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A FLIGHT INVESTIGATION OF PERFORMANCE
AND LOADS FOR A HELICOPTER WITH
10-64C MAIN-ROTOR BLADE SECTIONS

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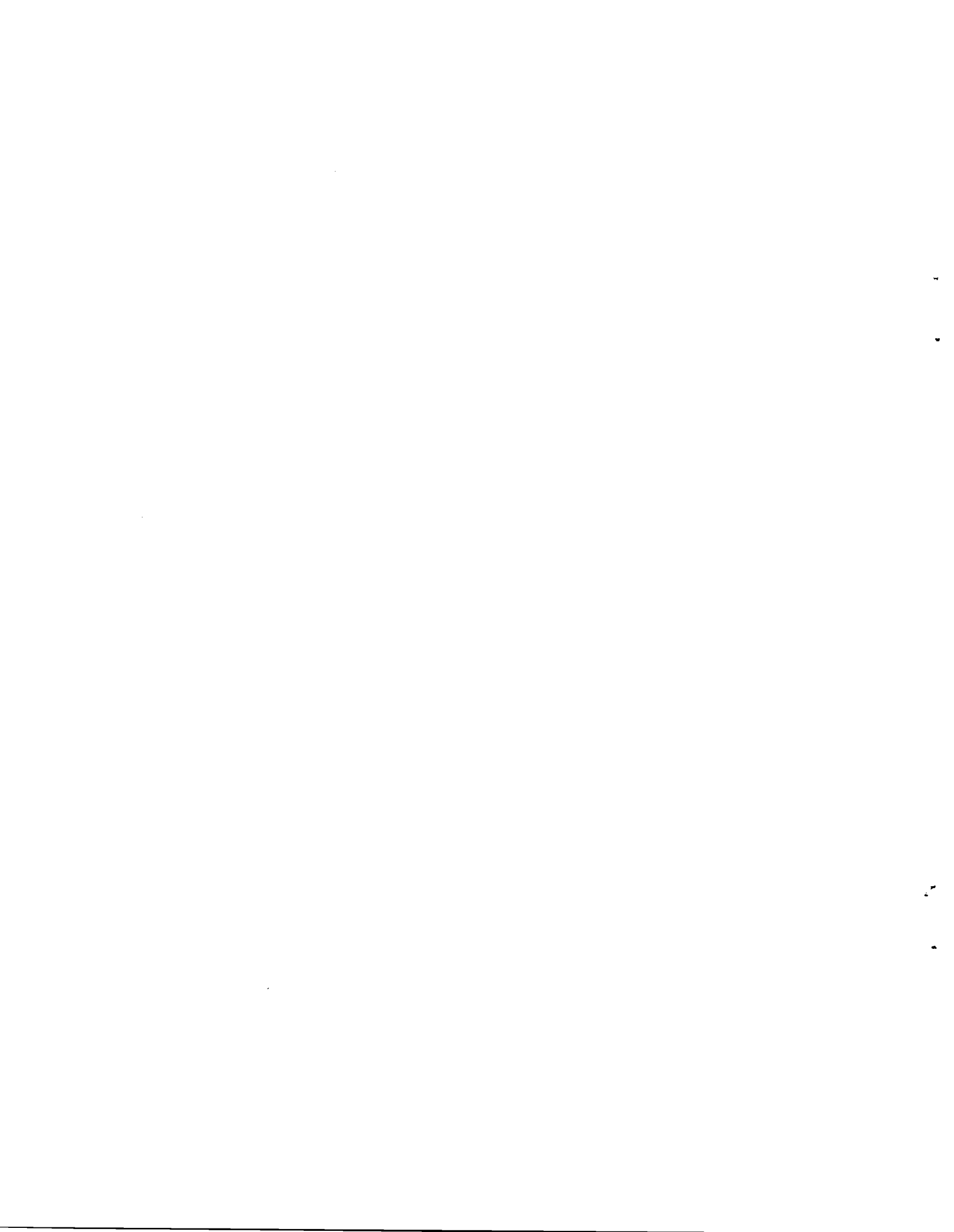
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A FLIGHT INVESTIGATION OF PERFORMANCE AND LOADS FOR A HELICOPTER WITH 10-64C MAIN-ROTOR BLADE SECTIONS

By

Charles E. K. Morris, Jr., Robert L. Tomaine,
and Dariene D. Stevens

SUMMARY

A flight investigation has obtained performance and rotor-loads data for a teetering-rotor, AH-1G helicopter flown with the 10-64C airfoil as the main-rotor blade section. Data for each test point describe flight-state parameters, control positions, rotor loads, power required, and blade motion. The flight program included forward flight up to 83 m/sec (162 knots), hover, linear climb and descent, descending turns, and symmetrical pull-ups.

Rotor loads are reviewed in terms of peak-to-peak values and harmonic content. Increased airspeed produced increased peak-to-peak loads at tip-speed ratios above 0.2. Peak-to-peak loads exhibited basic trends for increased maneuver load factor: inboard chordwise loads increased significantly, torsional loads decreased, and midspan beamwise loads remained virtually unchanged. Harmonic analysis showed that the trends for the larger harmonic components were consistent with trends exhibited by the peak-to-peak data for each respective type of load.

INTRODUCTION

Studies have indicated that improvements in rotorcraft airfoil characteristics can contribute significantly to improvements in the performance and loads characteristics of helicopter rotors. The aerodynamic design of these airfoils is still accomplished with design methods constrained to two-dimensional, steady flow (ref. 1). Efforts to relate airfoil design methods to the complex flow environment of the helicopter rotor lead to full-scale tests. Flight tests have been conducted for this purpose; they were accomplished with three sets of dynamically similar blades with the same twist and planform. Each of the three sets of blades was built with a different airfoil, designed by a significantly different method. The tests and some of the results have been documented in references 2, 3, and 4. Flight tests with the standard, production main-rotor blades are described in reference 5.

This report presents flight data on loads and performance for one blade set of the investigation of reference 2. The data were obtained with instrumented main-rotor blades having the 10-64C airfoil of reference 6. The data systems (described in ref. 3, 4, 5, and 7) produced records of flight-state parameters, control positions, engine performance, rotor loads, blade angles, blade pressure distributions, and other data. Test conditions included steady, level flight up to 83.2 m/sec (162 knots) and collective-fixed turns, pull-ups, climbs, and descents at a tip-speed ratio of approximately 0.25.

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Numerous sets of reduced data are presented with minimal analysis. Each set contains concurrently measured values of all of the performance and loads parameters. Figures illustrating trends or typical parameter histories are given to assist in the interpretation and utilization of the data listings.

SYMBOLS

Positive senses of some axes, angles, and accelerations are presented in figure 1.

A_{0f}	main-rotor collective pitch angle at 0.75R, commanded at swashplate, deg
A_{0s}	main-rotor collective pitch angle at 0.75R, measured at blade grips, deg
$A_{0, tr}$	tail-rotor collective pitch angle, deg
A_{1f}	main-rotor lateral-cyclic pitch angle, commanded at swashplate, deg
A_{1s}	main-rotor lateral-cyclic pitch angle, measured at blade grip, deg
a	speed of sound, m/sec
a_{1s}	first harmonic of main-rotor longitudinal flapping with respect to the rotor mast, deg
B_{1f}	main-rotor longitudinal-cyclic pitch angle, commanded at swashplate, deg
B_{1s}	main-rotor longitudinal-cyclic pitch angle, measured at blade grip, deg
b_{1s}	first harmonic of main-rotor lateral flapping with respect to the rotor mast, deg
C_L'	vehicle load coefficient, $\frac{Wn_z}{\rho\pi R^2 (\Omega R)^2}$
C_Q	main-rotor-mast torque (power) coefficient, $\frac{Q}{\rho\pi R^3 (\Omega R)^2}$
c	airfoil chord, m
F_{db}	drag-brace force, positive for tension, N
F_{pl}	pitch-link load, positive for compression, N
g	acceleration due to gravity, 9.81 m/sec ²
h_p	density altitude, m

i_h	horizontal-tail incidence angle, deg
M_{bp}	blade beamwise (flapwise) bending moment at "p" percent blade radius, positive for load applied upward, N-m
M_{cp}	blade chordwise (inplane) bending moment at "p" percent blade radius, positive for load applied rearward toward blade trailing edge, N-m
M_h	reference blade-tip Mach number, $\frac{\Omega R}{a}$
M_{tp}	blade torsional moment at "p" percent blade radius, positive for load applied upward at blade leading edge, N-m
m_1	data channel sensitivity, measured units/mV
n_x, n_y, n_z	orthogonal set of load factors for aircraft center of gravity, g units
p_f, q_f, r_f	orthogonal set of fuselage angular rates, rad/sec
Q	main-rotor mast torque, N-m
r	radial distance to blade element, m
R	main-rotor radius, m
T_b	blade temperature, C
T_{ce}	canister electronics temperature, C
t	time, seconds
V	aircraft true airspeed or velocity, m/sec (knots)
W	aircraft gross weight, N
X, Y, Z	orthogonal set of aircraft body axes (see fig. 1)
x	airfoil abscissa, positive rearward from leading edge, m
y	airfoil ordinate, positive upward, m
α_f	fuselage angle of attack, deg
β_f	fuselage angle of side-slip, deg
β_s	main-rotor, shaft-axis teeter angle, (where $\beta_s = a_0 - a_{1s} \cos\psi - b_{1s} \sin\psi$. . .) positive upward, deg
Δf	change in data measurement due to temperature (see table IV)

Δm_2	sensitivity of digitizing electronics, mV/counts - c
ΔP_0	data increment due to sensor temperature, data units/C
ΔV_0	adjustment to data-channel sensitivity for electronics temperature, mV/C
δ	digital data-system measurements, counts
θ_f	fuselage pitch attitude, deg
θ_s	main-rotor shaft-axis blade pitch at 0.75R, (where $\theta_s = A_0 - A_{1s} \cos\psi - B_{1s} \sin\psi - \dots$), measured at blade grip, deg
μ	tip-speed ratio, $V/(\Omega R)$
ρ	mass density of air, kg/m^3
ϕ_f	fuselage roll attitude, deg
ψ	main-rotor blade azimuth angle, measured from downwind position in direction of rotor rotation, deg
Ω	main-rotor rotational speed, rad/sec

Subscripts;

c	camber line
l	lower surface
u	upper surface

Bars over symbols denote mean values; circumflex marks ($\hat{\ }^$) over symbols denote peak-to-peak amplitudes of oscillations for one rotor revolution.

EQUIPMENT AND PROCEDURES

Test Vehicle

The test vehicle was the modified AH-1G attack helicopter described in the drawings of figure 2, the photograph of figure 3, and the tabulated characteristics given in Table I. The salient features of this helicopter are the teetering-hub main rotor, the narrow fuselage, and the stub wings. This vehicle had the same basic configuration described in reference 3 except for the main-rotor blades. The new set of blades had the same structural design as the NLR-1T blades of reference 3. The most significant change from the NLR-1T blades was in the use of the 10-64C airfoil as the blade-section profile. Some minor differences in blade weight and torsional natural frequency were also observed.

Airfoil

The 10-64C was designed with the methods described in reference 8. This approach employs the crestline method for predicting drag-divergence Mach numbers for an appropriate range of lift coefficients. The coordinates of the 10-64C were generated using the NACA equations for four and five-digit airfoils. The thickness distribution is that of an NACA 0010-64 (standard nose radius and maximum thickness at 40 percent chord). The camber is derived from an extrapolation of five-digit airfoil camber; maximum camber is located at 35 percent chord. Figure 4 presents geometric data for this shape; Table II contains the coordinates.

Aerodynamic characteristics of the 10-64C airfoil are given in reference 6, which presents data from tests conducted in the Langley 6- by 28-inch wind tunnel at Reynolds numbers close to those for flight. Drag-divergence Mach number was determined to be about 0.83 at zero-lift conditions and 0.72 at a normal-force coefficient of 0.6. Pitching-moment coefficients ranged from -0.015 to -0.020 at subcritical speed and moderate lift; maximum normal-force coefficient was found to be slightly below that of the NACA 0012 airfoil tested in the same facility.

Data Systems

The Piloted Aircraft Data System (PADS) acquired data from fuselage-mounted sensors. The list of PADS channels and their characteristics is given in Table III. The PADS used pulse-code modulation (PCM) in the multiplexer-digitizer system; it had a 10-bit word, parity included, and a sampling rate of 80 times per channel per second. Other details of the system are given in Appendix A of reference 5.

Rotor data were processed onboard by the Special Rotor Blade Instrumentation (SRBI) system of reference 7. The list of measured loads, temperatures and angles is given in Table IV. The SRBI system used PCM with an 8-bit word, which had no parity; it sampled each channel 1000 times per second. All of the channels for loads and angles had a single-pole, constant-delay filter with 3-decibel attenuation frequency at 90 Hz. Reference 7 and Appendix B of reference 3 contain further information on this system. The only difference in the set of sensors used, compared to those of reference 4, was the use of a linear slide-type potentiometer to measure hub teeter angle.

Data Reduction

Data reduction was conducted to produce complete sets of concurrent values of all performance and load parameters for each test point. Measured PADS data were corrected and reduced to final form as described in reference 5. PADS parameters change more slowly than SRBI parameters, which allows one set of reduced PADS data to remain valid for each complete revolution described by SRBI data. Some of the PADS parameters were used to reduce each set of SRBI data (for a complete rotor revolution inclusive of each PADS test-point time). Most of the reduced SRBI data are described by their harmonic content. All SRBI data were corrected for the effects of temperature and filter lag. Rotor

speed was calculated from SRBI azimuth data rather than PADS tachometer data.

Flight-Test Procedures

Flight-tests conditions included hover, level forward flight, and collective-fixed maneuvers. Test points for steady, level-flight speed sweeps ranged from about 34 to 83 m/sec (65 to 162 knots) in approximately 5 m/sec (10 knot) increments; each point was held for several seconds. Maneuvers were flown with a target tip-speed ratio of 0.25 (approximately 108 knots) and collective pitch set for steady, level flight at that speed. These maneuvers were symmetrical pull-ups, and constant-airspeed descending turns. Linear climbs and descents were also flown with the same airspeed target. Emphasis was placed on obtaining a data set that would be useful for comparison with data for the other blade sets flown with this same vehicle (refs. 2 through 5). This required strictly controlled and standardized test procedures, close attention to rotor speed, and the control of configuration parameters (such as center of gravity).

PRESENTATION OF RESULTS

Data on performance, rotor loads, flight state, and control positions are presented in figures 5 through 18 and in the listing of Appendix A. Table V is a guide to the listings. Flight numbers and run numbers are used to identify the test points for all listings and some figures. The data figures are presented as follows:

Level flight	<u>Figures</u>
Power-required data	5
Three speed sweeps.	6
Typical data histories.	7
Loads: harmonic content and airspeed	8, 9
Climb and descent.	10
Maneuvering flight	
Descending turns.	11 to 14
Symmetrical pull-ups.	15 to 17
Maneuver data trends, peak-to-peak loads.	18

DISCUSSION

The discussion of data for the 10-64C blades is consistent with the approach taken in reference 3 with the NLR-IT data. Vehicle load-level is described in

terms of vertical load-factor or vehicle load-coefficient C_L' . Although C_L' approximates rotor-lift coefficient, it is actually a measure of the normal component of inertial load reacted by the rotor, stub wings, and other aerodynamic surfaces. As in reference 3, rotor loads are discussed in terms of three components: beamwise (flapwise), chordwise (inplane), and torsional (including pitch-link loads).

As in references 3 and 5, test-point times for data reduction were chosen after records of flight-state parameters, control position, rotor motion, and blade loads were reviewed. For level flight or steady maneuvers, test-point criteria required a trimmed condition; for symmetrical pull-ups (transient maneuvers) the criteria required that the body attitude match that of the vehicle in level flight at the same airspeed.

Level Flight

Power-required (ie., torque-required) data are presented in figure 5 as the variation of main-rotor torque coefficient with tip-speed ratio for eight level-flight speed sweeps. (The sets of data are plotted with offset scales and are sequenced in ascending order of average reference Mach number and load coefficient). The value of maximum attainable tip-speed ratio was constrained by engine-power limitations.

The level-flight, speed-sweep data of figure 6 give results for three separate flights. Data trends with increasing values of tip-speed ratio show good agreement for the two flights at $C_L' = 0.0044$. Flight results at the higher value of vehicle load coefficient reflect the requirements for higher power, higher main-rotor collective pitch, and lower longitudinal flapping. At $\mu = 0.2$ and above, the higher C_L' produces a slight reduction in peak-to-peak loads for inboard beamwise and both torsional stations. Several additional trends can be observed in the data of figure 6. Above $\mu = 0.2$, peak-to-peak values of all the measured loads clearly show an increase with increasing tip-speed ratio; also, mean values of the torsional loads become more negative with increasing tip-speed ratio.

Characteristics of rotor loads for level flight are also presented in the next three figures. Figure 7 presents typical load histories for several rotor revolutions and indicates that the data wave-forms are highly periodic. Most of the characteristics of rotor-load harmonic content, shown in figures 8 and 9, are expected on the basis of level-flight results from NLR-1T data (ref. 3). Figure 8 presents data for airspeeds between 74 and 162 knots. Beam-wise loads are composed primarily of the first four harmonics, with the first two harmonics predominating inboard. The most significant chordwise loads are typically first, third and sixth harmonics; fourth harmonic chordwise loads also become comparatively large at 80 percent span at higher speeds. Torsional loads change from primarily first harmonic at lower speeds to include a significant amount of second-harmonic component at higher speeds. A summary of some harmonic components of level-flight rotor loads, shown in figure 9, indicate that the more significant components typically increase in magnitude as tip-speed ratio (and airspeed) increase. All of these trends are consistent with those observed for the NLR-1T blades (ref. 3).

Climb and Descent

Climb and descent data are presented in figure 10. Flight results show that increasing the rate of climb affects the main rotor by requiring more collective pitch, more forward tilt of the disk, and more power. Increasingly negative values of mean torsional loads are shown to be associated with increases in rate of climb.

Maneuvers

Results for both left and right descending turns are given in figures 11 through 14. The highly periodic data of figure 11 illustrate that a descending turn can be treated as a quasi-steady test condition. A review of the oscillatory loads data shows that three types of trends are evident as normal-load factor is increased to that producing $C_L' = 0.0078$. All chordwise loads and the beamwise loads at 80 percent span increase; all other beamwise loads remain relatively unaffected; torsional loads decrease slightly.

Data for symmetrical pull-ups are presented in figures 15, 16, and 17. The variation of chordwise loads with time clearly illustrates the transient nature of the maneuver (fig. 15(b)). The harmonic-content data show the same trends of rotor loads with C_L' as for descending turns, although the chordwise loads do not appear to increase as consistently for turns.

The peak-to-peak loads data, shown in figure 18, can be used to develop a better understanding of the total set of maneuver loads data. (The vector summation of the harmonic components of any given load can be very significant to the resulting peak-to-peak loads). The previously observed trends for variations in magnitudes of harmonic loads with C_L' are generally consistent for trends shown in the data of figure 18. Increases in C_L' affect peak-to-peak loads by producing: virtually no change in most beamwise channels, moderate increases beamwise and chordwise at 80 percent span, large increases for inboard chord loads, and slight decreases for the torsional channels. These results are consistent with the trends exhibited by the more significant harmonic components of each respective type of load.

CONCLUDING REMARKS

A flight investigation has been conducted to acquire data on the performance, loads and airfoil aerodynamics of a teetering-rotor helicopter having the 10-64C airfoil as the blade-section contour for the main-rotor. Data are presented on the variation of flight-state parameters, control positions, rotor loads, power required, and blade motion during level-flight speed sweeps, as well as maneuvers at approximately 0.25 tip-speed ratio.

Several trends are evident in the data. At tip-speed ratios above 0.2, peak-to-peak loads increase with increased airspeed. Peak-to-peak loads also display basic trends with increases in normal load factor for maneuvers: inboard chordwise loads increase significantly, torsional loads decrease, and the mid-span beamwise loads remain virtually unchanged. Harmonic analysis shows that

the most consistently significant components in level flight are the first four beamwise, the first two torsional and the first, third, and sixth chordwise. These larger harmonic components exhibit trends consistent with the previously cited trends for peak-to-peak maneuver loads.

APPENDIX A

TEST-POINT DATA LISTINGS

The upper part of the page for each test point contains PADS-PCM data from fuselage-mounted sensors. The information on test-point identification and data on flight state, control position, and other parameters are presented in the manner explained in reference 5.

The lower part of each page contains SRBI-system data on the rotor. Test-point identification is printed next to flight-condition parameters. Three temperatures are given: the value computed for ambient atmospheric conditions (AMB TEMP); blade temperature at 90 percent radius, upper surface, 60 percent chord (TEMP 60); and the temperature of the blade electronics in the canister (CAN TEMP). The latter two are listed in both Table IV and reference 7 as T_b and T_{ce} , respectively. These two temperatures were used in SRBI data reduction. The mast-torque coefficient printed is the average value for the revolution. The total torque coefficient is the value obtained for engine power at equivalent main-rotor rotational speed. Both blade pitch (at 75 percent radius) and teeter angle of the instrumented blade are described by conventional mean and cyclic components based on harmonic analysis. Peak-to-peak values are added since, as noted in reference 5, data traces may be much more complex than a simple first-harmonic pattern.

Rotor loads are presented in terms of mean values, peak-to-peak values, and the harmonic content for the first 12 harmonics of actual rotor rotational frequency. (The measured value of this frequency is also listed). The harmonic representation uses a series of cosine terms, each with a phase delay. Using labels from the listing, each load may be described as:

$$F(t) = (\text{MEAN}) + \sum_{n=1} (\text{AMP})_n \cos (t - (\text{PHASE})_n)$$

where F is the load (a function of time), MEAN is the mean amplitude, n is number of the harmonic, AMP is the vector amplitude, and PHASE is the phase angle in degrees for that harmonic.

FLIGHT NO. 075 AIRCRAFT TOTAL WT = 36364. N LOADED CG X = 5.04 M = 165.4 IN
 RUN NO. 3 8175. LB Y = -.01 = -.6
 TIME 49784.40 (SFC) Z = 1.83 = 71.9

AERODYNAMIC FLIGHT STATE
 T. AIRSPEED = 66.6 KT DYNAMIC PRES = .66 KPA = 13.9 PSF
 A/C MACH NO = .100 STATIC PRES = 94.2 KPA = 1967. PSF
 TOTAL TEMP = 290.8 DEG K = 523.4 DEG R
 STATIC TEMP = 290.2 DEG K = 522.3 DEG R
 BODY ALPHA = -.2 DEG DENSITY = 1.13 KG/M3 = .00219 SLUG/FT3
 BODY BETA = .8 DEG DENSITY ALT = 827. M = 2714. FT
 SONIC SPEED = 342.1 M/SEC = 1122. FPS
 RATE OF CLIMB = -22. M/MIN = -74. FPM

INERTIAL FLIGHT STATE

AXIS	CG LIN VEL (M/S)	CG LIN VEL (FPS)	CG LIN ACC (G)	HUB LIN VEL (M/S)	HUB LIN VEL (FPS)	HUB LIN ACC (G)	AXIS	ANG POS (DEG)	ANG RATES (RAD/SEC)	ANG ACC (RAD/SFC2)
X	34.24	112.3	-.030	34.24	112.3	-.031	ROLL	-.1	-.005	.015
Y	.50	1.6	.005	.49	1.6	.008	PITCH	-.9	.001	.008
Z	-.15	-.5	-1.013	-.15	-.5	-1.013	YAW	319.3	-1.001	.002

CONTROL ANGLES
 M.R. COLL = 8.3 DEG HORIZ FIN = 6.7 DEG
 A1 = -.5 DEG T.R. COLL = 1.7 DEG
 B1 = 2.2 DEG PEDAL POS = 1.5 DEG

ROTOR PARAMETERS

HOVER TIP MACH = .67 SHAFT ALPHA = -.2 DEG
 CONTROL ALPHA = -2.4 DEG
 TIP MAX-MACH = .77 DELTA PSI = -.8 DEG
 TIP MIN-MACH = .57
 .9R MAX-MACH = .70 ENGINE POWER = 340. KW = 456. HP
 .9R MIN-MACH = .50 THRUST FACTOR = .833E+07 N = .187E+07 LP

NASA LANGLEY FLIGHT DATA AH-1G ---- ROTOR PERFORMANCE AND LOADS

FLIGHT NO. 75 MU = .150 TOTAL CO = .000179 AMB TEMP = 17.0 C = 62.67 F
 RUN NO. 3 V = 66.6 KT MAST CO = .000163 TEMP U60 = 34.3 C = 93.75 F
 TIME 49784.27 NZ = 1.013 G OMEGA = 34.054 RAD/SEC CAN TEMP = 31.9 C = 89.47 F
 CLP = .00442 RPM/324 = 1.004

ROTOR ANGLES THETA 3/4 (DEG) A0 = 6.5 A1 = -1.2 B1 = 2.1 PEAK-TO-PEAK = 4.8
 TEETER ANG (DEG) A0 = .1 A1 = -.3 B1 = .3 PEAK-T0-PEAK = .8

ROTOR LOADS (AMP/PHASE) DRAG BRACE (N/DEG) CHORD .449 (N-M/DEG) CHORD .803 (N-M/DEG) PITCH LINK (N/DEG) TORSION .449 (N-M/DEG)

	DRAG BRACE (N/DEG)	CHORD .449 (N-M/DEG)	CHORD .803 (N-M/DEG)	PITCH LINK (N/DEG)	TORSION .449 (N-M/DEG)
MEAN	46112.	-292.	-3257.	-1907.	-355.
HARMONIC-1	4254./ .8	1036./ -4.8	179./ -6.2	1188./ -1.5	161./ -46.2
2	58./ -3.2	126./ 4.4	62./ -18.4	444./ 22.5	40./ 32.1
3	296./ -70.0	88./ 55.8	44./ -19.1	265./ 33.6	54./ -75.9
4	264./ 67.4	175./ 31.6	65./ 36.6	92./ 51.9	28./ 46.8
5	213./ 65.4	61./ -66.8	23./ 30.2	123./ -5.0	2./ -77.3
6	418./ -84.8	185./ 75.6	64./ 72.4	124./ -55.0	22./ -47.1
7	203./ -83.4	103./ -66.8	32./ -45.2	53./ -76.2	4./ 55.9
8	79./ 55.0	86./ -70.5	31./ -84.4	43./ 86.8	5./ -2.5
9	143./ 75.2	84./ 78.4	34./ 57.7	22./ 51.5	3./ -7
10	28./ -68.9	39./ 69.1	26./ 48.5	157./ -8.9	20./ 36.6
11	89./ -64.3	67./ -9.1	16./ -5.6	72./ 29.1	11./ 15.1
12	43./ -43.1	20./ -58.1	7./ -83.0	32./ 14.8	5./ 73.5
PEAK-TO-PEAK	10070.	2657.	638.	3403.	477.

BEAM .174 (N-M/DEG) BEAM .350 (N-M/DEG) BEAM .449 (N-M/DEG) BEAM .606 (N-M/DEG) BEAM .803 (N-M/DEG)

	BEAM .174 (N-M/DEG)	BEAM .350 (N-M/DEG)	BEAM .449 (N-M/DEG)	BEAM .606 (N-M/DEG)	BEAM .803 (N-M/DEG)
MEAN	-2080.	-184.	-228.	-505.	-503.
HARMONIC-1	344./ -29.2	191./ -79.7	209./ -80.7	200./ -69.5	81./ -76.4
2	153./ 7.4	127./ -9.5	154./ -6.7	214./ -4.4	123./ -17.8
3	100./ 2.4	13./ 15.6	12./ -25.2	65./ -27.4	140./ -7.8
4	140./ 31.2	51./ 20.5	39./ 26.3	29./ 46.7	53./ 59.7
5	126./ 5.0	8./ 58.2	20./ -12.3	29./ 15.4	42./ 1.0
6	25./ 63.6	10./ 33.9	13./ -15.8	20./ 30.7	35./ -46.4
7	56./ -73.2	10./ -35.7	28./ -66.5	20./ 44.4	56./ 88.5
8	54./ 73.3	13./ 89.9	21./ 67.8	11./ -38.1	22./ 18.5
9	9./ 46.6	7./ 40.9	8./ 38.9	10./ 80.5	16./ -79.1
10	88./ -40.5	40./ -36.5	23./ -65.9	34./ -26.4	27./ -12.4
11	28./ 20.6	22./ 14.9	7./ -55.5	15./ 17.0	8./ 20.5
12	14./ 45.4	7./ 44.3	4./ 30.2	6./ 63.6	4./ 85.2
PEAK-TO-PEAK	1525.	581.	631.	840.	800.

NASA LANGLEY FLIGHT DATA AH-1G ---- PADS PCM DATA

FLIGHT NO. 075 AIRCRAFT TOTAL WT = 36307. N LOADED CG X= 5.04 M = 198.4 IN
 RUN NO. 4 8162. LB Y= -.01 = -.6
 TIME 49865.30 (SEC) Z= 1.83 = 71.9

AERODYNAMIC FLIGHT STATE DYNAMIC PRES= .86 KPA = 17.9 PSF
 T. AIRSPEED= 75.6 KT STATIC PRES= 94.3 KPA = 1970. PSF
 A/C MACH NO= .114 TOTAL TEMP= 290.9 DEG K = 523.7 DEG P
 STATIC TEMP= 290.2 DEG K = 522.3 DEG P

BODY ALPHA= -.9 DEG DENSITY= 1.13 KG/M3 = .00220 SLUG/FT3
 BODY BETA= -1.1 DEG DENSITY ALT= 811. M = 2662. FT
 SONIC SPEED= 342.1 M/SEC = 1122. FPS
 RATE OF CLIMB= -23. M/MIN = -75. FPM

INERTIAL FLIGHT STATE

AXIS	CG LIN VFL (M/S)	CG LIN VFL (FPS)	CG LIN ACC (G)	HUB LIN VEL (M/S)	HUB LIN VEL (FPS)	HUB LIN ACC (G)	AXIS	ANG POS (DEG)	ANG RATES (RAD/SEC)	ANG ACC (RAD/SEC2)
X	38.85	127.5	-.035	38.84	127.4	-.039	ROLL	-1.1	-.005	-.011
Y	-.72	-2.3	.011	-.72	-2.4	.009	PITCH	-1.5	.007	.018
Z	-.42	-2.0	-1.026	-.62	-2.0	-1.026	YAW	312.6	-.006	.004

CONTROL ANGLES M.R. COLL= 8.5 DEG HORIZ FIN= 6.8 DEG
 A1= -.4 DEG T.R. COLL= .9 DEG
 B1= 2.5 DEG PEDAL POS= 1.2 DEG

ROTOR PARAMETERS HOVER TIP MACH= .67 SHAFT ALPHA= -.9 DEG
 CONTROL ALPHA= -3.4 DEG
 TIP MAX-MACH= .78 DELTA PSI= 1.1 DEG
 TIP MIN-MACH= .55
 .9R MAX-MACH= .72 ENGINE POWER= 347. KW = 465. HP
 .9R MIN-MACH= .49 THRUST FACTOR= .835E+07 N = .188F+07 LB

NASA LANGLEY FLIGHT DATA AH-1G ---- ROTOR PERFORMANCE AND LOADS

FLIGHT NO. 75 MU= .170 TOTAL CQ= .000182 AMB TEMP= 17.0 C = 62.65 F
 RUN NO. 4 V= 75.6 KT MAST CQ= .000166 TFMP U60= 34.3 C = 93.75 F
 TIME 49865.15 NZ= 1.026 G OMEGA= 34.036 RAD/SEC C&N TEMP= 31.5 C = 88.78 F
 CLP= .00447 RPM/324= 1.003

ROTOR ANGLES THETA 3/4 (DEG) A0= 6.7 A1= -1.2 B1= 2.5 PEAK-TO-PEAK= 5.8
 TEETER ANG (DEG) A0= .1 A1= -.5 B1= .2 PEAK-TO-PEAK= 1.1

ROTOR LOADS (AMP/PHASE)	DRAG BRACE (N/DEG)	CHORD .449 (N-M/DEG)	CHORD .803 (N-M/DEG)	PITCH LINK (N/DEG)	TORSION .449 (N-M/DEG)
MEAN	45992.	-198.	-3231.	-2000.	-370.
HARMONIC-1	4165./ .9	989./ -2.7	168./ -6.6	1393./ -10.8	192./ -45.6
2	375./ -65.7	150./ 40.8	39./ 11.2	438./ 9.0	37./ 10.8
3	504./ 20.6	160./ 24.8	18./ 6.0	303./ 21.8	53./ -80.9
4	199./ -74.6	157./ 68.1	56./ 86.6	19./ -85.7	21./ 86.9
5	138./ -60.8	47./ -39.7	23./ 60.5	63./ 48.0	14./ 6.2
6	535./ -64.0	300./ -73.8	85./ -70.2	127./ -80.4	25./ -50.3
7	277./ -61.8	180./ -62.6	60./ -46.4	52./ 88.2	6./ 17.7
8	82./ -32.4	62./ -39.0	27./ -35.0	38./ 69.4	4./ 9.1
9	115./ -9	103./ 15.9	51./ 43.7	131./ -73.4	6./ 5.1
10	99./ -45.0	91./ 19.1	37./ 33.3	74./ -45.2	8./ -63.7
11	21./ -45.3	89./ 8.2	42./ 19.0	64./ 89.4	15./ 27.1
12	70./ -35.8	18./ 36.1	20./ -12.0	44./ 89.9	14./ 59.2
PEAK-TO-PEAK	8904.	2657.	838.	3654.	596.

	BFAM .174 (N-M/DEG)	BEAM .350 (N-M/DEG)	BEAM .449 (N-M/DEG)	BEAM .606 (N-M/DEG)	BEAM .803 (N-M/DEG)
MEAN	-2073.	-193.	-248.	-513.	-499.
HARMONIC-1	427./ -31.8	245./ -69.7	255./ -69.4	250./ -61.3	96./ -74.9
2	146./ -2.5	129./ -14.5	162./ -5.8	184./ -4.0	101./ -14.6
3	145./ -1.6	34./ 18.1	21./ 67.6	50./ -18.6	111./ 2.6
4	99./ -78.5	40./ 74.8	28./ 35.8	35./ -78.8	50./ -39.7
5	109./ 27.1	11./ 50.1	25./ 27.4	32./ 41.1	32./ 65.5
6	41./ -12.7	7./ 17.8	16./ -20.6	3./ -29.4	43./ 27.8
7	32./ 49.7	20./ 51.1	21./ 27.5	16./ 90.1	28./ -30.1
8	44./ 57.3	6./ -83.4	11./ 84.6	11./ 26.7	27./ 79.8
9	73./ 86.7	39./ -85.1	22./ 79.6	41./ -68.0	32./ -42.3
10	30./ -59.8	12./ -58.2	8./ -87.4	20./ -52.0	20./ -43.6
11	16./ -29.4	15./ 55.7	9./ -89.8	8./ 88.5	7./ 82.3
12	45./ 58.3	22./ 60.1	9./ 20.3	12./ 67.2	6./ 40.7
PEAK-TO-PEAK	1332.	713.	771.	883.	694.

FLIGHT NO. 075 AIRCRAFT TOTAL WT = 36203. N LOADED CG X= 5.04 M = 169.5 IN
 RUN NO. 6 8139. LB Y= -.01 = -.6
 TIME 50121.20 (SEC) Z= 1.83 = 72.0

AERODYNAMIC FLIGHT STATE

T. AIRSPEED= 93.4 KT
 A/C MACH NO= .141

DYNAMIC PRES= 1.31 KPA = 27.3 PSF
 STATIC PRES= 94.2 KPA = 1968. PSF
 TOTAL TEMP= 291.3 DEG K = 574.4 DEG F
 STATIC TEMP= 290.2 DEG K = 522.3 DEG F

BODY ALPHA= -1.9 DEG
 BODY BET= -2.2 DEG

DENSITY= 1.13 KG/M3 = .00220 SLUG/FT3
 DENSITY ALT= 822. M = 2697. FT
 SONIC SPEED= 342.1 M/SEC = 1122. FPS
 RATE OF CLIMB= 21. M/MIN = 70. FPM

INERTIAL FLIGHT STATE

AXIS	CG LIN VEL (M/S)	CG LIN VEL (FPS)	CG LIN ACC (G)	HUB LIN VEL (M/S)	HUB LIN VEL (FPS)	HUB LIN ACC (G)	AXIS	ANG POS (DEG)	ANG RATES (RAD/SEC)	ANG ACC (RAD/SEC2)
X	47.97	157.4	-.039	47.96	157.4	-.042	ROLL	-1.4	-.001	.029
Y	-1.81	-5.9	.022	-1.81	-5.9	.029	PITCH	-1.5	.005	.014
Z	-1.62	-5.3	-1.022	-1.62	-5.3	-1.022	YAW	155.0	.004	.003

CONTROL ANGLES

M.R. COLL= 9.4 DEG HORIZ FIN= 7.6 DEG
 A1= -.1 DEG T.R. COLL= 1.1 DEG
 R1= 4.2 DEG PEDAL POS= 1.4 DEG

ROTOR PARAMETERS

HOVER TIP MACH= .67 SHAFT ALPHA= -1.9 DEG
 CONTROL ALPHA= -6.1 DEG
 TIP MAX-MACH= .81 DELTA PSI= 2.2 DEG
 TIP MIN-MACH= .53
 .9R MAX-MACH= .74 ENGINE POWER= 401. KW = 538. HP
 .9R MIN-MACH= .46 THRUST FACTOR= .831E+07 N = .187E+07 LB

NASA LANGLEY FLIGHT DATA AH-1G ---- ROTOR PERFORMANCE AND LOADS

FLIGHT NO. 75 MU= .211 TOTAL CO= .000212 AMB TEMP= 17.0 C = 62.63 F
 RUN NO. 6 V= 93.4 KT MAST CO= .000195 TEMP U60= 35.0 C = 94.93 F
 TIME 50121.14 NZ= 1.022 G UMLGA= 33.968 RAD/SEC CAN TEMP= 29.6 C = 85.30 F
 CLP= .00446 RPM/324= 1.001

ROTOR ANGLES THETA 3/4 (DEG) A0= 7.5 A1= -1.1 R1= 4.4 PEAK-TO-PFAK= 9.0
 TEETER ANG (DEG) A0= .1 A1= -1.3 R1= .1 PEAK-TO-PEAK= 2.5

ROTOR LOADS (AMP/PHASE) DRAG BRACE CHORD .449 CHORD .803 PITCH LINK TORSION .449
 (N/DEG) (N-M/DEG) (N-M/DEG) (N-M/DEG)

	MEAN	3968./	134.	-3122.	-2455.	-419.				
HARMONIC-1	3968./	-3.0	810./	-9.9	159./	-18.6	1999./	-21.2	278./	-42.3
2	280./	-67.6	129./	-81.8	25./	-82.5	821./	-51.9	85./	-47.7
3	1930./	65.6	452./	62.6	60./	74.5	346./	12.4	49./	60.3
4	333./	52.8	220./	42.4	82./	33.9	201./	87.8	23./	57.6
5	358./	-44.3	64./	-50.2	7./	66.1	208./	-37.9	33./	21.8
6	1044./	7.0	661./	3.8	206./	4.1	175./	75.3	39./	68.7
7	200./	42.7	65./	82.9	21./	-86.6	34./	77.7	3./	63.6
8	128./	72.3	107./	-74.4	43./	-78.5	37./	-15.1	2./	-75.3
9	74./	25.0	41./	3.6	14./	5.1	44./	25.5	1./	88.4
10	44./	85.9	102./	-39.6	39./	-49.9	56./	-67.0	1./	-15.8
11	79./	-47.4	19./	-78.0	22./	-36.2	10./	32.8	8./	-43.8
12	52./	31.3	112./	47.3	66./	41.5	17./	-78.9	4./	-3
PEAK-TO-PEAK	12035.		3279.		846.		5033.		625.	

BEAM .174 BEAM .350 BEAM .449 BEAM .606 BEAM .803
 (N-M/DEG) (N-M/DEG) (N-M/DEG) (N-M/DEG) (N-M/DEG)

	MEAN	-2078.	-216.	-246.	-496.	-484.				
HARMONIC-1	619./	-39.4	336./	-57.7	353./	-56.8	341./	-59.3	127./	-76.1
2	169./	-57.6	124./	-55.7	136./	-45.3	139./	-35.6	74./	-18.8
3	135./	45.9	81./	55.6	64./	69.3	53./	-53.6	63./	-42.2
4	161./	53.2	49./	48.7	29./	70.4	28./	54.6	80./	47.6
5	113./	-48.9	21./	-84.2	3./	-14.9	21./	-89.3	33./	-72.5
6	78./	-4.3	15./	46.8	14./	22.4	14./	88.8	8./	-23.4
7	19./	51.1	5./	34.4	9./	-65.4	1./	-30.9	10./	33.3
8	41./	-40.5	2./	8.8	10./	-44.0	4./	52.6	11./	71.1
9	29./	13.0	21./	23.1	7./	2.7	22./	31.0	20./	21.9
10	36./	-71.6	14./	-69.1	13./	-67.8	16./	-58.3	10./	-71.6
11	11./	-5.2	9./	-75.7	5./	-29.1	7./	-75.1	6./	-51.4
12	7./	-57.9	3./	43.2	3./	82.0	2./	-40.6	0./	86.2
PEAK-TO-PEAK	1726.		842.		929.		891.		479.	

FLIGHT NO. 775 AIRCRAFT TOTAL WT = 36009. N LOADED CG X = 5.05 M = 198.6 IN
 RUN NO. 8 8096. LB Y = -.01 = -.6
 TIME 50358.20 (SEC) Z = 1.83 = 72.0

AERODYNAMIC FLIGHT STATE

T. AIRSPEED = 112.2 KT
 A/C MACH NO = .169

BODY ALPHA = -2.1 DEG
 BODY BETA = 1.0 DEG

DYNAMIC PRES = 1.89 KPA = 39.6 PSF
 STATIC PRES = 94.2 KPA = 1968. PSF
 TOTAL TEMP = 291.9 DEG K = 525.5 DEG F
 STATIC TEMP = 290.3 DEG K = 522.5 DEG F
 DENSITY = 1.13 KG/M3 = .00220 SLUG/FT3
 DENSITY ALT = 824. M = 2703. FT
 SONIC SPEED = 342.1 M/SEC = 1122. FPS
 RATE OF CLIMB = -40. M/MIN = -131. FPM

INERTIAL FLIGHT STATE

AXIS	CG LIN VEL (M/S)	CG LIN VEL (FPS)	CG LIN ACC (G)	HUB LIN VEL (M/S)	HUB LIN VEL (FPS)	HUB LIN ACC (G)	AXIS	ANG POS (DEG)	ANG RATES (RAD/SEC)	ANG ACC (RAD/SEC2)
X	57.68	189.2	-.053	57.67	189.2	-.055	ROLL	.9	-.005	-.002
Y	1.00	3.3	-.007	.99	3.3	-.008	PITCH	-2.7	.006	.009
Z	-2.10	-6.9	-1.025	-2.10	-6.9	-1.025	YAW	291.1	-.005	-.001

CONTROL ANGLES

M.R. COLL = 10.1 DEG
 A1 = .3 DEG
 B1 = 5.4 DEG
 HORIZ FIN = 8.3 DEG
 T.R. COLL = 2.5 DEG
 PEDAL POS = 2.8 DEG

ROTOR PARAMETERS

HOVER TIP MACH = .67
 TIP MAX-MACH = .84
 TIP MIN-MACH = .50
 .9R MAX-MACH = .77
 .9R MIN-MACH = .43
 SHAFT ALPHA = -2.1 DEG
 CONTROL ALPHA = -7.5 DEG
 DELTA PSI = -1.0 DEG
 ENGINE POWER = 461. KW = 618. HP
 THRUST FACTOR = .835E+07 N = .188E+07 LB

NASA LANGLEY FLIGHT DATA AH-1G ---- ROTOR PERFORMANCE AND LOADS

FLIGHT NO. 75 MU = .253 TOTAL CQ = .000242 AMR TFMP = 17.1 C = 62.83 F
 V = 112.2 KT MAST CQ = .000221 TEMP U60 = 35.3 C = 95.62 F
 RUN NO. 8 NZ = 1.025 G OMEGA = 34.040 RAD/SEC CAN TEMP = 28.4 C = 83.20 F
 TIME 50358.05 CLP = .00443 RPM/324 = 1.003

ROTOR ANGLES

THETA 3/4 (DEG) A0 = 8.3 A1 = -.5 B1 = 5.7 PEAK-TO-PEAK = 11.5
 TEETER ANG (DEG) A0 = .2 A1 = -1.6 B1 = -.0 PEAK-TO-PEAK = 3.1

ROTOR LOADS (AMP/PHASE)

	DRAG BRACE (N/DEG)	CHORD .449 (N-M/DEG)	CHORD .803 (N-M/DEG)	PITCH LINK (N/DEG)	TORSION .449 (N-M/DEG)
MEAN	43816.	380.	-3071.	-2887.	-476.
HARMONIC-1	3587./ -33.2	788./ -37.6	156./ -36.3	2407./ -36.6	338./ -50.0
2	494./ 63.4	127./ 67.5	23./ -19.4	1673./ -50.8	169./ -49.1
3	1833./ 41.3	495./ 35.3	78./ 47.6	310./ -23.3	71./ 25.8
4	445./ 34.8	222./ 30.2	89./ 23.5	285./ 72.3	51./ 53.3
5	187./ -83.8	55./ -84.2	30./ -71.2	147./ -9.3	26./ -9.6
6	667./ 18.6	416./ 7.9	124./ 6.0	195./ -39.3	23./ -49.6
7	69./ -23.9	41./ 82.1	21./ -85.2	8./ 69.0	4./ 32.5
8	161./ 83.6	74./ -64.5	32./ -60.1	61./ -20.3	5./ 80.9
9	76./ -3.3	132./ 9.6	43./ 8.7	46./ 73.4	6./ .3
10	100./ 31.1	208./ 7.1	110./ 7.4	77./ 14.3	2./ 31.6
11	68./ 82.2	23./ 31.5	21./ 2.3	18./ -88.9	7./ -25.9
12	124./ 26.3	117./ 18.9	71./ 15.9	17./ -83.7	6./ -33.2
PEAK-TO-PEAK	13319.	3180.	856.	7292.	963.

	BEAM .174 (N-M/DEG)	BEAM .350 (N-M/DEG)	BEAM .449 (N-M/DEG)	BEAM .606 (N-M/DEG)	BEAM .803 (N-M/DEG)
MEAN	-2069.	-237.	-267.	-507.	-477.
HARMONIC-1	770./ -56.9	439./ -67.0	435./ -68.4	409./ -77.2	178./ -89.7
2	384./ -58.3	268./ -77.2	283./ -76.0	240./ -71.9	87./ -56.8
3	98./ 62.1	33./ -3.6	43./ 56.6	87./ 76.6	88./ 70.9
4	243./ 52.7	81./ 34.5	47./ 29.6	59./ 53.2	111./ 36.0
5	70./ -6.3	3./ 12.6	26./ 50.0	9./ 73.9	50./ 39.7
6	29./ 81.4	9./ 44.3	23./ 77.8	9./ -60.3	45./ -81.8
7	18./ -53.9	9./ -81.1	21./ 88.7	11./ -34.4	34./ -53.9
8	19./ -7.1	3./ 69.9	10./ -60.7	9./ -20.6	23./ -21.8
9	24./ 54.5	10./ 70.4	3./ 16.1	13./ -59.2	15./ -28.2
10	42./ -4.6	26./ -2	15./ -5.6	32./ 5.4	26./ 17.2
11	6./ -89.2	8./ -56.6	3./ 27.8	5./ -74.8	3./ 57.1
12	20./ -31.1	8./ -26.9	6./ -84.4	7./ -49.9	3./ -30.2
PEAK-TO-PEAK	2517.	1279.	1299.	1222.	728.

FLIGHT NO. 075 AIRCRAFT TOTAL WT = 35824. N LOADED CG X= 5.05 M = 198.7 IN
 RUN NO. 10 8054. LB Y= -.01 = -.6
 TIME 50641.70 (SEC) Z= 1.83 = 72.0

AERODYNAMIC FLIGHT STATE

DYNAMIC PRES= 2.56 KPA = 53.4 PSF
 STATIC PRES= 94.3 KPA = 1969. PSF
 T. AIRSPEED= 130.1 KT TOTAL TEMP= 292.5 DEG K = 526.5 DEG R
 A/C MACH NO= .195 STATIC TEMP= 290.3 DEG K = 522.5 DEG R
 BODY ALPHA= -3.3 DEG DENSITY= 1.13 KG/M3 = .00220 SLUG/FT3
 BODY BETA= -.1 DEG DENSITY ALT= 817. M = 2681. FT
 SONIC SPEED= 342.1 M/SEC = 1122. FPS
 RATE OF CLIMB= -21. M/MIN = -70. FPM

INERTIAL FLIGHT STATE

AXIS	CG LIN VEL (M/S)	CG LIN VEL (FPS)	CG LIN ACC (G)	HUB LIN VEL (M/S)	HUB LIN VEL (FPS)	HUB LIN ACC (G)	AXIS	ANG POS (DEG)	ANG RATE (RAD/SEC)	ANG ACC (RAD/SEC2)
X	66.83	219.3	-.073	66.82	219.2	-.071	ROLL	-.3	.007	.028
Y	-.10	-.3	.008	-.08	-.3	.013	PITCH	-3.6	.005	-.007
Z	-3.86	-12.7	-1.016	-3.86	-12.7	-1.016	YAW	75.0	-.000	-.027

CONTROL ANGLES

M.R. COLL= 11.7 DEG HORIZ FIN= 9.2 DEG
 A1= .3 DEG T.R. COLL= 2.8 DEG
 B1= 6.8 DEG PEDAL POS= 3.2 DEG

ROTOR PARAMETERS

SHAFT ALPHA= -3.3 DEG
 HOVER TIP MACH= .67 CONTROL ALPHA= -10.1 DEG
 TIP MAX-MACH= .86 DELTA PSI= .1 DEG
 TIP MIN-MACH= .47
 .9R MAX-MACH= .80 ENGINE POWER= 563. KW = 755. HP
 .9R MIN-MACH= .40 THRUST FACTOR= .832E+07 N = .187E+07 LB

NASA LANGLEY FLIGHT DATA AH-1G ---- ROTOR PERFORMANCE AND LOADS

FLIGHT NO. 75 MU= .294 TOTAL CO= .000297 AMB TEMP= 17.1 C = 62.81 F
 RUN NO. 10 V= 130.1 KT MAST CO= .000275 TEMP U60= 26.0 C = 96.87 F
 TIME 50641.63 NZ= 1.016 G OMEGA= 33.982 RAD/SEC CAN TEMP= 27.7 C = 81.81 F
 CLP= .00439 RPM/324= 1.001

ROTOR ANGLES

THETA 3/4 (DEG) A0= 9.6 A1= -.7 B1= 7.2 PEAK-TO-PEAK= 14.4
 TEETER ANG (DEG) A0= .2 A1= -2.0 B1= -.4 PEAK-TO-PEAK= 4.0

ROTOR LOADS (AMP/PHASE)

	DRAG BRACE (N/DEG)	CHORD .449 (N-M/DEG)	CHORD .803 (N-M/DEG)	PITCH LINK (N/DEG)	TORSION .449 (N-M/DEG)
MEAN HARMONIC-1	41352.	790.	-2972.	-3556.	-556.
2	4293./ -46.6	920./ -54.8	190./ -50.5	3105./ -40.4	409./ -48.0
3	57./ -56.5	54./ -30.7	39./ 24.8	2308./ -49.3	236./ -53.6
4	3131./ 32.9	741./ 33.6	132./ 45.9	388./ -48.9	95./ 11.0
5	717./ 12.8	391./ -1.4	151./ -6.5	450./ 53.5	70./ 20.0
6	260./ 49.1	128./ -75.0	42./ -87.6	249./ -21.3	47./ -2.7
7	564./ -49.0	263./ -46.3	83./ -46.0	127./ -36.9	9./ -32.0
8	45./ -43.3	14./ -30.8	14./ -20.8	37./ 19.7	6./ 57.1
9	112./ -24.1	62./ -38.4	26./ -49.9	78./ -50.0	9./ 85.6
10	47./ -50.4	28./ -11.8	5./ 39.4	31./ 15.5	6./ -67.9
11	57./ -12.2	26./ 32.0	11./ -60.2	74./ -.2	4./ -82.6
12	63./ -50.7	2./ -47.1	8./ -71.8	53./ 79.2	4./ 9.1
PEAK-TO-PEAK	79./ -22.3	30./ 6.7	9./ 1.3	22./ -29.5	4./ 6.3
	14973.	3840.	756.	9800.	1159.
	BEAM .174 (N-M/DEG)	BEAM .350 (N-M/DEG)	BEAM .449 (N-M/DEG)	BEAM .606 (N-M/DEG)	BEAM .803 (N-M/DEG)
MEAN HARMONIC-1	-1988.	-229.	-244.	-480.	-467.
2	1106./ -62.7	557./ -65.4	544./ -65.2	493./ -69.5	206./ 87.9
3	496./ -55.3	343./ -85.9	346./ -87.7	300./ -81.1	133./ -57.4
4	754./ 37.9	21./ -58.1	53./ 49.0	148./ 66.4	169./ 65.9
5	365./ 34.4	113./ 10.6	55./ -13.3	83./ 29.0	142./ 13.0
6	110./ -38.1	1./ 20.1	24./ 7.1	10./ -44.2	56./ 22.1
7	23./ -68.8	5./ 28.0	13./ -57.4	10./ -88.4	38./ -78.8
8	21./ 24.6	7./ 48.1	13./ 32.7	5./ -67.4	33./ -88.3
9	22./ -68.0	5./ 41.5	14./ 86.5	11./ -71.9	28./ -61.9
10	19./ 10.2	11./ 84.4	6./ 10.6	15./ -70.3	20./ -43.8
11	40./ -32.7	21./ -31.4	12./ -32.1	27./ -12.8	23./ -2.7
12	9./ -50.2	9./ -64.3	4./ -51.4	8./ -78.5	5./ -69.8
PEAK-TO-PEAK	14./ -66.0	6./ 88.9	8./ 77.8	7./ -71.8	3./ 88.9
	3647.	1679.	1590.	1501.	972.

NASA LANGLEY FLIGHT DATA AH-1G ---- PADS PCM DATA

FLIGHT NO. 075 AIRCRAFT TOTAL WT = 35635. N LOADED CG X = 5.05 M = 198.7 IN
 RUN NO. 17 8012. LB Y = -.01 = -.6
 TIME 50963.20 (SEC) Z = 1.83 = 72.1

AERODYNAMIC FLIGHT STATE DYNAMIC PRES = 3.42 KPA = 71.5 PSF
 STATIC PRES = 94.5 KPA = 1974. PSF
 T. AIRSPEED = 150.2 KT TOTAL TEMP = 293.1 DEG K = 527.5 DEG R
 A/C MACH NO = .225 STATIC TEMP = 290.1 DEG K = 522.1 DEG R
 BODY ALPHA = -5.9 DEG DENSITY = 1.14 KG/M3 = .00220 SLUG/FT3
 BODY BETA = -.0 DEG DENSITY ALT = 788. M = 2586. FT
 SONIC SPEED = 342.0 M/SEC = 1122. FPS
 RATE OF CLIMB = -22. M/MIN = -71. FPM

INERTIAL FLIGHT STATE

AXIS	CG LIN VEL (M/S)	CG LIN VEL (FPS)	CG LIN ACC (G)	HUB LIN VEL (M/S)	HUB LIN VEL (FPS)	HUB LIN ACC (G)	AXIS	ANG POS (DEG)	ANG RATES (RAD/SEC)	ANG ACC (RAD/SEC ²)
X	76.84	252.1	-.102	76.83	252.1	-.104	ROLL	-.7	.001	-.048
Y	-.02	-.1	.015	-.01	-.0	.005	PITCH	-6.2	.006	.008
Z	-7.95	-26.1	-.996	-7.96	-26.1	-.996	YAW	292.4	.007	-.020

CONTROL ANGLES M.R. COLL = 14.3 DEG HORIZ FIN = 10.5 DEG
 A1 = .0 DEG T.R. COLL = 3.5 DEG
 B1 = 8.3 DEG PEDAL POS = 3.9 DEG

ROTOR PARAMETERS

HOVER TIP MACH = .67 SHAFT ALPHA = -5.9 DEG
 CONTROL ALPHA = -14.2 DEG
 TIP MAX-MACH = .89 DELTA PSI = .0 DEG
 TIP MIN-MACH = .44
 .9R MAX-MACH = .83 ENGINE POWER = 754. KW = 1011. HP
 .9R MIN-MACH = .37 THRUST FACTOR = .834E+07 N = .188E+07 LB

NASA LANGLEY FLIGHT DATA AH-1G ---- ROTOR PERFORMANCE AND LOADS

FLIGHT NO. 75 MU = .339 TOTAL CO = .000398 AMB TEMP = 16.9 C = 62.47 F
 RUN NO. 12 V = 150.2 KT MAST CO = .000367 TEMP U60 = 36.7 C = 98.14 F
 TIME 50963.11 NZ = .996 G OMEGA = 33.961 RAD/SEC CAN TEMP = 27.3 C = 81.11 F
 CLP = .00427 RPM/324 = 1.001

ROTOR ANGLES THETA 3/4 (DEG) A0 = 11.9 A1 = -.9 B1 = 9.7 PEAK-TO-PEAK = 18.4
 TEETER ANG (DEG) A0 = .3 A1 = -2.3 B1 = -.9 PEAK-TO-PEAK = 4.8

ROTOR LOADS (AMP/PHASE)	DRAG BRACE (N/DEG)	CHORD .449 (N-M/DEG)	CHORD .803 (N-M/DEG)	PITCH LINK (N/DFG)	TORSION .449 (N-M/DEG)
MEAN HARMONIC-1	37191.	1435.	-2881.	-4656.	-678.
2	7165./ -66.6	1624./ -70.2	300./ -68.0	4064./ -43.4	499./ -46.8
3	926./ -67.8	320./ -35.0	98./ -16.8	3157./ -44.0	310./ -53.7
4	4946./ 46.4	1191./ 46.5	231./ 50.4	468./ -89.9	115./ -2.7
5	848./ -4.7	519./ -5.8	188./ -13.6	593./ 67.0	84./ 12.0
6	449./ 86.7	220./ -73.6	78./ -74.4	260./ -.6	52./ 26.8
7	585./ -83.6	277./ -79.7	88./ -77.9	274./ 2.7	33./ 3.0
8	120./ 78.8	27./ 17.7	13./ 55.5	29./ 86.2	5./ -45.8
9	169./ 57.2	104./ 33.1	31./ 42.3	10./ 23.8	5./ 87.7
10	118./ -24.3	11./ 69.5	8./ -75.7	17./ -13.4	2./ 25.7
11	122./ -21.2	66./ -72.9	54./ -63.8	62./ -70.7	1./ -48.0
12	69./ 11.9	60./ -13.1	32./ -7.8	6./ -45.1	4./ 55.1
PEAK-TO-PEAK	75./ 88.0	19./ -32.0	16./ -59.3	28./ 44.2	3./ -60.3
	24926.	5814.	1272.	13189.	1435.

	BEAM .174 (N-M/DEG)	BEAM .350 (N-M/DEG)	BEAM .449 (N-M/DEG)	BEAM .606 (N-M/DEG)	BEAM .803 (N-M/DEG)
MEAN HARMONIC-1	-1747.	-202.	-213.	-436.	-436.
2	1732./ -69.6	698./ -68.4	651./ -66.7	599./ -68.8	259./ 89.4
3	730./ -50.1	423./ -87.0	410./ 87.8	330./ -89.8	131./ -57.6
4	517./ 25.4	36./ -22.8	96./ 62.5	238./ 53.5	252./ 49.9
5	421./ 39.5	121./ 9.6	57./ -17.7	81./ 32.4	133./ 5.9
6	129./ -38.8	6./ 22.0	31./ -7.0	13./ -17.0	71./ -3.4
7	35./ -42.7	14./ 9.6	17./ -40.8	16./ 71.0	25./ -63.2
8	9./ -55.2	1./ -13.1	10./ 78.7	14./ -72.0	30./ 83.1
9	21./ 60.2	3./ -74.8	12./ 72.6	9./ 75.4	24./ 89.9
10	12./ -28.9	3./ -27.0	11./ -43.9	7./ -84.6	14./ -60.4
11	30./ -88.1	22./ -81.6	7./ 62.0	24./ -71.7	20./ -54.2
12	20./ -88.6	2./ -65.5	9./ 48.7	5./ -75.0	3./ -57.0
PEAK-TO-PEAK	12./ -82.7	6./ 69.5	5./ -16.5	4./ -78.9	1./ -11.3
	5409.	2019.	1854.	1822.	1242.

FLIGHT NO. 775 AIRCRAFT TOTAL WT = 35525. N LOADED CG X = 5.05 M = 166.6 IN
 RUN NO. 13 7987. LB Y = -.01 = -.6
 TIME 51113.70 (SEC) Z = 1.83 = 77.1

AERODYNAMIC FLIGHT STATE

T. AIRSPEED = 161.2 KT DYNAMIC PRES = 3.95 KPA = 82.5 PSF
 A/C MACH NO = .243 STATIC PRES = 94.4 KPA = 1971. PSF
 TOTAL TEMP = 293.5 DEG K = 528.3 DEG R
 STATIC TEMP = 290.1 DEG K = 522.1 DEG R
 BODY ALPHA = -6.7 DEG DENSITY = 1.13 KG/M3 = .00270 SLUG/FT3
 BODY BETA = -.2 DEG DENSITY ALT = 802. M = 2631. FT
 SONIC SPEED = 342.0 M/SEC = 1122. FPS
 RATE OF CLIMB = 59. M/MIN = 193. FPM

INERTIAL FLIGHT STATE

AXIS	CG LIN VEL (M/S)	CG LIN VEL (FPS)	CG LIN ACC (G)	HUB LIN VEL (M/S)	HUB LIN VEL (FPS)	HUB LIN ACC (G)	AXIS	ANG POS (DEG)	ANG RATES (RAD/SEC)	ANG ACC (RAD/SEC2)
X	82.38	270.3	-.118	82.37	270.2	-.123	ROLL	-.8	.006	-.061
Y	-.35	-1.2	.023	-.34	-1.1	.010	PITCH	-6.0	.004	.023
Z	-9.65	-31.7	-1.027	-9.65	-31.7	-1.027	YAW	80.1	-.003	-.028

CONTROL ANGLES M.R. COLL = 15.8 DEG HORIZ FIN = 11.3 DEG
 A1 = -.3 DEG T.R. COLL = 3.9 DEG
 R1 = 9.1 DEG PEDAL POS = 4.3 DEG

ROTOR PARAMETERS

HOVER TIP MACH = .67 SHAFT ALPHA = -6.7 DEG
 CONTROL ALPHA = -15.7 DEG
 TIP MAX-MACH = .91 DELTA PSI = .2 DEG
 TIP MIN-MACH = .43
 .9R MAX-MACH = .85 ENGINE POWER = 878. KW = 1178. HP
 .9R MIN-MACH = .36 THRUST FACTOR = .838E+07 N = .188E+07 LB

NASA LANGLEY FLIGHT DATA AH-1G ---- ROTOR PERFORMANCE AND LOADS

FLIGHT NO. 75 MU = .363 TOTAL CO = .000459 AMB TEMP = 14.9 C = 62.43 F
 RUN NO. 13 V = 161.2 KT MAST CO = .000425 TEMP U60 = 37.1 C = 98.87 F
 TIME 51113.63 NZ = 1.027 G OMEGA = 34.065 RAD/SEC CAN TEMP = 27.3 C = 81.11 F
 CLP = .00436 RPM/324 = 1.004

ROTOR ANGLES THETA 3/4 (DEG) AO = 13.3 A1 = -1.3 R1 = 10.4 PFAK-TO-PEAK = 20.9
 TESTER ANG (DEG) AO = .3 A1 = -2.4 R1 = -1.2 PFAK-TO-PEAK = 5.3

ROTOR LOADS (AMP/PHASE) DRAG BRACE CHORD .449 CHORD .803 PITCH LINK TORSION .449
 (N/DEG) (N-M/DEG) (N-M/DEG) (N-M/DEG)

	MEAN	35035.	1834.	-2862.	-5272.	-764.				
HARMONIC-1	9018./	-68.8	2134./	-72.7	379./	-70.2	4767./	-44.9	573./	-47.7
2	1080./	-50.4	499./	-21.2	160./	-6.3	3796./	-38.9	353./	-52.3
3	6471./	48.6	1574./	48.3	306./	51.2	708./	70.6	116./	-7.2
4	1183./	-9.2	679./	-14.0	242./	-20.5	669./	66.2	100./	9.2
5	599./	88.7	257./	-68.8	85./	-64.0	272./	5.4	61./	42.9
6	636./	-38.6	314./	-42.0	90./	-39.4	305./	30.7	39./	32.6
7	188./	-61.6	116./	-59.0	40./	-52.9	61./	71.7	7./	-19.6
8	156./	72.3	103./	46.5	34./	45.1	5./	-92.5	4./	-75.0
9	11./	-38.5	79./	-17.6	30./	-31.8	24./	-70.7	2./	28.2
10	132./	-6.9	76./	83.1	47./	-85.2	48./	-35.0	3./	65.3
11	62./	48.0	80./	19.6	49./	5.2	8./	46.0	8./	-35.8
12	82./	44.2	30./	-3.2	12./	.3	12./	72.1	5./	-9.5
PEAK-TO-PEAK	31045.		7510.		1612.		15952.		1589.	

BEAM .174 BEAM .350 BEAM .449 BEAM .606 BEAM .803
 (N-M/DEG) (N-M/DEG) (N-M/DEG) (N-M/DEG) (N-M/DEG)

	MEAN	-1491.	-182.	-202.	-423.	-432.				
HARMONIC-1	2209./	-71.6	796./	-69.8	718./	-67.3	661./	-68.8	302./	-89.7
2	886./	-41.3	468./	-83.1	449./	89.3	361./	89.9	132./	-62.0
3	733./	29.1	53./	-9.5	114./	58.1	301./	47.8	334./	44.1
4	441./	38.5	129./	7.2	62./	-22.5	77./	33.5	129./	.9
5	137./	-41.6	7./	-31.1	32./	-18.7	14./	-14.4	72./	-8.4
6	46./	-19.5	17./	28.8	19./	-28.3	17./	84.8	18./	-42.0
7	28./	70.6	5./	-40.1	1./	-45.0	11./	-43.9	18./	76.7
8	15./	34.4	3./	-40.7	10./	64.3	10./	-70.1	25./	-84.3
9	6./	-11.3	7./	84.4	7./	-73.5	14./	-74.8	20./	-57.4
10	21./	-70.7	14./	-77.3	3./	77.5	19./	-68.4	15./	-50.8
11	28./	-74.6	6./	-68.7	15./	72.7	8./	-84.4	6./	-62.5
12	8./	59.0	4./	68.8	2./	.2	4./	-56.4	1./	-15.3
PEAK-TO-PEAK	6796.		2363.		2043.		2025.		1476.	

NASA LANGLEY FLIGHT DATA AH-1G ---- PADS PCM DATA

FLIGHT NO. 077 AIRCRAFT TOTAL WT = 36717. N LOADED CG X= 5.03 M = 198.1 IN
 RUN NO. 2 8255. LB Y= -0.00 = -0.0
 TIME 50746.20 (SEC) Z= 1.83 = 71.9

AERODYNAMIC FLIGHT STATE DYNAMIC PRES= 0.00 KPA = 0.0 PSF
 T. AIRSPEED= 0.0 KT STATIC PRES= 100.4 KPA = 2097. PSF
 A/C MACH NO= 0.000 TOTAL TEMP= 290.1 DEG K = 522.2 DEG R
 STATIC TEMP= 290.1 DEG K = 522.2 DEG R
 BODY ALPHA= 2.4 DEG DENSITY= 1.21 KG/M3 = .00234 SLUG/FT3
 BODY BETA= -3.4 DEG DENSITY ALT= 162. M = 532. FT
 SONIC SPEED= 342.0 M/SEC = 1122. FPS
 RATE OF CLIMB= 0. M/MIN = 0. FPM

INERTIAL FLIGHT STATE

AXIS	CG LIN VEL (M/S)	CG LIN VEL (FPS)	CG LIN ACC (G)	HUB LIN VEL (M/S)	HUB LIN VEL (FPS)	HUB LIN ACC (G)	AXIS	ANG POS (DEG)	ANG RATES (RAD/SEC)	ANG ACC (RAD/SEC2)
X	0.00	0.0	-0.023	0.00	0.0	-0.028	ROLL	.0	.001	-0.056
Y	0.00	0.0	.007	0.00	0.0	-0.005	PITCH	-0.8	-0.001	.023
Z	0.00	0.0	-1.027	0.00	0.0	-1.027	YAW	324.2	-0.030	.022

CONTRJL ANGLES M.R. COLL= 10.4 DEG HORIZ FIN= 6.0 DEG
 A1= -1.7 DEG T.R. COLL= 8.2 DEG
 B1= -1.4 DEG PEDAL PGS= 8.6 DEG

ROTOR PARAMETERS HOVER TIP MACH= .67 SHAFT ALPHA= 0.0 DEG HUB HEIGHT = 0.8 R
 CONTROL ALPHA= 1.4 DEG
 TIP MAX-MACH= .67 DELTA PSI= 0.0 DEG
 TIP MIN-MACH= .67
 .9R MAX-MACH= .60 THRUST FACTOR= .884E+07 N = .199E+07 LB
 .9R MIN-MACH= .60

NASA LANGLEY FLIGHT DATA AH-1G ---- ROTOR PERFORMANCE AND LOADS

FLIGHT NO. 77 NU=0.000 TOTAL CQ= .000302 AMB TEMP= 17.0 C = 62.52 F
 RUN NO. 2 V= 0.0 KT MAST CQ= .000257 TEMP U60= 31.5 C = 88.75 F
 TIME 50746.14 NZ= 1.027 G OMEGA= 33.943 RAD/SEC CAN TEMP= 36.2 C = 97.11 F
 CLP= .00410 RPM/324= 1.000

ROTOR ANGLES THETA 3/4 (DEG) AO= 7.9 A1= -1.8 B1= -1.1 PEAK-TO-PEAK= 3.9
 TEETER ANG (DEG) AO= .2 A1= 1.3 B1= -1.6 PEAK-TO-PEAK= 4.2

ROTOR LOADS (AMP/PHASE)	DRAG BRACE (N/DEG)	CHORD .449 (N-M/DEG)	CHORD .803 (N-M/DEG)	PITCH LINK (N/DEG)	TORSION .449 (N-M/DEG)
MEAN	40589.	655.	-2891.	-2691.	-399.
HARMONIC-1	781./ 56.8	335./ 85.1	82./ -67.6	986./ -30.1	25./ -50.4
2	366./ 7.4	107./ 12.6	30./ -2.9	257./ 84.2	22./ 76.6
3	1106./ 31.2	264./ 34.9	57./ 28.3	273./ -87.0	36./ 15.8
4	322./ -12.1	58./ 44.4	31./ 71.9	124./ -35.2	17./ -78.5
5	90./ -63.7	48./ 7.4	14./ -3.5	77./ -33.7	16./ -0.
6	658./ -77.2	357./ -78.5	112./ -80.7	35./ 47.9	11./ 4.1
7	59./ -61.4	89./ 16.4	31./ -13.0	176./ -60.1	9./ 62.1
8	150./ 74.1	66./ -75.1	18./ -60.7	50./ 87.5	1./ -56.9
9	159./ -28.6	31./ -32.4	16./ 14.0	54./ -68.7	6./ -39.0
10	66./ -40.2	40./ 36.9	20./ 39.9	40./ -77.4	2./ 4.1
11	53./ -83.6	18./ -64.5	16./ -56.5	17./ -86.3	2./ -45.8
12	46./ -39.0	14./ -82.1	4./ -22.4	5./ -84.5	1./ -25.4
PEAK-TO-PEAK	4393.	1601.	481.	2531.	164.
	BEAM .174 (N-M/DEG)	BEAM .350 (N-M/DEG)	BEAM .449 (N-M/DEG)	BEAM .606 (N-M/DEG)	BEAM .803 (N-M/DEG)
MEAN	-1026.	-84.	-127.	-342.	-396.
HARMONIC-1	70./ -17.5	100./ -2.5	112./ 2.9	146./ -8.6	115./ -14.8
2	20./ -71.4	25./ 28.6	42./ 32.5	46./ 49.4	24./ -10.0
3	59./ 63.3	47./ 36.2	45./ 29.3	50./ 15.8	47./ 3.5
4	49./ -76.6	28./ 87.8	11./ -63.4	20./ -88.4	35./ -61.6
5	23./ 67.7	12./ 75.2	10./ -3	17./ 49.2	18./ -62.2
6	12./ 63.3	5./ -84.2	12./ -67.8	8./ 77.6	19./ 80.3
7	73./ -51.1	28./ -20.3	49./ -39.2	20./ 84.0	51./ -46.0
8	26./ 70.4	4./ 49.5	8./ 53.7	4./ 8.2	6./ -22.1
9	13./ -59.8	6./ -54.2	7./ -14.1	6./ 33.5	4./ -26.8
10	16./ 88.5	6./ 83.8	7./ -83.4	7./ -78.8	8./ -84.6
11	5./ -68.6	10./ -80.1	6./ 57.5	10./ -90.0	5./ -62.0
12	4./ 54.2	5./ 62.8	3./ 11.2	4./ -59.0	2./ 4.1
PEAK-TO-PEAK	476.	373.	375.	503.	375.

FLIGHT NO. 078 AIRCRAFT TOTAL WT = 36599. N LOADED CG X = 5.03 M = 198.2 IN
 RUN NO. 2 2228. LB Y = -.00 = -.0
 TIME 53534.30 (SEC) Z = 1.82 = 71.6

AERODYNAMIC FLIGHT STATE

DYNAMIC PRES = 0.00 KPA = 0.0 PSF
 STATIC PRES = 102.0 KPA = 2129. PSF
 TOTAL TEMP = 296.7 DEG K = 534.1 DEG R
 STATIC TEMP = 296.7 DEG K = 534.1 DEG R
 T. AIRSPEED = 0.0 KT
 A/C MACH NO = 0.000
 BODY ALPHA = 17.7 DEG DENSITY = 1.20 KG/M3 = .00232 SLUG/FT3
 BODY BETA = 9.9 DEG DENSITY ALT = 239. M = 783. FT
 SONIC SPEED = 345.9 M/SEC = 1135. FPS
 RATE OF CLIMB = 0. M/MIN = 0. FPM

INERTIAL FLIGHT STATE

AXIS	CG LIN VEL (M/S)	CG LIN VEL (FPS)	CG LIN ACC (G)	HUB LIN VEL (M/S)	HUB LIN VEL (FPS)	HUB LIN ACC (G)	AXIS	ANG POS (DEG)	ANG PATES (RAD/SEC)	ANG ACC (RAD/SEC2)
X	0.00	0.0	-.014	0.00	0.0	-.013	ROLL	-1.1	.009	.062
Y	0.00	0.0	.009	0.00	0.0	.022	PITCH	-.5	.006	-.005
Z	0.00	0.0	-1.005	0.00	0.0	-1.005	YAW	336.8	.052	.017

CONTROL ANGLES

M.F. COLL = 11.5 DEG HORIZ FIN = 6.3 DEG
 A1 = -1.7 DEG T.R. COLL = 10.2 DEG
 B1 = -1.4 DEG PEDAL POS = 10.1 DEG

ROTOR PARAMETERS

HOVER TIP MACH = .64 SHAFT ALPHA = 0.0 DEG HUB HEIGHT = 1.9 R
 CONTROL ALPHA = 1.4 DEG
 TIP MAX-MACH = .64 DELTA PSI = 0.0 DEG
 TIP MIN-MACH = .64
 .9R MAX-MACH = .56 THRUST FACTOR = .834E+07 N = .137E+07 LB
 .9R MIN-MACH = .53

NASA LANGLEY FLIGHT DATA AH-1G ---- ROTOR PERFORMANCE AND LOADS

FLIGHT NO. 78 MU=0.000 TOTAL CG = .000364 AMB TEMP = 23.6 C = 74.42 F
 V = 0.0 KT MAST CG = .000324 TEMP U60 = 38.4 C = 101.19 F
 RUN NO. 2 NZ = 1.005 G OMEGA = 33.525 RAD/SEC CAN TEMP = 41.2 C = 106.14 F
 TIME 53533.86 CLP = .00439 RPM/324 = .988

ROTOR ANGLES

THETA 3/4 (DEG) AO = 8.7 A1 = -1.8 B1 = -1.2 PEAK-TO-PEAK = 4.4
 TEETER ANG (DEG) AO = .2 A1 = 1.6 B1 = -1.6 PEAK-TO-PEAK = 4.4

ROTOR LOADS (AMP/PHASE)

	DRAG BRACE (N/DEG)	CHORD .449 (N-M/DEG)	CHORD .803 (N-M/DEG)	PITCH LINK (N/DEG)	TORSION .449 (N-M/DEG)
MEAN	38585.	739.	-2626.	-3053.	-421.
HARMONIC-1	1607./ 72.7	522./ 76.4	114./ 60.7	1231./ -32.2	5./ 28.1
2	303./ -45.3	129./ -47.9	25./ -59.8	285./ -12.1	43./ 18.3
3	1049./ 59.4	241./ 68.4	24./ 49.6	135./ -45.7	25./ 30.0
4	754./ 46.7	453./ 23.3	184./ 22.4	254./ 47.5	80./ 28.0
5	322./ -33.0	62./ -63.5	23./ -82.8	104./ -7.2	26./ -73.6
6	308./ 30.6	212./ 43.1	68./ 41.6	158./ 52.7	17./ 48.3
7	207./ 39.9	98./ 5.9	26./ -1.1	22./ -52.3	8./ -31.6
8	286./ 70.0	125./ 44.8	39./ 41.3	22./ 79.4	9./ -80.5
9	111./ 62.9	95./ -36.7	39./ -11.5	11./ 79.7	2./ 85.3
10	73./ 44.6	39./ 80.0	19./ 87.0	49./ -3.8	2./ -85.5
11	57./ 5.6	83./ 82.7	34./ 88.9	10./ 67.6	3./ 25.9
12	86./ 42.1	19./ -31.2	10./ -13.5	12./ 19.0	5./ 77.6
PEAK-TU-PEAK	6178.	2144.	709.	3304.	205.
	BEAM .174 (N-M/DEG)	BEAM .350 (N-M/DEG)	BEAM .449 (N-M/DEG)	BEAM .606 (N-M/DEG)	BEAM .803 (N-M/DEG)
MEAN	-994.	-31.	-54.	-248.	-367.
HARMONIC-1	7./ 88.5	8./ 62.2	4./ 88.2	15./ 64.9	33./ 20.5
2	26./ -26.0	44./ -18.9	48./ -12.1	63./ -.9	20./ 28.2
3	63./ 43.1	62./ 48.1	41./ 51.1	20./ 27.8	30./ -65.5
4	228./ 33.4	121./ 20.6	45./ 8.0	78./ 50.5	134./ 10.2
5	58./ 26.3	24./ 24.9	6./ -76.9	24./ 3.6	29./ -23.2
6	21./ 56.9	5./ 50.2	7./ -22.2	6./ 73.2	10./ -51.2
7	21./ -46.6	11./ 50.9	14./ -15.9	10./ -79.4	32./ -17.5
8	23./ -66.3	7./ 17.2	11./ -54.8	7./ 53.8	19./ -61.1
9	8./ 56.1	0./ -51.0	5./ -47.6	1./ 81.4	6./ -48.2
10	12./ -12.0	16./ 3.7	10./ -13.5	18./ -.3	12./ -16.5
11	9./ -32.5	8./ 5.6	6./ 1.5	11./ -2.3	9./ -11.5
12	8./ 76.0	8./ 48.1	4./ 10.8	7./ 9.2	3./ -13.1
PEAK-TU-PEAK	607.	428.	296.	324.	411.

FLIGHT NO. 078 AIRCRAFT TOTAL WT = 36127. N LOADED CG X= 5.04 M = 198.6 IN
 RUN NO. 6 8122. LB Y= -.00 = -.0
 TIME 54334.70 (SEC) Z= 1.83 = 71.9

AERODYNAMIC FLIGHT STATE DYNAMIC PRES= 1.33 KPA = 27.7 PSF
 STATIC PRES= 99.4 KPA = 2076. PSF
 T. AIRSPEED= 92.1 KT TOTAL TEMP= 294.6 DEG K = 530.2 DEG R
 A/C MACH NO= .138 STATIC TEMP= 293.4 DEG K = 528.2 DEG R
 BODY ALPHA= -1.1 DEG DENSITY= 1.18 KG/M3 = .00229 SLUG/FT3
 BODY BETA= .4 DEG DENSITY ALT= 389. M = 1275. FT
 SONIC SPEED= 344.0 M/SEC = 1129. FPS
 RATE OF CLIMB= -45. M/MIN = -147. FPM

INERTIAL FLIGHT STATE

AXIS	CG LIN VEL (M/S)	CG LIN VEL (FPS)	CG LIN ACC (G)	HUB LIN VEL (M/S)	HUB LIN VEL (FPS)	HUB LIN ACC (G)	AXIS	ANG POS (DEG)	ANG RATES (RAD/SEC)	ANG ACC (RAD/SEC2)
X	47.37	155.4	-.037	47.35	155.4	-.034	ROLL	.0	.008	.003
Y	.33	1.1	.006	.35	1.1	.007	PITCH	-2.0	.007	-.014
Z	-.91	-3.0	-1.019	-.91	-3.0	-1.019	YAW	161.2	-.001	-.022

CONTROL ANGLES M.R. COLL= 9.0 DEG HORIZ FIN= 7.6 DEG
 A1= .3 DEG T.R. COLL= 1.4 DEG
 B1= 4.1 DEG PEDAL POS= 1.8 DEG

ROTOR PARAMETERS

HOVER TIP MACH= .65 SHAFT ALPHA= -1.1 DEG
 CONTROL ALPHA= -5.2 DEG
 TIP MAX-MACH= .79 DELTA PSI= -.4 DEG
 TIP MIN-MACH= .52
 .9R MAX-MACH= .73 ENGINE POWER= 377. KW = 505. HP
 .9R MIN-MACH= .45 THRUST FACTOR= .844E+07 N = .190E+07 LB

NASA LANGLEY FLIGHT DATA AH-1G ---- ROTOR PERFORMANCE AND LOADS

FLIGHT NO. 78 MU= .208 TOTAL CQ= .000194 AMB TEMP= 20.3 C = 68.54 F
 RUN NO. 6 V= 92.1 KT MAST CQ= .000185 TEMP U60= 37.8 C = 100.00 F
 TIME 54334.61 N7= 1.019 G OMEGA= 33.938 RAD/SEC CAN TEMP= 31.9 C = 89.47 F
 CLP= .00426 RPM/324= 1.000

ROTOR ANGLES THETA 3/4 (DEG) A0= 7.1 A1= -.6 B1= 4.2 PFAK-TO-PEAK= 8.6
 TEETER ANG (DEG) A0= .2 A1= -1.3 B1= .2 PEAK-TO-PEAK= 2.6

ROTOR LOADS (AMP/PHASE)	DRAG BRACE (N/DEG)	CHORD .449 (N-M/DEG)	CHORD .803 (N-M/DEG)	PITCH LINK (N/DEG)	TORSION .449 (N-M/DEG)
MEAN	44608.	174.	-3022.	-2304.	-426.
HARMONIC-1	3329./ -7.7	697./ -12.9	126./ -20.3	1913./ -28.2	279./ -49.0
2	244./ -81.2	158./ 74.9	12./ -64.6	898./ -48.8	80./ -42.1
3	1930./ 42.6	445./ 35.9	54./ 50.0	324./ 2.6	47./ 47.4
4	386./ 22.7	214./ 18.1	88./ 11.7	230./ 63.6	30./ 27.8
5	392./ -59.0	107./ -70.8	23./ 73.7	188./ -58.8	19./ -11.6
6	1437./ -18.5	847./ -22.9	252./ -20.8	169./ 37.1	35./ 30.3
7	287./ -2.6	145./ .9	47./ 9.5	89./ -1.9	7./ 15.8
8	236./ 63.2	129./ 51.7	54./ 43.7	30./ -71.4	4./ 61.8
9	88./ -83.1	42./ -61.5	18./ -70.7	80./ -40.4	3./ -49.5
10	141./ 7.3	125./ 78.9	52./ 71.3	76./ 46.5	1./ 68.0
11	130./ 28.6	25./ 63.2	24./ 71.9	16./ -54.7	4./ -11.3
12	40./ 85.3	54./ -47.9	32./ -63.8	17./ -36.7	3./ -52.3
PEAK-TO-PEAK	11660.	3407.	956.	5109.	638.

	BEAM .174 (N-M/DEG)	BEAM .350 (N-M/DEG)	BEAM .449 (N-M/DEG)	BEAM .606 (N-M/DEG)	BEAM .803 (N-M/DEG)
MEAN	-2113.	-244.	-263.	-518.	-498.
HARMONIC-1	570./ -46.6	341./ -63.1	364./ -62.1	351./ -64.1	134./ -78.2
2	189./ -58.9	135./ -61.7	147./ -54.3	144./ -46.1	67./ -38.2
3	151./ 25.1	82./ 32.5	65./ 47.7	53./ -79.9	66./ -61.1
4	192./ 30.9	60./ 27.0	32./ 45.5	36./ 31.2	91./ 25.7
5	121./ -73.4	19./ 76.4	3./ -59.9	20./ 68.2	35./ 85.8
6	78./ -50.3	15./ 4.2	11./ -40.4	18./ 54.8	15./ -74.6
7	34./ 39.4	7./ 16.2	15./ 59.0	1./ 44.9	10./ -22.1
8	47./ -65.8	5./ -37.3	9./ -78.3	5./ 31.7	13./ 45.4
9	43./ -38.6	29./ -31.7	8./ -23.0	29./ -23.4	31./ -19.5
10	47./ 38.6	18./ 39.4	15./ 45.6	19./ 40.9	12./ 43.4
11	5./ 15.3	8./ -4.1	4./ 6.1	9./ 12.4	6./ 24.9
12	7./ -49.8	5./ -1.1	5./ -21.5	4./ -16.2	4./ -15.9
PEAK-TO-PEAK	1710.	920.	958.	943.	531.

NASA LANGLEY FLIGHT DATA AH-1G ---- PADS PCM DATA

FLIGHT NO. 078 AIRCRAFT TOTAL WT = 36013. N LOADED CG X = 5.05 M = 198.6 IN
 RUN NO. 8 8097. LB Y = -.00 = -.0
 TIME 54497.70 (SEC) Z = 1.83 = 71.9

AERODYNAMIC FLIGHT STATE DYNAMIC PRES = 1.87 KPA = 39.1 PSF
 STATIC PRES = 99.5 KPA = 2078. PSF
 T. AIRSPEED = 109.2 KT TOTAL TEMP = 295.2 DEG K = 531.3 DEG R
 A/C MACH NO = .163 STATIC TEMP = 293.6 DEG K = 528.5 DEG R
 BODY ALPHA = -2.4 DEG DENSITY = 1.18 KG/M3 = .00279 SLUG/FT3
 BODY BETA = -.0 DEG DENSITY ALT = 383. M = 1257. FT
 SONIC SPEED = 344.1 M/SEC = 1129. FPS
 RATE OF CLIMB = -43. M/MIN = -141. FPM

INERTIAL FLIGHT STATE

AXIS	CG LIN VEL (M/S)	CG LIN VEL (FPS)	CG LIN ACC (G)	HUB LIN VEL (M/S)	HUB LIN VEL (FPS)	HUB LIN ACC (G)	AXIS	ANG POS (DFG)	ANG RATES (RAD/SEC)	ANG ACC (RAD/SEC2)
X	56.11	184.1	-.050	56.11	184.1	-.047	ROLL	.4	.010	-.051
Y	-.00	-.0	.005	.02	.1	-.005	PITCH	-3.1	-.000	-.016
Z	-2.31	-7.6	-1.014	-2.31	-7.6	-1.014	YAW	159.6	-.000	.019

CONTROL ANGLES M.R. COLL = 10.2 DEG HORIZ FIN = 8.4 DEG
 A1 = .3 DEG T.R. COLL = 2.0 DFG
 B1 = 5.4 DEG PEDAL POS = 2.4 DFG

ROTOR PARAMETERS HOVER TIP MACH = .65 SHAFT ALPHA = -2.4 DEG
 CONTROL ALPHA = -7.8 DEG
 TIP MAX-MACH = .82 DELTA PSI = -.0 DEG
 TIP MIN-MACH = .49
 .9R MAX-MACH = .75 ENGINE POWER = 465. KW = 623. HP
 .9R MIN-MACH = .42 THRUST FACTOR = .839E+07 N = .189E+07 LB

NASA LANGLEY FLIGHT DATA AH-1G ---- ROTOR PERFORMANCE AND LOADS

FLIGHT NO. 78 MU = .248 TOTAL CQ = .000241 AMB TEMP = 20.4 C = 68.80 F
 RUN NO. 8 V = 109.2 KT MAST CQ = .000231 TEMP U60 = 38.1 C = 100.62 F
 TIME 54497.60 NZ = 1.014 G OMEGA = 33.837 RAD/SEC CAN TEMP = 30.8 C = 87.39 F
 CLP = .00425 RPM/324 = .997

ROTOR ANGLES THETA 3/4 (DEG) AO = 8.1 A1 = -.6 B1 = 5.6 PEAK-TO-PEAK = 11.5
 TEETER ANG (DEG) AO = .2 A1 = -1.8 B1 = -.2 PFAK-TO-PEAK = 3.7

ROTOR LOADS (AMP/PHASE)	DRAG BRACE (N/DEG)	CHORD .449 (N-M/DEG)	CHORD .803 (N-M/DEG)	PITCH LINK (N/DEG)	TORSION .449 (N-M/DEG)
MEAN	42570.	578.	-2912.	-2824.	-494.
HARMONIC-1	3525./ -26.5	747./ -32.2	147./ -33.3	2396./ -35.1	337./ -48.1
2	451./ -76.5	143./ -75.4	35./ -11.6	1634./ -48.0	156./ -45.4
3	1843./ 45.4	504./ 40.9	82./ 45.7	295./ -28.7	63./ 29.0
4	339./ 46.0	202./ 46.5	80./ 37.6	289./ 74.6	44./ 53.8
5	194./ -62.2	54./ -36.1	29./ -46.0	103./ -3.1	17./ 9.4
6	638./ 30.7	414./ 19.8	128./ 19.7	173./ -23.5	17./ -32.1
7	93./ 84.0	9./ -85.6	13./ -29.0	28./ 49.1	2./ 36.9
8	139./ -74.3	85./ -32.7	43./ -29.4	70./ -22.4	4./ -78.5
9	51./ -31.5	69./ -1.2	32./ -13.7	39./ 73.5	5./ 6.6
10	129./ 28.8	129./ -9.0	62./ -3.4	66./ 38.1	5./ -29.0
11	112./ -13.0	18./ 49.5	9./ 3.6	32./ -76.2	10./ -36.7
12	126./ 30.8	71./ 16.9	51./ 24.3	7./ 40.4	5./ -38.3
PEAK-TO-PEAK	12203.	3048.	716.	7166.	919.

	BEAM .174 (N-M/DEG)	BEAM .350 (N-M/DEG)	BEAM .449 (N-M/DEG)	BEAM .606 (N-M/DEG)	BEAM .803 (N-M/DEG)
MEAN	-2043.	-245.	-266.	-515.	-493.
HARMONIC-1	780./ -56.2	436./ -65.4	436./ -66.4	418./ -69.5	178./ -86.1
2	380./ -55.3	266./ -74.6	282./ -72.6	237./ -69.0	85./ -56.4
3	86./ 59.6	31./ 13.8	47./ 63.5	81./ 86.1	84./ 79.3
4	246./ 58.8	82./ 45.6	45./ 38.2	63./ 59.0	112./ 42.1
5	61./ 2.7	5./ 47.4	24./ 63.5	6./ 30.8	44./ 51.6
6	20./ -33.9	7./ 60.7	15./ -71.7	10./ -1.6	38./ -55.5
7	33./ 56.4	10./ -89.4	24./ 71.7	3./ -36.4	27./ -66.6
8	12./ -43.0	5./ 37.2	7./ -71.8	5./ -29.3	18./ -19.3
9	19./ 70.8	14./ -84.4	4./ 66.2	15./ -47.6	15./ -27.1
10	44./ 16.1	23./ 8.2	14./ 4.8	28./ 18.7	22./ 25.4
11	3./ -11.1	6./ -23.9	2./ -62.2	3./ -23.4	1./ 76.5
12	14./ -37.8	4./ -44.0	2./ -57.6	5./ -41.4	1./ -34.8
PEAK-TO-PEAK	2561.	1286.	1330.	1222.	745.

NASA LANGLEY FLIGHT DATA AH-1G ---- PAOS PCM DATA

FLIGHT NO. 078 AIRCRAFT TOTAL WT = 35869. N LOADED CG X = 5.05 M = 198.7 IN
 RUN NO. 10 8064. LB Y = -.00 = -.0
 TIME 54665.10 (SEC) Z = 1.83 = 72.0

AERODYNAMIC FLIGHT STATF DYNAMIC PRES = 2.58 KPA = 56.0 PSF
 T. AIRSPEED = 128.1 KT STATIC PRES = 99.5 KPA = 2078. PSF
 A/C MACH NO = .192 TOTAL TEMP = 295.5 DEG K = 531.9 DEG R
 STATIC TEMP = 293.3 DEG K = 528.0 DEG R
 BODY ALPHA = -3.2 DEG DENSITY = 1.18 KG/M3 = .00229 SLUG/FT3
 BODY BETA = -.8 DEG DENSITY ALT = 373. M = 1225. FT
 SONIC SPEED = 343.9 M/SEC = 1128. FPS
 RATE OF CLIMB = -9. M/MIN = -30. FPM

INERTIAL FLIGHT STATE

AXIS	CG LIN VEL (M/S)	CG LIN VEL (FPS)	CG LIN ACC (G)	HUB LIN VEL (M/S)	HUB LIN VEL (FPS)	HUB LIN ACC (G)	AXIS	ANG POS (DEG)	ANG RATES (RAD/SEC)	ANG ACC (RAD/SEC2)
X	65.78	215.8	-.070	65.78	215.8	-.071	ROLL	1.1	.007	.025
Y	-.86	-2.8	.021	-.85	-2.8	.027	PITCH	-3.4	.003	.004
Z	-3.77	-12.2	-1.036	-3.72	-12.2	-1.036	YAW	27.7	.014	-.030

CONTROL ANGLES M.R. COLL = 11.7 DEG HORIZ FIN = 9.2 DEG
 A1 = .4 DEG T.R. COLL = 2.4 DEG
 B1 = 6.7 DEG PEDAL POS = 2.8 DEG

ROTOR PARAMETERS

HOVER TIP MACH = .65 SHAFT ALPHA = -3.2 DEG
 CONTROL ALPHA = -9.9 DEG
 TIP MAX-MACH = .84 DELTA PSI = .7 DEG
 TIP MIN-MACH = .46
 .9R MAX-MACH = .78 ENGINE POWER = 559. KW = 750. HP
 .9R MIN-MACH = .39 THRUST FACTOR = .836E+07 N = .188E+07 LB

NASA LANGLEY FLIGHT DATA AH-1G ---- ROTOR PERFORMANCE AND LOADS

FLIGHT NO. 78 MU = .291 TOTAL CO = .000292 AMB TEMP = 20.2 C = 68.36 F
 RUN NO. 10 V = 128.1 KT MAST CO = .000282 TEMP U60 = 38.5 C = 101.25 F
 TIME 54664.95 NZ = 1.036 G OMEGA = 33.767 RAD/SEC CAN TEMP = 30.8 C = 87.39 F
 CLP = .00434 RPM/324 = .995

ROTOR ANGLES THETA 3/4 (DEG) A0 = 9.4 A1 = -.7 B1 = 7.1 PEAK-TO-PEAK = 14.1
 TEETER ANG (DEG) A0 = .2 A1 = -2.1 B1 = -.4 PEAK-TO-PEAK = 4.3

ROTOR LOADS (AMP/PHASE)	DRAG BRACE (N/DEG)	CHORD .449 (N-M/DEG)	CHORD .803 (N-M/DEG)	PITCH LINK (N/DEG)	TORSION .449 (N-M/DEG)
MEAN HARMONIC-1	40393.	944.	-2812.	-3486.	-574.
2	4255./ -43.9	882./ -51.4	182./ -48.8	3096./ -39.9	410./ -46.7
3	289./ 75.9	64./ -66.5	32./ 26.9	2219./ -43.6	217./ -47.5
4	3163./ 36.7	751./ 36.5	136./ 47.4	387./ -48.7	89./ 19.7
5	661./ 17.5	378./ 5.4	148./ .0	428./ 66.2	67./ 22.2
6	158./ 79.7	139./ -70.4	45./ -75.5	212./ -18.1	37./ 3.9
7	509./ -37.6	264./ -46.5	91./ -49.4	113./ -29.4	10./ -25.8
8	119./ -33.9	31./ -12.2	6./ -25.6	19./ -1.8	4./ -82.7
9	58./ -9.5	58./ -16.6	30./ -31.3	46./ -39.2	8./ -71.9
10	49./ -63.1	30./ 16.7	14./ 54.5	37./ 30.9	6./ -36.1
11	115./ 26.4	39./ -.6	10./ 55.4	61./ -2.1	2./ -62.0
12	74./ -6.6	30./ -44.3	15./ -47.1	36./ 78.5	4./ -14.1
PEAK-TO-PEAK	33./ 10.2	21./ 40.0	7./ -38.4	23./ -10.1	2./ -22.6
PEAK-TO-PEAK	14976.	3578.	870.	9554.	1112.

	BEAM .174 (N-M/DEG)	BEAM .350 (N-M/DEG)	BEAM .449 (N-M/DEG)	BEAM .606 (N-M/DEG)	BEAM .803 (N-M/DEG)
MEAN HARMONIC-1	-1945.	-231.	-244.	-496.	-486.
2	1114./ -62.6	575./ -64.4	563./ -64.2	511./ -68.6	212./ -89.4
3	495./ -51.0	340./ -81.3	344./ -83.3	303./ -77.0	136./ -55.2
4	250./ 45.5	25./ -43.8	58./ 52.0	155./ 72.0	164./ 70.9
5	375./ 40.6	117./ 15.9	57./ -4.7	85./ 32.9	140./ 18.5
6	102./ -39.4	5./ 12.4	25./ 19.4	8./ -30.4	61./ 26.8
7	7./ -47.0	1./ 73.6	12./ -63.4	9./ -80.5	43./ -76.0
8	19./ 21.8	9./ 44.7	16./ 52.8	8./ -57.5	35./ -80.2
9	23./ -84.9	2./ 33.5	16./ -78.8	11./ -62.4	28./ -55.3
10	15./ 4.7	7./ -86.3	7./ 1.1	11./ -62.8	18./ -32.5
11	41./ -29.4	20./ -28.7	10./ -45.3	24./ -17.6	19./ -7.5
12	3./ -12.3	7./ 88.4	1./ -85.4	3./ -63.0	1./ 87.5
PEAK-TO-PEAK	18./ -59.4	6./ -62.7	6./ -82.0	6./ -54.4	2./ -32.7
PEAK-TO-PEAK	3671.	1719.	1622.	1543.	976.

FLIGHT NO. 078 AIRCRAFT TOTAL WT = 35690. N LOADED CG X = 5.05 M = 198.9 IN
 RUN NO. 12 8024. LB Y = -.00 = -.0
 TIME 54905.70 (SEC) Z = 1.83 = 72.0

AERODYNAMIC FLIGHT STATE
 DYNAMIC PRES = 3.44 KPA = 71.8 PSF
 STATIC PRES = 99.6 KPA = 2080. PSF
 T. AIRSPEED = 147.5 KT TOTAL TEMP = 296.5 DEG K = 533.7 DEG R
 A/C MACH NO = .221 STATIC TEMP = 293.7 DEG K = 528.6 DEG R
 BODY ALP-1A = -5.5 DEG DENSITY = 1.18 KG/M3 = .00229 SLUG/FT3
 BODY BETA = .8 DEG DENSITY ALT = 375. M = 1231. FT
 SONIC SPEED = 344.1 M/SEC = 1129. FPS
 RATE OF CLIMB = -1. M/MIN = -.2. FPM

INERTIAL FLIGHT STATE

AXIS	CG LIN VEL (M/S)	CG LIN VEL (FPS)	CG LIN ACC (G)	HUB LIN VEL (M/S)	HUB LIN VEL (FPS)	HUB LIN ACC (G)	AXIS	ANG POS (DEG)	ANG RATES (RAD/SEC)	ANG ACC (RAD/SEC2)
X	75.54	247.8	-.101	75.53	247.8	-.100	ROLL	.7	.011	-.097
Y	1.02	3.3	-.003	1.04	3.4	-.023	PITCH	-5.5	.005	-.003
Z	-7.22	-23.7	-1.006	-7.22	-23.7	-1.006	YAW	170.4	-.004	-.013

CONTROL ANGLES
 M.R. COLL = 13.8 DEG HORIZ FIN = 10.3 DEG
 A1 = .4 DEG T.R. COLL = 3.6 DEG
 B1 = 8.0 DEG PEDAL POS = 4.1 DEG

ROTOR PARAMETERS

SHAFT ALPHA = -5.5 DEG
 HOVER TIP MACH = .66 CONTRL ALPHA = -13.4 DEG
 TIP MAX-MACH = .88 DELTA PSI = -.8 DEG
 TIP MIN-MACH = .44
 .9R MAX-MACH = .81 ENGINE POWER = 728. KW = 976. HP
 .9R MIN-MACH = .37 THRUST FACTOR = .851E+07 N = .191E+07 LB

NASA LANGLEY FLIGHT DATA AH-1G ---- ROTOR PERFORMANCE AND LOADS

FLIGHT NO. 78 MU = .332 TOTAL CQ = .000369 AMB TEMP = 20.5 C = 68.90 F
 RUN NO. 12 V = 147.5 KT MAST CQ = .000360 TEMP U60 = 39.2 C = 102.50 F
 TIME 54905.55 NZ = 1.006 G OMEGA = 34.088 RAD/SEC CAN TEMP = 30.4 C = 86.69 F
 CLP = .00412 RPM/324 = 1.005

ROTOR ANGLES
 THETA 3/4 (DEG) A0 = 11.3 A1 = -.5 B1 = 8.7 PEAK-TO-PEAK = 17.2
 FEETER ANG (DEG) A0 = .2 A1 = -2.3 B1 = -.7 PEAK-TO-PEAK = 4.9

ROTOR LOADS (AMP/PHASE) DRAG BRACE CHORD .449 CHORD .803 PITCH LINK TORSION .449
 (N/DEG) (N-M/DEG) (N-M/DEG) (N-M/DEG)

	DRAG BRACE (N/DEG)	CHORD .449 (N-M/DEG)	CHORD .803 (N-M/DEG)	PITCH LINK (N/DEG)	TORSION .449 (N-M/DEG)
MEAN	37499.	1586.	-2777.	-4466.	-679.
HARMONIC-1	7100./ -65.9	1630./ -69.2	304./ -68.1	4114./ -44.1	502./ -48.8
2	1614./ -65.5	492./ -46.5	125./ -27.4	3070./ -46.7	294./ -55.7
3	4543./ 36.9	1079./ 34.3	207./ 41.1	507./ 85.8	117./ -9.1
4	655./ 7.9	462./ -3.8	170./ -14.6	622./ 58.9	94./ 12.1
5	511./ 84.8	249./ -66.2	85./ -70.0	242./ -6.8	46./ 31.2
6	630./ -70.0	333./ -57.4	100./ -59.7	300./ -1.0	34./ 4.1
7	121./ -1.8	88./ 18.8	26./ 2.7	63./ -61.1	3./ -3.2
8	72./ 10.8	62./ 17.2	20./ 2.2	5./ 79.3	3./ 77.9
9	96./ -19.9	11./ 13.2	18./ -28.7	13./ -13.7	4./ -8.6
10	54./ 17.2	95./ 26.7	47./ 47.9	72./ 88.2	3./ 41.4
11	65./ -79.4	64./ -26.1	36./ -42.7	20./ -40.8	2./ 25.0
12	8./ 86.3	17./ 83.8	7./ -69.3	13./ -17.5	4./ 3.2
PEAK-TO-PEAK	24118.	5955.	1329.	13196.	1428.

BEAM .174 BEAM .350 BEAM .449 BEAM .606 BEAM .803
 (N-M/DEG) (N-M/DEG) (N-M/DEG) (N-M/DEG) (N-M/DEG)

	BEAM .174 (N-M/DEG)	BEAM .350 (N-M/DEG)	BEAM .449 (N-M/DEG)	BEAM .606 (N-M/DEG)	BEAM .803 (N-M/DEG)
MEAN	-1764.	-219.	-223.	-455.	-451.
HARMONIC-1	1739./ -70.6	708./ -69.7	664./ -68.1	608./ -70.6	256./ 88.1
2	778./ -53.2	420./ -89.8	407./ 84.8	325./ 87.7	124./ -61.2
3	479./ 19.1	26./ -26.8	92./ 56.0	232./ 50.5	251./ 47.1
4	469./ 32.5	135./ 4.6	57./ -19.2	89./ 21.1	146./ -.9
5	139./ -43.6	7./ 13.0	32./ -12.5	13./ -7.6	68./ -14.6
6	50./ -21.0	17./ 1.2	29./ -38.6	17./ 74.1	28./ -47.3
7	21./ -75.2	5./ 23.1	12./ 37.2	9./ -89.1	26./ 59.2
8	21./ 19.2	6./ 87.4	17./ 55.2	10./ 73.0	24./ 81.6
9	10./ -46.6	6./ -19.5	11./ -68.9	8./ 61.4	11./ -64.7
10	41./ 80.9	22./ 79.3	7./ 62.4	25./ -89.8	19./ -71.7
11	33./ 85.5	3./ 68.7	9./ 43.0	8./ 69.0	4./ -67.8
12	16./ 54.0	6./ 43.8	8./ 88.9	6./ -88.1	4./ -84.4
PEAK-TO-PEAK	5546.	2098.	1887.	1859.	1260.

FLIGHT NO. 078 AIRCRAFT TOTAL WT = 35650. N LOADED CG X= 5.05 M = 198.8 IN
 RUN NO. 13 8015. LB Y= -0.00 = -0.0
 TIME 54970.20 (SEC) Z= 1.83 = 72.0

AERODYNAMIC FLIGHT STATE DYNAMIC PRES= 4.02 KPA = 84.0 PSF
 T. AIRSPEED= 159.4 KT STATIC PRES= 99.6 KPA = 2081. PSF
 A/C MACH NO= .238 TOTAL TEMP= 296.9 DEG K = 534.5 DEG R
 STATIC TEMP= 293.6 DEG K = 528.5 DEG R
 BODY ALPHA= -6.8 DEG DENSITY= 1.18 KG/M3 = .00230 SLUG/FT3
 BODY BETA= .5 DEG DENSITY ALT= 367. M = 1203. FT
 SONIC SPEED= 344.1 M/SEC = 1129. FPS
 RATE OF CLIMB= -26. M/MIN = -87. FPM

INERTIAL FLIGHT STATE

AXIS	CG LIN VEL (M/S)	CG LIN ACC (FPS)	HUB LIN VEL (M/S)	HUB LIN ACC (FPS)	AXIS	ANG POS (DEG)	ANG RATES (RAD/SEC)	ANG ACC (RAD/SEC2)	
X	81.41	267.1	-0.115	81.41	267.1	-0.114	ROLL 7.2	-0.000	.027
Y	.67	2.2	.004	.67	2.2	.010	PITCH -7.1	-0.001	-0.002
Z	-9.70	-31.8	-1.019	-9.70	-31.8	-1.019	YAW 165.0	.006	.017

CONTROL ANGLES M.R. COLL= 15.7 DEG HORIZ FIN= 11.2 DEG
 A1= -.1 DEG T.R. COLL= 4.0 DEG
 B1= 8.9 DEG PEDAL POS= 4.4 DEG

ROTOR PARAMETERS

HOVER TIP MACH= .66 SHAFT ALPHA= -6.8 DEG
 CONTROL ALPHA= -15.6 DEG
 TIP MAX-MACH= .90 DELTA PSI= -.5 DEG
 TIP MIN-MACH= .42
 .9R MAX-MACH= .83 ENGINE POWER= 874. KW = 1172. HP
 .9R MIN-MACH= .35 THRUST FACTOR= .852E+07 N = .192E+07 LB

NASA LANGLEY FLIGHT DATA AH-1G ---- ROTOR PERFORMANCE AND LOADS

FLIGHT NO. 78 MU= .359 TOTAL CQ= .000444 AMB TEMP= 20.4 C = 68.79 F
 RUN NO. 13 V= 159.4 KT MAST CQ= .000431 TEMP U60= 39.5 C = 103.12 F
 TIME 54970.05 NZ= 1.019 G OMEGA= 34.070 RAD/SEC CAN TEMP= 30.4 C = 86.69 F
 CLP= .00417 RPM/324= 1.004

ROTOR ANGLES THETA 3/4 (DEG) AO= 13.0 A1= -1.0 B1= 10.0 PEAK-TO-PEAK= 20.0
 TEETER ANG (DEG) AO= .2 A1= -2.6 B1= -1.1 PEAK-TO-PEAK= 5.5

ROTOR LOADS (AMP/PHASE)	DRAG BRACE (N/DEG)	CHORD .449 (N-M/DEG)	CHORD .803 (N-M/DEG)	PITCH LINK (N/DFG)	TORSION .449 (N-M/DEG)
MEAN HARMONIC-1	34951.	1984.	-2707.	-5256.	-776.
2	7419./ -78.1	1798./ -81.1	315./ -77.8	4594./ -48.1	562./ -48.3
3	498./ -82.0	286./ 31.6	115./ 25.1	3657./ -37.9	331./ -50.1
4	6053./ 48.4	1467./ 48.2	286./ 51.5	600./ 77.7	113./ -3.9
5	1429./ -15.7	719./ -18.3	238./ -23.6	655./ 65.8	93./ 7.5
6	381./ 52.9	195./ -86.9	74./ -80.5	277./ -.3	57./ 30.3
7	344./ -66.9	216./ -74.9	65./ -81.3	239./ 21.5	30./ 24.9
8	465./ 20.0	287./ 8.8	97./ 11.6	112./ 26.1	12./ -49.1
9	305./ 73.8	163./ 78.5	47./ 81.5	25./ 66.4	8./ -85.7
10	75./ 71.8	62./ -32.1	34./ -6.9	23./ 59.4	3./ -83.6
11	195./ -73.8	45./ -19.9	44./ -47.8	49./ -70.6	2./ -13.5
12	115./ 47.9	91./ -12.3	55./ -9.6	16./ 53.4	8./ -70.0
PEAK-TO-PEAK	51./ 21.1	23./ 74.6	11./ -33.2	19./ 80.5	10./ -65.7
	24952.	5952.	1467.	19207.	1542.

	BEAM .174 (N-M/DEG)	BEAM .350 (N-M/DEG)	BEAM .449 (N-M/DEG)	BEAM .606 (N-M/DEG)	BEAM .803 (N-M/DFG)
MEAN HARMONIC-1	-1545.	-197.	-206.	-433.	-445.
2	2041./ -73.7	781./ -70.7	718./ -68.0	668./ -69.4	303./ -89.5
3	760./ -43.3	459./ -87.7	453./ 86.3	366./ 86.6	133./ -69.4
4	722./ 29.7	48./ 8.8	95./ 47.5	276./ 47.4	313./ 40.2
5	424./ 35.9	122./ 4.2	61./ -30.7	82./ 40.3	119./ 5.6
6	113./ -38.8	12./ -49.3	31./ -25.2	10./ -30.7	74./ -12.9
7	60./ -53.0	18./ 37.0	16./ -32.9	15./ 73.4	18./ -63.1
8	16./ 19.0	9./ -64.3	1./ -46.8	10./ -51.0	18./ 70.0
9	21./ 51.8	4./ 72.6	8./ 42.9	5./ 81.9	19./ 76.8
10	10./ -88.0	14./ 70.2	3./ -32.0	14./ 82.5	20./ -79.4
11	22./ 79.1	18./ 79.9	9./ 64.7	19./ -88.1	17./ -76.6
12	4./ -74.1	6./ -50.2	10./ 43.7	1./ 49.6	2./ -30.6
PEAK-TO-PEAK	14./ 31.7	4./ 11.5	3./ -77.6	4./ 78.5	1./ -8.2
	6357.	2274.	2047.	2023.	1437.

FLIGHT NO. 078 AIRCRAFT TOTAL WT = 35146. N LOADED CG X= 5.05 M = 198.7 IN
 RUN NO. 20 7901. LB Y= -.00 = -.0
 TIME 55657.80 (SEC) Z= 1.83 = 72.2

AERODYNAMIC FLIGHT STATE DYNAMIC PRES= 1.89 KPA = 39.5 PSF
 STATIC PRES= 97.8 KPA = 2042. PSF
 T. AIRSPEED= 110.6 KT TOTAL TEMP= 294.6 DEG K = 530.3 DEG R
 A/C MACH NO= .166 STATIC TEMP= 293.0 DEG K = 527.4 DFG R
 BODY ALPHA= 8.5 DEG DENSITY= 1.16 KG/M3 = .00226 SLUG/FT3
 BODY BETA= -.4 DEG DENSITY ALT= 541. M = 1774. FT
 SONIC SPEED= 343.7 M/SEC = 1128. FPS
 RATE OF CLIMB= -688. M/MIN = -2258. FPM

INERTIAL FLIGHT STATE

AXIS	CG LIN VEL (M/S)	CG LIN ACC (G)	HUB LIN VEL (M/S)	HUB LIN ACC (G)	AXIS	ANG POS (DEG)	ANG RATES (RAD/SEC)	ANG ACC (RAD/SEC2)		
X	56.28	184.7	-1.60	55.68	182.7	-1.82	ROLL	-.8	.037	.003
Y	-3.39	-1.3	.002	-3.32	-1.0	.001	PITCH	-3.1	.294	.107
Z	8.46	27.8	-2.180	8.47	27.8	-2.161	YAW	219.0	.033	.020

CONTROL ANGLES M.R. COLL= 9.3 DEG HORIZ FIN= 6.5 DEG
 A1= .9 DEG T.R. COLL= 1.0 DEG
 B1= .3 DEG PEDAL POS= 1.9 DEG

ROTOR PARAMETERS

HOVER TIP MACH= .66 SHAFT ALPHA= 8.6 DEG
 CONTROL ALPHA= 8.3 DEG
 TIP MAX-MACH= .83 DELTA PSI= .3 DEG
 TIP MIN-MACH= .50
 .9R MAX-MACH= .76 ENGINE POWER= 211. KW = 283. HP
 .9R MIN-MACH= .43 THRUST FACTOR= .854E+07 N = .192E+07 LB

NASA LANGLEY FLIGHT DATA AH-1G ---- ROTOR PERFORMANCE AND LOADS

FLIGHT NO. 78 MU= .244 TOTAL CQ= .000104 AMB TEMP= 19.9 C = 67.73 F
 RUN NO. 20 V= 110.6 KT MAST CQ= .000070 TEMP U60= 37.4 C = 99.37 F
 TIME 55657.65 NZ= 2.161 G OMEGA= 34.741 RAD/SEC CAN TEMP= 29.6 C = 85.30 F
 CLP= .00859 RPM/324= 1.024

ROTOR ANGLES THETA 3/4 (DEG) AO= 6.5 A1= -.3 B1= .3 PFAK-TO-PEAK= 1.1
 TEETER ANG (DEG) AO= .1 A1= .8 B1= 1.3 PEAK-TO-PEAK= 2.6

ROTOR LOADS (AMP/PHASE)	DRAG BRACE (N/DEG)	CHORD .449 (N-M/DEG)	CHORD .803 (N-M/DEG)	PITCH LINK (N/DEG)	TORSION .449 (N-M/DEG)
MEAN	52397.	-880.	-3256.	-1702.	-366.
HARMONIC-1	7314./ 13.4	1720./ 21.9	291./ 28.1	1223./ 21.8	170./ -41.0
2	1399./ -40.2	720./ -41.5	212./ -50.1	763./ -70.8	105./ -25.9
3	3505./ 30.7	775./ 31.6	117./ 57.2	548./ 87.8	40./ -57.3
4	192./ 30.5	183./ 20.0	111./ 23.4	227./ -67.4	46./ 7.5
5	474./ -47.4	181./ -34.4	30./ -21.1	196./ -30.1	15./ -38.0
6	1680./ 11.3	934./ 4.5	261./ 5.7	310./ 71.5	45./ 83.1
7	421./ -.6	124./ 12.4	56./ 33.8	253./ -88.0	18./ -40.3
8	65./ -25.5	54./ -39.9	25./ 18.7	81./ 2.7	21./ 25.3
9	102./ 10.3	134./ 68.0	38./ 73.2	17./ 35.4	23./ 46.0
10	76./ 21.7	20./ 81.2	5./ 85.0	67./ -77.8	14./ 56.4
11	122./ -40.1	47./ 9.5	39./ 16.6	53./ 1.6	13./ 73.4
12	70./ 54.2	49./ 71.0	11./ -88.3	53./ -68.4	7./ 76.7
PEAK-TO-PEAK	21056.	6884.	1645.	4396.	637.

	BEAM .174 (N-M/DEG)	BEAM .350 (N-M/DEG)	BEAM .449 (N-M/DEG)	BEAM .606 (N-M/DEG)	BEAM .803 (N-M/DEG)
MEAN	-1211.	-193.	-291.	-659.	-826.
HARMONIC-1	518./ 24.7	396./ -55.8	456./ -61.2	526./ -42.9	390./ -80.8
2	56./ -23.4	141./ -61.1	200./ -51.6	225./ -49.6	176./ -66.9
3	402./ 14.6	158./ 16.0	118./ 33.3	71./ 84.8	91./ -53.4
4	257./ 39.8	80./ 31.0	48./ 41.6	50./ 23.7	143./ 29.2
5	185./ -56.9	39./ -49.5	15./ -38.0	42./ -47.6	73./ -62.4
6	188./ -35.1	16./ -76.8	16./ -33.8	33./ -61.5	14./ 9.6
7	157./ -85.2	34./ -63.5	69./ -69.0	5./ -72.8	70./ -31.4
8	34./ -45.3	9./ -14.0	24./ -33.7	8./ 70.3	33./ 24.4
9	21./ 52.4	21./ 38.9	7./ -80.3	26./ 50.9	32./ 46.2
10	76./ 86.3	29./ -87.8	24./ 89.4	33./ 89.4	24./ 80.8
11	22./ -38.1	10./ 14.4	15./ -44.4	9./ -19.1	2./ 72.1
12	39./ 60.9	15./ 70.6	17./ 7.8	13./ 38.4	4./ -86.5
PEAK-TO-PEAK	1960.	1126.	1302.	1261.	1206.

NASA LANGLEY FLIGHT DATA AH-1G ---- PADS PCM DATA

FLIGHT NO. 078 AIRCRAFT TOTAL WT = 34920. N LOADED CG X= 5.05 M = 198.7 IN
 RUN NO. 24 7851. LB Y= -.00 = -.0
 TIME 56018.20 (SEC) Z= 1.83 = 72.2

AERODYNAMIC FLIGHT STATE DYNAMIC PRES= 1.82 KPA = 38.0 PSF
 T. AIRSPEED= 109.0 KT STATIC PRES= 96.6 KPA = 2017. PSF
 A/C MACH NO= .163 TOTAL TEMP= 293.9 DEG K = 529.0 DEG R
 STATIC TEMP= 292.3 DEG K = 526.2 DEG R
 BODY ALPHA= -1.7 DEG DENSITY= 1.15 KG/M3 = .00223 SLUG/FT3
 BODY BETA= 2.1 DEG DENSITY ALT= 644. M = 2114. FT
 SONIC SPEED= 343.3 M/SEC = 1126. FPS
 RATE OF CLIMB= -25. M/MIN = -80. FPM

INERTIAL FLIGHT STATE

AXIS	CG LIN VEL (M/S)	CG LIN ACC (FPS)	CG LIN ACC (G)	HUB LIN VEL (M/S)	HUB LIN ACC (FPS)	HUB LIN ACC (G)	AXIS	ANG POS (DEG)	ANG RATES (RAD/SFC)	ANG ACC (RAD/SEC2)
X	56.01	183.8	-.050	56.01	183.7	-.049	ROLL	-1.1	-.001	-.010
Y	2.02	6.6	-.013	2.02	6.6	-.016	PITCH	-2.2	.003	-.005
Z	-1.69	-5.5	-1.057	-1.68	-5.5	-1.057	YAW	87.2	-.002	.002

CONTROL ANGLES M.R. COLL= 9.8 DEG HORIZ FIN= 8.2 DEG
 A1= .5 DEG T.R. COLL= 2.5 DEG
 B1= 5.1 DEG PEDAL POS= 2.9 DEG

ROTOR PARAMETERS

HOVER TIP MACH= .66 SHAFT ALPHA= -1.7 DEG
 CONTROL ALPHA= -6.9 DEG
 TIP MAX-MACH= .82 DELTA PSI= -2.1 DEG
 TIP MIN-MACH= .49
 .9R MAX-MACH= .76 ENGINE POWER= 432. KW = 579. HP
 .9R MIN-MACH= .43 THRUST FACTOR= .878E+07 N = .186E+07 LB

NASA LANGLEY FLIGHT DATA AH-1G ---- ROTOR PERFORMANCE AND LOADS

FLIGHT NO. 78 MU= .246 TOTAL CQ= .000226 AMB TEMP= 19.2 C = 66.48 F
 V= 109.0 KT MAST CQ= .000216 TEMP U60= 37.3 C = 99.17 F
 RUN NO. 24 NZ= 1.057 G OMEGA= 34.039 RAD/SEC CAN TEMP= 29.2 C = 84.60 F
 TIME 56018.05 CLP= .00436 RPM/324= 1.003

ROTOR ANGLES THETA 3/4 (DEG) A0= 7.9 A1= -.2 B1= 5.4 PFAK-TO-PEAK= 11.2
 TEETER ANG (DEG) A0= .2 A1= -1.6 B1= .0 PFAK-TO-PEAK= 3.2

ROTOR LOADS (AMP/PHASE)	DRAG BRACE (N/DEG)	CHORD .449 (N-M/DEG)	CHORD .803 (N-M/DEG)	PITCH LINK (N/DEG)	TORSION .449 (N-M/DEG)
MEAN HARMONIC-1	43384.	425.	-3064.	-2717.	-471.
2	3164./ -28.7	679./ -34.3	137./ -37.5	2287./ -38.2	328./ -53.1
3	276./ 78.7	50./ 68.8	29./ -10.0	1616./ -56.3	157./ -52.9
4	1747./ 38.7	446./ 35.8	63./ 44.5	256./ -36.2	58./ 15.6
5	487./ 37.1	277./ 30.3	103./ 24.1	325./ 63.6	53./ 39.6
6	109./ 22.2	41./ 62.8	20./ 77.0	117./ -30.2	13./ -28.9
7	903./ 14.4	467./ 4.6	142./ 2.8	158./ -52.5	18./ -72.7
8	210./ 29.8	155./ 48.9	60./ 47.1	80./ 8.1	9./ 34.0
9	102./ -85.3	71./ 86.3	40./ 88.2	61./ -64.4	5./ 79.8
10	84./ -10.4	119./ -32.9	49./ -41.7	55./ 59.7	6./ -56.9
11	128./ 18.1	195./ -11.1	100./ -5.6	84./ 18.7	5./ 76.6
12	110./ -29.5	13./ -2.9	7./ -56.5	31./ 80.9	5./ -44.4
PEAK-TO-PEAK	89./ .2	106./ -4.4	73./ 2.1	7./ -11.3	5./ -84.8
	11632.	2647.	828.	7031.	887.
	BEAM .174 (N-M/DEG)	BEAM .350 (N-M/DEG)	BEAM .449 (N-M/DEG)	BEAM .606 (N-M/DEG)	BEAM .803 (N-M/DEG)
MEAN HARMONIC-1	-2136.	-267.	-282.	-523.	-492.
2	720./ -58.2	422./ -69.2	424./ -70.2	406./ -73.4	175./ 89.8
3	356./ -64.4	257./ -82.2	270./ -80.5	221./ -77.2	71./ -65.7
4	62./ 53.5	33./ 5.1	43./ 53.2	72./ 72.0	74./ 64.4
5	286./ 49.6	91./ 32.6	51./ 22.5	70./ 47.9	115./ 34.2
6	69./ -7.5	1./ 86.0	22./ 41.5	8./ 23.9	36./ 24.1
7	9./ -27.0	4./ -5.3	11./ 88.0	12./ -78.7	33./ -73.3
8	48./ 10.6	11./ 32.9	27./ 32.9	9./ -64.9	33./ 77.5
9	18./ 79.0	5./ -88.0	8./ 53.8	11./ -62.5	21./ -57.9
10	11./ 75.3	18./ 71.7	1./ 38.9	23./ -87.4	19./ -69.0
11	51./ -21.7	30./ -15.3	18./ -33.1	32./ -14.4	25./ -1.2
12	2./ 13.3	6./ 71.8	3./ -46.3	2./ 41.0	2./ 41.8
PEAK-TO-PEAK	26./ 60.9	6./ 61.7	11./ 32.8	5./ 56.1	4./ 60.5
	2474.	1256.	1274.	1226.	736.

FLIGHT NO. 078 AIRCRAFT TOTAL WT = 34871. N LOADED CG X= 5.05 M = 198.7 IN
 RUN NO. 27 7840. LB Y= -.00 = -.0
 TIME 56099.80 (SEC) Z= 1.84 = 77.2

AERODYNAMIC FLIGHT STATE DYNAMIC PRES= 1.79 KPA = 37.5 PSF
 STATIC PRES= 98.5 KPA = 2058. PSF
 T. AIRSPEED= 107.4 KT TOTAL TEMP= 294.9 DEG K = 530.9 DEG R
 A/C MACH NO= .161 STATIC TEMP= 293.4 DEG K = 528.1 DEG R
 BODY ALPHA= 2.3 DEG DENSITY= 1.17 KG/M3 = .00227 SLUG/FT3
 BODY BETA= 1.5 DEG DENSITY ALT= 476. M = 1560. FT
 SONIC SPEED= 344.0 M/SEC = 1128. FPS
 RATE OF CLIMB= -678. M/MIN = -2225. FPM

INERTIAL FLIGHT STATE

AXIS	CG LIN VEL (M/S)	CG LIN VEL (FPS)	CG LIN ACC (G)	HUB LIN VEL (M/S)	HUB LIN VEL (FPS)	HUB LIN ACC (G)	AXIS	ANG POS (DEG)	ANG RATES (RAD/SEC)	ANG ACC (RAD/SEC2)
X	55.19	181.1	-.087	54.85	180.0	-.087	ROLL	54.4	.070	.020
Y	1.49	4.9	-.010	1.52	5.0	-.010	PITCH	-9.2	.164	.002
Z	2.17	7.1	-1.578	2.18	7.1	-1.573	YAW	116.9	.131	-.007

CONTROL ANGLES M.R. COLL= 9.8 DEG HORIZ FIN= 7.2 DEG
 A1= .7 DEG T.R. COLL= .4 DEG
 B1= 2.8 DEG PEDAL POS= .1 DEG

ROTOR PARAMETERS

HOVER TIP MACH= .66 SHAFT ALPHA= 2.3 DEG
 CONTROL ALPHA= -.5 DEG
 TIP MAX-MACH= .83 DELTA PSI= -1.6 DEG
 TIP MIN-MACH= .50
 .9R MAX-MACH= .76 ENGINE POWER= 296. KW = 397. HP
 .9R MIN-MACH= .44 THRUST FACTOR= .862E+07 N = .194E+07 LB

NASA LANGLEY FLIGHT DATA AH-1G ---- ROTOR PERFORMANCE AND LOADS

FLIGHT NO. 78 MU= .239 TOTAL CQ= .000147 AMB TEMP= 70.3 C = 68.45 F
 RUN NO. 27 V= 107.4 KT MAST CQ= .000133 TEMP U60= 37.4 C = 99.37 F
 TIME 56099.65 NZ= 1.573 G OMEGA= 34.496 RAD/SEC CAN TEMP= 29.2 C = 84.60 F
 CLP= .00622 RPM/324= 1.017

ROTOR ANGLES THETA 3/4 (DEG) A0= 7.4 A1= -.2 B1= 3.1 PEAK-TO-PEAK= 6.7
 TEETER ANG (DEG) A0= .2 A1= -.6 B1= .7 PEAK-TO-PEAK= 1.9

ROTOR LOADS (AMP/PHASE) DRAG BRACE (N/DEG) CHORD .449 (N-M/DEG) CHORD .803 (N-M/DEG) PITCH LINK (N/DEG) TORSION .449 (N-M/DEG)

	MEAN	47721.	-126.	-3098.	-2266.	-466.				
HARMONIC-1	5509./	7.3	1112./	10.6	199./	6.2	1805./	-35.6	302./	-59.1
2	342./	5.0	266./	-22.1	80./	-88.4	1008./	-74.2	108./	-1.8
3	2608./	41.7	598./	44.1	92./	59.6	384./	48.0	52./	60.3
4	341./	78.0	251./	53.7	136./	44.9	424./	-71.0	72./	64.1
5	570./	-25.9	148./	-43.8	15./	-47.1	34./	-15.9	29./	-45.7
6	1701./	-3.9	1031./	-10.3	303./	-9.2	328./	61.4	70./	56.7
7	358./	-10.1	123./	15.9	42./	20.4	130./	58.4	28./	68.7
8	49./	60.4	49./	-68.0	25./	-48.9	25./	-75.1	13./	83.4
9	80./	-13.7	137./	88.0	47./	75.6	109./	-47.2	9./	-1.1
10	56./	36.4	119./	-13.5	67./	-30.8	132./	28.9	16./	-1.5
11	132./	1.1	16./	-5.9	13./	-22.8	22./	-53.8	6./	88.6
12	161./	-44.5	48./	-4.4	13./	-29.1	16./	-84.3	8./	-43.3
PEAK-TO-PEAK	15509.		4897.		1264.		5525.		770.	

BEAM .174 (N-M/DEG) BEAM .350 (N-M/DEG) BEAM .449 (N-M/DEG) BEAM .606 (N-M/DEG) BEAM .803 (N-M/DEG)

	MEAN	-1708.	-250.	-312.	-625.	-669.				
HARMONIC-1	501./	-20.8	416./	-61.4	444./	-64.7	456./	-68.9	284./	-85.3
2	238./	-37.4	229./	-64.7	273./	-63.0	272./	-64.1	140./	-83.6
3	171./	3.7	95./	13.4	75./	40.1	79./	82.8	94./	-87.5
4	424./	74.2	135./	58.6	68./	58.5	97./	68.6	174./	58.1
5	94./	-27.3	23./	-37.1	26./	87.1	26./	-15.4	63./	-71.2
6	100./	-44.9	20./	63.7	12./	60.8	13./	62.0	44./	-63.4
7	56./	76.3	24./	79.2	40./	-87.4	10./	-14.7	57./	-53.5
8	6./	-33.9	4./	-20.1	11./	-34.0	13./	-32.6	24./	-29.4
9	46./	-57.3	32./	-51.8	14./	-82.9	38./	-43.7	35./	-39.4
10	59./	32.0	28./	42.4	13./	19.7	29./	39.5	21./	26.7
11	15./	36.4	2./	-77.3	7./	31.8	4./	-30.6	12./	-32.8
12	18./	-28.6	8./	-55.7	8./	-61.8	5./	16.0	6./	-63.6
PEAK-TO-PEAK	2385.		1309.		1354.		1421.		1081.	

NASA LANGLEY FLIGHT DATA AH-1G ---- PADS PCM DATA

FLIGHT NO. 078 AIRCRAFT TOTAL WT = 34675. N LOADED CG X= 5.05 M = 198.6 IN
 RUN NO. 30 7796. LB Y= -.00 = -.0
 TIME 56410.10 (SEC) Z= 1.84 = 72.3

AERODYNAMIC FLIGHT STATE DYNAMIC PRES= 1.87 KPA = 39.1 PSF
 T. AIRSPEED= 110.1 KT STATIC PRES= 97.7 KPA = 2041. PSF
 A/C MACH NO= .165 TOTAL TEMP= 294.7 DEG K = 530.5 DEG R
 STATIC TEMP= 293.1 DEG K = 527.6 DEG R
 BODY ALPHA= 6.1 DEG DENSITY= 1.16 KG/M3 = .00226 SLUG/FT3
 BODY BETA= 2.1 DEG DENSITY ALT= 549. M = 1800. FT
 SONIC SPEED= 343.8 M/SEC = 1128. FPS
 RATE OF CLIMB= -898. M/MIN = -2947. FPM

INERTIAL FLIGHT STATE

AXIS	CG LIN VEL (M/S)	CG LIN VEL (FPS)	CG LIN ACC (G)	HUB LIN VEL (M/S)	HUB LIN VEL (FPS)	HUB LIN ACC (G)	AXIS	ANG POS (DEG)	ANG RATES (RAD/SEC)	ANG ACC (RAD/SEC2)
X	56.30	184.7	-.176	55.75	182.9	-.132	ROLL	58.5	.100	.178
Y	2.06	6.7	-.017	2.25	7.4	.011	PITCH	-10.4	.269	.011
Z	6.02	19.7	-2.060	6.02	19.8	-2.042	YAW	193.3	.160	.039

CONTROL ANGLES M.R. COLL= 9.8 DEG HORIZ FIN= 6.8 DEG
 A1= 1.4 DEG T.R. COLL= -.4 DEG
 B1= 1.7 DEG PEDAL POS= -.5 DEG

ROTOR PARAMETERS

HOVER TIP MACH= .66 SHAFT ALPHA= 6.2 DEG
 CONTROL ALPHA= 4.5 DEG
 TIP MAX-MACH= .84 DELTA PSI= -2.3 DEG
 TIP MIN-MACH= .51
 .9R MAX-MACH= .78 ENGINE POWER= 171. KW = 229. HP
 .9R MIN-MACH= .45 THRUST FACTOR= .893E+07 N = .201E+07 LB

NASA LANGLEY FLIGHT DATA AH-1G ---- ROTOR PERFORMANCE AND LOADS

FLIGHT NO. 78 MU= .240 TOTAL CQ= .000080 AMB TEMP= 19.9 C = 67.90 F
 RUN NO. 30 V= 110.1 KT MAST CQ= .000060 TEMP U60= 37.1 C = 98.75 F
 TIME 56410.00 NZ= 2.042 G OMEGA= 35.171 RAD/SEC CAN TEMP= 29.2 C = 84.60 F
 CLP= .00782 RPM/324= 1.037

ROTOR ANGLES THETA 3/4 (DEG) AO= 7.1 A1= .1 B1= 1.7 PEAK-TO-PEAK= 3.7
 TEETER ANG (DEG) AO= .0 A1= .1 B1= 1.0 PEAK-TO-PEAK= 1.7

ROTOR LOADS (AMP/PHASE)	DRAG BRACE (N/DEG)	CHORD .449 (N-M/DEG)	CHORD .803 (N-M/DEG)	PITCH LINK (N/DEG)	TORSION .449 (N-M/DEG)
MEAN HARMONIC-1	53097.	-887.	-3327.	-2128.	-419.
2	7248./ 2.1	1648./ 12.2	257./ 12.0	1688./ -12.1	239./ -53.5
3	713./ -82.6	533./ -57.2	169./ -66.5	740./ -2.1	84./ -7.4
4	4205./ 26.8	954./ 26.2	140./ 42.1	476./ 54.6	36./ 49.6
5	168./ -57.2	123./ 53.0	111./ 37.9	311./ -76.7	43./ 23.4
6	450./ -58.3	123./ -35.2	23./ 1.2	190./ -35.3	7./ .6
7	1602./ -14.2	927./ -23.2	273./ -23.8	366./ 56.7	72./ 66.9
8	283./ -51.4	29./ 4.9	29./ 37.7	184./ 63.3	27./ -76.7
9	129./ 68.0	121./ 56.4	32./ 52.1	67./ -14.5	22./ -51.5
10	116./ 26.2	209./ 40.6	98./ 43.0	95./ 14.8	19./ -31.5
11	79./ -24.1	23./ 10.4	26./ -1.8	42./ -76.8	13./ -26.0
12	52./ 63.1	57./ -22.3	50./ -6.5	67./ -23.0	1./ -20.2
PEAK-TO-PEAK	82./ -84.1	12./ 50.1	21./ 39.4	45./ 83.1	2./ 54.8
	21048.	6750.	1550.	4771.	842.

	BEAM .174 (N-M/DEG)	BEAM .350 (N-M/DEG)	BEAM .449 (N-M/DEG)	BEAM .606 (N-M/DEG)	BEAM .803 (N-M/DEG)
MEAN HARMONIC-1	-1413.	-214.	-290.	-642.	-782.
2	509./ 1.1	397./ -59.7	443./ -64.3	502./ -65.6	350./ -80.9
3	36./ 53.6	164./ -68.4	231./ -59.2	264./ -59.4	193./ -72.9
4	386./ 9.1	165./ 10.4	123./ 30.9	84./ 72.1	87./ -73.1
5	325./ 56.2	102./ 46.2	63./ 47.7	63./ 51.4	166./ 43.8
6	112./ -68.0	28./ -63.9	21./ -74.4	26./ -34.3	71./ -86.4
7	162./ -53.2	16./ 52.9	11./ -42.4	21./ -79.8	18./ -41.6
8	121./ 72.7	30./ 79.5	55./ 87.6	4./ -55.2	54./ -49.7
9	22./ 64.5	4./ 57.8	15./ -67.0	4./ -38.3	18./ .3
10	53./ -6.2	44./ 4.6	8./ -11.6	46./ 16.7	45./ 27.8
11	52./ 43.5	19./ 54.5	14./ 41.8	22./ 61.1	19./ 53.0
12	23./ -63.1	7./ -40.0	14./ -59.9	8./ -32.0	1./ 78.3
PEAK-TO-PEAK	28./ 7.7	11./ 24.5	19./ -28.6	12./ 7.4	3./ 46.8
	2258.	1152.	1275.	1381.	1276.

FLIGHT NO. 078 AIRCRAFT TOTAL WT = 34445. N LOADED CG X= 5.04 M = 198.6 IN
 RUN NO. 37 7744. LB Y= -.00 = -.0
 TIME 56756.70 (SEC) Z= 1.84 = 72.4

AERODYNAMIC FLIGHT STATE DYNAMIC PRES= 1.84 KPA = 38.4 PSF
 T. AIRSPEED= 109.7 KT STATIC PRES= 96.4 KPA = 2012. PSF
 A/C MACH NO= .164 TOTAL TEMP= 294.0 DEG K = 529.2 DEG R
 STATIC TEMP= 292.4 DEG K = 526.4 DEG R
 BODY ALPHA= .1 DEG DENSITY= 1.15 KG/M3 = .00223 SLUG/FT3
 BODY BETA= .6 DEG DENSITY ALT= 671. M = 2203. FT
 SONIC SPEED= 343.4 M/SEC = 1127. FPS
 RATE OF CLIMB= -62. M/MIN = -203. FPM

INERTIAL FLIGHT STATE

AXIS	CG LIN VEL (M/S)	HUB LIN VEL (FPS)	CG LIN ACC (G)	HUB LIN ACC (G)	AXIS	ANG POS (DEG)	ANG RATES (RAD/SEC)	ANG ACC (RAD/SEC2)	
X	56.44	185.2	-.057	56.29	184.7	-.054	ROLL -32.7	-.017	.056
Y	.61	2.0	-.003	.59	1.9	.010	PITCH -1.3	.072	-.012
Z	.13	.4	-1.260	.13	.4	-1.259	YAW 294.6	-.087	.016

CONTROL ANGLES M.R. COLL= 10.0 DEG HORIZ FIN= 7.9 DEG
 A1= .4 DEG T.R. COLL= 2.7 DEG
 B1= 4.6 DEG PEDAL POS= 3.6 DEG

ROTOR PARAMETERS

HOVER TIP MACH= .66 SHAFT ALPHA= .1 DEG
 CONTROL ALPHA= -4.5 DEG
 TIP MAX-MACH= .82 DELTA PSI= -.6 DEG
 TIP MIN-MACH= .50
 .9R MAX-MACH= .76 ENGINE POWER= 421. KW = 564. HP
 .9R MIN-MACH= .43 THRUST FACTOR= .832E+07 N = .187E+07 LB

NASA LANGLEY FLIGHT DATA AH-1G ---- ROTOR PERFORMANCE AND LOADS

FLIGHT NO. 78 MU= .246 TOTAL CQ= .000218 AMR TEMP= 19.3 C = 66.69 F
 V= 109.7 KT MAST CQ= .000206 TEMP U60= 37.1 C = 98.87 F
 RUN NO. 37 NZ= 1.259 G OMEGA= 34.159 RAD/SEC CAN TEMP= 29.2 C = 84.60 F
 TIME 56756.56 CLP= .00510 RPM/324= 1.007

ROTOR ANGLES THETA 3/4 (DEG) AO= 7.8 A1= -.5 B1= 4.8 PEAK-TO-PEAK= 10.0
 TEETER ANG (DEG) AO= .2 A1= -1.3 B1= .1 PEAK-TO-PEAK= 2.4

ROTOR LOADS (AMP/PHASE) DRAG BRACE CHORD .449 CHORD .803 PITCH LNK TORSION .449
 (N/DEG) (N-M/DEG) (N-M/DEG) (N-M/DEG)

MEAN HARMONIC	1	2	3	4	5	6	7	8	9	10	11	12	PEAK-TO-PEAK
44657.	3874./ -9.4	288./ 62.1	1982./ 46.0	436./ 53.6	157./ -26.8	1296./ -5.8	299./ 54.9	208./ 79.8	82./ -4.5	56./ -6.6	51./ -74.4	230./ -16.1	12186.
434.	810./ -13.8	58./ -5.2	500./ 45.6	276./ 45.8	20./ 27.8	759./ -13.8	145./ 83.7	110./ 52.3	82./ 76.0	68./ 28.2	34./ 53.2	90./ -22.3	3838.
-3095.	154./ -14.2	39./ 19.6	79./ 58.6	118./ 39.5	28./ -80.6	219./ -14.8	49./ 88.4	33./ 47.2	35./ 61.5	15./ -12.6	21./ 17.2	52./ -15.6	940.
-2663.	2122./ -32.4	1520./ -43.4	260./ -7.0	386./ 86.0	160./ -13.4	130./ 65.2	93./ 33.0	29./ 11.3	100./ -85.0	99./ 19.6	16./ -24.9	24./ -78.1	6529.
-491.	314./ -50.2	146./ -37.7	58./ 43.1	66./ 50.3	18./ 27.1	29./ 50.5	13./ 42.5	5./ 81.7	2./ 54.2	8./ 17.0	5./ 45.2	8./ -38.7	852.

BEAM .174 BEAM .350 BEAM .449 BEAM .606 BEAM .803
 (N-M/DEG) (N-M/DEG) (N-M/DEG) (N-M/DEG) (N-M/DEG)

MEAN HARMONIC	1	2	3	4	5	6	7	8	9	10	11	12	PEAK-TO-PEAK
-1952.	647./ -43.6	336./ -53.4	57./ -73.8	330./ 62.6	106./ -21.1	66./ -35.1	26./ 31.1	23./ 70.7	47./ 88.9	53./ -8.9	4./ -13.8	20./ -21.2	2297.
-259.	423./ -63.8	257./ -73.2	49./ 4.1	107./ 47.5	13./ -47.9	10./ 20.1	10./ 78.8	5./ 90.0	30./ 88.7	25./ 2.8	3./ -31.6	8./ -15.0	1261.
-297.	430./ -66.8	286./ -72.3	51./ 49.9	61./ 39.7	27./ 56.1	14./ 36.0	19./ 80.4	8./ 37.8	15./ 82.6	15./ -23.7	2./ 11.9	10./ -75.3	1305.
-559.	430./ -70.3	239./ -70.6	70./ 82.0	82./ 57.9	16./ -20.1	9./ -3.5	11./ -31.9	10./ -23.3	30./ -77.2	32./ 12.7	3./ -78.6	7./ -37.7	1320.
-550.	220./ -89.1	78./ -73.3	77./ 79.5	140./ 44.5	48./ 72.6	37./ -75.5	44./ -52.5	21./ -6.0	25./ -55.8	26./ 17.0	3./ 8.3	2./ -13.5	832.

FLIGHT NO. 078 AIRCRAFT TOTAL WT = 34419. N LOADED CG X= 5.04 M = 198.6 IN
 RUN NO. 39 7738. LB Y= -0.00 = -0
 TIME 56776.70 (SEC) Z= 1.84 = 72.4

AERODYNAMIC FLIGHT STATE DYNAMIC PRES= 1.75 KPA = 36.5 PSF
 T. AIRSPEED= 106.8 KT STATIC PRES= 96.8 KPA = 2022. PSF
 A/C MACH NO= .160 TOTAL TEMP= 294.1 DEG K = 529.4 DEG R
 STATIC TEMP= 292.6 DEG K = 526.7 DEG P
 BODY ALPHA= 1.3 DEG DENSITY= 1.15 KG/M3 = .00224 SLUG/FT3
 BODY BETA= .7 DEG DENSITY ALT= 628. M = 2059. FT
 SONIC SPEED= 343.5 M/SEC = 1127. FPS
 RATE OF CLIMB= -484. M/MIN = -1588. FPM

INERTIAL FLIGHT STATE

AXIS	CG LIN VEL (M/S)	CG LIN ACC (G)	HUB LIN VEL (M/S)	HUB LIN ACC (G)	AXIS	ANG POS (DEG)	ANG RATES (RAD/SEC)	ANG ACC (RAD/SEC2)	
X	54.92	180.2	-0.067	54.64	179.3	-0.068	ROLL -47.9	-0.039	-0.006
Y	.65	2.1	-0.008	.58	1.9	-0.005	PITCH -8.1	.135	-0.002
Z	1.29	4.2	-1.418	1.29	4.2	-1.414	YAW 128.9	-0.135	.009

CONTROL ANGLES M.R. COLL= 10.1 DEG HORIZ FIN= 7.5 DEG
 A1= .2 DEG T.R. COLL= 2.8 DEG
 B1= 3.7 DEG PEDAL POS= 3.9 DEG

ROTOR PARAMETERS

HOVER TIP MACH= .66 SHAFT ALPHA= 1.4 DEG
 CONTROL ALPHA= -2.4 DEG
 TIP MAX-MACH= .82 DELTA PSI= -.6 DEG
 TIP MIN-MACH= .50
 .9R MAX-MACH= .76 ENGINE POWER= 386. KW = 517. HP
 .9R MIN-MACH= .44 THRUST FACTOR= .841E+07 N = .189E+07 LB

NASA LANGLEY FLIGHT DATA AH-1G ---- ROTOR PERFORMANCE AND LOADS

FLIGHT NO. 78 MU= .239 TOTAL CQ= .000198 AMB TEMP= 19.5 C = 67.02 F
 V= 106.8 KT MAST CQ= .000184 TEMP U60= 37.4 C = 99.34 F
 RUN NO. 39 NZ= 1.414 G OMEGA= 34.258 RAD/SEC CAN TEMP= 29.2 C = 84.60 F
 TIME 56776.55 CLP= .00568 RPM/324= 1.010

ROTOR ANGLES THETA 3/4 (DEG) A0= 7.8 A1= -.7 R1= 4.0 PEAK-TO-PEAK= 8.2
 TEETER ANG (DEG) A0= .2 A1= -1.0 B1= .4 PEAK-TO-PEAK= 2.0

ROTOR LOADS (AMP/PHASE)	DRAG BRACE (N/DEG)	CHORD .449 (N-M/DEG)	CHORD .803 (N-M/DEG)	PITCH LINK (N/DEG)	TORSION .449 (N-M/DEG)
MEAN	45974.	265.	-3078.	-2439.	-481.
HARMONIC-1	5179./ 5.5	1062./ 3.1	214./ 4.5	1823./ -24.9	284./ -53.0
2	176./ -72.9	154./ -47.0	54./ 56.6	1353./ -32.0	140./ -24.3
3	2347./ 53.8	556./ 53.0	81./ 70.5	350./ 23.5	57./ 58.6
4	448./ 58.6	311./ 42.4	150./ 37.6	441./ -83.9	74./ 55.2
5	590./ -53.8	138./ -50.6	21./ -11.0	147./ -30.0	26./ 71.1
6	1614./ -21.2	954./ -26.7	269./ -26.4	321./ 30.7	63./ 30.5
7	148./ -18.1	24./ -58.4	15./ 88.3	70./ 55.1	17./ 48.7
8	140./ -74.5	92./ -82.5	35./ -67.0	50./ 43.8	5./ -82.7
9	112./ -73.7	70./ 48.1	29./ 51.2	70./ -76.6	2./ -1.8
10	33./ -74.6	203./ 6.8	107./ 1.2	89./ 81.6	4./ 87.2
11	109./ -4	63./ 38.7	40./ 82.4	43./ -25.2	1./ -11.8
12	35./ -41.2	29./ 1.2	16./ 76.9	22./ -22.5	16./ -67.3
PEAK-TO-PEAK	14402.	4897.	1378.	5853.	785.

	BEAM .174 (N-M/DEG)	BEAM .350 (N-M/DEG)	BEAM .449 (N-M/DEG)	BEAM .606 (N-M/DEG)	BEAM .803 (N-M/DEG)
MEAN	-1808.	-254.	-305.	-587.	-611.
HARMONIC-1	609./ -21.8	400./ -60.3	421./ -64.0	435./ -69.6	259./ 88.3
2	272./ -41.4	232./ -68.9	261./ -68.6	221./ -68.8	71./ -83.2
3	73./ 1.5	67./ 25.0	64./ 54.2	71./ 89.0	83./ -84.0
4	383./ 66.9	123./ 50.8	62./ 43.0	87./ 61.1	152./ 45.4
5	162./ -43.9	24./ -56.6	17./ 67.0	32./ -43.7	58./ -75.3
6	144./ -48.3	21./ 16.2	19./ -20.7	14./ 60.2	26./ -78.6
7	14./ 15.5	8./ 75.6	19./ -78.7	12./ -22.1	47./ -43.2
8	53./ 53.4	9./ 82.3	19./ 34.5	12./ -10.5	25./ 17.3
9	43./ 89.7	26./ -77.6	14./ 81.1	26./ -53.9	22./ -29.2
10	51./ 50.3	28./ 69.2	17./ 46.1	28./ 61.1	23./ 51.4
11	2./ 78.0	10./ -28.4	7./ 4.4	5./ 41.2	9./ -52.0
12	44./ -62.3	15./ -60.4	14./ -79.3	10./ -59.7	3./ -43.7
PEAK-TO-PEAK	2545.	1256.	1275.	1277.	915.

FLIGHT NO. 079 AIRCRAFT TOTAL WT = 33597. N LOADED CG X= 5.03 M = 198.1 IN
 RUN NO. 9 7553. LB Y= -0.00 = -0.0
 TIME 64430.60 (SEC) Z= 1.85 = 73.0

AERODYNAMIC FLIGHT STATE DYNAMIC PRES= 1.73 KPA = 36.1 PSF
 STATIC PRES= 97.0 KPA = 2027. PSF
 T. AIRSPEED= 106.0 KT TOTAL TEMP= 293.5 DEG K = 528.4 DEG R
 A/C MACH NO= .159 STATIC TEMP= 292.1 DEG K = 525.7 DEG R
 BODY ALPHA= -2.4 DEG DENSITY= 1.16 KG/M3 = .00225 SLUG/FT3
 BODY BETA= .8 DEG DENSITY ALT= 585. M = 1919. FT
 SONIC SPEED= 343.2 M/SEC = 1126. FPS
 RATE OF CLIMB= -2. M/MIN = -7. FPM

INERTIAL FLIGHT STATE

AXIS	CG LIN VEL (M/S)	CG LIN VEL (FPS)	CG LIN ACC (G)	HUB LIN VEL (M/S)	HUB LIN VEL (FPS)	HUB LIN ACC (G)	AXIS	ANG POS (DEG)	ANG RATES (RAD/SEC)	ANG ACC (RAD/SEC2)
X	54.48	178.7	-.058	54.47	178.7	-.060	ROLL	.2	.005	.027
Y	.74	2.4	.001	.75	2.5	.007	PITCH	-2.4	.002	.008
Z	-2.24	-7.4	-1.025	-2.24	-7.4	-1.025	YAW	340.9	-.004	.015

CONTROL ANGLES M.R. COLL= 9.4 DEG HORIZ FIN= 7.8 DEG
 A1= .4 DEG T.R. COLL= 1.9 DEG
 B1= 4.6 DEG PEDAL POS= 2.3 DEG

ROTOR PARAMETERS

HOVER TIP MACH= .66 SHAFT ALPHA= -2.4 DEG
 CONTROL ALPHA= -6.9 DEG
 TIP MAX-MACH= .82 DELTA PSI= -.8 DEG
 TIP MIN-MACH= .50
 .9R MAX-MACH= .75 ENGINE POWER= 415. KW = 557. HP
 .9R MIN-MACH= .43 THRUST FACTOR= .834E+07 N = .188F+07 LB

NASA LANGLEY FLIGHT DATA AH-1G ---- ROTOR PERFORMANCE AND LOADS

FLIGHT NO. 79 MU= .239 TOTAL CO= .000215 AMR TEMP= 18.9 C = 66.04 F
 RUN NO. 8 V= 106.0 KT MAST CO= .000207 TEMP U60= 36.9 C = 98.45 F
 TIME 64430.45 NZ= 1.025 G OMEGA= 34.081 RAD/SEC CAN TEMP= 30.0 C = 86.00 F
 CLP= .00403 RPM/324= 1.004

ROTOR ANGLES THETA 3/4 (DEG) AO= 7.6 A1= -.5 R1= 4.7 PEAK-TO-PEAK= 9.5
 TEETER ANG (DEG) AO= .2 A1= -1.3 B1= -.1 PEAK-TO-PEAK= 2.5

ROTOR LOADS (AMP/PHASE)	DRAG BRACE (N/DEG)	CHORD .449 (N-M/DEG)	CHORD .803 (N-M/DEG)	PITCH LINK (N/DFG)	TORSION .449 (N-M/DEG)
MEAN HARMONIC-1	43726.	494.	-3208.	-2689.	-456.
2	2934./ -24.8	600./ -32.6	121./ -39.4	2713./ -36.0	327./ -50.9
3	555./ 66.1	107./ 55.7	27./ -59.7	1459./ -55.3	140./ -51.8
4	1521./ 46.5	386./ 44.0	51./ 53.2	265./ -32.2	48./ 19.2
5	536./ 43.2	290./ 43.3	104./ 31.6	301./ 68.6	53./ 42.0
6	89./ -4.7	10./ -28.0	16./ 66.2	135./ -12.1	23./ 8.2
7	882./ -1.2	465./ -1.3	133./ -4.0	107./ -46.3	13./ -88.7
8	319./ 55.9	169./ 60.6	64./ 62.1	96./ 23.2	8./ 36.5
9	143./ 41.8	73./ 15.8	30./ 24.3	53./ -68.8	7./ -89.6
10	47./ -42.1	62./ -12.7	20./ -12.8	42./ -64.1	7./ -31.2
11	97./ 35.8	144./ -4.4	73./ 2.2	97./ 33.0	5./ 88.8
12	90./ -40.8	21./ 79.8	9./ 52.1	32./ -72.6	9./ -17.9
PEAK-TO-PEAK	112./ -3.6	80./ -6.4	44./ -0	11./ -9.7	3./ -45.6
PEAK-TO-PEAK	10591.	2256.	745.	6549.	813.

	BEAM .174 (N-M/DEG)	BEAM .350 (N-M/DEG)	BEAM .449 (N-M/DEG)	BEAM .606 (N-M/DFG)	BEAM .803 (N-M/DEG)
MEAN HARMONIC-1	-2074.	-189.	-218.	-472.	-473.
2	651./ -55.6	392./ -66.5	401./ -67.1	388./ -69.6	156./ -84.8
3	326./ -65.9	233./ -79.6	244./ -77.5	201./ -73.9	63./ -58.1
4	25./ 69.9	38./ 28.0	48./ 63.3	70./ 89.2	71./ 76.3
5	258./ 46.7	86./ 34.6	52./ 33.0	58./ 40.9	104./ 29.0
6	76./ -22.4	7./ 63.8	17./ 53.1	6./ 2.8	34./ 46.4
7	13./ 52.2	8./ 12.7	8./ -70.0	13./ -6.5	30./ -56.9
8	44./ 18.9	8./ 38.3	23./ 43.6	7./ -26.8	25./ -87.7
9	10./ 28.5	2./ -89.0	5./ 46.4	5./ -42.7	14./ -41.9
10	15./ -76.6	16./ -70.7	4./ -57.3	21./ -59.5	16./ -37.8
11	54./ -2.9	25./ 1.9	15./ -11.7	28./ 9.9	21./ 22.7
12	14./ 12.6	9./ -43.7	3./ 40.8	6./ -23.6	5./ -6.1
PEAK-TO-PEAK	12./ -70.1	2./ -80.2	6./ -74.3	5./ -77.2	5./ -44.9
PEAK-TO-PEAK	2172.	1154.	1168.	1120.	665.

FLIGHT NO. 079 AIRCRAFT TOTAL WT = 32018. N LOADED CG X= 5.03 M = 197.9 IN
 RUN NO. 34 7198. LB Y= -.00 = -.0
 TIME 66880.00 (SEC) Z= 1.88 = 74.1

AERODYNAMIC FLIGHT STATE DYNAMIC PRES= 1.79 KPA = 37.3 PSF
 STATIC PRES= 96.4 KPA = 2013. PSF
 T. AIRSPEED= 108.3 KT TOTAL TEMP= 294.6 DEG K = 530.3 DEG R
 A/C MACH NO= .162 STATIC TEMP= 293.1 DEG K = 527.5 DEG R
 BODY ALPHA= 1.4 DEG DENSITY= 1.15 KG/M3 = .00222 SLUG/FT3
 BODY BETA= 1.5 DEG DENSITY ALT= 691. M = 2268. FT
 SONIC SPEED= 343.8 M/SEC = 1128. FPS
 RATE OF CLIMB= -263. M/MIN = -863. FPM

INERTIAL FLIGHT STATE

AXIS	CG LIN VEL (M/S)	CG LIN VEL (FPS)	CG LIN ACC (G)	HUB LIN VEL (M/S)	HUB LIN VEL (FPS)	HUB LIN ACC (G)	AXIS	ANG POS (DEG)	ANG RATFS (RAD/SEC)	ANG ACC (RAD/SEC2)
X	55.66	182.6	-.092	55.40	181.8	-.089	ROLL	-1.4	.025	-.095
Y	1.44	4.7	-.010	1.49	4.9	-.030	PITCH	-3.1	.130	-.019
Z	1.38	4.5	-1.506	1.39	4.5	-1.502	YAW	229.1	.025	-.040

CONTROL ANGLES M.R. COLL= 9.3 DEG HORIZ FIN= 7.1 DEG
 A1= .4 DEG T.R. COLL= 1.7 DEG
 R1= 2.7 DEG PEDAL POS= 2.0 DEG

ROTOR PARAMETERS

HOVER TIP MACH= .66 SHAFT ALPHA= 1.4 DEG
 CONTROL ALPHA= -1.3 DEG
 TIP MAX-MACH= .82 DELTA PSI= -1.5 DEG
 TIP MIN-MACH= .50
 .9R MAX-MACH= .76 ENGINE POWER= 360. KW = 483. HP
 .9R MIN-MACH= .43 THRUST FACTOR= .837E+07 N = .188E+07 LB

NASA LANGLEY FLIGHT DATA AH-1G ---- ROTOR PERFORMANCE AND LOADS

FLIGHT NO. 79 MU= .241 TOTAL CQ= .000184 AMB TEMP= 19.9 C = 67.83 F
 RUN NO. 34 V= 108.3 KT MAST CQ= .000165 TFMP U60= 38.7 C = 101.72 F
 TIME 66879.85 N7= 1.502 G OMEGA= 34.412 RAD/SEC CAN TEMP= 29.6 C = 85.30 F
 CLP= .00559 RPM/324= 1.014

ROTOR ANGLES THETA 3/4 (DEG) A0= 7.0 A1= -.5 R1= 3.0 PEAK-TO-PEAK= 6.2
 TEETER ANG (DEG) A0= .1 A1= -.6 R1= .? PEAK-TO-PEAK= 1.2

ROTOR LOADS (AMP/PHASE)	DRAG BRACE (N/DEG)	CHORD .449 (N-M/DEG)	CHORD .803 (N-M/DEG)	PITCH LINK (N/DEG)	TORSION .449 (N-M/DEG)
MEAN HARMONIC-1	46219.	183.	-3346.	-2293.	-463.
2	4261./ 11.6	800./ 13.0	145./ 8.0	1652./ -39.9	303./ -59.8
3	196./ 38.9	134./ -31.3	61./ 64.6	980./ -26.0	97./ -10.4
4	2181./ 38.1	521./ 41.9	78./ 55.7	235./ 19.5	34./ 68.3
5	451./ 71.0	283./ 52.1	130./ 38.8	305./ -79.7	75./ 52.8
6	725./ -22.6	168./ -29.5	31./ 1.7	85./ -6.7	22./ -66.8
7	2090./ -2.3	1221./ -5.7	361./ -4.7	215./ 48.0	51./ 43.7
8	468./ -1.5	199./ 16.4	64./ 13.7	159./ 46.5	19./ 36.6
9	20./ -56.5	27./ -56.2	20./ -33.9	26./ 5.8	5./ 86.3
10	149./ 62.6	198./ 68.3	70./ 60.8	106./ -78.3	4./ -68.5
11	45./ -79.4	204./ -17.0	100./ -21.7	106./ 28.9	15./ -21.2
12	91./ -69.0	28./ 75.3	24./ -54.9	23./ -65.2	4./ -2.4
PEAK-TO-PEAK	13374.	4774.	1384.	5163.	751.

	BEAM .174 (N-M/DEG)	BEAM .350 (N-M/DEG)	BEAM .449 (N-M/DEG)	BEAM .606 (N-M/DEG)	BEAM .803 (N-M/DEG)
MEAN HARMONIC-1	-1736.	-205.	-277.	-584.	-630.
2	443./ -28.7	392./ -63.4	418./ -65.9	426./ -70.2	253./ -85.9
3	224./ -39.6	220./ -69.5	258./ -68.3	254./ -71.9	123./ 89.1
4	139./ -16.3	72./ 7.2	58./ 40.5	77./ 80.9	97./ 89.3
5	327./ 58.1	114./ 46.3	62./ 47.4	74./ 53.5	147./ 36.1
6	131./ -27.7	29./ -43.3	21./ 71.9	33./ -26.5	51./ -80.0
7	121./ -55.5	13./ 54.4	9./ -14.6	17./ 78.0	26./ -57.8
8	82./ 56.3	21./ 69.7	43./ 72.7	9./ -66.0	61./ -69.9
9	9./ 52.7	6./ -61.6	8./ -8.7	9./ -46.9	21./ -22.2
10	41./ -88.5	30./ -84.5	13./ 76.5	33./ -66.9	30./ -50.0
11	52./ 11.9	24./ 24.5	12./ 22.8	29./ 22.0	27./ 14.2
12	9./ 31.3	4./ -2.1	3./ 27.7	5./ 87.2	12./ -46.3
PEAK-TO-PEAK	2029.	1206.	1304.	1302.	975.

FLIGHT NO. 079 AIRCRAFT TOTAL WT = 31636. N LOADED CG X = 5.02 M = 197.8 IN
 RUN NO. 41 7112. LB Y = -.00 = -.0
 TIME 07548.30 (SEC) Z = 1.89 = 74.5

AERODYNAMIC FLIGHT STATE

T. AIRSPEED = 0.0 KT
 A/C MACH NO = 0.000

DYNAMIC PRES = 0.00 KPA = 0.0 PSF
 STATIC PRES = 102.1 KPA = 2132. PSF
 TOTAL TEMP = 297.0 DEG K = 534.6 DEG R
 STATIC TEMP = 297.0 DEG K = 534.6 DEG R
 DENSITY = 1.20 KG/M3 = .00232 SLUG/FT3
 DENSITY ALT = 238. M = 781. FT
 SONIC SPEED = 346.1 M/SEC = 1135. FPS
 RATE OF CLIMB = 0. M/MIN = 0. FPM

BODY ALPHA = -49.9 DEG
 BODY BETA = 45.4 DEG

INERTIAL FLIGHT STATE

AXIS	CG LIN VEL (M/S)	CG LIN VEL (FPS)	CG LIN ACC (G)	HUB LIN VEL (M/S)	HUB LIN VEL (FPS)	HUB LIN ACC (G)	AXIS	ANG POS (DEG)	ANG RATES (RAD/SEC)	ANG ACC (RAD/SEC2)
X	0.00	0.0	.000	0.00	0.0	-.001	ROLL	-.7	.003	-.027
Y	0.00	0.0	-.003	0.00	0.0	-.006	PITCH	.7	-.007	.003
Z	0.00	0.0	-1.024	0.00	0.0	-1.024	YAW	342.7	.039	-.019

CONTRL ANGLES

M.R. COLL = 10.0 DEG HORIZ FIN = 6.4 DEG
 A1 = -1.5 DEG T.R. COLL = 9.6 DEG
 B1 = -.3 DEG PEDAL POS = 9.2 DEG

ROTOR PARAMETERS

HOVER TIP MACH = .05 SHAFT ALPHA = 0.0 DEG HUB HEIGHT = 1.9 R
 CONTROL ALPHA = .3 DEG
 TIP MAX-MACH = .65 DELTA PSI = 0.0 DEG
 TIP MIN-MACH = .55
 .9K MAX-MACH = .58
 .9R MIN-MACH = .58 THRUST FACTOR = .849E+07 N = .191E+07 LB

NASA LANGLEY FLIGHT DATA AH-1G ---- ROTOR PERFORMANCE AND LOADS

FLIGHT NO. 79 MU=0.000 TOTAL CO = .000296 AMB TEMP = 23.9 C = 74.96 F
 RUN NO. 41 V = 0.0 KT MAST CO = .000263 TEMP U60 = 39.9 C = 103.75 F
 TIME 07548.15 NZ = 1.024 G OMEGA = 33.833 RAD/SEC CAN TEMP = 31.9 C = 89.47 F
 CLP = .00373 RPM/324 = .997

ROTOR ANGLES

THETA 3/4 (DEG) AO = 7.6 A1 = -1.7 B1 = -.4 PEAK-TO-PEAK = 3.4
 TEETER ANG (DEG) AO = .1 A1 = 1.0 B1 = -1.0 PEAK-TO-PEAK = 2.7

ROTOR LOADS (AMP/PHASE)

	DRAG BRACE (N/DEG)	CHORD .449 (N-M/DEG)	CHORD .803 (N-M/DEG)	PITCH LINK (N/DEG)	TORSION .449 (N-M/DEG)
MEAN	40431.	1022.	-2965.	-2957.	-430.
HARMONIC-1	1689./ -32.8	458./ -42.0	131./ -49.4	931./ -65.1	23./ -23.9
2	815./ 51.9	182./ 56.0	60./ -80.1	304./ 11.5	34./ 35.1
3	463./ -6.0	48./ -16.5	1./ -21.4	49./ -73.8	23./ -39.6
4	191./ -48.2	95./ -72.0	29./ -60.3	28./ -14.1	10./ -42.9
5	35./ -16.8	31./ 79.5	18./ 78.4	56./ 12.5	17./ 43.2
6	312./ -22.6	112./ -21.7	51./ -28.6	28./ 10.7	4./ -42.7
7	94./ 7.1	46./ -43.9	3./ -58.7	51./ 84.3	4./ 64.0
8	144./ 5.9	27./ -86.9	19./ 65.8	24./ -7.1	3./ -21.3
9	122./ 54.9	29./ -70.0	9./ -54.3	35./ 76.9	4./ -5.3
10	75./ -17.7	9./ 21.3	14./ -72.4	40./ -69.5	4./ -52.1
11	20./ 69.8	37./ 52.5	9./ 73.4	24./ -59.7	5./ -88.9
12	15./ 68.6	17./ -73.4	13./ 86.1	10./ -10.3	3./ 4.0
PEAK-TO-PEAK	3909.	1292.	481.	2270.	163.

ROTOR LOADS (AMP/PHASE)

	BEAM .174 (N-M/DEG)	BEAM .350 (N-M/DEG)	BEAM .449 (N-M/DEG)	BEAM .600 (N-M/DEG)	BEAM .803 (N-M/DEG)
MEAN	-1120.	-78.	-72.	-263.	-335.
HARMONIC-1	42./ 44.1	36./ -10.0	54./ -18.3	98./ -30.5	94./ -51.3
2	68./ 24.6	64./ -4.2	72./ -12.3	100./ -19.3	95./ -38.1
3	44./ -29.9	40./ -35.6	18./ -45.3	11./ -35.5	21./ 27.1
4	27./ -69.1	14./ -84.6	5./ 45.0	5./ 14.5	17./ 43.7
5	8./ -54.5	5./ 40.5	11./ -3.8	1./ -82.6	16./ 37.9
6	15./ 88.6	1./ 20.9	9./ -70.6	7./ -66.6	25./ -61.6
7	28./ -71.5	6./ -25.8	15./ -83.9	15./ 75.6	22./ 75.7
8	10./ -30.1	5./ -57.8	5./ -72.6	5./ -79.3	4./ 3.7
9	8./ 65.4	5./ -78.5	5./ 66.3	4./ -56.4	7./ -54.9
10	19./ 78.3	16./ -87.3	12./ 75.5	19./ -81.4	12./ -83.6
11	8./ 44.8	7./ 88.8	3./ 26.6	6./ 84.2	6./ -81.4
12	6./ 6.9	4./ 33.0	3./ -23.1	4./ 32.4	5./ -2.4
PEAK-TO-PEAK	338.	211.	256.	381.	355.

FLIGHT NO. 080 AIRCRAFT TOTAL WT = 36718. N LOADED CG X= 5.02 M = 197.6 IN
 RUN NO. 2 8255. LB Y= -.00 = -.0
 TIME +9685.20 (SEC) Z= 1.82 = 71.8

AERODYNAMIC FLIGHT STATE DYNAMIC PRES= 0.00 KPA = 0.0 PSF
 T. AIRSPEED= 0.0 KT STATIC PRES= 101.9 KPA = 2128. PSF
 A/C MACH NU= 0.000 TOTAL TEMP= 296.5 DEG K = 533.6 DEG R
 STATIC TEMP= 296.5 DEG K = 533.6 DEG R
 BODY ALPHA= -2.9 DEG DENSITY= 1.20 KG/M3 = .00232 SLUG/FT3
 BODY BETA= .0 DEG DENSITY ALT= 239. M = 783. FT
 SONIC SPEED= 345.7 M/SEC = 1134. FPS
 RATE OF CLIMB= 0. M/MIN = 0. FPM

INERTIAL FLIGHT STATE

AXIS	CG LIN VEL (M/S)	CG LIN VEL (FPS)	CG LIN ACC (G)	HUB LIN VEL (M/S)	HUB LIN VEL (FPS)	HUB LIN ACC (G)	AXIS	ANG POS (DEG)	ANG RATES (RAD/SEC)	ANG ACC (RAD/SEC2)
X	0.00	0.0	-.016	0.00	0.0	-.018	ROLL	-1.3	.007	-.018
Y	0.00	0.0	.032	0.00	0.0	.026	PITCH	-1.1	.006	.011
Z	0.00	0.0	-1.025	0.00	0.0	-1.025	YAW	22.3	-.006	.054

CONTRJL ANGLES M.F. COLL= 11.3 DEG HURIZ FIN= 6.3 DEG
 A1= -1.9 DEG T.R. COLL= 9.1 DEG
 B1= -1.5 DEG PEDAL POS= 8.9 DEG

ROTOR PARAMETERS

HOVER TIP MACH= .66 SHAFT ALPHA= 0.0 DEG HUB HEIGHT = 1.9 R
 CONTROL ALPHA= 1.5 DEG
 TIP MAX-MACH= .66 DELTA PSI= 0.0 DEG
 TIP MIN-MACH= .56
 .9R MAX-MACH= .59
 .9R MIN-MACH= .59 THRUST FACTOR= .866E+07 N = .195E+07 LB

NASA LANGLEY FLIGHT DATA AH-1G ---- ROTOR PERFORMANCE AND LOADS

FLIGHT NU. 80 MU=0.000 TOTAL CQ= .000351 AMB TEMP= 23.3 C = 73.94 F
 RUN NO. 2 V= 0.0 KT MAST CQ= .000318 TEMP U60= 37.4 C = 99.23 F
 TIME 49686.13 NZ= 1.025 G OMEGA= 34.150 RAD/SEC CAN TEMP= 40.0 C = 104.06 F
 CLP= .00424 KPM/324= 1.007

ROTOR ANGLES THETA 3/4 (DEG) AO= 8.5 A1= -1.8 B1= -1.3 PEAK-TO-PEAK= 4.3
 TEETER ANG (DEG) AJ= .4 A1= 1.1 B1= -1.6 PEAK-TO-PEAK= 3.7

ROTOR LOADS (AMP/PHASE) DRAG BRACE CHORD .449 CHORD .803 PITCH LINK TORSION .449
 (N/DEG) (N-M/DEG) (N-M/DEG) (N-M/DEG)

MEAN HARMONIC	DRAG BRACE (N/DEG)	CHORD .449 (N-M/DEG)	CHORD .803 (N-M/DEG)	PITCH LINK (N/DEG)	TORSION .449 (N-M/DEG)
1	40110.	975.	-2796.	-3027.	-427.
2	208./ -59.5	94./ -36.0	65./ -26.5	1425./ -34.4	23./ -30.2
3	373./ 77.3	109./ -83.4	10./ -81.6	438./ 24.6	53./ 51.2
4	3094./ 37.7	714./ 35.2	114./ 19.0	179./ 17.9	26./ 70.1
5	765./ 46.2	414./ 52.0	165./ 54.0	342./ 73.7	79./ 35.5
6	433./ -31.9	158./ -38.6	46./ -16.3	11./ 55.8	22./ -16.0
7	900./ -87.2	487./ 87.9	136./ -84.6	198./ 34.4	25./ 44.2
8	390./ 79.3	222./ 73.1	73./ 84.3	69./ 84.5	5./ 40.0
9	218./ 55.5	97./ 52.4	31./ 50.5	14./ 15.3	3./ -22.7
10	154./ 31.4	182./ -14.5	88./ -15.7	18./ 62.3	3./ -18.4
11	42./ 13.5	118./ -21.9	45./ -23.1	138./ -39.3	22./ -8.2
12	113./ 73.8	9./ 35.5	8./ 83.5	44./ -26.3	3./ -25.2
PEAK-TO-PEAK	131./ 23.3	73./ 44.3	44./ 25.2	31./ 9.8	7./ -86.4
PEAK-TO-PEAK	8880.	3054.	997.	3798.	311.

MEAN HARMONIC	BEAM .174 (N-M/DEG)	BEAM .350 (N-M/DEG)	BEAM .449 (N-M/DEG)	BEAM .605 (N-M/DEG)	BEAM .803 (N-M/DEG)
1	-937.	-9.	-32.	-229.	-321.
2	75./ -76.6	5./ 42.7	21./ -69.1	58./ -59.2	67./ -37.3
3	84./ 32.8	57./ 26.1	91./ 30.1	106./ 43.4	58./ -64.6
4	110./ 33.8	125./ 35.2	108./ 35.9	73./ 26.9	63./ -50.4
5	202./ 62.3	110./ 57.2	44./ 51.6	61./ 83.9	159./ 62.6
6	62./ 29.1	21./ -1.7	13./ 32.2	44./ 13.4	18./ -60.0
7	62./ 21.3	17./ -56.3	27./ 31.6	36./ -6.1	46./ 22.1
8	33./ 80.2	6./ -18.0	19./ 85.8	10./ 21.1	13./ 63.7
9	17./ 27.9	4./ -82.4	11./ 11.8	7./ -26.8	15./ -57.0
10	3./ -51.7	7./ -6.7	5./ -40.8	11./ .8	8./ -3.5
11	34./ -46.4	28./ -64.6	17./ -58.4	33./ -52.2	24./ -44.3
12	8./ 9.7	14./ -26.1	5./ -79.9	11./ -25.1	7./ -1.2
PEAK-TO-PEAK	20./ -33.3	16./ -45.9	10./ -35.1	20./ -43.0	12./ -13.7
PEAK-TO-PEAK	807.	471.	402.	405.	642.

FLIGHT NO. 080 AIRCRAFT TOTAL WT = 35652. N LOADED CG X= 5.04 M = 198.4 IN
 RUN NO. 19 8015. LB Y= -.00 = -.0
 TIME 51315.90 (SEC) Z= 1.83 = 72.0

AERODYNAMIC FLIGHT STATE DYNAMIC PRES= 1.96 KPA = 41.0 PSF
 T. AIRSPEED= 111.9 KT STATIC PRES= 99.2 KPA = 2072. PSF
 A/C MACH NO= .167 TOTAL TEMP= 295.1 DEG K = 531.1 DEG R
 STATIC TEMP= 293.4 DEG K = 528.1 DEG R
 BODY ALPHA= 7.0 DEG DENSITY= 1.18 KG/M3 = .00229 SLUG/FT3
 BODY BETA= 2.2 DEG DENSITY ALT= 403. M = 1323. FT
 SONIC SPEED= 344.0 M/SEC = 1128. FPS
 RATE OF CLIMB= -601. M/MIN = -1972. FPM

INERTIAL FLIGHT STATE

AXIS	CG LIN VEL (M/S)	CG LIN VEL (FPS)	CG LIN ACC (G)	HUB LIN VEL (M/S)	HUB LIN VEL (FPS)	HUB LIN ACC (G)	AXIS	ANG POS (DFG)	ANG RATES (RAD/SEC)	ANG ACC (RAD/SEC2)
X	57.10	187.3	-.105	56.49	185.3	-.102	ROLL	-3.0	.035	.123
Y	2.17	7.1	-.008	2.24	7.3	.016	PITCH	-3.2	.297	-.014
Z	7.01	23.0	-2.008	7.03	23.1	-1.990	YAW	137.0	.017	-.003

CONTROL ANGLES M.R. COLL= 9.8 DEG HORIZ FIN= 6.9 DEG
 A1= 1.2 DEG T.R. COLL= 1.8 DEG
 B1= 2.1 DEG PEDAL POS= 2.6 DEG

ROTOR PARAMETERS

HOVER TIP MACH= .67 SHAFT ALPHA= 7.1 DEG
 CONTROL ALPHA= 5.0 DEG
 TIP MAX-MACH= .83 DELTA PSI= -2.3 DEG
 TIP MIN-MACH= .50
 .9R MAX-MACH= .77 ENGINE POWER= 285. KW = 383. HP
 .9R MIN-MACH= .43 THRUST FACTOR= .875E+07 N = .197E+07 LB

NASA LANGLEY FLIGHT DATA AH-1G ---- ROTOR PERFORMANCE AND LOADS

FLIGHT NO. 80 MU= .246 TOTAL CQ= .000136 AMB TEMP= 20.3 C = 68.46 F
 RUN NO. 19 V= 111.9 KT MAST CQ= .000105 TEMP U60= 38.9 C = 102.05 F
 TIME 51315.76 NZ= 1.990 G OMEGA= 34.950 RAD/SEC CAN TEMP= 31.9 C = 89.47 F
 CLP= .00783 RPM/324= 1.030

ROTOR ANGLES THETA 3/4 (DEG) A0= 6.8 A1= .1 B1= 1.7 PEAK-TO-PEAK= 3.7
 TEETER ANG (DEG) A0= .3 A1= .0 B1= 1.0 PEAK-TO-PEAK= 2.0

ROTOR LOADS (AMP/PHASE) DRAG BRACE CHORD .449 CHORD .803 PITCH LINK TORSION .449
 (N/DEG) (N-M/DEG) (N-M/DEG) (N-M/DEG)

	DRAG BRACE (N/DEG)	CHORD .449 (N-M/DEG)	CHORD .803 (N-M/DEG)	PITCH LINK (N/DEG)	TORSION .449 (N-M/DEG)
MEAN	51930.	-595.	-3377.	-2002.	-396.
HARMONIC-1	7016./ 1.6	1584./ 12.3	277./ 16.2	1713./ -7.4	241./ -45.2
2	785./ -7.2	531./ -37.5	121./ -47.0	619./ 39.0	66./ 29.3
3	3274./ 11.6	703./ 13.1	89./ 30.7	458./ 69.4	42./ 51.2
4	291./ -73.9	132./ 25.4	118./ 14.7	310./ -86.5	47./ -22.5
5	678./ -1.6	216./ .7	68./ 19.5	217./ 16.0	48./ 88.2
6	1122./ -20.9	582./ -25.3	175./ -24.9	260./ 77.6	58./ -86.9
7	57./ 40.0	97./ 76.9	44./ 42.4	110./ 65.0	38./ -48.6
8	111./ -4.3	61./ 22.0	54./ 8.9	62./ -29.8	29./ -49.7
9	88./ 64.7	64./ -79.4	25./ -78.9	77./ 17.7	22./ -26.7
10	227./ 35.1	161./ -16.2	64./ -16.2	49./ -68.7	23./ 4.7
11	184./ 31.5	17./ 24.4	10./ -1.1	46./ -2.2	3./ -32.7
12	111./ 84.0	28./ 23.9	7./ 16.8	49./ 60.6	6./ 10.0
PEAK-TO-PEAK	17177.	5033.	1286.	4907.	780.

BEAM .174 BEAM .350 BEAM .449 BEAM .606 BEAM .803
 (N-M/DEG) (N-M/DEG) (N-M/DEG) (N-M/DEG) (N-M/DEG)

	BEAM .174 (N-M/DEG)	BEAM .350 (N-M/DEG)	BEAM .449 (N-M/DEG)	BEAM .606 (N-M/DEG)	BEAM .803 (N-M/DEG)
MEAN	-1228.	-194.	-292.	-667.	-796.
HARMONIC-1	471./ 5.7	407./ -60.8	463./ -66.5	520./ -70.2	371./ -85.9
2	177./ 62.5	219./ -80.8	270./ -69.0	286./ -65.1	172./ -72.8
3	352./ -5.4	142./ -11.7	93./ 8.6	52./ 41.9	49./ 78.0
4	377./ 31.1	114./ 16.2	52./ 15.6	91./ 31.2	185./ 27.3
5	114./ -18.8	22./ -41.6	10./ 74.7	36./ -41.8	64./ -79.8
6	83./ -72.7	10./ -37.1	19./ 13.8	23./ 83.6	62./ -17.9
7	116./ 45.0	25./ 43.4	36./ 59.2	6./ 28.2	42./ -54.6
8	65./ 42.6	7./ -60.3	14./ 57.2	6./ 6.2	21./ -22.2
9	55./ 30.6	34./ -4.1	12./ -14.7	40./ 5.7	43./ 8.2
10	65./ 56.7	20./ 53.6	18./ 33.3	25./ 51.0	20./ 44.3
11	28./ -82.0	12./ -16.9	7./ 79.8	7./ -74.3	3./ -3.6
12	34./ -12.3	13./ 14.1	16./ -15.3	13./ -6.5	4./ 58.4
PEAK-TO-PEAK	2378.	1313.	1402.	1381.	1338.

FLIGHT NO. 780 AIRCRAFT TOTAL WT = 35480. N LOADED CG X = 5.04 M = 198.3 IN
 RUN NO. 21 7977. LB Y = -.00 = -.0
 TIME 51557.70 (SFC) Z = 1.83 = 72.1

AERODYNAMIC FLIGHT STATE DYNAMIC PRES = 1.78 KPA = 37.2 PSF
 T. AIRSPEED = 106.7 KT STATIC PRES = 99.5 KPA = 2077. PSF
 A/C MACH NO = .160 TOTAL TEMP = 295.7 DEG K = 532.2 DEG R
 STATIC TEMP = 294.2 DEG K = 529.5 DEG R
 BODY ALP-A = -2.7 DEG DENSITY = 1.18 KG/M3 = .00229 SLUG/FT3
 BODY BETA = .5 DEG DENSITY ALT = 406. M = 1333. FT
 SONIC SPEED = 344.4 M/SEC = 1130. FPS
 RATE OF CLIMB = -237. M/MIN = -778. FPM

INERTIAL FLIGHT STATE

AXIS	CG LIN VEL (M/S) (FPS)	CG LIN ACC (G)	HUB LIN VEL (M/S) (FPS)	HUB LIN ACC (G)	AXIS	ANG POS (DEG)	ANG RATES (RAD/SEC)	ANG ACC (RAD/SEC2)
X	54.85 179.9	-.071	54.67 179.4	-.079	ROLL	43.7	.014	-.046
Y	.48 1.6	.008	.50 1.6	-.004	PITCH	-5.7	.084	.039
Z	-2.59 -8.5	-1.161	-2.59 -8.5	-1.159	YAW	327.3	.130	-.034

CONTROL ANGLES M.R. COLL = 10.1 DEG HORIZ FIN = 7.5 DEG
 A1 = .4 DEG T.R. COLL = .9 DEG
 B1 = 3.7 DEG PEDAL POS = 1.1 DEG

ROTOR PARAMETERS

HOVER TIP MACH = .65 SHAFT ALPHA = -2.7 DEG
 CONTROL ALPHA = -6.4 DEG
 TIP MAX-MACH = .81 DELTA PSI = -.5 DEG
 TIP MIN-MACH = .49
 .9R MAX-MACH = .75 ENGINE POWER = 408. KW = 548. HP
 .9R MIN-MACH = .43 THRUST FACTOR = .847E+07 N = .189E+07 LB

NASA LANGLEY FLIGHT DATA AH-1G ---- ROTOR PERFORMANCE AND LOADS

FLIGHT NO. 80 MU = .241 TOTAL CO = .000211 AMB TEMP = 21.0 C = 69.80 F
 RUN NO. 21 V = 106.7 KT MAST CO = .000200 TEMP U60 = 39.2 C = 102.50 F
 TIME 51557.55 NZ = 1.159 G OMEGA = 33.924 RAD/SEC CAN TEMP = 30.8 C = 87.39 F
 CLP = .00478 RPM/324 = 1.000

ROTOR ANGLES THETA 3/4 (DEG) AO = 7.9 A1 = -.5 B1 = 4.0 PEAK-TO-PEAK = 8.4
 TEETER ANG (DEG) AO = .4 A1 = -.7 B1 = -.0 PEAK-TO-PEAK = 1.2

ROTOR LOADS (AMP/PHASE) DRAG BRACE CHORD .449 CHORD .803 PITCH LINK TORSION .449
 (N/DEG) (N-M/DEG) (N-M/DEG) (N-M/DEG)

	MEAN	43426.	387.	-3045.	-2698.	-489.
HARMONIC-1	4039./ -21.9	842./ -26.0	171./ -31.4	2107./ -36.1	320./ -50.1	
2	1062./ -83.1	213./ 83.2	33./ -53.1	1483./ -43.5	138./ -37.0	
3	1641./ 53.5	421./ 55.4	57./ 71.5	196./ -7.4	37./ 50.2	
4	570./ 69.6	316./ 62.4	122./ 49.3	344./ -86.2	62./ 66.8	
5	430./ 21.4	129./ 20.1	51./ 56.1	115./ 7.3	33./ 51.9	
6	991./ -7.6	598./ -9.2	169./ -10.7	145./ 53.1	32./ 43.5	
7	150./ 31.1	136./ -3.0	49./ 6.8	25./ -76.6	8./ 76.2	
8	113./ 85.1	43./ 75.4	14./ -82.9	82./ 78.7	7./ -35.4	
9	40./ 79.9	163./ 67.4	72./ 65.2	96./ -64.9	2./ 12.7	
10	47./ -57.4	27./ 49.8	18./ -14.4	49./ 70.8	3./ -29.9	
11	23./ -9.1	34./ -41.2	12./ 54.5	37./ 18.9	5./ -46.8	
12	126./ -4.5	106./ -2.1	60./ 1.7	35./ -45.2	5./ -59.3	
PEAK-TO-PEAK	11070.	3175.	952.	6411.	750.	

BEAM .174 BEAM .350 BEAM .449 BEAM .606 BEAM .803
 (N-M/DEG) (N-M/DEG) (N-M/DEG) (N-M/DEG) (N-M/DEG)

	MEAN	-1969.	-256.	-292.	-554.	-546.
HARMONIC-1	633./ -47.4	419./ -64.6	424./ -66.4	426./ -68.2	213./ -83.5	
2	387./ -56.3	264./ -71.3	282./ -69.1	241./ -67.3	92./ -67.7	
3	31./ -.5	51./ 28.6	58./ 59.6	72./ -87.9	82./ -89.1	
4	307./ 71.8	99./ 56.6	56./ 51.7	76./ 65.3	138./ 49.4	
5	105./ -28.7	14./ -81.4	23./ 63.8	12./ -24.9	53./ 83.7	
6	90./ -37.2	15./ 55.9	16./ 21.8	9./ 61.3	27./ -64.7	
7	11./ -52.5	12./ -62.2	23./ -60.4	9./ -1.7	43./ -23.5	
8	42./ 65.4	8./ -84.8	11./ 37.2	10./ -14.2	23./ 19.7	
9	55./ -65.6	27./ -64.0	15./ -62.0	31./ -49.5	26./ -34.3	
10	26./ 30.8	20./ 63.2	10./ 27.5	19./ 59.2	18./ 54.8	
11	13./ 26.9	5./ 26.6	4./ -21.8	5./ -5.5	2./ -16.3	
12	13./ -1.8	2./ -24.4	3./ -67.3	1./ 18.0	1./ -8.2	
PEAK-TO-PEAK	2172.	1284.	1263.	1280.	829.	

FLIGHT NO. 080 AIRCRAFT TOTAL WT = 35459. N LOADED CG X= 5.04 M = 198.3 IN
 RUN NO. 23 7972. LB Y= -0.00 = -0.0
 TIME 51576.70 (SEC) Z= 1.83 = 72.1

AERODYNAMIC FLIGHT STATE DYNAMIC PRES= 1.82 KPA = 38.0 PSF
 STATIC PRES= 100.6 KPA = 2101. PSF
 T. AIRSPEED= 107.3 KT TOTAL TEMP= 296.5 DEG K = 533.8 DEG R
 A/C MACH NO= .160 STATIC TEMP= 295.0 DEG K = 531.0 DEG R
 BODY ALPHA= 2.2 DEG DENSITY= 1.19 KG/M3 = .00231 SLUG/FT3
 BODY BETA= -1.9 DEG DENSITY ALT= 320. M = 1050. FT
 SONIC SPEED= 344.9 M/SEC = 1132. FPS
 RATE OF CLIMB= -603. M/MIN = -1978. FPM

INERTIAL FLIGHT STATE

AXIS	CG LIN VEL (M/S)	CG LIN VEL (FPS)	CG LIN ACC (G)	HUB LIN VEL (M/S)	HUB LIN VEL (FPS)	HUB LIN ACC (G)	AXIS	ANG POS (DEG)	ANG RATES (RAD/SEC)	ANG ACC (RAD/SEC2)
X	55.15	180.9	-.107	54.70	179.5	-.109	ROLL	52.5	.052	.054
Y	-1.87	-6.1	.039	-1.77	-5.8	.044	PITCH	-10.7	.220	-.000
Z	2.14	7.0	-1.664	2.14	7.0	-1.654	YAW	171.9	.150	-.046

CONTROL ANGLES M.R. COLL= 10.0 DEG HORIZ FIN= 6.9 DEG
 A1= .6 DEG T.R. COLL= -.2 DEG
 B1= 2.1 DEG PEDAL POS= -.5 DEG

ROTOR PARAMETERS

HOVER TIP MACH= .66 SHAFT ALPHA= 2.2 DEG
 CONTROL ALPHA= .1 DEG
 TIP MAX-MACH= .82 DELTA PSI= 1.9 DEG
 TIP MIN-MACH= .50
 .9R MAX-MACH= .76 ENGINE POWER= 300. KW = 402. HP
 .9R MIN-MACH= .44 THRUST FACTOR= .874E+07 N = .196E+07 LB

NASA LANGLEY FLIGHT DATA AH-1G ---- ROTOR PERFORMANCE AND LOADS

FLIGHT NO. 80 MU= .239 TOTAL CQ= .000146 AMB TEMP= 21.9 C = 71.34 F
 RUN NO. 23 V= 107.3 KT MAST CQ= .000132 TEMP U60= 39.2 C = 102.50 F
 TIME 51576.55 NZ= 1.654 G OMEGA= 34.494 RAD/SEC CAN TEMP= 30.8 C = 87.39 F
 CLP= .00657 RPM/324= 1.017

ROTOR ANGLES THETA 3/4 (DEG) A0= 7.6 A1= -.5 B1= 2.5 PEAK-TO-PEAK= 5.3
 TEETER ANG (DEG) A0= .3 A1= -.4 B1= .8 PEAK-TO-PEAK= 1.9

ROTOR LOADS (AMP/PHASE)	DRAG BRACE (N/DEG)	CHORD .449 (N-M/DEG)	CHORD .803 (N-M/DEG)	PITCH LINK (N/DEG)	TORSION .449 (N-M/DEG)
MEAN	48081.	-139.	-3129.	-2338.	-484.
HARMONIC-1	6218./ 15.1	1277./ 20.5	221./ 14.4	1667./ -25.5	291./ -51.5
2	419./ 5.3	332./ -14.1	96./ -66.6	817./ 16.3	105./ 39.3
3	2782./ 58.8	653./ 60.9	95./ 74.0	438./ 65.7	58./ 83.4
4	115./ 74.4	218./ 67.8	144./ 64.5	381./ -38.2	71./ 89.5
5	665./ 4.1	201./ -18.6	36./ -20.6	9./ 24.3	30./ -3.0
6	1955./ 40.8	1156./ 35.4	335./ 36.0	414./ -87.6	80./ -90.0
7	173./ 66.9	120./ -56.6	42./ -63.3	216./ -55.4	31./ -53.9
8	123./ .9	85./ 18.2	39./ 9.4	47./ 28.0	14./ -16.7
9	103./ 8.1	133./ -47.8	61./ -54.0	102./ 27.4	4./ 61.5
10	48./ -72.0	135./ 71.4	79./ 52.6	119./ -57.2	11./ 74.9
11	81./ 80.8	39./ -31.6	37./ 16.4	22./ 45.0	3./ -66.3
12	114./ 78.7	28./ -85.4	8./ 27.7	74./ 5.1	8./ 25.1
PEAK-TO-PEAK	17712.	6076.	1429.	5531.	764.

	BEAM .174 (N-M/DEG)	BEAM .350 (N-M/DEG)	BEAM .449 (N-M/DEG)	BEAM .606 (N-M/DEG)	BEAM .803 (N-M/DEG)
MEAN	-1547.	-227.	-305.	-639.	-708.
HARMONIC-1	510./ -3.3	417./ -52.0	449./ -55.7	477./ -59.4	303./ -75.5
2	216./ -2.3	217./ -43.3	270./ -42.4	271./ -48.0	157./ -72.8
3	226./ 20.9	106./ 36.0	78./ 61.8	78./ -71.7	105./ -56.3
4	417./ -79.3	138./ 87.2	71./ 88.9	103./ -82.1	191./ 87.2
5	93./ 3.1	23./ 1.0	26./ -42.2	25./ 18.1	74./ -32.9
6	136./ 3.2	24./ -78.4	14./ 58.6	19./ -64.0	36./ -30.1
7	93./ -44.2	30./ -51.1	50./ -32.7	10./ 18.0	70./ -1.7
8	18./ 11.7	8./ 10.0	14./ 33.4	12./ 9.8	25./ 21.2
9	50./ 18.0	41./ 25.1	15./ -8.9	44./ 33.5	36./ 35.2
10	61./ -64.6	29./ -50.2	13./ -53.2	28./ -53.9	18./ -67.2
11	14./ 16.2	3./ 65.3	5./ 19.1	4./ -89.8	9./ 22.3
12	16./ -88.9	5./ -76.3	10./ 82.3	7./ -52.9	7./ 5.5
PEAK-TO-PEAK	2427.	1310.	1377.	1476.	1204.

FLIGHT NO. 080 AIRCRAFT TOTAL WT = 35144. N LOADED CG X= 5.04 M = 198.3 IN
 RUN NO. 27 7901. LB Y= -.00 = -.0
 TIME 52085.20 (SEC) Z= 1.83 = 72.2

AERODYNAMIC FLIGHT STATE DYNAMIC PRES= 1.76 KPA = 36.8 PSF
 STATIC PRES= 98.9 KPA = 2066. PSF
 T. AIRSPED= 106.3 KT TOTAL TEMP= 294.9 DEG K = 530.8 DEG R
 A/C MACH NO= .159 STATIC TEMP= 293.4 DEG K = 528.1 DEG R
 BODY ALPHA= .1 DEG DENSITY= 1.18 KG/M3 = .00228 SLUG/FT3
 BODY BETA= 2.1 DEG DENSITY ALT= 436. M = 1432. FT
 SONIC SPEED= 344.0 M/SEC = 1128. FPS
 RATE OF CLIMB= -124. M/MIN = -408. FPM

INERTIAL FLIGHT STATE

AXIS	CG LIN VEL (M/S)	CG LIN VEL (FPS)	CG LIN ACC (G)	HUB LIN VEL (M/S)	HUB LIN VEL (FPS)	HUB LIN ACC (G)	AXIS	ANG POS (DEG)	ANG RATES (RAD/SEC)	ANG ACC (RAD/SEC2)
X	54.63	179.2	-.062	54.44	178.6	-.066	ROLL	-44.1	.000	.031
Y	1.95	6.4	-.012	1.96	6.4	-.003	PITCH	-3.5	.093	.020
Z	.10	.3	-1.253	.11	.4	-1.251	YAW	12.0	-.118	-.002

CONTROL ANGLES M.R. COLL= 9.9 DEG HORIZ FIN= 7.6 DEG
 A1= .5 DEG T.R. COLL= 2.9 DEG
 B1= 4.0 DEG PEDAL POS= 3.7 DEG

ROTOR PARAMETERS

HOVER TIP MACH= .65 SHAFT ALPHA= .1 DEG
 CONTROL ALPHA= -3.9 DEG
 TIP MAX-MACH= .81 DELTA PSI= -2.1 DEG
 TIP MIN-MACH= .49
 .9R MAX-MACH= .75 ENGINE POWER= 396. KW = 531. HP
 .9R MIN-MACH= .43 THRUST FACTOR= .833E+07 N = .187E+07 LB

NASA LANGLEY FLIGHT DATA AH-1G ---- ROTOR PERFORMANCE AND LOADS

FLIGHT NO. 80 MU= .242 TOTAL CQ= .000209 AMB TEMP= 20.3 C = 68.45 F
 RUN NO. 27 V= 106.3 KT MAST CQ= .000194 TEMP U60= 38.8 C = 101.87 F
 TIME 52085.05 NZ= 1.251 G OMEGA= 33.618 RAD/SEC CAN TEMP= 30.8 C = 87.39 F
 CLP= .00522 RPM/324= .991

ROTOR ANGLES THETA 3/4 (DEG) A0= 7.7 A1= -.3 B1= 4.3 PEAK-TO-PEAK= 8.8
 FEETER ANG (DEG) A0= .3 A1= -.9 B1= .3 PEAK-TO-PEAK= 1.8

ROTOR LOADS (AMP/PHASE) DRAG BRACE CHORD .449 CHORD .803 PITCH LINK TORSION .449
 (N/DEG) (N-M/DEG) (N-M/DEG) (N-M/DEG)

	DRAG BRACE (N/DEG)	CHORD .449 (N-M/DEG)	CHORD .803 (N-M/DEG)	PITCH LINK (N/DEG)	TORSION .449 (N-M/DEG)
MEAN	44352.	425.	-2976.	-2593.	-480.
HARMONIC-1	4126./ -10.8	807./ -14.2	167./ -19.5	1975./ -34.0	302./ -53.5
2	420./ 64.8	57./ 34.4	31./ -2.5	1480./ -49.1	148./ -40.5
3	1986./ 42.2	476./ 42.6	71./ 46.8	312./ 7.5	54./ 43.5
4	438./ 41.7	328./ 33.1	128./ 23.6	431./ 72.0	74./ 37.1
5	411./ -51.7	68./ -61.9	14./ 41.1	192./ -24.7	40./ 23.7
6	1295./ -40.2	727./ -39.9	206./ -40.5	209./ 4.2	46./ 6.7
7	287./ 50.0	128./ 80.7	32./ 72.6	100./ 1.5	17./ 36.9
8	276./ 34.1	153./ 35.8	48./ 45.7	32./ -46.0	9./ 70.8
9	139./ 76.5	121./ 33.6	56./ 33.3	60./ 56.4	1./ 82.4
10	135./ 44.7	73./ 14.3	29./ 3.8	51./ 1.8	5./ 32.7
11	103./ 67.0	51./ -65.4	44./ -73.0	48./ -81.7	4./ -9.2
12	99./ -50.9	90./ -75.5	47./ -71.1	19./ 40.3	13./ -85.3
PEAK-TO-PEAK	12177.	3673.	913.	6285.	827.

BEAM .174 BEAM .350 BEAM .449 BEAM .606 BEAM .803
 (N-M/DEG) (N-M/DEG) (N-M/DEG) (N-M/DEG) (N-M/DEG)

	BEAM .174 (N-M/DEG)	BEAM .350 (N-M/DEG)	BEAM .449 (N-M/DEG)	BEAM .606 (N-M/DEG)	BEAM .803 (N-M/DEG)
MEAN	-1929.	-260.	-304.	-571.	-570.
HARMONIC-1	625./ -43.1	423./ -66.2	434./ -68.8	435./ -77.9	220./ 86.4
2	343./ -61.9	259./ -80.0	279./ -77.9	224./ -76.4	63./ -76.7
3	48./ -18.4	54./ 12.1	54./ 45.8	64./ 81.0	70./ 72.9
4	383./ 45.2	123./ 30.9	60./ 24.1	92./ 39.0	149./ 27.5
5	157./ -46.5	24./ -65.2	18./ 40.5	24./ -46.0	47./ 77.9
6	81./ -68.9	10./ 13.3	4./ -10.5	9./ -15.6	34./ -82.8
7	56./ -20.1	7./ -15.8	17./ 27.9	9./ -73.5	35./ -88.1
8	25./ 41.6	5./ 54.7	10./ 8.6	9./ -36.2	25./ -14.5
9	33./ 46.4	17./ 53.9	8./ 22.9	18./ 88.1	19./ -60.6
10	26./ -9.5	19./ 7.0	12./ -4.0	24./ 7.2	20./ -4
11	5./ -67.3	10./ -57.1	6./ -36.9	2./ -48.6	7./ -77.8
12	33./ 89.8	14./ -86.1	13./ 63.3	9./ -80.1	3./ -59.4
PEAK-TO-PEAK	2451.	1310.	1355.	1280.	797.

FLIGHT NO. 080 AIRCRAFT TOTAL WT = 35110. N LOADED CG X= 5.04 M = 198.3 IN
 RUN NO. 28 7894. LB Y= -.00 = -.0
 TIME 52095.20 (SEC) Z= 1.83 = 72.2

AERODYNAMIC FLIGHT STATE

DYNAMIC PRES= 1.82 KPA = 38.1 PSF
 STATIC PRES= 99.5 KPA = 2079. PSF
 T. AIRSPEED= 107.9 KT TOTAL TEMP= 295.5 DEG K = 531.9 DEG R
 A/C MACH NO= .161 STATIC TEMP= 294.0 DEG K = 529.2 DEG R
 BODY ALPHA= 1.5 DEG DENSITY= 1.18 KG/M3 = .00229 SLUG/FT3
 BODY BETA= 3.0 DEG DENSITY ALT= 393. M = 1291. FT
 SONIC SPEED= 344.3 M/SEC = 1130. FPS
 RATE OF CLIMB= -514. M/MIN = -1687. FPM

INERTIAL FLIGHT STATE

AXIS	CG LIN VEL (M/S)	CG LIN VEL (FPS)	CG LIN ACC (G)	HUB LIN VEL (M/S)	HUB LIN VEL (FPS)	HUB LIN ACC (G)	AXIS	ANG POS (DEG)	ANG RATES (RAD/SEC)	ANG ACC (RAD/SEC2)
X	55.40	181.8	-.088	55.10	180.8	-.092	ROLL	-54.8	-.078	.086
Y	2.91	9.6	-.033	2.76	9.0	-.011	PITCH	-10.5	.148	.005
Z	1.47	4.8	-1.460	1.48	4.9	-1.454	YAW	249.6	-.148	.041

CONTROL ANGLES

M.R. COLL= 9.9 DEG HORIZ FIN= 7.2 DEG
 A1= .5 DEG T.R. COLL= 2.9 DEG
 B1= 2.9 DEG PEDAL POS= 3.7 DEG

ROTOR PARAMETERS

HOVER TIP MACH= .65 SHAFT ALPHA= 1.5 DEG
 CONTROL ALPHA= -1.4 DEG
 TIP MAX-MACH= .82 DELTA PSI= -2.9 DEG
 TIP MIN-MACH= .49
 .9R MAX-MACH= .75 ENGINE POWER= 355. KW = 476. HP
 .9R MIN-MACH= .43 THRUST FACTOR= .843E+07 N = .190E+07 LB

NASA LANGLEY FLIGHT DATA AH-1G ---- ROTOR PERFORMANCE AND LOADS

FLIGHT NO. 80 MU= .244 TOTAL CQ= .000183 AMB TEMP= 20.8 C = 69.53 F
 RUN NO. 28 V= 107.9 KT HAST CQ= .000169 TEMP U60= 38.8 C = 101.87 F
 TIME 52095.09 NZ= 1.454 G OMEGA= 33.926 RAD/SEC CAN TEMP= 30.8 C = 87.39 F
 CLP= .00594 RPM/324= 1.000

ROTOR ANGLES

THETA 3/4 (DEG) A0= 7.6 A1= -.3 B1= 3.2 PEAK-TO-PEAK= 6.5
 TEETER ANG (DEG) A0= .4 A1= -.4 B1= .7 PEAK-TO-PEAK= 1.7

ROTOR LOADS (AMP/PHASE)

	DRAG BRACE (N/DEG)	CHORD .449 (N-M/DEG)	CHORD .803 (N-M/DEG)	PITCH LINK (N/DEG)	TORSION .449 (N-M/DEG)
MEAN	46088.	210.	-3001.	-2353.	-478.
HARMONIC-1	5488./ .1	1126./ 2.0	239./ -2.5	1774./ -30.5	279./ -57.0
2	417./ -39.6	238./ -53.2	61./ 63.3	1427./ -34.7	151./ -24.8
3	1873./ 28.9	463./ 33.4	62./ 41.8	389./ 15.0	53./ 57.4
4	416./ 46.5	282./ 22.9	143./ 13.3	418./ 79.6	81./ 36.6
5	671./ -42.3	123./ -49.5	24./ 15.6	191./ -13.6	43./ 61.5
6	1652./ -43.0	874./ -48.3	246./ -48.5	347./ 17.8	68./ 13.9
7	131./ -34.4	106./ 30.7	36./ 26.9	165./ 7.4	24./ 21.8
8	233./ -89.3	129./ -88.0	60./ -86.6	76./ -47.0	9./ 58.0
9	66./ 66.5	69./ 19.6	25./ 3.9	85./ 58.6	2./ -68.4
10	104./ -11.3	196./ -55.5	89./ -61.8	101./ -34.2	13./ -67.4
11	74./ -14.7	18./ 85.1	14./ -74.4	28./ -74.8	7./ 62.2
12	103./ 70.1	47./ -88.8	22./ 63.5	16./ 5.7	12./ 67.5
PEAK-TO-PEAK	14945.	4844.	1362.	6159.	833.

	BEAM .174 (N-M/DEG)	BEAM .350 (N-M/DEG)	BEAM .449 (N-M/DEG)	BEAM .606 (N-M/DEG)	BEAM .803 (N-M/DEG)
MEAN	-1741.	-250.	-314.	-623.	-646.
HARMONIC-1	610./ -23.9	440./ -64.2	459./ -68.6	454./ -75.7	273./ 80.9
2	302./ -49.1	251./ -76.7	281./ -75.7	249./ -76.3	80./ 86.7
3	112./ -40.7	62./ -17.4	53./ 23.9	70./ 67.4	82./ 68.7
4	413./ 44.4	129./ 26.4	63./ 26.8	95./ 37.0	168./ 24.3
5	187./ -42.6	31./ -67.9	26./ 39.5	44./ -50.0	59./ 78.8
6	126./ -67.0	15./ 13.3	16./ 1.7	12./ 60.9	39./ 75.6
7	82./ 4.1	19./ 19.2	42./ 32.8	11./ 89.0	67./ 73.8
8	14./ 40.5	10./ 89.3	7./ -28.8	16./ -69.5	30./ -60.5
9	45./ 46.8	32./ 63.2	17./ 25.3	32./ 81.2	31./ -77.9
10	39./ -43.3	23./ -26.8	8./ -67.4	28./ -21.2	28./ -29.0
11	8./ -38.4	2./ -21.5	6./ -83.7	4./ 40.6	13./ -84.3
12	44./ 80.6	14./ 69.5	14./ 46.7	10./ 86.4	2./ 40.1
PEAK-TO-PEAK	2726.	1414.	1408.	1360.	992.

FLIGHT NO. 380 AIRCRAFT TOTAL WT = 35104. N LOADED CG X = 5.04 M = 198.3 IN
 RUN NO. 29 7892. LB Y = -0.00 = -.0
 TIME 52099.50 (SEC) Z = 1.83 = 72.2

AERODYNAMIC FLIGHT STATE DYNAMIC PRES = 1.84 KPA = 38.5 PSF
 T. AIRSPEED = 108.3 KT STATIC PRES = 100.0 KPA = 2089. PSF
 A/C MACH NO = .162 TOTAL TEMP = 296.0 DEG K = 532.7 DEG R
 STATIC TEMP = 294.4 DEG K = 530.0 DEG R
 BODY ALP-IA = 4.9 DEG DENSITY = 1.18 KG/M3 = .00230 SLUG/FT3
 BODY BETA = 3.6 DEG DENSITY ALT = 355. M = 1165. FT
 SONIC SPEED = 344.5 M/SEC = 1130. FPS
 RATE OF CLIMB = -654. M/MIN = -2145. FPM

INERTIAL FLIGHT STATE

AXIS	CG LIN VEL (M/S)	CG LIN VEL (FPS)	CG LIN ACC (G)	HUB LIN VEL (M/S)	HUB LIN VEL (FPS)	HUB LIN ACC (G)	AXIS	ANG POS (DEG)	ANG RATES (RAD/SEC)	ANG ACC (RAD/SEC2)
X	55.39	181.7	-.104	54.93	180.2	-.117	ROLL	-51.1	-.061	-.118
Y	3.49	11.4	-.042	3.37	11.1	-.060	PITCH	-11.1	.224	.055
Z	4.76	15.6	-1.790	4.77	15.7	-1.779	YAW	211.2	-.144	.001

CONTROL ANGLES M.R. COLL = 9.9 DEG HORIZ FIN = 6.9 DEG
 A1 = .5 DEG T.R. COLL = 2.3 DEG
 B1 = 2.1 DEG PEDAL POS = 3.8 DEG

ROTOR PARAMETERS

HOVER TIP MACH = .66 SHAFT ALPHA = 5.0 DEG
 CONTROL ALPHA = 2.8 DEG
 TIP MAX-MACH = .82 DELTA PSI = -3.5 DEG
 TIP MIN-MACH = .50
 .9R MAX-MACH = .76 ENGINE POWER = 251. KW = 336. HP
 .9R MIN-MACH = .43 THRUST FACTOR = .869E+07 N = .195E+07 LB

NASA LANGLEY FLIGHT DATA AH-1G ---- ROTOR PERFORMANCE AND LOADS

FLIGHT NO. 80 MU = .241 TOTAL CQ = .000123 AMB TEMP = 21.3 C = 70.28 F
 RUN NO. 29 V = 108.3 KT MAST CQ = .000108 TFMP U60 = 38.8 C = 101.87 F
 TIME 52099.35 NZ = 1.779 G OMEGA = 34.405 RAD/SEC CAN TEMP = 30.8 C = 87.39 F
 CLP = .00706 RPM/324 = 1.014

ROTOR ANGLES THETA 3/4 (DEG) A0 = 7.4 A1 = -.4 B1 = 2.4 PFAK-TD-PEAK = 5.3
 TEETER ANG (DEG) A0 = .3 A1 = -.0 B1 = 1.0 PFAK-TD-PEAK = 2.0

ROTOR LOADS (AMP/PHASE) DRAG BRACE (N/DEG) CHORD .449 (N-M/DEG) CHORD .803 (N-M/DEG) PITCH LINK (N/DEG) TORSION .449 (N-M/DEG)

	DRAG BRACE (N/DEG)	CHORD .449 (N-M/DEG)	CHORD .803 (N-M/DEG)	PITCH LINK (N/DEG)	TORSION .449 (N-M/DEG)
MEAN HARMONIC-1	49941.	-265.	-3126.	-2127.	-458.
2	7279./ 2.9	1500./ 6.4	296./ 2.1	1623./ -22.2	259./ -55.1
3	463./ 20.7	317./ -24.1	69./ -84.0	792./ -22.4	89./ -7.0
4	2921./ 20.6	679./ 25.0	107./ 36.0	506./ 32.0	60./ 50.9
5	466./ 51.5	330./ 17.1	167./ 7.7	412./ 81.5	68./ 21.4
6	680./ -36.0	114./ -53.3	16./ 25.1	190./ 3.0	52./ 70.8
7	1448./ -28.9	865./ -33.8	248./ -33.8	367./ 34.1	67./ 27.5
8	312./ -29.2	151./ 6.0	58./ 5.8	237./ 25.6	28./ 40.7
9	14./ 60.1	96./ 72.8	37./ 54.0	57./ 55.3	19./ 68.9
10	98./ 85.0	166./ -51.8	66./ -52.4	38./ -27.0	1./ -52.0
11	108./ 14.3	119./ -41.0	62./ -53.8	76./ 11.1	11./ -58.9
12	90./ -45.1	12./ -38.8	21./ -44.7	49./ -38.6	13./ -24.5
PFAK-TD-PEAK	17712.	30./ -18.9	43./ -37.7	31./ 11.8	13./ -50.1

	BEAM .174 (N-M/DEG)	BEAM .350 (N-M/DEG)	BEAM .449 (N-M/DEG)	BEAM .606 (N-M/DEG)	BEAM .803 (N-M/DEG)
MEAN HARMONIC-1	-1481.	-234.	-316.	-658.	-742.
2	659./ -11.8	445./ -62.3	477./ -67.1	491./ -73.0	319./ 84.0
3	218./ -37.6	210./ -67.1	250./ -65.0	241./ -67.6	113./ -89.2
4	240./ -13.0	113./ -5.8	86./ 14.0	78./ 54.1	91./ 68.1
5	416./ 31.2	137./ 17.4	67./ 28.1	91./ 25.4	176./ 22.5
6	192./ -47.8	36./ -60.9	23./ 53.8	46./ -46.4	82./ -87.5
7	126./ -60.3	19./ 39.1	16./ -1.3	15./ 77.4	45./ -88.9
8	110./ 22.7	33./ 30.9	55./ 39.6	6./ 70.2	68./ 78.7
9	49./ 4.7	11./ -14.9	16./ 38.2	8./ -77.1	24./ -81.3
10	34./ -35.1	23./ -45.1	6./ -23.4	25./ -43.3	24./ -44.6
11	74./ 3.7	22./ 8.5	20./ 8.8	27./ 1.5	20./ -11.2
12	11./ -59.3	11./ -14.1	5./ 53.5	9./ -15.0	7./ 50.6
PEAK-TD-PEAK	2726.	13./ -26.6	15./ -77.4	15./ -31.7	7./ -3.5
		1386.	1408.	1320.	1151.

FLIGHT NO. 080 AIRCRAFT TOTAL WT = 35025. N LOADED CG X= 5.04 M = 198.3 IN
 RUN NO. 31 7874. LB Y= -0.00 = -0
 TIME 52235.70 (SEC) Z= 1.83 = 72.2

AERODYNAMIC FLIGHT STATE DYNAMIC PRES= 1.92 KPA = 40.1 PSF
 T. AIRSPEED= 110.6 KT STATIC PRES= 99.7 KPA = 2082. PSF
 A/C MACH NO= .165 TOTAL TEMP= 295.8 DEG K = 532.4 DEG R
 STATIC TEMP= 294.2 DEG K = 529.5 DEG R
 BODY ALPHA= 5.8 DEG DENSITY= 1.18 KG/M3 = .00229 SLUG/FT3
 BODY BETA= 4.7 DEG SONIC SPEED= 344.4 M/SEC = 1130. FPS
 RATE OF CLIMB= -912. M/MIN = -2991. FPM

INERTIAL FLIGHT STATE

AXIS	CG LIN VEL (M/S)	CG LIN VEL (FPS)	CG LIN ACC (G)	HUB LIN VEL (M/S)	HUB LIN VEL (FPS)	HUB LIN ACC (G)	AXIS	ANG POS (DEG)	ANG RATES (RAD/SEC)	ANG ACC (RAD/SEC2)
X	56.42	185.1	-.124	55.91	183.4	-.139	ROLL	-48.2	-.080	-.204
Y	4.67	15.3	-.071	4.52	14.8	-.106	PITCH	-15.3	.253	.065
Z	5.70	18.7	-2.014	5.71	18.7	-1.999	YAW	147.9	-.144	.020

CONTROL ANGLES M.R. COLL= 10.4 DEG HORIZ FIN= 6.9 DEG
 A1= .6 DEG T.R. COLL= 2.6 DEG
 B1= 2.1 DEG PEDAL POS= 4.1 DEG

ROTOR PARAMETERS

HOVER TIP MACH= .67 SHAFT ALPHA= 5.8 DEG
 CONTROL ALPHA= 3.8 DEG
 TIP MAX-MACH= .83 DELTA PSI= -4.6 DEG
 TIP MIN-MACH= .50
 .9R MAX-MACH= .76 ENGINE POWER= 252. KW = 338. HP
 .9R MIN-MACH= .43 THRUST FACTOR= .875E+07 N = .197E+07 LB

NASA LANGLEY FLIGHT DATA AH-1G ---- ROTOR PERFORMANCE AND LOADS

FLIGHT NO. 80 MU= .245 TOTAL CQ= .000123 AMB TEMP= 21.0 C = 69.87 F
 RUN NO. 31 V= 110.6 KT MAST CQ= .000105 TEMP U60= 38.5 C = 101.24 F
 TIME 52235.55 NZ= 1.999 G OMEGA= 34.620 RAD/SEC CAN TEMP= 30.8 C = 87.39 F
 CLP= .00784 RPM/324= 1.020

ROTOR ANGLES THETA 3/4 (DEG) A0= 7.7 A1= -.5 B1= 2.2 PEAK-TO-PEAK= 4.9
 TEETER ANG (DEG) A0= .3 A1= .5 B1= 1.0 PEAK-TO-PEAK= 2.1

ROTOR LOADS (AMP/PHASE) DRAG BRACE CHORD .449 CHORD .803 PITCH LINK TORSION .449
 (N/DEG) (N-M/DEG) (N-M/DEG) (N-M/DEG)

	DRAG BRACE (N/DEG)	CHORD .449 (N-M/DEG)	CHORD .803 (N-M/DEG)	PITCH LINK (N/DEG)	TORSION .449 (N-M/DEG)
MEAN	50790.	-435.	-3240.	-1981.	-437.
HARMONIC-1	8968./ -4.0	1917./ 2.6	375./ 2.6	2019./ -3.7	254./ -37.2
2	456./ 86.6	422./ -62.6	90./ -83.5	658./ -41.9	72./ -42.3
3	3409./ 15.6	825./ 19.3	129./ 31.9	619./ 34.9	65./ 45.6
4	143./ 72.0	243./ -17.0	156./ -14.5	395./ 61.8	69./ 12.6
5	602./ -55.3	64./ -48.3	26./ 59.4	218./ 28.4	64./ 65.8
6	1488./ -57.8	833./ -64.5	249./ -65.6	372./ 31.5	59./ 19.1
7	394./ -54.2	210./ 2.4	102./ .9	234./ 19.6	20./ 63.5
8	69./ 37.8	146./ 36.8	75./ 24.3	96./ 51.6	21./ -85.2
9	65./ 42.9	199./ 66.3	74./ 60.0	86./ -3.3	18./ -49.8
10	166./ -27.7	17./ -20.6	18./ 39.9	116./ 24.7	6./ -64.5
11	128./ -50.4	72./ 49.2	43./ 55.9	54./ 73.0	12./ -50.8
12	19./ 49.2	57./ 48.1	31./ 63.1	29./ -35.7	15./ -66.9
PEAK-TO-PEAK	21033.	7145.	1826.	6253.	680.

	BEAM .174 (N-M/DEG)	BEAM .350 (N-M/DEG)	BEAM .449 (N-M/DEG)	BEAM .606 (N-M/DEG)	BEAM .803 (N-M/DEG)
MEAN	-1224.	-199.	-304.	-663.	-796.
HARMONIC-1	802./ -7.2	467./ -60.6	504./ -67.2	537./ -73.2	380./ 82.2
2	207./ -48.3	222./ -73.7	263./ -68.3	248./ -66.2	88./ -72.0
3	262./ -16.7	123./ -13.0	94./ 12.2	76./ 47.4	64./ 69.3
4	460./ 13.2	140./ -2.4	70./ 11.8	98./ 1.6	214./ 3.4
5	202./ -61.6	43./ -71.8	20./ 35.0	55./ -61.1	77./ 69.7
6	171./ -83.4	20./ 38.3	14./ -63.4	27./ 74.5	22./ -83.6
7	169./ 8.9	43./ 22.2	71./ 21.6	4./ 24.5	70./ 59.2
8	77./ -9.8	10./ -3.8	24./ 10.4	2./ 31.6	18./ -78.4
9	60./ -33.4	35./ -29.1	17./ -41.8	39./ -22.4	38./ -18.6
10	99./ -9.9	36./ -6.0	32./ -18.7	42./ -6.8	34./ -5.9
11	20./ -17.0	9./ -66.2	10./ -13.6	5./ -64.0	3./ 59.2
12	43./ -69.9	18./ -62.9	21./ 84.4	18./ -63.7	9./ -39.6
PEAK-TO-PEAK	3262.	1519.	1539.	1340.	1275.

FLIGHT NO. 080 AIRCRAFT TOTAL WT = 34909. N LOADED CG X= 5.04 M = 198.3 TN
 RUN NO. 33 7848. LB Y= -.00 = -.0
 TIME 52435.20 (SEC) Z= 1.84 = 77.3

AERODYNAMIC FLIGHT STATE DYNAMIC PRES= 1.79 KPA = 37.4 PSF
 T. AIRSPEED= 107.9 KT STATIC PRES= 97.0 KPA = 2026. PSF
 A/C MACH NO= .162 TOTAL TEMP= 293.6 DEG K = 528.5 DEG R
 STATIC TEMP= 292.1 DEG K = 525.7 DEG R
 BODY ALPHA= -1.6 DEG DENSITY= 1.16 KG/M3 = .00225 SLUG/FT3
 BODY BETA= .6 DEG DENSITY ALT= 593. M = 1944. FT
 SONIC SPEED= 343.2 M/SEC = 1126. FPS
 RATE OF CLIMB= 32. M/MIN = 105. FPM

INERTIAL FLIGHT STATE

AXIS	CG LIN VEL (M/S)	CG LIN ACC (G)	HUB LIN VEL (M/S)	HUB LIN ACC (G)	AXIS	ANG POS (DEG)	ANG RATES (RAD/SEC)	ANG ACC (RAD/SEC2)	
X	55.46	182.0	-.052	55.47	182.0	-.048	ROLL .4	.013	-.024
Y	.56	1.8	.005	.59	1.9	-.000	PITCH -1.1	-.004	-.019
Z	-1.58	-5.2	-1.071	-1.58	-5.2	-1.071	YAW 163.4	-.005	-.003

CONTROL ANGLES M.R. COLL= 9.9 DEG HORIZ FIN= 8.1 DEG
 A1= .4 DEG T.R. COLL= 1.9 DEG
 B1= 5.0 DEG PEDAL POS= 2.5 DEG

ROTOR PARAMETERS

HOVER TIP MACH= .66 SHAFT ALPHA= -1.6 DEG
 CONTROL ALPHA= -6.7 DEG
 TIP MAX-MACH= .82 DELTA PSI= -.6 DEG
 TIP MIN-MACH= .50
 .9R MAX-MACH= .75 ENGINE POWER= 424. KW = 568. HP
 .9R MIN-MACH= .43 THRUST FACTOR= .832E+07 N = .187E+07 LB

NASA LANGLEY FLIGHT DATA AH-1G ---- ROTOR PERFORMANCE AND LOADS

FLIGHT NO. 80 MU= .243 TOTAL CG= .000220 AMB TEMP= 18.9 C = 66.08 F
 RUN NO. 33 V= 107.9 KT MAST CG= .000208 TEMP U60= 37.8 C = 100.00 F
 TIME 52435.05 NZ= 1.071 G OMEGA= 34.044 RAD/SEC CAN TEMP= 30.4 C = 86.69 F
 CLP= .00439 RPM/324= 1.003

ROTOR ANGLES THETA 3/4 (DEG) A0= 7.9 A1= -.5 B1= 5.4 PEAK-TO-PEAK= 11.0
 TEETER ANG (DEG) A0= .4 A1= -1.4 B1= -.2 PEAK-TO-PEAK= 2.8

ROTOR LOADS (AMP/PHASE)	DRAG BRACE (N/DEG)	CHORD .449 (N-M/DEG)	CHORD .803 (N-M/DEG)	PITCH LINK (N/DEG)	TORSION .449 (N-M/DEG)
MEAN	43902.	387.	-3213.	-2834.	-480.
HARMONIC-1	3670./ -28.1	801./ -33.6	169./ -38.1	2423./ -36.5	338./ -48.7
2	498./ -82.1	79./ -83.3	35./ -39.3	1664./ -50.6	158./ -49.5
3	1833./ 40.8	442./ 38.1	65./ 42.6	252./ -27.9	55./ 23.2
4	563./ 77.8	278./ 61.3	101./ 42.3	301./ 71.6	56./ 56.7
5	210./ 43.7	56./ 57.5	30./ 74.5	126./ -8.9	15./ 5.7
6	766./ 17.4	454./ 10.6	130./ 11.2	125./ -36.2	16./ -61.7
7	208./ 45.5	118./ 86.9	39./ 87.7	48./ 45.1	8./ 61.8
8	167./ 67.4	69./ -84.1	22./ -85.4	56./ -72.7	4./ -67.1
9	67./ -19.5	145./ 15.5	54./ 22.5	39./ 81.3	5./ -42.9
10	157./ 81.6	150./ 29.5	80./ 39.3	87./ 49.9	7./ -36.0
11	41./ -78.9	36./ 58.2	19./ -3.1	34./ -82.2	6./ -49.6
12	37./ 31.3	75./ 15.1	43./ 16.1	6./ -67.3	4./ -50.3
PEAK-TO-PEAK	12173.	2910.	912.	7163.	895.

	BEAM .174 (N-M/DEG)	BEAM .350 (N-M/DEG)	BEAM .449 (N-M/DEG)	BEAM .606 (N-M/DEG)	BEAM .803 (N-M/DEG)
MEAN	-2107.	-258.	-281.	-529.	-499.
HARMONIC-1	753./ -55.9	424./ -67.1	420./ -67.7	408./ -70.0	166./ -85.9
2	386./ -59.3	266./ -74.9	281./ -72.7	234./ -69.0	85./ -54.5
3	48./ 56.5	40./ 21.4	47./ 56.8	70./ 82.6	77./ 78.4
4	279./ 56.7	91./ 43.5	53./ 37.5	71./ 57.6	120./ 39.3
5	80./ -18.8	6./ -61.7	22./ 51.5	10./ -7.7	39./ 50.4
6	16./ -87.4	5./ 56.8	8./ 90.0	9./ 8.4	31./ -56.7
7	26./ 37.8	10./ -83.1	21./ 70.5	5./ 1.9	31./ -65.2
8	2./ -52.7	2./ 50.0	5./ 85.5	6./ -37.8	18./ -25.6
9	26./ 81.9	14./ 75.0	6./ 90.0	19./ -69.7	18./ -50.9
10	44./ 5.8	28./ 13.4	15./ .6	31./ 18.7	24./ 21.5
11	5./ -48.3	7./ -88.2	3./ 46.6	5./ 82.4	2./ 38.3
12	13./ -53.9	4./ -83.6	6./ 69.9	4./ -51.6	1./ -58.9
PEAK-TO-PEAK	2426.	1257.	1275.	1239.	708.

FLIGHT NO. 000 AIRCRAFT TOTAL WT = 34729. N LOADED CG X = 5.04 M = 198.3 IN
 RUN NO. 36 7821. LB Y = -.30 = -.0
 TIME 52053.70 (SEC) Z = 1.84 = 72.3

AERODYNAMIC FLIGHT STATE

T. AIRSPEED = 105.4 KT
 A/C MACH NO = .150

LYRANIC PRES = 1.71 KPA = 35.6 PSF
 STATIC PRES = 97.0 KPA = 2026. PSF
 TOTAL TEMP = 243.8 DEG K = 528.8 DEG R
 STATIC TEMP = 292.3 DEG K = 526.2 DEG R

BODY ALPHA = 6.0 DEG
 BODY BETA = -.5 DEG

DENSITY = 1.16 KG/M3 = .00224 SLUG/FT3
 DENSITY ALT = 599. M = 1965. FT
 SONIC SPEED = 343.3 M/SEC = 1126. FPS
 RATE OF CLIMB = -506. M/MIN = -1659. FPM

INERTIAL FLIGHT STATE

AXIS	CG LIN VEL (M/S) (FPS)	CG LIN ACC (G)	HUB LIN VEL (M/S) (FPS)	HUB LIN ACC (G)	AXIS	ANG POS (DEG)	ANG RATES (RAD/SEC)	ANG ACC (RAD/SEC2)
X	53.66 176.7	-.131	53.45 175.4	-.146	ROLL	.4	-.012	.109
Y	-.44 -1.4	.014	-.47 -1.5	.030	PITCH	-2.4	.202	.070
Z	6.22 20.4	-1.831	6.23 20.4	-1.822	YAW	283.0	.037	.056

CONTROL ANGLES

M.R. COLL = 8.9 DEG HORIZ FIN = 0.6 DEG
 A1 = .8 DEG T.R. COLL = .3 DEG
 E1 = 1.0 DEG PEDAL POS = 1.3 DEG

ROTOR PARAMETERS

HUVER TIP MACH = .66 SHAFT ALPHA = 6.6 DEG
 CONTROL ALPHA = 5.7 DEG
 TIP MAX-MACH = .82 DELTA PSI = .5 DEG
 TIP MIN-MACH = .51
 .9R MAX-MACH = .76 ENGINE POWER = 200. KW = 269. HP
 .9R MIN-MACH = .44 THRUST FACTOR = .849E+07 N = .191E+07 LB

NASA LANGLEY FLIGHT DATA AH-1G ---- ROTOR PERFORMANCE AND LOADS

FLIGHT NO. 000 RU = .234 TOTAL CG = .000100 AMB TEMP = 19.2 C = 66.49 F
 RUN NO. 36 V = 105.4 KT HAST CG = .000076 TEMP U60 = 37.0 C = 98.68 F
 TIME 52053.55 NZ = 1.072 G OMEGA = 34.620 RAD/SEC CAN TEMP = 29.6 C = 85.30 F
 CLP = .00723 RPM/324 = 1.020

ROTOR ANGLES THETA 3/4 (LEG) AC = 6.4 A1 = -.4 B1 = 1.1 PFAK-TO-PEAK = 2.7
 TEETER ANG (DEG) AC = .3 A1 = .5 B1 = 1.4 PEAK-TO-PEAK = 2.6

ROTOR LOADS (AMP/PHASE) DRAG BRACE CHORD .449 CHORD .803 PITCH LINK TORSION .449
 (N/DEG) (N-M/DEG) (N-M/DEG) (N/DEG) (N-M/DEG)

MEAN HARMONIC-1	2	3	4	5	6	7	8	9	10	11	12	PEAK-TO-PEAK	
51449.	5902./ 12.9	1208./ -26.8	2963./ 42.0	206./ 43.9	561./ -10.3	1219./ 4.6	260./ -24.7	166./ -93.1	49./ -22.8	29./ -23.2	19./ -72.8	93./ -51.0	17694.
-626.	1448./ 18.5	575./ -26.9	687./ 45.4	285./ 34.5	149./ -32.5	702./ -2.3	15./ 67.7	58./ -63.4	124./ 71.3	97./ 31.9	21./ 12.9	11./ -57.2	5694.
-3329.	250./ 15.5	138./ -53.1	106./ 62.3	159./ 34.8	19./ -24.8	206./ -3.6	20./ 58.1	15./ -30.4	40./ 77.3	52./ 35.6	33./ 31.0	12./ -80.7	1327.
-1656.	1314./ -10.1	379./ 39.1	497./ 54.7	300./ -70.5	147./ 36.9	348./ 71.9	208./ 78.1	02./ -02.6	67./ 67.4	64./ -67.6	32./ -4.6	20./ 46.8	4019.
-401.	218./ -46.9	65./ 40.3	50./ 60.0	68./ 61.0	27./ -58.9	54./ 71.2	18./ -75.6	11./ -40.0	3./ 64.4	7./ -69.8	6./ 72.6	6./ 61.5	602.

MEAN HARMONIC-1	2	3	4	5	6	7	8	9	10	11	12	PEAK-TO-PEAK	
-1485.	523./ 4.5	130./ 7.9	320./ 11.2	437./ 60.1	132./ -8.0	101./ -9.0	116./ 84.9	51./ 75.9	39./ 54.7	66./ 88.9	17./ 85.2	24./ 69.3	2332.
-225.	395./ -53.2	169./ -40.1	124./ 19.5	137./ 50.5	36./ -29.8	17./ -77.4	27./ -80.1	7./ -70.1	23./ 50.0	20./ -86.3	6./ 48.9	15./ 60.0	1229.
-314.	438./ -57.4	209./ -38.6	84./ 38.5	52./ 62.2	21./ -70.1	8./ -85.2	47./ -79.2	15./ -61.1	5./ 68.9	20./ -82.9	7./ -86.6	9./ 43.6	1274.
-658.	464./ -61.7	213./ -43.0	02./ 87.1	98./ 56.9	38./ -15.3	17./ -48.0	4./ -8.7	1./ -74.3	24./ 52.6	23./ -82.3	4./ 47.4	13./ 71.2	1177.
-748.	300./ -83.1	130./ -70.6	90./ -70.2	172./ 55.2	71./ -41.1	36./ -19.0	45./ -36.2	14./ 14.1	22./ 56.0	19./ -87.0	6./ 10.9	8./ -57.0	1133.

FLIGHT NO. 081 AIRCRAFT TOTAL WT = 36367. N LOADED CG X= 5.04 M = 198.4 IN
 RUN NO. 3 8176. LB Y= -0.00 = -0
 TIME 49433.10 (SEC) Z= 1.83 = 71.9

AERODYNAMIC FLIGHT STATE DYNAMIC PRES= .56 KPA = 11.7 PSF
 T. AIRSPEED= 65.2 KT STATIC PRES= 81.3 KPA = 1698. PSF
 A/C MACH NO= .099 TOTAL TEMP= 285.8 DEG K = 514.5 DEG R
 STATIC TEMP= 285.3 DEG K = 513.5 DEG R
 BODY ALPHA= -.7 DEG DENSITY= .99 KG/M3 = .00193 SLUG/FT3
 BODY BETA= 3.6 DEG DENSITY ALT= 2136. M = 7007. FT
 SONIC SPEED= 339.1 M/SEC = 1113. FPS
 RATE OF CLIMB= -71. M/MIN = -232. FPM

INERTIAL FLIGHT STATE

AXIS	CG LIN VEL (M/S)	CG LIN VEL (FPS)	CG LIN ACC (G)	HUB LIN VEL (M/S)	HUB LIN VEL (FPS)	HUB LIN ACC (G)	AXIS	ANG POS (DEG)	ANG RATES (RAD/SEC)	ANG ACC (RAD/SEC2)
X	33.45	109.7	-.025	33.45	109.7	-.022	ROLL	.0	-.005	-.017
Y	2.10	6.9	.006	2.09	6.9	.002	PITCH	-2.7	.002	-.014
Z	-.41	-1.4	-1.010	-.41	-1.4	-1.010	YAW	304.4	-.008	-.013

CONTROL ANGLES M.R. COLL= 9.3 DEG HORIZ FIN= 6.8 DEG
 A1= -.4 DEG T.R. COLL= 2.1 DEG
 B1= 2.3 DEG PEDAL POS= 2.6 DEG

ROTOR PARAMETERS

HOVER TIP MACH= .66 SHAFT ALPHA= -.7 DEG
 CONTROL ALPHA= -3.0 DEG
 TIP MAX-MACH= .76 DELTA PSI= -3.6 DEG
 TIP MIN-MACH= .57
 .9R MAX-MACH= .70 ENGINE POWER= 354. KW = 475. HP
 .9R MIN-MACH= .50 THRUST FACTOR= .712E+07 N = .160E+07 LB

NASA LANGLEY FLIGHT DATA AH-1G ---- ROTOR PERFORMANCE AND LOADS

FLIGHT NO. 81 MU= .147 TOTAL CQ= .000216 AMB TEMP= 12.1 C = 53.79 F
 RUN NO. 3 V= 65.2 KT MAST CQ= .000204 TEMP U60= 32.6 C = 90.63 F
 TIME 49432.95 NZ= 1.010 G OMEGA= 33.987 RAD/SEC CAN TEMP= 33.9 C = 92.94 F
 CLP= .00504 RPM/324= 1.002

ROTOR ANGLES THETA 3/4 (DEG) A0= 7.7 A1= -1.1 B1= 2.4 PEAK-TO-PEAK= 5.1
 TEETER ANG (DEG) A0= .3 A1= -.2 B1= .3 PEAK-TO-PEAK= .7

ROTOR LOADS (AMP/PHASE) DRAG BRACE (N/DEG) CHORD .449 (N-M/DEG) CHORD .803 (N-M/DEG) PITCH LINK (N/DEG) TORSION .449 (N-M/DEG)

	MEAN	45358.	-699.	-3961.	-1906.	-336.				
HARMONIC-1	4861./	-8.7	1175./	-8.6	220./	-15.0	1255./	-3.7	140./	-40.7
2	264./	7.1	86./	-62.2	64./	-13.6	406./	-4.5	35./	1.7
3	772./	-18.3	164./	-25.6	72./	-26.1	291./	32.1	65./	84.7
4	305./	13.5	231./	1.3	100./	6.2	150./	36.4	40./	28.5
5	180./	32.6	29./	-86.5	12./	-41.6	121./	-13.1	13./	20.7
6	279./	86.7	112./	56.4	50./	45.0	52./	-80.7	14./	-69.3
7	67./	31.0	62./	77.7	15./	-80.3	63./	62.4	3./	-33.0
8	54./	55.5	22./	44.3	15./	51.8	40./	25.8	3./	-13.6
9	15./	38.9	60./	-27.8	28./	-25.2	23./	87.4	2./	33.5
10	77./	55.9	98./	-14.2	58./	-21.0	191./	-64.2	24./	-31.8
11	44./	-6.5	35./	58.2	16./	40.0	57./	-34.4	13./	-89.9
12	98./	72.0	15./	30.0	12./	70.8	22./	-82.1	9./	-11.3
PEAK-TO-PEAK	11949.		3136.		781.		3601.		414.	

	BEAM .174 (N-M/DEG)	BEAM .350 (N-M/DEG)	BEAM .449 (N-M/DEG)	BEAM .606 (N-M/DEG)	BEAM .803 (N-M/DEG)					
MEAN	-1988.	-98.	-153.	-458.	-459.					
HARMONIC-1	391./	-31.9	176./	-87.6	192./	87.1	182./	-80.1	77./	-87.3
2	146./	-8.2	112./	-18.6	140./	-16.7	212./	-13.0	136./	-12.6
3	58./	-6.0	13./	5.0	34./	-15.9	73./	-42.7	139./	-21.1
4	222./	18.3	74./	7.3	46./	-.6	43./	33.7	94./	30.3
5	123./	-20.1	8./	34.1	20./	-59.0	23./	-11.0	43./	-35.4
6	23./	-43.1	8./	-18.5	13./	67.5	31./	3.2	44./	67.3
7	74./	67.8	16./	74.2	36./	75.4	19./	10.2	61./	52.3
8	53./	21.0	11./	29.8	21./	8.0	9./	-87.5	20./	-33.7
9	17./	82.7	9./	87.2	2./	-29.6	5./	5.8	12./	51.3
10	113./	80.6	50./	88.6	35./	58.2	44./	-88.6	33./	-75.4
11	30./	-52.0	21./	-54.6	11./	81.7	16./	-58.1	11./	-61.2
12	28./	-13.6	10./	-14.1	4./	-46.7	9./	-3.6	5./	33.2
PEAK-TO-PEAK	1671.		556.		586.		802.		850.	

FLIGHT NO. 081 AIRCRAFT TOTAL WT = 36333. N LOADED CG X= 5.04 M = 198.4 IN
 RUN NO. 4 8168. LB Y= -.00 = -.0
 TIME 49491.10 (SEC) Z= 1.83 = 71.9

AERODYNAMIC FLIGHT STATE

T. AIRSPEED= 73.5 KT
 A/C MACH NO= .112

DYNAMIC PRES= .71 KPA = 14.8 PSF
 STATIC PRES= 81.3 KPA = 1699. PSF
 TOTAL TEMP= 286.0 DEG K = 514.8 DEG R
 STATIC TEMP= 285.3 DEG K = 513.5 DEG P

BODY ALPHA= -1.2 DEG
 BODY BETA= 4.2 DEG

DENSITY= .99 KG/M3 = .00193 SLUG/FT3
 DENSITY ALT= 2131. M = 6993. FT
 SONIC SPEED= 339.2 M/SEC = 1113. FPS
 RATE OF CLIMB= -30. M/MIN = -98. FPM

INERTIAL FLIGHT STATE

AXIS	CG LIN VEL (M/S)	CG LIN VEL (FPS)	CG LIN ACC (G)	HUB LIN VEL (M/S)	HUB LIN VEL (FPS)	HUB LIN ACC (G)	AXIS	ANG POS (DEG)	ANG RATES (RAD/SEC)	ANG ACC (RAD/SEC2)
X	37.69	123.6	-.028	37.68	123.6	-.026	ROLL	-.0	.002	.012
Y	2.78	9.1	-.002	2.78	9.1	.001	PITCH	-2.0	.004	-.008
Z	-.82	-2.7	-1.011	-.82	-2.7	-1.011	YAW	294.8	-.000	-.009

CONTROL ANGLES

M.R. COLL= 9.3 DEG HORIZ FIN= 7.0 DEG
 A1= -.2 DEG T.R. COLL= 2.3 DEG
 B1= 2.8 DEG PEDAL POS= 2.7 DEG

ROTOR PARAMETERS

HOVER TIP MACH= .67 SHAFT ALPHA= -1.2 DEG
 CONTROL ALPHA= -4.1 DEG
 TIP MAX-MACH= .78 DELTA PSI= -4.2 DEG
 TIP MIN-MACH= .55
 .9R MAX-MACH= .71 ENGINE POWER= 359. KW = 482. HP
 .9R MIN-MACH= .49 THRUST FACTOR= .713E+07 N = .160E+07 LB

NASA LANGLEY FLIGHT DATA AH-1G ---- ROTOR PERFORMANCE AND LOADS

FLIGHT NO. 81 MU= .166 TOTAL CQ= .000218 AMB TEMP= 12.1 C = 53.83 F
 RUN NO. 4 V= 73.5 KT MAST CQ= .000208 TEMP U60= 32.2 C = 90.00 F
 TIME 49491.04 NZ= 1.011 G DMEGA= 34.009 RAD/SEC CAN TEMP= 33.1 C = 91.56 F
 CLP= .00503 RPM/324= 1.002

ROTOR ANGLES

THETA 3/4 (DEG) AO= 7.8 A1= -.8 B1= 3.0 PEAK-TO-PEAK= 6.3
 TEETER ANG (DEG) AO= .3 A1= -.3 B1= .2 PEAK-TO-PEAK= .6

ROTOR LOADS (AMP/PHASE)

	DRAG BRACE (N/DEG)	CHORD .449 (N-M/DEG)	CHORD .803 (N-M/DEG)	PITCH LINK (N/DEG)	TORSION .449 (N-M/DEG)
MEAN	45245.	-641.	-3907.	-2016.	-349.
HARMONIC-1	4549./ -13.8	1036./ -14.2	194./ -23.1	1443./ -14.2	173./ -47.9
2	267./ -69.8	65./ 6.4	45./ 10.2	348./ -19.1	23./ -13.0
3	114./ -62.4	39./ 72.3	41./ -18.6	282./ 5.5	62./ 69.8
4	242./ 38.6	204./ 12.4	70./ 24.4	81./ 65.4	27./ 31.9
5	132./ 45.2	9./ .1	22./ -4.2	82./ 5.0	16./ 87.3
6	408./ 64.1	167./ 38.9	63./ 42.4	97./ 22.2	17./ 64.8
7	92./ .5	109./ 33.3	30./ 62.1	29./ 13.2	4./ -66.2
8	15./ -43.5	50./ 59.6	19./ 46.3	50./ 21.8	5./ -61.4
9	51./ -83.8	147./ -51.3	72./ -42.9	100./ 28.2	3./ -83.1
10	60./ 5.6	46./ -15.4	26./ -25.8	49./ -54.8	7./ -21.8
11	99./ -.2	23./ 82.3	8./ 71.1	99./ -39.8	14./ -65.2
12	45./ 5.6	6./ 74.2	14./ 51.4	41./ -43.3	10./ -60.2
PEAK-TO-PEAK	10557.	2655.	742.	3593.	504.

BEAM .174 (N-M/DEG) BEAM .350 (N-M/DEG) BEAM .449 (N-M/DEG) BEAM .606 (N-M/DEG) BEAM .803 (N-M/DEG)

	BEAM .174 (N-M/DEG)	BEAM .350 (N-M/DEG)	BEAM .449 (N-M/DEG)	BEAM .606 (N-M/DEG)	BEAM .803 (N-M/DEG)
MEAN	-1976.	-104.	-168.	-463.	-463.
HARMONIC-1	453./ -41.3	218./ -83.7	223./ -85.8	221./ -73.1	86./ -88.6
2	130./ -18.4	112./ -31.9	151./ -22.7	191./ -16.8	120./ -22.8
3	101./ -30.1	13./ 2.2	19./ -85.5	53./ -41.4	119./ -19.0
4	137./ 38.8	53./ 17.9	41./ 2.9	40./ 49.5	58./ 64.9
5	95./ -32.6	11./ 6.2	15./ -39.6	30./ -1.4	39./ 18.1
6	50./ 72.3	12./ -52.8	18./ 75.1	13./ 9.7	35./ -59.4
7	19./ -29.1	15./ -23.4	17./ -52.9	23./ 10.7	36./ 58.1
8	62./ -5.3	11./ 18.1	17./ 3.5	8./ -66.7	30./ -6.2
9	61./ 11.6	34./ 13.7	26./ -5.2	37./ 23.8	36./ 49.3
10	26./ 64.2	14./ 64.4	7./ -82.0	10./ -86.4	9./ -15.9
11	23./ -78.2	20./ -57.2	7./ 6.6	11./ -40.1	9./ -40.6
12	22./ -36.7	13./ -44.6	3./ -85.4	7./ -43.5	1./ -57.3
PEAK-TO-PEAK	1454.	657.	639.	821.	738.

FLIGHT NO. 081 AIRCRAFT TOTAL WT = 36265. N LOADED CG X= 5.04 M = 198.5 IN
 RUN NO. 5 8153. LB Y= -0.00 = -0
 TIME 49586.60 (SEC) Z= 1.83 = 71.9

AERODYNAMIC FLIGHT STATE
 DYNAMIC PRES= .87 KPA = 18.3 PSF
 STATIC PRES= 81.3 KPA = 1698. PSF
 T. AIRSPEED= 81.5 KT TOTAL TEMP= 286.1 DEG K = 514.9 DEG R
 A/C MACH NO= .124 STATIC TEMP= 285.2 DEG K = 513.3 DEG R
 BODY ALPHA= -.7 DEG DENSITY= .99 KG/M3 = .00193 SLUG/FT3
 BODY BETA= 1.8 DEG DENSITY ALT= 2132. M = 6996. FT
 SONIC SPEED= 339.1 M/SEC = 1113. FPS
 RATE OF CLIMB= -11. M/MIN = -37. FPM

INERTIAL FLIGHT STATE

AXIS	CG LIN VEL (M/S)	CG LIN VEL (FPS)	CG LIN ACC (G)	HUB LIN VEL (M/S)	HUB LIN VEL (FPS)	HUB LIN ACC (G)	AXIS	ANG POS (DEG)	ANG RATES (RAD/SEC)	ANG ACC (RAD/SEC2)
X	41.89	137.4	-.033	41.88	137.4	-.032	ROLL	-1	-.006	-.032
Y	1.34	4.4	.001	1.33	4.4	-.005	PITCH	-9	.005	-.007
Z	-4.48	-1.6	-1.032	-4.48	-1.6	-1.032	YAW	271.8	-.005	.010

CONTROL ANGLES
 M.R. COLL= 9.4 DEG HORIZ FIN= 7.1 DEG
 A1= -.1 DEG T.R. COLL= 1.8 DEG
 B1= 3.1 DEG PEDAL POS= 2.2 DEG

ROTOR PARAMETERS
 HOVER TIP MACH= .67 SHAFT ALPHA= -.7 DEG
 CONTROL ALPHA= -3.8 DEG
 TIP MAX-MACH= .79 DELTA PSI= -1.8 DEG
 TIP MIN-MACH= .54
 .9R MAX-MACH= .72 ENGINE POWER= 347. KW = 465. HP
 .9R MIN-MACH= .48 THRUST FACTOR= .715E+07 N = .161E+07 LB

NASA LANGLEY FLIGHT DATA AH-1G ---- ROTOR PERFORMANCE AND LOADS

FLIGHT NO. 81 MU= .184 TOTAL CQ= .000210 AMB TEMP= 12.0 C = 53.65 F
 RUN NO. 5 V= 81.5 KT HAST CQ= .000200 TEMP U60= 31.5 C = 88.77 F
 TIME 49586.45 NZ= 1.032 G OMEGA= 34.054 RAD/SEC CAN TEMP= 30.8 C = 87.39 F
 CLP= .00512 RPM/324= 1.004

ROTOR ANGLES
 THETA 3/4 (DEG) A0= 7.9 A1= -.9 B1= 3.3 PEAK-TO-PEAK= 6.7
 TEETER ANG (DEG) A0= .3 A1= -.5 B1= .2 PEAK-TO-PEAK= 1.0

ROTOR LOADS (AMP/PHASE)	DRAG BRACE (N/DEG)	CHORD .449 (N-M/DEG)	CHORD .803 (N-M/DEG)	PITCH LINK (N/DEG)	TORSION .449 (N-M/DEG)
MEAN	45549.	-555.	-3807.	-2030.	-364.
HARMONIC-1	4479./ -10.6	1010./ -11.2	193./ -20.6	1561./ -16.4	195./ -45.9
2	248./ -40.6	79./ 49.9	30./ 22.5	519./ -10.0	36./ -12.4
3	674./ 17.2	177./ 20.7	8./ -16.5	319./ 5.4	61./ 68.2
4	224./ -76.5	186./ 86.4	83./ -87.7	83./ -23.6	34./ -88.5
5	465./ 60.4	68./ 70.7	32./ 40.7	163./ 87.4	31./ -33.1
6	1037./ 83.9	586./ 72.7	177./ 75.1	218./ 86.7	42./ -84.3
7	547./ 64.4	370./ 76.9	134./ 81.8	187./ 59.9	7./ -48.1
8	133./ -30.2	82./ -40.9	38./ -32.7	51./ 85.1	3./ 29.0
9	93./ -5.9	145./ -47.2	60./ -25.1	129./ 62.7	6./ -13.3
10	18./ 68.2	121./ -88.6	56./ 70.0	150./ -37.8	19./ -18.6
11	18./ 74.5	87./ -22.5	36./ -33.8	15./ 30.1	11./ -22.0
12	168./ -45.6	48./ -37.7	43./ -43.8	58./ 82.4	21./ 5.5
PEAK-TO-PEAK	10535.	3445.	1137.	3893.	607.

	BEAM .174 (N-M/DEG)	BEAM .350 (N-M/DEG)	BEAM .449 (N-M/DEG)	BEAM .606 (N-M/DEG)	BEAM .803 (N-M/DEG)
MEAN	-1956.	-113.	-180.	-473.	-465.
HARMONIC-1	509./ -37.8	256./ -70.5	262./ -69.9	250./ -69.8	101./ -85.5
2	139./ -8.7	110./ -25.9	146./ -14.8	180./ -15.1	98./ -23.7
3	139./ -18.7	45./ 6.2	30./ 37.9	53./ -26.0	92./ -11.5
4	203./ -74.1	62./ 85.3	23./ 43.3	67./ -73.5	77./ -52.2
5	140./ 44.2	13./ 43.3	32./ 23.3	37./ 25.3	23./ 30.0
6	25./ -30.7	8./ 39.5	18./ -1.9	8./ 3.6	54./ 31.6
7	117./ 54.8	31./ 40.9	46./ 43.0	1./ -31.5	41./ 33.4
8	39./ -83.3	6./ 38.1	9./ 60.8	14./ 33.1	19./ 61.7
9	63./ 52.4	37./ 62.7	19./ 59.1	35./ 84.9	25./ -72.0
10	99./ -70.5	38./ -58.9	29./ 85.8	46./ -53.3	38./ -54.6
11	22./ 5.2	5./ 44.6	4./ 14.0	5./ -87.6	8./ 70.0
12	60./ 14.4	24./ 11.5	13./ 1.1	20./ 20.2	15./ 22.1
PEAK-TO-PEAK	1665.	733.	771.	940.	758.

FLIGHT NO. 081 AIRCRAFT TOTAL WT = 36225. N LOADED CG X= 5.04 M = 198.5 IN
 RUN NO. 6 8144. LB Y= -.00 = -.0
 TIME 49669.10 (SEC) Z= 1.83 = 71.9

AERODYNAMIC FLIGHT STATE DYNAMIC PRES= 1.12 KPA = 23.5 PSF
 STATIC PRES= 81.3 KPA = 1698. PSF
 T. AIRSPEED= 92.4 KT TOTAL TEMP= 286.3 DEG K = 515.3 DEG R
 A/C MACH NO= .140 STATIC TEMP= 285.2 DEG K = 513.3 DEG R
 BODY ALPHA= -1.9 DEG DENSITY= .99 KG/M3 = .00193 SLUG/FT3
 BODY BETA= .5 DEG DENSITY ALT= 2134. M = 7002. FT
 SONIC SPEED= 339.1 M/SEC = 1113. FPS
 RATE OF CLIMB= 7. M/MIN = 23. FPM

INERTIAL FLIGHT STATE

AXIS	CG LIN VEL (M/S)	CG LIN VEL (FPS)	CG LIN ACC (G)	HUB LIN VEL (M/S)	HUB LIN VEL (FPS)	HUB LIN ACC (G)	AXIS	ANG POS (DEG)	ANG RATES (RAD/SEC)	ANG ACC (RAD/SEC2)
X	47.49	155.8	-.035	47.49	155.8	-.038	ROLL	-1.1	.001	.056
Y	.38	1.2	.009	.38	1.2	.021	PITCH	-1.8	.003	.014
Z	-1.61	-5.3	-1.006	-1.61	-5.3	-1.006	YAW	261.7	-.004	-.003

CONTROL ANGLES M.R. COLL= 10.0 DEG HORIZ FIN= 7.6 DEG
 A1= .0 DEG T.R. COLL= 1.7 DEG
 B1= 4.2 DEG PEDAL POS= 2.2 DEG

ROTOR PARAMETERS

HOVER TIP MACH= .66 SHAFT ALPHA= -1.9 DEG
 CONTROL ALPHA= -6.1 DEG
 TIP MAX-MACH= .81 DELTA PSI= -.5 DEG
 TIP MIN-MACH= .52
 .9R MAX-MACH= .74 ENGINE POWER= 387. KW = 519. HP
 .9R MIN-MACH= .46 THRUST FACTOR= .712E+07 N = .160E+07 LB

NASA LANGLEY FLIGHT DATA AH-1G ---- ROTOR PERFORMANCE AND LOADS

FLIGHT NO. 81 MU= .209 TOTAL CQ= .000236 AMB TEMP= 12.0 C = 53.63 F
 RUN NO. 6 V= 92.4 KT MAST CQ= .000229 TEMP U60= 31.5 C = 88.75 F
 TIME 49669.04 NZ= 1.006 G DMEGA= 33.965 RAD/SEC CAN TEMP= 29.2 C = 84.60 F
 CLP= .00501 RPM/324= 1.001

ROTOR ANGLES THETA 3/4 (DEG) A0= 8.5 A1= -.9 B1= 4.4 PEAK-TO-PEAK= 8.9
 TEETER ANG (DEG) A0= .3 A1= -.8 B1= .0 PEAK-TO-PEAK= 1.6

ROTOR LOADS (AMP/PHASE) DRAG BRACE (N/DEG) CHORD .449 (N-M/DEG) CHORD .803 (N-M/DEG) PITCH LINK (N/DEG) TORSION .449 (N-M/DEG)

	MEAN	44335.	-287.	-3666.	-2313.	-389.
HARMONIC-1	4361./ -12.6	904./ -17.1	186./ -24.7	1905./ -20.3	245./ -43.9	
2	389./ -50.1	92./ -84.3	21./ 81.8	646./ -59.4	70./ -63.0	
3	1899./ 59.3	442./ 57.7	53./ 73.8	324./ 5.3	52./ 52.3	
4	257./ 12.2	165./ -9.3	75./ -3.6	106./ 35.8	15./ -2.6	
5	592./ -76.9	133./ -70.2	28./ -50.3	214./ -71.5	28./ .2	
6	1183./ -28.9	680./ -32.0	206./ -30.6	166./ 37.6	36./ 33.0	
7	280./ -44.5	121./ -37.0	37./ -34.2	25./ -72.2	7./ 2.9	
8	98./ -82.9	113./ 85.6	42./ 73.9	36./ -45.8	2./ 40.3	
9	63./ -52.9	97./ -35.1	30./ -34.6	63./ -19.5	2./ .4	
10	111./ 10.2	127./ 64.4	60./ 55.3	35./ -86.8	4./ 36.6	
11	53./ 27.8	61./ 69.0	29./ 76.5	8./ -73.1	7./ 88.9	
12	113./ -61.0	82./ -20.1	55./ -28.6	17./ 72.2	5./ -70.3	
PEAK-TO-PEAK	13289.	3573.	908.	4641.	569.	

	BEAM .174 (N-M/DEG)	BEAM .350 (N-M/DEG)	BEAM .449 (N-M/DEG)	BEAM .606 (N-M/DEG)	BEAM .803 (N-M/DEG)
MEAN	-1978.	-126.	-175.	-447.	-456.
HARMONIC-1	619./ -41.7	307./ -62.8	317./ -61.6	309./ -63.5	119./ -84.7
2	127./ -59.1	87./ -56.1	106./ -42.3	121./ -33.1	77./ -23.5
3	123./ 36.0	75./ 47.3	60./ 56.9	41./ -64.7	60./ -36.3
4	115./ -11.8	29./ -21.3	19./ 57.8	20./ -30.6	59./ 8.5
5	155./ -83.6	21./ 76.1	6./ 60.5	27./ 65.3	35./ -87.6
6	88./ -33.3	14./ 39.3	17./ -9.8	13./ 85.2	19./ -49.4
7	10./ 39.0	4./ -30.3	10./ 4.0	2./ 66.9	18./ 32.7
8	48./ -68.9	8./ -49.4	14./ -78.3	5./ 2.1	10./ 31.7
9	41./ -20.0	24./ -15.1	6./ 2.1	26./ -8.2	25./ -17.8
10	32./ 70.0	11./ -80.8	16./ 75.1	12./ -78.3	7./ -60.0
11	12./ -84.6	7./ 59.1	8./ 67.2	11./ 63.7	5./ 71.6
12	8./ -84.1	1./ -28.0	1./ 65.8	4./ 68.0	2./ -41.8
PEAK-TO-PEAK	1772.	770.	797.	799.	458.

FLIGHT NO. 081 AIRCRAFT TOTAL WT = 36187. N LOADED CG X= 5.04 M = 198.5 IN
 RUN NO. 7 8135. LB Y= -.00 = -.0
 TIME 49751.10 (SEC) Z= 1.83 = 72.0

AERODYNAMIC FLIGHT STATE DYNAMIC PRES= 1.34 KPA = 27.9 PSF
 T. AIRSPEED= 100.7 KT STATIC PRES= 81.3 KPA = 1697. PSF
 A/C MACH NO= .153 TOTAL TEMP= 286.5 DEG K = 515.6 DEG R
 STATIC TEMP= 285.1 DEG K = 513.2 DEG R
 BODY ALPHA= -1.8 DEG DENSITY= .99 KG/M3 = .00193 SLUG/FT3
 BODY BETA= -.0 DEG DENSITY ALT= 2134. M = 7003. FT
 SONIC SPEED= 339.1 M/SEC = 1112. FPS
 RATE OF CLIMB= -2. M/MIN = -8. FPM

INERTIAL FLIGHT STATE

AXIS	CG LIN VEL (M/S)	CG LIN ACC (G)	HUB LIN VEL (M/S)	HUB LIN ACC (G)	AXIS	ANG POS (DEG)	ANG RATES (RAD/SEC)	ANG ACC (RAD/SEC2)		
X	51.79	169.9	-.040	51.78	169.9	-.039	ROLL	-.8	.004	-.011
Y	-.02	-.1	.010	-.01	-.0	.008	PITCH	-1.8	.002	-.003
Z	-1.60	-5.3	-1.033	-1.60	-5.3	-1.033	YAW	303.7	-.002	.020

CONTROL ANGLES M.R. COLL= 10.3 DEG HORIZ FIN= 7.9 DEG
 A1= .1 DEG T.R. COLL= 1.9 DEG
 B1= 4.7 DEG PEDAL POS= 2.4 DEG

ROTOR PARAMETERS

HOVER TIP MACH= .67 SHAFT ALPHA= -1.8 DEG
 CONTROL ALPHA= -6.5 DEG
 TIP MAX-MACH= .82 DELTA PSI= .0 DEG
 TIP MIN-MACH= .51
 .9R MAX-MACH= .75 ENGINE POWER= 410. KW = 549. HP
 .9R MIN-MACH= .45 THRUST FACTOR= .718E+07 N = .162E+07 LB

NASA LANGLEY FLIGHT DATA AH-1G ---- ROTOR PERFORMANCE AND LOADS

FLIGHT NO. 81 MU= .227 TOTAL CQ= .000248 AMB TEMP= 12.0 C = 53.53 F
 RUN NO. 7 V= 100.7 KT MAST CQ= .000236 TEMP U60= 31.2 C = 88.22 F
 TIME 49750.95 NZ= 1.033 G OMEGA= 34.040 RAD/SEC CAN TEMP= 27.3 C = 81.11 F
 CLP= .00911 RPM/324= 1.003

ROTOR ANGLES THETA 3/4 (DEG) A0= 8.8 A1= -.8 B1= 4.9 PEAK-TO-PEAK= 10.1
 TEETER ANG (DEG) A0= .3 A1= -.9 B1= .0 PEAK-TO-PEAK= 1.8

ROTOR LOADS (AMP/PHASE)	DRAG BRACE (N/DEG)	CHORD .449 (N-M/DEG)	CHORD .803 (N-M/DEG)	PITCH LINK (N/DEG)	TORSION .449 (N-M/DEG)
MEAN	44362.	-143.	-3604.	-2512.	-417.
HARMONIC-1	4196./ -18.3	832./ -25.1	174./ -33.6	2053./ -24.0	280./ -41.7
2	375./ 67.7	105./ 59.3	29./ 84.0	1033./ -63.3	100./ -60.8
3	2170./ 69.7	510./ 70.4	75./ 84.0	239./ 12.6	51./ 49.7
4	605./ 54.1	283./ 45.8	101./ 35.0	198./ 83.9	29./ 45.8
5	415./ -83.5	109./ -73.4	11./ -44.2	180./ -53.0	29./ 24.3
6	1045./ 1.9	631./ -3.3	191./ -2.3	146./ 82.1	31./ 61.8
7	175./ 23.5	46./ 75.2	12./ -80.0	4./ 64.1	5./ -82.1
8	103./ -74.6	93./ 86.1	28./ 83.1	16./ 73.2	6./ -67.4
9	155./ 38.2	101./ 24.3	49./ 21.9	37./ -15.8	5./ -24.4
10	129./ 44.5	172./ -51.5	70./ -51.8	54./ 55.5	6./ -18.8
11	76./ -72.2	35./ -60.8	23./ -26.1	24./ 1.6	2./ 63.1
12	152./ -4.0	86./ 6.5	50./ 5.6	22./ 65.9	4./ -65.5
PEAK-TO-PEAK	13266.	3304.	943.	5511.	640.

	BEAM .174 (N-M/DEG)	BEAM .350 (N-M/DEG)	BEAM .449 (N-M/DEG)	BEAM .606 (N-M/DEG)	BEAM .803 (N-M/DEG)
MEAN	-1963.	-143.	-183.	-448.	-457.
HARMONIC-1	659./ -44.8	325./ -62.6	344./ -62.6	343./ -64.6	142./ -85.4
2	209./ -70.4	154./ -72.0	157./ -65.9	143./ -56.7	69./ -33.4
3	85./ 82.7	73./ 56.0	52./ 62.0	48./ -63.3	52./ -57.5
4	162./ 53.1	53./ 39.1	30./ 52.9	30./ 52.9	75./ 34.8
5	128./ -65.0	9./ 86.7	11./ 3.1	15./ -81.2	41./ -68.5
6	46./ -55.3	10./ 50.6	5./ 27.7	15./ 55.4	15./ -32.4
7	13./ -66.0	5./ 51.0	4./ -63.9	8./ 76.5	17./ 25.4
8	19./ -87.6	4./ -37.3	9./ 80.4	7./ 16.5	13./ 36.3
9	22./ -12.6	18./ -15.1	8./ -18.1	22./ -8.4	20./ -2.4
10	41./ 55.3	18./ 51.9	15./ 55.8	22./ 63.8	16./ 59.0
11	10./ 5.0	8./ -1.2	5./ -6.9	7./ -12.2	3./ 32.9
12	8./ -21.3	3./ -3.5	5./ -23.4	4./ -17.6	2./ 6.9
PEAK-TO-PEAK	1823.	858.	928.	938.	496.

FLIGHT NO. 081 AIRCRAFT TOTAL WT = 36148. N LOADED CG X= 5.04 M = 198.5 IN
 RUN NO. 8 8127. LB Y= -.00 = -.0
 TIME 49846.00 (SEC) Z= 1.83 = 72.0

AERODYNAMIC FLIGHT STATE DYNAMIC PRES= 1.58 KPA = 33.0 PSF
 STATIC PRES= 81.2 KPA = 1696. PSF
 T. AIRSPEED= 109.4 KT TOTAL TEMP= 286.6 DEG K = 515.9 DEG R
 A/C MACH NO= .166 STATIC TEMP= 285.1 DEG K = 513.1 DEG R
 BODY ALPHA= -2.0 DEG DENSITY= .99 KG/M3 = .00193 SLUG/FT3
 BODY BETA= .0 DEG DENSITY ALT= 2139. M = 7019. FT
 SONIC SPEED= 339.0 M/SEC = 1112. FPS
 RATE OF CLIMB= -12. M/MIN = -39. FPM

INERTIAL FLIGHT STATE

AXIS	CG LIN VEL (M/S)	CG LIN VEL (FPS)	CG LIN ACC (G)	HUB LIN VEL (M/S)	HUB LIN VEL (FPS)	HUB LIN ACC (G)	AXIS	ANG POS (DEG)	ANG RATES (RAD/SEC)	ANG ACC (RAD/SEC2)
X	56.22	184.5	-.049	56.21	184.4	-.050	ROLL	-.8	.005	-.006
Y	.02	.1	.009	.03	.1	.007	PITCH	-2.2	.006	.006
Z	-2.01	-6.6	-1.041	-2.01	-6.6	-1.041	YAW	299.3	-.003	.016

CONTROL ANGLES M.R. COLL= 10.8 DEG HORIZ FIN= 8.2 DEG
 A1= .1 DEG T.R. COLL= 2.3 DEG
 B1= 5.2 DEG PEDAL POS= 2.7 DEG

ROTOR PARAMETERS

HOVER TIP MACH= .67 SHAFT ALPHA= -2.0 DEG
 CONTROL ALPHA= -7.3 DEG
 TIP MAX-MACH= .83 DELTA PSI= -.0 DEG
 TIP MIN-MACH= .50
 .9R MAX-MACH= .77 ENGINE POWER= 442. KW = 593. HP
 .9R MIN-MACH= .44 THRUST FACTOR= .719E+07 N = .162E+07 LB

NASA LANGLEY FLIGHT DATA AH-1G ---- ROTOR PERFORMANCE AND LOADS

FLIGHT NO. 81 MU= .246 TOTAL CQ= .000267 AMB TEMP= 11.9 C = 53.43 F
 V= 109.4 KT MAST CQ= .000253 TEMP U60= 31.2 C = 88.12 F
 RUN NO. 8 NZ= 1.041 G OMEGA= 34.054 RAD/SEC CAN TEMP= 25.7 C = 78.31 F
 TIME 49845.85 CLP= .00514 RPM/324= 1.004

ROTOR ANGLES THETA 3/4 (DEG) A0= 9.3 A1= -.8 B1= 5.5 PEAK-TO-PEAK= 11.2
 TEETER ANG (DEG) A0= .3 A1= -1.0 B1= -.1 PEAK-TO-PEAK= 1.9

ROTOR LOADS (AMP/PHASE)	DRAG BRACE (N/DEG)	CHORD .449 (N-M/DEG)	CHORD .803 (N-M/DEG)	PITCH LINK (N/DEG)	TORSION .449 (N-M/DEG)
MEAN	43631.	116.	-3480.	-2732.	-451.
HARMONIC-1	4195./ -27.0	894./ -32.0	198./ -35.3	2257./ -30.2	302./ -43.9
2	208./ -79.4	34./ -58.0	20./ -12.7	1410./ -54.4	140./ -52.6
3	1881./ 63.7	483./ 62.5	72./ 65.3	236./ -10.6	64./ 36.5
4	309./ 66.3	197./ 67.5	80./ 56.0	241./ -87.3	37./ 71.8
5	58./ -22.7	12./ 11.3	17./ -64.7	101./ -18.8	13./ 3.7
6	1020./ 32.2	611./ 25.0	177./ 22.3	210./ -43.9	29./ -68.6
7	135./ 70.5	108./ -62.1	36./ -57.6	44./ -77.6	5./ 68.8
8	214./ -53.8	116./ -61.3	43./ -60.1	50./ -38.8	6./ -60.3
9	79./ -65.5	90./ 12.4	40./ 4.7	37./ -18.9	5./ .5
10	145./ 51.9	167./ -16.0	85./ -13.5	104./ 68.6	7./ -32.9
11	109./ -12.4	32./ -2.1	12./ -54.2	13./ 3.9	3./ -30.9
12	75./ 13.1	79./ 11.4	52./ 8.4	6./ -29.4	3./ -86.1
PEAK-TO-PEAK	14352.	3732.	953.	6370.	838.

	BEAM .174 (N-M/DEG)	BEAM .350 (N-M/DEG)	BEAM .449 (N-M/DEG)	BEAM .606 (N-M/DEG)	BEAM .803 (N-M/DEG)
MEAN	-1929.	-147.	-192.	-449.	-459.
HARMONIC-1	757./ -50.5	372./ -64.6	373./ -66.7	368./ -68.6	163./ 89.9
2	300./ -55.6	221./ -71.7	241./ -68.7	207./ -65.3	87./ -44.7
3	56./ 16.4	35./ 51.3	45./ 76.9	58./ -84.2	54./ -87.7
4	188./ 80.5	66./ 67.2	46./ 58.5	57./ 82.9	98./ 58.4
5	53./ -4.3	4./ -87.3	18./ 82.4	8./ 16.0	36./ 72.7
6	33./ 11.1	11./ 48.2	16./ 48.6	7./ 17.6	29./ -72.1
7	26./ -53.2	13./ -31.5	24./ -77.1	6./ 6.2	31./ -36.9
8	10./ 22.9	4./ -84.9	7./ -14.7	9./ -37.9	15./ -12.1
9	21./ -50.6	13./ -54.6	8./ -50.1	20./ -35.5	17./ -25.3
10	46./ 44.2	23./ 41.5	16./ 38.5	31./ 45.8	23./ 50.1
11	8./ 78.7	4./ -10.6	4./ -88.0	4./ 57.8	3./ -60.9
12	11./ -75.7	5./ -55.8	4./ -73.2	3./ -18.2	2./ -44.4
PEAK-TO-PEAK	2117.	1038.	1112.	1130.	613.

FLIGHT NO. 081 AIRCRAFT TOTAL WT = 36154. N LOADED CG X= 5.04 M = 198.5 IN
 RUN NO. 8 8128. LB Y= -0.00 = -0.0
 TIME 49847.10 (SEC) Z= 1.83 = 72.0

AERODYNAMIC FLIGHT STATE DYNAMIC PRES= 1.58 KPA = 32.9 PSF
 STATIC PRES= 81.2 KPA = 1697. PSF
 T. AIRSPEED= 109.3 KT TOTAL TEMP= 286.6 DEG K = 515.9 DEG R
 A/C MACH NO= .166 STATIC TEMP= 285.1 DEG K = 513.1 DEG R
 BODY ALPHA= -2.1 DEG DENSITY= .99 KG/M3 = .00193 SLUG/FT3
 BODY BETA= -0.1 DEG DENSITY ALT= 2135. M = 7004. FT
 SONIC SPEED= 339.0 M/SEC = 1112. FPS
 RATE OF CLIMB= -3. M/MIN = -9. FPM

INERTIAL FLIGHT STATE

AXIS	CG LIN VEL (M/S)	CG LIN VEL (FPS)	CG LIN ACC (G)	HUB LIN VEL (M/S)	HUB LIN VEL (FPS)	HUB LIN ACC (G)	AXIS	ANG POS (DEG)	ANG RATES (RAD/SEC)	ANG ACC (RAD/SEC2)
X	56.19	184.3	-.048	56.18	184.3	-.049	ROLL	-.7	.005	.009
Y	-.10	-.3	.009	-.09	-.3	.011	PITCH	-2.2	.003	.005
Z	-2.10	-6.9	-1.030	-2.10	-6.9	-1.030	YAW	299.3	-.007	.019

CONTROL ANGLES M.R. COLL= 10.7 DEG HORIZ FIN= 8.3 DEG
 A1= .2 DEG T.R. COLL= 2.3 DEG
 B1= 5.3 DEG PEDAL POS= 2.7 DEG

ROTOR PARAMETERS

HOVER TIP MACH= .67 SHAFT ALPHA= -2.1 DEG
 CONTROL ALPHA= -7.4 DEG
 TIP MAX-MACH= .83 DELTA PSI= .1 DEG
 TIP MIN-MACH= .50
 .9R MAX-MACH= .77 ENGINE POWER= 435. KW = 584. HP
 .9R MIN-MACH= .44 THRUST FACTOR= .719E+07 N = .162E+07 LB

NASA LANGLEY FLIGHT DATA AH-1G ---- ROTOR PERFORMANCE AND LOADS

FLIGHT NO. 81 MU= .246 TOTAL CQ= .000263 AMB TEMP= 11.9 C = 53.45 F
 RUN NO. 8 V= 109.3 KT MAST CQ= .000251 TEMP U60= 31.2 C = 88.12 F
 TIME 49846.95 NZ= 1.030 G OMEGA= 34.020 RAD/SEC CAN TEMP= 25.7 C = 78.31 F
 CLP= .00510 RPM/324= 1.003

ROTOR ANGLES THETA 3/4 (DEG) A0= 9.3 A1= -.8 B1= 5.6 PEAK-TO-PEAK= 11.2
 TEETER ANG (DEG) A0= .3 A1= -1.1 B1= -.1 PEAK-TO-PEAK= 2.0

ROTOR LOADS (AMP/PHASE)	DRAG BRACE (N/DEG)	CHORD .449 (N-M/DEG)	CHORD .803 (N-M/DEG)	PITCH LINK (N/DEG)	TORSION .449 (N-M/DEG)
MEAN	43661.	90.	-3483.	-2746.	-449.
HARMONIC-1	4251./ -28.4	914./ -33.7	202./ -37.6	2245./ -29.6	305./ -43.6
2	352./ 77.0	67./ 71.6	16./ -39.6	1440./ -52.3	143./ -51.0
3	1871./ 60.0	469./ 58.3	73./ 58.3	240./ -9.2	69./ 38.6
4	276./ 58.1	178./ 63.1	77./ 52.6	233./ -89.2	37./ 72.7
5	48./ 78.6	21./ -87.0	9./ -59.8	140./ -15.3	19./ -2.1
6	962./ 31.4	558./ 25.5	169./ 23.5	181./ -41.8	28./ -65.2
7	50./ -86.1	123./ -46.2	37./ -36.0	52./ 82.1	3./ 66.7
8	187./ -60.7	125./ -56.2	46./ -52.2	65./ -36.5	7./ -42.8
9	89./ -54.9	103./ 1.8	50./ -5.1	22./ -.9	5./ 13.7
10	108./ 60.8	88./ -12.6	50./ -7.6	88./ 70.8	4./ -10.1
11	97./ -20.8	26./ -25.2	7./ -44.4	12./ -8.3	6./ -11.1
12	100./ 9.6	59./ .4	41./ 8.1	5./ -16.5	5./ -57.7
PEAK-TO-PEAK	14352.	3695.	953.	6380.	855.

	BEAM .174 (N-M/DEG)	BEAM .350 (N-M/DEG)	BEAM .449 (N-M/DEG)	BEAM .606 (N-M/DEG)	BEAM .803 (N-M/DEG)
MEAN	-1945.	-150.	-191.	-450.	-457.
HARMONIC-1	750./ -51.9	373./ -64.7	374./ -66.7	368./ -69.3	163./ 89.6
2	309./ -55.9	224./ -70.6	243./ -68.0	208./ -64.3	86./ -43.6
3	58./ 23.6	34./ 48.0	41./ 73.6	55./ -86.2	53./ -89.9
4	184./ 77.5	64./ 64.4	46./ 53.3	55./ 81.1	93./ 55.7
5	61./ -7.3	2./ 51.4	19./ 72.0	8./ 19.0	32./ 66.4
6	32./ 7.4	11./ 44.5	15./ 47.6	9./ 21.8	25./ -60.5
7	21./ -40.6	15./ -47.4	21./ -78.3	9./ 20.0	30./ -27.3
8	11./ -23.9	1./ 47.7	4./ -12.7	10./ -31.9	17./ -10.5
9	14./ -31.8	12./ -42.6	6./ -22.8	19./ -33.4	17./ -21.1
10	45./ 53.6	22./ 49.2	15./ 39.5	29./ 48.8	21./ 56.8
11	7./ 53.6	1./ 18.0	2./ 87.2	4./ 45.1	3./ -64.2
12	17./ -77.3	7./ -65.8	9./ -75.1	2./ -56.3	2./ -64.4
PEAK-TO-PEAK	2116.	1064.	1112.	1116.	619.

FLIGHT NO. 081 AIRCRAFT TOTAL WT = 36082. N LOADED CG X= 5.04 M = 198.6 IN
 RUN NO. 9 8112. LB Y= -.00 = -.0
 TIME 49942.10 (SEC) Z= 1.83 = 72.0

AERODYNAMIC FLIGHT STATE DYNAMIC PRES= 1.88 KPA = 39.2 PSF
 T. AIRSPEED= 119.2 KT STATIC PRES= 81.2 KPA = 1697. PSF
 A/C MACH NO= .181 TOTAL TEMP= 287.1 DEG K = 516.7 DEG R
 STATIC TEMP= 285.2 DEG K = 513.4 DEG R
 BODY ALPHA= -2.2 DEG DENSITY= .99 KG/M3 = .00193 SLUG/FT3
 BODY BETA= .7 DEG DENSITY ALT= 2140. M = 7022. FT
 SONIC SPEED= 339.1 M/SEC = 1113. FPS
 RATE OF CLIMB= -26. M/MIN = -86. FPM

INERTIAL FLIGHT STATE

AXIS	CG LIN VEL (M/S) (FPS)	CG LIN ACC (G)	HUB LIN VEL (M/S) (FPS)	HUB LIN ACC (G)	AXIS	ANG POS (DEG)	ANG RATE (RAD/SEC)	ANG ACC (RAD/SEC2)
X	61.29 201.1	-.057	61.27 201.0	-.061	ROLL	-.3	-.003	.028
Y	.80 2.6	.002	.79 2.6	.008	PITCH	-2.6	.010	.018
Z	-2.32 -7.6	-1.064	-2.32 -7.6	-1.063	YAW	295.6	-.002	-.006

CONTROL ANGLES M.R. COLL= 11.3 DEG HORIZ FIN= 8.6 DEG
 A1= .3 DEG T.R. COLL= 2.7 DEG
 B1= 5.8 DEG PEDAL POS= 3.1 DEG

ROTOR PARAMETERS

SHAFT ALPHA= -2.2 DEG
 HOVER TIP MACH= .67 CONTROL ALPHA= -7.9 DEG
 TIP MAX-MACH= .85 DELTA PSI= -.7 DEG
 TIP MIN-MACH= .49
 .9R MAX-MACH= .78 ENGINE POWER= 472. KW = 633. HP
 .9R MIN-MACH= .42 THRUST FACTOR= .724E+07 N = .163E+07 LB

NASA LANGLEY FLIGHT DATA AH-1G ---- ROTOR PERFORMANCE AND LOADS

FLIGHT NO. 81 MU= .268 TOTAL CQ= .000284 AMB TEMP= 12.1 C = 53.71 F
 RUN NO. 9 V= 119.2 KT MAST CQ= .000266 TEMP U60= 31.2 C = 88.12 F
 TIME 49942.03 NZ= 1.063 G OMEGA= 34.084 RAD/SEC CAN TEMP= 24.6 C = 76.21 F
 CLP= .00524 RPM/324= 1.005

ROTOR ANGLES THETA 3/4 (DEG) A0= 9.7 A1= -.5 B1= 6.2 PEAK-TO-PEAK= 12.2
 TEETER ANG (DEG) A0= .3 A1= -1.1 B1= -.1 PFAK-TO-PEAK= 2.1

ROTOR LOADS (AMP/PHASE) DRAG BRACE CHORD .449 CHORD .803 PITCH LINK TORSION .449
 (N/DEG) (N-M/DEG) (N-M/DEG) (N-M/DEG)

	DRAG BRACE (N/DEG)	CHORD .449 (N-M/DEG)	CHORD .803 (N-M/DEG)	PITCH LINK (N/DEG)	TORSION .449 (N-M/DEG)
MEAN	43386.	279.	-3403.	-2955.	-484.
HARMONIC-1	4403./ -38.3	940./ -41.2	227./ -40.5	2510./ -36.9	329./ -46.3
2	408./ -64.5	93./ -27.5	32./ -2.7	1799./ -52.2	177./ -54.5
3	2040./ 38.8	527./ 39.0	88./ 50.5	261./ -39.7	67./ 22.3
4	428./ 15.9	205./ 11.0	83./ 5.9	242./ 63.2	35./ 33.3
5	228./ -73.8	76./ -54.9	35./ -66.8	148./ -6.3	32./ -1.1
6	859./ 7.8	500./ 4.4	156./ 1.4	164./ -26.1	21./ -41.8
7	95./ 58.4	81./ 27.6	31./ 27.2	22./ 36.6	82./ 82.1
8	250./ -89.3	140./ -54.7	62./ -58.3	60./ -38.1	5./ -60.3
9	82./ -8.9	29./ 28.4	7./ 25.0	70./ 76.1	1./ -35.1
10	117./ 17.1	79./ -63.2	52./ -87.4	93./ 15.8	9./ -13.9
11	33./ 81.1	75./ 61.4	34./ 44.7	20./ 83.6	5./ 29.7
12	35./ -5.7	18./ -10.8	13./ -35.2	12./ -24.8	3./ 78.9
PEAK-TO-PEAK	14650.	4087.	1071.	7749.	898.

BEAM .174 BEAM .350 BEAM .449 BEAM .606 BEAM .803
 (N-M/DEG) (N-M/DEG) (N-M/DEG) (N-M/DEG) (N-M/DEG)

	BEAM .174 (N-M/DEG)	BEAM .350 (N-M/DEG)	BEAM .449 (N-M/DEG)	BEAM .606 (N-M/DEG)	BEAM .803 (N-M/DEG)
MEAN	-1891.	-147.	-187.	-457.	-463.
HARMONIC-1	887./ -57.0	441./ -65.9	433./ -68.2	396./ -73.9	184./ 84.8
2	391./ -54.7	261./ -78.7	280./ -76.8	267./ -70.3	118./ -54.0
3	132./ 53.0	33./ -32.2	39./ 45.0	98./ 80.3	94./ 70.7
4	187./ 40.7	65./ 21.3	37./ 8.8	52./ 39.8	106./ 30.9
5	44./ -37.5	1./ -8.5	19./ 76.5	6./ 53.6	64./ 57.4
6	8./ -86.7	3./ -53.3	12./ -78.7	12./ -79.2	46./ -77.9
7	18./ -36.9	11./ -34.6	15./ -73.0	7./ 80.2	35./ -67.3
8	34./ 27.7	13./ 53.0	15./ -7.7	10./ -83.6	19./ -37.0
9	41./ 65.2	26./ 84.6	13./ 50.1	29./ -80.9	24./ -61.2
10	54./ -9.3	29./ -10.3	14./ -22.6	32./ 1.6	27./ 6.7
11	2./ -5.5	4./ 38.0	5./ 6.3	1./ -43.9	2./ 54.8
12	4./ -24.8	4./ -64.5	3./ 40.9	3./ 69.8	3./ -46.5
PEAK-TO-PEAK	2662.	1304.	1296.	1254.	789.

FLIGHT NO. 081 AIRCRAFT TOTAL WT = 36003. N LOADED CG X = 5.05 M = 198.6 IN
 RUN NO. 10 8094. LB Y = -.00 = -.0
 TIME 50060.10 (SEC) Z = 1.83 = 72.0

AERODYNAMIC FLIGHT STATE DYNAMIC PRES = 2.29 KPA = 47.8 PSF
 T. AIRSPEED = 131.4 KT STATIC PRES = 81.4 KPA = 1699. PSF
 A/C MACH NO = .199 TOTAL TEMP = 287.5 DEG K = 517.4 DEG R
 STATIC TEMP = 285.2 DEG K = 513.3 DFG P
 BODY ALPHA = -3.4 DEG DENSITY = .99 KG/M3 = .00193 SLUG/FT3
 BODY BETA = .0 DEG DENSITY ALT = 2124. M = 6969. FT
 SONIC SPEED = 339.1 M/SEC = 1113. FPS
 RATE OF CLIMB = 6. M/MIN = 18. FPM

INERTIAL FLIGHT STATE

AXIS	CG LIN VEL (M/S)	CG LIN VEL (FPS)	CG LIN ACC (G)	HUB LIN VEL (M/S)	HUB LIN VEL (FPS)	HUB LIN ACC (G)	AXIS	ANG POS (DEG)	ANG RATES (RAD/SEC)	ANG ACC (RAD/SEC2)
X	67.48	221.4	-.068	67.47	221.3	-.066	ROLL	-.4	.002	.004
Y	.02	.1	.009	.03	.1	.010	PITCH	-3.3	.008	-.011
Z	-3.95	-13.0	-1.035	-3.95	-13.0	-1.035	YAW	55.4	-.003	-.004

CONTROL ANGLES M.R. COLL = 12.3 DEG HORIZ FIN = 9.3 DEG
 A1 = .3 DEG T.P. COLL = 2.8 DEG
 B1 = 6.8 DEG PEDAL POS = 3.3 DEG

ROTOR PARAMETERS

SHAFT ALPHA = -3.4 DEG
 HOVER TIP MACH = .67 CONTROL ALPHA = -10.1 DEG
 TIP MAX-MACH = .87 DELTA PSI = -.0 DEG
 TIP MIN-MACH = .47
 .9R MAX-MACH = .80 ENGINE POWER = 555. KW = 744. HP
 .9R MIN-MACH = .40 THRUST FACTOR = .726E+07 N = .163E+07 LB

NASA LANGLEY FLIGHT DATA AH-1G ---- ROTOR PERFORMANCE AND LOADS

FLIGHT NO. 81 MU = .296 TOTAL CQ = .000333 AMB TEMP = 12.0 C = 53.66 F
 RUN NO. 10 V = 131.4 KT MAST CQ = .000313 TEMP U60 = 31.5 C = 88.75 F
 TIME 50060.01 NZ = 1.035 G OMEGA = 34.074 RAD/SEC CAN TEMP = 23.4 C = 74.12 F
 CLP = .00508 RPM/324 = 1.004

ROTOR ANGLES THETA 3/4 (DEG) A0 = 10.7 A1 = -.7 B1 = 7.2 PEAK-TO-PEAK = 14.1
 TEETER ANG (DEG) A0 = .3 A1 = -1.4 B1 = -.4 PEAK-TO-PEAK = 2.8

ROTOR LOADS (AMP/PHASE)	DRAG BRACE (N/DEG)	CHORD .449 (N-M/DEG)	CHORD .803 (N-M/DEG)	PITCH LINK (N/DFG)	TORSION .449 (N-M/DEG)
MEAN	41521.	668.	-3284.	-3469.	-542.
HARMONIC-1	5030./ -45.3	1062./ -53.6	248./ -49.4	2953./ -39.0	379./ -45.4
2	568./ -57.3	173./ -37.4	31./ -27.9	2106./ -53.7	215./ -59.8
3	3174./ 38.2	786./ 38.9	136./ 52.5	312./ -48.1	90./ 15.4
4	703./ 7.7	350./ -5.2	144./ -11.1	348./ 61.3	49./ 9.7
5	199./ 19.4	79./ -75.4	42./ 81.6	254./ -22.4	50./ -6.6
6	738./ -43.8	432./ -44.6	126./ -43.9	125./ -65.2	12./ 77.3
7	106./ 39.3	61./ 67.6	19./ 88.8	44./ 77.9	7./ 81.3
8	186./ -1.7	97./ -23.2	32./ -27.3	81./ -38.2	8./ -73.8
9	23./ 54.3	6./ -24.5	4./ -42.8	38./ -88.5	4./ -70.8
10	44./ 26.3	36./ -65.1	22./ -44.6	73./ 4.1	5./ 41.3
11	18./ 48.0	19./ 85.8	14./ -55.0	34./ -89.6	1./ 13.9
12	90./ -37.9	49./ -75.5	21./ -89.0	13./ -45.5	0./ 50.0
PEAK-TO-PEAK	16525.	4199.	961.	8991.	1044.

	BEAM .174 (N-M/DEG)	BEAM .350 (N-M/DEG)	BEAM .449 (N-M/DEG)	BEAM .606 (N-M/DEG)	BEAM .803 (N-M/DEG)
MEAN	-1820.	-136.	-167.	-427.	-458.
HARMONIC-1	1117./ -61.5	513./ -65.3	501./ -65.6	457./ -70.6	202./ 82.5
2	464./ -54.6	302./ -84.5	311./ -86.2	282./ -78.3	149./ -51.5
3	215./ 31.7	21./ -14.1	62./ 52.3	144./ 70.7	149./ 72.4
4	283./ 31.7	96./ 6.0	53./ -11.3	73./ 26.0	138./ 9.1
5	114./ -53.7	7./ 55.3	19./ 14.0	16./ -57.0	62./ 33.7
6	32./ -43.0	1./ -25.3	4./ 86.8	4./ 69.6	34./ -82.4
7	40./ -83.1	14./ -89.6	23./ 78.3	9./ -51.7	45./ -71.0
8	27./ -43.1	7./ 34.0	16./ -69.3	12./ -88.6	29./ -59.5
9	14./ 49.5	15./ -74.8	6./ 28.9	22./ -64.2	27./ -53.1
10	32./ -23.2	17./ -15.3	11./ -35.7	21./ -11.3	19./ -13.1
11	7./ 17.4	5./ -62.5	3./ -16.2	4./ -47.6	1./ 41.5
12	21./ 75.8	8./ -84.2	8./ 65.5	7./ -75.4	2./ 42.7
PEAK-TO-PEAK	3333.	1525.	1473.	1393.	917.

FLIGHT NO. 081 AIRCRAFT TOTAL WT = 35932. N LOADED CG X = 5.05 M = 198.7 IN
 RUN NO. 11 8078. LB Y = -.00 = -.0
 TIME 50129.60 (SEC) Z = 1.83 = 72.0

AERODYNAMIC FLIGHT STATE DYNAMIC PRES = 2.58 KPA = 53.9 PSF
 STATIC PRES = 81.3 KPA = 1699. PSF
 T. AIRSPEED = 139.5 KT TOTAL TEMP = 287.7 DEG K = 517.9 DEG R
 A/C MACH NO = .212 STATIC TEMP = 285.2 DEG K = 513.3 DEG R
 BODY ALPHA = -4.0 DEG DENSITY = .99 KG/M3 = .00193 SLUG/FT3
 BODY BETA = -.0 DEG DENSITY ALT = 2127. M = 6980. FT
 SONIC SPEED = 339.1 M/SEC = 1113. FPS
 RATE OF CLIMB = -14. M/MIN = -47. FPM

INERTIAL FLIGHT STATE

AXIS	CG LIN VEL (M/S)	CG LIN VEL (FPS)	CG LIN ACC (G)	HUB LIN VEL (M/S)	HUB LIN VEL (FPS)	HUB LIN ACC (G)	AXIS	ANG POS (DEG)	ANG RATES (RAD/SEC)	ANG ACC (RAD/SEC2)
X	71.56	234.8	-.077	71.56	234.8	-.078	ROLL	-1.8	.007	.012
Y	-.01	-.0	.012	.01	.0	.015	PITCH	-4.2	.001	.001
Z	-5.03	-16.5	-1.017	-5.03	-16.5	-1.017	YAW	59.0	-.002	-.017

CONTROL ANGLES M.R. COLL = 13.1 DEG HORIZ FIN = 9.7 DEG
 A1 = .2 DEG T.R. COLL = 3.1 DEG
 B1 = 7.3 DEG PEDAL POS = 3.6 DEG

ROTOR PARAMETERS

HOVER TIP MACH = .67 SHAFT ALPHA = -4.0 DEG
 CONTROL ALPHA = -11.3 DEG
 TIP MAX-MACH = .88 DELTA PSI = -.0 DEG
 TIP MIN-MACH = .46
 .9R MAX-MACH = .82 ENGINE POWER = 604. KW = 810. HP
 .9R MIN-MACH = .39 THRUST FACTOR = .725E+07 N = .163E+07 LB

NASA LANGLEY FLIGHT DATA AH-1G ---- ROTOR PERFORMANCE AND LOADS

FLIGHT NO. 81 MU = .314 TOTAL CQ = .000364 AMB TEMP = 12.0 C = 53.64 F
 RUN NO. 11 V = 139.5 KT MAST CQ = .000340 TEMP U60 = 31.5 C = 88.75 F
 TIME 50129.45 NZ = 1.017 G OMEGA = 34.020 RAD/SEC CAN TEMP = 23.0 C = 73.42 F
 CLP = .00500 RPM/324 = 1.003

ROTOR ANGLES THETA 3/4 (DEG) A0 = 11.3 A1 = -.8 B1 = 7.9 PEAK-TO-PEAK = 15.8
 TEETER ANG (DEG) A0 = .3 A1 = -1.5 B1 = -.6 PEAK-TO-PEAK = 3.1

ROTOR LOADS (AMP/PHASE) DRAG BRACE (N/DEG) CHORD .449 (N-M/DEG) CHORD .803 (N-M/DEG) PITCH LINK (N/DEG) TORSION .449 (N-M/DEG)

	MEAN	40335.	869.	-3220.	-3774.	-575.				
HARMONIC-1	5656./	-51.5	1203./	-60.9	260./	-56.5	3299./	-40.8	415./	-46.6
2	688./	-44.7	278./	-25.7	56./	-22.4	2385./	-55.5	255./	-64.5
3	3696./	43.0	903./	42.8	169./	53.7	319./	-67.3	93./	5.1
4	603./	16.6	355./	1.8	151./	-8.3	418./	59.9	64./	13.8
5	211./	78.4	123./	-60.7	90./	-83.5	249./	-17.4	51./	4.1
6	621./	-48.5	344./	-46.2	116./	-48.2	137./	-34.0	11./	-41.5
7	165./	20.2	56./	53.8	19./	72.1	41./	81.4	6./	76.1
8	129./	-16.9	86./	2.4	34./	-9.5	72./	-41.7	7./	-77.3
9	80./	2.0	27./	87.0	6./	-71.7	45./	-2.7	3./	-1.0
10	18./	-64.0	43./	-63.5	32./	-44.3	41./	-25.4	1./	12.3
11	43./	9.4	37./	-39.3	18./	-53.1	14./	68.7	1./	-68.3
12	84./	-32.9	37./	47.2	9./	89.2	8./	38.2	2./	-7.6
PEAK-TO-PEAK	19272.		4571.		990.		10112.		1159.	

BEAM .174 (N-M/DEG) BEAM .350 (N-M/DEG) BEAM .449 (N-M/DEG) BEAM .606 (N-M/DEG) BEAM .803 (N-M/DEG)

	MEAN	-1796.	-132.	-158.	-407.	-439.				
HARMONIC-1	1298./	-64.0	562./	-66.1	538./	-65.5	493./	-69.3	218./	83.6
2	529./	-56.3	337./	-88.2	342./	88.5	294./	-85.2	150./	-52.3
3	295./	21.7	10./	-88.4	79./	59.4	178./	62.7	178./	62.6
4	338./	34.2	105./	6.6	55./	-17.6	80./	24.1	148./	3.7
5	120./	-51.1	8./	52.2	25./	6.7	13./	-52.9	70./	16.3
6	16./	-78.3	8./	15.9	8./	-32.1	8./	62.1	27./	-79.3
7	37./	-79.7	15./	74.7	23./	82.2	10./	-60.8	44./	-80.7
8	32./	-80.9	7./	10.0	20./	86.7	12./	79.6	30./	-76.8
9	15./	-7.4	10./	60.8	9./	-39.5	14./	71.7	18./	-84.5
10	23./	-53.7	12./	-66.7	5./	89.9	16./	-55.2	16./	-48.0
11	9./	-89.9	3./	52.1	4./	31.1	3./	63.8	4./	71.7
12	11./	46.4	5./	71.1	6./	-51.4	3./	-31.4	2./	31.3
PEAK-TO-PEAK	3879.		1697.		1532.		1512.		1041.	

FLIGHT NO. 081 AIRCRAFT TOTAL WT = 35894. N LOADED CG X= 5.05 M = 198.7 IN
 RUN NO. 12 8070. LB Y= -0.00 = -0.0
 TIME 50237.10 (SEC) Z= 1.83 = 72.0

AERODYNAMIC FLIGHT STATE

T. AIRSPEED= 152.1 KT
 A/C MACH NO= .231

DYNAMIC PRES= 3.08 KPA = 64.3 PSF
 STATIC PRES= 81.3 KPA = 1698. PSF
 TOTAL TEMP= 288.0 DEG K = 518.5 DEG R
 STATIC TEMP= 285.0 DEG K = 513.0 DEG R
 DENSITY= .99 KG/M3 = .00193 SLUG/FT3
 DENSITY ALT= 2126. M = 6975. FT
 SONIC SPEED= 339.0 M/SEC = 1112. FPS
 RATE OF CLIMB= -1. M/MIN = -5. FPM

BODY ALPHA= -5.3 DEG
 BODY BETA= .1 DEG

INERTIAL FLIGHT STATE

AXIS	CG LIN VEL (M/S)	CG LIN VEL (FPS)	CG LIN ACC (G)	HUB LIN VEL (M/S)	HUB LIN VEL (FPS)	HUB LIN ACC (G)	AXIS	ANG PDS (DEG)	ANG RATES (RAD/SEC)	ANG ACC (RAD/SEC2)
X	77.93	255.7	-.094	77.92	255.6	-.097	ROLL	-.3	.000	-.020
Y	.08	.3	.012	.08	.3	.008	PITCH	-5.3	.007	.011
Z	-7.17	-23.5	-1.028	-7.17	-23.5	-1.028	YAW	64.1	-.002	.018

CONTROL ANGLES

M.R. COLL= 15.0 DEG HORIZ FIN= 10.5 DEG
 A1= .0 DEG T.R. COLL= 3.8 DEG
 B1= 8.2 DEG PEDAL PDS= 4.3 DEG

ROTOR PARAMETERS

HOVER TIP MACH= .67 SHAFT ALPHA= -5.3 DEG
 CONTROL ALPHA= -13.5 DEG
 TIP MAX-MACH= .90 DELTA PSI= -.1 DEG
 TIP MIN-MACH= .44
 .9R MAX-MACH= .84 ENGINE POWER= 729. KW = 978. HP
 .9R MIN-MACH= .37 THRUST FACTOR= .727E+07 N = .163E+07 LB

NASA LANGLEY FLIGHT DATA AH-1G ---- ROTOR PERFORMANCE AND LOADS

FLIGHT NO. 81 MU= .343 TOTAL CQ= .000439 AMB TEMP= 11.8 C = 53.32 F
 RUN NO. 12 V= 152.1 KT MAST CQ= .000410 TEMP U60= 31.9 C = 89.35 F
 TIME 50236.95 NZ= 1.028 G OMEGA= 34.021 RAD/SEC CAN TEMP= 22.6 C = 72.72 F
 CLP= .00505 RPM/324= 1.003

ROTOR ANGLES THETA 3/4 (DEG) A0= 12.9 A1= -1.0 B1= 9.2 PEAK-TO-PEAK= 18.2
 TEETER ANG (DEG) A0= .3 A1= -1.6 B1= -.8 PEAK-TO-PEAK= 3.5

ROTOR LOADS (AMP/PHASE) DRAG BRACE CHORD .449 CHORD .803 PITCH LINK TORSION .449
 (N/DEG) (N-M/DEG) (N-M/DEG) (N-M/DEG)

	MEAN	37704.	1363.	-3142.	-4481.	-663.				
HARMONIC-1	7396./	-60.6	1679./	-66.4	344./	-64.2	4040./	-43.6	492./	-46.8
2	1098./	-51.5	399./	-29.8	108./	-25.1	3028./	-52.3	311./	-66.2
3	5086./	46.5	1222./	46.3	241./	53.0	490./	76.9	103./	-2.9
4	894./	-6.8	491./	-5.4	178./	-16.0	509./	66.2	67./	6.2
5	406./	84.9	192./	-70.3	71./	-76.3	262./	.5	52./	19.7
6	728./	-62.7	377./	-63.6	123./	-61.3	232./	-.2	26./	14.3
7	67./	-18.0	69./	-56.8	25./	-29.7	15./	43.1	7./	-61.3
8	112./	33.8	126./	9.6	43./	8.7	48./	-11.3	4./	-41.0
9	94./	-15.0	26./	80.4	18./	-81.7	32./	-15.9	4./	21.9
10	111./	8.6	66./	-75.0	45./	-70.2	52./	78.8	3./	-14.4
11	42./	68.9	80./	-17.7	42./	-28.6	14./	3.7	5./	79.3
12	69./	-14.1	22./	-46.7	18./	-35.5	10./	-9.2	2./	-8.3
PEAK-TO-PEAK	25320.		5924.		1346.		12605.		1358.	

	BEAM .174 (N-M/DEG)	BEAM .350 (N-M/DEG)	BEAM .449 (N-M/DEG)	BEAM .606 (N-M/DEG)	BEAM .803 (N-M/DEG)					
MEAN	-1588.	-114.	-143.	-386.	-425.					
HARMONIC-1	1732./	-67.8	656./	-67.9	607./	-66.4	560./	-69.4	259./	85.9
2	694./	-51.4	402./	-88.3	399./	86.6	327./	-89.9	147./	-55.5
3	503./	20.2	37./	-42.8	103./	60.8	242./	51.4	257./	47.0
4	342./	40.8	105./	6.0	54./	-22.1	71./	29.0	125./	.6
5	99./	-41.6	9./	13.1	30./	-7.1	8./	-20.0	75./	-2.9
6	37./	-8.6	14./	10.5	19./	-35.1	14./	83.3	23./	-58.5
7	12./	-69.0	7./	27.7	14./	78.4	13./	-57.9	28./	-87.7
8	23./	87.3	5./	-46.4	15./	64.6	7./	79.6	21./	-89.4
9	10./	-21.5	5./	20.2	10./	-52.8	10./	63.4	12./	-82.4
10	38./	66.6	21./	77.7	12./	52.2	25./	84.9	20./	-83.8
11	27./	-86.5	4./	-87.1	9./	72.0	9./	-73.9	6./	-61.5
12	12./	58.3	3./	65.8	3./	74.3	4./	73.1	1./	-66.3
PEAK-TO-PEAK	5222.		1910.		1783.		1750.		1305.	

FLIGHT NO. 081 AIRCRAFT TOTAL WT = 35786. N LOADED CG X = 5.05 M = 198.7 IN
 RUN NO. 13 8045. LB Y = -.00 = -.0
 TIME 50398.90 (SEC) Z = 1.83 = 72.0

AERODYNAMIC FLIGHT STATE

DYNAMIC PRES = 3.49 KPA = 72.9 PSF
 STATIC PRES = 81.5 KPA = 1701. PSF
 TOTAL TEMP = 288.7 DEG K = 519.7 DEG R
 STATIC TEMP = 285.2 DEG K = 513.4 DEG R
 T. AIRSPEED = 161.8 KT
 A/C MACH NO = .246
 BODY ALPHA = -5.5 DEG DENSITY = 1.00 KG/M3 = .00193 SLUG/FT3
 BODY BETA = -.8 DEG DENSITY ALT = 2114. M = 6936. FT
 SONIC SPEED = 339.1 M/SEC = 1113. FPS
 RATE OF CLIMB = -20. M/MIN = -67. FPM

INERTIAL FLIGHT STATE

AXIS	CG LIN VEL (M/S)	CG LIN VEL (FPS)	CG LIN ACC (G)	HUB LIN VEL (M/S)	HUB LIN VEL (FPS)	HUB LIN ACC (G)	AXIS	ANG POS (DEG)	ANG RATES (RAD/SEC)	ANG ACC (RAD/SEC2)
X	82.82	271.7	-.116	82.80	271.7	-.114	ROLL	-2.0	-.001	.023
Y	-1.20	-3.9	.024	-1.20	-3.9	.029	PITCH	-5.7	.011	-.010
Z	-7.99	-26.2	-1.085	-7.99	-26.2	-1.085	YAW	168.7	-.000	-.022

CONTROL ANGLES

M.R. COLL = 16.6 DEG HORIZ FIN = 11.2 DEG
 A1 = -.3 DEG T.R. COLL = 4.4 DEG
 B1 = 8.9 DEG PEDAL POS = 4.9 DEG

ROTOR PARAMETERS

HOVER TIP MACH = .66 SHAFT ALPHA = -5.5 DEG
 CONTROL ALPHA = -14.4 DEG
 TIP MAX-MACH = .91 DELTA PSI = .8 DEG
 TIP MIN-MACH = .42
 .9R MAX-MACH = .84 ENGINE POWER = 814. KW = 1092. HP
 .9R MIN-MACH = .35 THRUST FACTOR = .707E+07 N = .159E+07 LB

NASA LANGLEY FLIGHT DATA AH-1G ---- ROTOR PERFORMANCE AND LOADS

FLIGHT NO. 81 MU = .371 TOTAL CQ = .000512 AMB TEMP = 12.1 C = 53.78 F
 V = 161.8 KT MAST CQ = .000481 TEMP U60 = 31.9 C = 89.44 F
 RUN NO. 13 NZ = 1.085 G OMEGA = 33.484 RAD/SEC CAN TEMP = 21.8 C = 71.32 F
 TIME 50398.83 CLP = .00547 RPM/324 = .987

ROTOR ANGLES

THETA 3/4 (DEG) AO = 14.4 A1 = -1.6 B1 = 10.3 PEAK-TO-PEAK = 20.4
 TEETER ANG (DEG) AO = .3 A1 = -1.1 B1 = -.9 PEAK-TO-PEAK = 2.5

ROTOR LOADS (AMP/PHASE)

	DRAG BRACE (N/DEG)	CHORD .449 (N-M/DEG)	CHORD .803 (N-M/DEG)	PITCH LINK (N/DEG)	TORSION .449 (N-M/DEG)
MEAN	33970.	1847.	-2955.	-4751.	-715.
HARMONIC-1	10250./ -59.7	2417./ -64.4	450./ -59.3	4688./ -42.8	531./ -41.5
2	1566./ -35.1	570./ -15.8	109./ -10.4	3209./ -45.1	318./ -65.6
3	7592./ 54.6	1862./ 54.1	386./ 56.5	725./ 80.4	131./ -7.4
4	971./ -20.1	573./ -11.4	221./ -16.6	556./ 73.4	77./ 10.3
5	282./ 76.6	180./ -56.5	62./ -66.8	324./ 11.6	73./ 32.7
6	869./ -62.7	437./ -64.2	132./ -64.2	215./ 31.4	32./ 57.9
7	231./ -74.8	182./ -82.2	64./ -75.3	87./ 39.3	9./ -75.2
8	252./ 54.9	196./ 35.4	74./ 34.5	41./ -49.4	12./ -34.2
9	140./ 1.1	112./ -32.1	50./ -25.8	23./ -78.3	6./ -2.9
10	112./ -13.1	52./ 49.9	35./ 72.4	21./ 13.7	4./ -21.5
11	53./ -46.4	115./ .3	57./ -12.2	21./ -79.0	4./ -51.2
12	67./ -29.8	42./ -45.5	20./ -53.9	43./ -88.9	6./ -47.5
PEAK-TO-PEAK	35692.	9078.	2018.	14343.	1454.

	BEAM .174 (N-M/DEG)	BEAM .350 (N-M/DEG)	BEAM .449 (N-M/DEG)	BEAM .606 (N-M/DEG)	BEAM .803 (N-M/DEG)
MEAN	-1257.	-77.	-130.	-379.	-421.
HARMONIC-1	2260./ -66.9	773./ -66.7	687./ -65.5	629./ -68.4	324./ 85.8
2	770./ -37.8	450./ -82.1	447./ -88.9	371./ -84.7	188./ -43.2
3	693./ 31.6	46./ -43.7	152./ 61.6	332./ 52.4	341./ 49.8
4	334./ 52.4	111./ 10.3	64./ -23.3	69./ 39.8	116./ -.3
5	109./ -33.5	10./ 6.0	37./ -7.3	8./ -23.1	85./ -1.1
6	38./ 8.4	18./ 39.0	13./ -21.2	19./ 83.1	8./ -64.5
7	15./ 19.2	10./ -25.8	6./ 59.8	15./ -49.6	27./ -82.0
8	39./ 65.2	2./ -16.1	15./ 54.0	10./ -70.4	25./ -82.3
9	13./ -76.6	7./ 49.3	9./ -66.4	10./ 81.0	16./ -58.9
10	15./ 79.3	14./ 75.1	10./ 55.0	18./ 82.2	14./ -70.6
11	9./ -21.0	1./ -75.8	9./ 69.1	3./ -68.3	3./ -.6
12	13./ 68.3	2./ -75.7	1./ 40.8	4./ -61.2	3./ -59.5
PEAK-TO-PEAK	6688.	2242.	2008.	2027.	1548.

FLIGHT NO. 081 AIRCRAFT TOTAL WT = 35784. N LOADED CG X= 5.05 M = 198.7 IN
 RUN NO. 13 8045. LB Y= -.00 = -.0
 TIME 50399.90 (SEC) Z= 1.83 = 72.0

AERODYNAMIC FLIGHT STATE DYNAMIC PRES= 3.48 KPA = 72.7 PSF
 STATIC PRES= 81.5 KPA = 1702. PSF
 T. AIRSPEED= 161.5 KT TOTAL TEMP= 288.7 DEG K = 519.6 DEG R
 A/C MACH NO= .245 STATIC TEMP= 285.2 DEG K = 513.4 DEG R
 BODY ALPHA= -5.4 DEG DENSITY= 1.00 KG/M3 = .00193 SLUG/FT3
 BODY BETA= -1.0 DEG DENSITY ALT= 2113. M = 6932. FT
 SONIC SPEED= 339.1 M/SEC = 1113. FPS
 RATE OF CLIMB= 12. M/MIN = 40. FPM

INERTIAL FLIGHT STATE

AXIS	CG LIN VEL (M/S)	CG LIN VEL (FPS)	CG LIN ACC (G)	HUB LIN VEL (M/S)	HUB LIN VEL (FPS)	HUB LIN ACC (G)	AXIS	ANG POS (DEG)	ANG RATES (RAD/SEC)	ANG ACC (RAD/SEC2)
X	82.71	271.4	-.113	82.70	271.3	-.112	ROLL	-2.1	.001	.022
Y	-1.42	-4.7	.041	-1.42	-4.7	.045	PITCH	-5.3	.003	-.008
Z	-7.89	-25.9	-1.061	-7.89	-25.9	-1.061	YAW	167.9	.001	.031

CONTROL ANGLES M.R. COLL= 16.6 DEG HORIZ FIN= 11.4 DEG
 A1= -.3 DEG T.R. COLL= 4.4 DEG
 B1= 9.2 DEG PEDAL POS= 4.9 DEG

ROTOR PARAMETERS

HOVER TIP MACH= .66 SHAFT ALPHA= -5.4 DEG
 CONTROL ALPHA= -14.6 DEG
 TIP MAX-MACH= .91 DELTA PSI= 1.0 DEG
 TIP MIN-MACH= .42
 .9R MAX-MACH= .84 ENGINE POWER= 819. KW = 1099. HP
 .9R MIN-MACH= .35 THRUST FACTOR= .706E+07 N = .159E+07 LB

NASA LANGLEY FLIGHT DATA AH-1G ---- ROTOR PERFORMANCE AND LOADS

FLIGHT NO. 81 MU= .371 TOTAL CQ= .000517 AMR TEMP= 12.1 C = 53.75 F
 RUN NO. 13 V= 161.5 KT MAST CQ= .000490 TEMP U60= 31.9 C = 89.38 F
 TIME 50399.78 NZ= 1.061 G OMEGA= 33.446 RAD/SEC CAN TEMP= 21.8 C = 71.32 F
 CLP= .00537 RPM/324= .986

ROTOR ANGLES THETA 3/4 (DEG) A0= 14.4 A1= -1.6 B1= 10.6 PEAK-TO-PEAK= 21.4
 TEETER ANG (DEG) A0= .3 A1= -1.3 B1= -1.0 PEAK-TO-PEAK= 3.1

ROTOR LOADS (AMP/PHASE)	DRAG BRACE (N/DEG)	CHORD .449 (N-M/DEG)	CHORD .803 (N-M/DEG)	PITCH LINK (N/DEG)	TORSION .449 (N-M/DEG)
MEAN	33605.	1895.	-2940.	-4766.	-708.
HARMONIC-1	10108./ -61.7	2392./ -66.7	445./ -62.2	4735./ -42.8	541./ -41.4
2	1265./ -33.1	528./ -11.3	107./ -4.5	3215./ -43.9	322./ -62.9
3	7406./ 55.4	1785./ 54.5	369./ 56.7	737./ 77.3	129./ -7.5
4	1027./ -15.2	568./ -11.8	220./ -17.4	578./ 79.1	71./ 7.1
5	247./ 80.7	158./ -54.3	47./ -66.9	307./ 8.1	61./ 30.3
6	859./ -60.9	431./ -64.5	133./ -62.2	254./ 29.4	36./ 44.8
7	298./ -70.5	193./ -64.8	58./ -55.9	67./ 8.4	8./ -60.9
8	203./ 42.0	172./ 37.7	61./ 34.7	34./ -58.0	10./ -43.9
9	165./ -6.1	116./ -15.1	56./ -19.4	27./ -17.9	6./ 20.2
10	103./ 2.5	64./ 83.2	40./ 88.6	51./ 77.4	5./ 56.3
11	75./ -50.7	136./ -3.1	72./ -3.8	9./ 87.7	4./ 83.8
12	17./ -69.4	45./ -70.3	21./ -81.3	29./ 68.9	7./ -52.4
PEAK-TO-PEAK	34653.	8683.	1860.	14452.	1465.

	BEAM .174 (N-M/DEG)	BEAM .350 (N-M/DEG)	BEAM .449 (N-M/DEG)	BEAM .606 (N-M/DEG)	BEAM .803 (N-M/DEG)
MEAN	-1252.	-74.	-127.	-373.	-412.
HARMONIC-1	2287./ -67.9	772./ -67.0	682./ -65.4	625./ -68.3	313./ 86.3
2	755./ -36.7	445./ -81.1	443./ -87.7	366./ -83.5	188./ -43.0
3	691./ 31.0	53./ -42.9	148./ 63.1	327./ 52.6	337./ 49.2
4	324./ 59.8	101./ 16.3	61./ -23.4	67./ 51.5	97./ 7.0
5	89./ -31.1	10./ -21.9	34./ -9.5	6./ -8.9	82./ -4.5
6	54./ 4.1	21./ 43.7	18./ -11.7	16./ 85.8	11./ -26.3
7	26./ -4.2	9./ -4.3	9./ 8.9	9./ -50.4	21./ 63.0
8	38./ 61.1	6./ 34.5	14./ 43.8	4./ -56.0	17./ 85.3
9	21./ -69.7	8./ 11.2	11./ -53.9	7./ 39.2	8./ -73.1
10	29./ 56.6	21./ 67.2	13./ 35.7	24./ 70.5	17./ 89.2
11	15./ -86.2	8./ 74.4	13./ 72.7	8./ 79.9	4./ -82.4
12	9./ 61.1	3./ -48.0	3./ 41.1	3./ -9.4	1./ 47.7
PEAK-TO-PEAK	6694.	2216.	2006.	2027.	1513.

FLIGHT NO. 082 AIRCRAFT TOTAL WT = 32386. N LOADED CG X= 5.03 M = 198.2 IN
 RUN NO. 35 7281. LB Y= -.00 = -.0
 TIME 05001.50 (SEC) Z= 1.87 = 73.8

AERODYNAMIC FLIGHT STATE DYNAMIC PRES= 0.00 KPA = 0.0 PSF
 T. AIRSPEED= 0.0 KT STATIC PRES= 101.2 KPA = 2114. PSF
 A/C MACH NO= 0.000 TOTAL TEMP= 299.0 DEG K = 538.2 DEG R
 STATIC TEMP= 299.0 DEG K = 538.2 DEG F
 BODY ALPHA= -48.8 DEG DENSITY= 1.18 KG/M3 = .0229 SLUG/FT3
 BODY BETA= 45.4 DEG DENSITY ALT= 393. M = 1288. FT
 SONIC SPEED= 347.2 M/SEC = 1139. FPS
 RATE OF CLIMB= 0. M/MIN = 0. FPM

INERTIAL FLIGHT STATE

AXIS	CG LIN VEL (M/S)	CG LIN VEL (FPS)	CG LIN ACC (G)	HUB LIN VEL (M/S)	HUB LIN VEL (FPS)	HUB LIN ACC (G)	AXIS	ANG POS (DEG)	ANG RATES (RAD/SEC)	ANG ACC (KAD/SEC2)
X	0.00	0.0	.011	0.00	0.0	.014	ROLL	.7	-.002	.019
Y	0.00	0.0	-.013	0.00	0.0	-.009	PITCH	1.2	.010	-.015
Z	0.00	0.0	-1.012	0.00	0.0	-1.012	YAW	17.8	-.018	-.019

CONTROL ANGLES M.F. COLL= 9.9 DEG HORIZ FIN= 6.5 DEG
 A1= -1.3 DEG T.R. COLL= 8.7 DEG
 B1= .3 DEG PEDAL POS= 9.0 DEG

ROTOR PARAMETERS HOVER TIP MACH= .06 SHAFT ALPHA= 0.0 DEG HUB HEIGHT = 1.9 R
 CONTRL ALPHA= -.3 DEG
 TIP MAX-MACH= .66 DELTA PSI= 0.0 DEG
 TIP MIN-MACH= .66
 .9R MAX-MACH= .59 THRUST FACTOR= .873E+07 N = .196E+07 LB
 .9R MIN-MACH= .59

NASA LANGLEY FLIGHT DATA AH-1G ---- ROTOR PERFORMANCE AND LOADS

FLIGHT NO. 82 MU=0.000 TOTAL CQ= .000278 AMB TEMP= 25.9 C = 78.55 F
 RUN NO. 35 V= 0.0 KT MAST CQ= .000231 TEMP U60= 39.9 C = 103.75 F
 TIME 68001.68 NZ= 1.021 G OMEGA= 34.040 RAD/SEC CAN TEMP= 30.8 C = 87.39 F
 CLP= .06371 KPM/324= 1.003

ROTOR ANGLES THETA 3/4 (DEG) A0= 7.8 A1= -1.4 B1= .6 PEAK-TO-PEAK= 3.0
 TFLTER ANG (DEG) A0= .2 A1= .4 B1= -.5 PEAK-TO-PEAK= 1.3

ROTOR LOADS (AMP/PHASE)	DRAG BRACE (N/DEG)	CHORD .449 (N-M/DEG)	CHORD .803 (N-M/DEG)	PITCH LINK (N/DEG)	TORSION .449 (N-M/DEG)
MEAN	42136.	1121.	-2793.	-2767.	-430.
HARMONIC-1	3064./ -60.3	822./ -63.4	219./ -50.2	1012./ 69.2	31./ 15.0
2	1762./ 70.7	462./ 72.4	78./ 54.3	73./ 10.9	24./ 53.1
3	1395./ -23.1	344./ -19.8	63./ -21.9	102./ -72.2	52./ 14.2
4	266./ -5.3	140./ -54.3	47./ -59.0	97./ -23.6	18./ -63.6
5	590./ 68.2	143./ 80.6	40./ 89.2	37./ -72.6	15./ 69.5
6	600./ -37.6	309./ -24.7	100./ -21.9	39./ -21.4	11./ -41.6
7	187./ 7.0	61./ -27.7	16./ -47.9	75./ 25.5	4./ 75.3
8	4./ -41.8	17./ 48.9	8./ -9.4	27./ -45.1	3./ -88.7
9	62./ 27.3	65./ -21.0	26./ -17.9	51./ -61.1	3./ 47.3
10	85./ 29.1	65./ -68.9	12./ -60.5	79./ 23.4	6./ 71.4
11	156./ 58.5	59./ -81.4	29./ 86.5	46./ -80.0	12./ 83.6
12	13./ -79.3	7./ 54.4	4./ -35.3	11./ 17.2	4./ -52.6
PLAK-TU-PEAK	10577.	3044.	834.	2637.	233.

	BEAM .174 (N-M/DEG)	BEAM .350 (N-M/DEG)	BEAM .449 (N-M/DEG)	BEAM .606 (N-M/DEG)	BEAM .803 (N-M/DEG)
MEAN	-1139.	-77.	-60.	-273.	-236.
HARMONIC-1	88./ -65.2	71./ 26.1	95./ 11.3	161./ -7.6	171./ -25.7
2	45./ -87.9	31./ -28.0	43./ -18.1	66./ -27.7	81./ -41.6
3	51./ 22.1	57./ -8.0	54./ -10.0	48./ -14.3	21./ -19.8
4	71./ -54.9	38./ -69.9	17./ -72.9	20./ -63.2	38./ -72.0
5	9./ 54.7	6./ 1.6	6./ 60.3	4./ 51.8	4./ 38.1
6	28./ 86.4	7./ 36.5	8./ 89.7	12./ 50.6	16./ -77.1
7	29./ 51.6	12./ 39.2	22./ 37.6	1./ 1.7	18./ 28.4
8	13./ -89.3	8./ 88.8	14./ -88.5	5./ -36.6	3./ -55.8
9	17./ -81.3	14./ -66.2	9./ -60.5	17./ -65.3	16./ -54.1
10	29./ -4.4	19./ -2	18./ -26.5	21./ 4.2	16./ 24.6
11	9./ -82.6	18./ 81.9	5./ 77.5	15./ -89.9	11./ -89.1
12	12./ 86.9	7./ -35.1	4./ 55.9	6./ 87.9	6./ -51.7
PLAK-TU-PEAK	448.	366.	396.	500.	506.

FLIGHT NO. 062 AIRCRAFT TOTAL WT = 32409. N LOADED CG X= 5.03 M = 198.2 IN
 RUN NO. 35 7286. LB Y= -.30 = -.0
 TIME 68001.80 (SEC) Z= 1.87 = 73.8

AERODYNAMIC FLIGHT STATE DYNAMIC PRES= 0.00 KPA = 0.0 PSF
 T. AIRSPEED= 0.0 KT STATIC PRES= 101.2 KPA = 2114. PSF
 A/C MACH NU= 0.000 TOTAL TEMP= 299.0 DEG K = 538.2 DEG R
 STATIC TEMP= 299.0 DEG K = 538.2 DEG K
 BODY ALPHA= -48.6 DEG DENSITY= 1.18 KG/M3 = .00229 SLUG/FT3
 BODY BETA= 46.6 DEG DENSITY ALT= 392. M = 1286. FT
 SONIC SPEED= 347.2 M/SEC = 1139. FPS
 RATE OF CLIMB= 0. M/MIN = 0. FPM

INERTIAL FLIGHT STATE

AXIS	CG LIN VEL (M/S)	CG LIN ACC (FPS)	HUB LIN VEL (M/S)	HUB LIN ACC (FPS)	AXIS	ANG POS (DEG)	ANG RATES (RAD/SEC)	ANG ACC (RAD/SEC2)	
X	0.00	0.0	.017	0.00	0.0	ROLL	.6	-.009	-.047
Y	0.00	0.0	-.019	0.00	0.0	PITCH	1.2	.007	-.046
Z	0.00	0.0	-1.021	0.00	0.0	YAW	17.8	-.013	.026

CONTROL ANGLES M.R. COLL= 10.0 DEG HORIZ FIN= 6.6 DEG
 A1= -1.1 DEG T.R. COLL= 8.7 DEG
 B1= 1.0 DEG PEDAL POS= 9.0 DEG

ROTOR PARAMETERS

HOVER TIP MACH= .66 SHAFT ALPHA= 0.0 DEG HUB HEIGHT = 1.9 R
 CONTROL ALPHA= -1.0 DEG
 TIP MAX-MACH= .66 DELTA PSI= 0.0 DEG
 TIP MIN-MACH= .56
 .9R MAX-MACH= .59 THRUST FACTOR= .873E+07 N = .196E+07 LB
 .9R MIN-MACH= .59

NASA LANGLEY FLIGHT DATA AH-1G ---- ROTOR PERFORMANCE AND LOADS

FLIGHT NO. 62 MU=0.000 TOTAL CQ= .000280 AMB TEMP= 25.3 C = 78.46 F
 RUN NO. 35 V= 0.0 KT MAST CQ= .000238 TEMP 060= 39.9 C = 103.75 F
 TIME 68001.13 NZ= 1.016 G OMEGA= 34.116 RAD/SEC CAN TEMP= 30.6 C = 87.39 F
 CLP= .0037C RPM/324= 1.006

ROTOR ANGLES THETA 3/4 (DEG) A0= 7.8 A1= -1.6 B1= .1 PEAK-TO-PEAK= 3.2
 TEETER ANG (DEG) A0= .2 A1= .7 B1= -.7 PEAK-TO-PEAK= 1.6

ROTOR LOADS (AMP/PHASE)	URAG BRACE (N/DEG)	CHORD .449 (N-M/DEG)	CHORD .803 (N-M/DEG)	PITCH LINK (N/DEG)	TORSION .449 (N-M/DEG)
MEAN	41661.	1281.	-2768.	-2704.	-427.
HARMONIC-1	2166./ -18.9	707./ -20.3	216./ -20.3	954./ -79.9	22./ -3.0
2	1078./ 79.1	271./ 76.1	30./ -80.5	99./ -19.2	17./ 79.2
3	1042./ 45.8	247./ 46.9	49./ 44.0	124./ -50.0	29./ 69.4
4	237./ -78.2	125./ -45.5	37./ -33.3	88./ 57.0	21./ -38.0
5	168./ -63.5	41./ 67.8	6./ -42.6	99./ -6.5	18./ 4.1
6	293./ -89.4	133./ 78.3	33./ -86.9	60./ 54.7	8./ 51.5
7	100./ 57.0	14./ 22.8	8./ 78.2	44./ -65.9	6./ -68.0
8	122./ 5.9	73./ 10.1	24./ 9.1	29./ 63.5	1./ 33.1
9	61./ -31.1	29./ -25.9	7./ -38.4	14./ -26.8	3./ 16.0
10	48./ 10.0	52./ 31.5	20./ 33.1	44./ 88.2	1./ 36.6
11	90./ 35.3	19./ 69.7	7./ 61.2	24./ 49.6	6./ 73.9
12	78./ -85.1	18./ 46.4	16./ -66.8	19./ 65.3	4./ 23.1
PEAK-TO-PEAK	6124.	2117.	675.	2094.	162.

	BEAM .174 (N-M/DEG)	BEAM .350 (N-M/DEG)	BEAM .449 (N-M/DEG)	BEAM .606 (N-M/DEG)	BEAM .803 (N-M/DEG)
MEAN	-1114.	-70.	-60.	-224.	-240.
HARMONIC-1	55./ 23.9	63./ 8.5	95./ 9.0	172./ -5.8	178./ -19.4
2	48./ 54.3	34./ 13.8	38./ -2.8	57./ -10.4	89./ -31.1
3	27./ 11.3	38./ 6.9	29./ 12.5	21./ 10.2	8./ -40.8
4	29./ -4.4	18./ -18.3	13./ -34.1	14./ 79.4	18./ 50.9
5	50./ 66.2	13./ 70.5	9./ 63.8	20./ 72.1	8./ 72.1
6	36./ 38.5	4./ -26.2	9./ 28.1	15./ 2.4	13./ 37.7
7	20./ -36.6	9./ -60.0	17./ -59.2	8./ 75.9	18./ -71.7
8	6./ -23.1	4./ 40.8	3./ 15.5	2./ -64.6	5./ 38.5
9	11./ 33.1	8./ -6.7	6./ -19.0	11./ 28.1	6./ 44.7
10	9./ -88.3	11./ 86.7	10./ -89.9	8./ -86.5	8./ -57.0
11	4./ 75.2	10./ 62.5	3./ 4.8	7./ 77.6	4./ -78.0
12	3./ -61.8	5./ 42.8	1./ 44.8	4./ -43.4	1./ 81.1
PEAK-TO-PEAK	288.	235.	292.	400.	461.

FLIGHT NO. 083 AIRCRAFT TOTAL WT = 35216. N LOADED CG X= 5.11 M = 201.1 IN
 RUN NO. 17 7917. LB Y= -0.00 = -0.0
 TIME 51948.20 (SEC) Z= 1.83 = 72.1

AERODYNAMIC FLIGHT STATE DYNAMIC PRES= 1.73 KPA = 36.1 PSF
 STATIC PRES= 90.9 KPA = 1898. PSF
 T. AIRSPEED= 108.5 KT TOTAL TEMP= 288.7 DEG K = 519.7 DEG R
 A/C MACH NO= .164 STATIC TEMP= 287.2 DEG K = 516.9 DEG R
 BODY ALPHA= 3.9 DEG DENSITY= 1.10 KG/M3 = .00214 SLUG/FT3
 BODY BETA= 2.1 DEG DENSITY ALT= 1082. M = 3549. FT
 SONIC SPEED= 340.3 M/SEC = 1116. FPS
 RATE OF CLIMB= -413. M/MIN = -1356. FPM

INERTIAL FLIGHT STATE

AXIS	CG LIN VEL (M/S)	CG LIN VEL (FPS)	CG LIN ACC (G)	HUB LIN VEL (M/S)	HUB LIN VEL (FPS)	HUB LIN ACC (G)	AXIS	ANG POS (DEG)	ANG RATES (RAD/SEC)	ANG ACC (RAD/SEC2)
X	55.66	182.6	-.050	55.65	182.6	-.045	ROLL	-1.2	-.003	.044
Y	2.05	6.7	-.016	2.05	6.7	-.007	PITCH	-3.3	.005	-.027
Z	3.76	12.3	-1.028	3.76	12.3	-1.028	YAW	195.9	.005	.015

CONTROL ANGLES M.R. COLL= 7.6 DEG HORIZ FIN= 7.9 DEG
 A1= 1.2 DEG T.R. COLL= .9 DEG
 B1= 4.6 DEG PEDAL POS= 1.3 DEG

ROTOR PARAMETERS HOVER TIP MACH= .68 SHAFT ALPHA= 3.9 DEG
 CONTROL ALPHA= -.7 DEG
 TIP MAX-MACH= .84 DELTA PSI= -2.1 DEG
 TIP MIN-MACH= .51
 .9R MAX-MACH= .77 ENGINE POWER= 241. KW = 323. HP
 .9R MIN-MACH= .44 THRUST FACTJR= .822E+07 N = .185E+07 LB

NASA LANGLEY FLIGHT DATA AH-1G ---- ROTOR PERFORMANCE AND LOADS

FLIGHT NO. 83 MU= .242 TOTAL CG= .000127 AMB TEMP= 14.0 C = 57.26 F
 RUN NO. 17 V= 108.5 KT MAST CG= .000111 TFMP U60= 32.2 C = 90.00 F
 TIME 51948.08 NZ= 1.028 G OMEGA= 34.355 RAD/SEC CAN TEMP= 23.8 C = 74.81 F
 CLP= .00438 RPM/324= 1.013

ROTOR ANGLES THETA 3/4 (DEG) AO= 6.3 A1= .2 B1= 4.9 PEAK-TO-PEAK= 9.7
 TEETER ANG (DEG) AO= .2 A1= -1.6 B1= .5 PEAK-TO-PEAK= 3.1

ROTOR LOADS (AMP/PHASE) DRAG BRACE CHORD .449 CHORD .803 PITCH LINK TORSION .449
 (N/DEG) (N-M/DEG) (N-M/DEG) (N-M/DEG)

	MEAN	48126.	-370.	-3487.	-1715.	-377.				
HARMONIC-1	2282./	-0	438./	5.3	108./	-17.4	2235./	-36.6	319./	-56.5
2	581./	-10.1	207./	-37.0	21./	-83.5	1667./	-54.1	142./	-41.6
3	2316./	17.2	548./	21.9	93./	23.3	301./	-34.0	60./	1.6
4	467./	24.5	341./	16.5	152./	6.5	511./	59.8	105./	18.9
5	533./	16.4	120./	53.7	58./	60.4	274./	6.0	40./	58.1
6	443./	-78.8	203./	-77.6	63./	-83.0	150./	-71.1	20./	80.4
7	79./	-52.4	70./	-31.0	33./	-51.5	135./	-30.1	15./	19.3
8	48./	15.0	24./	47.5	9./	-10.1	35./	24.3	12./	22.1
9	67./	12.9	45./	34.6	18./	32.9	62./	-77.7	7./	17.8
10	83./	26.6	112./	71.0	56./	66.7	38./	-.3	5./	58.5
11	72./	-6.1	40./	78.5	15./	49.3	14./	69.7	7./	38.9
12	11./	-66.6	7./	1.2	12./	-36.9	23./	-57.4	4./	-77.7
PEAK-TO-PEAK	8748.		2359.		822.		7475.		888.	

	BEAM .174 (N-M/DEG)	BEAM .350 (N-M/DEG)	BEAM .449 (N-M/DEG)	BEAM .606 (N-M/DEG)	BEAM .803 (N-M/DEG)					
MEAN	-2290.	-277.	-302.	-544.	-448.					
HARMONIC-1	530./	-51.7	393./	-70.0	398./	-72.3	366./	-76.9	151./	88.0
2	341./	-64.6	255./	-81.4	276./	-79.9	239./	-77.7	68./	-72.8
3	158./	88.1	53./	-40.6	46./	20.5	83./	56.8	87./	46.6
4	501./	32.5	148./	14.5	66./	11.1	110./	28.7	175./	20.1
5	223./	-17.5	19./	-47.9	37./	16.9	43./	-20.8	24./	58.1
6	23./	65.8	12./	-62.7	32./	-88.4	10./	67.7	61./	-74.2
7	93./	-37.4	24./	-35.9	33./	-16.6	8./	-86.1	34./	49.2
8	43./	-54.1	16./	-50.4	9./	-30.7	14./	-55.7	22./	-66.8
9	23./	84.9	19./	-88.5	4./	69.9	23./	-63.6	27./	-50.3
10	14./	-20.5	12./	-28.8	5./	-3.1	18./	-8.4	22./	-11.8
11	8./	-24.3	3./	-52.2	4./	-29.2	4./	-33.8	8./	-38.2
12	25./	64.1	12./	68.6	7./	33.1	7./	58.2	1./	29.0
PEAK-TO-PEAK	2655.		1336.		1268.		1232.		845.	

NASA LANGLEY FLIGHT DATA AH-1G ---- PADS PCM DATA

FLIGHT NO. 083 AIRCRAFT TOTAL WT = 34933. N LOADED CG X= 5.11 M = 201.1 IN
 RUN NO. 22 7854. LB Y= -.00 = -.0
 TIME 52389.20 (SEC) Z= 1.83 = 72.2

AERODYNAMIC FLIGHT STATE DYNAMIC PRES= 1.65 KPA = 34.4 PSF
 STATIC PRES= 90.0 KPA = 1879. PSF
 T. AIRSPEED= 106.5 KT TOTAL TEMP= 288.0 DEG K = 518.3 DEG R
 A/C MACH NO= .161 STATIC TEMP= 286.5 DEG K = 515.6 DEG R
 BODY ALPHA= -8.1 DEG DENSITY= 1.09 KG/M3 = .00212 SLUG/FT3
 BODY BETA= 1.3 DEG DENSITY ALT= 1160. M = 3804. FT
 SONIC SPEED= 339.9 M/SEC = 1115. FPS
 RATE OF CLIMB= 374. M/MIN = 1228. FPM

INERTIAL FLIGHT STATE

AXIS	CG LIN VEL (M/S)	CG LIN VEL (FPS)	CG LIN ACC (G)	HUB LIN VEL (M/S)	HUB LIN VEL (FPS)	HUB LIN ACC (G)	AXIS	ANG POS (DEG)	ANG PATES (RAD/SEC)	ANG ACC (RAD/SEC2)
X	54.20	177.8	-.029	54.20	177.8	-.029	ROLL	-.4	-.000	-.012
Y	1.27	4.2	.010	1.27	4.2	.008	PITCH	-1.6	.000	.001
Z	-7.70	-25.3	-1.014	-7.70	-25.3	-1.014	YAW	5.9	-.006	-.009

CONTROL ANGLES M.R. COLL= 13.1 DEG HORIZ FIN= 9.2 DEG
 A1= -.3 DEG T.R. COLL= 3.9 DEG
 B1= 6.6 DEG PEDAL POS= 4.0 DEG

ROTOR PARAMETERS

HOVER TIP MACH= .66 SHAFT ALPHA= -8.1 DEG
 CONTROL ALPHA= -14.7 DEG
 TIP MAX-MACH= .82 DELTA PSI= -1.3 DEG
 TIP MIN-MACH= .50
 .9R MAX-MACH= .75 ENGINE POWER= 692. KW = 928. HP
 .9R MIN-MACH= .43 THRUST FACTOR= .776E+07 N = .174E+07 LB

NASA LANGLEY FLIGHT DATA AH-1G ---- ROTOR PERFORMANCE AND LOADS

FLIGHT NO. 83 MU= .244 TOTAL CQ= .000395 AMB TEMP= 13.3 C = 55.97 F
 V= 106.5 KT MAST CQ= .000367 TEMP U60= 37.1 C = 89.77 F
 RUN NO. 22 NZ= 1.014 G OMEGA= 33.523 RAD/SEC CAN TEMP= 23.4 C = 74.12 F
 TIME 52389.09 CLP= .00453 RPM/324= .988

ROTOR ANGLES THETA 3/4 (DEG) A0= 11.1 A1= -1.0 B1= 7.0 PFAK-TO-PEAK= 13.9
 TEETER ANG (DEG) A0= .3 A1= -2.0 B1= -.7 PFAK-TO-PEAK= 4.0

ROTOR LOADS (AMP/PHASE) DRAG BRACE CHORD .449 CHORD .803 PITCH LINK TORSION .449
 (N/DEG) (N-M/DEG) (N-M/DEG) (N-M/DEG)

	MEAN	37144.	1363.	-2973.	-3707.	-548.
HARMONIC-1	5514./ -39.7	1194./ -45.2	246./ -46.0	2629./ -26.4	312./ -43.6	
2	778./ -29.0	224./ -23.6	49./ -45.7	1020./ -63.0	137./ -67.9	
3	2500./ 62.7	625./ 58.5	106./ 67.3	301./ -27.5	87./ 21.1	
4	176./ -2.5	111./ 31.3	61./ 23.9	122./ 65.6	21./ 54.8	
5	429./ -80.1	122./ 59.6	23./ 63.9	226./ -77.2	32./ -77.4	
6	572./ -65.2	307./ -61.7	98./ -65.9	7./ -15.9	6./ -60.6	
7	121./ 21.6	43./ 78.7	23./ 61.5	7./ 76.4	2./ -60.9	
8	153./ 29.5	63./ 7.1	32./ 15.2	18./ 50.2	2./ -39.3	
9	38./ -28.3	74./ 51.5	31./ 53.3	11./ -62.6	2./ 61.7	
10	13./ -36.5	40./ -89.8	13./ -85.0	18./ 82.9	4./ 51.4	
11	34./ 32.3	24./ -14.9	14./ 34.7	10./ -70.9	5./ 60.7	
12	20./ -65.0	23./ 17.6	18./ 19.3	8./ -33.9	3./ 17.4	
PEAK-TO-PEAK	16397.	4062.	856.	6352.	799.	

BEAM .174 BEAM .350 BEAM .449 BEAM .606 BEAM .803
 (N-M/DEG) (N-M/DEG) (N-M/DEG) (N-M/DEG) (N-M/DEG)

	MEAN	-1664.	-103.	-140.	-410.	-453.
HARMONIC-1	1114./ -59.1	420./ -66.6	405./ -66.8	382./ -69.7	156./ 89.0	
2	234./ -53.2	175./ -84.8	186./ -81.1	174./ -69.0	103./ -38.6	
3	101./ -7.3	49./ 72.5	61./ 81.2	98./ -82.2	73./ -68.1	
4	109./ 58.7	33./ 42.3	19./ 38.2	27./ 54.4	59./ 43.0	
5	87./ -89.3	9./ 33.2	2./ -68.0	8./ 62.4	20./ 53.8	
6	47./ -57.8	5./ 59.5	5./ -34.5	3./ 66.0	2./ 47.5	
7	23./ -29.6	8./ -22.4	13./ -38.3	5./ -30.6	18./ -31.9	
8	18./ 66.5	4./ 75.3	2./ 15.7	3./ -50.5	8./ 5.8	
9	15./ -82.8	8./ -60.9	3./ -28.9	12./ -39.9	11./ -18.6	
10	18./ -62.3	7./ -58.2	6./ -38.0	7./ -61.1	6./ -53.0	
11	9./ 71.9	1./ 59.0	1./ 51.9	2./ 37.5	2./ -88.2	
12	4./ 16.4	1./ -14.0	0./ -81.4	2./ 80.6	0./ 44.4	
PEAK-TO-PEAK	2695.	1031.	1004.	1053.	528.	

FLIGHT NO. 083 AIRCRAFT TOTAL WT = 34935. N LOADED CG X= 5.11 M = 201.1 IN
 RUN NO. 23 7854. LB Y= -.00 = -.0
 TIME 52442.20 (SEC) Z= 1.83 = 77.2

AERODYNAMIC FLIGHT STATE
 T. AIRSPEED= 108.1 KT DYNAMIC PRES= 1.71 KPA = 35.8 PSF
 A/C MACH NO= .164 STATIC PRES= 90.9 KPA = 1898. PSF
 TOTAL TEMP= 288.7 DEG K = 519.6 DEG R
 STATIC TEMP= 287.1 DEG K = 516.8 DEG R
 RODDY ALPHA= 4.9 DEG DENSITY= 1.10 KG/M3 = .00214 SLUG/FT3
 RODDY BETA= .8 DEG DENSITY ALT= 1084. M = 3555. FT
 SONIC SPEED= 340.3 M/SEC = 1116. FPS
 RATE OF CLIMB= -452. M/MIN = -1481. FPM

INERTIAL FLIGHT STATE

AXIS	CG LIN VEL (M/S)	CG LIN ACC (FPS)	CG LIN ACC (G)	HUB LIN VEL (M/S)	HUB LIN ACC (FPS)	HUB LIN ACC (G)	AXIS	ANG POS (DEG)	ANG RATES (RAD/SEC)	ANG ACC (RAD/SEC2)
X	55.40	181.8	-.065	55.41	181.8	-.066	ROLL	.7	.009	.016
Y	.74	2.4	-.001	.75	2.5	.002	PITCH	-2.9	-.000	.006
Z	4.70	15.4	-1.047	4.70	15.4	-1.047	YAW	3.0	.001	-.022

CONTROL ANGLES
 M.R. COLL= 7.0 DEG HORIZ FIN= 7.3 DEG
 A1= 1.2 DEG T.R. COLL= .3 DEG
 B1= 3.5 DEG PEDAL POS= .8 DEG

ROTOR PARAMETERS

HOVER TIP MACH= .67 SHAFT ALPHA= 4.9 DEG
 CONTROL ALPHA= 1.4 DEG
 TIP MAX-MACH= .84 DELTA PSI= -.8 DEG
 TIP MIN-MACH= .51
 .9R MAX-MACH= .77 ENGINE POWER= 193. KW = 259. HP
 .9R MIN-MACH= .44 THRUST FACTOR= .813E+07 N = .183E+07 LB

NASA LANGLEY FLIGHT DATA AH-1G ---- ROTOR PERFORMANCE AND LOADS

FLIGHT NO. 83 MU= .243 TOTAL CO= .000103 AMR TFMP= 14.0 C = 57.17 F
 RUN NO. 23 V= 108.1 KT HAST CO= .000088 TEMP U60= 31.5 C = 88.78 F
 TIME 52442.06 NZ= 1.047 G OMEGA= 34.190 RAD/SEC CAN TFMP= 23.0 C = 73.42 F
 CLP= .00447 RPM/324= 1.008

ROTOR ANGLES
 THETA 3/4 (DEG) A0= 5.7 A1= -.0 B1= 3.8 PFAK-TO-PEAK= 7.7
 TEETER ANG (DEG) A0= .2 A1= -1.0 B1= .5 PFAK-TO-PEAK= 2.1

ROTOR LOADS (AMP/PHASE)	DRAG BRACE (N/DEG)	CHORD .449 (N-M/DEG)	CHORD .803 (N-M/DEG)	PITCH LINK (N/DEG)	TORSION .449 (N-M/DEG)
MEAN	48677.	-529.	-3468.	-1390.	-356.
HARMONIC-1	2609./ 4.7	483./ 7.2	115./ -14.9	2286./ -36.4	310./ -55.4
2	519./ -80.6	64./ 75.5	19./ -11.0	1176./ -53.3	95./ -37.8
3	1990./ 18.6	450./ 23.2	75./ 30.3	309./ -24.1	49./ 12.7
4	541./ 49.5	325./ 26.9	142./ 13.2	395./ 66.3	83./ 20.3
5	581./ 17.5	141./ 40.0	67./ 61.2	271./ 12.6	35./ 63.5
6	409./ -50.2	235./ -26.9	69./ -40.9	182./ -78.3	24./ 86.2
7	77./ 57.4	58./ -85.0	28./ -85.6	70./ -11.1	11./ 40.4
8	70./ 43.7	46./ 27.9	14./ 57.6	31./ 62.5	11./ 45.3
9	30./ 32.9	58./ 82.3	22./ 86.1	46./ -29.4	1./ -24.7
10	132./ -6.4	78./ 81.1	51./ 78.3	41./ 65.2	6./ -72.7
11	49./ -27.6	41./ 20.2	24./ 20.4	34./ -66.2	8./ 55.0
12	11./ -89.8	3./ -74.5	17./ -33.4	19./ 78.7	6./ -36.5
PEAK-TO-PEAK	8742.	2208.	786.	6599.	771.

	BEAM .174 (N-M/DEG)	BEAM .350 (N-M/DEG)	BEAM .449 (N-M/DEG)	BEAM .606 (N-M/DEG)	BEAM .803 (N-M/DEG)
MEAN	-2298.	-280.	-310.	-554.	-461.
HARMONIC-1	544./ -47.5	402./ -65.7	409./ -67.9	361./ -73.7	146./ 89.7
2	313./ -61.8	227./ -79.1	253./ -76.0	231./ -77.7	89./ -70.8
3	153./ -62.8	60./ -29.5	50./ 21.7	81./ 65.8	80./ 60.4
4	435./ 33.3	135./ 17.5	57./ 22.5	93./ 25.0	162./ 22.5
5	211./ -7.8	22./ -41.5	33./ 34.5	42./ -6.9	78./ 77.8
6	53./ 48.2	17./ -64.4	36./ -87.5	13./ 36.8	62./ -70.3
7	55./ -30.7	9./ -1.0	17./ 20.4	5./ -62.2	23./ -83.8
8	39./ -32.5	10./ -14.9	6./ 12.1	9./ -38.0	17./ -46.3
9	24./ -56.2	15./ -34.0	2./ -43.6	21./ -25.2	24./ -18.9
10	28./ 41.9	21./ 29.7	10./ 35.9	20./ 29.5	21./ 24.3
11	2./ 35.0	4./ -49.4	2./ 50.7	1./ 21.4	4./ -13.4
12	9./ -69.6	9./ -64.7	5./ 65.2	5./ -85.8	2./ -87.2
PEAK-TO-PEAK	2483.	1299.	1241.	1132.	799.

NASA LANGLEY FLIGHT DATA AH-1G ---- PADS PCM DATA

FLIGHT NO. 383 AIRCRAFT TOTAL WT = 34854. N LOADED CG X= 5.11 M = 201.1 IN
 RUN NO. 24 7836. LB Y= -0.00 = -0.0
 TIME 52515.00 (SEC) Z= 1.84 = 72.3

AERODYNAMIC FLIGHT STATE DYNAMIC PRES= 1.66 KPA = 34.6 PSF
 T. AIRSPEED= 106.5 KT STATIC PRES= 90.4 KPA = 1889. PSF
 A/C MACH NO= .161 TOTAL TEMP= 288.4 DEG K = 519.0 DEG P
 STATIC TEMP= 286.9 DEG K = 516.4 DEG R
 BODY ALPHA= -9.6 DEG DENSITY= 1.10 KG/M3 = .00213 SLUG/FT3
 BODY BETA= 2.3 DEG DENSITY ALT= 1122. M = 3683. FT
 SONIC SPEED= 340.1 M/SEC = 1116. FPS
 RATE OF CLIMB= 518. M/MIN = 1699. FPM

INERTIAL FLIGHT STATE

AXIS	CG LIN VEL (M/S)	CG LIN ACC (G)	HUB LIN VEL (M/S)	HUB LIN ACC (G)	AXIS	ANG POS (DEG)	ANG RATES (RAD/SEC)	ANG ACC (RAD/SEC2)	
X	53.97	177.1	-0.013	53.95	177.0	-0.014	ROLL .3	.008	.050
Y	2.16	7.1	.004	2.17	7.1	.014	PITCH -.5	.007	.002
Z	-9.15	-30.0	-1.052	-9.16	-30.0	-1.052	YAW 5.2	-.001	-.010

CONTROL ANGLES M.R. COLL= 14.1 DEG HORIZ FIN= 9.6 DEG
 A1= -4.4 DEG T.R. COLL= 4.5 DEG
 B1= 7.0 DEG PEDAL PDS= 4.8 DEG

ROTOR PARAMETERS

HOVER TIP MACH= .67 SHAFT ALPHA= -9.6 DEG
 CONTROL ALPHA= -16.7 DEG
 TIP MAX-MACH= .83 DELTA PSI= -2.3 DEG
 TIP MIN-MACH= .51
 .9R MAX-MACH= .76 ENGINE POWER= 803. KW = 1077. HP
 .9R MIN-MACH= .44 THRUST FACTOR= .800E+07 N = .180E+07 LB

NASA LANGLEY FLIGHT DATA AH-1G ---- ROTOR PERFORMANCE AND LOADS

FLIGHT NO. 83 MU= .240 TOTAL CQ= .000438 AMR TEMP= 13.7 C = 56.69 F
 V= 106.5 KT HAST CQ= .000410 TEMP U60= 31.9 C = 89.40 F
 RUN NO. 24 NZ= 1.052 G OMEGA= 34.000 RAD/SEC CAN TEMP= 23.4 C = 74.12 F
 TIME 52514.86 CLP= .00454 RPM/324= 1.002

ROTOR ANGLES THETA 3/4 (DEG) A0= 11.7 A1= -1.0 B1= 7.3 PEAK-TO-PEAK= 14.7
 TEETER ANG (DEG) A0= .3 A1= -2.3 B1= -.8 PEAK-TO-PEAK= 4.6

ROTOR LOADS (AMP/PHASE)	DRAG BRACE (N/DEG)	CHORD .449 (N-M/DEG)	CHORD .803 (N-M/DEG)	PITCH LINK (N/DEG)	TORSION .449 (N-M/DEG)
MEAN	36677.	1686.	-3029.	-4181.	-591.
HARMONIC-1	5735./ -50.3	1256./ -56.5	245./ -53.5	2763./ -24.9	321./ -44.1
2	1093./ -80.3	294./ -71.0	73./ -84.9	929./ -72.7	131./ -75.2
3	2433./ 57.4	624./ 51.8	104./ 62.2	253./ -28.2	85./ 21.9
4	287./ 39.4	153./ 37.5	58./ 28.5	132./ 65.9	12./ 41.1
5	386./ -81.6	126./ 70.6	21./ 72.2	294./ -71.3	53./ -71.2
6	765./ -85.0	434./ -78.5	135./ -79.5	51./ 57.2	13./ 81.1
7	38./ -18.7	45./ 3.8	11./ 9.2	37./ 47.7	6./ 47.1
8	144./ -20.3	83./ .8	33./ -6.6	16./ 21.7	1./ -69.8
9	27./ -2.2	71./ 46.7	25./ 38.3	37./ -63.4	3./ 39.6
10	53./ -74.2	33./ -42.2	17./ -33.2	42./ 88.9	2./ 86.3
11	15./ -83.1	27./ 75.5	15./ 49.1	24./ 50.3	4./ 37.3
12	87./ 53.4	32./ -31.3	11./ -32.5	5./ 76.9	3./ -20.6
PEAK-TO-PEAK	16370.	3930.	786.	6726.	772.

	BEAM .174 (N-M/DEG)	BEAM .350 (N-M/DEG)	BEAM .449 (N-M/DEG)	BEAM .606 (N-M/DEG)	BEAM .803 (N-M/DEG)
MEAN	-1501.	-81.	-120.	-398.	-457.
HARMONIC-1	1207./ -64.0	420./ -69.0	400./ -68.5	380./ -70.8	163./ 87.2
2	244./ -69.1	171./ 88.2	175./ -85.8	170./ -70.6	110./ -39.5
3	92./ -16.4	53./ 67.4	66./ 74.7	84./ -88.6	68./ -71.1
4	110./ 61.5	32./ 44.4	17./ 44.3	21./ 64.6	46./ 43.1
5	97./ 86.2	6./ 35.8	5./ 70.9	10./ 63.7	10./ 37.4
6	45./ -78.7	3./ -66.1	5./ 88.8	6./ -77.9	11./ 35.3
7	33./ -6.4	8./ -47.1	14./ -38.7	4./ -11.7	17./ -20.2
8	16./ 61.8	4./ 70.2	4./ 19.1	2./ -29.8	5./ 7.5
9	13./ -67.7	5./ -9.3	2./ -48.0	9./ -15.1	10./ -10.8
10	26./ -82.1	8./ 76.4	7./ -75.8	10./ -89.8	9./ -81.0
11	9./ -73.0	2./ -33.8	0./ -.5	1./ -33.6	1./ -19.8
12	5./ 68.5	1./ 21.5	3./ -5.7	1./ 5.6	1./ -57.7
PEAK-TO-PEAK	2870.	1016.	1000.	1033.	560.

FLIGHT NO. 083 AIRCRAFT TOTAL WT = 34778. N LOADED CG X= 5.11 M = 201.1 IN
 RUN NO. 25 7819. LB Y= -.00 = -.0
 TIME 52732.50 (SEC) Z= 1.84 = 72.3

AERODYNAMIC FLIGHT STATE DYNAMIC PRES= 1.71 KPA = 35.8 PSF
 T. AIRSPED= 107.8 KT STATIC PRES= 91.5 KPA = 1911. PSF
 A/C MACH NO= .163 TOTAL TEMP= 289.1 DEG K = 520.4 DEG R
 STATIC TEMP= 287.6 DEG K = 517.6 DEG R
 BODY ALP-1A= 11.0 DEG DENSITY= 1.11 KG/M3 = .00215 SLUG/FT3
 BODY BETA= -2.3 DEG DENSITY ALT= 1028. M = 3374. FT
 SONIC SPEED= 340.5 M/SEC = 1117. FPS
 RATE OF CLIMB= -800. M/MIN = -2624. FPM

INERTIAL FLIGHT STATE

AXIS	CG LIN VEL (M/S)	CG LIN VEL (FPS)	CG LIN ACC (G)	HUB LIN VEL (M/S)	HUB LIN VEL (FPS)	HUB LIN ACC (G)	AXIS	ANG POS (DEG)	ANG RATES (RAD/SEC)	ANG ACC (RAD/SEC2)
X	54.43	178.5	-.079	54.39	178.4	-.079	ROLL	-.0	-.010	-.012
Y	-2.19	-7.2	.019	-2.21	-7.3	.017	PITCH	-2.9	.003	.001
Z	10.58	34.7	-1.082	10.58	34.7	-1.082	YAW	170.1	.002	-.019

CONTROL ANGLES M.R. COLL= 3.5 DEG HORIZ FIN= 6.7 DEG
 A1= 2.0 DEG T.R. COLL= -1.1 DEG
 B1= 1.9 DEG PEDAL POS= -.6 DEG

ROTOR PARAMETERS

SHAFT ALPHA= 11.0 DEG
 HOVER TIP MACH= .69 CONTROL ALPHA= 9.2 DEG
 TIP MAX-MACH= .85 DELTA PSI= 2.3 DEG
 TIP MIN-MACH= .52
 .9R MAX-MACH= .78 ENGINE POWER= 12. KW = 17. HP
 .9R MIN-MACH= .46 THRUST FACTOR= .859E+07 N = .193F+07 LB

NASA LANGLEY FLIGHT DATA AH-1G ---- ROTOR PERFORMANCE AND LOADS

FLIGHT NO. 83 MU= .236 TOTAL CG= .000006 AMR TEMP= 14.4 C = 57.92 F
 V= 107.8 KT MAST CG=-.000009 TEMP U60= 30.8 C = 87.50 F
 RUN NO. 25 NZ= 1.082 G OMEGA= 35.010 RAD/SEC CAN TEMP= 21.8 C = 71.32 F
 TIME 52732.41 CLP= .00436 RPM/324= 1.032

ROTOR ANGLES THETA 3/4 (DEG) A0= 2.8 A1= .4 B1= 2.2 PEAK-TO-PEAK= 4.6
 TEETER ANG (DEG) A0= .1 A1= -.9 B1= 1.1 PEAK-TO-PEAK= 2.8

ROTOR LOADS (AMP/PHASE)	DRAG BRACE (N/DEG)	CHORD .449 (N-M/DEG)	CHORD .803 (N-M/DEG)	PITCH LINK (N/DEG)	TORSION .449 (N-M/DEG)
MEAN	54853.	-1415.	-3889.	257.	-229.
HARMONIC-1	2915./ 45.4	609./ 53.5	100./ 19.2	2659./ -28.2	297./ -49.6
2	188./ -80.6	114./ -69.2	45./ 86.6	908./ -33.9	89./ -33.7
3	1493./ 28.5	337./ 39.5	67./ 53.6	417./ -21.5	37./ -.8
4	407./ 50.6	341./ 31.1	147./ 22.1	440./ 70.1	79./ 46.7
5	454./ 46.9	114./ -88.8	48./ -79.4	183./ 62.0	30./ -71.8
6	397./ 22.8	238./ 23.1	72./ 16.8	110./ -23.6	18./ -11.5
7	58./ 13.8	84./ -79.5	30./ -85.8	21./ 4.8	9./ -44.9
8	93./ -61.6	24./ -46.8	16./ -13.4	24./ 26.4	3./ -74.5
9	83./ 73.4	105./ -71.0	63./ -62.2	54./ -74.9	4./ 11.4
10	48./ 25.4	43./ -46.5	17./ -77.8	63./ 25.0	10./ 2.7
11	28./ 67.4	8./ 75.9	17./ -13.5	26./ 10.8	10./ -84.1
12	60./ -3.7	9./ -80.2	6./ 33.4	7./ -11.6	7./ 70.2
PEAK-TO-PEAK	10168.	2692.	696.	6593.	698.

	BEAM .174 (N-M/DEG)	BEAM .350 (N-M/DEG)	BEAM .449 (N-M/DEG)	BEAM .606 (N-M/DEG)	BEAM .803 (N-M/DEG)
MEAN	-2342.	-331.	-367.	-602.	-469.
HARMONIC-1	488./ -32.2	394./ -58.7	402./ -60.4	348./ -65.3	126./ -84.3
2	235./ -44.4	185./ -66.5	208./ -66.1	204./ -65.0	90./ -71.8
3	276./ -30.0	83./ -19.5	51./ 27.7	99./ 83.1	119./ 88.1
4	496./ 38.6	142./ 23.7	54./ 30.2	97./ 26.7	171./ 25.4
5	182./ 16.6	18./ -9.0	26./ 70.6	36./ 20.0	28./ -62.0
6	61./ 76.1	19./ -.0	31./ -42.3	16./ 81.0	55./ -28.9
7	13./ -31.0	4./ -85.5	10./ 9.7	12./ 15.1	35./ 12.5
8	25./ 42.9	5./ 11.1	6./ -62.1	9./ 37.2	24./ 32.4
9	27./ 86.7	18./ -81.3	6./ -85.9	21./ -78.2	23./ -88.7
10	28./ -25.1	8./ 7.3	7./ -33.6	8./ -12.6	7./ -35.1
11	13./ 63.4	8./ 58.6	5./ 86.9	5./ 78.2	1./ -53.5
12	22./ 62.9	9./ -89.1	11./ 55.6	8./ 69.8	3./ 81.9
PEAK-TO-PEAK	2227.	1224.	1108.	1052.	791.

FLIGHT NO. 083 AIRCRAFT TOTAL WT = 34657. N LOADED CG X= 5.11 M = 201.1 IN
 RUN NO. 26 7792. LB Y= -0.00 = -0.0
 TIME 52833.00 (SEC) Z= 1.84 = 72.3

AERODYNAMIC FLIGHT STATE

DYNAMIC PRES= 1.70 KPA = 35.5 PSF
 STATIC PRES= 89.6 KPA = 1871. PSF
 T. AIRSPEED= 108.3 KT TOTAL TEMP= 287.7 DEG K = 517.8 DEG R
 A/C MACH NO= .164 STATIC TEMP= 286.1 DEG K = 515.1 DEG R
 BODY ALPHA= -10.5 DEG DENSITY= 1.09 KG/M3 = .00212 SLUG/FT3
 BODY BETA= 1.8 DEG DENSITY ALT= 1192. M = 3910. FT
 SONIC SPEED= 339.7 M/SEC = 1114. FPS
 RATE OF CLIMB= 716. M/MIN = 2351. FPM

INERTIAL FLIGHT STATE

AXIS	CG LIN VEL (M/S)	CG LIN VEL (FPS)	CG LIN ACC (G)	HUB LIN VEL (M/S)	HUB LIN VEL (FPS)	HUB LIN ACC (G)	AXIS	ANG POS (DEG)	ANG RATES (RAD/SEC)	ANG ACC (RAD/SEC2)
X	54.77	179.7	-0.007	54.75	179.6	-0.011	ROLL	-0.2	-0.005	.011
Y	1.78	5.9	.008	1.77	5.8	.010	PITCH	1.9	.011	.020
Z	-10.12	-33.2	-1.056	-10.13	-33.2	-1.056	YAW	172.4	.004	-0.004

CONTROL ANGLES

M.R. COLL= 14.9 DEG HORIZ FIN= 10.0 DEG
 A1= -0.5 DEG T.R. COLL= 4.9 DEG
 R1= 7.6 DEG PEDAL POS= 5.1 DEG

ROTOR PARAMETERS

HOVER TIP MACH= .67 SHAFT ALPHA= -10.5 DEG
 CONTROL ALPHA= -18.0 DEG
 TIP MAX-MACH= .83 DELTA PSI= -1.9 DEG
 TIP MIN-MACH= .50
 .9R MAX-MACH= .77 ENGINE POWER= 863. KW = 1158. HP
 .9R MIN-MACH= .44 THRUST FACTOR= .795E+07 N = .179E+07 LB

NASA LANGLEY FLIGHT DATA AH-1G ---- ROTOR PERFORMANCE AND LOADS

FLIGHT NO. 83 MU= .244 TOTAL CQ= .000474 AMB TEMP= 13.0 C = 55.39 F
 RUN NO. 26 V= 108.3 KT HAST CQ= .000441 TEMP U60= 31.9 C = 89.37 F
 TIME 52832.85 NZ= 1.056 G OMEGA= 33.997 RAD/SEC CAN TEMP= 22.6 C = 72.72 F
 CLP= .00457 RPM/324= 1.002

ROTOR ANGLES

THETA 3/4 (DEG) A0= 12.4 A1= -1.1 B1= 8.0 PFAK-TD-PEAK= 16.2
 TEETER ANG (DEG) A0= .3 A1= -2.5 B1= -0.8 PFAK-TD-PEAK= 4.9

ROTOR LOADS (AMP/PHASE)

	DRAG BRACE (N/DEG)	CHORD .449 (N-M/DEG)	CHORD .803 (N-M/DEG)	PITCH LINK (N/DEG)	TORSION .449 (N-M/DEG)
MEAN	35581.	1989.	-2866.	-4419.	-614.
HARMONIC-1	6242./ -45.6	1422./ -50.6	288./ -46.9	2969./ -24.7	326./ -40.5
2	576./ -43.0	188./ -23.0	48./ -56.7	1082./ -64.4	150./ -68.9
3	2872./ 61.3	725./ 58.0	124./ 65.1	252./ -31.7	94./ 21.5
4	151./ -36.1	136./ 15.4	55./ 16.4	146./ 76.0	14./ 44.9
5	468./ -78.0	139./ -81.9	28./ -77.6	300./ -71.9	56./ -76.8
6	525./ -71.8	312./ -74.0	105./ -75.7	73./ -15.7	5./ 47.5
7	94./ 76.9	11./ 79.4	4./ 44.7	26./ 59.3	5./ 38.2
8	110./ -36.7	76./ -5	24./ -18.3	15./ 35.1	3./ 70.7
9	61./ -65.3	65./ 34.3	29./ 26.6	33./ -52.0	1./ 62.6
10	59./ -14.3	13./ 63.5	16./ -82.6	49./ 69.5	2./ 70.6
11	47./ 84.3	10./ 85.1	17./ 42.1	14./ -74.1	3./ 47.5
12	33./ -68.7	30./ -21.4	7./ -15.6	10./ 4.7	5./ -41.6
PEAK-TD-PEAK	18024.	4321.	865.	7219.	855.
	BEAM .174 (N-M/DEG)	BEAM .350 (N-M/DEG)	BEAM .449 (N-M/DEG)	BEAM .606 (N-M/DEG)	BEAM .803 (N-M/DEG)
MEAN	-1378.	-61.	-106.	-385.	-464.
HARMONIC-1	1382./ -61.3	446./ -67.4	412./ -67.2	390./ -70.2	166./ 84.7
2	236./ -50.6	167./ -87.3	177./ -82.7	165./ -67.5	107./ -31.8
3	134./ -8	55./ 81.7	75./ 84.5	97./ -87.8	73./ -74.9
4	103./ 74.2	28./ 54.5	16./ 39.8	23./ 75.1	42./ 52.5
5	93./ 87.5	6./ 51.0	7./ 67.2	9./ 59.0	11./ 35.9
6	29./ -75.5	6./ -74.4	4./ -15.1	3./ -87.8	9./ -4.7
7	23./ 11.7	7./ -52.6	9./ -18.5	5./ -7.4	12./ -17.8
8	18./ 70.9	5./ -73.6	5./ 35.3	5./ -24.6	6./ 1.7
9	15./ -46.8	8./ -30.2	2./ -1.2	10./ -10.9	9./ -16.2
10	26./ 74.3	11./ 52.6	6./ 74.3	12./ 66.8	11./ 71.6
11	4./ -72.6	1./ 86.2	1./ -60.9	1./ -89.6	2./ 65.7
12	2./ 76.0	1./ 44.4	3./ 20.4	1./ -47.7	1./ -79.6
PEAK-TD-PEAK	3323.	1077.	1053.	1072.	528.

FLIGHT NO. 084 AIRCRAFT TOTAL WT = 33744. N LOADED CG X= 5.03 M = 198.2 IN
 RUN NO. 8 7586. LB Y= -0.00 = -0
 TIME ***** (SEC) Z= 1.85 = 72.9

AERODYNAMIC FLIGHT STATE DYNAMIC PRES= 1.61 KPA = 33.6 PSF
 STATIC PRES= 87.3 KPA = 1822. PSF
 T. AIRSPED= 106.5 KT TOTAL TEMP= 286.5 DEG K = 515.6 DFG R
 A/C MACH NO= .162 STATIC TEMP= 285.0 DEG K = 512.9 DFG R
 BODY ALPHA= -1.5 DEG DENSITY= 1.07 KG/M3 = .00207 SLUG/FT3
 BODY BETA= 2.4 DEG DENSITY ALT= 1417. M = 4649. FT
 SONIC SPEED= 339.0 M/SEC = 1112. FPS
 RATE OF CLIMB= -76. M/MIN = -249. FPM

INERTIAL FLIGHT STATE

AXIS	CG LIN VEL (M/S)	CG LIN VEL (FPS)	CG LIN ACC (G)	HUB LIN VEL (M/S)	HUB LIN VEL (FPS)	HUB LIN ACC (G)	AXIS	ANG POS (DEG)	ANG RATES (RAD/SEC)	ANG ACC (RAD/SEC2)
X	54.71	179.5	-.077	54.52	178.9	-.085	ROLL	1.8	.019	.029
Y	2.25	7.4	-.017	2.29	7.5	-.010	PITCH	-2.8	.093	.040
Z	-1.45	-4.8	-1.204	-1.45	-4.7	-1.202	YAW	178.2	-.013	.019

CONTROL ANGLES M.R. COLL= 10.0 DEG HORIZ FIN= 7.1 DEG
 A1= .6 DEG T.R. COLL= 1.7 DEG
 B1= 2.9 DEG PEDAL POS= 2.1 DFG

ROTOR PARAMETERS

HOVER TIP MACH= .67 SHAFT ALPHA= -1.5 DEG
 CONTROL ALPHA= -4.5 DEG
 TIP MAX-MACH= .83 DELTA PSI= -2.4 DEG
 TIP MIN-MACH= .51
 .9R MAX-MACH= .77 ENGINE POWER= 398. KW = 533. HP
 .9R MIN-MACH= .44 THRUST FACTOR= .784E+07 N = .176E+07 LB

NASA LANGLEY FLIGHT DATA AH-1G ---- ROTOR PERFORMANCE AND LOADS

FLIGHT NO. 84 MU= .239 TOTAL CQ= .000220 AMB TEMP= 11.8 C = 53.27 F
 RUN NO. 8 V= 106.5 KT MAST CQ= .000202 TEMP U60= 31.5 C = 88.75 F
 TIME 101100.65 NZ= 1.202 G OMEGA= 34.212 RAD/SEC CAN TEMP= 23.8 C = 74.81 F
 CLP= .00512 RPM/324= 1.008

ROTOR ANGLES THETA 3/4 (DEG) A0= 8.1 A1= -.3 B1= 3.6 PEAK-TO-PEAK= 7.4
 TEETER ANG (DEG) A0= .1 A1= -.3 B1= .1 PEAK-TO-PEAK= .7

ROTOR LOADS (AMP/PHASE)	DRAG BRACE (N/DEG)	CHORD .449 (N-M/DEG)	CHORD .803 (N-M/DEG)	PITCH LINK (N/DEG)	TORSION .449 (N-M/DEG)
MEAN	45004.	-57.	-3502.	-2270.	-429.
HARMONIC-1	2850./ -9.1	530./ -19.5	110./ -34.9	1838./ -38.9	293./ -54.6
2	357./ 1.4	166./ -30.1	14./ 57.4	1270./ -55.1	117./ -50.1
3	1738./ 45.1	434./ 49.3	66./ 55.4	174./ 29.5	34./ 50.6
4	387./ 58.6	227./ 40.2	105./ 24.0	301./ 74.1	56./ 44.2
5	623./ -53.9	148./ -60.2	32./ -43.4	132./ -54.4	16./ 38.5
6	1335./ -14.5	740./ -20.4	225./ -18.4	91./ 27.8	29./ 35.1
7	189./ 55.5	149./ 87.9	42./ -83.1	66./ 26.8	14./ 43.1
8	173./ 48.6	109./ 75.0	36./ 73.7	36./ -56.2	9./ 67.6
9	74./ -69.2	129./ 43.5	57./ 45.3	38./ 52.3	5./ 75.4
10	101./ -2.9	79./ 55.4	38./ 68.5	57./ 44.4	4./ 26.4
11	108./ -6.3	31./ -21.3	18./ -57.6	62./ 88.0	6./ -6.3
12	164./ -28.1	78./ -50.1	50./ -57.7	17./ -77.7	8./ -76.6
PEAK-TO-PEAK	10483.	3541.	951.	5376.	715.

	BEAM .174 (N-M/DEG)	BEAM .350 (N-M/DEG)	BEAM .449 (N-M/DEG)	BEAM .606 (N-M/DEG)	BEAM .803 (N-M/DEG)
MEAN	-1869.	-139.	-210.	-481.	-532.
HARMONIC-1	458./ -50.3	347./ -69.5	367./ -69.8	385./ -70.7	199./ -86.2
2	257./ -66.1	218./ -79.7	244./ -76.4	209./ -76.6	82./ -80.1
3	49./ 31.8	61./ 26.2	55./ 45.0	52./ 82.1	62./ 77.1
4	264./ 47.8	93./ 37.5	54./ 31.8	65./ 45.9	115./ 27.7
5	113./ -67.1	15./ -70.3	7./ 58.1	18./ -62.1	43./ 88.7
6	88./ -79.4	10./ -5.1	9./ -76.1	16./ 17.7	22./ -61.9
7	27./ -64.2	6./ 56.0	10./ 53.1	9./ -3.4	25./ -60.1
8	35./ 33.9	4./ 80.0	12./ 23.8	9./ -14.1	17./ -7.0
9	21./ 54.0	15./ 62.4	5./ -85.8	16./ 89.4	17./ -74.3
10	37./ 28.8	16./ 29.5	16./ 9.9	23./ 17.5	17./ 2.3
11	9./ -85.3	9./ -61.6	6./ 15.4	2./ 7.8	4./ 87.9
12	21./ -86.3	8./ -86.4	5./ -79.2	5./ -38.7	3./ -4.5
PEAK-TO-PEAK	1775.	1091.	1160.	1129.	722.

FLIGHT NO. 084 AIRCRAFT TOTAL WT = 33715. N LOADED CG X= 5.03 M = 198.1 IN
 RUN NO. 10 7580. LB Y= -.00 = -.0
 TIME ***** (SEC) Z= 1.85 = 72.9

AERODYNAMIC FLIGHT STATE DYNAMIC PRES= 1.70 KPA = 35.5 PSF
 STATIC PRES= 87.0 KPA = 1818. PSF
 T. AIRSPEED= 109.6 KT TOTAL TEMP= 286.8 DEG K = 516.3 DEG R
 A/C MACH NO= .166 STATIC TEMP= 285.2 DEG K = 513.4 DEG R
 BODY ALPHA= 2.1 DEG DENSITY= 1.06 KG/M3 = .00206 SLUG/FT3
 BODY BETA= 5.5 DEG DENSITY ALT= 1451. M = 4761. FT
 SONIC SPEED= 339.1 M/SEC = 1113. FPS
 RATE OF CLIMB= -282. M/MIN = -924. FPM

INERTIAL FLIGHT STATE

AXIS	CG LIN VEL (M/S)	CG LIN VEL (FPS)	CG LIN ACC (G)	HUB LIN VEL (M/S)	HUB LIN VEL (FPS)	HUB LIN ACC (G)	AXIS	ANG POS (DEG)	ANG RATES (RAD/SEC)	ANG ACC (RAD/SEC2)
X	56.10	184.1	-.083	55.81	183.1	-.078	ROLL	.0	-.003	.060
Y	5.42	17.8	-.056	5.41	17.7	-.044	PITCH	-2.7	.144	-.026
Z	2.06	6.8	-1.519	2.07	6.8	-1.515	YAW	362.1	.017	.008

CONTROL ANGLES M.R. COLL= 10.1 DEG HORIZ FIN= 7.1 DEG
 A1= .8 DEG T.R. COLL= 2.3 DEG
 B1= 2.7 DEG PEDAL POS= 2.8 DEG

ROTOR PARAMETERS HOVER TIP MACH= .66 SHAFT ALPHA= 2.1 DEG
 CONTROL ALPHA= -.6 DEG
 TIP MAX-MACH= .84 DELTA PSI= -5.5 DEG
 TIP MIN-MACH= .51
 .9R MAX-MACH= .78 ENGINE POWER= 364. KW = 488. HP
 .9R MIN-MACH= .44 THRUST FACTOR= .792E+07 N = .178E+07 LB

NASA LANGLEY FLIGHT DATA AH-1G ---- ROTOR PERFORMANCE AND LOADS

FLIGHT NO. 84 MU= .244 TOTAL CQ= .000197 AMB TEMP= 12.1 C = 53.73 F
 RUN NO. 10 V= 109.6 KT MAST CQ= .000171 TFMP U60= 31.2 C = 88.12 F
 TIME 01143.60 NZ= 1.515 G OMEGA= 34.493 RAD/SEC CAN TEMP= 23.8 C = 74.81 F
 CLP= .00637 RPM/324= 1.017

ROTOR ANGLES THETA 3/4 (DEG) A0= 7.9 A1= -.0 B1= 3.2 PEAK-TO-PEAK= 6.7
 TFETER ANG (DEG) A0= .1 A1= -.3 B1= .5 PEAK-TO-PEAK= 1.4

ROTOR LOADS (AMP/PHASE) DRAG BRACE CHORD .449 CHORD .803 PITCH LINK TORSION .449
 (N/DEG) (N-M/DEG) (N-M/DEG) (N-M/DEG)

	MEAN	2	3	4	5	6	7	8	9	10	11	12	PEAK-TO-PEAK
HARMONIC-1	47298.	4940./ -4.2	319./ 22.9	2148./ 15.2	301./ 54.0	606./ -51.3	1291./ -63.6	250./ -65.2	33./ 73.3	89./ 33.0	39./ 45.3	89./ -26.7	152./ 46.0
		1013./ -2.1	205./ -34.0	514./ 22.1	250./ 26.2	97./ -76.1	815./ -65.3	114./ -18.2	88./ 67.6	48./ -58.0	90./ -83.9	17./ 33.0	53./ 74.6
		-229.	206./ -8.9	80./ 33.1	134./ 7.5	19./ 8.0	241./ -67.0	43./ -30.3	36./ 49.9	14./ -88.2	42./ 88.3	30./ 59.4	21./ 64.2
		-3559.	1737./ -36.1	333./ 10.9	403./ 63.0	141./ -5.4	310./ 19.7	169./ -8.6	61./ 66.3	83./ 58.8	82./ -47.7	31./ 63.5	14./ -67.4
		-1998.	270./ -60.1	43./ 31.5	79./ 26.2	40./ 64.2	59./ 9.3	25./ 10.8	14./ 28.2	6./ -64.2	14./ -81.2	5./ -18.2	10./ 23.9
		-420.	12138.	4439.	1302.	5626.	716.						

	BEAM .174 (N-M/DEG)	BEAM .350 (N-M/DEG)	BEAM .449 (N-M/DEG)	BEAM .606 (N-M/DEG)	BEAM .803 (N-M/DEG)
MEAN	-1563.	-114.	-220.	-538.	-632.
HARMONIC-1	521./ -32.5	392./ -69.6	413./ -73.7	425./ -78.5	259./ 81.2
2	260./ -63.0	224./ -84.6	257./ -81.3	236./ -82.5	106./ 82.6
3	133./ -23.4	76./ -13.3	53./ 11.2	55./ 50.1	72./ 56.1
4	428./ 32.0	133./ 17.0	62./ 22.0	102./ 25.4	171./ 16.6
5	149./ -50.1	27./ -64.2	22./ 26.8	35./ -50.4	51./ 70.9
6	99./ -83.7	14./ 1.3	16./ -36.8	10./ 34.8	33./ 63.2
7	85./ -4.1	25./ 4.8	44./ 10.3	7./ 69.4	59./ 48.8
8	14./ -65.1	6./ 71.3	3./ -16.0	11./ 63.6	21./ 63.5
9	35./ 46.8	29./ 59.3	13./ 24.8	33./ 61.2	29./ 67.7
10	39./ -58.8	21./ -57.9	7./ -76.7	23./ -57.7	19./ -66.3
11	5./ 18.6	4./ -24.2	2./ -23.2	8./ 9.8	11./ 31.9
12	35./ 50.8	7./ 40.2	9./ 45.0	6./ -90.0	5./ -24.4
PEAK-TO-PEAK	2557.	1262.	1292.	1310.	1003.

FLIGHT NO. 084 AIRCRAFT TOTAL WT = 33227. N LOADED CG X= 5.03 M = 198.1 IN
 RUN NO. 24 7470. LB Y= -.00 = -.0
 TIME ***** (SEC) Z= 1.86 = 73.2

AERODYNAMIC FLIGHT STATE DYNAMIC PRES= 1.73 KPA = 36.2 PSF
 T. AIRSPEED= 110.3 KT STATIC PRES= 87.8 KPA = 1834. PSF
 A/C MACH NO= .167 TOTAL TEMP= 287.1 DEG K = 516.9 DEG R
 STATIC TEMP= 285.5 DEG K = 514.0 DEG R
 BODY ALPHA= 3.5 DEG DENSITY= 1.07 KG/M3 = .00208 SLUG/FT3
 BODY BETA= .5 DEG DENSITY ALT= 1375. M = 4510. FT
 SONIC SPEED= 339.3 M/SEC = 1113. FPS
 RATE OF CLIMB= -406. M/MIN = -1334. FPM

INERTIAL FLIGHT STATE

AXIS	CG LIN VEL (M/S)	CG LIN VEL (FPS)	CG LIN ACC (G)	HUB LIN VEL (M/S)	HUB LIN VEL (FPS)	HUB LIN ACC (G)	AXIS	ANG POS (DEG)	ANG RATES (RAD/SEC)	ANG ACC (RAD/SEC ²)
X	56.64	185.8	-.090	56.33	184.8	-.091	ROLL	-43.3	-.028	.090
Y	.46	1.5	-.008	.41	1.3	.014	PITCH	-4.6	.151	.003
Z	3.48	11.4	-1.557	3.49	11.4	-1.552	YAW	251.8	-.129	-.001

CONTROL ANGLES M.R. COLL= 9.7 DEG HORIZ FIN= 7.1 DEG
 A1= .6 DEG T.R. COLL= 2.2 DEG
 B1= 2.7 DEG PEDAL POS= 3.3 DEG

ROTOR PARAMETERS

HOVER TIP MACH= .68 SHAFT ALPHA= 3.5 DEG
 CONTROL ALPHA= .8 DEG
 TIP MAX-MACH= .85 DELTA PSI= -.4 DEG
 TIP MIN-MACH= .51
 .9R MAX-MACH= .78 ENGINE POWER= 312. KW = 418. HP
 .9R MIN-MACH= .45 THRUST FACTOR= .807E+07 N = .181E+07 LB

NASA LANGLEY FLIGHT DATA AH-1G ---- ROTOR PERFORMANCE AND LOADS

FLIGHT NO. 84 MU= .245 TOTAL CQ= .000166 AMB TEMP= 12.4 C = 54.31 F
 RUN NO. 24 V= 110.3 KT MAST CQ= .000143 TEMP U60= 30.5 C = 86.87 F
 TIME 101957.55 NZ= 1.552 G OMEGA= 34.523 RAD/SEC CAN TEMP= 21.5 C = 70.62 F
 CLP= .00637 RPM/324= 1.018

ROTOR ANGLES THETA 3/4 (DEG) AO= 7.8 A1= -.5 B1= 3.1 PEAK-TO-PEAK= 6.3
 TEETER ANG (DEG) AO= .1 A1= -.3 B1= .8 PEAK-TO-PEAK= 1.6

ROTOR LOADS (AMP/PHASE)	DRAG BRACE (N/DEG)	CHORD .449 (N-M/DEG)	CHORD .803 (N-M/DEG)	PITCH LINK (N/DEG)	TORSION .449 (N-M/DEG)
MEAN	48497.	-130.	-3469.	-1999.	-420.
HARMONIC-1	5800./ 2.4	1170./ 2.1	252./ -4.9	1807./ -23.4	269./ -49.2
2	591./ 62.1	205./ 8.3	25./ -73.1	1080./ -30.9	97./ -9.6
3	2031./ 38.3	444./ 43.6	67./ 60.3	325./ 37.6	49./ 57.8
4	379./ 68.5	292./ 49.7	151./ 31.9	362./ -76.6	71./ 52.9
5	614./ -11.1	100./ -17.5	26./ 31.4	175./ 41.2	51./ -78.2
6	1013./ -7.8	638./ -12.8	180./ -13.0	271./ 69.9	54./ 61.7
7	268./ 1.3	140./ 38.9	48./ 26.3	141./ 52.4	24./ 73.0
8	80./ -75.0	59./ -60.0	17./ -83.6	44./ -50.0	13./ -85.9
9	39./ -31.8	81./ 3.6	30./ 4.1	61./ -53.2	5./ 19.3
10	85./ 55.8	142./ -35.5	80./ -52.1	90./ 13.0	16./ -11.7
11	65./ -3.6	11./ 47.0	15./ -44.2	35./ -12.7	12./ 69.2
12	27./ 86.0	11./ -80.2	13./ 27.7	1./ -70.3	6./ -43.7
PEAK-TO-PEAK	12859.	3926.	1073.	5241.	713.

	BEAM .174 (N-M/DEG)	BEAM .350 (N-M/DEG)	BEAM .449 (N-M/DEG)	BEAM .606 (N-M/DEG)	BEAM .803 (N-M/DEG)
MEAN	-1626.	-128.	-222.	-537.	-635.
HARMONIC-1	578./ -18.9	393./ -59.0	420./ -63.1	421./ -69.2	256./ 86.1
2	264./ -44.7	212./ -67.0	240./ -65.0	227./ -66.4	97./ -78.8
3	113./ .9	67./ 9.8	57./ 43.1	66./ 79.0	80./ 85.3
4	374./ 60.9	123./ 45.2	62./ 52.1	88./ 52.7	161./ 42.6
5	162./ -8.9	29./ -27.9	26./ 72.8	37./ -11.0	56./ -74.5
6	82./ -31.4	14./ 86.4	15./ 72.6	10./ -74.3	42./ -64.3
7	62./ 60.4	21./ 64.9	39./ 85.0	9./ -49.4	58./ -64.7
8	16./ -10.1	3./ -24.1	5./ 89.3	10./ -52.4	19./ -45.8
9	27./ -76.4	23./ -44.7	9./ 80.8	26./ -33.6	26./ -23.0
10	44./ 13.7	21./ 23.4	9./ 18.4	28./ 26.5	24./ 22.7
11	9./ -22.9	5./ -85.6	1./ 22.1	6./ -59.7	9./ -34.5
12	26./ -25.2	6./ -26.8	12./ -39.2	8./ -.7	3./ 54.4
PEAK-TO-PEAK	2444.	1242.	1237.	1260.	984.

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2. Morris, Charles E. K., Jr.: Rotor-Airfoil Flight Investigation: Preliminary Results. Paper No. 78-05, Am. Helicopter Soc., May 1978.
3. Morris, Charles E. K., Jr.; Tomaine, Robert L.; and Stevens, Dariene D.: A Flight Investigation of Performance and Loads for a Helicopter with NLR-1T Main-Rotor Blade Sections. NASA TM 80165, 1979.
4. Morris, Charles E. K., Jr.; Stevens, Dariene D.; and Tomaine, Robert L.: A Flight Investigation of Blade-Section Aerodynamics for a Helicopter Main-Rotor Having NLR-1T Airfoil Sections. NASA TM 80166 (AVRADCOM TM 80-B-1), 1980.
5. Morris, Charles E. K., Jr.: A Flight Investigation of Basic Performance Characteristics of a Teetering-Rotor Attack Helicopter. NASA TM 80112, 1979.
6. Bingham, Gene J.; and Noonan, Kevin W.: Experimental Investigation of Three Helicopter Rotor Airfoils Designed Analytically. NASA TP 1396 (AVRADCOM TR 79-11), 1979.
7. Knight, Vernie H.; Haywood, William S., Jr.; and Williams, Milton L.: A Rotor-Mounted Digital Instrumentation System for Helicopter Blade Flight Research Measurements. NASA TP 1146, 1978.
8. Bingham, Gene J.: An Analytical Evaluation of Airfoil Sections for Helicopter Rotor Applications. NASA TN D-7796, 1975.

TABLE I.- BASIC AIRCRAFT CHARACTERISTICS

Empty weight, N (lb.)	28,160 (6330)
Fuel capacity, N (lb.)	7,250 (1630)
Powerplant.	Lycoming T53-L-13B
Nominal transmission limit at 100% rpm, kw (hp)820 (1100)

Wing:

Airfoil	
Root	NACA 0030
Tip	NACA 0024
Semi-span (panel only), m (ft)	1.09 (3.56)
Area (panels only), m ² (ft ²)	1.63 (17.6)
Chord:	
Root, m (ft)	0.88 (2.89)
Tip, m (ft)	0.62 (2.04)
Incidence angle (chord line), deg	14.0
Leading-edge sweep, deg	15.2
Dihedral angle, deg	0.0

Horizontal tail:

Airfoil	inverted Clark Y
Semi-span (panel only), m (ft)	0.78 (2.54)
Area (panels only), m ² (ft ²)	0.95 (10.2)
Chord:	
Root, m (ft)	0.75 (2.45)
Tip, m (ft)	0.54 (1.78)
Leading-edge sweep, deg	19.9
Dihedral angle, deg	0.0

Vertical tail:

Airfoil	
Root	cambered, 14% thick
Tip	cambered, 15% thick
Span (above tail boom), m (ft)	1.64 (5.38)
Area, m ² (ft ²)	1.73 (18.6)
Chord:	
Root, m (ft)	1.42 (4.67)
Tip, m (ft)69 (2.25)
Leading-edge sweep, deg	50.0
Twist, deg	nonlinear

TABLE I.- Concluded

Main rotor:

Number of blades	2
Airfoil	10-64C
Radius (R), m (ft)	6.706 (22.0)
Chord, m (ft).	0.686 (2.25)
Taper	1:1
Solidity	0.0651
Twist, deg	-10/R
Flapwise inertia, kg-m ² (slug-ft ²)	2120 (1560)
Lock number	5.05
Nominal tip speed, m/sec (ft/sec).	227.5 (746.6)
Hub precone angle, deg	2.75
Pitch-flap coupling, deg	0.0
Blade pitch range at 0.75 R, deg	-11.9, +39.2
Trim tab -	
Width, m (ft)	0.191 (0.75)
Overhang length, m (ft).	0.042 (0.138)
In-board edge	0.761 R
Blade weight, kN (lb)*	1.267 (284.9), 1.263 (284.0)
Blade static center of gravity	
Chordwise, c246, .245
Spanwise, R5409, .5333
Blade measured torsional natural frequency, Hz*	16.7, 17.0

Tail rotor:

Number of blades	2
Airfoil	
0.25 tail-rotor radius	NACA 0018
Tip	cambered, 8% thick
Radius	1.295 (4.25)
Chord, m (ft).	0.292 (0.96)
Taper	1:1
Solidity	0.144
Twist, deg	0.0
Equivalent root cut-out.	35
Nominal tip speed, m/sec (ft/sec).	227.5 (746.4)
Blade pitch range, deg ³	-14.7, +15.3
Hub precone angle, deg	1 ⁰
Pitch-flap coupling, deg	30 ⁰

*Characteristics given for instrumented and uninstrumented blade, respectively

TABLE II. - COORDINATES OF 10-64C AIRFOIL

x/c	y_u/c	x/c	y_l/c
0.00000	0.00000	0.00000	0.00000
.00631	.01182	.00613	-.00908
.01228	.01659	.01295	-.01344
.01981	.02070	.01997	-.01640
.02913	.02441	.02883	-.01897
.04072	.02819	.04054	-.02170
.05471	.03202	.05575	-.02450
.09059	.03943	.09220	-.02884
.14814	.04765	.15286	-.03323
.20098	.05278	.20283	-.03561
.25089	.05615	.25015	-.03732
.30780	.05859	.30429	-.03877
.35507	.05960	.34940	-.03959
.40614	.05970	.41539	-.04014
.46074	.05873	.46898	-.03995
.51845	.05654	.52565	-.03908
.57867	.05307	.58482	-.03738
.64055	.04837	.64568	-.03473
.70302	.04253	.70715	-.03110
.76468	.03574	.76787	-.02658
.82383	.02829	.82615	-.02139
.87842	.02063	.87998	-.01586
.92603	.01335	.92696	-.01045
.96382	.00719	.96433	-.00579
.98896	.00293	.98909	-.00251
1.00000	.00100	1.00000	-.00100

TABLE III.- PADS-PCM DATA SYSTEM CHARACTERISTICS

Parameter	System Accuracy (a)	Digital Channel Precision	Filter Frequency (b)
Aerodynamic Flight State:			
dynamic pressure - regular	70 Pa	14 Pa	1 Hz
- sensitive	14 Pa	3 Pa	_____
static pressure - regular	500 Pa	200 Pa	_____
- sensitive	70 Pa	40 Pa	_____
angle of attack	.1°	.18°	10 Hz
angle of sideslip	.1°	.18°	10 Hz
total temperature	.06°C	.1°C	_____
Inertial Flight State:			
roll attitude	.5°	.36°	_____
pitch attitude	.5°	.18°	_____
heading	3.0°	.72°	_____
angular rates	.01 rad/sec	.044 rad/sec	10 Hz
longitudinal acceleration	.001 g	.004 g	10 Hz
lateral acceleration	.001 g	.003 g	10 Hz
normal acceleration	.005 g	.009 g	10 Hz
Control Positions:			
lateral servo	.1°	.04°	10 Hz
longitudinal servo	.1°	.07°	10 Hz
collective servo	.1°	.05°	10 Hz
horizontal fin	.1°	.02°	10 Hz
pedal position	.16°	.07°	10 Hz
tail-rotor collective	.1°	.07°	10 Hz
Rotor/Engine Parameters:			
main-rotor speed - regular	.5%	.23%	_____
- sensitive	.1%	.05%	_____
main-rotor azimuth	1°	22.5°	_____
engine torque pressure	3 kPa	1.3 kPa	_____
fuel quantity	60	40	_____

Notes: (a) accuracy of analog signal before digitization

(b) frequency at 3 db roll-off for constant delay, 4 pole Bessel Filters

TABLE IV.- CHARACTERISTICS OF ROTOR-DATA SENSORS AND CHANNELS

Parameter	Analog system accuracy	Digital channel precision	(a) Maximum final-data error	Data reduction paramaters (b)			
				m_1 (1/mV)	$\Delta m_2 \times 10^5$ (mV/count-C)	ΔV_0 (mV/C)	ΔP_0 (N-m/C)
β_s	.1°	.11°	.3°	.102°	13.4	-.009	—
θ_s	.1°	.25°	.8°	.45°	14.0	-.006	—
ψ	—	1.41°	.3°	—	—	—	—
F_{db}	70 N	546. N	1.4 kN	-5430.0 N	9.2	-.016	—
F_{p1}	36 N	123.4 N	.31 kN	1244. N-m	7.8	-.009	—
M_{b17}	—	24.6 N-m	.06 kN-m	353. N-m	9.5	-.011	-11.6
M_{b35}	—	26.7 N-m	.07 kN-m	351. N-m	12.6	-.009	-13.4
M_{b45}	—	26.7 N-m	.07 kN-m	215. N-m	10.3	-.012	-9.2
M_{b61}	—	20.3 N-m	.05 kN-m	203. N-m	7.1	-.008	-7.1
M_{b80}	—	18.3 N-m	.05 kN-m	117. N-m	12.0	-.018	-23.6
M_{c45}	—	134.2 N-m	.34 kN-m	1790. N-m	6.0	-.005	1.8
M_{c80}	—	40.7 N-m	.10 kN-m	1250. N-m	2.7	-.003	87.3
M_{t45}	—	15.2 N-m	.04 kN-m	303. N-m	3.9	-.004	0.4
Q	112 N-m	124. N-m	.32 kN-m	620. N-m	16.9	-.024	—
T_b	—	.4°C	1.0°C	—	—	—	—
T_{ce}	—	.4°C	1.0°C	—	—	—	—

Notes: (a) conservative accuracy bound for absolute value of single digital-data value
 (b) constants used in the data-reduction equations of reference 7

$$\Delta f = (m_1 (\Delta m_2 \delta + \Delta V_0)) \Delta T_{ce} + \Delta P_0 \Delta T_b$$

TABLE V.- TEST POINT/TEST CONDITION CATALOG

Flight condition	Test Point (Flight no.-run no.)	μ	V (knots)	C_L'
Hover	77-2	0	0	0.0042
	78-2	0	0	0.0044
	79-41	0	0	0.0037
	80-2	0	0	0.0042
	82-35*	0	0	0.0037
Level flight	75-3	0.150	67	0.0044
	-4	.170	76	0.0045
	-6	.211	93	0.0045
	-8	.253	112	0.0044
	-10	.294	130	0.0044
	-12	.339	150	0.0043
	-13	.363	161	0.0044
	78-6	.208	92	0.0043
	-10	.291	128	0.0043
	-12	.332	148	0.0041
	-13	.359	159	0.0042
	-24	.246	109	0.0044
	79-8	.239	106	0.0040
	80-33	.243	108	0.0044
	81-3	.147	65	0.0050
	-4	.166	74	0.0050
	-5	.184	82	0.0051
	-6	.209	92	0.0050
	-7	.227	101	0.0051
	-8*	.246	109	0.0051
	-9	.268	119	0.0052
	-10	.296	131	0.0051
	-11	.314	140	0.0050
-12	.343	152	0.0051	
-13*	.371	162	0.0054	
Climb	83-22	.244	107	0.0045
	-24	.240	107	0.0045
	-26	.244	108	0.0046
Descent	83-17	.242	109	0.0044
	-23	.243	108	0.0045
	-25	.236	108	0.0044
Right turn	78-27	.239	107	0.0062
	-30	.240	110	0.0078
	80-21	.241	107	0.0048
	-23	.239	107	0.0066

*Multiple data sets

TABLE V.- TEST POINT/TEST CONDITION CATALOG (Concluded)

Flight condition	Test Point (Flight no.-run no.)	μ	V (knots)	C_L'
Left turn	78-37	.246	110	0.0051
	-39	.239	107	0.0057
	80-27	.242	106	0.0052
	-28	.244	108	0.0059
	-29	.241	108	0.0071
	-31	.245	111	0.0078
	84-24	.245	110	0.0064
Pull-up	78-8	.248	109	0.0043
	-20	.244	111	0.0086
	79-34	.241	108	0.0056
	80-19	.246	112	0.0078
	-38	.234	105	0.0072
	84-8	.239	107	0.0051
	-10	.244	110	0.0064

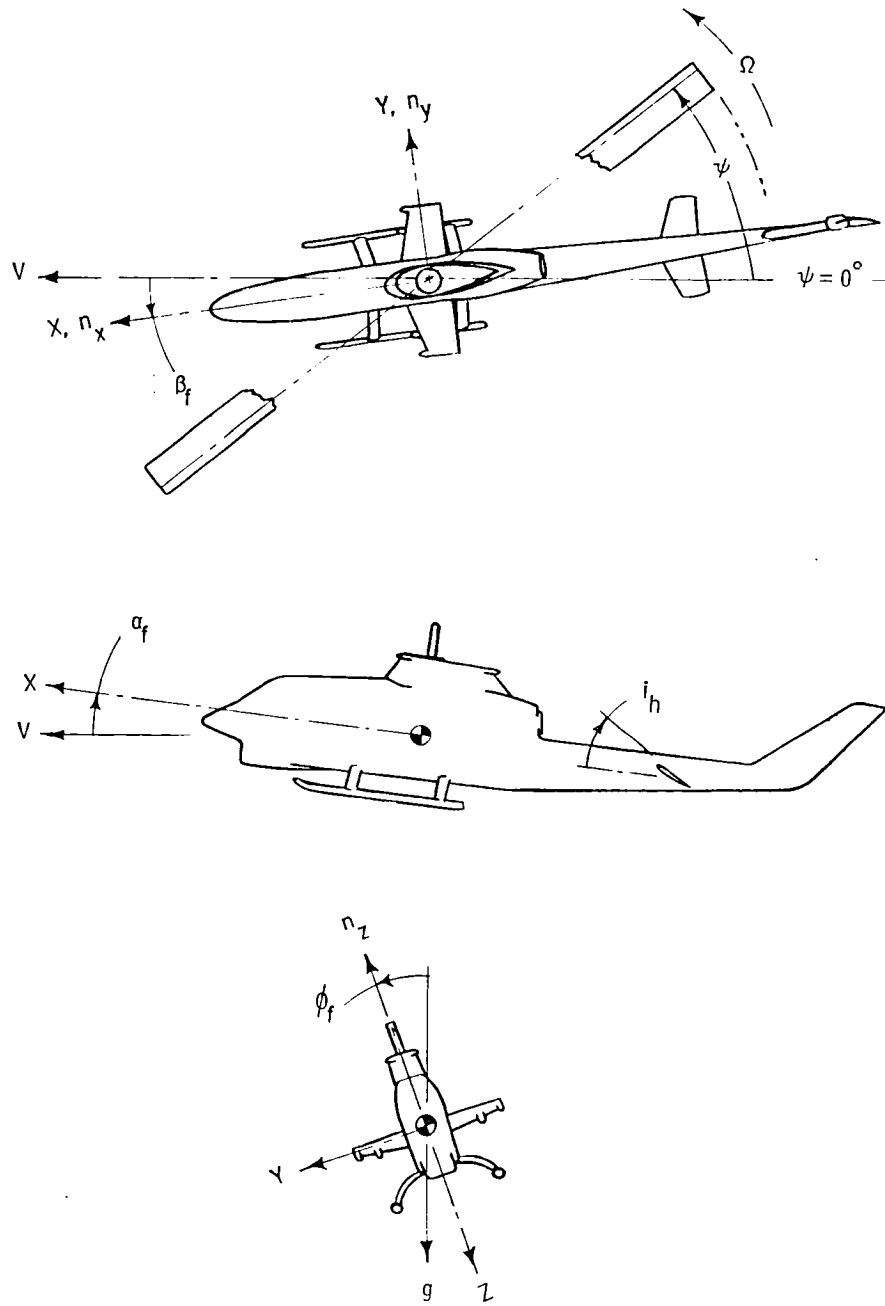


Figure 1. - Aircraft schematic and conventions used to define senses of axes, angles and accelerations.

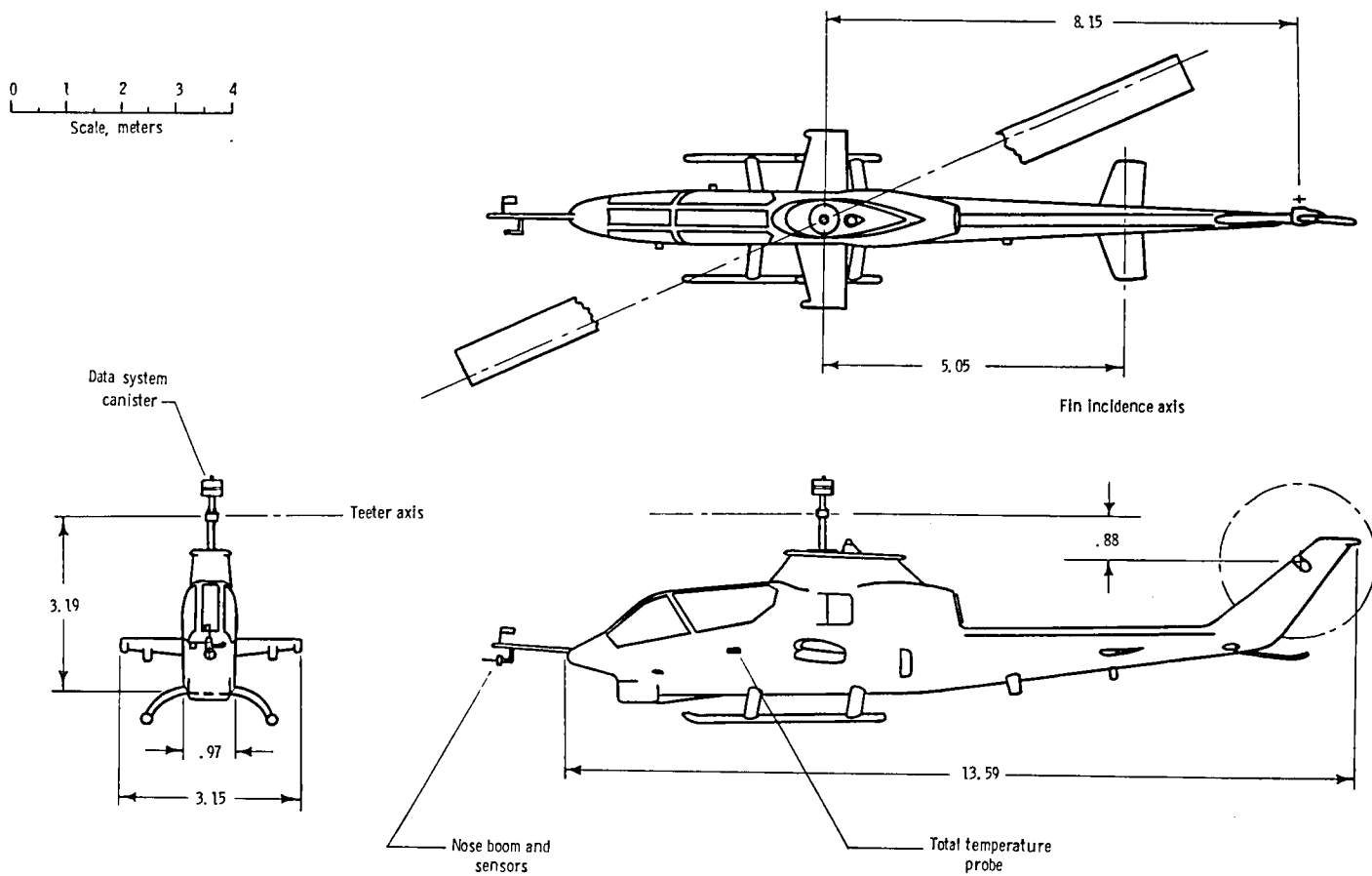


Figure 2. - Three-view scale drawing of aircraft. All dimensions are given in meters.

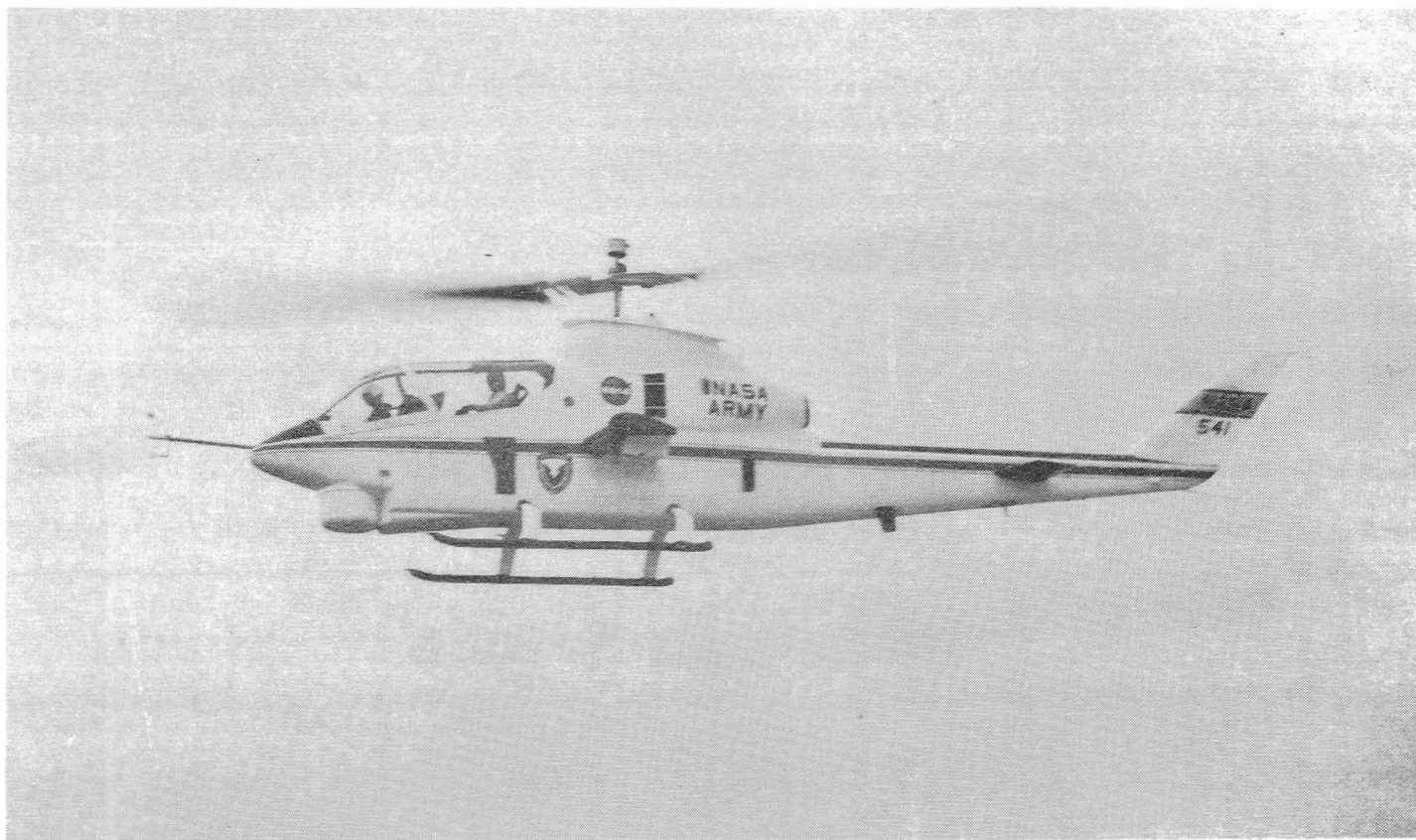


Figure 3. - Flight-test vehicle.

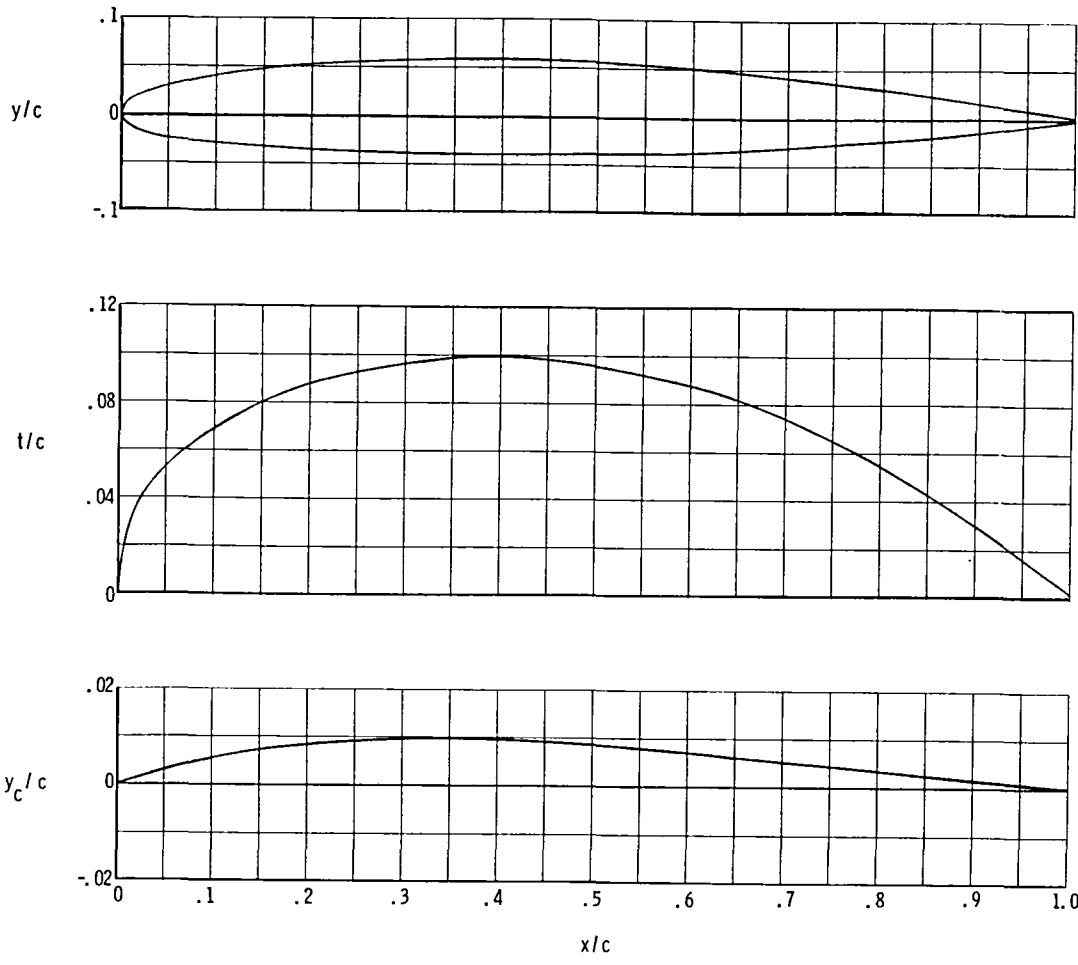


Figure 4. - Geometric characteristics of 10-64C airfoil.

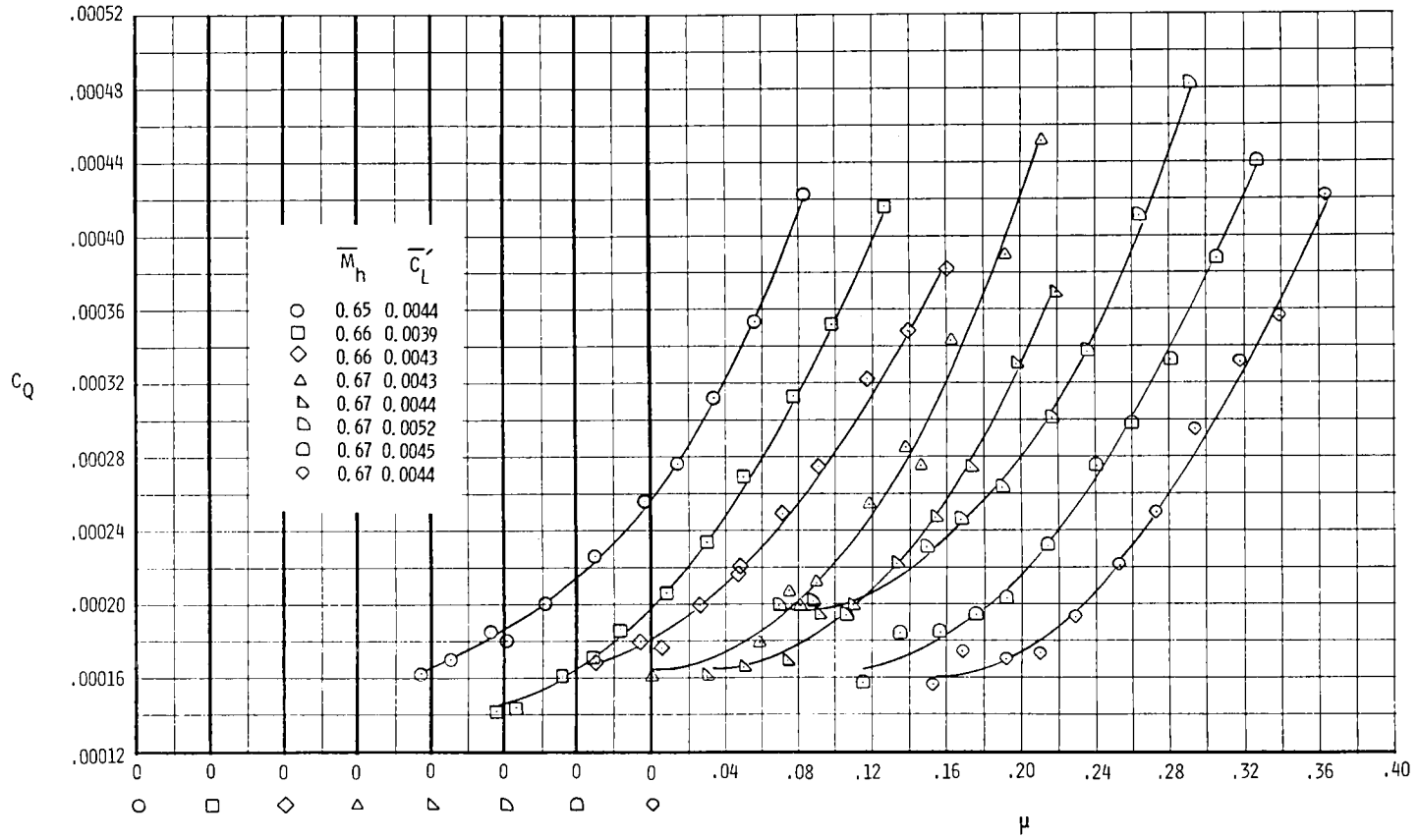
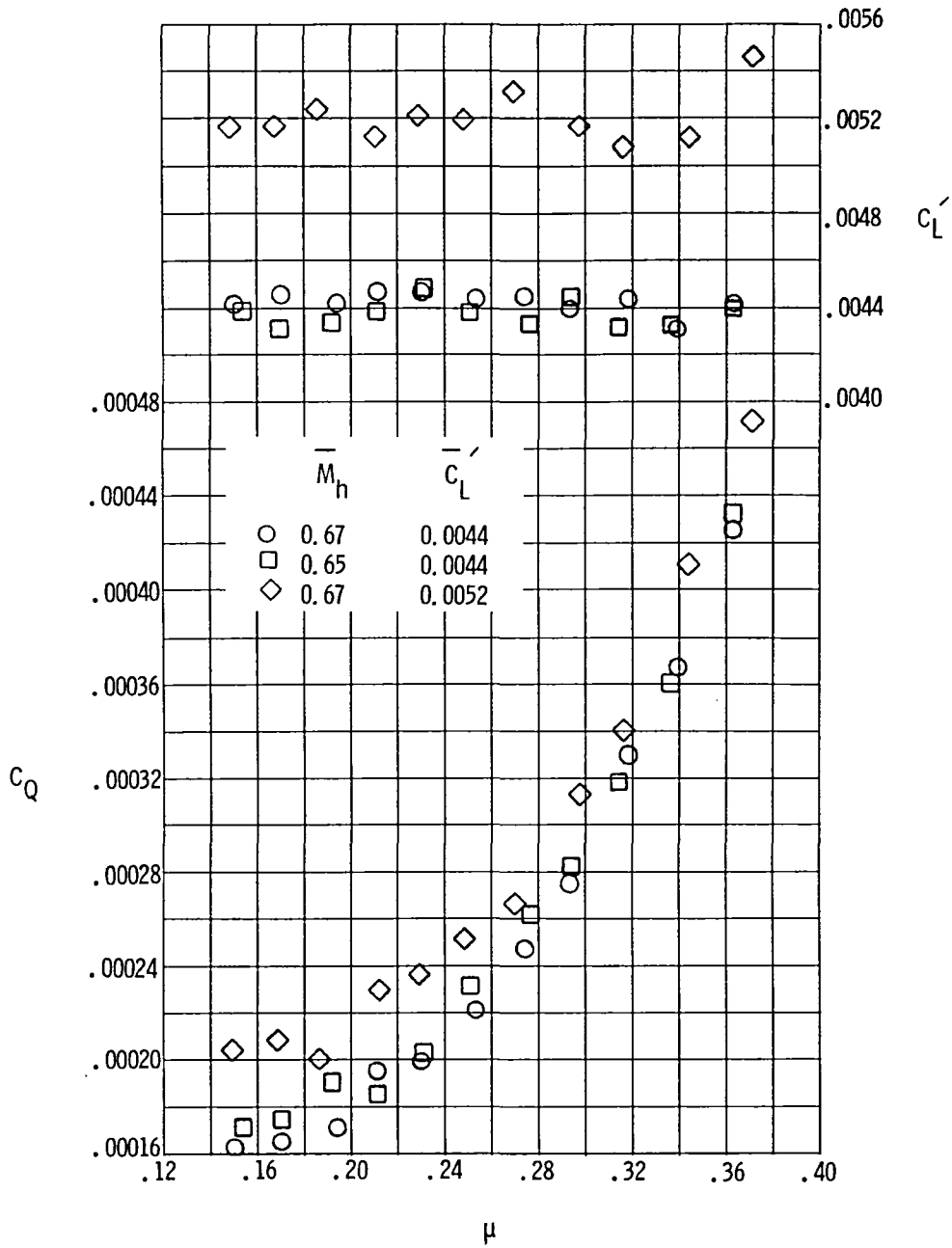
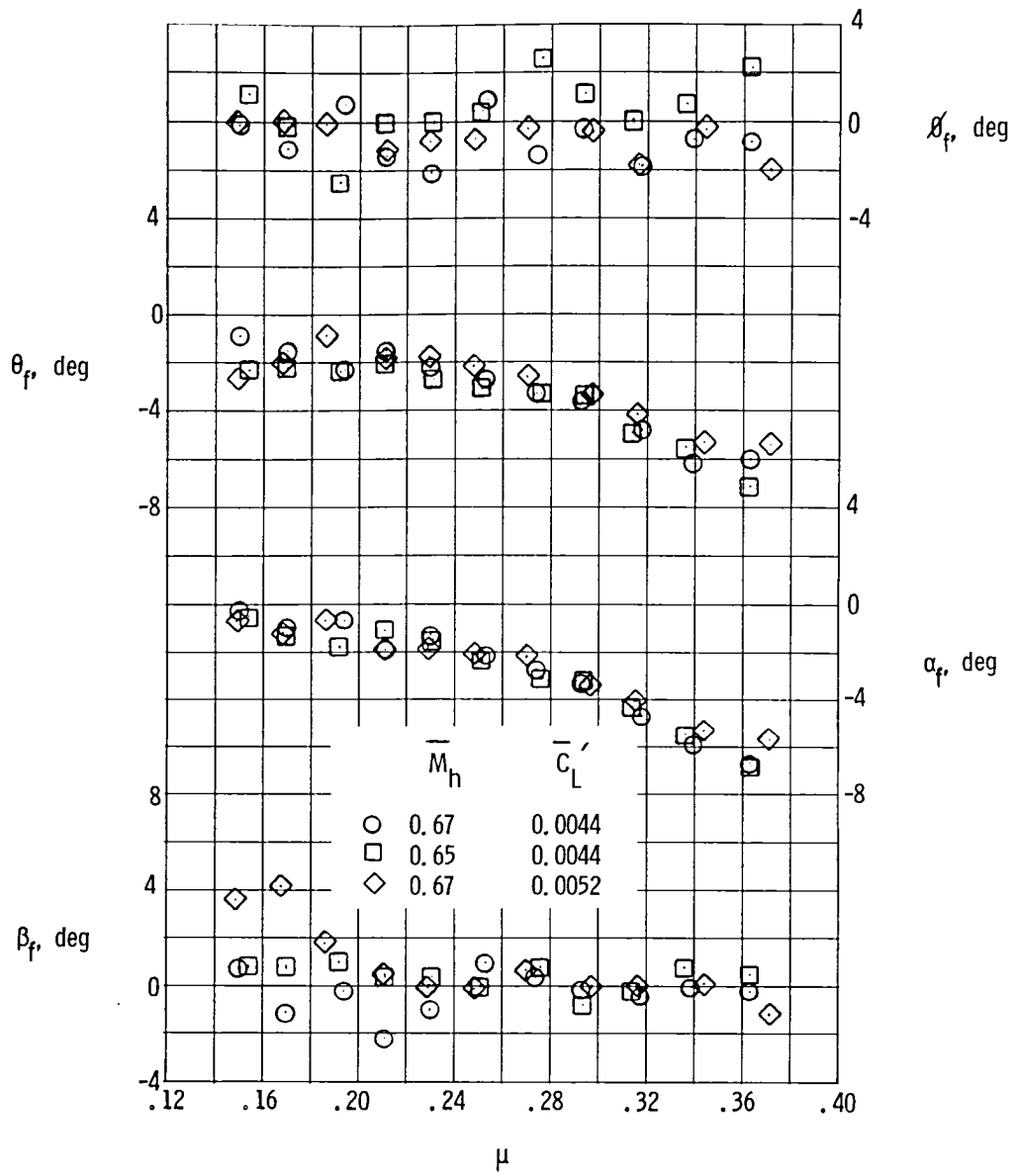


Figure 5.- Power (torque) coefficient as a function of tip-speed ratio for a series of test conditions.
 $\Omega = 33.9$ rad/sec. (324 rpm).



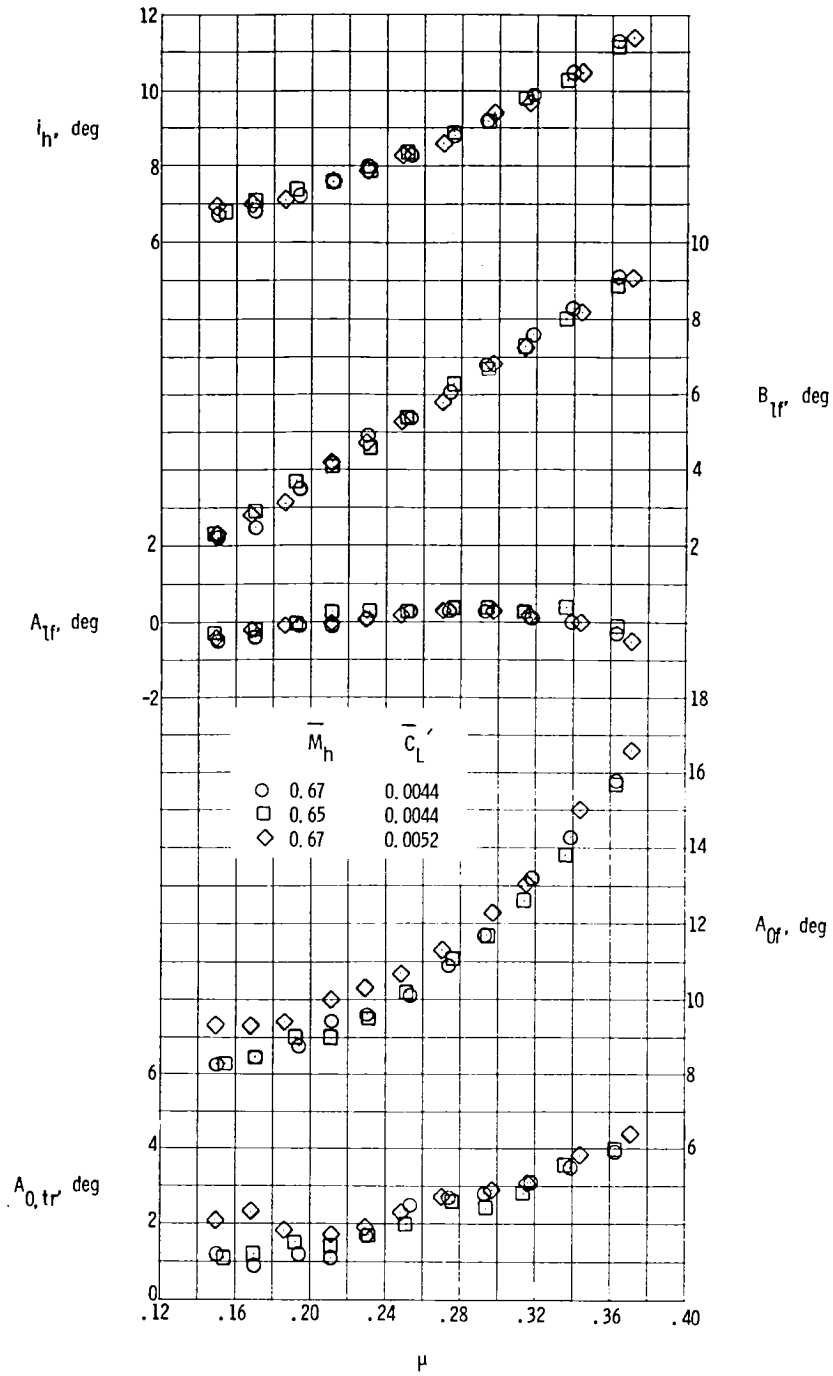
(a) Vehicle load and mast torque coefficients.

Figure 6. - Flight data for three level-flight speed sweeps.



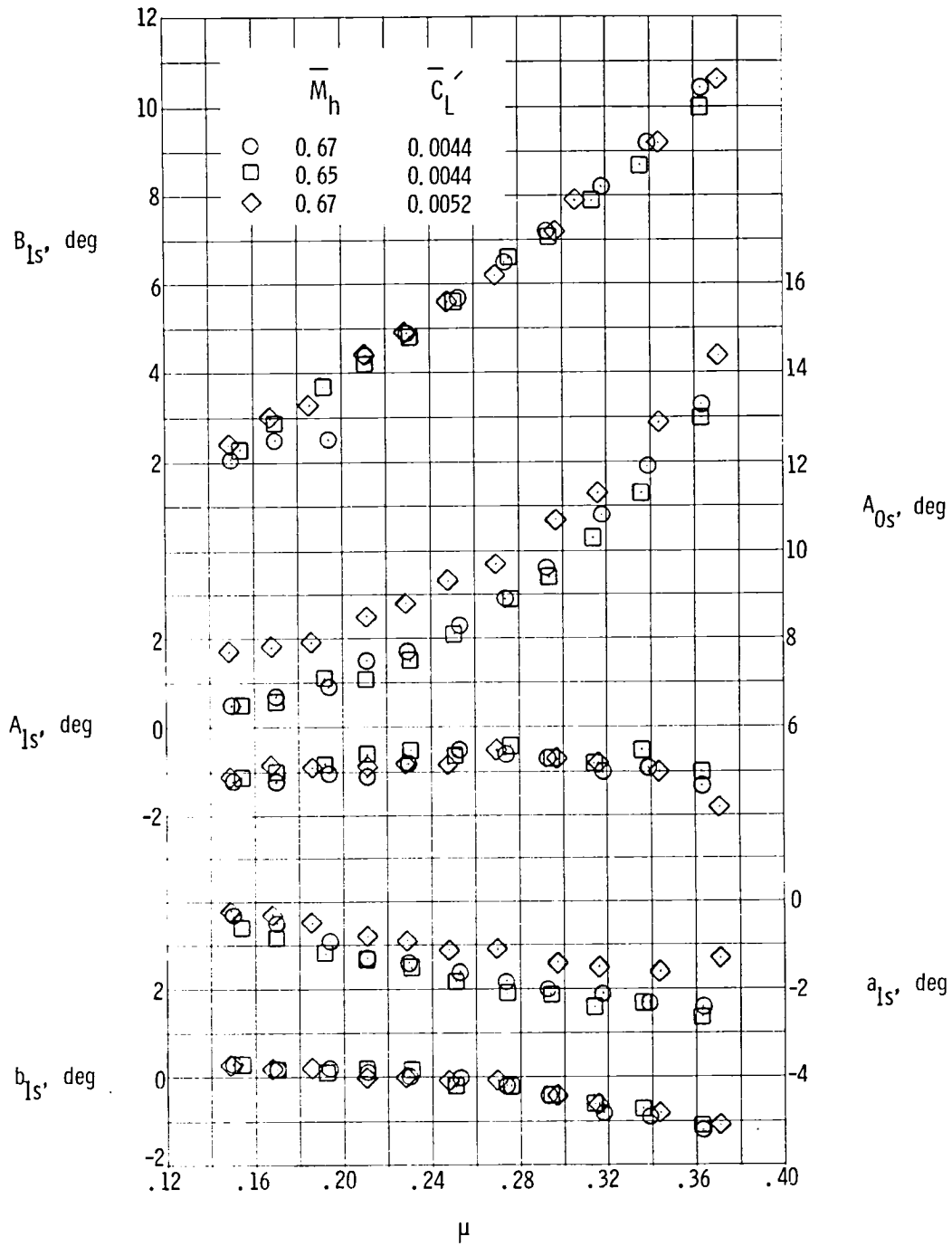
(b) Aircraft attitude.

Figure 6. - Continued.



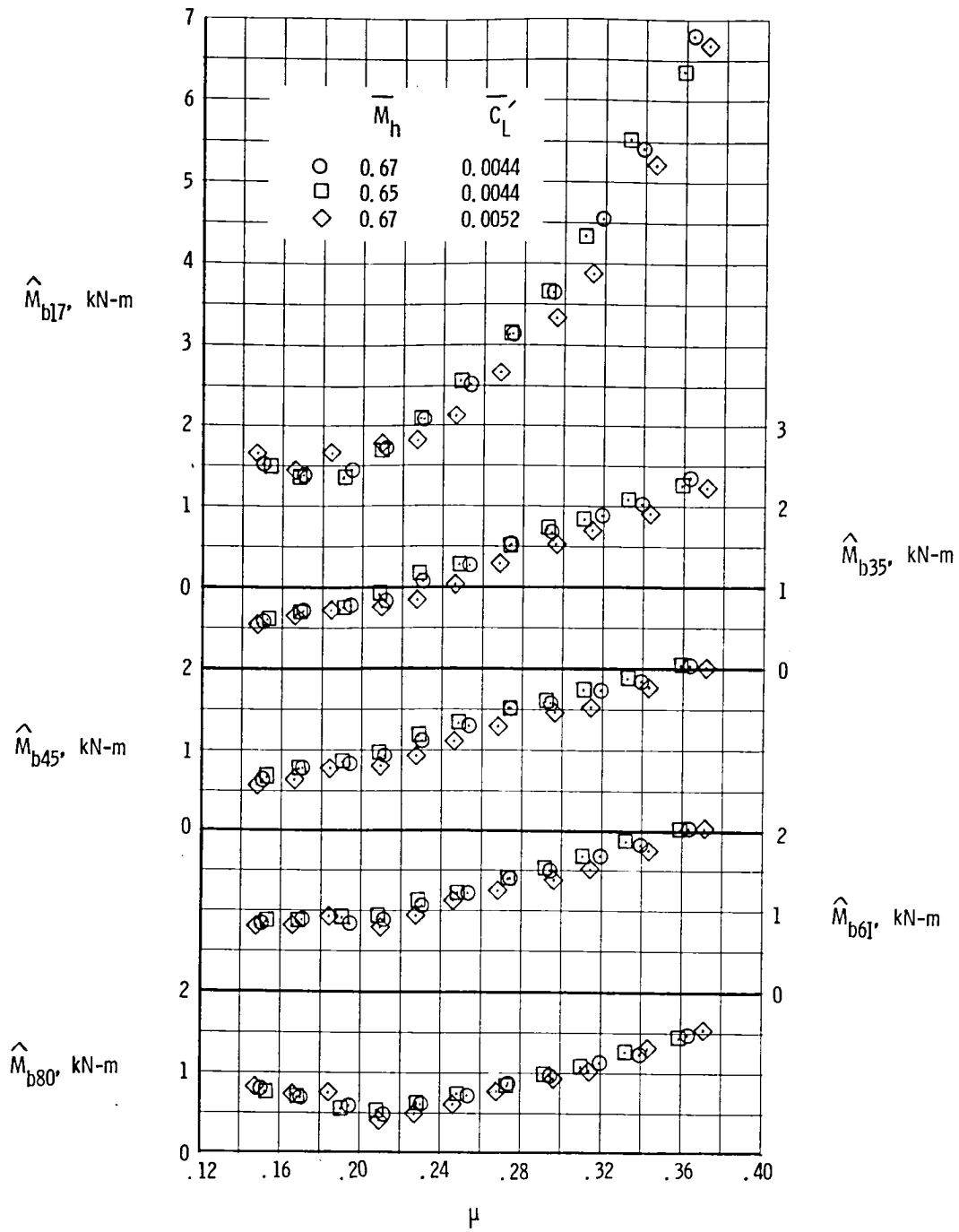
(c) Aircraft control positions.

Figure 6. - Continued.



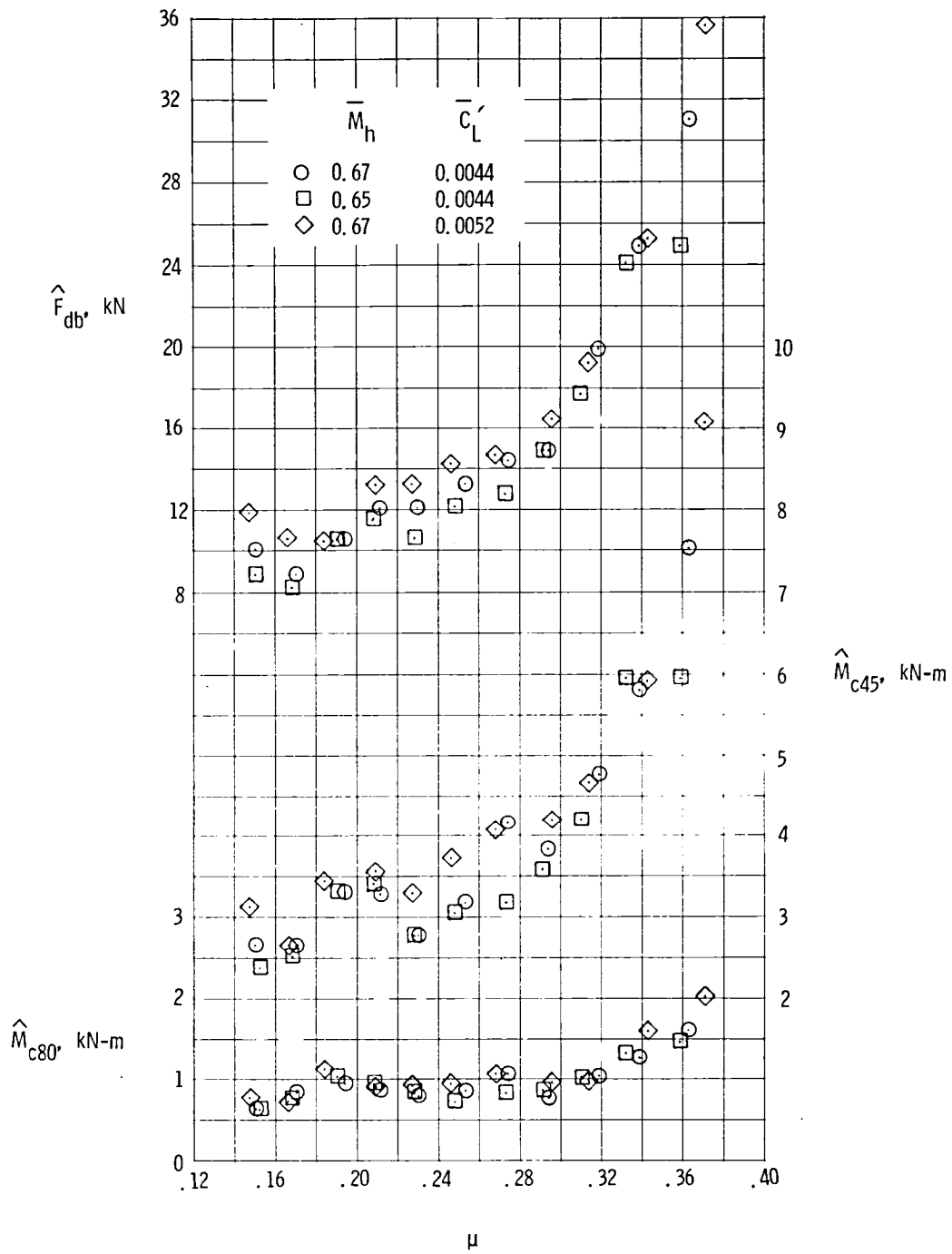
(d) Rotor-blade pitch and teeter angles.

Figure 6. - Continued.



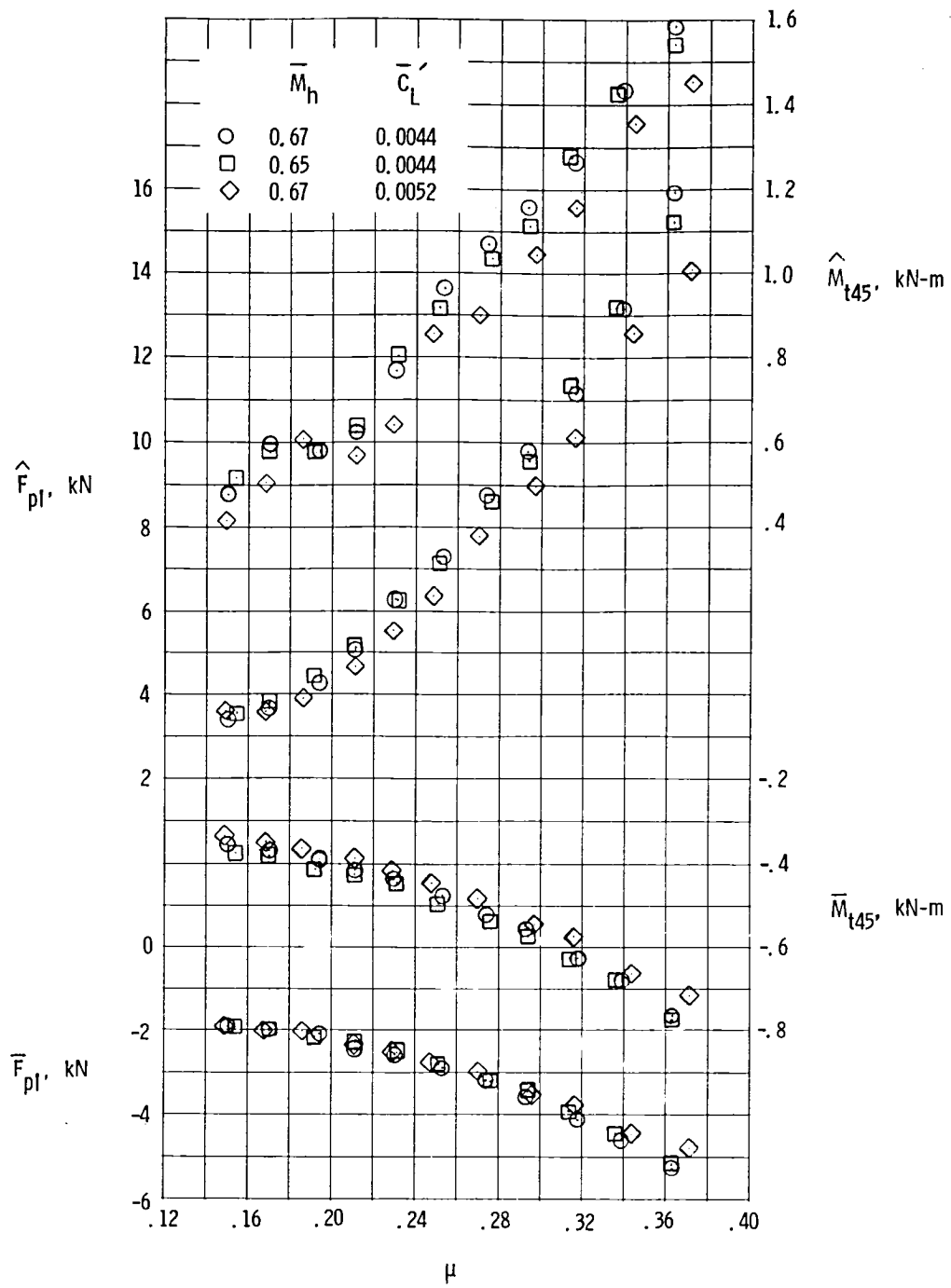
(e) Beamwise peak-to-peak rotor loads.

Figure 6. - Continued.



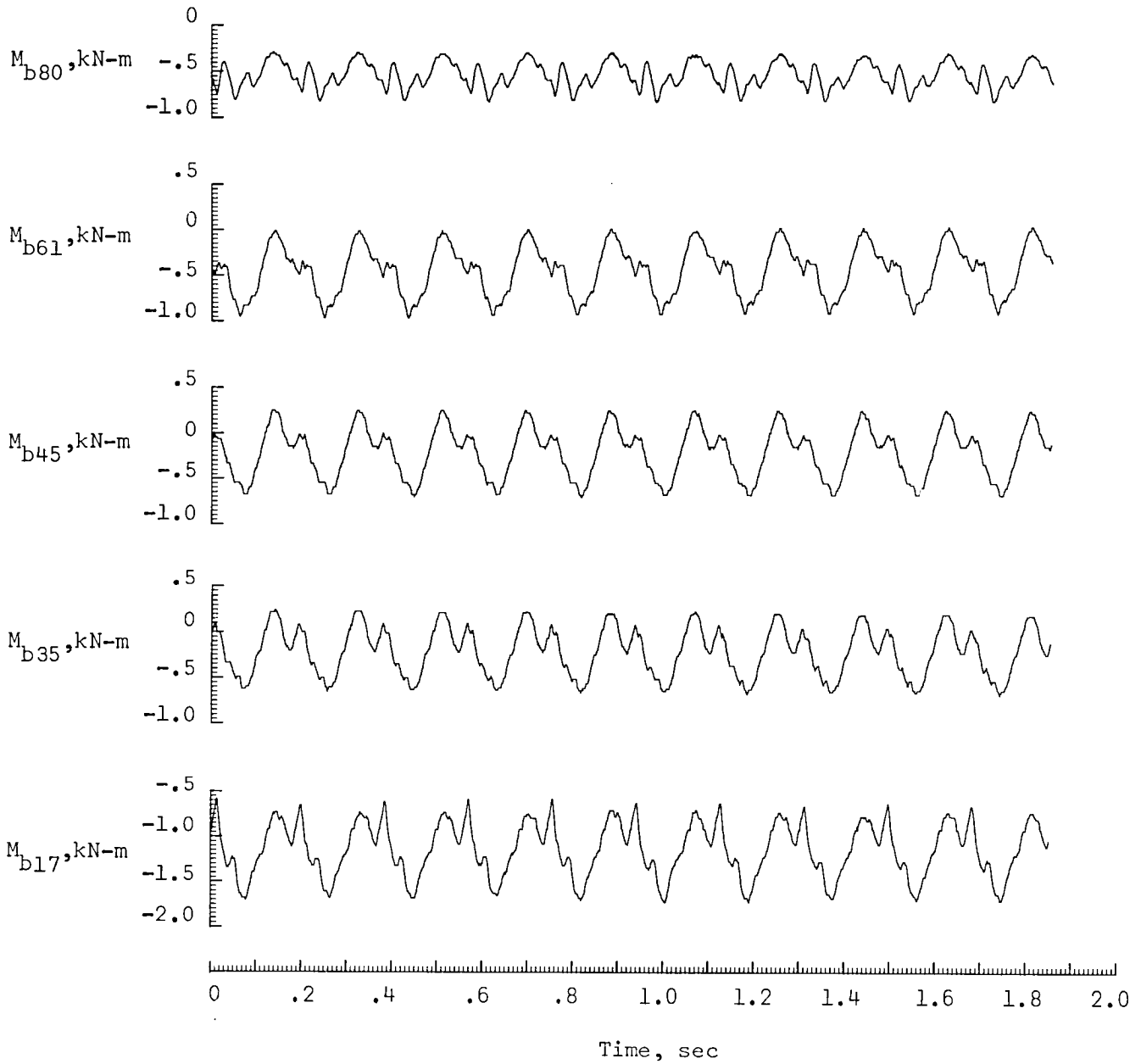
(f) Chordwise peak-to-peak rotor loads.

Figure 6. - Continued.



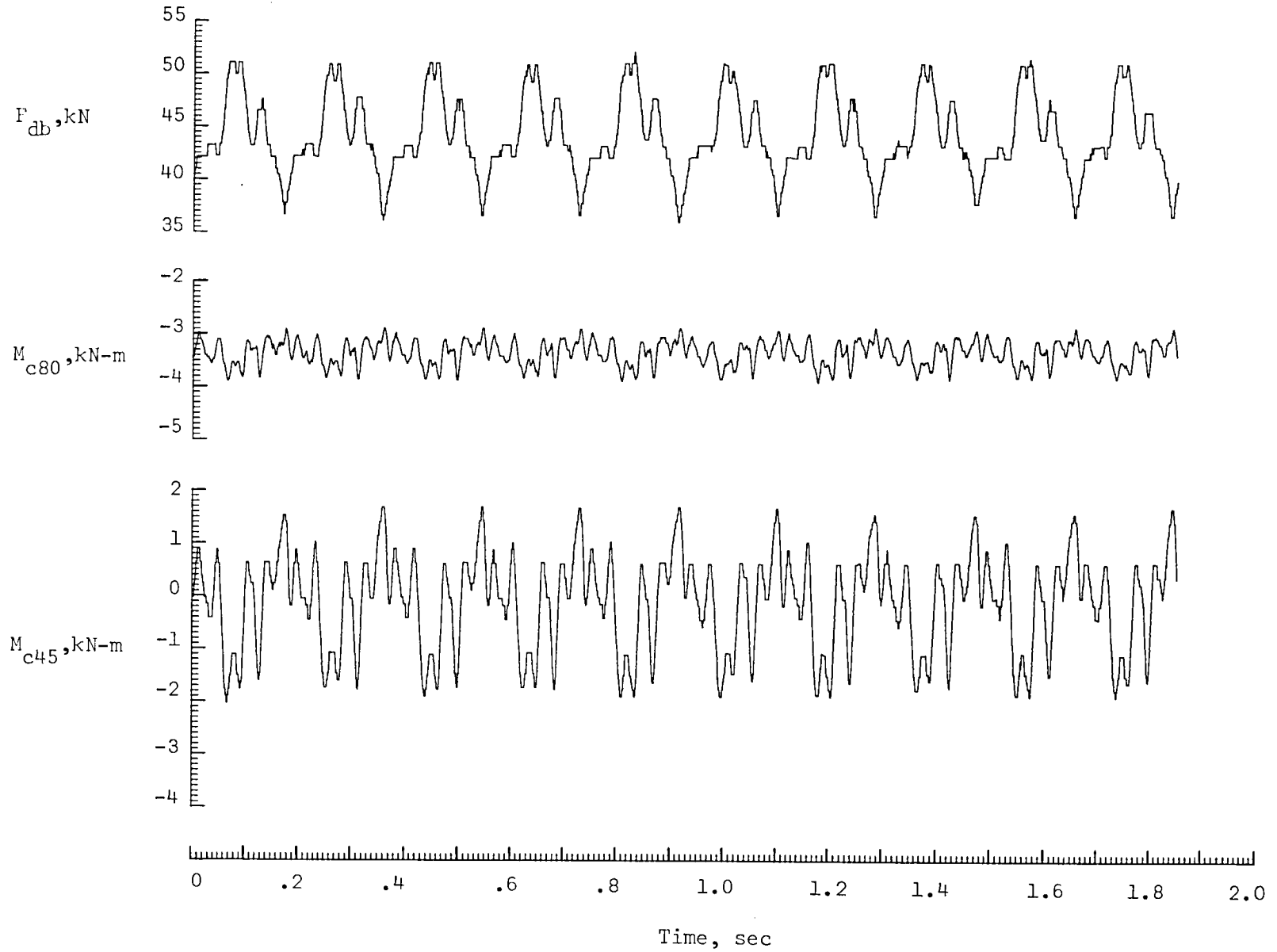
(g) Blade torsion and pitch-link loads.

Figure 6. - Concluded.



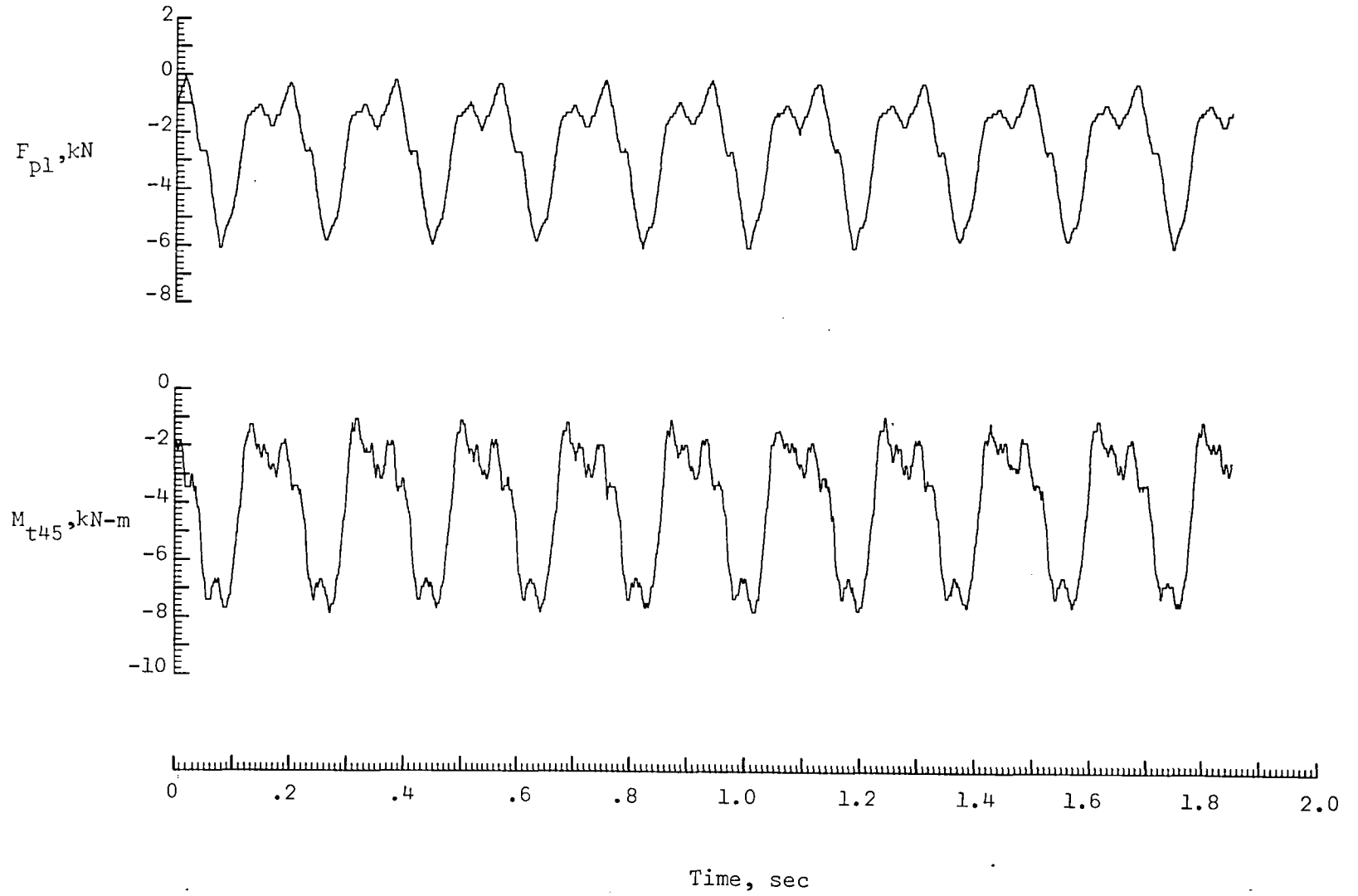
(a) Beamwise loads

Figure 7.- Rotor-load histories for typical level-flight condition
(Flight 81, run 7 of Appendix A). $\mu = 0.23$; $C_L^i = 0.0052$.

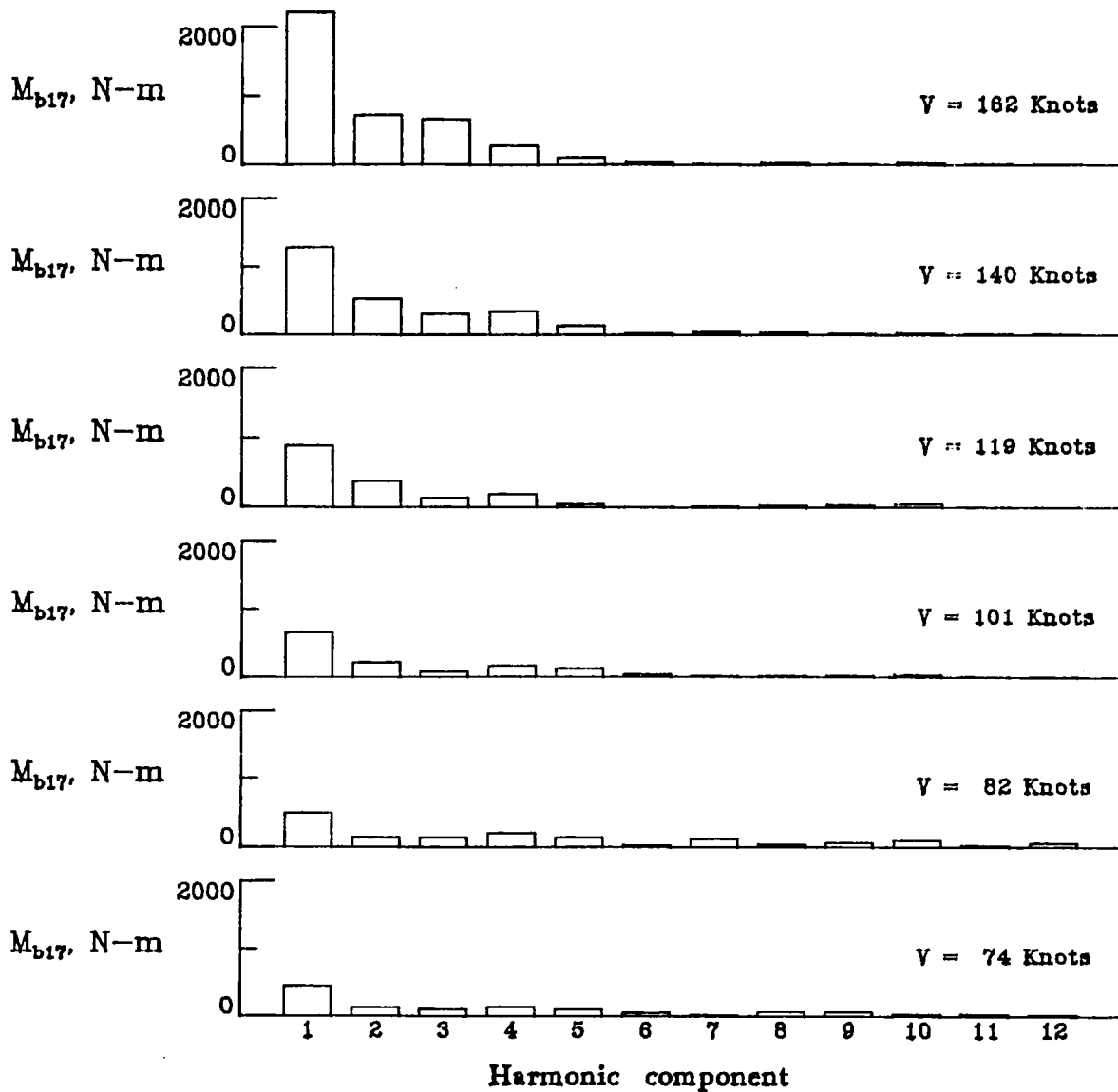


(b) Chordwise loads

Figure 7.- Continued.

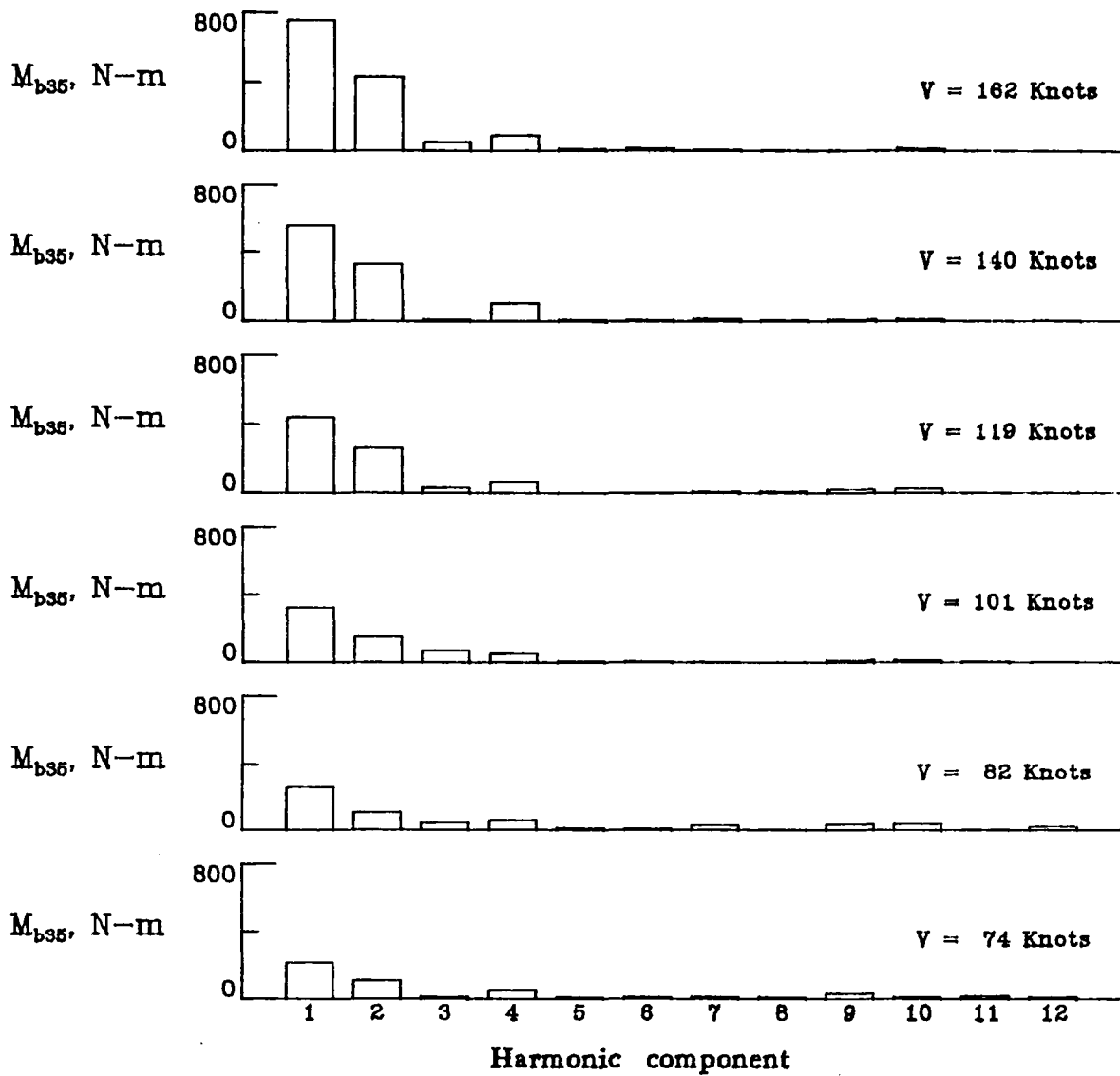


(c) Torsional loads
Figure 7.-Concluded.



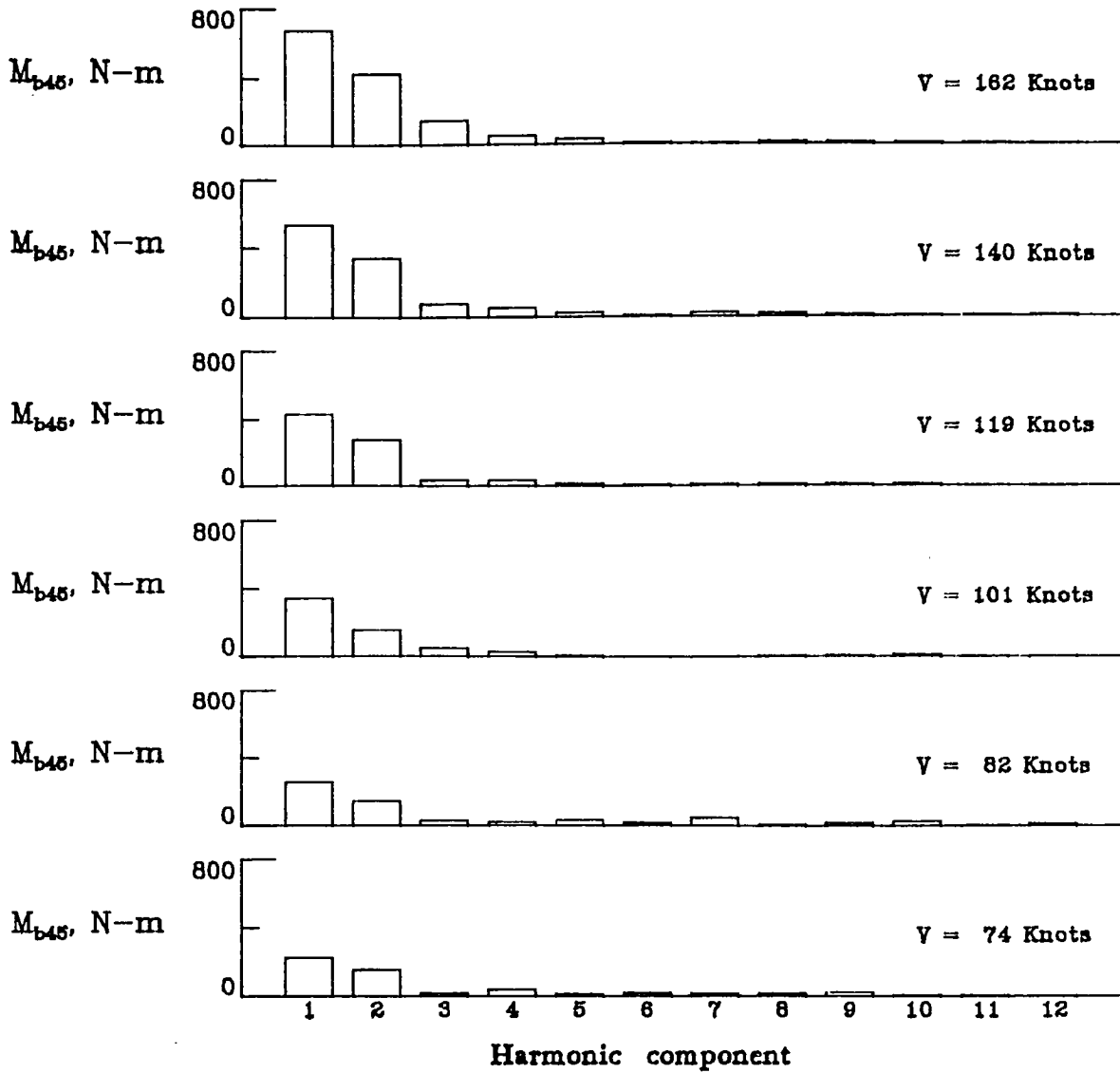
(a) M_{b17}

Figure 8.- Harmonic content of rotor loads for level flight. $C_L = 0.0052$.



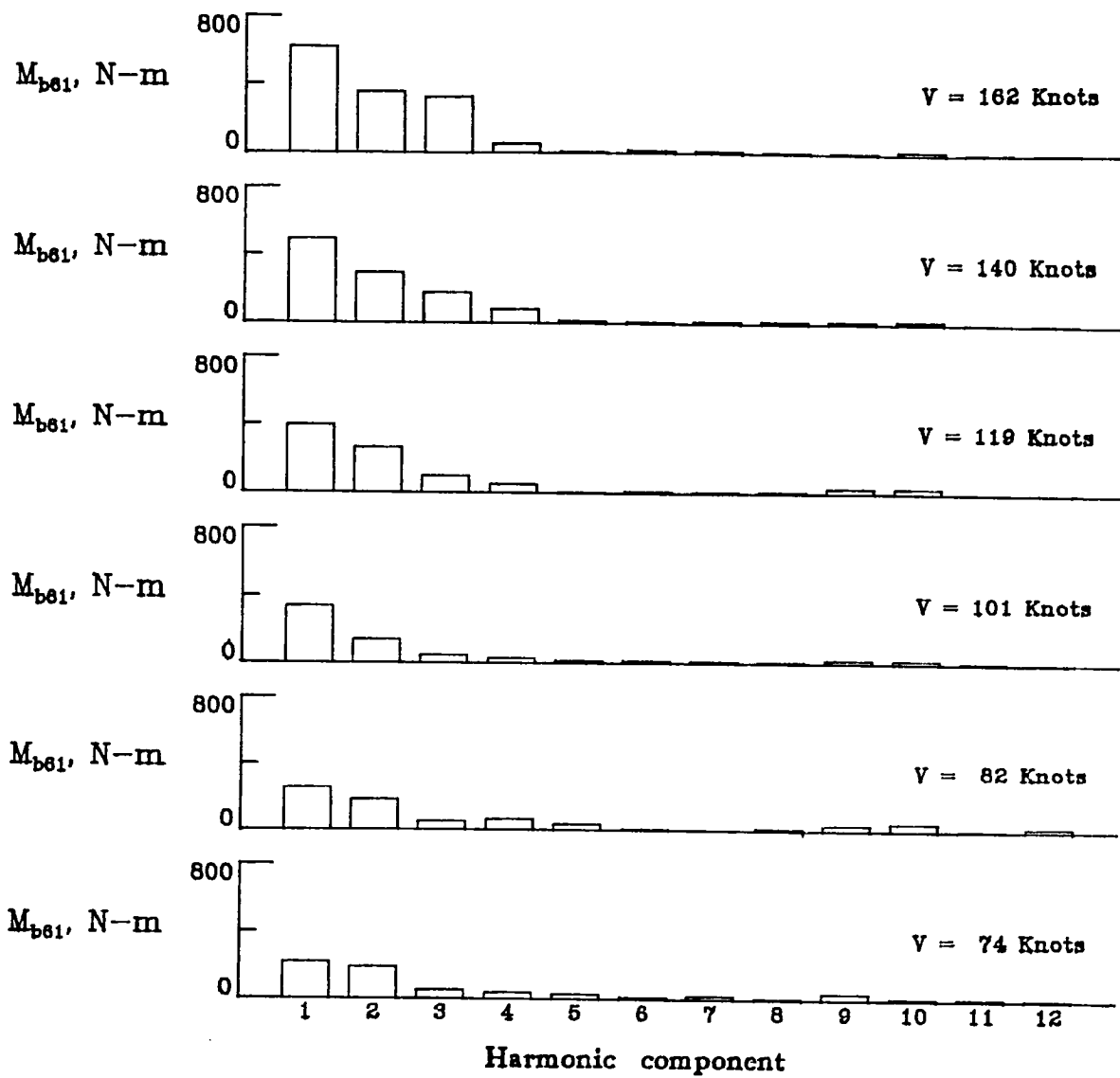
(b) M_{b35}

Figure 8.- Continued.



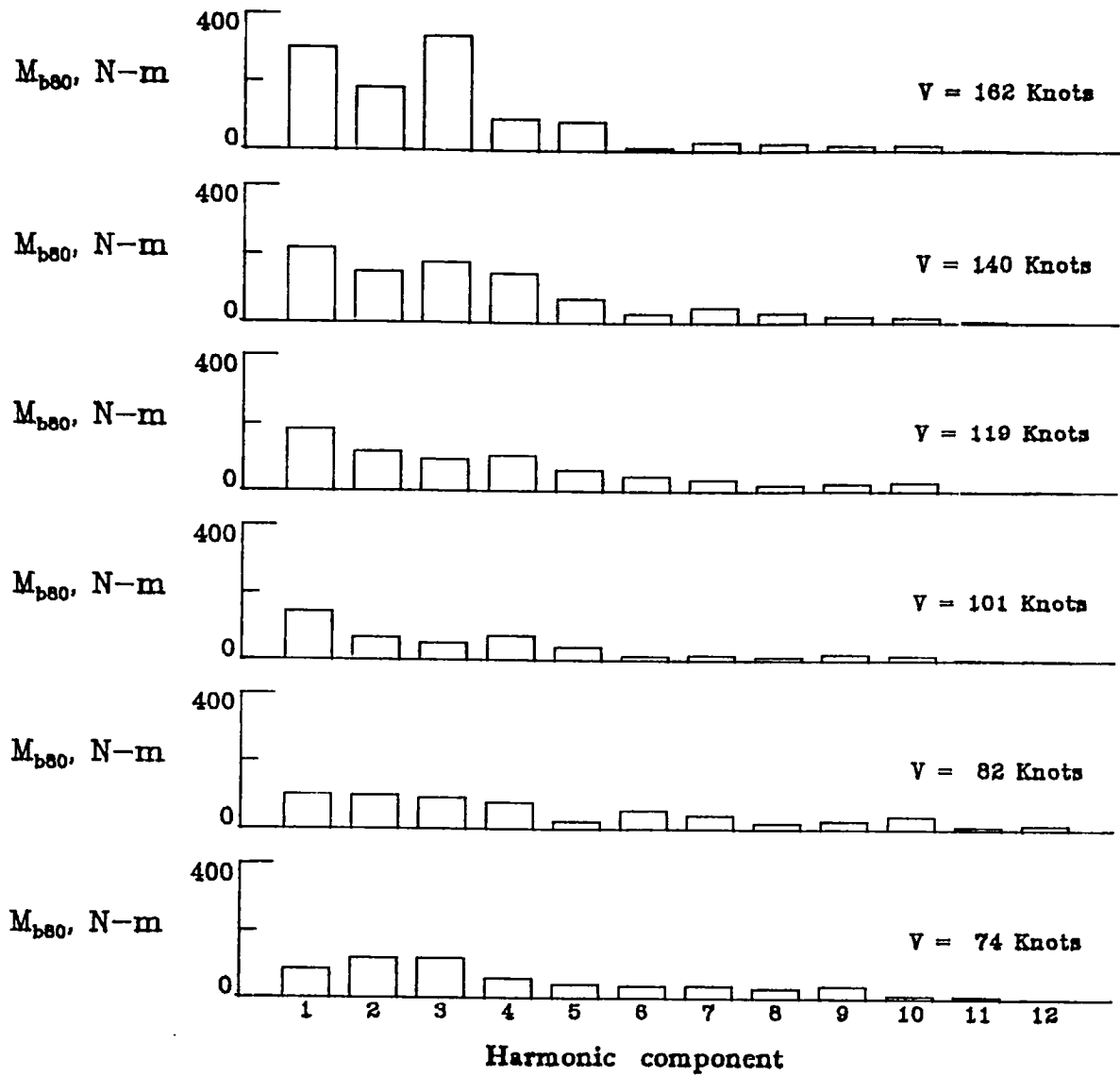
(c) M_{b45}

Figure 8.- Continued.



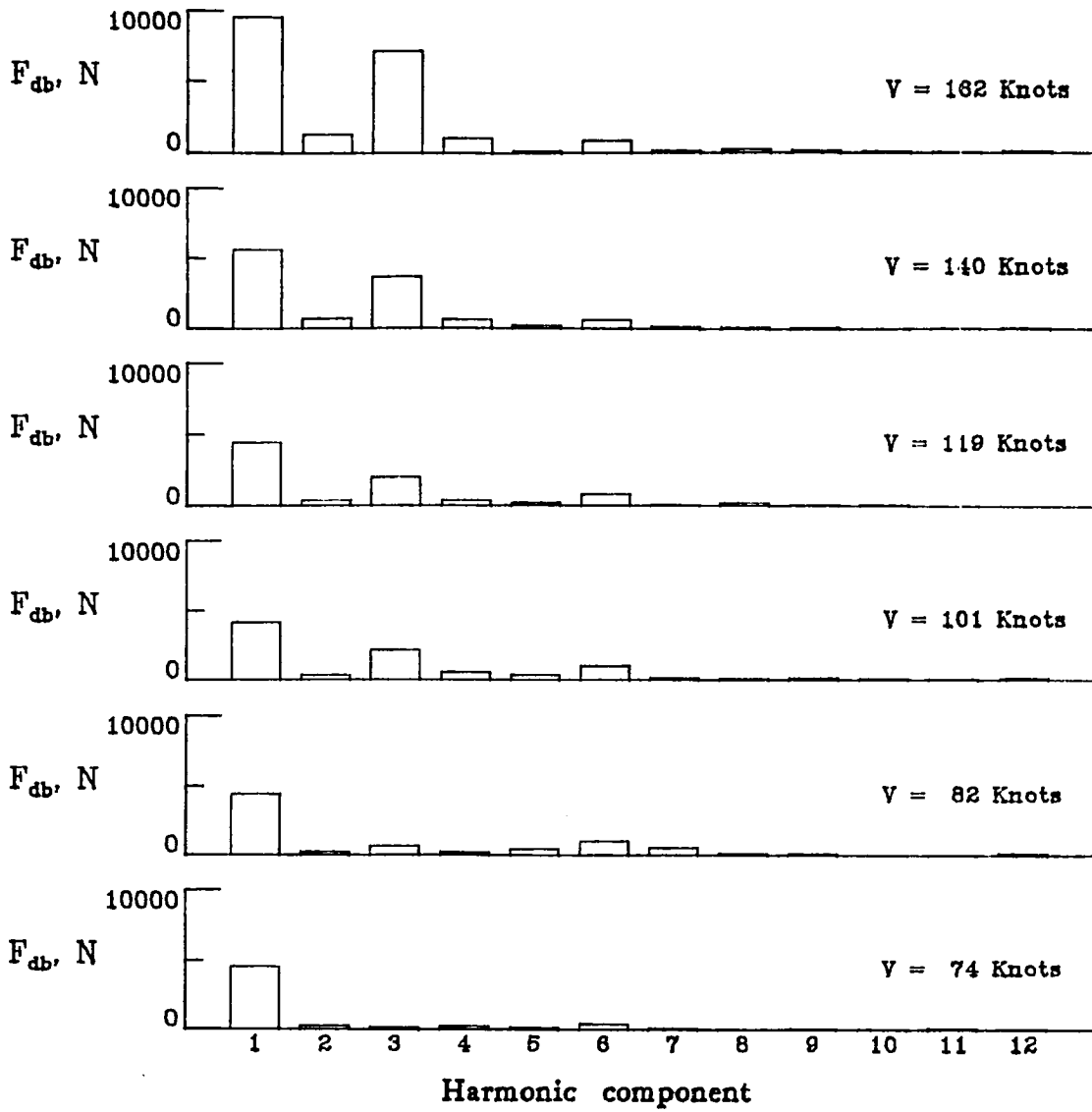
(d) M_{b61}

Figure 8.- Continued.



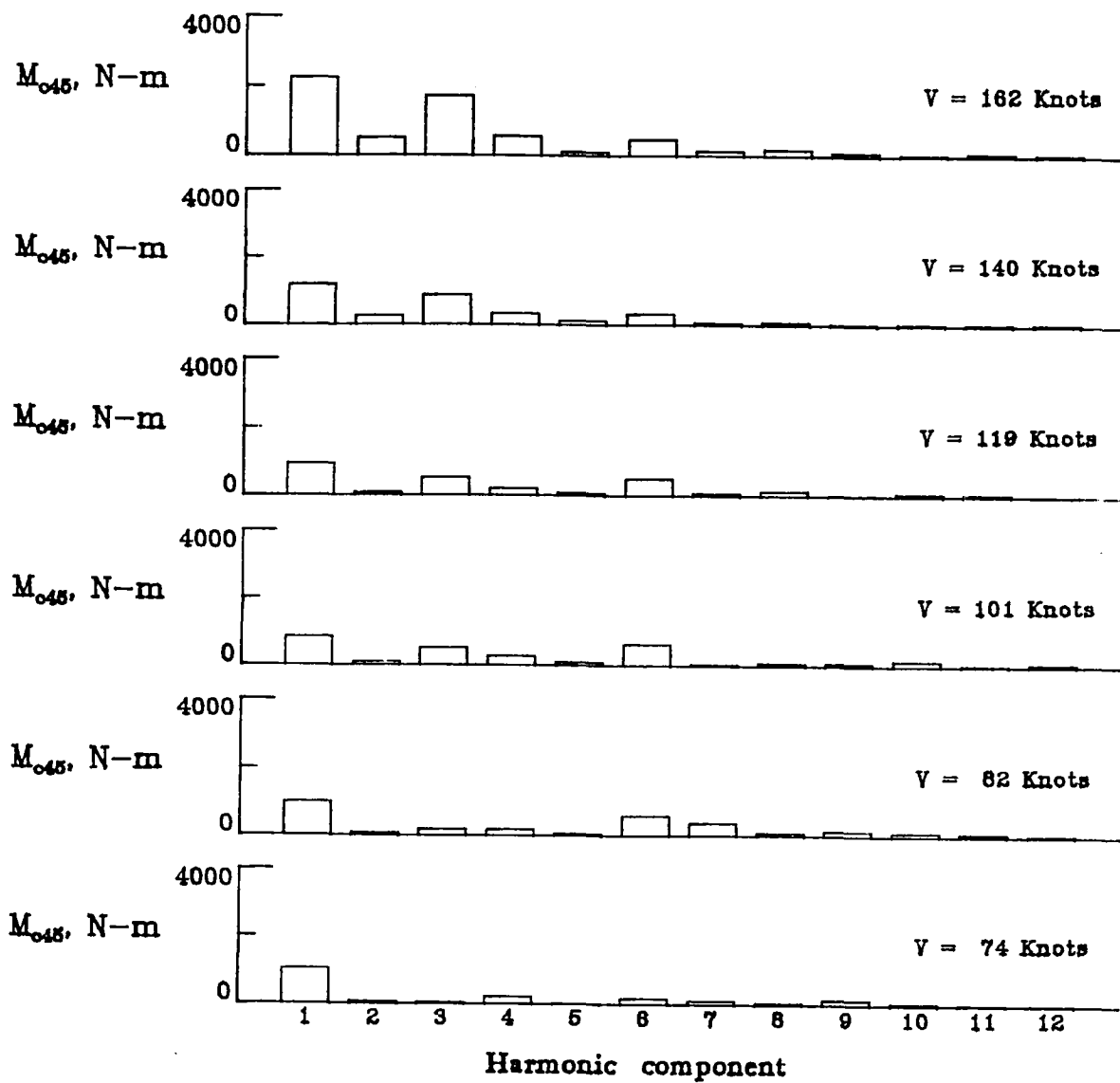
(e) M_{b80}

Figure 8.- Continued.



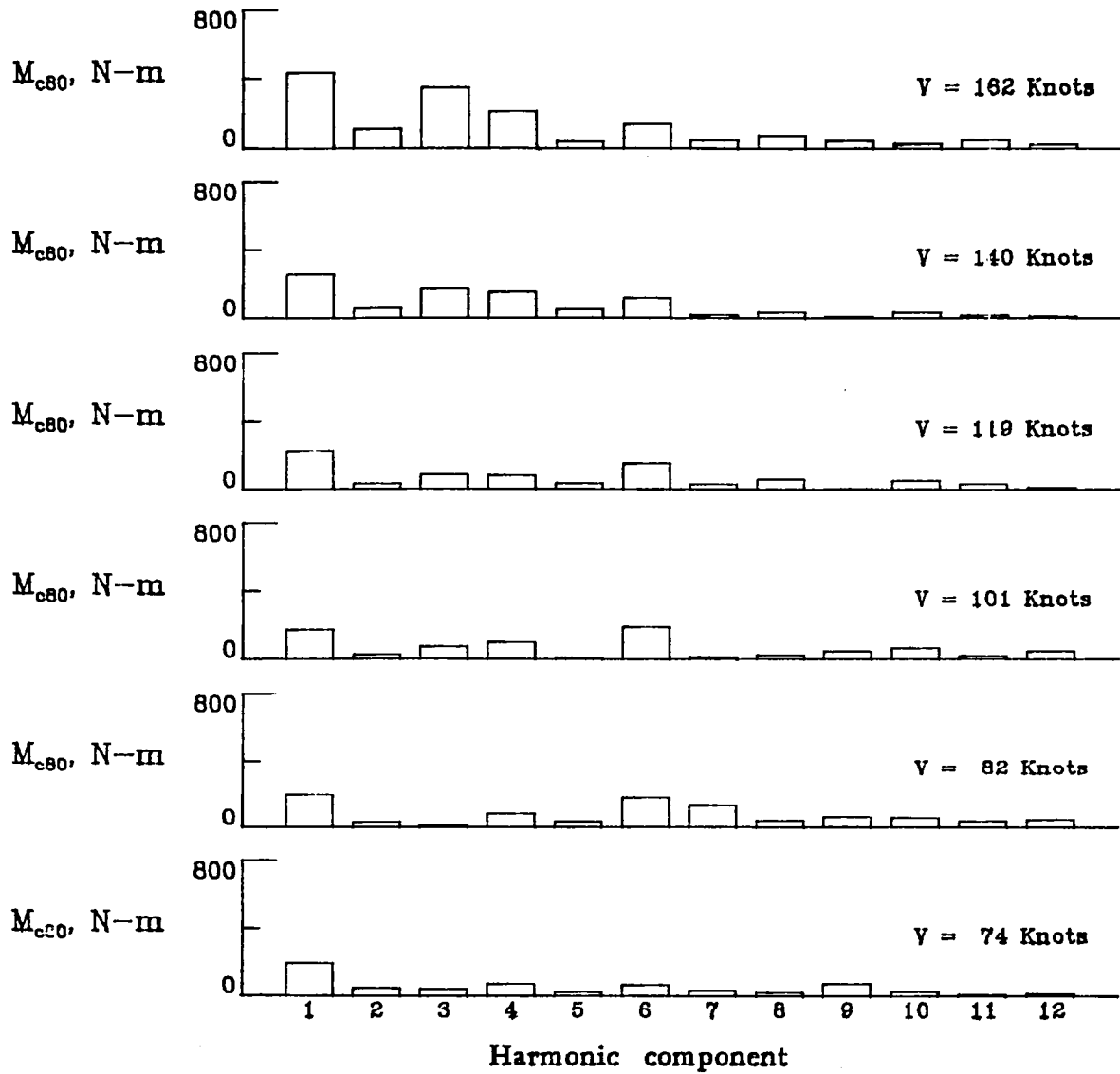
(f) F_{db}

Figure 8.- Continued.



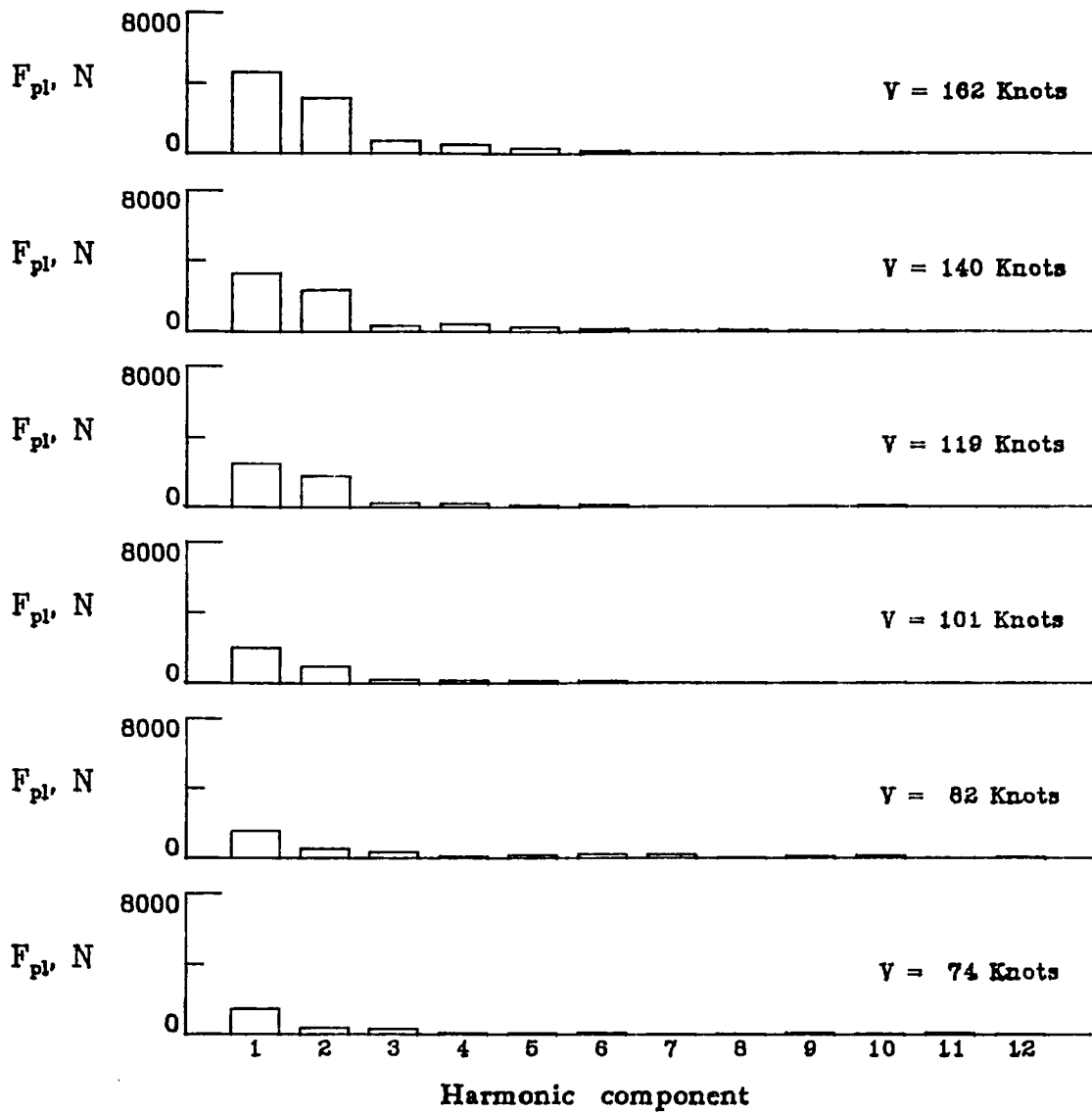
(g) M_{c45}

Figure 8.- Continued.



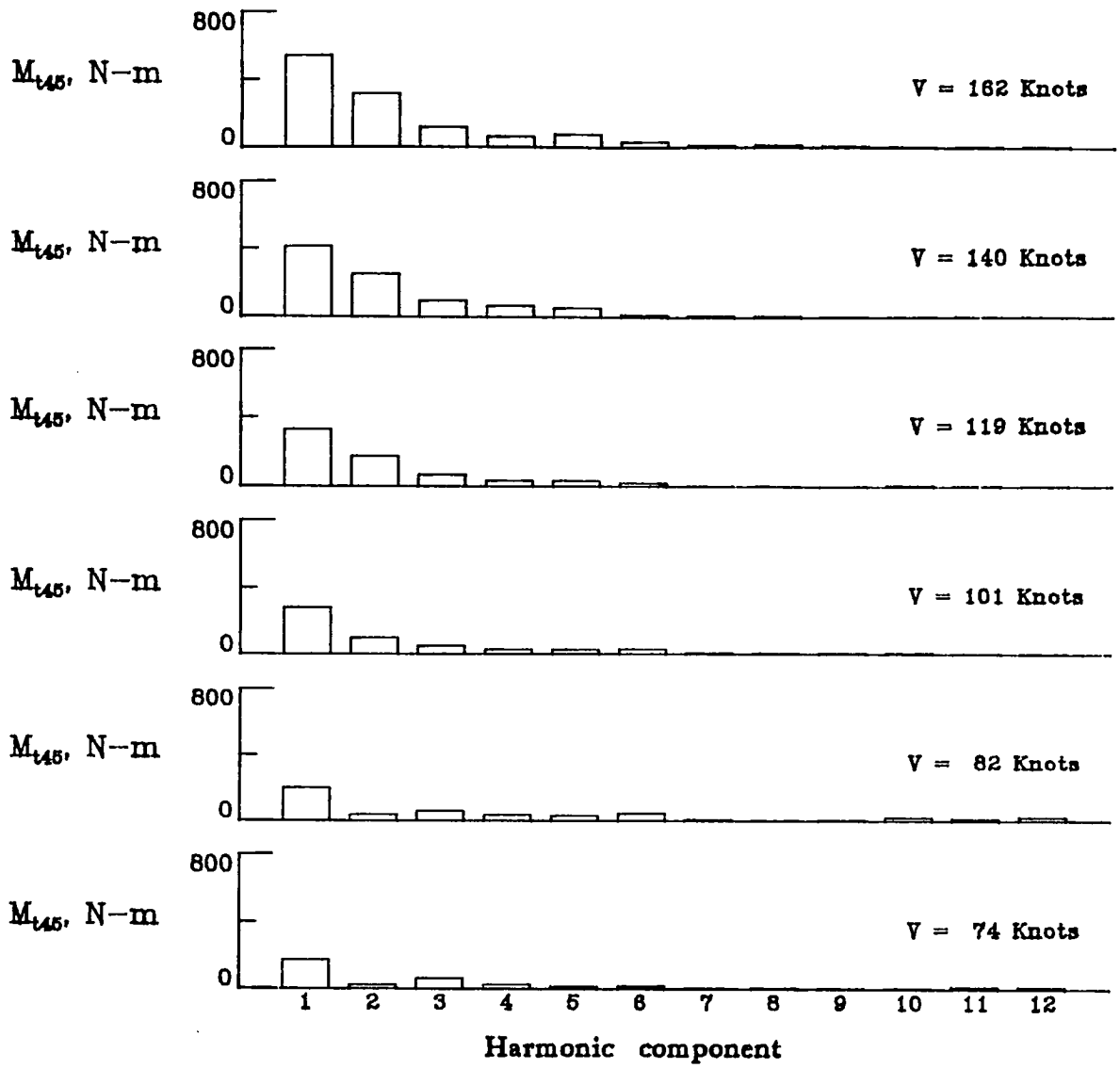
(h) M_{c80}

Figure 8.- Continued.



(i) F_{pl}

Figure 8.- Continued.



(j) M_{t45}

Figure 8.- Concluded.

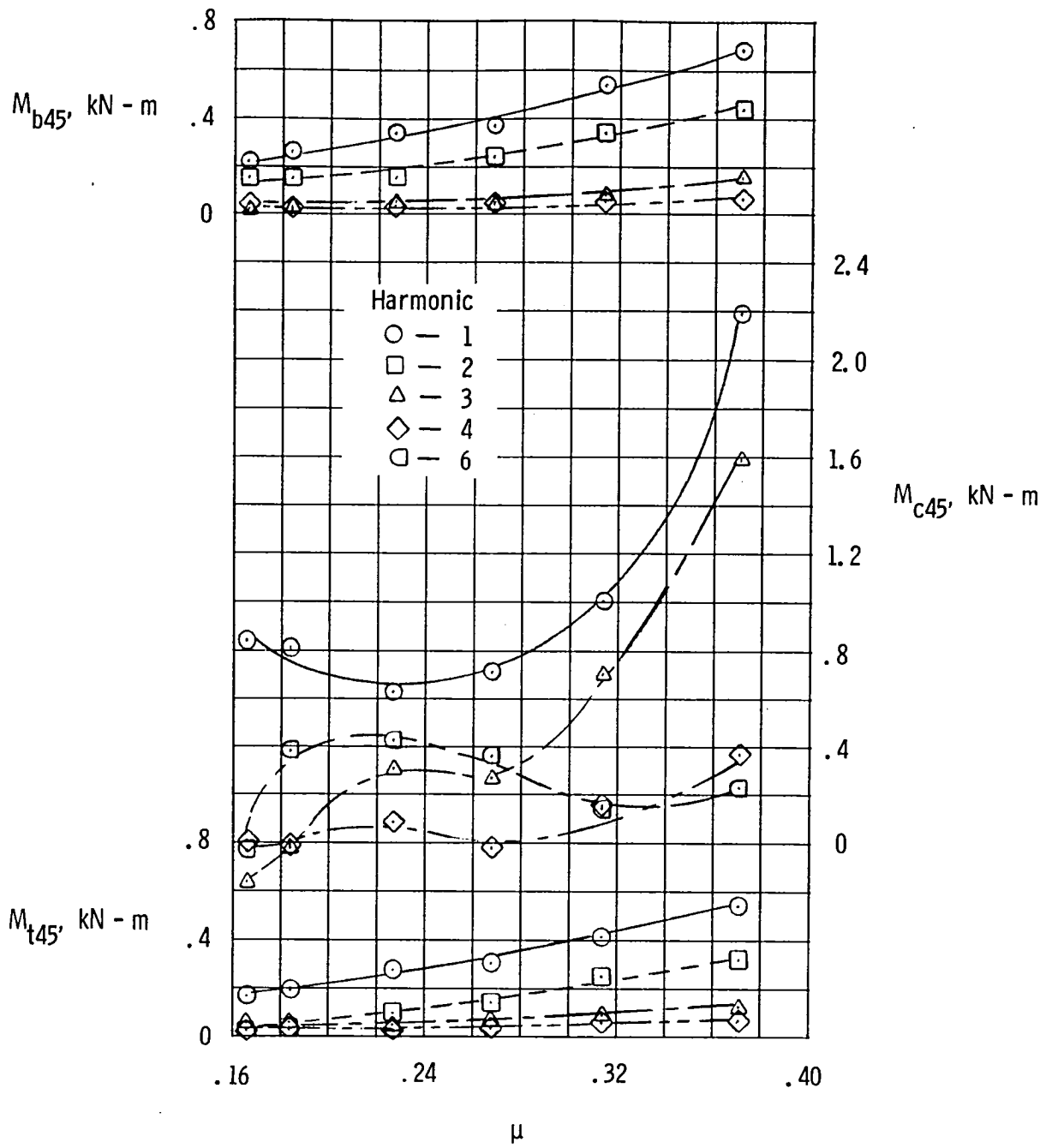
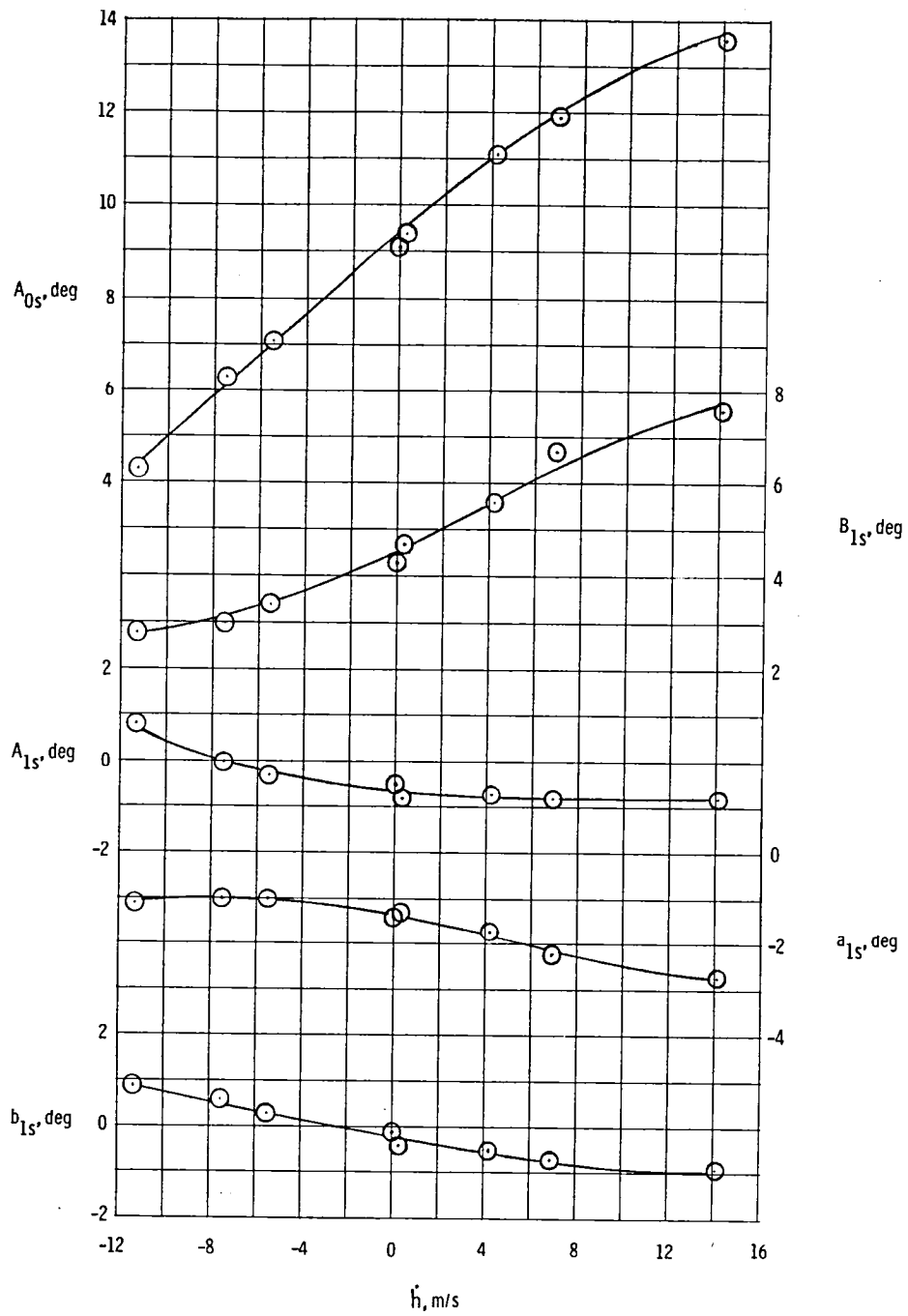
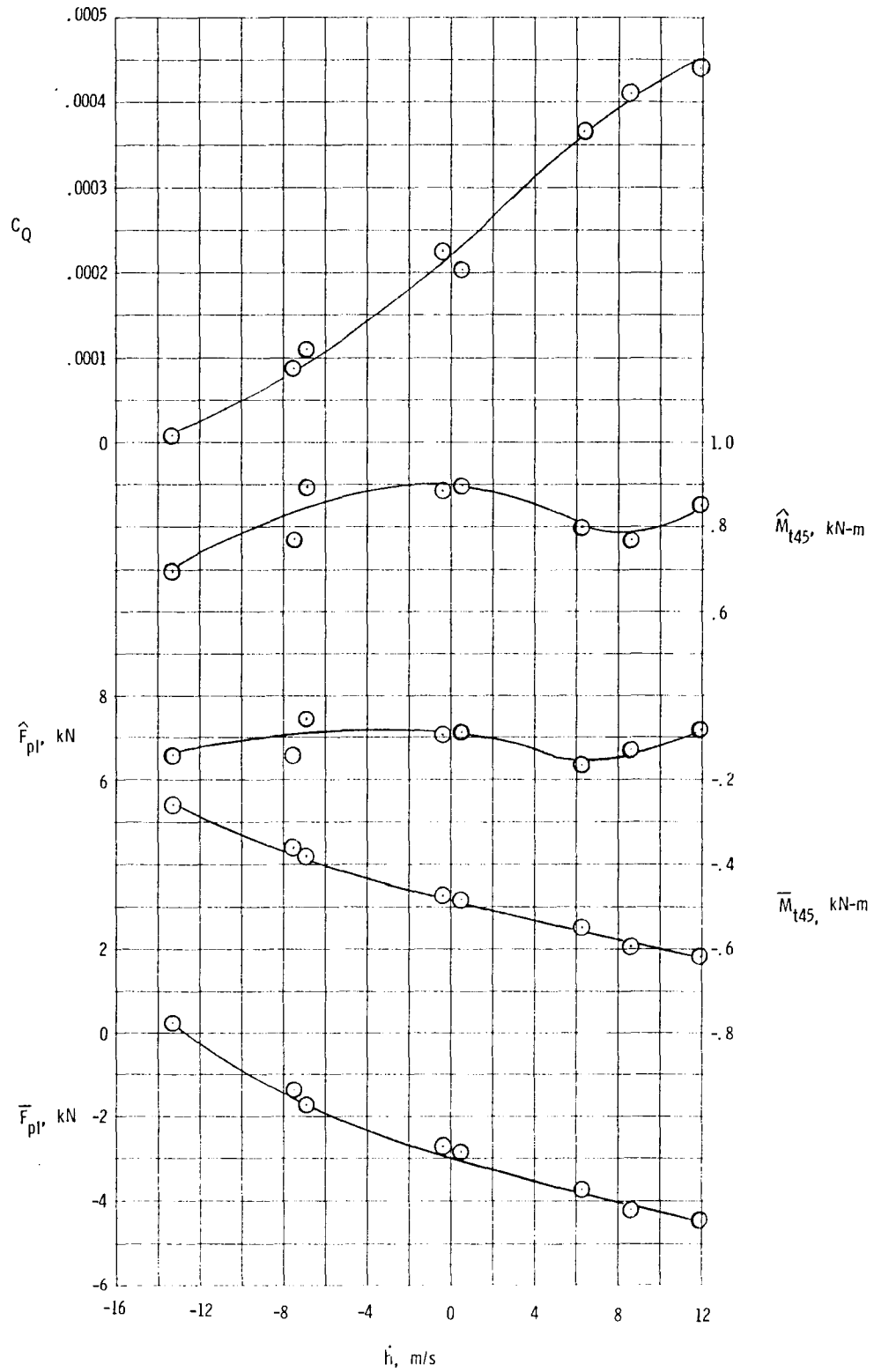


Figure 9. - Effect of tip-speed ratio on primary harmonic-load components at 0.45R.



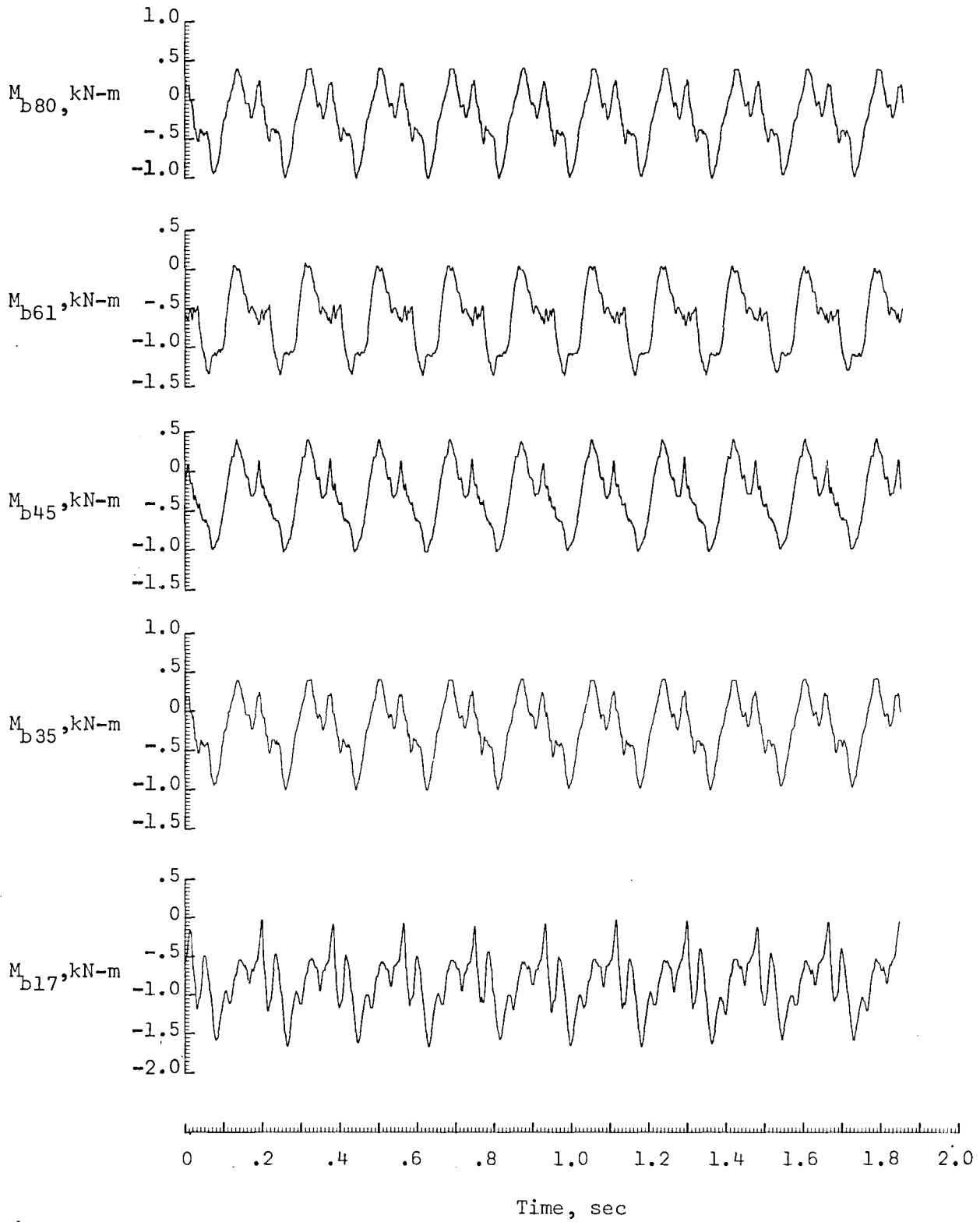
(a) Rotor angles

Figure 10. - Effect of rate of climb on rotor angles, loads and torque required. $\bar{\mu} = 0.24$; $C_L' = 0.0045$.



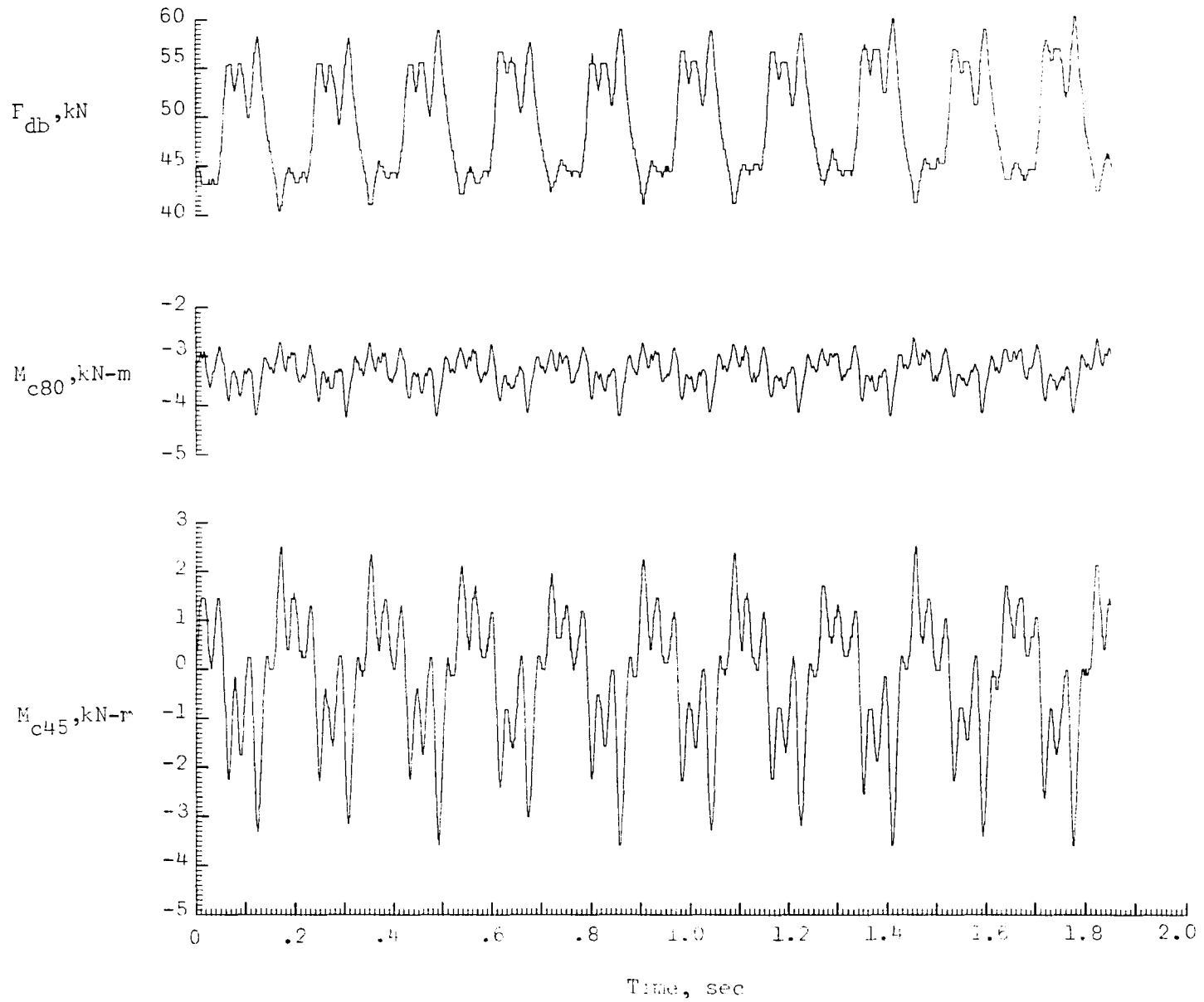
(b) Rotor torque and torsional loads.

Figure 10.- Concluded.



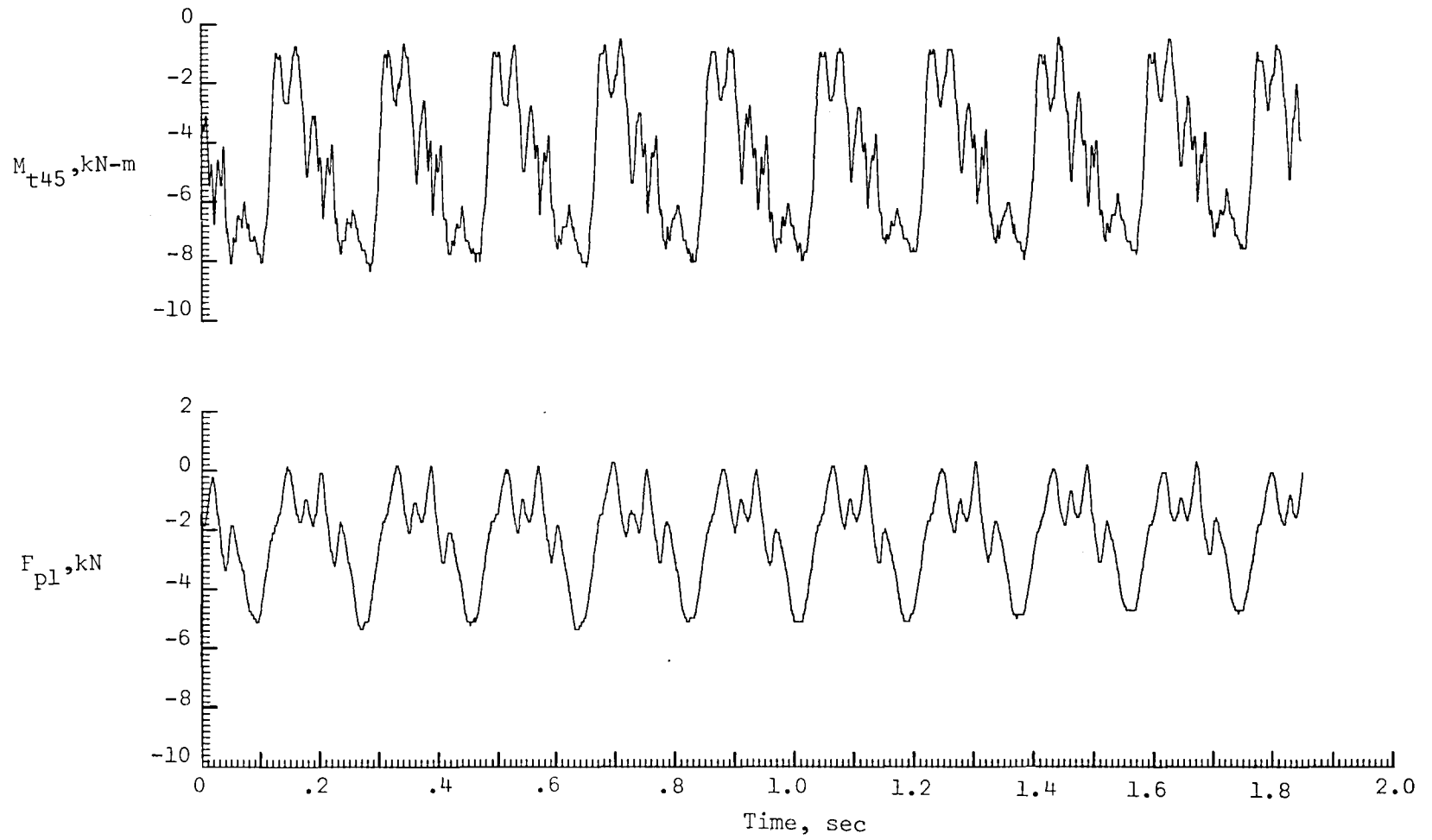
(a) Beamwise loads

Figure 11. - Rotor-load histories for typical descending left turn (Flight 80, run 29 of Appendix A). $\mu = 0.24$; $C'_L = 0.0071$.



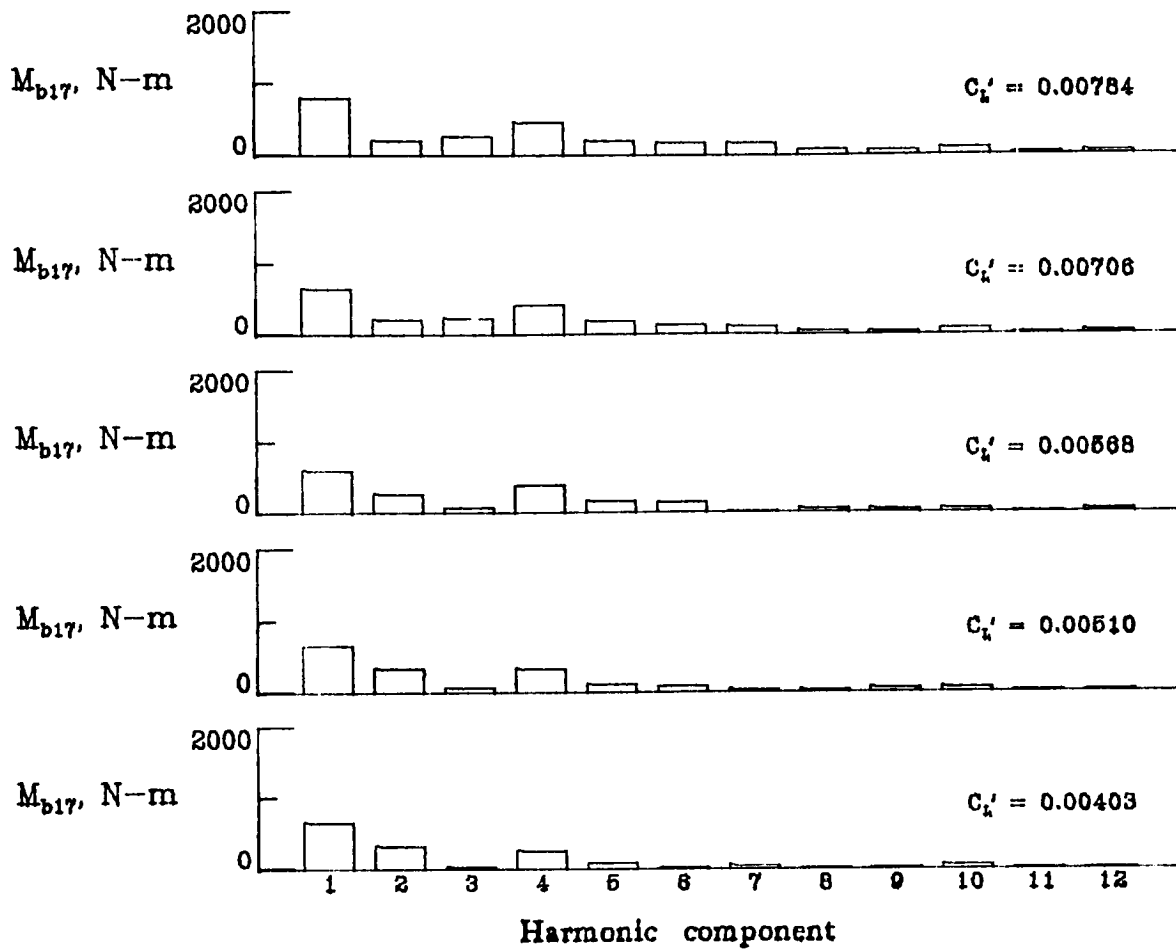
(b) Chordwise loads

Figure 11.- Continued.



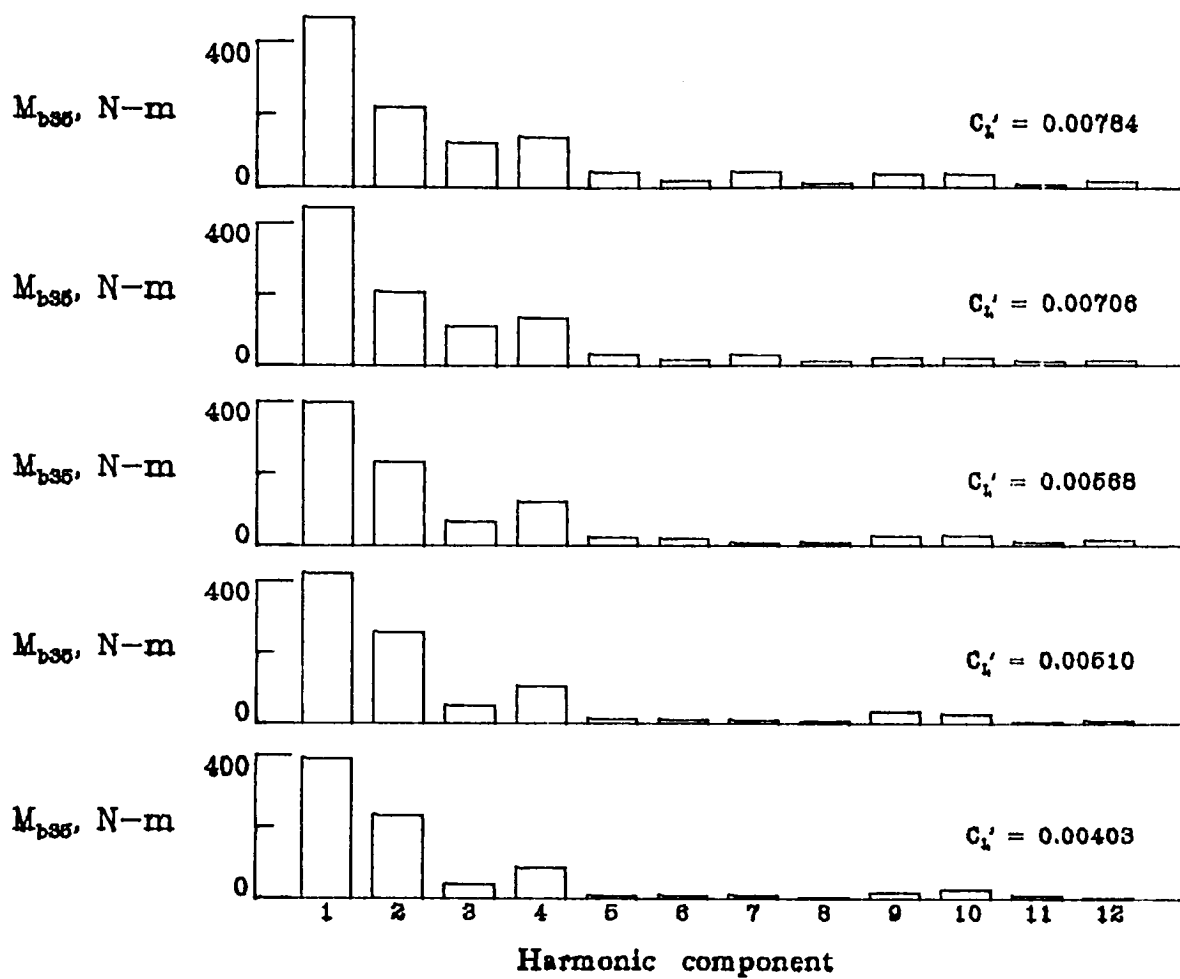
(c) Torsional loads

Figure 11.- Concluded.



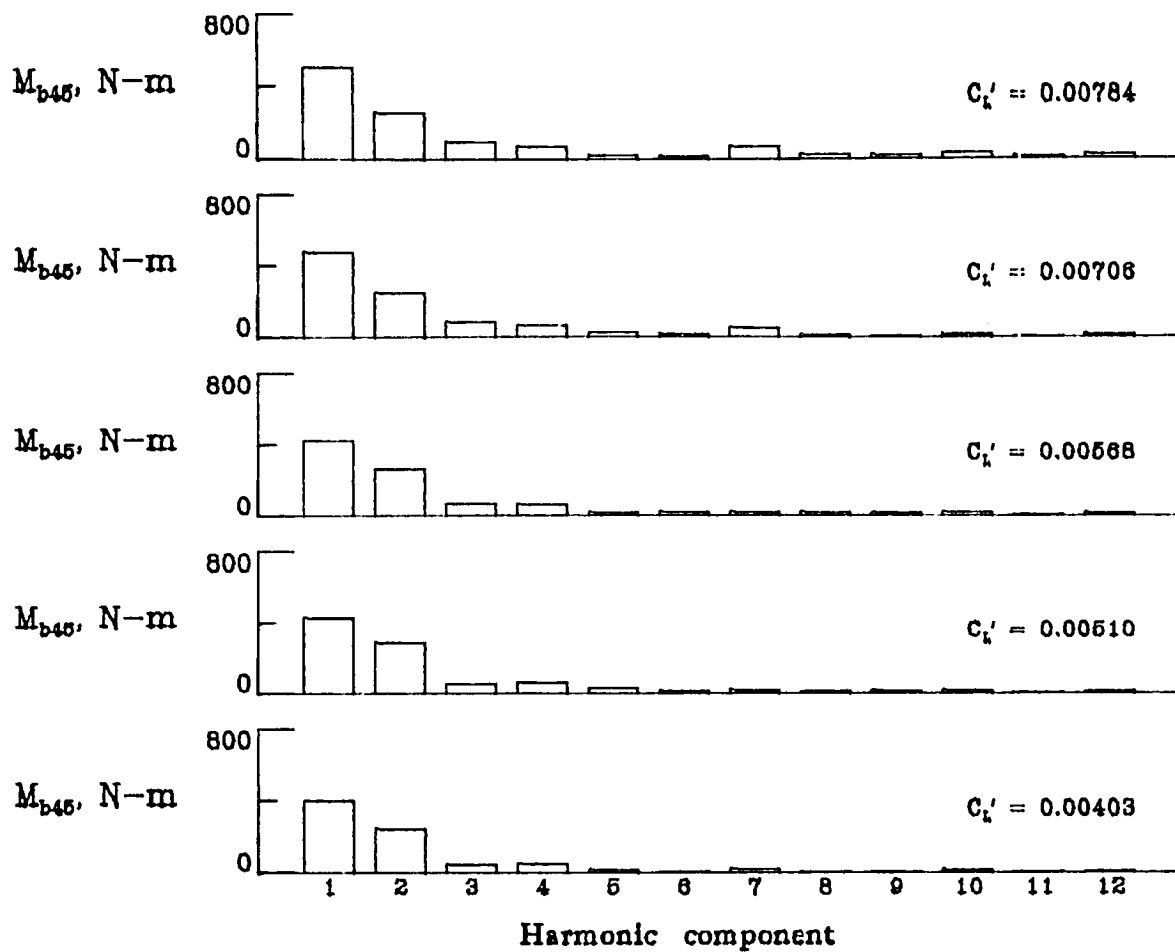
(a) M_{b17}

Figure 12. - Harmonic content of rotor loads for descending left turns.
 $\bar{u} = 0.24$.



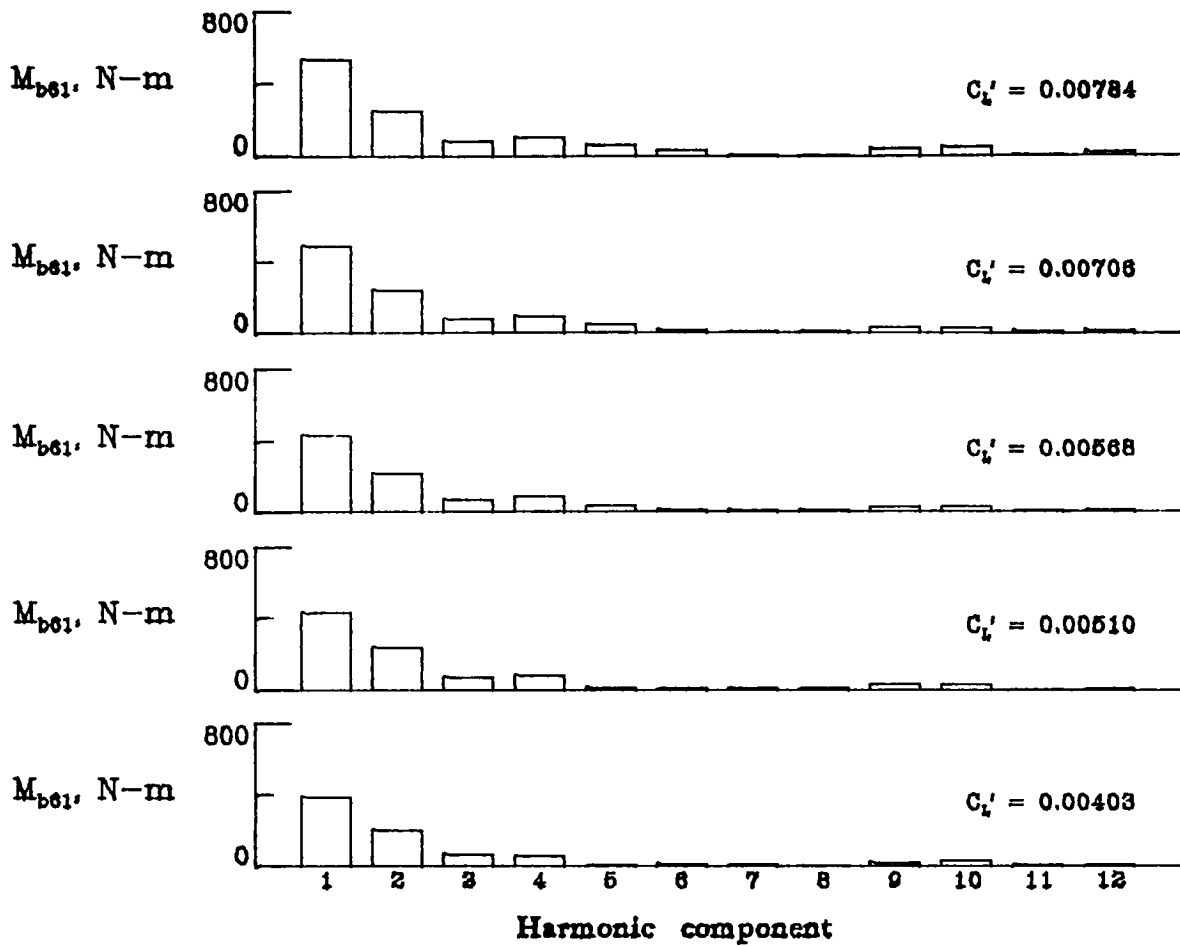
(b) M_{b35}

Figure 12.- Continued.



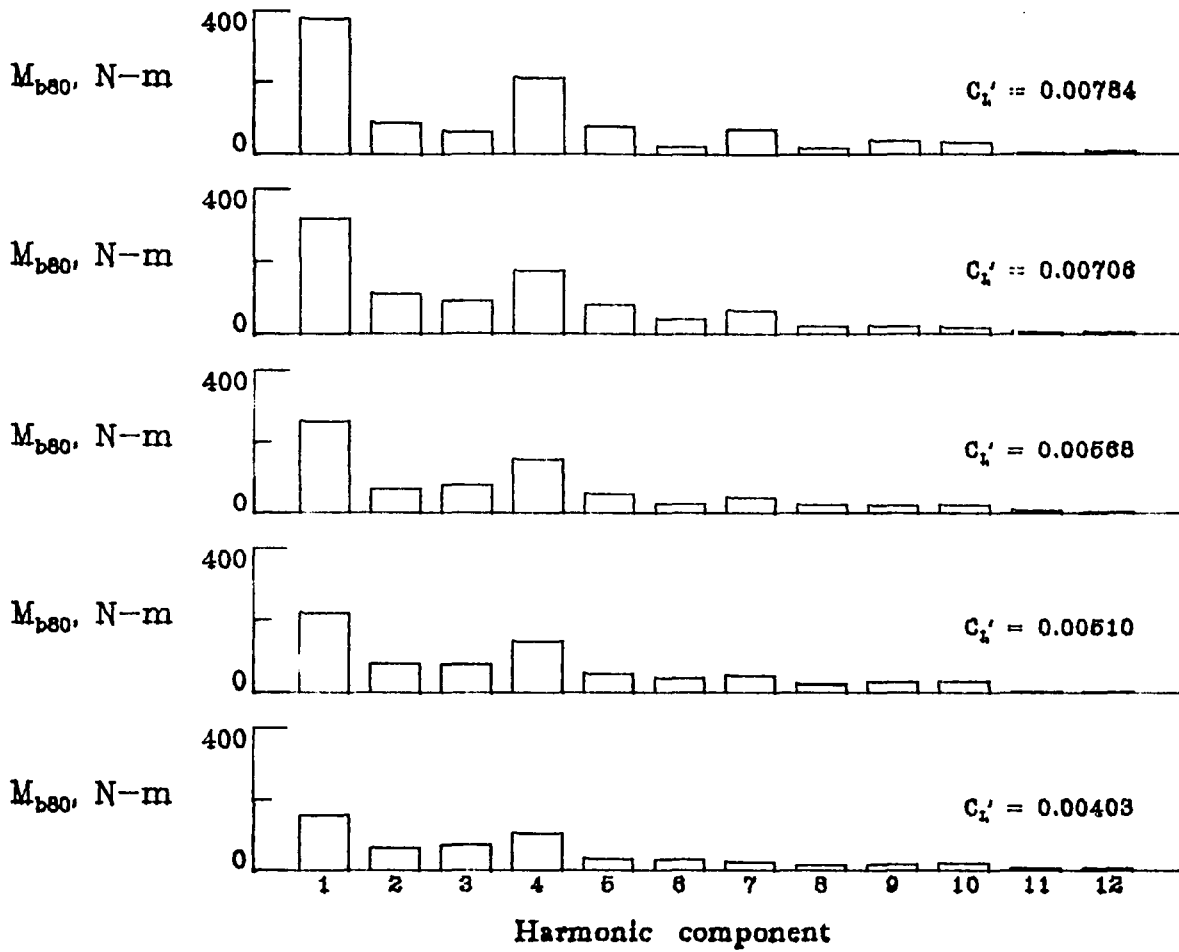
(c) M_{b45}

Figure 12.- Continued.



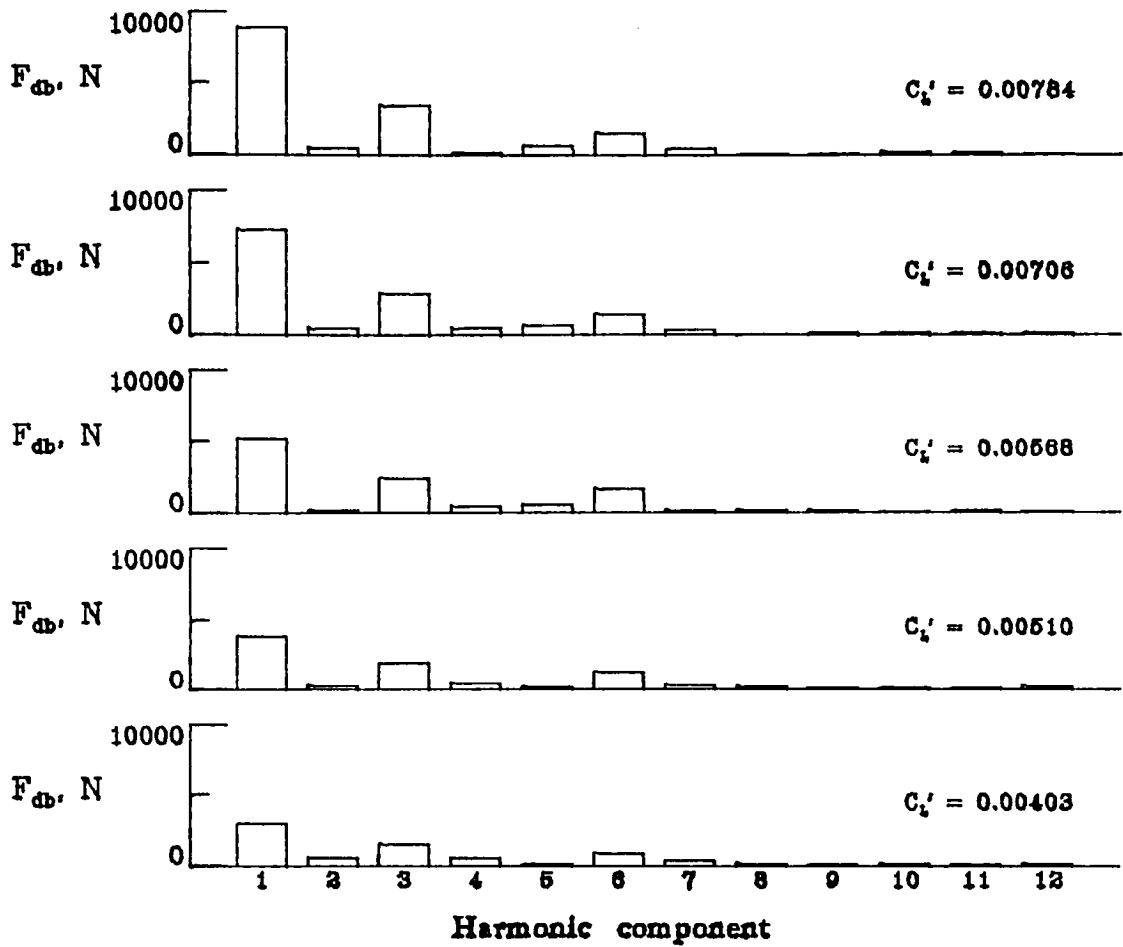
(d) M_{b61}

Figure 12.- Continued.



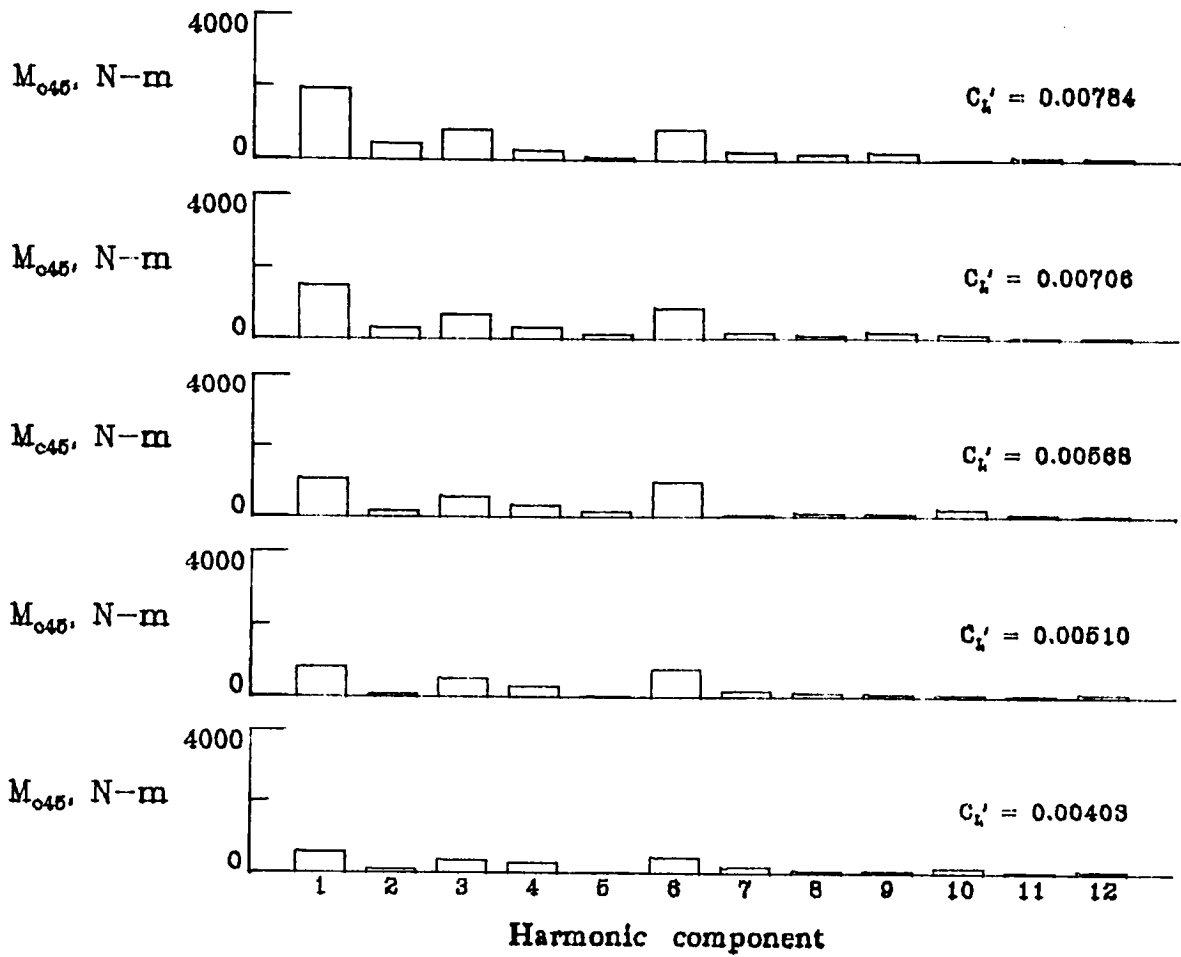
(e) M_{b80}

Figure 12.- Continued.



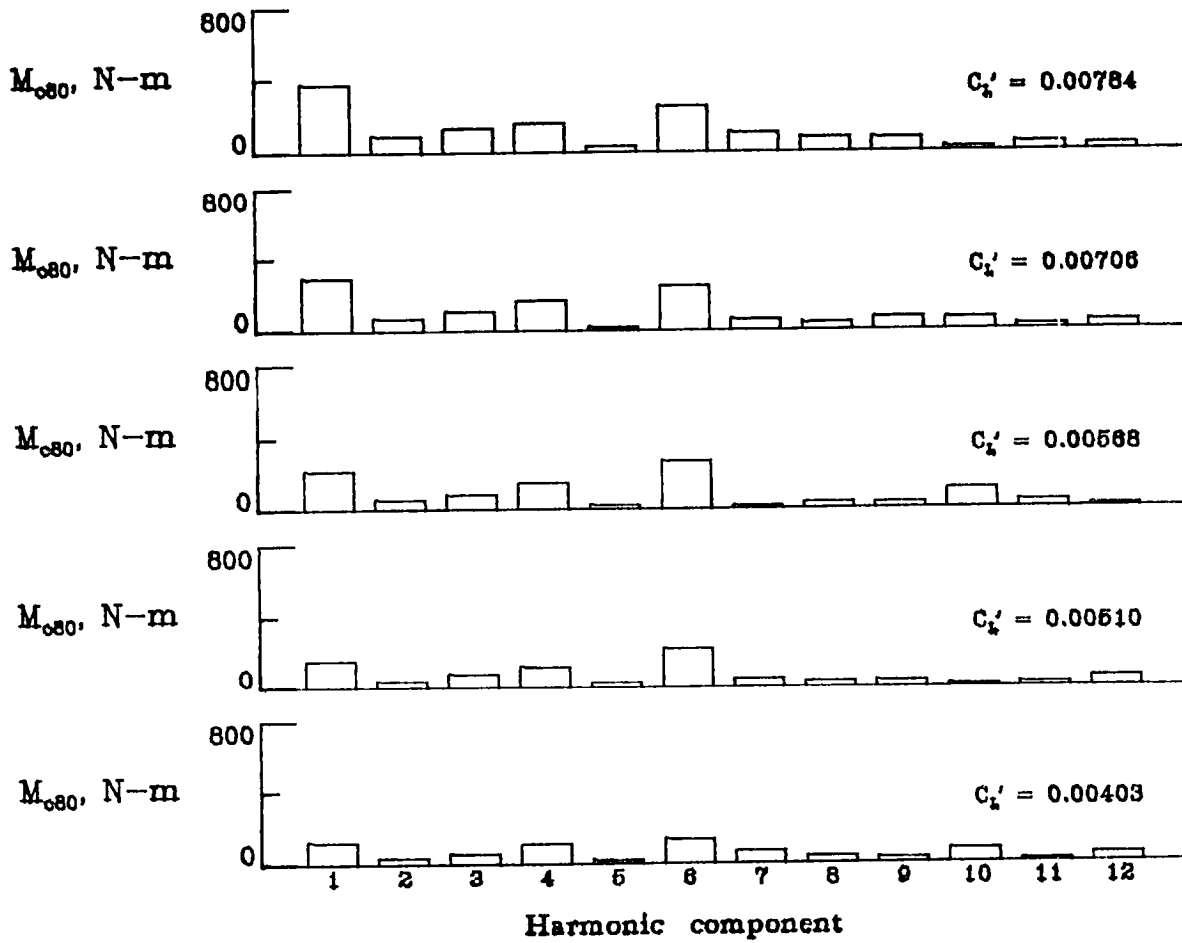
(f) F_{db}

Figure 12.- Continued.



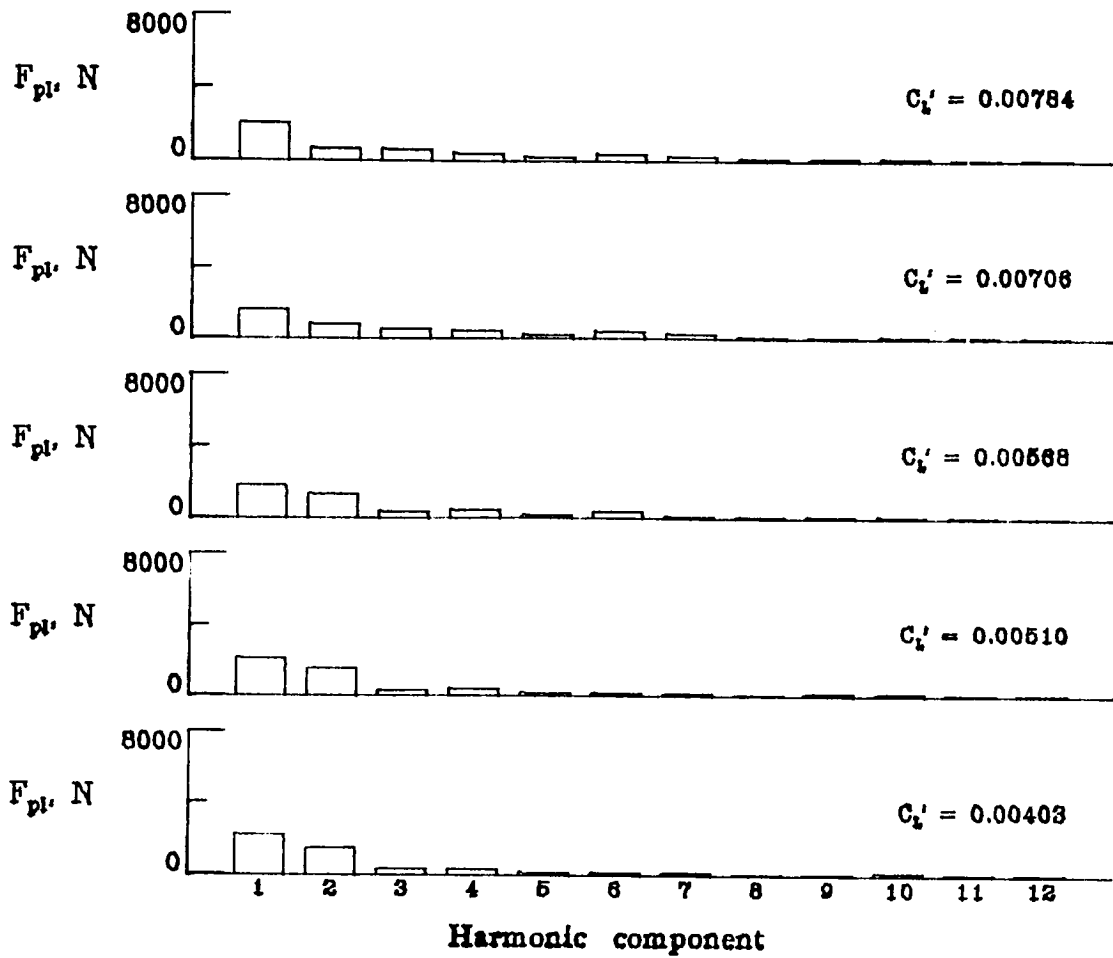
(g) M_{C45}

Figure 12.- Continued.



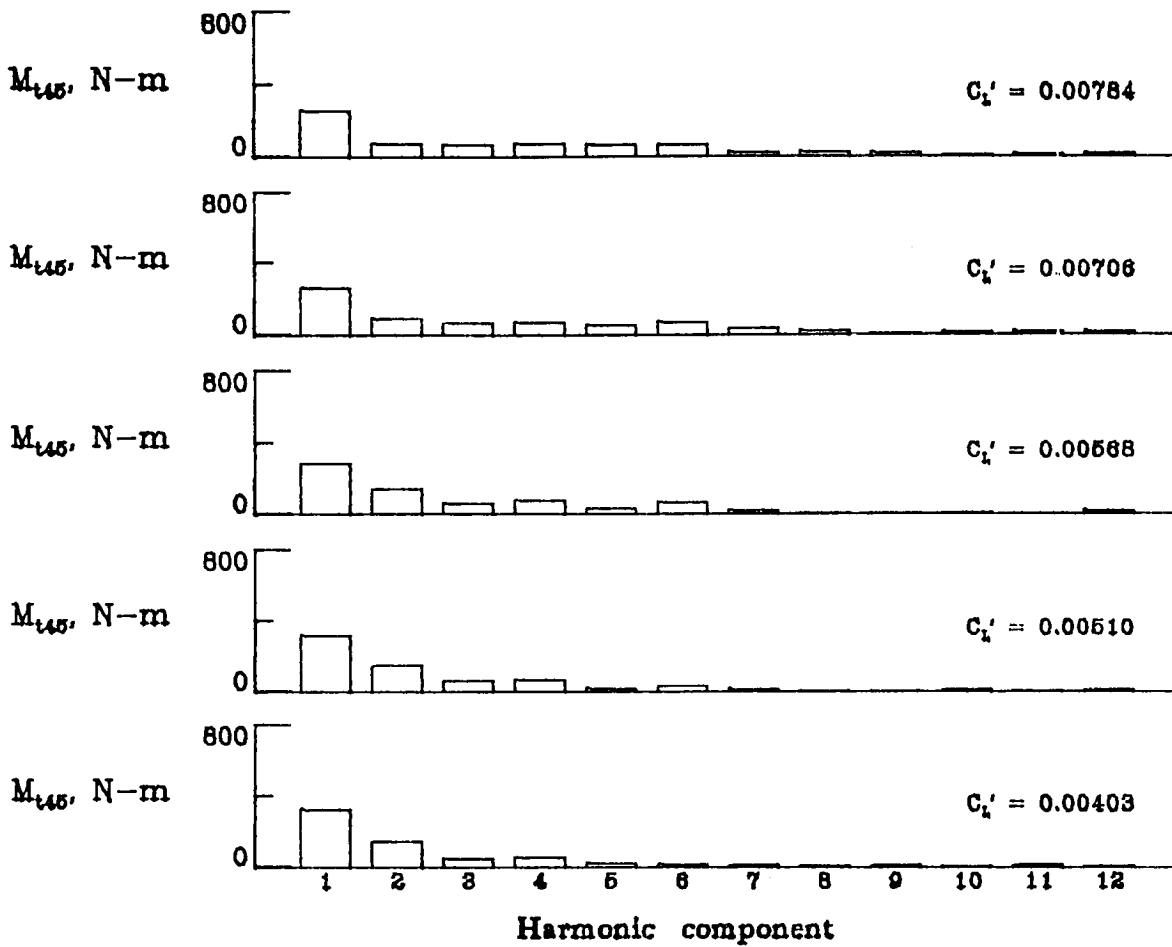
(h) M_{c80}

Figure 12.- Continued.



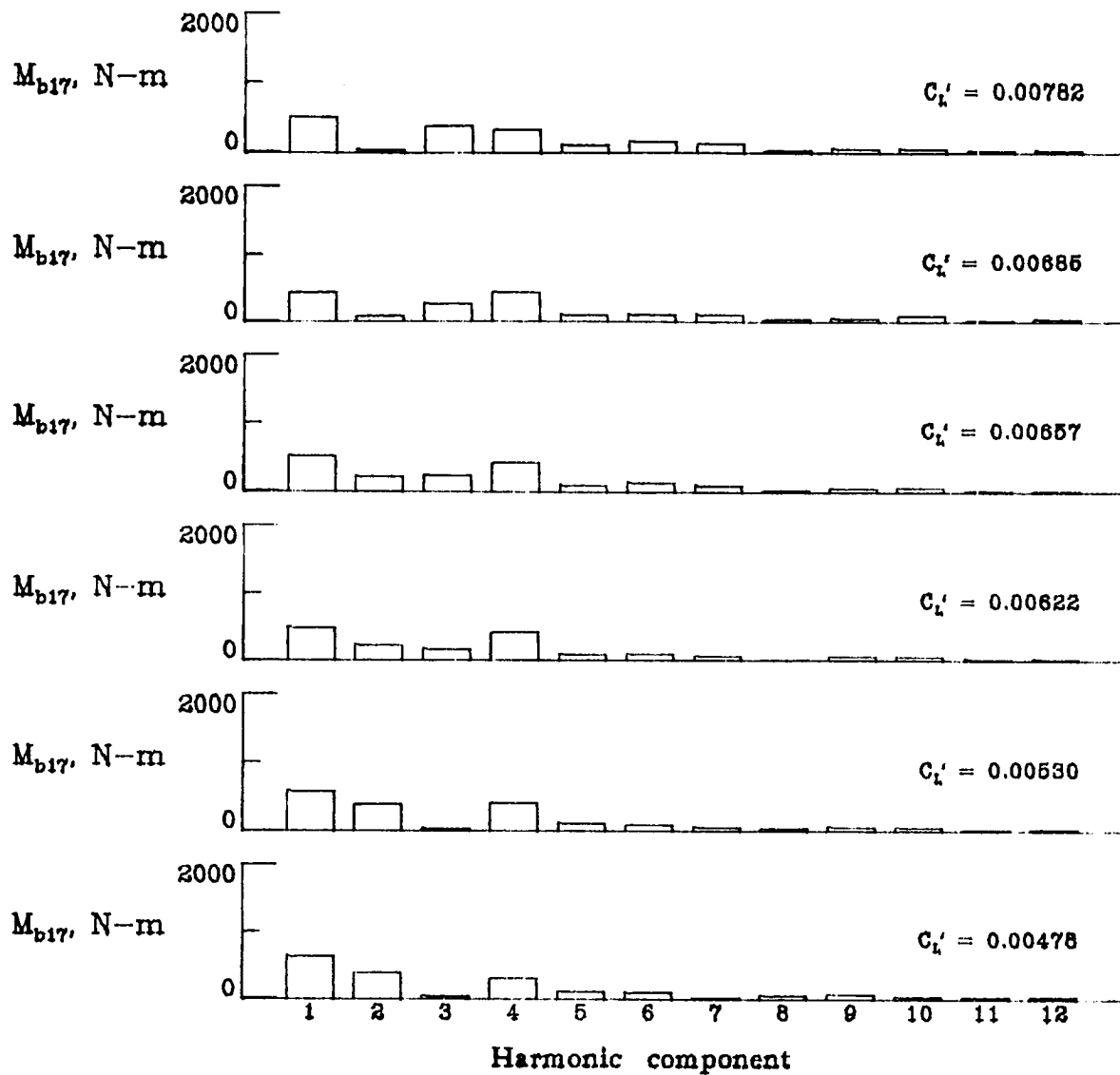
(i) F_{p1}

Figure 12.- Continued.



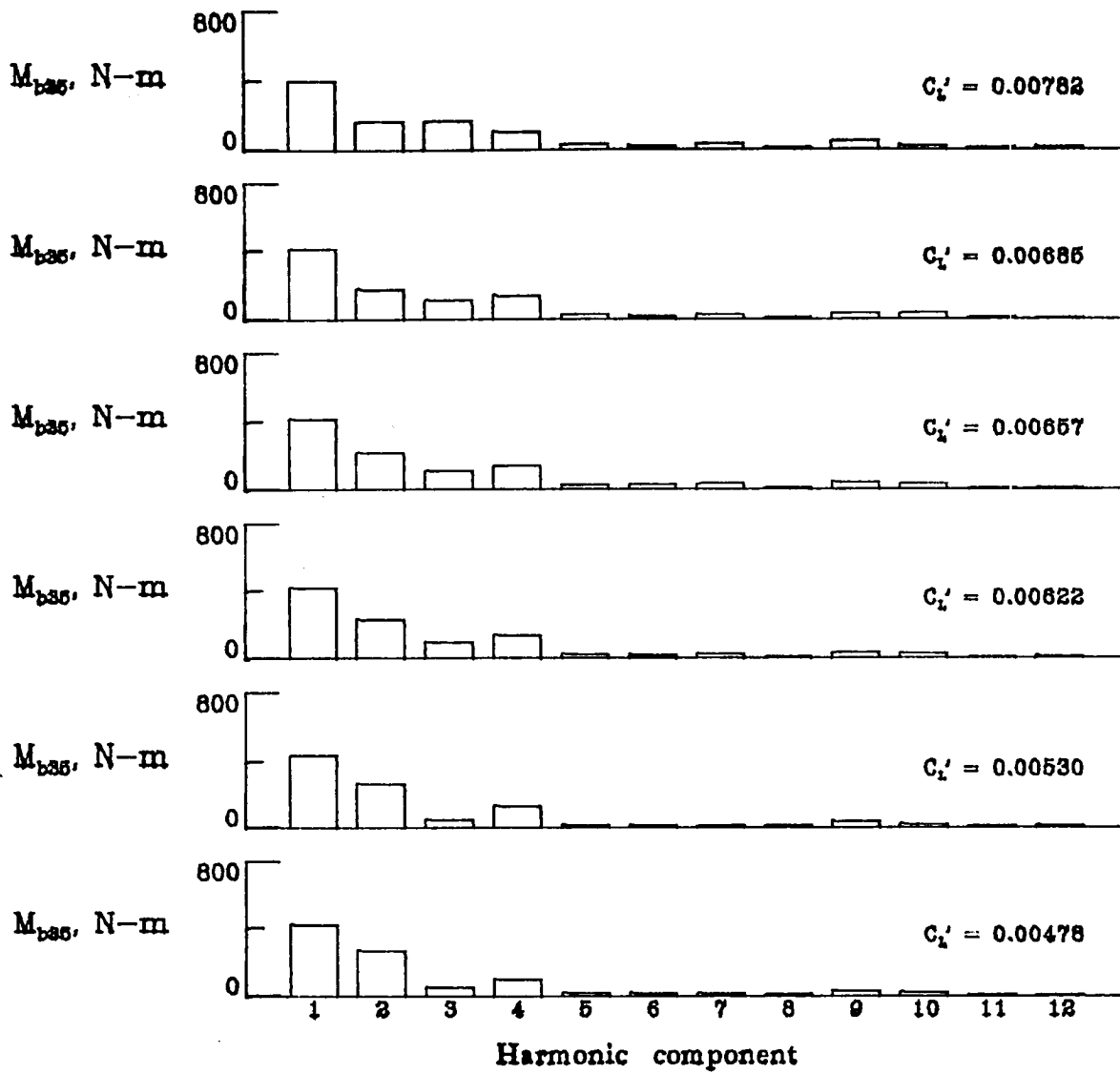
(j) M_{t45}

Figure 12.- Concluded.



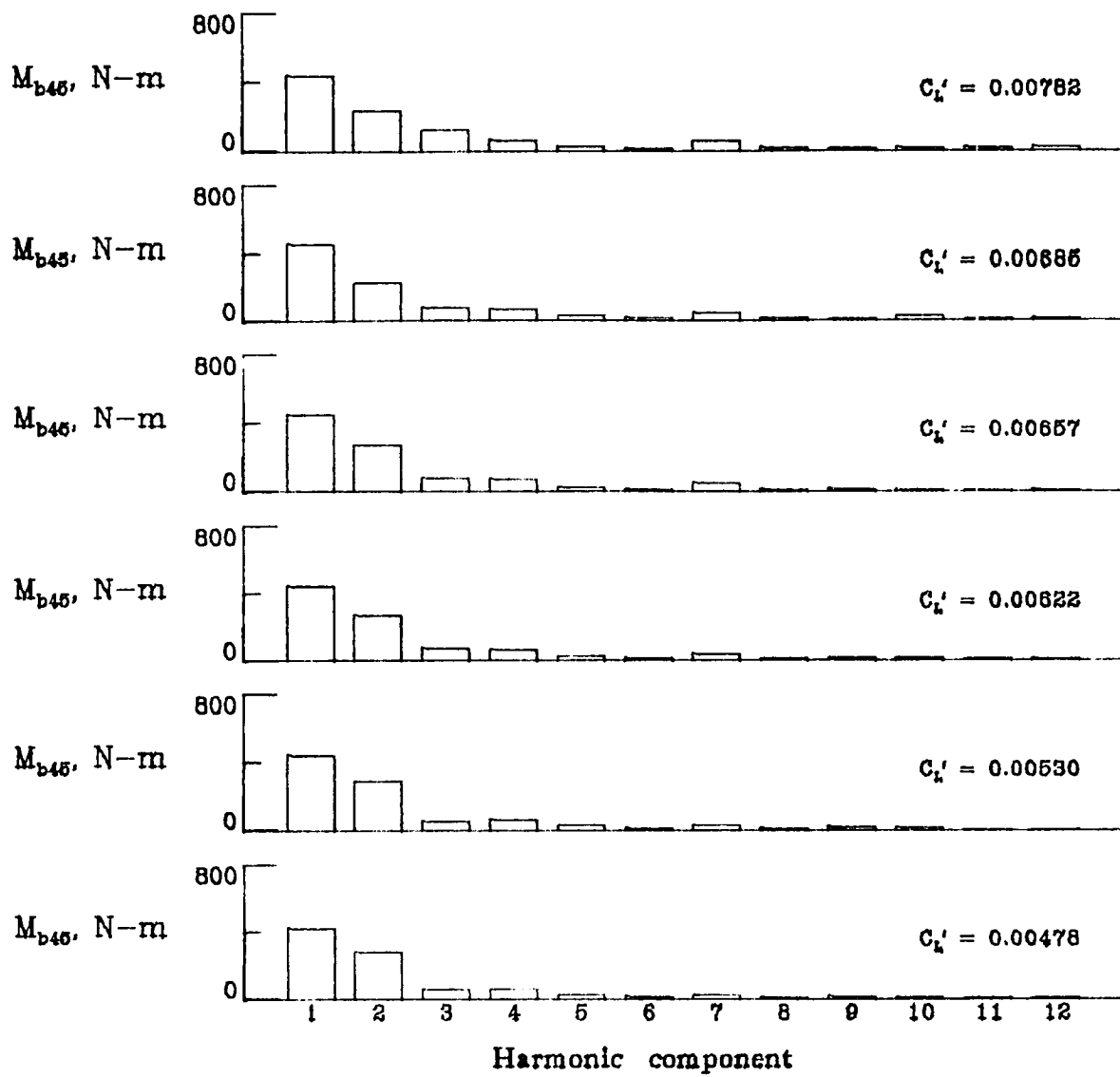
(a) M_{b17}

Figure 13.- Harmonic content of rotor loads for descending right turns.
 $\bar{\mu} = 0.24$.



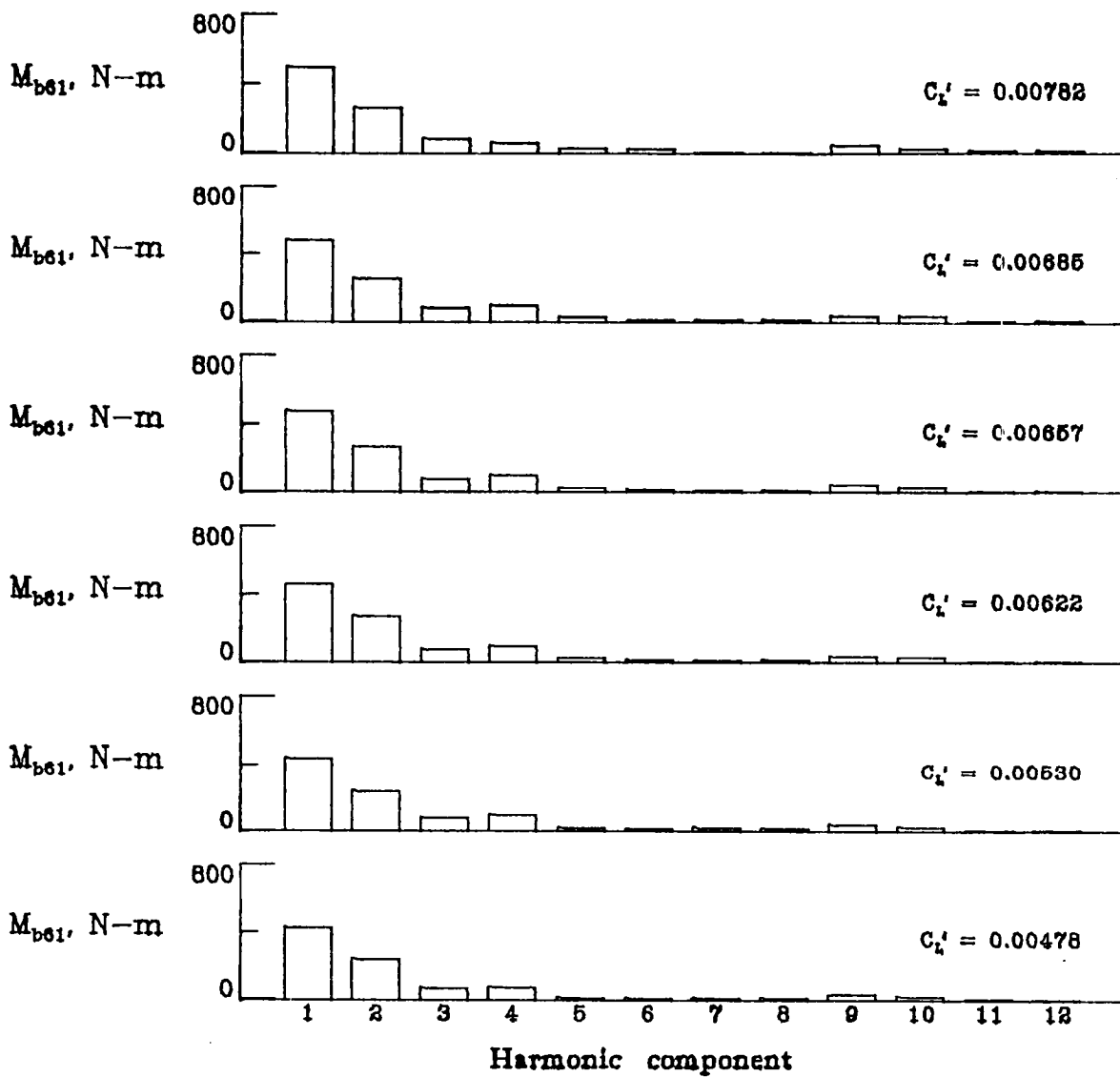
(b) M_{b35}

Figure 13.- Continued.



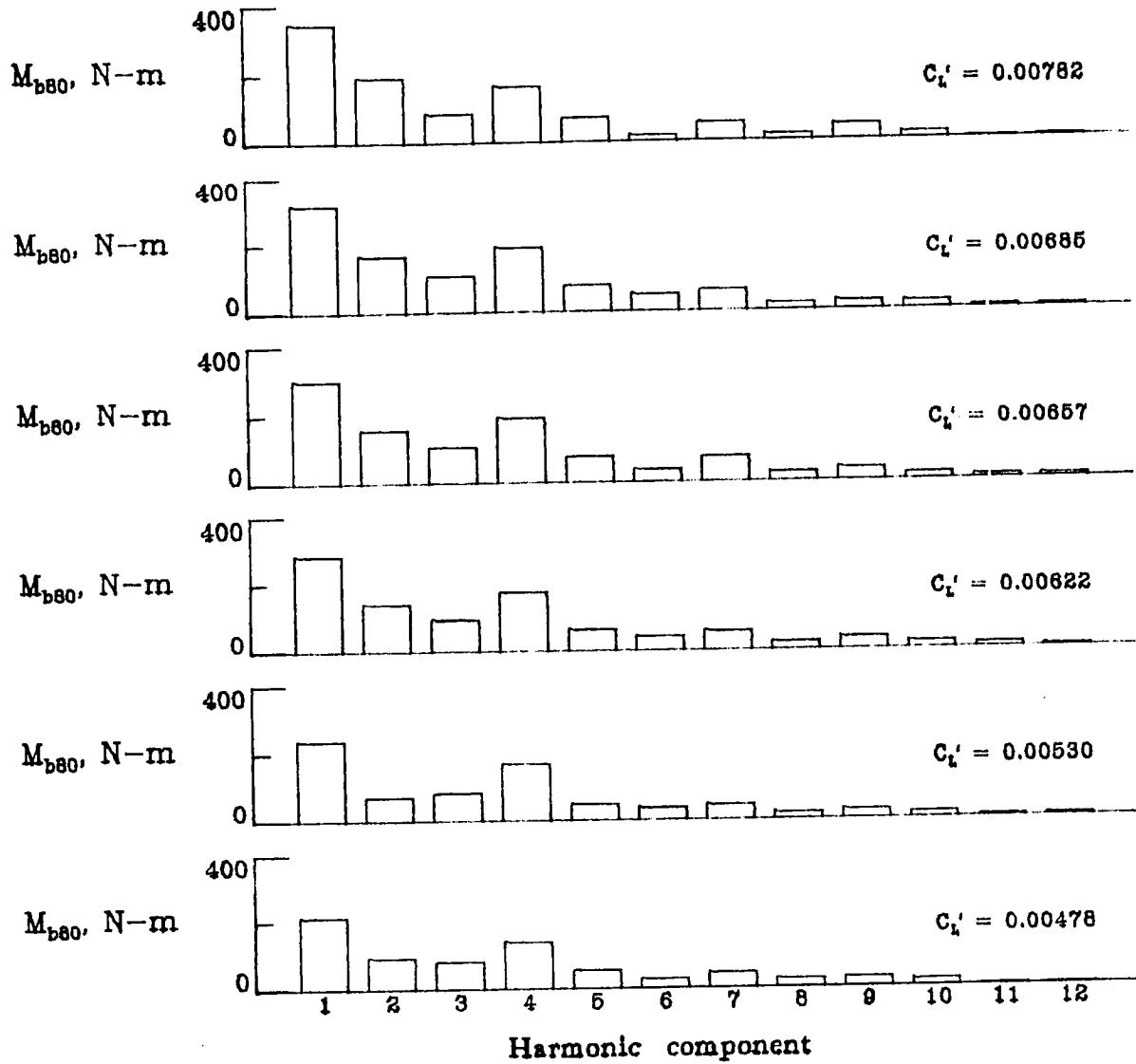
(c) M_{b45}

Figure 13.- Continued.



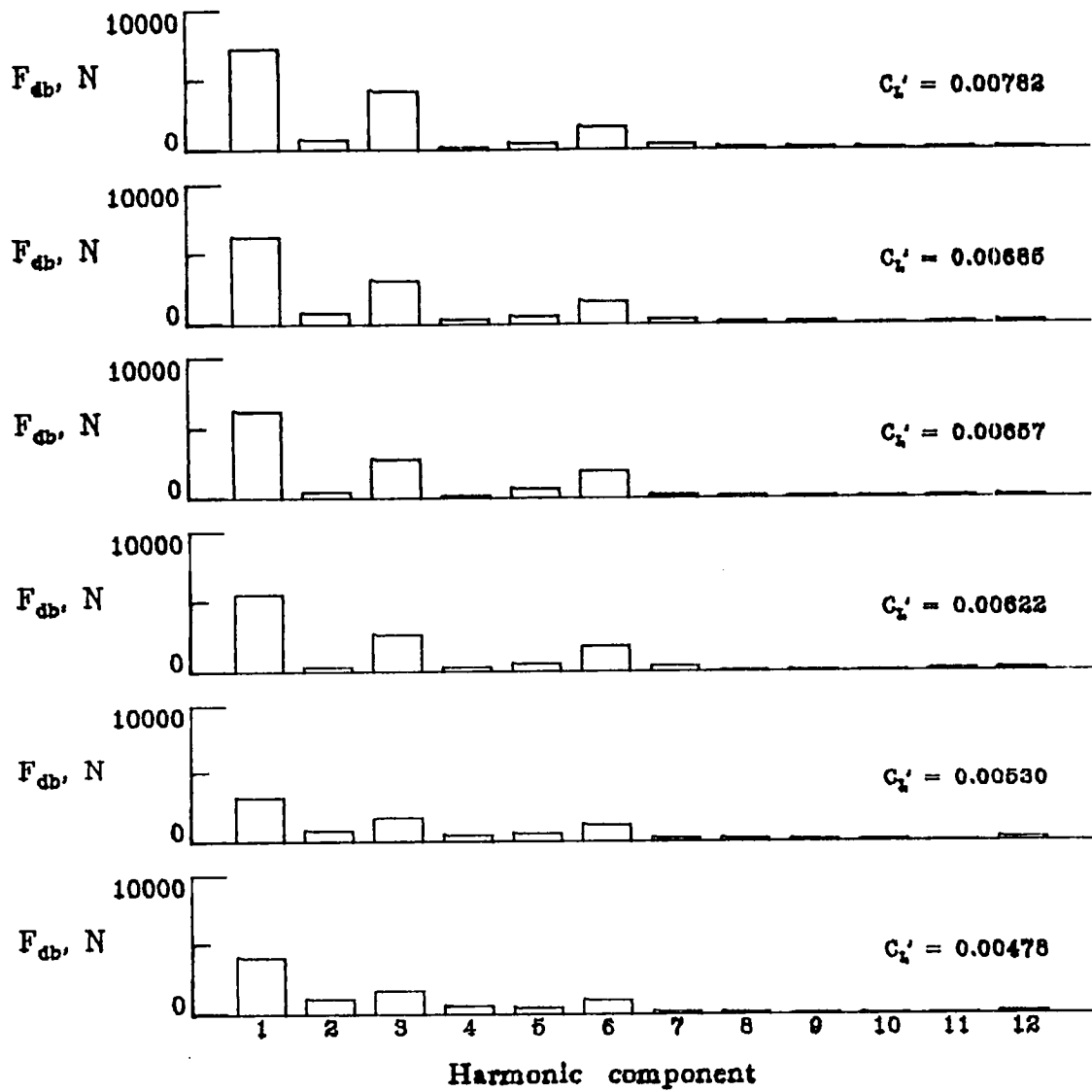
(d) M_{b61}

Figure 13.- Continued.



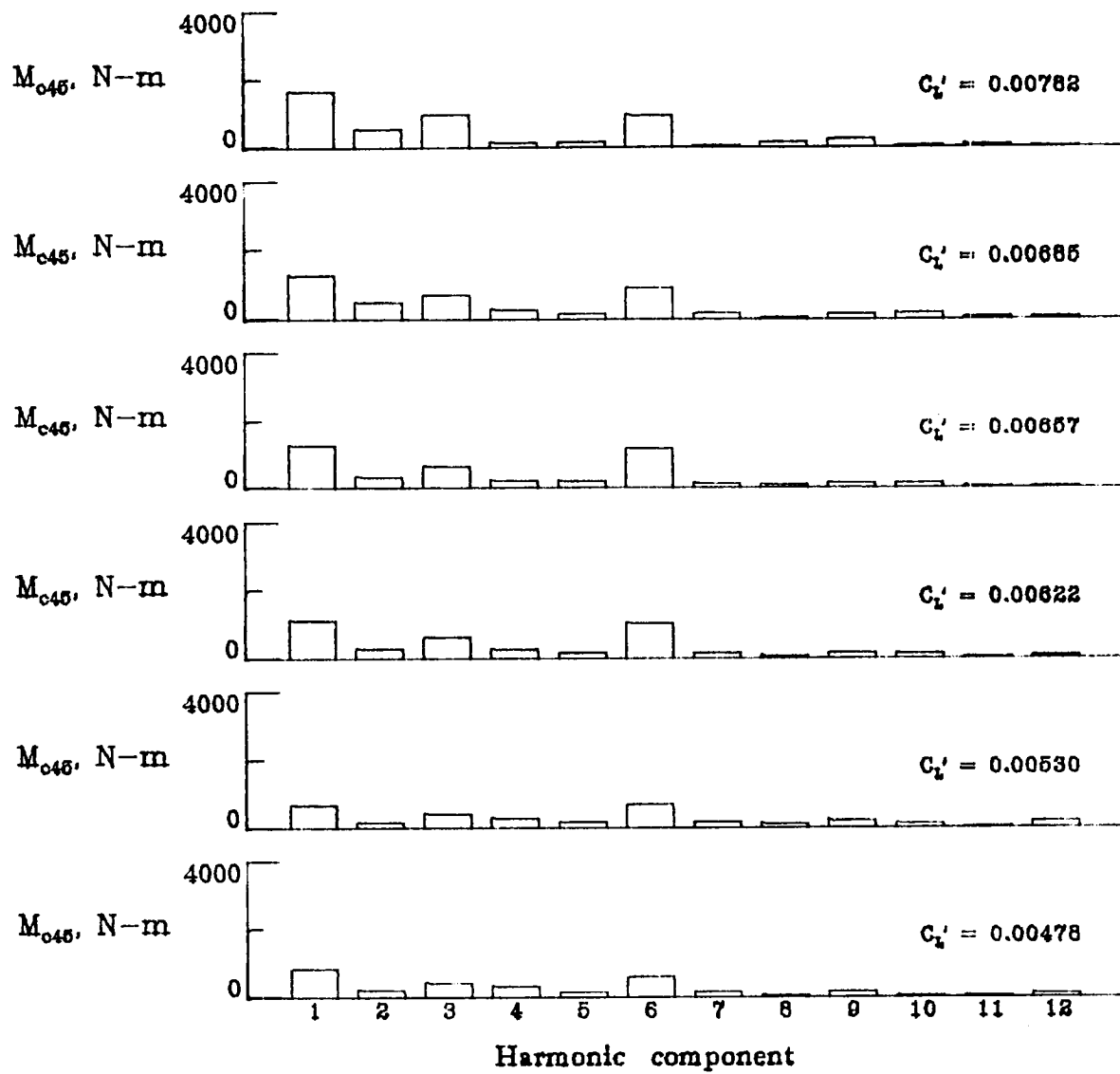
(e) M_{b80}

Figure 13.- Continued.



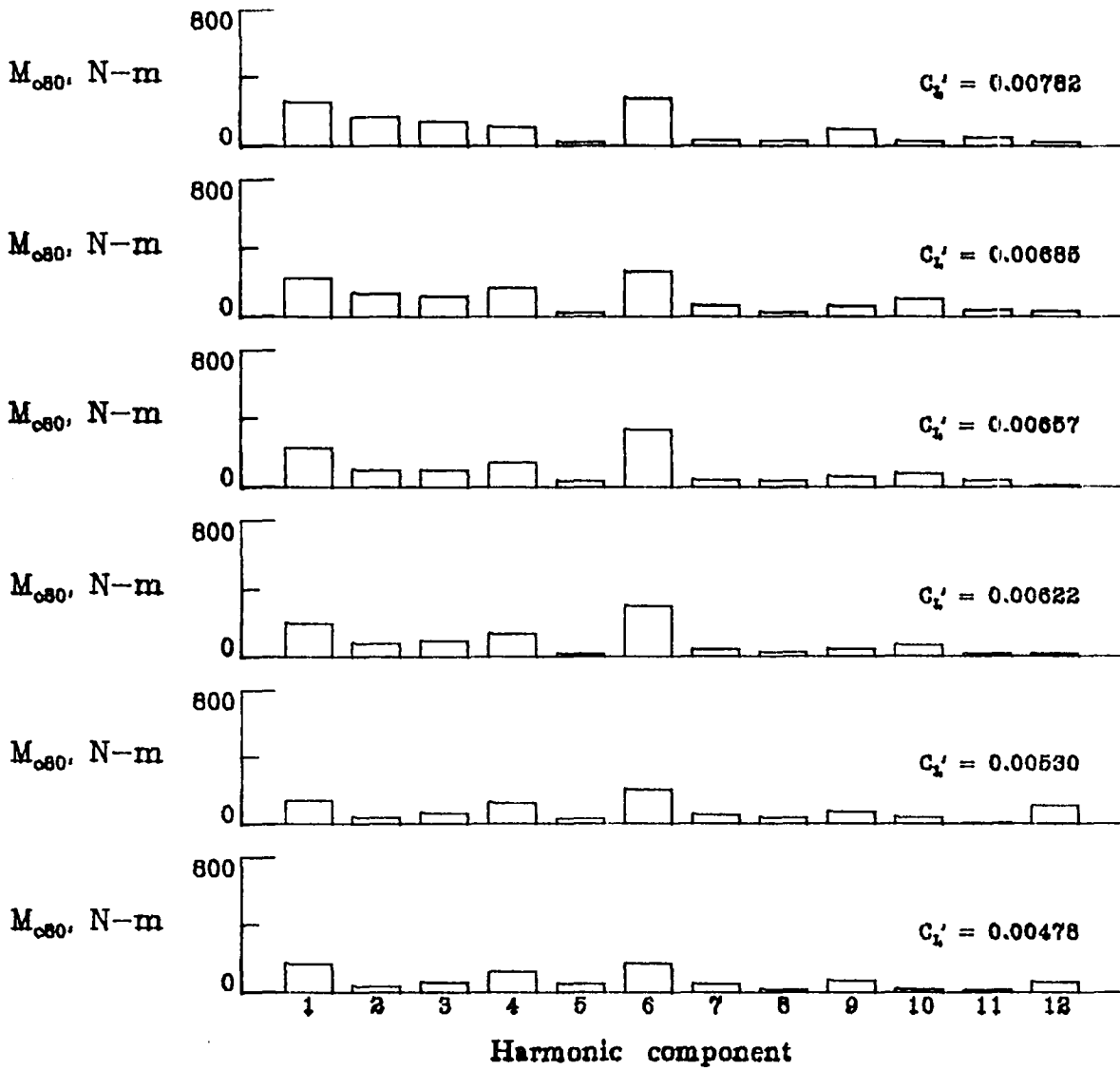
(f) F_{db}

Figure 13.- Continued.



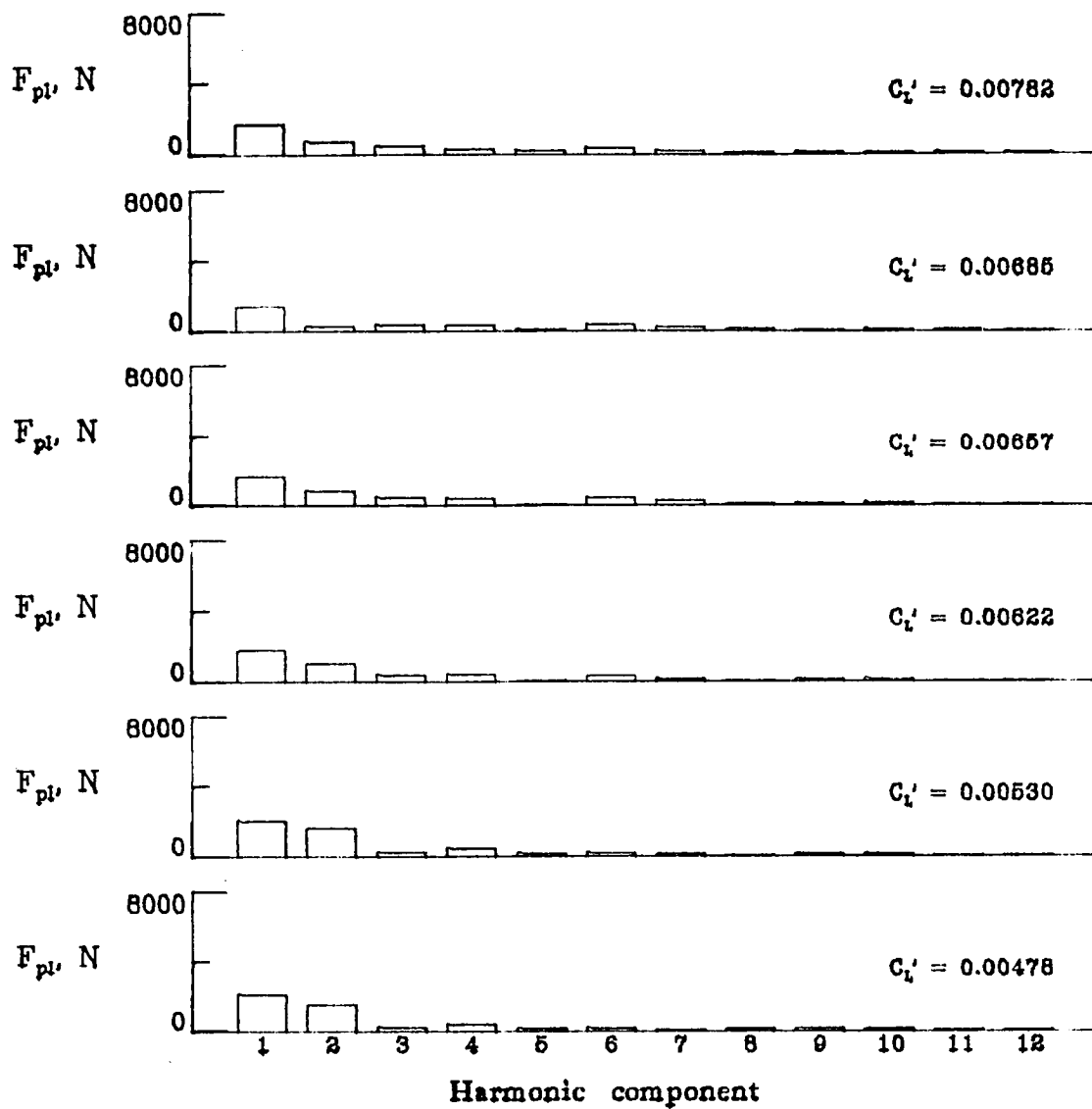
(g) M_{c45}

Figure 13.- Continued.



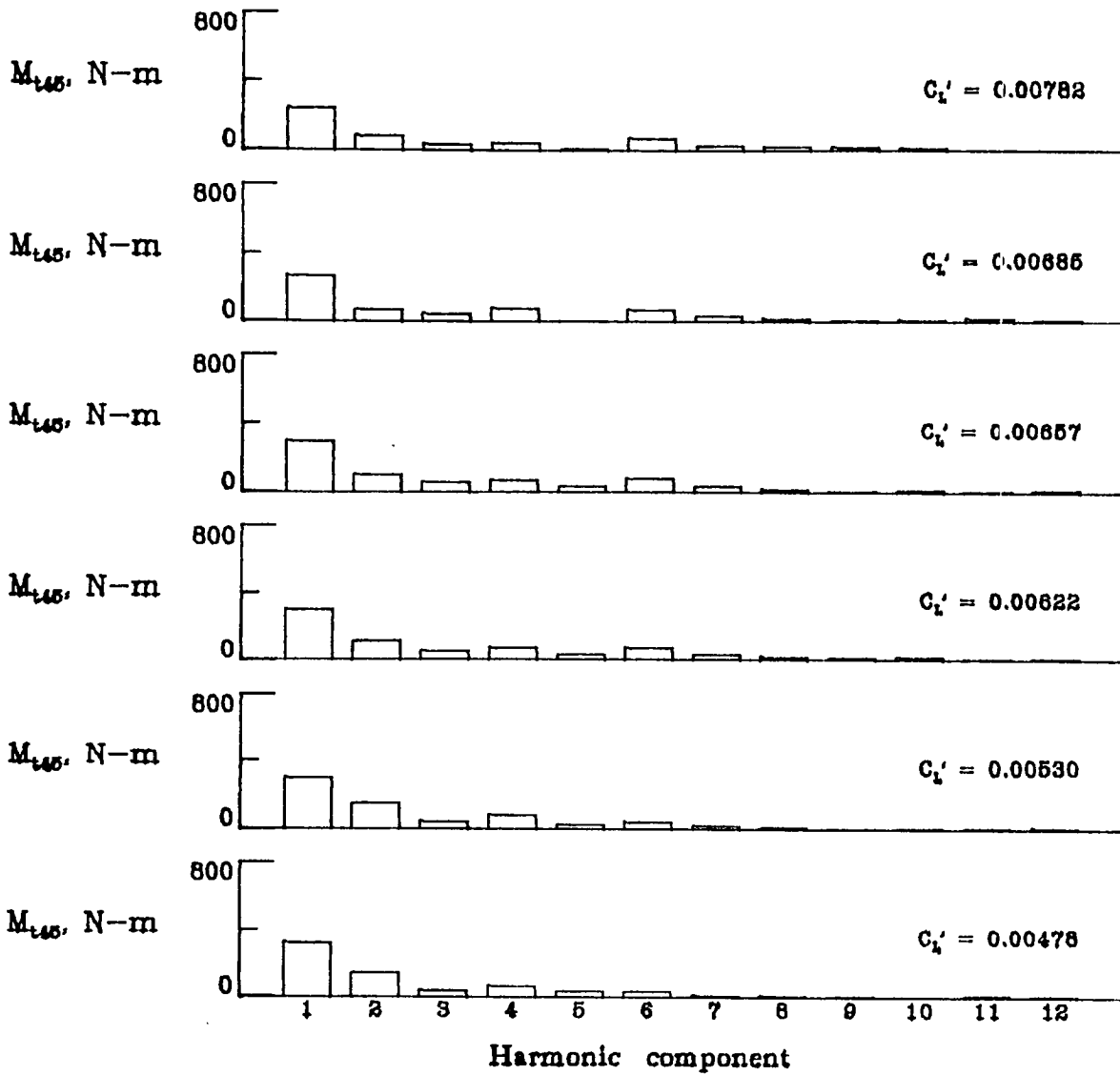
(h) M_{c80}

Figure 13.- Continued.



(i) F_{p1}

Figure 13.- Continued.



(j) M_{t45}

Figure 13.-Concluded.

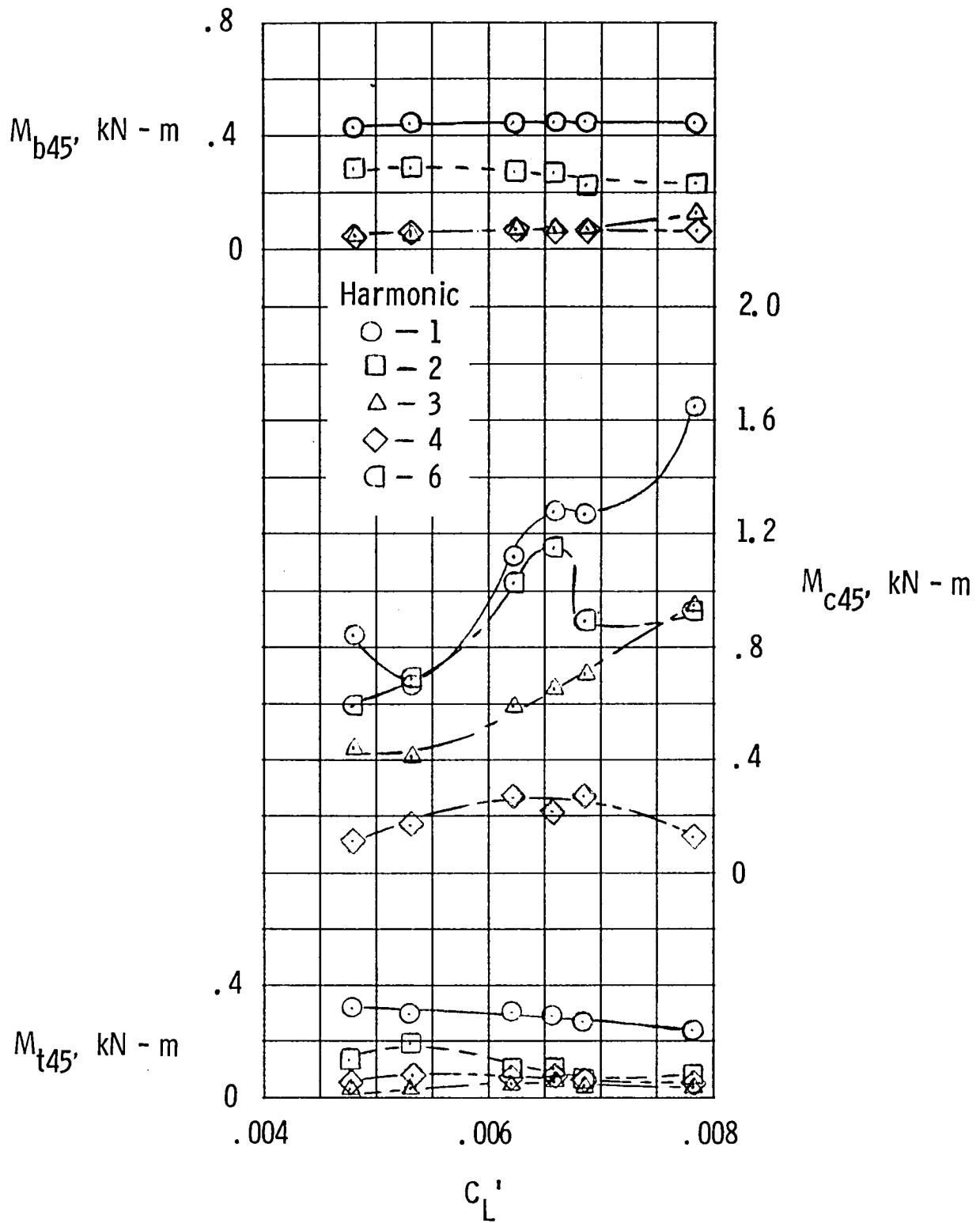
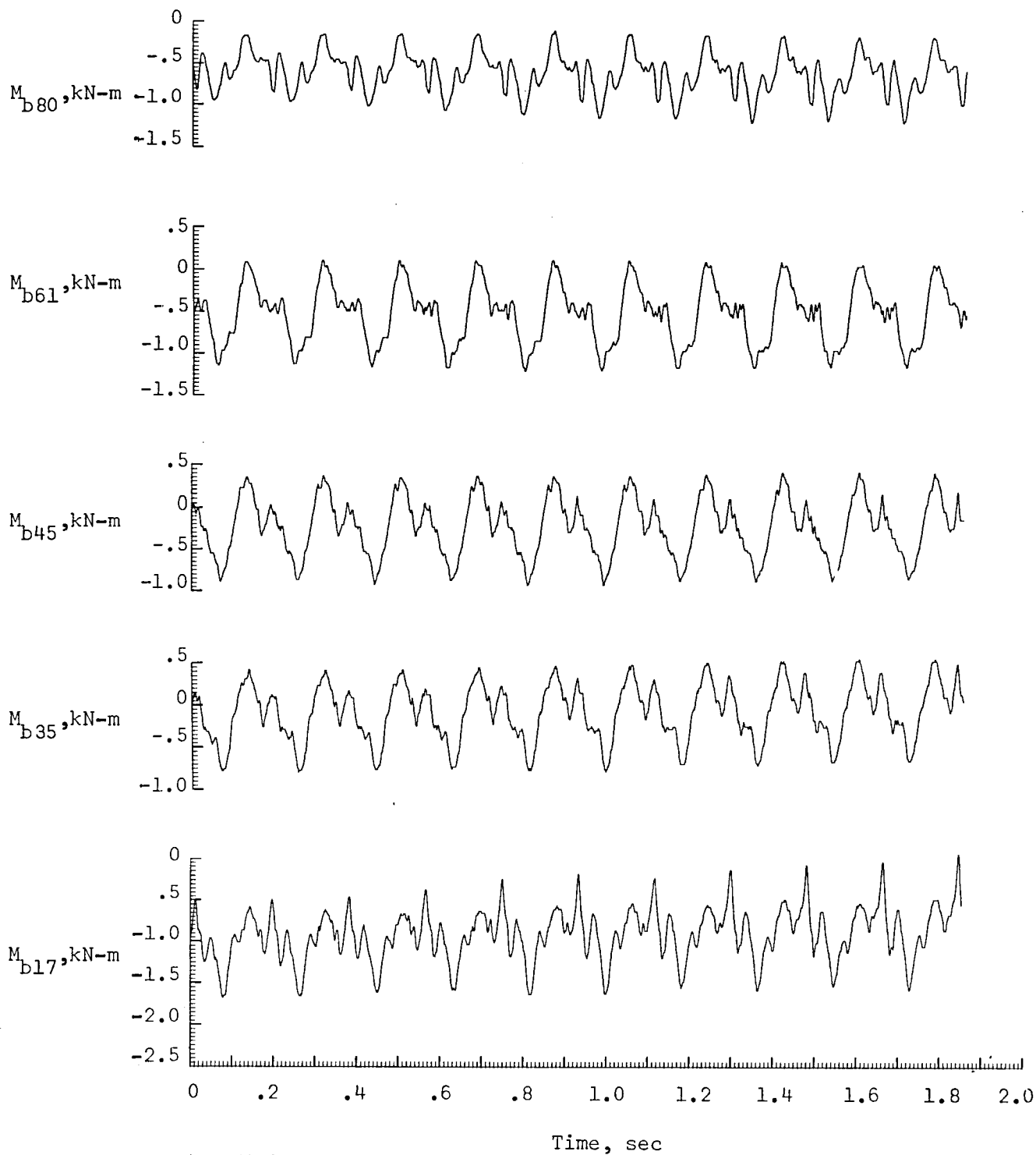
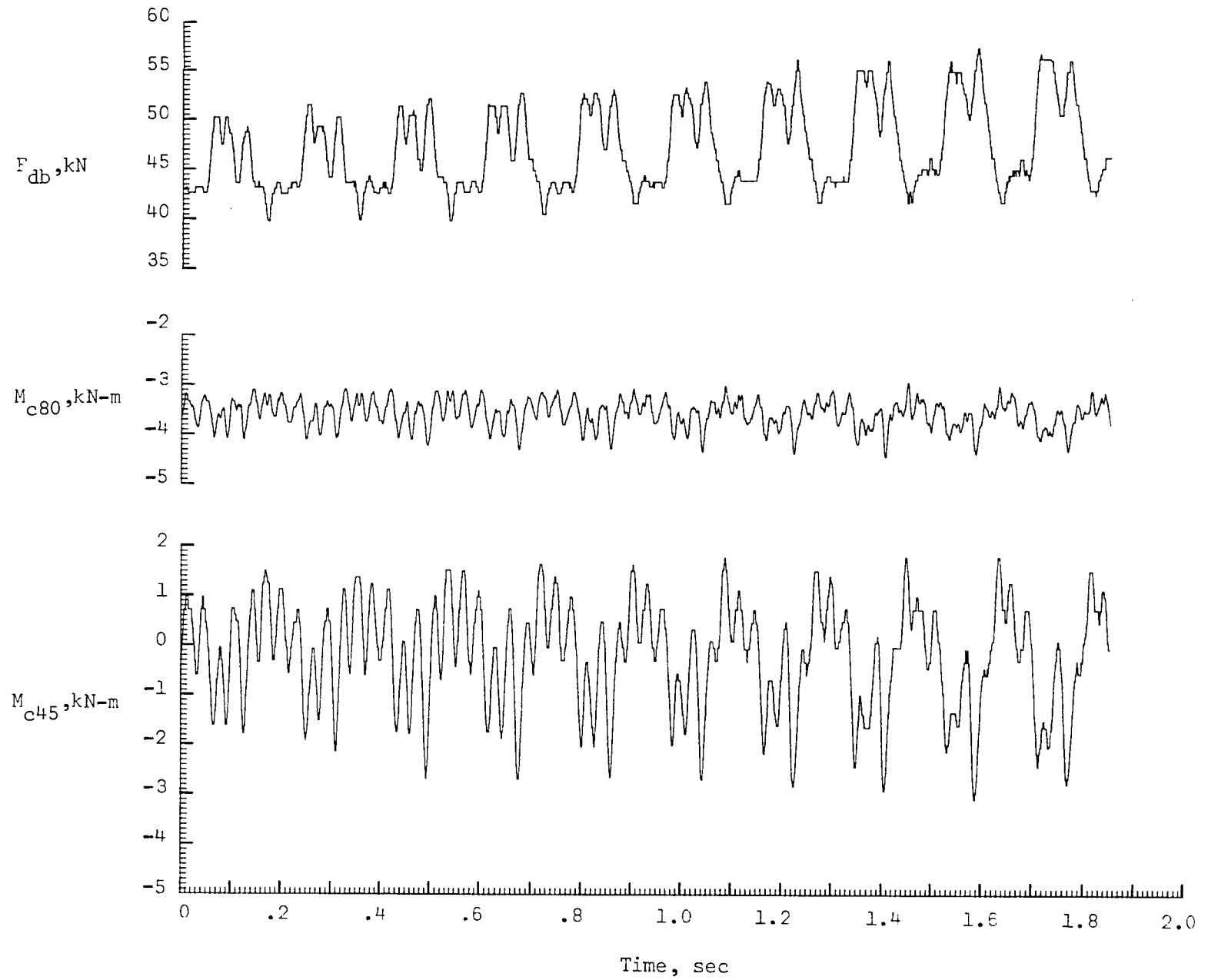


Figure 14. - Effect of vehicle load coefficient on primary harmonic-load components for descending right turns. $\bar{\mu} = 0.24$

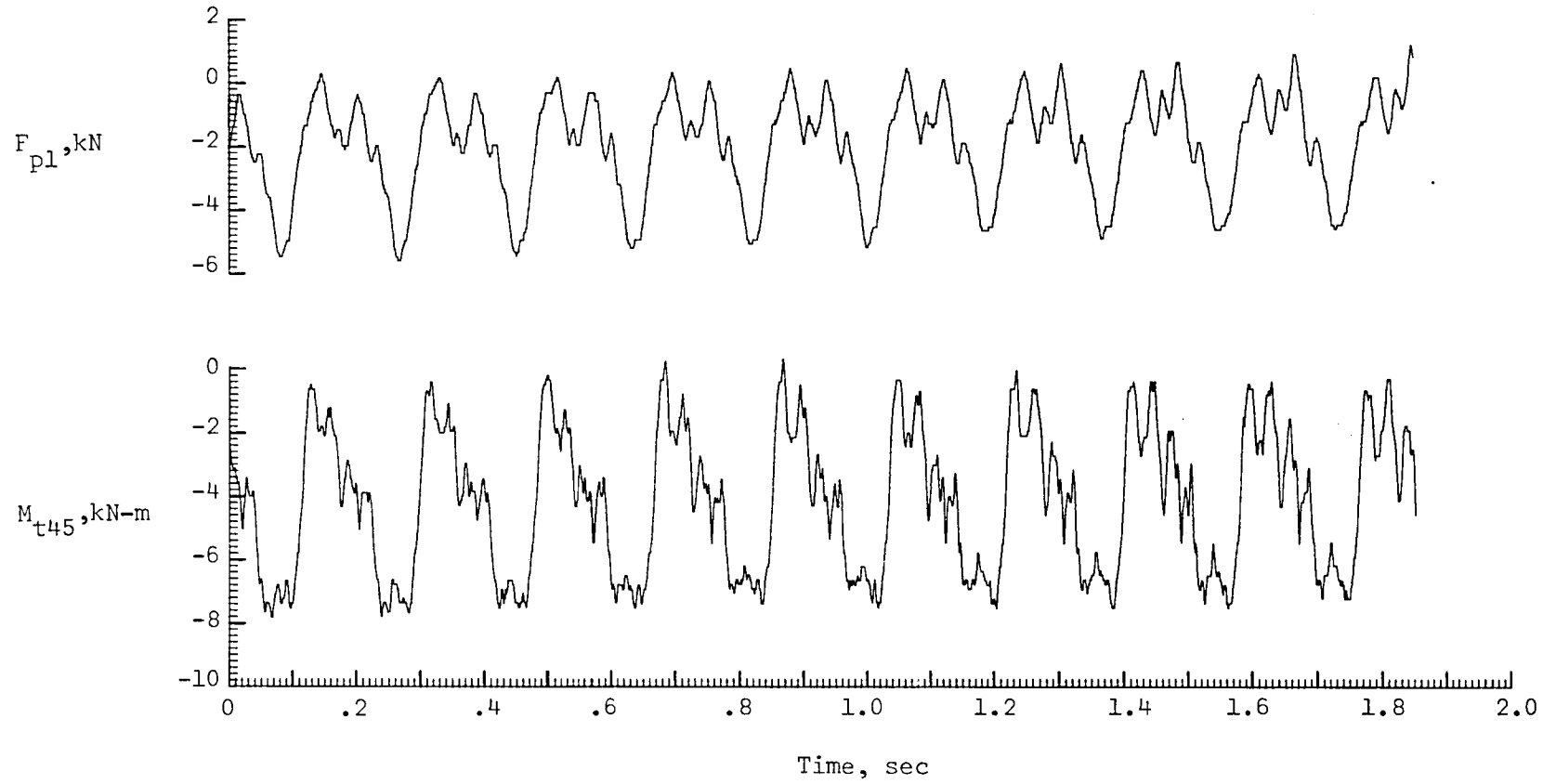


(a) Beamwise loads.

Figure 15. - Rotor-load histories for typical symmetrical pull-up (Flight 84, run 10 of Appendix A). $\mu = 0.25$; $C_L' = 0.0065$.

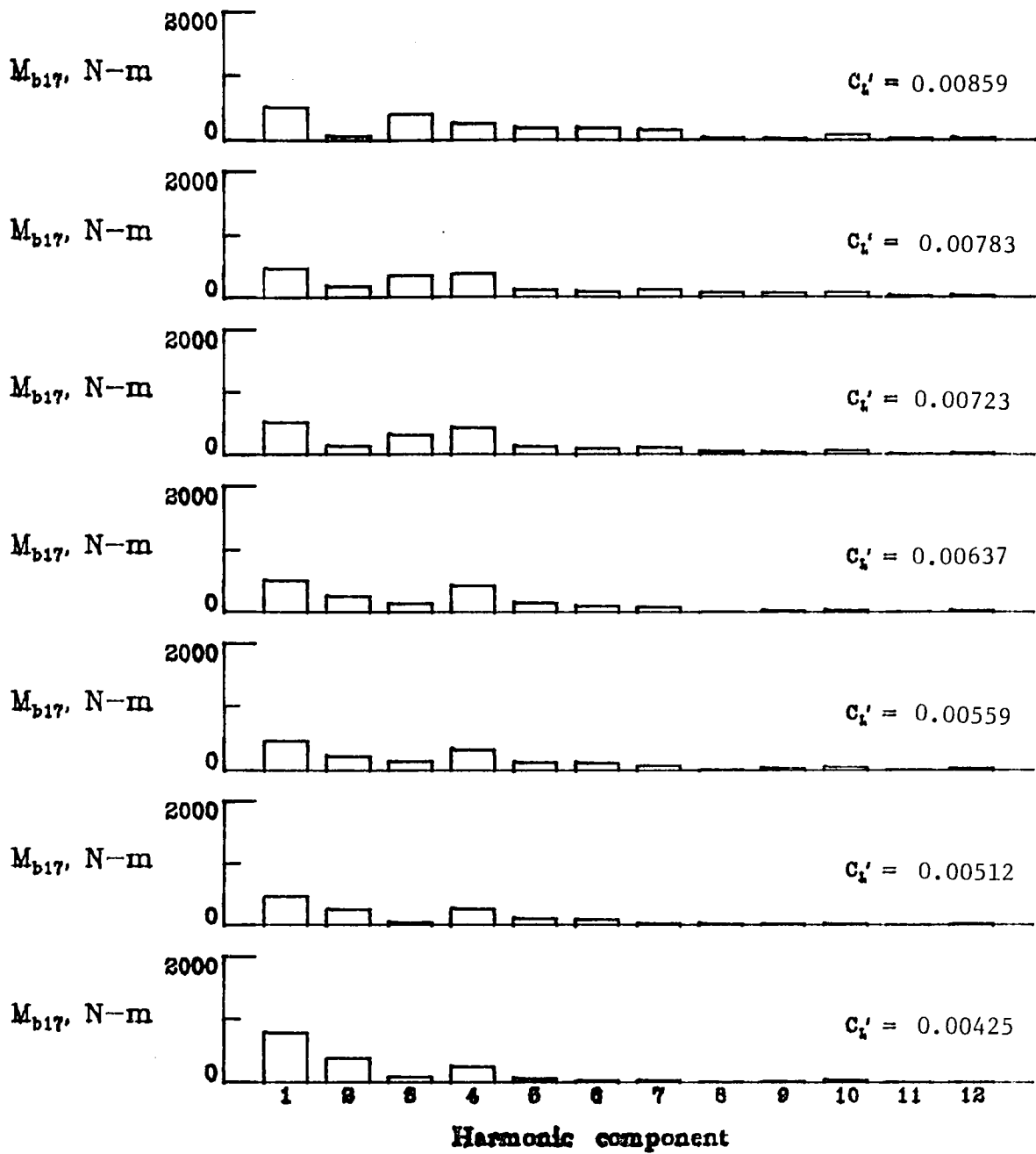


(b) Chordwise loads.
Figure 15.- Continued.



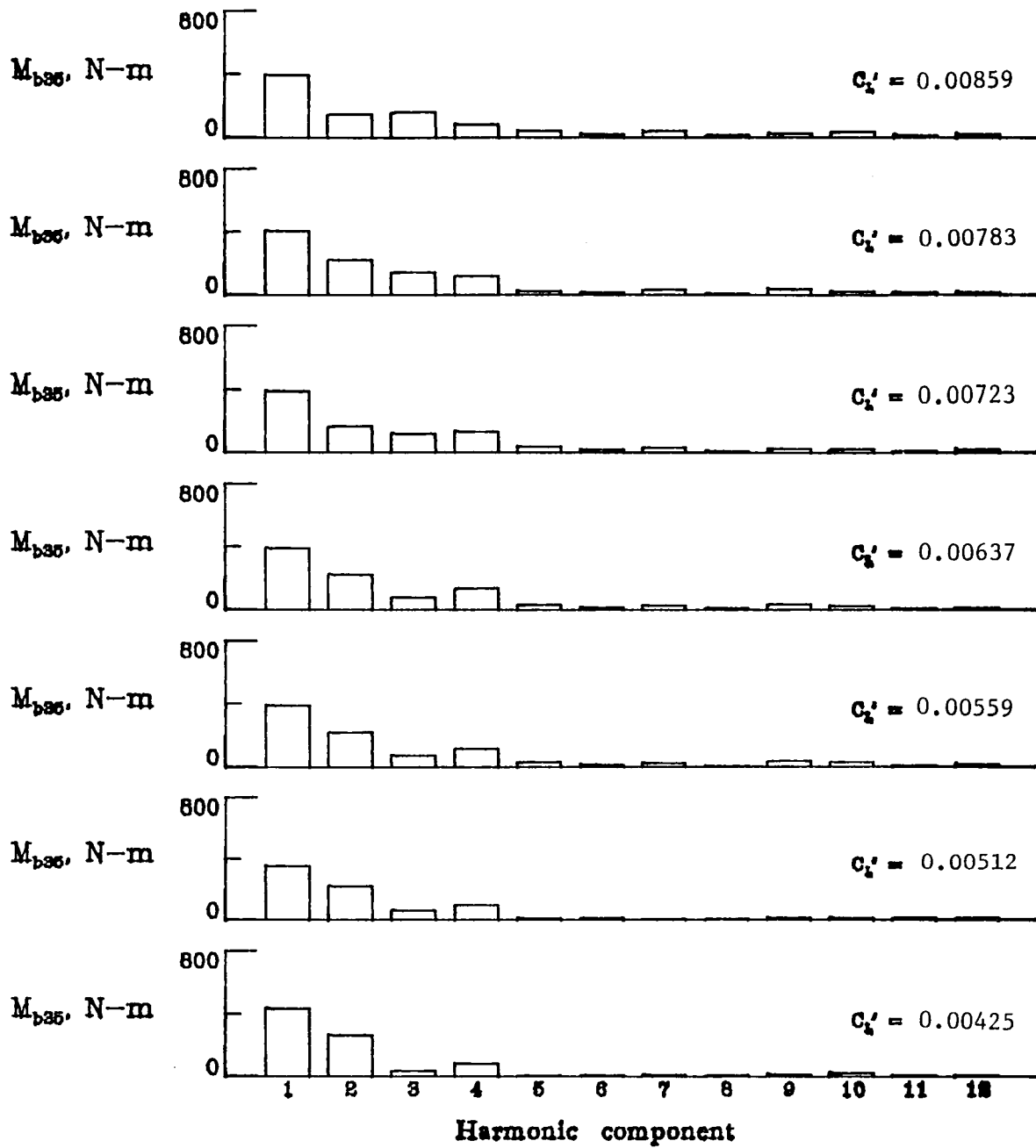
(c) Torsional loads.

Figure 15.- Concluded.



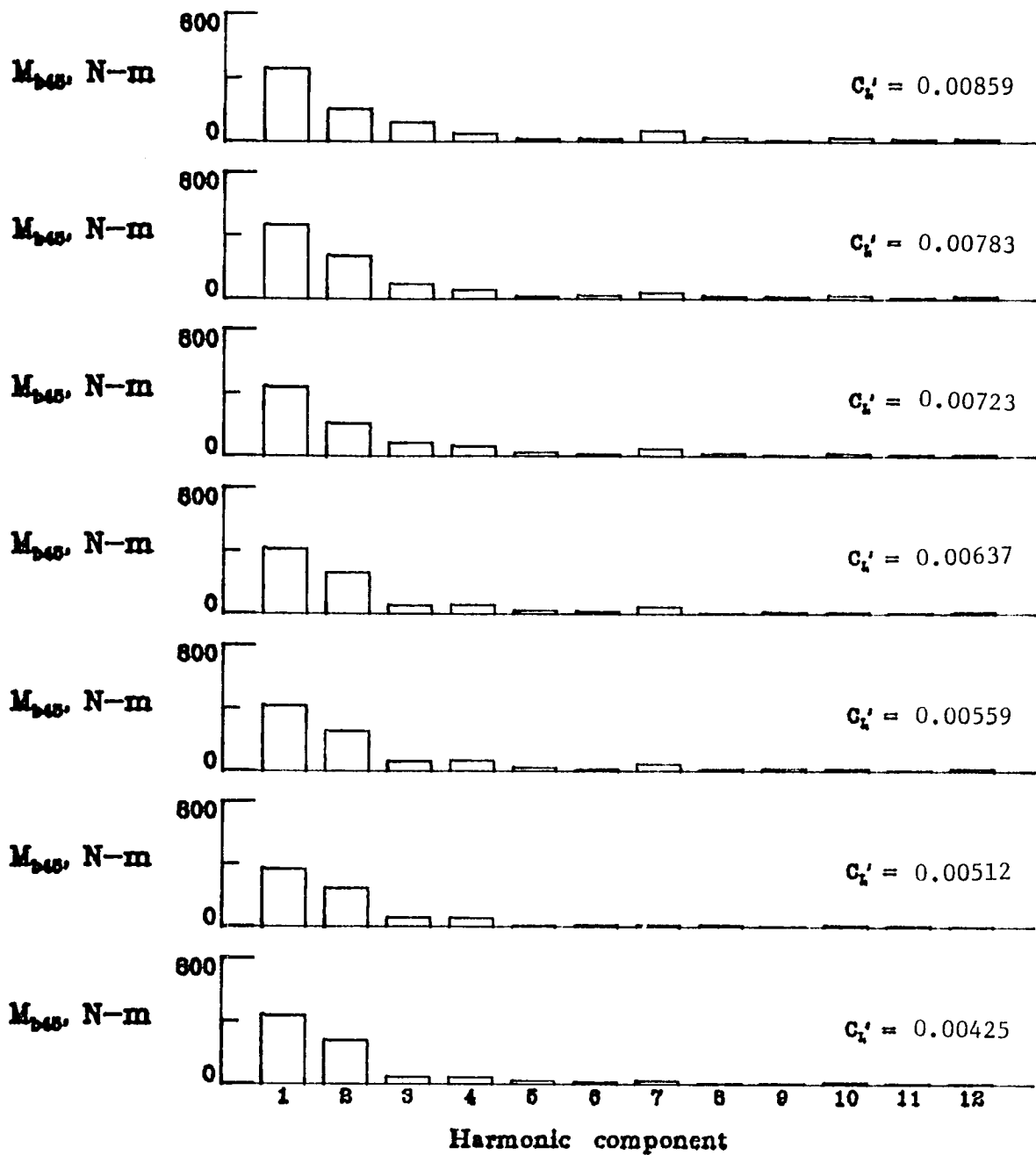
(a) M_{b17}

Figure 16. - Harmonic content of rotor loads for symmetrical pull-ups.
 $\bar{\mu} = 0.25$.



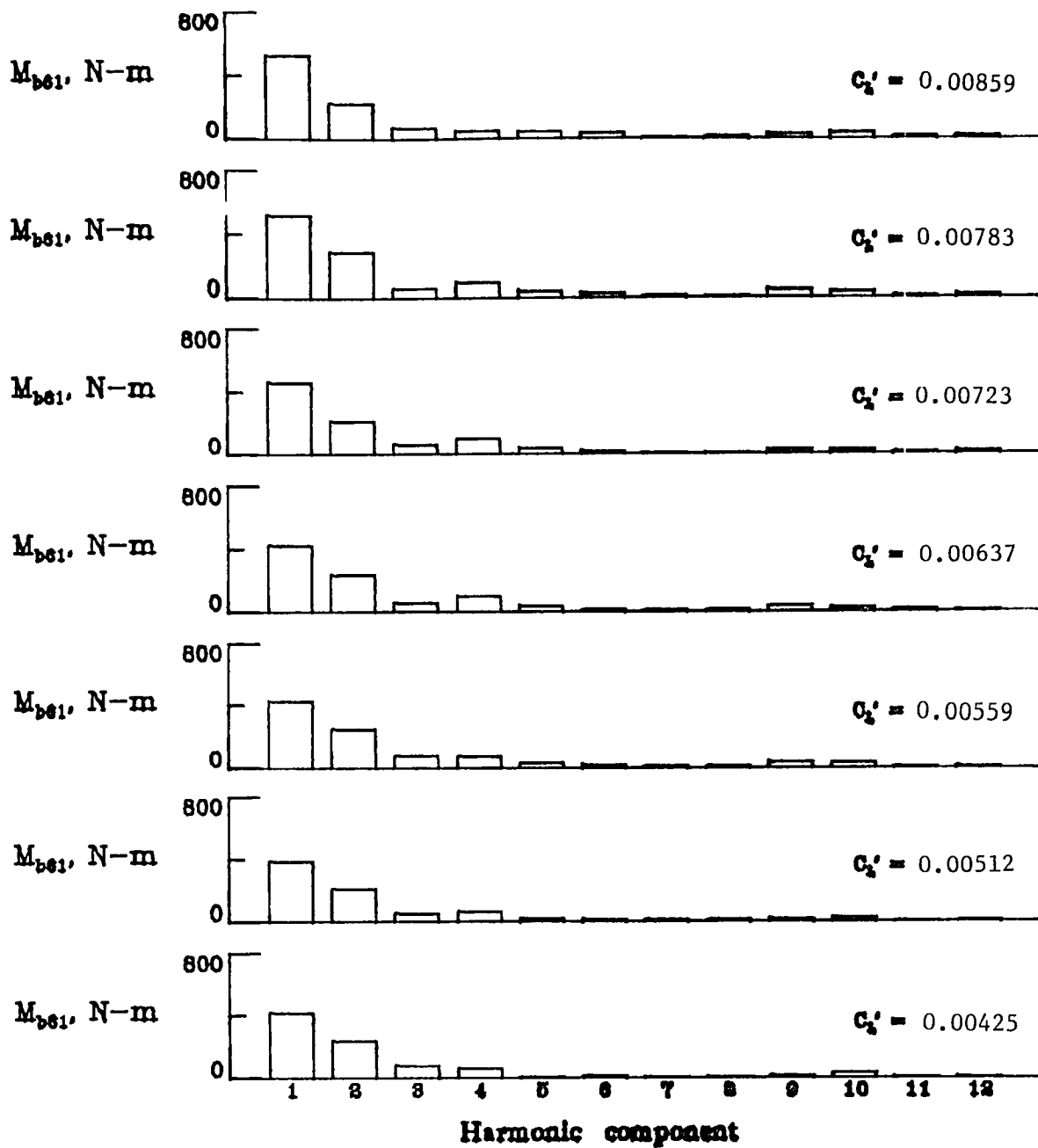
(b) M_{b35}

Figure 16.- Continued.



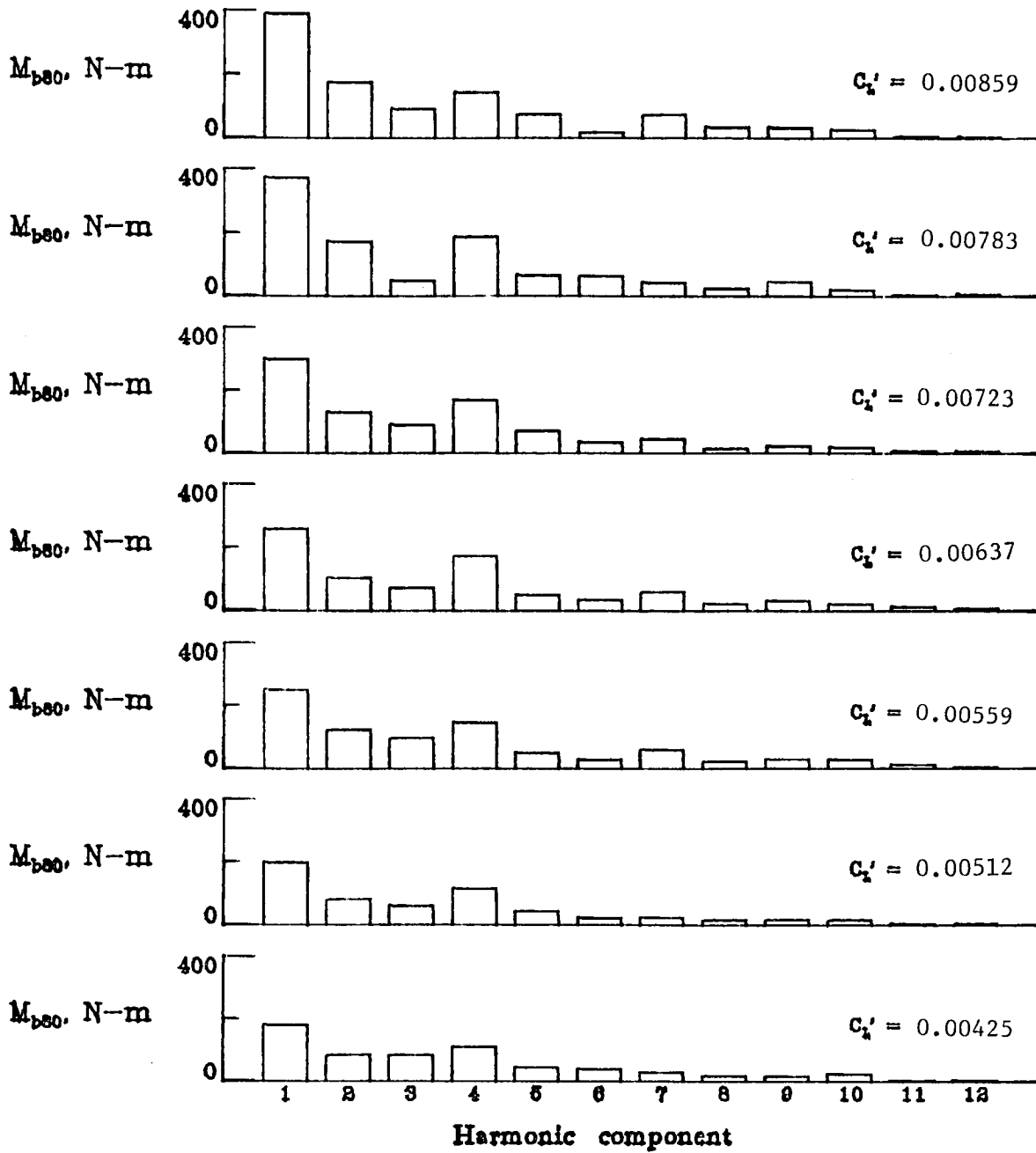
(c) M_{b45}

Figure 16.- Continued.



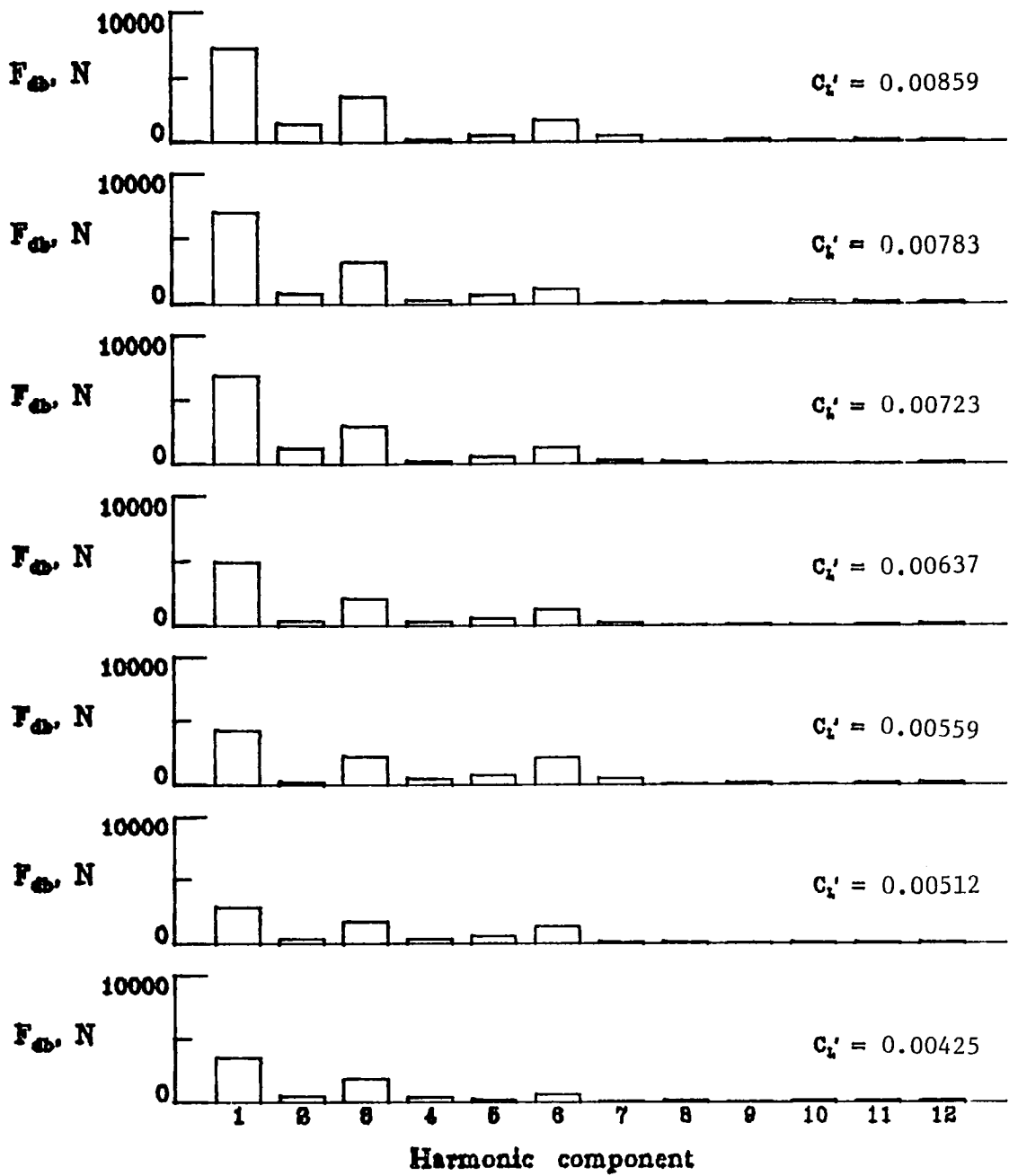
(d) M_{b61}

Figure 16.- Continued.



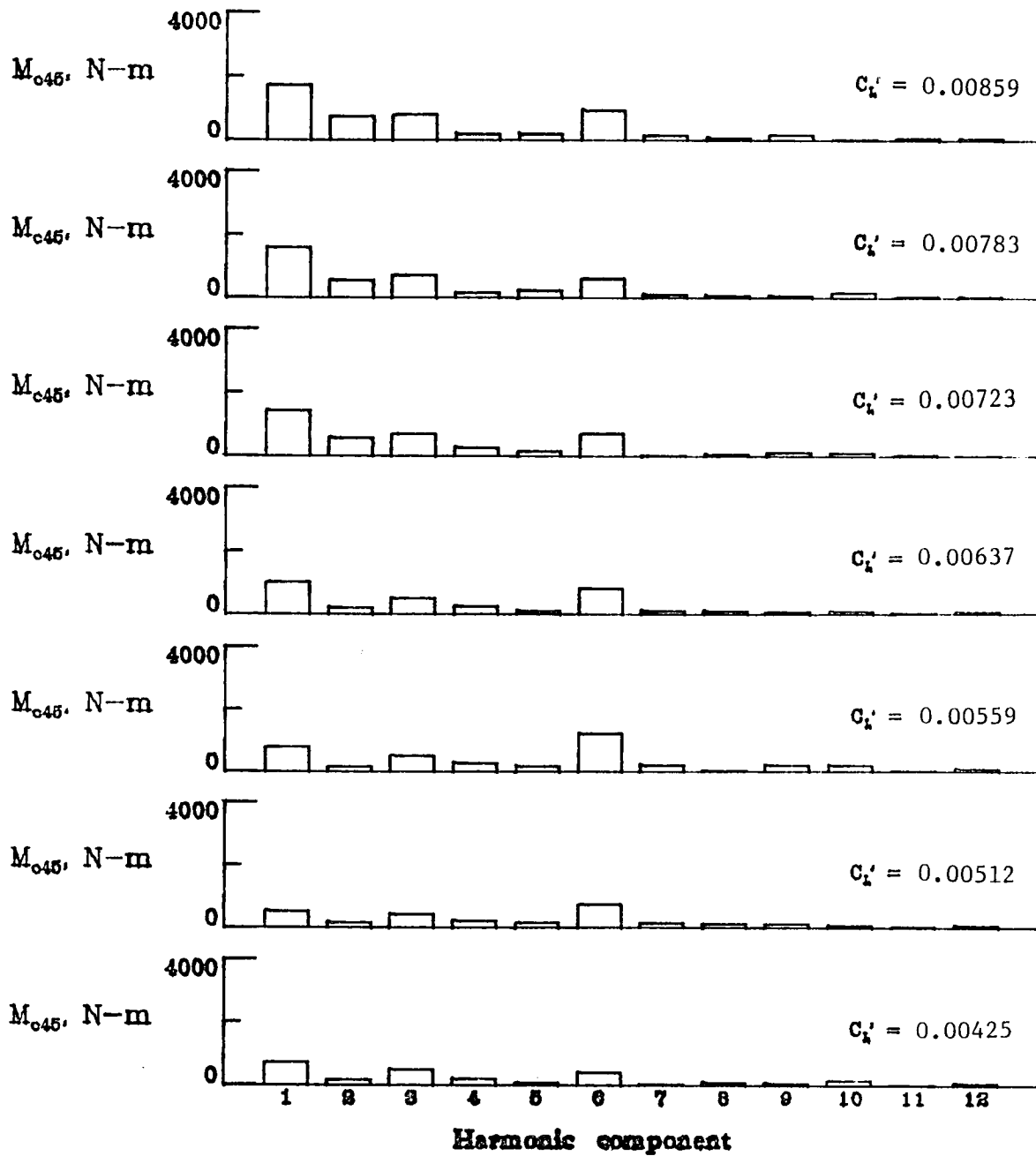
(e) M_{b80}

Figure 16.- Continued.



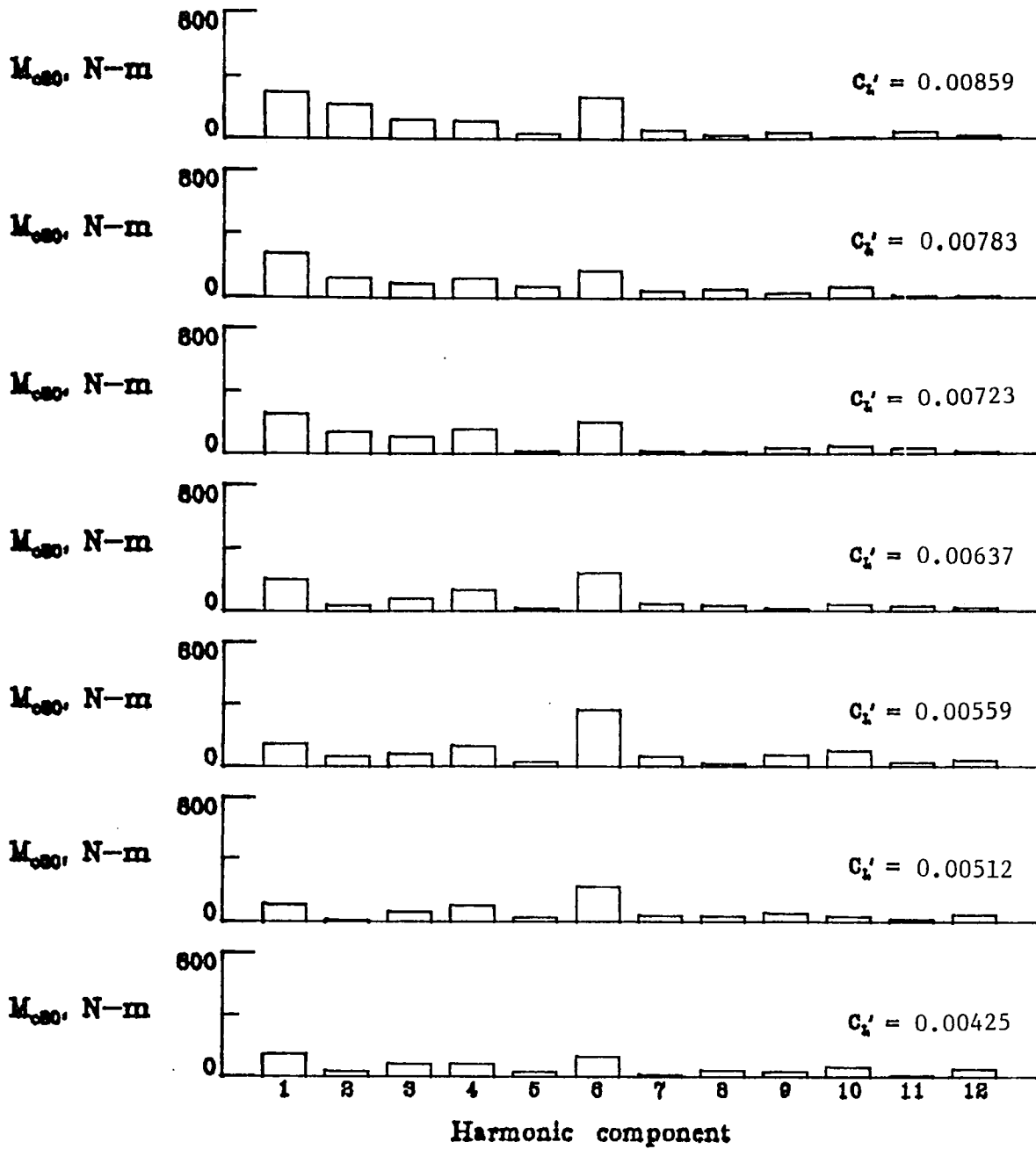
(f) F_{db}

Figure 16.- Continued.



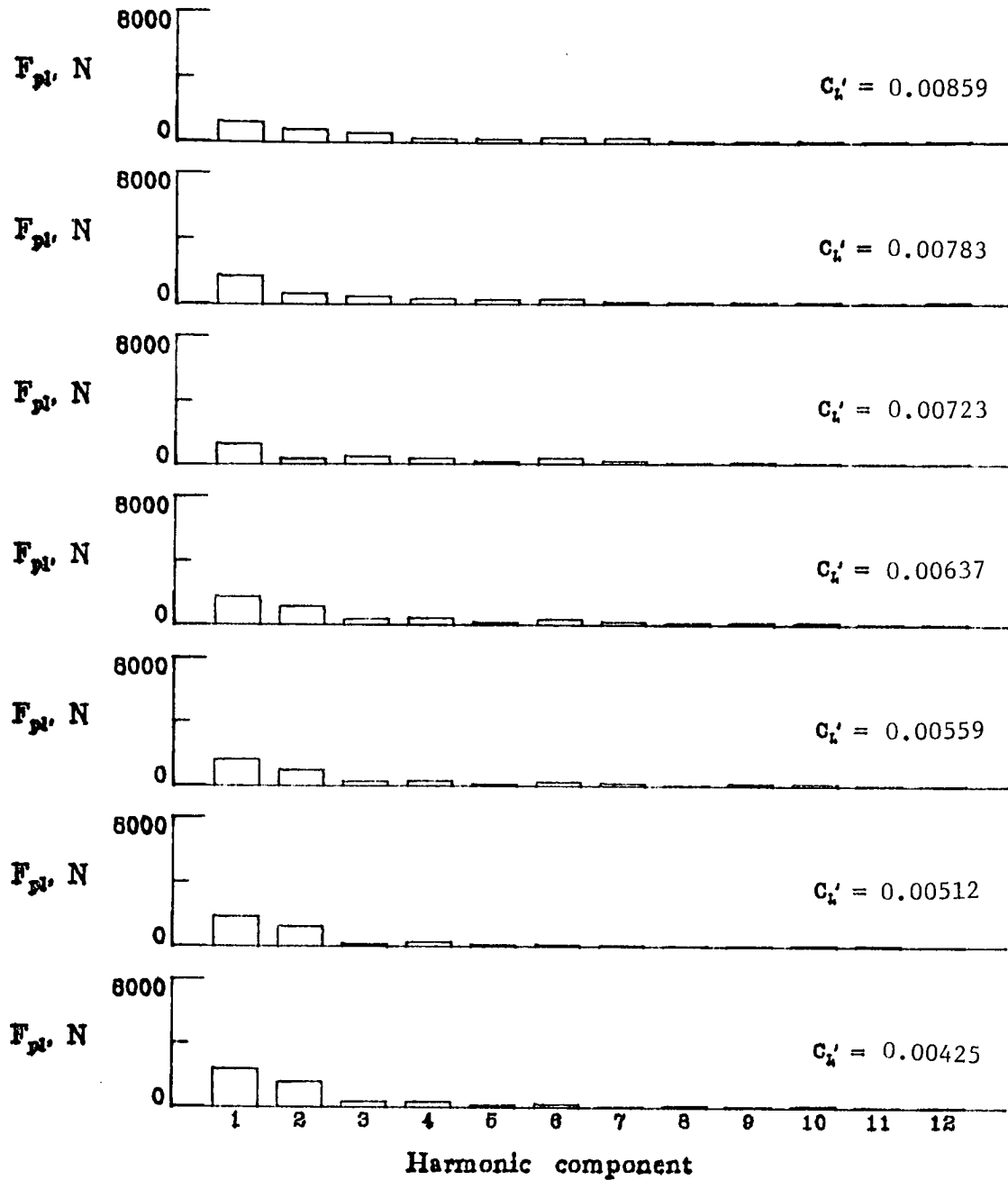
(g) M_{c45}

Figure 16.- Continued.



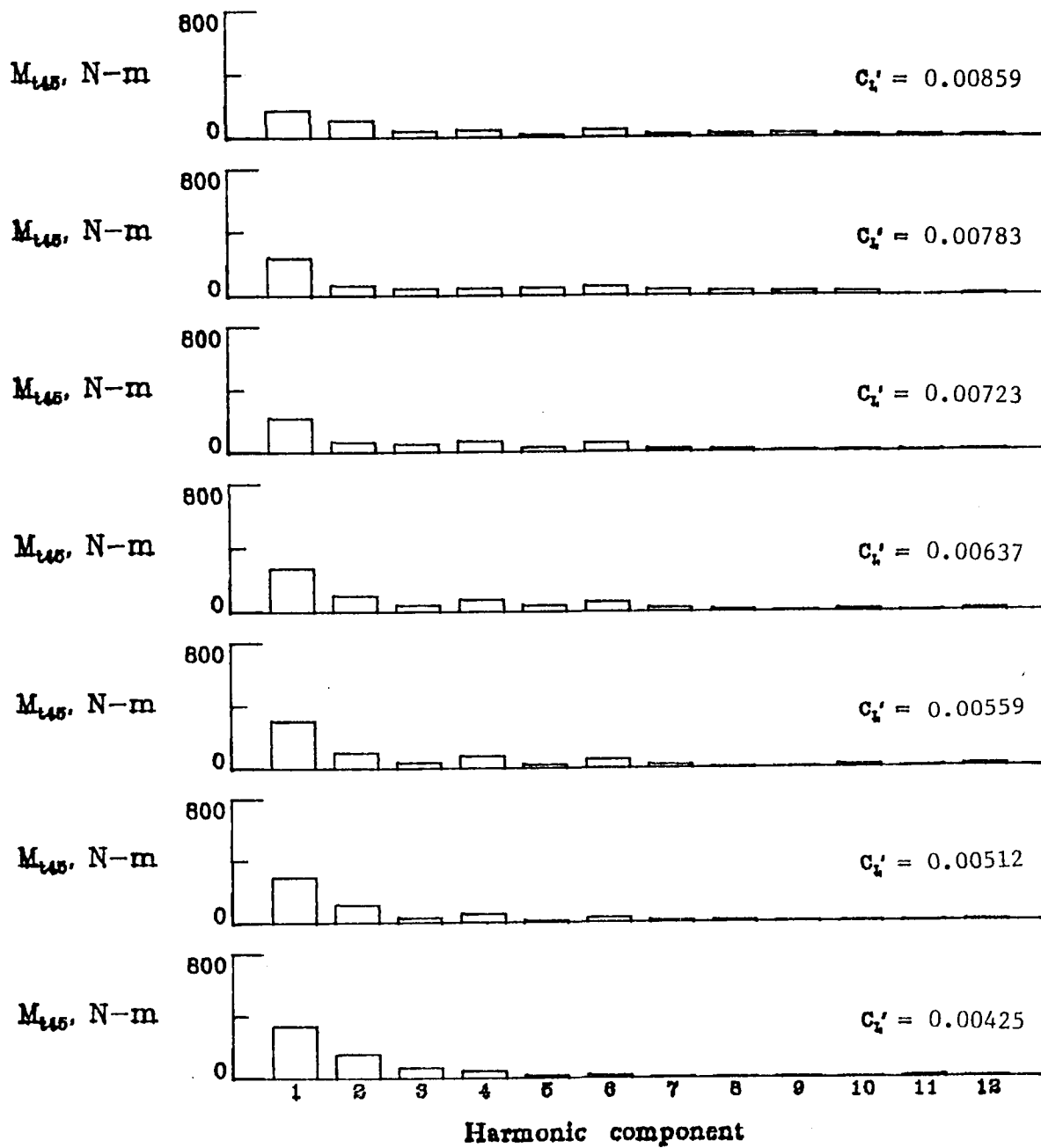
(h) M_{c80}

Figure 16.- Continued.



(i) F_{p1}

Figure 16.- Continued.



(j) M_{t45}

Figure 16.- Concluded.

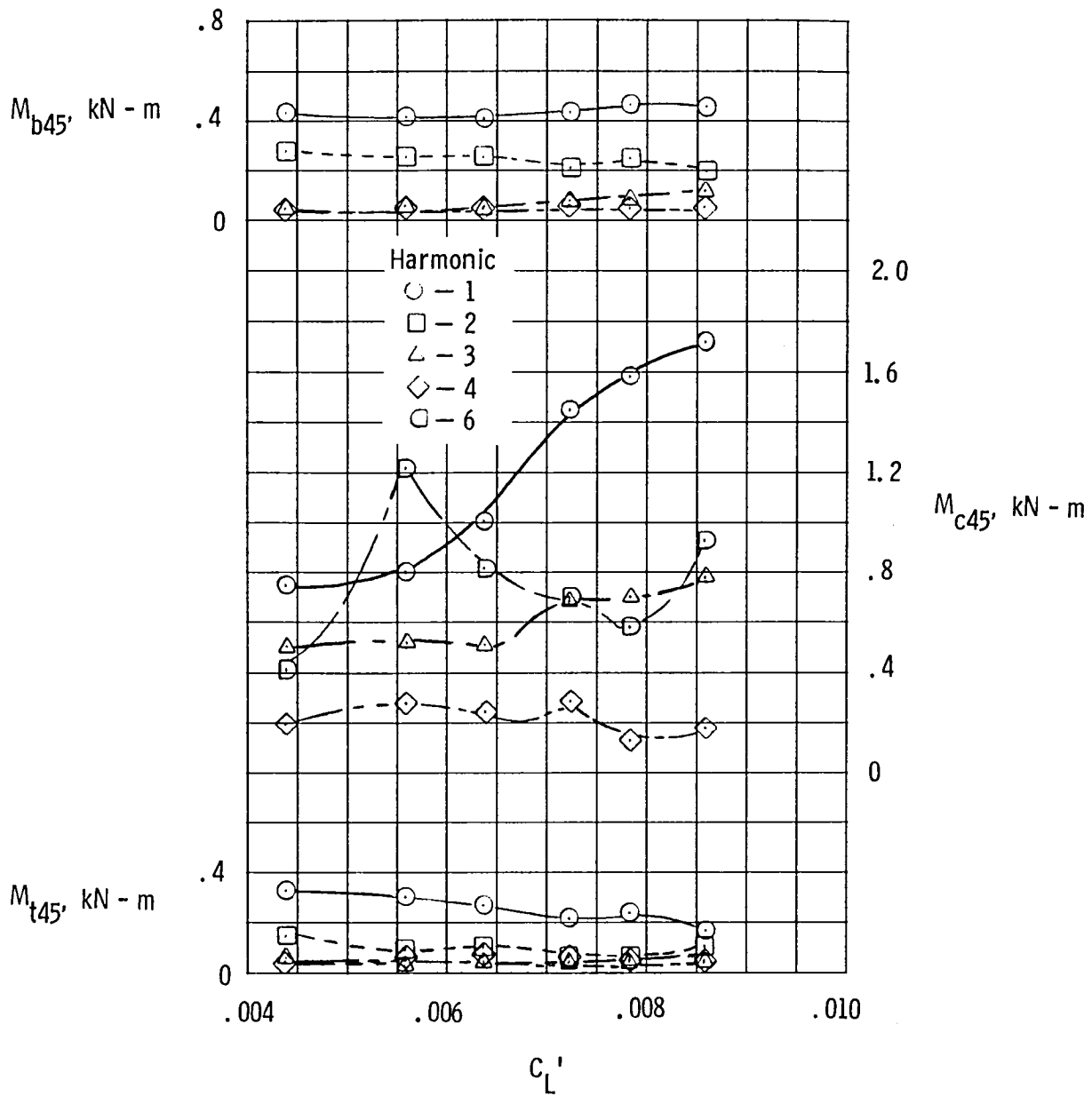
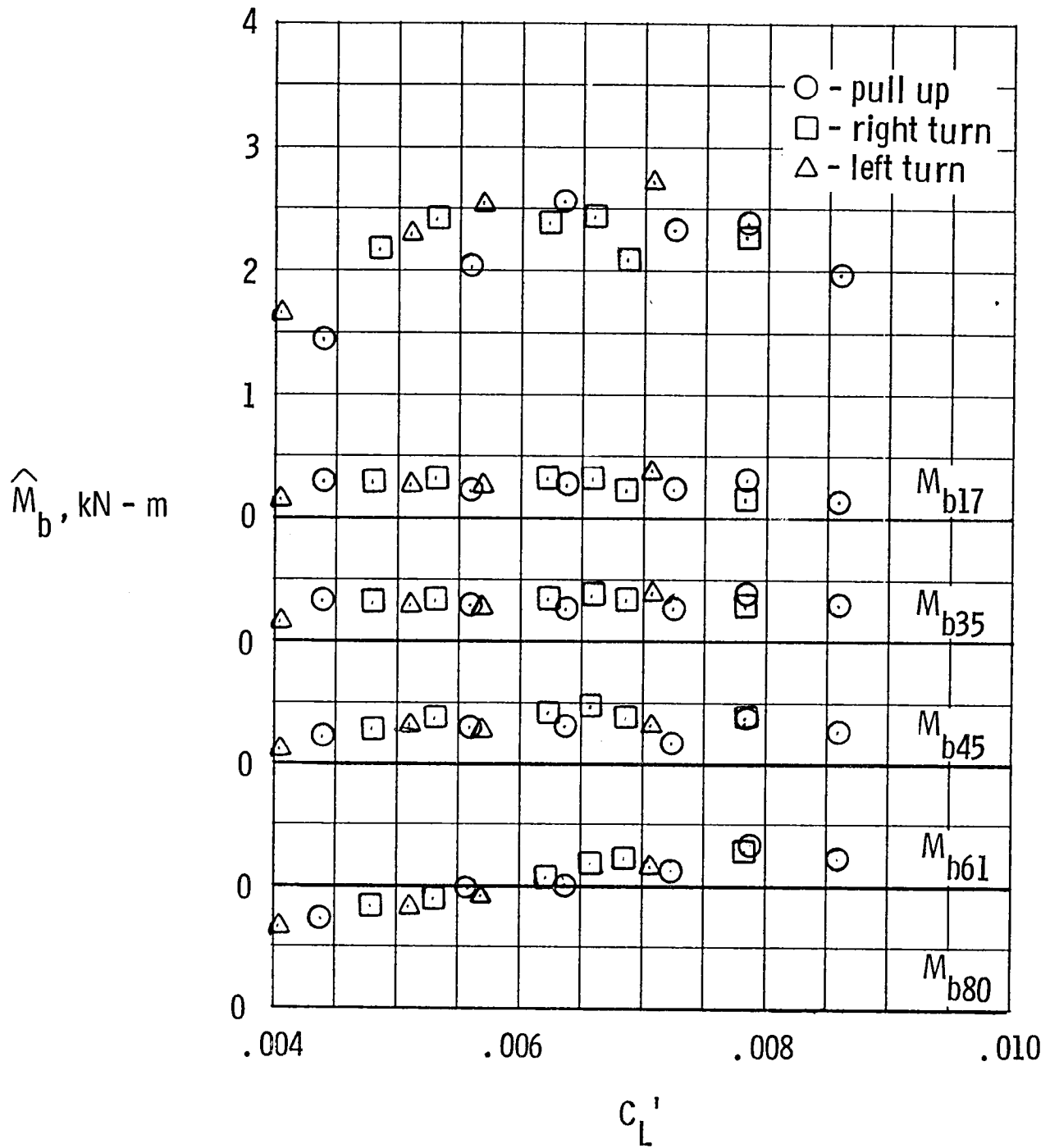
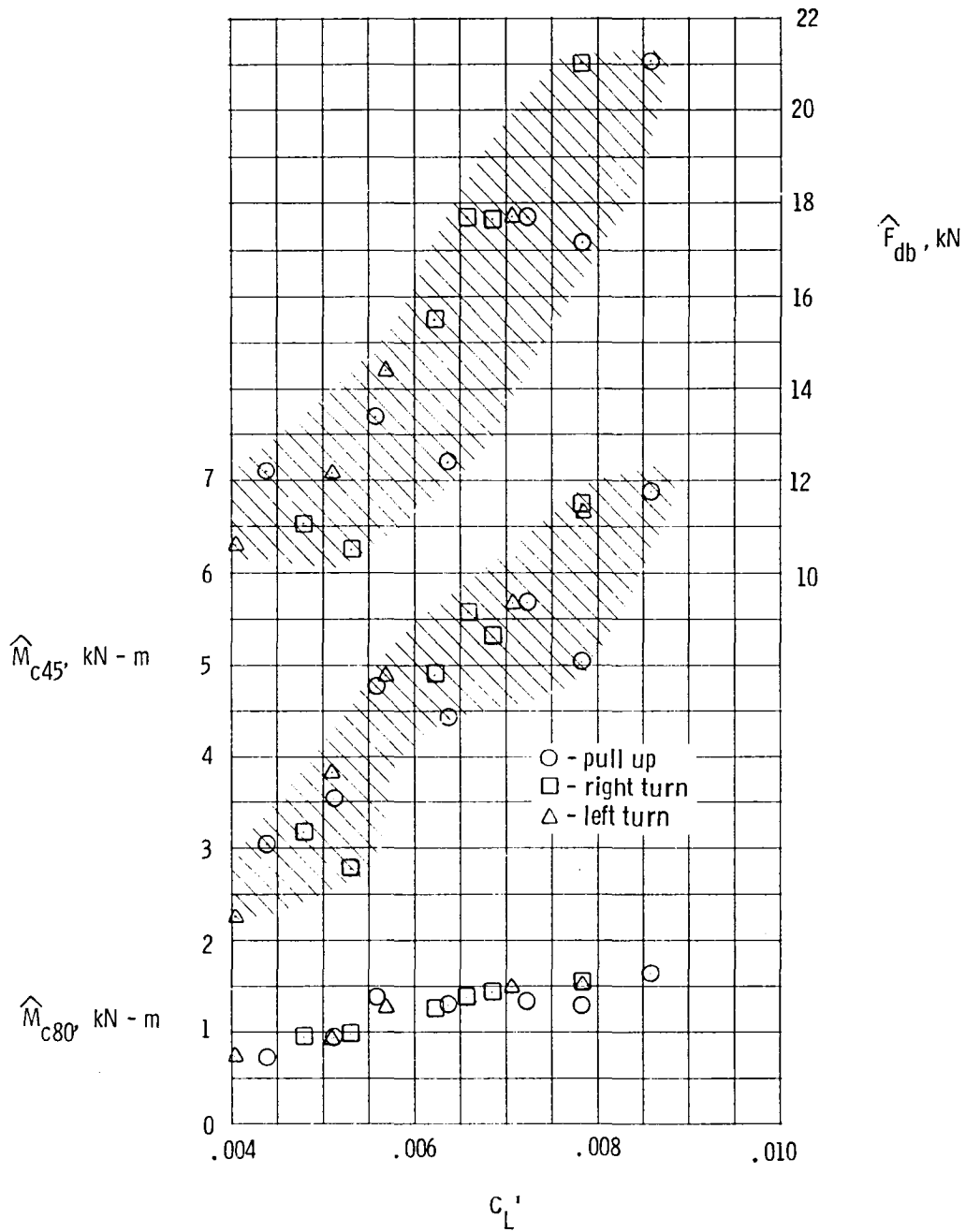


Figure 17. - Effect of vehicle load coefficient on primary harmonic-load components for symmetrical pull-ups. $\mu = 0.25$.



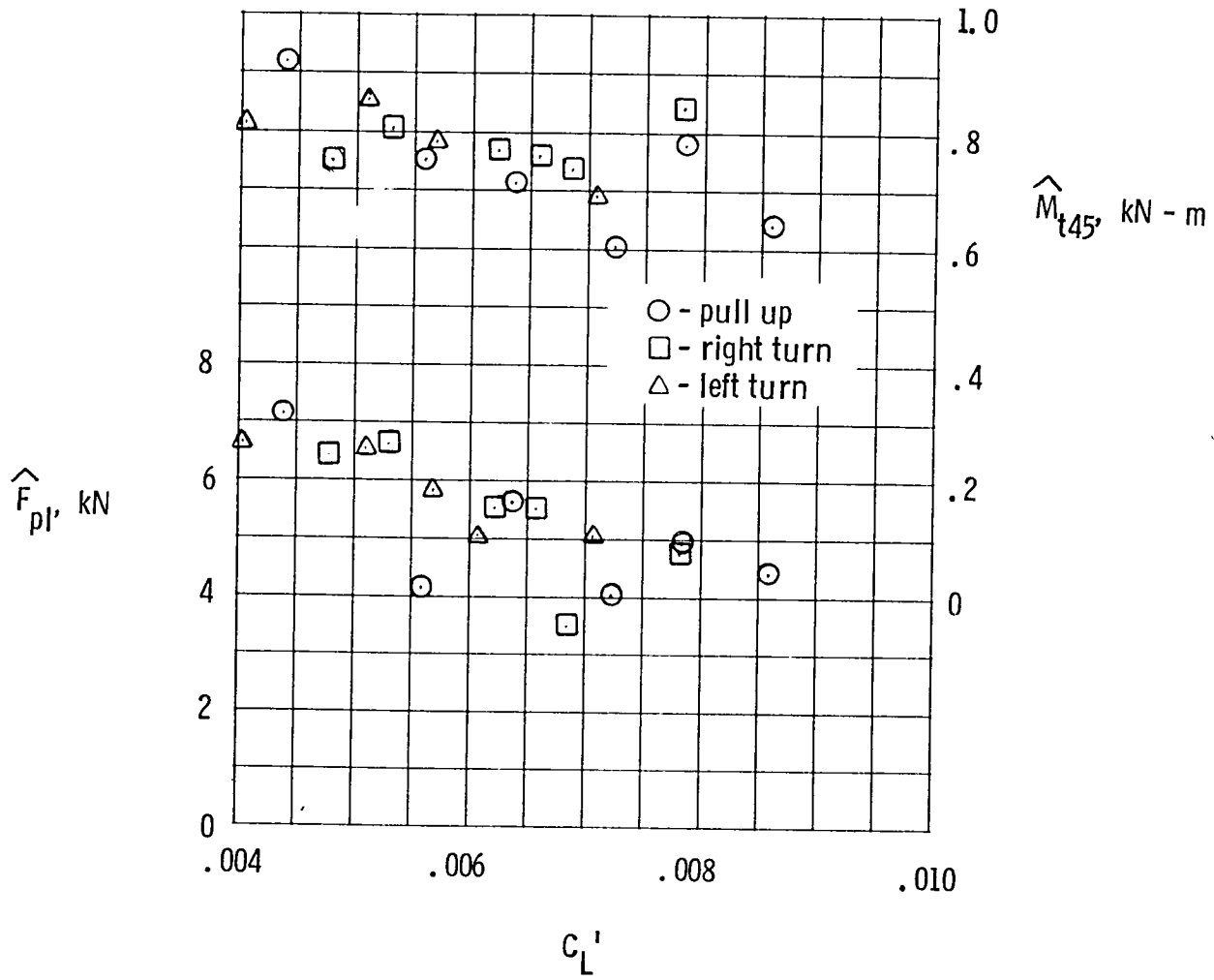
(a) Beamwise loads

Figure 18. - Effect of vehicle load coefficient on peak-to-peak loads for maneuvering flight. $\bar{\mu} = 0.25$.



(b) Chordwise loads

Figure 18. - Continued.



(c) Torsional loads

Figure 18. - Concluded.

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16. ABSTRACT A flight investigation has produced data on performance and rotor loads for a teetering-rotor, AH-1G helicopter flown with a main rotor that had the NLR-1T airfoil as the blade-section contour. The test envelope included hover, forward-flight speeds from 34 to 83 m/sec (65 to 162 knots), and collective-fixed maneuvers at about 0.25 tip-speed ratio. The data set for each test point describes vehicle flight state, control positions, rotor loads, power requirements, and blade motions. Rotor loads are reviewed primarily in terms of peak-to-peak and harmonic content. Lower frequency components predominated for most loads and generally increased with increased airspeed, but not necessarily with increased maneuver load factor. This report covers detailed data for an advanced airfoil on an AH-1G and is applicable for evaluating performance and airfoil analyses.					
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