65.2
60.0	18.5
-1.6	79.1
-27.9	2.3
-14.9	10.4
-7.3	24.0
17.8	

UPPER ROTOR SHAFT STRESS

COS	SIN
3124.2	2282.0
-521.1	-23.2
-501.7	-35.2
162.8	191.0
64.4	-320.6
-16.3	86.3
13.1	-66.3
-144.5	12.9
74.0	-22.2
0.9	141.3
-104.2	

RUN 21 PUNT 8 CMY/S,R = 0.1366
 VKTS = 90.0 CLR/S,R = 0.09316
 V/OR = 0.251 RHD100 = 0.2185 CP/S = 0.002323 CDR/S,R = 0.01058
 CMX/S,R = -0.0050

LOWER ROTOR BLADE NORMAL BENDING MUMENT

HARMONIC	.1R		.2R		.3R		.6R	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	-955.9		-170.7		96.6		-294.6	
1	722.6	-1060.0	615.6	-587.3	534.9	-124.1	226.1	253.4
2	59.1	351.9	11.5	228.8	-67.4	162.1	-100.1	56.0
3	-30.2	-136.9	-36.1	-79.5	-8.3	-53.9	32.7	-25.1
4	246.5	185.0	180.9	64.9	78.7	64.0	-56.6	-25.2
5	-68.4	-7.9	-42.6	26.9	-30.0	29.1	9.7	0.1
6	110.2	483.8	191.5	223.5	62.6	125.1	-20.0	-53.5
7	246.4	17.9	112.0	-85.6	44.7	-29.0	-27.5	0.6
8	-137.7	-16.4	-46.1	15.2	3.5	-25.0	8.9	-4.4
9	-107.9	102.7	-3.8	61.0	1.2	-3.5	9.0	-9.2
10	54.1	25.6	31.4	-27.7	9.1	-12.4	-8.2	-0.2

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LOWER ROTOR EDGEWISE BENDING MUMENT .1R

LOWER ROTOR PITCH LINK LOAD

HARMONIC	BENDING MUMENT .1R		PITCH LINK LOAD	
	COS	SIN	COS	SIN
0	-5291.1		-82.0	
1	1772.5	-524.5	-130.5	110.1
2	-360.0	-417.0	30.6	16.7
3	25.3	42.6	-24.7	-9.2
4	3.5	41.8	2.0	7.9
5	36.7	-27.1	-3.1	-11.9
6	-78.8	-24.7	33.8	-4.0
7	447.7	-427.4	22.6	-20.6
8	29.4	62.7	2.8	10.0
9	-13.0	-44.4	34.5	11.4
10	-45.6	3.5	-15.8	-14.5

HARMONIC

RUN	21	POINT	8	UMEG#R =	604.9	ALFS,C =	6.0	CLR/S,R =	0.09316	CMY/S,R =	0.1366
VKTS =	90.0	RHUI00 =	0.2185	CP/S =	0.002323	CDR/S,R =	0.01058	CMX/S,R =	-0.0050		
V/D R =	0.251										
PSI		UPPER ROTOR	BLADE	NORMAL	BENDING	MOMENT	UP	EDGEWISE	UR	PITCH	UPPER ROTOR
		.IK	.2R	.3R	.6R	BENDING .IK	LINK	LOAD	SHAFT	STRESS	
0.00	-1487.	0.	-526.	1089.	0.	-372.	2152.				
11.25	-1395.	0.	-490.	1398.	0.	-284.	2760.				
22.50	-793.	0.	-459.	1222.	0.	-340.	3143.				
33.75	-616.	0.	-301.	1255.	0.	-343.	3668.				
45.00	-855.	0.	-121.	1539.	0.	-160.	4439.				
56.25	-652.	0.	-199.	1300.	0.	108.	4731.				
67.50	-397.	0.	-385.	755.	0.	281.	4988.				
78.75	-299.	0.	-309.	288.	0.	175.	5685.				
90.00	268.	0.	-92.	-359.	0.	-84.	5896.				
101.25	791.	0.	-60.	-710.	0.	-126.	5705.				
112.50	441.	0.	-227.	-67.	0.	28.	6101.				
123.75	-313.	0.	-451.	910.	0.	68.	6339.				
135.00	-743.	0.	-515.	1158.	0.	-5.	5522.				
146.25	-313.	0.	-246.	501.	0.	-42.	4577.				
157.50	923.	0.	42.	-464.	0.	-69.	3432.				
168.75	1238.	0.	-96.	-700.	0.	-89.	2887.				
180.00	-426.	0.	-541.	104.	0.	-99.	3188.				
191.25	-2355.	0.	-995.	888.	0.	-149.	3441.				
202.50	-3337.	0.	-1439.	994.	0.	-144.	2648.				
213.75	-4062.	0.	-1755.	838.	0.	-80.	1916.				
225.00	-4342.	0.	-1802.	459.	0.	-197.	1893.				
236.25	-3941.	0.	-1802.	-85.	0.	-441.	1566.				
247.50	-4157.	0.	-1927.	-24.	0.	-483.	1201.				
258.75	-4995.	0.	-2028.	622.	0.	-364.	1598.				
270.00	-5126.	0.	-2048.	1150.	0.	-322.	1815.				
281.25	-4979.	0.	-2031.	1748.	0.	-342.	1365.				
292.50	-5184.	0.	-1921.	2457.	0.	-412.	1073.				
303.75	-4820.	0.	-1760.	2533.	0.	-516.	881.				
315.00	-3915.	0.	-1610.	2121.	0.	-449.	682.				
326.25	-3280.	0.	-1343.	1809.	0.	-274.	1152.				
337.50	-2505.	0.	-953.	1331.	0.	-309.	1816.				
348.75	-1641.	0.	-657.	871.	0.	-436.	1916.				

RUN	21	PUINT	8	UMEG* 90.0 0.251	604.9 0.2185	ALFS,C = CP/S =	6.0 0.002323	CLR/S,R = CDR/S,R =	0.09316 0.01058	CMY/S,R = CMX/S,R =	0.1366 -0.0050
PSI											
300.00	419.	741.	513.	-461.	-2921.	-240.					
288.75	-212.	463.	255.	-450.	-3753.	-227.					
277.50	-669.	51.	131.	-437.	-4446.	-224.					
266.25	166.	198.	247.	-520.	-4573.	-282.					
255.00	928.	751.	373.	-595.	-4765.	-220.					
243.75	-21.	598.	211.	-504.	-5494.	-69.					
232.50	-1304.	-260.	-132.	-379.	-6579.	-88.					
221.25	-1125.	-611.	-276.	-429.	-7236.	-146.					
210.00	-296.	-238.	-175.	-596.	-6954.	6.					
198.75	-180.	25.	-102.	-723.	-6649.	147.					
187.50	-782.	-154.	-204.	-756.	-7364.	100.					
176.25	-1712.	-630.	-454.	-687.	-8176.	80.					
165.00	-2538.	-1221.	-729.	-559.	-7644.	118.					
153.75	-2796.	-1527.	-824.	-461.	-6400.	60.					
142.50	-2708.	-1427.	-693.	-379.	-6069.	14.					
131.25	-2693.	-1304.	-514.	-257.	-6663.	68.					
120.00	-2549.	-1236.	-366.	-146.	-6754.	66.					
108.75	-2210.	-998.	-187.	-79.	-5760.	14.					
97.50	-2011.	-725.	23.	-1.	-4876.	18.					
86.25	-1833.	-548.	222.	76.	-5227.	-2.					
75.00	-1411.	-322.	360.	99.	-5942.	-61.					
63.75	-1130.	-126.	365.	104.	-5566.	-33.					
52.50	-1556.	-163.	321.	138.	-4519.	25.					
41.25	-1548.	-249.	397.	145.	-4208.	-43.					
30.00	-918.	-48.	559.	48.	-4674.	-177.					
18.75	193.	455.	688.	-122.	-4814.	-219.					
7.50	531.	861.	758.	-228.	-4107.	-159.					
356.25	-129.	740.	671.	-201.	-3241.	-135.					
345.00	-618.	286.	397.	-153.	-3227.	-228.					
333.75	-402.	125.	244.	-201.	-3846.	-308.					
322.50	-11.	372.	410.	-309.	-3818.	-262.					
311.25	337.	661.	603.	-405.	-3052.	-217.					

RUN 21	PUNT 9	CMCGR = 604.5	ALFS,C = 6.2	CLR/S,K = 0.12079	CMY/S,K = 0.1746
VKTS = 89.8		RHOLCU = 0.2181	CP/S = 0.003962	CDR/S,K = 0.01305	CMX/S,K = -0.00064
VOR = 0.251					

CMY/S,K = 0.1746
CMX/S,K = -0.0064

CLR/S, R = 0.12079
CDR/S, R = 0.01305

$$\begin{aligned} \text{ALFS,C} &= 6.2 \\ \text{CP/S} &= 0.003962 \end{aligned}$$

CMCGR = 604.5
RHJCU = 0.2181

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VKTS =
V/OR =

HARMONIC	•1R		•2R		BLADE NORMAL BENDING MOMENT		•3R		•6R	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	651.9		0.0		420.1		1968.9			
1	742.0	4712.7	0.0	0.0	508.8	1973.9	1069.4	367.2		
2	517.2	-674.7	0.0	0.0	168.0	-318.6	-277.2	-703.5		
3	-78.9	179.2	0.0	0.0	-74.1	86.2	-339.6	114.2		
4	151.9	-560.6	0.0	0.0	33.7	-194.1	-175.4	590.8		
5	-381.1	380.6	0.0	0.0	-73.9	62.6	232.6	-363.7		
6	-2.0	-486.1	0.0	0.0	-17.5	-157.7	151.4	336.7		
7	21.4	163.1	0.0	0.0	52.8	-58.0	-73.4	-62.6		
8	-136.2	-117.5	0.0	0.0	-21.8	17.6	84.2	67.1		
9	107.6	-10.1	0.0	0.0	6.5	1.1	-24.6	63.5		
10	-68.2	-170.6	0.0	0.0	-15.0	20.5	59.4	137.3		

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HARMONIC	UPPER ROTOR EDGEWISE BENDING MOMENT .LR		UPPER RUTOR PITCH LINK LOAD		UPPER RUTOR SHAFT STRESS	
	CUS	SIN	CUS	SIN	CUS	SIN
0	0.0		-199.0		3612.8	
1	0.0	0.0	-115.3	252.4	-1426.4	3344.0
2	0.0	0.0	-14.0	52.3	-540.6	75.4
3	0.0	0.0	-62.3	-46.4	205.4	-46.2
4	0.0	0.0	-59.2	-8.2	249.2	132.5
5	0.0	0.0	67.0	-143.2	-130.0	-475.4
6	0.0	0.0	99.5	5.7	63.9	110.8
7	0.0	0.0	-27.7	134.0	-355.4	-35.9
8	0.0	0.0	-5.3	31.1	6.8	275.9
9	0.0	0.0	22.8	8.2	-18.3	-47.4
10	0.0	0.0	2.0	5.4	-98.0	239.6

HARMONIC

PUN 21 POINT 9
 VKTS = 89.8
 V/CR = 0.251
 OMEG*K = 604.5
 RHU100 = 0.2181
 ALFS,C = 6.2
 CLR/S,R = 0.12079
 CDR/S,K = 0.01305
 CMY/S,R = 0.1746
 CMX/S,K = -0.0064

LOWER ROTOR BLADE NORMAL BENDING MOMENT

HARMONIC	.1R		.2R		.3R		.6R	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	2559.8		2384.8		1842.9		-56.1	
1	-674.6	-2600.1	-499.3	-1545.3	-246.5	-773.5	75.0	193.9
2	-459.2	124.2	-387.6	131.4	-357.8	73.0	-226.3	29.5
3	-144.2	-214.4	-127.6	-97.6	-59.7	-63.2	32.5	-15.5
4	-77.6	536.8	55.3	353.3	-15.6	198.8	-17.0	-86.6
5	35.1	272.0	69.4	151.5	1.3	99.5	-5.6	-25.8
6	32.3	693.6	211.4	352.3	55.6	187.3	-15.3	-75.9
7	207.3	28.1	125.7	-57.5	63.0	-14.0	-24.4	-6.9
8	-199.6	-216.2	-121.2	-25.7	8.0	-18.0	19.7	14.0
9	-51.1	-143.7	-47.3	-33.6	15.9	-8.5	9.2	18.3
10	29.6	-132.1	-11.5	-57.1	34.6	-5.9	-6.4	12.7

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HARMONIC	LOWER ROTOR EDGEWISE BENDING MOMENT .1R		LOWER ROTOR PITCH LINK LOAD	
	COS	SIN	COS	SIN
0	-5496.9		-10.5	
1	2864.1	616.2	-188.6	123.5
2	206.7	-372.3	-18.8	21.5
3	63.7	94.9	-10.2	-58.2
4	12.7	44.6	24.9	3.0
5	-20.1	16.6	42.5	14.2
6	-117.4	-71.7	47.6	19.4
7	803.0	67.4	4.4	-9.6
8	-2.7	55.0	-3.2	7.5
9	30.9	27.6	-6.6	10.1
10	5.2	-1.9	10.4	-10.8

RUN 21
 VKTS =
 V/CR =

POINT 9
 89.8
 0.251

CMGCR = 604.5
 RHU100 = 0.2181

ALFS,C = 6.2
 CP/S = 0.003962

CLR/S,K = 0.12079
 CDR/S,K = 0.01305

CMY/S,K = 0.1746
 CMX/S,R = -0.0064

PSI	UPPER ROTOR BLADE	NORMAL	BENDING	MUMENT	UR EDGEWISE	UR PITCH	UPPER ROTOR
	.1R	.2R	.3R	.6R	BENDING .1K	LINK LOAD	SHAFT STRESS
0.00	1476.	0.	988.	2676.	0.	-291.	1509.
11.25	1739.	0.	1065.	2997.	0.	-255.	2857.
22.50	2942.	0.	1324.	2495.	0.	-428.	3301.
33.75	3762.	0.	1791.	2420.	0.	-418.	3711.
45.00	3964.	0.	2185.	2775.	0.	-23.	4908.
56.25	4288.	0.	2187.	2719.	0.	408.	5803.
67.50	4459.	0.	2027.	2576.	0.	432.	6381.
78.75	4481.	0.	2104.	2451.	0.	36.	7110.
90.00	4912.	0.	2306.	1960.	0.	-321.	7347.
101.25	5242.	0.	2295.	1806.	0.	-209.	7484.
112.50	4787.	0.	1997.	2520.	0.	187.	8147.
123.75	3758.	0.	1602.	3219.	0.	309.	8166.
135.00	2799.	0.	1453.	3056.	0.	49.	7152.
146.25	2983.	0.	1616.	1873.	0.	-190.	6027.
157.50	4139.	0.	1584.	308.	0.	-183.	4800.
168.75	3657.	0.	990.	-82.	0.	-91.	4145.
180.00	653.	0.	147.	947.	0.	-61.	5019.
191.25	-2100.	0.	-605.	1558.	0.	-67.	5290.
202.50	-3197.	0.	-1247.	1053.	0.	-64.	3385.
213.75	-3829.	0.	-1659.	422.	0.	-73.	1956.
225.00	-4054.	0.	-1736.	-124.	0.	-163.	2241.
236.25	-3730.	0.	-1702.	-515.	0.	-369.	2019.
247.50	-4052.	0.	-1741.	-11.	0.	-566.	1207.
258.75	-4742.	0.	-1783.	1048.	0.	-557.	1309.
270.00	-4570.	0.	-1713.	1929.	0.	-381.	1540.
281.25	-4155.	0.	-1458.	2957.	0.	-332.	1003.
292.50	-3902.	0.	-1083.	3834.	0.	-502.	122.
303.75	-2884.	0.	-769.	3713.	0.	-595.	-816.
315.00	-1453.	0.	-443.	3207.	0.	-443.	-820.
326.25	-390.	0.	103.	2893.	0.	-330.	626.
337.50	730.	0.	674.	2303.	0.	-425.	1507.
348.75	1554.	0.	943.	2023.	0.	-453.	1113.

RUN 21 POINT 9
 VKTS = 89.8 UMEG#R = 604.5 ALFS,C = 6.2 CLR/S,R = 0.12079 CMY/S,R = 0.1746
 V/OR = 0.251 RHU100 = 0.2181 CP/S = 0.003962 CDR/S,R = 0.01305 CMX/S,R = -0.00664

PSI	LOWER ROTOR BLADE NORMAL		BENDING MOMENT		LR EDGEWISE		LR PITCH	
	.1R	.2K	.3R	.6R	BENDING .1R	LINK LOAD		
300.00	5818.	4536.	2904.	-261.	-4282.	-142.		
288.75	4769.	4131.	2768.	-93.	-5610.	-130.		
277.50	4505.	3708.	2649.	-3.	-6119.	-211.		
266.25	5280.	3916.	2779.	-32.	-5986.	-232.		
255.00	5912.	4407.	2980.	-74.	-6432.	-101.		
243.75	5370.	4348.	2863.	-38.	-7805.	17.		
232.50	4381.	3706.	2565.	-15.	-8994.	39.		
221.25	4542.	3444.	2486.	-151.	-8662.	82.		
210.00	5368.	3832.	2540.	-376.	-7801.	149.		
198.75	5008.	3930.	2432.	-494.	-8036.	178.		
187.50	3490.	3250.	2103.	-461.	-8978.	203.		
176.25	2124.	2308.	1630.	-345.	-8819.	198.		
165.00	1356.	1626.	1253.	-220.	-7361.	122.		
153.75	1114.	1380.	1214.	-143.	-6409.	95.		
142.50	1163.	1449.	1353.	-73.	-6900.	158.		
131.25	1072.	1487.	1419.	43.	-7456.	172.		
120.00	934.	1452.	1463.	145.	-6585.	139.		
108.75	822.	1462.	1504.	227.	-5015.	163.		
97.50	479.	1345.	1489.	348.	-4564.	192.		
86.25	488.	1224.	1513.	404.	-5324.	185.		
75.00	1000.	1402.	1491.	322.	-5525.	190.		
63.75	498.	1345.	1233.	291.	-4283.	140.		
52.50	-821.	697.	995.	341.	-2965.	-30.		
41.25	-477.	460.	1061.	211.	-2975.	-201.		
30.00	1283.	1165.	1232.	-86.	-3496.	-248.		
18.75	1893.	1807.	1356.	-257.	-2959.	-189.		
7.50	1422.	1804.	1428.	-253.	-1800.	-114.		
356.25	1232.	1571.	1247.	-187.	-1743.	-126.		
345.00	1104.	1323.	975.	-74.	-2863.	-233.		
333.75	1521.	1412.	1246.	-23.	-3558.	-306.		
322.50	3563.	2458.	2068.	-158.	-3284.	-281.		
311.25	5099.	3932.	2737.	-311.	-3248.	-213.		

RUN 21 PCINT 10 CMY/S,R = 0.1901
 VKTS = 89.9 CMEG*R = 607.3 ALFS,C = 6.4 CLR/S,R = 0.13876
 V/CR = 0.250 RHCICC = 0.2169 CP/S = 0.007045 CDR/S,R = 0.01286
 CMX/S,R = -0.0043

HARMONIC	UPPER ROTOR BLADE NORMAL		BENDING MOMENT		•6K	
	•1R	•2R	•3R	•6K	CUS	SIN
0	CUS	CCS	CUS	CUS	3231.2	352.9
1	3849.1	0.0	2097.1	2189.4	96.3	-550.5
2	-1206.4	0.0	-407.4	-306.3	-1353.2	407.2
3	-326.5	0.0	-243.4	118.7	-282.3	741.5
4	-136.3	0.0	-100.0	-229.5	176.6	-229.8
5	-237.0	0.0	-57.3	16.1	182.6	375.2
6	-238.7	0.0	-62.5	-201.1	147.1	-67.3
7	32.5	0.0	-8.3	-43.3	-79.9	-31.2
8	55.4	0.0	40.8	-11.9	152.4	27.0
9	-234.2	0.0	29.3	10.4	116.9	103.1
10	-79.3	0.0	-1.1	12.9	44.0	
	-29.9	0.0	-22.8			

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HARMONIC	UPPER ROTOR EDGEWISE BENDING MOMENT •1R		UPPER ROTOR PITCH LINK LOAD		UPPER ROTOR SHAFT STRESS	
	CUS	SIN	CUS	SIN	CUS	SIN
0	0.0		-168.8		4320.4	4170.0
1	0.0	0.0	-141.4	357.1	-251.8	-22.7
2	0.0	0.0	48.7	-48.0	-646.0	-383.1
3	0.0	0.0	-62.2	64.4	408.0	281.3
4	0.0	0.0	-62.8	15.6	251.9	-390.1
5	0.0	0.0	-75.8	-98.5	-140.9	-42.0
6	0.0	0.0	24.5	18.7	51.0	-22.0
7	0.0	0.0	55.5	122.3	-301.1	-9.5
8	0.0	0.0	-23.3	0.4	132.1	61.0
9	0.0	0.0	1.7	-28.5	67.8	189.3
10	0.0	0.0	10.6	45.8	-105.9	

RUN 21 POINT 10 CMY/S,R = 0.1901
 VKTS = 89.9 UMEG*R = 607.3 ALFS,C = 6.4 CLR/S,R = 0.13876
 V/CR = 0.250 RHJ100 = 0.2169 CP/S = 0.007045 CDR/S,R = 0.01286
 CMX/S,R = -0.0043

LOWER ROTOR BLADE NORMAL BENDING MUMENT

HARMONIC	.1R		.2R		.3R		.6K	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	3936.8	-2271.7	3437.5	-1459.4	2524.6	-659.2	28.4	228.4
1	2238.4	722.8	1632.4	678.7	1194.8	464.6	315.1	154.3
2	-1398.4	-120.6	-966.2	-32.1	-787.3	-31.8	-328.2	-21.4
3	-287.7	715.4	-209.7	526.4	-111.0	262.5	60.6	-133.3
4	-493.4	217.1	-127.1	177.2	-97.6	98.1	51.1	-25.1
5	-176.1	683.4	-56.8	385.2	-51.9	196.0	25.8	-81.7
6	-80.5	-174.9	172.8	-118.6	52.8	-33.0	0.4	13.9
7	161.2	-311.8	43.1	-106.8	55.1	-24.7	-15.9	33.4
8	-50.0	-224.7	-94.7	-227.3	28.2	16.7	1.5	36.5
9	558.7	-189.8	107.2	-64.4	18.3	6.2	-49.3	13.4
10	45.1		-31.2		24.0		-2.0	

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LOWER ROTOR EDGEWISE BENDING MOMENT .1R

HARMONIC	LOWER ROTOR PITCH LINK LOAD	
	COS	SIN
0	-5400.5	5.4
1	3819.2	-214.4
2	238.7	-61.7
3	237.5	-7.1
4	11.1	36.1
5	-92.0	33.6
6	-156.5	13.9
7	378.2	-28.3
8	-60.3	4.4
9	92.5	-0.1
10	35.2	-41.1

PUN 21	PLINT 10	UMEG#K = 607.3	ALFS,C = 6.4	CLR/S,K = 0.13070	CMY/S,K = 0.1901
VPTS =	89.9	CP/S = 0.007045	CDR/S,K = 0.01286	CMX/S,R = -0.0043	
VV/CR =	0.250	RHU100 = 0.2169			
		UPPER ROTOR BLADE NORMAL BENDING MOMENT	UP EDGWISE BENDING .1K	UR PITCH LINK LOAD	UPPER ROTOR SHAFT STRESS
		.1K .2K .3K .6K			
PSI					
0.00	1399.	0.	2432.	-393.	3785.
11.25	2118.	0.	2913.	-217.	4535.
22.50	3897.	0.	2631.	-189.	4915.
33.75	5335.	0.	2986.	-74.	5768.
45.00	6600.	0.	3377.	149.	6890.
56.25	8480.	0.	3228.	261.	7171.
67.50	9852.	0.	3813.	170.	7703.
78.75	8330.	0.	4767.	-119.	9126.
90.00	8945.	0.	4530.	-295.	9651.
101.25	10045.	0.	4139.	39.	9313.
112.50	9829.	0.	4870.	485.	9653.
123.75	8811.	0.	5363.	395.	9491.
135.00	8254.	0.	4573.	115.	7536.
146.25	8445.	0.	4087.	165.	5397.
157.50	8819.	0.	3940.	243.	4325.
168.75	7759.	0.	3345.	122.	4017.
180.00	4709.	0.	2364.	51.	4221.
191.25	1910.	0.	2936.	-4.	4022.
202.50	951.	0.	2347.	-158.	2829.
213.75	759.	0.	1683.	-280.	1995.
225.00	589.	0.	1512.	-449.	1929.
236.25	549.	0.	1671.	-681.	1326.
247.50	-10.	0.	2568.	-617.	588.
258.75	-1062.	0.	3954.	-348.	820.
270.00	-1541.	0.	4914.	-382.	1159.
281.25	-1475.	0.	5408.	-626.	882.
292.50	-1407.	0.	5433.	-657.	481.
303.75	-1043.	0.	4615.	-496.	149.
315.00	-235.	0.	3366.	-331.	448.
326.25	797.	0.	2131.	-286.	1841.
337.50	1736.	0.	1097.	-439.	3012.
348.75	1828.	0.	1223.	-553.	3272.

RUN 21 POINT 10
 VKTS = 89.9 OMEG*R = 607.3 ALFS,C = 6.4 CLR/S,K = 0.13876 CMY/S,R = 0.1901
 V/OR = 0.250 RHJ100 = 0.2169 CP/S = 0.007045 CDR/S,R = 0.01286 CMX/S,R = -0.0043

PSI	LOWER RUTOR BLADE NORMAL BENDING MUMENT			LR EDGEWISE BENDING .LR		LR PITCH LINK LOAD	
	.1R	.2R	.3R	.6R			
300.00	8051.	6557.	4222.	-179.	-4023.	-92.	
288.75	7179.	5828.	3959.	46.	-4987.	-243.	
277.50	7113.	5499.	3676.	127.	-6475.	-252.	
266.25	6641.	5340.	3673.	181.	-7720.	-111.	
255.00	6653.	5221.	3702.	173.	-8530.	-106.	
243.75	6588.	5097.	3333.	79.	-9777.	-30.	
232.50	4835.	4288.	2737.	9.	-11038.	156.	
221.25	3493.	3208.	2327.	-140.	-11141.	138.	
210.00	4177.	3030.	2051.	-487.	-10550.	92.	
198.75	3833.	3070.	1654.	-751.	-10426.	241.	
187.50	1094.	1969.	1080.	-698.	-10399.	269.	
176.25	-976.	409.	425.	-541.	-9288.	131.	
165.00	-1102.	-276.	-32.	-479.	-7314.	119.	
153.75	-903.	-208.	11.	-409.	-5958.	140.	
142.50	-535.	114.	472.	-280.	-5696.	112.	
131.25	712.	817.	1014.	-173.	-5462.	203.	
120.00	1756.	1693.	1469.	-19.	-4607.	259.	
108.75	1650.	2104.	1884.	294.	-3736.	169.	
97.50	1850.	2269.	2356.	589.	-3596.	258.	
86.25	3465.	3000.	2830.	660.	-4322.	472.	
75.00	4478.	3899.	3078.	676.	-5090.	376.	
63.75	3546.	3871.	3123.	796.	-4606.	71.	
52.50	3442.	3539.	3263.	747.	-3246.	-73.	
41.25	5550.	4237.	3472.	388.	-2775.	-72.	
30.00	6408.	5108.	3490.	115.	-2937.	-80.	
18.75	4888.	4764.	3367.	124.	-2069.	-160.	
7.50	4232.	4065.	3144.	125.	-907.	-264.	
356.25	4421.	3851.	2669.	87.	-990.	-231.	
345.00	3433.	3387.	2275.	189.	-1360.	-185.	
333.75	3813.	3202.	2571.	172.	-1148.	-383.	
322.50	7103.	4637.	3410.	-154.	-1602.	-503.	
311.25	9089.	6410.	4080.	-358.	-2962.	-250.	

RUN 21 PJINT 11 UALG*K = 610.2 ALFS,C = 8.3 CLK/S,R = 0.07363 CMY/S,R = 0.1446
 VKTS = 89.8 RHJICO = 0.2105 CP/S = 0.000894 CDR/S,R = 0.01289 CMX/S,R = -0.0031
 V/OR = 0.248

UPPER ROTOR BLADE NORMAL BENDING MOMENT

HARMONIC	.1R		.2R		.3K		.6K	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	-2670.5		0.0		-1152.7		613.1	
1	548.2	-326.5	0.0	0.0	576.9	-502.3	1342.7	-1882.5
2	345.4	-339.1	0.0	0.0	88.2	-114.8	-364.6	-219.5
3	118.7	136.0	0.0	0.0	6.4	51.6	-344.0	135.9
4	489.3	-141.9	0.0	0.0	135.6	-35.2	-502.0	193.1
5	-295.6	321.0	0.0	0.0	-60.7	72.6	174.6	-272.7
6	54.9	-214.3	0.0	0.0	4.8	-77.5	34.3	168.9
7	-3.5	112.2	0.0	0.0	31.4	-0.7	-45.0	-53.8
8	-32.9	-81.3	0.0	0.0	-8.9	7.1	17.9	34.0
9	277.5	28.6	0.0	0.0	8.0	2.0	-210.1	21.7
10	-62.5	-69.1	0.0	0.0	-3.9	8.7	-4.6	37.8

UPPER ROTOR EDGEWISE BENDING MOMENT .1R

HARMONIC

	COS	SIN
0	0.0	
1	0.0	0.0
2	0.0	0.0
3	0.0	0.0
4	0.0	0.0
5	0.0	0.0
6	0.0	0.0
7	0.0	0.0
8	0.0	0.0
9	0.0	0.0
10	0.0	0.0

UPPER ROTOR PITCH LINK LOAD

	COS	SIN
0	-397.5	
1	-82.4	207.7
2	-22.1	-0.4
3	-70.9	-15.7
4	5.7	-31.9
5	22.5	-62.7
6	-12.1	21.1
7	-10.2	34.4
8	-26.4	-16.2
9	-3.4	20.7
10	31.3	11.0

UPPER ROTOR SHAFT STRESS

	COS	SIN
0	3261.3	
1	-1794.8	438.8
2	-542.6	-162.5
3	130.2	24.1
4	-99.5	93.0
5	-67.9	-279.5
6	-22.7	47.6
7	-155.1	-141.9
8	21.8	88.5
9	31.5	-19.9
10	-57.2	54.2

RUN 21 PUNT 11
 VKTS = 89.8 OMEG#R = 610.2 ALFS,C = 8.3 CLR/S,R = 0.07363 CMY/S,R = 0.1446
 V/DR = 0.248 RHU100 = 0.2165 CP/S = 0.000894 CDR/S,R = 0.01289 CMX/S,R = -0.0031

LOWER ROTOR BLADE NORMAL BENDING MOMENT

HARMONIC	.1R		.2R		.3R		.6R	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	-4748.4		-2841.0		-1770.8		-575.1	
1	-705.3	672.6	-305.9	704.1	-112.1	700.0	116.1	330.2
2	216.0	422.7	147.8	238.7	34.5	142.5	-41.9	12.3
3	86.3	-107.6	49.5	-76.2	36.4	-43.7	22.9	-33.6
4	335.3	-30.3	192.0	-84.9	99.6	-21.1	-61.0	5.7
5	-235.4	-49.3	-145.1	27.6	-73.6	7.9	31.2	1.0
6	37.3	373.7	129.7	183.5	40.3	97.4	-9.4	-39.2
7	227.6	-26.7	104.6	-88.7	49.3	-19.7	-23.2	5.9
8	-29.1	-16.0	-3.6	11.2	8.7	2.2	2.4	1.7
9	172.3	26.7	54.1	-43.9	-4.7	3.0	-16.6	1.1
10	37.8	-26.8	1.3	-12.9	7.3	0.6	-2.5	1.8

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LOWER ROTOR EDGEWISE BENDING MOMENT .1P

HARMONIC

HARMONIC	LOWER ROTOR PITCH LINK LOAD	
	COS	SIN
0	-5335.3	
1	1007.0	-995.7
2	-93.3	-276.8
3	-8.4	-36.6
4	-16.4	48.9
5	17.4	-38.6
6	-21.0	-22.7
7	246.6	-441.5
8	30.7	3.4
9	-18.4	11.7
10	-0.3	1.5

PUN 21	PUNT 11	89.8	OMEG*H = 610.2	ALFS,C = 8.3	CLR/S,K = 0.07363	CMY/S,R = 0.1446
V/KTS =	U.248	RHJ100 = 0.2165	CP/S = 0.000894	CUR/S,R = 0.01289	CMX/S,R = -0.0031	

	UPPER ROTOR	BLADE	NORMAL	BENDING	MUMENT	UR	EDGEWISE	UR	PITCH	UPPER ROTOR
	.1R	.2R	.3R	.6R		BENDING	.1K	LINK	LOAD	SHAFT STRESS
PSI										
0.00	-1231.	0.	-375.	712.		0.		-566.		705.
11.25	-1699.	0.	-563.	824.		0.		-535.		871.
22.50	-2131.	0.	-815.	849.		0.		-512.		1303.
33.75	-2440.	0.	-1025.	595.		0.		-420.		1880.
45.00	-3101.	0.	-1220.	682.		0.		-303.		2437.
56.25	-3811.	0.	-1478.	725.		0.		-155.		2665.
67.50	-3765.	0.	-1683.	-48.		0.		-9.		2922.
78.75	-3110.	0.	-1691.	-1152.		0.		-68.		3548.
90.00	-2777.	0.	-1594.	-1752.		0.		-268.		4063.
101.25	-2832.	0.	-1583.	-1897.		0.		-502.		4384.
112.50	-2808.	0.	-1756.	-1717.		0.		-206.		4992.
123.75	-3233.	0.	-2026.	-1016.		0.		-188.		5584.
135.00	-4126.	0.	-2111.	-394.		0.		-215.		5550.
146.25	-3750.	0.	-1851.	-888.		0.		-236.		4999.
157.50	-1986.	0.	-1506.	-1968.		0.		-264.		4292.
168.75	-1388.	0.	-1396.	-2051.		0.		-259.		3951.
180.00	-2521.	0.	-1499.	-1124.		0.		-277.		4417.
191.25	-3368.	0.	-1632.	-396.		0.		-345.		4907.
202.50	-3614.	0.	-1703.	45.		0.		-338.		4469.
213.75	-3993.	0.	-1644.	632.		0.		-358.		3880.
225.00	-3672.	0.	-1432.	882.		0.		-577.		4016.
236.25	-2641.	0.	-1166.	793.		0.		-724.		4144.
247.50	-2411.	0.	-942.	1284.		0.		-598.		3786.
258.75	-2687.	0.	-771.	2185.		0.		-508.		3566.
270.00	-2327.	0.	-637.	2679.		0.		-562.		3549.
281.25	-2125.	0.	-521.	3185.		0.		-547.		3219.
292.50	-2565.	0.	-441.	3977.		0.		-555.		2566.
303.75	-2476.	0.	-427.	4072.		0.		-666.		1890.
315.00	-1871.	0.	-426.	3361.		0.		-623.		1527.
326.25	-1788.	0.	-371.	2832.		0.		-466.		1609.
337.50	-1821.	0.	-304.	2339.		0.		-487.		1585.
348.75	-1387.	0.	-297.	1369.		0.		-583.		1082.

RUN 21 POINT 11
 VKTS = 89.8 OMEG*R = 610.2 ALFS,C = 8.3 CLR/S,R = 0.07363 CMY/S,R = 0.1440
 V/OR = 0.248 RHOICO = 0.2165 CP/S = 0.000894 CUR/S,R = 0.01289 CMX/S,R = -0.0031

PSI	LOWER ROTOR BLADE NORMAL BENDING MOMENT			LR EDGEWISE BENDING		LR PITCH LINK LOAD	
	.1R	.2R	.3R	.6R	.1R		
300.00	-6610.	-3967.	-2631.	-773.	-3163.	-328.	
288.75	-6726.	-4292.	-2802.	-801.	-3680.	-345.	
277.50	-6137.	-4131.	-2730.	-880.	-4472.	-309.	
266.25	-5163.	-3570.	-2390.	-968.	-4636.	-337.	
255.00	-4227.	-2942.	-2089.	-1009.	-4448.	-301.	
243.75	-4289.	-2731.	-2092.	-928.	-4786.	-183.	
232.50	-5225.	-3127.	-2248.	-754.	-5626.	-188.	
221.25	-5289.	-3453.	-2234.	-674.	-6096.	-240.	
210.00	-4022.	-3004.	-1983.	-768.	-5869.	-142.	
198.75	-3087.	-2222.	-1664.	-879.	-5657.	-9.	
187.50	-3327.	-1976.	-1478.	-870.	-6139.	31.	
176.25	-3832.	-2237.	-1503.	-789.	-6899.	34.	
165.00	-4038.	-2447.	-1602.	-700.	-6984.	12.	
153.75	-4284.	-2499.	-1586.	-583.	-6351.	-21.	
142.50	-4561.	-2566.	-1478.	-446.	-6023.	-7.	
131.25	-4478.	-2568.	-1381.	-350.	-6500.	-8.	
120.00	-4175.	-2395.	-1266.	-304.	-6910.	-40.	
108.75	-4072.	-2203.	-1105.	-260.	-6443.	-13.	
97.50	-4051.	-2115.	-988.	-224.	-5759.	-4.	
86.25	-3898.	-2062.	-977.	-221.	-5905.	-85.	
75.00	-3991.	-2078.	-1038.	-213.	-6520.	-102.	
63.75	-4463.	-2264.	-1139.	-185.	-6405.	-39.	
52.50	-4737.	-2487.	-1269.	-197.	-5511.	-61.	
41.25	-4727.	-2606.	-1407.	-260.	-4981.	-136.	
30.00	-4848.	-2708.	-1500.	-325.	-5271.	-184.	
18.75	-4809.	-2741.	-1517.	-407.	-5488.	-245.	
7.50	-4491.	-2615.	-1560.	-516.	-4857.	-259.	
356.25	-4842.	-2700.	-1780.	-559.	-3915.	-213.	
345.00	-5849.	-3251.	-2106.	-530.	-3665.	-271.	
333.75	-6119.	-3706.	-2313.	-568.	-4070.	-365.	
322.50	-5686.	-3647.	-2366.	-692.	-4149.	-311.	
311.25	-5895.	-3601.	-2441.	-769.	-5551.	-257.	

RUN 21
VPTS =
V/CR =

POINT 12
90.0
0.249

UMEG*H = 610.3
RHU100 = 0.2165

ALFS.C = 8.3
CP/S = 0.000871

CLR/S,R = 0.07364
CDR/S,R = 0.01288

CMY/S,R = 0.1446
CMX/S,R = -0.0031

UPPER ROTOR BLADE NORMAL BENDING MOMENT

HARMONIC	.1R		.2R		.3R		.6R	
	COS	SIN	CUS	SIN	CUS	SIN	COS	SIN
0	-2655.2		0.0	0.0	-1210.6		613.2	
1	476.0	-278.1	0.0	0.0	504.5	-495.1	1144.7	-1918.6
2	427.5	-424.7	0.0	0.0	137.2	-135.7	-328.8	-195.9
3	130.5	101.3	0.0	0.0	14.6	56.5	-270.8	251.9
4	475.9	-316.5	0.0	0.0	136.6	-74.9	-471.8	357.2
5	-109.7	377.2	0.0	0.0	-20.3	83.8	39.0	-295.6
6	-68.2	-195.3	0.0	0.0	-38.6	-61.9	111.8	117.6
7	44.9	68.8	0.0	0.0	27.1	-20.1	-62.2	-9.9
8	-68.0	-27.0	0.0	0.0	3.9	6.1	33.5	4.4
9	210.2	-234.1	0.0	0.0	-4.7	-6.0	-127.1	197.0
10	-93.7	5.3	0.0	0.0	12.3	10.7	21.9	18.7

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UPPER ROTOR EDGEWISE BENDING MOMENT .1R

HARMONIC	UPPER ROTOR BENDING MOMENT .1R		UPPER ROTOR PITCH LINK LOAD		UPPER ROTOR SHAFT STRESS	
	CUS	SIN	CUS	SIN	CUS	SIN
0	0.0		-390.2		3276.3	
1	0.0	0.0	-63.9	218.4	-1743.0	664.9
2	0.0	0.0	-23.8	6.3	-547.0	-16.8
3	0.0	0.0	-71.1	3.8	144.4	-5.8
4	0.0	0.0	-9.0	-31.8	-80.0	139.0
5	0.0	0.0	-7.2	-66.1	-183.8	-211.8
6	0.0	0.0	-1.3	25.8	9.2	44.4
7	0.0	0.0	13.4	33.4	-231.1	-31.1
8	0.0	0.0	-25.1	8.4	59.8	68.2
9	0.0	0.0	9.1	14.0	-3.4	-26.0
10	0.0	0.0	24.1	-17.3	21.1	90.6

RUN 21 POINT 12 CMY/S,R = 0.1446
 VKTS = 90.0 UMEG#R = 610.3 CLR/S,R = 0.07364 CMX/S,R = -0.0031
 V/CR = 0.249 RHU100 = 0.2165 CP/S = 0.000871 CDR/S,K = 0.01288

HARMONIC	LOWER ROTOR BLADE NORMAL BENDING MUMENT			
	.1R		.3R	
	COS	SIN	COS	SIN
0	-4766.4		-1787.5	
1	-699.6	561.8	-144.2	663.6
2	144.2	481.0	14.9	156.9
3	103.0	-68.6	40.9	-21.5
4	343.2	82.6	102.4	5.7
5	-175.7	-250.4	-69.2	-45.0
6	-181.9	339.5	-12.6	106.8
7	181.2	98.8	51.1	11.2
8	-27.4	-40.9	11.5	-1.5
9	77.9	183.5	2.0	-1.1
10	13.5	-19.7	2.4	11.6

	.2R		.6R	
	COS	SIN	COS	SIN
0	-2858.9		-574.2	
1	-326.9	638.5	92.1	342.6
2	109.2	274.7	-41.3	6.3
3	60.9	-45.1	29.3	-29.0
4	217.6	-23.1	-67.1	-16.9
5	-160.3	-91.1	27.6	27.3
6	7.2	226.9	12.7	-39.9
7	127.9	-10.8	-17.7	-7.2
8	-11.0	-2.9	1.7	0.6
9	90.2	28.6	-8.5	-18.0
10	1.0	0.9	-1.7	-1.8

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HARMONIC	LOWER ROTOR EDGEWISE BENDING MUMENT .1R		LOWER ROTOR PITCH LINK LOAD	
	COS	SIN	COS	SIN
0	-5410.5		-152.8	
1	1087.4	-874.7	-122.7	119.4
2	-52.3	-279.6	24.3	12.1
3	14.8	-18.6	-23.4	-12.4
4	-32.0	38.5	4.1	-1.2
5	40.2	-17.8	-14.1	-14.6
6	-22.9	-32.6	22.0	16.7
7	469.1	-142.8	16.5	-4.1
8	17.2	28.8	-1.2	12.5
9	-7.2	-13.1	17.0	2.3
10	4.7	-11.7	19.2	-19.7

RUN 21	POINT 12	UMEG#R = 610.3	ALFS,C = 8.3	CLK/S,R = 0.07364	CMY/S,R = 0.1446
VKTS =	90.0	RHUI00 = 0.2165	CP/S = 0.000371	CMX/S,R = -0.0031	
V/CR =	0.249				

	UPPER ROTOR	BLADE NORMAL	BENDING MUMENT	UR EDGEWISE	UR PITCH	UPPER ROTOR
	.1K	.2K	.3R	BENDING .1K	LINK LOAD	SHAFT STRESS
PSI						
0.00	-1230.	0.	-438.	0.	-545.	723.
11.25	-1867.	0.	-671.	0.	-521.	1153.
22.50	-2182.	0.	-926.	0.	-466.	1686.
33.75	-2642.	0.	-1133.	0.	-360.	2297.
45.00	-3527.	0.	-1388.	0.	-227.	2695.
56.25	-3950.	0.	-1662.	0.	-55.	2827.
67.50	-3427.	0.	-1775.	0.	4.	3254.
78.75	-2835.	0.	-1714.	0.	-159.	3882.
90.00	-2818.	0.	-1637.	0.	-294.	4237.
101.25	-2843.	0.	-1694.	0.	-241.	4678.
112.50	-2901.	0.	-1935.	0.	-181.	5382.
123.75	-3660.	0.	-2145.	0.	-195.	5691.
135.00	-4083.	0.	-2015.	0.	-206.	5377.
146.25	-2749.	0.	-1641.	0.	-234.	4712.
157.50	-1256.	0.	-1399.	0.	-263.	4033.
168.75	-1654.	0.	-1383.	0.	-263.	4055.
180.00	-2734.	0.	-1480.	0.	-306.	4756.
191.25	-3138.	0.	-1635.	0.	-343.	4836.
202.50	-3677.	0.	-1717.	0.	-324.	4119.
213.75	-4094.	0.	-1612.	0.	-436.	3898.
225.00	-3320.	0.	-1425.	0.	-659.	4197.
236.25	-2559.	0.	-1245.	0.	-675.	4042.
247.50	-2832.	0.	-1030.	0.	-535.	3629.
258.75	-2787.	0.	-833.	0.	-522.	3481.
270.00	-2208.	0.	-725.	0.	-553.	3309.
281.25	-2430.	0.	-644.	0.	-538.	2878.
292.50	-2856.	0.	-581.	0.	-616.	2235.
303.75	-2358.	0.	-575.	0.	-669.	1566.
315.00	-1867.	0.	-546.	0.	-534.	1397.
326.25	-1921.	0.	-444.	0.	-448.	1631.
337.50	-1567.	0.	-355.	0.	-539.	1394.
348.75	-996.	0.	-339.	0.	-586.	795.

RUN 21 PLINT 12 CMY/S,R = 0.1446
 VKTS = 90.0 CMY/S,R = 0.07364
 V/OR = 0.249 RHU100 = 0.2165 CP/S = 0.000871 CMX/S,R = -0.0031

PSI	LOWER ROTOR BLADE NORMAL BENDING MOMENT			LR EDGEWISE BENDING .LR		LR PITCH LINK LOAD	
	.1K	.2K	.3K	.6R			
300.00	-6829.	-4218.	-2733.	-766.	-3505.	-360.	
288.75	-6453.	-4271.	-2812.	-848.	-4225.	-322.	
277.50	-5578.	-3835.	-2575.	-942.	-4649.	-314.	
266.25	-4560.	-3181.	-2184.	-1018.	-4553.	-337.	
255.00	-4039.	-2711.	-2033.	-1008.	-4610.	-236.	
243.75	-4738.	-2864.	-2183.	-850.	-5280.	-161.	
232.50	-5616.	-3425.	-2307.	-678.	-6023.	-225.	
221.25	-4911.	-3441.	-2178.	-689.	-6066.	-212.	
210.00	-3366.	-2645.	-1865.	-833.	-5748.	-70.	
198.75	-3009.	-1993.	-1573.	-904.	-5927.	17.	
187.50	-3662.	-2093.	-1489.	-853.	-6707.	37.	
176.25	-4030.	-2415.	-1592.	-760.	-7153.	38.	
165.00	-4244.	-2527.	-1660.	-644.	-6723.	-8.	
153.75	-4659.	-2629.	-1597.	-503.	-6115.	-30.	
142.50	-4679.	-2709.	-1493.	-398.	-6261.	-4.	
131.25	-4285.	-2534.	-1376.	-347.	-6866.	-16.	
120.00	-4195.	-2317.	-1238.	-293.	-6810.	-27.	
108.75	-4296.	-2267.	-1134.	-233.	-6067.	-4.	
97.50	-4095.	-2232.	-1075.	-218.	-5777.	-45.	
86.25	-3969.	-2106.	-1047.	-219.	-6322.	-102.	
75.00	-4282.	-2191.	-1098.	-188.	-6635.	-67.	
63.75	-4571.	-2417.	-1210.	-177.	-6022.	-43.	
52.50	-4612.	-2500.	-1314.	-224.	-5229.	-96.	
41.25	-4760.	-2574.	-1422.	-275.	-5155.	-142.	
30.00	-4879.	-2744.	-1517.	-335.	-5507.	-207.	
18.75	-4621.	-2721.	-1546.	-452.	-5310.	-273.	
7.50	-4573.	-2601.	-1627.	-545.	-4409.	-237.	
356.25	-5279.	-2902.	-1894.	-537.	-3775.	-222.	
345.00	-5905.	-3459.	-2192.	-539.	-4006.	-329.	
333.75	-5758.	-3629.	-2330.	-637.	-4343.	-348.	
322.50	-5710.	-3540.	-2384.	-725.	-3961.	-258.	
311.25	-6164.	-3784.	-2521.	-739.	-3369.	-287.	

RUN 21 POINT 13 CMY/S,R = 0.1735
 VKTS = 90.0 CMY/S,R = 0.08979 CMX/S,R = -0.0028
 V/CR = 0.249 ALFS,C = 8.5 CLR/S,R = 0.01528
 CP/S = 0.001022 CDK/S,R = 0.01528

UPPER ROTOR BLADE NORMAL BENDING MOMENT

HARMONIC	.1K		.2K		.3K		.6K	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	-952.5		0.0		-342.0		1340.3	
1	23.6	824.9	0.0	0.0	279.8	26.5	981.6	-1506.6
2	444.6	-264.5	0.0	0.0	121.5	-67.2	-402.2	-149.2
3	115.9	161.5	0.0	0.0	-9.2	64.0	-380.2	190.0
4	515.0	-310.0	0.0	0.0	145.4	-82.5	-505.1	376.5
5	-138.4	340.0	0.0	0.0	-20.3	72.0	64.5	-280.9
6	-19.1	-272.0	0.0	0.0	-18.6	-93.5	98.2	192.0
7	35.2	88.1	0.0	0.0	40.7	-10.1	-75.1	-27.1
8	-49.3	-102.2	0.0	0.0	-9.1	2.2	40.7	57.4
9	350.9	-21.9	0.0	0.0	0.8	-4.5	-219.0	79.3
10	-63.4	-60.5	0.0	0.0	-5.5	11.3	15.3	53.6

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UPPER ROTOR EDGEWISE BENDING MOMENT .1K

HARMONIC	UPPER ROTOR BENDING MOMENT .1K		UPPER ROTOR PITCH LINK LOAD		UPPER ROTOR SHAFT STRESS	
	COS	SIN	COS	SIN	COS	SIN
0	0.0		-303.8		3568.5	
1	0.0	0.0	-81.4	242.2	-1810.0	875.4
2	0.0	0.0	-27.3	0.2	-560.5	-109.1
3	0.0	0.0	-81.6	2.8	80.6	-32.7
4	0.0	0.0	-14.9	-38.2	-39.8	95.3
5	0.0	0.0	-4.3	-103.4	-196.1	-237.9
6	0.0	0.0	8.4	20.7	40.1	39.7
7	0.0	0.0	17.9	61.3	-249.2	-129.3
8	0.0	0.0	-39.9	-1.7	-0.8	99.1
9	0.0	0.0	1.6	25.8	-27.6	-61.1
10	0.0	0.0	27.5	-21.5	-54.9	116.6

PUN 21 PUNT 13
 VKTS = 90.0 UMEG#R = 610.3 ALFS,C = 8.5 CLR/S,R = 0.08979 CMY/S,R = 0.1735
 V/CR = 0.249 KHD100 = 0.2165 CP/S = 0.001022 CDR/S,R = 0.01528 CMX/S,R = -0.0028

HARMONIC	.1R		.2R		.3R		.6R	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	-3037.4		-1602.4		-936.2		-459.6	
1	-256.2	-423.9	-69.1	-84.2	47.9	187.4	125.6	275.4
2	208.5	441.2	177.8	246.4	62.0	155.7	-40.3	24.8
3	51.1	-130.0	11.5	-95.8	12.5	-53.5	15.4	-26.2
4	327.8	58.4	202.3	-35.5	95.2	8.6	-62.7	-5.1
5	-282.4	-213.1	-211.9	-38.7	-96.6	-24.0	39.8	22.4
6	-62.4	457.2	101.2	244.8	23.6	123.9	-3.1	-51.7
7	227.0	34.0	118.6	-55.1	46.2	1.3	-24.0	-1.6
8	-58.3	-34.6	-14.6	-4.9	13.2	-5.7	0.6	-2.0
9	99.4	19.9	24.4	-22.5	-5.2	7.9	-12.7	0.8
10	54.1	-13.3	11.6	-20.8	9.0	1.1	-6.0	4.0

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HARMONIC	LOWER ROTOR EDGEWISE BENDING MOMENT .1R		LOWER ROTOR PITCH LINK LOAD	
	COS	SIN	COS	SIN
0	-5397.3		-132.0	
1	1324.1	-822.9	-120.2	121.8
2	-251.7	-239.5	31.1	12.9
3	-26.7	23.9	-27.9	-6.5
4	-19.3	37.5	1.6	2.3
5	39.0	-20.7	-19.5	-11.5
6	-46.1	-37.9	33.3	5.4
7	511.4	-188.7	14.3	-13.9
8	-2.2	5.6	10.0	5.7
9	-20.4	24.7	14.6	2.6
10	9.4	-1.2	-5.1	-25.1

RUN	21	POINT	13	OMEGAR =	610.3	ALFSC =	8.5	CLRSR =	0.08979	CMY/SR =	0.1735
VKTS =	90.0	RHJUG =	0.2165	CP/S =	0.001022	CDR/SR =	0.01528	CMX/SR =	-0.0028		
V/CR =	0.249										
PSI	UPPER ROTOR BLADE NORMAL	BENDING MOMENT	UK EDGEWISE BENDING	UK PITCH LINK LOAD	UPPER ROTOR SHAFT STRESS						
.1R	.2K	.3R	.6R								
0.00	262.	183.	1014.	-498.	750.						
11.25	-311.	60.	1529.	-475.	1236.						
22.50	-593.	-76.	1659.	-426.	1895.						
33.75	-486.	-142.	1487.	-523.	2463.						
45.00	-885.	-194.	1697.	-133.	2994.						
56.25	-1415.	-324.	1678.	125.	3312.						
67.50	-1004.	-427.	778.	177.	3735.						
78.75	-118.	-373.	-263.	-83.	4405.						
90.00	45.	-263.	-657.	-267.	4842.						
101.25	-213.	-289.	-594.	-159.	5220.						
112.50	-204.	-511.	-261.	-25.	5874.						
123.75	-635.	-772.	456.	-22.	6184.						
135.00	-1390.	-765.	861.	-83.	5846.						
146.25	-634.	-423.	49.	-160.	5258.						
157.50	1175.	-116.	-1092.	-164.	4589.						
168.75	1186.	-151.	-884.	-122.	4418.						
180.00	-512.	-400.	260.	-202.	5155.						
191.25	-1470.	-639.	844.	-278.	5420.						
202.50	-1761.	-792.	1048.	-207.	4399.						
213.75	-2358.	-813.	1500.	-299.	3741.						
225.00	-2255.	-724.	1600.	-609.	4157.						
236.25	-1477.	-623.	1397.	-674.	4228.						
247.50	-1601.	-523.	1882.	-479.	3721.						
258.75	-2089.	-411.	2702.	-424.	3511.						
270.00	-1742.	-343.	3086.	-468.	3365.						
281.25	-1645.	-313.	3648.	-461.	2951.						
292.50	-2295.	-283.	4458.	-550.	2490.						
303.75	-2257.	-295.	4381.	-630.	1872.						
315.00	-1538.	-303.	3586.	-491.	1433.						
326.25	-1273.	-166.	3031.	-362.	1715.						
337.50	-943.	65.	2324.	-436.	1850.						
348.75	-48.	203.	1284.	-513.	1161.						

RUN 21 POINT 13
 VKTS = 90.0 OMEG*R = 610.3 ALFS,C = 8.5 CLR/S,R = 0.08979 CMY/S,R = 0.1735
 V/CR = 0.249 RHD100 = 0.2165 CP/S = 0.001022 COR/S,R = 0.01528 CMX/S,R = -0.0028

PSI	LOWER ROTOR BLADE NORMAL BENDING MOMENT			LR EDGEWISE BENDING .LR	LR PITCH LINK LOAD
	.1R	.2R	.3R		
300.00	-3857.	-1978.	-1317.	-3235.	-306.
288.75	-3976.	-2333.	-1487.	-3951.	-319.
277.50	-3273.	-2133.	-1373.	-4516.	-296.
266.25	-2131.	-1464.	-1023.	-4385.	-319.
255.00	-1472.	-895.	-811.	-4383.	-255.
243.75	-2178.	-1026.	-963.	-5276.	-143.
232.50	-3350.	-1688.	-1204.	-6292.	-172.
221.25	-3165.	-1948.	-1182.	-6376.	-206.
210.00	-1810.	-1412.	-937.	-5982.	-82.
198.75	-1108.	-766.	-705.	-6250.	38.
187.50	-1690.	-713.	-646.	-7140.	64.
176.25	-2659.	-1184.	-817.	-7568.	83.
165.00	-3293.	-1707.	-1082.	-7044.	48.
153.75	-3640.	-1993.	-1199.	-6354.	-28.
142.50	-3859.	-2075.	-1131.	-6449.	-11.
131.25	-3816.	-2052.	-1023.	-7021.	33.
120.00	-3551.	-1918.	-931.	-6920.	-0.
108.75	-3485.	-1754.	-829.	-6027.	-17.
97.50	-3612.	-1706.	-738.	-5540.	-13.
86.25	-3479.	-1684.	-686.	-6000.	-70.
75.00	-3277.	-1595.	-672.	-6366.	-95.
63.75	-3448.	-1601.	-693.	-5755.	-41.
52.50	-3612.	-1707.	-729.	-4861.	-32.
41.25	-3403.	-1700.	-751.	-4797.	-96.
30.00	-3129.	-1584.	-727.	-5299.	-175.
18.75	-2849.	-1443.	-649.	-5217.	-242.
7.50	-2579.	-1274.	-634.	-4370.	-232.
356.25	-2842.	-1300.	-804.	-3769.	-195.
345.00	-3398.	-1638.	-1027.	-3978.	-271.
333.75	-3282.	-1821.	-1078.	-4310.	-349.
322.50	-2837.	-1616.	-1022.	-3979.	-283.
311.25	-3138.	-1569.	-1091.	-3301.	-239.

RUN 21 POINT 14 CMY/S,R = 0.2227
 VKTS = 90.1 CMX/S,R = -0.0034
 V/CR = 0.250 CLR/S,R = 0.11858
 CDR/S,R = 0.01911
 ALFS,C = 8.6
 CP/S = 0.002092

UPPER ROTOR BLADE NORMAL BENDING MOMENT

HARMONIC	.1R		.2R		.3R		.6R	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	1805.5				1087.9		2465.5	
1	-122.9	3202.3	0.0	0.0	147.2	1153.2	753.7	-580.4
2	230.9	-323.7	0.0	0.0	10.0	-134.8	-798.2	-290.1
3	108.2	202.0	0.0	0.0	-11.6	91.1	-425.4	258.1
4	406.9	-656.2	0.0	0.0	105.2	-205.9	-392.5	669.6
5	-66.3	430.1	0.0	0.0	2.9	88.6	2.3	-367.7
6	29.3	-402.5	0.0	0.0	-20.1	-132.7	114.7	272.4
7	53.3	127.8	0.0	0.0	54.7	-32.1	-114.3	-21.2
8	-36.1	-88.5	0.0	0.0	-12.6	3.2	52.2	64.7
9	213.0	-4.0	0.0	0.0	-3.0	-1.1	-93.6	75.1
10	-92.4	-106.9	0.0	0.0	-7.3	22.7	41.3	87.6

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UPPER ROTOR EDGEWISE BENDING MOMENT .1R

HARMONIC	UPPER ROTOR BENDING MOMENT .1R		UPPER ROTOR PITCH LINK LOAD		UPPER ROTOR SHAFT STRESS	
	COS	SIN	COS	SIN	COS	SIN
0	0.0		-183.5		4113.6	
1	0.0	0.0	-108.1	286.6	-1254.0	1105.5
2	0.0	0.0	12.5	-0.2	-665.8	40.0
3	0.0	0.0	-105.7	39.8	40.8	-61.3
4	0.0	0.0	-20.8	-18.9	92.2	89.8
5	0.0	0.0	-56.6	-124.9	-305.3	-304.9
6	0.0	0.0	21.1	-19.6	49.0	75.4
7	0.0	0.0	64.3	117.7	-396.9	-93.0
8	0.0	0.0	-31.7	-36.9	-32.7	78.7
9	0.0	0.0	-7.9	17.9	-33.7	32.9
10	0.0	0.0	-0.1	-13.2	-32.5	187.0

RUN 21 POINT 14
 VKTS = 90.1 OMEG*R = 608.3 ALFS,C = 8.8 CLR/S,R = 0.11858 CMY/S,R = 0.2227
 V/CR = 0.250 RHD100 = 0.2161 CP/S = 0.002092 CDR/S,R = 0.01911 CMX/S,R = -0.0034

HARMONIC	.1R		.2R		.3R		.6R	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	599.9	-2902.0	1009.3	-1869.2	837.2	-970.8	-221.5	142.1
1	557.9	251.5	352.2	137.4	357.2	97.1	183.4	26.7
2	222.9	-103.8	116.0	-69.6	12.1	-47.9	-73.5	-28.0
3	11.5	325.1	-10.0	159.1	6.0	105.6	32.1	-56.4
4	138.2	-323.0	152.8	-114.5	56.8	-38.1	-43.8	36.3
5	-138.3	589.8	-165.2	309.7	-77.2	165.4	32.4	-63.6
6	-8.9	16.5	162.5	-58.9	42.1	8.8	-9.1	-3.7
7	269.7	-113.9	151.7	-23.1	73.3	-0.3	-28.2	8.0
8	-61.7	-196.2	-45.3	-80.2	12.8	4.6	2.2	18.7
9	79.6	-3.5	-30.3	-17.8	11.0	-10.4	-1.2	3.0
10	28.2		13.2		14.5		-5.9	

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HARMONIC	LOWER ROTOR EDGEWISE BENDING MOMENT .1R		LOWER ROTOR PITCH LINK LOAD	
	COS	SIN	COS	SIN
0	-5742.1	-394.8	-92.0	124.1
1	2201.8	-118.2	-141.9	18.0
2	-560.4	118.1	33.2	-0.6
3	-32.3	3.6	-28.9	14.0
4	-26.0	-47.6	4.9	-22.6
5	61.1	-24.7	-17.5	-3.3
6	-55.8	-14.0	50.5	-27.9
7	747.7	24.6	18.8	16.4
8	-9.4	4.0	-1.8	-16.9
9	22.8	19.7	18.1	-19.3
10	12.4		-2.6	

RUN	21	PUNT	14	90.1	OMEGAR = 608.3	ALFS,C = 8.8	CLR/S,R = 0.11858	CMY/S,R = 0.2227
V/CR =	0.250	RHUI00 = 0.2161	CP/S = 0.002092	CDR/S,R = 0.01911	CMX/S,R = -0.0034			
PSI	UPPER RKTOR	BLADE NORMAL	BENDING MOMENT	UR EDGEWISE	UR PITCH	UPPER RKTOR		
	.1R	.2R	.3R	BENDING .1R	LINK LOAD	SHAFT STRESS		
0.00	2529.	0.	1353.	0.	-416.	1575.		
11.25	2324.	0.	1335.	0.	-363.	2428.		
22.50	2523.	0.	1394.	0.	-283.	3111.		
33.75	3003.	0.	1642.	0.	-140.	3635.		
45.00	3416.	0.	1977.	0.	139.	4179.		
56.25	3842.	0.	2077.	0.	371.	4405.		
67.50	4380.	0.	2093.	0.	240.	4899.		
78.75	4996.	0.	2239.	0.	-126.	5691.		
90.00	5307.	0.	2380.	0.	-247.	5810.		
101.25	5046.	0.	2299.	0.	-5.	5790.		
112.50	4564.	0.	1991.	0.	247.	6449.		
123.75	3940.	0.	1661.	0.	209.	6698.		
135.00	3329.	0.	1642.	0.	-30.	5884.		
146.25	3901.	0.	1946.	0.	-104.	4891.		
157.50	5296.	0.	2051.	0.	106.	4289.		
168.75	4815.	0.	1631.	0.	220.	4500.		
180.00	2159.	0.	973.	0.	12.	5473.		
191.25	89.	0.	407.	0.	-155.	5562.		
202.50	-612.	0.	38.	0.	-80.	4295.		
213.75	-975.	0.	-67.	0.	-155.	3645.		
225.00	-747.	0.	5.	0.	-515.	4101.		
236.25	-216.	0.	51.	0.	-702.	4255.		
247.50	-676.	0.	57.	0.	-504.	4078.		
258.75	-1414.	0.	55.	0.	-270.	4066.		
270.00	-1290.	0.	16.	0.	-292.	3835.		
281.25	-1295.	0.	39.	0.	-470.	3505.		
292.50	-1733.	0.	155.	0.	-567.	3089.		
303.75	-1399.	0.	202.	0.	-494.	2156.		
315.00	-547.	0.	257.	0.	-371.	1790.		
326.25	46.	0.	575.	0.	-334.	2703.		
337.50	991.	0.	1025.	0.	-374.	2960.		
348.75	2186.	0.	1293.	0.	-416.	1889.		

RUN 21 POINT 14
 VKTS = 90.1 OMEG*H = 608.3 ALFS,C = 8.8 CLR/S,R = 0.11858 CMY/S,R = 0.2227
 V/OR = 0.250 RHO100 = 0.2161 CP/S = 0.002092 CDR/S,R = 0.01911 CMX/S,R = -0.0034

PSI	LOWER ROTOR BLADE NORMAL BENDING MOMENT			LR EDGEWISE BENDING .LR		LR PITCH LINK LOAD	
	.1R	.2R	.3R	.6R			
300.00	3059.	2857.	1789.	-272.	-3577.	-255.	
288.75	2406.	2362.	1519.	-235.	-4505.	-255.	
277.50	3024.	2386.	1669.	-318.	-4846.	-251.	
266.25	4037.	2969.	1874.	-435.	-4517.	-295.	
255.00	3934.	3245.	1943.	-427.	-4815.	-231.	
243.75	2696.	2695.	1633.	-292.	-6269.	-85.	
232.50	1539.	1807.	1183.	-191.	-7579.	-101.	
221.25	1514.	1434.	1052.	-260.	-7614.	-177.	
210.00	2456.	1785.	1207.	-466.	-7186.	-56.	
198.75	2876.	2184.	1230.	-646.	-7720.	140.	
187.50	1582.	1818.	932.	-658.	-8976.	182.	
176.25	-529.	699.	426.	-513.	-9308.	121.	
165.00	-1673.	-320.	-56.	-367.	-8182.	71.	
153.75	-1789.	-681.	-278.	-314.	-7153.	48.	
142.50	-1921.	-724.	-244.	-288.	-7441.	48.	
131.25	-2035.	-774.	-165.	-249.	-7957.	54.	
120.00	-1886.	-703.	-130.	-221.	-7233.	70.	
108.75	-2215.	-679.	-118.	-152.	-5879.	79.	
97.50	-2909.	-965.	-133.	-13.	-5433.	14.	
86.25	-2689.	-1093.	-108.	66.	-5891.	-82.	
75.00	-1810.	-703.	15.	42.	-5891.	-69.	
63.75	-1626.	-355.	153.	44.	-4831.	8.	
52.50	-1695.	-335.	273.	75.	-3827.	10.	
41.25	-904.	-90.	449.	24.	-4105.	-50.	
30.00	138.	515.	710.	-67.	-4974.	-142.	
18.75	717.	1055.	1040.	-109.	-4796.	-234.	
7.50	1313.	1475.	1313.	-130.	-3730.	-215.	
356.25	1792.	1777.	1311.	-124.	-3438.	-146.	
345.00	1616.	1740.	1170.	-58.	-4212.	-231.	
333.75	1705.	1716.	1328.	-52.	-4621.	-359.	
322.50	2830.	2271.	1753.	-186.	-3972.	-316.	
311.25	3641.	2931.	1948.	-299.	-3269.	-238.	

FUN 21 PJUNT 15 CMY/S,R = 0.2597
 VKTS = 90.0 ALFS,C = 9.0 CLR/S,R = 0.14057
 V/UR = 0.249 CP/S = 0.003825 COK/S,R = 0.02179

UPPER ROTOR BLADE NORMAL BENDING MUMENT

HAPMONIC	.1R		.2P		.3R		.6R	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	3710.8		0.0		1970.8		3296.3	
1	707.7	5582.5	0.0	0.0	481.3	2283.2	1000.3	311.4
2	108.3	-574.9	0.0	0.0	-94.3	-298.5	-1067.1	-497.7
3	-47.7	168.4	0.0	0.0	-78.2	96.1	-393.4	395.3
4	-1.8	-663.6	0.0	0.0	-33.5	-208.4	-0.8	683.1
5	-127.0	295.2	0.0	0.0	-8.8	34.8	55.0	-271.9
6	-63.8	-499.6	0.0	0.0	-65.2	-171.8	211.9	313.5
7	41.6	214.4	0.0	0.0	55.5	-61.1	-85.9	-53.4
8	-178.7	-215.1	0.0	0.0	-12.5	32.5	167.0	98.8
9	282.2	7.7	0.0	0.0	-5.1	5.1	-108.9	58.5
10	-124.7	-138.5	0.0	0.0	-11.7	33.3	63.7	99.3

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UPPER ROTOR EDGEWISE BENDING MUMENT .1R

HAPMONIC	UPPER ROTOR BENDING MUMENT .1R		UPPER ROTOR PITCH LINK LOAD		UPPER ROTOR SHAFT STRESS	
	COS	SIN	COS	SIN	COS	SIN
0	0.0		-70.0		4449.6	
1	0.0	0.0	-147.6	373.2	-974.5	1447.1
2	0.0	0.0	44.8	-36.8	-660.1	219.5
3	0.0	0.0	-89.3	61.7	43.7	-12.3
4	0.0	0.0	-62.5	-17.9	94.1	35.7
5	0.0	0.0	-19.1	-138.7	-339.1	-309.2
6	0.0	0.0	34.4	15.8	24.5	113.7
7	0.0	0.0	60.0	133.0	-423.0	-27.4
8	0.0	0.0	-41.1	-7.6	42.7	205.1
9	0.0	0.0	39.7	-4.6	4.9	109.5
10	0.0	0.0	-6.7	13.7	-59.9	266.8

RUN	21
PPOINT	15
VKTS =	90.0
UMEG*R =	610.2
ALFS,C =	9.0
CLR/S,R =	0.14057
CMY/S,R =	0.2597
CP/S =	0.003825
CDR/S,R =	0.02179
CMX/S,K =	-0.00559
RHUI00 =	0.2161
V/OR =	0.249

LOWER ROTOR BLADE NORMAL BENDING MOMENT

HARMONIC	.1K		.2K		.3K		.6K	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	3598.4		3159.5		2292.7		-23.4	
1	282.0	-5208.2	4.1	-3458.0	122.6	-2044.5	143.1	-0.1
2	62.5	162.1	-0.1	98.1	-55.0	56.9	-98.5	8.6
3	-39.6	-188.8	-53.2	-103.7	-17.4	-66.1	30.7	-43.0
4	-80.9	609.9	81.8	382.6	-0.6	210.1	-8.2	-103.2
5	10.3	-27.7	-13.7	6.9	-29.1	36.7	5.6	6.9
6	-75.4	657.6	149.3	368.0	27.0	194.2	-1.3	-71.7
7	224.7	-19.5	114.0	-59.4	60.3	7.8	-22.0	-1.9
8	-131.4	-298.6	-107.0	-64.0	19.2	-8.6	16.7	22.3
9	203.0	-417.6	-55.1	-177.7	18.2	16.5	-6.0	47.8
10	37.3	-76.8	5.1	-40.6	29.5	-8.3	-3.7	0.5

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LÜWER RUTOR EUGEWISE
BENDING MOMENT .1R

HARMONIC

LLWER ROTOR
PITCH LINK LOAD
COS SIN

0	-6061.4	-34.4	154.8
1	3072.0	-179.2	20.3
2	-542.2	3.6	-38.6
3	-42.2	-32.1	9.5
4	1.2	23.5	-7.3
5	-14.6	1.5	12.8
6	-82.2	42.0	-47.7
7	546.4	16.2	9.8
8	-8.2	-6.8	1.6
9	96.6	30.1	-3.7
10	37.5	-15.9	

RUN 21
VKTS =
V/OR =

PCINT 15

90.0 UMEG*R = 610.2
0.249 RHU100 = 0.2161

ALFS,C = 9.0
CP/S = 0.003825

CLR/S,K = 0.14057
CDR/S,K = 0.02179

CMY/S,K = 0.2597
CMX/S,K = -0.0059

UPPER ROTOR BLADE NORMAL BENDING MCMENT UR EDGEWISE UR PITCH UPPER KUTOR
.1K .2K .3K .6K BENDING .1K LINK LOAD SHAFT STRESS

PSI	.1K	.2K	.3K	.6K	BENDING .1K	LINK LOAD	SHAFT STRESS
0.00	4307.	0.	2198.	3138.	0.	-257.	2223.
11.25	4522.	0.	2369.	3886.	0.	-172.	3504.
22.50	5803.	0.	2747.	3735.	0.	-190.	3870.
33.75	7152.	0.	3412.	3863.	0.	-61.	4363.
45.00	7885.	0.	4041.	4332.	0.	264.	5325.
56.25	8418.	0.	4183.	4417.	0.	503.	5476.
67.50	8927.	0.	4075.	4204.	0.	424.	5641.
78.75	9212.	0.	4188.	4095.	0.	60.	6472.
90.00	9113.	0.	4384.	4010.	0.	-211.	6549.
101.25	8873.	0.	4301.	4004.	0.	23.	6215.
112.50	8776.	0.	3912.	4228.	0.	497.	6752.
123.75	8053.	0.	3483.	4478.	0.	546.	7014.
135.00	6607.	0.	3352.	4138.	0.	256.	6131.
146.25	6522.	0.	3436.	2647.	0.	235.	5105.
157.50	7684.	0.	3133.	955.	0.	405.	4440.
168.75	6436.	0.	2255.	964.	0.	293.	4555.
180.00	2593.	0.	1309.	2204.	0.	55.	5599.
191.25	156.	0.	596.	2391.	0.	44.	5689.
202.50	-255.	0.	66.	1539.	0.	72.	4197.
213.75	-840.	0.	-201.	1173.	0.	-133.	3533.
225.00	-1245.	0.	-244.	1172.	0.	-439.	4217.
236.25	-1030.	0.	-306.	1263.	0.	-594.	4389.
247.50	-1564.	0.	-379.	2186.	0.	-519.	4107.
258.75	-2290.	0.	-333.	3572.	0.	-336.	4142.
270.00	-1893.	0.	-192.	4498.	0.	-281.	3975.
281.25	-1450.	0.	63.	5228.	0.	-432.	3578.
292.50	-1420.	0.	374.	5697.	0.	-565.	2951.
303.75	-534.	0.	565.	5210.	0.	-476.	1902.
315.00	889.	0.	818.	4214.	0.	-275.	1920.
326.25	1955.	0.	1385.	3323.	0.	-228.	3282.
337.50	3166.	0.	1938.	2439.	0.	-354.	3296.
348.75	4218.	0.	2138.	2224.	0.	-393.	1975.

RUN 21 POINT 15
 VKTS = 90.0 OMEG#R = 610.2 ALFS,C = 9.0 CLR/S,R = 0.14057 CHY/S,R = 0.2597
 V/OR = 0.249 RH0100 = 0.2161 CP/S = 0.003825 CDR/S,R = 0.02179 CMX/S,R = -0.0059

PSI	LOWER ROTOR BLADE NORMAL BENDING MOMENT			LR EDGEWISE BENDING .LR	LR PITCH LINK LOAD
	.1R	.2R	.3R		
300.00	8758.	6798.	4328.	-4666.	-193.
288.75	7806.	6286.	4239.	-5362.	-206.
277.50	8286.	6190.	4191.	-5656.	-252.
266.25	8927.	6577.	4290.	-5717.	-284.
255.00	8609.	6658.	4358.	-6249.	-176.
243.75	7735.	6176.	4067.	-7560.	-12.
232.50	6818.	5487.	3631.	-8625.	-36.
221.25	6568.	5110.	3498.	-8611.	-120.
210.00	7162.	5237.	3501.	-8449.	43.
198.75	6947.	5270.	3222.	-9236.	272.
187.50	4663.	4372.	2639.	-10258.	256.
176.25	1944.	2727.	1907.	-10092.	149.
165.00	808.	1460.	1225.	-8932.	141.
153.75	579.	1038.	868.	-8342.	130.
142.50	-76.	817.	804.	-8702.	104.
131.25	-548.	479.	736.	-8584.	144.
120.00	-439.	373.	584.	-7258.	162.
108.75	-1059.	250.	447.	-5842.	136.
97.50	-2167.	-271.	373.	-5310.	164.
86.25	-1723.	-446.	393.	-5258.	184.
75.00	-544.	101.	442.	-4899.	113.
63.75	-1038.	278.	451.	-3969.	53.
52.50	-1608.	-61.	590.	-3094.	35.
41.25	276.	470.	981.	-3239.	-50.
30.00	2485.	1827.	1478.	-3929.	-183.
18.75	2831.	2637.	1991.	-3692.	-234.
7.50	3254.	2960.	2395.	-2925.	-184.
356.25	4443.	3456.	2445.	-3265.	-150.
345.00	4543.	3694.	2408.	-4266.	-222.
333.75	4704.	3825.	2890.	-4320.	-326.
322.50	7022.	4910.	3736.	-3765.	-320.
311.25	9184.	6417.	4260.	-3891.	-235.

RUN 21 POINT 16
 VKTS = 90.2 CMFG*H = 627.9 ALFS,C = 10.9 CLR/S,R = 0.06855 CMY/S,R = 0.1665
 V/DR = 0.242 RHL100 = 0.2161 CP/S = 0.000251 CUR/S,R = 0.01593 CMX/S,R = -0.0004

HARMONIC	UPPER ROTOR BLADE NORMAL BENDING MOMENT							
	.1R		.2R		.3R		.6R	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	-1697.0		0.0		-784.5		903.2	
1	580.6	-1050.0	0.0	0.0	630.0	-864.5	1530.7	-2299.3
2	372.8	-336.0	0.0	0.0	90.8	-97.5	-460.6	-191.1
3	210.3	164.9	0.0	0.0	51.4	46.0	-385.4	134.1
4	793.4	-96.1	0.0	0.0	219.0	-12.5	-794.5	177.3
5	-304.9	246.8	0.0	0.0	-59.3	31.3	171.9	-180.5
6	-12.7	-161.4	0.0	0.0	-16.5	-56.1	52.6	98.2
7	4.4	122.0	0.0	0.0	39.0	-0.2	-44.8	-53.2
8	-114.5	12.9	0.0	0.0	28.6	18.9	63.7	-34.3
9	101.5	250.3	0.0	0.0	7.2	-3.1	-97.8	-148.6
10	-68.6	-27.8	0.0	0.0	8.4	7.7	8.5	8.2

HARMONIC	UPPER ROTOR EDGEWISE BENDING MOMENT .1R				UPPER ROTOR PITCH LINK LOAD				UPPER ROTOR SHAFT STRESS			
	COS		SIN		COS		SIN		COS		SIN	
0	0.0				84.3				3506.5			
1	0.0	0.0	0.0	249.3	-126.1	-249.3		-127.9	-2476.7			-127.9
2	0.0	0.0	0.0	-20.7	-7.0	-596.4		-144.8	-596.4			-144.8
3	0.0	0.0	0.0	-27.7	-85.6	56.6		-142.8	56.6			-142.8
4	0.0	0.0	0.0	-42.9	7.2	-198.1		144.8	-198.1			144.8
5	0.0	0.0	0.0	-129.5	33.9	-98.8		-292.1	-98.8			-292.1
6	0.0	0.0	0.0	13.2	33.0	-4.1		98.9	-4.1			98.9
7	0.0	0.0	0.0	52.1	-20.8	-167.4		-254.3	-167.4			-254.3
8	0.0	0.0	0.0	-4.0	0.0	204.0		26.6	204.0			26.6
9	0.0	0.0	0.0	6.9	-5.9	-2.4		-44.7	-2.4			-44.7
10	0.0	0.0	0.0	-0.9	18.2	-87.0		16.9	-87.0			16.9

RUN 21 POINT 16 VKTS = 90.2 OMEG*R = 627.9 ALFS,C = 10.9 CLR/S,R = 0.06855 CMY/S,R = 0.1665
V/DK = 0.242 RHU100 = 0.2161 CP/S = 0.000251 CDR/S,R = 0.01593 CMX/S,R = -0.0004

LOWER ROTOR BLADE NORMAL BENDING MOMENT

HARMONIC	.1R		.2R		.3R		.6R	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	-6936.1		-4373.6		-2821.3		-717.1	
1	-710.2	449.6	-343.7	519.8	-132.4	559.5	104.9	286.7
2	507.4	514.7	379.0	260.1	216.7	155.1	43.3	-4.6
3	199.9	-50.8	125.4	-57.3	71.4	-34.0	11.8	-51.8
4	276.2	-28.3	161.8	-81.8	86.1	-26.2	-51.1	3.0
5	-330.1	-142.6	-219.2	13.2	-101.5	-3.8	41.7	11.6
6	-0.5	380.6	111.9	199.6	33.7	105.3	-7.1	-36.7
7	174.9	-68.4	65.0	-85.4	40.0	-16.9	-15.2	9.0
8	-138.1	-45.7	-50.7	12.7	12.7	-13.6	11.2	2.3
9	77.8	53.5	37.0	-2.7	-5.1	4.1	-7.1	-3.3
10	-0.5	-10.1	-3.9	11.3	0.2	15.8	0.6	-0.4

LOWER ROTOR EDGEWISE BENDING MOMENT .1R

HARMONIC

HARMONIC	LOWER ROTOR BENDING MOMENT .1R		LOWER ROTOR PITCH LINK LOAD	
	COS	SIN	COS	SIN
0	-5609.3		-187.4	
1	668.0	-1213.0	-84.2	162.9
2	-134.7	-138.9	31.9	16.6
3	-37.4	-116.6	-13.3	18.6
4	-13.3	23.1	1.0	-1.8
5	29.1	-45.5	-32.4	14.2
6	-1.5	-40.6	25.7	3.7
7	52.1	-222.1	-1.4	-22.0
8	26.2	0.7	-1.0	12.1
9	47.8	-7.9	-17.7	-12.5
10	10.8	-18.3	24.8	-5.8

RUN	21	POINT	16	90.2	OMEG* _R =	627.9	ALFS,C =	10.9	CLR/S,R =	0.06855	CMY/S,R =	0.1665
VKTS =	0.242	RH100 =	0.2161	CP/S =	0.000251	CDR/S,R =	0.01593	CMX/S,R =	-0.0004			
UPPER ROTUR	BLADE	NORMAL	BENDING	MOMENT	UR	EDGEWISE	UK	PITCH	UPPER	ROTUR		
	.1R	.2R	.3R	.6R	BENDING	.1R	LINK	LOAD	SHAFT	STRESS		
PSI												
0.00	-135.	0.	214.	947.	0.	0.		-69.	136.			
11.25	-115.	0.	-114.	614.	0.	0.		-138.	-199.			
22.50	-1124.	0.	-546.	1023.	0.	0.		-174.	213.			
33.75	-2375.	0.	-853.	1327.	0.	0.		-64.	1005.			
45.00	-2965.	0.	-1128.	1142.	0.	0.		187.	1579.			
56.25	-3406.	0.	-1469.	790.	0.	0.		468.	1597.			
67.50	-3679.	0.	-1689.	97.	0.	0.		568.	1744.			
78.75	-3015.	0.	-1650.	-1140.	0.	0.		378.	2674.			
90.00	-2150.	0.	-1502.	-2137.	0.	0.		150.	3532.			
101.25	-2194.	0.	-1494.	-2215.	0.	0.		171.	3699.			
112.50	-2619.	0.	-1728.	-1716.	0.	0.		347.	4176.			
123.75	-3044.	0.	-2010.	-1068.	0.	0.		447.	5280.			
135.00	-3665.	0.	-2028.	-561.	0.	0.		400.	5716.			
146.25	-3327.	0.	-1763.	-858.	0.	0.		263.	4973.			
157.50	-1539.	0.	-1457.	-1854.	0.	0.		196.	4156.			
168.75	-510.	0.	-1238.	-2192.	0.	0.		282.	4378.			
180.00	-1318.	0.	-1122.	-1402.	0.	0.		340.	5514.			
191.25	-2143.	0.	-1141.	-516.	0.	0.		253.	6254.			
202.50	-2255.	0.	-1193.	130.	0.	0.		166.	5878.			
213.75	-2597.	0.	-1109.	1054.	0.	0.		89.	5474.			
225.00	-2649.	0.	-889.	1819.	0.	0.		-103.	5784.			
236.25	-1607.	0.	-613.	1820.	0.	0.		-272.	5798.			
247.50	-600.	0.	-280.	1823.	0.	0.		-241.	5197.			
258.75	-486.	0.	58.	2508.	0.	0.		-122.	4942.			
270.00	-469.	0.	262.	3281.	0.	0.		-55.	4867.			
281.25	-313.	0.	270.	3847.	0.	0.		-66.	4227.			
292.50	-717.	0.	165.	4631.	0.	0.		-173.	3523.			
303.75	-1340.	0.	103.	5186.	0.	0.		-261.	3130.			
315.00	-1140.	0.	145.	4646.	0.	0.		-176.	2555.			
326.25	-370.	0.	198.	3468.	0.	0.		-37.	1915.			
337.50	-127.	0.	223.	2584.	0.	0.		-14.	1534.			
348.75	-314.	0.	271.	1825.	0.	0.		-43.	955.			

RUN 21 POINT 16
 VKTS = 90.2 OMEG#R = 627.9 ALFS,C = 10.9 CMY/S,R = 0.06855
 V/CR = 0.242 RHU100 = 0.2161 CP/S = 0.000251 CDR/S,R = 0.01593 CMX/S,R = -0.00004

PSI	LOWER ROTOR BLADE NORMAL			BENDING MUMENT		LR EDGEWISE BENDING .1R	LR PITCH LINK LOAD
	.1R	.2K	.3K	.6R			
300.00	-8863.	-5578.	-3713.	-907.	-3839.	-359.	
288.75	-9071.	-5908.	-3959.	-969.	-3872.	-379.	
277.50	-8581.	-5826.	-3866.	-1056.	-4216.	-439.	
266.25	-7298.	-5141.	-3420.	-1168.	-4592.	-413.	
255.00	-6092.	-4304.	-3078.	-1219.	-4657.	-289.	
243.75	-6226.	-4061.	-3083.	-1107.	-4711.	-235.	
232.50	-7264.	-4507.	-3186.	-892.	-5142.	-258.	
221.25	-7266.	-4810.	-3128.	-775.	-5593.	-268.	
210.00	-5884.	-4510.	-2873.	-835.	-5667.	-265.	
198.75	-4913.	-3505.	-2529.	-923.	-5717.	-173.	
187.50	-5240.	-3264.	-2327.	-908.	-6141.	0.	
176.25	-5886.	-3561.	-2387.	-829.	-6700.	28.	
165.00	-6213.	-3846.	-2539.	-751.	-6939.	-73.	
153.75	-6538.	-4014.	-2599.	-666.	-6814.	-49.	
142.50	-6808.	-4160.	-2569.	-587.	-6692.	12.	
131.25	-6704.	-4151.	-2498.	-551.	-6826.	-64.	
120.00	-6534.	-4026.	-2440.	-537.	-6974.	-84.	
108.75	-6659.	-4019.	-2422.	-503.	-6801.	4.	
97.50	-6823.	-4079.	-2391.	-467.	-6457.	-29.	
86.25	-5810.	-4069.	-2359.	-453.	-6357.	-123.	
75.00	-6852.	-4104.	-2416.	-439.	-6542.	-96.	
63.75	-7031.	-4224.	-2495.	-424.	-6581.	-67.	
52.50	-7087.	-4272.	-2497.	-433.	-6197.	-101.	
41.25	-6914.	-4219.	-2490.	-466.	-5807.	-88.	
30.00	-6679.	-4129.	-2499.	-507.	-5905.	-91.	
18.75	-6538.	-4010.	-2458.	-549.	-6061.	-181.	
7.50	-6635.	-3986.	-2477.	-573.	-5568.	-242.	
356.25	-7040.	-4214.	-2688.	-585.	-4774.	-264.	
345.00	-7503.	-4576.	-2968.	-602.	-4460.	-324.	
333.75	-7738.	-4846.	-3167.	-664.	-4497.	-365.	
322.50	-7920.	-5010.	-3302.	-756.	-4352.	-362.	
311.25	-8344.	-5225.	-3457.	-841.	-4047.	-364.	

$$\begin{aligned} \text{CMV/S, R} &= 0.1950 \\ \text{CMX/S, R} &= -0.0052 \end{aligned}$$

CUR/S,K = J.08018
CUR/S,K = 0.01852

ALFS,C = 11.1
CP/S = 0.000208

679.0
0.2161

UMTG#F. = =
RHUIOU = =

POLINT 17

RUN 21

VKTS = =
V/OR = =

UPPER ROTOR BLADE NORMAL BENDING MOMENT

HARMONIC	.1K		.2R		.3K		.6F.	
	CUS	SIN	CUS	SIN	CUS	SIN	CUS	SIN
0	-2054.4		0.0		-892.3		702.6	
1	819.6	-1794.7	0.0	0.0	721.2	-1207.6	1258.6	-2460.7
2	498.9	-542.7	0.0	0.0	99.6	-206.8	-681.3	-314.0
3	251.5	78.4	0.0	0.0	8.2	31.8	-621.3	127.5
4	1046.3	-345.2	0.0	0.0	268.8	-93.3	-944.9	382.5
5	-132.7	193.5	0.0	0.0	-1.7	39.5	76.6	-170.4
6	103.6	-279.4	0.0	0.0	2.3	-93.2	8.3	198.8
7	0.8	151.8	0.0	0.0	61.4	10.6	-80.3	-71.6
8	46.8	-163.3	0.0	0.0	-28.7	-1.7	2.4	91.5
9	-179.1	194.1	0.0	0.0	22.1	4.4	76.1	-81.0
10	-42.4	-132.9	0.0	0.0	-10.1	8.6	-48.7	-17.1

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UPPER ROTOR EDGEWISE
BENDING MOMENT .1R
COS SIN

HARMONIC	CO ₂	CO ₁	CO ₀	CO ₂	CO ₁	CO ₀
0	0.0		81.6	3913.1		-3373.3
1	0.0	0.0	-113.0	-5542.4		-32.5
2	0.0	0.0	-25.2	-807.6		-43.0
3	0.0	0.0	-97.2	139.7		140.3
4	0.0	0.0	15.5	-80.2		-266.9
5	0.0	0.0	66.8	-14.5		76.1
6	0.0	0.0	-4.6	-34.7		-344.4
7	0.0	0.0	-11.8	-99.1		-24.2
8	0.0	0.0	-11.0	-132.7		27.8
9	0.0	0.0	-10.6	1.9		-122.7
10	0.0	0.0	23.4	-158.0		

UPPER RUTUR
SHAFT STRESS
CUS SIN

3913.1	-3373.3
-5542.4	-32.5
-807.6	-43.0
139.7	140.3
-80.2	-266.9
-14.5	76.1
-34.7	-344.4
-99.1	-24.2
-132.7	27.8
1.9	-122.7
-158.0	

UPPER ROTUR
PITCH LINK LOAD
CLS SIN

81.6	285.5
-113.0	-23.7
-25.2	-53.2
-97.2	-99.1
15.5	-76.3
66.8	61.8
-4.6	-9.7
-11.8	-38.3
-11.0	20.0
-10.6	18.9
23.4	

UPPER RUTUR
SHAFT STRESS
CUS SIN

RUN 21 PGINT 17
 VPTS = 91.1 OMEG*R = 679.0 ALFS,C = 11.1 CLR/S,R = 0.08018 CMY/S,R = 0.1950
 V/OR = 0.226 RHU100 = 0.2161 CP/S = 0.000208 CDR/S,R = 0.01852 CMX/S,R = -0.0052

LOWER ROTOR BLADE NORMAL BENDING MOMENT

HARMONIC	.1R		.2R		.3R		.6R	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	-421.6	-1110.7	-2576.1	-372.8	-1539.2	-54.3	-555.1	209.3
1	-3184.0	-22.6	-2186.7	-180.9	-1357.8	-152.6	-75.2	-91.1
2	880.3	-84.5	536.4	-88.0	311.0	-44.0	16.3	-41.3
3	191.9	110.4	107.0	-70.2	51.8	-6.3	-8.8	-15.6
4	571.4	-173.6	347.1	-20.9	162.2	-13.6	-88.4	15.1
5	-259.0	419.4	-167.3	182.4	-72.4	98.6	32.5	-36.6
6	71.8	-65.5	160.6	-97.2	44.9	-18.5	-11.8	10.8
7	220.7	55.9	80.3	81.2	42.3	-27.8	-17.1	-9.0
8	-234.6	91.1	-55.9	18.7	23.4	6.2	24.6	-7.5
9	16.9	-59.5	42.9	-38.7	4.7	-23.5	-1.9	3.6
10	-0.1		-25.6		-20.3		-0.9	

LOWER ROTOR EDGEWISE
 BENDING MOMENT .1R

HARMONIC	LOWER ROTOR PITCH LINK LOAD	
	COS	SIN
0	-6579.2	190.7
1	1661.1	-0.1
2	-113.2	23.0
3	71.6	-5.2
4	-30.7	17.9
5	22.9	-6.7
6	-26.7	-29.2
7	2.8	14.0
8	56.9	-7.1
9	-8.9	5.0
10	-15.9	

RUN 21 POINT 17
 VKTS = 91.1 OMEG*R = 679.0 ALFS,C = 11.1 CLK/S,K = 0.08018 CMY/S,K = 0.1950
 V/CR = 0.226 RHU100 = 0.2161 CP/S = 0.000208 CUR/S,K = 0.01852 CMX/S,R = -0.0052

	UPPER ROTOR BLADE NORMAL	BENDING	MOMENT	UR EDGEWISE	UR PITCH	UPPER ROTOR
	.1K	.2K	.3R	BENDING .1R	LINK LOAD	SHAFT STRESS
PSI						
0.00	359.	0.	251.	0.	-86.	-2815.
11.25	-626.	0.	-280.	0.	-166.	-3385.
22.50	-2007.	0.	-900.	0.	-192.	-2823.
33.75	-3670.	0.	-1345.	0.	-54.	-2612.
45.00	-4401.	0.	-1594.	0.	153.	-2411.
56.25	-4255.	0.	-1807.	0.	385.	-1773.
67.50	-4327.	0.	-1967.	0.	639.	-1110.
78.75	-4065.	0.	-1984.	0.	669.	-6.
90.00	-3159.	0.	-1950.	0.	385.	1476.
101.25	-3169.	0.	-1997.	0.	144.	2399.
112.50	-4097.	0.	-2187.	0.	180.	3388.
123.75	-4394.	0.	-2468.	0.	338.	5104.
135.00	-4348.	0.	-2513.	0.	435.	6204.
146.25	-4146.	0.	-2055.	0.	394.	6296.
157.50	-2480.	0.	-1463.	0.	272.	6605.
168.75	-583.	0.	-1272.	0.	229.	7271.
180.00	-1161.	0.	-1372.	0.	246.	8214.
191.25	-2961.	0.	-1381.	0.	198.	9739.
202.50	-3241.	0.	-1298.	0.	144.	10560.
213.75	-2655.	0.	-1212.	0.	59.	9928.
225.00	-2499.	0.	-995.	0.	-177.	9669.
236.25	-1971.	0.	-600.	0.	-319.	10287.
247.50	-778.	0.	-162.	0.	-166.	10026.
258.75	39.	0.	207.	0.	-68.	8856.
270.00	116.	0.	462.	0.	-200.	7926.
281.25	-131.	0.	578.	0.	-239.	6973.
292.50	-441.	0.	557.	0.	-158.	5619.
303.75	-781.	0.	439.	0.	-188.	3953.
315.00	-968.	0.	343.	0.	-192.	1979.
326.25	-481.	0.	390.	0.	-52.	575.
337.50	561.	0.	511.	0.	22.	101.
348.75	979.	0.	511.	0.	-26.	-995.

RUN 21 POINT 17
 VKTS = 91.1 OMEG*R = 679.0 ALFS,C = 11.1 CLR/S,R = 0.08018 CMY/S,R = 0.1950
 V/OR = 0.226 RHJ100 = 0.2161 CP/S = 0.000208 CDR/S,R = 0.01852 CMX/S,R = -0.0052

PSI	LOWER ROTOR BLADE NORMAL			BENDING MOMENT		LR EDGEWISE BENDING .LR	LR PITCH LINK LOAD	
	.LR	.2R	.3R	.6R				
300.00	-5960.	-3722.	-2301.	-663.		-4962.	-367.	
298.75	-5503.	-3543.	-2327.	-754.		-5115.	-405.	
277.50	-4907.	-3152.	-2009.	-819.		-5109.	-396.	
266.25	-3624.	-2517.	-1536.	-900.		-5343.	-428.	
255.00	-2090.	-1606.	-1187.	-962.		-5829.	-408.	
243.75	-2013.	-1087.	-1060.	-855.		-6158.	-239.	
232.50	-3138.	-1464.	-1073.	-611.		-6332.	-187.	
221.25	-2844.	-1704.	-899.	-493.		-6664.	-343.	
210.00	-691.	-808.	-400.	-586.		-7167.	-331.	
198.75	746.	366.	79.	-680.		-7690.	-90.	
187.50	348.	693.	289.	-628.		-8209.	42.	
176.25	-575.	373.	293.	-502.		-8707.	46.	
165.00	-1296.	-99.	72.	-386.		-9068.	70.	
153.75	-2120.	-634.	-275.	-291.		-9152.	36.	
142.50	-2981.	-1120.	-466.	-226.		-8992.	-24.	
131.25	-3625.	-1521.	-589.	-217.		-8811.	18.	
120.00	-4076.	-1927.	-903.	-270.		-8664.	32.	
108.75	-4587.	-2292.	-1250.	-341.		-8379.	-35.	
97.50	-5492.	-2725.	-1489.	-373.		-7998.	-25.	
86.25	-5556.	-3381.	-1817.	-378.		-7704.	-1.	
75.00	-7153.	-3990.	-2246.	-409.		-7396.	-87.	
63.75	-7527.	-4365.	-2580.	-453.		-6950.	-118.	
52.50	-8214.	-4762.	-2809.	-468.		-6524.	-33.	
41.25	-8534.	-5104.	-2927.	-499.		-6223.	-30.	
30.00	-7744.	-4955.	-2849.	-597.		-5960.	-136.	
18.75	-6627.	-4391.	-2652.	-701.		-5679.	-212.	
7.50	-6210.	-3890.	-2449.	-720.		-5324.	-243.	
356.25	-6335.	-3721.	-2326.	-663.		-4923.	-277.	
345.00	-6411.	-3841.	-2400.	-604.		-4693.	-330.	
333.75	-6348.	-3950.	-2522.	-573.		-4662.	-386.	
322.50	-6329.	-3849.	-2407.	-561.		-4641.	-377.	
311.25	-6275.	-3745.	-2237.	-584.		-4709.	-336.	

UPPER ROTOR BLADE NORMAL BENDING MOMENT

HARMONIC	.1K		.2K		.3K		.6K	
	CUS	SIN	CCS	SIN	CCS	SIN	CUS	SIN
0	-2468.8		0.0		-1117.8		654.3	
1	33.4	276.8	0.0	0.0	278.9	-224.2	1034.9	-1606.7
2	365.4	-379.3	0.0	0.0	112.4	-126.8	-285.3	-206.4
3	39.7	145.2	0.0	0.0	1.2	65.7	-340.9	130.5
4	365.5	-227.7	0.0	0.0	108.8	-56.6	-376.3	259.4
5	-277.6	289.1	0.0	0.0	-60.1	61.9	167.8	-252.1
6	53.8	-213.1	0.0	0.0	16.9	-84.1	51.7	165.3
7	41.5	75.8	0.0	0.0	34.6	0.6	-63.1	-14.7
8	-67.9	-29.1	0.0	0.0	9.4	7.6	31.8	13.6
9	84.1	0.3	0.0	0.0	8.0	-3.2	-51.5	28.6
10	-7.3	-69.5	0.0	0.0	-14.3	7.4	-1.7	52.2

UPPER ROTOR EDGEWISE BENDING MOMENT .1R	UPPER ROTOR PITCH LINK LOAD	UPPER ROTOR SHAFT STRESS
COS SIN	COS SIN	COS SIN

HARMONIC	COS	SIN	COS	SIN	COS	SIN
0	0.0		175.8		3574.6	
1	0.0	0.0	-71.7	211.9	-1793.0	137.2
2	0.0	0.0	-30.8	12.3	-510.6	-54.0
3	0.0	0.0	-73.2	-2.7	48.7	-38.8
4	0.0	0.0	-7.6	-35.8	-102.6	81.9
5	0.0	0.0	13.7	-61.7	-58.7	-237.8
6	0.0	0.0	-2.0	39.2	3.3	29.3
7	0.0	0.0	7.9	58.8	-117.3	-99.9
8	0.0	0.0	-16.5	6.5	70.9	7.6
9	0.0	0.0	4.6	17.0	-40.0	-42.3
10	0.0	0.0	29.8	-3.2	-75.8	62.7

RUN 21 POINT 18 90.1 OMEG#R = 608.8 ALFS,C = 5.8 CLR/S,R = 0.07404 CMY/S,R = 0.1118
 VKTS = 0.250 RHU100 = 0.2161 CP/S = 0.001662 CDR/S,R = 0.00893 CMX/S,R = -0.0033

LOWER ROTOR BLADE NORMAL BENDING MOMENT

HARMONIC	.1R		.2R		.3R		.6R	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	-5008.6		-2981.0		-1886.1		-580.6	
1	-273.2	-355.8	-84.2	-61.2	37.4	177.4	128.2	247.4
2	205.2	441.2	145.4	253.5	46.4	163.1	-24.1	25.5
3	37.3	-119.5	39.6	-77.5	31.4	-41.4	23.6	-22.8
4	156.2	41.0	106.9	-11.2	50.0	2.3	-36.4	-11.0
5	-351.1	-76.4	-210.1	39.3	-103.3	3.6	40.0	3.5
6	50.7	459.2	167.0	223.6	55.6	118.9	-11.5	-49.8
7	216.0	12.8	105.7	-68.0	35.7	-19.6	-21.2	-0.6
8	-51.3	16.5	-3.4	16.3	13.5	-2.4	1.4	-2.1
9	47.1	-4.8	7.1	-11.8	-5.4	7.5	-6.5	-0.0
10	28.9	-1.3	10.4	-9.4	6.4	-1.8	-1.4	3.6

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LOWER ROTOR EDGEWISE BENDING MOMENT .1R

LOWER ROTOR PITCH LINK LOAD

HARMONIC

	BENDING MOMENT .1R		PITCH LINK LOAD	
	COS	SIN	COS	SIN
0	-4960.0		-131.8	
1	948.8	-656.4	-101.2	118.0
2	-204.9	-228.4	28.5	9.0
3	15.0	-7.5	-24.3	1.1
4	-12.9	6.1	2.1	-0.6
5	6.6	-39.3	-23.9	-2.5
6	-48.6	-37.3	35.7	0.5
7	352.0	-424.0	10.8	-13.9
8	-6.3	16.8	10.4	-0.3
9	-31.5	-18.0	20.6	1.0
10	0.1	9.8	-9.4	-9.5

RUN 21 POINT 18 PUNT 18 CMY/S,K = 0.1118
 VKTS = 90.1 OMEG*P = 608.8 ALFS,C = 5.8 CLR/S,K = 0.07404
 V/CR = 0.250 RHQ100 = 0.2161 CP/S = 0.001662 CDR/S,R = 0.00893 CMX/S,K = -0.0033

PSI	UPPER ROTOR BLADE NORMAL			BENDING MOMENT		UR EDGEWISE BENDING .1R	UR PITCH LINK LOAD	UPPER ROTOR SHAFT STRESS
	.1K	.2R	.3R	.6R				
0.00	-1788.	0.	-622.	822.	0.	0.	30.	999.
11.25	-2051.	0.	-789.	848.	0.	0.	89.	1093.
22.50	-2181.	0.	-985.	701.	0.	0.	80.	1519.
33.75	-2422.	0.	-1086.	600.	0.	0.	144.	2054.
45.00	-2852.	0.	-1142.	679.	0.	0.	299.	2634.
56.25	-3063.	0.	-1321.	510.	0.	0.	509.	2921.
67.50	-2984.	0.	-1521.	-35.	0.	0.	615.	3124.
78.75	-2723.	0.	-1506.	-729.	0.	0.	464.	3655.
90.00	-2238.	0.	-1346.	-1401.	0.	0.	266.	4122.
101.25	-1826.	0.	-1287.	-1663.	0.	0.	280.	4357.
112.50	-1950.	0.	-1393.	-1201.	0.	0.	370.	4862.
123.75	-2524.	0.	-1569.	-463.	0.	0.	375.	5431.
135.00	-2871.	0.	-1609.	-224.	0.	0.	359.	5419.
146.25	-2287.	0.	-1367.	-727.	0.	0.	334.	4923.
157.50	-1097.	0.	-1047.	-1418.	0.	0.	297.	4419.
168.75	-748.	0.	-978.	-1432.	0.	0.	296.	4365.
180.00	-1730.	0.	-1147.	-673.	0.	0.	267.	4920.
191.25	-2840.	0.	-1365.	77.	0.	0.	209.	5288.
202.50	-3364.	0.	-1536.	454.	0.	0.	227.	4909.
213.75	-3614.	0.	-1546.	713.	0.	0.	185.	4634.
225.00	-3424.	0.	-1363.	803.	0.	0.	-25.	4821.
236.25	-2779.	0.	-1177.	756.	0.	0.	-123.	4639.
247.50	-2553.	0.	-1084.	1101.	0.	0.	1.	4216.
258.75	-2852.	0.	-982.	1841.	0.	0.	72.	4230.
270.00	-2928.	0.	-883.	2491.	0.	0.	43.	4130.
281.25	-2884.	0.	-852.	3076.	0.	0.	28.	3532.
292.50	-3018.	0.	-821.	3574.	0.	0.	-52.	3053.
303.75	-2876.	0.	-769.	3513.	0.	0.	-107.	2671.
315.00	-2462.	0.	-754.	2992.	0.	0.	35.	2118.
326.25	-2253.	0.	-723.	2461.	0.	0.	132.	1903.
337.50	-2058.	0.	-630.	1804.	0.	0.	-1.	1929.
348.75	-1758.	0.	-569.	1087.	0.	0.	-75.	1497.

RUN 21	POINT 18	UMEG*R = 608.8	ALFS,C = 5.8	CLR/S,R = 0.07404	CMY/S,R = 0.1118
VKTS = 90.1	RH0100 = 0.2161	CP/S = 0.001662	CDR/S,R = 0.00893	CMX/S,R = -0.0033	
V/OR = 0.250					

PSI	LOWER ROTOR BLADE NORMAL BENDING MOMENT			LR EDGEWISE BENDING .LR	LR PITCH LINK LOAD
	.1R	.2R	.3R		
300.00	-5597.	-3190.	-2202.	-3128.	-274.
288.75	-6095.	-3653.	-2418.	-3720.	-308.
277.50	-5640.	-3668.	-2382.	-4411.	-300.
266.25	-4418.	-3059.	-2051.	-4347.	-303.
255.00	-3508.	-2348.	-1743.	-4095.	-248.
243.75	-3858.	-2264.	-1770.	-4559.	-147.
232.50	-4860.	-2805.	-2002.	-5481.	-158.
221.25	-5029.	-3183.	-2092.	-5910.	-215.
210.00	-4135.	-2893.	-1943.	-5606.	-137.
198.75	-3412.	-2331.	-1719.	-5389.	-7.
187.50	-3733.	-2181.	-1631.	-5961.	42.
176.25	-4662.	-2592.	-1786.	-6710.	60.
165.00	-5340.	-3126.	-2052.	-6510.	52.
153.75	-5578.	-3371.	-2154.	-5624.	-19.
142.50	-5672.	-3371.	-2045.	-5407.	-45.
131.25	-5629.	-3317.	-1916.	-6049.	9.
120.00	-5382.	-3200.	-1853.	-6271.	18.
108.75	-5273.	-3059.	-1787.	-5530.	-25.
97.50	-5446.	-3047.	-1712.	-4886.	-38.
86.25	-5505.	-3100.	-1673.	-5210.	-54.
75.00	-5348.	-3055.	-1662.	-5809.	-88.
63.75	-5309.	-2984.	-1658.	-5589.	-72.
52.50	-5379.	-2996.	-1661.	-4746.	-33.
41.25	-5300.	-3015.	-1671.	-4394.	-64.
30.00	-5046.	-2943.	-1658.	-4834.	-160.
18.75	-4724.	-2769.	-1611.	-5136.	-225.
7.50	-4637.	-2631.	-1622.	-4569.	-205.
356.25	-5099.	-2792.	-1791.	-3686.	-185.
345.00	-5623.	-3192.	-2013.	-3519.	-257.
333.75	-5399.	-3329.	-2075.	-4023.	-326.
322.50	-4792.	-3049.	-1996.	-4128.	-277.
311.25	-4849.	-2877.	-2004.	-3486.	-229.

RUN 21 PCINT 19 CMY/S,R = 0.1072
 VKTS = 108.5 U*EG#R = 609.8 CLR/S,R = 0.06938
 V/CR = 0.300 RHUIG0 = 0.2150 CP/S = 0.001245 COR/S,R = 0.00890
 CMX/S,R = -0.0025

HARMONIC	UPPER ROTOR BLADE NORMAL BENDING MUMENT			
	.1R	.2R	.3R	.6R
	COS	SIN	COS	SIN
0	-3064.5		-1437.8	364.6
1	829.0	1720.3	696.2	1506.9
2	200.0	-810.9	0.0	-183.1
3	127.6	97.2	0.0	-96.1
4	403.2	-204.9	0.0	-355.3
5	-429.1	359.4	0.0	304.6
6	-129.9	-238.5	0.0	142.5
7	43.6	143.4	0.0	-8.4
8	-158.4	134.0	0.0	121.4
9	-96.4	-88.9	0.0	106.1
10	-83.6	12.4	0.0	73.0

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HARMONIC	UPPER ROTOR EDGEWISE BENDING MUMENT .1R		UPPER ROTOR PITCH LINK LOAD		UPPER ROTOR SHAFT STRESS	
	COS	SIN	COS	SIN	COS	SIN
0	0.0		176.9		3568.2	
1	0.0	0.0	-39.7	224.9	-959.5	473.0
2	0.0	0.0	-31.2	44.7	-394.1	-101.7
3	0.0	0.0	-59.2	13.7	-3.6	-121.0
4	0.0	0.0	-18.3	-26.6	-189.6	255.2
5	0.0	0.0	27.8	-77.2	-44.0	-267.7
6	0.0	0.0	15.7	25.6	31.1	35.7
7	0.0	0.0	31.5	74.2	-250.9	-77.3
8	0.0	0.0	26.9	56.8	156.6	-102.3
9	0.0	0.0	30.2	6.3	34.7	-9.7
10	0.0	0.0	20.0	-20.5	-36.8	95.4

RUN 21	PUNT 19	OMEG#R = 609.8	ALFS,C = 5.5	CLR/S,R = 0.06938	CMY/S,R = 0.1072
VKTS = 108.5	RHJ100 = 0.2150	CP/S = 0.001245	CDR/S,R = 0.00890	CMX/S,R = -0.0025	
V/CR = 0.300					

	UPPER RUTOR BLADE	NORMAL	BENDING	MUMENT	UR	EDGEWISE	UR	PITCH	UPPER
	.1K	.2R	.3R	.6R	BENDING	.1K	LINK	LOAD	KUTUK
									SHAFT
									STRESS
PSI									
0.00	-2359.	0.	-610.	1978.	0.	0.		181.	1912.
11.25	-1693.	0.	-697.	1321.	0.	0.		187.	1949.
22.50	-1373.	0.	-778.	692.	0.	0.		67.	2403.
33.75	-2088.	0.	-774.	910.	0.	0.		153.	3196.
45.00	-2557.	0.	-871.	930.	0.	0.		434.	3561.
56.25	-2357.	0.	-1167.	288.	0.	0.		665.	3297.
67.50	-2292.	0.	-1335.	-248.	0.	0.		624.	3518.
78.75	-2063.	0.	-1132.	-776.	0.	0.		376.	4267.
90.00	-1056.	0.	-843.	-1682.	0.	0.		247.	4329.
101.25	-239.	0.	-845.	-2116.	0.	0.		314.	4143.
112.50	-846.	0.	-1120.	-1436.	0.	0.		360.	4901.
123.75	-2326.	0.	-1425.	-490.	0.	0.		351.	5702.
135.00	-2961.	0.	-1587.	-384.	0.	0.		361.	5240.
146.25	-2220.	0.	-1588.	-1163.	0.	0.		324.	4110.
157.50	-1517.	0.	-1537.	-1956.	0.	0.		246.	3463.
168.75	-2048.	0.	-1601.	-2063.	0.	0.		212.	3677.
180.00	-3308.	0.	-1891.	-1652.	0.	0.		199.	4359.
191.25	-4592.	0.	-2323.	-1084.	0.	0.		200.	4563.
202.50	-5766.	0.	-2637.	-414.	0.	0.		214.	4153.
213.75	-6255.	0.	-2684.	51.	0.	0.		139.	4058.
225.00	-5815.	0.	-2583.	89.	0.	0.		8.	4184.
236.25	-5348.	0.	-2447.	202.	0.	0.		-40.	3681.
247.50	-5197.	0.	-2224.	668.	0.	0.		-48.	3115.
258.75	-4847.	0.	-1941.	1199.	0.	0.		-19.	3285.
270.00	-4556.	0.	-1741.	1878.	0.	0.		115.	3541.
281.25	-4637.	0.	-1636.	2717.	0.	0.		107.	3394.
292.50	-4459.	0.	-1514.	3115.	0.	0.		-146.	3211.
303.75	-3844.	0.	-1316.	3001.	0.	0.		-185.	2983.
315.00	-3171.	0.	-1060.	2730.	0.	0.		86.	2673.
326.25	-2357.	0.	-820.	2129.	0.	0.		112.	2591.
337.50	-1799.	0.	-674.	1524.	0.	0.		-115.	2529.
348.75	-2116.	0.	-609.	1709.	0.	0.		-65.	2194.

RUN	21	POINT 19									
	VKTS =	108.5	UMEG#R =	609.8	ALFS,C =	5.5	CLR/S,R =	0.06938	CMY/S,R =	0.1072	
	V/VR =	0.300	RHJ100 =	0.2150	CP/S =	0.001245	CDR/S,R =	0.00890	CMX/S,R =	-0.00025	
	LOWER ROTOR BLADE NORMAL BENDING MOMENT										
		.1R	.2R	BENDING MOMENT			LR EDGEWISE	LR PITCH			
PSI				.3R	.6R	BENDING .1R	LINK LOAD				
300.00		-5305.	-3210.	-2164.	-763.	-3339.	-304.				
288.75		-5215.	-3258.	-2194.	-789.	-3456.	-295.				
277.50		-4491.	-3010.	-2003.	-856.	-4179.	-357.				
266.25		-3114.	-2265.	-1611.	-959.	-4586.	-324.				
255.00		-2458.	-1626.	-1445.	-973.	-4455.	-189.				
243.75		-3517.	-1906.	-1665.	-839.	-4556.	-176.				
232.50		-4729.	-2704.	-1942.	-704.	-5183.	-233.				
221.25		-4331.	-2931.	-2028.	-732.	-5694.	-186.				
210.00		-3315.	-2477.	-1929.	-877.	-5667.	-85.				
198.75		-3479.	-2197.	-1803.	-971.	-5483.	17.				
187.50		-4588.	-2580.	-1921.	-945.	-5700.	89.				
176.25		-5524.	-3277.	-2306.	-865.	-6281.	38.				
165.00		-6202.	-3809.	-2606.	-777.	-6489.	-34.				
153.75		-6843.	-4135.	-2663.	-668.	-5929.	8.				
142.50		-7122.	-4343.	-2653.	-571.	-5413.	20.				
131.25		-7006.	-4363.	-2643.	-519.	-5731.	-46.				
120.00		-6951.	-4275.	-2581.	-470.	-6226.	-32.				
108.75		-6931.	-4221.	-2480.	-414.	-5981.	-9.				
97.50		-6649.	-4053.	-2324.	-396.	-5425.	-87.				
86.25		-6433.	-3791.	-2176.	-381.	-5406.	-121.				
75.00		-6560.	-3786.	-2183.	-326.	-5775.	-92.				
63.75		-6545.	-3922.	-2243.	-306.	-5820.	-108.				
52.50		-6204.	-3778.	-2167.	-345.	-5323.	-91.				
41.25		-5972.	-3521.	-2047.	-370.	-4776.	-66.				
30.00		-5717.	-3412.	-1978.	-410.	-4774.	-174.				
18.75		-5194.	-3213.	-1894.	-512.	-5113.	-252.				
7.50		-5134.	-3019.	-1893.	-562.	-4957.	-185.				
356.25		-5813.	-3249.	-2066.	-511.	-4174.	-215.				
345.00		-6084.	-3581.	-2213.	-508.	-3651.	-346.				
333.75		-5478.	-3472.	-2202.	-611.	-3876.	-331.				
322.50		-5003.	-3184.	-2151.	-706.	-4185.	-264.				
311.25		-5116.	-3125.	-2132.	-743.	-3877.	-296.				

RUN 23 PCINT 7 UMEG#R = 592.1 ALFS,C = 0.2 CLK/S,R = 0.02499 CMY/S,R = 0.0246
 VKTS = 105.0 RHU100 = 0.2281 CP/S = 0.002093 CDR/S,R = 0.00209 CMX/S,R = -0.0006
 V/CR = 0.299

UPPER ROTOR BLADE NORMAL BENDING MOMENT

HARMONIC	.1R		.2R		.3R		.6R	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	-6121.8		-2441.1		-2861.7		-3123.7	
1	165.6	-521.7	336.0	-679.4	359.8	-628.4	1188.4	-1981.8
2	-29.8	-826.2	23.6	-495.6	-5.4	-280.3	-93.1	-65.0
3	164.9	-34.8	82.6	23.0	39.9	38.8	3.4	376.2
4	316.9	-84.2	208.5	12.2	106.2	7.6	-289.6	170.6
5	-117.5	147.0	-73.6	73.3	-31.5	28.9	53.6	-77.3
6	-102.9	-31.8	-50.9	-53.9	-28.6	-38.8	81.1	-0.3
7	62.6	-2.3	16.5	23.8	-2.2	7.3	-7.7	-35.7
8	38.2	34.4	8.4	14.5	-1.1	-14.0	-6.6	-15.9
9	16.0	89.4	-17.4	41.3	-4.1	-2.2	-2.8	-64.9
10	4.3	-25.8	2.3	-1.7	-4.3	11.3	11.3	-16.4

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UPPER ROTOR EDGEWISE BENDING MOMENT .1R

HARMONIC	UPPER ROTOR BENDING MOMENT .1R		UPPER ROTOR PITCH LINK LOAD		UPPER ROTOR SHAFT STRESS	
	COS	SIN	COS	SIN	COS	SIN
0	0.0		-157.7		1927.5	
1	0.0	0.0	-35.4	190.3	-1944.7	-135.5
2	0.0	0.0	-28.7	41.0	-290.4	-217.7
3	0.0	0.0	-27.7	9.9	171.3	-330.4
4	0.0	0.0	-1.1	-11.5	-244.4	264.4
5	0.0	0.0	-12.3	-18.3	-89.0	-29.3
6	0.0	0.0	1.8	0.7	5.3	16.3
7	0.0	0.0	7.6	3.0	36.9	6.1
8	0.0	0.0	-5.9	10.1	-64.6	-7.5
9	0.0	0.0	8.6	7.2	10.2	-61.3
10	0.0	0.0	20.5	-16.7	0.3	84.4

RUN 23 POINT 7 OMEG*R = 592.1 ALFS,C = 0.2 CLR/S,R = 0.02499 CMY/S,R = 0.0246
 VKTS = 105.0 RHU100 = 0.2281 CP/S = 0.002093 CDK/S,R = 0.00209 CMX/S,R = -0.0006
 V/OR = 0.299

LOWER ROTOR BLADE NORMAL BENDING MOMENT

HARMONIC	.1R		.2R		.3R		.6R	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	-10792.9		-7252.4		-4844.8		-953.9	
1	-603.0	165.4	-309.5	311.4	-105.5	410.0	88.5	291.6
2	112.5	1102.1	195.1	696.4	101.7	430.3	33.0	56.7
3	189.4	54.2	152.8	5.5	107.7	19.2	43.2	-29.5
4	257.4	-86.6	148.8	-117.1	101.0	-58.7	-42.5	3.3
5	-180.1	17.9	-80.5	38.6	-43.3	2.5	18.0	-11.1
6	-225.6	308.3	-18.0	229.7	-26.5	115.2	13.2	-35.9
7	140.2	76.8	87.2	3.9	25.5	15.2	-9.7	-6.1
8	4.9	10.1	5.1	-1.3	0.7	-3.0	0.3	-4.0
9	107.2	86.2	70.7	0.9	13.9	7.4	-10.0	-7.0
10	-45.2	-33.9	-28.1	10.1	-4.6	8.5	6.9	1.0

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LOWER ROTOR EDGEWISE BENDING MOMENT .1R

HARMONIC	LOWER ROTOR BENDING MOMENT .1R		LOWER ROTOR PITCH LINK LOAD	
	COS	SIN	COS	SIN
0	-4009.4		-239.9	
1	-70.5	-614.9	-65.5	115.3
2	24.3	-292.9	32.3	6.1
3	-39.5	-36.0	-1.1	25.9
4	-52.5	24.7	3.3	-2.1
5	-1.4	-28.6	-17.2	7.7
6	-19.4	-42.0	12.3	20.7
7	-96.2	60.0	11.1	-8.4
8	-19.2	7.8	-2.2	-1.8
9	6.3	9.4	8.9	-21.5
10	-10.2	-5.3	8.8	4.8

RUN 23	PUNT 7	UMEG*R = 592.1	ALFS,C = 0.2	CLR/S,R = 0.02499	CMY/S,R = 0.0246
VKTS =	105.0	RHUI00 = 0.2281	CP/S = 0.002093	CDK/S,R = 0.00209	CMX/S,R = -0.0006
V/OR =	0.299				

	UPPER ROTUR	BLADE	NORMAL	BENDING	MUMENT	UR	EDGEWISE	UR	PITCH	UPPER
	.1K	.2R	.3R	.6R	.1R					SHAFT
										STRESS
PSI										
0.00	-5583.	-1905.	-2433.	-2186.	0.				-230.	-482.
11.25	-6011.	-2141.	-2645.	-2467.	0.				-217.	-420.
22.50	-6708.	-2580.	-2876.	-2495.	0.				-148.	-254.
33.75	-7250.	-3051.	-3134.	-2662.	0.				-33.	2.
45.00	-7500.	-3358.	-3399.	-3230.	0.				33.	201.
56.25	-7660.	-3554.	-3609.	-3900.	0.				87.	359.
67.50	-7543.	-3596.	-3645.	-4604.	0.				107.	807.
78.75	-6790.	-3292.	-3510.	-5415.	0.				40.	1413.
90.00	-5886.	-2811.	-3366.	-5884.	0.				8.	2001.
101.25	-5704.	-2614.	-3302.	-5683.	0.				43.	2902.
112.50	-6094.	-2766.	-3311.	-5204.	0.				12.	3745.
123.75	-6280.	-2932.	-3386.	-4847.	0.				-46.	3715.
135.00	-6166.	-2932.	-3427.	-4653.	0.				-43.	3301.
146.25	-6002.	-2799.	-3318.	-4703.	0.				-61.	3249.
157.50	-5777.	-2572.	-3155.	-4944.	0.				-101.	3103.
168.75	-5748.	-2433.	-3101.	-4990.	0.				-93.	2820.
180.00	-6207.	-2593.	-3157.	-4656.	0.				-112.	3149.
191.25	-6710.	-2879.	-3239.	-4180.	0.				-162.	3775.
202.50	-6860.	-2967.	-3258.	-3730.	0.				-168.	3944.
213.75	-6937.	-2895.	-3157.	-3210.	0.				-217.	3876.
225.00	-6941.	-2811.	-2999.	-2613.	0.				-311.	3714.
236.25	-6501.	-2601.	-2841.	-2118.	0.				-289.	3205.
247.50	-5883.	-2204.	-2598.	-1778.	0.				-233.	2663.
258.75	-5557.	-1827.	-2283.	-1414.	0.				-291.	2290.
270.00	-5390.	-1587.	-2070.	-955.	0.				-325.	1805.
281.25	-5266.	-1448.	-1995.	-565.	0.				-291.	1480.
292.50	-5315.	-1436.	-1967.	-357.	0.				-349.	1590.
303.75	-5293.	-1500.	-1993.	-411.	0.				-405.	1586.
315.00	-4994.	-1464.	-2051.	-866.	0.				-329.	1213.
326.25	-4844.	-1377.	-2056.	-1501.	0.				-291.	811.
337.50	-5101.	-1475.	-2075.	-1825.	0.				-335.	338.
348.75	-5395.	-1715.	-2219.	-1915.	0.				-297.	-222.

RUN	23	PUNT	7	OMEGAR =	592.1	ALFS,C =	0.2	CLR/S,R =	0.02499	CMY/S,R =	0.0246
VKTS =	105.0	RHUIO =	0.2281	CP/S =	0.002093	CDR/S,R =	0.00209	CMX/S,R =	-0.0006		
V/OR =	0.299										
		LOWER ROTOR BLADE NORMAL BENDING MUMENT									
		.1K	.2R	.3R	.6R			LR EDGEWISE BENDING .1R		LR PITCH LINK LOAD	
PSI											
300.00	-13063.	-8740.	-5933.	-1223.	-3331.	-380.					
288.75	-12697.	-8806.	-5903.	-1260.	-3187.	-428.					
277.50	-11397.	-8186.	-5541.	-1330.	-3223.	-416.					
266.25	-10144.	-7307.	-5037.	-1361.	-3540.	-353.					
255.00	-9456.	-6695.	-4720.	-1319.	-3814.	-299.					
243.75	-9519.	-6547.	-4705.	-1215.	-3800.	-286.					
232.50	-10072.	-6797.	-4810.	-1077.	-3683.	-304.					
221.25	-10054.	-6961.	-4802.	-1007.	-3692.	-326.					
210.00	-9298.	-6637.	-4638.	-1062.	-3808.	-293.					
196.75	-9168.	-6324.	-4510.	-1123.	-3918.	-184.					
187.50	-9949.	-6581.	-4572.	-1100.	-3930.	-112.					
176.25	-10416.	-6970.	-4714.	-1065.	-3865.	-134.					
165.00	-10466.	-7057.	-4788.	-1042.	-3905.	-130.					
153.75	-10870.	-7182.	-4833.	-965.	-4085.	-74.					
142.50	-11323.	-7443.	-4879.	-864.	-4160.	-91.					
131.25	-11399.	-7522.	-4871.	-799.	-4085.	-142.					
120.00	-11438.	-7511.	-4835.	-740.	-4141.	-121.					
108.75	-11283.	-7507.	-4777.	-699.	-4411.	-121.					
97.50	-10623.	-7218.	-4595.	-722.	-4661.	-191.					
86.25	-10154.	-6779.	-4357.	-739.	-4745.	-199.					
75.00	-10333.	-6681.	-4277.	-689.	-4736.	-157.					
63.75	-10545.	-6836.	-4348.	-635.	-4752.	-188.					
52.50	-10465.	-6892.	-4409.	-618.	-4804.	-216.					
41.25	-10367.	-6879.	-4414.	-626.	-4756.	-172.					
30.00	-10231.	-6830.	-4369.	-681.	-4555.	-170.					
18.75	-10089.	-6691.	-4319.	-773.	-4399.	-227.					
7.50	-10440.	-6739.	-4447.	-818.	-4368.	-244.					
356.25	-11377.	-7238.	-4811.	-810.	-4198.	-263.					
345.00	-12147.	-7878.	-5179.	-848.	-3762.	-349.					
333.75	-12166.	-8166.	-5380.	-978.	-3359.	-403.					
322.50	-11985.	-8154.	-5523.	-1129.	-3268.	-366.					
311.25	-12439.	-8324.	-5735.	-1208.	-3357.	-339.					

RUN 23 POINT 0
 VKTS = 105.8 CMY/S,R = 0.0536
 V/C/P = 0.301 RHU100 = 0.2263 CP/S = 0.003972 CDR/S,R = 0.00167 CMX/S,R = -0.0035

UPPER ROTOR BLADE NORMAL BENDING MOMENT

HARMONIC	.1R		.2R		.3R		.6R	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	-1530.9		807.2		-526.6		-1101.8	
1	-94.7	1724.4	64.1	806.3	193.5	350.5	952.4	-1428.9
2	-625.0	-758.5	-428.9	-514.6	-347.4	-310.0	-982.2	-357.1
3	-203.6	187.5	-116.5	110.2	-87.6	100.6	120.0	91.7
4	-32.3	-206.5	35.0	-117.3	14.3	-56.0	-28.7	168.9
5	-393.8	234.0	-198.3	81.8	-59.6	41.3	239.7	-208.1
6	-216.9	-416.3	-53.8	-280.4	-54.6	-127.3	200.4	209.5
7	248.0	74.2	114.0	28.4	13.9	-34.2	-132.8	5.7
8	61.6	168.2	-1.8	59.6	2.6	-26.5	-50.3	-106.3
9	67.5	109.3	14.3	39.6	12.7	-20.3	-15.0	-100.8
10	-7.2	-37.8	-7.5	-8.6	-11.6	5.3	46.9	-0.0

UPPER ROTOR EDGEWISE BENDING MOMENT .1R

HARMONIC	COS		SIN		UPPER ROTOR PITCH LINK LOAD		UPPER ROTOR SHAFT STRESS	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	0.0		-142.4		4090.8		-2245.6	1769.3
1	0.0	0.0	23.7	203.3	-2245.6	1769.3	-355.5	-478.2
2	0.0	0.0	-23.8	54.8	-355.5	-478.2	451.9	61.2
3	0.0	0.0	-11.7	50.2	451.9	61.2	-58.3	311.1
4	0.0	0.0	-32.8	7.5	-58.3	311.1	25.6	-423.1
5	0.0	0.0	22.5	-48.8	25.6	-423.1	-72.5	5.8
6	0.0	0.0	33.6	19.6	-72.5	5.8	-113.1	-247.9
7	0.0	0.0	39.2	-4.1	-113.1	-247.9	61.3	-116.4
8	0.0	0.0	20.3	8.7	61.3	-116.4	24.5	-42.1
9	0.0	0.0	-38.3	-20.3	24.5	-42.1	-7.3	-9.7
10	0.0	0.0	-6.0	32.4	-7.3	-9.7		

RUN 23 POINT 8
 VKTS = 105.8 UMEGR = 595.2 ALFS,C = 0.6 CLR/S,R = 0.08253 CMY/S,R = 0.0536
 V/OR = 0.301 RHUIG = 0.2263 CP/S = 0.003972 CDK/S,R = 0.00167 CMX/S,R = -0.0035

LOWER ROTOR BLADE NORMAL BENJING MOMENT

HARMONIC	.1R		.2R		.3R		.6R	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	-2439.2		-1245.6		-668.4		-371.2	
1	-190.9	-614.7	-14.6	-168.0	93.8	174.1	139.8	350.0
2	-793.6	338.6	-595.9	297.6	-512.9	155.1	-240.8	40.6
3	-63.7	-411.2	-73.4	-230.4	7.6	-119.6	61.9	58.8
4	110.6	1.8	79.5	-39.0	55.2	-13.2	-27.3	-1.8
5	-471.1	-325.5	-319.0	-57.9	-136.0	-43.6	62.6	31.0
6	-100.8	444.1	74.0	252.1	5.1	125.3	9.3	-47.5
7	253.7	127.0	156.2	-5.8	44.7	12.3	-25.3	-11.1
8	-27.7	-86.1	-40.3	4.5	-20.7	29.3	1.6	6.9
9	-251.1	73.4	-53.7	89.0	4.8	-4.6	21.1	-9.8
10	-53.1	50.6	-7.4	39.9	-15.7	5.5	11.9	-9.5

LOWER ROTOR EDGEWISE BENDING MOMENT .1R

HARMONIC	LOWER ROTOR		PITCH LINK LOAD	
	COS	SIN	COS	SIN
0	-3924.5		-146.6	
1	1427.5	-99.5	-159.0	61.2
2	399.9	-658.1	32.6	25.0
3	113.9	106.4	-3.0	-17.0
4	-45.1	22.7	-1.9	6.2
5	70.8	-11.4	-3.2	1.4
6	-29.6	-73.5	33.5	4.2
7	858.3	800.8	8.9	1.7
8	-15.8	-76.4	2.9	18.1
9	-21.8	-41.5	-0.8	2.3
10	-15.1	-8.7	4.0	6.9

RUN	23	POINT	8	UMEG*R =	593.2	ALFS,C =	0.6	CLR/S,R =	0.08253	CMY/S,R =	0.0536
V/DR =	0.301	RHU100 =	0.2263	CP/S =	0.003972	CDR/S,R =	0.00167	CMX/S,R =	-0.0035		
UPPER ROTOR BLADE NORMAL BENDING MOMENT											
PSI											
	.1R	.2K	.3R	.6R	UR EDGEWISE BENDING .1K	UR PITCH LINK LOAD	UPPER ROTOR SHAFT STRESS				
0.00	-2733.	188.	-850.	-711.	0.	-116.	1802.				
11.25	-2536.	126.	-962.	-1212.	0.	-45.	1517.				
22.50	-2163.	314.	-694.	-1462.	0.	-68.	2253.				
33.75	-1119.	892.	-300.	-1817.	0.	-8.	3250.				
45.00	-33.	1513.	-156.	-2221.	0.	191.	3468.				
56.25	-118.	1564.	-247.	-1836.	0.	267.	3368.				
67.50	-846.	1228.	-241.	-1086.	0.	138.	3950.				
78.75	-414.	1373.	-15.	-1363.	0.	-15.	5086.				
90.00	1148.	2120.	209.	-2281.	0.	-71.	6020.				
101.25	1869.	2581.	244.	-2334.	0.	-32.	6732.				
112.50	1015.	2232.	94.	-1633.	0.	13.	7665.				
123.75	-133.	1542.	-159.	-1329.	0.	12.	8522.				
135.00	-430.	1224.	-321.	-1773.	0.	36.	8431.				
146.25	70.	1461.	-266.	-2712.	0.	24.	7266.				
157.50	471.	1747.	-243.	-3607.	0.	-159.	5944.				
168.75	-269.	1416.	-536.	-3718.	0.	-294.	5361.				
180.00	-1980.	513.	-996.	-3120.	0.	-186.	5515.				
191.25	-3275.	-264.	-1341.	-2590.	0.	-134.	5710.				
202.50	-3622.	-563.	-1500.	-2250.	0.	-255.	5384.				
213.75	-3683.	-585.	-1465.	-1750.	0.	-267.	4655.				
225.00	-3613.	-457.	-1275.	-1159.	0.	-234.	3966.				
236.25	-3244.	-201.	-1093.	-563.	0.	-346.	3494.				
247.50	-2979.	32.	-934.	175.	0.	-347.	3222.				
258.75	-2854.	237.	-674.	903.	0.	-193.	3140.				
270.00	-2464.	541.	-401.	1389.	0.	-247.	3038.				
281.25	-2210.	792.	-272.	1699.	0.	-395.	2654.				
292.50	-2450.	784.	-240.	1815.	0.	-310.	2060.				
303.75	-2378.	710.	-274.	1473.	0.	-227.	1447.				
315.00	-1696.	802.	-401.	660.	0.	-349.	977.				
326.25	-1506.	876.	-488.	-117.	0.	-408.	1055.				
337.50	-2213.	697.	-475.	-364.	0.	-314.	1757.				
348.75	-2791.	394.	-577.	-363.	0.	-218.	2197.				

RUN	23
PUNT	8
VKTS =	105.8
CMEG*R =	593.2
ALFS,C =	0.6
CLR/S,R =	0.08253
CMY/S,R =	0.0536
RHU100 =	0.2263
CP/S =	0.003972
CDR/S,R =	0.00167
CMX/S,R =	-0.0035

LOWER ROTOR BLADE NORMAL BENDING MOMENT	LR EDGEWISE BENDING .LR	LR PITCH LINK LOAD
.1R	.3R	
.2R	.6R	

[illegible]

RUN 23 PCINT 9 CMY/S,R = 0.1579
 VKTS = 105.6 UMG* R = 597.3 CLK/S,R = 0.11436
 V/CR = 0.299 RHU100 = 0.2251 CP/S = 0.004235 CDR/S,R = 0.01082 CMX/S,R = -0.0046

UPPER ROTOR BLADE NORMAL BENDING MOMENT

HARMONIC	.1R		.2R		.3R		.6R	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	1618.4		2997.9		978.5		-64.5	
1	107.6	2018.8	241.6	1013.0	359.0	418.0	1114.1	-1655.7
2	-1223.6	-1145.0	-861.0	-830.3	-668.5	-513.2	-1863.2	-776.8
3	-155.4	185.7	-99.5	87.5	-62.0	61.3	-171.0	-15.0
4	116.6	-490.9	147.2	-254.6	51.0	-120.3	-111.5	439.7
5	-283.1	269.3	-146.5	93.7	-36.0	22.3	190.4	-149.2
6	-113.3	-652.8	32.6	-413.8	-35.0	-192.6	200.3	359.2
7	260.8	91.1	154.0	17.9	26.5	-62.2	-173.0	60.4
8	-166.1	64.1	-71.8	-0.6	12.6	-11.4	72.1	-45.6
9	115.5	-146.9	85.9	-41.5	6.4	-12.5	-47.2	85.8
10	-106.8	58.7	-39.7	19.5	23.4	5.9	75.9	-10.4

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UPPER ROTOR EDGEWISE BENDING MOMENT .1R

HARMONIC

HARMONIC	UPPER ROTOR BENDING MOMENT .1R		UPPER ROTOR PITCH LINK LOAD		UPPER ROTOR SHAFT STRESS	
	COS	SIN	COS	SIN	COS	SIN
0	0.0		-108.6		4814.6	
1	0.0	0.0	-79.5	282.9	-2011.0	1467.4
2	0.0	0.0	99.5	14.6	-480.7	-612.3
3	0.0	0.0	-120.5	33.6	172.2	96.1
4	0.0	0.0	57.4	0.1	36.9	641.2
5	0.0	0.0	-95.3	-60.4	-57.0	-418.0
6	0.0	0.0	3.0	7.5	16.4	6.9
7	0.0	0.0	13.3	-5.9	-133.7	-346.0
8	0.0	0.0	-2.4	12.6	82.1	-89.0
9	0.0	0.0	-10.2	-25.7	14.6	-35.1
10	0.0	0.0	34.1	-22.8	-48.1	39.9

PUN 23 PUNT 9
 VKTS = 105.6 OMEG*R = 597.3 ALFS,C = 5.8 CLR/S,R = 0.11436 CMY/S,R = 0.1579
 V/OR = 0.299 RHU100 = 0.2251 CP/S = 0.004235 CUR/S,R = 0.01082 CMX/S,R = -0.0040

LOWER ROTOR BLADE NORMAL BENDING MOMENT

HARMONIC	.1R	.2R	.3R	.6R
	COS SIN	COS SIN	COS SIN	COS SIN
0	1359.6	1432.3	1152.6	-135.4
1	56.6 -1138.3	168.8 -495.9	236.5 -8.0	189.1 372.7
2	-1686.7 453.5	-1209.6 490.1	-484.9 287.8	-391.6 74.0
3	-118.8 -339.5	-110.4 -164.7	-29.5 -77.9	48.9 41.4
4	-51.8 637.0	129.2 359.4	47.7 175.1	-25.8 -115.5
5	-234.4 -2.8	-124.9 68.1	-66.2 43.0	29.8 -6.3
6	-48.7 747.9	183.1 399.7	34.4 216.9	-4.9 -75.0
7	359.0 174.6	228.9 -24.8	81.7 2.9	-32.6 -11.9
8	-118.5 -217.5	-92.9 -23.2	1.1 26.4	13.1 13.8
9	-154.9 -30.2	-61.1 28.1	-7.2 -13.9	22.4 1.3
10	-68.8 116.3	16.6 54.8	-1.3 -2.1	5.3 -13.0

LOWER ROTOR EDGEWISE BENDING MOMENT .1R

HARMONIC	COS SIN
0	-4836.6
1	2771.2 739.5
2	1131.0 -1373.8
3	204.5 172.8
4	-13.8 31.9
5	35.5 78.1
6	-136.7 -140.4
7	1361.6 610.1
8	-45.2 -45.9
9	1.3 -32.7
10	-27.3 24.9

LOWER ROTOR PITCH LINK LOAD	COS SIN
-89.0	134.0
-192.8	47.9
-38.4	-46.0
-20.7	-14.2
-2.6	-3.7
30.7	29.0
72.4	6.5
9.1	29.4
-10.8	18.0
-22.5	-20.1
12.4	

[illegible]

RUN 23 POINT 9 VKTS = 105.6 OMEG*R = 597.3 ALFS,C = 5.8 CLR/S,R = 0.11436 CMY/S,R = 0.1579
 V/OR = 0.299 RH0100 = 0.2251 CP/S = 0.004235 CDR/S,R = 0.01082 CMX/S,R = -0.0040

PSI	LOWER ROTOR BLADE			BENDING MOMENT		LR EDGEWISE BENDING .LR	LR PITCH LINK LOAD
	.1R	.2R	.3R	.6R			
300.00	3918.	2966.	1738.	-425.	-3439.	-252.	
288.75	2582.	2531.	1687.	-164.	-6102.	-232.	
277.50	2726.	2239.	1846.	-33.	-6478.	-311.	
266.25	4619.	3029.	2151.	-141.	-5684.	-315.	
255.00	4841.	3621.	2210.	-183.	-6713.	-131.	
243.75	2899.	2859.	1843.	-99.	-9179.	5.	
232.50	1691.	1736.	1279.	-166.	-9955.	-15.	
221.25	2109.	1425.	902.	-444.	-8250.	-4.	
210.00	2674.	1681.	837.	-749.	-6762.	57.	
198.75	2263.	1722.	789.	-938.	-7533.	79.	
187.50	713.	1083.	417.	-922.	-8795.	122.	
176.25	-1030.	-6.	-144.	-716.	-7547.	127.	
165.00	-1721.	-702.	-407.	-474.	-4512.	12.	
153.75	-1487.	-644.	-170.	-279.	-3461.	-22.	
142.50	-870.	-220.	315.	-100.	-5220.	95.	
131.25	296.	436.	811.	48.	-6379.	120.	
120.00	1525.	1330.	1329.	169.	-4994.	65.	
108.75	1928.	2004.	1841.	321.	-3500.	97.	
97.50	1891.	2220.	2167.	494.	-4427.	93.	
86.25	2058.	2297.	2261.	612.	-6446.	24.	
75.00	2086.	2352.	2216.	648.	-6541.	109.	
63.75	1611.	2173.	2013.	611.	-4490.	216.	
52.50	801.	1676.	1624.	519.	-3019.	35.	
41.25	268.	1123.	1259.	344.	-3471.	-265.	
30.00	622.	1005.	1124.	42.	-3764.	-350.	
18.75	1049.	1270.	1069.	-252.	-2037.	-262.	
7.50	213.	1087.	790.	-327.	121.	-217.	
356.25	-1045.	262.	296.	-259.	179.	-284.	
345.00	-1087.	-262.	-13.	-257.	-1468.	-382.	
333.75	-17.	95.	247.	-321.	-2201.	-401.	
322.50	1731.	1105.	970.	-401.	-1418.	-353.	
311.25	3650.	2343.	1587.	-491.	-1224.	-307.	

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RUN 23          PCINT 10
VKTS = 106.1      OMEG*R = 597.3      ALFS,C = 6.0      CLR/S,K = 0.13524      CMY/S,K = 0.1814
V/OR = 0.300      RHU100 = 0.2247      CP/S = 0.006703      CDR/S,R = 0.01160      CMX/S,K = -0.0068

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HARMONIC	.1R		.2R		.3K		.6R	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	3756.9		4528.7		2042.6		750.8	
1	-699.0	4753.4	-431.5	2902.2	-91.4	1710.9	647.2	-323.8
2	-1353.9	-1586.9	-949.7	-1205.0	-739.3	-791.1	-2182.3	-1166.8
3	-287.5	-58.5	-151.3	-57.4	-92.3	3.6	37.3	231.9
4	14.4	-541.2	87.6	-284.7	17.5	-123.9	-17.9	418.8
5	-914.1	-78.9	-476.2	-195.7	-213.7	-76.8	654.3	67.7
6	-8.2	-720.1	108.6	-433.4	-21.0	-207.5	180.7	440.7
7	56.1	216.1	68.2	63.1	41.4	-33.3	-82.6	-3.0
8	-114.6	218.0	-65.3	45.1	31.6	-37.3	9.5	-157.2
9	470.1	24.2	185.0	103.8	1.4	-16.1	-312.0	-12.3
10	-135.4	99.5	-34.2	20.5	60.8	-10.4	58.1	-1.7

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HARMONIC	UPPER ROTOR EDGEWISE BENDING MOMENT .LR		UPPER ROTOR PITCH LINK LOAD		UPPER ROTOR SHAFT STRESS	
	COS	SIN	COS	SIN	COS	SIN
0	0.0		-45.7		5279.1	
1	0.0	0.0	-111.0	382.5	-3516.3	1288.7
2	0.0	0.0	107.2	-19.5	-389.8	-525.8
3	0.0	0.0	-15.5	36.8	297.2	-31.1
4	0.0	0.0	-8.3	39.3	-211.7	718.3
5	0.0	0.0	10.6	-72.9	224.7	-152.0
6	0.0	0.0	15.4	-13.9	26.7	84.8
7	0.0	0.0	-116.4	177.5	-32.5	-401.1
8	0.0	0.0	20.4	-55.6	223.0	-12.5
9	0.0	0.0	2.2	35.7	44.9	-69.1
10	0.0	0.0	11.6	-54.1	26.7	66.4

RUN 23 POINT 10 CMY/S,R = 0.1814
 VKTS = 106.1 OMEG*R = 597.3 CLR/S,R = 0.13524
 V/DR = 0.300 RHD100 = 0.2247 CP/S = 0.006703 CDR/S,R = 0.01160
 CMX/S,R = -0.0068

LOWER ROTOR BLADE NORMAL BENDING MUMENT

HARMONIC	.1R		.2R		.3R		.6R	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	3991.9		3313.1		2423.7		26.3	
1	-465.0	-3797.2	-355.4	-2295.0	-97.7	-1257.2	142.4	175.0
2	-2186.5	891.7	-1499.9	875.8	-1213.5	559.8	-464.5	129.6
3	-368.4	-154.8	-217.8	-23.0	-85.6	-14.1	88.9	5.5
4	-464.3	922.3	-48.9	593.7	-59.5	273.3	29.5	-160.5
5	-374.5	322.8	-126.3	269.7	-91.5	140.3	41.2	-43.7
6	131.6	794.1	293.3	378.3	97.0	220.8	-19.0	-79.2
7	427.9	-159.8	115.1	-200.5	28.9	-58.4	-32.1	19.5
8	-30.4	-301.5	-75.9	-81.7	21.1	15.1	6.6	30.5
9	-29.2	15.4	-4.8	21.8	1.2	3.5	7.7	1.6
10	-18.9	84.6	14.8	51.9	-24.2	13.9	3.2	-16.4

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LOWER ROTOR EDGEWISE BENDING MUMENT .1R

HARMONIC	LOWER ROTOR PITCH LINK LOAD	
	COS	SIN
0	-4647.9	
1	3772.5	2465.4
2	1433.1	-1673.9
3	370.0	87.6
4	16.6	87.7
5	-11.0	12.4
6	-137.2	-110.6
7	431.8	-472.8
8	-118.7	8.6
9	-7.1	18.9
10	-12.5	-15.6

RUN 23 POINT 10
 VKTS = 106.1 OMEG*R = 597.3 ALFS,C = 6.0 CLR/S,R = 0.13524 CMY/S,R = 0.1814
 V/CR = 0.300 RHU100 = 0.2247 CP/S = 0.006703 CDR/S,R = 0.01160 CMX/S,R = -0.0068

PSI	UPPER RUJTOR .1K	BLADE NORMAL .2R	BENDING MOMENT .3R	BENDING MOMENT .6R	UR EDGEWISE BENDING .1R	UR PITCH LINK LOAD	UPPER RUJTOR SHAFT STRESS
0.00	785.	2870.	1038.	-257.	0.	-129.	1972.
11.25	771.	2468.	658.	48.	0.	55.	1758.
22.50	1646.	2765.	1140.	-181.	0.	205.	2067.
33.75	4251.	4351.	2235.	-1142.	0.	112.	3144.
45.00	6828.	6121.	2924.	-1261.	0.	15.	3554.
56.25	7277.	6658.	3143.	355.	0.	219.	3202.
67.50	7141.	6608.	3416.	2086.	0.	376.	3829.
78.75	8243.	7198.	3849.	2482.	0.	180.	5641.
90.00	9695.	8231.	4439.	2189.	0.	-37.	7126.
101.25	10936.	9134.	4974.	1993.	0.	41.	7932.
112.50	11557.	9509.	4893.	2010.	0.	375.	8818.
123.75	9791.	8639.	4275.	2471.	0.	656.	9861.
135.00	6908.	6988.	3748.	2578.	0.	446.	10336.
146.25	6707.	6350.	3371.	919.	0.	-3.	9509.
157.50	7916.	6697.	2941.	-1447.	0.	111.	7813.
168.75	6488.	6138.	2470.	-2296.	0.	530.	7074.
180.00	3534.	4481.	1747.	-2145.	0.	331.	7936.
191.25	1668.	3070.	766.	-2314.	0.	-154.	8648.
202.50	-101.	2059.	134.	-1947.	0.	-116.	8138.
213.75	-1688.	1188.	15.	-813.	0.	66.	7369.
225.00	-1107.	1128.	2.	-401.	0.	-169.	6785.
236.25	232.	1848.	138.	-330.	0.	-525.	5826.
247.50	-7.	2251.	558.	959.	0.	-671.	4756.
258.75	-336.	2256.	932.	2573.	0.	-569.	4224.
270.00	613.	2622.	1143.	3183.	0.	-299.	4127.
281.25	1035.	3065.	1323.	3782.	0.	-260.	4161.
292.50	218.	2904.	1380.	4758.	0.	-571.	4075.
303.75	229.	2703.	1395.	4351.	0.	-660.	3423.
315.00	1883.	3266.	1554.	2196.	0.	-361.	2180.
326.25	3173.	3997.	1670.	296.	0.	-185.	1097.
337.50	2601.	3958.	1625.	-307.	0.	-238.	954.
348.75	1332.	3395.	1469.	-362.	0.	-236.	1597.

RUN 23 POINT 10
 VKTS = 106.1 OMEG*R = 597.3 ALFS,C = 6.0 CLR/S,R = 0.13524 CMY/S,R = 0.1814
 V/OR = 0.300 RHU100 = 0.2247 CP/S = 0.006703 CDR/S,R = 0.01160 CMX/S,R = -0.0068

PSI	LOWER ROTOR BLADE NORMAL BENDING MOMENT			LR EDGEWISE BENDING .1R		LR PITCH LINK LOAD	
	.1R	.2R	.3R	.6R			
300.00	9733.	6717.	4175.	-299.	-3921.	-45.	
288.75	8246.	6525.	4255.	107.	-5921.	-321.	
277.50	7673.	5926.	4356.	421.	-8072.	-266.	
266.25	9422.	6472.	4689.	404.	-9118.	-105.	
255.00	10579.	7410.	4937.	325.	-9340.	-142.	
243.75	9304.	7222.	4809.	336.	-10020.	53.	
232.50	7512.	6109.	4243.	238.	-11076.	242.	
221.25	6995.	5208.	3494.	-55.	-11003.	63.	
210.00	7040.	4893.	3001.	-418.	-9564.	31.	
198.75	6156.	4613.	2702.	-695.	-8396.	227.	
187.50	3945.	3634.	2095.	-753.	-8223.	194.	
176.25	1480.	2036.	1185.	-603.	-7722.	107.	
165.00	51.	758.	529.	-419.	-5984.	130.	
153.75	-219.	353.	434.	-270.	-4109.	88.	
142.50	253.	606.	785.	-122.	-3517.	173.	
131.25	1204.	1223.	1279.	6.	-3941.	322.	
120.00	1936.	1849.	1644.	155.	-3959.	187.	
108.75	2032.	2155.	1934.	383.	-3148.	151.	
97.50	2176.	2378.	2300.	581.	-2726.	389.	
86.25	2502.	2693.	2521.	674.	-3514.	322.	
75.00	2214.	2664.	2405.	741.	-4402.	153.	
63.75	1645.	2280.	2200.	739.	-3950.	306.	
52.50	1799.	2138.	2070.	544.	-2437.	184.	
41.25	2353.	2292.	1934.	223.	-1169.	-178.	
30.00	2487.	2383.	1846.	-67.	-670.	-7.	
18.75	2119.	2303.	1755.	-241.	-342.	130.	
7.50	1305.	1897.	1379.	-244.	455.	-322.	
356.25	313.	1148.	830.	-128.	1307.	-432.	
345.00	105.	701.	663.	-45.	1071.	-162.	
333.75	1657.	1253.	1214.	-73.	-439.	-431.	
322.50	5062.	2947.	2351.	-218.	-2002.	-659.	
311.25	8662.	5233.	3542.	-387.	-2880.	-222.	

RUN 23 POINT 11
 VKTS = 106.4 LMEG#R = 598.1 ALFS,C = 6.0 CLR/S,R = 0.14505 CMY/S,R = 0.1888
 V/OR = 0.300 RHG100 = 0.2231 CP/S = 0.009078 CUR/S,R = 0.01129 CMX/S,R = -0.0126

UPPER ROTOR BLADE NORMAL BENDING MOMENT

HARMONIC	.1R		.2R		.3R		.6R	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	4585.5		5113.5		2486.8		1063.5	
1	-422.5	5433.8	-251.6	3351.5	35.7	1999.2	699.3	-59.1
2	-1776.4	-2029.3	-1212.9	-1546.1	-939.3	-1029.3	-2585.9	-1426.7
3	-408.0	-204.3	-187.1	-153.7	-88.3	-51.0	400.5	85.1
4	-34.9	-346.0	56.7	-191.5	22.3	-74.4	63.5	278.5
5	-1177.8	-36.0	-627.4	-205.6	-280.7	-53.8	867.4	1.6
6	-51.8	-730.2	100.2	-441.6	-23.3	-202.4	196.2	431.0
7	-2.2	302.1	41.9	86.0	56.4	-25.1	-65.8	-84.8
8	-33.7	390.3	-64.5	86.4	29.3	-87.8	-48.0	-289.4
9	799.8	169.5	265.6	226.1	-6.5	-26.1	-517.9	-86.0
10	-125.7	170.8	-43.1	40.7	69.5	-21.7	76.5	-40.5

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HARMONIC	UPPER ROTOR EDGEWISE BENDING MOMENT .1R		UPPER ROTOR PITCH LINK LOAD		UPPER ROTOR SHAFT STRESS	
	COS	SIN	COS	SIN	COS	SIN
0	0.0		-149.2		5775.2	
1	0.0	0.0	-106.0	428.2	-2692.8	-794.6
2	0.0	0.0	128.3	-38.0	-242.9	-645.5
3	0.0	0.0	19.8	31.2	177.6	-198.6
4	0.0	0.0	4.6	59.2	-428.8	642.6
5	0.0	0.0	23.5	-92.6	377.3	-66.2
6	0.0	0.0	-11.5	-37.5	125.3	101.4
7	0.0	0.0	-167.6	238.7	6.9	-575.1
8	0.0	0.0	11.3	-114.6	199.6	-228.1
9	0.0	0.0	62.2	79.6	46.5	-108.0
10	0.0	0.0	-21.0	-70.3	57.8	-12.9

RUN 23 PUNT 11 OMEG#R = 598.1 ALFS,C = 6.0 CLR/S,R = 0.14505 CMY/S,R = 0.1888
 VKTS = 106.4 RHU100 = 0.2231 CP/S = 0.009078 CDR/S,R = 0.01129 CMX/S,R = -0.0126
 V/CR = 0.300

HARMONIC	.1R		.2R		.3R		.6R	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	5556.9		4588.2		3236.3		139.5	
1	-225.8	-5708.5	-313.1	-3642.2	-74.2	-2196.0	111.5	21.9
2	-2231.4	1379.0	-1473.7	1221.3	-1209.2	805.6	-465.3	155.6
3	-538.9	-20.0	-305.8	79.6	-141.1	35.1	131.7	-8.2
4	-594.3	1092.5	-85.2	704.2	-70.8	321.5	66.9	-175.7
5	-283.1	-78.1	-173.6	36.7	-82.9	31.3	42.4	8.0
6	312.0	686.3	375.3	278.7	156.6	189.5	-28.6	-67.6
7	522.7	-308.9	72.8	-302.9	-1.4	-86.3	-41.4	35.9
8	-15.9	-157.5	-37.2	-45.1	12.8	5.0	-1.9	17.8
9	-44.0	281.1	53.1	109.1	-15.8	1.0	7.3	-21.9
10	-88.7	152.2	7.1	96.7	-32.4	11.5	12.4	-22.9

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HARMONIC	LOWER ROTOR EDGEWISE BENDING MOMENT .1R		LOWER ROTOR PITCH LINK LOAD	
	COS	SIN	COS	SIN
0	-4138.8		81.7	
1	4532.9	3795.1	-230.8	225.7
2	1182.6	-1718.2	-54.1	107.7
3	416.9	-4.3	51.6	29.7
4	26.8	-10.3	-22.2	53.4
5	-44.5	29.2	25.3	28.8
6	-150.9	-143.0	38.0	4.9
7	-766.9	-1047.8	-9.8	-73.5
8	-138.3	-132.0	0.4	-7.6
9	-96.8	-13.3	-52.3	-129.0
10	-71.1	-16.5	-121.6	-87.0

RUN 23 POINT 11
 VKTS = 106.4 OMEG*R = 598.1 ALFS,C = 6.0 CLR/S,R = 0.14505 CMY/S,R = 0.1888
 V/OR = 0.300 RHJ100 = 0.2231 CP/S = 0.009078 CDR/S,R = 0.01129 CMX/S,R = -0.0126

PSI	UPPER ROTOR •IR	BLADE NORMAL •2K	BENDING MUMENT •3R	•6R	UR EDGEWISE BENDING •1K	UR PITCH LINK LOAD	UPPER ROTOR SHAFT STRESS
0.00	1352.	3191.	1362.	149.	0.	-206.	3402.
11.25	1615.	2986.	943.	-54.	0.	6.	2053.
22.50	2146.	3203.	1560.	-242.	0.	175.	2200.
33.75	5315.	4958.	2747.	-1468.	0.	49.	3272.
45.00	8474.	7050.	3381.	-1745.	0.	-116.	3060.
56.25	8377.	7484.	3625.	577.	0.	22.	2277.
67.50	8080.	7317.	4078.	3015.	0.	232.	2928.
78.75	10073.	8299.	4689.	3456.	0.	184.	4490.
90.00	11940.	9701.	5427.	3248.	0.	-84.	5411.
101.25	13049.	10619.	6089.	3258.	0.	-159.	5816.
112.50	13889.	11044.	6007.	3078.	0.	352.	6697.
123.75	11891.	10120.	5218.	3403.	0.	852.	8162.
135.00	7958.	7946.	4436.	3681.	0.	386.	9097.
146.25	7248.	6818.	3833.	1691.	0.	-302.	8411.
157.50	8647.	7151.	3299.	-1462.	0.	68.	6894.
168.75	7039.	6597.	2789.	-2677.	0.	618.	6513.
180.00	3774.	4709.	1929.	-2618.	0.	131.	7571.
191.25	1985.	3168.	773.	-2971.	0.	-427.	8616.
202.50	-5.	2105.	102.	-2371.	0.	-157.	8882.
213.75	-2182.	1001.	-13.	-657.	0.	52.	8678.
225.00	-1558.	808.	-91.	-148.	0.	-311.	8228.
236.25	288.	1750.	64.	-247.	0.	-708.	7565.
247.50	-33.	2349.	668.	1343.	0.	-906.	6789.
258.75	-604.	2314.	1201.	3262.	0.	-803.	6068.
270.00	1001.	2822.	1436.	3536.	0.	-374.	5801.
281.25	2177.	3645.	1644.	3831.	0.	-294.	6308.
292.50	1063.	3594.	1864.	5096.	0.	-774.	7093.
303.75	877.	3327.	2072.	4742.	0.	-937.	6931.
315.00	3472.	4166.	2249.	2019.	0.	-529.	5230.
326.25	5067.	5129.	2222.	108.	0.	-248.	3330.
337.50	3166.	4661.	2083.	436.	0.	-272.	3121.
348.75	1152.	3601.	1892.	762.	0.	-292.	3911.

RUN 23 POINT 11 UMEG*R = 598.1 ALFS,C = 6.0 CLR/S,R = 0.14505 CMY/S,R = 0.1888
 VKTS = 106.4 RHU100 = 0.2231 CP/S = 0.009078 CDR/S,R = 0.01129 CMX/S,R = -0.0126
 V/OR = 0.300

LOWER ROTOR BLADE NORMAL BENDING MOMENT		LR EDGEWISE BENDING .LR		LR PITCH LINK LOAD	
	.IR	.2R	.3R	.6R	
PSI					
300.00	13088.	8927.	5711.	-143.	-111.
288.75	12302.	9326.	6011.	264.	-389.
277.50	11369.	8750.	6171.	644.	-97.
266.25	12791.	9082.	6488.	693.	-12.
255.00	14051.	9999.	6699.	647.	-190.
243.75	12674.	9842.	6540.	674.	172.
232.50	10458.	8567.	5919.	577.	452.
221.25	9758.	7419.	5061.	243.	133.
210.00	9978.	7028.	4446.	-210.	79.
198.75	8948.	6754.	4034.	-565.	356.
187.50	5906.	5487.	3233.	-628.	279.
176.25	2442.	3263.	1970.	-463.	106.
165.00	260.	1327.	880.	-292.	159.
153.75	-449.	467.	480.	-188.	243.
142.50	128.	634.	759.	-127.	390.
131.25	1321.	1418.	1270.	-73.	467.
120.00	1621.	1939.	1548.	109.	317.
108.75	1181.	1849.	1675.	402.	347.
97.50	1456.	1967.	1946.	596.	482.
86.25	1799.	2413.	2228.	702.	269.
75.00	1480.	2428.	2359.	799.	165.
63.75	2189.	2487.	2485.	688.	342.
52.50	3844.	3232.	2580.	352.	156.
41.25	3976.	3664.	2522.	107.	-15.
30.00	3092.	3299.	2453.	3.	298.
18.75	3142.	3095.	2360.	-110.	180.
7.50	3045.	3031.	2036.	-116.	-333.
356.25	2028.	2497.	1688.	24.	-161.
345.00	2041.	2220.	1709.	89.	-11.
333.75	3948.	2963.	2238.	35.	-631.
322.50	7095.	4575.	3332.	-66.	-727.
311.25	10558.	6871.	4733.	-202.	-100.

RUN 23 POINT 12 CMY/S,K = 0.1807
 VKTS = 106.8 CMGRK = 600.5 CLR/S,R = 0.09322
 V/CR = 0.300 RHU100 = 0.2214 CP/S = 0.001055 CMX/S,R = -0.0055

HARMONIC	UPPER ROTOR BLADE NORMAL BENDING MOMENT				UPPER ROTOR BLADE NORMAL BENDING MOMENT			
	.1R		.2R		.3R		.6R	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	-1851.2		639.2		-708.6		-1626.4	
1	272.1	-98.2	435.6	-391.6	447.5	-526.8	1206.0	-2404.7
2	-260.6	-684.3	-180.7	-438.7	-196.5	-262.0	-832.4	-399.2
3	55.7	143.3	42.9	97.9	25.1	59.4	-103.0	218.4
4	421.4	-388.4	287.8	-185.7	119.9	-106.0	-314.4	367.6
5	-567.5	524.7	-364.7	199.7	-129.4	88.2	404.0	-364.8
6	-1.6	-404.3	50.6	-230.6	5.1	-117.0	102.2	240.9
7	70.5	290.1	45.6	57.7	55.5	-63.9	-21.7	-88.4
8	-350.6	-80.9	-124.7	-49.1	-1.0	37.5	195.6	9.0
9	80.5	-571.1	165.8	-221.1	0.2	-9.2	22.0	399.0
10	-170.2	113.9	-63.9	1.1	34.7	-10.3	101.2	31.8

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HARMONIC	UPPER ROTOR EDGEWISE BENDING MOMENT .1R				UPPER ROTOR PITCH LINK LOAD				UPPER ROTOR SHAFT STRESS			
	COS		SIN		COS		SIN		COS		SIN	
0	0.0				-481.2		239.0		5000.4		735.8	
1	0.0	0.0	0.0	0.0	-31.2	20.0			-3385.2	-650.1		
2	0.0	0.0	0.0	0.0	-6.3	29.4			-730.9	-4.9		
3	0.0	0.0	0.0	0.0	-57.3	-30.7			309.7	502.1		
4	0.0	0.0	0.0	0.0	-58.5	-85.1			-8.1	-430.2		
5	0.0	0.0	0.0	0.0	43.5	52.2			234.1	46.3		
6	0.0	0.0	0.0	0.0	27.4	90.1			-57.6	-447.7		
7	0.0	0.0	0.0	0.0	-68.4	74.3			-126.0	296.1		
8	0.0	0.0	0.0	0.0	-36.2	-4.9			69.9	-89.5		
9	0.0	0.0	0.0	0.0	22.6	-0.7			-0.0	19.2		
10	0.0				9.3				-47.6			

RUN 23 PUINT 12 OMEG*R = 600.5 ALFS,C = 8.2 CLR/S,R = 0.09322 CMY/S,R = 0.1807
 VKTS = 106.8 RHU100 = 0.2214 CP/S = 0.001055 CDR/S,R = 0.01567 CMX/S,R = -0.0055
 V/DR = 0.300

LOWER ROTOR BLADE NORMAL BENDING MOMENT

HARMONIC	.1P		.2R		.3R		.6R	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	-256.9		436.5		403.6		-249.3	
1	-1161.6	824.4	-552.7	957.7	-265.8	990.9	109.1	523.8
2	-1356.4	496.4	-978.4	458.5	-826.8	246.1	-360.8	27.1
3	102.5	-159.1	44.9	-89.7	37.9	-23.3	14.1	3.9
4	358.0	526.5	318.6	234.0	144.2	152.9	-85.6	-70.9
5	-148.8	-28.4	-77.6	40.0	-29.8	32.9	18.2	1.1
6	-80.2	533.3	101.9	301.7	13.1	157.4	4.0	-53.4
7	284.0	124.8	172.1	-72.2	65.4	-56.4	-28.4	-5.8
8	-65.7	-193.5	-58.5	-33.6	17.5	14.2	9.1	11.6
9	-12.5	137.2	18.3	18.0	-16.0	-23.4	3.5	-7.3
10	23.4	99.2	30.8	23.4	-5.6	6.8	-0.1	-11.5

LOWER ROTOR EDGEWISE BENDING MOMENT .1P

HARMONIC

0	-5027.7	
1	2409.8	-246.5
2	1288.6	-1032.1
3	116.4	130.2
4	32.9	62.9
5	67.5	24.5
6	-51.5	-63.4
7	1304.7	-240.0
8	-18.3	28.6
9	-26.7	-22.2
10	3.7	4.1

LOWER ROTOR PITCH LINK LOAD

	COS	SIN
0	-119.2	
1	-194.9	151.0
2	-22.3	34.7
3	-5.0	-48.0
4	-2.1	-9.6
5	27.2	4.2
6	42.8	15.4
7	-0.2	4.1
8	1.9	14.6
9	18.4	15.1
10	48.7	35.6

RUN: 23 POINT 12 CMY/S,R = 0.1807
 VKTS = 106.8 UMEG#R = 600.5 ALFS,C = 8.2 CLR/S,R = 0.09322 CMX/S,R = -0.0055
 V/CR = 0.300 RHJ100 = 0.2214 CP/S = 0.001055 CDR/S,R = 0.01567

	UPPER ROTUR BLADE NORMAL			BENDING MOMENT		UR EDGLWISE	UR PITCH	UPPER KUTUR
	.1R	.2R	.3R	.6R		BENDING .1R	LINK LOAD	SHAFT STRESS
PSI								
0.00	-2302.	934.	-348.	-867.		0.	-636.	1259.
11.25	-2398.	380.	-742.	-1283.		0.	-410.	1078.
22.50	-1543.	581.	-907.	-2643.		0.	-403.	1310.
33.75	-1920.	693.	-840.	-2746.		0.	-489.	1901.
45.00	-3076.	159.	-909.	-2028.		0.	-354.	2608.
56.25	-2968.	-189.	-1135.	-2422.		0.	-19.	3083.
67.50	-1980.	85.	-1282.	-3278.		0.	96.	3628.
78.75	-1861.	320.	-1203.	-3382.		0.	-224.	4912.
90.00	-1926.	429.	-876.	-3617.		0.	-577.	6567.
101.25	-632.	967.	-665.	-4385.		0.	-532.	7619.
112.50	3.	1243.	-987.	-4133.		0.	-266.	8148.
123.75	-2268.	224.	-1463.	-2601.		0.	-152.	8939.
135.00	-4066.	-797.	-1458.	-2092.		0.	-199.	9697.
146.25	-2045.	-64.	-1155.	-3603.		0.	-281.	9104.
157.50	234.	1174.	-1015.	-4949.		0.	-395.	7151.
168.75	-619.	1027.	-1028.	-4645.		0.	-482.	6066.
180.00	-2124.	283.	-1145.	-3881.		0.	-455.	7194.
191.25	-2832.	-61.	-1403.	-3216.		0.	-417.	8479.
202.50	-4061.	-609.	-1576.	-1999.		0.	-506.	7789.
213.75	-4319.	-970.	-1454.	-1145.		0.	-624.	6437.
225.00	-2502.	-119.	-1060.	-1421.		0.	-630.	6194.
236.25	-1474.	940.	-518.	-1196.		0.	-633.	6101.
247.50	-1820.	1103.	-109.	94.		0.	-761.	5232.
258.75	-1243.	1213.	-20.	882.		0.	-818.	4757.
270.00	-770.	1565.	10.	1384.		0.	-636.	5229.
281.25	-1773.	1364.	164.	2564.		0.	-521.	5407.
292.50	-1955.	1098.	215.	2958.		0.	-728.	4483.
303.75	-864.	1468.	134.	1879.		0.	-879.	2983.
315.00	-848.	1665.	109.	1075.		0.	-654.	1814.
326.25	-1334.	1385.	84.	601.		0.	-443.	1501.
337.50	-883.	1437.	-1.	-626.		0.	-598.	1702.
348.75	-1069.	1533.	-95.	-1326.		0.	-777.	1639.

PUN 23 PUN 12 OMEG*R = 600.5 ALFS,C = 8.2 CLR/S,R = 0.09322 CMY/S,R = 0.1807
 VKTS = 106.8 RHU100 = 0.2214 CP/S = 0.001055 CDR/S,R = 0.01567 CMX/S,R = -0.0055
 V/DR = 0.300

LOWER ROTOR BLADE		NORMAL		BENDING MOMENT		LR EDGEWISE		LR PITCH	
		.1R	.2R	.3R	.6R	BENDING .1R		LINK LOAD	
PSI									
300.00	-987.	-287.	-253.	-547.	-338.	-2562.			
288.75	-1051.	-237.	-192.	-457.	-257.	-5076.			
277.50	-561.	-90.	46.	-428.	-378.	-6394.			
266.25	1045.	665.	418.	-525.	-366.	-5843.			
255.00	1656.	1304.	532.	-551.	-177.	-5729.			
243.75	216.	894.	305.	-435.	-108.	-7366.			
232.50	-899.	28.	-14.	-398.	-65.	-8829.			
221.25	-95.	-111.	-180.	-569.	27.	-8082.			
210.00	1062.	473.	-58.	-814.	9.	-6265.			
198.75	1001.	890.	190.	-953.	13.	-5954.			
187.50	108.	642.	161.	-911.	112.	-7207.			
176.25	-637.	56.	-153.	-730.	70.	-7485.			
165.00	-916.	-219.	-229.	-508.	-16.	-5695.			
153.75	-887.	-15.	178.	-269.	52.	-4169.			
142.50	-386.	398.	728.	-22.	80.	-5139.			
131.25	798.	985.	1157.	163.	46.	-7074.			
120.00	1913.	1762.	1583.	284.	118.	-7049.			
108.75	2235.	2377.	2076.	410.	113.	-5482.			
97.50	2312.	2653.	2425.	515.	3.	-5312.			
86.25	2400.	2716.	2422.	583.	69.	-7021.			
75.00	1729.	2432.	2103.	594.	150.	-7814.			
63.75	497.	1729.	1643.	585.	15.	-6125.			
52.50	-363.	1005.	1174.	462.	-91.	-3964.			
41.25	-866.	515.	779.	240.	-160.	-3607.			
30.00	-1106.	206.	500.	-54.	-350.	-4145.			
18.75	-966.	86.	248.	-369.	-363.	-3201.			
7.50	-1395.	-121.	-128.	-553.	-185.	-895.			
356.25	-2837.	-839.	-641.	-553.	-271.	179.			
345.00	-3803.	-1711.	-1117.	-516.	-459.	-1087.			
333.75	-3417.	-1961.	-1284.	-524.	-375.	-2607.			
322.50	-2475.	-1490.	-955.	-543.	-319.	-2355.			
311.25	-1543.	-767.	-508.	-565.	-414.	-1530.			

RUN 23 PCINT 13
 VKTS = 107.0 UMEG*R = 601.7 ALFS,C = 8.5 CLK/S,R = 0.13127 CMY/S,R = 0.2212
 V/GR = 0.300 RHU100 = 0.2210 CP/S = 0.007816 CDK/S,R = 0.01556 CMX/S,R = -0.0151

UPPER ROTOR BLADE NORMAL BENDING MOMENT

HARMONIC	.1R		.2R		.3R		.6R	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	1751.5		3239.1		1144.1		-13.1	
1	2965.1	981.4	2285.0	362.3	1757.1	-84.5	2209.7	-2259.5
2	-1742.4	-2070.0	-1123.5	-1495.6	-869.8	-961.1	-2102.5	-1636.4
3	-200.2	23.3	-57.7	1.1	-0.7	59.1	198.9	389.7
4	-401.9	-618.4	-98.7	-375.2	-44.7	-149.3	645.7	519.1
5	-843.9	396.9	-502.9	62.3	-209.9	20.5	646.4	-192.1
6	-124.6	-799.6	84.7	-461.6	5.7	-206.8	183.5	499.8
7	320.1	281.6	181.4	84.9	75.6	-56.6	-239.7	15.3
8	-265.8	151.8	-114.1	15.1	15.3	-28.0	86.6	-157.9
9	340.0	-422.7	234.9	-104.6	0.6	-24.1	-129.1	264.1
10	-25.1	165.8	7.1	52.6	56.5	-27.3	97.1	16.5

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UPPER ROTOR EDGEWISE BENDING MOMENT .1R

HARMONIC	UPPER ROTOR BENDING MOMENT .1R		UPPER ROTOR PITCH LINK LOAD		UPPER ROTOR SHAFT STRESS	
	COS	SIN	COS	SIN	COS	SIN
0	0.0		-407.8		6002.0	
1	0.0	0.0	-125.1	338.6	-2439.6	-3869.1
2	0.0	0.0	168.8	-1.6	-326.7	-661.5
3	0.0	0.0	-166.4	53.2	529.8	-406.3
4	0.0	0.0	15.0	-17.4	16.0	398.1
5	0.0	0.0	-26.8	-72.5	93.8	-161.9
6	0.0	0.0	-19.0	-14.9	31.4	151.6
7	0.0	0.0	-44.1	29.8	-264.6	-530.4
8	0.0	0.0	7.0	-4.8	57.7	3.7
9	0.0	0.0	-3.1	-13.2	34.4	-60.8
10	0.0	0.0	33.9	-31.9	-8.5	29.1

RUN 23 PUNT 13
 VKTS = 107.0 OMEG#R = 601.7 ALFS,C = 8.5 CLR/S,R = 0.13127 CMY/S,R = 0.2212
 V/DR = 0.300 RHO100 = 0.2210 CP/S = 0.007816 CDR/S,R = 0.01556 CMX/S,R = -0.0151

HARMONIC	.1R		.2R		.3R		.6R	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	5436.1		4492.2		3138.2		88.1	
1	-3839.6	-3017.7	-2747.2	-1448.9	-1852.2	-759.9	-267.9	224.5
2	-2890.5	680.4	-2032.4	799.2	-1653.3	417.9	-616.5	-73.4
3	-597.1	-169.9	-375.4	22.6	-187.3	20.8	154.3	44.2
4	-426.1	698.5	-76.9	447.3	-66.1	179.6	50.2	-133.1
5	68.2	-132.7	21.0	-89.5	22.2	-21.1	3.4	22.3
6	187.1	676.4	298.1	311.3	103.1	206.5	-37.4	-54.3
7	660.6	67.9	230.0	-176.9	18.6	-30.0	-64.4	-8.0
8	82.3	-138.4	1.1	-64.6	16.7	9.7	-9.4	14.7
9	211.8	-401.2	-60.7	-175.4	15.1	-2.8	-7.7	43.9
10	5.8	53.8	25.0	25.4	-3.2	17.2	1.9	-11.5

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HARMONIC	LOWER ROTOR EDGEWISE BENDING MOMENT .1R		LOWER ROTOR PITCH LINK LOAD	
	COS	SIN	COS	SIN
0	-3815.8		178.3	
1	4537.4	6106.3	-266.9	293.0
2	3469.1	-649.7	-47.9	60.5
3	430.7	475.1	110.5	110.7
4	-189.8	-39.9	-35.1	42.1
5	73.7	-30.6	44.0	53.6
6	-89.6	-102.3	26.2	22.3
7	-898.8	-926.8	48.2	-58.2
8	37.0	-82.5	-19.4	-14.7
9	138.3	106.7	-14.9	-191.7
10	13.7	-33.2	16.2	-27.3

RUN 23 PGINT 13 POINT 13 UMEG#R = 601.7 ALFS,C = 8.5 CLR/S,R = 0.13127 CMY/S,R = 0.2212
 VKTS = 107.0 RHU100 = 0.2210 CP/S = 0.007816 CDR/S,R = 0.01556 CMX/S,R = -0.0151
 V/CR =

PSI	UPPER ROTOR BLADE			NORMAL		BENDING		MOMENT		UR EDGEWISE		UR PITCH		UPPER ROTOR	
	.1R	.2R		.3R		.6R	BENDING .1R	LINK LOAD	SHAFT STRESS						
0.00	1773.	4135.	1930.	1583.	0.	0.	0.	-568.	3726.						
11.25	821.	2968.	1147.	1154.	0.	0.	0.	-555.	2272.						
22.50	1535.	2864.	1176.	-648.	0.	0.	0.	-310.	1654.						
33.75	3308.	3967.	1721.	-2456.	0.	0.	0.	-106.	1281.						
45.00	4017.	4628.	1858.	-2998.	0.	0.	0.	-122.	354.						
56.25	3545.	4279.	1615.	-2212.	0.	0.	0.	-81.	-377.						
67.50	3300.	3956.	1442.	-742.	0.	0.	0.	-36.	373.						
78.75	3222.	3983.	1475.	260.	0.	0.	0.	-229.	2098.						
90.00	3627.	4292.	1832.	-52.	0.	0.	0.	-400.	3224.						
101.25	5591.	5158.	2186.	-957.	0.	0.	0.	-348.	3639.						
112.50	5781.	5440.	1857.	-873.	0.	0.	0.	-291.	4428.						
123.75	2382.	3801.	1061.	123.	0.	0.	0.	-238.	5750.						
135.00	-378.	1978.	531.	-167.	0.	0.	0.	-114.	6580.						
146.25	1139.	2110.	223.	-2539.	0.	0.	0.	-79.	6201.						
157.50	2313.	2663.	-178.	-4477.	0.	0.	0.	-46.	5369.						
168.75	-390.	1562.	-659.	-4306.	0.	0.	0.	135.	5791.						
180.00	-3389.	-146.	-1316.	-3789.	0.	0.	0.	163.	7818.						
191.25	-4509.	-1046.	-2003.	-3966.	0.	0.	0.	-90.	9579.						
202.50	-5283.	-1469.	-2148.	-3515.	0.	0.	0.	-315.	9774.						
213.75	-4904.	-1363.	-1694.	-2622.	0.	0.	0.	-486.	9572.						
225.00	-2451.	-143.	-1013.	-2386.	0.	0.	0.	-747.	10165.						
236.25	-486.	1453.	-134.	-1427.	0.	0.	0.	-935.	10766.						
247.50	-68.	2377.	819.	1244.	0.	0.	0.	-954.	10452.						
258.75	824.	2973.	1495.	3729.	0.	0.	0.	-890.	9759.						
270.00	2325.	3824.	2013.	5134.	0.	0.	0.	-739.	9535.						
281.25	3024.	4597.	2586.	6379.	0.	0.	0.	-664.	9704.						
292.50	3562.	5077.	3034.	6713.	0.	0.	0.	-813.	9513.						
303.75	5001.	5709.	3305.	5175.	0.	0.	0.	-874.	8471.						
315.00	6362.	6433.	3441.	3262.	0.	0.	0.	-680.	7075.						
326.25	6300.	6516.	3309.	2199.	0.	0.	0.	-549.	6262.						
337.50	4998.	5917.	3030.	1500.	0.	0.	0.	-553.	5991.						
348.75	3356.	5161.	2674.	1254.	0.	0.	0.	-536.	5264.						

RUN 23 POINT 13 CMY/S,R = 0.2212
 VKTS = 107.0 OMEG+R = 601.7 ALFS,C = 8.5 CLR/S,R = 0.13127 CMX/S,R = -0.0151
 V/OR = 0.300 RHU100 = 0.2210 CP/S = 0.007816 CDR/S,R = 0.01556

LOWER ROTOR BLADE NORMAL BENDING MUMENT				LR EDGEWISE BENDING .LR		LR PITCH LINK LOAD	
	.1R	.2R	.3R	.6R			
PS1							
300.00	8689.	6123.	3827.	-216.	-8225.	-119.	
288.75	8390.	6440.	4508.	256.	-9192.	-313.	
277.50	9865.	6935.	5056.	494.	-11954.	-130.	
266.25	11705.	8069.	5579.	539.	-14656.	61.	
255.00	11770.	8678.	5879.	619.	-14405.	64.	
243.75	10899.	8380.	5797.	612.	-12402.	219.	
232.50	10355.	7865.	5414.	370.	-11668.	396.	
221.25	10227.	7501.	4972.	20.	-11936.	246.	
210.00	10580.	7421.	4717.	-332.	-10919.	95.	
198.75	10408.	7498.	4538.	-597.	-8329.	269.	
187.50	8063.	6774.	4038.	-548.	-5819.	342.	
176.25	5033.	5016.	3261.	-223.	-4601.	125.	
165.00	4332.	3806.	2778.	42.	-4161.	237.	
153.75	5163.	4021.	2889.	213.	-2896.	745.	
142.50	5195.	4544.	3355.	463.	-715.	837.	
131.25	5261.	4745.	3799.	674.	19.	511.	
120.00	6150.	5086.	3962.	743.	-1775.	561.	
108.75	6007.	5263.	3872.	860.	-3336.	757.	
97.50	4714.	4841.	3827.	1032.	-2189.	460.	
86.25	4401.	4519.	3877.	986.	-198.	207.	
75.00	4727.	4576.	3693.	699.	-113.	418.	
63.75	3920.	4201.	3137.	373.	-630.	372.	
52.50	2535.	3236.	2363.	60.	1222.	36.	
41.25	1405.	2251.	1504.	-234.	4636.	203.	
30.00	-88.	1263.	734.	-435.	6108.	482.	
18.75	-1365.	284.	223.	-566.	4950.	163.	
7.50	-1292.	-175.	-172.	-685.	3750.	-86.	
356.25	-1202.	-262.	-567.	-679.	3793.	102.	
345.00	-2042.	-573.	-618.	-479.	3361.	-132.	
333.75	-1057.	-415.	65.	-322.	722.	-711.	
322.50	3424.	1473.	1358.	-416.	-3577.	-608.	
311.25	7783.	4364.	2757.	-501.	-6997.	-107.	

RUN 23 POINT 14
 VKTS = 107.0 OMEG*R = 604.1 ALFS,C = 8.4 CLK/S,R = 0.11709 CMY/S,R = 0.2056
 V/OR = 0.299 RHU100 = 0.2198 CP/S = 0.004506 CDR/S,R = 0.01566 CMX/S,R = -0.0071

HARMONIC	UPPER ROTOR BLADE NORMAL BENDING MUMENT							
	.1R		.2R		.3R		.6R	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	1534.3		3075.8		1028.4		-229.7	
1	-341.8	597.8	35.0	-6.1	217.6	-300.7	1064.0	-2342.0
2	-1239.5	-1334.3	-850.6	-975.4	-689.2	-628.8	-2184.0	-1064.4
3	-65.0	49.8	-29.5	31.1	-38.0	24.6	-258.3	58.7
4	485.8	-911.3	410.8	-419.0	166.6	-200.9	-413.5	894.5
5	-342.2	65.4	-162.0	-20.5	-40.4	-50.1	199.7	21.7
6	220.0	-584.9	205.9	-307.1	54.8	-170.0	-1.4	393.2
7	10.5	296.5	26.2	88.9	37.9	-38.0	-59.4	-52.8
8	-420.2	-164.8	-148.7	-100.9	6.7	47.1	256.3	65.0
9	620.9	-185.4	290.4	59.1	-1.1	-15.0	-366.2	175.8
10	-226.5	29.8	-47.3	-4.6	67.2	28.4	52.5	68.0

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HARMONIC	UPPER ROTOR EDGEWISE BENDING MUMENT .1R				UPPER ROTOR PITCH LINK LOAD				UPPER ROTOR SHAFT STRESS			
	COS		SIN		COS		SIN		COS		SIN	
0	0.0				-459.1				5972.7			
1	0.0	0.0	0.0	0.0	-167.0	337.9	-25.7	-618.1	-2006.2	1079.5	-834.1	
2	0.0	0.0	0.0	0.0	135.9	-25.7	41.4	72.7	-618.1	-834.1	-26.7	
3	0.0	0.0	0.0	0.0	-116.6	41.4	-37.7	-224.2	72.7	-26.7	892.1	
4	0.0	0.0	0.0	0.0	28.3	-37.7	-76.7	215.8	-224.2	892.1	-232.5	
5	0.0	0.0	0.0	0.0	-43.0	-76.7	-18.0	-34.4	215.8	-232.5	56.3	
6	0.0	0.0	0.0	0.0	6.7	-18.0	44.3	-101.8	-34.4	56.3	-281.8	
7	0.0	0.0	0.0	0.0	-55.5	44.3	0.3	-18.5	-101.8	-281.8	297.8	
8	0.0	0.0	0.0	0.0	-13.5	0.3	-13.7	18.0	-18.5	297.8	-87.8	
9	0.0	0.0	0.0	0.0	24.3	-13.7	-15.7	-61.7	18.0	-87.8	14.6	
10	0.0	0.0	0.0	0.0	51.4	-15.7			-61.7	14.6		

RUN 23 POINT 14 UMEG* π R = 604.1 ALFS,C = 8.4 CLK/S,R = 0.11709 CMY/S,R = 0.2056
 VKTS = 107.0 RHU100 = 0.2198 CP/S = 0.004506 CDR/S,R = 0.01566 CMX/S,R = -0.0071
 V/CR = 0.299

LOWER ROTOR BLADE NORMAL BENDING MOMENT

HARMONIC	.1R		.2R		.3R		.6R	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	1857.3		2004.8		1467.1		-122.3	
1	472.5	519.2	612.5	676.7	515.8	811.8	215.3	492.3
2	-2222.6	1686.9	-1440.2	1415.5	-1226.5	974.4	-505.0	262.7
3	-106.8	133.3	-18.1	130.9	2.1	101.1	57.6	-15.9
4	-318.2	1183.2	86.8	716.2	-1.8	348.7	6.6	-189.8
5	-51.5	477.4	96.8	269.1	20.5	154.1	-2.1	-61.1
6	157.0	756.4	291.0	341.5	95.7	201.2	-26.8	-72.8
7	301.3	-216.0	62.7	-183.9	29.5	-45.4	-23.3	23.8
8	-106.0	-312.3	-82.8	-76.0	52.1	0.1	15.6	28.4
9	285.3	-353.0	-27.9	-173.2	-9.3	15.2	-7.3	45.5
10	41.2	81.9	54.8	16.4	6.8	15.7	-7.6	-12.2

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LOWER ROTOR EDGEWISE BENDING MOMENT .1R

HARMONIC	BENDING MOMENT .1R		LOWER ROTOR PITCH LINK LOAD	
	COS	SIN	COS	SIN
0	-4731.6		-19.5	
1	3942.9	1621.9	-163.2	244.3
2	1464.9	-3146.2	-44.1	111.1
3	227.7	-23.7	2.7	-13.9
4	84.2	-19.9	-9.5	40.9
5	-68.1	43.3	29.9	53.8
6	-78.1	-149.7	35.3	42.6
7	100.2	-614.7	-35.4	-12.2
8	-74.8	101.0	-35.8	1.3
9	60.7	139.3	-104.7	-2.4
10	2.2	10.2	-65.7	29.2

PSI	UPPER ROTOR		BLADE	NORMAL •2K	BENDING		MOMENT •6R	UR EDGEWISE BENDING •1K	UR PITCH LINK LOAD	UPPER ROTOR SHAFT STRESS
	•1K	•2K			•3R	•6R				
0.00	236.	2806.		810.	-1940.	0.	-608.	3214.		
11.25	-1320.	1632.		83.	-1130.	0.	-643.	3758.		
22.50	-1480.	998.		-299.	-1403.	0.	-483.	4222.		
33.75	-492.	1489.		44.	-2088.	0.	-265.	4413.		
45.00	472.	2239.		516.	-1925.	0.	-270.	4667.		
56.25	1341.	2659.		763.	-1629.	0.	-228.	4934.		
67.50	2684.	3241.		981.	-1735.	0.	-87.	5222.		
78.75	3481.	3867.		1181.	-1304.	0.	-239.	6082.		
90.00	2977.	3942.		1437.	-404.	0.	-477.	7512.		
101.25	3342.	4100.		1751.	-379.	0.	-359.	8716.		
112.50	4875.	4671.		1615.	-887.	0.	-155.	9333.		
123.75	3823.	4237.		1073.	-451.	0.	-154.	9682.		
135.00	926.	2816.		906.	-131.	0.	-169.	9782.		
146.25	1702.	2763.		1063.	-2041.	0.	-130.	8997.		
157.50	4685.	4062.		937.	-4549.	0.	-61.	7220.		
168.75	3742.	4012.		682.	-4562.	0.	92.	6029.		
180.00	472.	2486.		459.	-3100.	0.	107.	6817.		
191.25	-538.	1606.		-6.	-2558.	0.	-153.	8099.		
202.50	-934.	1379.		-377.	-1986.	0.	-413.	7685.		
213.75	-1900.	1008.		-159.	-543.	0.	-582.	6397.		
225.00	-655.	1448.		360.	26.	0.	-778.	5938.		
236.25	1733.	2858.		888.	-128.	0.	-884.	5591.		
247.50	2035.	3666.		1441.	1090.	0.	-878.	4594.		
258.75	1795.	3716.		1841.	2979.	0.	-885.	4303.		
270.00	2714.	4117.		2101.	3896.	0.	-800.	5376.		
281.25	2790.	4539.		2378.	4769.	0.	-707.	6398.		
292.50	1711.	4175.		2343.	5911.	0.	-882.	6292.		
303.75	1414.	3625.		1928.	5603.	0.	-1023.	5365.		
315.00	1770.	3562.		1692.	3791.	0.	-786.	4326.		
326.25	1906.	3643.		1685.	1780.	0.	-565.	3671.		
337.50	2060.	3605.		1531.	-328.	0.	-605.	3360.		
348.75	1730.	3460.		1260.	-1992.	0.	-619.	3128.		

RUN 23 POINT 14
 VKTS = 107.0 UMEGR = 604.1 ALFS,C = 8.4 CMY/S,R = 0.2056
 V/OR = 0.299 RHU100 = 0.2198 CP/S = 0.004506 CDR/S,R = 0.01566 CMX/S,R = -0.0071

PSI	LOWER ROTOR BLADE NORMAL BENDING MOMENT			LR EDGEWISE BENDING .LR		LR PITCH LINK LOAD	
	.1R	.2R	.3R	.6R			
300.00	3556.	2699.	1379.	-786.	-2055.	-80.	
288.75	2431.	2543.	1501.	-430.	-3806.	-319.	
277.50	2154.	2140.	1552.	-116.	-6798.	-454.	
266.25	3093.	2457.	1824.	-11.	-9135.	-232.	
255.00	3815.	2997.	2056.	21.	-9784.	-152.	
243.75	3619.	3009.	1952.	9.	-10311.	-106.	
232.50	2762.	2534.	1622.	-127.	-11670.	106.	
221.25	2034.	1955.	1239.	-363.	-12314.	132.	
210.00	2221.	1656.	874.	-665.	-11127.	11.	
198.75	2268.	1647.	573.	-961.	-9328.	87.	
187.50	342.	1092.	200.	-1013.	-8188.	178.	
176.25	-2181.	-311.	-360.	-795.	-7229.	92.	
165.00	-2461.	-1197.	-733.	-617.	-5671.	20.	
153.75	-1268.	-715.	-446.	-530.	-3933.	58.	
142.50	-509.	192.	370.	-317.	-3013.	161.	
131.25	817.	1037.	1206.	-55.	-3228.	240.	
120.00	2889.	2223.	1859.	124.	-3783.	194.	
108.75	3574.	3229.	2495.	400.	-3691.	178.	
97.50	3495.	3617.	3192.	766.	-3339.	300.	
86.25	4694.	4165.	3688.	937.	-4073.	314.	
75.00	5382.	4777.	3749.	971.	-5630.	254.	
63.75	3945.	4420.	3560.	1059.	-5981.	309.	
52.50	3198.	3706.	3382.	968.	-4553.	167.	
41.25	4464.	3860.	3170.	521.	-3053.	-125.	
30.00	4792.	4178.	2864.	37.	-2399.	25.	
18.75	3140.	3592.	2464.	-223.	-1630.	251.	
7.50	1409.	2475.	1721.	-353.	-149.	-121.	
356.25	-373.	1168.	528.	-401.	1396.	-457.	
345.00	-2748.	-437.	-520.	-323.	2196.	-294.	
333.75	-3367.	-1417.	-724.	-298.	1749.	-361.	
322.50	-579.	-575.	-92.	-527.	258.	-627.	
311.25	2626.	1438.	802.	-818.	-1137.	-372.	

RUN 23 PGINT 15
 VKTS = 107.8 OMEG*R = 607.3 ALFS,C = 3.1 CLR/S,R = 0.08479 CMY/S,R = 0.0939
 V/OR = 0.299 RHU100 = 0.2194 CP/S = 0.002807 CDR/S,R = 0.00627 CMX/S,R = -0.0060

HARMONIC	.1R		.2R		UPPER ROTLK BLADE NORMAL BENDING MOMENT		.3R		.6R	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	-2333.8		491.3		-761.7		-1463.2		-1463.2	
1	-702.0	-140.2	-238.7	-506.7	-27.5	-587.7	741.3	-2374.4	741.3	-2374.4
2	-561.9	-765.7	-384.8	-497.1	-348.7	-275.9	-1091.6	-282.4	-1091.6	-282.4
3	-37.6	66.7	-62.1	123.5	-27.5	63.6	26.5	81.1	26.5	81.1
4	272.6	-29.4	194.7	42.0	100.3	10.3	-292.9	-61.4	-292.9	-61.4
5	-526.5	304.7	-326.9	91.4	-105.3	30.4	371.4	-302.1	371.4	-302.1
6	-138.5	-404.6	1.3	-291.3	-15.2	-124.7	186.8	254.5	186.8	254.5
7	207.9	153.6	90.4	77.6	35.2	-27.6	-99.5	-48.7	-99.5	-48.7
8	-59.9	83.8	-22.2	23.1	11.5	1.4	17.3	-27.5	17.3	-27.5
9	242.8	-88.3	112.7	13.1	-1.7	-9.8	-119.8	44.3	-119.8	44.3
10	-94.1	-1.3	-29.6	-18.1	-1.2	7.4	62.8	18.6	62.8	18.6

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HARMONIC	UPPER ROTOR EDGEWISE BENDING MOMENT .1R		UPPER ROTOR PITCH LINK LOAD		UPPER ROTOR SHAFT STRESS	
	COS	SIN	COS	SIN	COS	SIN
0	0.0		-592.3		5546.7	
1	0.0	0.0	9.5	235.1	-3597.3	-841.2
2	0.0	0.0	-31.8	44.9	-417.9	-525.7
3	0.0	0.0	-44.1	47.6	298.3	-1.3
4	0.0	0.0	-48.4	-20.1	-188.9	409.2
5	0.0	0.0	49.6	-24.1	107.2	-255.9
6	0.0	0.0	49.8	68.8	-94.0	-57.4
7	0.0	0.0	29.3	66.0	-106.7	-270.9
8	0.0	0.0	46.1	20.9	33.0	-57.3
9	0.0	0.0	6.9	-26.7	17.7	25.7
10	0.0	0.0	-11.6	-10.7	-30.2	-10.4

RUN 23 POINT 15 CMY/S,R = 0.0939
 VKTS = 107.8 OMEG*R = 607.3 ALFS,C = 3.1 CLR/S,R = 0.08479
 V/OR = 0.299 RHU100 = 0.2194 CP/S = 0.002807 CDR/S,R = 0.00627 CMX/S,R = -0.0060

LOWER ROTOR BLADE NORMAL BENDING MOMENT

HARMONIC	.1R		.2R		.3R		.6R	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	-1933.8		-661.4		-309.7		-316.3	
1	-571.6	-355.9	-231.9	55.6	-43.2	343.8	130.1	384.6
2	-747.5	220.3	-565.0	190.7	-492.4	68.1	-233.6	6.0
3	-72.5	-453.9	-67.0	-255.5	3.1	-126.2	49.1	18.4
4	239.5	69.8	195.2	-19.0	101.4	9.6	-51.6	-18.5
5	-427.4	-203.1	-271.8	-14.5	-127.7	-26.4	49.2	22.1
6	-97.6	430.4	95.5	246.3	9.9	126.6	7.6	-54.8
7	385.2	97.3	184.5	-90.0	38.1	-33.4	-35.9	-13.4
8	1.6	-88.8	-19.8	-34.9	13.6	9.1	0.7	5.2
9	-3.1	22.6	-1.1	-1.9	-4.5	-3.6	8.5	3.5
10	-11.0	106.5	24.3	44.3	-12.3	1.3	-0.6	-6.4

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HARMONIC	LOWER ROTOR EDGEWISE BENDING MOMENT .1R		LOWER ROTOR PITCH LINK LOAD	
	COS	SIN	COS	SIN
0	-4365.5		-153.8	
1	1732.3	-376.7	-162.1	73.5
2	497.0	-515.0	26.1	12.5
3	44.7	-16.9	-3.9	-37.1
4	-60.4	-31.6	-4.2	-0.9
5	65.0	-26.2	5.8	3.6
6	-59.8	-116.0	38.4	8.0
7	355.8	-439.6	21.3	1.1
8	-25.9	-6.9	2.9	15.6
9	-35.8	10.1	0.5	-15.2
10	-11.1	-8.4	11.9	-11.2

RUN 23 PCINT 15
 VKTS = 107.8 UMLG*H = 607.3 ALFS,C = 3.1 CLR/S,R = 0.08479 CMY/S,R = 0.0939
 V/CP = 0.299 RHUICO = 0.2194 CP/S = 0.002807 CDR/S,R = 0.00627 CMX/S,R = -0.0060

	UPPER ROTOR BLADE			NORMAL BENDING		MOMENT		UR EDGEWISE	UR PITCH	UPPER ROTOR
	.1K	.2K	.3K	.3R	.6R	BENDING	.1R	LINK	SHAFT	STRESS
PSI										
0.00	-3731.	-174.	-1142.	-1661.	0.	-537.	1508.			
11.25	-3974.	-475.	-1415.	-2272.	0.	-459.	1108.			
22.50	-3858.	-519.	-1458.	-2916.	0.	-533.	1469.			
33.75	-3405.	-228.	-1319.	-3229.	0.	-548.	2066.			
45.00	-3246.	-81.	-1276.	-2926.	0.	-353.	2191.			
56.25	-3651.	-408.	-1433.	-2263.	0.	-108.	2016.			
67.50	-3779.	-726.	-1528.	-2012.	0.	-111.	2435.			
78.75	-2892.	-385.	-1305.	-2638.	0.	-341.	3753.			
90.00	-1471.	474.	-888.	-3561.	0.	-530.	5134.			
101.25	-391.	1197.	-632.	-3906.	0.	-560.	6058.			
112.50	-399.	1275.	-739.	-3442.	0.	-479.	7102.			
123.75	-1786.	594.	-1045.	-2514.	0.	-370.	8376.			
135.00	-2963.	-133.	-1184.	-2065.	0.	-340.	8936.			
146.25	-2011.	148.	-1041.	-2937.	0.	-427.	8463.			
157.50	-391.	1100.	-848.	-4238.	0.	-548.	7797.			
168.75	-726.	1315.	-803.	-4338.	0.	-624.	7661.			
180.00	-2100.	675.	-886.	-3501.	0.	-639.	8130.			
191.25	-2590.	199.	-1032.	-2844.	0.	-650.	8834.			
202.50	-2867.	36.	-1115.	-2130.	0.	-707.	9152.			
213.75	-3309.	-85.	-995.	-1110.	0.	-738.	8866.			
225.00	-2811.	182.	-713.	-417.	0.	-712.	8388.			
236.25	-1949.	772.	-423.	116.	0.	-762.	7933.			
247.50	-1897.	1083.	-146.	1005.	0.	-851.	7379.			
258.75	-1780.	1272.	133.	1650.	0.	-772.	6903.			
270.00	-1182.	1680.	318.	1768.	0.	-672.	6732.			
281.25	-1357.	1806.	350.	2057.	0.	-809.	6582.			
292.50	-2089.	1429.	261.	2321.	0.	-914.	5969.			
303.75	-2024.	1159.	52.	1766.	0.	-717.	4799.			
315.00	-1644.	1129.	-229.	795.	0.	-586.	3559.			
326.25	-2077.	877.	-457.	123.	0.	-796.	2922.			
337.50	-2911.	428.	-612.	-431.	0.	-963.	2807.			
348.75	-3418.	102.	-823.	-1072.	0.	-796.	2408.			

RUN 23 PUNT 15
 VKTS = 107.8 UMEG#R = 607.3 ALFS,C = 3.1 CLR/S,R = 0.08479 CMY/S,R = 0.0939
 V/CR = 0.299 RHU100 = 0.2194 CP/S = 0.002807 CDR/S,R = 0.00627 CMX/S,R = -0.0060

PSI	LOWER ROTOR BLADE NORMAL BENDING MOMENT			LR EDGEWISE BENDING .IK		LR PITCH LINK LOAD	
	.1R	.2R	.3R	.6R			
300.00	-1917.	-570.	-519.	-486.	-2456.	-294.	
288.75	-2634.	-1026.	-610.	-373.	-3446.	-326.	
277.50	-1908.	-988.	-414.	-428.	-4624.	-332.	
266.25	-73.	-69.	-65.	-599.	-4947.	-318.	
255.00	383.	612.	63.	-630.	-4798.	-229.	
243.75	-1024.	151.	-151.	-492.	-5167.	-119.	
232.50	-2118.	-736.	-535.	-428.	-5938.	-74.	
221.25	-1768.	-1034.	-774.	-551.	-6129.	-58.	
210.00	-837.	-661.	-664.	-751.	-5607.	-19.	
198.75	-455.	-164.	-407.	-893.	-5356.	37.	
187.50	-1112.	-180.	-397.	-887.	-5843.	73.	
176.25	-2191.	-768.	-651.	-732.	-6238.	41.	
165.00	-2718.	-1261.	-840.	-531.	-5739.	-16.	
153.75	-2859.	-1335.	-758.	-345.	-4863.	-9.	
142.50	-2983.	-1269.	-462.	-155.	-4761.	3.	
131.25	-2523.	-1013.	-115.	5.	-5529.	-45.	
120.00	-1551.	-422.	194.	91.	-5960.	-43.	
108.75	-1013.	106.	495.	150.	-5357.	3.	
97.50	-968.	315.	735.	225.	-4704.	-60.	
86.25	-1080.	331.	745.	275.	-5013.	-153.	
75.00	-1517.	121.	527.	261.	-5536.	-118.	
63.75	-1999.	-265.	263.	204.	-5042.	-84.	
52.50	-2244.	-562.	5.	132.	-3850.	-171.	
41.25	-2758.	-873.	-269.	40.	-3198.	-269.	
30.00	-3563.	-1283.	-478.	-99.	-3353.	-314.	
18.75	-3299.	-1437.	-604.	-265.	-3412.	-316.	
7.50	-3083.	-1316.	-735.	-371.	-2639.	-252.	
356.25	-3355.	-1365.	-857.	-397.	-1541.	-221.	
345.00	-3342.	-1502.	-878.	-425.	-1325.	-317.	
333.75	-2553.	-1327.	-764.	-500.	-2130.	-375.	
322.50	-1664.	-877.	-559.	-579.	-2716.	-297.	
311.25	-1356.	-496.	-433.	-586.	-2481.	-249.	

FUN 23 PUNT 16
 VKTS = 142.6
 V/VR = 0.396
 OMEG* R = 607.3
 RHU100 = 0.2176
 ALFS,C = 2.8
 CP/S = 0.002998
 CLR/S,R = 0.07811
 CDR/S,R = 0.00711
 CMY/S,R = 0.0933
 CMX/S,R = -0.0060

UPPER ROTOR BLADE NORMAL BENDING MOMENT

HARMONIC	.1R		.2R		.3R		.6R	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	-3080.6	778.9	-109.3	81.0	-1168.4	-277.9	-1860.7	-2635.0
1	621.9	-1188.5	716.3	-855.6	692.7	-473.1	1833.9	-495.5
2	-2130.1	183.1	-1442.8	36.3	-1100.1	50.4	-2262.9	90.9
3	-318.7	-863.4	-170.9	-502.1	-71.5	-242.4	514.3	718.5
4	-177.2	586.0	86.9	267.1	55.6	130.2	254.4	-440.3
5	-358.8	-476.7	-277.5	-300.1	-104.8	-165.6	264.9	268.9
6	-89.4	39.4	50.3	67.0	-8.1	5.3	-186.7	-32.4
7	329.6	182.8	152.2	63.3	24.4	-13.6	5.0	-147.0
8	2.2	6.7	-29.2	-21.1	12.7	-4.6	61.3	-38.6
9	-105.2	31.5	-29.8	8.1	17.4	3.9	66.5	-92.2
10	-68.9		-45.0		-3.4			

UPPER ROTOR EDGEWISE BENDING MOMENT .1R

HARMONIC

HARMONIC	COS	SIN
0	0.0	0.0
1	0.0	0.0
2	0.0	0.0
3	0.0	0.0
4	0.0	0.0
5	0.0	0.0
6	0.0	0.0
7	0.0	0.0
8	0.0	0.0
9	0.0	0.0
10	0.0	0.0

UPPER ROTOR PITCH LINK LOAD

UPPER ROTOR PITCH LINK LOAD		UPPER ROTOR SHAFT STRESS	
COS	SIN	COS	SIN
-605.3	198.8	5620.0	-187.5
71.6	116.2	-3066.4	-914.4
-26.3	-8.9	-533.8	-245.5
7.3	53.4	263.5	896.9
-3.8	-37.0	-183.1	-306.3
60.4	36.0	150.8	17.2
15.6	84.6	-36.3	-186.2
18.4	8.7	-68.5	-99.4
40.5	-5.9	184.7	-27.4
26.8	-39.8	52.6	-4.0
-12.9		-68.3	

RUN 23 PUINT 16 UMEU#R = 607.3 ALFS,C = 2.8 CLR/S,R = 0.07811 CMY/S,R = 0.0933
 VKTS = 142.6 RHU100 = 0.2176 CP/S = 0.002998 CDR/S,R = 0.00711 CMX/S,R = -0.0060
 V/CR = 0.396

LOWER ROTOR BLADE NORMAL BENDING MOMENT

HARMONIC	.1R		.2R		.3R		.6R	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	-2670.3		-1170.6		-673.9		-386.8	
1	-721.9	-744.2	-291.4	-81.8	30.1	355.1	226.8	501.7
2	-2566.9	123.8	-1937.2	278.2	-1497.9	-9.2	-502.1	-84.7
3	-155.6	-452.7	-159.2	-237.4	-46.2	-120.7	79.6	49.1
4	-372.5	587.6	-17.8	368.7	28.1	144.3	35.6	-106.0
5	-479.8	-315.7	-306.7	-36.9	-125.2	-28.9	59.6	25.7
6	-318.7	486.6	-7.4	343.1	-18.4	154.9	17.5	-45.0
7	280.1	136.4	173.3	-72.7	69.8	-43.9	-28.5	-0.1
8	-47.5	-144.6	-32.9	-27.9	26.4	11.2	3.7	13.8
9	-352.5	-229.0	-154.0	33.3	17.4	-2.9	33.7	15.6
10	-117.4	100.5	-1.7	60.2	-11.3	-4.3	6.5	-6.4

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LOWER ROTOR EDGEWISE BENDING MOMENT .1R

HARMONIC

	COS	SIN
0	-4201.7	
1	1030.7	-318.1
2	1728.1	-735.6
3	231.9	295.1
4	-54.9	25.0
5	36.1	30.3
6	19.5	-77.7
7	646.0	-442.9
8	-53.3	-59.7
9	44.8	-54.9
10	-15.1	-4.6

LOWER ROTOR PITCH LINK LOAD

	COS	SIN
	-180.7	
	-194.3	-0.3
	79.7	29.2
	24.2	23.3
	-24.5	17.5
	-14.3	9.7
	27.0	9.5
	1.3	-1.5
	-9.1	-4.3
	-14.2	16.2
	-11.8	13.0

UPPER ROTOR BLADE	NORMAL BENDING	MUMENT	UP	EDGEWISE	UR	PITCH	UPPER	KUTUR
.1K	.2R	.3R	.6R	BENDING .1K	LINK	LOAD	SHAFT	STRESS
PSI								
0.00	-5375.	-1099.	-1653.	-1208.	0.	-408.	2315.	
11.25	-5459.	-1488.	-2017.	-1997.	0.	-346.	1841.	
22.50	-5137.	-1495.	-1969.	-2385.	0.	-405.	1980.	
33.75	-4095.	-1014.	-1549.	-2909.	0.	-469.	2491.	
45.00	-2261.	-31.	-1131.	-3802.	0.	-389.	2603.	
56.25	-1209.	710.	-917.	-3743.	0.	-205.	2345.	
67.50	-1454.	792.	-722.	-2736.	0.	-199.	2830.	
78.75	-1167.	957.	-418.	-2346.	0.	-365.	4490.	
90.00	182.	1610.	-196.	-2679.	0.	-465.	6170.	
101.25	563.	1917.	-289.	-2643.	0.	-491.	7236.	
112.50	-1011.	1176.	-734.	-2147.	0.	-482.	8430.	
123.75	-2840.	-95.	-1363.	-2102.	0.	-440.	9578.	
135.00	-3056.	-756.	-1812.	-3403.	0.	-540.	9419.	
146.25	-2032.	-419.	-1860.	-5773.	0.	-751.	8086.	
157.50	-1775.	-23.	-1804.	-7443.	0.	-791.	6999.	
168.75	-3332.	-594.	-2112.	-7317.	0.	-737.	6904.	
180.00	-5713.	-1879.	-2770.	-6183.	0.	-777.	7651.	
191.25	-7492.	-2978.	-3309.	-4849.	0.	-722.	8572.	
202.50	-7944.	-3364.	-3326.	-3538.	0.	-549.	8815.	
213.75	-6850.	-2803.	-2766.	-2711.	0.	-534.	8308.	
225.00	-4902.	-1515.	-1899.	-2132.	0.	-652.	7502.	
236.25	-3377.	-292.	-1100.	-901.	0.	-768.	6455.	
247.50	-2596.	454.	-525.	816.	0.	-887.	5590.	
258.75	-2170.	929.	-95.	2364.	0.	-835.	5708.	
270.00	-2116.	1162.	219.	3665.	0.	-625.	6349.	
281.25	-2146.	1191.	358.	4210.	0.	-687.	6452.	
292.50	-1693.	1353.	336.	3482.	0.	-933.	6105.	
303.75	-1209.	1555.	215.	2179.	0.	-852.	5555.	
315.00	-1386.	1400.	-4.	895.	0.	-663.	4428.	
326.25	-2029.	992.	-322.	-365.	0.	-802.	3177.	
337.50	-3052.	465.	-704.	-974.	0.	-920.	2734.	
348.75	-4444.	-317.	-1151.	-868.	0.	-681.	2721.	

RUN 23 PUNT 16 VKTS = 142.6 OMEG*P = 607.3 ALFS,C = 2.8 CLR/S,R = 0.07811 CMY/S,R = 0.0933
 V/OR = 0.396 RHJ100 = 0.2176 CP/S = 0.002998 CDK/S,R = 0.00711 CMX/S,K = -0.0060

PSI	LOWER ROTOR BLADE NORMAL BENDING MOMENT		LR EDGEWISE BENDING .IR		LR PITCH LINK LOAD	
	.1R	.2K	.3R	.6R		
300.00	-523.	174.	-124.	-574.	-2773.	-270.
288.75	-1687.	-155.	-17.	-309.	-4499.	-324.
277.50	-720.	-148.	245.	-253.	-5814.	-372.
266.25	1446.	875.	468.	-424.	-5771.	-264.
255.00	847.	1229.	352.	-498.	-5307.	-130.
243.75	-1411.	115.	-162.	-497.	-5652.	-67.
232.50	-1972.	-983.	-877.	-688.	-6500.	-24.
221.25	-1476.	-1207.	-1385.	-1028.	-6418.	6.
210.00	-1555.	-1145.	-1468.	-1310.	-5179.	20.
198.75	-2066.	-1242.	-1476.	-1451.	-4406.	50.
187.50	-3340.	-1763.	-1796.	-1381.	-4904.	76.
176.25	-5283.	-2798.	-2207.	-1077.	-5175.	75.
165.00	-6029.	-3509.	-2243.	-715.	-4135.	49.
153.75	-4994.	-3114.	-1787.	-447.	-3179.	-4.
142.50	-3023.	-2094.	-1033.	-219.	-3820.	-33.
131.25	-2454.	-1142.	-241.	24.	-5267.	-18.
120.00	-1123.	-231.	433.	220.	-5903.	-62.
108.75	-201.	653.	993.	364.	-5691.	-184.
97.50	-452.	1071.	1365.	525.	-5795.	-271.
86.25	-1356.	796.	1331.	655.	-6600.	-323.
75.00	-1640.	232.	904.	616.	-7073.	-367.
63.75	-2059.	-201.	385.	407.	-6148.	-327.
52.50	-2901.	-698.	-86.	155.	-4262.	-260.
41.25	-3842.	-1427.	-610.	-103.	-2923.	-276.
30.00	-4104.	-2006.	-1185.	-377.	-2681.	-269.
18.75	-4967.	-2475.	-1677.	-508.	-2345.	-200.
7.50	-6380.	-3330.	-2032.	-470.	-988.	-239.
356.25	-7411.	-4064.	-2259.	-469.	196.	-346.
345.00	-5843.	-3785.	-2244.	-567.	-414.	-352.
333.75	-4226.	-2830.	-1708.	-621.	-2042.	-344.
322.50	-2666.	-1746.	-994.	-651.	-2638.	-389.
311.25	-737.	-514.	-356.	-697.	-2206.	-345.

V/D R = 0.599

RH0100 = 0.2157

CP/S = J.0J446L

CDR/S, R = 0.00754

$$CMX/S, K = -0.0070$$

UPPER ROTOR BLADE NORMAL BENDING MOMENT

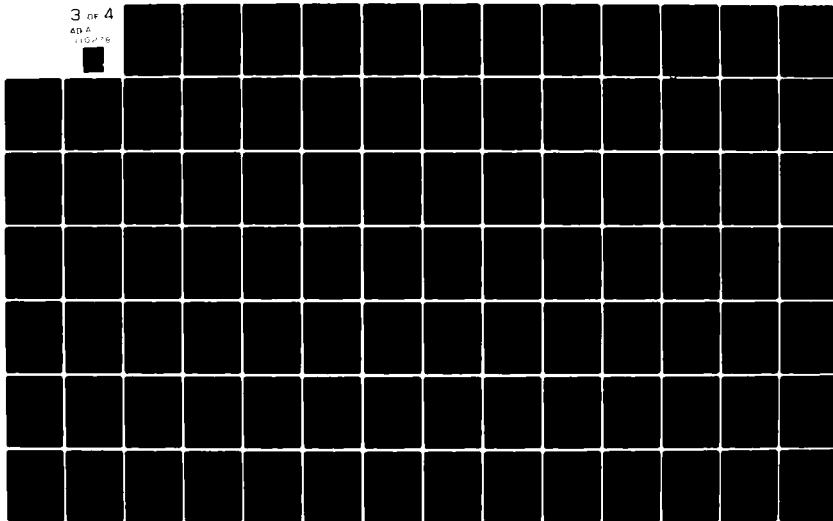
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UPPER RUTIR EDGEWISE

UPPER ROTOR EDGEWISE UPPER ROTOR UPPER ROTOR

AD-A110 278 NATIONAL AERONAUTICS AND SPACE ADMINISTRATION MOFFET--ETC F/6 20/4
PERFORMANCE AND LOADS DATA FROM A WIND TUNNEL TEST OF A FULL-SC--ETC(U)
OCT 81 F F FELKER
UNCLASSIFIED NASA-A-8732 NASA-TN-81329 NL

3 OF 4
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1.0

2.8 2.5

2.2

1.1

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RUN 23 POINT 17 UMEG#R = 604.7 ALFS,C = 2.9 CLR/S,R = 0.10987 CMY/S,R = 0.1176
 VKTS = 143.0 RHU100 = 0.2157 CP/S = 0.004461 CDR/S,R = 0.00754 CMX/S,R = -0.0070
 V/CR = 0.399

LOWER ROTOR BLADE NORMAL BENDING MOMENT

HARMONIC	.1R		.2R		.3R		.6K	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	680.1		1242.6		989.1		-165.7	
1	-224.3	-4740.3	-197.8	-2886.6	122.5	-1567.5	226.6	210.2
2	-2754.3	603.4	-2010.7	669.7	-1575.0	295.4	-527.1	7.4
3	-244.0	-487.0	-214.4	-249.1	-65.1	-133.8	84.5	67.7
4	-668.3	827.6	-152.5	562.7	-67.4	219.9	74.3	-144.2
5	-319.5	-90.5	-186.0	45.8	-93.2	33.1	39.3	1.6
6	-262.3	742.4	90.3	444.7	12.8	212.7	8.2	-66.7
7	349.2	225.6	226.8	-57.5	82.5	-43.7	-33.6	-7.3
8	-57.7	-178.6	-62.9	-40.8	8.3	-13.5	8.0	15.9
9	-441.4	-206.2	-178.8	61.1	21.9	-12.1	38.3	17.8
10	-106.8	88.9	11.5	50.4	1.9	-12.3	7.4	-0.6

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LOWER ROTOR EDGEWISE BENDING MOMENT .1R

HARMONIC	COS		SIN	
	COS	SIN	COS	SIN
0	-4228.2		-117.4	
1	2698.6	1185.9	-192.2	13.0
2	1281.5	-1153.6	85.4	81.2
3	335.7	215.2	16.7	64.9
4	54.8	-22.1	-47.3	23.6
5	52.1	81.8	1.8	20.1
6	-34.3	-132.0	38.8	41.6
7	588.5	-339.9	-23.8	3.0
8	-73.4	-25.5	-44.5	7.4
9	100.0	-81.7	-62.4	54.6
10	-23.0	-32.5	-34.1	10.3

LOWER ROTOR PITCH LINK LOAD

COS		SIN	
COS	SIN	COS	SIN
-117.4		-117.4	
-192.2	13.0	-192.2	13.0
85.4	81.2	85.4	81.2
16.7	64.9	16.7	64.9
-47.3	23.6	-47.3	23.6
1.8	20.1	1.8	20.1
38.8	41.6	38.8	41.6
-23.8	3.0	-23.8	3.0
-44.5	7.4	-44.5	7.4
-62.4	54.6	-62.4	54.6
-34.1	10.3	-34.1	10.3

RUN 23 PCINT 17
 VKTS = 143.0 DMLC#R = 604.7 ALFS,C = 2.9 CLR/S,R = 0.10987 CMY/S,K = 0.1176
 V/QR = 0.399 RHJICO = 0.2157 CP/S = 0.004461 COR/S,K = 0.00754 CMX/S,R = -0.0070

	UPPER ROTOR BLADE NORMAL		BENDING MOMENT		UR EDGELISE	UR PITCH	UPPER ROTUR
	.1R	.2R	.3R	.6R	BENDING .1R	LINK LOAD	SHAFT STRESS
PSI							
0.00	-3321.	218.	-703.	-560.	0.	-459.	2318.
11.25	-2731.	229.	-632.	-601.	0.	-384.	2523.
22.50	-1079.	993.	-104.	-645.	0.	-383.	3017.
33.75	1069.	2309.	840.	-877.	0.	-265.	3440.
45.00	3743.	3975.	1760.	-1489.	0.	-144.	3586.
56.25	5641.	5312.	2293.	-1251.	0.	-197.	3701.
67.50	5870.	5786.	2664.	-51.	0.	-277.	4576.
78.75	6366.	6149.	3139.	473.	0.	-253.	6423.
90.00	7992.	7013.	3480.	207.	0.	-320.	8242.
101.25	8221.	7373.	3423.	496.	0.	-505.	9538.
112.50	6191.	6398.	2996.	1142.	0.	-528.	10801.
123.75	4572.	5061.	2342.	721.	0.	-426.	11632.
135.00	4735.	4575.	1789.	-1180.	0.	-537.	11116.
146.25	5206.	4752.	1595.	-3656.	0.	-812.	9739.
157.50	4538.	4591.	1358.	-5337.	0.	-929.	8666.
168.75	2207.	3399.	538.	-5368.	0.	-857.	8372.
180.00	-1524.	1304.	-660.	-4085.	0.	-719.	8838.
191.25	-4954.	-802.	-1649.	-2598.	0.	-571.	9435.
202.50	-6232.	-1940.	-2154.	-1910.	0.	-535.	9200.
213.75	-5548.	-1855.	-2121.	-2132.	0.	-638.	8217.
225.00	-4516.	-1135.	-1685.	-2264.	0.	-703.	7223.
236.25	-4004.	-524.	-1245.	-1523.	0.	-723.	6284.
247.50	-3833.	-237.	-1026.	-282.	0.	-833.	5492.
258.75	-3979.	-157.	-877.	1160.	0.	-892.	5315.
270.00	-4526.	-256.	-673.	2755.	0.	-778.	5473.
281.25	-4666.	-331.	-498.	3486.	0.	-746.	5315.
292.50	-3712.	-26.	-447.	2679.	0.	-905.	4782.
303.75	-2646.	443.	-497.	1365.	0.	-949.	3856.
315.00	-2401.	625.	-500.	209.	0.	-793.	2662.
326.25	-2265.	711.	-390.	-1074.	0.	-718.	2014.
337.50	-2030.	874.	-351.	-1744.	0.	-757.	2177.
348.75	-2595.	688.	-515.	-1175.	0.	-662.	2363.

RUN 23 POINT 17
 VKTS = 143.0 OMEG*R = 604.7 ALFS,C = 2.9 CMY/S,R = 0.1176
 V/OR = 0.399 RHO100 = 0.2157 CP/S = 0.004461 CDR/S,R = 0.00754 CMX/S,R = -0.0070

PSI	LOWER ROTOR BLADE NORMAL BENDING MUMENT			LR EDGEWISE BENDING .LR		LR PITCH LINK LOAD	
	.1R	.2R	.3R	.6R			
300.00	7057.	5330.	3277.	-265.	-3136.	-164.	
288.75	5529.	5029.	3420.	136.	-4854.	-229.	
277.50	6161.	4799.	3651.	316.	-6171.	-381.	
266.25	8516.	5826.	3948.	213.	-6672.	-244.	
255.00	8091.	6385.	3982.	141.	-6776.	-15.	
243.75	5577.	5249.	3482.	96.	-7251.	55.	
232.50	4746.	3932.	2601.	-164.	-8180.	52.	
221.25	5049.	3534.	1863.	-594.	-8332.	81.	
210.00	4221.	3228.	1440.	-957.	-7206.	113.	
198.75	2344.	2341.	899.	-1137.	-6375.	113.	
187.50	-246.	892.	-28.	-1096.	-6631.	119.	
176.25	-3245.	-959.	-986.	-856.	-6311.	148.	
165.00	-4905.	-2379.	-1478.	-582.	-4551.	104.	
153.75	-4425.	-2498.	-1370.	-415.	-3143.	16.	
142.50	-3297.	-1767.	-875.	-287.	-3458.	63.	
131.25	-2549.	-1083.	-291.	-100.	-4344.	123.	
120.00	-1783.	-478.	231.	97.	-4281.	-48.	
108.75	-1120.	191.	677.	265.	-3580.	-246.	
97.50	-1284.	529.	1009.	467.	-3498.	-267.	
86.25	-1847.	384.	1136.	640.	-4252.	-300.	
75.00	-1703.	219.	1002.	616.	-4780.	-309.	
63.75	-1358.	218.	676.	435.	-4186.	-127.	
52.50	-2000.	-42.	352.	262.	-2793.	-80.	
41.25	-2574.	-525.	142.	45.	-1705.	-245.	
30.00	-1837.	-589.	-64.	-256.	-1440.	-131.	
18.75	-1684.	-438.	-315.	-403.	-1129.	104.	
7.50	-3304.	-919.	-499.	-310.	99.	-121.	
356.25	-3986.	-1589.	-573.	-228.	1153.	-449.	
345.00	-2232.	-1242.	-417.	-260.	414.	-363.	
333.75	264.	122.	332.	-295.	-1300.	-286.	
322.50	3198.	1982.	1641.	-372.	-2062.	-451.	
311.25	6390.	4080.	2787.	-453.	-2169.	-390.	

RUN 23 POINT 18
 VRTS = 143.2 UMEGR = 605.4 ALFS,C = 2.9 CLR/S,R = 0.09291 CMY/S,K = 0.1037
 V/CR = 0.399 RHU100 = 0.2149 CP/S = 0.003489 CDR/S,R = 0.00717 CMX/S,R = -0.0059

HARMONIC	.1R		.2R		.3R		.6R	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	-1570.9		974.9		-383.3		-1339.5	
1	167.4	3354.7	297.3	1821.0	415.6	907.4	1479.2	-1647.3
2	-2021.6	-1045.6	-1391.6	-756.9	-1059.6	-396.3	-2168.1	-206.3
3	-302.6	256.8	-176.8	76.4	-78.0	69.4	392.2	24.4
4	-451.9	-972.8	-36.2	-611.5	-6.2	-273.7	468.1	857.5
5	-212.1	643.9	-202.5	320.1	-70.9	133.5	152.3	-493.8
6	-218.9	-488.9	-29.5	-326.4	-57.8	-172.8	207.6	261.0
7	342.7	-75.0	174.0	20.1	24.6	-13.8	-175.0	24.5
8	37.0	146.9	-10.4	60.5	7.5	-5.5	-12.5	-90.8
9	-105.0	137.6	-51.2	18.7	21.4	-14.8	45.9	-114.4
10	-28.4	28.7	-18.6	9.5	-9.9	12.7	46.8	-87.4

HARMONIC	UPPER ROTOR BENDING MOMENT .1R		UPPER ROTOR PITCH LINK LOAD		UPPER ROTOR SHAFT STRESS	
	COS	SIN	COS	SIN	COS	SIN
0	0.0		-631.9		6031.5	
1	0.0	0.0	95.2	213.3	-3134.7	1816.4
2	0.0	0.0	-13.0	135.1	-532.5	-856.6
3	0.0	0.0	-2.4	-26.1	327.4	-86.4
4	0.0	0.0	-2.3	59.0	73.6	846.0
5	0.0	0.0	15.9	-52.4	70.8	-310.9
6	0.0	0.0	19.6	34.4	-8.6	70.6
7	0.0	0.0	31.2	43.9	-131.0	-107.1
8	0.0	0.0	41.2	6.1	120.3	-118.0
9	0.0	0.0	29.4	-2.4	20.3	-51.6
10	0.0	0.0	-23.9	-12.3	-78.5	9.2

RUN 23 PCJNT 18 OMEG#R = 605.4 ALFS,C = 2.9 CLR/S,R = 0.09291 CMY/S,R = 0.1037
 VKTS = 143.2 RHO100 = 0.2149 CP/S = 0.003489 CDR/S,R = 0.00717 CMX/S,R = -0.0059
 V/OR = 0.349

LOWER ROTOR BLADE NORMAL BENDING MOMENT

HARMONIC	.1R		.2R		.3R		.6R	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	-1315.3		-167.4		32.1		-290.4	
1	-255.6	-2115.3	-61.1	-1050.0	181.4	-298.6	230.8	408.6
2	-2740.1	182.3	-2041.9	349.6	-1576.3	47.4	-523.8	-63.2
3	-196.6	-503.4	-186.9	-257.9	-55.4	-127.3	84.0	70.3
4	-575.1	554.3	-141.5	403.0	-33.8	161.1	64.4	-101.0
5	-411.9	-235.5	-261.6	-4.5	-118.2	3.7	52.3	16.7
6	-398.7	563.7	-26.1	406.4	-38.2	189.3	23.9	-56.4
7	292.5	286.4	223.4	-2.9	75.3	-19.7	-31.1	-15.4
8	-22.2	-107.3	-25.0	-28.8	12.6	2.9	-1.5	8.6
9	-267.4	-314.7	-158.3	-2.1	18.8	5.9	29.3	28.6
10	-101.2	55.1	-18.9	51.4	-8.5	-5.5	4.5	-2.3

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LOWER ROTOR EDGEWISE BENDING MOMENT .1R

HARMONIC	LOWER ROTOR PITCH LINK LOAD	
	COS	SIN
0	-4103.6	
1	2037.7	248.4
2	1644.0	-949.4
3	298.7	285.9
4	6.2	-12.0
5	33.4	41.0
6	21.4	-104.2
7	819.2	-295.8
8	-56.2	-65.5
9	80.4	-40.5
10	4.3	15.1

PUN 23	PUNT 18	605.4	ALFSL =	2.9	CLR/S,R = 0.09291	CMY/S,R = 0.1037
VKTS =	143.2	0.2149	CP/S =	0.003489	CDR/S,R = 0.00717	CMX/S,R = -0.00059
V/CR =	0.399					

	UPPER MOTOR	BLADE	NORMAL	BENDING	MOMENT	UP EDEWISE	UR PITCH	UPPER ROTUK
	.1K	.2K	.3R	.6R	BENDING .1K	LINK LOAD	SHAFT STRESS	
PSI								
0.00	-4344.	-471.	-1197.	-903.	0.	-441.	2759.	
11.25	-3902.	-517.	-1281.	-1341.	0.	-384.	2944.	
22.50	-2987.	-114.	-903.	-1515.	0.	-440.	3491.	
33.75	-1110.	879.	-182.	-1995.	0.	-412.	3945.	
45.00	1303.	2259.	447.	-2702.	0.	-263.	4066.	
56.25	2365.	3161.	783.	-2294.	0.	-198.	4245.	
67.50	2137.	3349.	1082.	-1191.	0.	-297.	5202.	
78.75	2777.	3688.	1483.	-980.	0.	-389.	6940.	
90.00	4238.	4431.	1716.	-1275.	0.	-435.	8492.	
101.25	4167.	4575.	1560.	-940.	0.	-500.	9581.	
112.50	2273.	3585.	1062.	-465.	0.	-497.	10808.	
123.75	812.	2358.	424.	-952.	0.	-479.	11671.	
135.00	1030.	1971.	5.	-2732.	0.	-641.	11055.	
146.25	1791.	2310.	-54.	-5129.	0.	-842.	9468.	
157.50	1331.	2312.	-211.	-6587.	0.	-865.	8315.	
168.75	-973.	1240.	-892.	-6172.	0.	-825.	8077.	
180.00	-4165.	-552.	-1822.	-4692.	0.	-780.	8453.	
191.25	-6493.	-2073.	-2486.	-3365.	0.	-634.	8745.	
202.50	-6894.	-2584.	-2651.	-2649.	0.	-543.	8269.	
213.75	-5637.	-2065.	-2284.	-2422.	0.	-635.	7265.	
225.00	-4523.	-1100.	-1608.	-2048.	0.	-737.	6254.	
236.25	-3583.	-285.	-1052.	-999.	0.	-811.	5174.	
247.50	-3108.	199.	-737.	449.	0.	-898.	4433.	
258.75	-3246.	369.	-465.	1978.	0.	-839.	4689.	
270.00	-3671.	305.	-225.	3334.	0.	-716.	5198.	
281.25	-3499.	324.	-139.	3674.	0.	-825.	4985.	
292.50	-2715.	608.	-165.	2751.	0.	-976.	4461.	
303.75	-2210.	858.	-226.	1476.	0.	-853.	3901.	
315.00	-2138.	873.	-323.	201.	0.	-713.	2937.	
326.25	-2239.	787.	-441.	-1049.	0.	-813.	2165.	
337.50	-2900.	527.	-603.	-1409.	0.	-869.	2310.	
348.75	-3957.	-12.	-881.	-922.	0.	-673.	2708.	

RUN 23 POINT 18 CMY/S,R = 0.1037
 VKTS = 143.2 OMEG*R = 605.4 ALFS,C = 2.9 CLR/S,R = 0.09291
 V/OR = 0.399 RHO100 = 0.2149 CP/S = 0.003489 CDR/S,R = 0.00717 CMX/S,R = -0.0059

LOWER ROTOR BLADE NORMAL BENDING MOMENT				LR EDGEWISE	LR PITCH
				BENDING .1R	LINK LOAD
PSI	.1R	.2R	.3R	.6R	
300.00	2125.	2239.	1273.	-394.	-221.
288.75	942.	1729.	1357.	-69.	-307.
277.50	2241.	1829.	1595.	-24.	-376.
266.25	4206.	2917.	1833.	-183.	-230.
255.00	3237.	3106.	1729.	-236.	-65.
243.75	1027.	1870.	1148.	-275.	-16.
232.50	537.	786.	331.	-536.	11.
221.25	779.	504.	-244.	-911.	40.
210.00	270.	345.	-452.	-1197.	37.
198.75	-825.	-122.	-722.	-1339.	50.
187.50	-2734.	-1086.	-1311.	-1270.	100.
176.25	-4981.	-2411.	-1859.	-974.	116.
165.00	-5644.	-3166.	-1953.	-652.	56.
153.75	-4553.	-2776.	-1565.	-440.	-6.
142.50	-3397.	-1856.	-882.	-230.	16.
131.25	-2481.	-1019.	-135.	32.	33.
120.00	-1188.	-168.	503.	233.	-78.
108.75	-275.	676.	1028.	377.	-224.
97.50	-610.	1056.	1412.	560.	-292.
86.25	-1289.	844.	1462.	692.	-336.
75.00	-1259.	513.	1141.	618.	-336.
63.75	-1316.	301.	681.	411.	-229.
52.50	-2300.	-170.	247.	210.	-174.
41.25	-3068.	-883.	-181.	-32.	-231.
30.00	-2981.	-1258.	-605.	-309.	-200.
18.75	-3694.	-1513.	-985.	-431.	-130.
7.50	-5458.	-2302.	-1326.	-380.	-242.
356.25	-5856.	-3012.	-1566.	-366.	-379.
345.00	-4249.	-2651.	-1450.	-439.	-351.
333.75	-2104.	-1446.	-761.	-512.	-347.
322.50	366.	105.	262.	-601.	-411.
311.25	2443.	1664.	1024.	-626.	-329.

RUN 24 POINT 6
 VKTS = 140.9 UMEGR = 590.9 ALFS,C = 5.3 CLR/S,R = 0.07855 CMY/S,R = 0.1258
 V/DR = 0.403 RHU100 = 0.2204 CP/S = 0.002754 CDR/S,R = 0.01014 CMX/S,R = -0.0126

UPPER ROTOR BLADE NORMAL BENDING MOMENT

HARMONIC	.1R		.2R		.3R		.6R	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	-4555.2		-1293.5		-2095.9		-2473.8	
1	2478.0	-1951.5	2126.9	-1737.2	1669.7	-1537.1	2757.4	-3777.3
2	-2150.1	-1814.8	-1423.9	-1289.6	-1104.8	-804.5	-2315.5	-1396.2
3	-274.9	-61.1	-111.6	-78.3	-41.9	-0.1	545.1	403.6
4	120.9	-1081.7	321.1	-536.0	176.6	-240.0	78.8	897.3
5	-706.6	765.0	-473.5	352.6	-200.4	204.2	597.3	-574.9
6	162.1	-836.7	255.3	-460.5	70.9	-266.7	-15.6	538.1
7	485.8	204.2	178.7	127.3	37.7	-39.0	-297.8	-118.6
8	-139.5	339.8	-80.7	93.8	36.6	-3.8	74.6	-267.7
9	-282.9	54.2	-92.8	-52.3	9.5	-19.9	156.9	-93.3
10	-27.5	67.3	-26.9	-2.1	12.6	-21.6	111.8	-100.5

200

UPPER ROTOR EDGEWISE BENDING MOMENT .1R

HARMONIC	UPPER ROTOR BENDING MOMENT .1R		UPPER ROTOR PITCH LINK LOAD		UPPER ROTOR SHAFT STRESS	
	COS	SIN	COS	SIN	COS	SIN
0	-4760.9		-303.9		1482.4	
1	837.4	1083.2	31.7	205.9	-3287.6	-4718.7
2	393.8	2074.7	-0.3	90.5	-672.9	-799.9
3	36.6	141.1	-13.8	-1.4	492.4	-390.6
4	-183.2	23.0	-41.9	17.2	65.3	1071.7
5	-0.3	-3.0	104.2	-22.5	379.6	-614.6
6	-27.5	-56.4	27.1	59.3	10.5	48.8
7	-34.0	-329.8	8.1	80.3	-289.0	-477.0
8	-106.7	-47.5	19.2	51.3	291.6	-92.8
9	34.8	48.1	-9.3	-27.0	92.3	-32.0
10	77.0	-6.7	6.4	-34.4	-75.5	-3.2

RUN 24 POINT 6
 VKTS = 140.9 OMEG+R = 590.9 ALFS,C = 5.3 CLR/S,R = 0.07855 CMY/S,R = 0.1258
 V/DR = 0.403 RHU100 = 0.2204 CP/S = 0.002754 CDR/S,R = 0.01014 CMX/S,R = -0.0126

LOWER ROTOR BLADE NORMAL BENDING MOMENT

HARMONIC	.1R	.2R	.3R	.6R
	COS SIN	COS SIN	COS SIN	COS SIN
0	-405.8	47.3	190.9	-310.7
1	-3139.6	-1989.1	-1146.8	43.1
2	-3192.4	-2380.1	-1889.8	-673.2
3	-148.6	-125.1	-38.6	43.3
4	-199.8	185.0	91.3	-12.4
5	-402.5	-193.9	-97.4	47.8
6	-282.1	21.1	-13.1	15.5
7	229.7	174.9	80.2	-19.7
8	-183.9	-152.3	0.9	21.3
9	-429.8	-276.2	16.4	47.6
10	-183.3	165.1	-20.6	10.3

LOWER ROTOR EDGEWISE BENDING MOMENT .1R

HARMONIC	COS	SIN
0	-4593.4	723.6
1	2682.8	-939.7
2	2985.5	410.8
3	244.9	81.4
4	-30.5	25.5
5	93.7	-112.2
6	25.9	251.0
7	1598.3	-53.0
8	-95.8	-4.1
9	93.3	30.2
10	-21.8	

LOWER ROTOR PITCH LINK LOAD

HARMONIC	COS	SIN
0	-45.7	79.7
1	-212.6	69.6
2	59.2	41.5
3	19.3	11.0
4	-8.3	44.4
5	1.7	50.7
6	3.4	-6.1
7	-50.5	23.8
8	-27.9	22.7
9	-88.2	54.2
10	4.4	

RUN	24	POINT	6	OMEGA*R	590.9	ALFS,C	5.3	CLR/S,R	0.07855	CMV/S,R	0.1258
VKTS	=	140.9		RHO100	=	0.2204	CP/S	=	0.002754	CDR/S,R	= -0.0126
V/OR	=	0.403									
PSI				UPPER ROTOR	BLADE NORMAL	BENDING MOMENT		UR EDGEWISE	UR PITCH	UPPER ROTOR	
				.1R	.2K	.3R	.6R	BENDING .1R	LINK LOAD	SHAFT STRESS	
0.00		-4890.	-621.	-1429.	-781.	-3733.	-172.	-1511.			
11.25		-5780.	-1713.	-2408.	-2167.	-3013.	-51.	-3485.			
22.50		-6807.	-2472.	-2802.	-2848.	-1771.	-117.	-4413.			
33.75		-6955.	-2745.	-2684.	-3639.	-678.	-277.	-4498.			
45.00		-5207.	-2208.	-2628.	-5432.	-858.	-204.	-5087.			
56.25		-4014.	-1596.	-2769.	-6001.	-1855.	147.	-6066.			
67.50		-5103.	-1842.	-2836.	-4566.	-2604.	234.	-5653.			
78.75		-5730.	-2135.	-2601.	-3868.	-3239.	-83.	-3582.			
90.00		-3834.	-1344.	-2175.	-4831.	-4177.	-282.	-1921.			
101.25		-2359.	-498.	-2109.	-5229.	-5193.	-239.	-1274.			
112.50		-4365.	-1335.	-2780.	-4015.	-5994.	-235.	122.			
123.75		-7754.	-3362.	-3741.	-2753.	-6353.	-212.	2253.			
135.00		-8565.	-4503.	-4280.	-3447.	-6241.	-113.	2777.			
146.25		-6741.	-3978.	-4241.	-6235.	-6143.	-181.	1294.			
157.50		-5333.	-2976.	-3957.	-8887.	-6255.	-382.	126.			
168.75		-6038.	-2867.	-3907.	-9442.	-6098.	-455.	1069.			
180.00		-8289.	-3876.	-4379.	-8298.	-5482.	-414.	3714.			
191.25		-10648.	-5248.	-5026.	-6572.	-4711.	-359.	6167.			
202.50		-11264.	-5835.	-5107.	-4937.	-4140.	-283.	7021.			
213.75		-9296.	-4882.	-4308.	-4068.	-4081.	-240.	6885.			
225.00		-6246.	-2845.	-2963.	-3594.	-4262.	-288.	6801.			
236.25		-3827.	-917.	-1653.	-2241.	-4148.	-430.	6398.			
247.50		-2179.	353.	-753.	14.	-4374.	-606.	5693.			
258.75		-1342.	1146.	-146.	2414.	-5656.	-611.	5959.			
270.00		-1283.	1628.	452.	4629.	-6811.	-437.	7075.			
281.25		-792.	2051.	966.	5763.	-6769.	-432.	7366.			
292.50		446.	2646.	1200.	5195.	-6619.	-589.	6320.			
303.75		1024.	3015.	1187.	3950.	-7158.	-525.	4507.			
315.00		755.	2774.	927.	2560.	-7377.	-367.	2344.			
326.25		438.	2300.	444.	749.	-6635.	-476.	716.			
337.50		-721.	1758.	-24.	-344.	-5476.	-607.	310.			
348.75		-3069.	731.	-537.	-244.	-4444.	-439.	8.			

RUN 24 POINT 6
 VKTS = 140.9 OMEG#R = 590.9 ALFS,C = 5.3 CLR/S,R = 0.07855 CMY/S,R = 0.1258
 V/OR = 0.403 RHD100 = 0.2204 CP/S = 0.002754 CDR/S,R = 0.01014 CMX/S,R = -0.0126

LOWER ROTOR BLADE		NORMAL BENDING MOMENT		LR EDGEWISE		LR PITCH	
		.1R	.2R	.3R	.6R	BENDING .1R	LINK LOAD
PSI							
300.00	1963.	1090.	582.	593.	-4003.	-168.	
288.75	1220.	1300.	968.	-259.	-7223.	-210.	
277.50	2191.	1425.	1363.	-99.	-8348.	-371.	
266.25	4572.	2619.	1746.	-199.	-7432.	-158.	
255.00	4122.	3144.	1819.	-213.	-7374.	38.	
243.75	2135.	2180.	1479.	-201.	-9071.	-3.	
232.50	2087.	1364.	852.	-469.	-9934.	99.	
221.25	2798.	1351.	337.	-896.	-8008.	201.	
210.00	2719.	1441.	269.	-1226.	-5320.	61.	
198.75	2355.	1391.	300.	-1402.	-5078.	89.	
187.50	999.	864.	-84.	-1332.	-6501.	313.	
176.25	-1278.	-326.	-591.	-967.	-5859.	259.	
165.00	-2118.	-1098.	-604.	-538.	-2981.	88.	
153.75	-1194.	-718.	-119.	-218.	-2009.	173.	
142.50	-176.	91.	547.	60.	-4397.	266.	
131.25	988.	901.	1277.	301.	-6553.	144.	
120.00	2671.	1984.	2006.	429.	-6057.	7.	
108.75	3581.	3007.	2607.	529.	-5111.	-39.	
97.50	2845.	3219.	2891.	720.	-6204.	-44.	
86.25	1269.	2512.	2607.	891.	-8197.	-35.	
75.00	-53.	1404.	1764.	855.	-8140.	-40.	
63.75	-1230.	344.	769.	636.	-5374.	-56.	
52.50	-2888.	-752.	-45.	345.	-2577.	-118.	
41.25	-4005.	-1803.	-691.	-88.	-2066.	-194.	
30.00	-3637.	-2220.	-1291.	-651.	-2276.	-55.	
18.75	-4143.	-2425.	-1912.	-983.	-453.	156.	
7.50	-6911.	-3560.	-2511.	-904.	2362.	-61.	
356.25	-8500.	-4931.	-2941.	-752.	2686.	-436.	
345.00	-7122.	-4973.	-3030.	-734.	153.	-350.	
333.75	-5305.	-4004.	-2565.	-678.	-1977.	-186.	
322.50	-3185.	-2670.	-1472.	-622.	-1898.	-397.	
311.25	243.	-642.	-216.	-685.	-1771.	-435.	

RUN 24 PCINT 7 UMEG*R = 603.8 ALFS,C = 5.5 CLR/S,K = 0.11311 CMY/S,K = 0.1694
 VKTS = 140.9 RHU100 = 0.2188 CP/S = 0.003186 CUK/S,R = 0.01295 CMX/S,R = -0.0128
 V/CR = 0.394

HARMONIC	UPPER ROTOR BLADE NORMAL BENDING MOMENT							
	.1R		.2R		.3R		.6R	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	313.3		2175.5		250.7		-896.2	
1	-300.7	4589.4	-1969.5	2542.4	-1115.9	1378.4	109.2	-1332.8
2	-1891.4	-696.0	-1358.2	-502.3	-1029.7	-190.6	-2290.6	398.1
3	-116.2	248.1	-88.8	109.5	-45.7	90.7	30.8	33.3
4	-64.2	-1146.8	171.9	-640.0	74.3	-286.8	40.4	1022.2
5	-239.6	683.3	-251.8	342.6	-120.3	128.7	213.7	-519.8
6	-186.5	-615.3	1.5	-409.8	-45.8	-222.1	172.2	338.7
7	349.5	-133.7	198.0	-20.9	19.6	-24.6	-195.0	79.6
8	32.4	236.2	-34.4	88.7	1.9	-21.8	-12.6	-162.8
9	-346.1	245.0	-153.1	-1.0	32.8	-7.8	163.6	-227.1
10	-63.4	-44.0	-16.8	-16.0	-0.2	23.7	94.6	-76.8

HARMONIC	UPPER ROTOR EDGEWISE BENDING MOMENT .1R				UPPER ROTOR PITCH LINK LOAD				UPPER ROTOR SHAFT STRESS			
	COS		SIN		COS		SIN		COS		SIN	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	0.0				-305.4		2183.8		2183.8		-2161.5	
1	0.0	0.0	43.3	286.6	43.3		-4605.6		-4605.6		-781.1	
2	0.0	0.0	-2.6	108.3	-2.6		-762.1		-762.1		-322.5	
3	0.0	0.0	-10.7	-41.0	-10.7		422.1		422.1		1201.1	
4	0.0	0.0	25.6	24.9	25.6		-182.7		-182.7		-234.2	
5	0.0	0.0	9.1	-33.2	9.1		-26.0		-26.0		51.6	
6	0.0	0.0	49.0	10.7	49.0		11.9		11.9		-229.2	
7	0.0	0.0	-35.2	48.5	-35.2		-237.1		-237.1		-188.3	
8	0.0	0.0	41.8	14.1	41.8		140.8		140.8		-27.9	
9	0.0	0.0	4.1	39.1	4.1		87.2		87.2		33.8	
10	0.0	0.0	-0.9	-15.1	-0.9		-79.2		-79.2			

RUN 24 POINT 7 OMEG#R = 603.8 ALFS,C = 5.5 CLR/S,K = 0.11311 CMY/S,K = 0.1694
 VKTS = 140.9 RHJ100 = 0.2188 CP/S = 0.003186 CDR/S,R = 0.01295 CMX/S,R = -0.0128
 V/GR = 0.394

LOWER ROTOR BLADE NORMAL BENDING MUMENT

HARMONIC	.1R		.2R		.3R		.6R	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	1587.1		1464.1		1175.3		-190.4	
1	1787.5	-5947.8	1158.4	-3847.4	1073.7	-2165.6	370.5	146.4
2	-2677.2	1311.3	-1839.8	1161.9	-1434.2	680.8	-461.4	131.9
3	-129.0	-261.7	-81.8	-129.8	10.5	-55.7	92.2	41.2
4	-550.2	890.6	-49.5	609.6	-6.9	286.2	56.3	-147.4
5	-244.8	-502.9	-250.1	-189.2	-101.3	-75.0	33.7	57.1
6	-362.0	631.7	8.3	419.2	-28.3	190.3	19.0	-63.8
7	297.6	264.4	204.2	-21.2	63.0	-32.3	-34.3	-11.6
8	-47.4	-172.5	-58.3	-45.1	6.2	-11.0	5.8	14.5
9	-321.1	-281.1	-159.9	13.2	20.8	-2.1	32.8	26.0
10	-198.7	43.4	-35.8	73.0	-7.3	-11.6	14.9	-2.6

LOWER ROTOR EDGEWISE BENDING MOMENT .1R

HARMONIC	LOWER ROTOR PITCH LINK LOAD	
	COS	SIN
0	-4959.5	
1	2965.6	1101.9
2	310.7	-1715.5
3	352.6	52.6
4	41.2	-59.8
5	16.3	88.6
6	-10.2	-130.6
7	587.1	-510.4
8	-31.3	-76.8
9	95.9	-57.4
10	-16.9	-6.8

RUN 24
 VKTS =
 V/OR =

POINT 7
 140.9
 0.394

OMEG#R = 603.8
 RHO100 = 0.2188

ALFS,C = 5.5
 CP/S = 0.003186

CLR/S,R = 0.11311
 CDR/S,R = 0.01295

CMY/S,R = 0.1694
 CMX/S,R = -0.0128

PSI	UPPER ROTOR BLADE NORMAL BENDING MOMENT			UR EDGEWISE BENDING .1R	UR PITCH LINK LOAD	UPPER ROTOR SHAFT STRESS
	.1R	.2R	.3R			
0.00	-5213.	-1326.	-1978.	0.	-182.	-3047.
11.25	-4303.	-1157.	-1955.	0.	-79.	-3465.
22.50	-3179.	-429.	-1371.	0.	-157.	-3151.
33.75	-1479.	712.	-323.	0.	-175.	-2835.
45.00	1623.	2388.	559.	0.	-7.	-3383.
56.25	3860.	3854.	1042.	0.	137.	-4124.
67.50	3962.	4402.	1583.	0.	107.	-3295.
78.75	5012.	5031.	2317.	0.	42.	-926.
90.00	7826.	6482.	2836.	0.	1.	1099.
101.25	8418.	7252.	2936.	0.	-91.	2510.
112.50	5988.	6232.	2654.	0.	-126.	4424.
123.75	4590.	4902.	2097.	0.	-67.	5955.
135.00	5508.	4845.	1718.	0.	-191.	5500.
146.25	6644.	5533.	1829.	0.	-487.	4011.
157.50	6363.	5716.	1925.	0.	-519.	3417.
168.75	4671.	4896.	1413.	0.	-279.	4140.
180.00	1493.	3205.	481.	0.	-203.	5672.
191.25	-1650.	1356.	-340.	0.	-324.	7118.
202.50	-2666.	402.	-717.	0.	-369.	7577.
213.75	-1899.	638.	-550.	0.	-356.	7276.
225.00	-1052.	1334.	-92.	0.	-407.	6800.
236.25	-609.	1808.	222.	0.	-493.	5918.
247.50	-578.	1930.	267.	0.	-590.	4882.
258.75	-1489.	1614.	167.	0.	-638.	4611.
270.00	-2981.	891.	-31.	0.	-568.	4843.
281.25	-3692.	281.	-332.	0.	-529.	4700.
292.50	-3607.	74.	-726.	0.	-637.	4126.
303.75	-3965.	-201.	-1161.	0.	-683.	3006.
315.00	-4538.	-689.	-1471.	0.	-553.	1112.
326.25	-4271.	-814.	-1572.	0.	-465.	-703.
337.50	-4037.	-648.	-1624.	0.	-486.	-1636.
348.75	-4824.	-899.	-1780.	0.	-400.	-2252.

RUN 24 POINT 7 OMEG*8 = 603.8 ALFS,C = 5.5 CLR/S,R = 0.11311 CMY/S,R = 0.1694
 VKTS = 140.9 RHU100 = 0.2188 CP/S = 0.003186 CDR/S,R = 0.01295 CMX/S,K = -0.0128
 V/C R = 0.394

PSI	LOWER ROTOR BLADE NORMAL BENDING MOMENT			LR EDGEWISE BENDING .IR	LR PITCH LINK LOAD
	.1R	.2R	.3R		
300.00	8641.	6072.	3851.	-2702.	-140.
288.75	7827.	6002.	4193.	-4552.	-302.
277.50	9372.	6319.	4594.	-6324.	-440.
266.25	11328.	7460.	4845.	-6965.	-176.
255.00	9790.	7460.	4643.	-7049.	35.
243.75	6845.	5828.	3898.	-7864.	17.
232.50	5793.	4324.	2870.	-9420.	41.
221.25	5620.	3687.	2054.	-10103.	125.
210.00	4665.	3190.	1535.	-9254.	186.
198.75	2579.	2184.	786.	-8485.	206.
187.50	-967.	279.	-465.	-8748.	164.
176.25	-4782.	-2200.	-1755.	-8447.	151.
165.00	-6617.	-3957.	-2522.	-6528.	144.
153.75	-6354.	-4270.	-2603.	-4667.	36.
142.50	-5341.	-3674.	-2133.	-4413.	52.
131.25	-4165.	-2796.	-1434.	-4839.	216.
120.00	-3072.	-1895.	-799.	-4502.	90.
108.75	-2483.	-1182.	-259.	-3603.	-206.
97.50	-2475.	-777.	234.	-3289.	-197.
86.25	-2416.	-596.	583.	-4034.	-130.
75.00	-1451.	-303.	739.	-5062.	-186.
63.75	-180.	270.	822.	-5107.	-8.
52.50	17.	667.	950.	-4001.	141.
41.25	7.	711.	1098.	-3093.	-92.
30.00	993.	974.	1145.	-3241.	-106.
18.75	1116.	1268.	1037.	-3258.	184.
7.50	-398.	811.	862.	-1882.	-18.
356.25	-649.	259.	749.	-299.	-452.
345.00	1134.	718.	862.	-481.	-379.
333.75	2985.	1836.	1442.	-1883.	-262.
322.50	5311.	3219.	2440.	-2457.	-449.
311.25	8115.	4965.	3349.	-2152.	-368.

RUN 24 POINT 8
 VKTS = 141.2 OMEG#R = 601.7 ALFS,C = 5.5 CLR/S,K = 0.12530 CMY/S,R = 0.1812
 V/GR = 0.396 RHU100 = 0.2184 CP/S = 0.004110 CDR/S,K = 0.01325 CAX/S,R = -0.0135

UPPER ROTOR BLADE NORMAL BENDING MOMENT

HARMONIC	.1R		.2R		.3R		.6R	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	1451.5		2970.9		808.2		-486.7	
1	-126.4	6902.0	-69.5	4268.2	213.5	2521.8	1277.2	-395.1
2	-1996.5	-1327.5	-1406.2	-967.0	-1043.1	-546.4	-2159.0	-416.6
3	-129.9	175.5	-71.7	52.3	-27.9	74.9	74.6	154.4
4	-72.2	-1191.7	193.7	-648.1	68.3	-282.4	21.3	1047.5
5	-341.6	885.9	-332.0	425.8	-137.2	186.0	296.3	-687.4
6	-249.5	-729.5	-4.1	-489.4	-58.5	-261.7	210.5	397.9
7	376.7	-84.4	201.8	-17.6	22.3	-42.0	-221.3	52.3
8	98.4	186.8	-11.5	71.1	-24.6	-29.2	-82.9	-128.2
9	-237.1	332.6	-125.5	58.9	37.0	-19.9	84.0	-258.8
10	-58.8	-11.6	-24.1	-7.1	-11.5	7.9	58.0	-100.9

208

UPPER ROTOR EDGEWISE BENDING MOMENT .1R

HARMONIC

HARMONIC	UPPER ROTOR BENDING MOMENT .1R		UPPER ROTOR PITCH LINK LOAD		UPPER ROTOR SHAFT STRESS	
	COS	SIN	COS	SIN	COS	SIN
0	0.0		-335.4		2405.4	
1	0.0	0.0	42.7	290.7	-4013.6	-878.6
2	0.0	0.0	13.3	156.4	-668.8	-665.4
3	0.0	0.0	-13.3	-12.7	407.0	-358.4
4	0.0	0.0	3.9	42.8	24.2	1137.7
5	0.0	0.0	26.5	-47.5	15.1	-482.7
6	0.0	0.0	65.7	-0.9	39.2	79.3
7	0.0	0.0	-15.9	-6.8	-268.0	-282.9
8	0.0	0.0	42.7	21.4	59.4	-194.7
9	0.0	0.0	20.3	20.2	111.4	-48.9
10	0.0	0.0	-7.1	-28.5	-93.1	47.6

PUN 24 PCINT 8
 VKTS = 141.2 UMEGR = 601.7 ALFS,C = 5.5 CLR/S,R = 0.12530 CMY/S,R = 0.1812
 V/CR = 0.396 RHU100 = 0.2184 CP/S = 0.004110 CDR/S,R = 0.01325 CMX/S,R = -0.0135

LOWER ROTOR BLADE NORMAL BENDING MUMENT

HARMONIC	.1R		.2R		.3R		.6R	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	2973.2		2419.5		1823.2		-122.8	
1	-524.5	-7272.8	-565.5	-4588.9	-122.7	-2709.6	160.4	77.9
2	-2689.3	973.7	-1901.3	928.2	-1495.4	488.5	-512.3	41.4
3	-88.0	-244.9	-60.7	-120.5	13.3	-42.1	77.2	44.0
4	-768.9	1018.0	-165.7	741.8	-89.3	344.9	95.2	-176.2
5	-354.4	-426.2	-301.1	-131.1	-134.9	-61.8	47.9	44.7
6	-557.7	656.3	-88.1	473.8	-77.8	212.2	36.4	-70.7
7	262.9	271.8	205.9	-8.0	81.4	-35.6	-19.6	-15.6
8	-12.1	-259.1	-71.9	-81.5	7.7	-9.1	1.4	32.5
9	-72.5	-361.6	-113.1	-76.1	23.0	6.2	19.3	38.2
10	-88.3	-40.0	-34.3	22.3	-12.6	3.9	-15.4	34.9

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LOWER ROTOR EDGEWISE BENDING MUMENT .1R

HARMONIC	COS		SIN	
	COS	SIN	COS	SIN
0	-4663.7		-8.3	
1	3656.8	2444.6	-198.7	75.6
2	927.0	-1032.6	86.8	114.8
3	282.6	141.4	36.6	78.7
4	-50.2	-11.1	-30.6	35.6
5	-9.1	68.5	-2.3	49.9
6	47.8	-161.0	5.1	72.2
7	739.4	-31.1	14.2	-26.1
8	-140.5	-106.0	-23.3	-9.5
9	168.5	30.5	-61.9	19.0
10	-18.6	-14.2	-35.8	27.6

HARMONIC

RUN 24 VKTS = 141.2 PGINT 8 OMEG*R = 601.7 ALFS,C = 5.5 CLR/S,R = 0.12530 CMY/S,R = 0.1812
V/OR = 0.396 RHU100 = 0.2184 CP/S = 0.004110 CDR/S,R = 0.01325 CMX/S,R = -0.0135

PSI	UPPER ROTOR BLADE NORMAL .1R	BENDING MOMENT .2R	BENDING MOMENT .3R	UR EDGEWISE BENDING .1R	UR PITCH LINK LOAD	UPPER ROTOR SHAFT STRESS
0.00	-1285.	1322.	-153.	-928.	-157.	-1982.
11.25	-244.	1608.	-63.	-1026.	-147.	-2433.
22.50	819.	2346.	667.	-317.	-172.	-2015.
33.75	2830.	3616.	1714.	-202.	-75.	-1532.
45.00	6028.	5379.	2468.	-867.	105.	-1872.
56.25	7720.	6620.	2880.	-201.	176.	-2349.
67.50	7580.	6974.	3394.	1196.	59.	-1349.
78.75	9010.	7758.	4108.	863.	-52.	851.
90.00	11812.	9306.	4620.	-206.	-78.	2443.
101.25	11761.	9783.	4622.	351.	-160.	3594.
112.50	8684.	8320.	4067.	1682.	-218.	5499.
123.75	6545.	6490.	3141.	1653.	-142.	6859.
135.00	6562.	5768.	2403.	-123.	-200.	6017.
146.25	6946.	5881.	2219.	-2796.	-469.	4237.
157.50	6424.	5762.	2017.	-4973.	-558.	3432.
168.75	4057.	4537.	1068.	-5321.	-392.	3949.
180.00	-369.	2116.	-369.	-3949.	-277.	5514.
191.25	-4488.	-408.	-1532.	-2335.	-270.	7089.
202.50	-5776.	-1676.	-2097.	-1712.	-303.	7217.
213.75	-4945.	-1527.	-2062.	-1994.	-397.	6225.
225.00	-4003.	-817.	-1591.	-2146.	-441.	5359.
236.25	-3366.	-187.	-1123.	-1603.	-434.	4557.
247.50	-2996.	187.	-941.	-549.	-577.	3739.
258.75	-3447.	157.	-860.	1071.	-732.	3634.
270.00	-4247.	-131.	-690.	2890.	-644.	3980.
281.25	-4051.	-101.	-516.	3573.	-547.	3880.
292.50	-3081.	347.	-436.	2922.	-648.	3234.
303.75	-2537.	639.	-435.	2012.	-704.	1999.
315.00	-2099.	733.	-418.	772.	-651.	258.
326.25	-1172.	1139.	-254.	-882.	-662.	-888.
337.50	-830.	1600.	-9.	-1479.	-608.	-989.
348.75	-1395.	1528.	27.	-950.	-362.	-1184.

RUN 24
 VKTS =
 V/OR =
 POINT 8
 141.2
 0.396
 OMEG*R = 601.7
 RH0100 = 0.2184
 ALFS,C = 5.5
 CP/S = 0.004110
 CLR/S,R = 0.12530
 CDR/S,R = 0.01325
 CMY/S,R = 0.1812
 CMX/S,R = -0.0135

LOWER ROTOR BLADE NORMAL BENDING MOMENT				LR EDGEWISE BENDING .LR		LR PITCH LINK LOAD	
	.LR	.2K	.3R	.6R			
PSI							
300.00	9969.	7057.	4627.	-75.	-4299.	-106.	
288.75	9795.	7147.	5099.	251.	-6352.	-310.	
277.50	12023.	7916.	5663.	337.	-7850.	-397.	
266.25	13944.	9273.	6132.	333.	-8298.	-88.	
255.00	12670.	9369.	6077.	356.	-8413.	130.	
243.75	10300.	8015.	5406.	344.	-9274.	109.	
232.50	9396.	6745.	4492.	123.	-10437.	125.	
221.25	9387.	6256.	3817.	-369.	-10219.	174.	
210.00	8760.	5964.	3390.	-836.	-8879.	201.	
198.75	6468.	4975.	2640.	-991.	-8581.	262.	
187.50	2420.	2805.	1280.	-919.	-9158.	262.	
176.25	-1491.	143.	-126.	-724.	-8132.	179.	
165.00	-3221.	-1586.	-898.	-456.	-5643.	166.	
153.75	-3122.	-1920.	-976.	-333.	-4443.	226.	
142.50	-2550.	-1537.	-632.	-348.	-4933.	257.	
131.25	-1820.	-970.	-145.	-240.	-4910.	200.	
120.00	-1124.	-365.	227.	-40.	-3722.	30.	
108.75	-1262.	-37.	447.	141.	-2806.	-94.	
97.50	-2177.	-214.	611.	421.	-2959.	-48.	
86.25	-2561.	-561.	610.	639.	-3565.	-42.	
75.00	-2044.	-636.	376.	536.	-3628.	-124.	
63.75	-1913.	-546.	201.	361.	-2647.	-71.	
52.50	-1890.	-514.	290.	245.	-1268.	1.	
41.25	-918.	-226.	439.	-94.	-744.	-31.	
30.00	273.	348.	438.	-457.	-1044.	107.	
18.75	-447.	373.	301.	-416.	-737.	276.	
7.50	-1923.	-346.	104.	-237.	467.	36.	
356.25	-1548.	-670.	20.	-249.	884.	-298.	
345.00	345.	56.	381.	-242.	-385.	-310.	
333.75	2915.	1520.	1377.	-221.	-1921.	-341.	
322.50	6643.	3648.	2747.	-373.	-2469.	-461.	
311.25	9745.	5940.	3929.	-399.	-2874.	-284.	

RUN	24
POINT	9
VPTS =	142.4 UMSGK = 600.4 ALFS,C = 7.9 CLR/S,K = 0.09029 CMY/S,R = 0.1804
VCR =	0.400 RHJ100 = 0.2175 CP/S = 0.000919 CDR/S,K = 0.01622 CMX/S,R = -0.0004

UPPER ROTOR BLADE NORMAL BENDING MOMENT

HARMONIC	.1R		.2R		.3R		.6R	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	-1031.5		1185.3		-468.1		-1621.5	
1	-4734.6	3273.6	-3121.2	1591.8	-1942.8	766.1	-729.2	-1882.5
2	-928.7	-206.8	-634.6	-79.9	-492.7	117.1	-1135.2	954.7
3	260.8	300.8	116.5	192.8	38.2	128.8	-412.4	284.3
4	-42.9	-759.2	172.3	-422.5	117.5	-199.9	137.5	634.3
5	-133.6	703.8	-157.4	393.7	-56.1	177.6	129.1	-558.0
6	-211.7	-485.5	-35.4	-358.6	-68.0	-181.7	198.3	268.1
7	294.5	-100.8	191.5	-15.5	56.2	-31.0	-167.5	67.9
8	100.0	323.9	-11.7	105.3	0.1	-47.7	-77.0	-244.2
9	-388.7	169.0	-171.2	-33.8	23.4	8.5	233.6	-213.0
10	-70.4	-9.4	-19.1	-7.4	15.8	11.4	49.9	-81.9

212	UPPER ROTOR EDGWISE BENDING MOMENT .1R	UPPER RUTOR. PITCH LINK LOAD	UPPER ROTOR SHAFT STRESS
	COS SIN	COS SIN	COS SIN
1			
2			
3			
4			
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HARMONIC	0.0	0.0	-421.8	351.6	2022.0
1	0.0	0.0	-40.4	52.3	-3049.6
2	0.0	0.0	-10.0	21.3	-515.7
3	0.0	0.0	-105.3	-26.3	389.3
4	0.0	0.0	-16.1	-42.2	-270.9
5	0.0	0.0	-57.8	50.8	36.6
6	0.0	0.0	33.6	99.4	-0.3
7	0.0	0.0	68.0	93.0	-235.5
8	0.0	0.0	39.8	-0.7	127.7
9	0.0	0.0	8.4	-32.1	32.0
10	0.0	0.0	1.2		-59.7
					-6.6

RUN 24 POINT 9
 VKTS = 142.4 OMEG#R = 600.4 ALFS,C = 7.9 CLR/S,R = 0.09029 CMY/S,R = 0.1804
 V/VR = 0.400 RHO100 = 0.2175 CP/S = 0.000919 CDR/S,R = 0.01622 CMX/S,R = -0.0004

LOWER ROTOR BLADE NORMAL BENDING MOMENT

HARMONIC	.1R		.2R		.3R		.6R	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	-1887.5		-1008.7		509.8		-405.0	
1	4729.7	-1098.0	3548.8	-662.9	2689.3	87.1	635.8	514.4
2	-3359.0	1430.3	-2256.8	1319.9	-1701.8	807.1	-492.4	230.3
3	-234.8	-199.9	-132.8	-40.5	-14.2	8.1	116.7	69.6
4	-229.8	199.9	-23.6	174.5	25.8	98.9	20.8	-40.4
5	-89.8	-722.2	-192.7	-366.2	-37.2	-182.1	23.4	83.5
6	-481.7	421.2	-127.5	348.1	-84.2	142.8	38.7	-49.6
7	211.7	273.0	201.0	4.6	76.3	-30.8	-20.8	-19.5
8	-102.6	-64.1	-33.9	17.9	19.3	16.1	11.8	4.4
9	-334.9	15.1	-92.5	102.9	-5.0	-1.0	27.5	-11.0
10	-142.3	9.1	-23.9	67.9	-2.3	5.4	-4.3	8.7

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LOWER ROTOR EDGEWISE BENDING MOMENT .1R

HARMONIC	LOWER ROTOR EDGEWISE BENDING MOMENT .1R		LOWER ROTOR PITCH LINK LOAD	
	COS	SIN	COS	SIN
0	-5068.7		-133.1	
1	1522.7	-718.7	-177.3	98.5
2	615.6	-2717.5	35.3	92.6
3	457.1	138.1	-7.0	26.9
4	54.7	-76.5	-46.3	-26.1
5	84.3	34.0	-14.4	-28.5
6	26.8	-67.4	43.0	18.7
7	1270.6	-679.9	10.8	26.9
8	-89.4	-152.4	11.2	-6.4
9	-4.3	-17.1	-1.6	55.6
10	-0.8	-11.8	-36.2	15.9

RUN 24 POINT 9
 VKTS = 142.4 OMEG#R = 600.4 ALFS,C = 7.9 CLR/S,R = 0.09029 CMY/S,R = 0.1804
 V/VR = 0.400 RHO100 = 0.2175 CP/S = 0.000919 CDR/S,R = 0.01622 CMX/S,R = -0.0004

UPPER ROTOR BLADE NORMAL BENDING MOMENT				UR EDGEWISE	UR PITCH	UPPER ROTOR
				BENDING .1R	LINK LOAD	SHAFT STRESS
PSI	.1R	.2R	.3R	.6R		
0.00	-6887.	-2485.	-2777.	-3394.	-500.	-1524.
11.25	-5633.	-2132.	-2726.	-3655.	-384.	-1271.
22.50	-4889.	-1580.	-2305.	-2774.	-397.	51.
33.75	-4130.	-976.	-1563.	-1972.	-318.	1261.
45.00	-1903.	80.	-1045.	-2434.	-33.	1220.
56.25	-133.	1132.	-798.	-2381.	228.	767.
67.50	-148.	1533.	-318.	-1457.	117.	1603.
78.75	1015.	2194.	447.	-1976.	-185.	3607.
90.00	4183.	3809.	1049.	-3679.	-235.	5107.
101.25	5362.	4864.	1252.	-3817.	-119.	6040.
112.50	3580.	4208.	1112.	-2425.	-126.	7715.
123.75	2837.	3346.	869.	-1999.	-196.	9241.
135.00	4567.	3864.	944.	-3106.	-253.	8415.
146.25	6067.	5030.	1449.	-4119.	-318.	5883.
157.50	5867.	5470.	1868.	-4003.	-283.	4198.
168.75	4601.	4954.	1674.	-3009.	-192.	3956.
180.00	2516.	3799.	986.	-1502.	-246.	4130.
191.25	187.	2437.	378.	106.	-373.	4196.
202.50	-772.	1699.	238.	842.	-452.	3935.
213.75	-47.	1972.	398.	398.	-591.	3037.
225.00	665.	2466.	495.	-28.	-760.	1629.
236.25	299.	2391.	452.	323.	-796.	273.
247.50	-648.	1917.	296.	901.	-733.	-452.
258.75	-1962.	1255.	-90.	1577.	-642.	-435.
270.00	-3710.	261.	-660.	2332.	-611.	-198.
281.25	-5014.	-715.	-1201.	2087.	-800.	-76.
292.50	-5482.	-1229.	-1718.	716.	-978.	1.
303.75	-6108.	-1704.	-2283.	-531.	-743.	-418.
315.00	-6883.	-2404.	-2736.	-1775.	-417.	-1582.
326.25	-6794.	-2683.	-2933.	-3468.	-549.	-2336.
337.50	-6561.	-2441.	-2919.	-4156.	-842.	-1896.
348.75	-7050.	-2401.	-2816.	-3507.	-771.	-1374.

RUN 24 PGINT 9
 VKTS = 142.4 OMEG*R = 600.4 ALFS,C = 7.9 CLR/S,R = 0.09029 CMY/S,R = 0.1804
 V/OR = 0.400 RHO100 = 0.2175 CP/S = 0.000919 CDR/S,R = 0.01622 CMX/S,R = -0.0004

PSI	LOWER ROTOR BLADE NORMAL BENDING MOMENT			LR EDGEWISE BENDING .LR		LR PITCH LINK LOAD	
	.1R	.2R	.3R	.6R			
300.00	1630.	1341.	790.	-546.	-696.	-371.	
288.75	1501.	1363.	987.	-428.	-3463.	-419.	
277.50	2664.	1705.	1290.	-406.	-5618.	-388.	
266.25	3793.	2437.	1365.	-478.	-5268.	-222.	
255.00	2042.	2017.	798.	-493.	-4739.	-93.	
243.75	-1438.	-14.	-324.	-429.	-6540.	-48.	
232.50	-3407.	-1974.	-1475.	-559.	-9074.	-27.	
221.25	-3655.	-2794.	-2276.	-1017.	-9200.	0.	
210.00	-4260.	-3179.	-2806.	-1493.	-7346.	48.	
198.75	-6289.	-4079.	-3435.	-1697.	-6623.	56.	
187.50	-9011.	-5670.	-4350.	-1688.	-7580.	31.	
176.25	-10989.	-7278.	-5196.	-1555.	-7478.	93.	
165.00	-11405.	-7920.	-5367.	-1314.	-5047.	119.	
153.75	-10318.	-7328.	-4716.	-1084.	-2720.	-26.	
142.50	-8277.	-6023.	-3667.	-886.	-2948.	-49.	
131.25	-6216.	-4560.	-2612.	-578.	-4652.	120.	
120.00	-4539.	-3172.	-1564.	-184.	-5150.	59.	
108.75	-2734.	-1775.	-433.	150.	-4319.	-185.	
97.50	-961.	-346.	659.	444.	-4556.	-199.	
86.25	254.	775.	1492.	689.	-6771.	-129.	
75.00	1674.	1594.	2032.	739.	-8789.	-153.	
63.75	3245.	2480.	2378.	650.	-8515.	-13.	
52.50	3121.	2947.	2486.	610.	-6875.	140.	
41.25	1705.	2397.	2237.	561.	-6228.	-58.	
30.00	1198.	1633.	1738.	383.	-6750.	-267.	
18.75	734.	1259.	1216.	187.	-6103.	-184.	
7.50	-1066.	537.	743.	60.	-3190.	-188.	
356.25	-1930.	-394.	332.	-123.	-472.	-376.	
345.00	-585.	-372.	113.	-410.	-618.	-409.	
333.75	653.	330.	180.	-655.	-2256.	-348.	
322.50	982.	742.	425.	-737.	-2121.	-384.	
311.25	1484.	1041.	649.	-676.	-490.	-391.	

UPPER ROTOR BLADE NORMAL BENDING MOMENT

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UPPER KOTOR EDGEWISE BENDING MOMENT .LR	UPPER KOTOR PITCH LINK LOAD	UPPER KOTOR SHAFT STRESS
COS SIN	COS SIN	COS SIN

HARMONIC	0.0	0.0	-416.4	356.1	2030.7
1	0.0	0.0	-65.1	356.1	-2848.2
2	0.0	0.0	-10.4	54.2	-390.0
3	0.0	0.0	-103.5	-17.0	329.2
4	0.0	0.0	-0.4	-18.0	-631.3
5	0.0	0.0	-33.3	-57.5	118.1
6	0.0	0.0	9.9	67.2	-71.6
7	0.0	0.0	28.4	105.3	-80.4
8	0.0	0.0	23.5	40.6	384.0
9	0.0	0.0	-5.2	-2.3	36.9
10	0.0	0.0	19.0	-30.6	-28.0
					-19.3
					50.8
					-197.3
					-307.8
					47.8
					-306.1
					863.4
					56.9
					-959.4
					2653.5

RUN 24 PGINT 10
 VKTS = 142.5
 V/PR = 0.396
 CMY/S,R = 0.1801
 CMX/S,R = 0.0003
 CLR/S,R = 0.09034
 CDR/S,R = 0.01615
 ALFS,C = 7.9
 CP/S = 0.000884

LOWER ROTOR BLADE NORMAL BENDING MOMENT

HARMONIC	.1R		.2R		.3R		.6R	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	-1909.2		-1023.8		-517.1		-408.1	
1	4817.4	-1310.1	3617.3	-833.8	2765.5	-43.5	673.7	477.6
2	-3079.3	1872.8	-2031.0	1607.7	-1558.1	1028.9	-456.3	301.9
3	-281.3	-157.9	-127.2	-17.0	-1.1	7.8	133.1	35.0
4	-140.6	183.7	20.6	150.7	52.8	83.5	10.7	-27.1
5	-274.8	-645.1	-294.5	-305.7	-87.0	-169.4	38.0	76.6
6	-243.6	510.2	36.7	337.3	2.1	155.5	22.8	-53.3
7	304.8	128.0	153.2	-63.4	37.9	-32.0	-29.2	-0.7
8	-142.8	-15.2	-47.8	33.1	13.6	-8.7	13.2	1.7
9	-258.2	290.7	23.9	154.5	4.6	-10.1	21.7	-33.7
10	-59.8	126.9	28.7	68.3	-14.4	14.2	4.9	-13.7

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LOWER ROTOR EDGEWISE BENDING MOMENT .1R

HARMONIC

	COS	SIN
0	-5153.4	
1	1564.5	-933.1
2	220.7	-2800.6
3	396.5	-53.3
4	74.7	-49.1
5	69.5	6.7
6	39.1	-117.1
7	298.1	-862.5
8	-49.9	-79.3
9	-17.0	-71.6
10	-26.7	10.0

LOWER ROTOR PITCH LINK LOAD

	COS	SIN
0	-133.9	
1	-172.7	115.5
2	45.6	85.3
3	-0.8	24.6
4	-53.6	-3.1
5	-13.1	-22.3
6	43.2	-1.0
7	42.5	9.1
8	-5.4	3.2
9	25.4	30.8
10	-5.3	20.9

RUN 24	PJUNT 10	UMEG*R = 607.1	ALFS,C = 7.9	CLR/S,R = 0.09034	CMY/S,R = 0.1801
VKTS = 142.5	RHU100 = 0.2175	CP/S = 0.000884	CDK/S,R = 0.01615		CMX/S,R = 0.0003
V/OR = 0.396					

PSI	UPPER KOTOR BLADE NORMAL BENDING MOMENT			UR EDGEWISE BENDING .1R	UR PITCH LINK LOAD	UPPER KOTOR SHAFT STRESS
	.1R	.2R	.3R			
0.00	-6993.	-2401.	-2735.	0.	-554.	-1151.
11.25	-6017.	-2215.	-2692.	0.	-396.	-1155.
22.50	-4911.	-1654.	-2416.	0.	-378.	-188.
33.75	-4405.	-1069.	-1766.	0.	-365.	1480.
45.00	-2639.	-110.	-1105.	0.	-165.	2045.
56.25	-307.	1046.	-801.	0.	162.	1276.
67.50	1.	1524.	-521.	0.	201.	1305.
78.75	134.	1805.	109.	0.	-81.	3117.
90.00	2849.	3083.	790.	0.	-204.	4922.
101.25	5244.	4551.	1130.	0.	-103.	5676.
112.50	4275.	4515.	1119.	0.	-112.	6830.
123.75	2786.	3545.	908.	0.	-190.	8646.
135.00	3749.	3509.	804.	0.	-212.	8820.
146.25	5473.	4527.	1121.	0.	-290.	6625.
157.50	5801.	5278.	1628.	0.	-340.	4367.
168.75	4911.	5116.	1713.	0.	-237.	3655.
180.00	3215.	4219.	1186.	0.	-196.	3738.
191.25	970.	2908.	492.	0.	-299.	3714.
202.50	-614.	1857.	161.	0.	-378.	3536.
213.75	-610.	1721.	241.	0.	-493.	3078.
225.00	146.	2142.	361.	0.	-708.	1994.
236.25	321.	2291.	354.	0.	-824.	486.
247.50	-250.	2069.	328.	0.	-775.	-589.
258.75	-1296.	1652.	162.	0.	-673.	-703.
270.00	-2927.	832.	-332.	0.	-620.	-376.
281.25	-4555.	-203.	-930.	0.	-757.	-246.
292.50	-5263.	-886.	-1435.	0.	-963.	-138.
303.75	-5672.	-1397.	-1989.	0.	-830.	-63.
315.00	-6496.	-2099.	-2530.	0.	-486.	-675.
326.25	-6730.	-2466.	-2774.	0.	-499.	-1709.
337.50	-6277.	-2243.	-2770.	0.	-774.	-1949.
348.75	-6580.	-2175.	-2741.	0.	-787.	-1385.

RUN 24 POINT 10
 VKTS = 142.5 OMEG*R = 607.1 ALFS,C = 7.9 CLR/S,R = 0.09034 CMY/S,R = 0.1801
 V/CR = 0.396 RHD100 = 0.2175 CP/S = 0.000884 CDK/S,R = 0.01615 CMX/S,R = 0.0003

LOWER ROTOR BLADE NORMAL BENDING MUMENT				LR EDGEWISE BENDING .LR		LR PITCH LINK LOAD	
PSI	.1K	.2K	.3R	.6R			
300.00	1647.	1150.	713.	-630.	-616.	-366.	
288.75	1584.	1375.	837.	-493.	-2182.	-386.	
277.50	1891.	1480.	1139.	-394.	-4427.	-417.	
266.25	3267.	2044.	1337.	-485.	-5458.	-316.	
255.00	2861.	2198.	945.	-538.	-5564.	-139.	
243.75	-419.	693.	-20.	-428.	-6237.	-54.	
232.50	-3255.	-1527.	-1154.	-471.	-7844.	-56.	
221.25	-3796.	-2776.	-2111.	-857.	-9018.	-26.	
210.00	-4065.	-3159.	-2745.	-1342.	-8539.	62.	
198.75	-5780.	-3832.	-3285.	-1641.	-7323.	97.	
187.50	-8349.	-5262.	-4104.	-1703.	-7030.	33.	
176.25	-10486.	-6900.	-5018.	-1605.	-7194.	19.	
165.00	-11410.	-7854.	-5419.	-1427.	-6154.	90.	
153.75	-10886.	-7715.	-5063.	-1218.	-4234.	66.	
142.50	-9148.	-6660.	-4153.	-994.	-3365.	-17.	
131.25	-7003.	-5099.	-2981.	-703.	-4059.	33.	
120.00	-5210.	-3557.	-1834.	-309.	-4911.	81.	
108.75	-3497.	-2260.	-806.	88.	-4918.	-50.	
97.50	-1550.	-916.	235.	378.	-4858.	-176.	
86.25	1.	424.	1233.	601.	-5903.	-181.	
75.00	1281.	1424.	1958.	743.	-7849.	-161.	
63.75	2945.	2295.	2385.	702.	-8763.	-51.	
52.50	3654.	3014.	2556.	590.	-7978.	109.	
41.25	2394.	2801.	2400.	572.	-6792.	24.	
30.00	1247.	1932.	1985.	502.	-6493.	-216.	
18.75	1085.	1457.	1498.	278.	-6288.	-239.	
7.50	-87.	995.	1008.	102.	-4512.	-167.	
356.25	-1616.	23.	561.	-31.	-1674.	-286.	
345.00	-947.	-361.	266.	-329.	-352.	-422.	
333.75	625.	259.	188.	-636.	-1253.	-404.	
322.50	894.	724.	330.	-708.	-1962.	-379.	
311.25	1037.	824.	571.	-671.	-1099.	-388.	

RUN 24 PUNT 11 CMY/S,K = 0.1025
 VKTS = 160.6 UMEG*K = 603.8 ALFS,C = 2.8 CLK/S,K = 0.08466
 V/CR = 0.449 RHUIOU = 0.2137 CP/S = 0.003551 CUR/S,K = 0.00762 CMX/S,K = -0.0174

HARMONIC	UPPER ROTOR BLADE NORMAL BENDING MOMENT				UPPER ROTOR SHAFT STRESS			
	.1R		.2R		.3R		.6R	
	CUS	SIN	CGS	SIN	CGS	SIN	CGS	SIN
0	-49392.9		-1589.0		-2333.8		-2909.6	
1	-17.2	-247.0	856.4	2141.7	829.4	1135.4	1873.3	-1331.9
2	8.8	-725.8	-556.3	-1227.1	-415.2	-735.7	-593.5	-961.6
3	-321.2	-403.4	-94.2	-43.4	-42.1	20.9	496.3	483.4
4	37.2	19.7	-122.8	-569.6	1.9	-232.7	720.0	880.3
5	-413.1	-78.4	-379.4	371.9	-136.9	206.5	325.9	-612.2
6	-189.9	-10.9	21.9	-446.9	-33.7	-239.1	153.9	430.6
7	-47.4	103.8	141.8	28.6	25.9	-40.6	-216.0	2.8
8	5.2	-46.4	-4.9	58.7	-18.5	-4.1	-94.9	-105.3
9	-40.0	71.5	33.6	97.0	24.3	-12.1	-143.4	-126.9
10	-58.0	39.7	21.7	-1.7	17.2	17.7	-4.7	-3.5

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HARMONIC	UPPER ROTOR EDGEWISE BENDING MOMENT .1R		UPPER ROTOR PITCH LINK LOAD		UPPER ROTOR SHAFT STRESS	
	CUS	SIN	CGS	SIN	CGS	SIN
0	0.0		-564.0		2424.1	
1	0.0	0.0	49.1	215.3	-3890.5	-2462.8
2	0.0	0.0	-100.4	118.8	-535.1	-717.9
3	0.0	0.0	-17.1	-10.2	544.1	-359.7
4	0.0	0.0	-84.5	-7.4	-54.9	805.9
5	0.0	0.0	84.3	-110.6	152.8	-310.4
6	0.0	0.0	-3.8	29.3	26.1	4.8
7	0.0	0.0	60.1	22.9	-303.5	-217.9
8	0.0	0.0	4.4	37.6	18.4	-113.8
9	0.0	0.0	10.6	33.9	83.7	-12.6
10	0.0	0.0	-17.2	-6.8	10.9	-29.2

RUN 24 POINT 11 UMEG#R = 603.8 ALFS,C = 2.8 CLR/S,R = 0.08466 CMY/S,R = 0.1025
 VKTS = 160.6 RHU100 = 0.2137 CP/S = 0.003551 CDR/S,R = 0.00762 CMX/S,R = -0.0174
 V/IR = 0.449

LOWER ROTOR BLADE NORMAL BENDING MUMENT

HARMONIC	.1R		.2R		.3R		.6K	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	55.6		465.7		503.8		-271.6	
1	-2123.3	-5100.5	-1534.2	-2952.3	-762.6	-1579.6	132.0	257.6
2	-3604.0	531.9	-2681.4	677.0	-2119.1	207.2	-693.0	-93.3
3	-327.0	-487.2	-253.2	-231.8	-101.9	-108.0	82.8	108.0
4	-316.0	793.0	12.7	475.8	-7.2	182.4	13.8	-139.8
5	-66.5	101.6	-16.8	96.3	-27.3	64.9	3.3	-14.0
6	-253.5	430.8	1.2	290.7	-7.7	130.5	13.0	-41.1
7	213.1	261.4	149.3	-21.9	40.6	-54.7	-28.8	-16.1
8	-49.6	-27.8	-17.8	-2.6	16.7	-19.2	11.2	6.1
9	-380.1	-443.7	-228.1	-20.2	25.3	-17.3	49.9	43.3
10	-83.7	105.1	11.8	62.0	-9.7	-12.0	23.7	-20.7

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LOWER ROTOR EDGEWISE BENDING MOMENT .1R

HARMONIC

HARMONIC	BENDING MOMENT .1R		LOWER ROTOR PITCH LINK LOAD	
	COS	SIN	COS	SIN
0	-4049.4		-90.4	
1	2749.4	1306.1	-212.3	-53.7
2	2414.3	-920.3	154.6	75.9
3	539.0	409.3	34.7	106.4
4	1.0	35.9	-21.8	-7.4
5	60.8	54.4	30.2	26.5
6	-8.2	-111.4	15.8	35.3
7	67.5	-490.5	0.2	-4.6
8	-151.6	-35.1	-28.3	-5.7
9	125.9	-40.7	-107.4	-9.5
10	-17.4	1.9	-7.2	-6.9

RUN 24
 VKTS =
 V/OR =

POINT 11
 160.6 UMEG*R = 603.8 ALFS,C = 2.8 CLK/S,R = 0.1025
 0.449 RHU100 = 0.2137 CP/S = 0.003551 CDR/S,R = 0.00762 CMX/S,R = -0.0174

PSI	UPPER ROTOR BLADE NORMAL BENDING MOMENT			UR EDGEWISE BENDING .1R	UR PITCH LINK LOAD	UPPER RUTUR SHAFT STRESS
	.1R	.2R	.3R			
0.00	-50428.	-1671.	-2082.	0.	-578.	-1524.
11.25	-50373.	-2020.	-2334.	0.	-522.	-2463.
22.50	-50173.	-1925.	-2142.	0.	-615.	-2558.
33.75	-50152.	-981.	-1636.	0.	-522.	-2592.
45.00	-50082.	81.	-1393.	0.	-124.	-3285.
56.25	-50177.	272.	-1465.	0.	109.	-3585.
67.50	-50220.	14.	-1356.	0.	-75.	-2454.
78.75	-49689.	415.	-956.	0.	-315.	-678.
90.00	-49066.	1421.	-569.	0.	-397.	677.
101.25	-48929.	1899.	-461.	0.	-464.	1938.
112.50	-48967.	1246.	-839.	0.	-480.	3658.
123.75	-49131.	105.	-1549.	0.	-382.	5065.
135.00	-49622.	-485.	-1932.	0.	-364.	5017.
146.25	-49824.	-219.	-1788.	0.	-507.	3900.
157.50	-49315.	102.	-1785.	0.	-701.	3280.
168.75	-48776.	-708.	-2430.	0.	-900.	3928.
180.00	-48751.	-2788.	-3483.	0.	-953.	5303.
191.25	-49012.	-4816.	-4446.	0.	-703.	6574.
202.50	-49319.	-5596.	-4922.	0.	-430.	7205.
213.75	-49679.	-5297.	-4769.	0.	-471.	7140.
225.00	-50118.	-4586.	-4273.	0.	-661.	6776.
236.25	-50395.	-3851.	-3851.	0.	-728.	6273.
247.50	-50076.	-3560.	-3649.	0.	-716.	5496.
258.75	-49397.	-3819.	-3538.	0.	-690.	4919.
270.00	-49157.	-3830.	-3268.	0.	-649.	5094.
281.25	-49282.	-3143.	-2763.	0.	-677.	5317.
292.50	-49055.	-2340.	-2289.	0.	-779.	4542.
303.75	-48474.	-1682.	-2029.	0.	-813.	2974.
315.00	-47877.	-894.	-1819.	0.	-752.	1481.
326.25	-47521.	-365.	-1596.	0.	-720.	529.
337.50	-48060.	-615.	-1540.	0.	-752.	77.
348.75	-49475.	-1216.	-1731.	0.	-720.	-452.

RUN 24 POINT 11
 VKTS = 160.6 OMEG#R = 603.8 ALFS.C = 2.8 CLR/S,R = 0.08466 CMY/S,R = 0.1025
 V/OR = 0.449 RHO100 = 0.2137 CP/S = 0.003551 CUR/S,R = 0.00762 CMX/S,R = -0.0174

PSI	LOWER ROTOR BLADE NORMAL BENDING MOMENT			LR EDGEWISE BENDING .1R		LR PITCH LINK LOAD	
	.1R	.2R	.3R	.6R			
300.00	6167.	4126.	2714.	-300.	-4206.	-141.	
288.75	5987.	4621.	3320.	137.	-5425.	-268.	
277.50	7410.	5037.	3803.	294.	-7134.	-319.	
266.25	9209.	6100.	4076.	178.	-8199.	-67.	
255.00	8089.	6258.	4013.	192.	-7951.	95.	
243.75	6209.	5159.	3573.	106.	-7447.	46.	
232.50	6289.	4364.	2786.	-357.	-7822.	99.	
221.25	6132.	4010.	1944.	-846.	-8147.	221.	
210.00	4368.	3151.	1300.	-1152.	-7150.	168.	
198.75	2587.	2009.	640.	-1376.	-5797.	108.	
187.50	460.	774.	-235.	-1351.	-5425.	223.	
176.25	-2555.	-922.	-1020.	-1013.	-5189.	269.	
165.00	-4080.	-2249.	-1348.	-692.	-4066.	167.	
153.75	-3411.	-2211.	-1200.	-473.	-3024.	197.	
142.50	-2972.	-1603.	-735.	-164.	-3105.	270.	
131.25	-2996.	-1297.	-156.	152.	-3802.	50.	
120.00	-1828.	-754.	367.	301.	-4435.	-251.	
108.75	-507.	198.	829.	384.	-4921.	-302.	
97.50	-874.	661.	1199.	523.	-5153.	-338.	
86.25	-1833.	352.	1242.	623.	-5212.	-482.	
75.00	-1974.	-130.	798.	544.	-5349.	-387.	
63.75	-2546.	-682.	53.	336.	-5003.	-157.	
52.50	-4380.	-1657.	-650.	150.	-3374.	-224.	
41.25	-5481.	-2668.	-1188.	-87.	-1163.	-313.	
30.00	-4911.	-2993.	-1686.	-490.	141.	-43.	
18.75	-4991.	-3057.	-2172.	-784.	541.	136.	
7.50	-6477.	-3658.	-2445.	-741.	1165.	-93.	
356.25	-6756.	-4167.	-2404.	-650.	1914.	-245.	
345.00	-4996.	-3594.	-2061.	-663.	1471.	-178.	
333.75	-2051.	-2199.	-1205.	-556.	-409.	-309.	
322.50	598.	-282.	242.	-440.	-2397.	-493.	
311.25	4493.	2205.	1729.	-477.	-3507.	-330.	

RUN 24 PLINT 12 CMY/S,R = 0.1019
 VKTS = 160.6 UMEG*R = 606.2 ALFS,C = 2.8 CLR/S,R = 0.08466
 V/DR = 0.447 RHJ100 = 0.2137 CP/S = 0.003623 CDR/S,R = 0.00751
 CMX/S,R = -0.0187

HARMONIC	UPPER ROTOR BLADE NORMAL BENDING MOMENT			
	.1R		.3R	
	COS	SIN	COS	SIN
0	-14554.3		-2210.5	
1	189.7	308.3	566.9	1421.4
2	-138.6	-204.4	-423.7	-603.4
3	297.9	-902.4	-36.2	23.6
4	-225.9	411.1	-49.6	-271.5
5	236.0	27.3	-100.9	242.1
6	-320.8	154.5	-94.6	-231.2
7	511.1	-689.7	17.6	-55.8
8	-204.5	392.7	-19.1	0.5
9	10.9	-121.7	14.5	-18.9
10	-232.4	472.0	14.8	-0.0
	.6R		COS	SIN
			-2865.1	
			1572.2	-1183.6
			-464.2	-584.1
			439.3	378.6
			917.0	878.3
			215.8	-726.3
			263.9	375.4
			-215.0	66.2
			-130.3	-91.4
			-187.2	-106.4
			-33.5	-11.3

HARMONIC	UPPER ROTOR EDGEWISE BENDING MOMENT .1R			
	COS	SIN	UPPER ROTOR PITCH LINK LOAD	
			COS	SIN
0	0.0		-573.9	
1	0.0	0.0	61.5	216.7
2	0.0	0.0	-91.6	131.4
3	0.0	0.0	-16.2	-11.1
4	0.0	0.0	-83.3	-1.3
5	0.0	0.0	81.7	-135.0
6	0.0	0.0	2.5	27.7
7	0.0	0.0	73.4	3.7
8	0.0	0.0	20.6	30.8
9	0.0	0.0	13.8	28.8
10	0.0	0.0	-24.3	7.5
	UPPER ROTOR SHAFT STRESS		COS	SIN
			2412.5	
			-4235.1	-430.7
			-570.8	-730.4
			474.2	-281.6
			68.2	877.3
			99.5	-346.3
			35.3	-4.4
			-309.5	-138.6
			30.2	-133.3
			93.0	-50.9
			6.2	-3.2

PUN 24 POINT 12
 VKTS = 160.6
 V/CR = 0.447
 OMEG#R = 606.2
 RHD100 = 0.2137
 ALFS,C = 2.8
 CP/S = 0.003623
 CLR/S,R = 0.08466
 CDR/S,R = 0.00751
 CMV/S,R = 0.1019
 CMX/S,R = -0.0187

LOWER ROTOR BLADE NORMAL BENDING MOMENT

HARMONIC	.1R		.2R		.3R		.6R	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	-186.1		260.0		376.3		-286.7	
1	-1392.1	-4426.7	-996.7	-2509.4	-422.9	-1258.1	158.3	322.1
2	-3783.7	433.5	-2798.3	612.7	-2178.6	153.7	-698.8	-97.5
3	-229.7	-476.9	-201.2	-225.1	-81.7	-98.7	65.0	125.6
4	-477.6	724.9	-83.0	477.9	-44.7	187.2	39.3	-120.4
5	-73.0	124.6	-9.1	110.4	-25.6	68.2	11.4	-17.8
6	-396.2	442.9	-68.5	337.8	-45.9	150.9	23.9	-46.1
7	139.3	301.3	145.1	19.8	55.6	-50.7	-12.2	-14.9
8	-75.3	-35.6	-27.7	-6.7	17.3	-13.0	9.9	5.4
9	-287.4	-520.2	-222.2	-63.5	33.2	-7.9	36.7	46.6
10	-123.5	60.7	-20.9	53.5	-13.6	-7.4	0.9	3.2

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LOWER ROTOR EDGEWISE BENDING MOMENT .1R

HARMONIC

HARMONIC	BENDING MOMENT .1R		PITCH LINK LOAD	
	COS	SIN	COS	SIN
0	-4047.1		-92.8	
1	2688.2	1256.9	-204.6	-56.7
2	2540.4	-1115.1	144.2	95.0
3	558.7	428.0	25.3	104.0
4	16.2	28.6	-24.6	-11.9
5	35.8	45.3	17.7	36.5
6	35.3	-127.2	6.2	45.6
7	196.3	-452.0	-0.3	-15.7
8	-129.6	-79.6	-25.9	-19.4
9	166.8	16.6	-101.9	-34.0
10	-5.2	-46.0	-14.1	-1.6

RUN 24 PGINT 12
 VKTS = 160.6 OMEG*R = 606.2 ALFS,C = 2.8 CLR/S,R = 0.08466 CMY/S,R = 0.1019
 V/OR = 0.447 RH0100 = 0.2137 CP/S = 0.003623 CDR/S,R = 0.00751 CMX/S,R = -0.0187

PSI	UPPER ROTOR BLADE NORMAL BENDING MOMENT			UR EDGEWISE BENDING .IR	UR PITCH LINK LOAD	UPPER ROTOR SHAFT STRESS
	.1R	.2R	.3R			
0.00	-14351.	-1981.	-2321.	0.	-536.	-1896.
11.25	-14228.	-2132.	-2426.	0.	-535.	-2352.
22.50	-15280.	-1759.	-2002.	0.	-661.	-2038.
33.75	-15384.	-575.	-1400.	0.	-501.	-1713.
45.00	-14275.	525.	-1155.	0.	-41.	-2105.
56.25	-14805.	660.	-1150.	0.	129.	-2128.
67.50	-15543.	506.	-945.	0.	-123.	-702.
78.75	-14010.	1149.	-498.	0.	-335.	1247.
90.00	-12487.	2242.	-99.	0.	-405.	2632.
101.25	-12642.	2518.	-79.	0.	-501.	4019.
112.50	-13553.	1626.	-597.	0.	-501.	5855.
123.75	-14835.	534.	-1264.	0.	-382.	6990.
135.00	-14866.	255.	-1452.	0.	-381.	6460.
146.25	-13415.	734.	-1229.	0.	-536.	5099.
157.50	-14649.	917.	-1316.	0.	-750.	4380.
168.75	-17952.	-248.	-2095.	0.	-968.	4812.
180.00	-17002.	-2564.	-3244.	0.	-964.	5859.
191.25	-13156.	-4556.	-4204.	0.	-654.	6642.
202.50	-12750.	-5176.	-4590.	0.	-415.	6657.
213.75	-14409.	-4801.	-4396.	0.	-496.	6114.
225.00	-14564.	-4118.	-3949.	0.	-676.	5395.
236.25	-14694.	-3491.	-3632.	0.	-760.	4496.
247.50	-15303.	-3433.	-3589.	0.	-750.	3543.
258.75	-15460.	-3971.	-3633.	0.	-677.	3159.
270.00	-16099.	-4149.	-3453.	0.	-641.	3448.
281.25	-16097.	-3537.	-3039.	0.	-721.	3482.
292.50	-14173.	-2815.	-2662.	0.	-806.	2564.
303.75	-13358.	-2189.	-2412.	0.	-808.	1081.
315.00	-14426.	-1348.	-2164.	0.	-781.	-253.
326.25	-14256.	-799.	-1922.	0.	-766.	-1025.
337.50	-13548.	-1080.	-1830.	0.	-750.	-1202.
348.75	-14167.	-1650.	-1991.	0.	-672.	-1324.

RUN 24 POINT 12
 VKTS = 160.6 UMEG*R = 606.2 ALFS.C = 2.8 CMV/S,R = 0.1019
 V/OR = 0.447 RHO100 = 0.2137 CP/S = 0.003623 CDR/S,R = 0.00751 CMX/S,R = -0.0187

LOWER ROTOR BLADE NORMAL BENDING MOMENT		LR EDGEWISE BENDING .LR		LR PITCH LINK LOAD	
PSI	.LR	.3R	.6R		
300.00	5518.	2519.	-265.	-4126.	-126.
288.75	5236.	3025.	112.	-5475.	-322.
277.50	6895.	3451.	240.	-7218.	-338.
266.25	8421.	3674.	169.	-8261.	-27.
255.00	6942.	3535.	116.	-7900.	114.
243.75	5226.	3005.	-50.	-7504.	57.
232.50	5373.	2157.	-486.	-8155.	131.
221.25	4915.	3152.	-954.	-8339.	216.
210.00	3036.	705.	-1257.	-7005.	138.
198.75	1196.	32.	-1411.	-5755.	123.
187.50	-1187.	-896.	-1359.	-5504.	239.
176.25	-4062.	-1638.	-1046.	-4932.	233.
165.00	-4925.	-2992.	-691.	-3603.	138.
153.75	-3784.	-2607.	-460.	-2786.	194.
142.50	-3166.	-1806.	-201.	-2998.	234.
131.25	-2929.	-1330.	139.	-3625.	-5.
120.00	-1551.	-653.	344.	-4280.	-281.
108.75	-236.	347.	424.	-4844.	-326.
97.50	-540.	865.	579.	-5196.	-352.
86.25	-1229.	666.	691.	-5500.	-442.
75.00	-1191.	293.	565.	-5785.	-334.
63.75	-1908.	-240.	382.	-5313.	-161.
52.50	-3901.	-1297.	256.	-3516.	-242.
41.25	-4781.	-2293.	-49.	-1336.	-269.
30.00	-4007.	-2474.	-504.	-175.	25.
18.75	-4446.	-2588.	-720.	303.	134.
7.50	-6390.	-3468.	-673.	1308.	-148.
356.25	-6660.	-4117.	-660.	2248.	-268.
345.00	-4763.	-3512.	-680.	1567.	-178.
333.75	-2395.	-2112.	-612.	-422.	-340.
322.50	880.	-173.	-574.	-2167.	-504.
311.25	4457.	2245.	-536.	-3211.	-282.

RUN 25 POINT 5
 VKTS = 105.3 UMEGR = 593.8 ALFS,C = 8.3 CLR/S,R = 0.10721 CMY/S,R = 0.1998
 V/OR = 0.299 RHU100 = 0.2277 CP/S = 0.001613 CDR/S,R = 0.01670 CMX/S,R = -0.0103

UPPER ROTOR BLADE NORMAL BENDING MOMENT

HARMONIC	.1R		.2R		.3R		.6R	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	-146.3		1670.6		-71.0		-947.8	
1	914.8	1356.6	837.3	600.4	735.3	167.2	1465.5	-1808.4
2	-147.4	-914.9	-119.1	-611.7	-146.0	-381.6	-836.9	-675.4
3	39.3	190.9	34.9	130.3	29.1	90.2	-27.7	276.8
4	352.5	-452.0	269.8	-203.7	118.4	-98.8	-266.8	440.4
5	-543.4	312.3	-300.5	81.7	-97.1	17.7	409.5	-212.3
6	4.8	-449.4	72.2	-270.9	5.9	-128.8	104.9	298.8
7	82.2	309.9	27.1	50.8	24.3	-75.2	-37.0	-79.3
8	-299.8	-63.5	-120.4	-47.7	-0.3	26.9	158.9	13.9
9	213.5	-499.3	191.0	-167.0	-17.9	-7.0	-83.9	337.7
10	-123.5	87.9	-36.3	1.7	43.0	-14.9	106.5	39.9

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UPPER ROTOR EDGEWISE BENDING MOMENT .1R

HARMONIC	UPPER ROTOR BENDING MOMENT .1R		UPPER ROTOR PITCH LINK LOAD		UPPER ROTOR SHAFT STRESS	
	COS	SIN	COS	SIN	COS	SIN
0	-5086.8		-246.0		1523.0	
1	1866.4	836.6	-44.4	242.6	-1642.4	-1541.6
2	-665.2	746.0	7.0	34.0	-554.3	-467.4
3	-6.7	8.3	-74.1	21.9	320.6	-390.4
4	-90.3	38.5	-44.8	-35.2	-24.1	341.5
5	74.1	-79.9	27.2	-98.8	77.7	-559.6
6	2.5	-21.8	27.7	26.8	-40.6	72.6
7	495.5	-597.4	-22.4	99.8	-303.7	-407.0
8	-40.7	31.8	-23.8	61.0	68.9	149.8
9	-72.5	37.0	16.1	21.0	10.6	-47.1
10	-0.5	-12.4	9.1	-26.8	-16.9	35.0

RUN 25 POINT 5
 VKTS = 105.3 OMEG#R = 593.8 ALFS,C = 8.3 CLR/S,R = 0.10721 CMY/S,R = 0.1998
 V/OR = 0.299 RH0100 = 0.2277 CP/S = 0.001613 CDR/S,R = 0.01670 CMX/S,R = -0.0103

LOWER ROTOR BLADE NORMAL BENDING MOMENT

HARMONIC	.1R		.2R		.3R		.6R	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	2042.2		1724.7		1337.5		-155.5	
1	-484.2	-2487.2	-293.8	-1418.2	-55.8	-641.5	138.9	277.4
2	-1109.5	632.7	-786.9	541.9	-680.9	332.8	-296.7	63.2
3	54.9	-196.9	13.8	-112.2	26.1	-51.6	20.2	-3.7
4	259.5	537.3	270.4	252.1	117.3	145.5	-72.4	-85.7
5	-254.8	105.5	-103.8	141.1	-56.0	87.5	29.1	-14.9
6	-78.8	645.9	136.6	356.4	20.9	185.5	3.3	-66.6
7	231.9	99.2	152.3	-32.2	79.1	-21.9	-23.4	-4.3
8	-82.4	-228.7	-87.5	-52.6	-2.7	-3.7	12.0	18.9
9	-28.8	52.3	-0.3	-1.2	-3.9	-27.5	6.8	-1.6
10	37.4	107.5	49.4	8.7	6.5	-2.2	-7.5	-8.6

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LOWER ROTOR EDGEWISE BENDING MOMENT .1R

HARMONIC	.1R	
	COS	SIN
0	-5242.0	
1	2711.7	299.6
2	575.6	-865.3
3	154.4	108.7
4	-12.9	33.1
5	18.1	80.5
6	-94.4	-85.2
7	673.5	1019.6
8	-19.6	9.3
9	10.7	3.4
10	0.3	10.4

LOWER ROTOR PITCH LINK LOAD

	PITCH LINK LOAD	
	COS	SIN
0	-8.6	
1	-185.8	155.0
2	-21.6	50.2
3	-17.3	-44.9
4	-5.8	-10.2
5	26.1	-7.1
6	52.5	23.9
7	10.5	-15.0
8	-11.3	19.7
9	15.6	19.5
10	24.2	10.7

PUN	25	PCINT	5	UMEG*R =	593.8	ALFS,C =	0.3	CLR/S,R =	0.10721	CAY/S,R =	0.1998
V/KTS =	105.3	U.299	RHUI00 =	0.2277	CP/S =	0.001613	CDR/S,R =	0.01670	CMX/S,R =	-0.0103	
UPPER ROTOR BLADE NORMAL BENDING MOMENT	UPPER ROTOR SHAFT STRESS	UPPER ROTOR BLADE NORMAL BENDING MOMENT	UPPER ROTOR BLADE NORMAL BENDING MOMENT	UPPER ROTOR BLADE NORMAL BENDING MOMENT	UPPER ROTOR BLADE NORMAL BENDING MOMENT	UPPER ROTOR BLADE NORMAL BENDING MOMENT	UPPER ROTOR BLADE NORMAL BENDING MOMENT	UPPER ROTOR BLADE NORMAL BENDING MOMENT	UPPER ROTOR BLADE NORMAL BENDING MOMENT	UPPER ROTOR BLADE NORMAL BENDING MOMENT	UPPER ROTOR BLADE NORMAL BENDING MOMENT
PSI	UPPER ROTOR BLADE NORMAL BENDING MOMENT	UPPER ROTOR BLADE NORMAL BENDING MOMENT	UPPER ROTOR BLADE NORMAL BENDING MOMENT	UPPER ROTOR BLADE NORMAL BENDING MOMENT	UPPER ROTOR BLADE NORMAL BENDING MOMENT	UPPER ROTOR BLADE NORMAL BENDING MOMENT	UPPER ROTOR BLADE NORMAL BENDING MOMENT	UPPER ROTOR BLADE NORMAL BENDING MOMENT	UPPER ROTOR BLADE NORMAL BENDING MOMENT	UPPER ROTOR BLADE NORMAL BENDING MOMENT	UPPER ROTOR BLADE NORMAL BENDING MOMENT
0.00	347.	2527.	624.	45.	-3524.	-369.	-581.	-3524.	-369.	-581.	-3524.
11.25	-4.	1913.	258.	-2.	-3922.	-217.	-1494.	-3922.	-217.	-1494.	-3922.
22.50	743.	2062.	202.	-1196.	-3645.	-239.	-1619.	-3645.	-239.	-1619.	-3645.
33.75	985.	2425.	360.	-1727.	-2494.	-275.	-1332.	-2494.	-275.	-1332.	-2494.
45.00	338.	2180.	333.	-1414.	-1608.	-46.	-1255.	-1608.	-46.	-1255.	-1608.
56.25	337.	1876.	156.	-1629.	-2064.	309.	-1369.	-2064.	309.	-1369.	-2064.
67.50	1106.	2081.	28.	-2170.	-3251.	301.	-974.	-3251.	301.	-974.	-3251.
78.75	1105.	2242.	46.	-2210.	-3591.	-80.	21.	-3591.	-80.	21.	-3591.
90.00	841.	2237.	307.	-2311.	-3172.	-315.	829.	-3172.	-315.	829.	-3172.
101.25	2040.	2715.	507.	-2860.	-3726.	-220.	1214.	-3726.	-220.	1214.	-3726.
112.50	2859.	3070.	207.	-2722.	-5470.	-51.	1798.	-5470.	-51.	1798.	-5470.
123.75	729.	2135.	-235.	-1447.	-6539.	32.	2707.	-6539.	32.	2707.	-6539.
135.00	-1332.	990.	-277.	-907.	-6261.	-2.	3055.	-6261.	-2.	3055.	-6261.
146.25	193.	1391.	-206.	-2407.	-6220.	-110.	2090.	-6220.	-110.	2090.	-6220.
157.50	2111.	2319.	-344.	-4084.	-7369.	-144.	613.	-7369.	-144.	613.	-7369.
168.75	925.	1960.	-497.	-4063.	-8502.	-120.	607.	-8502.	-120.	607.	-8502.
180.00	-1066.	947.	-724.	-3408.	-8238.	-173.	2493.	-8238.	-173.	2493.	-8238.
191.25	-2098.	323.	-1175.	-3059.	-6980.	-213.	4087.	-6980.	-213.	4087.	-6980.
202.50	-3434.	-357.	-1517.	-2208.	-6272.	-194.	3899.	-6272.	-194.	3899.	-6272.
213.75	-4052.	-874.	-1501.	-1341.	-6671.	-292.	3269.	-6671.	-292.	3269.	-6671.
225.00	-2690.	-297.	-1248.	-1499.	-6956.	-443.	3477.	-6956.	-443.	3477.	-6956.
236.25	-1680.	644.	-824.	-1354.	-6053.	-474.	3700.	-6053.	-474.	3700.	-6053.
247.50	-1908.	877.	-397.	-31.	-4933.	-509.	3294.	-4933.	-509.	3294.	-4933.
258.75	-1327.	1035.	-194.	943.	-5093.	-549.	3092.	-5093.	-549.	3092.	-5093.
270.00	-496.	1569.	-19.	1450.	-5938.	-402.	3531.	-5938.	-402.	3531.	-5938.
281.25	-1059.	1727.	288.	2676.	-5738.	-317.	3782.	-5738.	-317.	3782.	-5738.
292.50	-1361.	1574.	431.	3461.	-4644.	-545.	3103.	-4644.	-545.	3103.	-4644.
303.75	-269.	1847.	370.	2669.	-4407.	-666.	1883.	-4407.	-666.	1883.	-4407.
315.00	490.	2249.	433.	1731.	-5324.	-409.	1187.	-5324.	-409.	1187.	-5324.
326.25	592.	2394.	642.	1164.	-5736.	-239.	1372.	-5736.	-239.	1372.	-5736.
337.50	1113.	2702.	825.	97.	-4786.	-396.	1517.	-4786.	-396.	1517.	-4786.
348.75	1241.	2975.	868.	-517.	-3652.	-507.	739.	-3652.	-507.	739.	-3652.

RUN 25 POINT 5 VKTS = 105.3 UMEGR = 593.8 ALFS,C = 8.3 CLR/S,R = 0.10721 CMY/S,R = 0.1998
 V/OR = 0.299 RHO100 = 0.2277 CP/S = 0.001613 CDR/S,R = 0.01670 CMX/S,R = -0.0103

LOWER ROTOR BLADE NORMAL BENDING MUMENT				LR EDGENISE BENDING .IK		LR PITCH LINK LOAD	
PSI	.1R	.2R	.3R	.6R			
300.00	4499.	3183.	2089.	-327.	-4365.	-209.	
288.75	4108.	3141.	2106.	-195.	-5707.	-158.	
277.50	4481.	3189.	2332.	-129.	-5313.	-272.	
266.25	6212.	3965.	2750.	-225.	-5126.	-281.	
255.00	6857.	4682.	2934.	-272.	-6748.	-72.	
243.75	5275.	4216.	2653.	-151.	-8723.	57.	
232.50	3850.	3142.	2148.	-103.	-8743.	34.	
221.25	4051.	2717.	1799.	-290.	-7353.	51.	
210.00	4504.	2883.	1700.	-550.	-7116.	133.	
198.75	3975.	2817.	1595.	-726.	-8538.	201.	
187.50	2613.	2183.	1203.	-753.	-9225.	218.	
176.25	1051.	1201.	616.	-638.	-7630.	151.	
165.00	-77.	373.	238.	-459.	-5596.	91.	
153.75	-630.	7.	236.	-290.	-5624.	130.	
142.50	-687.	-48.	380.	-130.	-6997.	174.	
131.25	-67.	158.	548.	-1.	-6986.	175.	
120.00	740.	699.	866.	82.	-5293.	191.	
108.75	901.	1169.	1273.	182.	-4447.	177.	
97.50	899.	1302.	1535.	302.	-5594.	132.	
86.25	1258.	1432.	1603.	370.	-6689.	170.	
75.00	1053.	1492.	1508.	415.	-5824.	232.	
63.75	51.	1044.	1225.	473.	-4109.	194.	
52.50	-476.	461.	918.	432.	-3733.	100.	
41.25	-56.	422.	851.	222.	-4451.	-46.	
30.00	725.	824.	983.	-62.	-4040.	-219.	
18.75	1357.	1223.	1062.	-292.	-2074.	-222.	
7.50	1193.	1308.	959.	-375.	-822.	-107.	
356.25	266.	887.	682.	-316.	-1694.	-166.	
345.00	-49.	377.	420.	-243.	-2933.	-308.	
333.75	956.	575.	555.	-251.	-2540.	-291.	
322.50	2551.	1546.	1189.	-309.	-1524.	-256.	
311.25	3966.	2620.	1847.	-358.	-2181.	-282.	

RUN	25
PUNT	6
VKTS =	UMEG*R = 593.9
V/R =	ALFS,C = 8.0
	CP/S = 0.000632
	CLR/S,R = 0.06654
	CDR/S,R = 0.01263
	CNY/S,K = 0.1385
	CMX/S,R = 0.0028

UPPER ROTOR BLADE NORMAL BENDING MOMENT

HARMONIC	.1R		.2R		.3R		.6R	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	-351.4		1558.1		-163.8		-1076.5	
1	-2935.8	-1596.7	-1742.3	-1646.9	-1039.3	-1394.6	-66.8	-3437.5
2	-923.5	-217.1	-686.9	-112.3	-548.1	4.3	-1776.6	438.8
3	269.6	33.5	153.8	63.5	61.1	57.8	-294.7	378.1
4	720.6	-542.1	513.1	-240.1	246.9	-147.7	-691.0	556.7
5	117.0	238.2	34.2	117.5	25.9	-2.2	-77.6	-133.0
6	-142.8	-116.2	-82.9	-92.4	-49.3	-53.0	137.7	31.8
7	32.2	-5.3	35.5	-42.6	8.7	-27.9	10.6	48.3
8	-244.4	124.8	-112.3	21.1	-2.7	25.6	142.6	-71.0
9	-230.9	52.9	-97.5	-24.7	-4.5	-7.6	147.1	-32.9
10	-47.5	3.0	-10.7	9.4	3.7	16.3	39.3	0.4

UPPER ROTOR LOGWISE
BENDING MOMENT .1R

HARMONIC	UPPER ROTOR LGDGEWISE BENDING MOMENT .1LR		UPPER ROTOR PITCH LINK LOAD		UPPER SHAFT STRESS	
	COS	SIN	COS	SIN	COS	SIN
0	-5368.0		-236.5		1074.0	
1	2027.3	493.1	-90.8	353.6	-5660.9	-17.6
2	1162.8	509.7	22.8	-13.4	-694.7	-411.1
3	-15.0	-83.9	-66.1	84.1	398.8	-80.1
4	24.5	-5.6	17.1	0.3	-283.2	378.5
5	4.8	-116.2	-72.1	-21.9	-407.9	-266.4
6	-1.1	-5.5	-32.4	-9.9	-74.2	-21.2
7	498.7	-388.4	-66.3	5.6	-256.5	-245.5
8	-0.7	3.8	23.8	66.8	18.6	146.5
9	0.1	47.5	-44.1	-4.3	74.9	9.2
10	21.8	10.1	-4.5	5.7	-59.1	35.7

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HARMONIC

0	-5368.0	-236.5	1074.0	-17.6
1	2027.3	-90.8	-5660.9	-411.1
2	1162.6	22.8	-694.7	-80.1
3	-15.0	-66.1	398.8	378.5
4	24.5	17.1	-283.2	-266.4
5	4.8	-72.1	-407.9	-21.2
6	-1.1	-32.4	-74.2	-245.5
7	498.7	-66.3	-256.5	146.5
8	-0.7	23.8	18.6	9.2
9	0.1	-44.1	74.9	35.7
10	21.8	-4.5	-59.1	

RUN 25 POINT 6
 VKTS = 106.2
 V/OR = 0.302

OMEG#R = 593.9
 RH0100 = 0.2272

ALFS,C = 8.0
 CP/S = 0.000632

CLR/S,R = 0.06654
 CDK/S,R = 0.01263

CMY/S,R = 0.1385
 CMX/S,K = 0.0028

LOWER ROTOR BLADE NORMAL BENDING MOMENT

HARMONIC	.1R		.2R		.3R		.6R	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	-7023.9		-4716.4		-3114.9		-766.7	
1	109.3	1902.3	366.1	1557.2	360.2	1372.6	182.9	507.9
2	-414.6	960.7	-215.9	648.0	-201.7	380.7	-60.2	37.5
3	131.2	80.8	120.6	37.2	90.1	27.8	68.6	-46.9
4	-157.5	348.3	18.5	222.5	27.6	109.8	15.2	-68.9
5	-112.3	-517.5	-179.6	-253.5	-62.4	-123.2	19.8	62.6
6	-287.1	420.2	-37.1	290.6	-46.2	132.5	20.5	-46.3
7	160.5	92.0	88.3	31.6	34.3	46.1	-15.2	-7.1
8	-25.4	-76.6	-23.2	-9.2	5.3	14.5	7.1	4.5
9	-64.1	146.2	35.1	57.5	9.9	-7.2	10.6	-17.6
10	24.4	63.6	27.9	24.6	-12.0	23.9	2.8	-11.5

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LOWER ROTOR EDGEWISE BENDING MOMENT .1R

HARMONIC	COS		SIN	
	COS	SIN	COS	SIN
0	-4568.5		-162.1	
1	463.4	-1296.6	-117.1	124.7
2	51.5	-449.4	24.0	27.8
3	-8.3	-20.9	-17.9	-6.2
4	-25.8	-12.4	-1.8	9.5
5	10.7	22.9	-19.9	-27.7
6	-1.9	-13.7	24.6	33.0
7	-777.2	1016.9	36.8	-27.7
8	-15.5	-9.7	-11.1	15.2
9	5.2	-50.9	5.9	7.3
10	-6.3	-7.6	32.6	21.3

LOWER ROTOR PITCH LINK LOAD

COS		SIN	
COS	SIN	COS	SIN
-162.1		124.7	
-117.1	124.7	27.8	
24.0	27.8	-6.2	
-17.9	-6.2	9.5	
-1.8	9.5	-27.7	
-19.9	-27.7	33.0	
24.6	33.0	-27.7	
36.8	-27.7	15.2	
-11.1	15.2	7.3	
5.9	7.3	21.3	
32.6	21.3		

RUN 25	POINT 6	OMEGAR = 593.9	ALFSC = 8.0	CLR/S,R = 0.06654	CMY/S,R = 0.1385
VKTS = 106.2		RHO100 = 0.2272	CP/S = 0.000632	CDR/S,R = 0.01263	CMX/S,R = 0.0028
V/CR = 0.302					

	UPPER ROTOR BLADE NORMAL BENDING MOMENT			UR EDGEWISE	UR PITCH	UPPER ROTOR
	.1R	.2R	.3R	BENDING .1R	LINK LOAD	SHAFT STRESS
PSI						
0.00	-3737.	-438.	-1461.	-1645.	-549.	-5870.
11.25	-3765.	-800.	-1855.	-2392.	-246.	-5517.
22.50	-4258.	-1117.	-2151.	-2974.	-21.	-4472.
33.75	-5394.	-1624.	-2209.	-2599.	2.	-3386.
45.00	-5137.	-1677.	-2063.	-2395.	46.	-2804.
56.25	-3427.	-1001.	-1817.	-3500.	87.	-2772.
67.50	-2105.	-182.	-1464.	-5087.	-9.	-2218.
78.75	-1235.	495.	-1054.	-5743.	-65.	-429.
90.00	-95.	1164.	-760.	-5631.	56.	1688.
101.25	390.	1492.	-691.	-5979.	125.	3367.
112.50	-337.	1147.	-804.	-7004.	28.	4885.
123.75	-821.	764.	-870.	-7567.	12.	6024.
135.00	39.	1162.	-623.	-7032.	131.	6154.
146.25	1446.	2074.	-167.	-6335.	116.	5543.
157.50	2242.	2679.	138.	-6471.	-22.	4940.
168.75	2205.	2809.	270.	-6942.	15.	4966.
180.00	1759.	2795.	435.	-6676.	130.	5833.
191.25	1409.	2781.	601.	-5780.	-66.	6509.
202.50	1447.	2836.	731.	-5458.	-455.	5884.
213.75	1810.	3096.	987.	-6317.	-585.	4902.
225.00	2308.	3521.	1383.	-7341.	-501.	4847.
236.25	2938.	4022.	1758.	-7249.	-542.	4811.
247.50	3537.	4540.	2056.	-6553.	-637.	3704.
258.75	3473.	4729.	2222.	-6691.	-556.	2356.
270.00	2572.	4314.	2108.	-7424.	-419.	1586.
281.25	1564.	3616.	1673.	-7252.	-442.	792.
292.50	552.	2855.	989.	-6056.	-592.	-561.
303.75	-1072.	1780.	219.	-5090.	-690.	-1959.
315.00	-2476.	724.	-351.	-4805.	-595.	-2694.
326.25	-2368.	450.	-607.	-4426.	-390.	-2970.
337.50	-1934.	606.	-783.	-3336.	-374.	-3718.
348.75	-2776.	245.	-1080.	-2027.	-559.	-5055.

RUN 25 POINT 6
 VKTS = 106.2
 V/VR = 0.302
 OMEG*R = 593.9
 RHU100 = 0.2272
 ALFS,C = 8.0
 CP/S = 0.000632
 CLR/S,R = 0.06654
 CDR/S,R = 0.01263
 CMY/S,R = 0.1385
 CMX/S,R = 0.0028

PSI	LOWER ROTOR BLADE NORMAL BENDING MGMENT				LR EDGEWISE BENDING .LR	LR PITCH LINK LOAD
	.1K	.2R	.3R	.6R		
300.00	-9597.	-6610.	-4567.	-1199.	-4078.	-316.
288.75	-9493.	-6612.	-4595.	-1237.	-3092.	-325.
277.50	-8767.	-6235.	-4256.	-1266.	-1948.	-423.
266.25	-7475.	-5555.	-3907.	-1333.	-2888.	-338.
255.00	-7206.	-5198.	-3946.	-1276.	-4805.	-151.
243.75	-8427.	-5660.	-4193.	-1073.	-4964.	-175.
232.50	-8957.	-6201.	-4263.	-976.	-3533.	-278.
221.25	-7671.	-5879.	-4093.	-1097.	-3234.	-222.
210.00	-6330.	-5042.	-3773.	-1262.	-4858.	-84.
198.75	-6424.	-4653.	-3516.	-1298.	-6100.	48.
187.50	-7441.	-4980.	-3596.	-1178.	-5285.	91.
176.25	-8358.	-5557.	-3842.	-982.	-3918.	-35.
165.00	-8569.	-5808.	-3795.	-815.	-4286.	-120.
153.75	-7855.	-5500.	-3430.	-720.	-5934.	-20.
142.50	-6583.	-4774.	-2973.	-671.	-6388.	18.
131.25	-5550.	-3935.	-2462.	-610.	-5077.	-54.
120.00	-5270.	-3383.	-2028.	-470.	-4306.	-24.
108.75	-5439.	-3300.	-1845.	-276.	-5590.	9.
97.50	-5384.	-3322.	-1756.	-141.	-7105.	-80.
86.25	-5061.	-3115.	-1598.	-90.	-6536.	-115.
75.00	-4819.	-2887.	-1478.	-95.	-4849.	-77.
63.75	-4544.	-2778.	-1443.	-184.	-4894.	-80.
52.50	-4269.	-2667.	-1472.	-313.	-6449.	-60.
41.25	-4490.	-2713.	-1623.	-380.	-6747.	-73.
30.00	-5062.	-3019.	-1828.	-434.	-4959.	-218.
18.75	-5022.	-3360.	-2041.	-522.	-3532.	-276.
7.50	-6669.	-3899.	-2476.	-538.	-4114.	-193.
356.25	-8105.	-4860.	-3131.	-517.	-5054.	-245.
345.00	-8707.	-5629.	-3626.	-641.	-4238.	-368.
333.75	-8517.	-5745.	-3836.	-854.	-2373.	-339.
322.50	-8754.	-5812.	-4006.	-992.	-1854.	-311.
311.25	-9351.	-6243.	-4285.	-1094.	-3163.	-351.

RUN 25 POINT 7
 VKTS = 104.7 UMEG#R = 590.0 ALFS.C = 8.3 CLK/S,R = 0.10581 CMY/S,R = 0.1970
 V/OR = 0.300 RHU100 = 0.2269 CP/S = 0.002266 CUR/S,R = 0.01620 CMX/S,R = -0.0051

UPPER ROTOR BLADE NORMAL BENDING MOMENT

HARMONIC	.1R		.2R		.3R		.6R	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	1460.1		2843.5		774.4		-230.9	
1	615.0	129.8	740.1	-281.1	695.3	-476.0	1529.0	-2463.6
2	-1430.6	-1379.5	-1020.9	-1034.7	-785.9	-668.2	-2334.1	-1288.9
3	-120.7	83.9	-63.8	49.0	-32.7	29.2	-167.4	-1.1
4	300.6	-458.7	246.0	-225.7	94.3	-129.8	-332.1	379.8
5	-258.6	292.7	-159.5	141.2	-24.7	31.6	97.3	-196.3
6	158.6	-459.2	160.1	-258.6	47.0	-128.2	6.7	327.6
7	48.8	193.4	59.2	27.8	50.7	-67.2	-59.2	-41.9
8	-339.7	-166.2	-118.2	-99.2	-6.9	37.5	222.9	56.5
9	335.7	-202.1	174.7	-14.8	-0.8	-11.8	-172.8	152.0
10	-212.5	70.5	-70.7	10.0	40.9	29.2	63.3	11.5

UPPER ROTOR

SHAFT STRESS

UPPER ROTOR

PITCH LINK LOAD

UPPER ROTOR EDGEWISE

BENDING MOMENT .1R

HARMONIC	UPPER ROTOR		UPPER ROTOR		UPPER ROTOR	
	COS	SIN	COS	SIN	COS	SIN
0	-5010.9		-227.9		1738.8	
1	2953.2	-36.1	-162.2	273.7	-3460.3	158.0
2	504.6	2078.8	144.6	29.7	-788.6	-539.1
3	292.8	70.1	-117.8	-8.0	209.2	-37.1
4	12.1	61.7	59.9	1.0	-276.0	581.8
5	79.0	-295.1	-51.3	-98.8	-76.1	-234.1
6	-93.0	17.4	15.5	-24.9	79.5	11.6
7	765.9	-128.4	-100.5	-32.1	-200.2	-542.7
8	-98.9	25.6	-0.7	15.2	-21.9	241.2
9	-42.4	-16.4	2.3	-26.1	-4.1	-18.7
10	35.0	73.2	70.4	25.6	-92.8	-21.1

RUN 25 POINT 7
 VKTS = 104.7
 V/OR = 0.300
 OMLG*R = 590.0
 RHU100 = 0.2269
 ALFS,C = 8.3
 CP/S = 0.002266
 CLR/S,R = 0.10581
 CDR/S,R = 0.01620
 CMY/S,R = 0.1970
 CMX/S,R = -0.0051

LOWER ROTOR BLADE NORMAL BENDING MOMENT

HARMONIC	.1R		.2R		.3R		.6R	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	252.1		468.3		475.6		-260.4	
1	-1735.1	349.2	-982.8	647.7	-550.1	762.4	81.3	483.3
2	-1139.0	453.8	-833.2	409.8	-724.9	228.6	-323.4	34.0
3	37.1	-216.2	8.6	-125.0	28.7	-51.1	28.5	0.2
4	206.1	819.1	309.5	372.6	139.8	173.2	-69.2	-140.9
5	-138.7	49.0	-40.8	52.3	-7.7	42.1	3.3	-9.8
6	193.4	682.9	285.1	290.9	101.2	175.0	-30.5	-60.4
7	235.0	47.0	115.5	-27.9	48.8	10.6	-28.1	0.3
8	-165.7	-91.9	-69.9	20.6	12.5	13.7	14.5	4.2
9	86.5	201.2	55.5	24.0	-27.4	-20.7	-12.6	-17.1
10	-3.2	81.7	17.8	26.8	-3.9	9.4	-4.2	-9.2

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LOWER ROTOR EDGEWISE BENDING MOMENT .1R

HARMONIC	LOWER ROTOR BENDING MOMENT .1R		LOWER ROTOR PITCH LINK LOAD	
	COS	SIN	COS	SIN
0	-5122.2		-39.2	
1	2400.4	-317.5	-182.5	161.2
2	967.0	-886.8	-18.2	34.4
3	32.5	125.8	-17.0	-53.1
4	-13.2	-22.7	-2.6	-0.5
5	-64.6	163.1	21.2	-14.5
6	-95.2	-27.0	57.9	14.2
7	212.2	1111.2	7.1	-5.0
8	-60.8	-19.1	-14.5	20.2
9	-41.5	-44.0	0.3	-23.3
10	45.2	34.4	40.6	8.1

RUN	25	PLINT	7	CMY/S,R = 0.1970	CMX/S,R = -0.0051	CLR/S,R = 0.10581	CLR/S,R = 0.01620	ALFS,C = 8.3	CP/S = 0.002266	590.0	0.2269	CMY/S,R = 0.1970	CMX/S,R = -0.0051
VKTS =	104.7	CMY/S,R = 0.1970	CMX/S,R = -0.0051	CLR/S,R = 0.10581	CLR/S,R = 0.01620	ALFS,C = 8.3	CP/S = 0.002266	590.0	0.2269	CMY/S,R = 0.1970	CMX/S,R = -0.0051	CLR/S,R = 0.10581	CLR/S,R = 0.01620
V/Cr =	0.300	CMY/S,R = 0.1970	CMX/S,R = -0.0051	CLR/S,R = 0.10581	CLR/S,R = 0.01620	ALFS,C = 8.3	CP/S = 0.002266	590.0	0.2269	CMY/S,R = 0.1970	CMX/S,R = -0.0051	CLR/S,R = 0.10581	CLR/S,R = 0.01620
PSI	0.00	557.	2790.	852.	-1357.	-583.	-368.	-2893.					
	11.25	-275.	1942.	239.	-1606.	-647.	-441.	-2717.					
	22.50	-168.	1618.	-104.	-2150.	-1163.	-280.	-1853.					
	33.75	240.	1901.	109.	-2281.	-832.	17.	-1113.					
	45.00	609.	2260.	431.	-1781.	-324.	-11.	-643.					
	56.25	1174.	2464.	555.	-1374.	-1213.	-114.	-533.					
	67.50	2184.	2863.	685.	-1269.	-3344.	41.	-375.					
	78.75	2931.	3425.	897.	-970.	-5172.	22.	842.					
	90.00	2949.	3671.	1142.	-561.	-5834.	-210.	2728.					
	101.25	3217.	3838.	1317.	-682.	-6126.	-155.	3901.					
	112.50	4045.	4044.	1085.	-970.	-7377.	-2.	4524.					
	123.75	2767.	3372.	543.	-563.	-9064.	-57.	5407.					
	135.00	359.	2105.	317.	-504.	-9296.	-42.	5872.					
	146.25	912.	2047.	366.	-2355.	-8361.	1.	5004.					
	157.50	2918.	2904.	136.	-4585.	-8394.	-84.	3497.					
	168.75	1874.	2588.	-260.	-4770.	-9234.	114.	3009.					
	180.00	-684.	1289.	-524.	-3811.	-8720.	491.	4171.					
	191.25	-1495.	614.	-807.	-3406.	-6627.	351.	5354.					
	202.50	-1797.	441.	-996.	-2802.	-4881.	-119.	4726.					
	213.75	-2093.	387.	-724.	-1573.	-4776.	-320.	3411.					
	225.00	-669.	1161.	-106.	-781.	-5650.	-406.	3485.					
	236.25	1167.	2482.	572.	-38.	-5713.	-555.	3994.					
	247.50	1580.	3239.	1205.	1654.	-4538.	-610.	3113.					
	258.75	1981.	3586.	1647.	3400.	-4047.	-626.	1836.					
	270.00	2962.	4134.	1978.	4369.	-5255.	-588.	1758.					
	281.25	3280.	4640.	2399.	5132.	-6333.	-434.	2246.					
	292.50	3284.	4841.	2622.	5626.	-5980.	-504.	1973.					
	303.75	3444.	4776.	2386.	5281.	-5334.	-779.	712.					
	315.00	2980.	4386.	2051.	4362.	-5217.	-695.	-742.					
	326.25	2370.	3927.	1854.	2935.	-4863.	-355.	-1410.					
	337.50	2352.	3744.	1617.	865.	-3618.	-260.	-1520.					
	348.75	1867.	3506.	1298.	-823.	-1833.	-316.	-2122.					

RUN 25 POINT 7
 VKTS = 104.7
 V/OR = 0.300
 OMEG*R = 590.0
 RH0100 = 0.2269
 ALFS,C = 8.3
 CP/S = 0.002266
 CLR/S,R = 0.10581
 CDR/S,R = 0.01620
 CMY/S,R = 0.1970
 CMX/S,R = -0.0051

PSI	LOWER ROTOR BLADE NORMAL BENDING MOMENT			LR EDGEWISE BENDING		LR PITCH LINK LOAD
	.1R	.2R	.3R	.6R	.1R	
300.00	219.	5.	-75.	-678.	-4155.	-233.
288.75	104.	175.	-40.	-601.	-5176.	-205.
277.50	-102.	144.	166.	-454.	-4805.	-293.
266.25	954.	566.	558.	-417.	-4878.	-297.
255.00	2145.	1233.	732.	-454.	-6581.	-147.
243.75	1624.	1265.	605.	-405.	-8219.	-45.
232.50	448.	669.	424.	-357.	-7741.	-3.
221.25	843.	431.	332.	-511.	-6430.	43.
210.00	2406.	993.	407.	-800.	-6773.	64.
198.75	2913.	1620.	626.	-965.	-8103.	142.
187.50	1797.	1484.	674.	-887.	-7948.	238.
176.25	491.	767.	393.	-666.	-6159.	141.
165.00	-146.	214.	163.	-424.	-4904.	17.
153.75	-358.	101.	346.	-189.	-5579.	106.
142.50	177.	397.	804.	1.	-7030.	167.
131.25	1663.	1163.	1278.	87.	-7014.	105.
120.00	2707.	2024.	1702.	152.	-5629.	184.
108.75	2440.	2330.	2011.	301.	-5412.	258.
97.50	2027.	2189.	2113.	450.	-6905.	109.
86.25	1976.	2094.	2044.	512.	-7490.	62.
75.00	1340.	1895.	1860.	543.	-6047.	219.
63.75	211.	1299.	1478.	533.	-4726.	204.
52.50	-622.	519.	873.	398.	-4931.	14.
41.25	-1190.	-138.	320.	170.	-5161.	-107.
30.00	-1249.	-409.	116.	-109.	-3797.	-209.
18.75	-681.	-208.	103.	-433.	-1727.	-265.
7.50	-1011.	-194.	-147.	-628.	-1110.	-180.
356.25	-2855.	-1027.	-715.	-551.	-2162.	-164.
345.00	-4106.	-2071.	-1245.	-401.	-2718.	-290.
333.75	-3456.	-2268.	-1357.	-407.	-1691.	-326.
322.50	-1996.	-1597.	-957.	-518.	-883.	-283.
311.25	-647.	-677.	-373.	-625.	-2029.	-279.

RUN 25 POINT 8
 VKTS = 104.8 OMEG*R = 591.9 ALFS,C = 8.4 CLR/S,R = 0.11600 CMY/S,R = 0.2138
 V/OR = 0.299 RHO100 = 0.2265 CP/S = 0.001886 CDR/S,R = 0.01780 CMX/S,R = -0.0055

UPPER ROTOR BLADE NORMAL BENDING MUMENT

HARMONIC	.1R		.2R		.3R		.6R	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	2216.0		3375.1		1115.1		-25.6	
1	968.4	2872.6	881.2	1696.0	818.3	883.3	1751.2	-1187.8
2	-676.0	-1408.9	-513.3	-1021.6	-431.2	-673.2	-1578.1	-1259.8
3	-49.9	153.3	-38.3	97.7	-20.3	58.4	-207.9	31.4
4	371.6	-251.6	260.2	-109.3	105.5	-78.3	-408.7	249.9
5	-484.0	228.2	-259.8	35.1	-64.6	-3.7	316.0	-126.4
6	189.5	-383.8	163.9	-212.6	52.4	-117.7	-31.1	285.0
7	-24.7	279.7	49.4	68.9	67.0	-50.4	-56.2	-60.0
8	-234.8	-124.6	-87.7	-80.0	4.0	25.0	138.2	48.9
9	337.2	-106.4	155.9	26.6	-13.7	-9.6	-191.4	113.3
10	-121.1	-50.9	-28.6	-25.3	18.0	23.5	26.1	101.1

UPPER ROTOR EDGEWISE BENDING MUMENT .1R

HARMONIC	.1R	
	COS	SIN

0	-5088.1	
1	2873.5	240.3
2	-458.2	1223.6
3	148.0	115.3
4	3.7	54.3
5	127.0	-109.8
6	-43.0	-25.6
7	891.0	68.2
8	-67.0	25.7
9	-17.5	-29.6
10	-8.0	10.2

UPPER ROTOR PITCH LINK LOAD

HARMONIC	UPPER ROTOR PITCH LINK LOAD	
	COS	SIN

0	-274.2	
1	-148.6	281.0
2	98.4	61.1
3	-136.9	-43.6
4	28.3	33.2
5	8.0	-150.6
6	-2.9	-25.6
7	-20.9	13.7
8	-7.6	56.0
9	32.9	-13.8
10	2.4	-7.9

UPPER ROTOR SHAFT STRESS

HARMONIC	UPPER ROTOR SHAFT STRESS	
	COS	SIN

0	1866.1	
1	-1388.4	-775.1
2	-438.3	-442.8
3	231.3	-160.7
4	-375.8	206.7
5	-45.6	-553.9
6	48.9	86.4
7	-0.8	-655.0
8	35.2	156.9
9	-50.0	-25.4
10	-13.7	-7.2

PUN 25 POINT 8
 VKTS = 104.8
 V/OR = 0.299

OMEGAR = 591.9
 RHO100 = 0.2265

ALFS,C = 8.4
 CP/S = 0.001886

CLR/S,R = 0.11600
 CDR/S,R = 0.01780

CMY/S,R = 0.2138
 CMX/S,R = -0.0055

LOWER ROTOR BLADE NORMAL BENDING MOMENT

HARMONIC	.1R		.2R		.3R		.6R	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	1142.6		1091.7		893.3		-211.9	
1	-1088.0	-3386.3	-776.1	-2057.4	-351.6	-1111.0	120.3	169.2
2	-258.6	616.0	-180.6	430.6	-215.0	277.7	-142.3	60.1
3	59.9	-244.8	24.6	-152.9	41.2	-83.7	31.0	-21.8
4	244.0	518.5	270.0	223.7	131.2	109.4	-57.0	-84.0
5	-373.8	-106.9	-218.5	44.4	-86.3	22.5	49.5	12.5
6	314.7	585.3	317.7	210.3	129.5	138.7	-41.5	-53.7
7	296.8	-80.2	117.7	-128.8	69.7	-44.3	-30.6	17.4
8	-117.3	-35.5	-42.7	18.6	0.5	5.2	8.2	4.0
9	236.4	230.1	112.2	-7.0	-34.0	-12.4	-24.8	-14.0
10	46.5	57.0	32.1	3.2	0.2	4.6	-10.1	-5.9

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LOWER ROTOR EDGEWISE BENDING MOMENT .1R

HARMONIC

HARMONIC	COS	SIN
0	-5190.1	
1	2249.7	-366.9
2	-209.6	-253.0
3	2.5	74.9
4	-24.1	-30.3
5	84.7	59.6
6	-91.7	-2.6
7	438.0	772.7
8	-82.7	10.5
9	-60.4	-23.9
10	-1.3	-6.6

LOWER ROTOR PITCH LINK LOAD

	COS	SIN
	-51.4	
	-157.9	145.1
	19.5	31.2
	-28.0	-26.8
	-2.7	7.2
	0.1	-18.5
	54.4	-8.8
	14.4	-29.0
	-0.2	29.9
	25.1	-31.0
	16.7	-14.4

RUN	25	POINT	8	OMEGAR =	591.9	ALFS,C =	8.4	CLR/S,R = 0.11603	CMY/S,R = 0.2130
VKTS =	104.8	OMEGAR =	0.2265	CP/S =	0.001886	CDR/S,R = 0.01780	CMX/S,R = -0.0055		
V/OR =	0.299	RHJ100 =							
PSI	UPPER ROTOR	BLADE	NORMAL	BENDING	MOMENT	UR EDGEWISE	UR PITCH	UPPER ROTOR	
	.1R	.2R	.3R	.6R	BENDING .1R	LINK LOAD	SHAFT STRESS		
0.00	2492.	3958.	1650.	-267.	-1639.	-421.	-131.		
11.25	2304.	3566.	1338.	-215.	-1757.	-454.	-1127.		
22.50	2813.	3537.	1199.	-749.	-2425.	-398.	-872.		
33.75	3356.	3986.	1477.	-1058.	-2161.	-206.	144.		
45.00	3522.	4386.	1855.	-541.	-1185.	18.	767.		
56.25	3899.	4546.	1977.	-102.	-1241.	146.	452.		
67.50	4712.	4785.	1978.	-34.	-2891.	93.	-80.		
78.75	5298.	5171.	2126.	130.	-4495.	-95.	295.		
90.00	5522.	5517.	2447.	115.	-4725.	-205.	1390.		
101.25	6236.	5914.	2679.	-343.	-4660.	-134.	2065.		
112.50	6972.	6168.	2469.	-511.	-5955.	-47.	2363.		
123.75	5680.	5481.	1930.	75.	-7951.	-74.	3242.		
135.00	3108.	4096.	1567.	373.	-8613.	-129.	4138.		
146.25	2752.	3578.	1404.	-913.	-7921.	-130.	3408.		
157.50	4235.	4047.	1060.	-3020.	-7925.	-118.	1468.		
168.75	3653.	3767.	557.	-3908.	-9172.	-67.	830.		
180.00	998.	2381.	77.	-3491.	-9683.	110.	2376.		
191.25	-844.	1215.	-479.	-3174.	-8251.	267.	3980.		
202.50	-1930.	543.	-995.	-2825.	-6405.	132.	3783.		
213.75	-2918.	-53.	-1123.	-1885.	-6009.	-224.	2769.		
225.00	-2455.	0.	-892.	-1303.	-6614.	-481.	2714.		
236.25	-1066.	874.	-513.	-1148.	-6407.	-616.	3405.		
247.50	-718.	1567.	-41.	-90.	-5004.	-771.	3504.		
258.75	-606.	1841.	395.	1499.	-4023.	-765.	2869.		
270.00	399.	2334.	723.	2459.	-4560.	-498.	2467.		
281.25	1009.	2912.	1100.	3375.	-5417.	-378.	2697.		
292.50	942.	3166.	1458.	4429.	-5083.	-621.	2876.		
303.75	1482.	3361.	1556.	4433.	-4191.	-803.	2330.		
315.00	2264.	3627.	1524.	3558.	-4223.	-649.	1489.		
326.25	2440.	3756.	1616.	2706.	-4845.	-447.	1305.		
337.50	2580.	3890.	1761.	1489.	-4482.	-403.	1604.		
348.75	2780.	4086.	1802.	119.	-2909.	-408.	1196.		

RUN 25 POINT 8
 VKTS = 104.8
 V/CR = 0.299
 OMEG#R = 591.9
 RHU100 = 0.2265
 ALFS,C = 8.4
 CP/S = 0.001886
 CLR/S,R = 0.11600
 CDR/S,R = 0.01780
 CMY/S,R = 0.2138
 CMX/S,R = -0.0055

PSI	LOWER ROTOK BLADE NORMAL			BENDING MOMENT		LR EDGEMISE BENDING .IR	LR PITCH	
	.1R	.2R	.3R	.3R	.6R		LINK	LOAD
300.00	3526.	2534.	1747.	-373.	-3801.	-258.		
288.75	3646.	2654.	1691.	-330.	-4539.	-219.		
277.50	3580.	2665.	1791.	-245.	-4111.	-232.		
266.25	4608.	3114.	2259.	-261.	-3878.	-318.		
255.00	6204.	4009.	2631.	-353.	-5117.	-239.		
243.75	5898.	4265.	2535.	-293.	-6767.	-40.		
232.50	3960.	3400.	2160.	-121.	-7011.	-2.		
221.25	3404.	2588.	1859.	-141.	-6252.	-72.		
210.00	4679.	2807.	1801.	-403.	-6454.	1.		
198.75	5141.	3320.	1868.	-644.	-7911.	182.		
187.50	3638.	2968.	1684.	-674.	-8751.	243.		
176.25	1599.	1797.	1054.	-550.	-7870.	139.		
165.00	1.	598.	344.	-392.	-6573.	63.		
153.75	-1307.	-260.	-6.	-253.	-6559.	108.		
142.50	-1804.	-716.	-47.	-171.	-7439.	123.		
131.25	-1092.	-602.	-12.	-182.	-7411.	71.		
120.00	-535.	-179.	89.	-199.	-6089.	113.		
108.75	-1139.	-125.	227.	-97.	-5188.	177.		
97.50	-1759.	-444.	225.	48.	-5723.	84.		
86.25	-1752.	-620.	91.	123.	-6176.	-5.		
75.00	-2022.	-710.	20.	178.	-5074.	64.		
63.75	-2352.	-908.	15.	210.	-3694.	107.		
52.50	-1914.	-902.	-64.	119.	-3869.	48.		
41.25	-1510.	-684.	-127.	-14.	-4745.	-14.		
30.00	-1434.	-539.	34.	-79.	-4345.	-134.		
18.75	-487.	-154.	354.	-181.	-2957.	-260.		
7.50	637.	540.	565.	-312.	-2448.	-193.		
356.25	186.	702.	554.	-273.	-3206.	-99.		
345.00	-563.	255.	443.	-134.	-3811.	-227.		
333.75	411.	311.	479.	-149.	-3292.	-346.		
322.50	2089.	1181.	870.	-279.	-2427.	-277.		
311.25	3026.	2068.	1451.	-356.	-2598.	-234.		

RUN 25 PUNT 9
 VKTS = 104.3 UMEGR = 597.7 ALFS,C = 8.6 CMY/S,K = 0.2565
 V/OR = J.295 RHJ100 = 0.2265 CP/S = 0.001653 CDK/S,R = 0.02220 CMX/S,K = -0.0028

UPPER ROTOR BLADE NORMAL BENDING MOMENT

HARMONIC	.1R		.2R		.3R		.6R	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	4676.6		5134.9		2231.5		678.3	
1	1253.2	10451.8	699.2	7108.8	703.1	4560.6	1424.8	2294.3
2	471.5	-979.0	233.3	-657.0	125.0	-475.3	-414.3	-550.9
3	144.4	239.0	39.7	155.3	3.3	80.9	-371.5	165.9
4	467.4	-350.7	326.2	-123.1	114.6	-83.1	-538.8	488.6
5	-373.4	533.6	-251.8	229.6	-73.0	78.2	240.3	-374.4
6	-186.6	-275.7	-73.8	-209.4	-77.7	-91.6	236.8	128.7
7	71.1	206.3	44.8	24.9	38.7	-71.7	2.1	-36.4
8	-134.2	130.6	-63.5	43.3	20.2	-5.9	30.1	-89.1
9	65.8	-76.6	66.4	-27.2	14.0	-5.8	-12.0	71.0
10	-66.9	26.5	-21.0	-12.5	17.0	-7.5	96.8	20.2

UPPER ROTOR EDGEWISE BENDING MOMENT .1R

HARMONIC

	COS	SIN
0	-5526.3	
1	2691.1	561.1
2	-1315.9	-930.7
3	-5.9	6.9
4	-16.1	-27.7
5	57.8	-54.8
6	50.8	-27.4
7	647.0	-659.0
8	-108.5	-23.9
9	1.5	2.4
10	30.1	16.6

UPPER ROTOR PITCH LINK LOAD

	COS	SIN
0	-344.4	
1	-152.1	292.6
2	-21.1	75.4
3	-90.0	-76.1
4	7.5	14.7
5	57.8	-124.9
6	43.2	34.4
7	-116.7	173.3
8	27.7	56.4
9	-32.6	-11.3
10	5.4	0.7

UPPER ROTOR SHAFT STRESS

	COS	SIN
0	2232.2	
1	-540.3	882.6
2	-435.1	-2.3
3	139.3	-148.9
4	-213.0	-96.9
5	31.8	-553.7
6	-17.8	131.0
7	-219.7	-671.5
8	134.9	38.5
9	57.5	-50.7
10	-78.7	-15.0

RUN 25 POINT 9
 VKTS = 104.3
 V/OR = 0.295
 OMEG+R = 597.7
 RHO100 = 0.2265
 ALFS,C = 8.6
 CP/S = 0.001653
 CLR/S,R = 0.13770
 CDR/S,R = 0.02220
 CMY/S,R = 0.2565
 CMX/S,R = -0.0028

LOWER ROTOR BLADE NORMAL BENDING MOMENT

HARMONIC	.1R		.2R		.3R		.6R	
	COS	SIN	COS	SIN	COS	SIN	COS	SIN
0	2842.6		2235.2		1659.0		-140.7	
1	383.7	-10540.8	-249.8	-7172.3	67.5	-4613.1	157.2	-374.9
2	902.4	883.7	702.9	507.5	483.3	365.6	125.7	70.2
3	139.5	-122.3	71.8	-107.7	63.1	-57.3	41.3	-28.0
4	96.6	118.9	120.8	58.4	65.8	51.3	-24.0	-31.9
5	-259.9	-434.2	-217.1	-144.0	-78.8	-56.2	43.0	53.2
6	-164.5	634.3	77.5	365.7	-3.3	189.0	6.2	-62.4
7	339.5	13.5	196.4	-113.7	98.6	-37.0	-32.2	3.8
8	-123.1	-171.4	-82.9	-6.3	6.4	10.4	13.5	13.1
9	-263.4	112.3	-48.8	98.5	-1.0	-19.6	21.7	-12.4
10	10.2	56.7	11.0	13.0	-13.9	2.1	-2.2	-9.3

245

LOWER ROTOR EDGEWISE BENDING MOMENT .1R

HARMONIC

	COS	SIN
0	-5583.6	
1	2242.0	61.9
2	-1359.8	1088.0
3	-115.2	18.0
4	-25.8	-42.9
5	67.5	-2.2
6	-25.8	-95.6
7	1156.1	-137.0
8	64.1	-16.4
9	-9.2	-47.0
10	-4.4	6.0

LOWER ROTOR PITCH LINK LOAD

	COS	SIN
0	-69.9	
1	-119.0	166.7
2	75.6	19.4
3	-25.4	30.4
4	0.8	-5.7
5	-47.6	15.2
6	59.5	14.8
7	-24.2	-27.4
8	-16.6	10.9
9	-9.3	-6.6
10	-1.3	-6.7

RUN 25 VKTS = 104.3 PCINT 9 OMEG*R = 597.7 ALFS,C = 8.6 CLR/S,R = 0.13770 CMY/S,R = 0.2505
V/CR = 0.295 RHU100 = 0.2265 CP/S = 0.001653 CDK/S,R = 0.02220 CMX/S,R = -0.00028

PSI	UPPER ROTOR BLADE NORMAL BENDING MOMENT			UR EDGEWISE BENDING .1R	UR PITCH LINK LOAD	UPPER ROTOR SHAFT STRESS
	.1R	.2R	.3R			
0.00	6389.	6134.	3117.	-3494.	-615.	1091.
11.25	8560.	7297.	3638.	-4939.	-355.	249.
22.50	10118.	8454.	4369.	-5342.	-392.	1005.
33.75	10864.	9371.	5178.	-4212.	-572.	2490.
45.00	11525.	9945.	5617.	-3273.	-362.	3164.
56.25	12396.	10371.	5765.	-3646.	181.	2852.
67.50	13314.	10910.	6056.	-4325.	393.	2802.
78.75	14302.	11655.	6559.	-4067.	61.	3535.
90.00	15255.	12390.	6946.	-3255.	-278.	3784.
101.25	15580.	12628.	6875.	-3308.	-230.	3031.
112.50	14526.	11960.	6324.	-4684.	-3.	2893.
123.75	12285.	10590.	5674.	-6024.	87.	4053.
135.00	10589.	9420.	5232.	-6149.	-65.	4695.
146.25	10485.	9011.	4802.	-6156.	-355.	3504.
157.50	10172.	8598.	4066.	-7634.	-457.	1612.
168.75	7719.	7148.	3001.	-9705.	-194.	998.
180.00	4067.	4938.	1745.	-10277.	52.	2154.
191.25	789.	2824.	470.	-9371.	-78.	3309.
202.50	-1984.	953.	-641.	-8902.	-267.	2720.
213.75	-3965.	-591.	-1514.	-9566.	-193.	1523.
225.00	-4729.	-1375.	-2125.	-9738.	-203.	1700.
236.25	-5147.	-1623.	-2431.	-8058.	-591.	2480.
247.50	-5828.	-1338.	-2521.	-5858.	-914.	2268.
258.75	-6042.	-2140.	-2510.	-5238.	-740.	1658.
270.00	-5672.	-1872.	-2342.	-5577.	-396.	1587.
281.25	-5370.	-1462.	-1991.	-4706.	-427.	1617.
292.50	-4820.	-1066.	-1539.	-2854.	-768.	1383.
303.75	-3314.	-274.	-948.	-2240.	-905.	1037.
315.00	-1085.	991.	-176.	-3315.	-667.	761.
326.25	1165.	2379.	678.	-4217.	-451.	1123.
337.50	2988.	3716.	1577.	-3743.	-569.	2094.
348.75	4519.	4974.	2459.	-2967.	-750.	2255.

RUN 25 POINT 9
 VKTS = 104.3 OMEG*R = 597.7 ALFS,C = 8.6 CMY/S,R = 0.2565
 V/OR = 0.295 RH0100 = 0.2265 CP/S = 0.001653 CDR/S,R = 0.02220 CMX/S,R = -0.0028

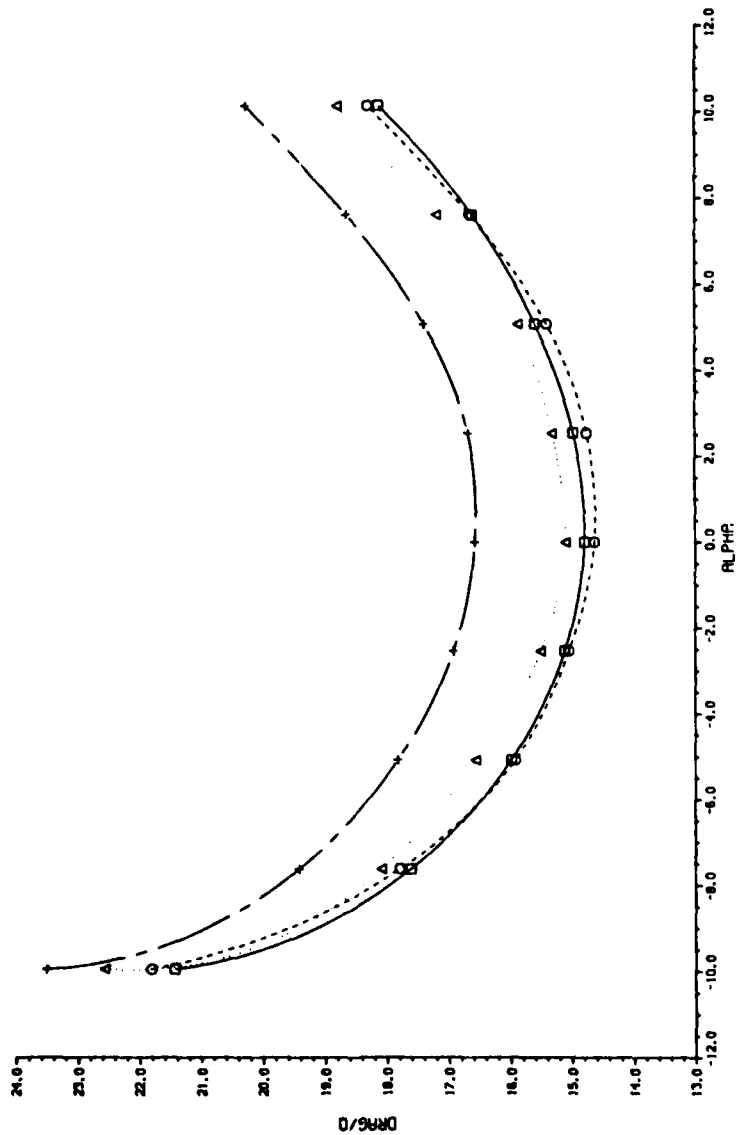
PSI	LOWER ROTOR BLADE NORMAL BENDING MOMENT			LR EDGEWISE BENDING .IK		LR PITCH LINK LOAD	
	.1R	.2R	.3R	.6R			
300.00	10867.	7591.	5066.	90.	-3986.	-245.	
288.75	10546.	7609.	5084.	147.	-5196.	-297.	
277.50	11259.	7809.	5470.	138.	-5153.	-382.	
266.25	13636.	8923.	6027.	-32.	-3849.	-370.	
255.00	14378.	9856.	6202.	-67.	-3600.	-210.	
243.75	12025.	9167.	5852.	175.	-5157.	-61.	
232.50	9847.	7641.	5252.	358.	-6673.	-92.	
221.25	9637.	6955.	4771.	244.	-6734.	-209.	
210.00	9910.	6986.	4524.	1.	-6390.	-177.	
198.75	8287.	6423.	4099.	-176.	-7408.	36.	
187.50	5429.	4778.	3029.	-250.	-9454.	235.	
176.25	2099.	2548.	1553.	-247.	-10315.	261.	
165.00	-976.	416.	290.	-256.	-9150.	160.	
153.75	-3017.	-1184.	-616.	-363.	-7927.	92.	
142.50	-4321.	-2334.	-1421.	-520.	-8368.	103.	
131.25	-5783.	-3418.	-2213.	-636.	-9088.	113.	
120.00	-7326.	-4462.	-2854.	-687.	-7827.	92.	
108.75	-8310.	-5151.	-3224.	-684.	-5212.	56.	
97.50	-8688.	-5443.	-3345.	-637.	-3840.	-7.	
86.25	-8584.	-5513.	-3295.	-567.	-4249.	-55.	
75.00	-7718.	-5219.	-3047.	-505.	-4304.	-12.	
63.75	-6203.	-4385.	-2546.	-453.	-2794.	44.	
52.50	-4748.	-3337.	-1863.	-363.	-1455.	20.	
41.25	-3275.	-2336.	-1062.	-220.	-2276.	-2.	
30.00	-1021.	-1026.	-102.	-101.	-4300.	25.	
18.75	1490.	685.	942.	-18.	-4965.	-17.	
7.50	3102.	2144.	1862.	112.	-3991.	-130.	
356.25	4386.	3114.	2554.	244.	-3721.	-187.	
345.00	6308.	4114.	3096.	255.	-5255.	-201.	
333.75	8089.	5266.	3678.	205.	-6520.	-255.	
322.50	9180.	6248.	4386.	181.	-5592.	-297.	
311.25	10257.	7059.	4941.	129.	-3927.	-270.	

SECTION D

Plotted Performance and Loads Data

06/24/81
18:53:42

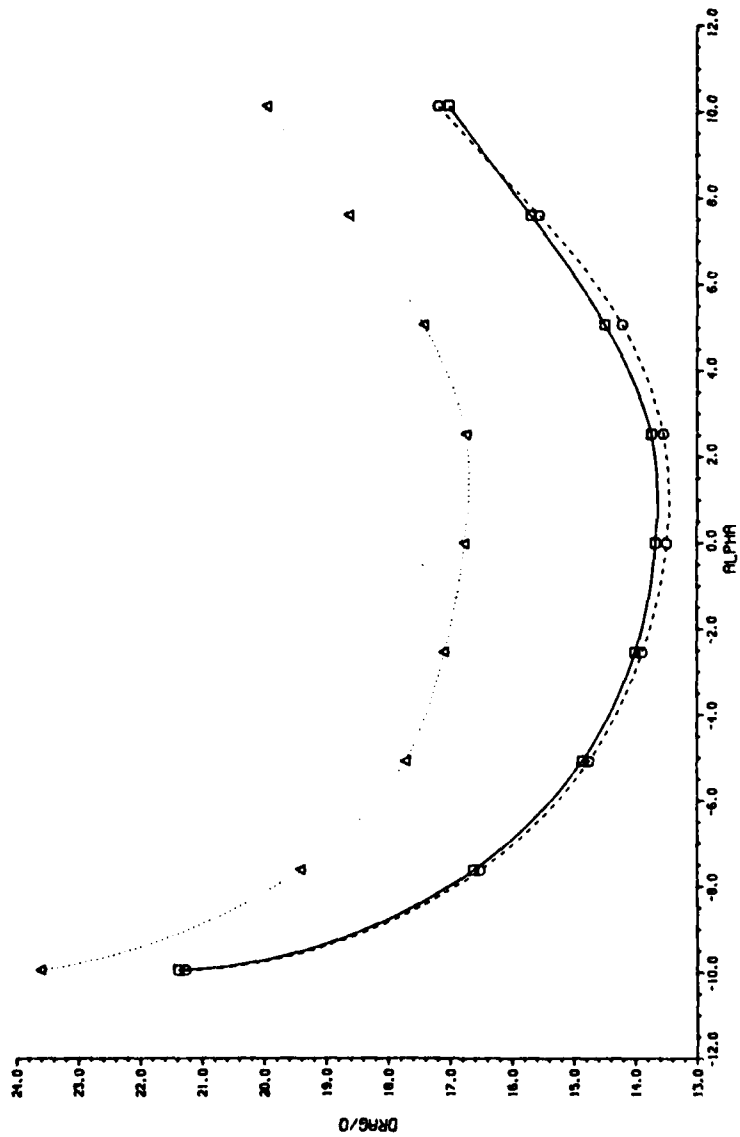
EFFECT OF HUB CONFIGURATION ON DRAG 120 KNOTS 343 RPM
12 - E3,E4,S4 13 - E3,E4 15 - NO FAIRINGS 17 - IC



SYMBOL
PLOT FILE NO. 12 13 15 17

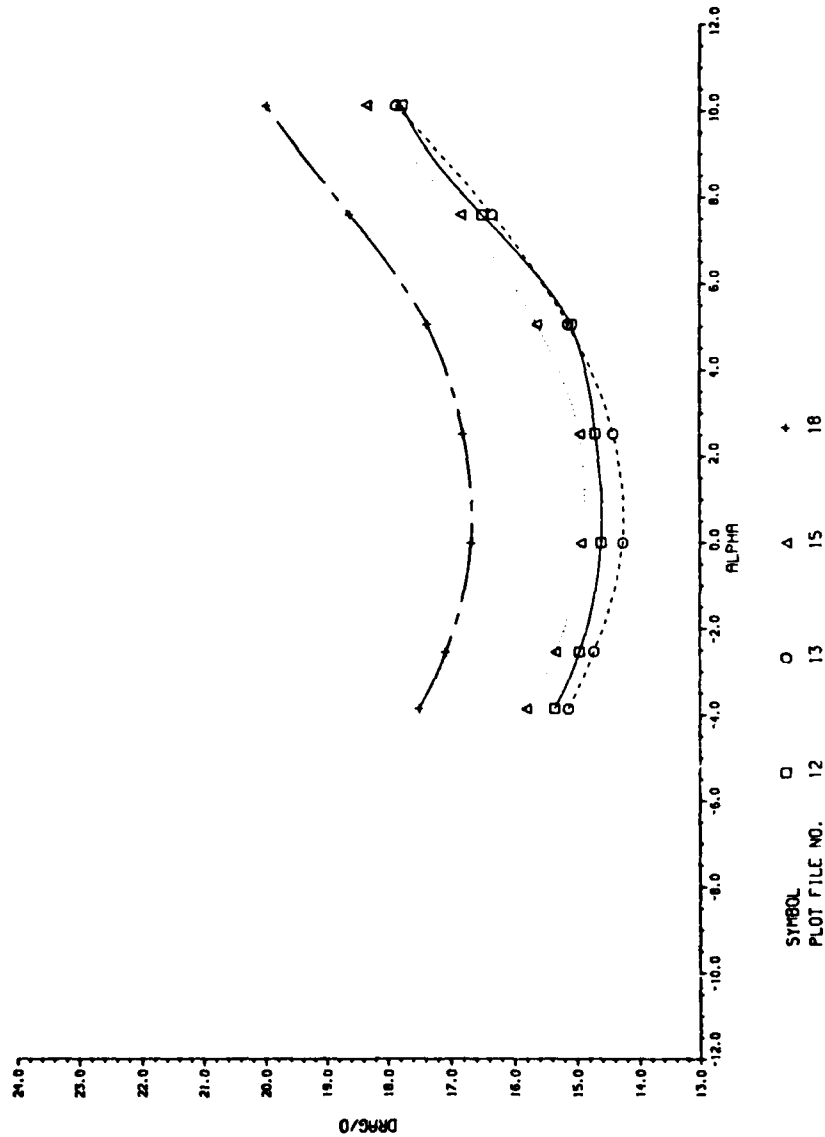
06/24/81
18:55:13
2

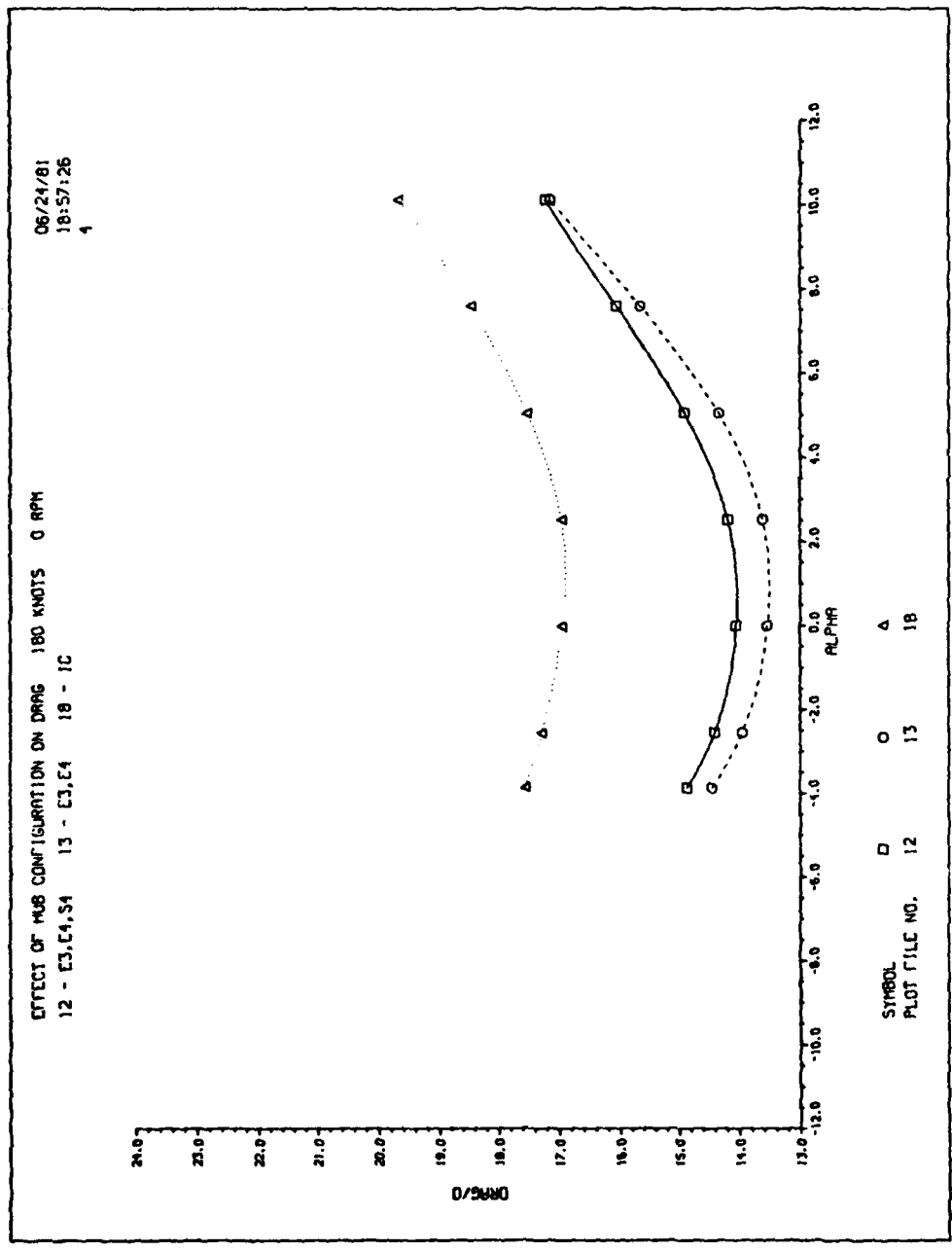
EFFECT OF HUB CONFIGURATION ON DRAG 120 KNOTS 0 RPM
12 - E3,E4,S4 13 - E3,E4 18 - 1C

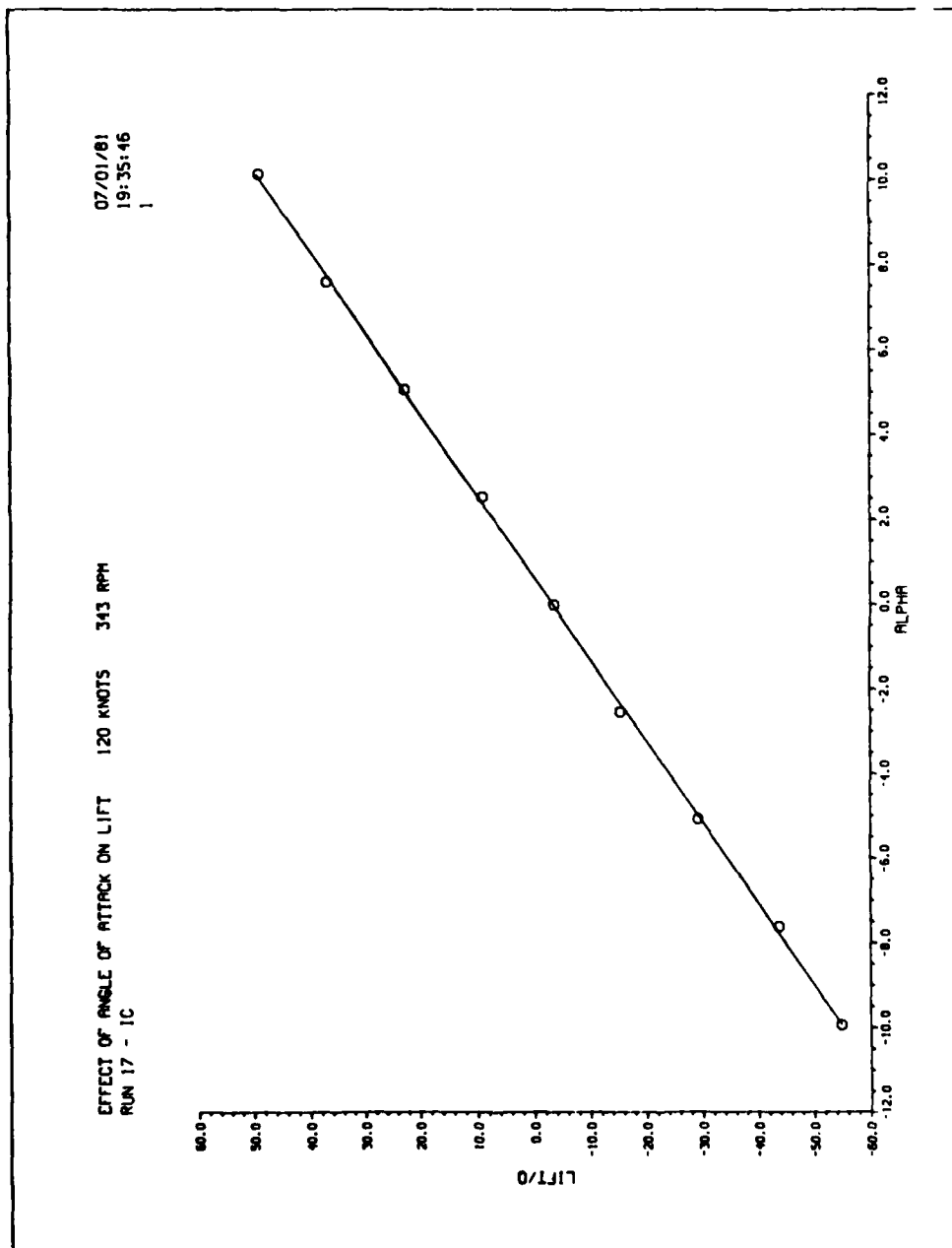


SYMBOL
PLOT FILE NO. 12 13 18

EFFECT OF HUB CONFIGURATION ON DRAG 180 KNOTS 343 RPM
 12 - E3,E4,S4 13 - E3,E4 15 - NO FAIRINGS 18 - IC
 06/24/81 18:56:17
 3

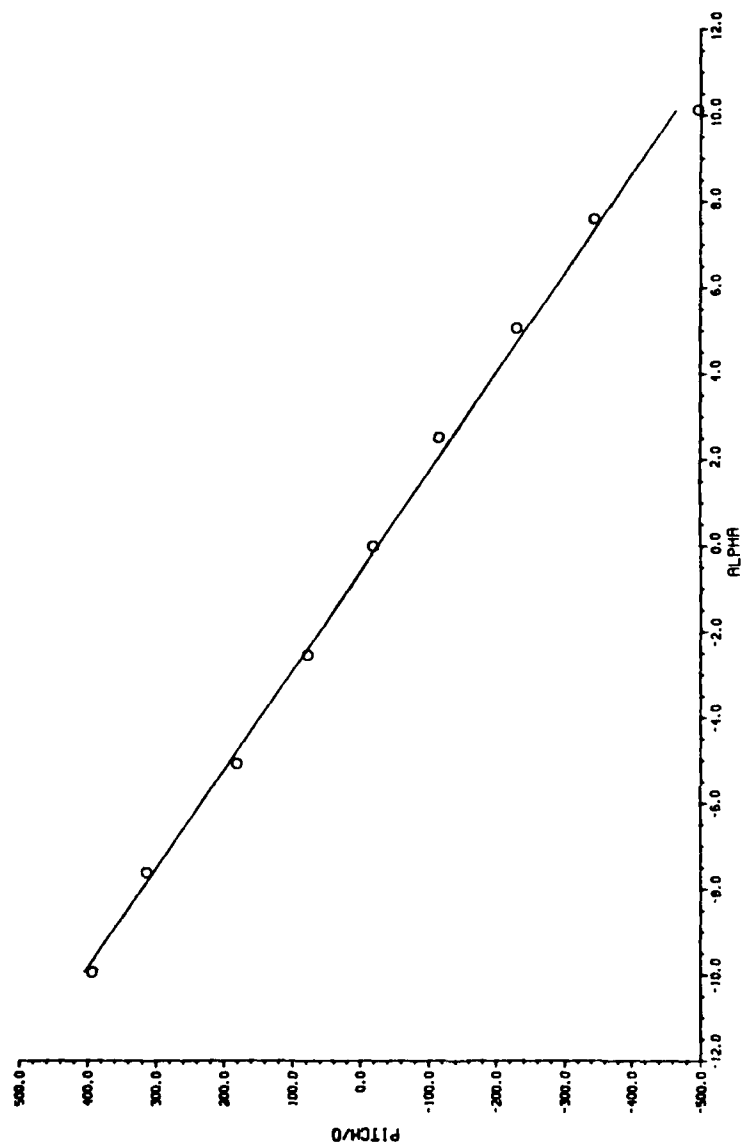






07/01/81
19:36:18
2

EFFECT OF ANGLE OF ATTACK ON PITCHING MOMENT
RUN 17 - IC 120 KNOTS 343 RPM

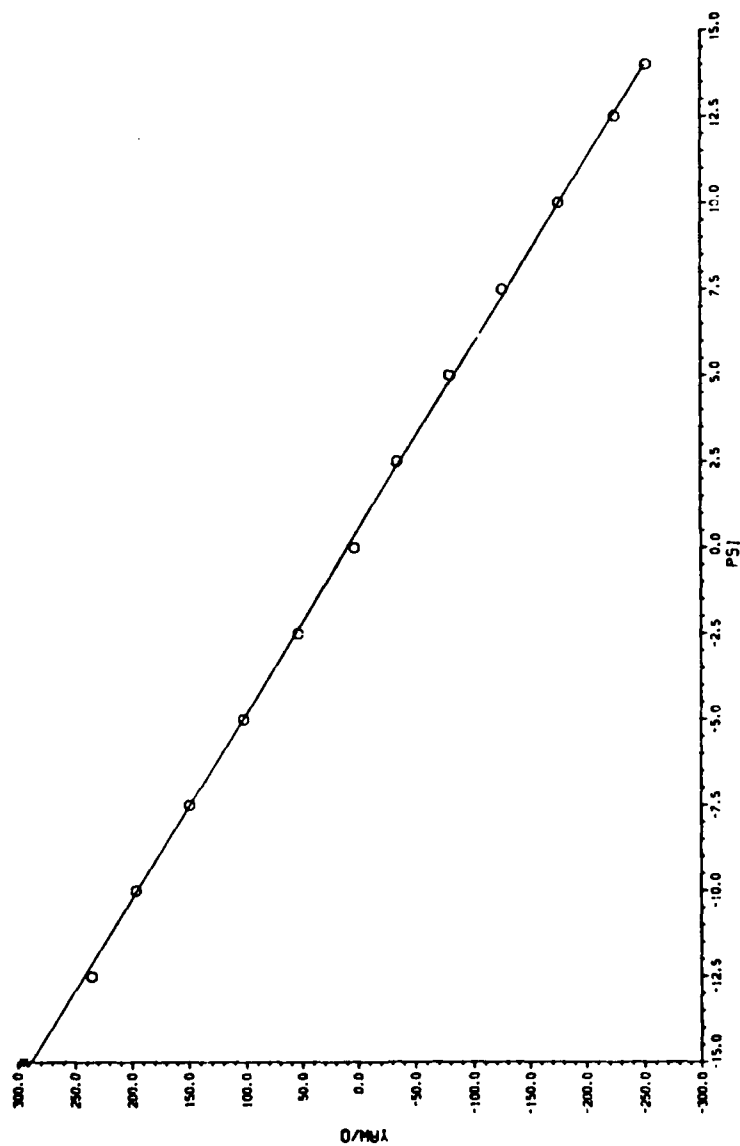


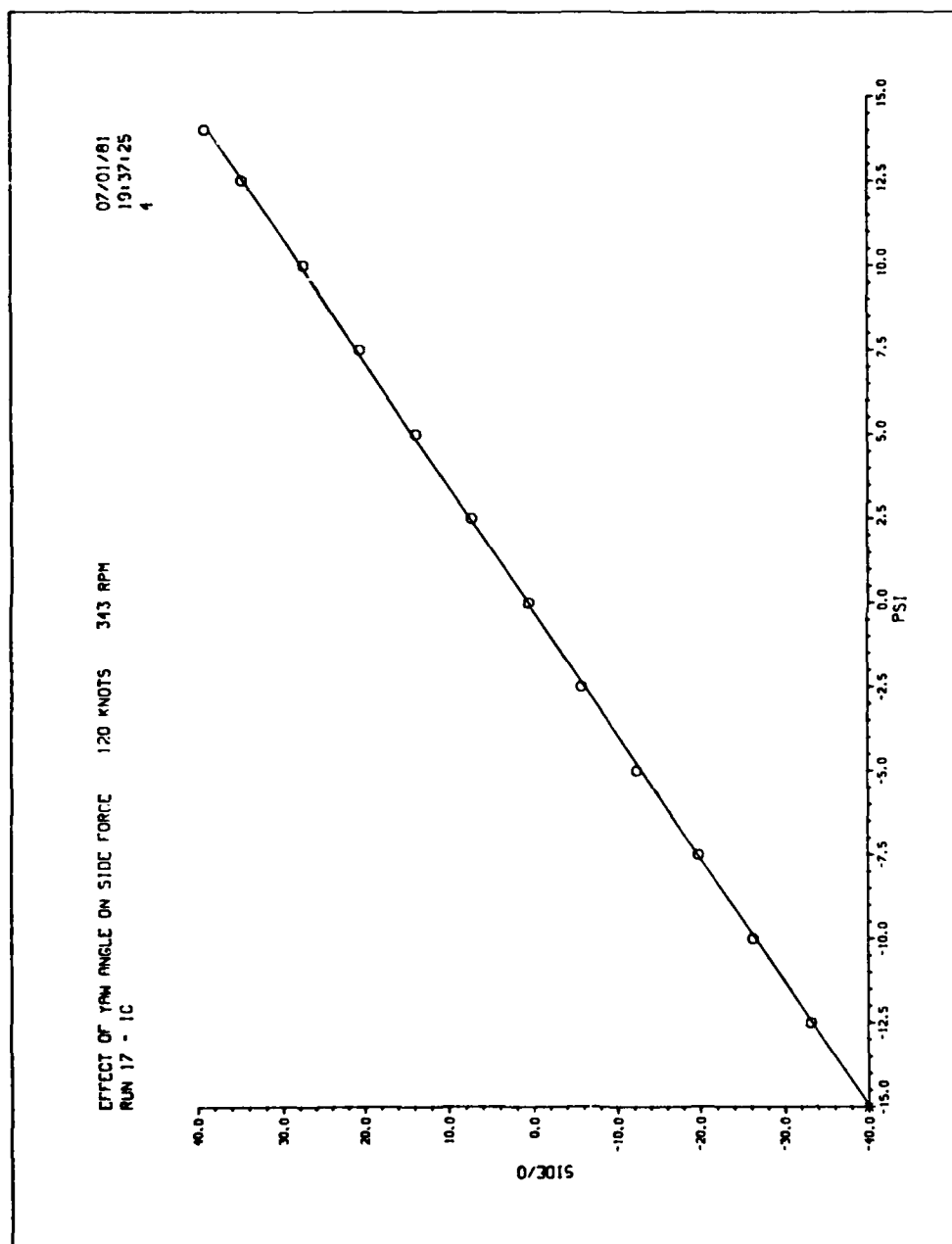
07/01/81
19:37:05
3

EFFECT OF YAW ANGLE ON YAWING MOMENT
RUN 17 - 1C

120 KNOTS

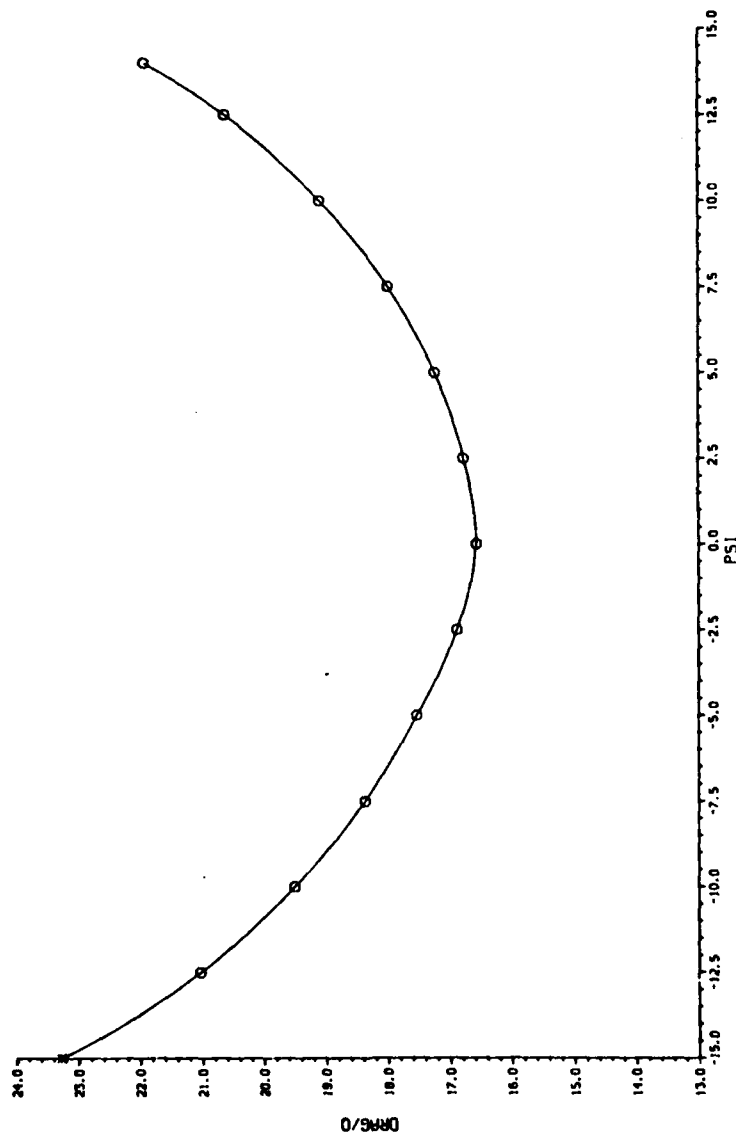
343 RPM





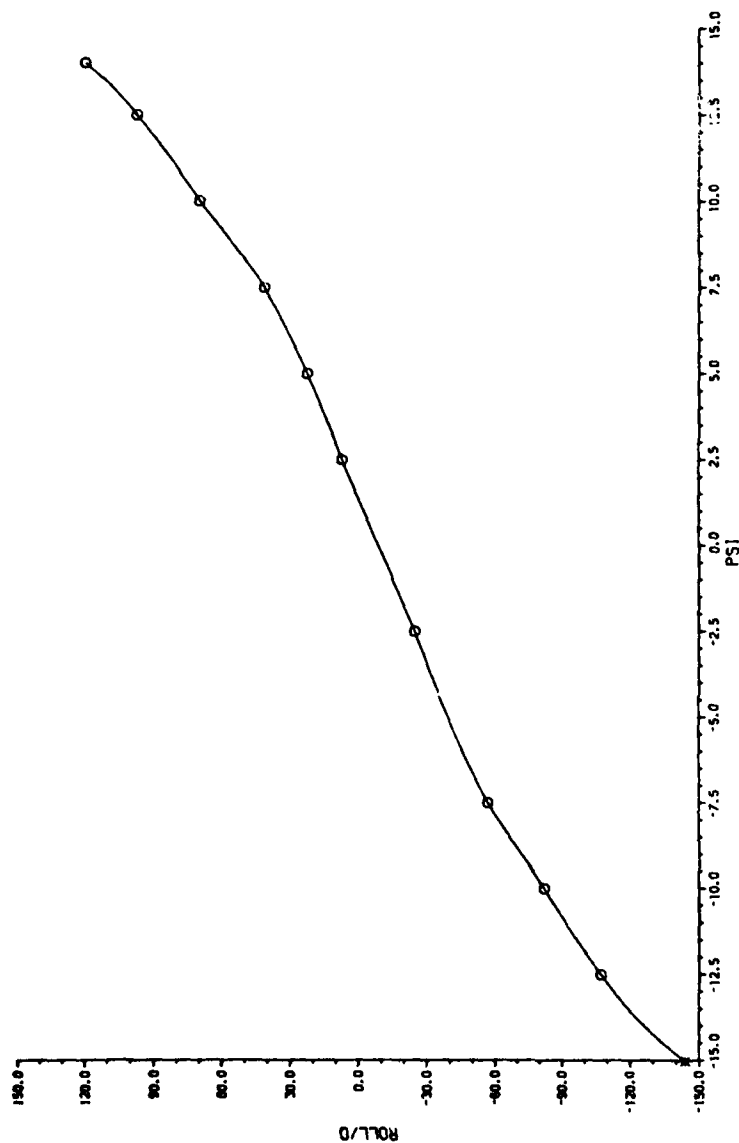
07/01/81
19:37:55
5

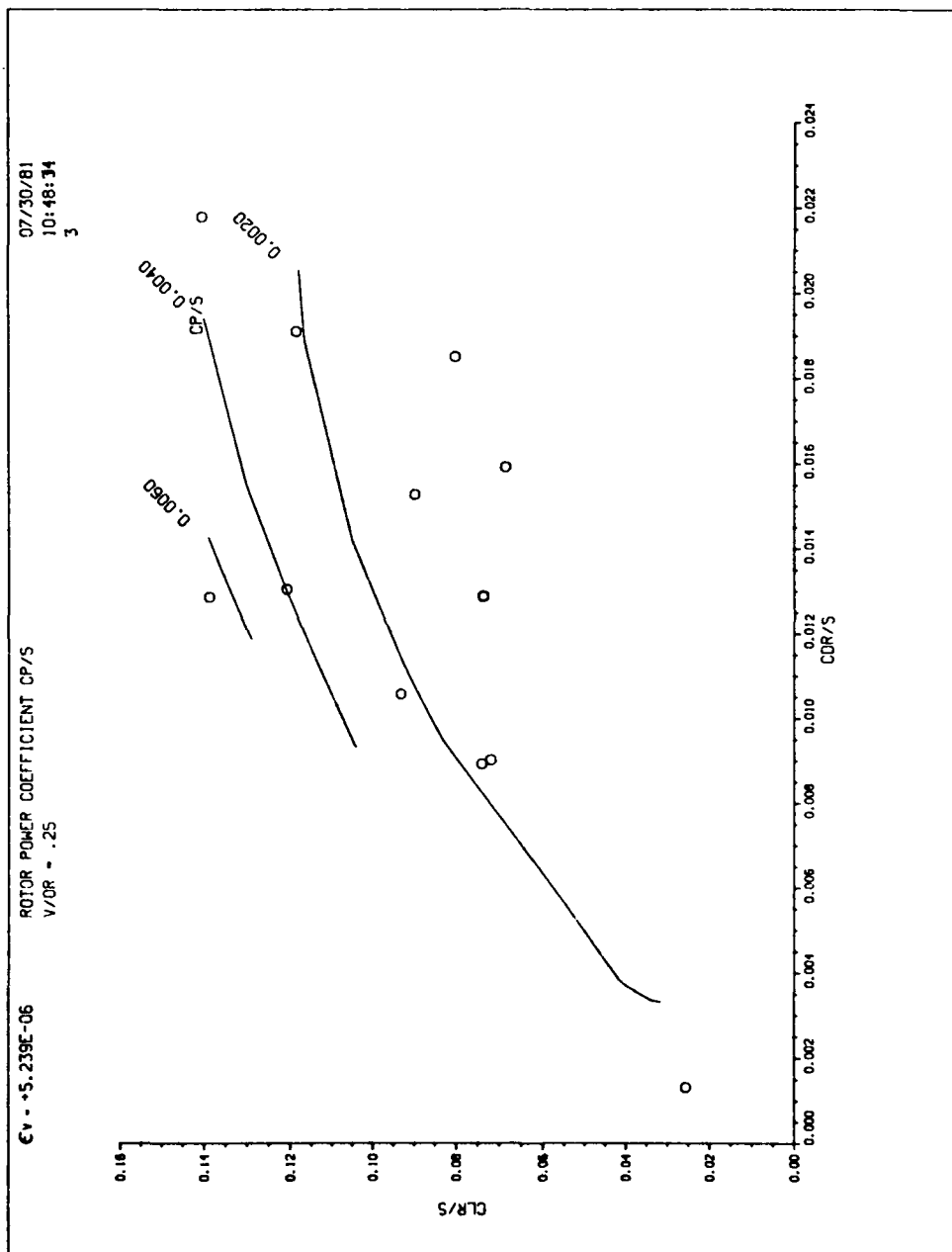
EFFECT OF YAW ANGLE ON DRAG
RUN 17 - 1C

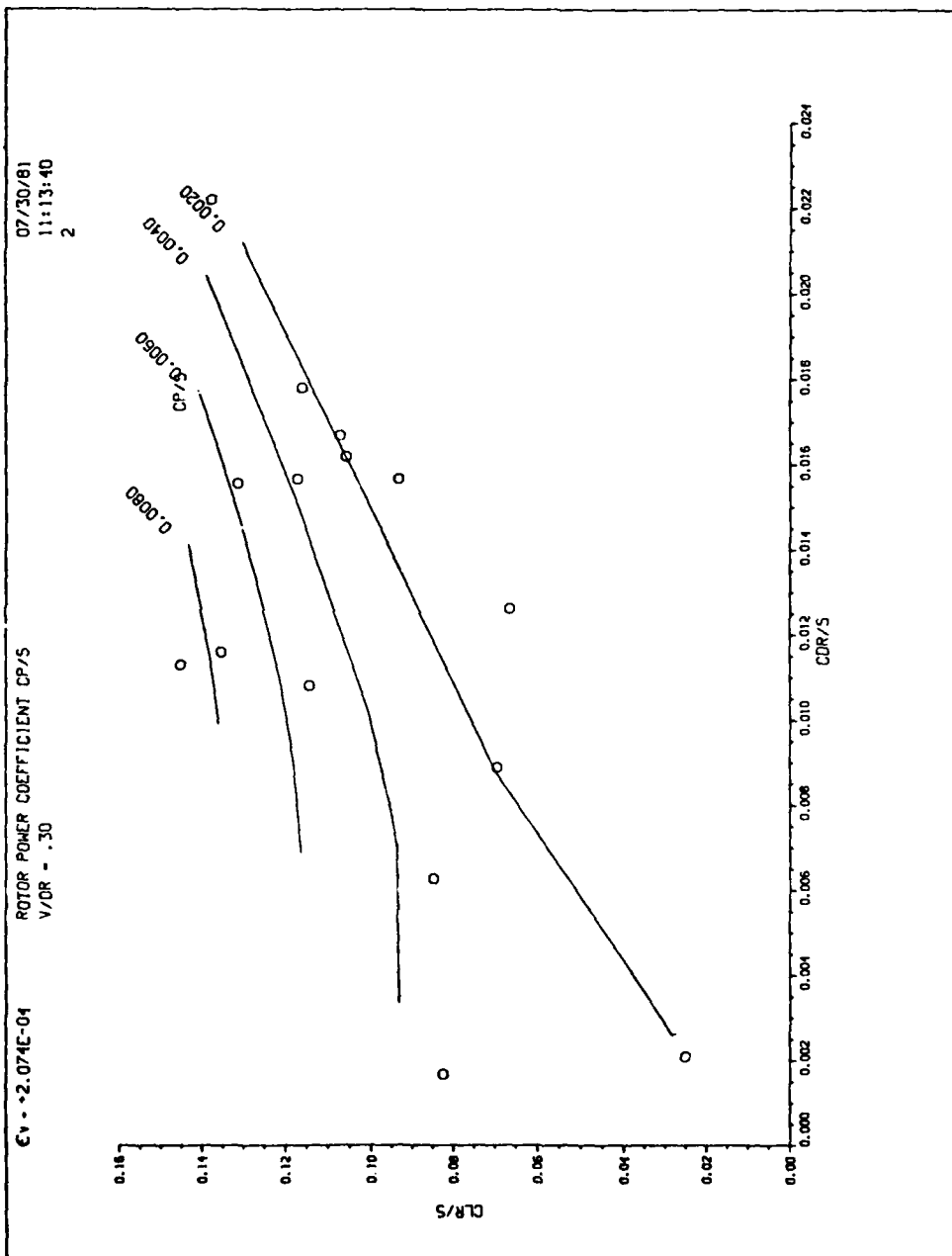


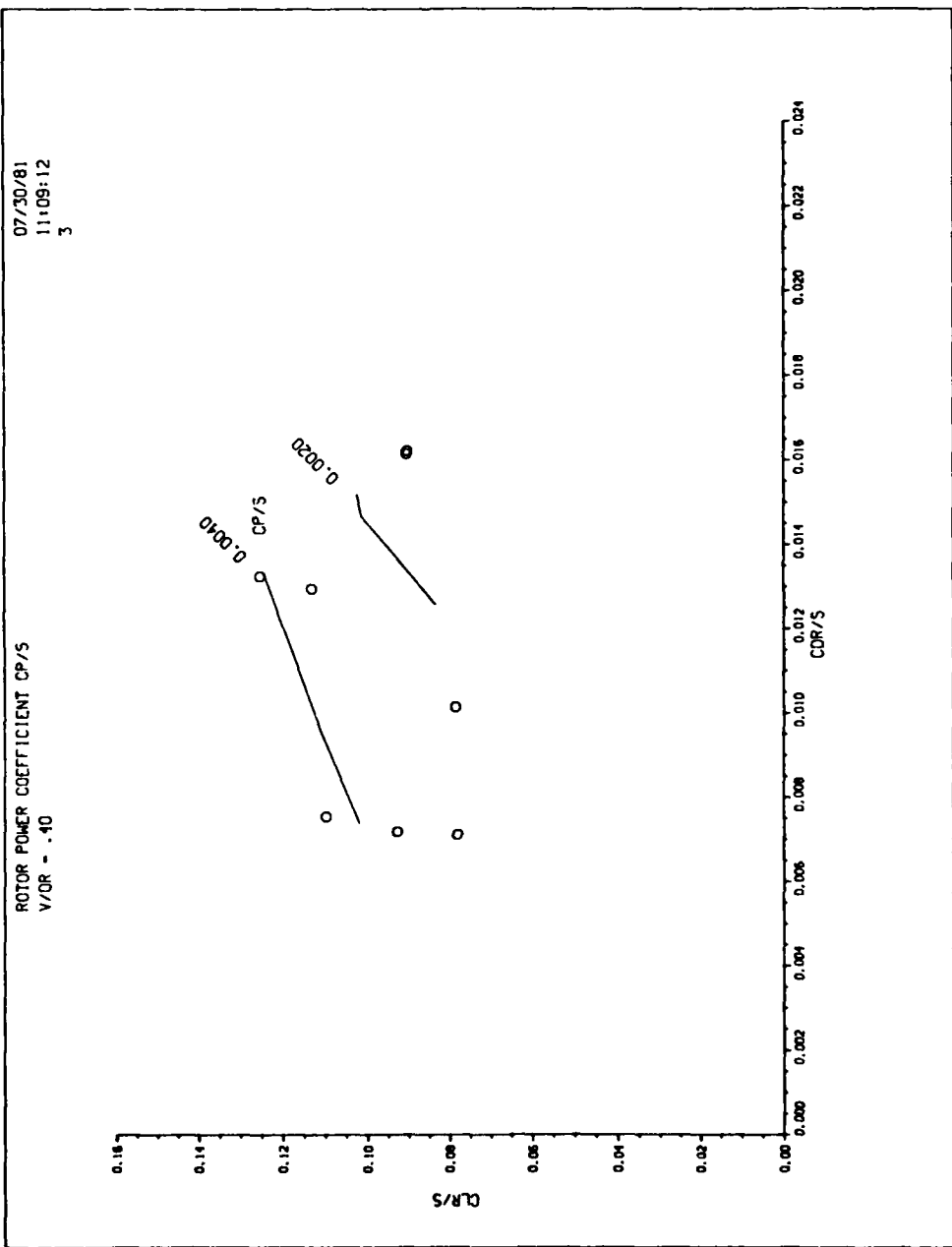
07/01/81
19:38:28
6

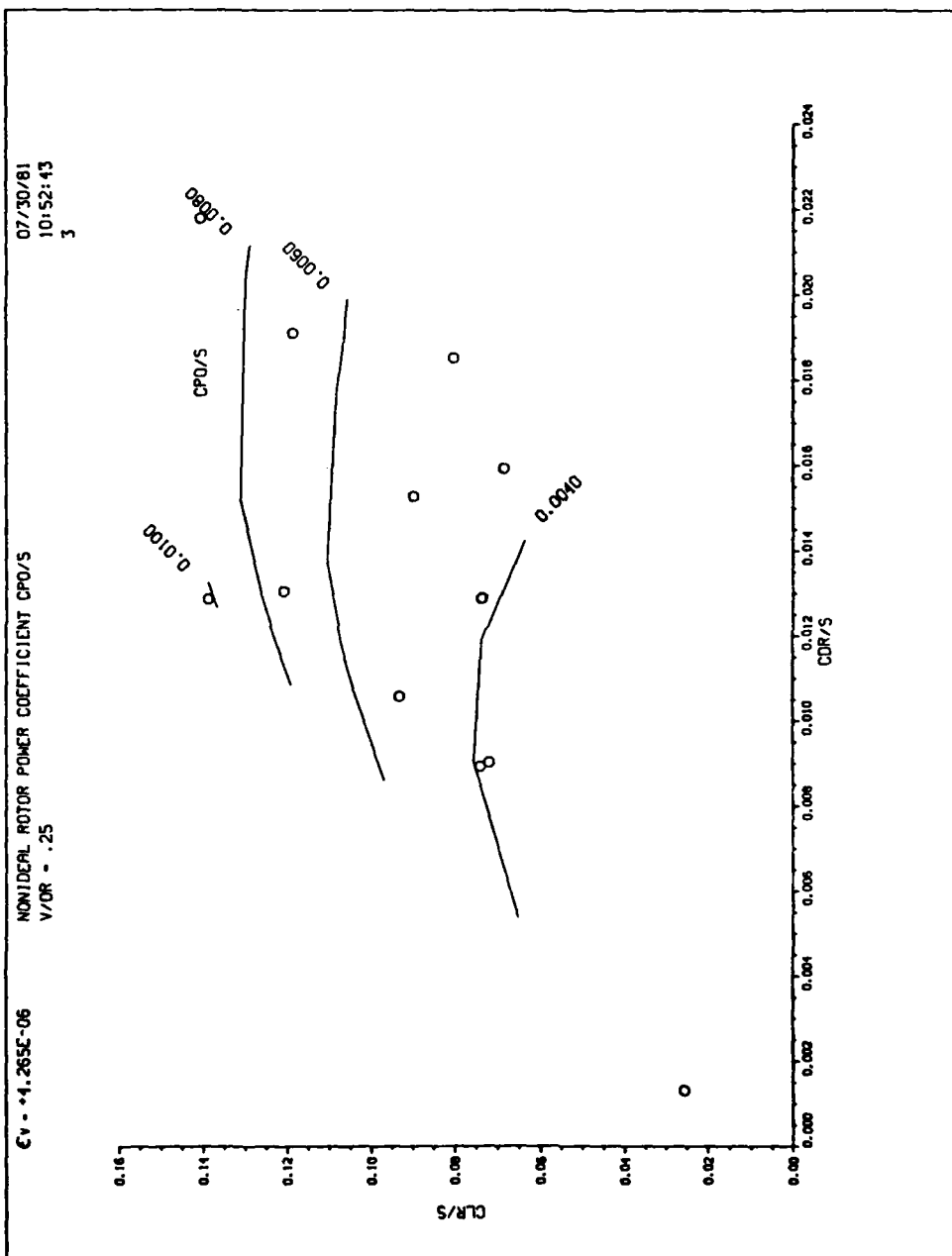
EFFECT OF YAW ANGLE ON ROLLING MOMENT 120 KNOTS 343 RPM
RUN 17 - 1C

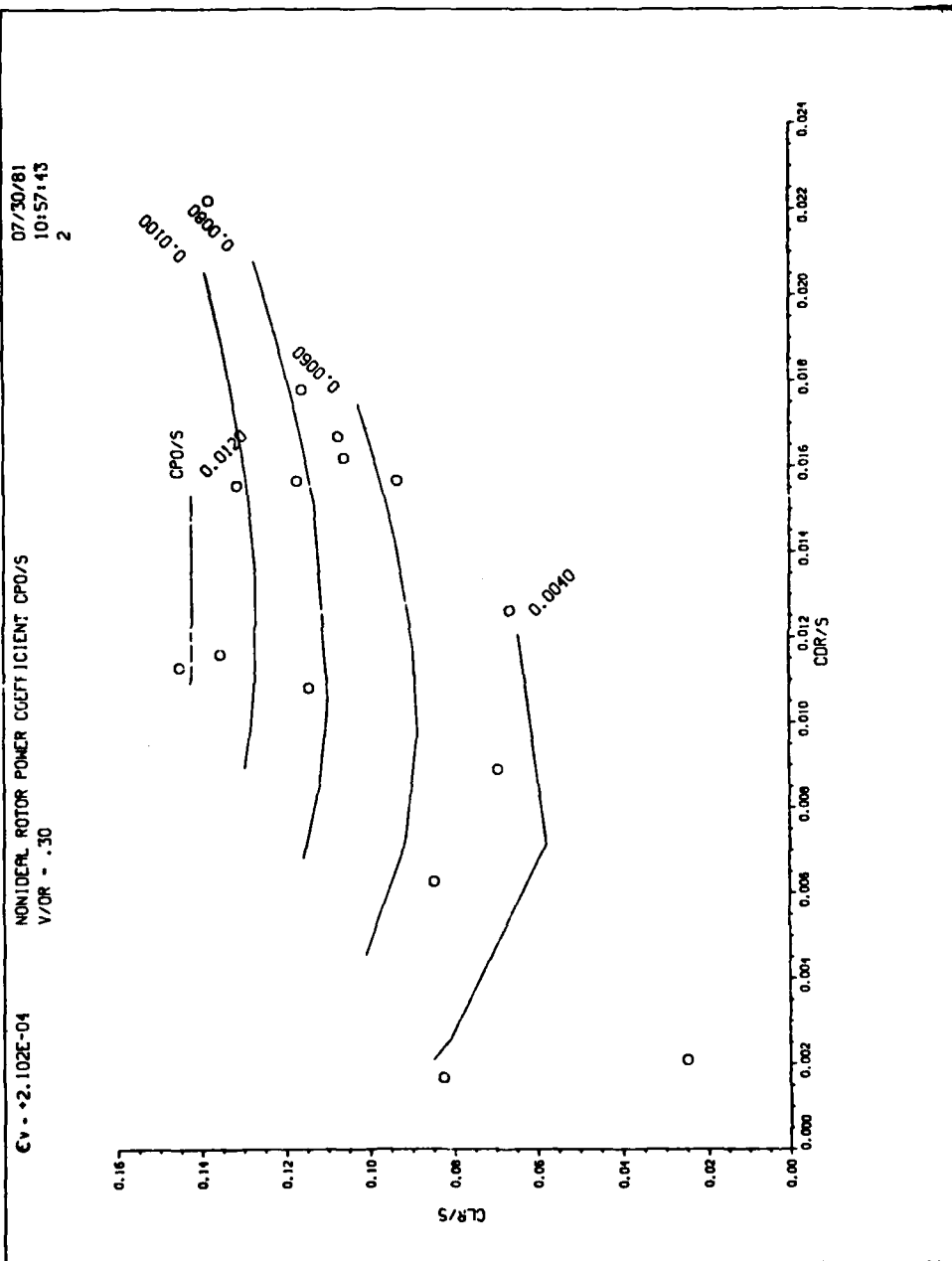








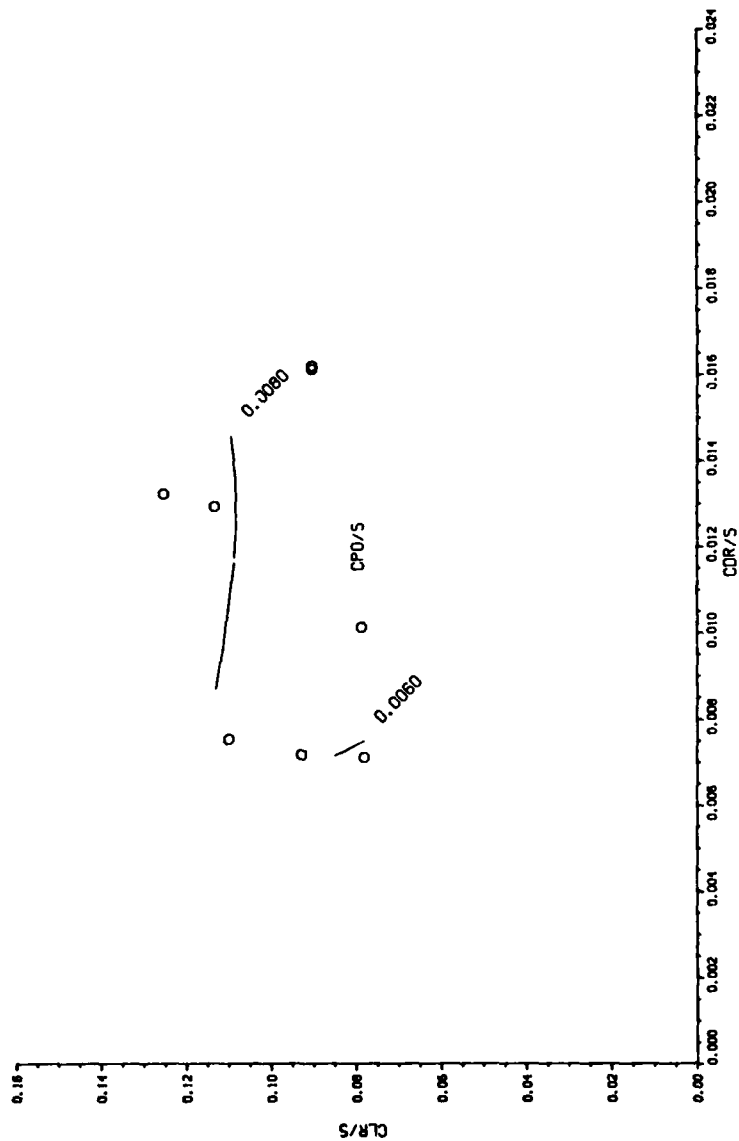


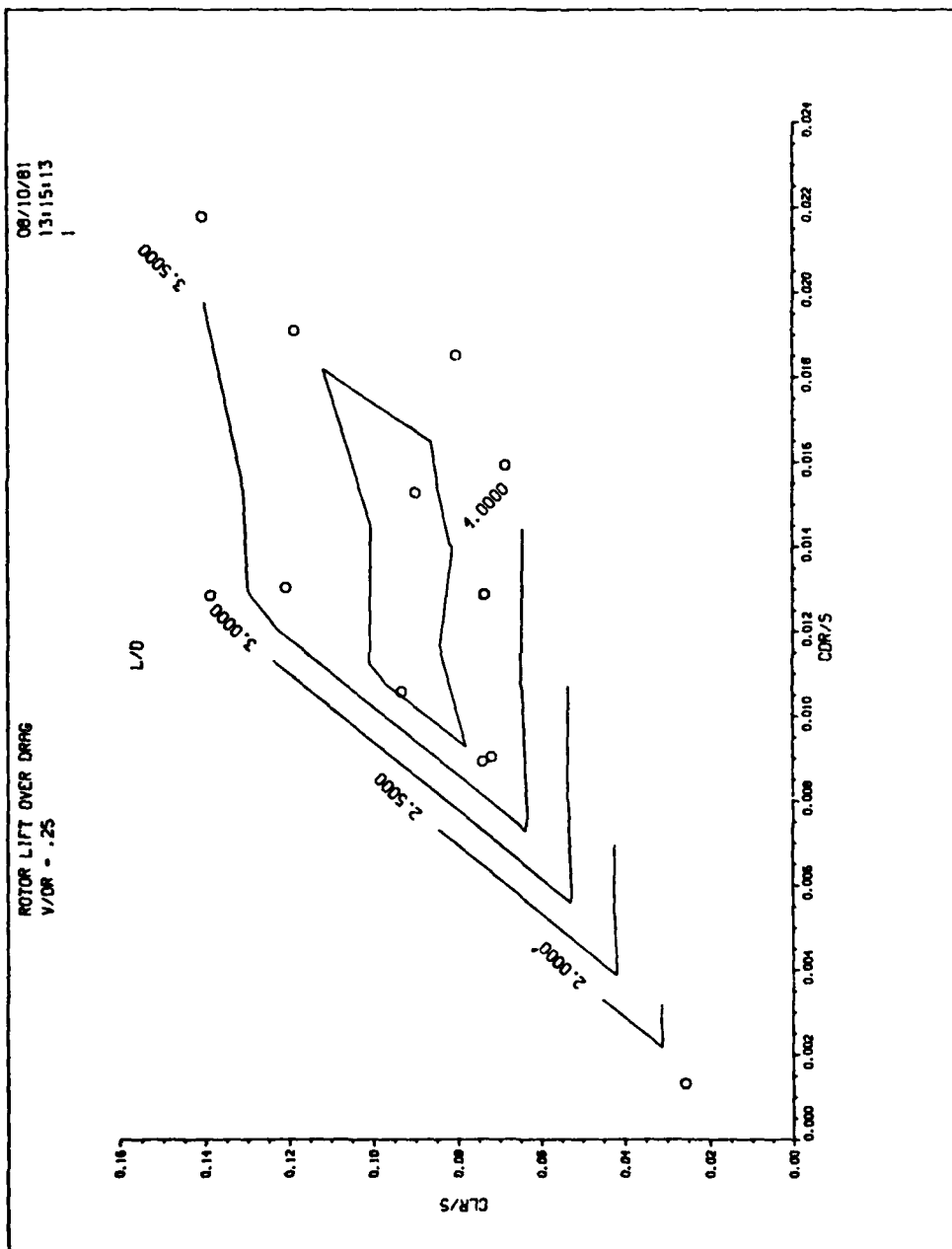


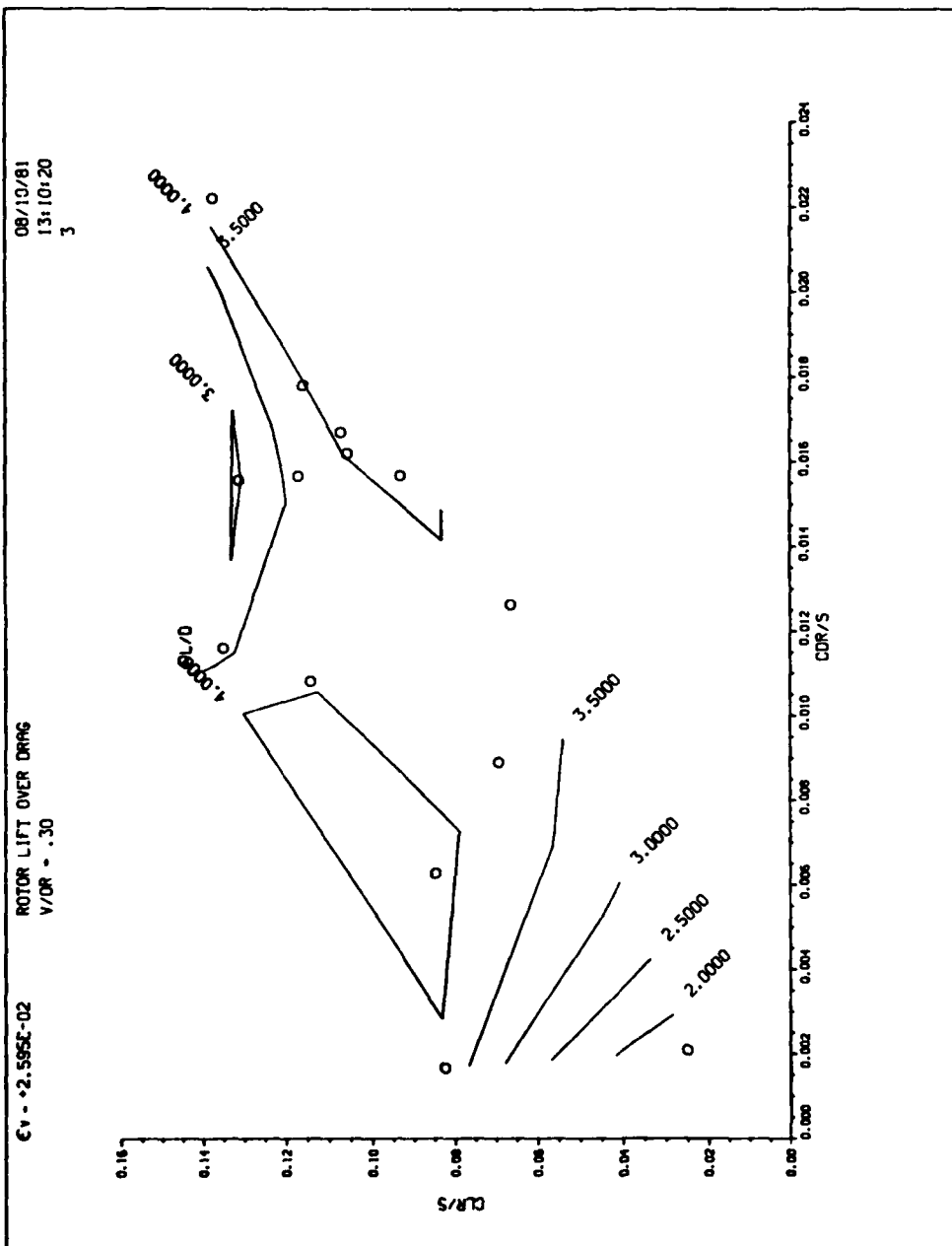
07/30/81
11:02:50
2

NONIDEL ROTOR POWER COEFFICIENT CP0/S
V/DR = .40

Cv = +1.658E-05

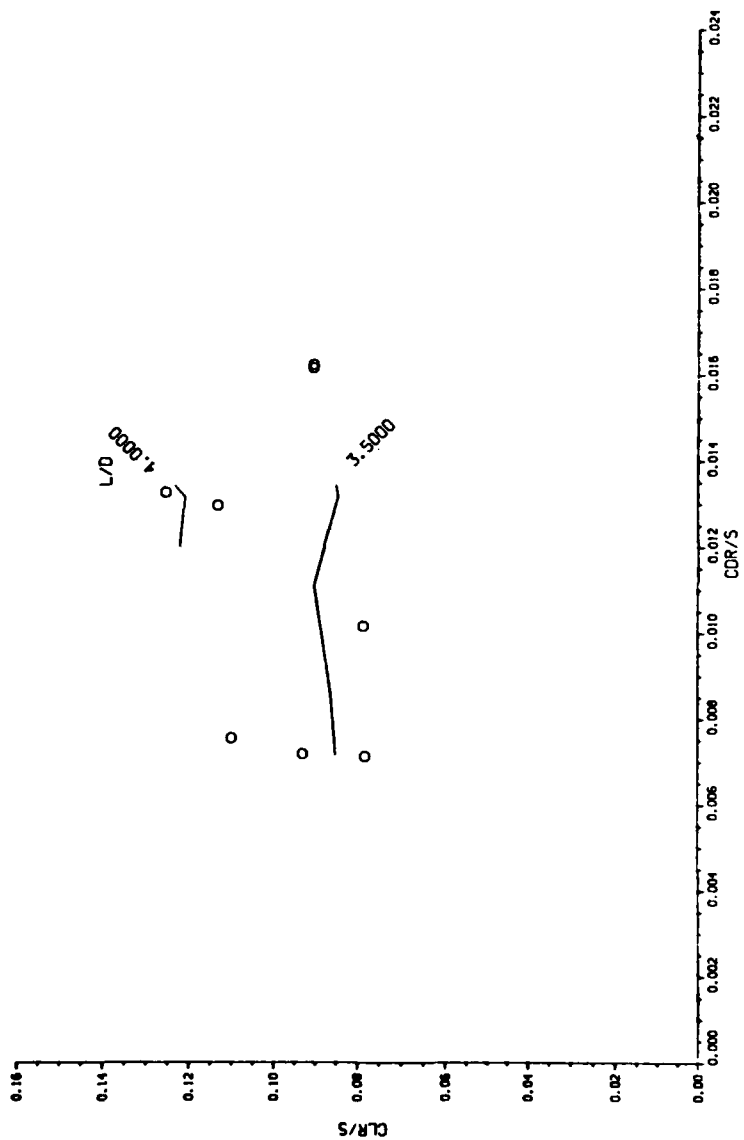






08/10/81
13:02:45
1

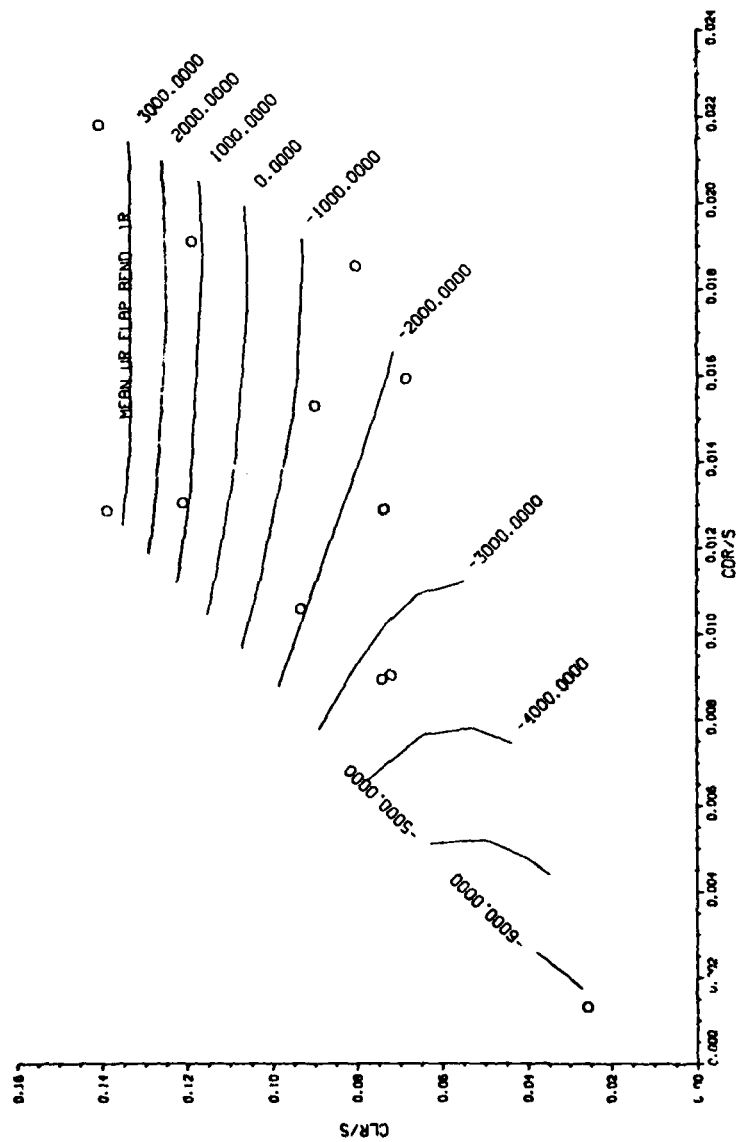
ROTOR LIFT OVER DRAG
V/OR = .40

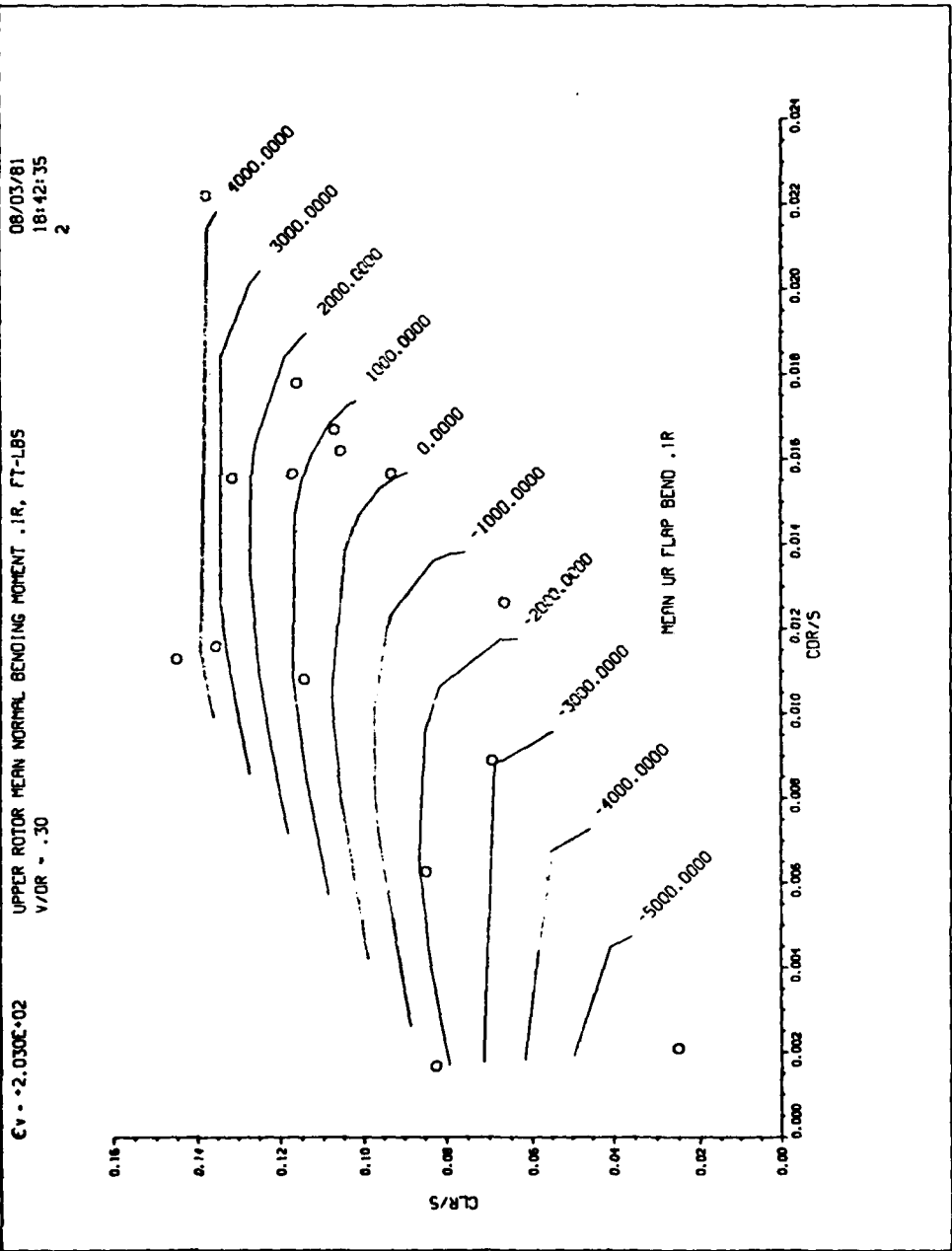


08/03/81
18:29:42
2

UPPER ROTOR MEAN NORMAL BENDING MOMENT, IR, FT-LBS
V/OR = .25

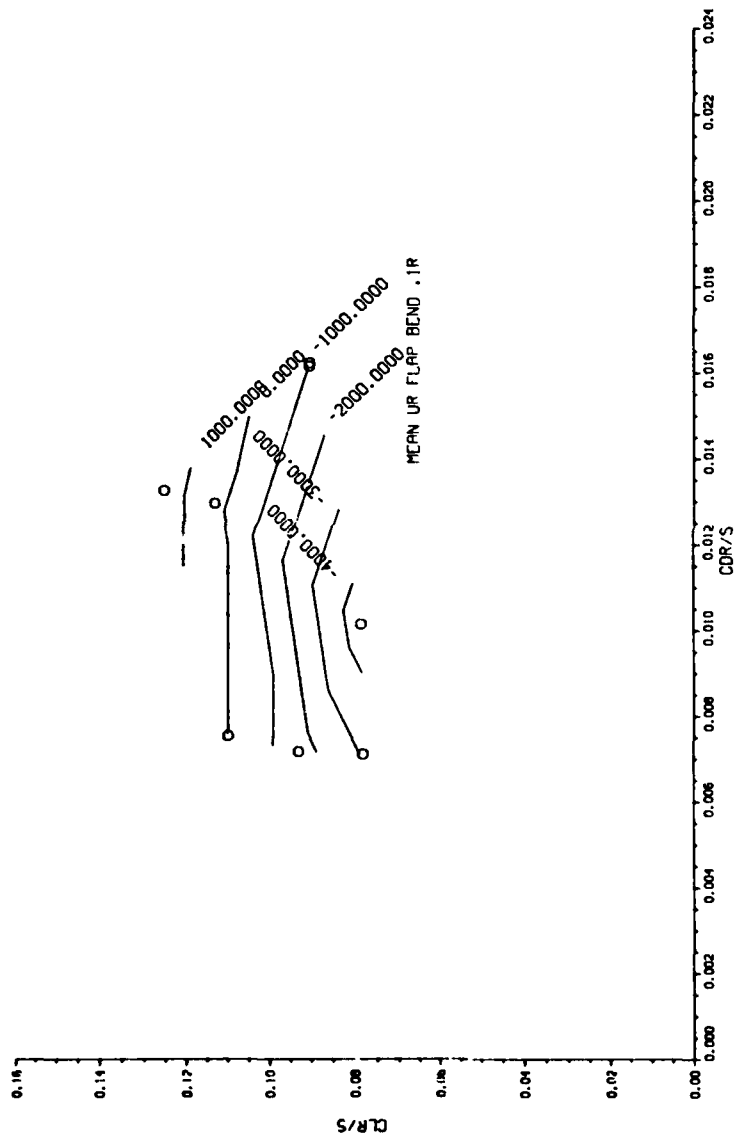
Cv = 1.217E+02

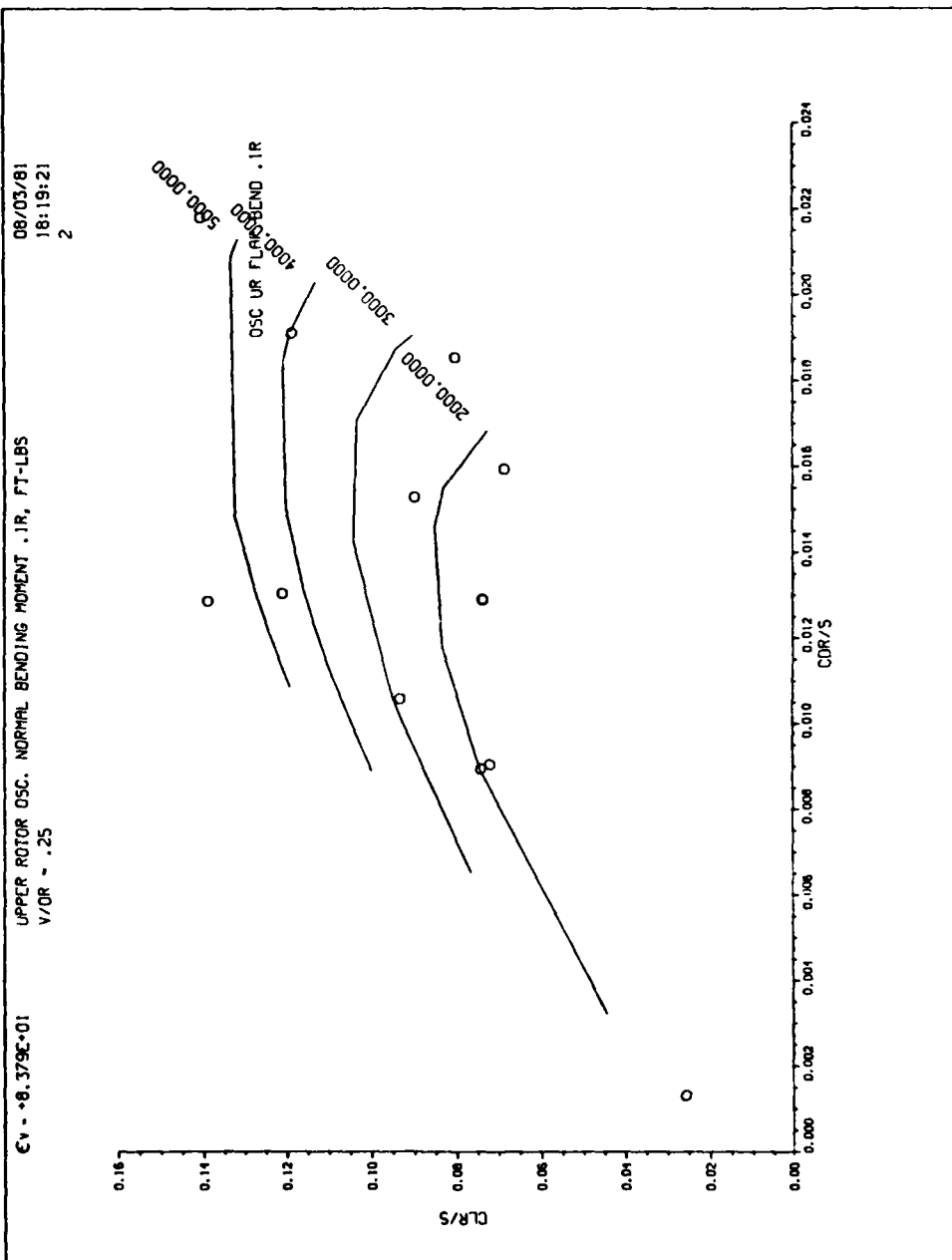




08/03/81
18:48:35
1

UPPER ROTOR MEAN NORMAL BENDING MOMENT .1R, FT-LBS
V/VR = .40

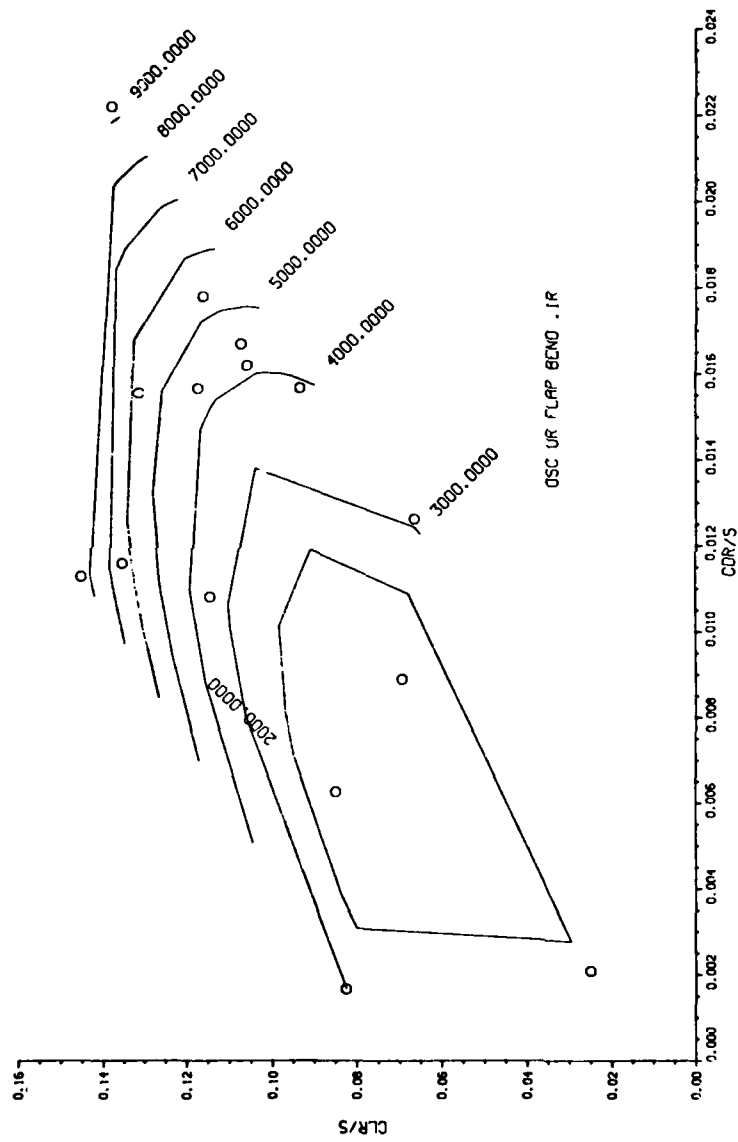


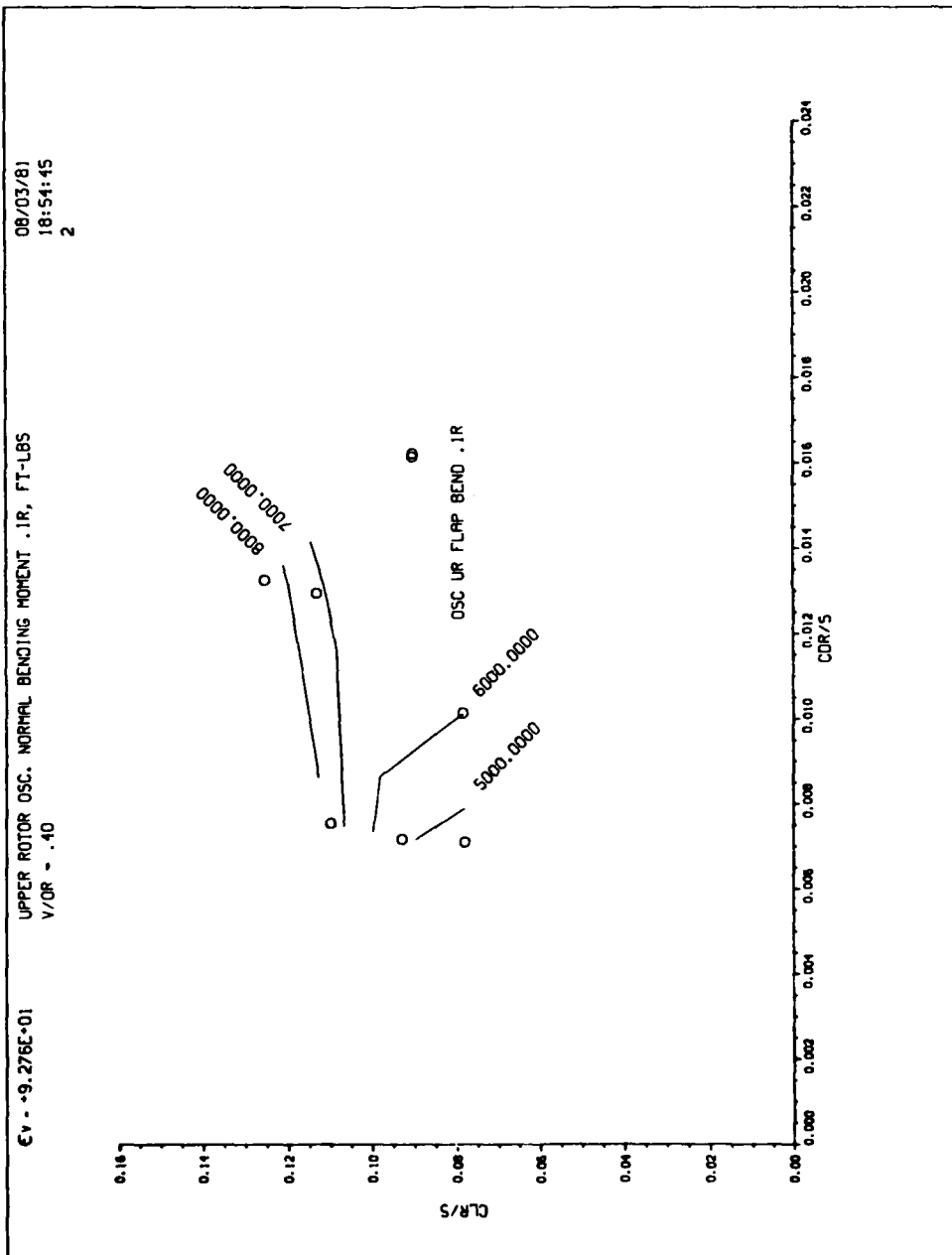


08/03/81
19:01:43
2

UPPER ROTOR OSC. NORMAL BENDING MOMENT .1R, FT-LBS
V/QR = .30

Cv = +2.575E+02

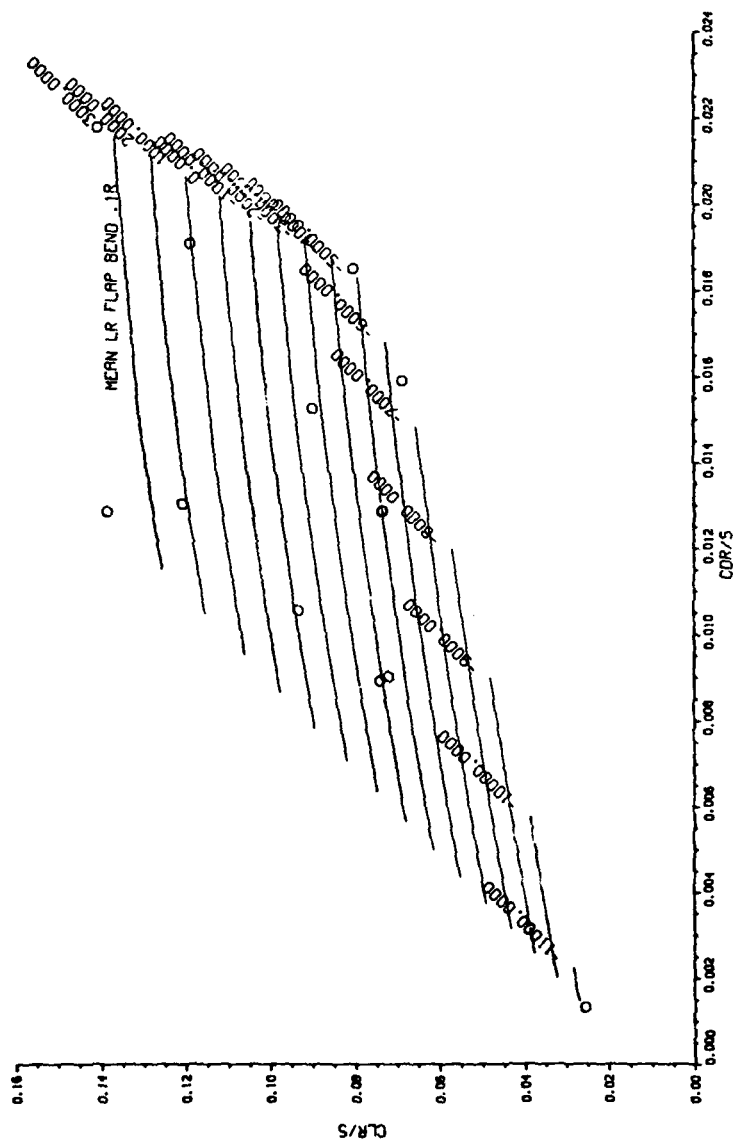


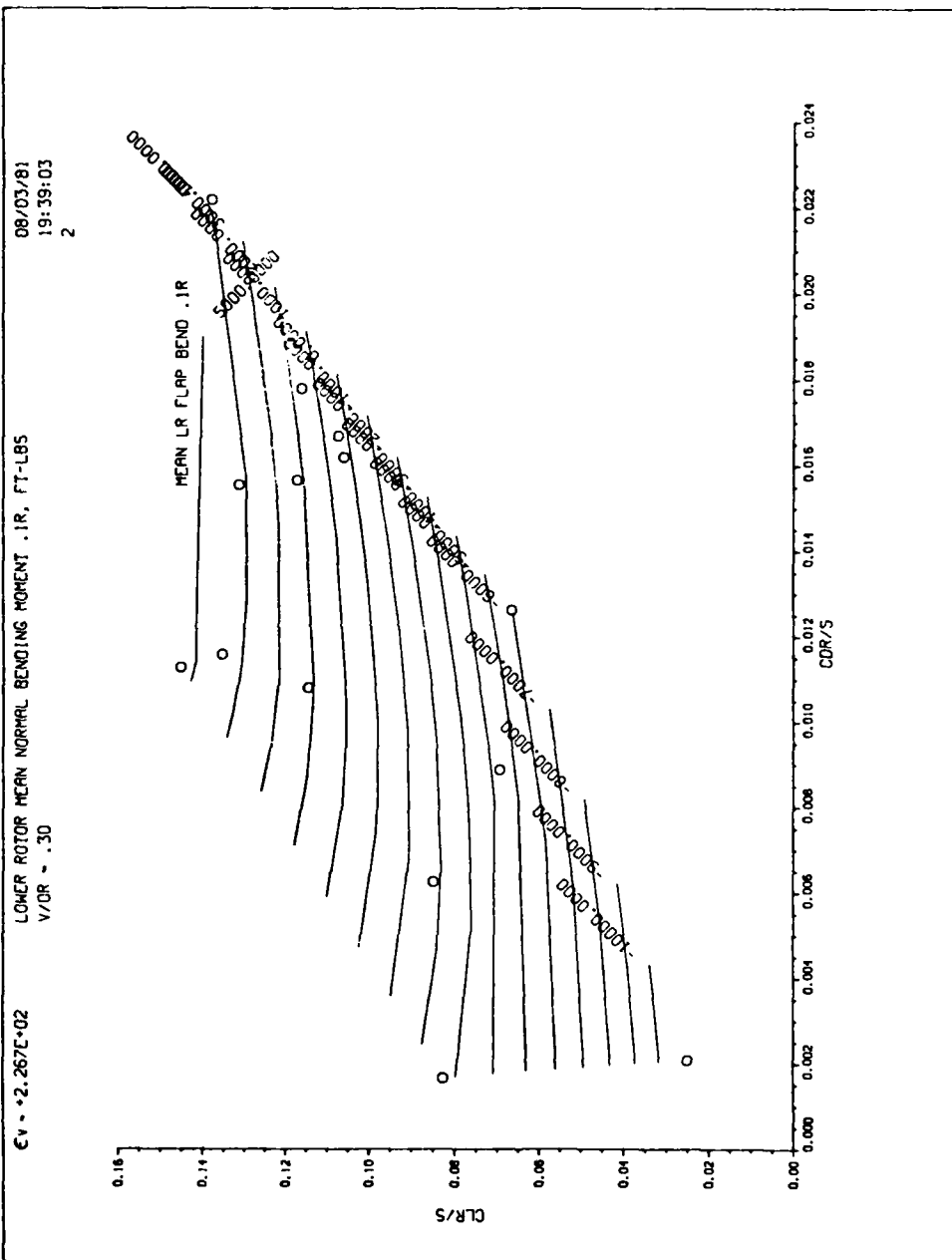


08/03/81
19:49:55
2

LOWER ROTOR MEAN NORMAL BENDING MOMENT .1R, FT-LBS
V/OR = .25

CV = +1.305E+02

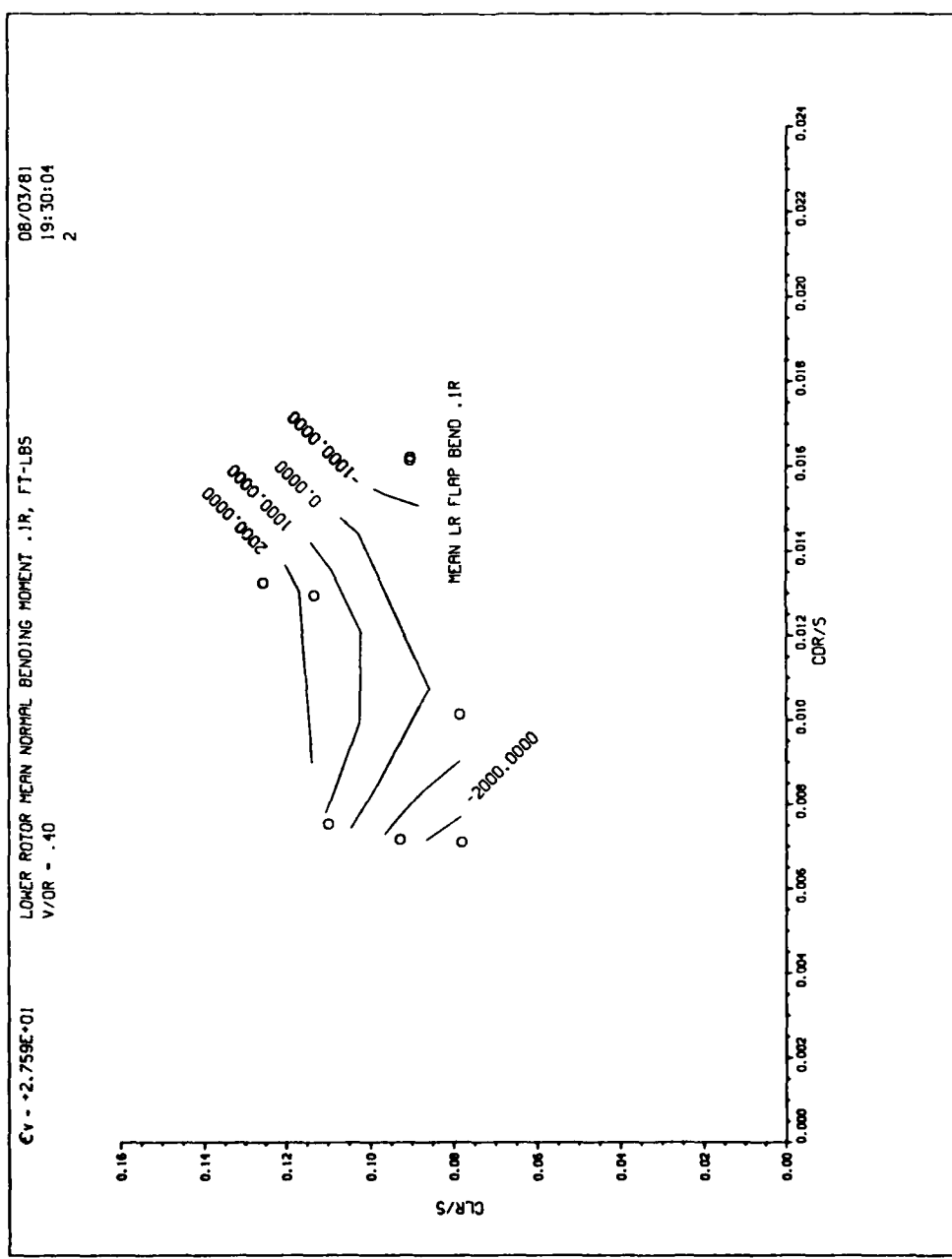


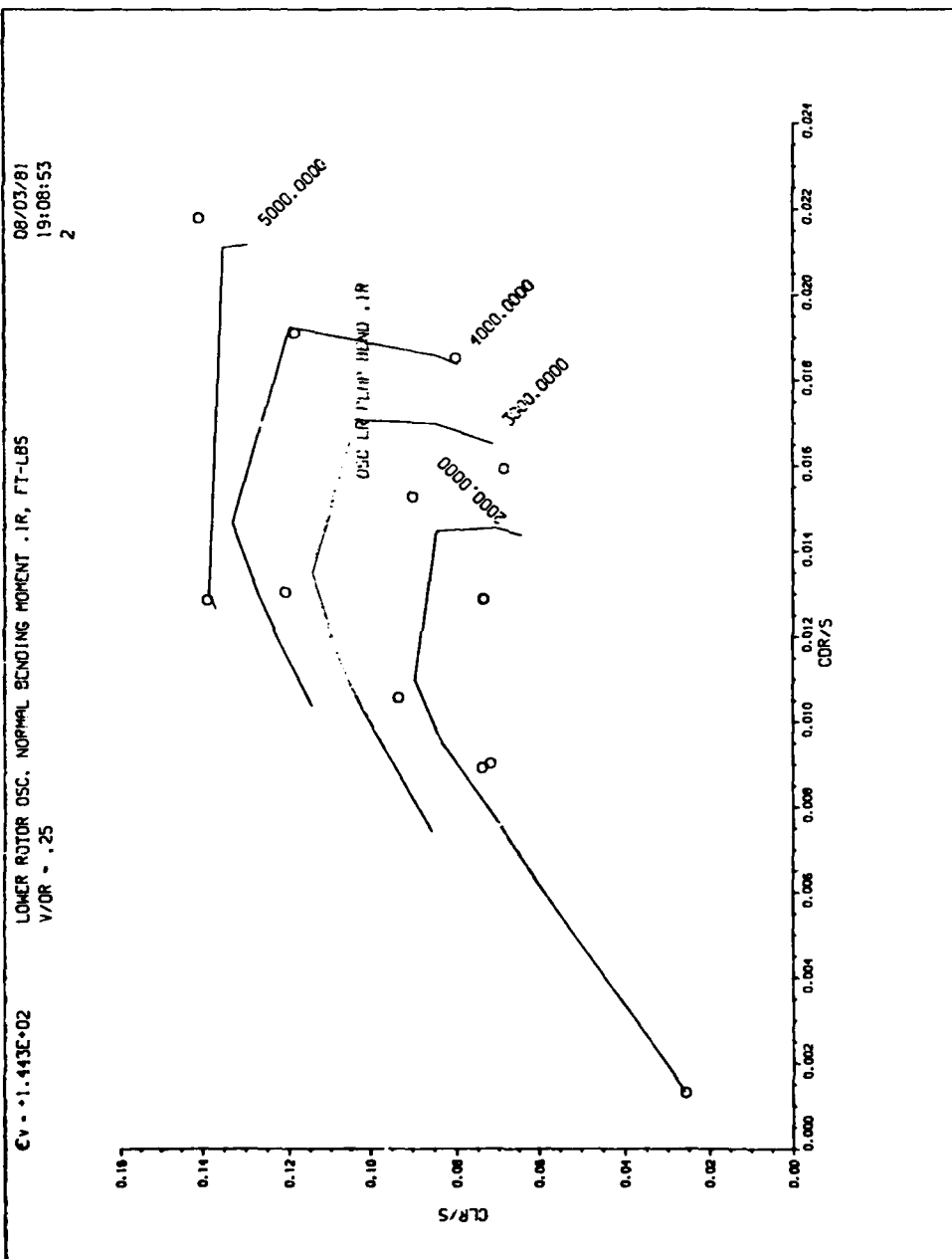


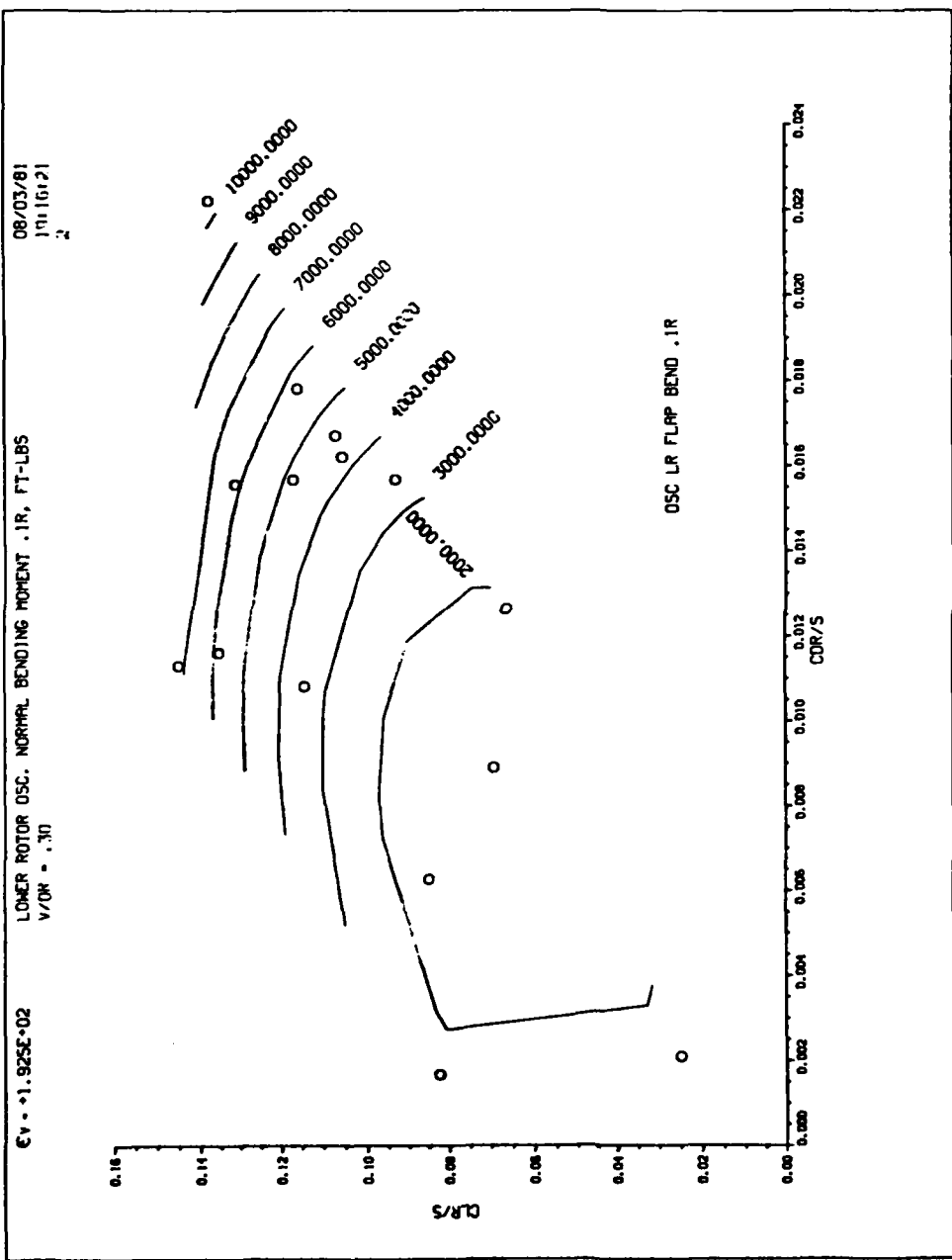
08/03/81
19:30:04
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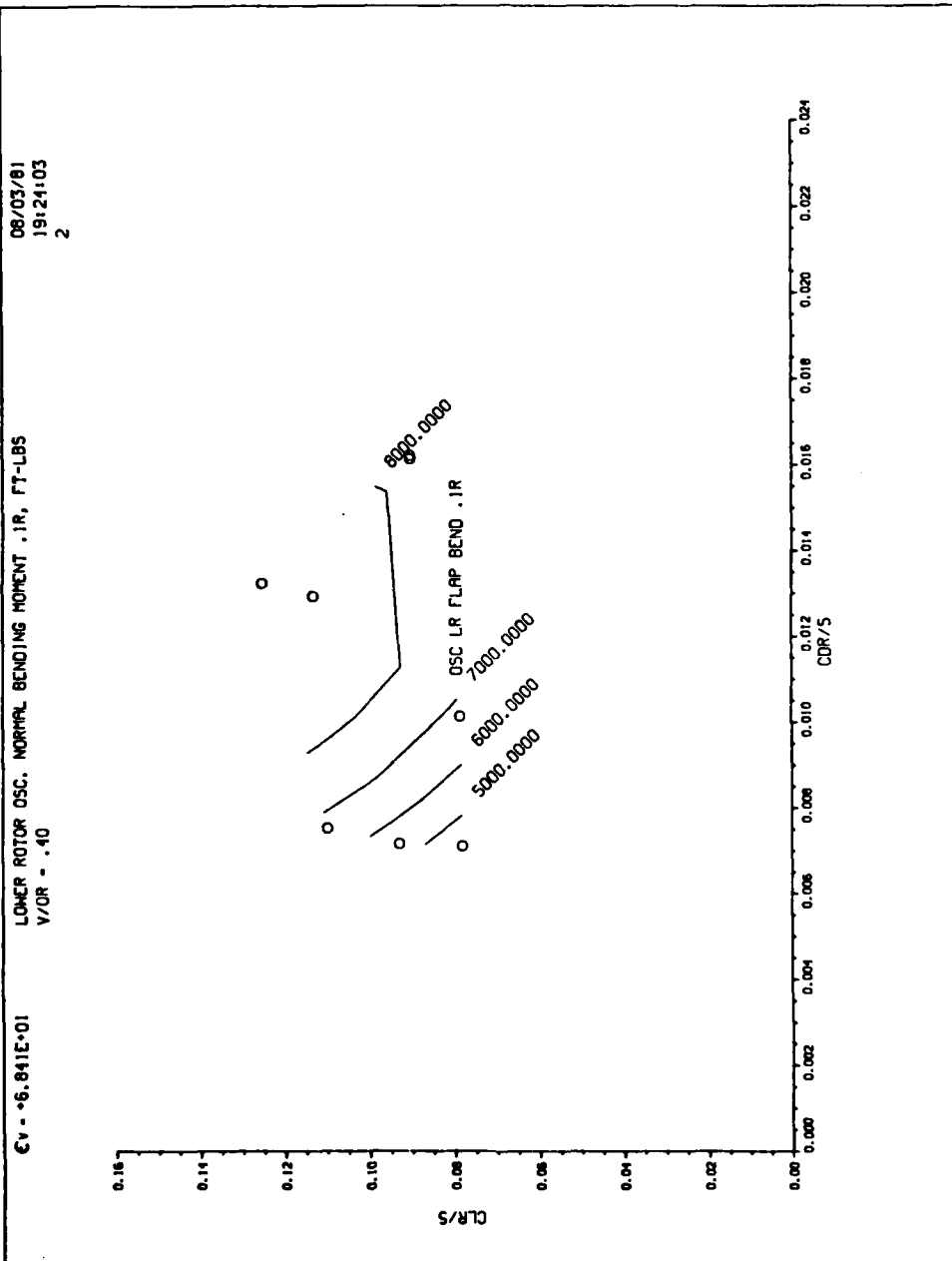
LOWER ROTOR MEAN NORMAL BENDING MOMENT .1R, FT-LBS
V/VR = .40

Cv = 2.759E+01





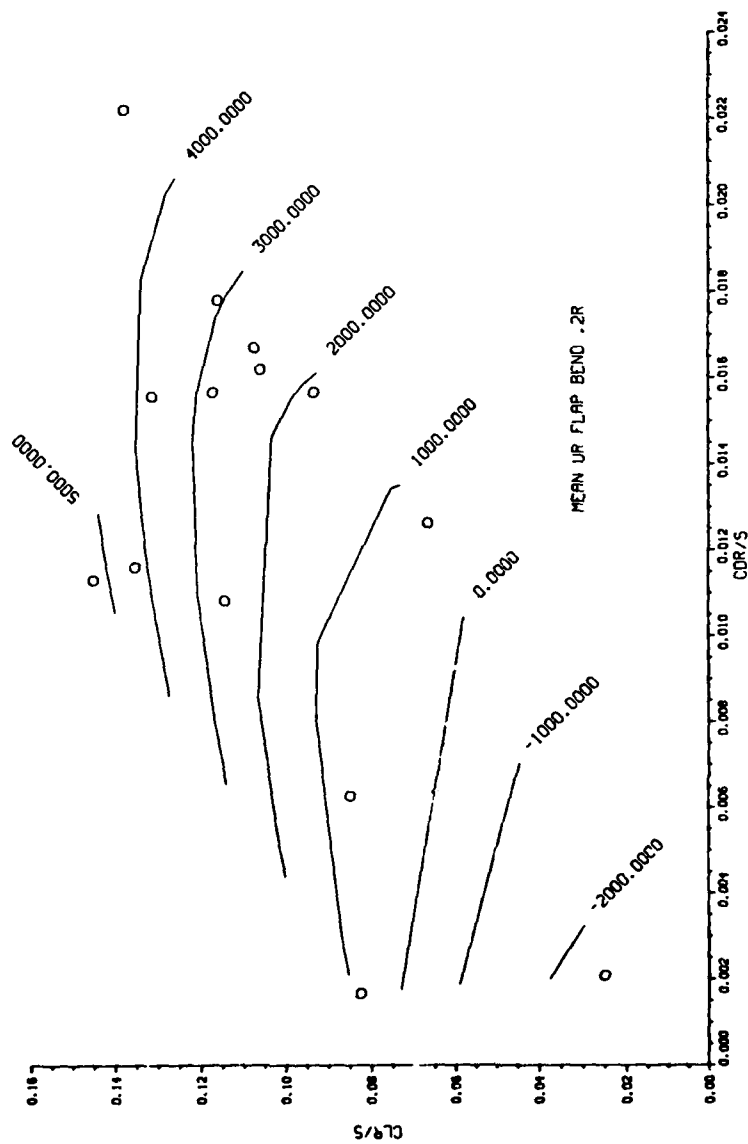




08/03/81
16:33:30
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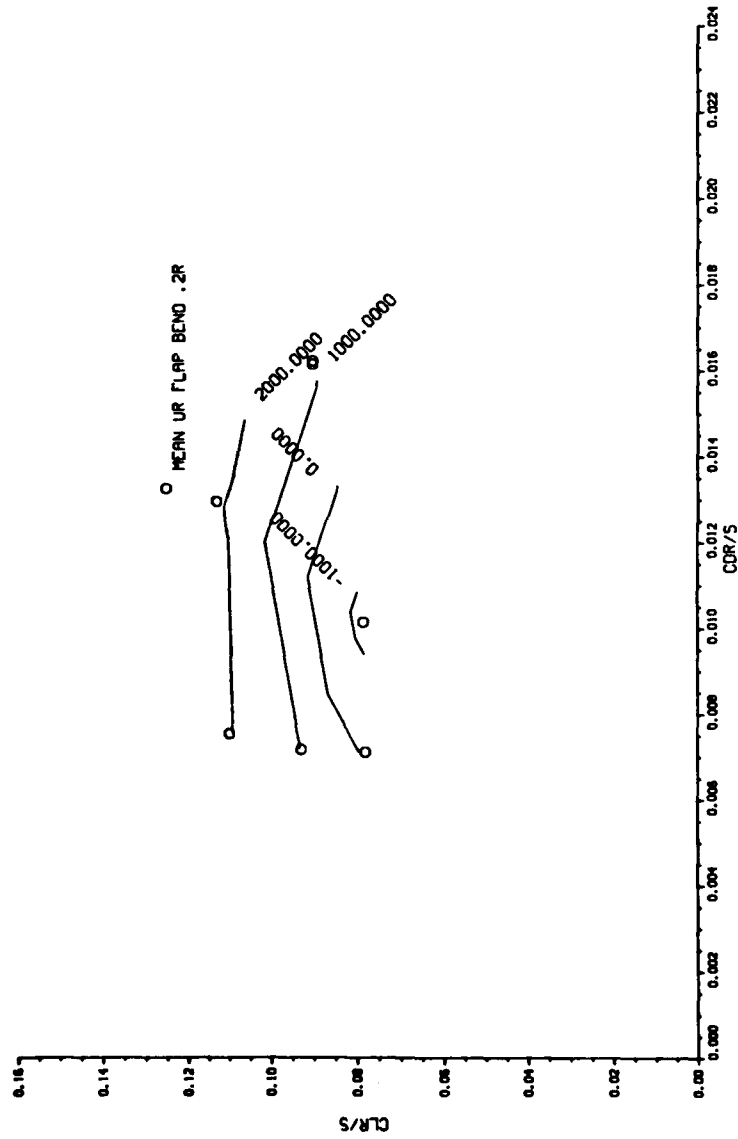
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V/OR - .30

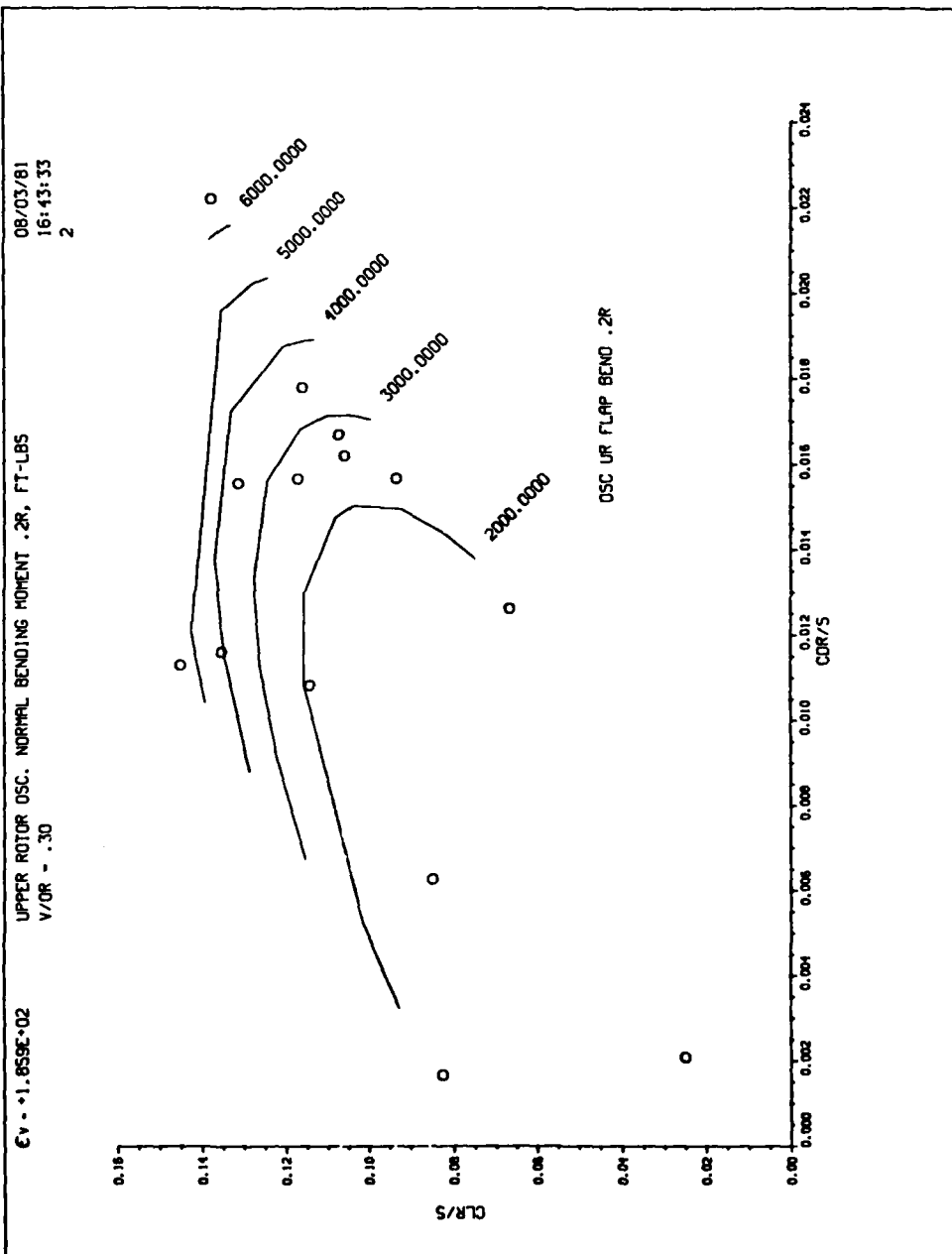
$C_v = 1.465E-02$



08/03/81
16:38:07
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UPPER ROTOR MEAN NORMAL BENDING MOMENT .2R, FT-LBS
V/OR = .40

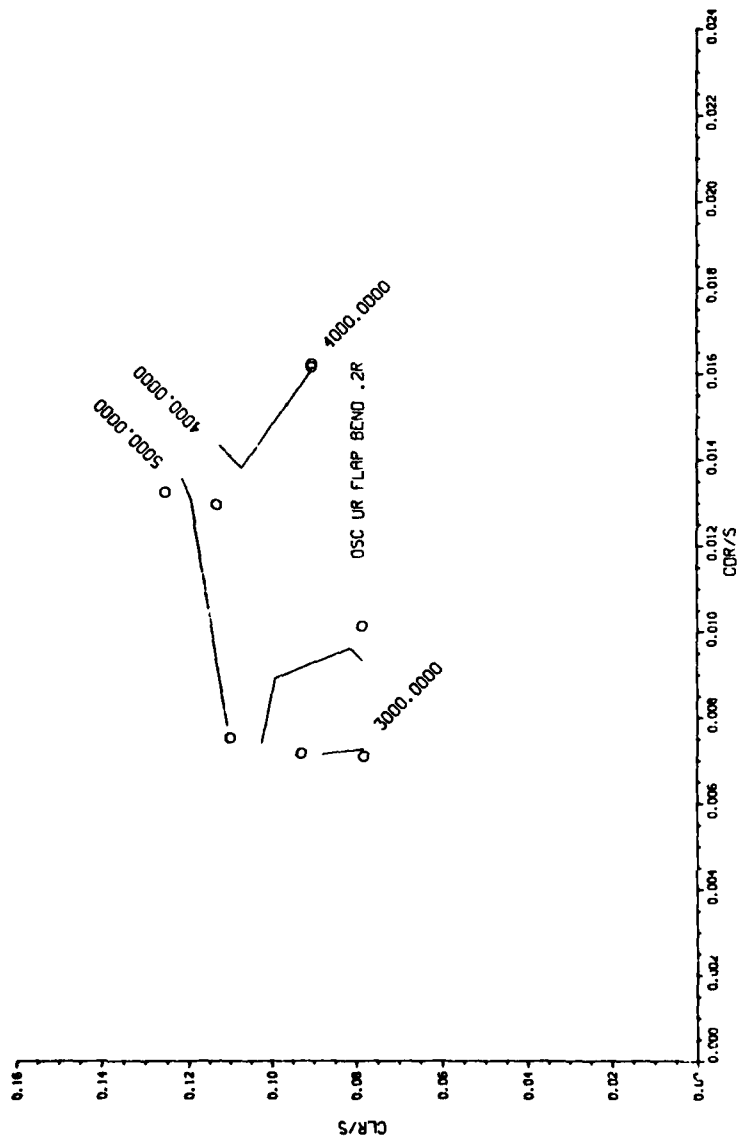


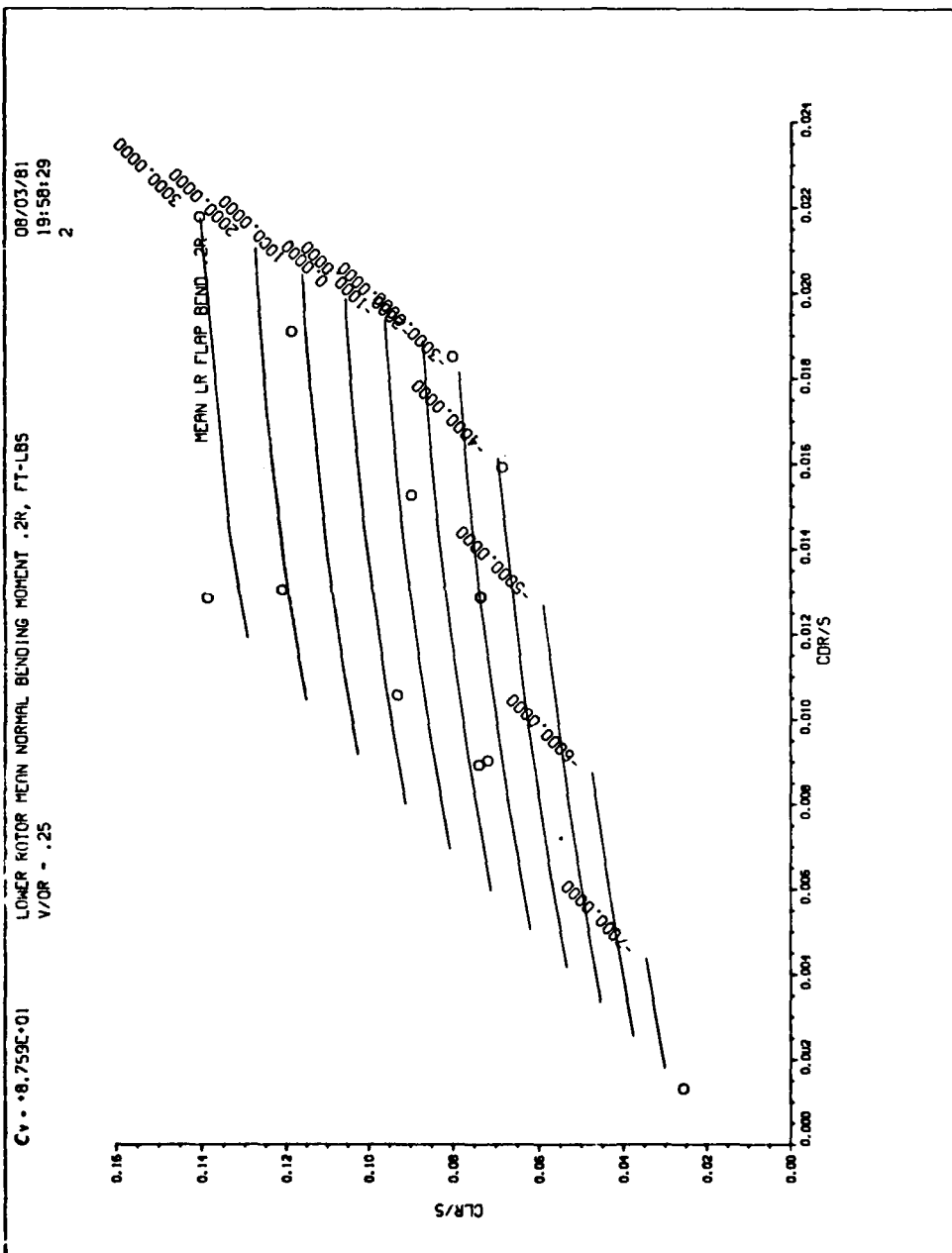


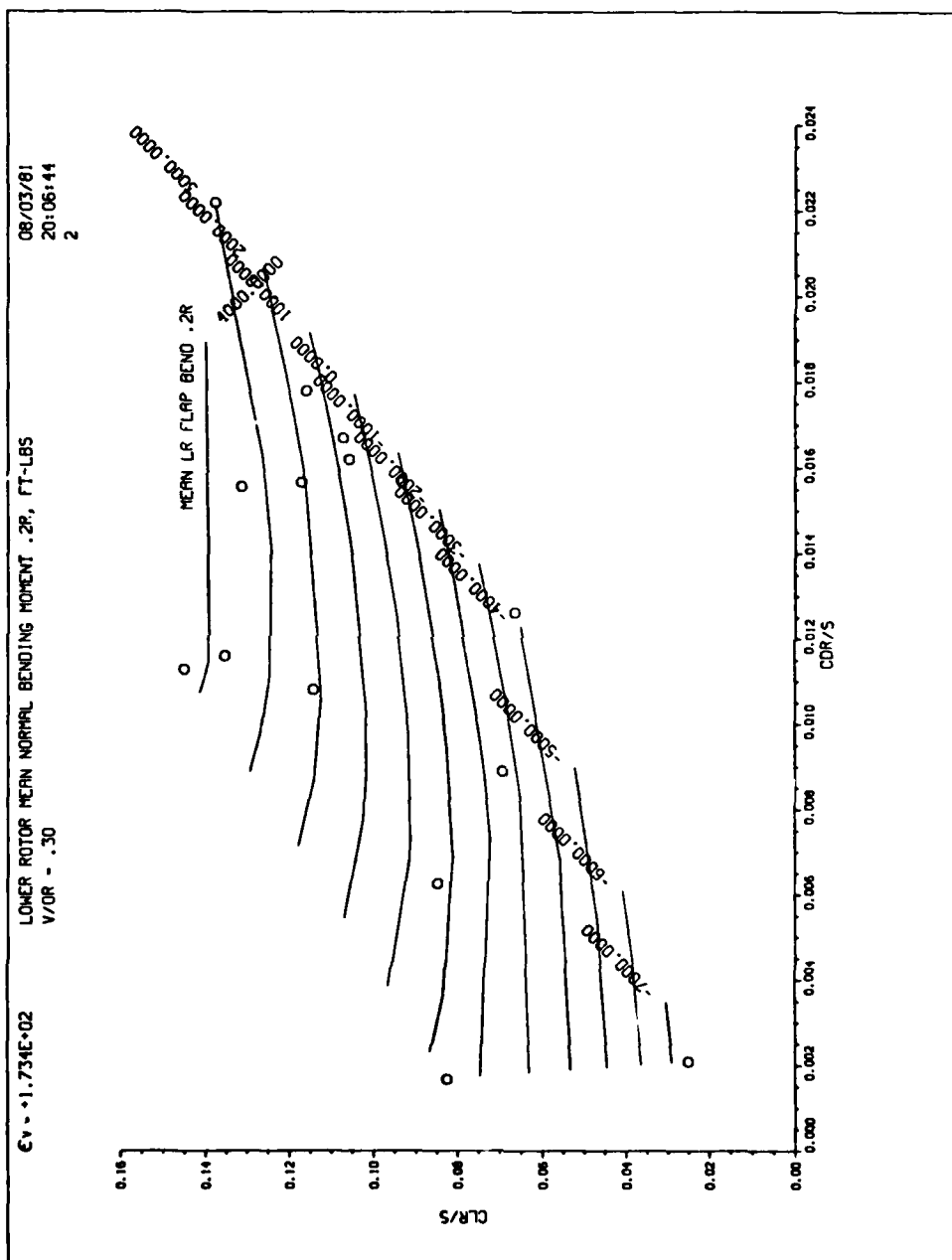
08/03/81
16:46:59
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UPPER ROTOR OSC. NORMAL BENDING MOMENT .2R, FT-LBS
V/OR = .40

Cv = 7.786E-01



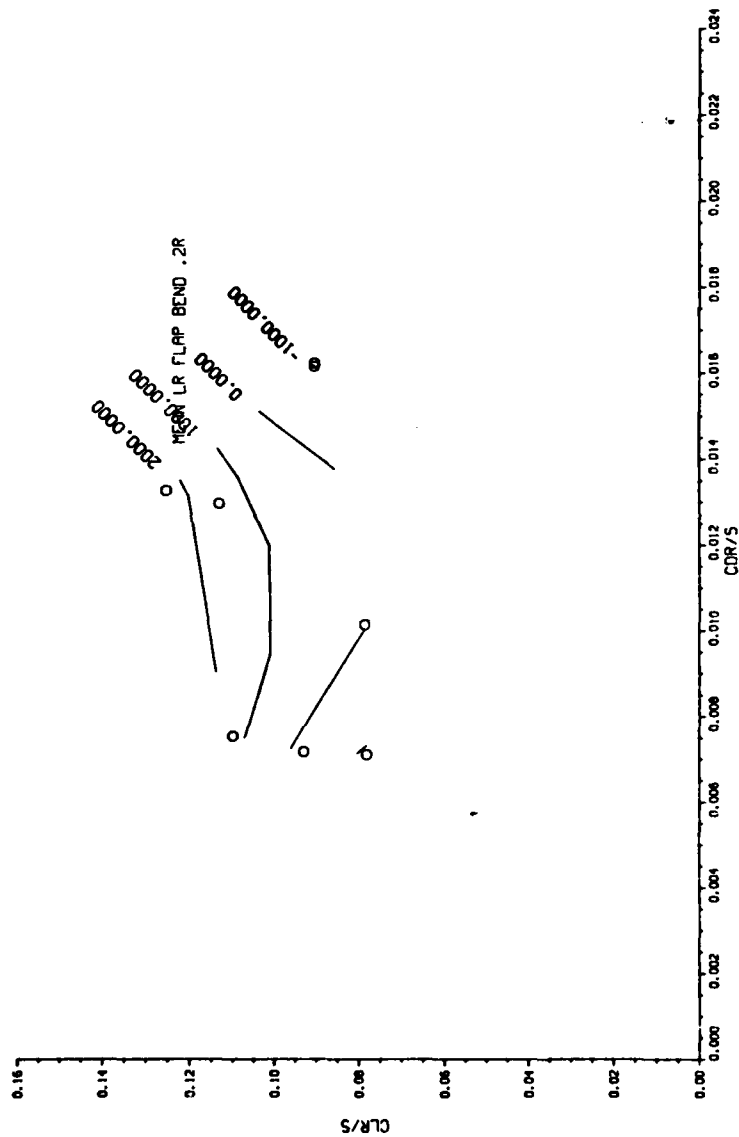




08/03/81
20:15:52
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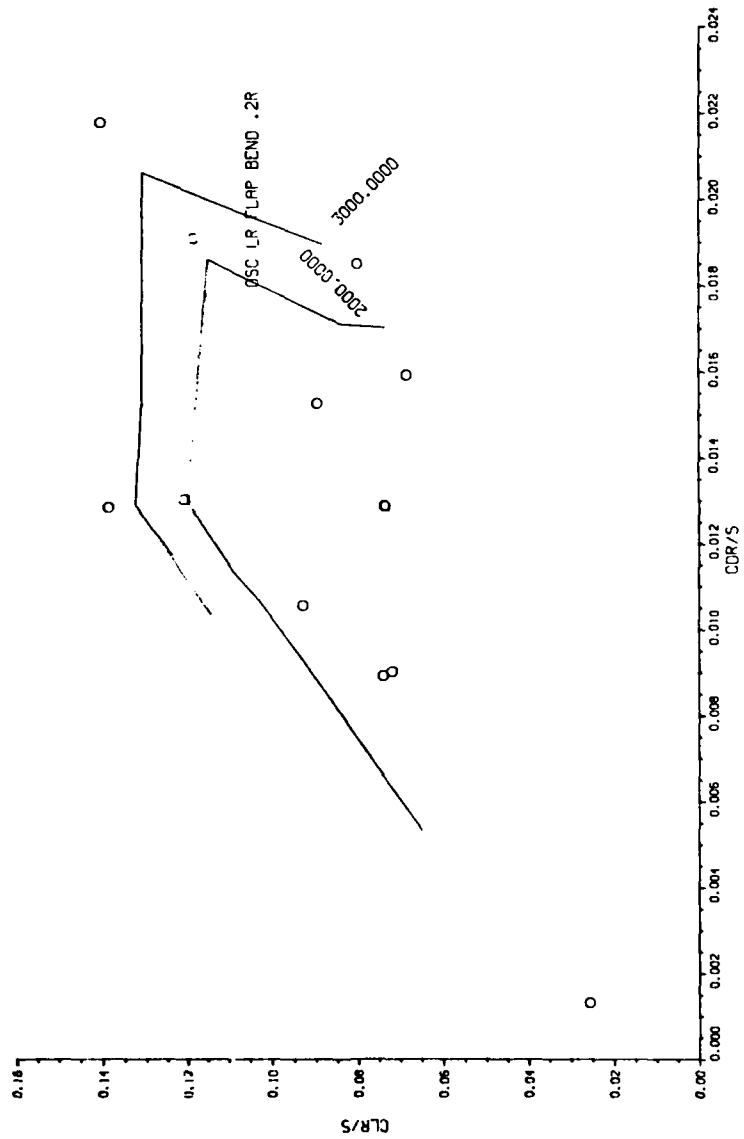
LOWER ROTOR MEAN NORMAL BENDING MOMENT .2R, FT-LBS
V/OR = .40

$\epsilon_v = 1.692E-01$



08/03/81
17:50:02

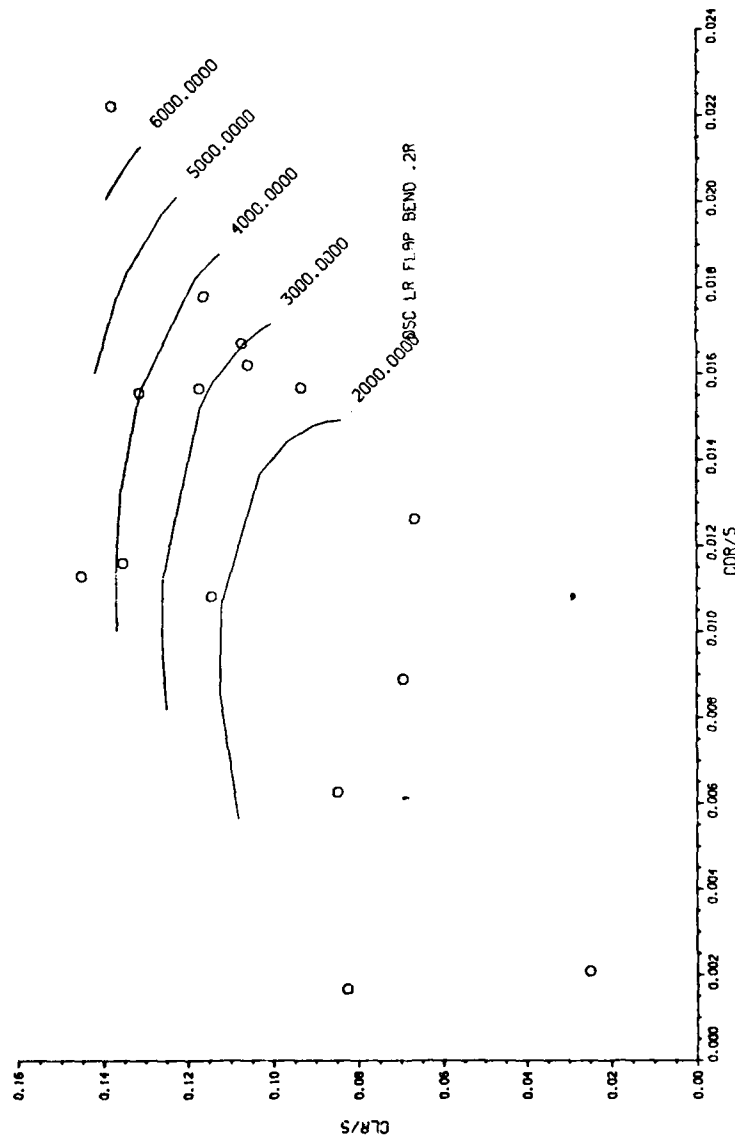
LOWER ROTOR OSC. NORMED, REMAINING MOMENT .2R, FT-LBS
V/VR = .25



08/03/81
17:46:04
2

LOWER ROTOR OSC. NORMAL BENDING MOMENT .2R, FT-LBS
V/VR = .30

CV = +1.378E-02



AD-A110 278 NATIONAL AERONAUTICS AND SPACE ADMINISTRATION MOFFET--ETC F/6 20/4
PERFORMANCE AND LOADS DATA FROM A WIND TUNNEL TEST OF A FULL-SC--ETC(U)
OCT 81 F F FELKER

UNCLASSIFIED NASA-A-8732

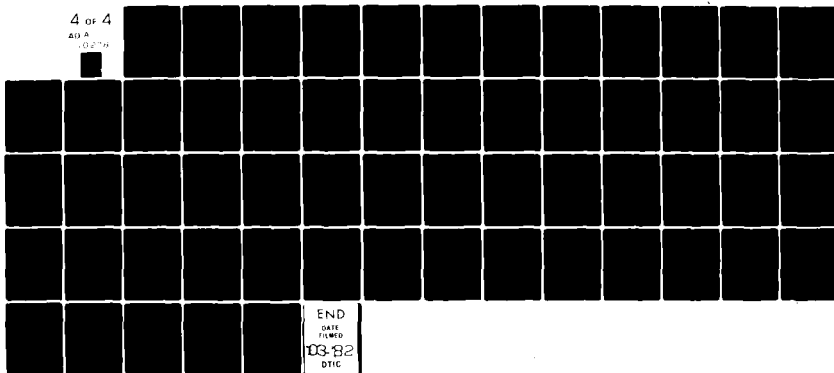
NASA-TM-81329

NL

4 of 4

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1.0

2.8 2.5

2.2



1.1

2.0

1.8



1.25

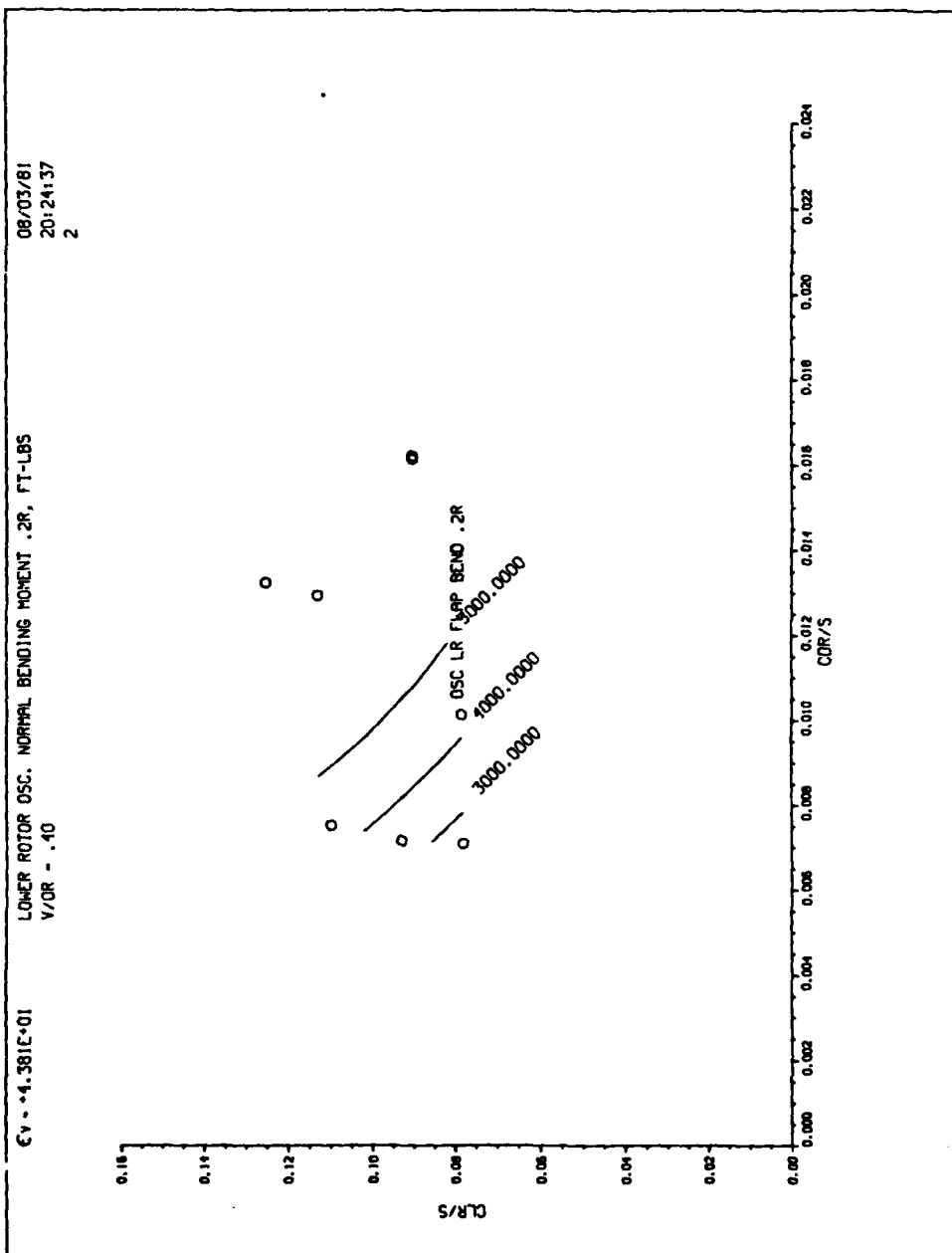


1.4



1.6

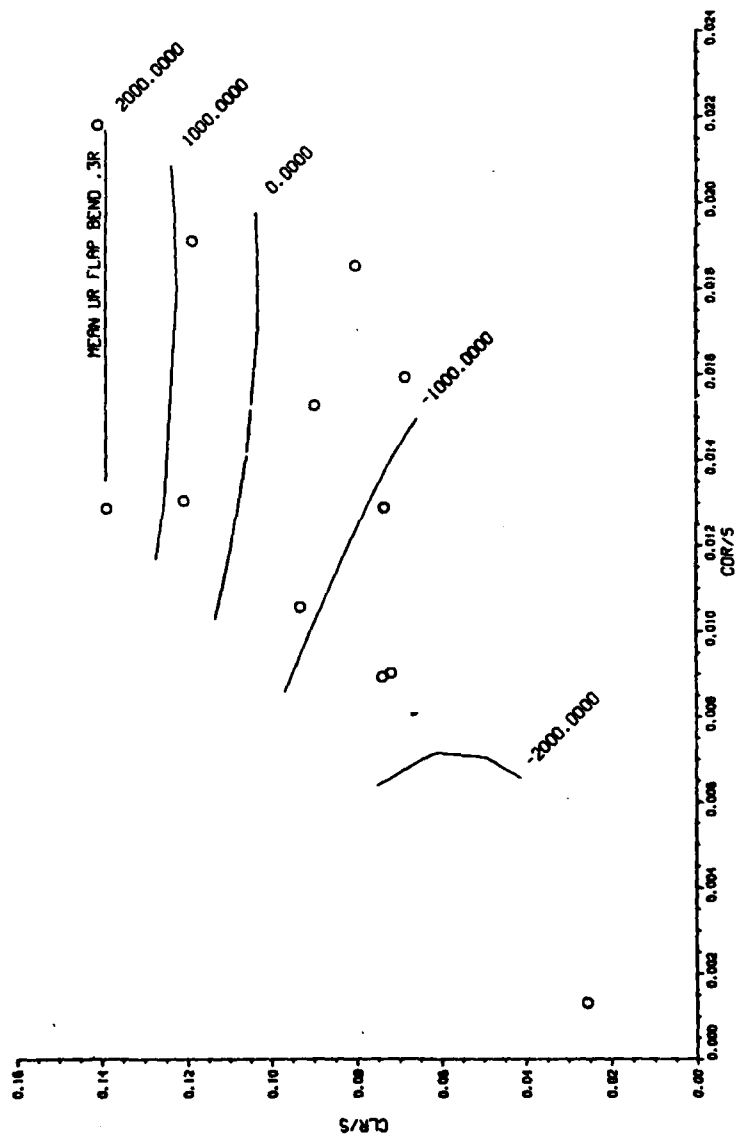
U.S. GOVERNMENT PRINTING OFFICE: 1967



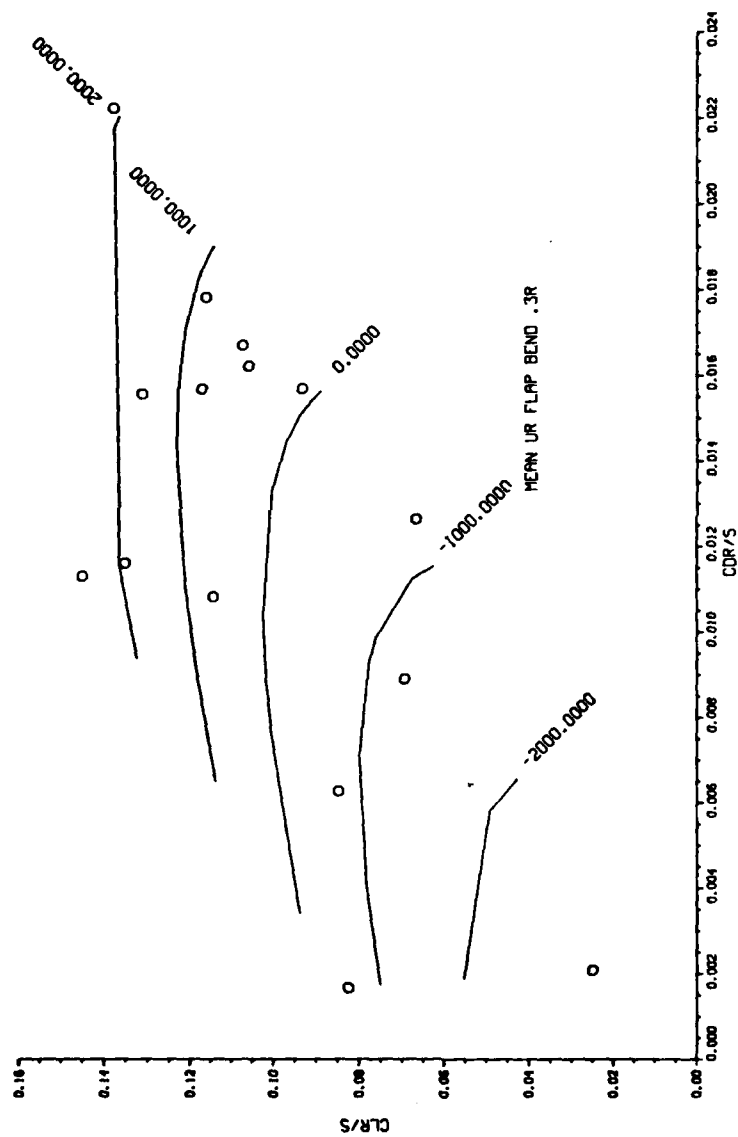
08/06/81
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UPPER ROTOR MEAN NORMAL BENDING MOMENT .3R, FT-LBS
V/OR - .25

CV - +6.379E+01

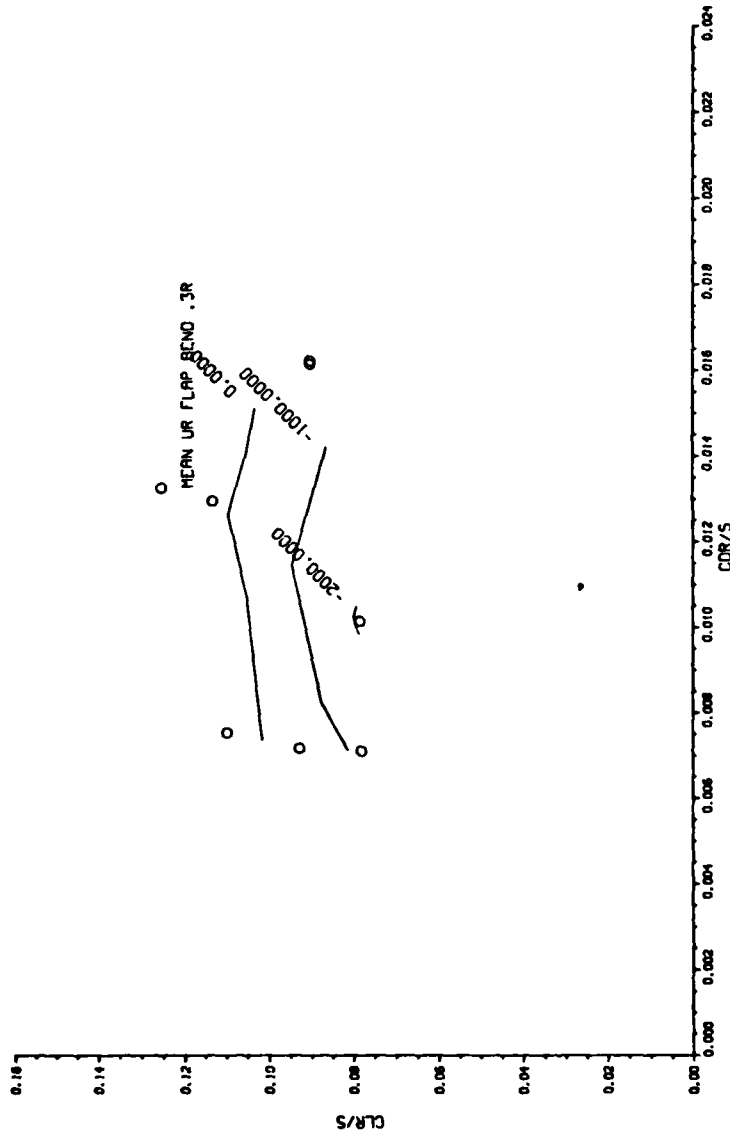


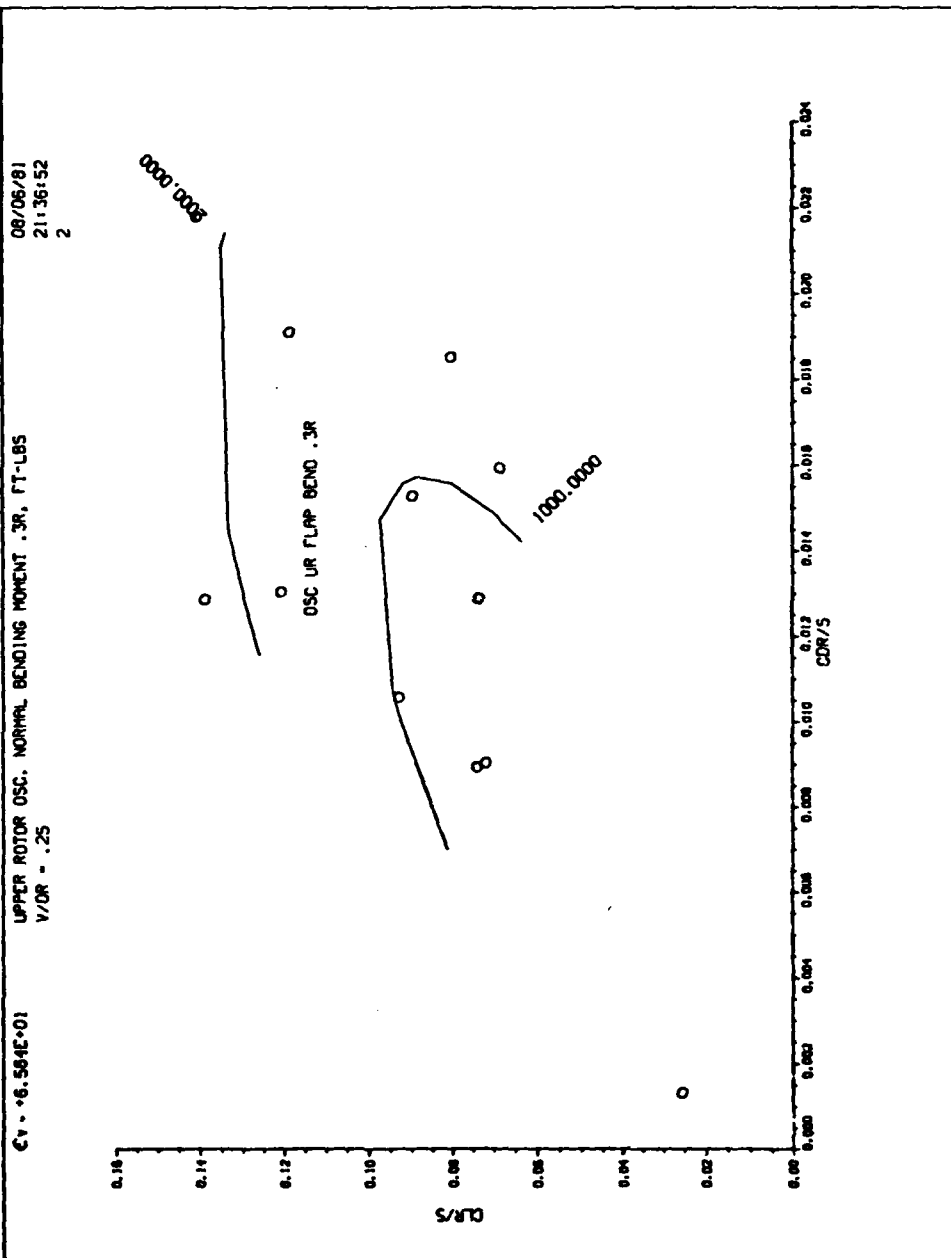
Ev. 9.233E+01

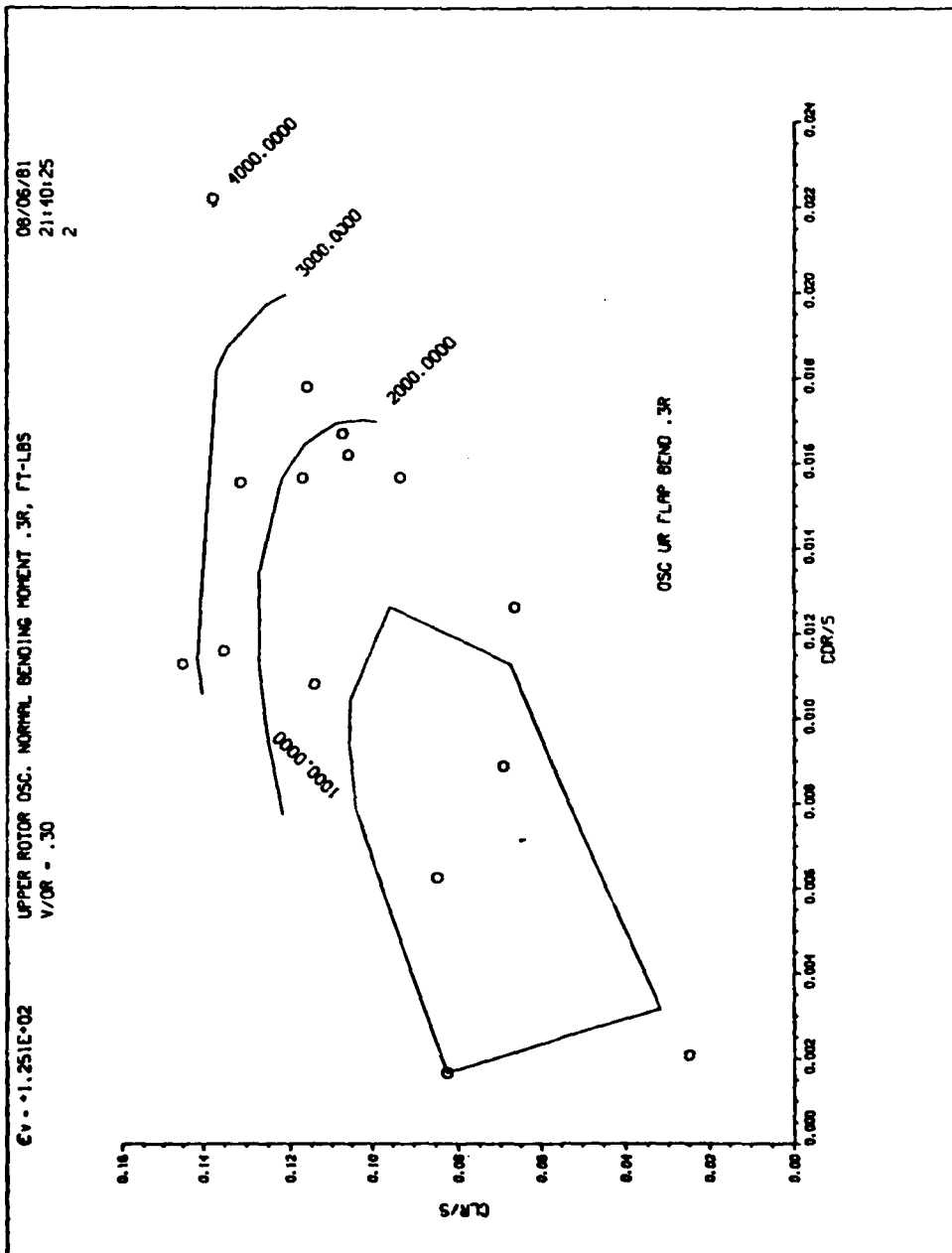


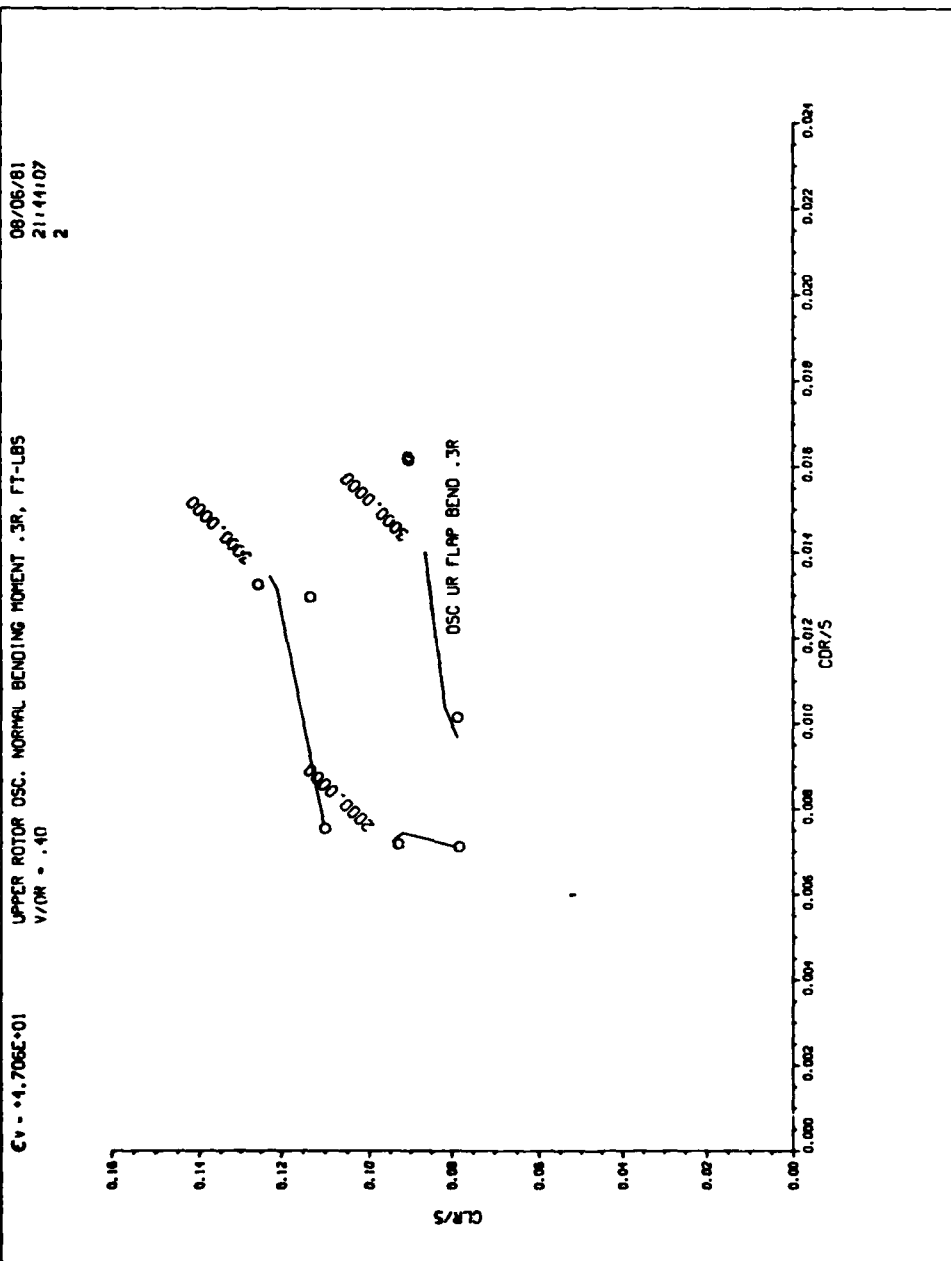
08/06/81
21:47:44
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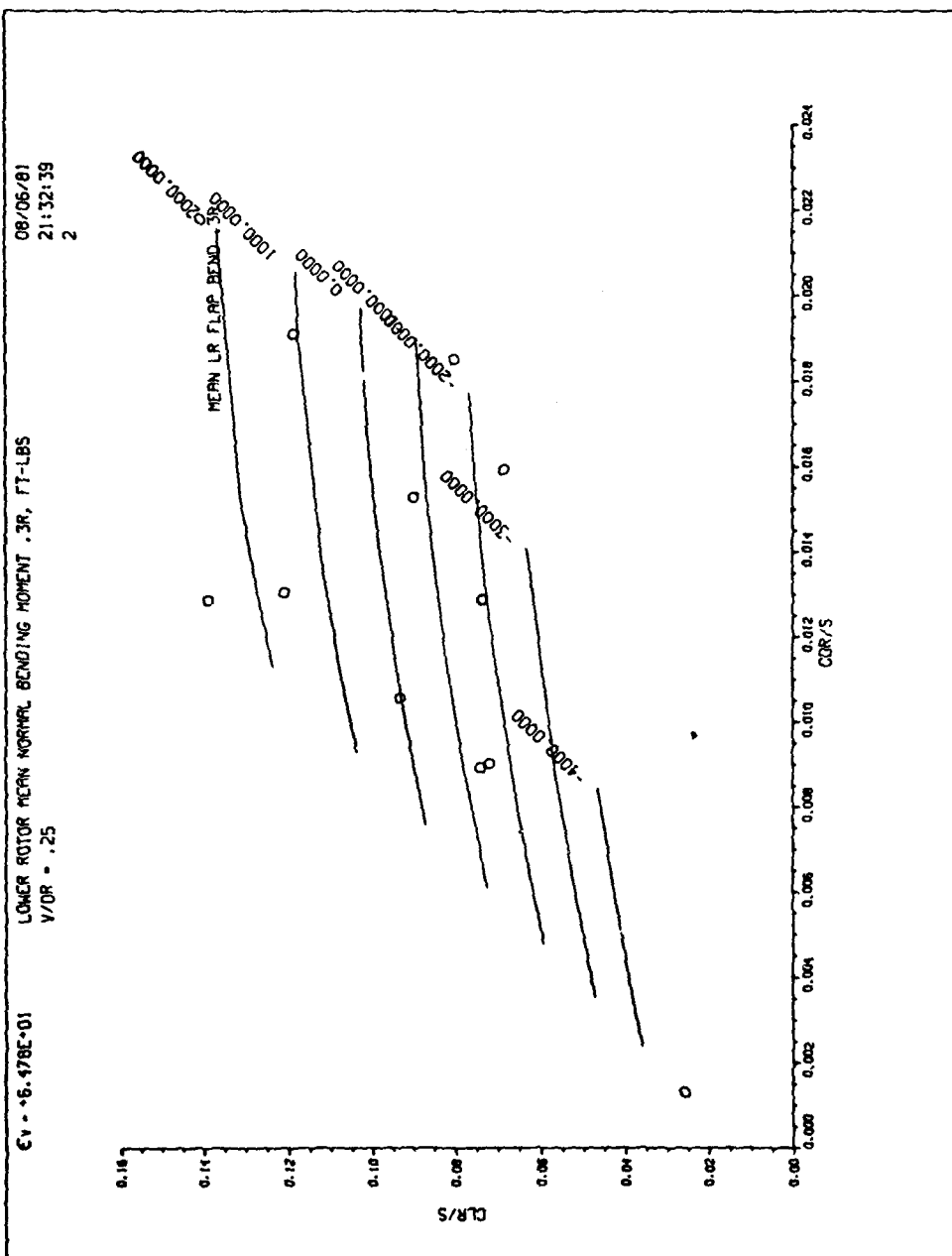
UPPER ROTOR MEAN NORMAL BENDING MOMENT .3R, FT-LBS
V/OR = .40

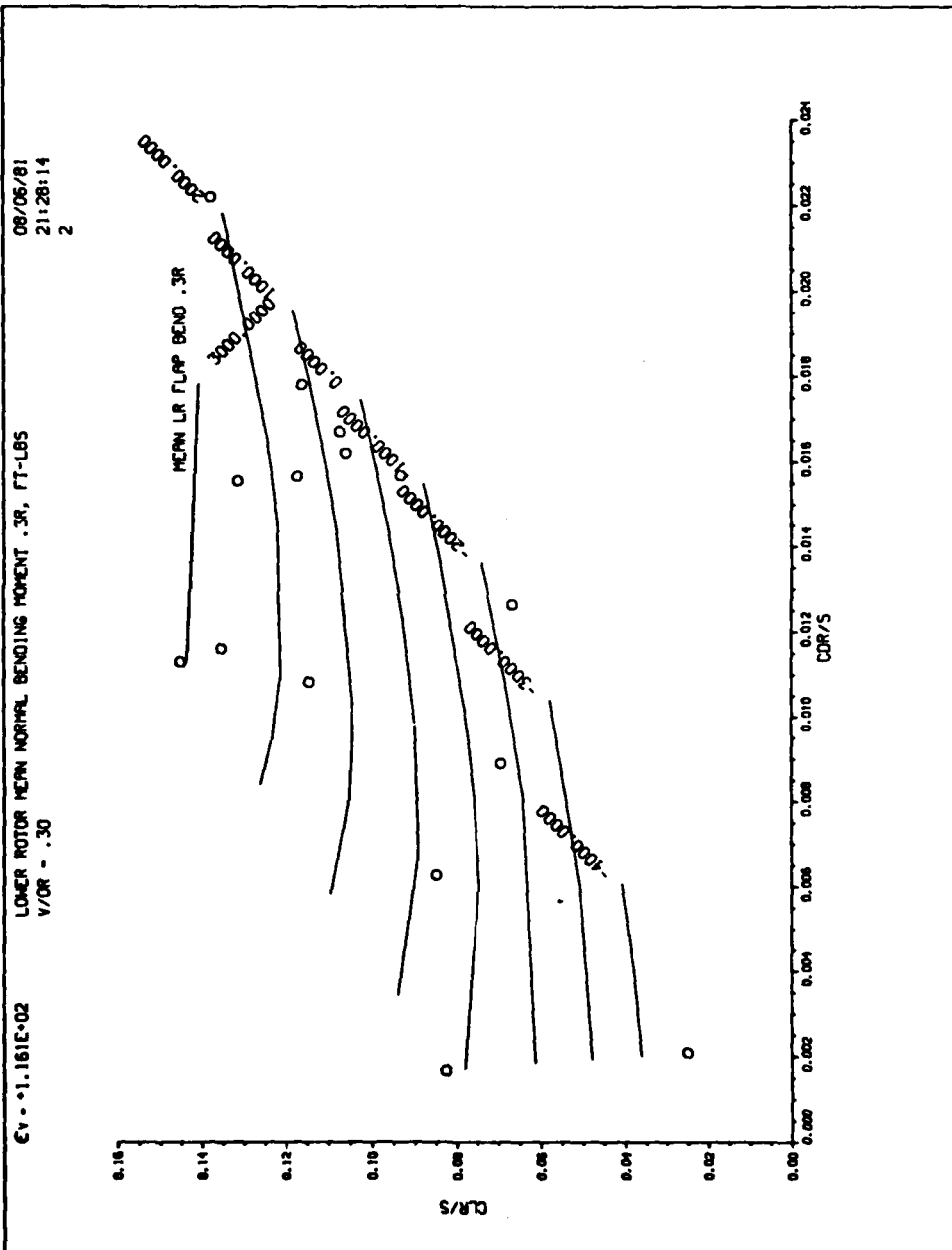


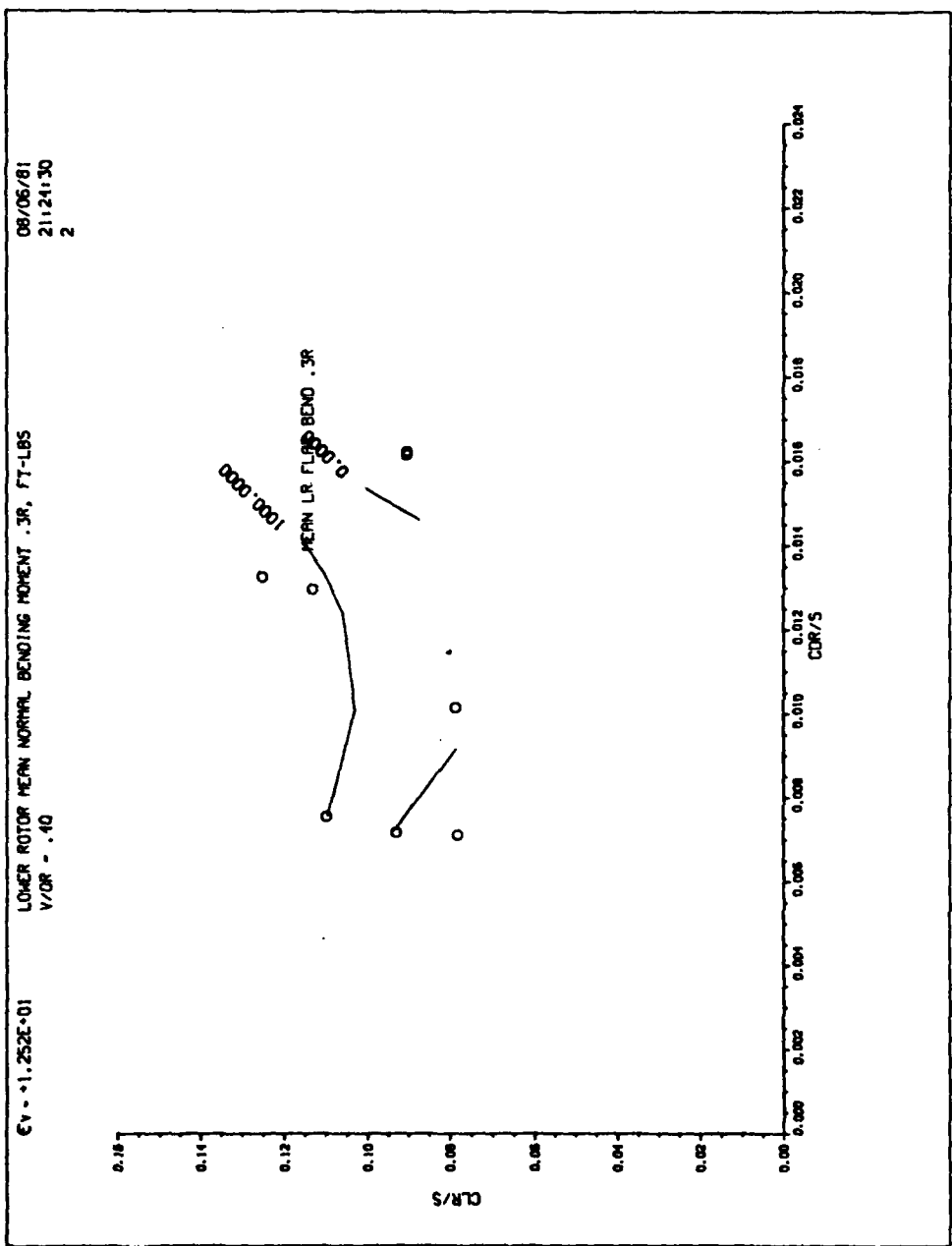


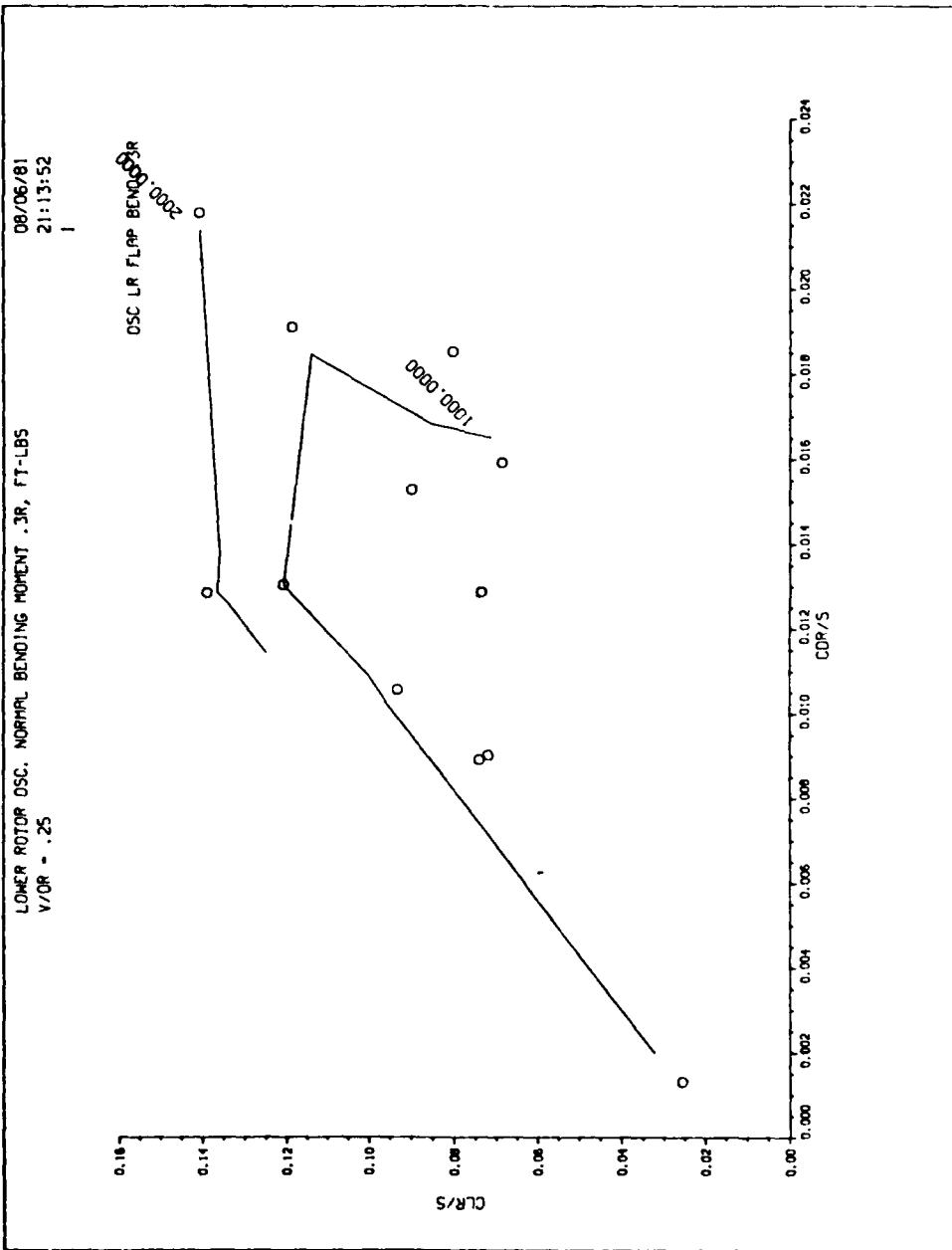


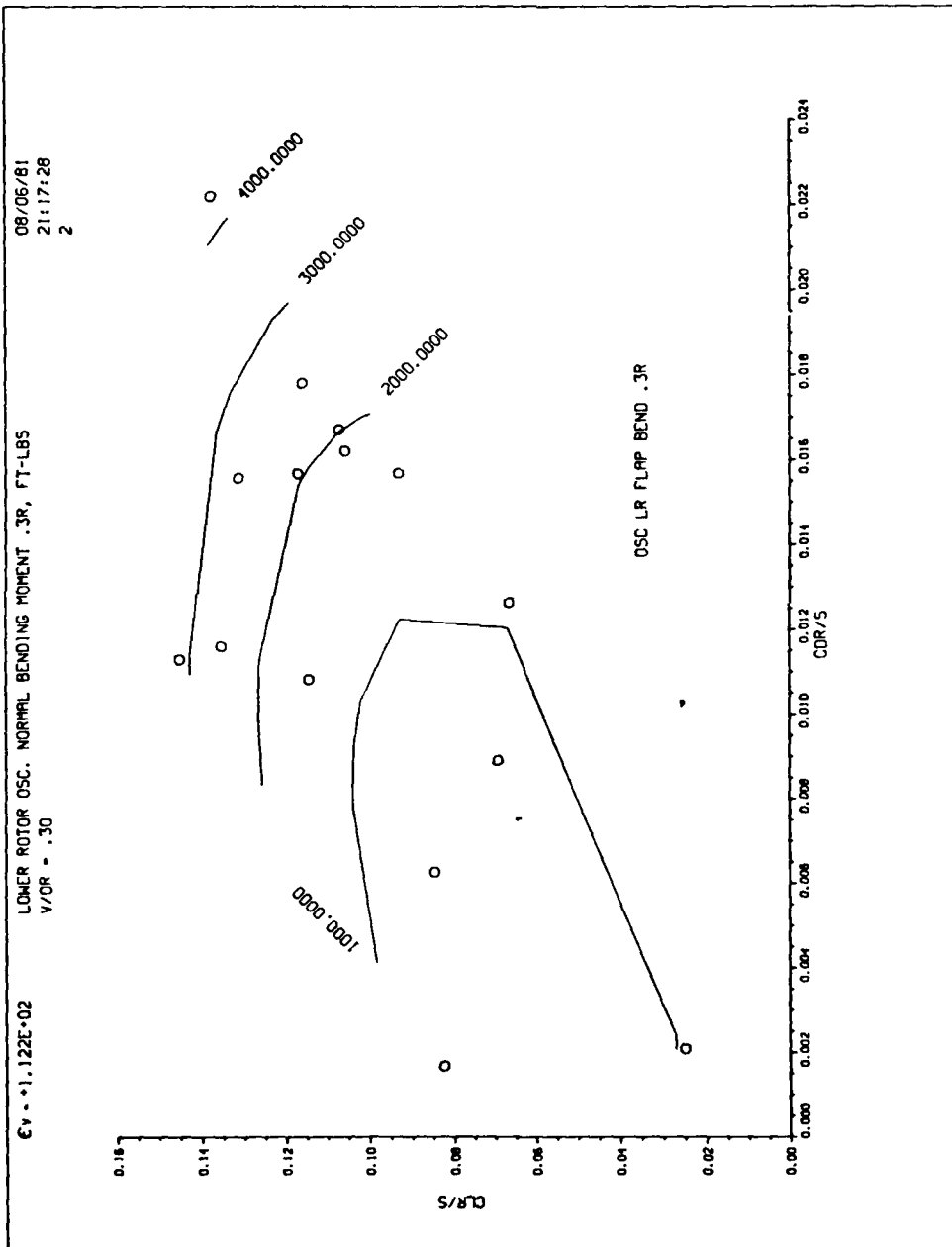








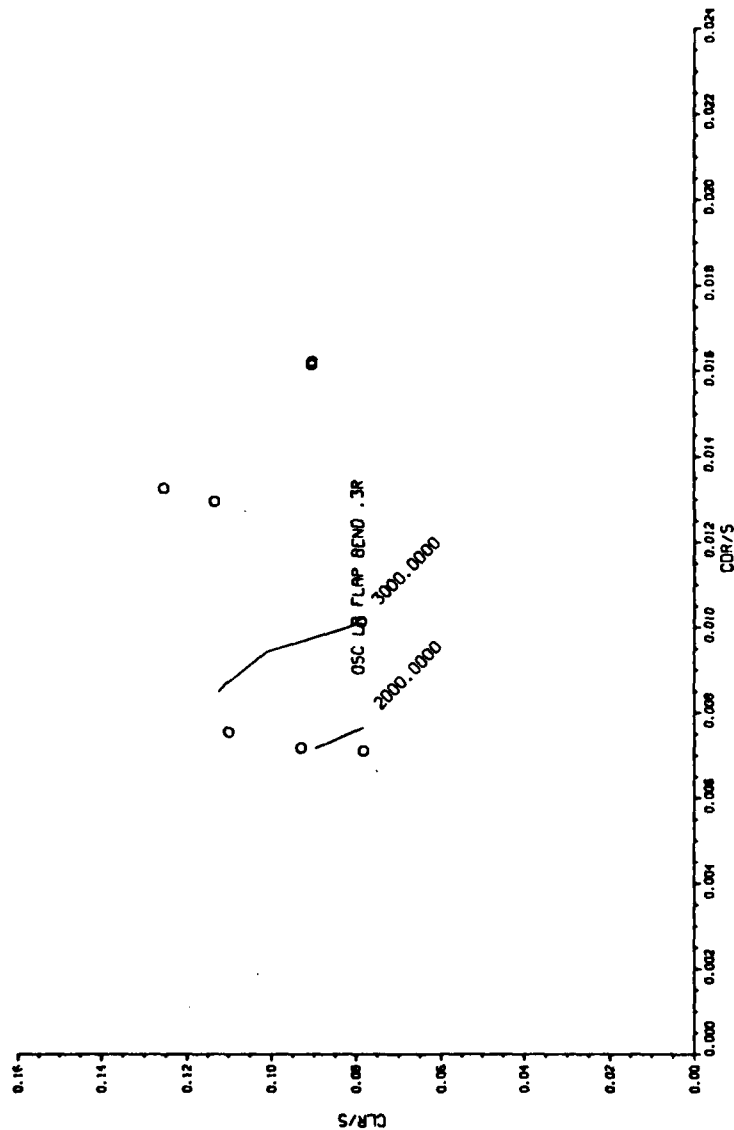




08/06/81
21:20:43
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V/OR = .40

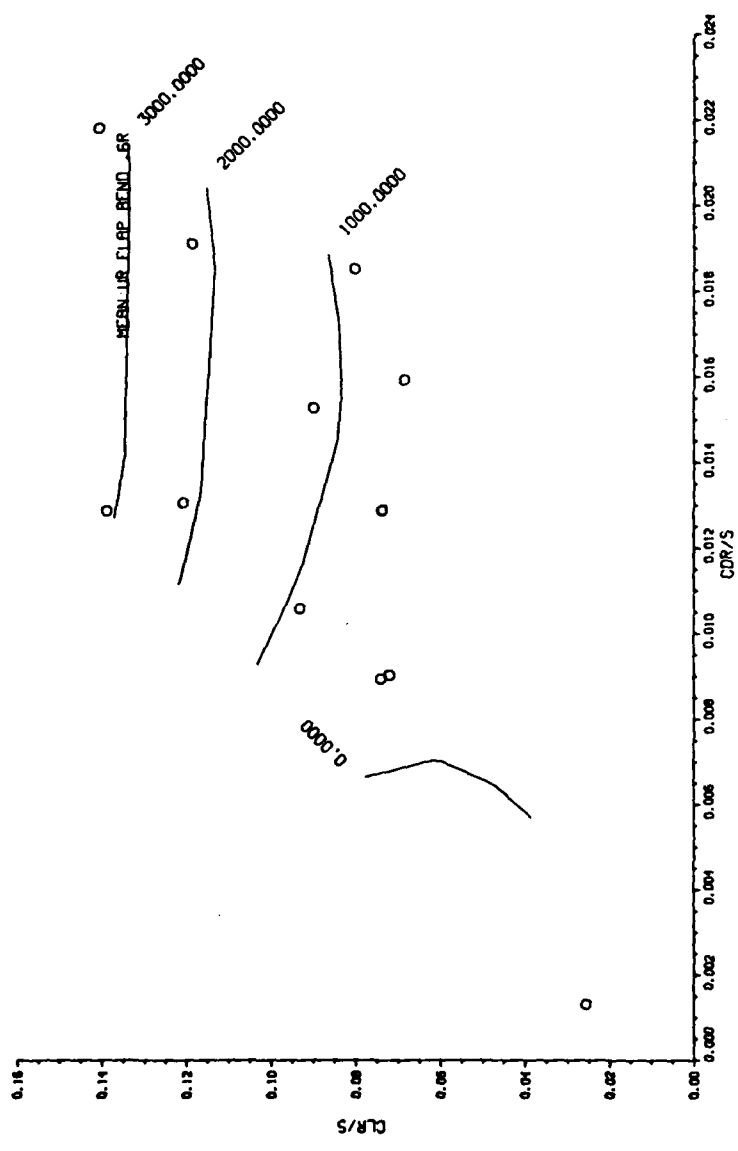
EV - +3.404E+01



08/06/81
21:10:19
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V/DK = .25

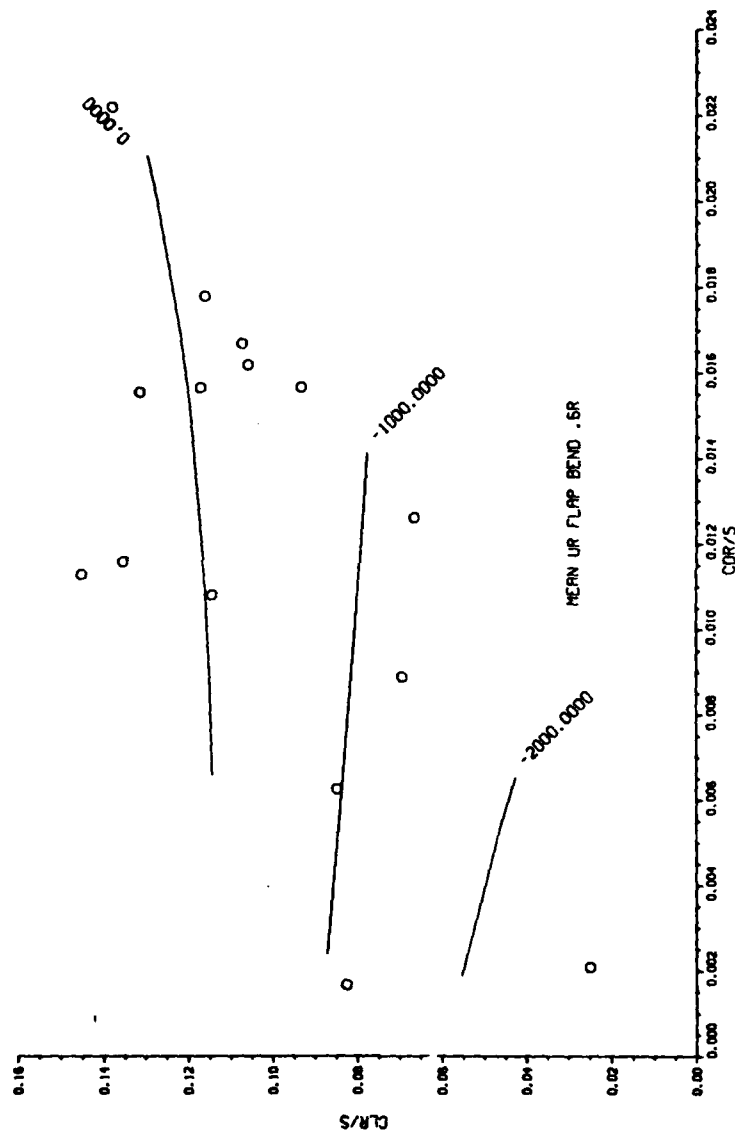
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08/06/81
21:06:22
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V/OR = .30

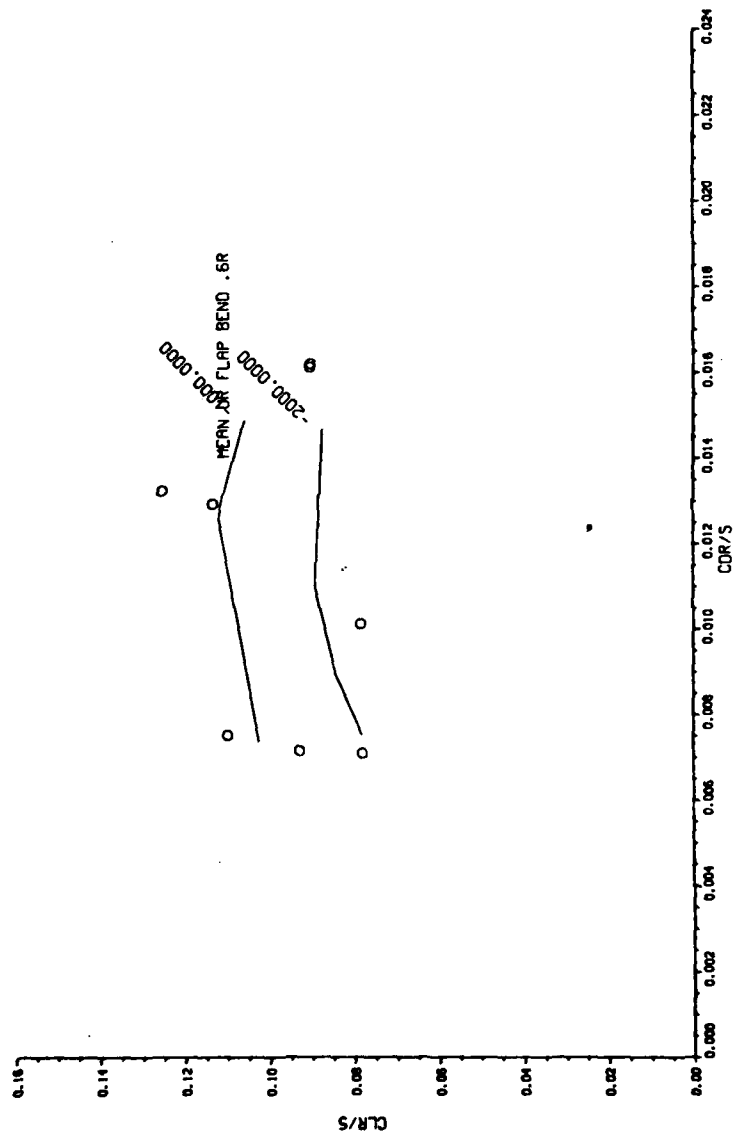
EV = -1.488E+02

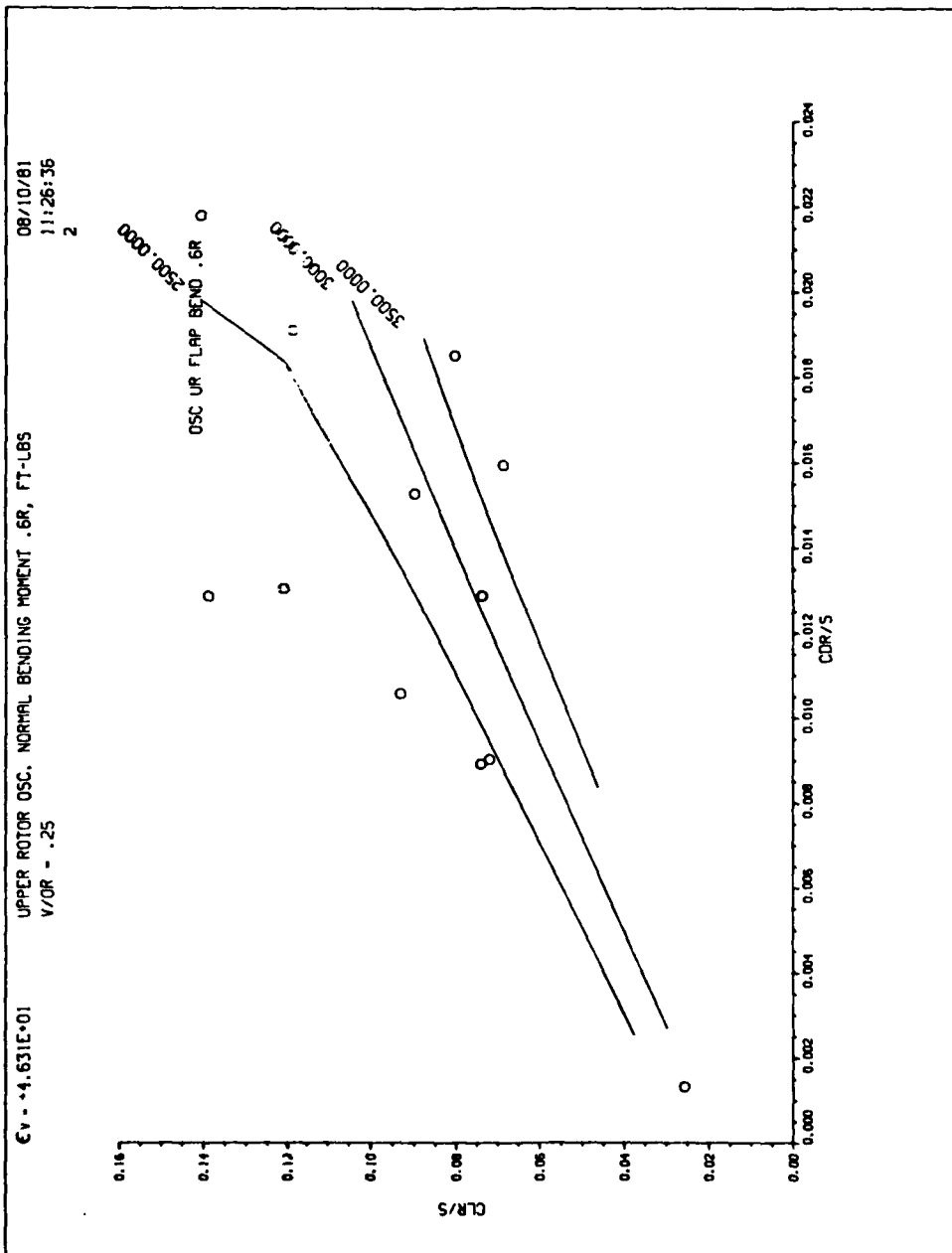


08/06/81
21:02:24
2

UPPER ROTOR MEAN NORMAL BENDING MOMENT .6R, FT-LBS
V/DR = .40

$\epsilon_V = +1.001E-01$

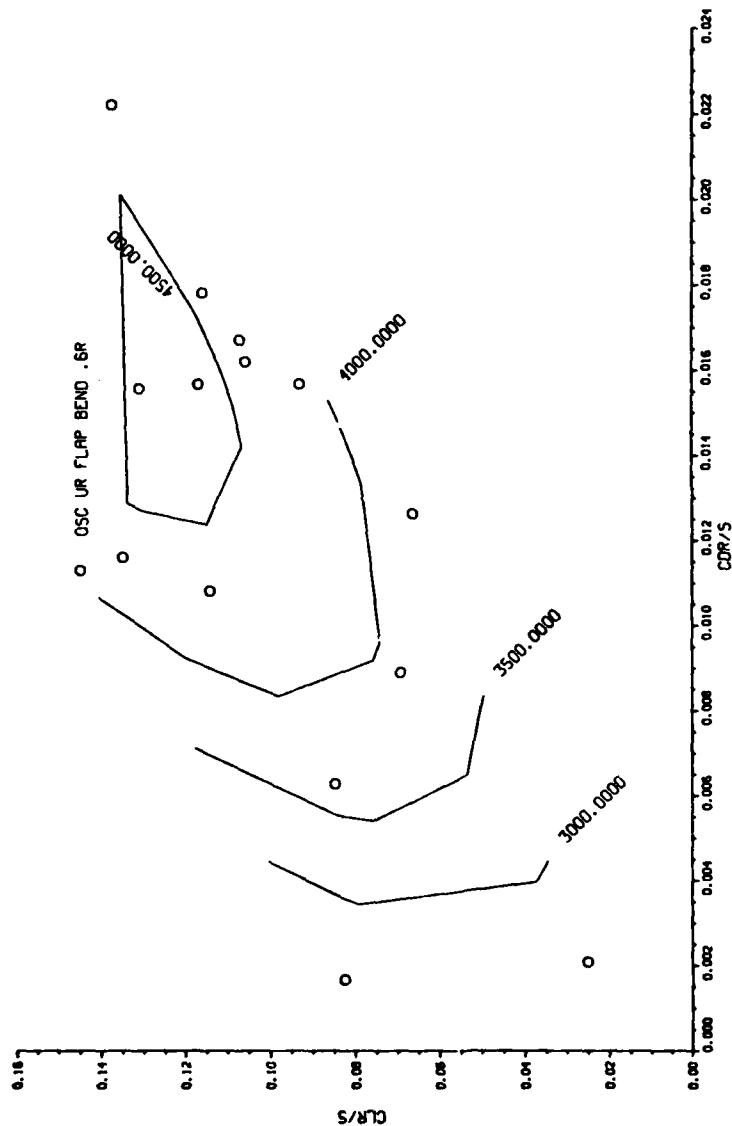




09/10/81
11:33:52
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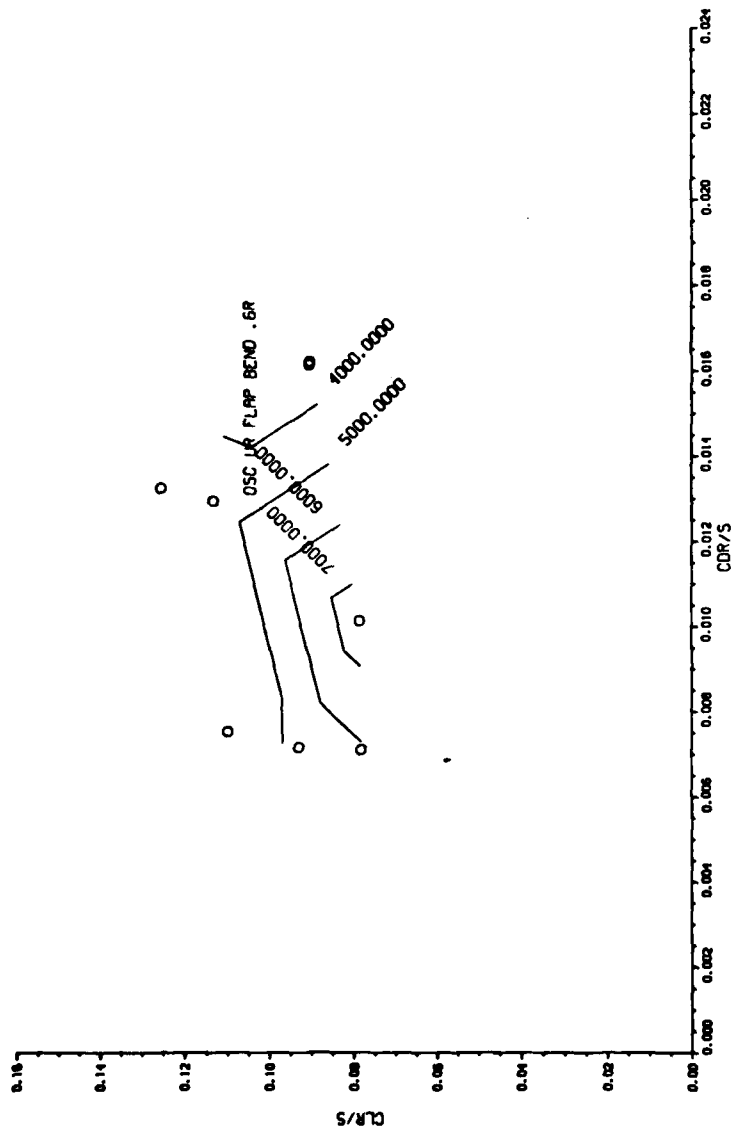
UPPER ROTOR OSC. NORMAL BENDING MOMENT .6R, FT-LBS
V/DK ~ .30

EV ~ +1.831E+02



08/06/81
20:58:06
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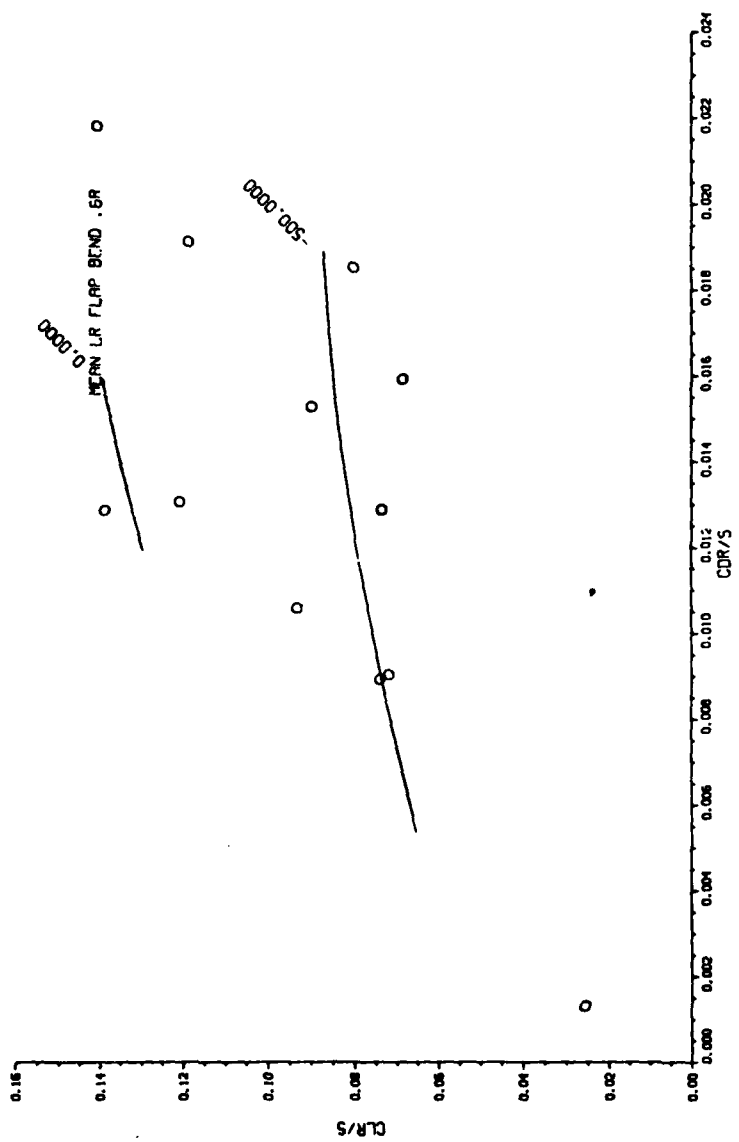
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V/OR = .40

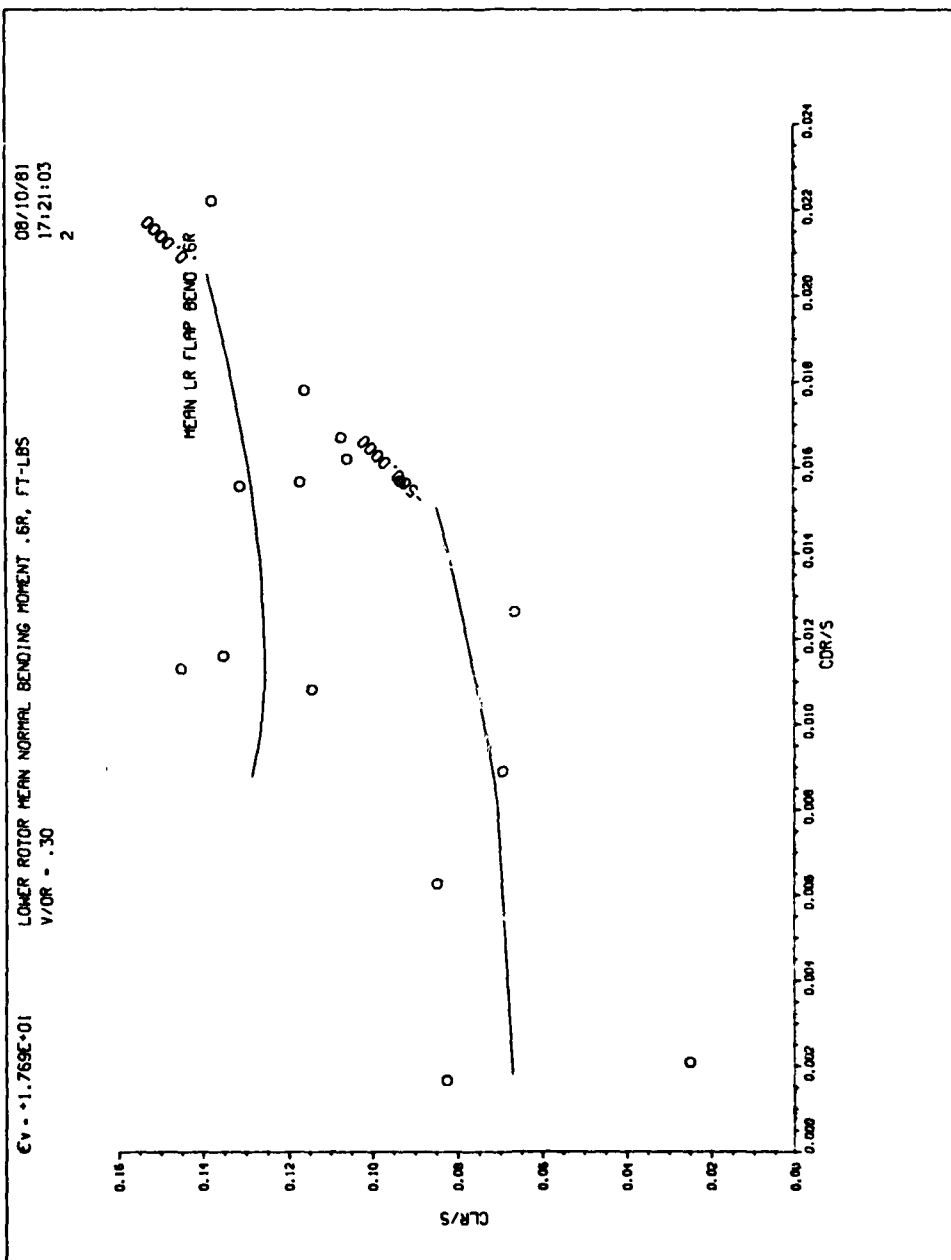


08/10/81
17:16:18
2

LOWER ROTOR MEAN NORMAL BENDING MOMENT .6R, FT-LBS
V/OR - .25

EV - +9.471E+00

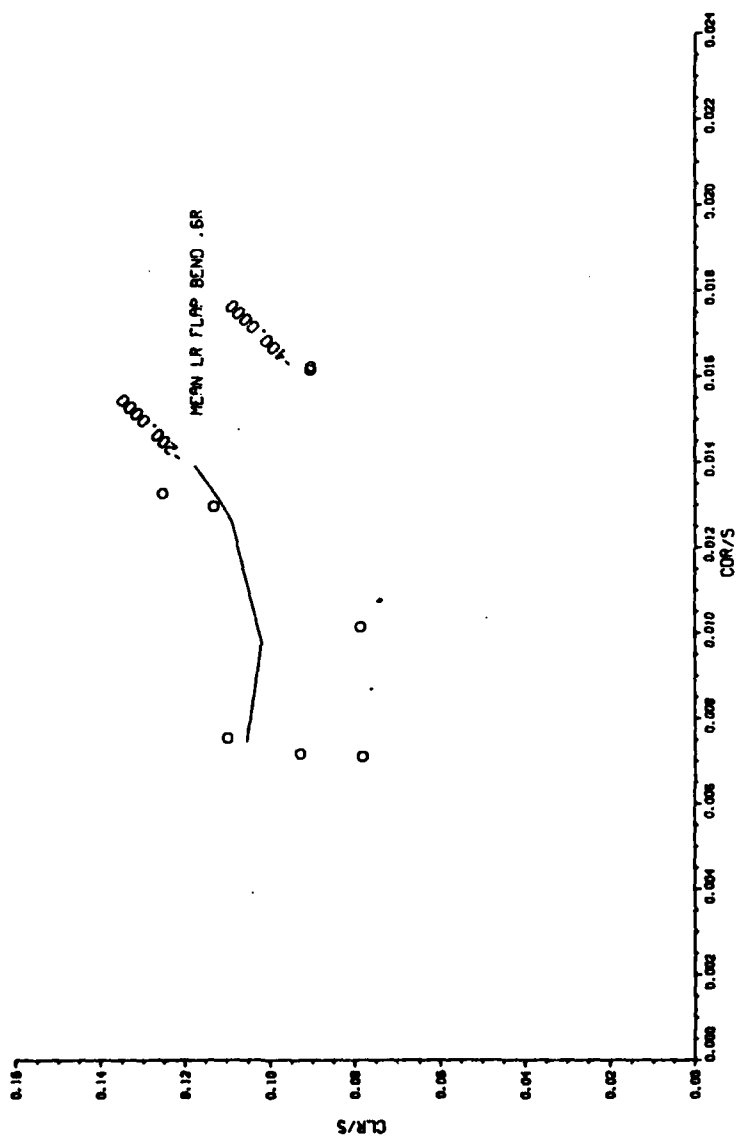


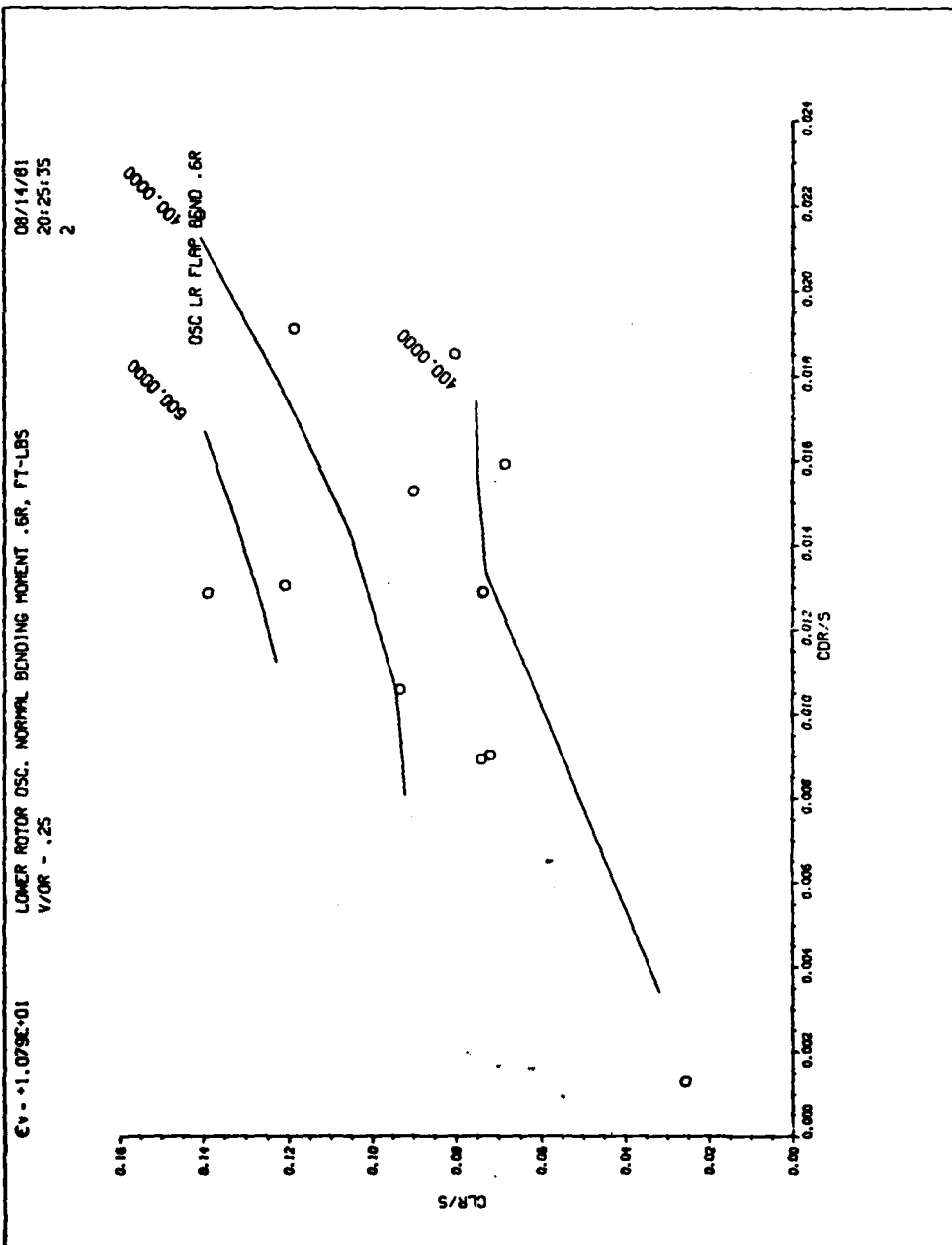


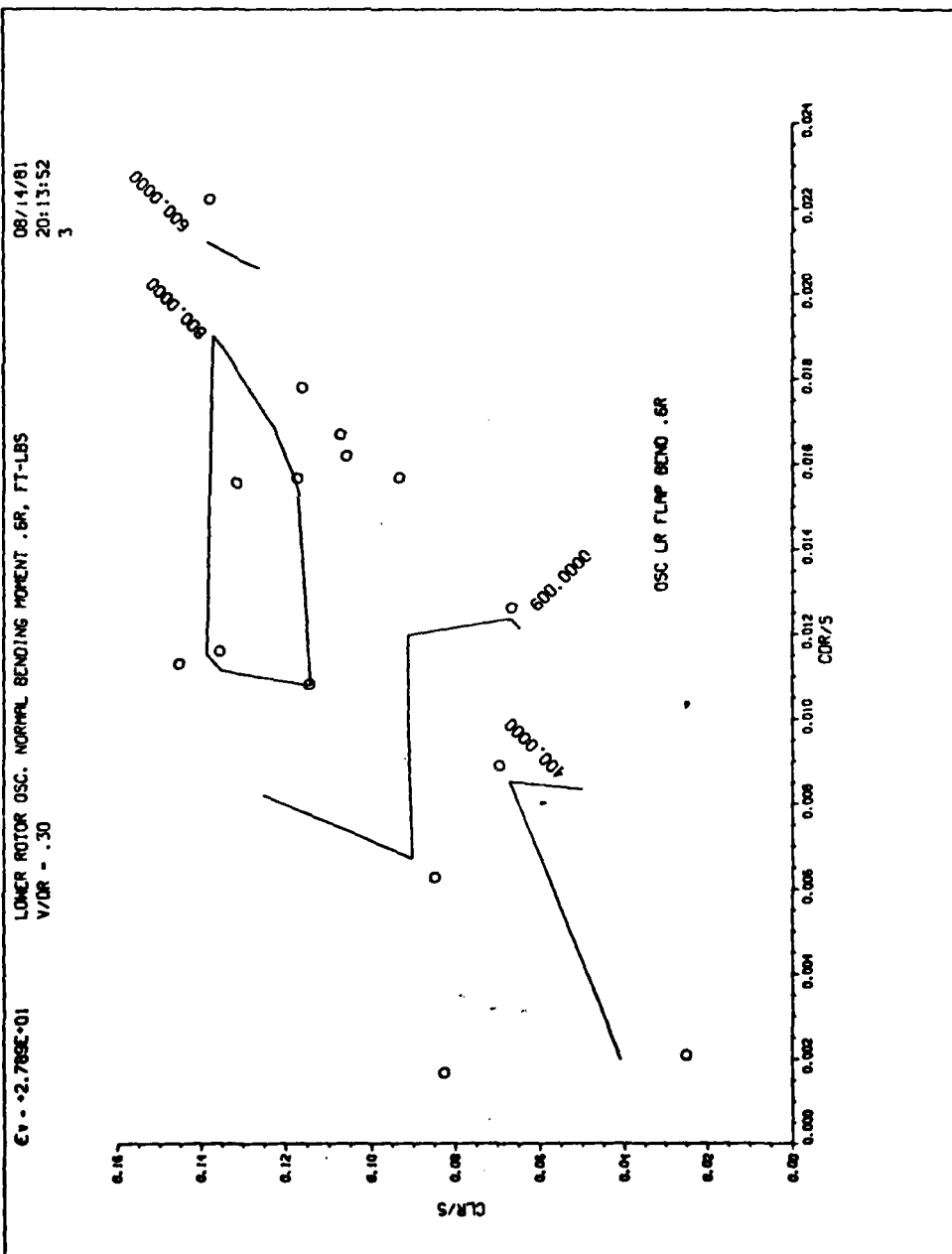
08/14/81
20:33:03
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V/VR = .40

Cv = -1.081E+00

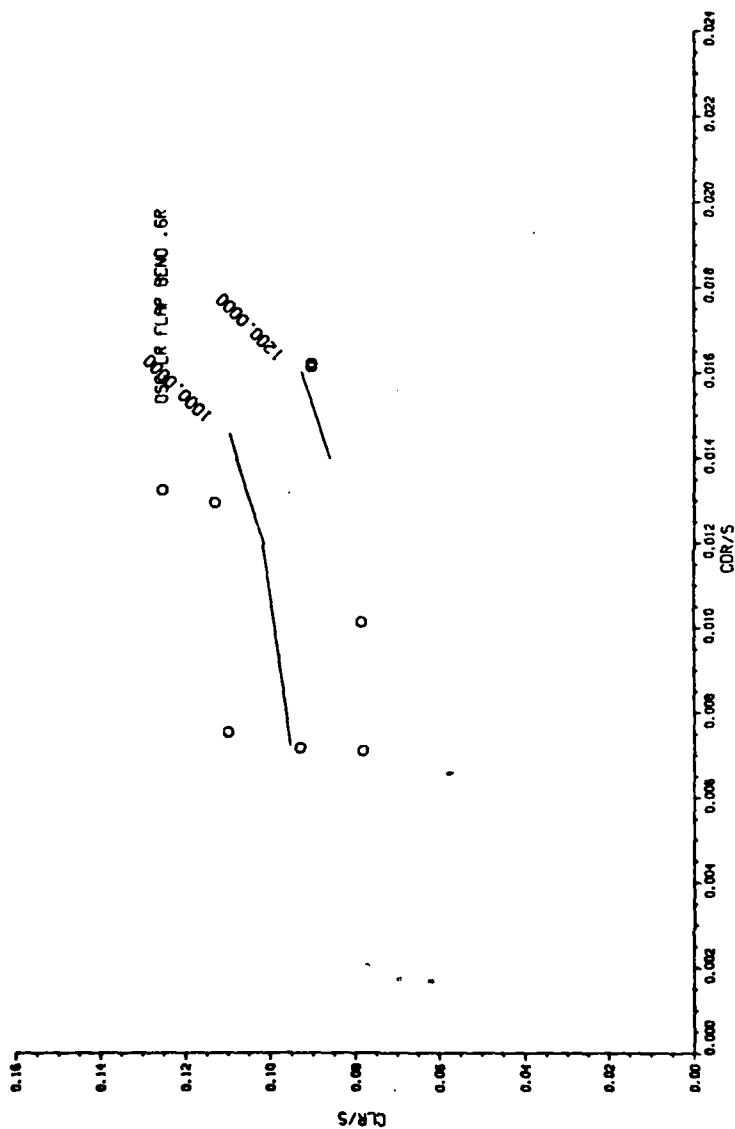


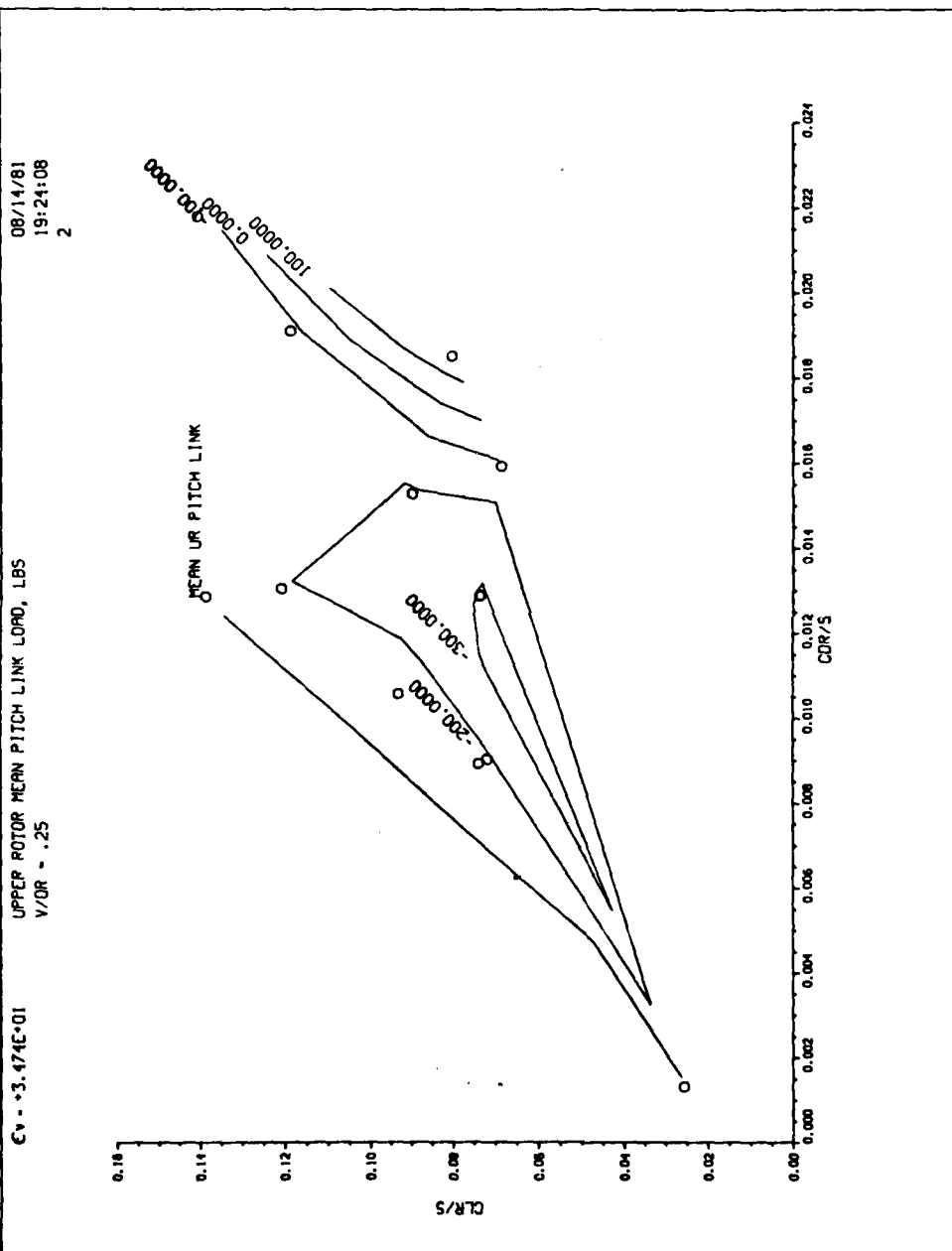


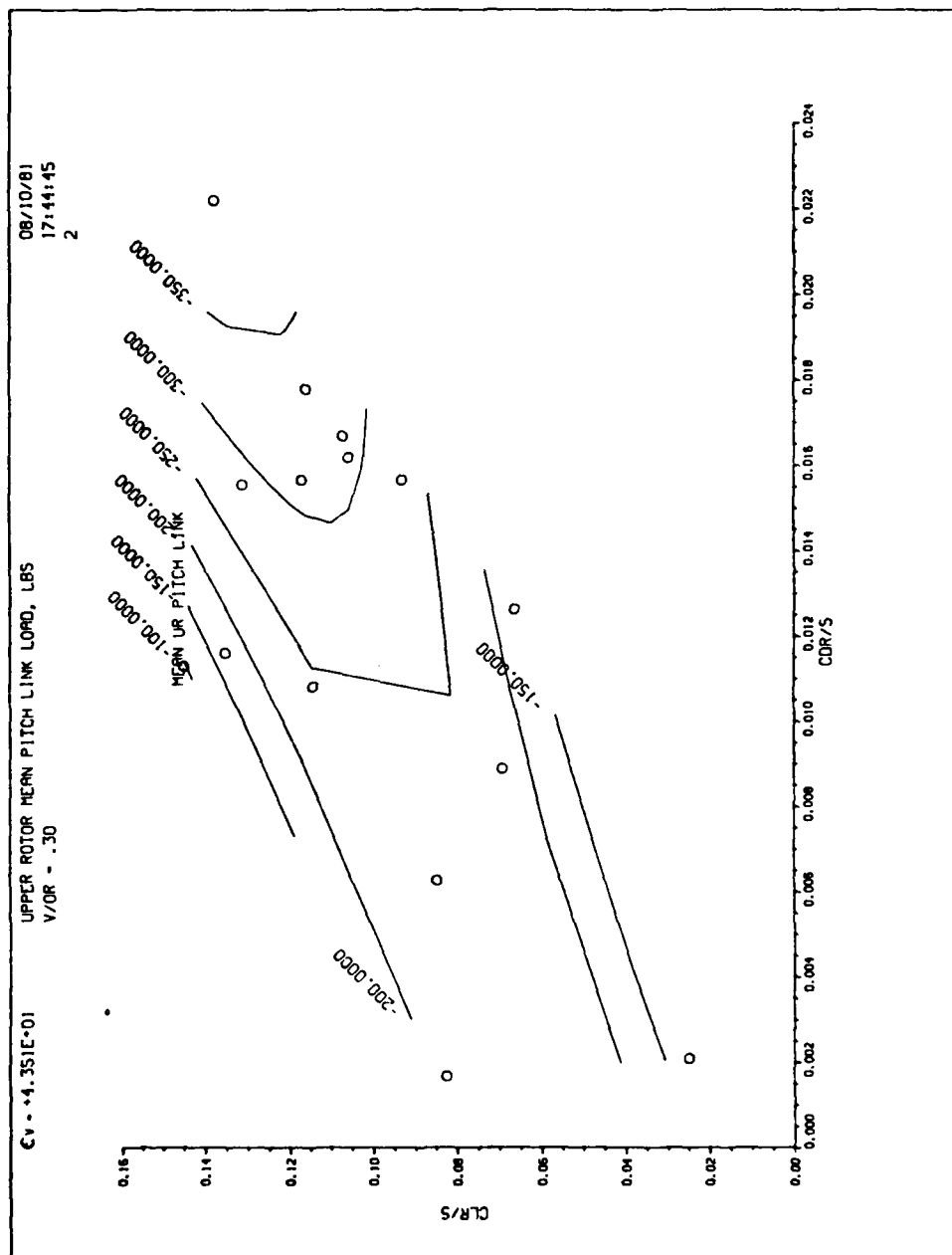


08/14/81
 19:55:26
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LOWER ROTOR OSC. NORMAL BENDING MOMENT .6R, FT-LBS
 V/OR = .40

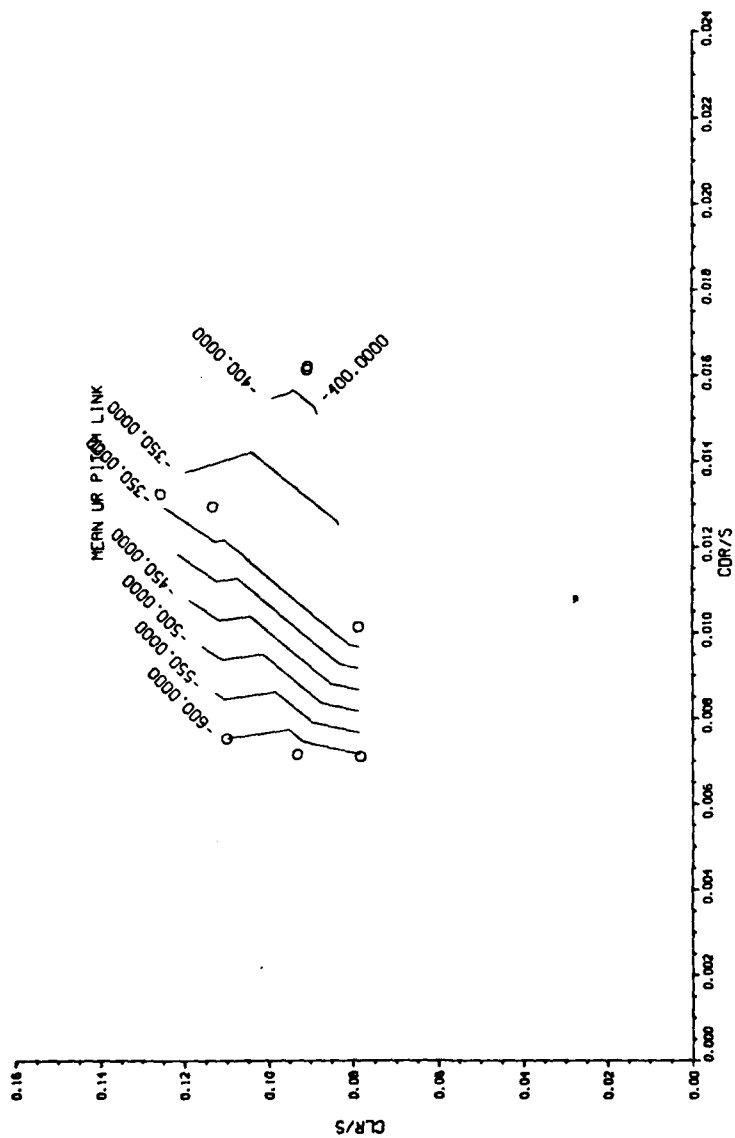


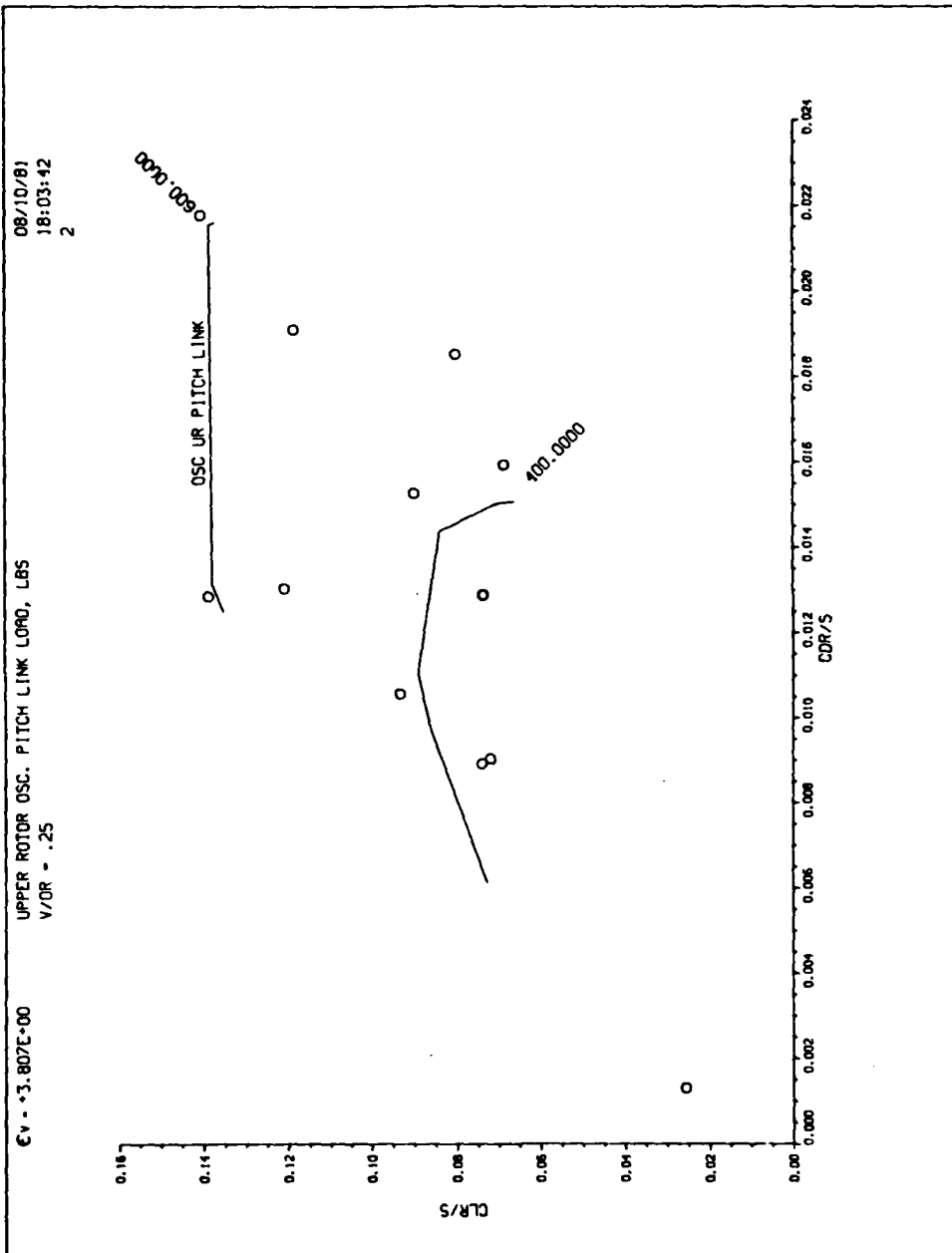


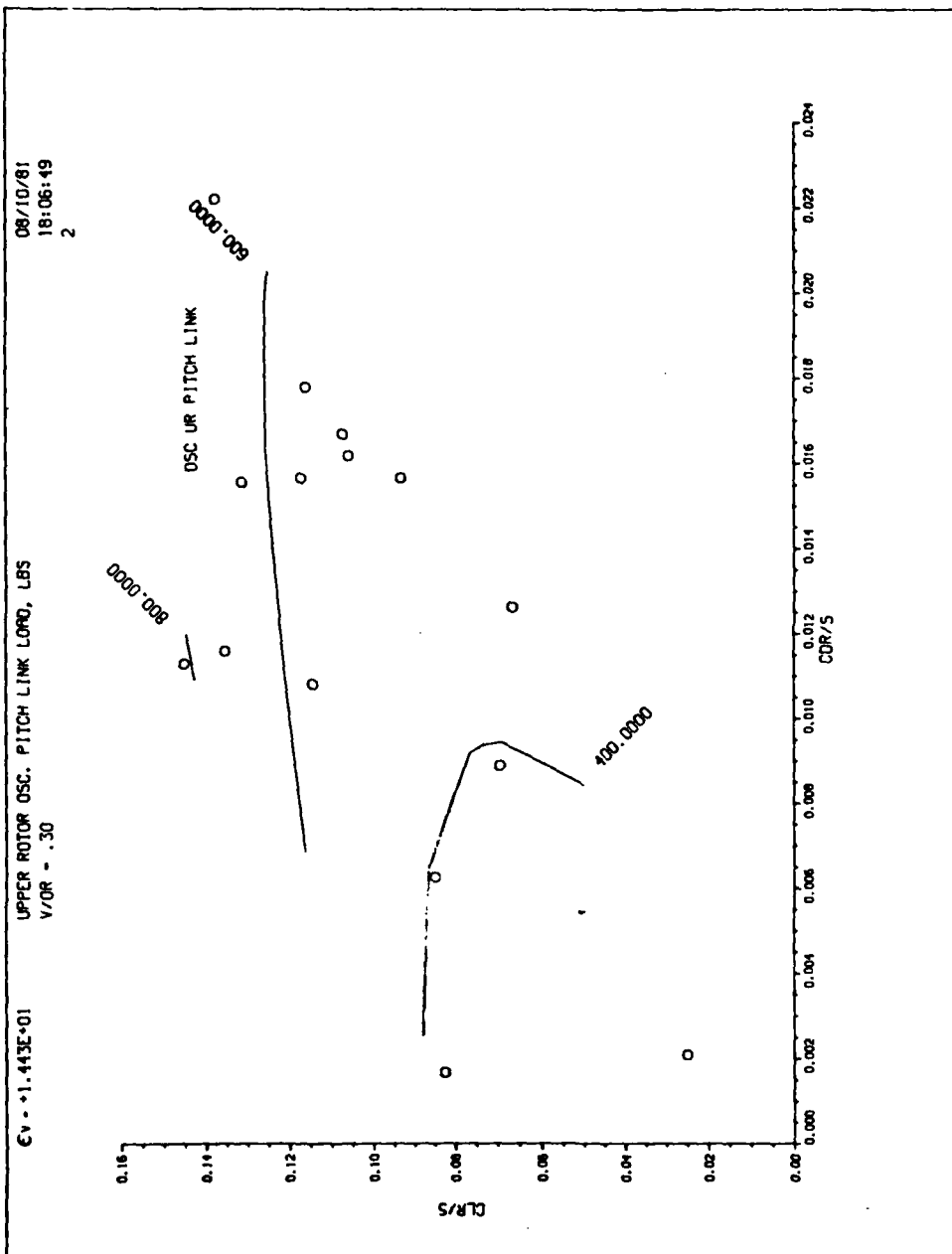


08/10/81
17:48:19

UPPER ROTOR MEAN PITCH LINK LOAD, LBS
V/OR = .40

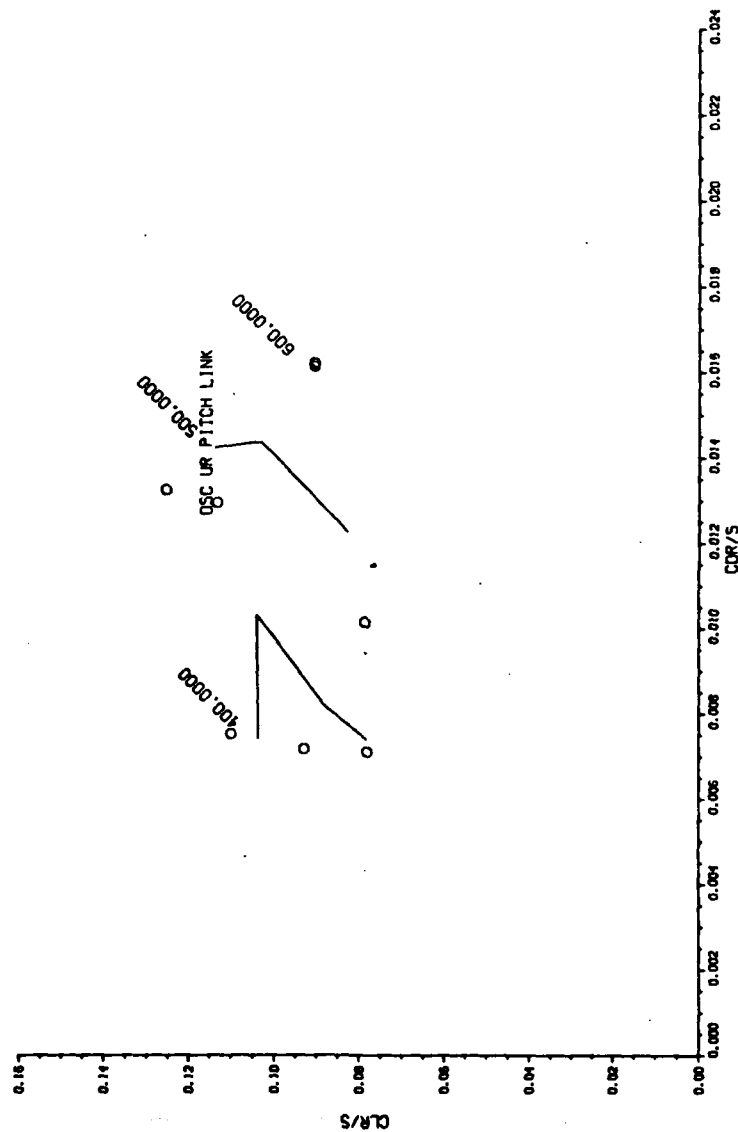


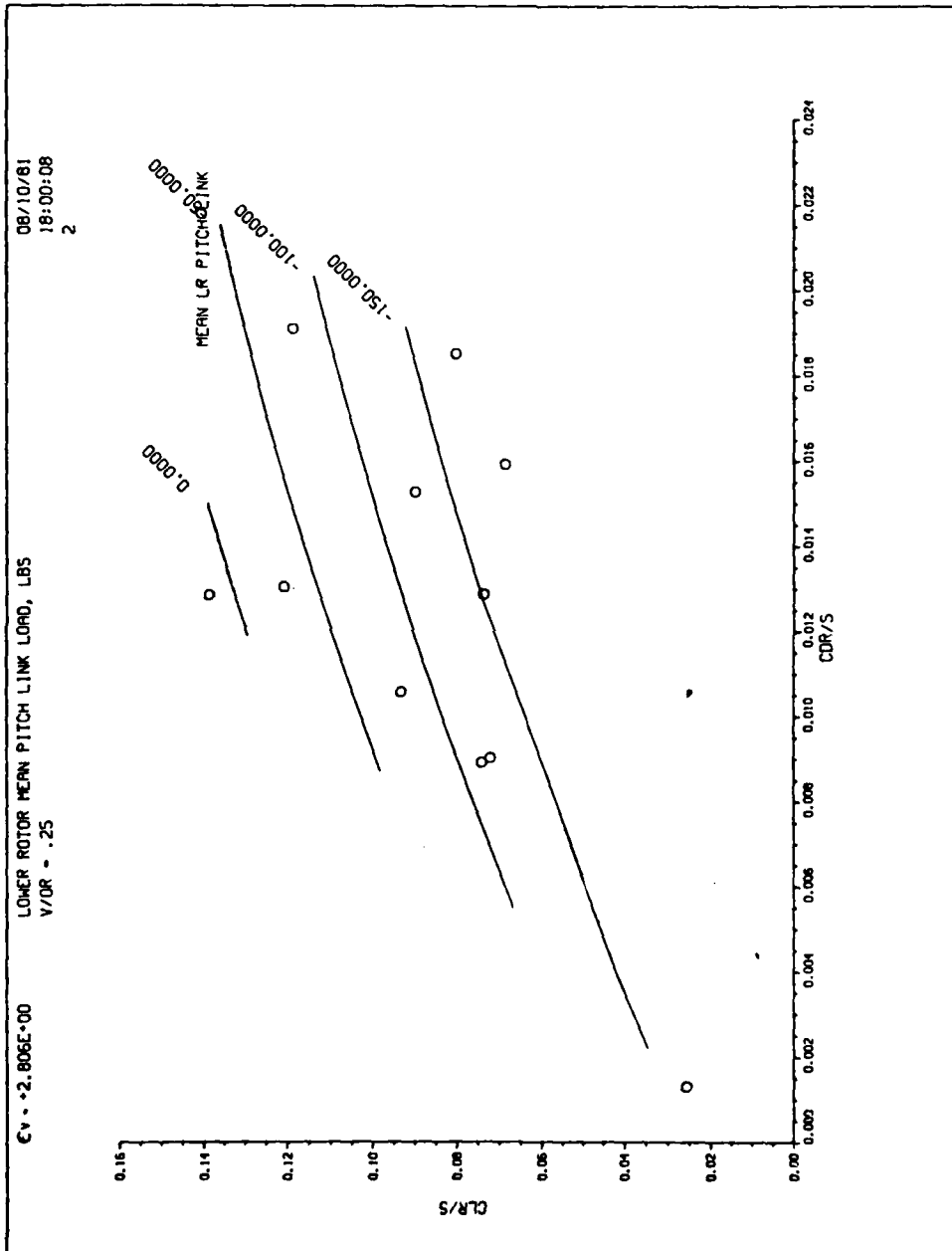


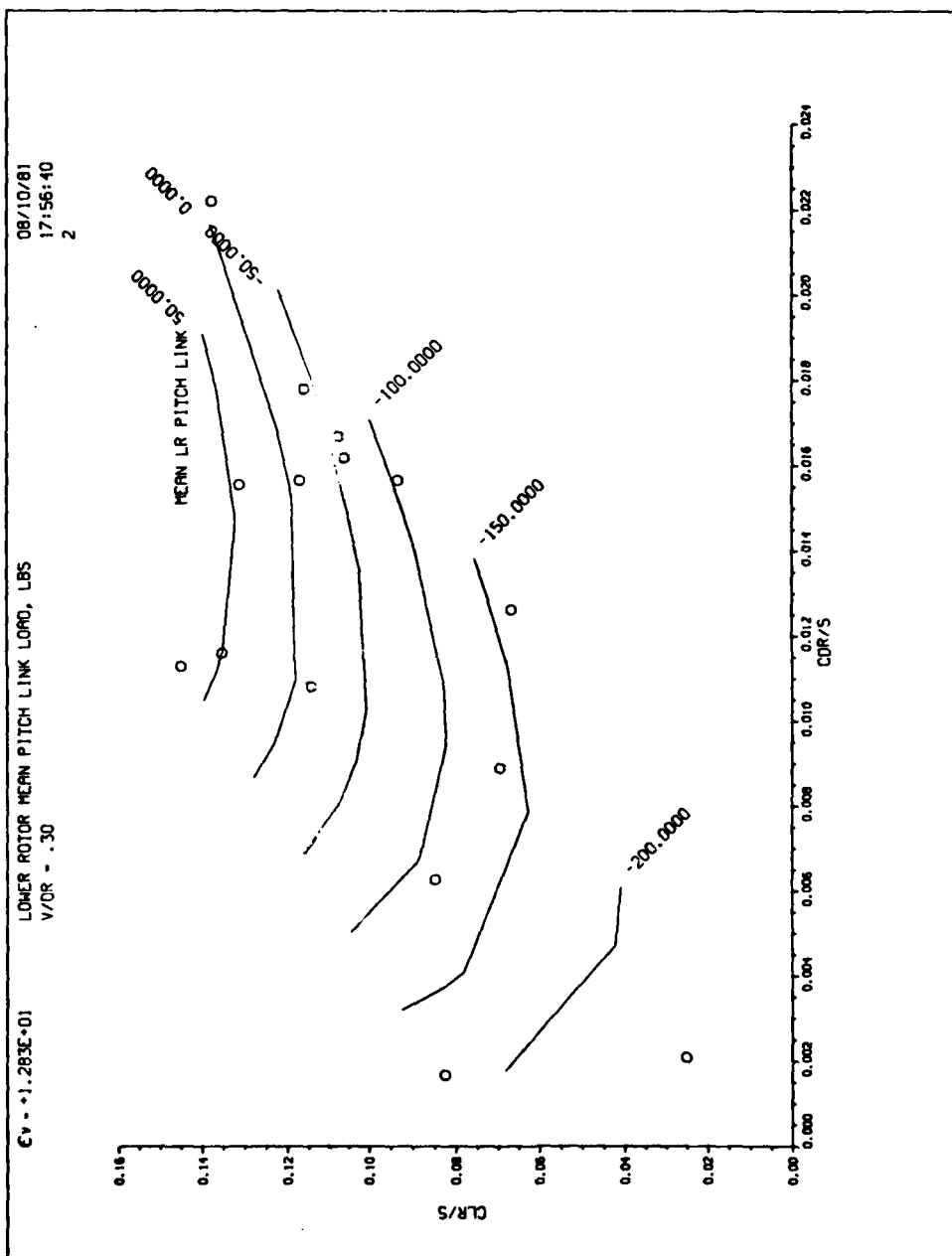


08/14/81
19:49:36
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UPPER ROTOR OSC. PITCH LINK LOAD, LBS
V/OR = .40



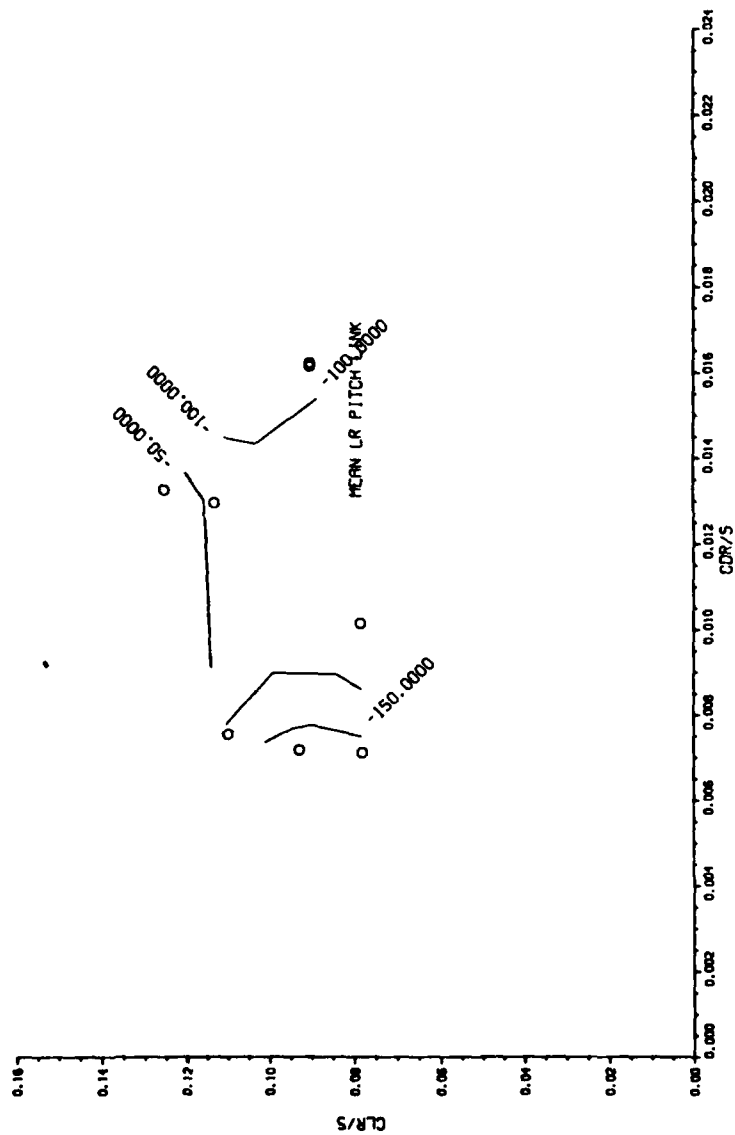


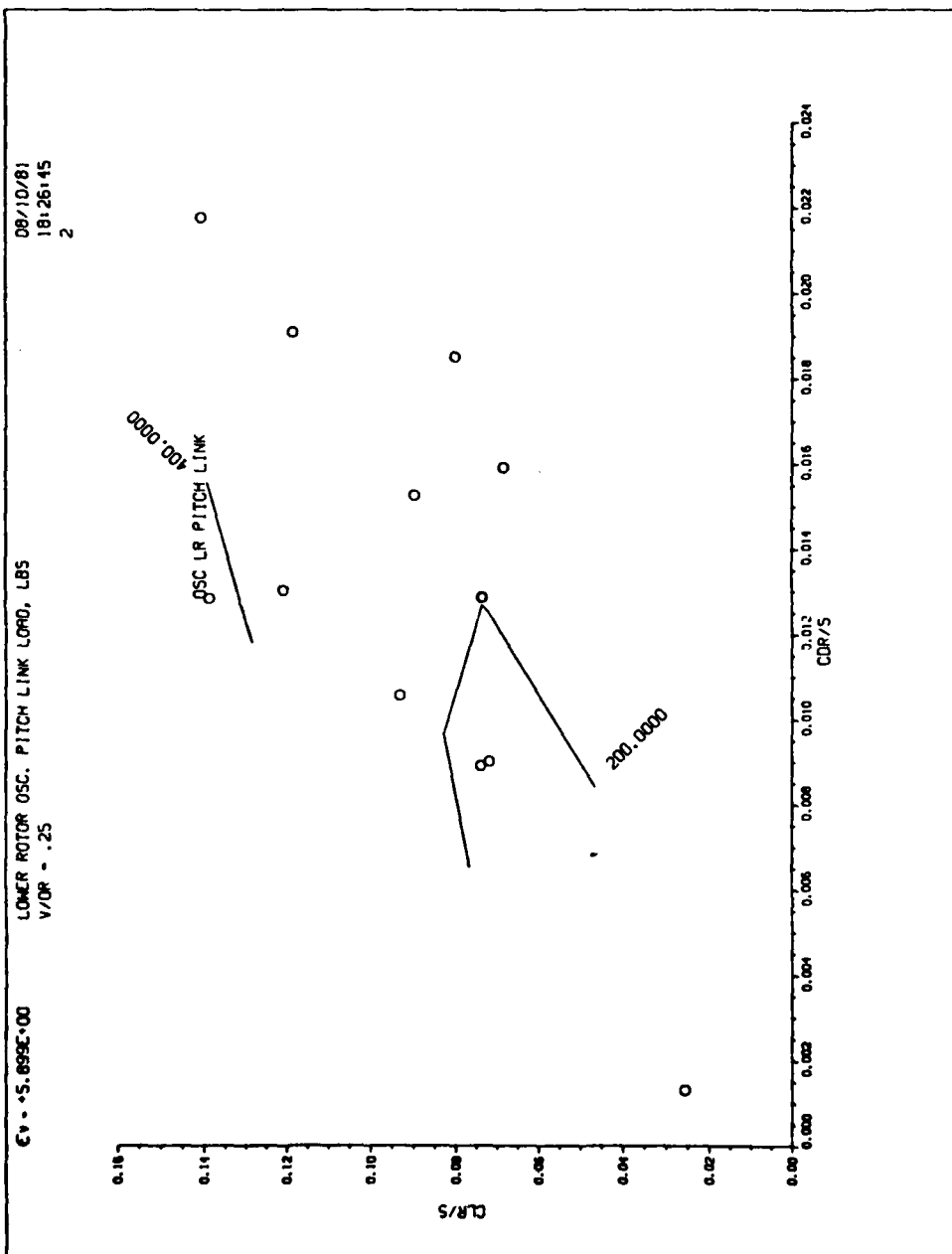


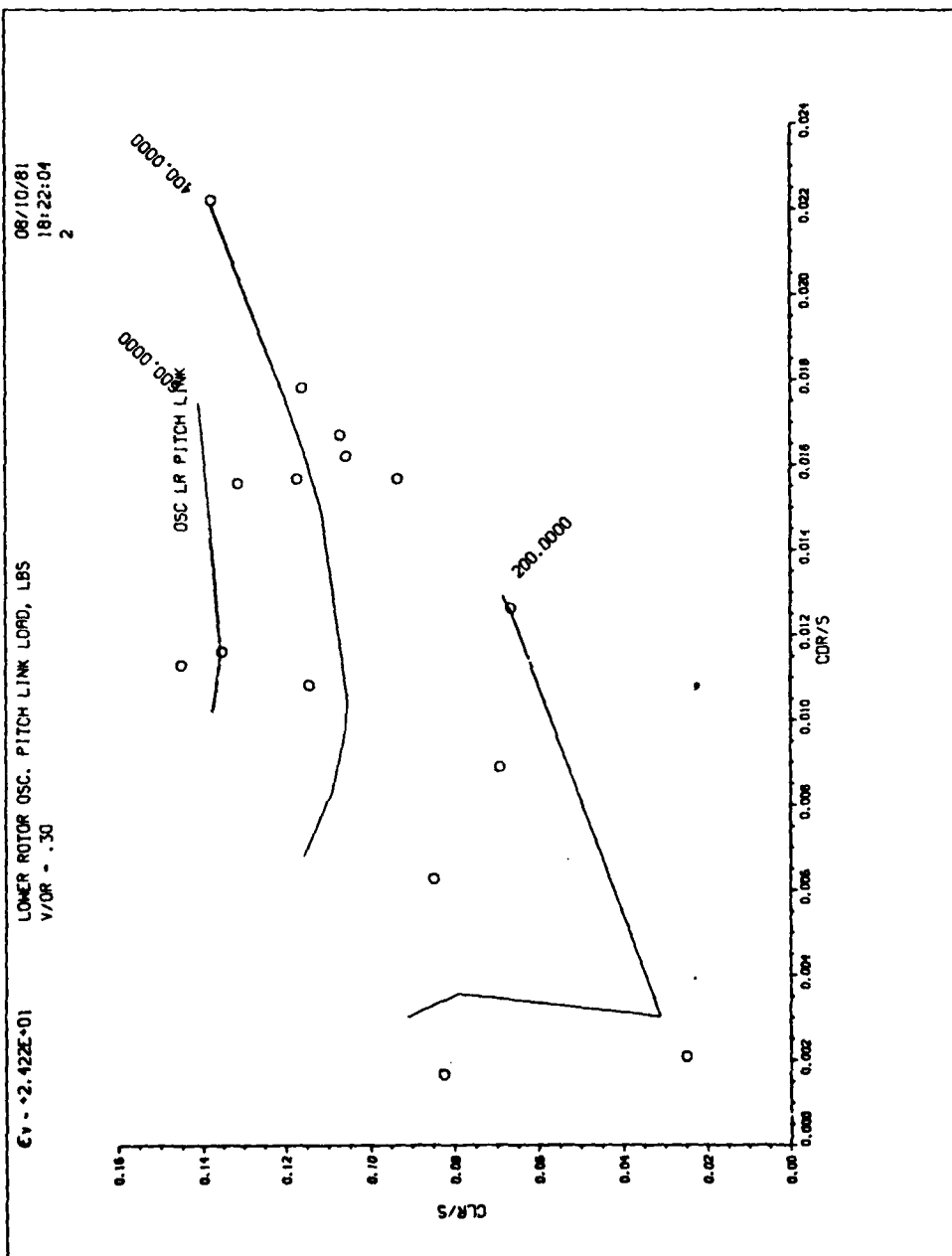
08/10/81
17:52:56
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LOWER ROTOR MEAN PITCH LINK LOAD, LBS
V/DR = .40

CV = 3.084E+00

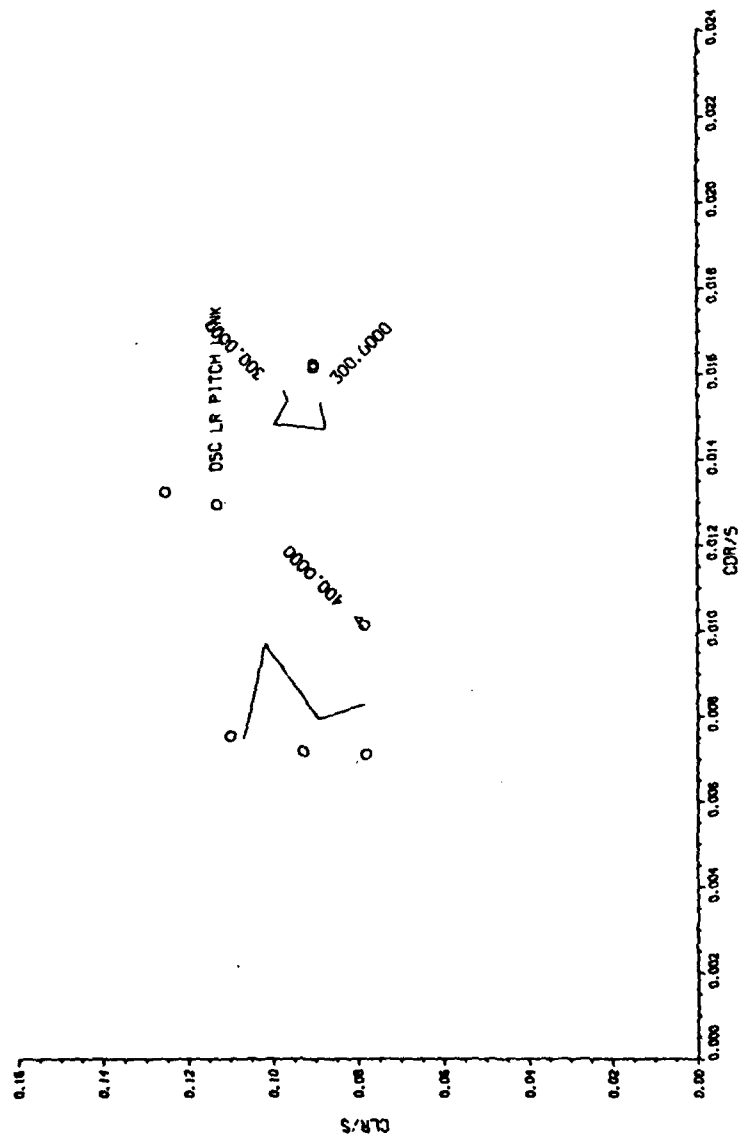


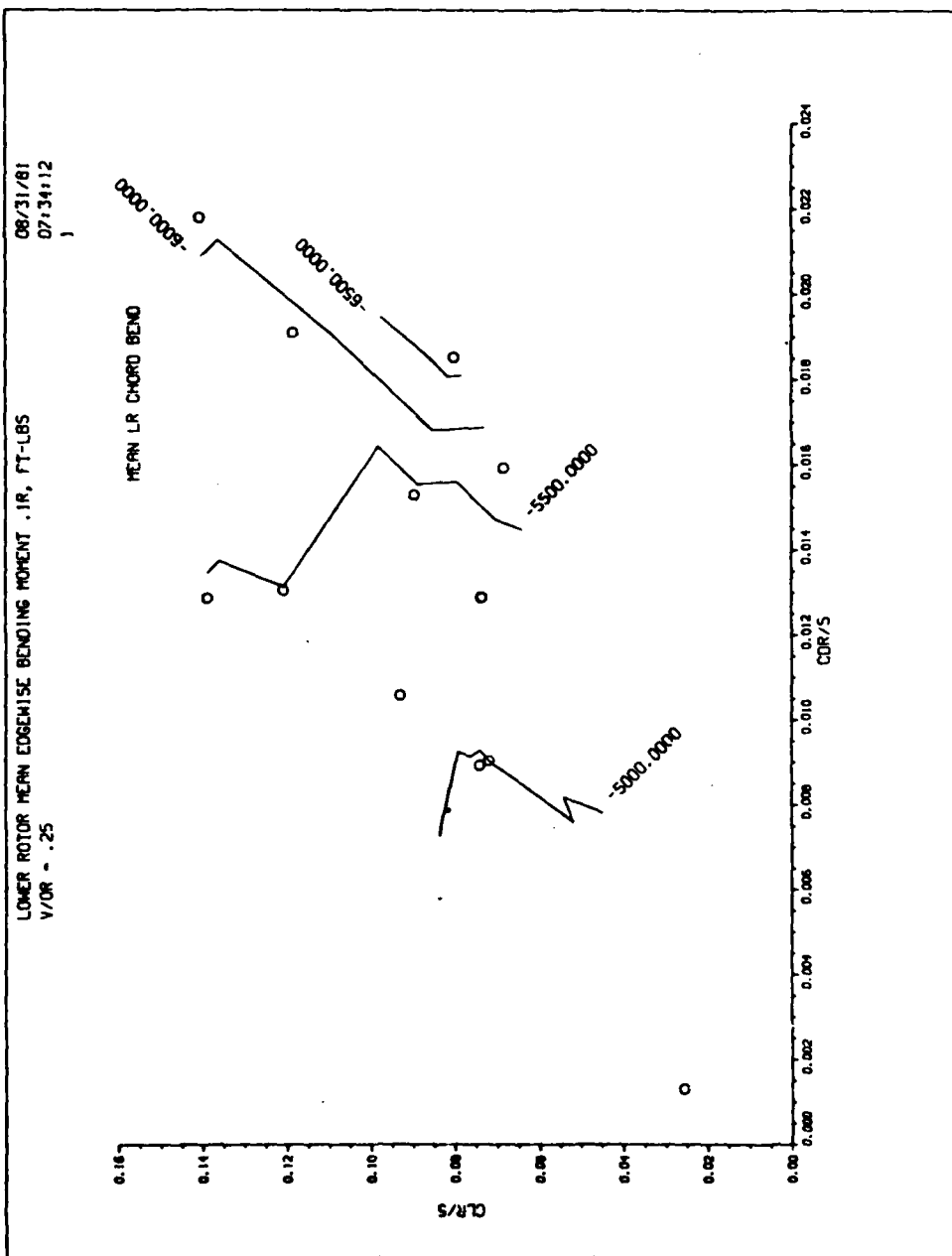


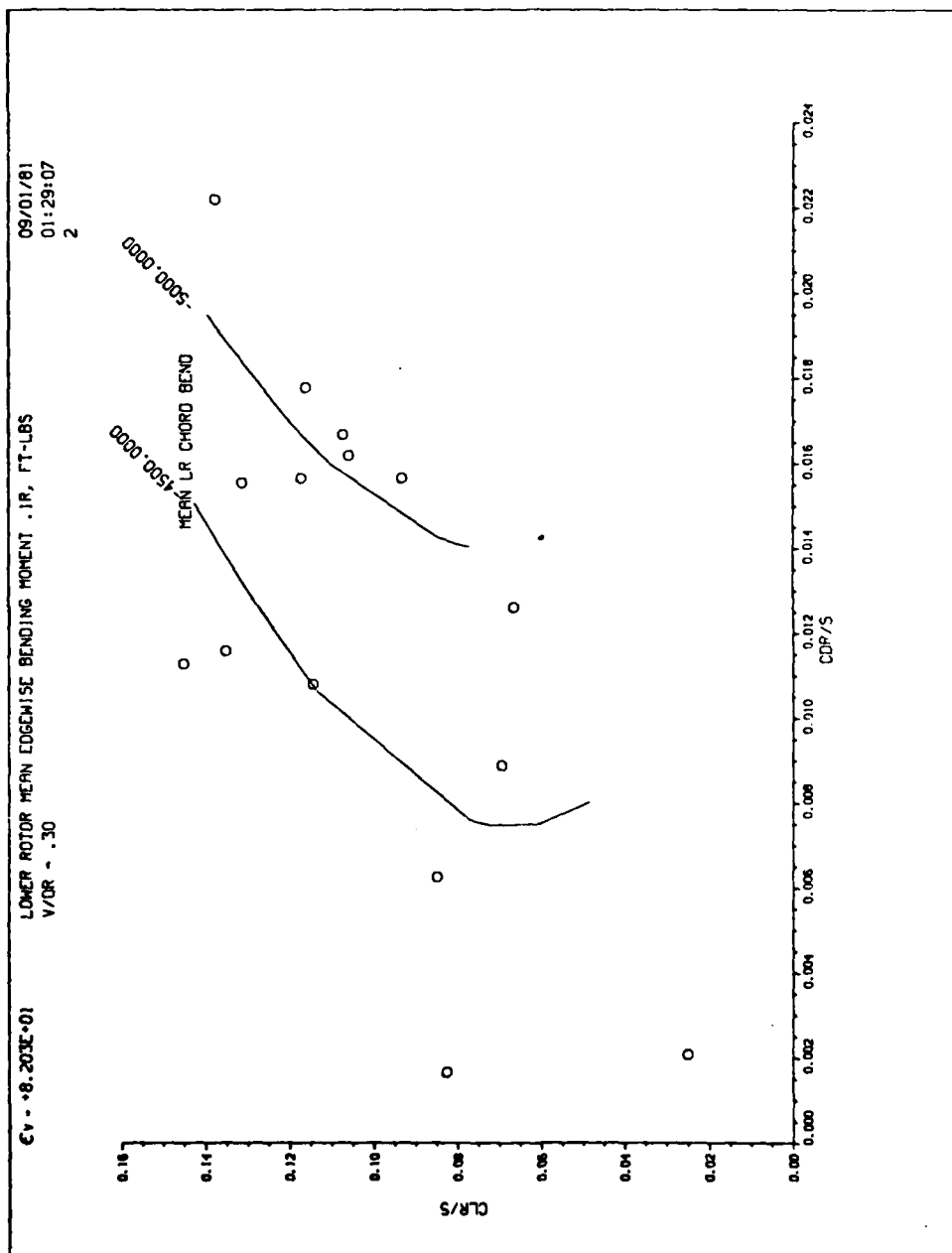


09/14/81
19:37:56
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LOWER ROTOR OSC. PITCH LINK LOAD, LBS
V/DK - .40



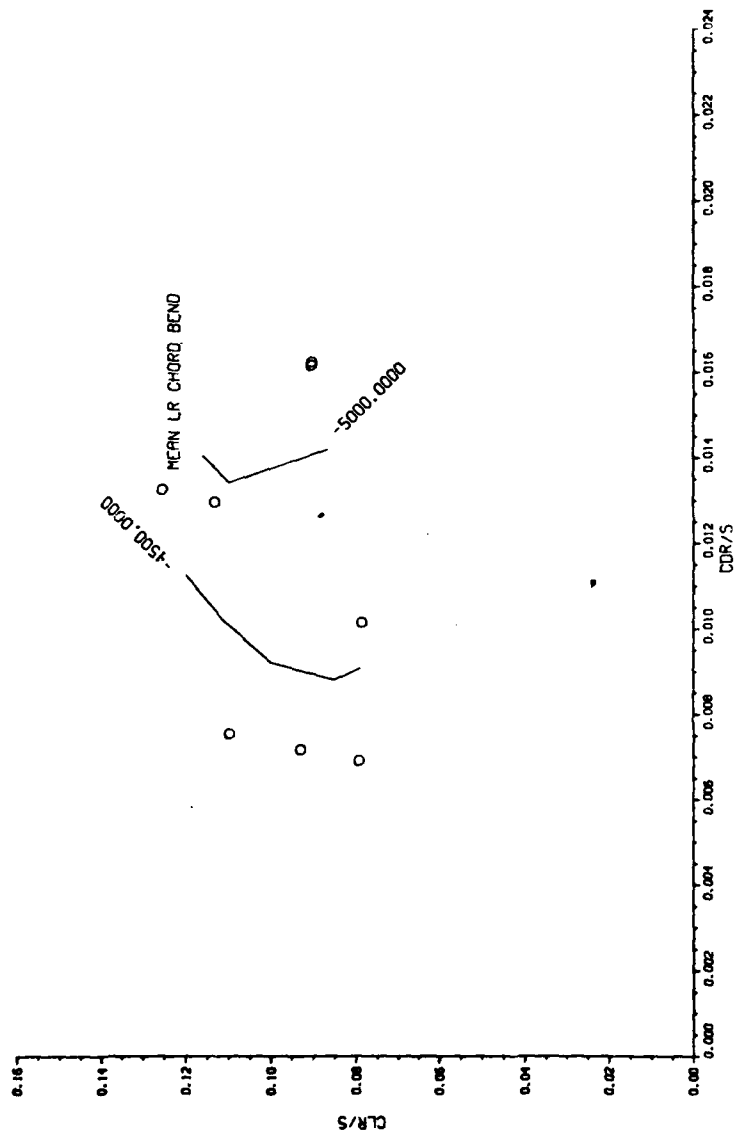


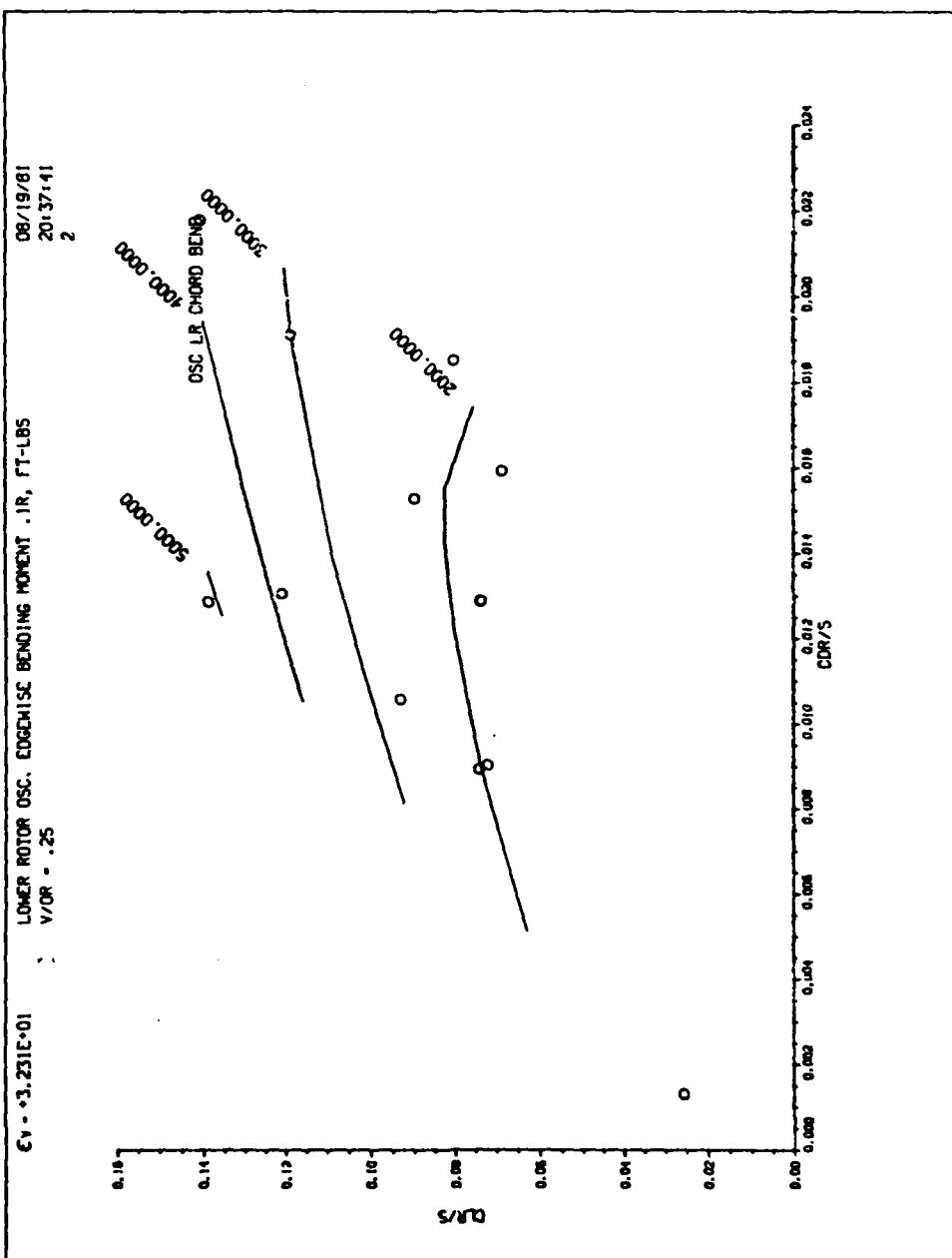


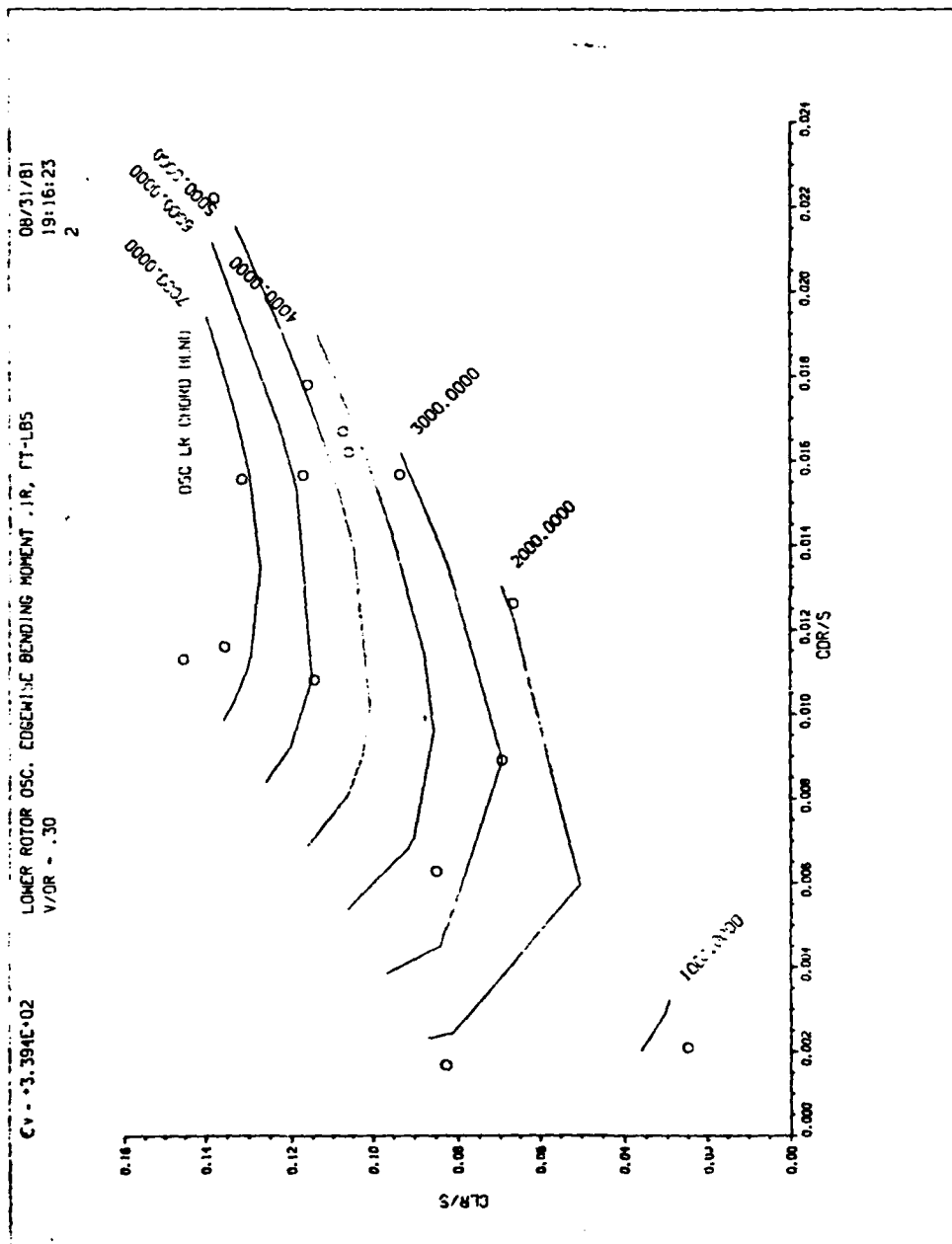
08/31/81
20:39:53
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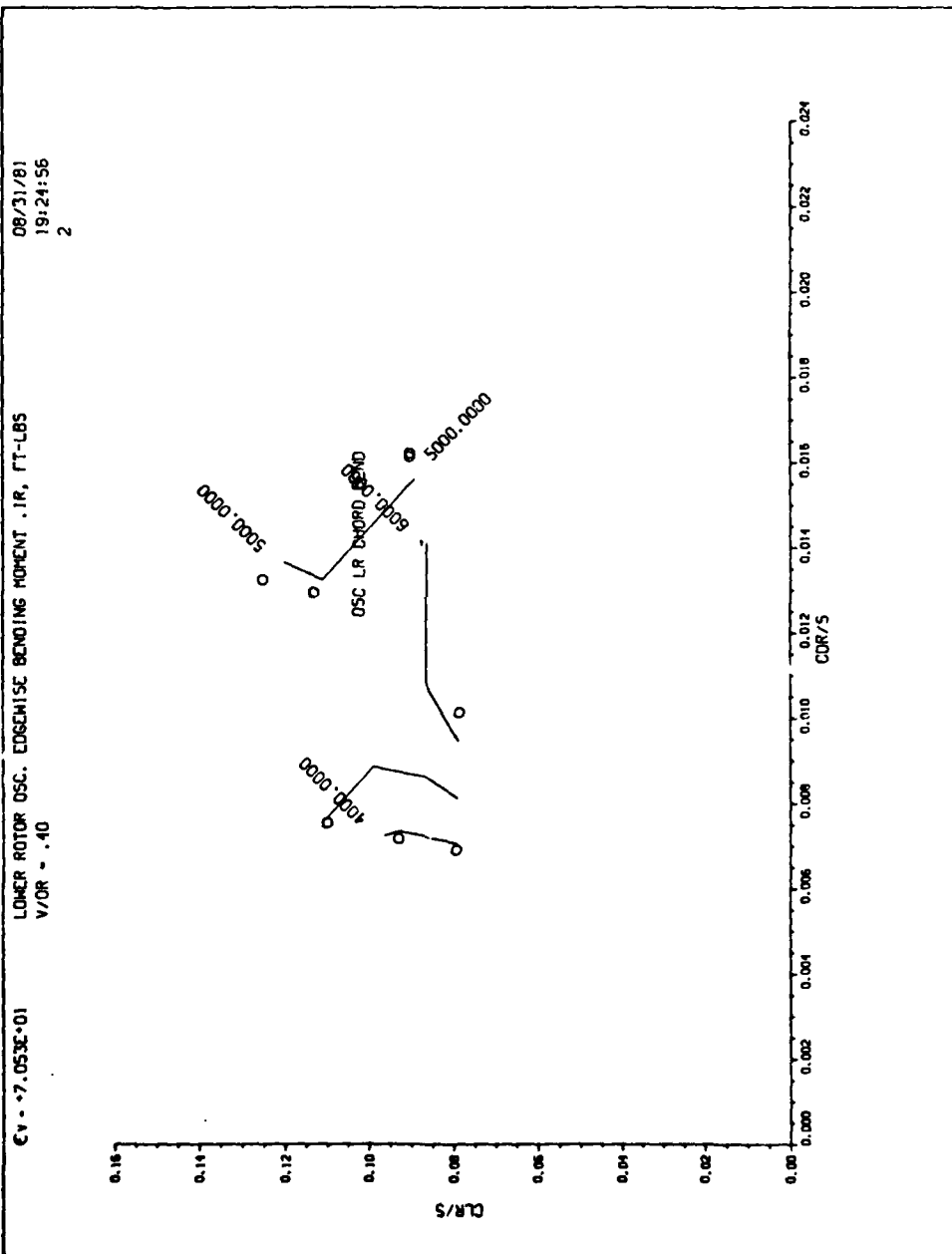
LOWER ROTOR MEAN EDGEWISE BENDING MOMENT .LR, FT-LBS
V/OR = .40

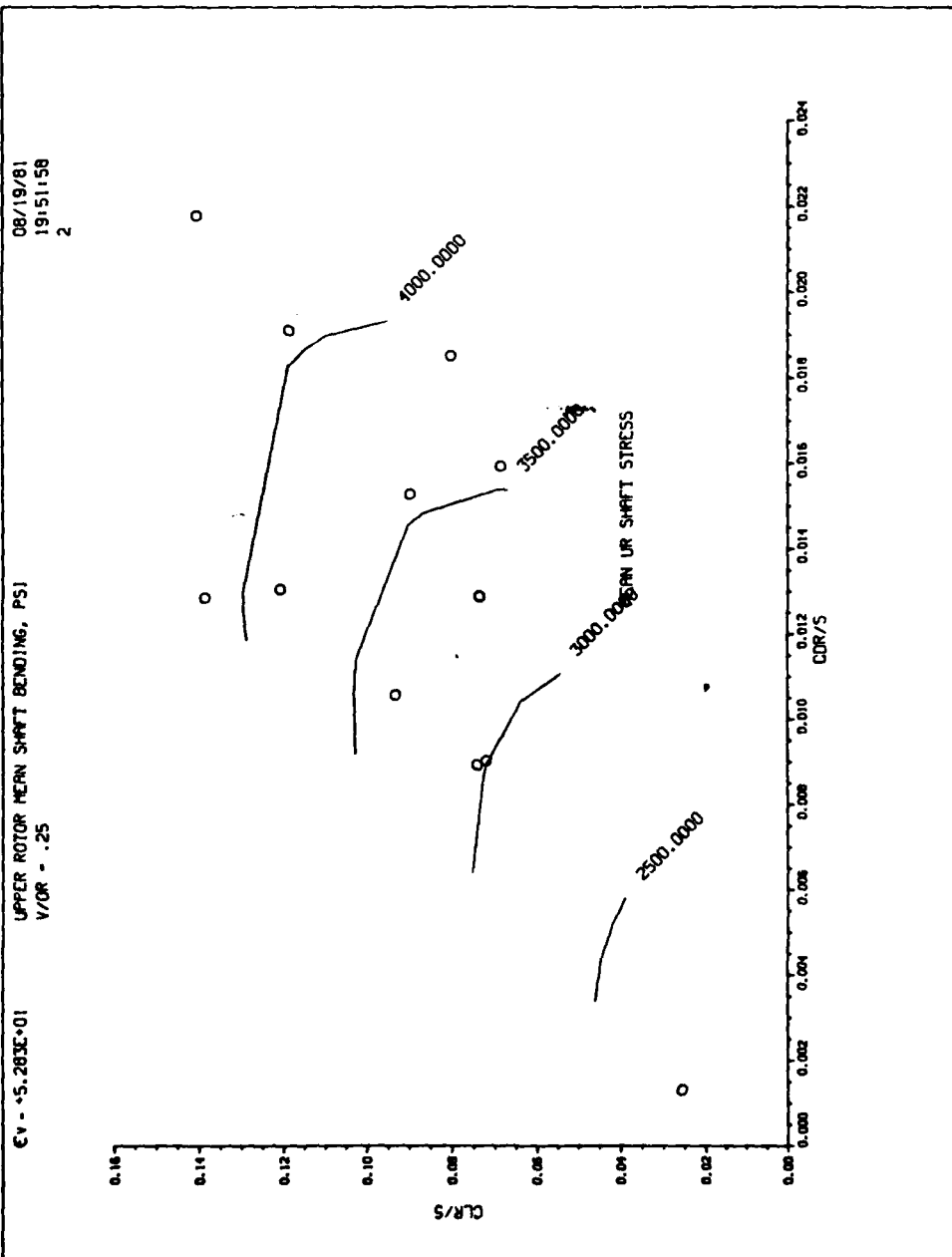
EV = +1.947E+01

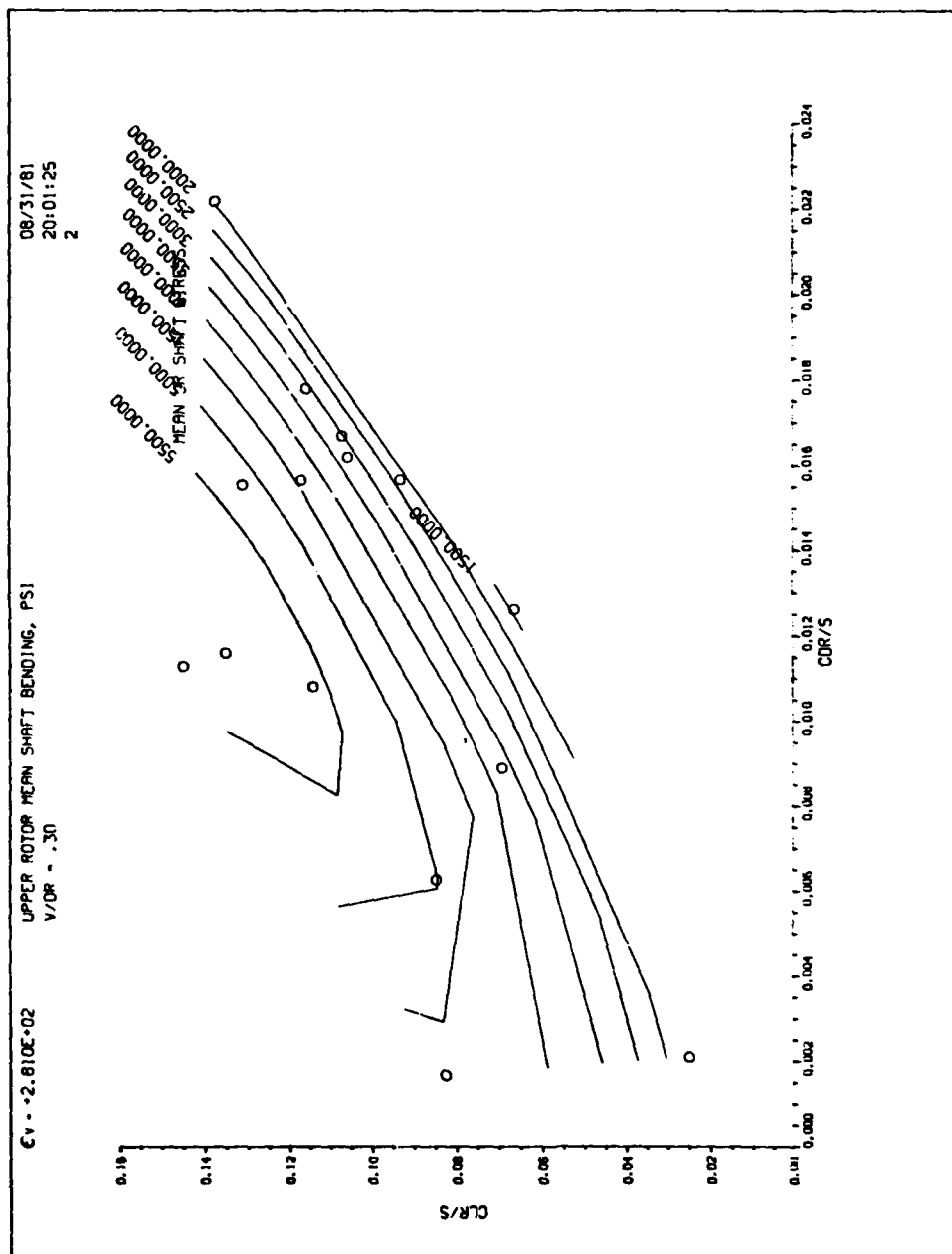






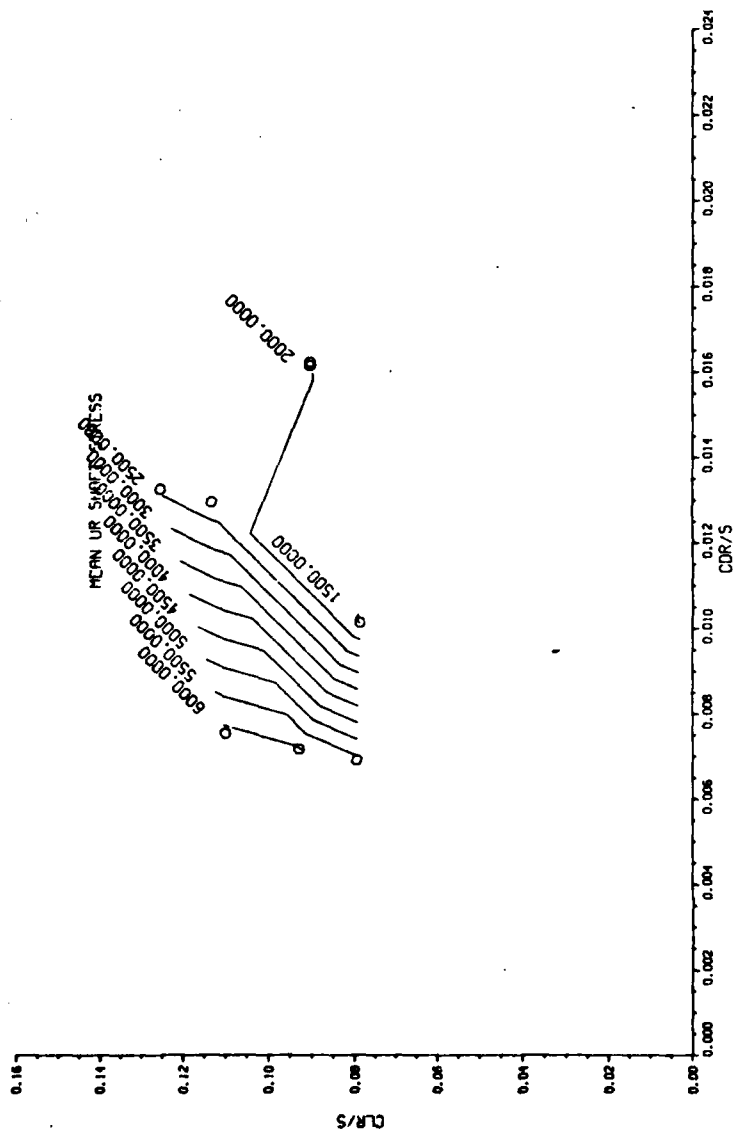


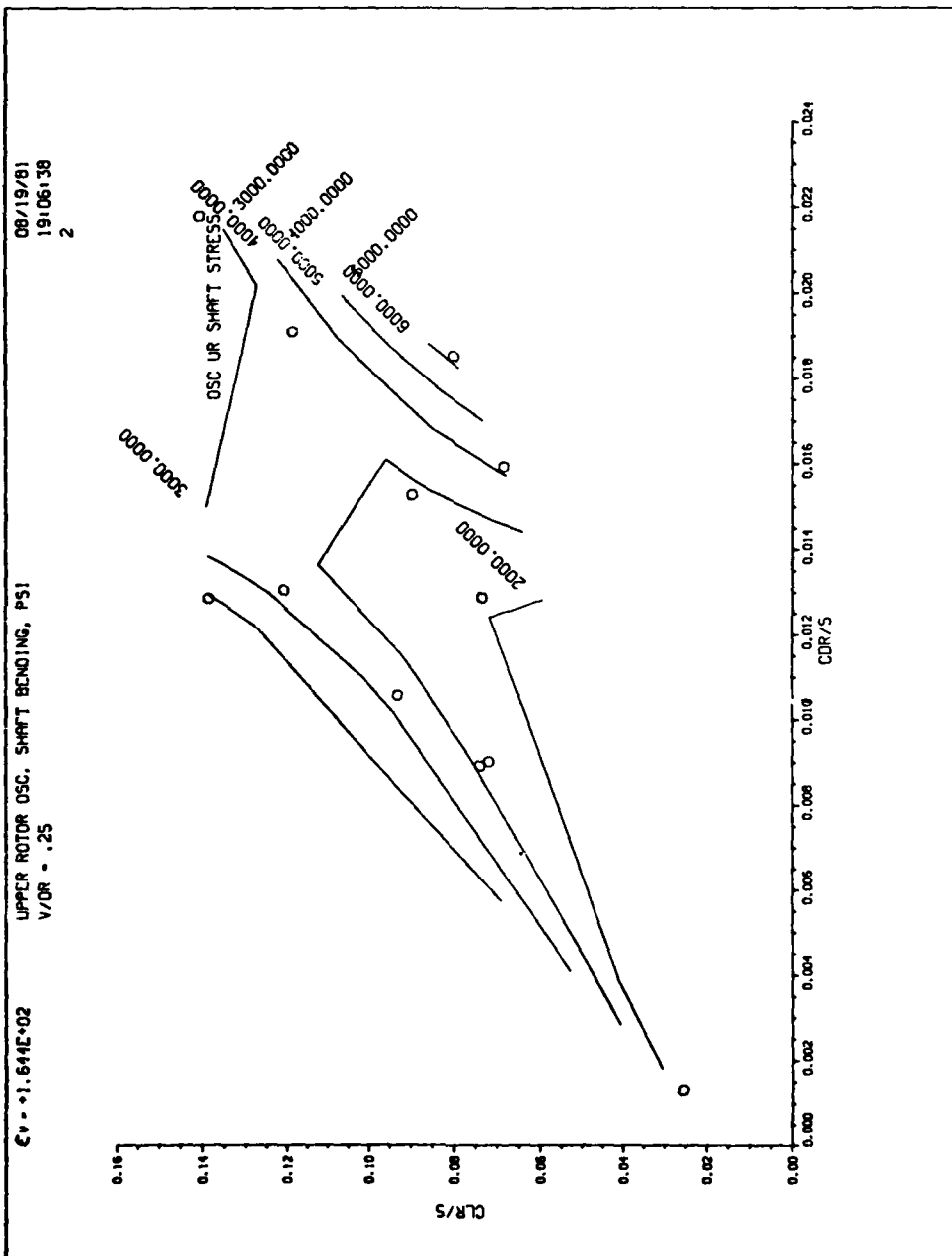


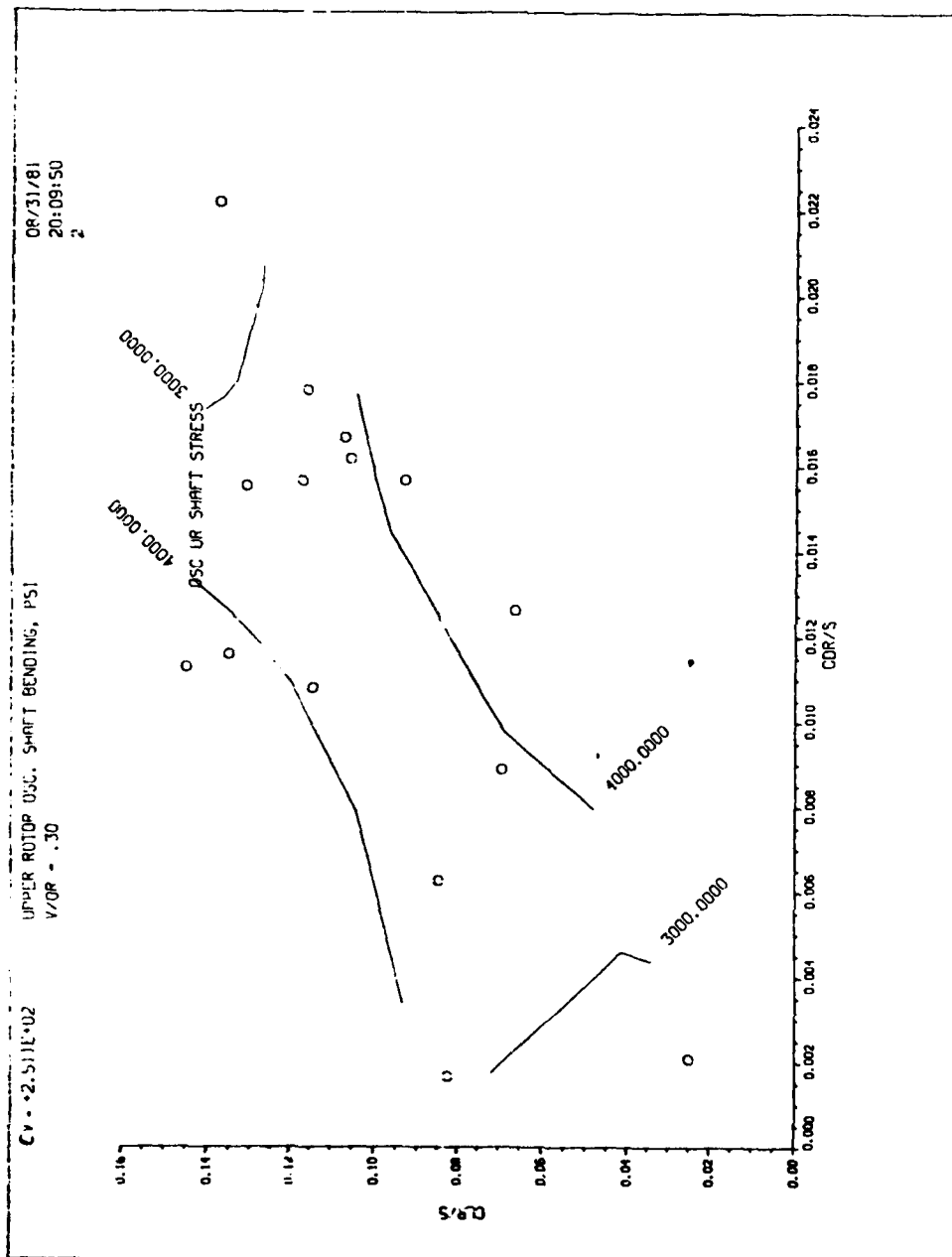


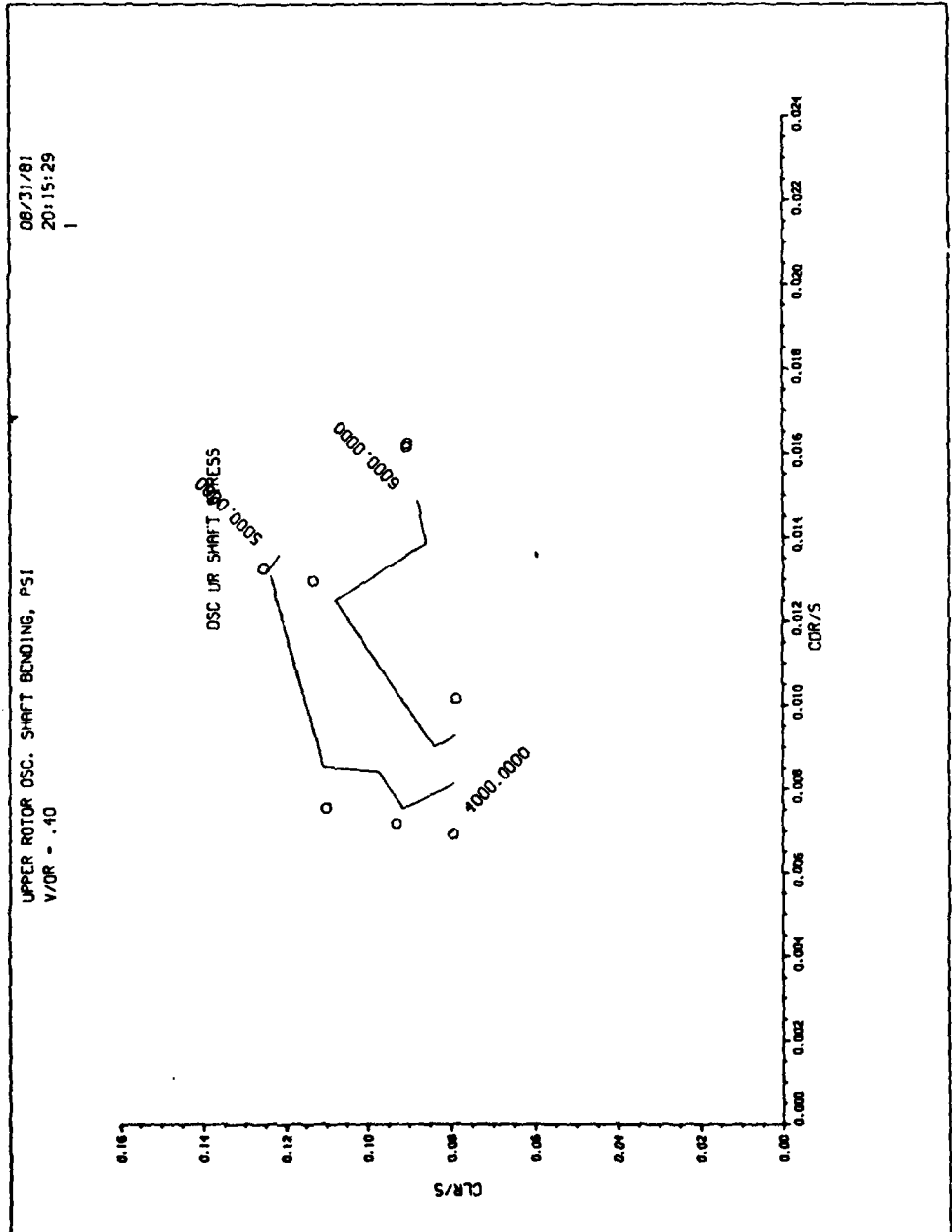
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19:47:10

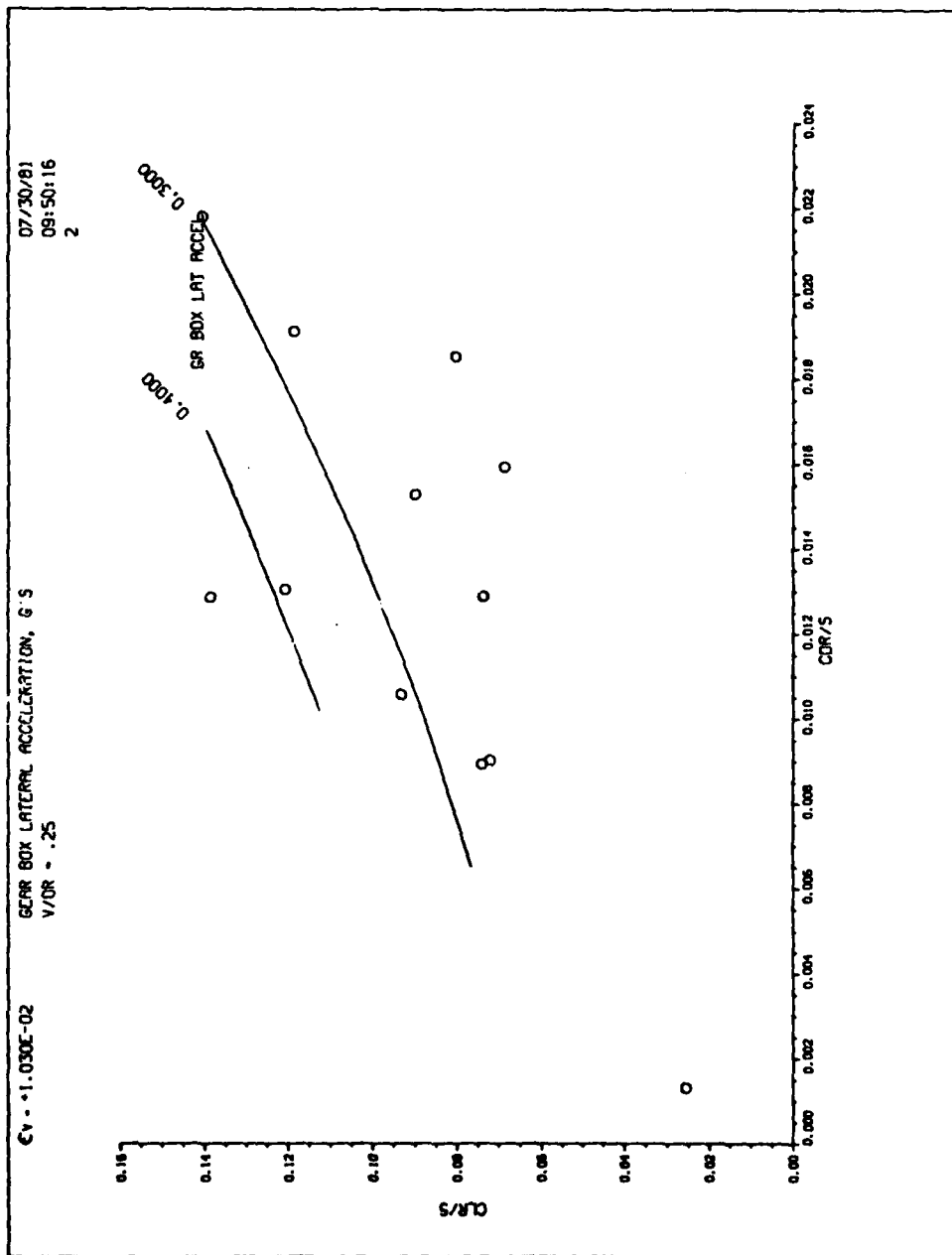
UPPER ROTOR MEAN SHAFT BENDING, PSI
V/OR = .40

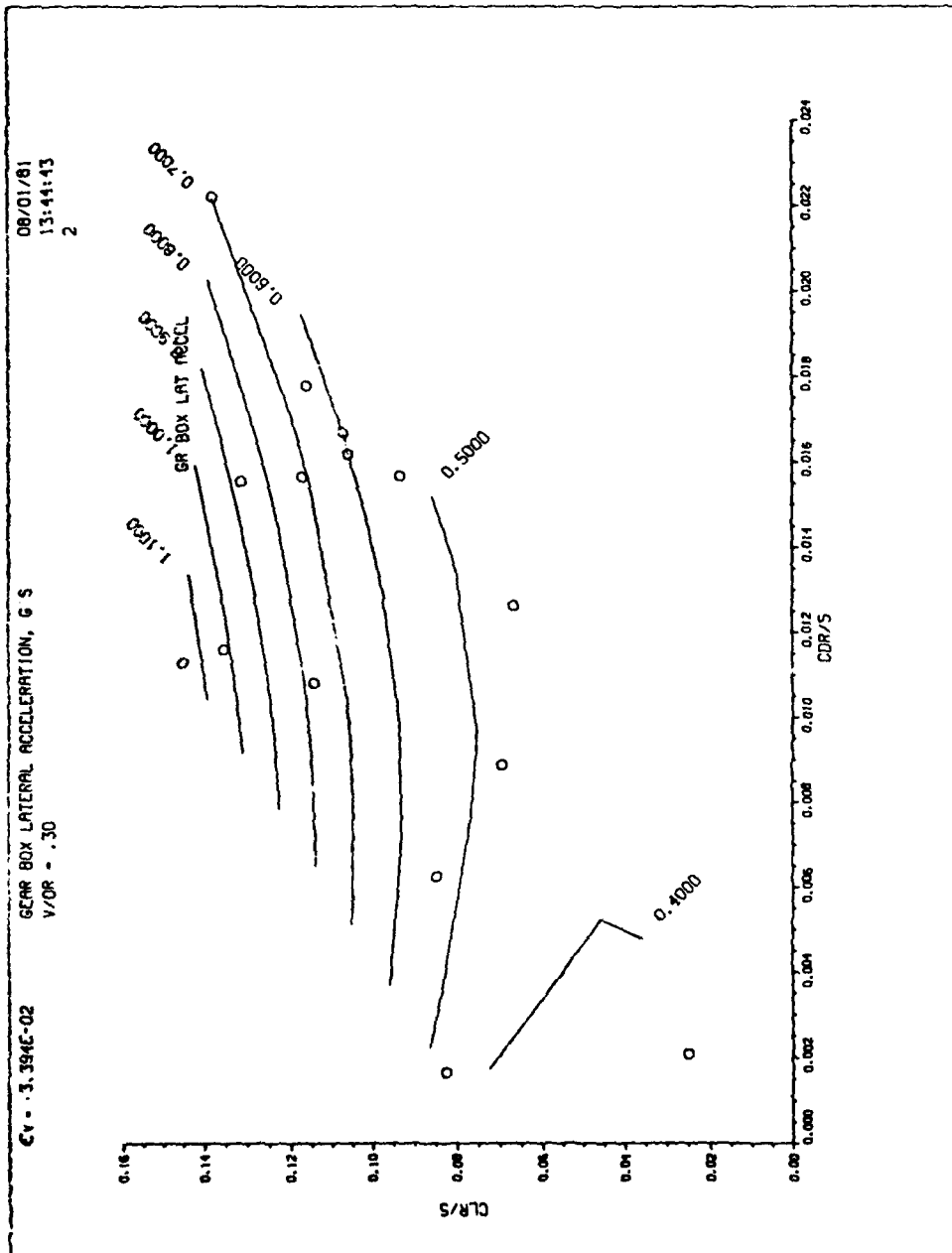






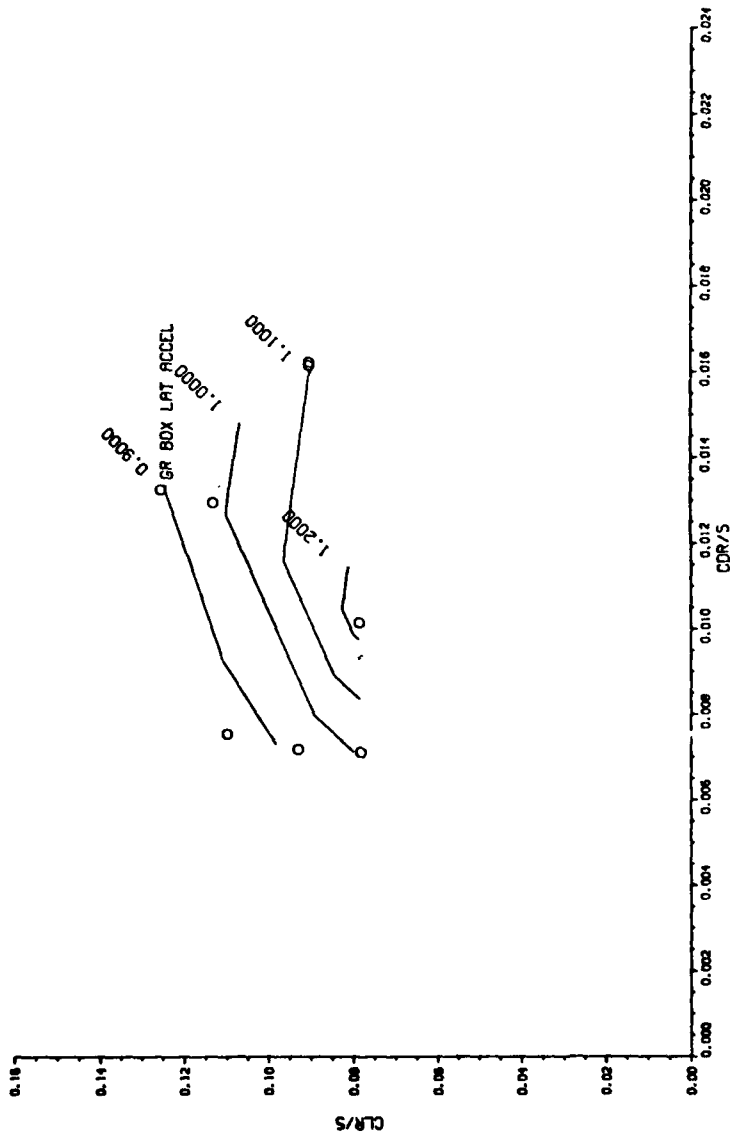


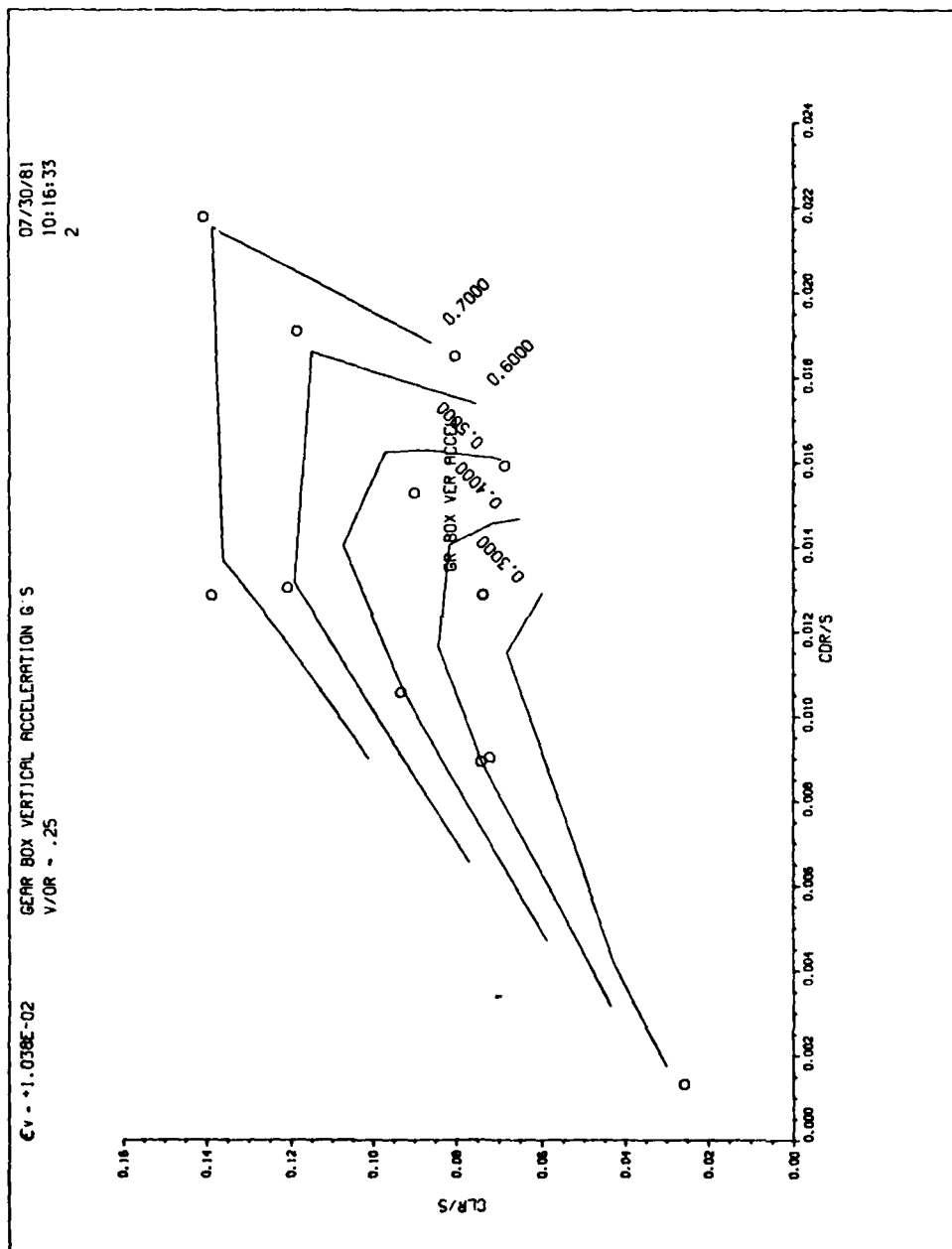


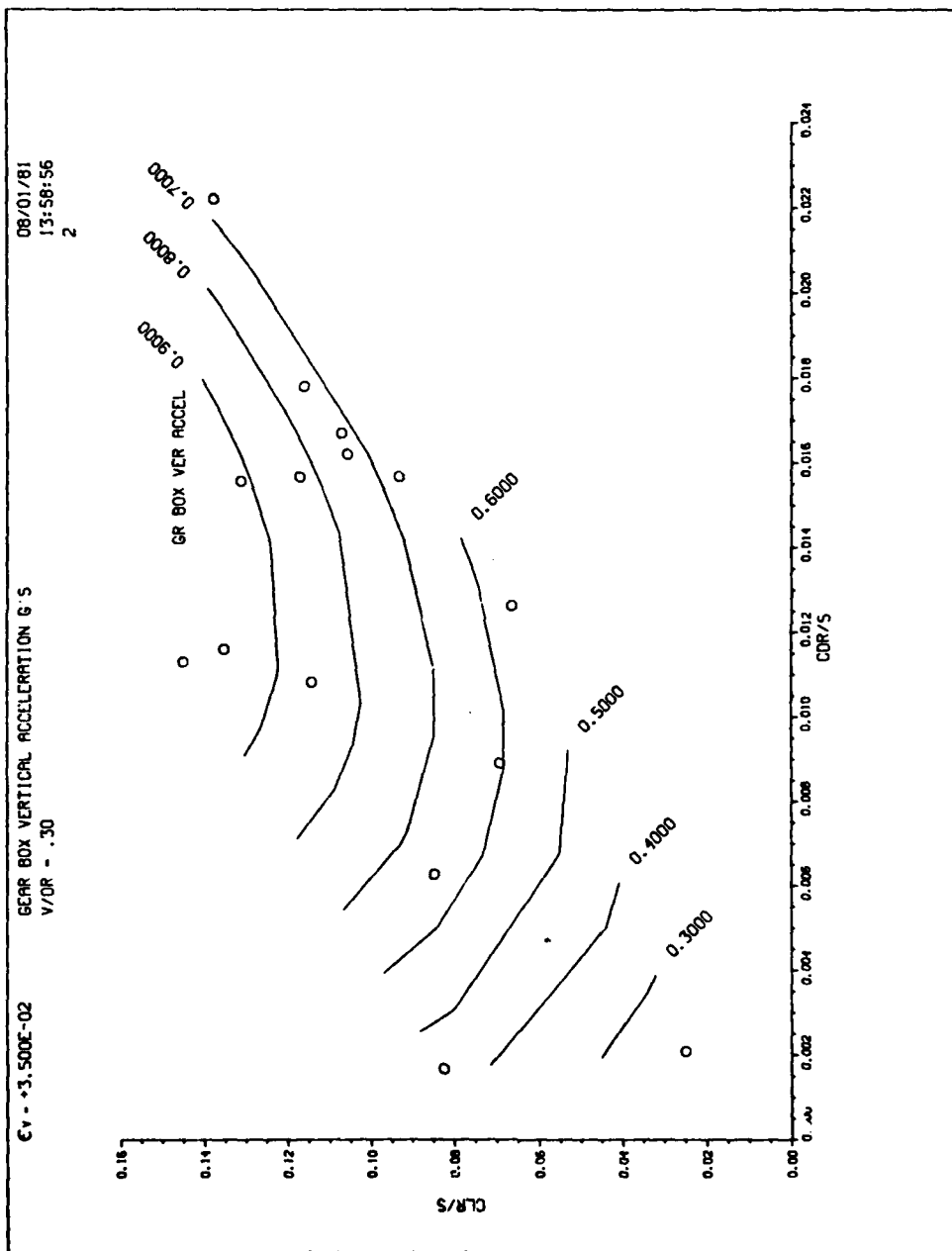


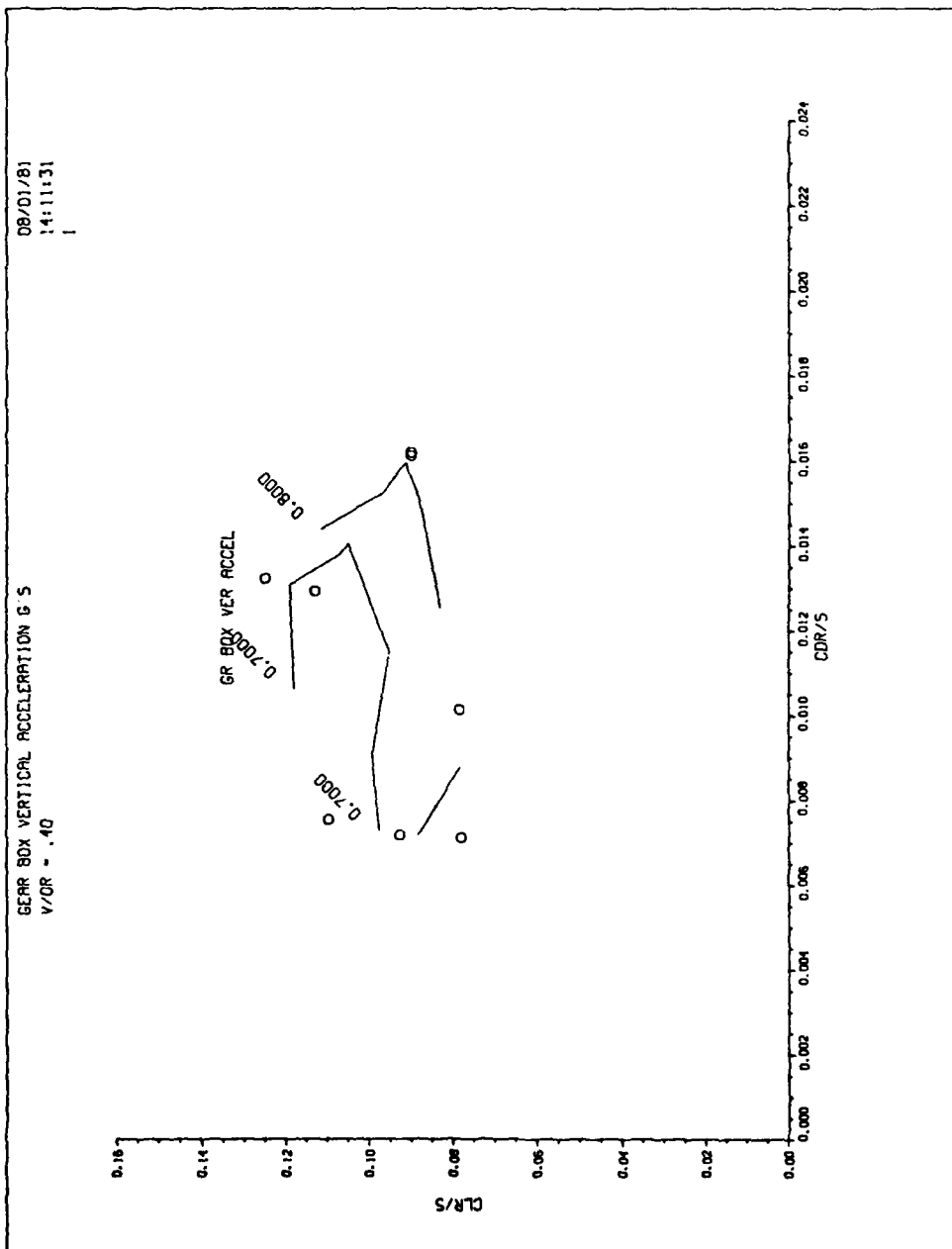
07/31/81
07:57:51
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GEAR BOX LATERAL ACCELERATION, G'S
V/OR = .40

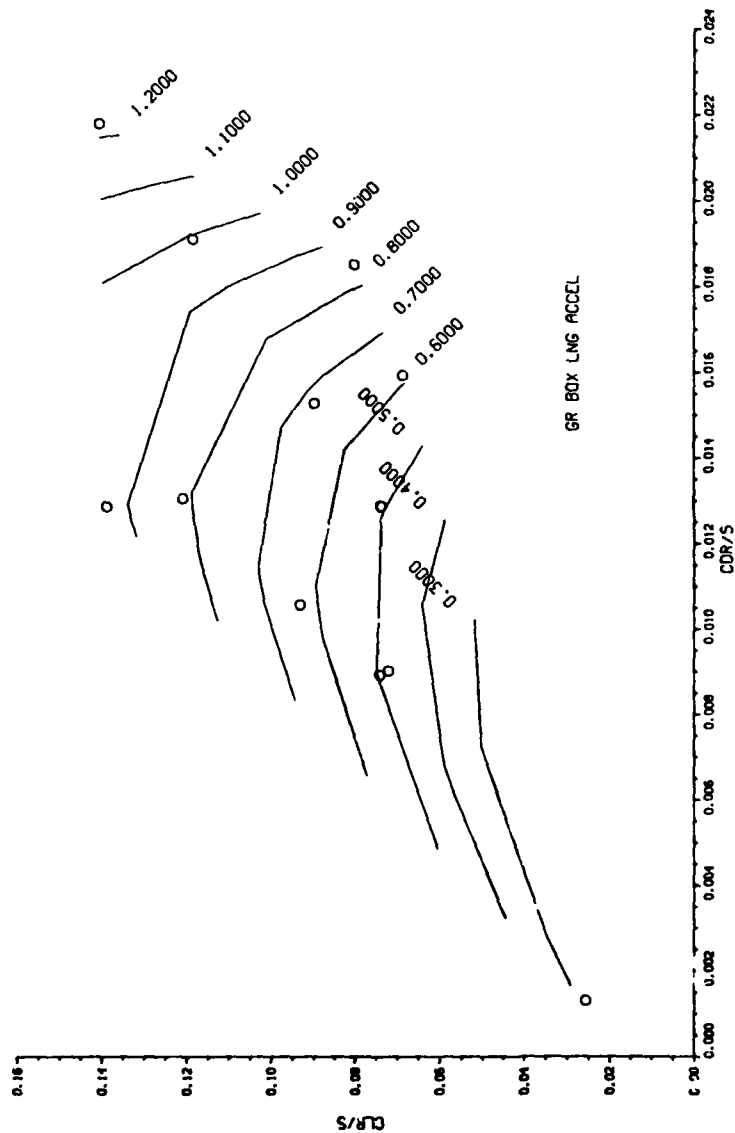


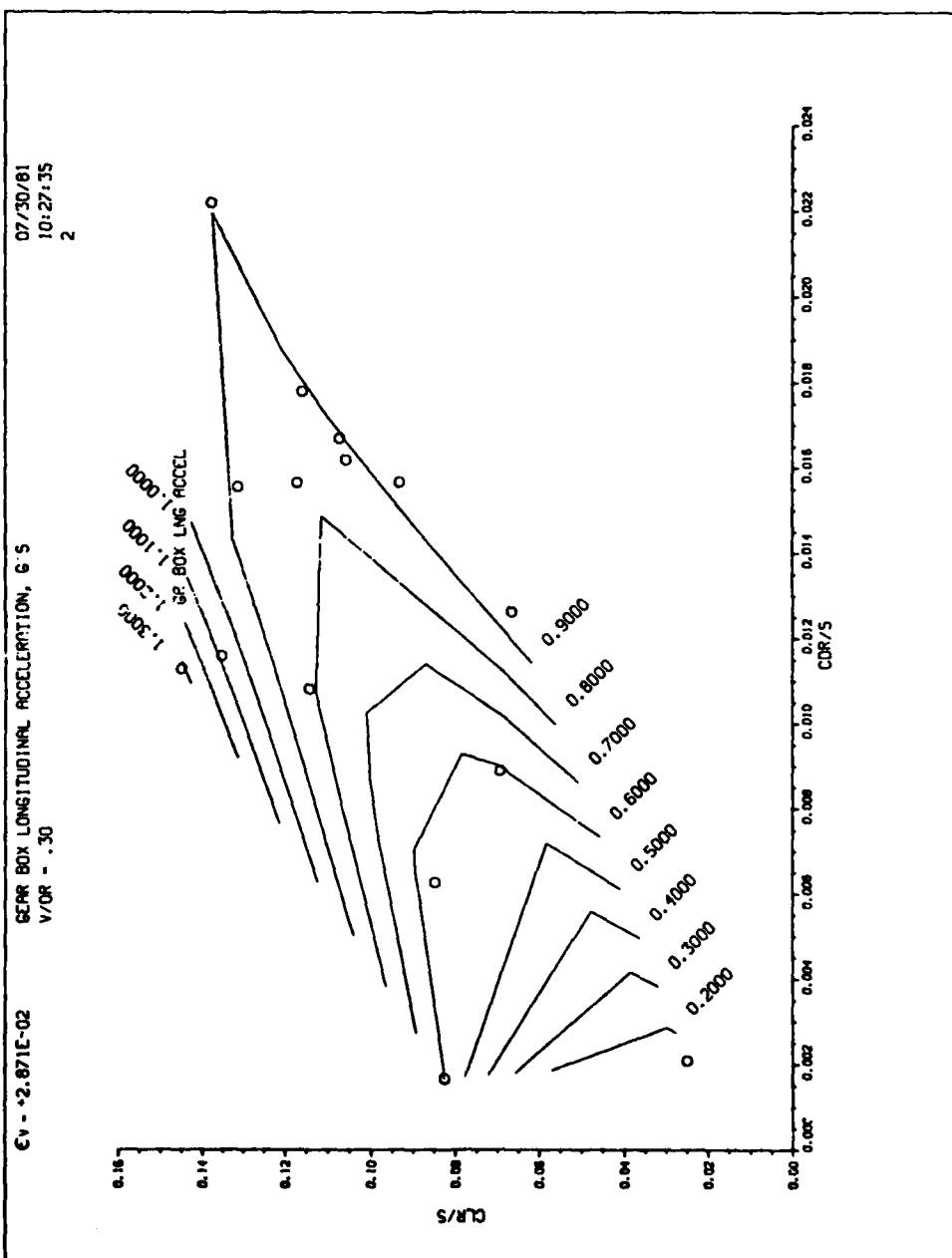






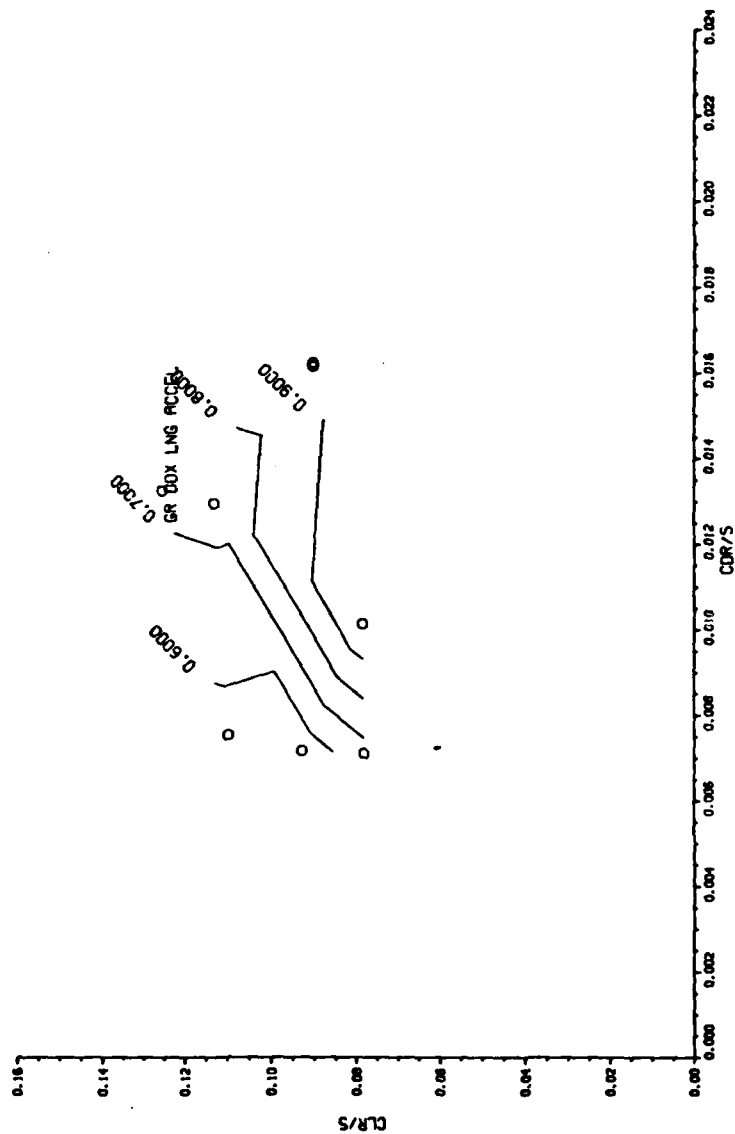
Ev - +2.658E-02





07/30/81
10:41:42
3

GEAR BOX LONGITUDINAL ACCELERATION, G'S
V/DK = .40



1. Report No. NASA TM-81329	2. Government Accession No. 40-4110 278	3. Recipient's Catalog No.	
4. Title and Subtitle PERFORMANCE AND LOADS DATA FROM A WIND TUNNEL TEST OF A FULL-SCALE, COAXIAL, HINGELESS ROTOR HELICOPTER		5. Report Date October 1981	6. Performing Organization Code
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9. Performing Organization Name and Address Ames Research Center, NASA, and AVRADCOM Research and Technology Laboratories Moffett Field, California 94035		13. Type of Report and Period Covered Technical Memorandum	
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15. Supplementary Notes			
16. Abstract A test of a full-scale XH-59A Advancing Blade Concept Helicopter was conducted in Ames Research Center's 40- by 80-Foot Wind Tunnel. The helicopter was tested with the rotor on and off, rotor hub fairings on and off, inter-rotor shaft fairing on and off, rotor instrumentation module on and off, and auxiliary propulsion thrust on and off. The investigation was accomplished over an advance ratio range of 0.25 and 0.45 with the rotor on and from 60 to 180 knots with the rotor off. This report presents data on aerodynamic forces and moments, rotor loads, rotor control positions and vibration for the XH-59A as well as the aerodynamic performance of the isolated rotor.			
17. Key Words (Suggested by Author(s)) Helicopter Wind tunnel test Performance data Rotor blade loads data		18. Distribution Statement Unlimited STAR Category - 02	
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