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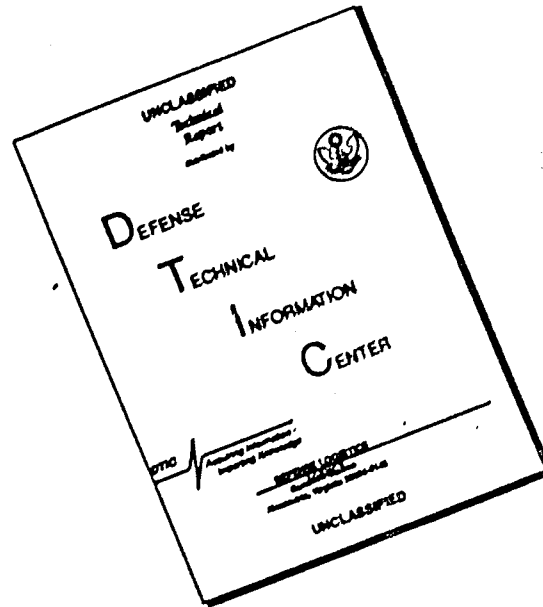
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TRANSPORTATION RESEARCH COMMAND
FORT EUSTIS, VIRGINIA

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TCREC TECHNICAL REPORT 62-42

MEASUREMENT OF DYNAMIC AIR LOADS
ON A FULL-SCALE SEMIRIGID ROTOR

Task 9R38-01-019-04

Contract DA 44-177-TC-653

December 1962

prepared by:

BELL HELICOPTER COMPANY
Fort Worth, Texas



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U. S. ARMY TRANSPORTATION RESEARCH COMMAND
Fort Eustis, Virginia

This report has been reviewed by the U. S. Army Transportation
Research Command and is considered to be technically sound.
The report is published for the exchange of information and
stimulation of ideas.

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Task 9R38-01-019-04

Contract DA 44-177-TC-653

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MEASUREMENT OF DYNAMIC AIR LOADS ON A FULL-SCALE
SEMIRIGID ROTOR

USATRECOM Report No. TCREC TR 62-42

Bell Helicopter Company Report No. 525-099-001

Prepared by



for

U. S. ARMY TRANSPORTATION RESEARCH COMMAND

Fort Eustis, Virginia

FOREWORD

This report describes the HU-1A dynamic air load measurement program and presents reduced data for selected flight conditions. The program was conducted by Bell Helicopter Company under U. S. Army Transportation Research Command Contract DA 44-177-TC-653 (Reference 1), and was carried out under the technical cognizance of Mr. John Yeates, USATRECOM, Fort Eustis, Virginia.

The program began in July, 1960 and was completed in June, 1962. Personnel associated with the program include Mr. F. B. Burpo, the Research Project Engineer, and Messrs. R. T. Bybee, B. Blankenship, J. A. DeTore, G. Boswell, and R. R. Lynn of Bell Helicopter Company. Additionally, Mr. E. L. Davis, a special consultant to USATRECOM, contributed many valuable suggestions during the early part of the program.

It was beyond the scope of the program to check every one of the thousands of data points presented. As discrepancies are found, it is requested that they be reported to Mr. J. Yeates of USATRECOM.

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LIST OF SYMBOLS

GW	Gross weight
H_D	Pressure density
H_P	Pressure altitude
I.A.S.	Indicated airspeed
K	1000 (used to denote electrical resistance)
N_1	Engine shaft r.p.m.
N_2	Engine gas producer r.p.m. in per cent
O.A.T.	Outside air temperature
P	Pressure
R	Radius
SHP	Shaft horsepower
V_{max}	Velocity, maximum
Z/D	Ratio of rotor diameter/rotor height above ground
ΔP	Differential pressure
σ	Density ratio
ψ	Main rotor azimuth angle in degrees; zero degrees is for instrumented blade over tail boom

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I. SUMMARY

This report describes a program to measure the dynamic air loads acting on the HU-1A semirigid main rotor and presents reduced data for selected flight conditions. The work reported includes only that pertaining to the data gathering, reduction, and presentation. The analyses and interpretation of those data are outside the scope of the program as defined in Reference 1.

Descriptions of the basic HU-1A helicopter, the instrumentation system, and various component tests are given. The latter include blade fatigue, differential pressure transducer, slip ring qualification, and main rotor vibration tests. All components performed satisfactorily.

The flight program is described. A total of three data flights were made during which 68 steady state and maneuver flight conditions were recorded. The flight conditions and related information are tabulated.

The data recording, processing, and presentation are discussed. Calibrations, sign conventions, and reduced data for eleven steady state and two maneuver conditions are given. The reduced data include:

IBM tabulations of blade differential pressures, air loads, bending moments, controls and blade positions, center of gravity accelerations, controls loads, and various harmonic analyses;

Curves of differential pressures versus chord, air loads versus span and azimuth, thrust versus azimuth, and blade bending moments versus span and azimuth;

Tables of related photo panel (velocity, temperature, etc.), and helicopter attitude and position information.

II. INTRODUCTION

The design of modern rotor systems has been hampered due to the lack of knowledge of the basic air loads acting on the blades. These fluctuating air loads are responsible for the rotor and control system fatigue loads and the cockpit vibrations associated with helicopter operation. The various harmonics of the air loads act on the blade, which responds as a function of its dynamic characteristics. Due to the complex interrelation of the aerodynamic forces acting on a blade and the dynamic characteristics of that blade, the experimental determination of the actual air loads acting on a rotor is impossible without direct pressure measurement.

Recognizing this, the U. S. Army Transportation Research Command (USATRECOM) initiated a broad experimental program to define the inflight air loads acting on rotor blades. The first such project involved National Aeronautics and Space Administration (NASA) tests with the articulated four-bladed rotor H-34 helicopter. That work is reported in part by Reference 2. The second part of the over-all air loads program involved the subject Bell Helicopter Company tests of the semirigid two-bladed rotor system of the HU-1A helicopter. The purpose of the Bell work, as defined by Reference 1, was to gather, reduce, and present selected data from the test flights. The analysis and interpretation of those data were outside the scope of the program.

These two projects are the first known programs to measure air loads on a full scale rotor in flight. However, similar wind tunnel model tests were conducted in 1956 by NACA. These model tests are reported by Reference 3. It is hoped that the analysis and application of the data presented herein will allow greatly improved rotors for future helicopter designs.

At the onset of the program, it was planned that the basic air load and moment data would be reduced by use of a 12-point harmonic analysis. Oscillograph trace sensitivities, channels per oscillograph, paper speed, etc., were adjusted accordingly. The major portion of the data, flight conditions, etc., presented herein follows this initial planning and is referred to as Type I data, conditions, etc.

During the course of the program, USATRECOM advised the contractor that a new rotor air load prediction technique was being developed by the Cornell Aeronautical Laboratory and that it was desirable to use data from the subject program for correlation purposes. During subsequent discussions with personnel from USATRECOM and the Cornell Aeronautical Laboratory, it was decided that the HU-1A data to be supplied to the Cornell Aeronautical Laboratory should have a greater sensitivity than that originally planned; further, that a 24-point instead of a 12-point harmonic analysis should be used. To accomplish this, it was necessary to increase the sensitivity of the air load oscillograph traces, to delete some oscillograph traces (to allow for increased sensitivity), and

to increase the oscillograph paper speed. The resulting four flight conditions and data are referenced to herein as Type II flights, conditions, data, etc. The results of the Cornell Aeronautical Laboratory air load prediction work are reported in Reference 4.

III. DESCRIPTION OF TEST EQUIPMENT

A. HELICOPTER

The helicopter used during the subject program was the United States Army HU-1A Iroquois, Serial Number 59-1616. An in-flight photograph of the test helicopter is shown in Figure 1. A three-view drawing of the basic HU-1A is shown in Figure 2; pertinent data for the test machine are listed below.

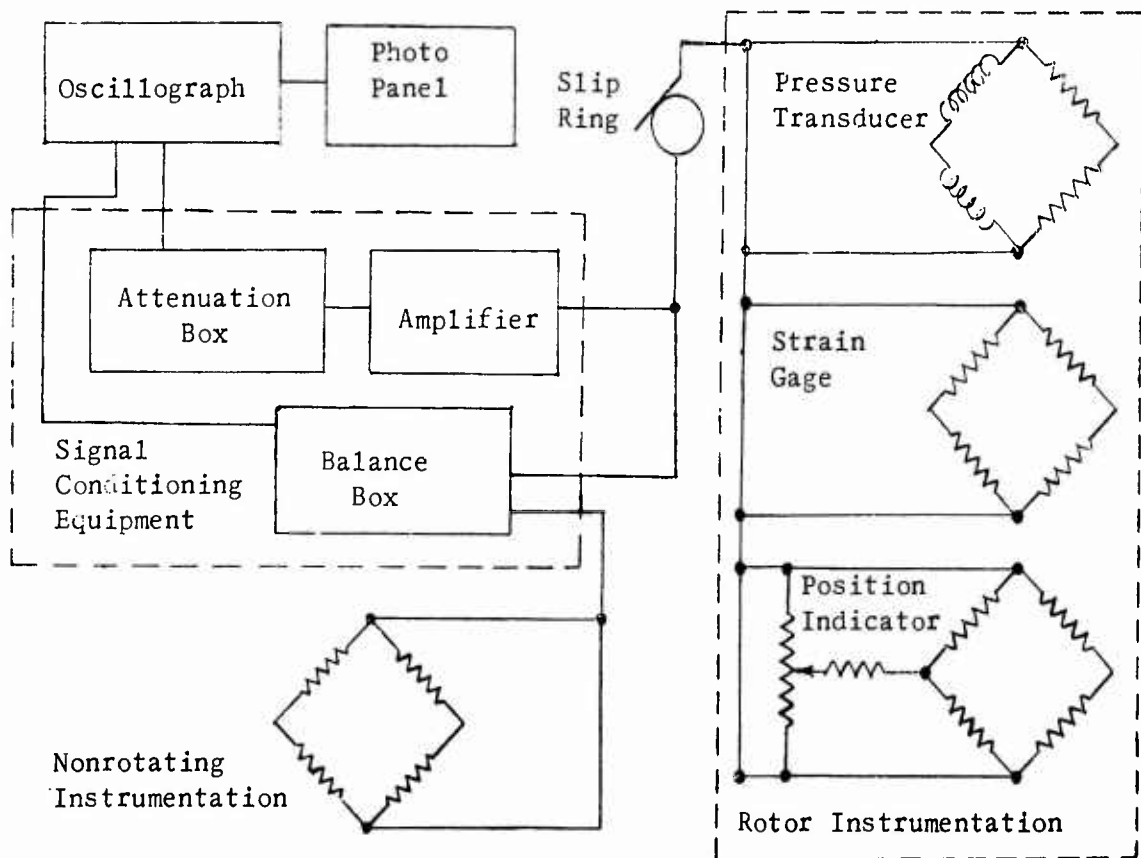
Take-off Gross Weight (pounds)	6175
Center of Gravity (inches, reference Sta. 0, Fig. 2)	133.1
Engine	Lycoming T53-L-1A (Serial No. LE 00239)
Power/Engine Speed (Horsepower/r.p.m.)	770/6400
Out of Ground Effect Ceiling (feet)	12,000
Cruise Speed (knots)	100
<u>Main Rotor Data</u>	
Number of Blades	2
Diameter (feet)	43.75
Chord (inches)	15.2
Blade Twist (degrees)(from centerline of rotation to tip)	-12
Blade Section	NACA 0015
Tip Speed (feet/second)	
At engine speed of 5800	652
At engine speed of 6400	720
At engine speed of 6600	742
Ratio of Blade Pitch to Bar Flapping	.16
Pitch Link Arm to Blade Feathering Axis (inches)	7.0
<u>Rigging Data</u>	
Fuselage	
Fore and aft (degrees)	0
Lateral (degrees)	0
Mast	
Forward (degrees)	3
Lateral (degrees)	0
Swashplate (neutral cyclic control)	
Forward (degrees)	3
Left (degrees)	-1 (left side down)
Swashplate	
Cyclic control full forward (degrees)	14.5
Cyclic control full aft (degrees)	-9
Cyclic control left (degrees)	-9.25
Cyclic control right (degrees)	9.5
Blade Angle at Blade Station 23	
Collective control full down (degrees)	9.5
Collective control full up (degrees)	22.5

B. INSTRUMENTATION SYSTEM

1. General (Block Diagram)

The data presented during the subject program were recorded manually, by oscillograph, and by photo panel. Counter number, maneuver description, and pilots' comments were recorded manually; airspeed, altitude, outside temperature, rotor speed, and power were recorded by photo panel; and the outputs of the rotor and/or fuselage mounted pressure, strain, and position transducers were recorded by oscillograph. Photo panel correlation traces were also recorded on the oscillograph.

A block diagram of the basic instrumentation system developed and used during the subject program is shown in the accompanying sketch. Figure 3 shows the instrumentation installation in the cabin of the HU-1A helicopter. Discussions of the major components peculiar to this system are given in the paragraphs below. Table 1 gives a complete list of all the oscillograph data channels recorded. Reference 5 is a complete wiring diagram of the instrumentation system.



BLOCK DIAGRAM OF INSTRUMENTATION

2. Components

a. Pressure Transducers - NACA-developed miniature pressure transducers were used during this program to measure the differential pressure between the upper and lower surface of one main rotor blade. The basic transducer is described in NACA Technical Note 2659 (Reference 6); a photograph of one of the transducers used during the program is shown by Figure 4.

The device operates on a variable air-gap inductance principle. A thin stretched diaphragm is mounted between two coils; one side of the diaphragm is connected to the upper blade surface, the other side to the lower surface. Differential blade pressure results in a deflection of the diaphragm and a consequent air gap and inductance change which is amplified and recorded. The transducer output was amplified by Consolidated Electrodynamic Corporation (CEC) System D amplifiers which supply a 3000 cycle excitation voltage.

The transducers used during this program were supplied by the Modern Machine and Tool Company, Inc., Newport News, Virginia. All units were carefully inspected as described in a later section and performed satisfactorily during the program.

b. Main Rotor Slip Ring - Figure 5 shows the slip ring assembly which was developed and used during this program. The slip ring assembly is defined fully in Reference 7. The Bell-designed unit which was built by the Instrument Engineering Company of Austin, Texas, successfully completed its qualification tests (Reference 8) and performed satisfactorily during the program.

The slip ring is constructed in four sections, three 50-ring segments with two brushes per ring, and a 14-ring segment with four brushes per ring. The 14 rings were power carriers; the remaining 150 rings were used to carry signals.

The slip ring assembly was installed inside the main rotor mast with only the rotating plug connector protruding from the top (see Figure 6). It was driven by a cap fitting over the top of the mast and held stationary by a stand pipe extending out the bottom of the mast and attaching to the frame of the ship. The stationary wiring was brought down through the pipe to the signal conditioning equipment.

c. Attenuation Box - The attenuation box was used for two reasons; first, it was used to attenuate or adjust the signal amplitude, and second, it was used to provide a matching network.

Type 7-312 and 7-315 galvanometers were used during the program with the CEC System D amplifiers. The output impedance of this type of amplifier was not the correct value for the above galvanometers. The contractor was informed by NASA personnel early during the program that the high frequency galvanometers that are intended to be used with that amplifier (323 galvanometers) produced "hashy" oscillograph traces when used

with the NACA transducers. Therefore, the lower frequency galvanometers were used and a matching network was required.

A potentiometer was used in the matching network. The amplifiers have step attenuators which allow the signal amplitude to be varied in large increments; however, a finer amplitude adjustment was required for the subject program. Therefore, an adjustment potentiometer was incorporated in the attenuation box.

d. Photo Panel - The following instruments were installed in the photo panel.

- Airspeed indicator (knots)
- Altimeter (feet)
- Tachometer, engine (N_1) and rotor (r.p.m.)
- Tachometer, gas producer (N_2) (per cent r.p.m.)
- Temperature gage, outside air (degrees centigrade)
- Pressure gage, high torque, engine (p.s.i.)
- Pressure gage, low torque, engine (p.s.i.)

The instrument readings were recorded by a Model G Automax 35 mm camera.

e. Standard Items - The following equipment was installed in the helicopter for the test program.

Six Consolidated Electrodynamics Corporation (CEC) oscillographs, Model 5-114-P3-18.

Three CEC Model 2-105B power supplies with 1-113B amplifiers.
Two CEC Model 2-105 power supplies with 1-113B amplifiers.

Attitude gyro: Lear K4B System.

Rate gyro: Minneapolis Honeywell Model VFDD-1 with K-3 gyros.

Accelerometers: Statham Model A17-3-120

Position Indicators: A potentiometer was used to unbalance a Wheatstone Bridge.

Angle of attack and yaw vane - Aerodynamic vanes were connected to potentiometers. The vanes were mounted on a boom as shown in Figure 1. The boom vane position was at the following approximate location: Water Line +40; Butt Line 0; Station -100.

C. INSTRUMENTED BLADES

The most important item of the program (and the most difficult to assemble) was the fully instrumented main rotor blade. A schematic of that blade (designated as the red blade) is shown in Figure 7. This blade is

detailed completely by Reference 9. It was instrumented to measure beam and chord bending, torsion, and differential pressure.

For the purpose of tracing bending moments across the hub and establishing mode shapes, chord and beam bending gages were installed on the second, or white blade. Also, the mass distribution for the two blades was assured by installing dummy transducer trays in the white blade.

The following paragraphs describe the strain and pressure sensor installations and present basic dynamics data for the red blade.

1. Strain Gage Installation

Baldwin-Lima-Hamilton, SR4 paper strain gages, type A-13, were installed on the blades per standard Bell Helicopter Company laboratory procedure. A thin coating of epoxy fairing putty was applied over all strain gages and lead wires and was sanded so that the installation was aerodynamically clean. Figure 8 shows a photograph of the completed installation.

The locations of the strain gages in per cent radius are:

Red Blade

Beam Bending: 15; 28; 36; 45; 60; 65; 80; 92.5
Chord Bending: 15; 28; 60; 80
Torsion: 15; 50

White Blade

Beam and Chord Bending: 15; 28

2. Pressure Sensor Installation

Forty-four pressure transducers of the type shown by Figure 4 were installed in the red blade. The transducer installation consisted of the following components:

Tray Assemblies - These assemblies included transducers, bridge resistors, and mounting hardware (see Figure 9). Stainless steel tubing (.0625 inch, .010 wall) was used to connect the pressure transducer to the tray air pressure orifices. All tubing lengths were quite short and the maximum length used was 3.5 inches.

Aluminum Tubes - These tubes served as an electrical conduit to carry the transducer lead wires and also to position the trays spanwise inside the blade.

The trays were shaped to match the inside contour of the three blade sections (i.e., box beam, mid-, and trailing-edge sections). Figure 10 shows the three tray assemblies used.

Six tray assemblies of each shape were mounted to three aluminum tubes and each tube was then inserted into the matching blade section from the tip. Figure 11 shows the tube and tray assembly for the box beam section partially installed in the blade. Foam spacers supported the tube between the transducer stations.

After all assemblies were in place, the trays were connected to the blade by screws with drilled orifices. Prior to the final installation, the heads of the orifice screws were filed to be flush with the blade surface.

The span and chordwise locations of the pressure transducers installed in the red blade are:

<u>Spanwise Station</u> <u>Per Cent Radius</u>	<u>Chordwise Station</u> <u>Per Cent Chord</u>
40	4; 17; 34; 63; 88
55; 75; 90; 95	2; 9; 17; 23; 34; 63; 90
85	2; 4; 9; 13; 17; 23; 34; 47.7; 63; 77; 90

The installation performed satisfactorily. During the course of the program, however, two transducers became inoperative (at 85 per cent radius, 47.7 per cent chord and at 95 per cent radius, 34 per cent chord).

3. Mass and Stiffness Distribution

Chordwise stiffness, beamwise stiffness, and weight distribution curves for the special blades of this program are shown in Figures 12, 13 and 14, respectively. A comparison with the standard HU-1A blade is given in Figure 14.

The transducer installation had small or negligible effect on the stiffnesses. From Figure 14 note that 30 per cent of the total weight added to the standard blades is concentrated at the six transducer stations.

The chordwise center of gravity shift of the blade was determined to be approximately 0.3 per cent of the chord. This is considered to be negligible.

IV. MISCELLANEOUS ANALYSES AND COMPONENT TESTS

During the course of this program, various analyses and component tests were conducted to establish the approach and to verify equipment performance and structure. The results of these analyses and tests are summarized below.

A. TRANSDUCER PRESSURE RANGE DETERMINATION

A study was conducted to define the maximum differential pressure which might be expected at the various locations over the blade for the flight conditions required by this program. The results of these calculations allowed the selection of the proper range pressure transducer to be installed at each blade location.

For a helicopter gross weight of 5900 pounds, a rotor speed of 314 r.p.m., and an ICAO standard day at sea level, differential pressures over the blade as a function of azimuth positions were calculated for the following flight conditions: (1) hover out of ground effect; (2) 120 knot straight and level flight; (3) 50 knot, 2140 foot per minute climb; (4) 80 knot entry, 1.39 g pull-up, and 770 shaft horsepower. Calculations were based on the experimental pressure data of NACA Report 832 (Reference 10). The highest pressures for all spanwise stations inboard of 95 per cent radius were predicted for Condition No. 4 above, and the highest pressures at the 95 per cent radius were predicted for Condition No. 3. The contractor's IBM 650 computer Program C21 was used to obtain values of angle of attack and Mach number for these flight conditions.

In the chart below, the calculated values of maximum differential pressures are shown in parentheses. The values to the right of the ones in parentheses are the maximum pressure ranges of the transducers used. The results of the flight tests showed that these values were adequate for the test program.

		MAXIMUM DIFFERENTIAL PRESSURE					
		ΔP , p.s.i.					
Ch. Sta. in % Ch.	Span Sta. in % R	40	55	75	85	90	95
	2			(8.9) 15	(11.8) 15	(11.3) 15	(12.0) 15
4		(5.2) 8			(10.6) 15		
9			(5.8) 15	(9.0) 15	(9.5) 15	(8.9) 15	(9.4) 15
13					(8.6) 15		
17		(3.2) 8	(3.7) 8	(5.4) 8	(7.3) 15	(7.2) 15	(7.5) 15
23			(2.8) 8	(4.3) 8	(5.8) 15	(5.8) 15	(6.8) 15
34		(1.4) 8	(2.0) 4	(2.5) 8	(2.8) 8	(3.7) 8	(3.4) 8
47.7					(1.4) 4		
63		(0.5) 1	(0.8) 2	(0.9) 2	(1.1) 2	(1.3) 4	(1.3) 4
77					(0.8) 2		
88		(0.1) 1					
90			(0.3) 1	(0.5) 1	(0.61) 2	(0.8) 2	(0.8) 2

B. BLADE STATIC STRESS ANALYSIS

A static stress analysis of the critical blade station for various flight conditions was made. This analysis showed that the most critical spanwise station for the modified blades is the same as that for the standard blade. The critical spanwise station occurs at the 13 per cent radius and is well inboard of the modified sections of the blade.

C. BLADE FATIGUE TESTS AND SAFE LIFE DETERMINATION

As described previously, holes were drilled through the rotor blade nose block, box beam, and skin to mount the transducer installation. These holes produced stress raisers which reduced the fatigue strength of the basic blade. Therefore, it was necessary to determine a safe life for the instrumented blades of the subject program. The determination of a safe life involved blade specimen fatigue tests (Reference 11) and analyses of the fatigue test data (Reference 12). The following paragraphs summarize this phase of the program.

Four HU-1A main rotor blade specimens were tested with the transducer trays installed. Testing was accomplished in a constant displacement fatigue test machine as shown by Figure 15. This machine applied combined mean and oscillatory chord and beam bending moments in addition to a steady axial load to simulate centrifugal force. The bending moments, expressed as a per cent of the YH-40 V_{max} loads measured during the YH-40 flight "load" survey, were: 111 per cent for blade specimen Serial No. A2-2, 110 per cent for specimen Serial No. A2-16, 79 per cent for specimen Serial No. A2-15, and 70 per cent for specimen Serial No. A2-18. Cycles to failure were plotted as a function of stress level at the critical chordwise location (17 per cent) and a mean curve through the test data was drawn. Subsequently, the failure stress levels at all frequencies were reduced 20 per cent to account for scatter. Based on these data and an assumed conservative flight spectrum for the test helicopter, fatigue life calculations were made for several configurations of the test blade.

The calculations indicated that with the most inboard instrumented blade station at the 30 per cent radius, the blade life would be about 70 hours. With the most inboard instrumented blade station at the 40 per cent radius, the life of the blade was calculated to be 140 hours. Because of the large increase in blade life, the blades were constructed with the most inboard instrumented station at the 40 per cent radius.

During the flight test program, a review of the measured data revealed that the blade moments at the 75 per cent radius were higher than had previously been measured during the YH-40 tests and that there was a significant amount of five per revolution beam bending during certain flight conditions. Additional fatigue life calculations were made and the 75 per cent radial station was found to be critical. At this time it was estimated that 15 hours flight time would be adequate for the subject program.

Since 15 hours was well under the new fatigue life of the blades, it was decided that this flight time would not be exceeded without additional analysis and a careful inspection of the blade. These were not required.

D. SLIP RING QUALIFICATION TESTS

Qualification tests of the main rotor slip ring assembly were conducted by the Southwest Research Institute, San Antonio, Texas, and are reported in Reference 8. The slip ring assembly was operated at approximately 340 r.p.m. to determine the mechanical and electrical performance under adverse environmental conditions of low and high temperatures (0° to 120° F), relative humidity (100 per cent), and high altitude (15,000 feet).

Each test consisted of one-hour runs during which the slip ring assembly was operated in the clockwise and counterclockwise directions for each of the four test conditions. Temperature and self-generated noise were checked during the tests.

After completion of the eight hours of operation the slip ring assembly was checked for resistance, dielectric strength, and brush wear. The resistance to ground was over 500 megohms and the insulation withstood 500 volts AC, 60 c.p.s., for five seconds. Brush wear or "dusting" was slight and over-all performance was excellent.

E. LABORATORY CENTRIFUGE TEST

After completion of the preliminary design of the transducer tray and installation, it was decided to conduct a centrifuge test on a typical assembly. The purpose of this preliminary test was to check the structural strength of the assembly during high acceleration forces and to establish that the transducer as mounted did not produce extraneous outputs due to case distortion. The test was accomplished early in the program (October, 1960) before the final blade design was completed. Figure 16 shows a photograph of the test fixture and a mockup of the box beam transducer tray assembly. The rotating arm shown was a section of a box beam used in the HU-1A main rotor blade, and the transducer tray assembly was installed in the tip. The transducers were connected through a slip ring to amplifiers which were connected to a recording oscillograph.

The beam was rotated at 1500 r.p.m. which produced a 762 g acceleration on the transducer installation (corresponds to 95 per cent radius on an HU-1A rotor). With the orifices sealed, no output was recorded and it was therefore established that centrifugal force would cause no extraneous signal.

Accelerating the device to 1500 r.p.m. required approximately one second. The assembly was started and stopped 100 times for the purpose of straining the tubing connections and the mounting with repeated inertia loads. Inspections of the installation after completion of the tests showed all connections and hardware to be satisfactory and it was concluded that the installation was adequate.

F. GROUND RUN AND FLIGHT TEST OF TYPICAL TRANSDUCER INSTALLATION

During February, 1961, a ground run and a short flight test were conducted with a blade which had a complete transducer installation at the 95 percent radius. These tests were conducted to prove the structural adequacy of the transducer installation and to evaluate the overall system in flight. Also, any instrumentation "noise" or "hash" problems which might occur during later tests could be determined and corrected.

Three tray assemblies, including seven transducers, were installed at the 95 percent radius station of one HU-1A main rotor blade. This installation at 95 percent radius was similar to that used later in the fully instrumented blade. The main rotor slip ring assembly discussed earlier was also installed on the helicopter so that its performance could be checked.

The results of this test showed that,

- 1) the installation was structurally adequate,
- 2) the recording system functioned properly,
- 3) the air pressures recorded were within the range of the transducers, and
- 4) the slip ring assembly was satisfactory.

In addition, four air pressure leaks were discovered. Two of the leaks were caused by the assembly procedure, and two were the result of faulty transducers. Changes were made in the assembly and transducer testing procedures to eliminate, insofar as possible, a similar occurrence in the final installation.

G. MAIN ROTOR BLADE SHAKE TESTS

A shake test was conducted to determine the natural frequencies of the instrumented main rotor blades. The rotor was suspended by means of elastic cord fastened to the centerline of the trunnion. The pitch of the blades was adjusted so that the chord line at 75 percent radius was horizontal. MB electronic shaker equipment was used for the tests. This shaker allows the operator to control the force and frequency of the input motion.

To determine the beamwise symmetrical bending modes, an MB shaker was attached so that the force was applied vertically at the centerline of the hub (directly under the suspension point). For determining the asymmetrical beamwise modes, the shaker was offset in the spanwise direction approximately ten inches.

The symmetrical chordwise bending modes were determined by connecting the shaker to the centerline of the hub with the force applied horizontally. Asymmetrical chordwise modes were investigated by offsetting the shaker approximately ten inches in the spanwise direction.

The results of these tests are given below. Also shown for comparison are the similarly determined natural frequencies of the standard HU-1A rotor. All modes compare closely except the first chord asymmetric bending.

BLADE STATIC NATURAL FREQUENCIES

MODE	Frequency in Cycles Per Second	
	Standard Blade	Instrumented Blade
<u>Beamwise</u>		
First Symmetric	2.08	2.20
Second Symmetric	9.00	8.75
Third Symmetric	22.3	22.75
First Asymmetric	5.5	4.5
Second Asymmetric	15.8	13.8
<u>Chordwise</u>		
First Symmetric	7.5	7.5
First Asymmetric	20.7	27.0

H. GALVANOMETER PHASE SHIFT TEST

A large phase shift between the origination of a signal and the recording of a signal, or between two instrumentation channels, would cause large errors in the data. To measure the phase shift of an air pressure signal from the rotor blade through the instrumentation system, including the amplifiers, would be extremely difficult. However, the major cause of any phase shift was expected to be the CEC galvanometers in the oscillographs. The phase shift produced by these galvanometers was investigated.

The basic frequency reference on the oscillograph records was the azimuth indication (24 "blips" per revolution). Therefore, it was important to compare all signal galvanometers with the azimuth galvanometer.

The following CEC galvanometers were used during the test program:

- Galvanometer Type 7-323 - azimuth indication (natural frequency of 1000 c.p.s.)
- " " 7-325 - accelerometers (natural frequency of 18.5 c.p.s.)
- " " 7-339 - attitude gyros (natural frequency of 50 c.p.s.)
- " " 7-312 - all other channels
and
7-315 (natural frequency of 100 c.p.s.)

A Type 7-317 galvanometer with a natural frequency of 3700 c.p.s. was used during the phase shift test as a reference. Galvanometers Types 317, 323 and 312 were installed in an oscillograph; a signal of constant amplitude was applied and the frequency was varied from 0 to 60 c.p.s.

The results of the test program proved that the galvanometer phase shift was as expected; that is, the phase shift varied as any damped spring-mass system. CEC galvanometers normally employ .64 critical damping. This value yields a flat frequency response (± 2 per cent) to at least 60 per cent of the natural frequency, and approximately a linear variation of phase angle with frequency. Therefore, at 30 c.p.s. (approximately six per revolution) the phase shift is $30/100 \times 90$ or 27 degrees for the 312 and 315 galvanometers. This is only $27/6$ or about 4.5 degrees when referred to the one-per-revolution rotor frequency.

I. TEST OF NACA PRESSURE TRANSDUCER

NACA Model 49 pressure transducers were thoroughly tested as a part of their receiving inspection at Bell. The manufacturer of these transducers was not equipped to test the devices as thoroughly as needed, consequently the Bell tests were quite stringent. The results of all tests discussed below were examined to select the most accurate transducers from the group received.

1. Temperature

Variations of the transducers' outputs due to temperature were investigated. These changes were manifested as a shift in the zero reference or a change of sensitivity, or both. To investigate these items the transducers were subjected to temperature variations of 0 degrees Fahrenheit to 120 degrees Fahrenheit. The environmental temperatures in which the transducers would be operated were within this range. The fixture which was used to mount the transducer for the tests is shown in Figure 17. Transducer outputs were recorded on a CEC oscillograph through CEC System D amplifiers. The transducers were placed in an environment of 0 degrees Fahrenheit, and 15 minutes were allowed for the transducers' temperatures to stabilize. They were balanced and the output due to applying full range pressure was recorded. The transducer balance was checked and the temperature was increased from 0 to 120 degrees Fahrenheit. Zero shift was recorded. Next, full range pressure was applied and the output recorded.

The zero shift and sensitivity changes were then expressed as a percentage of the full range output per degree Fahrenheit as shown below:

$$\text{Percentage Zero Shift} = \frac{(0^\circ\text{F, zero pressure}) - (120^\circ\text{F, zero pressure})}{(0^\circ\text{F, zero pressure}) - (0^\circ\text{F, full pressure)}} \times \frac{100}{120}$$

$$\text{Percentage Sensitivity Change} = \frac{(0^\circ\text{F, full pressure}) - (120^\circ\text{F, full pressure})}{(0^\circ\text{F, zero pressure}) - (0^\circ\text{F, full pressure)}} \times \frac{100}{120}$$

The results of these tests are presented in Figures 18 and 19. These figures show the distribution of zero shift and sensitivity as a function of the number of units tested. In the final selection of the transducers for this program it was found that the temperature effect was the critical factor.

2. Linearity, Hysteresis, Repeatability

For these tests, eight transducers were connected to a manifold as shown in Figure 17 and the output of each transducer was recorded on a CEC oscillograph through the CEC System D amplifiers. The pressure applied was measured with a manometer. The room temperature of 76 degrees Fahrenheit did not vary more than 0.5 degrees Fahrenheit while data were being taken.

Linearity, hysteresis, and repeatability were checked simultaneously. The transducers were calibrated at 0 per cent, ± 25 per cent, ± 50 per cent, ± 75 per cent and ± 100 per cent of full range. Pressure was applied in increments up to full range, then reduced to zero in steps. Care was taken when applying the pressure so that no overshoot occurred. In this manner the linearity and hysteresis were checked. The 50 per cent and 100 per cent points were run twice more at ten minute intervals to obtain the repeatability data.

The results indicated that the combined error due to linearity, hysteresis and repeatability was within plus or minus 2 per cent of full scale output.

3. Vibration

The transducers were placed in the test fixture and vibrated with an acceleration of ± 20 g's. This test was to ascertain if any of the transducer coils were loose. They were mounted in the same manner as they would be mounted in the blade so that no output would be obtained from stressing the case of the transducers. No output due to vibration was obtained from any of the transducers tested.

V. FLIGHT TESTS

The flight test portion of the program was conducted during August through October, 1961. The helicopter configuration and instrumentation are defined in previous sections.

Several preliminary flights were required to prepare for the data flights. These flights were made to track and balance the rotor, to functionally check the instrumentation, to adjust and position oscillograph traces, and to check for pressure transducer outputs due to centrifugal force or "noise." After the initial flights, the pilot commented that track and balance with the instrumented rotor were good and comparable to a standard HU-1A rotor.

It was found during these flights that several pressure transducer traces apparently contained hash or "noise." Several orifices were sealed and flights were made to check this condition. No outputs were recorded from the sealed transducer; therefore, it was assumed that all outputs recorded previously were due to air pressure.

A total of 12 flights requiring 6.4 hours was required to complete the program. A log of these flights is given in Table 2.

Flights number 7A, 10A, 10B, 10C, and 12A were conducted to record data. All such flights were performed early in the morning to take advantage of cool temperatures, smooth air, and low wind velocities. A list of these flight conditions is presented in Table 3, in which weather conditions and pilots' comments are also given. This table presents data recorded by the observer prior to and during each flight condition. One of the readings recorded by the observer was the amount of fuel consumed. During straight and level flight conditions, the weight of the fuel consumed was used to calculate the change in gross weight so that the altitude could be changed and gross weight/density ratio could be held nearly constant.

VI. DISCUSSION, REDUCTION, AND PRESENTATION OF DATA

A. METHODS OF CALIBRATION AND SIGN CONVENTIONS

The following paragraphs describe the methods used to calibrate the instrumented parts and equipment of the test helicopter. The sign conventions used are also noted. Right and left are determined while seated in the helicopter facing forward; positive deflection on the oscillograph paper is for the trace moving up.

1. Attitude and Rate Gyroscopes

The attitude gyros were calibrated using a tilt table and a precision inclinometer. The rate gyros were calibrated on a Genisco rate of turn table.

For a preflight calibration, the helicopter was leveled and an oscillograph recording of the attitude gyro trace was made to establish a reference point. There was no preflight calibration of the rate gyros. The calibration curves for the attitude and rate gyros are shown in Figures 20 and 21.

The sign conventions for these gyros are given below:

Attitude Gyro:

Positive (+) Roll: Top of mast is right
Positive (+) Pitch: Nose of helicopter is up
Zero: Helicopter level on both axes

Rate Gyro:

Positive (+) Roll: Top of mast moves right
Positive (+) Pitch: Nose of helicopter moves up
Positive (+) Yaw: Nose of helicopter moves right
Zero: No motion

2. Position Indicators

The position indicators were calibrated after being installed on the helicopter. With the exception of the main rotor pylon, all position indicators were calibrated with a protractor. The pylon position indicators were calibrated with a dial indicator. For various deflections, the position indicator outputs were recorded on the oscillograph. A 100K ohm resistance calibration was also recorded. The outputs of the pylon position indicators were also recorded while the ship was level and the mast angle was measured and recorded during the preflight check.

Zero for the flap and pitch position indicators was determined prior to each test flight by operating the helicopter on the ground with the collective full down and recording the traces. The average value of the flap and pitch traces was used as the zero. For the pitch trace, this zero or reference point is defined as the low blade angle which is +9.5 degrees at Station 23 on the blade. Positive deflection for the pitch

trace was for the leading edge of the red blade rotating up. Positive deflection for the flap trace was for the red blade moving up. A 100K resistance calibration was used to establish the sensitivity of the blade pitch trace. All other position indicators were calibrated during the preflight checks by moving the appropriate controls to their limits. The calibration curves for all position indicators are shown on Figures 22a through 22m. The sign conventions for the various position indicators are given below:

Rudder Pedal:

Positive (+): Right rudder
Zero: Neutral pedal position the middle of full travel on the oscillograph

Fore and Aft Cyclic:

Positive (+): Stick forward
Zero: Swashplate perpendicular to mast

Lateral Cyclic:

Positive (+): Stick to right
Zero: Swashplate perpendicular to mast

Collective:

Positive (+): Stick up
Zero: Collective stick full down

Stabilizer Bar:

Positive (+): Upward movement of the side of the stabilizer bar attached to the instrumented blade control links

Pylon:

Positive (+): Pylon mount increasing in length (pylon moving up)

Angle of Attack Vanes:

Positive (+) Yaw: Nose of helicopter is to right
Positive (+) Pitch: Nose of helicopter is up
Zero: Vanes parallel with axes of helicopter

3. Main Rotor Strain Gage

The main rotor assembly was installed on a dummy mast which was fastened to the floor so that the beam and chord bending bridges and the torsion bridges could be calibrated. The appropriate loads were applied and the bridge outputs were recorded. Calibration curves showing the output versus bending moment or torsion are presented by Figures 23a through 23r.

During the calibration, a fixed precision resistor ($\pm .5$ per cent) was connected across one leg of the bridge. The output produced by this unbalance is indicated on the curves. A corresponding load value is defined as the calibrate equivalent. A calibrate equivalent was recorded for all strain gage bridges.

All blade strain gages were calibrated during the preflight check using a 100K precision resistor. The sign conventions for these gages are:

Beam Bending Positive (+): Top of blade in compression
Torsional Positive (+): Blade trailing edge rotated up
Zero: Reference point with rotor stopped
(A droop correction factor is subtracted from in-flight readings to obtain zero)
Chord Bending Positive (+): Leading edge of blade in tension

4. Pressure Transducers

The pressure transducers were calibrated after the rotor and related instrumentation were installed on the helicopter. The system D amplifiers used in conjunction with the transducer have a reference phase control. The output or sensitivity of the amplifier is dependent on that control. Therefore, the reference phase control was adjusted prior to the calibration of the system and was not changed during the remainder of the program.

Each transducer was calibrated throughout its pressure range with a mercury or water manometer as the indicating device for pressure; the transducer output was recorded on an oscillograph. The calibration curves for the pressure transducers as installed in the main rotor blade are presented by Figures 24a through 24f.

For a preflight calibration, all main rotor blade pressure transducers were checked by applying a known vacuum to each transducer. The vacuum was measured with a manometer. These calibration results are presented in Tables 4a through 4f (see Section VI-B-1 for a more complete discussion of these data). The sign conventions for the transducers are:

Positive (+): Pressure on top surface of blade lower than pressure on bottom surface
Zero: Pressure on bottom surface equals pressure on top surface

5. Control Tubes

All components used to measure control system loads were instrumented with tension bridges. For calibration, the components were loaded on a Baldwin Universal tester and the output was recorded on a microammeter. The calibration curves for these parts are shown by Figures 25a through 25f. All strain gaged control tubes were calibrated with a 100K ohm precision resistor during the preflight check.

The sign convention for the control tubes is:

Positive (+): Tension in tube

6. Accelerometers

The accelerometers were calibrated at the helicopter. The difference in output between the accelerometer sitting on its base and the accelerometer inverted was recorded on an oscillograph. The 2g inversion was used as the calibrate. The accelerometers were calibrated with a 100K ohm precision resistor during the preflight check.

The accelerometer sign conventions are:

Vertical, Positive (+): Accelerometer case moving up
Fore and Aft, Positive (+): Accelerometer case moving forward
Lateral, Positive (+): Accelerometer case moving right

7. Photo Panel Instruments

All photo panel instruments were calibrated on the appropriate test device in the contractor's Standards and Calibration Laboratory prior to installation on the helicopter. In addition, the airspeed indicator was calibrated in flight with a trailing bomb device. The calibration curves for the photo panel instruments are presented in Figures 26a through 26g. There was no preflight calibration for the photo panel instruments.

8. Blade Azimuth Indication

Blade azimuth indication was accomplished by positioning a trace interrupter on the swashplate (Figure 27) to produce 24 indications ($360^{\circ}/24 = 15^{\circ}$ apart) per revolution. Blade azimuth position was equal to zero degrees when the red blade was over the tail boom. When viewed from above, the main rotor rotates counterclockwise.

B. SENSITIVITIES

1. Type I Flight Conditions

Tables 4a through 4f list the oscillograph channel, the trace zero position, the calibration constant, and the droop, where applicable, for all six oscillographs for the Type I flight conditions. The calibration constant or sensitivity is a term expressed in the appropriate units per inch which relates the trace deflection to the quantity being measured.

The trace zero is the reference position for all traces. It is the distance in inches from the reference line at the bottom of the oscillograph to the zero position for all traces.

Referring to Tables 4a through 4f, there are numbers in the column marked "Droop" for the beam bending, pitch position, and vertical acceleration channels. The droop readings for the beam bending channels indicate the negative bending moments for each beam channel caused by the blade's own weight. These droop readings must be subtracted from the in-flight readings to obtain a true zero.

The blade pitch position zero was recorded with the collective control full down. At this position the pitch of the blade was +9.5 degrees at the reference Station 23. Therefore, +9.5 degrees is shown in the "Droop" column and must be added to all in-flight readings to obtain the true blade angle at Station 23. The twist of the blade is -10 degrees 57 minutes from Station 23 to the tip.

The vertical accelerometer indicated one (1) g when the zero record was taken; therefore, one (1) g is shown in the "Droop" column and is to be added to all in-flight readings.

2. Type II Flight Conditions

Tables 5a through 5f list the oscillograph channel, the trace zero position, the calibration constant and the droop for all six oscillographs. The discussions of Paragraph 1, above, apply to the Type II records; however, certain channels were deleted and the trace sensitivities were increased for the Type II flight conditions.

C. ACCURACY

A detailed study to establish the absolute accuracy of each of the 94 channels of instrumentation discussed herein is outside the scope of the program. An evaluation of the over-all system, however, has indicated that over-all errors in the tabulated data of ± 5 to 7 per cent are to be expected.

D. DATA PROCESSING

1. Data Reading

a. Photo Panel - Information recorded by the photo panel camera included airspeed, altitude, engine and rotor r.p.m., gas producer r.p.m. (per cent), and engine high and low torque. Counter numbers on the film and a mark on the oscillograph records produced by the camera shutter, allowed correlation between photo panel and oscillograph records.

b. Oscillograph - The oscillograph records were read using the Benson-Lehner OSCAR system at the contractor's facility. The OSCAR system consists of a Model E Oscillograph Trace Reader, a Model E Decimal Counter, a Model B Electrotypewriter, and an IBM 026 Keypunch.

To read oscillograph records using the OSCAR, the record was placed on a reading table and a hairline representing the X axis and one representing the Y axis were aligned over the point to be read. With the hairlines aligned, a button was depressed and the data point was typed on a record sheet and punched on an IBM card. The deck of punched cards served as an input to the IBM 650 computer used during the program.

2. Data Grouping

The various types of data can be conveniently grouped according to reduction procedures. These data groups are listed and discussed briefly in the sections below.

a. Group I

	<u>IA</u>	<u>IB</u>
Photo Panel	1. Airspeed 2. Pressure altitude 3. Engine r.p.m. 4. O.A.T. 5. N_1 (per cent) 6. High torque, engine 7. Low torque, engine	1. True airspeed 2. Density altitude 3. Rotor r.p.m. 4. Engine power
Oscillograph	8. Pitch rate 9. Roll rate 10. Yaw rate 11. Pitch attitude 12. Roll attitude 13. Fore & aft cyclic position 14. Lateral cyclic position 15. Collective position 16. Rudder position 17. Boom, angle of attack vane 18. Boom, yaw vane	5. Pitch rate 6. Roll rate 7. Yaw rate 8. Pitch attitude 9. Roll attitude 10. Fore & aft cyclic position 11. Lateral cyclic position 12. Collective position 13. Rudder position 14. Angle of attack 15. Yaw

In all cases the data of Group IA were used to obtain Group IB which are tabulated. The photo panel data were corrected using the instrument calibration curves and were used to calculate true airspeed, density altitude, and engine power. True rotor r.p.m. was read using the azimuth indication on the oscillograph records and the oscillograph timing lines.

b. Group II (Oscillograph - 16 Channels)

1. Vertical acceleration (center of gravity)
2. Lateral acceleration (center of gravity)
3. Fore and aft acceleration (center of gravity)
4. Blade pitch position
5. Blade flap position
6. Right hand cyclic tube
7. Left hand cyclic tube
8. Collective tube
9. Lift link
10. Right front pylon position
11. Right aft pylon position
12. Left front pylon position
13. Left aft pylon position
14. Pitch link - red
15. Pitch link - white
16. Stabilizer bar position

c. Group III - Differential Pressure (Oscillograph - 42 Channels) -

Group III data are the differential blade pressures for the various span and chord locations listed in Section IIIC2.

d. Group IV - Strain Gage (Oscillograph - 18 Channels) -

Group IV data are the beam and chord bending and torsion gages listed in Section IIIC1. The gages include:

	Quantity on Red Blade	Quantity on White Blade	Total
Beam Bending	8	2	10
Chord Bending	4	2	6
Torsion	2	-	2
		Total channels	18

3. Data Reduction

a. Steady State, Type I Flight Condition - Seven steady state conditions from Flight 10 were reduced using Bell Helicopter Company IBM Program B02. These steady state conditions are listed below:

TYPE I STEADY STATE FLIGHT CONDITIONS

Condition Number	Counter Number	Flight Condition	I.A.S. Knots	Rotor r.p.m.
23	561	Maximum power climb	22	314
27	565	Straight and level flight	30	314
29	567	Straight and level flight	80	314
31	569	Straight and level flight	V_{max} 105	314
42	581	Hover (Z/D = 1.5)	0	314
55	603	Altitude, stall threshold	75	324
58	606	Altitude, before stall threshold	60	324

The various data groups were reduced as described in the paragraphs below:

(1) Group IA and Group IB Data - The 18 data sources of Group IA were read once at a rotor azimuth angle of 180 degrees for each of the three rotor revolutions used for the differential pressure and moment data. These three readings were averaged to calculate the data for Group IB and the data in Group IB are tabulated for each steady state condition.

(2) Group II - Group II oscillograph channels were read and punched on IBM cards by use of the OSCAR system at each 30 degrees of azimuth for three rotor revolutions (12 points/rev. x 3 rev. = 36 points). The computer was programmed so that corresponding points of the three revolutions were examined, the two closest values were averaged, and the third rejected. The average values are tabulated for the 12 azimuth positions for each channel and were harmonically analyzed to give the steady value through the fifth harmonic components. The sine and cosine components, and the resultant and phase angle are tabulated. The "averaging" method described herein was used for all data in Groups II, III and IV.

(3) Group III - Group III pressure data were read 12 times per revolution for three rotor revolutions and averaged as discussed above. The 12 average values were tabulated for each channel and processed as discussed below.

(a) ΔP versus Chord - Curves of ΔP versus per cent chord were plotted using the averaged values for each of the six spanwise stations, for each 30 degrees of azimuth, and for each steady state flight condition. Therefore, $6 \times 12 = 72$ curves are given for each steady state flight condition.

(b) Thrust/Inch versus Azimuth and Radius - The 72 differential pressure versus chord curves were integrated and the results were tabulated as thrust per inch versus azimuth at each spanwise station and as thrust per inch versus span for each azimuth position. Curves of air load per inch versus azimuth (six curves) and curves of air load per inch versus per cent radius (12 curves) were plotted and presented herein.

The curves of air load versus azimuth were harmonically analyzed for the steady through the fifth harmonic component. The results were tabulated in the form of sine and cosine components, and the resultant and phase angle.

(c) Thrust/Blade versus Azimuth - The curve of air load versus per cent radius was integrated to give blade thrust versus azimuth (12 points), and the data were plotted.

The curves of blade thrust versus azimuth were harmonically analyzed to determine the steady through the fifth harmonic components. The sine and cosine components, and the resultant and phase angle were tabulated.

(4) Group IV - For the same three rotor revolutions used for the pressure data, the 18 strain gage channels were read at each 30 degrees of azimuth, the three corresponding readings were averaged as previously discussed, and the values were tabulated for each channel.

Curves of moment or torsion versus azimuth were plotted for each channel and each curve was harmonically analyzed for the steady through the fifth harmonic component. The results were tabulated as sine and cosine components, and the resultant and phase angle. Curves of beam and chordwise moment versus per cent radius were plotted and are given herein.

b. Maneuvers, Type I Flight Conditions - Data for two maneuver flight conditions of Flight 10 were reduced using Bell Helicopter Company IBM 650 Program B03. These are listed below:

TYPE I MANEUVER FLIGHT CONDITIONS

Condition Number	Counter Number	Flight Condition	Indicated Airspeed Knots	Rotor Speed r.p.m.
34	572	Symmetrical pull-up	80	314
38	576	Approach and flare	50-0	314

Five rotor revolutions, spaced approximately one second apart, were reduced for each maneuver condition. The results of all five revolutions are presented and no averaging was required. Figure 28 shows a time history of the vertical acceleration for Condition 34 with the five rotor revolutions indicated on the curve to show where the revolutions occurred during the maneuver. For Condition 38, Figure 29 shows a time history of collective stick position with the five rotor revolutions indicated on that curve. The following paragraphs describe the handling of the various data groups for the maneuver flight conditions.

(1) Group I - The channels in Group IA were read once during each revolution at approximately the 180-degree azimuth position. The data in Group IA were used to calculate the data in Group IB and the IB data were tabulated for each revolution.

(2) Group II - Each channel in Group II was read 12 times per revolution (each 30-degree azimuth position) for the five revolutions. The variation of each trace versus azimuth was harmonically analyzed for each of the five revolutions to give the steady through the fifth harmonic. The sine and cosine, and the resultant and phase angle were tabulated.

(3) Group III - The 42 differential pressure channels were read 12 times per revolution (each 30 degrees of azimuth) for the five revolutions and the data were tabulated. The variation of differential pressure versus chord was integrated at each spanwise station and at each azimuth position for each revolution. The result of the integration is

the thrust per inch versus azimuth for each of the five revolutions. The variation of thrust per inch versus azimuth was harmonically analyzed for each spanwise station and each revolution to give the steady through the fifth harmonic components. The sine and cosine components, and the resultant and phase angle were tabulated.

(4) Group IV - The 18 strain gage channels were read 12 times per revolution (each 30 degrees of azimuth) for each of the five revolutions. The variation of moment or torsion versus azimuth was harmonically analyzed for each revolution to give the steady through the fifth harmonic. The sine and cosine components, and the resultant and phase angle were tabulated.

c. Steady State, Type II Flight Condition Data - Four steady state conditions from Flight 12 were reduced using Bell Helicopter Company IBM Program B15. These steady state conditions are:

TYPE II STEADY STATE FLIGHT CONDITIONS

Condition Number	Counter Number	Flight Condition	Indicated Airspeed Knots	Rotor Speed r.p.m.
65	694	Straight and level flight	30	314
66	696	Straight and level flight	80	314
67	697	Straight and level flight	105	314
68	698	Straight and level flight	105	324

For these flight tests and the succeeding data reduction, the sensitivities of the oscillograph traces were approximately doubled, the oscillograph paper speed was doubled, and a 24-point (each 15 degrees of azimuth) harmonic analysis of the data was employed. Because of the increase in sensitivity, it was necessary to delete certain traces from the oscillograph records so that the traces would be readable. The channels are grouped below as discussed in Section D2 ; however, with certain deletions, Table 1 shows the oscillograph setup used. For comparing the results of the 12 and 24-point harmonic analyses, the data of Condition No. 29 from the Type I conditions (Flight 10) were harmonically analyzed using the 24-point Type II Program, B15.

(1) Group I - The Group I data were reduced as explained in Section 3a(1).

(2) Group II - The Type II data of Group II which included only blade pitch and flap position, were read 24 times per revolution (each 15 degrees of azimuth) for three rotor revolutions. The computer was programmed as before so that corresponding points of the three revolutions were examined, the two closest values were averaged, and the third rejected. The variation of the averaged values versus azimuth

was harmonically analyzed to give the steady through the eleventh harmonic. The sine and cosine components, and the resultant and phase angle were tabulated.

(3) Group III - The seven pressure channels at the 55 per cent blade radius were deleted. The remaining 35 channels were read 24 times per revolution (each 15 degrees of azimuth) for three rotor revolutions and averaged as described above. The variation of each pressure channel versus chord was integrated to obtain thrust per inch for each spanwise station and each of the 24 azimuth positions. The variation of thrust per inch versus azimuth was harmonically analyzed for the steady through the eleventh harmonic, the sine and cosine components, and the resultant and phase angle were tabulated.

The variation of thrust per inch versus span was integrated for each of the 24 azimuth positions to obtain the total thrust per blade versus azimuth. The variation of total blade thrust was harmonically analyzed to give the steady through the eleventh harmonic. The sine and cosine components, and the resultant and phase angle were tabulated.

(4) Group IV - Blade Strain Gages - Only eight beam bending channels and two torsion channels for the red blade from Group IV data were recorded during these flights. These data were processed in the same manner as the Group II, Type II data above.

d. Method of Integration - Weighting Factors - To obtain the highest accuracy possible from the numerical integrations of the subject pressure data, considerable attention was given to the integration procedure. A modified version of Legendre-Gauss quadrature was considered. A discussion of this approximation is given in Hildebrand, Introduction to Numerical Analysis (Reference 13, page 323). Based on the USATRECOM H-34 program at NASA, chordwise and spanwise transducer locations and weighting factors were specified by the contracting agent to optimize the integration accuracy. Later, some changes in weighting factors were required due to final gage locations and to inoperative gages.

For one blade station, plots were made of chordwise differential pressure distributions for several azimuth positions and areas under the curves measured with a planimeter. The quantities so measured were checked against the computer output values and found to agree. This validated both the weighting distribution used and the computer routine. Other spot checks of this type were made and some further adjustments in weight distributions resulted. The details of the method of integration and weight factors used in Bell Helicopter Company IBM 650 Programs B02, B03, and B15 are given in the following pages.

The approximations used to determine the thrust/inch of blade ($\frac{dT}{dr}$) and the thrust (T) are of the following form:

$$\frac{dT}{dr} = \int_0^C \Delta P(x) dx = C \sum_{i=1}^n W_i \Delta P_i$$

$$T = \int_0^R \frac{dT}{dr} dr = R \sum_{i=1}^m W_i \left(\frac{dT}{dr} \right)_i$$

where

- $\frac{dT}{dr}$ = Air loading at a given spanwise station (lbs/inch)
- T = Thrust of one blade at a given Ψ (lb)
- R = Main rotor blade radius (inches)
- C = Chord length (inches)
- ΔP = Differential pressure (psi)
- n = Number of chordwise stations (5, 6, 7, or 10)
- m = Number of spanwise stations (5 or 6)

The W_i values are weighting factors. There is a different set of W_i values for each value of n or m. The values used are listed below:

CHORDWISE WEIGHTING FACTORS

Radius (%R)	85	55, 75, 90	95	40
	(10 Gages)	(7 Gages)	(6 Gages)	(5 Gages)
	% Chord	% Chord	% Chord	% Chord
	W_i	W_i	W_i	W_i
	2	2	2	4
	.02	.044	.044	.10
	4	9	9	17
	.04	.082	.082	.10
	9	17	17	34
	.045	.082	.082	.222
	13	23	23	63
	.045	.044	.113	.355
	17	34	34	88
	.05	.208	-	.222
	23	63	63	-
	.085	.333	.472	-
	34	90	90	-
	.195	.208	.208	-
	47.7	-	-	-
	-	-	-	-
	63	-	-	-
	.220	-	-	-
	77	-	-	-
	.135	-	-	-
	90	-	-	-
	.165	-	-	-

SPANWISE WEIGHTING FACTORS

Type I Data 6 Stations		Type II Data 5 Stations	
% Radius	W_i	% Radius	W_i
40	.225	40	.312
55	.175	55	-
75	.150	75	.238
85	.075	85	.075
90	.050	90	.050
95	.050	95	.050

e. Method of Harmonic Analysis and Discussion - The method of harmonic analysis used in Bell Helicopter Company IBM 650 Programs B02, B03, and B15 is developed in R. G. Manley, Wave Form Analysis (Reference 14, page 186). The equations used in the programs are as follow:

$$A_0 = \frac{1}{N} \sum_{r=1}^N f(\psi_r)$$

$$A_k = \frac{2}{N} \sum_{r=1}^N f(\psi_r) \cos(k\psi_r)$$

$$B_k = \frac{2}{N} \sum_{r=1}^N f(\psi_r) \sin(k\psi_r)$$

$$\text{Max}_k = + \sqrt{A_k^2 + B_k^2}$$

$$\phi_k = \frac{\text{arc tan } \frac{B_k}{A_k}}{k}$$

where

A_0 = steady value

A_k = cos component

B_k = sin component

$f(\psi_r)$ = value, at azimuth position ψ_r , of the function to be analyzed

$k = 1, 2, 3 \dots (\frac{N}{2} - 1)$

N = number of readings per main rotor revolution

ϕ_k = phase angle, referred to one per rev frequency

To evaluate the effect of computer accuracy on the higher harmonics of the Type II program, a simple test was made. From trigonometric tables, two sine functions were added to construct the curve. The first function had a maximum value of one (1), and the length of the cycle was the same as that for one rotor revolution on the Type II oscillograph records. The second curve had a maximum value of .5 and was twice the frequency of the first and in phase. The resulting curve was plotted and photographically reduced to the one-half size shown in Figure 30, and that figure was read and harmonically analyzed as was the data of the subject program. The results of this work are listed below. The maximum value of any sine component above the second is .006 for the third harmonic. The eleventh is .002. This compares to values of -.08 to +.05 for the eleventh harmonic of the flapping trace from the Type II flight test data.

HARMONIC CONTENT OF TWO-PER-REV SINE CURVE

Steady Value = 1.5008

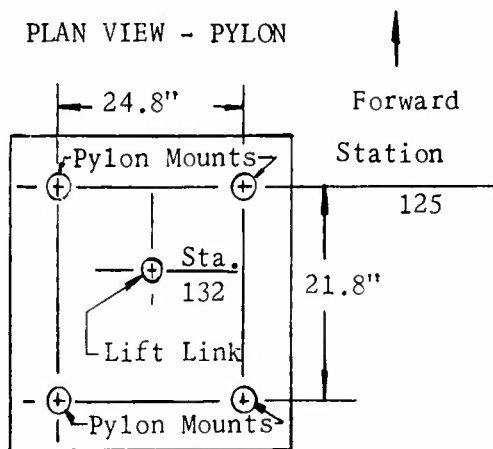
Harmonic	Cosine	Sine	Maximum	PHI (Degrees)
1	.00356	.50277	.50278	89.594
2	.00167	.24830	.24830	44.808
3	.00142	.00628	.00644	25.745
4	.00333	.00144	.00363	5.853
5	.00265	.00322	.00417	10.116
6	-.00083	.00583	.00589	16.355
7	.00296	.00209	.00363	5.030
8	.00167	.00433	.00464	8.619
9	.00024	-.00039	.00046	33.582
10	.00167	.00004	.00167	0.126
11	-.00084	.00223	.00238	10.052

Also, a set of IBM cards was punched for a pure sine curve using trigonometric table data rounded off to two decimal places as does the OSCAR (OSCAR accuracy is $\pm .01$ of an inch.). The maximum value was unity. This curve was harmonically analyzed using a 24-point input. The results are shown below. The maximum harmonic components were the fifth and seventh with a value of .001 and the eleventh was .00095. Therefore, the value of the higher harmonic components obtained by the reduction of the Type II data is not due to computer round-off. Additional checks were made to evaluate reading error and these were found to be negligible also.

HARMONIC CONTENT OF SINE CURVE

Harmonic	Cosine	Sine	Maximum	PHI (Degrees)
1	.00000	1.00324	1.00324	89.999
2	.00000	.00000	.00000	163.002
3	.00000	.00000	.00000	74.847
4	.00000	.00000	.00000	6.804
5	.00000	-.00110	.00110	54.001
6	.00000	.00000	.00000	8.938
7	.00000	.00120	.00120	12.858
8	.00000	.00000	.00000	35.005
9	.00000	.00000	.00000	22.478
10	.00000	.00000	.00000	35.084
11	.00000	.00095	.00095	8.183

PLAN VIEW - PYLON



f. Pylon Position Indicator

The adjacent sketch is presented to show the location of the pylon position indicators. The lift link location is also indicated on the sketch.

A pylon position indicator was used to measure the vertical motion of each of the four pylon mounts. By using the dimensions shown above and by using the motions of any three pylon position indicators,

the mast angle with respect to the helicopter fuselage can be calculated.

E. DATA PRESENTATION

1. Table of Flight Conditions Recorded

Table 3 presents a list of all steady state and maneuver flight conditions for which oscillograph and photo panel data were recorded. The column labeled Condition No. is used throughout this report to refer to a particular steady state or maneuver flight condition. Flights 10A, 10B, and 10C were conducted to record Type I data. Flight 12A was conducted to record data for the Type II program.

2. Group IB Data

The data included in Group IB were discussed in Section VID2. These tables present information for ship attitude, control positions, airspeed, attitude, horsepower, gross weight, etc. No harmonic analyses were required for these data; their principal purpose is to define the flight condition. Tables 6a through 7d present Group IB data for the

three revolutions of each steady state condition. Tables 8a and 8b present Group IB data for the five revolutions of the two maneuvers.

3. IBM Tabulations

Notes: In general, blank spaces appearing in tabulated columns are equivalent to zero (0); however, pressure transducers at 85 per cent radius, 47.7 per cent chord and 95 per cent radius, 34 per cent chord were inoperative and no print out is given.

The decimal point for each data point presented is indicated by the last two digits as shown by the examples below.

3540000051 = 3.540

3540000050 = .354

3540000049 = .0354

A negative number is indicated by a minus (-) sign after the last digit.

3540000051- = -3.540

a. Steady State Flight Conditions

(1) Type I Data (B02 Program) - IBM tabulation Numbers 1 through 7 present the IBM listings for the seven Type I steady state flight conditions. The harmonic analyses column headings are labeled COSINE, SINE, MAX, and PSI (ψ). MAX refers to the resultant; PSI (ψ) is the phase angle. IBM tabulation Number 8 gives Condition No. 29 reduced in the same manner as the Type II data described below. This was done to evaluate the effect of the data reduction methods.

The right column contains numbers of the form

XXX Y Z WW

X, XX, or XXX is the data code number. This 1, 2, or 3 digit number was used by the computer for sorting.

For the raw data listing, Y is the line number 7, 8, or 9.

7 is the line for 0, 30 degrees, 60 degrees, 90 degrees.

8 is the line for 120 degrees, 150 degrees, 180 degrees, 210 degrees.

9 is the line for 240 degrees, 270 degrees, 300 degrees, 330 degrees.

For the harmonic analysis, Y is 0, 1, 2, 3, 4, 5. The numbers 1 through 5 indicate the harmonic component and zero is the steady value.

Z is the oscillograph number. A zero indicates calculated data whose components were obtained from more than one oscillograph.

WW is the flight condition number.

Examples: On Page 242 the differential pressure at the 40 per cent blade radius station, 17 per cent chord, and at 330 degrees azimuth is 1499850051 = 1.50 pounds per square inch. The right column contains the number 2 9 1 23

2 = sorting number
9 = line for last four azimuth readings
1 = data recorded on Oscillograph No. 1
23 = flight condition number

On Page 247 the fourth harmonic sine component of the blade loading at 40 per cent radius is 2001803050- = -.20 p.s.i. The right column contains the number 7 4 0 23.

7 = sorting number
4 = fourth harmonic component
0 = data from more than one oscillograph
23 = Flight Condition No. 23

(2) Type II Data, B15 Program - IBM tabulations 9 through 12 present the IBM listings for the Type II data. The harmonic analyses headings are labeled the same as the Type I Maneuver Data. Since only the harmonic analyses of the Type II data are presented, the channels are not named and must be identified by the channel identification number. The left hand column contains a number of the form,

XX 0 YY 00 ZZ

X or XX is the channel identification number which is listed below.

0 is a spacer.

YY is the flight condition number.

00 is a spacer.

ZZ is the harmonic component index. Zero is the steady value, and 1 through 11 are the first through the eleventh harmonic components.

Example: On Page 370 the left hand column marked COEF contains the number 3 0 68 00 07.

3 = red blade beam bending, 36 per cent radius
0 = spacer
68 = flight condition number
00 = spacer
07 = seventh harmonic

The seventh harmonic cosine component is 7870508752-
= -78.7 inch-pounds.

Following are the channel identification numbers for Type II data:

1.	Red Blade Beam Bending	15% R
2.	Red Blade Beam Bending	28% R
3.	Red Blade Beam Bending	36% R
4.	Red Blade Beam Bending	45% R
5.	Red Blade Beam Bending	60% R
6.	Red Blade Beam Bending	65% R
7.	Red Blade Beam Bending	80% R
8.	Red Blade Beam Bending	92.5% R
9.	Red Blade Torsion	15% R
10.	Red Blade Torsion	50% R
11.	Red Blade Pitch Position	
12.	Red Blade Flap Position	
13.	Blade Loading	40% R
14.	Blade Loading	75% R
15.	Blade Loading	85% R
16.	Blade Loading	90% R
17.	Blade Loading	95% R
18.	Total Blade Thrust	95% R

b. Maneuver Data, B03 Program - IBM tabulations 13a through 14e present the listings for the two maneuver flight conditions. The harmonic analyses column headings are labeled COSINE, SINE, MAX, AND PHI (ϕ). MAX refers to the resultant; PHI is the phase angle.

The right hand column of the harmonic analysis data contains a number of the form

XXX 0 YY WW Z

A blank space, XX, or XXX is the time in seconds.

A blank space represents zero time for the first revolution that was reduced.

The second revolution occurred .XX (for Condition No. 38) or X.XX (for Condition No. 34) seconds later. The third revolution occurred X.XX seconds from the start, etc.

YY is the condition number.

WW is the channel identification for the computer.

Z is 0, 1, 2, 3, 4, 5; zero is the value of the steady component, and 1 through 5 are the first through the fifth harmonic components.

Example: On Page 431 the second harmonic sine component of the vertical acceleration is 6065208349 = +.06 g. The right hand column for the line contains the number 38 53 2

The XXX 0 is missing and only the YY WW Z is shown.

XXX is missing or blank because time = zero

38 = flight condition number

53 = channel identification for the computer

2 = second harmonic

Figure 28 shows a time history of the vertical acceleration for Condition 34, the symmetrical pull-up maneuver. Figure 29 shows a time history of the collective stick position for Condition 38, the approach and flare maneuver. The five rotor revolutions that were reduced are shown on the curves.

4. Graphs

Since over 900 curves were to be plotted, it was decided that the curves would be plotted by a machine process. The machine used was an Electronic Associates, Inc., Dataplotter, Model 3033D. Input to the machine was by means of IBM cards.

The accuracy of the graphs was limited by the accuracy of the graph paper. The maximum error of any plotted point in this report is plus or minus one-sixty-fourth of an inch.

The types of graphs listed below are given by Figures 31 through 37. Each figure number consists of parts a through o; these letter designations correspond to the titles given below. These graphs are presented for each of the steady state Type I flight conditions.

- a. ΔP vs Chord 40% R for all azimuth positions.
- b. ΔP vs Chord 5% R for all azimuth positions.
- c. ΔP vs Chord 75% R for all azimuth positions.
- d. ΔP vs Chord 85% R for all azimuth positions.
- e. ΔP vs Chord 90% R for all azimuth positions.
- f. ΔP vs Chord 95% R for all azimuth positions.
- g. Air load vs per cent radius.
- h. Air load vs azimuth.
- i. Total thrust/blade vs azimuth.
- j. Beam moment vs per cent radius.
- k. Beam moment vs azimuth.
- m. Chord moment vs per cent radius.
- n. Chord moment vs azimuth.
- o. Torsion vs azimuth.

5. Oscillograph Records

a. Maneuver Conditions - Five rotor revolutions of a symmetrical pull-up and an approach and flare were reduced. From the five revolutions reduced, Revolutions 1, 3, and 5 were cut from each of the six oscillograph records and are presented for each maneuver.

Figure 28 presents a time history of the vertical acceleration during Condition No. 34, a symmetrical pull-up. The five rotor revolutions that were reduced are marked on the curves to indicate where the revolutions occurred during the maneuver. Figures 38a through 38f are full scale reproductions of the selected oscillograph records.

Figure 29 presents a time history of the collective control position for Condition No. 38, an approach and flare. The five rotor revolutions that were reduced are also indicated on the curves of this figure. Figures 39a through 39f are full scale reproductions of the six oscillograph records.

b. Type I and Type II Steady State Condition (Sample) - Figures 40a and 40b show sections from the oscillograph records for the Type I high speed flight conditions. One rotor revolution from each of the six oscillographs for Condition No. 31 is shown.

Figures 41a through 41c show sections from the oscillograph records for the Type II high speed flight, Condition No. 67. One rotor revolution from each of the six oscillographs is shown.

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FIGURES



FIGURE 1 - HU-1A TEST HELICOPTER.

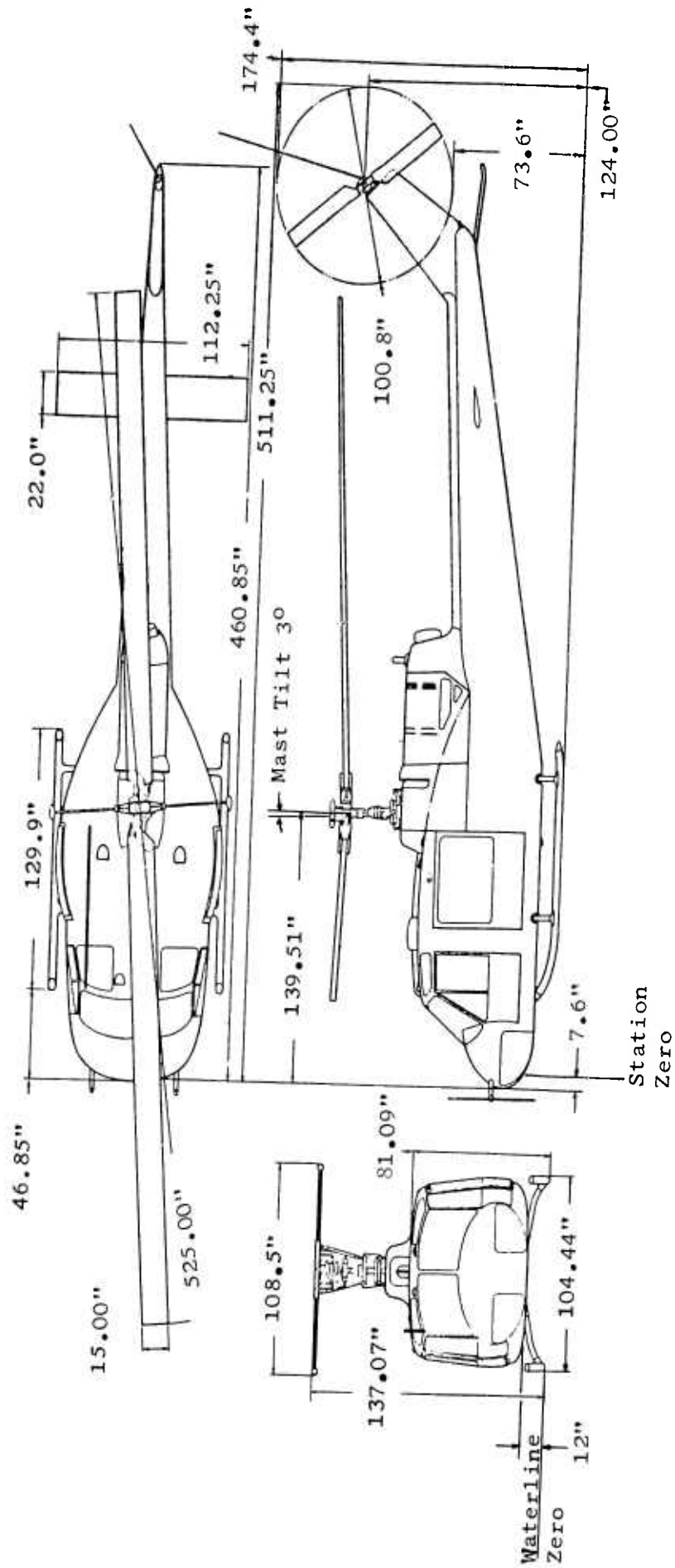


FIGURE 2 - HU-1A HELICOPTER - THREE-VIEW.

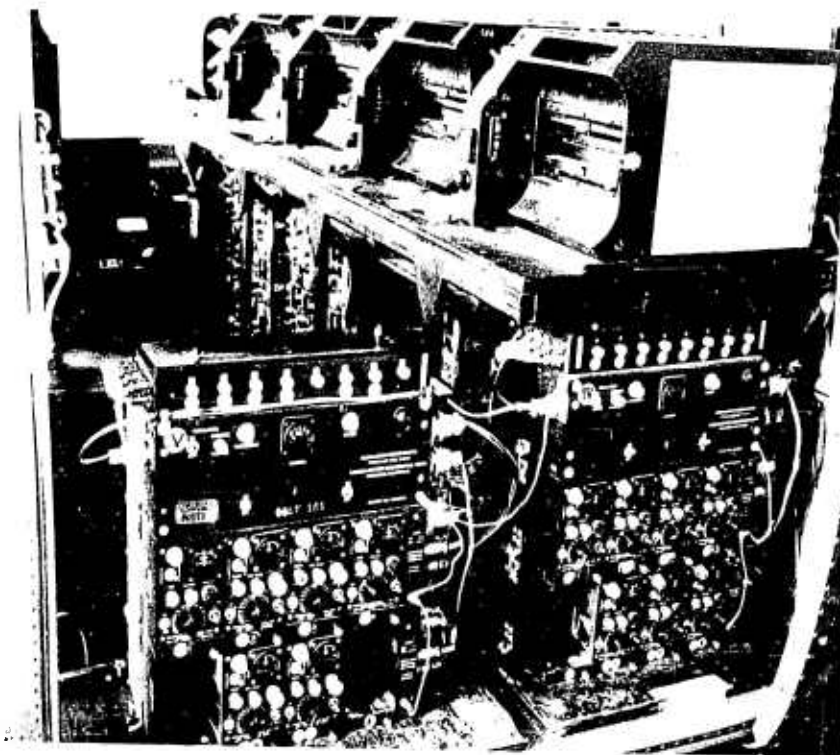


FIGURE 3 - INSTRUMENTATION EQUIPMENT
IN TEST HELICOPTER.

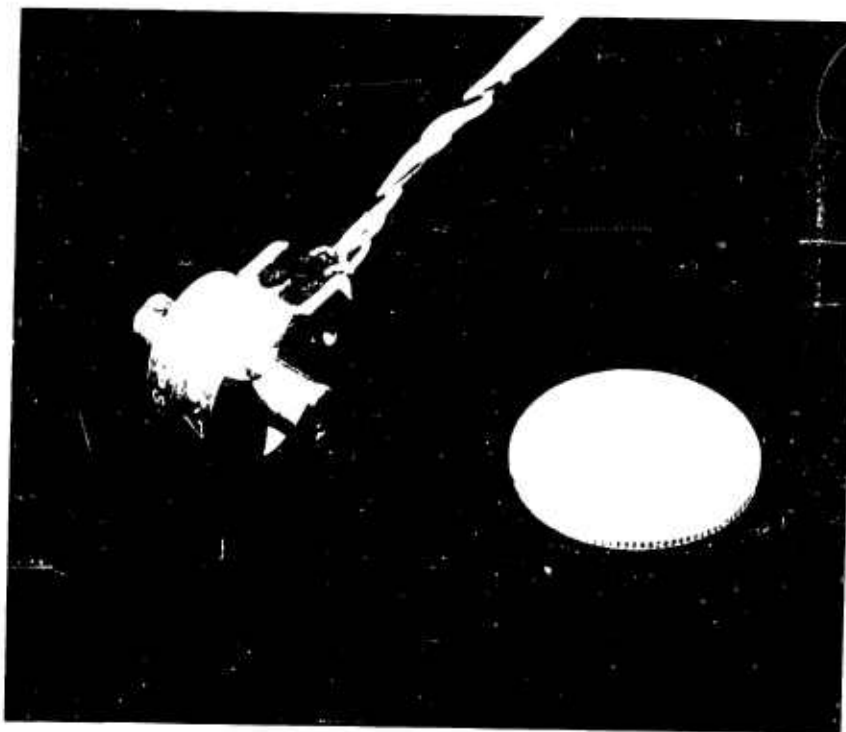


FIGURE 4 - NACA PRESSURE TRANSDUCER
(SIZE COMPARISON WITH DIME).

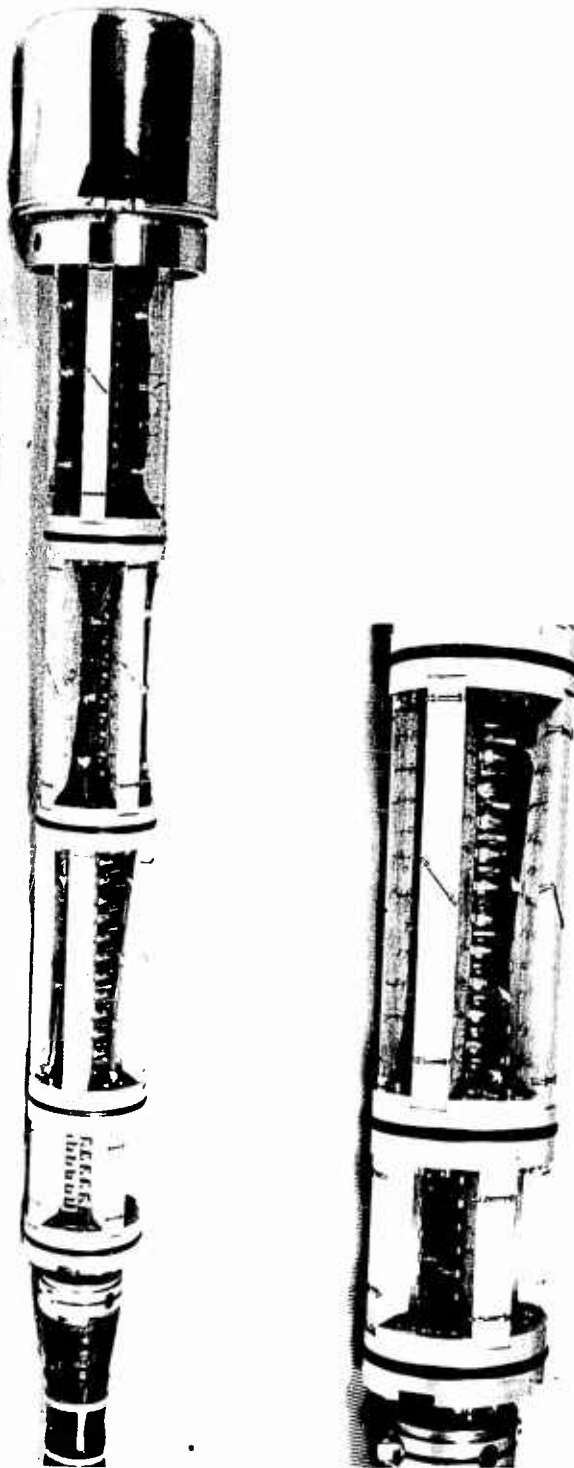


FIGURE 5 - SLIP RING ASSEMBLY.

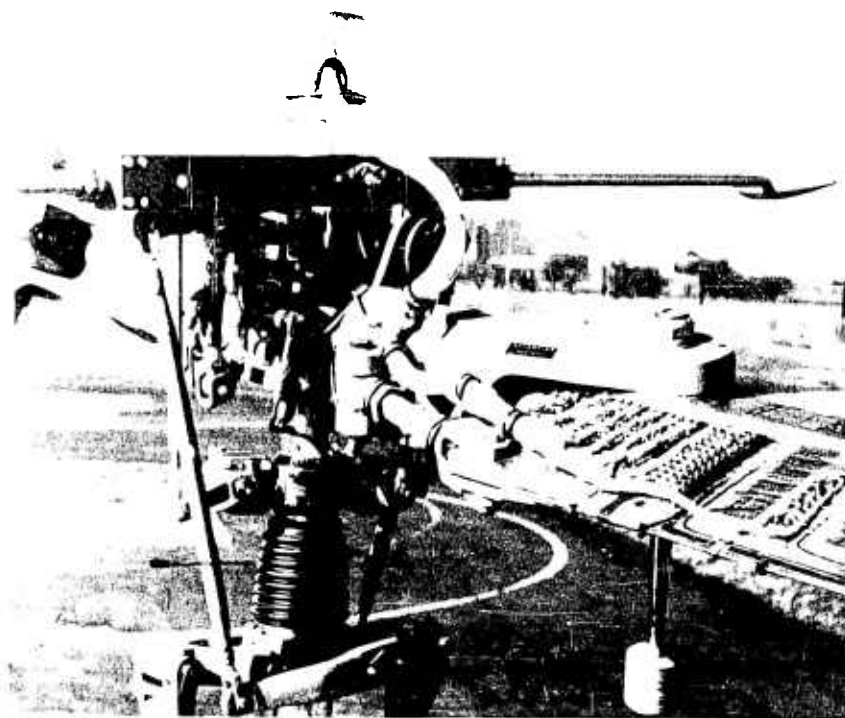


FIGURE 6 - TEST HELICOPTER SLIP RING AND WIRING.

Chord Stations in Per Cent Chord, 85 Per Cent Radius Station Shown

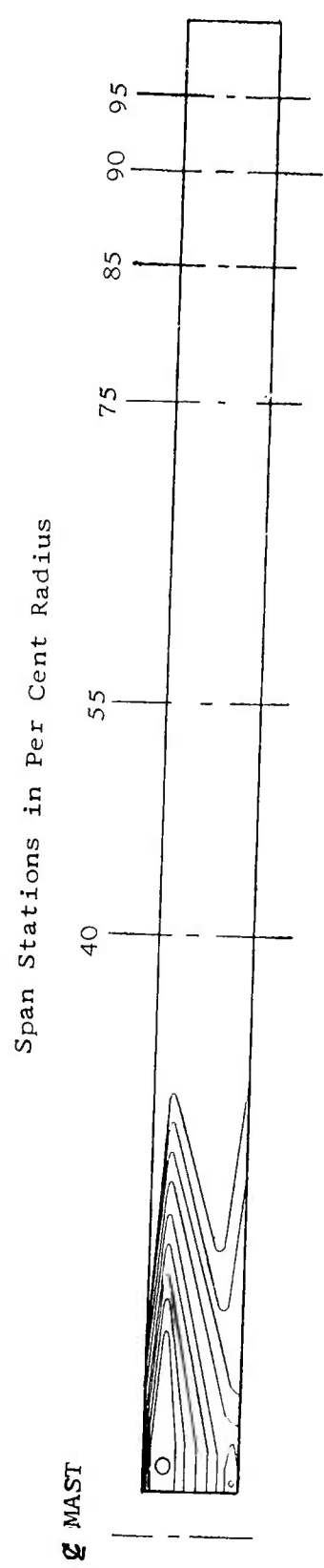
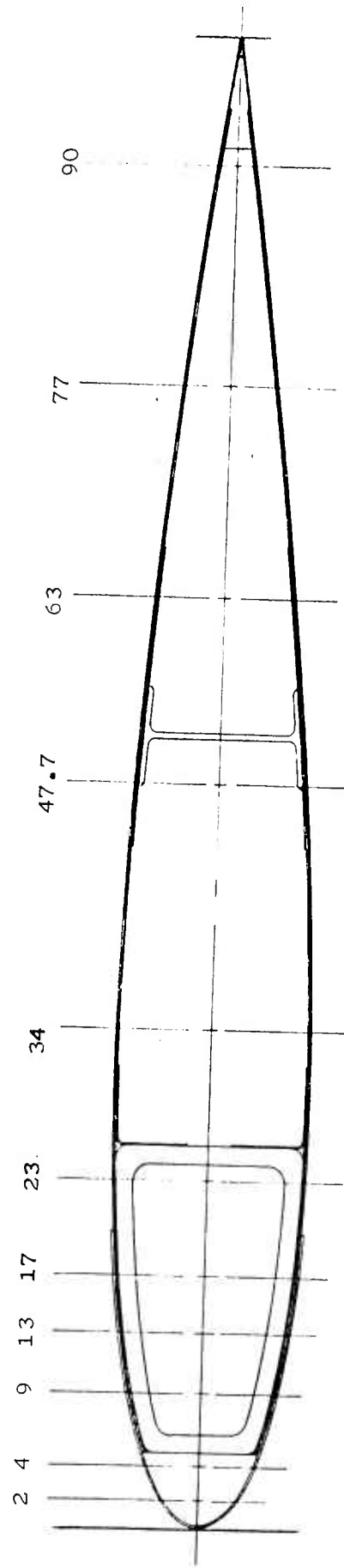


FIGURE 7 - SCHEMATIC LOCATION OF PRESSURE TRANSDUCERS.

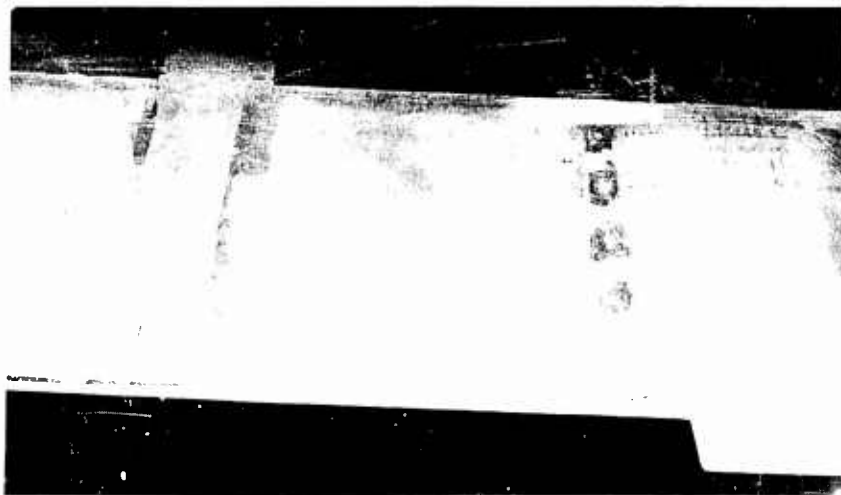
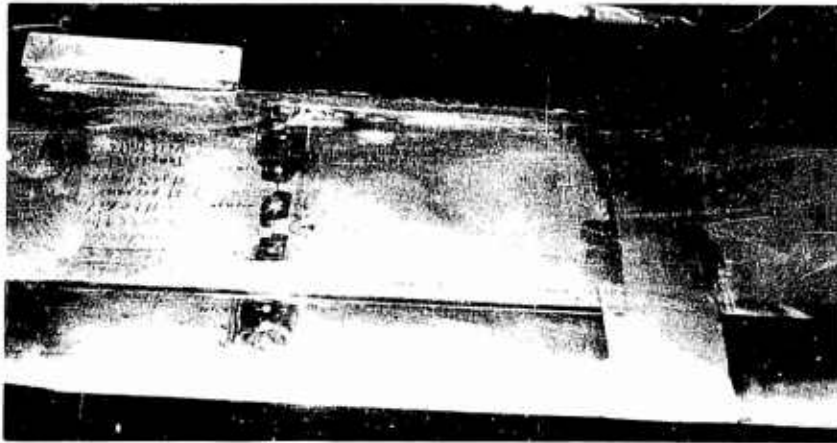


FIGURE 8 - INSTRUMENTED BLADE.

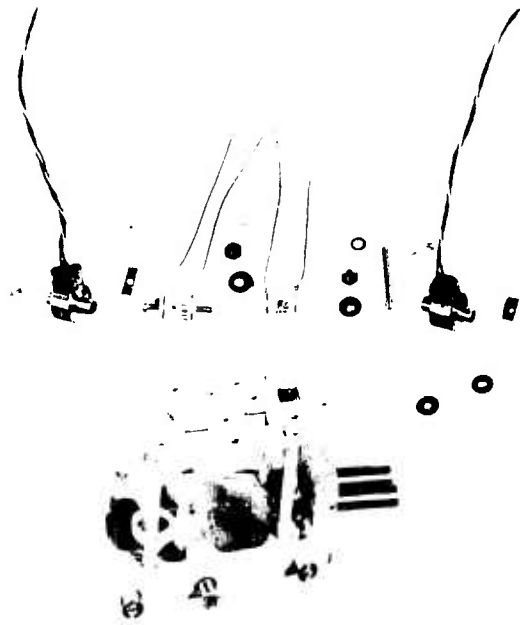


FIGURE 9 -
TRANSDUCER TRAY ASSEMBLY.

FIGURE 10 -
TYPES OF
TRANSDUCER TRAYS.

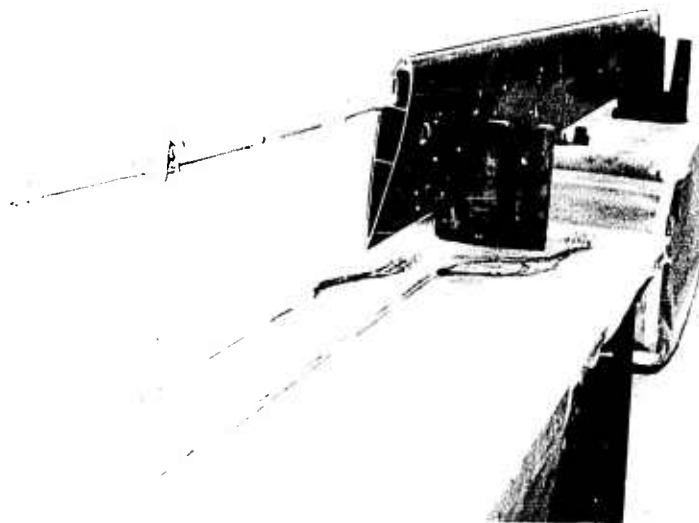


FIGURE 11 -
TRAY ASSEMBLIES
BEING INSTALLED
IN BLADE.

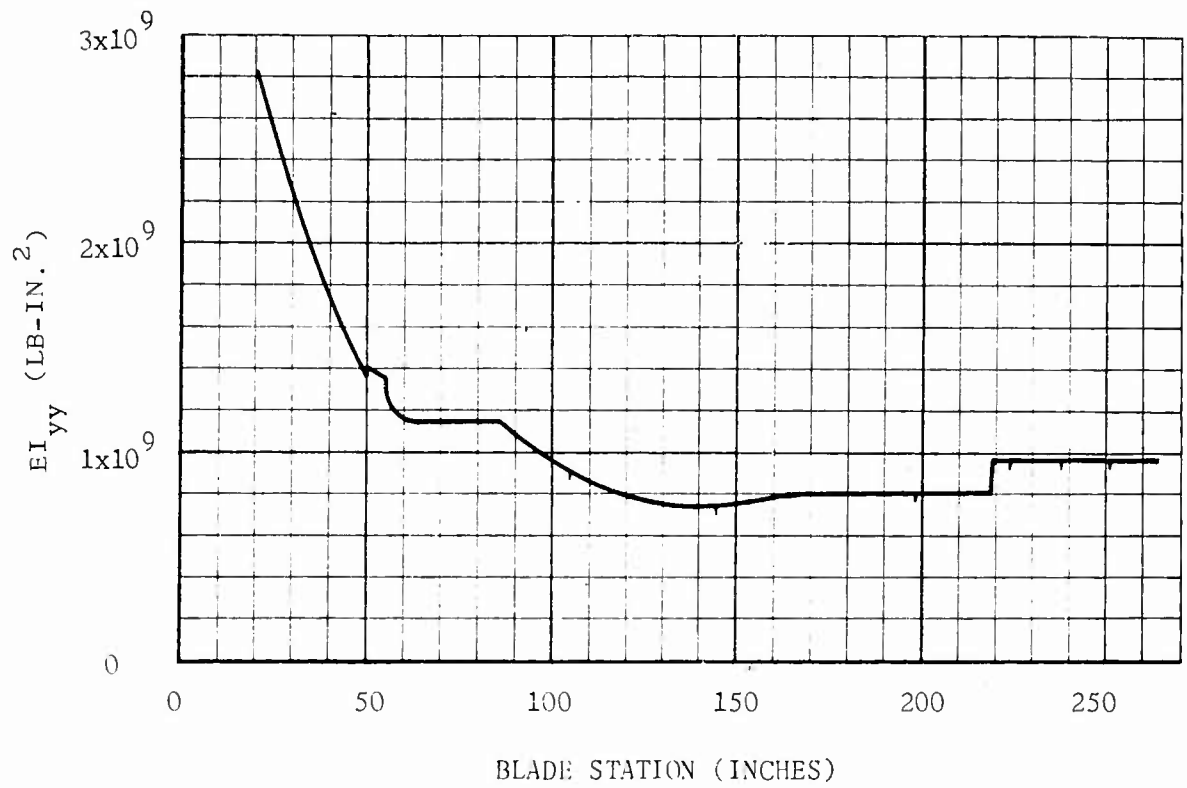


FIGURE 12 - CHORDWISE STIFFNESS DISTRIBUTION.

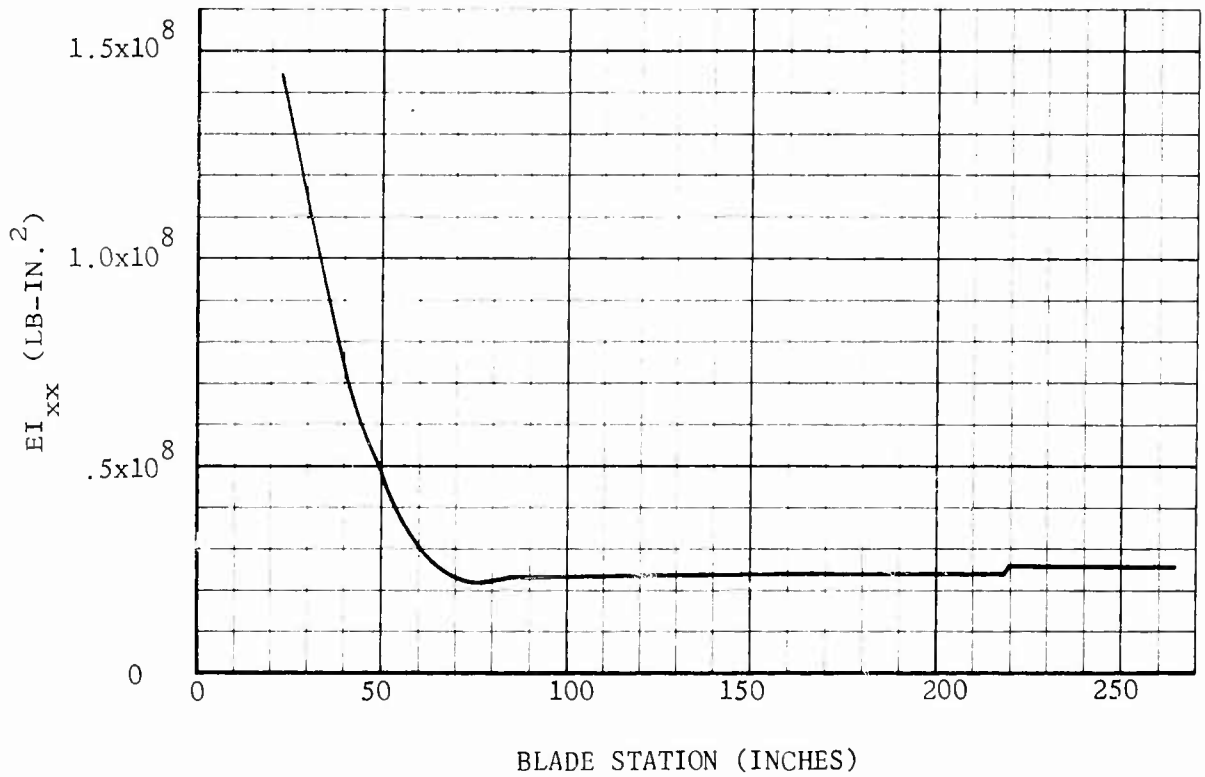


FIGURE 13 - BEAMWISE STIFFNESS DISTRIBUTION.

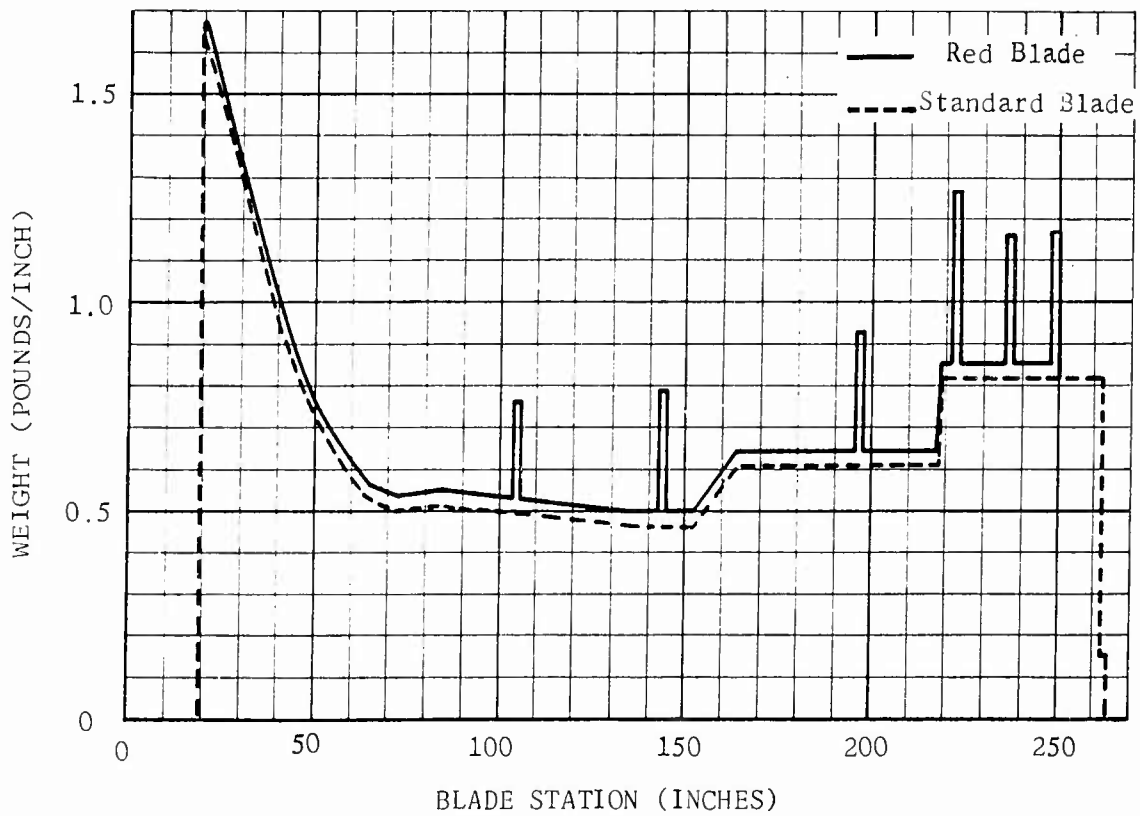


FIGURE 14 - BLADE WEIGHT DISTRIBUTION.

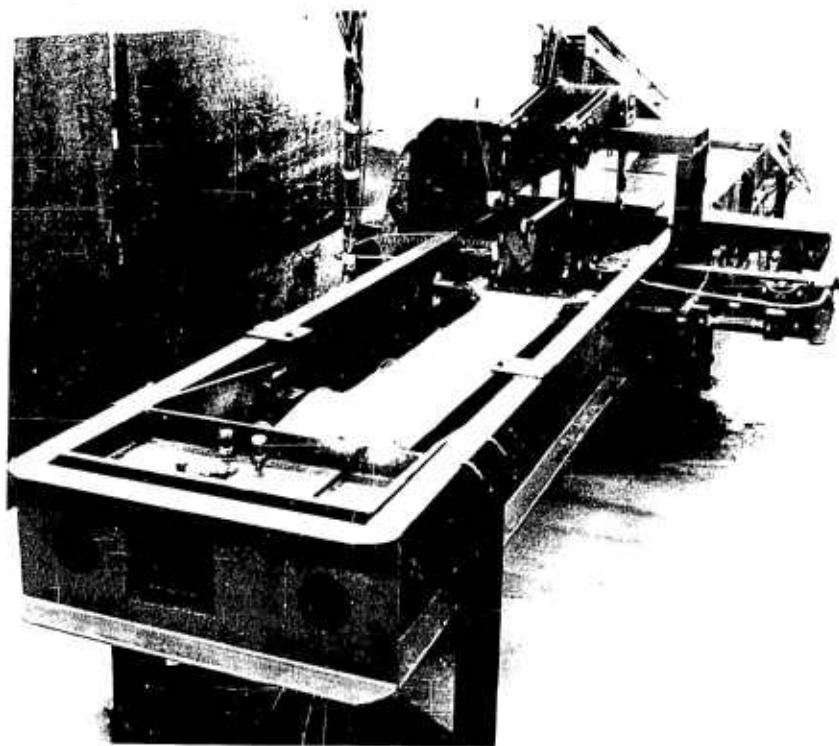


FIGURE 15 - FATIGUE TEST MACHINE.

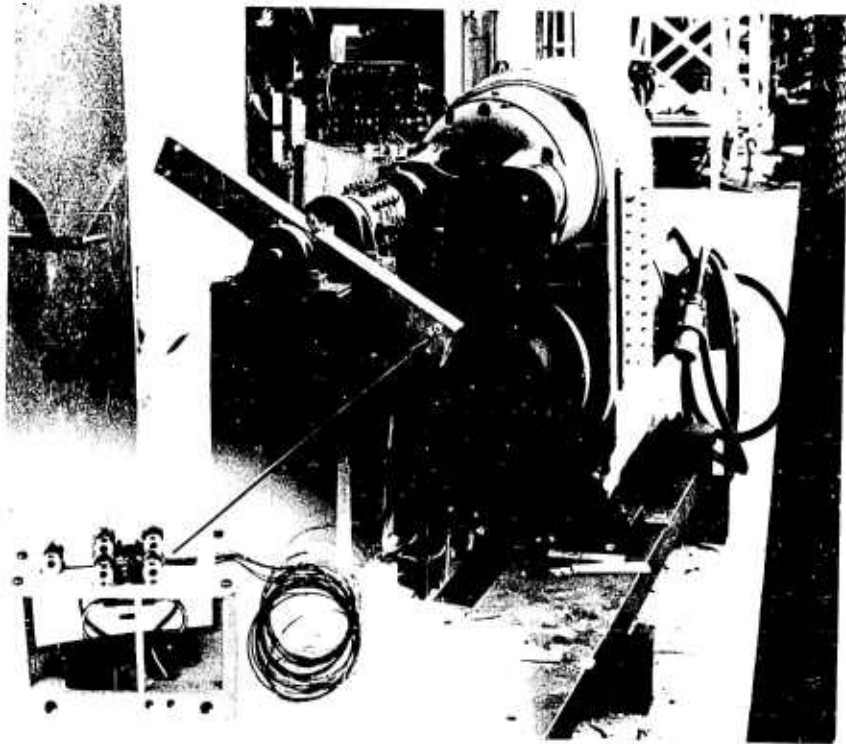


FIGURE 16 - LABORATORY CENTRIFUGE FIXTURE
AND INSERT SHOWING TRANSDUCER
TRAY ASSEMBLY.

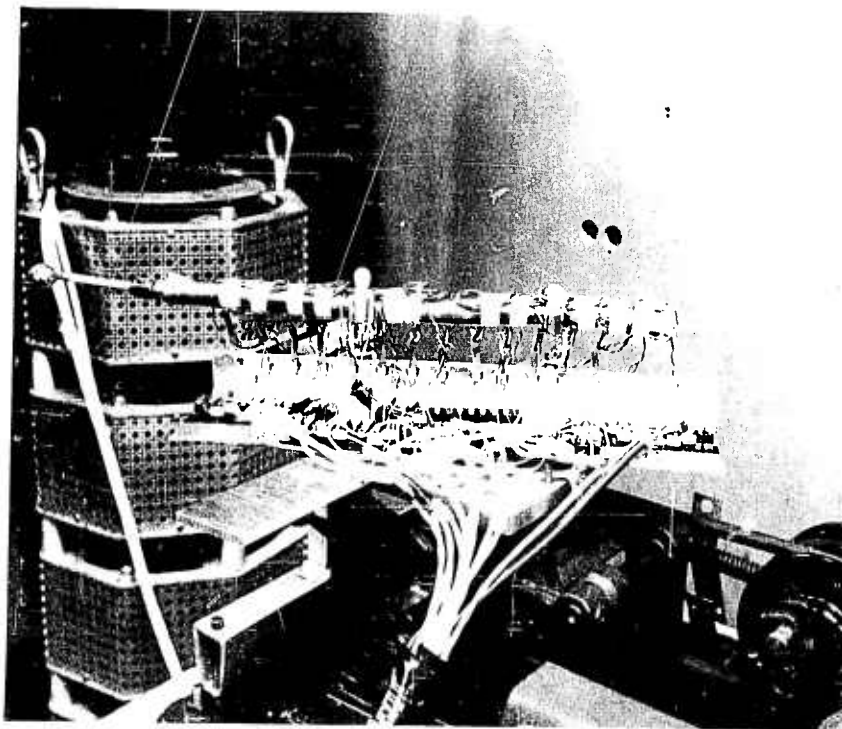


FIGURE 17 - PRESSURE TRANSDUCER TEST FIXTURE.

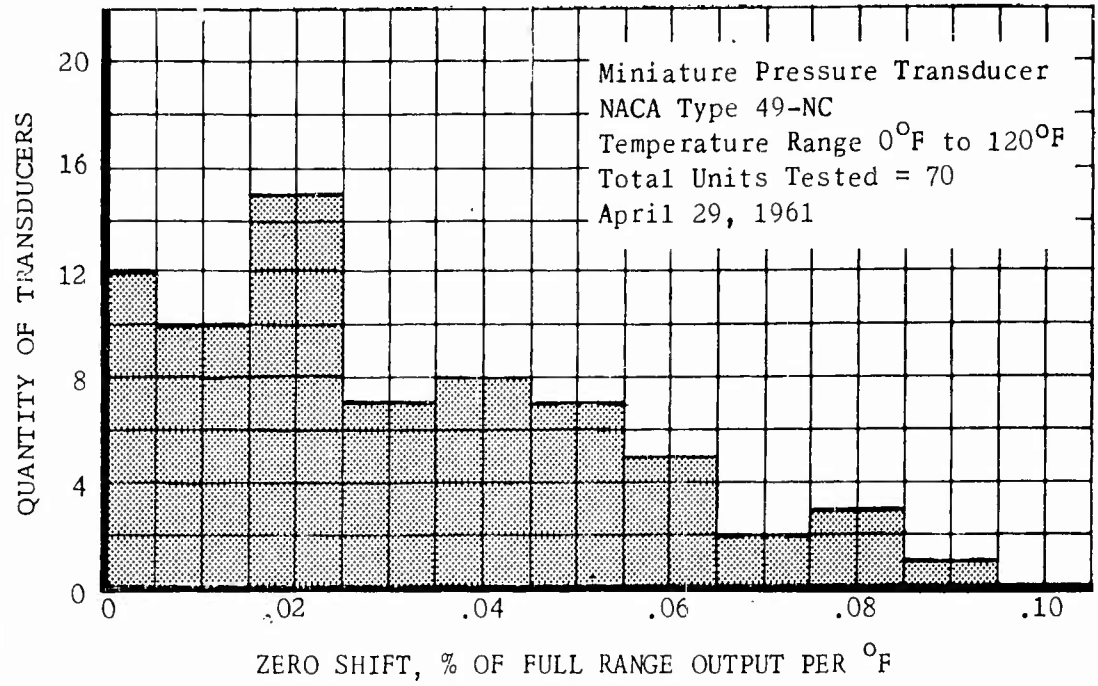


FIGURE 18 - ZERO SHIFT DUE TO TEMPERATURE CHANGE.

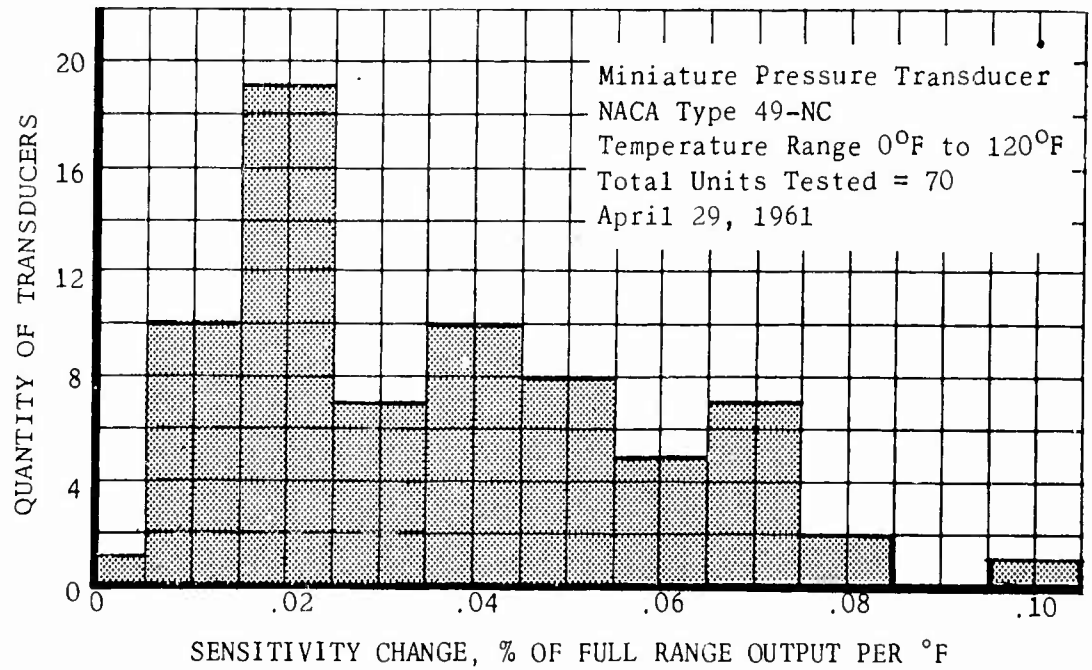


FIGURE 19 - SENSITIVITY CHANGE DUE TO TEMPERATURE CHANGE.

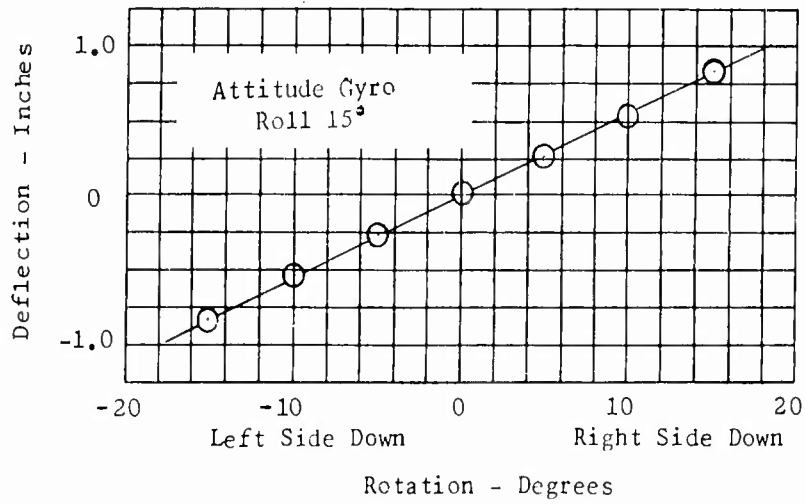


FIGURE 20a -
Roll Attitude
Gyro Calibration
Curve.

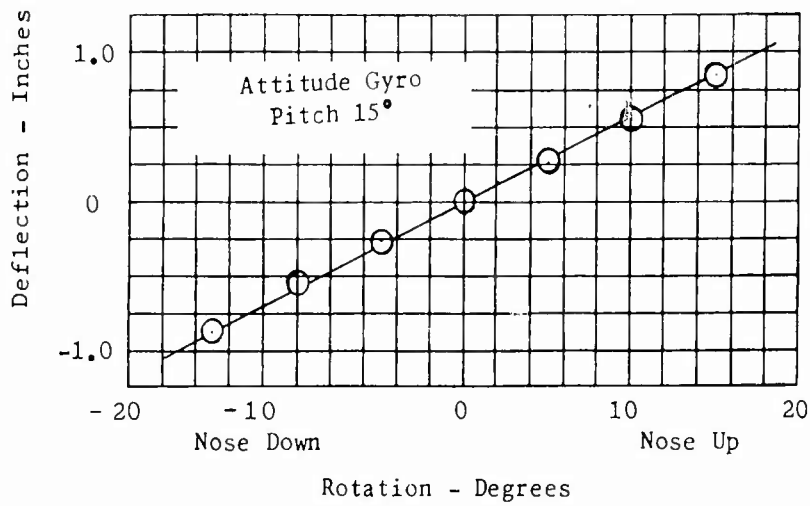


FIGURE 20b -
Pitch Attitude
Gyro Calibration
Curve.

FIGURE 20 - ATTITUDE GYRO CALIBRATION CURVES.

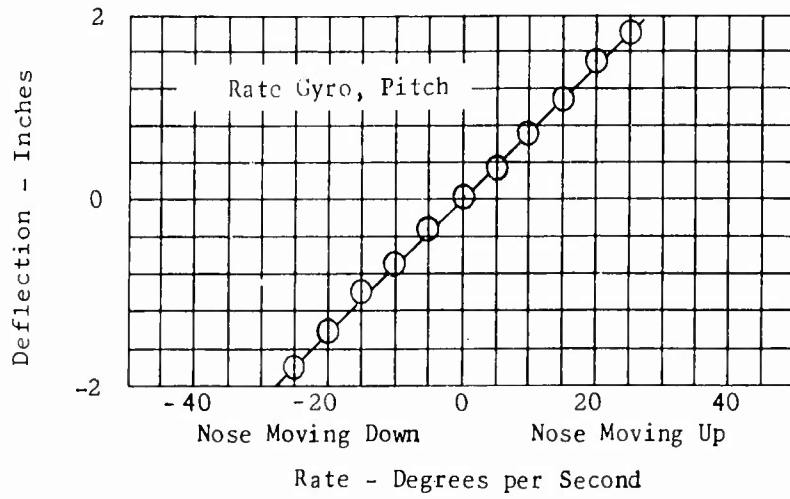


FIGURE 21a - Pitch Rate Gyro Calibration Curve.

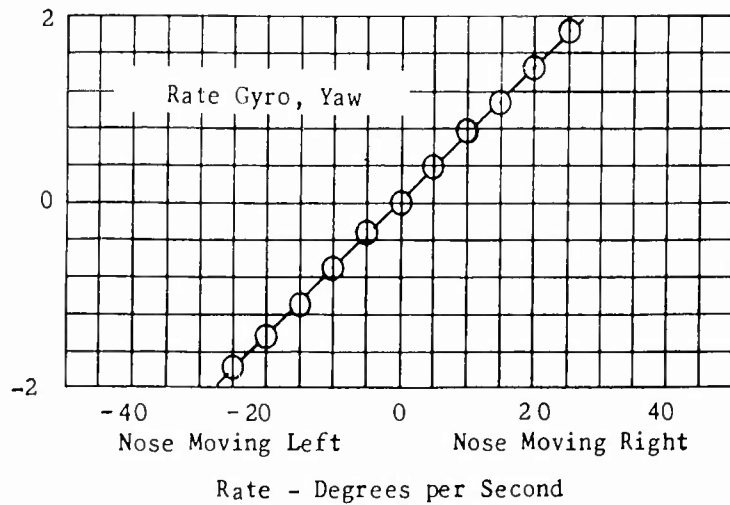


FIGURE 21b - Yaw Rate Gyro Calibration Curve.

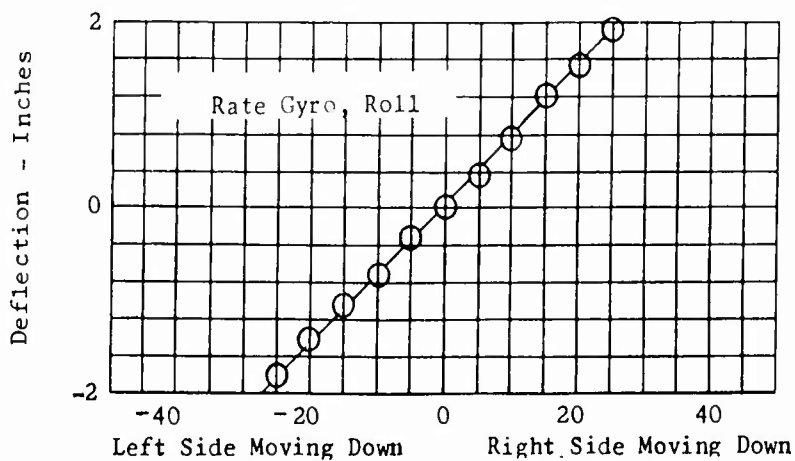


FIGURE 21c - Roll Rate Gyro Calibration Curve.

FIGURE 21 - RATE GYROS CALIBRATION CURVES.

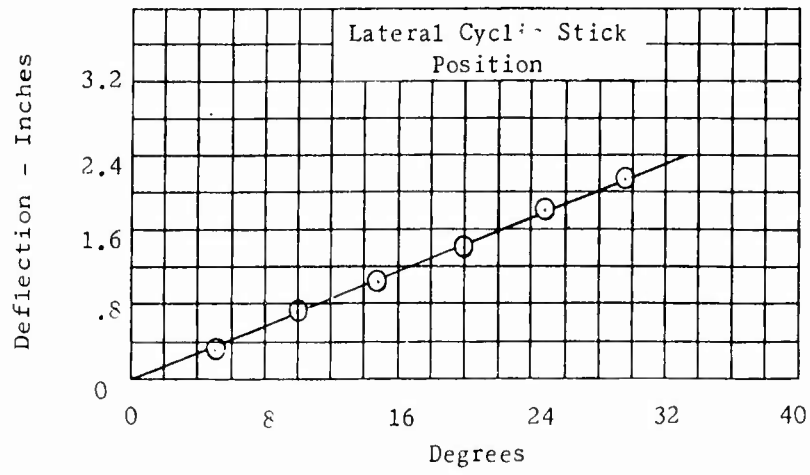


FIGURE 22a -
Lateral Cyclic
Stick Position.

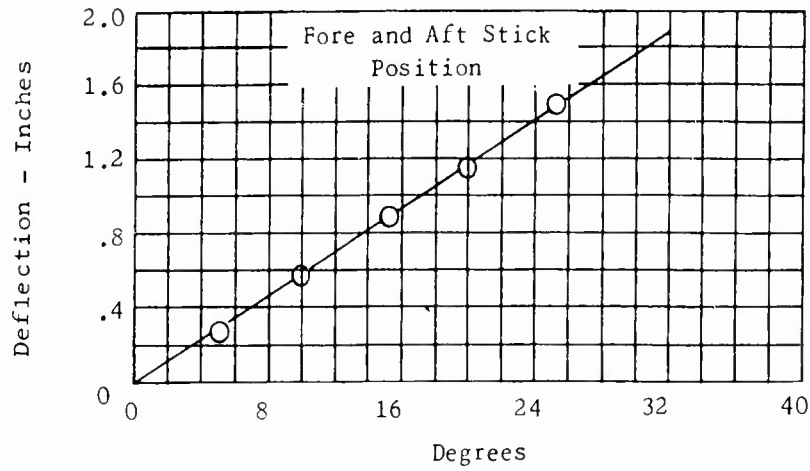


FIGURE 22b - Fore
and Aft Cyclic
Stick Position.

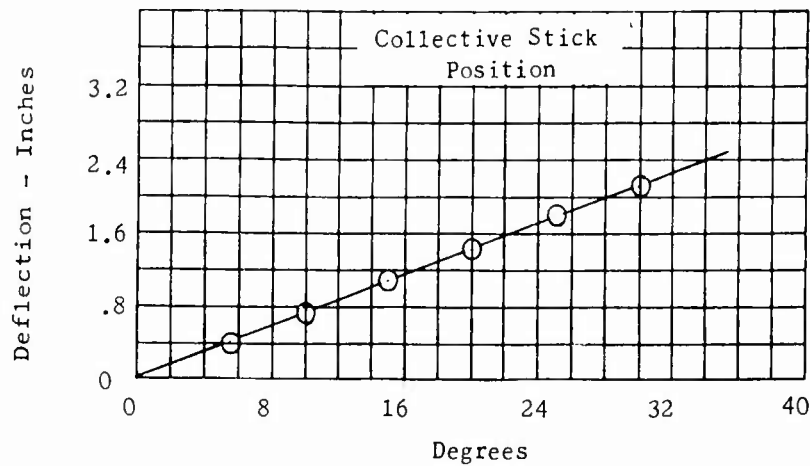


FIGURE 22c -
Collective Stick
Position.

FIGURE 22 - POSITION INDICATORS CALIBRATION CURVES.

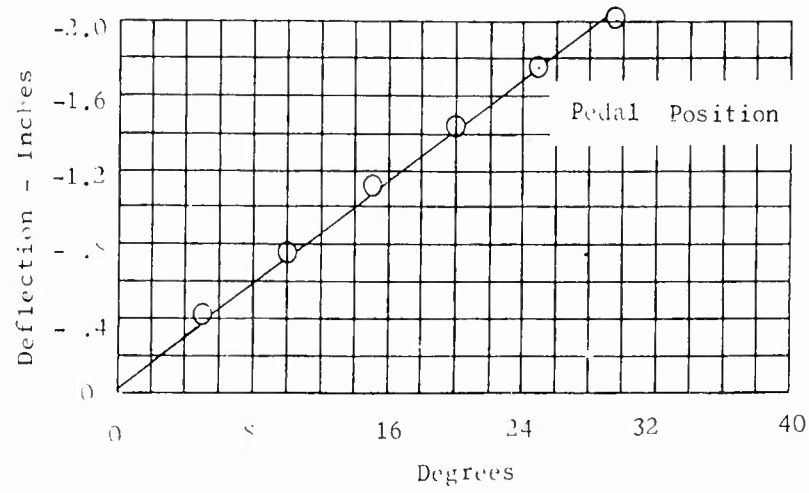


FIGURE 22d -
Rudder Pedal
Position
Indicator.

FIGURE 22 - POSITION INDICATORS CALIBRATION CURVES .

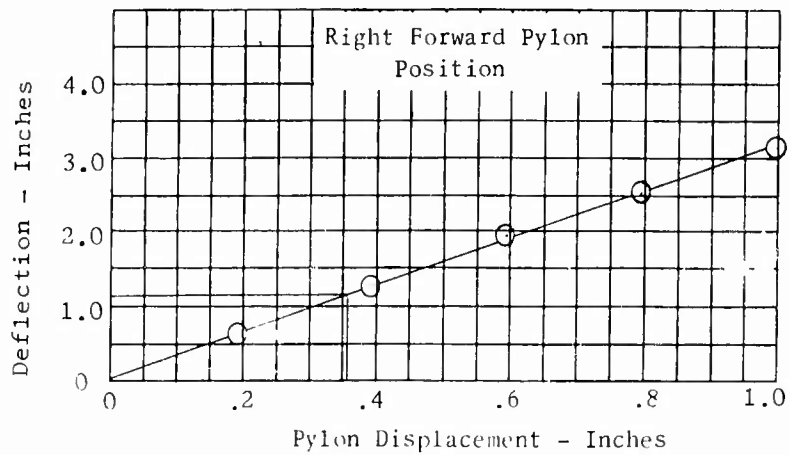


FIGURE 22e - Pylon Position Indicator.

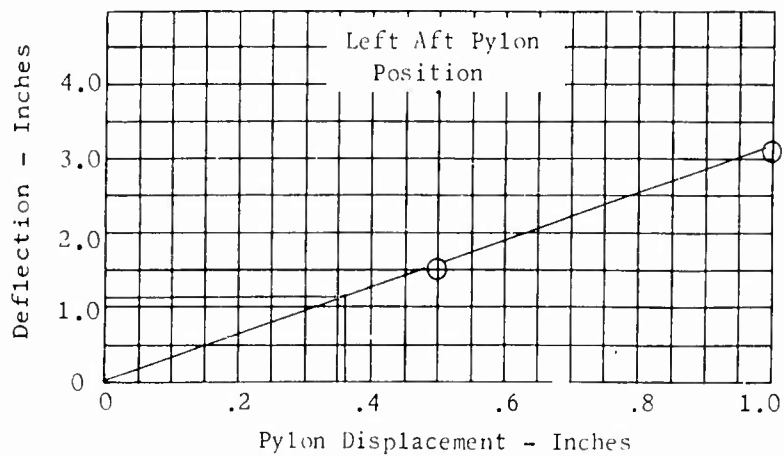


FIGURE 22f - Pylon Position Indicator.

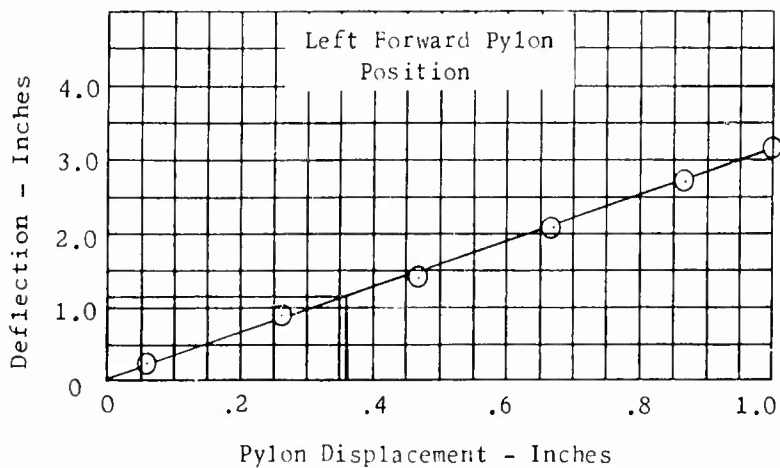


FIGURE 22g - Pylon Position Indicator.

FIGURE 22 - POSITION INDICATORS CALIBRATION CURVES .

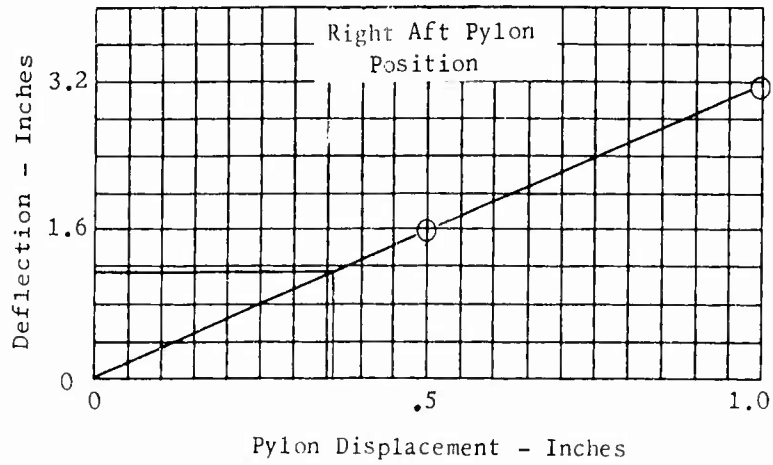


FIGURE 22h - Pylon Position Indicator.

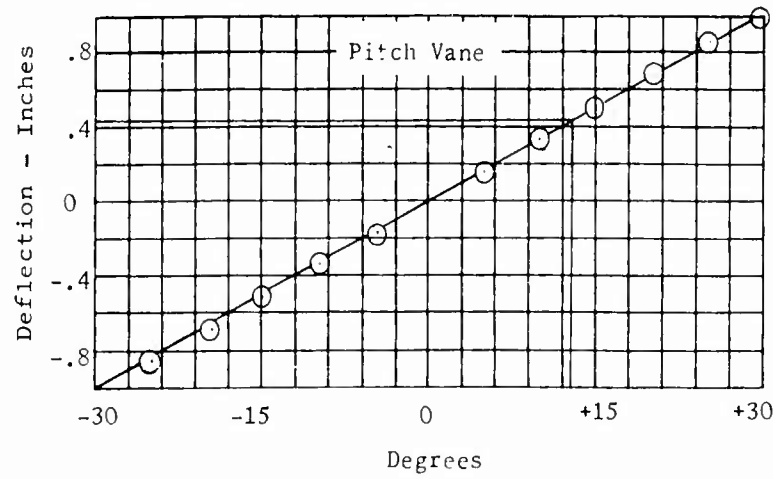


FIGURE 22i - Pitch Vane Position Indicator

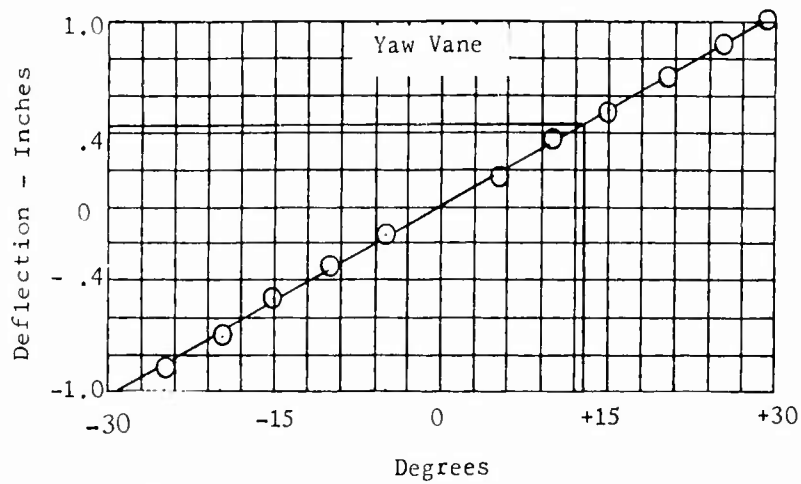


FIGURE 22j - Yaw Vane Position Indicator.

FIGURE 22 - POSITION INDICATORS CALIBRATION CURVES .

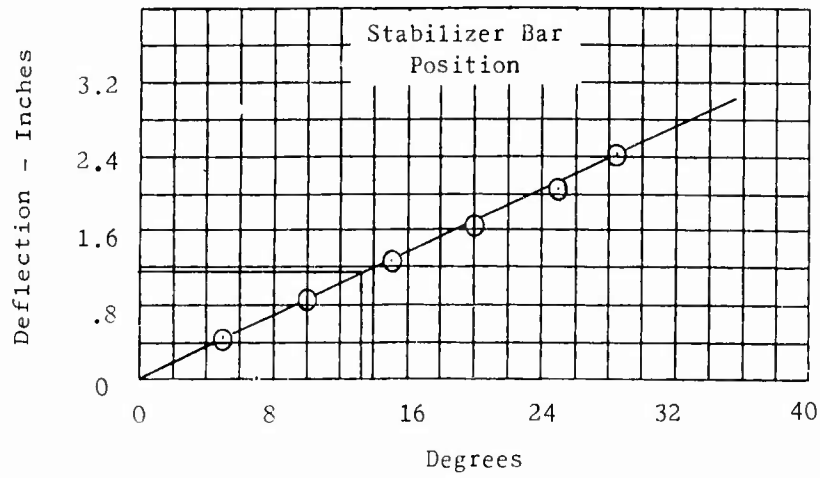


FIGURE 22k - Stabilizer Bar Position Indicator.

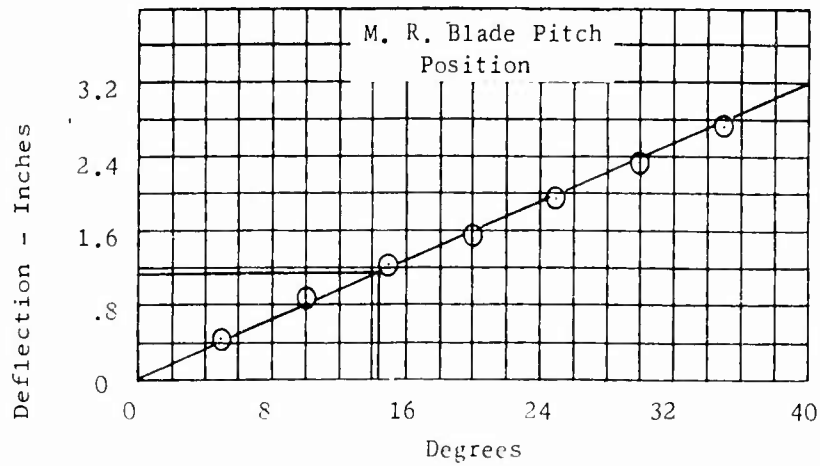


FIGURE 22l - Main Rotor Blade Pitch Position Indicator.

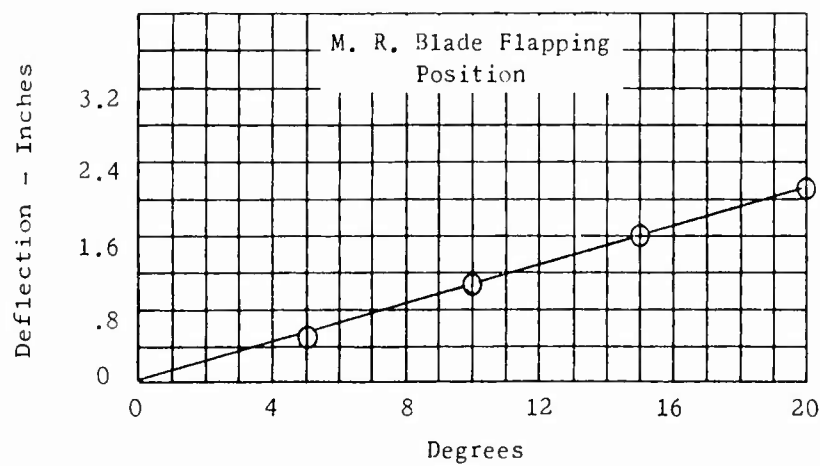


FIGURE 22m - Main Rotor Blade Flapping Position Indicator

FIGURE 22 - POSITION INDICATORS CALIBRATION CURVES.

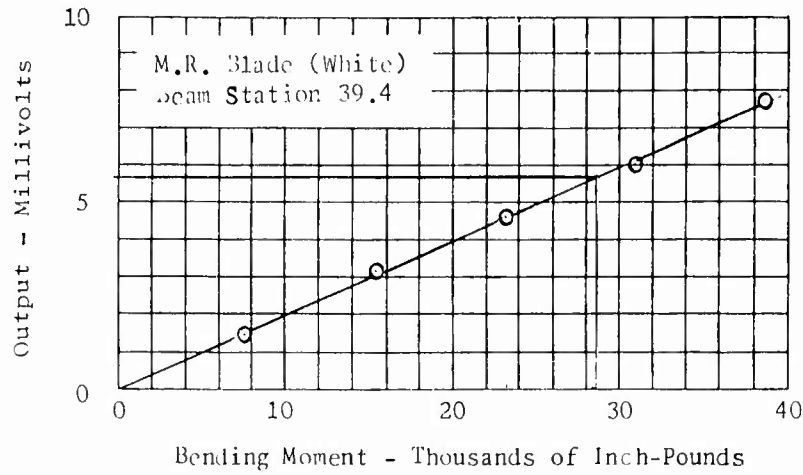


FIGURE 23a -
White Blade Beam
Bending.

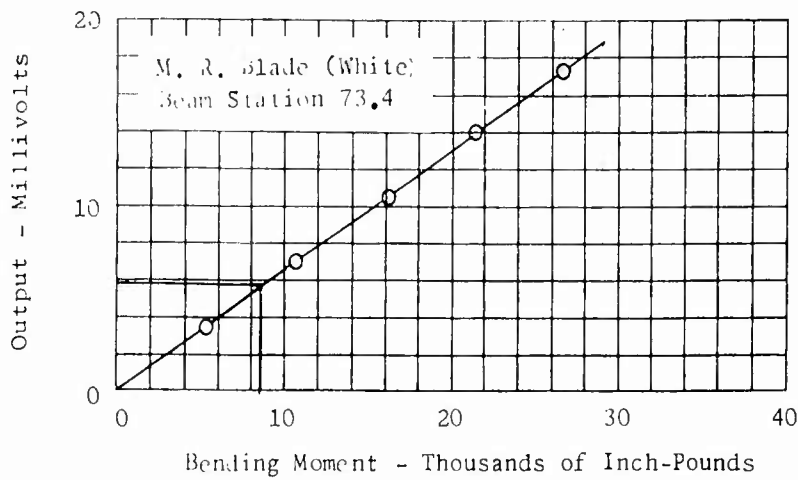


FIGURE 23b -
White Blade
Beam Bending

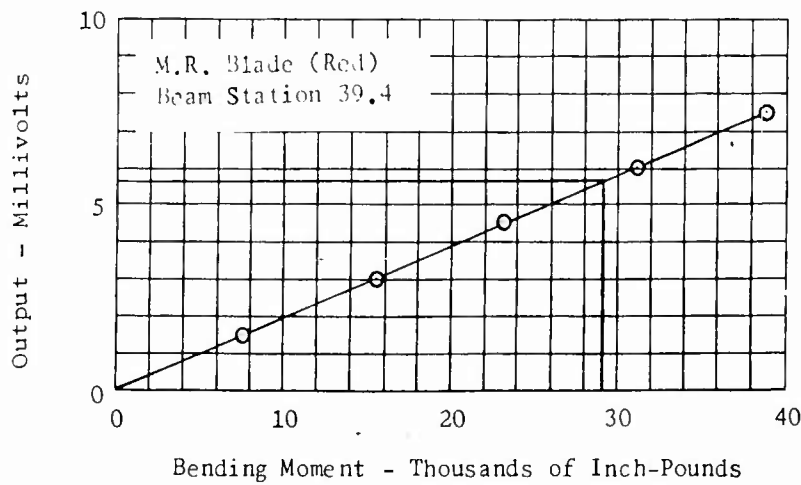


FIGURE 23c -
Red Blade
Beam Bending.

FIGURE 23 - MAIN ROTOR BLADE STRAIN GAGE CALIBRATION CURVES

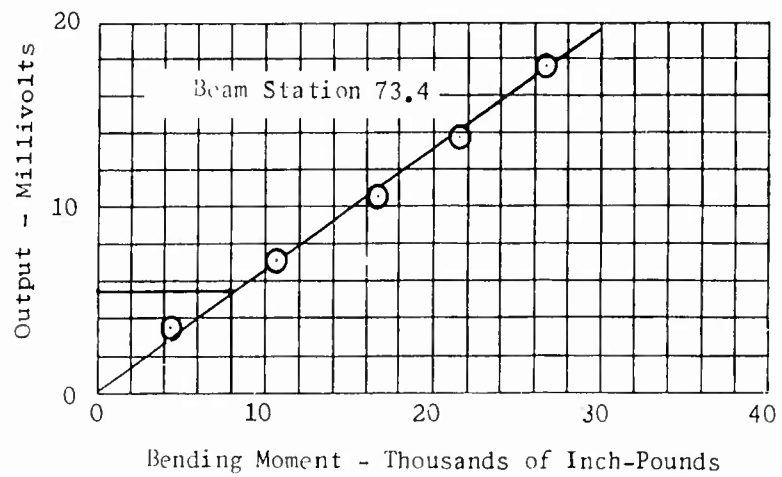


FIGURE 23d -
Red Blade
Beam Bending.

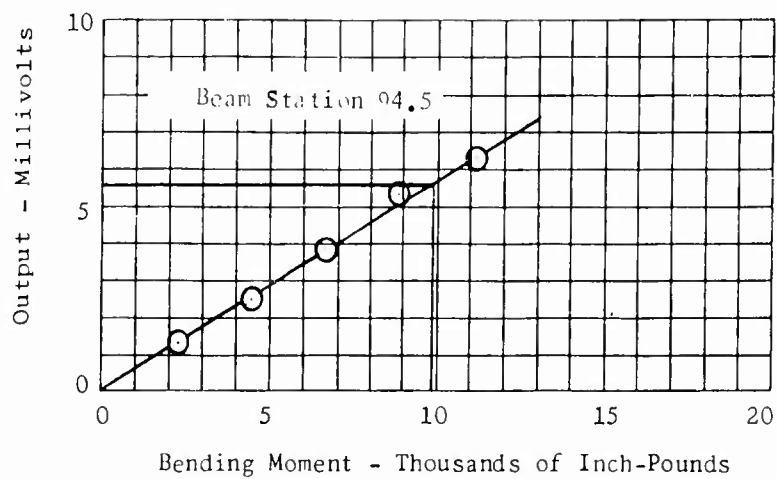


FIGURE 23e -
Red Blade
Beam Bending.

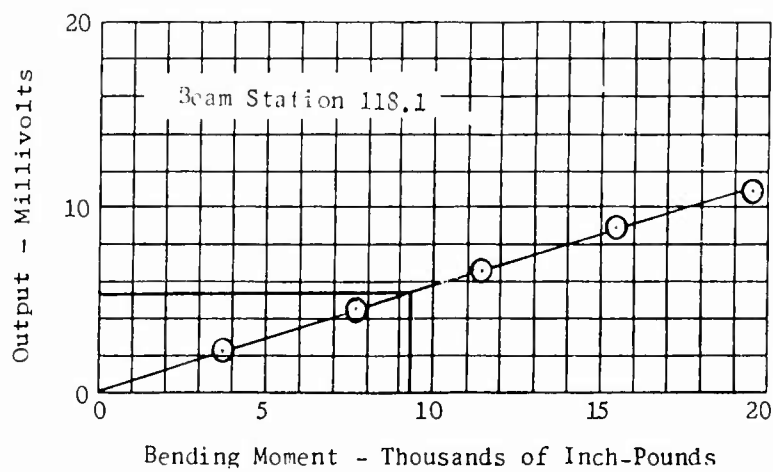


FIGURE 23f -
Red Blade
Beam Bending.

FIGURE 23 - MAIN ROTOR BLADE STRAIN GAGE CALIBRATION CURVES .

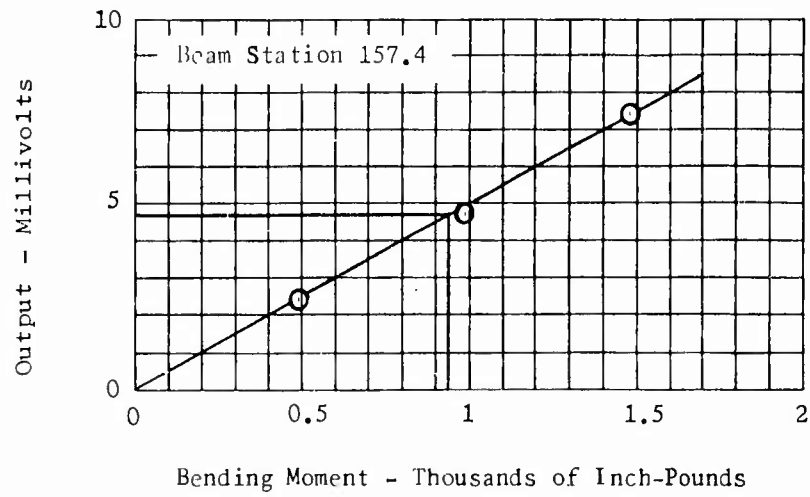


FIGURE 23g -
Red Blade
Beam Bending.

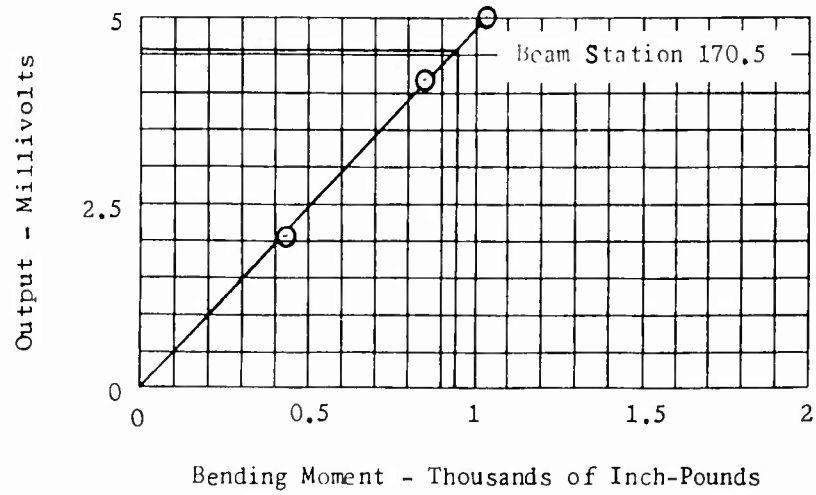


FIGURE 23h -
Red Blade
Beam Bending.

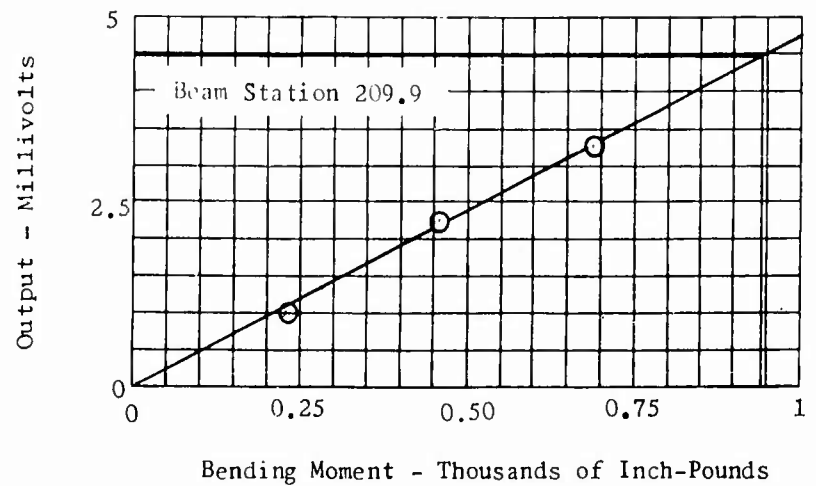


FIGURE 23i -
Red Blade
Beam Bending

FIGURE 23 - MAIN ROTOR BLADE STRAIN GAGE CALIBRATION CURVES .

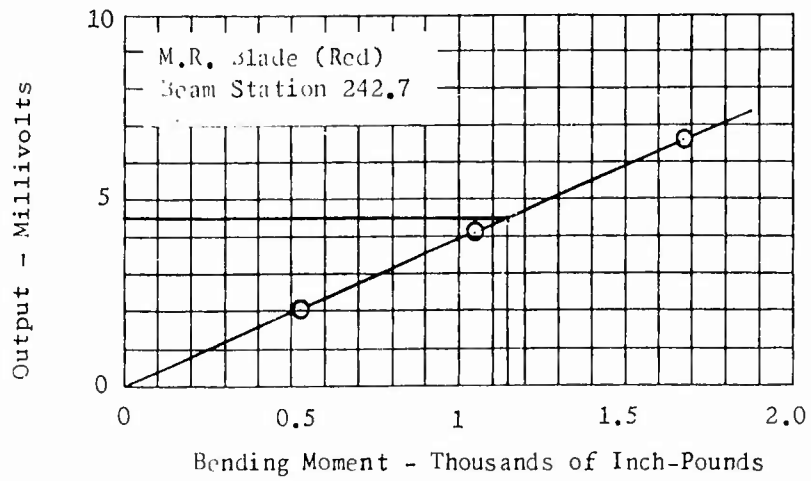


FIGURE 23j -
Red Blade
Beam Bending.

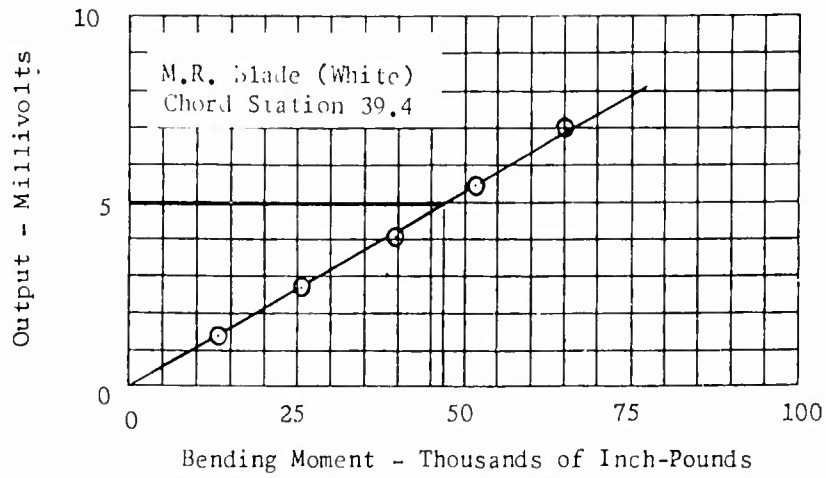


FIGURE 23k -
White Blade
Chord Bending.

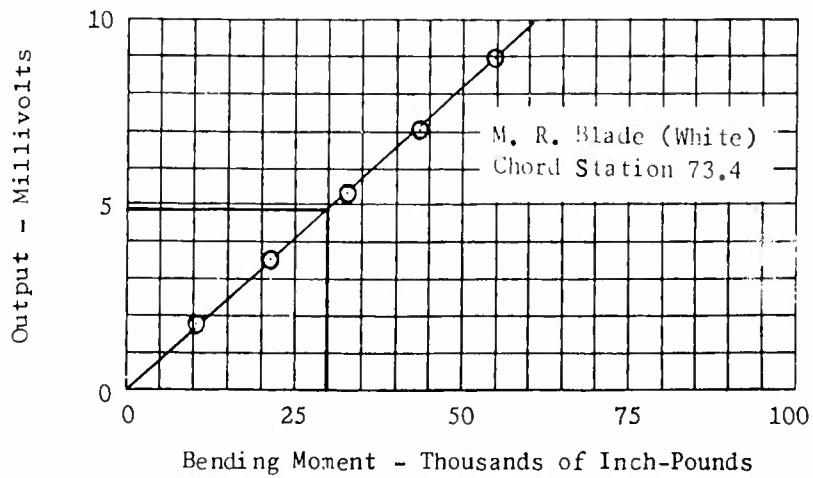


FIGURE 23l -
White Blade
Chord Bending.

FIGURE 23 - MAIN ROTOR BLADE STRAIN GAGE CALIBRATION CURVES .

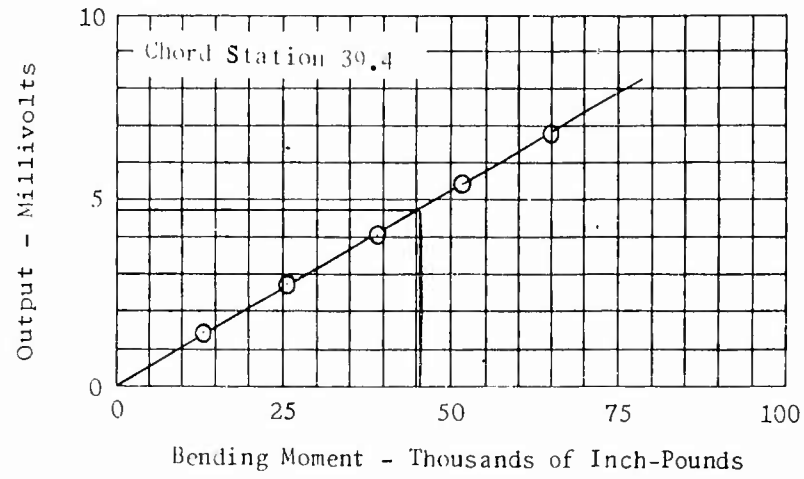


FIGURE 23m -
Red Blade
Chord Bending.

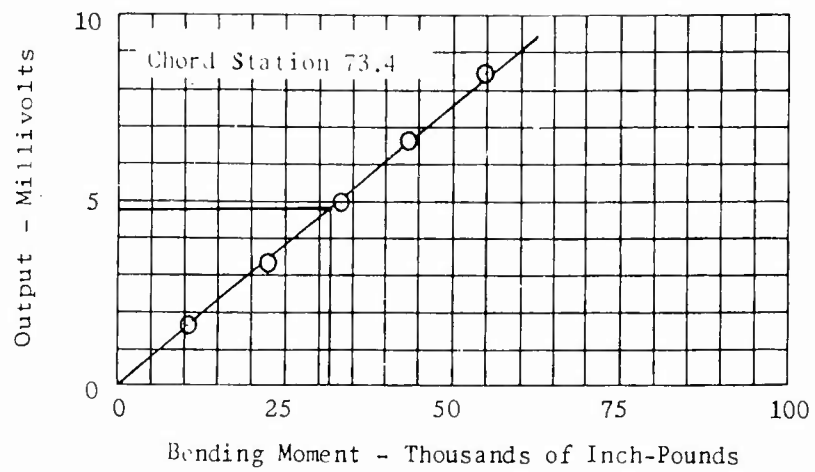


FIGURE 23n -
Red Blade
Chord Bending

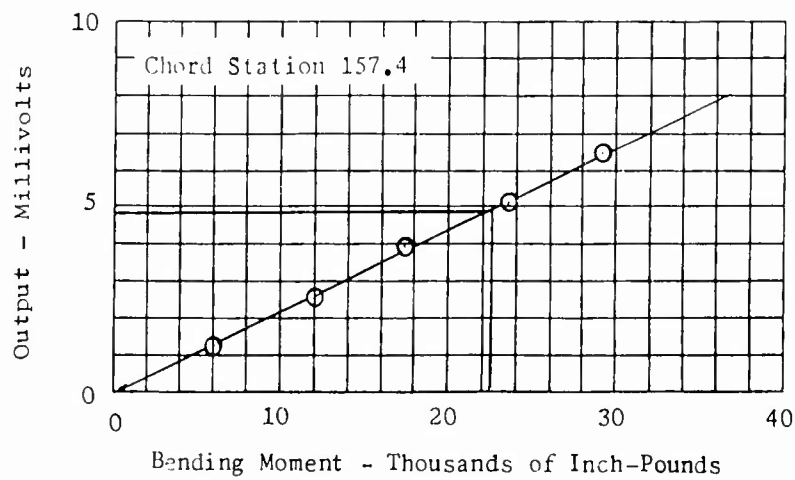


FIGURE 23o -
Red Blade
Chord Bending.

FIGURE 23 - MAIN ROTOR BLADE STRAIN GAGE CALIBRATION CURVES.

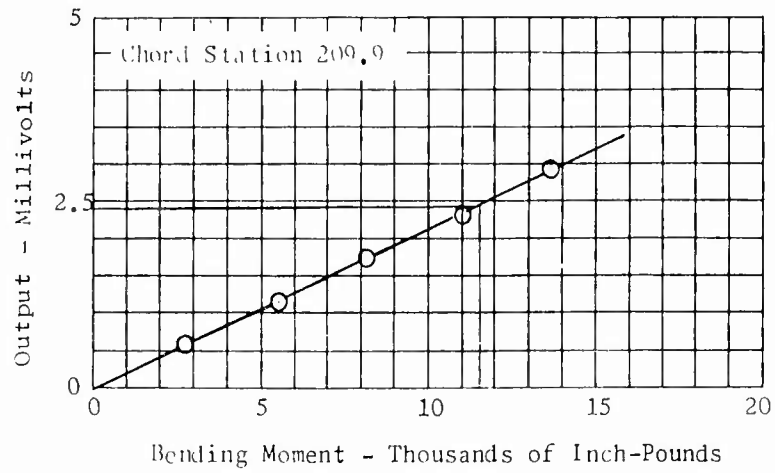


FIGURE 23p -
Red Blade
Chord Bending

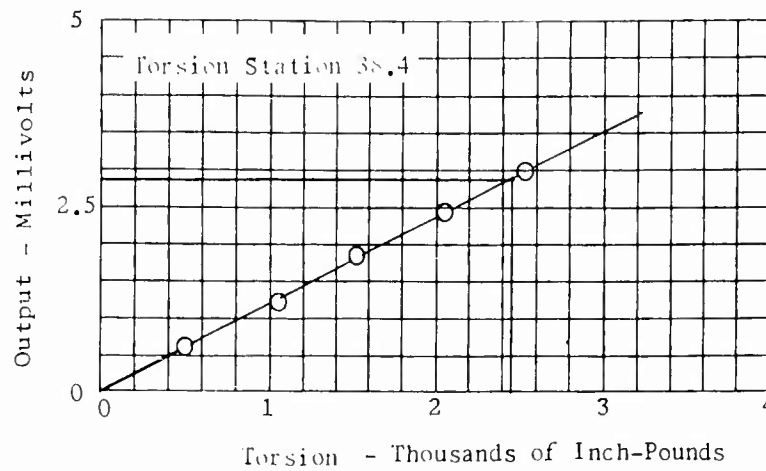


FIGURE 23q -
Red Blade
Torsion.

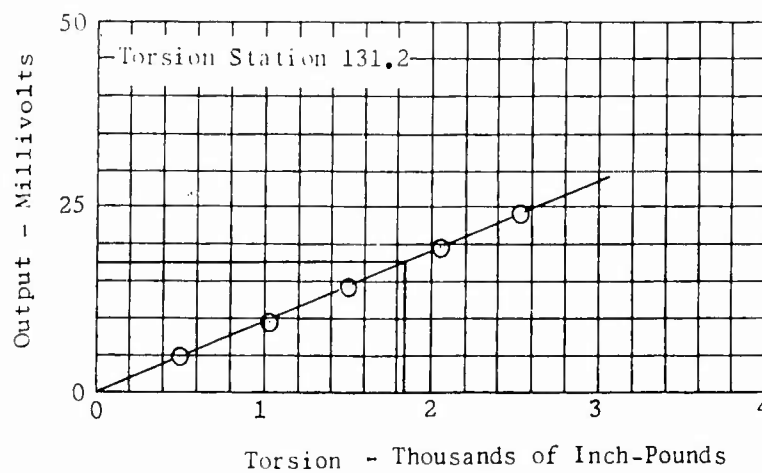


FIGURE 23r -
Red Blade
Torsion.

FIGURE 23 - MAIN ROTOR BLADE STRAIN GAGE CALIBRATION CURVES.

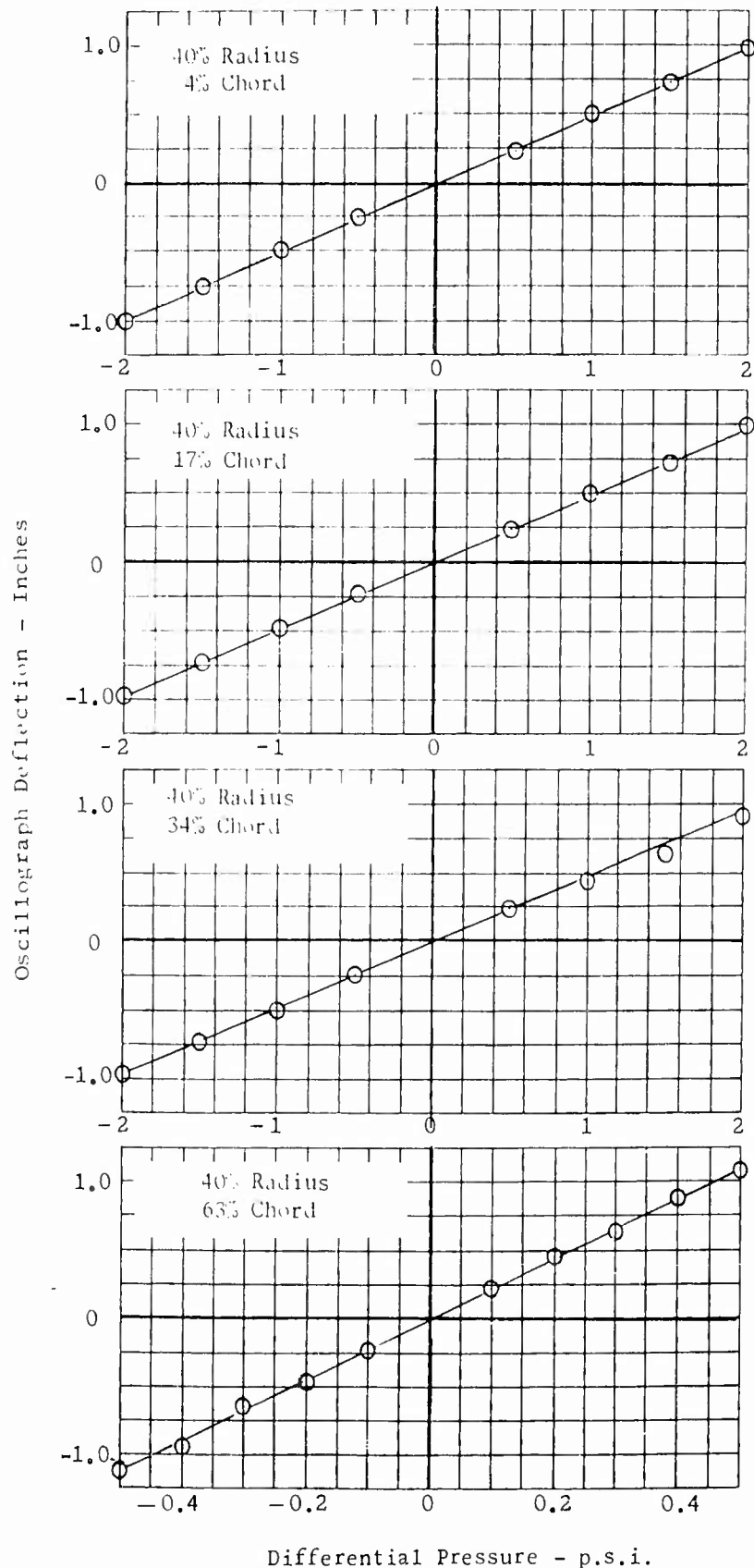


FIGURE 24a -
Differential
Pressure

FIGURE 24a -
Differential
Pressure.

FIGURE 24a -
Differential
Pressure.

FIGURE 24a -
Differential
Pressure.

FIGURE 24 - PRESSURE TRANSDUCER CALIBRATION CURVES,

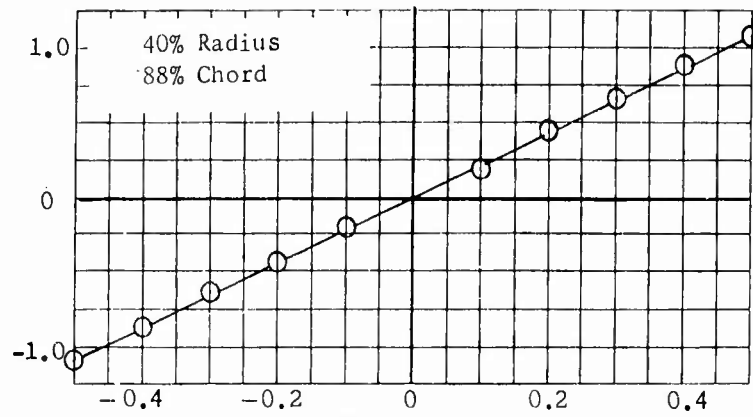


FIGURE 24a -
Differential
Pressure.

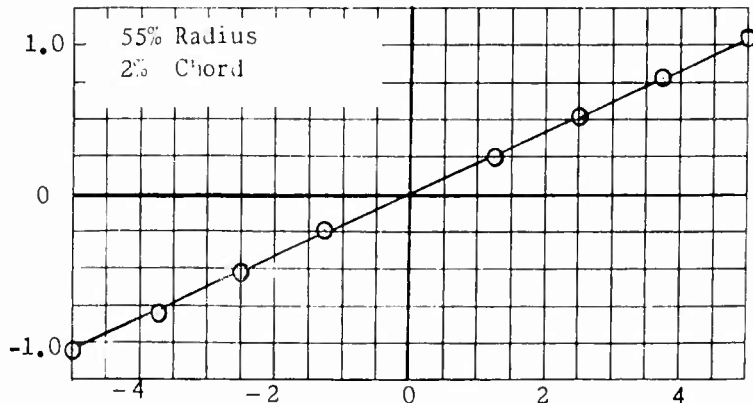


FIGURE 24b -
Differential
Pressure

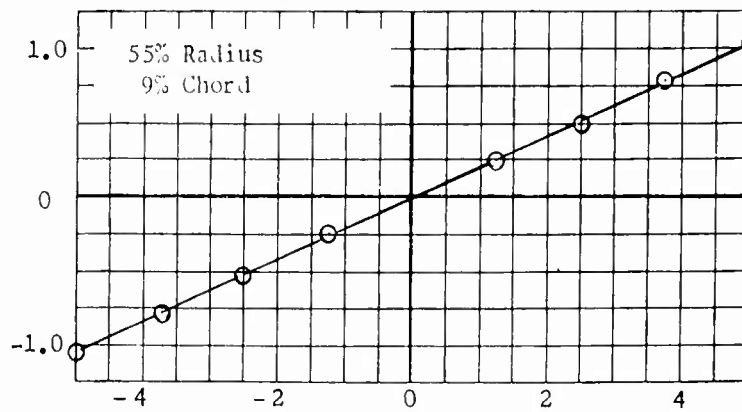


FIGURE 24b -
Differential
Pressure.

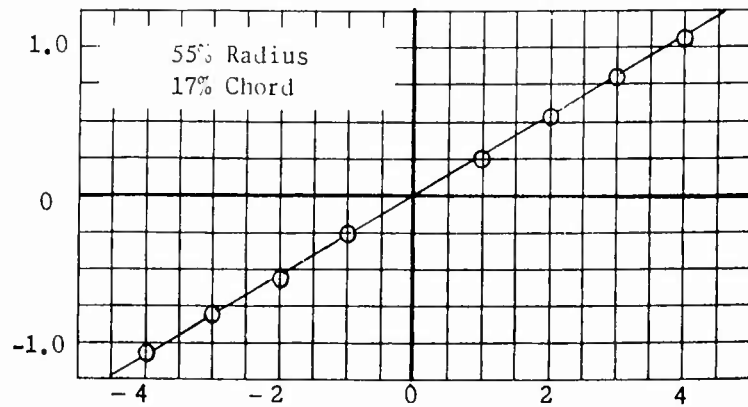


FIGURE 24b -
Differential
Pressure.

Differential Pressure - p.s.i.

FIGURE 24 - PRESSURE TRANSDUCER CALIBRATION CURVES.

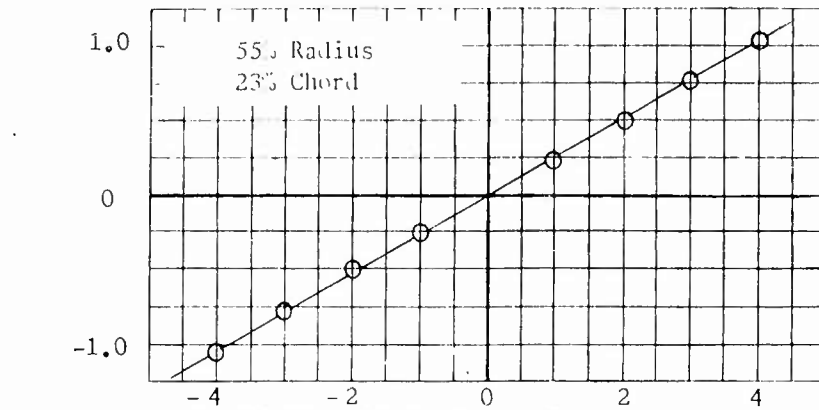


FIGURE 24b -
Differential
Pressure.

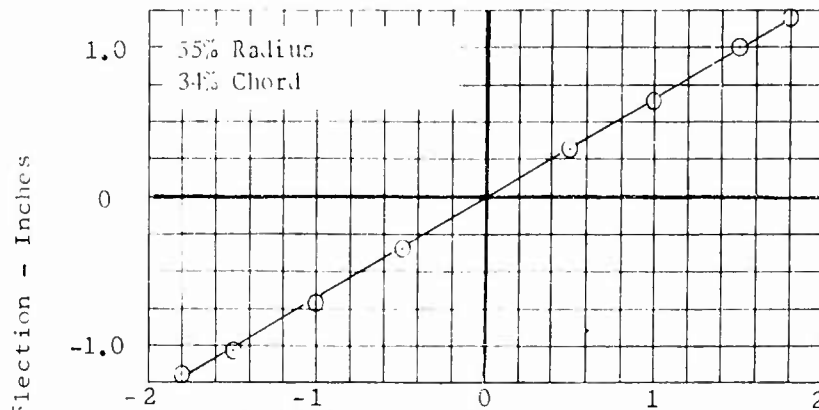


FIGURE 24b -
Differential
Pressure

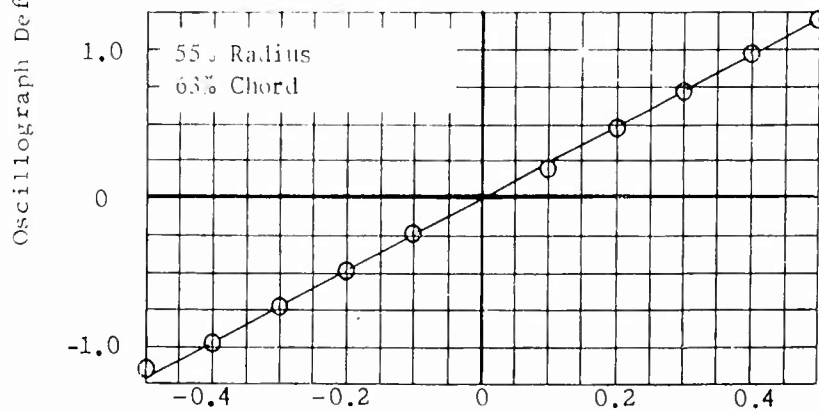


FIGURE 24b -
Differential
Pressure

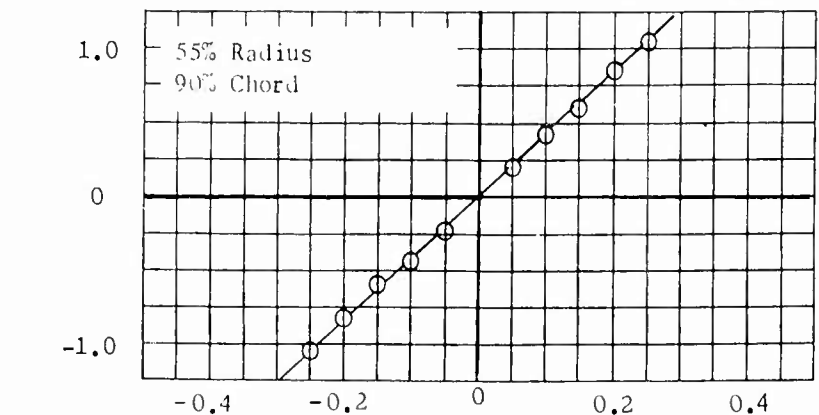


FIGURE 24b -
Differential
Pressure

Differential Pressure - p.s.i.

FIGURE 24 - PRESSURE TRANSDUCER CALIBRATION CURVES

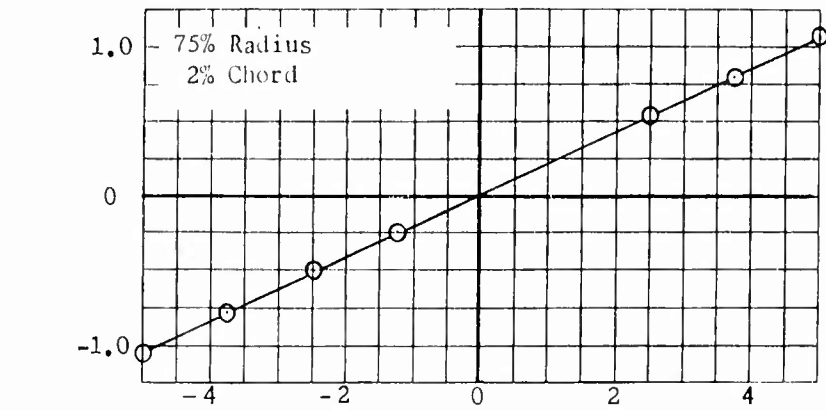


FIGURE 24c -
Differential
Pressure.

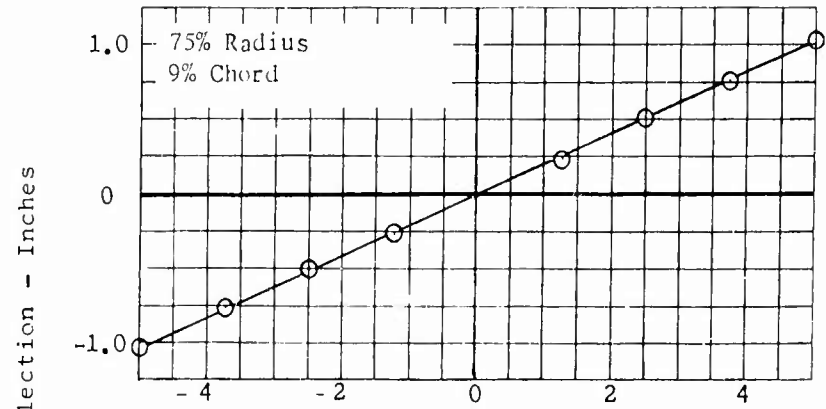


FIGURE 24c -
Differential
Pressure

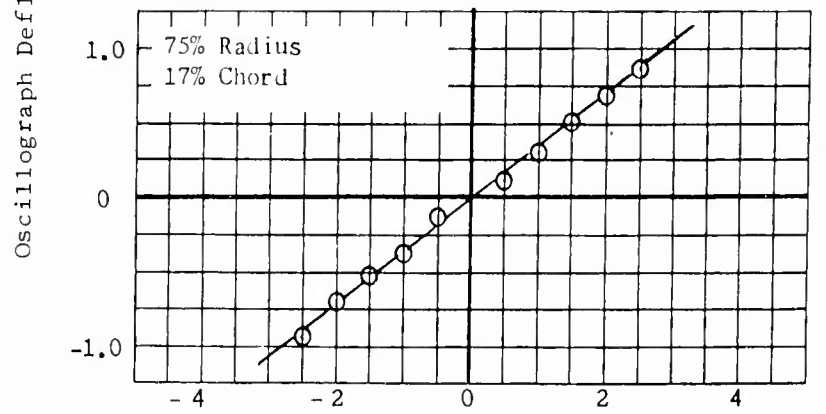


FIGURE 24c -
Differential
Pressure

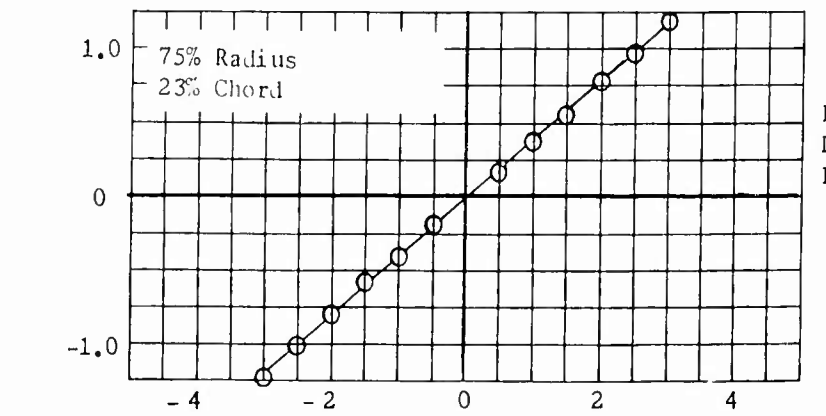


FIGURE 24c -
Differential
Pressure

FIGURE 24 - PRESSURE TRANSDUCER CALIBRATION CURVES

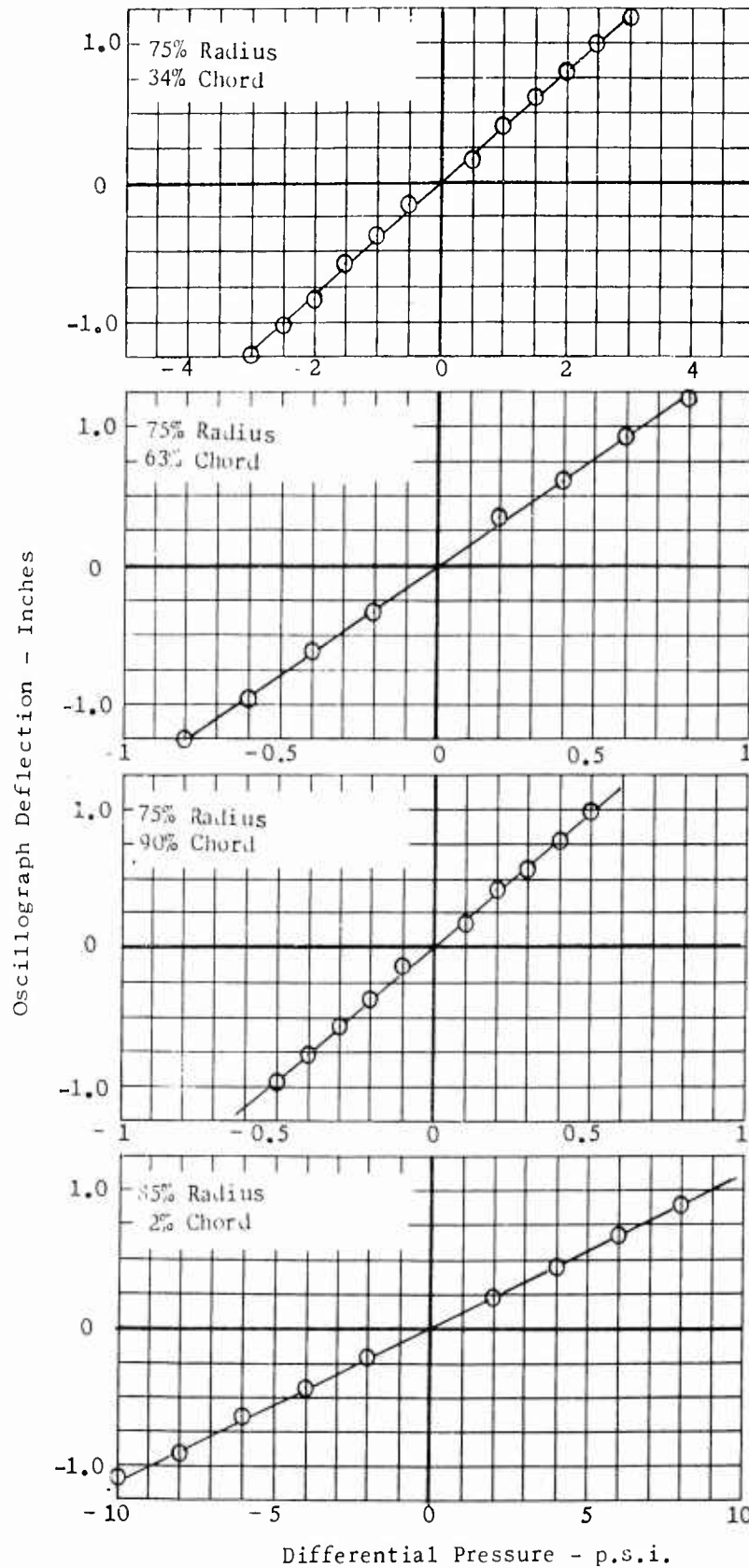


FIGURE 24c -
Differential
Pressure .

FIGURE 24c -
Differential
Pressure

FIGURE 24c -
Differential
Pressure

FIGURE 24d -
Differential
Pressure .

FIGURE 24 - PRESSURE TRANSDUCER CALIBRATION CURVES .

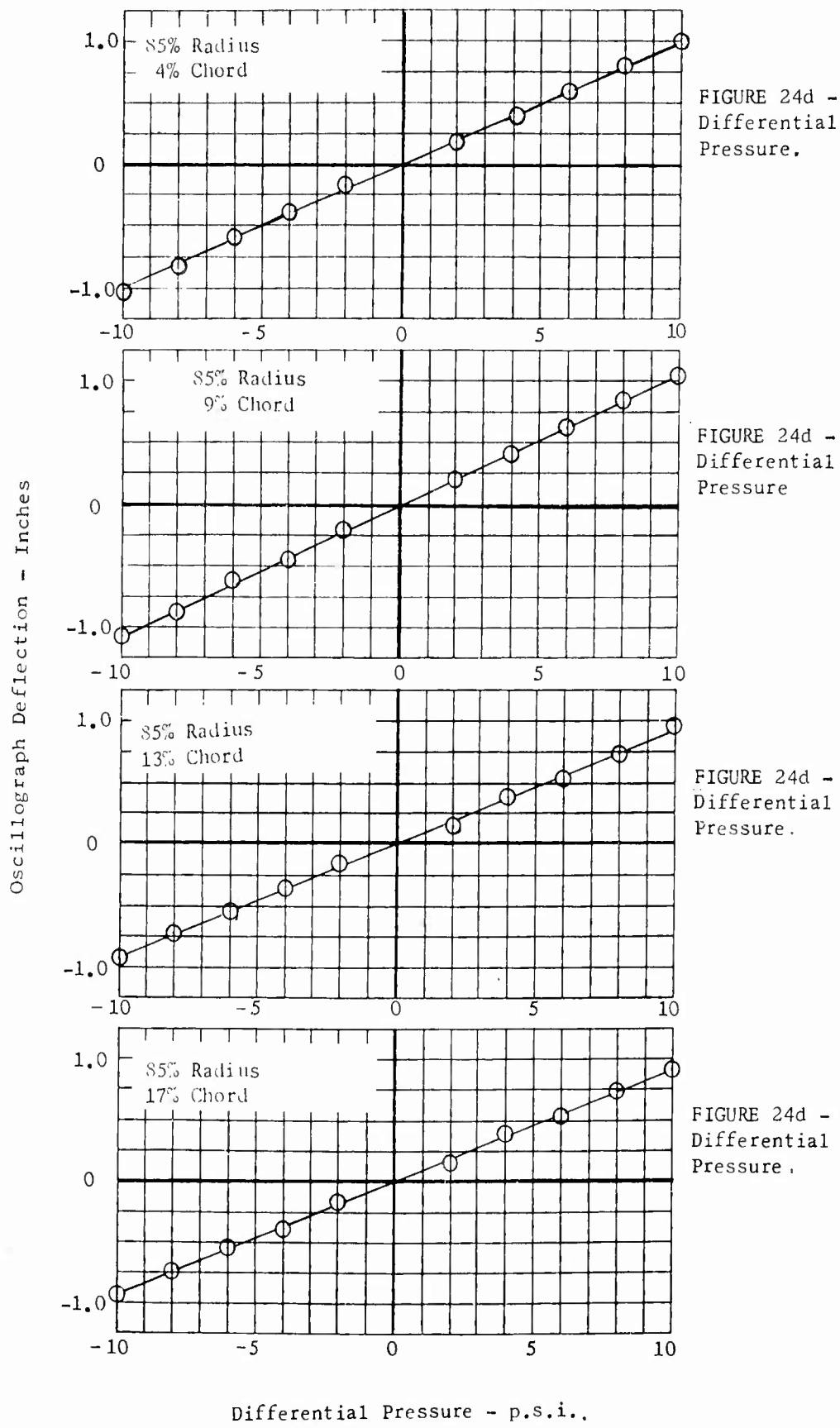


FIGURE 24d -
Differential
Pressure.

FIGURE 24d -
Differential
Pressure

FIGURE 24d -
Differential
Pressure.

FIGURE 24d -
Differential
Pressure.

FIGURE 24 - PRESSURE TRANSDUCER CALIBRATION CURVES.

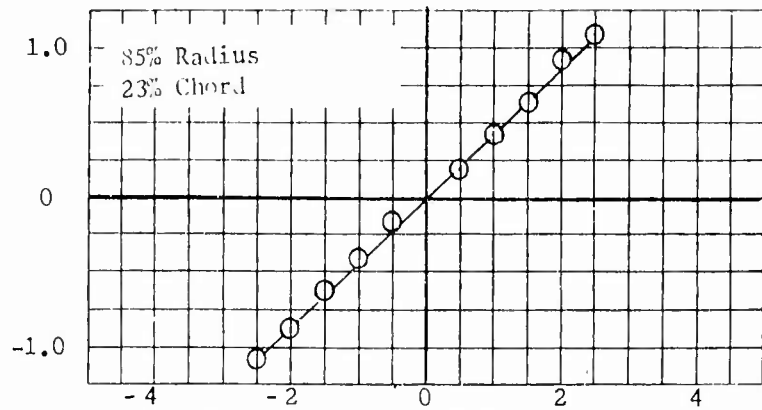


FIGURE 24d -
Differential
Pressure.

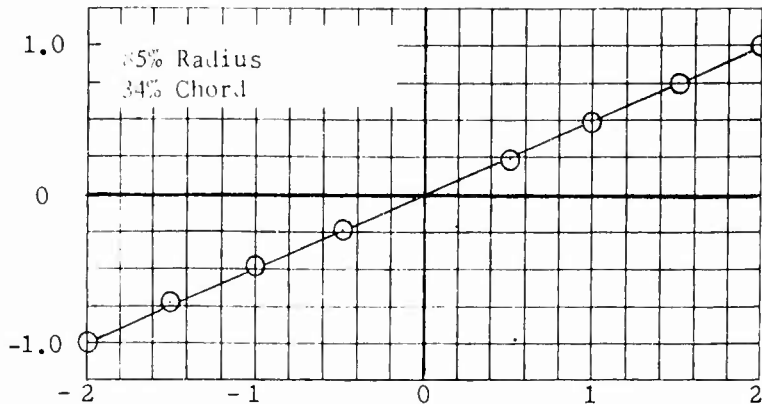


FIGURE 24d -
Differential
Pressure.

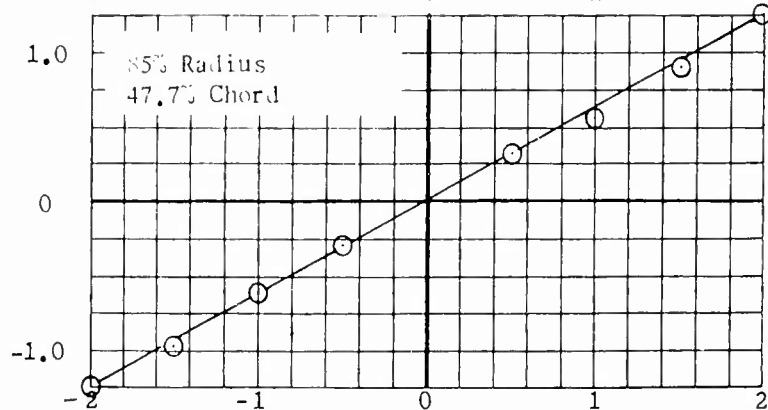


FIGURE 24d -
Differential
Pressure.

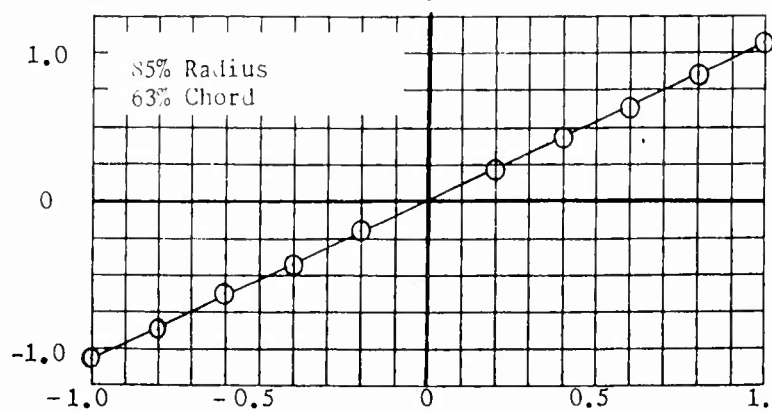


FIGURE 24d -
Differential
Pressure

Oscillograph Deflection - Inches

Differential Pressure - p.s.i.

FIGURE 24 - PRESSURE TRANSDUCER CALIBRATION CURVES.

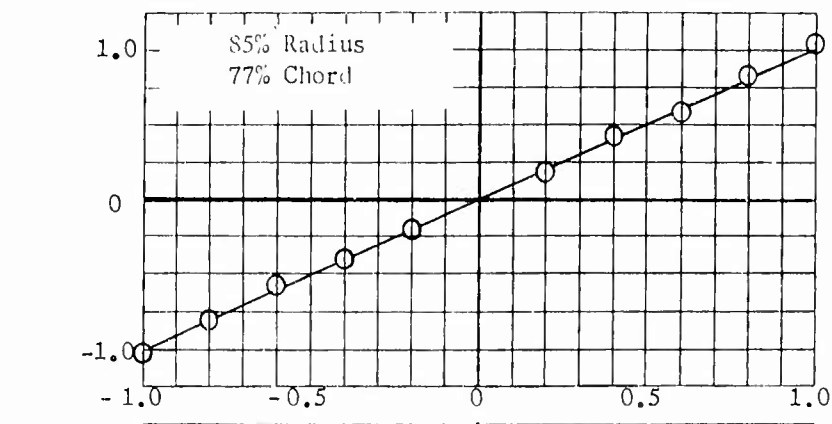


FIGURE 24d -
Differential
Pressure

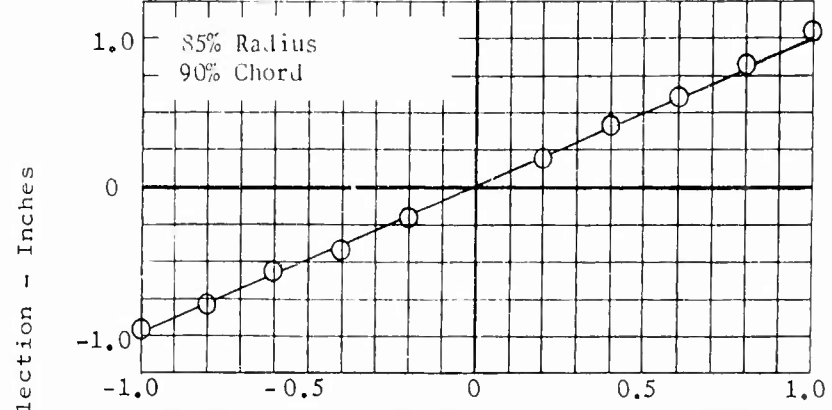


FIGURE 24d -
Differential
Pressure

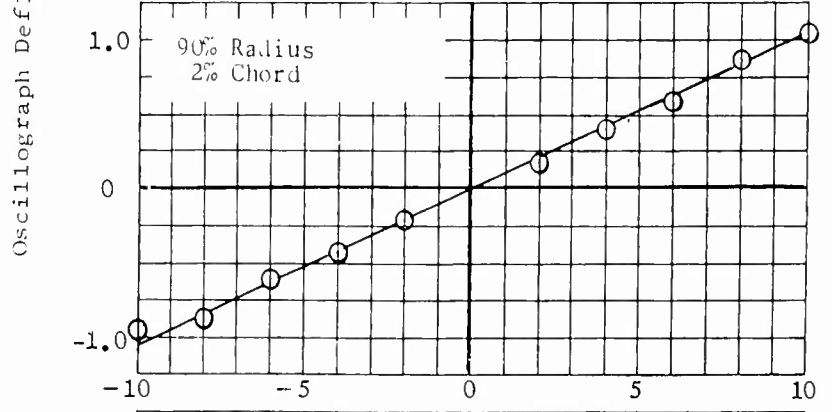


FIGURE 24e -
Differential
Pressure

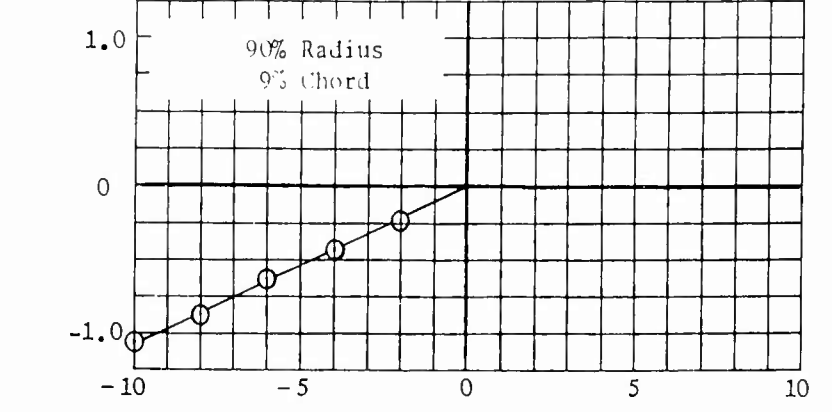


FIGURE 24e -
Differential
Pressure

Differential Pressure - p.s.i.

FIGURE 24 - PRESSURE TRANSDUCER CALIBRATION CURVES .

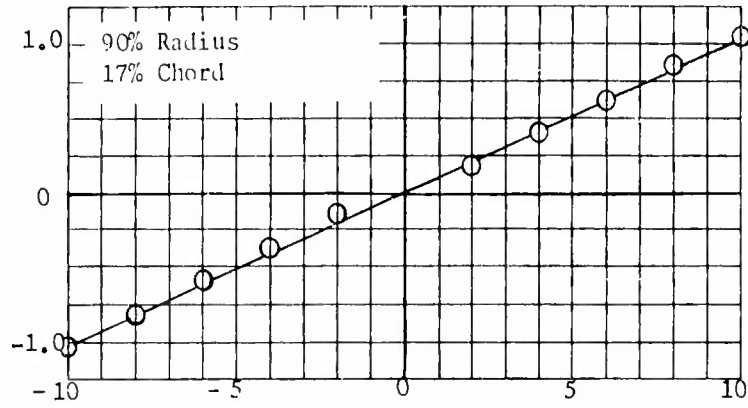


FIGURE 24e -
Differential
Pressure.

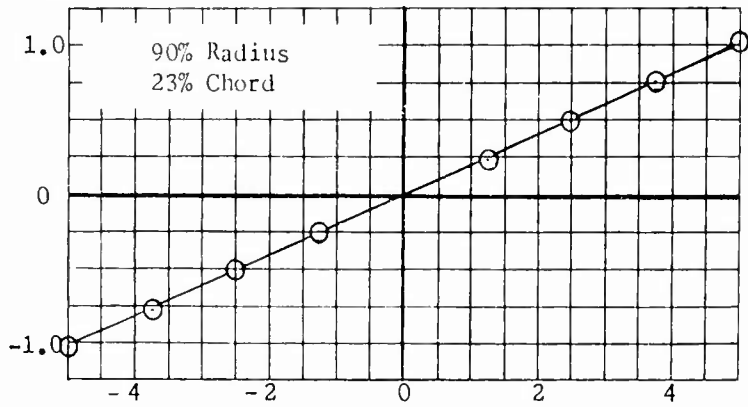


FIGURE 24e -
Differential
Pressure.

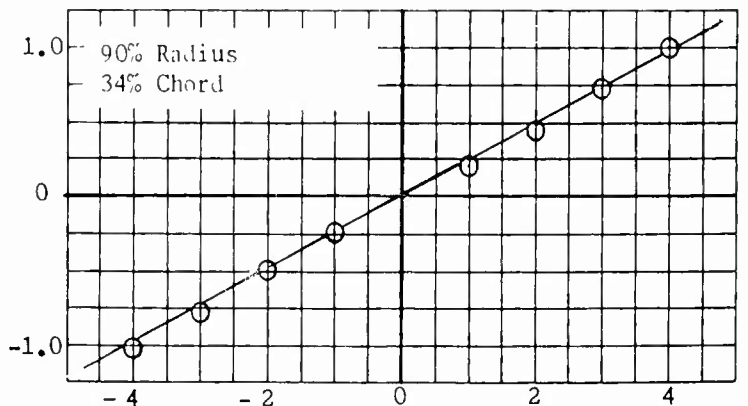


FIGURE 24e -
Differential
Pressure.

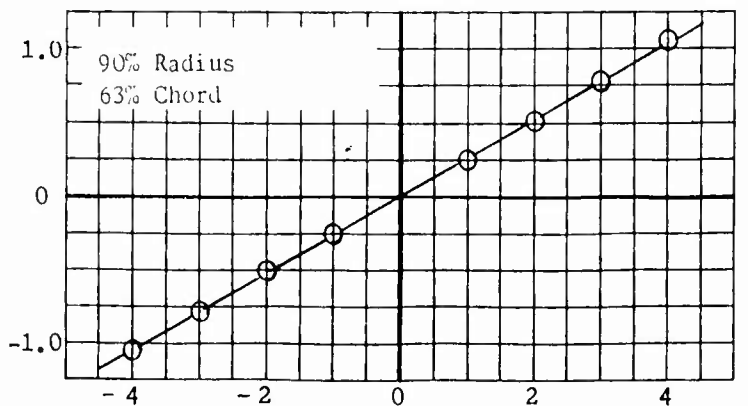


FIGURE 24e -
Differential
Pressure.

Oscillograph Deflection - Inches

Differential Pressure - p.s.i.

FIGURE 24 - PRESSURE TRANSDUCER CALIBRATION CURVES.

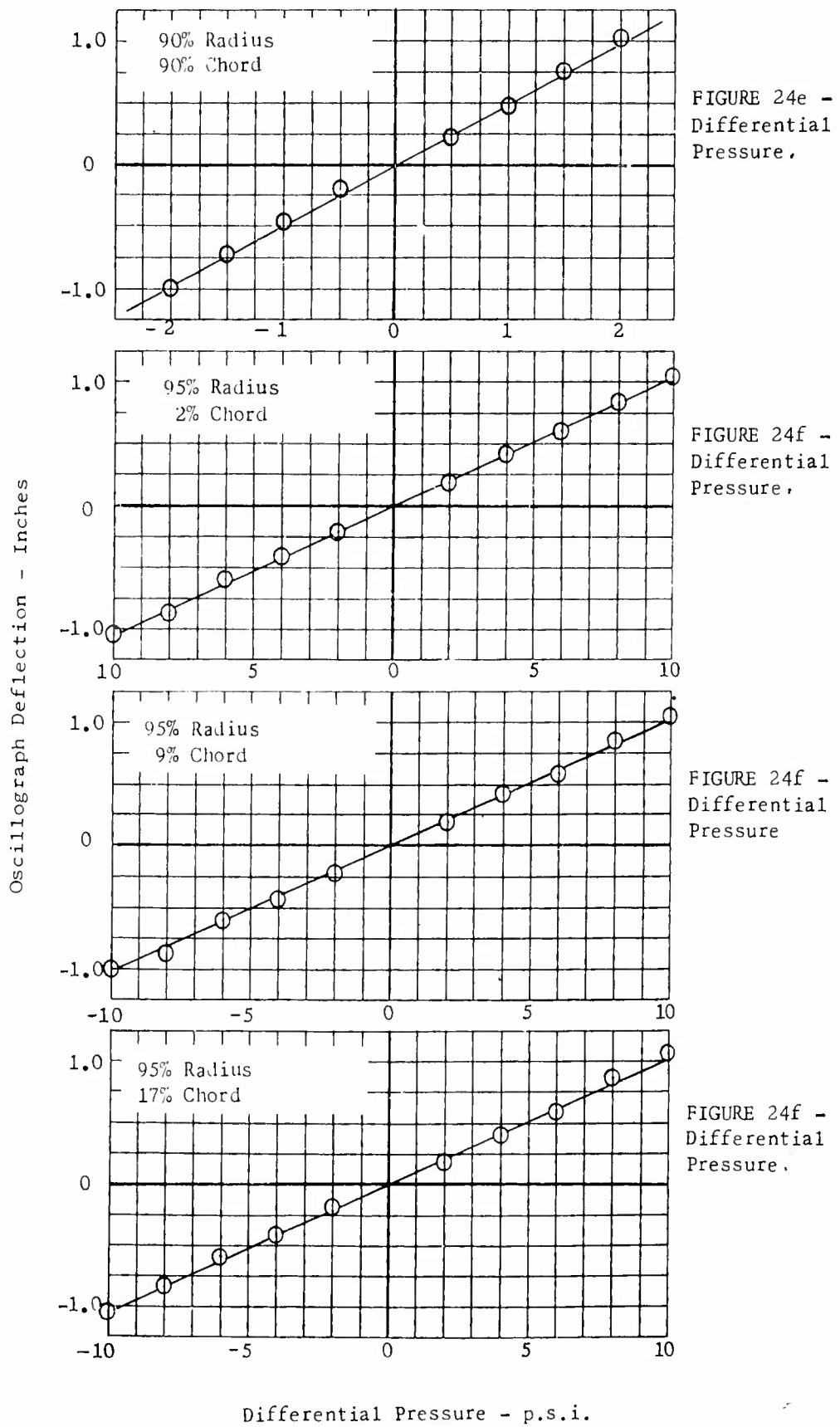


FIGURE 24e -
Differential
Pressure.

FIGURE 24f -
Differential
Pressure.

FIGURE 24f -
Differential
Pressure

FIGURE 24f -
Differential
Pressure.

FIGURE 24 - PRESSURE TRANSDUCER CALIBRATION CURVES.

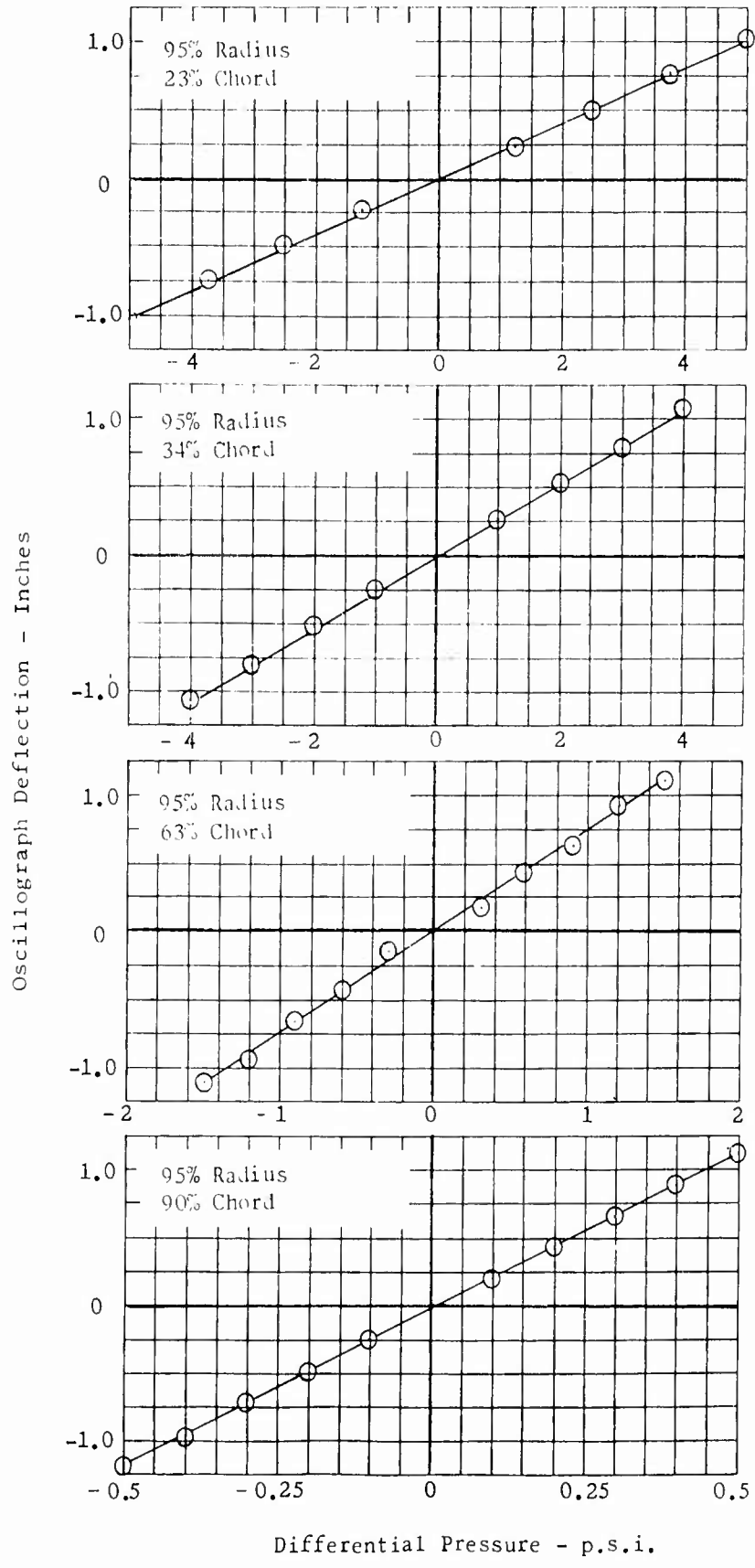


FIGURE 24f -
Differential
Pressure.

FIGURE 24f -
Differential
Pressure.

FIGURE 24f -
Differential
Pressure.

FIGURE 24f -
Differential
Pressure.

FIGURE 24 - PRESSURE TRANSDUCER CALIBRATION CURVES .

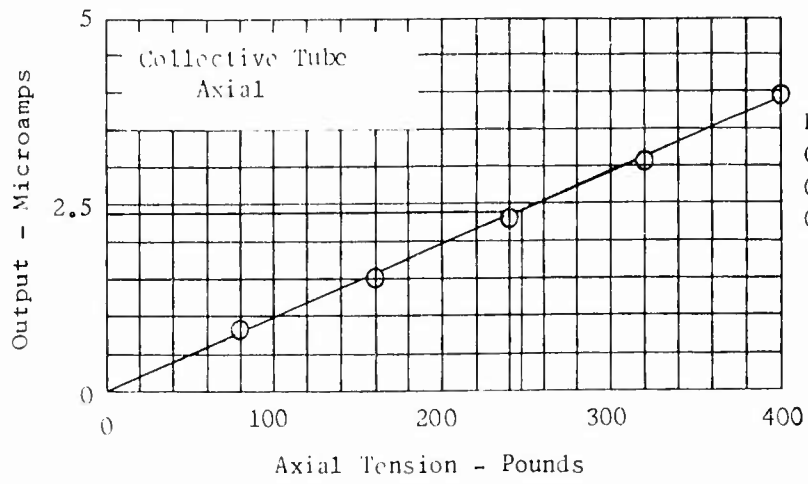


FIGURE 25a -
Collective Tube
Calibration
Curve .

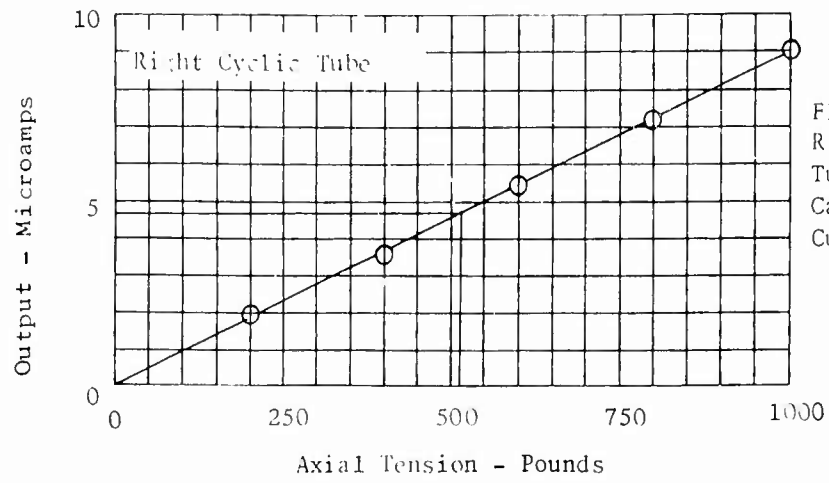


FIGURE 25b -
Right Cyclic
Tube
Calibration
Curve .

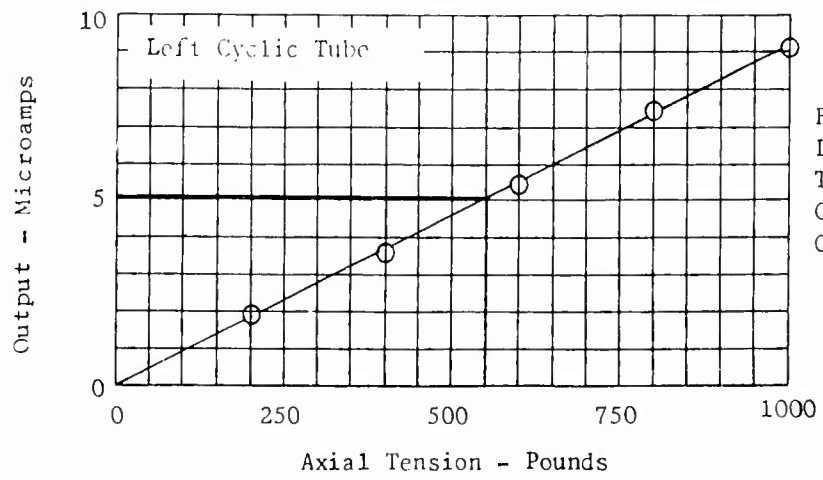


FIGURE 25c -
Left Cyclic
Tube
Calibration
Curve .

FIGURE 25 - CONTROL TUBES CALIBRATION CURVES .

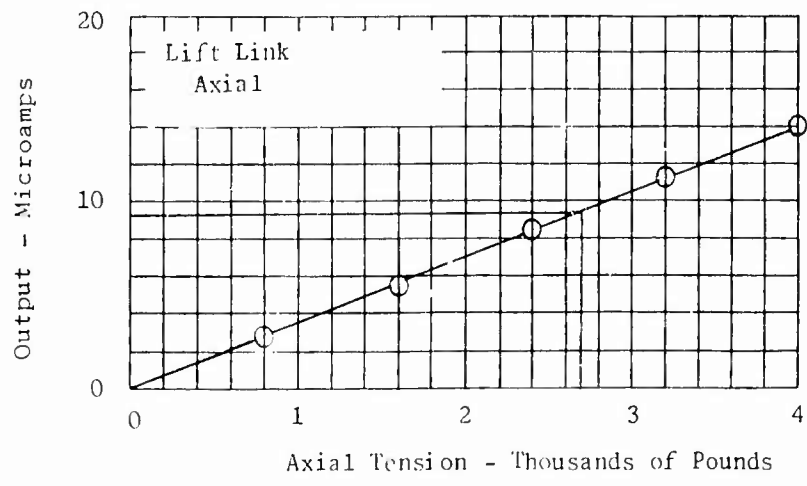


FIGURE 25d -
Lift Link
Calibration
Curve .

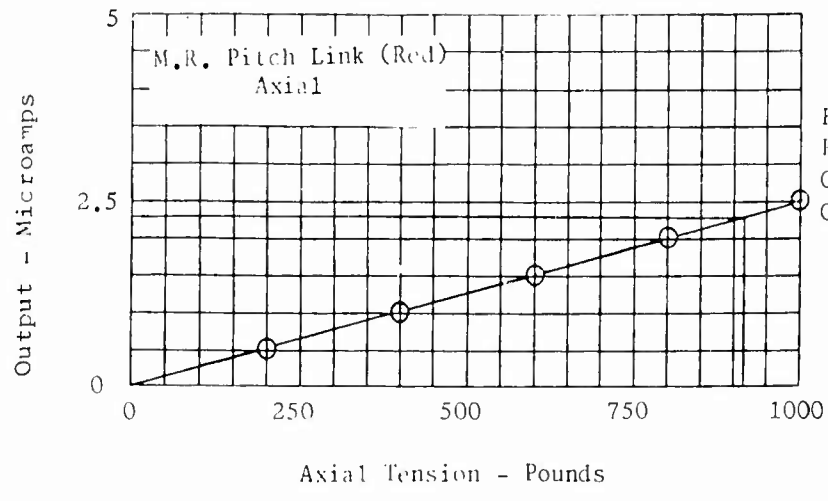


FIGURE 25e -
Red Pitch Link
Calibration
Curve

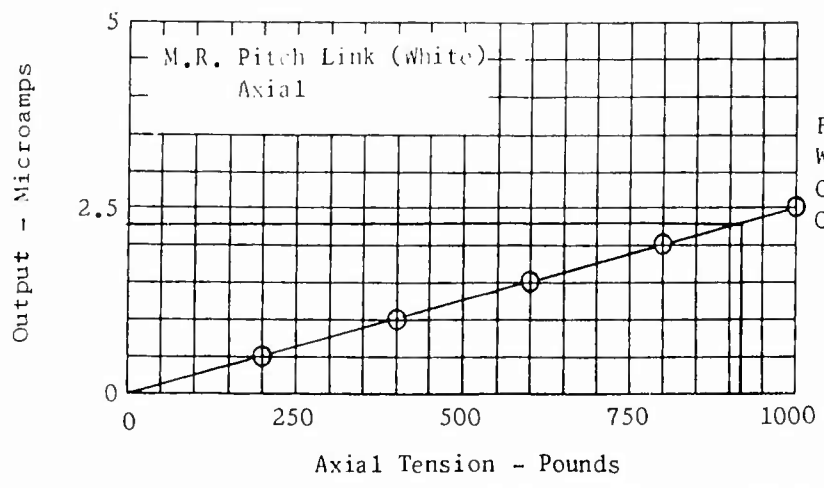


FIGURE 25f -
White Pitch Link
Calibration
Curve .

FIGURE 25 - CONTROL TUBES CALIBRATION CURVES .

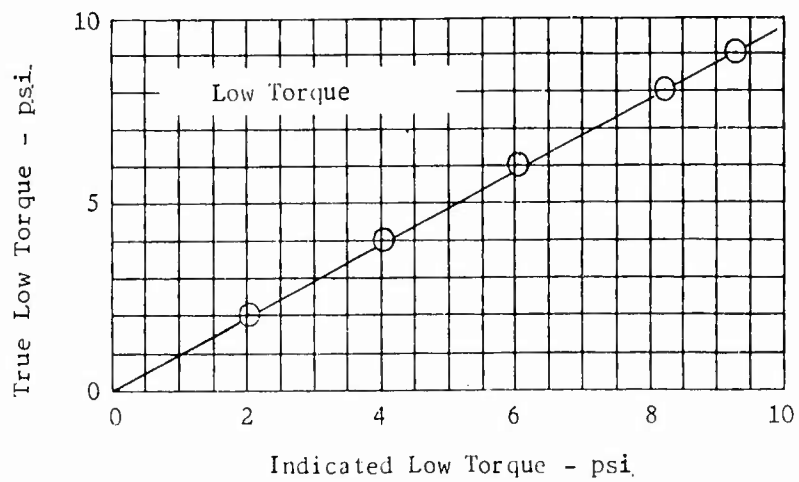


FIGURE 26a -
Engine Low
Torque
Calibration
Curve.

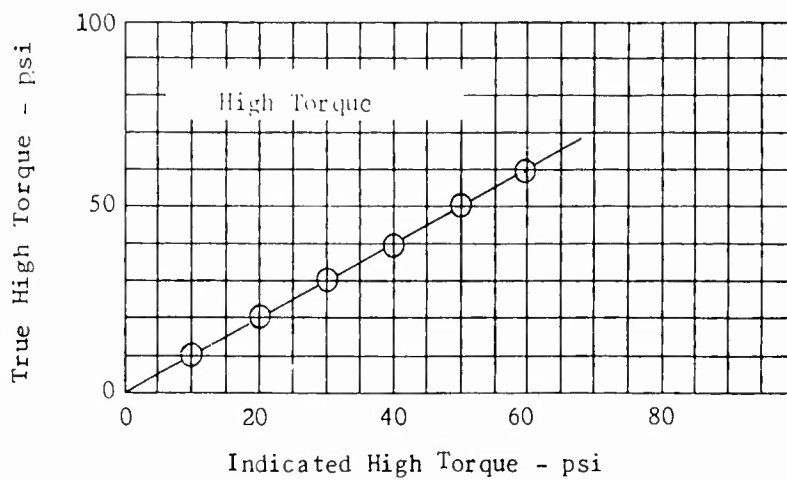


FIGURE 26b -
Engine High
Torque
Calibration
Curve

FIGURE 26 - PHOTO PANEL INSTRUMENTS
CALIBRATION CURVES.

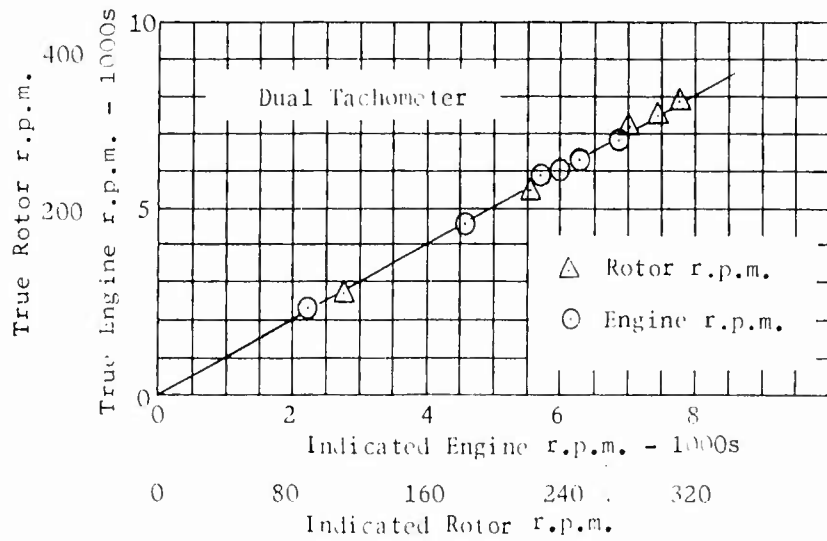


FIGURE 26c - Tachometer Calibration Curve.

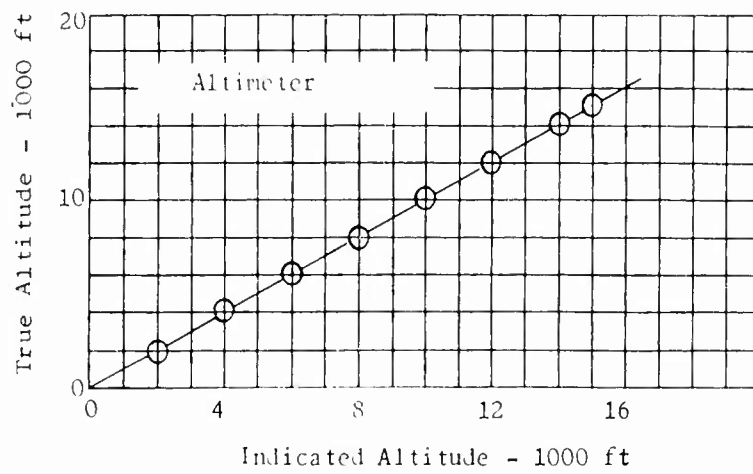


FIGURE 26d - Altimeter Calibration Curve.

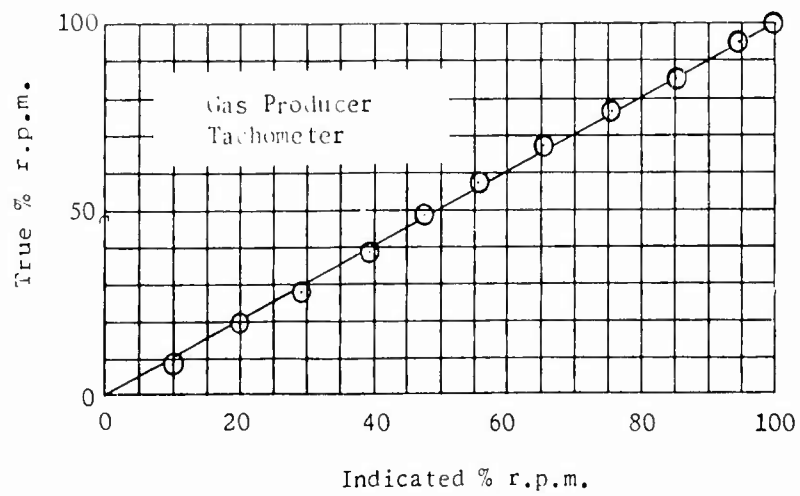


FIGURE 26e - Gas Producer Tachometer Calibration Curve

FIGURE 26 - PHOTO PANEL INSTRUMENTS CALIBRATION CURVES.

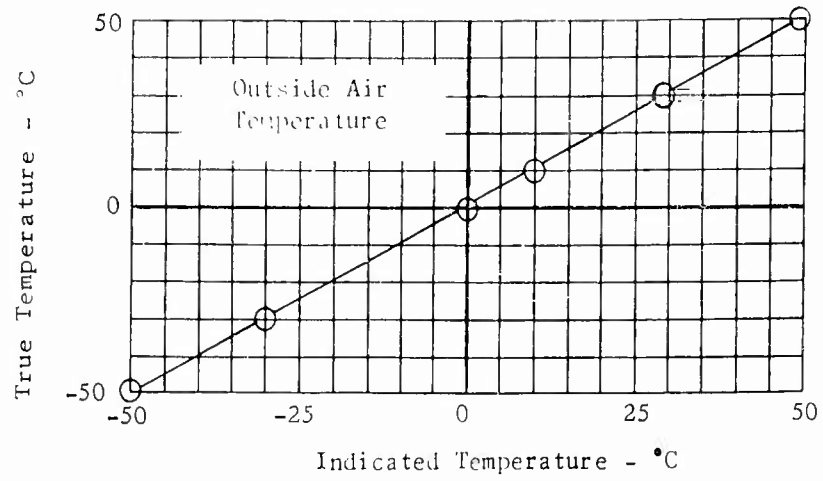


FIGURE 26f -
O.A.T.
Indicator
Calibration
Curve

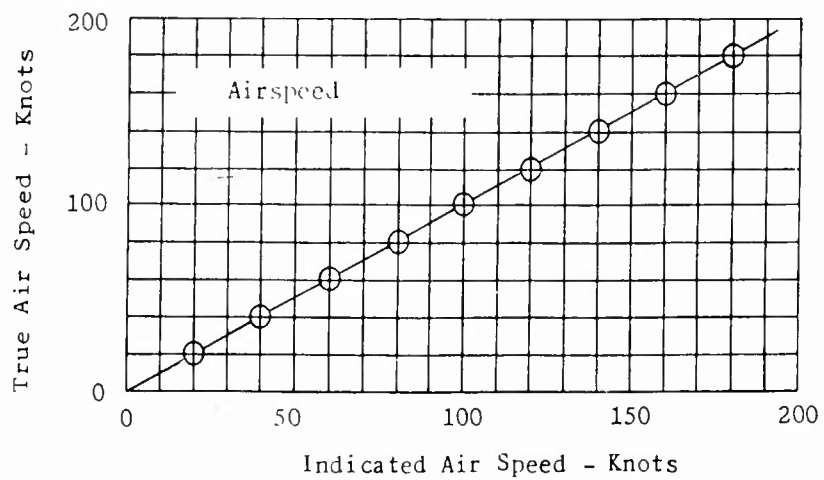


FIGURE 26g -
Airspeed
Indicator
Calibration
Curve,

FIGURE 26 - PHOTO PANEL INSTRUMENTS
CALIBRATION CURVES.

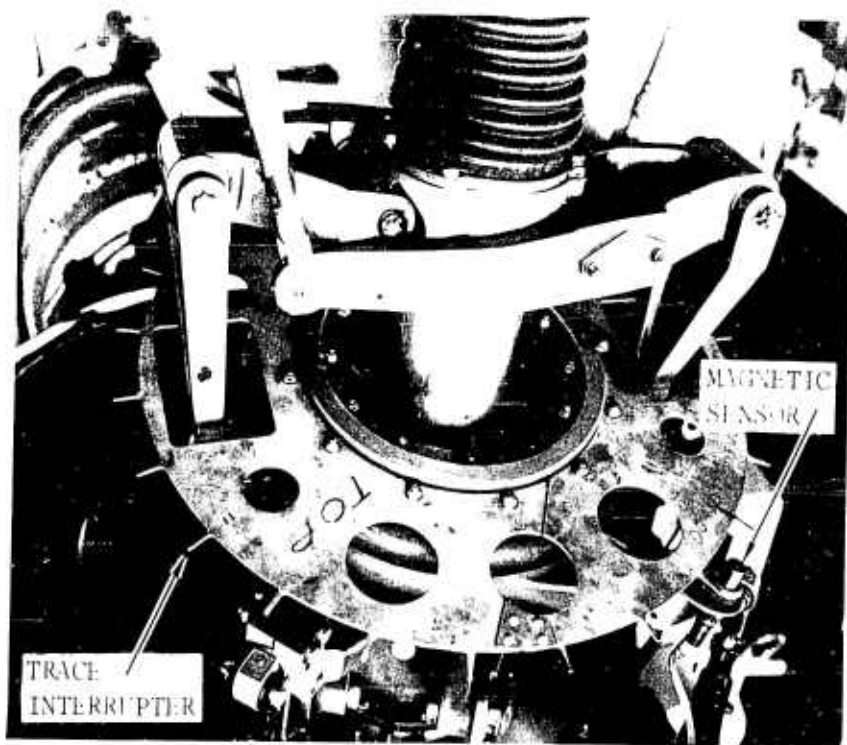
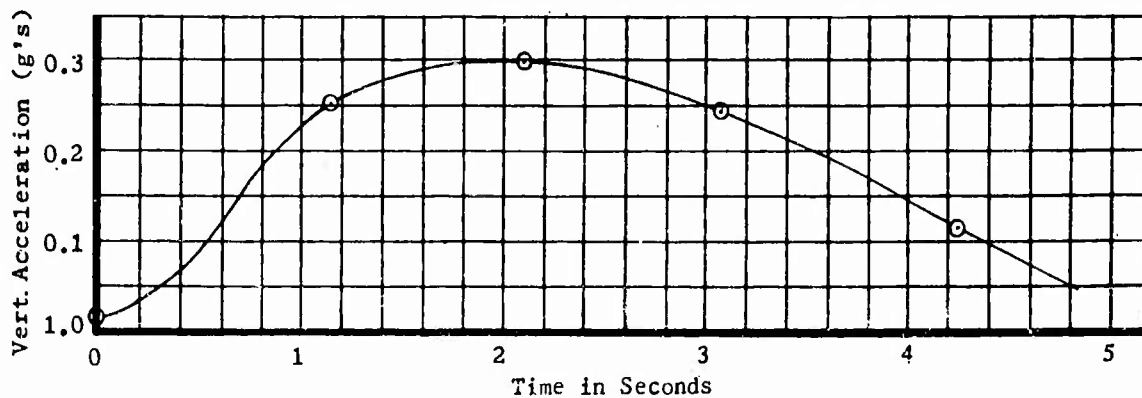
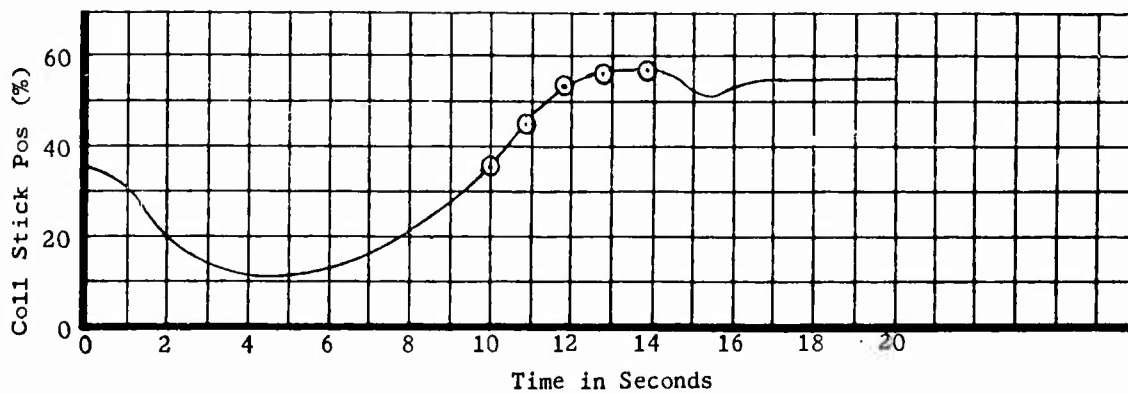


FIGURE 27 - SWASHPLATE MOUNTED AZIMUTH TRACE INTERRUPTER.



⊙ The five rotor revolutions that were reduced occurred at this point during maneuver.

FIGURE 28 - CONDITION NO. 34, SYMMETRICAL PULL-UP TIME HISTORY.



⊙ The five rotor revolutions that were reduced occurred at this point during maneuver.

FIGURE 29 - CONDITION NO. 38, APPROACH AND FLARE TIME HISTORY.

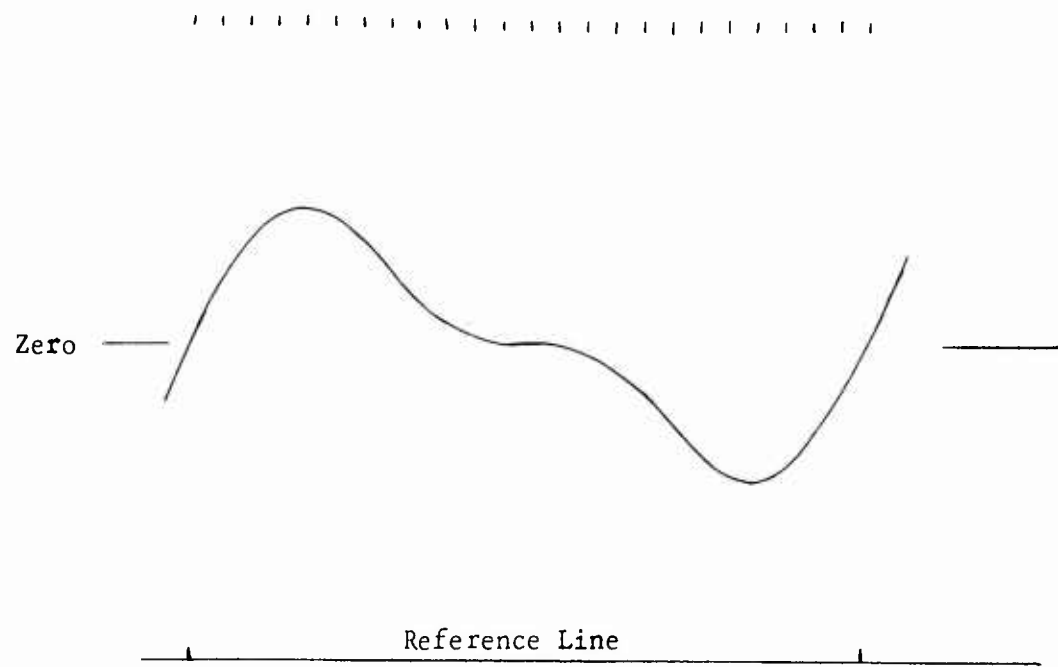


FIGURE 30 - SECOND HARMONIC CURVE, TEST CASE.

FIGURE 31, GRAPHICAL DATA

TYPE I CONDITION NO. 23

MAXIMUM POWER CLIMB, TRUE AIRSPEED = 20 KNOTS

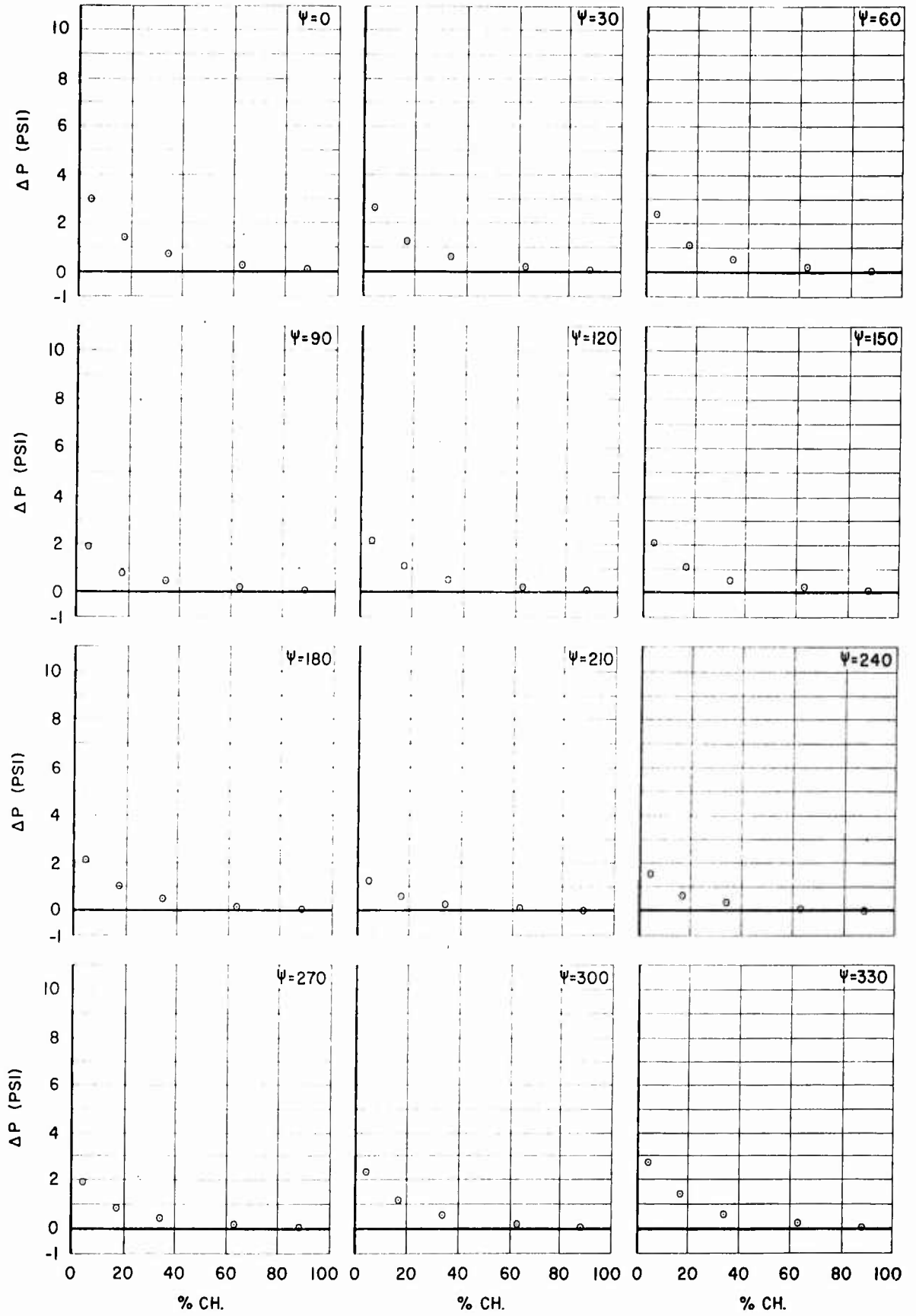


Figure 31a $-\Delta P$ vs % CHORD (40% R, COND.NO.23, MAX.PWR.CLIMB, $V_{true} = 20$ KNOTS),

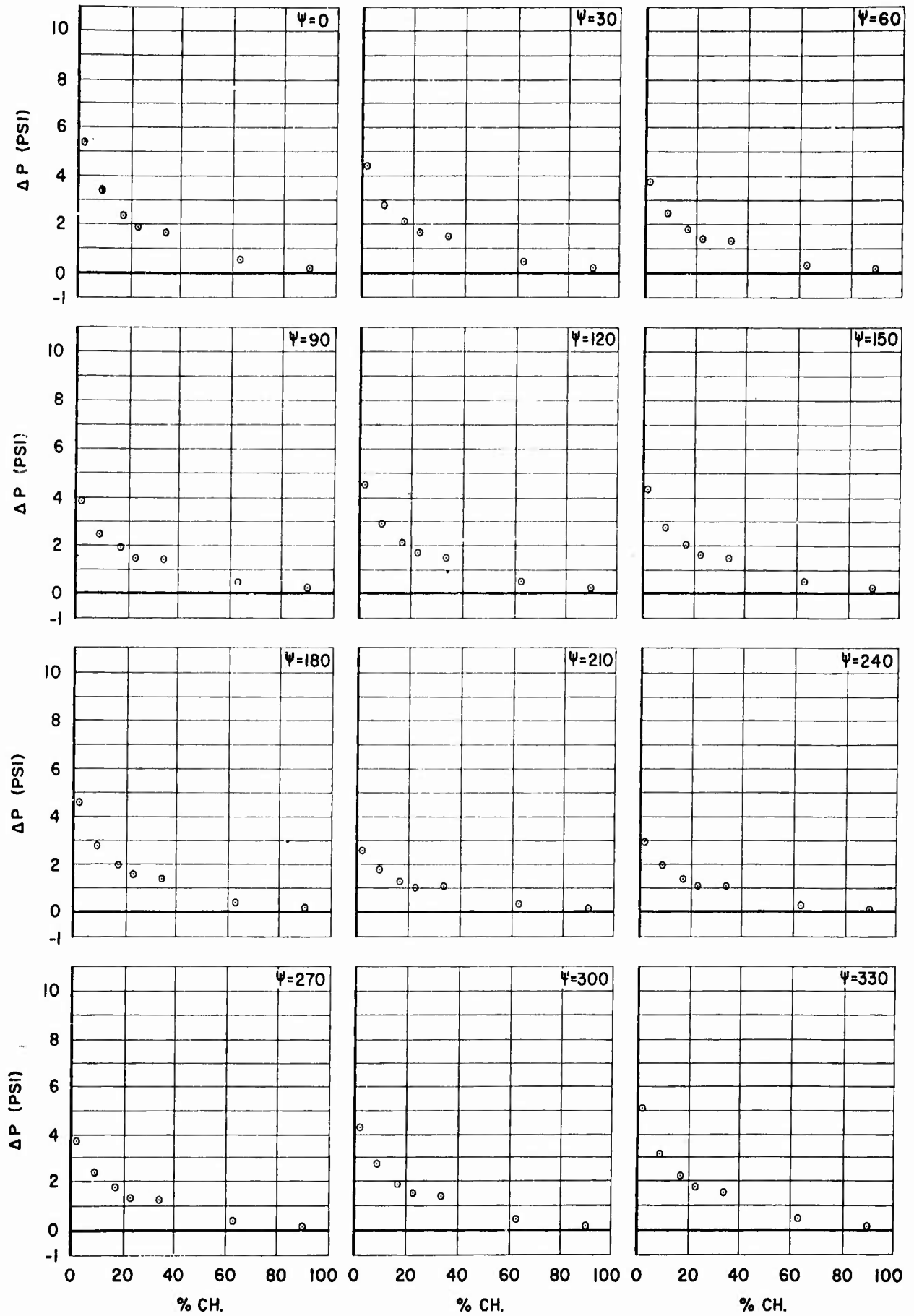


Figure 31b ΔP vs % CHORD (55% R, COND.NO.23, MAX.PWR.CLIMB, $V_{true} = 20$ KNOTS).
91

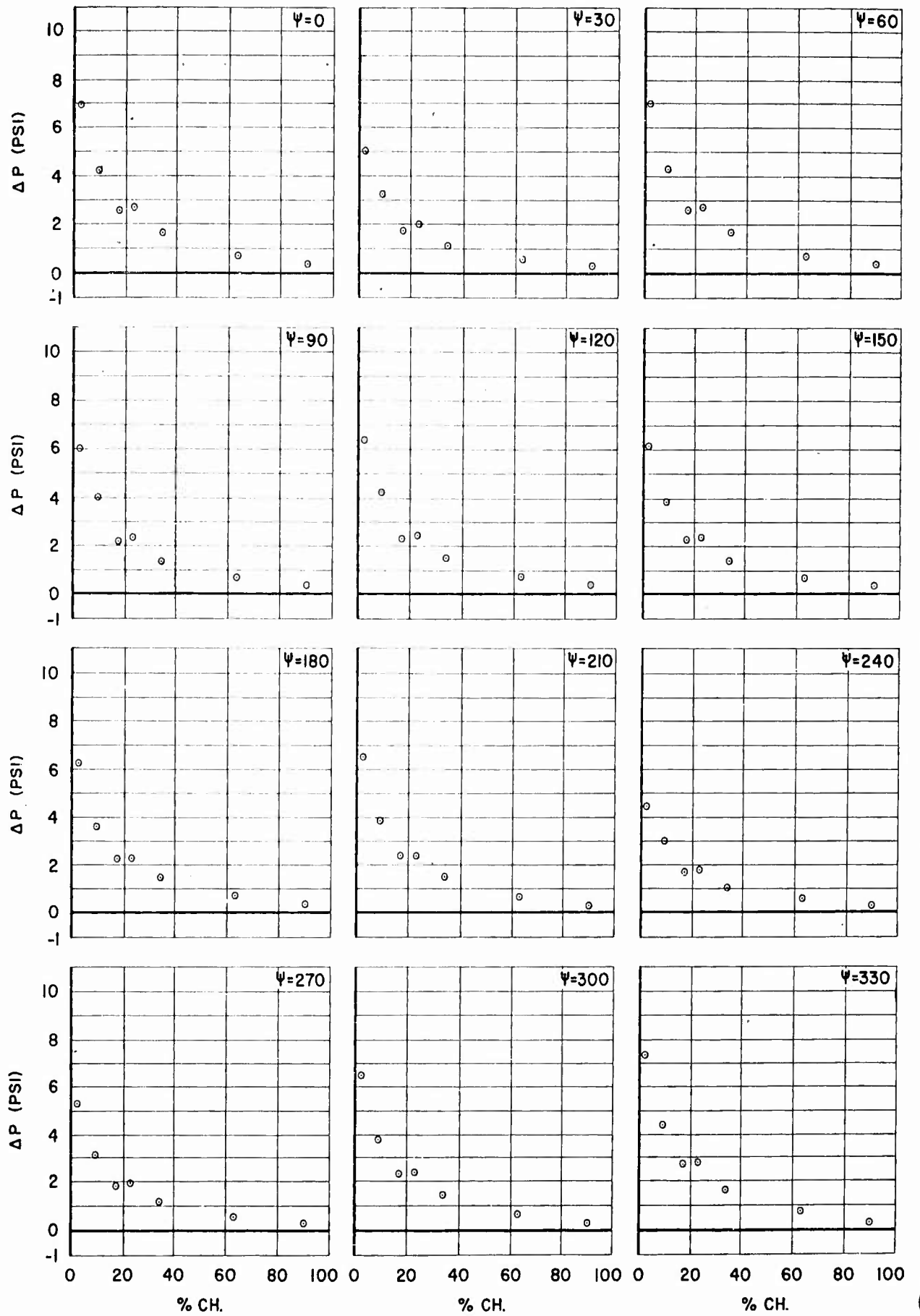


Figure 31c $-\Delta P$ vs % CHORD (75% R, COND.NO.23, MAX.PWR.CLIMB, $V_{true} = 20$ KNOTS).

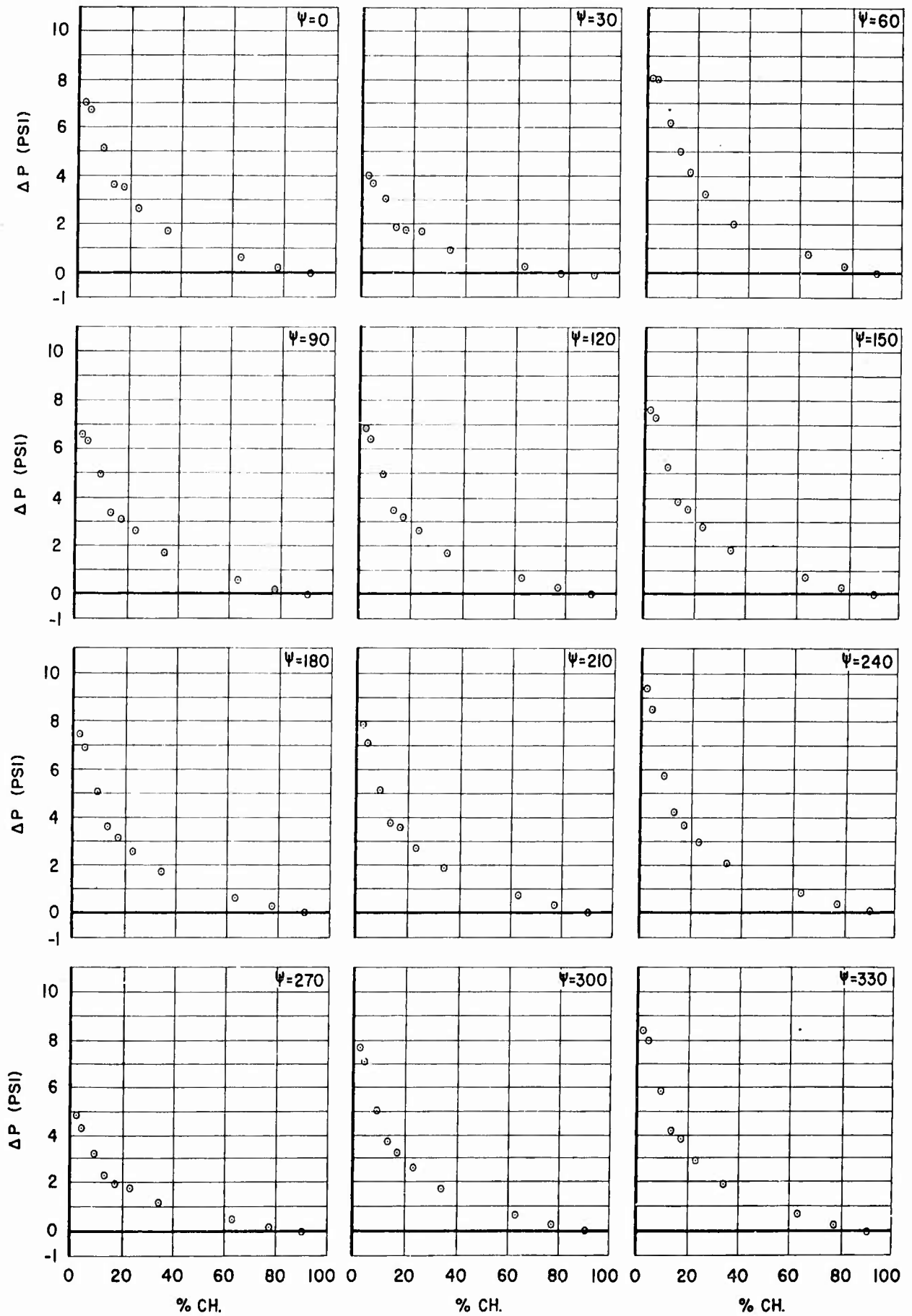


Figure 31d ΔP vs % CHORD (85% R, COND.NO.23, MAX.PWR.CLIMB, $V_{true} = 20$ KNOTS).

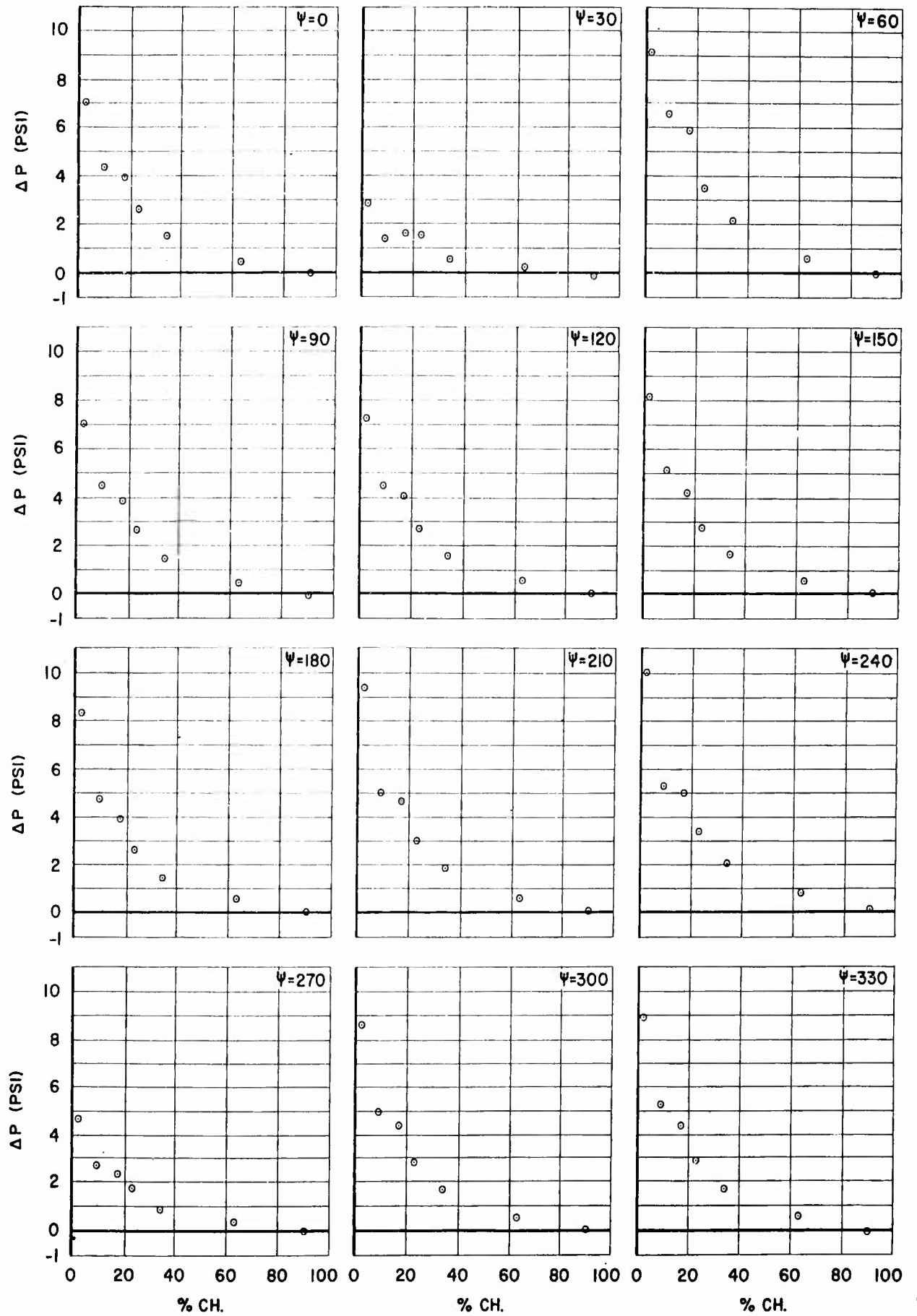


Figure 31e ΔP vs % CHORD (90% R, COND.NO.23, MAX.PWR.CLIMB, $V_{true} = 20$ KNOTS).

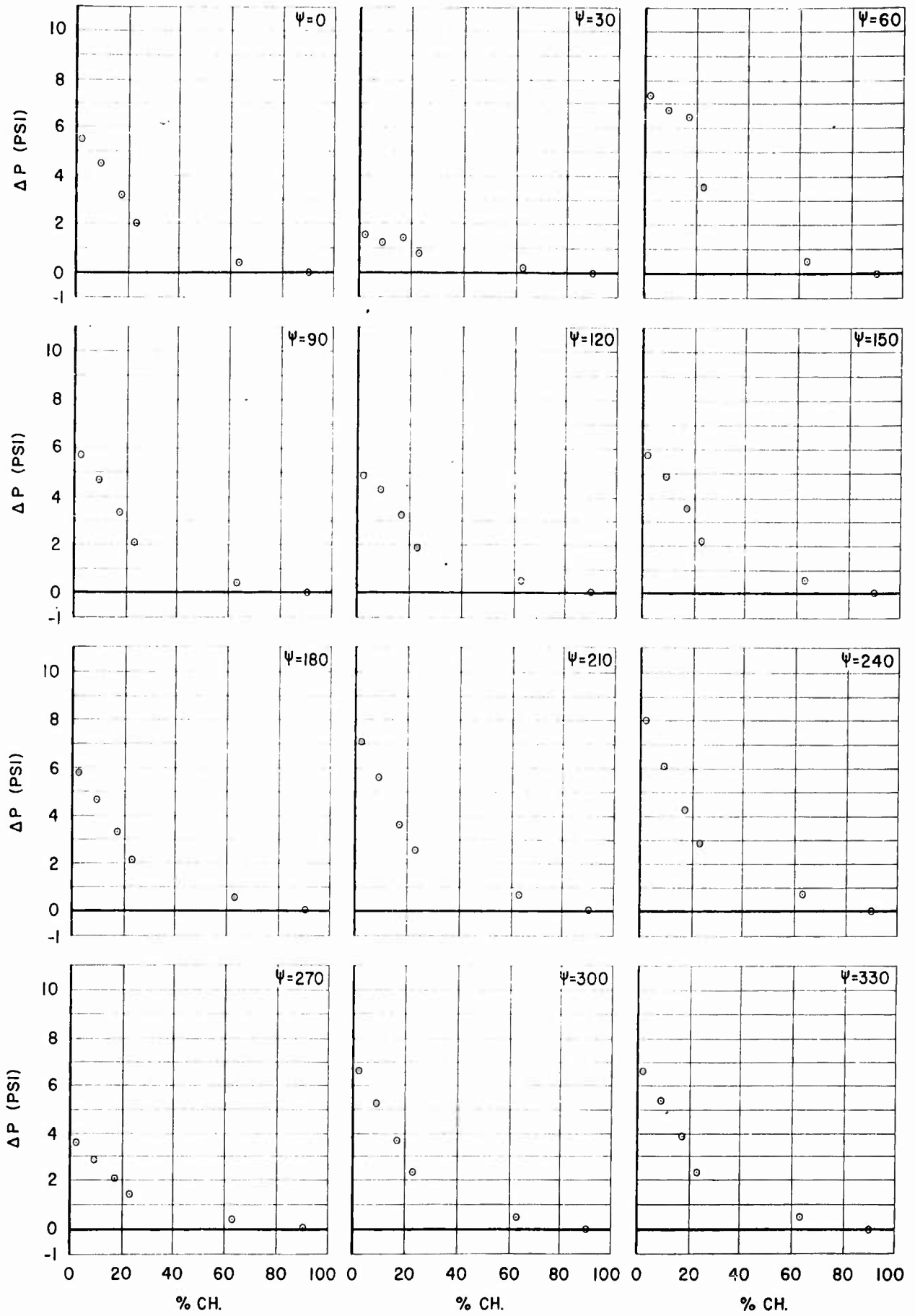


Figure 31f $-\Delta P$ vs % CHORD (95% R, COND.NO.23, MAX.PWR.CLIMB, $V_{true} = 20$ Knots).

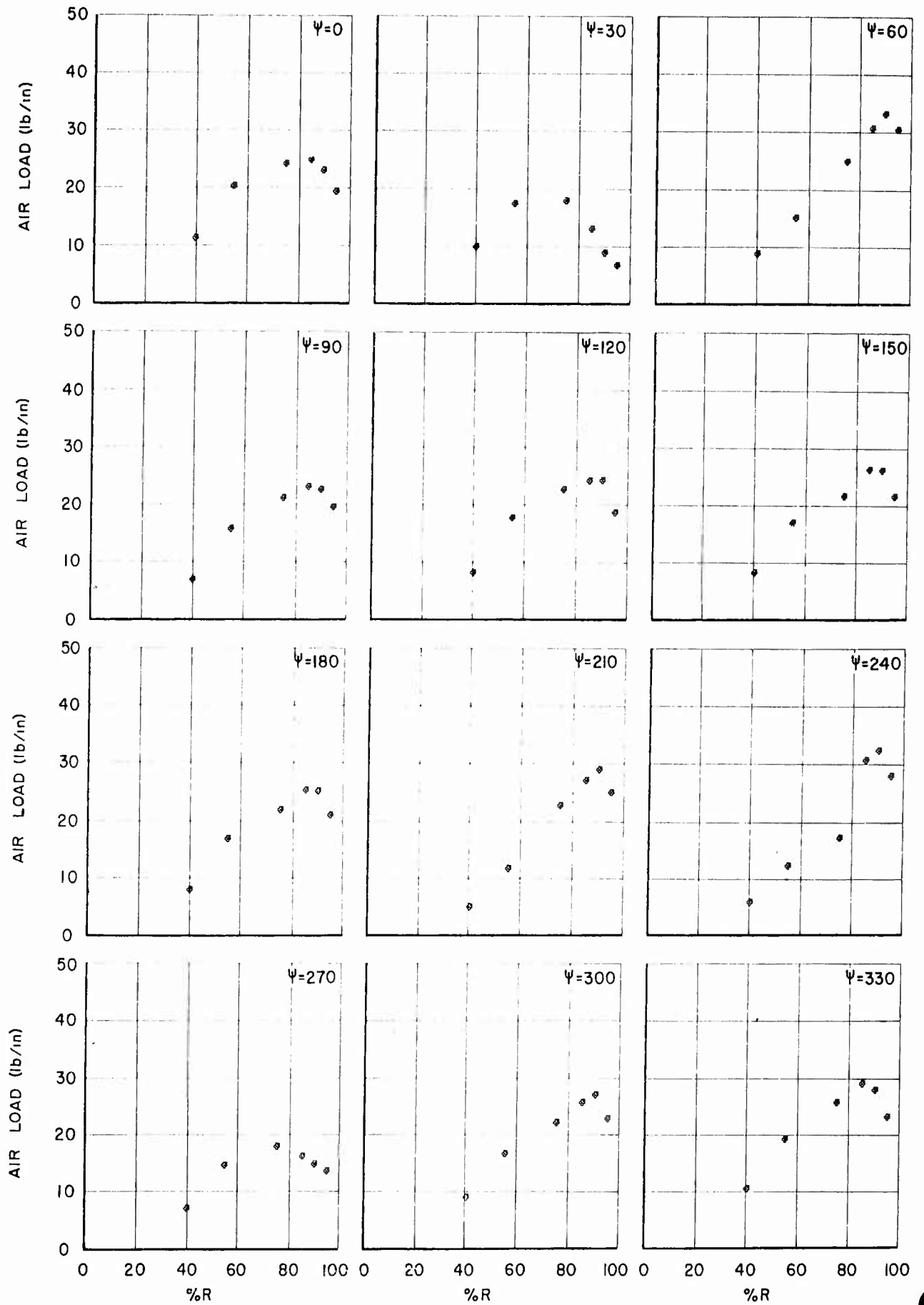


Figure 31g - AIR LOAD vs % RADIUS (COND.NO.23,MAX.PWR.CLIMB, $V_{true} = 20$ KNOTS).

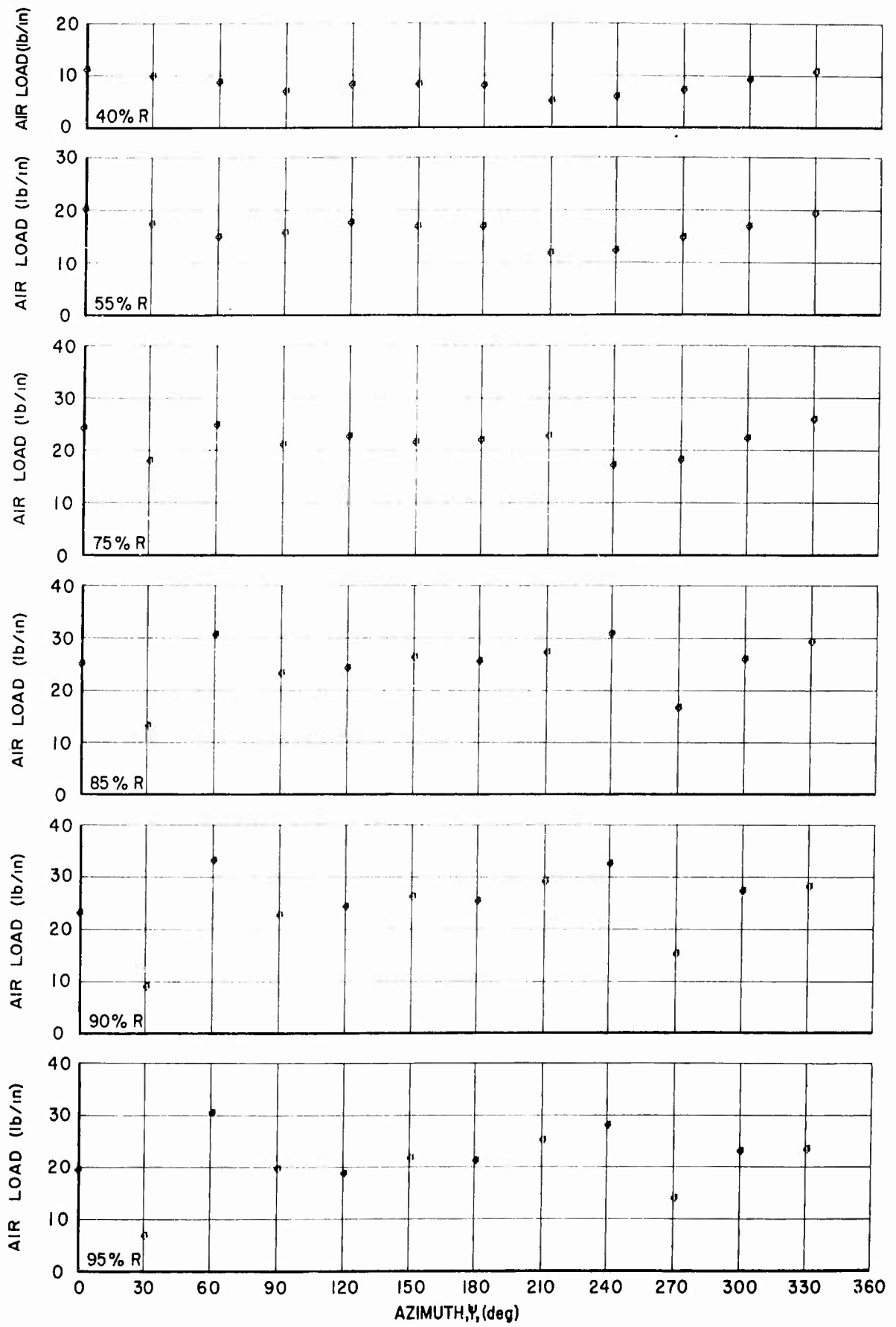


Figure 31h - AIR LOAD vs AZIMUTH (COND.NO.23,MAX.PWR.CLIMB, $V_{true} = 20$ KNOTS).

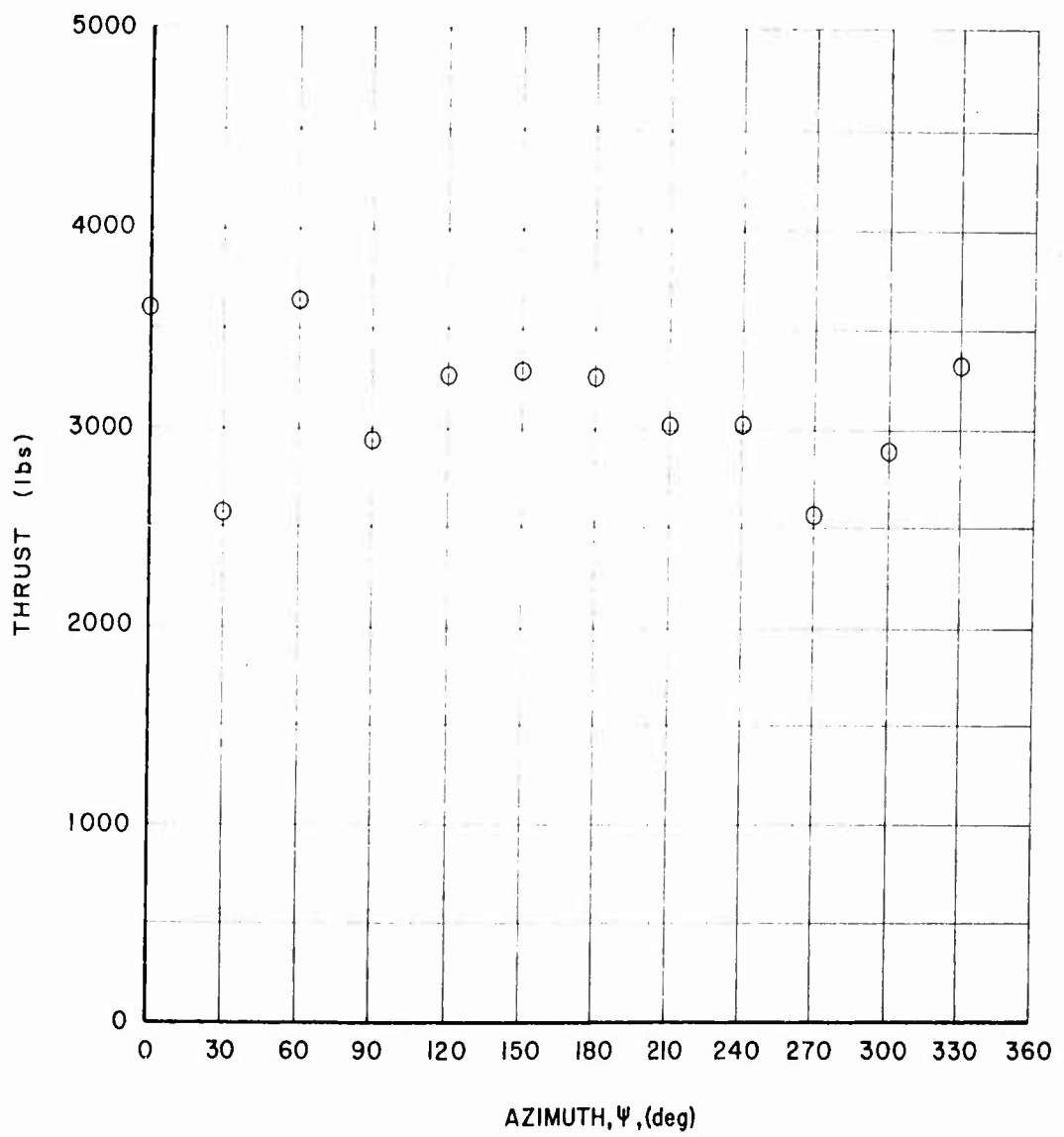


Figure 31i TOTAL THRUST/BLADE vs AZIMUTH
 (COND.NO.23,MAX.PWR.CLIMB,Vtrue=20KNOTS).

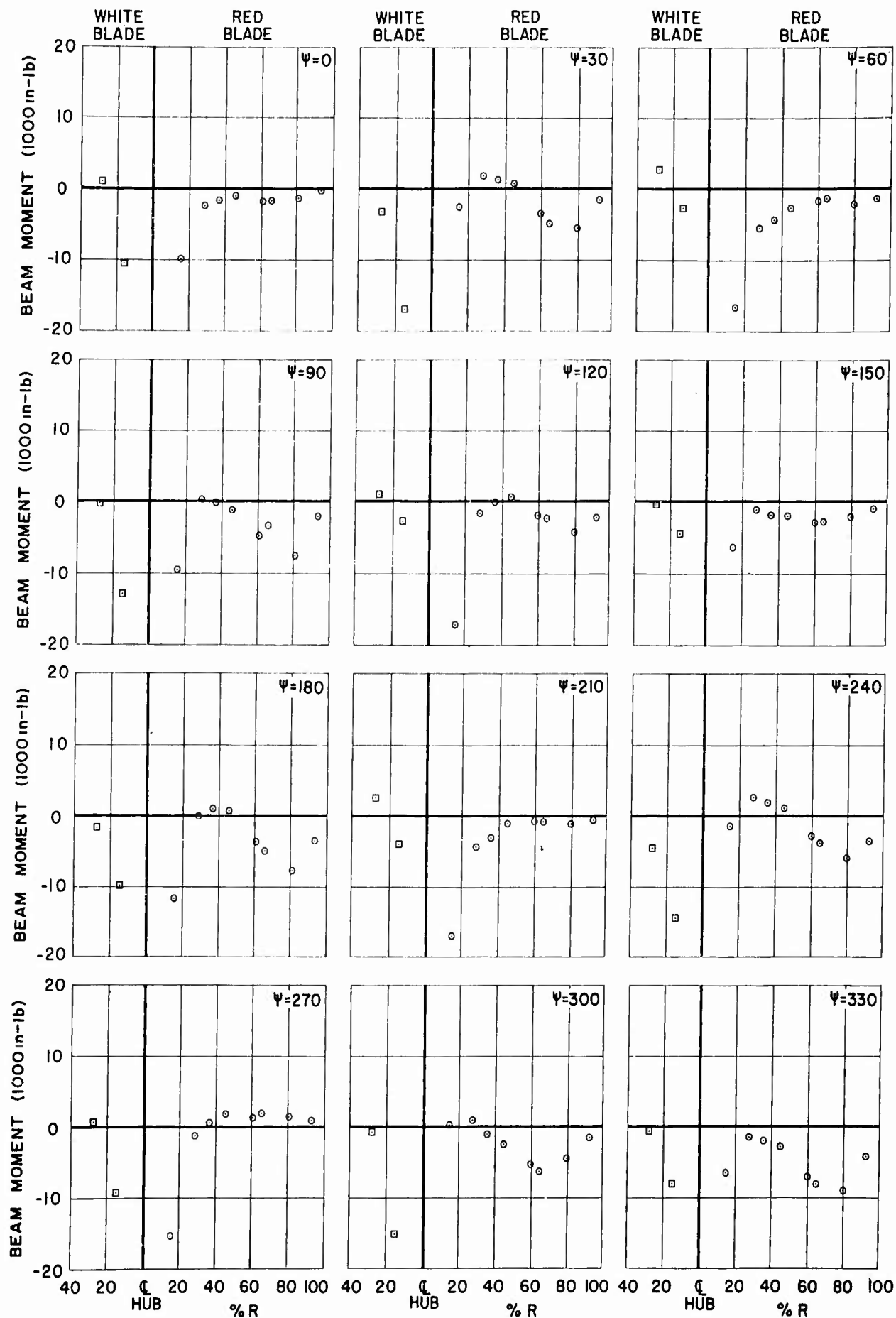


Figure 31j - BEAM MOMENT vs % RADIUS (COND.NO.23,MAX.PWR.CLIMB,Vtrue = 20 KNOTS).

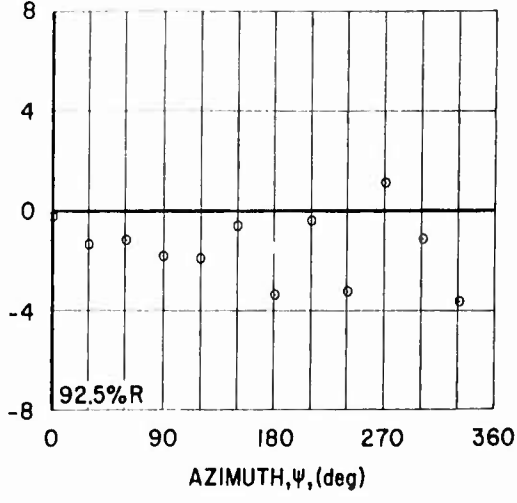
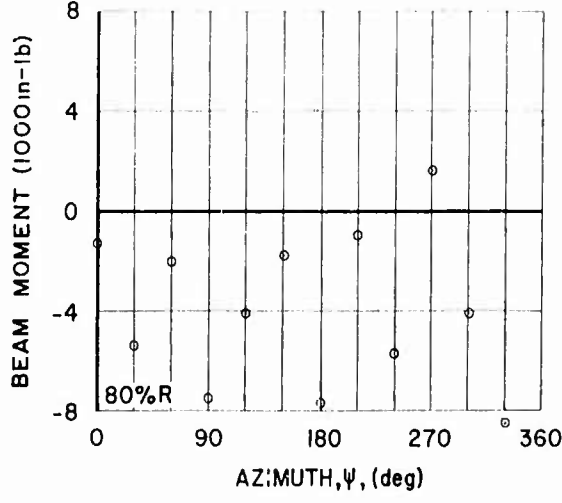
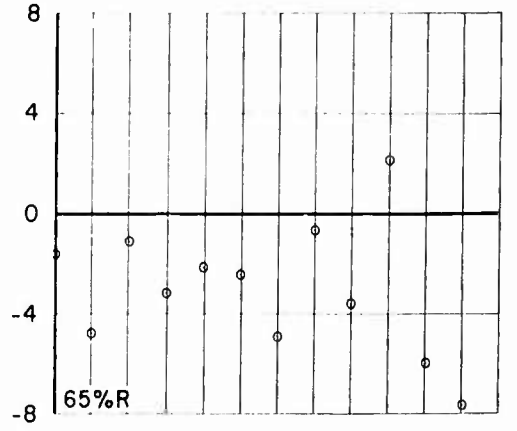
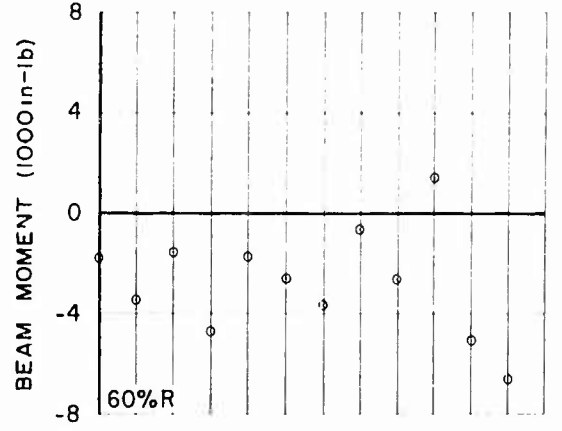
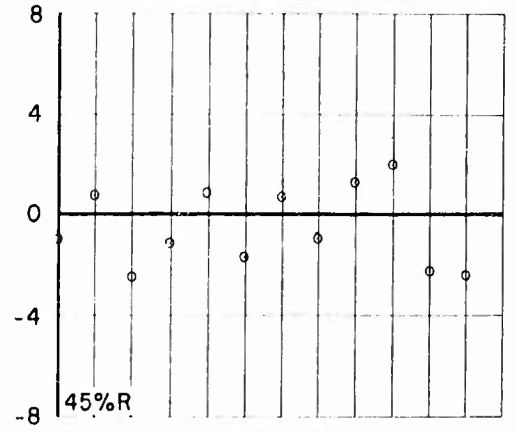
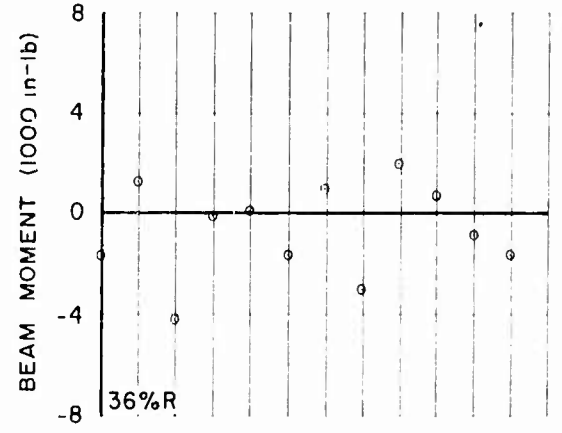
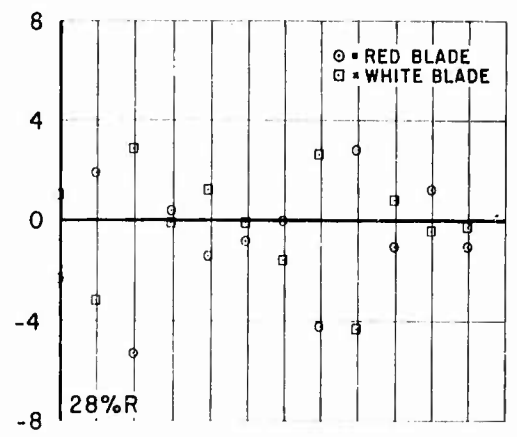
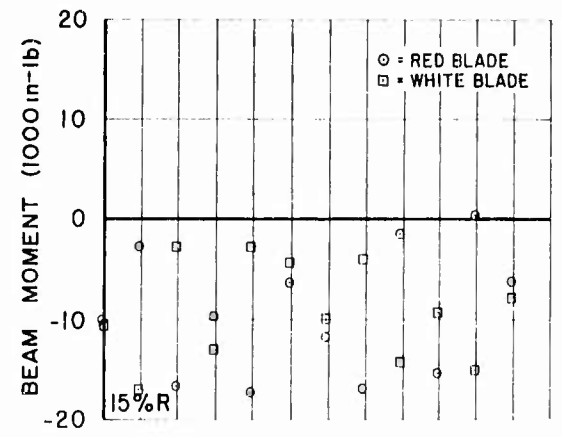


Figure 31k - BEAM MOMENT vs AZIMUTH (COND.NO.23,MAX.PWR.CLIMB,Vtrue=20 KNOTS).

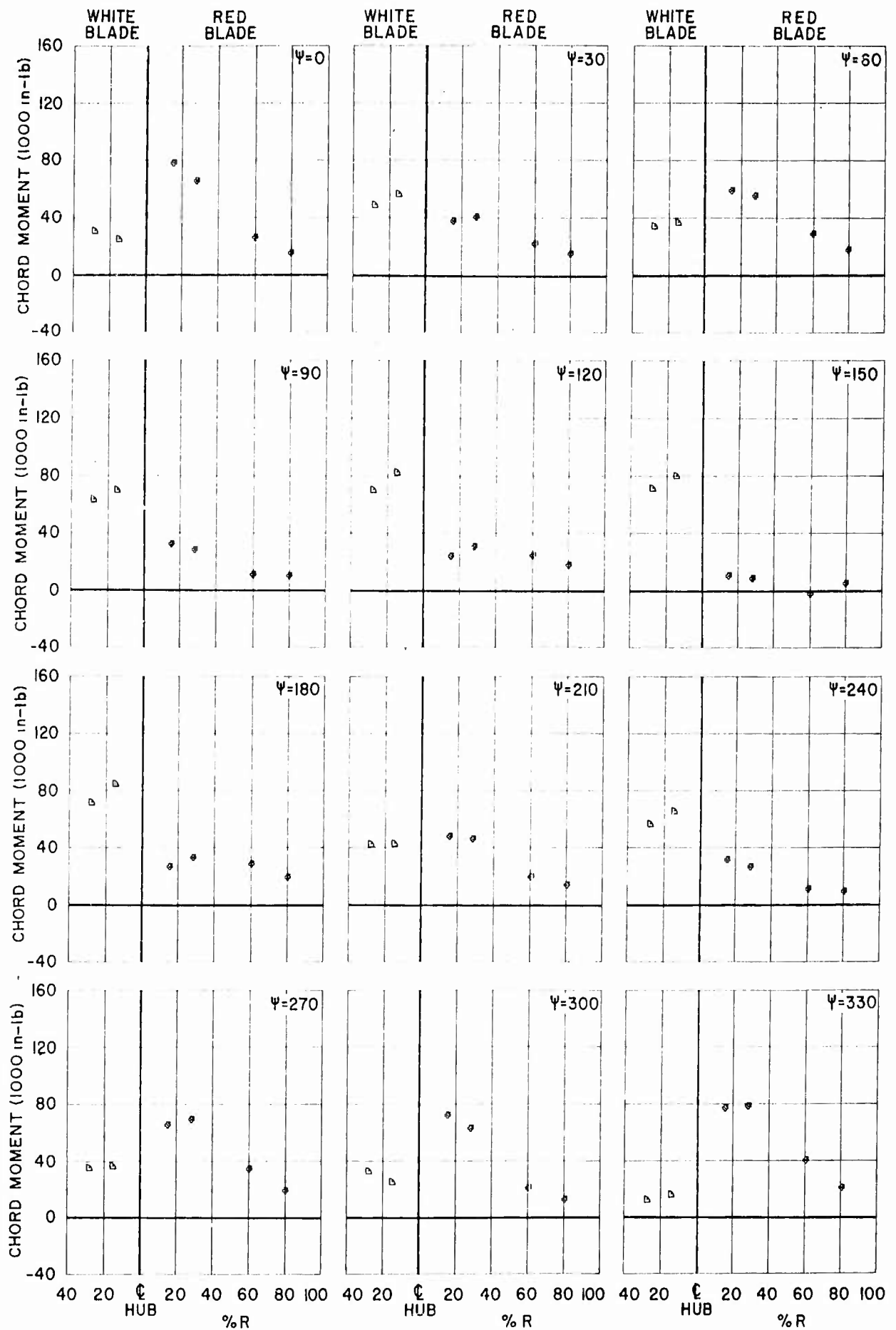


Figure 31m - CHORD MOMENT vs % RADIUS (COND.NO.23,MAX.PWR.CLIMB,Vtrue=20 KNOTS).

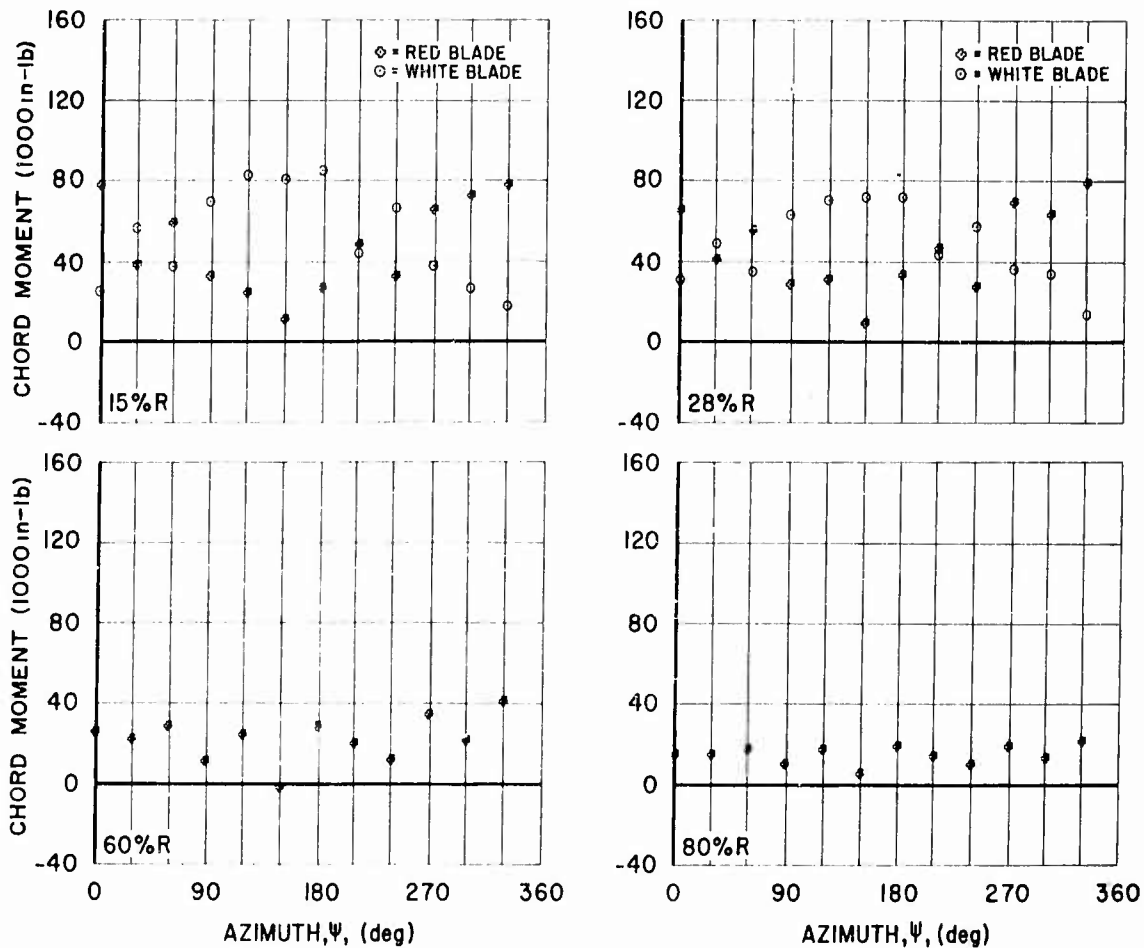


Figure 31n - CHORD MOMENT vs AZIMUTH (COND.NO.23, MAX.PWR.CLIMB, $V_{true}=20$ KNOTS).

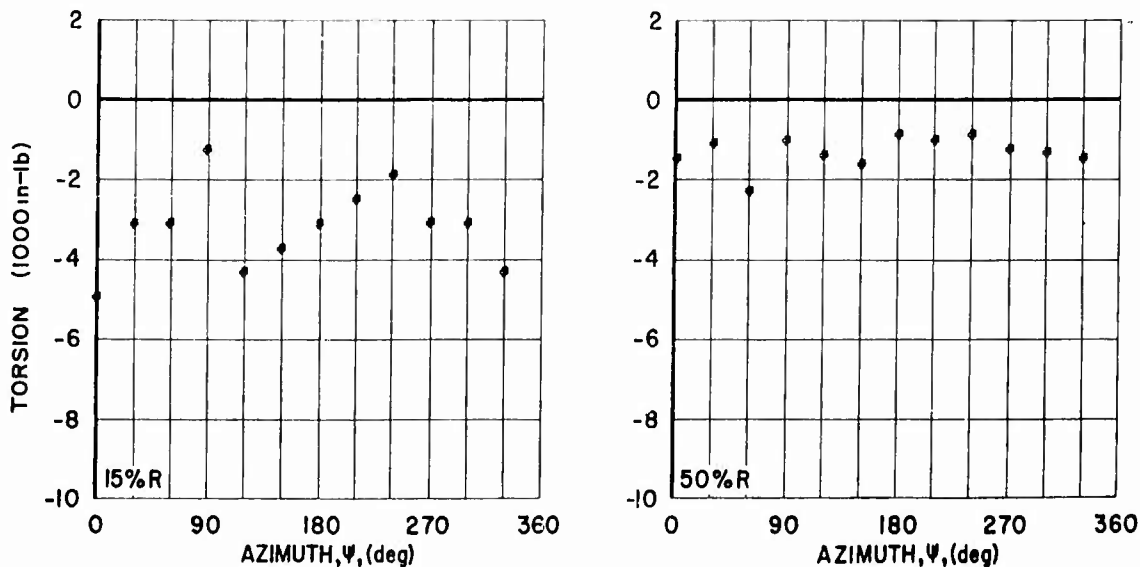


Figure 31o - TORSION vs AZIMUTH (COND.NO.23, MAX.PWR.CLIMB, $V_{true}=20$ KNOTS).

FIGURE 32, GRAPHICAL DATA

TYPE I CONDITION NO. 27

LEVEL FLIGHT, TRUE AIRSPEED = 34 KNOTS

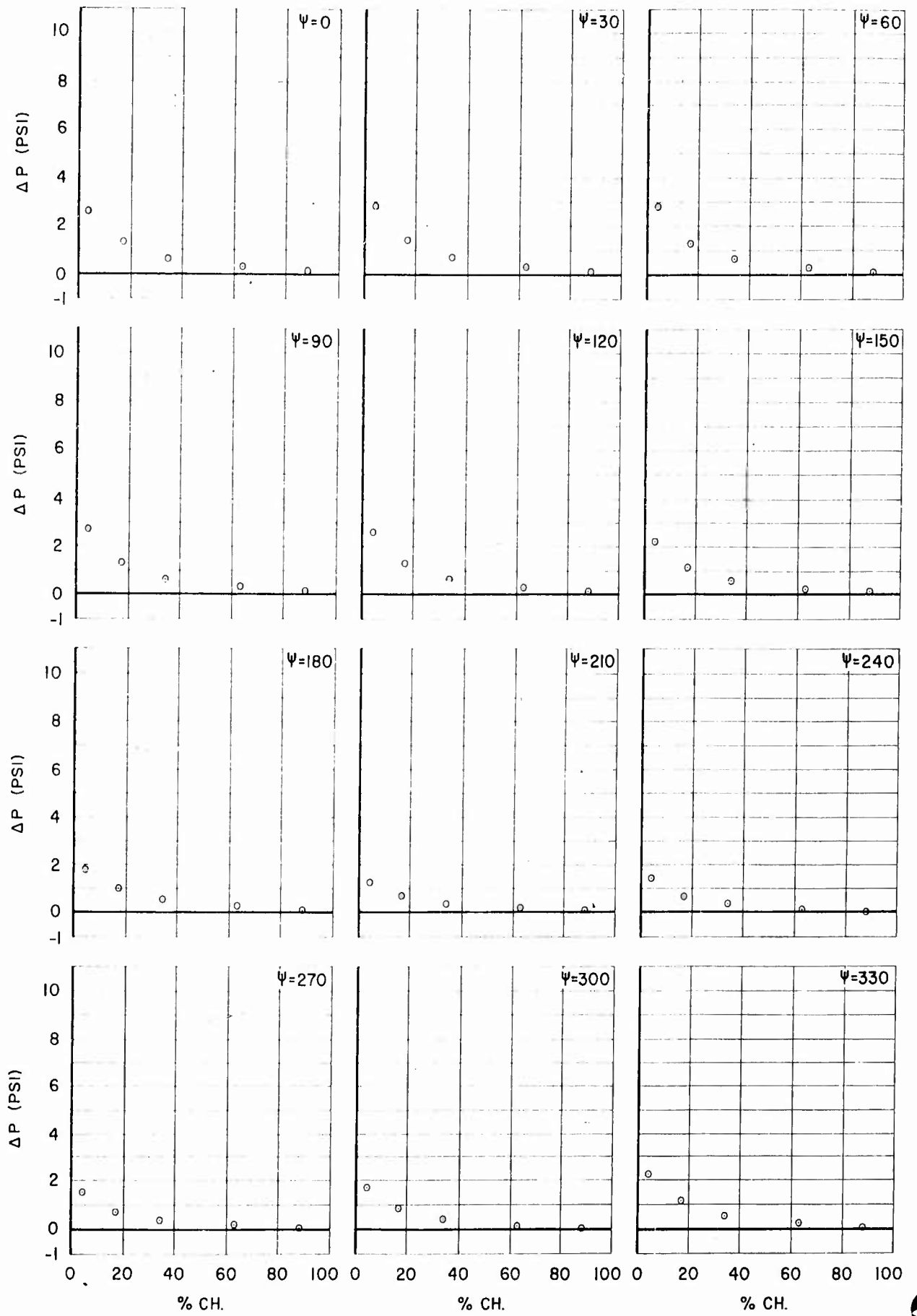


Figure 32a ΔP vs % CHORD (40% R, COND. NO. 27, LEVEL FLIGHT, $V_{true}=34$ KNOTS).

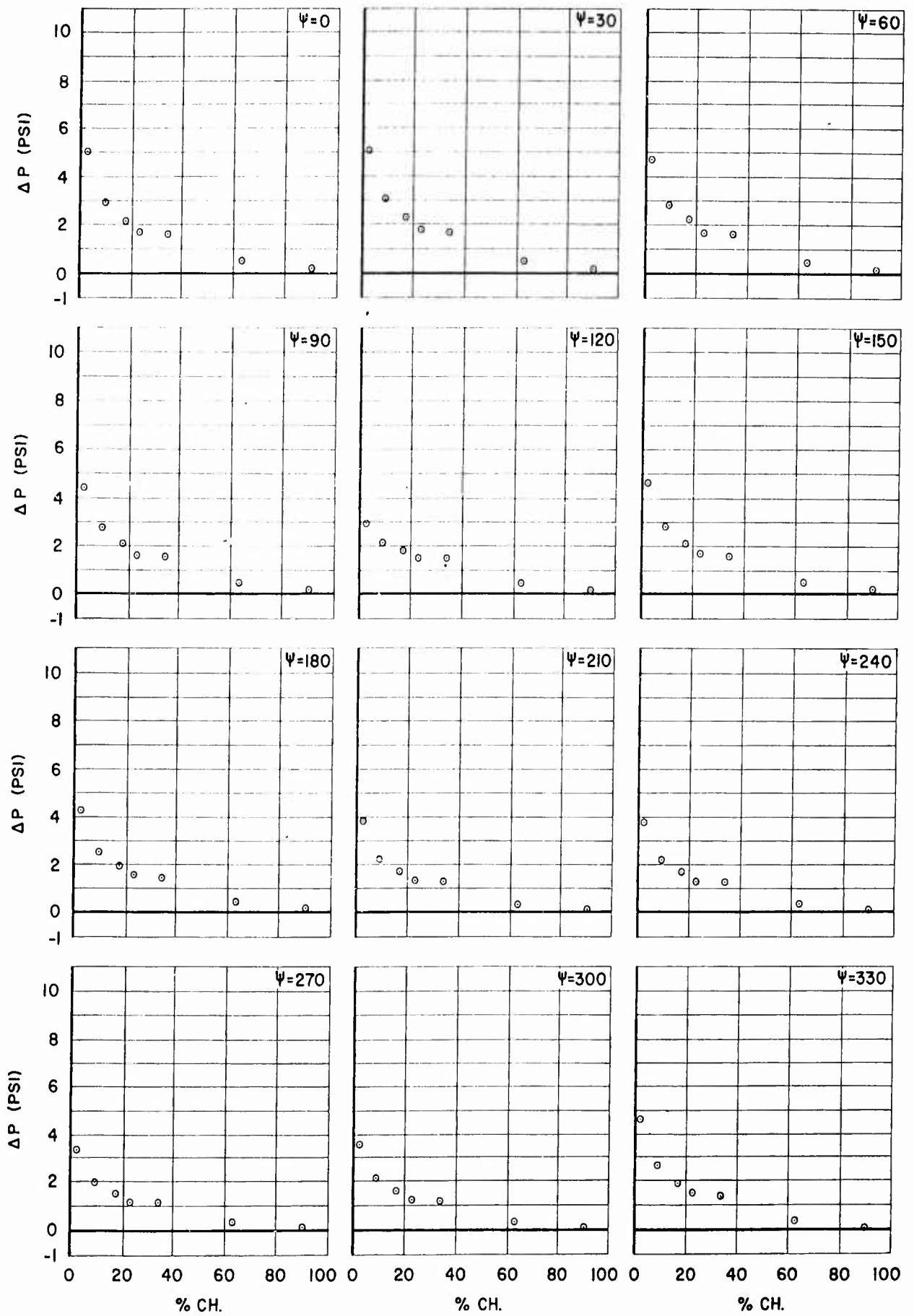


Figure 32b $-\Delta P$ vs % CHORD (55% R, COND.NO.27, LEVEL FLIGHT, $V_{true}=34$ KNOTS).

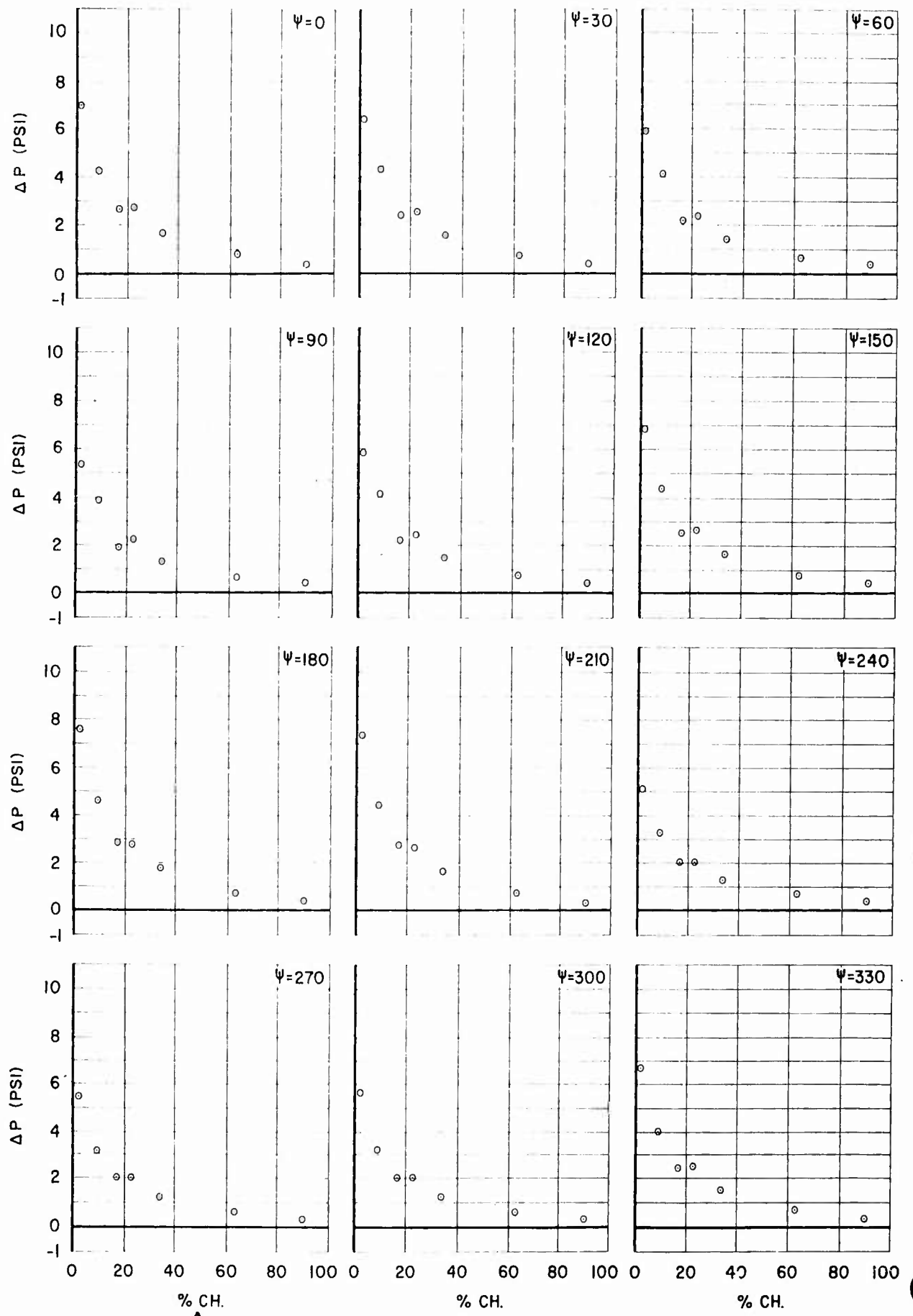


Figure 32c $-\Delta P$ vs % CHORD (75% R, COND.NO. 27, LEVEL FLIGHT, $V_{true}=34$ KNOTS).

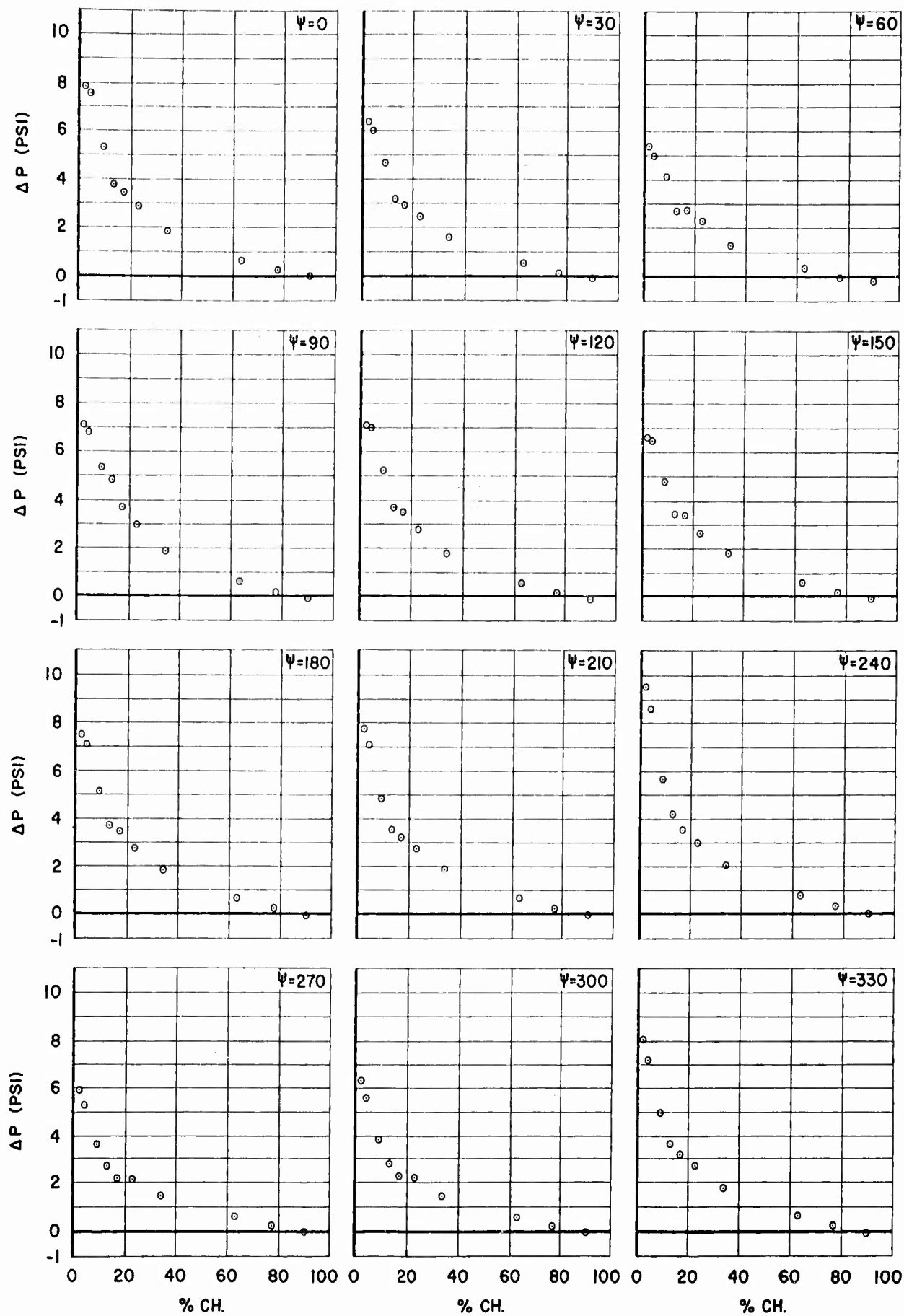


Figure 32d $-\Delta P$ vs % CHORD (85% R, COND.NO.27, LEVEL FLIGHT, $V_{true}=34$ KNOTS).

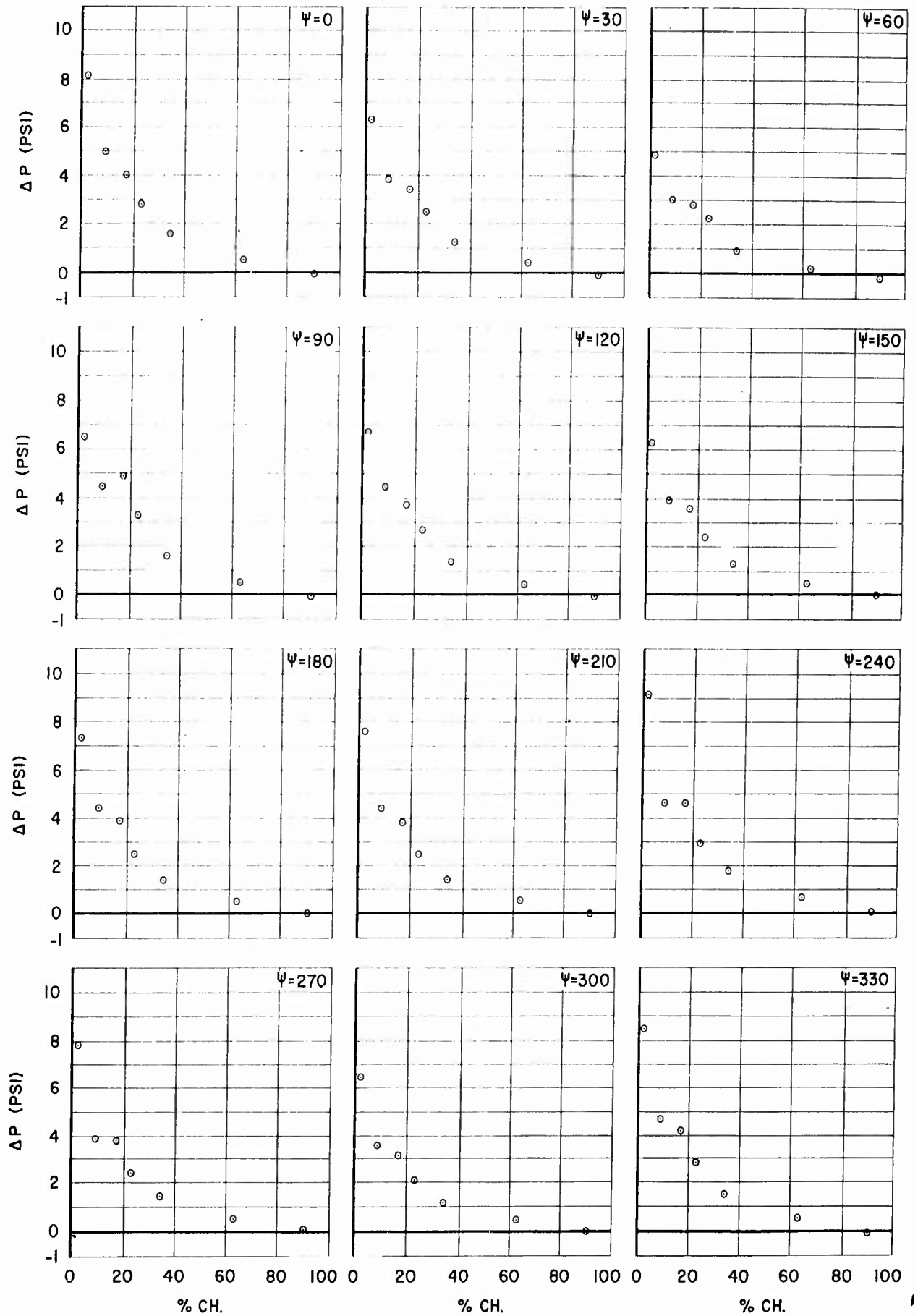


Figure 32e ΔP vs % CHORD (90% R, COND.NO.27, LEVEL FLIGHT, $V_{true}=34$ KNOTS).

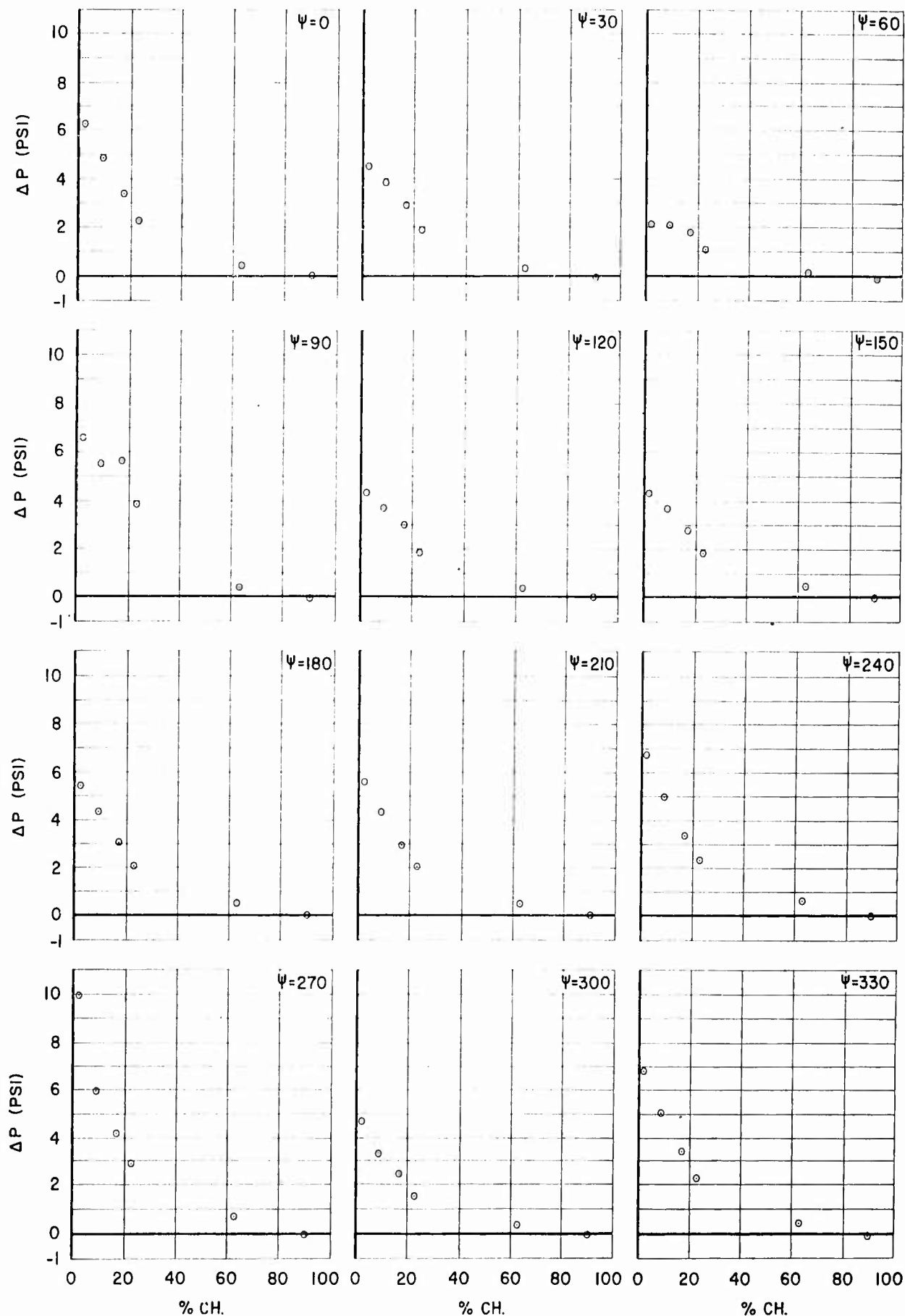


Figure 32f $-\Delta P$ vs % CHORD (95% R, COND.NO.27, LEVEL FLIGHT, $V_{true}=34$ KNOTS).

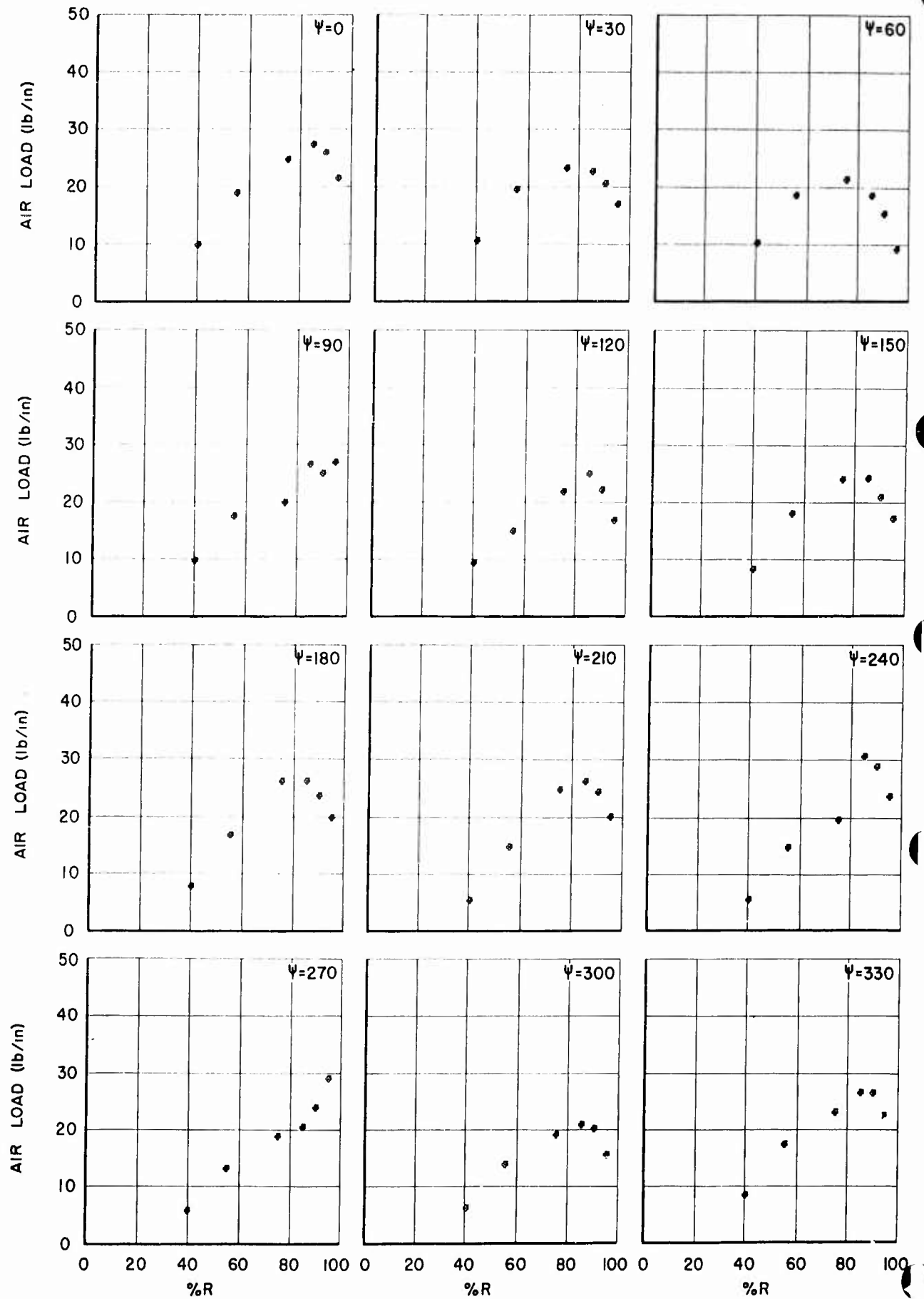


Figure 32g - AIR LOAD vs % RADIUS (COND.NO.27, LEVEL FLIGHT, $V_{true}=34$ KNOTS).

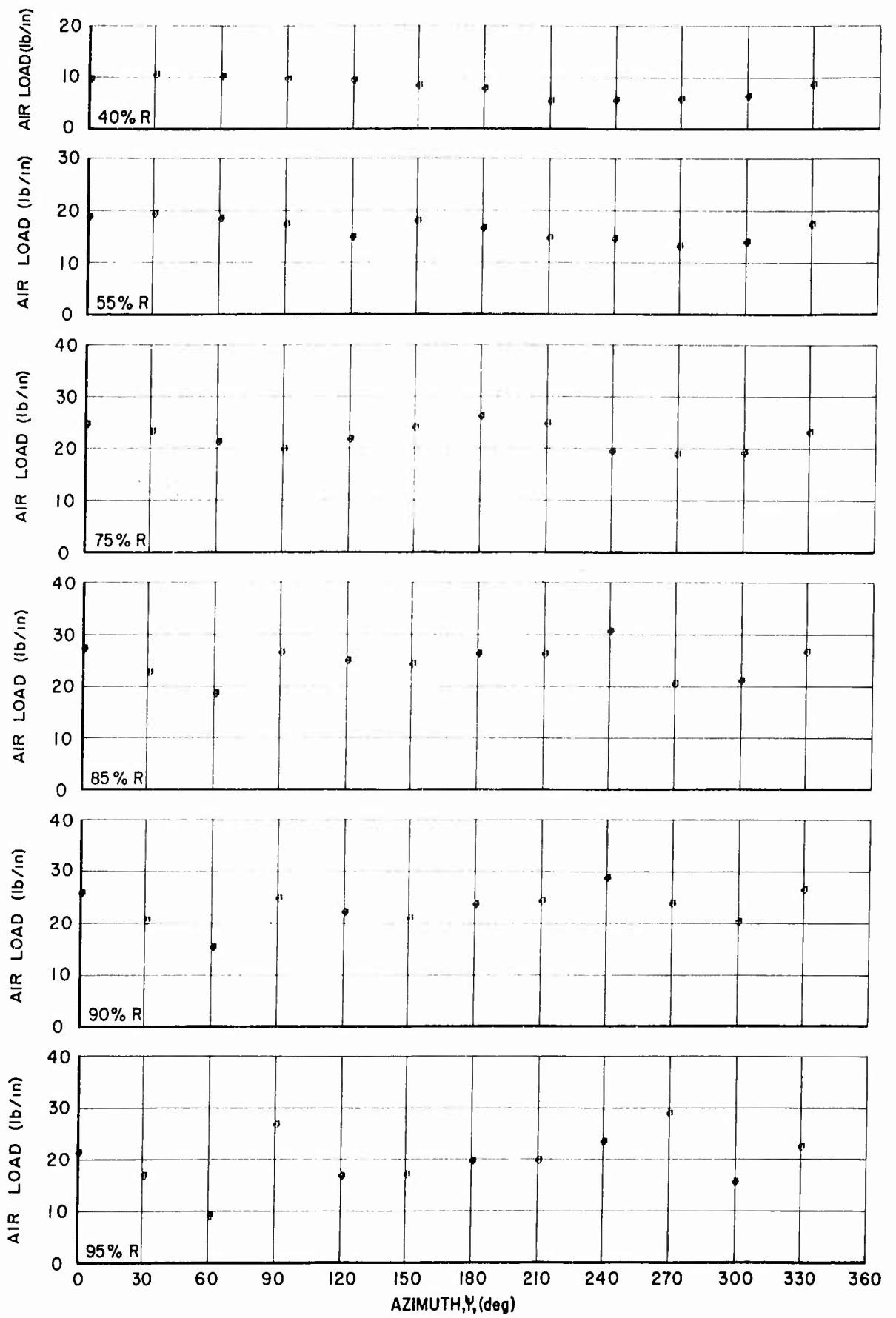


Figure 32h - AIR LOAD vs AZIMUTH (COND.NO.27, LEVEL FLIGHT, $V_{true}=34$ KNOTS).

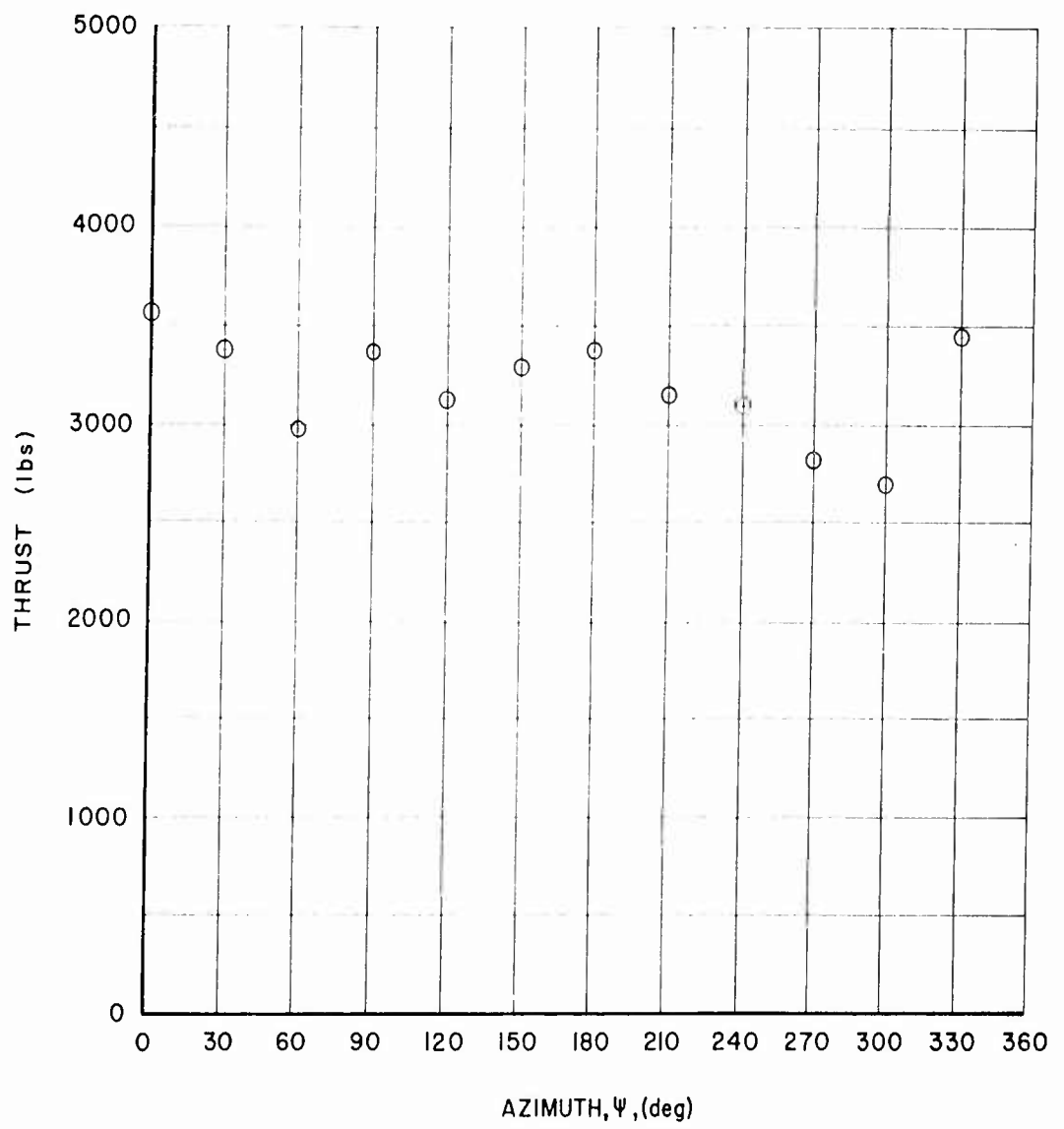


Figure 32i TOTAL THRUST/BLADE vs AZIMUTH
(COND.NO.27, LEVEL FLIGHT, $V_{true}=34$ KNOTS).

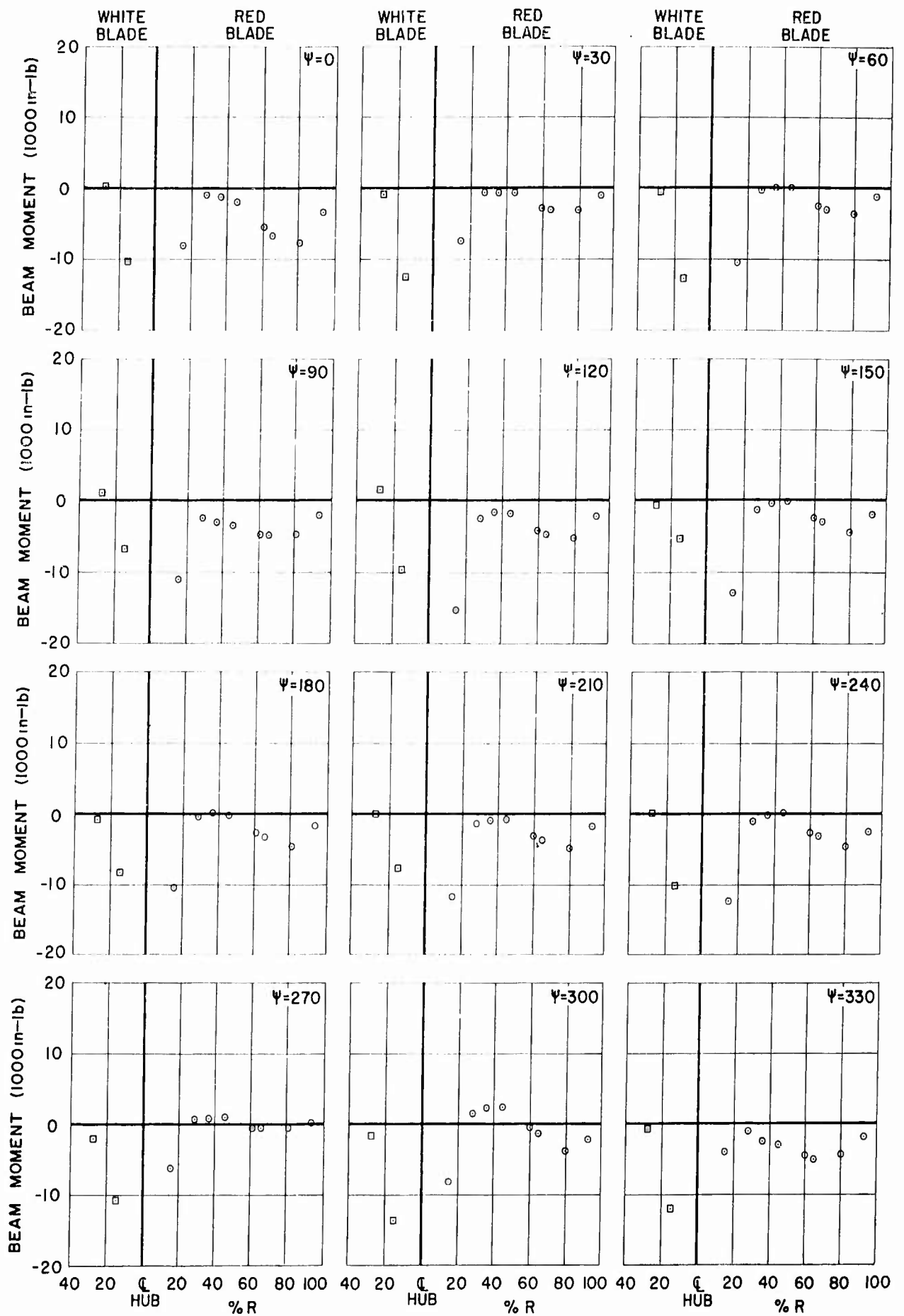


Figure 32j. - BEAM MOMENT vs % RADIUS (COND.NO.27, LEVEL FLIGHT, $V_{true}=34$ KNOTS).

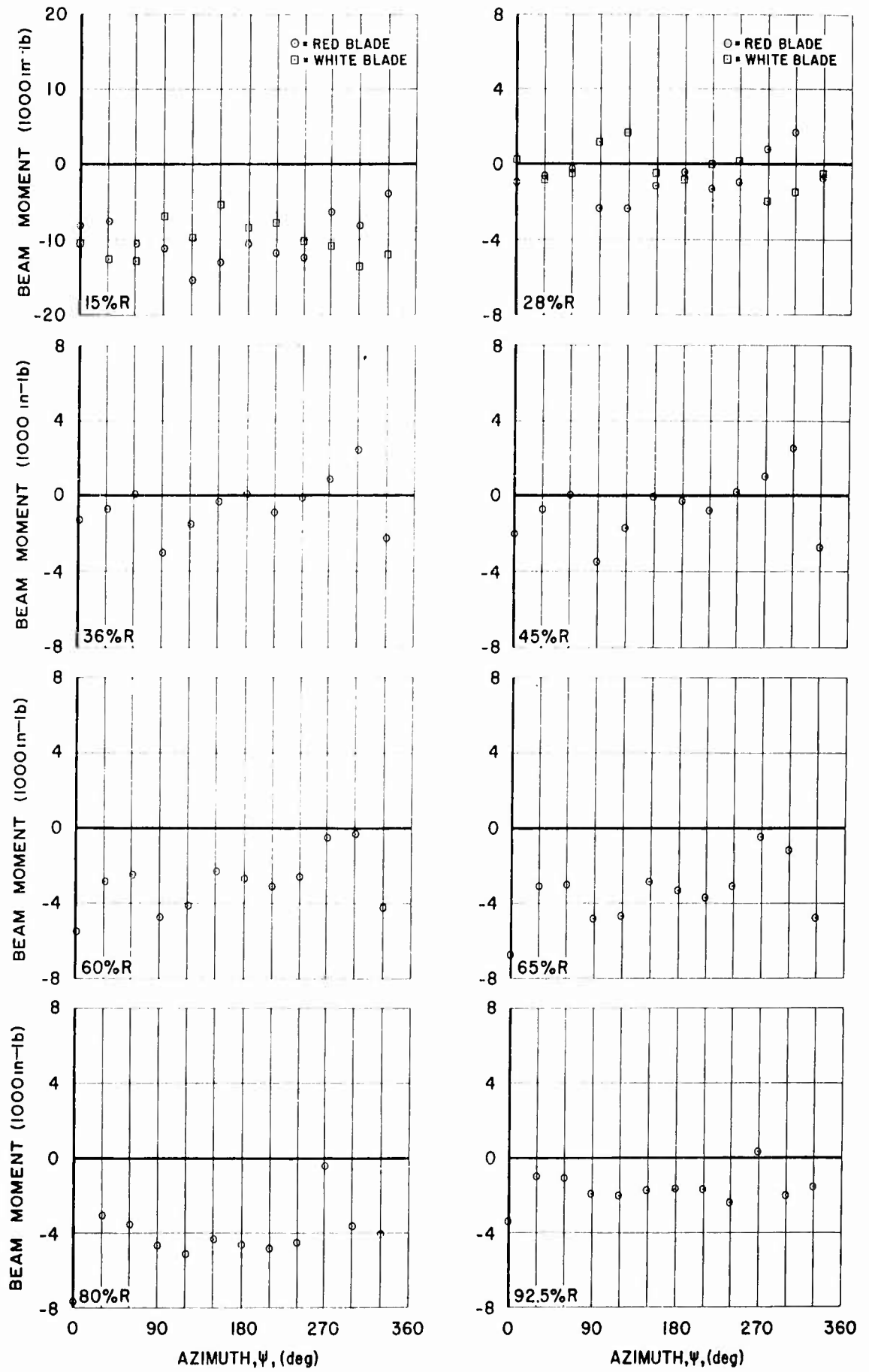


Figure. 32k - BEAM MOMENT vs AZIMUTH (COND.NO.27, LEVEL FLIGHT, $V_{true}=34$ KNOTS).

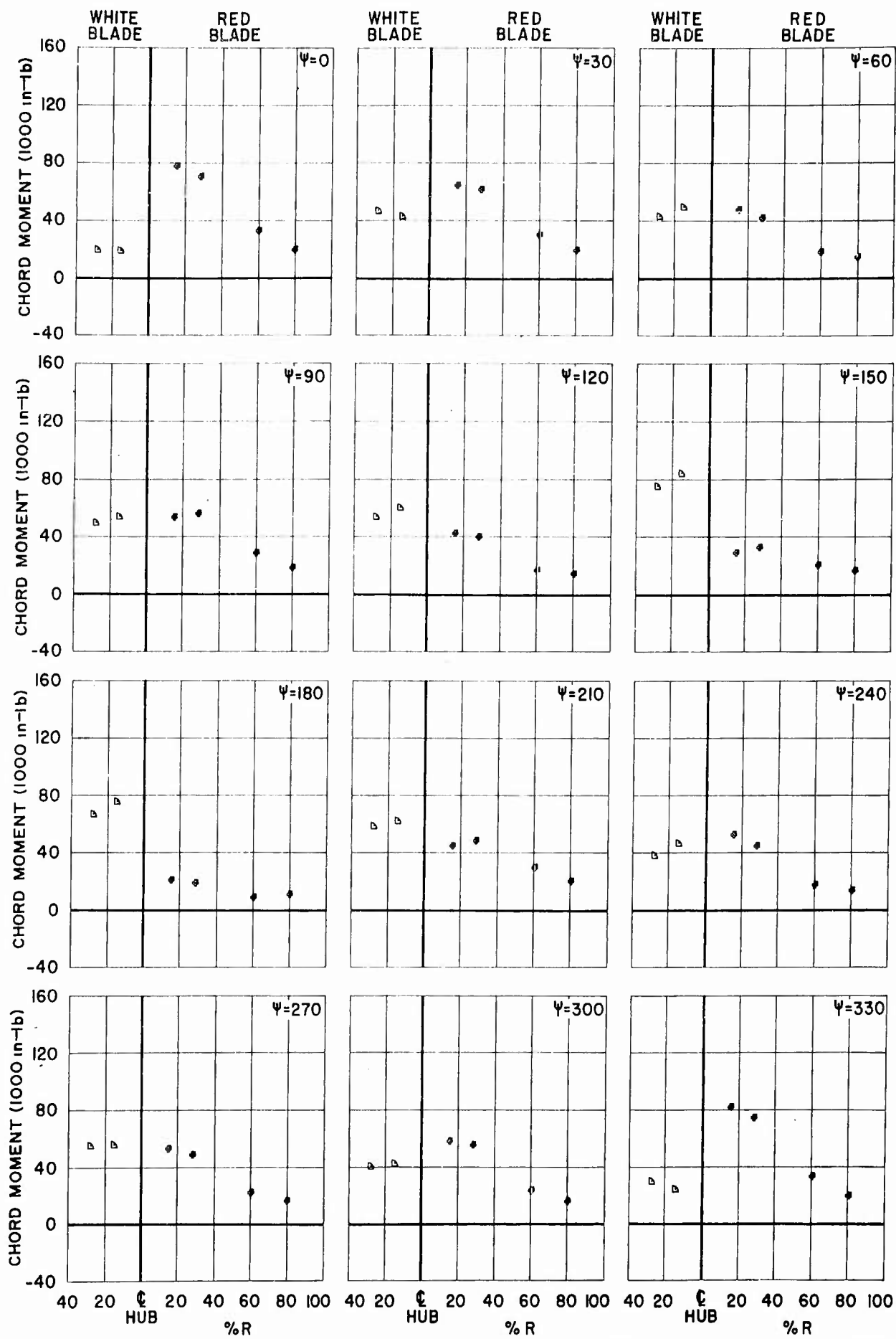


Figure 32m - CHORD MOMENT vs % RADIUS (COND.NO.27, LEVEL FLIGHT, $V_{true}=34$ KNOTS).

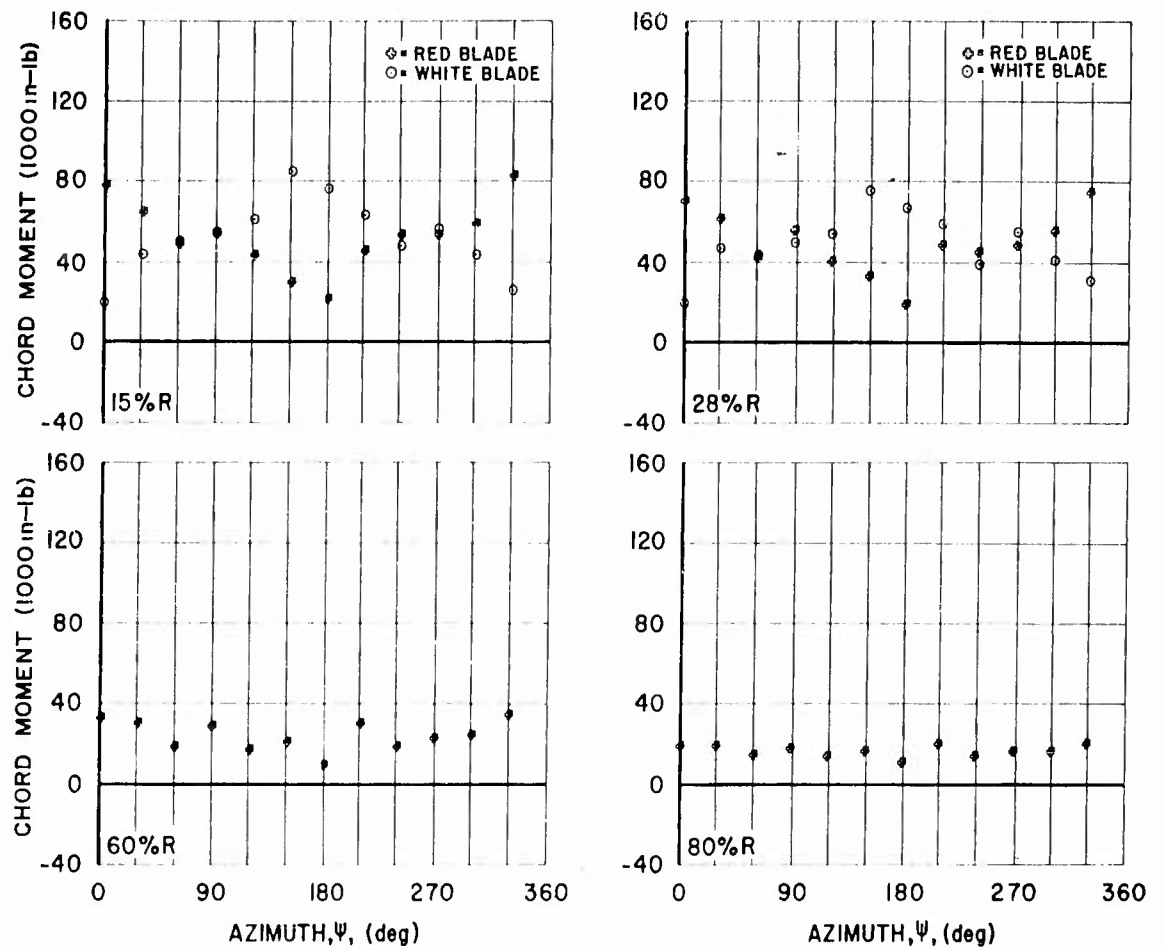


Figure 32n - CHORD MOMENT vs AZIMUTH (COND.NO.27, LEVEL FLIGHT, $V_{true}=34$ KNOTS)

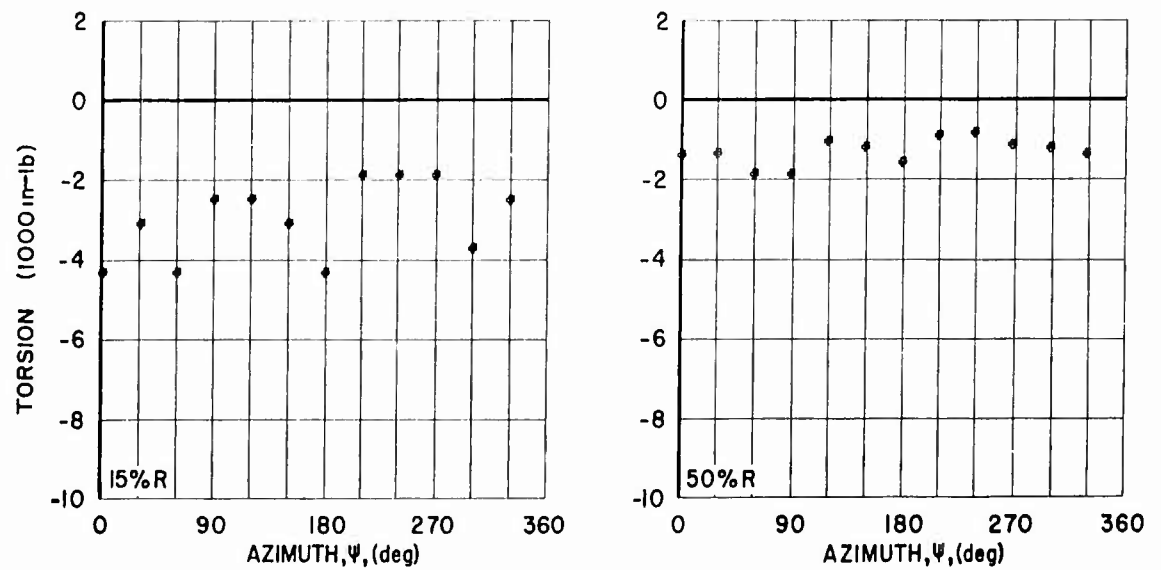


Figure 32o - TORSION vs AZIMUTH (COND.NO.27, LEVEL FLIGHT, $V_{true} = 34$ KNOTS)

FIGURE 33, GRAPHICAL DATA

TYPE I CONDITION NO. 29

LEVEL FLIGHT, TRUE AIRSPEED = 88 KNOTS

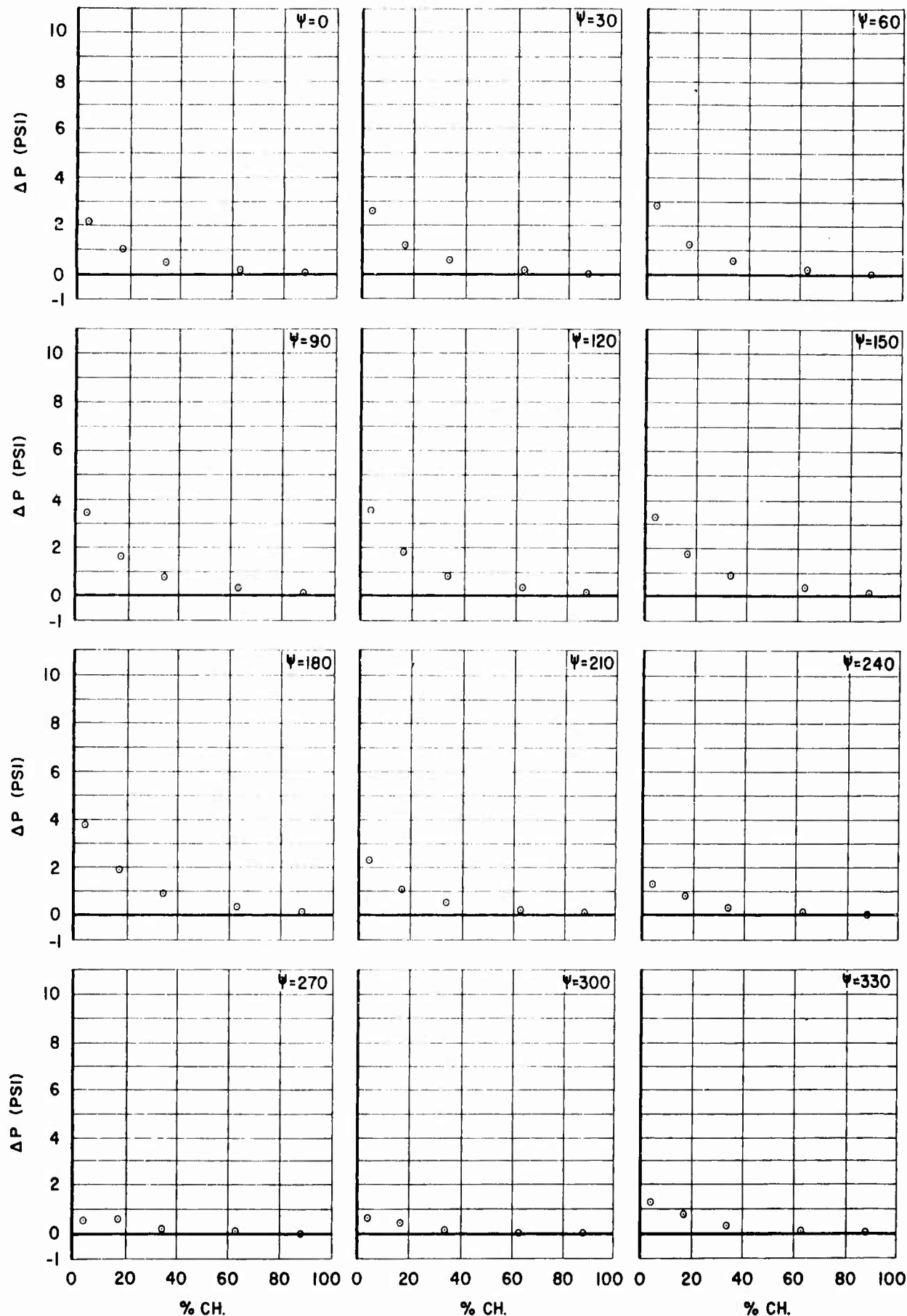


Figure 33a $-\Delta P$ vs % CHORD (40% R, COND.NO.29, LEVEL FLIGHT, $V_{true}=88$ KNOTS).

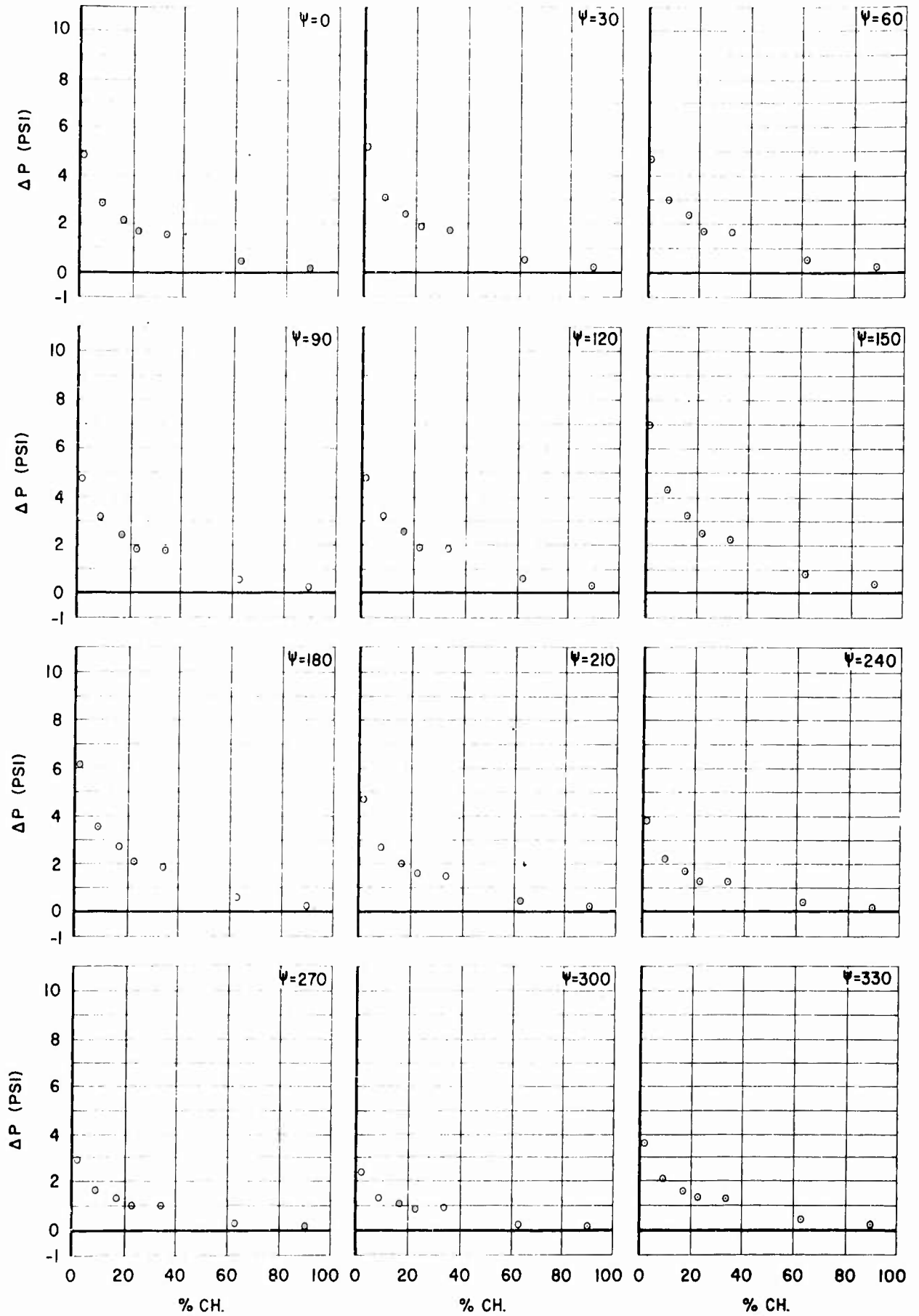


Figure 33b $-\Delta P$ vs % CHORD (55% R, COND.NO.29, LEVEL FLIGHT, $V_{true}=88$ KNOTS).

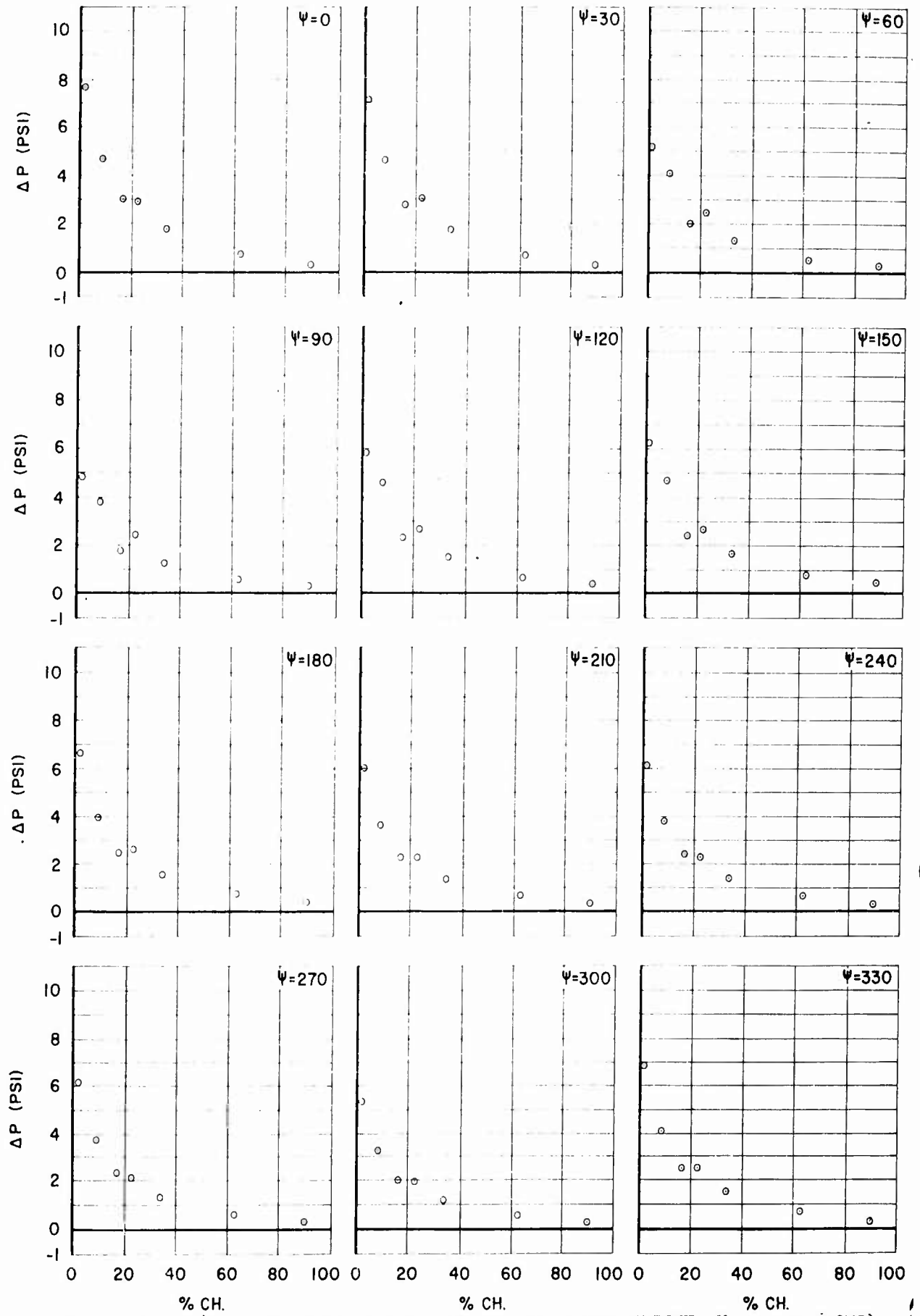


Figure 33c - ΔP vs % CHORD (75% R, COND.NO.29, LEVEL FLIGHT, $V_{true}=88$ KNOTS).

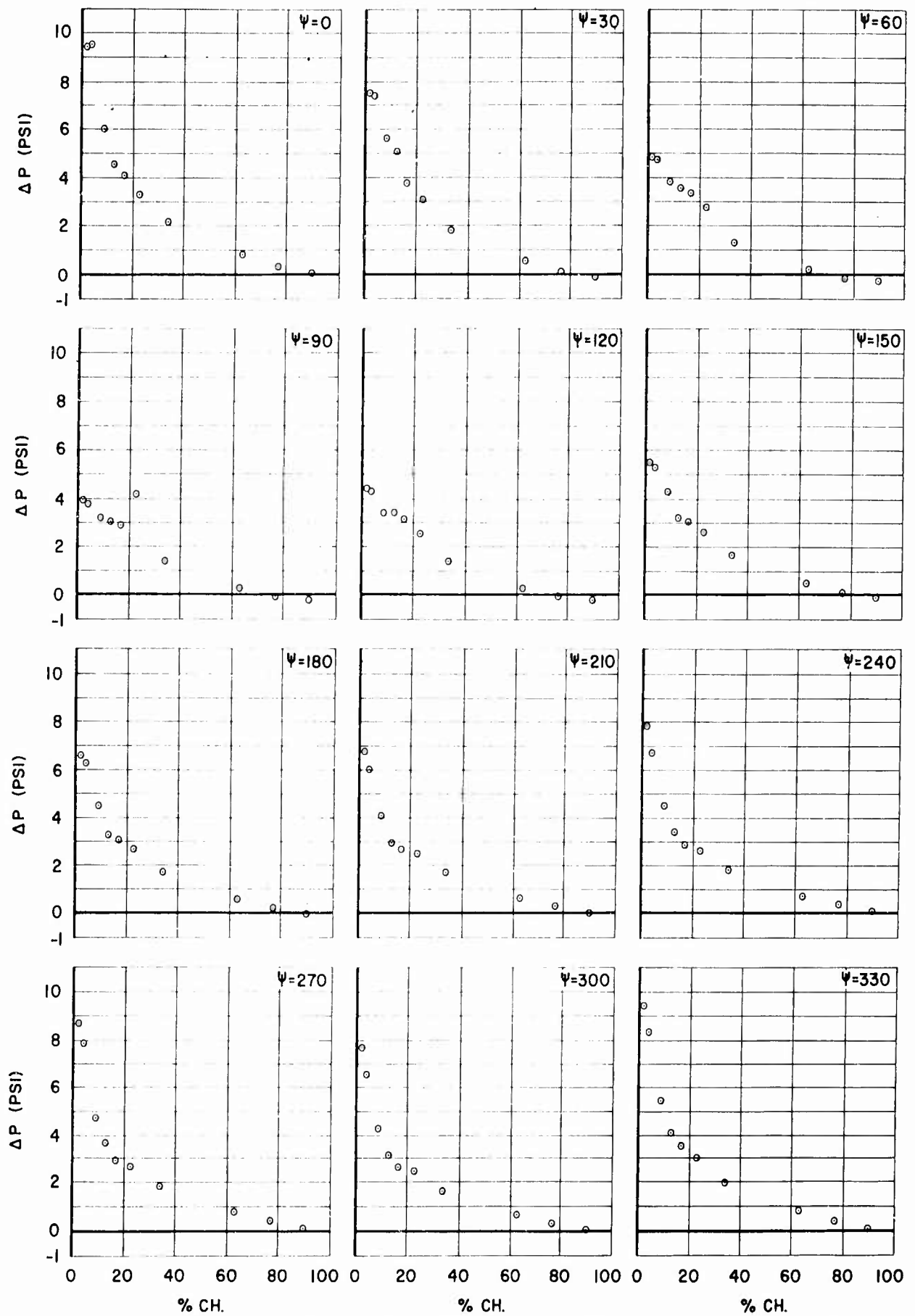


Figure 33d $-\Delta P$ vs % CHORD (85% R, COND. NO. 29, LEVEL FLIGHT, $V_{true} = 88$ KNOTS).

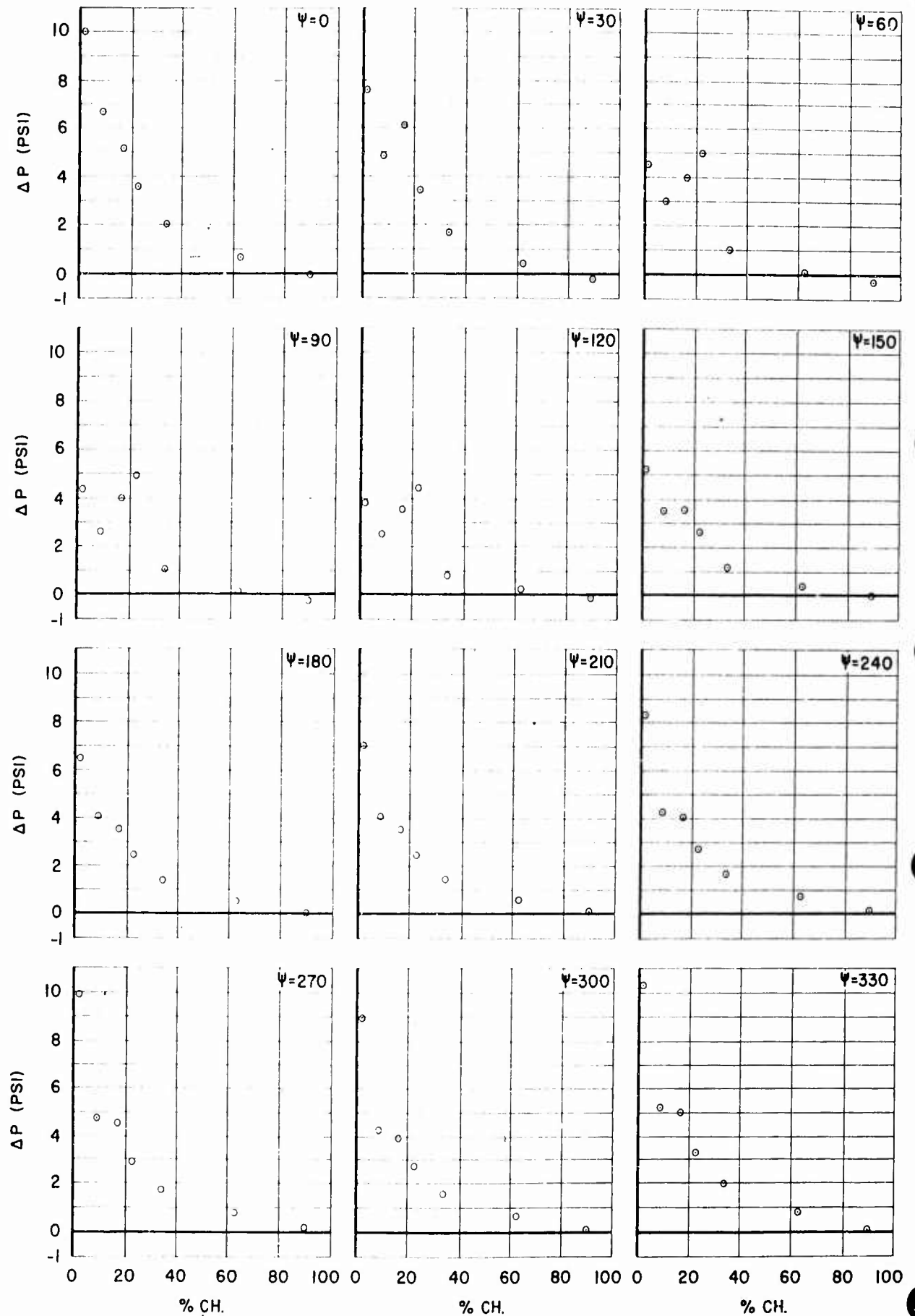


Figure 33e ΔP vs % CHORD (90% R, COND.NO.29, LEVEL FLIGHT, $V_{true}=88$ KNOTS.,

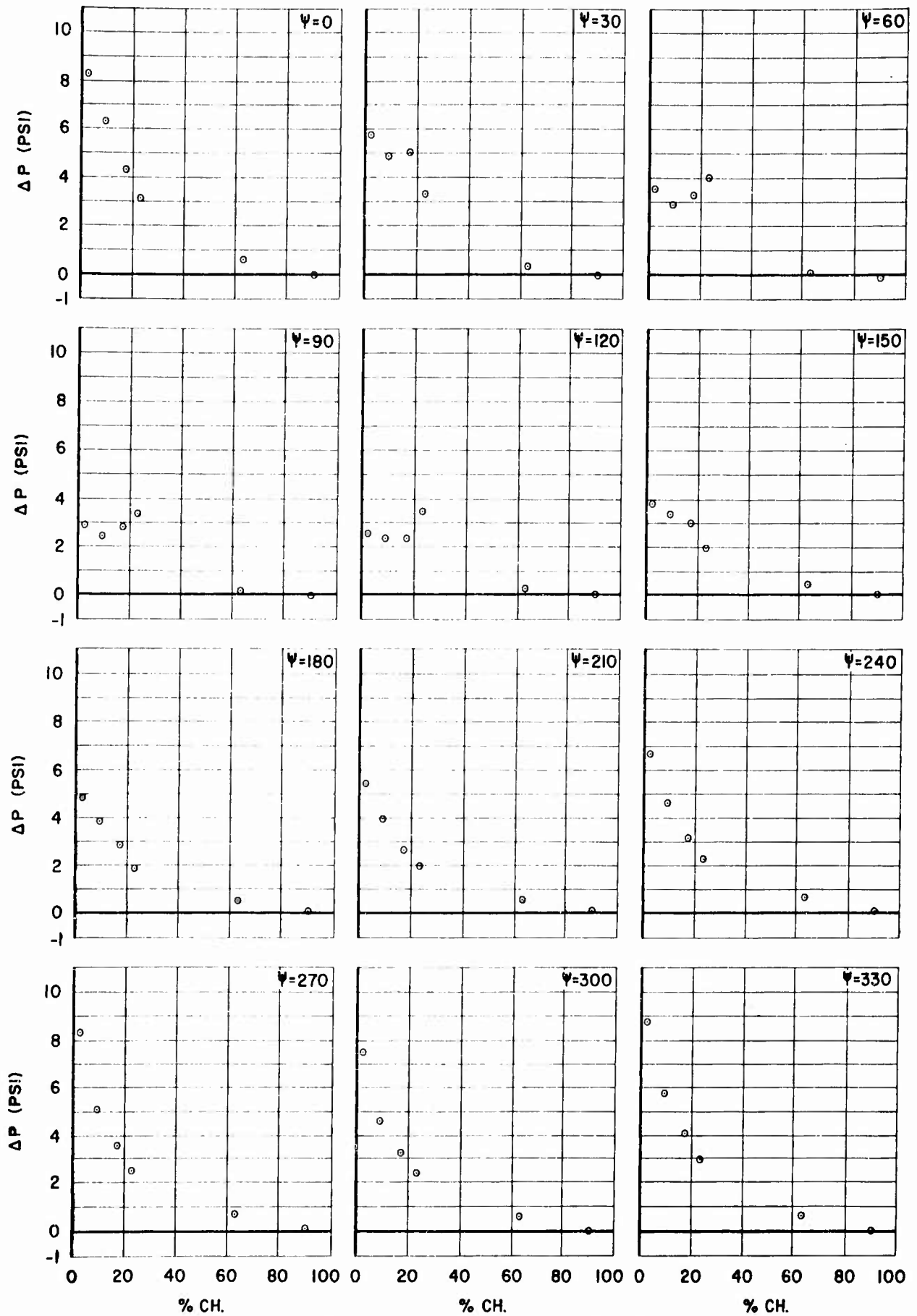


Figure 33f $-\Delta P$ vs % CHORD (95% R, COND. NO. 29, LEVEL FLIGHT, $V_{true}=88$ KNOTS).

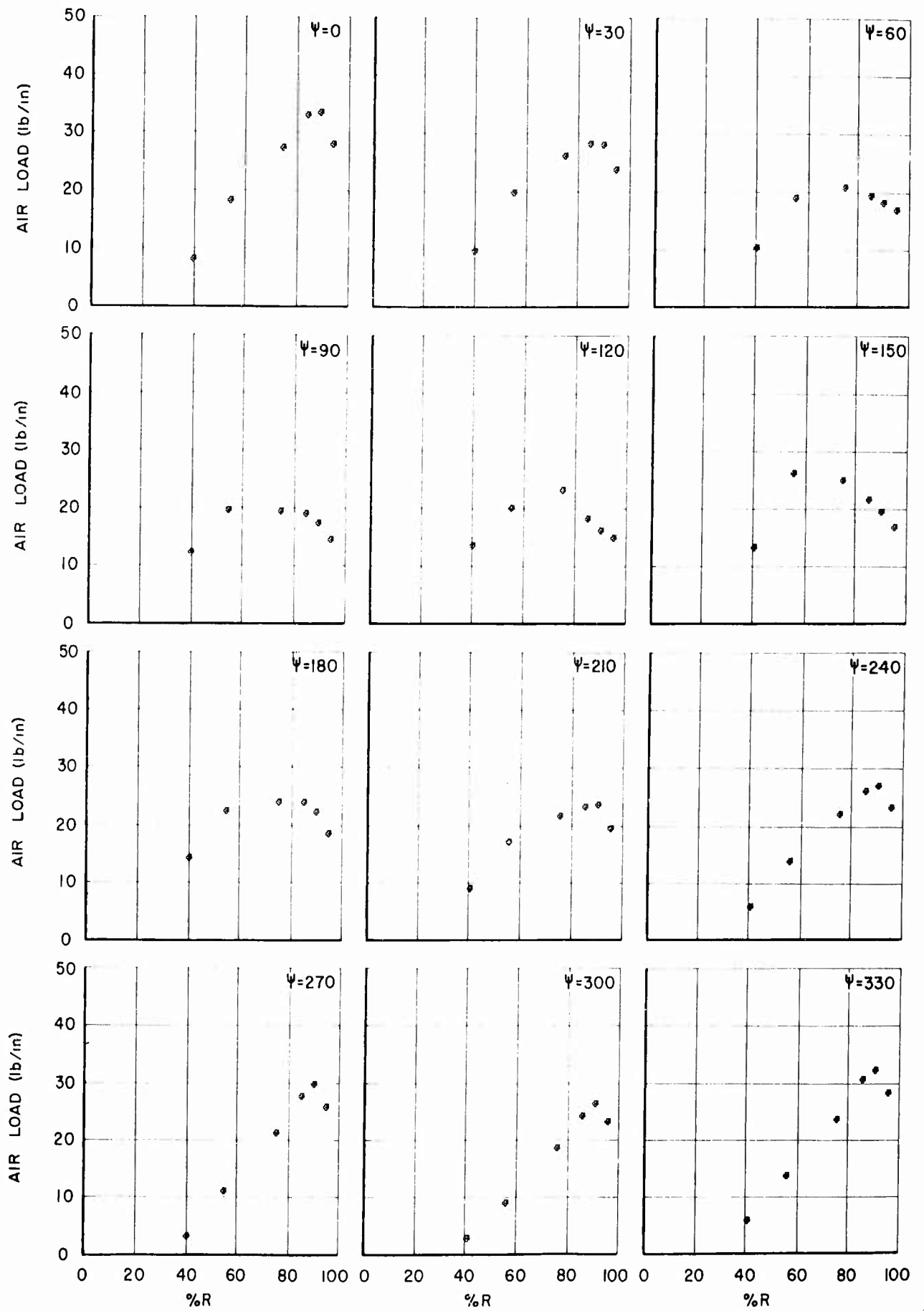


Figure 33g - AIR LOAD vs % RADIUS (COND.NO.29, LEVEL FLIGHT, $V_{true}=88$ KNOTS).

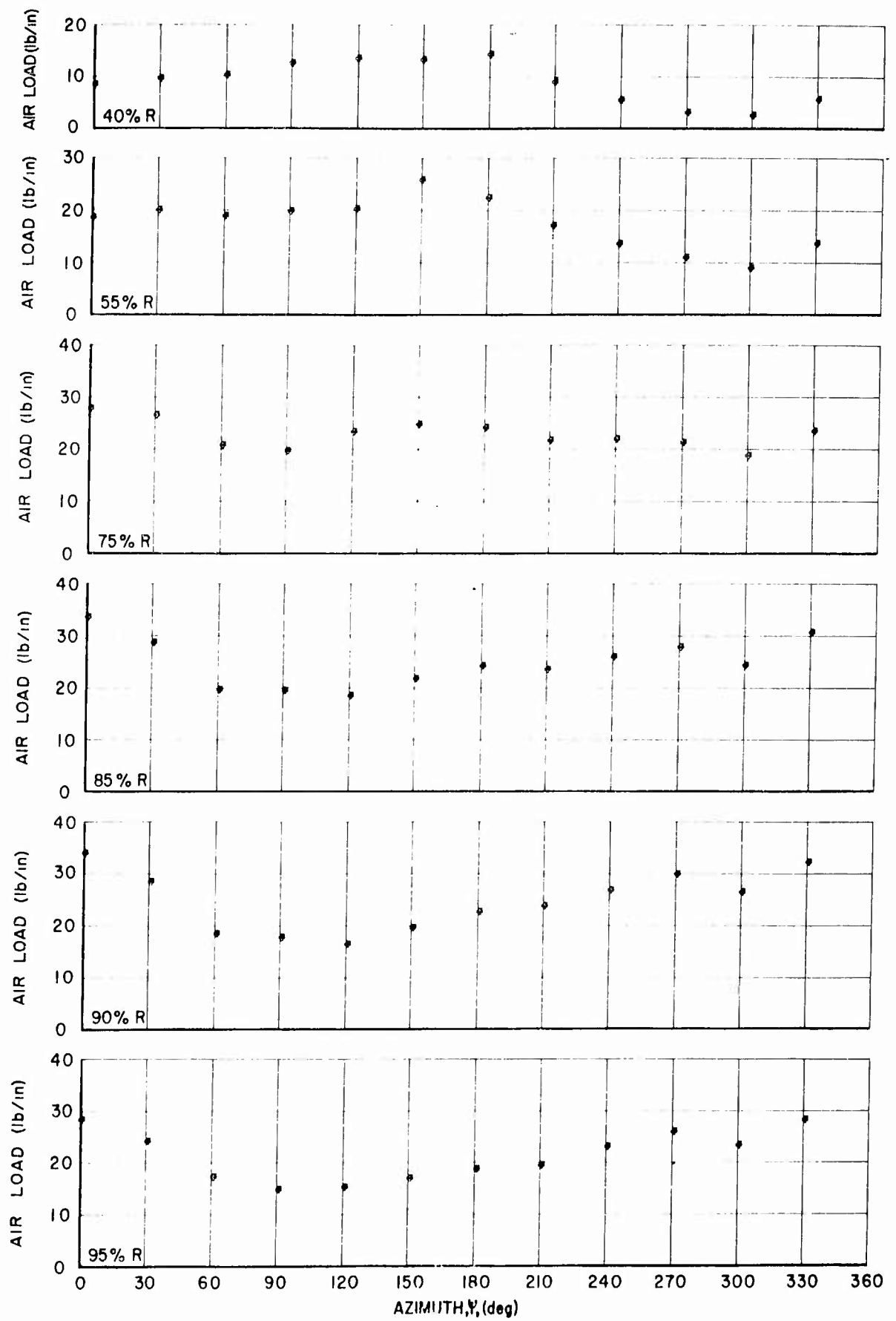


Figure 33h - AIR LOAD vs AZIMUTH (COND.NO.29, LEVEL FLIGHT, $V_{true}=88$ KNOTS).

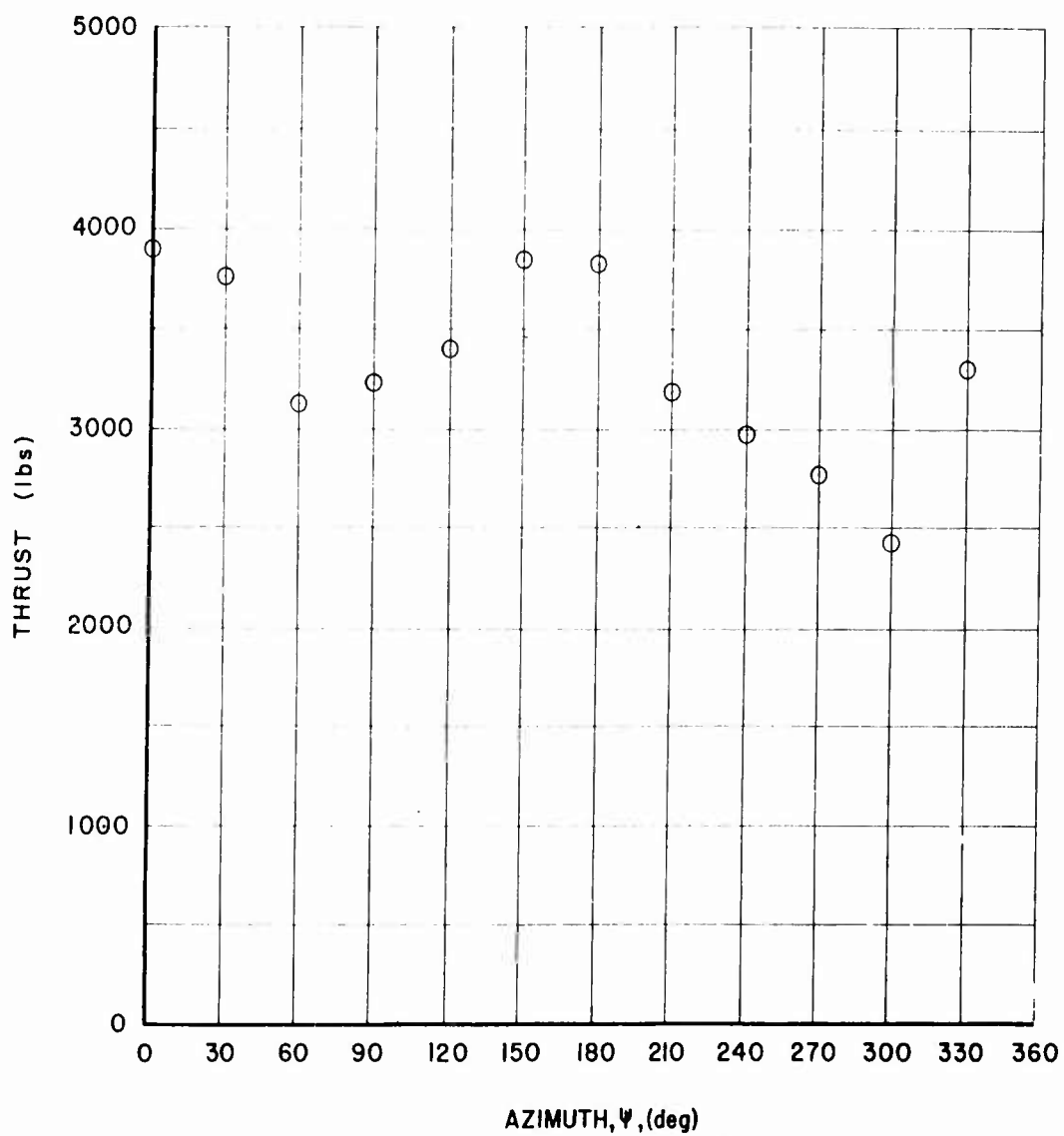


Figure 33i TOTAL THRUST/BLADE vs AZIMUTH
 (COND.NO.29, LEVEL FLIGHT, $V_{true}=88$ KNOTS).

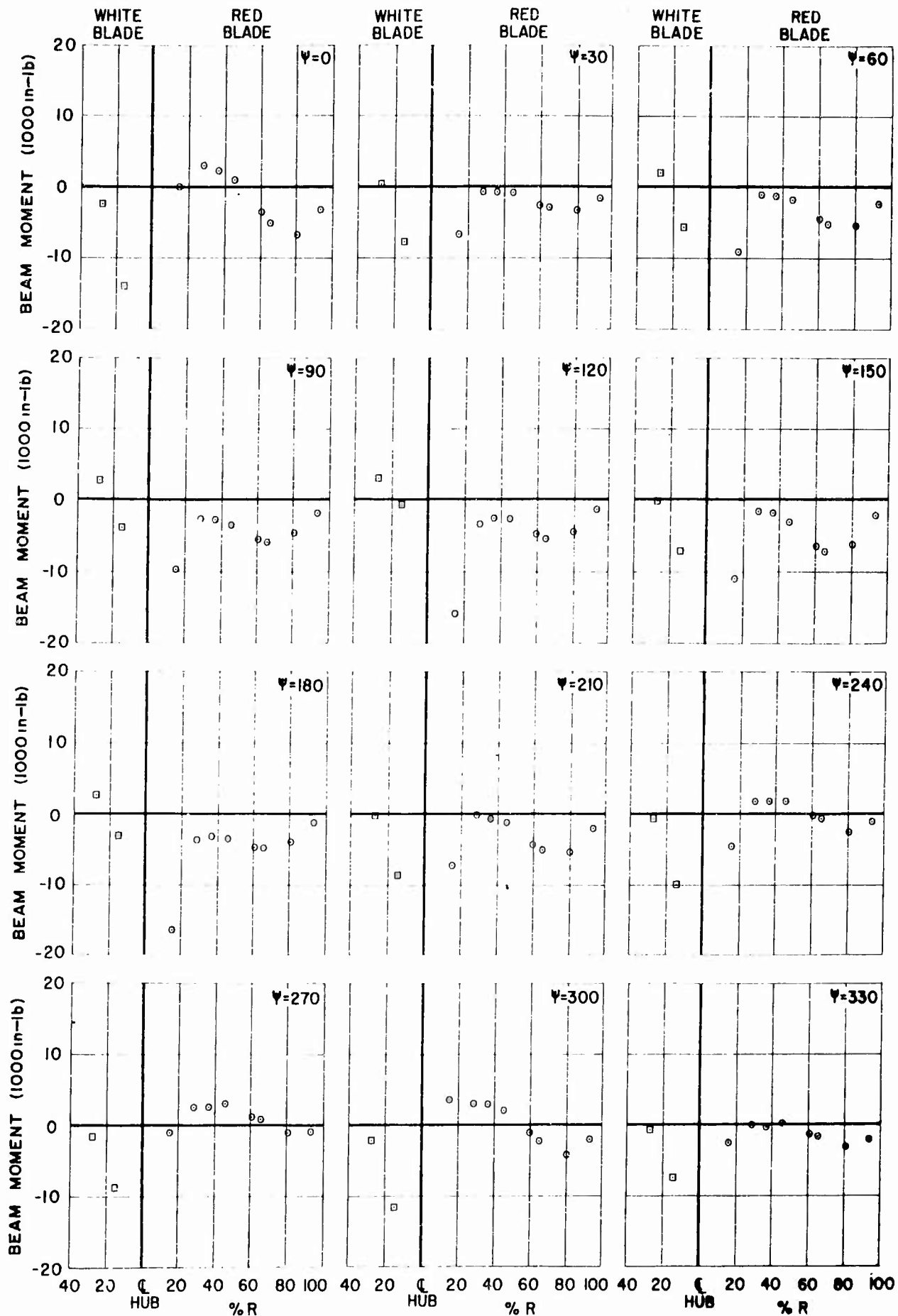


Figure 33j - BEAM MOMENT vs % RADIUS (COND.NO.29, LEVEL FLIGHT, $V_{true}=88$ KNOTS).

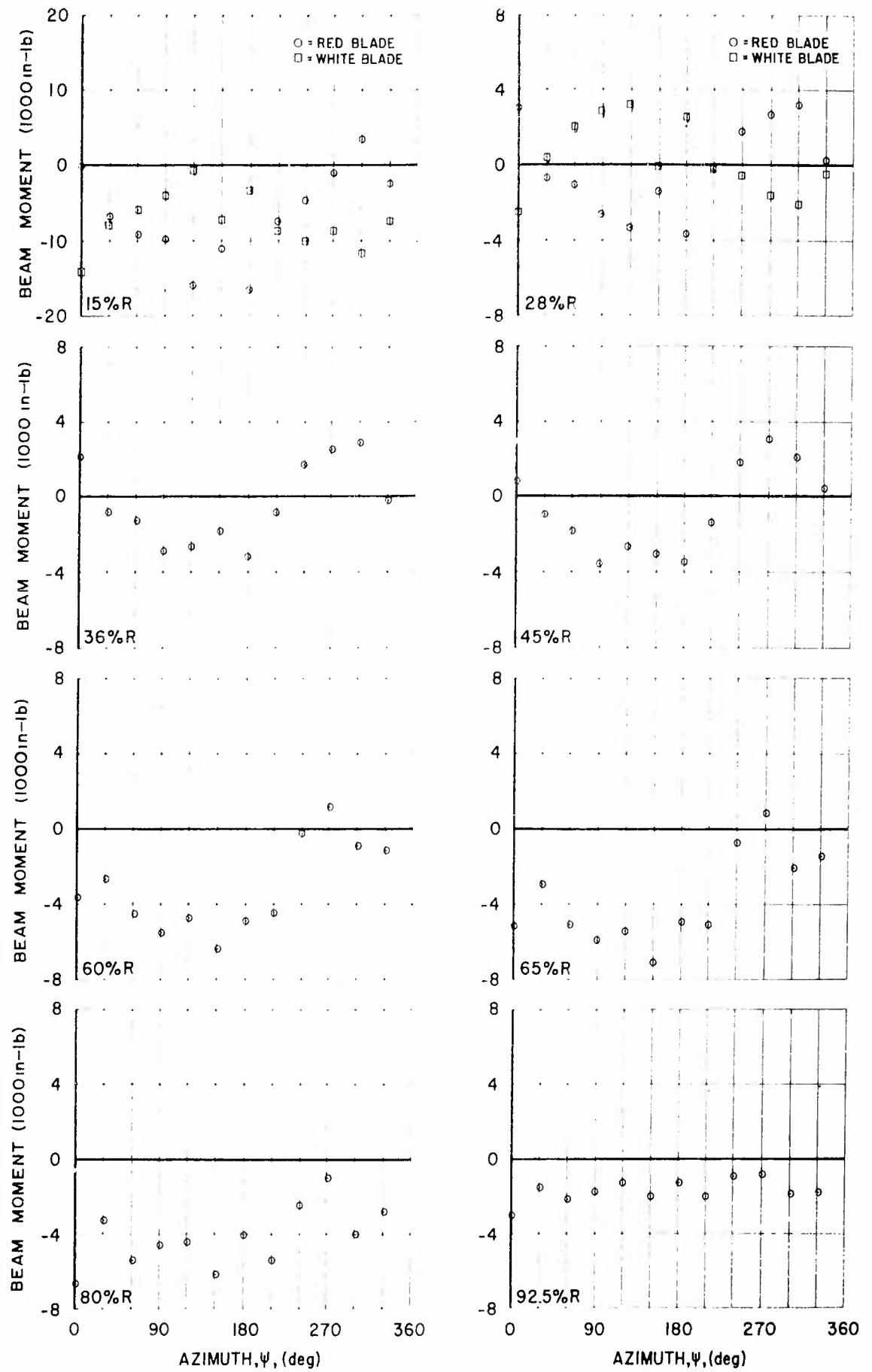


Figure 33k - BEAM MOMENT vs AZIMUTH (COND.NO.29, LEVEL FLIGHT, $V_{true}=88$ KNOTS).

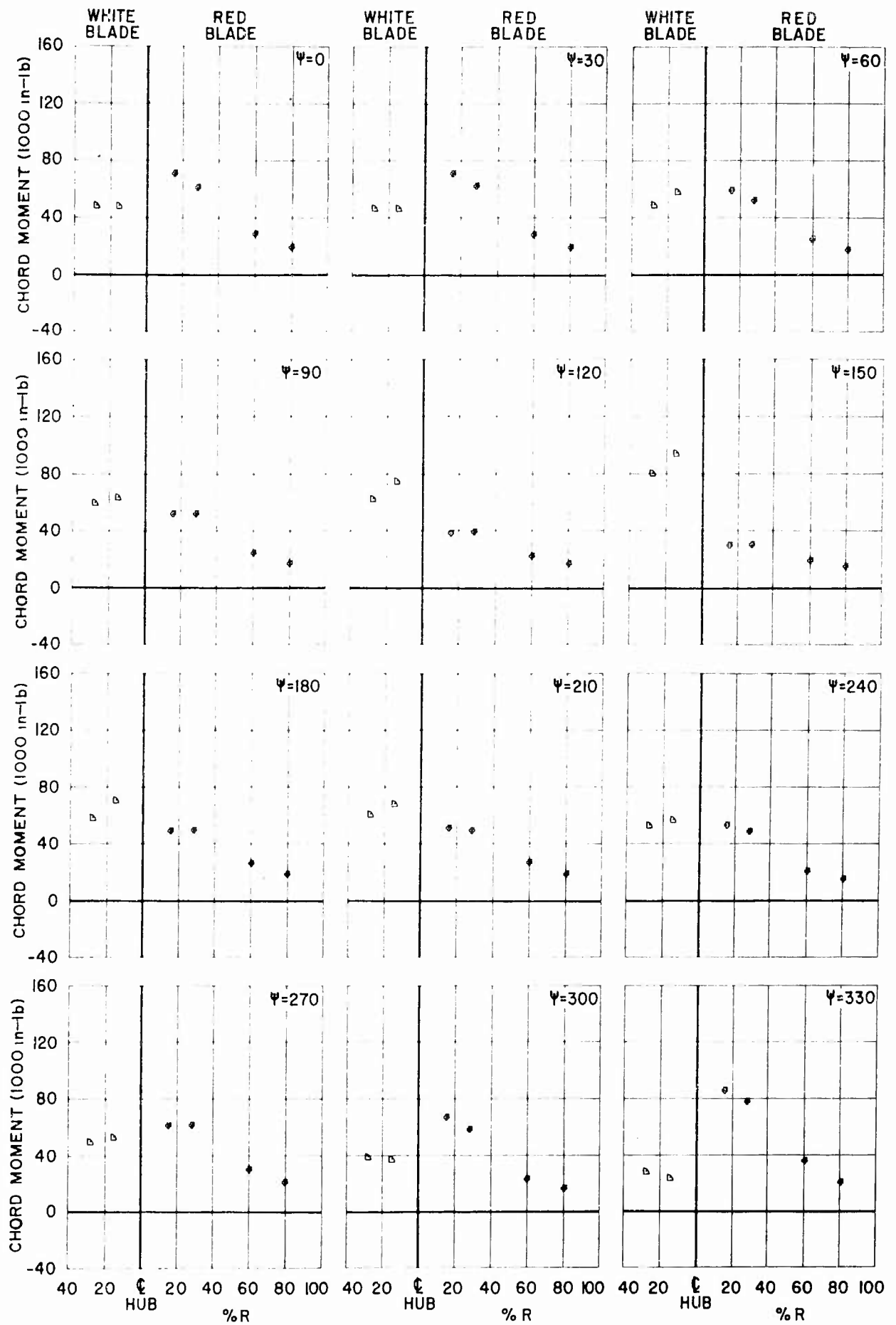


Figure 33m - CHORD MOMENT vs % RADIUS (COND.NO.29, LEVEL FLIGHT, $V_{true}=88$ KNOTS).

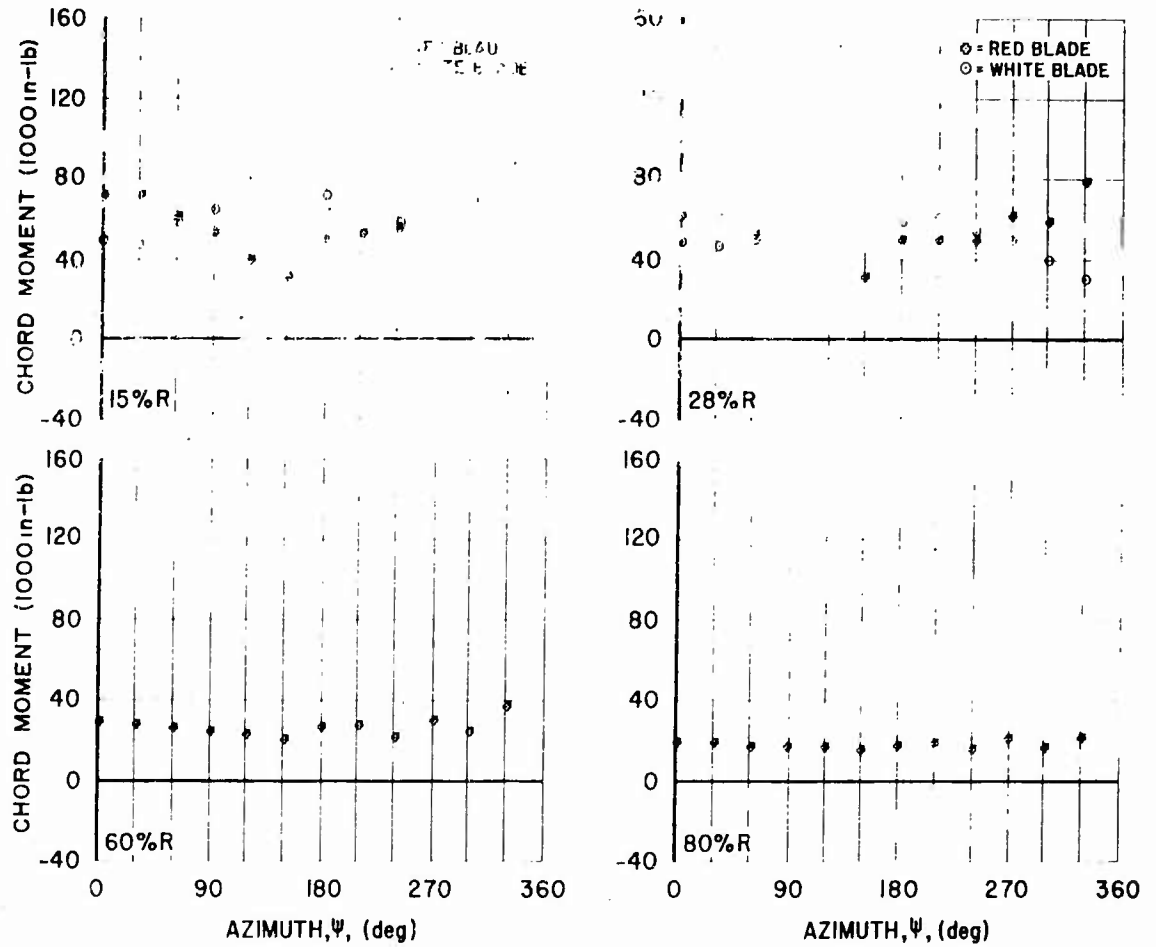


Figure 33n - CHORD MOMENT vs AZIMUTH (COND.NO.29, LEVEL FLIGHT, $V_{true}=88$ KNOTS)

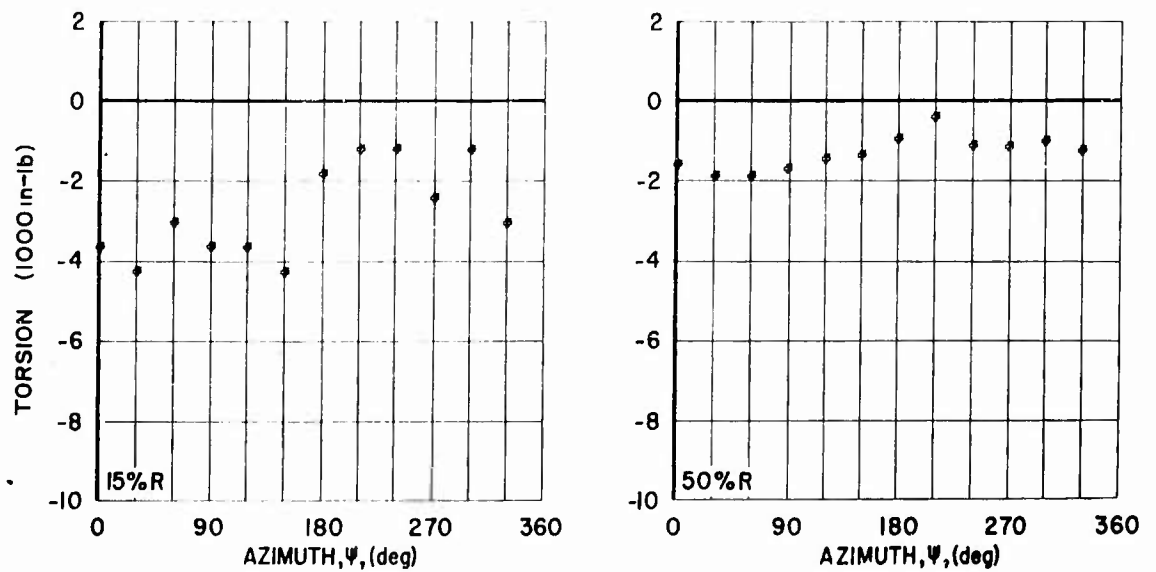


Figure 33o - TORSION vs AZIMUTH (COND.NO.29, LEVEL FLIGHT, $V_{true}=88$ KNOTS).

FIGURE 34, GRAPHICAL DATA

TYPE I CONDITION NO. 31

LEVEL FLIGHT, TRUE AIRSPEED = 113 KNOTS

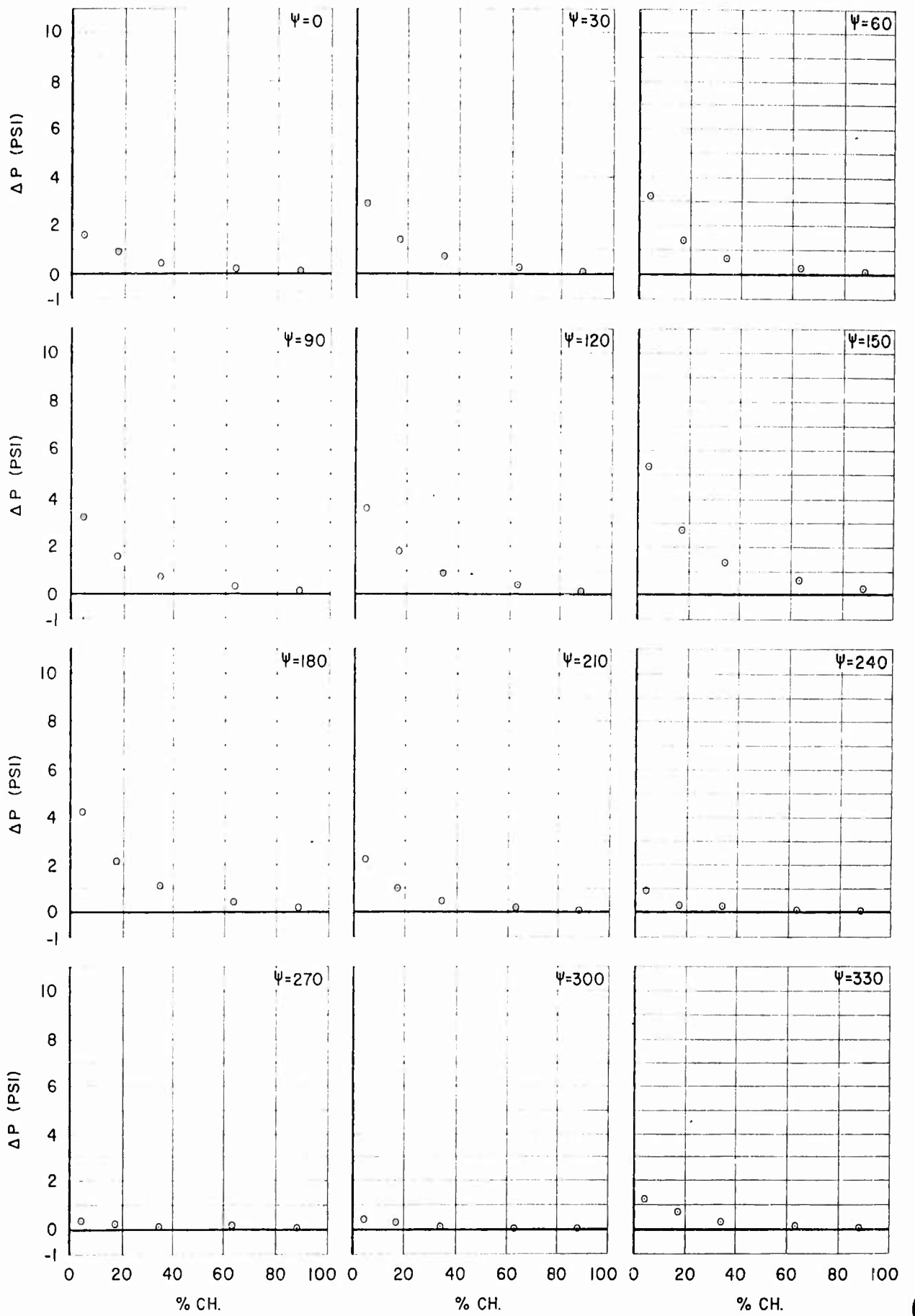


Figure 34a ΔP vs % CHORD (40% κ , COND.NO.31, LEVEL FLIGHT, $V_{true}=113$ KNOTS).

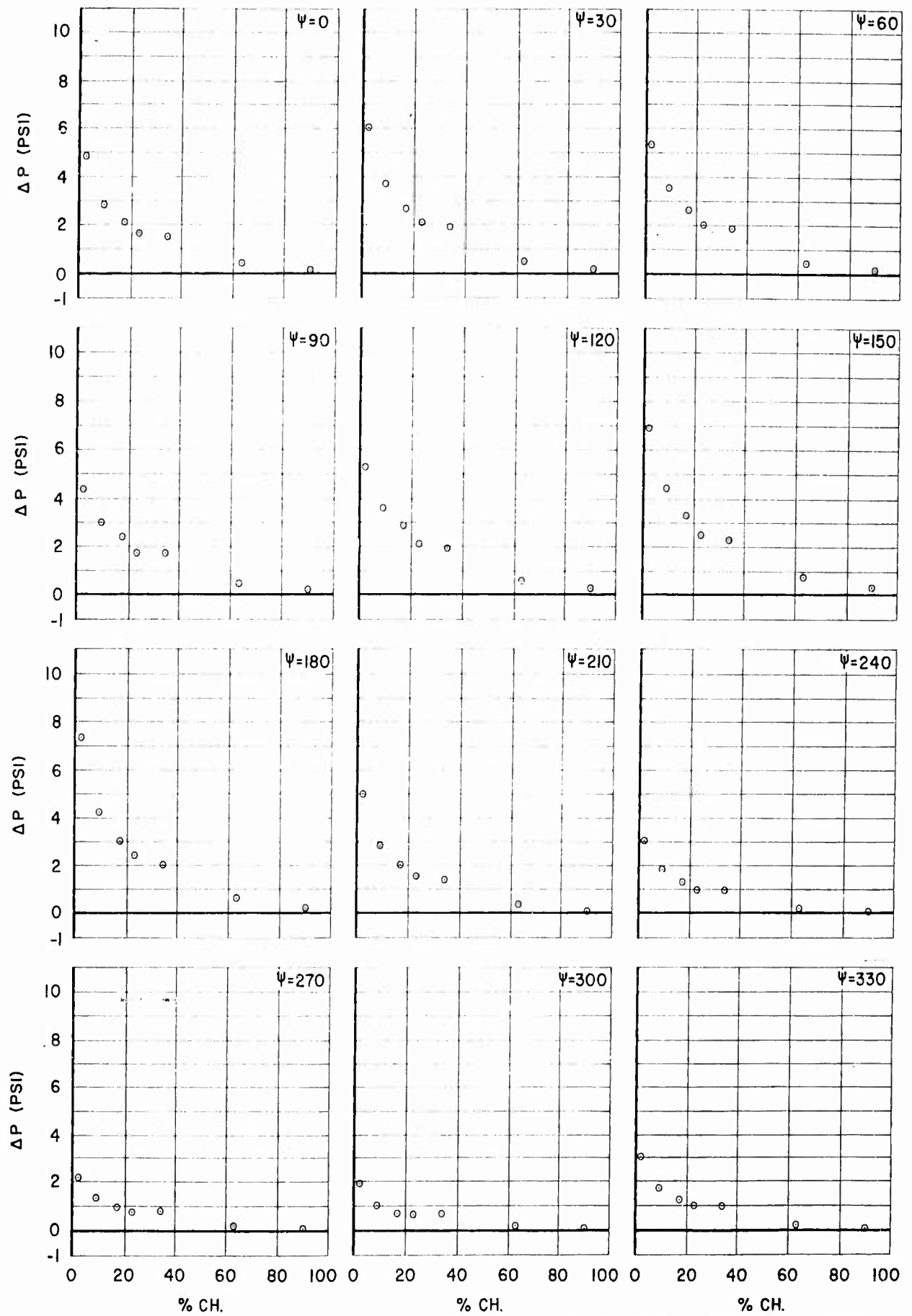


Figure 34b - ΔP vs % CHORD (55% R, COND.NO.31, LEVEL FLIGHT, $V_{true}=113$ KNOTS).

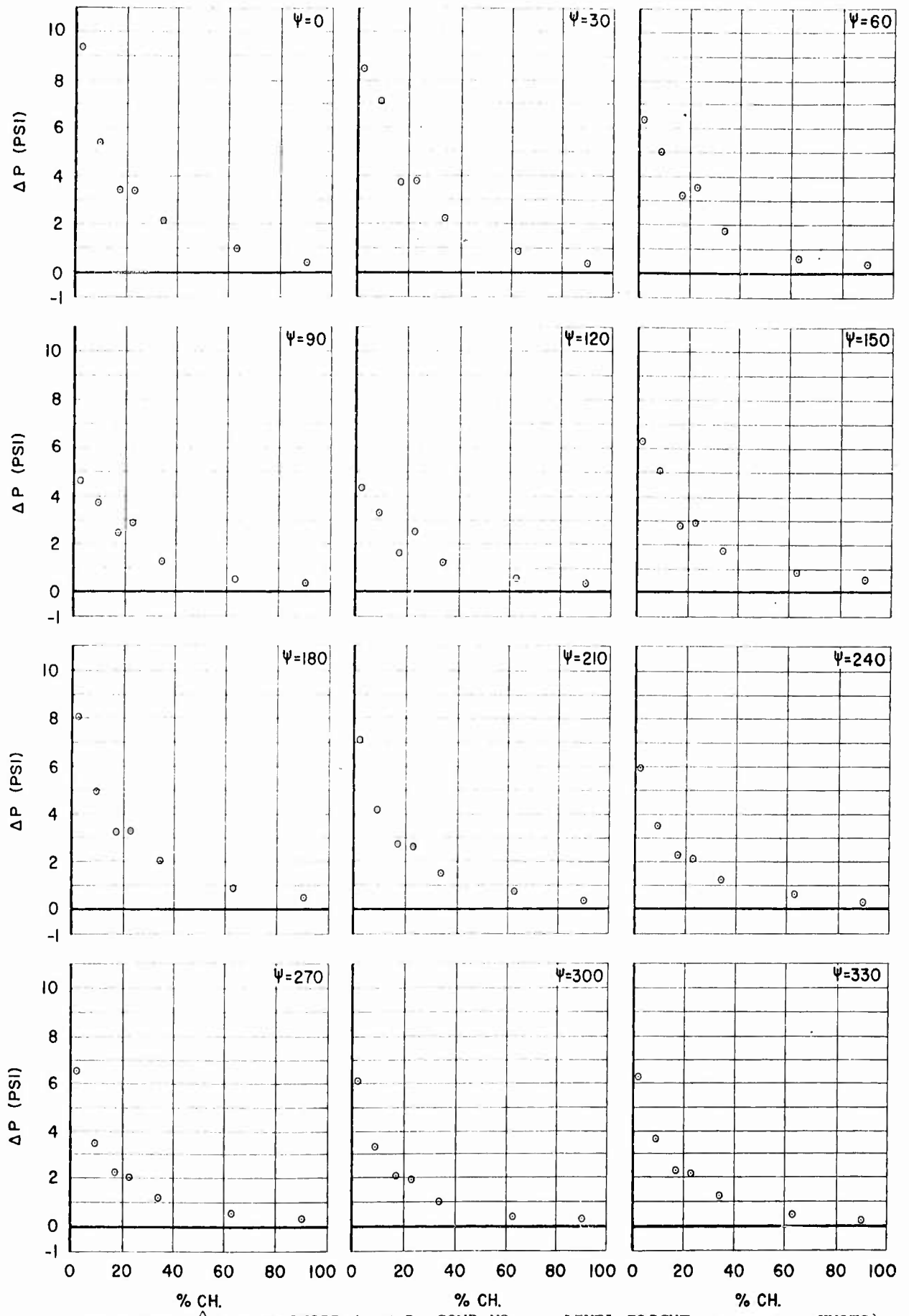


Figure 34c $-\Delta P$ vs % CHORD (75% R, COND.NO.31, LEVEL FLIGHT, $V_{true}=113$ KNOTS).

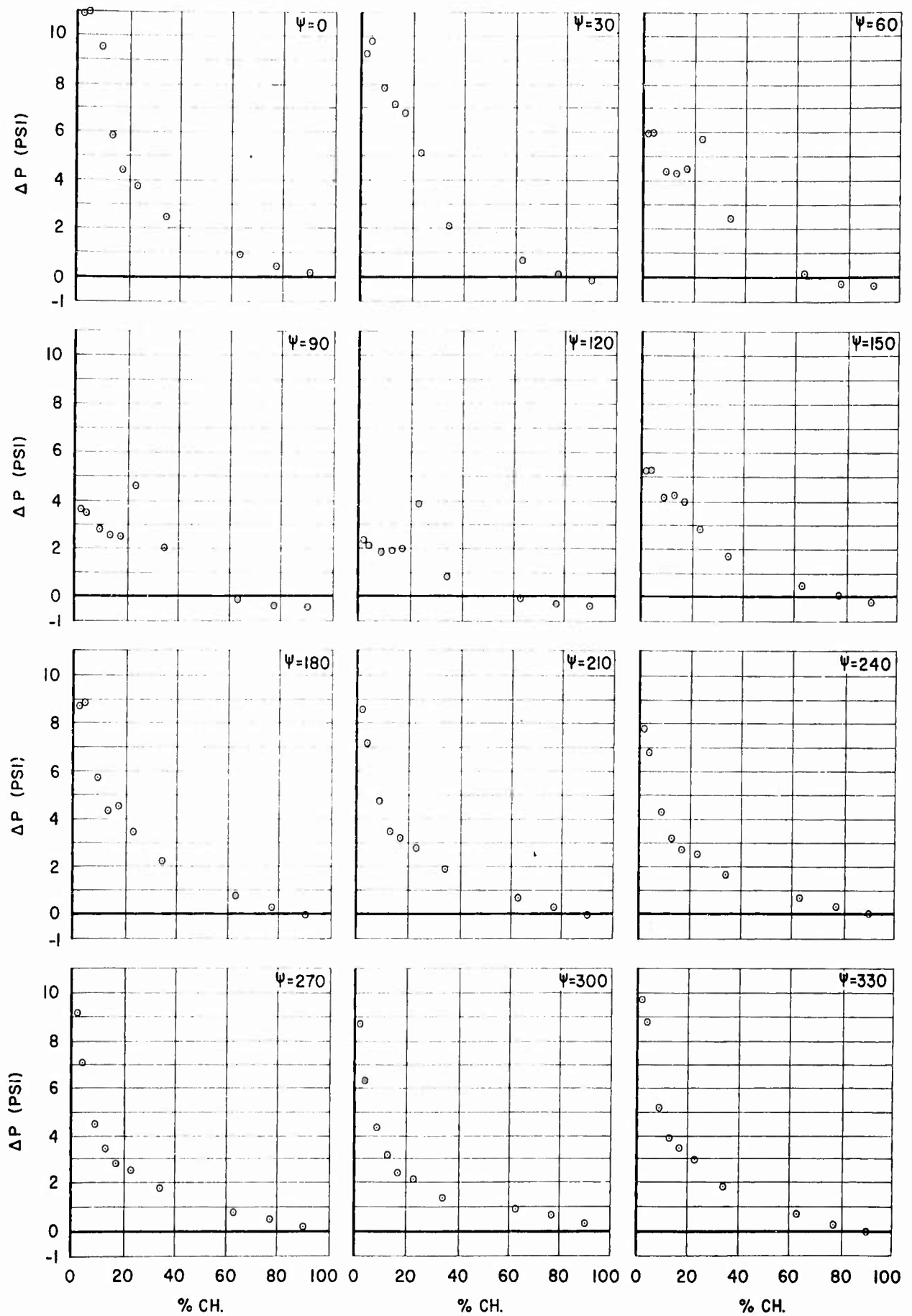


Figure 34d $-\Delta P$ vs % CHORD (85% R, COND.NO.31, LEVEL FLIGHT, $V_{true}=113$ KNOTS).

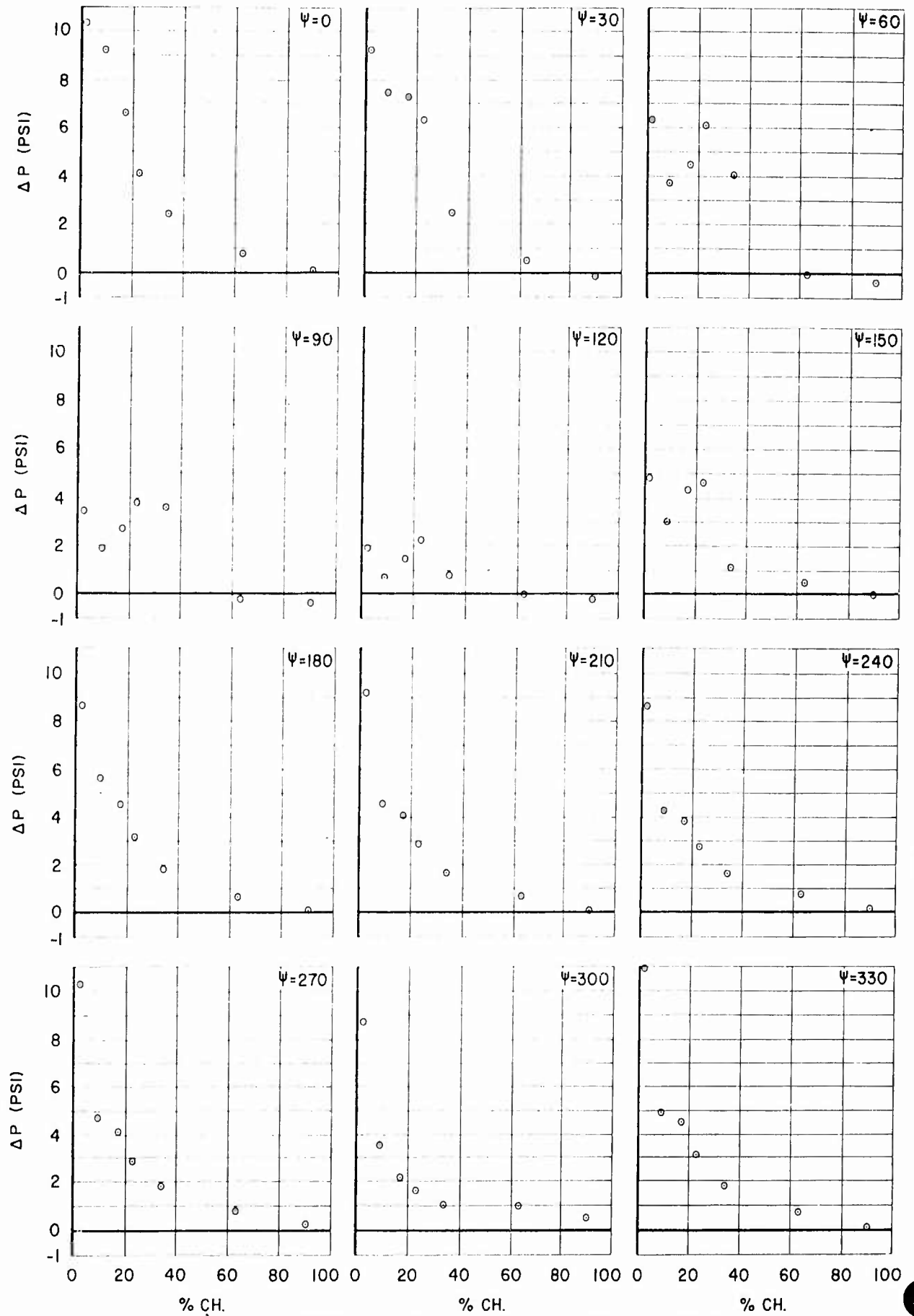


Figure 34e ΔP vs % CHORD (90% R, COND.NO.31, LEVEL FLIGHT, $V_{true}=113$ KNOTS).

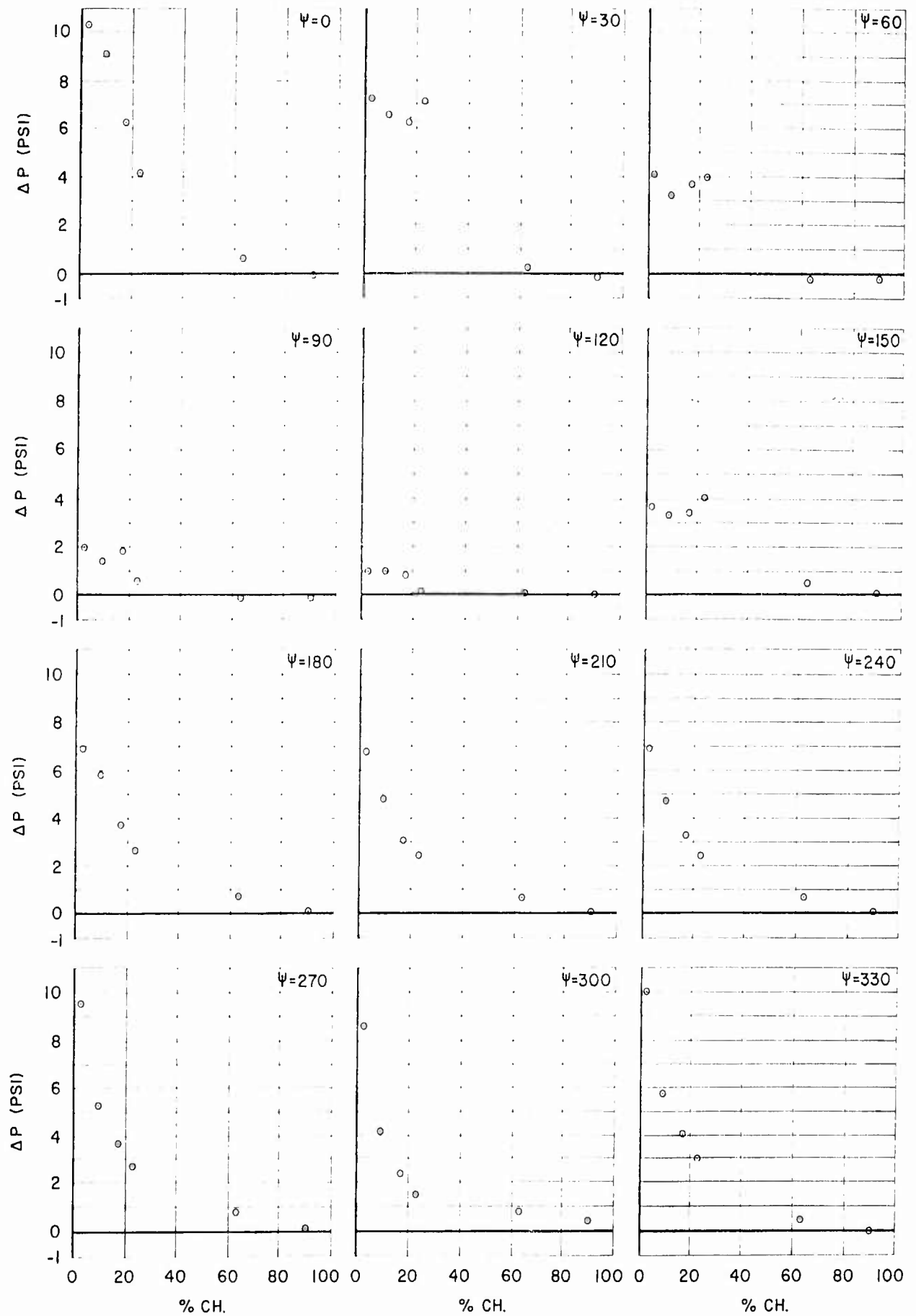


Figure 34f ΔP vs % CHORD (95% R, COND.NO.31, LEVEL FLIGHT, $V_{true}=113$ KNOTS).

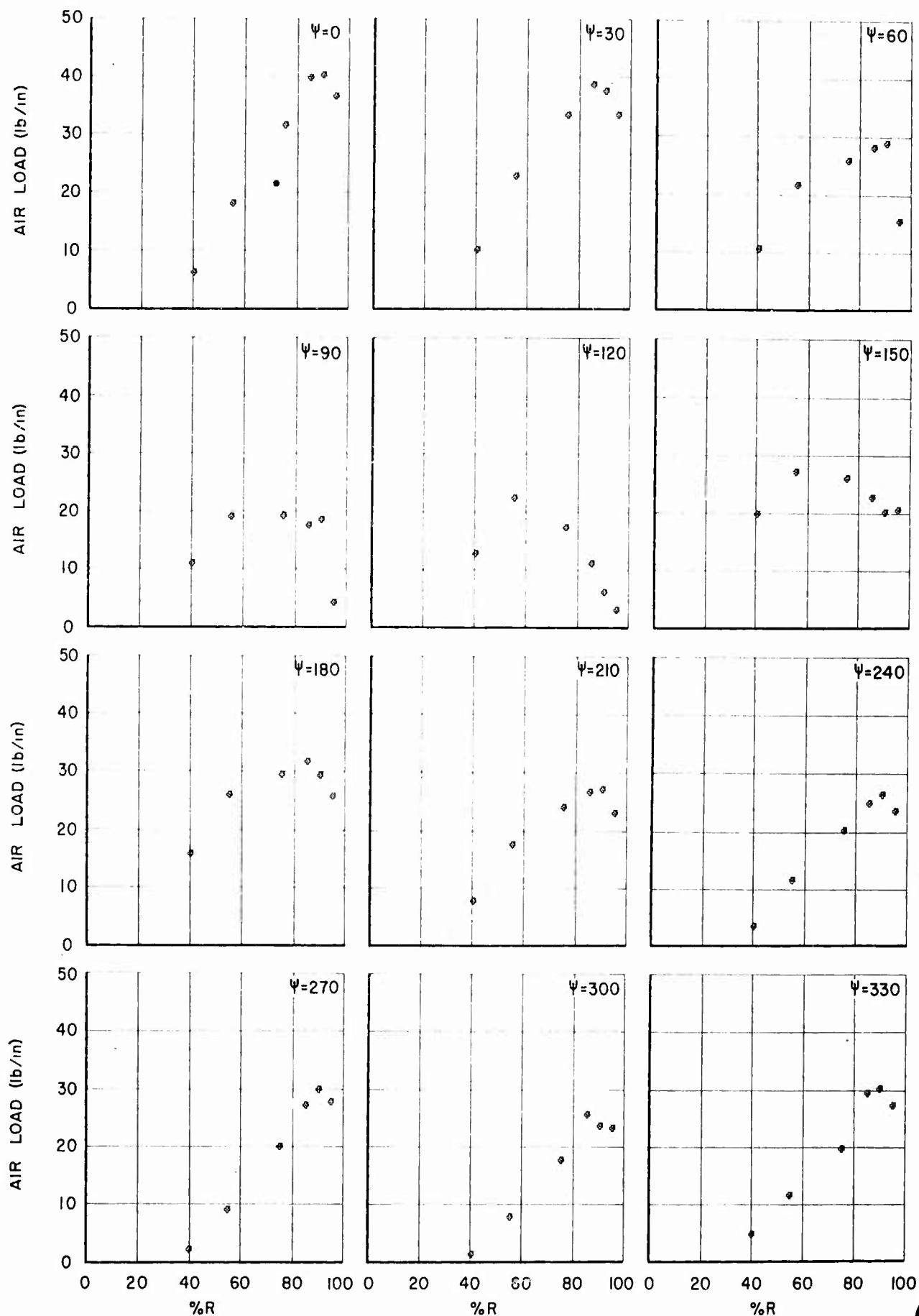


Figure 34g - AIR LOAD vs % RADIUS (COND.NO.31, LEVEL FLIGHT, $V_{true}=113$ KNOTS).

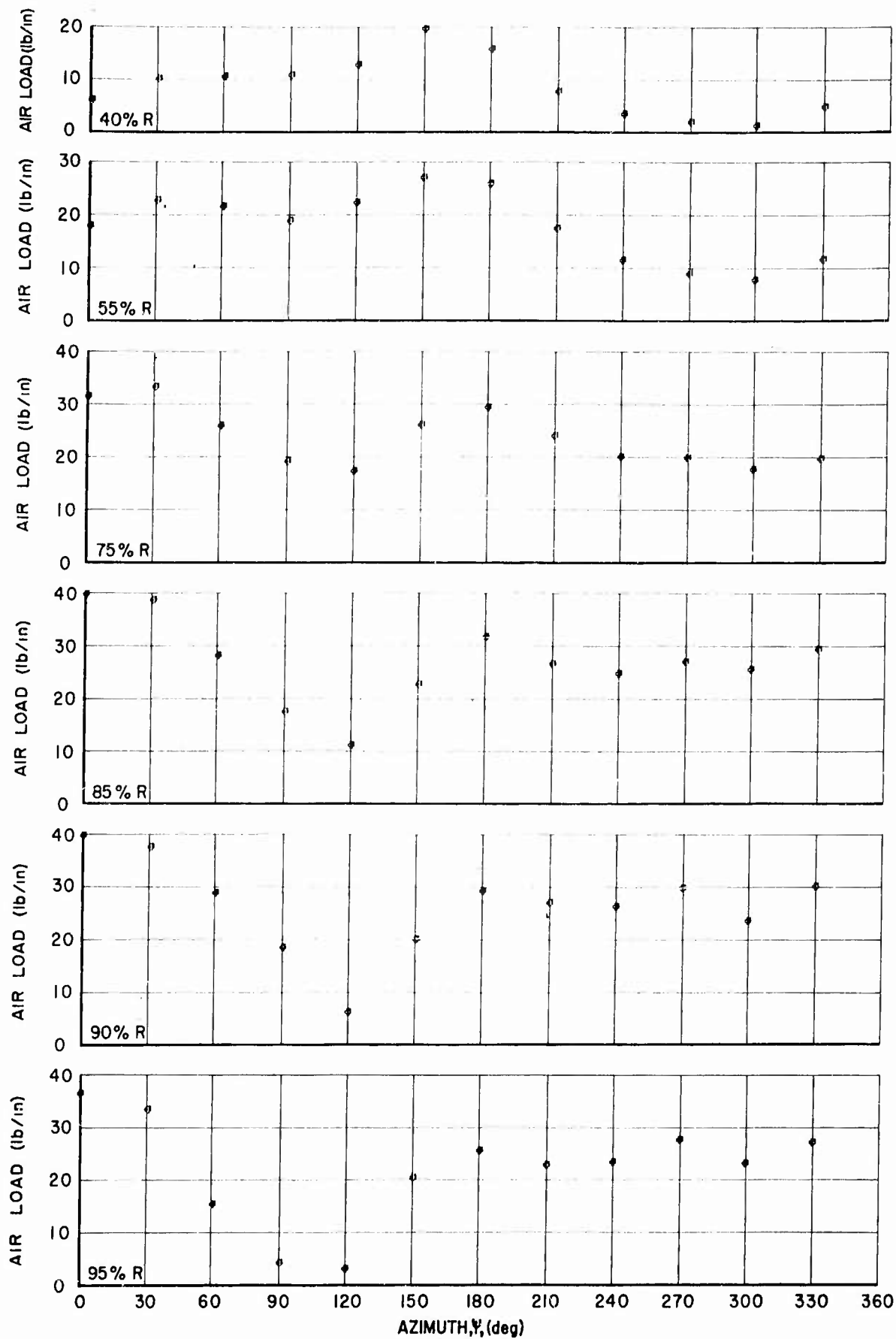


Figure 34h - AIR LOAD vs AZIMUTH (COND.NO.31, LEVEL FLIGHT, $V_{true}=113$ KNOTS).

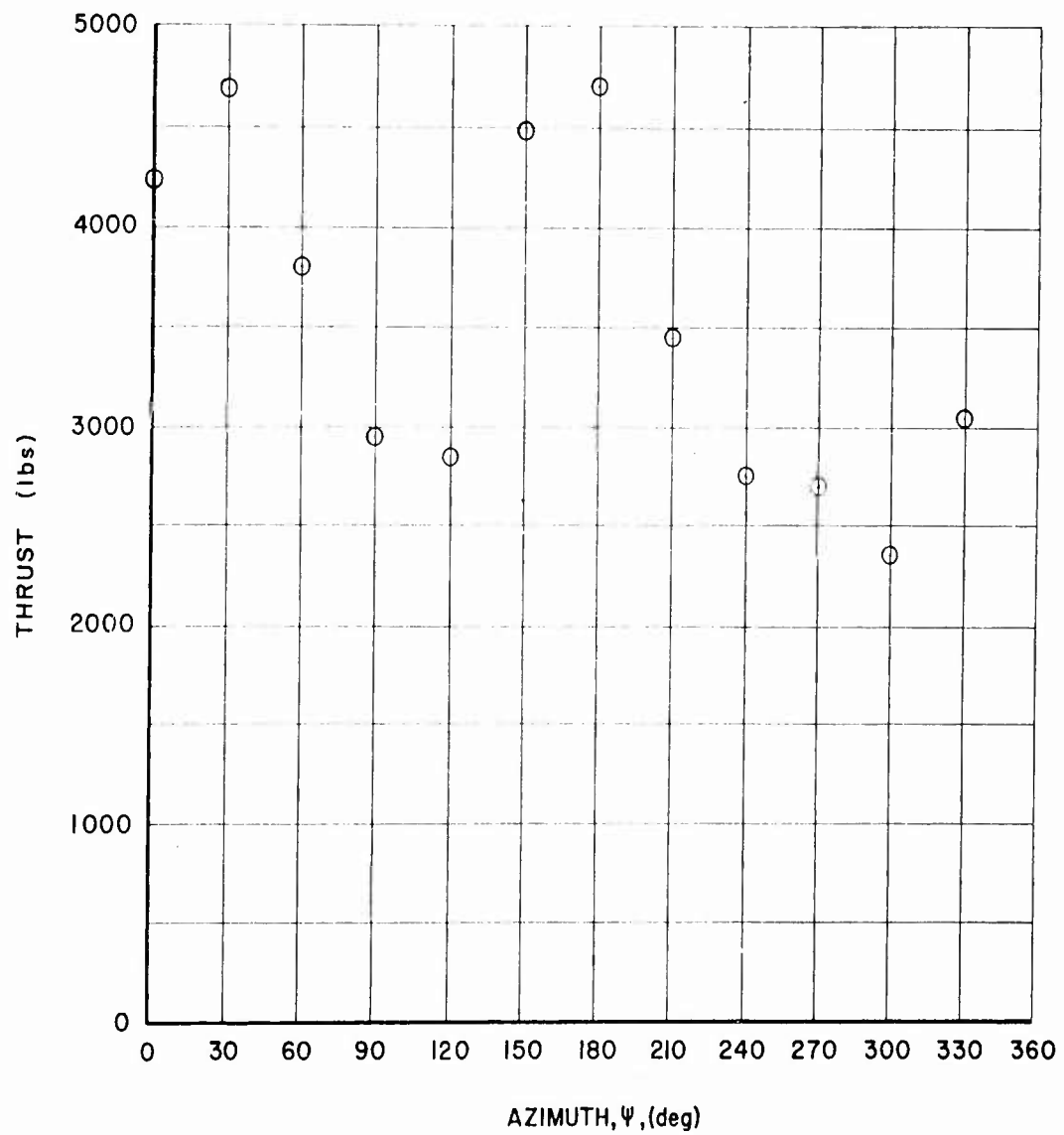


Figure 34i

TOTAL THRUST/BLADE vs AZIMUTH
 (COND.NO.31, LEVEL FLIGHT, $V_{true}=113$ KNOTS).

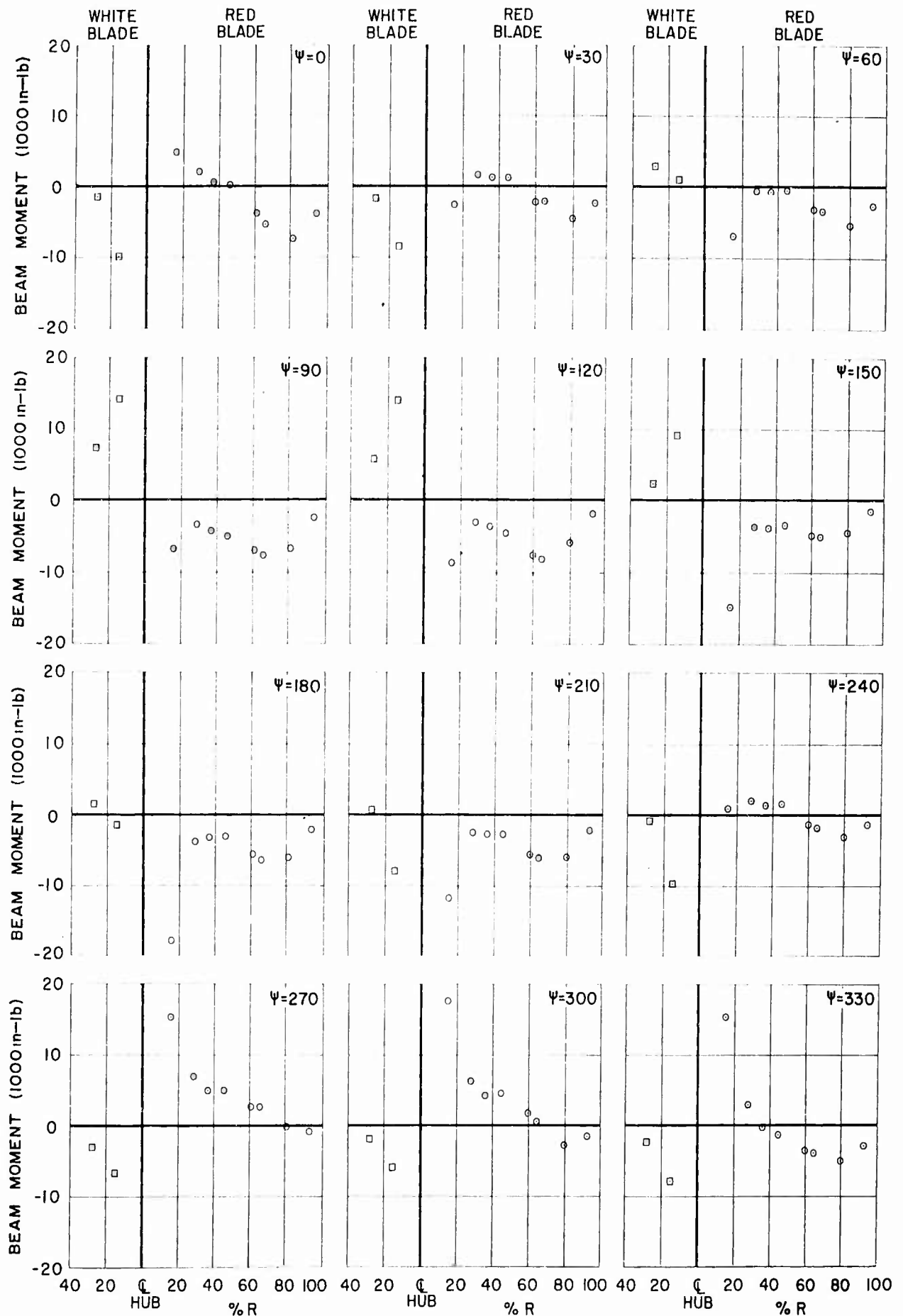


Figure 34j - BEAM MOMENT vs % RADIUS (COND.NO.31, LEVEL FLIGHT, $V_{true}=113$ KNOTS).

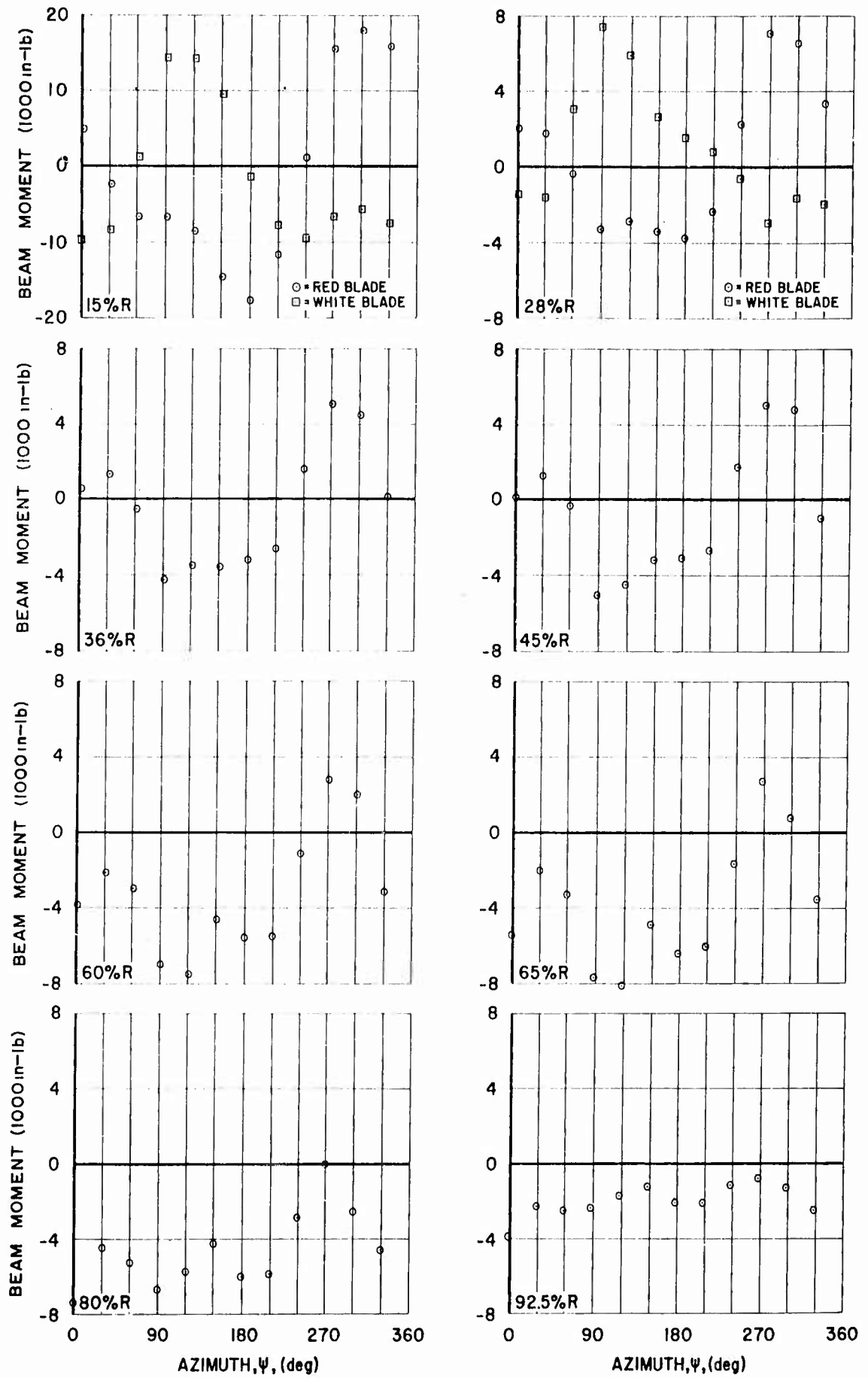


Figure 34k - BEAM MOMENT vs AZIMUTH (COND.NO.31, LEVEL FLIGHT, $V_{true}=113$ KNOTS).

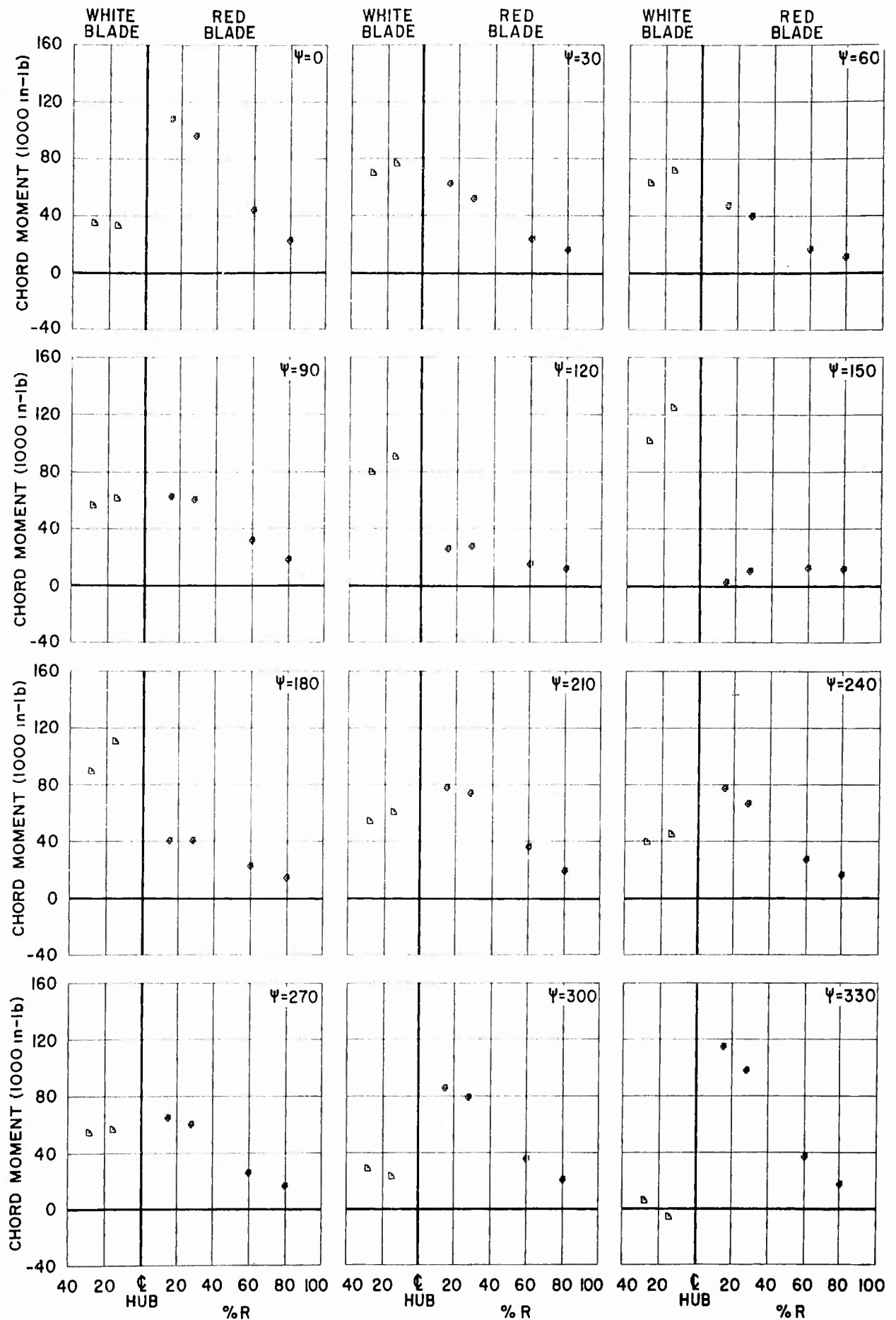


Figure 34m - CHORD MOMENT vs % RADIUS (COND.NO.31, LEVEL FLIGHT, $V_{true}=113$ KNOTS),

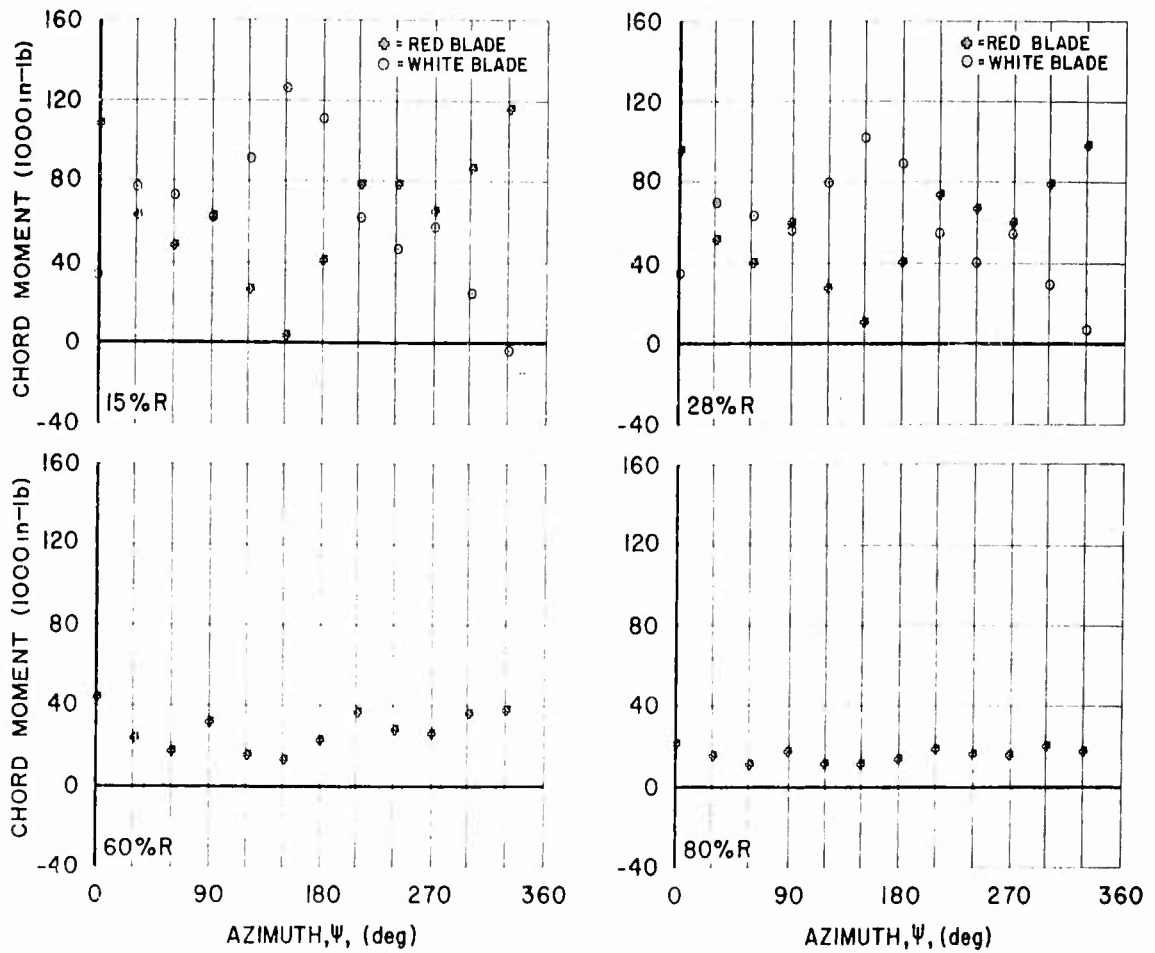


Figure 34n - CHORD MOMENT vs AZIMUTH (COND.NO.31, LEVEL FLIGHT, $V_{true}=113$ KNOTS).

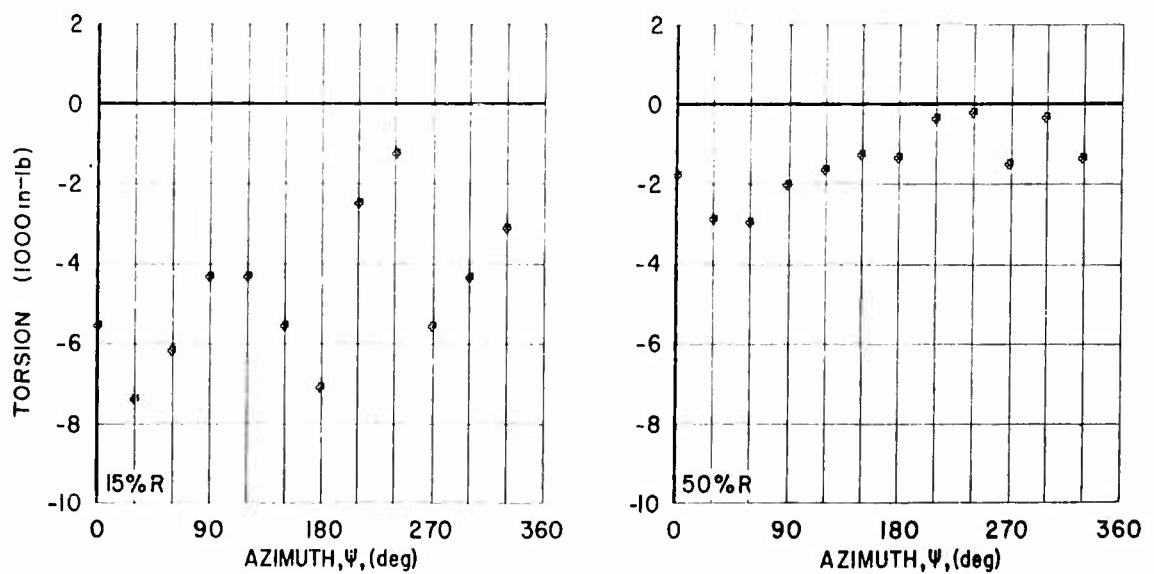


Figure 34o - TORSION vs AZIMUTH (COND.NC.31, LEVEL FLIGHT, $V_{true}=113$ KNOTS).

FIGURE 35, GRAPHICAL DATA
TYPE I CONDITION NO. 42
HOVER OUT OF GROUND EFFECT

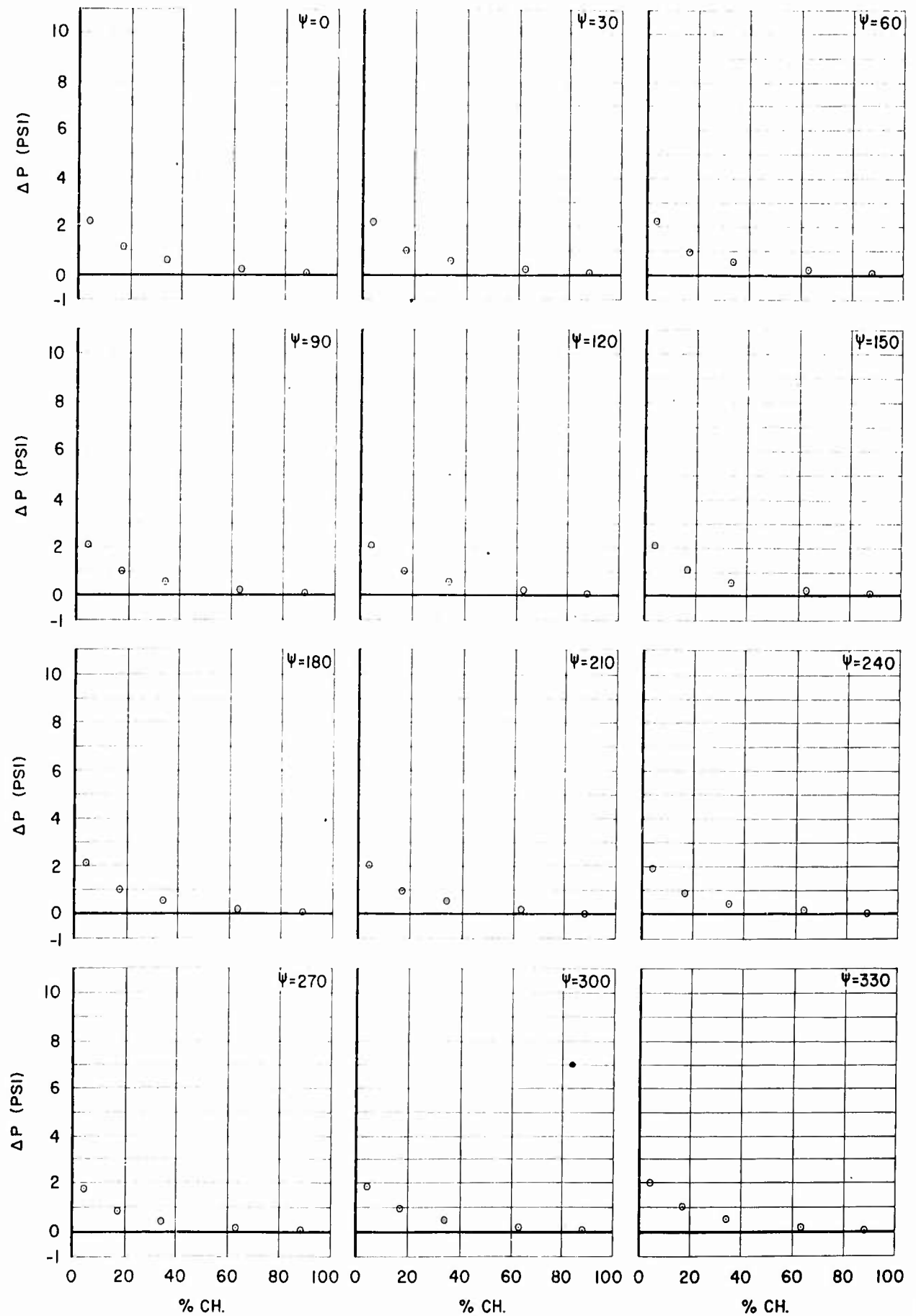


Figure 35a - ΔP vs % CHORD (40% R, COND.NO.42, HOVER O.G.E.).

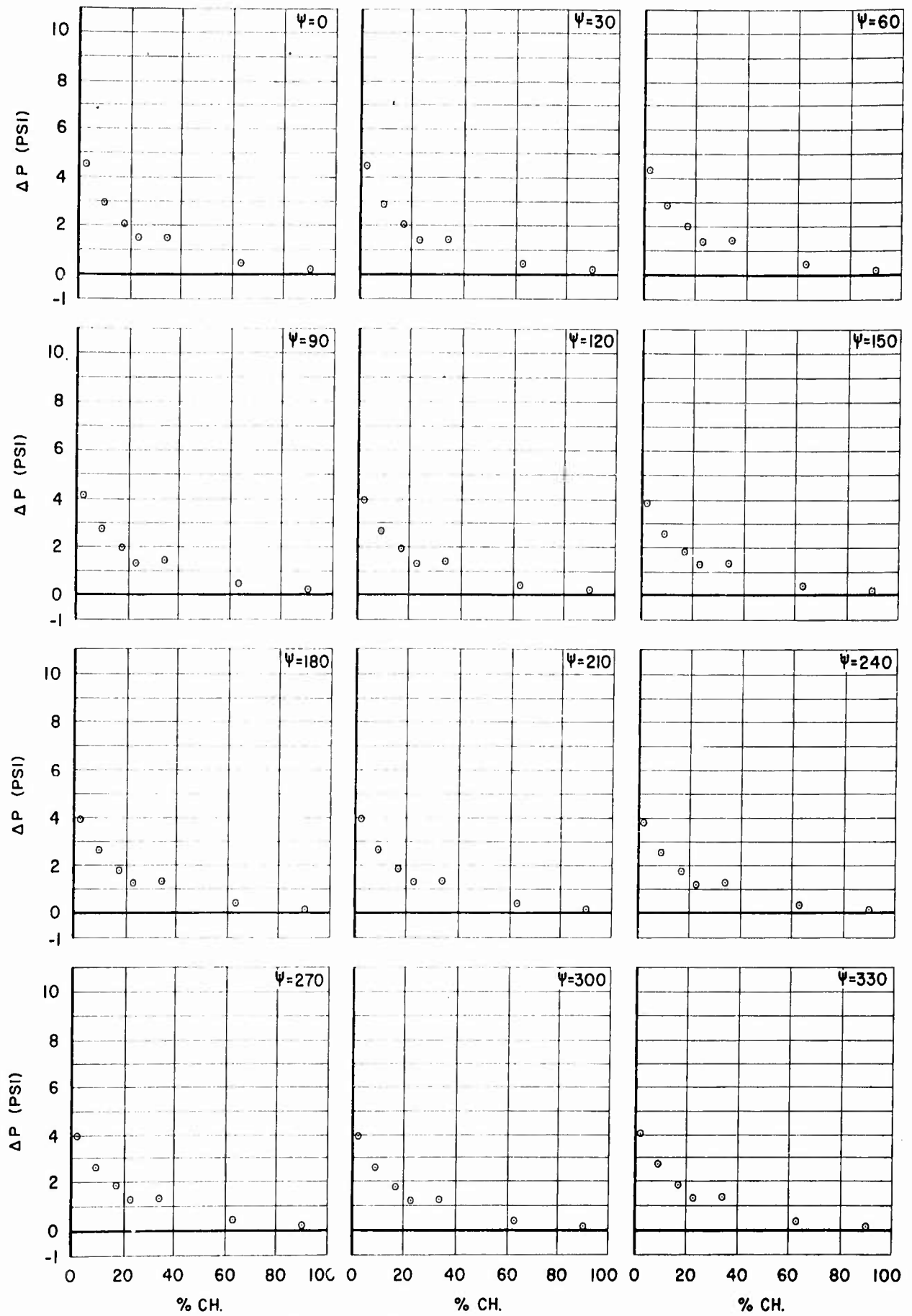


Figure 35b $-\Delta P$ vs % CHORD (55% R, COND.NO.42, HOVER O.G.E.).

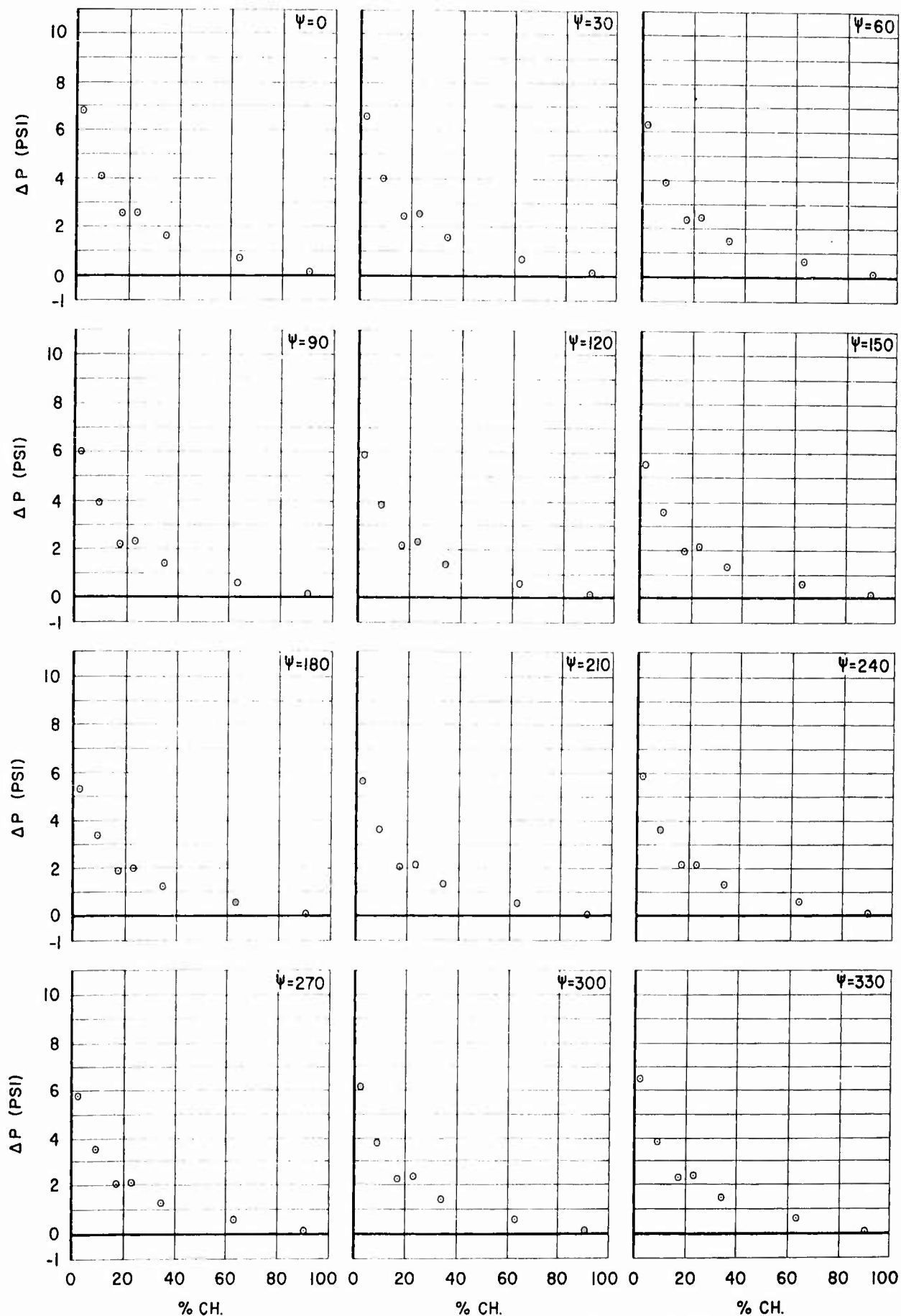


Figure 35c $-\Delta P$ vs % CHORD (75% R, COND.NO.42, HOVER O.G.E.).

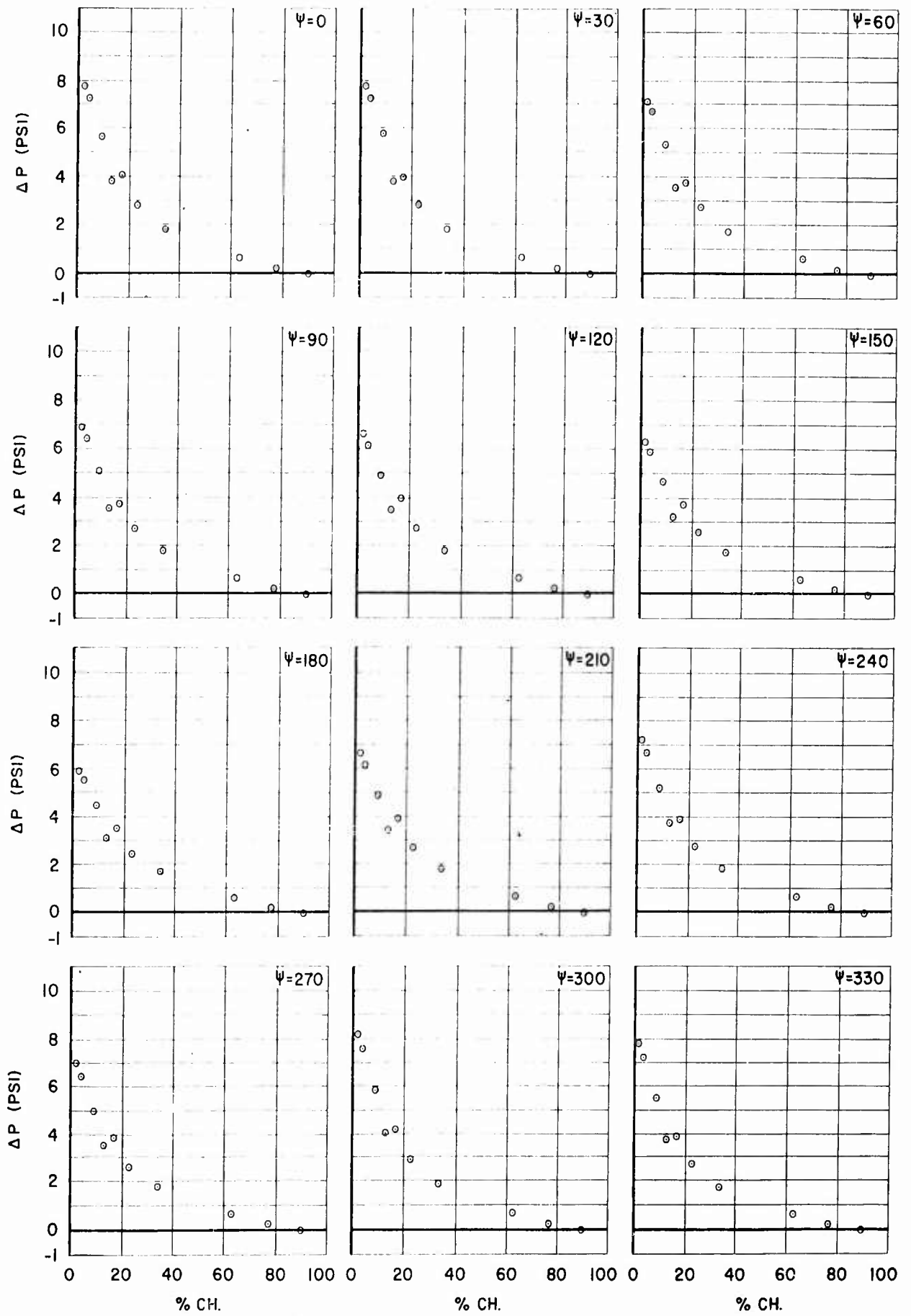


Figure 35d - ΔP vs % CHORD (85% R, COND.NO.42, HOVER O.G.E.).

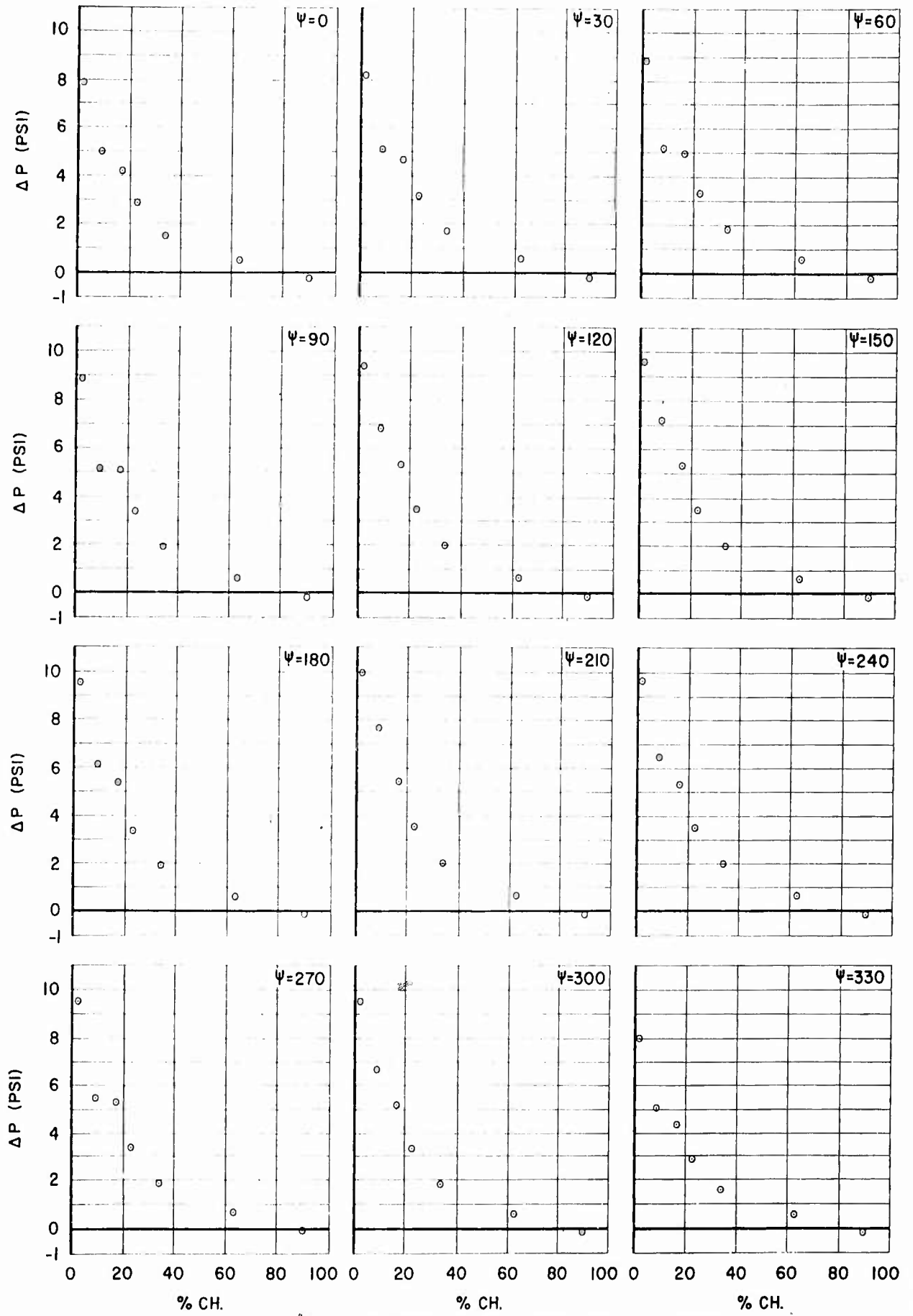


Figure 35e ΔP vs % CHORD (90°R, COND. NO.42, HOVER O.G.E.).

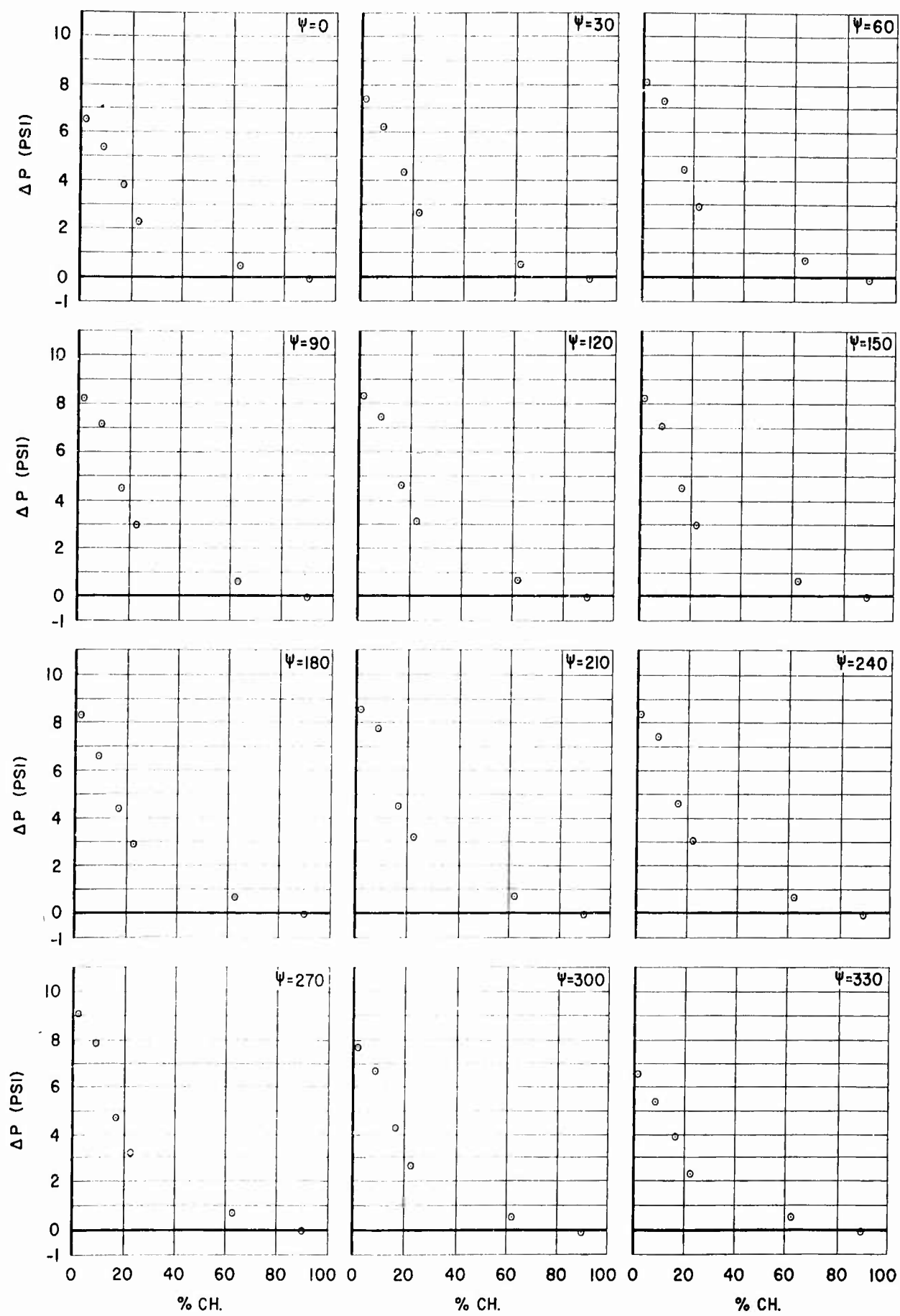


Figure 35f - ΔP vs % CHORD (95% R, COND.NO.42, HOVER O.G.E.).

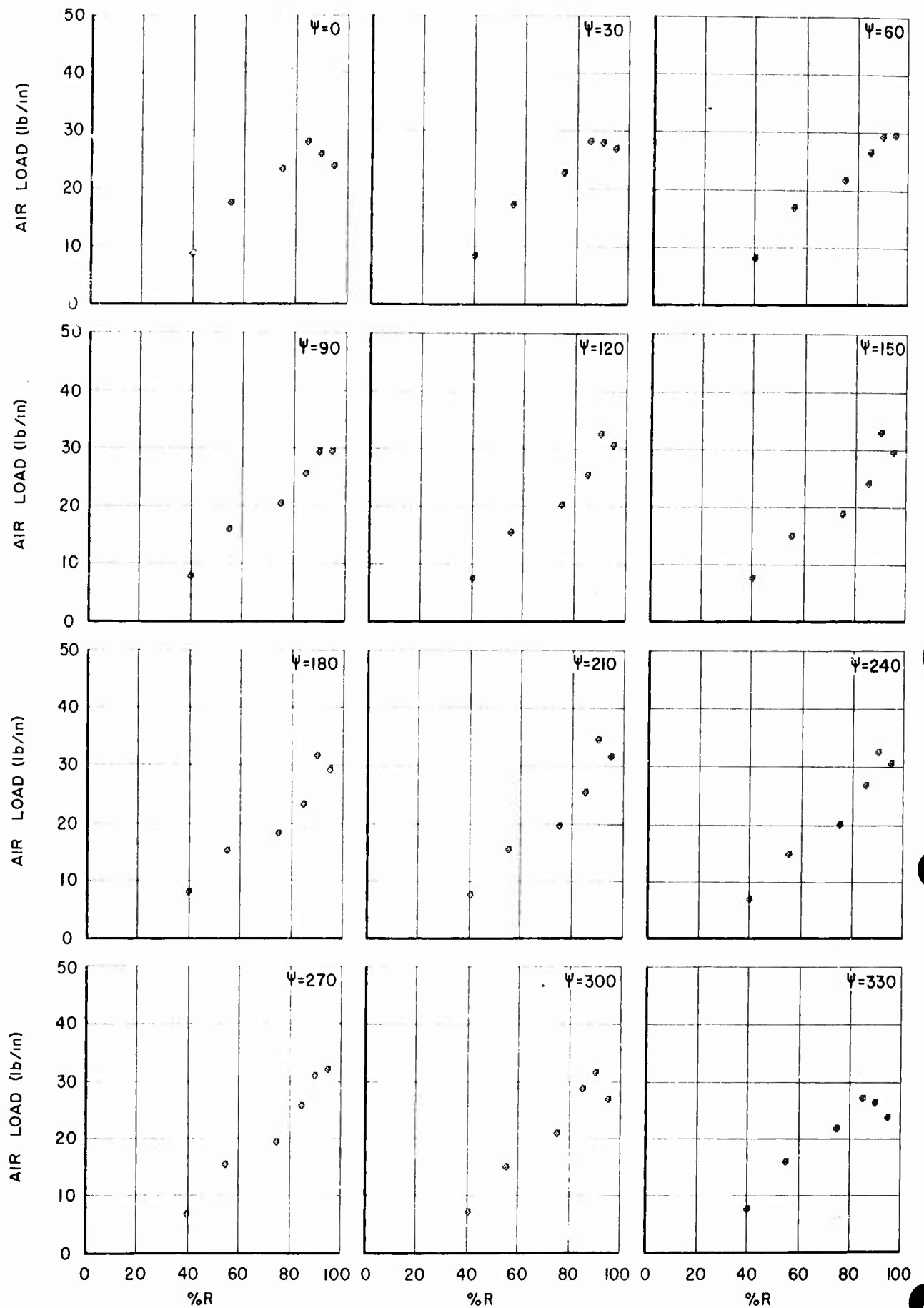


Figure 35g - AIR LOAD vs % RADIUS (COND.NO.42, HOVER O.G.E.).

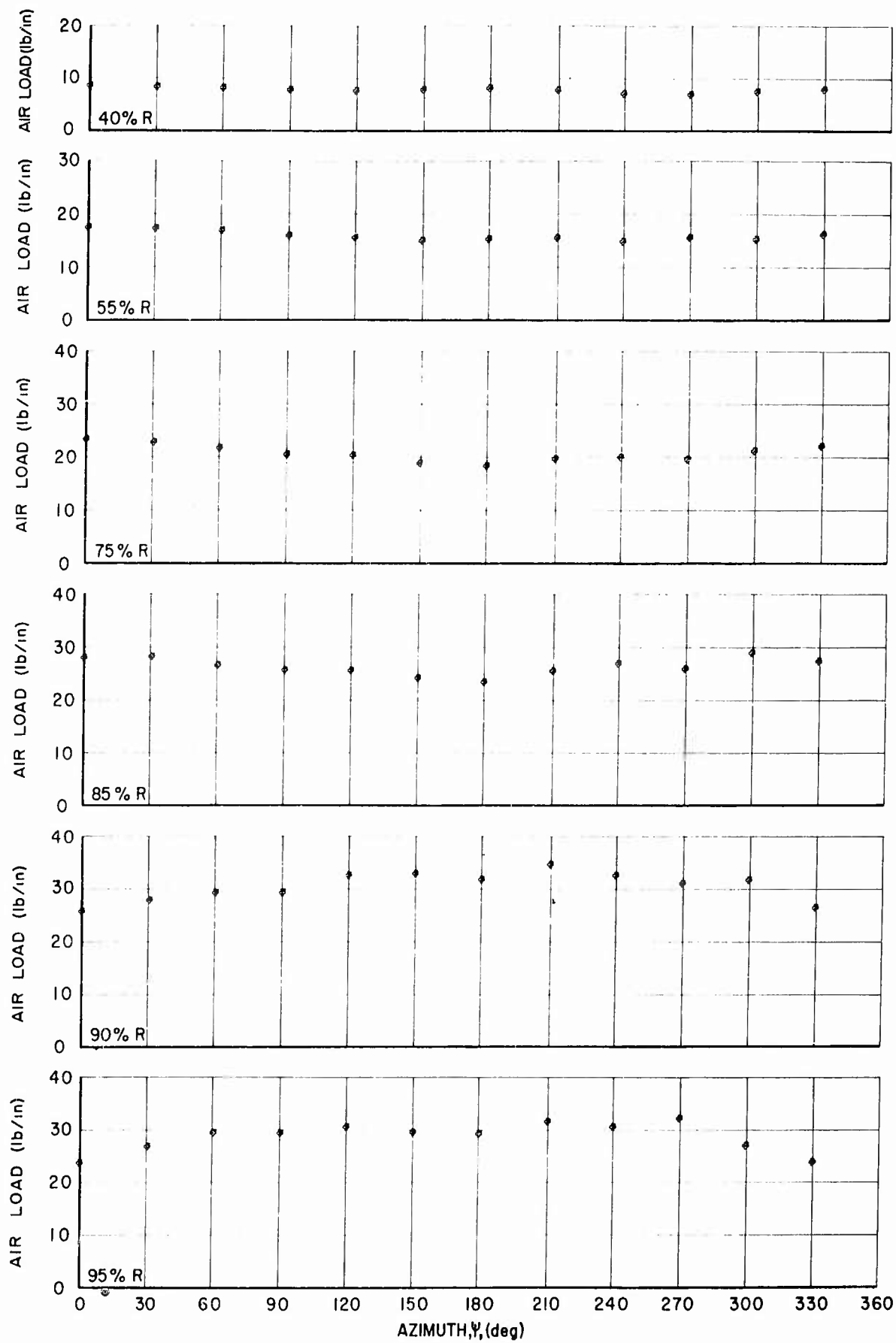


Figure 35h - AIR LOAD vs AZIMUTH (COND.NO.42, HOVER O.G.E.).

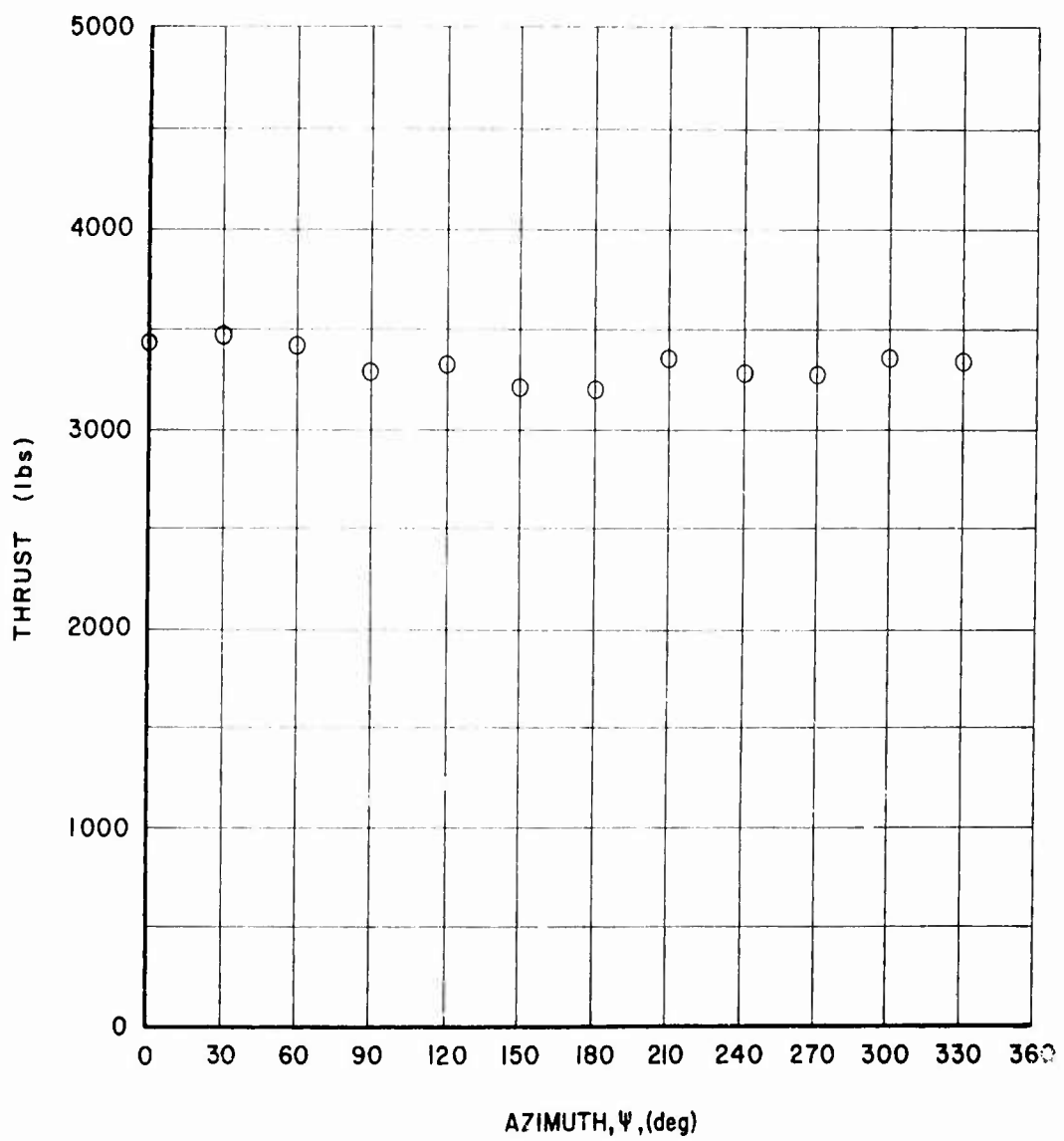


Figure 35i - TOTAL THRUST/BLADE vs AZIMUTH (COND.NO.42, HOVER O.G.E.).

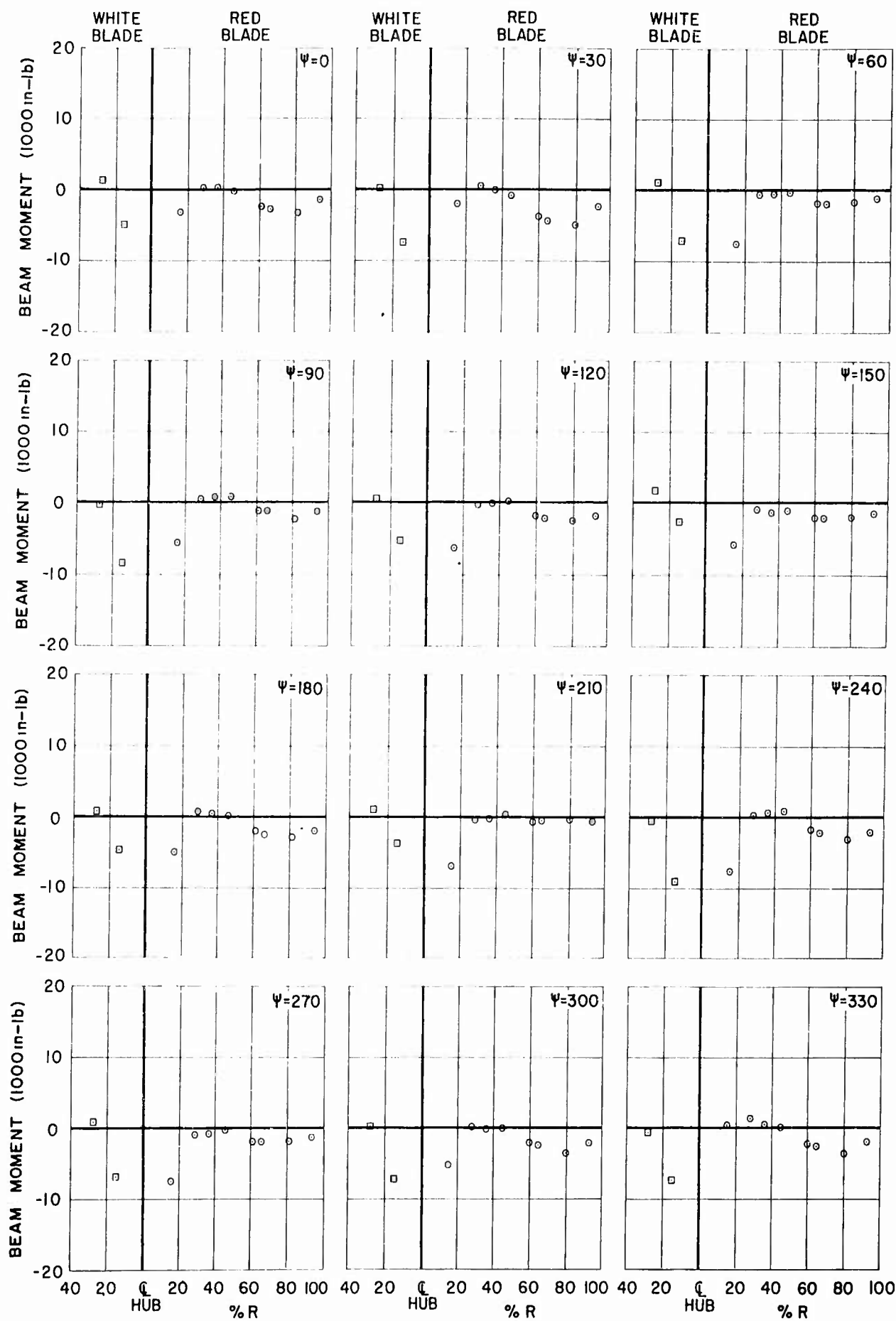


Figure 35j - BEAM MOMENT vs % RADIUS (COND.NO.42, HOVER O.G.E.).

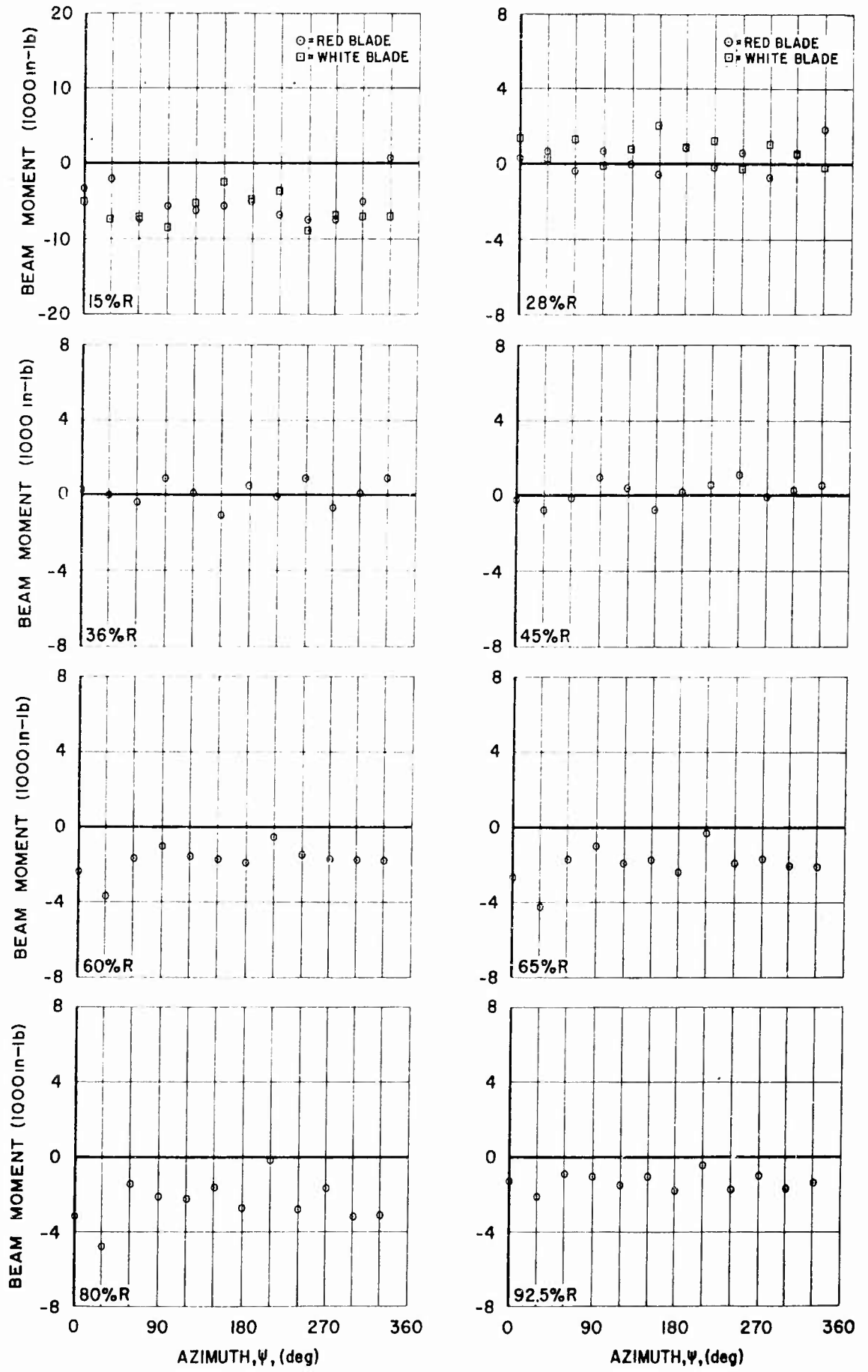


Figure 35k - BEAM MOMENT vs AZIMUTH (COND.NO.42, HOVER O.G.E.).

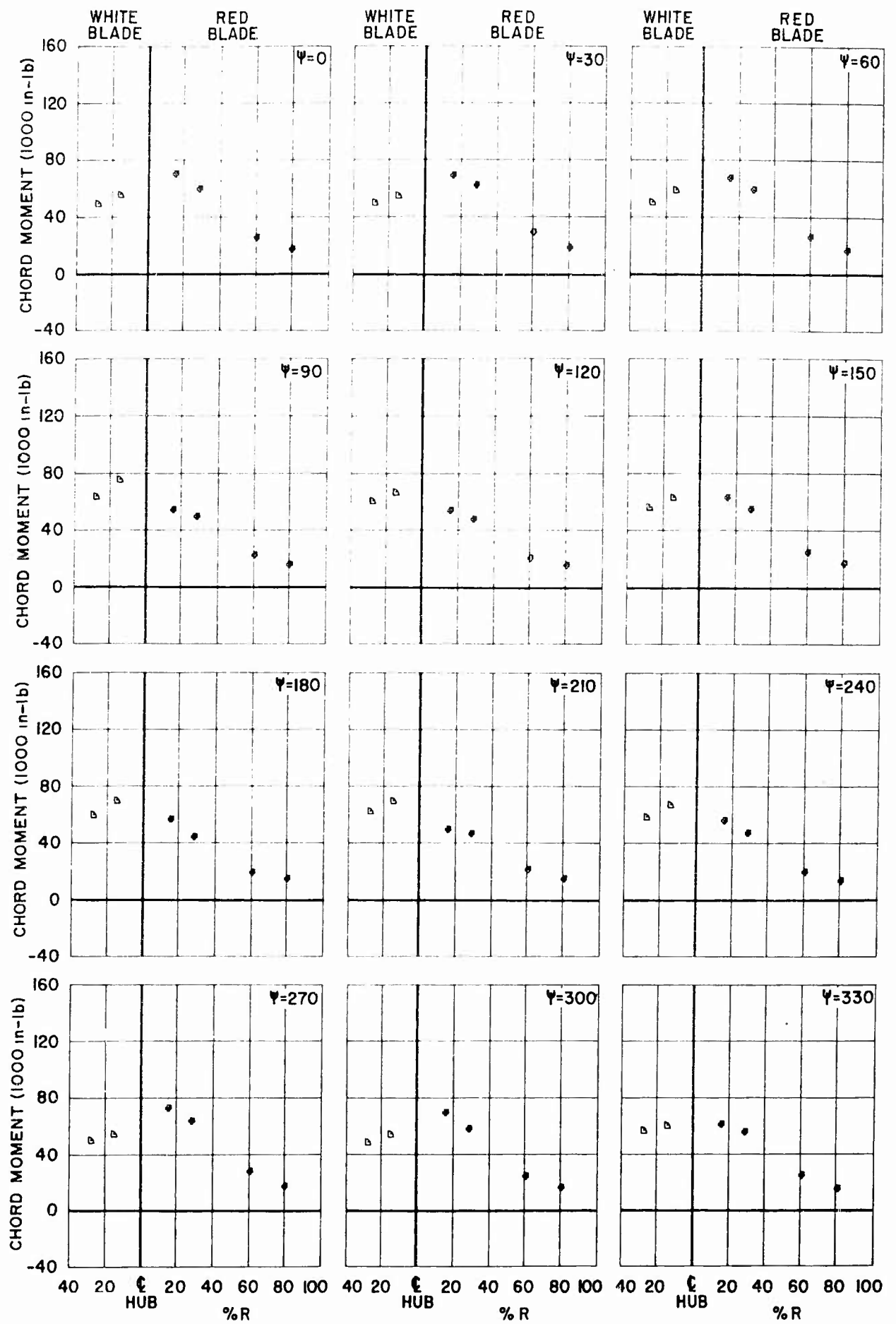


Figure 35m - CHORD MOMENT vs % RADIUS (COND.NO.42, HOVER O.G.E.).

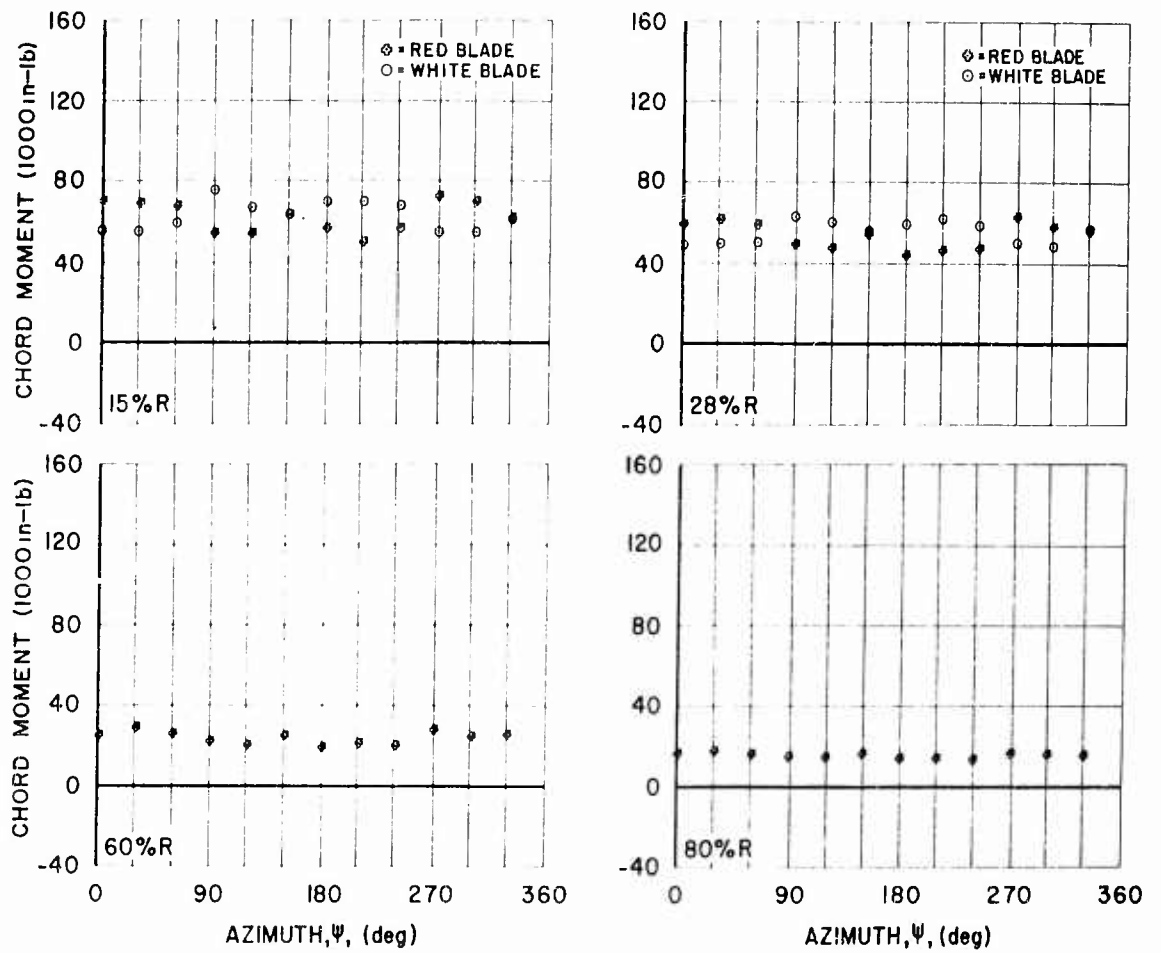


Figure 35n - CHORD MOMENT vs AZIMUTH (COND.NO.42, HOVER O.G.E.),

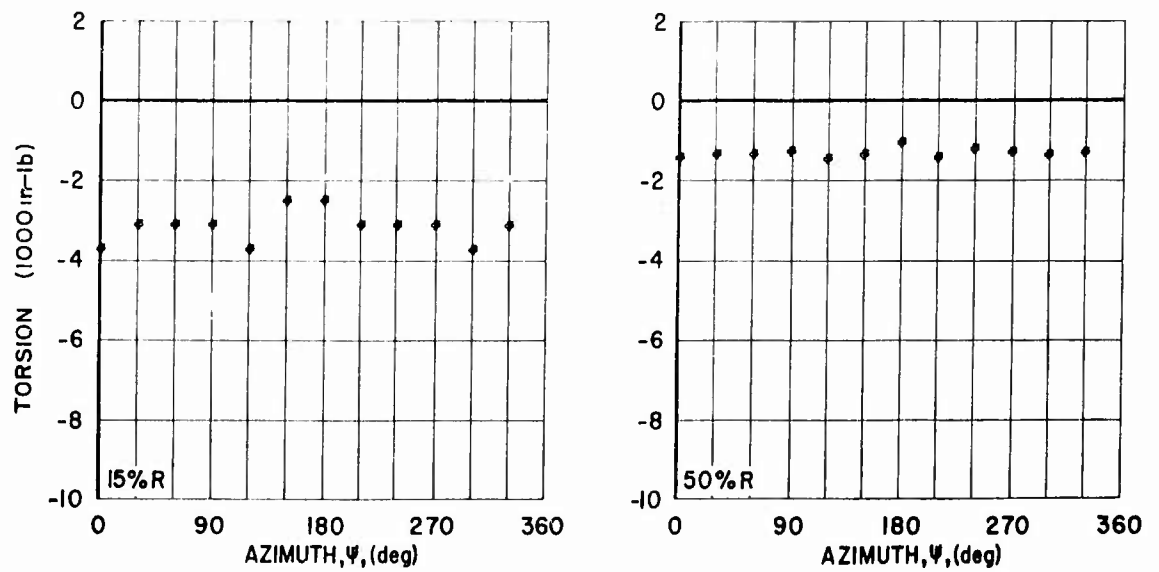


Figure 35o - TORSION vs AZIMUTH (COND.NO.42, HOVER O.G.E.).

FIGURE 36, GRAPHICAL DATA

TYPE I CONDITION NO. 55

HIGH ALTITUDE STALL THRESHOLD, TRUE AIRSPEED = 91 KNOTS

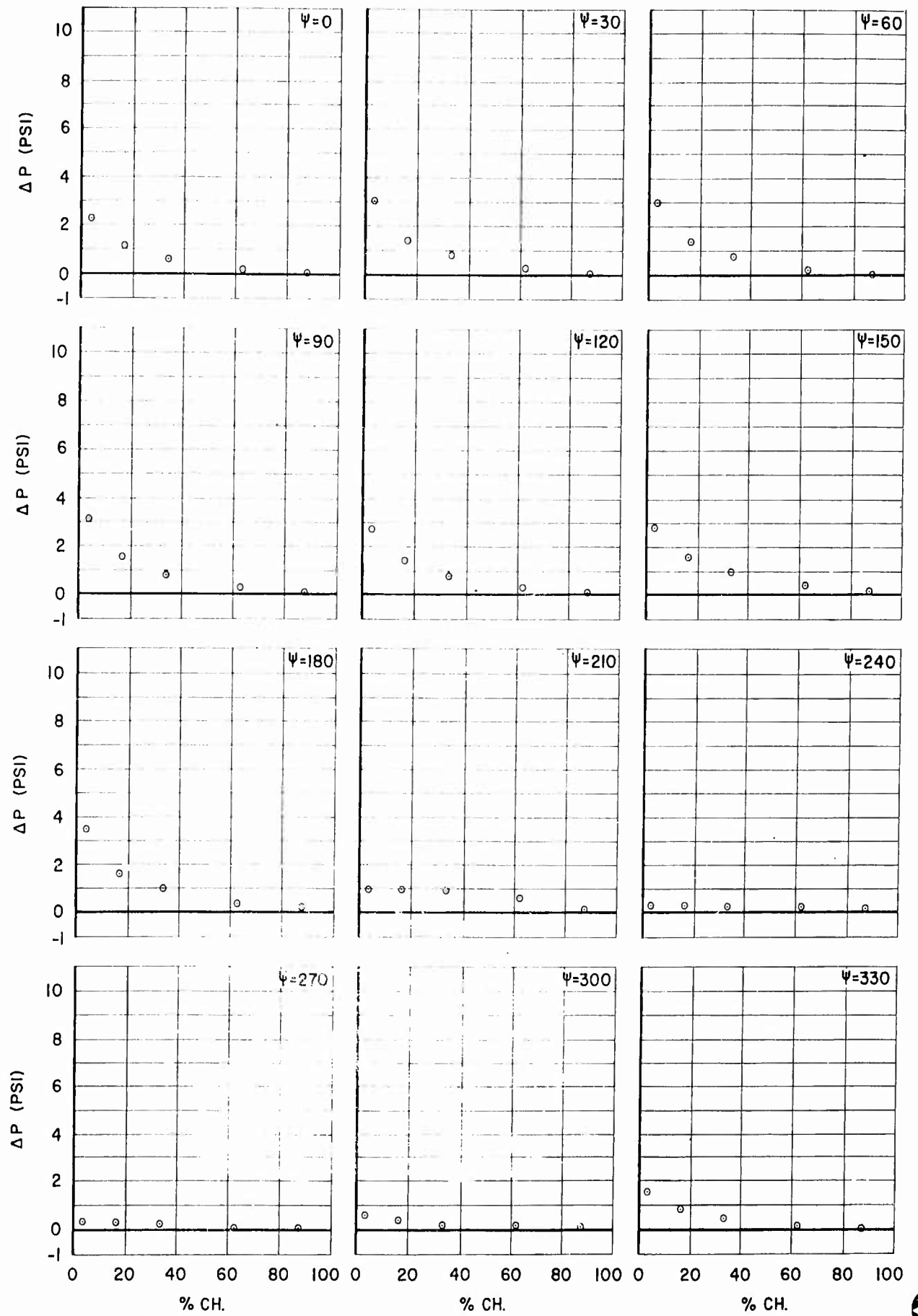


Figure 36a- ΔP vs % CHORD (40% R, COND. NO. 55, HIGH ALT. STALL THRESHOLD, $V_{true}=91$ KNOTS).

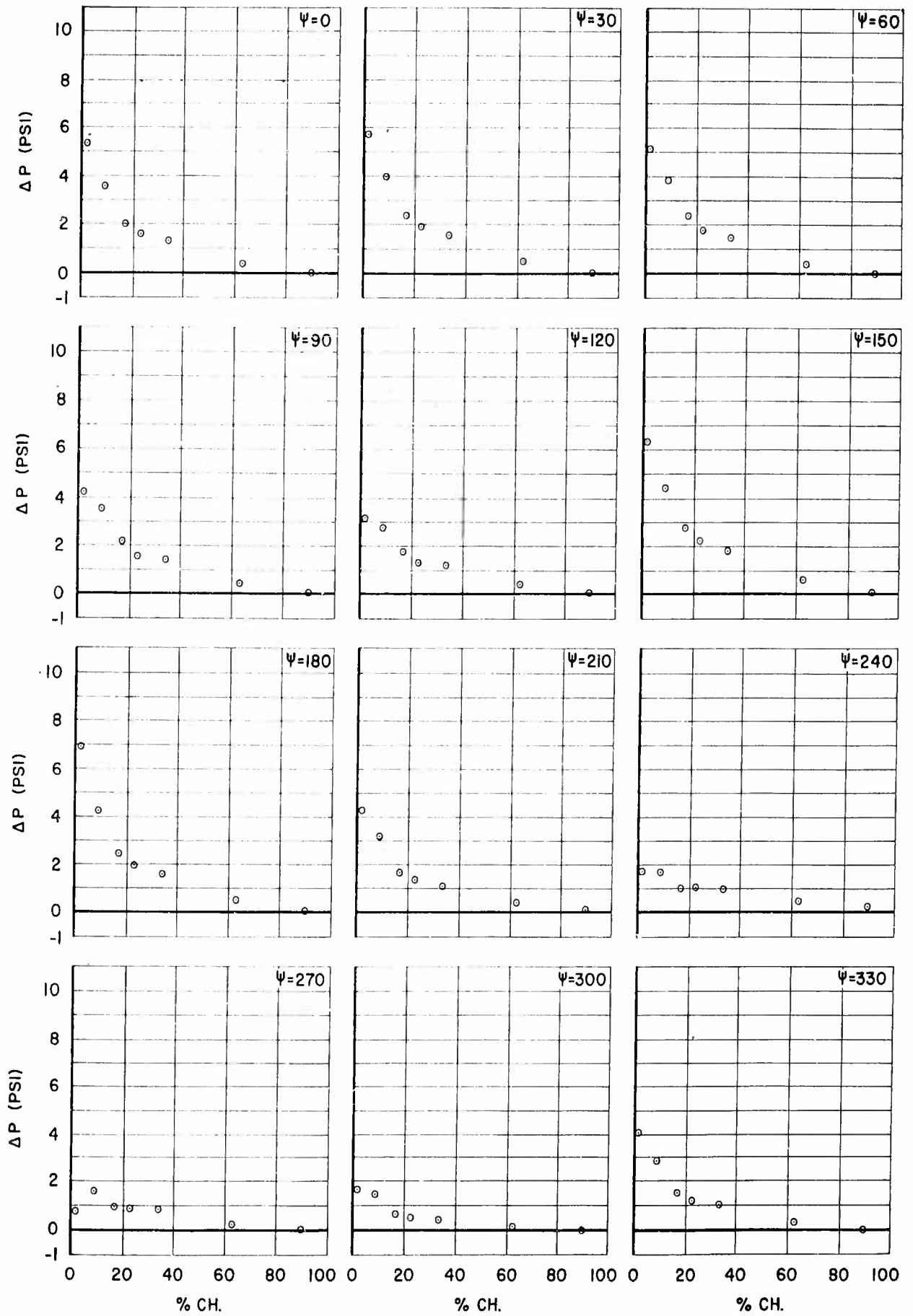


Figure 36b- ΔP vs % CHORD (55% R, COND. NO. 55, HIGH ALT. STALL THRESHOLD, $V_{true}=91$ KNOTS),

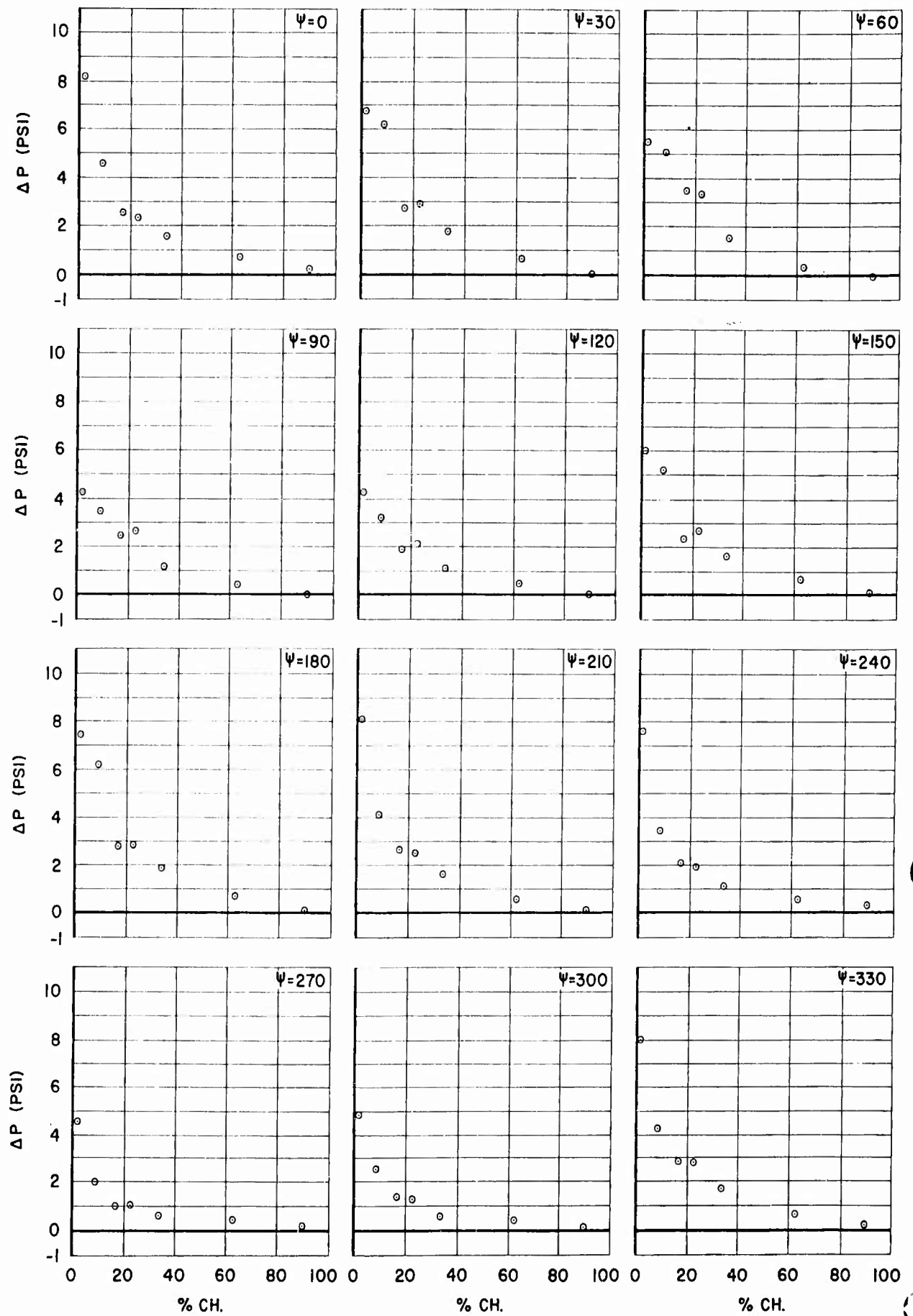


Figure 36c- ΔP vs % CHORD (75% R, COND. NO. 55, HIGH ALT. STALL THRESHOLD, $V_{true}=91$ KNOTS).

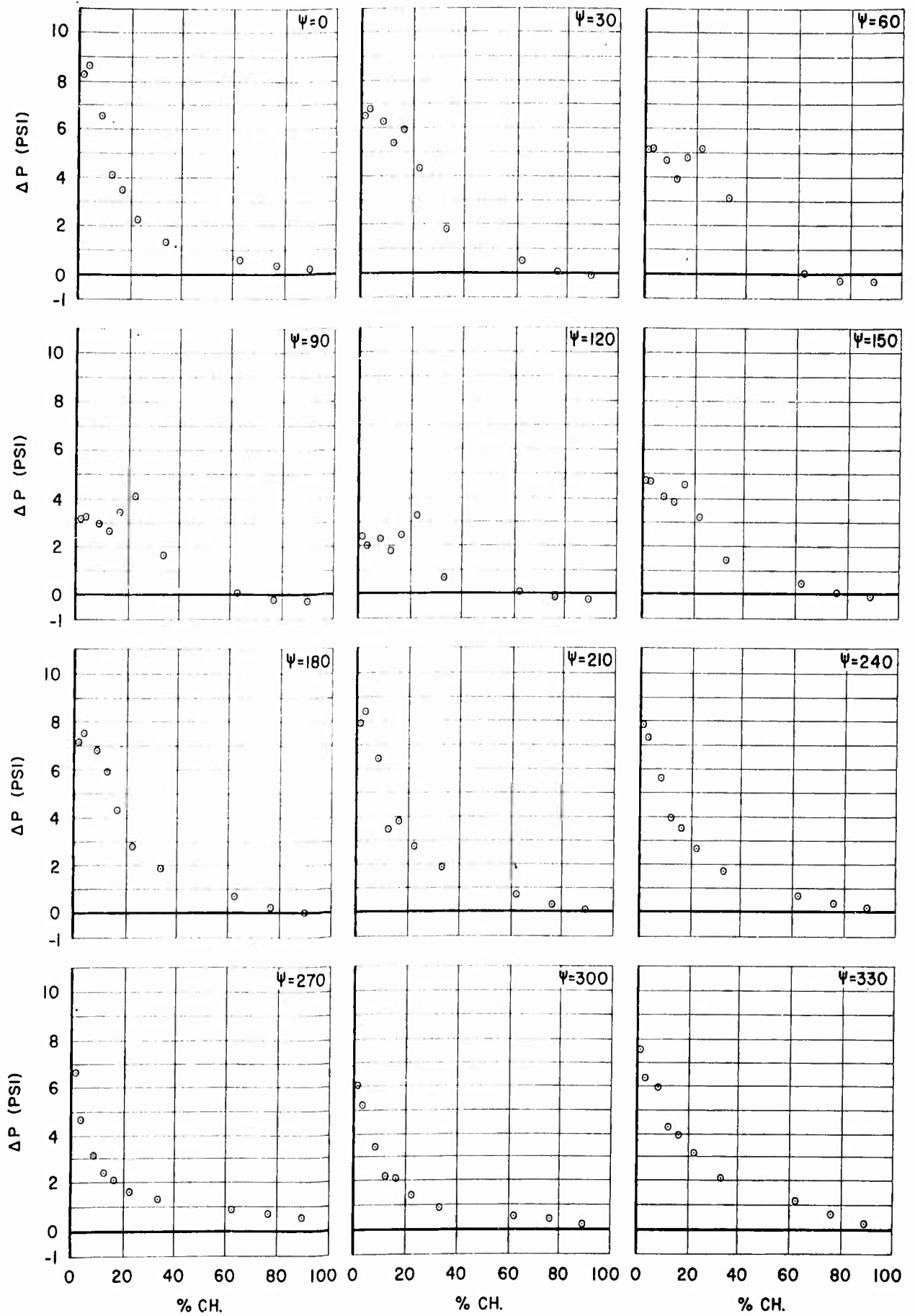


Figure 36d- ΔP vs % CHORD (85% R, COND. NO. 55, HIGH ALT. STALL THRESHOLD, $V_{true} = 91$ KNOTS).

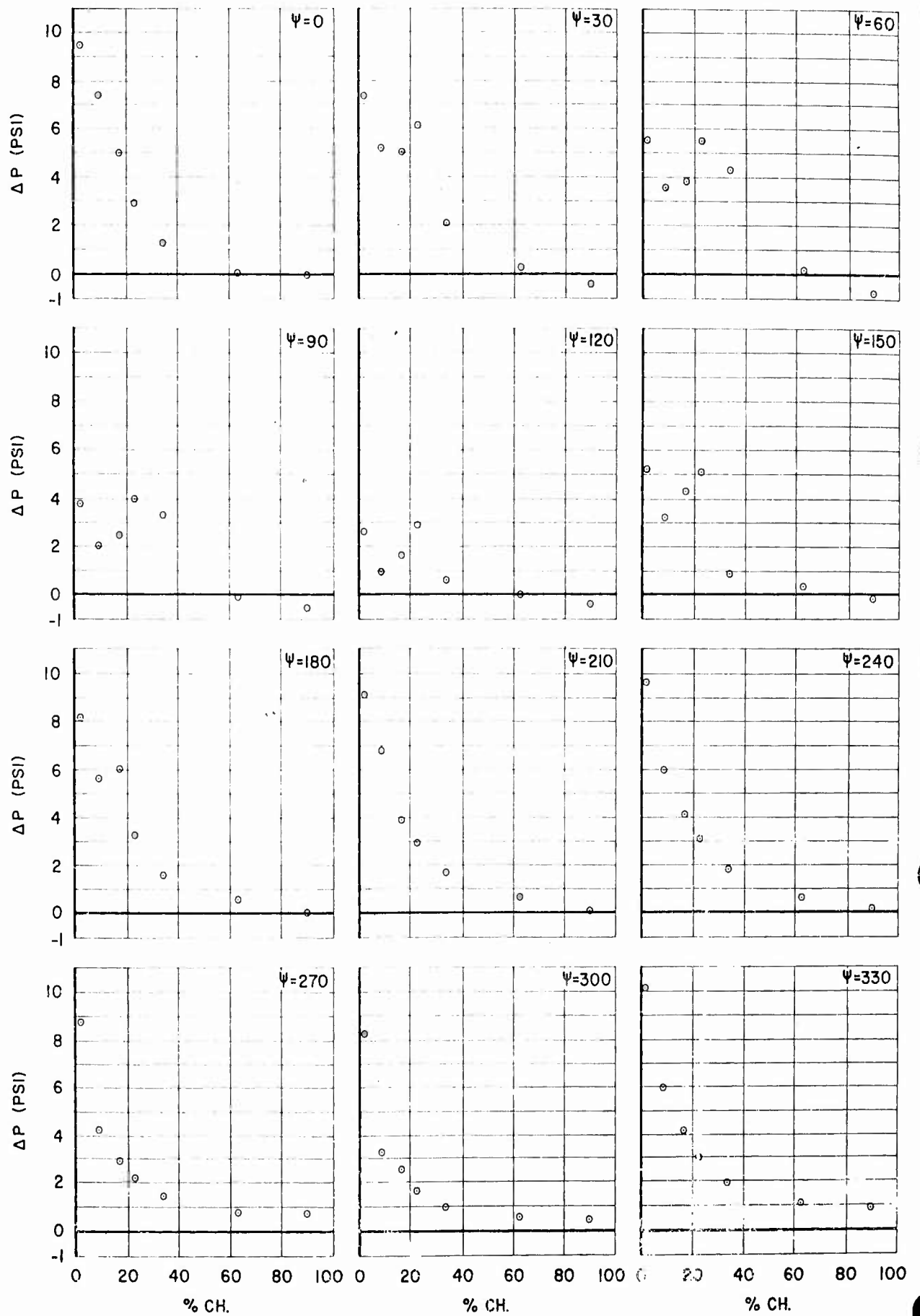


Figure 36e- ΔP vs % CHORD (0% R, COND. NO. 55, HIGH ALT. STALL THRESHOLD, $V_{true}=91$ KNOTS).

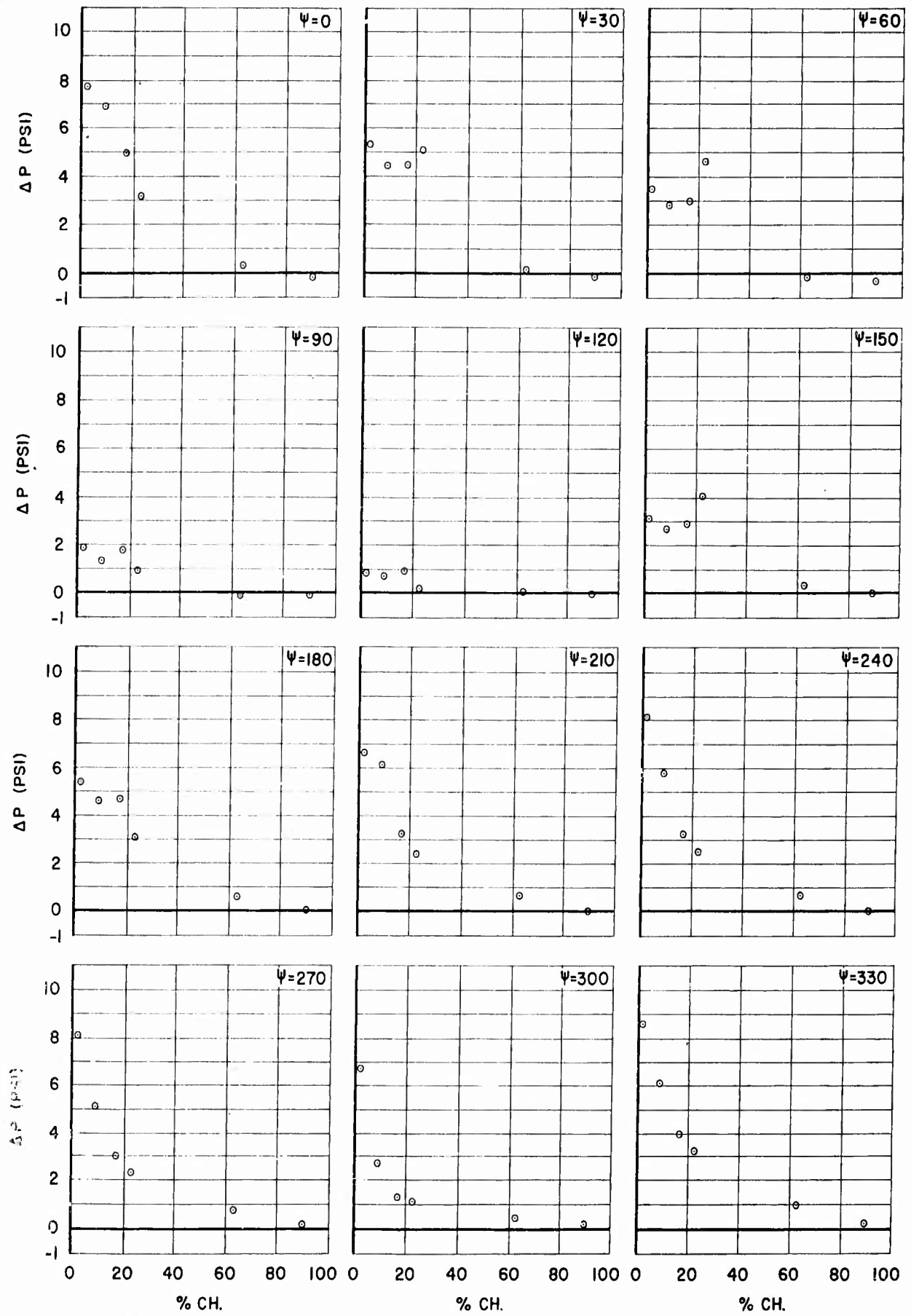


Figure 36f- ΔP vs % CHORD (95% R, COND. NO. 55, HIGH ALT. STALL THRESHOLD, $V_{true}=91$ KNOTS).

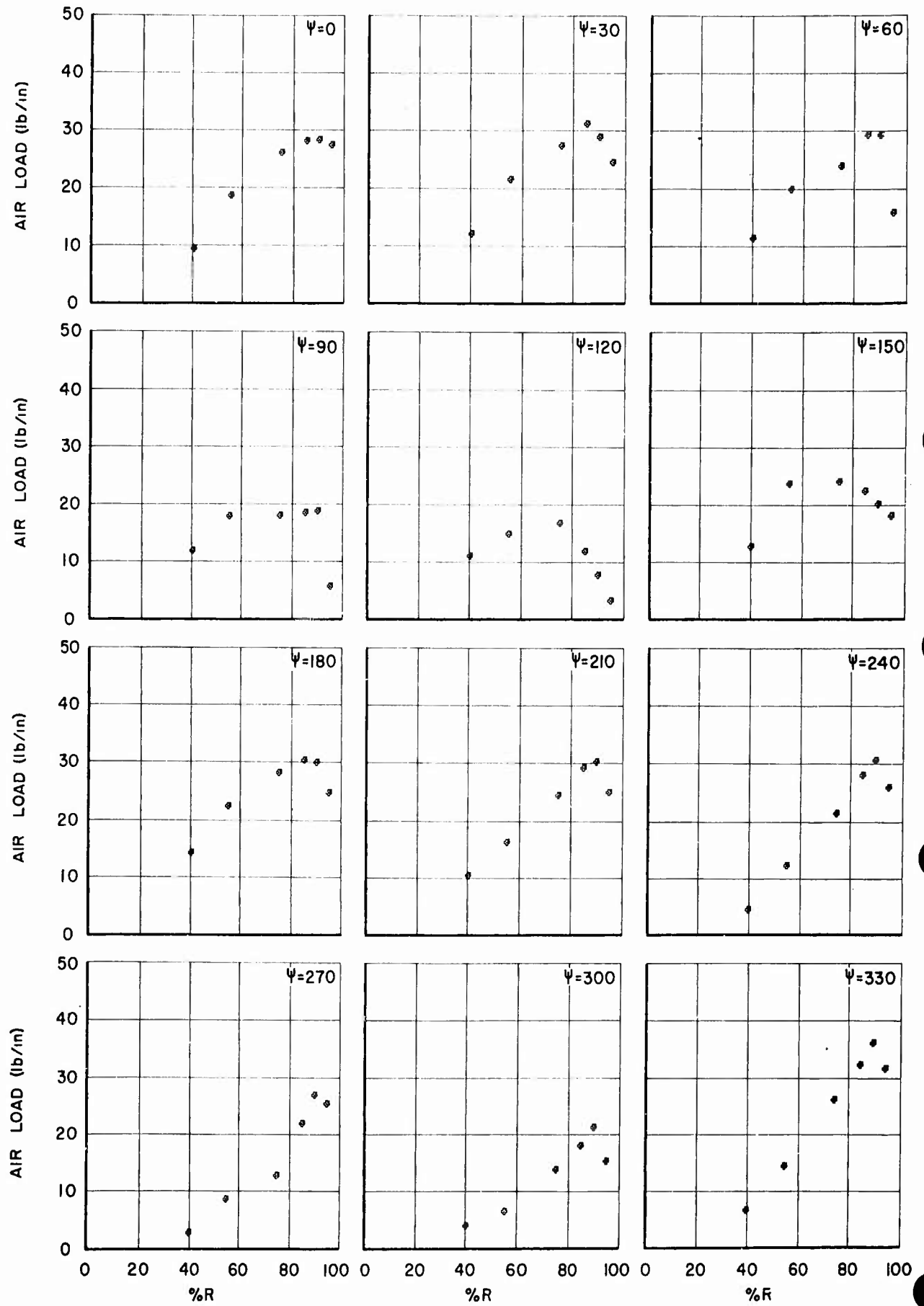


Figure 36g- AIR LOAD vs % RADIUS (COND.NO.55,HIGH ALT.STALL THRESHOLD,Vtrue=91KNOTS).

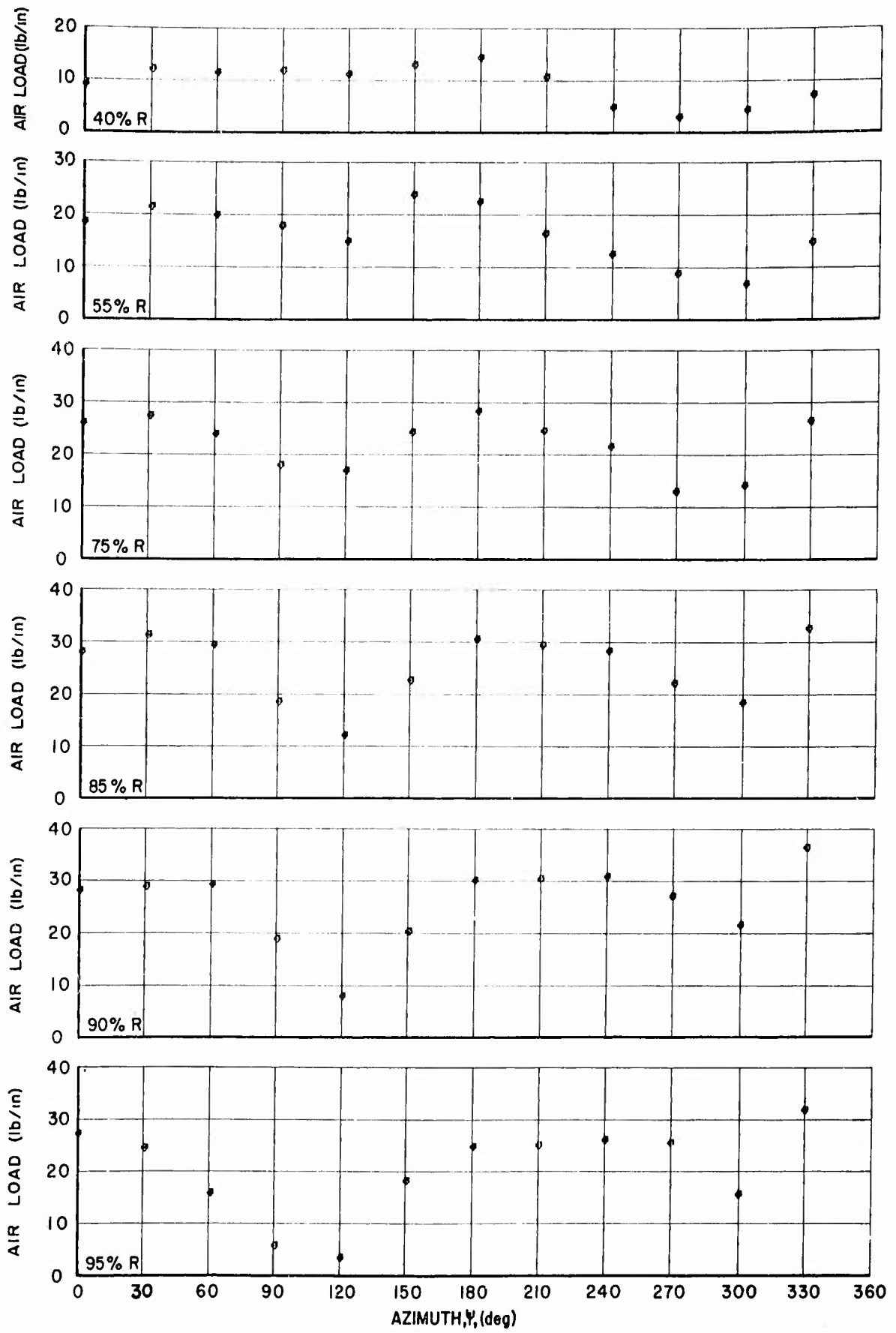


Figure 36h-AIR LOAD vs AZIMUTH (COND.NO.55,HIGH ALT.STALL THRESHOLD, $V_{true}=91$ KNOTS).

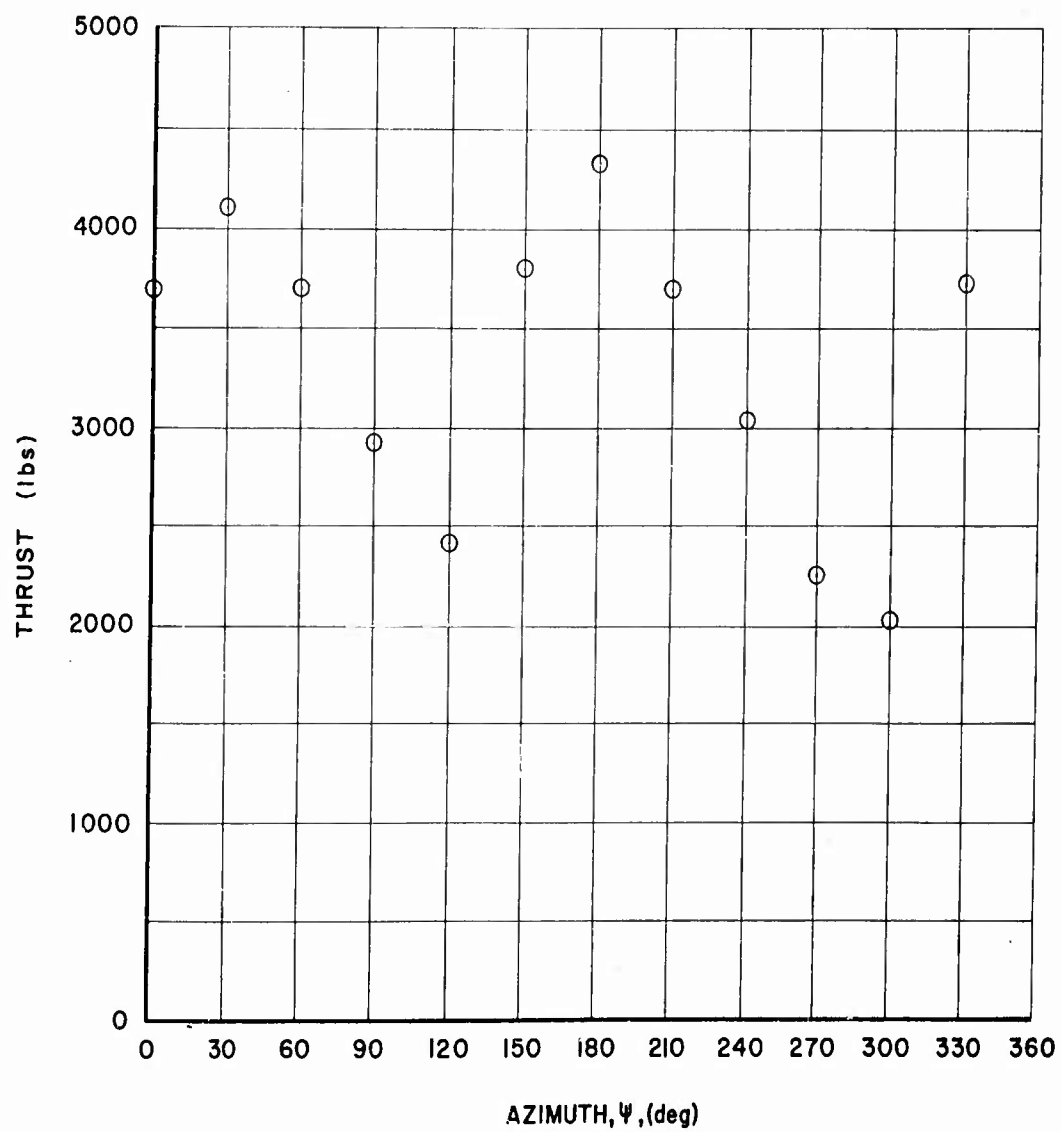


Figure 36i TOTAL THRUST/BLADE vs AZIMUTH
 (COND. NO. 55, HIGH ALT. STALL THRESHOLD, $V_{true}=91$ KNOTS).

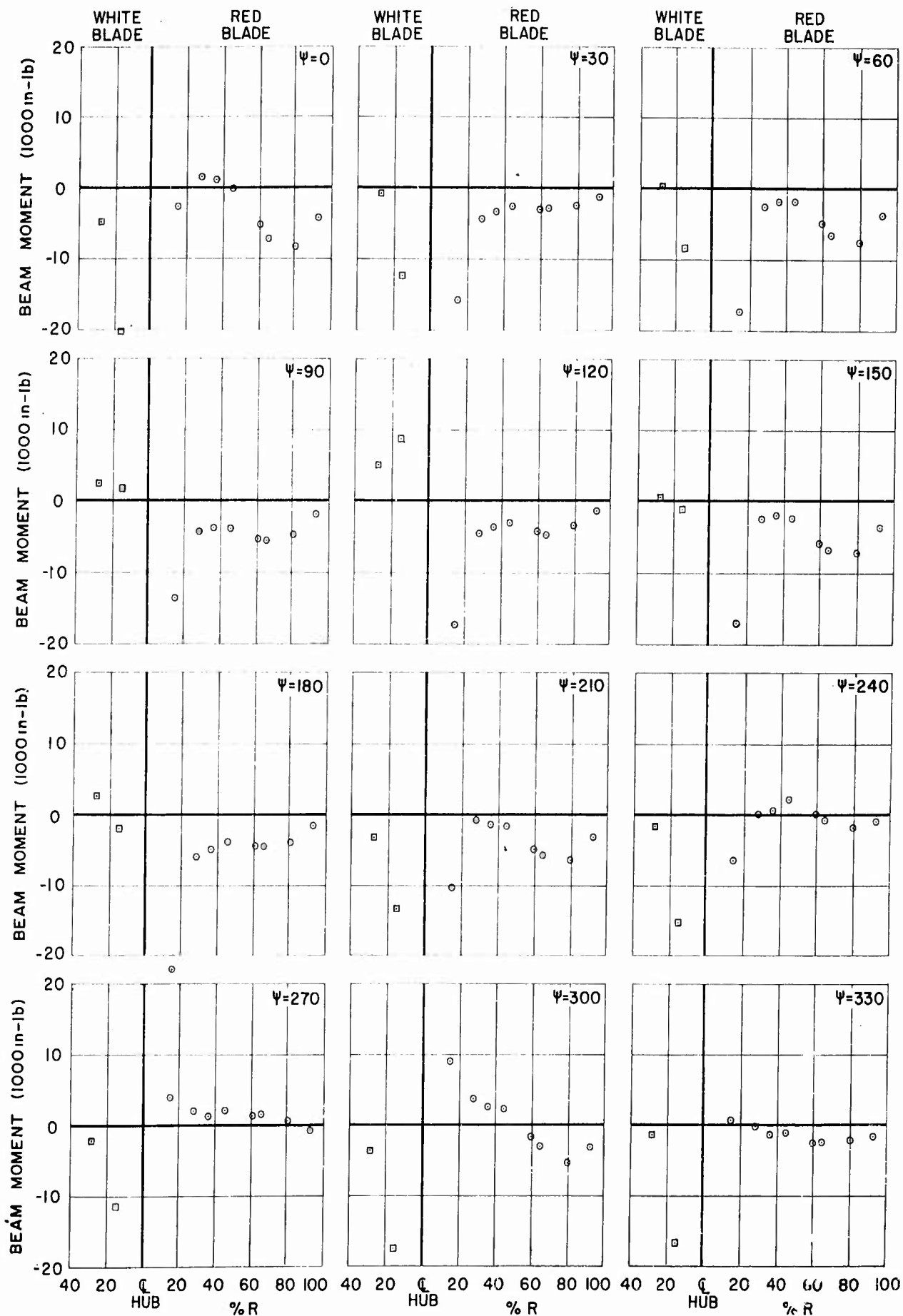


Figure 36j-BEAM MOMENT vs % RADIUS (COND.NO.55,HIGH ALT.STALL THRESHOLD, V_{tr} =91KNOTS),
169

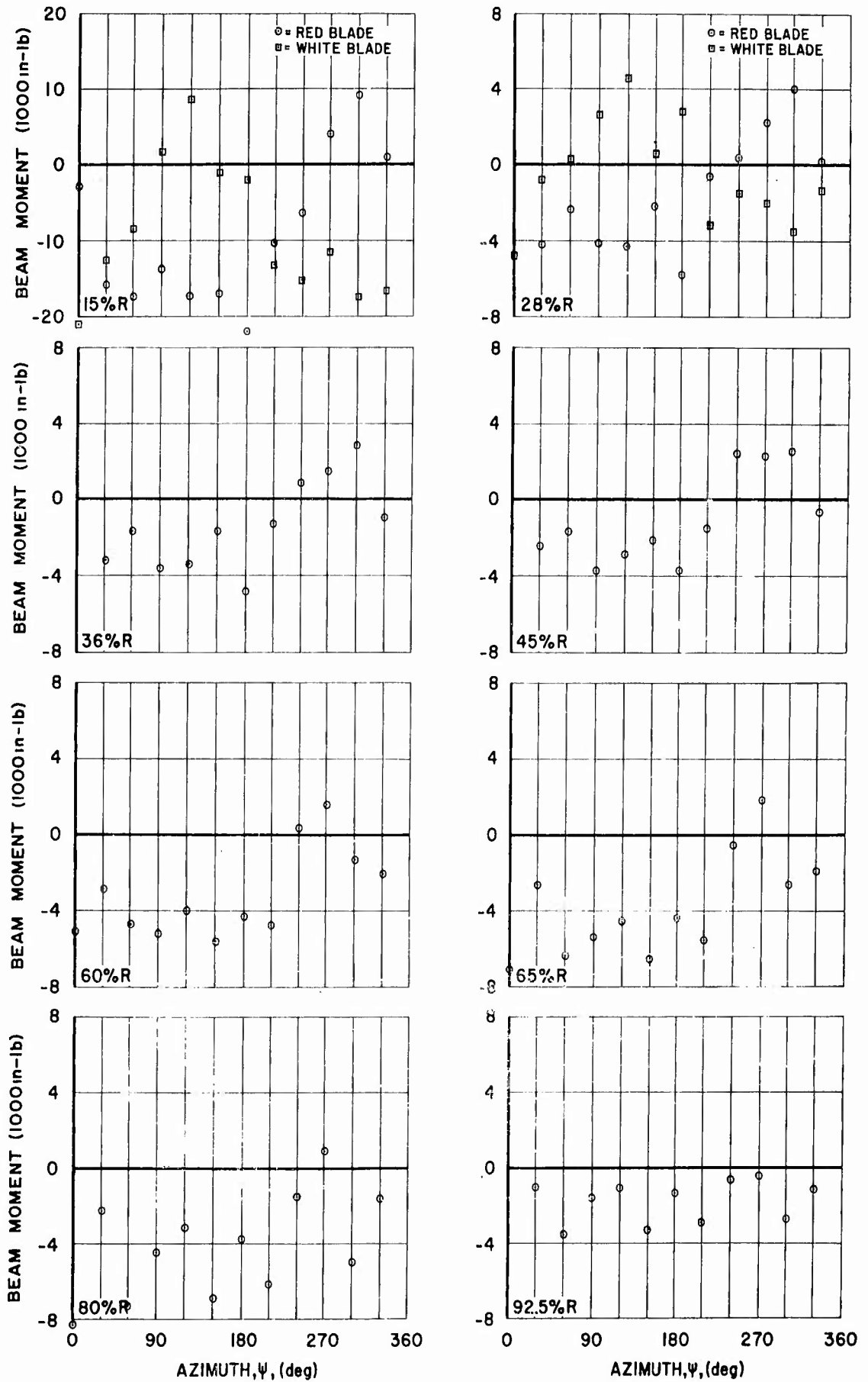


Figure 36k-BEAM MOMENT vs AZIMUTH (COND. NO. 55, HIGH ALT. STALL THRESHOLD, $V_{true} = 91$ KNOTS).

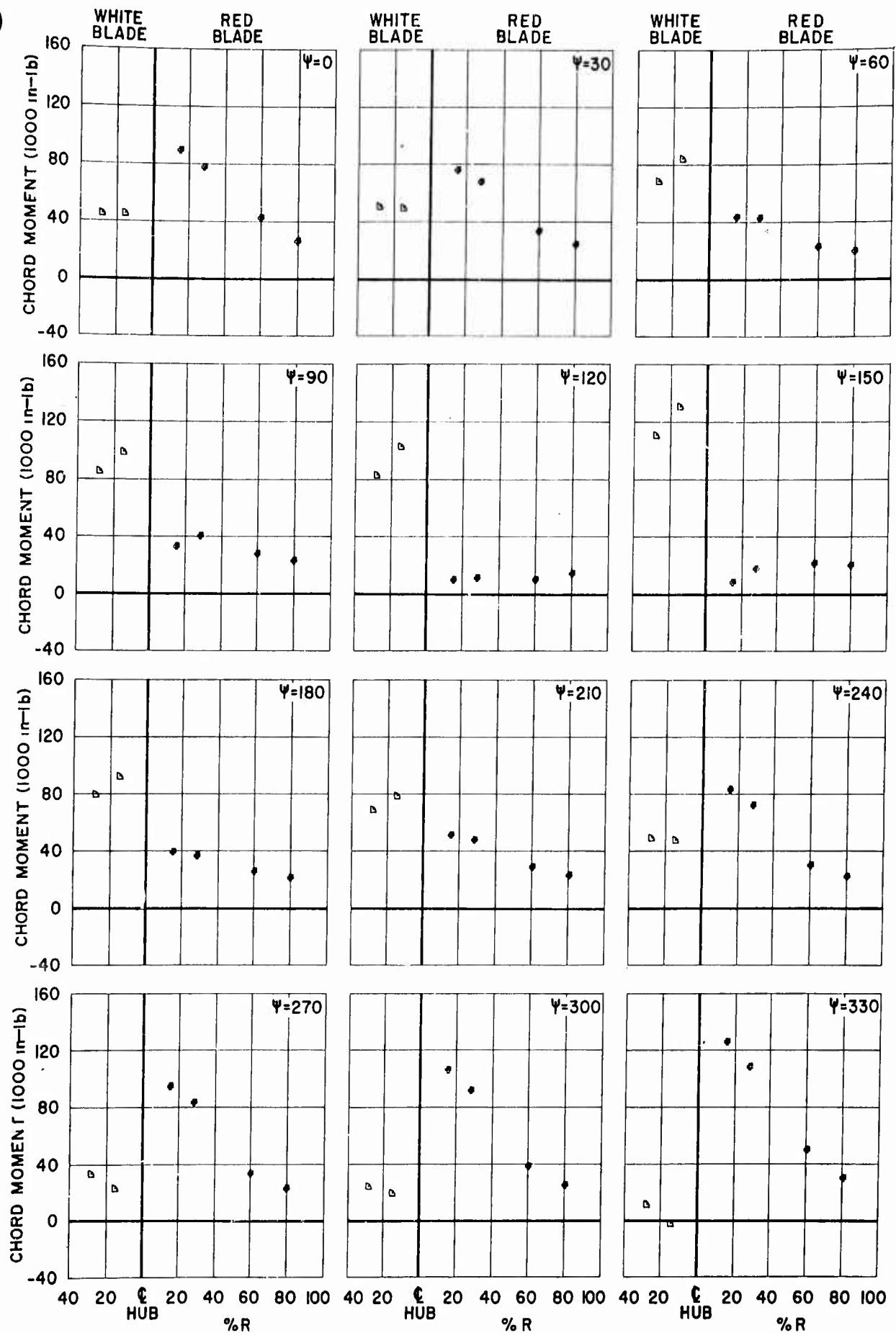


Figure 36m-CHORD MOMENT vs % RADIUS (COND.NO.55,HIGH ALT.STALL THRESHOLD,Vtrue=91KNOTS).

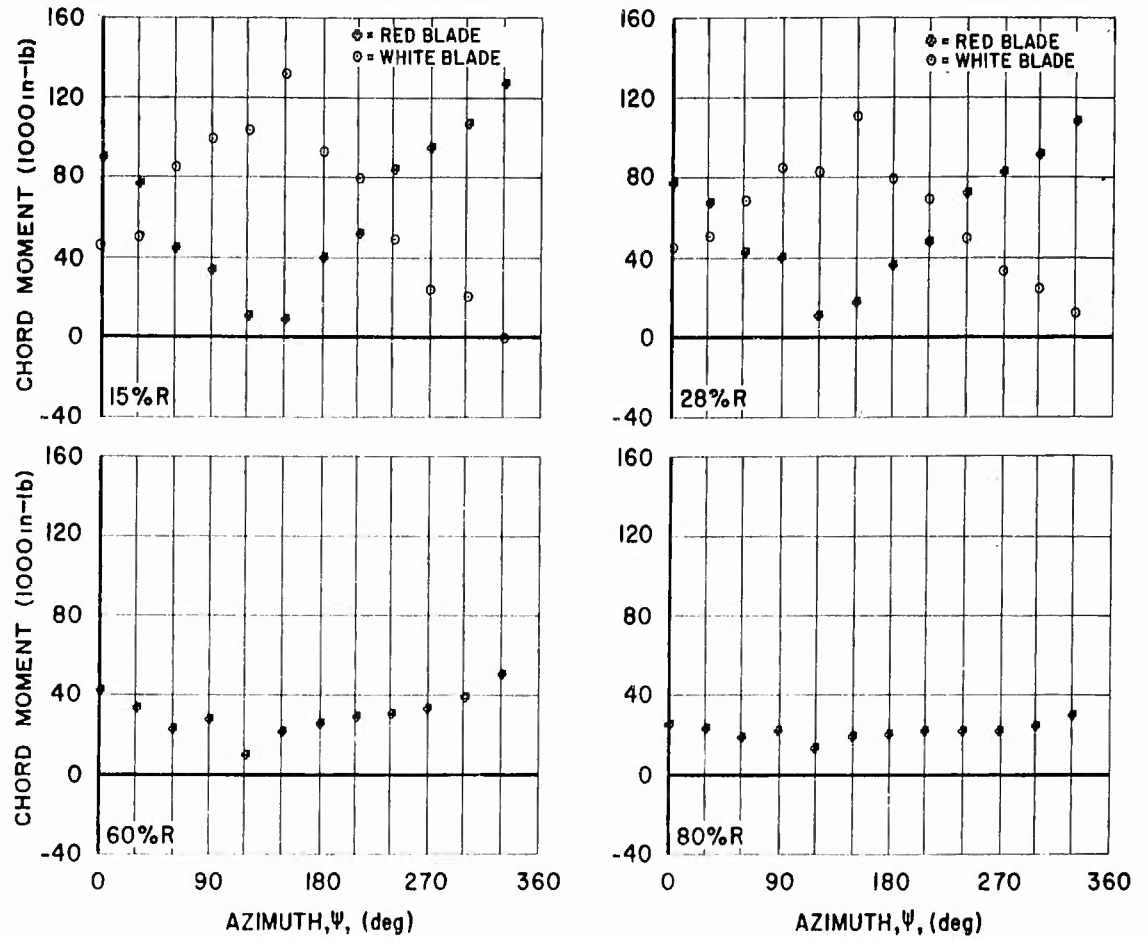


Figure 36n-CHORD MOMENT vs AZIMUTH (COND.NO.55,HIGH ALT.STALL THRESHOLD, $V_{true}=91$ KNOTS),

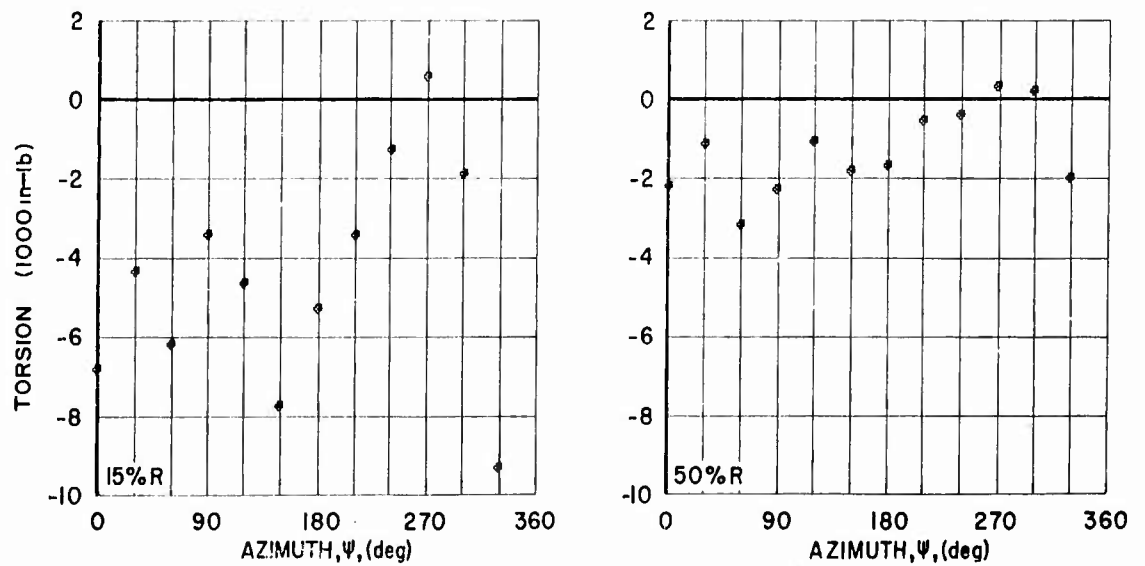


Figure 36o-TORSION vs AZIMUTH (COND.NO.55,HIGH ALT.STALL THRESHOLD, $V_{true}=91$ KNOTS)

FIGURE 37, GRAPHICAL DATA

TYPE I CONDITION NO. 58

HIGH ALTITUDE, BELOW STALL THRESHOLD, TRUE AIRSPEED = 79 KNOTS

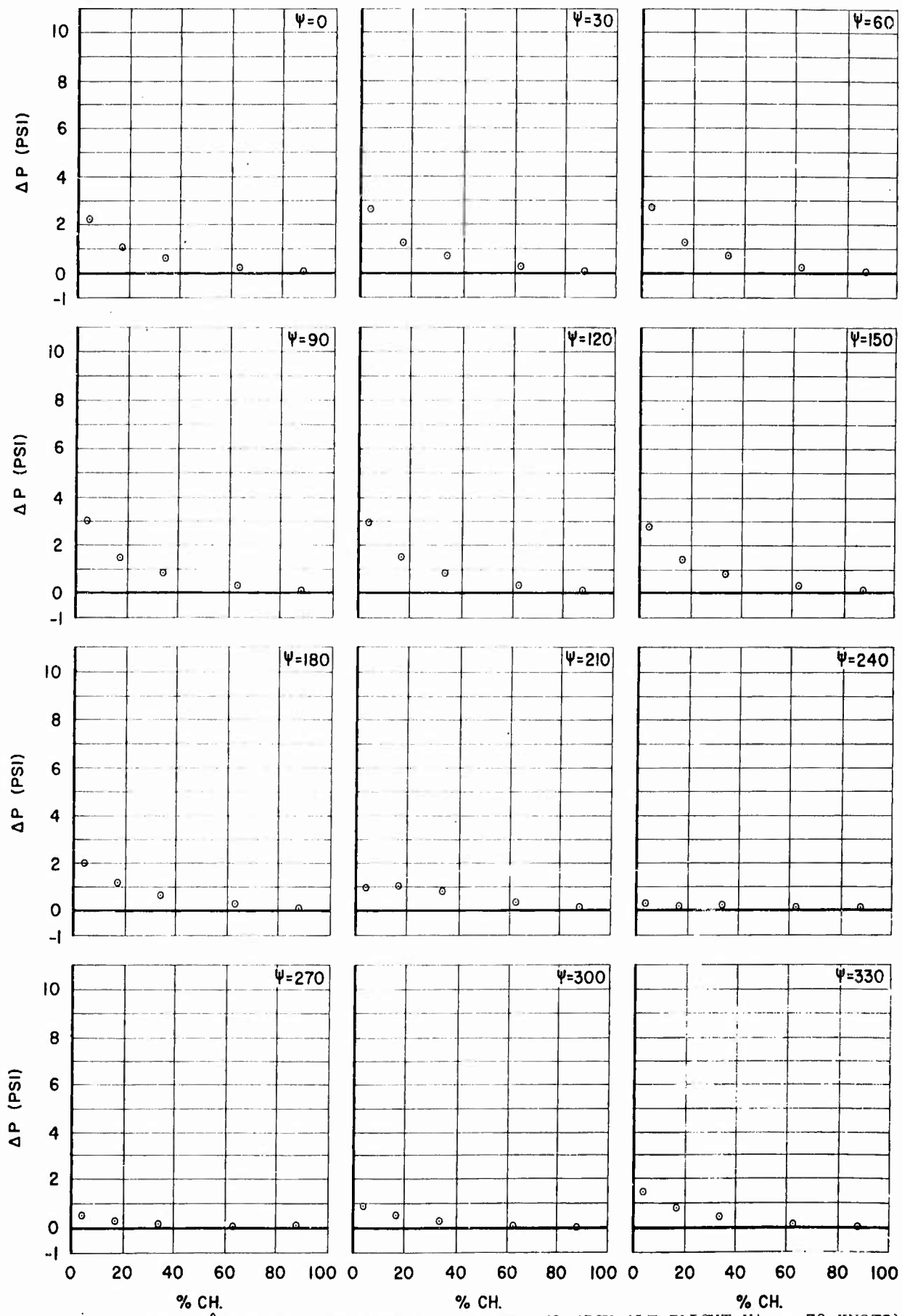


Figure 37a $-\Delta P$ vs % CHORD (40% R, COND. NO. 58, HIGH ALT. FLIGHT, $V_{true}=79$ KNOTS)

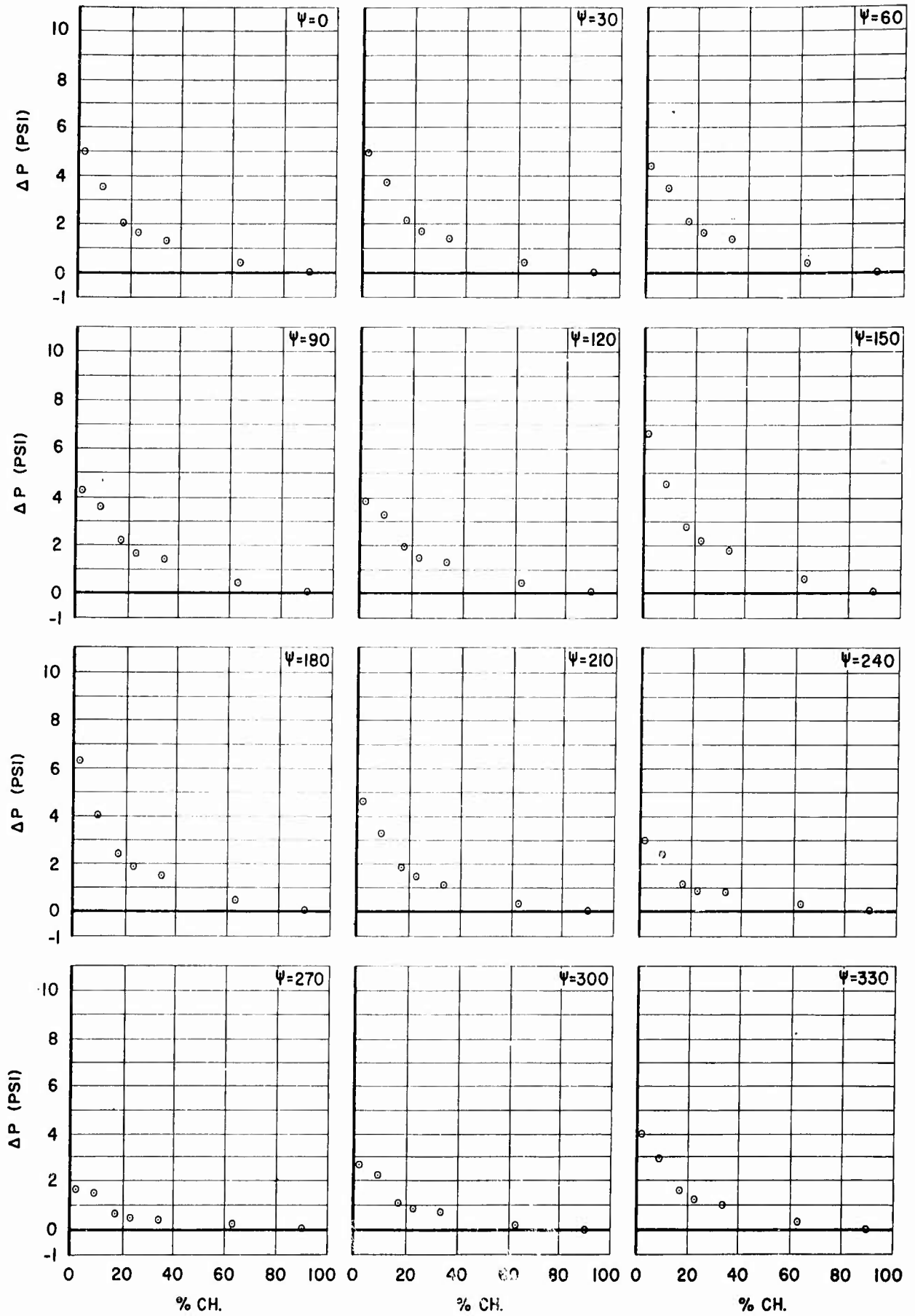


Figure 37b $-\Delta P$ vs % CHORD (55% R, CCND. NO. 58, HIGH ALT. FLIGHT, $V_{true} = 79$ KNOTS),

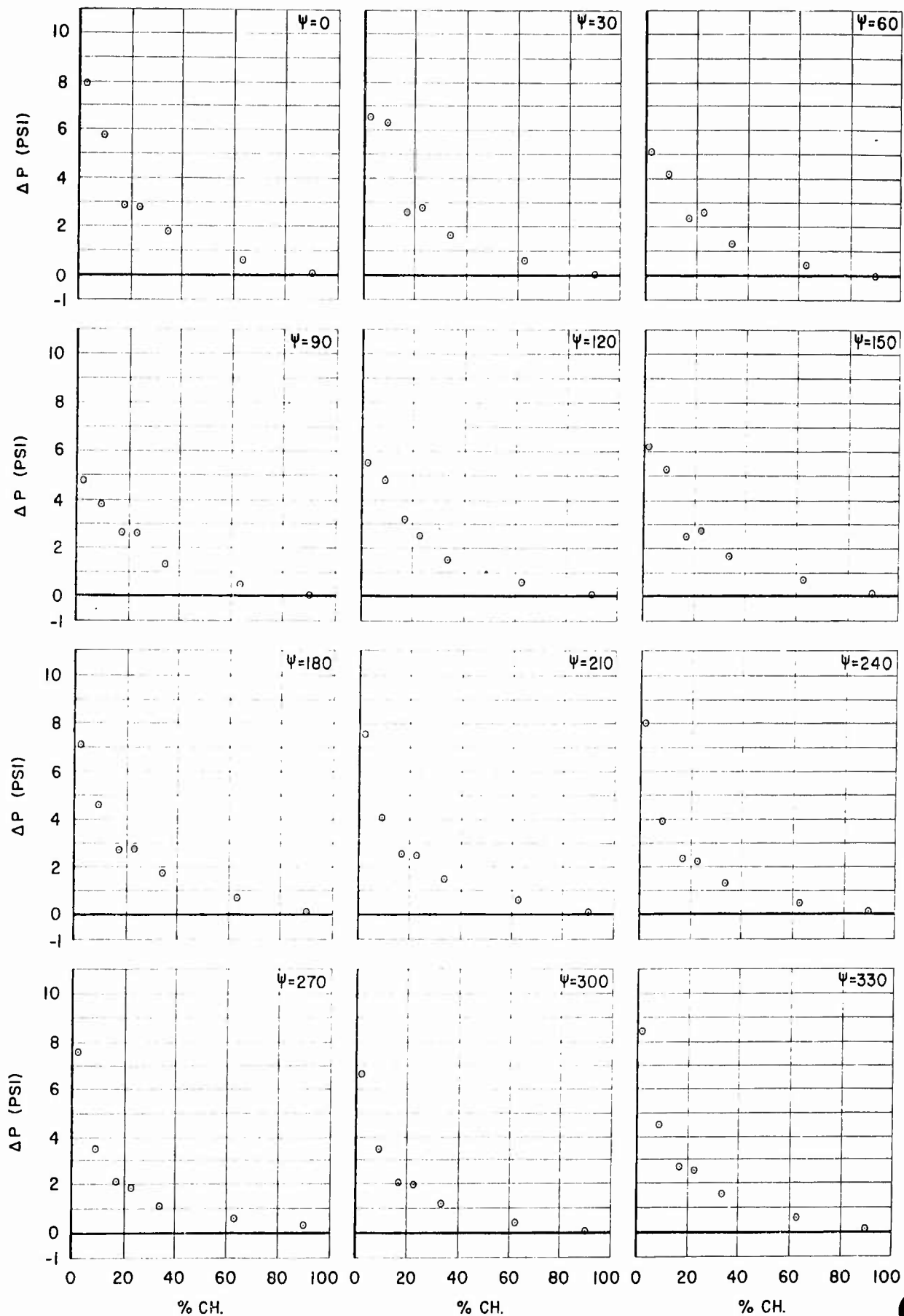


Figure 37c $-\Delta P$ vs % CHORD (75% R, COND. NO. 58, HIGH ALT. FLIGHT, $V_{true} = 79$ KNOTS).

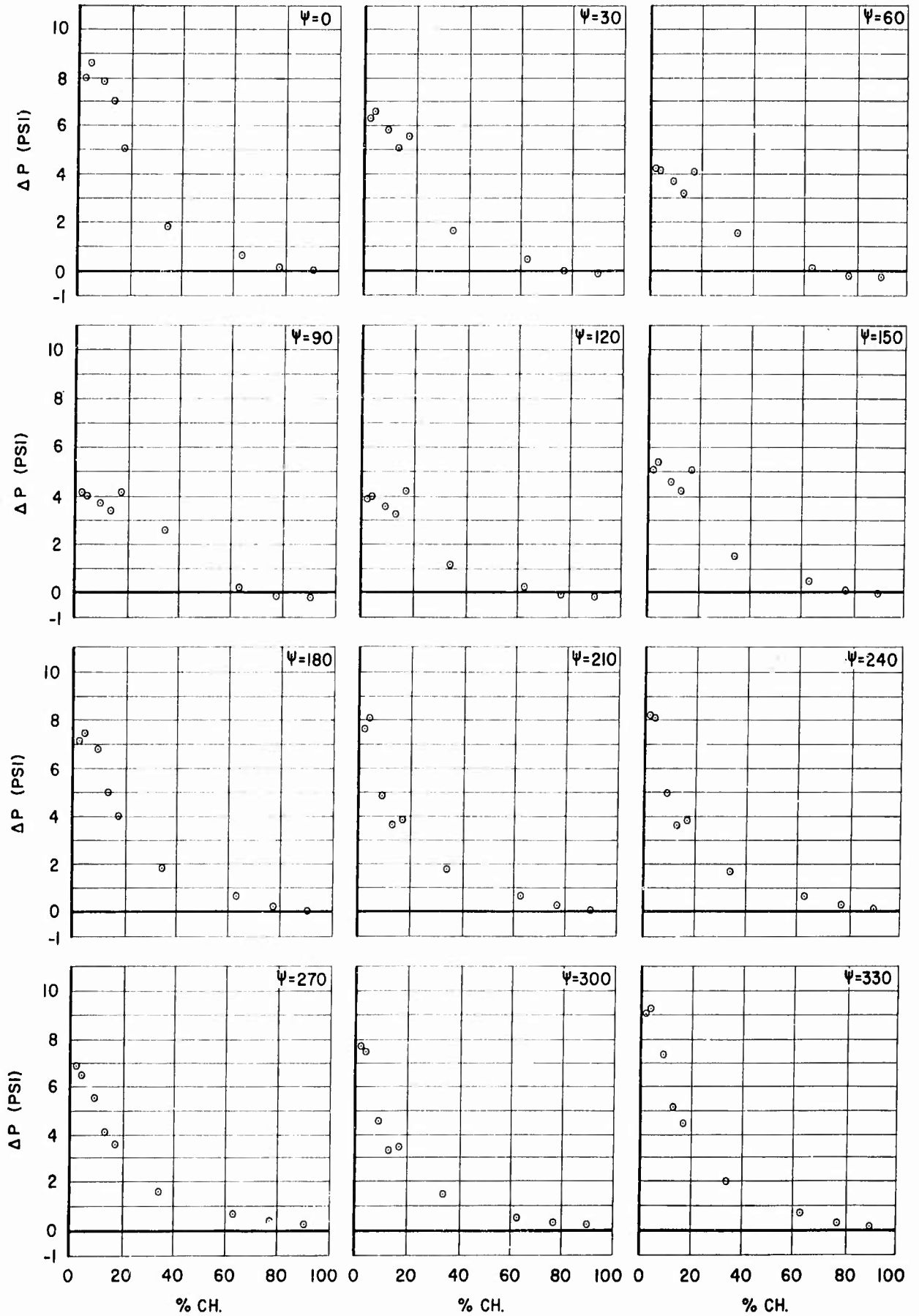


Figure 37d ΔP vs % CHORD (85% R, COND. NO. 58, HIGH ALT. FLIGHT, $V_{true} = 79$ KNOTS).

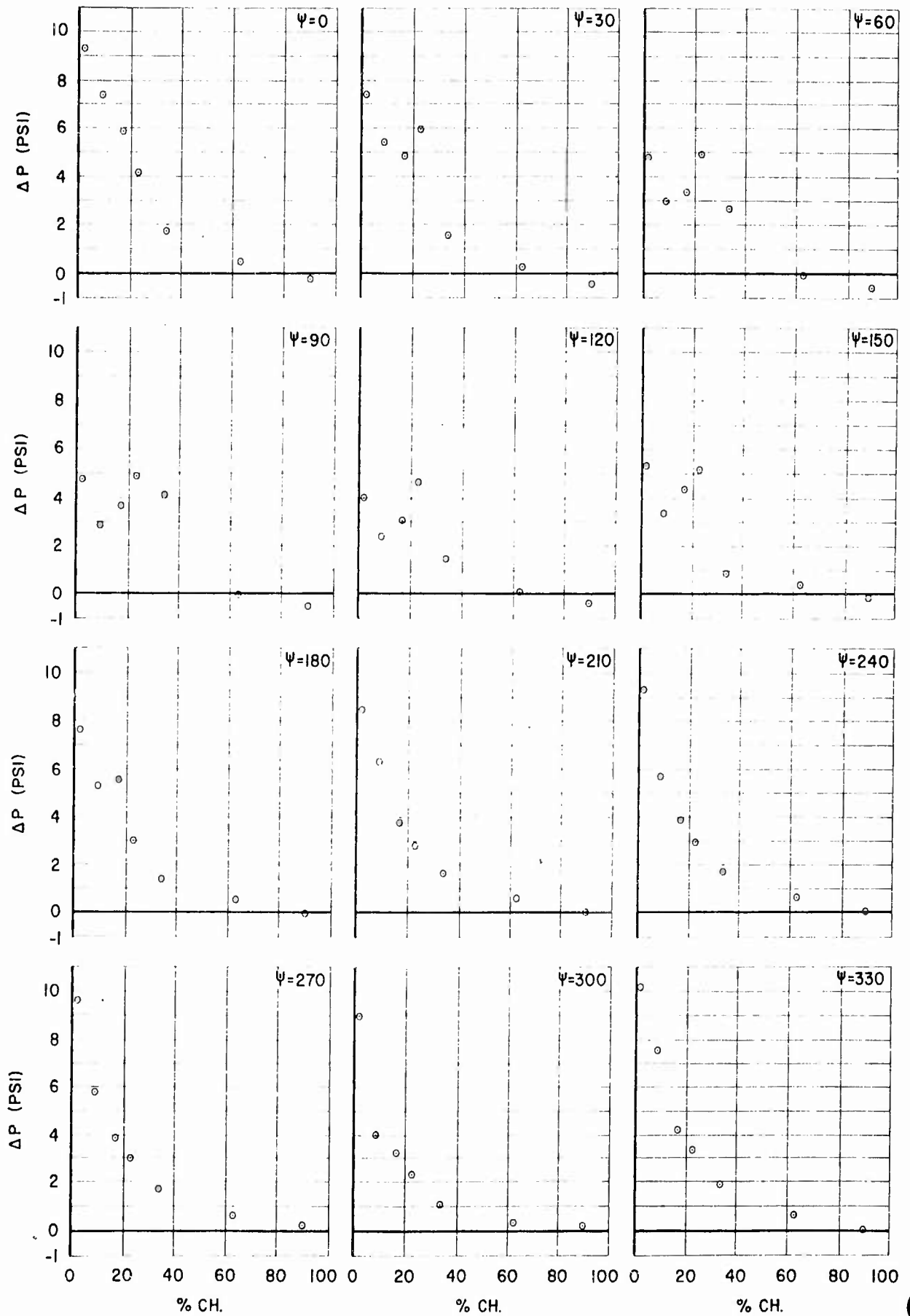


Figure 37c - ΔP vs % CHORD (90% R, COND. NO. 58, HIGH ALT. FLIGHT, $V_{true} = 79$ KNOTS).

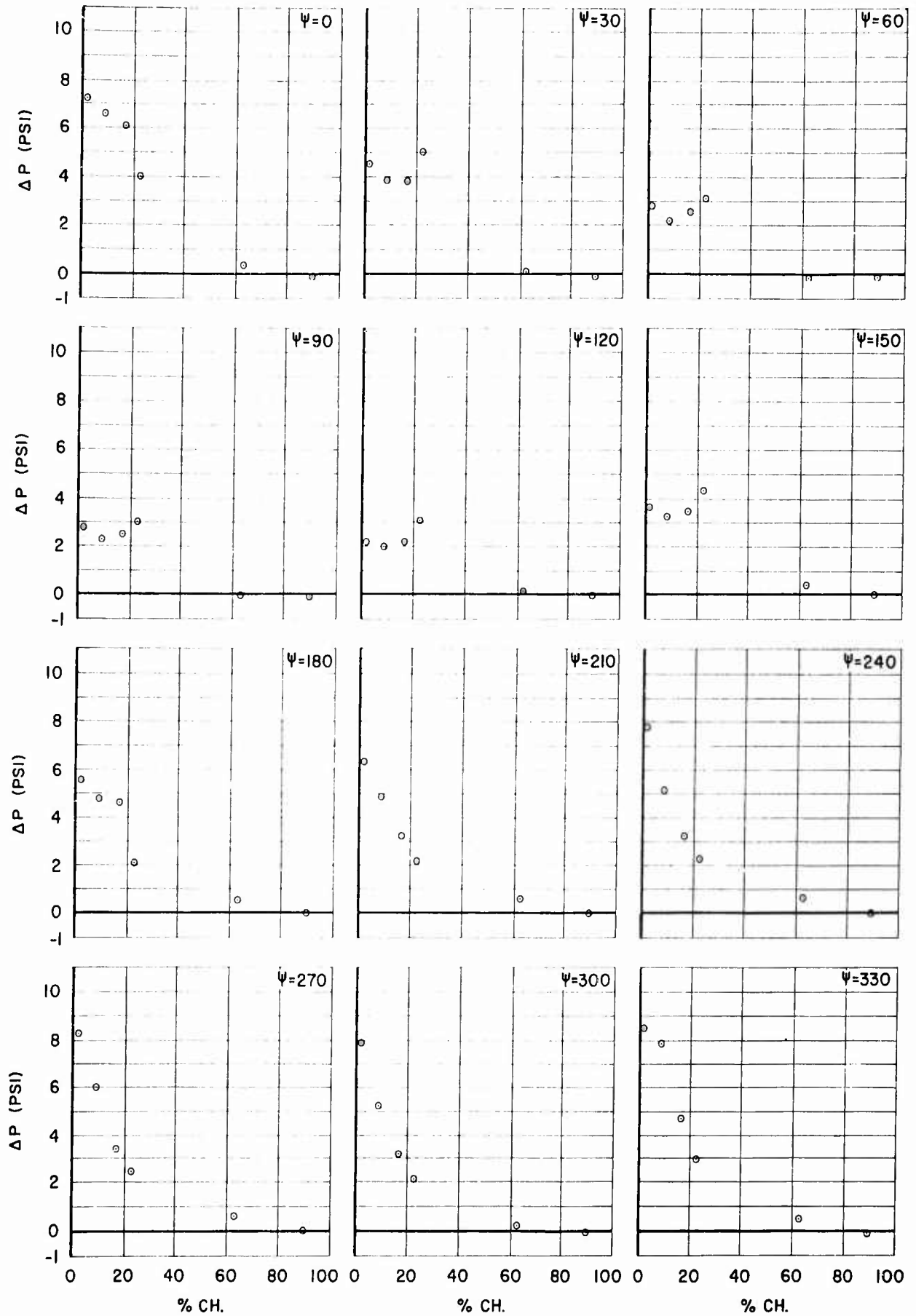


Figure 37f - ΔP vs % CHORD (95% R, COND. NO. 58, HIGH ALT. FLIGHT, $V_{true} = 79$ KNOTS).

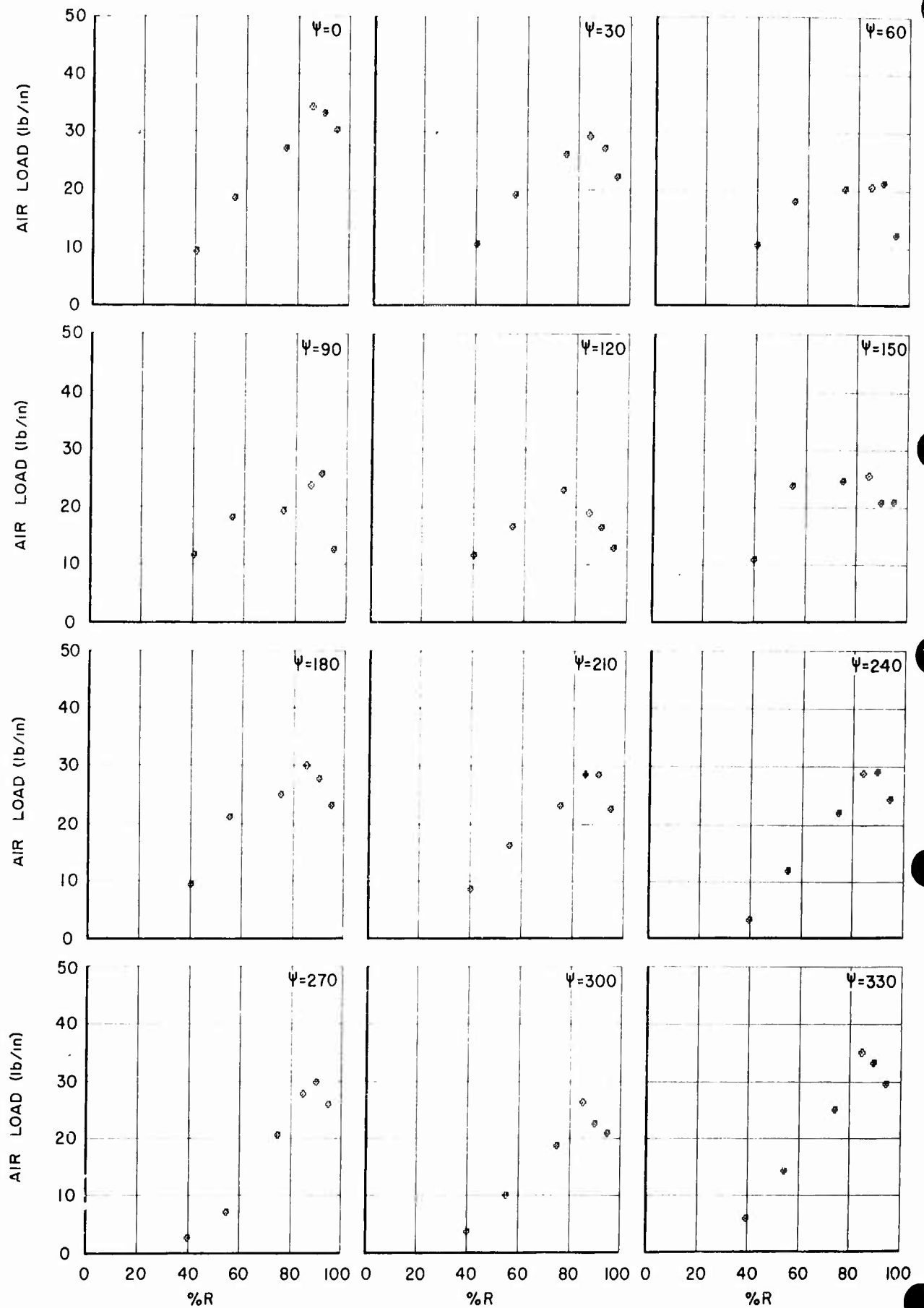


Figure 37g - AIR LOAD vs % RADIUS (COND.NO.58,HIGH ALT.FLIGHT,Vtrue = 79 KNOTS),

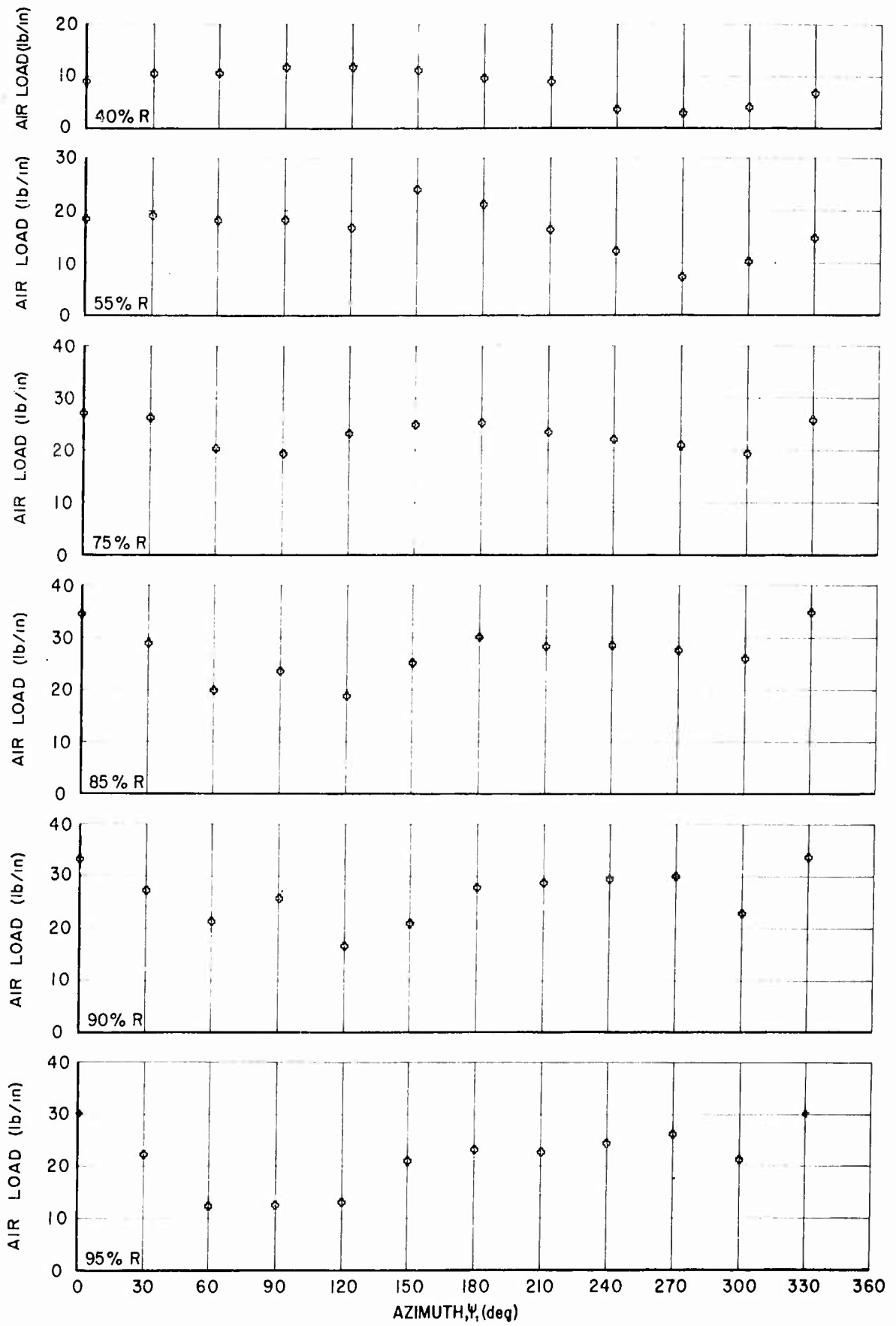


Figure 37h - AIR LOAD vs AZIMUTH (COND.NO.58,HIGH ALT. FLIGHT,Vtrue = 79 KNOTS).

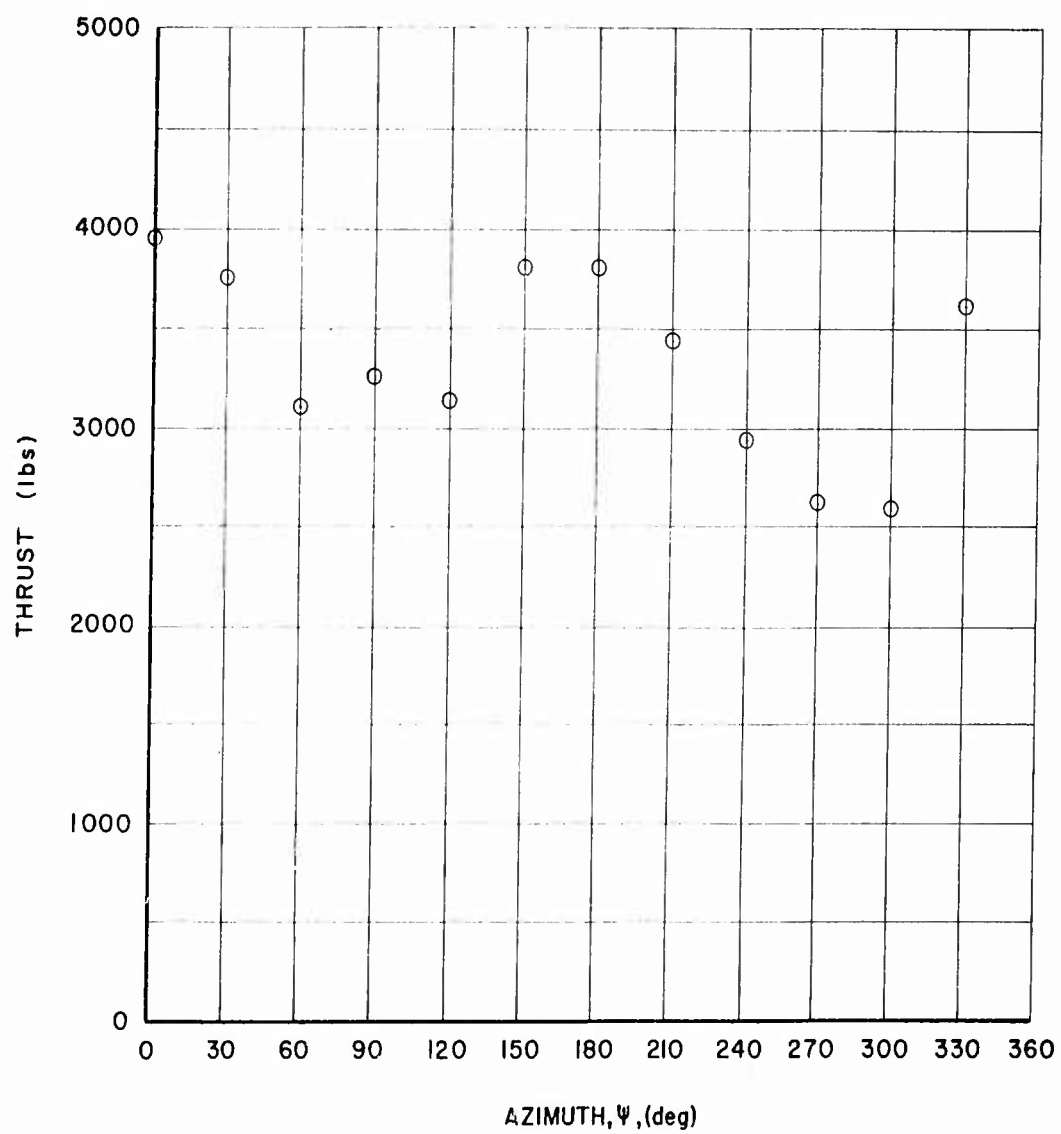


Figure 37i TOTAL THRUST/BLADE vs AZIMUTH
 (COND.NO.58,HIGH ALT.FLIGHT, $v_{true}=79$ KNOTS)

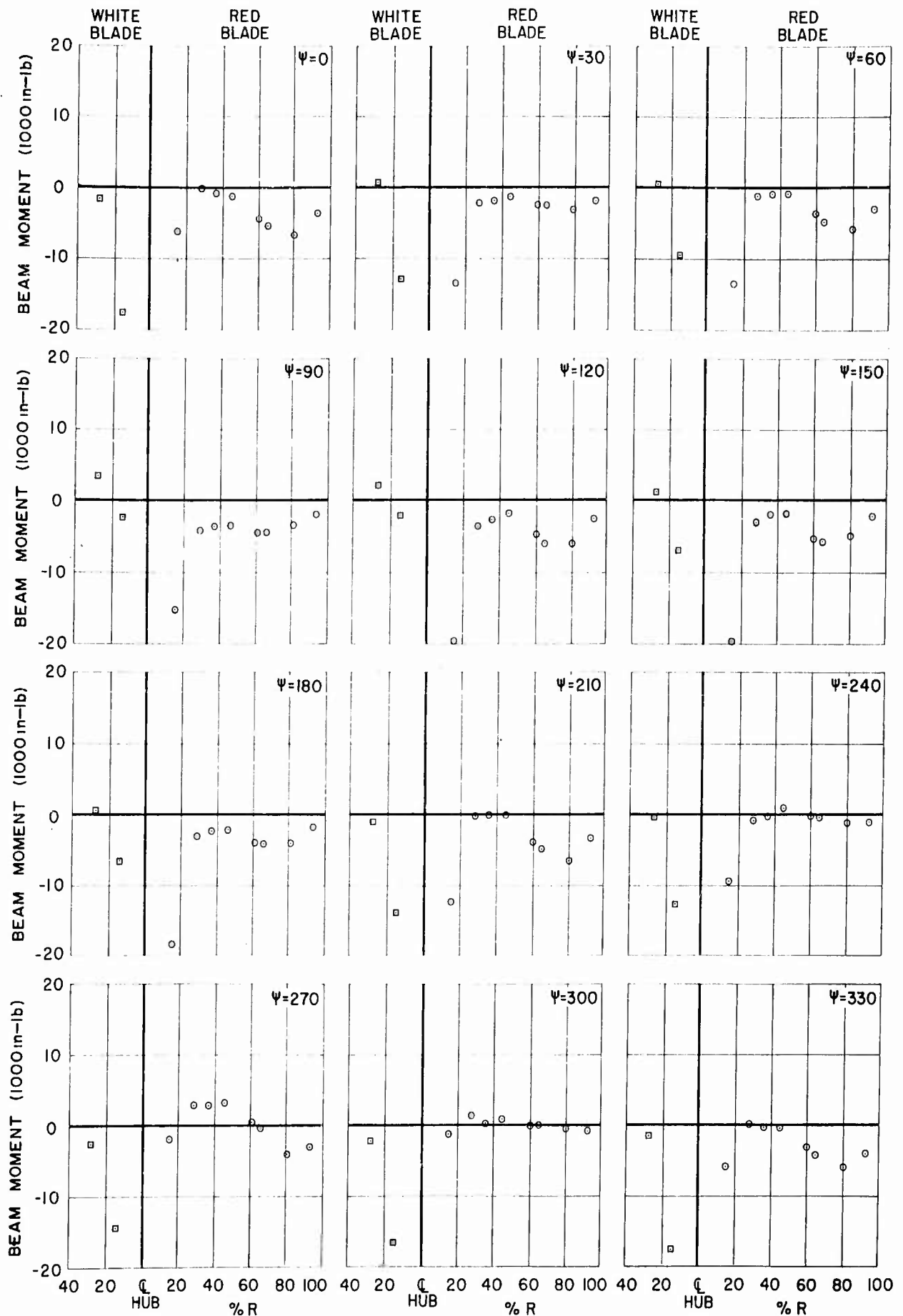


Figure 37j - BEAM MOMENT vs % RADIUS (COND.NO.58, HIGH ALT.FLIGHT, $v_{true} = 79$ KNOTS).

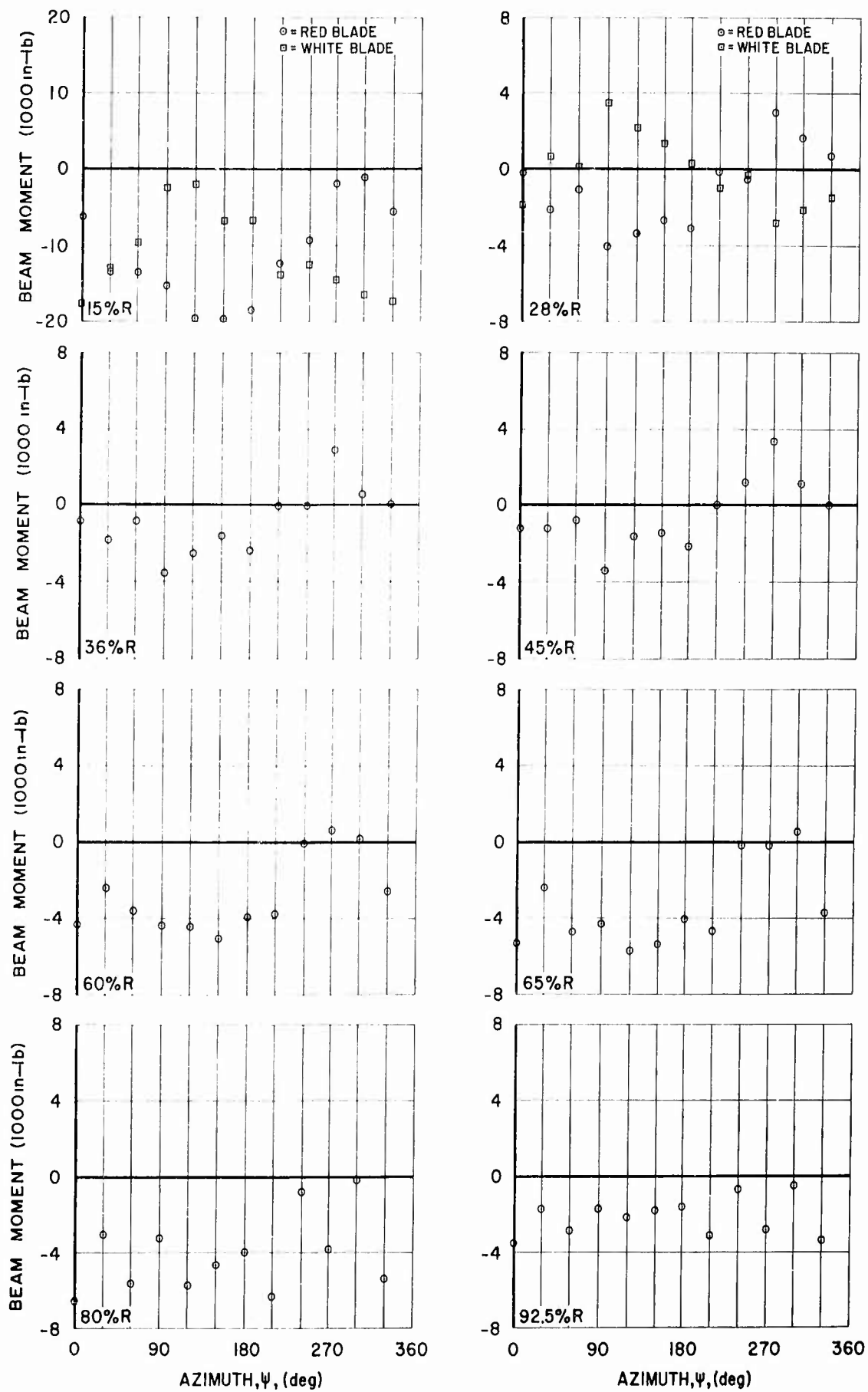


Figure 37k - BEAM MOMENT vs AZIMUTH (COND.NO.58,HIGH ALT.FLIGHT,Vtrue=79 KNOTS),

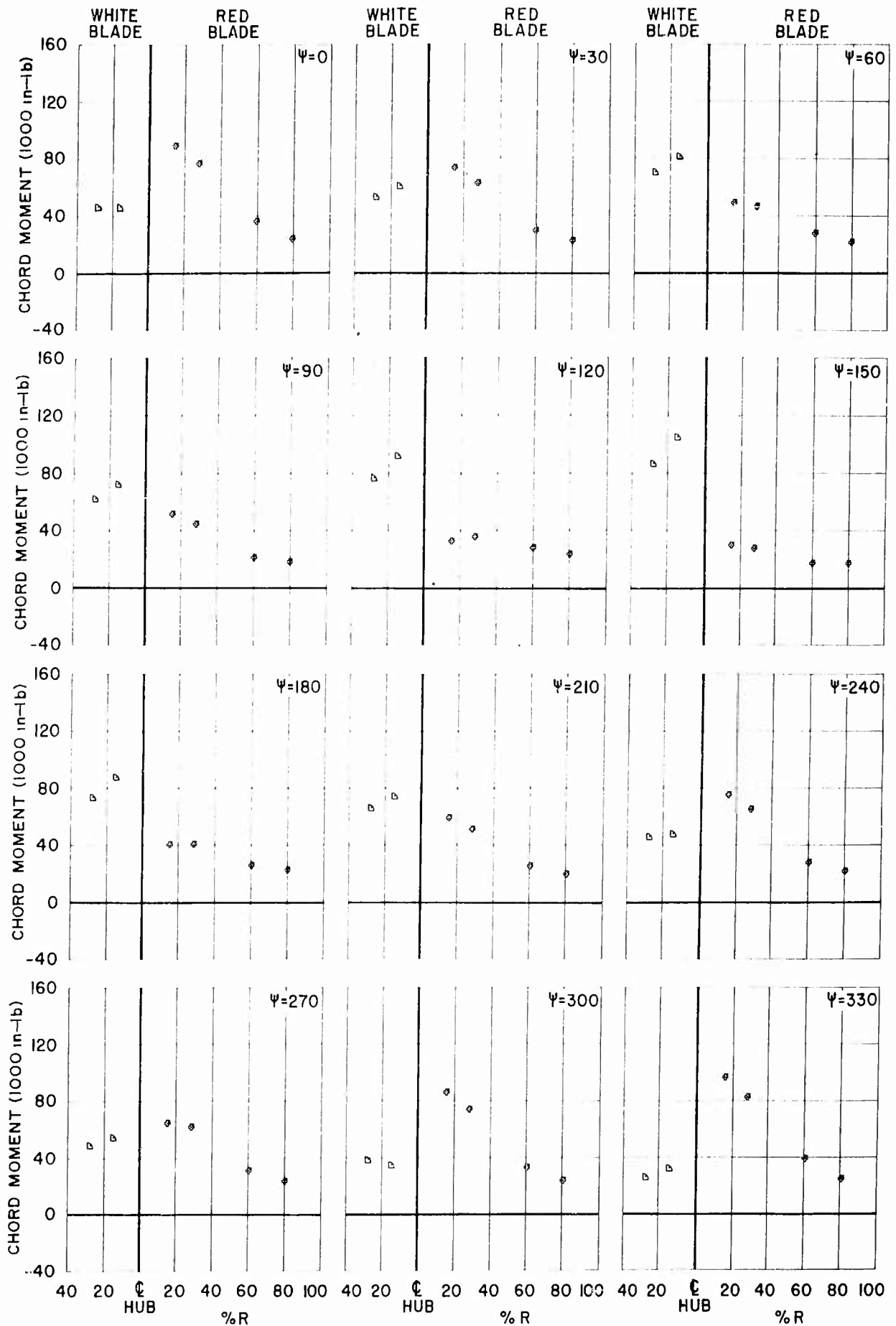


Figure 37m - CHORD MOMENT vs % RADIUS (X ND.NO.58, HIGH ALT. FLIGHT, $v_{true}=79$ KNOTS),

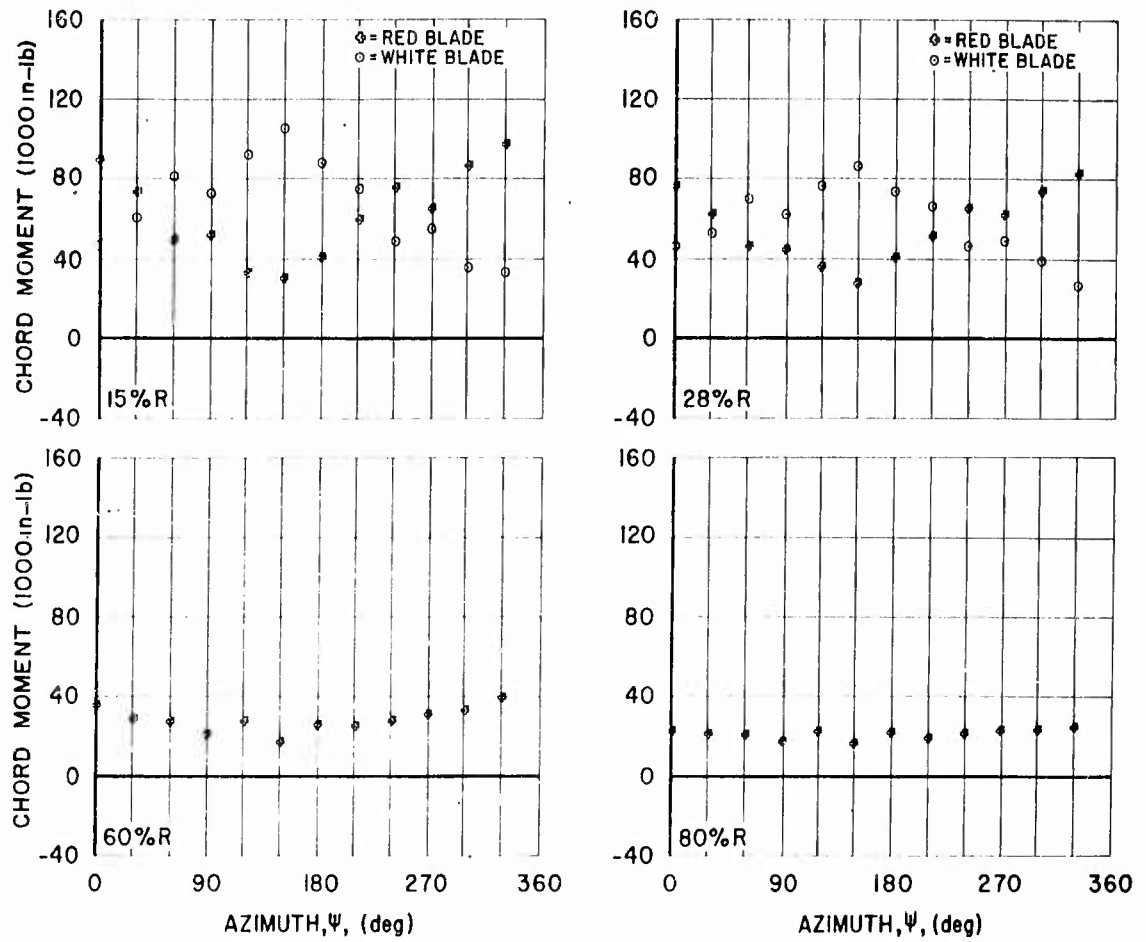


Figure 37n - CHORD MOMENT vs AZIMUTH (COND.NO.58, HIGH ALT. FLIGHT, $V_{true}=79$ KNOTS).

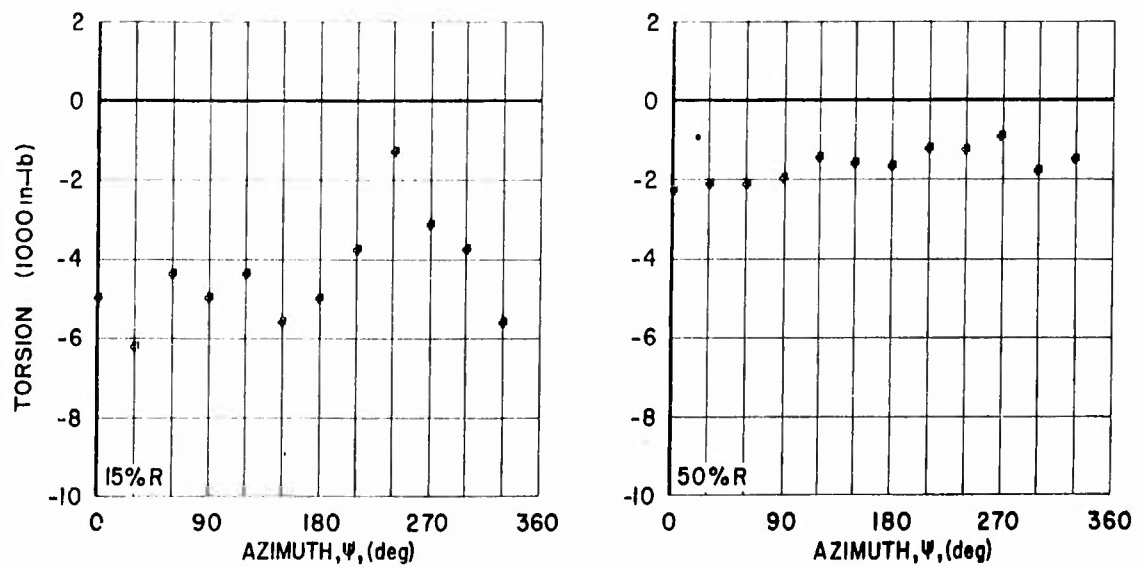


Figure 37o - TORSION vs AZIMUTH (COND.NO.58, HIGH ALT. FLIGHT, $V_{true} = 79$ KNOTS).

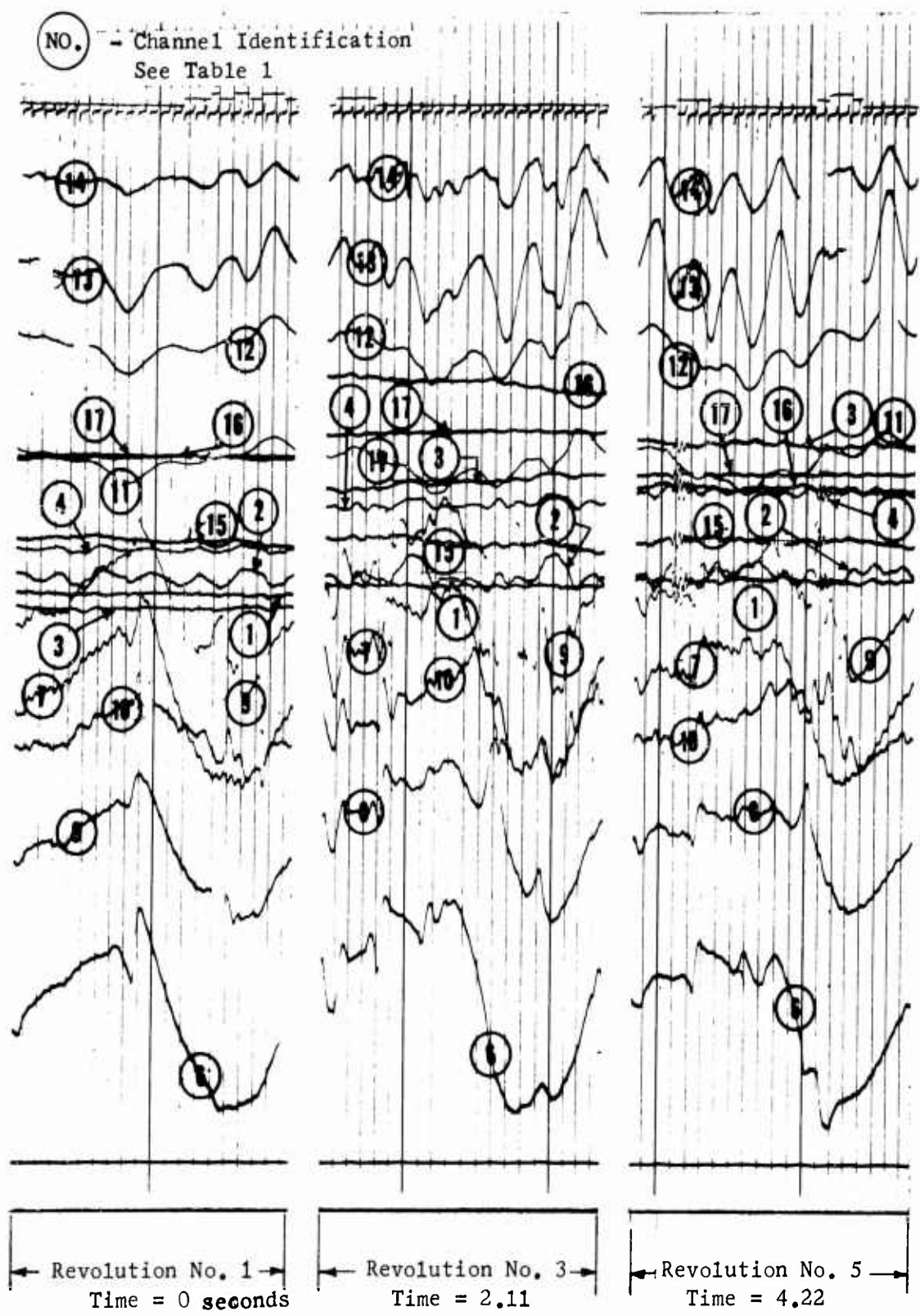


FIGURE 38a - THREE ROTOR REVOLUTIONS OSCILLOGRAPH NO. 1
CONDITION NO. 34, SYMMETRICAL PULL-UP.

NO. - Channel Identification
See Table 1

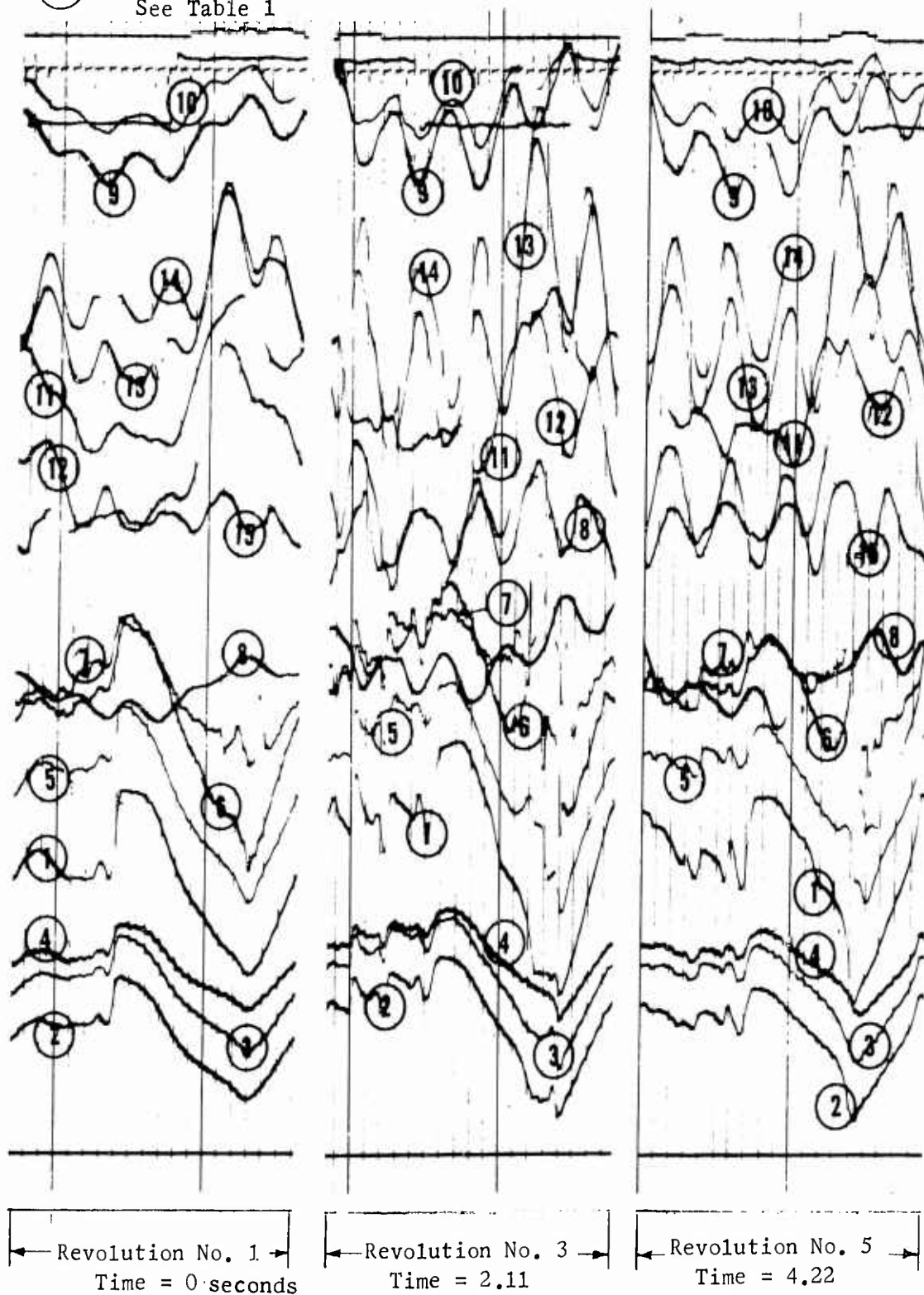


FIGURE 38b - THREE ROTOR REVOLUTIONS OSCILLOGRAPH NO. 2
CONDITION NO. 34, SYMMETRICAL PULL-UP.

NO. - Channel Identification
See Table 1

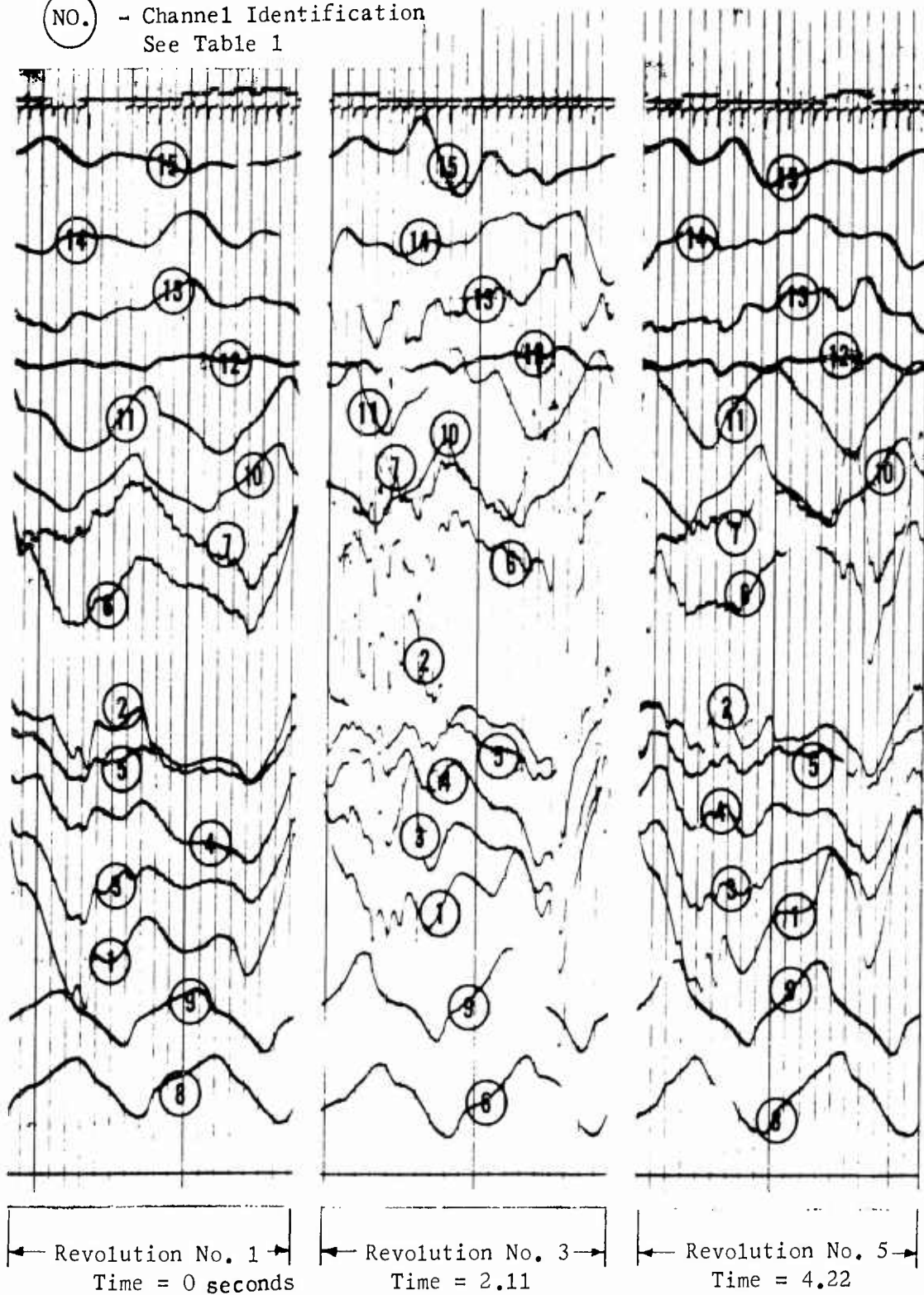


FIGURE 38c - THREE ROTOR REVOLUTIONS OSCILLOGRAPH NO. 3
CONDITION NO. 34, SYMMETRICAL PULL-UP.

NO. - Channel Identification
See Table 1

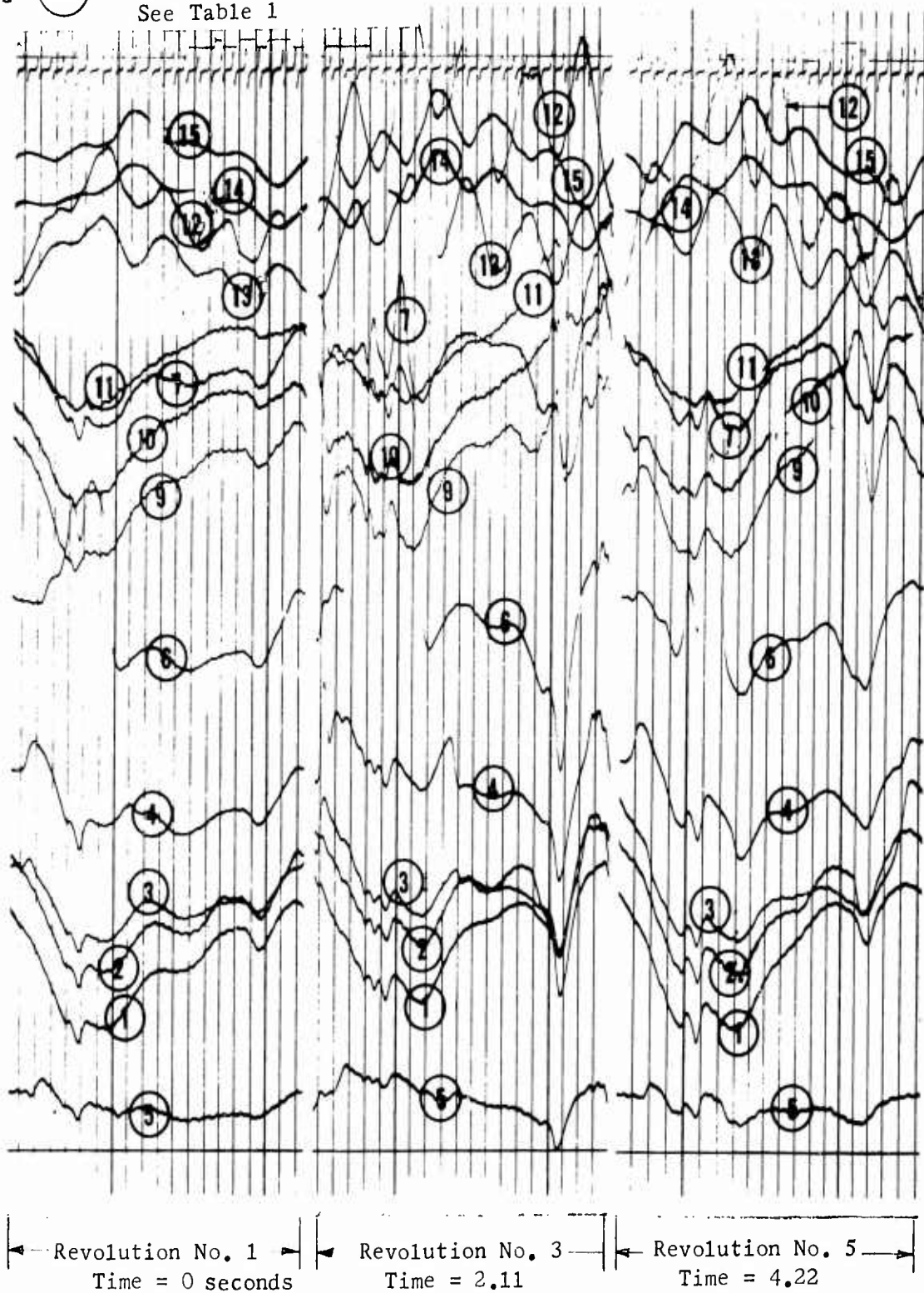


FIGURE 38d - THREE ROTOR REVOLUTIONS OSCILLOGRAPH NO. 4
CONDITION NO. 34, SYMMETRICAL PULL-UP.

NO. - Channel Identification
See Table 1



FIGURE 38e - THREE ROTOR REVOLUTIONS OSCILLOGRAPH NO. 5
CONDITION NO. 34, SYMMETRICAL PULL-UP.

NO. - Channel Identification
See Table 1

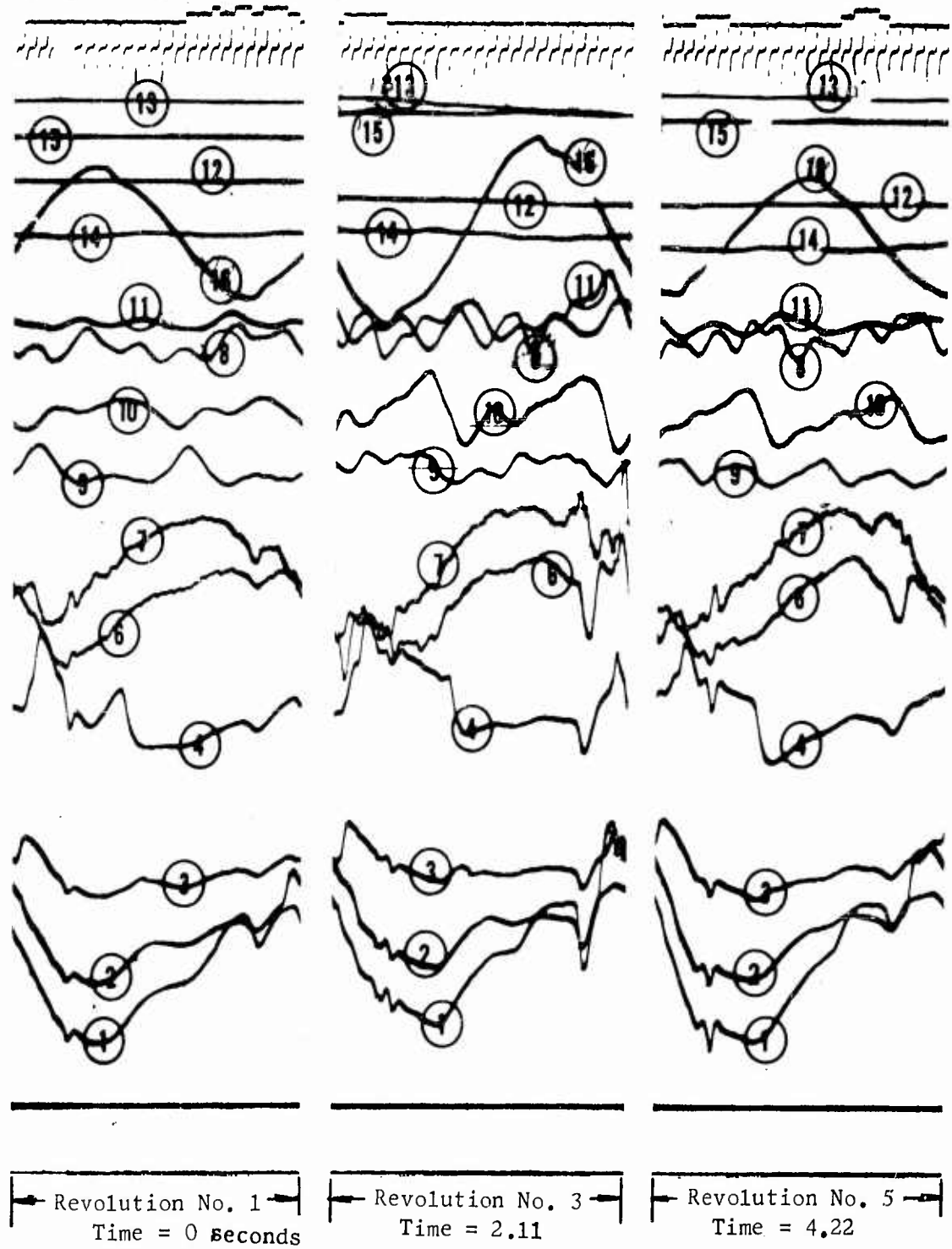


FIGURE 38f - THREE ROTOR REVOLUTIONS OSCILLOGRAPH NO. 6
CONDITION NO. 34, SYMMETRICAL PULL-UP.

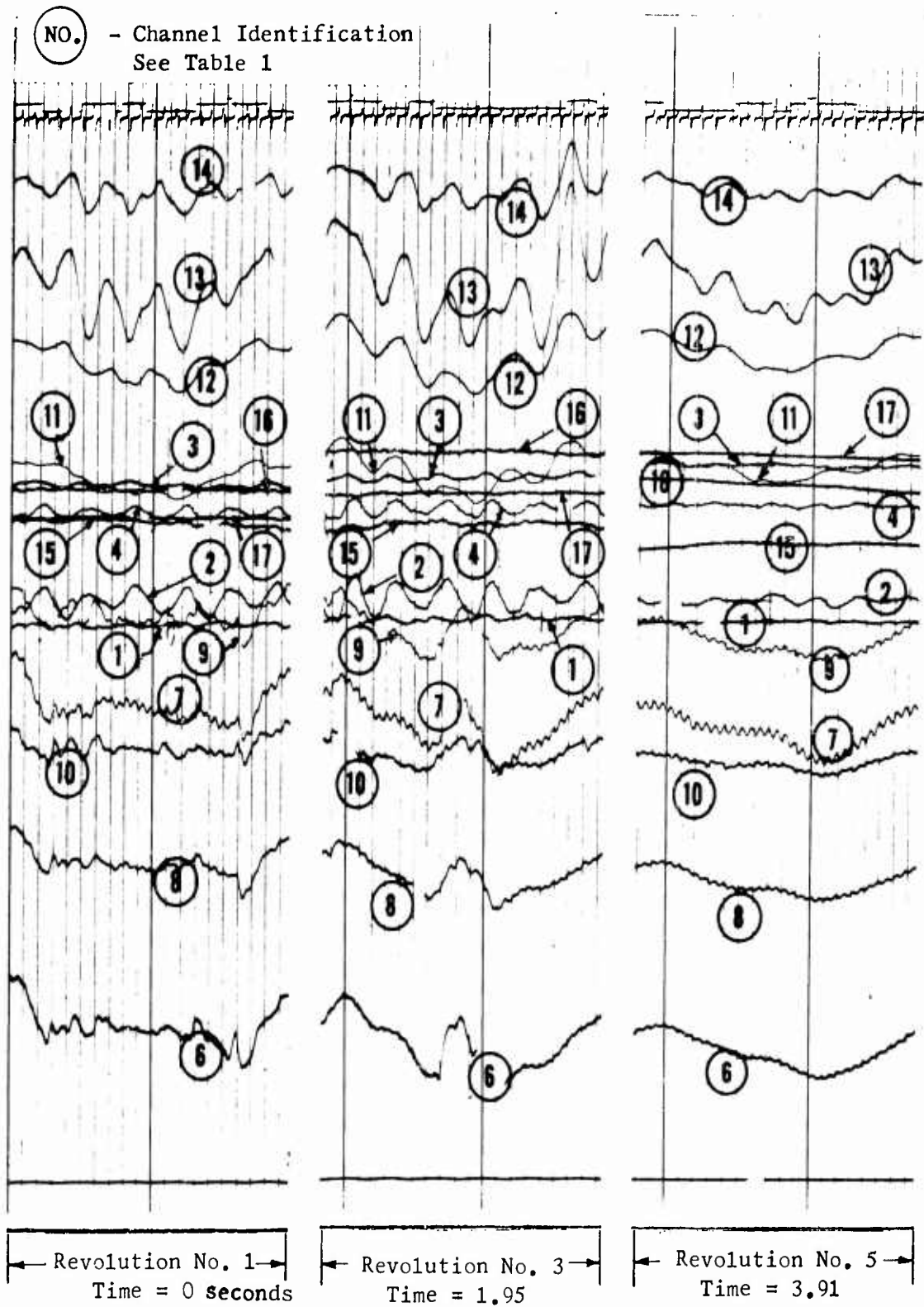


FIGURE 39a - THREE ROTOR REVOLUTIONS OSCILLOGRAPH NO. 1
CONDITION NO. 38, APPROACH AND FLARE.

NO. - Channel Identification
See Table 1

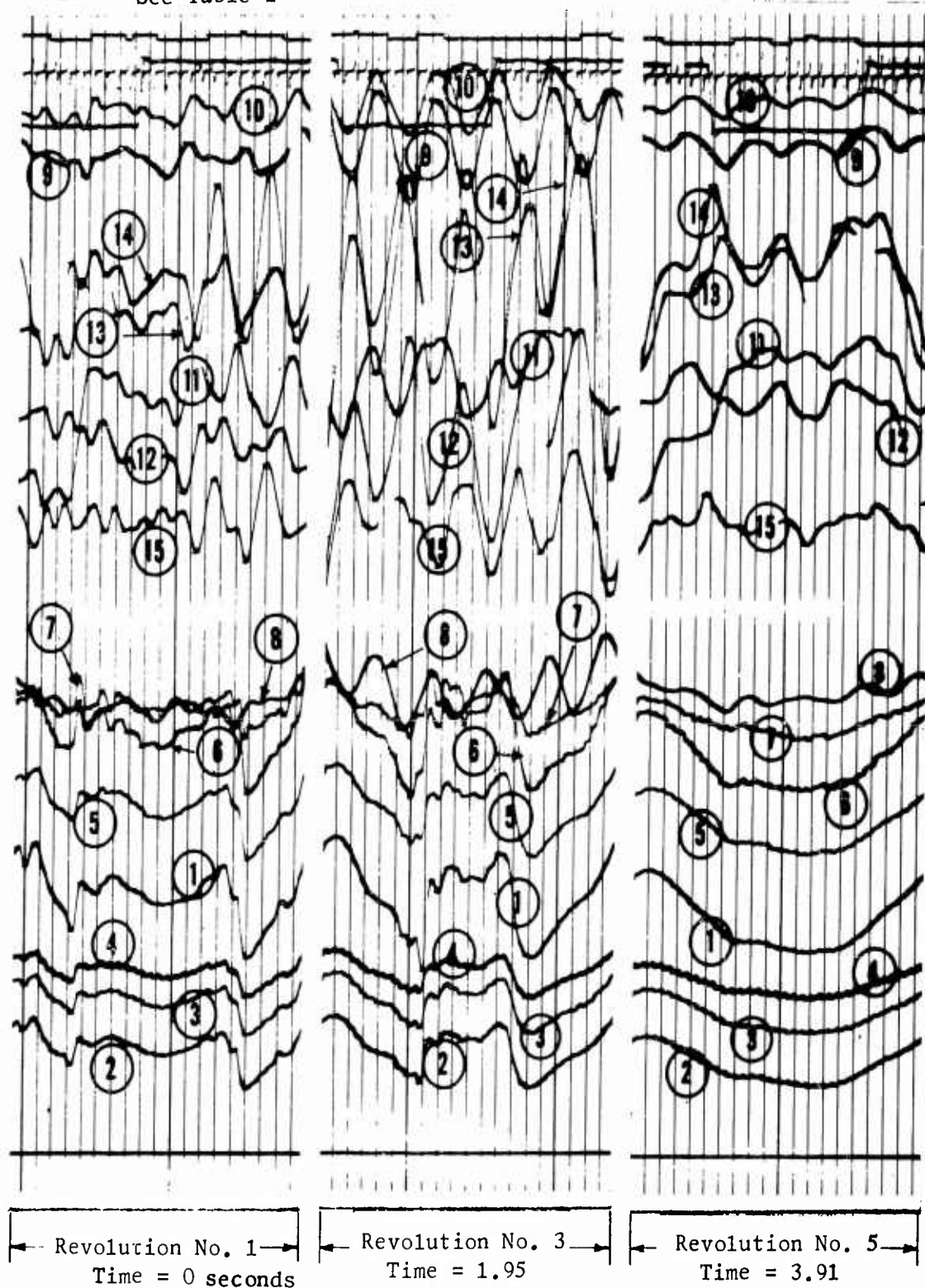


FIGURE 39b - THREE ROTOR REVOLUTIONS OSCILLOGRAPH NO. 2
CONDITION NO. 38, APPROACH AND FLARE.

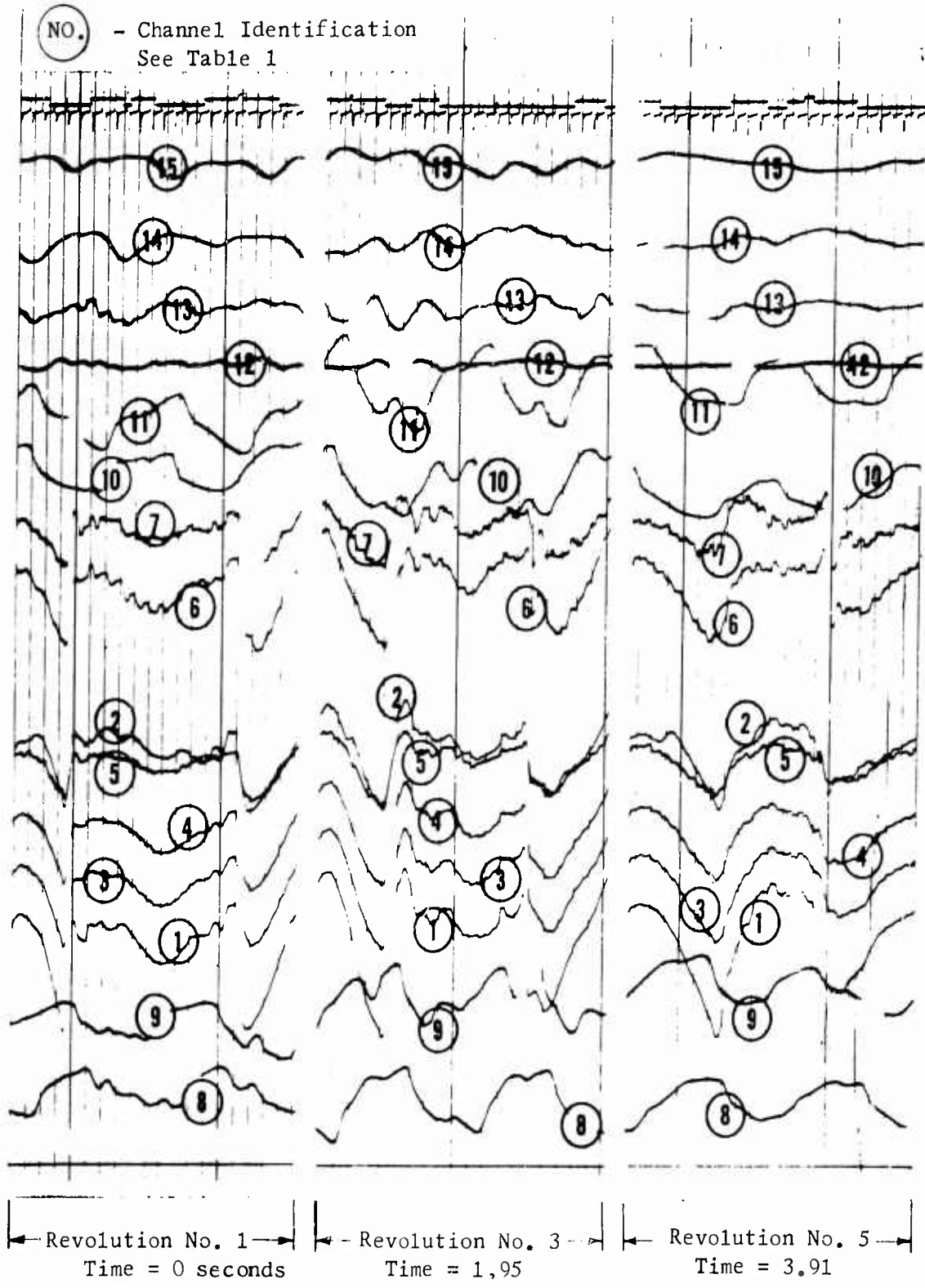
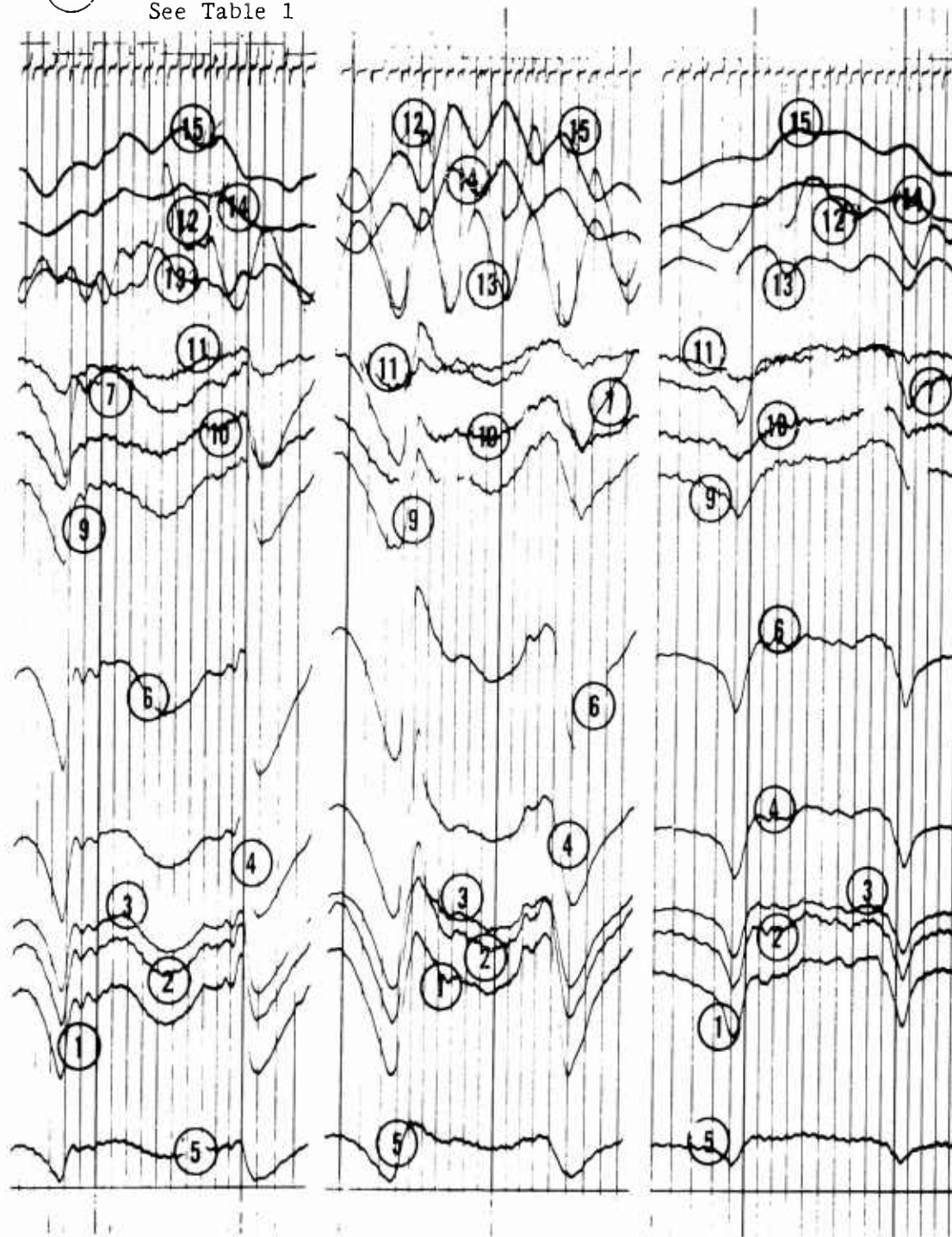


FIGURE 39c - THREE ROTOR REVOLUTIONS OSCILLOGRAPH NO. 3
CONDITION NO. 38, APPROACH AND FLARE.

NO. - Channel Identification
See Table 1



Revolution No. 1 Revolution No. 3 Revolution No. 5
 Time = 0 seconds Time = 1.95 Time = 3.91

FIGURE 39d - THREE ROTOR REVOLUTIONS OSCILLOGRAPH NO. 4
CONDITION NO. 38, APPROACH AND FLARE.

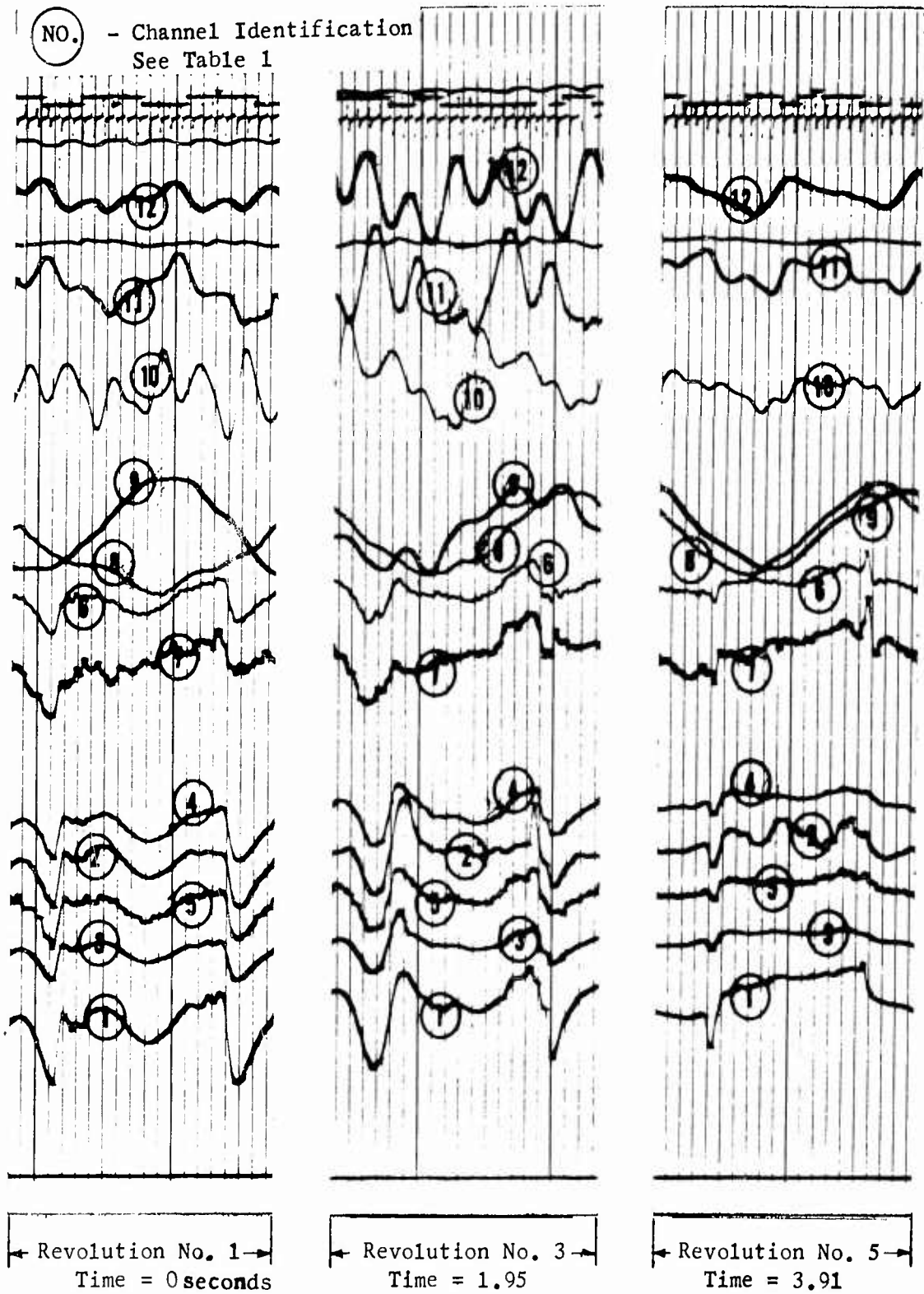


FIGURE 39e - THREE ROTOR REVOLUTIONS OSCILLOGRAPH NO. 5
CONDITION NO. 38, APPROACH AND FLARE .

NO. - Channel Identification
See Table 1

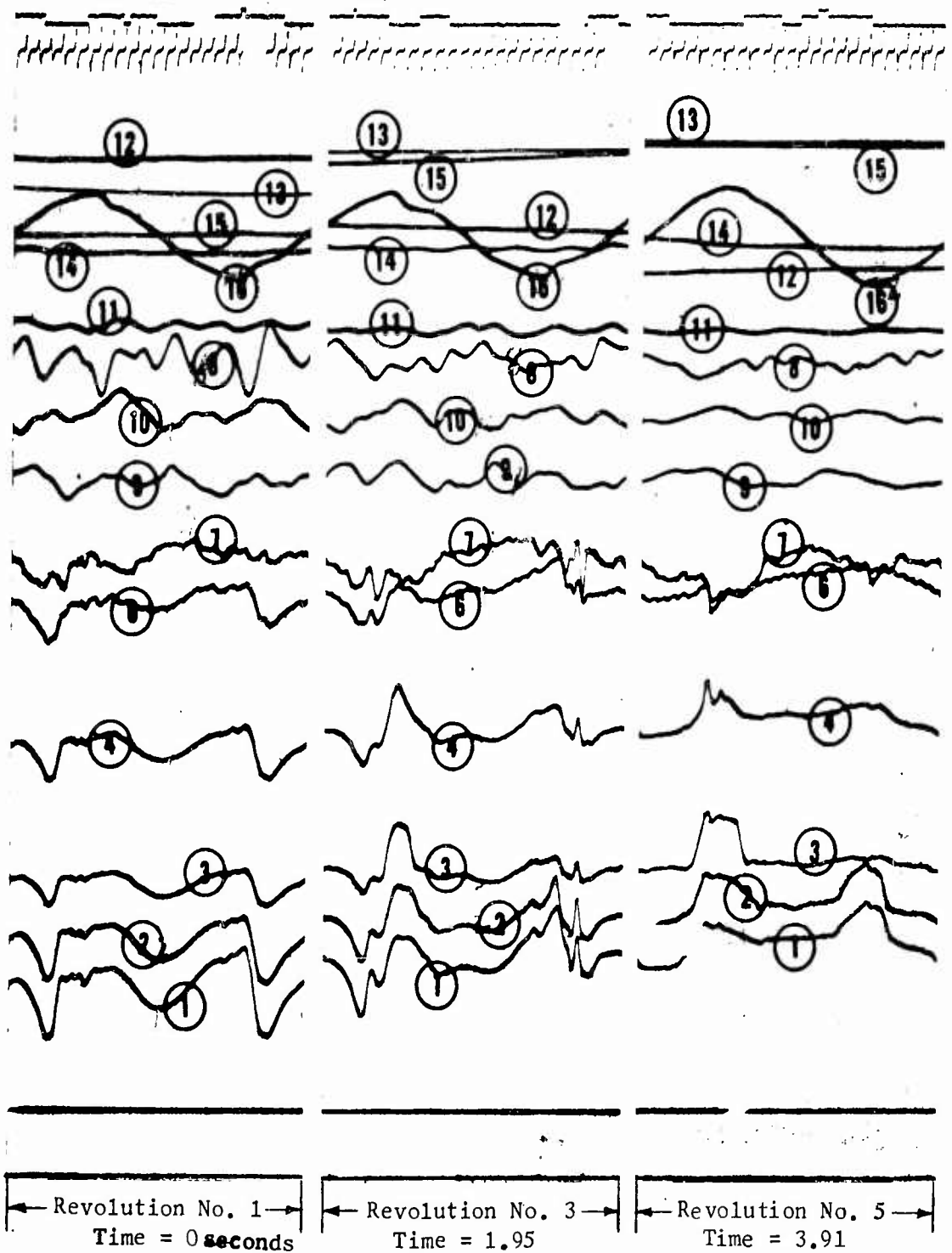


FIGURE 39f - THREE ROTOR REVOLUTIONS OSCILLOGRAPH NO. 6
CONDITION NO. 38, APPROACH AND FLARE.

NO. - Channel Identification
See Table 1

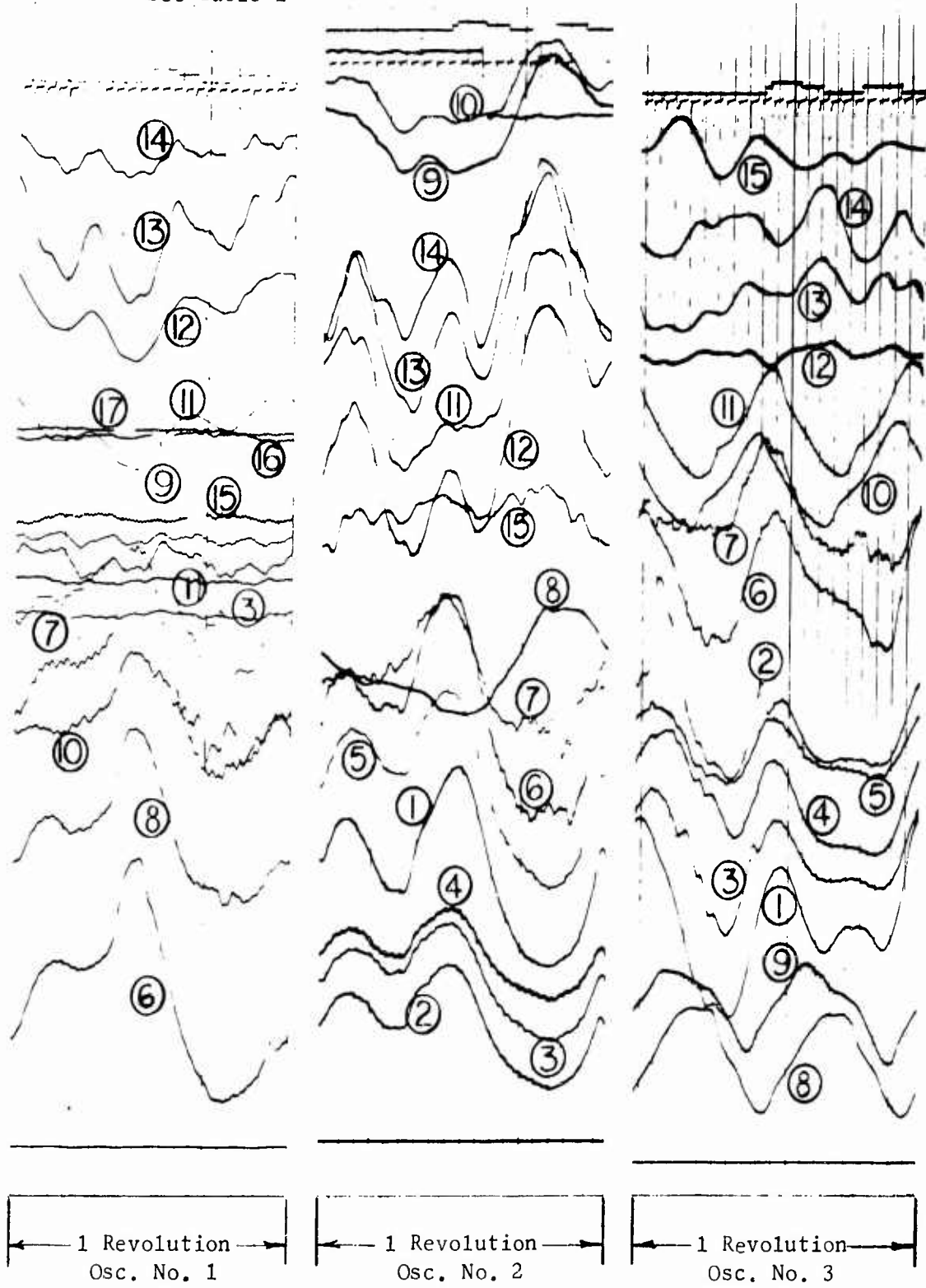


FIGURE 40a - OSCILLOGRAPH RECORDS TYPE I CONDITION NO. 31
LEVEL FLIGHT.

NO. - Channel Identification
See Table 1

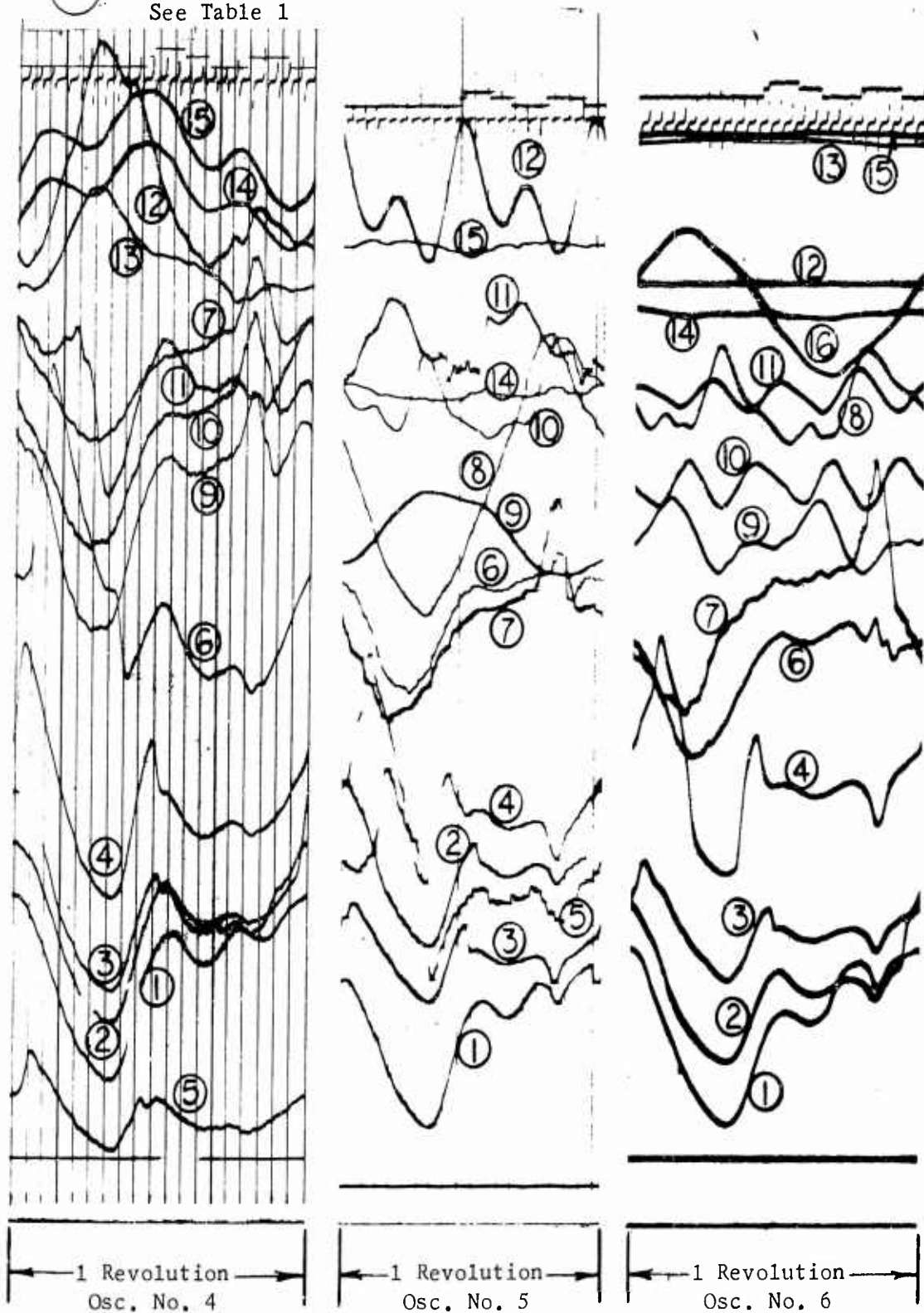


FIGURE 40b - OSCILLOGRAPH RECORDS TYPE I CONDITION NO. 31

LEVEL FLIGHT.

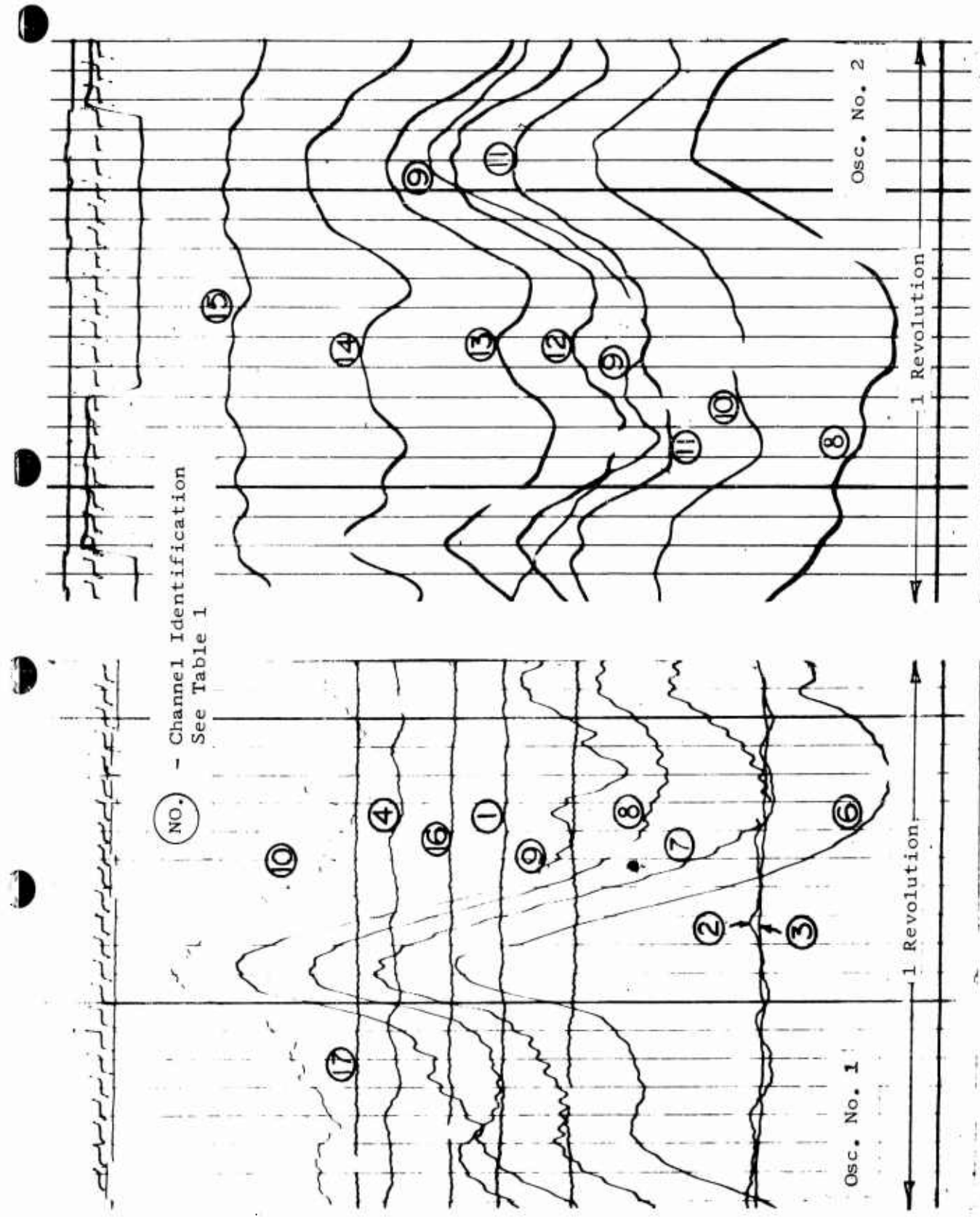


FIGURE 41a - OSCILLOGRAPH RECORDS TYPE II CONDITION NO. 67
LEVEL FLIGHT.

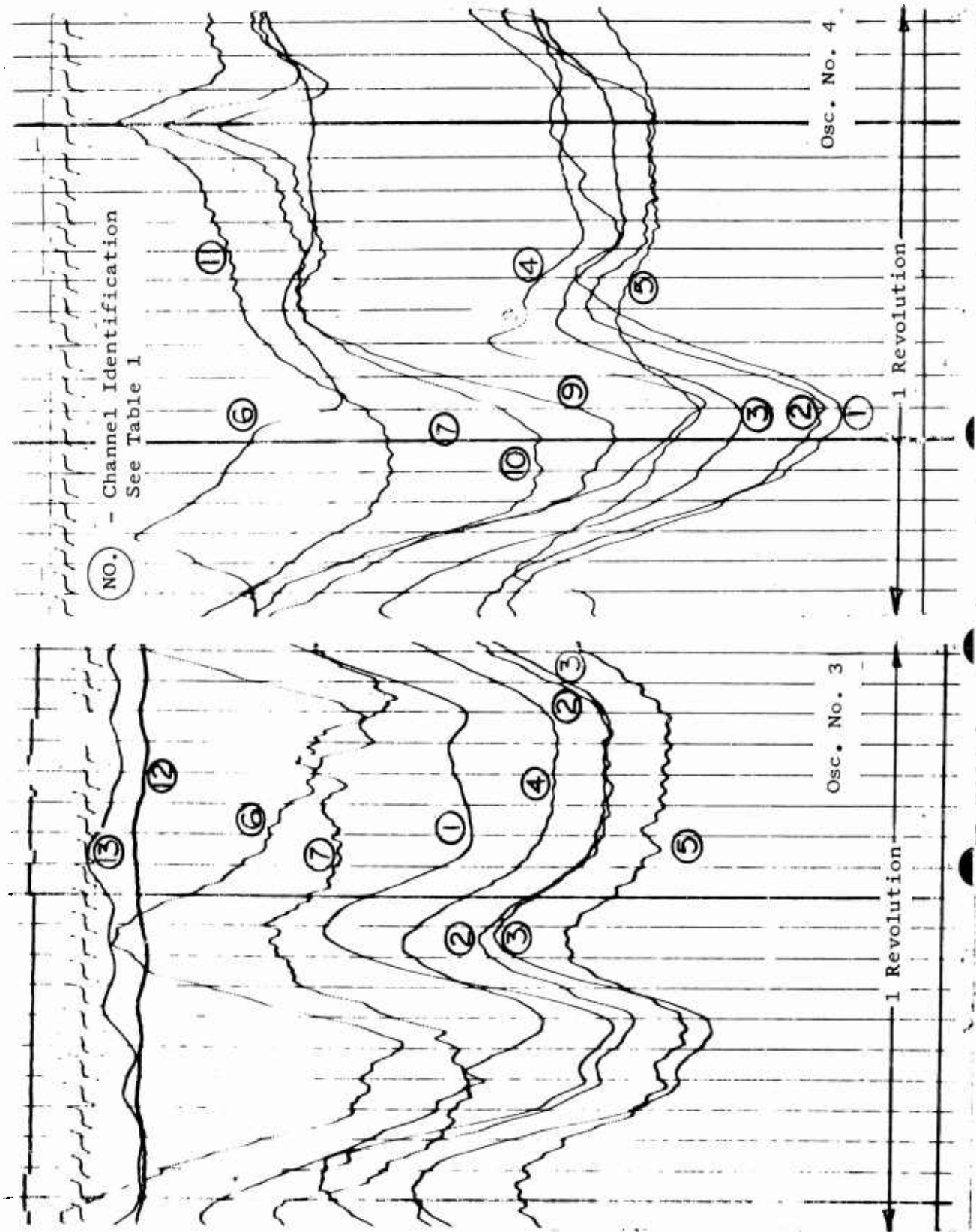


FIGURE 41b - OSCILLOGRAPH RECORDS TYPE II CONDITION NO. 67

LEVEL FLIGHT,

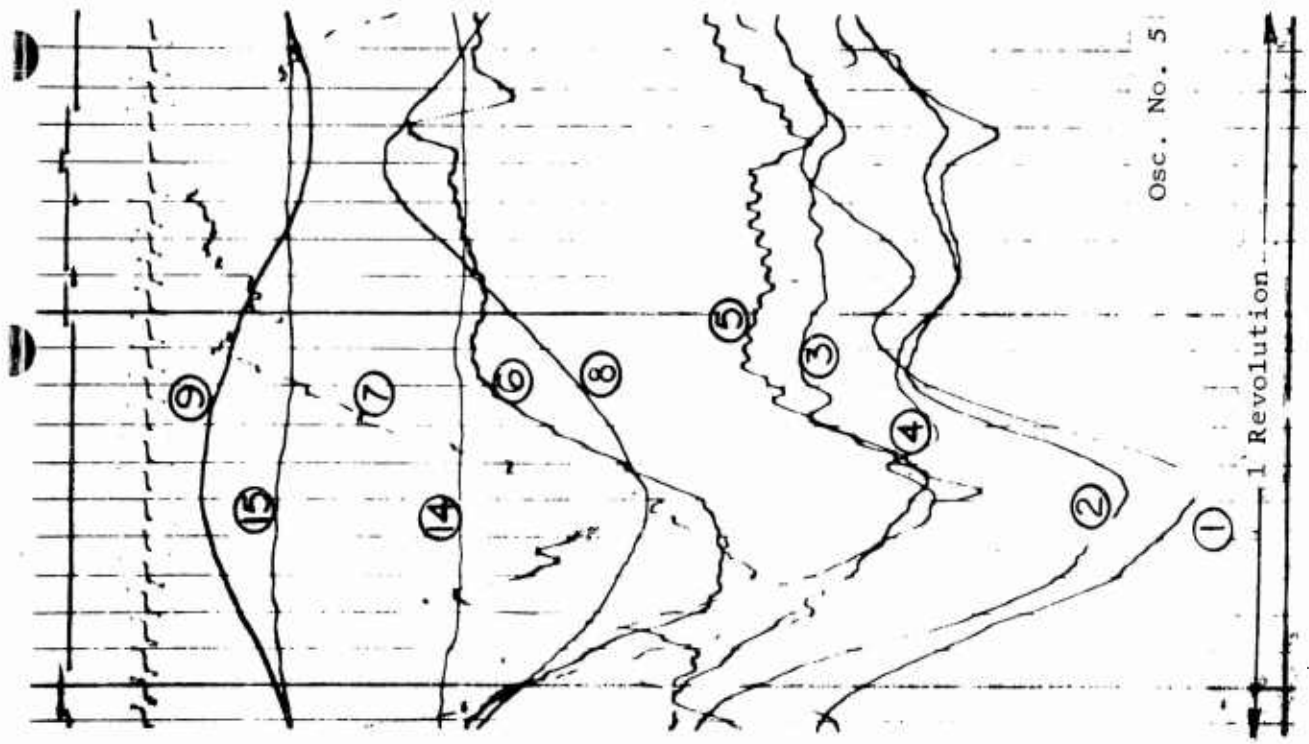
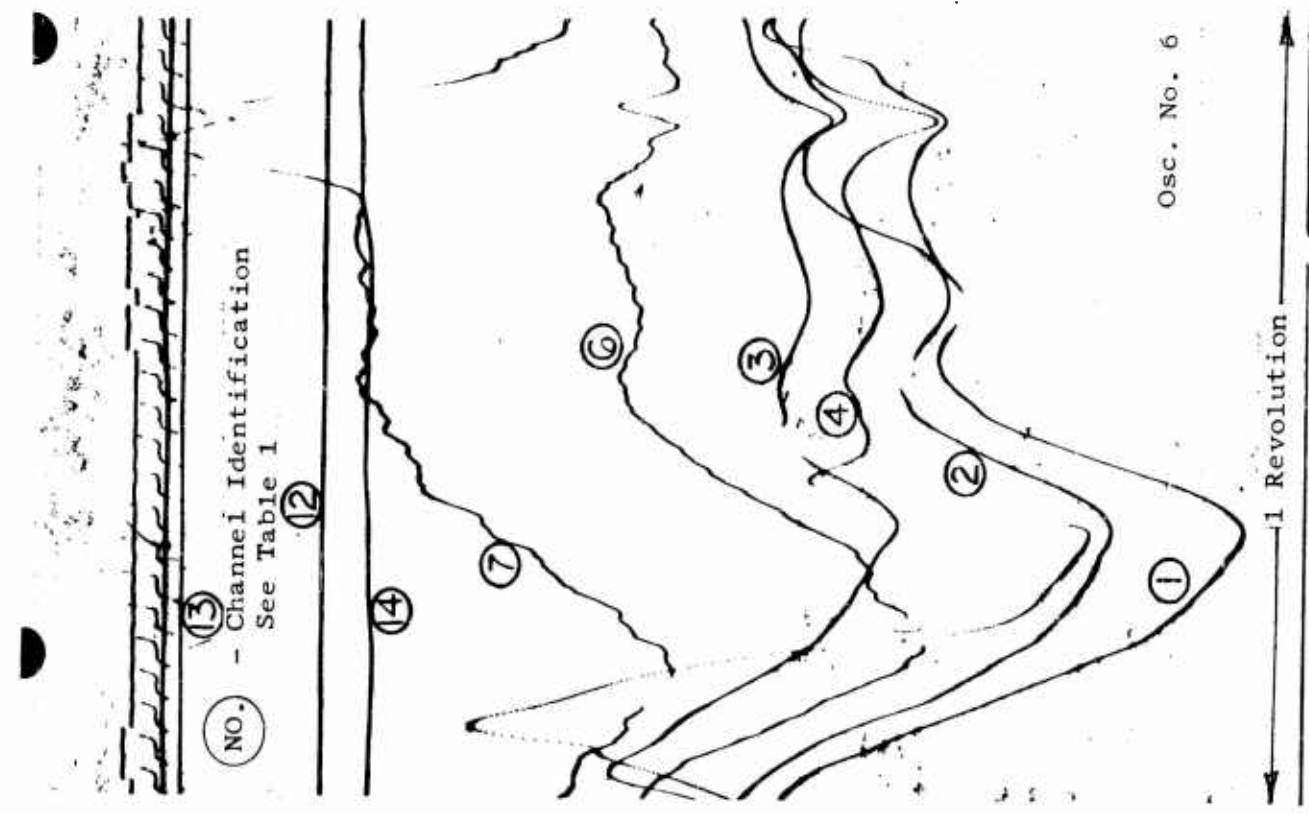


FIGURE 41c - OSCILLOGRAPH RECORDS TYPE II CONDITION NO. 67
LEVEL FLIGHT.

TABLES

TABLE 1
OSCILLOGRAPH SETUP

Red Blade = Instrumented Blade
*Data not recorded for Type II Conditions

Osc. Channel	Oscillograph 1	Oscillograph 2	Oscillograph 3	Oscillograph 4	Oscillograph 5	Oscillograph 6
1	Att. Gyro Roll	* Δ P 55%R 2% Ch	Δ P 75%R 2% Ch	Δ P 85%R 2% Ch	Δ P 90%R 2% Ch	Δ P 95%R 2% Ch
2		* Δ P 55%R 9% Ch	Δ P 75%R 9% Ch	Δ P 85%R 4% Ch	Δ P 90%R 9% Ch	Δ P 95%R 9% Ch
3	Att. Gyro Pitch	* Δ P 55%R 17% Ch	Δ P 75%R 17% Ch	Δ P 85%R 9% Ch	Δ P 90%R 17% Ch	Δ P 95%R 17% Ch
4		* Δ P 55%R 23% Ch	Δ P 75%R 23% Ch	Δ P 85%R 13% Ch	Δ P 90%R 23% Ch	Δ P 95%R 23% Ch
5		* Δ P 55%R 34% Ch	Δ P 75%R 34% Ch	Δ P 85%R 17% Ch	Δ P 90%R 34% Ch	Δ P 95%R 34% Ch
6	Δ P 40%R 4% Ch	* Δ P 55%R 63% Ch	Δ P 75%R 63% Ch	Δ P 85%R 23% Ch	Δ P 90%R 63% Ch	Δ P 95%R 63% Ch
7	Δ P 40%R 17% Ch	* Δ P 55%R 90% Ch	Δ P 75%R 90% Ch	Δ P 85%R 34% Ch	Δ P 90%R 90% Ch	Δ P 95%R 90% Ch
8	Δ P 40%R 34% Ch	Red Blade Bm Bend. 15%R	*R.F. Pylon Pos	Δ P 85%R 47.7% Ch Inoperative	Red Bl Pitch Pos	*Lift Link Load
9	Δ P 40%R 63% Ch	Red Blade Bm Bend. 28%R	*R.A. Pylon Pos	Δ P 85%R 53% Ch	Red Bl Flap Pos	*Rt Cyclic Tube
10	Δ P 40%R 88% Ch	Red Blade Bm Bend. 36%R	*L.F. Pylon Pos	Δ P 85%R 77% Ch	*Vert Accl	*L Cyclic Tube
11	*Red Blade Ch Bend. 15%R	Red Blade Bm Bend. 45%R	*L.A. Pylon Pos	Δ P 85%R 90% Ch	*F & A Accl	*Coll Tube
12	*Red Blade Ch Bend. 28%R	Red Blade Bm Bend. 60%R	Red Blade Torsion 15%R	*Wh Blade Bm Bend. 15%R	*Lat Accl	Rud Pedal Pos
13	*Red Blade Ch Bend. 60%R	Red Blade Bm Bend. 65%R	Red Blade Torsion 50%R	*Wh Blade Bm Bend. 28%R		F & A Cyclic Pos
14	*Red Blade Ch Bend. 80%R	Red Blade Bm Bend. 80%R	*Red Pitch Link	*Wh Blade Ch Bend. 15%R	Angle of Attack	Lat. Cyclic Pos
15	Roll Rate	Red Blade Bm Bend. 92.5%R	*Wh Pitch Link	*Wh Blade Ch Bend. 28%R	Yaw	Coll Stick Pos
16	Pitch Rate					
17	Yaw Rate					Stab. Bar Pos
18	AZ	AZ	AZ	AZ	AZ	AZ

TABLE 2
FLIGHT LOG

Flight No.	Ground Run No.	Date	Time (hr)	Purpose
	3B	7-18-61	.3	Rotor Track and Balance
	4B	7-20-61	.1	Rotor Track and Balance
	5B	7-26-61	1.2	Rotor Track and Balance
3A, B, C, D		7-26-61	.6	Shake Down Flight
	6B, C	7-27-61	.2	Transducer Check
4A		8-4-61	.3	Airspeed Calibration
5A, B, C		8-7-61	.7	Airspeed Calibration
6A, B		8-8-61	.3	Transducer Check (Taped)
7A		8-11-61	.5	Dynamic Pressure Survey
8A		8-23-61	.2	Instrumentation Check
9A		8-24-61	.2	Instrumentation Check
10A, B, C		8-25-61	1.2	Dynamic Pressure Survey
11A		9-6-61	.2	Instrumentation Check
12A		9-7-61	.4	Dynamic Pressure Survey

TABLE 3
LIST OF FLIGHT CONDITIONS RECORDED

Flight No. 7A, August 11, 1961
I. Hartwig, Pilot; C. Coulter, Observer

Weather Cond.: Wind SSW, 4-6 Kn Take-off Gross Weight = 6175 lb.
Barometer: Hp = 490 Ft Take-off Fuel = 300 lb.
Gnd Temp.: + 24°C Center of Gravity at Sta. 132

CONDITION NO.	CNTR NO.	MANEUVER OR STEADY	FLIGHT CONDITION	IAS (Kn)	Hp (Ft) ()*	FUEL CNTR (Gallons)	ROTOR r.p.m. (Nom)	REMARKS
00	400	S	Ground Run	0			200	
							311	
01	401	S	Hover IGE	0	(4)	3	314	
02	402	M	Accelerate	0-50	(50)	5	314	
03	403	S	Maximum Climb	60	1300	6	314	
04	404	S	Level Flight	100	2000	10	324	
05	405	S	Level Flight	100	2050	11	314	
06	406	S	Level Flight	82	2200	11	314	
07	407	S	Level Flight	81	2200	14	324	
08	408	S	Level Flight	62	2250	15	314	
09	409	S	Level Flight	39	2280	16	314	
10	410	S	Level Flight	30	2280	17	314	
11	411	S	Level Flight	22	2290	18	314	
12	412	S	Hover OGE	0	2250	18	314	
								Hold Turn Radius
								IAS & Hp
13	413	M	90° Right Turn	80	2300	21	314	Max. Bank Angle of 37°
								Hold Turn Radius
								IAS & Hp
14	414	M	90° Left Turn	80	2320	23	314	Max. Bank Angle of 37°
								Cyclic & Coll.
15	415	M	Symm Pull-Up 1.3 g	80	2400	24	314	Approx. 1.3 g's
16	416	M	Rolling Pull-Out	80	2400	25	314	
17	417	S	Level Flight	81	2340	26	314	
18	418	S	Partial Pwr Descent	22	2000	27	314	6 p.s.i. Torque
					1000			
19	419	S	Autorotation	52	1000	28	314	
					100			
20	420	M	Approach and Flare	50-0	(100-0)	30	314	

* Absolute Altitude

TABLE 3 (cont'd)
LIST OF FLIGHT CONDITIONS RECORDED

Flight No. 10A, August 25, 1961
L. Hartwig, Pilot; C. Coulter, Observer

Weather Cond.: CAVU
Barometer: 30.03 In. Hg, $H_p=500$ Ft
Gnd Temp.: + 28°C

Take-off Gross Weight = 6151 lb.
Take-off Fuel = 300 lb.
Center of Gravity at Sta. 132.4

CONDITION NO.	CNTR NO.	MANEUVER OR STEADY	FLIGHT CONDITION	IAS (Kn)	H_p (Ft) ()**	FUEL CNTR (Gallons)	ROTOR r.p.m. (Nom)	REMARKS
21	559	M	Acceleration	0-50	(50)	9	314	
22	560	S	Maximum Pwr Climb	50	1200	10	314	
23*	561	S	Maximum Pwr Climb	22	1800	10	314	
24	562	S	Level Flight	80	1700	11	324	
25	563	S	Level Flight	100	1800	14	324	
26	564	S	Level Flight	110	1820	14	324	V_{max} as limited by rotor roughness
27*	565	S	Level Flight	30	1900	15	314	
28	566	S	Level Flight	60	2000	16	314	
29*	567	S	Level Flight	80	2020	17	314	
30	568	S	Level Flight	100	2100	18	314	
31*	569	S	Level Flight	105	2125	19	314	V_{max} as limited by rotor roughness
32	570	M	Right Turn	80	2150	20	314	
33	571	M	Left Turn	80	2170	21	314	
34*	572	M	Symm Pull-Up	80	2240	22	314	Cyclic and Coll. 80 Kn Entry
35	573	M	Rolling Pull-Out	80	2230	23	314	
36	574	S	Autorotation	87	1500	24	314	
37	575	S	Autorotation	50	1600	25	314	
38*	576	M	Approach and Flare	50-0	(0)	26	314	

* These flight data reduced and presented in this report.

**Absolute Altitude

TABLE 3 (cont'd)
LIST OF FLIGHT CONDITIONS RECORDED

Flight No. 10B, August 25, 1961
L. Hartwig, Pilot; C. Coulter, Observer

Weather Cond.: CAVU
Barometer: 30.03 In. Hg, H_p=500 Ft.
Gnd Temp.: + 28°C

Take-off Gross Weight = 6151 lb.
Take-off Fuel = 300 lb.
Center of Gravity at Sta. 132.4

CONDITION NO.	CNTR NO.	MANEUVER OR STEADY	FLIGHT CONDITION	IAS (Kn)	H _p (Ft) ()**	FUEL CNTR (Gallons)	ROTOR r.p.m. (Nom)	REMARKS
39	578	S	Hover Z/D .33	0	(5.6)	1	314	
40	579	S	Hover Z/D .66	0	(20)	2	314	
41	580	S	Hover Z/D 1.0	0	(35)	3	314	
42*	581	S	Hover Z/D 1.5	0	(57)	4	314	
43	582	M	Fwd, Spot - Spot	10	(8)	5	314	
44	583	S	Reverse Flight	10	(8)	6	314	
45	584	M	Left, Spot - Spot	10	(8)	9	314	
46	585	M	Normal Deceleration	50-0	1000	12	314	Hold Alt
47	586	M	Fast Deceleration	50-0	1000	13	314	
48	587	M	Up Collective	60	1300	14	314	Step 16-21 p.s.i.
49	588	M	Greater Up Coll	60	1300	15	314	16-26 p.s.i.
50	589	M	Down Collective	60	1700	16	314	Step 20-15 p.s.i.
51	590	M	Greater Down Coll	60	1400	17	314	20-2 p.s.i.
52	591	M	Approach and Flare	50-0	(50)	19	314	

* These flight data reduced and presented in this report.

**Absolute Altitude

TABLE 3 (cont'd)
LIST OF FLIGHT CONDITIONS RECORDED

Flight No. 10C, August 25, 1961
L. Hartwig, Pilot; C. Coulter, Observer

Weather Cond.: CAVU
Barometer: 30.03 In. Hg
Gnd Temp.: + 28°C

Take-off Gross Weight = 6385 lb.
Take-off Fuel = 450 lb.
Center of Gravity at Sta. 132.2

CONDITION NO.	CNTR NO.	MANEUVER OR STEADY	FLIGHT CONDITION	IAS (Kn)	H _p (Ft) ()**	FUEL CNTR (Gallons)	ROTOR r.p.m. (Nom)	REMARKS
53	601	S	Maximum Pwr Ascent	0	700	4	314	
54	602	S	Partial Pwr Climb	55	1200	5	314	
55*	603	S	Stall Threshold	75	9400	17	324	
56	604	M	Alt Left Turn	75	9300	18	320	
57	605	M	Alt Right Turn	75	9300	18	320	
58*	606	S	Stall Threshold	60	9300	19	324	
59	607	S	Partial Pwr Descent	65	8700	20	314	12 p.s.i.
60	608	S	Partial Pwr Descent	0	6050	21	314	14 p.s.i.
61	609	S	Partial Pwr Descent	80	4600	22	314	10 p.s.i.
62	610	S	Autorotation	20	3800	22	314	
63	611	S	Autorotation	0	1800	23	314	
64	612	M	Approach and Flare	50-0	(50)	27	314	

* These flight data reduced and presented in this report.

**Absolute Altitude

TABLE 3 (cont'd)
LIST OF FLIGHT CONDITIONS RECORDED

Flight No. 12A (Type II), September 7, 1961
L. Hartwig, Pilot; C. Coulter, Observer

Weather Cond.: CAVU
Barometer: 29.98 In. Hg
Gnd Temp.: + 30°C

Take-off Gross Weight = 6151 lb.
Take-off Fuel = 300 lb.
Center of gravity at Sta. 132.4

CONDITION NO.	CNTR NO. MANEUVER OR STEADY	FLIGHT CONDITION	IAS (Kn)	H _p (Ft)	FUEL CNTR (Gallons)	ROTOR r.p.m. (Nom)	REMARKS
65*	694 S	Level Flight	30	1400	11	314	
66*	696 S	Level Flight	80	1400	17	314	
67*	697 S	Level Flight	105	1400	18	314	
68*	698 S	Level Flight	105	1400	19	324	

* These flight data reduced and presented in this report.

TABLE 4a
TRACE SENSITIVITIES FOR
DYNAMIC AIR LOADS MEASUREMENT PROGRAM
TYPE I FLIGHT NO. 10, OSCILLOGRAPH NO. 1
CONDITION NOS. 23, 27, 29, 31, 34, 38, 42, 55, 58

No.	Oscillograph Channel	Trace Zero (Inches)	Calibration Constant	Droop
1	Att Gyro Roll	3.36	18.29 deg/in.	
2				
3	Att Gyro Pitch	3.38	15.4 deg/in.	
4				
5				
6	ΔP 40%R, 4% Ch	.19	3.51 p.s.i./in.	
7	ΔP 40%R, 17% Ch	.21	1.82 p.s.i./in.	
8	ΔP 40%R, 34% Ch	1.33	1.2 p.s.i./in.	
9	ΔP 40%R, 63% Ch	2.63	.44 p.s.i./in.	
10	ΔP 40%R, 88% Ch	2.13	.31 p.s.i./in.	
11	Red Blade Ch, 15%R	3.91	269,500 in.-lb/in.	
12	Red Blade Ch, 28%R	4.49	176,650 in.-lb/in.	
13	Red Blade Ch, 60%R	4.66	46,055 in.-lb/in.	
14	Red Blade Ch, 80%R	5.38	47,035 in.-lb/in.	
15	Roll Rate	3.69	13.4 deg/sec	
16	Pitch Rate	4.09	13.8 deg/sec	
17	Yaw Rate	4.16	13.4 deg/sec	
18	AZ			

TABLE 4b
TRACE SENSITIVITIES FOR
DYNAMIC AIR LOADS MEASUREMENT PROGRAM
TYPE I FLIGHT NO. 10, OSCILLOGRAPH NO. 2
CONDITION NOS. 23, 27, 29, 31, 34, 38, 42, 55, 58

No.	Oscillograph Channel	Trace Zero (Inches)	Calibration Constant	Droop
1	ΔP 55%R, 2% Ch	.58	4.61 p.s.i./in.	
2	ΔP 55%R, 9% Ch	.07	4.55 p.s.i./in.	
3	ΔP 55%R, 17% Ch	.35	3.51 p.s.i./in.	
4	ΔP 55%R, 23% Ch	.65	3.56 p.s.i./in.	
5	ΔP 55%R, 34% Ch	.92	1.32 p.s.i./in.	
6	ΔP 55%R, 63% Ch	1.34	.41 p.s.i./in.	
7	ΔP 55%R, 90% Ch	1.90	.27 p.s.i./in.	
8	Red Blade Bm, 15%R	2.49	60,830 in.-lb/in.	-17,650 in.-lb
9	Red Blade Bm, 28%R	5.10	17,665 in.-lb/in.	-13,050 in.-lb
10	Red Blade Bm, 36%R	5.54	19,650 in.-lb/in.	-10,600 in.-lb
11	Red Blade Bm, 45%R	3.53	8,280 in.-lb/in.	- 8,100 in.-lb
12	Red Blade Bm, 60%R	3.77	7,496 in.-lb/in.	- 4,900 in.-lb
13	Red Blade Bm, 65%R	4.80	7,777 in.-lb/in.	- 4,000 in.-lb
14	Red Blade Bm, 80%R	5.32	7,715 in.-lb/in.	- 1,900 in.-lb
15	Red Blade Bm, 92.5%R	3.78	9,500 in.-lb/in.	- 600 in.-lb
16				
17				
18	AZ			

TABLE 4c
 TRACE SENSITIVITIES FOR
 DYNAMIC AIR LOADS MEASUREMENT PROGRAM
 TYPE I FLIGHT NO. 10, OSCILLOGRAPH NO. 3
 CONDITION NOS. 23, 27, 29, 31, 34, 38, 42, 55, 58

No.	Oscillograph Channel	Trace Zero (Inches)	Calibration Constant	Droop
1	ΔP 75%R, 2% Ch	.03	4.72 p.s.i./in.	
2	ΔP 75%R, 9% Ch	1.53	4.24 p.s.i./in.	
3	ΔP 75%R, 17% Ch	.86	2.84 p.s.i./in.	
4	ΔP 75%R, 23% Ch	1.05	2.59 p.s.i./in.	
5	ΔP 75%R, 34% Ch	1.86	2.84 p.s.i./in.	
6	ΔP 75%R, 63% Ch	2.32	.64 p.s.i./in.	
7	ΔP 75%R, 90% Ch	2.72	.36 p.s.i./in.	
8	Pylon Pos RF	.31	.30 in./in.	
9	Pylon Pos RA	.58	.30 in./in.	
10	Pylon Pos LF	4.02	.30 in./in.	
11	Pylon Pos LA	4.21	.30 in./in.	
12	Red B1 Torsion, 15%	4.75	61,780 in.-lb/in.	
13	Red B1 Torsion, 50%	5.19	7,600 in.-lb/in.	
14	Red Pitch Link	5.46	2,785 lb/in.	
15	White Pitch Link	5.91	2,916 lb/in.	
16				
17				
18	AZ			

TABLE 4d
TRACE SENSITIVITIES FOR
DYNAMIC AIR LOADS MEASUREMENT PROGRAM
TYPE I FLIGHT NO. 10, OSCILLOGRAPH NO. 4
CONDITION NOS. 23, 27, 29, 31, 34, 38, 42, 55, 58

No.	Oscillograph Channel	Trace Zero (Inches)	Calibration Constant	Droop
1	ΔP 85%R, 2% Ch	.22	8.30 p.s.i./in.	
2	ΔP 85%R, 4% Ch	.59	8.89 p.s.i./in.	
3	ΔP 85%R, 9% Ch	.75	6.85 p.s.i./in.	
4	ΔP 85%R, 13% Ch	1.19	4.63 p.s.i./in.	
5	ΔP 85%R, 17% Ch	- .08	9.80 p.s.i./in.	
6	ΔP 85%R, 23% Ch	1.64	2.19 p.s.i./in.	
7	ΔP 85%R, 34% Ch	3.49	1.84 p.s.i./in.	
8				
9	ΔP 85%R, 63% Ch	3.21	.95 p.s.i./in.	
10	ΔP 85%R, 77% Ch	3.94	.95 p.s.i./in.	
11	ΔP 85%R, 90% Ch	4.61	.94 p.s.i./in.	
12	White Blade Bm, 15%R	4.85	21,950 in.-lb/in.	-17,650 in.-lb
13	White Blade Bm, 28%R	4.31	16,646 in.-lb/in.	-13,050 in.-lb
14	White Blade Ch, 15%R	5.23	218,680 in.-lb/in.	
15	White Blade Ch, 28%R	5.40	143,970 in.-lb/in.	
16				
17				
18	AZ			

TABLE 4e
TRACE SENSITIVITIES FOR
DYNAMIC AIR LOADS MEASUREMENT PROGRAM
TYPE I FLIGHT NO. 10, OSCILLOGRAPH NO. 5
CONDITION NOS. 23, 27, 29, 31, 34, 38, 42, 55, 58

No.	Oscillograph Channel	Trace Zero (Inches)	Calibration Constant	Droop
1	ΔP 90%R, 2% Ch	.20	10.58 p.s.i./in.	
2	ΔP 90%R, 9% Ch	.35	9.22 p.s.i./in.	
3	ΔP 90%R, 17% Ch	.98	11.83 p.s.i./in.	
4	ΔP 90%R, 23% Ch	1.52	4.90 p.s.i./in.	
5	ΔP 90%R, 34% Ch	1.20	3.70 p.s.i./in.	
6	ΔP 90%R, 63% Ch	3.02	1.65 p.s.i./in.	
7	ΔP 90%R, 90% Ch	3.18	.89 p.s.i./in.	
8	Red Blade Pitch Pos	3.21	11.6 deg/in.	+ 9.5 deg
9	Red Blade Flap Pos	3.79	10.6 deg/in.	
10	Vert Accel	4.55	.6 g's/in.	+ 1.0 g
11	F & A Accel	5.18	.66 g's/in.	
12	Lat Accel	5.65	.68 g's/in.	
13				
14	Angle of Attack	4.80	27.0 deg/in.	
15	Angle of Yaw	5.46	31.0 deg/in.	
16				
17				
18	AZ			

TABLE 4f
TRACE SENSITIVITIES FOR
DYNAMIC AIR LOADS MEASUREMENT PROGRAM
TYPE I FLIGHT NO. 10, OSCILLOGRAPH NO. 6
CONDITION NOS. 23, 27, 29, 31, 34, 38, 42, 55, 58

No.	Oscillograph Channel	Trace Zero (Inches)	Calibration Constant	Droop
1	ΔP 95%R, 2% Ch	.13	9.62 p.s.i./in.	
2	ΔP 95%R, 9% Ch	.50	9.57 p.s.i./in.	
3	ΔP 95%R, 17% Ch	.99	10.53 p.s.i./in.	
4	ΔP 95%R, 23% Ch	1.65	5.16 p.s.i./in.	
5				
6	ΔP 95%R, 63% Ch	2.51	1.40 p.s.i./in.	
7	ΔP 95%R, 90% Ch	3.07	.44 p.s.i./in.	
8	Lift Link	3.32	5,667 lb/in.	
9	Rt Cyclic Tube	3.53	2,080 lb/in.	
10	Lt Cyclic Tube	3.92	2,256 lb/in.	
11	Coll Tube	4.39	1,984 lb/in.	
12	Rud Ped Pos	5.07	80.75 %/in.	
13	F & A Cyclic Pos	5.14	87.72 %/in.	
14	Lat Cyclic Pos	5.06	81.97 %/in.	
15	Coll Stick Pos	4.10	42.92 %/in.	
16	Stab. Bar Pos	4.96	10.34 %/in.	
17				
18	AZ			

TABLE 5a
TRACE SENSITIVITIES FOR
DYNAMIC AIR LOADS MEASUREMENT PROGRAM
TYPE II FLIGHT NO. 12, OSCILLOGRAPH NO. 1
CONDITION NOS. 65, 66, 67, 68

No.	Oscillograph Channel	Trace Zero (Inches)	Calibration Constant	Droop
1	Att Gyro Roll	3.34	18.3 deg/in.	
2				
3	Att Gyro Pitch	1.54	15.4 deg/in.	
4				
5				
6	ΔP 40%R, 4% Ch	.08	1.4 p.s.i./in.	
7	ΔP 40%R, 17% Ch	1.12	.8 p.s.i./in.	
8	ΔP 40%R, 34% Ch	1.66	.47 p.s.i./in.	
9	ΔP 40%R, 63% Ch	2.13	.18 p.s.i./in.	
10	ΔP 40%R, 88% Ch	3.76	.12 p.s.i./in.	
11				
12				
13				
14				
15	Roll Rate	2.74	13.4 deg/sec	
16	Pitch Rate	3.66	13.8 deg/sec	
17	Yaw Rate	4.34	13.4 deg/sec	
18	AZ			

TABLE 5b
TRACE SENSITIVITIES FOR
DYNAMIC AIR LOADS MEASUREMENT PROGRAM
TYPE II FLIGHT NO. 12, OSCILLOGRAPH NO. 2
CONDITION NOS. 65, 66, 67, 68

No.	Oscillograph Channel	Trace Zero (Inches)	Calibration Constant	Droop
1				
2				
3				
4				
5				
6				
7				
8	Red B1 Bm Bend. 15%R	.31	22,990 in.-1b/in.	-17,650 in.-1b
9	Red B1 Bm Bend. 28%R	.72	6,789 in.-1b/in.	-13,050 in.-1b
10	Red B1 Bm Bend. 36%R	.45	7,766 in.-1b/in.	-10,600 in.-1b
11	Red B1 Bm Bend. 45%R	1.53	8,144 in.-1b/in.	- 8,100 in.-1b
12	Red B1 Bm Bend. 60%R	2.62	7,465 in.-1b/in.	- 4,900 in.-1b
13	Red B1 Bm Bend. 65%R	3.32	7,809 in.-1b/in.	- 4,000 in.-1b
14	Red B1 Bm Bend. 80%R	4.55	7,779 in.-1b/in.	- 1,900 in.-1b
15	Red B1 Bm Bend. 92.5%R	5.35	9,461 in.-1b/in.	- 600 in.-1b
16				
17				
18	AZ			

TABLE 5c
TRACE SENSITIVITIES FOR
DYNAMIC AIR LOADS MEASUREMENT PROGRAM
TYPE II FLIGHT NO. 12, OSCILLOGRAPH NO. 3
CONDITION NOS. 65, 66, 67, 68

No.	Oscillograph Channel	Trace Zero (Inches)	Calibration Constant	Droop
1	ΔP 75%R, 2% Ch	0	1.88 p.s.i./in.	
2	ΔP 75%R, 9% Ch	.27	1.62 p.s.i./in.	
3	ΔP 75%R, 17% Ch	.42	1.15 p.s.i./in.	
4	ΔP 75%R, 23% Ch	.92	1.15 p.s.i./in.	
5	ΔP 75%R, 34% Ch	.82	1.30 p.s.i./in.	
6	ΔP 75%R, 63% Ch	2.15	.24 p.s.i./in.	
7	ΔP 75%R, 90% Ch	3.03	.15 p.s.i./in.	
8				
9				
10				
11				
12	Red B1 Tors 15%R	5.83	61,016 lb-in./in.	
13	Red B1 Tors 50%R	6.12	7,608 lb-in./in.	
14				
15				
16				
17				
18	AZ			

TABLE 5d
TRACE SENSITIVITIES FOR
DYNAMIC AIR LOADS MEASUREMENT PROGRAM
TYPE II FLIGHT NO. 12, OSCILLOGRAPH NO. 4
CONDITION NOS. 65, 66, 67, 68

No.	Oscillograph Channel	Trace Zero (Inches)	Calibration Constant	Droop
1	ΔP 85%R, 2% Ch	- .05	3.53 p.s.i./in.	
2	ΔP 85%R, 4% Ch	.16	3.70 p.s.i./in.	
3	ΔP 85%R, 9% Ch	.60	3.00 p.s.i./in.	
4	ΔP 85%R, 13% Ch	.82	2.09 p.s.i./in.	
5	ΔP 85%R, 17% Ch	1.17	4.17 p.s.i./in.	
6	ΔP 85%R, 23% Ch	3.59	3.08 p.s.i./in.	
7	ΔP 85%R, 34% Ch	3.17	1.65 p.s.i./in.	
8				
9	ΔP 85%R, 63% Ch	2.46	.40 p.s.i./in.	
10	ΔP 85%R, 77% Ch	3.61	.40 p.s.i./in.	
11	ΔP 85%R, 90% Ch	4.77	.44 p.s.i./in.	
12				
13				
14				
15				
16				
17				
18	AZ			

TABLE 5e
TRACE SENSITIVITIES FOR
DYNAMIC AIR LOADS MEASUREMENT PROGRAM
TYPE II FLIGHT NO. 12, OSCILLOGRAPH NO. 5
CONDITION NOS. 65, 66, 67, 68

No.	Oscillograph Channel	Trace Zero (Inches)	Calibration Constant	Droop
1	ΔP 90%R, 2% Ch	0	4.08 p.s.i./in.	
2	ΔP 90%R, 9% Ch	.57	3.68 p.s.i./in.	
3	ΔP 90%R, 17% Ch	1.69	5.00 p.s.i./in.	
4	ΔP 90%R, 23% Ch	.39	2.09 p.s.i./in.	
5	ΔP 90%R, 34% Ch	1.77	1.65 p.s.i./in.	
6	ΔP 90%R, 63% Ch	3.32	.70 p.s.i./in.	
7	ΔP 90%R, 90% Ch	4.92	.34 p.s.i./in.	
8	Red Blade Pitch Pos	3.36	12.0 deg/in.	9.5 deg/in.
9	Red Blade Flap Pos	5.61	10.0 deg/in.	
10				
11				
12				
13				
14	Angle of Attack	4.82	26.9 deg/in.	
15	Angle of Yaw	5.50	30.0 deg/in.	
16				
17				
18	AZ			

TABLE 5f
TRACE SENSITIVITIES FOR
DYNAMIC AIR LOADS MEASUREMENT PROGRAM
TYPE II FLIGHT NO. 12, OSCILLOGRAPH NO. 6
CONDITION NOS. 65, 66, 67, 68

No.	Oscillograph Channel	Trace Zero (Inches)	Calibration Constant	Droop
1	ΔP 95%R, 2% Ch	.09	3.94 p.s.i./in.	
2	ΔP 95%R, 9% Ch	.80	4.25 p.s.i./in.	
3	ΔP 95%R, 17% Ch	1.99	4.46 p.s.i./in.	
4	ΔP 95%R, 23% Ch	1.17	2.14 p.s.i./in.	
5				
6	ΔP 95%R, 63% Ch	2.50	.60 p.s.i./in.	
7	ΔP 95%R, 90% Ch	4.51	.19 p.s.i./in.	
8				
9				
10				
11				
12	Rud Ped Pos	5.29	40 %/in.	
13	F & A Cyclic Pos	5.32	44.4 %/in.	
14	Lat Cyclic Pos	5.31	40.3 %/in.	
15	Coll Stick Pos	5.50	41.5 %/in.	
16				
17				
18	AZ			

TABLE 6a

GROUP IB DATA - TYPE I FLIGHTS

CONDITION NO. 23 MAXIMUM POWER CLIMB

Identification	Revolution No. 1	Revolution No. 2	Revolution No. 3	Average
Att. Gyro Roll (Deg)	-0.6	-0.6	-0.7	-0.6
Att. Gyro Pitch (Deg)	4.5	4.5	4.5	4.5
Roll Rate (Deg/Sec)	-0.4	-0.5	-0.8	-0.6
Pitch Rate (Deg/Sec)	0.3	0.1	0	0.1
Yaw Rate (Deg/Sec)	-0.3	0	0.4	0
Angle of Attack Vane (Deg)	25.6	25.9	26.2	25.9
Yaw Vane (Deg)	-2.8	-3.4	-5.0	-3.7
Rud Pedal Pos (%) *	33.1 Left	33.9 Left	33.9 Left	33.6 Left
F & A Cyclic Pos (%) *	32.5 Fwd	32.5 Fwd	32.5 Fwd	32.5 Fwd
Lat Cyclic Pos (%) *	1.6 Left	4.9 Left	4.1 Left	3.5 Left
Coll Stick Pos (%)	47.5	47.5	47.5	47.5

*Calculated from neutral position = 0%

Photo Panel Film Frame Nos. 1 through 10

I.A.S. 19 V_{true} 20 Knots

O.A.T._{corr} 23°C

H_p 1780 H_D 3150 Feet

Engine r.p.m. 6390 Rotor r.p.m. 313

GW 6085 GW/ σ ' 6680 Pounds

SHP 467 SHP/ σ ' 513

TABLE 6b

GROUP IB DATA - TYPE I FLIGHTS

CONDITION NO. 27 STRAIGHT AND LEVEL FLIGHT

Identification	Revolution No. 1	Revolution No. 2	Revolution No. 3	Average
Att. Gyro Roll (Deg)	-1.8	-1.7	-1.7	-1.7
Att. Gyro Pitch (Deg)	-0.3	-0.2	-0.3	-0.3
Roll Rate (Deg/Sec)	0.1	0.3	0.4	0.3
Pitch Rate (Deg/Sec)	0.1	0.1	0.1	0.1
Yaw Rate (Deg/Sec)	-0.8	-0.8	-0.8	-0.8
Angle of Attack Vane (Deg)	1.4	1.4	1.4	1.4
Yaw Vane (Deg)	9.0	9.0	9.0	9.0
Rud Pedal Pos (%) *	4.8 Right	4.8 Right	4.8 Right	4.8 Right
F & A Cyclic Pos (%) *	21.9 Fwd	21.9 Fwd	21.9 Fwd	21.9 Fwd
Lat Cyclic Pos (%) *	7.4 Left	8.2 Left	8.2 Left	7.9 Left
Coll Stick Pos (%)	46.6	46.2	46.2	41.3

*Calculated from neutral position = 0%

Photo Panel Film Frame Nos. 1 through 8

I.A.S. 32.5 V_{true} 34 Knots

O.A.T._{corr} 23.5°C

H_p 1950 H_D 3350 Feet

Engine r.p.m. 6390 Rotor r.p.m. 313

GW 6053 GW/ σ ' 6680 Pounds

SHP 450 SHP/ σ ' 497

TABLE 6c

GROUP IB DATA - TYPE I FLIGHTS

CONDITION NO. 29 STRAIGHT AND LEVEL FLIGHT

Identification	Revolution No. 1	Revolution No. 2	Revolution No. 3	Average
Att. Gyro Roll (Deg)	0	0	0	0
Att. Gyro Pitch (Deg)	-0.8	-0.8	-0.8	-0.8
Roll Rate (Deg/Sec)	0.1	-0.1	-0.1	0
Pitch Rate (Deg/Sec)	0.3	0.3	0.3	0.3
Yaw Rate (Deg/Sec)	-0.5	-0.4	-0.2	-0.4
Angle of Attack Vane (Deg)	-1.4	-1.4	-1.4	-1.4
Yaw Vane (Deg)	-3.4	-3.4	-3.4	-3.4
Rud Pedal Pos (%) *	14.5 Right	14.5 Right	14.5 Right	14.5 Right
F & A Cyclic Pos (%) *	49.0 Fwd	49.1 Fwd	49.1 Fwd	49.1 Fwd
Lat Cyclic Pos (%) *	7.4 Left	5.7 Left	5.7 Left	6.3 Left
Coll Stick Pos (%)	56.8	56.8	56.8	56.8

*Calculated from neutral position = 0%

Photo Panel Film Frame Nos. 1 through 5

I.A.S. 84 V_{true} 88.5 Knots

O.A.T._{corr} 24°C

H_p 2040 H_D 3500 Feet

Engine r.p.m. 6370 Rotor r.p.m. 312

GW 6043 GW/σ' 6700 Pounds

SHP 508 SHP/σ' 563

TABLE 6d

GROUP IB DATA - TYPE I FLIGHTS

CONDITION NO. 31 STRAIGHT AND LEVEL FLIGHT

Identification	Revolution No. 1	Revolution No. 2	Revolution No. 3	Average
Att. Gyro Roll (Deg)	-1.3	-1.5	-1.5	-1.4
Att. Gyro Pitch (Deg)	-4.5	-4.3	-4.5	-4.4
Roll Rate (Deg/Sec)	-0.4	-0.3	-0.1	-0.3
Pitch Rate (Deg/Sec)	0.3	0.3	0.3	0.3
Yaw Rate (Deg/Sec)	-0.4	-0.5	-0.6	-0.5
Angle of Attack Vane (Deg)	-6.7	-6.2	-6.5	-6.5
Yaw Vane (Deg)	-1.6	-1.6	-1.6	-1.6
Rud Pedal Pos (%) *	2.4 Left	1.7 Left	0	1.3 Left
F & A Cyclic Pos (%) *	61.4 Fwd	62.3 Fwd	60.5 Fwd	61.4 Fwd
Lat Cyclic Pos (%) *	14.8 Left	13.9 Left	16.4 Left	15.0 Left
Coll Stick Pos (%)	76.4	76.4	76.4	76.4

*Calculated from neutral position = 0%

Photo Panel Film Frame Nos. 1 through 5

I.A.S. 107.5 V_{true} 113.5 Knots

O.A.T._{corr} 23.5°C

H_p 2160 H_D 3650 Feet

Engine r.p.m. 6350 Rotor r.p.m. 311.5

GW 6027 GW/ σ 6719 Pounds

SHP 768 SHP/ σ 856

TABLE 6e

GROUP IB DATA - TYPE I FLIGHTS

CONDITION NO. 42 HOVER OGE

Identification	Revolution No. 1	Revolution No. 2	Revolution No. 3	Average
Att. Gyro Roll (Deg)	-2.7	-2.7	-2.9	-2.8
Att. Gyro Pitch (Deg)	2.8	2.8	2.9	2.8
Roll Rate (Deg/Sec)	-0.7	-0.7	-0.7	-0.7
Pitch Rate (Deg/Sec)	0	0.3	0.3	0.2
Yaw Rate (Deg/Sec)	0.4	0.2	0	0.2
Angle of Attack Vane (Deg)	-13.8	-7.0	1.1	-6.6
Yaw Vane (Deg)	31.7	31.7	30.8	31.4
Rud Pedal Pos (%) *	35.5 Left	35.5 Left	35.5 Left	35.5 Left
F & A Cyclic Pos (%) *	8.8 Fwd	9.6 Fwd	9.6 Fwd	9.3 Fwd
Lat Cyclic Pos (%) *	18.0 Left	18.0 Left	18.0 Left	18.0 Left
Coll Stick Pos (%)	57.3	56.8	57.3	57.1

*Calculated from neutral position = 0%

Photo Panel Film Frame Nos. 1 through 8

I.A.S. 0 V_{true} 0 Knots

O.A.T._{corr} 23.5°C

H_p 605 H_D 1600 Feet

Engine r.p.m. 6390 Rotor r.p.m. 311.5

GW 6125 GW/ σ 6420 Pounds

SHP 669 SHP/ σ 701

TABLE 6f

GROUP IB DATA - TYPE I FLIGHTS

CONDITION NO. 55 HIGH ALTITUDE STALL THRESHOLD

Identification	Revolution No. 1	Revolution No. 2	Revolution No. 3	Average
Att. Gyro Roll (Deg)	-0.7	-0.9	-0.7	-0.8
Att. Gyro Pitch (Deg)	-0.8	-0.8	-0.8	-0.8
Roll Rate (Deg/Sec)	0	-0.3	-0.3	-0.2
Pitch Rate (Deg/Sec)	0	-0.3	-0.4	-0.2
Yaw Rate (Deg/Sec)	-0.5	-0.5	-0.5	-0.5
Angle of Attack Vane (Deg)	-0.3	-0.3	-0.3	-0.3
Yaw Vane (Deg)	-6.2	-6.2	-6.2	-6.2
Rud Pedal Pos (%) *	16.1 Left	20.2 Left	20.2 Left	18.8 Left
F & A Cyclic Pos (%) *	59.6 Fwd	59.6 Fwd	58.8 Fwd	59.3 Fwd
Lat Cyclic Pos (%) *	13.1 Left	18.0 Left	18.9 Left	16.7 Left
Coll Stick Pos (%)	71.7	71.7	71.7	71.7

*Calculated from neutral position = 0%

Photo Panel Film Frame Nos. 1 through 6

I.A.S. 77 V_{true} 90.7 Knots

O.A.T._{corr} 9.5°C

H_p 9325 H_D 10,725 Feet

Engine r.p.m. 6550 Rotor r.p.m. 318.6

GW 6273 GW/ σ ' 8700 Pounds

SHP 649 SHP/ σ ' 900

TABLE 6g

GROUP IB DATA - TYPE I FLIGHTS

CONDITION NO. 58 HIGH ALTITUDE FLIGHT

Identification	Revolution No. 1	Revolution No. 2	Revolution No. 3	Average
Att. Gyro Roll (Deg)	0.4	0.5	0.7	0.5
Att. Gyro Pitch (Deg)	-2.8	-2.6	-2.6	-2.7
Roll Rate (Deg/Sec)	-0.3	0.1	0.1	0
Pitch Rate (Deg/Sec)	-0.4	-0.3	-0.1	-0.3
Yaw Rate (Deg/Sec)	-0.3	-0.3	-0.4	-0.3
Angle of Attack Vane (Deg)	-3.2	-3.0	-3.0	-3.1
Yaw Vane (Deg)	-10.3	-9.9	-9.9	-10.0
Rud Pedal Pos (%) *	15.3 Left	14.5 Left	14.5 Left	14.8 Left
F & A Cyclic Pos (%) *	43.9 Fwd	43.9 Fwd	44.7 Fwd	44.2 Fwd
Lat Cyclic Pos (%) *	10.7 Left	9.8 Left	10.7 Left	10.4 Left
Coll Stick Pos (%)	63.6	63.6	63.6	63.6

*Calculated from neutral position = 0%

Photo Panel Film Frame Nos. 1 through 8

I.A.S. 67 V_{true} 78.9 Knots

O.A.T._{corr} 9.5°C

H_p 9350 H_D 10,750 Feet

Engine r.p.m. 6600 Rotor r.p.m. 321.2

GW 6260 GW/σ 8682 Pounds

SHP 579 SHP/σ 803

TABLE 7a

GROUP IB DATA - TYPE II FLIGHTS

CONDITION NO. 65 STRAIGHT AND LEVEL FLIGHT

Identification	Revolution No. 1	Revolution No. 2	Revolution No. 3	Average
Att. Gyro Roll (Deg)	-0.6	-0.7	-0.7	-0.7
Att. Gyro Pitch (Deg)	-1.5	-1.5	-1.5	-1.5
Roll Rate (Deg/Sec)	-0.3	-0.4	-0.3	-0.3
Pitch Rate (Deg/Sec)	-0.4	-0.3	0	-0.2
Yaw Rate (Deg/Sec)	-0.9	-1.9	-2.5	-1.8
Angle of Attack Vane (Deg)	3.8	4.0	3.2	3.7
Yaw Vane (Deg)	-13.5	-13.2	-13.2	-13.2
Rud Pedal Pos (%) *	5.6 Left	4.8 Left	4.8 Left	5.1 Left
F & A Cyclic Pos (%) *	24.0 Fwd	24.9 Fwd	24.9 Fwd	24.6 Fwd
Lat Cyclic Pos (%) *	15.3 Left	12.9 Left	12.1 Left	13.4 Left
Coll Stick Pos (%)	44.2	44.2	44.2	44.2

*Calculated from neutral position = 0%

Photo Panel Film Frame Nos. 1 through 15

I.A.S. 31 V_{true} 32.6 Knots

O.A.T._{corr} 29.5°C

H_P 1390 H_D 3380 Feet

Engine r.p.m. 6410 Rotor r.p.m. 312

GW 6085 GW/σ ' 6731 Pounds

SHP 433 SHP/σ ' 479

TABLE 7b

GROUP IB DATA - TYPE II FLIGHTS

CONDITION NO. 66 STRAIGHT AND LEVEL FLIGHT

Identification	Revolution No. 1	Revolution No. 2	Revolution No. 3	Average
Att. Gyro Roll (Deg)	1.8	1.8	2.2	2.0
Att. Gyro Pitch (Deg)	-1.7	-1.7	-1.5	-1.6
Roll Rate (Deg/Sec)	1.2	0.9	0.1	0.7
Pitch Rate (Deg/Sec)	-0.4	-0.1	-0.1	-0.2
Yaw Rate (Deg/Sec)	-1.6	-1.7	-1.3	-1.5
Angle of Attack Vane (Deg)	-0.5	-0.5	-0.5	-0.5
Yaw Vane (Deg)	-4.5	-4.8	-5.4	-4.9
Rud Pedal Pos (%) *	16.0 Right	16.0 Right	16.0 Right	16.0 Right
F & A Cyclic Pos (%) *	48.9 Fwd	48.9 Fwd	48.9 Fwd	48.9 Fwd
Lat Cyclic Pos (%) *	12.1 Left	12.1 Left	12.1 Left	12.1 Left
Coll Stick Pos (%)	51.3	51.6	51.3	51.4

*Calculated from neutral position = 0%

Photo Panel Film Frame Nos. 1 through 12

I.A.S. 87.5 V_{true} 92 Knots

O.A.T._{corr} 29°C

H_p 1375 H_D 3300 Feet

Engine r.p.m. 6420 Rotor r.p.m. 314

GW 6420 GW/ σ ' 6660 Pounds

SHP 6040 SHP/ σ ' 528

TABLE 7c

GROUP IB DATA - TYPE II FLIGHTS

CONDITION NO. 67 STRAIGHT AND LEVEL FLIGHT

Identification	Revolution No. 1	Revolution No. 2	Revolution No. 3	Average
Att. Gyro Roll (Deg)	-1.1	-0.5	-0.4	-0.7
Att. Gyro Pitch (Deg)	-3.4	-3.5	-3.7	-3.5
Roll Rate (Deg/Sec)	1.2	1.7	2.1	1.7
Pitch Rate (Deg/Sec)	-0.4	-0.6	-0.4	-0.5
Yaw Rate (Deg/Sec)	0.3	-0.5	-0.9	-0.4
Angle of Attack Vane (Deg)	-8.6	-8.6	-8.6	-8.6
Yaw Vane (Deg)	-1.2	-1.2	-1.2	-1.2
Rud Pedal Pos (%) *	1.6 Right	3.2 Right	3.2 Right	2.7 Right
F & A Cyclic Pos (%) *	67.5 Fwd	67.5 Fwd	67.5 Fwd	67.5 Fwd
Lat Cyclic Pos (%) *	16.9 Left	18.6 Left	18.6 Left	18.0 Left
Coll Stick Pos (%)	77.8	77.8	77.8	77.8

*Calculated from neutral position = 0%

Photo Panel Film Frame Nos. 1 through 13

I.A.S. 106 V_{true} 111.3 Knots

O.A.T._{corr} 29°C

H_p 1375 H_D 3300 Feet

Engine r.p.m. 6410 Rotor r.p.m. 313

GW 6033 GW/σ' 6652 Pounds

SHP 758 SHP/σ' 836

TABLE 7d
 GROUP IB DATA - TYPE II FLIGHTS
 CONDITION NO. 68 STRAIGHT AND LEVEL FLIGHT

Identification	Revolution No. 1	Revolution No. 2	Revolution No. 3	Average
Att. Gyro Roll (Deg)	0.5	0.2	-0.2	0.2
Att. Gyro Pitch (Deg)	-4.3	-4.5	-4.5	-4.4
Roll Rate (Deg/Sec)	-0.3	-0.8	-1.1	-0.7
Pitch Rate (Deg/Sec)	0.1	0	-0.1	0
Yaw Rate (Deg/Sec)	0	0.3	0.5	0.3
Angle of Attack Vane (Deg)	-7.0	-6.7	-6.7	-6.8
Yaw Vane (Deg)	-3.0	-3.3	-3.3	-3.2
Rud Pedal Pos (%) *	4.8 Right	4.8 Right	4.8 Right	4.8 Right
F & A Cyclic Pos (%) *	65.8 Fwd	63.1 Fwd	63.1 Fwd	64.0 Fwd
Lat Cyclic Pos (%) *	15.3 Left	15.3 Left	16.9 Left	15.9 Left
Coll Stick Pos (%)	77.9	77.9	77.5	77.7

*Calculated from neutral position = 0%

Photo Panel Film Frame Nos. 1 through 19

I.A.S. 105 V_{true} 110.4 Knots

O.A.T._{corr} 29°C

H_p 1450 H_D 3400 Feet

Engine r.p.m. 6630 Rotor r.p.m. 324

GW 6027 GW/σ' 6667 Pounds

SHP 757 SHP/σ' 837

TABLE 8a
GROUP IB DATA - MANEUVER CONDITIONS

CONDITION NO. 34, SYMMETRICAL PULL-UP

Identification	Revolution No. 1 Time = 0	Revolution No. 2 Time = 1.15	Revolution No. 3 Time = 2.11	Revolution No. 4 Time = 3.07	Revolution No. 5 Time = 4.22
Att. Gyro Roll (Deg)	-0.6	-0.9	0.4	1.1	1.1
Att. Gyro Pitch (Deg)	-2.0	0.6	9.4	14.3	12.9
Roll Rate (Deg/Sec)	-0.5	1.3	-0.8	2.8	-0.4
Pitch Rate (Deg/Sec)	0.7	5.2	6.6	2.5	-1.8
Yaw Rate (Deg/Sec)	-0.3	-0.1	1.5	-1.2	-1.6
Angle of Attack Vane (Deg)	-2.7	-2.2	4.1	4.9	-0.5
Yaw Vane (Deg)	-3.7	-3.4	-2.2	-1.9	-5.0
Rud Pedal Pos (%) *	10.5 Rt	9.7 Rt	3.2 Rt,	4.0 Rt	1.6 Rt
F & A Cyclic Pos (%)*	45.6 Fwd	28.9 Fwd	44.7 Fwd	48.2 Fwd	48.2 Fwd
Lat Cyclic Pos (%) *	12.3 Lt	12.3 Lt	11.5 Lt	17.2 Lt	17.2 Lt
Coll Stick Pos (%)	58.1	52.8	54.0	53.2	52.4
V _{true} (Knots)	92.2	92.2	90.0	87.6	82.7
Density Alt (Ft)	3900	3900	3900	4050	4400
Rotor RPM	312.5	3.5.5	311.0	311.0	315.5
SHP/ σ'	606	626	665	669	674
GW/ σ' (Lb)	6742	6742	6742	6772	6850
OAT ($^{\circ}$ C)	22.5	22.5	22.5	22.5	22.5

*Calculated from neutral position = 0%

TABLE 8b
GROUP IB DATA - MANEUVER CONDITIONS

CONDITION NO. 38, APPROACH AND FLARE, 50-0 KNOTS

Identification	Revolution No. 1 Time = 0	Revolution No. 2 Time = 0.97	Revolution No. 3 Time = 1.95	Revolution No. 4 Time = 2.93	Revolution No. 5 Time = 3.91
Att. Gyro Roll (Deg)	-2.7	-2.7	-2.2	-2.0	-2.4
Att. Gyro Pitch (Deg)	9.9	8.8	10.3	11.4	11.6
Roll Rate (Deg/Sec)	1.6	0	1.2	-0.4	-0.3
Pitch Rate (Deg/Sec)	-1.4	0.3	1.5	0.7	-1.0
Yaw Rate (Deg/Sec)	-4.4	-2.8	-2.7	-0.7	0.4
Angle of Attack Vane (Deg)	--	--	--	--	--
Yaw Vane (Deg)	-1.6	-1.2	-1.2	-0.3	-0.9
Rud Pedal Pos (%) *	22.5 Rt	4.0 Rt	8.1 Lt	19.4 Lt	27.4 Lt
F & A Cyclic Pos (%)*	2.6 Fwd	12.3 Fwd	22.8 Fwd	23.7 Fwd	26.3 Fwd
Lat Cyclic Pos (%) *	18.9 Lt	17.2 Lt	17.2 Lt	16.4 Lt	14.8 Lt
Coll Stick Pos (%)	35.1	45.3	53.4	56.8	56.8
V _{true} (Knots)	19.4	11.3	5.1	0	0
Density Alt (Ft)	1600	1600	1600	1700	1700
Rotor RPM	309.0	307.5	306.0	304.5	306.0
SHP/ σ'	306	387	491	599	626
GW/ σ' (Lb)	6269	6269	6269	6289	6289
OAT (°C)	22.5	22.5	22.5	23.5	23.5

*Calculated from neutral position = 0%

IBM TABULATIONS

IBM TAB NO. 1
TYPE I STEADY STATE CONDITION NO. 23
MAXIMUM POWER CLIMB

PER CENT CHORD	K	DELTA PER CENT			PRESSURE RADIUS		
		40	D E G	PER CENT	R E E S	90+11201K	
		0+11201K	.30+11201K	60+11201K	90+11201K		
4	0	3052830051	2666840051	2421210051	1894860051	17123	
	1	2140490051	2070310051	2140490051	1298330051	18123	
	2	1596595051	1965040051	2421210051	2859835051	19123	
17	0	1445310051	1290780051	1127160051	8181000050	27123	
	1	1099890051	1090800051	1045350051	6453900050	28123	
	2	6908400050	8908200050	1236240051	1499850051	29123	
34	0	7320000050	6720000050	5640000050	4680000050	37123	
	1	5640000050	5640000050	5640000050	3480000050	38123	
	2	4200000050	4000000050	6120000050	6960000050	39123	
63	0	3116900050	2634000050	2414500050	2107200050	47123	
	1	2370600050	2677900050	2392550050	1821850050	48123	
	2	1909650050	2238900050	2809600050	3116900050	49123	
88	0	1266900050	9888000049	8961000049	8961000049	57123	
	1	1035150050	1205100050	1081500050	6798000049	58123	
	2	8034000049	9888000049	1174200050	1375050050	59123	

PER CENT CHORD	K	DELTA PER CENT			PRESSURE RADIUS		
		55	D E G	PER CENT	R E E S	90+11201K	
		0+11201K	30+11201K	60+11201K	90+11201K		
2	0	5391360051	4446720051	375520051	3778560051	147223	
	1	4469760051	4285440051	4561920051	2580480051	148223	
	2	2949120051	3732480051	4285440051	5091840051	149223	
9	0	3408750051	2772450051	2454300051	2408850051	157223	
	1	2886075051	2727000051	2749725051	1772550051	158223	
	2	1954350051	2408850051	2772450051	3226950051	159223	
17	0	2351030051	2105400051	1772045051	1859770051	167223	
	1	2070310051	2000130051	2000130051	1280785051	168223	
	2	1403600051	1789590051	1929950051	2280850051	169223	
23	0	1884680051	1635760051	1386840051	1422400051	177223	
	1	1671320051	1564640051	1564640051	1066800051	178223	
	2	1102360051	1351280051	1564640051	1813560051	179223	
34	0	1650000051	1485000051	1306800051	1372800051	187223	
	1	1491600051	1425600051	1399200051	1095600051	188223	
	2	1108800051	1280400051	1425600051	1597200051	189223	
63	0	5291000050	4477000050	3703700050	4497350050	197223	
	1	4721200050	4680500050	4477000050	3703700050	198223	
	2	3500200050	3988600050	4721200050	5291000050	199223	
90	0	2136000050	2002500050	1682100050	2095950050	207223	
	1	2109300050	2069250050	1975800050	1735500050	208223	
	2	1495200050	1708800050	2002500050	2189400050	209223	

PER CENT CHORD	K	DELTA PER CENT			PRESSURE RADIUS		
		75	D E G	PER CENT	R E E S	90+11201K	
		0+11201K	30+11201K	60+11201K	90+11201K		
2	0	6933990051	5047190051	6981160051	5943420051	377323	
	1	6320780051	6132100051	6226440051	6462290051	378323	
	2	4433980051	5283040051	6462290051	7358520051	379323	
9	0	4237000051	3241305051	4279370051	3940410051	387323	
	1	4152260051	3813300051	3601450051	3855670051	388323	
	2	2987085051	3177750051	3770930051	4406480051	389323	
17	0	2556900051	1761420051	2599515051	2130750051	397323	
	1	2244390051	2230185051	2244390051	2414850051	398323	
	2	1704600051	1846650051	2358030051	2784180051	399323	
23	0	2668730051	1995070051	2720550051	2293035051	407323	
	1	2409630051	2331900051	2305990051	2409630051	408323	
	2	1839610051	1969160051	2435540051	2850100051	409323	
34	0	1619370051	1136400051	1676190051	1306860051	417323	
	1	1448910051	1392090051	1463115051	1505730051	418323	
	2	51170051	1193220051	1477320051	1690395051	419323	
63	0	6922800050	5544650050	7243300050	6410000050	427323	
	1	6986900050	6538200050	7179200050	7115100050	428323	
	2	6217700050	5512600050	6922800050	8204800050	429323	
90	0	3461250050	2946500050	3834000050	3319250050	437323	
	1	3763000050	3479000050	3692000050	3479000050	438323	
	2	3266000050	2911000050	3283750050	3550000050	439323	

PER CENT CHORD	K	85		DELTA	PRESSURE		
		O+(120)K	D E G	PER CENT	R E E S	60+(120)K	90+(120)K
2	0	7012655051	3983520051	8008535051	6514715051	607423	
	1	6805180051	7552090051	7386110051	7801060051	608423	
	2	9294680051	4813420051	7635080051	8381990051	609423	
4	0	6711195051	3644490051	7956555051	6222300051	617423	
	1	6311190051	7200090051	6844530051	7022310051	618423	
	2	8444550051	4311165051	7022310051	7911210051	619423	
9	0	5102505051	3013560051	6198345051	4862790051	627423	
	1	4862790051	5205240051	4999770051	5068260051	628423	
	2	5684670051	3219030051	4999770051	5821650051	629423	
13	0	3588250051	1828850051	4977250051	3287300051	637423	
	1	3379900051	3750300051	3565100051	3750300051	638423	
	2	4213300051	2315000051	3704000051	4167000051	639423	
17	0	3480420051	1715700051	4117680051	3039240051	647423	
	1	3137280051	3431400051	3137280051	3529440051	648423	
	2	3627480051	1960800051	3235320051	3823560051	649423	
23	0	2631600051	1666680051	3212745051	2543880051	657423	
	1	2565810051	2708355051	2565810051	2719320051	658423	
	2	2982480051	1765365051	2653530051	2938620051	659423	
34	0	1706550051	9358500050	1981800051	1623975051	667423	
	1	1633150051	1761600051	1743250051	1890050051	668423	
	2	2073550051	1174400051	1743250051	1945100051	669423	
47.7	0					677423	
	1					678423	
	2					679423	
63	0	5807200050	2570400050	7520800050	5236000050	687423	
	1	6378400050	6473600050	6568800050	7425600050	688423	
	2	8377600050	4664800050	6664000050	7520800050	689423	
77	0	1706400050	5688000049-	2512200050	1327200050	697423	
	1	2275200050	2275200050	2749200050	3223200050	698423	
	2	3886800050	1422000050	2654400050	2749200050	699423	
90	0	5658000049-	1414500050-		8015500049-	707423	
	1	4715000048-	9430000048-	1886000049	2829000049	708423	
	2	1131600050	3772000049-	1886000049	2829000049	709423	

PER CENT CHORD	K	DELTA PER CENT			PRESSURE RADIUS		
		90	D E G	R E E S	90+(120)K		
		0+(120)K	30+(120)K	60+(120)K			
2	0	7037030051	2857140051	9100520051	6984120051	797523	
	1	7195760051	8148140051	8253960051	9312160051	798523	
	2	9999990051	4656080051	8571420051	8888880051	799523	
9	0	4331990051	1382550051	6544070051	4424160051	807523	
	1	4424160051	5069350051	4700670051	4977180051	808523	
	2	5299775051	2765100051	4977180051	5253690051	809523	
17	0	3905220051	1656760051	5857830051	3786880051	817523	
	1	4023560051	4141900051	3905220051	4615260051	818523	
	2	4970280051	2366800051	4378580051	4378580051	819523	
23	0	2598060051	1544130051	3480420051	2598060051	827523	
	1	2647080051	2696100051	2598060051	2990220051	828523	
	2	3382380051	1764720051	2843160051	2941200051	829523	
34	0	1481600051	5370800050	2129800051	1407520051	837523	
	1	1518640051	1648280051	1481600051	1852000051	838523	
	2	2074240051	8889600050	1703840051	1777920051	839523	
63	0	4279600050	2222'00050	6254800050	4279600050	847523	
	1	5596400050	5184900050	5843300050	6584000050	848523	
	2	8394600050	3785800050	5925600050	6254800050	849523	
90	0	2655000049-	1416000050-	3540000049-	6195000049-	857523	
	1	8850000048	3097500049	6195000049	9735000049	858523	
	2	1725750050	2655000049	5310000049		859523	

PER CENT CHORD	K	DELTA PER CENT			PRESSURE RADIUS		
		95	D E G	R E E S	90+(120)K		
		0+(120)K	30+(120)K	60+(120)K			
2	0	5528625051	1538400051	7307400051	5672850051	967623	
	1	4807500051	5720925051	5769000051	7018950051	968623	
	2	7980450051	3605625051	6586275051	6634350051	969623	
9	0	4497430051	1243970051	6698300051	4593120051	977623	
	1	4210360051	4784500051	4593120051	5550020051	978623	
	2	6028470051	2918545051	5215105051	5358640051	979623	
17	0	3157800051	1421010051	6420860051	3263060051	987623	
	1	3157800051	3473580051	3263060051	3578840051	988623	
	2	4263030051	2105200051	3684100051	3894620051	989623	
23	0	2010450051	7732500050	3531175051	2062000051	997623	
	1	1855800051	2165100051	2113550051	2525950051	998623	
	2	2835250051	1469175051	2371300051	2371300051	999623	
34	0					1007623	
	1					1008623	
	2					1009623	
63	0	4194000050	1817400050	5172600050	4054200050	1017623	
	1	4753200050	5592000050	5731800050	6850200050	1018623	
	2	7409400050	3984300050	5452200050	5312400050	1019623	
90	0	4350000048	3045000049-	3697500049-	3045000049-	1027623	
	1	1522500049	4785000049	4785000049	7830000049	1028623	
	2	6090000049	6525000049	1740000049	4350000048	1029623	

		BLADE PER CENT		LOADING RADIUS		
		D E G		R E E S		
	40					
K	0+(120)K	30+(120)K	60+(120)K	90+(120)K		
0	1126639752	9906065451	8784797651	7048365351		17023
1	8345739551	8447065151	8231112551	5270928651		18023
2	6114173451	7403674751	9411255651	1097484852		19023
		BLADE PER CENT		LOADING RADIUS		
		D E G		R E E S		
	55					
K	0+(120)K	30+(120)K	60+(120)K	90+(120)K		
0	2034400252	1750843452	1504439152	1586653552		27023
1	1781960052	1710681052	1710406752	1197255352		28023
2	1247856452	1503966252	1707589752	1964136952		29023
		BLADE PER CENT		LOADING RADIUS		
		D E G		R E E S		
	75					
K	0+(120)K	30+(120)K	60+(120)K	90+(120)K		
0	2428457452	1803567252	2490810652	2121839152		37023
1	2291456252	2171432752	2212462152	2290552552		38023
2	1731572652	1835108652	2250289552	2606213152		39023
		BLADE PER CENT		LOADING RADIUS		
		D E G		R E E S		
	85					
K	0+(120)K	30+(120)K	60+(120)K	90+(120)K		
0	2507592552	1318249152	3069134052	2326036452		47023
1	2434734652	2638373152	2559830952	2732200752		48023
2	3095648752	1665673852	2607101752	2941608652		49023
		BLADE PER CENT		LOADING RADIUS		
		D E G		R E E S		
	90					
K	0+(120)K	30+(120)K	60+(120)K	90+(120)K		
0	2316834552	8987026151	3321655852	2275965852		57023
1	2444814052	2631617052	2548218252	2928895252		58023
2	3266769852	1529736352	2748269752	2832692952		59023
		BLADE PER CENT		LOADING RADIUS		
		D E G		R E E S		
	95					
K	0+(120)K	30+(120)K	60+(120)K	90+(120)K		
0	1945546252	6795643451	3049163152	1967764252		67023
1	1879413552	2171152252	2126051652	2523672852		68023
2	2816725552	1407363552	2322676252	2355428652		69023

BLADE 0	LOADING AZIMUTH	THRUST	PER	INCH
SPAN				
40			1126639752	
55			2034400252	
75			2428457452	
85			2507592552	
90			2316834552	
95			1945546252	

BLADE 180	LOADING AZIMUTH	THRUST	PER	INCH
SPAN				
40			8231112551	
55			1710406752	
75			2212462152	
85			2559830952	
90			2548218252	
95			2126051652	

BLADE 30	LOADING AZIMUTH	THRUST	PER	INCH
SPAN				
40			9906065451	
55			1750843452	
75			1803567252	
85			1318249152	
90			8987026151	
95			6795643451	

BLADE 210	LOADING AZIMUTH	THRUST	PER	INCH
SPAN				
40			5270928651	
55			1197255352	
75			2290552552	
85			2732200752	
90			2928895252	
95			2523672852	

BLADE 60	LOADING AZIMUTH	THRUST	PER	INCH
SPAN				
40			8784797651	
55			1504439152	
75			2490810652	
85			3069134052	
90			3321655852	
95			3049163152	

BLADE 240	LOADING AZIMUTH	THRUST	PER	INCH
SPAN				
40			6114173451	
55			1247856452	
75			1731572652	
85			3095648752	
90			3266769852	
95			2816725552	

BLADE 90	LOADING AZIMUTH	THRUST	PER	INCH
SPAN				
40			7048365351	
55			1586653552	
75			2121839152	
85			2326036452	
90			2275965852	
95			1967764252	

BLADE 270	LOADING AZIMUTH	THRUST	PER	INCH
SPAN				
40			7403674751	
55			1503966252	
75			1835108652	
85			1665673852	
90			1529736352	
95			1407363552	

BLADE 120	LOADING AZIMUTH	THRUST	PER	INCH
SPAN				
40			8345739551	
55			1781960052	
75			2281456252	
85			2434734652	
90			2444814052	
95			1879413552	

BLADE 300	LOADING AZIMUTH	THRUST	PER	INCH
SPAN				
40			9411255651	
55			1707589752	
75			2250289552	
85			2607101752	
90			2748269752	
95			2322676252	

BLADE 150	LOADING AZIMUTH	THRUST	PER	INCH
SPAN				
40			8447065151	
55			1710681052	
75			2171432752	
85			2638373152	
90			2631617052	
95			2171152252	

BLADE 330	LOADING AZIMUTH	THRUST	PER	INCH
SPAN				
40			1097484852	
55			1964136952	
75			2606213152	
85			2941608652	
90			2832692952	
95			2355428652	

HARMONIC ANALYSIS

				40	BLADE PER CENT	LOADING RADIUS	
COEF		COSINE	SINE		MAX	PSI	
STEADY		8433701751					70023
1		1851104751	3480728750	1883545451	1064927752		71023
2		1002822251	1025221651	1434131051	1571836053		72023
3		1168084250	4104448350	4267425150	3529527452		73023
4		5368585049	2001803050	2072542550	7125318752		74023
5		2166514750	1152825050	2454137650	4160358252		75023
				55	BLADE PER CENT	LOADING RADIUS	
COEF		COSINE	SINE		MAX	PSI	
STEADY		1641682352					80023
1		1856701051	8656135050	2048566651	2499542852		81023
2		1407869051	2113063751	2539120651	1518371553		82023
3		2363033350	3624100050	4326433550	1896477352		83023
4		6717440050	1520733349	6719161150	3242184650		84023
5		4730323350	8976660049	4814744350	3814903352		85023
				75	BLADE PER CENT	LOADING RADIUS	
COEF		COSINE	SINE		MAX	PSI	
STEADY		2185313752					90023
1		8913673350	8505990050	1232093851	4365933352		91023
2		1237980051	1433111051	1893779951	1554109053		92023
3		8534580050	2014150051	2187515351	8234539852		93023
4		3584650050	5400560050	6481961050	5910640152		94023
5		1042072851	1431103851	1770303351	6121212452		95023
				85	BLADE PER CENT	LOADING RADIUS	
COEF		COSINE	SINE		MAX	PSI	
STEADY		2491348852					100023
1		1568701351	6174430050	1685840951	2014846753		101023
2		4793621750	5868558350	7577518550	1546215153		102023
3		3301496750	3962580251	3976310051	8841243152		103023
4		2265651751	3828519851	4448678751	5984592352		104023
5		1637665751	4332266749	1638238651	7169693152		105023
				90	BLADE PER CENT	LOADING RADIUS	
COEF		COSINE	SINE		MAX	PSI	
STEADY		2478681052					110023
1		2727124751	9744506750	2895990951	1996627253		111023
2		3090870050	3483878350	4657347450	1142104153		112023
3		9828740050	4962493851	5058891851	8626565552		113023
4		3109921551	4376390351	5368836451	5865047652		114023
5		2553086751	2568936750	2565978651	7085083952		115023
				95	BLADE PER CENT	LOADING RADIUS	
COEF		COSINE	SINE		MAX	PSI	
STEADY		2103710352					120023
1		2133520551	1060616351	2382607151	2064329153		121023
2		7876861750	4914046750	9284008050	7402084252		122023
3		1427004051	4314640251	4544499151	8389969552		123023
4		2420286751	4311566851	4944430851	6017311152		124023
5		2658006851	4520185050	2696167851	7006973152		125023

TOTAL		BLADE	THRUST	
BLADE	POSITION		THRUST	
	0		3607648954	6023
	30		2565030054	306023
	60		3629456454	606023
	90		2994195854	906023
	120		3255236154	1206023
	150		3288039954	1506023
	180		3258999254	1806023
	210		3015380954	2106023
	240		3022691354	2406023
	270		2562988854	2706023
	300		3403606054	3006023
	330		3834990254	3306023

HARMONIC ANALYSIS					
COEF	COSINE	SINE	MAX	PSI	
STEADY	3203188754				130023
1	1349791253	5492321752	1457255153	2214148652	131023
2	1676141853	2236241553-	2794678453	1534254353	132023
3	6774728352-	2380841853-	2475353953	8470539952	133023
4	9723011752-	2216913353-	2420759053	6157963752	134023
5	1070938353	7740425052-	1321382153	6482834252	135023

PER CENT RADIUS	K	BEAM RED		BENDING BLADE			
		O+(120)K	D E G 30+(120)K	R E E S 60+(120)K	90+(120)K		
	0	9742100054-	2442500054-	1643340055-	9437950054-	217223	
15	1	1704170055-	6092300054-	1156700055-	1673755055-	218223	
	2	1225900054-	1521680055-	5990000053	6092300054-	219223	
	0	2274350054-	1965250054	5277400054-	4637250053	227223	
28	1	1391100054-	7728250053-	2210000052	4217500054-	228223	
	2	2848500054	1037800054-	1258650054	1037800054-	229223	
	0	1561000054-	1386500054	4115500054-	1100000052	237223	
36	1	2075000053	1561000054-	1091750054	2936500054-	238223	
	2	2074250054	7970000053	7750000053-	1561000054-	239223	
	0	8964000053-	8424000053	2428200054-	1062000054-	247223	
45	1	9252000053	1641600054-	7596000053	8964000053-	248223	
	2	1339200054	2043000054	2221200054-	2386800054-	249223	
	0	1714200054-	3400800054-	1489320054-	4675120054-	257223	
60	1	1676720054-	2576240054-	3625680054-	5898000053-	258223	
	2	2613720054-	1471600054	5049920054-	6624080054-	259223	
	0	1589130054-	4777700054-	1083625054-	3183415054-	267223	
65	1	2133520054-	2444600054-	4933240054-	6558900053-	268223	
	2	3611150054-	2143830054	6022020054-	7694075054-	269223	
	0	1244225054-	5371750054-	1977150054-	7493375054-	277223	
80	1	4060200054-	1745700054-	7686250054-	9356250053-	278223	
	2	5718925054-	1648900054	4098775054-	8573475054-	279223	
	0	2200000053-	1360000054-	1170000054-	1835000054-	287223	
92.5	1	1930000054-	6000000053-	3402500054-	4100000053-	288223	
	2	3260000054-	1110000054	1170000054-	3687500054-	289223	

STEADY STATE DATA

WH.	BEAM	BEND	PER CENT	K	O+(120)K	D E G 30+(120)K	R E E S 60+(120)K	90+(120)K
		.15R		0	1040650055-	1677200055-	2504500054-	1282100055-
		.15R		1	2504500054-	4150750054-	9748000054-	3821500054-
		.15R		2	1413800055-	9089509054-	1490625055-	7662750054-
		.20R		0	1099100054	3145630054-	2930160054	6612000052-
		.20R		1	1265560054	6612000052-	1564260054-	2680470054
		.20R		2	4310850054-	8494100053	3990400053-	2325800053-

HARMONIC ANALYSIS

PER CENT	RED BLADE RADIUS	BEAM COSINE	BENDING SINE	MAX	PSI
15	9285875054-				290223
	1	2570228554	2586834554-	3646613154	3148155153
	2	7857227553	1185307854-	1422081154	1517699053
	3	1013849353-	1419366754	1422983054	3136189552
	4	2205088554-	8341056753-	2357572454	5017995852
	5	1556395554-	6895624854	7069088254	2054379552
28	7875458353-				300223
	1	1506943052	7677666753-	7679145553	2711244453
	2	4048225553-	3952070553-	5657472153	1121557053
	3	5299498853	8243668053	9800140353	1908826152
	4	8096439252	2677210253	2796958753	1829339852
	5	1693244054-	2342895554	2890715254	2517123652
36	5785000053-				310223
	1	4158414053-	5223519053-	6676642753	2314769053
	2	3848122753-	1418128352	3850734953	8894473752
	3	7532500853	8514999253	1136854354	1616784252
	4	6631872753	4396162053	7956630953	8384940051
	5	1663783554-	9808513753	1931384254	2989987052
45	4686000053-				320223
	1	7087362853-	4001336853-	8138882453	2094479353
	2	3277497753-	6035333053	6867840653	5925212752
	3	8763002253	9314997753	1278903454	1558297852
	4	6796499053	5437773353-	8704124153	9665689851
	5	9955638353-	2208666553-	1019769354	3850170652

HARMONIC ANALYSIS

60		PER	CENT	RED BLADE	BEAM	BENDING	
COEF				RADIUS			
STEADY				COSINE	SINE	MAX	PSI
				2713666754-			330223
1				8588082553-	2722109753-	9009164353	1975867353
2				5528293553-	1130642554	1258559854	5802819852
3				5933801553	1230592854	1412492354	2020027552
4				5778169053	3732738753	6878995253	8215687751
5				1121167354	1570555854-	1929679154	6110435752

65		PER	CENT	RADIUS			
COEF				COSINE	SINE	MAX	PSI
STEADY							
				2998711354-			340223
1				9086912853-	1321710353	9182532453	1717242553
2				1140625954-	1178639154	1640188254	6703049952
3				7841810553	1075817754	1331286454	1797036152
4				1108222854	1796016353	1122681854	2301369251
5				1796564554	1719975354-	2487158854	6324953952

80		PER	CENT	RADIUS			
COEF				COSINE	SINE	MAX	PSI
STEADY							
				3936045854-			350223
1				2435330253-	7787623753-	8159529253	2526346053
2				5786240753-	6458673553	8671507653	6592837552
3				4564710053	192320354	1975773554	2554734652
4				2443089853	5122389353	5675170553	1612937552
5				3008073254	1870054554-	3541978054	6562633452

92.5		PER	CENT	RADIUS			
COEF				COSINE	SINE	MAX	PSI
STEADY							
				1494583354-			360223
1				1851538053	1207396353-	2210429553	3268914553
2				3602079553-	1714008253	3989065253	7727654952
3				5541678352	8470832253	8488939953	2875233452
4				4077087753	553385053	6889319953	1342881952
5				1350679054	5046771753-	1441885254	6790239252

HARMONIC ANALYSIS

WH.	BEAM	BEND	.15R				
COEF				COSINE	SINE	MAX	PSI
STEADY							
				9043770854-			750423
1				2549927354-	2060730754	3278527154	1410565053
2				4298541053	1156396554-	1233704854	1451955253
3				1829066752	9511681753-	9513440253	9036721452
4				1472480254-	1378172754-	2016818854	5577629952
5				2202383354	4877647854-	5351816554	5886008152

WH.	BEAM	BEND	.20R				
COEF				COSINE	SINE	MAX	PSI
STEADY							
				7999166752-			760423
1				4364292852	6611890553	6626278553	8622357152
2				2288827553-	3483832853-	4168431653	1183478453
3				4855082553-	7906850553-	9278475753	7948287852
4				1595245553	3003302253	3400681153	1550609452
5				1773544854	1909639054-	2606181654	6257677852

			CHORD RED		BENDING BLADE				
PER	CEN1	K	0+(120)K	D E G	R E E S	90+(120)K			
	RADIUS			30+(120)K	60+(120)K				
	15	0	7815500055	3773000055	5929000055	3234000055			67123
		1	2425500055	1078000055	2695000055	4851000055			68123
		2	3234000055	6602750055	7276500055	7815500055			69123
	28	0	6536050055	4062950055	5564475055	2826400055			77123
		1	3091375055	8832500054	3356350055	4681225055			78123
		2	2738075055	6977675055	6359400055	7949250055			79123
	60	0	2579080055	2210640055	2878437555	1105320055			87123
		1	2463942555	1842200054-	2901465055	2003392555			88123
		2	1197430055	3477152555	2164585055	4144950055			89123
	80	0	1505120055	1505120055	1787330055	1034770055			97123
		1	1787330055	5644200054	1975470055	1458085055			98123
		2	1034770055	1951952555	1364015055	2210645055			99123
WH.	CHORD	BEND	.15R	0	2514820055	5685680055	3717560055	6997760055	737423
				1	8309840055	8091160055	8528520055	4373600055	738423
				2	6669740055	3717560055	2624160055	1749440055	739423
WH.	CHORD	BEND	.28R	0	3095355055	4894980055	3455280055	6334680055	747423
				1	7054530055	7198500055	7198500055	4319100055	748423
				2	5758800055	3599250055	3383295055	1367715055	749423

HARMONIC ANALYSIS

			RED BLADE RADIUS	CHORD	BENDING		
COEF	15 PER	CENT	COSINE	SINE	MAX	PSI	
STEADY			4727479255				
1			2299128555	1523941255-	2758330855	3264622253	
2			6833333348-	1166970754-	1166970754	1349998453	
3			4042493254-	7411242354-	8442053254	8046318552	
4			3593334754	3889951753	3614328654	1544618551	
5			6653716754	9015579754-	1720502755	6128564652	

			RADIUS	CHORD	BENDING		
COEF	28 PER	CENT	COSINE	SINE	MAX	PSI	
STEADY			4585539655				
1			1968467555	1395978255-	2413217655	3246568853	
2			7833333348-	1784807254-	1784807254	1349998853	
3			4857867754-	5888326754-	7633562154	7682579152	
4			3385791754	1529839554	3715372754	6078850851	
5			1071697254	1268492255-	1273011355	5496584452	

			RADIUS	CHORD	BENDING		
COEF	60 PER	CENT	COSINE	SINE	MAX	PSI	
STEADY			2245181355				
1			7161821754	4529576554-	8474004554	3276882353	
2			1055422054	4320855053-	1140444454	1688680153	
3			2840054754-	2916814354-	4071082954	7525463852	
4			2705730254	1163309554	2945210554	5816236151	
5			5933689754-	1024640155-	1184049855	4798497552	

			RADIUS	CHORD	BENDING		
COEF	80 PER	CENT	COSINE	SINE	MAX	PSI	
STEADY			1514919055				
1			1934464854	1164065054-	2257698354	3289625653	
2			6271300753	2036675053-	6593734453	1710041253	
3			1332656354-	1136677754-	1751513354	7348741352	
4			1019091854	7467825053	1263420854	9058417651	
5			2953555754-	4558525754-	5431726154	4741200752	

HARMONIC ANALYSIS

			COSINE	SINE	MAX	PSI	
WH.	CHORD	BEND	.15R	5248320055			
				2448071055-	1579064055	2913158955	
				6378230053-	4734538353-	7943404253	
				4373603854	7289336054	8500754654	
				1913456354	1104734754	2209469154	
				9961371854-	7899698754	1271354355	

			COSINE	SINE	MAX	PSI	
WH.	CHORD	BEND	.28R	4804998855			
				1940233855-	1187206855	2274635655	
				9598046753-	8312095053-	1269698554	
				3119353854	6118728554	6867984154	
				2519482754	2701440054	3693991254	
				4232719554-	7923810754	8983467654	

		D E G R E E S					
		(120)K	30*(120)K	60*(120)K	90*(120)K		
R/B TORS	.15R	0	4942240054-	3088900054-	3088900054-	123560054-	487323
		1	4324460054-	3706680054-	3088900054-	2471120054-	488323
		2	1853340054-	3088900054-	3088900054-	4324460054-	489323
R/B TORS	.50R	0	1445520054-	1065120054-	2282400054-	9890400053-	497323
		1	1369440054-	1597680054-	8368800053-	9890400053-	498323
		2	8368800053-	1217280054-	1293360054-	1445520054-	499323

HARMONIC ANALYSIS

R/B TORS	.15R					
COEF		COSINE	SINE	MAX	PSI	
STEADY		3191863354-				560323
1		4872278853-	4778593352-	4895656353	1856015053	561323
2		7207426553-	7133509053	1014070854	6764766152	562323
3		3088903253-	3088903253-	4368368853	7499999852	563323
4		1029631753	3166666747-	1029631753	899999952	564323
5		1305524753-	6655653053	6782485753	2021956652	565323

R/B TORS	.50R					
COEF		COSINE	SINE	MAX	PSI	
STEADY		1280680054-				570323
1		2045788753-	2006041753-	2865214653	2244379853	571323
2		4438016752	7686843352	8876009952	2999999652	572323
3		1267998753	7608013352-	1478729053	1096787353	573323
4		1584998653	2086427353	2620190753	1319427852	574323
5		2265413053-	2386439253	3290469353	2670193952	575323

		STEADY	STATE	DATA				
				D E G R E E S				
				K	0+(120)K	30+(120)K	60+(120)K	90+(120)K
RED BLADE	PITCH			0	154982052	1404233052	1270292552	147999052
				1	1252822052	1311057052	1369292052	1543997052
				2	1730349052	1823525052	1811878052	1695408052
RED BLADE	FLAP			0	4788000050-	1276800051-	1064000050	1276800051-
				1	3192000050-	6384000050	1276800051	2128000051
				2	9044000050	1808800051	1064000051	2128000050
VERTICAL	ACCEL			0	1000000051	9330100050	1018270051	9573700050
				1	9939100050	1015225051	1000000051	9391000050
				2	9817300050	9695500050	1018270051	1015225051
FORE- AFT	ACCEL			0	7271000049	1665550050	3966000049-	5288000049
				1	1421150050-	7601500049	9915000049	1817750050
				2	2313500049-	3305000049	1322000050-	6610000049
LATERAL	ACCEL			0	4056000049	6422000049		1690000049-
				1	9802000049-	1014000050	1014000049	6760000048
				2	2704000049-	3042000049-	6760000049-	1365800050

HARMONIC ANALYSIS

		COEF	COSINE	SINE	MAX	PSI	
RED BLADE	PITCH	STEADY	1492556152				910523
		1	7364110050	3033599851-	3121702951	2836447153	911523
		2	1795598050-	1765153350-	2517923450	1122550753	912523
		3	1358835050	2523535050	2866123150	2056636452	913523
		4	1989685550-	8407333348	1991460950	4439510852	914523
		5	3035183349	9167643349-	9657019349	5766368852	915523

		COEF	COSINE	SINE	MAX	PSI	
RED BLADE	FLAP	STEADY	3990000050				920523
		1	7967040850-	1077362351-	1339942951	2335172653	921523
		2	3989995849	3839379349	5537228649	2194895952	922523
		3	3901331550-	1773344549	3905359850	5913247652	923523
		4	6649991849-	3839371749-	7678747749	5249999752	924523
		5	3090371350	4477043050-	5440065250	6092323952	925523

		COEF	COSINE	SINE	MAX	PSI	
VERTICAL	ACCEL	STEADY	9868050050				930523
		1	4195991748	7793500047-	4267754948	3494779753	931523
		2	3044860048	2461244249-	2480007049	1385261853	932523
		3	1014990049-	1015100048	1020053449	5809626552	933523
		4	5074923348-	2109628549-	2169811349	6411848152	934523
		5	5954196748	4295493348-	7341915348	6483849452	935523

HARMONIC ANALYSIS

		COEF	COSINE	SINE	MAX	PSI	
FORE- AFT	ACCEL	STEADY	3442708349				940523
		1	8296746748-	7866928347-	8333960248	1854165653	941523
		2	8345123849	6058352749	1031235850	1798935952	942523
		3	3304996748-	3855847248-	5078440848	7646627852	943523
		4	3002040249	4770358347-	3002419249	8977240952	944523
		5	1618257848-	6845882248	7034547748	2065993752	945523

		COEF	COSINE	SINE	MAX	PSI	
LATERAL	ACCEL	STEADY	1014000049				950523
		1	2351844849	3455478248	2377094349	8358453351	951523
		2	5830498549	4390756748-	5847007849	1778466953	952523
		3	4506669848-	1126660048	4645367248	5532128352	953523
		4	9295025048-	4439534849-	4535795949	6454370852	954523
		5	3801788348-	4431209748	5838596848	2612563752	955523

		STEADY	STATE	DATA				
				D E G R E E S				
				K	0+11201K	30+11201K	60+11201K	90+11201K
LIFT LINK	LOAD	0	5156697054	4505026554	4561693554	4590027054		1037623
		1	5326698054	5326698054	5100030054	4533360054		1038623
		2	4646694054	4646694054	5610033054	5326698054		1039623
RT. CYCLIC	LOAD	0	8320000052	2912000053	2288000053	1664000053-		1047623
		1	4160000052	2080000052	8320000052	2288000053		1048623
		2	1456000053	1040000053-		2080000052		1049623
LT. CYCLIC	LOAD	0	1353600053-	1128000053-	6768000052	1128000053-		1057623
		1	9024000052	1353600053	9024000052-	9024000052-		1058623
		2	4512600052	9024000052-		2256000052		1059623
COLLECTIVE	LOAD	0	3968000052	1984000052	9920000052	1984000052		1067623
		1	3968000052	7936000052	5952000052	6944000052-		1068623
		2	1190400053	1984000052	3968000052	7936000052		1069623
STABILIZER	BAR	0	7238000050	2585000051	3825300051	3929200051		1077623
		1	2481600051	9306000050	1240800051-	2946900051-		1078623
		2	4239400051-	4239400051-	2895200051-	1344200051-		1079623

HARMONIC ANALYSIS

		COSINE	SINE	MAX	PSI	
LIFT LINK	LOAD	4944195854				1080623
COEF STEADY		2188283052	6496960052-	6855587952	2886143953	1081623
1		1322222553	4825714553-	5003577953	1426613653	1082623
2		2361076752-	4722833351	2407848652	5622949452	1083623
3		7083331752-	1635885052	7269780552	4174890852	1084623
4		3006286752	4135916752	5113078052	1079752052	1085623
5						

		COSINE	SINE	MAX	PSI	
RT. CYCLIC	LOAD	7280000052				1090623
COEF STEADY		1247332752	1281334252	1788199152	4577037952	1091623
1		8493334052	1170866453	1446476953	2702164452	1092623
2		6933344251-	2080000052	2192512852	3614499352	1093623
3		9879998352-	2101555852	1010103553	4199792452	1094623
4		5539981051-	2321331252-	2386523152	5131542852	1095623
5						

		COSINE	SINE	MAX	PSI	
LT. CYCLIC	LOAD	2256000052-				1100623
COEF STEADY		3269752552-	2004128252	3835076452	1484946453	1101623
1		2444000852-	4884383552-	5461716052	1217089953	1102623
2		3759990551	1880000052	1917231252	2623003152	1103623
3		8460000352-	5535634752-	1011013653	5329948752	1104623
4		4377531251	1252126352-	1405186652	5939827752	1105623
5						

		COSINE	SINE	MAX	PSI	
COLLECTIVE	LOAD	4546666752				1110623
COEF STEADY		7926459051	4576349351	9152689551	3000003452	1111623
1		5786670251-	1002280152-	1157333552	1200000053	1112623
2		2000000045	1488000352	1488000352	2999999852	1113623
3		1074667552-	5011400052-	5125333252	6447413952	1114623
4		1784644852-	1030366252	2060730852	2999999652	1115623
5						

		COSINE	SINE	MAX	PSI	
STABILIZER	BAR	2024916750-				1120623
COEF STEADY		1021589251	3952177051	4082076451	7550697452	1121623
1		3015830349-	7462233348	3106780049	8305107052	1122623
2		1206337850-	6031696749-	1348727050	6885502652	1123623
3		4307981748-	7461933348	8616214748	2999976052	1124623
4		8134503349	7180630549	1085041950	8287210151	1125623
5						

	STEADY		STATE DATA				
	K	0+(120)K	30+(120)K	60+(120)K	90+(120)K		
R F	PYLON	0	3540000049-	4277500049	1475000049	6785000049	447323
		1	2950000048	8850000048	2065000048-	5605000049	448323
		2	2065000049	5752500049	5900000048-	1770000049-	449323
R A	PYLON	0	1230000050	1605000050	1725000050	1260000050	457323
		1	1005000050	1095000050	1410000050	1725000050	458323
		2	1635000050	1200000050	8400000049	8400000049	459323
L F	PYLON	0	1050000049	4200000049-	3300000049-	4200000049-	467323
		1	1800000049	2100000049	6000000048-	5400000049-	468323
		2	2700000049-	3000000049-	3300000049	4200000049	469323
L A	PYLON	0	1921500050	7777500049	1342000050	4422500049	477323
		1	1357250050	1342000050	1723250050	7320000049	478323
		2	1235250050	5185000049	1357250050	1555500050	479323
			HARMONIC	ANALYSIS			
R F	PYLON						
COEF		COSINE	SINE	MAX	PSI		
STEADY		1597916749					520323
1		9435745348-	3252881348	9980707748	1609788753		521323
2		2544375049-	2107689549	3303967249	7018130352		522323
3		6016666742	4916660047	4916660047	2999976752		523323
4		1352088148	1000620349	1009714049	2057612952		524323
5		2060750548	2401293248	3164317048	9872869651		525323
R A	PYLON						
COEF		COSINE	SINE	MAX	PSI		
STEADY		1297500050					530323
1		9037663348-	5805622848	1074172349	1472840953		531323
2		3499991048	4200223749	4214780949	4261831152		532323
3		1749987548-	1250088848	2150576348	4815398052		533323
4		2249990848-	1732040548-	2839440648	5439726152		534323
5		1787687748	1555601248-	2369751548	6379420452		535323
L F	PYLON						
COEF		COSINE	SINE	MAX	PSI		
STEADY		9125000048-					540323
1		8263142748	5781090548-	1008466849	3250244553		541323
2		1074999349	3897114549-	4042663149	1427106353		542323
3		1249996848	5000035047	1346289548	7267199651		543323
4		7750003748-	6928202848-	1039531449	5544887152		544323
5		1263145548-	2810865047	1294042648	3349088952		545323
L A	PYLON						
COEF		COSINE	SINE	MAX	PSI		
STEADY		1192041750					550323
1		7935703348	1127933248-	8015461348	3519105153		551323
2		3736248349	2201147849-	4336427449	1647481353		552323
3		1525005048	1524985048-	2156686648	1050001353		553323
4		4066660048-	1804940049-	1850185349	6432572052		554323
5		4518166747	4209553248-	4233730748	5522523552		555323
RED	PITCH LINK						
		K	(120)K	D E G	R E E S	90+(120)K	
		0	2506500053-	2228000053-	2785000053-	1392500053	507323
		1	8355000052-	2228000053-	2785000052-	2228000053	508323
		2	2785000052-	1114000053-	1671000053-	1671000053-	509323
WHITE	PITCH LINK						
		0	5832000052	1749600053	2916000052-	2041200053-	517323
		1	5832000052-	1166400053-	2624400053-	1749600053-	518323
		2	3207600053-	5832000052-	5832000052-	1458000053-	519323
			HARMONIC	ANALYSIS			
RED	PITCH LINK						
COEF		COSINE	SINE	MAX	PSI		
STEADY		9979583352-					580323
1		1212605753-	2411881052-	1236359353	1912493653		581323
2		3713332852-	4823762752	6087489452	6379454252		582323
3		1856665552	1253250253-	1266928653	9280898852		583323
4		3713332052	6431681852	7426665952	1500000352		584323
5		8706091751-	2411879352	2564200152	2196958452		585323
WHITE	PITCH LINK						
COEF		COSINE	SINE	MAX	PSI		
STEADY		9963000052-					590323
1		1240577453	4937881252	1335237453	2170408352		591323
2		2673002252	4208881751	2705935652	4474132651		592323
3		4859993851	8747999352	8761488952	2894005852		593323
4		1700997252-	7155100052	7354512152	2584320352		594323
5		3146223752	3479882752-	4691301352	6242346052		595323

IBM TAB NO. 2
TYPE I STEADY STATE CONDITION NO. 27
LEVEL FLIGHT, TRUE AIRSPEED 34 KNOTS

PER CENT CHORD	K	DELTA PER CENT		PRESSURE RADIUS			
		40	D E G	60	90	120	180
		0+(120)K	30+(120)K	60+(120)K	90+(120)K	120+(120)K	180+(120)K
4	0	2561570051	2807200051	2807200051	2649295051	17127	
	1	2579115051	2175580051	1772045051	1263240051	18127	
	2	1438690051	1579050051	1754500051	2315940051	19127	
17	0	1272600051	1372590051	1290780051	1254420051	27127	
	1	1254420051	1127160051	1018080051	6999300050	28127	
	2	6726600050	7453800050	8726400050	1199880051	29127	
34	0	5240000050	6840000050	6720000050	6120000050	37127	
	1	5880000050	5400000050	5400000050	3660000050	38127	
	2	3840000050	3720000050	4200000050	5520000050	39127	
63	0	2765700050	3029100050	2831550050	2809600050	47127	
	1	2674000050	2502300050	2699850050	2041350050	48127	
	2	1887700050	1887700050	1843800050	2634000050	49127	
88	0	1205100050	1174200050	1019700050	1127850050	57127	
	1	1081500050	1143300050	1421400050	1004250050	58127	
	2	8497500049	8034000049	7725000049	1035150050	59127	

PER CENT CHORD	K	DELTA PER CENT		PRESSURE RADIUS			
		55	D E G	60	90	120	180
		0+(120)K	30+(120)K	60+(120)K	90+(120)K	120+(120)K	180+(120)K
2	0	5022720051	5068800051	4746240051	4377600051	147227	
	1	2903040051	4608000051	4239360051	3824640051	148227	
	2	3778560051	3363840051	3640320051	4654080051	149227	
9	0	2908800051	3067875051	2817900051	2727000051	157227	
	1	2090700051	2772450051	2499750051	2227050051	158227	
	2	2227050051	1999800051	2181600051	2772450051	159227	
17	0	2175580051	2280850051	2245760051	2052765051	167227	
	1	1754500051	2105400051	1929950051	1719410051	168227	
	2	1719410051	1543960051	1649230051	2035220051	169227	
23	0	1706880051	1813560051	1671320051	1564640051	177227	
	1	1457960051	1671320051	1564640051	1351280051	178227	
	2	1315720051	1209040051	1315720051	1635760051	179227	
34	0	1584000051	1663200051	1636800051	1544400051	187227	
	1	1452000051	1557600051	1478400051	1320000051	188227	
	2	1313400051	1214400051	1267200051	1504800051	189227	
63	0	5087500050	5128200050	4782250050	4497350050	197227	
	1	4477000050	4965400050	4639800050	4008950050	198227	
	2	4070000050	3622300050	3703700050	4782250050	199227	
90	0	1949100050	2055900050	1975800050	2055900050	207227	
	1	2055500050	2136000050	2042550050	1708800050	208227	
	2	1655400050	1468500050	1495200050	1922400050	209227	

PER CENT CHORD	K	DELTA PER CENT		PRESSURE RADIUS			
		75	D E G	60	90	120	180
		0+(120)K	30+(120)K	60+(120)K	90+(120)K	120+(120)K	180+(120)K
2	0	6933990051	6367950051	5849080051	5283040051	377327	
	1	5731155051	6745310051	7500030051	7311350051	378327	
	2	5047190051	5424550051	5613230051	6650970051	379327	
9	0	4194630051	4279370051	4067520051	3813300051	387321	
	1	4067520051	4258185051	4575960051	4364110051	388327	
	2	3220120051	3156565051	3220120051	3982780051	389327	
17	0	2613720051	2358030051	2130750051	1832445051	397321	
	1	2116545051	2443260051	2812590051	2698950051	398327	
	2	2017110051	2045520051	2045520051	2500080051	399327	
23	0	2694640051	2513270051	2331900051	2176440051	407327	
	1	2357810051	2565090051	2772370051	2591000051	408327	
	2	2046890051	2046890051	2072800051	2539180051	409327	
34	0	1619370051	1505730051	1363680051	1250040051	417327	
	1	1406295051	1590960051	1761420051	1619370051	418327	
	2	1250040051	1221630051	1250040051	1534140051	419327	
63	0	7563800050	6986900050	6057450050	6025400050	427327	
	1	6858700050	7179200050	7563800050	7243300050	428327	
	2	6922800050	6025400050	6025400050	7083050050	429327	
90	0	3621000050	3532250050	3443500050	3656500050	437327	
	1	3763000050	4047000050	3869500050	3479000050	438327	
	2	3727500050	3053000050	3266000050	3514500050	439327	

PER CENT CHORD	X	DELTA PER CENT			PRESSURE RADIUS	
		B5 0+11201K	D L G 10+11201K	R L F S 60+11201K	90+11201K	
2	0	7801060051	6390230051	5394350051	7054150051	607427
	1	7054150051	6556210051	7469100051	7718070051	608427
	2	9460860051	5892270051	6307240051	8050030051	609427
4	0	7511205051	6044520051	4977840051	6711195051	617427
	1	6933420051	6400080051	7022310051	7022310051	618427
	2	8533440051	5244510051	5600070051	7200090051	619427
9	0	5273730051	4657320051	4169400051	5273730051	627427
	1	5205240051	4725810051	5068260051	4794300051	628427
	2	5616180051	3629970051	3835440051	4965525051	629427
13	0	3750300051	3194700051	2708550051	4792050051	637427
	1	3657700051	3379900051	3657700051	3518800051	638427
	2	4213300051	2731700051	2824300051	3680850051	639427
17	0	3431400051	2941200051	2745120051	3627480051	647427
	1	3431400051	3333360051	3431400051	3235320051	648427
	2	3529440051	2205900051	2352960051	3235320051	649427
23	0	2850900051	2478090051	2280720051	2938620051	657427
	1	2708355051	2587740051	2741250051	2730285051	658427
	2	3026340051	2171070051	2258790051	2785110051	659427
34	0	1862525051	1556450051	1284500051	1853350051	667427
	1	1724900051	1761600051	1835900051	1871700051	668427
	2	2073550051	1486350051	1523050051	1853350051	669427
47.7	0					677427
	1					678427
	2					679427
63	0	6711600050	5426400050	3712800050	5712000050	687427
	1	5331200050	5807200050	6664000050	6902000050	688427
	2	8282400050	6378400050	5997600050	7092400050	689427
77	0	2559600050	1327200050	2844000049	1327200050	697427
	1	1279800050	1990800050	2559600050	2938800050	698427
	2	3792000050	2844000050	7464800050	2938800050	699427
90	0	9430000048	8487000049	1886000050	1320200050	707427
	1	1084450050	5658000049	1414500049	9430000048	708427
	2	7544000049	2829000049		2829000049	709427

PER CHORD	CFNT K	90			DELTA	PRESSURE	90+(120)K
		0+(120)K	PER CENT		R F F S	RADIUS	
			D	E			
			30+(120)K	60+(120)K			
	0	8148140051	6349200051	4867720051	6455020051	797527	
	1	6666660051	6243380051	7301580051	7619040051	798527	
	2	9100520051	7777770051	6455020051	8465600051	799527	
	0	4977180051	3871140051	3041610051	4424160051	807527	
	1	4424160051	3871140051	4424160051	4424160051	808527	
	2	4608500051	3871140051	3594630051	4700670051	809527	
	0	4023560051	3431860051	2840160051	4851940051	817527	
	1	3668540051	3550200051	3905220051	3786880051	818527	
	2	4615260051	3846090051	3195180051	4260240051	819527	
	0	2843160051	2500020051	2254920051	3235320051	827527	
	1	2647080051	2752960051	2500020051	2500020051	828527	
	2	2941200051	2475510051	2156880051	2892180051	829527	
	0	1592720051	1259360051	9260000050	1592720051	837527	
	1	1389000051	1259360051	1407520051	1481600051	838527	
	2	1814960051	1518640051	1222320051	1629760051	839527	
	0	5431800050	4279600050	2304400050	4938000050	847527	
	1	4279600050	4773400050	5267200050	5925600050	848527	
	2	7571600050	5514100050	5267200050	6419400050	849527	
	0	3982500049	8850000049	1593000050	7080000049	857527	
	1	7965000049		5310000049	6195000049	858527	
	2	1150500050	1150500050	3540000049	2655000049	859527	

PER CHORD	CFNT K	95			DELTA	PRESSURE	90+(120)K
		0+(120)K	PER CENT		R F F S	RADIUS	
			D	E			
			30+(120)K	60+(120)K			
	0	6297825051	4519050051	2163375051	6538200051	967627	
	1	4326750051	4326750051	5384400051	5576700051	968627	
	2	6730500051	9903450051	4711350051	6876650051	969627	
	0	4832345051	3827600051	2105180051	5454330051	977627	
	1	3636220051	3636220051	4306050051	4306050051	978627	
	2	4975880051	5932780051	3349150051	5071570051	979627	
	0	3368320051	2947280051	1789420051	5578780051	987627	
	1	2947280051	2736760051	3052540051	2947260051	988627	
	2	3368320051	4210400051	2526240051	3473580051	989627	
	0	2768200051	1907350051	1134100051	3814700051	997627	
	1	1855800051	1855800051	2062000051	2062000051	998627	
	2	2371300051	2938350051	1598050051	2371300051	999627	
	0					1007627	
	1					1008627	
	2					1009627	
	0	4683300050	3634800050	1677600050	4054200050	1017627	
	1	4054200050	4753200050	5312400050	5452200050	1018627	
	2	6850200050	7339500050	4054200050	5382300050	1019627	
	0	1087500049	3045000049	4350000049	8047500049	1027627	
	1	4350000048	4350000049	4785000049	6742500049	1028627	
	2	7830000049	3045000049	1740000049	2175000049	1029627	

		BLADE PER CENT		LOADING RADIUS		
		D E G	R F E S			
40						
K	0+(120)K	30+(120)K	60+(120)K	90+(120)K		
0	9703208651	1055140952	1023209152	9765218651		17027
1	9471087051	8465903751	7894383951	5584969251		18027
2	5733912051	5998137551	6578376051	8859200051		19027
		BLADE PER CENT		LOADING RADIUS		
		D E G	R F E S			
55						
K	0+(120)K	30+(120)K	60+(120)K	90+(120)K		
0	1878673152	1951345152	1857589152	1750738552		27027
1	1501579852	1815043852	1684663452	1492426952		28027
2	1486362852	1343336452	1425307252	1774822752		29027
		BLADE PER CENT		LOADING RADIUS		
		D E G	R F E S			
75						
K	0+(120)K	30+(120)K	60+(120)K	90+(120)K		
0	2468947152	2331550452	2137806952	1991816352		37027
1	2193273552	2420011252	2634873352	2497902652		38027
2	1964492952	1910342452	1947832152	2346044152		39027
		BLADE PER CENT		LOADING RADIUS		
		D E G	R F E S			
85						
K	0+(120)K	30+(120)K	60+(120)K	90+(120)K		
0	2730440452	2272839552	1863189552	2665273252		47027
1	2508087252	2440981252	2646258952	2641858252		48027
2	3085180552	2072943552	2132546752	2697553852		49027
		BLADE PER CENT		LOADING RADIUS		
		D E G	R F E S			
90						
K	0+(120)K	30+(120)K	60+(120)K	90+(120)K		
0	2588338452	2061342052	1547867152	2502015052		57027
1	2232392352	2111534952	2390229652	2455387252		58027
2	2909640652	2411071452	2059037452	26889223152		59027
		BLADE PER CENT		LOADING RADIUS		
		D E G	R F E S			
95						
K	0+(120)K	30+(120)K	60+(120)K	90+(120)K		
0	2143768852	1702706952	9192505851	2697114552		67027
1	1698288652	1734098752	2001033252	2016783252		68027
2	2381908752	2928426352	1596957852	2291400652		69027

BLADE 0	LOADING AZIMUTH	THRUST	PER	INCH
SPAN				
40			9703208651	
55			1878673152	
75			2468947152	
85			2730440452	
90			2588338452	
95			2143768852	

BLADE 180	LOADING AZIMUTH	THRUST	PER	INCH
SPAN				
40			7894383951	
55			1684663452	
75			2634873352	
85			2646258952	
90			2390229652	
95			2001033252	

BLADE 30	LOADING AZIMUTH	THRUST	PER	INCH
SPAN				
40			1055140952	
55			1951345152	
75			2331550452	
85			2272839552	
90			2061392052	
95			1702706952	

BLADE 210	LOADING AZIMUTH	THRUST	PER	INCH
SPAN				
40			5584969251	
55			1492426952	
75			2497902652	
85			2641858252	
90			2455387252	
95			2016783252	

BLADE 60	LOADING AZIMUTH	THRUST	PER	INCH
SPAN				
40			1023209152	
55			1857589152	
75			2137806952	
85			1863189552	
90			1547867152	
95			9192505851	

BLADE 240	LOADING AZIMUTH	THRUST	PER	INCH
SPAN				
40			5733912051	
55			1486362852	
75			1964492952	
85			3085180552	
90			2909640652	
95			2381908752	

BLADE 90	LOADING AZIMUTH	THRUST	PER	INCH
SPAN				
40			9765218651	
55			1750738552	
75			1991816352	
85			2665273252	
90			2502015052	
95			2697114552	

BLADE 270	LOADING AZIMUTH	THRUST	PER	INCH
SPAN				
40			5998137551	
55			1343336452	
75			1910342452	
85			2072943552	
90			2411071452	
95			2928426352	

BLADE 120	LOADING AZIMUTH	THRUST	PER	INCH
SPAN				
40			9471087051	
55			1501579852	
75			2193273552	
85			2508087252	
90			2232192352	
95			1698288652	

BLADE 300	LOADING AZIMUTH	THRUST	PER	INCH
SPAN				
40			6578376051	
55			1425307252	
75			1947832152	
85			2132546752	
90			2059037452	
95			1596957852	

BLADE 150	LOADING AZIMUTH	THRUST	PER	INCH
SPAN				
40			8465503751	
55			1815046852	
75			2420011252	
85			2440981252	
90			2111534952	
95			1734098752	

BLADE 330	LOADING AZIMUTH	THRUST	PER	INCH
SPAN				
40			8859200051	
55			1774822752	
75			2346044152	
85			2697553852	
90			2689223152	
95			2291400652	

HARMONIC ANALYSIS

		40		BLADE PFR	CENT	LOADING RADIUS	
COEF	COSINE	SINE	MAX	MAX	PSI		
STEADY	8236458251						70027
1	1208929251	2075691051	2402084851	5978253752			71027
2	4261728850	1815663750-	4640257950	1683484553			72027
3	3389348349	1342776850	1384892250	2527799552			73027
4	1037796850	1594729850-	1902678550	7576368252			74027
5	3384077550-	5787385049-	4433208350	3794094752			75027
		55		BLADE PFR	CENT	LOADING RADIUS	
COEF	COSINE	SINE	MAX	MAX	PSI		
STEADY	1663490752						80027
1	1173477251	1740866351	2099443851	5601701352			81027
2	1417769451	3911080050	1470726251	7711065551			82027
3	1682386750-	1529018350	2271394450	4591140852			83027
4	8619750048	8128533350-	8128990350	6765188952			84027
5	3518550049-	4490471750	4504235650	1889606252			85027
		75		BLADE PFR	CENT	LOADING RADIUS	
COEF	COSINE	SINE	MAX	MAX	PSI		
STEADY	2237074352						90027
1	6835206750-	6632260050	9524018350	1358633553			91027
2	3129518251	3549566749	3129719551	3249166050			92027
3	1563293350-	2897630050-	3292437750	8055093452			93027
4	1442053350	1475203350	2062945150	1141276252			94027
5	1022500049	5456183350-	5457141350	5421472252			95027
		85		BLADE PFR	CENT	LOADING RADIUS	
COEF	COSINE	SINE	MAX	MAX	PSI		
STEADY	2479762852						100027
1	1353276351-	7558530050-	1550055051	2091849253			101027
2	1450991351	1210980050	1456035951	2385390651			102027
3	2802857251	2029866251-	3460688551	1080291553			103027
4	4896633350	7672573350-	9101944850	7563650352			104027
5	1028666251-	1687637051	1976429351	2427271852			105027
		90		BLADE PFR	CENT	LOADING RADIUS	
COEF	COSINE	SINE	MAX	MAX	PSI		
STEADY	2329844152						110027
1	6839550050-	2373495051-	2470075551	2539249453			111027
2	5829655050	1701746750-	6072958050	1718634253			112027
3	2888731251	1771042851-	3388415751	1094960353			113027
4	1430695351	6495983350-	1571262951	8389496852			114027
5	1214225551-	1057171851	1609955251	2779107552			115027
		95		BLADE PFR	CENT	LOADING RADIUS	
COEF	COSINE	SINE	MAX	MAX	PSI		
STEADY	2009311552						120027
1	7143660050-	3076572551-	3158420051	2569278353			121027
2	1510748251-	4331513350-	1571617151	9799914952			122027
3	2844543851	1066775751-	3037999351	1131475653			123027
4	4332741851	4502181750-	4356070251	8851691552			124027
5	1416493851-	8592391750	1653627851	2978738552			125027

BLADE POSITION	TOTAL BLADE THRUST	THRUST
0		3565273054 6027
30		3377598154 306027
60		2988682754 606027
90		3370851254 906027
120		3121029854 1206027
150		3270472254 1506027
180		3373428654 1806027
210		3104663354 2106027
240		3095471154 2406027
270		2831182554 2706027
300		2708700454 3006027
330		3465522554 3306027

HARMONIC ANALYSIS

COEFF	COSINE	SINE	MAX	PSI	
STEADY	1187739754				150027
1	5337531752	1422030753	1518902053	6942658652	131027
2	2296085353	2986316751	2296279353	3722527750	132027
3	1184940853	7363041752	1395072953	1093812753	133027
4	9744440052	7065901752	1202492653	8103262052	134027
5	7594628352	5400098352	9318768752	7891711752	135027

PER	CFNT RADIUS	K	BEAM		BENDING		R I F S	
			RFD	HLADF	D F G	R I F S		
			0+(120)K	30+(120)K	60+(120)K	90+(120)K		
15		0	7917200054-	7308900054-	1035040055-	1095870055-	217227	
		1	1521680055-	1278360055-	1035040055-	1156700055-	218227	
		2	1217530055-	6042300054-	7917200054-	3659100054-	219227	
28		0	8611500053-	5078500053-	1545500053-	2274350054-	227227	
		1	2274350054-	1037800054-	3317000053-	1214450054-	228227	
		2	8611500053-	9053500053-	1788600054-	6845000053-	229227	
36		0	1168000054-	5785000053-	2075000053-	2936500054-	237227	
		1	1364700054-	1855000053-	2075000053-	7750000053-	238227	
		2	1100000052	9935000053	2565500054	2150500054-	239227	
45		0	1890000054-	5652000053-	1800000053	3380400054-	247227	
		1	1558800054-	4770000052	1512000053-	6480000053-	248227	
		2	3456000053	1173600054	2664000054	2635200054-	249227	
60		0	5424720054-	2763640054-	2388840054-	4675120054-	257227	
		1	4037960054-	2701440054-	2613720054-	3026000054-	258227	
		2	2501280054-	4024000053-	2150000053-	4150400054-	259227	
65		0	6644180054-	2988970054-	2911220054-	4738815054-	267227	
		1	4583275054-	2758800054-	3227300054-	3611150054-	268227	
		2	2988970054-	3448100053-	1083625054-	4699930054-	269227	
80		0	7609100054-	2980100054-	3481575054-	4600250054-	277227	
		1	5053150054-	4253075054-	4561675054-	4754550054-	278227	
		2	4445950054-	3184750053-	3558725054-	3983050054-	279227	
92.5		0	3327500054-	8850000053-	9800000053-	1835000054-	287227	
		1	1930000054-	1645000054-	1550000054-	1597500054-	288227	
		2	2310000054-	4450000053	1930000054-	1455000054-	289227	

			PER	CFNT	RFD	BLADE RADIUS	BEAM SINE	BENDING MAX	R I F S PSI	
WH.	BEAM	BEND	.15R		0+(120)K	30+(120)K	60+(120)K	90+(120)K		
					0	1018700055-	1238200055-	1260150055-	6675000054-	717427
					1	9528500054-	5138500054-	4211500054-	7553000054-	718427
					2	9967500054-	1062600055-	1336475055-	1172450055-	719427

			PER	CFNT	RFD	BLADE RADIUS	BEAM SINE	BENDING MAX	R I F S PSI	
WH.	BEAM	BEND	.20R		0	3500300053	7319600053-	3990400053-	1265560054	727427
					1	1764540054	3990400053-	7319600053-	1093430053	728427
					2	2668000053	1897180054-	1397800054-	3990400053-	729427

COEF	PER	CFNT	RADIUS	SINE	MAX	PSI	
STEADY	15						
1			9691408354-				290227
2			3097520554	2006806054-	3690786454	3270618153	291227
3			6589928553	2634020253-	7096845853	1691066153	292227
4			1115217354-	8733333347-	1115217354	6000001552	293227
5			8617566253	4390035753-	9671342253	8325110152	294227
			7657066553-	4263955553-	8764244653	4182238552	295227

COEF	PER	CFNT	RADIUS	SINE	MAX	PSI	
STEADY	28						
1			6256166753-				300227
2			4621207553	9849558753-	1087976954	2951349953	301227
3			1324872153-	7649180052-	1529831953	1050000553	302227
4			8832499053-	5888335253	1061534454	4876997552	303227
5			1472062552-	7649162352	7789521952	2522331452	304227
			1561536953	1606109052-	1569775053	7082550852	305227

COEF	PER	CFNT	RADIUS	SINE	MAX	PSI	
STEADY	36						
1			4311250053-				310227
2			1406361753-	1013759554-	1023468054	2621019253	311227
3			2619995553-	6666666746-	2619995553	9000001152	312227
4			916999053-	1015250354	1368072454	4402971752	313227
5			2947494753-	2836232353	4090469353	3402551952	314227
			3698857853	6400910052	3753813453	1963571651	315227

COEF	PER	CFNT	RADIUS	SINE	MAX	PSI	
STEADY	45						
1			5307000053-				320227
2			3341370053-	1157811154-	1205061854	2539022053	321227
3			4208994853-	1075602853	4344255753	8283247552	322227
4			965998853-	1228200354	1562572254	4272854752	323227
5			5312993853-	2748763853	5981939953	3816112152	324227
			4307366753	1090108353	4443168253	2840442551	325227

		HARMONIC		ANALYSIS		
60	PER CENT	RFD BLADE RADIUS	RFAM	RFNDING		
COEF		COSINE	SINE	MAX	PSI	
STEADY		2866710054-				330227
1		1839898753-	1063411254-	1130615654	2501457353	331227
2		7433526353-	1081963352-	7434313653	9041695252	332227
3		1124400154-	1080071354	1559528954	4537867852	333227
4		4122797553-	1731124053	4471492953	3930573252	334227
5		1028890553	7723900051	1031785653	8586304350	335227

		RADIUS		ANALYSIS		
65	PER CENT	COSINE	SINE	MAX	PSI	
STEADY		3381080454-				340227
1		4630223753-	1012372854-	1112233354	2454223853	341227
2		1004528454-	8980098352	1008534354	8744578252	342227
3		1166550054-	1160069154	1645174554	4505320252	343227
4		3564456553-	1571515053	3895511453	3905201252	344227
5		8136858352-	2456101752-	8499464652	3935927852	345227

		RADIUS		ANALYSIS		
80	PER CENT	COSINE	SINE	MAX	PSI	
STEADY		4134135454-				350227
1		7076233351-	6662187053-	6662562853	2693914653	351227
2		1160463954-	1726027553	1173229854	8577005252	352227
3		9193708753-	9643746353	1332389354	4454381252	353227
4		1382273553-	2783953352-	1410029853	4784681552	354227
5		5972666053-	5103193553-	7855910153	4410228152	355227

		RADIUS		ANALYSIS		
92.5	PER CENT	COSINE	SINE	MAX	PSI	
STEADY		1581666754-				360227
1		5181860052-	1444895753-	1535005053	2502705453	361227
2		4472914753-	1714008253	4790072053	7951665952	362227
3		5145832853-	4670831353	6749551153	4592341052	363227
4		1979156852	6855866751	2094538352	4776565151	364227
5		3123486753-	5284273353-	6138380353	4788260952	365227

		HARMONIC		ANALYSIS		
WH.	BEAM BEND .15R	COSINE	SINE	MAX	PSI	
COEF		9830312554-				750427
STEADY		2516323054-	9790839553	2700090154	1587393353	751427
1		5396051553	3960261753-	6693358353	1618621953	752427
2		7499571753	3658346753-	8344284153	1113321853	753427
3		9054368353	4910738353-	1030033554	8288157752	754427
4		7786135053	6305816253	1001934254	7800647451	755427

		HARMONIC		ANALYSIS		
WH.	BEAM BEND .20R	COSINE	SINE	MAX	PSI	
COEF		1840291759-				760427
STEADY		2588487753-	8181615053	8581322353	1075502653	761427
1		9710180252-	4805274752-	1083412553	1031647153	762427
2		8184281353	6658401553-	1055067654	1069565353	763427
3		6935844052-	9610573252	1185196453	3145439252	764427
4		1858416352-	9736855352	9912621352	2016115052	765427

PER CENT RADIUS	K	CHORD RED		BENDING BLADE			
		0+11201K	D E G	R E E S	60+11201K	90+11201K	
15	0	7815500055	6468000055	4851000055	5390000055	67127	
	1	4312000055	2964500055	2156000055	4581500055	68127	
	2	5390000055	5390000055	5929000055	8354500055	69127	
28	0	7066000055	6182750055	4239600055	5652800055	77127	
	1	4062950055	3356350055	1943150055	4946200055	78127	
	2	4592900055	4946200055	5652800055	7595950055	79127	
60	0	3292932555	3039630055	1865227555	2901465055	87127	
	1	1727062555	2118530055	9671550054	3062657555	88127	
	2	1888255055	2302756055	2486970055	3500180055	89127	
80	0	1975470055	1975470055	1528637555	1881400055	97127	
	1	1481602555	1740295055	1175875055	2116575055	98127	
	2	1505120055	1740295055	1740295055	2140092555	99127	
WH. CHORD BEND .15R	0	1968120055	4373600055	5029640055	5467000055	737427	
	1	6123040055	8528520055	7653600055	5341720055	738427	
	2	4810960055	5685680055	4373600055	2624160055	739427	
WH. CHORD BEND .28R	0	2015580055	4751010055	4391085055	5038950055	747427	
	1	5470860055	7630410055	6766590055	5974755055	748427	
	2	3959175055	5614830055	4175130055	3167340055	749427	

HARMONIC ANALYSIS

COFF STEADY	15 PER CENT	RED BLADE RADIUS		CHORD BENDING		
		COSINE	SINE	MAX	PSI	
		5300166755				100127
1		2083355755	6031495854-	2168907755	3438538153	101127
2		2245751753	3889901753-	4491629553	1499995453	102127
3		7635838354	5839160554-	9612586654	1075315653	103127
4		1122917554-	3889831753-	1188381954	4977657452	104127
5		1718820055-	1423393353	2579493053	2635704752	105127

COFF STEADY	28 PER CENT	RADIUS		CHORD BENDING		
		COSINE	SINE	MAX	PSI	
		5019804255				110127
1		1747268255	4129565854-	1795405055	3467024953	111127
2		2944088353	1019889254-	1061532254	1430508653	112127
3		6477171854	6182744054-	8954332954	1054440953	113127
4		1177666554-	1529839854	1930623854	3189724552	114127
5		1664408354	1479825354	2227136754	8328058551	115127

COFF STEADY	60 PER CENT	RADIUS		CHORD BENDING		
		COSINE	SINE	MAX	PSI	
		2429401355				120127
1		6451365254	1302772854-	6581590254	3485833753	121127
2		1594351754	3323700052	1554707054	6124900050	122127
3		2648164854	3338984854-	4261642454	1028060453	123127
4		6332558353-	1362733554	1502682854	2873101952	124127
5		2529363854	9573660053	2704483554	4146338051	125127

COFF STEADY	80 PER CENT	RADIUS		CHORD BENDING		
		COSINE	SINE	MAX	PSI	
		1750094055				130127
1		1941223854	5550208353-	2019009154	3440440953	131127
2		6467286753	3394433352	6476188653	1502240651	132127
3		8623101753	1136677354-	1426749554	1023949453	133127
4		5683385053-	5770598353	8099424153	3364093852	134127
5		1194445754	1238701753	1200851554	1184140651	135127

HARMONIC ANALYSIS

COFF STEADY	WH. CHORD BEND .15R	RADIUS		CHORD BENDING		
		COSINE	SINE	MAX	PSI	
		5248320055				770427
1		2211471355-	5756475554	2285164255	1654096553	771427
2		1275639854-	1578186354-	2029268154	1155257953	772427
3		6924860754-	6924871254	9793239454	4499998752	773427
4		5466915053-	3156410053	6312692353	3749983352	774427
5		6111903353	7499800052	6157745753	1399136751	775427

COFF STEADY	WH. CHORD BEND .28R	RADIUS		CHORD BENDING		
		COSINE	SINE	MAX	PSI	
		4912976355				780427
1		1684641055-	4233277554	1737015255	1658944053	781427
2		1799691753-	1974126354-	1982312754	1323955553	782427
3		6478644254-	6358679354	9077754854	4517647352	783427
4		5398803353-	1766327254	1846992954	2674896252	784427
5		4299806753-	7539948353-	8679813253	4806103852	785427

		D E G R E E S						
		120IK	30+(120)K	60+(120)K	90+(120)K			
R/B	TORS	.15R	0	4324460054-	3088900054-	4324460054-	2471120054-	487327
			1	2471120054-	3088900054-	4324460054-	1853340054-	488327
			2	1853340054-	1853340054-	3706680054-	2471120054-	489327
R/B	TORS	.50R	0	1331400054-	1293360054-	1825920054-	1825920054-	497327
			1	9890400053-	1141200054-	1521600054-	8368800053-	498327
			2	7608000053-	1065120054-	1141200054-	1293360054-	499327

HARMONIC ANALYSIS

R/B	TORS	.15R					
COFF			COSINE	SINE	MAX	PSI	
STEADY			2985936754-				560327
1			3980589353-	4357461853-	5901911953	2275879653	561327
2			5662981053-	8916895052	5732753653	8552585852	562327
3			6177798053	2059270553-	6511972353	1138550153	563327
4			2574088053-	8916888352	2724157853	4022136752	564327
5			2197216353-	7907053352-	2335160553	3995842552	565327

R/B	TORS	.50R					
COFF			COSINE	SINE	MAX	PSI	
STEADY			1252150054-				570327
1			1575896853-	2839345553-	3247357753	2409688053	571327
2			1902013552	2196236752-	2905359052	1554468353	572327
3			2345798853	7607988352	2466087453	5989707751	573327
4			1838601053-	1096119353	2141569453	3728797552	574327
5			1810963352	2038560252-	2726764352	6232322152	575327

		STEADY	STATE	DATA					
				D	E	G	R	E	S
				30+11201K	60+11201K	90+11201K			
RED BLADE	PITCH	K	O+11201K						
		0	1613879052	1532350052	1404233052	1334351052	867527		
		1	1252822052	1334351052	1392586052	1474115052	868527		
2	1602232052	1741996052	1776937052	1724525552	869527				
RED BLADE	FLAP	0	1276800051-	1702400051-	1596000051-	3192000050	877527		
		1	1170400051	1702400051	2021600051	2766400051	878527		
		2	2713200051	9576000050	1064000050-	6384000050-	879527		
VERTICAL	ACCEL	0	1000000051	1042630051	9756400050	1039585051	887527		
		1	1003045051	9634600050	9878200050	1048720051	888527		
		2	9756400050	1030450051	1012180051	9908650050	889527		
FORE- AFT	ACCEL	0	5618500049-	3966000049-	6610000049	3966000049-	897527		
		1	5288000049-	5949000049-	5288000049-	5288000049-	898527		
		2	3966000049	3305000049-	5288000049-	7271000049-	899527		
LATERAL	ACCEL	0	1284400050	2028000049	5408000049	3380000048-	907527		
		1	4732000049-	3380000049	1216800050		908527		
		2	3380000049	6760000048-	3380000049-	6084000049	909527		

HARMONIC ANALYSIS

RED BLADE	PITCH					
COEFF		COSINE	SINE	MAX	PSI	
STEADY		1515364852				910527
1		1287808051	1998304851-	2377324451	3027997753	911527
2		9220725049-	1092715050-	1429770550	1149205653	912527
3		1747031750-	1261776750	2159040650	4805389052	913527
4		5338316749	4202583149-	6794065949	8044711452	914527
5		6635833348-	8625765049	8651252249	1887982552	915527

RED BLADE	FLAP					
COEFF		COSINE	SINE	MAX	PSI	
STEADY		5275666750				920527
1		1998114751-	7214223550-	2124361751	1998522053	921527
2		9310014249-	7678900048	9341628349	8764246152	922527
3		3812667750	2482666850-	4549732850	1089764453	923527
4		2216665249-	7678605048-	2345893149	4977656752	924527
5		3235182549-	1539558250	1573182650	2037346152	925527

VERTICAL	ACCEL					
COEFF		COSINE	SINE	MAX	PSI	
STEADY		1005836351				930527
1		5867811748	2587166748-	6412850148	3362069253	931527
2		7105136748-	1054820549	1271800349	6198185952	932527
3		5076000047	7104893348-	7123002748	9136216152	933527
4		8627568346	2900763349	3026347249	1835906352	934527
5		2851150047-	4981333346	2894338147	3401794252	935527

HARMONIC ANALYSIS

FORE- AFT	ACCEL					
COEFF		COSINE	SINE	MAX	PSI	
STEADY		3387625049-				940527
1		1652497748	4917949048	5188156848	7142695352	941527
2		2478748349-	3625471249	4391837249	6218028552	942527
3		4957503548-	5508327848	7410702848	4399575652	943527
4		1156750549-	2480585849-	2737038149	6124983652	944527
5		1652498548	2714615848-	3178032448	6026611952	945527

LATERAL	ACCEL					
COEFF		COSINE	SINE	MAX	PSI	
STEADY		3013833349				950527
1		1077338949	9757261747	1081748449	5175055551	951527
2		5238999749	1366010549	5414157649	7306929751	952527
3		4506667348-	1690003548-	4813123948	6685202952	953527
4		2985665549	3512598849-	4610048749	7759103452	954527
5		2886724248-	9757255047-	3047165448	3973509752	955527

		STEADY	STAT	DATA						
				D	E	G	R	E	F	S
LIFT LINK	LOAD	K	0+11201K	30+11701K	60+11201K	90+11201K				
		O	5043364054	5156697054	4505026554	5326698054				1037627
		1	5156697054	5326698054	4970029054	5156697054				1038627
		2	4590027054	5496699054	5270031054	5553366054				1039627
RT. CYCLIC	LOAD	O	2080000052	1872000053	3120000053	6240000052				1047627
		1	4160000052			6240000052				1048627
		2	2496000053	2080000052	8320000052	1040000052				1049627
LT. CYCLIC	LOAD	O	4512000052	9024000052	4512000052	4512000052				1057627
		1	9024000052	6768000052	9024000052	9024000052				1058627
		2	4512000052	2256000052	1128000053					1059627
COLLECTIVE	LOAD	O	1984000052	3968000052	1984000052	9920000052				1067627
		1		5952000052	5952000052	3968000052				1068627
		2		1190400053	3968000052	1984000052				1069627
STABILIZER	BAR	O	2068000050	1654400051	3102000051	3774100051				1077627
		1	2843500051	1654400051	2585000050	2119700051				1078627
		2	3722400051	4342800051	3153700051	1964600051				1079627

HARMONIC ANALYSIS

LIFT LINK	LOAD	COEF	COSINE	SINE	MAX	PSI	
		STEADY	5126002454				1080627
		1	5396701752	7584886752	9308861152	3054521353	1081627
		2	2361900051	2740024253	2740126053	1347530653	1082627
		3	1416733352	9443950051	1702649452	1087708553	1083627
		4	7319523352	1104193753	1324763353	1411505952	1084627
		5	1146575052	1859515052	2184589252	4766841252	1085627

RT. CYCLIC	LOAD	COEF	COSINE	SINE	MAX	PSI	
		STEADY	7193333352				1090627
		1	1710110052	2107779052	2714260252	5094645152	1091627
		2	2513332252	1516121953	1536812953	4970627252	1092627
		3	1040000252	8666675451	1353777352	1067314753	1093627
		4	6153333852	4653442552	7714793852	5427457652	1094627
		5	1409891752	8944404051	1669676152	6552178452	1095627

LT. CYCLIC	LOAD	COEF	COSINE	SINE	MAX	PSI	
		STEADY	1880000051				1100627
		1	1916876352	1265625752	2297003152	1465650553	1101627
		2	1128000452	6512506851	1302502452	1499998852	1102627
		3	3759998351	7519988251	8407604351	3885502852	1103627
		4	5263997752	7815014052	9422532452	7599080952	1104627
		5	3687595050	6143743351	6154800251	1731302352	1105627

HARMONIC ANALYSIS

COLLECTIVE	LOAD	COEF	COSINE	SINE	MAX	PSI	
		STEADY	4298666752				1110627
		1	7380647051	2863654751	7916720851	2012060153	1111627
		2	1488000352	2863658851	1515305352	9544670252	1112627
		3	1653332152	9920004251	1928100652	4967874052	1113627
		4	3141334052	2863658251	3154359652	1302179951	1114627
		5	4073982751	2863655751	4979744951	7020777451	1115627

STABILIZER	BAR	COEF	COSINE	SINE	MAX	PSI	
		STEADY	2283416750				1120627
		1	9993731749	3819546851	3820854051	8850121652	1121627
		2	3015831749	6716025049	7362080849	1470912453	1122627
		3	1292504550	1206336750	1767997850	7434168152	1123627
		4	3015795049	2238643349	3755867849	3585331852	1124627
		5	5516361749	1182699450	1305021250	1299893152	1125627

	STEADY	STATE	DATA				
		K	0+(120)K	30+(120)K	60+(120)K	90+(120)K	
R F	PYLON	0	1475000049-	3540000049	6490000049	7375000049	447327
		1	5605000049	1180000049	2950000048	5015000049	448327
		2	7080000049	7080000049	3835000049	1475000048-	449327
R A	PYLON	0	8100000049	1080000050	1110000050	1200000050	457327
		1	7800000049	5700000049	9600000049	1140000050	458327
		2	9600000049	1050000050	6900000049	3900000049	459327
L F	PYLON	0	2250000049	3000000048-	2100000048-	4500000048-	467327
		1	1200000049	4050000049	6000000048	1500000049-	468327
		2	2400000049-	3000000048	2100000049	5700000049	469327
L A	PYLON	0	1174250050	7930000049	3507500049	4117500049	477327
		1	3050000049	9150000049	1037000050	6405000049	478327
		2	2745000049	4270000049	4880000049	9760000049	479327
HARMONIC ANALYSIS							
R F	PYLON	COEFF	COSINE	SINE	MAX	PSI	
STEADY		1	1822708349				520327
		1	8961730048-	2071938748	9198126748	1669820453	521327
		2	3724374849-	1681893849	4086550949	1784825252	522327
		3	9833406747	7374959847-	1229170148	1077101553	523327
		4	5039575748-	4896655848	7026703448	3395601752	524327
		5	8715920847-	1334429648-	1593855948	4736982752	525327
R A	PYLON	COEFF	COSINE	SINE	MAX	PSI	
STEADY		1	8950000049				530327
		1	5464102548-	6964109748	8851849548	1281180553	531327
		2	1100000049-	2684679249	2901293449	5614025652	532327
		3	3499890048-	4999928347-	3535220048	6271000852	533327
		4	1100001149	9526286348	1455164549	1022334752	534327
		5	1464122248	3590100046	1464562348	2809278850	535327
L F	PYLON	COEFF	COSINE	SINE	MAX	PSI	
STEADY		1	7875000048				540327
		1	7863624348	2491074748-	8246744848	3424229453	541327
		2	1262499149	272992249-	3065024449	1471622953	542327
		3	7500003347	5000021747	9017897047	1127005752	543327
		4	1125004248-	5412657548-	552835748	6456460952	544327
		5	3636298347-	7589735047-	8415845247	4888016452	545327
L A	PYLON	COEFF	COSINE	SINE	MAX	PSI	
STEADY		1	6493958349				550327
		1	7529527748	1037462748-	7599784648	3521921953	551327
		2	1876040549	5024708248-	3479716649	1734465853	552327
		3	2033288848-	1779171748	2701828648	4627131252	553327
		4	1131041849	4182175848-	1205886749	8492886552	554327
		5	1366314048	2049137848	2462880348	1126112652	555327
HARMONIC ANALYSIS							
RED	PITCH LINK	K	(120)K	D E G	R E E S	90+(120)K	
		0	8355000052-	1671000053-	2506500053-	1871000053-	507327
		1	8355000052	5570000052-	2228000053-	5570000052	508327
		2	1671000053	8355000052-	1671000053-	1671000053-	509327
WHITE	PITCH LINK	0	1166400053-	8748000052	2041200053	1312200053-	517327
		1	8748000052-	7290000052-	2916000052-	2041200053-	518327
		2	2332800053-	2770200053-	2916000052-	5832000052-	519327
HARMONIC ANALYSIS							
RED	PITCH LINK	COEFF	COSINE	SINE	MAX	PSI	
STEADY		1	8819166752-				580327
		1	8072929552-	4732714752-	9357925552	2103807553	581327
		2	2320833052-	1607922052	2823416752	7264248952	582327
		3	1346083353	4741684351-	1346083353	1123416953	583327
		4	5105834852-	1607922052	535032652	4062995952	584327
		5	1574596752	9104445050	1577226952	6616697450	585327
WHITE	PITCH LINK	COEFF	COSINE	SINE	MAX	PSI	
STEADY		1	7897500052-				590327
		1	7092429352	1021004753	1241166153	5521452252	591327
		2	3523502052	1473108052	3819066152	1174443152	592327
		3	9720002852-	2186999752	9463002752	5971120952	593327
		4	5953498352-	1052227752-	6045788452	4750574252	594327
		5	1746329852-	7330407851-	1894999252	4055919652	595327

IBM TAB NO. 3
TYPE I STEADY STATE CONDITION NO. 29
LEVEL FLIGHT, TRUE AIRSPEED 88 KNOTS

PER CENT CHORD	K	DELTA PER CENT			PRESSURE RADIUS		
		40	DELTA PER CENT		PRESSURE RADIUS		
		0+(120)K	D E G	R E E S	60+(120)K	90+(120)K	
4	0	22282150>1	26668400>1	29475600>1	34368200>1	171.29	
	1	35440900>1	32809150>1	38072650>1	23159400>1	181.29	
	2	13334200>1	56144000>0	66671000>0	13685100>1	191.29	
17	0	10998900>1	12544200>1	13089600>1	16362000>1	271.29	
	1	18180000>1	17634600>1	19069000>1	11069800>1	281.29	
	2	85446000>0	59994000>0	46359000>0	81810000>0	291.29	
34	0	55200000>0	63600000>0	63600000>0	79200000>0	371.29	
	1	87600000>0	88800000>0	93600000>0	57600000>0	381.29	
	2	36000000>0	20400000>0	15600000>0	36000000>0	391.29	
63	0	23925500>0	25901000>0	27218000>0	34242000>0	471.29	
	1	37754000>0	39949000>0	38193000>0	25023000>0	481.29	
	2	18218500>0	11194500>0	74630000>49	17999000>0	491.29	
88	0	11278500>0	10506000>0	10197000>0	14059500>0	571.29	
	1	16068000>0	16995000>0	17613000>0	14986500>0	581.29	
	2	64890000>49	23175000>49	2530000>49	92700000>49	591.29	

PER CENT CHORD	K	DELTA PER CENT			PRESSURE RADIUS		
		55	DELTA PER CENT		PRESSURE RADIUS		
		0+(120)K	D E G	R E E S	60+(120)K	90+(120)K	
2	0	49075200>1	52070400>1	47001600>1	47001600>1	1472.29	
	1	47462400>1	68659200>1	60829600>1	46540800>1	1482.29	
	2	37324800>1	29030400>1	23961600>1	35481600>1	1492.29	
9	0	28860750>1	30906000>1	29997000>1	31360500>1	1572.29	
	1	31360500>1	41814000>1	35451000>1	26361000>1	1582.29	
	2	21361500>1	16816500>1	13180500>1	20907000>1	1592.29	
17	0	21931250>1	23861200>1	23510300>1	24212100>1	1672.29	
	1	24913900>1	31230100>1	27194750>1	20001300>1	1682.29	
	2	16141400>1	12983300>1	10527000>1	15790500>1	1692.29	
23	0	17246600>1	18846800>1	17068800>1	17780000>1	1772.29	
	1	18491200>1	24180800>1	20980400>1	15646400>1	1782.29	
	2	12090400>1	99568000>0	85344000>0	13157200>1	1792.29	
34	0	15840000>1	17292000>1	16434000>1	17358000>1	1872.29	
	1	17688000>1	21252000>1	18216000>1	14388000>1	1882.29	
	2	11880000>1	99000000>0	88440000>0	12210000>1	1892.29	
63	0	48840000>0	51078500>0	47415500>0	52096000>0	1972.29	
	1	54945000>0	69597000>0	59422000>0	45177000>0	1982.29	
	2	33170500>0	25844500>0	16890500>0	35816000>0	1992.29	
90	0	18289500>0	19471000>0	19756000>0	22428000>0	2072.29	
	1	23763000>0	28168500>0	23763000>0	16687500>0	2082.29	
	2	13884000>0	11347500>0	97455000>49	13617000>0	2092.29	

PER CENT CHORD	K	DELTA PER CENT			PRESSURE RADIUS		
		75	DELTA PER CENT		PRESSURE RADIUS		
		0+(120)K	D E G	R E E S	60+(120)K	90+(120)K	
2	0	77358800>1	71698400>1	52358700>1	48113400>1	3773.29	
	1	58019100>1	62264400>1	66048000>1	59909000>1	3783.29	
	2	60849300>1	61321000>1	53302100>1	67924800>1	3793.29	
9	0	47454400>1	46607000>1	41078900>1	37704300>1	3873.29	
	1	45759600>1	46607000>1	39404100>1	36438200>1	3883.29	
	2	37709300>1	37285600>1	32624900>1	40675200>1	3893.29	
17	0	30540750>1	27981850>1	20455200>1	17614200>1	3973.29	
	1	23012100>1	23864400>1	24716700>1	22728000>1	3983.29	
	2	23864400>1	23580300>1	20171100>1	25569000>1	3993.29	
23	0	29926050>1	30832900>1	25132700>1	24355400>1	4073.29	
	1	26687300>1	26428200>1	26687300>1	23059900>1	4083.29	
	2	23059900>1	21504300>1	19691600>1	25391800>1	4093.29	
34	0	18182400>1	17898300>1	13636800>1	12500400>1	4173.29	
	1	15057300>1	16335750>1	15625500>1	13636800>1	4183.29	
	2	13920900>1	13636800>1	11932200>1	15341400>1	4193.29	
63	0	83330000>0	74045500>0	55767000>0	57690000>0	4273.29	
	1	65702500>0	76279000>0	76920000>0	69228000>0	4283.29	
	2	67946000>0	61215500>0	56408000>0	71151000>0	4293.29	
90	0	34612500>0	34435000>0	33902500>0	35677500>0	4373.29	
	1	38162500>0	44730000>0	40825000>0	35000000>0	4383.29	
	2	33015000>0	29820000>0	26270000>0	30685000>0	4393.29	

PER CENT CHORD	K	DELTA PER CENT		PRESSURE RADIUS			
		85 0+(120)K	D E G 30+(120)K	R E E S 60+(120)K	90+(120)K		
2	0	9460860051	7552090051	4896410051	3900530051	6074 29	
	1	4398470051	5477340051	6556210051	6722190051	6084 29	
	2	7801060051	8630960051	7635080051	9377870051	6094 29	
4	0	9600120051	7422315051	4800060051	3733380051	6174 29	
	1	4266720051	5244510051	6222300051	5955630051	6184 29	
	2	6666750051	7822320051	6488970051	8266770051	6194 29	
9	0	6095610051	5684670051	3869585051	3150540051	6274 29	
	1	3356010051	4246380051	4451850051	4040917051	6284 29	
	2	4451850051	4725810051	4246380051	5410710051	6294 29	
13	0	4583700051	5093000051	3588250051	3009500051	6374 29	
	1	3379900051	3148400051	3241000051	2916900051	6384 29	
	2	3379900051	3657700051	3148400051	4074400051	6394 29	
17	0	4117680051	3823560051	3382380051	2843160051	6474 29	
	1	3137280051	3039240051	3039240051	2647080051	6484 29	
	2	2843160051	2941200051	2647080051	3529440051	6494 29	
23	0	3322395051	3114060051	2774145051	4155735051	6574 29	
	1	2500020051	2565810051	2653530051	2478090051	6584 29	
	2	2609670051	2675460051	2478090051	3026340051	6594 29	
34	0	2211175051	1853350051	1321200051	1376250051	6674 29	
	1	1376250051	1633150051	1743250051	1706550051	6684 29	
	2	1798300051	1853350051	1633150051	2036850051	6694 29	
47.7	0					6774 29	
	1					6784 29	
	2					6794 29	
63	0	8472800050	6188000050	2618000050	2760800050	6874 29	
	1	2665600050	4664800050	5902400050	6378400050	6884 29	
	2	7616000050	7806400050	6949600050	8377600050	6894 29	
77	0	3412800050	1327200050	1327200050	8532000049	6974 29	
	1	6636000049	8532000049	2275200050	3033600050	6984 29	
	2	3886800050	4076400050	3412800050	4076400050	6994 29	
90	0	7072500049	8487000049	2451800050	2357500050	7074 29	
	1	2263200050	1320200050	3772000049	1886000049	7084 29	
	2	1037300050	1037300050	7544000049	1037300050	7094 29	

PER CENT CHORD	K	DELTA PER CENT		PRESSURE RADIUS		
		90	D E G	R E E S	90+(120)K	
		0+(120)K	30+(120)K	60+(120)K		
2	0	1005290052	7619040051	4550260051	4338620051	7975.29
	1	3809520051	5185180051	6455020051	6984120051	7985.29
	2	8253960051	9841260051	8888880051	1026454052	7995.29
9	0	6728410051	4885010051	3041610051	2580760051	8075.29
	1	2488590051	3502460051	4055480051	4055480051	8085.29
	2	4239820051	4700670051	4239820051	5161520051	8095.29
17	0	5206960051	6153680051	4023560051	4023560051	8175.29
	1	3550200051	3550200051	3550200051	3550200051	8185.29
	2	4023560051	4496920051	3705220051	4970280051	8195.29
23	0	3627480051	3480420051	5024550051	4902000051	8275.29
	1	4436310051	2598060051	2451900051	2451900051	8285.29
	2	2696100051	2892180051	2745120051	3333360051	8295.29
34	0	2074240051	1759400051	1055640051	1037120051	8375.29
	1	8148800050	1142240051	1389000051	1481600051	8385.29
	2	1666800051	1777920051	1592720051	2000160051	8395.29
63	0	7077800050	4444200050	1316800050	1316800050	8475.29
	1	2304400050	4115000050	5267200050	5925600050	8485.29
	2	7407000050	7900800050	6584000050	8230000050	8495.29
90	0	1770000049-	1548750050-	2699250050-	2389500050-	8575.29
	1	1504500050-	2655000049-	6195000049	1239000050	8585.29
	2	1548750050	1637250050	8850000049	8850000049	8595.29

PER CENT CHORD	K	DELTA PER CENT		PRESSURE RADIUS		
		95	D E G	R E E S	90+(120)K	
		0+(120)K	30+(120)K	60+(120)K		
2	0	8268900051	5769000051	3557550051	2884500051	9676.29
	1	2499900051	3749850051	4807500051	5384400051	9686.29
	2	6634350051	8258900051	7451625051	8749650051	9696.29
9	0	6315540051	4880190051	2870700051	2392250051	9776.29
	1	2296560051	3349150051	3827600051	3523290051	9786.29
	2	4593120051	5071570051	4293120051	5741400051	9796.29
17	0	4315660051	5052480051	3263060051	2736760051	9876.29
	1	2315720051	2947280051	2842020051	2631500051	9886.29
	2	3157800051	3578840051	3263060051	4105140051	9896.29
23	0	3144550051	3324975051	4020900051	3350750051	9976.29
	1	3453850051	1958900051	1855800051	1958900051	9986.29
	2	2268200051	2525950051	2422850051	2989900051	9996.29
34	0					10076.29
	1					10086.29
	2					10096.29
63	0	6151200050	3285300050	6990000049	1258200050	10176.29
	1	2376600050	4194000050	5172600050	5731800050	10186.29
	2	6710400050	7129800050	6011400050	6990000050	10196.29
90	0	3480000049-	6090000049-	1261500050-	7830000049-	10276.29
	1	1740000049-	4132500049	8265000049	1000500050	10286.29
	2	1087500050	8700000049	2610000049	3480000049	10296.29

		40		BLADE PER CENT	LOADING RADIUS		
				D E G	R E E S		
K	0+(120)K	30+(120)K	60+(120)K	90+(120)K			
0	8479924551	9728848151	1029157952	1254145852	17029		
1	1350568052	1321682052	1431141852	8886985251	18029		
2	5666838951	5094670051	2787259751	5745852851	19029		
		55		BLADE PER CENT	LOADING RADIUS		
				D E G	R E E S		
K	0+(120)K	30+(120)K	60+(120)K	90+(120)K			
0	1857692652	1997149552	1892230552	1982866152	27029		
1	2027925352	2609771652	2249755152	1707321652	28029		
2	1367086752	1097230552	8967826751	1374733352	29029		
		75		BLADE PER CENT	LOADING RADIUS		
				D E G	R E E S		
K	0+(120)K	30+(120)K	60+(120)K	90+(120)K			
0	2758935652	2629845552	2078358852	1948260952	37029		
1	2321992852	2482416052	2349777952	2157340552	38029		
2	2187886452	2119582152	1867154152	2361105352	39029		
		85		BLADE PER CENT	LOADING RADIUS		
				D E G	R E E S		
K	0+(120)K	30+(120)K	60+(120)K	90+(120)K			
0	3326102652	2835383652	1930975752	1917948852	47029		
1	1817745652	2149459552	2396976852	2318894652	48029		
2	2590361652	2763802752	2426839752	3048613552	49029		
		90		BLADE PER CENT	LOADING RADIUS		
				D E G	R E E S		
K	0+(120)K	30+(120)K	60+(120)K	90+(120)K			
0	3366132052	2812922952	1811870652	1737015552	57029		
1	1609402852	1936682652	2239089052	2355116352	58029		
2	2677442052	2972148852	2623095552	3206423352	59029		
		95		BLADE PER CENT	LOADING RADIUS		
				D E G	R E E S		
K	0+(120)K	30+(120)K	60+(120)K	90+(120)K			
0	2811033652	2379654252	1680923752	1453848352	67029		
1	1480565952	1663813252	1844223352	1930670152	68029		
2	2284716552	2569830352	2302540852	2801139052	69029		

BLADE	LOADING			
0	AZIMUTH			
SPAN		THRUST	PER	INCH
40			8479924551	
55			1857692652	
75			2758935652	
85			3326102652	
90			3366132052	
95			2811033652	

BLADE	LOADING			
180	AZIMUTH			
SPAN		THRUST	PER	INCH
40			1431141852	
55			2249755152	
75			2399777952	
85			2396976852	
90			2239089052	
95			1844223352	

BLADE	LOADING			
30	AZIMUTH			
SPAN		THRUST	PER	INCH
40			9728848151	
55			1997149552	
75			2629845552	
85			2835383652	
90			2812922952	
95			2379654252	

BLADE	LOADING			
210	AZIMUTH			
SPAN		THRUST	PER	INCH
40			8886985251	
55			1707321652	
75			2157340552	
85			2318894652	
90			2355116352	
95			1930670152	

BLADE	LOADING			
60	AZIMUTH			
SPAN		THRUST	PER	INCH
40			1029157952	
55			1892230552	
75			2078358852	
85			1930975752	
90			1811870652	
95			1680923752	

BLADE	LOADING			
240	AZIMUTH			
SPAN		THRUST	PER	INCH
40			5666838951	
55			1367086752	
75			2187886452	
85			2590361652	
90			2677442052	
95			2284716552	

BLADE	LOADING			
90	AZIMUTH			
SPAN		THRUST	PER	INCH
40			1254145852	
55			1982866152	
75			1948260952	
85			1917948852	
90			1737015552	
95			1453848352	

BLADE	LOADING			
270	AZIMUTH			
SPAN		THRUST	PER	INCH
40			3094670051	
55			1097230552	
75			2119582152	
85			2763802752	
90			2972148852	
95			2569830352	

BLADE	LOADING			
120	AZIMUTH			
SPAN		THRUST	PER	INCH
40			1350568052	
55			2027925352	
75			2321992852	
85			1817745652	
90			1609402852	
95			1480565952	

BLADE	LOADING			
300	AZIMUTH			
SPAN		THRUST	PER	INCH
40			2787259751	
55			8967826751	
75			1867154152	
85			2426839752	
90			2623095552	
95			2302540852	

BLADE	LOADING			
150	AZIMUTH			
SPAN		THRUST	PER	INCH
40			1321682052	
55			2609771652	
75			2482416052	
85			2149459552	
90			1936682652	
95			1663813252	

BLADE	LOADING			
330	AZIMUTH			
SPAN		THRUST	PER	INCH
40			5745852851	
55			1374733352	
75			2361105352	
85			3048613552	
90			3206423352	
95			2801139052	

HARMONIC ANALYSIS

				BLADE PER CENT	LOADING RADIUS	
		COSINE	SINE	MAX	PSI	
				40		
COEF STEADY		9021444251		5101300951	1185309453	70029
1		2436550351-	4481795851	1639416051	1782804353	71029
2		1636463551	9834570049-	1939787350	9433962752	72029
3		4364801749	1884926750-	5854268850	8995651252	73029
4		5854241850	1777433348-	5255308250	3485100452	74029
5		5228912250-	5260615049			75029
				55		
COEF STEADY		1755045652		5723400651	1161533253	80029
1		2522729351-	5137426551	2967420751	7605747850	81029
2		2966375051	7877300049	1123468751	2383190352	82029
3		3565616750	1065385351	9808757750	7381245252	83029
4		4184076850	8871596750-	4113556250	1199410052	84029
5		2058611750	3561385050			85029
				75		
COEF STEADY		2276054752		9509744250	4809151752	90029
1		6351965050	7077271750	2797703751	3068803250	91029
2		2797543251	2996883349	1998843651	1321388552	92029
3		1539208851	1275230251	3614328650	8195029752	93029
4		3058460050	1925926750-	4763671850	4347297052	94029
5		3786105050-	2891016750-			95029
				85		
COEF STEADY		2460259052		507160351	3149226653	100029
1		3549937351	3559534551-	3075999651	3137836351	101029
2		3057566551	3362445050	1805706651	8436856351	102029
3		1632365551	7719840050	1483483851	8545687952	103029
4		1409490551	4626668350-	5463217650	3384256952	104029
5		5366678350-	1022501750			105029
				90		
COEF STEADY		2445611852		7062927351	3095290753	110029
1		4495338551	5447648551-	2847062951	4106038551	111029
2		2817869551	4066675050	1777475051	7793142851	112029
3		1631539351	7053346750	1371315551	8646837352	113029
4		1329845851	3346885050-	4921804350	3652828452	114029
5		4916575050-	2268216749-			115029
				95		
COEF STEADY		2100246652		6069838651	3122710753	120029
1		4082809551	4491504051-	1908494151	6046496450	121029
2		1908069051	4027816749	1436937351	9912138451	122029
3		1247716351	7127361750	8483367450	8124872252	123029
4		6948733350	4866480050-	6225824550	4342281652	124029
5		4964695050-	3756686750-			125029

BLADE	POSITION	TOTAL BLADE THRUST	THRUST
	0		3904348054
	30		3765572054
	60		3132601054
	90		3213664154
	120		3405411754
	150		3850912454
	180		3829750254
	210		3176230654
	240		2984079254
	270		2791636454
	300		2434934254
	330		3287752654
			6029
			306029
			606029
			906029
			1206029
			1506029
			1806029
			2106029
			2406029
			2706029
			3006029
			3306029

COEF STEADY	HARMONIC ANALYSIS			
	COSINE	SINE	MAX	PSI
	3314741054			130029
1	5228430052-	3278936553	3320359953	9905983752
2	4650859253	1147081752	4652273553	7064245450
3	1494258853	1217458353	1927437253	1305722652
4	1201088353	6829981752-	1381701753	8259382652
5	5984175052-	4866216751	6003928052	3507021052
				131029
				132029
				133029
				134029
				135029

PER CENT RADIUS	K	BEAM RED BENDING BLADE				
		O+11201K	30+11201K	60+11201K	90+11201K	
15	0	9300000051-	6700600054-	9133800054-	9742100054-	2172 29
	1	1582510055-	1095870055-	1643340055-	7308900054-	2162 29
	2	4571550054-	9217500053-	3640500054	2442500054-	2192 29
28	0	3113475054	6845000053-	1037800054-	2627650054-	2272 29
	1	3334250054-	1391100054-	3687550054-	1545500053-	2282 29
	2	1788600054	2671850054	3201800054	2870750053	2292 29
36	0	2172500054	7750000053-	1168000054-	2838250054-	2372 29
	1	2543500054-	1757500054-	3133000054-	7750000053-	2382 29
	2	1779500054	2565500054	2958500054	1855000053-	2392 29
45	0	8424000053	8964000053-	1807200054-	3546000054-	2472 29
	1	2635200054-	3049200054-	3463200054-	1310400054-	2482 29
	2	1836000054	3078000054	2125800054	4284000053	2492 29
60	0	3625680054-	2651200054-	4487720054	5537160054-	2572 29
	1	4750080054-	6399200054-	4825040054-	4412760054-	2582 29
	2	2524800053-	1171760054	9271200053-	1114520054-	2592 29
65	0	5205435054-	2950105054-	5127665054-	5944250054-	2672 29
	1	5477630054-	7149685054-	4933240054-	5127665054-	2682 29
	2	6947750053-	8217400053	2133520054-	1472475054-	2692 29
80	0	6683300054-	3288700054-	5448900054-	4561675054-	2772 29
	1	4445950054-	6143250054-	4060200054-	5448900054-	2782 29
	2	2440050054-	1012775054-	4021625054-	2825800054-	2792 29
92.5	0	3070000054-	1550000054-	2215000054-	1740000054-	2872 29
	1	1265000054-	2025000054-	1265000054-	2025000054-	2882 29
	2	9800000053-	8850000053-	1930000054-	1835000054-	2892 29

WH.	BEAM	BEND	.15R	K	D E G R E E S				
					O+11201K	30+11201K	60+11201K	90+11201K	
				0	1391850055-	7772500054-	5687250054-	3821500054-	7174 29
				1	5290000053-	7114000054-	3163000054-	8650500054-	7184 29
				2	9967500054-	8650500054-	1150400055-	7333500054-	7194 29
				0	2396560054	4332600053	4097660054	2930160054	7274 29
				1	3263080054	6612000052-	2597240054	2325800053-	7284 29
				2	5655000053-	1564260054-	2063640054-	3990400053-	7294 29

15	PER CENT	RED BLADE RADIUS		BEAM BENDING			
		COSINE	SINE	MAX	PSI		
COEF STEADY		6700600054-					290229
1		5296303254	5597172554-	7705788054	3134179453		291229
2		1089869354-	3073024353-	1132364754	9787323652		292229
3		2534582353	1520753853	2955807853	1032127752		293229
4		7601798352-	1317006753	1520751253	3000004752		294229
5		2662285854	1339071754	2980080354	5340279851		295229

28	PER CENT	RADIUS		BEAM BENDING			
		COSINE	SINE	MAX	PSI		
COEF STEADY		1545500053-					300229
1		1608373354	2418613754-	2904575254	3036238353		301229
2		3164975853-	1657318853	3572643053	7618075052		302229
3		5152294553	5152295053	7286445253	1500000152		303229
4		2208125752	8924019752-	9193146752	7097447752		304229
5		1276909454	2840931053	1308130954	2508630351		305229

36	PER CENT	RADIUS		BEAM BENDING			
		COSINE	SINE	MAX	PSI		
COEF STEADY		3083125053-					310229
1		1324023354	2251205554-	2611697554	3004614853		311229
2		4912496253-	8508690452	4985639153	8508678952		312229
3		4585002753	6386253253	7861709753	1810786352		313229
4		7783333346	2836242852	2836242852	2249996152		314229
5		8702260753	1879553853	8902924553	2437557451		315229

45	PER CENT	RADIUS		BEAM BENDING			
		COSINE	SINE	MAX	PSI		
COEF STEADY		6997500053-					3202 29
1		1372453754	2572341854-	2915574054	2980818253		3212 29
2		7210496753-	1374382053	7340312653	8460419852		3222 29
3		5313003253	5934002253	7964947353	1605345152		3232 29
4		7245024852-	1792658252-	7463511752	4847443552		3242 29
5		2490454353	1462581753-	2888166953	6591507152		3252 29

HARMONIC ANALYSIS

60	PER	CENT	RED BLADE RADIUS	BEAM	BENDING		
COEF			COSINE	SINE	MAX	PSI	
STEADY			3150933354-				330229
1			1182573554-	2574848054-	2833429454	2946683353	331229
2			1027576154-	2001615253	1046889354	8448869552	332229
3			2686067853	5309665753	5950421053	2105531352	333229
4			5309736752-	7032708352-	8812053752	5823674952	334229
5			8515014753-	2486458553-	8870622953	3925565452	335229

65	PER	CENT	RADIUS				
COEF			COSINE	SINE	MAX	PSI	
STEADY			3782892154-				340229
1			9976405553	2541816254-	2730589054	2914295853	341229
2			1108221954-	3367539353	1158256954	8154881452	342229
3			1360975853	5443897853	5611441753	2532124752	343229
4			3240501252-	1796022353-	1825021353	6494308852	344229
5			1269837154-	2967894553-	1304059254	3863103352	345229

80	PER	CENT	RADIUS				
COEF			COSINE	SINE	MAX	PSI	
STEADY			4198427154-				350229
1			1380701253	1183457454-	1191484354	2766544353	351229
2			9740182053-	1169242753	9810110853	8657739652	352229
3			6429266751-	3986079253	3986597753	3030802252	353229
4			1189388353	5011063352-	1290640253	8428840652	354229
5			1443192054-	1923850053-	1455958554	3751861352	355229

92.5	PER	CENT	RADIUS				
COEF			COSINE	SINE	MAX	PSI	
STEADY			1732083354-				360229
1			3631822253-	2010226053-	4151041053	2089646853	361229
2			3720831053-	4113623352	3743501353	8684560352	362229
3			1583323352	1899998053	1906583753	2841212852	363229
4			7916858351-	4113608352-	4189077652	2522342352	364229
5			5551514753-	3647773152-	5563486153	3675187552	365229

HARMONIC ANALYSIS

WH. BEAM BEND .15R

COEF		COSINE	SINE	MAX	PSI	
STEADY		7342645854-				750429
1		2255432354-	3098196754	3832205454	1260539653	751429
2		1033478854-	8078935053-	1311781354	1090077753	752429
3		6767925053-	6219178353-	9191462853	7419350352	753429
4		4572985052-	2376149253	2419753253	2522339952	754429
5		2445526854-	1305614854-	2772225054	4161936452	755429

WH. BEAM BEND .20R

COEF		COSINE	SINE	MAX	PSI	
STEADY		3361583353				760429
1		1006193654-	1985568854	2225962554	1168737753	761429
2		4438935053-	1441587253	4667153153	8100414952	762429
3		3884068353-	5826102253-	7002103553	7876998152	763429
4		5548671052	4805279852	7340195152	1022333452	764429
5		1102299254-	3209689253-	1148078754	3924691652	765429

CHORD RED BENDING BLADE
 PER CENT RADIUS K D O+1120IK E 30+1120IK G R E E S 60+1120IK 90+1120IK

PER CENT RADIUS	K	0+1120IK	30+1120IK	60+1120IK	90+1120IK	
15	0	7007000055	7007000055	5929000055	5120500055	671 29
	1	3773000055	2964500055	4851000055	5120500055	681 29
	2	5390000055	6063750055	6737500055	8624000055	691 29
28	0	6006100055	6182750055	5122850055	5122850055	771 29
	1	3886300055	3003050055	4946200055	4946200055	781 29
	2	4946200055	6094425055	5829450055	7860925055	791 29
60	0	2763300055	2717245055	2486970055	2371832555	871 29
	1	2164585055	1911282555	2625135055	2717245055	881 29
	2	2072475055	2924492555	2348805055	3615317555	891 29
80	0	1834365055	1834365055	1693260055	1622707555	971 29
	1	1622707555	1505120055	1787330055	1834365055	981 29
	2	1552155055	2093057555	1646225055	2140092555	991 29
WH. CHORD BEND .15R	0	4810960055	4592280055	5795020055	6341720055	7374 29
	1	7435120055	9403240055	6997760055	6779080055	7384 29
	2	5685680055	5248320055	3717560055	2405480055	7394 29
WH. CHORD BEND .28R	0	4751010055	4607040055	4894980055	5902770055	7474 29
	1	6190710055	8062320055	5758800055	6046740055	7484 29
	2	5326890055	4894980055	3887190055	2951385055	7494 29

HARMONIC ANALYSIS

COEF STEADY	15 PER CENT	RED BLADE CHORD		BENDING		PSI
		RADIUS COSINE	SINE	MAX	MIN	
1		5715645855	8217152054-	1924688755	3347268653	100129
2		1740462855	1944948354	3323523054	1790880252	101129
3		2694991854	4716243054-	5223666054	8151223152	102129
4		2245827054-	3889830053-	5941873553	7977677652	103129
5		4491668353	1215339854-	4544320454	3910241652	104129

COEF STEADY	28 PER CENT	RED BLADE CHORD		BENDING		PSI
		RADIUS COSINE	SINE	MAX	MIN	
1		5328941755	7186780554-	1427121255	3297624853	110129
2		1232954555	8924040053	1658947354	1627155252	111129
3		1398471054	4416243854-	4756438754	8273287852	112129
4		1766493754-	1274801753-	2138324254	8914554752	113129
5		2134520854	2087337354-	5662315154	4032631452	114129

COEF STEADY	60 PER CENT	RED BLADE CHORD		BENDING		PSI
		RADIUS COSINE	SINE	MAX	MIN	
1		2559890655	2008753254-	3768729554	3277912653	120129
2		3188766754	6647466752-	1728337054	1788978953	121129
3		1727058254	1918955854-	2066777954	8273288352	122129
4		7675803353-	1994215053-	1130720354	8746045052	123129
5		1112995754	2673501554-	3184610254	4741761452	124129

COEF STEADY	80 PER CENT	RED BLADE CHORD		BENDING		PSI
		RADIUS COSINE	SINE	MAX	MIN	
1		1763812655	1143335254-	1608982054	3147166353	130129
2		1132081254	2743691753-	3371727053	7815415452	131129
3		5095430053	6789109052	7087846453	1374127251	132129
4		1959770053-	1482782754-	1640103654	4893989652	133129
5		7055256753				134129

HARMONIC ANALYSIS

WH. CHORD BEND .15R	COEF STEADY	COSINE	SINE	MAX	PSI
	1	5767685055			7704 29
	2	1990828555-	1135512855	2291896055	1503007853
	3	8200426753	1578173353-	8350905953	1745533153
	4	2369038854	6195937254	6633399154	2302515552
	5	8200588353	1104727354-	1375833954	7664679452

WH. CHORD BEND .28R	COEF STEADY	COSINE	SINE	MAX	PSI
	1	5272901355			7804 29
	2	1341420255-	7440454054	1533953055	1509841953
	3	6598560053	3117031753-	7297731253	1673574353
	4	2879405254	4439079054	5291162154	1901019152
	5	5398941753	7273061753-	9057924553	7664681752

		D E G R E E S					
		(120)K	30+(120)K	60+(120)K	90+(120)K		
R/B TORS	.15R	0	3706680054-	4324460054-	3088900054-	3706680054-	4873.29
		1	3706680054-	4324460054-	1853340054-	1235560054-	4883.29
		2	1235560054-	2471120054-	1235560054-	3088900054-	4893.29

R/B TORS	.50R	0	1597680054-	1902000054-	1902000054-	1673760054-	4973.29
		1	1445520054-	1369440054-	9129600053-	3804000053-	4983.29
		2	1103160054-	1141200054-	9890400053-	1217280054-	4993.29

HARMONIC ANALYSIS

R/B TORS		.15R					
COEF	STEADY	COSINE	SINE	MAX	PSI		
		2831491754-					5603.29
1		5249151853-	1190480554-	1301068754	2462060253		5613.29
2		2059261353-	3566754753	4118530853	5999996952		5623.29
3		4118536053-	5148168053-	6592872953	7711339352		5633.29
4		1029635053-	1783175753	2059266253	3000001852		5643.29
5		1009785052	5788338352	5875757552	1602084952		5653.29

R/B TORS		.50R					
COEF	STEADY	COSINE	SINE	MAX	PSI		
		1302870054-					5703.29
1		3403117053-	4094299353-	5323954553	2302671853		5713.29
2		9827013352	3843418352-	1055187453	1693195853		5723.29
3		5706011752-	1902001053-	1985747653	8443357752		5733.29
4		2853010052-	1262837353	1294663953	2568264652		5743.29
5		5501136752	4705026552-	7238769252	6389204352		5753.29

		STEADY	STATE	DATA					
		K	U	E	G	R	E	E	S
RED BLADE	PITCH	0	1800231052	1520703052	1252822052	1113058052			
		1	1136352052	1799410052	1485762052	1776937052			
		2	2056465052	2231170052	2149641052	2021524052			
RED BLADE	FLAP	0	1276800051-	2660000050-	8512000050	1064000051			8775 29
		1	1170400051	6384000050	1383200051	4256000050			8765 29
		2	5852000050-	8512000050-	1064000051-	5320000050-			8795 29
VERTICAL	ACCEL	0	9269200050	1048720051	9634600050	1030450051			8875 29
		1	9512800050	9817300050	9025600050	1048720051			8885 29
		2	9543250050	1063945051	1006090051	1066990051			8895 29
FORE- AFT	ACCEL	0	1520300050-	9915000049-	1322000049	1057600050-			8975 29
		1	1057600050-	1255900050-	1255900050-	1288950050-			8985 29
		2	9915000048-	1057600050-	1222850050-	1652500050-			8995 29
LATERAL	ACCEL	0	8112000049	1352000049	5746000049	9464000049-			9075 29
		1		3380000049	7436000049				9085 29
		2	5408000049	8788000049-	1690000049-	4732000049			9095 29

HARMONIC ANALYSIS

RED BLADE PITCH		COSINE	SINE	MAX	PSI	
COEF STEADY		1653672952				9105 29
1		1371259051	5301323551-	5475799751	2845024753	9115 29
2		7764883349-	166666744	7764883349	8999994252	9125 29
3		1747073350	2329423350	291782650	1771000452	9135 29
4		3882416749	6724200049-	7764536449	7500031952	9145 29
5		2638250049	5629383349-	6216938149	5902209652	9155 29

RED BLADE FLAP		COSINE	SINE	MAX	PSI	
COEF STEADY		7980000049				9205 29
1		7785897850-	8889343750	1181696451	1312141153	9215 29
2		2660005349-	3071507849	4063223849	6544671252	9225 29
3		3103334250-	2394001250-	3919429250	7254921252	9235 29
4		6833333343	1535757249-	1535757249	6750006752	9245 29
5		2410766750-	1707344350-	2954119350	4306135052	9255 29

VERTICAL ACCEL		COSINE	SINE	MAX	PSI	
COEF STEADY		9954325050				9305 29
1		2169497749	1928601549-	2902397349	3183729753	9315 29
2		2156889749-	1318523348	2160916149	8825091452	9325 29
3		6597383348-	8627400048-	1086082449	7753160752	9335 29
4		1446367249-	1274583349	1927833249	3465312752	9345 29
5		2917300048-	6094835048-	6757044748	4888436852	9355 29

FORE- AFT ACCEL		COSINE	SINE	MAX	PSI	
COEF STEADY		1027304250-				9405 29
1		5286946748-	1150816849	1266450749	1146744453	9415 29
2		3552872049-	4245617549	5536078749	6496185252	9425 29
3		9508345048-	1156748749	1281205049	3848780852	9435 29
4		1955459049-	2432883249-	3121336349	5780225252	9445 29
5		2424735048-	5932283346	2425460648	3571970152	9455 29

LATERAL ACCEL		COSINE	SINE	MAX	PSI	
COEF STEADY		1352000049				9505 29
1		3902888348	1800503748	4298180048	2476510352	9515 29
2		5633333049	8781496748	5701367249	4430109751	9525 29
3		3379990848	1126664848	3562823648	6144989051	9535 29
4		2028000849-	2829593549-	3481291049	5859260752	9545 29
5		3902887348-	4053834548-	5627264348	4521736752	9555 29

			STEADY		STATE		DATA		
			D	L	U	R	L	S	
LIFT LINK	LOAD	K	0+11201K	30111201K	60+11201K	90+11201K			
		0	5043363054	5298364554	4816695054	5666700054		10376.29	
		1	5185030554	5383365054	4760028054	5326698054		10386.29	
		2	4816695054	5036701054	5440032054	5893368054		10396.29	
RT. CYCLIC	LOAD	0	1456000053	3536000053	1456000053	2080000052		10476.29	
		1	1040000053	2080000052	6240000052	3328000053		10486.29	
		2	1248000053	4160000052	1040000053	5200000052		10496.29	
LT. CYCLIC	LOAD	0	9024000052	1353600053	9024000052	2256000052		10576.29	
		1	1579200053	1353600053	2256000052	1353600053		10586.29	
		2	6768000052	4512000052	1804800053	5768000052		10596.29	
COLLECTIVE	LOAD	0	3968000052	1984000052	1984000052	9920000052		10676.29	
		1	3968000052	7936000052	3968000052	3968000052		10686.29	
		2	3968000052	1587200053	7936000052	3968000052		10696.29	
STABILIZER	BAR	0	8272000050	8272000050	2481600051	3619000051		10776.29	
		1	3829800051	2088400051	1240800051	5170000050		10786.29	
		2	1964800051	1044000051	6204000051	2088000051		10796.29	

HARMONIC ANALYSIS

LIFT LINK	LOAD	COEF	COSINE	SINE	MAX	PSI	
		STEADY	5288920154				10806.29
		1	1379955853	1100007253	1764736253	3214405353	10816.29
		2	1463905553	2371961253	2787331953	1191591653	10826.29
		3	472866751	6130868352	6157008952	9146643952	10836.29
		4	3777836752	4907560052	6173237652	1310273652	10846.29
		5	1049500051	3638831752	3640364952	5366959152	10856.29

RT. CYCLIC	LOAD	COEF	COSINE	SINE	MAX	PSI	
		STEADY	1256666753				10906.29
		1	2310554852	1331095051	2314385852	3567028853	10916.29
		2	4766666252	9757220352	1085930353	3198161952	10926.29
		3	1040000552	173344251	1044340152	3154125451	10936.29
		4	5806664852	7955888352	9849543352	3153103052	10946.29
		5	6094478251	733538351	1092385952	6356317652	10956.29

LT. CYCLIC	LOAD	COEF	COSINE	SINE	MAX	PSI	
		STEADY	3196000052				11006.29
		1	1728876352	1880002351	1739688052	1737939753	11016.29
		2	7700000852	9441141352	1218959353	1153884153	11026.29
		3	1879999552	1504001852	2407575452	4711338452	11036.29
		4	4323999052	4233131852	6051146352	5609790352	11046.29
		5	2248776751	1880000751	2731108951	7979194851	11056.29

COLLECTIVE	LOAD	COEF	COSINE	SINE	MAX	PSI	
		STEADY	5456000052				11106.29
		1	1210323851	1355096952	1360491252	2648961053	11116.29
		2	3306667252	2290926052	4022734152	1073575053	11126.29
		3	3306650051	1984000852	2011367352	3315409352	11136.29
		4	2976000752	5727311551	3030610752	8727665652	11146.29
		5	4516993851	3630972851	5795446151	7758792851	11156.29

STABILIZER	BAR	COEF	COSINE	SINE	MAX	PSI	
		STEADY	2326500050				11206.29
		1	1061208251	3317327851	3482933751	1077394053	11216.29
		2	8618800048	4477341749	4559504549	1295532153	11226.29
		3	1033996750	1200336850	1588835350	1035337153	11236.29
		4	2584965049	4477375049	5170003049	6000011852	11246.29
		5	7619080049	2576108349	8042805149	3973621252	11256.29

		STEADY	STATE	DATA		D E G R E E S			
				0+11201K	30+11201K	60+11201K	90+11201K		
R F	PYLON	0	2360000049	5605000049	8550000049	8997500049		4473 29	
		1	5015000049	1475000049	3245000049	7080000049		4483 29	
		2	9145000049	9440000049	5310000049	1180000049		4493 29	
R A	PYLON	0	1050000050	1260000050	1470000050	1080000050		4573 29	
		1	8400000049	7500000049	1140000050	1380000050		4583 29	
		2	1470000050	1080000050	7500000049	6300000049		4593 29	
L F	PYLON	0	3000000048	1800000049-	4500000049-	1200000049-		4673 29	
		1	6000000048	5900000049	9000000048-	2700000049-		4683 29	
		2	4800000049-	1200000049-	1800000049	5400000049		4693 29	
L A	PYLON	0	9450000049	7320000049	3350000049	2287500049		4773 29	
		1	4575000049	1006500050	8845000049	6100000049		4783 29	
		2	2135000049	6100000048	5185000049	1098000050		4793 29	

HARMONIC ANALYSIS

R F PYLON		COSINE	SINE	MAX	PSI	
COEF STEADY		5617291749				5203 29
1		4275612048-	2998215548-	5222083348	2150195553	5213 29
2		3195833349-	2512195749	4065031049	1091483252	5223 29
3		9833235047-	1229161248-	1574091048	7711345152	5233 29
4		3933341548	3832167848	5491510348	1106339052	5243 29
5		8339571747	4434426047-	9445241747	6639978752	5253 29

R A PYLON		COSINE	SINE	MAX	PSI	
COEF STEADY		1075000050				5303 29
1		5714103848-	1299053848	5659908148	1671919953	5313 29
2		3750006848-	3767210749	3785827149	4784234652	5323 29
3		1133333343	7833333342	1377699343	1155043952	5333 29
4		1250011348	1299027348-	1802775748	7847459852	5343 29
5		1214126748	1299033048-	1776086148	6261300652	5353 29

L F PYLON		COSINE	SINE	MAX	PSI	
COEF STEADY		4250000048-				5403 29
1		6714106248	1799038548-	6950954048	3450000153	5413 29
2		1274999049	3680608249-	3895189349	1445533053	5423 29
3		5000013347-	9999981747-	1118033048	8114494852	5433 29
4		3250004548-	3031088848-	4444100448	5575097052	5443 29
5		2141088347-	1990390047	8272278547	2100009452	5453 29

L A PYLON		COSINE	SINE	MAX	PSI	
COEF STEADY		5909375049				5503 29
1		5623277848	3950467048	6660745148	3495215352	5513 29
2		4168331749	1716895549-	4508072649	1688068653	5523 29
3		2033332748-	2287495048-	3060567848	7612213652	5533 29
4		6100001048-	4842520048-	7788453848	5461112652	5543 29
5		5399348347-	2169543548	2235721048	2079506252	5553 29

			D E G R E E S				
			11201K	30+11201K	60+11201K	90+11201K	
RED	PITCH LINK	0	2506500053-	3342000053-	8355000052-	8355000052-	5073 29
		1	1114000053-	1671000053-	5570000052-	2506500053	5083 29
		2	1114000053	1810250053-	6962500052-	1114000053-	5093 29
WHITE	PITCH LINK	0	4374000052	1749600053		1312200053-	5173 29
		1		5832000052-	8748000052-	2624400053-	5183 29
		2	1458000053-	2332800053-	2041200053-	8748000052-	5193 29

HARMONIC ANALYSIS

RED PITCH LINK		COSINE	SINE	MAX	PSI	
COEF STEADY		9051250052-				5803 29
1		1216325053-	7130163552-	1409907453	2103790753	5813 29
2		2436874052-	5828712552	6317613852	5634444152	5823 29
3		6962518351-	1230041753-	1232010753	8892010052	5833 29
4		5221876352-	2009896751-	5225742952	4555105652	5843 29
5		3111998852	2965026051-	3126091952	7091149252	5853 29

WHITE PITCH LINK		COSINE	SINE	MAX	PSI	
COEF STEADY		8262000052-				5903 29
1		7593438552	1063965953	1307144453	5448485552	5913 29
2		6318001252	1683553552	6538462452	7460430251	5923 29
3		3158997552	6074997852	6847252252	2084186052	5933 29
4		1944000852-	1433333346-	1944000852	4500001152	5943 29
5		4191438252-	5383400551	4225868452	3453622352	5953 29

IBM TAB NO. 4
TYPE I STEADY STATE CONDITION NO. 31
LEVEL FLIGHT, TRUE AIRSPEED 113 KNOTS

PER CENT CHORD	K	DELTA PER CENT			PRESSURE RADIUS	
		40	D E G	R E E S	60°	90°
		O+(120)K	30+(120)K	60+(120)K	90+(120)K	
4	0	1596595051	2877380051	3228280051	3123010051	17131
	1	3509000051	5263500051	4158165051	2228215051	18131
	2	9649750050	3859900050	4210800050	1315875051	19131
17	0	8726400050	1363500051	1381680051	1499850051	27131
	1	1727100051	2636100051	2108880051	1008990051	28131
	2	3454200050	2090700050	2908800050	7272000050	29131
34	0	3960000050	6840000050	6780000050	6720000050	37131
	1	8280000050	1338000051	1098000051	5040000050	38131
	2	2760000050	1320000050	1080000050	3240000050	39131
63	0	1756000050	2546200050	2524250050	2963250050	47131
	1	3643700050	5750900050	4433900050	2065250050	48131
	2	1338950050	1734050050	4170500049	1756000050	49131
88	0	8961000049	9270000049	8188500049	1143300050	57131
	1	1514100050	2332950050	2039400050	1390500050	58131
	2	9424500049	6025500049	5098500049	9888000049	59131

PER CENT CHORD	K	DELTA PER CENT			PRESSURE RADIUS	
		55	D E G	R E E S	60°	90°
		O+(120)K	30+(120)K	60+(120)K	90+(120)K	
2	0	4861440051	6082560051	5391360051	4377600051	147231
	1	5276160051	6888960051	7326720051	5045760051	148231
	2	3087360051	2257920051	2027520051	3173520051	149231
9	0	2863350051	3772350051	3613275051	2976975051	157231
	1	3567825051	4385925051	4226850051	2863350051	158231
	2	1886175051	1408950051	1990800051	1818000051	159231
17	0	2140490051	2701930051	2666840051	2386120051	167231
	1	2842290051	3280915051	3052830051	2105400051	168231
	2	1368510051	1017610051	7719600050	1368510051	169231
23	0	1671320051	2133600051	2062480051	1706880051	177231
	1	2098040051	2524760051	2453640051	1635760051	178231
	2	1066800051	8534400050	7467600050	1102360051	179231
34	0	1531200051	1947000051	1900800051	1709400051	187231
	1	1914000051	2270400051	2098800051	1478400051	188231
	2	1069200051	8580000050	8052000050	1108800051	189231
63	0	4619450050	5718350050	5168900050	5128200050	197231
	1	6043950050	7488800050	6919000050	4395600050	198231
	2	2808300050	2523400050	2421650050	2991450050	199231
90	0	1842300050	2242800050	2176050050	2309550050	207231
	1	2950350050	3337500050	2883600050	1895700050	208231
	2	1421850050	1468500050	1468500050	1762200050	209231

PER CENT CHORD	K	DELTA PER CENT			PRESSURE RADIUS	
		75	D E G	R E E S	60°	90°
		O+(120)K	30+(120)K	60+(120)K	90+(120)K	
2	0	9339660051	8467015051	6344365051	4551905051	377331
	1	4268885051	6226440051	7971730051	7028330051	378331
	2	5896250051	6485875051	6084930051	6250025051	379331
9	0	5338620051	7054605051	4999660051	3622635051	387331
	1	3198935051	4978475051	4872550051	4131075051	388331
	2	3474340051	3474340051	3304860051	3686190051	389331
17	0	3409200051	3693300051	3196125051	2386440051	397331
	1	1548345051	2713155051	3238740051	2698950051	398331
	2	2272800051	2301210051	2102340051	2329620051	399331
23	0	3342390051	3756950051	3536715051	2824190051	407331
	1	2461450051	2888965051	3290570051	2603955051	408331
	2	2150530051	2046890051	1943250051	2202350051	409331
34	0	2102340051	2215980051	1761420051	1193220051	417331
	1	1164810051	1676190051	2017110051	1534140051	418331
	2	1278450051	1193220051	1022760051	1278450051	419331
63	0	9518850050	8397100050	5897200050	4807500050	427331
	1	5192100050	8236850050	9166300050	7467650050	428331
	2	6410000050	5897200050	4102400050	4999800050	429331
90	0	3869500050	3585500050	3408000050	3283750050	437331
	1	3585500050	4987750050	4863500050	3674250050	438331
	2	3124000050	3124000050	3177250050	2698000050	439331

PER CENT CHORD	K	DELTA PER CENT			PRESSURE RADIUS			
		85 0+(120)K	D 30+(120)K	E G	R 60+(120)K	E S	90+(120)K	
2	0	1087169052	9294880051		5975280051	3568570051		607431
	1	2365215051	5228370051		8630960051	8547970051		608431
	2	7759565051	9128900051		8672455051	9709830051		609431
4	0	1102236052	9777900051		6044520051	3422265051		617431
	1	2080915051	5244510051		8800110051	7111200051		618431
	2	6800085051	7022310051		6311190051	8800110051		619431
9	0	9485865051	7807860051		4383360051	2739600051		627431
	1	1814985051	4109400051		5684670051	4725810051		628431
	2	4314870051	4520340051		4349115051	5205240051		629431
13	0	5810650051	7130200051		4305900051	2500200051		637431
	1	1698300051	4213300051		4305900051	3495650051		638431
	2	3194700051	3472500051		3217850051	3935500051		639431
17	0	4411800051	6813780051		4509840051	2451000051		647431
	1	1960800051	3970620051		4509840051	3235320051		648431
	2	2745170051	2843160051		2500020051	3529440051		649431
23	0	3771960051	5120655051		5745660051	4561440051		657431
	1	3837750051	2796075051		3421080051	2796075051		658431
	2	2543880051	2609670051		2247825051	3026340051		659431
34	0	2458900051	2110250051		2440550051	2000150051		667431
	1	8074000050	1688200051		2238700051	1899225051		668431
	2	1706550051	1816650051		1431300051	1926750051		669431
47.7	0							677431
	1							678431
	2							679431
63	0	9234400050	6997200050		1666000050	1428000050-		687431
	1	6664000049-	4664800050		7901600050	7187600050		688431
	2	7520800050	8520400050		1009120051	7901600050		689431
77	0	4360800050	1327200050		2322600050-	3981600050-		697431
	1	2654400050-	8532000049		3128400050	3270600050		698431
	2	3792000050	5308800050		7204800050	3507600050		699431
90	0	1791700050	1037300050-		3253350050-	4526400050-		707431
	1	3866300050-	1603100050-			2829000049		708431
	2	1037300050	2263200050		3677700050	6601000049		709431

PER CENT CHORD	K	DELTA PER CENT			PRESSURE RADIUS			
		90						
		0+(120)K	D E G	30+(120)K	R E E S	60+(120)K	90+(120)K	
2	0	1031745052	9206340051	6349200051	3386240051	797531		
	1	1904760051	4761900051	8571420051	9100520051	798531		
	2	8571420051	1026454052	8677240051	1089946052	799531		
9	0	9170915051	7419685051	3686800051	1843400051	807531		
	1	6451900050	2949440051	5576285051	4516330051	808531		
	2	4239820051	4700670051	3548545051	4885010051	809531		
17	0	6567870051	7277910051	4496920051	2662650051	817531		
	1	1420080051	4260240051	4496920051	4023560051	818531		
	2	3786880051	4161900051	2248460051	4496920051	819531		
23	0	4068660051	6274560051	6078480051	3725520051	827531		
	1	2205900051	4583370051	3186300051	2867670051	828531		
	2	2745120051	2892180051	1666680051	3137280051	829531		
34	0	2389080051	2444640051	4018840051	3518800051	837531		
	1	7222800050	1055640051	1814960051	1685320051	838531		
	2	1629760051	1889040051	1111200051	1852000051	839531		
63	0	7653900050	4773400050	8230000049-	2469000050-	847531		
	1	3292000049-	4444200050	7077800050	6913200050	848531		
	2	7736200050	8065400050	1020520051	7571600050	849531		
90	0	7965000049	1593000050-	3982500050-	3717000050-	857531		
	1	2478000050-	8850000048-	1239000050	1371750050	858531		
	2	1770000050	2743500050	5354250050	1371750050	859531		

PER CENT CHORD	K	DELTA PER CENT			PRESSURE RADIUS			
		95						
		0+(120)K	D E G	30+(120)K	R E E S	60+(120)K	90+(120)K	
2	0	1028805052	7211250051	4134450051	1923000051	967631		
	1	9615000050	3653700051	6826650051	6730500051	968631		
	2	6874725051	9518850051	8557350051	9999600051	969631		
9	0	9090550051	6554765051	3253460051	1387505051	977631		
	1	9569000050	3253460051	5741400051	4784500051	978631		
	2	4688810051	5262950051	4210360051	5741400051	979631		
17	0	6210340051	6210340051	3684100051	1789420051	987631		
	1	7894500050	3368320051	3684100051	3052540051	988631		
	2	3263060051	3684100051	2420980051	4105140051	989631		
23	0	4124000051	7088125051	3969350051	5412750050	997631		
	1	1031000050	4020900051	2629050051	2422850051	998631		
	2	2422850051	2732150051	1546500051	3041450051	999631		
34	0					1007631		
	1					1008631		
	2					1009631		
63	0	6151200050	2376600050	2306700050-	1537800050-	1017631		
	1	6990000049	4753200050	7339500050	6850200050	1018631		
	2	7269600050	8248200050	8388000050	5452200050	1019631		
90	0	8700000049-	1609500050-	2153250050-	1457250050-	1027631		
	1		5655000049	1174500050	1131000050	1028631		
	2	1261500050	1522500050	4632750050	4567500049	1029631		

		BLADE PER CENT		LOADING RADIUS		
40		D E G	R E E S			
K	0+(120)K	30+(120)K	60+(120)K	90+(120)K		
0	6256003851	1030358352	1078952052	1113070052		17031
1	1305585652	2014416852	1609708152	8107559751		18031
2	3911499351	2456180951	1819439351	5407872951		19031
		BLADE PER CENT		LOADING RADIUS		
55		D E G	R E E S			
K	0+(120)K	30+(120)K	60+(120)K	90+(120)K		
0	1812590152	2301674052	2183536552	1922780752		27031
1	2266255552	2750887252	2631302452	1792103652		28031
2	1194599552	9433736751	8302254551	1224894052		29031
		BLADE PER CENT		LOADING RADIUS		
75		D E G	R E E S			
K	0+(120)K	30+(120)K	60+(120)K	90+(120)K		
0	3165122352	3351462552	2610690852	1940810952		37031
1	1762751352	2637707052	2979936852	2442121452		38031
2	2054510452	2037873852	1818091752	2030595352		39031
		BLADE PER CENT		LOADING RADIUS		
85		D E G	R E E S			
K	0+(120)K	30+(120)K	60+(120)K	90+(120)K		
0	3988431352	3887115052	2840550252	1776752352		47031
1	1148042052	2312937652	3214647152	2703153952		48031
2	2527730452	2756753152	2612299752	2998561552		49031
		BLADE PER CENT		LOADING RADIUS		
90		D E G	R E E S			
K	0+(120)K	30+(120)K	60+(120)K	90+(120)K		
0	4037909752	3781000852	2915339752	1882188952		57031
1	6569259951	2052164752	2973474252	2754240052		58031
2	2684308252	1033824052	2419227252	3079226352		59031
		BLADE PER CENT		LOADING RADIUS		
95		D E G	R E E S			
K	0+(120)K	30+(120)K	60+(120)K	90+(120)K		
0	3668399752	3365534452	1568502852	4550834651		67031
1	3452247051	2091335952	2611800552	2339123352		68031
2	2396531452	2823305352	2380983952	2786890252		69031

BLADE 0 LOADING AZIMUTH				BLADE 180 LOADING AZIMUTH			
SPAN	THRUST	PER	INCH	SPAN	THRUST	PER	INCH
40		625600	3851	40		1609708	152
55		1812590	152	55		2631302	452
75		3165122	352	75		2979936	852
85		3988431	352	85		3214647	352
90		4037909	752	90		2973474	252
95		3668399	752	95		2611800	552

BLADE 30 LOADING AZIMUTH				BLADE 210 LOADING AZIMUTH			
SPAN	THRUST	PER	INCH	SPAN	THRUST	PER	INCH
40		1030358	852	40		8107559	751
55		2301674	052	55		1792103	652
75		3351462	552	75		2442121	452
85		3887115	052	85		2703153	952
90		3781000	852	90		2754240	052
95		3365534	452	95		2339123	352

BLADE 60 LOADING AZIMUTH				BLADE 240 LOADING AZIMUTH			
SPAN	THRUST	PER	INCH	SPAN	THRUST	PER	INCH
40		1078952	052	40		3911499	351
55		2183536	552	55		1194599	552
75		2610690	852	75		2054510	452
85		2840550	252	85		2527730	452
90		2915339	752	90		2684308	252
95		1568502	852	95		2396531	452

BLADE 90 LOADING AZIMUTH				BLADE 270 LOADING AZIMUTH			
SPAN	THRUST	PER	INCH	SPAN	THRUST	PER	INCH
40		1113070	052	40		2456180	951
55		1922780	752	55		9433736	751
75		1950810	952	75		2037873	852
85		1776752	352	85		2756753	152
90		1882188	952	90		3033824	052
95		4550834	651	95		2823305	352

BLADE 120 LOADING AZIMUTH				BLADE 300 LOADING AZIMUTH			
SPAN	THRUST	PER	INCH	SPAN	THRUST	PER	INCH
40		1305585	652	40		1819439	351
55		2266255	552	55		8302254	551
75		1762751	352	75		1818091	752
85		1148042	052	85		2612299	752
90		6569259	951	90		2419227	252
95		3452247	051	95		2380983	952

BLADE 150 LOADING AZIMUTH				BLADE 330 LOADING AZIMUTH			
SPAN	THRUST	PER	INCH	SPAN	THRUST	PER	INCH
40		2014416	852	40		5407872	951
55		2750887	252	55		1224894	052
75		2637707	052	75		2030595	352
85		2312937	652	85		2998561	552
90		2052164	752	90		3079226	352
95		2091335	952	95		2786890	252

		HARMONIC ANALYSIS				
		40		BLADE PER CENT	LOADING RADIUS	
COEF STEADY	COSINE	SINE	MAX	PSI		
1	9123288351					70031
2	3813410551-	5471374551	6669185851	1248755353		71031
3	2659938051	1055854451-	2861834851	1691747753		72031
4	9137799250-	1376300051	1652027751	4119391852		73031
5	1382958350-	1005545151-	1015010651	6554226452		74031
	1933448550-	2421861550	3098973450	2572029652		75031
		55		BLADE PER CENT	LOADING RADIUS	
COEF STEADY	COSINE	SINE	MAX	PSI		
1	1821185352					80031
2	3204176751-	6828788351	7543149151	1151367353		81031
3	3958678851	5768473350	4000486351	4145312751		82031
4	6193644350-	1760261851	1866047751	3646163252		83031
5	6326750049	2362201750-	2445460050	7124844852		84031
	2700145050-	1714899750-	198697250	4248404152		85031
		75		BLADE PER CENT	LOADING RADIUS	
COEF STEADY	COSINE	SINE	MAX	PSI		
1	2402639552					90031
2	1254474051	1824842051	2214442051	5549371352		91031
3	5457156551	3189340351	6320795051	1515170552		92031
4	7105566750-	2689194751	2781485051	3493360552		93031
5	1282966351	5905566749	1284325451	6590302750		94031
	3820163350	3790398350	5381520950	8955183751		95031
		85		BLADE PER CENT	LOADING RADIUS	
COEF STEADY	COSINE	SINE	MAX	PSI		
1	2730581352					100031
2	5469051251	2880008551-	6181016951	3322286653		101031
3	6760240851	4166604551	7941123951	1582358852		102031
4	1672153051-	2463899351	2977733351	4138774252		103031
5	2035649851	4751121750-	2090359251	8671564552		104031
	7202750049	4439046750	4497102650	1615671452		105031
		90		BLADE PER CENT	LOADING RADIUS	
COEF STEADY	COSINE	SINE	MAX	PSI		
1	2689152452					110031
2	6399606251	4129837051-	7616463451	3271647753		111031
3	5984641351	5668633051	6243138451	2172333052		112031
4	1548158851-	1918893051	2465551951	4296550652		113031
5	2926968251	1616065751-	3343472951	8277390752		114031
	4707355050	2905563350	5531861350	6336901251		115031
		95		BLADE PER CENT	LOADING RADIUS	
COEF STEADY	COSINE	SINE	MAX	PSI		
1	2236059652					120031
2	5252883051	7804841551-	9407886651	3039416953		121031
3	8246050751	2980941351	8768315951	9937443751		122031
4	2518826750-	4498466851	4505513251	3106827452		123031
5	1535876751	5952371750-	1647186851	8470397352		124031
	2819990050	4622001750	5414355450	1172233452		125031

TOTAL	BLADE	THRUST	
BLADE	POSITION	THRUST	
	0	4243155854	6031
	30	4686640254	306031
	60	3814270854	606031
	90	2960089854	906031
	120	2862499754	1206031
	150	4489191754	1506031
	180	4696661654	1806031
	210	3462789454	2106031
	240	2752004154	2406031
	270	2691096554	2706031
	300	2347969454	3006031
	330	3040514054	3306031

HARMONIC		ANALYSIS			
COEF	COSINE	SINE	MAX	PSI	
STEADY	3503905354				130031
1	6238715052-	4951342853	4990492253	9718145252	131031
2	8733007253	2851431753	9186733853	9041241451	132031
3	1668700853-	4005894553	4339556853	3753824352	133031
4	1438409753	1062440253-	1788239853	8088740952	134031
5	2515266751	3995200052	4003109952	1727951552	135031

PER CENT RADIUS	K	BEAM		BENDING BLADE			
		O+I120IK	D E G 30+I120IK	R E E S 60+I120IK	90+I120IK		
15	0	4857100054	2442500054-	6700600054-	6700600054-	217231	
	1	8525500054-	1460850055-	1765000055-	1156700055-	218231	
	2	1207300054	1550235055	1793555055	1580650055	219231	
28	0	2053575054	1788600054	3312000053-	3245925054-	227231	
	1	2804300054-	3334250054-	3687550054-	2274350054-	228231	
	2	2318550054	7088100054	6558150054	3378450054	229231	
36	0	6005000053	1386500054	4802500053-	4213750054-	237231	
	1	3427750054-	3526000054-	3133000054-	2543500054-	238231	
	2	1681250054	5120000054	4530500054	2075000053	239231	
45	0	2214000053	1380600054	2340000053-	4953600054-	247231	
	1	4374000054-	3049200054-	2966400054-	2552400054-	248231	
	2	1877400054	5148000054	4899600054	8550000053-	249231	
60	0	3775600054-	2051520054-	2913560054-	6923920054-	257231	
	1	7448640054-	4525200054-	5499680054-	5424720054-	258231	
	2	1039560054-	2858360054	2071280054	3063480054-	259231	
65	0	5322090054-	1900210054-	3183415054-	7577420054-	267231	
	1	8005155054-	4738815054-	62942.5054-	5905365054-	268231	
	2	1511360054-	2443760054	8995103053	3416725054-	269231	
80	0	7300500054-	4368800054-	5178875054-	6606150054-	277231	
	1	5641775054-	4137350054-	5911800054-	5757500054-	278231	
	2	2748650054-	1059000053	2440050054-	4484525054-	279231	
92.5	0	3735000054-	2120000054-	2357500054-	2215000054-	287231	
	1	1550000054-	1075000054-	1930000054-	1930000054-	288231	
	2	9800000053-	6000000053-	1122500054-	2310000054-	289231	
WH. BEAM BEND .15R	K	O+I120IK	D E G 30+I120IK	R E E S 60+I120IK	90+I120IK		
	0	9748000054-	8321250054-	1227000054	1428725055	717431	
	1	1417750055	9458250054	1407000054-	7772500054-	718431	
WH. BEAM BEND .20R	0	1397800054-	1564260054-	3096620054	7424580054	727431	
	1	5926440054	2680470054	1598480054	8494100053	728431	
	2	5655000053-	2895940054-	1564260054-	1897180054-	729431	

HARMONIC ANALYSIS

COEF STEADY	PER CENT	RED BLADE RADIUS		BEAM		BENDING	
		COSINE	SINE	SINE	MAX	PSI	
15	1	1073825054-	1043543155-	1516552455	3165199353	290231	
	2	1100431355	4346127354-	6619680054	1105185153	291231	
	3	4993129354-	1520768353	6763132253	4331578951	292231	
	4	6589933353	7603580052	4389916752-	8779851852	8250001652	293231
	5	4097588353-	4097588353-	5139689753-	6573175853	4628732152	294231
	5	4097588353-	4097588353-	5139689753-	6573175853	4628732152	295231
28	1	6256541753	3071576554	3676961754-	4791098954	3098739453	300231
	2	1427920754-	1427920754-	3314642253-	1465887454	9653433152	301231
	3	1619284253-	1619284253-	1280713254	1290909454	3240200952	302231
	4	7360426752-	7360426752-	1784809553	1930622653	2810272652	303231
	5	3908605052-	3908605052-	2093382053-	2129558753	5188478952	304231
	5	3908605052-	3908605052-	2093382053-	2129558753	5188478952	305231
36	1	3165000053-	2211442854	2999910354-	3726921154	3063965253	310231
	2	2211442854	1138061954-	3261666353	1183879054	8200389852	311231
	3	3438744753-	3438744753-	1588375554	1625172754	3407190052	312231
	4	9006236552-	9006236552-	2978046253	3111250953	2670660652	313231
	5	8190933350-	8190933350-	7858994352-	7859421152	5388057352	314231
	5	8190933350-	8190933350-	7858994352-	7859421152	5388057352	315231
45	1	4548000053-	2012534554	3181983554-	3765011854	3023124653	320231
	2	2012534554	1093649254-	5557283353	1226744754	7653150352	321231
	3	6623994753-	6623994753-	1973400554	2081605854	3618501852	322231
	4	1828496853-	1828496853-	2330475053	2962180653	3202945752	323231
	5	2437642053	2437642053	1045831753	2652520053	4644197251	324231
	5	2437642053	2437642053	1045831753	2652520053	4644197251	325231

		HARMONIC			ANALYSIS		
	60	PER	CENT	RED BLADE	BEAM	BENDING	
	COEF			RADIUS			
	STEADY			COSINE	SINE	MAX	PSI
	1			3144686754-			330231
	2			1622366854	3115661354-	3512750954	331231
	3			1346155654-	2218004053	1364305854	332231
	4			9869730353-	1948960254	2184619354	333231
	5			1905233053-	1893422754-	2686068253	334231
				2746446753	1734806353	2654179853	335231
	65	PER	CENT	RADIUS			
	COEF			COSINE	SINE	MAX	PSI
	STEADY			3675958354-			340231
	1			1533659754	3039893254-	3404858754	341231
	2			1493831054-	3984919753	1546068254	342231
	3			1043413954-	2184041054	2420485054	343231
	4			4115330253-	2974662853-	5077850153	344231
	5			4184666751-	1334343352	1398422852	345231
	80	PER	CENT	RADIUS			
	COEF			COSINE	SINE	MAX	PSI
	STEADY			4539172954-			350231
	1			1682745052	1786921254-	1787000454	351231
	2			1346909654-	1948738553-	1360934054	352231
	3			3600333253-	1407987354	1453290154	353231
	4			3889648853-	2394167053-	4567428653	354231
	5			3174907353-	1611168853-	3560323253	355231
	92.5	PER	CENT	RADIUS			
	COEF			COSINE	SINE	MAX	PSI
	STEADY			1827083354-			360231
	1			5856810753-	4426128353-	7341174653	361231
	2			5937497053-	1919689853-	6240118653	362231
	3			1425000753-	4433332253	4656722153	363231
	4			2929166853-	1333333347-	2929166853	364231
	5			1743192353-	7844588352	1911568853	365231
					HARMONIC	ANALYSIS	
	WH.	BEAM	BEND	.15R			
	COEF			COSINE	SINE	MAX	PSI
	STEADY			1425291754-			750431
	1			4667996054-	9226115754	1033979755	751431
	2			4353417354-	5037453254-	6657940954	752431
	3			1280409853	7499590053-	7608107553	753431
	4			5670430353	1900932253-	5980578853	754431
	5			3694571753	4501753353	5823713853	755431
	WH.	BEAM	BEND	.20R			
	COEF			COSINE	SINE	MAX	PSI
	STEADY			9742550053			760431
	1			1827538254-	3510189254	3957439154	761431
	2			1290065354-	4805284353-	1376653954	762431
	3			1387163753	1359423554-	1366482554	763431
	4			2080755053	4805273352	2135520553	764431
	5			1906829753	2906474053	3476146053	765431

PER CENT RADIUS	K	CHORD RED	BENDING BLADE			
			U	E	G	R
		0+(120)K	30+(120)K	60+(120)K	90+(120)K	
15	0	1078000056	6198500055	4716250055	6198500055	67131
	1	2560250055	2695000054	4042500055	7815500055	68131
	2	7815500055	6468000055	8624000055	1158850056	69131
28	0	9539100055	5122850055	3974625055	6006100055	77131
	1	2738075055	1055900055	4062950055	7419300055	78131
	2	6712700055	6006100055	7949250055	9892400055	79131
60	0	4329170055	2302750055	1657980055	3131740055	87131
	1	1496787555	1266512555	2256695055	3638345055	88131
	2	2763300055	2579080055	3592290055	3776510055	89131
80	0	2163610055	1552155055	1128840055	1787330055	97131
	1	1175875055	1175875055	1434567555	1928435055	98131
	2	1693260055	1646225055	2116575055	1857882555	99131
WH. CHORD BEND .15R	0	3280200055	7653800055	7216440055	6123040055	737431
	1	9075220055	1257410056	1104334056	6123040055	738431
	2	4592280055	5685680055	2405480055	4373600054-	739431
WH. CHORD BEND .28R	0	3455280055	6982545055	6334680055	5614830055	747431
	1	7990335055	1022187056	8926140055	5470860055	748431
	2	4031160055	5470860055	2951365055	7198500054	749431

HARMONIC ANALYSIS

COEF STEADY	15 PER CENT	RED BLADE RADIUS		CHORD SINE	BENDING MAX	PSI	
		COSINE	SINE				
		6423083355					100131
1		2770321255	2445481055-	3695275055	3185637853		101131
2		5389992054	5056865054	7390798254	2158679252		102131
3		6288340054	2111082555-	2202748655	9552912252		103131
4		4491662754	1166978354	4640783654	3641003051		104131
5		3040366753-	1996487754	2019505254	1973176352		105131

COEF STEADY	28 PER CENT	RADIUS		SINE	MAX	PSI	
		COSINE	SINE				
		5873612555					110131
1		2062180555	2074787055-	2925291455	3148254153		111131
2		4416240754	2294750354	4976852554	1372856052		112131
3		5005090054	1854824255-	1921166955	9503370952		113131
4		5299498554	2294759554	5774998354	9853327751		114131
5		1753866754	2199631254	2813258954	1028660852		115131

COEF STEADY	60 PER CENT	RADIUS		SINE	MAX	PSI	
		COSINE	SINE				
		2732596855					120131
1		5974379854	6903546554-	9129740954	3108731653		121131
2		2686537554	3321731753	2707019754	3526342451		122131
3		1803823554	7330417054-	7549092154	9460811052		123131
4		3415746354	2260142354	4095798654	8372985351		124131
5		2584178354	2336429754	3483802754	8423527651		125131

COEF STEADY	80 PER CENT	RADIUS		SINE	MAX	PSI	
		COSINE	SINE				
		1638385955					130131
1		1969916354	2819183054-	3439238754	3049441053		131131
2		6075331553	3394433352-	6084806953	1784010453		132131
3		5879391753	1998985354-	2083654254	9546320352		133131
4		1195473854	1323840854	1783735454	1197921852		134131
5		1087361254	1525723054	1873548854	1090461352		135131

HARMONIC ANALYSIS

COEF STEADY	WH. CHORD BEND .15R	COSINE	SINE	MAX	PSI	
1		3288084355-	2626204355	4208140655	1413855253	770431
2		6378161354	2840738854	6982172954	1200374352	771431
3		6195927354-	2350810355	2431091255	3492180552	772431
4		2551281254	1893825754	3177359354	9146659951	773431
5		2610942753	5671386553-	6243528453	5894399652	774431

COEF STEADY	WH. CHORD BEND .28R	COSINE	SINE	MAX	PSI	
1		2293067855-	2001598355	3043773355	1388825953	780431
2		3899182754	1350720554	4126508554	9553329351	781431
3		4559044354-	1811622855	1868107655	3470849052	782431
4		1859625054	3013142554	3540795554	1457957852	783431
5		1354421853	1179904354-	1187652654	5530967452	784431

		D E G R E E S						
		(120)K	40+(120)K	60+(120)K	90+(120)K			
R/B	TORS	.15R	0	5560020054-	7413360054-	6177800054-	4324460054-	487331
			1	4324460054-	5560020054-	7104470054-	2471120054-	488331
			2	1235560054-	5960020054-	4324460054-	3088900054-	489331
R/B	TORS	.50R	0	1749840054-	2853000054-	2929080054-	1978080054-	497331
			1	1597680054-	1217280054-	1293360054-	3043200053-	490331
			2	1521600053-	1445520054-	2662800053-	1293360054-	499331

HARMONIC ANALYSIS

R/B	TORS	.15R					
COEF			COSINE	SINE	MAX	PSI	
STEADY			4762054254-				560331
1			5111208053-	1125204654-	1235851954	2455702233	561331
2			6692612753-	1000000047	6692612753	8999999952	562331
3			1081114454	1441487254-	1801858454	1022899653	563331
4			8751891853-	3566756553-	9450786353	5054323252	564331
5			2022300253	3014976553	3630396453	1122964152	565331

R/B	TORS	.50R					
COEF			COSINE	SINE	MAX	PSI	
STEADY			1423330054-				570331
1			5753916553-	8877949853-	1057948754	2370522053	571331
2			3170131751	2690394253-	2690581053	1353375553	572331
3			1648398553	3233400353-	3629338253	9900421452	573331
4			1933701353-	8235896752	2101785153	3923254852	574331
5			1823114053	2981748053	3494934353	1171147252	575331

		STEADY	STATE	DATA						
				D	E	G	R	E	E	S
				30+	60+	90+	120K			
RED BLADE	PITCH	K	0+11201K	30+11201K	60+11201K	90+11201K				
		0	2231170052	1852642552	1427527052	1194587052			867531	
		1	1078117052	1287763052	1642996552	1963289052			868531	
		2	2347640052	2819343552	2813520052	2452463052			869531	
RED BLADE	FLAP	0	1808800051-	8512000050-	8512000050	2340800051			877531	
		1	2979200051	7660000051	2128000051	1223600051			878531	
		2	2128000050-	1808800051-	2447200051-	2340800051-			879531	
VERTICAL	ACCEL	0	1033495051	9878200050	9177850050	9786850050			887531	
		1	1173565051	9756400050	9086500050	9056050050			888531	
		2	9208300050	1033495051	1207060051	1079170051			889531	
FORE- AFT	ACCEL	0	3172800050-	2941450050-	1057600050-	1156750050-			897531	
		1	2974500050-	3470290050-	3635500050-	1355050050-			898531	
		2	4296500049-	1751690050-	2743150050-	3899900050-			899531	
LATERAL	ACCEL	0	2399800050	9464000049-	3380000049-	4056000049-			907531	
		1	2078000050-	1960400050	2366000050	7098000049-			908531	
		2		1352000049-	1892800050-	1487200050			909531	

HARMONIC ANALYSIS

RED BLADE	PITCH	COEF STEADY	COSINE	SINE	MAX	PSI	
			1925921652				910531
		1	3181091251	7603621351-	8242232651	2927027553	911531
		2	3251476750-	5883866749-	3304285150	9512861952	912531
		3	3785245050-	5823530050	6945616050	4100784352	913531
		4	4610280050	2773838350	5380414650	7758449651	914531
		5	1383049650	6219150049	1516440550	4842412051	915531

RED BLADE	FLAP	COEF STEADY	COSINE	SINE	MAX	PSI	
			2261000050				920531
		1	2040941351-	1872242051	2769608551	1374685353	921531
		2	7536675049-	2303641749	7880877849	8150191852	922531
		3	7093315049	2039335850-	2159176250	9639298252	923531
		4	1329971749-	7678883348-	1535733449	5250023452	924531
		5	1608766748	1375250048-	2116469448	6389492552	925531

VERTICAL	ACCEL	COEF STEADY	COSINE	SINE	MAX	PSI	
			1010150051				930531
		1	5015499249	1618526349-	5270185949	3421148653	931531
		2	3425639249-	1015263350-	1071498850	1256774553	932531
		3	1573260049	5582633348	1669372649	6512324351	933531
		4	2156866249-	5493858349	5902080249	2785869452	934531
		5	3464800048-	5637113348-	6616788148	4768468452	935531

FORE- AFT	ACCEL	COEF STEADY	COSINE	SINE	MAX	PSI	
			2382354250-				940531
		1	2469252749-	1212753249-	2750996049	2061575953	941531
		2	1021795250-	1054248850	1468164150	6705220352	942531
		3	1432164849	2919419549-	3251785049	9871031652	943531
		4	4682095048-	1669627249-	1734034349	6358376352	944531
		5	3350582849	1267834849	3582430749	4145251651	945531

LATERAL	ACCEL	COEF STEADY	COSINE	SINE	MAX	PSI	
			1464666749				950531
		1	1137173849-	9365045048-	1473161649	2194727253	951531
		2	1388616550	2195375349-	1405863650	1755080153	952531
		3	3943331748	8449980048	9324807148	2166102152	953531
		4	9097828249	1253802850-	1549105050	7649133952	954531
		5	9118381748	4295050048	1007930349	5044387951	955531

			STEADY	STATE	DATA							
						U	E	G	R	E	E	S
						0+11201K	30+11201K	60+11201K	90+11201K			
LIFT LINK	LOAD		0	5440032054	5525032554	5241697554	6601705554	1037631				
			1	6941707554	5721167054	4901695554	5156697054	1038631				
			2	4873362054	6743373054	7140042054	6176701054	1039631				
RT. CYCLIC	LOAD		0	1040000053	4264000053	3952000053	1768000053	1047631				
			1	1664000053	2080000052	6240000052	3536000053	1048631				
			2	3952000053	2280000053	1560000053	2080000052	1049631				
LT. CYCLIC	LOAD		0	1240800053	4060800053	1353600053	1579200053	1057631				
			1	2481600053	2143200053	4512000052	3722400053	1058631				
			2	1804800053	1804800053	2368800053	2707200053	1059631				
COLLECTIVE	LOAD		0	1190400053	1984000052	1190400053	1785600053	1067631				
			1	3968000052	1686400053	1289600053	4960000052	1068631				
			2	1587200053	2380800053	3968000052	1984000053	1069631				
STABILIZER	BAR		0	1137400051	2791800051	3929200051	2892000051	1077631				
			1	1602700051	1034000050	2171400051	3929200051	1078631				
			2	4653000051	3929200051	2688400051	1034000051	1079631				

HARMONIC ANALYSIS

LIFT LINK	LOAD		COSINE	SINE	MAX	PSI	
COEF	STEADY		5872118154				1080631
	1		2555434353	6156466751	2556175853	3586199253	1081631
	2		6351434853	7483946853	9815813053	1148397953	1082631
	3		4721550051	9445250051	1055963052	3885327952	1083631
	4		4958420052	3966906353	3997775053	2071882252	1084631
	5		1834820052	5523198352	5819289952	5767532452	1085631

RT. CYCLIC	LOAD		COSINE	SINE	MAX	PSI	
COEF	STEADY		9753333352				1090631
	1		1830775552	1323225152	2258907652	3585818352	1091631
	2		1248000353	2671977253	2949062053	3248206652	1092631
	3		5199976751	3466650351	6249593751	1123002052	1093631
	4		1473333553	5404997352	1569313153	5004559952	1094631
	5		2707728551	1623448552	1645874552	1989382652	1095631

LT. CYCLIC	LOAD		COSINE	SINE	MAX	PSI	
COEF	STEADY		8084000052				1100631
	1		1272373752	1190062852	1742178052	2230555153	1101631
	2		1785998352	6675326052	6710120652	1424893953	1102631
	3		7520018351	1880002552	2024825052	8273286052	1103631
	4		4606010252	2979473753	3014866053	6530303152	1104631
	5		1923629752	4380666751	1977879552	3343417452	1105631

COLLECTIVE	LOAD		COSINE	SINE	MAX	PSI	
COEF	STEADY		8266666750				1110631
	1		1399398052	7380666751	1582105352	3321920653	1111631
	2		3802664052	859073351	3898499852	8363473652	1112631
	3		2149330952	2645333852	3408432852	4303127552	1113631
	4		1669867053	8877337252	1891170453	6998995251	1114631
	5		2539338351	4073941751	4800745851	1161284052	1115631

STABILIZER	BAR		COSINE	SINE	MAX	PSI	
COEF	STEADY		5126916750				1120631
	1		1744831351	3633133851	4030396651	6434711452	1121631
	2		3877489249	5223568049	6505427349	6329337652	1122631
	3		1637170850	1378663850	2140336950	4663307552	1123631
	4		4308078348	5223611749	5241346649	6632132652	1124631
	5		7328610249	8306725049	1107746450	6228407152	1125631

		STEADY	STATE	DATA				
		K	D	E	G	R	E	S
R F	PYLON	0	0+11201K	30+11201K	60+11201K	90+11201K		
		0	3075000049	9887500049	1607750050	1711000050		447331
		1	8555000049	7375000048	4277500049	1091500050		448331
		2	1681500050	1681500050	2145000049	1180000049		449331
R A	PYLON	0	9900000049	1470000050	1515000050	1275000050		457331
		1	7500000049	2100000049	1020000050	1560000050		458331
		2	1380000050	1140000050	6600000049	1200000049		459331
L F	PYLON	0	7500000048	6000000049-	9300000049-	4800000049-		467331
		1	4500000048	6300000049	1200000049-	6900000049-		468331
		2	1005000050-	4500000049-	1200000049	7800000049		469331
L A	PYLON	0	7625000049	7625000048	5795000049-	5490000049-		477331
		1	1525000048	8540000049	7625000049	9150000048-		478331
		2	6100000049-	5642500049-		8845000049		479331

HARMONIC ANALYSIS

R F		PYLON						
COEF STEADY		COSINE	SINE	MAX	PSI			
		9550625049						520331
1		2941183748-	2653571848-	3961313248	2220571853			521331
2		6748124549-	4917942749	8350050249	7195797152			522331
3		1720815748-	2949990548-	3415208848	7991457852			523331
4		7743764348	5322456048	9396511348	8625395051			524331
5		1237963048-	1178587748	1709275148	2728149952			525331

R A		PYLON						
COEF STEADY		COSINE	SINE	MAX	PSI			
		1007500050						530331
1		2723081348-	5497604748	6135049248	1163502153			531331
2		1462499649-	6040527549	6215052549	5180512052			532331
3		1249988048-	2249993248-	2573895848	8031518552			533331
4		9875016248	1753702349	2012618049	1515408552			534331
5		2473103848	9975941047-	2666727748	6760639652			535331

L F		PYLON						
COEF STEADY		COSINE	SINE	MAX	PSI			
		2187500049-						540331
1		7964110848	1000001348-	8026647148	3528432053			541331
2		3049998249	6928203749-	7569841249	1468802553			542331
3		1499953347	4999986747-	9013832047	1087699553			543331
4		2500009248-	8660255548-	9013882148	6347446052			544331
5		1035882048	1000001248-	1439810448	6320193852			545331

L A		PYLON						
COEF STEADY		COSINE	SINE	MAX	PSI			
		8006250048						550331
1		2988583248	2054263748	3628784848	3455552952			551331
2		6611665049	4270227349-	8039503849	1639582253			552331
3		2541725847-	2053333348	2049157948	3237506252			553331
4		2287491748	7924132048-	8247695848	7152551452			554331
5		2734418048-	7375693347	2632145948	3298091252			555331

11201K D E G K E S 90+11201K

RED		PITCH LINK						
		D	E	G	K	E	S	
		0	5013000053-	6684000053-	2506500053-	1392500053-		507331
1		1	2785000052-	6962500052-	4177500053-	1114000053		508331
2		2	4734500053	5291500053-	5848500053-	8355000052		509331
WHITE		PITCH LINK						
		0	1749600053-	1166400053	3207600053	4811400053-		517331
1		1	4374000053-	8748000052	2916000053-	5248800053-		518331
2		2	3061800053-	3790800053-	2041200053-	1166400053-		519331

HARMONIC ANALYSIS

RED		PITCH LINK						
COEF STEADY		COSINE	SINE	MAX	PSI			
		2100354253-						580331
1		2111288853-	3688336052-	2143263553	1899093453			581331
2		5453961352-	3818813552	6658005052	7250032752			582331
3		1995916253	2274792353-	2974019353	1040511253			583331
4		1868272353-	2029999553-	2758865653	5684391652			584331
5		3023776552-	1135427852	3229925952	3188377052			585331

WHITE		PITCH LINK						
COEF STEADY		COSINE	SINE	MAX	PSI			
		1992600053-						590331
1		1542982853	1102799053	1896240353	3556113952			591331
2		8140905052	3958436352	9069471652	1307962652			592331
3		1239300453-	1579499853	2007656653	4770604952			593331
4		1324350153-	1494154153-	196597053	5711192252			594331
5		2799166752	3359888851-	2819259252	7063108652			595331

IBM TAB NO. 5
TYPE I STEADY STATE CONDITION NO. 42
HOVER OUT OF GROUND EFFECT

PER CENT CHORD	K	DELTA PER CENT			PRESSURE RADIUS	
		40	D E G		60	90
		0+11201K	30+11201K	45+11201K	60+11201K	90+11201K
4	0	2245760051	2210670051	2228215051	2105400051	17142
	1	2035220051	2070310051	2140490051	2070310051	18142
	2	1929950051	1824680051	1912405051	2070310051	19142
17	0	1163520051	1046240051	9817200050	1027170051	27142
	1	9999000050	1054440051	1072620051	9817200050	28142
	2	8999100050	8908200050	9817200050	1108980051	29142
34	0	6300000050	5880000050	5640000050	5520000050	37142
	1	5400000050	5280000050	5640000050	5640000050	38142
	2	5040000050	4920000050	5400000050	5640000050	39142
63	0	2370600050	2414500050	2282800050	2151100050	47142
	1	2063300050	2238900050	2326700050	2195000050	48142
	2	1975500050	2019400050	2195000050	2238900050	49142
88	0	1019700050	9579000049	9270000049	8961000049	57142
	1	9270000049	9888000049	1070600050	9115500049	58142
	2	8040000049	8652000049	1004250050	9733500049	59142

PER CENT CHORD	K	DELTA PER CENT			PRESSURE RADIUS	
		55	D E G		60	90
		0+11201K	30+11201K	45+11201K	60+11201K	90+11201K
2	0	4515840051	4469760051	4331520051	4055040051	147242
	1	3870720051	3778560051	3870720051	3962880051	148242
	2	3778560051	3937840051	3937840051	4101120051	149242
9	0	2908800051	2863350051	2863350051	2658825051	157242
	1	2590650051	2499750051	2590650051	2636100051	158242
	2	2522475051	2658825051	2522475051	2772450051	159242
17	0	2035220051	2035220051	1894860051	1894860051	167242
	1	1859770051	1754500051	1859770051	1824680051	168242
	2	1754500051	1859770051	1769990051	1894860051	169242
23	0	1457960051	1386840051	1351280051	1280160051	177242
	1	1280160051	1244660051	1244660051	1280160051	178242
	2	1209040051	1280160051	1262380051	1351280051	179242
34	0	1465200051	1457000051	1438800051	1372800051	187242
	1	1346400051	1293600051	1320000051	1346400051	188242
	2	1293600051	1333200051	1313400051	1399200051	189242
63	0	4639800050	4680500050	4436300050	4151400050	197242
	1	4040350050	4029300050	4232800050	4192100050	198242
	2	3988600050	4273500050	4110700050	4395600050	199242
90	0	2069250050	2002500050	1975800050	1922400050	207242
	1	1922400050	1869000050	1869000050	1842300050	208242
	2	1762200050	1882350050	1735500050	1975800050	209242

PER CENT CHORD	K	DELTA PER CENT			PRESSURE RADIUS	
		75	D E G		60	90
		0+11201K	30+11201K	45+11201K	60+11201K	90+11201K
2	0	6742480051	6603800051	6273610051	5967005051	377342
	1	5849080051	5518890051	5283040051	5660400051	378342
	2	5849080051	5778325051	6155685051	6485875051	379342
9	0	4067520051	4025150051	3698040051	3855670051	387342
	1	3770930051	3516710051	3347230051	3643820051	388342
	2	3622635051	3559080051	3813300051	3898040051	389342
17	0	2556900051	2485875051	2358030051	2144955051	397342
	1	2159160051	1960290051	1875060051	2059725051	398342
	2	2159160051	2102340051	2319415051	2358030051	399342
23	0	2578045051	2539180051	2461450051	2280080051	407342
	1	2280080051	2124620051	2020980051	2202350051	408342
	2	2202350051	2176440051	2422585051	2461450051	409342
34	0	1619370051	1562550051	1477320051	1377885051	417342
	1	1392090051	1264245051	1250040051	1363680051	418342
	2	1335270051	1306860051	1463115051	1534140051	419342
63	0	7051000050	6986900050	6538700050	6153600050	427342
	1	6153600050	5769000050	5961300050	6089500050	428342
	2	6345900050	6153600050	6377950050	6922800050	429342
90	0	1491000050	1491000050	149.000050	1349000050	437342
	1	1349000050	1366750050	1331290050	1349000050	438342
	2	1455500050	1437750050	1579750050	1544250050	439342

PER CENT CHORD	K	DELTA PER CENT			PRESSURE RADIUS	
		0+11201K	30+11201K	60+11201K	90+11201K	
2	0	7801060051	7801060051	7178635051	6888170051	607442
	1	6639200051	6307240051	5892290051	6639200051	608442
	2	7220130051	6971160051	6174515051	7801060051	609442
4	0	7288980051	7288980051	6757640051	6400080051	617442
	1	6133410051	5866740051	5511180051	6133410051	618442
	2	6666750051	6400080051	7555650051	7200090051	619442
9	0	5684670051	5821650051	5376465051	5068260051	627442
	1	4897035051	4657320051	4451850051	4862790051	628442
	2	5205240051	4965525051	5821650051	5513445051	629442
13	0	3842900051	3842900051	3611400051	3518800051	637442
	1	3472500051	3194700051	3102100051	3426200051	638442
	2	3750300051	3541950051	4051250051	3773450051	639442
17	0	4117680051	4019640051	3823560051	3725520051	647442
	1	3970620051	3725520051	3529440051	3921600051	648442
	2	3921600051	3672580051	4215720051	3921600051	649442
23	0	2850900051	2872830051	2796075051	2697390051	657442
	1	2719320051	2565810051	2456160051	2697390051	658442
	2	2785110051	2642565051	2949585051	2763180051	659442
34	0	1844175051	1853350051	1779950051	1779950051	667442
	1	1798300051	1743250051	1734075051	1816650051	668442
	2	1871700051	1835000051	1926750051	1798300051	669442
47.7	0					677442
	1					678442
	2					679442
63	0	6854400050	7140000050	6902000050	6616400050	687442
	1	6664000050	6235600050	6330800050	6902000050	688442
	2	7044800050	6854400050	7282800050	6949600050	689442
77	0	2512200050	2559600050	2275200050	2275200050	697442
	1	2464800050	2180400050	2275200050	2464800050	698442
	2	2749200050	2654400050	2654400050	2749200050	699442
90	0	1886000049	2429000049		9430000048-	707442
	1	1414500049-	9430000048-		4715000048	708442
	2	3300500049	4715000048	1414500049	3772000049	709442

PER CENT CHORD	K	DELTA PER CENT			PRESSURE RADIUS	
		90	D E G	PER CENT	R E E S	90+11201K
		0+11201K	10+11201K	60+11201K		
2	0	7936500051	8253960051	8888880051	8888880051	797542
	1	9417980051	9629620051	9523800051	9947080051	798542
	2	9629620051	9523800051	9523800051	7989410051	799542
9	0	5069350051	5161520051	5253690051	5161520051	807542
	1	6820580051	7189260051	6129405051	7650110051	808542
	2	6451900051	5484115051	6682325051	5069350051	809542
17	0	4260240051	4733600051	5029450051	5088620051	817542
	1	5325300051	5325300051	5384470051	5443640051	818542
	2	5325300051	5325300051	5206960051	4378580051	819542
23	0	2941200051	3235320051	3382380051	3382380051	827542
	1	3480420051	3480420051	3382380051	3578460051	828542
	2	3529440051	3431400051	3382380051	2941200051	829542
34	0	1574200051	1777920051	1889040051	1926080051	837542
	1	2000160051	2000160051	1963120051	2074240051	838542
	2	2037200051	1926080051	1889040051	1648280051	839542
63	0	5761000050	6419600050	6501700050	6419400050	847542
	1	6748600050	6419400050	6748600050	7242400050	848542
	2	7077800050	7242400050	6584000050	6254800050	849542
90	0	1770000050-	1416000050-	1504500050-	1504500050-	857542
	1	1062000050-	1194750050-	5310000049-	6637500049-	858542
	2	7080000049-	3982500049-	9735000049-	1062000050-	859542

PER CENT CHORD	K	DELTA PER CENT			PRESSURE RADIUS	
		95	D E G	PER CENT	R E E S	90+11201K
		0+11201K	30+11201K	60+11201K		
2	0	6634350051	7499700051	8172750051	8268900051	967642
	1	8365050051	8268900051	8316975051	8557350051	968642
	2	8365050051	9086175051	7692000051	6586275051	969642
9	0	5454330051	6315540051	7368130051	7176750051	977642
	1	7463820051	7081040051	6607610051	7750890051	978642
	2	7415975051	7646580051	6698300051	5406485051	979642
17	0	3894620051	4420420051	4526180051	4526180051	987642
	1	4631440051	4526180051	4420420051	4526180051	988642
	2	4631440051	4736700051	4315660051	3947250051	989642
23	0	2371300051	2732150051	2989900051	2989900051	997642
	1	3144550051	2989900051	2938350051	3247650051	998642
	2	3093000051	3273425051	2732150051	2397075051	999642
34	0					1007642
	1					1008642
	2					1009642
63	0	5592000050	6011400050	6570600050	6570600050	1017642
	1	7129800050	6850200050	7479300050	7828800050	1018642
	2	7409400050	7619100050	5941500050	6011400050	1019642
90	0	4350000048	4350000048-	4045000049-		1027642
	1	2175000048-	1740000049	4567500049	2175000049	1028642
	2	1305000049	1740000049	4567500049-	8700000048	1029642

		40		BLADE PER CENT	LOADING RADIUS	
		D E G	R E E S			
K	0+11201K	30+11201K	60+11201K	90+11201K		
0	8113824651	8431137051	8217304551	7980877151		17042
1	7758278351	7966849751	8286602651	7928548751		18042
2	7242596051	7075052151	7642640351	8163394851		19042
		45		BLADE PER CENT	LOADING RADIUS	
		D E G	R E E S			
K	0+11201K	30+11201K	60+11201K	90+11201K		
0	1755846352	1738357752	1705416652	1607881452		27042
1	1571728452	1517950852	1553645752	1581668652		28042
2	1513064052	1568456252	1554169152	1651693152		29042
		75		BLADE PER CENT	LOADING RADIUS	
		D E G	R E E S			
K	0+11201K	30+11201K	60+11201K	90+11201K		
0	2337218452	2287323352	2180036752	2061745852		37042
1	2049718852	1903391352	1853721552	1992205152		38042
2	2021548852	1981319752	2144356452	2232646252		39042
		85		BLADE PER CENT	LOADING RADIUS	
		D E G	R E E S			
K	0+11201K	30+11201K	60+11201K	90+11201K		
0	2807953752	2828045452	2665119252	2576323452		47042
1	2568960752	2435282652	2357405752	2574940152		48042
2	2714120152	2612616052	2918405652	2759674752		49042
		90		BLADE PER CENT	LOADING RADIUS	
		D E G	R E E S			
K	0+11201K	30+11201K	60+11201K	90+11201K		
0	2589156252	2806573252	2941929352	2945315952		57042
1	3273245952	3111976352	3201021252	3491428552		58042
2	3284146552	3134870652	3202068052	2677071852		59042
		95		BLADE PER CENT	LOADING RADIUS	
		D E G	R E E S			
K	0+11201K	30+11201K	60+11201K	90+11201K		
0	2386994152	2702914252	2964887752	2957194452		67042
1	3076922952	2970648952	2946650152	3186406752		68042
2	3086846052	3247137652	2731896252	2419829452		69042

BLADE AZIMUTH	LOADING AZIMUTH	THRUST	PER INCH	BLADE AZIMUTH	LOADING AZIMUTH	THRUST	PER INCH		
BLADE 180	LOADING AZIMUTH	SPAN	THRUST <td>PER</td> <td>INCH</td> <td>SPAN</td> <td>THRUST <td>PER</td> <td>INCH</td> </td>	PER	INCH	SPAN	THRUST <td>PER</td> <td>INCH</td>	PER	INCH
40			8713824651			40		8286602651	
55			1751846352			55		1553645752	
75			2337218452			75		1853721552	
85			2807954752			85		2357405752	
90			2589156252			90		3201021252	
95			2386994152			95		2946650152	
BLADE 210	LOADING AZIMUTH	SPAN	THRUST <td>PER</td> <td>INCH</td> <td>SPAN</td> <td>THRUST <td>PER</td> <td>INCH</td> </td>	PER	INCH	SPAN	THRUST <td>PER</td> <td>INCH</td>	PER	INCH
40			8433137051			40		7928548751	
55			1738352752			55		1581668652	
75			2287323352			75		1992205152	
85			2828044452			85		2574940152	
90			2806573752			90		3491428552	
95			2702514252			95		3186406752	
BLADE 240	LOADING AZIMUTH	SPAN	THRUST <td>PER</td> <td>INCH</td> <td>SPAN</td> <td>THRUST <td>PER</td> <td>INCH</td> </td>	PER	INCH	SPAN	THRUST <td>PER</td> <td>INCH</td>	PER	INCH
40			8217304551			40		7242596051	
55			1705418652			55		1513064052	
75			2380036752			75		2021548852	
85			2664119752			85		271420152	
90			2441829352			90		3284146552	
95			2464667752			95		3086846052	
BLADE 270	LOADING AZIMUTH	SPAN	THRUST <td>PER</td> <td>INCH</td> <td>SPAN</td> <td>THRUST <td>PER</td> <td>INCH</td> </td>	PER	INCH	SPAN	THRUST <td>PER</td> <td>INCH</td>	PER	INCH
40			790877151			40		7075052151	
55			1603861452			55		1588456252	
75			2271348852			75		1981339752	
85			2676324652			85		2612616052	
90			2464312752			90		3134870652	
95			2451146652			95		3247137652	
BLADE 300	LOADING AZIMUTH	SPAN	THRUST <td>PER</td> <td>INCH</td> <td>SPAN</td> <td>THRUST <td>PER</td> <td>INCH</td> </td>	PER	INCH	SPAN	THRUST <td>PER</td> <td>INCH</td>	PER	INCH
40			778270451			40		7642640351	
55			1571218652			55		1554169152	
75			2240218852			75		2144356452	
85			2640218852			85		2918405652	
90			24744752			90		3202068052	
95			2476912752			95		2731896252	
BLADE 330	LOADING AZIMUTH	SPAN	THRUST <td>PER</td> <td>INCH</td> <td>SPAN</td> <td>THRUST <td>PER</td> <td>INCH</td> </td>	PER	INCH	SPAN	THRUST <td>PER</td> <td>INCH</td>	PER	INCH
40			766849751			40		8163394851	
55			1517280652			55		1651693152	
75			224499152			75		2232646252	
85			264499152			85		2759674752	
90			247499152			90		2677071852	
95			2476484752			95		2419829452	

HARMONIC ANALYSIS

		40			LOADING RADIUS	
COEF STEADY	COSINE	SINE	MAX	BLADE PER CENT	PSI	
1	7950758951					70042
2	2439928350	3340198750	4136445050		5385284252	71042
3	4600077850	4191915049	4619138250		2603407251	72042
4	7197401749	9962450049	1229076750		7805167552	73042
5	6333068349	2489306349	6804753049		5364499651	74042
	4159441749	1926343349	4583858049		4970011251	75042
		55			LOADING RADIUS	
COEF STEADY	COSINE	SINE	MAX	BLADE PER CENT	PSI	
1	1611658652					80042
2	9018131750	3549020050	9689884750		2145974852	81042
3	3096860050	3506398350	4678180350		2427448952	82042
4	4568050049	5912666749	4606156449		2458363151	83042
5	1479892750	8337333349	1698605450		7349240951	84042
	6351383349	2514625350	2793596250		5683503452	85042
		75			LOADING RADIUS	
COEF STEADY	COSINE	SINE	MAX	BLADE PER CENT	PSI	
1	2087104352					90042
2	1917971351	1977250050	1928136251		5865870051	91042
3	2630090050	2179515050	3415795550		1982401052	92042
4	3839543350	1909025050	4287944750		1111878053	93042
5	2659781750	1962731750	3468525250		3638433352	94042
	1155648350	1340383349	1163395650		1323182651	95042
		85			LOADING RADIUS	
COEF STEADY	COSINE	SINE	MAX	BLADE PER CENT	PSI	
1	2651570752					100042
2	1834829251	6949963350	1962045151		3392542753	101042
3	2631888350	1441956750	5001012350		7564129352	102042
4	2501751750	7832066749	2588830850		1156258753	103042
5	6259565050	4563326750	7778190750		3602022452	104042
	1677430050	4552155050	4651374850		1395431852	105042
		90			LOADING RADIUS	
COEF STEADY	COSINE	SINE	MAX	BLADE PER CENT	PSI	
1	3071567152					110042
2	3269160351	7487586750	3353630651		1929002853	111042
3	6286358350	8619183349	6331064650		8703082952	112042
4	3307798350	2426765050	4044176750		4629225252	113042
5	1039756851	8056831750	1315378151		3555718552	114042
	5406445050	3366233349	5416414550		7125655050	115042
		95			LOADING RADIUS	
COEF STEADY	COSINE	SINE	MAX	BLADE PER CENT	PSI	
1	2889860752					120042
2	2814815051	1051583350	2016778651		1621395153	121042
3	1935111351	1070634651	11541251		7552283452	122042
4	1544483350	5454531750	6151575250		3484697152	123042
5	5764366749	7644030050	7732805550		2456640552	124042
	1709923350	7491021750	7683704750		5657163952	125042

TOTAL		BLADE	THRUST
BLADE	POSITION		THRUST
	0		3445831454
	30		3475573654
	60		3425548354
	90		3302211354
	120		3125016154
	150		2819873354
	180		3202567854
	210		3361199754
	240		3287846054
	270		3278218054
	300		3161536754
	330		3130757554

6042
606042
606042
906042
1206042
1506042
1806042
2106042
2406042
2706042
3006042
3306042

HARMONIC ANALYSIS

COEFF	COEFF	IN	MA	PSI	
Steady	334683054				130042
1	8778861752	1889940052	8460842852	1217627552	131042
2	1029092652	4516670052	463243252	395231452	132042
3	1151713352	4089137152	1201042852	3147060452	133042
4	2748258352	374187352	4641486752	3189901752	134042
5	2255701752	1070270052	2680130752	6508752552	135042

PER	CENT	RADIUS	RED		BLADE		PER	CENT	RADIUS
			1	2	1	2			
			0001200	0001200	0001200	0001200			
15	U	0	4008000054	1844200054	7408000054	5408000054			217242
		1	6142300054	5484000054	4875000054	5709500054			218242
		2	7308900054	7308900054	4875000054	5915000053			219242
28	U	0	4754000053	7287000053	5120000053	7287000053			227242
		1	2210000052	5078500053	6743500053	1545500053			228242
		2	6407500051	6845000051	7520000053	1876925054			229242
36	U	0	4090000053	1072500053	2837000053	7735000053			231242
		1	2075000053	9715000053	6007000053	1100000052			238242
		2	7935000053	9785000053	2170000053	7935000053			239242
45	U	0	1512000053	6894000053	6880000052	1049400054			247242
		1	4698000053	6840000053	2628000053	7540000053			248242
		2	1173600054	2700000052	9560000053	7540000053			249242
60	U	0	2313800054	3629600054	1621700054	7646000053			257242
		1	1526800054	1476720054	1578120054	4771600053			258242
		2	1551840054	1676720054	1716200054	1751680054			259242
65	U	0	2639025054	4133310054	1666900053	9669700053			267242
		1	1900210054	1707785054	2366610054	2670400053			268242
		2	1900210054	1666900053	2070750054	2070635054			269242
80	U	0	3134400054	4754550054	1390550054	2072675054			277242
		1	2206600054	1591406054	2710075054	1275500053			28242
		2	2787225054	1629975054	3122975054	305825054			279242
92.5	U	0	1265000054	1120000054	6850000053	1027500054			287242
		1	2525000054	1027500054	1767500054	4160000053			288242
		2	1760000054	9600900053	1692500054	1360000054			289242

STEADY STATE DATA

WH.	BEAM	BEND	PER	CENT	RADIUS	COEF	STEADY	
WH.	BEAM	BEND	.15R		0001200	0	4809250054	717442
						1	5028750054	718442
						2	6760750054	719442
WH.	BEAM	BEND	.20R		0001200	0	1432020054	727442
						1	6494100053	728442
						2	2125800053	729442

HARMONIC ANALYSIS

PER	CENT	RADIUS	COEF	STEADY	COSINE	SINE	MAX	PSI							
15	PER	CENT	RADIUS	COEF	STEADY	COSINE	SINE	MAX	PSI						
										1	2029843754	1019130071	2029843754	2139801649	290242
										2	1650245854	1077501054	151262654	1046624753	291242
										3	1013025753	5760088754	5067505453	8541892152	292242
										4	2281147053	6390059252	2322986453	4712335052	293242
										5	1218778054	3530217753	1268870254	3276924552	294242
28	PER	CENT	RADIUS	COEF	STEADY	COSINE	SINE	MAX	PSI						
										1	3459583353	1063201653	1625133053	3424452053	300242
										2	2944165053	2527834053	3517906053	1662714653	301242
										3	147204052	4857874553	406010553	8942143252	302242
										4	147210852	7649156752	7789529152	647766052	303242
										5	968257053	327132653	6006007453	1075438752	304242
36	PER	CENT	RADIUS	COEF	STEADY	COSINE	SINE	MAX	PSI						
										1	1586169153	7791760052	1767214753	3338362853	310242
										2	1637492852	5672470052	590401752	3694698052	311242
										3	1801249353	5731249853	6007638753	9581572752	312242
										4	1307997853	2836222352	1346349153	8694992252	313242
										5	4369917553	2907925753	5249020053	2927171052	314242
45	PER	CENT	RADIUS	COEF	STEADY	COSINE	SINE	MAX	PSI						
										1	1888256853	1992904753	745333053	2265444953	320242
										2	3243000753	4780464252	2778045553	8580724952	321242
										3	1587000053	5140499753	6342767553	9482992552	322242
										4	4139788752	4985135752	5476690452	7977665052	323242
										5	1768742054	123396853	2156810453	2901994252	324242

		HARMONIC		ANALYSIS		
60	PER CENT	RED. RAD. BEAM BENDING				
COEF		COSINE	SINE	MAX	PSI	
STEADY		1720446754-				330242
1		5683104553-	1320170353-	5034426053	1930777353	331242
2		5591831753-	7032700052-	3660033353	9553910352	332242
3		1874018352-	6409135253-	6311917653	8943288052	333242
4		1561649752	1244248853-	1254010653	6928844052	334242
5		3621701553	1428365253-	3693192653	6769523952	335242

65	PER CENT	RADIUS				
COEF		COSINE	SINE	MAX	PSI	
STEADY		1955297154-				340242
1		6674924753-	1253378353-	6791581353	1906348353	341242
2		4601390053-	4490095052-	4623245253	9278665452	342242
3		5832766752-	7128918853-	7152740453	8844086152	343242
4		4536570052	1571520553-	1635689953	7152551452	344242
5		5897220853	2375889653-	6357834953	6761126652	345242

80	PER CENT	RADIUS				
COEF		COSINE	SINE	MAX	PSI	
STEADY		2391831754-				350242
1		9206443253-	2105700051	9206443253	1796111353	351242
2		3536039353-	1447633753	3620892253	7886805452	352242
3		1414418353-	4436128353-	4656158653	8410520352	353242
4		8333333346-	2004418753-	2004418753	6749994852	354242
5		8499226553	6771683353-	1086704054	6429084452	355242

92.5	PER CENT	RADIUS				
COEF		COSINE	SINE	MAX	PSI	
STEADY		1316458354-				360242
1		1523074553-	1812430753-	1548843053	1695380553	361242
2		7895620852-	6170428352-	1166156653	7432743152	362242
3		2375010052-	2216608753-	2227357553	8716149652	363242
4		5145823752	1026406753-	1149763253	7414544852	364242
5		4373091253	2735410353-	5158136953	6559474452	365242

		HARMONIC		ANALYSIS		
WH.	BEAM BEND .15R					
COEF		COSINE	SINE	MAX	PSI	
STEADY		5984062554-				750442
1		1240702654-	3373867553	1285564754	1647849753	751442
2		1573083854	7603703553-	1747213754	1671013053	752442
3		3658403552-	4207076253	4222952653	1165661652	753442
4		1097501053-	3168207553	3352911453	2727666652	754442
5		1167334954	7398041553-	1382026654	6552706452	755442

WH.	BEAM BEND .20R					
COEF		COSINE	SINE	MAX	PSI	
STEADY		7939233353				760442
1		2622987553-	1810608253	3187219253	1453632853	761442
2		5051766053	7610575353-	3193516753	1712599153	762442
3		1387165553-	4161500753	4386606453	36144497852	763442
4		5548697852	3000000046-	5548697852	8949999452	764442
5		6507054853	3675206553-	7376911453	6637895452	765442

PER CENT RADIUS	K	CHORD REF	BENDING BLADE		K E L E S		90°(120)K
			0°(120)K	30°(120)K	60°(120)K	90°(120)K	
15	0	7007000055	6872250055	6737500055	5390000055	67142	
	1	5390000055	6333250055	5659500055	4985750055	68142	
	2	5659500055	7276500055	7067000055	6196500055	69142	
28	0	5917750055	6182750055	5917750055	4946200055	77142	
	1	4769550055	5476150055	4416250055	4681225055	78142	
	2	4769550055	6359400055	5829450055	5652800055	79142	
60	0	2486970055	2878437555	2579080055	2210640055	87142	
	1	2026420055	2486970055	1911282555	2141557555	88142	
	2	2026420055	2807550055	2486970055	2579080055	89142	
80	0	1693260055	1610847555	1669742555	1552155055	97142	
	1	1528637555	1716777555	1481602555	1505120055	98142	
	2	1434567555	1740795055	1693260055	1646225055	99142	
WH. CHORD BEND .15R	0	5576340055	5467000055	5704360055	7544660055	737442	
	1	6669740055	6347200055	6977760055	6977760055	738442	
	2	6779080055	5467000055	5467000055	6123040055	739442	
WH. CHORD BEND .28R	0	4894980055	4966950055	5036950055	6334660055	777442	
	1	6046740055	5614830055	5774750055	6262695055	784442	
	2	5902770055	5036950055	4694780055	5758600055	749442	

HARMONIC ANALYSIS

COEF STEADY	15 PER CENT	RED BLADE RADIUS	CHORD		BENDING		PSI
			COSINE	SINE	MAX	PSI	
1		6207729255			7368133954	3423195253	100142
2		7020099854	2237765854-	4724751754-	1029173154	1254465353	101142
3		3368818353-	6512921354-	1572084754	6889260054	3634184452	103142
4		2245825754-	194220055-	5049396753	1572084754	8044677052	104142
5		1235214254	1963242354	6818095053-	2078264854	6816970552	105142

COEF STEADY	28 PER CENT	RADIUS	CHORD		BENDING		PSI
			COSINE	SINE	MAX	PSI	
1		5409906355			6857588154	3505682053	110142
2		6764887854	1123777254-	2549711753-	1061540454	9694887752	111142
3		1040464854-	4563464554-	4712970554	4712970554	3482340152	112142
4		1177660054-	5049396753-	2049396753	2049396753	6750013552	113142
5		4666666748	1920416754	1378754054-	2364098754	6486474752	114142

COEF STEADY	60 PER CENT	RADIUS	CHORD		BENDING		PSI
			COSINE	SINE	MAX	PSI	
1		2385265355			5018196854	3537687853	120142
2		3000465254	5275985053-	6647416752	2396807353	8194911152	121142
3		2302781753-	2072477754-	197020354	197020354	3646147452	122142
4		7292011753-	194220055-	5049396753-	3661111453	5325110252	123142
5		5070133553-	6077800053	5234976753-	6491339653	6313152152	124142

COEF STEADY	80 PER CENT	RADIUS	CHORD		BENDING		PSI
			COSINE	SINE	MAX	PSI	
1		1622707655			1040917554	5671748351	130142
2		1025373054-	1018352254-	2176120053-	2570733353	1462052453	131142
3		9798740052	9407018353-	9915860253	9915860253	3614494052	132142
4		3135648353-	1018353353-	1175881353	1175881353	2999975252	133142
5		5879230052-	5664836753	1018329553-	1611383153	6872436652	134142

HARMONIC ANALYSIS

COEF STEADY	WH. CHORD BEND .15R	COSINE	SINE	MAX	PSI
1		6277938355			770442
2		6625350354-	2842477854-	7209375354	1567790453
3		6378258353-	7890953353	1014639454	6447431152
4		1093405754	5649227754-	5754064054	4365137952
5		1184520554	7890871753-	1423287554	8158245352

COEF STEADY	WH. CHORD BEND .28R	COSINE	SINE	MAX	PSI
1		5560841355			780442
2		5141697254-	1175414354	5322482054	1850239153
3		2399585053-	2078021753-	3174300253	1104461653
4		1559680354	4529044854-	4818451354	7629534052
5		3000000048	2077971753-	2077971753	6750021052

		HARMONIC ANALYSIS				
		0	1	2	3	4
R/B	TORS	.15R				
		0	1	2	3	4
		3706680054-	3088900054-	3088900054-	3088900054-	487342
		3706680054-	2471120054-	2471120054-	3088900054-	488342
		3088900054-	3088900054-	3706680054-	3088900054-	489342
R/B	TORS	.50R				
		0	1	2	3	4
		1369440054-	1293360054-	1293360054-	1217280054-	497342
		1407480054-	1293360054-	9890400053-	1369440054-	498342
		1141200054-	1217280054-	1293360054-	1217280054-	499342

HARMONIC ANALYSIS

		HARMONIC ANALYSIS				
		COSINE	SINE	MAX	PSI	
R/B	TORS	.15R				
COEF						
STEADY		3140381754-				560342
1		2950955053-	5148136052	2995524653	1701039853	561342
2		1544454353	8916883382	1783380853	1499996252	562342
3		2059269853-	1029627553	2302331253	5114502552	563342
4		5148136752	2675069053-	2724156353	7022332952	564342
5		1167584353-	5148155052	1276043953	3124123852	565342

		HARMONIC ANALYSIS				
		COSINE	SINE	MAX	PSI	
R/B	TORS	.50R				
COEF						
STEADY		1258490054-				570342
1		4460760052-	3843434052-	5888154652	2207485153	571342
2		9910188351	1647180052	1902009152	2999975252	572342
3		5706013352-	1333333347-	5706013352	6000004352	573342
4		6022986052	6039675052-	8529597552	7873018352	574342
5		8853265052-	3843414352	9651535352	3130663652	575342

	STEADY	SIN	COS	MAX	PSI	
RED BLADE PITCH	1	10112000	10112000	10112000	10112000	867542
	2	1835172052	1753664052	1681761252	1602232252	868542
	3	1613877952	1535176052	1453880652	1375179652	869542
RED BLADE FLAP	1	1064000050	9576000050	8508000050	7440000050	877542
	2	2120000051	1874800051	1686700051	1498600051	878542
	3	9576000050	8176000050	7096000050	6016000050	879542
VERTICAL ACCEL	1	1019225051	1027405051	9876200050	9661050050	887542
	2	9391000050	9386800050	9380000050	9373200050	888542
	3	8756400050	8695500050	8634600050	8573700050	889542
FORE-AFT ACCEL	1	1852100049	1760000049	1673000049	1586000049	897542
	2	5288000049	5165000049	5042000049	4919000049	898542
	3	6610000049	6480000049	6350000049	6220000049	899542
LATERAL ACCEL	1	4732000049	4630000049	4528000049	4426000049	907542
	2	6760000049	6660000049	6560000049	6460000049	908542
	3	6760000049	6660000049	6560000049	6460000049	909542
		HARMONIC	ANALYSIS			
RED BLADE PITCH	COEF	COSINE	SIN	MAX	PSI	
STEADY	1	1638143652				910542
	2	1839553851	4734937250	1679514351	3455656351	911542
	3	7764898349	3362183349	6461559649	7629374952	912542
	4	2329418350	1358788350	600761550	7077147652	913542
	5	388222049	330203349	1332653749	5522319952	914542
	6	2396900049	7003655049	740168549	9777685852	915542
RED BLADE FLAP	COEF	COSINE	SIN	MAX	PSI	
STEADY	1	3325000050				920542
	2	525253050	3790702751	1066147651	2063476053	921542
	3	310331549	7676816749	3176921849	674897851	922542
	4	7093321749	3103311850	1183366150	2570833752	923542
	5	1990030749	7676833349	4063244749	773264951	924542
	6	1351202550	9230733349	1354358850	7616172750	925542
VERTICAL ACCEL	COEF	COSINE	SIN	MAX	PSI	
STEADY	1	9842675050				930542
	2	1192136849	5771686749	1173438149	3573241353	931542
	3	2435987749	1673124849	253535149	1721740152	932542
	4	5044898348	5045100048	430677148	4497957152	933542
	5	3592575048	1757940048	3761728348	8341604352	934542
	6	1263687048	2074813348	4433623348	2425653552	935542
		HARMONIC	ANALYSIS			
FORE-AFT ACCEL	COEF	COSINE	SIN	MAX	PSI	
STEADY	1	1101666749				940542
	2	4991750749	1977550049	4991789548	1797730253	941542
	3	1569875249	2702917749	3306377049	5062676352	942542
	4	4957436048	5855027248	6780460748	1267498452	943542
	5	7987087348	1431108248	8114285948	4753958552	944542
	6	1686747048	5836365048	4190577548	1325290452	945542
LATERAL ACCEL	COEF	COSINE	SIN	MAX	PSI	
STEADY	1	1854000049				950542
	2	7507103449	7515773449	1212207049	3087778353	951542
	3	1042185449	2439707449	001111449	6044780451	952542
	4	2070005748	533301047	301111449	1170866253	953542
	5	3048100449	233114749	650872449	1502449552	954542
	6	670547248	177773449	526666748	746184351	955542

		COEFF	LOAD	MAX	PSI	
LIFT LINE	LOAD	1	470000000	470000000	470000000	1037642
		2	470000000	470000000	470000000	1037642
		3	470000000	470000000	470000000	1037642
		4	470000000	470000000	470000000	1037642
RT. CYCLIC	LOAD	1	470000000	470000000	470000000	1047642
		2	470000000	470000000	470000000	1047642
LT. CYCLIC	LOAD	1	470000000	470000000	470000000	1097642
		2	470000000	470000000	470000000	1097642
		3	470000000	470000000	470000000	1097642
COLLECTIVE	LOAD	1	198400000	198400000	198400000	1067642
		2	198400000	198400000	198400000	1067642
		3	198400000	198400000	198400000	1067642
STABILIZER	BAR	1	137400000	137400000	137400000	1077642
		2	137400000	137400000	137400000	1077642
		3	137400000	137400000	137400000	1077642

HARMONIC ANALYSIS

		COEFF	LOAD	MAX	PSI	
LIFT LINE	LOAD	1	470000000	470000000	470000000	1080642
		2	470000000	470000000	470000000	1081642
		3	470000000	470000000	470000000	1082642
		4	470000000	470000000	470000000	1083642
		5	470000000	470000000	470000000	1084642
		6	470000000	470000000	470000000	1085642

		COEFF	LOAD	MAX	PSI	
RT. CYCLIC	LOAD	1	470000000	470000000	470000000	1090642
		2	470000000	470000000	470000000	1091642
		3	470000000	470000000	470000000	1092642
		4	470000000	470000000	470000000	1093642
		5	470000000	470000000	470000000	1094642
		6	470000000	470000000	470000000	1095642

		COEFF	LOAD	MAX	PSI	
LT. CYCLIC	LOAD	1	470000000	470000000	470000000	1100642
		2	470000000	470000000	470000000	1101642
		3	470000000	470000000	470000000	1102642
		4	470000000	470000000	470000000	1103642
		5	470000000	470000000	470000000	1104642
		6	470000000	470000000	470000000	1105642

HARMONIC ANALYSIS

		COEFF	LOAD	MAX	PSI	
COLLECTIVE	LOAD	1	198400000	198400000	198400000	1110642
		2	198400000	198400000	198400000	1111642
		3	198400000	198400000	198400000	1112642
		4	198400000	198400000	198400000	1113642
		5	198400000	198400000	198400000	1114642
		6	198400000	198400000	198400000	1115642

		COEFF	LOAD	MAX	PSI	
STABILIZER	BAR	1	137400000	137400000	137400000	1120642
		2	137400000	137400000	137400000	1121642
		3	137400000	137400000	137400000	1122642
		4	137400000	137400000	137400000	1123642
		5	137400000	137400000	137400000	1124642
		6	137400000	137400000	137400000	1125642

			STEADY	SIN	COS	MAX	PSI	
R F	PYLON		0	80112000	101112010	60112000	701112011	
			1	1475000049	9475000047	1000000049	6475000049	447342
			2	8217500047	4175000049	1600000047	5675000047	448342
			3	6342500047	7000000047	1000000047	6087500047	449342
R A	PYLON		0	1070000050	1270000050	1170000050	1170000050	457342
			1	1140000050	1290000050	1305000050	1270000050	458342
			2	1125000050	1050000050	1020000050	1170000050	459342
L F	PYLON		0	1400000049	1600000049	2400000049	2100000049	467342
			1	1700000049	1700000049	2000000049	2400000049	468342
			2	2700000049	1000000048	1200000049	2500000048	469342
L A	PYLON		0	1067500050	9455000047	7015000049	5775000049	477342
			1	7015000047	9150000049	1306500050	9657500049	478342
			2	6405000049	5185000049	7625000047	6672500049	479342

HARMONIC ANALYSIS

				COSINE	SINE	MAX	PSI	
R F	PYLON							
COEF								
STEADY				4879791749				520342
1				-4620747540	1405591747	4027305140	1017427523	521342
2				1413542549	9470350240	1400701740	9127425152	522342
3				2450340740	7309711947	1306000040	1349330251	523342
4				6022917548	1005778947	1241640047	6024561352	524342
5				7080770347	3946727540	1635421048	5149463352	525342

				COSINE	SINE	MAX	PSI	
R A	PYLON							
COEF								
STEADY				1142500050				530342
1				3540063340	5131700048	6234196048	124001655	531342
2				1874982548	2301571740	1031079548	2589353352	532342
3				5000116747	4909400047	7071079647	1050004153	533342
4				6624971040	1512533340	6790120140	4022131952	534342
5				7900811547	3604370047	6117660047	500617851	535342

				COSINE	SINE	MAX	PSI	
L F	PYLON							
COEF								
STEADY				9125000048				540342
1				7930000248	5424041040	7600077440	3290303153	541342
2				5875061048	1017570049	1175000149	1500000053	542342
3				4999996747	7500612547	7010000047	1070978052	543342
4				1062500149	801073440	1330000040	9253610051	544342
5				5693873347	282507040	2087758140	5627831952	545342

				COSINE	SINE	MAX	PSI	
L A	PYLON							
COEF								
STEADY				8057083349				550342
1				1152874540	1770544540	1715077040	4770620052	551342
2				2363748849	5000000041	2363748849	6059842344	552342
3				1016661248	5004250047	1136654440	6885494052	553342
4				1270826048	3521844040	3744111440	2746038352	554342
5				2914806348	1270833448	1170882048	4712815551	555342

				COSINE	SINE	MAX	PSI	
RED	PITCH LINK							
COEF								
STEADY				1392500053	8355000052	5770000052	8355000052	507342
1				1114000054	5770000052	5770000052	8355000052	508342
2				5770000052	2785000052	2785000052	1392500053	509342
WHITE	PITCH LINK							
COEF								
STEADY				2916000052	8748000052	2916000052	8748000052	517342
1				8748000052	8748000052	8748000052	5832000052	518342
2				8748000052	8748000052	1166400053	8748000052	519342

HARMONIC ANALYSIS

				COSINE	SINE	MAX	PSI	
RED	PITCH LINK							
COEF								
STEADY				7194583352				580342
1				2830524252	1438024852	3174867452	2069324853	581342
2				1392497852	8059601751	1607918652	7499998752	582342
3				3713333752	2320833052	4378949752	4933154252	583342
4				9283341351	1000000046	9283341351	6949998852	584342
5				4186441751	9738540051	1060027452	2265241152	585342

				COSINE	SINE	MAX	PSI	
WHITE	PITCH LINK							
COEF								
STEADY				6318000052				590342
1				6511196750	1740329352	1740896052	8900269252	591342
2				1214999552	4208887051	1285874852	8044664052	592342
3				1943499252	1944001252	2749231552	1049999953	593342
4				1214999652	4208887551	1285834552	4776644951	594342
5				9068876351	1310330352	1593552752	6093747152	595342

IBM TAB NO. 6
TYPE I STEADY STATE CONDITION NO. 55
HIGH ALTITUDE STALL THRESHOLD
TRUE AIRSPEED 91 KNOTS

PER CENT CHORD	K	40		DELTA PER CENT	PRESSURE RADIUS		
		0+11201K	D E G 30+11201K	R E E S 60+11201K	90+11201K		
4	0	2351030051	3123010051	3070375051	3140555051	17155	
	1	2754565051	2824745051	3509000051	1035155051	18155	
	2	3859900050	3859900050	6667100050	1649230051	19155	
17	0	1199880051	1472580051	1445310051	1563480051	27155	
	1	1445310051	1590750051	1654380051	1027170051	28155	
	2	3817800050	3454200050	4545000050	9271800050	29155	
34	0	6540000050	8760000050	8400000050	8160000050	37155	
	1	8040000050	9960000050	1038000051	9900000050	38155	
	2	3420000050	2820000050	2580000050	5340000050	39155	
63	0	2436450050	3490050050	2919350050	3204700050	47155	
	1	3402250050	4499750050	4236350050	6782550050	48155	
	2	3380300050	1229200050	2524250050	2458400050	49155	
88	0	1205100050	1266900050	9888000049	1266900050	57155	
	1	1390500050	2132100050	2858250050	2193900050	58155	
	2	2657400050	1205100050	1884900050	1266900050	59155	

PER CENT CHORD	K	55		DELTA PER CENT	PRESSURE RADIUS		
		0+11201K	D E G 30+11201K	R E E S 60+11201K	90+11201K		
2	0	5414400051	5806080051	5230080051	4216320051	147255	
	1	3179520051	6359040051	6912000051	4308480051	148255	
	2	1797120051	8294400050	1751040051	4147200051	149255	
9	0	3636000051	4045050051	3908700051	3522375051	157255	
	1	2772450051	4431375051	4249575051	3226950051	158255	
	2	1749825051	1681650051	1545300051	2954250051	159255	
17	0	2070310051	2456300051	2456300051	2193125051	167255	
	1	1789590051	2789655051	2491390051	1719410051	168255	
	2	1087790051	1017610051	7193450050	1614140051	169255	
23	0	1653540051	1991360051	1849120051	1564640051	177255	
	1	1333500051	2258060051	1991360051	1422400051	178255	
	2	1137920051	9423400050	5689600050	1297940051	179255	
34	0	1379400051	1650000051	1544400051	1432200051	187255	
	1	1240800051	1834800051	1636800051	1161600051	188255	
	2	1062600051	9042000050	4818000050	1135200051	189255	
63	0	4497350050	5820100050	4721200050	4700850050	197255	
	1	4599100050	6552700050	5779400050	4904350050	198255	
	2	5636950050	2889700050	2096050050	4049650050	199255	
90	0	8410500049	1054650050	9078000049	9612000049	207255	
	1	1094700050	1388400050	1335000050	2042550050	208255	
	2	3511050050	8410500049	5073000049	1041300050	209255	

PER CENT CHORD	K	75		DELTA PER CENT	PRESSURE RADIUS		
		0+11201K	D E G 30+11201K	R E E S 60+11201K	90+11201K		
2	0	254750051	6839650051	5589645051	4268885051	377355	
	1	4292470051	6037760051	7452860051	8113240051	378355	
	2	7641540051	4599075051	4905680051	8042485051	379355	
9	0	4639515051	6270760051	5147955051	3474340051	387355	
	1	3220120051	5211510051	6207205051	4152260051	388355	
	2	3495525051	2076130051	2626940051	4321740051	389355	
17	0	2613720051	2798385051	3565455051	2471670051	397355	
	1	1917675051	2372235051	2826795051	2698950051	398355	
	2	2159160051	1079580051	1463115051	2954640051	399355	
23	0	2396675051	2992605051	3420120051	2668730051	407355	
	1	2150530051	2720550051	2888965051	2565090051	408355	
	2	1995070051	1140040051	1360275051	2914875051	409355	
34	0	1647780051	1846650051	1619370051	1193220051	417355	
	1	1136400051	1661985051	1931880051	1690395051	418355	
	2	1207425051	6818400050	6534300050	1818240051	419355	
63	0	7884300050	7339450050	4262650050	4583150050	427355	
	1	5288250050	7211250050	7820200050	6602300050	428355	
	2	6634350050	5128000050	4999800050	7627900050	429355	
90	0	3017500050	1082750050	3195000049	5502500049	437355	
	1	8875000049	1650750050	1917000050	2201000050	438355	
	2	4260000050	2591500050	2130000050	3408000050	439355	

PER CENT CHORD	K	DELTA PER CENT			PRESSURE RADIUS	
		85	D E G	PER CENT	R L E S	90+(120)K
		0+(120)K	30+(120)K	60+(120)K	90+(120)K	
2	0	8299000051	6556210051	5186675051	3153620051	607455
	1	2406710051	4730430051	7137140051	7884050051	608455
	2	7842555051	6639200051	6058270051	7552090051	609455
4	0	8666775051	6844530051	5244510051	3244485051	617455
	1	2000025051	4666725051	7511205051	8355660051	618455
	2	7288980051	4666725051	5200065051	6355635051	619455
9	0	6575040051	6301080051	4725810051	2945070051	627455
	1	2294415051	4040910051	6780510051	6403815051	628455
	2	5616180051	3184785051	3458745051	5958630051	629455
13	0	4143850051	5417100051	3958650051	2639100051	637455
	1	1782550051	3819750051	5903250051	3472500051	638455
	2	3958650051	2453900051	2245550051	4305900051	639455
17	0	3529440051	5980440051	4852980051	3431400051	647455
	1	2451000051	4558860051	4313760051	3823560051	648455
	2	3529440051	2156880051	2156880051	3970620051	649455
23	0	2302650051	4364070051	5241270051	4100910051	657455
	1	3245640051	3190815051	2807040051	2763180051	658455
	2	2697390051	1666680051	1458345051	3223710051	659455
34	J	1376250051	1835000051	3163725051	1642325051	667455
	1	6606000050	1431300051	1890050051	1890050051	668455
	2	1761600051	1367075051	9450250050	2183650051	669455
47.7	0					677455
	1					678455
	2					679455
63	0	6330800050	5521600050	9520000049	1047200050	687455
	1	1047200050	4760000050	7425600050	7616000050	688455
	2	7473200050	9282000050	5922450050	1256640051	689455
77	0	3981600050	1042800050	2180400050-	1896000050-	697455
	1	1232400050-	9480000049	2796600050	3555000050	698455
	2	4360800050	7394400050	4882200050	7062600050	699455
90	0	2640400050	4715000049-	2451800050-	2451800050-	707455
	1	2074600050-	6129500049-	6601000049	1414500050	708455
	2	2640400050	5705150050	2546100050	3206200050	709455

PER CENT CHORD	K	DELTA PER CENT			PRESSURE RADIUS	
		90	D E G	R E S	60°(120)K	90°(120)K
		0°(120)K	30°(120)K	60°(120)K	90°(120)K	
2	0	9523800051	7407400051	5608460051	3756610051	797555
	1	2645500051	5238090051	6148140051	9100520051	798555
	2	9629620051	8730190051	8253960051	1015872052	799555
9	0	7419685051	5253690051	3840715051	2027740051	807555
	1	9677850050	3225990051	5622370051	6774495051	808555
	2	5991050051	4239670051	3318120051	5991050051	809555
17	0	5029450051	5088620051	3905220051	2485140051	817555
	1	1656760051	4319410051	6035340051	3905220051	818555
	2	4141900051	2758500051	2603480051	4201070051	819555
23	0	2965710051	6201030051	5588280051	3970620051	827555
	1	2916690051	5122590051	3284340051	2965710051	828555
	2	3137280051	2254920051	1715700051	3088260051	829555
34	0	1314520051	2148320051	4370720051	3296560051	837555
	1	6296800050	9074800050	1629760051	1740880051	838555
	2	1870520051	1500120051	1037120051	2037200051	839555
63	0	1069900050	3374300050	2551300050	7407000049-	847555
	1	4938000049	3868100050	6254600050	7242400050	848555
	2	7677800050	8230000050	6254600050	1193350051	849555
90	0	3097500049	3451500050-	6903000050-	5133000050-	857555
	1	3363000050-	1106250050-	8407500049	1681500050	858555
	2	2655000050	7876500050	5177250050	1008900051	859555

PER CENT CHORD	K	DELTA PER CENT			PRESSURE RADIUS	
		95	D E G	R E S	60°(120)K	90°(120)K
		0°(120)K	30°(120)K	60°(120)K	90°(120)K	
2	0	7788150051	5384400051	3557550051	1874925051	967655
	1	8653500050	3124875051	5384400051	6634350051	968655
	2	8124675051	8076600051	6730500051	8605425051	969655
9	0	6937525051	4497430051	2870700051	1339660051	977655
	1	7176750050	2679320051	4593120051	6124160051	978655
	2	5789245051	5119415051	2775010051	6124160051	979655
17	0	4999850051	4526180051	3052540051	1789420051	987655
	1	9473400050	2894650051	4684070051	3263060051	988655
	2	3263060051	3052540051	1368380051	3999880051	989655
23	0	3221875051	5155000051	4681050051	9279000050	997655
	1	2062000050	4046675051	3093000051	2422850051	998655
	2	2525950051	2371300051	1185650051	3299200051	999655
34	0					1007655
	1					1008655
	2					1009655
63	0	3564900050	2097000050	1048500050-	8388000049-	1017655
	1	9087000049	3634800050	6430800050	7129800050	1018655
	2	7409400050	8108400050	5032800050	1062480051	1019655
90	0	1370250050-	8700000049-	2740500050-	5872500049-	1027655
	1	2175000048-	4132500049	9135000049	8265000049	1028655
	2	1022250050	2240250050	2523000050	3153750050	1029655

		BLADE PER CENT		LOADING RADIUS		
		D E G	R E F S			
40						
K	0+(120)K	30+(120)K	60+(120)K	90+(120)K		
0	9202893051	1209079452	1145455252	1190171352		17055
1	1125186752	1304602952	1440926452	1073246452		18055
2	4975439051	3022022351	4512789951	7373610751		19055
		BLADE PER CENT		LOADING RADIUS		
		D E G	R E F S			
55						
K	0+(120)K	30+(120)K	60+(120)K	90+(120)K		
0	1849616452	2152716252	1996122352	1796193252		27055
1	1509994652	2399898452	2257775152	1657759452		28055
2	1265380952	9016361451	7025184051	1510242252		29055
		BLADE PER CENT		LOADING RADIUS		
		D E G	R E F S			
75						
K	0+(120)K	30+(120)K	60+(120)K	90+(120)K		
0	2597216152	2740975852	2394525352	1807622652		37055
1	1703581752	2441051752	2846918452	247328052		38055
2	2172557052	1316666452	1436696052	2672814652		39055
		BLADE PER CENT		LOADING RADIUS		
		D E G	R E F S			
85						
K	0+(120)K	30+(120)K	60+(120)K	90+(120)K		
0	2808244552	3131684752	2946533952	1862291952		47055
1	1216522752	2281016152	3073223152	2954750352		48055
2	2843081652	2231173152	1859576652	3285356352		49055
		BLADE PER CENT		LOADING RADIUS		
		D E G	R E F S			
90						
K	0+(120)K	30+(120)K	60+(120)K	90+(120)K		
0	2828912152	2901395952	2942863452	1896460752		57055
1	8061234551	2053714452	3035585952	3067351252		58055
2	3108942652	2735280852	2183893252	3674393052		59055
		BLADE PER CENT		LOADING RADIUS		
		D E G	R E F S			
95						
K	0+(120)K	30+(120)K	60+(120)K	90+(120)K		
0	2738066152	2460370552	1598752452	5881917051		67055
1	3605182151	1847988852	2504530252	2533745052		68055
2	2634290452	2584112052	1589857552	3223062352		69055

BLADE 0 LOADING AZIMUTH					BLADE 270 LOADING AZIMUTH				
SPAN	THRUST	PER	INCH	SPAN	THRUST	PER	INCH		
40		9202893051		40		3092022351			
55		1849616452		55		9016381451			
75		2597216152		75		1316666452			
85		2808244552		85		2231173152			
90		2828912152		90		2735280852			
95		2738066152		95		2584112052			

BLADE 30 LOADING AZIMUTH					BLADE 300 LOADING AZIMUTH				
SPAN	THRUST	PER	INCH	SPAN	THRUST	PER	INCH		
40		1209079452		40		4512789951			
55		2152716252		55		7025184051			
75		2740975852		75		1436696052			
85		3131684752		85		1859576652			
90		2901395952		90		2183893252			
95		2460370552		95		1589857552			

BLADE 60 LOADING AZIMUTH					BLADE 330 LOADING AZIMUTH				
SPAN	THRUST	PER	INCH	SPAN	THRUST	PER	INCH		
40		1145455252		40		7373810751			
55		1996122352		55		1510242252			
75		2394525352		75		2672814652			
85		2946533952		85		3285356352			
90		2942863452		90		3674393052			
95		1598752452		95		3223062352			

BLADE 90 LOADING AZIMUTH					BLADE 180 LOADING AZIMUTH				
SPAN	THRUST	PER	INCH	SPAN	THRUST	PER	INCH		
40		1190171352		40		1440926452			
55		1796193252		55		2257775152			
75		1807622652		75		2846918452			
85		1862291952		85		3073223152			
90		1896460752		90		3035585952			
95		5881917051		95		2504530252			

BLADE 120 LOADING AZIMUTH					BLADE 210 LOADING AZIMUTH				
SPAN	THRUST	PER	INCH	SPAN	THRUST	PER	INCH		
40		1125186752		40		1073246452			
55		1509999652		55		1657759452			
75		1703581752		75		2473328052			
85		1216522752		85		2954750352			
90		8061234551		90		3067351252			
95		3605182151		95		2533745052			

BLADE 150 LOADING AZIMUTH					BLADE 240 LOADING AZIMUTH				
SPAN	THRUST	PER	INCH	SPAN	THRUST	PER	INCH		
40		1304602952		40		4975439051			
55		2399998452		55		1265380952			
75		2441093752		75		2172557052			
85		2281016152		85		2843081652			
90		2053714452		90		3108942652			
95		1847988852		95		2634290452			

		HARMONIC		ANALYSIS		
		40		BLADE	LOADING	
				PER	RADIUS	
COEF	COSINE	SINE	MAX	CENT	PSI	
STEADY	9503636751					70055
1	1512047851-	3962043351	4240763651		1108885353	71055
2	2357106351	4429364750	2398362551		5321322151	72055
3	8244006350-	2965232750-	8761066050		6659427252	73055
4	1478377250	2108714250	2911414550		1487242352	74055
5	2667338550-	1462796750	3042115950		3025183552	75055
				BLADE	LOADING	
				PER	RADIUS	
				CENT		
COEF	COSINE	SINE	MAX	PSI		
STEADY	1666663352					80055
1	1314057251-	4865087751	5039427051		1051148953	81055
2	4221510351	1370081251	4438273551		8990358251	82055
3	5523638850-	8169305050	9861446650		4135480752	83055
4	3464245750	1658076851-	1693879851		7045028452	84055
5	1743675050-	4246203350	4590277250		2246503752	85055
				BLADE	LOADING	
				PER	RADIUS	
				CENT		
COEF	COSINE	SINE	MAX	PSI		
STEADY	2216994752					90055
1	2671753350	1553802051	1576605051		8024343352	91055
2	6050449051	2204323351	6439485551		1000894752	92055
3	3413068350-	7583806750-	8316439150		8192334052	93055
4	7489373350-	1914504751-	2055780951		6215875452	94055
5	1174374751-	1426006750	1183000851		3461533052	95055
				BLADE	LOADING	
				PER	RADIUS	
				CENT		
COEF	COSINE	SINE	MAX	PSI		
STEADY	2541121352					100055
1	1885480051	2083151551-	2809725151		3121485453	101055
2	5302578351	4667268751	7064045251		2067693352	102055
3	1685805751-	7642056750-	1850932551		6812854452	103055
4	4738811750-	3165975051-	3201243751		6537180452	104055
5	1524562051-	5254575050-	1612574051		3980341852	105055
				BLADE	LOADING	
				PER	RADIUS	
				CENT		
COEF	COSINE	SINE	MAX	PSI		
STEADY	2602909752					110055
1	2764997251	5115245851-	5814718451		2983930253	111055
2	4267117251	4766645351	6397593051		2408249352	112055
3	2363937851-	1579687351-	2843169751		7125086652	113055
4	2115005050	4071976051-	4077465051		6824332552	114055
5	1434423351-	6985396750-	1578367751		4093194552	115055
				BLADE	LOADING	
				PER	RADIUS	
				CENT		
COEF	COSINE	SINE	MAX	PSI		
STEADY	2055290452					120055
1	2429567351	7802639851-	6172146951		2872954253	121055
2	6685274551	3183698851	7404649451		1273249352	122055
3	6622700049	9124555050	9148557650		2861623052	123055
4	4843440050	3405790551-	3440057851		6952346752	124055
5	1328112051-	1264504051-	1833608051		4471891552	125055

TOTAL	BLADE	THRUST	
BLADE	POSITION	THRUST	
	0	3697715054	6055
	30	4100882754	306055
	60	3710836454	606055
	90	2431231454	906055
	120	2420522454	1206055
	150	3293649354	1506055
	180	4139382954	1806055
	210	3684467754	2106055
	240	3042729854	2406055
	270	2251652754	2706055
	300	2015442354	3006055
	330	3732092654	3306055

		HARMONIC ANALYSIS				
COEFF	COSINE	SINE	MAX	PSI		
STEADY	3310033854				130055	
1	3383521752-	3079788853	3098319153	9626949852	131055	
2	8191486053	3719593353	8796433653	1221093552	132055	
3	1507821753-	3363428352-	1544879553	6419161452	133055	
4	5038183351-	2970743353-	2971170553	6725709852	134055	
5	1362157553-	1823550051-	1362279653	3615339652	135055	

PER CENT RADIUS	K	BEAM		BENDING		
		0+1120JK	30+1120JK	60+1120JK	90+1120JK	
15	0	2442500054-	1552097055-	1704170055-	1334190055-	217255
	1	1704170055-	1673750055-	2190810055-	1004625055-	218255
	2	6092300054-	4246800054-	9419350054-	1207300054-	219255
28	0	1700275054-	4129175054-	2274350054-	4040850054-	227255
	1	4217500054-	2097700054-	5719025054-	5078500053-	228255
	2	4637250053	2318550054	4085650054	2870750053	229255
36	0	1288250054	3133000054-	1561000054-	3526000054-	237255
	1	3129500054-	1561000054-	4705000054-	1168000054-	238255
	2	4935000053	1583000054	2958500054	8732500053-	239255
45	0	1440000052	2345400054-	1558800054-	3628800054-	247255
	1	2759400054-	2014200054-	3628800054-	1393200054-	248255
	2	2539800054	2415600054	2664000054	5652000053-	249255
60	0	5049920054-	2801120054-	4675120054-	5124880054-	257255
	1	3925520054-	5574640054-	4225360054-	4675120054-	258255
	2	4221600053	1659000054	1264440054-	2014040054-	259255
65	0	7033030054-	2600140054-	6333100054-	5322090054-	267255
	1	4466620054-	6488640054-	4311080054-	5516515054-	268255
	2	4614650053-	1910520054	2600140054-	1861325054-	269255
80	0	6072000054-	2208600054-	7300500054-	4445950054-	277255
	1	3095825054-	6876175054-	3713025054-	6143250054-	278255
	2	1475675054-	9545500053	4947425054-	1591400054-	279255
92.5	0	4020000054-	9800000053-	3497500054-	1550000054-	287255
	1	1027500054-	3260000054-	1312500054-	2880000054-	288255
	2	6000000053-	4100000053-	2690000054-	1075000054-	289255

WH. BEAM BEND	K	D E G R E E S				
		0+1120JK	30+1120JK	60+1120JK	90+1120JK	
.15R	0	2094250055-	1216250055-	8101750054-	1995250054	717455
	1	9019250054	7485000053-	1736250054-	1304050055-	718455
	2	1490625055-	1117475055-	1710125055-	1622325055-	719455
.28R	0	4843960054-	8489200053-	3163000053	2646740054	727455
	1	5143640054	6492200053	2813200054	3179360054-	728455
	2	1514760054-	2014140054-	3512260054-	1348300054-	729455

HARMONIC ANALYSIS

15 PER CENT	COEF STEADY	RED BLADE RADIUS		BEAM BENDING		
		COSINE	SINE	MAX	PSI	
	1	8778958354-	1029148055-	1208593355	3016220253	290255
	2	6336814054	3687623554-	5013351954	1136773053	291255
	3	3396340754-	6589421753	1167009354	1014601353	292255
	4	4055321853	7902047853	8881671453	1570829052	293255
	5	2736990054	5079873353	2763732354	2102899151	294255

28 PER CENT	COEF STEADY	RADIUS		BEAM BENDING		
		COSINE	SINE	MAX	PSI	
	1	1177647954-	3153985554-	3501917254	2957569853	300255
	2	1521775254	6501795853-	4987403953	1103084953	301255
	3	7581226053-	3091377553	5888376252	3146958053	302255
	4	2576146053-	1657319553-	3063206853	5318862952	303255
	5	1878736354	3316887752	1879025154	2022890950	304255

36 PER CENT	COEF STEADY	RADIUS		BEAM BENDING			
		COSINE	SINE	MAX	PSI		
	1	1086125054-	1125644554	2348867554-	2604660154	2956050753	310255
	2	1125644554	7286870853-	2978046053-	7871927653	1011145953	311255
	3	7286870853-	3766251753	4093753253	5542485253	1579531852	312255
	4	3766251753	2538124253-	2410798053-	3500574553	5588155652	313255
	5	2538124253-	1494354854	2077426253	1508180254	1552784651	314255

45 PER CENT	COEF STEADY	RADIUS		BEAM BENDING			
		COSINE	SINE	MAX	PSI		
	1	8550000053-	7893064553	2581882354-	2699837254	2869989153	320255
	2	7893064553	1000499654-	1195121352-	1000570954	9034219352	321255
	3	1000499654-	3864002553	6072002653	7197203153	1717626752	322255
	4	3864002553	1519001053-	3226609753-	4774481053	5562995452	323255
	5	1519001053-	6498428053	1668824353	6671036453	2897392451	324255

		HARMONIC		ANALYSIS		
60	PER CENT	RED. BLADE RADIUS	BEAM	BENDING		
COEF		COSINE	SINE	MAX	PSI	
STEADY		3104083354-				330255
1		4439732553-	2391019854-	2431889854	2805190953	331255
2		1436732754-	1514736253	1444675554	8699079652	332255
3		2686068353	8495465353	909984453	2415141952	333255
4		8120726752-	1190150753-	1440605653	5892330152	334255
5		1124861154-	1513740753-	1135000754	3753286652	335255

65	PER CENT	RADIUS				
COEF		COSINE	SINE	MAX	PSI	
STEADY		3756968854-				340255
1		3014163353	2464914754-	2483275354	2769716753	341255
2		1539197454-	7296338352	1540925854	8864300652	342255
3		2138677053	9202760753	9448021653	2563899852	343255
4		6804789752	561266751-	6827877452	8882121352	344255
5		1876260354-	2311129553-	1890440754	3740443652	345255

60	PER CENT	RADIUS				
COEF		COSINE	SINE	MAX	PSI	
STEADY		437672954-				350255
1		3548870052-	1586079754-	1586476754	2687182253	351255
2		1382270554-	8908503352-	1385138254	9184376052	352255
3		5529084353	6750619853	8725917853	1689362152	353255
4		2571655353	1224919553	2848480153	6367297251	354255
5		2696908554-	4341085053-	2732422354	3764954252	355255

92.5	PER CENT	RADIUS				
COEF		COSINE	SINE	MAX	PSI	
STEADY		1941875054-				360255
1		2416310853-	3920070753-	4604944353	2383505453	361255
2		5937498253-	1371215352	5939081353	8933851952	362255
3		3087499553	1424997253	3400480853	8258367451	363255
4		1187494653	1234085653	1712632753	1152555852	364255
5		1420869354-	3549335252-	1421312654	3628619152	365255

		HARMONIC		ANALYSIS		
WH.	BEAM BEND .15R	COSINE	SINE	MAX	PSI	
COEF		8760250054-				750455
STEADY		6917566254-	8310042554	1081247155	1297751753	751455
1		3173603754-	3342460854-	4609100154	1132422253	752455
2		1829050052	5304565053	5307717453	2934172952	753455
3		7956877753	9663025053	1251742654	1263268752	754455
4		2703849354-	1194566354-	2955983354	4076726152	755455

		HARMONIC		ANALYSIS		
WH.	BEAM BEND .15R	COSINE	SINE	MAX	PSI	
COEF		4741850053-				760455
STEADY		1796879054-	2651142054	3202706454	1241283553	761455
1		8739151553-	8889778253-	1246599154	1127447953	762455
2		1367165453-	5548632052-	1494021653	6726700052	763455
3		1248450953	7207907052-	1443585553	8250012052	764455
4		1892984054-	3761889753-	1930001754	3824808052	765455

PER CENT RADIUS	K	CHORD RED		BENDING BLADE			
		0+11201K	30+11201K	D E G	R E E S	60+11201K	90+11201K
15	0	8893500055	7546000055	4312000055	3234000055	67155	
	1	9432500054	8085000054	3907750055	5120500055	68155	
	2	8354500055	9432500055	1064525056	1266650056	69155	
28	0	7684275055	6712700055	4239600055	3974625055	77155	
	1	1059900055	1766500055	3621325055	4769550055	78155	
	2	7242650055	8302550055	9185800055	1086397556	79155	
60	0	4167977555	3269905055	2233667555	2717245055	87155	
	1	9441275054	2118530055	2533025055	2878437555	88155	
	2	3039630055	3292932555	3868620055	5043022555	89155	
80	0	2539890055	2351750055	1928435055	2257680055	97155	
	1	1387532555	1998987555	2093057555	2281197555	98155	
	2	2257680055	2257680055	2539890055	3080792555	99155	
WH. CHORD BEND .15R	0	4482940055	4920300055	8419180055	9840600055	737455	
	1	1027796056	1312080056	9184560055	7872480055	738455	
	2	4810960055	2296140055	1968120055	1093400054-	739455	
WH. CHORD BEND .28R	0	4463070055	5038950055	6838575055	8494230055	747455	
	1	8278275055	1108569056	7918350055	6910560055	748455	
	2	4966965055	3311310055	2447490055	1223745055	749455	

HARMONIC ANALYSIS

COEF STEADY	15 PER CENT	RED BLADE RADIUS		CHORD BENDING		
		COSINE	SINE	MAX	PSI	
		6322020855				100155
1		3364228355	3802972255-	5077462955	3114969853	101155
2		1796659854	3889883353	1838286854	6108175951	102155
3		1122906754-	5389988354-	5505714754	8607726152	103155
4		4491626753	2722918354-	2759715854	6984174052	104155
5		7590620054-	1647229554	7767295354	3355123452	105155

COEF STEADY	28 PER CENT	RADIUS		CHORD BENDING		
		COSINE	SINE	MAX	PSI	
		5785287555				110155
1		2697639055	2923839555-	3978202455	3126957553	111155
2		3680123353	1274858353	3894685153	9553485251	112155
3		1766491354-	4710656754-	5030981954	8314800352	113155
4		1104059554	3442117854-	3614847454	7194591652	114155
5		4895139754-	2888113254	5683624854	2989191352	115155

COEF STEADY	60 PER CENT	RADIUS		CHORD BENDING		
		COSINE	SINE	MAX	PSI	
		3008926855				120155
1		9276537354	8454778054-	1255139155	3176534853	121155
2		3837912054	7976966753-	3919934854	1741292353	122155
3		8059590053-	326225254-	3360310054	8537417352	123155
4		1688682354	2127185554-	2715943454	7711114252	124155
5		2958101753-	2314116354	2332946254	1945690852	125155

COEF STEADY	80 PER CENT	RADIUS		CHORD BENDING		
		COSINE	SINE	MAX	PSI	
		2247881355				130155
1		3093932354	2981216854-	4296518554	3160629253	131155
2		1528634254	2715570053-	1552567554	1749633453	132155
3		6271310053-	1685418254-	1798312554	8319672152	133155
4		3919590053	1018335554-	1091164154	7276295352	134155
5		2326335053-	1295799854	1316516454	2003556752	135155

HARMONIC ANALYSIS

COEF STEADY	WH. CHORD BEND .15R	COSINE		SINE		
				MAX	PSI	
		6423725055				770455
1		3511121255-	3834131355	5198897555	1324820253	771455
2		2824608254	1104732954	3032960054	1068048652	772455
3		2333333348	4555835354	4555835354	2999994052	773455
4		2733645053	1736004554-	1757395754	6973718652	774455
5		1160313955	3936832054	1225281555	3748314951	775455

COEF STEADY	WH. CHORD BEND .28R	COSINE		SINE		
				MAX	PSI	
		5914767555				780455
1		2599403855-	2641426855	3705946055	1345406053	781455
2		2399493054	1039015254	2614788654	1170665552	782455
3		8398285053	4679027554	4753799554	2660815052	783455
4		1319736054	2078025554-	2461685054	7560481852	784455
5		7877832754	4179366054	8917810754	5989389951	785455

		D E G R E E S					
		(120)K	30+(120)K	60+(120)K	90+(120)K		
R/B	TORS	.15R	0 6795580054-	4324460054-	6177800054-	3397790054-	487355
			1 4633350054-	7722250054-	5251130054-	3397790054-	488355
			2 1235560054-	6177800053	1853340054-	9266700054-	489355

R/B	TORS	.50R	0 2130240054-	1065120054-	3119280054-	2206320054-	497355
			1 9890400053-	1749640054-	1597680054-	4564800053-	498355
			2 3043200053-	4184400053	3043200053	1902000054-	499355

HARMONIC ANALYSIS

		R E E S				
		(120)K	30+(120)K	60+(120)K	90+(120)K	
R/B	TORS	.15R				
COEF		COSINE	SINE	MAX	PSI	
STEADY		4453164254-				560355
1		7942701553-	1712391554-	1905792654	2453694153	561355
2		2445377754-	1203779854	2725611554	7689524552	562355
3		1029634053	7722248053	7790517953	2746845152	563355
4		7464845353	1471285954	1649824754	1577454752	564355
5		8091903352-	4968302553	5033767953	1985011552	565355

R/B	TORS	.50R				
COEF		COSINE	SINE	MAX	PSI	
STEADY		1233130054-				570355
1		3253722053-	1068485154-	1116927754	2530636153	571355
2		4120997353-	8784956752-	4213594053	9601696752	572355
3		1648400553	3613800353	3971999153	2182678352	573355
4		1458199253-	7027969353	7177652653	2543042752	574355
5		1057481753-	1174847853	1580675553	2639808352	575355

	U	V	W	X	Y	Z	PSI
RED BLADE	PITCH	0	10011201K	10011201K	10011201K	10011201K	10011201K
		1	1967112452	1599400052	1303968852	1124705052	867555
		2	2289405052	210676052	257475652	2429169052	868555
		3	2289405052	210676052	257475652	2429169052	869555
RED BLADE	FLAP	0	2447200051	3172000050	8512000050	2234400051	877555
		1	3617600051	4043200051	4681600051	2500400051	878555
		2	1489600051	2128600050	1649200051	2287600051	879555
VERTICAL	ACCEL	0	9056000050	1045675051	9238750050	9360000050	887555
		1	1082215051	7878200050	9238750050	1088305051	888555
		2	9177850050	7640000050	1091350051	9451900050	889555
FORE-AFT	ACCEL	0	1074550050	1983000049	3305000048	1685550050	897555
		1	5749000049	1090650050	3288000049	8262000049	898555
		2	9915000048	1916400050	8262000049	1123700050	899555
LATERAL	ACCEL	0	7436600049	9464000049	1892800050	9802000049	908555
		1	2029000049	1797600050	1149200050	9464000049	909555

HARMONIC ANALYSIS

RED BLADE	PITCH	COEF	COSINE	SINE	MAX	PSI	
STEADY			1837113352				910555
1			2141547271	8870159051	7196201051	2873131653	911555
2			3396816747	2289405052	2294766550	1392562453	912555
3			3202896350	4853183347	3239428650	5712793952	913555
4			2687186150	3245800049	2824702350	4977654152	914555
5			1615558350	1127400049	1619487270	3679837252	915555

RED BLADE	FLAP	COEF	COSINE	SINE	MAX	PSI	
STEADY			1041833351				920555
1			3000779851	1268518751	3270771151	1554858853	921555
2			4433216748	1171817850	1172668650	4389771857	922555
3			2037333550	1773331750	2707514850	4633031552	923555
4			2216706749	7678733348	3345936549	4776556851	924555
5			1574861850	3241448347	3609446150	3496952852	925555

VERTICAL	ACCEL	COEF	COSINE	SINE	MAX	PSI	
STEADY			9847750050				930555
1			1408249849	8021901748	1531596749	2031523953	931555
2			8375078348	1889808849	2067031647	1270511753	932555
3			5882400648	5882615048	1874857848	4499563652	933555
4			5100164349	7691398349	3228831149	3088734752	934555
5			1653016649	5147971748	1171896849	6879380552	935555

FORE-AFT	ACCEL	COEF	COSINE	SINE	MAX	PSI	
STEADY			6417208349				940555
1			2083280549	3294413347	2083540949	1790940353	941555
2			3552876549	8821610349	7671378449	3124414852	942555
3			2203553348	1377084249	1394297849	8838988352	943555
4			6472291249	2528288749	6948982449	3966569152	944555
5			1751365048	2532772248	3079320448	4706737352	945555

LATERAL	ACCEL	COEF	COSINE	SINE	MAX	PSI	
STEADY			9295000048				950555
1			3153578748	8278391848	8821548048	1104463753	951555
2			1309749950	2292947249	1329864950	1750350053	952555
3			6759981748	3943345348	7828687048	1099144853	953555
4			2112496849	5123000949	3384389049	1075937252	954555
5			2264308347	5421728348	5428454748	5552170452	955555

		STEADY	STATE	DATA						
				D	E	G	R	L	E	S
LIFT LINK	LOAD	X	0+11201K	40+11201K	60+11201K	90+11201K				
		0	4250025054	4703361054	4023357054	5156677054				1037655
		1	5978368554	5383365054	4080024054	5043363054				1038655
		2	4193358054	5326698054	6091702554	5525032554				1039655
RT. CYCLIC	LOAD	0	6240000052-	3328000053	4477000053	2184000053				1047655
		1	3120000052	4160000052	2080000052-	2808000053				1048655
		2	3848000053	2912000053	3120000052					1049655
LT. CYCLIC	LOAD	0	2707200053	1353600053-	9024000052	2256000053				1057655
		1	1128000052	2256000053-	2030400053	1353600053-				1058655
		2	6768000052	2481600053	5640000052	3835200053-				1059655
COLLECTIVE	LOAD	0	1091200053-	1984000052	2976000052-	7936000052-				1067655
		1	3969000052-	1785600053	2976000052	3968000052				1068655
		2	3968000052-	3968000052-		1785600053				1069655
STABILIZER	BAR	0	1861200051-	6204000050	3102000051	4549600051				1077655
		1	3515600051	2068000051	3102000050-	3205400051-				1078655
		2	5325100051-	7031200051-	5945500051-	4601300051-				1079655

HARMONIC ANALYSIS

LIFT LINK	LOAD	COEF	COSINE	SINE	MAX	PSI	
STEADY			4979612854				1080655
1			5015866751-	1093679853-	1094629453	2675741353	1081655
2			3281972253-	7238571353-	7947846053	1228052253	1082655
3			3777855052	5194411752-	6422935552	1020093753	1083655
4			2762511553-	3885114253	4767135653	3145368652	1084655
5			5223925052	2757650052-	5407116652	6643418852	1085655

RT. CYCLIC	LOAD	COEF	COSINE	SINE	MAX	PSI	
STEADY			1646666753				1090655
1			2322393350-	4673354051	4679121051	9284494152	1091655
2			1187333153-	1936432853	2271460353	6075737352	1092655
3			1733330352-	2773333752	3270445552	4066844652	1093655
4			5806664752-	2852109052-	6469107052	5153582252	1094655
5			3234398551-	1333995552-	1372646152	5127422052	1095655

LT. CYCLIC	LOAD	COEF	COSINE	SINE	MAX	PSI	
STEADY			2444000052				1100655
1			5873805051-	6143726751	8499821451	1137133253	1101655
2			9211993552-	6186886352	1109677451	7305711052	1102655
3			2600000046	3008000752	3008000752	2999996352	1103655
4			2124400553	3581860252	2154385353	2592609251	1104655
5			3971381052	1265620252	4168172552	3535261851	1105655

COLLECTIVE	LOAD	COEF	COSINE	SINE	MAX	PSI	
STEADY			9093333351				1110655
1			2187698252-	1256214452-	2522716452	2096652053	1111655
2			5042663752	4725035552-	6910457152	1584312553	1112655
3			3141333752-	3306666751	3158689352	5797000052	1113655
4			5869335352-	3865937352-	7028126952	5334269552	1114655
5			1614969252-	3971166251-	1663077652	3876295952	1115655

STABILIZER	BAR	COEF	COSINE	SINE	MAX	PSI	
STEADY			1202025051-				1120655
1			7550897850-	5386664051	5439329951	9797959452	1121655
2			1292520049	2238681349	2585016649	2999985052	1122655
3			8616740049-	1809506250-	2004194350	8151217952	1123655
4			3877550049	3731181749-	5381181249	7902551452	1124655
5			6575776749	2227858350	2322877750	1471108752	1125655

		STEADY	STATE	DATA			
		K	D E G	R E E S			
		0+(120)K	30+(120)K	60+(120)K	90+(120)K		
R F	PYLON	0	1622500049	6195000049	1180000050	8555000049	447355
		1	4277500049	2507500049	2802500049	7080000049	448355
		2	1386500050	7965000049	4425000049	3835000049	449355
R A	PYLON	0	1140000050	1695000050	1500000050	1005000050	457355
		1	7200000049	7050000049	1275000050	1785000050	458355
		2	1545000050	9900000049	6450000049	7250000049	459355
L F	PYLON	0	1500000049	4650000049	8700000049	2550000049	467355
		1	1800000049	6900000049	2100000049	6300000049	468355
		2	1050000050	3300000049	2250000049	7650000049	469355
L A	PYLON	0	1067500050	7015000049	1372500049	2440000049	477355
		1	5642500049	1464000050	1006500050	6100000049	478355
		2	3507500049	1525000048	5490000049	1479250050	479355

HARMONIC ANALYSIS

		COSINE	SINE	MAX	PSI	
R F	PYLON	5187083349				520355
COEF STEADY		6758061348	1841379548	7004432348	1952414853	521355
1		4302082249	5279868849	6810649049	6458672552	522355
2		1229175048	2458286747	1253516248	1162301253	523355
3		4916783347	3832169248	386382448	2067218352	524355
4		3710913347	4545556248	4560478748	1893343652	525355
5						

		COSINE	SINE	MAX	PSI	
R A	PYLON	1127500050				530355
COEF STEADY		7147120248	1433027548	7289368648	1686623053	531355
1		9499995848	5672468849	5751467649	4024629552	532355
2		2499896747	1250006848	1274759548	3376980852	533355
3		2499898748	8227250548	8598697048	2672557252	534355
4		6471398347	5669941747	8603908147	8244670851	535355
5						

		COSINE	SINE	MAX	PSI	
L F	PYLON	1750000049				540355
COEF STEADY		6339111248	3948555548	7468794548	3191827852	541355
1		1937498349	7036456749	7298330249	1426974953	542355
2		2750003548	2500023347	2761344048	5826851352	543355
3		6125005848	3247596748	6932718148	5198335152	544355
4		5891158347	5144283346	5913576247	3500189552	545355
5						

		COSINE	SINE	MAX	PSI	
L A	PYLON	6011041749				550355
COEF STEADY		4209561748	7749645048	8819150148	6148944752	551355
1		6049164049	4666433849	7639894649	1611763853	552355
2		2287499848	2541661748	3419459048	7600424452	553355
3		1779170048	4402250047	1832824048	4847443252	554355
4		1127945048	1146197548	1608113448	9091970551	555355
5						

		D E G	R E E S				
		120)K	30+(120)K	60+(120)K	90+(120)K		
RED	PITCH LINK	0	1392500052	1114000053	1671000053	1392500052	507355
		1	4177500052	5570000052	1671000053	2367250053	508355
		2	4734500053	2785000053	1392500053	7101750053	509355
WHITE	PITCH LINK	0	2916000052	1603600053	2770200053	1603800053	517355
		1	2041200053	5248600053	1458000052	2770200053	518355
		2	3061800053	2916000053		2916000052	519355

HARMONIC ANALYSIS

		COSINE	SINE	MAX	PSI	
RED	PITCH LINK	3481250051				580355
COEF STEADY		1597983253	1297330753	2058304453	2190716053	581355
1		1636186653	1467227853	2197695253	6905814052	582355
2		1206833653	9979584852	1566004053	1319604352	583355
3		3133134352	1105445453	1148988653	1854395652	584355
4		1296275253	8331639552	1540938553	6546070951	585355
5						

		COSINE	SINE	MAX	PSI	
WHITE	PITCH LINK	5589000052				590355
COEF STEADY		1638442853	1841098353	2464576653	4833325352	591355
1		5588998052	2946218752	6317998452	7610211152	592355
2		6561003052	8505000052	1074159253	7745074152	593355
3		1215001852	9680431252	9756381352	2071151852	594355
4		1055242753	4316989252	1140132153	4044988752	595355
5						

IBM TAB NO. 7
TYPE I STEADY STATE CONDITION NO. 58
HIGH ALTITUDE, BELOW STALL THRESHOLD
TRUE AIRSPEED 79 KNOTS

PER CENT CHORD	K	40		DELTA PER CENT		PRESSURE RADIUS		
		0+11201K	30+11201K	D E G	R E E S	60+11201K	90+11201K	
4	0	2298395051	2701930051	2772110051	2772110051	3017740051	17158	
	1	2947560051	2772110051	2055220051	1017610051	18158		
	2	3684450050	2614400050	9474300050	1543960051	19158		
17	0	1108980051	1290780051	1318050051	1472580051	27158		
	1	1508940051	1408950051	1218060051	1070800051	28158		
	2	2454300050	3181500050	5635800050	8726400050	29158		
34	0	6600000050	7560000050	7680000050	8460000050	37158		
	1	8460000050	8160000050	7020000050	8580000050	38158		
	2	3000000050	1920000050	3120000050	4980000050	39158		
61	0	2659500050	3116900050	2919350050	3248600050	47158		
	1	3468100050	3380300050	3402250050	4060750050	48158		
	2	2107200050	8780000049	1295050050	1975500050	49158		
88	0	1035150050	1158750050	1066050050	1205100050	57158		
	1	1359600050	1421400050	1591350050	2101200050	58158		
	2	2054850050	1467750050	6489000049	1019700050	59158		

PER CENT CHORD	K	55		DELTA PER CENT		PRESSURE RADIUS		
		0+11201K	30+11201K	D E G	R E E S	60+11201K	90+11201K	
2	0	5068800051	5022720051	4469760051	4285440051	147258		
	1	3847680051	6635520051	6312960051	4654080051	148258		
	2	3041280051	1728000051	2764800051	4055040051	149258		
9	0	3590550051	3772350051	3545100051	3590550051	157258		
	1	3272400051	4545000051	4045050051	3317850051	158258		
	2	2454300051	1568025051	2317950051	3022425051	159258		
17	0	2105400051	2210670051	2175580051	2210670051	167258		
	1	1965040051	2772110051	2456300051	1894860051	168258		
	2	1210605051	7018000050	1157970051	1684320051	169258		
23	0	1706880051	1760220051	1706880051	1671320051	177258		
	1	1493520051	2204720051	1920240051	1529080051	178258		
	2	9245600050	5334000050	9245600050	1315720051	179258		
34	0	1372800051	1465200051	1438800051	1432200051	187258		
	1	1320000051	1808400051	1557600051	1181400051	188258		
	2	8844000050	4554000050	7788000050	1089000051	189258		
63	0	4721200050	4924700050	4721200050	4721200050	197258		
	1	4741550050	6410250050	5392750050	4029300050	198258		
	2	3968250050	2849000050	2523400050	3886650050	199258		
90	0	8277000049	9078000049	9078000049	1041300050	207258		
	1	1068000050	1308300050	1228200050	1094700050	208258		
	2	1388400050	9078000049	4405500049	8544000049	209258		

PER CENT CHORD	K	75		DELTA PER CENT		PRESSURE RADIUS		
		0+11201K	30+11201K	D E G	R E E S	60+11201K	90+11201K	
2	0	7948145051	6603800051	5188700051	4764170051	377358		
	1	5518890051	6226440051	7075500051	7547200051	378358		
	2	8018900051	7547200051	6650970051	8443430051	379358		
9	0	5783505051	6355500051	4237000051	3770930051	387358		
	1	4787810051	5253880051	4575960051	4067520051	388358		
	2	3940410051	3516710051	3516710051	4533590051	389358		
17	0	2897820051	2642130051	2429055051	2613720051	397358		
	1	3181920051	2500080051	2727360051	2585310051	398358		
	2	2386440051	2159160051	2130750051	2784180051	399358		
23	0	2824190051	2850100051	2668730051	2591000051	407358		
	1	2513270051	2746460051	2772370051	2513270051	408358		
	2	2780080051	1891430051	2046890051	2642820051	409358		
34	0	1818240051	1704600051	1363680051	1306860051	417358		
	1	1519935051	1690395051	1761420051	1534140051	418358		
	2	1377885051	1136400051	1250040051	1661985051	419358		
63	0	6506150050	6602300050	5063900050	4871600050	427358		
	1	6089500050	7307400050	7563800050	6794600050	428358		
	2	5672850050	6281800050	4711350050	6922800050	429358		
90	0	1171500050	1011750050	7100000049	5857500049	437358		
	1	1118250050	1739500050	1775000050	1739500050	438358		
	2	2272000050	3532250050	1242500050	2325250050	439358		

PER CENT CHORD	K	DELTA PER CENT		PRESSURE RADIUS		
		0+11201K	30+11201K	60+11201K	90+11201K	
2	0	8050030051	6390230051	4315480051	4149500051	607458
	1	3900530051	5103885051	7137140051	7635080051	608458
	2	8216010051	6888170051	7718070051	9087405051	609458
4	0	8666775051	6066750051	4222275051	4000050051	617458
	1	4000050051	5422290051	7466760051	8088990051	618458
	2	8088990051	6488970051	7466760051	9289005051	619458
9	0	7876350051	5890140051	3766950051	3698460051	627458
	1	3561480051	4588830051	6780910051	4862790051	628458
	2	4999770051	5547670051	4588830051	7362675051	629458
13	0	7060750051	5139300051	3264150051	3379900051	637458
	1	3241000051	4213300051	5000400051	3657700051	638458
	2	3657700051	4143850051	3379900051	5185600051	639458
17	0	5098080051	5637300051	4166700051	4166700051	647458
	1	4215720051	5098080051	4019640051	3872580051	648458
	2	3872580051	3627480051	3529440051	4509840051	649458
23	0					657458
	1					658458
	2					659458
34	0	1899225051	1734075051	1642325051	2605700051	667458
	1	1192750051	1559750051	1890050051	1853350051	668458
	2	1770775051	1679025051	1578100051	2128600051	669458
47.7	0					677458
	1					678458
	2					679458
63	0	6997200050	5426400050	2046800050	2475200050	687458
	1	2856000050	5236000050	7235200050	7425600050	688458
	2	7330400050	7425600050	5854800050	8234800050	689458
77	0	2085600050	7584000049	1232400050	1137600050	697458
	1	3792000049	1422000050	2844000050	3555000050	698458
	2	3839400050	4455600050	3886800050	3934200050	699458
90	0	9430000049	2829000049	1603100050	1603100050	707458
	1	1225900050	1414500049	1037300050	1461650050	708458
	2	2263200050	3111900050	3111900050	2593250050	709458

PER CENT CHORD	K	90			DELTA	PRESSURE	90+(120)K
		0+(120)K	30+(120)K	60+(120)K	PER CENT	RADIUS	
		D	E	G	R	E	S
		0+(120)K	30+(120)K	60+(120)K	90+(120)K		
2	0	5365070051	7460310051	4867720051	4761900051	797558	
	1	4021160051	5343910051	7619040051	8465600051	798558	
	2	4312160051	9629620051	8994700051	1021163052	799558	
9	0	7419685051	5484115051	3041610051	2857270051	807558	
	1	2396420051	3364205051	5299775051	6313645051	808558	
	2	5714540051	5806710051	4055480051	7557940051	809558	
17	0	5917000051	4911110051	3431860051	3668540051	817558	
	1	3076840051	4378580051	5561980051	3786880051	818558	
	2	3905220051	3905220051	3313520051	4260240051	819558	
23	0	4215720051	6029460051	5000040051	4902000051	827558	
	1	4656900051	5196120051	3039240051	2843160051	828558	
	2	2990220051	3063750051	2401980051	3431400051	829558	
34	0	1796440051	1629760051	2740960051	4111440051	837558	
	1	1481600051	8889600050	1444560051	1703840051	838558	
	2	1777920051	1777920051	1148240051	2000160051	839558	
63	0	5431800050	3292000050		8230000048	847558	
	1	1316800050	4444200050	6090200050	6748800050	848558	
	2	7242400050	6913200050	4115000050	7407000050	849558	
90	0	1725750050-	3672750050-	5044500050-	4602000050-	857558	
	1	3230250050-	9735000049-	4425000049	1106250050	858558	
	2	1460250050	2920500050	2876250050	1371750050	859558	

PER CENT CHORD	K	95			DELTA	PRESSURE	90+(120)K
		0+(120)K	30+(120)K	60+(120)K	PER CENT	RADIUS	
		D	E	G	R	E	S
		0+(120)K	30+(120)K	60+(120)K	90+(120)K		
2	0	7307400051	4615200051	2884500051	2788350051	967658	
	1	2211450051	3653700051	5576700051	6345900051	968658	
	2	7788150051	8268900051	7884300051	8509275051	969658	
9	0	6650455051	3923290051	2248715051	2296560051	977658	
	1	2009490051	3253460051	4784500051	4880190051	978658	
	2	5167260051	6028470051	5262950051	7846580051	979658	
17	0	6157710051	3894620051	2631500051	2526240051	987658	
	1	2210460051	3473580051	4631440051	3263060051	988658	
	2	3263060051	3473580051	3263060051	4736700051	989658	
23	0	4072450051	5103450051	3196100051	3041450051	997658	
	1	3093000051	4330200051	2139325051	2216650051	998658	
	2	2319750051	2525950051	2216650051	3041450051	999658	
34	0					1007658	
	1					1008658	
	2					1009658	
63	0	4194000050	1607700050	9786000049-		1017658	
	1	1817400050	4333800050	6011400050	6710400050	1018658	
	2	7129800050	6710400050	2865900050	5731800050	1019658	
90	0	5655000049-	5220000049-	7177500049-	6090000049-	1027658	
	1	1087500049	4785000049	7395000049	7830000049	1028658	
	2	8047500049	7177500049	8700000048	2610000049-	1029658	

K	U+ 120 K	BLADE PER CENT		LOADING RADIUS	
		D E G	R E S	60+ 120 K	90+ 120 K
0	9067860951	1055215852	1060227952	1164383552	17058
1	1180144052	1126270652	9559197851	8881804151	18058
2	3726161651	2915040851	4211172351	6674753951	19058

K	U+ 120 K	BLADE PER CENT		LOADING RADIUS	
		D E G	R E S	60+ 120 K	90+ 120 K
0	1837758652	1915040052	1824354852	1821855252	27058
1	1678726452	2408692152	2136716352	1653267052	28058
2	1229993752	7411565951	1053810552	1493973252	29058

K	U+ 120 K	BLADE PER CENT		LOADING RADIUS	
		D E G	R E S	60+ 120 K	90+ 120 K
0	2707601052	2623852752	2039077252	1940105452	37058
1	2323679152	2492628852	2531022652	2354603652	38058
2	2242080652	2099620552	1912806952	2568659152	39058

K	U+ 120 K	BLADE PER CENT		LOADING RADIUS	
		D E G	R E S	60+ 120 K	90+ 120 K
0	3438203752	2908928752	2014053352	2361802452	47058
1	1870926852	2527433052	3002426652	2812738652	48058
2	2852141652	2756611452	2610963252	3467694352	49058

K	U+ 120 K	BLADE PER CENT		LOADING RADIUS	
		D E G	R E S	60+ 120 K	90+ 120 K
0	3314708752	2727268252	2145300252	2583789852	57058
1	1673212552	2116974852	2808156852	2891948452	58058
2	2957216452	3023474952	2312102052	3390904452	59058

K	U+ 120 K	BLADE PER CENT		LOADING RADIUS	
		D E G	R E S	60+ 120 K	90+ 120 K
0	3027264652	2228779752	1240703752	1273760552	67058
1	1321338052	2124301452	2337518052	2295697452	68058
2	2474043052	2640138352	2150405452	3022549852	69058

BLADE ID	LOADING AZIMUTH	THRUST	PER	INCH	BLADE ID	LOADING AZIMUTH	THRUST	PER	INCH
SPAN					SPAN				
40		4067860751			40		9557197851		
55		1837758652			55		2136716452		
75		2707601052			75		2531022652		
85		3438203752			85		3007426652		
90		3314708752			90		2808156852		
95		3027266652			95		2337518052		
BLADE 30	LOADING AZIMUTH				BLADE 210	LOADING AZIMUTH			
SPAN					SPAN				
40		1055215852			40		8881804151		
55		1915040052			55		1653267052		
75		2623852752			75		2354603652		
85		2904728752			85		2832738652		
90		2727268252			90		2891948452		
95		2228779752			95		2245697452		
BLADE 60	LOADING AZIMUTH				BLADE 240	LOADING AZIMUTH			
SPAN					SPAN				
40		1060222952			40		3726161651		
55		1824354852			55		1224993752		
75		2034072752			75		2242080652		
85		2014053152			85		2852141652		
90		2145300252			90		295216452		
95		1240703752			95		2474043052		
BLADE 90	LOADING AZIMUTH				BLADE 270	LOADING AZIMUTH			
SPAN					SPAN				
40		1168383852			40		2915040851		
55		1821855252			55		7411565951		
75		1940105452			75		2099620552		
85		2361802452			85		2756611452		
90		2583789852			90		3023474952		
95		1273760552			95		2640138352		
BLADE 120	LOADING AZIMUTH				BLADE 300	LOADING AZIMUTH			
SPAN					SPAN				
40		1180144052			40		4211172951		
55		1678726452			55		1053810552		
75		2323679152			75		1932806952		
85		1870426852			85		2610963252		
90		1673212552			90		2312102052		
95		1321338052			95		2150405452		
BLADE 150	LOADING AZIMUTH				BLADE 330	LOADING AZIMUTH			
SPAN					SPAN				
40		1126220652			40		6674753951		
55		2408692152			55		1493973252		
75		2492628852			75		2568659152		
85		2527433052			85		3467644352		
90		2116974852			90		3390904452		
95		2124301452			95		3022549852		

HARMONIC ANALYSIS						
		40		BLADE PER CENT		LOADING RADIUS
COEF STEADY	COSINE	SINE	MAX	PSI		
1	8411488351					70058
2	5624523050-	4070986351	4109657251	9786625752		71058
3	1257188551	2702270049-	1257478951	1793843353		72058
4	1714408349	4184980850-	4201432150	9169067752		73058
5	1050031750-	4591707250	4710238050	2572023052		74058
	2796426750	1050849550-	2987354550	6788092952		75058
		55		BLADE PER CENT		LOADING RADIUS
COEF STEADY	COSINE	SINE	MAX	PSI		
1	1649612152					80058
2	1466170751-	4541450851	4772256551	1078922653		81058
3	3755842051	1810966749-	3755885651	1798618753		82058
4	4473173350-	1596566750	4749746750	5345276552		83058
5	1524022350-	9470983350-	9592818650	6521465852		84058
	4187243350	1021700251	1104174551	1354293252		85058
		75		BLADE PER CENT		LOADING RADIUS
COEF STEADY	COSINE	SINE	MAX	PSI		
1	2321311652					90058
2	2977691750	1663250050	3410725650	2918642752		91058
3	3249909351	8394616749-	3250993251	1792601853		92058
4	1284092251	5878918350	1412271151	8199859251		93058
5	1723966749-	1591655050-	1561202750	6591504252		94058
	6989630050-	3760070050-	7936816450	4165560552		95058
		85		BLADE PER CENT		LOADING RADIUS
COEF STEADY	COSINE	SINE	MAX	PSI		
1	2720327052					100058
2	2111706251	3655897851-	4221953651	3000114453		101058
3	4194281351	1888583350	4198531151	1289074451		102058
4	8897178350	7821010050-	1184601151	1062277153		103058
5	1694340851	9205315050-	1928255451	8287121852		104058
	8225315050-	8997533350	1217062851	2648655252		105058
		90		BLADE PER CENT		LOADING RADIUS
COEF STEADY	COSINE	SINE	MAX	PSI		
1	2662088152					110058
2	2301127051	4025704551-	4636969251	2997526653		111058
3	2558718051	1773244051	3113106551	1736137652		112058
4	1132634251	1664872051-	2013618451	1014093353		113058
5	2704444251	1451837851-	3069503451	8294289552		114058
	9009933350-	1624088350	9155158250	3395637752		115058
		95		BLADE PER CENT		LOADING RADIUS
COEF STEADY	COSINE	SINE	MAX	PSI		
1	2178041652					120058
2	2012606551	6058426551-	6383973451	2883764753		121058
3	4488834551	5475745050-	4522109451	1765225553		122058
4	1823367051	6686889050	1942115251	6713214851		123058
5	1416286851	1249062551-	1888392351	7964751152		124058
	3872358350-	1047728350-	4011594950	3902796052		125058

TOTAL	BLADE	THRUST
BLADE	POSITION	THRUST
	0	3953381054
	30	3757558454
	60	3106652754
	90	3260693954
	120	3143072154
	150	3805695054
	180	3807465454
	210	3448173354
	240	2940947154
	270	2624220954
	300	2592411254
	330	3614746054

6058
306058
606058
906058
1206058
1506058
1806058
2106058
2406058
2706058
3006058
3306058

		HARMONIC ANALYSIS			
COEF	COSSINE	SINE	MAX	PSI	
STEADY	3337915254				130058
1	9340283351	2511701054	2513437153	8787031552	131058
2	5495745553	1406531752	5497545153	7330283450	132058
3	8847875052	2269721752	9134350852	1152041053	133058
4	7352673352	7603470052	1057707753	7850982952	134058
5	2486030052	4437255052	5086214452	2385206152	135058

PER CENT RADIUS	K	BEAM RED		BENDING BLADE		R E E S		
		0+(120)K	30+(120)K	D E G	30+(120)K	60+(120)K	90+(120)K	
15	0	6092300054-	1339190055-	1339190055-	1521680055-			217258
	1	1947490055-	1947490055-	1825830055-	1217530055-			218258
	2	9133800054-	1834200054-	9217500053-	5484000054-			219258
28	0	1545500053-	2097700054-	1037800054-	4040850054-			227258
	1	3334250054-	2627650054-	3069275054-	6622500052-			228258
	2	5078500053-	3025150054	1700275054	7287000053			229258
36	0	7750000053-	1757500054-	7750000053-	3526000054-			237258
	1	2445250054-	1561000054-	2347000054-	1100000052			238258
	2	1100000052	2958500054	6005000053	1092500053			239258
45	0	1144800054-	1186200054-	7308000053-	3380400054-			247258
	1	1558800054-	1393200054-	2097000054-	1440000052			248258
	2	1256400054	3409200054	1173600054	1440000052			249258
60	0	4303200054-	2388840054-	3588200054-	4375280054-			257258
	1	4450240054-	5049920054-	3925520054-	3775600054-			258258
	2	2760000052-	6470400053	1972800053	2613720054-			259258
65	0	5322090054-	2405715054-	4738815054-	4311080054-			267258
	1	5788710054-	5399860054-	4077770054-	4699930054-			268258
	2	1892700053-	2281550053-	5106600053	3766690054-			269258
80	0	6606150054-	3057250054-	5680350054-	3250125054-			277258
	1	5757500054-	4677400054-	3983050054-	6336125054-			278258
	2	8199000053-	3867325054-	2027000053-	5448900054-			279258
92.5	0	3545000054-	1740000054-	2880000054-	1740000054-			287258
	1	2275000054-	1835000054-	1645000054-	3165000054-			288258
	2	6950000053-	2832500054-	5050000053-	3450000054-			289258

WH.	BEAM	BEND	.15R	K	0+(120)K	D E G	R E E S	90+(120)K	
				0	1743050055-	1282100055-	9418750054-	2285000054-	717458
				1	1846000054-	6675000054-	6565250054-	1369900053-	718458
				2	1238200055-	1435750055-	1633300055-	1721100055-	719458
			.25R	0	1847700054-	6492200053	1498400053	3479040054	727458
				1	2147360054	1315060054	3163000053	1015380054-	782458
				2	3495400053-	2846440054-	2180600054-	1514760054-	729458

HARMONIC ANALYSIS

PER CENT	RADIUS	RED BLADE		BEAM		BENDING		
		COSINE	SINE	SINE	MAX	PSI		
15	COEF STEADY	1123750455-						
	1	5062731254	6790246754-	8469870054	3067078053			290258
	2	1850244054-	3951028253-	1891959154	9602697752			291258
	3	3548418753-	3041501053-	4673542953	7353376552			292258
	4	8871028753	2195008553	9138556353	3474468851			293258
	5	1375106254	2052049553-	1390333154	7030249552			294258
28	COEF STEADY	9568354253-						
	1	1052397754	2429815254-	2647931854	2934183353			300258
	2	4416248353-	2549734852-	4423602653	9165216352			301258
	3	2649746853-	2796960253	3852810053	4448393252			302258
	4	1030460053-	5099444352-	1149735253	5158236552			303258
	5	6699385753	8234892253-	1061580054	6182592252			304258
36	COEF STEADY	7913750053-						
	1	4361311553	1920378054-	1969279654	2827952353			310258
	2	4748748753-	1134492753	4882385553	8328184652			311258
	3	1146246953-	5076250753	5204056453	3424144252			312258
	4	1310001653-	1985363353-	2378607153	5914550052			313258
	5	4644928753	8142469253-	9374175653	5994058252			314258
45	COEF STEADY	4686000053-						
	1	2506776353	2030165754-	2045583654	2770390553			320258
	2	7693498353-	1613405253	7860851953	8407806852			321258
	3	3450035052	6969001253	6977535753	2905528652			322258
	4	3346501053-	1015847353-	3497286853	4922148452			323258
	5	1909215553	6677343053-	6944927253	5719130652			324258

HARMONIC ANALYSIS

60	PER	CENT	RED BLADE RADIUS	BEAM COSINE	SINE	BENDING MAX	PSI	
COEF			2804243354-					
STEADY			5799063553	2109247554-		2187513754	2853728053	330258
1			1246209354-	3083569553		1483791954	8305105852	331258
2			2436199353-	6621466853		7055415753	3673326852	332258
3			1842769053-	1244246553		2223498853	3649314852	333258
4			5236873353-	2602332253		5847818053	3071521752	334258
5								335258

65	PER	CENT	RADIUS	COSINE	SINE	MAX	PSI	
COEF			3368118854-					
STEADY			5053008253	2191307054-		2240812054	2829850553	340258
1			1315608254-	3479790553		1360850654	8259226252	341258
2			4990241853-	7906617253		9349711753	4075265952	342258
3			1166551253-	2469527753		2731191853	2882126052	343258
4			6284375853-	9405052853		1131142854	2475010352	344258
5								345258

80	PER	CENT	RADIUS	COSINE	SINE	MAX	PSI	
COEF			4140564654-					
STEADY			1741283352-	1062914654-		1063057254	2690614653	350258
1			1166892654-	2783903352		1167224654	8931666752	351258
2			5529087353-	5721958253		7956859453	4467263752	352258
3			2860979353-	1837378253		3400170753	3682265452	353258
4			7412292353-	1943709354		2080246854	2217484952	354258
5								355258

92.5	PER	CENT	RADIUS	COSINE	SINE	MAX	PSI	
COEF			2187291754-					
STEADY			3836742853-	1267784353-		4040776253	1982852453	360258
1			4274994553-	6856033352-		4329622453	9455562152	361258
2			2375003053-	3245832853		4021948553	4206441752	362258
3			2533332353-	1782567253		3097631153	3621701452	363258
4			3288257353-	9976112353		1050406854	2164858052	364258
5								365258

HARMONIC ANALYSIS

WH.	BEAM	BEND	.15R	COSINE	SINE	MAX	PSI	
COEF				1091866755-				
STEADY				4165199054-	5481975354	6884833854	1272275453	750458
1				2094394354-	4029395053-	2280742754	1016609753	751458
2				1097485053-	1097516753-	1552100653	1049997353	752458
3				7591039253	1425681753	7723758453	2659219151	753458
4				1377175554-	4445224353	1447139554	3242220952	754458
5								755458

WH.	BEAM	BEND	.25R	COSINE	SINE	MAX	PSI	
COEF				1414666753-				
STEADY				8479001753-	2125548254	2288425254	1117474453	760458
1				3884100853-	4805275052-	3913712653	9352627052	761458
2				2774300253	3051763853-	4124318653	1040911153	762458
3				8323321052-	2000000046-	8323321052	4500000052	763458
4				5115300053-	7320152353	8930337353	2498916052	764458
5								765458

PER CENT RADIUS	K	CHORD RED		BENDING BLADE			
		O+I120IK	D E G	R E E S	30+I120IK	60+I120IK	90+I120IK
15	0	8893500055	7276500055	4851000055	5120500055		67158
	1	3234000055	2964500055	4042500055	5929000055		68158
	2	7546000055	6468000055	8624000055	9702000055		69158
28	0	7595950055	6182750055	4592900055	4416250055		77158
	1	3533000055	2738075055	4062950055	5122850055		78158
	2	6536050055	6182750055	7419300055	8302550055		79158
40	0	3546235055	2855410055	2717245055	2072475055		87158
	1	2763300055	1704035055	2579080055	2533025055		88158
	2	2786327555	3108712555	3315960055	3960730055		89158
80	0	2304115055	2163610055	2116575055	1787330055		97158
	1	2304715055	1693260055	2257680055	1975470055		98158
	2	2210645055	2351750055	2398785055	2539890055		99158
WH. CHORD BEND .15R	0	4592280055	6013700055	8091160055	7216440055		737458
	1	9184560055	1049664056	8747200055	7435120055		738458
	2	4810960055	5467000055	3498880055	3280200055		739458
WH. CHORD BEND .28R	0	4607040055	5254905055	6982545055	6190710055		747458
	1	7630410055	8638200055	7342470055	6622620055		748458
	2	4607040055	4894980055	3887190055	2663445055		749458

HARMONIC ANALYSIS

COEF STEADY	15 PER CENT	RED BLADE RADIUS		CHORD BENDING		
		COSINE	SINE	MAX	PSI	
1		6220958355	1840718755-	2868531955	3200817753	100158
2		2200052355	1555960854	3915738254	1170664652	101158
3		3593326054	6374298353	2087031654	8891842151	102158
4		3593340054	6737491054-	7635828554	9935752352	103158
5		8983338353-	8333333348	8983338353	4499986852	104158
		1338849554-	4932195754	5110682154	2103740852	105158

COEF STEADY	28 PER CENT	RADIUS		CHORD BENDING		
		COSINE	SINE	MAX	PSI	
1		5557114655	1511205955-	2279754355	3184800453	110158
2		1706908555	6374298353	2087031654	8891842151	111158
3		1987305754	4563450554-	5276958454	1000471653	112158
4		2649756554	1274935053	1472149353	1500038552	113158
5		7360383352	1716109554	2676423754	2802380452	114158
		2053828754-				115158

COEF STEADY	60 PER CENT	RADIUS		CHORD BENDING		
		COSINE	SINE	MAX	PSI	
1		2828544755	4236392754-	7132025154	3235589353	120158
2		5737487254	1229781554-	1671585054	1563168953	121158
3		1132181054	1496784054-	1699983354	9943364152	122158
4		8059658353	4320886753	4325145553	2313571452	123158
5		1918916752-	2441578754-	2979504754	4700611352	124158
		1707671554-				125158

COEF STEADY	80 PER CENT	RADIUS		CHORD BENDING		
		COSINE	SINE	MAX	PSI	
1		2175368855	1760996054-	2360538954	3117537153	130158
2		1571953354	6788915053-	6967593853	1415018353	131158
3		1567800053	1567808353-	1752879753	9885538352	132158
4		7839416752	4073373353	4073373353	2249995852	133158
5		1166666748	1217884754-	1867067354	4414302152	134158
		1415166854-				135158

HARMONIC ANALYSIS

COEF STEADY	WH. CHORD BEND .15R	COSINE		SINE		
		SINE	MAX	PSI		
1		6569511755	2068606055	2976154055	1359680053	770458
2		2139710755-	1578175053-	2465197654	1781647653	771458
3		2460140854	6742637054	7346061754	3779505852	772458
4		2915727754-	7890898353-	1014623154	5776301052	773458
5		6378066753-	5196213754-	6286485354	6085042252	774458
		3538256854				775458

HARMONIC ANALYSIS

COEF STEADY	WH. CHORD BEND .28R	COSINE		SINE		
		SINE	MAX	PSI		
1		5776796355	1483037355	2203461255	1376971853	780458
2		1629675355-	9351141753	1767337254	1597264052	781458
3		1499680754	5518854054	5971093754	3748090052	782458
4		2279519854-	7273130053	7492444753	2597428252	783458
5		1799530053-	2832866754-	5659216354	6599238052	784458
		4899142354				785458

		D I F F E R E N T I A L					
		0+(120)K	30+(120)K	60+(120)K	90+(120)K		
R/B TORS	.15R	0	4942240054-	6177800054-	4324460054-	4942240054-	487358
		1	4324460054-	5560020054-	4942240054-	3706680054-	488358
		2	1235560054-	3088900054-	3706680054-	5560020054-	489358
R/B TORS	.50R	0	2206320054-	2054160054-	2054160054-	1902000054-	497358
		1	1369440054-	1521600054-	1597680054-	1141200054-	498358
		2	1179240054-	8368800053-	1711800054-	1407480054-	499358

HARMONIC ANALYSIS

R/B TORS		.15R				
COEF	STEADY	COSINE	SINE	MAX	PSI	
		4375941754-				560358
1		5626024353-	1049830454-	1191077454	418132253	561358
2		9266691753-	5350132753	1070025754	7499999352	562358
3		4118530253	1029637253-	4245284553	1153212353	563358
4		1029636753-	1783380253-	2059270953	5999999252	564358
5		1507482053	2019630052	1520950753	1526138451	565358

R/B TORS		.50R				
COEF	STEADY	COSINE	SINE	MAX	PSI	
		1581830054-				570358
1		3181826553-	3399785753-	4656453953	2268967453	571358
2		1616698553-	6039660052-	1725829953	1002423453	572358
3		1014399253	6339816751	1016378453	1192078151	573358
4		5389020052-	1647193352-	5635138252	4924904052	574358
5		8757775052-	1862416353-	2058052653	4896306952	575358

		STEADY	STATE	DATA						
				D	E	G	H	E	E	S
RED BLADE	PITCH		K	0*(120)K	30*(120)K	60*(120)K	90*(120)K			
		0		1928348052	1724525552	1404233052	1252822052	867558		
		1		1206234052	1375115552	1625526052	1899230552	868558		
		2		2167111552	2312699052	2347640052	2236993552	869558		
RED BLADE	FLAP	0		1010800051-	5320000050	1436400051	2553600051	877558		
		1		3192000051	3245200051	3298400051	1489600051	878558		
		2		8512000050	4788000050-	1170400051-	1383200051-	879558		
VERTICAL	ACCEL	0		9786850050	9786850050	9969550050	9725950050	887558		
		1		1048720051	8995150050	9756400050	9817300050	888558		
		2		1000000051	9695500050	1060900051	9299650050	889558		
FORE- AFT	ACCEL	0		1388100050-	4296500049-	3966000049-	4296500049-	897558		
		1		6610000049-	1255900050-	1222850050-	6610000048-	898558		
		2		4957500049-	4957500049-	1156750050-	1454200050-	899558		
LATERAL	ACCEL	0		4056000049	3380000048-	3380000049-	7098000049-	907558		
		1		9464000049-	9464000049	5408000049	3380000048	908558		
		2		2366000049-	7436000049-	1081600050-	1014000050	909558		

HARMONIC ANALYSIS

RED BLADE PITCH		COSINE	SINE	MAX	PSI	
COEF	STEADY	1790040052				910558
1		1811990551	5378876751-	5675881051	2886172153	911558
2		7279150049	4202750049	8405303949	1500038652	912558
3		1261733350-	3882583349	1320119550	5429863952	913558
4		1019108350-	8403166748-	1022566950	4617843252	914558
5		1717033350-	1183176750	2085212350	2908599552	915558

RED BLADE FLAP		COSINE	SINE	MAX	PSI	
COEF	STEADY	1046266751				920558
1		1839236251-	1525424751	2389500051	1403283953	921558
2		1416666744-	6143020049	6143020049	4500068952	922558
3		8866471749-	1063998850	1385017050	4326854152	923558
4		4433365749	1535756749-	4691831249	8522337052	924558
5		2266964250-	9717535349	2466461450	3135943952	925558

VERTICAL ACCEL		COSINE	SINE	MAX	PSI	
COEF	STEADY	9827450050				930558
1		5224318348	4481185048-	6882915248	3193785053	931558
2		2436012849-	2637065048	2450244849	8691080652	932558
3		1014900048-	6089888348-	6173877448	8684614252	933558
4		8627408348-	3516073349	3620371949	2594658352	934558
5		2686630048-	8617833346-	2688011848	3636744752	935558

HARMONIC ANALYSIS

FORE- AFT ACCEL		COSINE	SINE	MAX	PSI	
COEF	STEADY	1870916749-				940558
1		1416877549-	8311218548	1642651949	1496046753	941558
2		3222373049-	4531839249	5560688449	6270740752	942558
3		3855828348	3855845048-	5452976548	1049999653	943558
4		9639581748-	1860438249	2095339049	2934756552	944558
5		2050433348	8862055048-	9096169348	5660548452	945558

LATERAL ACCEL		COSINE	SINE	MAX	PSI	
COEF	STEADY	9576666748-				950558
1		4224993348-	7546683346-	4225667248	1810233153	951558
2		7802165349	7317919548-	7836408749	1773208653	952558
3		1689991748	2816678348-	3284775348	1003211853	953558
4		3098361348-	4927395849-	4937127449	6660049452	954558
5		4225016548-	1051186748-	4353821148	3879431052	955558

		STEADY	STATE	DATA					
				D E G R E E S					
				K	0+11201K	30+11201K	60+11201K	90+11201K	
LIFT LINK	LOAD			0	5355031554	4986696054	5071696554	5156697054	1037658
				1	5978368554	4873362054	5355031554	4873362054	1038658
				2	5156697054	5326698054	6063369054	5156697054	1039658
RT. CYCLIC	LOAD			0	1040000053	2496000053	2496000053	2080000052	1047658
				1	3120000052-	4160000052	6240000052	1664000053	1048658
				2	2080000053		2080000052-	2080000052	1049658
LT. CYCLIC	LOAD			0	1128000052-	9024000052-	9024000052	4512000052	1057658
				1	4512000052-	2256000052-	1128000052-	1128000053-	1058658
				2	9024000052	4512000052	7896000052-	9024000052-	1059658
COLLECTIVE	LOAD			0	1190400053	7936000052	5952000052	7936000052	1067658
				1	9920000052	1388800053	1190400053	3968000052	1068658
				2	2976000052	1190400053	9920000052	1190400053	1069658
STABILIZER	BAR			0	1137400051	3102000051	3722400051	2791800051	1077658
				1	1189100051-	1189100051-	3463900051-	5273400051-	1078658
				2	5997200051-	4963200051-	3308800051-	1240800051-	1079658
				HARMONIC ANALYSIS					
LIFT LINK	LOAD								
COEF				COSINE	SINE	MAX	PSI		
STEADY				5279475754					1080658
1				5725423352	6703711752-	8815907452	3104995753		1081658
2				1605572253-	2462711553-	3282221753	1203569053		1082658
3				5500000047	6333333347	8388153047	1634275452		1083658
4				1888951752	2371966553	2379476153	2136169352		1084658
5				5725326752-	1796261752-	6000493552	3948374252		1085658
RT. CYCLIC	LOAD								
COEF				COSINE	SINE	MAX	PSI		
STEADY				8926666752					1090658
1				2027332052	1663667852	2622568552	3937296452		1091658
2				3033334552	1245921953	1282315353	3815845452		1092658
3				1733333351-	1386666552	1397457852	3237500752		1093658
4				4246666552-	2251665552-	4806680152	5198335452		1094658
5				2260029251	7630020051	7957696751	1470011852		1095658
LT. CYCLIC	LOAD								
COEF				COSINE	SINE	MAX	PSI		
STEADY				1598000052-					1100658
1				9332514351-	1240438152	1552303152	1269562153		1101658
2				4981998052-	3093442752	5064272552	7408143252		1102658
3				5640004751	1503999252	1606272152	2314797652		1103658
4				3289999252	5698447752-	6580000152	7499999852		1104658
5				3692513351	2635617051	4536643151	7103646051		1105658
				HARMONIC ANALYSIS					
COLLECTIVE	LOAD								
COEF				COSINE	SINE	MAX	PSI		
STEADY				9176000052					1110658
1				5343665051	2642159051	5961187851	2630995552		1111658
2				1405331692	3579572052-	3845555052	1457174353		1112658
3				4959987551-	1653334352	1726131252	3556640052		1113658
4				1736000752	4295480051-	1788354052	8652553752		1114658
5				3836516750-	5948819551-	5961177951	5326199852		1115658
STABILIZER	BAR								
COEF				COSINE	SINE	MAX	PSI		
STEADY				1124475051-					1120658
1				2403448351	4046877351	4706780251	5929383952		1121658
2				4308318249-	1492440049	4559493749	8046673052		1122658
3				1034005250-	1120163250	1524444950	4423654252		1123658
4				1866666744	5969760049	5969760049	2249995552		1124658
5				6022833347	5736079249-	5736395449	5412031652		1125658

		STEADY	STATE	DATA			
				D E G	R E E S		
R F	PYLON	K	0+1120JK	30+1120JK	60+1120JK	90+1120JK	
		0	3687500049	7080000049	9735000049	9145000049	447358
		1	5752500049	1475000049	4130000049	7375000049	448358
		2	1032500050	9440000049	6195000049	1770000049	449358
R A	PYLON	0	1110000050	1380000050	1320000050	9900000049	457358
		1	7800000049	6300000049	1110000050	1410000050	458358
		2	1380000050	1020000050	7500000049	6000000049	459358
L F	PYLON	0	6000000048-	4200000049-	5400000049-	2400000049-	467358
		1	9000000048	3600000049	1350000049-	4950000049-	468358
		2	5700000049-	2400000049-	1200000049	3900000049	469358
L A	PYLON	0	1128500050	4880000049	1525000049	3050000048-	477358
		1	5642500049	8845000049	1052250050	4270000049	478358
		2	3050000048-	1525000049-	5185000049	8387500049	479358

HARMONIC ANALYSIS

		COEF	COSINE	SINE	MAX	PSI	
R F	PYLON	STEADY	6342500049				
		1	8604215047-	2473612848-	2618985648	2508202853	520358
		2	2986874849-	2788962849	4086530949	6848125152	521358
		3	4916568347-	4916601747-	6953101247	7500006752	522358
		4	2581259048	4470862248	5162509848	1499998752	523358
		5	8603990047-	5069553347	9986441647	2989860152	524358

		COEF	COSINE	SINE	MAX	PSI	
R A	PYLON	STEADY	1040000050				
		1	1616030848-	9330001747-	1866023848	2099995953	530358
		2	1749995248	3940416049	3944300149	4372854052	531358
		3	1500010748	5000078347	1581151448	6145032051	532358
		4	1750011848	5629173748	5894924848	1818261152	533358
		5	1160491747	6698483346-	1339939547	6600119852	534358

		COEF	COSINE	SINE	MAX	PSI	
L F	PYLON	STEADY	1450000049-				
		1	3265549548	3749981747	3287010548	6550844851	540358
		2	1087499149	4308476749-	4443605049	1420830453	541358
		3	2499975047	7500013347	7905698947	2385508552	542358
		4	2375004248-	4979648848-	5517021648	6112539052	543358
		5	2344468347	3749988347	4422549547	1159732952	544358

		COEF	COSINE	SINE	MAX	PSI	
L A	PYLON	STEADY	4867291749				
		1	2634702048	6224644548	6759279148	6705854552	550358
		2	5134165249	2533331749-	5734034849	1667789253	551358
		3	1016668348-	2541611747-	1047956248	6467864552	552358
		4	1270835748	2201151848	2541671248	1500000052	553358
		5	2194471748	3788078347-	2226928448	7004123252	554358

			D E G	R E E S			
			0+1120JK	30+1120JK	60+1120JK	90+1120JK	
RED	PITCH LINK	0	2228000053-	1949500053-	8355000052-	4177500052-	507358
		1	2785000052	5570000052-	1392500053-	1114000053	508358
		2	2228000053	2785000052	1671000053-	2506500053-	509358
WHITE	PITCH LINK	0	2916000052-	1166400053	8748000052	2916000052-	517358
		1	1166400053-	2187000053-	1749600053-	2624400053-	518358
		2	1603800053-	1458000053-	1166400053-	1458000052-	519358

HARMONIC ANALYSIS

		COEF	COSINE	SINE	MAX	PSI	
RED	PITCH LINK	STEADY	6382291752-				
		1	1280564453-	3696670052-	1332853753	1961021153	580358
		2	9051247852-	7235643552	1158790853	7068043552	581358
		3	6962500352	6962516751-	6997226352	1180964653	582358
		4	3017083552-	8039603351-	3122362152	4873021752	583358
		5	1665644752	4808286751-	1733657552	6877959052	584358

		COEF	COSINE	SINE	MAX	PSI	
WHITE	PITCH LINK	STEADY	8869500052-				
		1	1291326853	6979549352	1467878153	2839097552	590358
		2	1093498052-	3577550352	3740936252	5349803252	591358
		3	1701001552-	9719987851	1959129352	5008505952	592358
		4	6075014551-	1052221552-	1215001852	5999999252	593358
		5	3922269352-	1735503851-	3926195952	3651254052	594358

IBM TAB NO. 8
24 POINT ANALYSES OF TYPE I
STEADY STATE FLIGHT CONDITION NO. 29
LEVEL FLIGHT, TRUE AIRSPEED 89 KNOTS

COEF	COSINE	SINE	MAX	PHI
10290000	8487129654-			
10290001	4258808854-	5071090854-	6622191054	3100242553
10290002	1157384354-	4315855653-	1235234654	1002251853
10290003	3039401853	4242241853	5218675953	1812662452
10290004	3161266853-	1825163353	3650319053	3749988452
10290005	2131054854	1069687854	2384453054	5330872051
10290006	5268767653-	2490681453	5827813153	2578311752
10290007	9105812552-	4267807953-	4363867853	3885084952
10290008	4789895852-	1659710052-	5069130152	4261175352
10290009	6008564252	1176762553	1121286653	6094565151
10290010	1016318353	6655447552-	1231677153	3222936052
10290011	4558775051	3017805052-	3052644852	2532649152

COEF	COSINE	SINE	MAX	PHI
20290000	1523143853-			
20290001	1491488354	2323691254-	2761173354	3026948553
20290002	3017078753-	1657049253	3442176153	7561170052
20290003	3941773053	2804239453	7016179153	1860626852
20290004	1258795353-	6124419952-	1399875453	5148608252
20290005	1060197754	5809407953	1208929654	5744148951
20290006	1527522453	4243143352-	1589360253	5741263552
20290007	8358649252-	3244791751	8356950952	2539646052
20290008	4384569252	8574161751-	2630197152	3713548152
20290009	3013571752	3164405052	4369935852	5155598451
20290010	2166148352	4020385051	2203141752	1051449051
20290011	4375013352	2045822252-	4829713252	3044895552

COEF	COSINE	SINE	MAX	PHI
30290000	1887062553-			
30290001	1240266954	2222321854-	2544990454	2991656853
30290002	4448875653-	1859982353	4822035753	7865560752
30290003	5372276453	6269904053	8256393553	1646901752
30290004	5986308352-	2522081352-	6495904952	5071152552
30290005	7676058353	3563183053	8462750453	4980092651
30290006	2879889353	9707519252-	3049098853	5689534852
30290007	7633073351-	1246746353	1249060753	1335764452
30290008	4853724251-	364290452-	3675124452	3280136252
30290009	6392925051	1376495152-	1519691052	3277151752
30290010	4695914552-	1785954051-	5024066652	1591771552
30290011	5775030852	1034793552-	5867008452	3180375252

COEF	COSINE	SINE	MAX	PHI
40290000	5600133353-			
40290001	1397353054	2574587254-	2929350654	2984908353
40290002	7571177753-	1210072153	7667268553	8545972152
40290003	6365944653	2827443753	8630521853	1415705052
40290004	1696687452-	8226400052	8401506752	2541276052
40290005	1798762853	7497120852	1248747253	4522084951
40290006	3562997953	1527002953-	3876427753	5613356052
40290007	3072352852	5037884252	5900816652	8374725351
40290008	1696666052-	1175515552-	2064100852	1816053752
40290009	1072343453-	212712352-	1073236453	2124663052
40290010	1656221352-	6224296752	6449913952	1049028452
40290011	4872700050	2215206652	2215742452	8067261051

COEF	COSINE	SINE	MAX	PHI
50290000	3015087554-			
50290001	1267957854	2568110354-	2864071854	2962770253
50290002	9291568353-	1278838753	9379161453	8608169052
50290003	3523346253	4476857353	5657067453	1726567852
50290004	1228610253	7811711752-	1455922953	8188777652
50290005	7809118553-	3513432053-	8563091553	4084473052
50290006	9331465051	4043593352-	4149888652	4716579252
50290007	1010584753	7350869252	1244653653	5147383551
50290008	5132165052-	6734754252	8466453352	1591387252
50290009	3967225051-	5619801752-	5633787452	2955133152
50290010	1329893352-	2835115052-	3131532152	2448697152
50290011	4067123352-	1170151452	4232108952	1490445152

COEF	COSINE	SINE	MAX	PHI
60290000	3593281354-			
60290001	1140019754	2535318654-	2779835554	2942113353
60290002	9597994253-	2119212153	9829168553	8377450952
60290003	2382853253	4480078853	5074356653	2066416452
60290004	8459690052	1916122353-	2094561643	734537352
60290005	1110005854-	5016683853-	1218106854	4086413052
60290006	2635531853-	5531318352	2692952553	2802451652
60290007	7089572152	4245463352	8263790752	4416786151
60290008	1626843352-	1070775253	1083063153	1232987152
60290009	2201547552	6608480852-	6965545952	3204721952
60290010	7152628352	9804075852-	1213589753	3061128752
60290011	4885002552-	3764732752	6167170752	1294359952

COEF	COSINE	SINE	MAX	PHI
70290000	4123497554-			
70290001	2304525254-	1296213054-	1316539654	2800812353
70290002	8396058354-	1452742754-	8520813153	8504175152
70290003	5716270052	3277028853-	3326510953	-2670173052
70290004	8103700051-	2049110853-	7050712654	6693382452
70290005	1277980954-	6377067553-	1423780354	4132176752
70290006	5471705153-	3921908153	6736959052	2406637252
70290007	1177606653-	9356250852-	1504045153	3120966452
70290008	1183059753	1263154853-	1730661853	3914058352
70290009	9841797552	6192023352	1162764553	3574142951
70290010	3118233351-	3299329252	3314031852	9539905551
70290011	5178054252	4470295852-	6840744852	2901776752

COEF	COSINE	SINE	MAX	PHI
80290000	1902858554-			
80290001	3487744053-	9885802552-	3625141253	1958250753
80290002	3567481353-	6279019252	3622317553	8500889552
80290003	9319016751-	1262253853-	1265719153	3140743252
80290004	5124723352-	9559031752-	1084610053	6045091552
80290005	5658875853-	3045681753-	6526433853	4165794552
80290006	1182620853-	2483510653	2750712153	1924383152
80290007	2583947552-	9592055852-	9933998152	3641761852
80290008	1971055052	1229021753-	1244726853	3488891052
80290009	4085585852	314549252-	5156178452	3582303052
80290010	2561368352	8166675051	2688410952	1768437951
80290011	5747448352	5516589552	7966619452	3984217851

COEF	COSINE	SINE	MAX	PHI
90290000	4334678354-			
90290001	1689768353-	9221469253-	9375009953	2596161653
90290002	4812173453-	5947099353	7650163653	6448925952
90290003	1556248153-	5747357553-	5954328353	8494966352
90290004	1271166953-	8806924252	1546442553	3632123352
90290005	2426782751	1582158353-	2896981053	6537947552
90290006	6215571747	8898160853	8898160853	1499999352
90290007	2054561453-	1409402453-	2491513153	3063566052
90290008	2542390052	8806863352	9166492752	9237185051
90290009	4776165052-	3542383352	5946446952	1593738252
90290010	1289414453-	6629538352	1449861153	1527899952
90290011	3096040052	2418014252-	3857858152	2919884752

COEF	COSINE	SINE	MAX	PHI
100290000	1577075054-			
100290001	3246083053-	4547897053-	5537523853	2344824853
100290002	1115415453-	3367934252-	1165152953	1715993053
100290003	4985735053-	2448979853-	2499215453	9383575152
100290004	1585021751-	5765135052	5767313552	2289371452
100290005	1487613753	6451962552	1621502853	4689395051
100290006	1585011352	1901980052	2475841052	8365655451
100290007	842397252-	2751228352	8861860452	2313046152
100290008	4596518852	4117958352-	6171350452	3976790952
100290009	3083740052-	4201818352-	5211979452	2596942652
100290010	3761191751-	4318892252	4335238952	9497716351
100290011	6193575051-	1333836052	1470619752	1044613552

COEF	COSINE	SINE	MAX	PHI
110290000	1587845352			
110290001	1394344551	5162733651-	5945112551	2850103053
110290002	5906958349-	3178369249-	6707770649	1041417353
110290003	9789608349	3689340850	3817014550	2504637352
110290004	1997175049	4324108349-	4763047449	7369770052
110290005	1194924850	2518666748-	1195190250	7175850152
110290006	2995946249-	3495175049	4603470649	2176701252
110290007	4473858348	1268258349	1344654349	1008134252
110290008	2496268349	1729741749	3036998849	4339911151
110290009	8023081348-	1943075049	2102198749	1249289452
110290010	1582866749-	2313357549-	2803050149	2356189352
110290011	1952500049	4522515849-	4925992849	2666829552

COEF	COSINE	SINE	MAX	PHI
120290000	1854166750-			
120290001	1001955151-	1076661651	1470752951	1329416653
120290002	3415054249-	7856831349	8566936049	5674634252
120290003	3510619150-	1398182450-	3778804050	6723867852
120290004	2916651149-	4330125849	5220608749	3099077652
120290005	1650046450-	1423821850-	2179431550	4415817052
120290006	6249986149-	1666674249	6468394649	2751141552
120290007	8583602548	1116445049-	1408272649	4393632852
120290008	4166702548	4330109249	4350110349	1056294652
120290009	2606166749	1018162549	2797999449	2371077251
120290010	9150725048	3690195849-	3801960449	2839269452
120290011	8375900048	4555879248-	9534764648	3013245752

COEF	COSINE	SINE	MAX	PHI
130290000	9371741751			
130290001	2899772751-	4848282251-	5649293951	1208817853
130290002	1828184051	2171846950-	1841039451	1766125653
130290003	1193000750	5886184249	1310109150	8754806351
130290004	6013646050	4179283550-	7321274550	8130050052
130290005	4988644350-	1014870650-	5090828450	3829982450
130290006	6675417649-	7011450849-	7680996049	3773440352
130290007	1213422450-	9240311749	1525197550	2038720452
130290008	2606558650	2014121350-	3294060150	4078828552
130290009	1727559249	1691747350-	1700545150	7352149551
130290010	9957292549-	2705112850-	2882553050	2497917652
130290011	1266107550	2198897549	1285060250	8956821850

COEF	COSINE	SINE	MAX	PHI
140290000	2328302752			
140290001	6117535050	5839224250	8453379450	4369000052
140290002	3177810751	4381708349	3178112651	3969399050
140290003	1496380551	1334242351	2004633451	1390722652
140290004	6398932550	1123119250	6496748050	2488741351
140290005	6481749250-	3624830050-	7426470650	4184410252
140290006	1271757650	6144981750-	6275608250	4695117952
140290007	2712456750	1225247550	2976548950	3472747951
140290008	7758258349	2350410050	2475143050	8966614851
140290009	2431180050	2452481750-	3453301250	3497223252
140290010	2871813350	1489280050-	3236782050	3326057152
140290011	3412311750	8930787549	1670991950	2917028651

COEF	COSINE	SINE	MAX	PHI
150290000	2438525652			
150290001	3602329251	3831793951-	5259222451	3132320553
150290002	2978139851	3043090050	2993646751	2917142751
150290003	1181769351	7621004250	1406191951	1093906652
150290004	1410872051	2783998150-	1438077351	8720938552
150290005	3954895050-	1351330050-	4180035450	3977809952
150290006	6072259150-	5655997250-	8298352750	3716171952
150290007	3448397350-	3483845850-	4772934850	3534643952
150290008	1151435850	1129377550	1758706650	6137829951
150290009	1448030850	2165978350	2555755650	6165369151
150290010	1395446750	1634071750-	2133658650	3108450852
150290011	1188649250-	4287148349-	1263606150	1816671952

COEF	COSINE	SINE	MAX	PHI
160290000	2333148052			
160290001	3890939151	6522554851-	7594540951	3008176053
160290002	3047848751	1396327550	3051045651	1311544351
160290003	1038229751	1279451051	1647700251	1698062452
160290004	1111167751	2616272550-	2143959251	8666905752
160290005	5614655050-	4749946750-	7369622250	4402639952
160290006	6737222650-	7155417250-	1174955651	3894343752
160290007	2019433350-	4506405050-	4949205950	3512308352
160290008	1349043350	1016746750	1701479550	4692679751
160290009	2907085050	2052666750	3546733550	3913722651
160290010	1361037550-	6854133349-	1623893550	2110457352
160290011	1612176750-	3202937850-	3585794950	2211653852

COEF	COSINE	SINE	MAX	PHI
170290000	2040115552			
170290001	3987613651	5169427251-	6688181251	3065995153
170290002	2288687151	1090317550-	2271305751	1786242453
170290003	7500620050	1050450551	1290751451	1815723552
170290004	4491454250	5003105050-	6723375050	7797876652
170290005	4238266750-	8417632550-	7424406750	4865496252
170290006	3759441550-	8590107550-	7376978650	4106069052
170290007	1127176850-	3750386750-	3916111350	3618169752
170290008	1255775850	1643165850	2068082950	6576429151
170290009	1123729250	2725385050	2947963850	7510248851
170290010	5771925049-	1402124250-	1516279550	2476252052
170290011	2031375049-	4134495950-	3141071450	2420836552

COEF	COSINE	SINE	MAX	PHI
180290000	3277380654			
180290001	2496513352-	2019417353	2034790453	9704746052
180290002	4764557553	8653541751-	4765343253	1794797553
180290003	1499258853	1337003353	2008819253	1390860752
180290004	1374480353	4269982552-	1439278853	8568549552
180290005	1020494753-	5088139252-	1140307453	4130012752
180290006	2323040852-	7857277552-	8189177852	4225341952
180290007	2664583344	2472100051-	2472243651	3865965052
180290008	3186590052	4321116751	3215754552	9652481650
180290009	2473361752	8946786751	2640202352	2709591451
180290010	9997958351	3762149252-	3892779952	2848822652
180290011	1446344252	1780745851-	1457265152	3208918952

IBM TAB NO. 9
TYPE II STEADY STATE CONDITION NO. 65
LEVEL FLIGHT, TRUE AIRSPEED 33 KNOTS

COEF	COSINE	SINE	MAX	PHI
10650000	1014918755-			
10650001	2904949154	1804593654-	3419837354	3281508953
10650002	8464860853	4286749453-	9488418653	1665707953
10650003	1033949154-	4786128753	1139351154	5172022952
10650004	6753595053	6553958353-	9410919953	7896487252
10650005	1438343353-	9778159253-	9883381453	522638952
10650006	7184678353-	4119210353	8281756853	2502882552
10650007	1302400554-	9194475053	1594249354	2068275752
10650008	1293255353	1078496653	1683943153	4978257651
10650009	1717879253	4019755353	4371446253	7428901551
10650010	9927620052-	3590953352	1055711153	1601142752
10650011	1367334853-	2723618253-	3047572953	2212200352

COEF	COSINE	SINE	MAX	PHI
20650000	4106312553-			
20650001	3751510553	926297253-	9993828853	2920479853
20650002	2118836352-	3361322052-	3973405752	1188872053
20650003	8091014053-	5907680853	1001824354	4795494252
20650004	1046637453-	5879456352	1200470753	3768875752
20650005	2456602352	4349798353-	4356729753	5464648452
20650006	1216363153	1159786853	1680667953	7272673751
20650007	1561898853-	1248701053	1999695553	2019407152
20650008	2262993452	3429669252-	4108986552	3792724652
20650009	3099674252	5330547452	7377087052	5140892551
20650010	5230489852	9867419252	1116798953	6207247651
20650011	2237524352	3882381751-	2270956652	3183240752

COEF	COSINE	SINE	MAX	PHI
30650000	1401687553-			
30650001	1355279353-	9142265853-	9242175453	2615677053
30650002	2416107753-	3891501152	2447246253	8542512652
30650003	7999241853-	7207895453	1076762054	4599295652
30650004	2782813853-	2634175153	3831831353	3414294252
30650005	6898917552	2566127953-	2657247353	5700958152
30650006	4109508853	6471583351	4110018453	1503682550
30650007	2300847353	1540241353-	2768797953	4660010252
30650008	4853764252-	3362766052-	5904843952	2683935052
30650009	2197742552-	1075839553-	1098058053	2671715452
30650010	4422519252	2273614652-	4972725552	3327523352
30650011	7590563352	9631201752	1226281853	4705233651

COEF	COSINE	SINE	MAX	PHI
40650000	3072100053-			
40650001	4129549653-	1048894054-	1127257954	2485101953
40650002	5140157053-	9676650852	5230448453	8466925752
40650003	8458165853-	9168359253	1247394854	4423091452
40650004	3902330253-	2821164153	4815303553	3603380052
40650005	8268820052	556690252-	9968142452	6520998952
40650006	3596933853	1119800853-	3767212153	5711792452
40650007	3441234053	3130400853-	4652042653	4538686152
40650008	5090013352-	8228377552-	9675455152	2978242252
40650009	6359670852-	1826043053-	1933620253	2786644452
40650010	8557308351-	5604687552-	5669638252	7613190552
40650011	4043656752	1043178553	118808753	6255659351

COEF	COSINE	SINE	MAX	PHI
50650000	2630951054-			
50650001	4223600053-	9881779253-	1074655154	2468575253
50650002	8477055053-	1387702553	8589888253	8535154752
50650003	8340826753-	9505859253	1264637354	4375501152
50650004	3888020153-	2370457153	4553654253	3715751952
50650005	1576094252-	2161902053	2167639553	1883393452
50650006	3110389852-	8398149252-	8955637152	4161284752
50650007	1973672853	1030935253-	2226722053	4748860252
50650008	6220608351-	2693700052	2764593952	1287543352
50650009	5549623352-	1364369252-	5714877352	2153468752
50650010	4498321752-	1746505052-	4825471852	2012190652
50650011	6406992552-	4680881752-	7934746852	1965013552

COEF	COSINE	SINE	MAX	PHI
60650000	3217473154-			
60650001	4363348453-	1002566354-	1093401754	2464804653
60650002	1004542454-	1922275053	1022769254	8458347452
60650003	9014753353-	1064760754	1395124854	4341759652
60650004	3741812853-	2536049053	4520255353	3646804452
60650005	4135018352-	3672720053	3695924253	1928474752
60650006	2602996853-	1138815053-	2841213153	3393824352
60650007	5005182552	7388490052-	8922560652	4344601352
60650008	3253784252	5635651752	6507509752	7499962651
60650009	2258921752-	6260515052	6655582252	1220449852
60650010	1310153253-	6249966751	1311643153	1772688352
60650011	7344513352-	7987215852-	1085069153	2067276552

COEF	COSINE	SINE	MAX	PHI
70650000	3966296954-			
70650001	1134662653-	5924258853-	6031940153	2591575553
70650002	1126851154-	2027461553	1144945554	8490011352
70650003	8206153153-	1041846054	1326217454	4274197452
70650004	2025782853-	9824543352	2251446853	3853194252
70650005	4219857552	2378929053	2416066153	1598824652
70650006	5023933553-	5834222552	5057696153	2889600052
70650007	5213134253-	5007921753	7228834553	1945002952
70650008	4861308351-	1319290253	1320185553	1151378552
70650009	6864605852	1407779853	1566228653	7111694351
70650010	1026172753	7923905052	1296499853	3767463851
70650011	6101528352	5222740852	8031542152	3687510951

COEF	COSINE	SINE	MAX	PHI
80650000	1601289254-			
80650001	4559598352-	2061382552-	5003922052	2043276153
80650002	4037700753-	6067760852	4083038653	8572684052
80650003	4818225853-	5273785453	7143396453	4413846552
80650004	7095754252-	1429021653	1419151653	2999999652
80650005	9897270052	1189275852	9968466852	1370384851
80650006	3863240753-	3153672552	3876091653	3077781252
80650007	4134143953-	4094016153	5818257053	1932563252
80650008	7884416751	8193455052	8231302852	1056293252
80650009	8772916751	8586499252	8631199852	9351808051
80650010	3321482552	2125744252-	3943479952	3273808252
80650011	9985992552	6281257052	1179721353	2924561151

COEF	COSINE	SINE	MAX	PHI
90650000	3101646754-			
90650001	1620251853-	4506289753-	4790604653	2502318853
90650002	4201527253-	3813476752	4218798153	8740691352
90650003	6361122553	2932722853-	7004622953	1117494953
90650004	3177918853-	6605200052	3245836653	4206461052
90650005	9146881752	6078322552-	1098232453	6527900252
90650006	3305027853-	6864296353	7618515153	1928498952
90650007	2812312953-	3043674252	2829277653	2481749252
90650008	1398279253-	1100864453-	1779631453	2727667052
90650009	2489474252	1135008253	1161989053	8625434551
90650010	6422690052	3813430052	7469484352	3069944451
90650011	1484005053	1693054853	2251378653	4433147451

COEF	COSINE	SINE	MAX	PHI
100650000	1348835054-			
100650001	1441210753-	2603493053-	2975779653	2410324953
100650002	4902140462	5490703351-	4932794552	1768045853
100650003	2290477053	2626316751-	2290627653	1197810253
100650004	1141200353-	6039666752	1291167653	3802762652
100650005	9412087551	7880847552-	7936852752	5536211552
100650006	7853013852	3803980052	4754992352	8854970051
100650007	1156620852-	4760325051-	1250751252	2891009852
100650008	1014398853-	1647182552-	1027685353	2365290152
100650009	5786768352-	1530644252-	5985779752	2164620852
100650010	2705891752	5490309251	2761029752	1146972251
100650011	3215492552	3332308352	4630731252	4183825351

COEF	COSINE	SINE	MAX	PHI
110650000	1497473352			
110650001	1493041051	1733943551-	2288172151	3107306553
110650002	8568225049-	1843301450-	2032708850	1225347853
110650003	2780965050-	1525680050	3171981450	5041671952
110650004	8737638349	9040475049-	1260164150	7847443252
110650005	1803890849-	3078333349	3567934749	2407402652
110650006	9486711749-	5987250048	9539137949	2899837752
110650007	2266508349-	3243283349	3956759749	1784958052
110650008	2246984249-	4325043348	2288231149	2113809352
110650009	1846483349	2781416748	1867314549	9518048350
110650010	7985000047	1457548349	1459733949	8686425351
110650011	5597666748	3189157549	3237910649	7276795551

COEF	COSINE	SINE	MAX	PHI
120650000	1645833350			
120650001	2071349351-	3341731350-	2098132451	1891646353
120650002	8344276749-	1097504249	8416143449	8625351452
120650003	2617492350	2509749850-	3626308050	1054012853
120650004	2063327849-	7217051748-	2204794549	4977679552
120650005	1645893749	1270081350	1280701450	1652324252
120650006	2499998849-	2083312549-	3254269249	3663426352
120650007	8038671748	5445025849-	5504044749	3977115852
120650008	3333325849-	1443370049	3632406649	1957335252
120650009	3416166748-	2597507549-	2619875449	2916751552
120650010	4057300048-	1819153349	1863849649	1025730452
120650011	1148201749-	4728541949	4865950749	9422601051

COEF	COSINE	SINE	MAX	PHI
13065000	822985451			
130650001	1290727851	1914666251	2309096151	5601503652
130650002	7909034150	3775208650-	8763847350	1672417653
130650003	3543293349	6876360849-	7735584349	9908714452
130650004	1087852350-	2771075750-	2976958750	6214158252
130650005	1625955950-	2145290850-	2691840550	4656816752
130650006	1764971550-	6206733349	1870924950	2677086252
130650007	1520678650-	6346691749-	1647807150	2895052552
130650008	1933437549	9911208349	1009803150	9870200851
130650009	9040681749-	5504768349	1058472550	1651813852
130650010	2722158348	2383545849-	2399039849	2765153152
130650011	4850433349	1213286850	1306649150	6200876551

COEF	COSINE	SINE	MAX	PHI
140650000	2305776452			
140650001	1421720050-	4281755850	4511620750	1083683053
140650002	2530601051	8471091749-	2532018451	1790413853
140650003	2254766750	6671250850-	7041985550	9622479052
140650004	4767435050	2322225049	4773087450	6971705850
140650005	5541597550-	1899251750	5858025350	3221641252
140650006	1106377550-	2389546750-	2633249850	4045925452
140650007	5773988250	1028595050	5864891250	1442982251
140650008	3206789250-	1871000050	3712699650	1871732552
140650009	9830900049-	1234820850-	1578368950	2571947952
140650010	4140605050-	4265491749-	4162517750	3541183652
140650011	2783350049	1836578550	1857549750	7398395551

COEF	COSINE	SINE	MAX	PHI
150650000	2436800552			
150650001	7944432550-	1766861351-	1937250451	2457896453
150650002	1591812451	8745506349-	1594213051	1784276553
150650003	2261979051	1826279551-	2907205851	1070277553
150650004	4219261750	6306680850-	7589573250	7594367752
150650005	9505750850-	120332351	1538198951	2563374652
150650006	2775912150-	2653591750-	3840213150	3728490352
150650007	1100190750	5212003350-	5326856350	4027421052
150650008	5757891750	2173050050	6154304450	2584587051
150650009	3012717550	3418626750	4556695750	5401265651
150650010	5442504250-	1146474250-	5561951950	1918955552
150650011	7270108349-	1922071250-	2054970250	2266192852

COEF	COSINE	SINE	MAX	PHI
160650000	2354366052			
160650001	4258288350-	2616684251-	2651106651	2607569453
160650002	5896925049	4218830050	4259843250	4102148152
160650003	2556530551	2413054451-	3515498451	1055512053
160650004	1488006751	1665868351-	2233669951	7794306552
160650005	1308422351-	1537718451-	2019370151	2608095852
160650006	6628179350-	8917196750	1111076851	2110392452
160650007	1486034850	4795151750-	5020137350	4103120052
160650008	5871666747	8185330850-	8185332950	3375513852
160650009	3713983350	4152550048	3714215850	7122282649
160650010	5535156750	4953817550	7428207650	4182769451
160650011	1396740050-	2983412550	3294181750	1046250252

COEF	COSINE	SINE	MAX	PHI
170650000	2011898352			
170650001	1389107550-	2493588551-	2497454751	2668115253
170650002	1133869751-	3665320850	1191639751	8104308752
170650003	2248282351	2177254851-	3129730551	1053065053
170650004	2785085551	2205503051-	3552596951	8040609652
170650005	1161777551-	1253789151	1704302251	2656372052
170650006	1799784851-	1571156051	2389091151	2314667752
170650007	1559326850-	1653013350-	2272447850	3238155552
170650008	8428880050-	1377773751-	1615153451	3768215952
170650009	5791958350	5488116750-	7979110650	3517143952
170650010	1463383349	6810504750	6813578750	8836557451
170650011	2076578350-	8762463350	9005161950	9393847751

COEF	COSINE	SINE	MAX	PHI
180650000	3214483554			
180650001	7374183352	8166675052	1100332553	4791921752
180650002	2399953053	2757251752-	2415739853	1767230853
180650003	1245275653	1434475753-	1899587353	1036538153
180650004	8522705852	8443767552-	1199723853	7881664252
180650005	9903474252-	5471771752	1131455253	3021578052
180650006	5912690252-	1724771752	6159118652	2728961352
180650007	2567670852	1748824252-	3106657352	4653449652
180650008	3953775051	4739883351-	6172425151	3872914852
180650009	4859441751	1622675051-	6061183751	3592175252
180650010	2288593352	8563008351	2443544652	2051385651
180650011	2784333350-	1302813352	3302930752	8225728251

IBM TAB NO. 10
TYPE II STEADY STATE CONDITION NO. 66
LEVEL FLIGHT, TRUE AIRSPEED 92 KNOTS

COEF	COSINE	SINE	MAX	PHI
10660000	8487129654-	5071090694-	6622191094	3100242553
10660001	4258808854-	4315855653-	1235236654	1002251853
10660002	1157384354-	4315855653-	1235236654	1002251853
10660003	3037401953	5642241953	2218675723	1812662452
10660004	3161266053	1025163353	3650119053	3749998452
10660005	2131054854	1069681254	2384453054	5330672051
10660006	5268767053	2490681453	5827613153	2576311752
10660007	9105812552	4687807953	4363667853	5685084952
10660008	4787895052	1059210052	5069136152	4261175352
10660009	6008564252	1176762553	1321286653	6994565151
10660010	1036318353	6655447552	1231627153	3272906052
10660011	4558775051	3017805052	3052043872	2532639152

COEF	COSINE	SINE	MAX	PHI
20660000	1523143053-			
20660001	1491486354	2323691254-	2761173354	3026948553
20660002	3017078753-	1657049253	3442176153	7581170052
20660003	3941773053	5004239453	7016174153	1860626852
20660004	1258795353-	6124479952-	1399675353	5148608252
20660005	1060197754-	5007002254	1208228654	5764148951
20660006	1527272553	4283143352-	1585360253	5741263552
20660007	6330647252-	3244721751	8356950952	2539640052
20660008	4384567252	8574161752-	9630197152	3713548152
20660009	3013171752	3164609052	4369935052	5155996451
20660010	2166148752	4070369051	2203141752	1051449051
20660011	6315013352	2045622252-	4629713252	3064895552

COEF	COSINE	SINE	MAX	PHI
30660000	1887062553-			
30660001	1240266754	2222321054-	2549970454	2331656853
30660002	4440875053-	1659962753	4822035753	7665563752
30660003	7372276453	6695800053	8256393953	1646901752
30660004	5906308352-	2220613352-	6499904952	5071152552
30660005	7676768353	3563133053	8462750453	4780092651
30660006	2677864753	9707514752-	3030708653	5687534852
30660007	7633273351-	1499763351	1249080751	1332764952
30660008	7893724751-	3642900452-	3675172452	3280136252
30660009	6332925051	1774475152-	1515893052	3277151752
30660010	4695714752-	1789794052	5024066052	1591771552
30660011	5775030452	1034797552-	2867008452	3160375252

COEF	COSINE	SINE	MAX	PHI
40660000	5600133353-			
40660001	1377373054	274537254-	2723570054	2964908553
40660002	757177753-	1410071753	760726653	8255724152
40660003	6165746653	5627433753	8930470953	1917709052
40660004	1676687452-	6278400052	8401906752	2541276052
40660005	1778762653	749716652	1948747253	4522206451
40660006	3362777953	1527006753-	387647753	5613356052
40660007	3076752652	5037864752	5900816052	837472551
40660008	169666007-	1175515552	2064106052	1616053752
40660009	1077343453-	2727175752-	103536753	214063052
40660010	1696421352-	622224752	6497713752	1047026052
40660011	4872700952	2215206652	2212744752	6067263051

COEF	COSINE	SINE	MAX	PHI
50660000	3015087554-			
50660001	1267576654	2568110354-	2664071654	2962776253
50660002	9291568353	1476836753	3277161453	6609162052
50660003	3523346753	4476873753	5697067453	1726567652
50660004	1240610753	7311711752-	1455247953	6186777652
50660005	7607148753-	3134360053	8655212953	4064773052
50660006	3331469051	4043573352-	4747666652	4716579252
50660007	1010784753	7390864752	1249553653	5147383551
50660008	5112165052-	6734254752	6960233252	1571387252
50660009	3967227051-	5017001752-	5633767452	2959133152
50660010	1327873552-	283913052-	3131324752	2446697152
50660011	4067123752-	1170174752	6222106952	1490445152

COEF	COSINE	SINE	MAX	PHI
60660000	3593281354-			
60660001	1140017754	2535316654-	2771635954	2942113353
60660002	9587894753-	2119214753	7677168553	8577450952
60660003	2302897753	4480078653	5074356653	2066416452
60660004	2922690052	1916122353-	2094961653	7345537352
60660005	1110005854-	5016683653-	1213106854	4086413052
60660006	2632233653-	2931316652	282272253	2802451652
60660007	7089572152	4245963352	6263740752	4416786151
60660008	1626843352-	1670775253	1063063153	1232987152
60660009	2201547752	6604480052-	6763947752	3604721752
60660010	1152628352	2804075652-	1213267153	3061128752
60660011	466902852-	3164732752	6167310752	1294359752

COEF	COSINE	SINE	MAX	PHI
70660000	5123697554-			
70660001	2304525253-	1292213094-	1316539654	2800812353
70660002	8376058323-	1452742753-	8520013153	8509175152
70660003	5716270052	3277028853	3326510953	2670173052
70660004	8103700051-	2049110853-	2050712653	6693382452
70660005	1272980954-	6377067553-	1423700354	4132176752
70660006	2477705123-	3721908153-	6736799254	2906631252
70660007	1177606053-	9356250852-	1507045153	3120766452
70660008	1183059753	1263194653-	1730661853	3914058352
70660009	9841797552	6192023352	1162764553	3575142951
70660010	3118233351-	3299324252	3314031852	9539905551
70660011	5178054252	4470295852-	6640744852	2901776752

COEF	COSINE	SINE	MAX	PHI
80660000	1902858554-			
80660001	3487744053-	9885027252-	3629141253	1958270753
80660002	3567481353-	6279019252	3622517553	8500889552
80660003	7317016751-	1262283853	1265719153	3140743252
80660004	2124723352-	7557031752-	1084610053	6045091552
80660005	2628815253-	3052661753-	2226423853	3162798552
80660006	1182670553-	2483510653	7750712753	1924388152
80660007	2583747552-	9292015252-	7733978152	3641761852
80660008	1777079052	1290217753-	1244726853	3400841052
80660009	5089529552	3149492552-	2126178452	3523035052
80660010	2581768552	816667091	2688410952	1768337551
80660011	3747488352	5216882252	7388819952	3384217851

COEF	COSINE	SINE	MAX	PHI
90660000	4334678354-			
90660001	1602768353-	3221682253-	7375002953	2596161853
90660002	4042173453-	5747079253	7690163853	6448723552
90660003	1956248153-	5743579253-	7794328353	8494768352
90660004	1271168753-	800924252-	1349942253	3832231552
90660005	7426782753	1792178353-	2876761053	6537947552
90660006	6245711851	887816853	887816853	1477773552
90660007	2924574551-	1409404951-	877217152	3063768052
90660008	2542790052	808882352	9166472752	7237183051
90660009	4776165052-	3242791552	5746466752	1995738252
90660010	1284444553-	6227525252	1443881153	1527899952
90660011	3906849053	2417014752-	3857858152	2917884752

COEF	COSINE	SINE	MAX	PHI
100660000	1577375054-			
100660001	3246381051-	4547847051-	5787523853	2344824853
100660002	1179415253	3367934252-	1188152953	1715993053
100660003	49887135052	2448778853-	2479215453	9383575152
100660004	1588821751-	5768135952	5767713552	2289371452
100660005	1487613753	6851782752	1627902853	4689395051
100660006	1588811352	1701400052	2475841052	8363655451
100660007	842372752-	779228352	8861860452	2313046152
100660008	4526418852-	4117783552-	6171350452	3976790952
100660009	3083780052-	4601881952-	5211974952	2578644652
100660010	3781791751-	4318872552	4332238952	7477716551
100660011	6173870051-	1338828052	4770817752	1044813552

COEF	COSINE	SINE	MAX	PHI
110660000	1587845352			
110660001	1364344551	5162733851-	5245112551	2850103053
110660002	5906498347-	3178782247-	6707770849	1041417353
110660003	7789409747-	3684468850	5817014550	2504637352
110660004	1977173047	4524108347-	4763847449	7369770052
110660005	1474424850	2912881747-	1172190250	7173850152
110660006	2972546847-	2992175347	4833470847	2178701252
110660007	4473858348	1268228347	1344854347	1008134252
110660008	2478288347	1727741747	3038998847	4339911151
110660009	8073787348-	1743078747-	2102198747	1249289452
110660010	1482466747-	231777747-	2884850149	2356189352
110660011	192580047	4527518647-	4725772847	2688829552

COEF	COSINE	SINE	MAX	PHI
120660000	1884168750-			
120660001	1001925151-	1076661851	1470752951	1329416653
120660002	3415074247-	7826831347	8268736049	5674634252
120660003	3510419150-	1398162490-	3778504050	6723867852
120660004	2916651147-	4330127847	522058749	3079077652
120660005	1650748490-	1422421850-	217731550	4418817052
120660006	6249486147-	168676447	6488394649	2751141552
120660007	8583802348	1116445047-	140872649	437632852
120660008	4168702348	433010247	4330110347	1056234652
120660009	2688166749	101812249	277977449	2371077551
120660010	719072048	3890738847-	3801960449	2837267452
120660011	8378400048	4538876447-	7534764848	3013245752

COEF	COSIRL	SIRL	MAX	PHI
13066000	2111741751			
13066001	2077112751	494020291	2049293751	120007053
13066002	182018491	211844751	104103751	170012053
13066003	1193000751	2080184751	133030751	875306351
13066004	601304600	417220751	1223274751	013002002
13066005	4780044751	10148700751	20700784751	302790252
13066006	6673417847	701140047	200774047	377344052
13066007	1213422450	220311747	152919750	203872042
13066008	2606253050	2014121350	329400150	402882852
13066009	172759247	169174750	1700945150	935214951
13066010	995729247	2701174750	2882533050	249791762
13066011	126610750	217887747	1285000250	895621850

COEF	COSIRL	SIRL	MAX	PHI
14066000	2326402752			
14066001	6112335070	2637224250	842317450	436700002
14066002	3177010751	420100347	2170112051	3949297050
14066003	147038751	123447351	100463751	139722052
14066004	638730750	112311750	647074050	340074151
14066005	648174250	3024030750	740670050	410411252
14066006	1273730750	814447750	627500750	463117952
14066007	2712420750	117247750	277030750	34747751
14066008	173026847	1270400750	2470430750	049001402
14066009	2431100750	120440750	24230750	34723052
14066010	207301350	1207300750	3120750	32007752
14066011	1412311750	61070750	10707750	737020051

COEF	COSIRL	SIRL	MAX	PHI
15066000	24307751			
15066001	2002327251	302777351	227220751	312320053
15066002	173030751	3043030750	17320751	271144751
15066003	110170751	60100750	12007751	107370002
15066004	1410072051	1701700750	143007751	872030052
15066005	30440750	1207700750	4130030750	377007752
15066006	592774750	30730750	27030750	371012752
15066007	144047750	30230750	777030750	333043052
15066008	173140750	13270750	17300750	613027751
15066009	1440300750	27077750	173070750	61036751
15066010	173440750	121077750	17300750	310043052
15066011	117004750	12700750	17300750	101007752

COEF	COSIRL	SIRL	MAX	PHI
16066000	233344051			
16066001	30707751	622724051	2274940751	300070053
16066002	304704751	127030750	302124051	131154451
16066003	1030227751	127047751	104770051	1070062452
16066004	1113167751	12707750	12707751	060090752
16066005	2030000750	40400750	12707750	40007752
16066006	673720750	70304750	113072051	307034352
16066007	201340750	400040750	404000750	301230652
16066008	173030750	10370750	173430050	407007751
16066009	2907000750	40400750	17307750	31172051
16066010	173030750	60407750	17307750	213043052
16066011	101270750	30407750	30077750	2211073052

COEF	COSIRL	SIRL	MAX	PHI
17066000	205011507			
17066001	370701350	230740750	200000751	30077053
17066002	20007751	40400750	17300751	170042453
17066003	1730200750	2000700750	12707750	101572352
17066004	40407750	2000700750	17307750	173070052
17066005	403000750	807000750	270700750	400396052
17066006	373040750	800000750	173070050	410006052
17066007	11771700750	370000750	371011350	201010752
17066008	12707750	104310750	100000750	657042751
17066009	117302750	27030750	270700750	701000051
17066010	27030750	14070750	17307750	247020052
17066011	205137007	37340750	37107750	440000052

COEF	COSIRL	SIRL	MAX	PHI
18066000	32117007			
18066001	247001350	201047750	203070453	2734740052
18066002	47047750	803947751	470343053	173477753
18066003	10727007	12707750	100001353	1330063752
18066004	137400750	40400750	133270053	060074352
18066005	107040750	10407750	114040753	610012752
18066006	2327040750	80377750	01007752	427041552
18066007	2000700750	1471000751	247000751	300700752
18066008	170040750	201117751	17307750	007001050
18066009	24730750	80400750	17300750	207074051
18066010	273700750	27027750	20277752	200002052
18066011	104070750	17077750	14570752	320070952

IBM TAB NO. 11
TYPE II STEADY STATE CONDITION NO. 67
LEVEL FLIGHT, TRUE AIRSPEED 111 KNOTS

COEF	COSINE	SINE	MAX	PHI
10670000	4003885454-			
10670001	8348294254	9698360054-	1279657055	3107216953
10670002	3212249584-	2832320254-	4282590954	1107017253
10670003	3222463352-	3027775053-	3044875153	8797496052
10670004	4310820053-	3318552552	4323574653	4389948752
10670005	8837250853	5490017453-	1040371554	6562999652
10670006	3257064753-	8621708352-	3369244653	3247109952
10670007	4931476753-	5249639353-	7202650653	3239856152
10670008	1915947552	1659136752-	2534480152	3988858852
10670009	8970484252	9956394252	1340146953	5331318951
10670010	3417763853-	1277700553-	3648784553	2004978252
10670011	5976927552-	4877691752	7714606152	1279843652

COEF	COSINE	SINE	MAX	PHI
20670000	9183675053			
20670001	2677300854	3424751454-	4347052154	3080165453
20670002	9282345853-	1735073553-	9443115253	9529383152
20670003	1907318153-	8615345853	8823947253	3416105252
20670004	1145645253-	5144524252	1255852053	3895438152
20670005	5580917153	3001153453-	6336683553	6634614752
20670006	1301221353	1584099253	2050011553	8433234151
20670007	8542912552-	1971965052	9421139052	2215203952
20670008	6364670852	1714794252-	6591627552	4311515052
20670009	4929527552	1856679252	5267589552	2293178351
20670010	1737669252	5187176752	5470493252	7147949951
20670011	2955189252	8007222551-	3061747752	3134904252

COEF	COSINE	SINE	MAX	PHI
30670000	4390454253			
30670001	2006955454	2871667254-	3503475854	3049490053
30670002	796670053-	3881444153	8862089353	7701237552
30670003	2548845853-	1188954254	1215968054	3403325652
30670004	1116363453-	1148949353	1601983753	3354396952
30670005	3547906253	226007753-	4206585453	6550054752
30670006	1650272753	1035465453	1948227053	5351043651
30670007	1377104852-	4957470852	5145185652	1507491952
30670008	1779691252	3642975052-	4054450452	3700459552
30670009	1692462852-	8304452551-	1885224052	2290399352
30670010	1037941752	3220248852-	3383385652	2878650352
30670011	1817510052-	4457106751	1871363352	1511101852

COEF	COSINE	SINE	MAX	PHI
40670000	6289000052-			
40670001	1964525854	3059465554-	3635889354	3027050953
40670002	9483210853-	6011790353	1122821954	7381387352
40670003	3146268753-	1442203354	1478123554	3410422352
40670004	40670004	8816144252	1296148253	3428556852
40670005	1244533453	4893592952-	1337286853	6770697952
40670006	1696665153	4411314252	1753074353	2429028151
40670007	6713524052	1084458053	1275446353	8319958651
40670008	3054017852-	2350437852-	3854080052	2719856952
40670009	3149222952-	1693028852-	3575465152	2314028652
40670010	2556537652-	277062352-	3769867452	2273007152
40670011	2045762551	3390036952-	3396203952	2485940052

COEF	COSINE	SINE	MAX	PHI
50670000	2635616754-			
50670001	1634821754	2941907954-	3365629854	2990609853
50670002	1145992454-	4033710753	1214910254	8030437352
50670003	5791465453-	1616797854	1717395154	3656927652
50670004	1477451053-	9966669252-	1782191553	5350075852
50670005	2565798353-	2064247053	3293089353	2823649652
50670006	1866235852-	9331290852-	9516082452	4311503352
50670007	6150493352	2654787552	6698989852	3335267251
50670008	2954885852-	2693900051	2967140252	2184886052
50670009	8648160852-	6840091751-	8675168852	2050247652
50670010	5773801752-	1145922552-	5886418652	1912258852
50670011	8955475051-	1864220852-	2068169452	2221281652

COEF	COSINE	SINE	MAX	PHI
60670000	3215846354-			
60670001	1433112254	2996686354-	3321737354	2955586453
60670002	1250628354-	3564795353	1300441854	8204515652
60670003	5307670853-	1812385054	1888505554	3544099152
60670004	2163747953-	1775230253-	2798793953	5484172752
60670005	4104015753-	3254747353	5237969553	2831666752
60670006	7808972452-	7158296752-	1059345453	3708512352
60670007	1238875852	2967518352-	3215739152	4180850152
60670008	5043333352	3099629252	5919705452	3946857151
60670009	6141425852-	9607033351	6219235552	1899191552
60670010	6713975052-	1432150051	6715502352	1787780252
60670011	6100333351	7018150051	9298843751	4454736551

COEF	COSINE	SINE	MAX	PHI
70670000	4016536354-			
70670001	2381386553	1608302854-	1625837654	2784224953
70670002	1228601254-	1047610052-	1228645854	9024427452
70670003	3744908453-	1424353154	1472761154	3491027352
70670004	3840885253-	2722791153-	4708077153	5383317752
70670005	5177625253-	2402589653	5707910353	3102142852
70670006	2009570353-	1555804353-	2541436653	3629115952
70670007	9625910052-	1991664353-	2212082353	3488643852
70670008	5996352552	4771907552-	7663376852	4018589652
70670009	1022267653	2413257552	1050366253	1475842751
70670010	6823475852	7511083350	6823889252	6306698349
70670011	3251530852-	6036749252-	6856733552	2197200752

COEF	COSINE	SINE	MAX	PHI
80670000	1879206054-			
80670001	4748744553-	2958304553-	5594831553	2119214953
80670002	5393094153-	1562690052-	5395357653	9032986652
80670003	1031364853-	5282529853	5382270353	3368249952
80670004	1990753353-	7852060852-	2140011153	5038140052
80670005	2700094253-	9965218352	2878118253	3194849052
80670006	6307305052-	5124726752-	8126802652	3651568252
80670007	6380427552-	1792347353-	1902526653	3577217352
80670008	7292876752	7852077552-	1071639753	3911067852
80670009	1031367753	2366612552	1058171953	1435951951
80670010	8202828352	1168416752	8285625552	8106718650
80670011	4502725051	1173948351-	4653244851	3139883552

COEF	COSINE	SINE	MAX	PHI
90670000	5173648354-			
90670001	5282653853-	8811323353-	1027355154	2390560553
90670002	2331278853-	3007609353	3805335153	6389011752
90670003	1044692154	8859847553-	1369799554	1065664453
90670004	1525403353-	1761379353-	2330088553	5727663352
90670005	8247211752-	2449711353	2584811553	2172127152
90670006	4576206153	3813491353	5956876553	6634245151
90670007	7189342552-	1476880753-	1642572153	3486336352
90670008	1271159453-	2201722553	2542327353	1499987752
90670009	7393468352	1309481053	1503786653	6727829851
90670010	4533009553-	8058790852	4604086953	1699192852
90670011	2162345852	2233824753	2244266153	7679180451

COEF	COSINE	SINE	MAX	PHI
100670000	1531110054-			
100670001	4630862153-	5981291753-	7564438853	2322520953
100670002	2358766453	8323900852-	2501330153	1702812453
100670003	3525843653	1588574453-	3867187953	1119153353
100670004	1283851453-	1070667053-	1671706453	5495660052
100670005	9286890852	7514360052	1194621153	7795515451
100670006	3170018352	1901976752	3696827252	5160550451
100670007	7689567551-	1077894553-	1080633853	3798850152
100670008	8023516852	7961372552-	1134577953	3942952152
100670009	4192436752-	3039763352-	5685095252	2472065652
100670010	2723362752	1186134952-	2970457952	3364649252
100670011	1018657552	9584560051	1398678352	3932357251

COEF	COSINE	SINE	MAX	PHI
110670000	1920373452			
110670001	2863941351	7339815151-	7878771951	2913153653
110670002	2927930850-	9584308349-	3080806550	9906269052
110670003	3121892550-	2390151750	3931798350	4752066052
110670004	1298157550	7783050049	1513595650	7736155351
110670005	1559623750	1597400049	1567782850	1169592951
110670006	1048537250-	9987333348	1053283050	2909316452
110670007	5489558348	1325491749-	1434670949	4178528952
110670008	9983500048	4323833349-	4437593649	3537518052
110670009	1261525049	2931333349	3191263149	7412772251
110670010	5312741749	4395266749-	6895186249	3203988252
110670011	3027558349	9665833347-	3029100949	3256103552

COEF	COSINE	SINE	MAX	PHI
120670000	6666666749-			
120670001	1098262951-	2390540651	2630753851	1146750253
120670002	2734228349-	6808176748	2817714949	8300890052
120670003	2330877750	1967219550-	3050072750	1066120753
120670004	3749981349-	1443372549	4018169249	3973705752
120670005	2077098349	9379411749-	9606648849	5649736052
120670006	1666682349	8333483348	1863410749	4427541551
120670007	3560555249-	1727423349-	3955287049	2940220652
120670008	8333256748-	7217125048-	1102406749	2761182852
120670009	4975490849-	1994493049	5360364849	1757288452
120670010	2317583349	1402491549	2708906649	3118033851
120670011	2976380849	4436239149-	5342196249	2762351252

COEF	COSINF	SINE	MAX	PHI
130670000	8778732151			
130670001	4229119351-	5181357251	6688192051	1292219653
130670002	2347099951	1195688051-	2634112351	1665021353
130670003	1091174651-	8722560850	1396958451	4712069752
130670004	9716442549	6773580350-	5843769350	6955322752
130670005	1944620150-	1592150250	2513262750	2813824652
130670006	2653292850-	2011859350-	3329795950	3619520452
130670007	1541053349-	4822074249-	5062335949	3603957252
130670008	1466314750-	5598758348	1469381750	2222704452
130670009	5673637549-	7319145049-	9260672049	2580199552
130670010	4067480849-	7120281749	8200171449	1197372952
130670011	4017549249-	2072475048-	4022891249	1663209352

COEF	COSINE	SINE	MAX	PHI
140670000	2411348352			
140670001	6121765650	4656421750	7691442050	3725784452
140670002	4913598851	2379590351	5459478351	1292014452
140670003	9879052550-	1187034351	1544346951	4325626852
140670004	1034281351	1741065850	1048833151	2388836951
140670005	2697620850-	7152875049	2790841150	3302989652
140670006	2468282850	2408273350-	1448506950	5261750552
140670007	1247196850	2413417550	2716631050	8953021451
140670008	1880465850-	2715708349	1897974350	2147279352
140670009	3095333348-	9986783349-	9991579149	2980274852
140670010	1226751750	1903833349-	1241436950	3511784752
140670011	5786333348	4434455849	4472048249	7505974151

COEF	COSINE	SINE	MAX	PHI
150670000	2708696352			
150670001	4412066951	4231620351-	6113341551	3161959453
150670002	5757215951	3539525251	6758237551	1579156052
150670003	1946642451-	6756964250	2060578151	5361922452
150670004	1677260851	1661920850-	1685474351	8858532652
150670005	3754926750-	16246274250	4091317550	3132071452
150670006	4078030250	3972375050-	5692951450	5262538052
150670007	4823941748-	3954952550	3955246650	1295697452
150670008	3096080850-	1817116749	3101408650	2208014052
150670009	5715450049	2566750048-	5721210649	3971429352
150670010	1191951750-	1737383349	1204547250	1717070052
150670011	3176425049	8800058349	9355784449	6377518251

COEF	COSINE	SINE	MAX	PHI
160670000	2767713552			
160670001	4844513151	6475826151-	8087374851	3067998753
160670002	4150003951	3318988351	5313964251	1932563352
160670003	2121633851-	7963408349	2123127851	5928348552
160670004	2716910351	2304634250-	2726667491	8878786752
160670005	2772792550	1084536651	1119421051	1513172452
160670006	3583946150-	4321158349	3609902250	2885417552
160670007	1430072550	1123250048	1430116650	6428861049
160670008	3985650049-	1958342550	1998489350	1268797752
160670009	1573485850	2271610850-	2763344650	3385659452
160670010	7805531750	4594700049	7819043350	3368809550
160670011	2019350050	5983853350	6315399750	6486561851

COEF	COSINE	SINE	MAX	PHI
170670000	2402293252			
170670001	4864299651	7978634051-	9344517851	3013692353
170670002	6368272751	2704063351	6918587651	1150340052
170670003	1442509351-	2675133751	3039271951	3944494352
170670004	8916280050	1719981750-	9080660050	8727038852
170670005	5502620849	3095450850-	3143979050	5601597652
170670006	1323110650-	2787536750-	3085608950	4076809052
170670007	1246468350	1878320850-	2254278650	4336693852
170670008	1977441750-	2449006750	3147683250	1611487752
170670009	7053333348	1734333350-	1735767050	3025876352
170670010	2434150850	2561283349-	2447589050	3539932852
170670011	1637750850	1134096250	1992084850	3154682651

COEF	COSINE	SINE	MAX	PHI
180670000	3435734754			
180670001	9378560852-	1803369753	2032662453	1174770353
180670002	7502590253	1993839353	7763005553	7441278551
180670003	2360825153-	1949677353	3061619253	4681618352
180670004	1529368353	5312817552-	1619020653	8521086852
180670005	3579446752-	3086456752	4726378552	2784594552
180670006	4719624751-	4241535852-	4267713152	4394178852
180670007	9943258351	1645671752	1922737452	8438478351
180670008	3297250052-	8293766751	3399959452	2073512152
180670009	1556358351-	1753377552-	1760291352	2943639952
180670010	1541880852	5248600051	1628764752	1879870151
180670011	2495291751	1366925852	1389514652	7241335751

IBM TAB NO. 12
TYPE II STEADY STATE CONDITION NO. 68
LEVEL FLIGHT, TRUE AIRSPEED 110 KNOTS

COEF	COSINE	SINE	MAX	PHI
10680000	8932581354-			
10680001	7680348354	6962796354-	1037261955	3178350853
10680002	2837109654-	3200010854-	4276594454	1142200053
10680003	1945966053-	5230253353	5580531753	3680273552
10680004	2825985153-	2405899853	3711407553	3489765552
10680005	4326354753	6612980153	7902458553	1136128352
10680006	4789789853-	1149560353-	4925807053	3224931052
10680007	3330563953	1960347853-	3864663053	4707417352
10680008	2059619053	4148158352	2100976653	1423408751
10680009	2216668352	2356367353	2366770653	9402879851
10680010	1325600553-	4746903352-	1408029753	1997021752
10680011	1198029953-	4463150952	1278465053	1450614452

COEF	COSINE	SINE	MAX	PHI
20680000	1234887553			
20680001	2413068954	2679007754-	3605549154	3120103953
20680002	6974953853-	1554251853-	7146025553	9628108952
20680003	2638530653-	6506574253	7021207353	3735780952
20680004	6364705852-	2204808352	6735774652	4022333152
20680005	2877479153	2859233853	9056489153	8963552251
20680006	2828984551-	7637614252	7642651852	1535354652
20680007	1860650352-	2066208351	1872087552	2480905852
20680008	1838681752	2450108351	1854934152	9487688450
20680009	6018387552	2258530052-	6428214852	3771447952
20680010	1293780052	1115935152	1708560252	4077903751
20680011	1752740852-	1334429152-	2207847052	1975285052

COEF	COSINE	SINE	MAX	PHI
30680000	1138441753			
30680001	1829297354	2528562954-	3120890754	3058839853
30680002	5319916353-	3198700653	6207256653	7449336652
30680003	2419414053-	8096321753	8450088153	3554588852
30680004	1941513552-	4483709252	4886013052	2835333552
30680005	1703955553	1603638953	2339760853	8651846751
30680006	1876781753	1488481753	2395288853	6403008551
30680007	7870508752-	2023290052	8126414352	2365471752
30680008	2588678852-	1120894452-	2820932952	2542656952
30680009	3981208351-	3168471352-	3141385452	2920425352
30680010	5156639251-	6200780352	6222192952	4675384251
30680011	3345556752	4570852552-	5664401452	2783651152

COEF	COSINE	SINE	MAX	PHI
40680000	1867466753-			
40680001	1778435554	2006479354-	3322523054	3023619953
40680002	6174799553-	4776258153	7930403153	7056736852
40680003	2263297453-	7513633353	7781093653	3445974352
40680004	1357353752-	5284691752	5461066552	2609794952
40680005	5402151452	7927895052	9593474852	1114581352
40680006	1832398353	6107575052	1931516853	3072482551
40680007	7596926852-	4065406352	6914070652	2120602052
40680008	6447344852-	2871000042	6447344852	2249996952
40680009	2477612552-	6216468351	6103002052	1796144652
40680010	2385997752-	2155432752	2154121452	1774063752
40680011	2161899452	2905902852	5621884052	4850174851

COEF	COSINE	SINE	MAX	PHI
50680000	2648058354-			
50680001	1442030954	2833400754-	3179247254	2969733753
50680002	7989957553-	2438544353	8353796753	8151387552
50680003	3731960853-	1107147254	1168353654	3620929652
50680004	3421495852-	1993335753	2022487053	6506507152
50680005	1820554053-	1573489353-	2401701253	4416731652
50680006	5598731752-	6220411751	5633181452	2894336952
50680007	5359731751	1744755051	6537752051	4990565451
50680008	4354600852	2154970852	4658646652	3291191051
50680009	1249478352-	2504480052-	2798659852	2705394752
50680010	5014737552-	4167802552-	6520595852	2197203452
50680011	2506375051-	5371645352	5377489452	8424677051

COEF	COSINE	SINE	MAX	PHI
60680000	3193070054-			
60680001	1301403854	2916130654-	3193347854	2940501453
60680002	8253841053-	1790998553	6445911653	8387673652
60680003	3638052753-	1148732254	1252243954	3562975352
60680004	1024935553-	2676936453-	2866440553	6226233952
60680005	3050519853-	7787205453-	412062153	4448347952
60680006	1496722651-	6507546752-	1632072352	3391645952
60680007	2817437552	5068676752-	4576861252	4399918452
60680008	1138785852-	8453616751	7418262852	1792652252
60680009	3192375052	7359233351	5276101552	1442372151
60680010	8693491751	2942409252-	3068149352	2864600452
60680011	6792416752-	450964852	8034247452	1342694152

COEF	COSINE	SINE	MAX	PHI
70680000	3961435054-			
70680001	1492231153-	1594427454-	1601395154	2753467753
70680002	8222982353-	1357213653-	8334234653	9468612452
70680003	1218643353-	1012539854	1019846954	3228761252
70680004	2479560353-	2554372053-	3559920853	5646286052
70680005	4270298653-	4072312853-	5900178153	4472810552
70680006	2398520053-	8427290052-	2542260953	3322652052
70680007	1612013653	6947145852-	1755339353	4809798052
70680008	1118275253	1403495852	1127008453	8942224650
70680009	1348299953	1423440852	1355792953	6696182450
70680010	7032921752	1000663153	1223088953	2487944751
70680011	4529689252	3281259252-	5593276952	2946189352

COEF	COSINE	SINE	MAX	PHI
80680000	1814161754-			
80680001	4802453853-	2261513353-	5308295953	2052161253
80680002	4432945153-	1120285053-	4572312453	9709136652
80680003	7489959252	3279170553	3303622253	2571126052
80680004	1261468053-	9559037552-	1582736153	5428844952
80680005	2319072753-	1426821853-	2722850853	4232042852
80680006	1576830953-	7884179252-	1762951653	3442752252
80680007	4338448352	758777552-	8740162052	4282297852
80680008	6701563352	6627966751-	6746257352	4427280452
80680009	7489973352	2687058352-	7957385452	3700714952
80680010	6879705052	4501246752	6271408852	3319588351
80680011	4591850052	9128675851	4681710552	3170510052

COEF	COSINE	SINE	MAX	PHI
90680000	4309255054-			
90680001	6581879853-	1202389354-	1370747654	2413036953
90680002	5981160353-	1769865852-	5983778453	9084747852
90680003	1210847554	4637894353-	1296631154	1130139153
90680004	2160987453-	2201742752-	2172174853	4354561152
90680005	1237203153	3794049853	3990674953	1438787052
90680006	8098162553-	1525395053	4027763753	2337874152
90680007	6239110852	1453407053	1581822353	4189002252
90680008	1906747653-	6603200852-	2017703353	2466834252
90680009	6031961352	2480634653	2552916753	6461453651
90680010	1137364453-	2465076553	2714611253	1147681952
90680011	3639132552-	3422954252	4995991952	1243211952

COEF	COSINE	SINE	MAX	PHI
100680000	1535865054-			
100680001	4635496553-	6757684153-	8194761953	2355514753
100680002	2167428553	9170246352-	2353440253	1685335553
100680003	4195389953	3048008350-	4195391653	1199824953
100680004	3170016452-	1153027553-	1195608853	6365686652
100680005	4761408751-	1510776653	2511127153	1836112752
100680006	6340192851	2218476752	2707777752	1234233052
100680007	6078697652	7724140052-	9633237152	4402638752
100680008	1902019852	5470087551-	1974683652	4298725352
100680009	1158104152	1304000052-	1744894452	3461714852
100680010	1386208851-	477759052-	4974836752	2538200852
100680011	1444160852	2636547551-	1465311452	3144171852

COEF	COSINE	SINE	MAX	PHI
110680000	1824010352			
110680001	2595927751	6999927351-	7465776851	2903473353
110680002	1600390050-	5358268749-	1687708050	9925553752
110680003	3813375050-	1719350050-	4183660250	5191021652
110680004	1348089250	1810607050	2261733750	1335325652
110680005	8423124249	2186641749-	702373149	6908920052
110680006	1098466350-	4493463349-	1186820450	3370759052
110680007	8326944249-	5788233349-	1014108750	3068628252
110680008	7489175049	2594566749	7925676549	2386531051
110680009	9774925049	3776675049-	5921820549	3751405252
110680010	3021791749	3628416749-	4721931149	3097679752
110680011	5685833347-	1378286749-	1379459049	2433076252

COEF	COSINE	SINE	MAX	PHI
120680000	2916666749-			
120680001	3855200450	1917329751	1955704251	7863105552
120680002	4512552849-	3667576849-	5752454949	1091647753
120680003	2335065850	2664216150-	3542677850	1037443753
120680004	3333337849	6916666743	3333337849	2972214646
120680005	1254504950-	1424451549	1262566150	3470439852
120680006	8333263748-	8333216748-	1178498249	2749997552
120680007	7877480749-	3710770349	4707710449	2211099652
120680008	5416669849	3608456149-	6508553449	4072117552
120680009	3315991249	1642138849-	3700326749	3707272952
120680010	9041055048-	1484249349	1737530649	1213469852
120680011	2038652548	8053317749-	2055897749	2467728452

COEF	COSINE	SINE	MAX	PHI
130680000	9014830051			
130680001	3964848851-	5492091251	6773705951	1258262753
130680002	1881794951	1050476851-	2159145851	1654141953
130680003	1334573551-	5966165050	1461861051	5197104752
130680004	1175403850	7774172150-	7862526750	6764940952
130680005	1898414850-	7693875849	2048398450	3158766552
130680006	1793740050-	2324997350-	2936514250	3872495852
130680007	4598425049-	1533308349-	4847323649	2834865152
130680008	1760667050-	5807110849-	1853961650	2478172852
130680009	8034775048	5558509249-	5616280049	3091389952
130680010	1653885049-	5062319249	5325637249	1080924852
130680011	2857248349-	6377875048	2927565749	1521971652

COEF	COSINE	SINE	MAX	PHI
140680000	2384049952			
140680001	1391929151	8860993350	1650042051	3248075152
140680002	1780593251	2624866851	4602478851	1738612952
140680003	1677619351-	2689440850	1498725051	5698626252
140680004	8827803350	1182163350-	8906605550	8809347352
140680005	5467171747-	3625550049-	6960074649	4271006352
140680006	3076302950	1933275850-	3657506650	5466597152
140680007	1090024350	9681866749	1457922650	5944611451
140680008	1153994250-	3583491749	1208352450	2034361252
140680009	2251583349-	6895775049-	7254058849	2799081152
140680010	8409508349	4337491749	9462223049	2728397051
140680011	5976666748	3107732549	3167057449	7188950851

COEF	COSINE	SINE	MAX	PHI
150680000	2679907352			
150680001	5615430451	2571481851-	6176301651	3353958653
150680002	3507900751	3726813351	5116069551	2337840652
150680003	2901024351-	7482422550-	2975965151	6482089952
150680004	1868158751	7094741750-	1994875451	3480126152
150680005	2934707250	2821037250	6076373250	4774766051
150680006	1697007250-	7674098349-	3676781450	3414652752
150680007	1007994250	4370791749-	4445566050	4043967052
150680008	4428698850	7045167449	4445610750	1129665051
150680009	1464440850-	1371274250	1766453950	1520961152
150680010	4392083349	1592155850-	1592758350	2715601552
150680011	9536291749	1706425850	2131635050	5765903551

COEF	COSINE	SINE	MAX	PHI
160680000	2688962352			
160680001	6123499951	5561306451-	8271963551	3177545653
160680002	3457126051	3614470451	5004754451	2313711952
160680003	3041692551-	1347729850-	4044652551	6084222852
160680004	1454171551	4035422550-	1506163251	8612001552
160680005	5198734750	2564363350-	5796791750	6674887952
160680006	8769653350	2778706049	8720054450	4024721252
160680007	1104720850	8172850050	8247174450	1175743052
160680008	6795642750-	2621840049-	6460758450	2277618252
160680009	1259927250	3374744250-	442523350	4211176152
160680010	8234916749	2167176749	1127816750	4767920751
160680011	1175577550	2337221350-	1516215450	2597286652

COEF	COSINE	SINE	MAX	PHI
170680000	2150884452			
170680001	5921290951	6557479251-	1040306252	3046935853
170680002	5931086351	2536424551	6450677051	1157698952
170680003	2287107851-	1473722551	2720147851	4906791352
170680004	7664988350	1516546750-	1813575450	8720209252
170680005	5431077549	1801560850	1881644850	1464475452
170680006	4842096850-	5132758350-	6920568750	3777893752
170680007	4148967549	3186110050-	3213030250	3963132752
170680008	4000868350-	9259025049-	4196607650	2412878952
170680009	5306416748	1594965050-	3475356650	2990603852
170680010	6838083349	2369076750	2464828850	7389334251
170680011	876193349-	1124218850-	1425311450	2109719552

COEF	COSINE	SINE	MAX	PHI
180680000	3389009554			
180680001	3086909252	2691556853	2709200653	8345741152
180680002	5822703451	2319499453	6267691253	1086004152
180680003	3410093353-	6835914252	347793253	5622155552
180680004	1306318453	9226866752-	1599318153	2119136352
180680005	5648116751-	8586975051	1027633352	2466824252
180680006	6726791151	3707443352-	3759275152	466303252
180680007	7015683351	2810875051	757812451	3119114151
180680008	2706810852-	2688116751-	2720127852	2120897752
180680009	1994631351-	1582673352-	1575192952	2920188152
180680010	5961400051	8021025051	977374651	5337946451
180680011	3048666750	1673314251	1700859851	7243122851

IBM TAB NO. 13a
MANEUVER CONDITION NO. 34 - SYMMETRICAL PULL-UP
REVOLUTION I

TIME	PER CENT CHORD	K	DELTA PER CENT		PRESSURE RADIUS	
			40	50	60	90
			(120)K	10*(120)K	60*(120)K	90*(120)K
4	0		2105400051	2701930051	3052830051	3438820051
	1		3614270051	3263370051	3894970051	2421210051
	2		1333420051	4761700050	5965300050	7228150051
17	0		1072620051	1290780051	1363500051	1636200051
	1		1836180051	1818000051	1999800051	1181700051
	2		5999400050	4999600050	3817800050	7453800050
34	0		5400000050	6600000050	6240000050	7920000050
	1		8880000050	9240000050	9840000050	5880000050
	2		3360000050	3240000050	1490000050	3240000050
63	0		2282800050	2677900050	2590100050	3380300050
	1		3819300050	4302200050	4258300050	2502300050
	2		1712100050	1712100050	5707000049	1799400050
90	0		9579000049	1081500050	1050600050	1328700050
	1		1575900050	1730400050	1730400050	1328700050
	2		1236000050	6035000049	3708000049	1019700050

TIME	PER CENT CHORD	K	DELTA PER CENT		PRESSURE RADIUS	
			55	60	60	90
			(120)K	10*(120)K	60*(120)K	90*(120)K
2	0		4700160051	5437440051	4838400051	4700160051
	1		4700160051	7004160051	6312960051	4746240051
	2		3778560051	2856960051	2119680051	3502080051
9	0		2772450051	3272400051	3090400051	3136050051
	1		3136050051	4272400051	3636000051	2681550051
	2		2045250051	1636200051	1181700051	2045250051
17	0		2105400051	2456300051	2421210051	2456300051
	1		2456300051	3191100051	2733020051	2105400051
	2		1649230051	1333420051	9474300050	1543960051
23	0		1635760051	1920740051	1813560051	1776000051
	1		1884680051	2453640051	2133600051	1600200051
	2		1280160051	1102750051	7823200050	1280160051
34	0		1531200051	1782000051	1716000051	1716000051
	1		1808400051	2151000051	1834800051	1438600051
	2		1174600051	1003200051	7392000050	1201200051
63	0		4721200050	5250300050	4924700050	5204600050
	1		5779400050	7167200050	6023600050	4517700050
	2		3296700050	2523400050	1424500050	3500200050
90	0		1735500050	2002500050	1949100050	2189400050
	1		2509800050	2830200050	2296200050	1655400050
	2		1388400050	1064000050	6010000049	1308300050

TIME	PER CENT CHORD	K	DELTA PER CENT		PRESSURE RADIUS	
			75	80	60	90
			(120)K	30*(120)K	60*(120)K	90*(120)K
2	0		8820790051	7405690051	5566060051	4717000051
	1		5707570051	6462290051	6839650051	6084930051
	2		6132100051	6367950051	5330210051	6698140051
9	0		5211510051	4787810051	4406480051	3770930051
	1		4575960051	4957290051	4109890051	3728560051
	2		3728560051	3728560051	3220120051	4025150051
17	0		3295560051	3039870051	2215980051	1733010051
	1		2244390051	2443260051	2613720051	2329620051
	2		2386440051	2386440051	2045520051	2500080051
23	0		3264660051	3264660051	2720550051	2461450051
	1		2720550051	272370051	2746460051	2331900051
	2		2254170051	2202350051	1995070051	2461450051
34	0		2102340051	1931880051	1477320051	1250040051
	1		1534140051	1647780051	1676190051	1392090051
	2		1420500051	1363680051	1193270051	1534140051
63	0		9550900050	7563800050	5833100050	5640800050
	1		6538200050	7820200050	7692000050	6922800050
	2		6794600050	6025400050	5320300050	6922800050
90	0		3834000050	3550000050	3443500050	3479000050
	1		3940500050	4544000050	4189000050	3479000050
	2		3301500050	3017500050	2414000050	3124000050

TIME	K	PER CENT CHORD	DELTA PER CENT		PRESSURE RADIUS	
			85	D E G	R E E S	
			(120)K	30+(120)K	60+(120)K	90+(120)K
2	0		9792820051	8133020051	5228370051	4149500051
	1		4149500051	5643320051	6888170051	6888170051
	2		7801060051	8796940051	7884050051	9377870051
4	0		1004457052	8266770051	5244510051	4000050051
	1		4000050051	5511180051	6577860051	6044520051
	2		6577860051	7733430051	7200090051	8533440051
9	0		6095610051	6095610051	4177890051	3150540051
	1		3219030051	4451850051	4588830051	4177890051
	2		4451850051	4725810051	4246360051	5479200051
13	0		4676300051	5509700051	3796600051	3055800051
	1		3287300051	3657700051	3472500051	2963200051
	2		3241000051	3565100051	3287300051	3981800051
17	0		4311760051	4117680051	3823560051	3137280051
	1		3333360051	3137780051	3333360051	2549040051
	2		2745120051	2941200051	2745120051	3529440051
23	0		3421080051	3355290051	3815820051	4714950051
	1		2960550051	2631600051	2763180051	2478090051
	2		2587740051	2675460051	2543880051	3026340051
34	0		2183650051	1890050051	1394600051	1339550051
	1		1266150051	1651500051	1743250051	1669850051
	2		1724900051	1816650051	1633150051	2000150051
47.7	0					
	1					
	2					
63	0		8472800050	6664000050	2665600050	2380000050
	1		2475200050	4664800050	5997600050	6283200050
	2		7520800050	7711200050	6854400050	8282400050
77	0		3412800050	1516800050	1422000050-	1327200050-
	1		9480000049-	7584000049	2180400050	2749200050
	2		3792000050	3981600050	3033600050	3697200050
90	0		9430000049	5658000049-	2640400050-	2829000050-
	1		2640400050-	1508800050-	4715000049-	9430000048
	2		8487000049	1037300050	4715000049	8487000049

MODEL 90		DELTA PER CENT		PRESSURE RADII	
PER CENT CHORD	K	D E G	D E G	R I E S	R I E S
		(120)K	30*(120)K	60*(120)K	90*(120)K
TIME					
2	Q	1047618051	7830680051	4761900051	4126980051
	1	3597880051	5396820051	6772480051	7195760051
	2	8359780051	9947080051	9417980051	1047618051
	0	7373600051	5253690051	3225950051	2488590051
9	1	2119910051	3702460051	4331990051	4239820051
	2	4331990051	4792840051	4147650051	4977180051
	0	5206960051	6508700051	4260240051	3786880051
17	1	3313520051	3668540051	3668540051	3431860051
	2	3905220051	4378580051	4141900051	4851940051
	0	3725520051	4362780051	5392200051	4803960051
23	1	4460820051	2647080051	2949040051	2500020051
	2	2745120051	2892180051	2843160051	333360051
	0	2074240051	1777920051	1111200051	1333440051
34	1	6296800050	1111200051	1333440051	1518640051
	2	1666800051	1814960051	1629760051	2000160051
	0	6913200050	4115000050	6584000049	6584000049
63	1	1481400050	1950400050	5102600050	6090200050
	2	7571600050	7407000050	6254800050	7900800050
	0	3540000049-	1858500050-	3186000050-	2743500050-
90	1	1947000050-	4540000049-	4425000049	7965000049
	2	1416000050	1416000050	6195000049	8850000049

MODEL 95		DELTA PER CENT		PRESSURE RADII	
PER CENT CHORD	K	D E G	D E G	R I E S	R I E S
		(120)K	30*(120)K	60*(120)K	90*(120)K
TIME					
2	0	8461200051	5769000051	3557550051	2692200051
	1	2403750051	3749870051	4999800051	5480550051
	2	6634350051	8653500051	7980450051	9230400051
	0	7368130051	4880190051	2966390051	2487940051
9	1	2009490051	3345150051	4018980051	4114670051
	2	4593120051	5071570051	4784500051	5932780051
	0	4315660051	5263000051	3474580051	2526240051
17	1	2210460051	2842020051	2947280051	2736760051
	2	3263060051	3789360051	3473580051	4105140051
	0	3196100051	4794150051	4072450051	2886800051
23	1	3144550051	2319750051	1958900051	1958900051
	2	2319750051	2680600051	2525950051	2989900051
	0				
34	1				
	2				
	0	6011400050	3355200050	1398000049-	8388000049
63	1	1957200050	4333800050	5312400050	5871600050
	2	6850200050	7409400050	6011400050	7129800050
	0	8265000049-	8265000049-	1392000050-	7830000049-
90	1	3045000049-	3915000049	7830000049	1000500050
	2	1087500050	8265000049	4350000048	3915000049

		HARMONIC		ANALYSIS		
COEF	BLADE	LOADING	PER CENT	RADIUS		
STEADY		COSINE	MAX	PHI		
			40			
1		9069747551	5378272151	1705027753		34100
2		2729902851-	1704731951	1797939553		34101
3		1704687851	1058756750	5995955252		34103
4		1058754550-	6000731550	1519598151		34104
5		6762497500	6043441950	3794562752		34105
		1456541050-				

		HARMONIC		ANALYSIS		
COEF	BLADE	LOADING	PER CENT	RADIUS		
STEADY		COSINE	MAX	PHI		
			55			
1		1759878852	6210762151	1168598053		34200
2		2806077551-	3064659051	3864645351		34201
3		3036815351	1315064751	2568789452		34203
4		2944063750	1034832151	7138692152		34204
5		2773764850	1432833650	1725764152		34205
		9275833348				
		1429828050				

		HARMONIC		ANALYSIS		
COEF	BLADE	LOADING	PER CENT	RADIUS		
STEADY		COSINE	MAX	PHI		
			75			
1		2340576552	1530549751	4387432852		34300
2		1103314751	3619017551	3401456251		34301
3		3543537851	2429786751	1468125252		34303
4		1746552751	8028037350	8494587552		34304
5		753458350	4331748050	5792319752		34305
		1454230050				
		4080350050-				

		HARMONIC		ANALYSIS		
COEF	BLADE	LOADING	PER CENT	RADIUS		
STEADY		COSINE	MAX	PHI		
			85			
1		2277537552	4399292651	3282417953		34400
2		3740616351	2979673551	7077581551		34401
3		2889201751	1323464051	1716974452		34403
4		8237088350	1292439251	8507047752		34404
5		1216655751	4358381050	3165278652		34405
		4048498350-				
		1614046750				

		HARMONIC		ANALYSIS		
COEF	BLADE	LOADING	PER CENT	RADIUS		
STEADY		COSINE	MAX	PHI		
			90			
1		2460183952	7449357451	3113299453		34500
2		4919511851	3449464251	8619926151		34501
3		3294488251	1567243351	1265754552		34503
4		1233888751	1519483251	6652236952		34504
5		1474920351	4084017150	2423944652		34505
		2426253350-				
		4005658350				

		HARMONIC		ANALYSIS		
COEF	BLADE	LOADING	PER CENT	RADIUS		
STEADY		COSINE	MAX	PHI		
			95			
1		1752604952	6330865051	3073196453		34600
2		3838156551	2577340451	2229645651		34601
3		2569538351	1381811751	1687835152		34603
4		8764498350	8609860650	8180827352		34604
5		7017921750	343546350	3780743252		34605
		3392901750-				
		5396383349-				

		HARMONIC		ANALYSIS		
RED	BLADE	BEAM	BENDING	15	PER CENT	RADIUS
COEF	STEADY		COSINE	SINE	MAX	PHI
	1		6092300054-			34210
	2		5912726754	6120823754-	8510277354	3140092853
	3		1723515354-	8780060853-	1934269854	1034977753
	4		2027668053	6083005753	6412050853	2385501852
	5		3041506253-	1756012853-	3512028053	5249999652
			2400704054	1254423254	2708681854	5517621251
						34215
RED	BLADE	BEAM	BENDING	28	PER CENT	RADIUS
COEF	STEADY		COSINE	SINE	MAX	PHI
	1		1839916753-			34220
	2		1839820554-	2535852054-	3132967454	3059617753
	3		5299496353-	1466666747-	5299496353	9000001152
	4		4416253353	7360420353	8583651953	1967874652
	5		2944165052	1529833053-	1557905753	7022335252
			1074903654	2688437753	1108013954	2808431551
						34225
RED	BLADE	BEAM	BENDING	36	PER CENT	RADIUS
COEF	STEADY		COSINE	SINE	MAX	PHI
	1		5948750053-			34230
	2		1359985354	2369042354-	2731651854	2998586553
	3		5076245753-	8508692352	5147062153	8524233552
	4		5567502753	9170002753	1072781654	1957875552
	5		8187501052-	1418116053-	1637499553	5999999852
			7360140053	2402923853	7742461153	3616144351
						34235
RED	BLADE	BEAM	BENDING	45	PER CENT	RADIUS
COEF	STEADY		COSINE	SINE	MAX	PHI
	1		8688000053-			34240
	2		1438861854	2621070854-	2990039454	2987650153
	3		7796996053-	1553649153	7950281353	8436535552
	4		5658003353	8694002253	1037297854	1898138952
	5		6900206351-	3585357052	3651152352	2522342052
			1481373553	1113291953-	1853074853	6461482952
						34245
RED	BLADE	BEAM	BENDING	60	PER CENT	RADIUS
COEF	STEADY		COSINE	SINE	MAX	PHI
	1		3275866754-			34250
	2		1397635054	2667711254-	3011655154	2976504053
	3		8745327553-	8655628352	8788057453	8717380552
	4		1499201653	8245599253	8380782253	2656504752
	5		9994605052	8333333346-	9994605052	8999998852
			7229965053-	3306894353-	7950342453	4091575252
						34255
RED	BLADE	BEAM	BENDING	65	PER CENT	RADIUS
COEF	STEADY		COSINE	SINE	MAX	PHI
	1		3974076754-			34260
	2		1156188454	2709387354-	2945768354	2931096153
	3		9656435353-	1459266553	9766074053	8570328652
	4		1166551353	8943548053	9019306753	2752286052
	5		1879433753	3367553352-	1909365153	8746039852
			1156190054-	2847584353-	1190740454	3876720652
						34265
RED	BLADE	BEAM	BENDING	80	PER CENT	RADIUS
COEF	STEADY		COSINE	SINE	MAX	PHI
	1		4413804254-			34270
	2		1070783053	1260207854-	1264748854	2748566953
	3		9000827353-	1781703053	9175475953	8440156052
	4		1285838352-	6686328753	6687565053	3036723952
	5		2185909853	6681356752	2285739953	4249017251
			1251471354-	3470847353-	1298710254	3910017952
						34275
RED	BLADE	BEAM	BENDING	92.5	PER CENT	RADIUS
COEF	STEADY		COSINE	SINE	MAX	PHI
	1		1977500054-			34280
	2		4259471553-	1957955853-	4687930053	2046868853
	3		3958331053-	5484831752	3996150453	8605554652
	4		3166660052	2533330753	2553045653	2762499652
	5		9499976752	2742398352	9887886852	4025516351
			5082199753-	1683714053-	5353844153	3966596952
						34285

HARMONIC ANALYSIS

WH. BLADE	BEAM BEND	15 0/0 R	HARMONIC		ANALYSIS	
COEF		COSINE	SINE	MAX	PHI	
STEADY		6583541754-				34410
1		3077549054-	3651671854	4775564454	1301234653	34411
2		1536499954-	1330647854-	2032598254	1104467053	34412
3		5487508353-	1024334554-	1162062354	8060713552	34413
4		1463341253-	6336341752	1594634753	3914678852	34414
5		2190451754-	1164006554-	2480522154	4159723852	34415

WH. BLADE	BEAM BEND	2 0/0 R	HARMONIC		ANALYSIS	
COEF		COSINE	SINE	MAX	PHI	
STEADY		2113133353				34420
1		1310374354-	2196364854	2557557354	1208207553	34421
2		5964818553-	2402658852	5969655653	8884667552	34422
3		3884069053-	8877869053-	9690332853	8212353752	34423
4		1387168552	7207922352	7340189452	1977664652	34424
5		1214268354-	2543316053-	1240617654	3836594852	34425

		HARMONIC		ANALYSIS		
RED BLADE	CHORD	BENDING	15	PER CENT	RADIUS	
COEF		COSINE	SINE	MAX	PHI	
STEADY		5367541755				34110
1		1863177755	9668881854-	2099119855	3325731453	34111
2		1122908254	1166968754	1619487054	2305115552	34112
3		3144160754-	8084945054-	8674840654	6291650552	34113
4		2245821753	1166962754-	1188376754	7022335252	34114
5		4707603054-	1111110554-	4636950654	3865603652	34115

RED BLADE	CHORD	BENDING	28	PER CENT	RADIUS	
COEF		COSINE	SINE	MAX	PHI	
STEADY		5034525055				34120
1		1469403255	9084635354-	1727556655	3282734353	34121
2		2944158854	1529832854	1178998854	1372856252	34122
3		2944161054-	6477160354-	7114892154	8185207452	34123
4		1766499754	5097502753	1838632954	4025574651	34124
5		4683858754-	9255245053-	4774424454	3823551752	34125

RED BLADE	CHORD	BENDING	60	PER CENT	RADIUS	
COEF		COSINE	SINE	MAX	PHI	
STEADY		2486970055				34130
1		3730647754	2425413254-	4449927454	3269722253	34131
2		1266508354	6647433352	1768251654	1502243351	34132
3		1151172054-	2840055854-	3064567654	8264404652	34133
4		1727062354	5647183352-	1728341054	8944876952	34134
5		2118920054-	2056566854-	273204254	4474475752	34135

RED BLADE	CHORD	BENDING	80	PER CENT	RADIUS	
COEF		COSINE	SINE	MAX	PHI	
STEADY		1657983855				34140
1		1068035854	1086979054-	1523884454	3144961753	34141
2		4311516753	2036673353-	4768155553	1673574553	34142
3		2351730053-	6271316753-	6697764353	8314802052	34143
4		987937833	6788750052-	7118642453	8875334752	34144
5		8328586753-	9512018153-	1264291754	4575901652	34145

WH. BLADE	CHORD BEND	15 0/0 P	HARMONIC		ANALYSIS		
COEF		COSINE	SINE	MAX	PHI		
STEADY		9485223355				34430	
1		2236843555-	1360208755	2617945155	1486965253	34431	
2		1457860054	1500000048	1457860054	2747596946	34432	
3		400118354	8018269754	8764699654	2114497752	34433	
4		1457874854	1262546154-	1228580354	7777671352	34434	
5		4145118754	9765880054	4758606154	2651420451	34435	

WH. BLADE	CHORD BEND	28 0/0 P	HARMONIC		ANALYSIS		
COEF		COSINE	SINE	MAX	PHI		
STEADY		5098937555				34440	
1		1554906555-	9531403054	1823790755	1484921753	34441	
2		1559668854	2078018154-	1573451154	1762054653	34442	
3		2197507054	6758553754	7360644954	2365812352	34443	
4		1559683054	2078056353	1573465754	1897290251	34444	
5		5231227254	2466107054	5783738854	5048025451	34445	

RED BLADE	TORSION	15 0/0 P	HARMONIC		ANALYSIS		
COEF		COSINE	SINE	MAX	PHI		
STEADY		3655198354-				34350	
1		5111207553-	1241962354-	1343024554	2476307353	34351	
2		4633344053-	4458441553	6430051353	5805103452	34352	
3		3088903253-	6177802053-	6906993653	8114497752	34353	
4		5148183352-	2675063553	2724151753	252236152	34354	
5		2022292253	6401683351	2023312253	3626238950	34355	

RED BLADE	TORSION	50 0/0 P	HARMONIC		ANALYSIS		
COEF		COSINE	SINE	MAX	PHI		
STEADY		1375780054-				34360	
1		3717841253-	5010713353-	6239358253	2334253953	34361	
2		1014401553	4392480052-	1105418153	1682934053	34362	
3		3803985752	2789601053-	2815417753	9258838252	34363	
4		5072013352-	8784955052	1014400153	3000002252	34364	
5		6746383352	6995115252	9718298552	9207396351	34365	

		HARMONIC ANALYSIS				
RED BLADE COEF STEADY	PITCH	POSITION COSINE	SINE	MAX	PHI	
		1659496452				34510
1		1600901551	5361462351-	5595369951	2856253253	34511
2		1164720050-	3362216749	1212277950	8194903752	34512
3		1747073350	2717656750	3230777550	1908821752	34513
4		9705916749	6724200049-	1180761250	8132150552	34514
5		8791500049	1556683349-	8926254949	6999178052	34515
RED BLADE COEF STEADY	FLAP	POSITION COSINE	SINE	MAX	PHI	
		5320000049-				34520
1		1143458751-	1029294851	1538488151	1380077653	34521
2		8865611748	4607261749	4691804349	3955334252	34522
3		3369334550-	1950668250-	3893266150	7002286952	34523
4		2659984249-	7678750049	8126421049	2727663252	34524
5		2220076350-	1071615550-	2465177250	4115325852	34525
VERTICAL COEF STEADY	ACCEL	COSINE	SINE	MAX	PHI	
		1013195051				34530
1		2130522349	2019058049-	2935254849	3165386953	34531
2		1674764749-	9669173348-	1933847449	1049999053	34532
3		8120116748	1014990049-	1299833749	1028868353	34533
4		1167243849-	1142730049	1633490149	3390200452	34534
5		5065055048-	9057466747	5145401748	3397227752	34535
FORE- AFT COEF STEADY	ACCEL	COSINE	SINE	MAX	PHI	
		1167766750-				34540
1		1167553849	2458985048-	1193167249	3481067553	34541
2		3029580549-	4484135549	5411638349	6202191452	34542
3		5508320048	1432167849-	1534444749	9701248152	34543
4		1377084549-	1240293849-	1853291849	5550207752	34544
5		5951108348	1357308348	6103931248	2569610751	34545
LATERAL COEF STEADY	ACCEL	COSINE	SINE	MAX	PHI	
		3380000048-				34550
1		9948611048	140941048-	1011750649	3495162953	34551
2		6421999749	1951440248	6424963949	8702499650	34552
3		6760012048-	2253336248-	7125677948	6614498152	34553
4		2704001549-	4293176749-	5073755049	5944893852	34554
5		1913843347	3792384548-	3797210648	5457780252	34555
LIFT LINK COEF STEADY	LOAD	COSINE	SINE	MAX	PHI	
		5449476554				34610
1		1290143253	1057414353-	1668111153	3206616153	34611
2		2266688253-	2453752853-	3340475753	1136346953	34612
3		9443866751-	2833290052-	2986536252	8385527952	34613
4		7555640052	8179231752	1113496953	1181737852	34614
5		3456831752-	7591700051-	3539212352	3847727052	34615
RIGHT COEF STEADY	CYCLIC	LOAD COSINE	SINE	MAX	PHI	
		1040000053				34620
1		1813776852	1340223352	2255212852	3646117852	34621
2		7106667052	1230910953	1421333553	2999999952	34622
3		3466671051-	1040000952	1096257352	3614498752	34623
4		8839996352-	1050777653	1373167553	3251832252	34624
5		6128928051	7377796051	9606828051	1007178552	34625
LEFT COEF STEADY	CYCLIC	LOAD COSINE	SINE	MAX	PHI	
		9400000051-				34630
1		1215250852-	6008768751-	1355687152	2063099553	34631
2		6580001252-	1074564453-	1260020953	1192595753	34632
3		3384000252-	7520016751	3466549352	5582372452	34633
4		5828000252-	6186885252-	8499596152	5667772952	34634
5		8725111750	1352877052	1355687652	1726198752	34635
COLLECTIVE COEF STEADY	LOAD	COSINE	SINE	MAX	PHI	
		3968000052				34640
1		2096345251	7823653751-	8099643251	2850000353	34641
2		2314667052-	1718194552-	2882685552	1082933953	34642
3		9920016751	2976000252	3136980252	2385500852	34643
4		3968000052	1145462952-	4130025352	8597447252	34644
5		7823654051	2096337751-	8099641651	6900000752	34645
STABILIZER COEF STEADY	BAR	COSINE	SINE	MAX	PHI	
		8616666748-				34650
1		9756601750-	3452885751	3588082151	1057783753	34651
2		3446661749	5969813349	6893340849	3000004252	34652
3		1550996250	3446705049-	1588832050	1158236853	34653
4		1723300049-	2984926749-	3446672349	6000017552	34654
5		1100388550-	7994771749	1360153950	2880001452	34655

HARMONIC ANALYSIS

R F	PYLON	POSITION	COSINE	SINE	MAX	PHI	
COEF							
STEADY							
1		6539166749	5996446548-	4916595247-	6016568848	1846873053	34310
2		3638333349-	2469616049	439732564,	7291612852		34312
3		1966655248-	9833268347-	2198787048	6885501552		34313
4		6883343748	5961147548	9105805848	1022334552		34314
5		8868740047-	4916643547-	1014041148	4180061452		34315

R A	PYLON	POSITION	COSINE	SINE	MAX	PHI	
COEF							
STEADY							
1		1075000050	6147116548-	3915076748	7287994748	1475070953	34320
2		8500003748-	4070319849	4158125149	5089775252		34322
3		1166666743	9999921747-	9999921747	9000022352		34323
4		5000013248	1732061348	5291518548	4776666751		34324
5		1647141348	4150601747-	1698631648	6917132252		34325

L F	PYLON	POSITION	COSINE	SINE	MAX	PHI	
COEF							
STEADY							
1		8000000048-	7147119548	3049039348-	7770325548	3368963853	34330
2		1799999049	4070319549-	4450561449	1469281253		34332
3		5000018347-	4999985047-	7071070147	7499993552		34333
4		2500005548-	3464101748-	4272005348	5854560757		34334
5		6471236747-	4509620047-	7887558647	4297430952		34335

L A	PYLON	POSITION	COSINE	SINE	MAX	PHI	
COEF							
STEADY							
1		4219166749	9553734748	1878871848-	9736734948	3488740053	34340
2		4702081849	1981033349-	5102358949	1685769253		34342
3		5083343347-	1525005048	1607496248	3614497852		34343
4		6354169248-	5722980548-	8551489548	5550206952		34344
5		1629601248	3403880048	3773857348	1288346452		34345

RED	PITCH LINK	POSITION	COSINE	SINE	MAX	PHI	
COEF							
STEADY							
1		1392500053-	1008283253-	1003730553-	1422712253	2248703653	34370
2		3945415052-	5225742352	6547876252	6352633552		34372
3		9283307251	1578166753-	1580894753	9112215452		34373
4		6266252352-	4019804851	6279132652	4408237652		34374
5		3584497252	1218138152	3785826252	3753913351		34375

WHITE	PITCH LINK	POSITION	COSINE	SINE	MAX	PHI	
COEF							
STEADY							
1		1433700053-	1042688153	9667657752	1421912353	4283624852	34380
2		6561002852	2104441352	6890241752	8891820951		34382
3		4860026751-	1069199853	1070303853	3086752752		34383
4		4617000252-	4208861751	4636144552	4369782952		34384
5		5566882552-	4336603751-	5583748052	3689087052		34385

IBM TAB NO. 13b
MANEUVER CONDITION NO. 34 - SYMMETRICAL PULL-UP
REVOLUTION 2

CONL 41		40		DELTA PER CENT	PRESSURE RADIUS
PER CENT CHORD	K	11201K	D E G 30+11201K	R E E S 60+11201K	90+11201K
TIME	115				
4	0	2701930051	3333550051	3544090051	4421340051
	1	4491520051	4526610051	4316070051	2526480051
	2	1122880051	5614400050	6667100050	1754500051
17	0	1327140051	1618020051	1618020051	2199780051
	1	2308860051	2345220051	2054340051	1181700051
	2	7272000050	5272200050	4363200050	1018080051
34	0	6600000050	7920000050	7920000050	1092000051
	1	1152000051	1248000051	9960000050	7320000050
	2	4560000050	3840000050	1080000050	5040000050
63	0	2765700050	3599800050	3204700050	4785100050
	1	4697300050	5794800050	4126600050	3380300050
	2	3643700050	1624300050	1097500050	2677900050
86	0	1328700050	1359600050	1143300050	1823100050
	1	1884900050	2441100050	2966400050	2688300050
	2	1081500050	1699500050	1345000049	1514100050

CONL 41		55		DELTA PER CENT	PRESSURE RADIUS
PER CENT CHORD	K	11201K	D E G 30+11201K	R E E S 60+11201K	90+11201K
TIME	115				
2	0	5713920051	6543360051	5529600051	6174720051
	1	5253120051	8847360051	7372800051	5483520051
	2	4193280051	1751040051	1474560051	4423680051
9	0	3317850051	3908700051	3499650051	4045050051
	1	3681450051	5226750051	4045050051	3045150051
	2	2499750051	1045350051	7272000050	2499750051
17	0	2456300051	2947560051	2737020051	3158100051
	1	2982650051	3894990051	3017740051	2315940051
	2	1894860051	1087790051	5965300050	1894860051
23	0	1920240051	2275840051	2062480051	2275840051
	1	2275840051	3022600051	2346960051	1778000051
	2	1457960051	1066800051	5334000050	1457960051
34	0	1729200051	2019600051	1861200051	2125200051
	1	2164800051	2508000051	2006400051	1570800051
	2	1320000051	1122000051	5412000050	1399200051
63	0	5291000050	6308500050	5779400050	6796900050
	1	7081800050	7814400050	6105000050	4965400050
	2	4151400050	8302800050	2442000049	4517700050
90	0	1922400050	2269500050	1975800050	2616600050
	1	2990400050	3097200050	2296200050	2002500050
	2	2296200050	4485600050	8010000049	1869000050

CONL 41		75		DELTA PER CENT	PRESSURE RADIUS
PER CENT CHORD	K	11201K	D E G 30+11201K	R E E S 60+11201K	90+11201K
TIME	115				
2	0	1028306052	8349090051	6273610051	5377380051
	1	7641540051	8160410051	7971730051	6886820051
	2	8443430051	7075500051	4764170051	8820790051
9	0	6609720051	7880820051	4999660051	4579960051
	1	7584230051	7880820051	4999660051	4194630051
	2	4491220051	3728560051	2796420051	4787810051
17	0	3892170051	3693300051	2698950051	2386440051
	1	5085390051	3409200051	3181920051	2642130051
	2	2841000051	2272800051	1761420051	2983050051
23	0	3679220051	3756950051	3109200051	2979650051
	1	3834680051	3705130051	3161020051	2591000051
	2	2668730051	1995070051	1658240051	2901920051
34	0	2244390051	2215980051	1647780051	1647780051
	1	2187570051	2272800051	1960290051	1590960051
	2	1704600051	1250040051	8238900050	1818240051
63	0	9422700050	8397100050	6666400050	7435600050
	1	8076600050	9550900050	8333000050	7884300050
	2	8012500050	8268900050	3076800050	7884300050
90	0	5751000050	3656500050	3621000050	4118000050
	1	4473000050	4899000050	4295500050	3834000050
	2	3763000050	5467000050	2449500050	3621000050

TIME	K	CORL. 34 PER CENT CHORD	85 [120]K	DELTA	PRESSURE	RADIUS	
				PER CENT	RADIUS	60+[120]K	90+[120]K
				D E G	R E E S		
				30+[120]K	60+[120]K		
	115						
	0		1145262052	9128900051	6307240051	5394350051	
2	1		6639200051	7801060051	8630960051	8133020051	
	2		9626840051	9626840051	6473220051	1070571052	
	0		1164459052	9511230051	6488970051	5155620051	
4	1		6844530051	8088990051	8622330051	6844530051	
	2		8800110051	7911210051	9422290051	1057791052	
	0		1041048052	7739370051	4862790051	4657320051	
9	1		5136750051	6438060051	5547690051	4725810051	
	2		5136750051	4520340051	3287520051	6438060051	
	0		6898700051	6806100051	4583700051	4491100051	
13	1		5046700051	5880100051	4213300051	3518800051	
	2		4028100051	3241000051	2268700051	4768900051	
	0		4509840051	6176520051	4803960051	4313760051	
17	1		5294160051	5882400051	4117680051	3235320051	
	2		3333360051	2352960051	1470600051	4117680051	
	0		3640380051	4210560051	5701800051	5460570051	
23	1		6315840051	3947400051	3245640051	2785110051	
	2		3026340051	2127210051	1491240051	3486870051	
	0		2348800051	2146950051	1688200051	2954350051	
34	1		2403850051	2110250051	2091900051	1908400051	
	2		2055200051	1339550051	1174400051	2348800051	
	0						
47.7	1						
	2						
	0		8092000050	7425600050	2856000050	5236000050	
63	1		3998400050	6378400050	7140000050	7520800050	
	2		9044000050	8472800050	6893600050	1028160051	
	0		3792000050	1990800050	8532000049-	5688000049	
77	1			1801200050	2749200050	3507600050	
	2		5119200050	7204800050	6730800050	5877600050	
	0		1603100050	6601000049-	2546100050-	2734700050-	
90	1		2168900050-	1131600050-	9430000048-	3772000049	
	2		1697400050	4997900050	3960600050	2546100050	

Cont. 34		90	DELTA PER CENT		PRESSURE RADIUS		
PER CENT CHORD	K	(120)K	D	E	G	R E E S	90+(120)K
TIME	115		30+(120)K			60+(120)K	
2	0	1047618052	8571420051	6137560051	6137560051	6137560051	6137560051
	1	6031740051	7513220051	8359780051	8359780051	8359780051	8253960051
	2	1015872052	1079364052	7724860051	7724860051	7724860051	1047618052
9	0	9309170051	6912750051	3686800051	3686800051	3778970051	3778970051
	1	3871140051	4977180051	5345860051	5345860051	4239820051	4239820051
	2	4885010051	4792840051	3502460051	3502460051	8295300051	8295300051
17	0	5325300051	6745380051	4615260051	4615260051	5561980051	5561980051
	1	5561980051	6745380051	4378580051	4378580051	4023560051	4023560051
	2	4496920051	4260240051	2840160051	2840160051	5443640051	5443640051
23	0	3725520051	5392200051	5980440051	5980440051	6029460051	6029460051
	1	6078480051	5588280051	2990220051	2990220051	2794140051	2794140051
	2	3137280051	2843160051	1813740051	1813740051	3578460051	3578460051
34	0	2222400051	2037200051	2037200051	2037200051	4074400051	4074400051
	1	2926160051	1629760051	1666800051	1666800051	1592720051	1592720051
	2	2000160051	1592720051	8519200050	8519200050	2074240051	2074240051
63	0	6754800050	5267200050	4938000049	4938000049	1646000050	1646000050
	1	2469000050	5431800050	6090200050	6090200050	6748600050	6748600050
	2	8559200050	6748600050	4279600050	4279600050	8559200050	8559200050
90	0	8850000048	4779000050	8142000050	8142000050	5929500050	5929500050
	1	4425000050	1593000050	2655000049	2655000049	1770000049	1770000049
	2	1947000050	5310000050	5221500050	5221500050	2566500050	2566500050

		95	DELTA PER CENT		PRESSURE RADIUS		
PER CENT CHORD	K	(120)K	D	E	G	R E E S	90+(120)K
TIME	115		30+(120)K			60+(120)K	
2	0	1028805052	7211250051	4519050051	4519050051	4422900051	4422900051
	1	4326750051	5576700051	6153600051	6153600051	6442050051	6442050051
	2	8461200051	9807300051	7692000051	7692000051	1028805052	1028805052
9	0	8707790051	6411230051	3636220051	3636220051	3636220051	3636220051
	1	3636220051	4784500051	4975880051	4975880051	4688810051	4688810051
	2	5262950051	5358640051	4306050051	4306050051	8803480051	8803480051
17	0	5578780051	5999820051	3999880051	3999880051	3894620051	3894620051
	1	3789360051	4841960051	3368320051	3368320051	2947280051	2947280051
	2	3578840051	3684100051	2947280051	2947280051	4526180051	4526180051
23	0	3608500051	5618950051	4691050051	4691050051	4639500051	4639500051
	1	4845700051	4897250051	2319750051	2319750051	2268200051	2268200051
	2	2680600051	2680600051	2062000051	2062000051	3402300051	3402300051
34	0						
	1						
	2						
63	0	5452200050	3914400050	4194000049	4194000049	1258200050	1258200050
	1	2516400050	5452200050	5871600050	5871600050	6570600050	6570600050
	2	8108400050	6850200050	2796000050	2796000050	7269600050	7269600050
90	0	7395000049	1261500050	1696500050	1696500050	1261500050	1261500050
	1	4785000049	2610000049	8265000049	8265000049	1174500050	1174500050
	2	1392000050	1044000050	1827000050	1827000050	5220000049	5220000049

		HARMONIC		ANALYSIS		
COEF	BLADE	LOADING	40	PER CENT	RADIUS	
STEADY		COSINE	SINE	MAX	PHI	
		1128469952				115034100
1		2981831351-	6034239051	6730776951	1162963853	115034101
2		1723174251	5418690750-	1806364151	1712718753	115034102
3		4568340350	7744683348-	4568996750	1196762653	115034103
4		5352768850	3242045750-	6258034450	8219942552	115034104
5		4254603850-	1483255350	4505740750	3215604952	115034105

		HARMONIC		ANALYSIS		
COEF	BLADE	LOADING	55	PER CENT	RADIUS	
STEADY		COSINE	SINE	MAX	PHI	
		2033006452				115034200
1		3341492551-	7338433551	8063385051	1144817453	115034201
2		3253698751	6410275050	3316243551	5572695051	115034202
3		1553754051	1421536551	2105924451	1415184552	115034203
4		8491453350	1921048351-	2100351051	7346161852	115034204
5		3870581750-	4271036749-	3894075150	3725937952	115034205

		HARMONIC		ANALYSIS		
COEF	BLADE	LOADING	75	PER CENT	RADIUS	
STEADY		COSINE	SINE	MAX	PHI	
		2805091952				115034300
1		3746380050-	4343096351	4359224651	9493016952	115034301
2		4568843551	2779855050-	4577292551	1782591153	115034302
3		4814565051	2611617351	5477278651	9492406251	115034303
4		5360966749-	8496685050-	8513580750	6659742952	115034304
5		1136776751-	1173990751-	1634171251	4518453052	115034305

		HARMONIC		ANALYSIS		
COEF	BLADE	LOADING	85	PER CENT	RADIUS	
STEADY		COSINE	SINE	MAX	PHI	
		2838866252				115034400
1		2373567251	2438104851	3402671951	4576844252	115034401
2		3864368551	7274733349	3865053251	5392372650	115034402
3		3876508051	7503446750	3948459351	3651605051	115034403
4		7731456750	1587704251-	1765943351	7399104352	115034404
5		1313909251-	2871820050-	1345056151	3847085052	115034405

		HARMONIC		ANALYSIS		
COEF	BLADE	LOADING	90	PER CENT	RADIUS	
STEADY		COSINE	SINE	MAX	PHI	
		2971322252				115034500
1		2389388751	5285833349	2389973351	1267297251	115034501
2		2666750051	6100323350-	2735634351	1735575153	115034502
3		4511719551	1094165050-	4513046151	1195369253	115034503
4		1888629051	1941058251-	2708251551	7855391852	115034504
5		1977301751-	3734251750	2012254651	3386106352	115034505

		HARMONIC		ANALYSIS		
COEF	BLADE	LOADING	95	PER CENT	RADIUS	
STEADY		COSINE	SINE	MAX	PHI	
		2106741352				115034600
1		3164835751	2669731851-	4140489551	3198503353	115034601
2		3598858751	4147675050-	3622680851	1767128453	115034602
3		2856766351	1078596051	3053601651	6894816651	115034603
4		6511753350	1518923751-	1652621751	7330130552	115034604
5		9264236750-	6816366749-	9289279450	3684161752	115034605

		HARMONIC		ANALYSIS		
RED BLADE	BEAM	BENDING		PER CENT	RADIUS	
COEF		COSINE	SINE	MAX	PHI	
STEADY		7087533354				115034210
1		8589441254	6184121754-	1058403855	3242473353	115034211
2		2179741554-	2634008353	2195598654	8655488452	115034212
3		5069153353-	1013808353-	5169537953	6376989952	115034213
4		8617569753-	6146046753	1058472554	3612588952	115034214
5		5604225554	3649540554	6687786654	6614533751	115034215
RED BLADE	BEAM	BENDING	28	PER CENT	RADIUS	
COEF		COSINE	SINE	MAX	PHI	
STEADY		1906366754				115034220
1		2149524254	2225374254-	3093985254	3140067453	115034221
2		2502537753-	2294749353	3395374653	6874007352	115034222
3		8538085053	3827474853	9356712953	8046527951	115034223
4		6918784053-	1274864353	7035257753	4238992952	115034224
5		2914442554	1548216554	3300143854	5595646551	115034225
RED BLADE	BEAM	BENDING	36	PER CENT	RADIUS	
COEF		COSINE	SINE	MAX	PHI	
STEADY		9287500052				115034230
1		1382238554	2587165754-	2933259254	2981141453	115034231
2		8023744553-	8508693352	8068733253	8697337852	115034232
3		1146250354	1048000454	1553124154	1414541152	115034233
4		1637528852	1418115753-	1427538853	6914672552	115034234
5		1892761054	5894158753	1982411554	3459373451	115034235
RED BLADE	BEAM	BENDING	45	PER CENT	RADIUS	
COEF		COSINE	SINE	MAX	PHI	
STEADY		7446000053-				115034240
1		1374682954	2836687054-	3152228854	2958552353	115034241
2		9521994753-	1195115253	9596701753	8642308152	115034242
3		1131600454	1021200354	1524260354	1402144252	115034243
4		5519994352	9560935852	1104001053	1500001752	115034244
5		6815162853	7686965051	6815596353	1292447550	115034245
HARMONIC ANALYSIS						
RED BLADE	BEAM	BENDING	60	PER CENT	RADIUS	
COEF		COSINE	SINE	MAX	PHI	
STEADY		3644420054-				115034250
1		1579204754	2818648254-	3230892354	2992606153	115034251
2		7308595353-	1839322353	7536489453	8293698852	115034252
3		5746935553	9619863853	1120576054	1971526052	115034253
4		1686589553	5409777752-	1771225953	8555405952	115034254
5		1666659854-	9793256853-	1933089254	4208768252	115034255
RED BLADE	BEAM	BENDING	65	PER CENT	RADIUS	
COEF		COSINE	SINE	MAX	PHI	
STEADY		4550870854-				115034260
1		1500320654	2879069054-	3246536654	2975246253	115034261
2		5508704753-	1122517852-	5509848253	9058368352	115034262
3		2073868753	1023971254	1044761454	2618354952	115034263
4		2397894253	1010263253-	2602023953	8428842452	115034264
5		2563179254-	1307550354-	2877425154	4140548452	115034265
RED BLADE	BEAM	BENDING	80	PER CENT	RADIUS	
COEF		COSINE	SINE	MAX	PHI	
STEADY		4979570854-				115034270
1		2981644553	1899464754-	1922724154	2789210953	115034271
2		1047954054-	3340688352-	1048486354	9091293952	115034272
3		2700247853-	6686326053	7210984253	3733038052	115034273
4		5721942353	7794929352	5774792953	1939394451	115034274
5		3577041554-	1520852954-	3886929454	4060675552	115034275
RED BLADE	BEAM	BENDING	92.5	PER CENT	RADIUS	
COEF		COSINE	SINE	MAX	PHI	
STEADY		2270416754-				115034280
1		4980701353-	7530681853-	9028762553	2365198453	115034281
2		4591665853-	1645447753-	4877590953	9985771052	115034282
3		2691666253-	3483330353	4402119653	4256475652	115034283
4		1266661353	1371205853	1866718053	1181739252	115034284
5		1512764054-	5610991353-	1613470554	4007006452	115034285

HARMONIC ANALYSIS

WH. BLADE	BEAM BEND	15 0/0 R	COSINE			PHI
COEF			SINE	MAX		
STEADY		7927958354				115034410
1		7353594854	1004584254	6453991354	1460475653	115034411
2		1499918754	6316412853	1622268254	1014508353	115034412
3		1060915854	7316611753	1288751054	7153077952	115034413
4		1829158553	2534560353	3125670653	7645637252	115034414
5		5987237254	3218750254	6807092854	4168216852	115034415

WH. BLADE	BEAM BEND	2 0/0 R	COSINE			PHI
COEF			SINE	MAX		
STEADY		2514010954				115034420
1		1522700054	2270898554	2734153554	1238629453	115034421
2		4855090353	7207950052	4908303553	8577773052	115034422
3		8045566053	1081990254	1348337554	778863052	115034423
4		4161463352	3123634653	3151044253	6939725652	115034424
5		2916232754	1188908554	3144272454	4043601252	115034425

		HARMONIC		ANALYSIS	
RED BLADE	CHORD	BENDING	15	PER CENT	RADIUS
COEF		COSINE	SINE	MAX	PHI
STEADY		4985750055			
1		3462872755	1510293455	3777892755	3364361253
2		2470408354	1166966754	2732165554	1264251252
3		5839160254	4534160025	1034058455	7853988652
4		2021245254	1944941854	2405056754	7902553752
5		1127206155	4211225254	1203302955	4009712452

RED BLADE	CHORD	BENDING	28	PER CENT	RADIUS
COEF		COSINE	SINE	MAX	PHI
STEADY		4902037555			
1		2729827055	1258876055	3006114555	3352429353
2		2060907754	1019886754	2299458554	1316477352
3		5888326754	7449243354	9892565954	7782371852
4		1766495354	2549716554	3101863954	7617875052
5		9927686754	5959482554	1157905055	4219518852

RED BLADE	CHORD	BENDING	60	PER CENT	RADIUS
COEF		COSINE	SINE	MAX	PHI
STEADY		2521511355			
1		8144254554	3909899554	9034168254	3343552453
2		2648156754	1263019254	2933931054	1672507653
3		2533021554	3223847754	4059925954	7728093252
4		1727060354	1130066254	7063925154	8170052852
5		5150679554	4840546754	7068266554	4464441752

RED BLADE	CHORD	BENDING	80	PER CENT	RADIUS
COEF		COSINE	SINE	MAX	PHI
STEADY		1705018855			
1		2658180554	1531449754	3067778054	3300525953
2		1332654854	8146701753	1561939954	1642809953
3		4623061753	1254265254	1522088454	7849717252
4		7055246753	2715548353	7559808853	8473710152
5		2501395854	2074564254	3249738154	4393420952

WH. BLADE	CHORD BEND	15 0/0 R			
COEF		COSINE	SINE	MAX	PHI
STEADY		4537610055			
1		3880774755	1897142855	4319671655	1539480053
2		2551261554	2525096854	3589575054	1576476653
3		6924870254	1093400155	1244241955	1921751552
4		1093412454	1333333348	1093412454	1746696246
5		1548189955	5083380354	1629509055	3635451451

WH. BLADE	CHORD BEND	28 0/0 R			
COEF		COSINE	SINE	MAX	PHI
STEADY		4559050055			
1		2753102555	1441823255	3107801155	1523585753
2		2759419754	1870223854	3333486854	1629360853
3		4559053854	8398252354	955570454	2050144852
4		1559685254	1039012354	1874077054	8158243052
5		1361394155	6937328554	1527959255	5400454051

		HARMONIC		ANALYSIS	
RED BLADE	TORSION	15 0/0 R			
COEF		COSINE	SINE	MAX	PHI
STEADY		4015570054			
1		3189887253	1780672054	1809018154	2598437953
2		1132595654	1426701854	1821606754	6422226152
3		1132596954	7207434753	1342477954	7082373252
4		8333333346	8916883753	8916883753	2249999852
5		2160242553	1756323253	2784119153	6417763352

RED BLADE	TORSION	50 0/0 R			
COEF		COSINE	SINE	MAX	PHI
STEADY		1483560054			
1		3417829853	9105622353	9725940553	2494261953
2		3550397853	1666666746	3550397953	9000000552
3		4945200053	2155600253	5394591353	6785075752
4		1141199653	2415863353	2671840653	1617875052
5		7550245052	1418781253	1607172153	5960406152

		HARMONIC		ANALYSIS		
RED BLADE	PITCH	POSITION				
COEF		COSINE	SINE	MAX	PHI	
STEADY		1711907952				115034510
1		1238488351	378773751-	3985107751	2861062053	115034511
2		1455851750	2521650050-	2911738850	1499998053	115034512
3		4270588350	1747070050	4614128150	7416384151	115034513
4		6794116749	5447608350-	5589057050	6924555452	115034514
5		4426081750-	5573366749-	4461033850	3743539452	115034515
RED BLADE	FLAP	POSITION				
COEF		COSINE	SINE	MAX	PHI	
STEADY		2482666750-				115034520
1		3937811351-	1364785850	3940175651	1780150153	115034521
2		1861999750	1996479350	2730013350	2349805952	115034522
3		3014667250-	1773358349-	3019878550	6112217052	115034523
4		6206693349	1382175750	1515137050	1645435652	115034524
5		2827217350-	4781210049-	2867360750	3791973752	115034525
VERTICAL	ACCLL	COSINE	SINE	MAX	PHI	
COEF		1245630051				115034530
STEADY		1839620049	2706000549-	3272100249	3042090453	115034531
1		5379521749-	8790166748	5450864749	8535992952	115034532
2		1217985047-	4262986749-	4433570149	8468491652	115034533
3		1725492249-	2285451749	2063671249	3176310752	115034534
4		6216000048-	9479788348-	1133600649	4734934352	115034535
5						
FORE-AFT	ACCEL	COSINE	SINE	MAX	PHI	
COEF		1531316750-				115034540
STEADY		2151145349-	2183558349	3065184049	1345715853	115034541
1		2809253349	5629021049	6291087449	3173888652	115034542
2		5508303348	1872830849	1952155049	2453684252	115034543
3		5673585249-	6964722049-	8983146649	5770828752	115034544
4		5219916747-	1632725749-	1633559649	5363383352	115034545
5						
LATERAL	ACCEL	COSINE	SINE	MAX	PHI	
COEF		9576666748-				115034550
STEADY		3229052248-	2816659248-	4284897548	2210977653	115034551
1		1121033350	4878613248-	1122094450	1787540653	115034552
2		7886644748	4506661748	9083455648	9914974651	115034553
3		4450135749-	6732481549-	8070427249	5913358252	115034554
4		1277618248-	2816667848-	3092883148	4912076752	115034555
5						
LIFT LINK	LOAD	COSINE	SINE	MAX	PHI	
COEF		6648928054				115034610
STEADY		9722393352	1048149753-	1429638853	3128487953	115034611
1		3494475253-	1799416753-	3930554453	1036227053	115034612
2		1888821752-	1888893253-	1898313553	8809654252	115034613
3		3777836752	6666666747	3777836752	2527715647	115034614
4		5000021752-	5574031752-	7487993552	4562144752	115034615
5						
RIGHT	CYCLIC	LOAD				
COEF		COSINE	SINE	MAX	PHI	
STEADY		1196000053				115034620
1		1940666052	7737785351	2089238552	2173806752	115034621
2		1092000053	1110822153	1557687353	2274477752	115034622
3		1040000552-	1386668652	1733335252	4228996052	115034623
4		8839993052-	2191621753	2363188653	2799172252	115034624
5		1393375851	4271104751-	4492641951	5761361152	115034625
LEFT	CYCLIC	LOAD				
COEF		COSINE	SINE	MAX	PHI	
STEADY		3948000052-				115034630
1		3407378852-	3625037851-	3426607552	1860727453	115034631
2		2086799853-	1850065753-	2792796753	1108254653	115034632
3		2256000252-	1880004752	2936657052	4673145452	115034633
4		1071599353-	6186885852	1237376553	3749999652	115034634
5		1151382552	2242500552	2520811452	1256447352	115034635
COLLECTIVE	LOAD	COSINE	SINE	MAX	PHI	
COEF		3968000052				115034640
STEADY		7380665051	3749663351-	8278538051	3330676753	115034641
1		6778662752	5440950252-	8692192352	1606237253	115034642
2		6613348351	2645331752	2726746052	2532124052	115034643
3		5455994752	1174099653-	1294677153	7373102952	115034644
4		4074021751-	9476970051-	1031555252	4934755752	115034645
5						
STABILIZER	BAR	COSINE	SINE	MAX	PHI	
COEF		8616666748				115034650
STEADY		1744521251-	9475018550	1985223951	1514922953	115034651
1		1378667250-	5969791749-	1502367250	1017065953	115034652
2		1033999250	1723316749	1048261750	3154080051	115034653
3		3446645049-	8333333343-	3446645049	4500003652	115034654
4		1327840049-	5203148549	5369908149	2086325652	115034655
5						

				HARMONIC	ANALYSIS			
COEF	R F	PYLON	POSITION	COSINE	SINE	MAX	PHI	
STEADY								115034310
1			7866666749					115034311
2			3915692348-	5107151248-	6595340948	2335795753		115034312
3			4056249844-	4385647247	5973901747	6638258752		115034313
4			1475011748	4424992348-	4664356048	7614504052		115034314
5			4670844348	2128986348-	5133163648	6125914151		115034315
			5092916047-	2357165048	2411556548	2043839652		115034315
COEF	R A	PYLON	POSITION	COSINE	SINE	MAX	PHI	
STEADY								115034320
1			6250000049					115034321
2			2598081548-	1339818747	2601533948	1770479053		115034322
3			5000029047	5975575547	5975784749	4476029752		115034323
4			1499993148-	2499999048-	2915471548	7967878352		115034324
5			6500005548	8660296747	6557444548	1697280151		115034325
			2598092748	1866030347	3198774048	7137415051		115034325
COEF	L F	PYLON	POSITION	COSINE	SINE	MAX	PHI	
STEADY								115034330
1			2475000049					115034331
2			781097548	2915067048	6474465548	2675912052		115034332
3			2449997849	5975575749-	6458327549	1461468753		115034333
4			2000001048	1500005048	2500003848	1228999252		115034334
5			3000003548-	3464099248-	4582576148	5727663952		115034335
			2810950047-	1415061848-	1442710748	5175294752		115034335
COEF	L A	PYLON	POSITION	COSINE	SINE	MAX	PHI	
STEADY								115034340
1			1880833349					115034341
2			4792677748	7520403048	8917747548	5749104452		115034342
3			4651248349	2685400749-	5370796649	1650000053		115034343
4			1016668948-	4066666748	4191824748	3467876052		115034344
5			1042083949-	1081605648-	1086693149	4911844552		115034345
			2251010248-	4037280047-	2286928448	3803362652		115034345
COEF	RED	PITCH LINK	POSITION	COSINE	SINE	MAX	PHI	
STEADY								115034370
1			2042333353-					115034371
2			1399492853-	1631575553-	2149562453	2293784853		115034372
3			1438915953-	1366732653	1984549653	6823689052		115034373
4			1578167053-	2227999753-	2730310253	7822959552		115034374
5			1021166153-	1286336453	1642389053	3211113152		115034375
			6104090752	3783249252	7181427352	6351037151		115034375
COEF	WHITE	PITCH LINK	POSITION	COSINE	SINE	MAX	PHI	
STEADY								115034380
1			1968300053-					115034381
2			1470087853	1690531753	2240324953	4898975452		115034382
3			2915996252-	5050662252	5831999952	5999998052		115034383
4			1603799653	1069149753	1927527253	1123002352		115034384
5			8747998852-	1178487253	1467687653	3164669652		115034385
			8868873852-	3297320252-	9461989452	4007888452		115034385

IBM TAB NO. 13c
MANEUVER CONDITION NO. 34 - SYMMETRICAL PULL-UP
REVOLUTION 3

PER CENT CHORD	F	DELTA PER CENT		PRESSURE RADIUS	
		U	E	R	E
		11201*	30*(11201*	60*(11201*	90*(11201*
TIME	211				
4	0	3263370051	3754630051	3824810051	4666770051
	1	4070440051	4245890051	4421340051	2526480051
	2	4912600050	6316200050	6667100050	1579050051
17	0	1581660051	1763460051	1763460051	2236140051
	1	2054340051	2236140051	2181600051	1236240051
	2	5090400050	6361000050	3817800050	9453600050
34	0	8400000050	8880000050	8400000050	1104000051
	1	1032000051	1152000051	1068000051	1092000051
	2	5760000050	3840000050	1200000050	4320000050
63	0	3029100050	3775400050	3599800050	4258300050
	1	5653400050	5443600050	4477800050	2985200050
	2	5487500050	2107200050	5707000049	2677900050
90	0	1359600050	1421400050	1359600050	1452300050
	1	1722300050	2193900050	2410200050	2657400050
	2	1390400050	2842800050	6484000047	1514100050

PER CENT CHORD	K	DELTA PER CENT		PRESSURE RADIUS	
		U	E	R	E
		11201*	30*(11201*	60*(11201*	90*(11201*
TIME	211				
2	0	6497280051	7096320051	6312960051	6635520051
	1	5852160051	8248320051	7741440051	5345280051
	2	4331520051	2119680051	2119680051	4469760051
9	0	3681450051	4090500051	3954150051	4317750051
	1	3772350051	4817700051	4272300051	3181500051
	2	2408850051	1090800051	1136250051	2499750051
17	0	2666840051	3123010051	3017740051	3368640051
	1	2982650051	3614270051	3123010051	2351030051
	2	1754500051	1157970051	4123400050	1894860051
23	0	1991360051	2366960051	2240280051	2489200051
	1	2240280051	2713680051	2418080051	1778000051
	2	1386840051	1066800051	6178600050	1457960051
34	0	1795200051	2112000051	2072400051	2257200051
	1	2072400051	2389200051	2085600051	1597200051
	2	1386000051	1069200051	8712000050	1372800051
63	0	5473800050	6349200050	6227100050	7041100050
	1	6959700050	7436500050	6715500050	5087500050
	2	4884000050	4802600050	2523400050	4273500050
90	0	2322900050	3017100050	2456400050	2589900050
	1	2723400050	3150600050	2696700050	2403000050
	2	2723400050	4619100050	1628700050	1975800050

PER CENT CHORD	F	DELTA PER CENT		PRESSURE RADIUS	
		U	E	R	E
		11201*	30*(11201*	60*(11201*	90*(11201*
TIME	211				
2	0	1009438052	7971740051	6226440051	6698140051
	1	6839670051	7664180051	7524560051	7452860051
	2	8679280051	6868820051	3443410051	9622680051
9	0	5847060051	5550470051	5465730051	6143650051
	1	6143650051	4299660051	4299660051	4575960051
	2	4406480051	3643820051	1694800051	5042030051
17	0	3579660051	3352380051	2812590051	3409200051
	1	3939870051	2954640051	3210330051	2841000051
	2	2869410051	2187570051	8523000050	3181920051
23	0	3290570051	3497850051	3161020051	3471940051
	1	3083240051	3290570051	3238750051	2746460051
	2	2668730051	1917340051	9068500050	4057380051
34	0	1960290051	2073930051	1838240051	1931680051
	1	1761420051	1984700051	1460297051	1676190051
	2	1590960051	1221640051	2272800050	1931880051
63	0	9166300050	7820200050	6607300050	8333000050
	1	7435600050	8904900050	9038100050	8268900050
	2	7820200050	7756100050	1282000050	8909900050
90	0	5431900050	4337000050	3514500050	4153700050
	1	4153500050	4792500050	4437500050	4011500050
	2	4153500050	5360500050	1065000050	4011500050

TIME	PER CENT CHORD	X	DELTA PER CENT		PRESSURE RADIUS	
			85	PER CENT	PER CENT	RADIUS
			(120)K	30*(120)K	60*(120)K	90*(120)K
2	0		1120365051	6713940051	6307240051	5892290051
	1		5560330051	6473270051	8464980051	9045910051
	2		9792820051	9626840051	5560330051	1087169052
4	0		1102236052	8977890051	6400680051	5955630051
	1		5511180051	6488970051	8444550051	8000100051
	2		9066780051	8711270051	4622280051	1040013052
9	0		6643530051	7259940051	4999770051	4657320051
	1		4246380051	5068260051	5347220051	5273730051
	2		7136750051	4588810051	2671110051	6985980051
13	0		4305900051	5926400051	4722600051	4581700051
	1		4259600051	4954100051	4167000051	3935500051
	2		5981800051	4518800051	1666800051	4907800051
17	0		4137280051	4607880051	4902000051	4705720051
	1		6411800051	3627480051	3921600051	3431400051
	2		3235320051	2647040051	7843200050	3921600051
23	0		7828970051	3443010051	6030750051	5899170051
	1		5350920051	2960550051	3267570051	3004410051
	2		3004410051	2434230051	1162290051	3552660051
34	0		2110250051	1945100051	1981800051	2128600051
	1		1504700051	1981800051	2183650051	2073550051
	2		7073550051	1468000051	7707000050	2330450051
47.7	0					
	1					
	2					
63	0		1399440051	6473600050	4188800050	4760000050
	1		2380000050	6092800050	7806400050	8092000050
	2		8758400050	7616000050	5997600050	1047200051
77	0		9195600050	1422000050	2844000049	2844000049
	1		9480000049	1611600050	3128400050	3886800050
	2		4740000050	6162000050	4929600050	6446400050
90	0		4620700050	8487000049	2168900050	2074600050
	1		2734700050	1131600050	1884000049	6601000049
	2		1791700050	4054900050	2734700050	3489100050

TIME	PER CENT CHORD	K	DELTA PER CENT		PRESSURE RADIUS		
			90	90	U F G	R E S	
			(120)K	30*(120)K	60*(120)K	90*(120)K	
		211					
		0	1058200052	7936500051	6243380051	6031740051	
	2	1	4913540051	6137560051	8148140051	9206340051	
		2	1037046052	1058200052	7195760051	1037036052	
		0	700420051	6267560051	4055480051	3688800051	
	9	1	3133780051	4055480051	5345860051	4792840051	
		2	4977180051	4792840051	3133780051	8848320051	
		0	4260240051	6151680051	4970280051	4733600051	
	17	1	4141400051	4733600051	4378480051	4496920051	
		2	4496920051	4141900051	2366800051	5325300051	
		0	2794140051	4656900051	6225540051	5980440051	
	23	1	5441220051	3137280051	3068260051	3039240051	
		2	3137280051	2892180051	1617660051	3676500051	
		0	1185280051	1777920051	2666880051	2815040051	
	34	1	1296400051	1770480051	1666800051	1740880051	
		2	1963120051	1740880051	7408000050	2481680051	
		0	6748600050	4608800050	2304400050	2469000050	
	63	1	1646000050	5102600050	6748600050	7407000050	
		2	8559200050	6913200050	7900600050	8394600050	
		0	4513500050	4867500050	6283500050	6372000050	
	90	1	4779000050	2212500050	4425000049	1504500050	
		2	1770000050	4748900050	4602000050	4071000050	

TIME	PER CENT CHORD	K	DELTA PER CENT		PRESSURE RADIUS	
			95	95	U F G	R E S
			(120)K	30*(120)K	60*(120)K	90*(120)K
		211				
		0	9999600051	6730500051	4711350051	4230600051
	2	1	3365250051	4230600051	6249750051	7018950051
		2	8461200051	9615000051	7115100051	1028805052
		0	8133650051	6124160051	3923290051	3349150051
	9	1	2775010051	3731910051	5167260051	5167260051
		2	5262950051	5358640051	3923290051	6994860051
		0	3999880051	5894560051	4210400051	3578840051
	17	1	3052540051	3578840051	3473580051	3263060051
		2	3578340051	3789360051	2526240051	4315660051
		0	2835250051	4433300051	4742600051	4639500051
	23	1	4175590051	2783700051	2474400051	2577500051
		2	2629050051	2732150051	1752700051	3402300051
		0				
	34	1				
		2				
		0	2796000050	3075600050	1677600050	1398000050
	63	1	1957200050	4613400050	6650200050	7129800050
		2	7828800050	7409400050	3495000050	7269600050
		0	4350000048	1392000050	1607500050	1131000050
	90	1	6525000049	4350000049	1000500050	1131000050
		2	1392000050	4135000049	1392000050	7830000049

		HARMONIC ANALYSIS			
COEF	BLADE	LOADING	40	PER CENT	RADIUS
STEADY		COSINE	SINE	MAX	PHI
		1159752252			211034100
1		2456112051-	5801593851	6300077551	1129454453
2		2063897051	4750369250	2117860051	6480872951
3		3238638550	7720981749	3329401650	4469711451
4		1104741851	1491131250-	1114957951	8807858052
5		1264413350-	4202276749	1332416050	3232315652

		HARMONIC ANALYSIS			
COEF	BLADE	LOADING	55	PER CENT	RADIUS
STEADY		COSINE	SINE	MAX	PHI
		2119170052			211034200
1		2400945051-	7509340251	7083826951	1077305353
2		3140046351	9921293350	3293050351	8767242151
3		5663596750	8205443350	9970237150	1846187352
4		7718860050	1226334551-	1449035651	7554684152
5		1871628350-	7107523350	7349821850	2095056452

		HARMONIC ANALYSIS			
COEF	BLADE	LOADING	75	PER CENT	RADIUS
STEADY		COSINE	SINE	MAX	PHI
		2659951752			211034300
1		4884040050-	4407310851	4434289851	9632354052
2		3871007351	2064619351	4387180351	1403671752
3		4026871551	9079138350-	4127953751	1157647853
4		2047704251	2846873251-	3506819151	7643170052
5		1864948851-	1511989251-	2404747351	4379161752

		HARMONIC ANALYSIS			
COEF	BLADE	LOADING	85	PER CENT	RADIUS
STEADY		COSINE	SINE	MAX	PHI
		2674563552			211034400
1		1987125251	1092247551	2267525351	2879593152
2		3212512551	2464640851	4052081351	1877576452
3		2578895551	1391574351-	2930389251	1105495553
4		1622659251	2870029351-	3296982151	7487074552
5		1702617251-	1552105351-	2303895951	4447045952

		HARMONIC ANALYSIS			
COEF	BLADE	LOADING	90	PER CENT	RADIUS
STEADY		COSINE	SINE	MAX	PHI
		2799821152			211034500
1		2760781351	2796770251-	3929864851	3146289853
2		2487714351	2156534851	3292319151	2046058452
3		1112662751	2042279351-	2325709151	9952739452
4		9553155050	3246029751-	3431681851	7154090352
5		2335875251-	1135254851-	2597136251	4118402952

		HARMONIC ANALYSIS			
COEF	BLADE	LOADING	95	PER CENT	RADIUS
STEADY		COSINE	SINE	MAX	PHI
		2002108052			211034600
1		2826937351	3626465251-	4598132851	3079374853
2		2903758251	1264463551	3167124951	1176554152
3		1266411751	3198783350-	1306185651	1152747953
4		7373420050	1690127051-	1843968051	7339251952
5		1750637551-	1026432551-	2029358451	4207678452

		HARMONIC		ANALYSIS		
RED BLADE	BEAM	BENDING		PER CENT	RADIUS	
			15			
COEF		COSINE	SINE	MAX	PHI	
STEADY		6732691754				211034210
1		7153827754	6786117754-	9860458654	3165110153	211034211
2		1520750854-	3336421354-	3666659254	1227481853	211034212
3		3041488353-	1013830754-	1058470254	8443359452	211034213
4		1419365354-	1051607554	1767678354	3585329452	211034214
5		5924621354	1918336354	6197377354	3412373851	211034215
			20			
COEF		COSINE	SINE	MAX	PHI	
STEADY		19652500-4				211034220
1		1859335554	2547685054-	3154017754	3061224853	211034221
2		4857874753-	3314641853-	5880569153	1071533253	211034222
3		8832505053	2944177353	9310779353	6144993051	211034223
4		4416198552-	2294748753-	2336856853	6477668452	211034224
5		3440164054	1040276053	3441736554	3464094750	211034225
			36			
COEF		COSINE	SINE	MAX	PHI	
STEADY		2018750053-				211034230
1		1239566254	2641854054-	2918204454	2951361253	211034231
2		6549995553-	2268985753	6931863953	8044669652	211034232
3		1113500354	5567503553	1244931354	8855019851	211034233
4		3274974552-	1701739253-	1732965953	6477667252	211034234
5		2657683054	2511043853	2669519154	1079484551	211034235
			45			
COEF		COSINE	SINE	MAX	PHI	
STEADY		1044400054-				211034240
1		1361378354	2956331254-	3254726654	2947258853	211034241
2		8900997053-	3585341752	8908215053	8884668152	211034242
3		1062600454	4554001753	1156074854	7732863651	211034243
4		3449961052	2987786353-	3007638553	6914667952	211034244
5		7638206553	2314686353-	7981226253	6862821552	211034245
			60			
COEF		COSINE	SINE	MAX	PHI	
STEADY		3694393354-				211034250
1		1364575554	2874299754-	3181770754	2953960653	211034251
2		7870796753-	4327820052-	7882686253	9157364552	211034252
3		6496535053	6621463553	4276246353	1518187952	211034253
4		2373719853	3029472353-	3848668353	7702005352	211034254
5		2314070754-	6238344353-	2396683754	3901746452	211034255
			65			
COEF		COSINE	SINE	MAX	PHI	
STEADY		4460139254-				211034260
1		1158788654	3100314554-	3309794754	2904939853	211034261
2		9073162853-	8980106352-	9117444553	9282620552	211034262
3		5573518353	8813929053	1042830054	1923088252	211034263
4		3629250353	2245026353-	4267505253	8206484952	211034264
5		3465967354-	4511832353-	3495210354	3748335952	211034265
			80			
COEF		COSINE	SINE	MAX	PHI	
STEADY		5230308354-				211034270
1		2392547753	2148908054-	2162186054	2763530353	211034271
2		1035095454-	2783911053-	1071878854	9752680352	211034272
3		1671583853	9643743853	9787542453	2672214352	211034273
4		5721943353	1224919253	5851586353	3020789551	211034274
5		4148189854-	5899182853-	4189926454	3761876552	211034275
			92.5			
COEF		COSINE	SINE	MAX	PHI	
STEADY		2579166754-				211034280
1		3489426353-	8832566853-	9496859153	2484428353	211034281
2		7283330753-	1371206353-	7411282853	9533103952	211034282
3		1108333753	5541663551	5651410353	2623002052	211034283
4		316660153	1371206053	3450788853	5853313451	211034284
5		1994391554-	2250774753-	2007051954	3728777752	211034285

HARMONIC ANALYSIS

WH. BLADE	BEAM BEND	15 0/0 R	COSINE			PHI	
COEF			SINE	MAX			
STFADY		7153500054					211034410
1		4076509254-	1528066251	4079172154	1778531053		211034411
2		1646252554-	3485030754-	3854294054	1223574953		211034412
3		6584988353-	4390005753	7914178153	4876995252		211034413
4		7682908353-	3168720053	8310147553	3939726252		211034414
5		7117990054-	2128106554-	7429365554	3932937552		211034415

WH. BLADE	BEAM BEND	2 0/0 R	COSINE			PHI	
COEF			SINE	MAX			
STFADY		2805315054					211034420
1		1260401054-	1417826754	1897061854	1316360453		211034421
2		5658408753-	6727399253-	9465321253	1126476553		211034422
3		5826097353-	4438933553-	7324448253	7243465452		211034423
4		3329194853	1922111053-	3844222853	8250000552		211034424
5		3566938354-	6965002253-	3634303554	3820977452		211034425

		HARMONIC		ANALYSIS	
REF BLADE	CHORD	BENDING	15	PER CENT	RADIUS
COFF		COSINE	SINE	MAX	PHI
STEADY		4424291755			
1		-2980824855	7050184254-	5063065055	3468930653
2		2245756753	1889908353-	4491637853	1499995453
3		5839161354-	5389994054-	7946561554	7423646352
4		1572078854	3500901854-	3837674454	7354561452
5		1453658055-	2382310254-	1473049855	3786142452

REF BLADE	CHORD	BENDING	28	PER CENT	RADIUS
COFF		COSINE	SINE	MAX	PHI
STEADY		4592900055			
1		2362863355	4739539754-	2409285555	3486578753
2		1177658754	1529836854-	1930616654	1537944353
3		6771578054-	4616244354-	4084397554	7103711352
4		8832468353	4679551554-	4174070654	7055408152
5		1157754655-	3209706754-	1199496155	4910415852

REF BLADE	CHORD	BENDING	60	PER CENT	RADIUS
COFF		COSINE	SINE	MAX	PHI
STEADY		2467780455			
1		7249571554	2337661753-	7253739354	3581532153
2		3837911554	8333333354-	3837911554	1800000053
3		3147089354-	3684398054-	4245509354	7649905752
4		5371065053	4653224254-	4684142754	6214669052
5		2721228054-	2759804354-	3875771154	4506065152

REF BLADE	CHORD	BENDING	80	PER CENT	RADIUS
COFF		COSINE	SINE	MAX	PHI
STEADY		1673662155			
1		1982103254	3713350052-	1982451054	3589267353
2		1998984354	2036671753-	2009332854	2968762751
3		7055233353-	1567832254-	1719261854	6192409652
4		1914650052-	2647676254-	2647966354	6728796352
5		1276576354-	1530696554-	1993158054	4603448852

WH. BLADE	CHORD BEND	15 0/0 R	HARMONIC		ANALYSIS	
COFF		COSINE	SINE	MAX	PHI	
STEADY		5047863355				
1		3224735055-	1297081355	3475821655	1580885953	211034430
2		2186795854	3787650454	4373549854	3009003052	211034432
3		5831471054	6924867254	4053168754	1663302852	211034433
4		1457879354	1262547754-	1928584754	7977672552	211034434
5		2204229755	1607864454	2210086255	8344046350	211034435

WH. BLADE	CHORD BEND	28 0/0 R	HARMONIC		ANALYSIS	
COFF		COSINE	SINE	MAX	PHI	
STEADY		5062945055				
1		2383533555-	1292285255	7711315755	1515346953	211034441
2		1679654854-	2902240254	3359303654	6000003252	211034442
3		5998754754	1199752454	6117553854	3769983751	211034443
4		6958260254	4156031753-	6970960254	8914551352	211034444
5		1855645055	6273157354	1958811855	4735648951	211034445

RED BLADE	TORSION	15 0/0 R	HARMONIC		ANALYSIS	
COFF		COSINE	SINE	MAX	PHI	
STEADY		4375941754-				
1		1406509853-	2288096354-	2292415254	2664824153	211034350
2		6177790053-	6666666746-	6177790053	9000000552	211034352
3		2059269353-	3088900753	3112397453	4123003452	211034353
4		1029630853-	1605039354	1608338554	2341762452	211034354
5		3768675052	7436450753	7445994153	1741976452	211034355

RED BLADE	TORSION	50 0/0 R	HARMONIC		ANALYSIS	
COFF		COSINE	SINE	MAX	PHI	
STEADY		1356760054-				
1		2073993853-	1047766154-	1068095854	2588033753	211034360
2		5705974052-	2964924553-	3019330853	1295533353	211034362
3		8875999252-	215600553	2331190153	3746004452	211034363
4		2726201053	6478508353	7029112753	1679489352	211034364
5		1439989753	1601658753	2153806153	9608501251	211034365

		HARMONIC		ANALYSIS		
RED BLADE COEF	PITCH	POSITION COSINE	SINE	MAX	PHI	
STEADY		1693466852				211034510
1		1624120751	6158360751-	6368922651	2847740153	211034511
2		1747025050	2017318350-	2668645650	1554465153	211034512
3		4464700350	5823266747-	4502524250	1175229853	211034513
4		1941170050	3698396750-	4176874350	7442338552	211034514
5		9059750049-	7278166747-	1162113550	4375534452	211034515
RED BLADE COEF	FLAP	POSITION COSINE	SINE	MAX	PHI	
STEADY		7980000049-				211034520
1		1250495551-	6358535550-	1402871651	2063524953	211034521
2		2127999550-	2150053250	3025080350	6735232452	211034522
3		1595998550-	3901332850	4215164250	3741633752	211034523
4		-1666666743	9214512349	9214512349	2249999352	211034524
5	6	4519046050-	1444132350-	4744185350	3544442052	211034525
VERTICAL COEF	ACCEL	COSINE	SINE	MAX	PHI	
STEADY		1299425051				211034530
1		1964673349	6324540249-	6622669449	2872570453	211034531
2		6597303348	1318523349-	1474363549	1482906753	211034532
3		5074666748-	1978485049-	1994140749	6508556852	211034533
4		421279849-	2724960049-	5016806849	3677514552	211034534
5		8481716748-	1714485048-	8651048148	4828546852	211034535
FORE-AFT COEF	ACCEL	COSINE	SINE	MAX	PHI	
STEADY		9143833349-				211034540
1		3708228348	8626198348-	9389475748	2932619053	211034541
2		9915030048	5533616049	7621740149	1992082052	211034542
3		1211835349-	7711675048-	1436399949	7082372652	211034543
4		7067667349-	3434657549-	6121937949	5353195452	211034544
5		1800091748	9145223347	2019079348	5386497251	211034545
LATERAL COEF	ACCEL	COSINE	SINE	MAX	PHI	
STEADY		5633333347-				211034550
1		1276520049-	7193883248-	1573149349	2157624153	211034551
2		1109766750	2244160349	1132230050	5716067951	211034552
3		5633312848	4506661748	7214167548	1288662752	211034553
4		2107668349-	5951904049-	6384334749	6219774952	211034554
5		3080051748-	1032054449	1074997149	124988552	211034555
LIFT LINK COEF	LOAD	COSINE	SINE	MAX	PHI	
STEADY		6186147554				211034610
1		2542325553	2961447753-	3903023353	3106452353	211034611
2		1652776853	6297965653-	6511224553	1423522953	211034612
3		1888833352-	7555283352-	7780048552	5552136952	211034613
4		3919463852-	1861217253	4347548053	3859012252	211034614
5		1220085853-	3441155052-	1267684953	5415013852	211034615
RIGHT COEF	CYCLIC	LOAD COSINE	SINE	MAX	PHI	
STEADY		1577333353				211034620
1		1327776352	1259778652	1630309352	4349468652	211034621
2		1005332253-	600443752	1170994553	7457592952	211034622
3		1386669552	3120002252	3414273952	2201249452	211034623
4		3466671552	6604888552	7459380952	1557665352	211034624
5		1674438352-	1860221352	2702831852	2639825752	211034625
LEFT COEF	CYCLIC	LOAD COSINE	SINE	MAX	PHI	
STEADY		1692000052				211034630
1		2407125052-	1591251052-	2885539352	2134670853	211034631
2		2725999853-	8140637352-	2844956053	2831354852	211034632
3		1127997852-	3007995752-	3212540652	8514799152	211034633
4		1692000052	1269931853	1281162053	2060272052	211034634
5		4360871752-	2867536751-	4170421152	3675766652	211034635
COLLECTIVE COEF	LOAD	COSINE	SINE	MAX	PHI	
STEADY		1818666752				211034640
1		1665204752	2996554852-	3428159452	2990611753	211034641
2		7109331552	4868218052-	6616388352	1627970253	211034642
3		6613323351-	7919991751	1192234452	4123001952	211034643
4		9093329552	1116826453-	1440204053	7728822052	211034644
5		3956126252	1012560852	4083652052	2871307351	211034645
STABILIZER COEF	RAK	COSINE	SINE	MAX	PHI	
STEADY		2172800053				211034650
1		2172800053	4645487051-	128543751	2449326253	211034651
2		1723330453-	835471144-	111011049	594466852	211034652
3		1723338250	1206330250-	2103598650	1083360453	211034653
4		1550997050	8954739849	1790939850	7596038251	211034654
5		3594658249	1303536950	1352192350	1491667452	211034655

HARMONIC ANALYSIS

COEF	R F	PYLON	POSITION	COSINE	SINE	MAX	PHI	
STEADY				3933333349				211034310
1				1229160548	4947234048-	5097642648	2839528653	211034311
2				3712082749-	2852832349	4681688849	7122639552	211034312
3				2458325748-	4916725047	2507011648	5622997052	211034313
4				4179177048	5535349748	6935821248	1323681952	211034314
5				1229181548	1013904248	1593389148	7903580451	211034315

COEF	R A	PYLON	POSITION	COSINE	SINE	MAX	PHI	
STEADY				1287500050				211034320
1				7080135348-	3349515047	7088054048	1772914453	211034321
2				1074999949-	6105479349	6199395349	4999290052	211034322
3				4000013348	3500010048	5315089548	1372863852	211034323
4				5749986848-	3031100848	6499993848	3805102152	211034324
5				1580163248	4665071248	4925424348	1425752352	211034325

COEF	L F	PYLON	POSITION	COSINE	SINE	MAX	PHI	
STEADY				1375000049-				211034330
1				5397122348	1160260047	5398369348	1231540851	211034331
2				2774998349-	5585864349-	6237186549	1482088553	211034332
3				3450000042-	1499999748-	1499999748	8999795952	211034333
4				8750009348-	5629165548-	1040433449	5318862552	211034334
5				2397128348-	1616023248-	2890978248	4279717552	211034335

COEF	L A	PYLON	POSITION	COSINE	SINE	MAX	PHI	
STEADY				9277083349				211034340
1				1407035048-	1487299849	1493940549	9540429252	211034341
2				5159580549	1892987349-	5495877749	1699262753	211034342
3				3050001748	4574993348-	5498461148	1012300453	211034343
4				1957083049-	6603453348	2065485449	4033873552	211034344
5				3167943348-	3427023348	4666942748	2655006552	211034345

COEF	RED	PITCH LINK	POSITION	COSINE	SINE	MAX	PHI	
STEADY				1601375053-				211034370
1				1271460053-	2168253353-	2513549953	2396127253	211034371
2				9283326752-	9647523852	1338861053	6694893952	211034372
3				7890833352-	4641668752	4154798652	4984481552	211034373
4				1392499753-	9647523352	1694049153	3632124952	211034374
5				3067071052-	4044195352	5075671552	2543525352	211034375

COEF	WHITE	PITCH LINK	POSITION	COSINE	SINE	MAX	PHI	
STEADY				1798200053-				211034380
1				1128865953	2861230853	3075137153	6850351652	211034381
2				6074999352-	6313328352	8761491352	6694893952	211034382
3				1409399453	1020600453-	1740124153	1080300953	211034383
4				1044899853-	2146530753	2387343653	2898903852	211034384
5				6408652252-	6742310352-	9302127252	4529067352	211034385

IBM TAB NO. 13d
MANEUVER CONDITION NO. 34 - SYMMETRICAL PULL-UP
REVOLUTION 4

PER CENT CHORD		K	DELTA PER CENT		PRESSURE RADIUS	
			(120)K	30*(120)K	60*(120)K	90*(120)K
TIME		307				
4	0		2947560051	4035350051	3123010051	3965170051
	1		3719540051	4245890051	4351160051	2210670051
	2		5965300050	7719800050	1052700051	1824680051
17	0		1545300051	1890720051	1563480051	1908900051
	1		1927080051	2145240051	2145240051	1416040051
	2		5454000050	3817800050	6726600050	1036260051
34	0		7440000050	9840000050	7440000050	9720000050
	1		9600000050	1068000051	1092000051	1512000051
	2		3720000050	2280000050	2640000050	4560000050
63	0		2853500050	3468100050	3029100050	4038800050
	1		4214400050	4916800050	4697300050	2677900050
	2		3292500050	1097500050	1536500050	2370600050
90	0		1390500050	1328700050	1050600050	1328700050
	1		1637700050	1977600050	2317500050	2163000050
	2		3708000050	1266500050	9270000049	1452300050

PER CENT CHORD		K	DELTA PER CENT		PRESSURE RADIUS	
			(120)K	30*(120)K	60*(120)K	90*(120)K
TIME		307				
2	0		6589440051	5160940051	5852160051	5575680051
	1		5391360051	7741440051	7695360051	5575680051
	2		2810880051	1612800051	2903640051	5022720051
9	0		1772350051	3454200051	3726900051	3681450051
	1		3408750051	4545000051	4226850051	3317850051
	2		1408950051	1636200051	1590750051	2817900051
17	0		2737020051	2596660051	2807200051	2912470051
	1		2701930051	3403730051	3087920051	2456300051
	2		1614140051	1579500051	1298330051	2140490051
23	0		2169160051	2098040051	2240280051	2133600051
	1		2062480051	2595880051	2453640051	1884680051
	2		1529080051	1280160051	1066800051	1671320051
34	0		1900800051	1887600051	1966800051	2006400051
	1		1940400051	2244000051	2098800051	1650000051
	2		1716000051	1161600051	1042800051	1478400051
63	0		6064100050	5657300050	6267800050	6308500050
	1		6267800050	7407400050	7081800050	5616600050
	2		1298330051	3622300050	3093200050	4395600050
90	0		2643300050	2082600050	2483100050	2296200050
	1		2536500050	2910300050	2723400050	2696700050
	2		1842300050	2830200050	1602000050	2136000050

PER CENT CHORD		K	DELTA PER CENT		PRESSURE RADIUS	
			(120)K	30*(120)K	60*(120)K	90*(120)K
TIME		307				
2	0		1014155052	6839650051	6886820051	6462290051
	1		6084930051	6933990051	8018900051	8396260051
	2		9056640051	4150960051	4433980051	1009438052
9	0		6101280051	4364110051	5550470051	5296250051
	1		4787810051	5253880051	5042030051	4914920051
	2		4364110051	2118500051	2584570051	6058910051
17	0		3522840051	2727360051	2897820051	2698950051
	1		2386440051	2670540051	3238740051	3096690051
	2		2727360051	1193220051	1590960051	3494430051
23	0		3264660051	2901920051	3186930051	3083290051
	1		2772370051	3031470051	3264660051	2979650051
	2		2409630051	1295500051	1580510051	3290570051
34	0		1875060051	1477320051	1846650051	1789830051
	1		1534140051	1818250051	2017110051	1818240051
	2		1342090051	8523000050	8238900050	2045520051
63	0		8268900050	7884300050	6153600050	7115100050
	1		6538200050	8333000050	9615000050	8781700050
	2		8653500050	7115100050	5457300050	1019190051
90	0		6106300050	3479000050	3401500050	3976000050
	1		1869500050	4215000050	4757000050	4224500050
	2		8129500050	6070500050	4124000050	6958000050

TIME	K	PER CENT CHORD	DELTA PER CENT		PRESSURE RADIUS	
			85 11201K	D E G 30*11201K	R E E S 60*11201K	90*11201K
			307			
	0		9958800051	8133020051	7303120051	5477340051
2	1		4481460051	6058270051	8547970051	9543850051
	2		1029076052	9045910051	6307240051	1120365052
	0		1004457052	8088990051	7200090051	5333400051
4	1		4355610051	6044520051	8533440051	8889000051
	2		9777900051	7200090051	5333400051	1048902052
	0		6506550051	6027120051	5890140051	4314870051
9	1		3424500051	4657320051	5410710051	5547690051
	2		5273730051	4383360051	3219030051	7396920051
	0		4259600051	4676300051	5278200051	4120700051
13	1		3379900051	4444800051	4259600051	4213300051
	2		4120700051	3194700051	2407600051	5787500051
	0		3529440051	3627480051	5196120051	4019640051
17	1		3431400051	3333360051	4117680051	3529440051
	2		3235320051	2156880051	1764720051	4313760051
	0		2872830051	2938620051	5636010051	5241270051
23	1		2543880051	2828970051	3311430051	3201780051
	2		3004410051	2105280051	1842120051	3859680051
	0		1302850051	1853350051	2018500051	1743250051
34	1		1284500051	1798300051	2257050051	2257050051
	2		1926750051	1321200051	1156050051	2605700051
47.7	0					
	1					
	2					
	0		4569600050	6378400050	3617600050	3998400050
63	1		2284800050	5426400050	8282400050	8758400050
	2		7996800050	7996800050	7330400050	1275680051
	0		2844000050	1422000050	6636000049-	3792000049-
77	1		8532000049-	1327200050	3602400050	4550400050
	2		5688000050	6446400050	4171200050	1004880051
	0		2546100050	9430000049-	2074600050-	2546100050-
90	1		2263200050-	1225900050-	1886000049	1037300050
	2		3583400050	3772000050	3866300050	6129500050

Cont. 31		90		DELTA	PRESSURE	
PER CENT				PER CENT	RADIUS	
CHORD	K	11201K	30+11201K	D E G	R E E S	90+11201K
TIME	307					
2	0	1015872052	7089940051	6772480051	5185180051	
	1	3703700051	5714280051	8359780051	9841260051	
	2	1079364052	1058200052	7407400051	1085946052	
9	0	8110960051	5069350051	4608500051	3410290051	
	1	2304250051	3686800051	5345860051	4885010051	
	2	5161520051	4792840051	3133780051	7742280051	
17	0	5088620051	5680320051	5680320051	4851940051	
	1	3195180051	4260240051	4733600051	4733600051	
	2	4851940051	4378580051	2840160051	5917000051	
23	0	3529440051	3284340051	6323580051	5490240051	
	1	4166700051	2647080051	3186300051	3235320051	
	2	3382180051	2892180051	1764720051	4117680051	
34	0	2146320051	1407520051	2296480051	1740880051	
	1	6296800050	1296400051	1965170051	1889040051	
	2	2574240051	1592720051	5926400050	2555760051	
63	0	6938000050	4773400050	1152200050	1316800050	
	1	2469000050	4115000050	3077800050	8592000050	
	2	7746700050	6748600050	5225600050	1119280051	
90	0	1947000050-	3894000050-	6703000050-	5929500050-	
	1	4336500050-	1593000050-	8850000049	1858500050	
	2	3097500050-	4956000050-	1858500050	5133000050	

Cont. 32		45		DELTA	PRESSURE	
PER CENT				PER CENT	RADIUS	
CHORD	K	11201K	30+11201K	D E G	R E E S	90+11201K
TIME	307					
2	0	9999600051	5384400051	5192100051	3461400051	
	1	2307600051	3942150051	6345900051	7699700051	
	2	9615000051	9711150051	6730500051	1076880052	
9	0	8516410051	4497430051	4401740051	2775010051	
	1	2009490051	3540530051	5262950051	5645710051	
	2	5645710051	5454330051	4018980051	6602610051	
17	0	4736700051	4736700051	4631440051	3157800051	
	1	2105200051	3052540051	3684100051	3789360051	
	2	3999880051	3894670051	2420960051	4631440051	
23	0	3402300051	2989900051	5361200051	4072450051	
	1	3247650051	2216650051	2577500051	2835250051	
	2	2886800051	2835250051	1546500051	4072450051	
34	0					
	1					
	2					
63	0	3355200050	4194000050	2796000049	1258200050	
	1	2376600050	4473600050	7129800050	7828800050	
	2	8108400050	7549200050	6011460050	9925800050	
90	0	1479000050-	5220000049-	1740000050-	1044000050-	
	1	2610000049-	4785000049	1044000050	1348500050	
	2	1218000050	1000500050	2436000050	2305500050	

		HARMONIC		ANALYSIS		
COEF	BLADE	LOADING	40	PER CENT	RADIUS	
STEADY		COSINE	SINE	MAX	PHI	
1		1112546952				307034100
2		2285256751-	4970437251	5470616451	1146915553	307034101
3		20835610251	2111799750	2843463151	2129599151	307034102
4		1871458050-	7500383349-	2016162850	6727993652	307034103
5		3721574050	6847558350	7793533750	1536909952	307034104
		2549266350-	5269635350	5853871850	2316321752	307034105

		HARMONIC		ANALYSIS		
COEF	BLADE	LOADING	55	PER CENT	RADIUS	
STEADY		COSINE	SINE	MAX	PHI	
1		2088577552				307034200
2		2415453551-	4991274851	5545019451	1158239853	307034201
3		3475858851	6858183350	3542871951	5580802351	307034202
4		5762155050	2510466749-	5767621250	1191684353	307034203
5		5415113350	1777319851-	1857982851	7173621352	307034204
		3095953350	5563546750	6366944250	1218106452	307034205

		HARMONIC		ANALYSIS		
COEF	BLADE	LOADING	75	PER CENT	RADIUS	
STEADY		COSINE	SINE	MAX	PHI	
1		2609166352				307034300
2		6835116749-	2205956751	2407015451	9177473652	307034301
3		5305746851	1128317051	5424393851	6002819351	307034302
4		2087952551	3553623251-	4121624051	1001455453	307034303
5		1764088350-	3525235851-	3529646951	6821620152	307034304
		8403070050-	1907225050-	9266992650	4098748552	307034305

		HARMONIC		ANALYSIS		
COEF	BLADE	LOADING	85	PER CENT	RADIUS	
STEADY		COSINE	SINE	MAX	PHI	
1		2580592352				307034400
2		1803704051	1639066851-	2437188651	3177378753	307034401
3		3349092351	2587974851	4232497351	1884733552	307034402
4		4660903350-	3232821851-	3266248251	8726531752	307034403
5		2713196750-	4147705251-	4156569751	6656434152	307034404
		1886372751-	1214016051-	2243264851	4255283852	307034405

		HARMONIC		ANALYSIS		
COEF	BLADE	LOADING	90	PER CENT	RADIUS	
STEADY		COSINE	SINE	MAX	PHI	
1		2728031352				307034500
2		2777259351	5247686551-	5937287551	2978893653	307034501
3		4309777551	3076991851	5296637951	1777138952	307034502
4		8299793350	2991615051-	3104613751	9516862952	307034503
5		1543172751	4792179851-	5034517851	7196238852	307034504
		1668768051-	2050269051-	2643556251	4617139152	307034505

		HARMONIC		ANALYSIS		
COEF	BLADE	LOADING	95	PER CENT	RADIUS	
STEADY		COSINE	SINE	MAX	PHI	
1		1984989852				307034600
2		2524351551	5485367751-	6038349051	2947117753	307034601
3		3136598851	1871230751	3652363151	1540972052	307034602
4		8564770050	1230366051-	1494117551	1016141353	307034603
5		1044523251	2527681551-	2734995951	7311301952	307034604
		5909868350-	1390183851-	1510588151	4939379552	307034605

		HARMONIC		ANALYSIS		
RED	BLADE	BEAM	BENDING	15	PER CENT	RADIUS
COEF	STEADY	COSINE	SINE	MAX	PHI	
	1	2930816754	9711676754	1192292955	3054583253	307034210
	2	6916616054	2027666054	2570822454	1089668453	307034211
	3	1013834754	1013831354	143476454	1050000353	307034213
	4	1317983354	7024053353	1493670254	7011728851	307034214
	5	3931498854	1702394254	4284161954	4682764251	307034215

		HARMONIC		ANALYSIS		
RED	BLADE	BEAM	BENDING	28	PER CENT	RADIUS
COEF	STEADY	COSINE	SINE	MAX	PHI	
	1	1494183354	3334438254	3856021454	3001475053	307034220
	2	1936600854	4079558753	7407373853	1067090053	307034221
	3	6182749254	2355325753	5266686553	1111450253	307034222
	4	4710671753	9099418352	7789490652	5522334952	307034223
	5	5888701752	1841802751	7809550554	7517448750	307034225

		HARMONIC		ANALYSIS		
RED	BLADE	BEAM	BENDING	36	PER CENT	RADIUS
COEF	STEADY	COSINE	SINE	MAX	PHI	
	1	2346270053	2807892054	3146635154	2942983053	307034230
	2	1294600354	1701738853	4890615053	7981870552	307034231
	3	4584497353	1310003354	6356901653	3962894051	307034232
	4	6222507253	1701738853	2599450053	5522334252	307034233
	5	1465000553	1451977854	1528601954	7091058852	307034234

		HARMONIC		ANALYSIS		
RED	BLADE	BEAM	BENDING	45	PER CENT	RADIUS
COEF	STEADY	COSINE	SINE	MAX	PHI	
	1	8550000054	3025826054	3302897054	2937542653	307034240
	2	1331664054	2390229853	3949956053	8275275352	307034241
	3	426830753	4622002053	6833443153	1445447252	307034242
	4	3726304553	2390228353	4426770953	517003452	307034243
	5	6869083351	1965733253	3966127453	5180165152	307034245

		HARMONIC		ANALYSIS		
RED	BLADE	BEAM	BENDING	60	PER CENT	RADIUS
COEF	STEADY	COSINE	SINE	MAX	PHI	
	1	3518226754	2578584254	2958001054	2993394653	307034250
	2	1449370154	5409776752	1618790354	9095755552	307034251
	3	1617886154	7246132553	7353045253	2673919452	307034252
	4	1249349553	1622931853	1762404953	6176310952	307034253
	5	6871414552	2199233253	1552480954	3762877552	307034254

		HARMONIC		ANALYSIS		
RED	BLADE	BEAM	BENDING	65	PER CENT	RADIUS
COEF	STEADY	COSINE	SINE	MAX	PHI	
	1	4220448354	2912710854	3176313654	2935072253	307034260
	2	1266919154	1234765253	1618443954	9218777652	307034261
	3	1613726854	4925431853	4952644253	3200300152	307034262
	4	5184658752	2397278553	2659507653	7439519652	307034263
	5	1231348353	1662663552	1876192754	5610155252	307034264

		HARMONIC		ANALYSIS		
RED	BLADE	BEAM	BENDING	80	PER CENT	RADIUS
COEF	STEADY	COSINE	SINE	MAX	PHI	
	1	4838129254	1824680054	1842705254	2619794553	307034270
	2	2571096553	1447633253	1607393954	9258355852	307034271
	3	1600861954	1800163053	3684307753	9749596651	307034272
	4	3214581853	3006622253	3120626453	1861627752	307034273
	5	8357823352	4688206853	2432325554	3473094252	307034274

		HARMONIC		ANALYSIS		
RED	BLADE	BEAM	BENDING	92.5	PER CENT	RADIUS
COEF	STEADY	COSINE	SINE	MAX	PHI	
	1	2365416754	5616267353	6821854753	2354140653	307034280
	2	3872369353	2468171853	3651975853	1112599353	307034281
	3	2691664053	7916681752	8526515652	9726707552	307034282
	4	3166641752	5484827053	5493960653	2167393252	307034283
	5	3166635752	6724593253	1554866354	3087490252	307034284

HARMONIC ANALYSIS

WH. BLADE	BEAM BEND	15 0/0 R	COSINE			PHI
COEF			SINE	MAX		
STEADY		3312250054				307034410
1		4097332354	5919135554	7198909454	1246916953	307034411
2		2853500754	1964284554	3664231454	1072713553	307034412
3		6950828353	1938916354	2059741954	3657409152	307034413
4		1756001054	8237343553	1339607654	6282780251	307034414
5		4097332254	7974698053	4174217254	3820277452	307034415

WH. BLADE	SEAM BEND	2 0/0 R	COSINE			PHI
COEF			SINE	MAX		
STEADY		2791443354				307034420
1		9351769053	3714280554	3830249354	1041350353	307034421
2		1733958754	2162379753	1747390054	8644574152	307034422
3		1137476654	4716367353	1231379054	6750685652	307034423
4		2635619353	4084442753	4861025653	7570628352	307034424
5		2088644854	2741073853	2106554554	3749532052	307034425

		HARMONIC ANALYSIS				
RED BLADE	CHORD	BENDING	15	PER CENT	RADIUS	
COEF		COSINE	SINE	MAX	PHI	
STEADY		4873458355				307034110
1		2693703355	2949987555-	3994804655	3123999453	307034111
2		1572076054	3889908353-	1619486654	1730510153	307034112
3		1347492254-	8666666748	1347492254	5999987752	307034113
4		1572086754-	1944940854-	2500850154	5776289052	307034114
5		8072036754-	1492617854-	8208878454	3609527152	307034115

RED BLADE	CHORD	BENDING	28	PER CENT	RADIUS	
COEF		COSINE	SINE	MAX	PHI	
STEADY		4784270855				307034120
1		2090282255	2193611055-	3030051055	3136182853	307034121
2		3091367854	1274863554-	3343924654	1687945153	307034122
3		8832430053-	1766492854-	1974997554	8114501152	307034123
4		7360378353	3824577854-	3894758954	7022334152	307034124
5		7654071754-	1028383554-	7722848454	3753046252	307034125

RED BLADE	CHORD	BENDING	60	PER CENT	RADIUS	
COEF		COSINE	SINE	MAX	PHI	
STEADY		2602107555				307034130
1		7512375354	6676495054-	1005044155	3183714653	307034131
2		4068186354	6647473353-	4122138954	1753599153	307034132
3		1074614054-	5219564054-	5329037754	8612212952	307034133
4		2302715053	4919121754-	4924508454	6817003852	307034134
5		5516657554-	2688017754-	6136688854	4119557652	307034135

RED BLADE	CHORD	BENDING	80	PER CENT	RADIUS	
COEF		COSINE	SINE	MAX	PHI	
STEADY		1752053855				307034140
1		2266221854	2523907854-	3392030754	3119207453	307034141
2		1489438754		1489438754		307034142
3		3135648353-	2586923354-	2605857854	8769627352	307034143
4		2351738353	2172451754-	2185143754	6904459552	307034144
5		2893353554-	1709239754-	3360505054	4211446852	307034145

WH. BLADE	CHORD BEND	15 0/0 R				
COEF		COSINE	SINE	MAX	PHI	
STEADY		4209590055				307034430
1		3306786555-	1570920755	3669586655	1543074453	307034431
2		1439642555	9784755554-	1740685255	1628987053	307034432
3		9840601354	7289334754	1224629955	1217628652	307034433
4		6013691554-	5997113254	8492929554	3376977252	307034434
5		3546082254	1273327853	3548367754	4112988650	307034435

WH. BLADE	CHORD BEND	28 0/0 R				
COEF		COSINE	SINE	MAX	PHI	
STEADY		4894980055				307034440
1		2057708855-	2285893255	3075625755	1319928253	307034441
2		5998682053	6234071753-	8651464453	1569488153	307034442
3		1679652854	1679652054	2375387254	1499999652	307034443
4		3599335053	3117040054-	3137752554	6914673652	307034444
5		8099706554	4162273253	8110393954	5883450450	307034445

		HARMONIC ANALYSIS				
RED BLADE	TORSION	15 0/0 R				
COEF		COSINE	SINE	MAX	PHI	
STEADY		4684831754-				307034350
1		8338055353-	1753083354-	1941270954	2445632053	307034351
2		8237053753-	8916888253	1713919154	6636524452	307034352
3		1029635353-	1235559954	1739842654	3158788552	307034353
4		1029627553-	2140052354	2142527754	2318862852	307034354
5		2987922853-	2086317753	3644228953	2901506552	307034355

RED BLADE	TORSION	50 0/0 R				
COEF		COSINE	SINE	MAX	PHI	
STEADY		1306040054-				307034360
1		4694934553-	1128365654-	1222142854	2474086553	307034361
2		5959595353-	2635489053	6516331653	7807187252	307034362
3		2155599253-	9002801253	9257269453	3448840252	307034363
4		3246795353-	1383631454	1427365854	2585051152	307034364
5		2279068253-	4109651753	4875166753	2357422652	307034365

HARMONIC ANALYSIS

RED BLADE COEF	PITCH	POSITION COSINE	SINE	MAX	PHI	
STEADY		1688613952				307034510
1		1768314351	6719718551-	6948492951	2847433153	307034511
2		4853150049-	1849208350-	1911832150	1276473353	307034512
3		7764900049	4076425050-	4149720250	9359489752	307034513
4		5726438350-	5043066749-	5748601750	4625821452	307034514
5		2153798350-	1391665050	2564289150	2942634052	307034515
RED BLADE COEF	FLAP	POSITION COSINE	SINE	MAX	PHI	
STEADY		3546666750-				307034520
1		1843118351-	7344895850	1984076651	1582725653	307034521
2		1773330049-	3071515049	3546675149	5999993552	307034522
3		2128000850-	1773331350	2770034550	4673149252	307034523
4		3546681749	1166666744-	3546681749	8999995352	307034524
5		3380814750-	2804361749	3392425750	3505164352	307034525
VERTICAL COEF	ACCEL	COSINE	SINE	MAX	PHI	
STEADY		1235987551				307034530
1		2016400049	5299586049-	5670227649	2908309553	307034531
2		2182231849	3076556749	3771914249	2732577352	307034532
3		2029866748-	5075133348	5466016648	3726653352	307034533
4		1370237749-	1186672750	1194557550	2414667952	307034534
5		1840620049	3261056748	1869285149	2009385951	307034535
FORE-AFT COEF	ACCEL	COSINE	SINE	MAX	PHI	
STEADY		9309083349-				307034540
1		8547088348	7524513548	1138731849	4135939652	307034541
2		2974502849	8777456349	9267761649	3563975752	307034542
3		8813353348-	1872832049	2069843449	3840039852	307034543
4		7050666549-	1717327549	7256797649	4157776252	307034544
5		1625876749-	2016183248-	1638329949	3741378752	307034545
LATERAL COEF	ACCEL	COSINE	SINE	MAX	PHI	
STEADY		8450000048				307034550
1		2260339249	1287576949-	2601343449	3303324853	307034551
2		1335099950	3024738749-	1368934750	1736174253	307034552
3		1239331949	5000000042-	1239331949	1200000053	307034553
4		8449968346	7317914749-	7366538949	6914669052	307034554
5		8943263348	2735773048	9352347948	3401808151	307034555
LIFT LINK COEF	LOAD	COSINE	SINE	MAX	PHI	
STEADY		5950035054				307034610
1		1894772853	2205889753-	2907939753	3106612953	307034611
2		2408356053-	4334963553-	4959041053	1204724853	307034612
3		9443850051-	4722326752	4815831452	3376966752	307034613
4		3825016553-	4498553353	5904890653	3259343852	307034614
5		7496986752	4114435052	6551805952	5751700551	307034615
RIGHT COEF	CYCLIC	LOAD COSINE	SINE	MAX	PHI	
STEADY		1490666753				307034620
1		3454220752	2287334552	4142890352	3351194552	307034621
2		1230666553-	1711266353	2107835953	6286101152	307034622
3		3466629751-	3466666751-	4902580951	7500010252	307034623
4		2253335252	3302444352	3997956752	1392334252	307034624
5		1052448852	4860040051	1159244852	4957347451	307034625
LEFT COEF	CYCLIC	LOAD COSINE	SINE	MAX	PHI	
STEADY		3196000052-				307034630
1		2531253752-	2255996552	3390688152	1382907753	307034631
2		1879999253-	9117516852	2089422953	7706390152	307034632
3		1879997252-	1666666745	1879997252	5999999852	307034633
4		2632000553	7815011852	2745572953	4134339951	307034634
5		1228745552-	22559991852	2568913152	2371506152	307034635
COLLECTIVE COEF	LOAD	COSINE	SINE	MAX	PHI	
STEADY		1157333352				307034640
1		1245936352	3020299752-	3267195752	2924171753	307034641
2		6117329052	6013680852-	8578232452	1577447653	307034642
3		3306665752	3306673351	3323158052	1903535551	307034643
4		1504533453-	2863666751	1504805953	4472739852	307034644
5		2391396552	3593028752-	4316089952	6072927552	307034645
STABILIZER COEF	BAR	COSINE	SINE	MAX	PHI	
STEADY		6031666749-				307034650
1		2787878851-	4741342051-	5500235651	2395447553	307034651
2		5170000049	8954693349-	1033999250	1500000153	307034652
3		1551004550	2067997250-	2585000550	1022900153	307034653
4		1378663550	3333333344	1378663550	3463244246	307034654
5		4777786749	2434418850	2480860250	1577925352	307034655

HARMONIC ANALYSIS

R F		PYLON	POSITION				
COEF			COSINE	SINE	MAX	PHI	
STEADY			3810416749				307034310
1			2260727348-	2440879348-	3326830848	2271920053	307034311
2			4007082049-	4981811349	6393367749	6440560252	307034312
3			9833261747-	1474996748-	1772722748	7877002152	307034313
4			1229155748-	2545349548	2670178148	2562993252	307034314
5			2740718347	2676853347	10074688448	1461267752	307034315

R A		PYLON	POSITION				
COEF			COSINE	SINE	MAX	PHI	
STEADY			1277500050				307034320
1			4415068848-	5281103848	6883523148	1298960553	307034321
2			1449999349	6321985849	6486139249	3854108452	307034322
3			1499989348-	8166666742	1499989348	5999990052	307034323
4			6999986748-	1732052049	1868158849	2800145352	307034324
5			8490433346-	7810820047-	7856830447	5275925152	307034325

L I		PYLON	POSITION				
COEF			COSINE	SINE	MAX	PHI	
STEADY			1450000049-				307034330
1			4565070348	5946154248-	7557753048	3081160553	307034331
2			1674998549	6711697349-	6917550249	1420063753	307034332
3			2499997848	1500003548	2915475948	1032128052	307034333
4			2750005748-	3031049048-	4092680448	5894589952	307034334
5			3349253347	4446151248	4458748148	1713841752	307034335

L A		PYLON	POSITION				
COEF			COSINE	SINE	MAX	PHI	
STEADY			9150000049				307034340
1			3812506748	8123428347-	3898090348	3479716953	307034341
2			6176247049	4534364849-	7662016149	1618576653	307034342
3			3050003348	1016678348	3214989148	6145042351	307034343
4			5337496348-	8364371748	922277048	3063572052	307034344
5			3812510048	1829074348	4228541548	5125805851	307034345

RED		PITCH LINK	POSITION				
COEF			COSINE	SINE	MAX	PHI	
STEADY			1601375053-				307034370
1			1685430853-	1616252253-	2335154953	2237996953	307034371
2			1508540653-	1567722653	2175649153	6694893952	307034372
3			1392496552-	1299666653	1407105153	3203849852	307034373
4			7658758252	9245540352	1200569053	1259064152	307034374
5			1128430453	8331683350-	1128461253	7191539452	307034375

WHITE		PITCH LINK	POSITION				
COEF			COSINE	SINE	MAX	PHI	
STEADY			1433700053-				307034380
1			1660998253	2419531753	2934799653	5553056652	307034381
2			8747998052-	3367107052	9373626852	7947414052	307034382
3			2916004552-	1409400253-	1439249753	8610353752	307034383
4			7775998352	6734211752	1028667953	1022334852	307034384
5			1169497853-	492675752	1426416853	3274904152	307034385

IBM TAB NO. 13e
MANEUVER CONDITION NO. 34 - SYMMETRICAL PULL-UP
REVOLUTION 5

CHORD		40		DELTA PER CENT		PRESSURE RADIUS	
PER CENT CHORD	K	(120)K	D E G 30+(120)K	R E E S 60+(120)K	90+(120)K		
TIME	422						
4	0	2737020051	3228280051	3228280051	3894990051		
	1	3509000051	3509000051	3579180051	2456300051		
	2	1157970051	6316200050	9825200050	1754500051		
17	0	1436220051	1581660051	1490760051	1872540051		
	1	1745280051	1799820051	1818000051	1145340051		
	2	6181200050	3454200050	5817600050	9817200050		
34	0	6840000050	7920000050	7320000050	9480000050		
	1	8520000050	8880000050	9120000050	8280000050		
	2	5880000050	2160000050	2520000050	4440000050		
63	0	2897400050	3160800050	2853500050	3731500050		
	1	3599800050	3863200050	4214400050	3029100050		
	2	2897400050	1975500050	1273100050	2107200050		
88	0	1081500050	1050600050	1081500050	1390500050		
	1	1452300050	1606800050	1946700050	1977600050		
	2	1761300050	8034000049	7416000049	1019700050		

CHORD		55		DELTA PER CENT		PRESSURE RADIUS	
PER CENT CHORD	K	(120)K	D E G 30+(120)K	R E E S 60+(120)K	90+(120)K		
TIME	422						
2	0	6451200051	5990400051	5160960051	5299200051		
	1	5207040051	6773760051	6451200051	5529600051		
	2	4285440051	1428480051	2856960051	4700160051		
9	0	3636000051	3499650051	3136050051	3454200051		
	1	3272400051	4135950051	3726900051	3090600051		
	2	2454300051	6363000050	1590750051	2636100051		
17	0	2666840051	2666840051	2491390051	2666840051		
	1	2561570051	3052830051	2737020051	2280850051		
	2	1824680051	8070700050	1228150051	1965040051		
23	0	2026920051	2026920051	1884680051	1955800051		
	1	1884680051	2382520051	2098040051	1706880051		
	2	1457960051	7467600050	1031240051	1564640051		
34	0	1821600051	1848000051	1755600051	1848000051		
	1	1782000051	2072400051	1874400051	1570800051		
	2	1320000051	8976000050	1016400051	1425600051		
63	0	5535200050	5372400050	5006100050	5575900050		
	1	5372400050	6674800050	6267800050	5087500050		
	2	4110700050	4110700050	2564100050	4354900050		
90	0	2002500050	1895700050	2002500050	2242800050		
	1	2216100050	2696700050	2483100050	1922400050		
	2	2269500050	2696700050	1201500050	1842300050		

CHORD		75		DELTA PER CENT		PRESSURE RADIUS	
PER CENT CHORD	K	(120)K	D E G 30+(120)K	R E E S 60+(120)K	90+(120)K		
TIME	422						
2	0	9386830051	7735880051	5518890051	5707570051		
	1	5754740051	5943420051	7028330051	7075500051		
	2	8632110051	7735880051	5943420051	5245320051		
9	0	4957290051	4787810051	4067520051	4448850051		
	1	4364110051	4321740051	4194630051	4321740051		
	2	4533590051	3982780051	3601450051	4957290051		
17	0	3238740051	3238740051	2102340051	2159160051		
	1	2215980051	2358030051	2670540051	2727360051		
	2	2926230051	2528490051	2244390051	3181920051		
23	0	2953740051	3368300051	2513270051	2694640051		
	1	2591000051	2487360051	2824190051	2668730051		
	2	2720550051	2202390051	2150930051	3005560051		
34	0	1619370051	1931880051	1306860051	1477320051		
	1	1448910051	1505730051	1676190051	1590960051		
	2	1647780051	1278450051	1250040051	1846650051		
63	0	8974000050	7435600050	5833100050	6345900050		
	1	6025400050	7435600050	8076600050	8333000050		
	2	7884300050	6986900050	5640000050	8589400050		
90	0	5183000050	3408000050	3514500050	3656500050		
	1	6210000050	4473000050	4331000050	3798500050		
	2	3976000050	5003500050	2591400050	3798500050		

TIME	PER CENT CHORD	K	DELTA PER CENT		PRESSURE RADII	
			H _S		D E G	
			1201K	10+1201K	R E E S	90+1201K
		422				
		0	1062272052	8299000051	4896410051	4647440051
		1	4232490051	5062390051	7220130051	8547970051
		2	1004179052	9792820051	8381990051	1078870052
		0	1066680052	8355660051	4622280051	4355610051
		1	4177830051	4977840051	6933420051	7377870051
		2	9333450051	9244560051	7555650051	1075569052
		0	8766720051	6917490051	3903930051	3698460051
		1	3356010051	3766950051	4931280051	5068260051
		2	5273730051	4862790051	4588830051	6643530051
		0	4907800051	5602300051	3426200051	3611400051
		1	3194700051	2824300051	3518800051	3704060051
		2	4120700051	3657700051	3379900051	4768900051
		0	4117680051	4019640051	3137280051	3431400051
		1	2843160051	2647080051	3333360051	3137280051
		2	3333360051	2745120051	2745120051	3921600051
		0	3377220051	3333360051	2653530051	4407930051
		1	2346510051	2478090051	2807040051	2872830051
		2	3070200051	2521950051	2565810051	3486870051
		0	2073550051	1853350051	1266150051	1559750051
		1	1229450051	1541400051	1926750051	2036850051
		2	2091900051	1559750051	1578100051	2169300051
		0				
		1				
		2				
		0	5426400050	6283200050	2475200050	3522400050
		1	2094400050	4379200050	6664000050	7901600050
		2	9234400050	8472800050	5521600050	8758400050
		0	2275200050	1137600050	1516800050	4740000049
		1	1137600050	8532000049	2559600050	3886800050
		2	5024400050	6920400050	3886800050	5308800050
		0	5658000049	1037300050	2546100050	2451800050
		1	2546100050	1320200050	1886000049	7544000049
		2	2168900050	4243500050	2167900050	2829000050

PER CENT (HOUR)		50	PER CENT	PER CENT	PER CENT
		11201	30+11201	60+11201	90+11201
TIME	422				
	0	1026454052	7612000051	4232000051	4761920051
	1	1809520051	4550200051	1125760051	8677240051
	2	1037036052	1089946052	4629620051	1079364052
	0	8663980051	5714500051	2672940051	2949440051
	1	2488590051	2857270051	4516330051	4516330051
	2	4977180051	4977180051	4516330051	8848320051
	0	5443640051	5917000051	4668540051	4260240051
	1	3413520051	2258500051	3786880051	4141900051
	2	4733600051	4378580051	4023560051	5088620051
	0	3676500051	4460820051	4404760051	4852980051
	1	3676500051	2205490051	2647080051	2941200051
	2	3284340051	2290270051	2598060051	3578460051
	0	2111280051	1627760051	5630400050	1185280051
	1	5926400050	1185280051	1481600051	1814960051
	2	1563120051	1740880051	1518640051	2555760051
	0	4773400050	4277000050	1446000050	1316800050
	1	1813600050	6521200050	6090200050	7407000050
	2	8723800050	6584000050	5761000050	6746600050
	0	2401000050	4467500050	6904000050	4396500050
	1	4602000050	1858500050	8459000048	1239000050
	2	2124300050	4602600050	1416300050	2035500050

PER CENT (HOUR)		75	PER CENT	PER CENT	PER CENT
		11201	30+11201	60+11201	90+11201
TIME	422				
	0	5999600051	3447000051	3172500051	3172950051
	1	2499900051	1075800051	2285200051	6826650051
	2	8749650051	9804000051	8653930051	1017190052
	0	5612100051	5356500051	2679400051	2679320051
	1	2300870051	1870700051	4401700051	4975880051
	2	5550000051	4358640051	4884190051	9186240051
	0	5684040051	3784000051	4357800051	2842020051
	1	2137200051	1505240051	4157000051	3368320051
	2	3644620051	3896600051	3473580051	4315660051
	0	3556900051	4122100051	3814200051	3711600051
	1	3442000051	1546500051	1132000051	2474400051
	2	2886800051	2835250051	2422850051	3350750051
	0	4333800050	2652200050	5542000049	1398000050
	1	1957200050	1776800050	5871200050	6990000050
	2	3248200050	2490000050	3215400050	5871600050
	0	1870530050	1174500050	1395000050	4570000049
	1	3045100049	4780000049	6265000049	1218000050
	2	1218000050	7705300049	9570000049	3045000049

		HARMONIC		ANALYSIS		
COEF	BLADE	LOADING	40	PER CENT	RADIUS	
STEADY		COSINE	SINE	MAX	PHI	
		1003988152				422034100
1		1684836251-	4423095051	4733121851	1108527453	422034101
2		1741918551	3864285750	1784266551	6253990251	422034102
3		1299790050	4719772550-	4695478150	9513238952	422034103
4		5171840250	1214964550	5312633150	3305040951	422034104
5		2374212850-	4818630750	5371786550	2324603550	422034105

		HARMONIC		ANALYSIS		
COEF	BLADE	LOADING	55	PER CENT	RADIUS	
STEADY		COSINE	SINE	MAX	PHI	
		1898850152				422034200
1		1500577551-	5074711251	5291920951	1064728053	422034201
2		3890706051	4734133350	5719402151	3968766251	422034202
3		7940066750	2725031750-	8394687350	1136859453	422034203
4		7195420049	8131766750-	8163543950	6876425852	422034204
5		243735050	7836245050	1013372251	1521658652	422034205

		HARMONIC		ANALYSIS		
COEF	BLADE	LOADING	75	PER CENT	RADIUS	
STEADY		COSINE	SINE	MAX	PHI	
		2481407452				422034300
1		1155199051	9814753350-	1515842551	3196482553	422034301
2		2794278551	8866240050	2931568151	8852102651	422034302
3		2004899051	3561871750-	2036293051	1166420153	422034303
4		4713566750	7430786350-	8795645450	7559695752	422034304
5		1252156851-	1176015050	1257667251	3492691452	422034305

		HARMONIC		ANALYSIS		
COEF	BLADE	LOADING	85	PER CENT	RADIUS	
STEADY		COSINE	SINE	MAX	PHI	
		2419799252				422034400
1		3546046551	4994976751-	6125703151	3053718153	422034401
2		3075387551	1509272251	3425771651	1306794252	422034402
3		2028567851	9220275050-	222827851	1118524053	422034403
4		1395870851	5955598350-	1517612251	6422351952	422034404
5		1455750551-	7699553350	1646827551	3042507352	422034405

		HARMONIC		ANALYSIS		
COEF	BLADE	LOADING	90	PER CENT	RADIUS	
STEADY		COSINE	SINE	MAX	PHI	
		2555733752				422034500
1		4621928251	8319445351-	9517113951	2990546753	422034501
2		3718063251	1274565751	5911414651	9045233851	422034502
3		2305465051	1534340251-	276935051	1087848253	422034503
4		1423810851	9539703350-	1713854351	8154436352	422034504
5		1724602751-	5122393350	1752640351	3394755452	422034505

		HARMONIC		ANALYSIS		
COEF	BLADE	LOADING	95	PER CENT	RADIUS	
STEADY		COSINE	SINE	MAX	PHI	
		1898250052				422034600
1		4175711051	6330720251-	7583836651	1034086553	422034601
2		3139861251	1122330251	3334419651	9834608651	422034602
3		2242699051	9842660050-	2317558451	1151326353	422034603
4		1184863351	5796623350-	1319056351	8348276552	422034604
5		1049127851-	1100733350-	1054886351	3719790052	422034605

		HARMONIC		ANALYSIS		
RED	BLADE	BEAM	BENDING	15	PER CENT	RADIUS
COEF			COSINE	SINE	MAX	PHI
STEADY			2695958354-			422034210
1			5920980354-	8570270354-	1041669555	3046396153
2			1165907154-	1141407454-	1631609754	1121958253
3			7096838353	1013831954-	1237540454	1016640353
4			5069137352-	6146038253	6166907553	2367874652
5			6447783554	5609871853	6472141854	9944955750

RED	BLADE	BEAM	BENDING	28	PER CENT	RADIUS
COEF			COSINE	SINE	MAX	PHI
STEADY			6403750053			422034220
1			1812002354	3219068554-	3694016054	2993750153
2			6329957353-	2549738352-	6335090453	9115332952
3			3573005553	1177661753-	3724112653	1138550553
4			4416265052	1274860053-	1349185753	7227667352
5			2780896854	8733226753-	2914803554	6851309152

RED	BLADE	BEAM	BENDING	36	PER CENT	RADIUS
COEF			COSINE	SINE	MAX	PHI
STEADY			5130000053-			422034230
1			1197726154	2534283054-	2803058754	2952558653
2			4748749753-	2836242352-	4757212153	9170960152
3			4912504253	9825016752	5009791253	3769980851
4			1637514852-	8508692252-	8664831152	6477662652
5			1651522754	1007716654-	1932089054	6574722352

RED	BLADE	BEAM	BENDING	45	PER CENT	RADIUS
COEF			COSINE	SINE	MAX	PHI
STEADY			8826000053-			422034240
1			1107794654	2790138854-	3002013254	2916550253
2			1035000054-	9560925052-	1039406654	9263889452
3			4140004553	1932001253	4568617553	8338961351
4			2208005353-	2151205753-	3082689353	5606337452
5			1756041853	9496612053-	9657604453	5609527452

		HARMONIC		ANALYSIS		
RED	BLADE	BEAM	BENDING	60	PER CENT	RADIUS
COEF			COSINE	SINE	MAX	PHI
STEADY			3513240054-			422034250
1			6607363753	2628316854-	2710096354	2841112653
2			1355526154-	9737591752-	1359019254	9205443152
3			8745335352	4122799253	4214532253	2600795452
4			2811008853-	1190149753-	3052577153	5073681652
5			2022510754-	3795162253	2057810054	3387445252

RED	BLADE	BEAM	BENDING	65	PER CENT	RADIUS
COEF			COSINE	SINE	MAX	PHI
STEADY			4162020854-			422034260
1			5078553753	2782255054-	2828225654	2803445353
2			1510033354-	3367538352	1510408854	8936123152
3			1296167553-	7647382753	7756449753	3320657952
4			1490599853-	1010262353-	1800699253	5353192052
5			2478029854-	1213892254	2759377854	3078030752

RED	BLADE	BEAM	BENDING	80	PER CENT	RADIUS
COEF			COSINE	SINE	MAX	PHI
STEADY			4535958354-			422034270
1			2591605053	1366915354-	1391266254	2807355853
2			1588003154-	2783911053-	1612220654	9497171452
3			2700253253-	9643749253	1001465354	3521409052
4			1864454353	2338483253	2990768053	1285872952
5			2457936054-	1906963854	3110942054	2843885752

RED	BLADE	BEAM	BENDING	92.5	PER CENT	RADIUS
COEF			COSINE	SINE	MAX	PHI
STEADY			2270416754-			422034280
1			3480697253-	2212101053-	4124153753	2124373553
2			7995827253-	9598448352-	8053232653	9342260852
3			3008335853-	5066666253	5892468953	4023325052
4			1345833753-	1508325853	2021463653	3293539552
5			1061097054-	1012876054	1466916754	2726638452

HARMONIC ANALYSIS

WH. BLADE	BEAM BEND	15 0/0 R	HARMONIC			ANALYSIS
COEF		COSINE	SINE	MAX	PHI	
STEADY		2047208354-				422034410
1		4605401854-	6825229354	8733623754	1240093953	422034411
2		2505958554-	1362329754-	2852327254	1047650653	422034412
3		1024334054-	3658240052	1024987054	5931621852	422034413
4		7499583353	1920520753	1090772254	1164091752	422034414
5		6442863054-	2353521053	6447160254	3558159452	422034415

WH. BLADE	BEAM BEND	2 0/0 R	HARMONIC			ANALYSIS
COEF		COSINE	SINE	MAX	PHI	
STEADY		1154586754				422034420
1		1269293054-	2708887554	2991517454	1151062053	422034421
2		6935835353-	9610560352-	7002102553	9494444752	422034422
3		2774334853-	1664602253-	3235403253	7032125952	422034423
4		1942032253	4500000046	1942032253	3319087745	422034424
5		2614772354-	7867724053	2730575954	3265074352	422034425

		HARMONIC		ANALYSIS			
REF	BLADE	CHORD	BENDING	15	PER CENT	RADIUS	
COEF			COSINE	SINE	MAX	PHI	
STEADY			5232791755			422034110	
1			2659209855	2125654355	3405007655	3213495053	422034111
2			2245826354	1955354054	2732168454	1735754552	422034112
3			1746602554	2245826354	2076017254	1711439952	422034113
4			1746602554	1719118354	1957811054	5085324952	422034114
5			4972928854	2850766554	1037237655	3280947852	422034115

		HARMONIC		ANALYSIS			
REF	BLADE	CHORD	BENDING	28	PER CENT	RADIUS	
COEF			COSINE	SINE	MAX	PHI	
STEADY			5005083355			422034120	
1			2045062755	1877641355	2776295855	3174439153	422034121
2			1619285754	1784806554	2409500554	2389187952	422034122
3			5888270053	1766492754	1862065154	8385505552	422034123
4			1472100053	7649096753	1789444353	5477659852	422034124
5			1014604455	1111420354	1020615455	3474972452	422034125

		HARMONIC		ANALYSIS			
REF	BLADE	CHORD	BENDING	60	PER CENT	RADIUS	
COEF			COSINE	SINE	MAX	PHI	
STEADY			2556052555			422034130	
1			7462484454	6520961854	8506566854	3099522653	422034131
2			3223846054	1379491353	3226566354	1788192553	422034132
3			8443385053	7676131352	8478206753	5826845052	422034133
4			2302761753	7976925053	8302652853	6347444752	422034134
5			8763091754	3994928354	9630743954	4090147052	422034135

		HARMONIC		ANALYSIS			
REF	BLADE	CHORD	BENDING	80	PER CENT	RADIUS	
COEF			COSINE	SINE	MAX	PHI	
STEADY			1708938355			422034140	
1			1333210254	2694008054	1005849054	2963298853	422034141
2			1019089054	2715566753	1054649454	1725395653	422034142
3			3919561753	8624101753	7472108753	3814793152	422034143
4			1567831753	1377806753	2074062553	3477652352	422034144
5			4233700354	2558231854	4946591654	4228533152	422034145

		HARMONIC		ANALYSIS			
WH. BLADE	CHORD BEND	15 0/0 R	COSINE	SINE	MAX	PHI	
COEF			5284768755			422034430	
STEADY			2730788755	2620497254	1784730655	1361607753	422034431
1			1822261353	9469141353	9642887253	3955352352	422034432
2			1093403754	2551268354	2775698454	2226711752	422034433
3			3822446853	9469103053	9642884653	7022351952	422034434
4			1309370655	7252645354	1496816655	6620356152	422034435

		HARMONIC		ANALYSIS			
WH. BLADE	CHORD BEND	28 0/0 R	COSINE	SINE	MAX	PHI	
COEF			5026952555			422034440	
STEADY			2010349555	1838770855	2724441855	1375523353	422034441
1			1194609053	2078017453	2395520353	1199993353	422034442
2			4799046753	1679657054	1746866354	2468483852	422034443
3			5998649053	1474617354	1573451454	6189735352	422034444
4			1314496155	4470600854	1388438955	6824336552	422034445

		HARMONIC		ANALYSIS			
REF	BLADE	TORSION	15 0/0 R	COSINE	SINE	MAX	PHI
COEF			7148166754			422034350	
STEADY			8200109553	1372515254	1598817154	2391437453	422034351
1			3603707853	8025198753	8797187653	5709120552	422034352
2			6177803853	1166666747	6177803853	6000000952	422034353
3			5148173152	9808570853	7022042053	2174887552	422034354
4			1066604853	4608263753	4225144353	5149855152	422034355

		HARMONIC		ANALYSIS			
REF	BLADE	TORSION	50 0/0 R	COSINE	SINE	MAX	PHI
COEF			1515260054			422034360	
STEADY			5268865053	5485157853	760780453	2261522253	422034361
1			1458198153	3294458352	1494948153	9636527452	422034362
2			1902000353	2535785053	1918832353	5746846952	422034363
3			183878853	1294345052	1867879253	2739572351	422034364
4			4371493452	2640045253	2666126153	5211263152	422034365

HARMONIC ANALYSIS

RED BLADE COEF STEADY	PITCH	POSITION COSINE	SINE	MAX	PHI	
1709966852		1721178851	6292848751-	6523986751	7852970453	422034510
1		5823716749-	1681098350-	1779114550	1254463753	422034511
2		3105891750	1747026750-	3563518850	1102142653	422034512
3		1164705050	2689736750-	2931078550	7335337552	422034513
4		6460833348	6170633349	6204364549	1680454952	422034514
5						422034515
RED BLADE COEF STEADY	FLAP	POSITION COSINE	SINE	MAX	PHI	
3724000050-		1468513051-	7262594750	1638286751	1536851153	422034520
1		5319991749-	8333333343	5319991749	8999995952	422034521
2		2660001050-	2305331850	3519965950	4636188352	422034522
3		1666666744	3071490049	3071490049	2249992352	422034523
4		3934867050-	1426736750	4185541350	3201399152	422034524
5						
VERTICAL COEF STEADY	ACCEL	COSINE	SINE	MAX	PHI	
1117740051		1545076749	9977445048-	1839227049	3271473653	422034530
1		3552515049-	2637046749	4424294149	7170667752	422034531
2		1928488349-	1725488349-	2587735949	7394004952	422034532
3		3856989749-	5625711749	6820923849	3110863852	422034533
4		1443556349-	1187378348-	1448431449	3694044152	422034534
5						
FORE-AFT COEF STEADY	ACCEL	COSINE	SINE	MAX	PHI	
9033666749-		3726952849-	1425802348	3729679149	1778091353	422034540
1		2974502349	8014199349	8548394849	3481869452	422034541
2		3084668749-	1101668249-	3275492949	6655128352	422034542
3		4847334249-	1908135048	4851088449	4443643552	422034543
4		272881749-	1574748249-	3188840749	4191853952	422034544
5						
LATERAL COEF STEADY	ACCEL	COSINE	SINE	MAX	PHI	
5633333347-		1554150749	8148115048	1754794149	2766716452	422034550
1		9970998549	1463583449-	1007784250	1758247653	422034551
2		1013998749	2253325048	1038733449	4176259651	422034552
3		1633669049-	3805315849-	4141171649	6169139252	422034553
4		2021508048-	4245230548	4701965248	2309260352	422034554
5						
LIFT LINK COEF STEADY	LOAD	COSINE	SINE	MAX	PHI	
5751700554		1635836752	8938316752-	9086774352	2803711653	422034610
1		1605573753-	4907505953-	5163475653	1259418153	422034611
2		2833290052-	2833418352	4006967952	4499956952	422034612
3		3116680253-	6543400052	3184628153	4203577452	422034613
4		1635730052-	2395001752-	2900283752	4713356952	422034614
5						
RIGHT COEF STEADY	CYCLIC	LOAD COSINE	SINE	MAX	PHI	
8320000052		1293777552	2680444752	2976347452	6423466652	422034620
1		3813332852	4201110652	5675178152	2389183052	422034621
2		1733334052	1039999352-	1021496952	1096787653	422034622
3		5200003352	1140844253	1253764653	1637408852	422034623
4		9289198350	1479554652	1482467852	1728149552	422034624
5						
LEFT COEF STEADY	CYCLIC	LOAD COSINE	SINE	MAX	PHI	
8836000052-		9031248351-	1490499752	1742763352	1212125553	422034630
1		2312399753-	2256271751	2312629053	8959661452	422034631
2		3760005051	1007998352-	3031407352	9237501252	422034632
3		1879948351-	1335064853	1335197153	2270168852	422034633
4		2856873552-	111450-752-	1056569652	4026228952	422034634
5						
COLLECTIVE COEF STEADY	LOAD	COSINE	SINE	MAX	PHI	
2810666752		6818928351-	826662051-	1071613252	2304817753	422034640
1		2479998552	5440949852-	5979492352	1472518153	422034641
2		6613329251-	3306668351	739392851	5114497552	422034642
3		2149332252	6586412052-	6728235952	7201824652	422034643
4		3327225752	826662051-	3428382752	6920941852	422034644
5						
STABILIZER COEF STEADY	BAR	COSINE	SINE	MAX	PHI	
2412666750-		3229471251-	1717145750-	3234033151	1830436253	422034650
1		8616650048	1472433349-	1723317749	1500001253	422034651
2		1666666743-	6843351749-	6843351749	8999999952	422034652
3		6041680047	7462256749-	7595175849	723708352	422034653
4		24071305-7	23189004-7	259073349	5894132152	422034654
5						

HARMONIC ANALYSIS

R F		PYLON	POSITION				
COEF	STEADY		COSINE	SINE	MAX	PHI	
			4351250049				422034310
1			8257168848-	5750603048-	1005231949	2148548153	422034311
2			3859582749-	3534105749	5233190449	6876029352	422034312
3			1474991348-	1966662348-	2458324648	7771006652	422034313
4			2212508548	2980575248	3712010548	1335329052	422034314
5			5928218347-	6410570047-	8731505047	4544773852	422034315

R A		PYLON	POSITION				
COEF	STEADY		COSINE	SINE	MAX	PHI	
			1200000050				422034320
1			8062182748-	2598091848	8470470548	1621381253	422034321
2			3499993848	5455960749	5467175049	4716475652	422034322
3			4999883347-	1500007848	1581142548	3614482152	422034323
4			4499987748-	0062187848	7549835148	3164666552	422034324
5			4062206048	2598068348-	4821978548	6547964052	422034325

L F		PYLON	POSITION				
COEF	STEADY		COSINE	SINE	MAX	PHI	
			1500000049-				422034330
1			7446159048	1299041348-	7558622748	3501038953	422034331
2			1724998749	5759069049-	6011863049	1433372053	422034332
3			2999997248	1833333342	2999997248	1167137346	422034333
4			1750006748-	3031089348-	4821830548	5473705952	422034334
5			2946167748-	1299037348	3219841348	3124122452	422034335

L A		PYLON	POSITION				
COEF	STEADY		COSINE	SINE	MAX	PHI	
			7269166749				422034340
1			9553740048	8723136748	1293704249	4239795252	422034341
2			6481247749	321365049-	7234243949	1668129353	422034342
3			4066665748	1016673348	4191824848	4678778451	422034343
4			7879165348-	3081613348	8460353848	3965977152	422034344
5			1629608348	8146116746-	1631643148	7142765252	422034345

RED		PITCH LINK	POSITION				
COEF	STEADY		COSINE	SINE	MAX	PHI	
			2228000053-				422034370
1			2001242753-	7036886552-	2121355753	1993730053	422034371
2			6730408852-	1326534553	1487507253	5845088652	422034372
3			1253250253-	2320832552	1274558253	5650284552	422034373
4			6266243852-	8441580052	1051313853	3164669152	422034374
5			3302423352	1002715252	3451295152	3377974151	422034375

WHITE		PITCH LINK	POSITION				
COEF	STEADY		COSINE	SINE	MAX	PHI	
			1919700053-				422034380
1			1899231853	1177210053	2234480953	3179207752	422034381
2			1457999152-	4208885052	4454264752	5455329752	422034382
3			1457999653	5346003752-	1552920053	1132878953	422034383
4			1944004752-	8417766252	8639325352	2575098752	422034384
5			8786317052-	2538101052-	9145563052	3922248252	422034385

IBM TAB NO. 14a
MANEUVER CONDITION NO. 38 - APPROACH AND FLARE
REVOLUTION 1

Cond. R		40		DELTA PER CENT		PRESSURE RADIUS	
PER CENT CHORD	K	(120)K	D E G 30+(120)K	R E E S 60+(120)K	90+(120)K		
TIME							
4	0	3614270051	3052830051	2561570051	2772110051		
	1	2666840051	2561570051	2421210051	2526480051		
	2	2666840051	2175800051	1754500051	2631750051		
17	0	1818000051	1545300051	1327140051	1327140051		
	1	1399860051	1363500051	1254420051	1236240051		
	2	1290780051	1036760051	9271800050	1399860051		
34	0	8640000050	7560000050	6720000050	6600000050		
	1	6360000050	6240000050	5760000050	6240000050		
	2	6720000050	5520000050	3960000050	6840000050		
63	0	3555900050	2941300050	3073000050	2677900050		
	1	2721800050	2765700050	2677900050	2721800050		
	2	3204700050	2490100050	2063300050	3116900050		
86	0	1606800050	1174200050	1390500050	1112400050		
	1	1143300050	1205100050	1143300050	1112400050		
	2	1205100050	1143300050	8961000049	1452300050		

		55		DELTA PER CENT		PRESSURE RADIUS	
PER CENT CHORD	K	(120)K	D E G 30+(120)K	R E E S 60+(120)K	90+(120)K		
TIME							
2	0	5345280051	5345280051	3870720051	4423680051		
	1	4746240051	4331520051	4008960051	4147200051		
	2	4654080051	4101120051	2764800051	4008960051		
9	0	3045150051	3090600051	2363400051	2590650051		
	1	2817900051	2545200051	2317950051	2408850051		
	2	2727000051	2408850051	1545300051	2363400051		
17	0	2245760051	2351030051	1894860051	2035220051		
	1	2140490051	2000130051	1894860051	1894860051		
	2	2105400051	1965040051	1333420051	1789590051		
23	0	1778000051	1813560051	1351280051	1564640051		
	1	1635760051	1564640051	1422400051	1422400051		
	2	1600200051	1493520051	1031240051	1386840051		
34	0	1650000051	1689600051	1399200051	1504800051		
	1	1557600051	1452000051	1359600051	1399200051		
	2	1531200051	1438800051	1095600051	1372800051		
63	0	5128200050	5372400050	4110700050	4680500050		
	1	4558400050	4395600050	4110700050	4477000050		
	2	4843300050	4558400050	3215300050	4151400050		
90	0	1922400050	1708800050	1655400050	1602000050		
	1	1708800050	1655400050	1602000050	1762200050		
	2	1815600050	1708800050	1361700050	1548600050		

		75		DELTA PER CENT		PRESSURE RADIUS	
PER CENT CHORD	K	(120)K	D E G 30+(120)K	R E E S 60+(120)K	90+(120)K		
TIME							
2	0	6556630051	6320780051	4056620051	6084930051		
	1	6462290051	6273610051	5518890051	5707570051		
	2	6226440051	7028330051	3679260051	5235870051		
9	0	3898040051	4152260051	2584570051	3940410051		
	1	4406480051	4237000051	3643820051	3855670051		
	2	3728560051	4321740051	2372720051	3347230051		
17	0	2414850051	2329620051	1335270051	2358030051		
	1	2386440051	2215980051	1903470051	2045520051		
	2	2329620051	2698950051	1221630051	1789810051		
23	0	2487360051	2435540051	1684150051	2435540051		
	1	2487360051	2331900051	2046890051	2150530051		
	2	2331900051	2616910051	1450960051	1995070051		
34	0	1534140051	1420500051	9375300050	1477320051		
	1	1534140051	1477320051	1278450051	1363680051		
	2	1420500051	1590960051	7954800050	1193220051		
63	0	7435600050	6666400050	4679300050	7307400050		
	1	6922800050	6345900050	6089500050	6666400050		
	2	6794600050	7820200050	4615200050	5961300050		
90	0	3656500050	3408000050	2804500050	3656500050		
	1	3763000050	3408000050	3408000050	3514500050		
	2	3479000050	3405000050	2769000050	3372500050		

TIME	Cord. IN PER CFNT CHORD	X	85	DELTA	PRESSURE	
			(120)F	PER CFNT	RADIUS	
				D E G	R F F S	
			30*(120)F	60*(120)F	90*(120)F	
	0		6971160051	6556210051	3485580051	7137140051
2	1		7469100051	6971160051	5809300051	6407240051
	2		7386110051	7385110051	3744550051	5911360051
	0		6400080051	6133410051	3022260051	6488970051
4	1		6933420051	6311190051	5333400051	5600070051
	2		6488970051	6755640051	3644490051	4888950051
	0		4725810051	4657320051	2465640051	4794300051
9	1		5136750051	4794300051	3903930051	4109400051
	2		4657320051	4794300051	2534130051	3492990051
	0		3287300051	3102100051	1481600051	3472500051
13	1		3611400051	3287300051	2731700051	2916900051
	2		3626200051	3518800051	1805700051	2407600051
	0		2843160051	2647080051	1372560051	3039240051
17	1		3133360051	2941200051	2451000051	2549040051
	2		2843160051	2941200051	1568640051	2156880051
	0		2587740051	2500070051	1666680051	2719320051
23	1		2763180051	2565810051	2171070051	2324580051
	2		2631600051	2719320051	1622820051	2017560051
	0		1688200051	1486350051	9358500050	1816650051
34	1		1853350051	1669850051	1486350051	1578100051
	2		1779950051	1890050051	1027600051	1371200051
47.7	0					
	1					
	2					
	0		6568800050	5140800050	3236800050	6378400050
63	1		6283200050	5426400050	5045600050	5902400050
	2		6854400050	7520800050	4188800050	5236000050
	0		2180400050	9480000049	1896000049	1990800050
77	1		1706400050	1516800050	1327200050	1990800050
	2		2464800050	2844000050	9480000049	1706400050
	0		9430000048	7544000049	1603100050	4715000049
90	1		6601000049	9430000049	1320200050	5658000049
	2		1886000049	9430000048	8487000049	2829000049

Cond. 38		90			DELTA PFR CENT			PRESSURE RADIUS		
PER CENT CHORD	K	(120)K	D	E	G	R	F	F	S	90+(120)K
TIME			30+(120)K	60+(120)K						
2	0	7301580051	6666660051	3703700051	7301580051					
	1	8148140051	7724860051	6243380051	6560840051					
	2	8359780051	8888880051	4761900051	5396820051					
9	0	4147650051	3963310051	2119910051	4516330051					
	1	5161520051	4700670051	3502460051	3871140051					
	2	4885010051	4885010051	2949440051	3041610051					
17	0	3905220051	3668540051	2603480051	4260240051					
	1	4615260051	4023560051	3195180051	3550200051					
	2	4378580051	4615260051	2721820051	2958500051					
23	0	2549040051	2500020051	1813740051	2696100051					
	1	2843160051	2598060051	2058840051	2205900051					
	2	2745120051	2892180051	1911780051	1911780051					
34	0	1518640051	1296400051	7408000050	1481600051					
	1	1592720051	1370480051	9630400050	1185280051					
	2	1555680051	1679760051	8889600050	1000800051					
63	0	5431800050	3785800050	3127400050	5596400050					
	1	5267200050	4608800050	3950400050	4608800050					
	2	6254800050	6584000050	3950400050	4444200050					
90	0	2124000050-	3540000050-	3805500050-	2389500050-					
	1	2301000050-	2035500050-	1858500050-	1416000050-					
	2	1416000050-	1150500050-	2124000050-	1770000050-					

Cond. 38		95			DELTA PFR CENT			PRESSURE RADIUS		
PER CENT CHORD	K	(120)K	D	E	G	R	E	E	S	90+(120)K
TIME			30+(120)K	60+(120)K						
2	0	5672850051	4807500051	4903650051	5769000051					
	1	6442050051	5576700051	4326750051	4903650051					
	2	6634350051	7211250051	4711350051	4326750051					
9	0	4593120051	4018980051	4146700051	4593120051					
	1	5167260051	4593120051	3349150051	3923290051					
	2	5071570051	5550020051	3444840051	3253460051					
17	0	3263060051	2947280051	2842020051	3368320051					
	1	3578840051	3052540051	2315720051	2526240051					
	2	3368320051	3684100051	2420980051	2315720051					
23	0	2062000051	1804250051	1752700051	2113550051					
	1	2371300051	1958900051	1649600051	1855800051					
	2	2319750051	2529950051	1598050051	1598050051					
34	0									
	1									
	2									
63	0	4893000050	3215400050	3215400050	4333800050					
	1	5452200050	4333800050	4194000050	5032800050					
	2	6011400050	5731800050	3914400050	3774600050					
90	0	8700000048	4350000049-	4785000049-	4350000048					
	1	4350000048-	1305000049-	4350000049	4785000049					
	2	3045000049	3915000049	8700000048	1740000049					

		HARMONIC		ANALYSIS		
COFF	BLADE	LOADING	40	PER CENT	RADIUS	
STEADY		COSINE	SINE	MAX	PHI	
1		9975966751				38100
1		7724630350	8495538350	1148233851	-772109452	38101
2		1020831151	6165473150	1192571551	1556527652	38102
3		1272890051	8766966749	1275905651	1186866753	38103
4		3368551050	4417087550	5554979650	7683244952	38104
5		6258985049	7361296749	9662483249	6207460952	38105

		HARMONIC		ANALYSIS		
COFF	BLADE	LOADING	55	PER CENT	RADIUS	
STEADY		COSINE	SINE	MAX	PHI	
1		1665148452				38200
1		3053893350	1166927551	1206226551	7533438252	38201
2		6998654250	1121723851	1322148251	2901957652	38202
3		2109598251	6995086750	2222547451	6114896151	38203
4		5050990050	2664900049	5058015150	8924497352	38204
5		4364903350	6574113349	4414133150	3771302352	38205

		HARMONIC		ANALYSIS		
COFF	BLADE	LOADING	70	PER CENT	RADIUS	
STEADY		COSINE	SINE	MAX	PHI	
1		2083746352				38300
1		1192064251	4627853350	1278744551	1587827153	38301
2		1632113250	2916261750	3341912050	3038301552	38302
3		3491850051	1230909351	3702452451	6472674551	38303
4		1949044051	4012058350	1989909251	2907929651	38304
5		5672950050	3713482050	6891857750	4291996952	38305

		HARMONIC		ANALYSIS		
COFF	BLADE	LOADING	85	PER CENT	RADIUS	
STEADY		COSINE	SINE	MAX	PHI	
1		1926941752				38400
1		1814541751	2004448050	1825579351	1736963453	38401
2		3190430050	1532540050	3539424150	1028287853	38402
3		443521551	1014443251	4550049051	4294162151	38403
4		2083695551	6028046750	2169138251	4033735851	38404
5		6561295050	3683398350	7524494350	3013818052	38405

		HARMONIC		ANALYSIS		
COFF	BLADE	LOADING	90	PER CENT	RADIUS	
STEADY		COSINE	SINE	MAX	PHI	
1		2117461952				38500
1		2188715251	5382676050	2253931351	1938164953	38501
2		1605456851	4282136750	1661583151	9746724452	38502
3		4983235351	1616712851	5238930651	5991545851	38503
4		2038449551	5040243350	2099837351	3472080451	38504
5		2547771750	4503241750	5174004950	2389992452	38505

		HARMONIC		ANALYSIS		
COFF	BLADE	LOADING	95	PER CENT	RADIUS	
STEADY		COSINE	SINE	MAX	PHI	
1		1611900252				38600
1		8691610050	2013300850	8921741150	1930418453	38601
2		1908432551	2031481750	1919214451	8696194252	38602
3		2500171251	1127859751	2741152451	8068180951	38603
4		9622908350	1286318350	9708500350	8809656552	38604
5		4172431750	4729797550	6707152350	6228348152	38605

		HARMONIC		ANALYSIS		
RED	BLADE	BEAM	BENDING	PER CENT	RADIUS	
			15			
COEFF			COSINE	SINE	MAX	PHI
STEADY			127273754-			4210
1			3162770054	7570951153-	3171202554	3553526953
2			3649801354	8780056753-	3753921854	1732369053
3			1723516854	1083333348-	1723516854	1199999953
4			1824901054-	1756000853	1833530154	4362591852
5			2109160754	9545021753-	2317156154	6710764252

		HARMONIC		ANALYSIS		
RED	BLADE	BEAM	BENDING	PER CENT	RADIUS	
			28			
COEFF			COSINE	SINE	MAX	PHI
STEADY			1518308354-			38220
1			3651334053	2472354552-	3659696753	3561263653
2			4563657253	7669174252	467120253	4757673451
3			1148224854	2060920253-	1166573754	1166081653
4			3385796053-	1274862753-	3617857153	5015824052
5			9181162153	5366678253-	7645227453	6281985552

		HARMONIC		ANALYSIS		
RED	BLADE	BEAM	BENDING	PER CENT	RADIUS	
			36			
COEFF			COSINE	SINE	MAX	PHI
STEADY			1200750054-			38230
1			2160869253-	1689982753	2763245753	1419715953
2			4093750353-	1418117353	4432418453	8044669652
3			6540000053	1310003353-	6679716253	1162300153
4			8187463352	8508710052-	1180816253	7847443252
5			4591334752-	692481353-	4008800353	5268470252

		HARMONIC		ANALYSIS		
RED	BLADE	BEAM	BENDING	PER CENT	RADIUS	
			45			
COEFF			COSINE	SINE	MAX	PHI
STEADY			9999000053-			38240
1			3951488053-	2103351253-	4476420853	2080260953
2			7176001553-	3346121553-	7917882753	1025003253
3			3588001253	2346002353-	4286896353	1089404953
4			2897945753	1195115653-	3134753653	8449276352
5			4190515553-	5210649353-	6686649853	4623860152

		HARMONIC		ANALYSIS		
RED	BLADE	BEAM	BENDING	PER CENT	RADIUS	
			60			
COEFF			COSINE	SINE	MAX	PHI
STEADY			3482006754-			38250
1			2699522353-	4927981553-	5618934353	2412863153
2			5122263753-	7790071553-	7323239753	1183168053
3			2748510253	4372669753-	5166751553	1007174253
4			2873460853	2596692853-	3872930553	7947411752
5			5296217353-	2429308853	5826788153	3107193552

		HARMONIC		ANALYSIS		
RED	BLADE	BEAM	BENDING	PER CENT	RADIUS	
			65			
COEFF			COSINE	SINE	MAX	PHI
STEADY			4129616754-			38260
1			2519467853-	3741187853-	4510455053	2360420853
2			6480828253-	6959581053-	9509833353	1135200153
3			2721945053	7128919753-	7630889953	9696590652
4			3240411253	3143039853-	4514306653	7896847652
5			4090987253-	9055463553	9936679353	2286240652

		HARMONIC		ANALYSIS		
RED	BLADE	BEAM	BENDING	PER CENT	RADIUS	
			80			
COEFF			COSINE	SINE	MAX	PHI
STEADY			3796604254-			38270
1			1319053253-	3264701053-	3521104153	2479995853
2			5979116253-	1113565052	5980153153	8946651852
3			2057327353	5271918253-	5659127053	9710595452
4			7072093352-	1340721752-	7821440152	5132129052
5			1576218353	1187977554	1198388554	1648841852

		HARMONIC		ANALYSIS		
RED	BLADE	BEAM	BENDING	PER CENT	RADIUS	
			92.5			
COEFF			COSINE	SINE	MAX	PHI
STEADY			1478750054-			38280
1			9018920052-	1143871752-	9091169452	1872782553
2			2929162353-	2605293553	3920146253	6917453052
3			6333309252	7916671752-	1013826953	1028865653
4			7124990052-	1782567753	1919688153	2794669652
5			7435585052	4547716553	4608102053	1614284352

HARMONIC ANALYSIS

WH. BLADE	BEAM	REFD	15 0/0 R				
COFF			COSINE	SINE	MAX	PHI	
STEADY							
			1104670855-				38410
1			3117720754-	1080860753-	3119593754	1819855653	38411
2			2816918254-	3168708153-	2834678754	1767914453	38412
3			2304751854-	2195010053-	2315180754	6181345552	38413
4			5121672253-	2534556753	5714499553	3841765652	38414
5			2040530854-	1095833154	2316164154	3035254552	38415

WH. BLADE	BEAM	REFD	2 0/0 R				
COFF			COSINE	SINE	MAX	PHI	
STEADY							
			1272955054-				38420
1			3108854553-	7480043152-	3197575253	1935284853	38421
2			3467919253	2162378153	4086810153	1597254752	38422
3			9432735053-	1387165753	9534186953	5721137652	38423
4			4161494252	1201320553	1271358053	1772335152	38424
5			7433614853-	2135166353	7734181553	3279485752	38425

HARMONIC ANALYSIS

RED BLADE	CHORD	BENDING	15	PER CENT	RADIUS	
COEF		COSINE	SINE	MAX	PHI	
STEADY		4379375055				38110
1		2306326855	2719055054	2322534755	6772875151	38111
2		4491710053	2333938754	2376767754	1295532553	38112
3		4491662254	3144173254	5482777954	4833596752	38113
4		2695033754	3666666748	2695003754	1948833546	38114
5		1054093554	4051151753	1129261454	3179559152	38115

RED BLADE	CHORD	BENDING	28	PER CENT	RADIUS	
COEF		COSINE	SINE	MAX	PHI	
STEADY		4313204255				38120
1		2169945255	4416273353	2170394555	1165923051	38121
2		1030454254	1784807354	2060915654	1499999553	38122
3		3532995754	2649756354	4416250354	4771000352	38123
4		1913711354	1784802254	2616832054	7924904852	38124
5		2267943554	4416260053	2310541354	3379619752	38125

RED BLADE	CHORD	BENDING	60	PER CENT	RADIUS	
COEF		COSINE	SINE	MAX	PHI	
STEADY		2222153855				38130
1		8970784254	3727716753	8978525954	2379498051	38131
2		9978553353	9306458353	1364484154	1584780053	38132
3		7675633352	2666666748	7675633352	5999933952	38133
4		6908246753	9306426753	1159023154	5835328852	38134
5		4058248054	1754419754	4421240354	4067586052	38135

RED BLADE	CHORD	BENDING	80	PER CENT	RADIUS	
COEF		COSINE	SINE	MAX	PHI	
STEADY		1552155055				38140
1		3099837054	1700985053	3104500454	3568591453	38141
2		5487396753	2715568353	6122567653	1668352053	38142
3		4703515053	3135648353	5652905753	1087700653	38143
4		4703493053	1357800053	4895555853	4097442152	38144
5		1923959254	8489915053	2102951654	4076211752	38145

WH. BLADE	CHORD	BEND	15 0/0 R			
COEF		COSINE	SINE	MAX	PHI	
STEADY		3899793355				38430
1		2523534355	1373284554	2527268255	1831149253	38431
2		5467056753	3156350053	6312785053	1049997853	38432
3		5831470854	7289308353	5876852254	1176250053	38433
4		1822293053	3156336753	3644614253	6000006652	38434
5		1909485054	2635841354	3254810654	6118414752	38435

WH. BLADE	CHORD	BEND	28 0/0 R			
COEF		COSINE	SINE	MAX	PHI	
STEADY		4043157555				38440
1		7003520855	6084830853	2004444655	1817395853	38441
2		7399449053	8312128353	8651527053	7694912052	38442
3		4559054254	2833333348	4559054254	1186927746	38443
4		1679654554	1662418854	2363234154	7882387352	38444
5		3238716554	2270911254	3955543354	6499255752	38445

HARMONIC ANALYSIS

RED BLADE	TORSION	15 0/0 R				
COEF		COSINE	SINE	MAX	PHI	
STEADY		4581868354				38350
1		1369544053	2298202353	2675328953	2392084553	38351
2		6692606353	2675065553	7707423553	7910659352	38352
3		6177804553	1029636053	6263019953	6315411352	38353
4		2574082253	2675061053	3712393653	1152550952	38354
5		7547336353	1268556553	7653203353	1908219151	38355

RED BLADE	TORSION	50 0/0 R				
COEF		COSINE	SINE	MAX	PHI	
STEADY		1375780054				38360
1		5705983352	9883096752	1141201251	2999999653	38361
2		5705981852	3294358352	6588704352	7499997052	38362
3		2282401553	2662801053	3507116553	7646623252	38363
4		1204599053	1098108352	1209593853	1302166951	38364
5		5705975052	9883071852	1141197953	1200001752	38365

HARMONIC ANALYSIS

RED BLADE COEF	PITCH	POSITION COSINE	SINE	MAX	PHI	
STEADY		1341145152				38510
1		1668146351	3215008250	1698845251	1090882552	38511
2		1358802050	1344880050-	1911817250	1576475253	38512
3		3494113350	1747065050	3906541250	8855053651	38513
4		7764765049	3362066749-	8461386949	8414696652	38514
5		2067083349	8614615049	8859143649	1530138752	38515
RED BLADE COEF	FLAP	POSITION COSINE	SINE	MAX	PHI	
STEADY		2660000050-				38520
1		2553850051-	1353075751-	2890149451	2079154553	38521
2		1166666744	1228602550	1228602550	4499997452	38522
3		7093324549-	1666666743-	7093324549	6000000352	38523
4		3333333343	5000000043	6009252143	1407748352	38524
5		3521671749-	1826755850	1860392050	2018235652	38525
VERTICAL COEF	ACCEL	COSINE	SINE	MAX	PHI	
STEADY		9984775050				38530
1		2338400048	2437833348-	3378038848	3138073853	38531
2		2537643348-	6065208349	6070514649	4619791452	38532
3		1045103348	2232990049-	2253657249	9258848552	38533
4		2283743749-	1142711249-	2553678649	5164547552	38534
5		1288678349	7711985048-	1501811949	6582038952	38535
FOR- AFT COEF	ACCEL	COSINE	SINE	MAX	PHI	
STEADY		2754166749-				38540
1		8439050048-	1241352249	1501043349	1242089453	38541
2		1762668849	7250942349	7462115349	3816835252	38542
3		4406661848	8813323348	9853595148	2114498352	38543
4		1762667349	1144885049	2101846349	8251117751	38544
5		1064238849	1622980949	1940791449	1134918052	38545
LATERAL COEF	ACCEL	COSINE	SINE	MAX	PHI	
STEADY		6196666748				38550
1		1163861049	3339552248-	1210825549	3439898453	38551
2		3436333249	2439304849	4214094749	1768465152	38552
3		6759998748	1126663248	6853243948	3154098751	38553
4		2816670848-	8781498548	9222166248	2694592152	38554
5		1881389048	4466227048	4846319148	1343136852	38555
LIFT LINK COEF	LOAD	COSINE	SINE	MAX	PHI	
STEADY		5066974354				38610
1		2395026752	4030783352-	4688642352	3007181053	38611
2		6611078352	1308668353-	1466177453	1484009153	38612
3		2833401752	5666646752-	6135538752	9885522852	38613
4		9444183351-	1308663353-	1312066753	6646807852	38614
5		8938458352	7302515052-	1154271653	6415039552	38615
RIGHT COEF	CYCLIC	LOAD COSINE	SINE	MAX	PHI	
STEADY		1733333351				38620
1		1801333052	9288866750	1803726452	2951935551	38621
2		6586666552	6004438751-	6613978352	1773956553	38622
3		1039999352	1386667352	1733333452	1771004452	38623
4		3466689551	1070755353	1021343853	2201371652	38624
5		1801332352-	1293776052	2217804052	2886257252	38625
LEFT COEF	CYCLIC	LOAD COSINE	SINE	MAX	PHI	
STEADY		1504000052-				38630
1		4632503851-	4263745751	6296000251	1373736153	38631
2		8460002252-	1139689453-	1419369053	1167066153	38632
3		1879999552	3760018851	1917231252	3769997051	38633
4		1146799853-	2279379552	1169232953	4218960052	38634
5		831523351	1077627652	1365879152	1041773552	38635
COLLECTIVE COEF	LOAD	COSINE	SINE	MAX	PHI	
STEADY		2480000052				38640
1		2096343851	4516992751	4979747051	6510390652	38641
2		1983999552	5727311751-	2065012152	1719489553	38642
3		1983999852	3306670851	2011366752	3154111551	38643
4		9919990351-	2290926052	2496478352	2835330352	38644
5		7823667351	1210325251-	7916732751	7024120652	38645
STABILIZER COEF	BAR	COSINE	SINE	MAX	PHI	
STEADY		1464833350-				38650
1		2078718550	2190732051	2200572151	8457960652	38651
2		8616633348-	1492452049-	1723333049	1200000653	38652
3		1034002750-	8616685049-	1345969650	7326852052	38653
4		4308352249	1492469249-	4559535649	8522331352	38654
5		1071313348-	1013014250	1013070950	1812118352	38655

HARMONIC ANALYSIS

COFF	R F	PYLON	POSITION COSINE	SINE	MAX	PHI	
STEADY			4179166749				38310
1			6733943248	9174675047	6796156148	1722415053	38311
2			1712083749	1277386748	3714280849	9098543552	38312
3			9833616747	9833386747	1390653048	1499997152	38313
4			3195837848	7238525248	7912624548	7345541352	38314
5			1624380248	6587283346	1625715348	3553555752	38315

COFF	R A	PYLON	POSITION COSINE	SINE	MAX	PHI	
STEADY			7650000049				38320
1			7178208048	6897123348	9954746648	1361440553	38321
2			7250001748	3247595749	3327537149	5129224252	38322
3			5000007548	7000005048	5830960948	1032125452	38323
4			2249990048	4330196747	2291279348	4227659852	38324
5			6678223848	8971096747	6738710448	7046981052	38325

COFF	L F	PYLON	POSITION COSINE	SINE	MAX	PHI	
STEADY			1450000049				38330
1			9446155548	3433011748	1005064349	3400273653	38331
2			2524999249	2544775249	3492004649	1573320853	38332
3			1000001048	3833333342	1000001048	5999992952	38333
4			1249999048	1299040048	1802776348	1152554552	38334
5			7461560047	2566990348	2735008948	4995336752	38335

COFF	L A	PYLON	POSITION COSINE	SINE	MAX	PHI	
STEADY			4600416749				38340
1			4116524548	5605032748	6954291248	5370518552	38341
2			4015832749	8804591748	4111218849	6183129751	38342
3			5083323347	3049997848	3092068648	9315410352	38343
4			7116665748	2641381748	7491035648	3990934452	38344
5			1475150348	4080023548	4338509048	5797553752	38345

COFF	RED	PITCH LINK	COSINE	SINE	MAX	PHI	
STEADY			1901083352				38370
1			4227024852	4562818852	6217174052	2272148253	38371
2			6498330852	2411879852	6731483852	7981870552	38372
3			1067583553	1067583553	1509791053	7499999852	38373
4			2320829852	4873763252	5353031152	7392333652	38374
5			1811146852	5430176251	1890799052	3933795452	38375

COFF	WHITE	PITCH LINK	COSINE	SINE	MAX	PHI	
STEADY			1871100053				38380
1			8417780051	7385327752	7433145752	8349750152	38381
2			3401997352	8417761751	3504593152	9694894652	38382
3			8747998552	8261996752	1203279153	1445447352	38383
4			4859888351	6417790051	9720014151	7499997052	38384
5			8417785051	2334670852	2481789452	2196541152	38385

IBM TAB NO. 14b
MANEUVER CONDITION NO. 38 - APPROACH AND FLARE
REVOLUTION 2

Cond. 18		40		DELTA PER CENT		PRESSURE RADIUS	
PER CENT CHORD	K	(120)K	D E G	R E E S	30+(120)K	60+(120)K	90+(120)K
TIME	97						
4	0	3193190051	3017740051	2526480051	2105400051		
	1	2351030051	2491390051	2526480051	2596660051		
	2	2912470051	1473780051	1684320051	2035220051		
17	0	1618020051	1436220051	1199880051	1054440051		
	1	1254420051	1345320051	1236240051	1199880051		
	2	1363500051	6726600050	9453600050	1145340051		
34	0	7440000050	6960000050	6000000050	4920000050		
	1	5880000050	6000000050	5640000050	6120000050		
	2	7320000050	3600000050	4440000050	5040000050		
63	0	3380300050	2809600050	2634000050	2370600050		
	1	2721800050	2677900050	2897400050	2809600050		
	2	3555900050	1624300050	2151100050	2370600050		
88	0	1390500050	9888000049	9270000049	8652000049		
	1	1112400050	1143300050	1205100050	1268900050		
	2	1606800050	6798000049	1081500050	1143300050		

		55		DELTA PER CENT		PRESSURE RADIUS	
PER CENT CHORD	K	(120)K	D F G	R E E S	30+(120)K	60+(120)K	90+(120)K
TIME	97						
2	0	5760000051	5253120051	4055040051	3087360051		
	1	4193280051	4377600051	3962880051	4055040051		
	2	5253120051	2718720051	3502080051	4008960051		
9	0	3363300051	3045150051	2317950051	1954350051		
	1	2454300051	2499750051	2227050051	2408850051		
	2	3090600051	1590750051	1999800051	2317950051		
17	0	2456300051	2315940051	1929950051	1614140051		
	1	1965040051	2035220051	1789590051	1929950051		
	2	2315940051	1333420051	1614140051	1789590051		
23	0	1920240051	1706880051	1457960051	1315720051		
	1	1564640051	1529080051	1351280051	1457960051		
	2	1706880051	1031240051	1280160051	1351280051		
34	0	1768800051	1636800051	1399200051	1359600051		
	1	1491600051	1465700051	1320000051	1425600051		
	2	1663200051	1108800051	1267200051	1372800051		
63	0	5779400050	4965400050	4314200050	3907200050		
	1	4639800050	4395600050	4110700050	4639800050		
	2	5209600050	3500200050	3907200050	4232800050		
90	0	2189400050	1655400050	1655400050	1441800050		
	1	1735500050	1682100050	1628700050	1762200050		
	2	1762200050	1161700050	1521900050	1655400050		

		75		DELTA PER CENT		PRESSURE RADIUS	
PER CENT CHORD	K	(120)K	D F G	R E E S	30+(120)K	60+(120)K	90+(120)K
TIME	97						
2	0	7641540051	7075500051	4198130051	7217010051		
	1	6792480051	6273610051	5471720051	6084930051		
	2	7028330051	6792480051	4575490051	5896250051		
9	0	4703070051	4237000051	2754050051	4575960051		
	1	4152260051	3855670051	3728560051	3770930051		
	2	4364110051	4025150051	2965900051	3516710051		
17	0	2954640051	2698950051	1392090051	2670540051		
	1	2613720051	2272800051	1931880051	2187570051		
	2	2642130051	2642130051	1534140051	2130750051		
23	0	2927830051	2720550051	1684150051	2746460051		
	1	2668730051	2331900051	2020980051	2228260051		
	2	2668730051	2539180051	1710060051	2202350051		
34	0	1818240051	1647780051	8238900050	1761420051		
	1	1619370051	1477320051	1250040051	1392090051		
	2	1619370051	1562550051	9659400050	1363680051		
63	0	8397100050	7051000050	4935700050	7820200050		
	1	7179200050	6474100050	5897200050	7243300050		
	2	7435600050	7884300050	4871600050	6666400050		
90	0	3905000050	3514500050	2804500050	3976000050		
	1	3656500050	3408000050	3266000050	3727500050		
	2	3869500050	3940500050	2875500050	3479000050		

TIME	COND. OR PER CFNT CHORD	K	DELTA PFR CFNT			PRESSURE RADIUS			
			85			R E S			
			(120)K	D E G 30+(120)K		60+(120)K	90+(120)K		
		97							
	2	0	8381990051	7386110051		2987640051		8796940051	
		1	7386110051	7137140051		6058270051		6805180051	
		2	8464980051	9792820051		3900530051		6639200051	
	4	0	7644540051	7022310051		2755590051		8977890051	
		1	7022310051	6488970051		5422290051		6133410051	
		2	7466760051	9155670051		3466710051		5955630051	
	9	0	5616180051	5205240051		2054700051		6369570051	
		1	5136750051	4794300051		3972420051		4451850051	
		2	5205240051	6095610051		2534130051		4314870051	
	13	0	3981800051	3518800051		1157500051		4722600051	
		1	3150300051	3333600051		2824300051		3194700051	
		2	3935500051	4676300051		1666800051		3055800051	
	17	0	3431400051	3039240051		7843200050		4117680051	
		1	3333360051	2941200051		2451000051		2745120051	
		2	3235320051	4019640051		1470600051		2647080051	
	23	0	3004410051	2719320051		1403520051		3355290051	
		1	2850900051	2631600051		2280720051		2521950051	
		2	2960550051	3311430051		1622820051		2434230051	
	34	0	1926750051	1633150051		7890500050		2110250051	
		1	1871700051	1669850051		1523050051		1761600051	
		2	2036850051	2146950051		1009250051		1614800051	
	47.7	0							
		1							
		2							
	63	0	7711200050	5902400050		2189600050		7616000050	
		1	6568800050	5807200050		5236000050		6568800050	
		2	8187200050	9520000050		4093600050		6092800050	
	77	0	2844000050	1327200050		6636000049-		2749200050	
		1	1990800050	1516800050		1611600050		2559600050	
		2	3412800050	4266000050		9480000049		2085600050	
	90	0	1886000049	1414500050-		1886000050-		5658000049-	
		1	6601000049-	8487000049-		1037300050-		2829000049-	
		2	1886000049	8487000049		8487000049-		2829000049-	

TIME	PER CENT CHORD	Y	DELTA PER CENT			PRESSURE RADIUS		
			90			90+(120)K		
			(120)K	D F G	30+(120)K	R F E S	60+(120)K	90+(120)K
0			8888880051	7619040051	3386240051	9629620051		
2	1		8359780051	7830680051	6666660051	7513220051		
	2		9417980051	1058200052	3915340051	7195760051		
0			5253690051	4516330051	1935570051	6451900051		
9	1		5253690051	4608500051	3778970051	4331990051		
	2		4885010051	5622370051	2304250051	3963310051		
0			4615260051	4141900051	2130120051	5206960051		
17	1		4496920051	4141900051	3431860051	3905220051		
	2		4851940051	5561980051	2248460051	3668540051		
0			3137880051	2843160051	1519620051	3431400051		
23	1		2843160051	2647080051	2156880051	2451000051		
	2		3137880051	3631400051	1666680051	2352960051		
0			1777920051	1481600051	5926400050	2000160051		
34	1		1555680051	1296400051	1148240051	1333440051		
	2		1852000051	2074240051	8519200050	1259360051		
0			6748600050	4773400050	2798200050	6419400050		
63	1		5267200050	4773400050	4279600050	5431800050		
	2		7242400050	8888400050	3785800050	5267200050		
0			1327500050-	3186000050-	3805500050-	2301000050-		
90	1		1770000050-	2389500050-	1593000050-	9735000049-		
	2		1770000049-	6195000049	1770000050-	1327500050-		

TIME	PER CENT CHORD	Y	DELTA PER CENT			PRESSURE RADIUS		
			95			95+(120)K		
			(120)K	D F G	30+(120)K	R F E S	60+(120)K	90+(120)K
0			6922800051	5784400051	3846000051	7115100051		
2	1		6634350051	5961300051	4903650051	5576700051		
	2		7788150051	8461200051	5095950051	5672850051		
0			5550020051	4593120051	317770051	5837090051		
9	1		5262950051	4688810051	3827600051	4306050051		
	2		6028470051	6124160051	3731910051	4497430051		
0			3894620051	3168320051	2315720051	3789360051		
17	1		3578840051	3263040051	2526240051	2947280051		
	2		3894620051	4315660051	2736760051	3052540051		
0			2427850051	2010450051	1443400051	2629050051		
23	1		2319750051	2010450051	1752700051	2010450051		
	2		2732150051	3041440051	1701150051	2010450051		
0								
34	1							
	2							
0			5172600050	3495000050	2656200050	5172600050		
63	1		4753200050	4753200050	4753200050	5452200050		
	2		6710400050	7129800050	4194000050	4753200050		
0				5655000049-	3915000049-	4350000048-		
90	1		4350000048-	2610000049	2610000049	4785000049		
	2		4350000049	5655000049	1740000049	1740000049		

		HARMONIC		ANALYSIS		
COEF	BLADE	LOADING	40	PER CENT	RADIUS	
STEADY		COSINE	SINE	MAX	PHI	
		9140201751				97038100
1		1947248349	6670523250	6633381950	8831702452	97038101
2		1450329551	1051796851	1791572551	1797504352	97038102
3		1121607251	3699770049	1122217251	6297640450	97038103
4		4246776050-	2369316250-	4862999650	5228939157	97038104
5		1044318350	5833477550	5926218150	1597006852	97038105

		HARMONIC		ANALYSIS		
COEF	BLADE	LOADING	55	PER CENT	RADIUS	
STEADY		COSINE	SINE	MAX	PHI	
		1634634052				97038200
1		7443090050	5954403350	9531763150	3865948752	97038201
2		1936560851	1164003251	2259462651	1550434952	97038202
3		2106611551	3384456750	2133625451	3042359151	97038203
4		8247480550-	2085960050-	8507183150	4854841252	97038204
5		2430661750	8601851750	8938678350	1484421552	97038205

		HARMONIC		ANALYSIS		
COEF	BLADE	LOADING	75	PER CENT	RADIUS	
STEADY		COSINE	SINE	MAX	PHI	
		2231885852				97038300
1		1135300049-	3627338350	3629114550	9179268752	97038301
2		2467578350	4505713350	5137158350	3064622452	97038302
3		4354121351	3749643350	4370236851	1640667851	97038303
4		2127781251	5917573350	2208535651	3885446051	97038304
5		4887135050-	8767170050	1003729851	2382737452	97038305

		HARMONIC		ANALYSIS		
COEF	BLADE	LOADING	85	PER CENT	RADIUS	
STEADY		COSINE	SINE	MAX	PHI	
		2157498452				97038400
1		1214080551-	8166223350-	1463169051	2139258253	97038401
2		1139428051-	2510550049	1139704651	8936889252	97038402
3		6070685051	5717280050	6097547851	1793387151	97038403
4		4270977551	4826035050	4298157251	1611712751	97038404
5		1142804251-	7883630050	1388350751	2908003352	97038405

		HARMONIC		ANALYSIS		
COEF	BLADE	LOADING	90	PER CENT	RADIUS	
STEADY		COSINE	SINE	MAX	PHI	
		2382004852				97038500
1		1429912051-	1156563051-	1839099351	2189671553	97038501
2		1838956251-	2813916750	1860360551	8565012752	97038502
3		6834713751	7061131750	6871092151	1966153051	97038503
4		4753938851	1944328350	4757913251	5855132050	97038504
5		1072833251-	6524216750	1255637351	2973899652	97038505

		HARMONIC		ANALYSIS		
COEF	BLADE	LOADING	95	PER CENT	RADIUS	
STEADY		COSINE	SINE	MAX	PHI	
		1792446852				97038600
1		5344710050-	1509319551-	1601157351	2505002453	97038601
2		1709524851-	1199700050-	1713729251	9200714552	97038602
3		3577841051	5666376750	3622435551	2999807551	97038603
4		2086815751	2143315050-	2097793651	8853396652	97038604
5		1910253350-	4116171750	4537834050	2297906252	97038605

		HARMONIC		ANALYSIS			
RED	BLADE	BEAM	BENDING	15	PER CENT	RADIUS	
COEF			COSINE	SINE	MAX	PHI	
STEADY			6903366754-			97038210	
1			3466920054	1156941054-	3654866254	3415457153	97038211
2			2027667354	7024042353	2145881354	9553299051	97038212
3			2027666354	1016666748-	2027666354	1199999953	97038213
4			1419365754	3512028853-	1462170554	8652552052	97038214
5			2413310254	4317760054-	4946424754	5984039452	97038215
RED	BLADE	BEAM	BENDING	28	PER CENT	RADIUS	
COEF			COSINE	SINE	MAX	PHI	
STEADY			8317083353-			97038220	
1			1008905854	5268551553-	1138186054	3324262453	97038221
2			3532995053	-3569612253-	5022368553	1573523153	97038222
3			1059500354	5888300052	1061534654	1059937151	97038223
4			1177671553-	1529835053-	1930623053	5810270552	97038224
5			1110892954	2770611254-	2985024254	5836972152	97038225
RED	BLADE	BEAM	BENDING	36	PER CENT	RADIUS	
COEF			COSINE	SINE	MAX	PHI	
STEADY			1577375054-			97038230	
1			4608516253	3696554253-	5907870653	3217664253	97038231
2			6549969252	2268986553-	2361635053	1430510253	97038232
3			7860001753	9824961052	7921169553	2374995651	97038233
4			3275003853-	1134491753	3465937253	4022336152	97038234
5			9146472853	2184844254-	2368570054	5854315552	97038235
RED	BLADE	BEAM	BENDING	45	PER CENT	RADIUS	
COEF			COSINE	SINE	MAX	PHI	
STEADY			1317300054-			97038240	
1			3819782252	4198120753-	4215462553	2751989153	97038241
2			4623002753-	1075602953-	4746480453	9654880952	97038242
3			6624001053	2622003053-	7124064153	1128015653	97038243
4			3243004353-	1553649253	3595956553	3860049852	97038244
5			8600155552	1208587754-	1211643754	5481404852	97038245
		HARMONIC		ANALYSIS			
RED	BLADE	BEAM	BENDING	60	PER CENT	RADIUS	
COEF			COSINE	SINE	MAX	PHI	
STEADY			2819860053-			97038250	
1			721386281-	6433426353-	9665856953	2217270453	97038251
2			1393006154-	5085185053-	1482921854	1000273453	97038252
3			1124396753	2498666853-	2740000753	9807589752	97038253
4			2061401853-	2272103353	3067870753	3305409852	97038254
5			1002693654-	1780235254	2043191654	2387796252	97038255
RED	BLADE	BEAM	BENDING	65	PER CENT	RADIUS	
COEF			COSINE	SINE	MAX	PHI	
STEADY			3261185054-			97038260	
1			9074419753-	7620959053-	1185006854	2200245253	97038261
2			1535956854-	5949320053-	1647151354	1005866053	97038262
3			1296111052	4536582353-	4538433453	9054550152	97038263
4			4860626353-	3367533352	4872277853	4400919552	97038264
5			1244194554-	2874846754	3132533154	2268046152	97038265
RED	BLADE	BEAM	BENDING	80	PER CENT	RADIUS	
COEF			COSINE	SINE	MAX	PHI	
STEADY			4047341754-			97038270	
1			3419731853	5944590353-	6858040553	2999104453	97038271
2			1298590354-	8017665053-	1526245754	1058448853	97038272
3			6043426753-	2700245553-	6619239553	6802514252	97038273
4			9000830253-	6681371752	9025594253	4393867352	97038274
5			9720306753-	4104782554	4218303354	2066449952	97038275
RED	BLADE	BEAM	BENDING	92.5	PER CENT	RADIUS	
COEF			COSINE	SINE	MAX	PHI	
STEADY			2096250054-			97038280	
1			4098089353	9480726752-	4206326053	3469740653	97038281
2			3166659253-	4113621753-	5191301753	1162055053	97038282
3			4591672353-	9499978352-	4688917953	6389644352	97038283
4			5224997853-	1000000047-	5224997853	4500000452	97038284
5			3306419753-	1852306554	1881585454	2002417452	97038285

HARMONIC ANALYSIS

WH. BLADE	BEAM BEND	15 O/O R	COSINE	SINE	MAX	PHI	
COEF							
STEADY		8632208354-					97038410
1		3300989854-		2917984353	3313861854	1749483453	97038411
2		1664543854		7920523353	1843380954	1272342952	97038412
3		3292501754-		3292505053-	3308923254	6190353552	97038413
4		4207082253		3168283352-	4218995353	8892332052	97038414
5		3174260554-		4537198754	5537337154	2499538952	97038415

WH. BLADE	BEAM BEND	2 O/O R	COSINE	SINE	MAX	PHI	
COEF							
STEADY		2048366753-					97038420
1		8092696553-		5728312552	8112944853	1759511553	97038421
2		4438935553		4805287853-	6541784153	1563652753	97038422
3		1387167054-		5548692252	1388276354	5923646352	97038423
4		3606631553-		4805286052-	3638502353	4689727552	97038424
5		1049533054-		2411873254	2630333054	2270328052	97038425

HARMONIC ANALYSIS						
RED BLADE	CHORD	BENDING	15	PER CENT	RADIUS	
COEF STEADY		COSINE	SINE	MAX	PHI	
1		413233355				97038110
2		3422793355	5369551854-	3464655155	3510843253	97038111
3		2000000048-	7779785053	7779785053	4500007752	97038112
4		7635829354-	1347508254	7753816354	5666398752	97038113
5		4491690053	4666666748	4491690053	1488194347	97038114
		2337095354-	9412057254	9697877954	2078900152	97038115
RED BLADE	CHORD	BENDING	28	PER CENT	RADIUS	
COEF STEADY		COSINE	SINE	MAX	PHI	
1		4224875255				97038120
2		2837100555	4068987354-	2866130855	3518382653	97038121
3		2208122054	2549760053-	2222794554	1767065653	97038122
4		3827413054-	1177674354	4004498354	5429905252	97038123
5		1619288554-	1784811054	2409905754	3305405652	97038124
		6958320053-	6129906854	6169273854	1929523452	97038125
RED BLADE	CHORD	BENDING	60	PER CENT	RADIUS	
COEF STEADY		COSINE	SINE	MAX	PHI	
1		2283560455				97038130
2		9708993054	1435083754-	98144479654	3515920153	97038131
3		2648159554	5982726753-	2714899454	1736347253	97038132
4		6140688353	1611928254	1724932754	2307850552	97038133
5		9594775053-	7312233353	1206351854	3567219252	97038134
		2695931753	6373886753-	6920583853	5858533652	97038135
RED BLADE	CHORD	BENDING	80	PER CENT	RADIUS	
COEF STEADY		COSINE	SINE	MAX	PHI	
1		1524717955				97038140
2		2113006754	2848718253-	2132123254	3523217853	97038141
3		7839148353	1357783353-	7955867153	1750867853	97038142
4		9407015053	1175876754	1505857054	1711339652	97038143
5		7839050052-	5431148353	5487429253	2455326952	97038144
		4667793353-	4206513253-	6283553753	4440489852	97038145
WH. BLADE	CHORD BEND	15 0/0 R				
COEF STEADY		COSINE	SINE	MAX	PHI	
1		4100250055				97038430
2		3197446755-	4415425254	3227789555	1721376353	97038431
3		2733509254-	2840733854-	3942314254	1130510053	97038432
4		6560405054	182232254-	6808807854	1148253053	97038433
5		2733495354	3156406753	2751658754	4335328752	97038434
		4639476554	1389155055-	1464581555	5769364252	97038435
WH. BLADE	CHORD BEND	28 0/0 R				
COEF STEADY		COSINE	SINE	MAX	PHI	
1		4235117555				97038440
2		2515967755-	3626786254	2541973555	1717972853	97038441
3		1559682554-	1039011854-	1874074454	1068351653	97038442
4		4559054554	3359297854-	5663025754	1078719053	97038443
5		5998705053-	6234050053-	8651464753	5652554352	97038444
		4763935254	8425779554-	9679299554	5989676252	97038445
HARMONIC ANALYSIS						
RED BLADE	TORSION	15 0/0 R				
COEF STEADY		COSINE	SINE	MAX	PHI	
1		4427423354-				97038350
2		1406306853-	1406512053-	1989104753	2250001153	97038351
3		7207423753-	3566754353	8041684653	7683524052	97038352
4		8237071253-	4118536053-	9209325853	6885502052	97038353
5		4118534253	5350127253	6751754253	1310272052	97038354
		3768658352	3768661752	5329690052	9000005151	97038355
RED BLADE	TORSION	50 0/0 R				
COEF STEADY		COSINE	SINE	MAX	PHI	
1		1477220054-				97038360
2		1022284353-	1847705753-	2111653853	2410454753	97038361
3		9509982352-	1098116752	9573172052	8670662152	97038362
4		2916401253-	1268001353-	3180129453	6783286452	97038363
5		6340095051-	1098105052	1267991652	3000018152	97038364
		5150798352	3604697253-	3641311453	5562640452	97038365

		HARMONIC ANALYSIS				
RED BLADE COEF	PITCH	POSITION COSINE	SINE	MAX	PHI	
STEADY		1461497452				97038510
1		1992246751	6901327850-	2108395251	3408934451	97038511
2		2911553349	2857871750-	2872664650	1379085753	97038512
3		3105883350	5823666749	3160009850	3539965551	97038513
4		9707016748	5043466749	5136031349	1977641752	97038514
5		1430393350	4955038349	1513786350	3821328851	97038515
RED BLADE COEF	FLAP	POSITION COSINE	SINE	MAX	PHI	
STEADY		3546666750-				97038520
1		2208220751-	2055577051-	3016891751	2229496953	97038521
2		8866658049-	3071493349-	9383586549	9955328652	97038522
3		1418665450-	1418665850-	2006296150	7500000452	97038523
4		7093341749-	1166666744	7093341749	4499997852	97038524
5		1503128550-	3709102750	4002104250	2241209052	97038525
VERTICAL COEF	ACCEL	COSINE	SINE	MAX	PHI	
STEADY		1049227551				97038530
1		1464460749	2709796748-	1489320349	3495167353	97038531
2		6597633348-	6065210049	6100988449	4810406752	97038532
3		1826988749-	1725490049-	2513006849	7445448052	97038533
4		6597445048-	1494317249-	1633476949	6154461252	97038534
5		5805600047	1150001049-	1151465549	5457800752	97038535
FORE-AFT COEF	ACCEL	COSINE	SINE	MAX	PHI	
STEADY		5949000049-				97038540
1		6634503549	3413040548	6643276749	2944916451	97038541
2		1101663249-	1125804250	1151181550	4779446452	97038542
3		4516832549-	7711656748	4582190749	3229592052	97038543
4		1652499049-	3434656349	3811511149	2892334452	97038544
5		3390662749	2311370048-	3398531749	7122005352	97038545
LATERAL COEF	ACCEL	COSINE	SINE	MAX	PHI	
STEADY		1802666749				97038550
1		1400244749	2706173848	1426155349	1093837652	97038551
2		5238998849	1853871549	5557332849	9743415051	97038552
3		1126666349	4506663348	1213456749	7267133751	97038553
4		3323667349-	1658728049	3714585249	3836945052	97038554
5		1609109848-	8560515848	8710434348	2012912152	97038555
LIFT LINK COEF	LOAD	COSINE	SINE	MAX	PHI	
STEADY		5189752854				97038610
1		4527911752	7268568352-	8563531352	3019206053	97038611
2		2313895553	8997095052	2482657853	1062376152	97038612
3		5666646752-	4722200052-	7376317452	7326851452	97038613
4		1652789853	2699123353-	3164961553	7537023852	97038614
5		1019452053-	2546401752	1050773053	3319511052	97038615
RIGHT COEF	CYCLIC	LOAD COSINE	SINE	MAX	PHI	
STEADY						97038620
1		9471104551-	2240888052	2437816752	1129113453	97038621
2		7626666852	1801333352	7836507452	6644541851	97038622
3		693329051	1666666745-	693329051	1200000053	97038623
4		4160002852	1140844153	1214323553	1749149852	97038624
5		2537779051	1608902551-	3004811151	6552521952	97038625
LEFT COEF	CYCLIC	LOAD COSINE	SINE	MAX	PHI	
STEADY						97038630
1		5264000052-				97038631
2		3746501352-	2104876552	4297298852	1506716653	97038632
3		9588001752-	8791889852-	1300873253	1112599153	97038633
4		3759995351	1127999852-	1189016152	9614497752	97038634
5		8836000352-	1628127752-	8984748252	4761006652	97038635
		1141497952-	1511252751	1151458352	3449167152	97038636
COLLECTIVE COEF	LOAD	COSINE	SINE	MAX	PHI	
STEADY		8266666751-				97038640
1		5403009551	1210323551	5536912051	1262633652	97038641
2		9920001051	1145463052	1515305152	2455330252	97038642
3		1322666752	3306670851-	1363373752	1153212453	97038643
4		1322666552	5727313351	1441342452	5853305451	97038644
5		1113032152	4516989251-	1201196252	6758226952	97038645
STABILIZER COEF	BAR	COSINE	SINE	MAX	PHI	
STEADY		1378666750-				97038650
1		2101807550	2812656351	2820498451	8572641652	97038651
2		1723330749-	1666666743	1723330749	8999997652	97038652
3		8616700049-	5170023349-	1004871450	7032125952	97038653
4		1723303349-	2333333344-	1723303349	4500019452	97038654
5		3108661749	1859437250	1885249950	1610177952	97038655

HARMONIC ANALYSIS

R F	PYLON	POSITION				
COEF		COSINE	SINE	MAX	PHI	
STEADY		3146666749				97038310
1		3555761748-	1540874548	3875272248	1565707153	97038311
2		4252916349-	1405126349	4479026349	8085845252	97038312
3		4916590047-	4916635847-	6953140747	7500009052	97038313
4		4670836748	8941709748-	1008815649	7439524752	97038314
5		1852563748-	2392465548	3025869048	2555035852	97038315

R A	PYLON	POSITION				
COEF		COSINE	SINE	MAX	PHI	
STEADY		9650000049				97038320
1		8214105048-	3299052848	8851851248	1581180053	97018321
2		3250008548-	2901185349	2919332449	4819591552	97038322
3		9999893347-	1000005048	1414209648	4499985452	97038323
4		4249996848-	1342338449-	1408011849	6310790452	97038324
5		1285879348-	7009726747	1464530148	3028076752	97038325

L F	PYLON	POSITION				
COEF		COSINE	SINE	MAX	PHI	
STEADY		4500000048				97038330
1		1092820549	8660263347-	1096246649	3554689653	97038331
2		3149999249	2251666249-	3872014549	1622211353	97038332
3		9999961747	5999997248-	6082759148	9315409852	97038333
4		7499999748	8660255248	1145644049	1227665252	97038334
5		2928205348-	8660186747	3053583948	3270487752	97038335

L A	PYLON	POSITION				
COEF		COSINE	SINE	MAX	PHI	
STEADY		7091250049				97038340
1		3490232848	2932032248-	4558348248	3199674653	97038341
2		5566248549	5722983348	5595591749	2935142551	97038342
3		1524997848-	3049996748-	3409999748	8114498852	97038343
4		3812502348-	4842518848-	6163210448	5794668352	97038344
5		2609776748	4692954748-	5369800648	5981573452	97038345

RED	PITCH LINK					
COEF		COSINE	SINE	MAX	PHI	
STEADY		1926291753-				97038370
1		6929175552-	5909795352-	9107093652	2204603953	97038371
2		8819164052-	8039598351	8855732952	8739564252	97038372
3		1067583553-	1021166853-	1477334153	7457566052	97038373
4		4641649051	2411881852-	2456139852	7022334152	97038374
5		4974968351-	4301875752-	4330547152	5268065152	97038375

WHITE	PITCH LINK					
COEF		COSINE	SINE	MAX	PHI	
STEADY		1822500053-				97038380
1		5554107752	7224885752	9113017352	5244883252	97038381
2		2186996552-	1262665252-	2525327152	1050000253	97038382
3		8747997552	9233997552	1271983453	1551605252	97038383
4		2187001052-	2104443852-	3035071252	5597447652	97038384
5		1180107052-	6383112752	6491285052	2009491052	97038385

IBM TAB NO. 14c

MANEUVER CONDITION NO. 38 - APPROACH AND FLARE

REVOLUTION 3

PER CENT CHORD	Y	DELTA PER CENT		PRESSURE RADIUS	
		40	50	60	90
		(120)K	(120)K	(120)K	(120)K
TIME	195				
	0	2526480051	3087920051	2561570051	2421210051
	1	1929950051	1508870051	2631750051	1438690051
	2	1368510051	1649230051	1424680051	2315740051
	0	1199860051	1472580051	1199880051	1108980051
	1	9453600050	8362800050	1254420051	7453800050
	2	6363000050	7817400050	9639400050	1236240051
	0	6600000050	7080000050	5880000050	5040000050
	1	4440000050	3960000050	6460000050	4320000050
	2	3120000050	4300000050	4580000050	5520000050
	0	3160800050	3073000050	2414500050	2326700050
	1	1799900050	1931600050	2897400050	2107200050
	2	1799900050	1887700050	2061300050	2502300050
	0	1266900050	1421400050	8652000049	8652000049
	1	7107000049	8579000049	1297800050	8961000049
	2	7723000049	8543000049	8652000049	1174200050

PER CENT CHORD	X	DELTA PER CENT		PRESSURE RADIUS	
		40	50	60	90
		(120)K	(120)K	(120)K	(120)K
TIME	195				
	0	5529600051	5391360051	4239360051	3640320051
	1	2257920051	4746240051	4608000051	5022720051
	2	3271680051	2764800051	3594240051	4239360051
	0	1090600051	3045150051	2408850051	2227050051
	1	1499850051	2772450051	2727000051	2908800051
	2	1954350051	1545300051	2090700051	2454300051
	0	2315940051	2421210051	1965040051	1754500051
	1	1333420051	2175480051	2035220051	2245760051
	2	1614140051	1368510051	1649230051	1894860051
	0	1849120051	1778000051	1422499051	1315720051
	1	1122360051	1671320051	1600200051	1706880051
	2	1298940051	9958800050	1280160051	1493520051
	0	1708000051	1663200051	1452000051	1306800051
	1	1214400051	1597200051	1504800051	1623600051
	2	1254000051	1108800051	1293600051	1412490051
	0	5494500050	5128200050	4477000050	3581600050
	1	3627300050	5168900050	4924700050	5372400050
	2	4070000050	3378160050	3866500050	4477000050
	0	2002500050	1762200050	1682100050	1308300050
	1	1521920050	2062500050	1708800050	2002500050
	2	1602000050	1335000050	1448600050	1654400050

PER CENT CHORD	X	DELTA PER CENT		PRESSURE RADIUS	
		40	50	60	90
		(120)K	(120)K	(120)K	(120)K
TIME	195				
	0	7783050051	7075500051	4339640051	7217000051
	1	6745310051	6933990051	6225440051	6273610051
	2	5698145051	4764120051	4952850051	6000000051
	0	4787810051	4129800051	2881160051	4575960051
	1	4321740051	4109890051	3170000051	4170930051
	2	4152760051	2965900051	3008700051	3770930051
	0	3068780051	2727360051	1477320051	2566900051
	1	2613720051	2613720051	2244390051	2344300051
	2	2670540051	1761420051	1676130051	1864460051
	0	3005460051	2720550051	1787700051	2668710051
	1	2668730051	2642820051	2331900051	2331900051
	2	2615910051	1865420051	1865520051	2409630051
	0	1931880051	1676190051	8523000050	1733010051
	1	1590960051	1647380051	1420500051	1477320051
	2	1642780051	1051170051	1221630051	1477320051
	0	8845800050	5922800050	5256200050	7179200050
	1	7499700050	7543800050	6410000050	7435600050
	2	7623900050	5474100050	5256200050	6922800050
	0	4118000051	3514500050	2911000050	4189000050
	1	3727500050	3976000050	3408000050	3692000050
	2	3763000050	3514500050	3017500050	3514500050

TIME	PER CENT (HOUR)	F	DELTA PER CENT		PRESSURE RADIUS	
			(1201)	10+(1201)	R 4 P 5	90+(1201)
		195				
	2	0	8962920051	7635080051	3485580051	9626840051
		1	8630960051	7884050051	7469120051	7552090051
		2	9294880051	9626840051	4481460051	7801060051
	4	0	8266770051	7200090051	3200040051	9689010051
		1	8444550051	7377870051	6844530051	6755640051
		2	8266770051	8622330051	3911160051	7022310051
	6	0	5821650051	5342220051	2534130051	7739370051
		1	5821650051	5342220051	4862790051	4794300051
		2	5684670051	5684670051	2945070051	4931280051
	11	0	4120700051	3518800051	1481600051	5741220051
		1	4120700051	3796600051	3518800051	3518800051
		2	4305900051	4305900051	1990900051	3611400051
	17	0	3225520051	3232820051	1275520051	4509840051
		1	3225520051	3439440051	3225320051	3079240051
		2	3627480051	3627480051	1666680051	3039240051
	23	0	3114060051	2741250051	1644750051	3684240051
		1	3026340051	2872830051	2653530051	2675460051
		2	3092130051	3070200051	1864050051	2719220051
	34	0	2110250051	1614800051	2358500050	2348800051
		1	1964450051	1945100051	1945100051	2000150051
		2	2091900051	2128600051	1119350051	1743250051
	47.7	0				
		1				
		2				
	63	0	7996800050	5927600050	3236800050	8282400050
		1	5949600050	6759200050	5092800050	6759200050
		2	8472800050	4753200050	5045600050	6759200050
	77	0	3128400050	1227400050	1896000049-	3223200050
		1	1828000050	2785600050	1990800050	2464800050
		2	4602400050	1192000050	1422000050	2275200050
	90	0	1886000049	1027300050-	1603100050-	3772000049-
		1	2544000049-	8487000049-	1508800050-	1037300050-
		2	2829000049	5658000049	6601000049-	2430000048-

CONE, AS		90			DELTA	PRESSURE
PER CENT		PER	CFNT	RADIUS		
CHORD	K	(120)K	30*(120)K	60*(120)K	90*(120)K	
TIME	195					
	0	9206340051	7936500051	4973540051	1076454052	
2	1	8994700051	8148140051	8359780051	8359780051	
	2	9947080051	1089946052	5291000051	8783060051	
	0	4792840051	4792840051	2765100051	7650110051	
9	1	5438030051	4885010051	4977180051	4977180051	
	2	5161520051	7097090051	3133780051	4885010051	
	0	4615260051	4260240051	2840160051	6863720051	
17	1	5088620051	4496720051	4260240051	4260240051	
	2	5206960051	5798660051	3195180051	4378580051	
	0	3235320051	2892180051	2058840051	3725520051	
23	1	3088260051	2843160051	2647080051	2696100051	
	2	3235320051	3725520051	2352960051	2892180051	
	0	1214960051	1481600051	9260000050	2185360051	
34	1	1666800051	1555480051	1518640051	1481600051	
	2	2000160051	2222400051	1333440051	1518640051	
	0	7242400050	5102600050	4115000050	7077800050	
63	1	5761000050	5596400050	5102600050	5925600050	
	2	7736200050	9053000050	5925600050	6254800050	
	0	9735000049	2832000050	3097500050	2124000050	
90	1	1947000050	1593000050	1239000050	1416000050	
	2	1770000049	7080000049	8850000048	1062000050	

CONE, AS		90			DELTA	PRESSURE
PER CENT		PER	CFNT	RADIUS		
CHORD	K	(120)K	30*(120)K	60*(120)K	90*(120)K	
TIME	195					
	0	6922800051	5480550051	6057450051	8076600051	
2	1	6922800051	6442050051	6442050051	6538200051	
	2	8076600051	9422700051	7788150051	7115100051	
	0	5454330051	4784500051	4784500051	7176750051	
9	1	5454330051	5071510051	4975880051	4975880051	
	2	6028470051	7549510051	6411230051	5262950051	
	0	3894620051	3368320051	3157800051	6420860051	
17	1	3684100051	3473580051	3263060051	3157800051	
	2	3999880051	4526180051	4315660051	3684100051	
	0	2422850051	2010450051	2010450051	3453850051	
23	1	2371300051	2268200051	2268200051	2319750051	
	2	2835250051	3247650051	2835250051	2422850051	
	0					
34	1					
	2					
	0	5312400050	4054200050	3075600050	5592000050	
63	1	4753200050	5452200050	5592000050	5871600050	
	2	6850200050	7968600050	6291000050	5312400050	
	0	4350000048	6090000049	9135000049	5220000049	
90	1	2175000049	2175000049	1915000049	5655000049	
	2	5655000049	4785000049	3915000049		

		HARMONIC		ANALYSIS		
COEFF	BLADE	LOADING	40	PER CENT	RADIUS	
STEADY		COSINE	SINE	MAX	PHI	
		7997541251				195038100
1		1516679251	111776351	1884075351	3638981752	195038101
2		1214867551	3941935050	1277220251	8988462351	195038102
3		6238466050-	4906428349	6257710350	5856101452	195038103
4		7387702250	2897835750	7931062050	5457712151	195048104
5		7577593750-	1759155049	7579635350	3573402252	195038105

		HARMONIC		ANALYSIS		
COEFF	BLADE	LOADING	55	PER CENT	RADIUS	
STEADY		COSINE	SINE	MAX	PHI	
		1615632352				195038200
1		6185590050	7217920050	9505782150	4940419252	195038201
2		3418201251	1192738351	3620321051	9617895951	195038202
3		4248373350-	9793333347	4248384650	5995597752	195038203
4		1770923750-	705813348-	1772128850	4557040452	195038204
5		1085816551	6859225050	1284423651	6456212851	195038205

		HARMONIC		ANALYSIS		
COEFF	BLADE	LOADING	75	PER CENT	RADIUS	
STEADY		COSINE	SINE	MAX	PHI	
		2257017152				195038300
1		2408440050	1344052851	1165461051	1001591553	195038301
2		2155454351	2819201750-	2173812851	1762741953	195038302
3		3802250351	6071731750-	3850424151	1169757253	195038303
4		8440291750-	2937085050	8936721550	4796767651	195038304
5		1764831750-	1947671051	1955650451	1903551452	195038305

		HARMONIC		ANALYSIS		
COEFF	BLADE	LOADING	85	PER CENT	RADIUS	
STEADY		COSINE	SINE	MAX	PHI	
		2366422652				195038400
1		1911834051	1700551750	1919382251	1749170053	195038401
2		5220430050-	5631726750-	2679142950	1135852453	195038402
3		5681804251	5639080050-	5709724051	1181106953	195038403
4		4152353051	1246100049-	4152371651	8295701652	195038404
5		1427928551-	1476942751	2054382451	2680647552	195038405

		HARMONIC		ANALYSIS		
COEFF	BLADE	LOADING	90	PER CENT	RADIUS	
STEADY		COSINE	SINE	MAX	PHI	
		2722031852				195038500
1		1587321751-	1329724551-	2070693351	2199535553	195038501
2		2654788551-	4900711750-	2699642951	9522950552	195038502
3		4633935351	2499680050-	4640672451	1189707653	195038503
4		4843267851	1471973350-	4845404151	8956479852	195038504
5		1430059851-	8724781750	1675198351	2972253552	195038505

		HARMONIC		ANALYSIS		
COEFF	BLADE	LOADING	95	PER CENT	RADIUS	
STEADY		COSINE	SINE	MAX	PHI	
		2090249852				195038600
1		1789020050-	1846917851-	1855562351	2644673053	195038601
2		1191237351-	9970536750-	3343368451	9867531452	195038602
3		7516231750	4439755050-	8729556950	1098100453	195038603
4		2454567351	6263583349	2455364351	3654401950	195038604
5		1819330050	1206972251	1220607051	1628561052	195038605

HARMONIC ANALYSIS

REF BLADE	BEAM	BENDING	15	PER CENT	RADIUS
COFF		COSINE	SINE	MAX	PHI
STEADY		5940224054-			
1		5672852854	1344435854-	5829988654	3466671953
2		2331816754	1053606054	2558799554	1215765752
3		2027670053	1013870753	2246997653	8854909251
4		1824898254	8780063853-	2025129354	8357664452
5		2336425754	8895281554-	9197005954	5694336652
					195038210

REF BLADE	BEAM	BENDING	28	PER CENT	RADIUS
COFF		COSINE	SINE	MAX	PHI
STEADY		5150416752-			
1		5636197553	4177437753-	7014342653	3234680253
2		5888282052	4589502053-	4627120953	1386555253
3		3532995053-	5005081753	6126409853	4173918952
4		2355132853-	5099460052-	2409904053	4805409752
5		1379528654	4293122754-	4509323954	5756280152
					195038220

REF BLADE	BEAM	BENDING	36	PER CENT	RADIUS
COFF		COSINE	SINE	MAX	PHI
STEADY		5948750053-			
1		4818443853-	5182060753-	7076097453	2270823553
2		5240001753-	4537972753-	6931869453	1104467053
3		1637496853-	6549999353	6751584053	3467874152
4		7204996253-	2268985753	7553824553	4062995952
5		1333343554	2560293754-	2886677854	5950189752
					195038230

REF BLADE	BEAM	BENDING	45	PER CENT	RADIUS
COFF		COSINE	SINE	MAX	PHI
STEADY		5031000053-			
1		5373064253-	5533535253-	7712965153	2258429553
2		1048799954	3585345053-	1108389954	9943655752
3		1379998553-	7018001353	7172019153	3369790452
4		8693996053-	2868275753	9154920653	4043538252
5		6339061753	4816464253-	7961283253	6459443352
					195038240

HARMONIC ANALYSIS

REF BLADE	BEAM	BENDING	60	PER CENT	RADIUS
COFF		COSINE	SINE	MAX	PHI
STEADY		2913560054-			
1		2276914853-	5105769253-	5590457953	2459655553
2		1905232354	1406541353-	1910417254	9211110852
3		7620936353-	5871868253	9620681253	4746201852
4		1686597553-	3786838353	4145449953	2850185952
5		1071614754-	2821842854	3018469054	2215892652
					195038250

REF BLADE	BEAM	BENDING	65	PER CENT	RADIUS
COFF		COSINE	SINE	MAX	PHI
STEADY		3313031754-			
1		1021388853	7125426753-	7198259653	2781574653
2		2015538354	5275814253-	2083443554	9733424352
3		1218397154	4147735353	1287062054	5373337352
4		3175609753-	2132776753-	3825341053	5347144452
5		1761231854-	3732609854	4127264754	2305205652
					195038260

REF BLADE	BEAM	BENDING	80	PER CENT	RADIUS
COFF		COSINE	SINE	MAX	PHI
STEADY		3931616754-			
1		2177252753	5952584053-	6338271553	2900908053
2		2089477754-	3006626253-	2110998654	9409414952
3		2070192254-	9643753553	2283794154	5167402952
4		6079205353-	1002205353	6951825853	4292777952
5		2120758754-	4259882354	4758593854	2329323452
					195038270

REF BLADE	BEAM	BENDING	92.5	PER CENT	RADIUS
COFF		COSINE	SINE	MAX	PHI
STEADY		1953750054-			
1		4973250052	2726480253-	2771466553	2803374253
2		6729160053-	1234087253-	6841386253	9519611352
3		9975003353-	3166668253	1046558554	5412914152
4		5462498853-	1234085353	5600166153	4181737152
5		1047232454-	1729314054	2021688154	2423962652
					195038280

HARMONIC ANALYSIS

WH. BLADE	BFAM	RFND	15 0/0 R				
COEF			COSINE	SINE	MAX	PHI	
STEADY			5175083354-				195038410
1			5214345054-	4234045253-	5231507054	1846422353	195038411
2			2542543354	4752315053	2586575254	5293347451	195038412
3			5487515553-	7682503353-	9441063753	7815408552	195038413
4			1737707854	8554168353-	1936844454	8344761952	195038414
5			1919403254-	8764402754	8972115954	2047055152	195038415

WH. BLADE	BFAM	RFND	2 0/0 R				
COEF			COSINE	SINE	MAX	PHI	
STEADY			1696983353				195038420
1			8806201753-	1744990753	8977426253	1687917653	195038421
2			4161535252	1681850353-	1732571653	1419490053	195038422
3			5548611752	5826097253-	5852459353	9181342852	195038423
4			3190483753-	7402662352	3199511853	4392333752	195038424
5			1505304954-	4403151054	4653351754	2177480452	195038425

HARMONIC ANALYSIS

RED BLADE	CHORD	BENDING	15	PER CENT	RADIUS	
COEF		COSINE	SINE	MAX	PHI	
STEADY		4289541755				195038110
1		3466097555	2481868353-	3466186455	3595897553	195038111
2		6737536753-	1944949354-	2058342054	1254466553	195038112
3		5390001754	2245825754-	5839165354	1124600753	195038113
4		3817916054-	2722934054	4689440654	3612589552	195038114
5		5015965054-	1686736255	1759738155	2131225452	195038115

RED BLADE	CHORD	BENDING	28	PER CENT	RADIUS	
COEF		COSINE	SINE	MAX	PHI	
STEADY		4388008355				195038120
1		2979307555	6916960053	2980110355	1329978351	195038121
2		6416210053	2549730053-	5099415153	1649998553	195038122
3		2944169054	3532992854-	4598931354	1032685553	195038123
4		3680206854-	2294756054	4337029754	3701370452	195038124
5		1823480354-	1344031255	1356344655	1954525852	195038125

RED BLADE	CHORD	BENDING	60	PER CENT	RADIUS	
COEF		COSINE	SINE	MAX	PHI	
STEADY		2130043855				195038130
1		1187879355	5319968353	1189070055	2564302551	195038131
2		2110852054	3323726753	2136859354	4474133851	195038132
3		1304892554	1995713254-	2384452954	1010595353	195038133
4		2417886054-	5982743353	2490804154	4152551552	195038134
5		2705295554	6913565554	7424015954	1372589452	195038135

RED BLADE	CHORD	BENDING	80	PER CENT	RADIUS	
COEF		COSINE	SINE	MAX	PHI	
STEADY		1367934655				195038140
1		3920889054	2779405353	3930727954	4054750251	195038141
2		1136677854	7467808353	1760043454	1665216852	195038142
3		1097484254	8623066753-	1395723654	1072809553	195038143
4		7447200753-	6789066752	7478082153	4369779152	195038144
5		3906556753	2857728354	2884306354	1644316652	195038145

WH. BLADE	CHORD BEND	15 0/0 R				
COEF		COSINE	SINE	MAX	PHI	
STEADY		4045580055				195038430
1		3590860355-	7716842253-	3591689455	1812311153	195038431
2		7289406553-	1893822254-	2029265154	1244740353	195038432
3		3280193354-	5467001854	6175560954	4032123552	195038433
4		1093392554-	2583333348	1093392554	4499996752	195038434
5		6186808854	1781611055-	1892630755	5794440352	195038435

WH. BLADE	CHORD BEND	28 0/0 R				
COEF		COSINE	SINE	MAX	PHI	
STEADY		4139137555				195038440
1		2835823855-	1373708854-	2839149155	1827733153	195038441
2		1439692254	4156038353-	1498479354	1719489453	195038442
3		2639443854-	3359302254	4272186254	4271905052	195038443
4		2159544054-	8312141753	2133989554	3973704052	195038444
5		3643393554	1758233555-	1795585855	5634141852	195038445

HARMONIC ANALYSIS

RED BLADE	TORSION	15 0/0 R				
COEF		COSINE	SINE	MAX	PHI	
STEADY		5765946754-				195038350
1		1645431553	2849978253-	3290869353	2999999453	195038351
2		4633341753-	2675066553	5350124953	7499997552	195038352
3		2059260853	5833333347-	2059260853	1199999553	195038353
4		5662988753-	8916933352-	5732761853	4723707952	195038354
5		3704710853-	6416729753-	7409406353	4799998852	195038355

RED BLADE	TORSION	50 0/0 R				
COEF		COSINE	SINE	MAX	PHI	
STEADY		1508920054-				195038360
1		6170120052	2769281353-	2837185753	2825606753	195038361
2		6339788351-	7686841752	7712941352	4715742652	195038362
3		2536010052-	1014398553	1045618453	3467877352	195038363
4		6974013352-	1098135052-	7059940752	4723709552	195038364
5		3973830052	4965521253-	4981396853	5491510952	195038365

		HARMONIC ANALYSIS				
RED BLADE COFF	PITCH	POSITION COSINE	SINE	MAX	PHI	
STEADY		1530408852				195038510
1		1658268151	1947817551-	2684827151	5137995253	195038511
2		6794276749-	2185431750-	2288609650	1263650553	195038512
3		1960983349-	1940983349-	2744964949	7499999852	195038513
4		4854011749	1176753350-	1272896550	7110290152	195038514
5		9180433349-	1131232750	1456877150	2581215952	195038515
RED BLADE COFF	FLAP	POSITION COSINE	SINE	MAX	PHI	
STEADY		4433333350-				195038520
1		2145496050-	2265830751-	2275964851	2645910953	195038521
2		7093316849-	1071507749-	1729767349	1017066653	195038522
3		1950665550-	1241331150-	2412141650	7082372052	195038523
4		1273313749	1633333346	1775313749	1319125347	195038524
5		1223941350-	6520973050	6634841450	2012606952	195038525
VERTICAL COFF	ACCEL	COSINE	SINE	MAX	PHI	
STEADY		1043137551				195038530
1		1041219049	1464453549-	1796875449	3054126353	195038531
2		1370261749-	2295831749	7423393949	5031852952	195038532
3		1014883348-	6089893348-	613879548	8684619452	195038533
4		1776258849	3428171749	3861017549	1565242752	195038534
5		1244202049-	4804416747-	1245554749	1653411152	195038535
FORE-AFT COFF	ACCEL	COSINE	SINE	MAX	PHI	
STEADY		1635500049-				195038540
1		9646483348	7160835048-	1217501149	3239735753	195038541
2		7326080349-	2537164049-	1051096050	6709318152	195038542
3		1652499049	7711663348-	1823581849	1116610453	195038543
4		7436248549-	8586141748-	7485659449	4664669552	195038544
5		2320452249	7160823348-	2428334449	6856985952	195038545
LATERAL COFF	ACCEL	COSINE	SINE	MAX	PHI	
STEADY		1633666749				195038550
1		1820272349	3751934548-	1858978249	3483561453	195038551
2		7830332249	5171326049	9383854049	1672083152	195038552
3		6759983348	1126680048-	6853246348	1168458653	195038553
4		9576694748-	3219882749-	3359282149	6335907252	195038554
5		1307233048-	6005298848	6145931348	2045611452	195038555
LIFT LINK COFF	LOAD	COSINE	SINE	MAX	PHI	
STEADY		4948918054				195038610
1		4055685052	1280874253-	1343549253	2875695753	195038611
2		4344462353	1472251853-	4587142753	1706397553	195038612
3		3777851752	5000000047	3777851652	2527705547	195038613
4		1227767553	3271627352-	1770628753	8626984752	195038614
5		1066675753-	1357935052-	1075284653	3745100752	195038615
RIGHT COFF	CYCLIC	LOAD COSINE	SINE	MAX	PHI	
STEADY		1560000052				195038620
1		1549999352	7397781751	1726519552	2537110352	195038621
2		1733319751-	9907330752	9908846952	4550115452	195038622
3		8333333345	1040001252-	1040001252	9000001652	195038623
4		4680000052	2101554752	5130198052	6045618151	195038624
5		1560000052	1340223152	2056647752	8133287851	195038625
LEFT COFF	CYCLIC	LOAD COSINE	SINE	MAX	PHI	
STEADY		1052800053-				195038630
1		5639999851	1511221851	5838954451	1499989052	195038631
2		9587998552-	3256263251-	9593526452	9097256652	195038632
3		1127999552-	1128001752-	1595233752	7500002152	195038633
4		3195996752	7489389052-	8142809352	7327742952	195038634
5		5639976751	2104878252	2179129452	1500001352	195038635
COLLECTIVE COFF	LOAD	COSINE	SINE	MAX	PHI	
STEADY		6778666752-				195038640
1		2863654051-	1488000652-	1515305552	2591066353	195038641
2		1653334751	8590977351-	8748623151	1404467053	195038642
3		1983998552-	9919989751	2218178852	5114499252	195038643
4		1818665252	2004561052-	2706623052	7805408152	195038644
5		2863623751	1487999952-	1515304352	5617865452	195038645
STABILIZER COFF	BAR	COSINE	SINE	MAX	PHI	
STEADY		1705166750-				195038650
1		7907119350	1887458351	2046393051	6726975552	195038651
2		3446663049-	4500000043-	3446663049	9000003952	195038652
3		5170021749-	6893316049	8616665849	4229002852	195038653
4		1723322349-	2984919549-	3446672249	6000007852	195038654
5		1521166549-	1124250450-	1134494850	5245887952	195038655

HARMONIC ANALYSIS

COEFF	R F	PYLON	POSITION	COSINE	SINE	MAX	PHI	
STEADY				2310833349				195038310
1				5324815348-	1523224948	5538399848	1640362153	195038311
2				4965833049-	9767509748	5053414649	8465865252	195038312
3				4916740047	4916700047	6953292147	1499992352	195038313
4				1966672048	5109547748-	5474968248	7276294852	195038314
5				106684248-	1031552348-	1484000248	4480729452	195038315

COEFF	R A	PYLON	POSITION	COSINE	SINE	MAX	PHI	
STEADY				1252500050				195038320
1				9196158348-	1732066748	9357851448	1693334953	195038321
2				2500001349-	2078461349	3251154949	7013020752	195038322
3				5499981848-	2999989748-	6264961148	6953682352	195038323
4				9000008348	3464115048	9643663348	5262945451	195038324
5				1196176848	1732042748-	2104949148	6092592052	195038325

COEFF	L F	PYLON	POSITION	COSINE	SINE	MAX	PHI	
STEADY				1400000049-				195038330
1				1051314449	3183012548-	1098443349	3431555253	195038331
2				5049999349	2185063749-	5494542249	1683969853	195038332
3				4999931747	5500001348-	5522681148	9173145552	195038333
4				1000007248-	1732050248	2000003148	3000004952	195038334
5				986496747	2316990248-	2518395548	5861401352	195038335

COEFF	L A	PYLON	POSITION	COSINE	SINE	MAX	PHI	
STEADY				101666750				195038340
1				8400863348	7523405248-	8771663448	3432810753	195038341
2				6125416549	1276665749	6257042349	5886554751	195038342
3				1016669048	3333333342	1016659048	5999994052	195038343
4				889581748	1320680048-	8993331948	8788887952	195038344
5				1264183348-	9984265047	1626647548	2642713352	195038345

COEFF	RFD	PITCH LINE	POSITION	COSINE	SINE	MAX	PHI	
STEADY				2204791753-				195038370
1				1223376753-	8632608052-	1497287553	2152082453	195038371
2				6266246352-	5225742752	8159303352	7008677652	195038372
3				1856665252	2320835752-	2972117852	1028865953	195038373
4				7194584752-	4019811751-	7205805952	4579946852	195038374
5				6295955051	6220726852-	6252506152	5515583852	195038375

COEFF	WHITE	PITCH LINE	POSITION	COSINE	SINE	MAX	PHI	
STEADY				2211300053-				195038380
1				1099543853-	1111288553	1563316653	4530436952	195038381
2				7289955051-	1262665752-	1447998352	1200000953	195038382
3				2915995752	2429998252	1795776952	136853052	195038383
4				2432000051	1262662552	1285832652	1977664652	195038384
5				7894365051-	1027111253	1030140553	1807902352	195038385

IBM TAB NO. 14d

MANEUVER CONDITION NO. 38 - APPROACH AND FLARE

REVOLUTION 4

Cond. 45		40		DELTA PER CENT		PRESSURE RADIUS	
PER CENT CHORD	K	(120)K	D F G	R F F S	60+(120)K	90+(120)K	
TIME	293		30+(120)K				
4	0	2631750051	2842290051	2526480051	2210670051		
	1	1824680051	1543960051	1438690051	1333420051		
	2	1368510051	1579050051	1859770051	2315940051		
17	0	1381680051	1363500051	1181700051	1054440051		
	1	9453600050	8544600050	7635600050	6363000050		
	2	5999400050	7090200050	9817200050	1254420051		
34	0	6120000050	6840000050	6000000050	4920000050		
	1	4200000050	3480000050	3240000050	3240000050		
	2	3000000050	3720000050	4440000050	5760000050		
63	0	2853500050	2897400050	2458400050	2107200050		
	1	1756000050	1448700050	1580400050	1448700050		
	2	1624300050	1668200050	2019400050	2414500050		
88	0	1266900050	1143300050	8343000049	8343000049		
	1	6798000049	7107000049	6798000049	6180000049		
	2	6489000049	6798000049	9579000049	1081500050		

Cond. 55		55		DELTA PER CENT		PRESSURE RADIUS	
PER CENT CHORD	K	(120)K	D F G	R F F S	60+(120)K	90+(120)K	
TIME	293		30+(120)K				
7	0	5299200051	5299200051	4239360051	3548160051		
	1	2580480051	2396160051	2396160051	2626560051		
	2	2580480051	2764800051	3594240051	4239360051		
9	0	3090600051	3045150051	2499750051	2090700051		
	1	1545300051	1363500051	1499850051	1545300051		
	2	1499850051	1545300051	1999800051	2408850051		
17	0	2315940051	2280850051	2000130051	1719410051		
	1	1263240051	1228150051	1263240051	1333420051		
	2	1193060051	1298330051	1649230051	1965040051		
23	0	1778000051	1742440051	1493520051	1280160051		
	1	9601200050	9245600050	9956800050	9956800050		
	2	9601200050	1031240051	1355720051	1493520051		
34	0	1676400051	1650000051	1465200051	1293600051		
	1	1056000051	1042800051	1095600051	1082400051		
	2	1056000051	1082400051	1293600051	1425600051		
63	0	5413100050	5046800050	4354900050	3581600050		
	1	2889700050	2889700050	3215300050	3337400050		
	2	3052500050	3256000050	3825800050	4477000050		
90	0	2002500050	1788900050	1628700050	1335000050		
	1	1201500050	1254900050	1441800050	1308300050		
	2	1201500050	1308300050	1495200050	1708800050		

Cond. 75		75		DELTA PER CENT		PRESSURE RADIUS	
PER CENT CHORD	K	(120)K	D F G	R F F S	60+(120)K	90+(120)K	
TIME	293		30+(120)K				
2	0	7783050051	7311350051	5330210051	3726430051		
	1	7264180051	7075500051	6981160051	7452860051		
	2	7311350051	3962280051	5424550051	6556630051		
9	0	4787810051	4491220051	3643820051	2499830051		
	1	4321740051	4321740051	4279370051	4575960051		
	2	4491220051	2626940051	3474340051	3898040051		
17	0	2983050051	2812590051	1931880051	1335270051		
	1	2698950051	2670540051	2670540051	2784180051		
	2	2976230051	1477320051	1875060051	2500080051		
23	0	2979650051	2824190051	2072800051	1684150051		
	1	2772370051	2694640051	2616910051	2746460051		
	2	2746460051	1684150051	1995070051	2487360051		
34	0	1846650051	1733010051	1193220051	7670700050		
	1	1704600051	1789830051	1676190051	1761420051		
	2	1761420051	9943500050	1250040051	1534140051		
63	0	8653500050	7499700050	5961300050	4679300050		
	1	7627900050	7884300050	7499700050	8140700050		
	2	8204800050	5769000050	5704900050	7243300050		
90	0	4011500050	3727500050	3053000050	3124000050		
	1	3834000050	3905000050	3869500050	3869500050		
	2	3976000050	3301600050	3195000050	3479000050		

TIME	PER CENT CHORD	X	DELTA PER CENT		PRESSURE RATIO	
			R ₁ (120)X	H E G 30x(120)X	R F F T 60x(120)X	90x(120)X
		293				
		0	9294880051	8381990051	5560430051	9792870051
		1	9645910051	8299000051	8133020051	8381990051
		2	9294880051	1045674052	5560430051	8299000051
		0	8672330051	7911210051	5155620051	9689010051
		1	8800110051	7822320051	7555650051	7644540051
		2	8444550051	9244560051	4888950051	7288980051
		0	5958530051	5821650051	3903930051	7532500051
		1	6095610051	5753160051	542220051	5205240051
		2	5753160051	6849000051	3266950051	5273730051
		0	4213300051	3935500051	2639100051	5509700051
		1	4998500051	4074400051	3981800051	3935500051
		2	4652200051	4676300051	2639100051	3750300051
		0	3627480051	3529460051	2254920051	4313760051
		1	4019640051	3923600051	3529440051	3529440051
		2	3725520051	3921600051	2156880051	3333360051
		0	3179850051	2982480051	2214930051	3464940051
		1	3224710051	3048270051	2877830051	2916690051
		2	3135970051	3289500051	2171070051	2850900051
		0	2036850051	1835000051	1302850051	2183650051
		1	2091900051	2036850051	1981600051	2018500051
		2	2181650051	2202000051	1412950051	1798300051
		0				
		47.7				
		1				
		2				
		0	7996800050	6949600050	4569600050	6854400050
		1	7330400050	7520800050	2140000050	7616000050
		2	8853600050	8568000050	6283200050	7044800050
		0	3136600050	1801200050	5688000049	1896000050
		1	2275200050	2464800050	2464800050	3033600050
		2	3792000050	3792000050	1990800050	2464800050
		0	1886000049	4715000049	1320200050	8487000049
		1	5658000049	3772000049	5658000049	9430000048
		2	4715000049	6601000049	1886000049	9430000048

TIME	PER CENT CHORD	F	DELTA		PRESSURE	
			PER CENT	RADIUS	PER CENT	RADIUS
			90			
			(120)F	30*(120)R	60*(120)F	90*(120)R
		293				
		0	9629620051	8571420051	5185180051	9947080051
	2	1	9529800051	9417980051	9412160051	9629620051
		2	1026450052	1111110052	8784060051	9412160051
		0	4700670051	5254690051	3318120051	7465770051
	9	1	5991050051	5161520051	5253690051	4885010051
		2	5254690051	6544070051	4424160051	6516330051
		0	4970280051	4615260051	3550200051	6982060051
	17	1	4615260051	4615260051	4378580051	4496920051
		2	4615260051	5088620051	4496920051	4496920051
		0	3382380051	3186300051	2549040051	3823560051
	23	1	3382380051	3186300051	1019240051	3088260051
		2	3431400051	3627480051	2941200051	2990220051
		0	1852000051	1666800051	1370480051	2111280051
	34	1	1852000051	1814960051	1666800051	1814960051
		2	1963120051	2222400051	1555680051	1740880051
		0	7077800050	5925600050	5411800050	6913200050
	63	1	6584000050	6254800050	5761000050	6584000050
		2	8230000050	9053000050	6254800050	6419400050
		0	8850000049-	2712500050-	1593000050-	1770000050-
	90	1	1770000050-	1150500050-	7965000049-	9735000049-
		2	6195000049	1327500050	8850000049-	9735000049-

TIME	PER CENT CHORD	F	DELTA		PRESSURE	
			PER CENT	RADIUS	PER CENT	RADIUS
			90			
			(120)F	30*(120)R	60*(120)F	90*(120)R
		293				
		0	7307400051	6730500051	7307400051	8268900051
	2	1	7884300051	7211250051	7403550051	7499700051
		2	8076600051	9230400051	9711150051	7403550051
		0	5741400051	5456130051	6219850051	7463820051
	9	1	6506920051	5741400051	5741400051	5837090051
		2	6315540051	6791990051	6124160051	5645710051
		0	4999880051	3896620051	5368260051	6841900051
	17	1	4105140051	3896620051	3684100051	3789360051
		2	4315660051	4420920051	4315660051	3894620051
		0	2577500051	2422850051	2783700051	4278650051
	23	1	2783700051	2577500051	2629050051	2577500051
		2	2938350051	3144550051	2886800051	2577500051
		0				
	34	1				
		2				
		0	5731800050	4753200050	4893000050	5731800050
	63	1	5312400050	6011400050	6291000050	6570600050
		2	7129800050	8248200050	7129800050	6151200050
		0		3480000049-	6090000049-	5655000049-
	90	1	4785000049-	1305000049	4350000049	5220000049
		2	3480000049	4350000049	1740000049-	1305000049

		HARMONIC		ANALYSIS		
COEF	BLADE	LOADING	40	PER CENT	RADIUS	
STEADY		COSINE	SINE	MAX	PHI	
		7283834251				293038100
1		2385201051	1087018251	2621219651	2450038852	293038101
2		4692605550	1687595250	4985462650	9868065451	293038102
3		2464916748	3232978349	3242311449	2854665652	293038103
4		8963533348	7317216749	7371953349	2075403652	293038104
5		1130439050	2049990049	1148875750	3394432552	293038105

		HARMONIC		ANALYSIS		
COEF	BLADE	LOADING	55	PER CENT	RADIUS	
STEADY		COSINE	SINE	MAX	PHI	
		1388685552				293038200
1		4222961051	9870650050	4336784251	1315599052	293038201
2		1343205051	9137501350	1624542851	1711326152	293038202
3		3325066749	9521733349	1008560750	8358346252	293038203
4		2433327250	2295613350	3345297350	1063304552	293038204
5		1946020050	2677118850	3309676650	1079725752	293038205

		HARMONIC		ANALYSIS		
COEF	BLADE	LOADING	70	PER CENT	RADIUS	
STEADY		COSINE	SINE	MAX	PHI	
		2294230852				293038300
1		1078193251	2621590050	1109607151	1936660853	293038301
2		4785200751	6654330050	4831246951	3958407951	293038302
3		2748466851	6144256750	2818504151	4206423051	293038303
4		2230890751	3231628150	2254174651	4293974452	293038304
5		2048236750	2027616749	2058248350	3713069652	293038305

		HARMONIC		ANALYSIS		
COEF	BLADE	LOADING	85	PER CENT	RADIUS	
STEADY		COSINE	SINE	MAX	PHI	
		2564331652				293038400
1		1706791251	6710416749	1708109851	1777485353	293038401
2		4794756750	2775883349	4802789350	9165670152	293038402
3		4071402751	2286178350	4077816351	1071301251	293038403
4		2985967751	9681483349	2987536851	4642664750	293038404
5		1055925551	3843515050	1123701451	3199975252	293038405

		HARMONIC		ANALYSIS		
COEF	BLADE	LOADING	90	PER CENT	RADIUS	
STEADY		COSINE	SINE	MAX	PHI	
		2916740652				293038500
1		133929551	1064522251	1711320751	2184657953	293038501
2		2140642651	7508126750	2268495451	9966395252	293038502
3		2819971851	7035050049	2420849251	1195236453	293038503
4		3233367251	6462181750	3297308951	2825517151	293038504
5		6342708350	1215090851	1370673951	2351286552	293038505

		HARMONIC		ANALYSIS		
COEF	BLADE	LOADING	95	PER CENT	RADIUS	
STEADY		COSINE	SINE	MAX	PHI	
		2305181052				293038600
1		2154158350	2135248350	3033098050	2247474253	293038601
2		2812479051	1625431750	2817172151	9165382552	293038602
3		2233661750	7593078350	7914801550	8453589052	293038603
4		1359021551	1403315050	1366247551	8852614652	293038604
5		3767326750	6274745050	7318823350	3380392052	293038605

HARMONIC ANALYSIS

RED BLADE	BEAM	BENDING	15	PER CENT	RADIUS	
COEF STEADY		COSINE	SINE	MAX	PHI	
1		4825008354-				293038210
2		4226320354	1603298153-	4229360454	3578274753	293038211
3		1622133454	1756008853	1631610454	3089191951	293038212
4		1013831353	4055341053-	4180148953	9467873352	293038213
5		7096821853	5166666747-	7096821853	8999999452	293038214
		5386936353	4199154054-	4233566554	5546206652	293038215

RED BLADE	BEAM	BENDING	28	PER CENT	RADIUS	
COEF STEADY		COSINE	SINE	MAX	PHI	
1		7341666751-				293038220
2		4524016553	4571954253-	6431911853	3146980553	293038221
3		8832465252	1529813853-	1766498253	1499999653	293038222
4		2355330253-	2355332253	3330941353	4499999552	293038223
5		2355334753	5000000046-	2355334753	4500000452	293038224
		4014056353	2751946254-	2781067154	5565975652	293038225

RED BLADE	BEAM	BENDING	36	PER CENT	RADIUS	
COEF STEADY		COSINE	SINE	MAX	PHI	
1		5289750053-				293038230
2		3391721553-	5266669853-	6264305553	2372185453	293038231
3		4912513252-	2542610253-	2599451253	1295532953	293038232
4		4257498253-	3929999553-	5794064653	4576753652	293038233
5		4421248853-	2836221852	4430336753	4408238152	293038234
		5684213853	1831333754-	1917520854	5744873152	293038235

RED BLADE	BEAM	BENDING	45	PER CENT	RADIUS	
COEF STEADY		COSINE	SINE	MAX	PHI	
1		1179000044				293038240
2		1074020254-	5625976753-	1212450254	2076466353	293038241
3		5589000353-	2031895353-	5946823553	9998853352	293038242
4		5519998353-	4002001253	6818093253	4801929152	293038243
5		6002996553-	8365804752	6061009353	4301658352	293038244
		8840200353	6104022853-	7211534653	6043501652	293038245

HARMONIC ANALYSIS

RED BLADE	BEAM	BENDING	60	PER CENT	RADIUS	
COEF STEADY		COSINE	SINE	MAX	PHI	
1		1832886754-				293038250
2		1183727454-	2825014753-	1216970754	1934228153	293038251
3		1892739854-	2921277253-	1915150554	9438693752	293038252
4		5996801553-	1874000853-	6282794553	5421532652	293038253
5		3685531253-	3245850052	3699796653	4374173752	293038254
		5778327553-	1556821054	1660596854	2207260052	293038255

RED BLADE	BEAM	BENDING	65	PER CENT	RADIUS	
COEF STEADY		COSINE	SINE	MAX	PHI	
1		2340906754-				293038260
2		4404811253-	4379630253-	6211563753	2248357653	293038261
3		2417350254-	5275812853-	2474252254	9615581852	293038262
4		7128918753-	6480818352-	7158316353	6173147652	293038263
5		2397908353-	1908273753-	3064551053	5462826252	293038264
		1024187054-	2278519254	2498121054	2284075352	293038265

RED BLADE	BEAM	BENDING	80	PER CENT	RADIUS	
COEF STEADY		COSINE	SINE	MAX	PHI	
1		3893041754-				293038270
2		3974590052-	1254546752-	4167883552	1975178853	293038271
3		2314498554-	1781704553-	2321346254	4220098252	293038272
4		1658725554-	2443085053	1676620754	5720710952	293038273
5		2571706752	1781699353	1800163753	2044666152	293038274
		8860536753-	3149977754	3272224254	2114214252	293038275

RED BLADE	BEAM	BENDING	92.5	PER CENT	RADIUS	
COEF STEADY		COSINE	SINE	MAX	PHI	
1		2199166754-				293038280
2		1470061753	3855835052-	1519788153	3453029253	293038281
3		4670827753-	1508328553-	4908328253	9894829452	293038282
4		7758337053-	7916670052	7798623653	5805788852	293038283
5		3720833253-	1371225052-	3723359153	4552763852	293038284
		5111728853-	1305224554	1401752054	2227742152	293038285

HARMONIC ANALYSIS

WH.	BLADE	BEAM	BFND	15 0/0 R				
COFF				COSINF	SINF	MAX	PHI	
STEADY				4754375055-				293038410
1				3368199754-	5211016053	3408271754	1712053853	293038411
2				2030376254	3168191752	2030623454	4469843850	293038412
3				3658450052-	2926671753-	2949449153	8762492352	293038413
4				1591374854	5385961753-	1680047554	8532544352	293038414
5				1267165053-	4893230354	4904125554	1876398452	293038415

WH.	BLADE	BEAM	BFND	2 0/0 R				
COFF				COSINF	SINF	MAX	PHI	
STEADY				6274633353				293038420
1				1305540253-	2514865853	2833546453	1174351553	293038421
2				4161501053	2402643353-	4805287353	1650000053	293038422
3				3606630353	3051764753-	4724515853	1065878853	293038423
4				5548667752	1466666747	5548667752	3786215746	293038424
5				5630282853-	2606076754	2666202754	2043821452	293038425

		HARMONIC ANALYSIS				
RED BLADE	CHORD	BENDING	15	PER CENT	RADIUS	
COEF		COSINE	SINE	MAX	PHI	
STEADY		4648875055				293038110
1		2758286055	9026558353	2759762655	1874349551	293038111
2		2245881753-	1166971254-	1188386154	1295532053	293038112
3		4042503254	2694993054-	4858479154	1087700153	293038113
4		2021248554-	1166974754	2133939954	3749996852	293038114
5		1980349354-	1257235055	1272736355	1979029552	293038115

		HARMONIC ANALYSIS				
RED BLADE	CHORD	BENDING	28	PER CENT	RADIUS	
COEF		COSINE	SINE	MAX	PHI	
STEADY		4460412555				293038120
1		2368147555	8572111753	2369698455	2073061251	293038121
2		1472128353-	7649176753-	7789548553	1295531553	293038122
3		3238586554	2355326754-	4004498354	1079909153	293038123
4		2208123254-	2294755854	3184605554	3347445152	293038124
5		1305799354-	1003621455	1012080555	1948260852	293038125

		HARMONIC ANALYSIS				
RED BLADE	CHORD	BENDING	60	PER CENT	RADIUS	
COEF		COSINE	SINE	MAX	PHI	
STEADY		2130043855				293038130
1		9333467354	3421183353	9339735454	2099237651	293038131
2		2456264254	1329490053	2459859654	1549098651	293038132
3		1381651354	8443386753-	1619218454	1095235253	293038133
4		1151373554-	5717995053	1268755354	7880215252	293038134
5		1489462354	5261243854	5468014654	1483862852	293038135

		HARMONIC ANALYSIS				
RED BLADE	CHORD	BENDING	80	PER CENT	RADIUS	
COEF		COSINE	SINE	MAX	PHI	
STEADY		1395371755				293038140
1		2458080854	3717091853	2486026754	8599075651	293038141
2		1215069354	3394458353	1761593054	7804207851	293038142
3		7839176753	3135650053-	8443044053	1127329153	293038143
4		6663280053-	2036690053	6967596953	4075094352	293038144
5		2856308353	2136826854	2155832554	1647727552	293038145

		HARMONIC ANALYSIS				
WH. BLADE	CHORD BEND	15 0/0 R				
COEF		COSINE	SINE	MAX	PHI	
STEADY		4683396755				293038430
1		2994724055-	1327960754-	2997666955	1825390353	293038431
2		2369040754-	3156355053-	2389974854	9379451552	293038432
3		5102527054-	2551270254	5704801754	5114496352	293038433
4		4191359854-	9469160053	4296992854	4181735352	293038434
5		2747780754	1142836455-	1164731855	5627543152	293038435

		HARMONIC ANALYSIS				
WH. BLADE	CHORD BEND	28 0/0 R				
COEF		COSINE	SINE	MAX	PHI	
STEADY		4523057555				293038440
1		2351448255-	1330640554-	2355210155	1832388153	293038441
2		1319732254-	2078040053	1335992454	8552586352	293038442
3		5038944054-	2399503554	5581090854	5151220152	293038443
4		2759419354-	6234120053	2828964054	4181734552	293038444
5		2405618353-	9227152554-	9230287854	5370131552	293038445

		HARMONIC ANALYSIS				
RED BLADE	TORSION	15 0/0 R				
COEF		COSINE	SINE	MAX	PHI	
STEADY		4633350054-				293038350
1		6039857853-	5662989053-	8279452053	2231555453	293038351
2		7722242353-	4458444053	8916880053	7499998752	293038352
3		1029629553	1029678853	1456115553	14999999452	293038353
4		4633353053-	8916850052	4718374953	4227666552	293038354
5		4256486253-	5662986753-	7084284953	4661405752	293038355

		HARMONIC ANALYSIS				
RED BLADE	TORSION	50 0/0 R				
COEF		COSINE	SINE	MAX	PHI	
STEADY		1413820054-				293038360
1		3464240052-	2316377553-	2342138853	2614942253	293038361
2		2536015752	2196240052-	3354824352	1595534053	293038362
3		253988352	639986752	6828372352	2273288052	293038363
4		5072011252-	2196226752	5527088752	1914673952	293038364
5		9282016751	2755625253-	2757188053	5438584452	293038365

		HARMONIC ANALYSIS				
REG BLADE	PITCH	POSITION	SINE	MAX	PHI	
COEF		COSINE				
STEADY		1566320452				293038510
1		1853764051	2056888251-	2768976451	3120266653	293038511
2		5823303349	1666666744-	5823303349	1799999253	293038512
3		1358798350-	1164680050-	1789640350	7353373152	293038513
4		1941060049-	1666666745	1941060049	4499877152	293038514
5		2906500049-	3956938349-	4909694849	4674030252	293038515
REG BLADE	FLAP	POSITION	SINE	MAX	PHI	
COEF		COSINE				
STEADY		4256000050-				293038520
1		3237807750	1899626351-	1927022151	2796728053	293038521
2		6206674549	4607263349-	7729791949	1617066153	293038522
3		1418665750-	2127998150-	2557535850	7876997552	293038523
4		2660027549-	1075025250-	1107446050	6402549052	293038524
5		7551460049-	2504261350	2615639550	2135608052	293038525
VERTICAL	ACCEL	POSITION	SINE	MAX	PHI	
COEF		COSINE				
STEADY		1035525051				293038530
1		1011265349	1349950048-	1040063449	3525422653	293038531
2		2537363348	4834590049	4841243849	4349783652	293038532
3		6089900048-	1066666744	6089900048	5999966552	293038533
4		1471757049	1494336849	2097405849	1135904252	293038534
5		7267463348-	7440111748	1040054349	2686549252	293038535
FOR- AFT	ACCEL	POSITION	SINE	MAX	PHI	
COEF		COSINE				
STEADY		1432166749-				293038540
1		1843315549-	2498523348	1860171649	1722808953	293038541
2		4296497349-	6487685549	7781385049	6175734552	293038542
3		1652500749-	5508335048	1741888749	5385501952	293038543
4		5177832249-	3333333342	5177832249	4500000052	293038544
5		1461683749-	6314807748	1592258549	3132691152	293038545
LATERAL	ACCEL	POSITION	SINE	MAX	PHI	
COEF		COSINE				
STEADY		3380000048				293038550
1		1051194849	5633368347	1052703249	3067554951	293038551
2		6928999849	4000459749	8000919749	1500000052	293038552
3		2253331748	4506654748	5038595148	2114496852	293038553
4		1182998349	1853871849-	2199164849	7563572452	293038554
5		7547113347	5633415047	9417764347	7347775851	293038555
LIFT LINK	LOAD	POSITION	SINE	MAX	PHI	
COEF		COSINE				
STEADY		4958362554				293038610
1		3398193352	4435221752-	5587388552	3074587453	293038611
2		3069455253	1717627253-	3517356753	1653846053	293038612
3		1888850052-	1888848352-	2671236152	7499999352	293038613
4		7083408352	2453798352	7496385752	4776712451	293038614
5		1509216752-	5379748352	5487434752	2113415252	293038615
RIGHT	CYCLIC	LOAD	SINE	MAX	PHI	
COEF		COSINE				
STEADY		1733333352				293038620
1		1940666052	1120444452	2240888352	3000000952	293038621
2		1559998452-	1050777553	1062294453	4922226652	293038622
3		8333333345	1083333346-	1366768246	1025228653	293038623
4		2946666752	9006661551	3081240752	4249021051	293038624
5		1393339551	8044336750-	1608884251	6600006952	293038625
LEFT	CYCLIC	LOAD	SINE	MAX	PHI	
COEF		COSINE				
STEADY		1090400053-				293038630
1		1352876952-	5639986251	1465732052	1573693253	293038631
2		9211998252-	1628127852-	9354769452	9501147852	293038632
3		1503999852-	1166666746-	1503999852	6000001552	293038633
4		2443998752	4233133552-	4888000552	7499999852	293038634
5		6008745351	5640004351	8241035751	8637381851	293038635
COLLECTIVE	LOAD	POSITION	SINE	MAX	PHI	
COEF		COSINE				
STEADY		6944000052-				293038640
1		1068731852	6170313751	1234064652	29999995252	293038641
2		1653323851-	2863660351-	3306664551	1200000953	293038642
3		9920003351-	3306675051-	1045660452	6614499952	293038643
4		2479999252	2863664251	2496477752	1646689851	293038644
5		7673331750-	4430031750	8860316050	3000019052	293038645
STABILIZER	BAR	POSITION	SINE	MAX	PHI	
COEF		COSINE				
STEADY		3705166750-				293038650
1		4996011850	1963318251	2025887451	7572308352	293038651
2		2585006349	7462252049	7897307349	3544667652	293038652
3		3446691749-	5169981749	6213565449	4123011952	293038653
4		8616820048	1492432549	1723325549	1499981552	293038654
5		5186587049	5298179549	7414269449	9121958051	293038655

HARMONIC ANALYSIS

R F	PYLON	POSITION	COSINF	SINF	MAX	PHI	
COEFF			2581250049				293038310
STEADY			4407353348-	9174598747-	4501832548	1917590953	293038311
1			4154583049-	1234808049	4334202549	8172361252	293038312
2			4916595047-	9873300047-	1099393948	8114506852	293038313
3			7375047247	2128976548-	2253098848	7227668452	293038314
4			1000973548-	6586836746-	1003138348	3675297752	293038315
5							

R A	PYLON	POSITION	COSINF	SINE	MAX	PHI	
COEFF			1350000050				293038320
STEADY			1062916849-	2616040048	1094636449	1661732453	293038321
1			1925001249-	1948557749	2739070449	6732579052	293038322
2			3499981748-	5000116747	3535517548	5728989052	293038323
3			1125001349	7361228348	1344436749	8299488551	293038324
4			6291920047	8839801747	1085036248	1091156352	293038325
5							

L F	PYLON	POSITION	COSINF	SINF	MAX	PHI	
COEFF			2050000049-				293038330
STEADY			7714105548	5669840047	7734914048	4203660651	293038331
1			3974999749	2294967549-	4589936549	1650000053	293038332
2			4999933347	4999981747	7071007747	1500009252	293038333
3			1749993848	4763141848-	5074445648	7254337352	293038334
4			7858886747	1433009848	1634361748	1225176652	293038335
5							

L A	PYLON	POSITION	COSINF	SINF	MAX	PHI	
COEFF			1095458350				293038340
STEADY			2845690048	2795847848	3989325448	4449381452	293038341
1			5159581549	1276666049	5315181749	6948946851	293038342
2			7666666742	5083266747-	5083266747	9000029152	293038343
3			6354168348	2201160048	6724623448	4776674751	293038344
4			2043250047	2795841248	2803297548	1716403052	293038345
5							

RED	PITCH LINK	POSITION	COSINF	SINF	MAX	PHI	
COEFF			1833458353-				293038370
STEADY			1223376753-	8848028252-	1509810153	2158762053	293038371
1			1624581052-	1205941252	2023254252	7170658552	293038372
2			1856665552	4641650051	1913806752	4678734651	293038373
3			5337917752-	4019791751	5353032052	4392334952	293038374
4			6295958351	3220306752-	3281275152	5621245052	293038375
5							

WHITE	PITCH LINK	POSITION	COSINF	SINE	MAX	PHI	
COEFF			1798200053-				293038380
STEADY			1044432653	1047921653	1479519953	4509553752	293038381
1			4859969051-	8417761751	9719980051	5999993552	293038382
2			4859966751	3401997852	3436536352	2728998752	293038383
3			3888001352-	1683555752-	4236851952	5085331252	293038384
4			2182327052-	4586782852	5079481052	2308889252	293038385
5							

IBM TAB NO. 14e
MANEUVER CONDITION NO. 38 - APPROACH AND FLARE
REVOLUTION 5

TIME		PER CENT CHORD	40	DELTA PER CENT	PRESSURE RADIUS	PER CENT CHORD
			(120)K	DELTA PER CENT	60*(120)K	90*(120)K
4	0		2351030051	2526480051	2456300051	2105400051
	1		1965040051	1894860051	1824680051	1543960051
	2		1438690051	1579050051	1789590051	2105400051
17	0		1308960051	1236240051	1108980051	1054440051
	1		1036260051	9453600050	9090000050	8362800050
	2		6908400050	7454800050	9817200050	1191700051
34	0		5880000050	5880000050	5400000050	5040000050
	1		4440000050	4320000050	4200000050	3840000050
	2		4200000050	3860000050	4560000050	5160000050
51	0		2677900050	2721800050	2414500050	2063300050
	1		1841800050	1275500050	1931600050	1668200050
	2		1756000050	1799900050	1975500050	2326700050
68	0		1019700050	1019700050	7579000049	7416000049
	1		8034000049	8961000049	3343000049	6489000049
	2		6489000049	7725000049	8961000049	9888000049

TIME		PER CENT CHORD	55	DELTA PER CENT	PRESSURE RADIUS	PER CENT CHORD
			(120)K	DELTA PER CENT	60*(120)K	90*(120)K
2	0		4746740051	4878400051	4285440051	3732480051
	1		3087360051	2995200051	2903040051	2718720051
	2		2784800051	3041280051	3594240051	4239360051
9	0		2727000051	2817900051	2545200051	2136150051
	1		1818000051	1772500051	1681650051	1590750051
	2		1545300051	1727100051	2090700051	2408850051
17	0		2105400051	2210670051	2000130051	1719410051
	1		1508870051	1438690051	1403600051	1333420051
	2		1368510051	1438690051	1649230051	1929950051
23	0		1635760051	1671320051	1457960051	1280160051
	1		1137920051	1102560051	1031240051	9956800050
	2		9956800050	1066800051	1280160051	1457960051
34	0		1531200051	1557600051	1465200051	1346400051
	1		1188000051	1161600051	1122000051	1082400051
	2		1108800051	1174800051	1293600051	1399200051
51	0		4843300050	4884000050	4354900050	3744400050
	1		3256000050	3337400050	3256000050	3174600050
	2		3256000050	3378100050	3947900050	4354900050
68	0		1708800050	1788900050	1575300050	1468500050
	1		1361700050	1335000050	1254900050	1201500050
	2		1201500050	1388400050	1548600050	1655400050

TIME		PER CENT CHORD	75	DELTA PER CENT	PRESSURE RADIUS	PER CENT CHORD
			(120)K	DELTA PER CENT	60*(120)K	90*(120)K
2	0		7028330051	7028330051	6179270051	4622660051
	1		4905680051	6698140051	7783050051	7311350051
	2		3726430051	4952850051	5896250051	6603800051
9	0		4194630051	4152260051	4109890051	3135380051
	1		3347230051	4152260051	4703070051	4575960051
	2		3270120051	3262490051	3601450051	3940410051
17	0		2670540051	2670540051	2244390051	1619370051
	1		1704600051	2556900051	2869410051	2755730051
	2		2272800051	1761420051	2102340051	2471670051
23	0		2668730051	2694640051	2357810051	1917340051
	1		1995070051	2565090051	2824190051	2668730051
	2		2176440051	1943250051	2176440051	2513270051
34	0		1704600051	1619370051	1392090051	1051170051
	1		1221610051	1562550051	1789830051	1676190051
	2		1420500051	1136400051	1363680051	1534140051
51	0		7820200050	7371500050	6538200050	5128000050
	1		6474100050	7499700050	7692000050	7692000050
	2		7884300050	6025400050	6410000050	7115100050
68	0		3763000050	3585400050	3337000050	3124000050
	1		4011500050	4047000050	3763000050	3727500050
	2		4260000050	3408000050	3408000050	3656500050

TIME	COND. OF		DELTA			PRESSURE			
	PER	CFNT	PER CENT			RADIUS			
	CHORD	K	D	F	G	R	E	F	S
			(120)K	30+(170)K	60+(120)K	90+(120)K			
		391							
	2	0	8216010051	7967040051	6971160051	6390230051			
		1	7718070051	8133020051	8713950051	8879930051			
		2	8962920051	7967040051	7054150051	8299000051			
	4	0	7177870051	7288980051	6577860051	5955630051			
		1	7466760051	7733430051	8177880051	7911210051			
		2	8088990051	7200090051	6311199051	7377870051			
	9	0	5479200051	5479200051	4931280051	4725810051			
		1	5616180051	5684670051	5890140051	5616180051			
		2	5684670051	5136750051	4588830051	5342220051			
	13	0	3750300051	3657700051	3472500051	3194700051			
		1	4028100051	4074400051	4305900051	4213300051			
		2	4213300051	3889200051	3336000051	3750300051			
	17	0	3235320051	3235320051	2941200051	2941200051			
		1	3627480051	3921600051	3921600051	3725520051			
		2	3725520051	3431400051	2745120051	3235320051			
	23	0	2916690051	2894760051	2719320051	2675460051			
		1	3026340051	3026340051	3092130051	3026340051			
		2	3157920051	2938620051	2587740051	2872830051			
	34	0	1835000051	1724900051	1633150051	1669850051			
		1	1963450051	2055200051	2165300051	2110250051			
		2	2128600051	1981800051	1669850051	1816650051			
	47.7	0							
		1							
		2							
	63	0	7140000050	6759200050	5997600050	5807200050			
		1	7520800050	7616000050	7901600050	7901600050			
		2	8853600050	8282400050	6949600050	7330400050			
	77	0	2180400050	1990800050	1516800050	1516800050			
		1	2464800050	2844000050	3033600050	2938800050			
		2	3192000050	3318000050	2464800050	2749200050			
	90	0	9430000048-	2829000049-	8487000049-	1225900050-			
		1	5658000049-	2829000049-	9430000048-	9430000048-			
		2	5658000049	1886000049	9430000048	9430000048			

CONT. 18		90			DELTA	PER	CFNT	PRESSURE
PER CFNT		D F G			R F F S	RADIUS		
CHORD		30*(120)K			60*(120)K			90*(120)K
TIME	K	191						
2	0	8042320051	7724860051	7226500051	9100520051			
	1	9523800051	9841260051	1015872052	1015872052			
	2	1026454052	1068782052	8888880051	8465600051			
9	0	4977180051	4885010051	5253690051	5898880051			
	1	5898880051	5530200051	6359730051	5806710051			
	2	5530200051	6175390051	4792840051	4977180051			
17	0	4378580051	4615260051	4851940051	5561980051			
	1	5325300051	5443640051	5325300051	5325300051			
	2	5443640051	5561980051	5088620051	4733600051			
23	0	2941200051	3088260051	3137280051	3431400051			
	1	3431400051	3382380051	3333360051	3333360051			
	2	3480420051	3529440051	3284340051	3137280051			
34	0	1592720051	1666800051	1666800051	1926080051			
	1	1926080051	1889040051	1889040051	1963120051			
	2	2037200051	1963120051	1777920051	1777920051			
53	0	5925600050	5925600050	5925600050	6748600050			
	1	6748600050	6913700050	6584000050	7077800050			
	2	8065400050	8065400050	6913200050	6419400050			
90	0	1770000050-	2389500050-	1858500050-	1416000050-			
	1	1770000050-	7965000049-	7080000049-	7965000049-			
	2		4425000049-	1239000050-	1150500050-			

CONT. 18		95			DELTA	PER	CFNT	PRESSURE
PER CFNT		D F G			R F F S	RADIUS		
CHORD		30*(120)K			60*(120)K			90*(120)K
TIME	K	191						
2	0	6922800051	6442050051	7499700051	8749650051			
	1	8172750051	7884300051	8076600051	8076600051			
	2	8557350051	9903450051	8365050051	7403550051			
9	0	5358640051	5454330051	5932780051	7750890051			
	1	7368130051	6219850051	6124160051	6315540051			
	2	6793990051	8420720051	6124160051	5741400051			
17	0	3789360051	3894620051	4105140051	6947160051			
	1	5473520051	4105140051	4105140051	4105140051			
	2	4315660051	4526180051	4315660051	3999880051			
23	0	2319750051	2371300051	2732150051	3402300051			
	1	2732150051	2886800051	2886800051	2886800051			
	2	3041450051	3247650051	2886800051	2577500051			
34	0							
	1							
	2							
53	0	5312400050	5032800050	5312400050	4753200050			
	1	5452200050	6430800050	6850200050	6850200050			
	2	7129800050	7409400050	7269600050	6291000050			
90	0	4350000048-	3915000049-	3915000049-	7395000049-			
	1	8265000049-	1305000049	2610000049	3045000049			
	2	1305000049	8700000048-	1740000049-				

		HARMONIC ANALYSIS				
COEFF	BLADE	LOADING	40	PER CENT	RADIUS	
STEADY		COSINE	SINE	MAX	PHI	
		7413789151				391038100
1		1312967851	9727610050	1634058951	3653427552	391038101
2		5474038750	2273461749	5428257750	1189112451	391038102
3		9242265049	8115848349	1229988950	4623756852	391038103
4		718156749	1869500047	2718721049	8990148552	391038104
5		1651915069	2588666747	1652117849	3617955952	391038105

		HARMONIC ANALYSIS				
COEFF	BLADE	LOADING	55	PER CENT	RADIUS	
STEADY		COSINE	SINE	MAX	PHI	
		1417508152				391038200
1		1110469851	1122282251	106751651	1983984752	391038201
2		7330923550	5475608550	8115053950	1268287152	391038202
3		1311978350	1670056750	2046675250	430058852	391038203
4		1662883349	149333346	1668450049	1168321251	391038204
5		856533348	1541126550	1543856950	1726413352	391038205

		HARMONIC ANALYSIS				
COEFF	BLADE	LOADING	75	PER CENT	RADIUS	
STEADY		COSINE	SINE	MAX	PHI	
		2233384852				391038300
1		2778026750	2613206750	3814595950	2232427451	391038301
2		4117795251	7280073550	4150648251	5346009651	391038302
3		8199860050	1789480050	8076076851	5618791052	391038303
4		6618133350	4954766749	5644678750	4346405152	391038304
5		311596750	267114750	337611251	6431604952	391038305

		HARMONIC ANALYSIS				
COEFF	BLADE	LOADING	85	PER CENT	RADIUS	
STEADY		COSINE	SINE	MAX	PHI	
		2481349752				391038400
1		1980362251	1165374051	2277810051	2166754051	391038401
2		1652995851	3183390050	147459751	6178879551	391038402
3		1136400051	567561750	172725751	8835656151	391038403
4		1811431750	369813350	4120223950	6090219452	391038404
5		6499265050	1204485050	8103439750	4376269052	391038405

		HARMONIC ANALYSIS				
COEFF	BLADE	LOADING	90	PER CENT	RADIUS	
STEADY		COSINE	SINE	MAX	PHI	
		4911174352				391038500
1		299932851	1034896751	3192666451	290042552	391038501
2		1352743851	1137675050	1352519651	9240367252	391038502
3		3186443350	160563346	3189562150	8419689650	391038503
4		7669836750	196505050	3917701650	8649666252	391038504
5		3722941750	157841750	4035723050	6054129952	391038505

		HARMONIC ANALYSIS				
COEFF	BLADE	LOADING	95	PER CENT	RADIUS	
STEADY		COSINE	SINE	MAX	PHI	
		2365633052				391038600
1		1727212751	437566750	1781826351	1942273551	391038601
2		2862966051	632773350	2931949251	2622668152	391038602
3		2854628350	4127271750	501741750	1015533951	391038603
4		1302106051	200544750	1317440851	2183040951	391038604
5		222506750	210250046	2227039650	3563448252	391038605

		HARMONIC		ANALYSIS		
RED	BLADE	BFAM	BENDING	15	PER CENT	RADIUS
	COFF		COSINE	SINE	MAX	PHI
	STEADY		6700600054-			
	1		3561024354	1162269654-	3745899854	3419240353
	2		1419367754	4333333347-	1419367754	1800000053
	3		1013839053-	5049161553	5169552053	3377000352
	4		6082992353	3512028353-	7024040053	8249998252
	5		1102606854	4598645553-	1194667054	6747208952
						391038210
						391038211
						391038212
						391038213
						391038214
						391038215

		HARMONIC		ANALYSIS		
RED	BLADE	BFAM	BENDING	28	PER CENT	RADIUS
	COFF		COSINE	SINE	MAX	PHI
	STEADY		4342458313-			
	1		4358499253	5730556853-	7199708053	3072555953
	2		1177665153-	5099455752-	1283331453	1017066553
	3		4710665753-	3827417753-	6069554953	4696871052
	4		1177664853-	5099455752-	1283331453	5085332552
	5		7418162853	3690776553-	8285588153	6670963152
						391038220
						391038221
						391038222
						391038223
						391038224
						391038225

		HARMONIC		ANALYSIS		
RED	BLADE	BFAM	BENDING	36	PER CENT	RADIUS
	COFF		COSINE	SINE	MAX	PHI
	STEADY		8405000053-			
	1		2944350053-	4005997753-	4971641153	2336846653
	2		3766247853-	8508705052-	3861166053	9636527452
	3		5567499853-	2947500553	6299588353	5070091052
	4		2783747553-	2836220052	2798158653	4354562552
	5		5564346853	2871503353-	6261588153	6644076452
						391038230
						391038231
						391038232
						391038233
						391038234
						391038235

		HARMONIC		ANALYSIS		
RED	BLADE	BFAM	BENDING	45	PER CENT	RADIUS
	COFF		COSINE	SINE	MAX	PHI
	STEADY		4770000052-			
	1		7811506753-	5077603553-	9316742753	2130245153
	2		3380999053-	1075603553-	3547968053	9882376752
	3		4829998753-	4416000853	6544459553	4585458652
	4		2276997253-	5975574252	2354100953	4132383452
	5		2705504853	2926397053-	3985417953	6255078352
						391038240
						391038241
						391038242
						391038243
						391038244
						391038245

		HARMONIC		ANALYSIS		
RED	BLADE	BFAM	BENDING	60	PER CENT	RADIUS
	COFF		COSINE	SINE	MAX	PHI
	STEADY		1595513354-			
	1		1471852954-	5740046553-	1581683854	2012788553
	2		8058196553-	1406540353-	8180029853	9495055552
	3		4997333553-	4122799253	6478488653	4682579452
	4		1186865853-	7573670052	1407925853	3686427452
	5		5000939553-	1617242053	5255936553	3241588752
						391038250
						391038251
						391038252
						391038253
						391038254
						391038255

		HARMONIC		ANALYSIS		
RED	BLADE	BFAM	BENDING	65	PER CENT	RADIUS
	COFF		COSINE	SINE	MAX	PHI
	STEADY		2185366754-			
	1		1374152754-	5380006753-	1475716954	2013810653
	2		1261762054-	1122510052-	1263811854	9025445652
	3		5571517253-	3499648853	6581157653	4929167252
	4		1231357853-	2357276053	2659509753	2939524652
	5		7904458053-	3824600853	8781117653	3083596352
						391038260
						391038261
						391038262
						391038263
						391038264
						391038265

		HARMONIC		ANALYSIS		
RED	BLADE	BFAM	BENDING	80	PER CENT	RADIUS
	COFF		COSINE	SINE	MAX	PHI
	STEADY		3269412554-			
	1		6922894253-	4146776752	6935302653	1765721153
	2		1909461854-	4565614353-	1963286254	9672361352
	3		1092958554-	1800165353	1107684254	5688234552
	4		4050375253	1002204553	4172523653	3474460151
	5		9150024853-	9100479753	1290510354	2703110952
						391038270
						391038271
						391038272
						391038273
						391038274
						391038275

		HARMONIC		ANALYSIS		
RED	BLADE	BFAM	BENDING	92.5	PER CENT	RADIUS
	COFF		COSINE	SINE	MAX	PHI
	STEADY		2151666754-			
	1		8087185052-	5924281752	1002495353	1437753053
	2		7204162853-	2331052353-	7571906453	9896501852
	3		4591668353-	4749388352	4616171853	5803129252
	4		1029166053	6956015052	1236621253	8417610151
	5		4099617053-	4157566853	5838854553	2691958152
						391038280
						391038281
						391038282
						391038283
						391038284
						391038285

HARMONIC ANALYSIS

WH. BLADE	BEAM	REFD	15 0/0 R	COSINE	SINE	MAX	PHI	
COEF			6931083354-					391038410
STEADY			2690797754-	7437431553	2791692454	1645490753		391038411
1			1371875754	1584105553	1380991254	329387851		391038412
2			8048323353	3658365353-	8840757853	1118519953		391038413
3			6402073053	2851395053-	7008351653	8399811752		391038414
4			1296786354-	4269222253	1365253654	3235553152		391038415
5								

WH. BLADE	BEAM	REFD	2 0/0 R	COSINE	SINE	MAX	PHI	
COEF			2520283353					391038420
STEADY			27201253-	9466143853	5077398453	1184043453		391038421
1			2774314852	1441585253-	1468038253	1404466753		391038422
2			4993769053	4161500853-	6500470553	1067314753		391038423
3			548644752	103333347	5448644752	2667572146		391038424
4			6740025353-	3024556353	7387549153	3116641252		391038425
5								

		HARMONIC		ANALYSIS		
REF	BLADE	CHORD	BENDING	15	PER CENT	RADIUS
COFF		COSINE		SINE	MAX	PHI
STEADY		4985750055	1183099054	2040259755	3324315851	391038110
1		2036826555	7779821753	1555954754	1500010352	391038111
2		1347493554	2249827754	5427303254	1118520453	391038112
3		4940837854	1555964754	1555964754	2249999452	391038113
4		6666666747	1961076054	4231016154	3047736352	391038114
5		3749090354				391038115

REF	BLADE	CHORD	BENDING	28	PER CENT	RADIUS
COFF		COSINE		SINE	MAX	PHI
STEADY		4651783355	1619296554	1898225455	4893610351	391038120
1		1891306055	2549716753	2222790854	3293388951	391038121
2		2208110754	1177601554	5478777954	1158237553	391038122
3		5299504054	1274866854	1639246054	3223703552	391038123
4		1030457354	1619294854	3421934554	3035142352	391038124
5		3014551554				391038125

REF	BLADE	CHORD	BENDING	60	PER CENT	RADIUS
COFF		COSINE		SINE	MAX	PHI
STEADY		2183774655	1132827254	8011743654	8128675651	391038130
1		7931250754	3988478353	1364482654	8498062551	391038131
2		1304888254	1304889354	1513909954	1001552253	391038132
3		7675853353	2659008353	8123339353	4022330952	391038133
4		7675826753	5955146753	6217359853	5066012752	391038134
5		1786558353				391038135

REF	BLADE	CHORD	BENDING	80	PER CENT	RADIUS
COFF		COSINE		SINE	MAX	PHI
STEADY		1446326355	2323625053	2341548754	5695093651	391038140
1		2329991054	3394456753	7478069953	1349778252	391038141
2		6663272053	5487401753	5487401753	9000004552	391038142
3		1333333348	6789050052	3592352953	4227659552	391038143
4		3527617853	3107515853	3115126153	5480116252	391038144
5		2176150052				391038145

WH.	BLADE	CHORD	BEND	15 0/0 R		
COFF		COSINE		SINE	MAX	PHI
STEADY		4920300055	1506689254	2134137455	1840484253	391038430
1		2128812255	9469115053	2551272054	1008933753	391038431
2		2369039354	2915738354	7179157354	5201248652	391038432
3		6560394054	3156333353	1670188054	4772332852	391038433
4		1640092554	2137969854	3444226854	6432596152	391038434
5		2700330254				391038435

WH.	BLADE	CHORD	BEND	28 0/0 R		
COFF		COSINE		SINE	MAX	PHI
STEADY		4631035055	1823152754	1697559155	1861653753	391038440
1		1687740555	6234076753	1459563854	1026424453	391038441
2		1319730854	2639454854	4858615254	4903155952	391038442
3		4079144554	6234123353	1459554854	3867867152	391038443
4		1317718754	5763408353	2313405354	6911478252	391038444
5		2240463254				391038445

		HARMONIC		ANALYSIS		
REF	BLADE	TORSION	15 0/0 R	PER CENT	RADIUS	
COFF		COSINE		SINE	MAX	PHI
STEADY		4942240054	6793606753	8070971453	2373236253	391038350
1		4357463553	2675066353	3088897253	5999995252	391038351
2		1544443753	2059271853	2912243353	1049999553	391038352
3		2059262253	8916850052	1783379553	3750004552	391038353
4		1544454753	1443469553	1645853653	4825732452	391038354
5		7907148352				391038355

REF	BLADE	TORSION	50 0/0 R	PER CENT	RADIUS	
COFF		COSINE		SINE	MAX	PHI
STEADY		1426500054	2053673553	2198830653	2490646953	391038360
1		7856725052	4392481752	8784977952	1499997352	391038361
2		7608018352	2535985052	1417665553	3434932351	391038362
3		1394798753	4392470052	8784967852	3750002852	391038363
4		7608013352	7359281752	9081234652	6117331852	391038364
5		5320695052				391038365

HARMONIC ANALYSIS

RED BLADE COFF	PITCH	POSITION COSINE	SINE	MAX	PHI	
STEADY		1559526452				391038510
1		1284603851	2553602751-	2858512551	2767049453	391038511
2		3882521749-	1344880050-	1399800750	1269485853	391038512
3		1358798350-	1941366749	1372596750	5728965552	391038513
4		3882220049-	1533333345	3882220049	4499932552	391038514
5		7421500049	6891160049	1012752450	8575587751	391038515

RED BLADE COFF	FLAP	POSITION COSINE	SINE	MAX	PHI	
STEADY		4167333350-				391038520
1		1954092251	1250325051-	2319874251	3273869753	391038521
2		6206677249	1075025050	1241332850	2999996452	391038522
3		281334250	1241332250-	1096993950	1112135553	391038523
4		9753296749	4607245049-	1078672850	-8367874552	391038524
5		4976685049	8991616748	5077260749	2648284151	391038525

VERTICAL COFF	ACCEL	COSINE	SINE	MAX	PHI	
STEADY		9934025050				391038530
1		8591056748	1062075249-	1366055949	3899686553	391038531
2		5075116748	2637069749	2685441749	5044681752	391038532
3		4057891748-	7105100048	8183224748	3991462852	391038533
4		1116507349	1240631349	1661638349	1194592052	391038534
5		1559110048	3568901748-	3912932348	5869627252	391038535

FORE - AFT COFF	ACCEL	COSINE	SINE	MAX	PHI	
STEADY		1817750049				391038540
1		3816279548	7927762348	8798488748	6429468952	391038541
2		8813349048	5296871249	6358249649	4101620752	391038542
3		3105007048-	4407625348	5408334648	4228997352	391038543
4		8116664742	5729428748	5724428748	2249998052	391038544
5		3816273348	3521099148-	5192502548	6453926152	391038545

LATERAL COFF	ACCEL	COSINE	SINE	MAX	PHI	
STEADY		1380000048				391038550
1		1036099749	7282885748-	1266454449	3248961053	391038551
2		4394000249	2927165749	5279728949	1683524852	391038552
3		2253335548-	5000000042-	2253335548	6000004352	391038553
4		101499149	9757219848-	1407205649	1902552552	391038554
5		1347670548-	5228880547	1445554648	3175880752	391038555

LEFT LINK COFF	LOAD	COSINE	SINE	MAX	PHI	
STEADY		4854471054				391038610
1		6456708352	9010935052-	1109817253	3055378553	391038611
2		1983338053	2617336753-	3283912553	153568753	391038612
3		9445000051	4722303352	4815831052	422986952	391038613
4		1888935052	4907553352	5258431552	1723702652	391038614
5		1728380052-	2419867052	2977724652	2510723952	391038615

RIGHT COFF	CYCLIC	LOAD COSINE	SINE	MAX	PHI	
STEADY		5200000051				391038620
1		7935550051	2507111252	2696805252	6838183752	391038621
2		2946665252-	9306886552	9762221752	5378419052	391038622
3		1466666751-	1386667552-	1429344152	8532125452	391038623
4		520000751-	300722851-	6094444151	5250000352	391038624
5		393112751	1306223852	1364096152	1465012952	391038625

LEFT COFF	CYCLIC	LOAD COSINE	SINE	MAX	PHI	
STEADY		8648000052-				391038630
1		2430502252-	1503998752	2858208052	1482507253	391038631
2		6015998552-	1953753752-	6325297852	9899585552	391038632
3		1128000252-	3760010051-	1189016952	6614499952	391038633
4		1007999052	3246256752-	4432974852	7818263052	391038634
5		1745012751	1503998652	1514089052	1667637252	391038635

COLLECTIVE COFF	LOAD	COSINE	SINE	MAX	PHI	
STEADY		6778666752-				391038640
1		1113032452-	8709683751-	1413403652	2180438453	391038641
2		9919992251-	2000000045-	9919992251	9000001152	391038642
3		1322666852-	3306675051-	1363373952	6467876052	391038643
4		1322665852	5727322351-	1441342152	8414668552	391038644
5		5403030351-	1443699752-	1541491552	4989633952	391038645

STABILIZER COFF	BAR	COSINE	SINE	MAX	PHI	
STEADY		3963666750-				391038650
1		2871113350-	2627707351	2643346151	9623557952	391038651
2		6893335049	5000000043	6893335049	2077941246	391038652
3		1723300049	5170030049-	5449676449	9614484052	391038653
4		1446689549	2333333344-	3446689649	8999990252	391038654
5		1137865049	6069266849	6175009049	1587629352	391038655

		HARMONIC		ANALYST			
COEFF	R F	PYLON	POSITION	SINE	MAX	PHI	
STEADY			COSINE				
			2777916749				391038310
1			9012314848-	2080762248	9249399448	1669993752	391038311
2			3712083249-	3832164348	3731811549	8705297952	391038312
3			4516725047	1966662748-	2027191248	9467881352	391038313
4			4179161348-	2128982348	4690197848	3825110852	391038314
5			4754342848-	375766047	4769312248	3509185252	391038315
COEFF	R A	PYLON	POSITION	SINE	MAX	PHI	
STEADY			COSINE				
			1482500050				391038320
1			2732051748-	1669616749	1691821849	9929315152	391038321
2			1450001049-	3290896749	3596179149	5688938152	391038322
3			3999985048-	8499988348-	9394130148	8159964152	391038323
4			5500014748	3464113348	6500018748	8051061551	391038324
5			7320853347	6303855048	6346227348	1667515052	391038325
COEFF	L F	PYLON	POSITION	SINE	MAX	PHI	
STEADY			COSINE				
			2975000049-				391038330
1			7763141748	9580130048-	1233066349	3090191653	391038331
2			3024999849	2121762349-	1694928849	1624769253	391038332
3			1499995048	2166666742-	1499995048	1199997753	391038333
4			2749991848	3897116248-	4769692748	7630216052	391038334
5			1763152348-	9198764047-	1988687748	4151041452	391038335
COEFF	L A	PYLON	POSITION	SINE	MAX	PHI	
STEADY			COSINE				
			1125958350				391038340
1			8419111748	4624869348	9605772148	2878130652	391038341
2			4727498249	8804586748	4808788449	5275004551	391038342
3			1525007748	2033341748	2541678048	1771002452	391038343
4			7116670048	5804483347-	7170926148	8823685352	391038344
5			2255908348	1983482848	3003885248	8264640151	391038345
COEFF	RED	PITCH LINK	POSITION	SINE	MAX	PHI	
STEADY			COSINE				
			1926291753-				391038370
1			8706993252-	8027405752-	1184276053	2226744953	391038371
2			1856664352-	2411881752	3043743752	6379452552	391038372
3			5569998852	4641686751-	5589305952	1184121153	391038373
4			2320834752-	3215840252	3965841952	3145438952	391038374
5			1744489852	7917628351-	1915759152	6711767552	391038375
COEFF	WHITE	PITCH LINK	POSITION	SINE	MAX	PHI	
STEADY			COSINE				
			1895400051-				391038380
1			6573773352	1028388153	1220543853	5741203352	391038381
2			7290026751	4208888351-	8417792551	1650000353	391038382
3			2430003352-	4859978351	2478126352	5623004652	391038383
4			7290005051-	1262662752	1457998252	3000001852	391038384
5			2685774552-	1866116052	3270439652	2904157252	391038385

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R. R. Lynn

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(over)

UNCLASSIFIED

Bell Helicopter Company, Fort Worth, Tex.,
MEASUREMENT OF DYNAMIC AIR LOADS ON A FULL
SCALE SEMIRIGID ROTOR - F. B. Burpo and
R. R. Lynn

1. VTOL/STOL
Aircraft
2. Dynamic
air loads
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3. Contract
DA 44-177-
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