U.S. Department
of Transportation
**Federal Aviation
Administration**

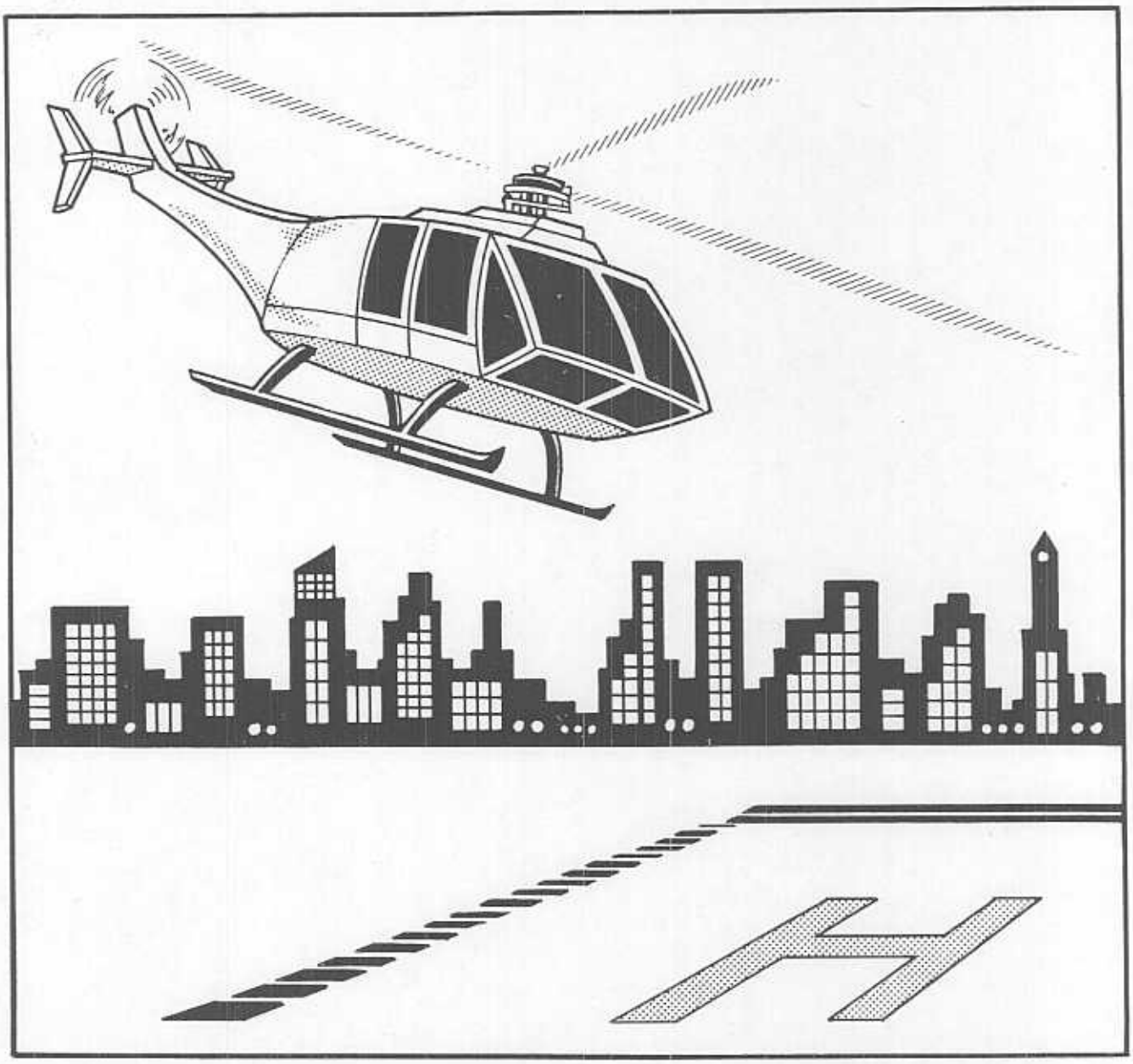
Report No. FAA-EE-85-7

August 1985

FLIGHT OPERATIONS

Noise Tests of Eight Helicopters

Sharon A. Yoshikami



NOTICE

The United States Government does not endorse products or manufacturers. Trade or manufacturers' names are used as necessary in documenting the subject test program.

Technical Report Documentation Page

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
FAA-EE-85-7		

4. Title and Subtitle	5. Report Date
Flight Operations Noise Tests of Eight Helicopters	August 1985
	6. Performing Organization Code
7. Author(s) Sharon A. Yoshikami	8. Performing Organization Report No.
9. Performing Organization Name and Address Federal Aviation Administration, Office of Environment and Energy, Noise Abatement Division, Noise Technology Branch (AEE-120), 800 Independence Ave., SW, Washington, DC 20591	10. Work Unit No. (TRAIS)
	11. Contract or Grant No.
12. Sponsoring Agency Name and Address Federal Aviation Administration, Office of Environment and Energy, Noise Abatement Division, Noise Technology Branch (AEE-120), 800 Independence Ave., SW Washington, DC 20591	13. Type of Report and Period Covered
	14. Sponsoring Agency Code

15. Supplementary Notes

16. Abstract

This document presents acoustical data and flight path information acquired during the FAA/HAI Helicopter Flight Operations Noise Test Program. "As-measured" noise levels of the Aerospatiale 365N, Agusta 109A, Bell 206L-1 and 222A, Hughes 500D, MBB BK117, Robinson R22, and Sikorsky S76 are presented for various enroute and heliport flight operations. These operations include level flyovers at two altitudes, normal takeoffs, normal and constant-gildeslope approaches, various types of noise abatement approaches, level flight turns and hover (IGE and OGE). The acoustical data are accompanied by radar tracking data and cockpit instrument panel information which document the operational procedures flown, and meteorological measurements to permit data corrections for nonstandard atmospheric conditions. This helicopter operational noise data base can be used in enroute and heliport land use planning, heliport environmental studies and planning guidelines, pilot familiarization and training, verification of noise prediction and estimating methods, and lateral attenuation studies.

17. Key Words	18. Distribution Statement
helicopter, noise, heliport, flight operations, noise abatement, directivity approaches	This document is available to the public through the National Technical Information Service, Springfield, VA 22161

19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No. of Pages	22. Price
Unclassified	Unclassified	728	

Form DOT F 1700.7 (8-72) Reproduction of completed page authorized

ACKNOWLEDGEMENTS

Appreciation is extended to the following participating organizations:

- DULLES AIR TRAFFIC CONTROL
- DULLES AIRPORT OPERATIONS
- DULLES STRUCTURES AND GROUNDS BRANCH
- DULLES AIRWAYS FACILITIES SECTOR
- NATIONAL WEATHER SERVICE TEST AND EVALUATION DIVISION
- OFFICE OF AIRPORT PLANNING AND PROGRAMMING

MANUFACTURERS:

AEROSPATIALE	HUGHES
AGUSTA	MBB
BELL	ROBINSON
BOEING VERTOL	SIKORSKY

OPERATORS:

HORSHAM VALLEY AIRWAYS
NORTHEAST HELICOPTERS
OMNI FLIGHT AIRWAYS

Special thanks to Charles R. Cox, industry coordinator, Donna Warren, Loretta Harrison and Steve Albersheim for their extra efforts.

TABLE OF CONTENTS

		PAGE
	LIST OF APPENDICIES	iii
	LIST OF FIGURES	iv
	LIST OF TABLES	vii
	GLOSSARY	ix
	SUMMARY	1
I.	INTRODUCTION	3
II.	TEST SITE	4
III.	TEST HELICOPTERS	6
IV.	FLIGHT CONDITIONS	7
V.	DATA ACQUISITION SYSTEMS	10
	A. Acoustical measurement instrumentation	12
	B. Meteorological measurements	14
	C. Position data	15
	D. Cockpit instrument recording system	17
	E. Ground photo system	17
VI.	TEST DATA COMPARISONS AND TRENDS	19
	A. Level flyovers	19
	B. Normal takeoffs	21
	C. Six-degree approach	22
	D. Normal approach	23
	E. Noise abatement approaches	24

LIST OF APPENDICES

		PAGE
APPENDIX A:	SIKORSKY S76	A-1
APPENDIX B:	MBB BK117	B-95
APPENDIX C:	BELL 222A	C-213
APPENDIX D:	ROBINSON R22	D-313
APPENDIX E:	AGUSTA 109A	E-381
APPENDIX F:	BELL 206L-1	F-453
APPENDIX G:	HUGHES 500D	G-519
APPENDIX H:	AEROSPATIALE 365N	H-579
APPENDIX I:	BELL 222A	I-647

LIST OF FIGURES

		PAGE
FIGURE 1:	DULLES TEST SITE	5
FIGURE 2:	SCHEMATIC OF TEST FLIGHT TRACKS	9
FIGURE 3:	SCHEMATIC OF GROUND TRACK FOR TURNS	9
FIGURE 4:	SCHEMATIC OF MICROPHONE ARRAY FOR HOVER OPERATIONS	10
FIGURE 5:	SCHEMATIC OF NOISE TEST AREA AND DATA ACQUISITION SYSTEMS	11
FIGURE 6:	SCHEMATIC OF MICROPHONE ARRAY FOR 'BASIC' PROGRAM	12
FIGURE 7:	PHOTO OF 4 FEET AND GROUND PLANE MICROPHONES	13
FIGURE 8:	METEOROLOGICAL TOWER	14
FIGURE 9:	PILOT WIND BALLOONS AND TRACKER	16
FIGURE 10:	TRACKING RADAR SYSTEM	16
FIGURE 11:	GROUND PHOTOGRAPHER AND ALIGNMENT RIG	18

LIST OF TABLES

		PAGE
TABLE 1:	TEST HELICOPTERS AND THEIR BASIC CHARACTERISTICS	6
TABLE 2:	FLIGHT CONDITIONS FOR THE 'BASIC PROGRAM'	7
TABLE 3:	500 FT. LEVEL FLYOVERS, SEL (ALL 8 HELICOPTERS)	20
TABLE 4:	1000 FT. LEVEL FLYOVERS, SEL (ALL 8 HELICOPTERS)	20
TABLE 5:	NORMAL TAKEOFF, SEL (ALL 8 HELICOPTERS)	21
TABLE 6:	SIX-DEGREE APPROACH, SEL (ALL 8 HELICOPTERS)	22
TABLE 7:	NORMAL APPROACH, SEL (ALL 8 HELICOPTERS)	23
TABLE 8:	'BEST' NOISE ABATEMENT APPROACH (ALL 8 HELICOPTERS)	25

GLOSSARY

AGL	-	ABOVE GROUND LEVEL
BRC	-	BEST RATE OF CLIMB
CLC/CL-C	-	CENTERLINE CENTER
CPA	-	CLOSET POINT OF APPROACH
C.I.	-	CONFIDENCE INTERVAL
dB	-	DECIBEL
dBA	-	A-WEIGHTED SOUND LEVEL
FAA	-	FEDERAL AVIATION ADMINISTRATION
FPS	-	FEET PER SECOND
HAI	-	HELICOPTER ASSOCIATION INTERNATIONAL
IAS	-	INDICATED AIRSPEED
IGE	-	IN-GROUND-EFFECT (HOVER)
KTS	-	KNOTS
LEQ	-	EQUIVALENT SOUND LEVEL
MET	-	10-METER METEOROLOGICAL TOWER
N	-	SAMPLE SIZE
OAT	-	OUTSIDE AIR TEMPERATURE
OGE	-	OUT-OF-GROUND-EFFECT (HOVER)
SEL	-	SOUND EXPOSURE LEVEL
S.D	-	STANDARD DEVIATION
SHP	-	SHAFT HORSEPOWER
SLM	-	SOUND LEVEL METER
VCR	-	CRUISE SPEED FOR BEST RANGE
VNE	-	NEVER-EXCEED SPEED
VY	-	SPEED FOR BEST RATE OF CLIMB

SUMMARY

This report presents data acquired during the FAA/HAI Helicopter Flight Operations Noise Test Program. The program emphasized the gathering of an extensive data base of acoustic characteristics and flight path information associated with typical enroute and heliport operations. These operations include level flyovers at two altitudes, normal takeoffs, normal and constant-glideslope approaches, different types of noise abatement approaches, turn and hover. Noise levels and sound directivity of eight test helicopters are presented from ground based microphone located directly beneath the flight path and to large distances to the sidelines of each helicopter. Test results and data trends are summarized and all data are grouped by helicopter type in the appendicies. In each appendix, the 'as-measured' A-Weighted sound levels and sound exposure levels are presented in bar charts and tables for quick reference and convience of the reader. Also included in each appendix are radar tracking data and cockpit instrument panel information which document the operational procedures flown and meteorological measurements to permit data corrections for nonstandard atmospheric conditions.

I. INTRODUCTION

This report presents data from eight helicopters collected during a joint FAA/HAI Flight Operations Noise Test Program. The program was conducted at Washington Dulles International Airport during the summer of 1984. The FAA'S and HAI'S three major objectives were as follows:

1) acquire noise data for various helicopter operational procedures with emphasis on sideline noise,
2) measure the noise reduction attainable with 'fly neighborly' operating procedures and
3) study low-angle noise propagation and ground effects.

To achieve these objectives the test was divided into two separate programs. A 'basic program' which was flown by all the test helicopters and the 'extended program' which was flown by only two of the test helicopters. The basic program consisted of approaches, takeoffs, level flyovers, level flight turns and hover. Acoustic data were gathered out to 2000 feet to the sideline. The 'extended program' consisted of level flyovers from 200 to 2000 feet. This program was designed to evaluate low angle noise propagation and ground effects out to sideline distances of 4000 feet over both grass and asphalt/concrete ground cover.

In this report, test results for the 'basic program' are presented. The test site, the helicopters tested, the flight conditions and the extensive data acquisition systems are first described. Noise data comparisons and trends are then highlighted. Finally appendices are presented, one for each test helicopter, which include helicopter characteristics, measured noise levels, and radar tracking, meteorological and cockpit video data. These appendices are set up by test helicopter as follows:

APPENDIX A = SIKORSKY S76
APPENDIX B = MBB BK117
APPENDIX C = BELL 222A
APPENDIX D = ROBINSON R22
APPENDIX E = AGUSTA 109A
APPENDIX F = BELL 206L-1
APPENDIX G = HUGHES 500D
APPENDIX H = AEROSPATIALE 365N
APPENDIX I = BELL 222A (REPEAT)

Preceding each appendix is a table of contents to aid the reader in locating the specific data of interest.

II. TEST SITE

The FAA/HAI Flight Operations Noise Test Program was conducted at Washington Dulles International Airport in the vicinity of runway 12/30. This site was selected because of its convenience and it met the following established siting criteria:

1) low ambient noise,
2) flat terrain (unobstructed to 4000 ft.),
3) low prevailing winds (less than 10 kts.) and
4) nearby aircraft services (fuel, emergency aid, etc.)

Dulles was located within relatively short flight times for the test helicopters and it was convenient for the majority of test personnel involved.

The test area was located at the approach end of Runway 12. From this point it is unobstructed approximately 3000 feet to the west and approximately 10000 feet to the east. From the center of the runway it is clear 1000 feet to both the north and south. Beyond these distances, the area is bordered to the north, south and west by sparse woods. The terrain is nominally flat with a ground cover of short clipped grass. An aerial photo of the test site is shown in Figure 1.

NOISE MEASUREMENT TEST SITE AT DULLES INTERNATIONAL AIRPORT

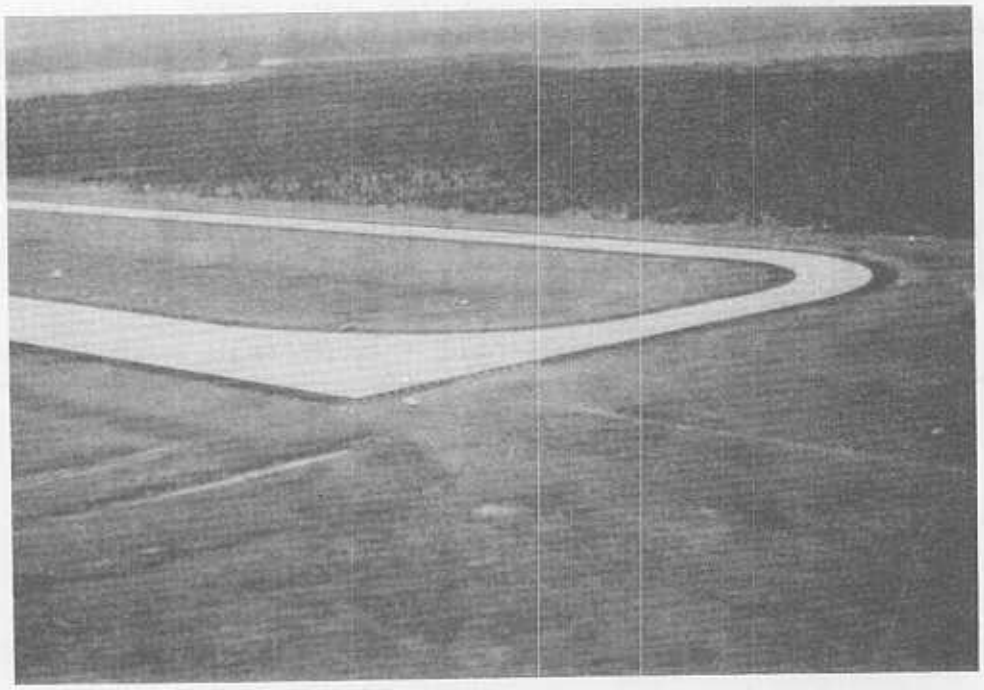


Figure 1

During the thirteen days of noise testing, Runway 12/30 was closed to all commercial and general aviation traffic. All airport traffic was directed to runways 1L/19R and 1R/19L located approximately three miles to the east. Because of the large distance, there was minimal interference. This resulted in an average ambient noise level of 45 dBA during testing.

III. TEST HELICOPTERS

The eight helicopters tested represent a varied mix of design types, sizes and performance capabilities. They vary from a Robinson R22 two seat trainer to the 14-place Sikorsky S76. The test helicopters and some of their basic characteristics are presented in Table 1.

TABLE 1

TEST HELICOPTERS AND THEIR BASIC CHARACTERISTICS

HELICOPTER	GROSS WT. (LBS)	BLADES MAIN/TAIL	TIPSPEED MAIN/TAIL	VY (KTS)	VCR (KTS)	BRC (FPM)
R22	1300	2/2	699/623	55	83	1000
500D	3000	5/4	680/519	65	118	1900
206L-1	4050	2/2	763/722	57	100	1520
109A	5730	4/2	727/703	60	145	1640
BK117	6283	4/2	725/714	65	126	2145
222A	7850	2/2	724/641	65	133	1550
365N	8818	4/13	717/727	75	135	1460
S76	10,300	4/4	675/674	74	146	1730

(1) Cruise speed for best range defined by each manufacturer
(2) Tipspeed at 100% rpm except for the R22 and 500D which were tested at 104% and 103%, respectively

IV. FLIGHT CONDITIONS

The 'basic program' consisted of level flyovers, takeoffs, three types of approaches and two optional test conditions - level flight turns and hover. A list of flight conditions for the 'basic program' is shown in Table 2.

TABLE 2

FLIGHT CONDITIONS FOR 'BASIC PROGRAM'

OPERATION	ALTITUDE (FT. AGL)	IAS (KTS)	NO. OF PASSES
6 DEG APPROACH	400	Vy	6
NORMAL APPROACH (1)	---	---	6
NORMAL TAKEOFF (1)	---	---	6
NOISE ABATEMENT	---	---	6
NOISE ABATEMENT (1) APPROACH (1)	---	---	6
LEVEL FLIGHT	500	Vcr	6
LEVEL FLIGHT	1000	Vcr	6
OPTIONAL			
15 DEGREE TURN (2)	500	65	6
30 DEGREE TURN (2)	500	65	6
HOVER IGE	5	0	8 headings
HOVER OGE	2 rotor diameters	0	8 headings

(1) DEFINED BY MANUFACTURER OR OPERATOR
(2) COORDINATED TURNS (BALL CENTERED) AT STABILIZED BANK ANGLE

Descriptions of the normal approach, normal takeoff and one or more noise abatement procedures were supplied to the FAA prior to the test

by each respective manufacturer or operator. Only noise abatement procedures that would be operationally practicable and comfortable to passengers, as judged by each pilot, were evaluated.

All the approaches and takeoffs were conducted into and out of a landing/takeoff area located approximately 4000 feet from the centerline (CLC) microphone position. Figure 2 is a schematic diagram which depicts the takeoff, approach and level flyover flight paths in relation to the landing/takeoff area and microphone array. The pilots were instructed to proceed into and out of the landing/takeoff point as if it were an operational heliport, and to perform all operations in a normal way for the prevailing conditions at the test site. To aid the pilot during the fixed glideslope approaches, a theodolite and operator were located at the landing area. The theodolite operator communicated course guidance information to the pilot via the aircraft radio.

Level flight turns were evaluated using the S76, BK117 and the 222A. These turns were performed at bank angles of 15 and 30 degrees and at an altitude of 500 feet and a constant airspeed of 65 knots. The pilots followed ground markers outlining the turn radius corresponding to the two bank angles. The midpoint of each turn's radius was located at the CLC microphone position. A schematic of the ground track is shown in Figure 3.

Hover data for in-ground-effect (IGE) and out-of-ground-effect (OGE).conditions were also measured for the helicopters not already in the FAA's data base. These were the R22, 109A and the BK117.

SCHEMATIC OF TEST FLIGHT TRACKS

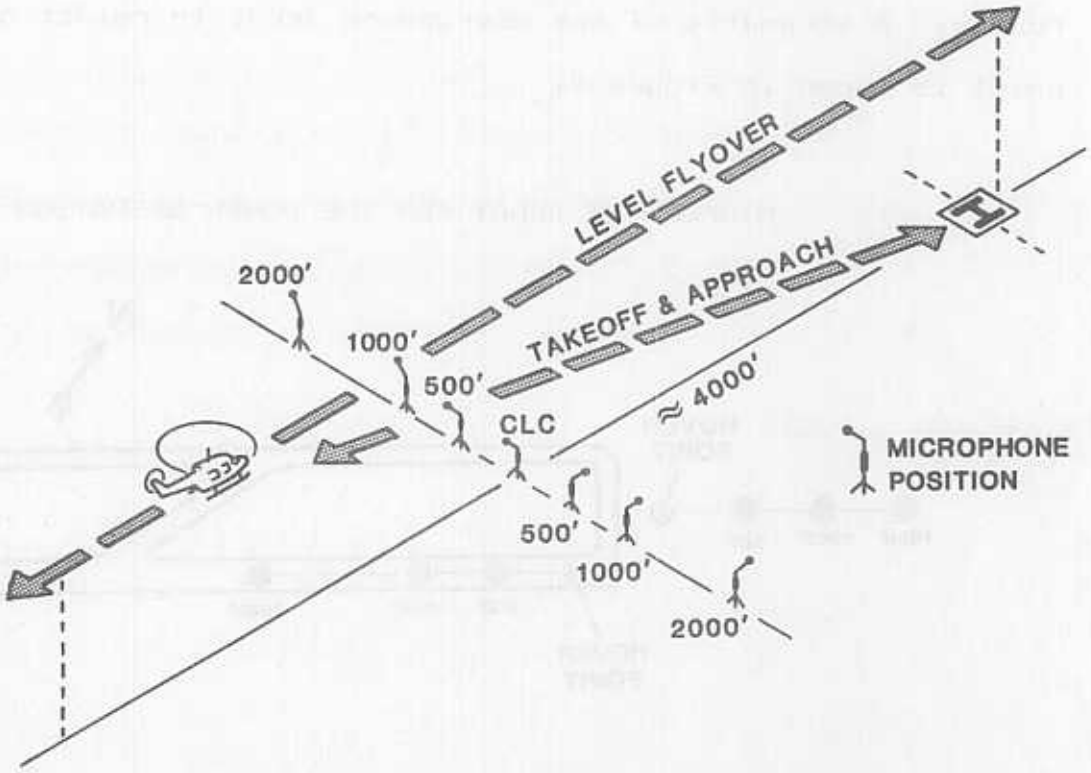


Figure 2

SCHEMATIC OF GROUND TRACK FOR TURNS

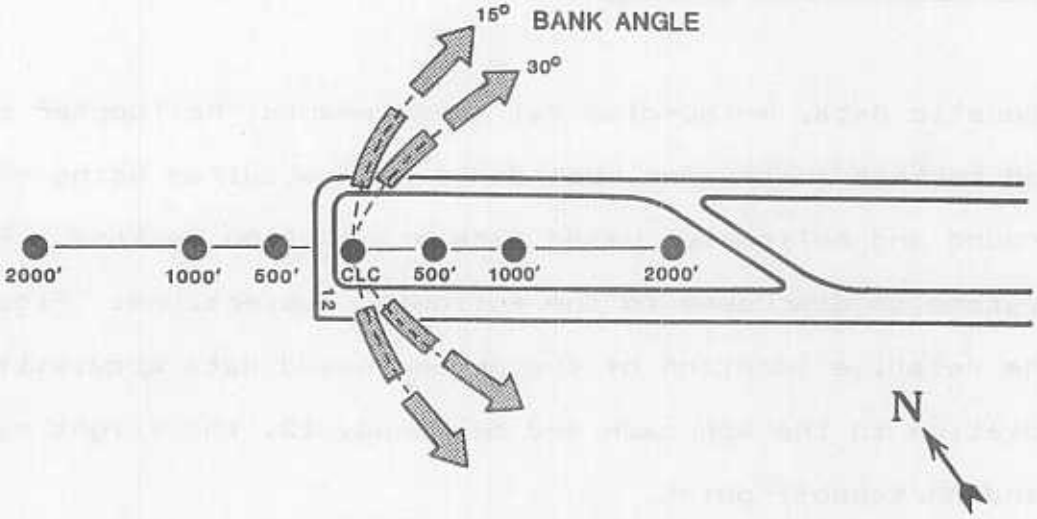


Figure 3

These tests were performed with the hovering helicopter and the microphone array located first on grass, and then relocated on the runway. A schematic of the microphone array in relation to the hover point is shown in Figure 4.

MICROPHONE ARRAY FOR THE HOVER OPERATION

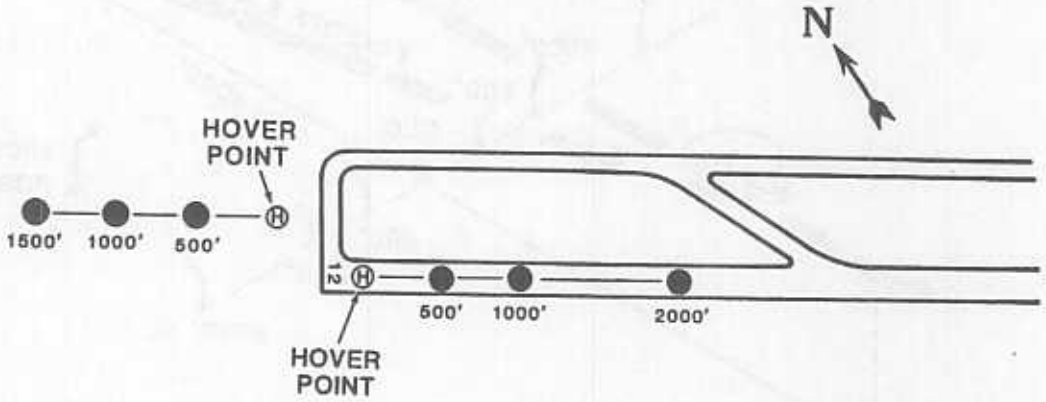


Figure 4

V. DATA ACQUISITION SYSTEMS

Acoustic data, meteorological measurements, helicopter position data and cockpit instrument recordings were acquired using extensive ground and helicopter based data acquisition systems. Each of these systems is discussed in the following subsections. Figure 5 depicts the relative location of the ground based data acquisition systems in relation to the approach end of Runway 12, the flight path, and the landing/takeoff point.

NOISE TEST AREA AND DATA ACQUISITION SYSTEMS

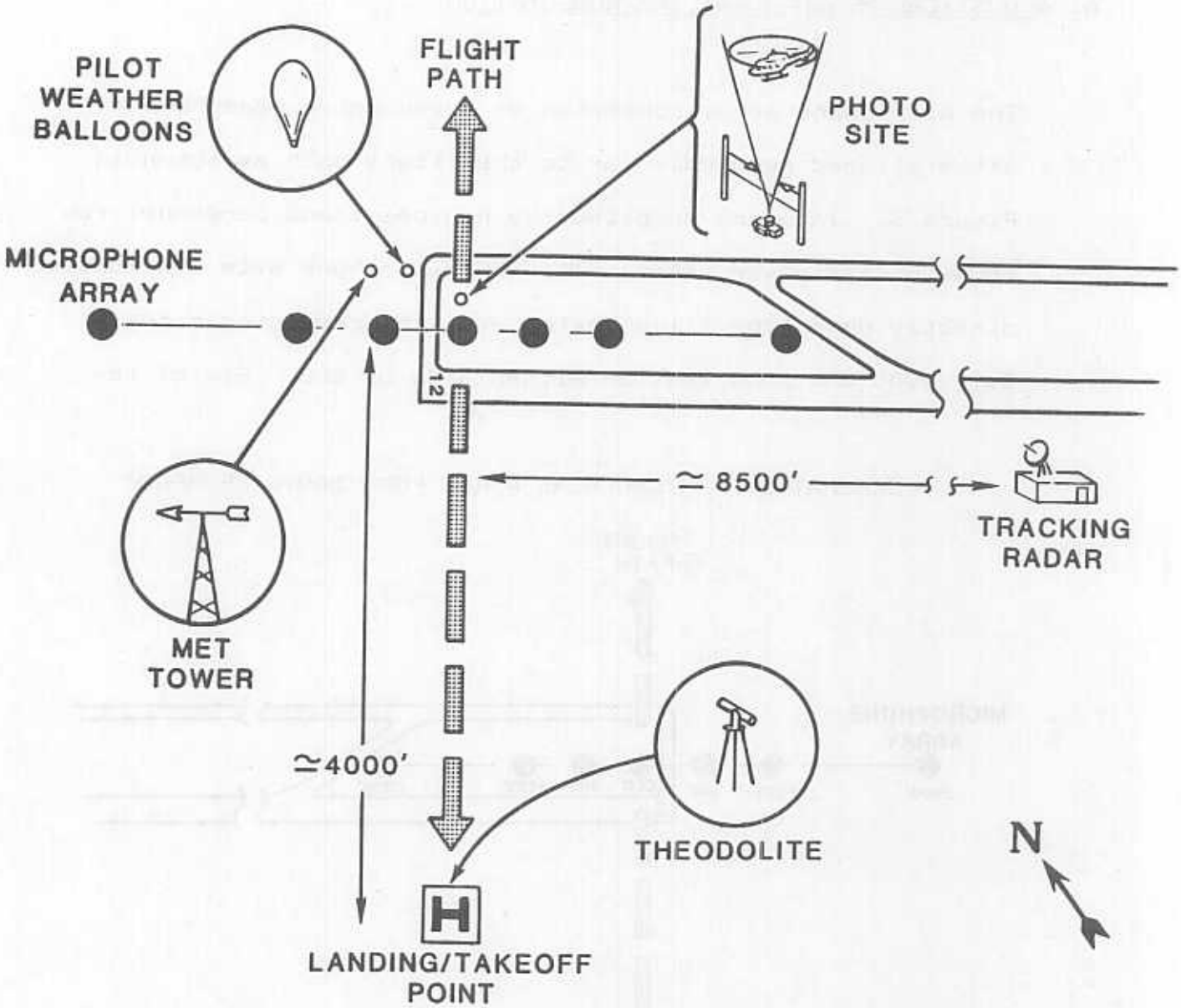


Figure 5

A. ACOUSTICAL MEASUREMENT INSTRUMENTATION

The microphone array consisted of seven noise measurement sites aligned perpendicular to the flight path as shown in Figure 6. Industry supplied the equipment and personnel for three of the seven sites. The CLC microphone site was located directly under the flight path, with the remaining sites at 500, 1000 and 2000 feet on either side of CLC. Six of the

SCHEMATIC OF MICROPHONE ARRAY FOR 'BASIC PROGRAM'

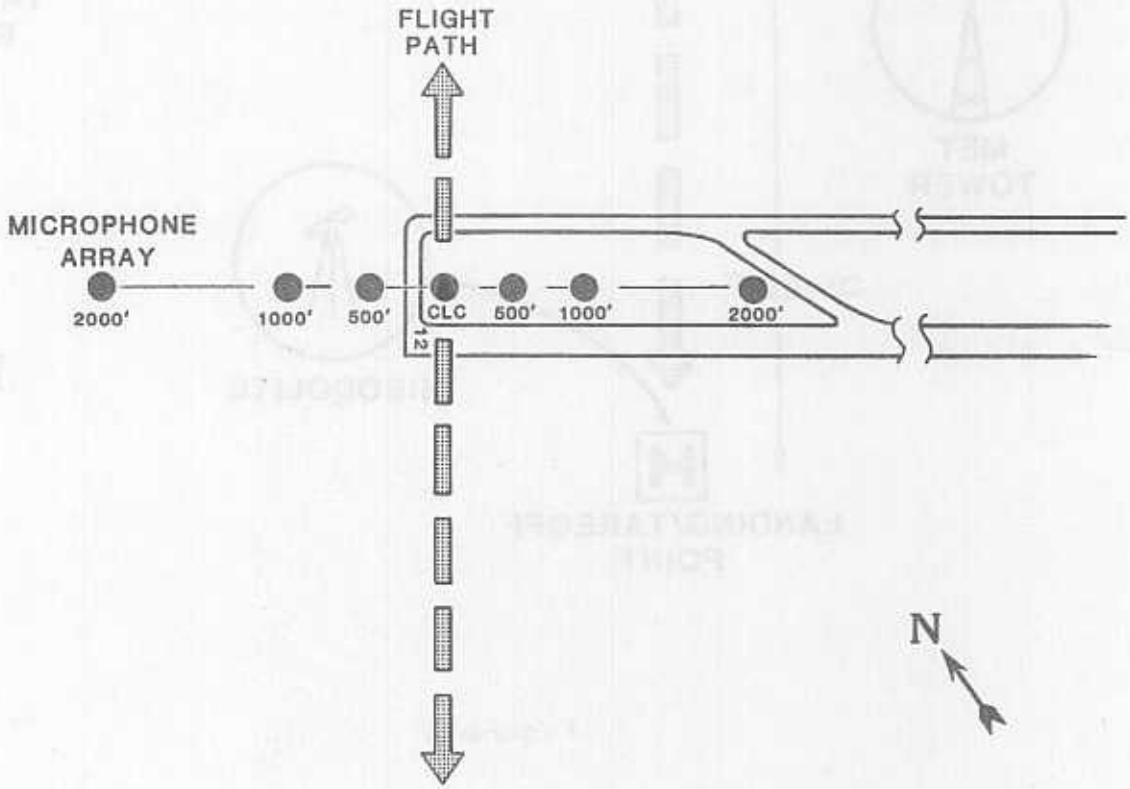


Figure 6

Seven noise measurement sites were equipped with a Type-1 precision integrating sound level meter (SLM) and a two-channel Nagra recorder. The seventh site had only a SLM. The typical measurement system consisted of a one-half inch microphone, mounted four feet above ground level on a tripod and oriented for grazing incidence. Each microphone was covered with a three-inch diameter wind screen. In addition, at the CLC, 500 feet west and 1000 feet west sites a ground plane microphone was used. A photo of a four feet and ground plane microphone is shown in Figure 7. The noise levels from the SLM's are presented in the Noise Level Data section of each appendix.

FOUR FEET AND GROUND PLANE MICROPHONES

Figure 7

B. METEOROLOGICAL MEASUREMENTS

Three different types of meteorological equipment were used to collect weather data. A ten-meter weather (MET) tower located in the vicinity of the microphone array provided a record of temperature, dew point, windspeed, and wind direction on a strip chart recorder. A psychrometer at the base of the MET tower measured surface temperature and relative humidity. A photo of the MET tower is shown in Figure 8. Additionally, pilot weather balloons were launched and tracked by the

10-METER METEOROLOGICAL TOWER

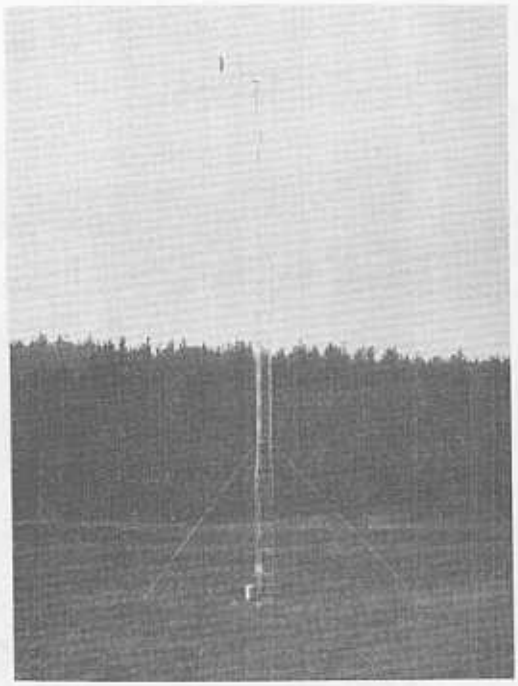


Figure 8

National Weather Service in the area every 15 to 30 minutes. These balloons provided real time windspeed and wind direction from ground to 3000 feet altitude in 300 feet intervals. Figure 9 is a photo of a pilot weather balloon and tracker. Also, the temperature from the helicopter's outside air temperature (OAT) guage was recorded periodically at different test altitudes. This information was used to identify the existence of any temperature inversions. This data can be found in the Meteorological Data section of each appendix.

C. POSITION DATA

The FAA's portable tracking radar system was used for helicopter position determination. The radar, as shown in Figure 10, transmits helicopter position data to a nine track magnetic tape recorder equipped with a time code generator. For each event the azimuth and elevation angles, range and time were recorded every tenth of a second on magnetic tape. The radar tapes were then processed at the FAA's Noise Laboratory at Washington Dulles. The processed data included the closet point of approach (CPA), time of CPA, elevation angle, rate of climb or descent, the climb or descent angle and ground speed. A graphics plot of the flight profile was also generated. These data and the plots can be found in the Position Data section of each appendix.

PILOT WIND BALLOON AND TRACKER

Figure 9

FAA'S PORTABLE TRACKING RADAR

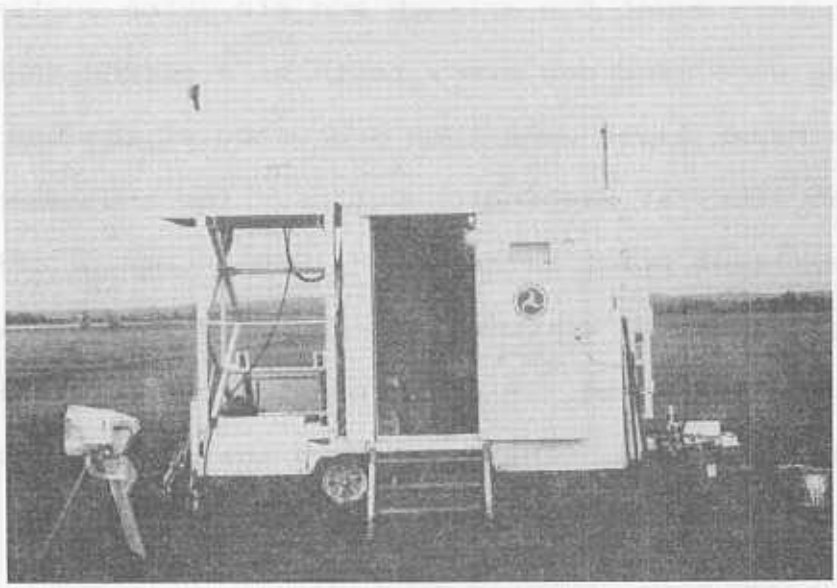


Figure 10

D. COCKPIT INSTRUMENT RECORDING SYSTEM

A video recording system in the cockpit of each test helicopter recorded instrument panel information during each test event. A clock, which was set to range time, was mounted on the instrument panel. The video system provided a continuous record of airspeed, vertical speed, altitude, rotor torque and time. After the test, the video tapes were replayed on a monitor and the above parameters were read and logged every five seconds. These data were then inputted into a computer, the glideslopes calculated, and listings made of all parameters. This system was invaluable in reconstructing and documenting the operational procedures actually flown, especially for the normal and noise abatement approaches. Plots and listings of these data can be found in the Cockpit Data section of each appendix.

E. GROUND PHOTO SYSTEM

A ground photo site, which consisted of a camera and operator, was located under the flight path, 125 feet north of the CLC microphone. The camera was equipped with a data-back which recorded time to the second on each of the slides. The data-back time was synchronized with the radar time code and the

clock on the cockpit instrument panel. This aided in determining the time the helicopter passed over the CLC microphone position. A picture was taken of each of the helicopters as it passed directly over the photo site. An alignment rig was used to aid the photographer in determining when the helicopter was directly overhead. A picture of the photographer and the alignment rig is shown in Figure 11. The altitude was determined from the slide prints, using a photo scaling technique. This system was used as a back-up to the tracking radar. The position data presented in this report is tracking radar data only.

GROUND PHOTOGRAPHER AND ALIGNMENT RIG

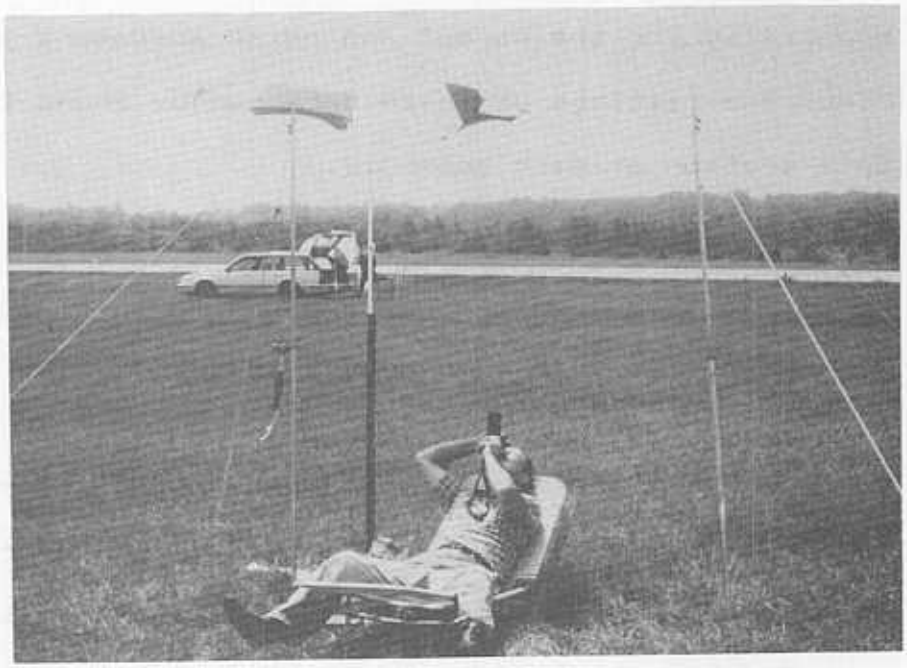


Figure 11

VI. TEST DATA COMPARISONS AND TRENDS

Appendicies A through I contain all test data measured during the FAA/HAI Helicopter Flight Operations Noise Test Program. Included in each appendix are the A-weighted sound level and sound exposure level for each flight condition in the form of bar charts, summary tables and individual event listings. Also included are helicopter position data, flight track plots, meteorological data and listings and plots from cockpit instrument readings.

In this section, the sound exposure levels of the eight helicopters are compared and trends in the data are noted. Tables of camparative data are presented for level flyovers, normal takeoffs, six degree approach, normal approach, and noise abatement approaches. Each table is arranged from the lightest to the heaviest helicopter.

A. LEVEL FLYOVERS

Measured SEL's of the eight test helicopters during 500 and 1000 feet level flyovers are presented below in Tables 3 and 4. Also listed in the tables are the indicated airspeeds (IAS) flown by each helicopter. (Noise levels of the S76 and the 222A are from the 'extended program')

TABLE 3

500 FT. LEVEL FLYOVER
SEL, dB

	2000' (LEFT SIDE)	1000'	500'	CLC	500' (RIGHT SIDE)	1000'	2000'	IAS (KTS)
R22	68.7	74.4	77.4	78.0	77.8	74.7	68.8	83
500D			------	NO DATA	--------			--
206L-1	73.9	78.0	82.2	83.5	82.3	77.5	73.2	100
109A	77.3	82.9	86.4	90.3	86.7	81.1	76.6	145
BK117	75.3	80.5	83.4	84.8	82.6	81.4	76.6	126
222A	78.5	81.6	84.2	85.3	85.1	82.9	80.8	120
365N	76.7	82.0	85.9	86.7	85.5	80.5	75.2	135
S76	80.6	83.6	87.1	85.6	85.4	82.9	76.6	120

TABLE 4

1000 FT. LEVEL FLYOVER
SEL, dB

	2000' (LEFT SIDE)	1000'	500'	CLC	500' (RIGHT SIDE)	1000'	2000'	IAS (KTS)
R22	68.0	72.3	73.0	73.5	71.7	72.1	68.6	83
500D			------	NO DATA	--------			--
206L-1	72.8	76.0	79.4	79.2	79.2	76.3	73.1	100
109A	76.9	81.1	82.9	84.7	82.6	80.6	75.8	145
BK117	76.0	79.2	80.6	81.0	79.6	78.8	77.6	126
222A	77.0	79.6	80.5	80.8	80.8	80.3	77.6	120
365N	75.7	80.5	81.5	80.7	80.7	79.6	75.0	135
S76	79.1	83.0	82.4	81.6	81.6	81.4	76.7	120

As shown in Tables 3 and 4 the noise emitted to the sidelines is omnidirectional for the majority of the test helicopters. One exception is the S76. For this helicopter at this airspeed, SEL's on the left side are 3dB higher than on the right side.

B. NORMAL TAKEOFFS

Measured SEL's of the eight test helicopters during normal takeoffs are presented in Table 5. Average altitudes and IAS read from the video tape recordings of the altimeter and airspeed gauges are also listed.

TABLE 5

NORMAL TAKEOFF
SEL, dB

	2000' (LEFT SIDE)	1000'	500'	CLC	500' (RIGHT SIDE)	1000'	2000'	AVG. ALT. (FT)	IAS (KTS)
R22	72.3	77.9	81.2	79.8	80.5	76.8	71.4	405	59
500D	74.0	78.2	81.3	82.1	80.3	77.1	72.9	400	86
206L-1	75.1	79.7	83.2	83.9	82.6	79.6	74.0	483	84
109A	79.5	84.2	87.0	86.1	85.5	83.6	76.8	558	64
BK117	---	78.3	78.5	77.4	76.8	77.5	75.8	1457	67
222A	---	78.9	79.7	83.8	83.0	78.8	72.5	240	79
365N	79.9	83.2	86.9	88.3	84.0	80.2	73.2	418	86
S76	---	85.3	86.5	83.2	86.0	83.8	78.0	493	83

NOTE: Altimeter and IAS readings made when helicopter passed over CLC microphone position.

As shown in Table 5, the takeoff noise is for the most part omnidirectional to the sidelines. The exception to this is the 365N which generates 3 to 6 dB lower SEL's to the right side than to the left.

C. SIX-DEGREE APPROACH

The measured SEL's of the eight test helicopters are presented below in Table 6. The table also lists the average altitude and indicated airspeed.

TABLE 6
6-DEGREE APPROACH
SEL, dB

	2000' (LEFT SIDE)	1000' (LEFT SIDE)	500' (LEFT SIDE)	CLC	500' (RIGHT SIDE)	1000' (RIGHT SIDE)	2000' (RIGHT SIDE)	AVG. ALT. (FT)	IAS (KTS)
R22	66.4	72.1	78.9	87.5	84.1	78.5	69.9	420	55
500D	71.4	76.5	80.5	86.8	83.7	78.2	74.7	430	65
206L-1	74.0	77.9	82.6	89.1	87.8	82.1	76.0	380	60
109A	76.8	83.7	89.9	97.9	90.5	83.7	76.7	410	62
BK117	74.8	80.5	85.3	91.1	89.0	83.5	79.1	380	65
222A	74.4	79.9	84.6	90.2	86.9	80.6	73.9	430	65
365N	77.8	84.5	90.7	94.6	88.4	81.4	78.4	380	68
S76	76.3	82.0	86.9	94.8	89.4	85.2	---	390	80

NOTE: Altimeter and IAS readings made when helicopter passed over CLC microphone position.

Six-degree approaches produce a highly directional noise to the sidelines. For all eight helicopters, the SEL is higher to the side corresponding to the respective main rotor's advancing blade. Main rotors of the R22, 500D, 206L-1, 109A, BK117, 222A and the S76 turn counterclockwise, as viewed from the top. This results in a right sideline sound directivity. The main rotor of the 365N turns clockwise, resulting in a left sideline sound directivity.

D. NORMAL APPROACH

The measured SEL's of the eight test helicopters for normal approaches are presented in Table 7.

TABLE 7

NORMAL APPROACH
SEL, dB

	2000' (LEFT SIDE)	1000'	500'	CLC	500' (RIGHT SIDE)	1000'	2000'	AVG. ALT. (FT)	IAS (KTS)
R22	65.2	70.7	75.4	81.4	80.8	76.6	68.4	620	58-50
500D	71.3	77.1	80.7	86.4	82.6	77.6	73.8	360	80-60
206L-1	72.1	77.2	82.7	89.8	86.7	80.0	74.6	300	68-53
109A	76.1	81.9	85.7	93.3	88.5	81.5	75.6	460	97-73
BK117	75.0	80.3	84.8	90.7	88.5	83.2	---	380	75-53
222A	74.9	79.5	83.7	86.3	85.0	83.8	---	580	83-66
365N	76.1	81.6	86.2	89.4	85.4	80.8	77.6	400	75-53
S76	75.2	80.9	83.7	83.9	84.0	82.8	---	620	85-64

NOTE: Altimeter readings made when helicopter passed over CLC microphone position. Ranges of indicated airspeed taken when helicopter was within 15 seconds of CLC.

Normal approaches produce directional sound patterns to the sideline identical to those produced by the six-degree approach. The difference in SEL between the left and right sides is less in most cases for the normal approaches than for a six-degree approach.

Normal approaches are characterized by continuous deceleration of airspeed and variable rates of descent that result in near constant rate of closure with respect to the ground. Airspeed/rate of descent profile plots for the normal

approaches can be found in the Cockpit Data section of each appendix.

E. NOISE ABATEMENT APPROACHES

The noise abatement approaches that were tested fall into three categories. The category for each test helicopter which resulted in the least sound exposure level is as follows:

1. CONSTANT SPEED/CONSTANT GLIDESLOPE

   222A - 6 DEG., 45 KTS.

   S76 - 12 DEG., 60 KTS.

2. DECELERATING SPEED/CONSTANT GLIDESLOPE

   500D - 9 DEG.

   BK117 - 10 DEG.

3. DECELERATING SPEED/VARIABLE GLIDESLOPE

   R22, 206L-1, 109A AND 365N

Representative flight profiles for the category 3 noise abatement approach can be found in the appendicies for the four helicopters listed above.

The measured SEL's of the eight test helicopters are listed in Table 8 for the 'best' noise abatement approach. Average altitudes and ranges of indicated airspeed are also given. It should be noted that the three categories of approaches were

not evaluated on all eight helicopters. In several instances, only one or two noise abatement approaches were flown.

TABLE 8

'BEST' NOISE ABATEMENT APPROACH
SEL, dB

	2000' (LEFT SIDE)	1000'	500'	CLC	500' (RIGHT SIDE)	1000'	2000'	AVG. ALT. (FT)	IAS (KTS)
R22	65.8	70.7	75.0	81.7	80.4	76.1	68.3	620	69-52
500D	70.7	75.1	78.7	83.0	82.5	79.3	75.3	520	70-59
206L-1	72.1	75.7	80.8	83.9	84.4	79.9	74.5	492	79-49
109A	75.5	80.8	84.0	88.0	87.0	82.1	76.2	650	89-69
BK117	75.4	79.6	83.1	85.7	85.2	82.4	77.2	620	63-56
222A	75.2	82.0	87.0	90.2	85.6	79.9	77.2	425	57-53
365N	78.7	84.7	87.5	86.5	82.4	80.4	77.9	650	92-60
S76	75.4	80.9	82.8	84.2	84.4	83.1	---	700	67-62

NOTE: Altimeter readings made when helicopter passed over CLC microphone position. Ranges of indicated airspeed taken when helicopter was within 15 seconds of CLC.

The sound directionality to one side of the helicopter is evident for this type of approach as it is for the six degree and normal approaches. The only exception is the 222A which now exhibits a left side directivity instead of the right side as shown previously.

APPENDIX A

SIKORSKY S76

	PAGE NUMBERS
HELICOPTER CHARACTERISTICS	A-3
NOISE LEVEL DATA	
SOUND EXPOSURE LEVEL	
Bar Charts	
Approaches	A-6
Takeoff	A-7
Level Flyovers	A-8
Summary Tables	A-9 - A-11
Individual Event Data	A-12 - A-20
A-WEIGHTED SOUND LEVEL	
Bar Charts	
Approaches	A-22
Takeoff	A-23
Level Flyovers	A-24
Summary Tables	A-25 - A-28
Individual Event Data	A-29 - A-41
RADAR TRACKING DATA	
Position Data	A-44 - A-61
Tracking Plots	A-62 - A-70
METEOROLOGICAL DATA	
10-meter Tower Data	A-72 - A-76
4 ft. Data and Aircraft OAT Data	A-77 - A-79
Pilot Balloon Wind Data	A-80 - A-82
COCKPIT VIDEO DATA	
Normal Approach Plot	A-84
Individual Event Data	A-85 - A-93

08 46 43

HELICOPTER CHARACTERISTICS

HELICOPTER MANUFACTURER :	SIKORSKY
HELICOPTER MODEL :	S76
TEST HELICOPTER N-NUMBER :	N766SA
MAX INTERNAL GROSS WEIGHT :	10,300 LBS.
NUMBER OF ENGINES :	TWO
UNINSTALLED TAKEOFF POWER :	650 SHP (PER ENGINE)
UNINSTALLED MAX CONTINUOUS PWR. :	650 SHP (PER ENGINE)
NEVER EXCEED SPEED (VNE) :	155 KTS.
MAX SPEED IN LEVEL FLIGHT	
WITH MAX CONTINUOUS POWER :	155 KTS.
SPEED FOR BEST RATE OF CLIMB (VY) :	74 KTS.
CRUISE SPEED FOR BEST RANGE (VCR) :	146 KTS.
BEST RATE OF CLIMB AT	
TAKEOFF POWER (BRC) :	1730 FPM
"TOP OF GREEN ARC" ROTOR SPEED :	293 RPM 100%

MAIN AND TAIL ROTOR SPECIFICATIONS

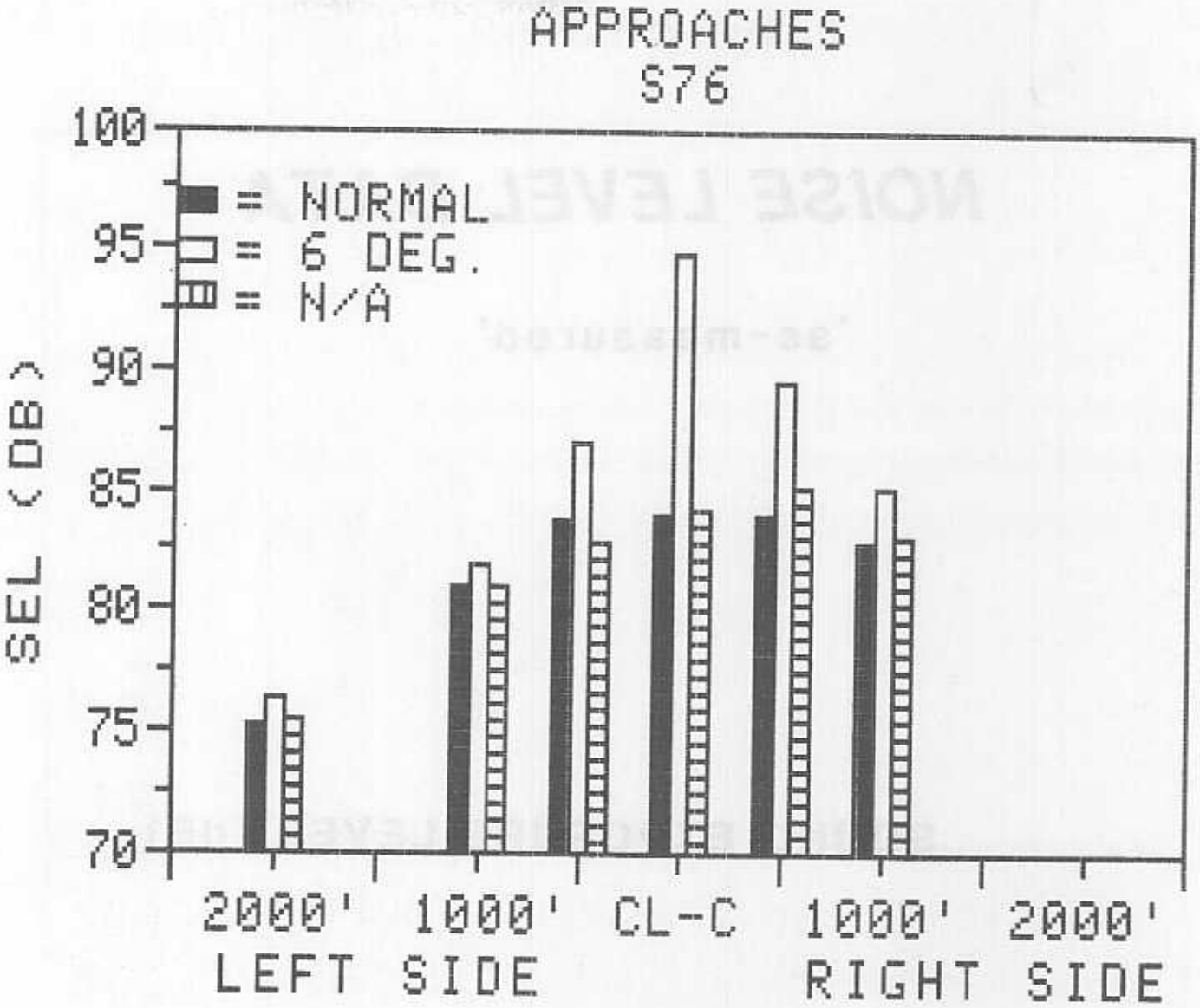
	MAIN	TAIL
DIAMETER (FT.) :	44.0	8.0
NO. OF BLADES :	4	4
TIPSPEED (FPS) :	675	674
TIP SHAPE :	SWEPT TAPERED	RECTANGULAR

NOISE LEVEL DATA

'as-measured'

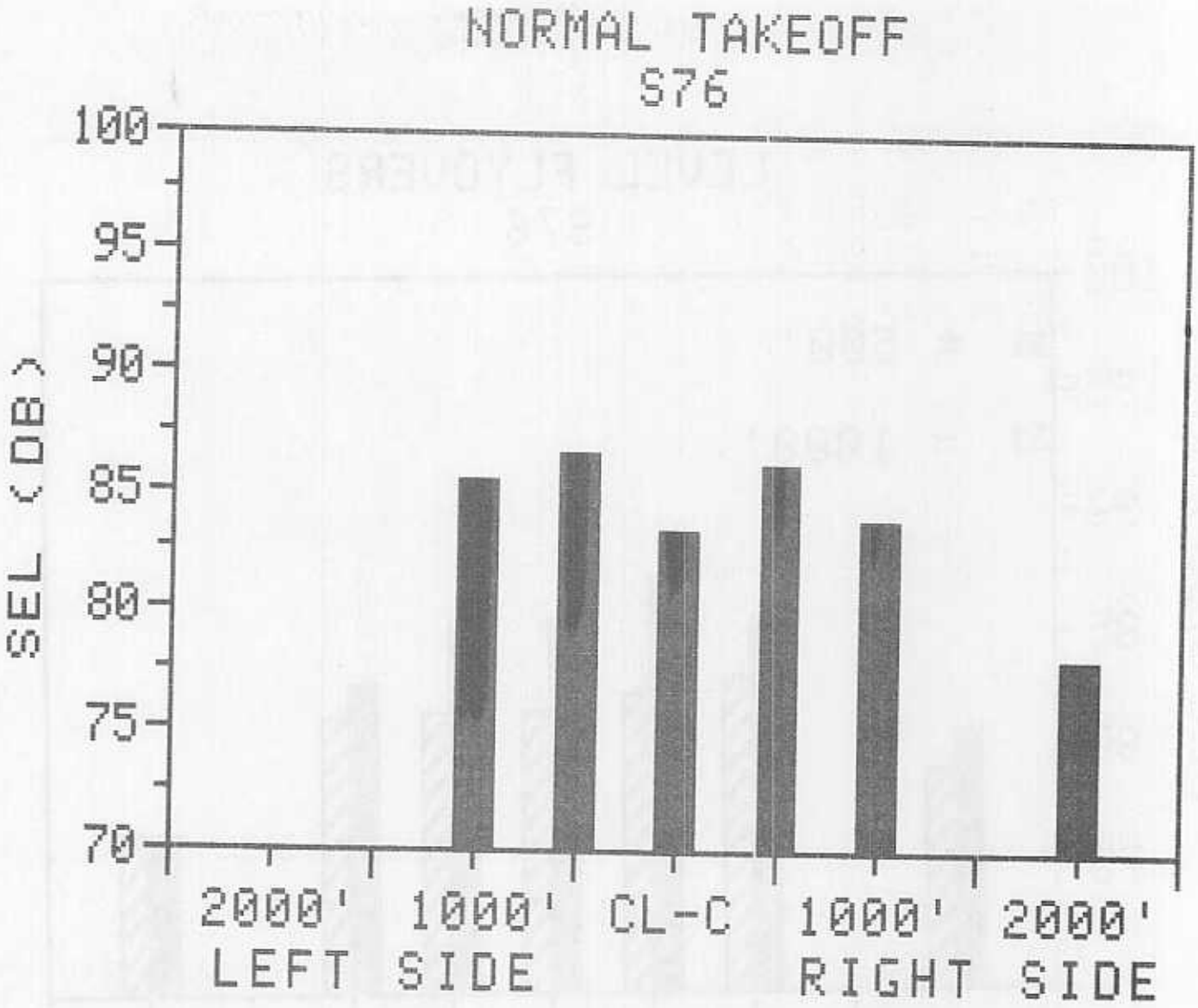
SOUND EXPOSURE LEVEL (dB)

THIS SECTION OF THE APPENDIX CONTAINS THE 'AS-MEASURED' SOUND EXPOSURE LEVELS (SEL) FOR ALL FLIGHT EVENTS. THESE DATA ARE PRESENTED IN THE FORM OF BAR CHARTS, SUMMARY TABLES AND INDIVIDUAL EVENT DATA. THE BAR CHARTS SHOW THE FALL OFF IN NOISE LEVEL VERSUS SIDELINE DISTANCE, AND PROVIDE A QUICK LOOK COMPARISON OF THE NOISE LEVELS. PERTINENT FLIGHT PARAMETER INFORMATION READ FROM THE COCKPIT INSTRUMENT PANEL VIDEO RECORDINGS IS ALSO SHOWN BELOW EACH BAR CHART. THE SUMMARY TABLES PRESENT THE AVERAGE NOISE LEVEL, NUMBER OF SAMPLES, STANDARD DEVIATION AND THE 90 PERCENT CONFIDENCE INTERVAL FOR EACH FLIGHT CONDITION. INDIVIDUAL EVENT DATA FOR EACH CONDITION IS THEN GIVEN.



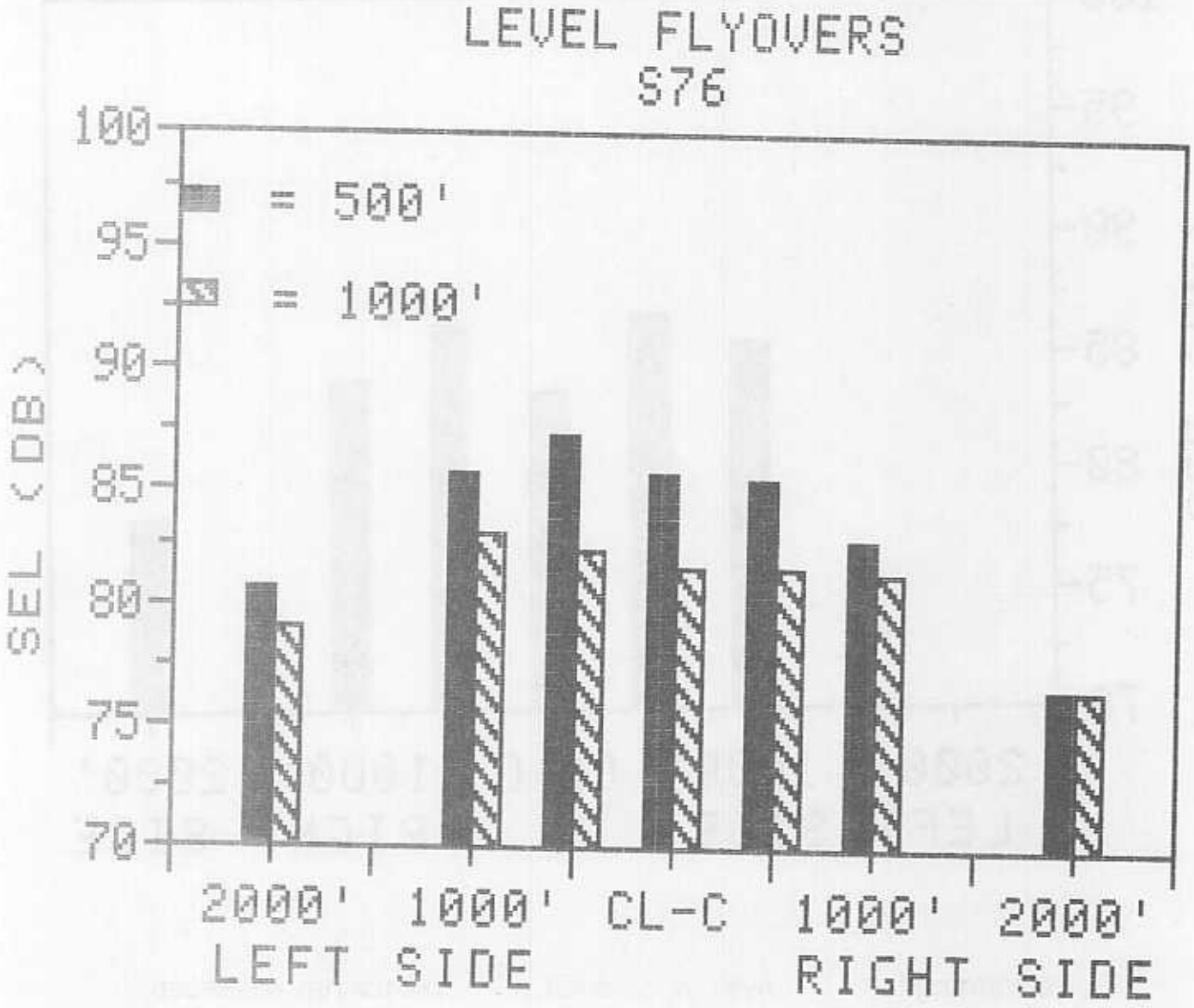
OPERATION	AVG. ALT. OVER CL-C (FT. AGL)	INDICATED AIRSPEED (KTS.)	GLIDESLOPE RANGE (DEG.)
NORMAL APPROACH	620	85-64	4.2- 9.9
SIX DEG. APPROACH	390	80	6.0
NOISE ABATEMENT APP. 12° TARGET, 60 KTS. (EVENTS D30-D33)	700	67-62	4.5-11.5

NOTE: ALTITUDE, AIRSPEED AND VERTICAL SPEED DATA READ FROM VIDEO TAPES OF THE INSTRUMENT PANEL. THE GLIDESLOPE RANGE WAS CALCULATED WITHIN ±15 SEC OF THE CL-C MICROPHONE POSITION.



OPERATION	AVG. ALT. OVER CLC (FT. AGL)	INDICATED AIRSPEED (KTS.)
NORMAL TAKEOFF	493	83

NOTE: ALTIMETER AND INDICATED AIRSPEED READINGS MADE WHEN THE HELICOPTER PASSED OVER CLC MICROPHONE POSITION



INDICATED AIRSPEED =120 KTS.

S76 SUMMARY SHEET (6/05-6/06/84)

SOUND EXPOSURE LEVEL (DB)

	(LEFT SIDE)				(RIGHT SIDE)		
	2000'	1000'	500'	CL-C	500'	1000'	2000'
*** SIX DEG. APPROACH AT VY, 74 KTS. ***							
AVERAGE	76.3	82.0	86.9	94.8	89.4	85.2	--
N	7	7	8	7	8	8	--
S.D.	.5	.7	1.4	.8	1.0	.6	--
90% CI	.4	.5	.9	.6	.6	.4	--
*** NORMAL APPROACH ***							
AVERAGE	75.2	80.9	83.7	83.9	84.0	82.8	--
N	6	6	7	7	7	7	--
S.D	.6	.4	.5	.7	.7	.7	--
90% CI	.5	.4	.3	.5	.5	.5	--
*** NOISE ABATEMENT APPROACH (9.5 DEG. TARGET, 60 KTS.) ***							
AVERAGE	76.5	82.4	85.9	91.4	88.9	86.3	--
N	5	6	5	6	6	6	--
S.D	.9	.6	1.0	1.6	1.3	1.3	--
90% CI	.9	.5	1.0	1.3	1.1	1.1	--
*** NOISE ABATEMENT APPROACH (12 DEG. TARGET, 60 KTS.) ***							
AVERAGE	75.4	80.9	82.8	84.2	85.2	83.1	--
N	3	4	4	4	4	4	--
S.D	.7	.7	.6	1.3	.7	.8	--
90% CI	1.1	.8	.7	1.5	.8	1.0	--

S76 SUMMARY SHEET (6/05-6/06/84)

SOUND EXPOSURE LEVEL (DB)

	(LEFT SIDE)				(RIGHT SIDE)		
	2000'	1000'	500'	CL-C	500'	1000'	2000'
*** NOISE ABATEMENT APPROACH (3 DEG. TARGET, 60 KTS.) ***							
AVERAGE	76.4	82.8	87.9	95.1	88.4	82.6	--
N	5	5	3	5	5	5	--
S.D.	.2	.6	.8	1.0	.7	.5	--
90% CI	.2	.6	1.3	1.0	.6	.5	--
*** NOISE ABATEMENT APPROACH (3 DEG. TARGET, 120 KTS.) ***							
AVERAGE	77.8	84.1	88.6	90.3	86.0	82.1	--
N	5	4	5	5	5	5	--
S.D	.6	.6	.4	1.3	.3	.8	--
90% CI	.5	.7	.3	1.2	.3	.7	--
*** NORMAL TAKEOFF ***							
AVERAGE	--	85.3	86.5	83.2	86.0	83.8	78.0
N	--	6	6	6	6	6	6
S.D	--	1.1	.6	.5	1.3	1.6	1.2
90% CI	--	.9	.5	.4	1.1	1.4	1.0
*** 500 FT. LEVEL FLYOVER AT 120 KTS. ***							
AVERAGE	80.8	85.6	87.1	85.6	85.4	82.9	76.6
N	6	7	7	14	7	7	7
S.D	.4	.3	.5	.8	.5	.6	.8
90% CI	.4	.2	.3	.4	.4	.5	.6

S76 SUMMARY SHEET (6/05-6/06/84)

SOUND EXPOSURE LEVEL (DB)

	(LEFT SIDE)				(RIGHT SIDE)		
	2000'	1000'	500'	CL-C	500'	1000'	2000'
* 1000 FT. LEVEL FLYOVER AT 120 KTS. *							
AVERAGE	79.1	83.0	82.4	81.6	81.6	81.4	76.7
N	6	6	6	11	6	6	6
S.D.	.7	.6	.7	.9	.6	.6	.6
90% CI	.6	.5	.6	.5	.5	.5	.5

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: SIKORSKY S76

TEST DATE: 6/04/84

OPERATION : LEVEL FLYOVER (1000' @ 120 KTS)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' EAST	1000' EAST	2000' EAST
S46	79.30	82.70	83.10	81.40	----	----	----
S47	----	----	----	82.70	82.00	81.80	77.10
S48	80.20	84.00	82.30	81.30	----	----	----
S49	----	----	----	82.30	81.80	81.70	77.10
S50	79.20	83.40	83.20	83.20	----	----	----
S51	----	----	----	--	82.30	81.90	77.30
S52	78.90	82.40	82.50	81.40	----	----	----
S53	----	----	----	79.90	80.80	80.70	76.10
S54	78.00	82.70	81.60	81.20	----	----	----
S55	----	----	----	81.00	81.60	81.70	75.80
S56	79.00	82.60	81.60	81.60	----	----	----
S57	----	----	----	81.10	81.10	80.60	76.60
AVERAGE	79.10	82.97	82.38	81.55	81.60	81.40	76.67
STD. DEV.	0.71	0.58	0.70	0.90	0.56	0.59	0.61
90% C.I.	0.59	0.48	0.57	0.49	0.46	0.48	0.50

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: SIKORSKY S76 TEST DATE: 6/05/84

OPERATION : 6 DEGREE APPROACH AT VY, 74 KTS.)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
A1	75.90	81.70	87.60	95.10	90.70	85.80	--
A2	76.70	82.70	88.00	95.20	89.20	85.20	--
A3	77.00	82.90	89.20	96.00	87.40	84.10	--
A4	76.50	82.20	86.20	95.50	89.80	85.90	--
A5	75.70	80.70	85.00	--	89.90	85.00	--
A6	75.90	82.10	87.10	94.00	89.50	85.60	--
A7	--	--	85.50	94.40	88.90	84.80	--
A8	76.10	81.70	86.40	93.70	89.40	85.10	--
AVERAGE	76.26	82.00	86.88	94.84	89.35	85.19	--
STD. DEV.	0.48	0.73	1.38	0.83	0.95	0.59	--
90% C.I.	0.35	0.54	0.92	0.61	0.64	0.39	--

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: SIKORSKY S76 TEST DATE:06/05/84

OPERATION : NOISE ABATEMENT APPROACH (9.5 DEG. TARGET, 60 KTS.)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
D9	77.90	83.00	86.10	91.10	89.90	87.60	--
D10	76.30	82.90	85.40	89.90	87.60	84.70	--
D11	--	--	--	--	--	--	--
D12	--	82.10	87.40	94.00	89.90	87.60	--
D13	76.30	82.40	85.80	92.50	90.40	87.40	--
D14	75.30	81.50	84.60	90.20	87.90	85.50	--
D15	76.50	82.50	--	90.80	87.50	85.20	--
AVERAGE	76.46	82.40	85.86	91.42	88.87	86.33	--
STD. DEV.	0.93	0.55	1.03	1.56	1.33	1.34	--
90% C.I.	0.89	0.45	0.98	1.28	1.10	1.11	--

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: SIKORSKY S76

TEST DATE: 6/06/84

OPERATION : NORMAL APPROACH

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
B17	75.90	81.40	84.50	84.70	84.20	82.40	--
B19	--	80.70	83.80	83.50	84.20	82.40	--
B21	74.70	--	83.30	83.00	82.90	82.00	--
B23	75.40	80.70	83.60	84.80	85.10	84.10	--
B25	75.80	80.70	83.20	83.50	83.50	82.70	--
B27	74.90	80.50	83.30	83.50	84.20	83.10	--
B29	74.60	81.50	84.00	84.30	84.20	83.10	--
AVERAGE	75.22	80.92	83.67	83.90	84.04	82.83	--
STD. DEV.	0.56	0.42	0.47	0.70	0.69	0.69	--
90% C.I.	0.46	0.35	0.34	0.51	0.50	0.50	--

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: SIKORSKY S76 TEST DATE: 6/06/84

OPERATION : NORMAL TAKEOFF

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' WEST	1000' WEST	500' WEST	CL-C	500' EAST	1000' EAST	2000' EAST
C18	--	86.00	86.70	83.30	86.40	86.10	78.50
C20	--	85.40	86.70	83.40	86.30	83.10	78.40
C22	--	84.50	86.50	83.30	85.40	83.10	77.00
C24	--	87.10	87.30	82.40	87.90	85.60	79.90
C26	--	84.60	86.50	83.90	85.90	82.80	77.60
C28	--	84.00	85.50	83.00	83.90	82.10	76.50
AVERAGE	--	85.27	86.53	83.22	85.97	83.80	77.98
STD. DEV.	--	1.14	0.59	0.50	1.31	1.64	1.22
90% C.I.	--	0.94	0.48	0.41	1.08	1.35	1.01

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: SIKORSKY S76 TEST DATE: 6/06/84

OPERATION : NOISE ABATEMENT APPROACH (12 DEG. TARGET, 60 KTS.)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
D30	--	81.10	82.50	84.20	85.80	84.10	--
D31	76.10	81.80	82.90	85.10	85.50	82.60	--
D32	74.80	80.20	82.20	82.40	84.30	82.30	--
D33	75.40	80.50	83.60	85.20	85.20	83.50	--
AVERAGE	75.43	80.90	82.80	84.23	85.20	83.13	--
STD. DEV.	0.65	0.71	0.61	1.30	0.65	0.83	--
90% C.I.	1.10	0.83	0.71	1.52	0.76	0.97	--

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: SIKORSKY S76 TEST DATE: 6/06/84

OPERATION : NOISE ABATEMENT APPROACH (3 DEG. TARGET, 60 KTS.)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
D34	76.50	83.50	88.80	93.30	88.40	83.00	--
D35	76.10	81.80	87.40	95.40	87.50	82.10	--
D36	76.50	82.70	--	95.80	88.20	82.00	--
D37	76.30	82.80	87.60	95.30	89.30	82.80	--
D38	76.60	83.20	--	95.60	88.80	83.00	--
AVERAGE	76.40	82.80	87.93	95.08	88.44	82.58	--
STD. DEV.	0.20	0.64	0.76	1.01	0.67	0.49	--
90% C.I.	0.19	0.61	1.28	0.97	0.64	0.47	--

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: SIKORSKY S76 TEST DATE: 6/06/84

OPERATION : NOISE ABATEMENT APPROACH (3 DEG. TARGET, 120 KTS.)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
D39	78.20	--	88.80	88.60	86.10	81.80	--
D40	77.90	83.90	88.70	90.20	85.50	82.00	--
D41	77.00	83.80	88.20	92.20	86.40	81.70	--
D42	77.50	83.70	88.40	90.00	85.80	81.50	--
D43	78.40	85.00	89.10	90.60	86.00	83.40	--
AVERAGE	77.80	84.10	88.64	90.32	85.96	82.08	--
STD. DEV.	0.56	0.61	0.35	1.29	0.34	0.76	--
90% C.I.	0.53	0.71	0.33	1.23	0.32	0.72	--

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: SIKORSKY S76 TEST DATE: 6/05/84

OPERATION : LEVEL FLYOVER (500' @ 120 KTS)

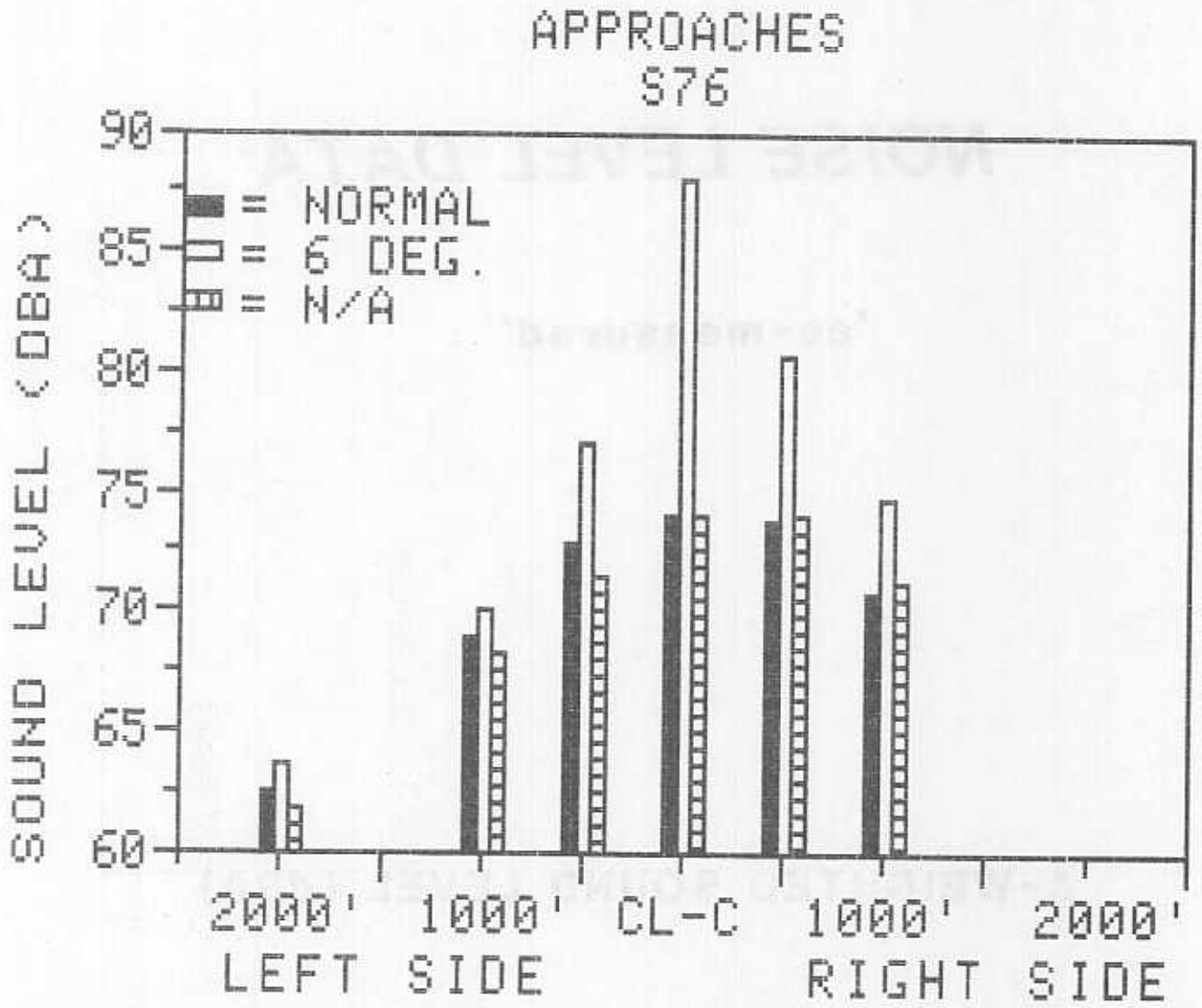
	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' EAST	1000' EAST	2000' EAST
Q100	----------	----------	----------	85.30	85.70	83.30	77.90
Q101	81.00	85.70	87.40	86.00	----------	----------	----------
Q102	----------	----------	----------	86.90	85.20	83.00	75.90
Q103	--	85.50	87.50	86.50	----------	----------	----------
Q104	----------	----------	----------	85.50	86.00	83.50	76.50
Q105	81.50	85.60	86.70	86.10	----------	----------	----------
Q106	----------	----------	----------	85.20	85.20	82.90	77.40
Q107	80.50	85.70	86.90	86.20	----------	----------	----------
Q108	----------	----------	----------	84.20	84.50	83.10	75.90
Q109	80.40	85.50	87.30	85.90	----------	----------	----------
Q110	----------	----------	----------	85.20	85.90	83.00	76.40
Q111	81.00	86.00	86.20	86.00	----------	----------	----------
Q112	----------	----------	----------	84.20	85.00	81.60	75.90
Q113	80.40	85.00	87.40	85.60	----------	----------	----------
AVERAGE	80.80	85.57	87.06	85.63	85.36	82.91	76.56
STD. DEV.	0.44	0.30	0.46	0.78	0.54	0.61	0.80
90% C.I.	0.37	0.22	0.34	0.38	0.39	0.45	0.59

NOISE LEVEL DATA

'as-measured'

A-WEIGHTED SOUND LEVEL (dBA)

THIS SECTION OF THE APPENDIX CONTAINS THE 'AS-MEASURED' A-WEIGHTED SOUND LEVEL (dBA) FOR ALL FLIGHT EVENTS. THESE DATA ARE PRESENTED IN THE FORM OF BAR CHARTS, SUMMARY TABLES AND INDIVIDUAL EVENT DATA. THE BAR CHARTS SHOW THE FALL OFF IN NOISE LEVEL VERSUS SIDELINE DISTANCE, AND PROVIDE A QUICK LOOK COMPARISON OF THE NOISE LEVELS. PERTINENT FLIGHT PARAMETER INFORMATION READ FROM THE COCKPIT INSTRUMENT PANEL VIDEO RECORDINGS IS ALSO SHOWN BELOW EACH BAR CHART. THE SUMMARY TABLES PRESENT THE AVERAGE NOISE LEVEL, NUMBER OF SAMPLES, STANDARD DEVIATION AND THE 90 PERCENT CONFIDENCE INTERVAL FOR EACH FLIGHT CONDITION. INDIVIDUAL EVENT DATA FOR EACH CONDITION IS THEN GIVEN.

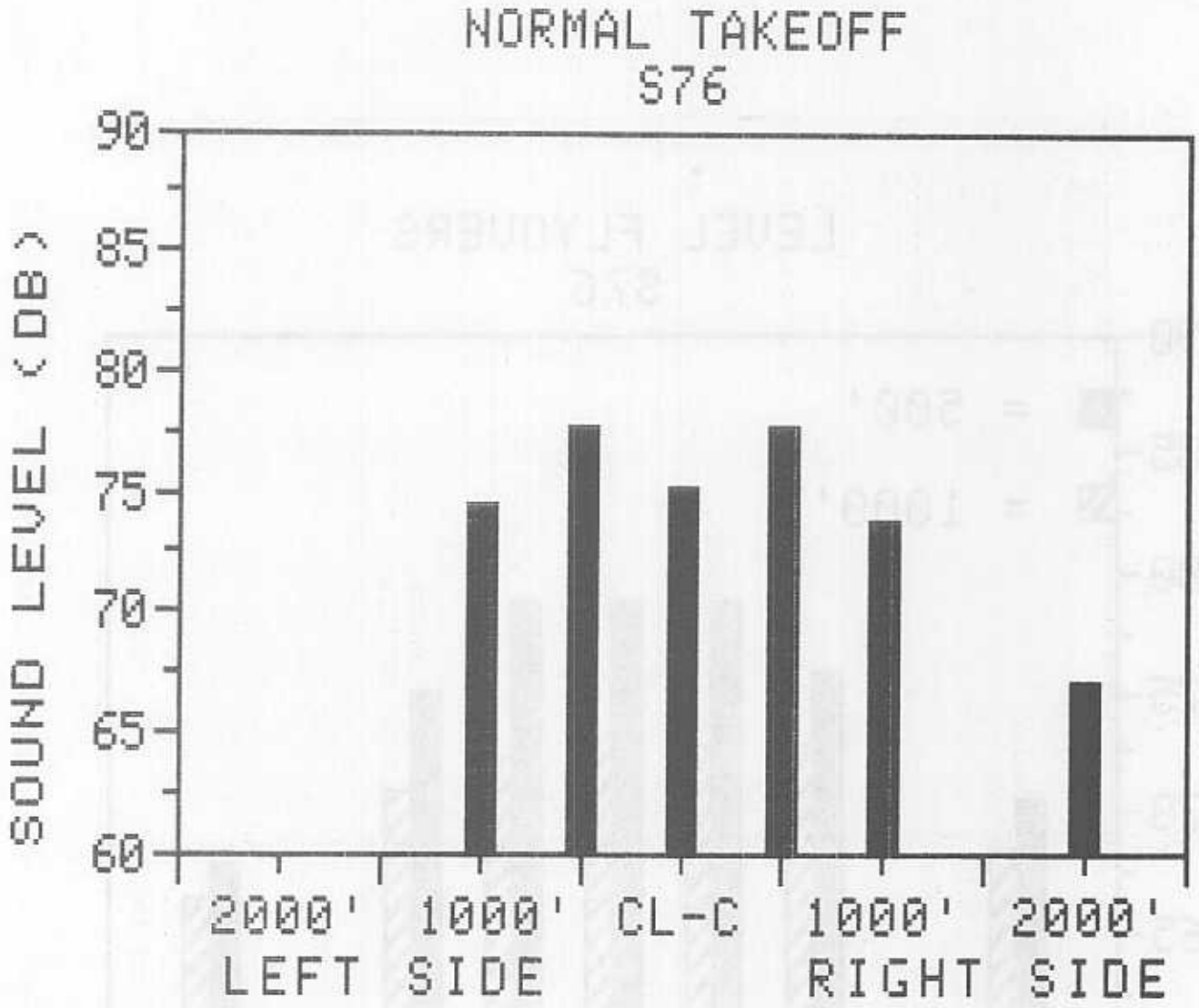


OPERATION	AVG. ALT. OVER CL-C (FT. AGL)	INDICATED AIRSPEED (KTS.)	GLIDESLOPE RANGE (DEG.)
NORMAL APPROACH	620	85-64	4.2- 9.9
SIX DEG. APPROACH	390	80	6.0
NOISE ABATEMENT APP.	700	67-62	4.5-11.5

12° TARGET, 60 KTS.

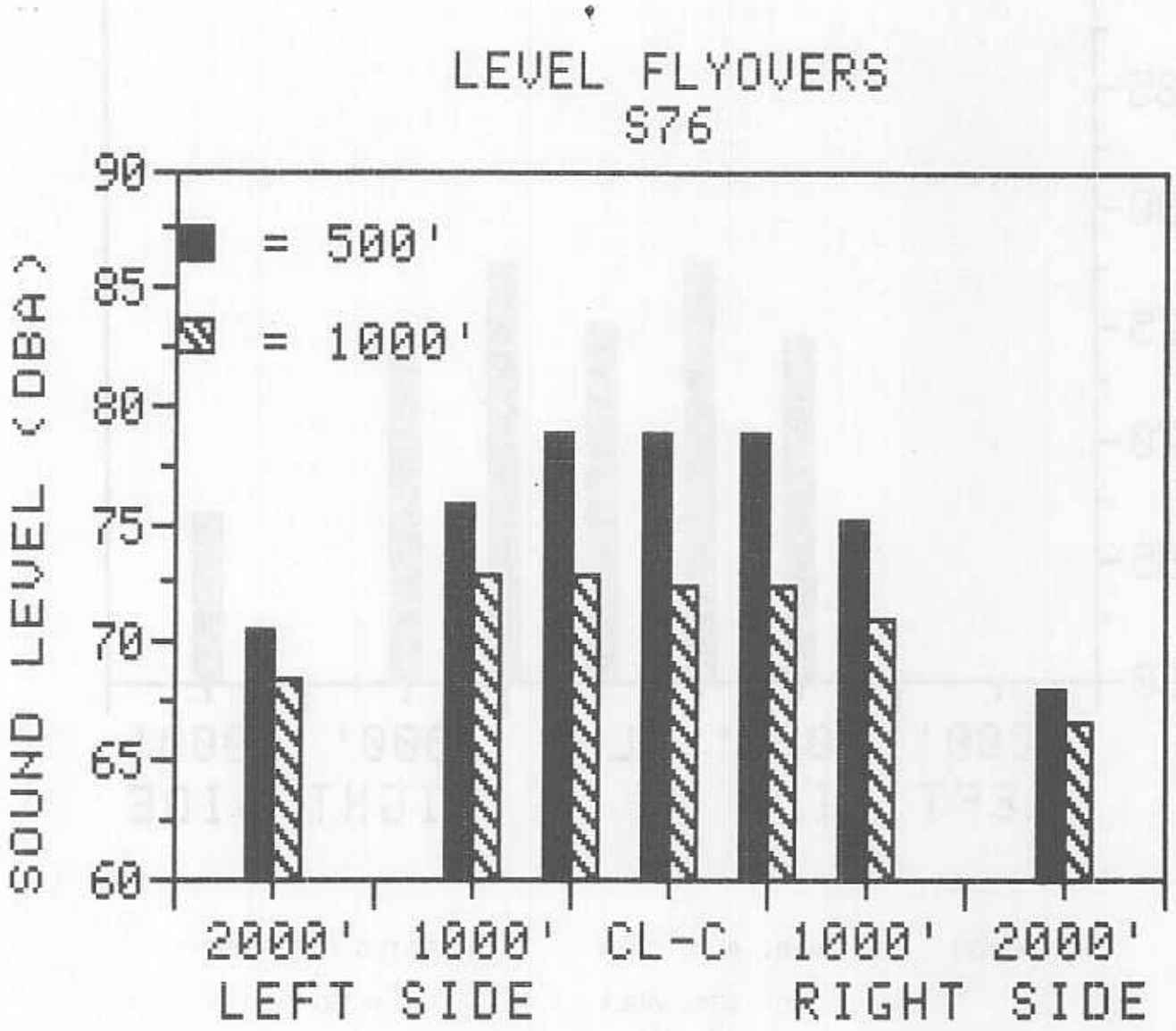
(EVENTS D30-D33)

NOTE: ALTITUDE, AIRSPEED AND VERTICAL SPEED DATA READ FROM VIDEO TAPES OF THE INSTRUMENT PANEL. THE GLIDESLOPE RANGE WAS CALCULATED WITHIN ±15 SEC OF THE CL-C MICROPHONE POSITION.



OPERATION	AVG. ALT. OVER CLC (FT. AGL)	INDICATED AIRSPEED (KTS.)
NORMAL TAKEOFF	493	83

NOTE: ALTIMETER AND INDICATED AIRSPEED READINGS MADE WHEN THE HELICOPTER PASSED OVER CLC MICROPHONE POSITION



INDICATED AIRSPEED =120 KTS.

S76 SUMMARY SHEET (6/05-6/06/84)

A-WEIGHTED SOUND LEVEL (DB)

	(LEFT SIDE)				(RIGHT SIDE)		
	2000'	1000'	500'	CL-C	500'	1000'	2000'
* 1000 FT. LEVEL FLYOVER AT 120 KTS. *							
AVERAGE	68.5	72.9	72.7	72.3	72.4	71.0	66.5
N	6	6	6	11	6	6	6
S.D.	1.0	.3	.9	1.3	.9	.9	.9
90% CI	.8	.3	.8	.7	.7	.7	.7

23°C
60% RH

S76 SUMMARY SHEET (6/05-6/06/84)

A-WEIGHTED SOUND LEVEL (DB)

	(LEFT SIDE)				(RIGHT SIDE)		
	2000'	1000'	500'	CL-C	500'	1000'	2000'
* SIX DEG. APPROACH AT VY, 74 KTS. *							
AVERAGE	63.5	70.1	77.0	88.1	80.6	74.7	--
N	7	8	8	7	8	8	--
S.D.	1.2	.7	1.2	1.7	2.0	1.3	--
90% CI	.9	.4	.8	1.2	1.3	.8	--
* NORMAL APPROACH *							
AVERAGE	62.4	68.9	72.8	74	73.7	70.7	--
N	6	6	7	7	6	6	--
S.D	.9	.5	.7	1.0	.7	1.0	--
90% CI	.7	.4	.5	.7	.6	.9	--
* NOISE ABATEMENT APPROACH (9.5 DEG. TARGET, 60 KTS.) *							
AVERAGE	62.3	69.5	75.1	82.1	79.0	75.1	--
N	6	6	5	6	6	6	--
S.D	1.6	.5	.8	1.7	1.2	2.1	--
90% CI	1.3	.4	.8	1.4	1.0	1.8	--
* NOISE ABATEMENT APPROACH (12 DEG. TARGET, 60 KTS.) *							
AVERAGE	61.8	68.1	71.4	73.9	74.0	71.1	--
N	4	4	4	4	4	4	--
S.D	1.1	.9	1.2	1.9	1.2	1.8	--
90% CI	1.3	1.0	1.4	2.2	1.4	2.1	--

S76 SUMMARY SHEET (6/05-6/06/84)

A-WEIGHTED SOUND LEVEL (DB)

	(LEFT SIDE)				(RIGHT SIDE)		
	2000'	1000'	500'	CL-C	500'	1000'	2000'
* NOISE ABATEMENT APPROACH (3 DEG. TARGET, 60 KTS.) *							
AVERAGE	64.3	70.9	77.5	88.8	78.8	70.6	--
N	5	5	3	5	5	5	--
S.D.	1.2	.8	.9	1.9	1.0	.6	--
90% CI	1.2	.8	1.6	1.8	1.0	.6	--
* NOISE ABATEMENT APPROACH (3 DEG. TARGET, 120 KTS.) *							
AVERAGE	67.7	75.1	80.9	85.0	79.2	72.6	--
N	5	4	5	5	5	5	--
S.D	.4	.4	.2	1.4	.6	.6	--
90% CI	.4	.4	.2	1.3	.5	.6	--
* NORMAL TAKEOFF *							
AVERAGE	--	74.5	77.6	75.1	77.6	73.7	67.1
N	--	6	6	6	6	6	6
S.D	--	1.4	1.1	.8	2.0	1.3	1.6
90% CI	--	1.2	.9	.6	1.7	1.1	1.3
* 500 FT. LEVEL FLYOVER AT 120KTS. *							
AVERAGE	70.4	75.9	78.8	78.7	78.9	75.2	68.0
N	7	7	7	14	7	7	7
S.D	1.3	.7	.6	1.1	1.0	1.2	1.0
90% CI	.9	.5	.4	.5	.7	.9	.8

S76 SUMMARY SHEET (06/06/84)

A-WEIGHTED SOUND LEVEL (DB)

	(INSIDE OF TURN)				(OUTSIDE OF TURN)		
	2000'	1000'	500'	CL-C	500'	1000'	2000'
		(RIGHT SIDE)			(RIGHT SIDE)		
* 15 DEG. BANK ANGLE TURN, 65 KTS. *							
AVERAGE	61.9	68.7	74.5	77.7	73.9	69.2	--
N	4	4	4	7	4	3	--
S.D.	.5	.5	1.3	4.3	2.9	1.3	--
90% CI	.6	.6	1.6	3.2	3.4	2.1	--
* 30 DEG. BANK ANGLE TURN, 65 KTS.							
AVERAGE	64.4	72.2	77.2	78.8	76.1	70.6	--
N	4	4	4	8	4	4	--
S.D	1.6	1	1.5	2.7	4.4	3.9	--
1.9	1.1	1.8	1.8	1.8	5.2	4.6	--
		(LEFT SIDE)			(LEFT SIDE)		
* 15 DEG. BANK ANGLE TURN, 65 KTS.							
AVERAGE	63.6	71.0	75.2	77.7	78.1	74.0	--
N	4	4	3	7	4	3	--
S.D	.4	1.6	1.4	4.3	4.7	2.2	--
90% CI	.4	1.8	2.4	3.2	5.5	3.7	--
* 30 DEG. BANK ANGLE TURN, 65 KTS.							
AVERAGE	64.8	70.4	75.3	78.8	77.6	74.2	--
N	4	4	4	8	4	4	--
S.D	.8	1.3	1.7	2.7	2.7	2.3	--
90% CI	.9	1.5	2	1.8	3.1	2.7	--

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: SIKORSKY S76 TEST DATE: 6/04/84

OPERATION : LEVEL FLYOVER (1000' @ 120 KTS)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' EAST	1000' EAST	2000' EAST
S46	67.80	72.50	73.00	72.60	----------	----------	----------
S47	----------	----------	----------	74.10	72.10	71.50	65.50
S48	69.30	72.80	71.30	71.80	----------	----------	----------
S49	----------	----------	----------	73.20	72.90	71.10	66.60
S50	68.40	72.80	74.20	75.00	----------	----------	----------
S51	----------	----------	----------	--	73.60	71.00	66.30
S52	69.30	73.50	72.50	71.90	----------	----------	----------
S53	----------	----------	----------	70.70	71.60	70.20	65.20
S54	67.00	72.70	72.80	71.90	----------	----------	----------
S55	----------	----------	----------	71.40	72.80	72.30	66.10
S56	69.20	72.80	72.40	71.40	----------	----------	----------
S57	----------	----------	----------	71.60	71.20	70.00	67.50
AVERAGE	68.50	72.85	72.70	72.33	72.37	71.02	66.50
STD. DEV.	0.95	0.34	0.94	1.29	0.90	0.85	0.88
90% C.I.	0.78	0.28	0.78	0.70	0.74	0.70	0.73

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: SIKORSKY S76 TEST DATE: 6/05/84

OPERATION : 6 DEGREE APPROACH AT VY, 74 KTS.

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
A1	62.90	70.10	78.20	87.80	82.40	74.70	--
A2	64.60	69.70	77.20	88.80	78.60	75.10	--
A3	64.90	71.20	78.80	90.90	76.60	71.80	--
A4	63.70	69.30	77.40	89.10	80.30	75.70	--
A5	62.80	69.50	76.20	--	81.80	74.30	--
A6	61.60	70.10	77.30	86.20	81.90	75.00	--
A7	--	70.90	75.70	87.50	81.10	75.80	--
A8	64.30	70.10	75.30	86.30	81.80	74.90	--
AVERAGE	63.54	70.11	77.01	88.09	80.56	74.66	--
STD. DEV.	1.18	0.66	1.21	1.66	2.00	1.26	--
90% C.I.	0.86	0.44	0.81	1.22	1.34	0.84	--

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: SIKORSKY S76 TEST DATE: 6/05/84

OPERATION : LEVEL FLYOVER (500' @ 120 KTS)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' EAST	1000' EAST	2000' EAST
Q100	----------	----------	----------	79.30	79.80	76.00	68.60
Q101	72.60	77.00	79.20	79.30	----------	----------	----------
Q102	----------	----------	----------	81.00	78.20	76.20	68.50
Q103	69.30	75.70	78.90	80.10	----------	----------	----------
Q104	----------	----------	----------	79.20	79.40	75.90	67.60
Q105	70.50	75.50	78.70	78.80	----------	----------	----------
Q106	----------	----------	----------	78.30	79.30	74.00	69.30
Q107	70.90	76.00	78.20	78.20	----------	----------	----------
Q108	----------	----------	----------	77.40	77.50	75.40	68.80
Q109	70.20	76.50	79.80	78.20	----------	----------	----------
Q110	----------	----------	----------	79.20	80.20	76.00	66.90
Q111	71.00	75.00	78.00	78.50	----------	----------	----------
Q112	----------	----------	----------	77.20	78.20	73.00	66.50
Q113	68.60	75.60	79.10	77.10	----------	----------	----------
AVERAGE	70.44	75.90	78.84	78.70	78.94	75.21	68.03
STD. DEV.	1.29	0.67	0.60	1.10	0.99	1.23	1.05
90% C.I.	0.94	0.49	0.44	0.53	0.72	0.90	0.77

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: SIKORSKY S76 TEST DATE: 6/06/84

OPERATION : NOISE ABATEMENT APPROACH (9.5 DEG. TARGET, 60 KTS.)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
D9	64.80	70.20	74.90	80.60	79.90	76.00	--
D10	63.60	69.50	74.80	80.50	77.60	71.50	--
D11	--	--	--	--	--	--	--
D12	61.30	69.00	76.50	85.20	79.80	77.30	--
D13	61.30	69.90	75.00	81.90	80.20	76.70	--
D14	60.80	69.10	74.30	81.70	77.40	74.00	--
D15	61.70	69.20	--	82.80	78.80	75.30	--
AVERAGE	62.25	69.48	75.10	82.12	78.95	75.13	--
STD. DEV.	1.58	0.48	0.83	1.74	1.22	2.12	--
90% C.I.	1.31	0.40	0.79	1.43	1.01	1.75	--

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: SIKORSKY S76 TEST DATE: 6/06/84

OPERATION : NORMAL APPROACH

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
B17	62.10	69.70	74.00	75.70	74.20	70.00	--
B19	--	68.60	73.40	73.90	74.40	70.00	--
B21	61.30	--	73.10	73.00	72.50	70.00	--
B23	63.00	68.70	72.20	74.80	--	--	--
B25	63.20	68.40	72.50	74.30	73.90	72.00	--
B27	61.40	69.00	72.20	72.90	73.50	70.00	--
B29	63.20	68.90	72.50	73.60	73.60	72.00	--
AVERAGE	62.37	68.88	72.84	74.03	73.68	70.67	--
STD. DEV.	0.89	0.45	0.68	1.00	0.67	1.03	--
90% C.I.	0.73	0.37	0.50	0.73	0.56	0.85	--

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: SIKORSKY S76 TEST DATE: 6/06/84

OPERATION : NORMAL TAKEOFF

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' WEST	1000' WEST	500' WEST	CL-C	500' EAST	1000' EAST	2000' EAST
C18	--	75.70	77.80	74.70	77.60	73.80	68.40
C20	--	74.20	77.50	74.70	77.50	73.40	67.50
C22	--	73.80	78.40	74.70	76.50	73.90	65.30
C24	--	76.50	78.80	76.20	80.60	75.90	68.70
C26	--	74.10	77.40	76.00	78.50	73.30	67.60
C28	--	72.60	75.60	74.40	74.60	71.90	64.90
AVERAGE	--	74.48	77.58	75.12	77.55	73.70	67.07
STD. DEV.	--	1.40	1.11	0.77	2.00	1.29	1.60
90% C.I.	--	1.15	0.92	0.64	1.65	1.07	1.32

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: SIKORSKY S76 TEST DATE: 6/06/84

OPERATION : NOISE ABATEMENT APPROACH (12 DEG.TARGET, 60 KTS.)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
D30	63.00	68.10	70.70	74.90	75.70	73.00	--
D31	62.40	69.00	71.50	74.90	73.90	70.50	--
D32	60.50	66.90	70.40	71.10	73.20	69.00	--
D33	61.40	68.20	73.00	74.80	73.20	72.00	--
AVERAGE	61.83	68.05	71.40	73.93	74.00	71.13	--
STD. DEV.	1.10	0.87	1.16	1.88	1.18	1.75	--
90% C.I.	1.30	1.02	1.37	2.21	1.39	2.06	--

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: SIKORSKY S76 TEST DATE: 6/06/84

OPERATION : NOISE ABATEMENT APPROACH (3 DEG. TARGET, 60 KTS.)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
D34	63.40	70.80	78.50	85.40	77.60	71.50	--
D35	64.00	70.30	76.70	89.60	78.80	70.20	--
D36	63.10	70.20	--	89.70	78.20	70.00	--
D37	66.10	70.80	77.30	89.60	78.90	70.60	--
D38	64.90	72.20	--	89.80	80.30	70.50	--
AVERAGE	64.3	70.86	77.50	88.82	78.76	70.56	--
STD. DEV.	1.22	0.80	0.92	1.91	1.01	0.58	--
90% C.I.	1.16	0.76	1.55	1.82	0.96	0.55	--

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: SIKORSKY S76 TEST DATE: 6/06/84

OPERATION : NOISE ABATEMENT APPROACH (3 DEG. TARGET, 120 KTS.)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
D39	67.90	--	81.20	83.70	79.80	72.00	--
D40	67.80	75.00	80.80	85.90	78.70	72.60	--
D41	67.00	74.70	80.90	87.00	79.70	72.70	--
D42	67.80	75.20	80.60	84.00	78.90	72.00	--
D43	68.20	75.60	80.80	84.50	78.70	73.50	--
AVERAGE	67.74	75.13	80.86	85.02	79.16	72.56	--
STD. DEV.	0.44	0.38	0.22	1.39	0.55	0.62	--
90% C.I.	0.42	0.44	0.21	1.33	0.52	0.59	--

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: SIKORSKY S76 TEST DATE: 6/06/84

OPERATION : 15 DEG. BANK ANGLE TURN AT 65 KTS.

	INSIDE OF TURN (RIGHT SIDE)				OUTSIDE OF TURN (RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
G44	62.60	69.40	72.70	73.80	----	----	----
G45	----	----	----	--	77.00	--	--
G46	61.70	68.20	75.20	82.00	----	----	----
G47	----	----	----	74.70	71.20	69.00	--
G48	61.40	68.80	74.30	74.60	----	----	----
G49	----	----	----	81.60	75.70	70.50	--
G50	61.80	68.40	75.70	83.30	----	----	----
G51	----	----	----	74.10	71.60	68.00	--
AVERAGE	61.88	68.70	74.48	77.73	73.88	69.17	--
STD. DEV.	0.51	0.53	1.32	4.32	2.91	1.26	--
90% C.I.	0.60	0.62	1.55	3.17	3.42	2.12	--

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: SIKORSKY S76 TEST DATE: 6/06/84

OPERATION : 15 DEG. BANK ANGLE TURN AT 65 KTS.

	INSIDE OF TURN (LEFT SIDE)				OUTSIDE OF TURN (LEFT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
G44	----------	----------	----------	73.80	74.90	--	--
G45	63.70	68.70	73.70	--	----------	----------	----------
G46	----------	----------	----------	82.00	82.70	75.50	--
G47	62.90	71.50	76.50	74.70	----------	----------	----------
G48	----------	----------	----------	74.60	73.20	71.20	--
G49	63.50	72.20	75.50	81.60	----------	----------	----------
G50	----------	----------	----------	83.30	81.40	75.30	--
G51	64.30	71.50	--	74.10	----------	----------	----------
AVERAGE	63.60	70.98	75.23	77.73	78.05	74.00	--
STD. DEV.	0.41	1.55	1.42	4.32	4.70	2.18	--
90% C.I.	0.48	1.82	2.39	3.17	5.52	3.68	--

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: SIKORSKY S76 TEST DATE: 6/06/84

OPERATION : 30 DEG. BANK ANGLE TURN AT 65 KTS.

	INSIDE OF TURN (RIGHT SIDE)				OUTSIDE OF TURN (RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
H52	66.00	72.50	75.50	80.30	----	----	----
H53	----	----	----	76.50	72.90	69.00	--
H54	62.30	70.80	76.40	76.80	----	----	----
H55	----	----	----	77.80	74.50	68.00	--
H56	65.10	72.80	78.60	82.50	----	----	----
H57	----	----	----	78.50	74.40	69.00	--
H58	64.10	72.80	78.30	75.30	----	----	----
H59	----	----	----	82.40	82.60	76.50	--
AVERAGE	64.38	72.23	77.20	78.76	76.10	70.63	--
STD. DEV.	1.59	0.96	1.49	2.71	4.39	3.94	--
90% C.I.	1.86	1.13	1.76	1.81	5.16	4.64	--

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: SIKORSKY S76 TEST DATE: 6/06/84

OPERATION : 30 DEG. BANK ANGLE TURN AT 65 KTS.

	INSIDE OF TURN (LEFT SIDE)				OUTSIDE OF TURN (LEFT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
H52	----------	----------	----------	80.30	79.10	76.00	--
H53	66.10	72.30	77.80	76.50	----------	----------	----------
H54	----------	----------	----------	76.80	75.90	74.00	--
H55	63.90	69.30	74.80	77.80	----------	----------	----------
H56	----------	----------	----------	82.50	80.60	75.80	--
H57	64.70	70.10	74.80	78.50	----------	----------	----------
H58	----------	----------	----------	75.30	74.90	71.00	--
H59	64.40	70.00	73.80	82.40	----------	----------	----------
AVERAGE	64.78	70.43	75.30	78.76	77.63	74.20	--
STD. DEV.	0.80	1.30	1.73	2.71	2.67	2.32	--
90% C.I.	0.94	1.53	2.04	1.81	3.14	2.72	--

RADAR TRACKING

DATA

THIS SECTION OF THE APPENDIX CONTAINS THE HELICOPTER POSITION DATA AND TRACKING PLOTS DERIVED FROM THE FAA'S PORTABLE TRACKING RADAR SYSTEM. THE POSITION DATA LISTS THE CLOSEST POINT OF APPROACH (CPA), TIME OF CPA, ELEVATION ANGLE, RATE OF CLIMB OR DESCENT, THE CLIMB OR DESCENT ANGLE, AND GROUND SPEED FOR ALL FLIGHT CONDITIONS. TRACKING PLOTS OF THE ACTUAL FLIGHT PROFILE FLOWN ARE PROVIDED FOR EACH FLIGHT CONDITIONS.

SIKORSKY S76

POSITION DATA
NOISE MEASUREMENT PROGRAM

CENTERLINE CENTER

DATE:06/05/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
SIX DEG. APPROACH AT VY, 74 KTS.							
1	APP	369.9	72.3	13:26:08.6	-637.0	-6.0	59.6
2	APP	368.2	81.6	13:33:52.5	-551.3	-4.8	64.9
3	APP	385.7	74.1	13:38:08.9	-564.4	-4.6	69.0
4	APP	366.8	85.4	13:44:23.9	-475.7	-4.1	66.0
5	APP	424.0	75.4	13:49:58.9	-948.9	-7.2	74.1
6	APP	372.8	66.5	13:54:27.9	-951.3	-8.7	61.4
7	APP	376.6	84.2	13:59:05.5	-510.9	-4.2	68.8
8	APP	366.0	81.1	14:03:03.5	-796.7	-6.5	68.7
NOISE ABATEMENT APPROACH (9.5 DEG. TARGET, 60 KTS.)							
9	APP	526.7	74.6	14:21:45.0	-803.4	-8.2	54.9
10	APP	551.6	75.5	14:26:24.4	-726.0	-8.1	50.1
11	APP	615.7	65.1	14:30:41.1	-814.7	-8.6	53.1
12	APP	538.6	80.2	14:35:24.9	-755.8	-8.7	48.7
13	APP	530.6	78.7	14:40:10.5	-951.4	-10.4	50.9
14	APP	557.5	79.5	14:47:21.6	-1212.3	-13.9	48.5

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

SIKORSKY S76

POSITION DATA
NOISE MEASUREMENT PROGRAM

CENTERLINE CENTER

DATE:06/06/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NORMAL APPROACH							
17	APP	547.9	73.4	10:18:17.6	-953.2	-8.3	64.7
19	APP	570.4	80.7	10:22:41.1	-1078.6	-9.0	67.4
21	APP	604.4	78.6	10:27:00.0	-1117.1	-8.7	71.8
23	APP	723.4	78.1	10:32:37.0	-1382.2	-10.5	73.9
25	APP	594.2	76.4	10:36:47.6	-1487.1	-11.7	70.8
27	APP	589.1	74.3	10:41:09.6	-1298.3	-11.1	65.2
29	APP	616.5	84.5	10:45:31.0	-1312.7	-11.0	66.4
NORMAL TAKEOFF							
18	DEP	515.3	84.2	10:20:11.8	1287.8	9.3	77.8
20	DEP	493.7	72.3	10:24:23.4	1011.2	7.0	81.2
22	DEP	537.0	86.5	10:28:42.1	1125.7	7.9	80.5
24	DEP	509.3	80.1	10:34:15.3	1124.4	7.3	86.4
26	DEP	453.3	72.6	10:38:22.7	943.4	6.9	77.5
28		-----	NO DATA	-----			
NOISE ABATEMENT APPROACH (12 DEG. TARGET, 60 KTS.)							
30	APP	731.4	71.7	11:01:09.4	-1576.7	-14.9	58.6
31	APP	714.5	73.9	11:05:31.4	-1238.3	-12.0	57.7
32	APP	672.7	71.3	11:09:45.0	-1200.5	-12.6	52.8
33	APP	673.5	72.6	11:14:15.8	-1053.9	-10.3	57.0
NOISE ABATEMENT APPROACH (3 DEG. TARGET, 60 KTS.)							
34	APP	187.1	79.1	11:27:41.0	-338.2	-3.4	56.7
35	APP	165.1	85.0	11:32:23.5	-361.6	-3.3	61.7
36	APP	190.3	86.9	11:36:58.8	-466.8	-3.9	68.4
37	APP	190.3	87.3	11:41:16.7	-337.1	-3.3	57.0
38	APP	181.3	89.1	11:45:40.3	-203.6	-1.9	59.5

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

SIKORSKY S76

POSITION DATA
NOISE MEASUREMENT PROGRAM

CENTERLINE CENTER

DATE:06/06/08 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NOISE ABATEMENT APPROACH (3 DEG. TARGET, 120 KTS.)							
39	APP	185.2	84.9	12:01:10.6	-337.8	-1.6	120.7
40	APP	150.4	85.4	12:04:31.3	-785.0	-3.6	121.5
41	APP	195.5	86.0	12:08:04.8	-7.8	0.0	111.2
42	APP	190.3	87.0	12:12:18.6	-848.2	-3.9	121.6
43	APP	209.6	89.1	12:15:52.1	-339.0	-1.4	135.8
44	APP	433.8	89.0	12:37:01.6	65.3	0.7	52.6
15 DEGREE BANK TURN AT 65 KTS.							
45	F/O	436.7	85.2	12:39:07.0	500.1	4.4	64.3
46	F/O	461.4	85.5	12:42:24.4	-445.5	-4.3	58.2
47	F/O	526.9	68.5	12:44:24.7	-14.7	-0.1	77.1
48	F/O	519.9	73.7	12:46:41.2	-2814.7	-19.7	77.5
49	F/O	392.9	79.1	12:48:59.0	-341.8	-3.0	63.4
50	F/O	471.4	89.7	12:51:15.8	52.9	0.4	71.4
51	F/O	510.0	74.6	12:53:25.9	128.2	1.0	69.6
30 DEGREE BANK TURN AT 65 KTS.							
52	F/O	437.6	81.4	12:55:37.3	122.0	1.0	67.2
53	F/O	480.1	65.0	12:57:35.2	-147.2	-1.3	66.2
54	F/O	459.8	74.7	12:59:49.3	18.2	0.2	65.3
55	F/O	527.6	70.3	13:01:56.2	221.4	1.9	66.8
56	F/O	463.3	76.2	13:04:00.6	105.3	0.9	64.0
57	F/O	466.6	80.3	13:05:55.6	-19.3	-0.2	64.9
58	F/O	475.9	74.6	13:08:08.4	48.4	0.4	63.8
59	F/O	473.9	84.8	13:09:56.6	-299.7	-2.5	69.0

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

SIKORSKY S76

POSITION DATA
NOISE MEASUREMENT PROGRAM

500 FT. EAST

DATE:06/05/84

FAA/AEE

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
SIX DEG. APPROACH AT VY, 74 KTS.							
1	APP	534.4	41.3	13:26:08.4	-645.4	-6.0	60.3
2	APP	560.1	40.9	13:33:52.3	-586.1	-5.1	64.9
3	APP	550.0	42.7	13:38:08.9	-564.3	-4.6	69.0
4	APP	587.5	38.6	13:44:23.7	-505.7	-4.3	66.4
5	APP	651.5	41.4	13:49:58.1	-1031.5	-8.2	70.5
6	APP	549.9	42.5	13:54:26.4	-869.6	-7.3	67.3
7	APP	593.2	39.6	13:59:05.3	-535.5	-4.4	68.3
8	APP	600.8	37.2	14:03:03.5	-796.7	-6.5	68.7
NOISE ABATEMENT APPROACH (9.5 DEG. TARGET, 60 KTS.)							
9	APP	685.7	49.3	14:21:44.6	-706.7	-7.2	55.2
10	APP	702.5	49.7	14:26:24.4	-726.1	-8.1	50.1
11	APP	641.0	64.0	14:30:40.4	-862.9	-9.0	54.0
12	APP	717.3	46.6	14:35:26.0	-858.8	-10.3	46.8
13	APP	726.8	45.9	14:40:10.6	-971.3	-10.7	50.6
14	APP	708.6	51.0	14:47:21.4	-1199.1	-13.3	50.1

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

SIKORSKY S76

POSITION DATA
NOISE MEASUREMENT PROGRAM

500 FT. EAST

DATE:06/06/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NORMAL APPROACH							
17	APP	654.3	52.7	10:18:17.9	-990.2	-8.5	65.3
19	APP	713.5	52.0	10:22:41.7	-1145.6	-9.8	65.1
21	APP	729.0	56.4	10:26:59.4	-1249.2	-9.7	72.2
23	APP	811.8	58.9	10:32:37.9	-1552.2	-12.1	71.4
25	APP	773.9	48.5	10:36:47.6	-1486.8	-11.7	70.8
27	APP	750.2	49.4	10:41:09.6	-1298.3	-11.1	65.2
29	APP	784.5	49.7	10:45:31.8	-1429.8	-12.0	66.4
NORMAL TAKEOFF							
18	DEP	723.1	43.8	10:20:11.0	1306.5	9.4	77.5
20	DEP	731.0	42.6	10:24:24.5	1136.8	7.7	82.6
22	DEP	744.9	46.3	10:28:42.2	1119.5	7.8	80.4
24	DEP	718.4	46.5	10:34:16.0	1080.8	7.1	86.1
26	DEP	668.1	43.1	10:38:23.8	1098.5	7.3	84.6
28		-----	NO DATA	-----			
NOISE ABATEMENT APPROACH (12 DEG. TARGET, 60 KTS.)							
30	APP	805.8	63.1	11:01:08.0	-1212.6	-11.3	60.1
31	APP	763.0	64.5	11:05:31.4	-1238.3	-12.0	57.7
32	APP	811.5	52.0	11:09:45.0	-1200.2	-12.6	52.8
33	APP	734.6	61.5	11:14:15.7	-1039.2	-10.2	57.0
NOISE ABATEMENT APPROACH (3 DEG. TARGET, 60 KTS.)							
34	APP	539.5	20.3	11:27:40.9	-344.4	-3.4	56.5
35	APP	513.3	18.9	11:32:23.5	-361.4	-3.3	61.7
36	APP	526.2	21.4	11:36:58.8	-466.8	-3.9	68.4
37	APP	525.6	21.4	11:41:16.8	-467.6	-4.6	56.8
38	APP	525.6	20.4	11:45:40.0	-41.9	-0.4	60.5

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

SIKORSKY S76

POSITION DATA
NOISE MEASUREMENT PROGRAM

500 FT. EAST

DATE:06/06/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NOISE ABATEMENT APPROACH (3 DEG. TARGET, 120 KTS.)							
39	APP	542.7	20.1	12:01:10.6	-337.7	-1.6	120.7
40	APP	521.2	16.9	12:04:31.3	-785.0	-3.6	121.5
41	APP	545.9	21.1	12:08:04.6	-8.5	0.0	111.1
42	APP	525.4	21.4	12:12:18.4	-816.0	-3.7	123.9
43	APP	534.2	23.3	12:15:51.9	-256.8	-1.1	136.7
44	APP	639.5	42.1	12:36:56.9	1186.5	4.9	136.9
15 DEGREE BANK TURN AT 65 KTS.							
45	F/O	650.1	42.1	12:39:06.7	464.2	4.1	63.3
46	F/O	612.9	43.1	12:42:20.5	2054.6	7.2	159.5
47	F/O	582.9	57.7	12:44:24.7	-14.9	-0.1	77.1
48	F/O	682.9	43.7	12:46:42.4	-1235.1	-10.2	67.7
49	F/O	572.2	42.6	12:48:59.7	-206.3	-1.9	62.6
50	F/O	684.7	43.7	12:51:15.3	-44.7	-0.3	74.1
51	F/O	614.9	54.1	12:53:26.5	32.2	0.3	71.1
30 DEGREE BANK TURN AT 65 KTS.							
52	F/O	595.2	46.7	12:55:37.0	18.7	0.2	65.6
53	F/O	519.6	56.4	12:57:36.5	-76.8	-0.7	62.0
54	F/O	575.9	50.6	12:59:49.8	13.2	0.1	66.3
55	F/O	596.3	55.7	13:01:56.0	304.2	2.6	66.4
56	F/O	565.7	51.9	13:03:56.3	-454.0	-2.6	99.6
57	F/O	626.4	46.7	13:05:56.1	-41.8	-0.3	67.6
58	F/O	590.1	51.2	13:08:09.1	584.2	5.2	63.0
59	F/O	705.9	42.3	13:09:55.9	-516.4	-4.4	66.3

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

SIKORSKY S76

POSITION DATA
NOISE MEASUREMENT PROGRAM

500 FT. WEST

DATE:06/05/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
SIX DEG. APPROACH AT VY, 74 KTS.							
1	APP	640.0	33.0	13:26:09.8	-557.8	-5.3	59.3
2	APP	654.3	33.7	13:33:52.9	-492.3	-4.3	64.6
3	APP	681.4	33.6	13:38:07.8	-504.8	-4.1	69.4
4	APP	639.1	34.9	13:44:23.9	-475.9	-4.1	66.0
5	APP	641.0	39.6	13:49:59.4	-905.1	-6.7	76.1
6	APP	673.4	30.5	13:54:28.0	-925.8	-8.5	61.4
7	APP	649.5	35.2	13:59:05.5	-510.7	-4.2	68.8
8	APP	630.8	33.9	14:03:04.0	-761.8	-6.2	69.6
NOISE ABATEMENT APPROACH (9.5 DEG. TARGET, 60 KTS.)							
9	APP	753.4	44.2	14:21:43.8	-648.8	-6.6	55.5
10	APP	727.4	49.7	14:26:23.3	-829.6	-8.7	53.3
11	APP	892.0	38.4	14:30:42.6	-856.8	-9.4	50.8
12	APP	718.7	47.9	14:35:25.3	-814.8	-9.6	47.5
13	APP	720.0	45.8	14:40:10.8	-1002.7	-11.1	50.2
14	APP	765.6	45.8	14:47:21.7	-1216.5	-14.0	48.0

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

SIKORSKY S76

POSITION DATA
NOISE MEASUREMENT PROGRAM

500 FT. WEST

DATE:06/06/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NORMAL APPROACH							
17	APP	815.7	40.5	10:18:17.3	-966.0	-8.4	64.4
19	APP	784.7	46.1	10:22:41.3	-1085.1	-9.1	67.0
21	APP	813.8	44.9	10:27:00.9	-1032.0	-8.6	67.4
23	APP	932.8	49.8	10:32:36.8	-1324.4	-10.0	74.1
25	APP	780.6	47.7	10:36:47.6	-1486.8	-11.7	70.8
27	APP	782.3	48.3	10:41:08.8	-1410.4	-11.7	67.2
29	APP	793.1	50.0	10:45:31.5	-1381.9	-11.6	66.3
NORMAL TAKEOFF							
18	DEP	695.0	48.3	10:20:12.0	1288.8	9.5	76.1
20	DEP	657.4	49.0	10:24:24.8	1147.8	7.9	81.4
22	DEP	708.8	48.4	10:28:41.6	1241.7	8.5	82.1
24	DEP	697.8	47.0	10:34:15.5	1118.9	7.3	86.5
26	DEP	656.4	43.4	10:38:22.9	941.9	6.7	79.7
28		-----	NO DATA	-----			
NOISE ABATEMENT APPROACH (12 DEG. TARGET, 60 KTS.)							
30	APP	936.4	47.4	11:01:09.8	-1672.8	-15.9	58.1
31	APP	961.5	42.5	11:05:33.4	-1263.5	-12.0	58.4
32	APP	839.9	53.8	11:09:43.8	-1072.0	-11.3	52.9
33	APP	919.3	43.5	11:14:16.9	-1216.1	-11.6	58.6
NOISE ABATEMENT APPROACH (3 DEG. TARGET, 60 KTS.)							
34	APP	504.6	22.3	11:27:40.5	-377.5	-3.8	55.4
35	APP	530.5	18.1	11:32:23.8	-240.1	-2.2	62.1
36	APP	497.5	21.2	11:36:59.5	-524.9	-4.2	70.3
37	APP	523.4	13.4	11:41:18.7	-791.8	-7.4	59.9
38	APP	491.5	21.8	11:45:39.7	-80.9	-0.7	61.9

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

SIKORSKY S76

POSITION DATA
NOISE MEASUREMENT PROGRAM

500 FT. WEST

DATE:06/06/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NOISE ABATMENT APPROACH (3 DEG. TARGET, 120 KTS.)							
39	APP	512.4	21.1	12:01:10.4	-391.4	-1.8	121.3
40	APP	515.8	16.9	12:04:31.4	-788.7	-3.7	121.6
41	APP	512.9	22.4	12:08:04.4	-13.6	-0.1	110.9
42	APP	498.8	22.6	12:12:19.3	-773.2	-3.6	119.7
43	APP	524.0	23.8	12:15:51.5	-41.1	-0.2	135.0
44	APP	665.8	40.6	12:37:01.6	65.4	0.7	52.6
15 DEGREE BANK TURN AT 65 KTS.							
45	F/O	660.0	41.7	12:39:07.4	514.4	4.5	64.7
46	F/O	684.4	42.4	12:42:25.0	-253.3	-2.2	64.6
47	F/O	844.5	35.7	12:44:24.6	-28.8	-0.2	77.2
48	F/O	729.5	43.2	12:46:41.2	-2815.2	-19.7	77.5
49	F/O	682.6	34.5	12:48:58.4	-385.7	-3.4	63.6
50	F/O	678.0	44.2	12:51:16.1	39.4	0.3	69.2
51	F/O	794.0	38.4	12:53:25.6	125.8	1.0	70.9
30 DEGREE BANK TURN AT 65 KTS.							
52	F/O	700.2	38.2	12:55:37.4	158.1	1.3	67.1
53	F/O	825.9	31.9	12:57:35.1	-145.7	-1.2	66.1
54	F/O	758.3	35.8	12:59:49.3	18.1	0.2	65.3
55	F/O	829.9	37.3	13:01:57.2	53.2	0.5	62.5
56	F/O	748.5	37.1	13:04:01.7	98.5	0.8	66.0
57	F/O	723.1	39.9	13:05:54.7	-94.1	-0.8	64.5
58	F/O	767.1	36.8	13:08:08.9	444.1	4.0	62.3
59	F/O	647.1	47.1	13:09:56.7	-253.0	-2.1	69.1

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

SIKORSKY S76

POSITION DATA
NOISE MEASUREMENT PROGRAM

1000 FT. EAST

DATE:06/05/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
SIX DEG. APPROACH AT VY, 74 KTS.							
1	APP	960.3	22.9	13:26:07.6	-663.3	-6.0	62.6
2	APP	993.8	21.8	13:33:52.3	-586.1	-5.1	64.9
3	APP	976.9	22.8	13:38:08.6	-549.6	-4.5	69.6
4	APP	1027.4	21.0	13:44:23.7	-505.7	-4.3	66.4
5	APP	1079.0	24.2	13:49:57.5	-954.6	-7.8	69.0
6	APP	979.2	22.4	13:54:26.4	-869.6	-7.3	67.3
7	APP	1029.0	21.2	13:59:06.3	-549.8	-4.6	68.1
8	APP	1043.0	20.5	14:03:03.5	-796.7	-6.5	68.7
NOISE ABATEMENT APPROACH (9.5 DEG. APPROACH, 60 KTS.)							
9	APP	1077.5	29.0	14:21:44.6	-706.7	-7.2	55.2
10	APP	1083.0	30.7	14:26:23.9	-755.1	-8.1	52.5
11	APP	964.5	36.8	14:30:40.4	-862.9	-9.0	54.0
12	APP	1105.3	28.2	14:35:26.0	-858.8	-10.3	46.8
13	APP	1128.0	28.8	14:40:09.4	-821.0	-8.8	52.1
14	APP	1089.5	28.8	14:47:23.1	-908.9	-10.1	50.6

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

SIKORSKY S76

POSITION DATA
NOISE MEASUREMENT PROGRAM

1000 FT. EAST

DATE:06/06/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NORMAL APPROACH							
17	APP	1023.1	30.7	10:18:17.9	-990.2	-8.5	65.3
19	APP	1086.8	31.3	10:22:41.7	-1145.6	-9.8	65.1
21	APP	1089.6	34.0	10:26:59.4	-1249.2	-9.7	72.2
23	APP	1134.8	37.9	10:32:37.9	-1552.2	-12.1	71.4
25	APP	1144.8	33.3	10:36:46.5	-1608.9	-12.3	72.7
27	APP	1130.7	30.3	10:41:09.6	-1298.3	-11.1	65.2
29	APP	1160.8	31.3	10:45:31.7	-1410.6	-11.9	66.2
NORMAL TAKEOFF							
18	DEP	1130.5	28.5	10:20:12.8	1282.9	9.2	78.5
20	DEP	1146.9	23.4	10:24:22.8	1076.7	7.7	78.7
22	DEP	1149.4	28.1	10:28:42.2	1119.5	7.8	80.4
24	DEP	1123.6	27.8	10:34:16.0	1080.8	7.1	86.1
26	DEP	1089.1	24.9	10:38:23.5	1068.0	7.2	83.1
28		-----	NO DATA	-----			
NOISE ABATEMENT APPROACH (12 DEG. TARGET, 60 KTS.)							
30	APP	1121.6	40.0	11:01:08.1	-1232.2	-11.4	60.1
31	APP	1073.9	40.2	11:05:31.3	-1249.7	-12.1	57.6
32	APP	1160.6	36.6	11:09:42.6	-897.5	-9.2	54.6
33	APP	1056.0	38.6	11:14:15.5	-1047.6	-10.3	57.0
NOISE ABATEMENT APPROACH (3 DEG. TARGET, 60 KTS.)							
34	APP	1023.3	10.6	11:27:40.9	-344.4	-3.4	56.5
35	APP	999.9	9.7	11:32:23.5	-361.4	-3.3	61.7
36	APP	710.8	11.5	11:37:05.2	-218.5	-1.7	72.0
37	APP	816.0	10.4	11:41:22.8	-337.7	-2.8	68.3
38	APP	990.0	8.8	11:45:44.2	52.6	0.5	60.1

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

SIKORSKY S76

POSITION DATA
NOISE MEASUREMENT PROGRAM

1000 FT. EAST

DATE:06/06/84

FAA/AEE

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NOISE ABATEMENT APPROACH (3 DEG. TARGET, 120 KTS.)							
39	APP	1026.8	10.6	12:01:10.7	-329.4	-1.5	120.5
40	APP	1010.3	8.8	12:04:31.3	-785.0	-3.6	121.5
41	APP	977.0	10.1	12:08:07.9	-50.1	-0.2	128.9
42	APP	893.0	9.5	12:12:21.6	-452.4	-2.0	126.8
43	APP	1011.9	12.2	12:15:51.9	-256.8	-1.1	136.7
44	APP	793.7	27.9	12:36:53.4	-369.3	-5.7	36.3
15 DEGREE BANK TURN AT 65 KTS.							
45	F/O	764.1	30.4	12:39:15.3	-78.6	-0.6	74.7
46	F/O	765.1	30.7	12:42:19.5	1550.3	8.9	97.4
47	F/O	828.7	29.0	12:44:30.9	999.0	9.9	56.2
48	F/O	781.8	29.1	12:46:35.5	14033.1	45.3	137.0
49	F/O	820.7	27.0	12:49:03.7	174.6	0.9	105.8
50	F/O	874.1	25.9	12:51:10.4	-255.5	-2.5	57.5
51	F/O	820.5	34.9	12:53:31.0	-1123.0	-6.3	99.7
30 DEGREE BANK TURN AT 65 KTS.							
52	F/O	759.3	30.1	12:55:28.6	-1794.9	-19.8	49.3
53	F/O	749.1	34.8	12:57:39.3	-502.9	-2.6	107.5
54	F/O	752.3	30.3	12:59:40.3	-781.3	-8.7	50.3
55	F/O	759.7	30.6	13:02:03.5	-402.0	-3.4	67.3
56	F/O	761.3	35.6	13:03:55.7	-997.3	-5.6	100.7
57	F/O	801.5	33.2	13:06:02.5	-140.1	-1.9	42.3
58	F/O	776.9	35.6	13:08:04.3	942.8	4.5	118.3
59	F/O	818.1	30.2	13:10:03.5	822.8	14.2	32.0

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

SIKORSKY S76

POSITION DATA
NOISE MEASUREMENT PROGRAM

1000 FT. WEST

DATE:06/05/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
SIX DEG. APPROACH AT VY, 74 KTS.							
1	APP	1078.9	18.9	13:26:09.8	-557.8	-5.3	59.3
2	APP	1104.9	19.3	13:33:52.9	-492.3	-4.3	64.6
3	APP	1131.3	19.6	13:38:07.8	-504.8	-4.1	69.4
4	APP	1088.1	19.7	13:44:23.9	-475.9	-4.1	66.0
5	APP	1056.0	22.9	13:49:59.4	-905.1	-6.7	76.1
6	APP	1124.6	17.7	13:54:28.1	-894.2	-8.2	61.2
7	APP	1096.5	19.4	13:59:06.9	-602.3	-4.9	69.1
8	APP	1075.0	20.9	14:03:02.6	-769.2	-6.3	69.3
NOISE ABATEMENT APPROACH (9.5 DEG. TARGET, 60 KTS.)							
9	APP	1165.9	26.9	14:21:43.8	-648.8	-6.6	55.5
10	APP	1118.1	29.9	14:26:23.3	-829.6	-8.7	53.3
11	APP	1299.5	25.3	14:30:42.6	-856.8	-9.4	50.8
12	APP	1109.7	28.9	14:35:25.3	-814.8	-9.6	47.5
13	APP	1120.1	27.5	14:40:10.8	-1002.7	-11.1	50.2
14	APP	1152.7	30.9	14:47:20.1	-1088.6	-11.3	53.7

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

SIKORSKY S76

POSITION DATA
NOISE MEASUREMENT PROGRAM

1000 FT. WEST

DATE:06/06/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NORMAL APPROACH							
17	APP	1237.3	25.5	10:18:17.3	-966.0	-8.4	64.4
19	APP	1185.6	28.6	10:22:41.3	-1085.1	-9.1	67.0
21	APP	1201.9	28.8	10:27:01.4	-970.1	-8.3	65.7
23	APP	1310.5	33.1	10:32:36.8	-1324.4	-10.0	74.1
25	APP	1169.7	29.7	10:36:47.6	-1486.8	-11.7	70.8
27	APP	1171.8	30.0	10:41:08.8	-1410.4	-11.7	67.2
29	APP	1171.0	31.3	10:45:31.5	-1381.9	-11.6	66.3
NORMAL TAKEOFF							
18	DEP	1094.0	28.4	10:20:12.0	1288.8	9.5	76.1
20	DEP	1056.3	28.1	10:24:24.8	1147.8	7.9	81.4
22	DEP	1101.0	28.9	10:28:41.6	1241.7	8.5	82.1
24	DEP	1100.6	27.8	10:34:15.5	1118.9	7.3	86.5
26	DEP	1072.1	25.0	10:38:22.9	941.9	6.7	79.7
28		-----	NO DATA	-----			
NOISE ABATEMENT APPROACH (12 DEG. TARGET, 60 KTS.)							
30	APP	1309.8	31.9	11:01:09.8	-1672.8	-15.9	58.1
31	APP	1351.7	28.8	11:05:33.4	-1263.5	-12.0	58.4
32	APP	1200.1	34.5	11:09:43.8	-1072.0	-11.3	52.9
33	APP	1312.2	28.9	11:14:17.0	-1216.2	-11.6	58.4
NOISE ABATEMENT APPROACH (3 DEG. TARGET, 60 KTS.)							
34	APP	983.1	10.8	11:27:42.3	-117.4	-1.2	53.1
35	APP	1017.6	9.4	11:32:23.8	-240.1	-2.2	62.1
36	APP	977.9	10.7	11:36:59.5	-524.9	-4.2	70.3
37	F/O	986.7	7.1	11:41:19.3	-333.0	-3.1	60.2
38	APP	972.2	10.9	11:45:39.7	-80.9	-0.7	61.9

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

SIKORSKY S76

POSITION DATA
NOISE MEASUREMENT PROGRAM

1000 FT. WEST

DATE:06/06/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NOISE ABATEMENT APPROACH (3 DEG. TARGET, 120 KTS.)							
39	APP	995.3	10.8	12:01:10.4	-391.4	-1.8	121.3
40	APP	1004.5	8.7	12:04:31.4	-788.7	-3.7	121.6
41	APP	991.2	11.5	12:08:04.4	-13.6	-0.1	110.9
42	APP	968.5	11.5	12:12:19.3	-773.2	-3.6	119.7
43	APP	985.1	12.5	12:15:51.5	-41.1	-0.2	135.0
44	F/O	1095.6	23.4	12:37:01.6	65.4	0.7	52.6
15 DEGREE BANK TURN AT 65 KTS.							
45	F/O	1086.2	24.0	12:39:07.4	514.4	4.5	64.7
46	F/O	1104.5	24.8	12:42:25.0	-253.3	-2.2	64.6
47	F/O	1282.0	23.3	12:44:24.3	-52.1	-0.4	77.6
48	F/O	1138.4	26.1	12:46:41.2	-2815.2	-19.7	77.5
49	F/O	1129.3	20.1	12:48:58.4	-385.7	-3.4	63.6
50	F/O	1093.7	25.7	12:51:16.1	39.4	0.3	69.2
51	F/O	1224.0	23.9	12:53:25.6	125.8	1.0	70.9
30 DEGREE BANK TURN AT 65 KTS.							
52	F/O	1136.0	22.5	12:55:37.4	158.1	1.3	67.1
53	F/O	1275.3	20.4	12:57:33.7	-77.3	-0.7	66.5
54	F/O	1200.2	21.8	12:59:49.3	18.1	0.2	65.3
55	F/O	1265.1	23.5	13:01:57.2	53.2	0.5	62.5
56	F/O	1178.5	22.6	13:04:01.7	98.5	0.8	66.0
57	F/O	1151.3	23.9	13:05:54.7	-94.1	-0.8	64.5
58	F/O	1203.6	22.6	13:08:08.9	444.1	4.0	62.3
59	F/O	1053.9	26.9	13:09:56.7	-253.0	-2.1	69.1

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

SIKORSKY S76

POSITION DATA
NOISE MEASUREMENT PROGRAM

2000 FT. EAST

DATE:06/05/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
SIX DEG. APPROACH AT VY, 74 KTS.							
1	APP	1921.4	11.5	13:26:07.4	-667.9	-6.0	63.1
2	APP	1957.8	11.8	13:33:50.3	-984.2	-8.9	62.3
3	APP	1938.4	11.4	13:38:08.6	-549.6	-4.5	69.6
4	APP	1994.0	10.8	13:44:23.7	-505.7	-4.3	66.4
5	APP	2031.3	13.1	13:49:57.0	-819.7	-6.9	67.1
6	APP	1942.0	11.2	13:54:26.4	-869.6	-7.3	67.3
7	APP	1991.8	10.9	13:59:06.3	-549.8	-4.6	68.1
8	APP	2008.4	11.1	14:03:03.0	-799.2	-6.6	68.4
NOISE ABATEMENT APPROACH (9.5 DEG. TARGET, 60 KTS.)							
9	APP	2009.4	14.3	14:21:46.5	-1052.6	-11.3	52.1
10	APP	2007.5	16.1	14:26:23.9	-755.1	-8.1	52.5
11	APP	1862.5	18.2	14:30:40.4	-862.9	-9.0	54.0
12	APP	2033.6	15.0	14:35:26.0	-858.8	-10.3	46.8
13	APP	2062.4	15.4	14:40:09.4	-821.0	-8.8	52.1
14	APP	2011.5	15.2	14:47:23.1	-908.9	-10.1	50.6

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

SIKORSKY S76

POSITION DATA
NOISE MEASUREMENT PROGRAM

2000 FT. EAST

DATE:06/06/84

FAA/AEE

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NORMAL APPROACH							
17	APP	1943.8	15.7	10:18:18.1	-1016.5	-8.6	66.1
19	APP	2006.2	16.4	10:22:41.7	-1145.6	-9.8	65.1
21	APP	1999.6	17.8	10:26:59.4	-1249.2	-9.7	72.2
23	APP	2011.2	20.4	10:32:37.9	-1552.2	-12.1	71.4
25	APP	2056.5	17.9	10:36:46.5	-1608.9	-12.3	72.7
27	APP	2051.5	16.6	10:41:09.1	-1411.2	-11.6	67.7
29	APP	2074.7	18.3	10:45:29.3	-1165.5	-9.5	68.6
NORMAL TAKEOFF							
18	DEP	2063.9	15.4	10:20:13.3	1275.0	8.8	81.2
20	DEP	2086.5	12.7	10:24:22.8	1076.7	7.7	78.7
22	DEP	2086.5	15.1	10:28:42.2	1119.5	7.8	80.4
24	DEP	2062.7	14.8	10:34:16.0	1080.8	7.1	86.1
26	DEP	2040.8	13.1	10:38:23.5	1068.0	7.2	83.1
28		-----	NO DATA	-----			
NOISE ABATEMENT APPROACH (12 DEG. TARGET, 60 KTS.)							
30	APP	1993.4	21.3	11:01:08.1	-1232.2	-11.4	60.1
31	APP	1946.2	22.1	11:05:29.8	-1180.7	-11.8	55.8
32	APP	2053.3	19.8	11:09:42.6	-897.5	-9.2	54.6
33	APP	1939.0	20.6	11:14:14.2	-1357.6	-13.4	56.0
NOISE ABATEMENT APPROACH (3 DEG. TARGET, 60 KTS.)							
34	APP	1923.2	5.5	11:27:47.4	-16.8	-0.2	50.3
35	APP	1940.6	4.9	11:32:28.3	-117.5	-0.9	74.5
36	APP	1415.6	5.9	11:37:05.2	-218.5	-1.7	72.0
37	APP	1648.8	5.2	11:41:23.0	-315.3	-2.7	65.5
38	APP	1937.3	4.6	11:45:44.2	52.6	0.5	60.1

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

SIKORSKY S76

POSITION DATA
NOISE MEASUREMENT PROGRAM

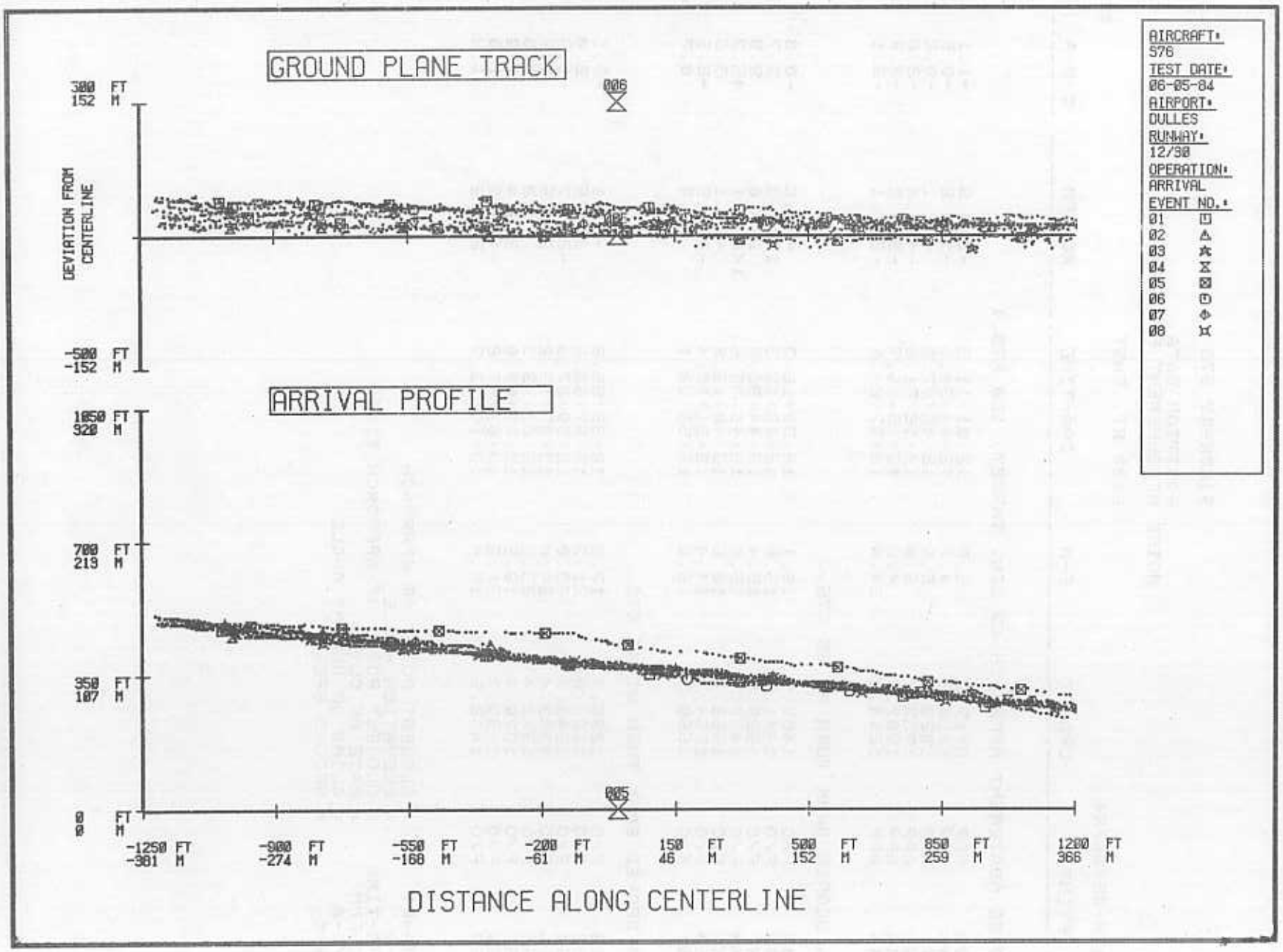
2000 FT. EAST

DATE:06/06/84 **FAA/AEE**

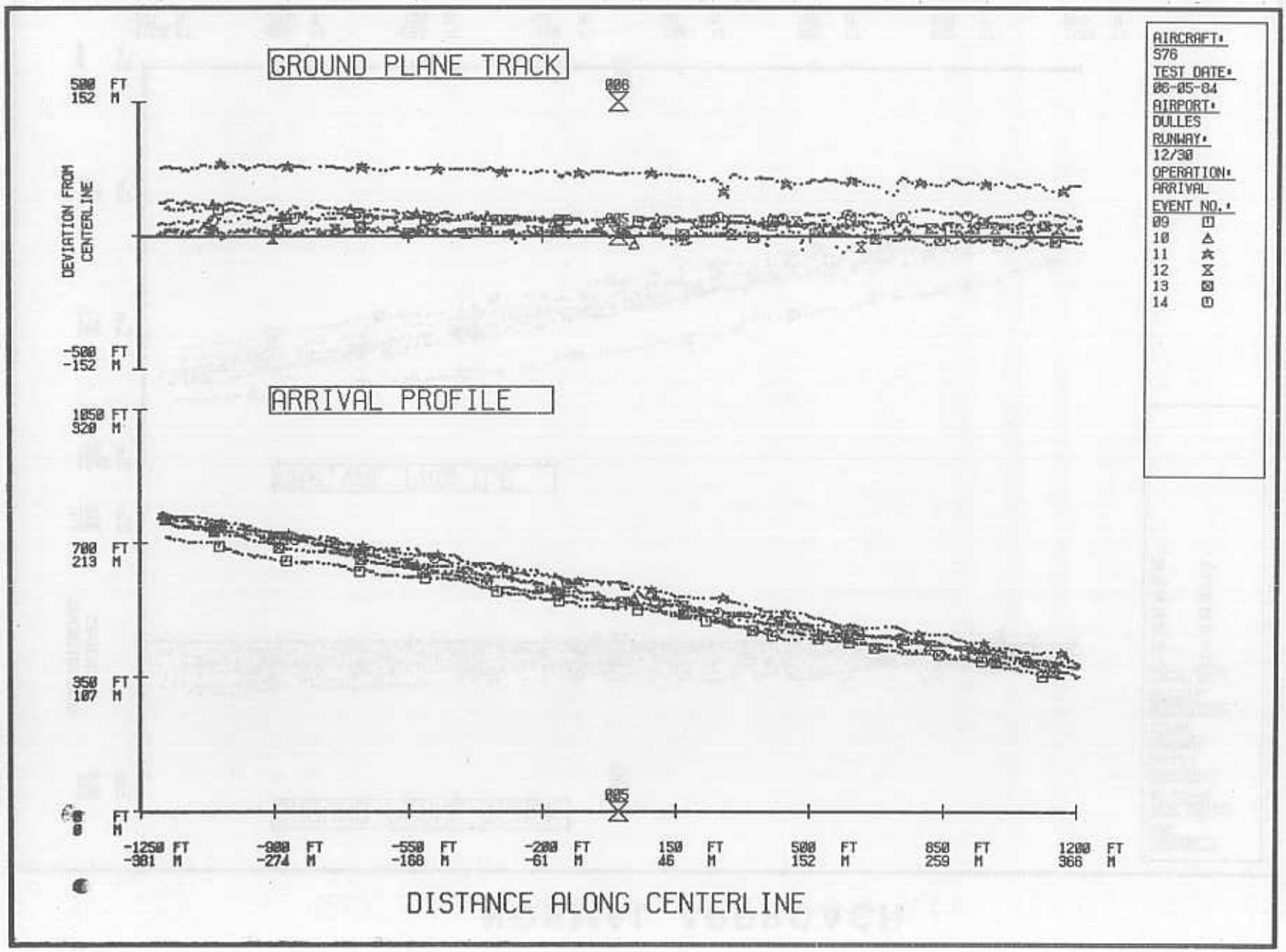
EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NOISE ABATEMENT APPROACH (3 DEG. TARGET, 120 KTS.)							
39	APP	2017.9	5.5	12:01:11.3	-240.5	-1.1	119.1
40	APP	1860.5	4.7	12:04:34.6	-113.6	-0.5	138.4
41	APP	1829.7	5.5	12:08:07.9	-50.1	-0.2	128.9
42	APP	1737.7	5.0	12:12:21.6	-452.4	-2.0	126.8
43	APP	1907.2	4.6	12:15:55.7	-574.2	-2.8	116.1
44	APP	1214.2	24.4	12:37:24.5	-287.1	-2.1	78.4
15 DEGREE BANK TURN AT 65 KTS.							
45	F/O	1405.9	16.1	12:39:15.3	-78.6	-0.6	74.7
46	F/O	1441.9	15.6	12:42:19.3	1212.8	9.7	69.9
47	F/O	1522.9	15.4	12:44:30.9	999.0	9.9	56.2
48	F/O	1436.7	15.5	12:46:35.5	14033.1	45.3	137.0
49	F/O	1562.1	16.5	12:49:15.8	476.1	3.6	73.9
50	F/O	1554.7	14.4	12:51:10.4	-255.5	-2.5	57.5
51	F/O	1560.3	16.2	12:53:32.1	87.8	0.7	70.8
30 DEGREE BANK TURN AT 65 KTS.							
52	F/O	1395.7	17.9	12:55:52.2	-13.1	-0.1	76.2
53	F/O	1102.0	21.3	12:57:50.6	290.5	2.0	81.3
54	F/O	1343.7	23.0	12:59:27.9	-215.7	-1.9	65.0
55	F/O	1303.4	24.0	13:02:13.2	261.5	1.9	77.9
56	F/O	1372.4	23.2	13:03:43.3	4.2	0.0	68.0
57	F/O	1379.4	19.5	13:06:09.0	270.4	1.9	79.6
58	F/O	1438.7	21.2	13:07:47.2	-114.0	-1.0	62.8
59	F/O	1412.6	18.4	13:10:13.7	236.2	1.8	72.9

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

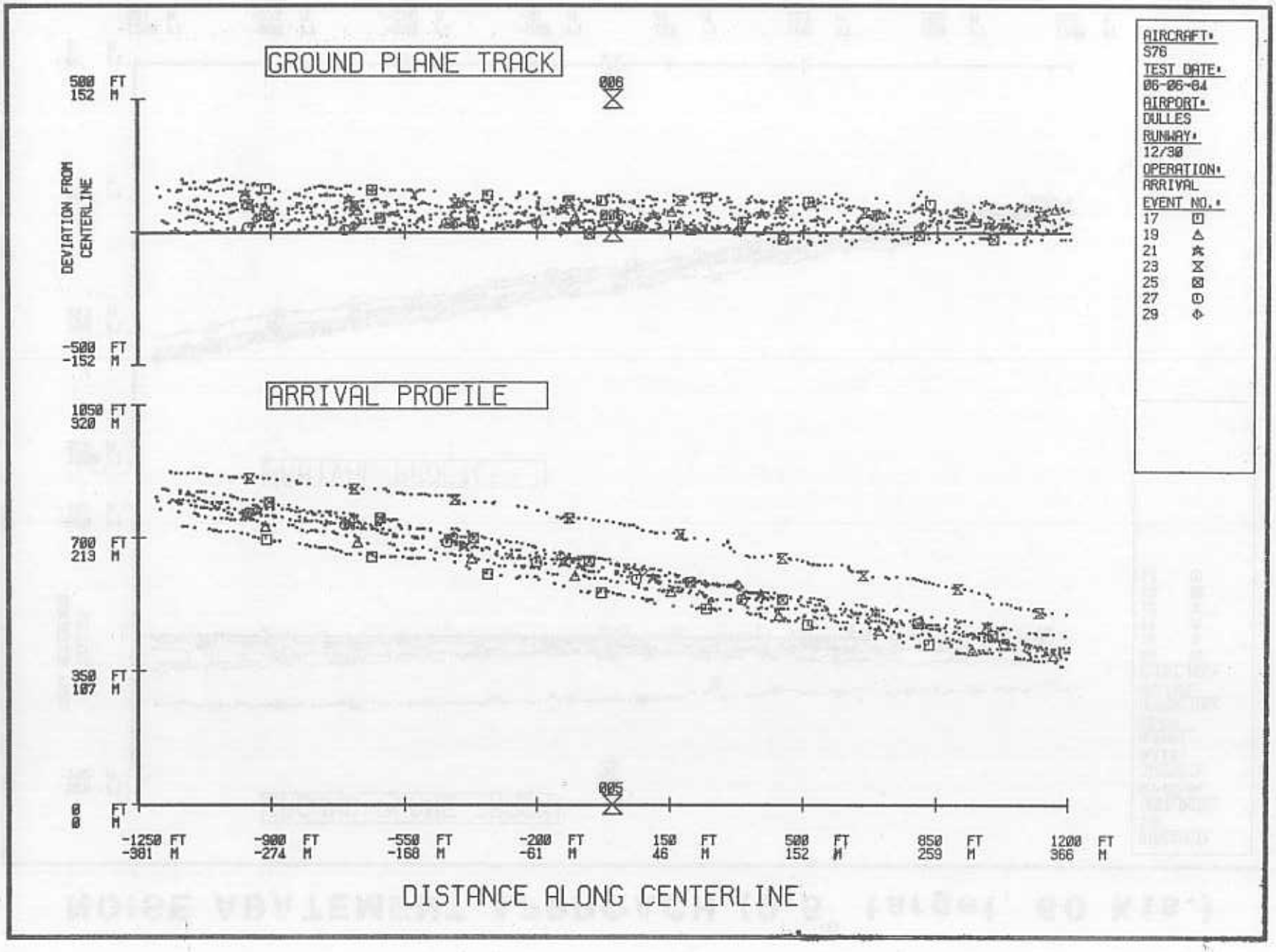
SIX° APPROACH at Vy, 74 Kts.



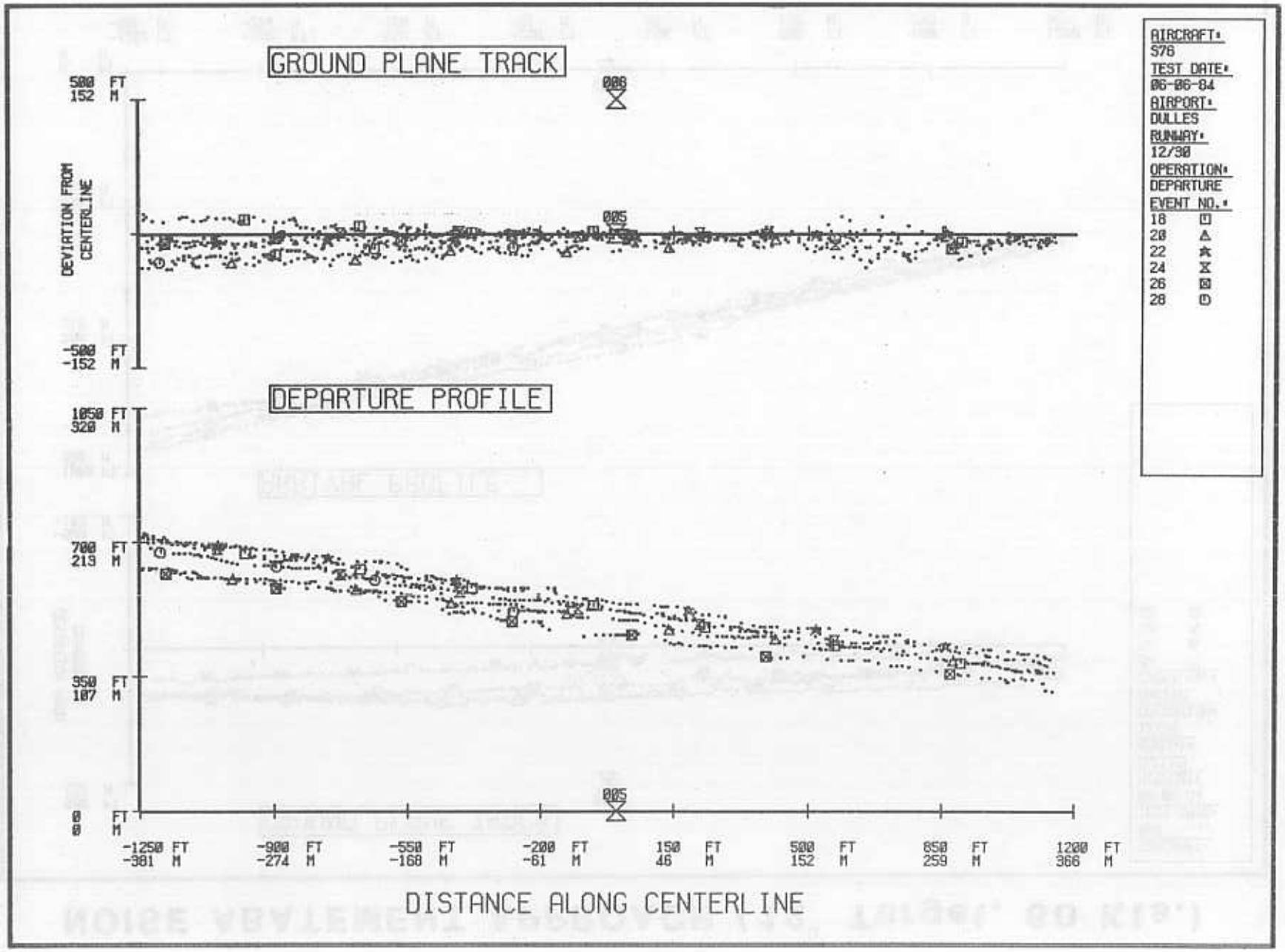
NOISE ABATEMENT APPROACH (9.5° target, 60 Kts.)



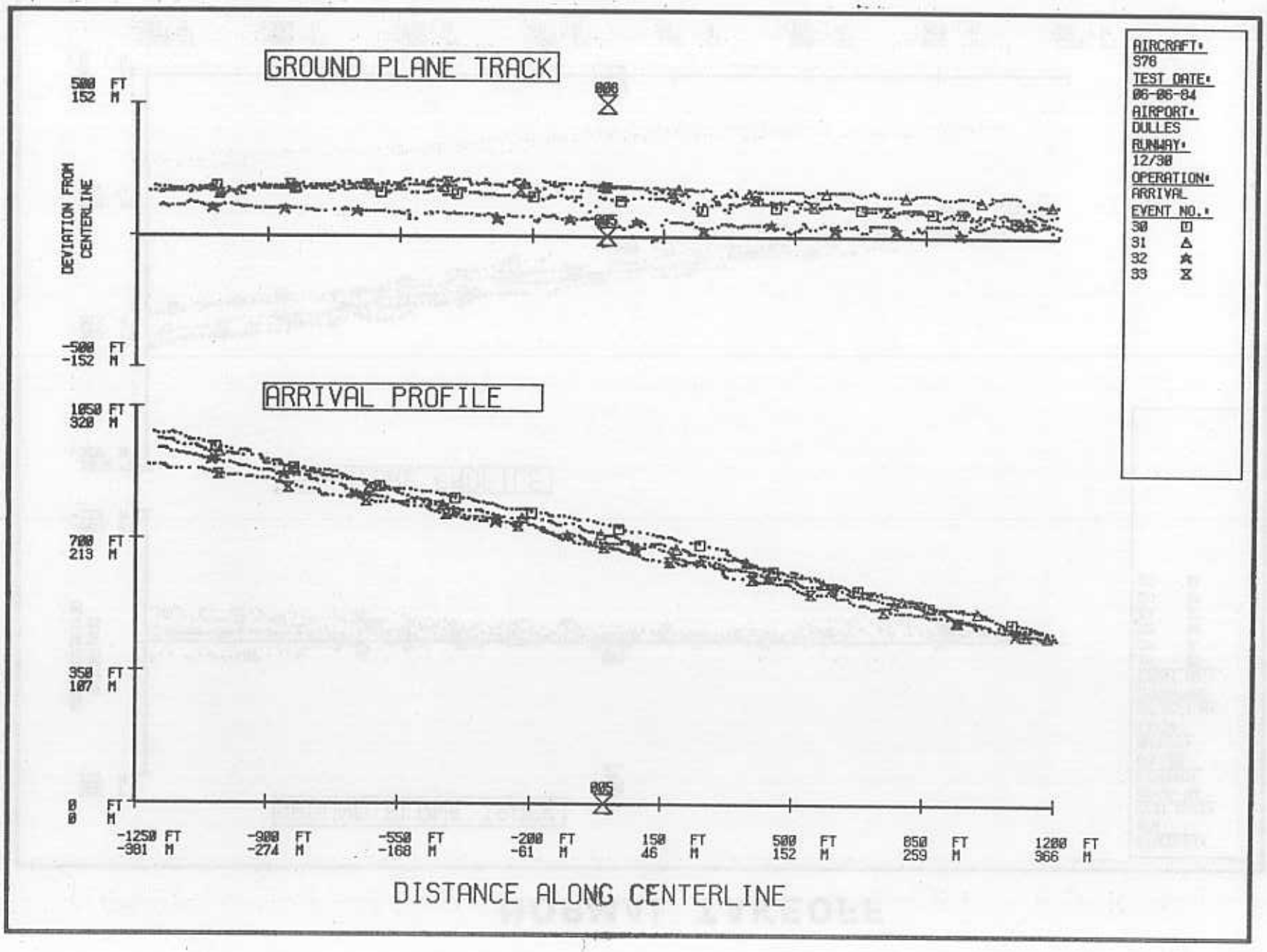
NORMAL APPROACH



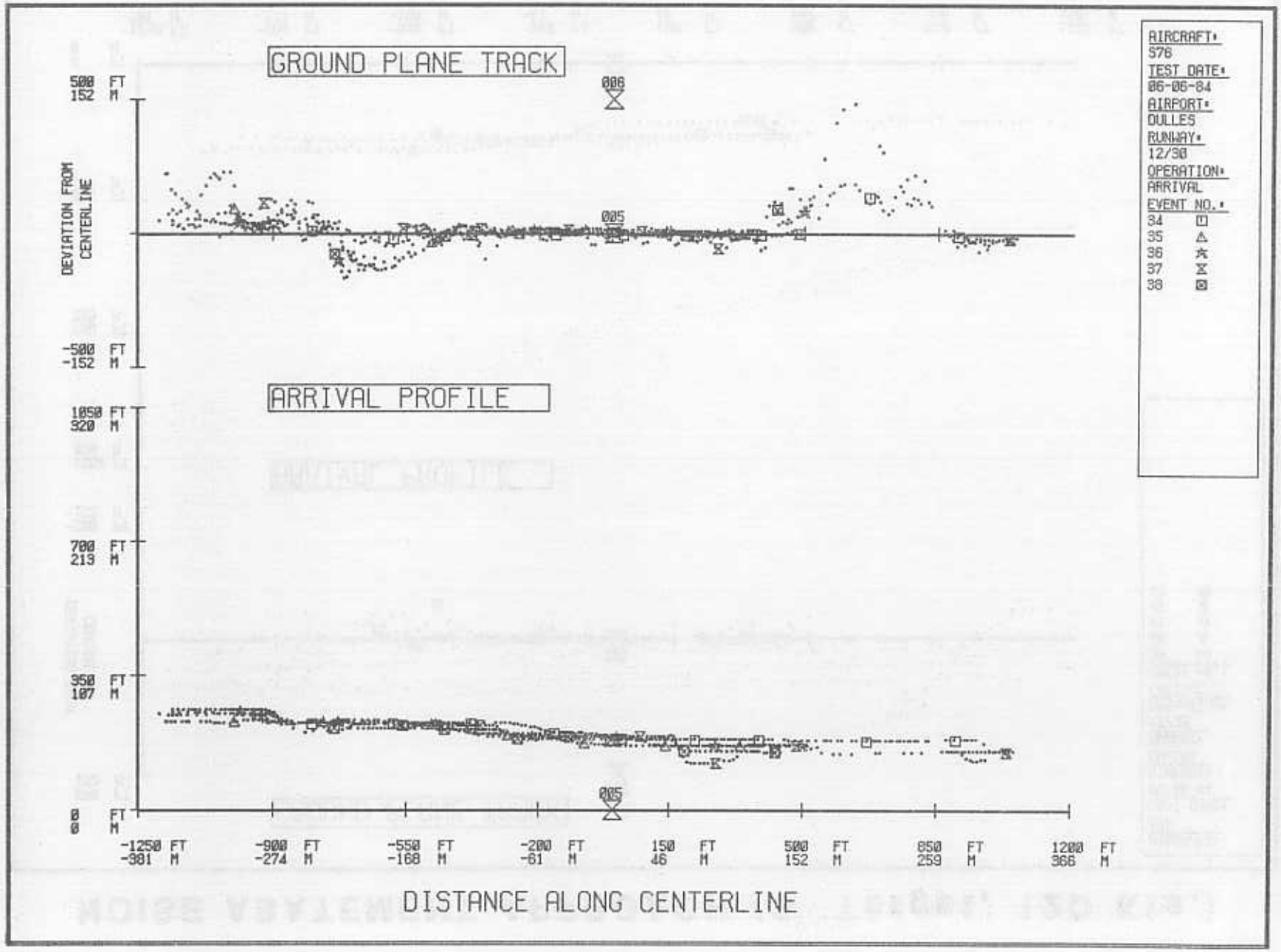
NORMAL TAKEOFF



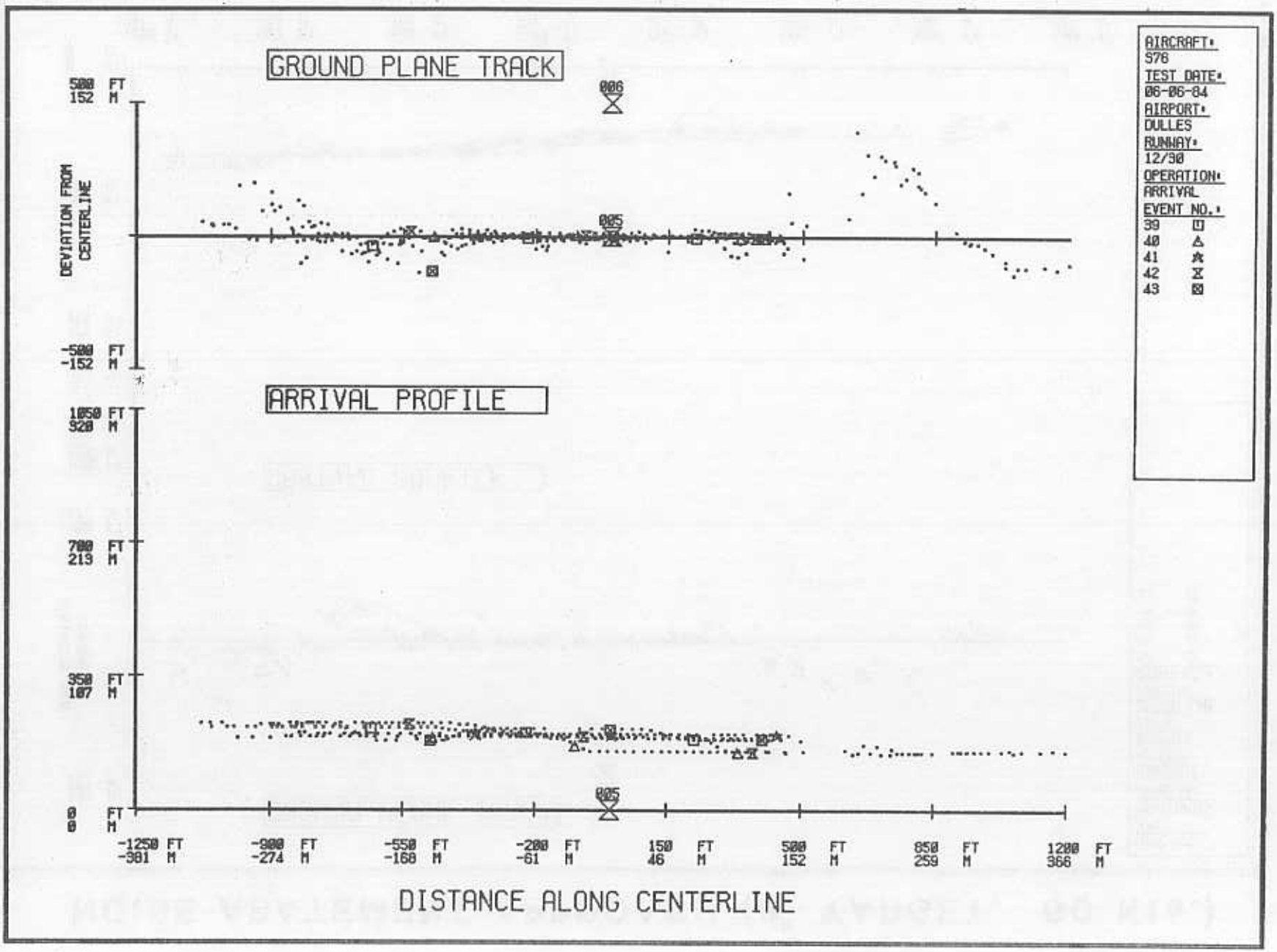
NOISE ABATEMENT APPROACH (12° Target, 60 Kts.)



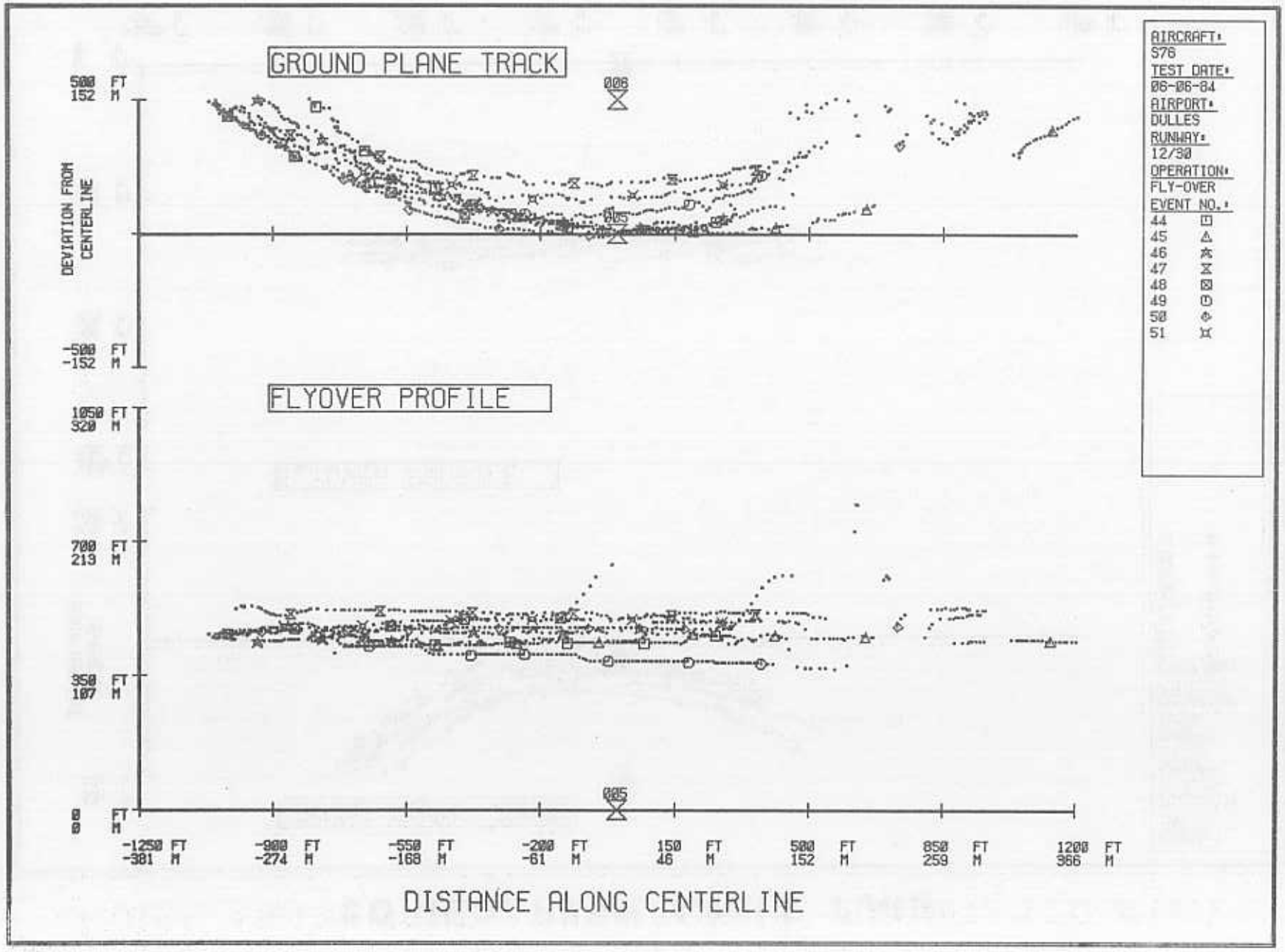
NOISE ABATEMENT APPROACH (3° TARGET, 60 Kts.)



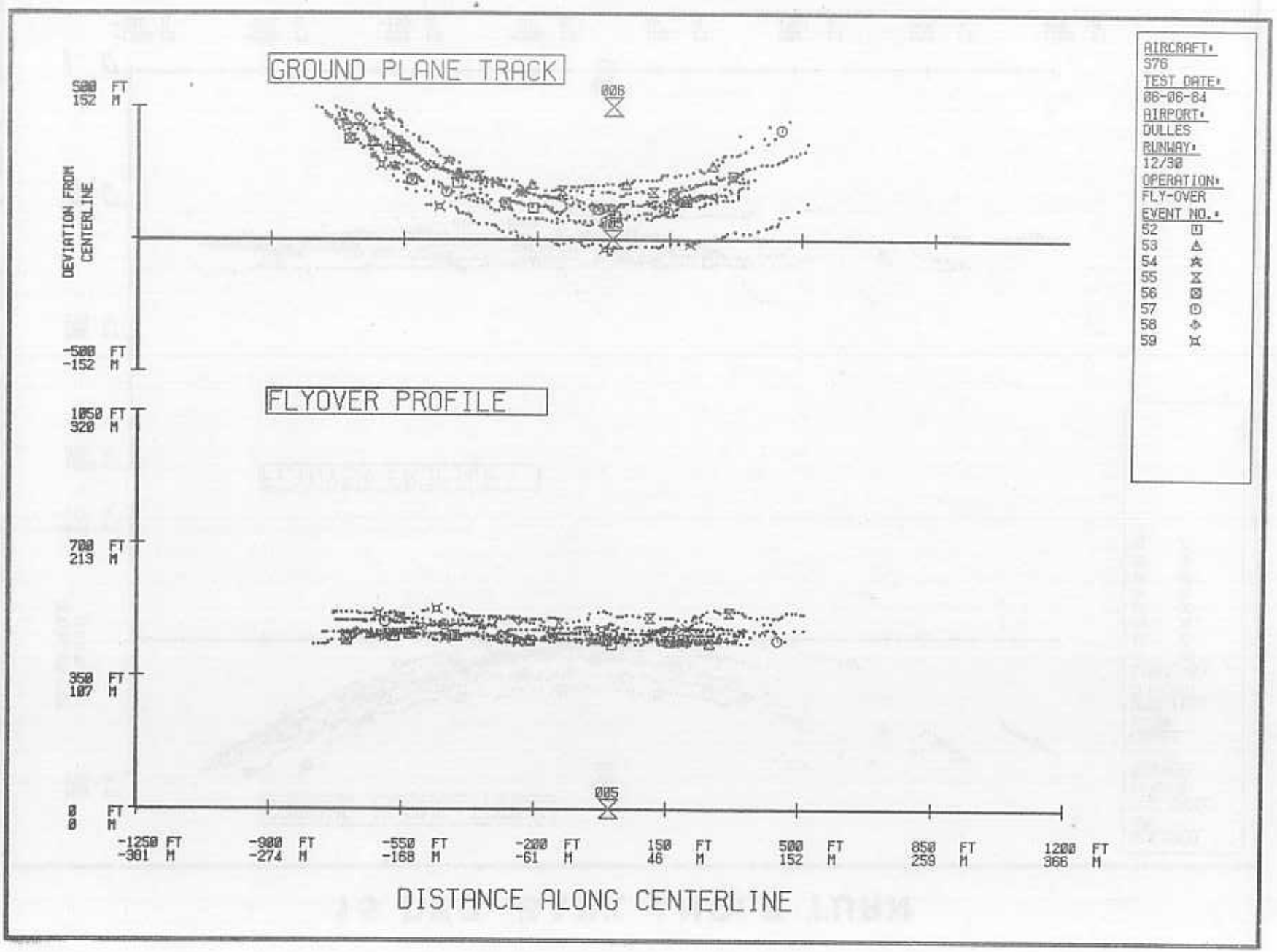
NOISE ABATEMENT APPROACH (3° Target, 120 Kts.)



15 DEG. BANK ANGLE TURN



30 DEG. BANK ANGLE TURN



METEOROLOGICAL DATA

THIS SECTION OF THE APPENDIX CONTAINS WEATHER DATA FROM SEVERAL TYPES OF METEOROLOGICAL EQUIPMENT: TEN-METER TOWER (MET), GROUND LEVEL PSYCHROMETER, AIRCRAFT OAT, AND PILOT BALLOONS. DATA FROM THE MET TOWER INCLUDE THE TEMPERATURE, RELATIVE HUMIDITY, WIND DIRECTION AND WIND SPEED MEASURED TYPICALLY EVERY 15 MINUTES DURING EACH FLIGHT EVENT. BECAUSE OF A FAILURE OF THE MET TOWER DEW POINT SENSOR, THE RELATIVE HUMIDITY WAS CALCULATED USING TEMPERATURE FROM THE MET TOWER AND DEW POINT FROM THE DULLES MID FIELD WEATHER STATION. GROUND LEVEL (4 FEET) TEMPERATURE AND RELATIVE HUMIDITY ARE GIVEN FOR DIFFERENT TIMES OF EACH TEST DAT, AND THE HELICOPTER'S OAT READINGS ARE SHOWN FOR DIFFERENT FLIGHT ALTITUDES AT VARIOUS TIMES OF THE DAY. THE PILOT BALLOON WIND DATA, TAKEN PERIODICALLY DURING EACH TEST DAY, INDLUDES THE WIND DIRECTION AND WIND SPEED AT VARIOUS ALTITUDES.

METEOROLOGICAL DATA

(MEASURED AT 30 FT. AGL)

HELICOPTER: SIKORSKY S76 DATE: 6/04/84

TIME	TEMP. (DEG. F)	R.H. %	WIND DIR. (DEG.)	WIND SPEED AVG. (MPH)	(MAX)
1000 FT. LEVEL FLYOVER AT 120 KTS.					
1:00	77	36	360	3	6
1:15	76	--	020	4	6
1:30	77	--	--	2	4
1:45	78	--	--	3	5
2:00	78	35	300	3	6

METEOROLOGICAL DATA

(MEASURED AT 30 FT. AGL)

HELICOPTER: SIKORSKY S76 DATE: 6/05/84

TIME	TEMP. (DEG. F)	R.H. %	WIND DIR. (DEG.)	WIND SPEED AVG. (MPH)	WIND SPEED MAX (MPH)
500 FT. LEVEL FLYOVER AT 120 KTS.					
11:00	72	66	210	8	10
11:15	73	--	210	8	10
11:30	76	--	210	8	11
11:45	76	--	210	7	10
12:00	76	58	210	10	15
SIX DEGREE APPROACH AT VY, 74 KTS.					
1:00	79	56	230	9	13
1:15	79	--	220	8	11
1:30	80	--	200	8	11
1:45	80	--	180	8	12
2:00	80	60	200	8	11
9.5 DEGREE TARGET, 60 KTS.					
2:00	80	60	200	9	13
2:15	80	--	210	8	11
2:30	80	--	200	8	11
2:45	81	--	200	8	12
3:00	82	60	230	8	11

METEOROLOGICAL DATA

(MEASURED AT 30 FT . AGL)

HELICOPTER: SIKORSKY S76 DATE: 6/05/84

TIME	TEMP. (DEG. F)	R.H. %	WIND DIR. (DEG.)	WIND SPEED AVG. (MPH)	WIND SPEED MAX (MPH)
500 FT. LEVEL FLYOVER AT 120 KTS.					
11:00	72	66	210	8	10
11:15	73	--	210	8	10
11:30	76	--	210	8	11
11:45	76	--	210	7	10
12:00	76	58	210	10	15
SIX DEGREE APPROACH AT VY, 74 KTS.					
1:00	79	56	230	9	13
1:15	79	--	220	8	11
1:30	80	--	200	8	11
1:45	80	--	180	8	12
2:00	80	60	200	8	11
9.5 DEGREE TARGET, 60 KTS.					
2:00	80	60	200	9	13
2:15	80	--	210	8	11
2:30	80	--	200	8	11
2:45	81	--	200	8	12
3:00	82	60	230	8	11

METEOROLOGICAL DATA

(MEASURED AT 30 FT. AGL)

HELICOPTER: SIKORSKY S76 DATE: 6/06/84

TIME	TEMP. (DEG. F)	R.H. %	WIND DIR. (DEG.)	WIND SPEED AVG. (MPH)	WIND SPEED MAX (MPH)
NORMAL APPROACH AND TAKEOFF					
9:00	75	93	180	3	-
9:15	76	--	180	3	-
9:30	76	--	180	3	-
9:45	78	--	180	3	-
10:00	80	72	200	3	-
10:15	81	--	220	3	-
10:30	81	--	230	3	5
10:45	84	--	210	3	-
11:00	84	57	230	3	5
12 DEGREE APPROACH AT 60 KTS.					
11:00	84	57	230	3	5
11:15	85	--	230	4	6
3 DEGREE APPROACH AT 60 KTS					
11:30	86	--	250	5	7
11:45	86	--	280	5	10
3 DEGREE APPROACH AT 120 KTS.					
12:00	86	53	280	6	8
12:15	87	--	280	7	9

METEOROLOGICAL DATA

(MEASURED AT 30 FT. AGL)

HELICOPTER: SIKORSKY S76 DATE: 6/06/84

TIME	TEMP. (DEG. F)	R.H. %	WIND DIR. (DEG.)	WIND SPEED AVG. (MPH)	WIND SPEED MAX (MPH)
15 DEGREE BANK TURNS AT 65 KTS.					
12:30	88	--	270	7	10
12:45	88	--	360	6	10
30 DEGREE BANK TURNS AT 65 KTS.					
1:00	88	42	280	5	11
1:15	89	--	280	6	10

METEOROLOGICAL DATA

HELICOPTER: SIKORSKY S76

DATE: 06/04/84

TEMPERATURE AND RELATIVE HUMIDITY DATA

(MEASURED AT 4 FT. AGL)

TIME	TEMP.	R.H.
11:00	74 F	30%
12:13	79 F	28%
1:15	80 F	31%
2:27	81 F	24%

HELICOPTERS OAT GUAGE DATA

TIME	ALTITUDE	TEMP.
8:50	200'	68 F
	400'	66 F
	600'	66 F
10:15	200'	72 F
	400'	72 F
	600'	70 F

METEOROLOGICAL DATA

HELICOPTER: SIKORSKY S76

DATE: 06/05/84

TEMPERATURE AND RELATIVE HUMIDITY DATA

(MEASURED AT 4 FT. AGL)

TIME	TEMP.	R.H.
	N	
	O	
	D	
	A	
	T	
	A	

HELICOPTERS OAT GUAGE DATA

TIME	ALTITUDE	TEMP.
8:20	200'	64 F
	400'	64 F
	600'	68 F
	1000'	72 F

METEOROLOGICAL DATA

HELICOPTER: SIKORSKY S76

DATE: 06/06/84

TEMPERATURE AND RELATIVE HUMIDITY DATA

(MEASURED AT 4 FT. AGL)

TIME	TEMP.	R.H.
	N	
	O	
	D	
	A	
	T	
	A	

HELICOPTERS OAT GUAGE DATA

TIME	ALTITUDE	TEMP.
	N	
	O	
	D	
	A	
	T	
	A	

PILOT BALLOON WIND DATA

SIKORSKY S76 06/04/84

FEET (AGL)	WIND DIR. (DEG.)	WIND SPD. (KTS)	WIND DIR. (DEG.)	WIND SPD. (KTS)
LAUNCH TIME:	8:24		10:00	
SFC	280	6	310	6
354	305	6	330	9
708	314	7	329	9
1033	333	8	327	9
1358	346	10	328	9
	11:30		12:35	
SFC	300	3	320	2
354	353	4	278	4
708	347	3	274	3
1033	337	3	257	2
1358	335	4	243	2
	1:15			
SFC	310	3		
354	012	3		
708	005	3		
1033	337	3		
1358	322	4		

PILOT BALLOON WIND DATA

SIKORSKY S76 06/05/84

FEET (AGL)	WIND DIR. (DEG.)	WIND SPD. (KTS)	WIND DIR. (DEG.)	WIND SPD. (KTS)
LAUNCH TIME:	8:05		9:00	
SFC	180	5	180	8
354	227	13	226	13
708	230	16	229	15
1033	232	21	231	19
1358	231	23	230	22
	9:35		10:20	
SFC	190	11	180	8
354	223	9	213	7
708	226	12	215	9
1033	227	16	217	8
1358	277	19	--	-
	10:45		11:35	
SFC	180	10	180	13
354	209	10	219	6
708	205	6	217	6
1033	--	--	219	7
1358	--	--	218	7
	12:35		1:20	
SFC	220	8	200	8
354	206	17	224	7
708	207	16	220	6
1033	209	17	208	6
1358	214	17	204	6

PILOT BALLOON WIND DATA

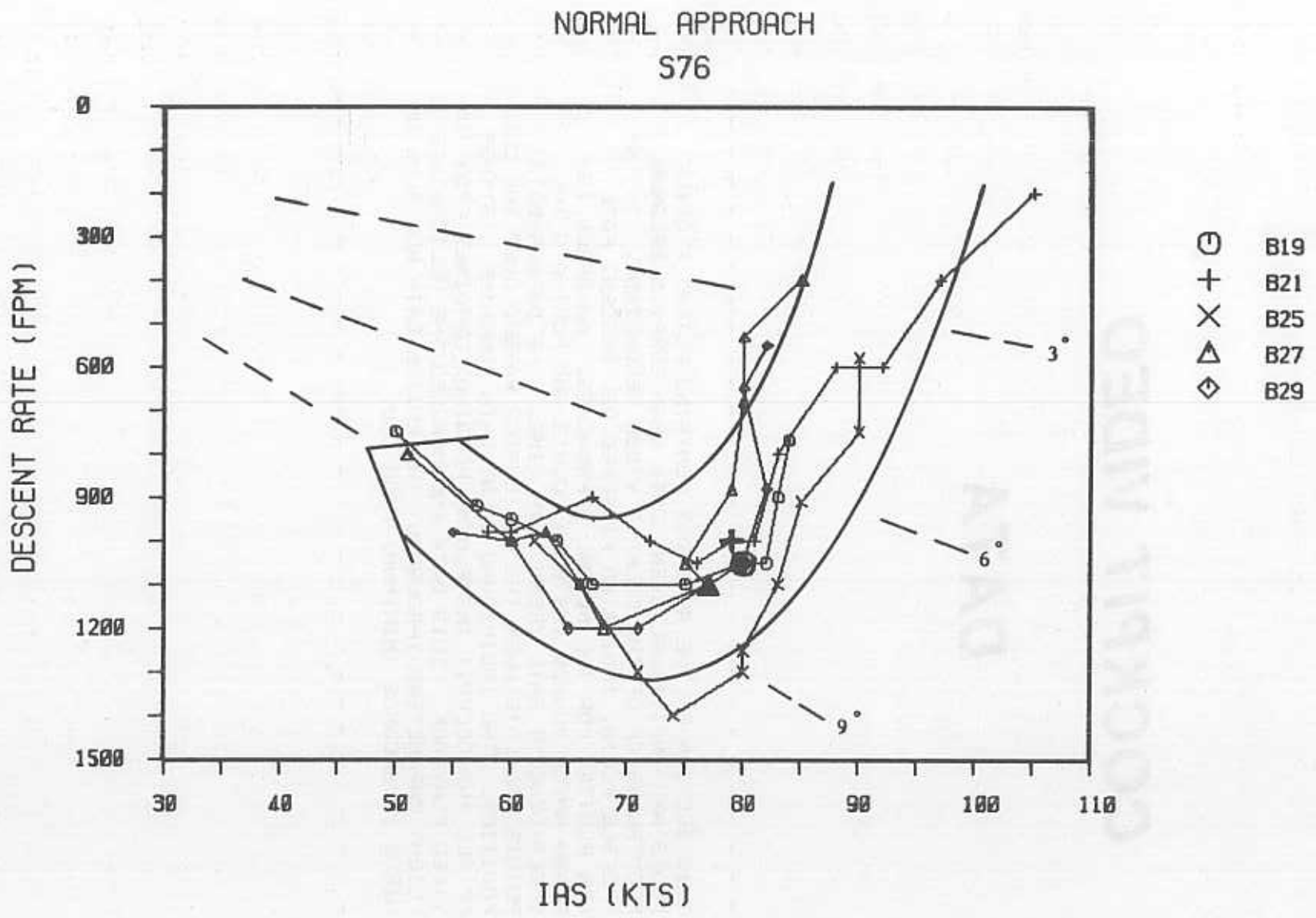
SIKORSKY S76 06/06/84

FEET (AGL)	WIND DIR. (DEG.)	WIND SPD. (KTS)	WIND DIR. (DEG.)	WIND SPD. (KTS)
LAUNCH TIME:	9:45		09:48	
SFC	360	0	250	3
354	276	5	250	4
708	259	2	263	5
1033	---	-	273	6
1358	---	-	282	7
	10:40		11:45	
SFC	260	8	270	7
354	280	11	269	10
708	278	12	271	10
1033	274	13	274	9
1358	271	12	281	6

COCKPIT VIDEO

DATA

THIS SECTION OF THE APPENDIX CONTAINS FLIGHT PROFILE PLOTS AND INDIVIDUAL EVENT DATA READ EVERY 5 SECONDS FROM PLAYBACK OF THE COCKPIT VIDEO RECORDINGS. IN THE PROFILE PLOTS, INDICATED AIRSPEED VS. DESCENT RATE ARE PLOTTED FOR THE NORMAL APPROACHES. AN ARROW IS DRAWN WHICH BOUNDS THE DATA POINTS AND PORTRAYS THE SPEED/DESCENT RATE TREND WITH TIME. THE DARKER DATA POINTS INDICATE WHEN THE HELICOPTER PASSED OVER THE CLC POSITION. THE INDIVIDUAL EVENT DATA CONTAINS LISTINGS OF ALL THE COCKPIT INSTRUMENT READINGS OBTAINED FROM THE VIDEO PLAYBACK. THIS DATA ENCOMPASSES THE HELICOPTERS'S FLIGHT PARAMETERS THROUGHOUT THE ENTIRE DATA RUN PLUS OR MINUS 15 SECONDS (MINIMUM) FROM CLC.


NORMAL APPROACH
S76
DESCENT RATE (FPM)
0
300
600
900
1200
1500
30
40
50
60
70
80
90
100
110
IAS (KTS)
3°
6°
9°
B19
B21
B25
B27
B29

COCKPIT VIDEO DATA

NORMAL APPROACH

HELICOPTER: SIKORSKY S76

DATE: 06/06/84

EVENT:B19

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-13	850	10	770	84	5.19
-8	720	13	900	83	6.15
-3	640	2	1050	82	7.26
CLC 0	580	1	1050	80	7.45
2	530	2	1100	75	8.33
7	480	0	1100	67	9.33
12	380	10	1000	64	8.88
17	250	6	950	60	9.00
22	200	7	920	57	9.17

EVENT:B21

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-27	990	25	200	105	1.08
-22	960	11	400	97	2.33
-17	900	14	600	92	3.69
-12	840	9	600	88	3.86
-7	710	11	800	83	5.46
-2	630	2	1000	81	7.00
CLC 0	610	3	1000	79	7.18
3	550	5	1050	76	7.84
8	500	5	1000	72	7.88
13	400	3	900	67	7.62
18	290	2	980	60	9.28
23	210	6	980	58	9.60

EVENT:B23

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D) (DEG)
-19	1010	22	500	85	3.33
-14	940	17	670	85	4.46
-9	860	13	700	82	4.84
-4	800	22	650	84	4.38
CLC 0	710	3	850	80	6.02
1	690	2	900	80	6.38
6	590	4	1200	78	8.74
11	490	0	1400	70	11.39
16	310	0	1550	64	13.84
21	220	2	1400	56	14.29

EVENT:B25

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-19	1020	17	580	90	3.65
-14	940	16	750	90	4.72
-9	830	6	910	85	6.07
-4	710	2	1100	83	7.52
0	630	0	1250	80	8.88
1	590	0	1300	80	9.23
6	500	0	1400	74	10.77
11	410	4	1300	71	10.42
16	290	7	1100	66	9.47
21	220	8	1000	62	9.16

COCKPIT VIDEO DATA

NORMAL APPROACH

HELICOPTER: SIKORSKY S76

DATE: 06/06/84

EVENT: B27

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D) (DEG)
-21	950	26	400	85	2.66
-16	880	21	530	80	3.75
-11	800	14	680	80	4.81
-6	710	2	880	79	6.32
-1	610	2	1050	75	7.95
CLC 0	590	2	1100	77	8.11
4	510	3	1200	68	10.04
9	460	6	1100	66	9.47
14	350	11	980	63	8.84
19	240	10	1000	60	9.47
24	170	13	800	51	8.91

EVENT: B29

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-18	960	30	550	82	3.80
-13	880	16	650	80	4.60
-8	800	10	880	82	6.08
-3	690	6	1050	80	7.45
CLC 0	630	3	1050	80	7.45
2	580	0	1100	77	8.11
7	500	2	1200	71	9.61
12	400	7	1200	65	10.50
17	250	2	1000	60	9.47
22	190	12	980	55	10.13

COCKPIT VIDEO DATA

NOISE ABATEMENT APPROACH

(9.5 DEG. TARGET, 60 KTS.)

HELICOPTER: SIKORSKY S76 DATE: 06/05/84

EVENT:D9

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-30	1000	32	150	66	1.29
-25	940	5	500	68	4.16
-20	850	18	850	64	7.54
-15	770	20	800	60	7.57
-10	670	20	750	64	6.65
-5	610	20	820	68	6.84
0	550	20	700	65	6.10
5	500	15	750	65	6.54
10	440	18	800	68	6.67
15	380	13	750	65	6.54
20	260	23	800	64	7.09

EVENT:D10

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-25	950	28	100	65	0.87
-20	880	8	500	65	4.36
-15	800	11	750	65	6.54
-10	700	15	700	65	6.10
-5	640	13	750	65	6.54
0	570	10	850	65	7.42
5	510	11	800	65	6.98
10	470	20	700	62	6.40
15	390	10	750	65	6.54
20	290	11	780	62	7.14

EVENT:D11

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-23	900	20	100	78	0.73
-18	840	6	450	78	3.27
-13	770	14	700	74	5.36
-8	680	18	750	70	6.07
-3	610	13	800	67	6.77
0	570	18	800	68	6.67
2	540	22	800	70	6.48
7	490	22	840	68	7.01
12	430	20	800	68	6.67
17	340	19	850	65	7.42
22	250	22	770	60	7.28

EVENT:D12

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-25	950	32	200	79	1.43
-20	900	11	500	73	3.88
-15	820	10	700	70	5.67
-10	710	16	800	64	7.09
-5	650	20	830	65	7.24
0	570	20	860	65	7.51
5	500	23	800	67	6.77
10	470	23	700	65	6.10
15	410	25	700	67	5.92
20	310	25	750	68	6.25

COCKPIT VIDEO DATA

NOISE ABATEMENT APPROACH

(9.5 DEG. TARGET, 60 KTS.)

HELICOPTER: SIKORSKY S76

DATE: 06/05/84

EVENT:D13

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-25	930	40	150	71	1.20
-20	910	39	150	71	1.20
-15	840	10	550	73	4.27
-10	730	11	800	69	6.57
-5	640	10	980	67	8.30
0	560	20	900	69	7.40
5	500	18	850	64	7.54
10	450	15	800	63	7.20
15	390	30	720	60	6.81
20	320	17	700	60	6.62

EVENT:D15

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-22	940	29	50	88	0.32
-17	890	8	350	83	2.39
-12	820	9	620	82	4.28
-7	720	7	750	75	5.67
-2	660	11	800	71	6.39
0	640	12	820	67	6.94
3	590	14	900	67	7.62
8	500	19	950	65	8.30
13	450	27	850	63	7.66
18	330	20	800	67	6.77
23	240	17	900	66	7.74

EVENT:D14

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-27	950	32	50	94	0.30
-22	930	25	200	89	1.27
-17	880	17	370	84	2.49
-12	800	3	650	74	4.98
-7	690	1	900	68	7.51
-2	630	10	850	63	7.66
0	570	14	850	66	7.31
3	550	13	800	61	7.44
8	490	15	850	63	7.66
13	440	23	750	61	6.97
18	360	22	750	62	6.86
23	240	22	730	60	6.90
28	200	23	700	60	6.62

COCKPIT VIDEO DATA

NOISE ABATEMENT APPROACH

(12 DEG. TARGET, 60 KTS.)

HELICOPTER: SIKORSKY S76

DATE: 06/06/84

EVENT:D30

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-24	1190	36	150	61	1.39
-19	1090	23	450	66	3.86
-14	1020	17	700	67	5.92
-9	920	14	880	67	7.45
-4	810	9	1200	67	10.19
CLC 0	730	8	1200	68	10.04
1	720	7	1200	68	10.04
6	610	0	1400	64	12.48
11	500	0	1500	64	13.38
16	400	12	1400	62	12.88
21	300	10	1150	60	10.91

EVENT:D32

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-20	1100	14	150	68	1.25
-15	990	9	680	66	5.84
-10	890	3	1050	66	9.04
-5	770	8	1200	66	10.34
CLC 0	660	5	1200	66	10.34
5	580	6	1050	62	9.63
10	500	4	1000	58	9.80
15	430	12	1000	57	9.98
20	310	10	920	60	8.71

EVENT:D31

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-27	1110	36	50	68	0.42
-22	1110	37	100	68	0.83
-17	1080	28	200	68	1.66
-12	980	13	680	68	5.67
-7	880	9	900	68	7.51
-2	770	5	1200	66	10.34
CLC 0	730	2	1250	65	10.95
3	650	7	1250	65	10.95
8	560	10	1200	66	10.34
13	460	12	1300	66	11.22
18	280	8	1450	68	12.16

EVENT:D33

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-36	1070	45	100	63	0.90
-31	1050	46	100	64	0.88
-26	1060	40	100	70	0.81
-21	1040	34	120	68	1.00
-16	980	11	420	70	3.40
-11	870	2	800	71	6.39
-6	810	8	920	66	7.91
-1	700	13	1000	63	9.02
CLC 0	670	10	1100	63	9.93
4	610	12	1200	63	10.84
9	520	9	1150	61	10.73
14	470	11	1050	62	9.63
19	320	10	1050	62	9.63

COCKPIT VIDEO DATA

NOISE ABATEMENT APPROACH

(3 DEG. TARGET, 60 KTS.)

HELICOPTER: SIKORSKY S76

DATE: 06/06/84

EVENT:D34

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-33	340	8	400	63	3.59
-28	320	34	300	62	2.74
-23	210	35	200	60	1.89
-18	290	38	180	60	1.70
-13	240	33	200	60	1.89
-8	220	30	200	63	1.80
-3	210	34	200	60	1.89
CLC 0	195	36	200	60	1.89
2	185	35	200	60	1.89
7	175	35	200	60	1.89
12	165	35	200	60	1.89
17	105	33	200	60	1.89

EVENT:D36

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-16	320	34	400	69	3.28
-11	270	30	360	69	2.95
-6	240	24	400	71	3.19
CLC 0	200	29	400	67	3.38
4	175	30	380	68	3.16
9	165	24	350	68	2.91
14	115	33	300	70	2.43

EVENT:D35

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-31	360	35	150	62	1.37
-26	350	35	190	65	1.65
-21	300	35	300	62	2.74
-16	280	35	250	60	2.36
-11	240	35	250	68	2.08
-6	240	25	200	68	1.66
CLC 0	195	32	400	68	3.33
4	170	32	350	65	3.05
9	155	34	250	65	2.18
14	115	30	200	65	1.74

EVENT:D37

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-24	370	33	300	63	2.70
-19	340	32	250	65	2.18
-14	390	30	350	74	2.68
-9	350	28	400	72	3.14
-4	330	25	400	69	3.28
CLC 0	300	30	350	69	2.87
6	275	32	300	65	2.61
11	155	30	300	65	2.61
16	100	37	250	65	2.18

COCKPIT VIDEO DATA

NOISE ABATEMENT APPROACH

(3 DEG. TARGET, 60 KTS.)

SIKORSKY S76 DATE: 06/06/84

EVENT:D38

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-23	370	31	300	69	2.46
-18	320	23	400	67	3.38
-13	270	30	400	65	3.48
-8	220	30	400	68	3.33
-3	210	30	300	68	2.50
CLC 0	195	26	300	68	2.50
2	180	32	300	68	2.50
7	165	36	300	65	2.61
12	140	32	250	67	2.11

COCKPIT VIDEO DATA

NOISE ABATEMENT APPROACH

(3 DEG. TARGET, 120 KTS.)

HELICOPTER: SIKORSKY S76 DATE: 06/06/84

EVENT:D39

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-19	430	20	650	122	3.02
-14	360	32	750	118	3.60
-9	290	42	700	120	3.30
-4	220	46	600	120	2.83
CLC 0	200	46	500	120	2.36
6	165	48	450	123	2.07
11	95	50	400	127	1.78

EVENT:D40

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-20	390	18	700	120	3.30
-15	350	30	700	122	3.25
-10	290	37	650	122	3.02
-5	210	36	580	120	2.74
CLC 0	180	42	400	119	1.90
5	155	42	380	120	1.79
10	100	53	300	123	1.38

EVENT:D41

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-23	450	35	500	122	2.32
-18	410	32	650	122	3.02
-13	370	34	600	121	2.81
-8	300	33	600	120	2.83
-3	220	34	600	125	2.72
CLC 0	200	34	600	120	2.83
2	175	35	600	120	2.83
7	115	35	500	122	2.32
12	85	40	300	120	1.41

EVENT:D42

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-22	460	32	500	120	2.36
-17	400	38	570	120	2.69
-12	350	40	600	120	2.83
-7	290	48	600	120	2.83
-2	210	34	600	130	2.61
CLC 0	195	40	600	128	2.65
3	175	38	580	125	2.63
8	125	44	500	128	2.21
13	85	50	300	122	1.39

COCKPIT VIDEO DATA

NOISE ABATEMENT APPROACH

(3 DEG. TARGET, 120 KTS.)

SIKORSKY S76 DATE: 06/06/84

EVENT:D43

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-16	380	35	550	121	2.57
-11	320	30	600	123	2.76
-6	230	30	550	120	2.59
CLC 0	200	40	500	123	2.30
4	170	34	500	121	2.34
9	85	35	450	120	2.12

APPENDIX B

MBB BK117

	PAGE NUMBERS
HELICOPTER CHARACTERISTICS	B-97
NOISE LEVEL DATA	
SOUND EXPOSURE LEVEL	
Bar Charts	
Approaches	B-100
Takeoff	B-101
Level Flyovers	B-102
Summary Tables	B-103 - B-105
Individual Event Data	B-106 - B-115
A-WEIGHTED SOUND LEVEL	
Bar Charts	
Approaches	B-118
Takeoff	B-119
Level Flyovers	B-120
Summary Tables	B-121 - B-124
Individual Event Data	B-125 - B-138
HOVER DATA (leq)	
Plots	B-140
Individual Event Data	B-141 - B-142
RADAR TRACKING DATA	
Position Data	B-144 - B-177
Tracking Plots	B-178 - B-191
METEOROLOGICAL DATA	
10-meter Tower Data	B-194 - B-197
4 ft. Data and Aircraft OAT Data	B-198 - B-200
Pilot Balloon Wind Data	B-201 - B-203
COCKPIT VIDEO DATA	
Normal Approach Plot	B-206
Individual Event Data	B-207 - B-212

MBB
N39184

HELICOPTER CHARACTERISTICS

HELICOPTER MANUFACTURER :	MBB
HELICOPTER MODEL :	BK117 A-1
TEST HELICOPTER N-NUMBER :	N39187
MAX INTERNAL GROSS WEIGHT :	7283 LBS.
NUMBER OF ENGINES :	TWO
UNINSTALLED TAKEOFF POWER :	592 SHP (PER ENGINE)
UNINSTALLED MAX CONTINUOUS PWR. :	550 SHP (PER ENGINE)
NEVER EXCEED SPEED (VNE) :	150 KTS.
MAX SPEED IN LEVEL FLIGHT	
WITH MAX CONTINUOUS POWER :	136 KTS.
SPEED FOR BEST RATE OF CLIMB (VY) :	65 KTS.
CRUISE SPEED FOR BEST RANGE (VCR) :	126 KTS.
BEST RATE OF CLIMB AT	
TAKEOFF POWER (BRC) :	2150 FPM
"TOP OF GREEN ARC" ROTOR SPEED :	391 RPM 102%

MAIN AND TAIL ROTOR SPECIFICATIONS

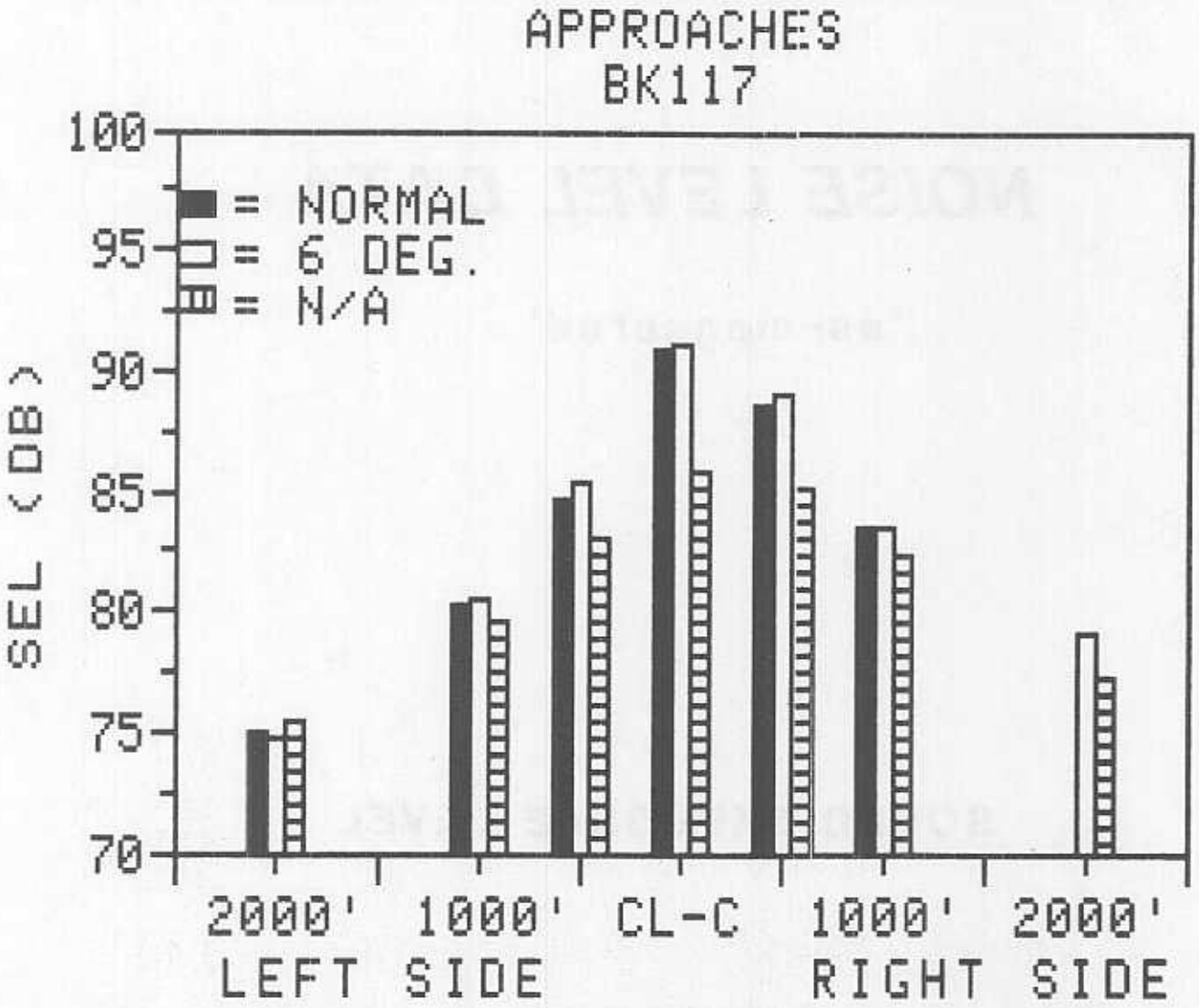
	MAIN	TAIL
DIAMETER (FT.) :	36.09	6.29
NO. OF BLADES :	4	2
TIPSPEED (FPS) @100% :	725	714
TIP SHAPE :	---	---

NOISE LEVEL DATA

'as-measured'

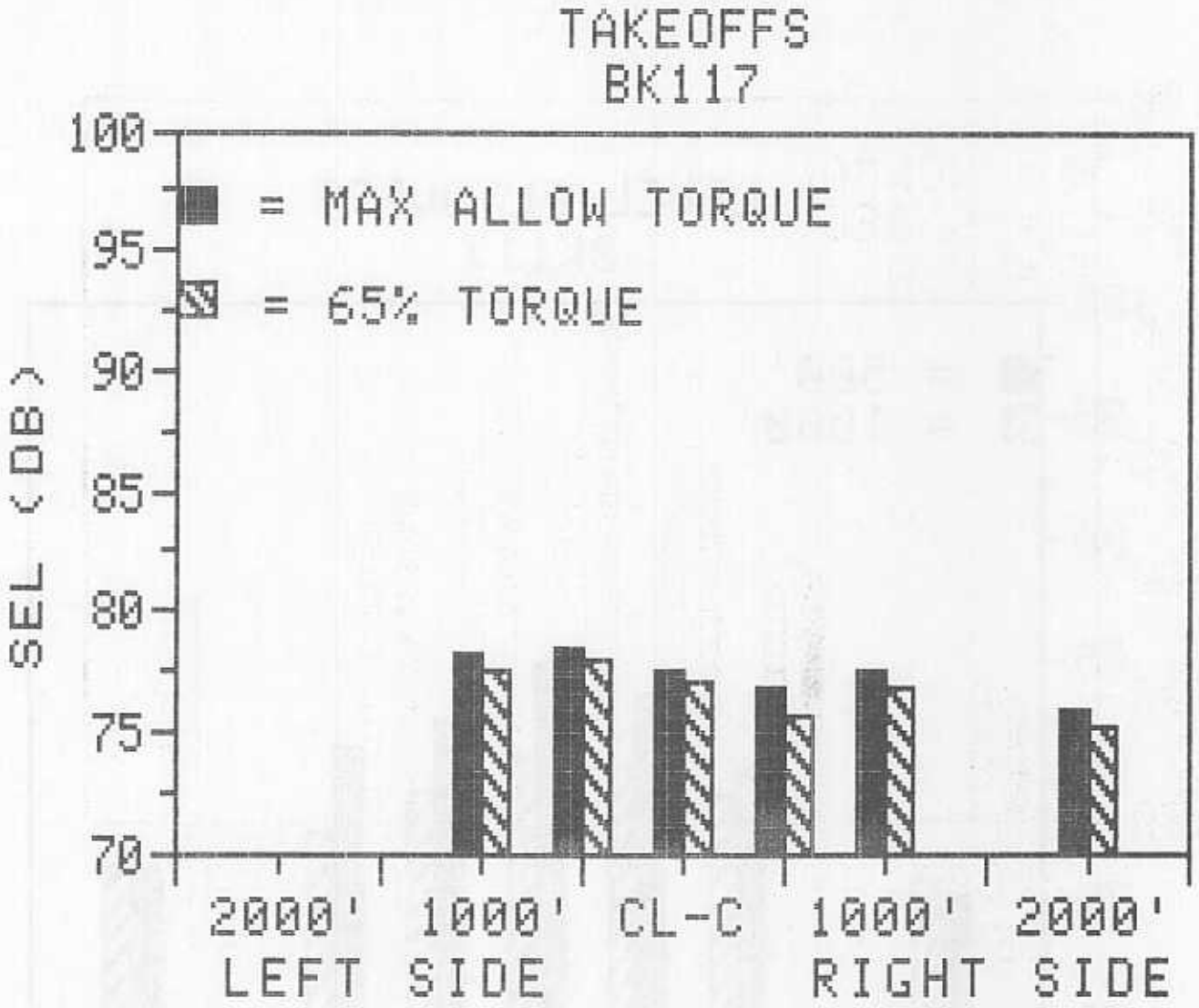
SOUND EXPOSURE LEVEL

THIS SECTION OF THE APPENDIX CONTAINS THE 'AS-MEASURED' SOUND EXPOSURE LEVELS (SEL) FOR ALL FLIGHT EVENTS. THESE DATA ARE PRESENTED IN THE FORM OF BAR CHARTS, SUMMARY TABLES AND INDIVIDUAL EVENT DATA. THE BAR CHARTS SHOW THE FALL OFF IN NOISE LEVEL VERSUS SIDELINE DISTANCE, AND PROVIDE A QUICK LOOK COMPARISON OF THE NOISE LEVELS. PERTINENT FLIGHT PARAMETER INFORMATION READ FROM THE COCKPIT INSTRUMENT PANEL VIDEO RECORDINGS IS ALSO SHOWN BELOW EACH BAR CHART. THE SUMMARY TABLES PRESENT THE AVERAGE NOISE LEVEL, NUMBER OF SAMPLES, STANDARD DEVIATION AND THE 90 PERCENT CONFIDENCE INTERVAL FOR EACH FLIGHT CONDITION. INDIVIDUAL EVENT DATA FOR EACH CONDITION IS THEN GIVEN.



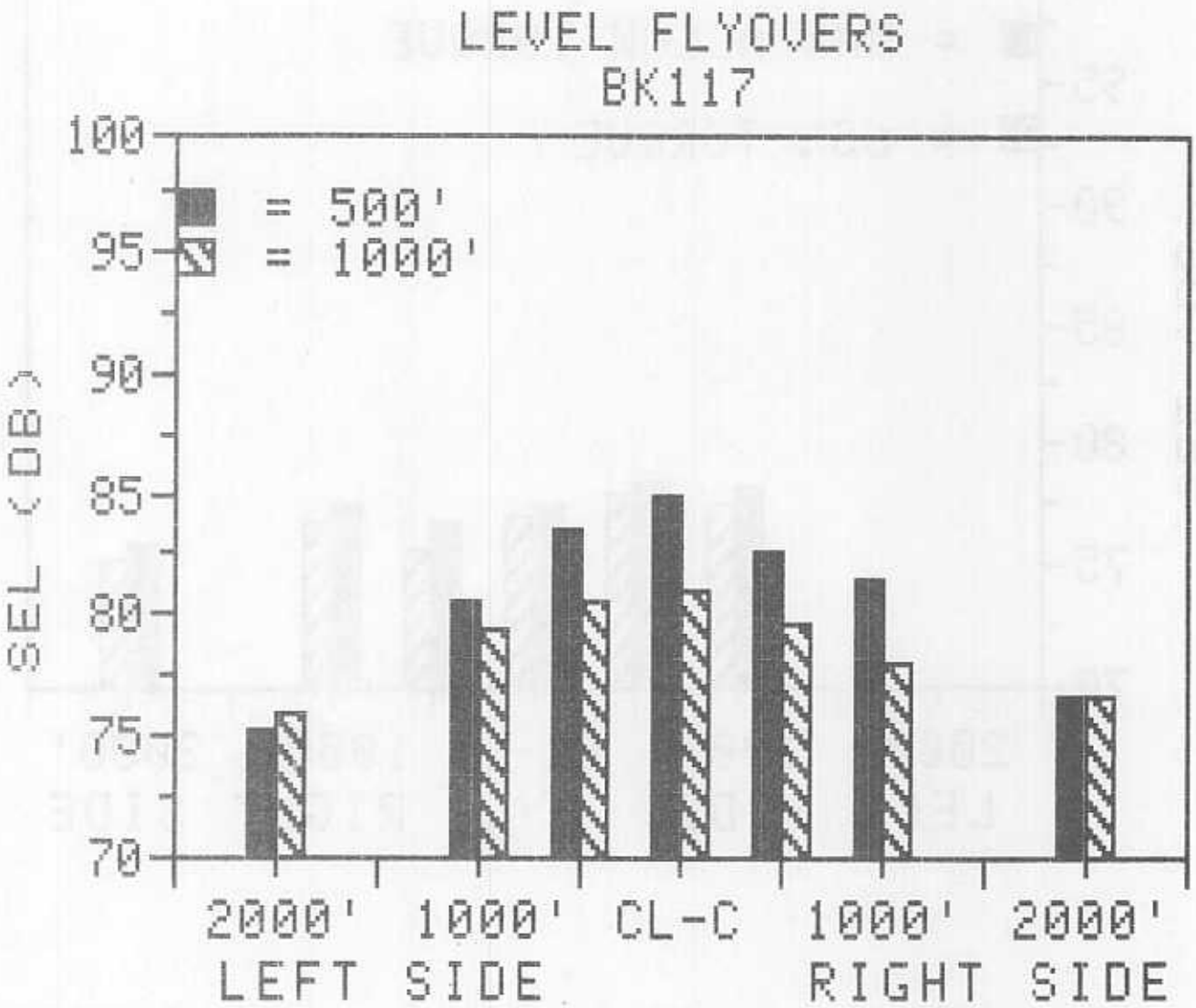
OPERATION	AVG. ALT. OVER CL-C (FT. AGL)	INDICATED AIRSPEED (KTS.)	GLIDESLOPE RANGE (DEG.)
NORMAL APPROACH	380	75-53	6.1-6.6
SIX DEG. APPROACH	380	65	6.0
NOISE ABATEMENT APP.	620	63-56	7.3-11.3
10 TARGET, VAR.A/S (EVENTS D29-D35)			

NOTE: ALTITUDE, AIRSPEED AND VERTICAL SPEED DATA READ FROM VIDEO TAPES OF THE INSTRUMENT PANEL. THE GLIDESLOPE RANGE WAS CALCULATED WITHIN ±15 SEC OF THE CL-C MICROPHONE POSITION.



OPERATION	AVG. ALT. OVER CLC (FT. AGL)	INDICATED AIRSPEED (KTS.)
TAKEOFF		
MAX ALLOW TORQUE	1460	67
65% TORQUE	1450	65

NOTE: ALTIMETER AND INDICATED AIRSPEED READINGS MADE WHEN THE HELICOPTER PASSED OVER CLC MICROPHONE POSITION



INDICATED AIRSPEED =126 KTS.

BK117 SUMMARY SHEET (6/25 & 6/27)

SOUND EXPOSURE LEVEL (DB)

	(LEFT SIDE)				(RIGHT SIDE)		
	2000'	1000'	500'	CL-C	500'	1000'	2000'
* SIX DEG. APPROACH AT VY, 65 KTS. *							
AVERAGE	74.8	80.5	85.3	91.1	89.0	83.5	79.1
N	8	7	8	8	8	7	7
S.D.	1.2	.5	1.4	.9	1.0	1.0	1.1
90% CI	.8	.4	.9	.6	.7	.7	.8
* NORMAL APPROACH *							
AVERAGE	75.0	80.3	84.7	90.9	88.6	83.5	--
N	5	6	6	6	6	6	--
S.D	.8	.8	.9	.9	.9	.4	--
90% CI	.8	.7	.7	.8	.8	.3	--
* NOISE ABATEMENT APPROACH (8 DEG. TARGET, 40 KTS.) *							
AVERAGE	76.2	82.4	88.8	93.1	87.8	85.5	79.3
N	4	4	4	5	5	5	5
S.D	.5	.3	.9	1.4	.7	.6	.9
90% CI	.6	.4	1.0	1.3	.7	.6	.9
* NOISE ABATEMENT APPROACH (6 DEG. TARGET, 40 KTS.) *							
AVERAGE	75.7	81.9	87.4	92.6	86.9	84.6	78.4
N	5	5	5	5	5	5	4
S.D	.5	.6	1.4	1.1	.5	.6	1.0
90% CI	.5	.5	1.4	1.0	.5	.6	1.2

BK117 SUMMARY SHEET (6/25 & 6/27)

SOUND EXPOSURE LEVEL (DB)

	(LEFT SIDE)				(RIGHT SIDE)		
	2000'	1000'	500'	CL-C	500'	1000'	2000'
* NOISE ABATEMENT APPROACH (10 DEG. TARGET, VAR. A/S) *							
AVERAGE	75.4	79.6	83.1	85.7	85.2	82.4	77.2
N	6	7	7	7	7	7	7
S.D.	.6	.6	1.2	2.2	1.3	.9	1.0
90% CI	.5	.4	.9	1.6	1.0	.7	.7
* NOISE ABATEMENT APPROACH (VAR. R/D AND A/S) *							
AVERAGE	74.8	80.7	84.8	88.1	87.2	83.2	78.5
N	7	8	8	8	8	8	8
S.D	.7	.6	1.3	2.3	1.4	1.0	.8
90% CI	.5	.4	.8	1.5	1.0	.7	.5
* TAKEOFF (MAX TORQUE) *							
AVERAGE	--	78.3	78.5	77.4	76.8	77.5	75.8
N	--	7	7	7	7	6	7
S.D	--	.3	1.1	.9	.5	1.1	.8
90% CI	--	.3	.8	.6	.4	.9	.6
* TAKEOFF (65% TORQUE) *							
AVERAGE	--	77.6	78.0	77.1	75.6	76.9	75.3
N	--	6	6	6	6	6	6
S.D	--	.9	.6	.5	1	.6	.4
90% CI	--	.8	.5	.4	.8	.5	.4

BK117 SUMMARY SHEET (6/25 & 6/27)

SOUND EXPOSURE LEVEL (DB)

	(LEFT SIDE)				(RIGHT SIDE)		
	2000'	1000'	500'	CL-C	500'	1000'	2000'
* 500 FT. LEVEL FLYOVER AT 126 KTS. *							
AVERAGE	75.3	80.5	83.4	84.8	82.6	81.4	76.6
N	8	17	16	15	16	17	8
S.D.	.9	.6	.7	.7	.7	.6	.7
90% CI	.5	.3	.3	.3	.3	.3	.5
* 1000 FT. LEVEL FLYOVER AT 126 KTS. *							
AVERAGE	76.0	79.3	80.6	81.0	79.6	78.8	76.6
N	6	12	13	13	13	13	7
S.D	.7	.3	1.1	.8	1.2	.8	1.2
90% CI	.6	.2	.6	.4	.6	.4	.9

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: MBB BK117 TEST DATE: 6/25/84

OPERATION : 6 DEGREE APPROACH AT VY, 65 KTS.

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
A1	72.90	--	84.30	90.90	90.20	85.30	80.18
A2	74.10	79.80	85.20	91.30	89.80	84.20	79.60
A4	73.50	79.90	82.50	89.10	89.40	83.30	79.40
A6	75.60	81.00	86.90	91.60	87.70	82.20	77.30
A8	75.70	81.00	86.20	91.10	88.20	--	78.50
A10	76.30	80.90	85.30	91.50	90.00	83.30	80.30
A12	75.90	80.50	85.40	91.60	88.70	82.90	--
A14	74.70	80.20	86.30	92.00	87.80	83.20	78.40
AVERAGE	74.84	80.47	85.26	91.14	88.98	83.49	79.10
STD. DEV.	1.24	0.52	1.37	0.89	1.01	1.00	1.08
90% C.I.	0.83	0.38	0.92	0.59	0.67	0.73	0.79

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: MBB BK117 TEST DATE: 6/25/84

OPERATION : TAKEOFF (MAX TORQUE)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' WEST	1000' WEST	500' WEST	CL-C	500' EAST	1000' EAST	2000' EAST
C3	--	78.60	78.40	77.60	77.60	78.20	74.70
C5	--	78.70	80.60	78.60	76.90	78.70	75.50
C7	--	77.90	77.40	75.90	76.40	75.80	75.70
C9	--	78.30	77.90	76.80	76.50	--	75.30
C11	--	78.40	79.40	77.70	77.20	77.90	77.20
C13	--	77.80	77.90	77.80	76.80	76.80	76.30
C15	--	78.20	78.00	77.10	76.00	77.50	75.70
AVERAGE	--	78.27	78.51	77.36	76.77	77.48	75.77
STD. DEV.	--	0.34	1.11	0.86	0.53	1.05	0.79
90% C.I.	--	0.25	0.81	0.63	0.39	0.86	0.58

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: MBB BK117 TEST DATE: 6/25/84

OPERATION : NORMAL APPROACH

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
B16	--	81.00	84.80	89.70	87.80	83.80	--
B18	76.40	80.80	85.40	90.70	88.90	83.70	--
B20	74.50	81.20	85.90	91.70	87.90	83.10	--
B22	74.50	79.20	83.50	89.80	90.30	83.50	--
B24	74.50	79.80	84.00	91.50	88.40	84.00	--
B26	--	--	--	--	--	--	--
B28	75.10	79.70	84.80	91.70	88.40	83.10	--
AVERAGE	75.00	80.28	84.73	90.85	88.62	83.53	--
STD. DEV.	0.82	0.82	0.88	0.93	0.92	0.37	--
90% C.I.	0.79	0.68	0.73	0.77	0.75	0.31	--

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: MBB BK117 TEST DATE: 6/25/84

OPERATION : TAKEOFF (65% TORQUE)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' WEST	1000' WEST	500' WEST	CL-C	500' EAST	1000' EAST	2000' EAST
C17	--	78.60	77.30	76.50	76.70	77.20	75.50
C19	--	78.80	78.70	77.50	76.80	77.70	75.80
C21	--	77.70	78.20	77.80	75.30	77.30	74.70
C23	--	77.10	77.70	76.60	74.70	76.70	74.80
C25	--	76.40	77.50	77.30	74.50	76.10	75.40
C27	--	77.10	78.80	76.90	75.60	76.30	75.40
AVERAGE	--	77.62	78.03	77.10	75.60	76.88	75.27
STD. DEV.	--	0.94	0.63	0.52	0.98	0.62	0.43
90% C.I.	--	0.77	0.52	0.43	0.80	0.51	0.35

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: MBB BK117 TEST DATE: 6/25/84

OPERATION : NOISE ABATEMENT APPROACH (10 DEG. TARGET, VAR. A/S)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
D29	74.90	80.20	81.90	83.40	83.70	81.60	77.20
D30	75.30	79.40	81.90	83.40	84.20	81.20	76.80
D31	74.70	79.50	82.70	85.10	85.80	82.20	76.90
D32	75.60	79.80	84.30	87.50	85.90	83.20	78.00
D33	--	78.70	82.40	84.90	84.30	82.80	75.90
D34	75.60	80.30	85.00	89.40	87.60	83.80	79.00
D35	76.30	79.30	83.50	86.00	84.90	81.90	76.90
AVERAGE	75.40	79.60	83.10	85.67	85.20	82.39	77.24
STD. DEV.	0.57	0.55	1.21	2.18	1.34	0.92	0.99
90% C.I.	0.47	0.41	0.88	1.60	0.98	0.68	0.73

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: MBB BK117 TEST DATE: 6/25/84

OPERATION : NOISE ABATEMENT APPROACH (VAR. A/S AND R/D)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
D38	75.60	80.30	84.80	89.30	88.10	84.60	79.20
D39	75.30	79.40	83.00	85.00	85.70	82.20	77.80
D40	74.60	81.10	83.80	85.10	84.70	82.40	79.30
D41	75.00	80.80	84.90	88.00	87.20	84.60	78.80
D42	75.10	80.60	83.80	86.80	86.50	83.70	77.50
D43	74.10	80.80	85.90	90.20	88.20	82.10	79.50
D44	73.80	81.50	86.60	91.10	88.60	83.40	78.30
D45	--	80.80	85.90	88.90	88.40	82.90	77.90
AVERAGE	74.79	80.66	84.84	88.05	87.18	83.24	78.54
STD. DEV.	0.65	0.62	1.25	2.26	1.42	1.01	0.77
90% C.I.	0.48	0.41	0.83	1.51	0.95	0.67	0.51

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: MBB BK117 TEST DATE: 6/25/84

OPERATION : LEVEL FLYOVER (500 FT. AT 126 KTS.)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' WEST	1000' WEST	500' WEST	CL-C	500' EAST	1000' EAST	2000' EAST
F46	74.50	80.20	--	84.00	81.80	81.30	--
F47	--	80.00	83.10	84.20	--	81.20	76.60
F48	75.80	80.50	83.00	84.00	82.20	80.60	--
F49	--	80.30	83.20	85.00	82.80	82.20	77.40
F50	76.50	81.60	84.00	85.20	82.20	81.40	--
F51	--	80.70	83.60	85.20	82.90	82.40	76.10
F52	74.60	79.60	82.30	84.80	82.20	81.10	--
F53	--	80.40	83.60	84.50	82.10	81.20	76.30
F54	75.00	81.10	84.20	86.20	83.70	81.80	--
F55	--	80.70	82.80	85.00	81.40	81.40	75.90
F56	75.30	80.60	82.30	84.20	82.90	79.80	--
F57	--	79.50	84.70	85.20	82.50	81.80	75.70
F58	73.90	80.10	83.20	84.50	82.50	81.10	--
F59	--	80.50	84.50	85.80	82.50	82.20	77.10
F60	75.40	81.50	83.10	84.00	83.90	81.00	--
F61	--	80.20	83.90	--	82.20	81.70	77.40
F62	76.40	80.70	83.10	--	83.80	81.60	--
AVERAGE	75.27	80.48	83.41	84.79	82.60	81.40	76.56
STD. DEV.	0.87	0.57	0.71	0.67	0.71	0.63	0.67
90% C.I.	0.54	0.25	0.32	0.31	0.32	0.28	0.45

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: MBB BK117 TEST DATE: 6/25/84

OPERATION : LEVEL FLYOVER (1000 FT. @ 126 KTS.)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' EAST	1000' EAST	2000' EAST
E63	--	79.50	82.00	82.50	79.70	80.20	78.00
E64	76.50	--	80.80	81.40	80.20	78.70	--
E65	--	79.30	81.80	81.20	79.30	78.50	76.70
E66	76.20	79.50	79.10	80.50	81.60	78.00	--
E67	--	79.70	82.00	81.10	77.90	79.40	78.10
E68	76.80	79.50	80.30	81.50	81.70	78.70	--
E69	--	79.30	81.90	81.30	78.80	80.40	76.80
E70	75.60	79.00	79.60	79.80	80.50	78.20	--
E71	--	78.90	81.40	80.90	78.70	79.30	75.60
E72	74.90	78.70	79.10	80.20	79.10	77.80	--
E73	--	79.10	80.70	80.70	78.50	78.70	74.90
E74	75.80	79.10	79.20	79.60	79.10	77.80	--
E75	--	79.50	80.20	81.70	79.00	79.10	75.80
AVERAGE	75.97	79.26	80.62	80.95	79.55	78.83	76.56
STD. DEV.	0.68	0.30	1.13	0.80	1.16	0.83	1.21
90% C.I.	0.56	0.16	0.57	0.40	0.58	0.42	0.89

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: MBB BK117 TEST DATE: 6/27/84

OPERATION : NOISE ABATEMENT APPROACH (8 DEG. TARGET, 40 KTS.)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	670' WEST	1000' WEST	2000' WEST
D1	75.70	82.40	88.50	92.40	86.60	84.60	78.40
D2	76.20	82.70	90.00	95.00	87.80	85.80	80.00
D3	76.90	82.00	88.80	94.00	88.40	86.30	80.30
D4	--	--	--	92.20	88.20	85.50	79.40
D5	75.80	82.60	87.90	91.70	87.90	85.20	78.30
AVERAGE	76.15	82.43	88.80	93.06	87.78	85.48	79.28
STD. DEV.	0.54	0.31	0.88	1.38	0.70	0.64	0.91
90% C.I.	0.64	0.36	1.04	1.32	0.67	0.61	0.87

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: MBB BK117 TEST DATE: 6/27/84

OPERATION : NOISE ABATEMENT APPROACH (6 DEG. TARGET, 40 KTS.)

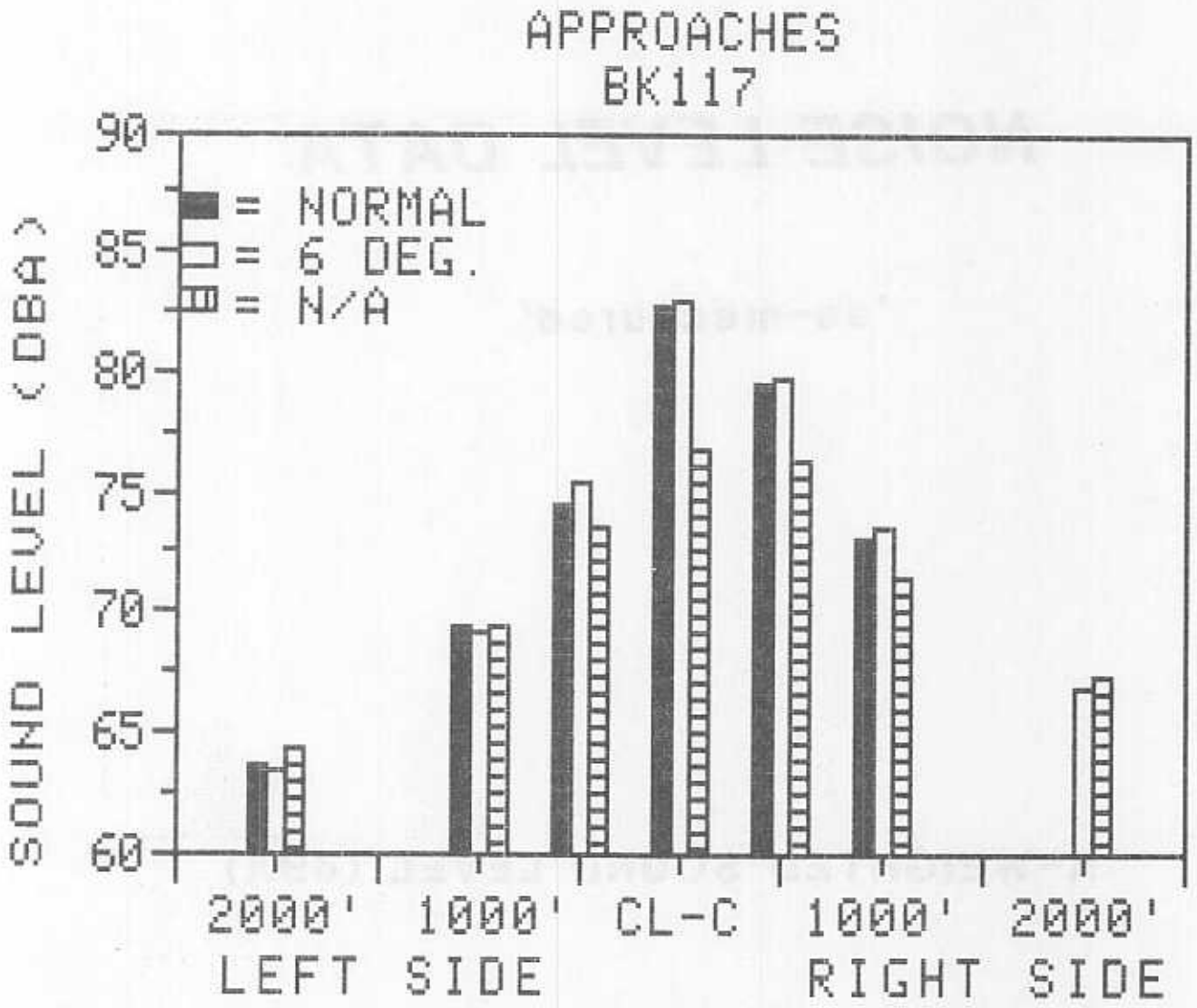
	E)	(LEFT SID			DE)	(RIGHT SI	
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	670' WEST	1000' WEST	2000' WEST
D6	76.00	81.30	85.10	91.10	86.30	83.90	77.20
D7	75.70	82.20	88.90	92.50	87.30	85.40	78.60
D8	76.10	81.90	87.90	93.40	86.90	84.60	78.30
D9	76.00	81.50	87.30	93.90	87.50	85.00	--
D10	74.80	82.70	87.90	92.30	86.70	84.10	79.60
AVERAGE	75.72	81.92	87.42	92.64	86.94	84.60	78.43
STD. DEV.	0.54	0.56	1.42	1.08	0.48	0.62	0.99
90% C.I.	0.51	0.53	1.35	1.03	0.45	0.59	1.16

NOISE LEVEL DATA

'as-measured'

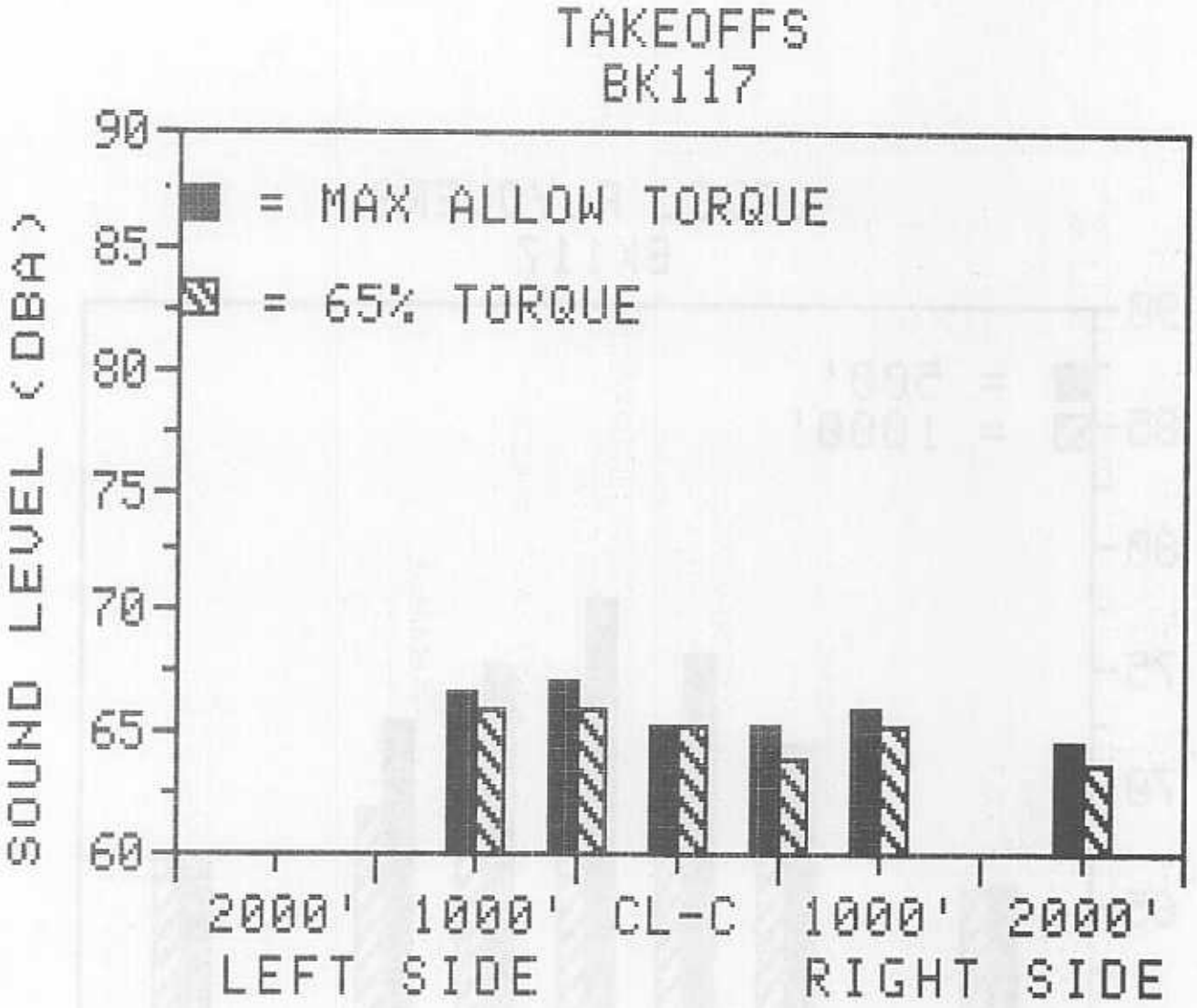
A-WEIGHTED SOUND LEVEL (dBA)

THIS SECTION OF THE APPENDIX CONTAINS THE 'AS-MEASURED' A-WEIGHTED SOUND LEVEL (dBA) FOR ALL FLIGHT EVENTS. THESE DATA ARE PRESENTED IN THE FORM OF BAR CHARTS, SUMMARY TABLES AND INDIVIDUAL EVENT DATA. THE BAR CHARTS SHOW THE FALL OFF IN NOISE LEVEL VERSUS SIDELINE DISTANCE, AND PROVIDE A QUICK LOOK COMPARISON OF THE NOISE LEVELS. PERTINENT FLIGHT PARAMETER INFORMATION READ FROM THE COCKPIT INSTRUMENT PANEL VIDEO RECORDINGS IS ALSO SHOWN BELOW EACH BAR CHART. THE SUMMARY TABLES PRESENT THE AVERAGE NOISE LEVEL, NUMBER OF SAMPLES, STANDARD DEVIATION AND THE 90 PERCENT CONFIDENCE INTERVAL FOR EACH FLIGHT CONDITION. INDIVIDUAL EVENT DATA FOR EACH CONDITION IS THEN GIVEN.



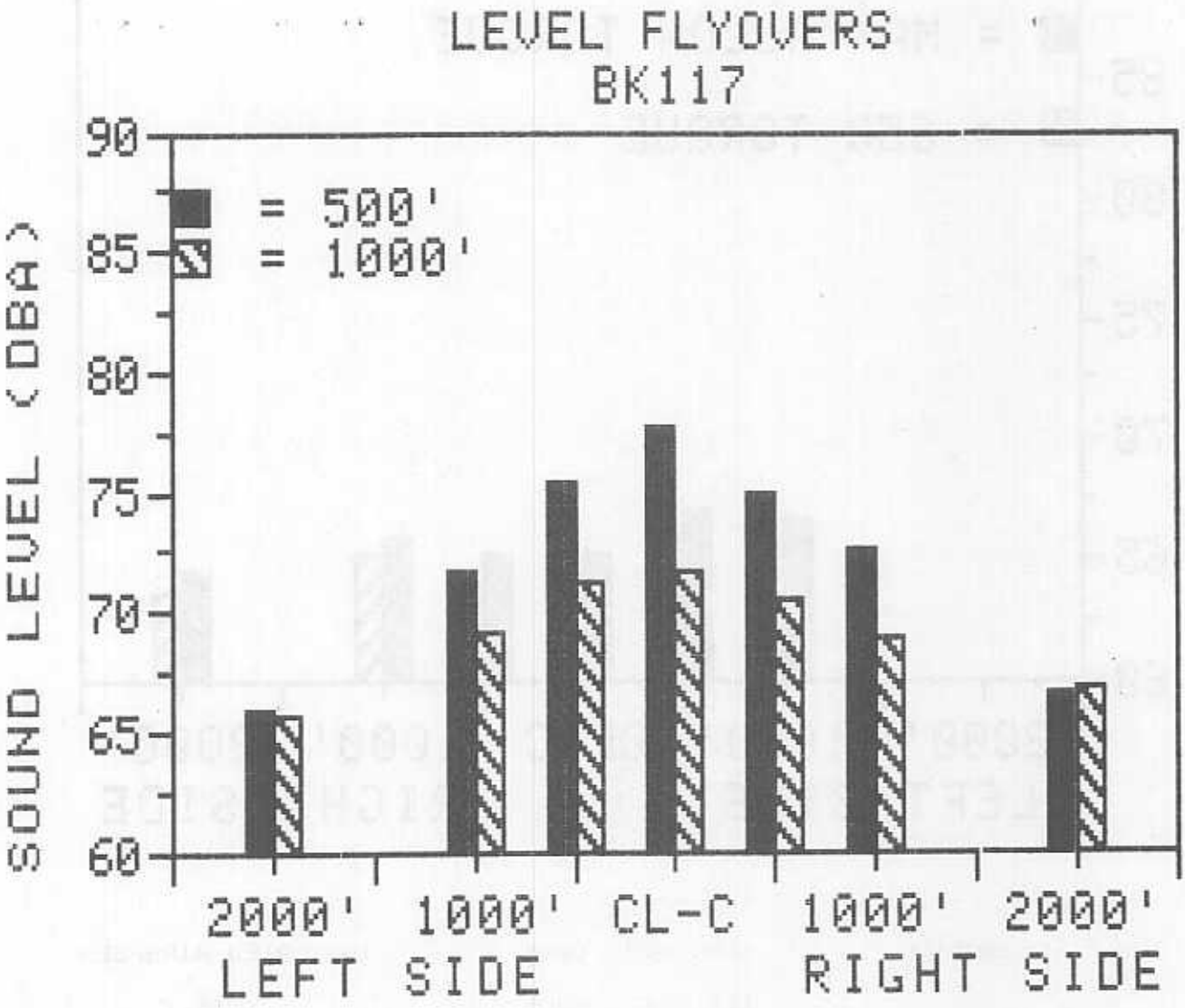
OPERATION	AVG. ALT. OVER CL-C (FT. AGL)	INDICATED AIRSPEED (KTS.)	GLIDESLOPE RANGE (DEG.)
NORMAL APPROACH	380	75-53	6.1-6.6
SIX DEG. APPROACH	380	65	6.0
NOISE ABATEMENT APP.	620	63-56	7.3-11.3
10 TARGET, VAR.A/S (EVENTS D29-D35)			

NOTE: ALTITUDE, AIRSPEED AND VERTICAL SPEED DATA READ FROM VIDEO TAPES OF THE INSTRUMENT PANEL. THE GLIDESLOPE RANGE WAS CALCULATED WITHIN ±15 SEC OF THE CL-C MICROPHONE POSITION.



OPERATION	AVG. ALT. OVER CLC (FT. AGL)	INDICATED AIRSPEED (KTS.)
TAKEOFF		
MAX ALLOW TORQUE	1460	67
65% TORQUE	1450	65

NOTE: ALTIMETER AND INDICATED AIRSPEED READINGS MADE WHEN THE HELICOPTER PASSED OVER CLC MICROPHONE POSITION



INDICATED AIRSPEED =126 KTS.

BK117 SUMMARY SHEET (6/25 & 6/27)

A-WEIGHTED SOUND LEVEL (DB)

	(LEFT SIDE)				(RIGHT SIDE)		
	2000'	1000'	500'	CL-C	500'	1000'	2000'
* SIX DEG. APPROACH AT VY, 65 KTS. *							
AVERAGE	63.4	69.1	75.4	83.0	79.8	73.4	66.9
N	8	7	8	8	8	8	6
S.D.	2.0	.5	1.5	1.4	1.5	1.3	2.2
90% CI	1.3	.4	1.0	.9	1	.9	1.8
* NORMAL APPROACH *							
AVERAGE	63.6	69.3	74.5	82.7	79.6	73.0	--
N	5	6	6	6	6	6	--
S.D	2.6	1.5	1.4	.9	1.0	1.1	--
90% CI	2.5	1.2	1.1	.8	.9	.9	--
* NOISE ABATEMENT APPROACH (8 DEG. TARGET, 40 KTS.) *							
AVERAGE	62.2	69.2	76.6	82.3	75.6	72.4	66.2
N	4	4	4	5	5	5	5
S.D	1.4	.9	1.8	1.6	1.1	1.2	1.7
90% CI	1.6	1.1	2.1	2.5	1.1	1.2	1.6
* NOISE ABATEMENT APPROACH (6 DEG. TARGET, 40 KTS.) *							
AVERAGE	63.0	68.6	76.4	82.0	74.8	72.2	65.7
N	5	5	5	5	5	5	4
S.D	1.1	1.1	2.1	1.2	.5	1.2	1.2
90% CI	1.0	1.1	2.0	1.2	.4	1.2	1.4

BK117 SUMMARY SHEET (6/25 & 6/27)

A-WEIGHTED SOUND LEVEL (DB)

	(LEFT SIDE)				(RIGHT SIDE)		
	2000'	1000'	500'	CL-C	500'	1000'	2000'
* NOISE ABATEMENT APPROACH (10 DEG. TARGET, VAR. A/S) *							
AVERAGE	64.2	69.3	73.4	76.7	76.2	71.5	67.3
N	6	7	7	7	7	7	7
S.D.	1.1	1.2	1.6	3.1	2.5	1.7	1.7
90% CI	.9	.9	1.2	2.3	1.9	1.3	1.3
* NOISE ABATEMENT APPROACH (VAR. R/D AND A/S) *							
AVERAGE	63.7	69.1	74.5	77.9	77.4	72.2	67.1
N	7	8	8	8	7	8	8
S.D	1.3	.8	1.8	2.3	.9	1.9	1.8
90% CI	.9	.5	1.2	1.6	.7	1.3	1.2
* TAKEOFF (MAX TORQUE) *							
AVERAGE	--	66.5	67.1	65.2	65.1	65.9	64.6
N	--	6	7	7	7	6	7
S.D	--	.4	2.0	1.4	.9	1.1	1.1
90% CI	--	.4	1.4	1.0	.7	.9	.8
* TAKEOFF (65% TORQUE) *							
AVERAGE	--	65.9	65.8	65.1	63.8	65.1	63.5
N	--	6	6	6	6	6	6
S.D	--	.7	.8	1.2	.7	.6	.5
90% CI	--	.6	.7	1.0	.5	.5	.4

BK117 SUMMARY SHEET (6/25 & 6/27)

A-WEIGHTED SOUND LEVEL (DB)

	(LEFT SIDE)				(RIGHT SIDE)		
	2000'	1000'	500'	CL-C	500'	1000'	2000'
* 500 FT. LEVEL FLYOVER AT 126 KTS. *ARGET, VAR. A/S) *							
AVERAGE	66.0	71.7	75.3	77.7	74.9	72.6	66.5
N	9	18	17	16	17	18	8
S.D.	1.2	1.1	1.0	.7	.6	1.0	.9
90% CI	.7	.5	.5	.3	.3	.4	.6
* 1000 FT. LEVEL FLYOVER AT 126 KTS. *							
AVERAGE	65.7	69.2	71.1	71.6	70.5	69.0	66.8
N	6	12	13	13	13	13	7
S.D	1.0	.5	.8	.7	1.3	.8	1.1
90% CI	.8	.3	.4	.4	.7	.4	.8

BK117 SUMMARY SHEET (06/28/84)

A-WEIGHTED SOUND LEVEL (DB)

	(INSIDE OF TURN)				(OUTSIDE OF TURN)		
	2000'	1000'	500'	CL-C	500'	1000'	2000'
			(RIGHT SIDE)			(RIGHT SIDE)	
* 15 DEG. BANK ANGLE TURN, 65 KTS. *							
AVERAGE	62.7	67.2	73.3	75.2	72.3	68.8	--
N	4	5	5	11	6	6	--
S.D.	1.0	.8	.4	1.8	1.0	.4	--
90% CI	1.2	.8	.4	1.0	.8	.4	--
* 30 DEG. BANK ANGLE TURN, 65 KTS.							
AVERAGE	62.7	69.0	72.4	75.9	74.6	70.1	--
N	4	4	4	8	4	3	--
S.D	.9	1.6	.9	2.3	.8	1.0	--
90% CI	1.1	1.9	1.1	1.5	.9	1.6	--
			(LEFT SIDE)			(LEFT SIDE)	
* 15 DEG. BANK ANGLE TURN, 65 KTS.							
AVERAGE	62.0	67.5	73.2	75.2	71.4	67.1	--
N	3	6	6	11	5	5	--
S.D	1.8	1.2	2.3	1.8	2.6	2.3	--
90% CI	3.0	1.0	1.9	1.0	2.5	2.2	--
* 30 DEG. BANK ANGLE TURN, 65 KTS.							
AVERAGE	62.9	69.2	73.3	75.9	71.7	69.3	--
N	2	4	4	8	4	4	--
S.D	1.4	1.6	.8	2.3	2.8	4.2	--
90% CI	--	1.8	1.0	1.5	3.3	4.9	--

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: MBB BK117 TEST DATE: 6/25/84

OPERATION : 6 DEGREE APPROACH AT VY, 65 KTS.

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
A1	62.90	--	74.70	82.40	81.20	76.00	63.10
A2	60.40	68.60	76.40	83.80	81.50	74.00	68.60
A4	62.40	69.10	72.50	80.50	80.10	72.00	--
A6	64.70	69.60	77.30	84.30	78.80	73.00	66.10
A8	63.40	69.50	75.60	82.10	77.40	73.00	67.30
A10	66.50	69.50	75.30	82.80	80.40	73.30	69.40
A12	65.30	68.20	74.90	83.50	80.90	73.80	--
A14	61.90	69.10	76.50	84.70	78.20	72.00	66.60
AVERAGE	63.44	69.09	75.40	83.01	79.81	73.39	66.85
STD. DEV.	1.98	0.52	1.46	1.36	1.50	1.28	2.21
90% C.I.	1.32	0.38	0.98	0.91	1.00	0.86	1.82

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: MBB BK117 TEST DATE: 6/25/84

OPERATION : TAKEOFF (MAX TORQUE)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' WEST	1000' WEST	500' WEST	CL-C	500' EAST	1000' EAST	2000' EAST
C3	--	66.70	67.30	65.20	65.30	67.50	64.00
C5	--	--	71.40	67.70	65.80	66.40	65.50
C7	--	66.30	66.10	63.60	65.50	64.50	65.50
C9	--	66.00	67.00	65.40	63.90	--	62.90
C11	--	66.80	66.40	63.70	66.00	66.60	65.20
C13	--	67.00	65.70	65.60	63.70	64.90	63.60
C15	--	66.00	66.00	64.90	65.20	65.70	65.40
AVERAGE	--	66.47	67.13	65.16	65.06	65.93	64.59
STD. DEV.	--	0.43	1.97	1.37	0.90	1.12	1.07
90% C.I.	--	0.35	1.44	1.01	0.66	0.93	0.78

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: MBB BK117 TEST DATE: 6/25/84

OPERATION : NORMAL APPROACH

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
B16	--	68.10	73.20	81.80	78.40	73.00	--
B18	67.20	69.50	75.90	83.10	79.80	73.00	--
B20	61.90	70.40	75.20	83.40	78.70	71.00	--
B22	61.50	67.40	72.50	81.30	81.30	72.80	--
B24	61.90	68.90	74.70	82.90	79.40	74.00	--
B26	--	--	--	--	--	--	--
B28	65.60	71.30	75.60	83.60	80.00	74.00	--
AVERAGE	63.62	69.27	74.52	82.68	79.60	72.97	--
STD. DEV.	2.61	1.45	1.37	0.92	1.04	1.10	--
90% C.I.	2.48	1.19	1.13	0.76	0.86	0.91	--

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: MBB BK117 TEST DATE: 6/25/84

OPERATION : TAKEOFF (65% TORQUE)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' WEST	1000' WEST	500' WEST	CL-C	500' EAST	1000' EAST	2000' EAST
C17	--	67.00	65.00	64.40	63.60	64.90	62.90
C19	--	66.30	65.80	64.00	63.60	65.80	63.50
C21	--	65.50	67.00	66.90	63.80	65.50	63.50
C23	--	66.00	65.70	65.80	63.10	65.30	64.40
C25	--	65.00	64.80	65.50	63.50	64.20	63.30
C27	--	65.40	66.40	63.90	65.00	64.90	63.10
AVERAGE	--	65.87	65.78	65.08	63.77	65.10	63.45
STD. DEV.	--	0.72	0.83	1.19	0.65	0.56	0.52
90% C.I.	--	0.59	0.68	0.98	0.53	0.46	0.43

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: MBB BK117 TEST DATE: 6/25/84

OPERATION : NOISE ABATEMENT APPROACH (10 DEG. TARGET, VAR. A/S)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
D29	62.80	70.00	71.90	72.90	72.80	69.00	67.90
D30	64.40	71.70	71.70	73.40	73.60	70.00	65.60
D31	63.90	68.90	73.50	75.90	77.20	71.30	66.80
D32	64.30	68.30	75.10	78.00	77.70	73.10	69.50
D33	--	68.90	71.70	76.20	74.50	71.00	65.30
D34	63.80	68.90	75.00	81.40	78.40	74.00	69.50
D35	66.00	68.60	74.60	79.20	79.20	72.30	66.80
AVERAGE	64.20	69.33	73.36	76.71	76.20	71.53	67.34
STD. DEV.	1.05	1.17	1.58	3.06	2.53	1.74	1.70
90% C.I.	0.86	0.86	1.16	2.25	1.85	1.28	1.25

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: MBB BK117 TEST DATE: 6/25/84

OPERATION : NOISE ABATEMENT APPROACH (VAR. A/S & R/D)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
D38	65.10	68.60	73.90	80.60	78.00	76.00	70.90
D39	62.90	68.80	73.40	75.80	76.40	71.00	66.40
D40	62.60	70.40	73.60	74.80	--	71.00	67.00
D41	65.00	68.10	72.70	76.60	76.40	73.20	65.50
D42	65.00	68.50	72.60	76.00	76.70	73.00	65.40
D43	62.20	70.00	76.40	79.30	78.90	71.00	68.30
D44	63.00	69.30	76.60	80.60	77.40	72.20	66.60
D45	--	69.20	76.70	79.40	77.80	70.00	66.40
AVERAGE	63.69	69.11	74.49	77.89	77.37	72.18	67.06
STD. DEV.	1.29	0.78	1.78	2.33	0.94	1.90	1.78
90% C.I.	0.94	0.52	1.19	1.56	0.69	1.27	1.19

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: MBB BK117 TEST DATE: 6/25/84

OPERATION : LEVEL FLYOVER (500 FT. AT 126 KTS.)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' WEST	1000' WEST	500' WEST	CL-C	500' EAST	1000' EAST	2000' EAST
F46	66.00	72.80	--	77.70	74.40	74.00	--
F47	--	74.00	74.30	77.00	--	72.10	67.40
F48	68.20	72.70	75.40	77.50	75.30	72.80	--
F49	--	71.00	74.60	77.60	74.30	72.90	66.40
F50	66.30	73.40	77.30	79.00	75.90	73.80	--
F51	--	71.20	75.20	78.20	75.20	73.40	66.80
F52	66.00	70.30	74.10	77.80	74.50	71.80	--
F53	--	71.20	75.50	77.00	74.30	72.30	66.80
F54	66.00	72.20	75.30	77.90	75.10	71.80	--
F55	--	71.50	74.20	77.80	74.00	72.00	64.90
F56	65.50	70.80	74.50	77.80	74.20	71.00	--
F57	--	70.00	76.80	78.40	74.90	74.00	66.30
F58	64.40	71.60	75.90	77.20	75.00	72.50	--
F59	--	71.00	77.00	78.40	75.00	73.60	67.60
F60	64.50	71.60	74.40	76.40	74.40	70.80	--
F61	--	70.90	75.30	--	75.20	72.30	65.40
F62	66.80	71.80	74.30	--	76.00	72.20	--
AVERAGE	65.97	71.65	75.26	77.71	74.86	72.55	66.45
STD. DEV.	1.15	1.07	1.04	0.65	0.59	0.97	0.93
90% C.I.	0.71	0.47	0.47	0.30	0.27	0.43	0.62

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: MBB BK117 TEST DATE: 6/25/84

OPERATION : LEVEL FLYOVER (1000 FT. @ 126 KTS.)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' WEST	1000' WEST	500' WEST	CL-C	500' EAST	1000' EAST	2000' EAST
E63	--	68.50	71.60	72.10	69.90	70.50	67.80
E64	66.00	--	71.00	72.70	71.20	69.00	--
E65	--	69.50	71.80	71.00	70.40	69.10	65.10
E66	66.60	69.30	69.80	71.80	73.20	68.00	--
E67	--	69.00	71.90	71.20	69.10	69.30	66.20
E68	66.80	70.50	71.30	73.20	73.20	69.00	--
E69	--	68.80	72.10	71.40	69.80	70.50	66.90
E70	65.30	69.60	70.60	71.10	71.00	68.30	--
E71	--	69.00	72.20	71.10	69.70	69.60	66.30
E72	64.60	69.50	70.20	70.80	70.20	68.00	--
E73	--	68.70	70.60	71.20	69.80	68.60	68.30
E74	64.60	69.30	69.90	71.10	69.60	68.70	--
E75	--	69.00	70.90	71.60	69.40	68.70	66.90
AVERAGE	65.65	69.23	71.07	71.56	70.50	69.02	66.79
STD. DEV.	0.97	0.53	0.82	0.72	1.33	0.81	1.06
90% C.I.	0.80	0.28	0.41	0.36	0.67	0.40	0.78

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: MBB BK117 TEST DATE: 6/27/84

OPERATION : NOISE ABATEMENT APPROACH (8 DEG. TARGET, 40 KTS.)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	670' WEST	1000' WEST	2000' WEST
D1	60.60	68.00	75.60	80.40	73.80	70.50	64.20
D2	62.40	70.20	79.10	85.60	75.70	72.50	66.90
D3	63.90	69.10	76.70	84.60	76.20	73.00	68.70
D4	--	--	--	81.00	76.80	73.80	66.00
D5	61.90	69.60	75.20	80.00	75.50	72.00	65.30
AVERAGE	62.20	69.23	76.65	82.32	75.60	72.36	66.22
STD. DEV.	1.36	0.93	1.75	2.59	1.12	1.23	1.70
90% C.I.	1.60	1.10	2.06	2.46	1.07	1.18	1.62

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: MBB BK117 TEST DATE: 6/27/84

OPERATION : NOISE ABATEMENT APPROACH (6 DEG. TARGET, 40 KTS.)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	670' WEST	1000' WEST	2000' WEST
D6	62.00	68.00	73.10	81.50	75.40	71.00	64.80
D7	63.40	69.10	78.70	80.80	74.70	72.00	66.40
D8	62.30	67.40	75.70	83.10	74.50	71.30	64.60
D9	64.70	68.40	76.80	83.60	75.00	74.00	--
D10	62.70	70.30	77.60	81.20	74.20	72.80	66.90
AVERAGE	63.02	68.64	76.38	82.04	74.76	72.22	65.68
STD. DEV.	1.08	1.11	2.14	1.23	0.46	1.21	1.15
90% C.I.	1.02	1.06	2.04	1.18	0.44	1.16	1.35

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: MBB BK117 TEST DATE: 6/28/84

OPERATION : 15 DEG. BANK ANGLE TURN AT 65 KTS.

	INSIDE OF TURN (RIGHT SIDE)				OUTSIDE OF TURN (RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
G1	--------	--------	--------	74.50	70.90	68.20	--
G2	61.40	65.90	73.10	72.30	--------	--------	--------
G3	--------	--------	--------	75.00	72.50	68.90	--
G4	--	67.10	72.80	76.30	--------	--------	--------
G5	--------	--------	--------	78.90	73.40	69.50	--
G6	63.90	68.00	73.20	74.40	--------	--------	--------
G7	--------	--------	--------	74.60	72.40	69.00	--
G8	62.60	67.30	73.80	75.70	--------	--------	--------
G9	--------	--------	--------	77.30	73.20	68.80	--
G10	62.80	67.80	73.70	74.30	--------	--------	--------
G11	--------	--------	--------	74.10	71.20	68.50	--
AVERAGE	62.68	67.22	73.32	75.22	72.27	68.82	--
STD. DEV.	1.02	0.82	0.42	1.78	1.02	0.44	--
90% C.I.	1.20	0.78	0.40	0.97	0.84	0.37	--

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: MBB BK117 TEST DATE: 6/28/84

OPERATION : 15 DEG. BANK ANGLE TURN AT 65 KTS.

	INSIDE OF TURN (LEFT SIDE)				OUTSIDE OF TURN (LEFT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
G1	61.90	67.30	71.70	74.50	--	--	--
G2	--	--	--	72.30	67.80	65.00	--
G3	--	68.80	71.90	75.00	--	--	--
G4	--	--	--	76.30	74.60	70.50	--
G5	63.90	68.90	77.60	78.90	--	--	--
G6	--	--	--	74.40	72.80	68.20	--
G7	--	66.00	72.40	74.60	--	--	--
G8	--	--	--	75.70	71.80	66.80	--
G9	--	67.30	74.00	77.30	--	--	--
G10	--	--	--	74.30	69.80	65.00	--
G11	60.30	66.50	71.50	74.10	--	--	--
AVERAGE	62.03	67.47	73.18	75.22	71.36	67.10	--
STD. DEV.	1.80	1.18	2.34	1.78	2.64	2.33	--
90% C.I.	3.04	0.97	1.93	0.97	2.51	2.22	--

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: MBB BK117 TEST DATE: 6/28/84

OPERATION : 30 DEG. BANK ANGLE TURN AT 65 KTS.

	INSIDE OF TURN (RIGHT SIDE)				OUTSIDE OF TURN (RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
H12	----------	----------	----------	77.90	74.30	69.00	--
H13	63.80	69.80	73.60	73.40	----------	----------	----------
H14	----------	----------	----------	78.70	74.50	--	--
H15	62.80	70.70	72.50	73.90	----------	----------	----------
H16	----------	----------	----------	75.90	73.90	70.40	--
H17	62.70	68.10	72.30	77.00	----------	----------	----------
H18	----------	----------	----------	77.70	75.70	70.80	--
H19	61.60	67.20	71.30	72.90	----------	----------	----------
AVERAGE	62.73	68.95	72.43	75.93	74.60	70.07	--
STD. DEV.	0.90	1.59	0.94	2.25	0.77	0.95	--
90% C.I.	1.06	1.87	1.11	1.51	0.91	1.59	--

A-WEIGHTED SOUND LEVEL (DB)

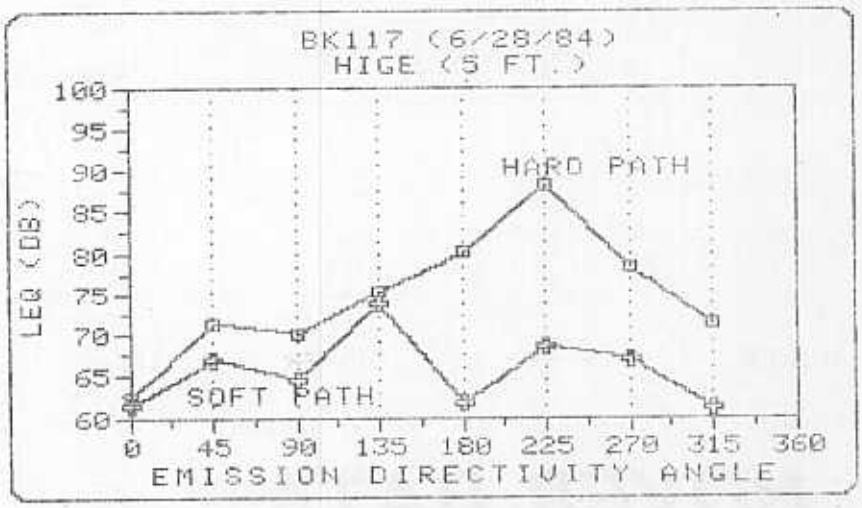
HELICOPTER: MBB BK117 TEST DATE: 6/28/84

OPERATION : 30 DEG. BANK ANGLE TURN AT 65 KTS.

	INSIDE OF TURN (LEFT SIDE)				OUTSIDE OF TURN (LEFT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
H12	61.90	71.50	73.60	77.90	--	--	--
H13	--	--	--	73.40	69.20	65.00	--
H14	--	68.20	73.90	78.70	--	--	--
H15	--	--	--	73.90	70.70	70.80	--
H16	63.90	66.80	72.10	75.90	--	--	--
H17	--	--	--	77.00	75.70	74.50	--
H18	--	70.10	73.70	77.70	--	--	--
H19	--	--	--	72.90	71.20	67.00	--
AVERAGE	62.90	69.15	73.33	75.93	71.70	69.33	--
STD. DEV.	1.41	1.56	0.83	2.25	2.80	4.21	--
90% C.I.	NA	1.84	0.97	1.51	3.29	4.94	--

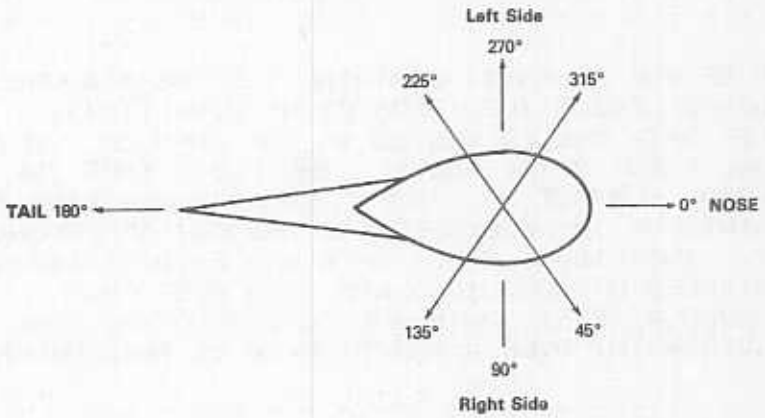
HOVER DATA

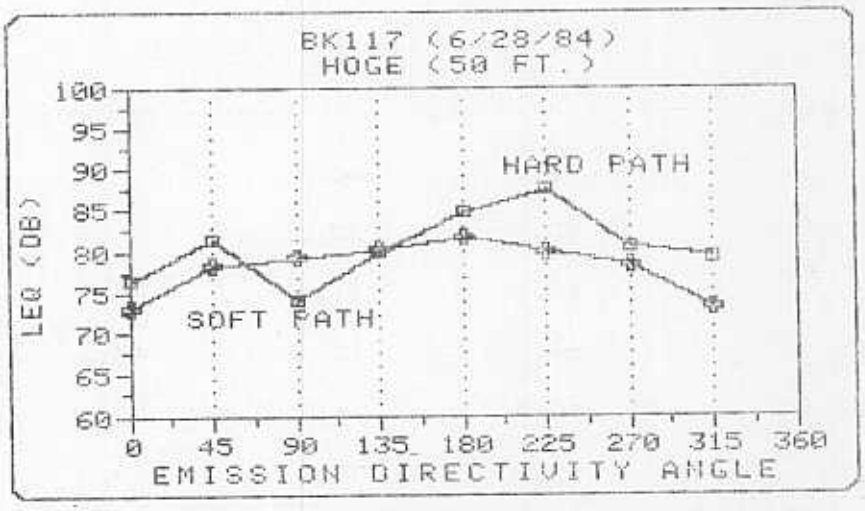
THIS SECTION OF THE APPENDIX CONTAINS THE 'AS-MEASURED' EQUIVALENT SOUND LEVELS (LEQ) FOR EIGHT DIRECTIVITY ANGLES. THESE DATA ARE PRESENTED IN THE FORM OF PLOTS AND INDIVIDUAL EVENT DATA TABLES. THE PLOTS SHOW THE EFFECT OF 'HARD' SURFACE VS. 'SOFT' SURFACE 500 FEET FROM THE HOVER POINT FOR IN-GROUND-EFFECT AND OUT-OF-GROUND-EFFECT HOVER. INDIVIDUAL EVENT DATA FOR EACH DIRECTIVITY ANGLE AT DISTANCES OF 500, 1000 AND 1500 FEET FROM HOVER POINT OVER A 'SOFT' PATH AND 500, 1000 AND 2000 FEET FROM HOVER POINT OVER A 'HARD' PATH IS THEN GIVEN.



500 FT. FROM HOVER POINT

Acoustical Emission Angle Convention





500 FT. FROM HOVER POINT

HOVER DATA (LEQ)

HELICOPTER: MBB BK117 DATE: 6/28/84

MICROPHONE: 500 FT. FROM HOVER POINT

DIRECTIVITY ANGLES (DEGREES)		(SOFT PATH) HOVER 5 FT. AGL	(SOFT PATH) HOVER 80 FT. AGL	(HARD PATH) HOVER 5 FT AGL	(HARD PATH) HOVER 80 FT. AGL
(NOSE)	0	61.5	73.2	62.2	76.6
	45	66.8	78.4	71.1	81.3
(LEFT)	90	64.4	79.3	70.1	74.0
	135	73.7	80.1	75.2	79.8
(TAIL)	180	61.8	81.7	80.3	84.8
	225	68.4	81.4	88.3	87.4
(RIGHT)	270	66.9	79.9	78.4	80.4
	315	61.1	78.2	71.1	79.1

MICROPHONE: 1000 FT. FROM HOVER POINT

DIRECTIVITY ANGLES (DEGREES)		(SOFT PATH) HOVER 5 FT. AGL	(SOFT PATH) HOVER 80 FT. AGL	(HARD PATH) HOVER 5 FT AGL	(HARD PATH) HOVER 80 FT. AGL
(NOSE)	0	48.0	66.4	--	67.9
	45	50.6	72.2	60.9	75.2
(LEFT)	90	48.8	71.1	60.2	65.8
	135	54.7	73.7	65.6	72.1
(TAIL)	180	49.4	74.8	68.5	77.2
	225	52.9	75.2	79.8	80.0
(RIGHT)	270	50.3	74.0	68.8	73.3
	315	47.0	71.5	61.8	72.1

HOVER DATA (LEQ)

HELICOPTER: MBB BK117 DATE: 6/28/84

MICROPHONE: 1500 FT. FROM HOVER POINT

(SOFT PATH)

DIRECTIVITY ANGLES (DEGREES)		HOVER 5 FT. AGL	HOVER 80 FT. AGL
(NOSE)	0	46.9	54.3
	45	48.4	61.0
(LEFT)	90	46.6	60.4
	135	49.3	64.1
(TAIL)	180	47.5	60.4
	225	49.0	64.1
(RIGHT)	270	49.2	59.0
	315	47.5	54.9

MICROPHONE: 2000 FT. FROM HOVER POINT

(HARD PATH)

DIRECTIVITY ANGLES (DEGREES)		HOVER 5 FT. AGL	HOVER 80 FT. AGL
(NOSE)	0	--	62.6
	45	--	70.1
(LEFT)	90	53.2	60.0
	135	58.2	67.3
(TAIL)	180	57.6	70.8
	225	64.3	72.6
(RIGHT)	270	55.7	68.5
	315	54.3	65.1

RADAR TRACKING DATA

THIS SECTION OF THE APPENDIX CONTAINS THE HELICOPTER POSITION DATA AND TRACKING PLOTS DERIVED FROM THE FAA'S PORTABLE TRACKING RADAR SYSTEM. THE POSITION DATA LISTS THE CLOSEST POINT OF APPROACH (CPA), TIME OF CPA, ELEVATION ANGLE, RATE OF CLIMB OR DESCENT, THE CLIMB OR DESCENT ANGLE, AND GROUND SPEED FOR ALL FLIGHT CONDITIONS. TRACKING PLOTS OF THE ACTUAL FLIGHT PROFILE FLOWN ARE PROVIDED FOR EACH FLIGHT CONDITIONS.

MBB BK117

POSITION DATA
NOISE MEASUREMENT PROGRAM

CENTERLINE CENTER

DATE:06/25/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
SIX DEG. APPROACH AT VY, 65 KTS.							
1		-----	NO DATA	-----			
2	APP	394.8	87.2	9:15:09.5	-580.4	-4.4	74.3
4	APP	384.6	74.5	9:22:55.9	-1054.9	-8.5	69.4
6	APP	384.9	78.5	9:28:10.7	-656.5	-5.0	73.5
8	APP	394.1	83.5	9:35:01.5	-947.8	-7.5	70.8
10	APP	387.7	83.1	9:40:34.4	-724.3	-5.8	70.4
12	APP	355.9	88.7	9:46:53.0	-490.5	-3.9	71.4
14	APP	375.7	75.5	9:52:49.1	-905.5	-7.4	69.3
TAKEOFF, MAX ALLOW TORQUE							
3	DEP	1125.5	65.7	9:19:59.7	2814.9	24.9	59.7
5		-----	NO DATA	-----			
7	DEP	1421.4	66.3	9:30:24.8	2803.5	27.5	53.1
9	DEP	1398.9	60.3	9:36:47.9	2815.1	30.8	46.6
11	DEP	1425.7	59.2	9:42:35.6	2701.8	28.0	50.2
13	DEP	1411.3	59.3	9:48:48.0	2818.7	28.0	52.3
15		-----	NO DATA	-----			
NORMAL APPROACH							
16		-----	NO DATA	-----			
18	APP	368.0	84.7	10:07:01.5	-953.4	-7.4	72.8
20	APP	363.6	84.7	10:13:23.6	-630.5	-5.6	63.2
22	APP	404.1	80.9	10:35:11.8	-917.7	-7.0	74.2
24		-----	NO DATA	-----			
26	APP	379.0	70.3	10:52:14.5	-960.9	-7.5	72.4
28	APP	407.3	76.1	10:58:35.5	-871.0	-6.0	81.4

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

MBB BK117

POSITION DATA
NOISE MEASUREMENT PROGRAM

CENTERLINE CENTER

DATE:06/25/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
TAKEOFF, 65% TORQUE							
17	DEP	1328.5	56.9	10:01:30.2	2600.8	27.7	49.0
19	DEP	1409.3	70.1	10:09:09.2	1994.1	22.8	46.9
21	DEP	1286.1	61.6	10:28:08.8	2892.3	30.6	48.3
23	DEP	1323.8	63.5	10:38:02.2	2580.2	26.2	51.7
25	DEP	1444.7	66.1	10:48:04.0	2669.2	26.2	53.6
27	DEP	1376.6	57.6	10:54:31.1	2809.4	30.8	46.6
NOISE ABATEMENT APPROACH (10 DEG. TARGET, VAR. A/S)							
29		-----	NO DATA	-----			
30	APP	590.0	79.3	12:02:27.3	-1700.2	-14.1	66.6
31		-----	NO DATA	-----			
32	APP	596.8	75.4	12:09:30.2	-1506.2	-11.8	71.4
33	APP	558.0	71.8	12:13:21.7	-1741.2	-13.7	70.4
34	APP	567.9	80.4	12:17:01.5	-1021.1	-8.2	69.9
35	APP	566.7	82.2	12:20:44.8	-1104.6	-8.7	71.5
NOISE ABATEMENT APPROACH (VAR. A/S AND R/D)							
38		-----	NO DATA	-----			
39	APP	543.4	85.2	12:35:38.7	-920.6	-8.1	63.5
40	APP	623.7	84.3	12:39:18.4	-816.2	-7.3	62.5
41	APP	636.4	82.5	12:42:58.2	-812.3	-8.5	53.4
42	APP	653.5	79.5	12:46:22.0	-976.7	-8.9	61.8
43		-----	NO DATA	-----			
44		-----	NO DATA	-----			
45	APP	582.8	76.9	12:55:40.5	-769.8	-6.8	63.8

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

MBB BK117

POSITION DATA
NOISE MEASUREMENT PROGRAM

CENTERLINE CENTER

DATE:06/25/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
500 FT. LEVEL FLYOVER AT 126 KTS.							
46		-----	NO DATA	-----			
47	F/O	529.0	85.1	13:16:44.1	289.8	1.4	120.3
48	F/O	480.7	88.6	13:19:07.2	311.8	1.3	137.5
49	F/O	502.8	74.8	13:21:05.9	-295.3	-1.4	121.3
50	F/O	479.3	83.3	13:23:22.9	-158.0	-0.6	146.2
51	F/O	463.4	80.3	13:25:29.5	-186.5	-0.9	121.4
52	F/O	484.3	78.6	13:27:39.9	299.9	1.3	130.8
53	F/O	511.9	84.6	13:29:54.0	-346.7	-1.6	124.9
54	F/O	509.1	83.0	13:32:07.8	962.4	4.3	127.4
55	F/O	483.2	84.4	13:34:28.3	78.1	0.4	124.7
56	F/O	625.9	83.3	13:37:02.4	724.6	3.0	135.2
57	F/O	424.2	81.9	13:42:13.2	25.6	0.1	116.3
58	F/O	495.6	85.7	13:44:31.4	91.3	0.4	136.3
59	F/O	502.9	77.8	13:49:21.5	461.8	2.1	124.7
60	F/O	527.3	88.0	13:51:34.8	-296.3	-1.3	128.0
61		-----	NO DATA	-----			
62	F/O	494.2	86.7	13:57:10.4	95.3	0.4	131.7
1000 FT. LEVEL FLYOVER AT 126 KTS.							
63	F/O	889.1	84.9	14:28:34.3	172.4	0.8	122.3
64	F/O	946.6	84.2	14:31:03.7	48.4	0.2	134.7
65	F/O	910.7	87.6	14:33:30.7	-52.6	-0.2	123.9
66		-----	NO DATA	-----			
67	F/O	971.9	84.3	14:39:24.7	259.6	1.2	124.3
68	F/O	964.4	83.7	14:41:41.0	-233.9	-1.0	139.1
69		-----	NO DATA	-----			
70		-----	NO DATA	-----			
71	F/O	943.6	84.8	14:50:42.1	-20.4	-0.1	127.0
72		-----	NO DATA	-----			
73	F/O	980.6	80.5	14:56:02.7	12.3	0.1	124.6
74	F/O	1016.6	88.9	14:58:19.0	103.5	0.4	133.9
75	F/O	934.4	81.2	15:00:57.8	-122.7	-0.5	126.4

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

MBB BK117

POSITION DATA
NOISE MEASUREMENT PROGRAM

CENTERLINE CENTER

DATE:06/27/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NOISE ABATEMENT APPROACH (8 DEG. TARGET, 40 KTS.)							
1	APP	516.7	86.9	12:18:50.8	-151.6	-2.8	30.1
2	APP	441.6	75.7	12:25:39.4	-676.0	-11.5	32.7
3	APP	457.2	73.3	12:32:05.9	-736.1	-12.9	31.8
4		-----	NO DATA	-----			
5		-----	NO DATA	-----			
NOISE ABATEMENT APPROACH (6 DEG. TARGET, 40 KTS.)							
6	APP	426.7	78.6	12:52:12.4	-245.8	-3.7	37.6
7	APP	449.3	83.6	12:58:51.5	-713.1	-11.9	33.5
8	APP	413.3	84.9	13:04:37.4	-463.7	-6.5	40.3
9	APP	353.8	77.1	13:10:51.1	-598.4	-10.5	31.8
10	APP	411.2	81.3	13:16:48.7	-123.0	-1.8	38.1

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

MBB BK117

POSITION DATA
NOISE MEASUREMENT PROGRAM

CENTERLINE CENTER

DATE:06/28/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
15 DEGREE BANK TURN							
1	F/O	509.6	82.2	11:19:45.1	-305.7	-2.6	65.6
2		-----	NO DATA	-----			
3		-----	NO DATA	-----			
4	F/O	518.4	84.3	11:24:56.8	730.6	6.3	64.8
5	F/O	502.5	67.8	11:26:36.0	-472.9	-4.0	66.4
6	F/O	517.6	84.2	11:28:36.8	64.4	0.6	65.2
7		-----	NO DATA	-----			
8	F/O	578.7	79.2	11:32:30.9	-120.8	-1.0	68.8
9	F/O	464.9	85.2	11:34:29.7	-169.1	-1.5	64.4
10	F/O	698.5	18.5	11:36:42.7	10568.1	25.5	218.6
11	F/O	474.5	89.0	11:38:34.3	229.0	2.0	63.7
30 DEGREE BANK TURN							
12	F/O	584.8	77.3	11:44:05.2	-232.0	-2.2	60.7
13		-----	NO DATA	-----			
14	F/O	519.8	72.2	11:45:51.7	74.6	0.6	67.6
15	F/O	597.3	85.8	11:50:11.2	602.1	4.7	72.6
16	F/O	544.7	83.2	11:52:26.2	-129.7	-1.3	57.8
17	F/O	552.1	76.4	11:54:31.8	552.9	4.8	65.0
18	F/O	611.2	88.6	11:56:52.2	-1.6	0.0	63.3
19	F/O	607.1	84.9	11:58:56.9	-217.8	-1.9	65.7

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

MBB BK117

POSITION DATA
NOISE MEASUREMENT PROGRAM

500 FT. EAST

DATE:06/25/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
SIX DEG. APPROACH AT VY, 65 KTS.							
1		-----	NO DATA	-----			
2	APP	645.5	38.0	9:15:09.4	-609.8	-4.6	74.7
4	APP	703.6	32.0	9:22:55.9	-1054.8	-8.5	69.4
6	APP	571.3	41.9	9:28:10.5	-684.7	-5.2	73.8
8	APP	580.5	41.5	9:35:02.2	-841.6	-6.9	68.6
10	APP	653.3	36.6	9:40:34.3	-725.8	-5.8	70.2
12	APP	608.0	36.1	9:46:52.8	-510.1	-4.1	71.1
14	APP	568.0	40.1	9:52:49.1	-906.0	-7.4	69.3
TAKEOFF, MAX ALLOW TORQUE							
3	DEP	1201.4	51.2	9:19:57.8	2961.1	26.5	58.7
5		-----	NO DATA	-----			
7	DEP	1487.3	61.4	9:30:24.9	2819.2	27.6	53.2
9	DEP	1463.5	56.3	9:36:47.9	2814.7	30.8	46.6
11	DEP	1491.1	55.4	9:42:35.6	2701.8	28.0	50.2
13	DEP	1462.9	56.4	9:48:48.1	2836.2	28.3	52.1
15		-----	NO DATA	-----			
NORMAL APPROACH							
16		-----	NO DATA	-----			
18	APP	585.5	39.3	10:07:01.3	-983.3	-7.6	73.0
20	APP	596.9	37.9	10:13:23.4	-627.9	-5.6	63.4
22	APP	670.2	37.8	10:35:11.6	-956.4	-7.3	73.9
24		-----	NO DATA	-----			
26	APP	520.5	43.6	10:52:14.5	-960.8	-7.5	72.4
28	APP	584.7	45.5	10:58:34.5	-779.8	-5.3	82.4

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

MBB BK117

POSITION DATA
NOISE MEASUREMENT PROGRAM

500 FT. EAST

DATE:06/25/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
TAKEOFF, 65% TORQUE							
17	DEP	1415.1	52.0	10:01:30.2	2600.9	27.7	49.0
19	DEP	1468.7	60.1	10:09:07.6	2114.0	24.0	46.8
21	DEP	1352.2	57.0	10:28:08.8	2891.9	30.6	48.3
23	DEP	1397.3	60.0	10:38:02.8	2487.1	25.7	51.0
25	DEP	1486.2	56.7	10:48:02.2	2661.7	26.1	53.6
27	DEP	1410.9	55.6	10:54:31.1	2809.5	30.8	46.6
NOISE ABATEMENT APPROACH (10 DEG. TARGET, VAR. A/S)							
29		-----	NO DATA	-----			
30	APP	779.6	50.1	12:02:26.9	-1536.1	-12.6	67.6
31		-----	NO DATA	-----			
32	APP	745.7	51.7	12:09:30.1	-1507.4	-11.7	71.9
33	APP	738.2	46.1	12:13:21.7	-1741.5	-13.7	70.4
34	APP	702.6	53.1	12:17:01.5	-1021.3	-8.2	69.9
35	APP	714.6	52.7	12:20:44.3	-1202.3	-9.5	70.9
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)							
38		-----	NO DATA	-----			
39	APP	711.5	47.3	12:35:40.1	-994.1	-9.0	61.8
40	APP	791.2	51.9	12:39:18.4	-816.0	-7.3	62.5
41	APP	786.7	53.5	12:42:58.2	-812.0	-8.5	53.4
42	APP	773.8	56.3	12:46:22.2	-973.5	-8.9	61.2
43		-----	NO DATA	-----			
44		-----	NO DATA	-----			
45	APP	705.5	53.0	12:55:40.9	-748.7	-6.7	63.0

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

MBB BK117

POSITION DATA
NOISE MEASUREMENT PROGRAM

500 FT. EAST

DATE:06/25/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
500 FT. LEVEL FLYOVER AT 126 KTS.							
46		-----	NO DATA	-----			
47	F/O	694.6	49.6	13:16:44.4	222.6	1.0	121.2
48	F/O	683.8	44.8	13:19:07.1	291.8	1.2	137.0
49	F/O	618.6	52.0	13:21:05.9	-295.6	-1.4	121.3
50	F/O	727.6	41.1	13:23:22.9	-157.9	-0.6	146.2
51	F/O	612.4	48.4	13:25:29.4	-182.4	-0.8	121.4
52	F/O	745.2	39.6	13:27:39.3	285.3	1.2	132.7
53	F/O	689.2	47.8	13:29:54.3	-339.7	-1.5	125.7
54	F/O	695.0	46.7	13:32:07.7	983.0	4.4	127.3
55	F/O	715.7	42.3	13:34:28.7	81.8	0.4	125.4
56	F/O	841.6	47.8	13:37:02.7	583.8	2.4	135.8
57	F/O	642.8	40.8	13:42:13.3	25.6	0.1	116.3
58	F/O	728.6	42.9	13:44:31.4	91.2	0.4	136.3
59	F/O	630.6	51.6	13:49:21.8	386.3	1.7	126.2
60	F/O	726.3	45.9	13:51:35.5	-368.7	-1.6	127.0
61		-----	NO DATA	-----			
62	F/O	716.0	43.8	13:57:10.4	95.4	0.4	131.7
1000 FT. LEVEL FLYOVER AT 126 KTS.							
63	F/O	972.0	65.6	14:28:34.5	183.1	0.8	123.0
64	F/O	1101.4	59.0	14:31:03.7	48.3	0.2	134.7
65	F/O	1034.9	62.1	14:33:31.1	-19.2	-0.1	124.3
66		-----	NO DATA	-----			
67	F/O	1069.0	65.3	14:39:24.8	272.3	1.2	124.8
68	F/O	1124.4	58.6	14:41:41.5	-178.2	-0.7	138.4
69		-----	NO DATA	-----			
70		-----	NO DATA	-----			
71	F/O	1039.9	64.9	14:50:42.1	-20.4	-0.1	127.0
72		-----	NO DATA	-----			
73	F/O	1031.9	69.9	14:56:02.7	12.1	0.1	124.6
74	F/O	1142.3	63.1	14:58:19.0	103.7	0.4	133.9
75	F/O	995.5	68.6	15:00:57.1	-120.2	-0.5	124.1

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

MBB BK117

POSITION DATA
NOISE MEASUREMENT PROGRAM

500 FT. EAST

DATE:06/27/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NOISE ABATEMENT APPROACH (8 DEG. TARGET, 40 KTS.)							
1	APP	691.9	48.4	12:18:51.7	-174.6	-3.4	28.8
2	APP	633.3	43.2	12:25:39.3	-683.1	-11.7	32.5
3	APP	680.4	40.3	12:32:05.9	-735.5	-12.9	31.8
4		-----	NO DATA	-----			
5		-----	NO DATA	-----			
NOISE ABATEMENT APPROACH (6 DEG. TARGET, 40 KTS.)							
6	APP	697.7	37.8	12:52:11.3	-272.0	-4.1	37.1
7	APP	587.5	48.5	12:58:52.2	-713.6	-12.2	32.6
8	APP	621.2	41.8	13:04:37.4	-463.4	-6.5	40.3
9	APP	608.3	34.8	13:10:51.0	-582.8	-10.2	31.8
10	APP	599.6	42.6	13:16:49.9	-165.7	-2.3	40.1

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

MBB BK117

POSITION DATA
NOISE MEASUREMENT PROGRAM

500 FT. EAST

DATE:06/28/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
15 DEGREE BANK TURN AT 65 KTS.							
1	F/O	741.7	44.2	11:19:44.5	-359.3	-3.2	63.6
2		-----	NO DATA	-----			
3		-----	NO DATA	-----			
4	F/O	693.2	49.0	11:24:57.4	656.1	5.7	65.2
5	F/O	568.0	55.3	11:26:36.0	-472.7	-4.0	66.4
6	F/O	687.2	49.7	11:28:36.9	63.4	0.5	65.2
7		-----	NO DATA	-----			
8	F/O	704.9	54.0	11:32:30.9	-120.7	-1.0	68.8
9	F/O	649.7	45.4	11:34:30.9	-106.2	-0.9	63.7
10	F/O	284.5	51.8	11:36:42.7	10568.0	25.5	218.6
11	F/O	688.5	43.7	11:38:34.0	196.1	1.7	63.3
30 DEGREE BANK TURN AT 65 KTS.							
12	F/O	652.9	59.6	11:44:07.8	-211.5	-2.0	59.3
13		-----	NO DATA	-----			
14	F/O	602.3	55.6	11:45:51.6	87.5	0.7	67.8
15	F/O	694.3	56.0	11:50:09.9	459.0	3.8	68.7
16	F/O	775.3	44.7	11:52:22.3	-105.0	-1.0	61.5
17	F/O	757.6	44.6	11:54:30.1	-95.2	-0.8	68.1
18	F/O	786.3	50.9	11:56:55.4	-199.9	-1.8	62.0
19	F/O	774.5	51.6	11:58:54.0	-171.9	-1.4	68.7

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

MBB BK117

POSITION DATA
NOISE MEASUREMENT PROGRAM

500 FT. WEST

DATE:06/25/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
SIX DEG. APPROACH AT VY, 65 KTS.							
1		-----	NO DATA	-----			
2	APP	615.4	39.9	9:15:09.7	-534.3	-4.1	74.4
4		-----	NO DATA	-----			
6	APP	682.7	35.4	9:28:09.7	-716.3	-5.5	73.0
8	APP	665.5	34.8	9:35:02.5	-760.8	-6.4	67.2
10	APP	601.8	39.0	9:40:35.2	-782.1	-6.1	71.9
12	APP	605.8	36.1	9:46:53.4	-436.1	-3.4	71.5
14	APP	676.4	32.3	9:52:49.5	-861.9	-6.9	69.8
TAKEOFF, MAX ALLOW TORQUE							
3	DEP	1252.0	54.9	9:19:59.6	2842.7	25.1	60.0
5		-----	NO DATA	-----			
7	DEP	1527.1	58.5	9:30:24.8	2803.3	27.5	53.1
9	DEP	1508.4	54.1	9:36:48.0	2835.3	31.0	46.6
11	DEP	1528.0	53.8	9:42:35.8	2716.0	28.0	50.5
13	DEP	1531.4	52.4	9:48:48.0	2819.1	28.0	52.3
15		-----	NO DATA	-----			
NORMAL APPROACH							
16		-----	NO DATA	-----			
18	APP	645.0	34.7	10:07:01.8	-934.1	-7.3	72.1
20	APP	629.6	35.2	10:13:23.7	-639.6	-5.7	63.2
22	APP	603.0	41.4	10:35:11.8	-917.8	-7.0	74.2
24		-----	NO DATA	-----			
26	APP	719.1	29.7	10:52:14.7	-981.7	-7.8	71.0
28	APP	698.0	34.5	10:58:35.5	-871.4	-6.0	81.4

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

MBB BK117

POSITION DATA
NOISE MEASUREMENT PROGRAM

500 FT. WEST

DATE:06/25/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
TAKEOFF, 65% TORQUE							
17	DEP	1425.5	51.3	10:01:30.2	2600.9	27.7	49.0
19	DEP	1521.7	61.8	10:09:09.7	1978.7	22.2	47.9
21	DEP	1408.6	53.5	10:28:08.8	2891.9	30.6	48.3
23	DEP	1431.4	55.9	10:38:02.2	2580.3	26.2	51.7
25	DEP	1569.7	57.3	10:48:04.0	2669.0	26.2	53.6
27	DEP	1517.8	50.0	10:54:31.1	2809.5	30.8	46.6
NOISE ABATEMENT APPROACH (10 DEG. TARGET, VAR. A/S)							
29		-----	NO DATA	-----			
30	APP	751.5	49.0	12:02:28.1	-1896.4	-15.8	66.2
31		-----	NO DATA	-----			
32	APP	784.4	46.8	12:09:30.6	-1480.3	-11.7	70.8
33	APP	747.0	44.8	12:13:21.8	-1744.3	-13.8	70.0
34	APP	798.3	44.5	12:17:02.0	-871.2	-6.7	72.8
35	APP	784.2	44.0	12:20:45.9	-973.9	-7.9	69.3
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)							
38		-----	NO DATA	-----			
39	APP	753.6	45.7	12:35:39.3	-1009.4	-8.9	63.7
40	APP	803.2	50.4	12:39:18.7	-793.0	-7.1	62.5
41	APP	832.7	49.2	12:42:58.2	-812.0	-8.5	53.4
42	APP	857.6	48.5	12:46:22.0	-976.9	-8.9	61.8
43		-----	NO DATA	-----			
44		-----	NO DATA	-----			
45	APP	819.9	43.0	12:55:41.1	-745.2	-6.8	62.1

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

MBB BK117

POSITION DATA
NOISE MEASUREMENT PROGRAM

500 FT. WEST

DATE:06/25/84

FAA/AEE

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
500 FT. LEVEL FLYOVER AT 126 KTS.							
46		-----	NO DATA	-----			
47	F/O	757.2	44.1	13:16:44.2	279.6	1.3	120.5
48	F/O	658.3	47.7	13:19:07.5	352.2	1.5	136.9
49	F/O	775.7	39.8	13:21:05.4	-263.6	-1.2	120.6
50	F/O	642.1	47.7	13:23:22.8	-114.6	-0.4	145.7
51	F/O	735.1	38.5	13:25:29.6	-193.1	-0.9	121.6
52	F/O	617.9	51.8	13:27:40.5	269.4	1.2	130.6
53	F/O	737.8	44.0	13:29:53.8	-343.9	-1.6	125.2
54	F/O	702.5	46.4	13:32:08.0	931.1	4.1	126.7
55	F/O	659.2	46.8	13:34:28.2	89.7	0.4	124.5
56	F/O	723.3	58.5	13:37:01.7	1014.3	4.2	134.7
57	F/O	611.1	43.6	13:42:13.0	26.9	0.1	120.6
58	F/O	671.2	47.5	13:44:31.6	61.8	0.3	133.8
59	F/O	778.9	39.1	13:49:21.5	462.0	2.1	124.7
60	F/O	712.5	47.6	13:51:35.1	-339.4	-1.5	127.6
61		-----	NO DATA	-----			
62	F/O	650.8	49.7	13:57:10.7	104.6	0.4	131.5
1000 FT. LEVEL FLYOVER AT 126 KTS.							
63	F/O	1056.8	57.0	14:28:34.2	165.6	0.8	122.1
64	F/O	1030.0	67.0	14:31:04.0	16.5	0.1	133.5
65	F/O	1038.5	61.2	14:33:30.7	-52.6	-0.2	123.9
66		-----	NO DATA	-----			
67	F/O	1102.4	60.9	14:39:24.3	193.4	0.9	121.0
68	F/O	1043.2	66.9	14:41:41.2	-212.8	-0.9	139.5
69		-----	NO DATA	-----			
70		-----	NO DATA	-----			
71	F/O	1092.1	59.6	14:50:41.6	87.1	0.4	126.3
72		-----	NO DATA	-----			
73	F/O	1167.1	56.0	14:56:02.7	12.1	0.1	124.6
74	F/O	1115.8	67.2	14:58:19.4	120.2	0.5	133.0
75	F/O	1119.9	55.6	15:00:58.0	-147.1	-0.7	126.9

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

MBB BK117

POSITION DATA
NOISE MEASUREMENT PROGRAM

500 FT. WEST

DATE:06/27/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NOISE ABATEMENT APPROACH (8 DEG. TARGET, 40 KTS.)							
1	APP	710.7	47.3	12:18:49.7	-220.5	-3.7	33.3
2	APP	683.1	38.1	12:25:40.3	-644.0	-11.1	32.4
3	APP	642.6	46.6	12:32:04.8	-543.3	-9.2	32.9
4		-----	NO DATA	-----			
5		-----	NO DATA	-----			
NOISE ABATEMENT APPROACH (6 DEG. TARGET, 40 KTS.)							
6	APP	571.8	48.6	12:52:10.4	-215.6	-3.2	37.6
7	APP	705.8	39.2	12:58:51.5	-713.0	-11.9	33.5
8	APP	657.9	39.0	13:04:37.6	-470.8	-6.8	39.2
9	APP	587.9	34.2	13:10:53.7	-486.0	-8.5	32.1
10	APP	660.8	38.5	13:16:47.7	-101.3	-1.6	35.9

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

MBB BK117

POSITION DATA
NOISE MEASUREMENT PROGRAM

500 FT. WEST

DATE:06/28/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
15 DEGREE BANK TURN AT 65 KTS.							
1	F/O	684.8	47.5	11:19:45.1	-306.0	-2.6	65.6
2		-----	NO DATA	-----			
3		-----	NO DATA	-----			
4	F/O	715.5	46.3	11:24:56.7	725.1	6.3	64.6
5	F/O	818.5	35.8	11:26:36.4	-365.5	-3.1	66.9
6	F/O	735.2	44.9	11:28:36.7	81.2	0.7	65.1
7		-----	NO DATA	-----			
8	F/O	796.6	47.6	11:32:30.2	-217.7	-1.8	70.0
9	F/O	699.3	41.6	11:34:29.4	-157.3	-1.4	64.6
10		-----	NO DATA	-----			
11	F/O	680.7	43.6	11:38:33.7	109.3	1.0	62.8
30 DEGREE BANK TURN AT 65 KTS.							
12	F/O	837.0	42.9	11:44:03.9	55.0	0.5	57.4
13		-----	NO DATA	-----			
14	F/O	814.5	38.4	11:45:50.3	262.5	2.3	64.7
15	F/O	806.4	47.6	11:50:11.2	601.8	4.7	72.6
16	F/O	697.2	50.9	11:52:26.1	-133.3	-1.3	57.6
17	F/O	697.6	50.3	11:54:31.8	552.7	4.8	65.0
18	F/O	781.9	51.4	11:56:52.0	-21.2	-0.2	62.8
19	F/O	753.6	53.4	11:58:57.3	-301.9	-2.6	66.1

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

MBB BK117

POSITION DATA
NOISE MEASUREMENT PROGRAM

1000 FT. EAST

DATE:06/25/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
SIX DEG. APPROACH AT VY, 65 KTS.							
1		-----	NO DATA	-----			
2	APP	1085.0	21.6	9:15:09.4	-609.8	-4.6	74.7
4	APP	1157.1	18.5	9:22:56.5	-1047.3	-8.3	70.9
6	APP	997.6	22.0	9:28:11.5	-555.6	-4.3	72.5
8	APP	1006.7	22.6	9:35:02.2	-841.6	-6.9	68.6
10	APP	1095.6	21.9	9:40:33.0	-610.8	-4.9	70.3
12	APP	1054.1	20.0	9:46:52.8	-510.1	-4.1	71.1
14	APP	714.8	33.0	9:52:55.1	822.4	3.5	131.0
TAKEOFF, MAX ALLOW TORQUE							
3	DEP	1442.9	38.5	9:19:57.0	2937.8	26.6	57.8
5		-----	NO DATA	-----			
7	DEP	1703.7	50.2	9:30:24.9	2819.2	27.6	53.2
9	DEP	1681.2	46.5	9:36:47.9	2814.7	30.8	46.6
11	DEP	1707.1	46.0	9:42:35.6	2701.8	28.0	50.2
13	DEP	1669.5	47.0	9:48:48.1	2836.2	28.3	52.1
15		-----	NO DATA	-----			
NORMAL APPROACH							
16		-----	NO DATA	-----			
18	APP	1023.2	21.4	10:07:01.3	-983.3	-7.6	73.0
20	APP	1036.1	21.7	10:13:22.1	-681.5	-6.1	62.8
22	APP	1108.5	22.4	10:35:10.6	-973.3	-7.4	73.7
24		-----	NO DATA	-----			
26	APP	758.4	17.9	10:52:20.2	-858.7	-6.3	76.9
28	APP	1000.2	24.8	10:58:34.5	-779.8	-5.3	82.4

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

MBB BK117

POSITION DATA
NOISE MEASUREMENT PROGRAM

1000 FT. EAST

DATE:06/25/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
TAKEOFF, 65% TORQUE							
17	DEP	1655.2	42.4	10:01:30.2	2600.9	27.7	49.0
19	DEP	1681.1	49.3	10:09:07.6	2114.0	24.0	46.8
21	DEP	1580.6	46.8	10:28:09.0	2916.1	30.9	48.1
23	DEP	1628.1	48.1	10:38:02.8	2487.1	25.7	51.0
25	DEP	1677.8	47.8	10:48:02.2	2661.7	26.1	53.6
27	DEP	1608.3	46.5	10:54:31.1	2809.5	30.8	46.6
NOISE ABATEMENT APPROACH (10 DEG. TARGET, VAR. A/S)							
29		-----	NO DATA	-----			
30	APP	1163.9	31.0	12:02:26.9	-1536.1	-12.6	67.6
31		-----	NO DATA	-----			
32	APP	1119.8	32.7	12:09:29.6	-1410.9	-10.7	73.5
33	APP	1130.0	29.2	12:13:21.4	-1707.0	-13.5	70.4
34	APP	1079.0	31.6	12:17:01.4	-1051.7	-8.5	69.5
35	APP	1093.5	31.4	12:20:44.3	-1202.3	-9.5	70.9
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)							
38		-----	NO DATA	-----			
39	APP	1101.3	28.5	12:35:40.1	-994.1	-9.0	61.8
40	APP	1164.9	32.1	12:39:19.1	-819.5	-7.4	62.1
41	APP	1154.5	33.4	12:42:58.2	-812.0	-8.5	53.4
42	APP	1124.3	35.0	12:46:22.2	-973.5	-8.9	61.2
43		-----	NO DATA	-----			
44		-----	NO DATA	-----			
45	APP	1070.9	31.8	12:55:40.9	-748.7	-6.7	63.0

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

MBB BK117

POSITION DATA
NOISE MEASUREMENT PROGRAM

1000 FT. EAST

DATE:06/25/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
500 FT. LEVEL FLYOVER AT 126 KTS.							
46		-----	NO DATA	-----			
47	F/O	1086.7	29.3	13:16:44.4	222.6	1.0	121.2
48	F/O	1096.8	26.2	13:19:07.1	291.8	1.2	137.0
49	F/O	1006.2	29.1	13:21:05.9	-295.6	-1.4	121.3
50	F/O	1152.8	24.6	13:23:22.9	-157.9	-0.6	146.2
51	F/O	1013.8	27.2	13:25:29.1	-204.5	-1.0	121.4
52	F/O	1166.9	24.1	13:27:39.3	285.3	1.2	132.7
53	F/O	1088.6	28.3	13:29:53.5	-334.3	-1.5	126.0
54	F/O	1097.6	27.6	13:32:07.7	983.0	4.4	127.3
55	F/O	1135.4	25.2	13:34:28.7	81.8	0.4	125.4
56	F/O	1234.2	30.4	13:37:02.8	512.1	2.1	135.6
57	F/O	1070.7	23.2	13:42:13.3	25.6	0.1	116.3
58	F/O	1147.2	25.7	13:44:31.4	91.2	0.4	136.3
59	F/O	1019.7	29.1	13:49:21.3	495.0	2.3	123.9
60	F/O	1123.9	27.8	13:51:35.5	-368.7	-1.6	127.0
61		-----	NO DATA	-----			
62	F/O	1131.9	26.1	13:57:10.4	95.4	0.4	131.7
1000 FT. LEVEL FLYOVER AT 126 KTS.							
63	F/O	1263.3	44.6	14:28:34.5	183.1	0.8	123.0
64	F/O	1424.8	41.6	14:31:03.7	48.3	0.2	134.7
65	F/O	1344.6	43.0	14:33:31.1	-19.2	-0.1	124.3
66		-----	NO DATA	-----			
67	F/O	1356.3	45.9	14:39:25.3	291.6	1.3	126.8
68	F/O	1448.6	41.6	14:41:41.5	-178.2	-0.7	138.4
69		-----	NO DATA	-----			
70		-----	NO DATA	-----			
71	F/O	1331.3	45.2	14:50:42.2	-44.1	-0.2	127.0
72		-----	NO DATA	-----			
73	F/O	1291.6	48.8	14:56:02.7	12.1	0.1	124.6
74	F/O	1441.0	45.1	14:58:19.0	103.7	0.4	133.9
75	F/O	1262.4	47.4	15:00:57.1	-120.2	-0.5	124.1

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

MBB BK117

POSITION DATA
NOISE MEASUREMENT PROGRAM

1000 FT. EAST

DATE:06/27/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NOISE ABATEMENT APPROACH (8 DEG. TARGET, 40 KTS.)							
1	APP	1090.1	28.4	12:18:51.7	-174.6	-3.4	28.8
2	APP	1050.5	25.4	12:25:37.9	-615.4	-9.9	34.6
3	APP	1100.9	25.2	12:32:03.3	-263.9	-4.5	33.3
4		-----	NO DATA	-----			
5		-----	NO DATA	-----			
NOISE ABATEMENT APPROACH (6 DEG. TARGET, 40 KTS.)							
6	APP	1132.3	21.3	12:52:15.4	-259.4	-3.9	37.2
7	APP	990.2	26.5	12:58:52.2	-713.6	-12.2	32.6
8	APP	1049.3	23.3	13:04:37.4	-463.4	-6.5	40.3
9	APP	675.0	15.6	13:11:05.3	1769.1	4.1	242.2
10	APP	1019.8	23.6	13:16:49.9	-165.7	-2.3	40.1

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

MBB BK117

POSITION DATA
NOISE MEASUREMENT PROGRAM

1000 FT. EAST

DATE:06/28/84 **FAA/AEE*

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
15 DEG. BANK TURN AT 65 KTS.							
1	F/O	982.3	26.7	11:19:51.1	387.0	3.0	72.9
2		-----	NO DATA	-----			
3		-----	NO DATA	-----			
4	F/O	971.5	26.1	11:24:50.7	888.7	7.2	69.5
5	F/O	792.7	29.5	11:26:43.2	789.8	6.9	64.7
6	F/O	899.2	29.5	11:28:30.8	303.5	2.5	69.6
7		-----	NO DATA	-----			
8	F/O	1074.5	31.8	11:32:34.9	-537.7	-4.6	65.8
9	F/O	797.9	27.7	11:34:39.4	-1235.3	-4.9	142.5
10	F/O	282.1	50.4	11:36:41.3	3865.7	16.2	131.3
11	F/O	857.6	32.3	11:38:40.6	342.1	2.4	79.3
30 DEG. BANK TURN AT 65 KTS.							
12	F/O	816.5	42.2	11:44:12.5	-153.1	-1.3	64.2
13		-----	NO DATA	-----			
14	F/O	837.0	35.0	11:45:56.3	-428.5	-3.0	81.5
15	F/O	992.6	34.1	11:50:04.9	347.4	2.9	68.4
16	F/O	1012.9	34.3	11:52:16.9	-103.2	-0.9	67.3
17	F/O	1037.2	32.0	11:54:24.9	46.4	0.4	66.7
18	F/O	988.0	36.9	11:57:01.8	-252.3	-2.1	69.1
19	F/O	948.9	32.1	11:59:04.6	12317.4	60.2	69.6

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

MBB BK117

POSITION DATA
NOISE MEASUREMENT PROGRAM

1000 FT. WEST

DATE:06/25/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
SIX DEG. APPROACH AT VY, 65 KTS.							
1		-----	NO DATA	-----			
2	APP	1049.6	22.2	9:15:09.7	-534.3	-4.1	74.4
4	APP	937.3	21.2	9:22:58.4	-825.5	-6.7	69.8
6	APP	1124.9	20.7	9:28:09.7	-716.3	-5.5	73.0
8	APP	1108.3	20.2	9:35:02.5	-760.8	-6.4	67.2
10	APP	1031.4	21.7	9:40:35.2	-782.1	-6.1	71.9
12	APP	1052.0	19.9	9:46:53.4	-436.1	-3.4	71.5
14	APP	1117.7	20.8	9:52:47.5	-939.7	-8.2	64.7
TAKEOFF, MAX ALLOW TORQUE							
3	DEP	1539.8	41.8	9:19:59.6	2842.7	25.1	60.0
5		-----	NO DATA	-----			
7	DEP	1774.5	47.3	9:30:24.8	2803.3	27.5	53.1
9	DEP	1757.9	38.0	9:36:45.2	3121.9	33.9	45.8
11	DEP	1771.6	44.2	9:42:35.8	2716.0	28.0	50.5
13	DEP	1788.3	42.9	9:48:47.9	2806.0	27.8	52.6
15		-----	NO DATA	-----			
NORMAL APPROACH							
16		-----	NO DATA	-----			
18	APP	1093.3	19.7	10:07:01.9	-927.8	-7.2	72.1
20	APP	1075.3	19.2	10:13:24.7	-811.9	-7.0	65.6
22	APP	1032.2	22.9	10:35:11.8	-917.8	-7.0	74.2
24		-----	NO DATA	-----			
26	APP	1178.9	17.7	10:52:14.7	-981.7	-7.8	71.0
28	APP	1142.2	20.0	10:58:36.5	-850.5	-5.8	82.5

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

MBB BK117

POSITION DATA
NOISE MEASUREMENT PROGRAM

1000 FT. WEST

DATE:06/25/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
TAKEOFF, 65% TORQUE							
17	DEP	1674.4	41.7	10:01:30.2	2600.9	27.7	49.0
19	DEP	1770.2	49.4	10:09:09.7	1978.7	22.2	47.9
21	DEP	1678.9	42.5	10:28:08.8	2891.9	30.6	48.3
23	DEP	1688.2	44.7	10:38:02.2	2580.3	26.2	51.7
25	DEP	1823.9	42.8	10:48:01.9	2683.0	26.3	53.6
27	DEP	1793.7	40.5	10:54:31.1	2809.5	30.8	46.6
NOISE ABATEMENT APPROACH (10 DEG. TARGET, VAR. A/S)							
29		-----	NO DATA	-----			
30	APP	1124.9	30.4	12:02:28.1	-1896.4	-15.8	66.2
31		-----	NO DATA	-----			
32	APP	1170.3	29.4	12:09:30.6	-1480.3	-11.7	70.8
33	APP	1143.2	27.5	12:13:21.8	-1744.3	-13.8	70.0
34	APP	1202.7	27.8	12:17:02.0	-871.2	-6.7	72.8
35	APP	1178.0	27.4	12:20:46.7	-1080.8	-9.0	67.1
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)							
38		-----	NO DATA	-----			
39	APP	1156.9	27.9	12:35:39.3	-1009.4	-8.9	63.7
40	APP	1182.9	31.6	12:39:18.7	-793.0	-7.1	62.5
41	APP	1213.8	31.7	12:42:58.4	-803.4	-8.5	53.3
42	APP	1243.5	31.2	12:46:22.0	-976.9	-8.9	61.8
43		-----	NO DATA	-----			
44		-----	NO DATA	-----			
45	APP	1224.6	27.3	12:55:41.1	-745.2	-6.8	62.1

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

MBB BK117

POSITION DATA
NOISE MEASUREMENT PROGRAM

1000 FT. WEST

DATE:06/25/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
500 FT. LEVEL FLYOVER AT 126 KTS.							
46		-----	NO DATA	-----			
47	F/O	1169.6	26.9	13:16:43.9	330.8	1.6	120.0
48	F/O	1060.4	27.5	13:19:07.5	352.2	1.5	136.9
49	F/O	1196.1	23.7	13:21:06.9	-176.8	-0.8	117.9
50	F/O	1046.0	27.1	13:23:22.8	-114.6	-0.4	145.7
51	F/O	1169.1	23.1	13:25:29.6	-193.1	-0.9	121.6
52	F/O	999.0	29.2	13:27:40.5	269.4	1.2	130.6
53	F/O	1151.7	26.6	13:29:53.8	-343.9	-1.6	125.2
54	F/O	1108.8	27.4	13:32:08.0	931.1	4.1	126.7
55	F/O	1066.5	26.9	13:34:28.2	89.7	0.4	124.5
56	F/O	1053.0	36.0	13:37:01.7	1014.3	4.2	134.7
57	F/O	1033.0	24.2	13:42:12.8	31.5	0.1	123.7
58	F/O	1070.3	27.4	13:44:30.9	174.1	0.7	137.0
59	F/O	1209.3	24.1	13:49:21.5	462.0	2.1	124.7
60	F/O	1111.4	28.4	13:51:35.1	-339.4	-1.5	127.6
61		-----	NO DATA	-----			
62	F/O	1046.1	28.5	13:57:10.7	104.6	0.4	131.5
1000 FT. LEVEL FLYOVER AT 126 KTS.							
63	F/O	1394.8	39.6	14:28:34.2	165.6	0.8	122.1
64	F/O	1309.8	46.5	14:31:04.0	16.5	0.1	133.5
65	F/O	1352.6	42.4	14:33:30.5	-65.9	-0.3	124.2
66		-----	NO DATA	-----			
67	F/O	1405.2	43.4	14:39:24.3	193.4	0.9	121.0
68	F/O	1322.1	46.6	14:41:40.8	-242.0	-1.0	138.2
69		-----	NO DATA	-----			
70		-----	NO DATA	-----			
71	F/O	1412.9	41.9	14:50:41.6	87.1	0.4	126.3
72		-----	NO DATA	-----			
73	F/O	1501.5	40.8	14:56:02.4	51.2	0.2	123.9
74	F/O	1386.3	48.0	14:58:19.4	120.2	0.5	133.0
75	F/O	1456.7	39.6	15:00:58.4	-180.7	-0.8	128.0

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

MBB BK117

POSITION DATA
NOISE MEASUREMENT PROGRAM

1000 FT. WEST

DATE:06/27/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NOISE ABATEMENT APPROACH (8 DEG. TARGET, 40 KTS.)							
1	APP	1111.7	28.1	12:18:49.7	-220.5	-3.7	33.3
2	APP	1112.6	22.4	12:25:40.3	-644.0	-11.1	32.4
3	APP	1047.9	26.6	12:32:04.8	-543.3	-9.2	32.9
4		-----	NO DATA	-----			
5		-----	NO DATA	-----			
NOISE ABATEMENT APPROACH (6 DEG. TARGET, 40 KTS.)							
6	APP	974.7	26.2	12:52:10.4	-215.6	-3.2	37.6
7	APP	1138.5	23.2	12:58:51.5	-713.0	-11.9	33.5
8	APP	1093.5	22.3	13:04:37.6	-470.8	-6.8	39.2
9	APP	1015.3	19.1	13:10:53.7	-486.0	-8.5	32.1
10	APP	1097.3	22.1	13:16:47.7	-101.3	-1.6	35.9

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

MBB BK117

POSITION DATA
NOISE MEASUREMENT PROGRAM

1000 FT. WEST

DATE:06/28/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
15 DEGREE BANK TURN AT 65 KTS.							
1	F/O	1086.3	27.8	11:19:45.1	-306.0	-2.6	65.6
2		-----	NO DATA	-----			
3		-----	NO DATA	-----			
4	F/O	1120.4	27.6	11:24:56.7	725.1	6.3	64.6
5	F/O	1259.1	22.5	11:26:36.4	-365.5	-3.1	66.9
6	F/O	1145.2	27.1	11:28:36.7	81.2	0.7	65.1
7		-----	NO DATA	-----			
8	F/O	1193.0	29.7	11:32:30.2	-217.7	-1.8	70.0
9	F/O	1123.9	24.5	11:34:29.4	-157.3	-1.4	64.6
10		-----	NO DATA	-----			
11	F/O	1096.3	25.4	11:38:33.7	109.3	1.0	62.8
30 DEGREE BANK TURN AT 65 KTS.							
12	F/O	1245.3	27.4	11:44:03.5	89.1	0.9	54.1
13		-----	NO DATA	-----			
14	F/O	1240.4	24.2	11:45:50.3	262.5	2.3	64.7
15	F/O	1202.5	29.8	11:50:11.2	601.8	4.7	72.6
16	F/O	1079.5	30.5	11:52:26.4	-122.2	-1.2	58.6
17	F/O	1077.4	31.4	11:54:32.5	584.4	5.2	63.9
18	F/O	1159.7	32.2	11:56:51.5	-70.2	-0.6	62.2
19	F/O	1123.6	32.8	11:58:57.4	-323.9	-2.8	65.9

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

MBB BK117

POSITION DATA
NOISE MEASUREMENT PROGRAM

2000 FT. EAST

DATE:06/25/84

FAA/AEE

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
SIX DEG. APPROACH AT VY, 65 KTS.							
1		-----	NO DATA	-----			
2	APP	2048.3	11.6	9:15:09.2	-645.5	-4.8	75.5
4	APP	2126.6	10.1	9:22:56.5	-1047.3	-8.3	70.9
6	APP	1953.4	11.8	9:28:09.4	-705.8	-5.4	73.1
8	APP	1966.2	11.5	9:35:02.2	-841.6	-6.9	68.6
10	APP	2054.0	11.6	9:40:33.0	-610.8	-4.9	70.3
12	APP	2020.0	10.7	9:46:51.7	-673.6	-5.3	71.8
14	APP	1373.1	16.6	9:52:55.2	789.4	3.6	124.9
TAKEOFF, MAX ALLOW TORQUE							
3	DEP	2203.0	24.1	9:19:57.0	2937.8	26.6	57.8
5		-----	NO DATA	-----			
7		-----	NO DATA	-----			
9	DEP	2386.4	30.8	9:36:47.9	2814.7	30.8	46.6
11	DEP	2407.3	30.8	9:42:35.6	2701.8	28.0	50.2
13	DEP	2362.3	31.2	9:48:48.1	2836.2	28.3	52.1
15		-----	NO DATA	-----			
NORMAL APPROACH							
16		-----	NO DATA	-----			
18	APP	1988.7	10.9	10:07:01.3	-983.3	-7.6	73.0
20	APP	1996.0	11.2	10:13:22.1	-681.5	-6.1	62.8
22	APP	2065.7	11.9	10:35:10.6	-973.3	-7.4	73.7
24		-----	NO DATA	-----			
26	APP	1523.2	8.9	10:52:20.4	-678.2	-4.1	92.3
28	APP	1946.1	13.0	10:58:33.2	-523.5	-3.5	83.6
**		-----	NO DATA	-----			

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

MBB BK117

POSITION DATA
NOISE MEASUREMENT PROGRAM

2000 FT. EAST

DATE:06/25/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
TAKEOFF, 65% TORQUE							
17	DEP	2389.0	27.5	10:01:29.6	2482.8	26.3	49.5
19	DEP	2379.3	33.1	10:09:08.1	1960.4	22.7	46.2
21	DEP	2308.1	30.1	10:28:09.0	2916.1	30.9	48.1
23	DEP	2350.8	33.1	10:38:04.7	2450.5	24.7	52.7
25	DEP	2350.8	32.0	10:48:02.2	2661.7	26.1	53.6
27	DEP	2293.2	33.4	10:54:33.2	2590.6	30.1	44.0
NOISE ABATEMENT APPROACH (10 DEG. TARGET, VAR. A/S)							
29		-----	NO DATA	-----			
30	APP	2085.2	16.8	12:02:26.9	-1536.1	-12.6	67.6
31		-----	NO DATA	-----			
32	APP	2034.6	17.4	12:09:29.6	-1410.9	-10.7	73.5
33	APP	2057.1	16.2	12:13:20.8	-1663.4	-13.7	67.4
34	APP	1998.1	17.0	12:17:00.8	-1171.6	-9.3	70.8
35	APP	2011.2	17.1	12:20:43.7	-1318.3	-10.2	72.2
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)							
38		-----	NO DATA	-----			
39	APP	2031.1	15.1	12:35:40.1	-994.1	-9.0	61.8
40	APP	2075.6	17.3	12:39:19.5	-846.8	-7.7	61.7
41	APP	2062.0	18.9	12:42:57.7	-822.2	-8.5	54.1
42	APP	2022.1	19.2	12:46:21.4	-924.6	-8.3	62.9
43		-----	NO DATA	-----			
44		-----	NO DATA	-----			
45	APP	1986.1	16.6	12:55:40.9	-748.7	-6.7	63.0

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

MBB BK117

POSITION DATA
NOISE MEASUREMENT PROGRAM

2000 FT. EAST

DATE:06/25/84

FAA/AEE

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
500 FT. LEVEL FLYOVER AT 126 KTS.							
46		-----	NO DATA	-----			
47	F/O	2019.0	15.4	13:16:44.7	162.8	0.8	120.8
48	F/O	2042.9	13.8	13:19:07.1	291.8	1.2	137.0
49	F/O	1938.8	14.8	13:21:06.5	-240.8	-1.1	120.0
50	F/O	2104.2	13.3	13:23:22.9	-157.9	-0.6	146.2
51	F/O	1957.6	13.8	13:25:29.1	-204.5	-1.0	121.4
52	F/O	2115.1	13.1	13:27:39.3	285.3	1.2	132.7
53	F/O	2024.3	14.9	13:29:53.5	-334.3	-1.5	126.0
54	F/O	2036.5	14.5	13:32:07.7	983.0	4.4	127.3
55	F/O	2083.9	13.5	13:34:28.7	81.8	0.4	125.4
56	F/O	2151.0	16.9	13:37:03.3	269.9	1.1	134.1
57	F/O	2027.8	12.1	13:42:13.3	25.6	0.1	116.3
58	F/O	2094.2	13.9	13:44:31.3	108.3	0.4	136.8
59	F/O	1952.8	14.9	13:49:22.2	373.1	1.7	126.3
60	F/O	2057.6	14.8	13:51:35.5	-368.7	-1.6	127.0
61		-----	NO DATA	-----			
62	F/O	2077.9	13.9	13:57:10.4	95.4	0.4	131.7
1000 FT. LEVEL FLYOVER AT 126 KTS.							
63	F/O	2097.0	25.1	14:28:34.5	183.1	0.8	123.0
64	F/O	2272.3	24.7	14:31:03.7	48.3	0.2	134.7
65	F/O	2183.4	25.0	14:33:31.6	61.8	0.3	124.9
66		-----	NO DATA	-----			
67	F/O	2170.8	26.8	14:39:25.8	305.0	1.3	128.7
68	F/O	2293.8	24.9	14:41:41.7	-157.5	-0.6	137.3
69		-----	NO DATA	-----			
70		-----	NO DATA	-----			
71	F/O	2149.6	26.1	14:50:40.6	153.7	0.7	127.6
72		-----	NO DATA	-----			
73	F/O	2090.1	28.1	14:56:02.0	118.0	0.5	124.2
74	F/O	2262.4	26.9	14:58:19.0	103.7	0.4	133.9
75	F/O	2073.2	26.7	15:00:57.1	-120.2	-0.5	124.1

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

MBB BK117

POSITION DATA
NOISE MEASUREMENT PROGRAM

2000 FT. EAST

DATE:06/27/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NOISE ABATEMENT APPROACH (8 DEG. TARGET, 40 KTS.)							
1	APP	2023.7	14.8	12:18:54.3	-117.8	-2.3	28.6
2	APP	1998.5	13.6	12:25:36.2	-581.5	-10.5	30.9
3	APP	2051.1	13.3	12:32:03.3	-263.9	-4.5	33.3
4		-----	NO DATA	-----			
5		-----	NO DATA	-----			
NOISE ABATEMENT APPROACH (6 DEG. TARGET, 40 KTS.)							
6	APP	2081.5	11.5	12:52:15.4	-259.4	-3.9	37.2
7	APP	1936.8	13.3	12:58:52.2	-713.6	-12.2	32.6
8	APP	2006.8	12.1	13:04:39.4	-296.4	-4.4	37.9
9	APP	1342.9	9.9	13:11:05.5	1769.1	4.1	242.2
10	APP	1973.4	11.9	13:16:51.2	-376.7	-5.5	38.3

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

MBB BK117

POSITION DATA
NOISE MEASUREMENT PROGRAM

2000 FT. EAST

DATE:06/28/84

FAA/AEE

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
15 DEGREE BANK TURN AT 65 KTS.							
1	F/O	1644.3	15.0	11:19:35.2	31.3	0.3	57.8
2	F/O	2033.6	13.9	7:39:35.5	-936.8	-6.5	81.3
3	F/O	2023.2	13.1	7:43:23.8	-957.9	-6.9	77.8
4	F/O	2031.6	13.9	7:47:29.6	-1039.5	-7.4	78.9
5	F/O	1446.3	15.8	11:26:43.2	789.8	6.9	64.7
6	F/O	2038.3	14.5	7:55:58.3	-845.1	-6.6	72.5
7	F/O	2034.5	15.1	8:00:03.3	-1013.5	-7.2	78.7
8	F/O	1743.8	17.5	11:32:43.6	-389.1	-3.2	68.1
9	F/O	2046.0	16.2	8:07:39.8	-1121.3	-8.2	77.0
10		-----	NO DATA	-----			
11		-----	NO DATA	-----			
15 DEGREE BANK TURN AT 65 KTS.							
12	F/O	2033.1	11.6	8:20:47.1	-711.5	-5.4	74.7
13		-----	NO DATA	-----			
14	F/O	2032.2	16.6	8:29:25.3	-888.3	-7.9	63.2
15		-----	NO DATA	-----			
16		-----	NO DATA	-----			
17	F/O	2008.5	10.2	8:36:22.1	779.8	5.3	83.6
18		-----	NO DATA	-----			
19	F/O	2021.2	9.3	8:40:49.9	1190.1	8.0	84.0

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

MBB BK117

POSITION DATA
NOISE MEASUREMENT PROGRAM

2000 FT. WEST

DATE:06/25/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
SIX DEG. APPROACH AT VY, 65 KTS.							
1		-----	NO DATA	-----			
2	APP	2008.7	11.0	9:15:09.7	-534.3	-4.1	74.4
4	APP	1863.0	10.1	9:22:58.4	-825.5	-6.7	69.8
6	APP	2085.9	10.6	9:28:09.7	-716.3	-5.5	73.0
8	APP	2070.0	12.0	9:34:58.8	-608.4	-4.9	70.3
10	APP	1987.6	10.7	9:40:35.5	-801.8	-6.3	71.9
12	APP	2010.4	9.5	9:46:55.4	-543.2	-4.5	68.6
14	APP	2077.9	10.7	9:52:47.5	-939.7	-8.2	64.7
TAKEOFF, MAX ALLOW TORQUE							
3	DEP	2333.4	25.8	9:19:59.6	2842.7	25.1	60.0
5		-----	NO DATA	-----			
7	DEP	2497.7	32.3	9:30:25.8	2891.9	28.7	52.0
9	DEP	2482.1	25.5	9:36:45.2	3121.9	33.9	45.8
11	DEP	2491.2	29.4	9:42:35.8	2716.0	28.0	50.5
13	DEP	2521.1	28.6	9:48:47.9	2806.0	27.8	52.6
15		-----	NO DATA	-----			
NORMAL APPROACH							
16		-----	NO DATA	-----			
18	APP	2056.7	9.8	10:07:02.6	-819.6	-6.2	73.9
20	APP	2021.9	8.7	10:13:26.9	-844.4	-7.2	66.0
22	APP	1986.9	11.7	10:35:11.3	-1005.8	-7.6	74.1
24		-----	NO DATA	-----			
26	APP	2150.3	9.3	10:52:14.7	-981.7	-7.8	71.0
28	APP	2094.9	9.7	10:58:38.1	-855.1	-5.9	81.7

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

MBB BK117

POSITION DATA
NOISE MEASUREMENT PROGRAM

2000 FT. WEST

DATE:06/25/84

FAA/AEE

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
TAKEOFF, 65% TORQUE							
17	DEP	2410.7	27.2	10:01:30.2	2600.9	27.7	49.0
19	DEP	2494.7	33.4	10:09:10.7	2031.9	21.0	52.1
21	DEP	2439.6	27.4	10:28:08.8	2891.9	30.6	48.3
23	DEP	2430.9	31.4	10:38:04.5	2437.6	24.9	51.9
25	DEP	2545.2	28.8	10:48:01.9	2683.0	26.3	53.6
27	DEP	2541.5	24.0	10:54:28.7	2877.5	30.5	48.2
NOISE ABATEMENT APPROACH (10 DEG. TARGET, VAR. A/S)							
29		-----	NO DATA	-----			
30	APP	2036.7	15.9	12:02:28.1	-1896.4	-15.8	66.2
31		-----	NO DATA	-----			
32	APP	2086.8	16.7	12:09:29.3	-1320.8	-10.0	73.9
33	APP	2069.6	14.4	12:13:22.0	-1721.0	-13.8	69.1
34	APP	2132.4	14.9	12:17:02.0	-871.2	-6.7	72.8
35	APP	2095.6	14.6	12:20:46.7	-1080.8	-9.0	67.1
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)							
38		-----	NO DATA	-----			
39	APP	2088.6	14.7	12:35:39.3	-1009.4	-8.9	63.7
40	APP	2094.7	16.9	12:39:18.7	-793.0	-7.1	62.5
41	APP	2123.6	17.1	12:42:58.4	-803.4	-8.5	53.3
42	APP	2155.2	16.6	12:46:23.1	-807.1	-7.6	60.0
43		-----	NO DATA	-----			
44		-----	NO DATA	-----			
45	APP	2150.8	14.6	12:55:42.3	-650.4	-6.0	60.6

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

MBB BK117

POSITION DATA
NOISE MEASUREMENT PROGRAM

2000 FT. WEST

DATE:06/25/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
500 FT. LEVEL FLYOVER AT 126 KTS.							
46		-----	NO DATA	-----			
47	F/O	2104.2	14.4	13:16:45.1	116.7	0.6	119.7
48	F/O	1997.8	13.8	13:19:07.5	352.2	1.5	136.9
49	F/O	2134.1	12.7	13:21:06.9	-176.8	-0.8	117.9
50	F/O	1985.7	13.5	13:23:22.8	-114.6	-0.4	145.7
51	F/O	2117.2	12.5	13:25:28.7	-212.0	-1.0	122.4
52	F/O	1927.4	14.3	13:27:40.5	269.4	1.2	130.6
53	F/O	2091.5	13.9	13:29:53.8	-343.9	-1.6	125.2
54	F/O	2031.2	15.0	13:32:09.2	589.3	2.6	126.7
55	F/O	2002.4	13.6	13:34:29.2	92.2	0.4	125.9
56	F/O	1939.2	18.2	13:37:01.7	1014.3	4.2	134.7
57	F/O	1984.8	12.0	13:42:12.8	31.5	0.1	123.7
58	F/O	2002.4	13.9	13:44:30.9	174.1	0.7	137.0
59	F/O	2158.3	12.9	13:49:21.5	462.0	2.1	124.7
60	F/O	2042.9	14.6	13:51:35.1	-339.4	-1.5	127.6
61		-----	NO DATA	-----			
62	F/O	1980.0	14.2	13:57:10.7	104.6	0.4	131.5
1000 FT. LEVEL FLYOVER AT 126 KTS.							
63	F/O	2252.5	22.9	14:28:34.2	165.6	0.8	122.1
64	F/O	2120.1	26.3	14:31:04.0	16.5	0.1	133.5
65	F/O	2191.2	24.2	14:33:30.5	-65.9	-0.3	124.2
66		-----	NO DATA	-----			
67	F/O	2227.6	25.3	14:39:24.3	193.4	0.9	121.0
68	F/O	2128.2	26.5	14:41:40.7	-267.8	-1.1	139.1
69		-----	NO DATA	-----			
70		-----	NO DATA	-----			
71	F/O	2252.4	24.4	14:50:41.6	87.1	0.4	126.3
72		-----	NO DATA	-----			
73	F/O	2341.3	24.5	14:56:03.3	-20.3	-0.1	127.1
74	F/O	2177.7	27.9	14:58:19.4	120.2	0.5	133.0
75	F/O	2304.3	23.4	15:00:58.5	-181.8	-0.8	127.9

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

MBB BK117

POSITION DATA
NOISE MEASUREMENT PROGRAM

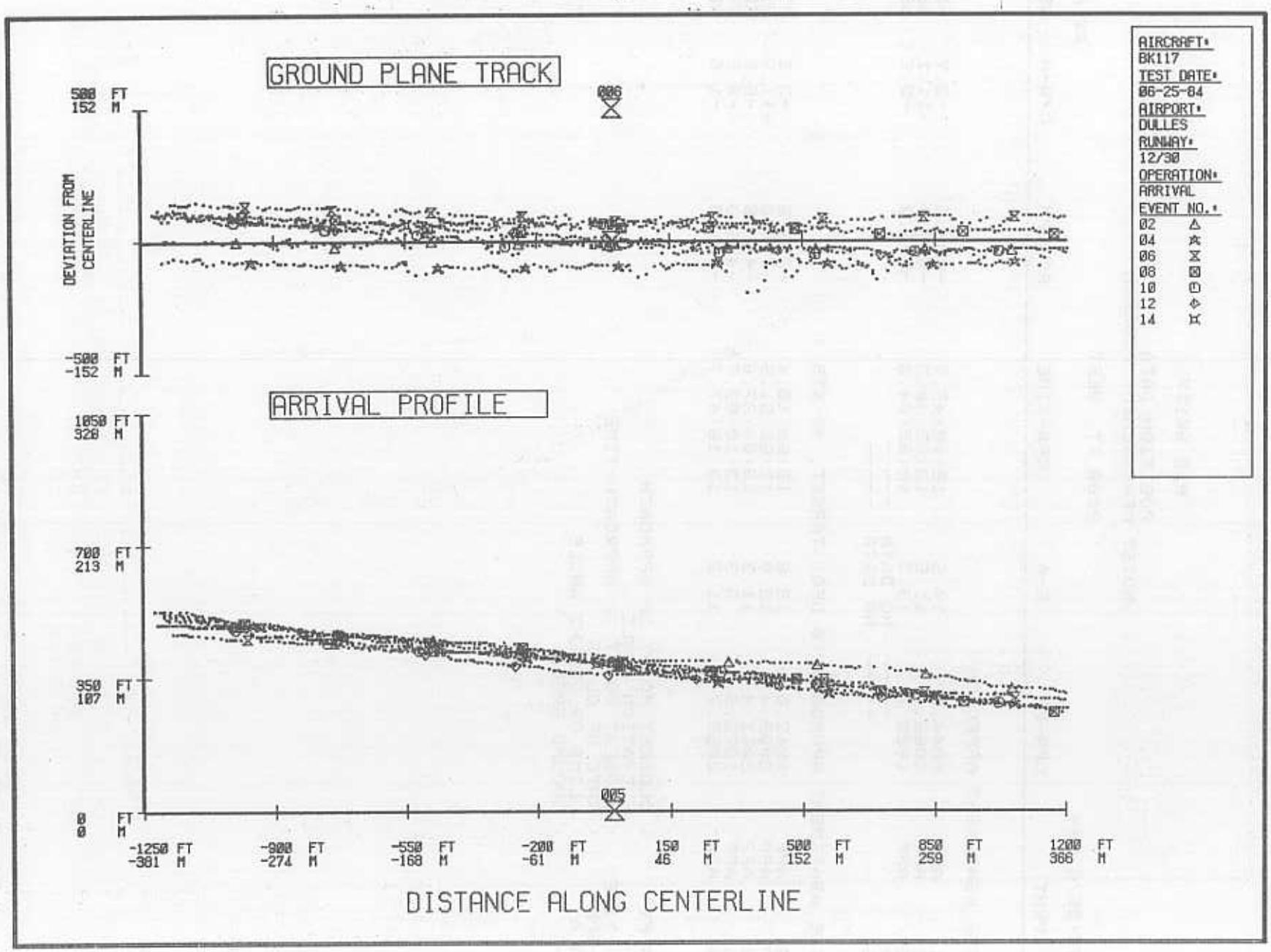
2000 FT. WEST

DATE:06/27/84 **FAA/AEE**

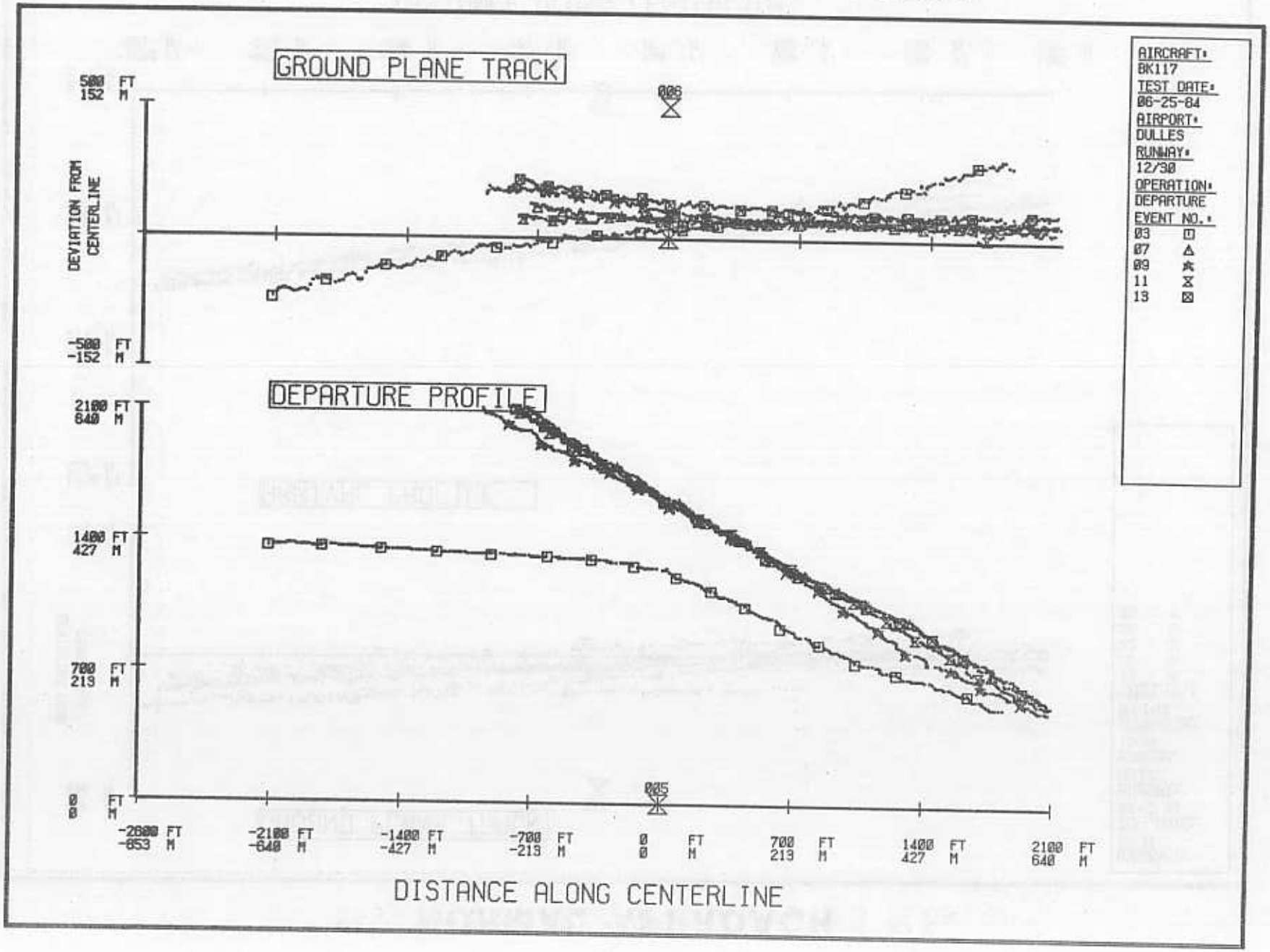
EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NOISE ABATEMENT APPROACH							
1	APP	2044.6	14.5	12:18:49.7	-220.5	-3.7	33.3
2	APP	2065.7	11.5	12:25:40.3	-644.0	-11.1	32.4
3	APP	1988.4	13.3	12:32:04.8	-543.3	-9.2	32.9
4		-----	NO DATA	-----			
5		-----	NO DATA	-----			
NOISE ABATEMENT APPROACH (6 DEG. TARGET, 40 KTS.)							
6	APP	1919.0	12.6	12:52:10.4	-215.6	-3.2	37.6
7	APP	2092.4	12.0	12:58:51.5	-713.0	-11.9	33.5
8	APP	2051.4	11.3	13:04:37.6	-470.8	-6.8	39.2
9	APP	1972.5	9.3	13:10:53.7	-486.0	-8.5	32.1
10	APP	2055.7	11.2	13:16:47.7	-101.3	-1.6	35.9

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

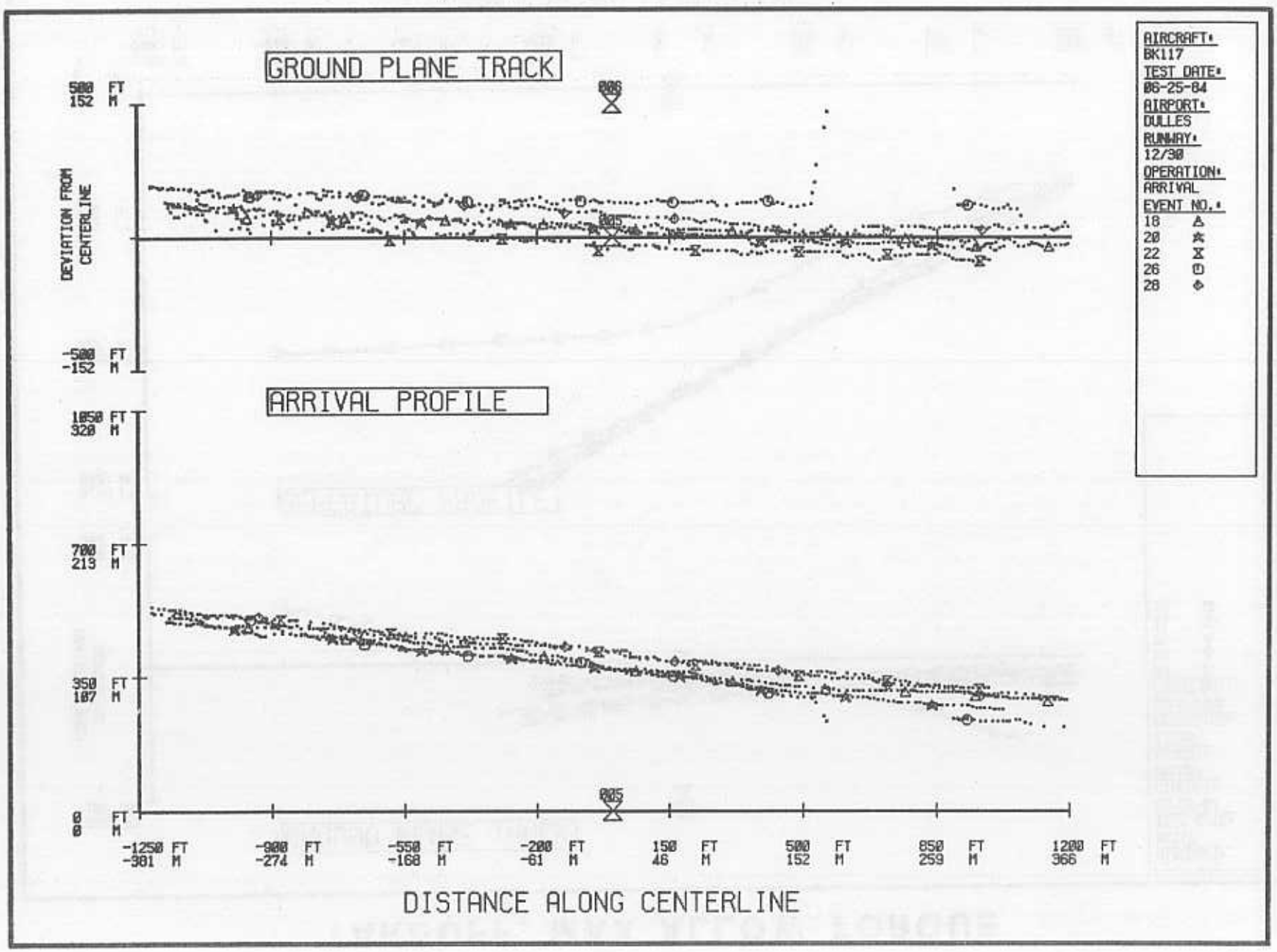
SIX° APPROACH at Vy, 65 Kts.



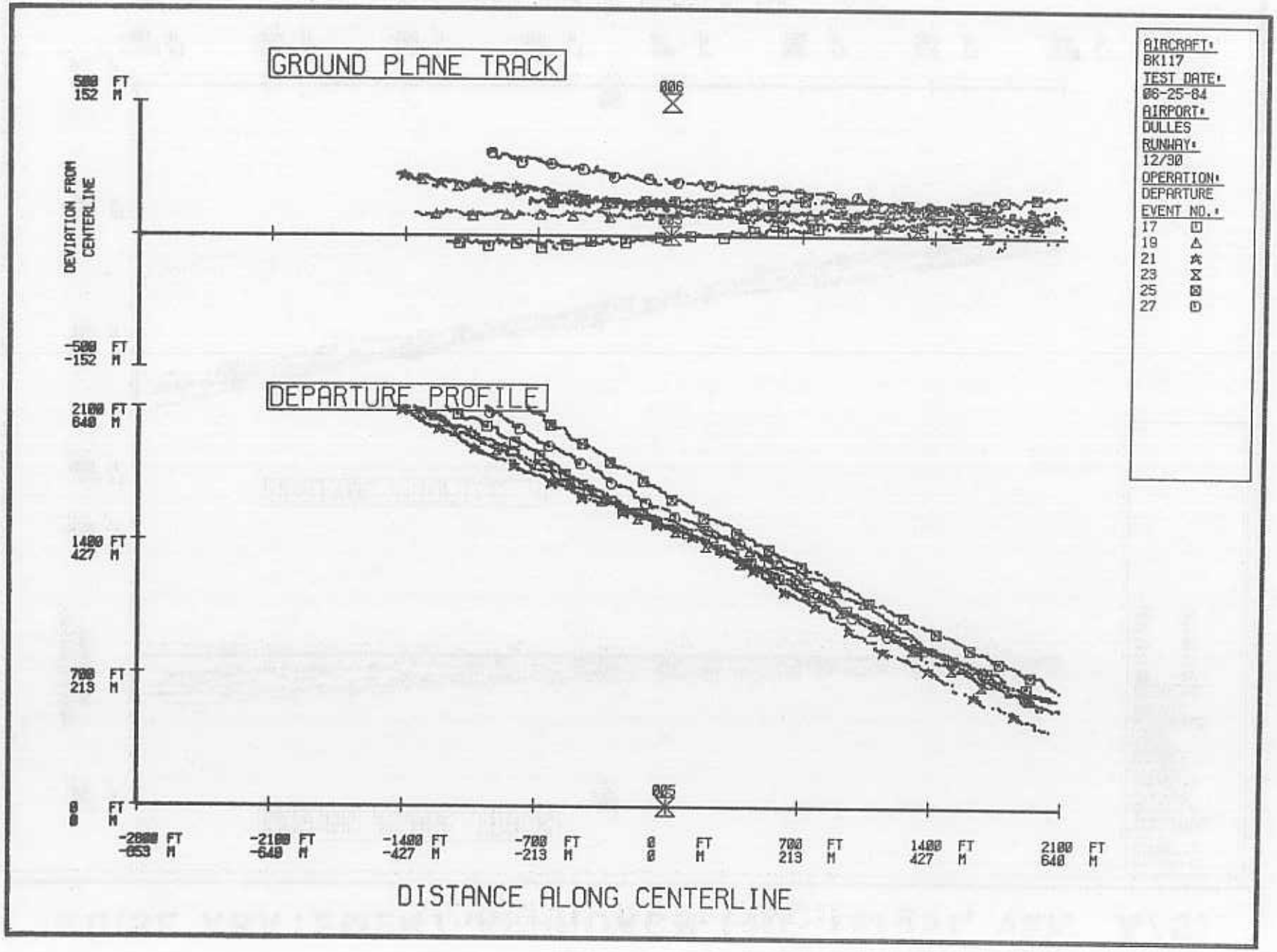
TAKEOFF, MAX ALLOW TORQUE



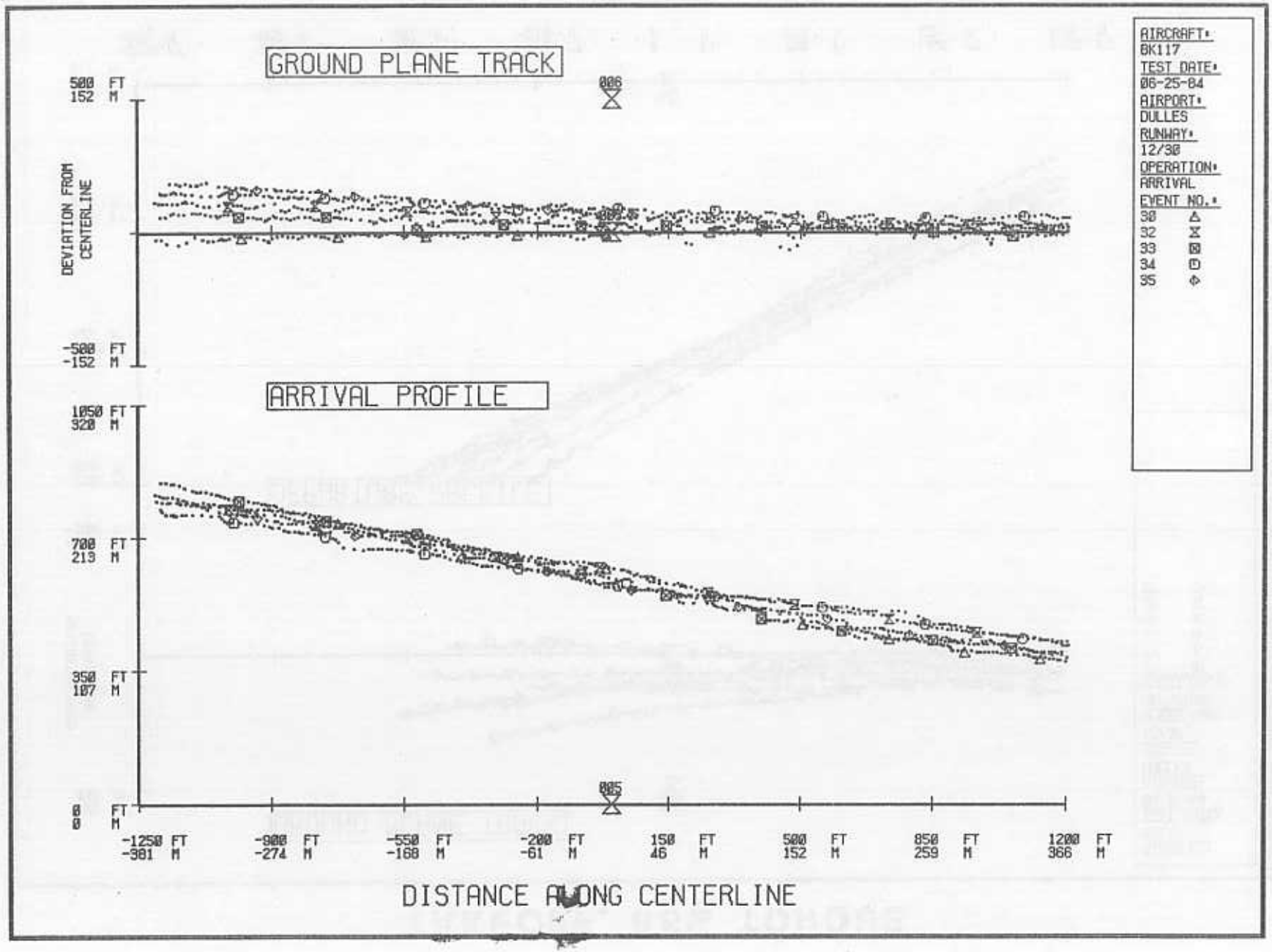
NORMAL APPROACH



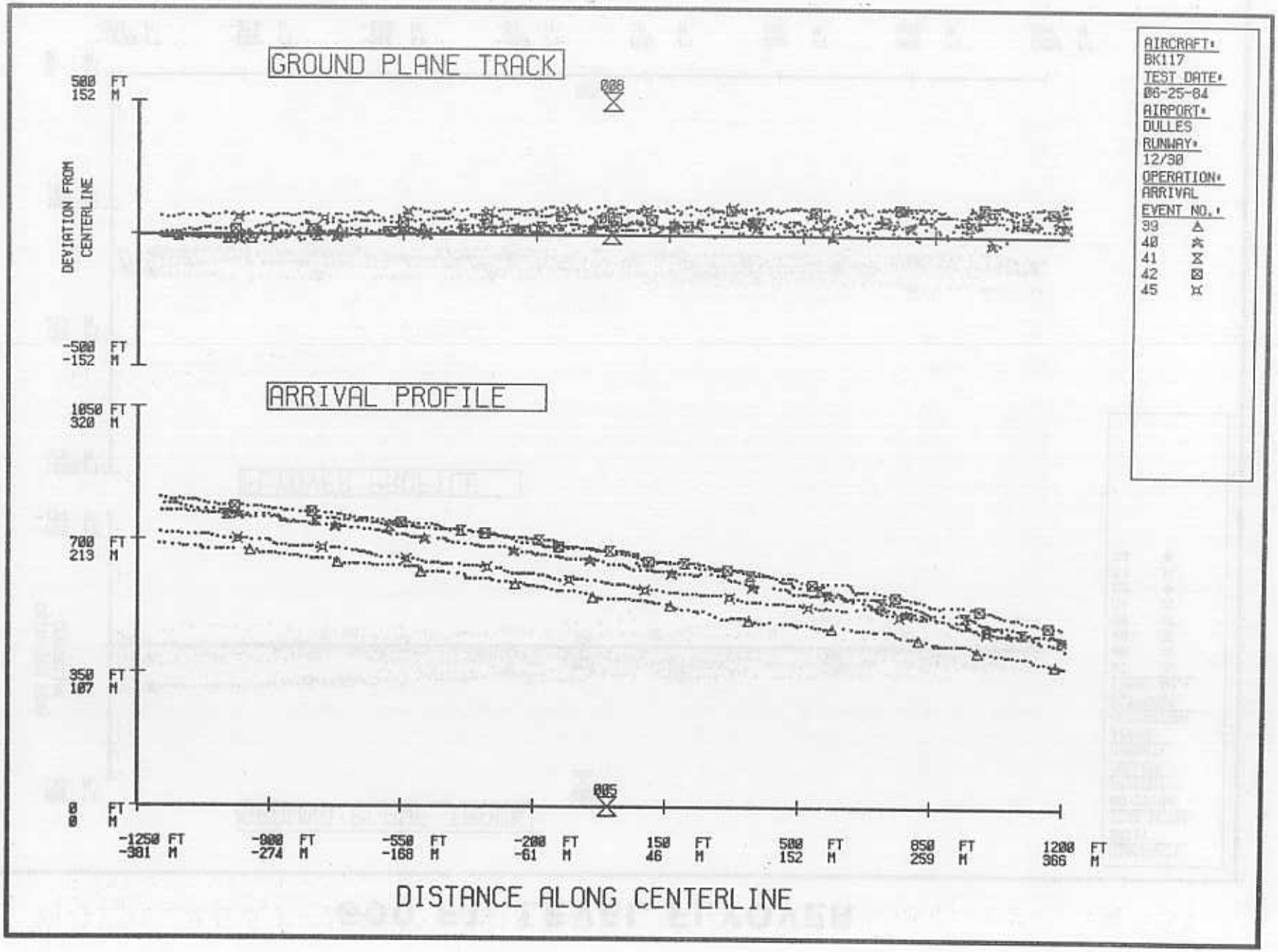
TAKEOFF, 65% TORQUE



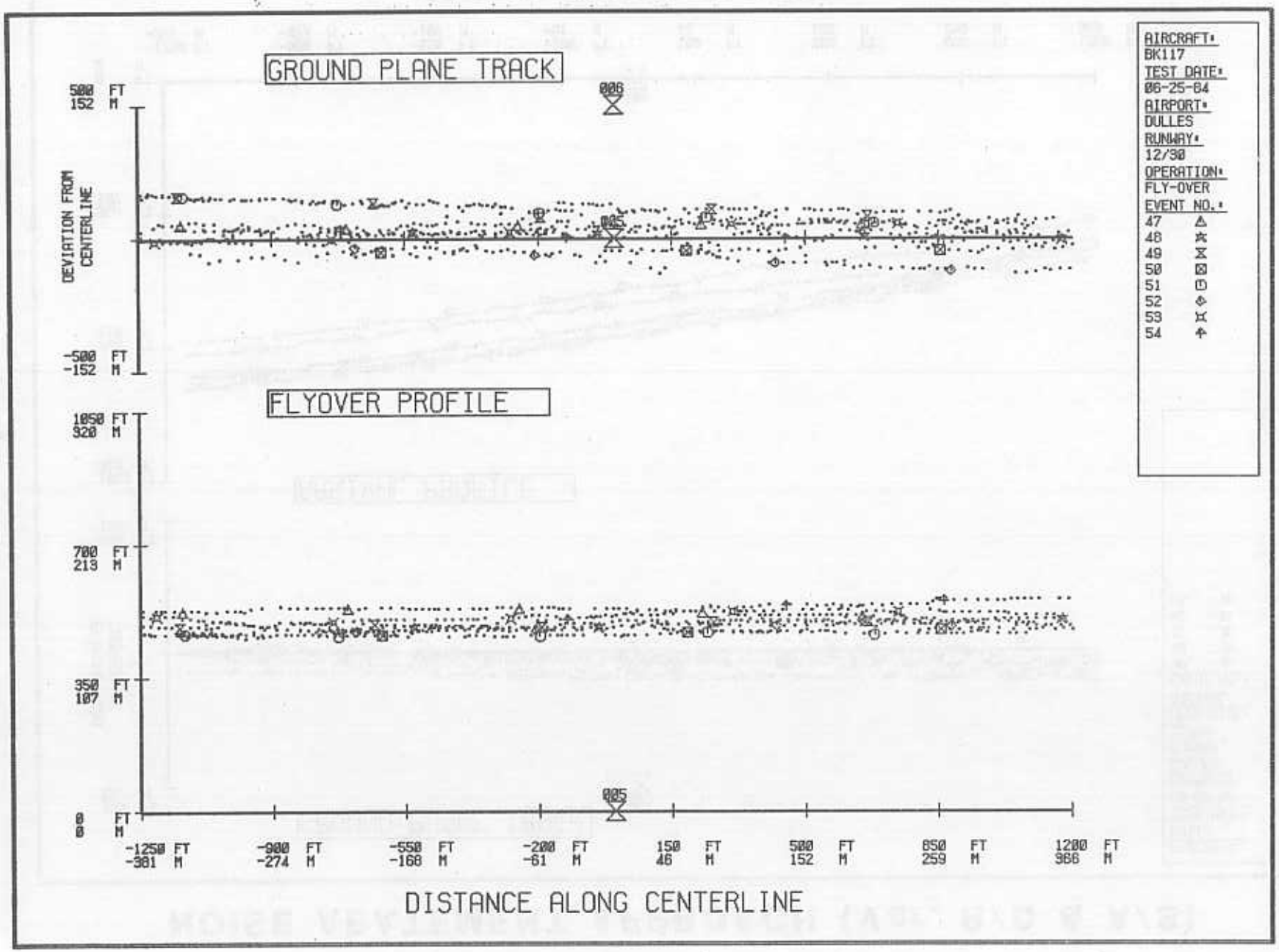
NOISE ABATEMENT APPROACH (10° target, var. A/S)



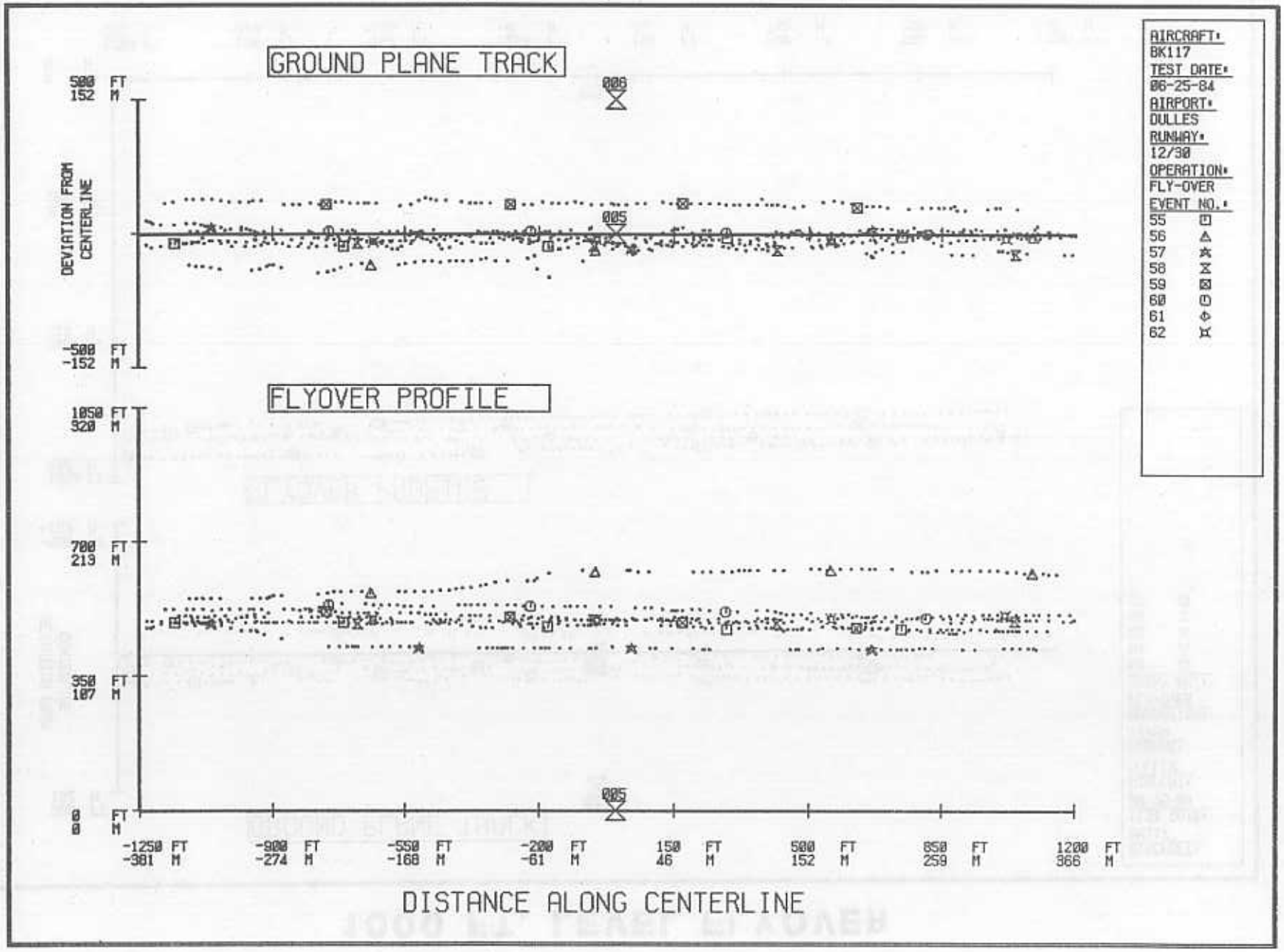
NOISE ABATEMENT APPROACH (Var. R/D & A/S)



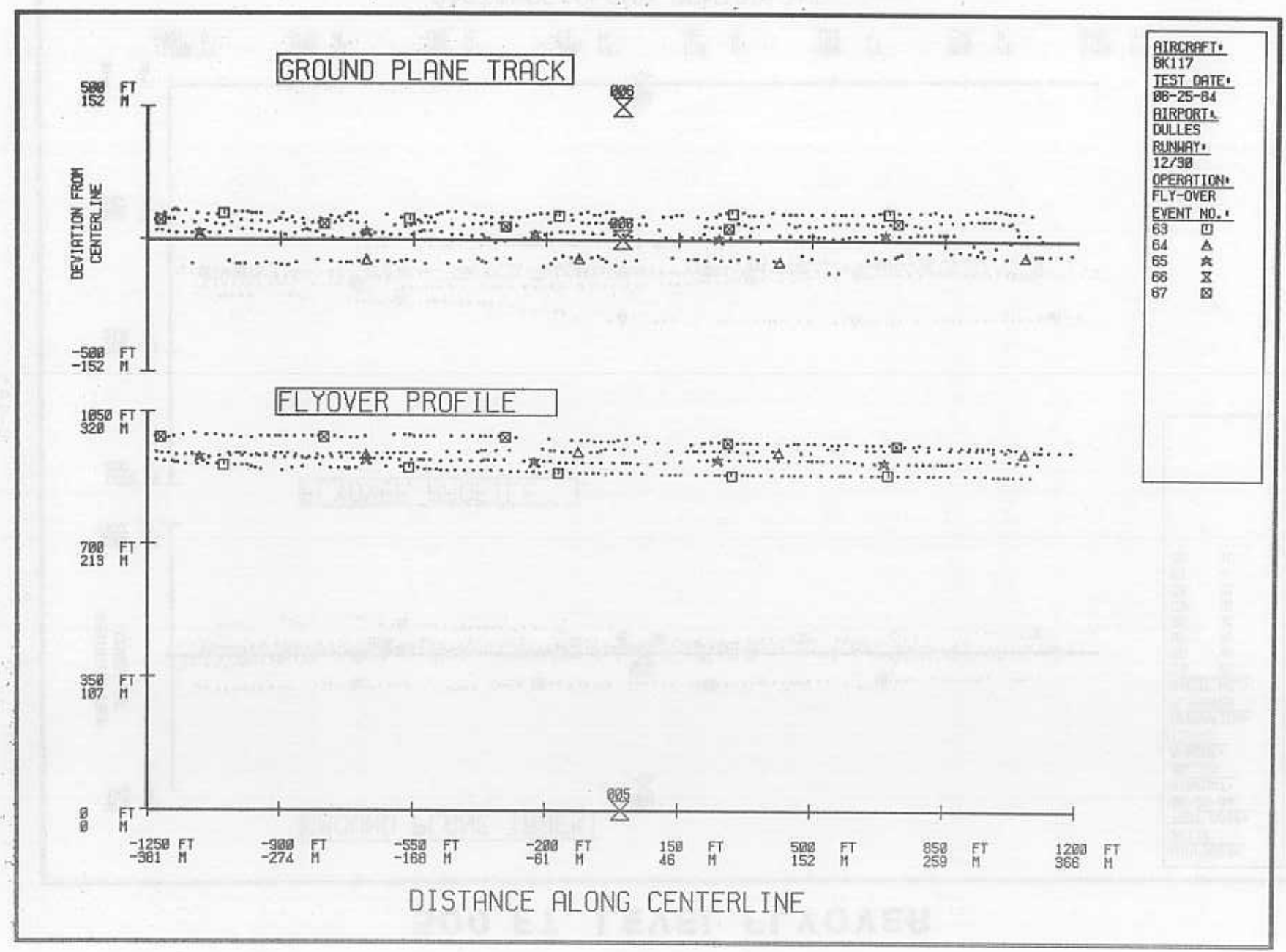
500 FT. LEVEL FLYOVER



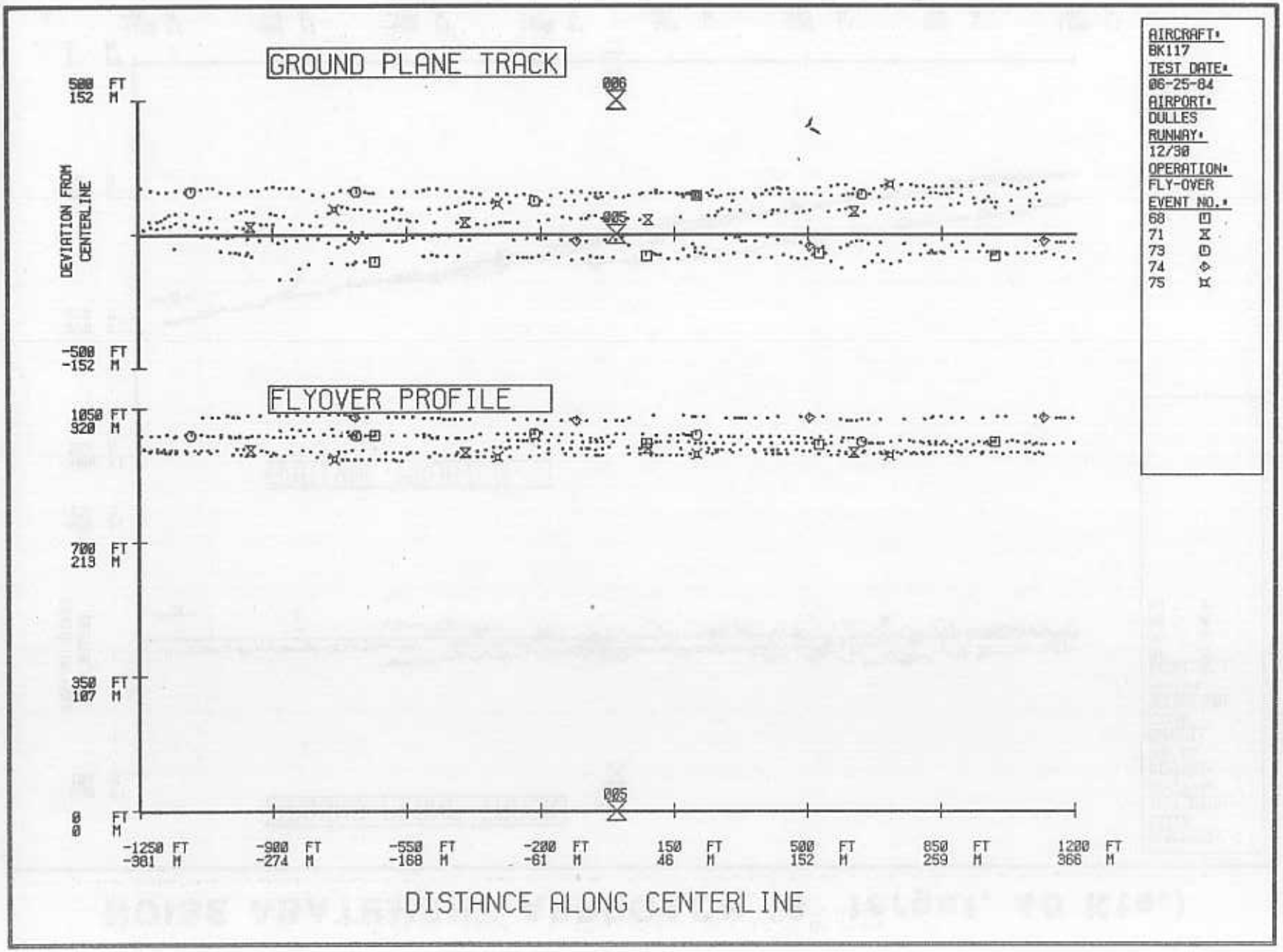
500 FT. LEVEL FLYOVER



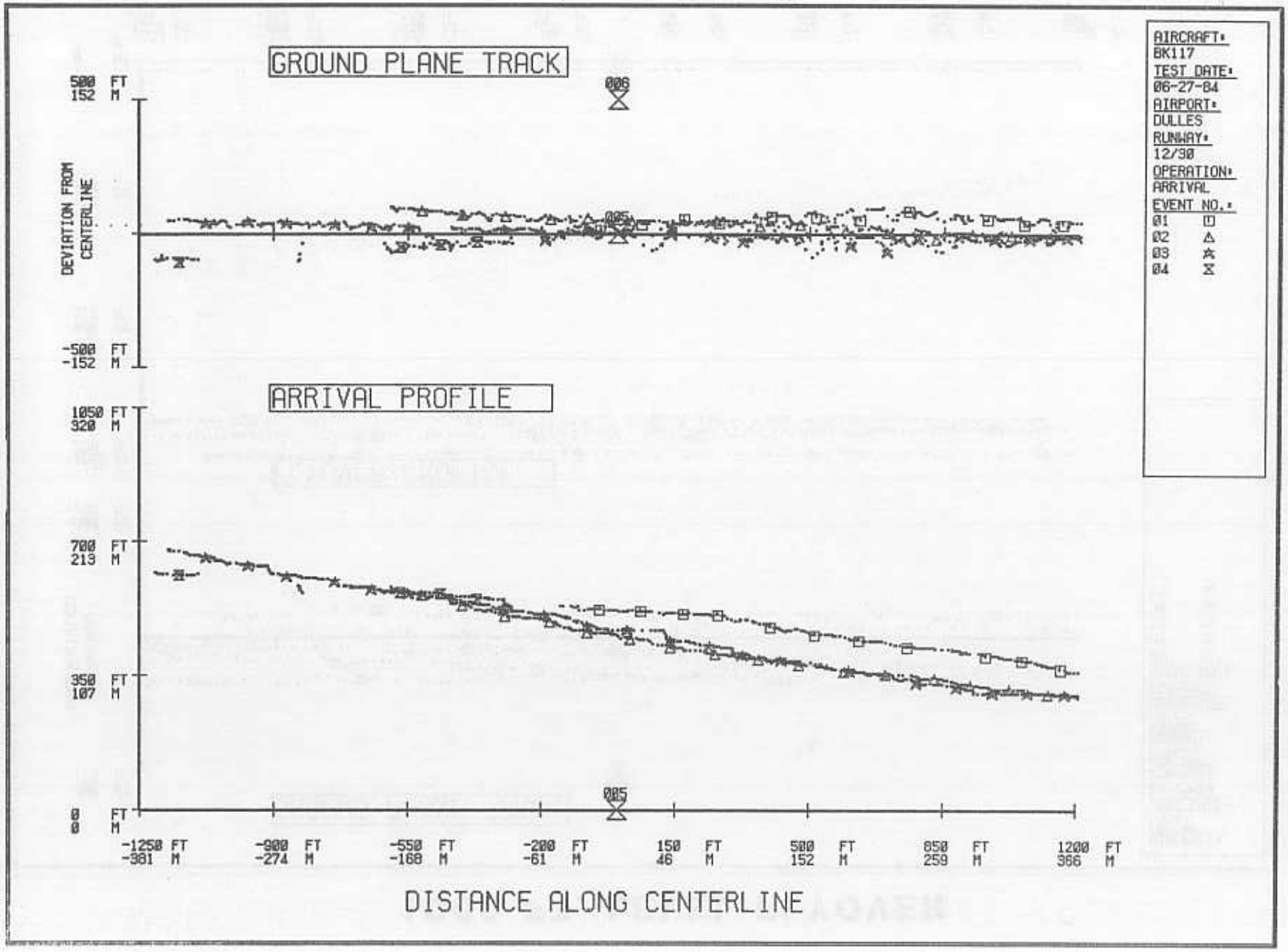
1000 FT. LEVEL FLYOVER



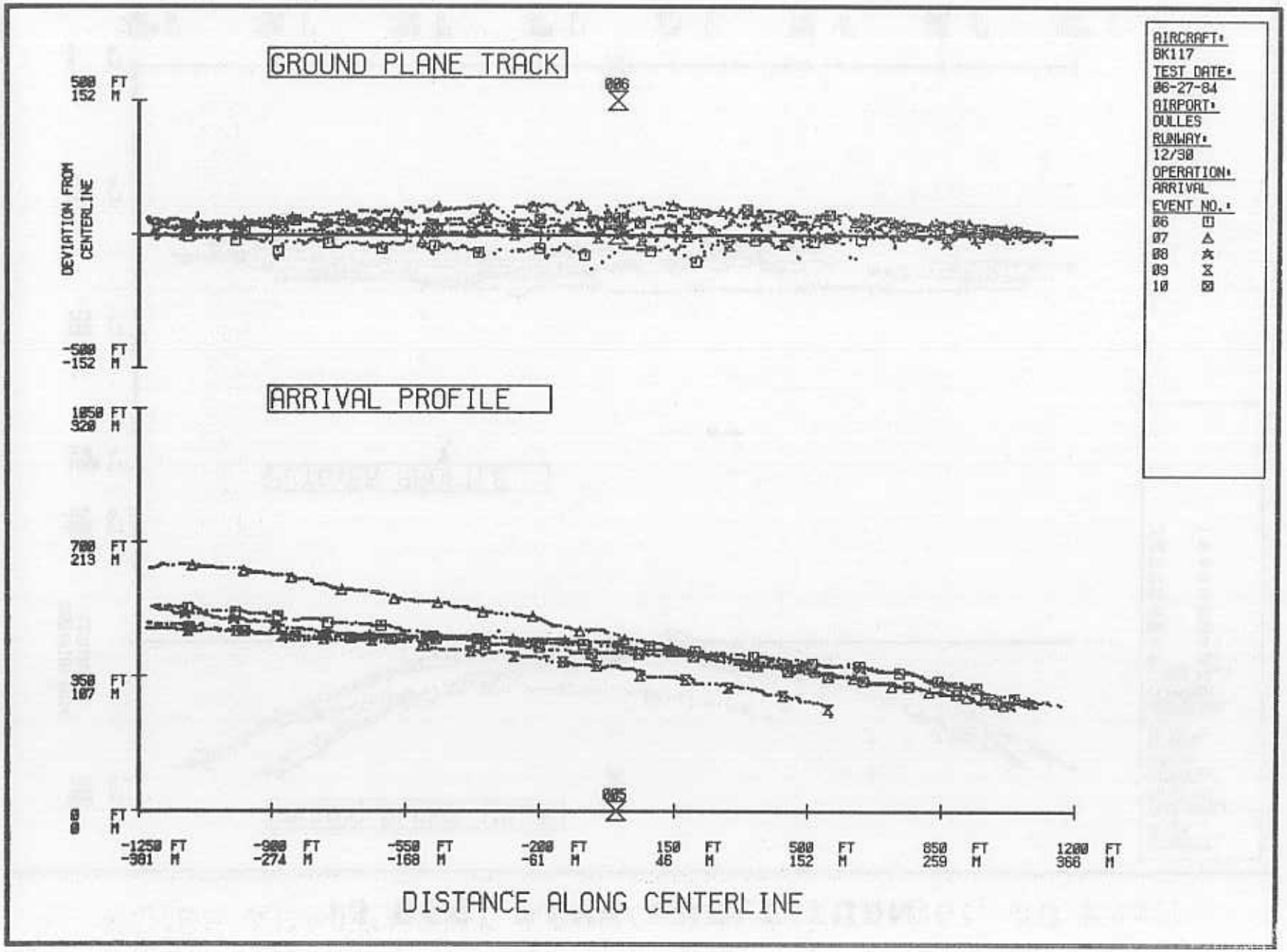
1000 FT. LEVEL FLYOVER



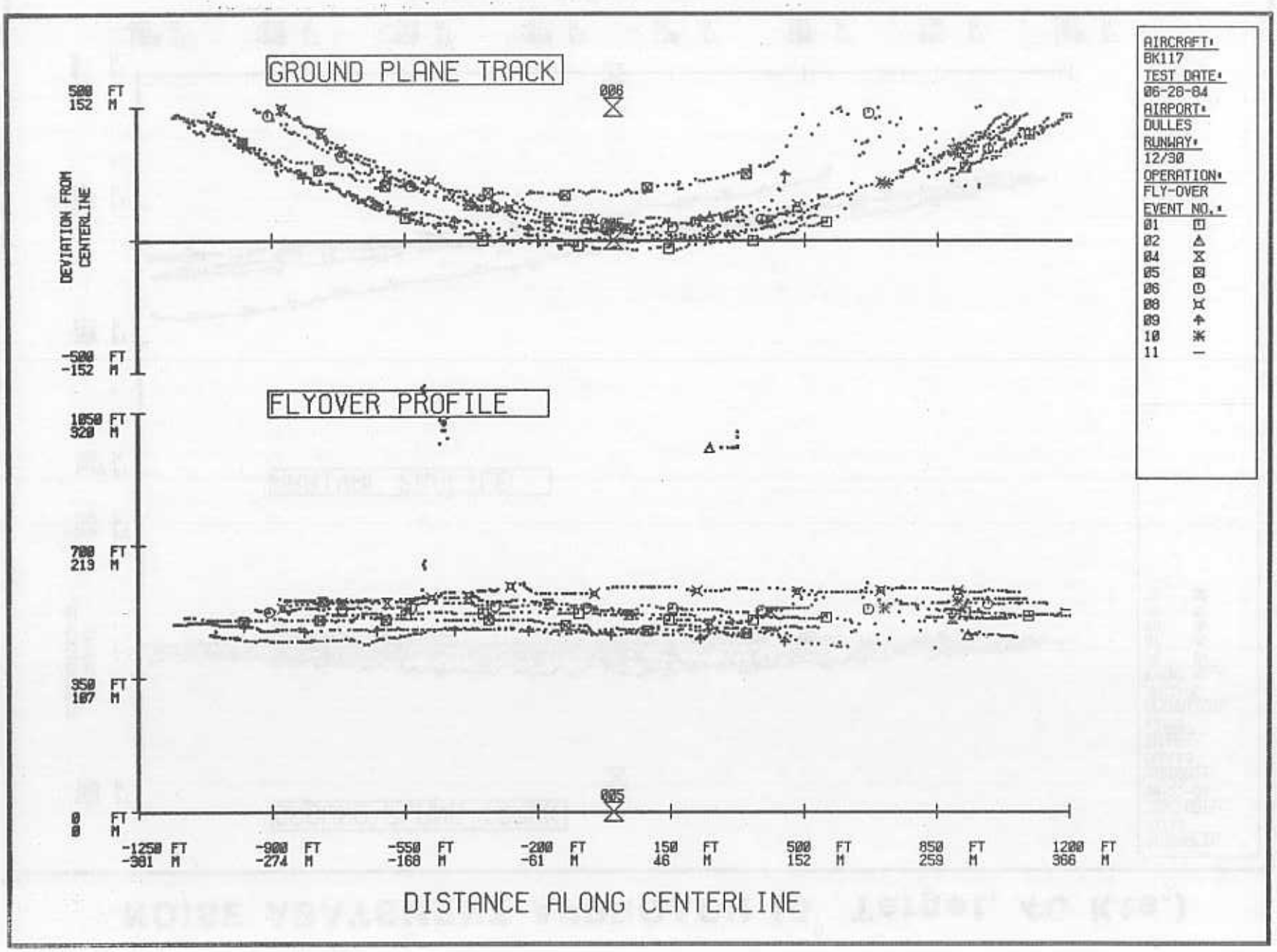
NOISE ABATEMENT APPROACH (8° target, 40 Kts.)



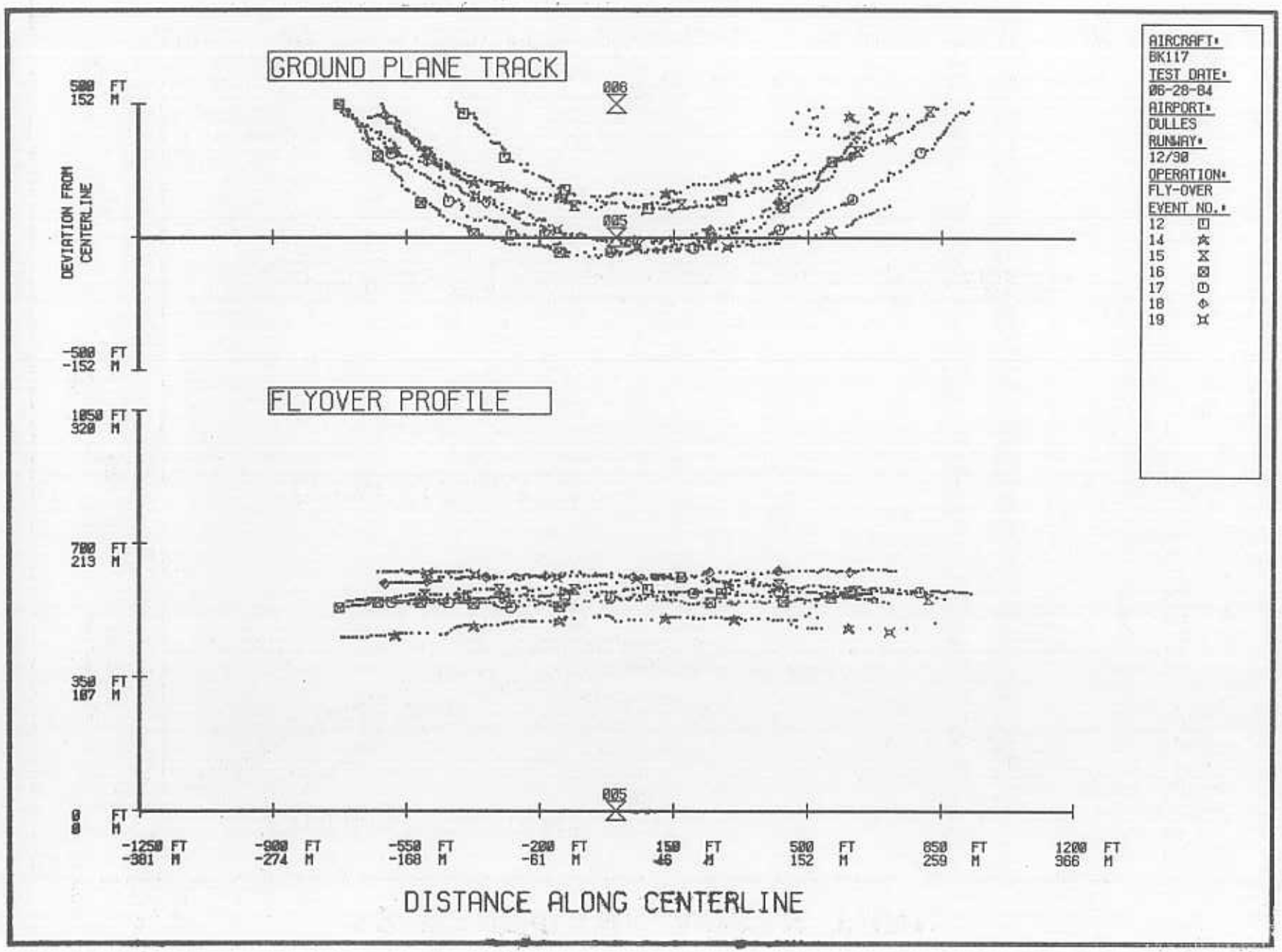
NOISE ABATEMENT APPROACH (6° Target, 40 Kts.)



15 DEG. BANK ANGLE TURN



30 DEG. BANK ANGLE TURN



METEOROLOGICAL

DATA

THIS SECTION OF THE APPENDIX CONTAINS WEATHER DATA FROM SEVERAL TYPES OF METEOROLOGICAL EQUIPMENT: TEN-METER TOWER (MET), GROUND LEVEL PSYCHROMETER, AIRCRAFT OAT, AND PILOT BALLOONS. DATA FROM THE MET TOWER INCLUDE THE TEMPERATURE, RELATIVE HUMIDITY, WIND DIRECTION AND WIND SPEED MEASURED TYPICALLY EVERY 15 MINUTES DURING EACH FLIGHT EVENT. BECAUSE OF A FAILURE OF THE MET TOWER DEW POINT SENSOR, THE RELATIVE HUMIDITY WAS CALCULATED USING TEMPERATURE FROM THE MET TOWER AND DEW POINT FROM THE DULLES MID FIELD WEATHER STATION. GROUND LEVEL (4 FEET) TEMPERATURE AND RELATIVE HUMIDITY ARE GIVEN FOR DIFFERENT TIMES OF EACH TEST DAT, AND THE HELICOPTER'S OAT READINGS ARE SHOWN FOR DIFFERENT FLIGHT ALTITUDES AT VARIOUS TIMES OF THE DAY. THE PILOT BALLOON WIND DATA, TAKEN PERIODICALLY DURING EACH TEST DAY, INDLUDES THE WIND DIRECTION AND WIND SPEED AT VARIOUS ALTITUDES.

METEOROLOGICAL DATA

(MEASURED AT 30 FT. AGL)

HELICOPTER: MBB BK117 DATE: 6/25/84

TIME	TEMP. (DEG. F)	R.H. %	WIND DIR. (DEG.)	WIND SPEED AVG. (MPH)	WIND SPEED MAX (MPH)
6 DEG. APP @ 65 KTS. & NORMAL TAKEOFF WITH MAX TORQUE					
9:00	70	66	360	6	9
9:15	72	--	360	3	6
9:30	72	--	360	5	8
9:45	72	--	360	6	10
10:00	73	55	350	7	10
NORMAL APPROACH AND NORMAL TAKEOFF @ 65% TORQUE					
10:00	73	55	350	7	10
10:15	73	--	360	6	9
10:30	74	--	020	4	7
10:45	74	--	360	6	9
11:00	74	52	360	8	12
NOISE ABATEMENT APPROACH (10 DEG. TARGET, VAR. A/S)					
12:00	76	48	020	8	11
12:15	76	--	350	7	11
12:30	77	--	350	7	9

METEOROLOGICAL DATA

(MEASURED AT 30 FT. AGL)

HELICOPTER: MBB BK117 DATE: 6/25/84

TIME	TEMP. (DEG. F)	R.H. %	WIND DIR. (DEG.)	WIND SPEED AVG. (MPH)	WIND SPEED MAX (MPH)
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)					
12:30	77	--	350	7	9
12:45	77	--	350	8	11
1:00	77	42	020	5	8
500 FT. LEVEL FLYOVER AT 126 KTS.					
1:00	77	42	020	5	8
1:15	77	--	350	8	9
1:30	78	--	360	7	11
1:45	78	--	360	5	7
2:00	76	48	310	8	11
1000 FT. LEVEL FLYOVER AT 126 KTS.					
2:00	76	48	310	8	11
2:15	78	--	360	6	9
2:30	76	--	350	5	8
2:45	76	--	320	4	6
3:00	76	46	350	4	-

METEOROLOGICAL DATA

(MEASURED AT 30 FT. AGL)

HELICOPTER: MBB BK117 DATE: 6/27/84

TIME	TEMP. (DEG. F)	R.H. %	WIND DIR. (DEG.)	WIND SPEED AVG. (MPH)	WIND SPEED MAX (MPH)
NOISE ABATEMENT APPROACH (8 DEG. TARGET, 40 KTS.)					
12:00	80	42	200	10	13
12:15	81	--	200	8	11
12:30	82	--	200	11	15
NOISE ABATEMENT APPROACH (6 DEG. TARGET, 40 KTS.)					
12:45	82	--	200	10	13
1:00	83	37	200	10	13
1:15	84	--	200	10	13

METEOROLOGICAL DATA

(MEASURED AT 30 FT. AGL)

HELICOPTER: MBB BK117 DATE: 6/28/84

TIME	TEMP. (DEG. F)	R.H. %	WIND DIR. (DEG.)	WIND SPEED AVG. (MPH)	WIND SPEED MAX (MPH)
5 FT. AND 80 FT. HOVER (HARD PATH)					
9:00	72	81	180	7	-
9:15	73	--	180	7	-
9:30	74	--	180	5	-
9:45	74	--	180	5	-
10:00	74	79	180	4	-
5 FT. AND 80 FT. HOVER (SOFT PATH)					
10:00	74	79	180	4	-
10:15	74	--	180	3	-
10:30	76	--	180	3	-
10:45	76	--	180	3	-
11:00	80	65	180	2	-
15 AND 30 DEGREE BANK TURNS AT 65 KTS.					
12:00	80	62	200	3	-
12:15	82	--	200	3	-
12:30	84	--	200	3	-
12:45	84	--	200	3	-
1:00	82	57	200	3	-

METEOROLOGICAL DATA

HELICOPTER: MBB BK117

DATE: 06/25/84

TEMPERATURE AND RELATIVE HUMIDITY DATA

(MEASURED AT 4 FT. AGL)

TIME	TEMP.	R.H.
09:30	76 F	41%
09:48	78 F	36%
10:04	78 F	36%
10:17	78 F	36%
10:39	78 F	34%
10:48	79 F	31%
11:06	79 F	31%
11:17	80 F	35%
11:32	80 F	29%
11:48	80 F	31%
12:05	81 F	33%
12:19	82 F	31%
12:34	80 F	35%
12:48	81 F	29%
13:02	79 F	31%
13:22	79 F	31%
13:33	79 F	33%
13:45	79 F	37%
13:58	78 F	33%

HELICOPTERS OAT GUAGE DATA

TIME	ALTITUDE	TEMP.
9:00	500'	68 F
	1000'	64 F
11:50	200'	75 F
	400'	73 F
	600'	73 F
	800'	70 F
1:00	200'	79 F
	400'	75 F
	600'	75 F
	800'	75 F
2:30	200'	79 F
	400'	79 F
	600'	77 F
	800'	75 F
	1000'	75 F

METEOROLOGICAL DATA

HELICOPTER: MBB BK117

DATE: 06/27/84

TEMPERATURE AND RELATIVE HUMIDITY DATA

(MEASURED AT 4 FT. AGL)

TIME	TEMP.	R.H.
11:19	86 F	28%
11:41	81 F	35%
12:14	87 F	24%
12:41	87 F	22%
13:11	87 F	24%
13:48	90 F	22%

HELICOPTERS OAT GUAGE DATA

TIME	ALTITUDE	TEMP.
	N	
	O	
	D	
	A	
	T	
	A	

METEOROLOGICAL DATA

HELICOPTER: MBB BK117

DATE: 06/28/84

TEMPERATURE AND RELATIVE HUMIDITY DATA

(MEASURED AT 4 FT. AGL)

TIME	TEMP.	R.H.
10:07	83 F	52%
10:30	83 F	58%
10:45	81 F	56%
12:05	81 F	58%

HELICOPTERS OAT GUAGE DATA

TIME	ALTITUDE	TEMP.
9:00	200'	72 F
	400'	70 F
	600'	70 F
	800'	70 F
	1000'	70 F
1:30	200'	82 F
	400'	82 F
	600'	81 F
	800'	81 F
	1000'	79 F

PILOT BALLOON WIND DATA

MBB BK117 06/25/84

FEET (AGL)	WIND DIR. (DEG.)	WIND SPD. (KTS)	WIND DIR. (DEG.)	WIND SPD. (KTS)
LAUNCH TIME:	9:09		9:39	
SFC	340	7	40	5
354	354	11	351	9
708	356	11	350	10
1033	359	12	343	12
1358	360	11	344	13
	10:57		11:56	
SFC	10	4	340	5
354	3	8	322	4
708	36	8	329	4
1033	359	9	323	5
1358	357	9	345	5
	12:55		1:36	
SFC	280	7	350	3
354	302	9	330	5
708	306	8	330	5
1033	303	7	334	5
1358	212	4	335	6

PILOT BALLOON WIND DATA

MBB BK117 06/27/84

FEET (AGL)	WIND DIR. (DEG.)	WIND SPD. (KTS)	WIND DIR. (DEG.)	WIND SPD. (KTS)
LAUNCH TIME:	11:01		11:30	
SFC	210	8	230	10
354	224	10	232	10
708	223	10	229	11
1033	226	8	225	12
1358	227	8	222	12
	12:04		12:33	
SFC	240	9	240	8
354	224	9	211	11
708	225	7	210	10
1033	231	7	213	9
1358	243	8	218	8
	1:00			
SFC	230	9		
354	230	16		
708	230	17		
1033	230	19		
1358	232	21		

PILOT BALLOON WIND DATA

MBB BK117

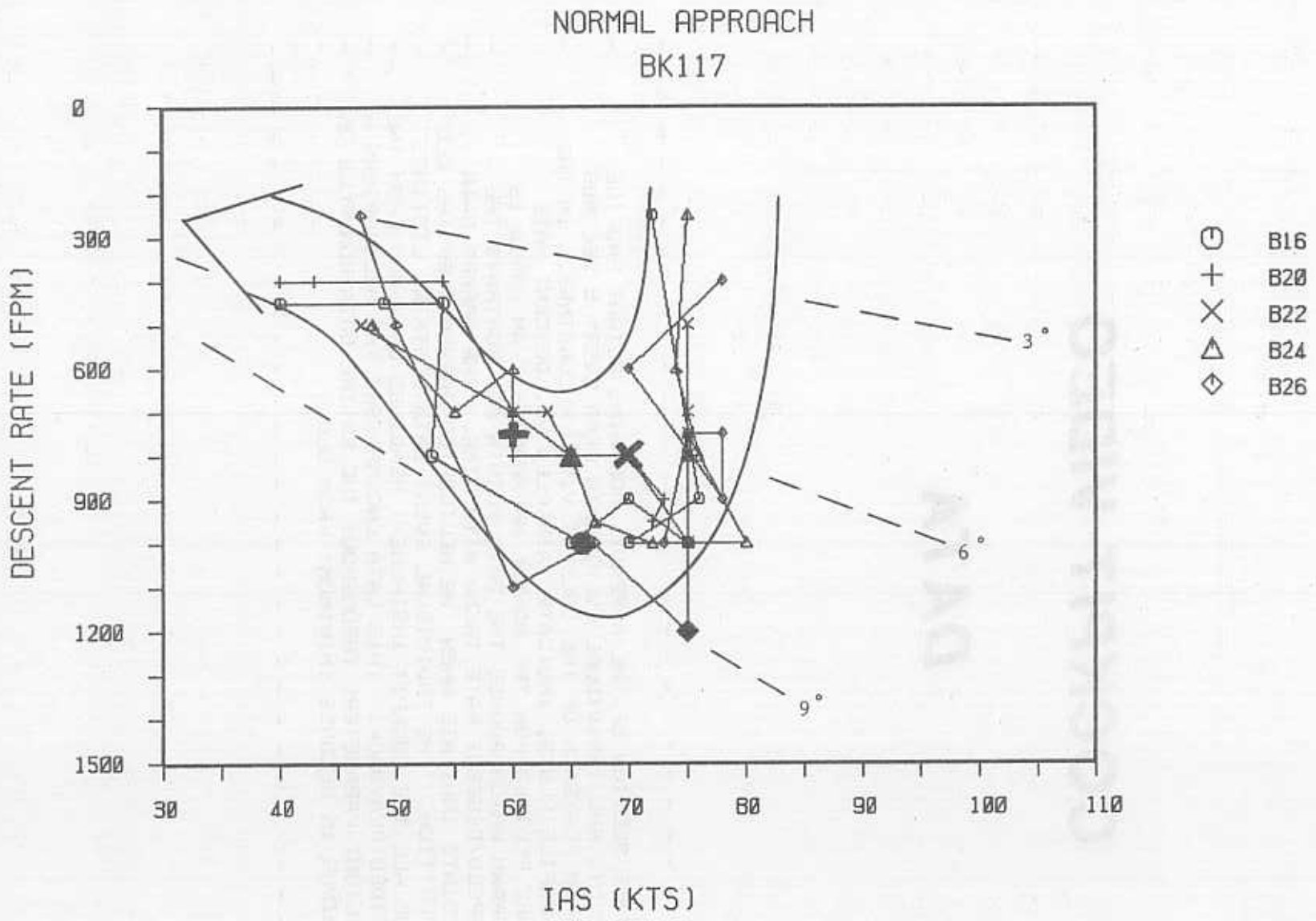
06/28/84

FEET (AGL)	WIND DIR. (DEG.)	WIND SPD. (KTS)	WIND DIR. (DEG.)	WIND SPD. (KTS)
LAUNCH TIME:	9:30		10:11	
SFC	250	2	240	2
354	233	3	206	3
708	242	3	203	3
1033	265	2	201	3
1358	298	3	202	3
	10:33		11:00	
SFC	360	0	230	2
354	283	2	281	4
708	280	3	278	4
1033	267	4	268	5
1358	272	4	280	5

COCKPIT VIDEO

DATA

THIS SECTION OF THE APPENDIX CONTAINS FLIGHT PROFILE PLOTS AND INDIVIDUAL EVENT DATA READ EVERY 5 SECONDS FROM PLAYBACK OF THE COCKPIT VIDEO RECORDINGS. IN THE PROFILE PLOTS, INDICATED AIRSPEED VS. DESCENT RATE ARE PLOTTED FOR THE NORMAL APPROACHES. AN ARROW IS DRAWN WHICH BOUNDS THE DATA POINTS AND PORTRAYS THE SPEED/DESCENT RATE TREND WITH TIME. THE DARKER DATA POINTS INDICATE WHEN THE HELICOPTER PASSED OVER THE CLC POSITION. THE INDIVIDUAL EVENT DATA CONTAINS LISTINGS OF ALL THE COCKPIT INSTRUMENT READINGS OBTAINED FROM THE VIDEO PLAYBACK. THIS DATA ENCOMPASSES THE HELICOPTERS'S FLIGHT PARAMETERS THROUGHOUT THE ENTIRE DATA RUN PLUS OR MINUS 15 SECONDS (MINIMUM) FROM CLC.


NORMAL APPROACH
BK117
DESCENT RATE (FPM)
0
300
600
900
1200
1500
30
40
50
60
70
80
90
100
110
IAS (KTS)
3°
6°
9°
B16
B20
B22
B24
B26

COCKPIT VIDEO DATA

NORMAL APPROACH

HELICOPTER: MBB BK117

DATE: 06/25/84

EVENT:B16

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D) (DEG)
-35	940	10	250	72	1.96
-30	850	7	900	76	6.72
-25	750	9	1000	70	8.11
-20	650	8	1000	75	7.57
-15	610	8	1000	75	7.57
-10	520	8	900	70	7.29
-5	450	5	1000	65	8.74
CLC 0	380	5	1000	66	8.60
5	290	14	800	53	8.57
10	260	8	450	54	4.72
15	230	7	450	49	5.20
20	170	9	450	40	6.38

EVENT:B22

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D) (DEG)
-40	940	11	500	75	3.77
-35	900	12	700	75	5.29
-30	810	13	750	75	5.67
-25	770	13	700	75	5.29
-20	700	12	750	75	5.67
-15	610	12	800	75	6.05
-10	560	9	1000	75	7.57
-5	460	8	1000	75	7.57
CLC 0	400	8	800	70	6.48
5	330	8	800	65	6.98
10	280	8	700	63	6.30
15	220	7	700	60	6.62
20	180	7	500	47	6.03

EVENT:B20

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-27	720	8	950	72	7.49
-22	650	10	900	73	6.99
-17	580	8	800	70	6.48
-12	520	9	800	65	6.98
-7	420	7	800	60	7.57
-2	370	11	800	60	7.57
CLC 0	360	11	750	60	7.09
3	325	10	700	60	6.62
8	250	11	700	60	6.62
13	225	11	400	54	4.19
18	200	7	400	43	5.27
23	1150	5	400	40	5.67

EVENT:B24

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-39	920	10	250	75	1.89
-34	880	8	600	74	4.59
-29	810	7	800	76	5.97
-24	740	6	800	75	6.05
-19	680	5	750	75	5.67
-14	580	5	1000	80	7.09
-9	490	8	1000	72	7.88
-4	400	8	950	67	8.05
CLC 0	360	7	800	65	6.98
5	300	8	700	60	6.62
10	---	7	600	60	7.22
15	240	8	700	55	5.90
20	140	8	500	48	5.90

COCKPIT VIDEO DATA

NORMAL APPROACH

HELICOPTER: MBB BK117

DATE: 06/25/84

EVENT: B26

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D) (DEG)
-34	950	11	400	78	2.90
-29	910	8	600	70	4.86
-24	830	9	900	78	6.54
-19	790	8	750	78	5.45
-14	730	7	750	75	5.67
-9	610	5	1000	73	7.77
-4	510	8	1000	75	7.57
CLC 0	420	5	1200	75	9.09
6	320	7	1000	67	8.48
11	240	7	1100	60	10.43
16	200	18	500	50	5.67
21	180	10	250	47	3.01

EVENT: B28

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-38	930	7	700	75	5.29
-33	880	11	800	75	6.05
-28	790	11	1000	77	7.37
-23	710	11	800	74	6.13
-18	660	10	700	70	5.67
-13	590	11	800	75	6.05
-8	500	8	1000	72	7.88
-3	420	9	800	77	5.89
CLC 0	---	-	---	--	--
2	350	9	750	74	5.74
7	300	5	750	72	5.90
12	250	5	700	70	5.67

COCKPIT VIDEO DATA

NOISE ABATEMENT APPROACH

(10 DEG. TARGET, VAR. A/S)

HELICOPTER: MBB BK117

DATE: 06/25/84

EVENT:D30

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-25	780	30	0	63	0.00
-20	780	28	0	65	0.00
-15	800	27	0	63	0.00
-10	780	18	0	70	0.00
-5	720	2	600	66	5.15
CLC 0	610	0	1100	65	9.62
5	500	0	1400	65	12.28
10	450	5	1200	60	11.39
15	280	6	1000	50	11.39
20	250	12	900	40	12.84
25	210	11	700	35	11.39

EVENT:D31

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-15	920	0	1200	65	10.50
-10	820	2	1500	65	13.17
-5	740	0	1400	65	12.28
CLC 0	650	0	1200	69	9.89
5	520	2	1200	65	10.50
10	410	0	1200	65	10.50
15	300	0	1100	55	11.39
20	210	0	700	47	8.46

EVENT:D32

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-20	980	2	500	65	4.36
-15	900	0	1200	60	11.39
-10	790	3	1300	65	11.39
-5	690	3	1400	65	12.28
CLC 0	580	4	1200	65	10.50
5	500	3	1200	69	9.89
10	360	1	1100	68	9.19
15	280	0	1100	58	10.79
20	230	1	1100	48	13.08

EVENT:D33

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-13	920	0	500	65	4.36
-8	850	0	1200	70	9.75
-3	690	0	1500	60	14.29
CLC 0	610	0	1500	65	13.17
2	580	0	1500	62	13.82
7	480	1	1500	63	13.60
12	400	1	1000	65	8.74
17	320	0	1100	58	10.79
22	240	12	900	45	11.39

COCKPIT VIDEO DATA

NOISE ABATEMENT APPROACH

(10 DEG. TARGET, VAR. A/S)

HELICOPTER: MBB BK117 DATE: 06/25/84

EVENT:D34

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-14	920	0	1000	65	8.74
-9	810	2	1200	64	10.67
-4	700	4	1500	65	13.17
CLC 0	590	2	1300	65	11.39
1	510	2	1000	65	8.74
6	420	1	1000	70	8.11
11	350	0	1000	65	8.74
16	250	0	1300	60	12.35

EVENT:D35

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-13	920	2	1200	64	10.67
-8	790	1	1200	70	9.75
-3	650	0	1000	65	8.74
CLC 0	600	0	1000	60	9.47
2	570	3	1000	60	9.47
7	480	1	1100	65	9.62
12	370	0	1100	60	10.43
17	320	0	1200	49	13.99
22	240	27	800	40	11.39

COCKPIT VIDEO DATA

NOISE ABATEMENT APPROACH

(VAR. R/D AND A/S)

HELICOPTER: MBB BK117

DATE: 06/25/84

EVENT:D39

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-32	950	20	0	65	0.00
-27	940	10	100	65	0.87
-22	890	7	500	68	4.16
-17	820	5	700	65	6.10
-12	750	4	1000	67	8.48
-7	680	3	1000	67	8.48
-2	600	2	700	65	6.10
CLC 0	--	-	--	--	--
3	500	0	1000	58	9.80
8	480	0	700	55	7.22
13	380	0	700	48	8.28
18	320	12	900	45	11.39
23	240	10	800	40	11.39

EVENT:D41

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-25	910	15	300	65	2.61
-20	870	10	500	62	4.57
-15	800	8	500	60	4.72
-10	750	8	500	55	5.15
-5	700	5	500	59	4.80
CLC 0	690	4	500	60	4.72
5	600	2	600	53	6.42
10	530	6	1000	52	10.95
15	440	8	1000	48	11.87
20	370	12	1000	42	13.60

EVENT:D40

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-25	950	16	100	70	0.81
-20	920	11	200	70	1.62
-15	900	8	500	70	4.04
-10	840	8	500	66	4.29
-5	780	2	800	67	6.77
CLC 0	700	2	900	60	8.52
5	630	2	900	60	8.52
10	510	2	1000	50	11.39
15	420	13	900	45	11.39
20	360	6	900	45	11.39
25	290	3	1000	41	13.94

EVENT:D42

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-20	910	10	0	65	0.00
-15	870	8	400	63	3.59
-10	800	5	500	60	4.72
-5	750	4	600	58	5.86
CLC 0	680	3	800	52	8.74
5	600	2	800	55	8.26
10	510	1	900	50	10.24
15	420	1	1000	49	11.63
20	300	5	1000	42	13.60
25	250	5	1000	42	13.60

COCKPIT VIDEO DATA

NOISE ABATEMENT APPROACH

(VAR. R/D AND A/S)

HELICOPTER: MBB BK117

DATE: 06/25/84

EVENT:D43

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-17	750	18	0	65	0.00
-22	700	12	300	65	2.61
-17	660	15	400	65	3.48
-12	630	11	400	60	3.77
-7	600	10	400	65	3.48
-2	540	5	400	58	3.91
CLC 0	---	-	---	--	--
3	500	5	500	55	5.15
8	420	11	600	52	6.54
13	360	12	700	48	8.28
18	290	10	700	45	8.84

EVENT:D44

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-20	780	16	0	65	0.00
-15	760	14	400	65	3.48
-10	710	9	400	60	3.77
-5	670	10	500	60	4.72
CLC 0	600	7	600	57	5.97
5	540	8	600	48	7.09
10	480	5	700	46	8.64
15	400	5	800	48	9.47
20	330	2	800	45	10.11
25	270	6	800	40	11.39

EVENT:D45

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-18	800	10	0	88	0.00
-13	750	5	400	83	2.73
-8	680	4	600	82	4.14
-3	600	5	800	75	6.05
CLC 0	---	-	---	71	--
2	530	9	900	67	7.62
7	500	2	500	67	4.23
12	420	3	1000	65	8.74
17	330	6	1000	63	9.02
22	260	5	900	67	7.62

APPENDIX C

BELL 222A

	PAGE NUMBERS
HELICOPTER CHARACTERISTICS	C-215
NOISE LEVEL DATA	
SOUND EXPOSURE LEVEL	
Bar Charts	
Approaches	C-218
Takeoff	C-219
Level Flyovers	C-220
Summary Tables	C-221 - C-223
Individual Event Data	C-224 - C-231
A-WEIGHTED SOUND LEVEL	
Bar Charts	
Approaches	C-234
Takeoff	C-235
Level Flyovers	C-236
Summary Tables	C-237 - C-240
Individual Event Data	C-241 - C-252
RADAR TRACKING DATA	
Position Data	C-254 - C-281
Tracking Plots	C-284 - C-292
METEOROLOGICAL DATA	
10-meter Tower Data	C-294 - C-295
4 ft. Data and Aircraft OAT Data	C-296 - C-298
Pilot Balloon Wind Data	C-299 - C-301
COCKPIT VIDEO DATA	
Normal Approach Plot	C-304
Individual Event Data	C-305 - C-311

bell
222

HELICOPTER CHARACTERISTICS

HELICOPTER MANUFACTURER :	BELL
HELICOPTER MODEL :	222A
TEST HELICOPTER N-NUMBER :	N2057B
MAX INTERNAL GROSS WEIGHT :	7850 LBS.
NUMBER OF ENGINES :	TWO
UNINSTALLED TAKEOFF POWER :	600 SHP (PER ENGINE)
UNINSTALLED MAX CONTINUOUS PWR. :	550 SHP (PER ENGINE)
NEVER EXCEED SPEED (VNE) :	150 KTS.
MAX SPEED IN LEVEL FLIGHT	
WITH MAX CONTINUOUS POWER :	143 KTS.
SPEED FOR BEST RATE OF CLIMB (VY) :	65 KTS.
CRUISE SPEED FOR BEST RANGE (VCR) :	133 KTS.
BEST RATE OF CLIMB AT	
TAKEOFF POWER (BRC) :	1550 FPM
"TOP OF GREEN ARC" ROTOR SPEED :	348 RPM 100%

MAIN AND TAIL ROTOR SPECIFICATIONS

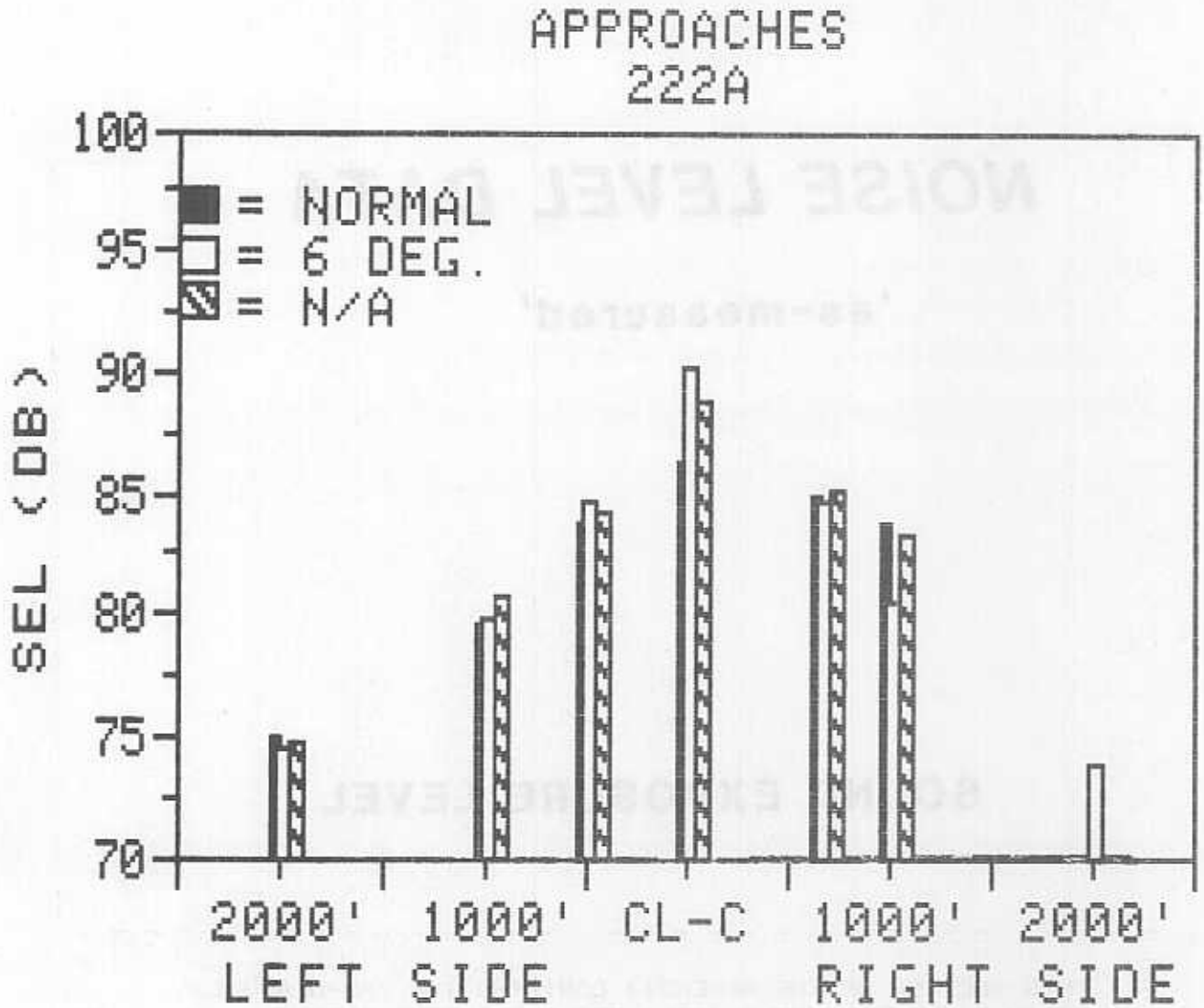
	MAIN	TAIL
DIAMETER (FT.) :	39.8	6.5
NO. OF BLADES :	2	2
TIPSPEED (FPS) :	724	641
TIP SHAPE :	SQUARE	SQUARE

NOISE LEVEL DATA

'as-measured'

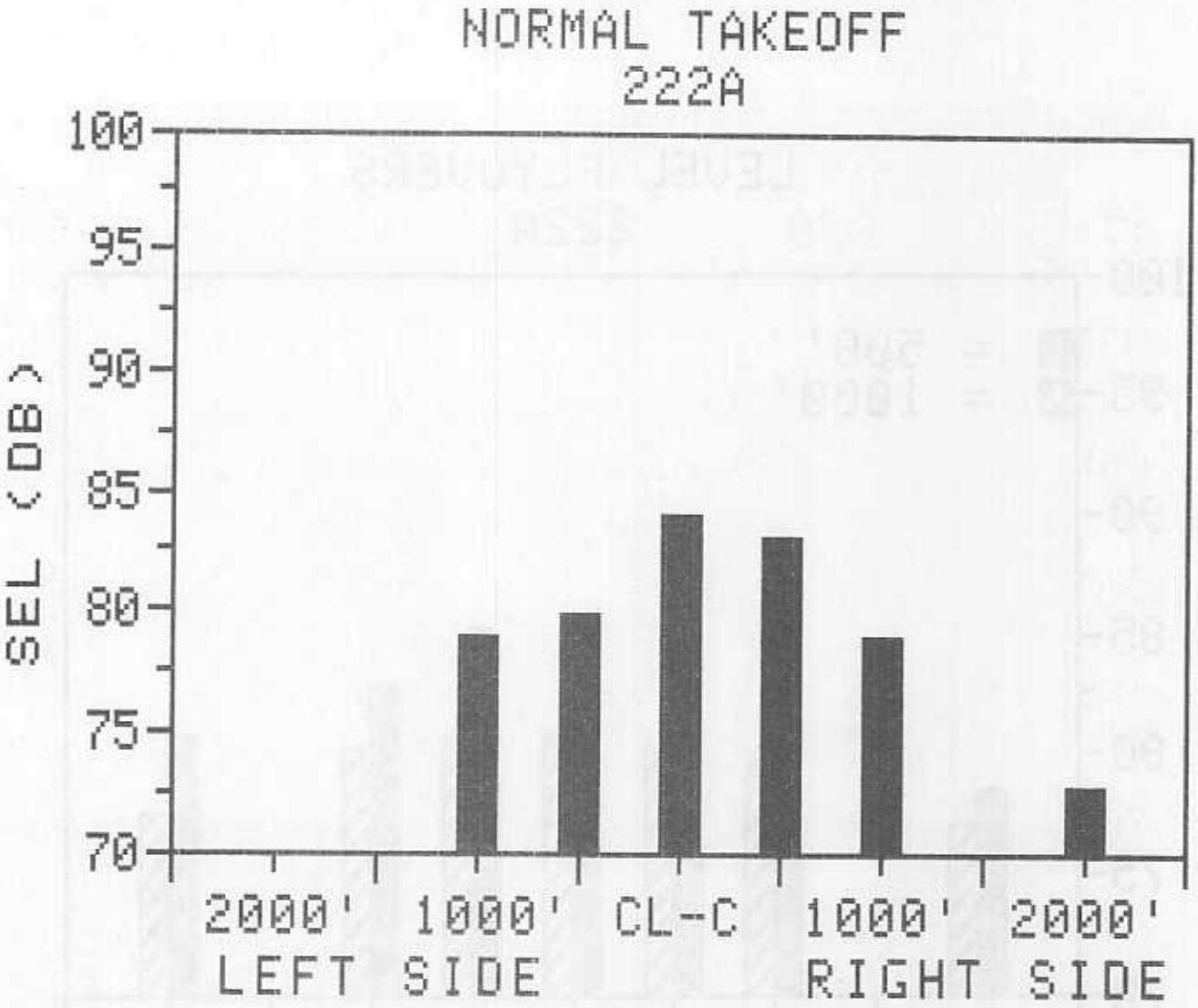
SOUND EXPOSURE LEVEL

THIS SECTION OF THE APPENDIX CONTAINS THE 'AS-MEASURED' SOUND EXPOSURE LEVELS (SEL) FOR ALL FLIGHT EVENTS. THESE DATA ARE PRESENTED IN THE FORM OF BAR CHARTS, SUMMARY TABLES AND INDIVIDUAL EVENT DATA. THE BAR CHARTS SHOW THE FALL OFF IN NOISE LEVEL VERSUS SIDELINE DISTANCE, AND PROVIDE A QUICK LOOK COMPARISON OF THE NOISE LEVELS. PERTINENT FLIGHT PARAMETER INFORMATION READ FROM THE COCKPIT INSTRUMENT PANEL VIDEO RECORDINGS IS ALSO SHOWN BELOW EACH BAR CHART. THE SUMMARY TABLES PRESENT THE AVERAGE NOISE LEVEL, NUMBER OF SAMPLES, STANDARD DEVIATION AND THE 90 PERCENT CONFIDENCE INTERVAL FOR EACH FLIGHT CONDITION. INDIVIDUAL EVENT DATA FOR EACH CONDITION IS THEN GIVEN.



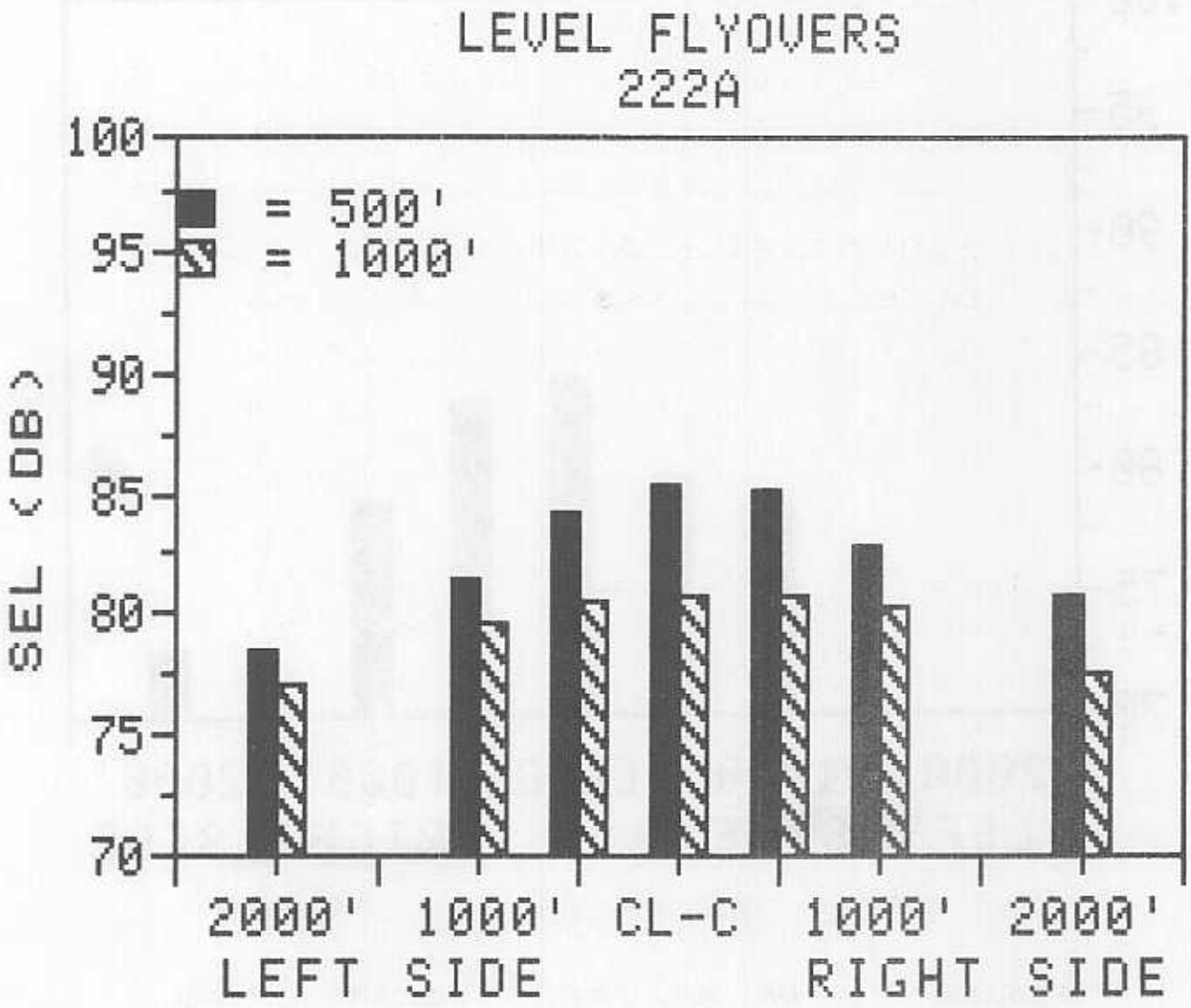
OPERATION	AVG. ALT. OVER CL-C (FT. AGL)	INDICATED AIRSPEED (KTS.)	GLIDESLOPE RANGE (DEG.)
NORMAL APPROACH	400	90-70	6.0
SIX DEG. APPROACH	430	79	6.0
NOISE ABATEMENT APP. 6 TARGET, VAR. A/S (EVENTS D10-D13)	425	57-53	6.5-8.4

NOTE: ALTITUDE, AIRSPEED AND VERTICAL SPEED DATA READ FROM VIDEO TAPES OF THE INSTRUMENT PANEL. THE GLIDESLOPE RANGE WAS CALCULATED WITHIN ±15 SEC OF THE CL-C MICROPHONE POSITION.



OPERATION	AVG. ALT. OVER CLC (FT. AGL)	INDICATED AIRSPEED (KTS.)
NORMAL TAKEOFF	240	79

NOTE: ALTIMETER AND INDICATED AIRSPEED READINGS MADE WHEN THE HELICOPTER PASSED OVER CLC MICROPHONE POSITION



INDICATED AIRSPEED =120 KTS.

222A SUMMARY SHEET (6/27/84)

SOUND EXPOSURE LEVEL (DB)

	(LEFT SIDE)				(RIGHT SIDE)		
	2000'	1000'	500'	CL-C	500'	1000'	2000'
* 500 FT. LEVEL FLYOVER AT 120 KTS. *							
AVERAGE	78.5	81.6	84.2	85.3	85.1	82.9	80.8
N	4	4	4	8	4	4	4
S.D	.4	.1	.2	.3	.2	.3	.8
90% CI	.5	.1	.3	.2	.2	.3	.9
* 1000 FT. LEVEL FLYOVER AT 120 KTS.) *							
AVERAGE	77.0	79.5	80.5	80.8	80.8	80.3	77.6
N	6	6	6	12	6	6	6
S.D	.2	.4	.3	.4	.6	.6	.6
90% CI	.2	.3	.3	.2	5	.5	.5

222A SUMMARY SHEET (6/27/84)

SOUND EXPOSURE LEVEL (DB)

	(LEFT SIDE)				(RIGHT SIDE)		
	2000'	1000'	670'	CL-C	670'	1000'	2000'
*** SIX DEG. APPROACH AT VY, 65 KTS. ***							
AVERAGE	74.4	79.9	84.7	90.2	84.7	80.6	73.9
N	6	5	6	6	6	6	5
S.D.	.8	.8	.4	1.1	1.1	.4	.9
90% CI	.7	.7	.3	.9	.9	.4	.9
*** NOISE ABATEMENT APPROACH (6 DEG. TARGET, VAR. A/S) ***							
AVERAGE	74.9	79.0	82.9	88.4	85.1	82.5	76.2
N	6	7	7	7	7	7	5
S.D	.8	.5	.7	.7	.7	.4	.7
90% CI	.7	.4	.5	.5	.5	.3	.7

222A SUMMARY SHEET (6/28/84)

SOUND EXPOSURE LEVEL (DB)

	(LEFT SIDE)				(RIGHT SIDE)		
	2000'	1000'	670'	CL-C	670'	1000'	2000'
*** NORMAL APPROACH ***							
AVERAGE	74.9	79.5	83.7	86.3	85.0	83.8	--
N	6	6	8	8	8	8	--
S.D.	.6	.4	.4	.5	.3	.4	--
90% CI	.5	.3	.3	.4	.2	.2	--
*** NOISE ABATEMENT APPROACH (VAR. R/D AND A/S) ***							
AVERAGE	76.0	80.4	84.1	86.8	85.8	84.1	--
N	8	9	9	9	9	9	--
S.D	.6	.6	.4	.4	.4	.3	--
90% CI	.4	.4	.2	.3	.2	.2	
*** NOISE ABATEMENT APPROACH (6 DEG. TARGET, VAR. A/S) ***							
AVERAGE	74.7	80.8	84.3	88.7	85.1	83.2	--
N	4	3	4	4	4	3	--
S.D	.4	1.0	.9	.3	.8	.9	--
90% CI	.5	1.6	1.0	.3	.9	1.5	--
*** NORMAL TAKEOFF ***							
AVERAGE	--	79.0	79.9	83.9	83.0	78.8	72.6
N	--	7	8	8	8	7	7
S.D	--	.8	.3	.7	.6	.3	1.0
90% CI	--	.7	.3	.6	.5	.3	1.0

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: BELL 222A TEST DATE: 6/27/84

OPERATION : LEVEL FLYOVER (500' @ 120 KTS)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' EAST	1000' EAST	2000' EAST
T10	----------	----------	----------	85.00	85.20	83.00	80.90
T11	78.70	81.70	83.80	85.70	----------	----------	----------
T12	----------	----------	----------	85.50	85.20	82.90	80.10
T13	78.90	81.50	84.30	85.60	----------	----------	----------
T14	----------	----------	----------	84.90	84.80	83.10	80.20
T15	78.30	81.50	84.20	85.30	----------	----------	----------
T16	----------	----------	----------	85.40	85.10	82.50	81.80
T17	78.00	81.50	84.30	85.30	----------	----------	----------
	85.5	79.9	83.2		83.2	79.5	83.1
AVERAGE	78.48	81.55	84.15	85.34	85.08	82.88	80.75
	7.0	-1.7	-1.0		-1.9	-3.0	4.7
STD. DEV.	0.40	0.10	0.24	0.28	0.19	0.26	0.79
90% C.I.	0.47	0.12	0.28	0.19	0.22	0.31	0.92
ARCPA	2004	1004	662	453	662	1004	2004
B	14.2	27.6	48.1	90°	48.1	27.6	14.2

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: BELL 222A

TEST DATE: 6/27/84

OPERATION : LEVEL FLYOVER (1000' @ 120 KTS)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' EAST	1000' EAST	2000' EAST
W18	----------	----------	----------	80.90	81.90	80.00	77.10
W19	77.00	79.80	80.80	81.10	----------	----------	----------
W20	77.20	79.50	80.80	81.10	----------	----------	----------
W21	----------	----------	----------	80.20	80.50	80.90	77.80
W22	--	79.80	80.50	81.40	----------	----------	----------
W23	----------	----------	----------	80.30	80.90	80.90	78.20
W24	76.70	79.10	80.60	80.80	----------	----------	----------
W25	----------	----------	----------	80.50	80.00	79.30	78.20
W26	76.80	78.90	80.50	81.20	----------	----------	----------
W27	----------	----------	----------	81.20	81.00	79.90	76.60
W28	77.20	79.60	79.80	80.30	----------	----------	----------
W29	----------	----------	----------	80.50	80.60	80.70	77.60
	74.0	77.4	78.8		78.8	77.4	74.0
AVERAGE	76.98	79.45	80.50	80.79	80.82	80.28	77.58
	-1.0	-1.9	-1.7		-2.0	-1.9	-2.6
STD. DEV.	0.23	0.37	0.34	0.42	0.62	0.60	0.63
90% C.I.	0.22	0.31	0.28	0.22	0.51	0.50	0.52
	2185	1376	1131	1311			
	27.6	47.2	66.7	90	66.7	47.2	27.6

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: BELL 222A

TEST DATE: 6/27/84

OPERATION : 6 DEGREE APPROACH AT VY, 65 KTS.

EVENT NO.	(LEFT SIDE) 2000' EAST	1000' EAST	500 ~~670'~~ EAST	CL-C	(RIGHT SIDE) 670' WEST	1000' WEST	2000' WEST
A40	74.10	80.50	84.90	89.60	82.60	80.50	73.90
A41	75.90	80.90	85.10	91.40	85.40	80.80	73.70
A42	73.90	--	84.70	90.10	85.80	80.20	74.00
A43	74.00	79.40	84.00	88.50	85.00	81.20	--
A44	73.70	79.80	84.50	91.40	84.50	80.90	75.20
A45	74.50	79.10	84.70	90.10	84.60	80.10	75.10
	81.1	83.6	87.5		86.4	84.4	81.1
AVERAGE	74.35	79.94	84.65	90.18	84.65	80.62	73.90
	6.7	3.7	2.8		1.7	3.8	7.2
STD. DEV.	0.80	0.75	0.38	1.11	1.12	0.43	0.89
90% C.I.	0.66	0.71	0.31	0.91	0.92	0.35	0.85
Ave GPA	2010	1042	607	374	754	1054	2015
Ave Alt			37.8	376			
Sdn	10.6	20.9	37.8		29.6	20.7	10.6

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: BELL 222A TEST DATE: 6/27/84

OPERATION : NOISE ABATEMENT APPROACH (6 DEG. TARGET, VAR. A/S)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT	2000'	1000'	~~670'~~ 500		670'	1000'	2000'
NO.	EAST	EAST	EAST	CL-C	WEST	WEST	WEST
D46	74.30	78.70	84.20	88.80	85.60	83.00	--
D47	75.40	79.10	82.90	88.80	85.10	82.20	75.60
D48	--	79.60	83.40	88.80	83.70	82.00	76.80
D49	74.50	78.80	82.10	88.20	85.20	82.90	76.90
D50	74.80	78.00	82.80	89.00	85.50	82.20	--
D51	76.30	79.40	83.10	87.10	85.10	82.70	76.40
D52	74.30	79.30	82.10	87.80	85.70	82.20	75.30
AVERAGE	74.93	78.99	82.94	88.36	85.13	82.46	76.20
STD. DEV.	0.79	0.54	0.74	0.70	0.68	0.40	0.72
90% C.I.	0.65	0.40	0.54	0.51	0.49	0.29	0.68

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: BELL 222A

TEST DATE: 6/28/84

OPERATION : NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	~~670'~~ 500 EAST	CL-C	670' WEST	1000' WEST	2000' WEST
D1	76.90	80.90	84.60	86.40	86.00	84.20	--
D2	75.80	80.10	83.50	87.00	86.20	83.90	--
D3	--	80.00	84.30	87.50	85.90	83.60	--
D4	76.10	80.60	84.00	86.60	86.00	84.40	--
D5	75.20	79.40	84.00	86.70	85.80	84.10	--
D6	75.20	80.10	84.00	87.10	85.10	84.10	--
D7	75.90	81.40	84.20	86.50	86.20	84.60	--
D8	76.10	80.30	84.60	86.90	85.50	83.90	--
D9	76.70	80.40	83.70	86.10	85.60	84.40	--
AVERAGE	75.99	80.36	84.10	86.76	85.81	84.13	--
STD. DEV.	0.62	0.57	0.37	0.42	0.36	0.31	--
90% C.I.	0.41	0.35	0.23	0.26	0.22	0.19	--

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: BELL 222A TEST DATE: 6/28/84

OPERATION : NOISE ABATEMENT APPROACH (6 DEG. TARGET, VAR. A/S)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	~~670'~~ 50' EAST	CL-C	670' WEST	1000' WEST	2000' WEST
D10	75.00	80.20	84.30	89.00	84.20	82.20	--
D11	75.00	80.30	83.30	88.40	85.60	83.60	--
D12	74.10	81.90	85.40	88.80	85.80	83.80	--
D13	74.70	--	84.30	88.60	84.70	--	--
AVERAGE	74.70	80.80	84.33	88.70	85.08	83.20	--
STD. DEV.	0.42	0.95	0.86	0.26	0.75	0.87	--
90% C.I.	0.50	1.61	1.01	0.30	0.89	1.47	--

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: BELL 222A

TEST DATE: 6/28/84

OPERATION : NORMAL APPROACH

EVENT NO.	(LEFT SIDE) 2000' EAST	1000' EAST	~~670'~~ 500 EAST	CL-C	(RIGHT SIDE) 670' WEST	1000' WEST	2000' WEST
B14	75.1	80.10	84.10	86.80	85.20	84.00	--
B16	--	79.60	83.50	86.10	85.00	84.30	--
B18	75.2	79.50	83.70	86.00	85.10	84.10	--
B20	--	--	84.40	86.50	85.30	83.40	--
B22	75.6	79.50	83.80	85.70	84.50	83.60	--
B24	74.9	79.50	83.70	86.10	85.20	84.10	--
B26	74.2	--	83.40	87.30	84.40	83.40	--
B28	74.2	79.00	83.10	86.00	85.10	83.50	--
	74.3	79.3	84.2		84.9	79.3	
AVERAGE	74.87	79.53	83.71	86.31	84.98	83.80	--
	-0.3	-0.3	-3.2		-1.1	-4.5	
STD. DEV.	0.56	0.35	0.41	0.52	0.34	0.36	--
90% C.I.	0.48	0.30	0.27	0.35	0.23	0.24	--
	2045	1040	860	340	600	1030	
	12	19	38		35	19	

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: BELL 222A

TEST DATE: 6/28/84

OPERATION : NORMAL TAKEOFF

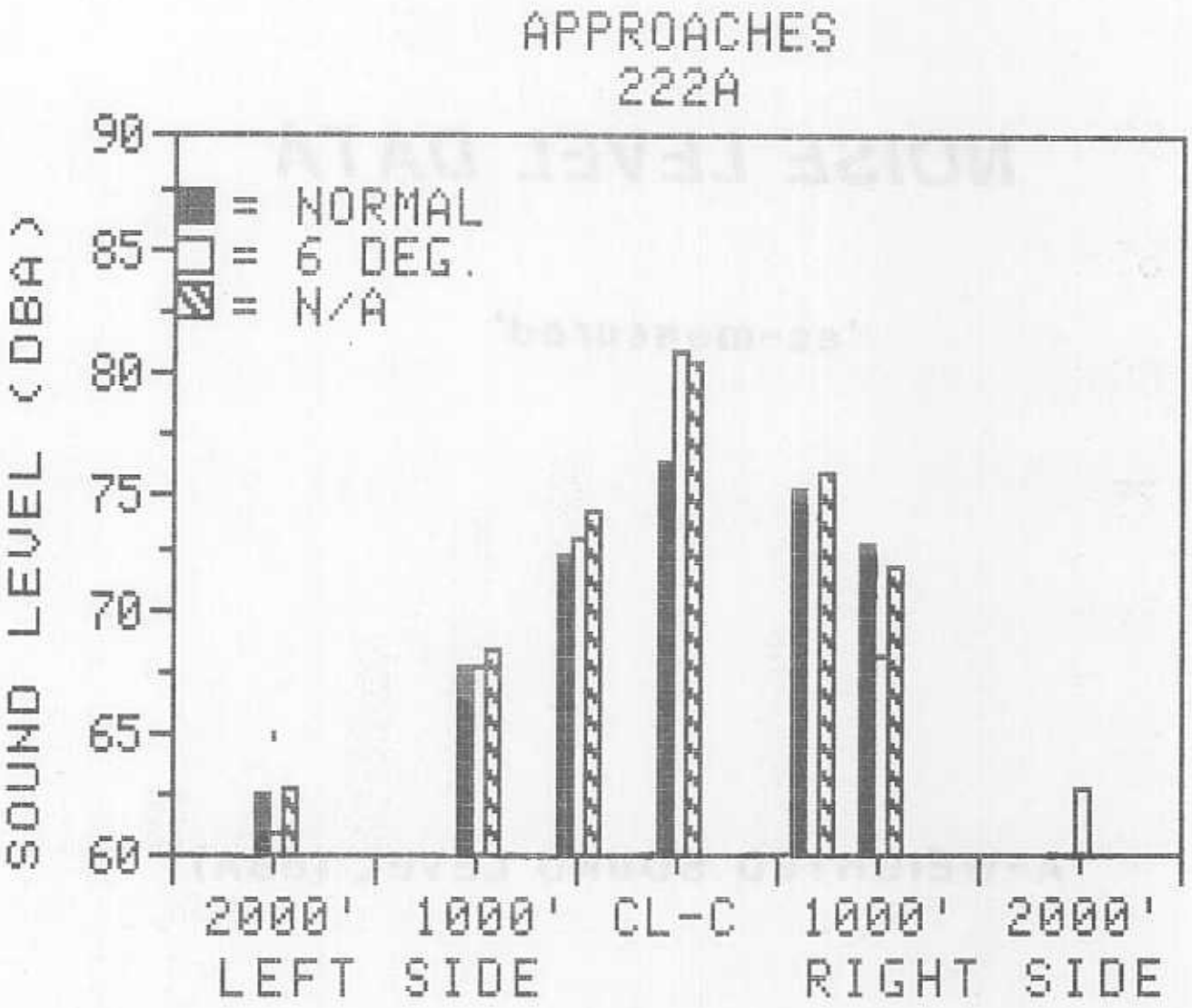
	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' WEST	1000' WEST	670' WEST	CL-C	500 ~~670'~~ EAST	1000' EAST	2000' EAST
C15	--	79.50	79.70	84.10	84.10	79.30	73.20
C17	--	77.60	79.20	83.00	82.40	79.00	71.70
C19	--	79.10	80.00	83.70	83.00	78.50	71.10
C21	--	79.10	79.80	84.90	83.40	78.70	73.50
C23	--	--	79.90	83.20	82.90	--	--
C25	--	79.30	79.60	84.00	82.50	78.70	72.80
C27	--	79.10	80.70	84.40	83.10	78.80	72.50
C29	--	79.10	80.10	84.20	82.70	78.90	73.10
AVERAGE	--	78.97	79.88	83.94	83.01	78.84	72.56
STD. DEV.	--	0.76	0.34	0.70	0.63	0.31	1.03
90% C.I.	--	0.72	0.28	0.58	0.52	0.30	0.98

NOISE LEVEL DATA

'as-measured'

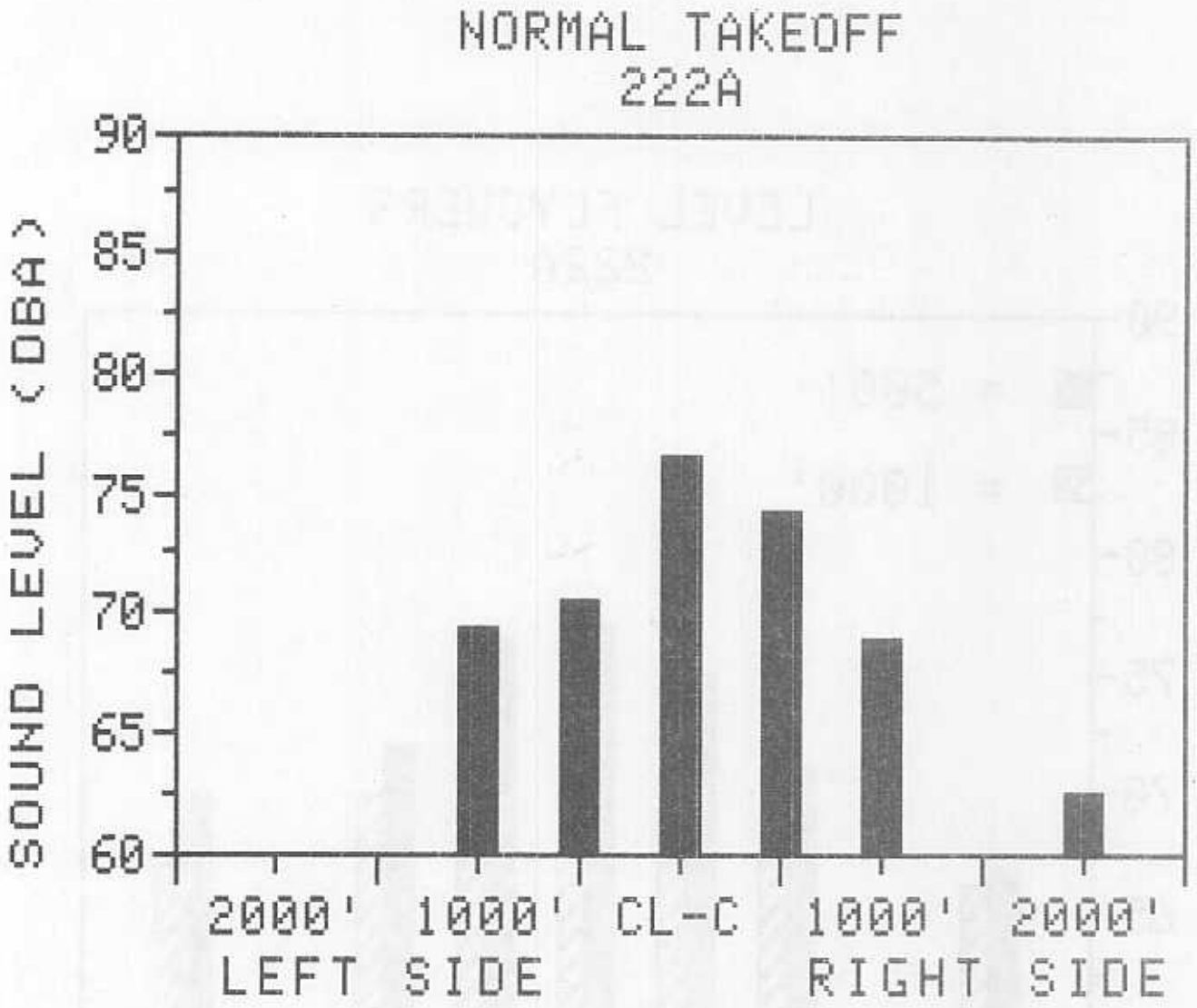
A-WEIGHTED SOUND LEVEL (dBA)

THIS SECTION OF THE APPENDIX CONTAINS THE 'AS-MEASURED' A-WEIGHTED SOUND LEVEL (dBA) FOR ALL FLIGHT EVENTS. THESE DATA ARE PRESENTED IN THE FORM OF BAR CHARTS, SUMMARY TABLES AND INDIVIDUAL EVENT DATA. THE BAR CHARTS SHOW THE FALL OFF IN NOISE LEVEL VERSUS SIDELINE DISTANCE, AND PROVIDE A QUICK LOOK COMPARISON OF THE NOISE LEVELS. PERTINENT FLIGHT PARAMETER INFORMATION READ FROM THE COCKPIT INSTRUMENT PANEL VIDEO RECORDINGS IS ALSO SHOWN BELOW EACH BAR CHART. THE SUMMARY TABLES PRESENT THE AVERAGE NOISE LEVEL, NUMBER OF SAMPLES, STANDARD DEVIATION AND THE 90 PERCENT CONFIDENCE INTERVAL FOR EACH FLIGHT CONDITION. INDIVIDUAL EVENT DATA FOR EACH CONDITION IS THEN GIVEN.



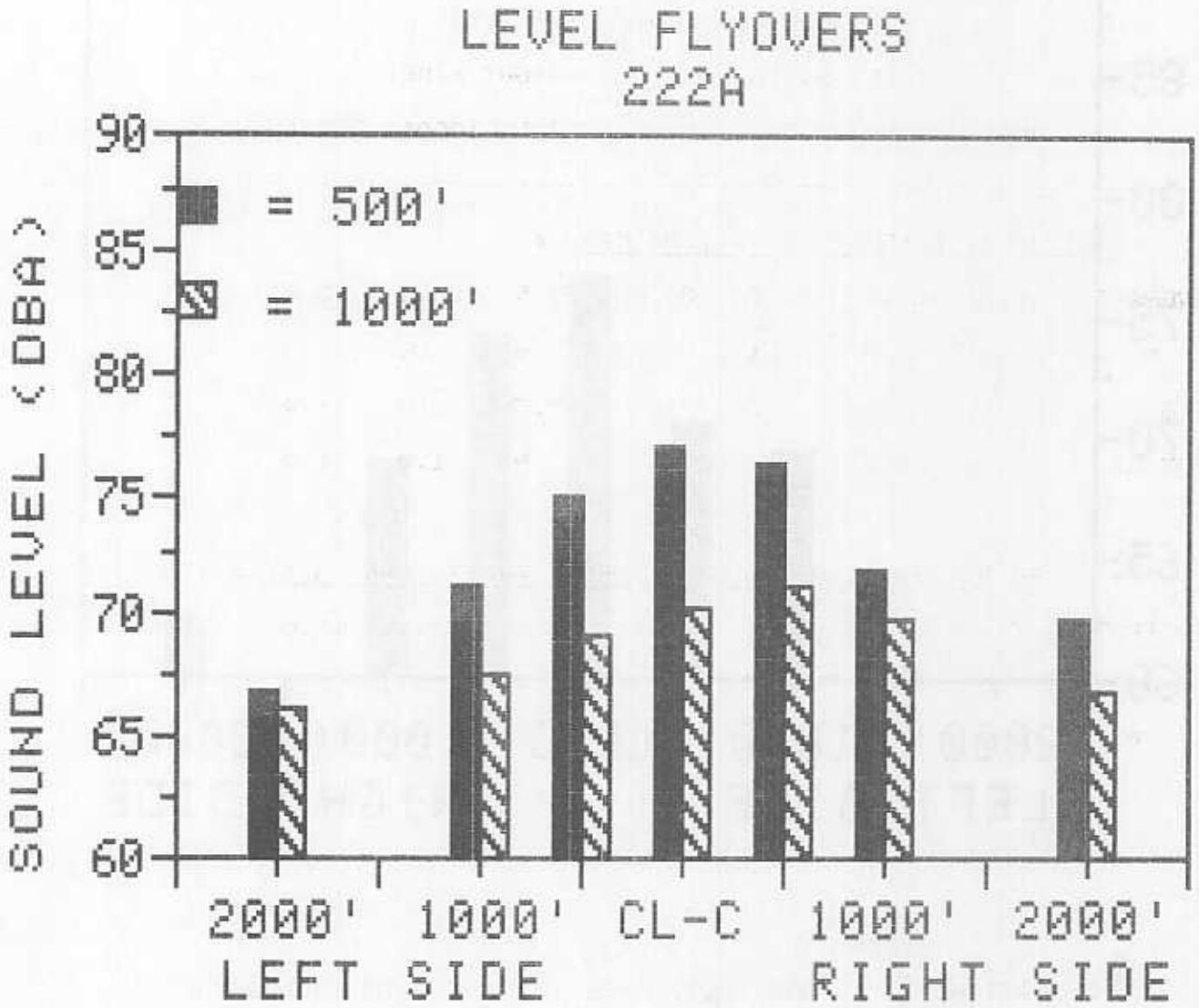
OPERATION	AVG. ALT. OVER CL-C (FT. AGL)	INDICATED AIRSPEED (KTS.)	GLIDESLOPE RANGE (DEG.)
NORMAL APPROACH	400	90-70	6.0
SIX DEG. APPROACH	430	79	6.0
NOISE ABATEMENT APP. 6 TARGET, VAR. A/S (EVENTS D10-D13)	425	57-53	6.5-8.4

NOTE: ALTITUDE, AIRSPEED AND VERTICAL SPEED DATA READ FROM VIDEO TAPES OF THE INSTRUMENT PANEL. THE GLIDESLOPE RANGE WAS CALCULATED WITHIN ±15 SEC OF THE CL-C MICROPHONE POSITION.



OPERATION	AVG. ALT. OVER CLC (FT. AGL)	INDICATED AIRSPEED (KTS.)
NORMAL TAKEOFF	240	79

NOTE: ALTIMETER AND INDICATED AIRSPEED READINGS MADE WHEN THE HELICOPTER PASSED OVER CLC MICROPHONE POSITION



INDICATED AIRSPEED =120 KTS.

222A SUMMARY SHEET (6/27/84)

A-WEIGHTED SOUND LEVEL (DB)

	(LEFT SIDE)				(RIGHT SIDE)		
	2000'	1000'	670'	CL-C	670'	1000'	2000'
* SIX DEG. APPROACH AT VY, 65 KTS. *							
AVERAGE	60.8	67.8	73.0	80.8	73.9	68.2	62.6
N	6	5	6	6	6	6	5
S.D.	1.0	2.4	1.0	1.4	2.3	1.3	1.4
90% CI	.9	2.3	.8	1.1	1.9	1.0	1.4
* NOISE ABATEMENT APPROACH (6 DEG. TARGET, VAR. A/S) *							
AVERAGE	63.5	67.9	73.1	79.8	75.8	71.1	66.0
N	6	6	7	7	7	7	5
S.D	1.5	.5	.9	1.1	1.3	.8	1.5
90% CI	1.2	.4	.6	.8	1.0	.6	1.5

222A SUMMARY SHEET (6/27/84)

A-WEIGHTED SOUND LEVEL (DB)

	(LEFT SIDE)				(RIGHT SIDE)		
	2000'	1000'	500'	CL-C	500'	1000'	2000'
* 500 FT. LEVEL FLYOVER AT 120 KTS. *							
AVERAGE	66.7	71.1	74.8	76.9	76.2	71.9	69.7
N	4	4	4	8	4	4	4
S.D	.3	.1	.3	.6	.4	.4	.2
90% CI	.4	.1	.3	.4	.5	.5	.2
* 1000 FT. LEVEL FLYOVER AT 120 KTS.) *							
AVERAGE	66.1	67.5	69.2	70.3	71.1	69.9	66.8
N	5	6	6	12	6	6	6
S.D	1.1	.4	.4	.7	.6	.8	.6
90% CI	1.1	.3	.3	.3	.5	.6	.5

70°/44% 21.1 of 67°F / 75% RH 71°F / 71% RH

222A SUMMARY SHEET (6/28/84)

A-WEIGHTED SOUND LEVEL (DB)

	(LEFT SIDE)				(RIGHT SIDE)		
	2000'	1000'	670'	CL-C	670'	1000'	2000'
*** NORMAL APPROACH ***							
AVERAGE	62.5	67.8	72.3	76.3	75.1	72.9	--
N	6	8	8	8	8	8	--
S.D.	.6	.8	.5	.8	.5	.7	--
90% CI	.2	.5	.3	.5	.3	.5	--
*** NOISE ABATEMENT APPROACH (VAR. R/D AND A/S) ***							
AVERAGE	63.2	68.8	73.9	78.2	76.2	73.6	--
N	8	9	9	9	9	9	--
S.D	.9	1.2	.8	.7	.6	.5	--
90% CI	.6	.7	.5	.5	.4	.3	--
*** NOISE ABATEMENT APPROACH (6 DEG. TARGET, VAR. A/S) ***							
AVERAGE	62.6	68.5	74.3	80.4	75.9	72.0	--
N	3	4	4	4	4	4	--
S.D	.3	.8	.6	.9	.7	.7	--
90% CI	.5	.9	.7	1.1	.8	.8	--
*** NORMAL TAKEOFF ***							
AVERAGE	--	69.3	70.4	76.4	74.1	68.9	62.5
N	--	7	8	8	8	8	7
S.D	--	.8	.6	.9	.9	.8	1.8
90% CI	--	.8	.5	.8	.7	.7	1.7

222A SUMMARY SHEET (06/28/84)

A-WEIGHTED SOUND LEVEL (DB)

	(INSIDE OF TURN)				(OUTSIDE OF TURN)		
	2000'	1000'	500'	CL-C	500'	1000'	2000'
			(RIGHT SIDE)		(RIGHT SIDE)		
* 15 DEG. BANK ANGLE TURN, 65 KTS. *							
AVERAGE	62.1	66.4	73.0	77.4	72.0	67.4	--
N	3	3	3	6	3	2	--
S.D.	.4	1.2	.8	3.5	1.7	2.0	--
90% CI	.7	2.0	1.4	2.9	2.9	--	--
* 30 DEG. BANK ANGLE TURN, 65 KTS.							
AVERAGE	64.3	67.0	72.5	74.7	71.0	67.5	--
N	3	3	2	5	3	3	--
S.D	1.7	.7	1.1	2.7	2.4	1.8	--
90% CI	2.8	1.1	--	2.6	4.1	3.0	--
			(LEFT SIDE)		(LEFT SIDE)		
* 15 DEG. BANK ANGLE TURN, 65 KTS.							
AVERAGE	61.4	66.0	70.9	77.4	76.5	68.7	--
N	3	3	3	6	3	2	--
S.D	.3	.6	1.2	3.5	1.4	.9	--
90% CI	.5	1.0	2.0	2.9	2.4	--	--
* 30 DEG. BANK ANGLE TURN, 65 KTS.							
AVERAGE	67.2	68.4	72.9	74.7	75.8	68.3	--
N	3	3	3	5	3	2	--
S.D	1.1	2.1	.4	2.7	3.1	.4	--
90% CI	1.8	3.5	.6	2.6	5.2	--	--

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: BELL 222A

OPERATION : LEVEL FLYOVER (500' @ 120 KTS)

TEST DATE: 6/27/84

EVENT NO.	(LEFT SIDE) 2000' EAST	1000' EAST	500' EAST	CL-C	(RIGHT SIDE) 500' EAST	1000' EAST	2000' EAST
T10	----------	----------	----------	77.30	76.10	71.40	69.90
T11	67.00	71.20	74.40	76.60	----------	----------	----------
T12	----------	----------	----------	77.70	76.80	72.00	69.60
T13	66.90	71.00	74.80	77.00	----------	----------	----------
T14	----------	----------	----------	76.20	75.80	72.40	69.50
T15	66.70	71.00	74.80	76.90	----------	----------	----------
T16	----------	----------	----------	77.20	76.20	71.80	69.70
T17	66.30	71.10	75.00	75.90	----------	----------	----------
AVERAGE	66.73	71.08	74.75	76.85	76.23	71.90	69.68
STD. DEV.	0.31	0.10	0.25	0.59	0.42	0.42	0.17
90% C.I.	0.36	0.11	0.30	0.40	0.49	0.49	0.20

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: BELL 222A

TEST DATE: 6/27/84

OPERATION : LEVEL FLYOVER (1000' @ 120 KTS)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' EAST	1000' EAST	2000' EAST
W18	----------	----------	----------	69.70	71.40	69.30	66.10
W19	65.70	67.70	70.00	70.00	----------	----------	----------
W20	67.50	67.20	68.90	69.90	----------	----------	----------
W21	----------	----------	----------	71.30	71.00	70.50	67.60
W22	--	67.90	68.80	70.60	----------	----------	----------
W23	----------	----------	----------	69.60	70.20	70.20	66.50
W24	67.20	67.90	69.70	70.10	----------	----------	----------
W25	----------	----------	----------	70.30	70.90	68.50	67.00
W26	65.30	67.00	69.20	70.20	----------	----------	----------
W27	----------	----------	----------	71.00	71.90	70.00	66.30
W28	65.00	67.20	68.60	69.60	----------	----------	----------
W29	----------	----------	----------	71.50	71.40	71.10	67.40
AVERAGE	66.14	67.48	69.20	70.32	71.13	69.93	66.82
STD. DEV.	1.14	0.40	0.41	0.65	0.58	0.75	0.61
90% C.I.	1.08	0.33	0.34	0.34	0.47	0.62	0.50

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: BELL 222A

OPERATION : 6 DEGREE APPROACH AT VY, 65 KTS.

TEST DATE: 6/27/84

EVENT NO.	(LEFT SIDE) 2000' EAST	1000' EAST	670' EAST	CL-C	(RIGHT SIDE) 670' WEST	1000' WEST	2000' WEST
A40	60.50	70.20	74.40	80.10	70.90	67.20	62.60
A41	61.90	70.10	74.10	82.20	75.20	69.00	61.20
A42	60.60	--	72.60	81.30	77.40	67.00	61.70
A43	59.00	65.10	72.40	78.50	74.30	70.00	--
A44	61.20	67.90	72.40	82.00	72.60	69.00	63.90
A45	61.60	65.60	72.30	80.70	73.00	67.20	64.50
AVERAGE	60.80	67.78	73.03	80.80	73.90	68.23	62.60
STD. DEV.	1.04	2.41	0.95	1.37	2.26	1.26	1.42
90% C.I.	0.86	2.29	0.79	1.13	1.87	1.04	1.35

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: BELL 222A TEST DATE: 6/27/84

OPERATION : NOISE ABATEMENT APPROACH (6 DEG. TARGET, VAR. A/S)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	670' EAST	CL-C	670' WEST	1000' WEST	2000' WEST
D46	61.60	68.10	73.70	79.90	76.60	70.30	--
D47	63.40	68.10	73.30	80.60	77.00	70.30	64.10
D48	--	68.50	74.70	81.50	73.30	71.50	66.50
D49	62.60	--	72.80	79.70	75.80	72.20	68.20
D50	64.40	67.10	72.30	80.10	76.50	71.00	--
D51	65.90	68.30	72.50	78.00	74.90	71.80	65.20
D52	63.00	67.50	72.60	79.00	76.60	70.50	66.00
AVERAGE	63.48	67.93	73.13	79.83	75.81	71.09	66.00
STD. DEV.	1.50	0.53	0.85	1.12	1.31	0.76	1.53
90% C.I.	1.24	0.44	0.62	0.82	0.96	0.56	1.46

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: BELL 222A TEST DATE: 6/28/84

OPERATION : NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	670' EAST	CL-C	670' WEST	1000' WEST	2000' WEST
D1	62.70	68.00	74.60	78.10	76.30	74.00	--
D2	63.40	68.10	73.00	78.20	76.70	73.20	--
D3	--	68.30	74.20	79.60	76.60	72.80	--
D4	62.40	68.40	74.30	78.20	76.00	74.00	--
D5	62.20	67.90	73.30	78.00	76.10	73.30	--
D6	62.50	67.80	72.80	78.00	75.30	73.80	--
D7	64.60	70.90	74.50	77.80	77.40	74.50	--
D8	63.70	69.80	75.10	78.70	75.70	73.20	--
D9	64.30	70.40	73.10	76.90	76.10	73.80	--
AVERAGE	63.23	68.84	73.88	78.17	76.24	73.62	--
STD. DEV.	0.91	1.19	0.83	0.72	0.61	0.53	--
90% C.I.	0.61	0.74	0.52	0.45	0.38	0.33	--

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: BELL 222A

TEST DATE: 6/28/84

OPERATION : NOISE ABATEMENT APPROACH (6 DEG. TARGET, VAR. A/S)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	670' EAST	CL-C	670' WEST	1000' WEST	2000' WEST
D10	62.30	68.80	74.40	81.70	74.90	71.20	--
D11	62.90	68.40	73.90	80.00	76.40	71.90	--
D12	62.50	69.30	75.10	80.40	76.30	71.90	--
D13	--	67.50	73.90	79.60	75.90	72.80	--
AVERAGE	62.57	68.50	74.33	80.43	75.88	71.95	--
STD. DEV.	0.31	0.76	0.57	0.91	0.68	0.66	--
90% C.I.	0.52	0.89	0.67	1.07	0.80	0.77	--

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: BELL 222A

TEST DATE: 6/28/84

OPERATION : NORMAL APPROACH

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	670' EAST	CL-C	670' WEST	1000' WEST	2000' WEST
B14	62.50	67.60	72.10	76.50	75.40	73.00	--
B16	--	68.30	72.60	75.50	74.70	74.00	--
B18	62.80	68.30	72.30	76.00	75.40	73.50	--
B20	--	69.30	73.30	77.50	75.10	72.00	--
B22	63.20	67.20	72.30	75.70	74.20	72.50	--
B24	62.20	67.50	72.30	75.90	75.70	73.20	--
B26	62.40	67.20	71.90	77.40	75.30	73.00	--
B28	61.60	66.80	71.90	75.90	75.10	71.80	--
AVERAGE	62.45	67.78	72.34	76.30	75.11	72.88	--
STD. DEV.	0.54	0.81	0.45	0.77	0.47	0.74	--
90% C.I.	0.23	0.54	0.30	0.51	0.31	0.50	--

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: BELL 222A

TEST DATE: 6/28/84

OPERATION : NORMAL TAKEOFF

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' WEST	1000' WEST	670' WEST	CL-C	670' EAST	1000' EAST	2000' EAST
C15	--	70.00	70.80	76.60	75.40	69.30	64.10
C17	--	68.00	69.40	75.00	73.20	69.00	59.80
C19	--	69.00	70.50	76.10	73.30	67.60	61.00
C21	--	70.00	70.80	77.70	74.60	69.00	63.20
C23	--	--	70.00	76.00	74.70	70.00	--
C25	--	69.50	70.40	76.90	73.90	68.30	63.00
C27	--	69.30	71.30	76.80	74.30	68.90	63.00
C29	--	69.50	70.20	76.40	73.10	68.90	63.70
AVERAGE	--	69.33	70.43	76.44	74.06	68.88	62.54
STD. DEV.	--	0.84	0.55	0.92	0.88	0.83	1.80
90% C.I.	--	0.80	0.45	0.76	0.72	0.68	1.72

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: BELL 222A

TEST DATE: 6/28/84

OPERATION : 15 DEG. BANK ANGLE TURN AT 65 KTS.

	INSIDE OF TURN (RIGHT SIDE)				OUTSIDE OF TURN (RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
G30	----------	----------	----------	72.30	71.00	--	--
G31	62.00	65.50	73.10	80.60	----------	----------	----------
G32	----------	----------	----------	74.70	71.00	66.00	--
G33	62.70	67.70	72.10	76.90	----------	----------	----------
G34	----------	----------	----------	81.20	74.00	68.80	--
G35	61.50	65.90	73.70	78.60	----------	----------	----------
AVERAGE	62.07	66.37	72.97	77.38	72.00	67.40	--
STD. DEV.	0.40	1.17	0.81	3.45	1.73	1.98	--
90% C.I.	0.68	1.98	1.36	2.85	2.92	--	--

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: BELL 222A

TEST DATE: 6/28/84

OPERATION : 15 DEG. BANK ANGLE TURN AT 65 KTS.

	INSIDE OF TURN (LEFT SIDE)				OUTSIDE OF TURN (LEFT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
G30	61.10	65.30	70.20	72.30	----	----	----
G31	----	----	----	80.60	78.10	--	--
G32	61.50	66.10	72.30	74.70	----	----	----
G33	----	----	----	76.90	75.30	69.30	--
G34	61.60	66.50	70.30	81.20	----	----	----
G35	----	----	----	78.60	76.20	68.00	--
AVERAGE	61.40	65.97	70.93	77.38	76.53	68.65	--
STD. DEV.	0.26	0.61	1.18	3.45	1.43	0.92	--
90% C.I.	0.45	1.03	2.00	2.85	2.41	--	--

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: BELL 222A

TEST DATE: 6/28/84

OPERATION : 30 DEG. BANK ANGLE TURN AT 65 KTS.

	INSIDE OF TURN (RIGHT SIDE)				OUTSIDE OF TURN (RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
H36	----------	----------	----------	71.10	68.20	69.50	--
H37	62.70	67.70	76.20	83.20	----------	----------	----------
H38	----------	----------	----------	75.10	72.40	67.00	--
H39	64.10	66.40	73.30	78.20	----------	----------	----------
H40	----------	----------	----------	73.10	72.40	66.00	--
H41	66.00	67.00	71.70	76.00	----------	----------	----------
AVERAGE	64.27	67.03	73.73	76.12	71.00	67.50	--
STD. DEV.	1.65	0.65	2.28	4.24	2.42	1.80	--
90% C.I.	2.79	1.10	3.85	3.50	4.09	3.04	--

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: BELL 222A TEST DATE: 6/28/84

OPERATION : 30 DEG. BANK ANGLE TURN AT 65 KTS.

	INSIDE OF TURN (LEFT SIDE)				OUTSIDE OF TURN (LEFT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
H36	68.10	70.80	73.30	71.10	----	----	----
H37	----	----	----	--	78.80	--	--
H38	66.00	67.00	72.80	75.10	----	----	----
H39	----	----	----	78.20	76.00	68.50	--
H40	67.40	67.40	72.60	73.10	----	----	----
H41	----	----	----	76.00	72.70	68.00	--
AVERAGE	67.17	68.40	72.90	74.70	75.83	68.25	--
STD. DEV.	1.07	2.09	0.36	2.72	3.05	0.35	--
90% C.I.	1.80	3.52	0.61	2.59	5.15	--	--

RADAR TRACKING

DATA

THIS SECTION OF THE APPENDIX CONTAINS THE HELICOPTER POSITION DATA AND TRACKING PLOTS DERIVED FROM THE FAA'S PORTABLE TRACKING RADAR SYSTEM. THE POSITION DATA LISTS THE CLOSEST POINT OF APPROACH (CPA), TIME OF CPA, ELEVATION ANGLE, RATE OF CLIMB OR DESCENT, THE CLIMB OR DESCENT ANGLE, AND GROUND SPEED FOR ALL FLIGHT CONDITIONS. TRACKING PLOTS OF THE ACTUAL FLIGHT PROFILE FLOWN ARE PROVIDED FOR EACH FLIGHT CONDITIONS.

BELL 222A

POSITION DATA
NOISE MEASUREMENT PROGRAM

CENTERLINE CENTER

DATE:06/27/84

FAA/AEE

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
500 FT. LEVEL FLYOVER AT 120 KTS.							
10	F/O	481.7	83.2	8:46:44.6	42.6	0.2	125.7
11	F/O	486.2	85.3	8:49:43.0	61.7	0.3	118.9
12		-----	NO DATA	-----			
13		-----	NO DATA	-----			
14		-----	NO DATA	-----			
15	F/O	498.2	83.9	9:01:16.4	19.3	0.1	120.4
16	F/O	493.2	80.0	9:04:13.0	-64.1	-0.3	125.2
17	F/O	508.3	88.1	9:06:58.7	143.1	0.7	117.4
1000 FT. LEVEL FLYOVER AT 120 KTS.							
18	F/O	980.7	83.7	9:09:54.4	98.7	0.4	137.9
19	F/O	1019.5	86.5	9:12:47.7	149.5	0.8	110.8
20		-----	NO DATA	-----			
21	F/O	1006.0	84.2	9:22:12.5	191.9	0.8	139.4
22	F/O	1015.3	85.3	9:25:18.4	422.7	2.3	104.9
23	F/O	1032.3	87.0	9:27:46.6	-48.7	-0.2	136.6
24	F/O	1021.7	85.6	9:31:01.5	415.0	2.2	105.8
25	F/O	1029.0	85.7	9:33:32.4	190.0	0.8	135.6
26	F/O	1011.9	88.2	9:36:49.3	-47.1	-0.2	110.5
27	F/O	995.2	85.9	9:39:35.9	76.4	0.3	135.8
28	F/O	1025.5	86.6	9:43:04.1	503.0	2.7	105.0
29	F/O	989.3	82.7	9:45:49.6	223.3	0.9	135.9

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

BELL 222A

POSITION DATA
NOISE MEASUREMENT PROGRAM

CENTERLINE CENTER

DATE:06/27/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
SIX DEG. APPROACH AT VY, 65 KTS.							
40	APP	350.2	86.5	13:37:37.2	-289.4	-3.1	52.7
41	APP	398.1	89.5	13:42:22.2	-240.4	-2.5	54.0
42	APP	368.5	83.6	13:47:42.3	-632.1	-7.5	47.3
43	APP	395.5	84.4	13:53:36.5	-486.0	-5.1	54.2
44	APP	370.8	87.1	13:59:37.1	-461.4	-5.1	50.9
45	APP	362.0	82.5	14:05:28.6	-350.6	-3.5	56.2
NOISE ABATEMENT APPROACH (6 DEG. TARGET, VAR. A/S)							
46	APP	360.0	79.8	14:14:55.6	-817.7	-7.0	65.4
47		-----	NO DATA	-----			
48	APP	370.6	85.8	14:24:13.4	-704.7	-4.9	81.2
49	APP	381.3	87.3	14:29:26.8	-125.2	-1.0	69.6
50	APP	390.6	79.0	14:34:18.3	-587.7	-5.1	65.5
51	APP	391.2	84.1	14:41:20.7	-405.8	-3.2	71.1
52	APP	399.2	83.9	14:46:27.8	-586.7	-5.3	62.7

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

BELL 222A

POSITION DATA
NOISE MEASUREMENT PROGRAM

CENTERLINE CENTER

DATE:06/28/84

FAA/AEE

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)							
1	APP	518.9	83.5	7:35:07.6	-1084.3	-8.0	76.5
2	APP	503.5	86.8	7:39:34.4	-948.6	-6.7	79.9
3	APP	435.7	79.1	7:43:25.1	-1081.6	-8.1	75.4
4	APP	489.8	79.3	7:47:29.6	-1039.4	-7.4	78.9
5	APP	515.3	89.5	7:51:54.4	-885.9	-6.4	77.5
6	APP	503.2	78.6	7:55:58.5	-893.8	-6.9	72.6
7	APP	518.1	82.9	8:00:03.6	-1017.2	-7.4	77.4
8	APP	499.9	85.3	8:03:58.2	-1108.9	-7.9	78.9
9	APP	547.7	81.8	8:07:41.0	-1080.5	-7.7	78.5
NOISE ABATEMENT APPROACH (6 DEG. TARGET, VAR. A/S)							
10		-----	NO DATA	-----			
11		-----	NO DATA	-----			
12	APP	386.8	84.8	8:20:47.8	-858.3	-6.5	74.6
13		-----	NO DATA	-----			
NORMAL APPROACH							
14	APP	585.8	84.2	8:29:24.8	-851.4	-7.7	62.4
16		-----	NO DATA	-----			
18		-----	NO DATA	-----			
20	APP	519.5	77.2	8:43:42.9	-987.2	-7.7	71.7
22	APP	581.7	86.1	8:48:34.6	-922.2	-7.0	73.6
24	APP	571.8	87.1	8:53:34.4	-1085.9	-8.6	70.7
26		-----	NO DATA	-----			
28	APP	584.3	82.2	9:13:00.3	-1036.2	-8.1	72.1
NORMAL TAKEOFF							
15		-----	NO DATA	-----			
17	DEP	347.4	86.4	8:36:21.9	764.6	5.1	84.2
19	DEP	324.3	88.4	8:40:50.4	1216.4	8.2	83.8
21		-----	NO DATA	-----			
23		-----	NO DATA	-----			

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

BELL 222A

POSITION DATA
NOISE MEASUREMENT PROGRAM

CENTERLINE CENTER

DATE:06/28/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NORMAL TAKEOFF							
25	DEP	293.1	87.8	8:55:08.3	831.5	5.4	86.1
27		-----	NO DATA	-----			
29	DEP	325.4	84.9	9:15:34.6	1032.5	6.8	86.0

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

BELL 222A

POSITION DATA
NOISE MEASUREMENT PROGRAM

CENTERLINE CENTER

DATE:06/28/84

FAA/AEE

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
15 DEG. BANK ANGLE TURN, 65 KTS.							
30	F/O	463.4	86.3	12:14:35.0	-140.6	-1.4	58.5
31		-----	NO DATA	-----			
32	F/O	421.5	82.4	12:17:40.2	-113.8	-1.0	65.0
33	F/O	454.7	82.0	12:19:20.0	-28.1	-0.3	56.6
34		-----	NO DATA	-----			
35	F/O	433.6	77.3	12:22:41.8	169.9	1.5	65.1
30 DEG. BANK ANGLE TURN, 65 KTS.							
36	F/O	585.6	54.0	12:24:52.8	51.7	0.5	64.8
37	F/O	473.4	85.8	12:26:24.8	207.8	1.5	76.4
38	F/O	434.1	76.5	12:27:50.0	-17.8	-0.2	64.6
39	F/O	460.6	80.9	12:29:38.2	-174.1	-1.5	67.0
40	F/O	462.3	86.7	12:31:13.9	198.4	1.7	67.4
41		-----	NO DATA	-----			

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

BELL 222A

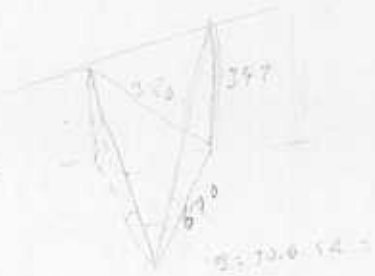
POSITION DATA
NOISE MEASUREMENT PROGRAM

500 FT. EAST

DATE:06/27/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
500 FT. LEVEL FLYOVER AT 120 KTS.							
10	F/O	645.7	48.1	8:46:44.7	28.7	0.1	125.7
11	F/O	669.4	46.6	8:49:42.9	56.2	0.3	119.8
12		-----	NO DATA	-----			
13		-----	NO DATA	-----			
14		-----	NO DATA	-----			
15	F/O	668.4	48.1	9:01:16.1	45.5	0.2	119.8
16	F/O	638.9	49.7	9:04:13.1	-70.4	-0.3	125.8
17	F/O	691.7	47.4	9:06:58.4	176.8	0.8	119.0
1000 FT. LEVEL FLYOVER AT 120 KTS.							
18	F/O	1053.6	68.2	9:09:54.7	173.0	0.7	139.3
19	F/O	1110.3	66.7	9:12:47.7	149.5	0.8	110.8
20		-----	NO DATA	-----			
21	F/O	1078.6	68.4	9:22:12.6	201.3	0.8	139.3
22	F/O	1096.6	67.6	9:25:18.4	422.7	2.3	104.9
23	F/O	1137.5	65.4	9:27:46.8	-43.6	-0.2	136.7
24	F/O	1111.1	66.7	9:31:01.5	415.0	2.2	105.8
25	F/O	1129.7	65.5	9:33:32.4	190.0	0.8	135.6
26	F/O	1116.0	65.1	9:36:49.6	-35.5	-0.2	109.7
27	F/O	1080.6	66.9	9:39:36.0	75.0	0.3	136.1
28	F/O	1120.9	66.2	9:43:04.1	503.0	2.7	105.0
29	F/O	1085.1	65.0	9:45:49.6	223.3	0.9	135.9

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED



BELL 222A

POSITION DATA
NOISE MEASUREMENT PROGRAM

500 FT. EAST

DATE:06/27/84

FAA/AEE

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
SIX DEG. APPROACH AT VY, 65 KTS.							
40	APP	582.0	37.4	13:37:37.0	-313.7	-3.3	53.6
41	APP	632.5	39.1	13:42:22.6	-420.6	-4.5	52.4
42	APP	607.9	37.3	13:47:42.3	-631.9	-7.5	47.3
43	APP	633.3	38.6	13:53:36.6	-471.1	-4.9	54.1
44	APP	593.6	38.6	13:59:37.6	-484.1	-5.3	51.9
45	APP	595.1	37.3	14:05:28.6	-350.4	-3.5	56.2
NOISE ABATEMENT APPROACH (6 DEG. TARGET, VAR. A/S)							
46	APP	598.3	36.6	14:14:55.7	-814.3	-7.0	65.5
47		-----	NO DATA	-----			
48	APP	607.3	37.7	14:24:13.4	-705.0	-4.9	81.2
49	APP	616.4	38.4	14:29:26.8	-125.2	-1.0	69.6
50	APP	618.0	39.8	14:34:17.7	-641.7	-5.5	66.1
51	APP	628.7	39.0	14:41:20.4	-374.3	-3.0	70.6
52	APP	634.0	38.9	14:46:27.9	-588.4	-5.3	62.5

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

BELL 222A

POSITION DATA
NOISE MEASUREMENT PROGRAM

500 FT. EAST

DATE:06/28/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)							
1	APP	713.5	46.5	7:35:07.6	-1084.3	-8.0	76.5
2	APP	693.4	44.1	7:39:35.5	-936.8	-6.5	81.3
3	APP	648.9	42.8	7:43:24.3	-1016.1	-7.6	75.4
4	APP	679.6	45.3	7:47:29.6	-1039.5	-7.4	78.9
5	APP	711.4	46.3	7:51:54.7	-917.9	-6.7	76.9
6	APP	696.5	46.4	7:55:58.3	-845.1	-6.6	72.5
7	APP	701.4	46.9	8:00:04.0	-987.7	-7.5	74.1
8	APP	683.2	47.1	8:03:58.2	-1108.4	-7.9	78.9
9	APP	722.3	48.9	8:07:41.0	-1080.5	-7.7	78.5
NOISE ABATEMENT APPROACH (6 DEG. TARGET, VAR. A/S)							
10		-----	NO DATA	-----			
11		-----	NO DATA	-----			
12	APP	635.8	39.2	8:20:47.1	-711.5	-5.4	74.7
13		-----	NO DATA	-----			
NORMAL APPROACH							
14	APP	736.3	51.4	8:29:25.3	-888.3	-7.9	63.2
16		-----	NO DATA	-----			
18		-----	NO DATA	-----			
20	APP	698.8	46.5	8:43:43.2	-984.5	-7.8	70.5
22	APP	738.0	52.0	8:48:35.3	-932.3	-7.2	72.9
24	APP	755.6	49.3	8:53:34.5	-1073.8	-8.5	70.8
26		-----	NO DATA	-----			
28	APP	760.1	50.6	9:12:59.8	-1060.2	-8.6	68.9
NORMAL TAKEOFF							
15		-----	NO DATA	-----			
17	DEP	592.0	36.1	8:36:21.9	764.7	5.1	84.2
19	DEP	593.3	33.0	8:40:50.1	1206.5	8.1	83.9
21		-----	NO DATA	-----			
23		-----	NO DATA	-----			

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

BELL 222A

POSITION DATA
NOISE MEASUREMENT PROGRAM

500 FT. EAST

DATE:06/28/84

FAA/AEE

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NORMAL TAKEOFF							
25	DEP	568.1	31.2	8:55:08.1	709.0	4.7	85.0
27		-----	NO DATA	-----			
29	DEP	579.7	34.0	9:15:34.3	1054.5	6.9	85.5

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

BELL 222A

POSITION DATA
NOISE MEASUREMENT PROGRAM

500 FT. EAST

DATE:06/28/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
15 DEG. BANK ANGLE TURN, 65 KTS							
30	F/O	700.1	41.5	12:14:35.4	-136.1	-1.3	60.5
31		-----	NO DATA	-----			
32	F/O	587.7	40.4	12:17:44.5	-752.8	-3.8	113.0
33	F/O	608.4	45.8	12:19:22.3	-550.1	-5.6	55.5
34		-----	NO DATA	-----			
35	F/O	591.2	46.0	12:22:41.8	169.6	1.5	65.1
30 DEG. BANK ANGLE TURN, 65 KTS.							
36	F/O	497.6	73.2	12:24:53.4	109.7	1.0	64.3
37	F/O	618.2	49.2	12:26:24.2	96.4	0.7	77.5
38	F/O	559.9	47.6	12:27:51.2	-180.7	-1.6	65.6
39	F/O	570.8	44.8	12:29:33.8	2163.2	8.6	141.6
40	F/O	665.7	44.1	12:31:12.3	-45.3	-0.4	62.7
41		-----	NO DATA	-----			

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

BELL 222A

POSITION DATA
NOISE MEASUREMENT PROGRAM

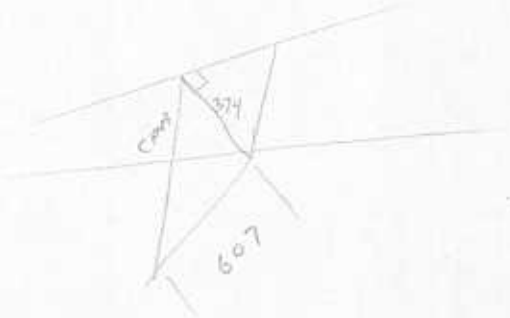
~~500~~ 600 FT. WEST

DATE:06/27/84

FAA/AEE

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
SIX DEG. APPROACH AT VY, 65 KTS.							
40	APP	607.6	35.2	13:37:37.3	-279.2	-3.0	52.6
41	APP	606.7	41.3	13:42:21.5	-72.7	-0.8	53.2
42	APP	617.1	36.5	13:47:42.8	-678.8	-8.3	45.7
43	APP	611.8 ≈754	39.8	13:53:37.6	-478.9	-5.1	52.9
44	APP	621.7	36.7	13:59:36.9	-451.0	-5.0	50.7
45	APP	620.8	36.2	14:05:28.2	-389.0	-3.9	56.8
NOISE ABATEMENT APPROACH (6 DEG. TARGET, VAR. A/S)							
46	APP	617.4	38.1	14:14:54.6	-867.6	-7.5	65.1
47		-----	NO DATA	-----			
48	APP	627.1	36.1	14:24:13.6	-719.7	-5.0	82.0
49	APP	630.3	37.5	14:29:26.1	-192.1	-1.6	68.6
50	APP	630.1	37.2	14:34:19.4	-614.5	-5.2	67.1
51	APP	629.9	38.9	14:41:19.7	-402.8	-3.3	69.3
52	APP	634.2	39.9	14:46:27.1	-609.0	-5.3	64.4

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED



BELL 222A

POSITION DATA
NOISE MEASUREMENT PROGRAM

~~500~~ 670 FT. WEST

DATE:06/28/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)							
1	APP	726.8	45.5	7:35:07.5	-1074.3	-7.8	77.2
2	APP	713.1	44.8	7:39:34.4	-948.3	-6.7	79.9
3	APP	672.3	39.4	7:43:25.2	-1085.3	-8.1	75.6
4	APP	706.7	43.0	7:47:30.2	-1054.1	-7.7	77.0
5	APP	711.9 ≈760	46.8	7:51:54.2	-883.3	-6.4	77.6
6	APP	701.6	44.7	7:55:58.9	-963.4	-7.6	71.5
7	APP	695.8	47.6	8:00:03.6	-1017.0	-7.4	77.4
8	APP	707.0	46.2	8:03:57.5	-1151.1	-8.1	79.4
9	APP	752.9	45.3	8:07:41.6	-1186.7	-8.7	76.9
NOISE ABATEMENT APPROACH (6 DEG. TARGET, VAR. A/S)							
10		-----	NO DATA	-----			
11		-----	NO DATA	-----			
12	APP	616.0	42.3	8:20:46.4	-642.7	-5.0	72.8
13		-----	NO DATA	-----			
NORMAL APPROACH							
14	APP	788.3	47.1	8:29:25.1	-866.8	-7.8	62.7
16		-----	NO DATA	-----			
18		-----	NO DATA	-----			
20	APP	738.8	43.3	8:43:42.9	-986.6	-7.7	71.7
22	APP	787.2	47.7	8:48:34.8	-920.4	-7.1	73.4
24	APP	758.9	49.3	8:53:34.0	-1101.6	-8.8	70.5
26		-----	NO DATA	-----			
28	APP	769.6	48.8	9:13:00.3	-1036.1	-8.1	72.1
NORMAL TAKEOFF							
15		-----	NO DATA	-----			
17	DEP	589.6	37.6	8:36:22.5	898.4	6.1	82.3
19	DEP	592.2	33.4	8:40:50.5	1220.1	8.1	84.2
21		-----	NO DATA	-----			
23		-----	NO DATA	-----			

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

BELL 222A

POSITION DATA
NOISE MEASUREMENT PROGRAM

500 FT. WEST

DATE:06/28/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NORMAL TAKEOFF							
25	DEP	572.4	30.9	8:55:07.8	641.1	4.3	85.0
27		-----	NO DATA	-----			
29	DEP	597.9	36.2	9:15:35.8	1185.3	7.6	87.2

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

BELL 222A

POSITION DATA
NOISE MEASUREMENT PROGRAM

500 FT. WEST

DATE:06/28/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
15 DEG. BANK ANGLE TURN, 65 KTS.							
30	F/O	657.0	44.8	12:14:34.8	-128.4	-1.3	57.1
31		-----	NO DATA	-----			
32	F/O	681.5	38.8	12:17:39.9	-113.8	-1.0	64.9
33	F/O	716.9	39.0	12:19:18.6	30.0	0.4	46.3
34		-----	NO DATA	-----			
35	F/O	713.3	36.6	12:22:41.5	62.9	0.5	66.6
30 DEG. BANK ANGLE TURN, 65 KTS.							
36	F/O	943.1	30.4	12:24:51.3	-135.6	-1.2	62.0
37	F/O	690.9	43.1	12:26:24.8	208.3	1.5	76.4
38	F/O	731.6	35.7	12:27:49.7	104.3	0.9	63.3
39	F/O	710.7	40.8	12:29:38.4	-200.2	-1.7	67.4
40	F/O	674.3	43.5	12:31:13.7	181.9	1.5	67.0
41		-----	NO DATA	-----			

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

BELL 222A

POSITION DATA
NOISE MEASUREMENT PROGRAM

1000 FT. EAST

DATE:06/27/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
500 FT. LEVEL FLYOVER AT 120 KTS.							
10	F/O	1048.7	27.4	8:46:44.7	28.7	0.1	125.7
11	F/O	1075.0	27.0	8:49:42.6	44.9	0.2	121.6
12		-----	NO DATA	-----			
13		-----	NO DATA	-----			
14		-----	NO DATA	-----			
15	F/O	1068.1	27.9	9:01:16.1	45.5	0.2	119.8
16	F/O	1035.2	28.1	9:04:13.3	-84.2	-0.4	128.2
17	F/O	1094.6	27.8	9:06:58.4	176.8	0.8	119.0
1000 FT. LEVEL FLYOVER AT 120 KTS.							
18	F/O	1324.6	47.7	9:09:54.7	173.0	0.7	139.3
19	F/O	1387.9	47.4	9:12:47.7	149.5	0.8	110.8
20		-----	NO DATA	-----			
21	F/O	1346.9	48.2	9:22:12.8	220.8	0.9	140.5
22	F/O	1369.0	47.9	9:25:18.4	422.7	2.3	104.9
23	F/O	1421.9	46.8	9:27:46.8	-43.6	-0.2	136.7
24	F/O	1387.6	47.5	9:31:01.5	415.0	2.2	105.8
25	F/O	1411.7	47.2	9:33:33.3	178.6	0.7	137.3
26	F/O	1401.7	46.4	9:36:49.6	-35.5	-0.2	109.7
27	F/O	1357.6	47.2	9:39:36.2	71.8	0.3	136.6
28	F/O	1399.6	47.5	9:43:04.2	499.7	2.7	105.1
29	F/O	1369.7	46.0	9:45:49.6	223.3	0.9	135.9

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

BELL 222A

POSITION DATA
NOISE MEASUREMENT PROGRAM

1000 FT. EAST

DATE:06/27/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
SIX DEG. APPROACH AT VY, 65 KTS.							
40	APP	1025.7	20.3	13:37:37.0	-313.7	-3.3	53.6
41	APP	1067.2	22.1	13:42:22.6	-420.6	-4.5	52.4
42	APP	1049.8	21.8	13:47:41.4	-599.4	-7.1	47.7
43	APP	1070.2	21.8	13:53:36.6	-471.1	-4.9	54.1
44	APP	1031.9	21.2	13:59:37.6	-484.1	-5.3	51.9
45	APP	1038.0	20.5	14:05:28.6	-350.4	-3.5	56.2
NOISE ABATEMENT APPROACH (6 DEG. TARGET, VAR. A/S)							
46	APP	1041.1	20.9	14:14:55.3	-800.3	-6.9	65.1
47		-----	NO DATA	-----			
48	APP	1046.2	21.5	14:24:12.9	-659.5	-4.6	80.8
49	APP	1053.7	21.5	14:29:27.2	-120.0	-0.9	71.7
50	APP	1052.7	22.2	14:34:17.7	-641.7	-5.5	66.1
51	APP	1065.7	21.9	14:41:20.4	-374.3	-3.0	70.6
52	APP	1069.6	21.9	14:46:27.9	-588.4	-5.3	62.5

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

BELL 222A

POSITION DATA
NOISE MEASUREMENT PROGRAM

1000 FT. EAST

DATE:06/28/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)							
1	APP	1116.5	27.3	7:35:08.2	-1091.7	-7.8	78.4
2	APP	1095.1	26.3	7:39:35.5	-936.8	-6.5	81.3
3	APP	1071.1	24.4	7:43:24.3	-1016.1	-7.6	75.4
4	APP	1088.1	26.5	7:47:29.6	-1039.5	-7.4	78.9
5	APP	1115.5	27.6	7:51:54.8	-929.8	-6.9	76.2
6	APP	1099.3	27.4	7:55:58.3	-845.1	-6.6	72.5
7	APP	1099.1	28.7	8:00:03.3	-1013.5	-7.2	78.7
8	APP	1087.8	27.6	8:03:58.3	-1103.6	-7.9	78.4
9	APP	1115.1	29.3	8:07:41.0	-1080.5	-7.7	78.5
NOISE ABATEMENT APPROACH (6 DEG. TARGET, VAR. A/S)							
10		-----	NO DATA	-----			
11		-----	NO DATA	-----			
12	APP	1071.2	22.2	8:20:47.1	-711.5	-5.4	74.7
13		-----	NO DATA	-----			
NORMAL APPROACH							
14	APP	1112.8	31.2	8:29:25.3	-888.3	-7.9	63.2
16		-----	NO DATA	-----			
18		-----	NO DATA	-----			
20	APP	1095.2	27.7	8:43:43.2	-984.5	-7.8	70.5
22	APP	1116.5	31.5	8:48:35.3	-932.3	-7.2	72.9
24	APP	1146.3	30.1	8:53:34.5	-1073.8	-8.5	70.8
26		-----	NO DATA	-----			
28	APP	1144.3	30.5	9:13:00.7	-1027.1	-7.9	73.3
NORMAL TAKEOFF							
15		-----	NO DATA	-----			
17	DEP	1038.5	19.9	8:36:22.1	779.8	5.3	83.6
19	DEP	1047.4	18.1	8:40:50.1	1206.5	8.1	83.9
21		-----	NO DATA	-----			
23		-----	NO DATA	-----			

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

BELL 222A

POSITION DATA
NOISE MEASUREMENT PROGRAM

1000 FT. EAST

DATE:06/28/84

FAA/AEE

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NORMAL TAKEOFF							
25	DEP	641.9	3.5	8:55:04.6	3812.8	17.4	120.2
27		-----	NO DATA	-----			
29	DEP	1031.6	18.4	9:15:34.3	1054.5	6.9	85.5

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

BELL 222A

POSITION DATA
NOISE MEASUREMENT PROGRAM

1000 FT. WEST

DATE:06/28/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
15 DEG. BANK ANGLE TURN, 65 KTS.							
30	F/O	1071.5	25.7	12:14:34.4	-138.5	-1.4	57.6
31		-----	NO DATA	-----			
32	F/O	1116.5	22.6	12:17:39.3	-246.5	-2.3	61.3
33	F/O	1141.6	23.4	12:19:18.6	30.0	0.4	46.3
34		-----	NO DATA	-----			
35	F/O	1151.4	21.8	12:22:41.5	62.9	0.5	66.6
30 DEG. BANK ANGLE TURN, 65 KTS.							
36	F/O	1390.4	20.2	12:24:51.3	-135.6	-1.2	62.0
37	F/O	1110.1	25.3	12:26:24.8	208.3	1.5	76.4
38	F/O	1120.3	22.7	12:27:43.8	155.6	1.8	49.9
39	F/O	1137.3	24.2	12:29:38.4	-200.2	-1.7	67.4
40	F/O	1092.0	25.3	12:31:13.7	181.9	1.5	67.0
41		-----	NO DATA	-----			

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

BELL 222A

POSITION DATA
NOISE MEASUREMENT PROGRAM

1000 FT. WEST

DATE:06/27/84

FAA/AEE

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
SIX DEG. APPROACH AT VY, 65 KTS.							
40	APP	1056.9	19.5	13:37:37.3	-279.2	-3.0	52.6
41	APP	1035.6	22.9	13:42:21.5	-72.7	-0.8	53.2
42	APP	1060.5	20.4	13:47:42.8	-678.8	-8.3	45.7
43	APP	1039.0	22.2	13:53:37.6	-478.9	-5.1	52.9
44	APP	1066.0	20.5	13:59:36.9	-451.0	-5.0	50.7
45	APP	1066.5	20.2	14:05:28.2	-389.0	-3.9	56.8
NOISE ABATEMENT APPROACH (6 DEG. TARGET, VAR. A/S)							
46	APP	1056.6	21.2	14:14:54.6	-867.6	-7.5	65.1
47		-----	NO DATA	-----			
48	APP	1071.1	19.9	14:24:13.9	-790.9	-5.5	80.7
49	APP	1068.5	21.1	14:29:27.9	-227.9	-1.8	71.4
50	APP	1055.4	21.3	14:34:19.4	-614.5	-5.2	67.1
51	APP	1064.4	21.9	14:41:19.7	-402.8	-3.3	69.3
52	APP	1067.4	22.5	14:46:27.1	-609.0	-5.3	64.4

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

BELL 222A

POSITION DATA
NOISE MEASUREMENT PROGRAM

1000 FT. WEST

DATE:06/28/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)							
1	APP	1134.4	27.8	7:35:07.3	-1061.1	-7.6	78.6
2	APP	1125.0	26.7	7:39:34.4	-948.3	-6.7	79.9
3	APP	1102.6	22.9	7:43:25.2	-1085.3	-8.1	75.6
4	APP	1110.6	25.9	7:47:30.3	-1058.9	-7.7	77.0
5	APP	1114.2	26.7	7:51:55.8	-1027.1	-8.0	71.8
6	APP	1105.7	26.6	7:55:58.9	-963.4	-7.6	71.5
7	APP	1096.2	28.1	8:00:03.6	-1017.0	-7.4	77.4
8	APP	1107.2	25.4	8:03:59.8	-883.8	-6.3	78.8
9	APP	1153.6	27.8	8:07:41.6	-1186.7	-8.7	76.9
NOISE ABATEMENT APPROACH (6 DEG. TARGET, VAR. A/S)							
10		-----	NO DATA	-----			
11		-----	NO DATA	-----			
12	APP	1036.9	23.7	8:20:46.4	-642.7	-5.0	72.8
13		-----	NO DATA	-----			
NORMAL APPROACH							
14	APP	1183.9	29.3	8:29:25.1	-866.8	-7.8	62.7
16		-----	NO DATA	-----			
18		-----	NO DATA	-----			
20	APP	1150.4	25.5	8:43:43.9	-908.7	-7.1	72.0
22	APP	1184.1	29.5	8:48:34.8	-920.4	-7.1	73.4
24	APP	1150.2	30.1	8:53:34.0	-1101.6	-8.8	70.5
26		-----	NO DATA	-----			
28	APP	1146.2	29.0	9:13:02.1	-1230.0	-10.1	68.4
NORMAL TAKEOFF							
15		-----	NO DATA	-----			
17	DEP	1030.2	20.5	8:36:22.5	898.4	6.1	82.3
19	DEP	1046.6	18.4	8:40:50.6	1217.2	8.1	84.4
21		-----	NO DATA	-----			
23		-----	NO DATA	-----			

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

BELL 222A

POSITION DATA
NOISE MEASUREMENT PROGRAM

1000 FT. WEST

DATE:06/28/84

FAA/AEE

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NORMAL TAKEOFF							
25	DEP	1032.6	16.6	8:55:07.8	641.1	4.3	85.0
27		-----	NO DATA	-----			
29	DEP	1028.5	20.3	9:15:35.9	1211.9	7.8	87.0

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

BELL 222A

POSITION DATA
NOISE MEASUREMENT PROGRAM

2000 FT. EAST

DATE:06/27/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
500 FT. LEVEL FLYOVER AT 120 KTS.							
10	F/O	1991.2	14.1	8:46:44.7	28.7	0.1	125.7
11	F/O	2016.3	14.1	8:49:42.6	44.9	0.2	121.6
12		-----	NO DATA	-----			
13		-----	NO DATA	-----			
14		-----	NO DATA	-----			
15	F/O	2007.2	14.5	9:01:16.1	45.5	0.2	119.8
16	F/O	1973.9	14.4	9:04:13.3	-84.2	-0.4	128.2
17	F/O	2034.0	14.7	9:06:58.4	176.8	0.8	119.0
1000 FT. LEVEL FLYOVER AT 120 KTS.							
18	F/O	2131.4	27.5	9:09:54.7	173.0	0.7	139.3
19	F/O	2193.7	27.9	9:12:47.7	149.5	0.8	110.8
20		-----	NO DATA	-----			
21	F/O	2145.5	28.0	9:22:13.0	241.1	1.0	140.9
22	F/O	2171.8	28.0	9:25:18.4	422.7	2.3	104.9
23	F/O	2230.8	27.8	9:27:46.8	-43.6	-0.2	136.7
24	F/O	2192.3	27.9	9:31:01.5	415.0	2.2	105.8
25	F/O	2213.5	28.0	9:33:33.3	178.6	0.7	137.3
26	F/O	2214.1	27.4	9:36:49.6	-35.5	-0.2	109.7
27	F/O	2166.1	27.5	9:39:36.2	71.8	0.3	136.6
28	F/O	2204.1	28.0	9:43:04.2	499.7	2.7	105.1
29	F/O	2184.7	26.9	9:45:49.6	223.3	0.9	135.9

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

BELL 222A

POSITION DATA
NOISE MEASUREMENT PROGRAM

2000 FT. EAST

DATE:06/27/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
SIX DEG. APPROACH AT VY, 65 KTS.							
40	APP	1994.5	10.4	13:37:37.0	-313.7	-3.3	53.6
41	APP	2025.0	11.5	13:42:20.2	-269.6	-3.1	49.5
42	APP	2013.3	11.2	13:47:41.4	-599.4	-7.1	47.7
43	APP	2029.9	12.2	13:53:34.0	-685.5	-6.9	55.7
44	APP	1997.1	11.3	13:59:35.5	-396.4	-4.5	49.4
45	APP	2005.4	10.6	14:05:27.6	-440.7	-4.5	55.8
NOISE ABATEMENT APPROACH (6 DEG. TARGET, VAR. A/S)							
46	APP	2007.3	10.8	14:14:55.3	-800.3	-6.9	65.1
47		-----	NO DATA	-----			
48	APP	2009.2	11.4	14:24:11.5	-453.5	-3.2	78.9
49	APP	2017.4	11.1	14:29:27.2	-120.0	-0.9	71.7
50	APP	2014.3	12.0	14:34:16.4	-559.7	-4.5	70.9
51	APP	2028.9	11.4	14:41:20.4	-374.3	-3.0	70.6
52	APP	2031.5	11.4	14:46:28.4	-574.9	-5.2	62.4

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

BELL 222A

POSITION DATA
NOISE MEASUREMENT PROGRAM

2000 FT. EAST

DATE:06/28/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)							
1	APP	2054.2	14.5	7:35:08.2	-1091.7	-7.8	78.4
2	APP	2033.6	13.9	7:39:35.5	-936.8	-6.5	81.3
3	APP	2023.2	13.1	7:43:23.8	-957.9	-6.9	77.8
4	APP	2031.6	13.9	7:47:29.6	-1039.5	-7.4	78.9
5	APP	2053.8	14.7	7:51:54.8	-929.8	-6.9	76.2
6	APP	2038.3	14.5	7:55:58.3	-845.1	-6.6	72.5
7	APP	2034.5	15.1	8:00:03.3	-1013.5	-7.2	78.7
8	APP	2024.9	14.8	8:03:57.1	-1127.0	-7.6	82.9
9	APP	2046.0	16.2	8:07:39.8	-1121.3	-8.2	77.0
NOISE ABATEMENT APPROACH (6 DEG. TARGET, VAR. A/S)							
10		-----	NO DATA	-----			
11		-----	NO DATA	-----			
12	APP	2033.1	11.6	8:20:47.1	-711.5	-5.4	74.7
13		-----	NO DATA	-----			
NORMAL APPROACH							
14	APP	2032.2	16.6	8:29:25.3	-888.3	-7.9	63.2
16		-----	NO DATA	-----			
18		-----	NO DATA	-----			
20	APP	2030.1	14.6	8:43:43.2	-984.5	-7.8	70.5
22	APP	2037.1	16.7	8:48:35.3	-932.3	-7.2	72.9
24	APP	2073.5	16.2	8:53:34.5	-1073.8	-8.5	70.8
26		-----	NO DATA	-----			
28	APP	2066.5	16.4	9:13:00.7	-1027.1	-7.9	73.3
NORMAL TAKEOFF							
15		-----	NO DATA	-----			
17	DEP	2008.5	10.2	8:36:22.1	779.8	5.3	83.6
19	DEP	2021.2	9.3	8:40:49.9	1190.1	8.0	84.0
21		-----	NO DATA	-----			
23		-----	NO DATA	-----			

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

BELL 222A

POSITION DATA
NOISE MEASUREMENT PROGRAM

2000 FT. EAST

DATE:06/28/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NORMAL TAKEOFF							
25	DEP	1368.0	1.8	8:55:04.6	3812.8	17.4	120.2
27		-----	NO DATA	-----			
29	DEP	2005.1	9.5	9:15:34.3	1054.5	6.9	85.5

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

BELL 222A

POSITION DATA
NOISE MEASUREMENT PROGRAM

2000 FT. WEST

DATE:06/27/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
SIX DEG. APPROACH AT VY, 65 KTS.							
40	APP	2025.2	9.7	13:37:37.3	-279.2	-3.0	52.6
41	APP	1992.1	11.3	13:42:21.5	-72.7	-0.8	53.2
42	APP	2021.0	9.3	13:47:45.5	-418.2	-4.5	52.0
43	APP	1994.4	11.0	13:53:37.6	-478.9	-5.1	52.9
44	APP	2030.9	10.2	13:59:36.9	-451.0	-5.0	50.7
45	APP	2025.9	9.4	14:05:31.1	-595.9	-6.7	50.1
NOISE ABATEMENT APPROACH (6 DEG. TARGET, VAR. A/S)							
46	APP	2018.6	10.6	14:14:54.6	-867.6	-7.5	65.1
47		-----	NO DATA	-----			
48	APP	2035.3	10.0	14:24:13.9	-790.9	-5.5	80.7
49	APP	2027.5	10.6	14:29:27.9	-227.9	-1.8	71.4
50	APP	2008.8	10.6	14:34:19.4	-614.5	-5.2	67.1
51	APP	2023.0	11.0	14:41:19.7	-402.8	-3.3	69.3
52	APP	2018.5	11.9	14:46:25.1	-700.8	-5.6	70.2

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

BELL 222A

POSITION DATA
NOISE MEASUREMENT PROGRAM

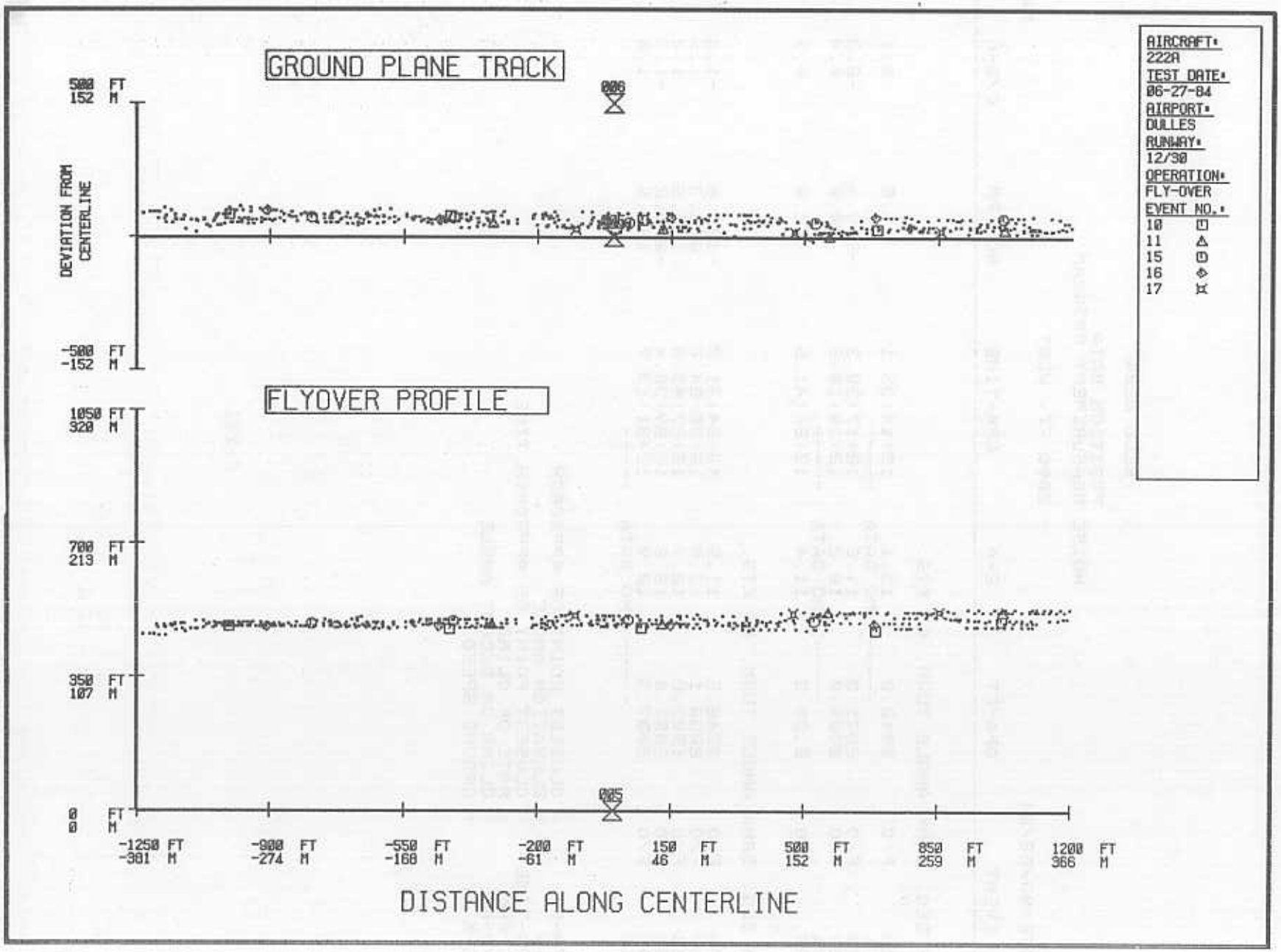
2000 FT. WEST

DATE:06/28/84 **FAA/AEE**

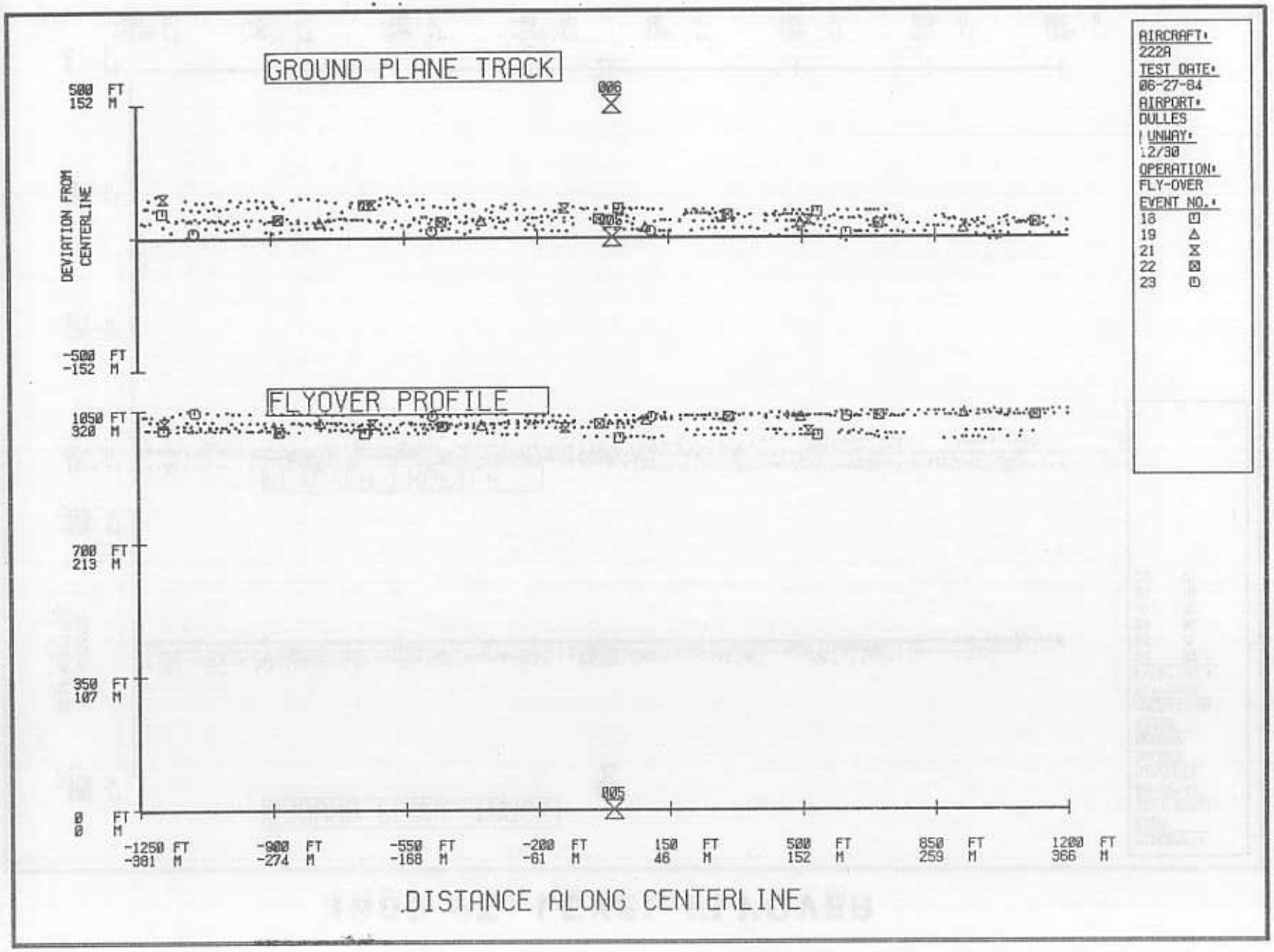
EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
15 DEG. BANK ANGLE TURN, 65 KTS.							
30	F/O	2012.2	13.1	12:14:33.1	11.5	0.1	60.7
31		-----	NO DATA	-----			
32	F/O	2071.9	11.6	12:17:39.3	-246.5	-2.3	61.3
33	F/O	2089.8	12.2	12:19:18.6	30.0	0.4	46.3
34		-----	NO DATA	-----			
35	F/O	2108.5	11.4	12:22:41.5	62.9	0.5	66.6
30 DEG. BANK ANGLE TURN, 65 KTS.							
36	F/O	2346.5	11.5	12:24:51.3	-135.6	-1.2	62.0
37	F/O	2056.1	13.0	12:26:24.8	208.3	1.5	76.4
38	F/O	1903.0	12.7	12:27:43.8	155.6	1.8	49.9
39	F/O	2087.0	12.6	12:29:38.4	-200.2	-1.7	67.4
40	F/O	2037.9	12.9	12:31:13.7	181.9	1.5	67.0
41		-----	NO DATA	-----			

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

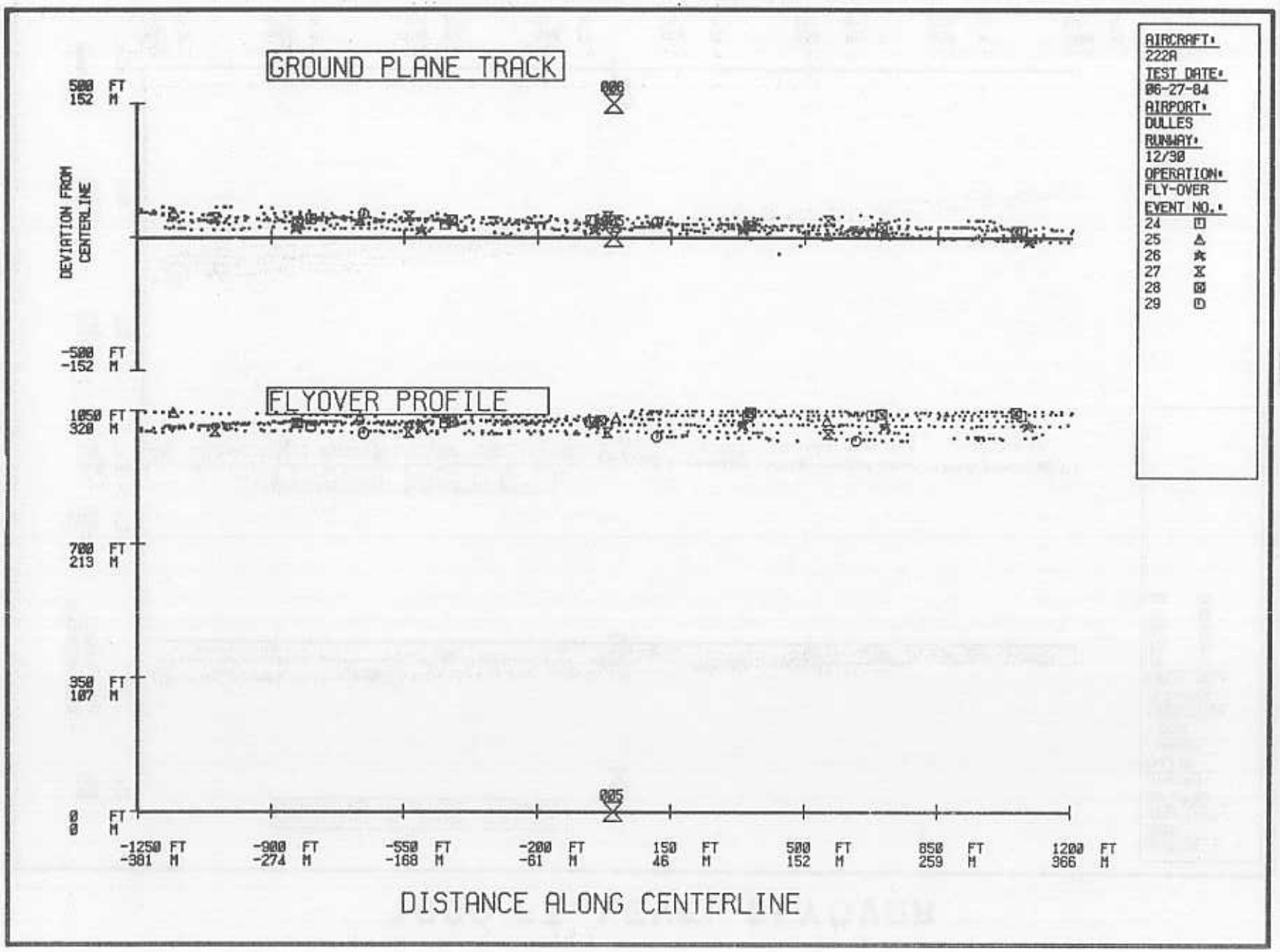
500 FT. LEVEL FLYOVER



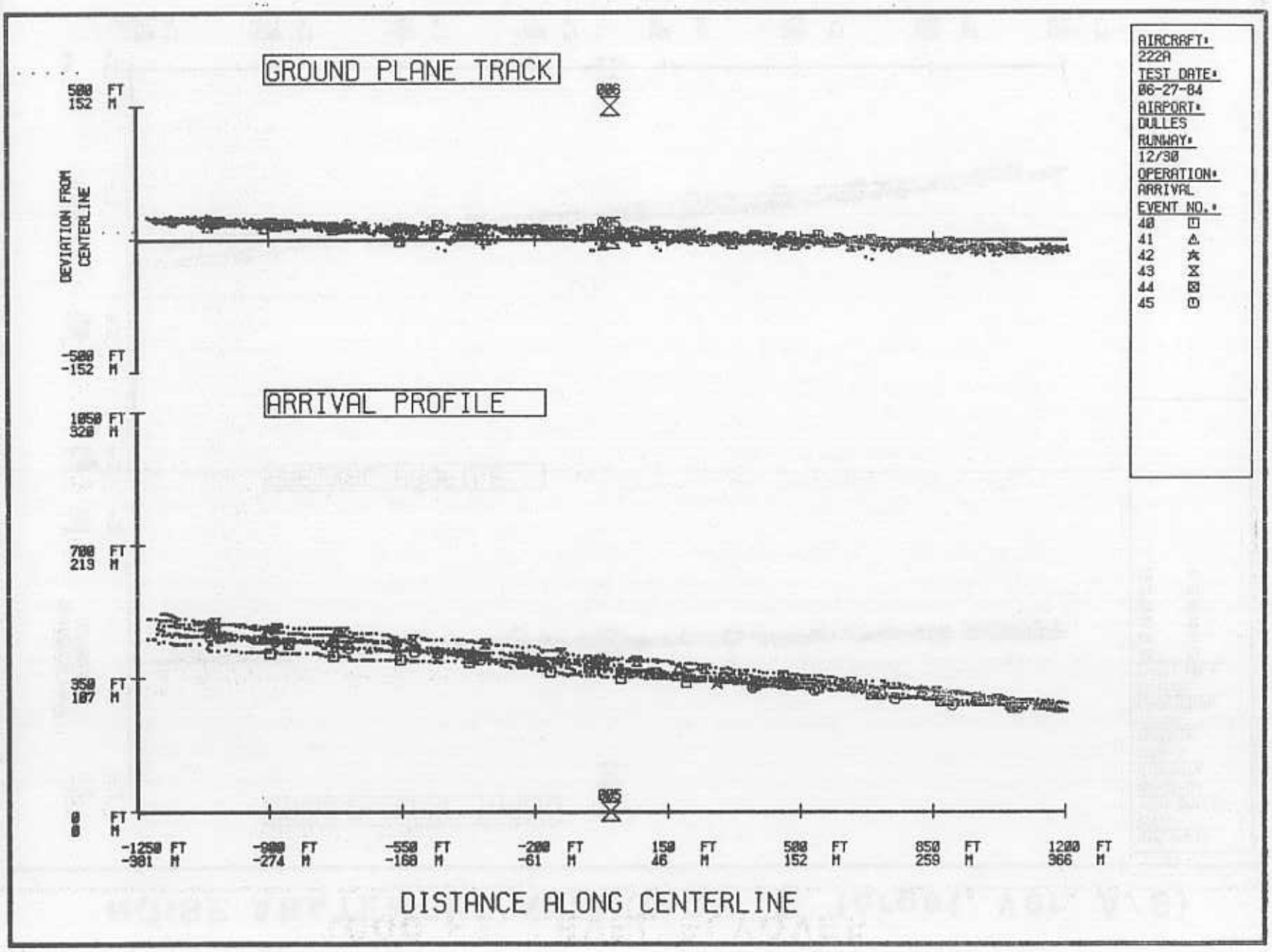
1000 FT. LEVEL FLYOVER



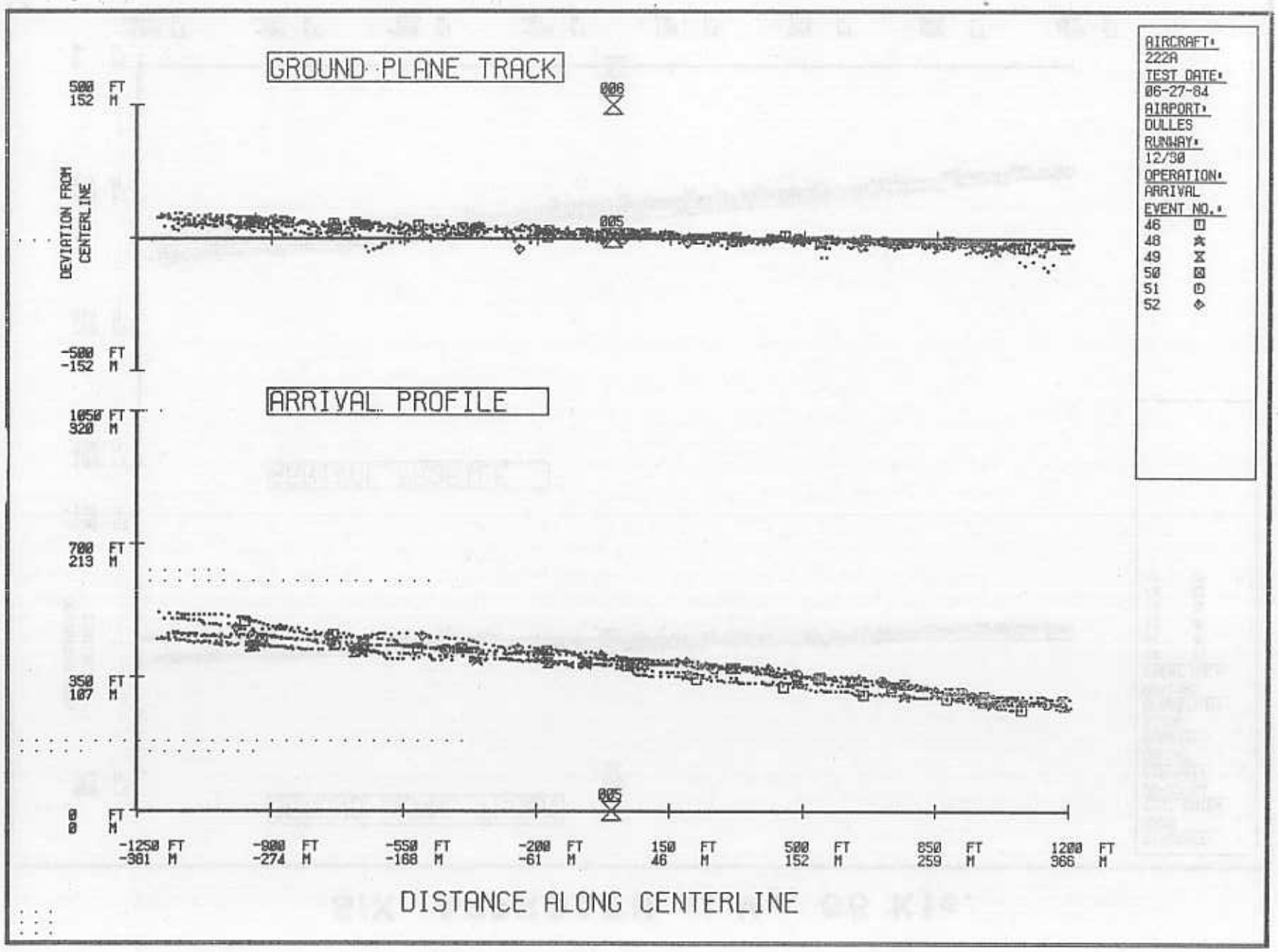
1000 FT. LEVEL FLYOVER



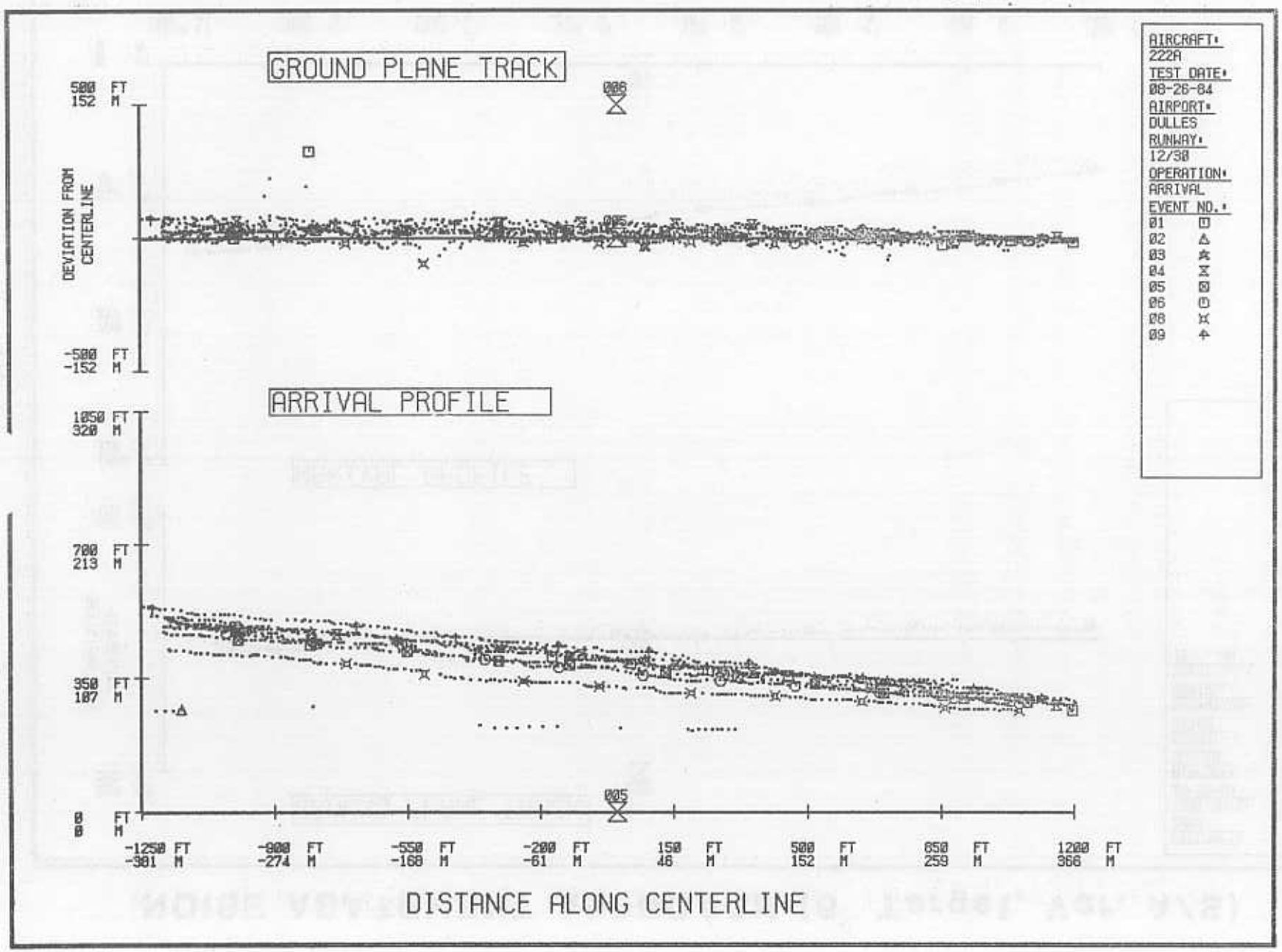
SIX APPROACH at Vy, 65 Kts.



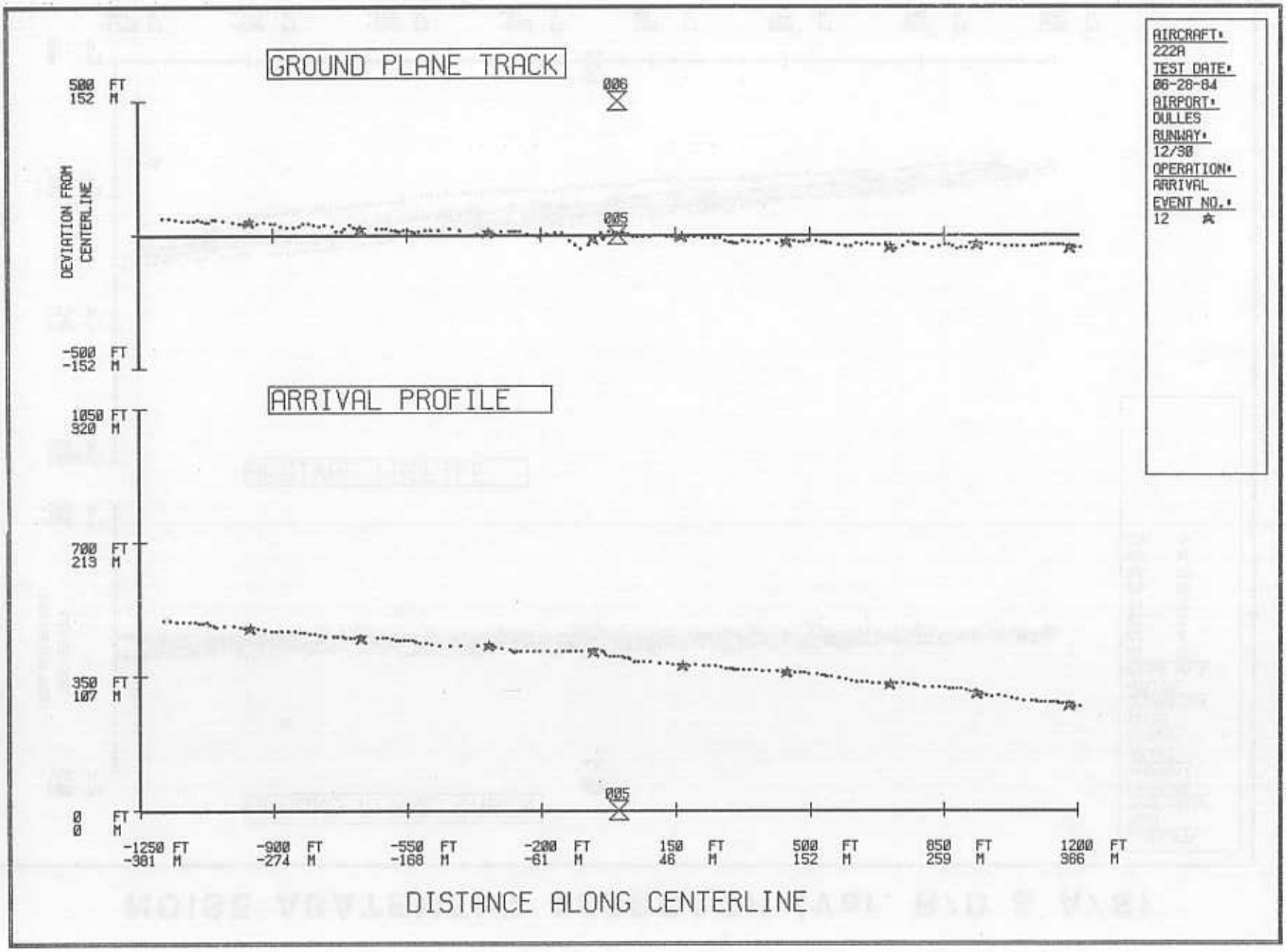
NOISE ABATEMENT APPROACH (6° target, Var. A/S)



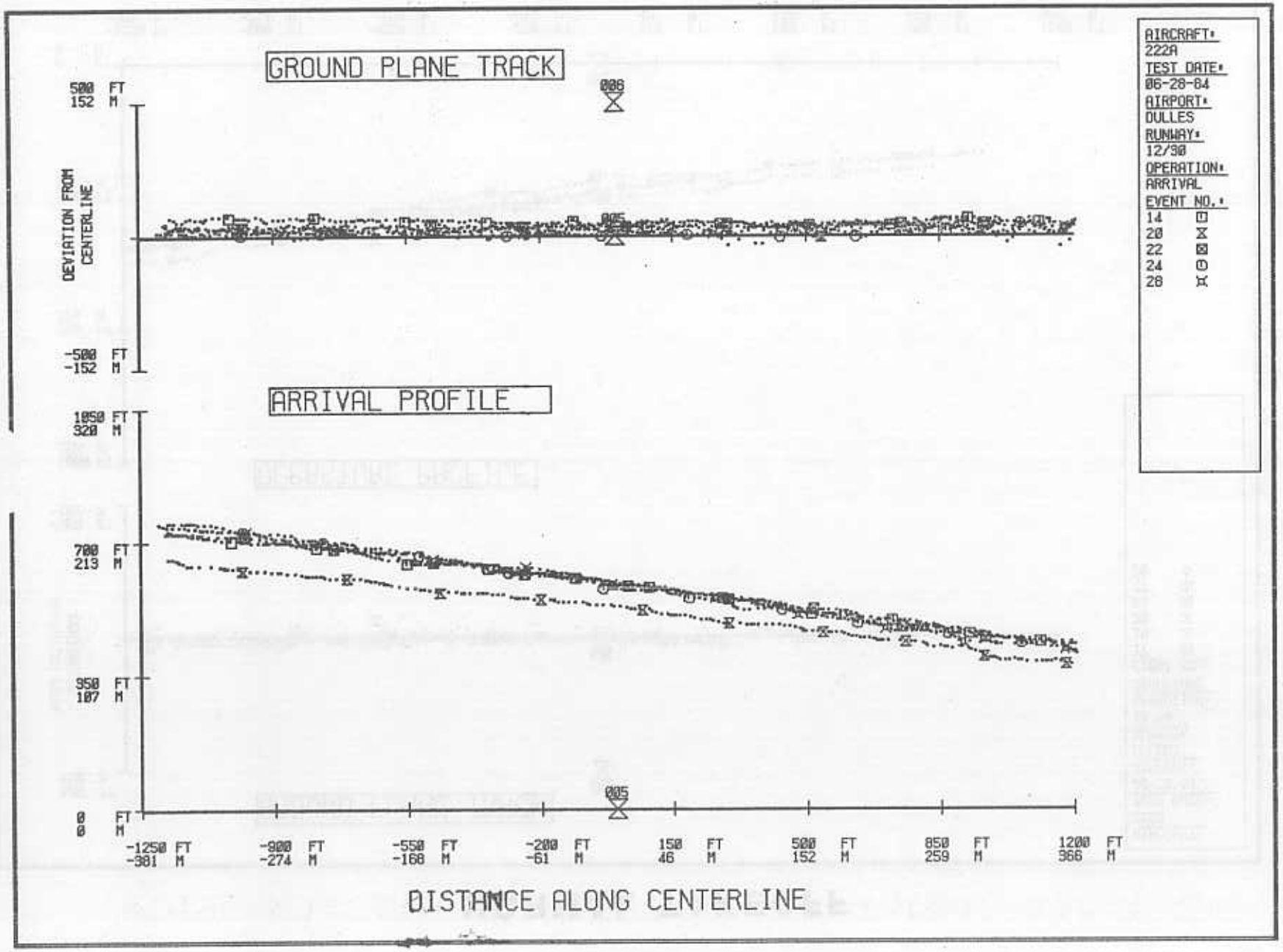
NOISE ABATEMENT APPROACH (Var. R/D & A/S)



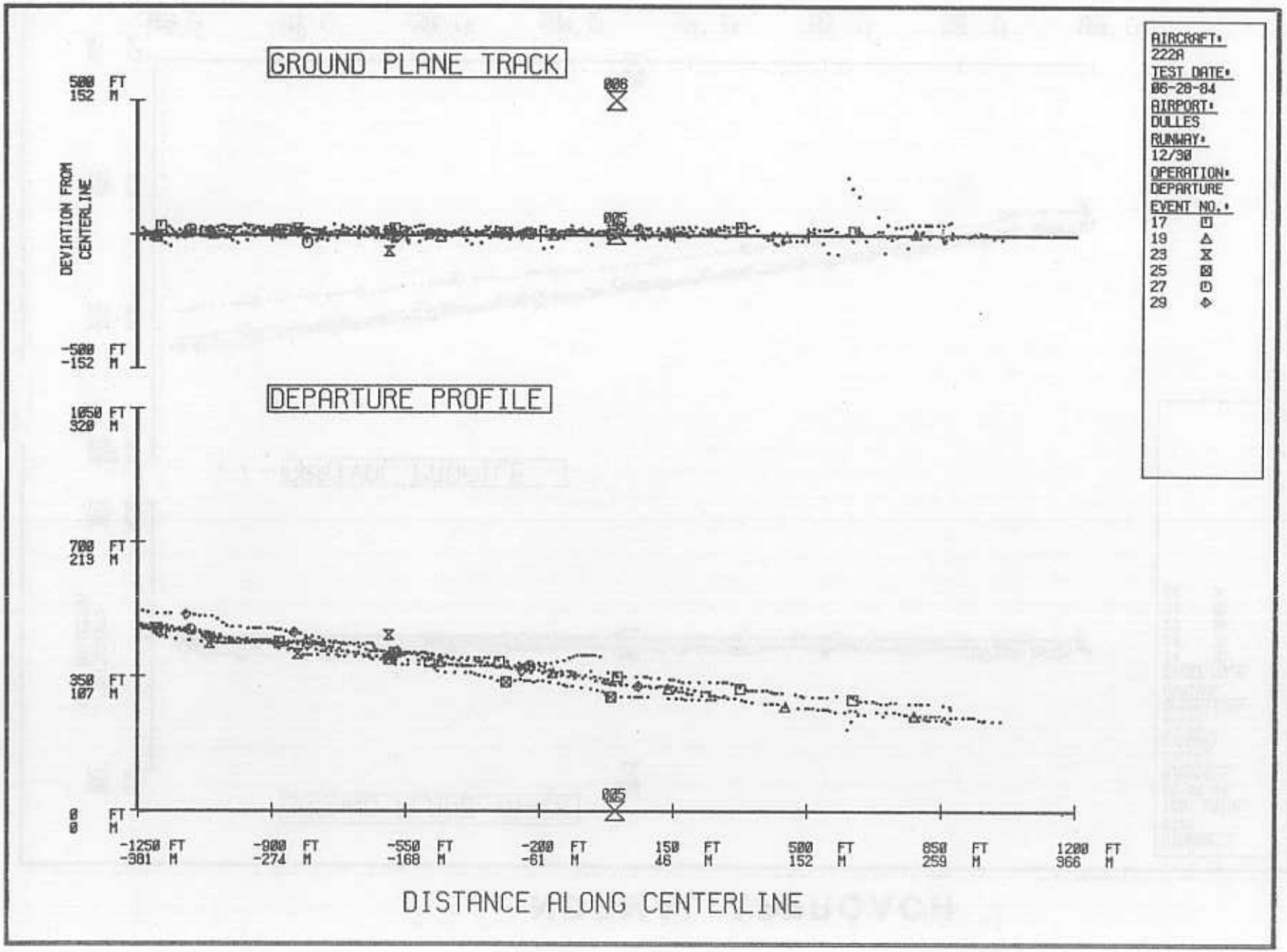
NOISE ABATEMENT APPROACH (6° Target, Var. A/S)



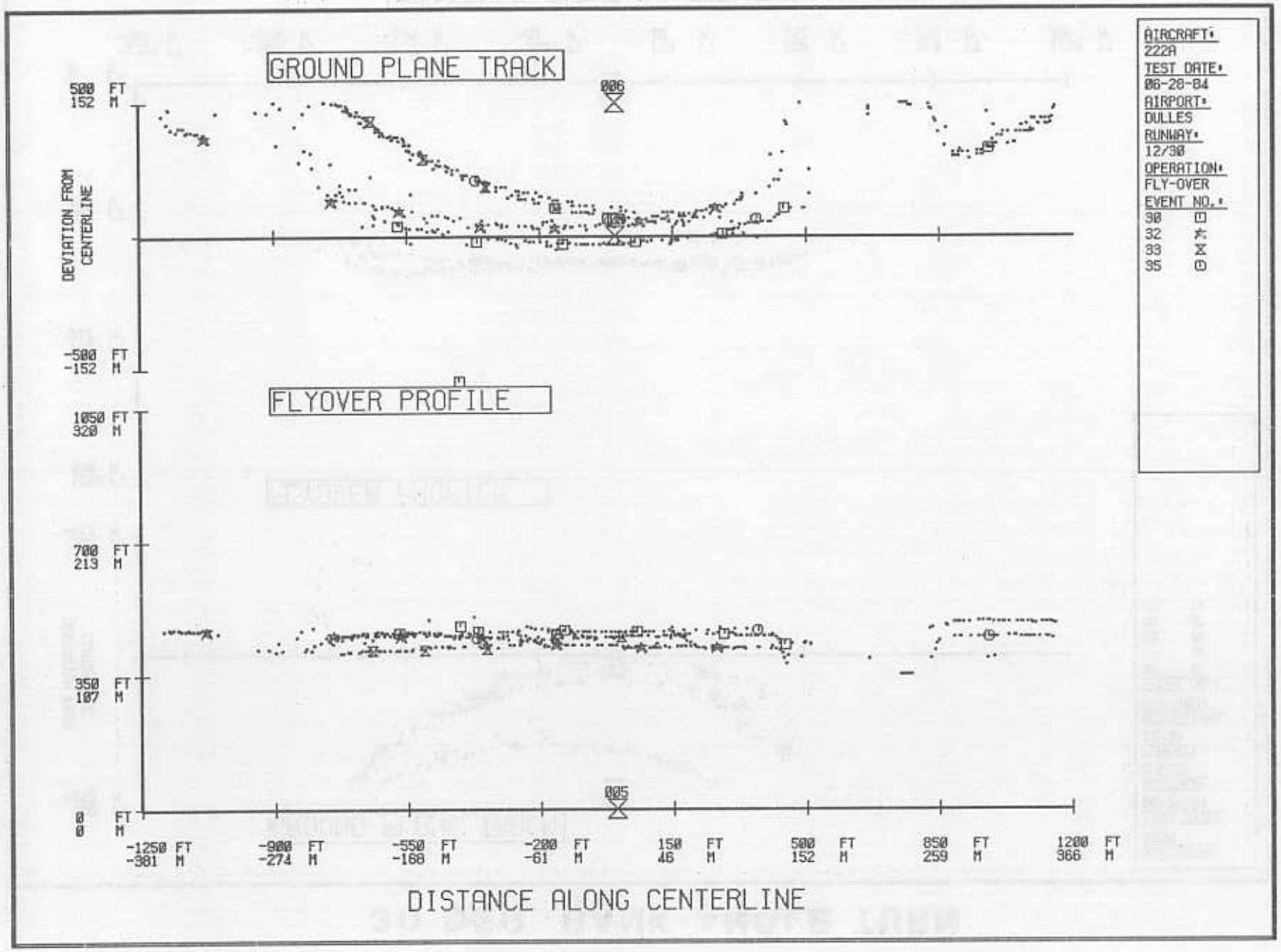
NORMAL APPROACH



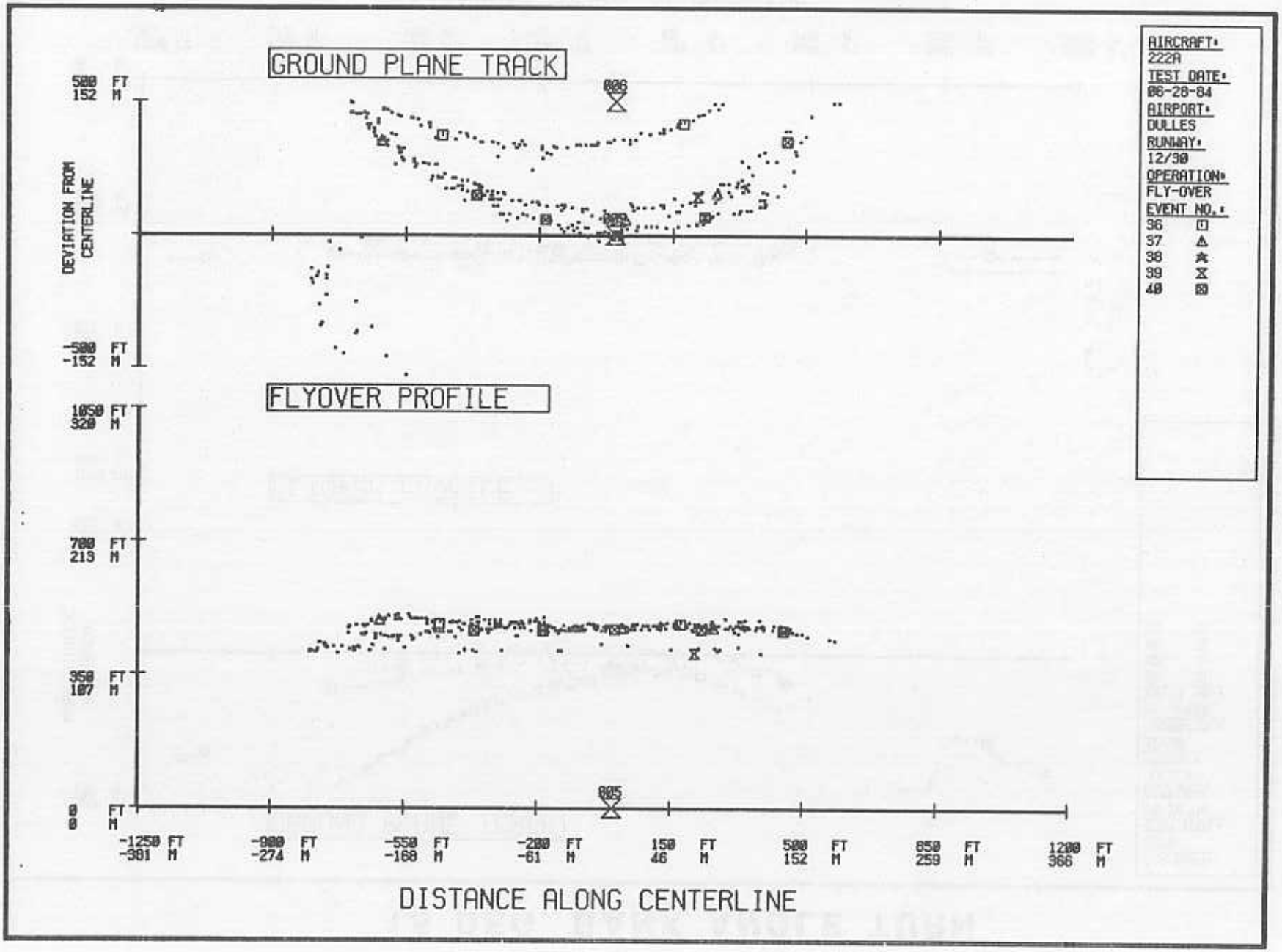
NORMAL TAKEOFF



15 DEG. BANK ANGLE TURN



30 DEG. BANK ANGLE TURN



METEOROLOGICAL

DATA

THIS SECTION OF THE APPENDIX CONTAINS WEATHER DATA FROM SEVERAL TYPES OF METEOROLOGICAL EQUIPMENT: TEN-METER TOWER (MET), GROUND LEVEL PSYCHROMETER, AIRCRAFT OAT, AND PILOT BALLOONS. DATA FROM THE MET TOWER INCLUDE THE TEMPERATURE, RELATIVE HUMIDITY, WIND DIRECTION AND WIND SPEED MEASURED TYPICALLY EVERY 15 MINUTES DURING EACH FLIGHT EVENT. BECAUSE OF A FAILURE OF THE MET TOWER DEW POINT SENSOR, THE RELATIVE HUMIDITY WAS CALCULATED USING TEMPERATURE FROM THE MET TOWER AND DEW POINT FROM THE DULLES MID FIELD WEATHER STATION. GROUND LEVEL (4 FEET) TEMPERATURE AND RELATIVE HUMIDITY ARE GIVEN FOR DIFFERENT TIMES OF EACH TEST DAY, AND THE HELICOPTER'S OAT READINGS ARE SHOWN FOR DIFFERENT FLIGHT ALTITUDES AT VARIOUS TIMES OF THE DAY. THE PILOT BALLOON WIND DATA, TAKEN PERIODICALLY DURING EACH TEST DAY, INCLUDES THE WIND DIRECTION AND WIND SPEED AT VARIOUS ALTITUDES.

METEOROLOGICAL DATA

(MEASURED AT 30 FT. AGL)

HELICOPTER: BELL 222A DATE: 6/28/84

TIME	TEMP. (DEG. F)	R.H. %	WIND DIR. (DEG.)	WIND SPEED AVG. (MPH)	WIND SPEED MAX (MPH)
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)					
8:00	71	81	180	5	-
8:15	72	--	180	5	-
6 DEGREE TARGET, VAR. AIRSPEED					
8:30	72	--	180	6	9
8:45	72	--	180	7	10
NORMAL APPROACH AND TAKEOFF					
8:45	72	--	180	7	10
9:00	72	81	180	7	-
9:15	73	--	180	7	-
15 AND 30 DEGREE TURNS AT 65 KTS.					
12:00	80	62	200	3	-
12:15	82	--	200	3	-
12:30	84	--	200	3	-
12:45	84	--	200	3	-
13:00	82	57	200	4	-

METEOROLOGICAL DATA

(MEASURED AT 30 FT. AGL)

HELICOPTER: BELL 222A DATE: 6/27/84

TIME	TEMP. (DEG. F)	R.H. %	WIND DIR. (DEG.)	WIND SPEED AVG. (MPH)	WIND SPEED MAX (MPH)
500 FT. LEVEL FLYOVER AT 120 KTS.					
9:00	67	75	200	4	-
9:15	68	--	200	4	-
1000 FT. LEVEL FLYOVER AT 120 KTS.					
9:30	70	--	200	3	5
9:45	71	--	200	4	-
10:00	72	71	200	4	-
6 DEGREE APPROACH AT 65 KTS.					
1:30	84	--	200	8	12
1:45	84	--	200	10	14
2:00	84	36	200	12	15
6 DEGREE APPROACH, VAR. AIRSPEED					
2:00	84	36	200	12	15
2:15	84	--	200	11	15
2:30	86	--	200	12	16
2:45	86	--	200	10	13
3:00	86	35	200	12	18

METEOROLOGICAL DATA

HELICOPTER: BELL 222A

DATE: 06/26/84

TEMPERATURE AND RELATIVE HUMIDITY DATA

(MEASURED AT 4 FT. AGL)

TIME	TEMP.	R.H.
08:08	68 F	59%
08:22	68 F	55%
08:38	69 F	51%
08:54	69 F	47%
09:36	70 F	44%
10:05	69 F	43%
11:05	71 F	41%
11:24	75 F	34%
12:09	75 F	37%
12:23	75 F	31%
13:08	74 F	36%
13:21	76 F	35%
13:50	78 F	30%

HELICOPTERS OAT GUAGE DATA

TIME	ALTITUDE	TEMP.
8:00	200'	61 F
	500'	61 F
	1000'	59 F
10:50	200'	68 F
	500'	64 F
	1000'	63 F

METEOROLOGICAL DATA

HELICOPTER: BELL 222A

DATE: 06/27/84

TEMPERATURE AND RELATIVE HUMIDITY DATA

(MEASURED AT 4 FT. AGL)

TIME	TEMP.	R.H.
07:45	69 F	55%
08:07	70 F	55%
08:27	72 F	50%
08:45	73 F	50%
09:05	75 F	48%
09:18	77 F	45%
09:38	80 F	41%
10:19	82 F	36%
10:32	85 F	36%
10:59	85 F	30%
01:33	89 F	23%
01:48	90 F	22%

HELICOPTERS OAT GUAGE DATA

TIME	ALTITUDE	TEMP.
8:15	200'	63 F
	400'	63 F
	600'	66 F
	200'	70 F
	350'	70 F
	400'	70 F
	600'	68 F

METEOROLOGICAL DATA

HELICOPTER: BELL 222A

DATE: 06/28/84

TEMPERATURE AND RELATIVE HUMIDITY DATA

(MEASURED AT 4 FT. AGL)

TIME	TEMP.	R.H.
07:45	72 F	68%
07:58	76 F	59%
08:15	76 F	62%
08:34	76 F	59%
08:45	76 F	59%
09:15	77 F	60%
09:38	78 F	60%
12:17	85 F	61%

HELICOPTERS OAT GUAGE DATA

TIME	ALTITUDE	TEMP.
7:30	200'	70 F
	400'	70 F
	600'	70 F
	800'	70 F
	1000'	70 F
	200'	72 F
	400'	70 F
	600'	70 F
	800'	70 F
	1000'	70 F

PILOT BALLOON WIND DATA

BELL 222A 06/26/84

FEET (AGL)	WIND DIR. (DEG.)	WIND SPD. (KTS)	WIND DIR. (DEG.)	WIND SPD. (KTS)
LAUNCH TIME:	7:58		9:39	
SFC	340	6	360	7
354	333	9	328	9
708	339	10	331	9
1033	345	13	338	11
1358	350	15	346	13
	10:07		10:33	
SFC	340	10	360	9
354	346	22	345	10
708	347	24	342	12
1033	349	25	339	17
1358	350	25	338	21
	1:14		1:38	
SFC	360	12	340	10
354	359	17	319	9
708	357	18	319	9
1033	354	19	317	9
1358	352	18	320	8

PILOT BALLOON WIND DATA

BELL 222A 06/27/84

FEET (AGL)	WIND DIR. (DEG.)	WIND SPD. (KTS)	WIND DIR. (DEG.)	WIND SPD. (KTS)
LAUNCH TIME:	7:48		8:49	
SFC	210	6	180	5
354	229	8	242	5
708	224	5	239	9
1033	236	12	236	13
1358	237	13	232	17
	1:37			
SFC	270	10		
354	243	8		
708	241	8		
1033	235	7		
1358	229	7		

PILOT BALLOON WIND DATA

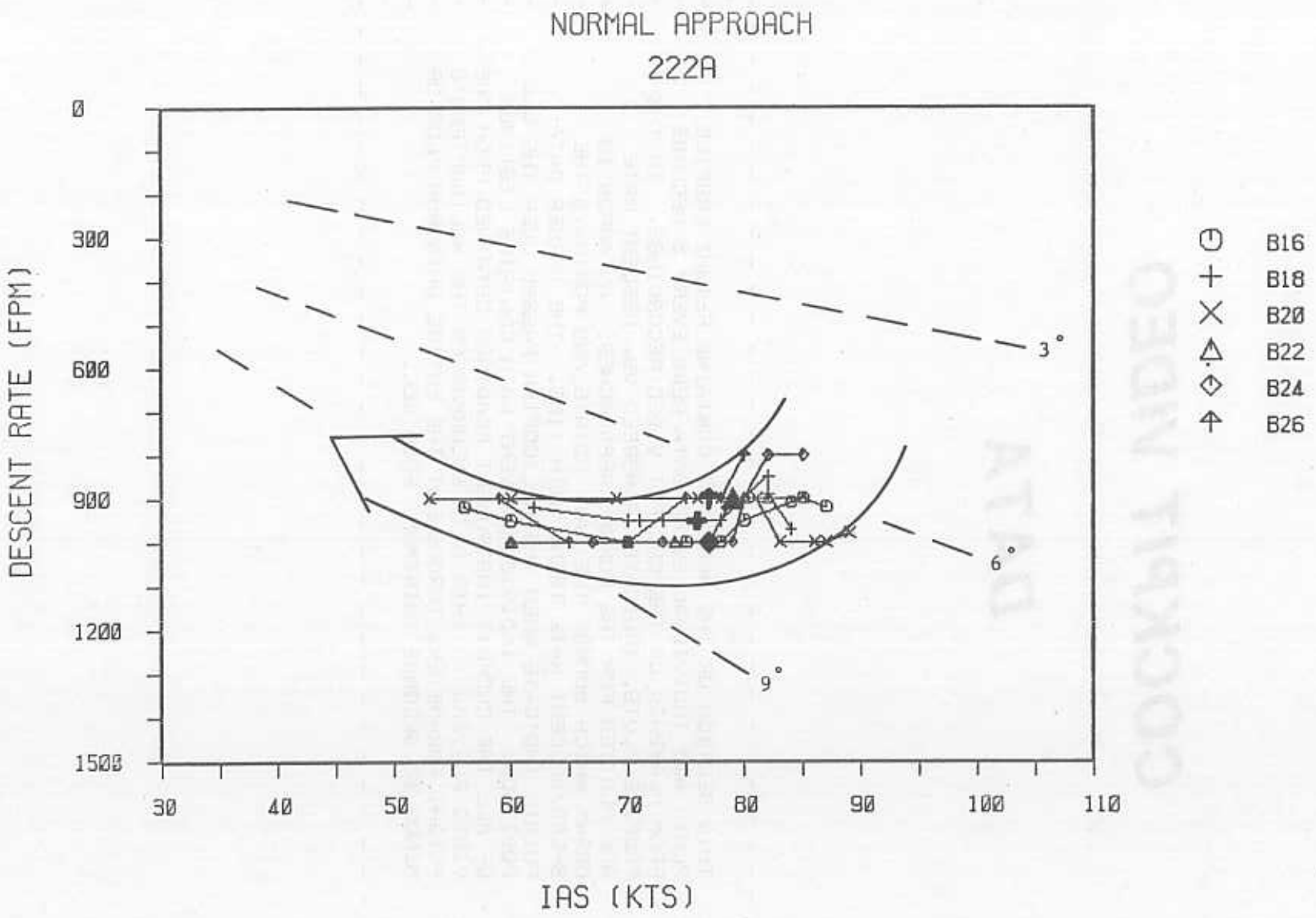
BELL 222A (6/28/84) 06/28/84

FEET (AGL)	WIND DIR. (DEG.)	WIND SPD. (KTS)	WIND DIR. (DEG.)	WIND SPD. (KTS)
LAUNCH TIME:	7:50		8:37	
SFC	210	8	235	5
354	212	9	239	5
708	212	7	251	3
1033	218	5	281	3
1358	233	3	295	3
	9:05			
SFC	210	2		
354	231	4		
708	230	3		
1033	253	2		
1358	297	2		

COCKPIT VIDEO

DATA

THIS SECTION OF THE APPENDIX CONTAINS FLIGHT PROFILE PLOTS AND INDIVIDUAL EVENT DATA READ EVERY 5 SECONDS FROM PLAYBACK OF THE COCKPIT VIDEO RECORDINGS. IN THE PROFILE PLOTS, INDICATED AIRSPEED VS. DESCENT RATE ARE PLOTTED FOR THE NORMAL APPROACHES. AN ARROW IS DRAWN WHICH BOUNDS THE DATA POINTS AND PORTRAYS THE SPEED/DESCENT RATE TREND WITH TIME. THE DARKER DATA POINTS INDICATE WHEN THE HELICOPTER PASSED OVER THE CLC POSITION. THE INDIVIDUAL EVENT DATA CONTAINS LISTINGS OF ALL THE COCKPIT INSTRUMENT READINGS OBTAINED FROM THE VIDEO PLAYBACK. THIS DATA ENCOMPASSES THE HELICOPTERS'S FLIGHT PARAMETERS THROUGHOUT THE ENTIRE DATA RUN PLUS OR MINUS 15 SECONDS (MINIMUM) FROM CLC.


NORMAL APPROACH
222A
DESCENT RATE (FPM)
0
300
600
900
1200
1500
IAS (KTS)
30
40
50
60
70
80
90
100
110
3°
6°
9°
B16
B18
B20
B22
B24
B26

COCKPIT VIDEO DATA

NOISE ABATEMENT APPROACH

(6 DEG. TARGET, VAR. A/S)

HELICOPTER: BELL 222A

DATE: 06/27/84

EVENT:D46

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-27	790	32	800	92	4.93
-22	740	--	800	93	4.87
-17	660	22	850	90	5.35
-12	590	22	1000	90	6.30
-7	520	20	900	87	5.86
-2	440	20	1000	85	6.67
CLC 0	420	20	900	83	6.15
3	380	20	900	80	6.38
8	330	18	900	75	6.81
13	260	16	800	65	6.98
18	220	19	600	57	5.97
23	200	18	500	48	5.90

EVENT:D48

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-30	800	27	900	90	5.67
-25	740	24	1000	86	6.59
-20	660	20	1000	90	6.30
-15	620	19	920	86	6.06
-10	520	20	900	88	5.80
-5	460	32	800	88	5.15
CLC 0	420	29	900	90	5.67
5	350	19	900	83	6.15
10	300	11	900	80	6.38
15	280	10	850	76	6.34
20	220	5	700	63	6.30

EVENT:D47

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-33	840	30	920	90	5.79
-28	750	31	950	88	6.12
-23	690	27	900	90	5.67
-18	630	21	1000	90	6.30
-13	580	20	900	90	5.67
-8	520	29	900	90	5.67
-3	470	38	800	85	5.33
CLC 0	440	20	850	85	5.67
2	420	19	850	84	5.73
7	360	16	850	73	6.60
12	290	20	700	73	5.43
17	240	18	700	67	5.92

EVENT:D49

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-38	880	20	900	90	5.67
-33	870	20	1000	89	6.37
-28	820	17	1000	90	6.30
-23	690	17	1000	90	6.30
-18	620	12	1000	90	6.30
-13	540	19	1000	88	6.44
-8	490	18	1000	85	6.67
-3	450	18	850	80	6.02
CLC 0	430	18	700	78	5.08
2	420	18	700	78	5.08
7	360	20	600	77	4.41
12	320	17	690	70	5.59
17	270	9	650	65	5.67

COCKPIT VIDEO DATA

NOISE ABATEMENT APPROACH

(6 DEG. TARGET, VAR. A/S)

HELICOPTER: BELL 222A

DATE: 06/27/84

EVENT: D50

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-34	890	25	900	90	5.67
-29	820	24	900	86	5.93
-24	725	21	1000	90	6.30
19	640	20	1000	85	6.67
-14	580	19	1000	85	6.67
-9	500	20	900	83	6.15
-4	460	21	800	80	5.67
CLC 0	440	20	680	75	5.14
6	390	18	750	73	5.82
11	320	20	800	65	6.98
16	280	25	690	60	6.52
21	230	20	700	52	7.64

EVENT: D52

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-39	920	27	1000	90	6.30
-34	860	30	900	92	5.54
-29	810	25	900	92	5.54
-24	730	29	1000	90	6.30
-19	660	20	1000	85	6.67
-14	580	20	1000	90	6.30
-9	510	22	900	89	5.73
-4	500	20	800	86	5.27
CLC 0	450	20	800	83	5.46
6	400	20	800	80	5.67
11	350	20	850	75	6.43
16	280	20	850	70	6.89
21	220	20	700	60	6.62

EVENT: D51

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-30	780	10	1100	90	6.93
-25	690	20	1100	95	6.57
-20	620	18	1000	95	5.97
-15	530	18	1000	90	6.30
-10	480	20	900	88	5.80
-5	470	20	900	88	5.80
CLC 0	430	18	800	78	5.81
5	420	17	800	75	6.05
10	380	18	800	72	6.30
15	300	10	800	65	6.98
20	250	15	700	62	6.40
25	200	20	600	60	5.67

COCKPIT VIDEO DATA

NOISE ABATEMENT APPROACH

(VAR. R/D AND A/S)

HELICOPTER: BELL 222A

DATE: 06/28/84

EVENT: D2

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-35	1060	25	750	90	4.72
-30	1000	25	900	90	5.67
-25	930	29	900	95	5.37
-20	840	25	1000	95	5.97
-15	730	18	1300	93	7.93
-10	660	10	1200	90	7.57
-5	590	16	1000	85	6.67
CLC 0	530	16	900	84	6.07
5	460	19	1000	84	6.75
10	360	10	1000	80	7.09
15	280	3	900	70	7.29
20	230	5	900	54	9.47

EVENT: D3

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-38	1020	36	600	90	3.77
-33	960	28	780	90	4.91
-28	900	20	1200	90	7.57
-23	800	18	1100	90	6.93
-18	700	18	1050	90	6.62
-13	620	10	1200	89	7.65
-8	540	13	1100	85	7.34
-3	460	15	1000	83	6.83
CLC 0	---	--	--	--	--
2	390	11	1050	80	7.45
7	300	20	900	79	6.46
12	240	13	900	75	6.81
17	200	10	800	65	6.98

EVENT: D4

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-34	1010	25	600	90	3.77
-29	960	30	750	90	4.72
-24	920	20	1000	93	6.10
-19	820	20	1000	93	6.10
-14	720	20	1000	90	6.30
-9	640	17	1000	90	6.30
-4	580	19	1000	90	6.30
CLC 0	530	17	1000	85	6.67
6	430	12	1000	80	7.09
11	360	10	1000	78	7.27
16	280	10	900	72	7.09
21	230	7	900	60	8.52

EVENT: D5

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-30	980	22	700	94	4.22
-25	920	20	900	90	5.67
-20	820	20	950	90	5.98
-15	740	20	1000	90	6.30
10	660	17	1000	89	6.37
-5	600	17	1000	85	6.67
CLC 0	530	10	1000	80	7.09
5	460	12	900	80	6.38
10	390	10	900	75	6.81
15	330	10	900	70	7.29
20	250	10	900	60	8.52

COCKPIT VIDEO DATA

NOISE ABATEMENT APPROACH

(VAR. R/D AND A/S)

HELICOPTER: BELL 222A

DATE: 06/28/84

EVENT: D6

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-38	1060	32	500	95	2.98
-33	1000	30	700	95	4.17
-28	930	20	900	90	5.67
-23	860	20	1050	90	6.62
-18	740	12	1200	89	7.65
-13	680	10	1100	86	7.26
-8	620	20	900	85	6.00
-3	560	20	900	82	6.22
CLC 0	540	20	900	80	6.38
2	520	18	900	80	6.38
7	420	10	900	75	6.81
12	350	10	900	70	7.29
17	290	10	900	60	8.52

EVENT: D7

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-30	1020	29	700	89	4.45
-25	990	29	800	90	5.04
-20	900	20	1000	90	6.30
-15	820	12	1200	90	7.57
-10	700	13	1150	90	7.25
-5	620	15	1100	90	6.93
CLC 0	540	10	1200	86	7.92
5	430	10	1150	80	8.16
10	350	5	900	79	6.46
15	290	1	1000	70	8.11
20	220	0	920	58	9.01

EVENT: D8

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-35	1000	20	700	92	4.31
-30	940	20	900	90	5.67
-25	880	20	1000	92	6.16
-20	820	22	1000	90	6.30
-15	730	22	1000	92	6.16
-10	650	20	1000	92	6.16
-5	580	20	1000	90	6.30
CLC 0	510	20	1000	89	6.37
5	430	15	1000	85	6.67
10	310	9	1000	80	7.09
15	240	2	900	70	7.29
20	200	2	900	60	8.52

EVENT: D9

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-36	1040	40	400	95	2.38
-31	1020	40	400	90	2.52
-26	1000	25	650	90	4.09
-21	930	22	900	90	5.67
-16	840	22	1000	95	5.97
-11	760	20	1100	95	6.57
-6	650	12	1100	90	6.93
-1	580	10	1000	88	6.44
CLC 0	570	10	1000	88	6.44
3	530	10	1050	85	7.01
9	430	5	1000	80	7.09
14	320	2	1000	72	7.88
19	230	0	1000	60	9.47

COCKPIT VIDEO DATA

NOISE ABATEMENT APPROACH

(6 DEG. TARGET, VAR. A/S)

HELICOPTER: BELL 222A

DATE: 06/28/84

EVENT:D10

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-38	1000	25	750	90	4.72
-33	935	25	800	92	4.93
-28	860	20	1000	91	6.23
-23	760	20	1100	92	6.78
-18	690	20	1100	94	6.64
-13	605	12	1300	90	8.20
-8	520	18	1050	90	6.62
-3	440	20	1000	86	6.59
CLC 0	400	28	900	87	5.86
2	370	29	900	85	6.00
7	330	20	900	84	6.07
12	260	15	900	80	6.38
17	200	10	850	73	6.60

EVENT:D11

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-38	900	22	900	89	5.73
-33	820	20	950	90	5.98
-28	750	25	900	90	5.67
-23	680	25	900	90	5.67
-18	640	22	900	90	5.67
-13	590	20	900	86	5.93
-8	550	20	900	85	6.00
-3	480	20	900	80	6.38
CLC 0	440	19	1000	80	7.09
2	400	20	900	80	6.38
7	300	20	900	78	6.54
12	250	20	900	75	6.81
17	200	10	850	70	6.89

EVENT:D12

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-33	870	20	1000	88	6.44
-28	760	16	1000	89	6.37
-23	680	25	1000	90	6.30
-18	610	20	1000	90	6.30
-13	570	40	800	90	5.04
-8	530	28	900	90	5.67
-3	440	30	800	90	5.04
CLC 0	400	20	900	88	5.80
2	380	20	900	85	6.00
7	300	18	900	80	6.38
12	240	10	900	75	6.81
17	200	10	800	65	6.98

EVENT:D13

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-35	820	27	900	90	5.67
-30	750	25	900	93	5.48
-25	690	20	1000	90	6.30
-20	610	20	900	90	5.67
-15	550	18	900	84	6.07
-10	500	20	900	82	6.22
-4	430	22	850	80	6.02
CLC 0	370	19	900	80	6.38
5	300	15	900	75	6.81
10	240	19	900	70	7.29
15	200	10	850	65	7.42
20	180	12	800	56	0.00

COCKPIT VIDEO DATA

NORMAL APPROACH

HELICOPTER: BELL 222A

DATE: 06/28/84

EVENT:B16

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D) (DEG)
-38	1080	37	500	86	3.29
-33	1010	30	650	87	4.23
-28	970	27	680	87	4.43
-23	930	27	780	88	5.02
-18	870	21	920	87	5.99
-13	800	20	900	85	6.00
-8	740	19	910	84	6.14
-3	660	13	950	80	6.73
CLC 0	620	10	1000	78	7.27
2	590	10	1000	78	7.27
7	530	10	1000	75	7.57
12	440	10	1000	70	8.11
17	350	10	950	60	9.00

EVENT:B18

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-34	600	37	600	91	3.73
-29	820	20	820	88	5.28
-24	860	20	860	86	5.67
19	970	14	970	84	6.55
14	890	18	890	82	6.15
-9	850	18	850	82	5.88
-4	950	14	950	78	6.91
CLC 0	580	10	1000	78	7.27
1	950	10	950	76	7.09
6	950	10	950	73	7.38
11	950	11	950	71	7.59
16	950	13	950	70	7.70
21	920	12	920	62	8.43

EVENT:B20

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D) (DEG)
-37	1040	25	670	93	4.08
-32	980	121	800	91	4.98
-27	930	25	830	91	5.17
-22	870	16	980	89	6.24
-17	770	12	1000	87	6.52
-12	700	17	1000	86	6.59
-7	620	12	1000	83	6.83
-2	560	15	900	81	6.30
CLC 0	550	15	900	80	6.38
3	500	12	900	78	6.54
8	440	11	900	76	6.72
13	360	10	900	69	7.40
18	300	7	900	60	8.52

EVENT:B22

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-30	970	20	600	90	3.77
-25	920	20	800	85	5.33
-20	850	18	900	85	6.00
-15	780	17	900	85	6.00
-10	730	20	900	82	6.22
-5	660	15	900	80	6.38
CLC 0	600	10	900	79	6.46
5	530	10	1000	77	7.37
10	450	10	1000	74	7.67
15	360	10	1000	70	8.11
20	280	5	1000	60	9.47

COCKPIT VIDEO DATA

NORMAL APPROACH

HELICOPTER: BELL 222A

DATE: 06/28/84

EVENT:B24

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D) (DEG)
-35	990	22	500	85	3.33
-30	940	22	350	84	2.36
-25	900	21	750	83	5.12
-20	840	20	800	85	5.33
-15	780	20	800	82	5.53
-10	730	20	900	80	6.38
-5	660	12	1000	79	7.18
CLC 0	580	10	1000	77	7.37
5	610	10	1000	73	--
10	440	5	1000	70	8.11
15	360	8	1000	67	8.48
20	260	10	1000	60	9.47

EVENT:B26

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-36	980	20	700	80	4.96
-31	940	20	700	80	4.96
-26	900	30	800	83	5.46
-21	840	20	800	80	5.67
-16	760	20	800	80	5.67
-11	720	20	800	80	5.67
-6	660	20	900	78	6.54
-1	590	19	900	75	6.81
CLC 0	580	19	900	77	6.63
4	550	14	900	75	6.81
9	460	9	1000	70	8.11
14	380	5	1000	65	8.74
19	280	5	900	59	8.66

EVENT:B28

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-30	940	25	400	83	2.73
-25	900	25	600	80	4.25
-20	860	21	700	80	4.96
-15	800	20	700	80	4.96
-10	740	19	800	79	5.74
-5	660	17	1000	75	7.57
CLC 0	580	12	1000	75	7.57
5	520	9	1000	73	7.77
10	430	8	1100	65	9.62
15	300	10	1000	60	9.47
20	250	12	1000	59	9.64

APPENDIX D

ROBINSON R22

	PAGE NUMBERS
HELICOPTER CHARACTERISTICS	D-315
NOISE LEVEL DATA	
SOUND EXPOSURE LEVEL	
Bar Charts	
Approaches	D-318
Takeoff	D-319
Level Flyovers	D-320
Summary Tables	D-321 - D-322
Individual Event Data	D-323 - D-328
A-WEIGHTED SOUND LEVEL	
Bar Charts	
Approaches	D-330
Takeoff	D-331
Level Flyovers	D-332
Summary Tables	D-333 - D-334
Individual Event Data	D-335 - D-340
HOVER DATA (leq)	
Plots	D-342
Individual Event Data	D-343 - D-344
RADAR TRACKING DATA	
Position Data	D-346 - D-359
Tracking Plots	D-360 - D-365
METEOROLOGICAL DATA	
10-meter Tower Data	D-368 - D-369
4 ft. Data and Aircraft OAT Data	D-370
Pilot Balloon Wind Data	D-371
COCKPIT VIDEO DATA	
Normal Approach Plot	D-374
Noise Abatement Approach Plot	D-375
Individual Event Data	D-376 - D-379

R22
N8380H

HELICOPTER CHARACTERISTICS

HELICOPTER MANUFACTURER :	ROBINSON
HELICOPTER MODEL :	R22 HP
TEST HELICOPTER N-NUMBER :	N8383H
MAX INTERNAL GROSS WEIGHT :	1300 LBS
NUMBER OF ENGINES :	ONE
UNINSTALLED TAKEOFF POWER :	160 HP
UNINSTALLED MAX CONTINUOUS PWR. :	160 HP
NEVER EXCEED SPEED (VNE) :	102 KTS.
MAX SPEED IN LEVEL FLIGHT WITH MAX CONTINUOUS POWER :	96 KTS.
SPEED FOR BEST RATE OF CLIMB (VY) :	55 KTS.
CRUISE SPEED FOR BEST RANGE (VCR) :	83 KTS.
BEST RATE OF CLIMB AT TAKEOFF POWER (BRC) :	1000 FPM
"TOP OF GREEN ARC" ROTOR SPEED :	530 RPM 104%

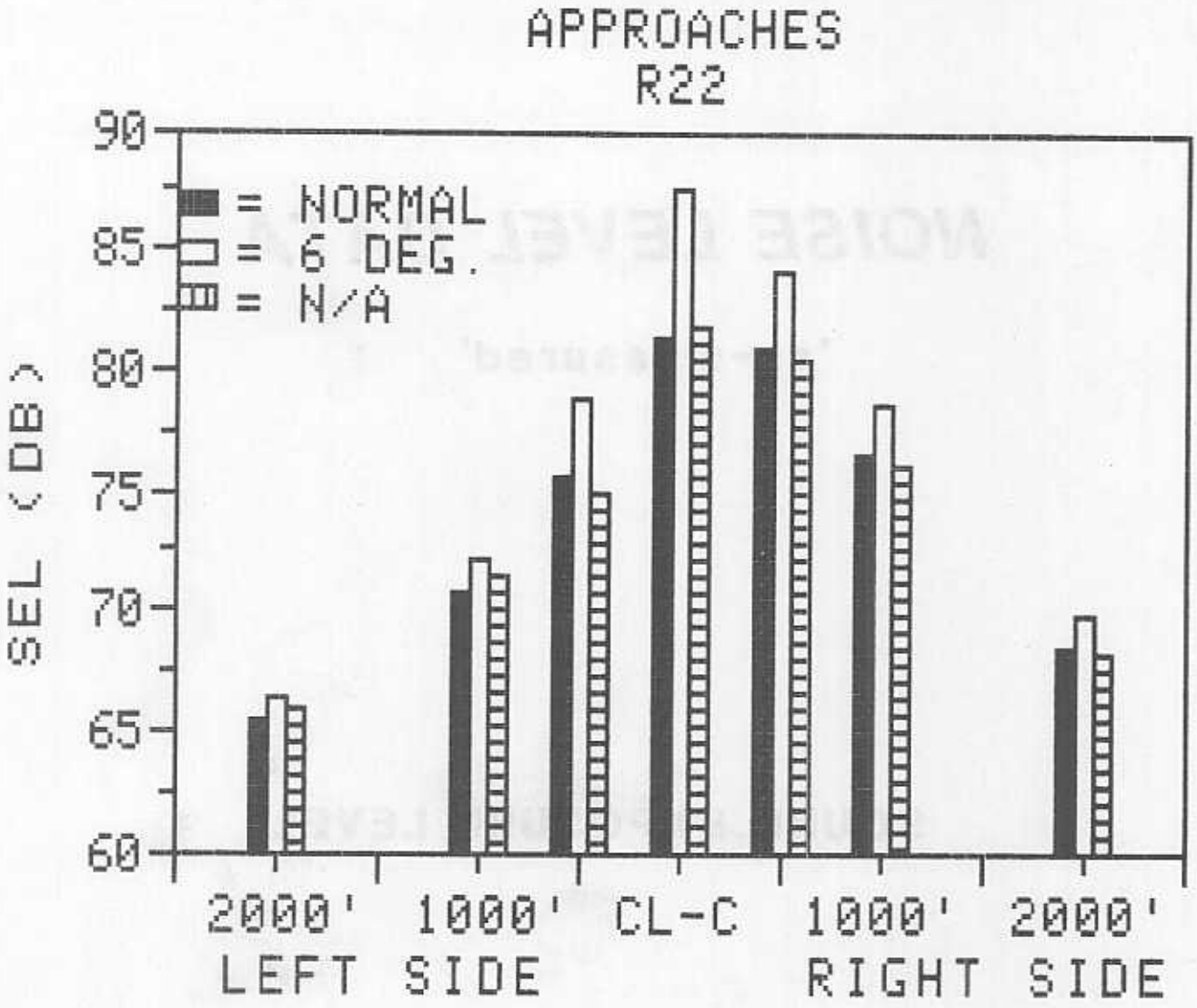
MAIN AND TAIL ROTOR SPECIFICATIONS

	MAIN	TAIL
DIAMETER (FT.) :	25.17	3.3
NO. OF BLADES :	2	2
TIPSPEED (FPS) :	699	623
TIP SHAPE :	RECTANGULAR	RECTANGULAR

NOISE LEVEL DATA

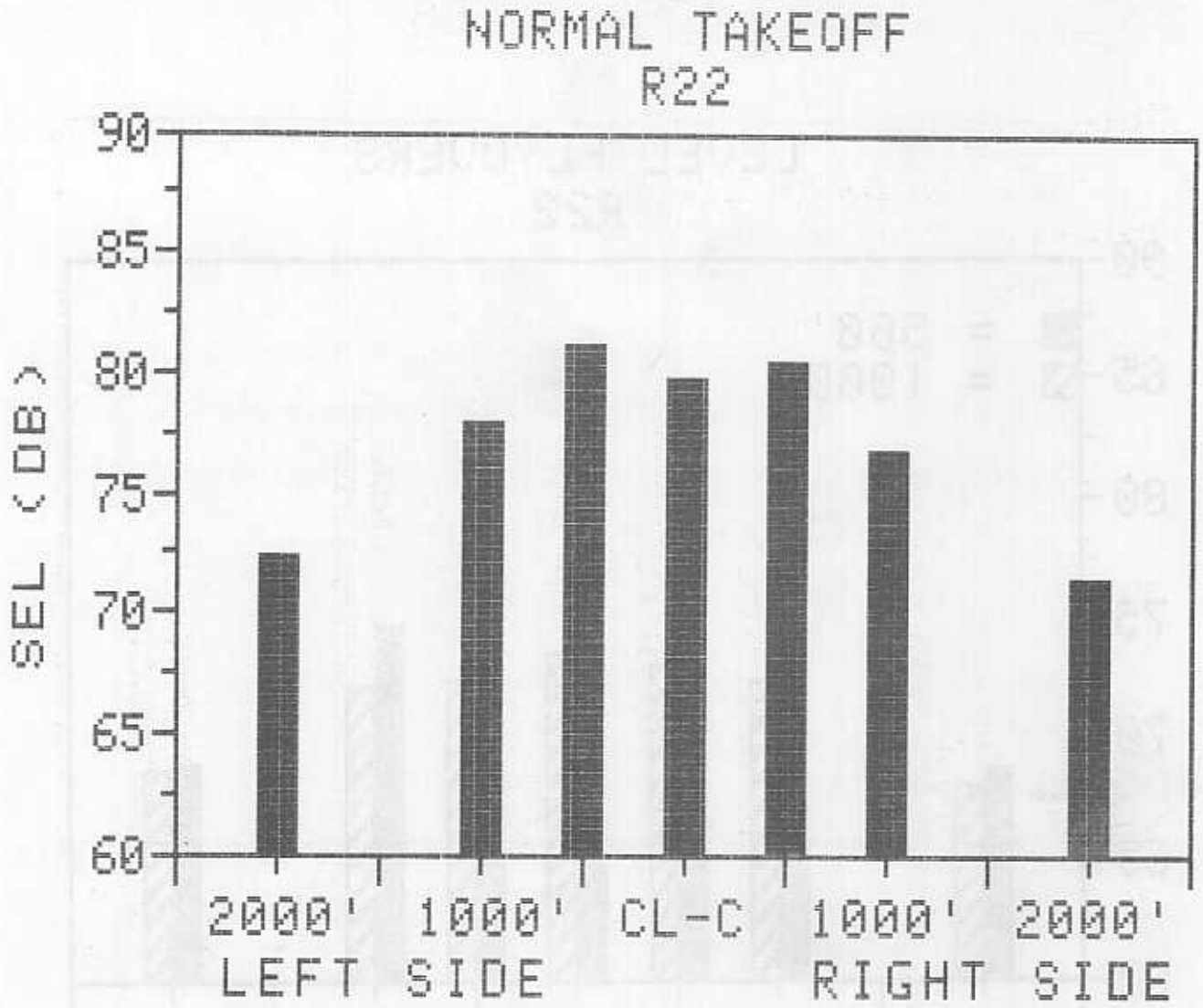
'as-measured'

SOUND EXPOSURE LEVEL



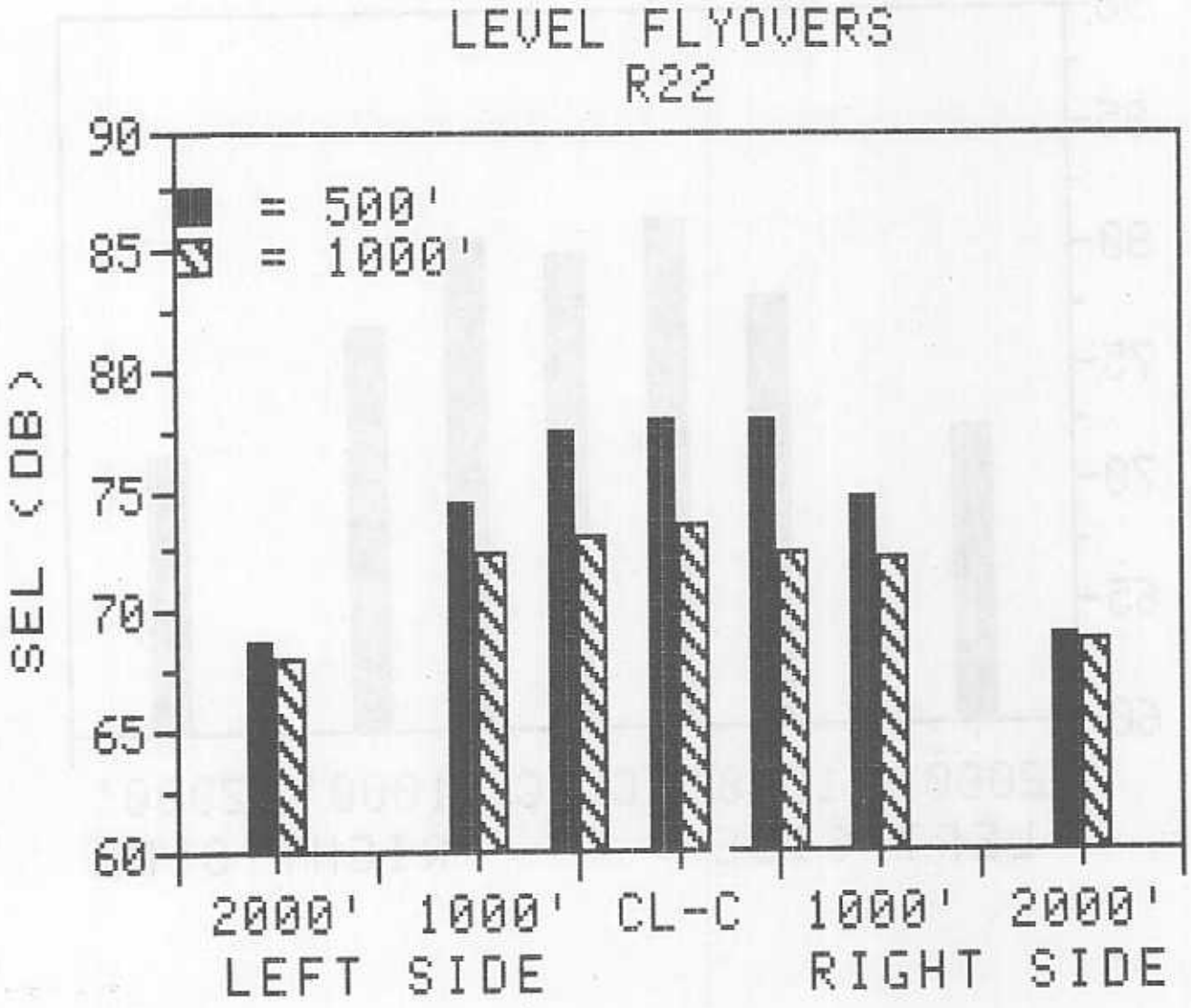
OPERATION	AVG. ALT. OVER CL-C (FT. AGL)	INDICATED AIRSPEED (KTS.)	GLIDESLOPE RANGE (DEG.)
NORMAL APPROACH	620	58-50	2.7-8.3
SIX DEG. APPROACH	420	55	6.0
NOISE ABATEMENT APP. VAR. R/D AND A/S (EVENTS D22-D29)	620	69-52	1.7-7.5

NOTE: ALTITUDE, AIRSPEED AND VERTICAL SPEED DATA READ FROM VIDEO TAPES OF THE INSTRUMENT PANEL. THE GLIDESLOPE RANGE WAS CALCULATED WITHIN ±15 SEC OF THE CL-C MICROPHONE POSITION.



OPERATION	AVG. ALT. OVER CLC (FT. AGL)	INDICATED AIRSPEED (KTS.)
NORMAL TAKEOFF	405	59

NOTE: ALTIMETER AND INDICATED AIRSPEED READINGS MADE WHEN THE HELICOPTER PASSED OVER CLC MICROPHONE POSITION



INDICATED AIRSPEED = 83 KTS.

R22 SUMMARY SHEET (7/09/84)

SOUND EXPOSURE LEVEL (DB)

	(LEFT SIDE)				(RIGHT SIDE)		
	2000'	1000'	500'	CL-C	500'	1000'	2000'
* SIX DEG. APPROACH AT VY, 55 KTS. *							
AVERAGE	66.4	72.1	78.9	87.5	84.1	78.5	69.9
N	6	7	7	7	7	5	5
S.D.	.6	1.1	.8	1.7	1.1	.5	1.3
90% CI	.5	.8	.6	1.3	.8	.4	1.3
* NORMAL APPROACH *							
AVERAGE	65.5	70.7	75.5	81.4	80.8	76.6	68.4
N	6	6	6	6	6	6	5
S.D	.4	1.4	1.2	3.3	2.3	1.7	2.0
90% CI	.4	1.3	1.1	3.2	2.2	1.6	1.9
* NOISE ABATEMENT APPROACH (VAR. R/D AND A/S) *							
AVERAGE	65.8	71.4	75.0	81.7	80.4	76.1	68.3
N	7	8	8	8	8	7	7
S.D	1.4	1.0	2.0	2.7	1.6	1.0	.9
90% CI	1.0	.6	1.4	1.8	1.1	.7	.7
* NORMAL TAKEOFF *							
AVERAGE	72.3	77.9	81.2	79.8	80.5	76.8	71.4
N	6	7	7	7	7	7	7
S.D	1.1	.9	.3	.4	.5	.4	.9
90% CI	.9	.7	.2	.3	.3	.3	.7

R22 SUMMARY SHEET (7/09/84)

SOUND EXPOSURE LEVEL (DB)

	(LEFT SIDE)				(RIGHT SIDE)		
	2000'	1000'	500'	CL-C	500'	1000'	2000'
* 500 FT. LEVEL FLYOVER AT 83 KTS. *							
AVERAGE	68.7	74.4	77.4	78.0	77.8	74.7	68.8
N	4	6	7	7	6	6	3
S.D.	.4	.6	.4	.5	.7	.5	.2
90% CI	.4	.5	.3	.4	.6	.4	.4
* 1000 FT. LEVEL FLYOVER AT 83 KTS. *							
AVERAGE	68.0	72.3	73.0	73.5	72.3	72.1	68.6
N	3	6	5	6	5	6	3
S.D	.6	.6	.8	.5	.6	.8	.4
90% CI	1.1	.5	.8	.4	.6	.6	.7

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: ROBINSON R22 TEST DATE: 7/09/84

OPERATION : 6 DEGREE APPROACH AT VY, 55 KTS.

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
A1	66.10	70.30	79.20	90.20	83.40	--	--
A2	66.10	71.00	79.40	87.50	83.80	--	--
A3	67.40	72.90	78.90	86.70	84.10	78.40	70.10
A4	65.90	72.20	78.90	87.60	86.30	79.20	68.50
A5	66.70	72.40	77.20	84.50	83.40	78.40	70.20
A6	66.40	72.80	79.60	88.30	83.10	78.40	68.90
A7	--	73.30	79.10	88.00	84.50	77.90	71.90
AVERAGE	66.43	72.13	78.90	87.54	84.09	78.46	69.92
STD. DEV.	0.55	1.09	0.79	1.72	1.09	0.47	1.33
90% C.I.	0.45	0.80	0.58	1.26	0.80	0.44	1.27

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: ROBINSON R22

TEST DATE: 7/09/84

OPERATION : NORMAL APPROACH

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
B8	66.90	72.20	77.60	84.40	83.20	78.10	--
B10	65.10	71.90	75.80	82.60	82.30	77.70	69.50
B12	64.90	68.60	73.50	77.30	77.10	73.50	65.10
B14	--	--	--	--	--	--	--
B16	65.00	69.70	75.00	78.30	79.70	76.40	69.80
B18	65.20	70.40	74.50	80.30	79.60	76.40	69.50
B20	65.60	71.50	76.30	85.40	82.60	77.40	68.20
AVERAGE	65.45	70.72	75.45	81.38	80.75	76.58	68.42
STD. DEV.	0.42	1.38	1.20	3.35	2.32	1.69	1.96
90% C.I.	0.40	1.32	1.14	3.19	2.21	1.61	1.86

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: ROBINSON R22 TEST DATE: 7/09/84

OPERATION : NORMAL TAKEOFF

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' WEST	1000' WEST	500' WEST	CL-C	500' EAST	1000' EAST	2000' EAST
C9	--	77.20	81.10	79.90	81.30	77.30	70.90
C11	70.30	77.50	81.40	79.50	80.50	76.60	72.70
C13	72.30	77.80	81.20	79.70	80.50	77.00	72.60
C15	73.70	77.50	81.80	80.10	80.70	76.20	71.20
C17	72.90	78.00	80.90	80.10	80.00	76.60	71.10
C19	72.40	79.80	81.10	80.40	80.50	76.90	71.00
C21	72.30	77.40	81.00	79.10	79.90	76.90	70.30
AVERAGE	72.32	77.89	81.21	79.83	80.49	76.79	71.40
STD. DEV.	1.13	0.88	0.30	0.43	0.46	0.35	0.90
90% C.I.	0.93	0.65	0.22	0.32	0.34	0.26	0.66

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: ROBINSON R22 TEST DATE: 7/09/84

OPERATION : NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
D22	64.60	71.40	75.50	81.20	80.70	76.30	67.20
D23	68.10	73.00	74.40	82.30	80.20	76.90	--
D24	66.40	71.00	74.70	81.30	80.70	76.60	67.90
D25	66.20	70.60	73.90	78.70	79.30	75.40	67.30
D26	--	71.70	72.40	79.90	78.80	--	68.60
D27	63.80	69.90	73.40	79.10	78.50	74.40	68.10
D28	65.20	71.50	77.40	85.20	81.60	76.00	69.30
D29	66.30	72.30	78.40	86.00	83.40	77.20	69.40
AVERAGE	65.80	71.43	75.01	81.71	80.40	76.11	68.26
STD. DEV.	1.41	0.96	2.02	2.69	1.61	0.96	0.88
90% C.I.	1.03	0.64	1.35	1.79	1.07	0.70	0.65

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: ROBINSON R22 TEST DATE: 7/09/84

OPERATION : LEVEL FLYOVER (500 FT. @ 83 KTS.)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' WEST	1000' WEST	500' WEST	CL-C	500' EAST	1000' EAST	2000' EAST
F30	68.80	74.20	77.40	78.50	77.80	74.40	--
F31	--	--	78.00	77.00	77.20	74.50	68.60
F32	68.60	74.80	77.60	78.10	78.20	75.10	--
F33	--	73.30	77.10	77.90	76.70	74.10	68.90
F34	69.10	74.90	77.10	78.40	78.10	--	--
F35	--	74.20	76.90	77.80	--	74.80	69.00
F36	68.20	74.90	77.90	78.50	78.60	75.30	--
AVERAGE	68.68	74.38	77.43	78.03	77.77	74.70	68.83
STD. DEV.	0.38	0.62	0.42	0.53	0.70	0.45	0.21
90% C.I.	0.44	0.51	0.31	0.39	0.58	0.37	0.35

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: ROBINSON R22 TEST DATE: 7/09/84

OPERATION : LEVEL FLYOVER (1000 FT. AT 83 KTS.)

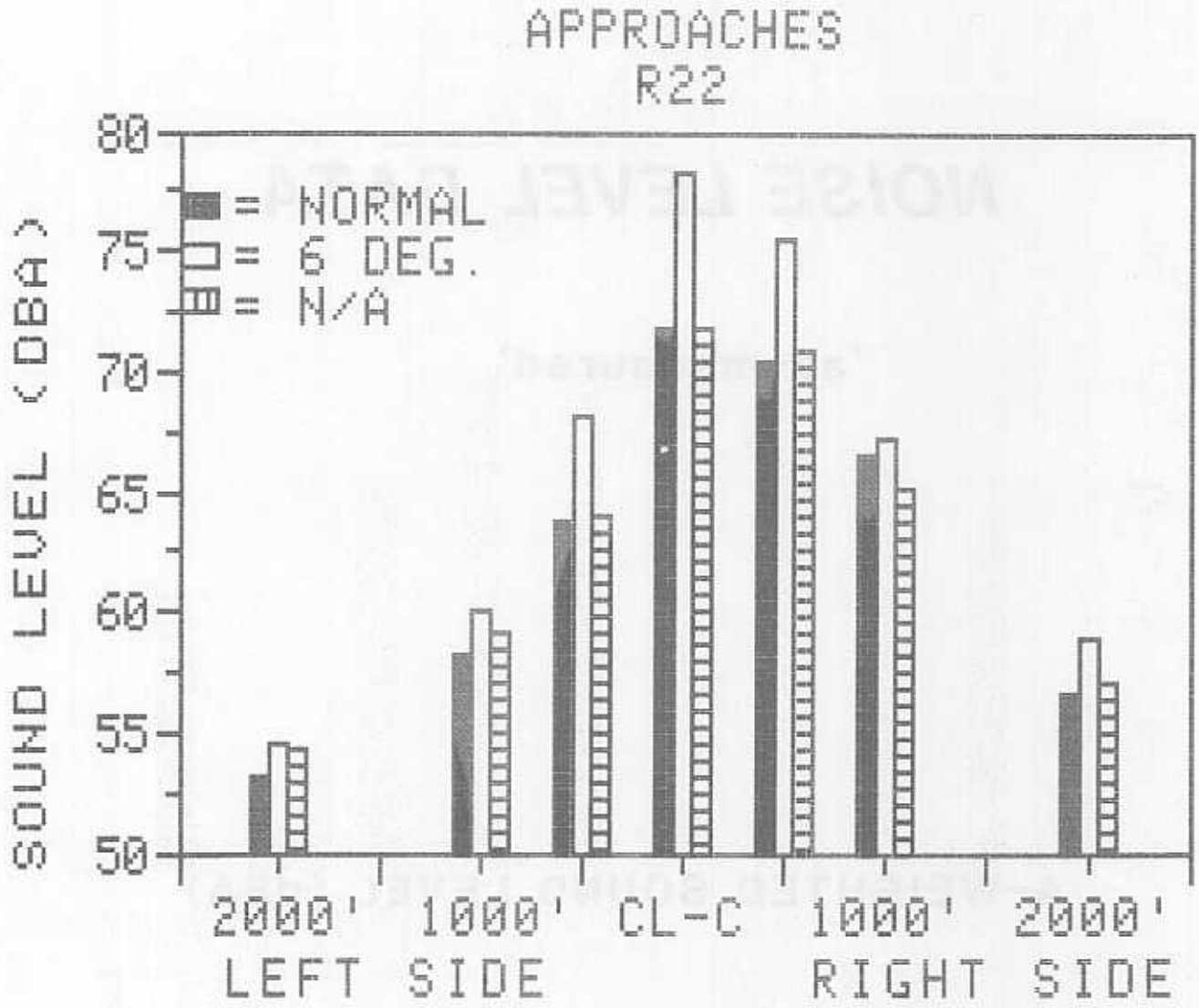
	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' WEST	1000' WEST	500' WEST	CL-C	500' EAST	1000' EAST	2000' EAST
E37	--	72.10	--	74.00	71.80	71.50	68.20
E38	67.30	72.10	72.40	73.70	73.10	72.40	--
E39	--	72.70	73.00	73.00	71.70	71.60	69.00
E40	68.40	72.80	73.70	74.20	72.80	73.50	--
E41	--	71.40	73.80	73.00	--	71.50	68.60
E42	68.40	72.90	72.00	73.10	72.30	72.10	--
AVERAGE	68.03	72.33	72.98	73.50	72.34	72.10	68.60
STD. DEV.	0.64	0.58	0.79	0.54	0.61	0.78	0.40
90% C.I.	1.07	0.47	0.75	0.44	0.58	0.64	0.67

NOISE LEVEL DATA

'as-measured'

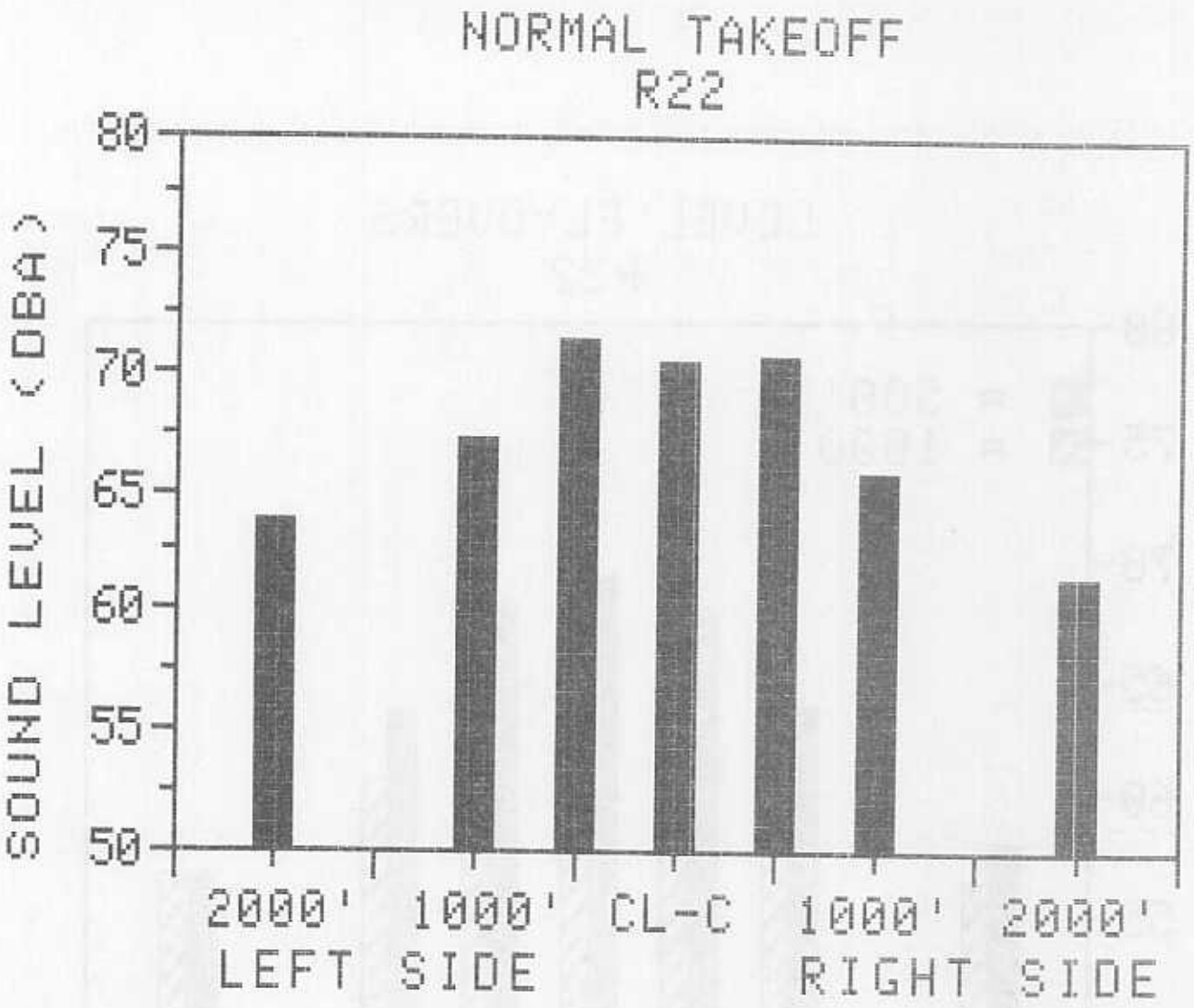
A-WEIGHTED SOUND LEVEL (dBA)

THIS SECTION OF THE APPENDIX CONTAINS THE 'AS-MEASURED' A-WEIGHTED SOUND LEVEL (dBA) FOR ALL FLIGHT EVENTS. THESE DATA ARE PRESENTED IN THE FORM OF BAR CHARTS, SUMMARY TABLES AND INDIVIDUAL EVENT DATA. THE BAR CHARTS SHOW THE FALL OFF IN NOISE LEVEL VERSUS SIDELINE DISTANCE, AND PROVIDE A QUICK LOOK COMPARISON OF THE NOISE LEVELS. PERTINENT FLIGHT PARAMETER INFORMATION READ FROM THE COCKPIT INSTRUMENT PANEL VIDEO RECORDINGS IS ALSO SHOWN BELOW EACH BAR CHART. THE SUMMARY TABLES PRESENT THE AVERAGE NOISE LEVEL, NUMBER OF SAMPLES, STANDARD DEVIATION AND THE 90 PERCENT CONFIDENCE INTERVAL FOR EACH FLIGHT CONDITION. INDIVIDUAL EVENT DATA FOR EACH CONDITION IS THEN GIVEN.



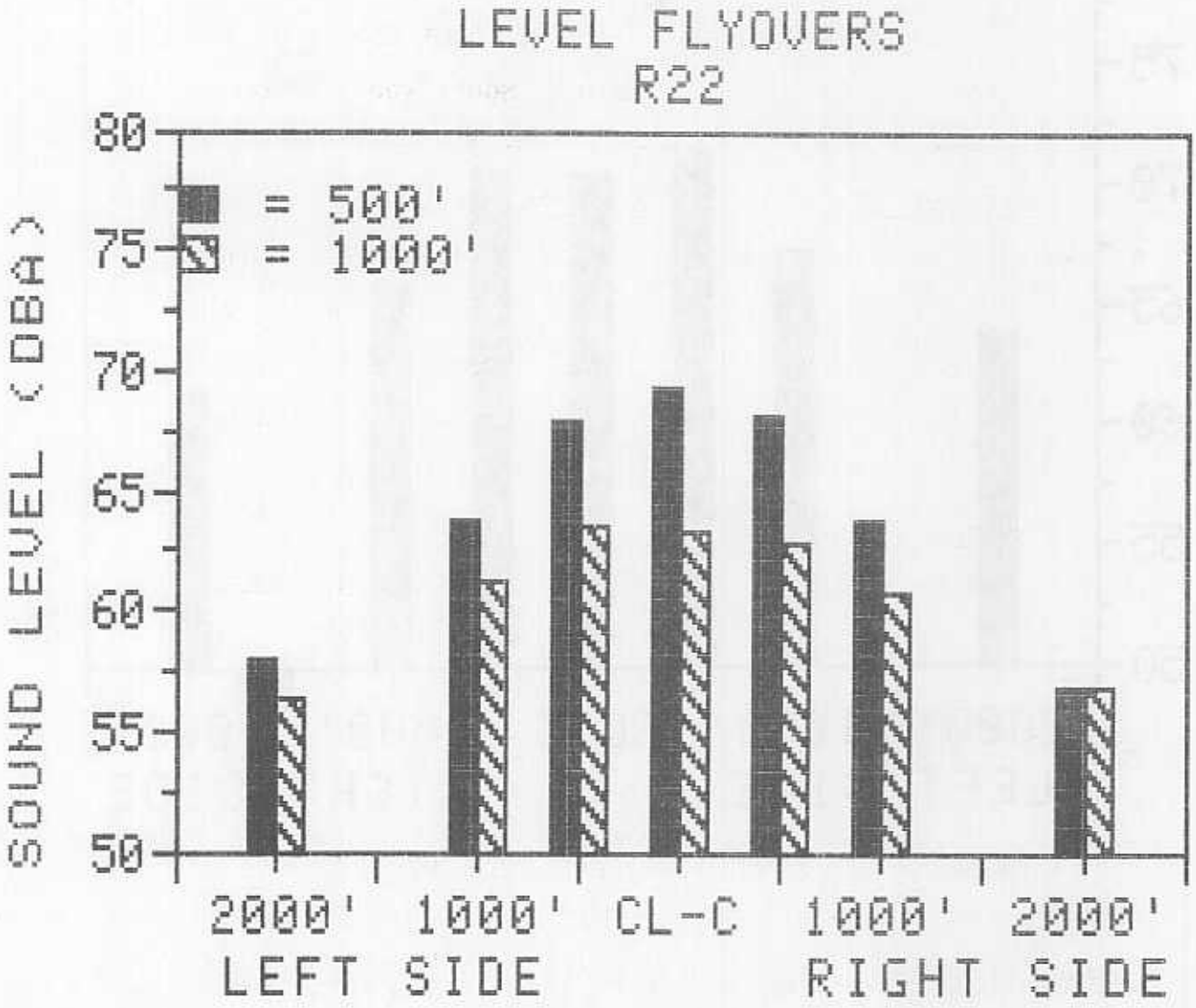
OPERATION	AVG. ALT. OVER CL-C (FT. AGL)	INDICATED AIRSPEED (KTS.)	GLIDESLOPE RANGE (DEG.)
NORMAL APPROACH	620	58-50	2.7-8.3
SIX DEG. APPROACH	420	55	6.0
NOISE ABATEMENT APP. VAR. R/D AND A/S (EVENTS D22-D29)	620	69-52	1.7-7.5

NOTE: ALTITUDE, AIRSPEED AND VERTICAL SPEED DATA READ FROM VIDEO TAPES OF THE INSTRUMENT PANEL. THE GLIDESLOPE RANGE WAS CALCULATED WITHIN ±15 SEC OF THE CL-C MICROPHONE POSITION.



OPERATION	AVG. ALT. OVER CLC (FT. AGL)	INDICATED AIRSPEED (KTS.)
NORMAL TAKEOFF	405	59

NOTE: ALTIMETER AND INDICATED AIRSPEED READINGS MADE WHEN THE HELICOPTER PASSED OVER CLC MICROPHONE POSITION



INDICATED AIRSPEED = 83 KTS.

R22 SUMMARY SHEET (7/09/84)

A-WEIGHTED SOUND LEVEL (DB)

	(LEFT SIDE)				(RIGHT SIDE)		
	2000'	1000'	500'	CL-C	500'	1000'	2000'
* SIX DEG. APPROACH AT VY, 55 KTS. *							
AVERAGE	54.5	60.1	68.2	78.3	75.4	67.3	58.8
N	7	7	7	7	7	5	5
S.D.	1.4	1.2	1.9	2.6	2.5	.6	1.3
90% CI	1.0	.9	1.4	1.9	1.8	.6	1.2
* NORMAL APPROACH *							
AVERAGE	53.1	58.2	63.7	71.9	70.5	66.4	56.5
N	6	6	6	6	6	6	5
S.D	1.1	2.1	3.3	4.5	3.6	2.1	2.2
90% CI	1.0	2.0	3.1	4.3	3.5	2.0	2.1
* NOISE ABATEMENT APPROACH (VAR. R/D AND A/S) *							
AVERAGE	54.3	59.2	64.0	71.7	70.8	65.2	57.0
N	7	8	8	8	8	8	7
S.D	1.8	1.9	3.0	3.8	2.9	1.6	1.9
90% CI	1.3	1.3	2.0	2.6	2.0	1.1	1.4
* NORMAL TAKEOFF *							
AVERAGE	63.7	67.3	71.4	70.4	70.7	65.9	61.5
N	6	6	7	7	7	7	7
S.D	1.1	1.5	.7	1.1	1.0	.8	2.4
90% CI	.9	1.2	.5	.8	.7	.6	1.7

R22 SUMMARY SHEET (7/09/84)

A-WEIGHTED SOUND LEVEL (DB)

	(LEFT SIDE)				(RIGHT SIDE)		
	2000'	1000'	500'	CL-C	500'	1000'	2000'
* 500 FT. LEVEL FLYOVER AT 83 KTS. *							
AVERAGE	57.9	63.8	68.0	69.3	68.2	63.8	56.8
N	4	7	6	7	6	7	3
S.D.	1.2	1.0	.8	.4	.7	.5	1.0
90% CI	1.4	.7	.7	.3	.6	.4	1.6
* 1000 FT. LEVEL FLYOVER AT 83 KTS. *							
AVERAGE	56.4	61.3	63.6	63.3	62.8	60.8	56.9
N	3	6	5	6	6	6	3
S.D	.3	1.0	2.5	1.3	1.3	.8	1.0
90% CI	.5	.9	2.4	1.1	1.1	.6	1.7

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: ROBINSON R22 TEST DATE: 7/09/84

OPERATION : 6 DEGREE APPROACH AT VY, 55 KTS.

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
A1	52.80	60.90	69.20	82.20	76.00	--	--
A2	53.70	60.80	69.30	79.70	76.30	--	--
A3	56.10	59.00	66.90	76.50	75.90	67.50	59.90
A4	54.30	61.30	67.70	79.30	79.60	67.80	57.80
A5	52.90	58.50	65.10	73.90	72.20	66.20	58.30
A6	55.80	61.20	70.80	77.60	72.50	67.30	57.50
A7	55.70	59.30	68.10	79.10	75.20	67.50	60.30
AVERAGE	54.47	60.14	68.16	78.33	75.39	67.26	58.76
STD. DEV.	1.40	1.17	1.85	2.64	2.50	0.62	1.26
90% C.I.	1.03	0.86	1.36	1.94	1.83	0.59	1.20

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: ROBINSON R22 TEST DATE: 7/09/84

OPERATION : NORMAL APPROACH

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
B8	56.70	61.50	68.30	75.90	74.40	70.00	--
B10	53.10	58.80	64.70	72.40	73.10	67.10	59.00
B12	51.70	55.70	61.80	67.40	66.00	63.00	54.10
B14	--	--	--	--	--	--	--
B16	51.60	56.70	61.90	68.10	66.90	64.90	58.30
B18	52.50	56.30	58.70	69.60	68.70	65.20	56.20
B20	53.00	60.30	66.80	78.20	73.60	68.00	54.70
AVERAGE	53.10	58.22	63.70	71.93	70.45	66.37	56.46
STD. DEV.	1.07	2.06	3.26	4.48	3.62	2.12	2.15
90% C.I.	1.02	1.96	3.10	4.26	3.45	2.02	2.05

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: ROBINSON R22 TEST DATE: 7/09/84

OPERATION : NORMAL TAKEOFF

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' WEST	1000' WEST	500' WEST	CL-C	500' EAST	1000' EAST	2000' EAST
C9	--	67.10	71.30	70.00	71.30	65.30	59.30
C11	61.60	66.30	71.70	70.00	70.70	67.30	63.90
C13	64.20	--	71.10	70.70	70.40	66.20	62.20
C15	64.00	66.30	71.80	71.30	71.00	64.90	65.10
C17	64.70	68.00	71.20	71.10	70.90	66.00	59.20
C19	64.20	70.00	72.40	71.40	71.60	66.40	59.60
C21	63.30	66.10	70.30	68.30	68.70	65.40	61.20
AVERAGE	63.67	67.30	71.40	70.40	70.66	65.93	61.50
STD. DEV.	1.11	1.50	0.66	1.09	0.95	0.81	2.35
90% C.I.	0.91	1.24	0.48	0.80	0.69	0.59	1.72

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: ROBINSON R22 TEST DATE: 7/09/84

OPERATION : NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
D22	53.00	59.30	64.60	71.90	70.30	65.00	55.60
D23	57.90	60.70	63.20	69.60	70.00	65.00	--
D24	52.60	58.10	63.30	71.40	71.10	65.80	54.60
D25	54.90	56.60	61.40	69.20	69.60	64.00	56.80
D26	--	60.30	61.10	68.60	67.70	64.00	59.30
D27	53.00	56.50	61.30	67.70	67.50	63.00	55.70
D28	53.80	60.50	68.30	76.90	74.40	66.50	57.40
D29	54.80	61.20	68.60	78.00	75.70	68.00	59.50
AVERAGE	54.29	59.15	63.98	71.66	70.79	65.16	56.99
STD. DEV.	1.83	1.87	3.01	3.84	2.92	1.59	1.88
90% C.I.	1.34	1.25	2.01	2.56	1.95	1.06	1.38

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: ROBINSON R22

TEST DATE: 7/09/84

OPERATION : LEVEL FLYOVER (500 FT. @ 83 KTS.)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' WEST	1000' WEST	500' WEST	CL-C	500' EAST	1000' EAST	2000' EAST
F30	57.80	63.30	68.30	69.40	68.00	63.00	--
F31	--	64.50	68.40	68.50	67.60	64.00	57.70
F32	59.20	64.60	68.40	69.40	68.30	64.50	--
F33	--	62.00	66.80	69.20	67.30	63.60	55.80
F34	58.10	63.80	67.30	69.50	68.30	63.80	--
F35	--	63.50	--	69.50	--	63.20	56.80
F36	56.40	64.70	69.00	69.90	69.40	64.20	--
AVERAGE	57.88	63.77	68.03	69.34	68.15	63.76	56.77
STD. DEV.	1.15	0.96	0.82	0.43	0.73	0.53	0.95
90% C.I.	1.35	0.70	0.67	0.31	0.60	0.39	1.60

A-WEIGHTED SOUND LEVEL (DB)

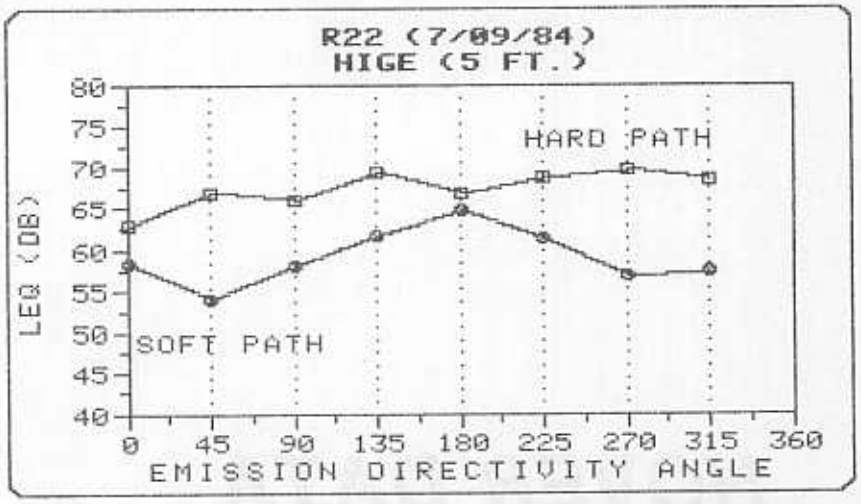
HELICOPTER: ROBINSON R22 TEST DATE: 7/09/84

OPERATION : LEVEL FLYOVER (1000 FT. AT 83 KTS.)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' WEST	1000' WEST	500' WEST	CL-C	500' EAST	1000' EAST	2000' EAST
E37	--	62.00	--	64.50	62.90	60.60	58.10
E38	56.70	60.80	62.20	63.60	64.40	61.00	--
E39	--	60.00	62.70	61.80	61.50	60.30	56.50
E40	56.20	62.90	67.60	65.00	62.40	62.00	--
E41	--	60.70	64.20	62.80	61.20	59.70	56.20
E42	56.20	61.60	61.30	62.00	64.20	61.00	--
AVERAGE	56.37	61.33	63.60	63.28	62.77	60.77	56.93
STD. DEV.	0.29	1.04	2.47	1.31	1.34	0.78	1.02
90% C.I.	0.49	0.86	2.35	1.08	1.10	0.64	1.72

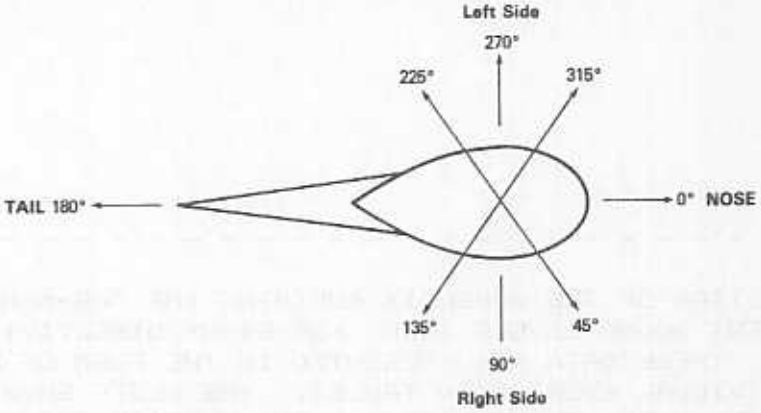
HOVER DATA

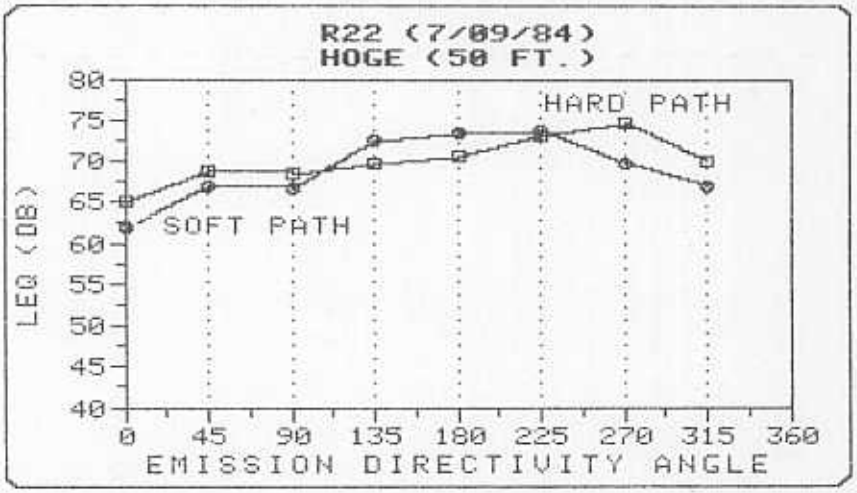
THIS SECTION OF THE APPENDIX CONTAINS THE 'AS-MEASURED' EQUIVALENT SOUND LEVELS (LEQ) FOR EIGHT DIRECTIVITY ANGLES. THESE DATA ARE PRESENTED IN THE FORM OF PLOTS AND INDIVIDUAL EVENT DATA TABLES. THE PLOTS SHOW THE EFFECT OF 'HARD' SURFACE VS. 'SOFT' SURFACE 500 FEET FROM THE HOVER POINT FOR IN-GROUND-EFFECT AND OUT-OF-GROUND-EFFECT HOVER. INDIVIDUAL EVENT DATA FOR EACH DIRECTIVITY ANGLE AT DISTANCES OF 500, 1000 AND 1500 FEET FROM HOVER POINT OVER A 'SOFT' PATH AND 500, 1000 AND 2000 FEET FROM HOVER POINT OVER A 'HARD' PATH IS THEN GIVEN.



500 FT. FROM HOVER POINT

Acoustical Emission Angle Convention





500 FT. FROM HOVER POINT

HOVER DATA (LEQ)

HELICOPTER: ROBINSON R22 DATE: 7/09/84

MICROPHONE: 500 FT. FROM HOVER POINT

DIRECTIVITY ANGLES (DEGREES)		(SOFT PATH) HOVER 5 FT. AGL	(SOFT PATH) HOVER 50 FT. AGL	(HARD PATH) HOVER 5 FT AGL	(HARD PATH) HOVER 50 FT. AGL
(NOSE)	0	58.2	61.9	63.0	65.2
	45	54.1	66.9	66.9	68.8
(LEFT)	90	57.9	66.7	66.0	68.4
	135	61.6	72.4	69.4	69.7
(TAIL)	180	64.9	73.5	66.9	70.6
	225	61.4	73.7	68.7	73.2
(RIGHT)	270	56.8	69.6	69.8	74.6
	315	57.3	66.9	68.4	70.1

MICROPHONE: 1000 FT. FROM HOVER POINT

DIRECTIVITY ANGLES (DEGREES)		(SOFT PATH) HOVER 5 FT. AGL	(SOFT PATH) HOVER 50 FT. AGL	(HARD PATH) HOVER 5 FT AGL	(HARD PATH) HOVER 50 FT. AGL
(NOSE)	0	--	52.2	54.8	58.9
	45	48.7	56.0	59.8	61.3
(LEFT)	90	48.7	51.4	58.5	62.1
	135	49.9	58.8	62.3	62.9
(TAIL)	180	--	63.6	58.1	63.7
	225	50.4	65.9	58.9	68.0
(RIGHT)	270	48.5	62.1	62.2	68.1
	315	47.1	56.2	60.1	63.6

HOVER DATA (LEQ)

HELICOPTER: ROBINSON R22 DATE: 7/09/84

MICROPHONE: 1500 FT. FROM HOVER POINT

(SOFT PATH)

DIRECTIVITY ANGLES (DEGREES)		HOVER 5 FT. AGL	HOVER 50 FT. AGL
(NOSE)	0	50.0	52.4
	45	54.0	55.7
(LEFT)	90	50.9	55.9
	135	53.4	57.7
(TAIL)	180	51.1	56.3
	225	50.1	60.6
(RIGHT)	270	56.6	62.5
	315	51.8	57.5

MICROPHONE: 2000 FT. FROM HOVER POINT

(HARD PATH)

DIRECTIVITY ANGLES (DEGREES)		HOVER 5 FT. AGL	HOVER 50 FT. AGL
(NOSE)	0	BELOW	42.4
	45	THE AMBIENT	44.6
(LEFT)	90		42.6
	135		45.4
(TAIL)	180		50.4
	225		52.6
(RIGHT)	270		49.7
	315		48.1

RADAR TRACKING

DATA

THIS SECTION OF THE APPENDIX CONTAINS THE HELICOPTER POSITION DATA AND TRACKING PLOTS DERIVED FROM THE FAA'S PORTABLE TRACKING RADAR SYSTEM. THE POSITION DATA LISTS THE CLOSEST POINT OF APPROACH (CPA), TIME OF CPA, ELEVATION ANGLE, RATE OF CLIMB OR DESCENT, THE CLIMB OR DESCENT ANGLE, AND GROUND SPEED FOR ALL FLIGHT CONDITIONS. TRACKING PLOTS OF THE ACTUAL FLIGHT PROFILE FLOWN ARE PROVIDED FOR EACH FLIGHT CONDITIONS.

ROBINSON R22

POSITION DATA
NOISE MEASUREMENT PROGRAM

CENTERLINE CENTER

DATE:07/09/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
SIX DEG. APPROACH AT VY, 55 KTS.							
1	APP	377.5	86.1	10:20:28.8	-505.6	-5.1	55.7
2	APP	391.9	77.7	10:25:00.2	-536.6	-5.6	54.1
3	APP	385.3	80.8	10:29:27.2	-608.4	-6.1	56.5
4	APP	391.4	86.8	10:34:07.8	-381.0	-3.9	54.5
5	APP	392.4	80.5	10:39:45.5	-636.8	-6.7	53.4
6	APP	380.9	87.3	10:45:01.1	-301.7	-3.2	52.5
7	APP	367.0	87.0	10:49:44.7	-507.7	-5.4	53.4
NORMAL APPROACH							
8		-----	NO DATA	-----			
10		-----	NO DATA	-----			
12	APP	573.3	85.4	11:14:07.8	-673.7	-6.6	57.5
14	APP	544.9	89.0	11:19:06.2	-362.9	-4.1	50.4
16	APP	573.8	83.2	11:24:10.2	-818.5	-9.1	50.7
18	APP	562.4	78.6	11:28:44.0	-910.3	-9.8	51.9
20	APP	538.0	81.0	11:33:32.2	-658.5	-7.5	49.5
NORMAL TAKEOFF							
9		-----	NO DATA	-----			
11	DEP	391.1	84.6	11:10:22.2	481.7	5.0	54.3
13	DEP	394.1	83.8	11:16:07.3	-169.0	-1.5	63.1
15		-----	NO DATA	-----			
17	DEP	376.0	79.8	11:26:03.4	513.7	5.2	55.5
19	DEP	457.2	55.5	11:30:47.1	759.3	8.8	48.5
21	DEP	515.5	62.0	11:35:23.4	416.2	5.1	46.3

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

ROBINSON R22

POSITION DATA
NOISE MEASUREMENT PROGRAM

CENTERLINE CENTER

DATE:07/09/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)							
22	APP	576.1	78.9	11:45:40.9	-786.4	-7.3	60.4
23	APP	561.7	80.0	11:49:31.0	-723.7	-7.5	54.0
24	APP	577.7	78.8	11:54:17.5	-923.8	-8.3	62.6
25	APP	598.6	85.4	11:58:26.0	-744.5	-6.9	60.6
26	APP	561.5	79.1	12:02:08.2	-472.2	-5.3	50.0
27	APP	525.2	88.9	12:05:54.0	-504.7	-5.7	49.7
28	APP	527.6	84.7	12:09:28.3	-518.8	-4.9	59.4
29	APP	559.6	84.6	12:13:03.2	-639.5	-7.0	51.4
500 FT. LEVEL FLYOVER AT 83 KTS.							
30	F/O	419.2	86.5	12:53:28.1	-151.2	-1.1	78.0
31		-----	NO DATA	-----			
32	F/O	409.4	87.2	12:57:36.5	77.6	0.6	78.2
33		-----	NO DATA	-----			
34	F/O	407.9	88.0	13:02:10.3	19.2	0.1	82.5
35		-----	NO DATA	-----			
36	F/O	385.2	86.4	13:10:39.4	114.1	0.8	83.5
1000 FT. LEVEL FLYOVER AT 83 KTS.							
37	F/O	957.4	80.0	13:13:18.0	645.2	4.5	81.7
38		-----	NO DATA	-----			
39	F/O	935.4	85.3	13:18:15.9	357.6	2.5	81.2
40	F/O	902.6	86.5	13:23:34.2	-352.6	-2.5	80.9
41	F/O	909.0	83.0	13:26:04.2	312.5	2.3	75.6
42	F/O	988.6	89.4	13:28:32.6	42.9	0.3	87.3

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

ROBINSON R22

POSITION DATA
NOISE MEASUREMENT PROGRAM

500 FT. EAST

DATE:07/09/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
SIX DEG. APPROACH AT VY, 55 KTS.							
1	APP	616.8	37.9	10:20:28.8	-505.8	-5.1	55.7
2	APP	629.6	39.1	10:24:59.4	-551.9	-5.9	53.1
3	APP	626.4	38.6	10:29:25.8	-428.0	-4.4	55.0
4	APP	643.4	37.7	10:34:07.6	-405.9	-4.2	54.5
5	APP	632.8	37.9	10:39:45.5	-637.3	-6.7	53.4
6	APP	633.3	37.3	10:45:00.2	-204.2	-2.2	51.8
7	APP	622.4	37.2	10:49:44.5	-499.5	-5.4	52.6
NORMAL APPROACH							
8		-----	NO DATA	-----			
10		-----	NO DATA	-----			
12	APP	748.2	50.2	11:14:07.7	-669.4	-6.5	57.7
14	APP	732.3	48.4	11:19:06.0	-369.2	-4.1	50.6
16	APP	760.8	48.7	11:24:10.3	-806.5	-8.9	50.9
18	APP	757.3	46.8	11:28:44.1	-917.6	-9.9	51.7
20	APP	740.6	46.1	11:33:32.4	-625.2	-7.2	49.0
NORMAL TAKEOFF							
9		-----	NO DATA	-----			
11	DEP	602.2	40.6	11:10:22.4	454.4	4.7	54.8
13	DEP	593.0	41.5	11:16:07.1	-209.8	-1.8	64.5
15		-----	NO DATA	-----			
17	DEP	562.6	41.7	11:26:03.6	480.6	4.9	55.9
19	DEP	661.9	34.5	11:30:47.2	854.9	9.9	48.5
21	DEP	683.3	42.0	11:35:23.4	417.0	5.1	46.3

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

ROBINSON R22

POSITION DATA
NOISE MEASUREMENT PROGRAM

500 FT. EAST

DATE:07/09/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)							
22	APP	748.5	50.5	11:45:40.1	-797.1	-7.5	59.5
23	APP	747.5	48.3	11:49:31.1	-708.7	-7.4	53.5
24	APP	750.8	49.1	11:54:17.8	-914.0	-8.3	61.9
25	APP	773.6	50.8	11:58:26.2	-719.6	-6.7	60.7
26	APP	751.3	48.7	12:02:07.2	-455.3	-5.0	51.3
27	APP	717.9	46.8	12:05:54.9	-491.2	-5.9	46.8
28	APP	718.7	47.4	12:09:28.2	-519.6	-5.0	59.1
29	APP	726.6	50.1	12:13:03.5	-634.4	-7.0	51.0
500 FT. LEVEL FLYOVER AT 83 KTS.							
30	F/O	645.8	40.6	12:53:28.0	-166.1	-1.2	77.8
31		-----	NO DATA	-----			
32	F/O	629.0	40.9	12:57:36.3	110.1	0.8	77.7
33		-----	NO DATA	-----			
34	F/O	657.2	38.6	13:02:10.3	19.2	0.1	82.5
35		-----	NO DATA	-----			
36	F/O	620.0	38.7	13:10:39.3	90.4	0.6	83.5
1000 FT. LEVEL FLYOVER AT 83 KTS.							
37	F/O	1027.1	66.9	13:13:18.0	645.6	4.5	81.7
38		-----	NO DATA	-----			
39	F/O	1027.9	64.9	13:18:15.5	359.3	2.5	81.7
40	F/O	1056.2	59.0	13:23:34.1	-353.0	-2.5	81.1
41	F/O	988.0	66.6	13:26:04.4	326.2	2.4	75.5
42	F/O	1113.4	62.1	13:28:31.5	162.5	1.0	89.7

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

ROBINSON R22

POSITION DATA
NOISE MEASUREMENT PROGRAM

500 FT. WEST

DATE:07/09/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
SIX DEG. APPROACH AT VY, 55 KTS.							
1	APP	629.5	36.4	10:20:29.4	-537.7	-5.5	55.4
2	APP	633.7	38.6	10:24:59.2	-550.3	-5.9	52.8
3	APP	613.8	36.2	10:29:28.1	-739.6	-7.4	56.0
4	APP	617.9	39.1	10:34:08.7	-339.5	-3.4	56.5
5	APP	639.2	37.1	10:39:45.6	-637.5	-6.7	53.4
6	APP	614.2	38.3	10:45:01.4	-347.5	-3.7	53.1
7	APP	607.2	37.1	10:49:44.7	-507.6	-5.4	53.4
NORMAL APPROACH							
8		-----	NO DATA	-----			
10		-----	NO DATA	-----			
12	APP	768.8	49.1	11:14:07.2	-685.9	-6.7	57.6
14	APP	730.0	48.4	11:19:06.3	-357.3	-4.0	50.2
16	APP	747.3	51.3	11:24:09.5	-901.8	-10.1	50.1
18	APP	741.2	49.1	11:28:43.7	-893.2	-9.7	51.6
20	APP	728.7	46.8	11:33:32.2	-658.6	-7.5	49.5
NORMAL TAKEOFF							
9		-----	NO DATA	-----			
11	DEP	660.8	36.1	11:10:21.9	545.8	5.6	55.4
13	DEP	632.4	38.6	11:16:07.7	-31.4	-0.3	58.9
15		-----	NO DATA	-----			
17	DEP	657.5	35.0	11:26:03.8	453.0	4.5	56.3
19	DEP	665.8	34.5	11:30:47.1	759.9	8.8	48.5
21	DEP	708.6	40.6	11:35:23.3	422.8	5.2	46.2

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

ROBINSON R22

POSITION DATA
NOISE MEASUREMENT PROGRAM

500 FT. WEST

DATE:07/09/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)							
22	APP	768.1	48.3	11:45:40.4	-815.6	-7.7	59.5
23	APP	748.7	49.5	11:49:30.5	-774.7	-7.8	55.8
24	APP	774.7	47.0	11:54:17.5	-924.4	-8.3	62.6
25	APP	769.4	51.1	11:58:26.5	-665.2	-6.2	60.1
26	APP	742.2	48.0	12:02:08.2	-472.5	-5.3	50.0
27	APP	709.2	45.7	12:05:56.4	-698.3	-8.2	48.0
28	APP	736.0	45.5	12:09:28.3	-518.5	-4.9	59.4
29	APP	768.1	45.6	12:13:04.4	-643.9	-7.0	51.4
500 FT. LEVEL FLYOVER AT 83 KTS.							
30	F/O	652.2	40.4	12:53:28.5	-76.2	-0.6	77.9
31		-----	NO DATA	-----			
32	F/O	652.0	39.1	12:57:36.0	133.0	1.0	77.1
33		-----	NO DATA	-----			
34	F/O	630.5	40.4	13:02:09.6	37.8	0.3	80.4
35		-----	NO DATA	-----			
36	F/O	638.5	36.9	13:10:39.1	3.9	0.0	83.7
1000 FT. LEVEL FLYOVER AT 83 KTS.							
37	F/O	1126.5	57.5	13:13:18.2	678.9	4.7	81.9
38		-----	NO DATA	-----			
39	F/O	1083.8	59.6	13:18:15.8	362.8	2.5	81.4
40	F/O	1008.0	63.4	13:23:34.2	-352.8	-2.5	80.9
41	F/O	1079.9	56.7	13:26:04.2	312.4	2.3	75.6
42	F/O	1103.6	63.6	13:28:32.6	42.9	0.3	87.3

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

ROBINSON R22

POSITION DATA
NOISE MEASUREMENT PROGRAM

1000 FT. EAST

DATE:07/09/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
SIX DEG. APPROACH AT VY, 55 KTS.							
1	APP	1055.2	21.5	10:20:28.0	-473.2	-4.8	56.0
2	APP	1066.0	22.0	10:24:58.9	-536.6	-5.7	53.0
3	APP	1062.8	21.7	10:29:25.8	-428.0	-4.4	55.0
4	APP	1083.1	21.4	10:34:07.5	-417.2	-4.3	54.4
5	APP	1069.6	22.0	10:39:44.9	-625.3	-6.5	54.2
6	APP	1073.3	21.1	10:45:00.2	-204.2	-2.2	51.8
7	APP	1065.1	20.8	10:49:44.5	-499.5	-5.4	52.6
NORMAL APPROACH							
8		-----	NO DATA	-----			
10		-----	NO DATA	-----			
12	APP	1135.5	30.9	11:14:07.5	-673.9	-6.5	58.1
14	APP	1125.2	29.4	11:19:05.1	-385.6	-4.4	49.6
16	APP	1152.0	29.9	11:24:10.3	-806.5	-8.9	50.9
18	APP	1152.7	28.7	11:28:44.2	-919.3	-10.0	51.4
20	APP	1141.5	28.0	11:33:32.5	-607.0	-7.0	48.9
NORMAL TAKEOFF							
9		-----	NO DATA	-----			
11	DEP	1031.7	17.1	11:10:15.6	973.5	9.3	58.4
13	DEP	795.1	23.0	11:16:02.4	2627.9	16.8	85.6
15		-----	NO DATA	-----			
17	DEP	994.0	22.2	11:26:03.6	480.6	4.9	55.9
19	DEP	1078.3	20.5	11:30:47.2	854.9	9.9	48.5
21	DEP	1080.7	25.1	11:35:23.4	417.0	5.1	46.3

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

ROBINSON R22

POSITION DATA
NOISE MEASUREMENT PROGRAM

1000 FT. EAST

DATE:07/09/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)							
22	APP	1134.5	30.7	11:45:40.1	-797.1	-7.5	59.5
23	APP	1138.3	30.7	11:49:29.8	-748.5	-7.4	56.7
24	APP	1135.2	30.1	11:54:17.8	-914.0	-8.3	61.9
25	APP	1156.1	31.3	11:58:26.2	-719.6	-6.7	60.7
26	APP	1145.5	29.6	12:02:07.2	-455.3	-5.0	51.3
27	APP	1119.5	28.0	12:05:54.9	-491.2	-5.9	46.8
28	APP	1119.8	28.3	12:09:28.2	-519.6	-5.0	59.1
29	APP	766.6	29.4	12:13:13.7	4.9	0.0	115.7
500 FT. LEVEL FLYOVER AT 83 KTS.							
30	F/O	1075.9	23.1	12:53:28.0	-166.1	-1.2	77.8
31		-----	NO DATA	-----			
32	F/O	1059.5	23.0	12:57:36.3	110.1	0.8	77.7
33		-----	NO DATA	-----			
34	F/O	1092.7	22.2	13:02:10.7	9.1	0.1	82.3
35		-----	NO DATA	-----			
36	F/O	940.9	22.5	13:10:35.0	842.3	1.9	244.9
1000 FT. LEVEL FLYOVER AT 83 KTS.							
37	F/O	1300.5	46.3	13:13:17.6	593.3	4.1	81.8
38		-----	NO DATA	-----			
39	F/O	1317.4	45.1	13:18:15.5	359.3	2.5	81.7
40	F/O	1382.1	42.0	13:23:33.6	-354.1	-2.5	81.0
41	F/O	1267.9	46.0	13:26:03.1	95.4	0.7	77.5
42	F/O	1410.5	44.3	13:28:31.5	162.5	1.0	89.7

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

ROBINSON R22

POSITION DATA
NOISE MEASUREMENT PROGRAM

1000 FT. WEST

DATE:07/09/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
SIX DEG. APPROACH AT VY, 55 KTS.							
1	APP	1070.2	21.3	10:20:27.8	-481.9	-4.9	56.0
2	APP	1071.4	21.8	10:24:59.2	-550.3	-5.9	52.8
3	APP	1047.6	20.4	10:29:28.2	-738.4	-7.4	56.0
4	APP	1053.8	21.8	10:34:08.7	-339.5	-3.4	56.5
5	APP	1076.6	20.2	10:39:47.8	-518.9	-5.9	50.0
6	APP	1053.0	21.3	10:45:01.4	-347.5	-3.7	53.1
7	APP	1043.1	20.1	10:49:46.7	-412.0	-4.4	52.3
NORMAL APPROACH							
8		-----	NO DATA	-----			
10		-----	NO DATA	-----			
12	APP	1154.3	29.2	11:14:09.2	-872.5	-8.7	56.1
14	APP	1126.7	29.1	11:19:06.3	-357.3	-4.0	50.2
16	APP	1130.2	31.2	11:24:09.5	-901.8	-10.1	50.1
18	APP	1131.3	29.8	11:28:43.7	-893.2	-9.7	51.6
20	APP	1129.0	28.2	11:33:32.2	-658.6	-7.5	49.5
NORMAL TAKEOFF							
9		-----	NO DATA	-----			
11	DEP	1104.1	20.8	11:10:21.9	545.8	5.6	55.4
13	DEP	1068.7	21.8	11:16:07.7	-31.4	-0.3	58.9
15		-----	NO DATA	-----			
17	DEP	1105.6	20.1	11:26:03.8	453.0	4.5	56.3
19	DEP	533.9	54.7	11:30:44.5	-429.2	-1.4	167.4
21	DEP	522.3	63.8	11:35:20.3	-37.7	-0.2	135.7

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

ROBINSON R22

POSITION DATA
NOISE MEASUREMENT PROGRAM

1000 FT. WEST

FAA/AEE

DATE:07/09/84

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)							
22	APP	1161.9	28.9	11:45:41.6	-732.5	-6.9	59.5
23	APP	1139.6	30.1	11:49:30.5	-774.7	-7.8	55.8
24	APP	1170.0	29.1	11:54:17.5	-924.4	-8.3	62.6
25	APP	1149.0	31.5	11:58:26.5	-665.2	-6.2	60.1
26	APP	1134.8	29.1	12:02:08.4	-438.6	-5.0	49.7
27	APP	1101.0	27.6	12:05:56.4	-698.3	-8.2	48.0
28	APP	1134.8	27.7	12:09:29.2	-524.6	-4.8	61.8
29	APP	1167.9	28.2	12:13:04.4	-643.9	-7.0	51.4
500 FT. LEVEL FLYOVER AT 83 KTS.							
30	F/O	1083.2	23.1	12:53:28.5	-76.2	-0.6	77.9
31		-----	NO DATA	-----			
32	F/O	1084.6	22.7	12:57:36.9	57.4	0.4	77.8
33		-----	NO DATA	-----			
34	F/O	1056.9	22.9	13:02:09.6	37.8	0.3	80.4
35		-----	NO DATA	-----			
36	F/O	1080.7	20.8	13:10:40.7	165.2	1.2	80.3
1000 FT. LEVEL FLYOVER AT 83 KTS.							
37	F/O	1455.9	40.8	13:13:18.2	678.9	4.7	81.9
38		-----	NO DATA	-----			
39	F/O	1405.0	41.8	13:18:15.8	362.8	2.5	81.4
40	F/O	1311.9	43.5	13:23:34.2	-352.8	-2.5	80.9
41	F/O	1417.7	39.6	13:26:04.2	312.4	2.3	75.6
42	F/O	1400.9	45.0	13:28:32.6	42.9	0.3	87.3

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

ROBINSON R22

POSITION DATA
NOISE MEASUREMENT PROGRAM

2000 FT. EAST

DATE:07/09/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
SIX DEG. APPROACH AT VY, 55 KTS.							
1	APP	2019.1	11.1	10:20:28.0	-473.2	-4.8	56.0
2	APP	2026.9	11.9	10:24:57.1	-453.0	-4.9	51.7
3	APP	2025.6	11.3	10:29:25.8	-428.0	-4.4	55.0
4	APP	2047.1	11.2	10:34:07.5	-417.2	-4.3	54.4
5	APP	2032.2	11.5	10:39:44.9	-625.3	-6.5	54.2
6	APP	2038.0	11.0	10:45:00.2	-204.2	-2.2	51.8
7	APP	2031.8	10.8	10:49:44.5	-499.5	-5.4	52.6
NORMAL APPROACH							
8		-----	NO DATA	-----			
10		-----	NO DATA	-----			
12	APP	2059.3	16.6	11:14:07.5	-673.9	-6.5	58.1
14	APP	2055.1	15.7	11:19:05.1	-385.6	-4.4	49.6
16	APP	2076.7	16.1	11:24:11.2	-634.7	-7.1	50.1
18	APP	2082.0	15.2	11:28:44.9	-920.6	-10.5	48.9
20	APP	2076.3	15.0	11:33:32.5	-607.0	-7.0	48.9
NORMAL TAKEOFF							
9		-----	NO DATA	-----			
11	DEP	1913.7	9.2	11:10:15.6	973.5	9.3	58.4
13	DEP	1556.2	11.6	11:16:02.4	2627.9	16.8	85.6
15		-----	NO DATA	-----			
17	DEP	1957.2	11.2	11:26:03.6	480.6	4.9	55.9
19	DEP	1491.9	12.5	11:31:08.7	-787.9	-2.8	160.1
21	DEP	2017.4	13.3	11:35:23.4	417.0	5.1	46.3

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

ROBINSON R22

POSITION DATA
NOISE MEASUREMENT PROGRAM

2000 FT. EAST

DATE:07/09/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NOISE ABATEMENT APPROACH							
22	APP	2059.2	16.5	11:45:40.1	-797.1	-7.5	59.5
23	APP	2063.2	16.5	11:49:29.8	-748.5	-7.4	56.7
24	APP	2057.6	17.3	11:54:15.9	-834.9	-7.4	63.6
25	APP	2076.7	16.9	11:58:26.2	-719.6	-6.7	60.7
26	APP	2075.3	15.9	12:02:07.2	-455.3	-5.0	51.3
27	APP	2056.4	14.9	12:05:54.9	-491.2	-5.9	46.8
28	APP	2052.8	15.7	12:09:26.2	-434.8	-4.6	53.6
29	APP	1404.4	15.7	12:13:13.7	4.9	0.0	115.7
500 FT. LEVEL FLYOVER AT 83 KTS.							
30	F/O	2032.0	12.1	12:53:27.4	-199.7	-1.4	80.2
31		-----	NO DATA	-----			
32	F/O	2018.9	11.9	12:57:36.3	110.1	0.8	77.7
33		-----	NO DATA	-----			
34	F/O	2053.6	11.7	13:02:10.7	9.1	0.1	82.3
35		-----	NO DATA	-----			
36	F/O	1476.8	13.9	13:10:34.2	-582.7	-5.3	62.3
1000 FT. LEVEL FLYOVER AT 83 KTS.							
37	F/O	2110.1	26.6	13:13:17.6	593.3	4.1	81.8
38		-----	NO DATA	-----			
39	F/O	2142.7	25.7	13:18:14.6	372.3	2.5	82.7
40	F/O	2228.0	24.6	13:23:33.6	-354.1	-2.5	81.0
41	F/O	2089.8	26.0	13:26:03.1	95.4	0.7	77.5
42	F/O	2233.4	26.3	13:28:31.5	162.5	1.0	89.7

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

ROBINSON R22

POSITION DATA
NOISE MEASUREMENT PROGRAM

2000 FT. WEST

DATE:07/09/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
SIX DEG. APPROACH AT VY, 55 KTS.							
1	APP	2019.1	9.9	10:20:31.9	-391.7	-4.2	52.3
2	APP	2028.8	10.2	10:25:02.1	-456.6	-4.7	54.9
3	APP	2006.2	10.2	10:29:28.2	-738.4	-7.4	56.0
4	APP	2010.4	10.3	10:34:10.7	-513.4	-5.0	57.5
5	APP	2026.2	10.2	10:39:47.8	-518.9	-5.9	50.0
6	APP	2014.9	10.6	10:45:01.4	-347.5	-3.7	53.1
7	APP	2000.3	10.0	10:49:46.7	-412.0	-4.4	52.3
NORMAL APPROACH							
8		-----	NO DATA	-----			
10		-----	NO DATA	-----			
12	APP	2072.8	15.4	11:14:09.2	-872.5	-8.7	56.1
14	APP	2052.4	14.8	11:19:08.2	-598.8	-6.5	51.8
16	APP	2048.6	16.3	11:24:09.5	-901.8	-10.1	50.1
18	APP	2051.2	16.6	11:28:41.6	-844.3	-9.4	50.5
20	APP	2060.3	14.7	11:33:32.2	-658.6	-7.5	49.5
NORMAL TAKEOFF							
9		-----	NO DATA	-----			
11		2036.9	6.8	11:10:11.0	-34.1	-0.2	77.4
13	DEP	2028.4	10.9	11:16:07.7	-31.4	-0.3	58.9
15		-----	NO DATA	-----			
17	DEP	2071.3	10.2	11:26:03.8	453.0	4.5	56.3
19	DEP	854.5	28.8	11:30:42.9	230.3	1.7	77.8
21	DEP	839.2	30.8	11:35:16.9	750.5	71.2	2.5

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

ROBINSON R22

POSITION DATA
NOISE MEASUREMENT PROGRAM

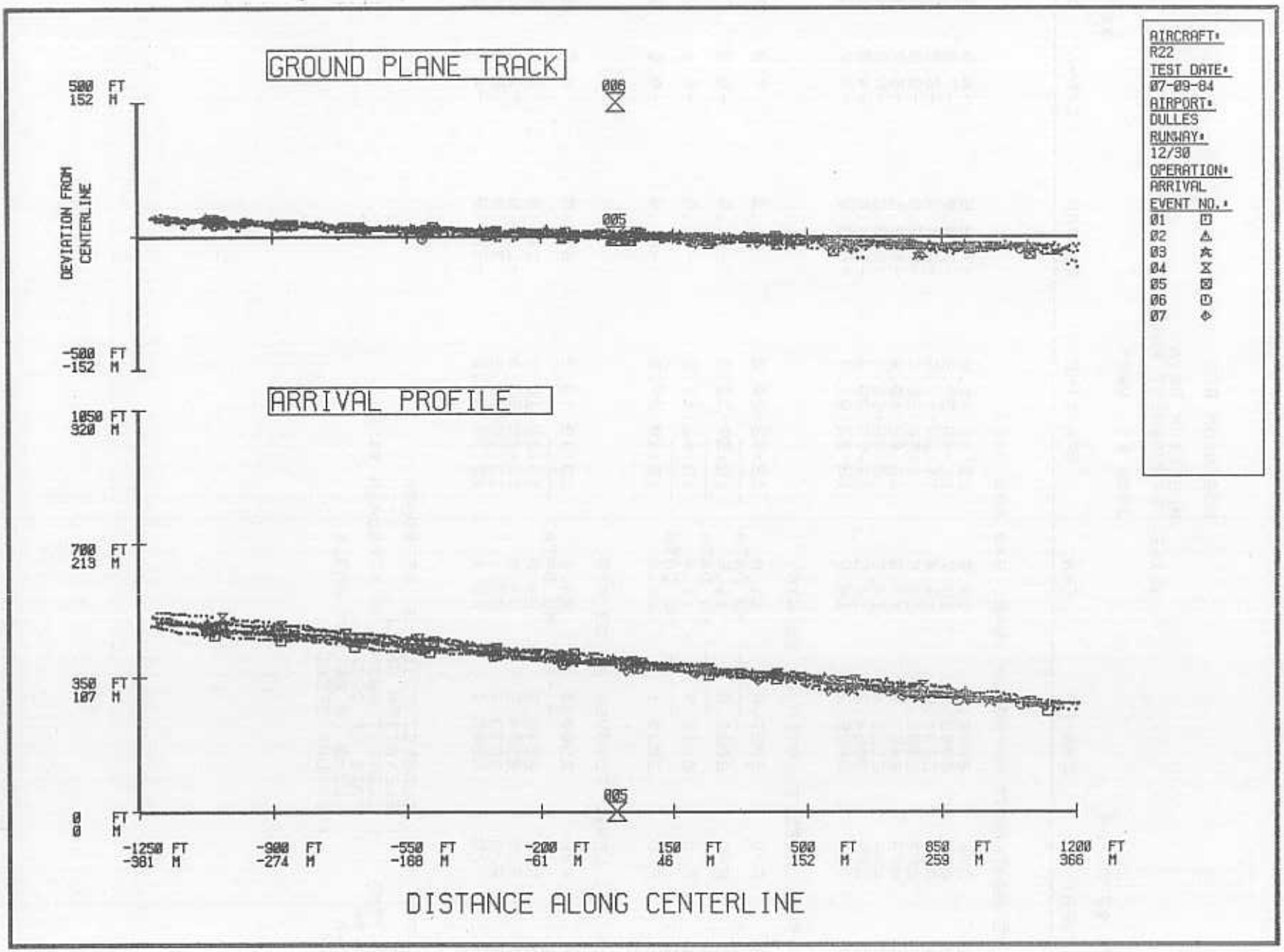
2000 FT. WEST

DATE:07/09/84 **FAA/AEE**

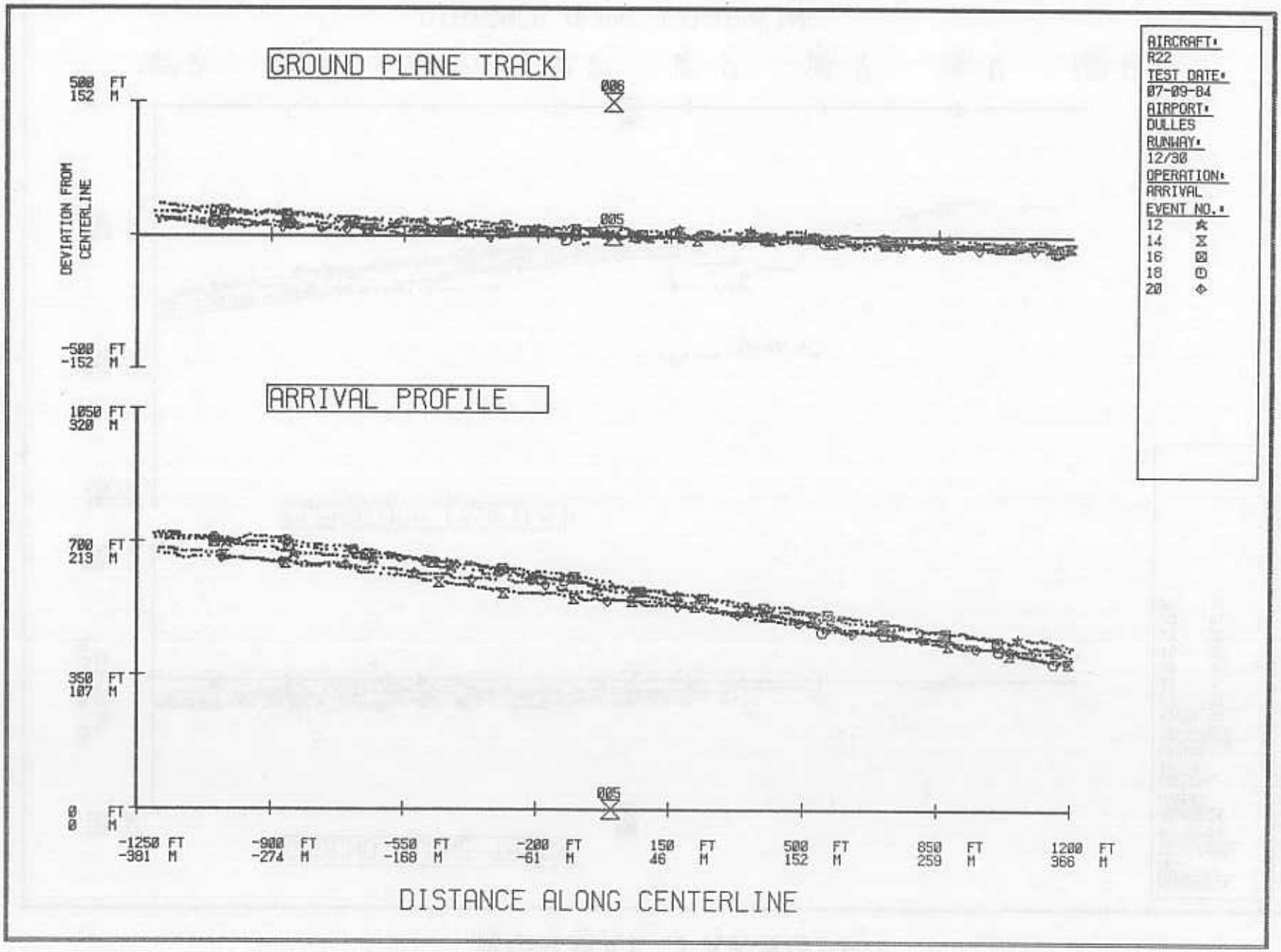
EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)							
22	APP	2082.9	15.3	11:45:41.6	-732.5	-6.9	59.5
23	APP	2063.2	15.7	11:49:30.5	-774.7	-7.8	55.8
24	APP	2094.8	15.4	11:54:17.5	-924.4	-8.3	62.6
25	APP	2063.4	16.6	11:58:26.5	-665.2	-6.2	60.1
26	APP	2057.7	14.9	12:02:10.6	-448.1	-5.7	44.6
27	APP	2028.4	14.2	12:05:56.4	-698.3	-8.2	48.0
28	APP	2064.2	14.5	12:09:29.2	-524.6	-4.8	61.8
29	APP	2096.2	14.9	12:13:04.4	-643.9	-7.0	51.4
500 FT. LEVEL FLYOVER AT 83 KTS.							
30	F/O	2037.6	11.6	12:53:29.2	21.3	0.2	77.9
31		-----	NO DATA	-----			
32	F/O	2022.0	11.5	12:57:33.3	-41.5	-0.3	77.6
33		-----	NO DATA	-----			
34	F/O	2010.7	11.4	13:02:11.6	-16.5	-0.1	82.6
35		-----	NO DATA	-----			
36	F/O	2033.1	10.6	13:10:37.8	-69.4	-0.5	84.8
1000 FT. LEVEL FLYOVER AT 83 KTS.							
37	F/O	2300.0	24.1	13:13:18.2	678.9	4.7	81.9
38		-----	NO DATA	-----			
39	F/O	2245.5	24.3	13:18:15.7	364.0	2.5	81.6
40	F/O	2134.9	24.8	13:23:35.8	-193.0	-1.3	81.2
41	F/O	2273.4	23.1	13:26:04.2	312.4	2.3	75.6
42	F/O	2208.1	26.1	13:28:34.5	-274.9	-1.8	86.8

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

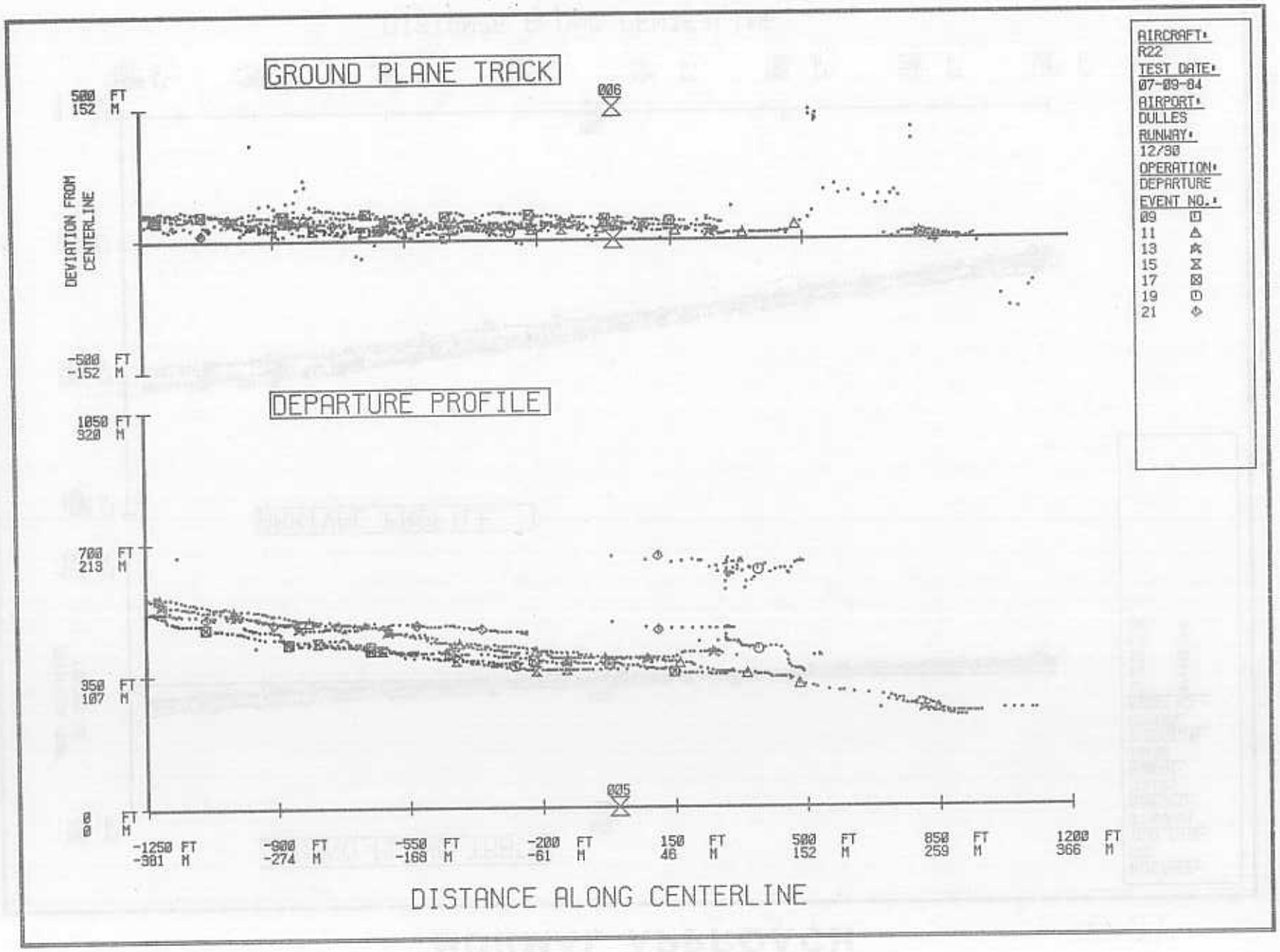
SIX° APPROACH at Vy, 55 Kts.)



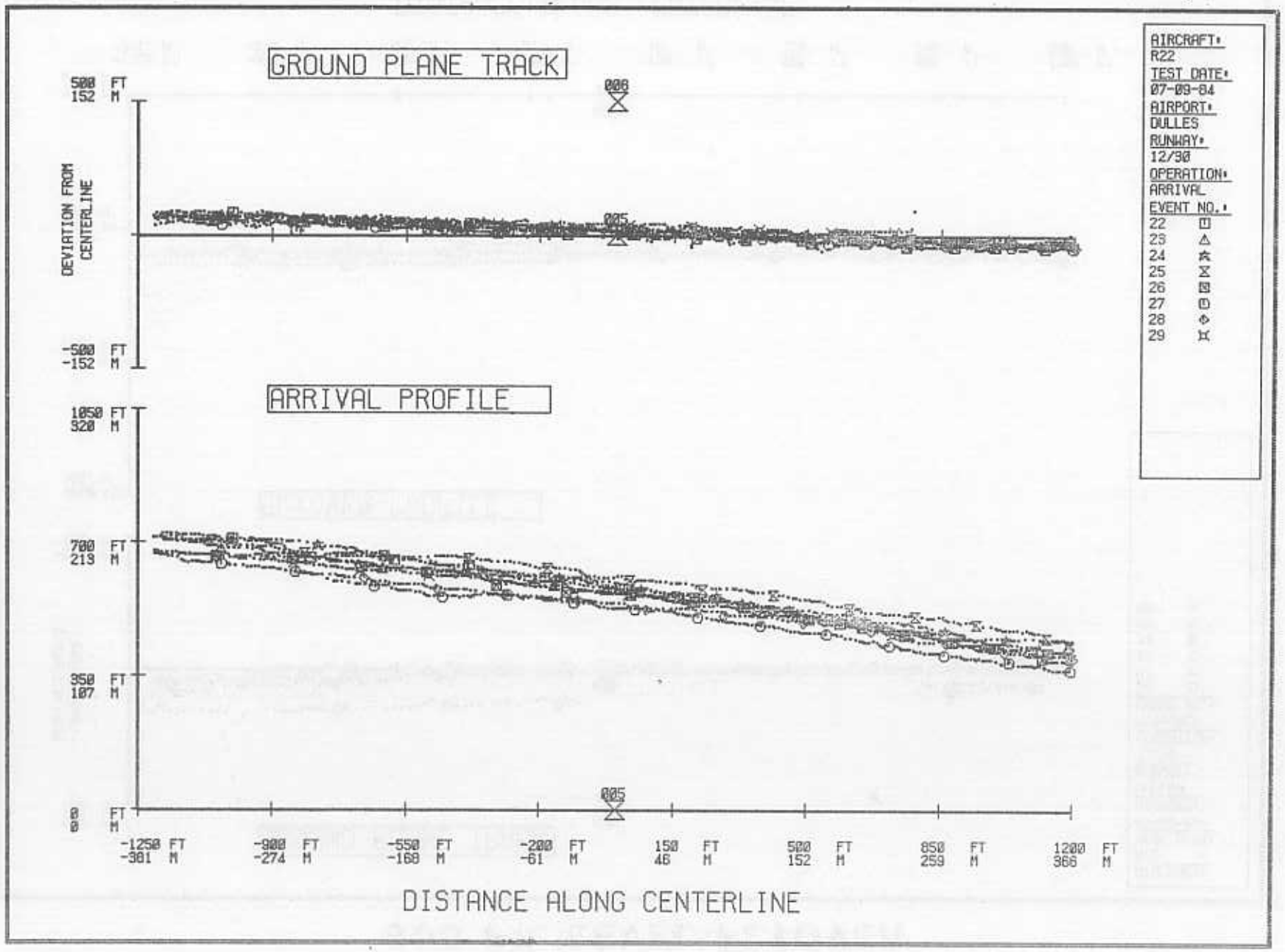
NORMAL APPROACH



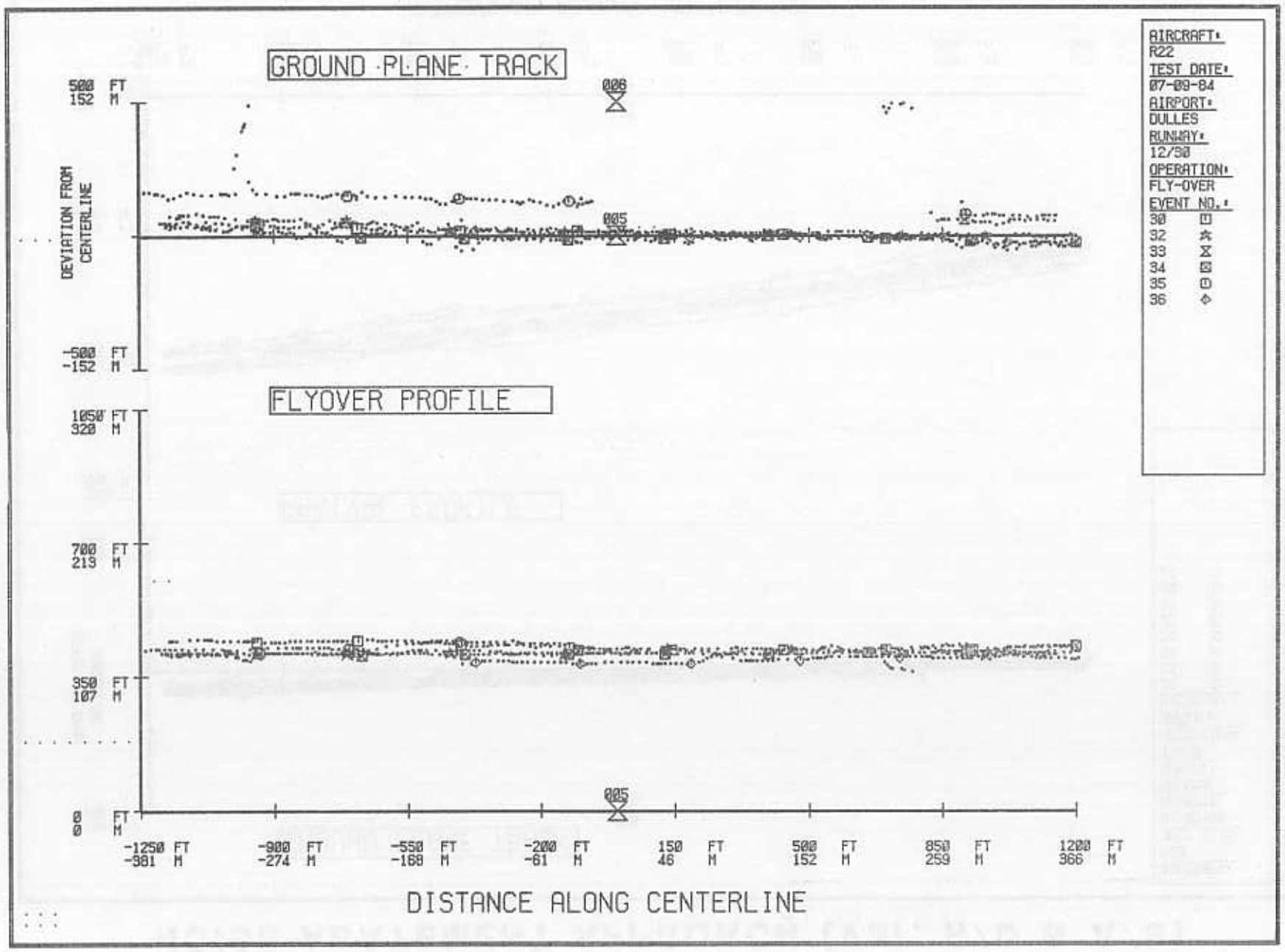
NORMAL TAKEOFF



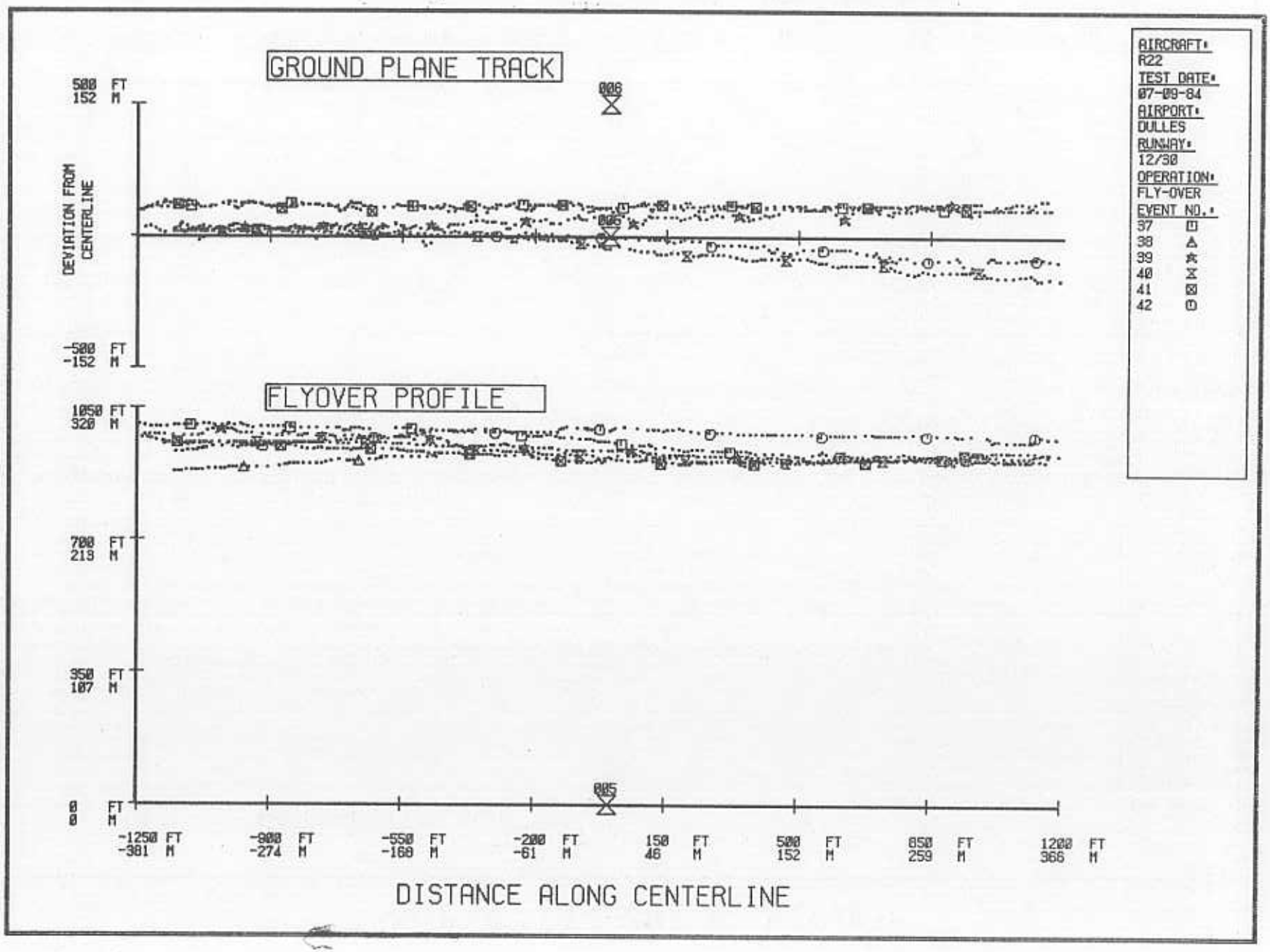
NOISE ABATEMENT APPROACH (Var. R/D & A/S)



500 FT. LEVEL FLYOVER



1000 FT. LEVEL FLYOVER



METEOROLOGICAL DATA

THIS SECTION OF THE APPENDIX CONTAINS WEATHER DATA FROM SEVERAL TYPES OF METEOROLOGICAL EQUIPMENT: TEN-METER TOWER (MET), GROUND LEVEL PSYCHROMETER, AIRCRAFT OAT, AND PILOT BALLOONS. DATA FROM THE MET TOWER INCLUDE THE TEMPERATURE, RELATIVE HUMIDITY, WIND DIRECTION AND WIND SPEED MEASURED TYPICALLY EVERY 15 MINUTES DURING EACH FLIGHT EVENT. BECAUSE OF A FAILURE OF THE MET TOWER DEW POINT SENSOR, THE RELATIVE HUMIDITY WAS CALCULATED USING TEMPERATURE FROM THE MET TOWER AND DEW POINT FROM THE DULLES MID FIELD WEATHER STATION. GROUND LEVEL (4 FEET) TEMPERATURE AND RELATIVE HUMIDITY ARE GIVEN FOR DIFFERENT TIMES OF EACH TEST DAY, AND THE HELICOPTER'S OAT READINGS ARE SHOWN FOR DIFFERENT FLIGHT ALTITUDES AT VARIOUS TIMES OF THE DAY. THE PILOT BALLOON WIND DATA, TAKEN PERIODICALLY DURING EACH TEST DAY, INCLUDES THE WIND DIRECTION AND WIND SPEED AT VARIOUS ALTITUDES.

METEOROLOGICAL DATA

(MEASURED AT 30 FT. AGL)

HELICOPTER: ROBINSON R22 DATE: 07/09/84

TIME	TEMP. (DEG. F)	R.H. %	WIND DIR. (DEG.)	WIND SPEED AVG. (MPH)	WIND SPEED MAX (MPH)
5 FT. AND 50' HOVER (SOFT PATH)					
8:30	64	--	340	2	-
8:45	64	--	360	2	-
5 FT. AND 50' HOVER (HARD PATH)					
9:00	64	75	340	2	-
9:15	66	--	340	2	-
6 DEGREE APPROACH AT VY, 55 KTS.					
10:00	69	66	360	3	5
10:15	70	--	360	3	5
10:30	72	--	--	3	5
10:45	72	--	360	3	5
NORMAL TAKEOFF AND APPROACH					
11:00	73	53	130	3	6
11:15	72	--	130	3	5
11:30	73	--	--	2	6

METEOROLOGICAL DATA

(MEASURED AT 30 FT. AGL)

HELICOPTER: ROBINSON R22 DATE: 07/09/84

TIME	TEMP. (DEG. F)	R.H. %	WIND DIR. (DEG.)	WIND SPEED AVG. (MPH)	WIND SPEED MAX (MPH)
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)					
11:45	74	--	360	4	10
12:00	74	52	270	3	6
12:15	74	--	320	3	8
500 AND 1000 FT. LEVEL FLYOVER AT 83 KTS.					
13:00	74	54	320	5	10
13:15	74	--	320	5	10
13:30	76	--	300	7	10
13:45	74	--	--	5	10

METEOROLOGICAL DATA

HELICOPTER: ROBINSON R22 DATE: 07/09/84

TEMPERATURE AND RELATIVE HUMIDITY DATA

(MEASURED AT 4 FT. AGL)

TIME	TEMP.	R.H.
08:07	66 F	62%
08:22	67 F	58%
08:42	69 F	51%
09:16	72 F	42%
09:39	74 F	43%
09:59	75 F	40%
10:21	75 F	37%
10:50	75 F	37%
11:18	77 F	36%
11:42	76 F	38%
11:55	77 F	32%
12:15	78 F	33%

HELICOPTERS OAT GUAGE DATA

TIME	ALTITUDE	TEMP.
8:20	200'	63 F
	400'	63 F
	600'	64 F
	800'	64 F
	1000'	64 F
9:21	200'	66 F
	400'	64 F
	600'	64 F
	800'	66 F
10:10	400'	68 F
	600'	68 F
	800'	66 F
12:15	200'	75 F
	400'	73 F
	600'	72 F
	800'	72 F

PILOT BALLOON WIND DATA

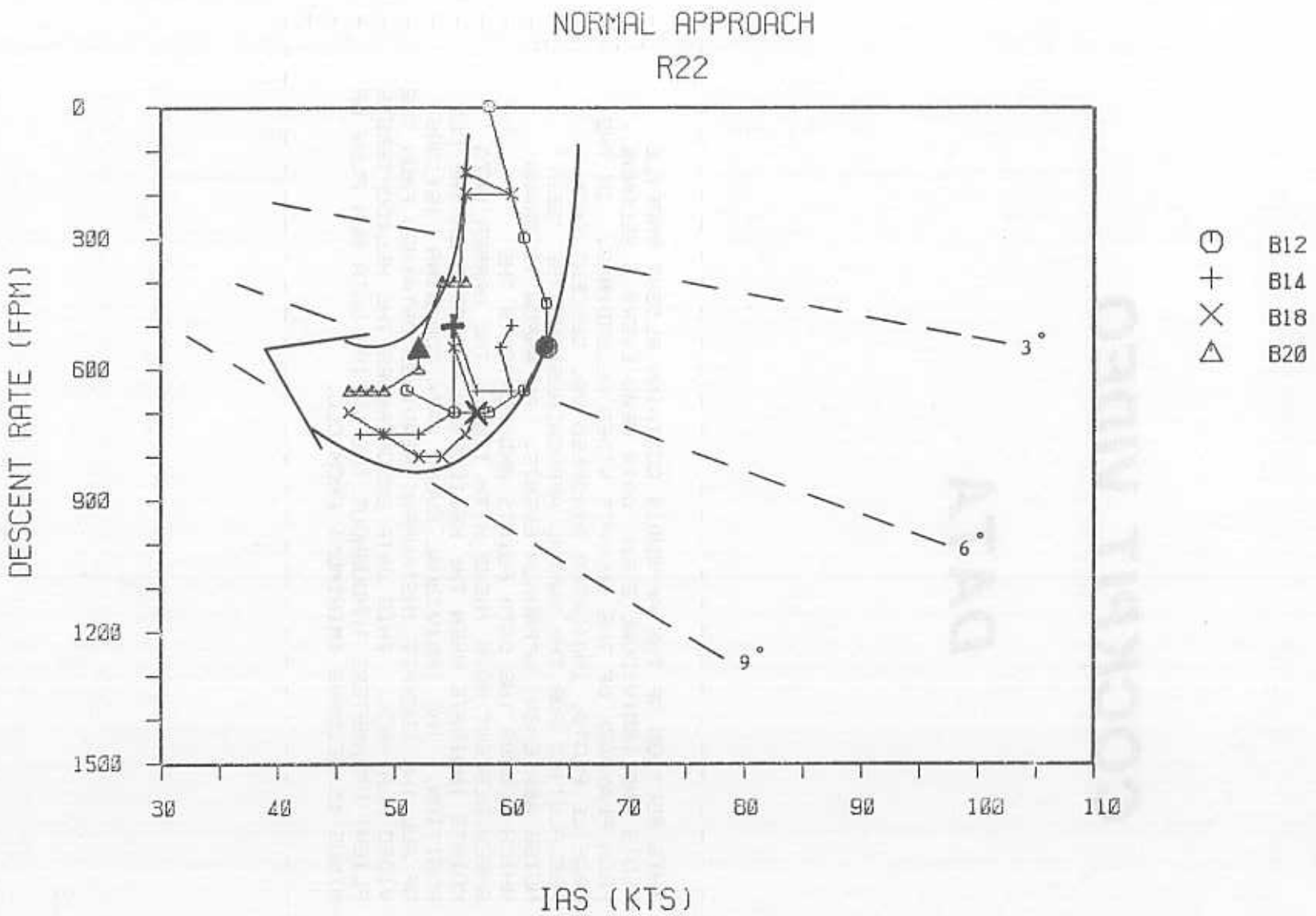
ROBINSON R22 07/09/84

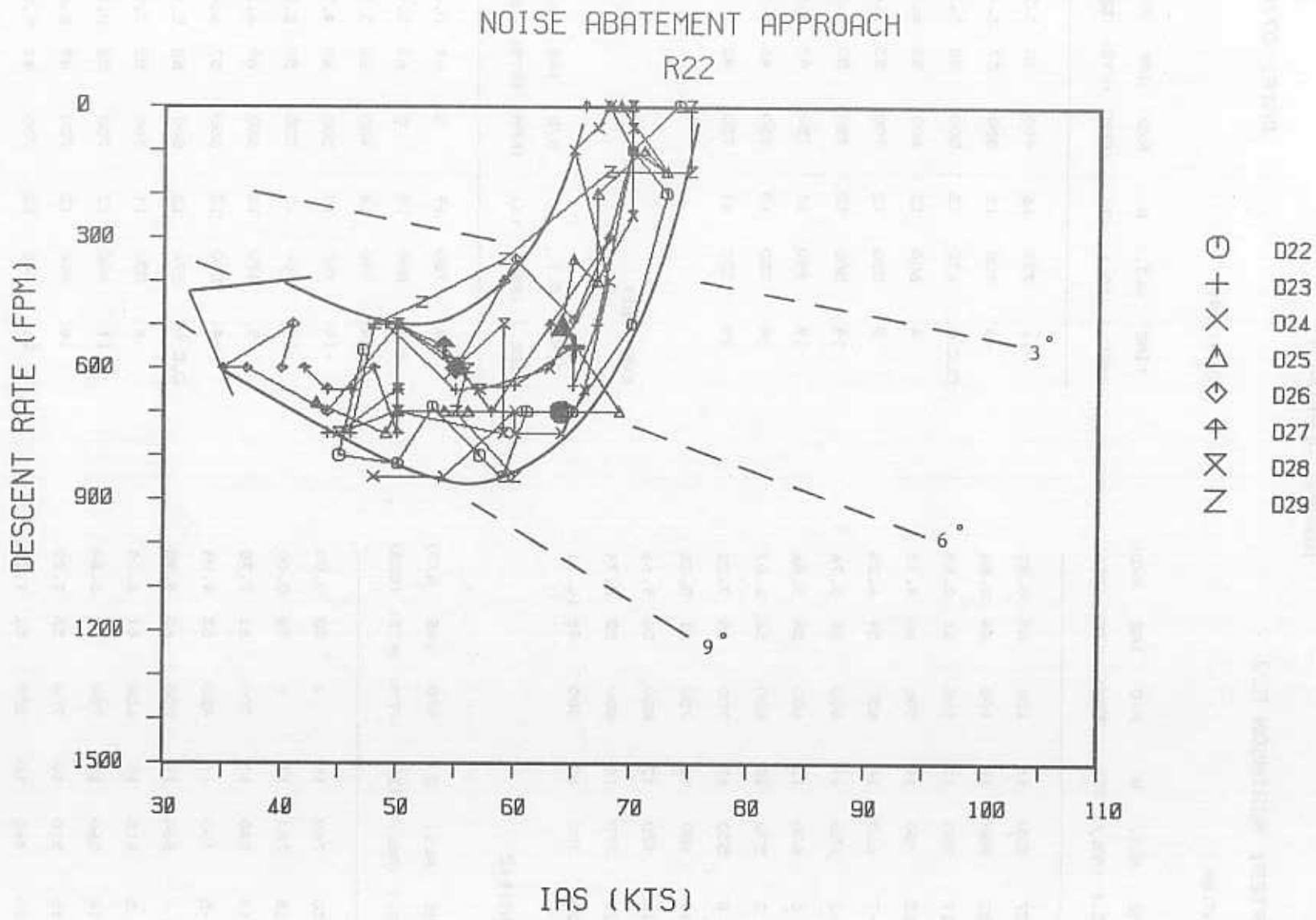
FEET (AGL)	WIND DIR. (DEG.)	WIND SPD. (KTS)	WIND DIR. (DEG.)	WIND SPD. (KTS)
LAUNCH TIME:	7:45		9:17	
SFC	300	2	070	2
354	336	6	018	4
708	347	6	017	3
1033	002	6	011	2
1358	016	5	003	2
	10:15		11:10	
SFC	310	4	340	4
354	331	3	325	3
708	331	3	319	3
1033	327	3	304	4
1358	314	3	286	4
	12:00			
SFC	290	5		
354	278	9		
708	277	11		
1033	274	12		
1358	274	12		

COCKPIT VIDEO

DATA

THIS SECTION OF THE APPENDIX CONTAINS FLIGHT PROFILE PLOTS AND INDIVIDUAL EVENT DATA READ EVERY 5 SECONDS FROM PLAYBACK OF THE COCKPIT VIDEO RECORDINGS. IN THE PROFILE PLOTS, INDICATED AIRSPEED VS. DESCENT RATE ARE PLOTTED FOR THE NORMAL APPROACHES AND THE 'BEST' NOISE ABATEMENT APPROACH EVENTS. AN ARROW IS DRAWN WHICH BOUNDS THE DATA POINTS AND PORTRAYS THE SPEED/DESCENT RATE TREND WITH TIME. THE DARKER DATA POINTS INDICATE WHEN THE HELICOPTER PASSED OVER THE CLC POSITION. THE INDIVIDUAL EVENT DATA CONTAINS LISTINGS OF ALL THE COCKPIT INSTRUMENT READINGS OBTAINED FROM THE VIDEO PLAYBACK. THIS DATA ENCOMPASSES THE HELICOPTERS'S FLIGHT PARAMETERS THROUGHOUT THE ENTIRE DATA RUN PLUS OR MINUS 15 SECONDS (MINIMUM) FROM CLC.


NORMAL APPROACH
R22
DESCENT RATE (FPM)
0
300
600
900
1200
1500
30
40
50
60
70
80
90
100
110
IAS (KTS)
3°
6°
9°
B12
B14
B18
B20


NOISE ABATEMENT APPROACH
R22
DESCENT RATE (FPM)
0
300
600
900
1200
1500
30
40
50
60
70
80
90
100
110
IAS (KTS)
3°
6°
9°
D22
D23
D24
D25
D26
D27
D28
D29

COCKPIT VIDEO DATA

NOISE ABATEMENT APPROACH

(VAR. R/D AND A/S)

HELICOPTER: ROBINSON R22

DATE: 07/09/84

EVENT:D22

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-22	780	19	0	74	0.00
-17	770	16	100	70	0.81
-12	750	14	200	73	1.55
-7	720	12	500	70	4.04
-2	630	13	700	65	6.10
CLC 0	620	13	700	64	6.20
3	580	12	700	61	6.51
8	500	13	850	59	8.18
13	460	13	800	57	7.97
18	420	11	690	53	7.39
23	350	12	820	50	9.32
28	300	12	800	45	10.11
33	240	19	560	47	6.76

EVENT:D24

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-25	750	20	+200	70	0.00
-20	750	19	0	68	0.00
-15	740	21	50	67	0.42
-10	720	13	100	65	0.87
-5	680	12	400	68	3.33
CLC 0	620	12	650	66	5.58
5	560	13	750	64	6.65
10	500	12	750	60	7.09
15	450	11	700	60	6.62
20	370	11	850	54	8.94
25	290	11	850	48	10.07

EVENT:D23

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-21	750	21	+100	69	0.00
-16	760	20	150	73	1.16
-11	750	12	100	70	0.81
-6	700	12	500	67	4.23
-1	630	11	640	65	5.58
CLC 0	620	11	550	65	4.79
4	580	12	640	60	6.05
9	530	13	650	55	6.70
14	470	13	500	49	5.78
19	440	13	500	48	5.90
24	380	14	750	46	9.27
29	300	15	750	44	9.69

EVENT:D25

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-34	820	13	+250	70	0.00
-29	820	17	0	69	0.00
-24	790	16	150	73	1.16
-19	780	15	100	71	0.80
-14	750	13	200	67	1.69
-9	710	13	400	67	3.38
-4	680	11	350	65	3.05
CLC 0	650	11	500	64	4.42
6	570	11	700	69	5.75
11	510	10	700	56	7.09
16	460	10	700	54	7.35
21	400	10	700	50	7.95
26	350	10	750	49	8.69

COCKPIT VIDEO DATA

NORMAL APPROACH

HELICOPTER: ROBINSON R22

DATE: 07/09/84

EVENT:B18

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D) (DEG)
-23	770	17	0	58	0.00
-18	760	14	150	56	0.00
-13	740	12	200	60	2.78
-8	710	10	200	56	4.04
-3	660	10	550	55	4.95
CLC 0	620	11	700	57	6.04
2	600	12	750	56	6.84
7	530	12	800	54	7.22
12	480	11	800	52	7.23
17	470	12	750	49	7.95
22	390	13	700	46	10.11
27	360	12	660	44	12.00

EVENT:B20

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-33	780	18	0	57	0.00
-28	780	11	0	59	0.00
-23	780	14	100	59	3.59
-18	720	13	400	56	4.72
-13	700	11	400	55	5.28
-8	660	10	400	54	6.14
-3	640	10	400	54	6.47
CLC 0	580	11	550	52	5.15
2	560	12	600	52	7.22
7	500	13	650	49	8.19
12	470	13	650	47	8.69
17	430	12	650	48	9.07
22	380	12	650	46	9.69
27	340	11	700	42	9.95
32	260	11	700	40	9.95

COCKPIT VIDEO DATA

NORMAL APPROACH

HELICOPTER: ROBINSON R22 DATE: 07/09/84

EVENT:B8

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D) (DEG)
-27	820	16	100	65	0.87
-22	800	18	100	64	0.88
-17	780	17	100	61	0.93
-12	750	14	500	60	4.72
-7	660	14	650	59	6.25
-2	620	14	600	59	5.76
CLC 0	600	13	600	58	5.86
3	570	12	600	56	6.07
8	530	12	700	55	7.22
13	480	11	750	51	8.35
18	420	12	850	50	9.66
23	370	10	800	52	8.74
28	300	10	800	45	10.11

EVENT:B12

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D) (DEG)
-20	760	19	0	58	0.00
-15	760	17	0	58	0.00
10	740	12	300	61	2.78
-5	700	11	450	63	4.04
CLC 0	660	11	550	63	4.95
5	610	10	650	61	6.04
10	560	10	700	58	6.84
15	510	10	700	55	7.22
20	460	10	650	51	7.23
25	410	10	700	50	7.95
30	350	10	800	45	10.11
35	250	12	800	38	12.00

EVENT:B10

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-11	730	16	400	60	3.77
-6	700	15	350	57	3.48
CLC 0	630	13	500	55	5.15
4	600	12	600	55	6.18
9	550	12	700	53	7.49
14	500	12	750	50	8.52
19	440	11	750	47	9.07
24	380	10	750	46	9.27
29	330	11	750	42	

EVENT:B14

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-34	780	19	0	61	0.00
-29	800	18	0	63	0.00
-24	790	16	400	63	3.59
-19	750	13	500	60	4.72
-14	700	12	550	59	5.28
-9	670	13	650	60	6.14
-4	590	13	650	57	6.47
CLC 0	570	13	500	55	5.15
6	530	11	700	55	7.22
11	480	12	750	52	8.19
16	400	12	750	49	8.69
21	340	12	750	47	9.07
26	300	12	750	44	9.69
31	250	11	700	40	9.95

COCKPIT VIDEO DATA

NOISE ABATEMENT APPROACH

(VAR. R/D AND A/S)

HELICOPTER: ROBINSON R22

DATE: 07/09/84

EVENT:D26

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-19	750	13	300	68	2.50
-14	700	13	490	65	4.27
-9	680	11	350	60	3.30
-4	660	10	400	59	3.84
CLC 0	600	11	600	55	6.18
6	560	10	500	50	5.67
11	530	11	700	44	9.04
16	480	12	600	37	9.21
21	420	13	600	35	9.75
26	360	13	500	41	6.92
31	320	12	600	40	8.52

EVENT:D27

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-31	760	18	0	66	0.00
-26	770	18	0	68	0.00
-21	750	18	100	70	0.81
-16	720	13	300	68	2.50
-11	660	10	500	63	4.50
-6	620	10	700	58	6.84
CLC 0	570	10	550	54	5.77
4	540	11	500	50	5.67
9	490	12	650	50	7.38
14	430	13	750	50	8.52
19	400	12	600	48	7.09
24	350	12	650	46	8.02

EVENT:D28

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-30	780	19	50	70	0.40
-25	760	19	100	70	0.81
-20	770	18	0	70	0.00
-15	740	14	250	70	2.02
-10	670	12	600	63	5.40
-5	620	14	650	57	6.47
CLC 0	570	15	600	55	6.18
5	540	12	500	59	4.80
10	490	10	750	59	7.21
15	420	11	750	54	7.88
20	380	10	700	50	7.95
25	320	11	750	45	9.47
30	260	16	650	50	7.38

EVENT:D29

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-30	750	21	0	775	0.00
-25	750	20	0	75	0.00
-20	720	17	150	75	1.13
-15	700	13	150	68	1.25
-10	670	13	350	59	3.36
-5	630	13	450	52	4.90
CLC 0	590	14	500	48	5.90
5	560	14	500	50	5.67
10	520	11	600	56	6.07
15	470	11	700	55	7.22
20	380	10	850	60	8.04

APPENDIX E

AGUSTA 109A

	PAGE NUMBERS
HELICOPTER CHARACTERISTICS.....	E-383
NOISE LEVEL DATA	
SOUND EXPOSURE LEVEL	
Bar Charts	
Approaches.....	E-386
Takeoff.....	E-387
Level Flyovers.....	E-388
Summary Tables.....	E-389 - E-390
Individual Event Data.....	E-391 - E-396
A-WEIGHTED SOUND LEVEL	
Bar Charts	
Approaches.....	E-398
Takeoff.....	E-399
Level Flyovers.....	E-400
Summary Tables.....	E-401 - E-402
Individual Event Data.....	E-403 - E-408
HOVER DATA (leq)	
Plots.....	E-410 - E-412
Individual Event Data.....	E-413 - E-415
RADAR TRACKING DATA	
Position Data.....	E-418 - E-431
Tracking Plots.....	E-432 - E-437
METEOROLOGICAL DATA	
10-meter Tower Data.....	E-440 - E-442
4 ft. Data and Aircraft OAT Data.....	E-443
Pilot Balloon Wind Data.....	E-444
COCKPIT VIDEO DATA	
Normal Approach Plot.....	E-446
Noise Abatement Approach Plot.....	E-447
Individual Event Data.....	E-448 - E-451

N421DT

HELICOPTER CHARACTERISTICS

HELICOPTER MANUFACTURER :	AGUSTA
HELICOPTER MODEL :	109 MKII
TEST HELICOPTER N-NUMBER :	N4210T
MAX INTERNAL GROSS WEIGHT :	5730 LBS.
NUMBER OF ENGINES :	TWO
UNINSTALLED TAKEOFF POWER :	420 SHP (PER ENGINE)
UNINSTALLED MAX CONTINUOUS PWR. :	420 SHP (PER ENGINE)
SPECIFIC FUEL CONSUMPTION	
AT MAXIMUM POWER :	30 GALLONS PER HOUR
NEVER EXCEED SPEED (VNE) :	168 KTS.
MAX SPEED IN LEVEL FLIGHT	
WITH MAX CONTINUOUS POWER :	150 KTS.
SPEED FOR BEST RATE OF CLIMB (VY) :	60 KTS.
CRUISE SPEED FOR BEST RANGE (VCR) :	145 KTS.
BEST RATE OF CLIMB AT	
TAKEOFF POWER (BRC) :	1640 FPM
"TOP OF GREEN ARC" ROTOR SPEED :	424 RPM 110%

MAIN AND TAIL ROTOR SPECIFICATIONS

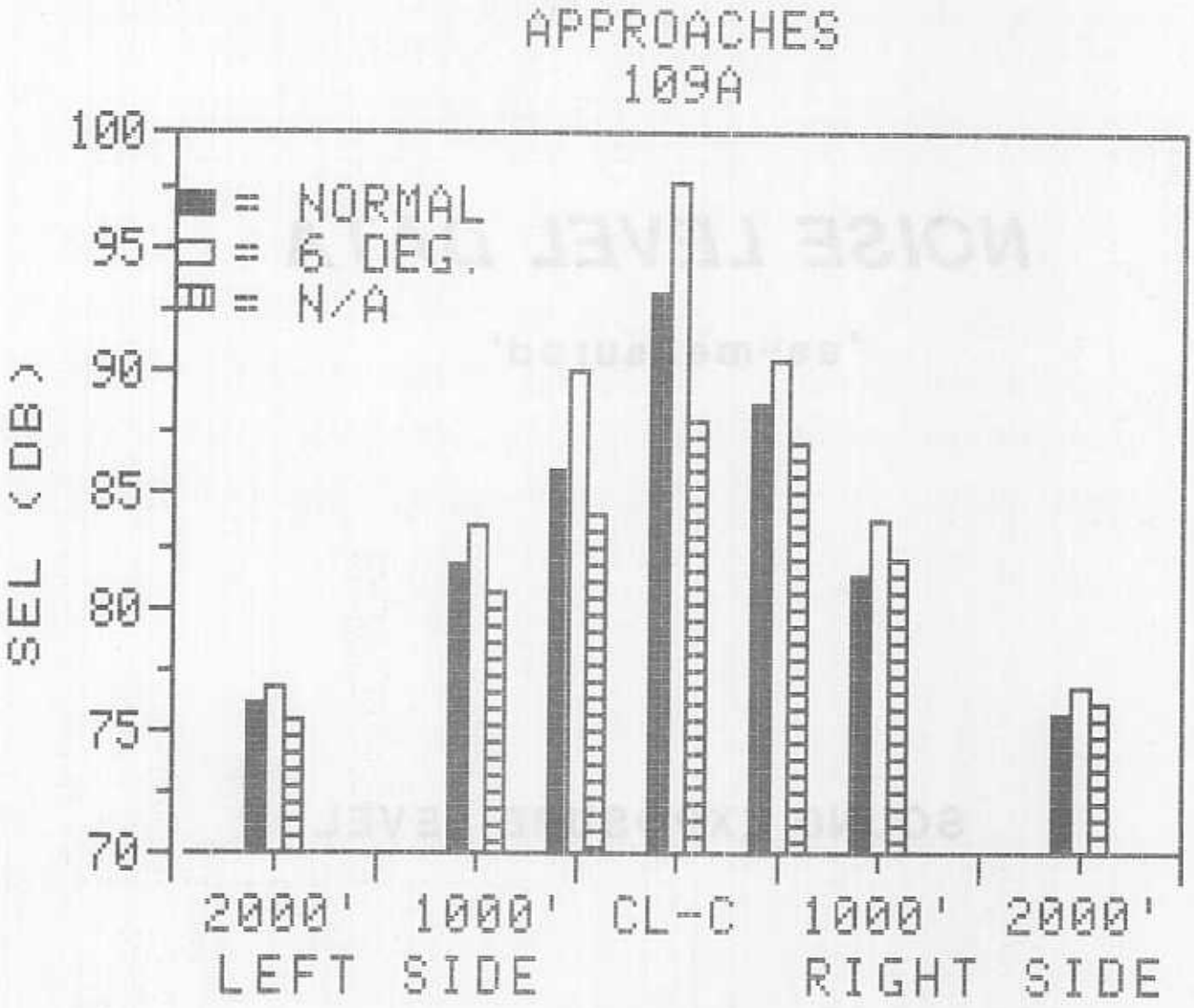
	MAIN	TAIL
DIAMETER (FT.) :	36.09	6.66
NO. OF BLADES :	4	2
TIPSPEED :	727	703
TIP SHAPE :	---	--

NOISE LEVEL DATA

'as-measured'

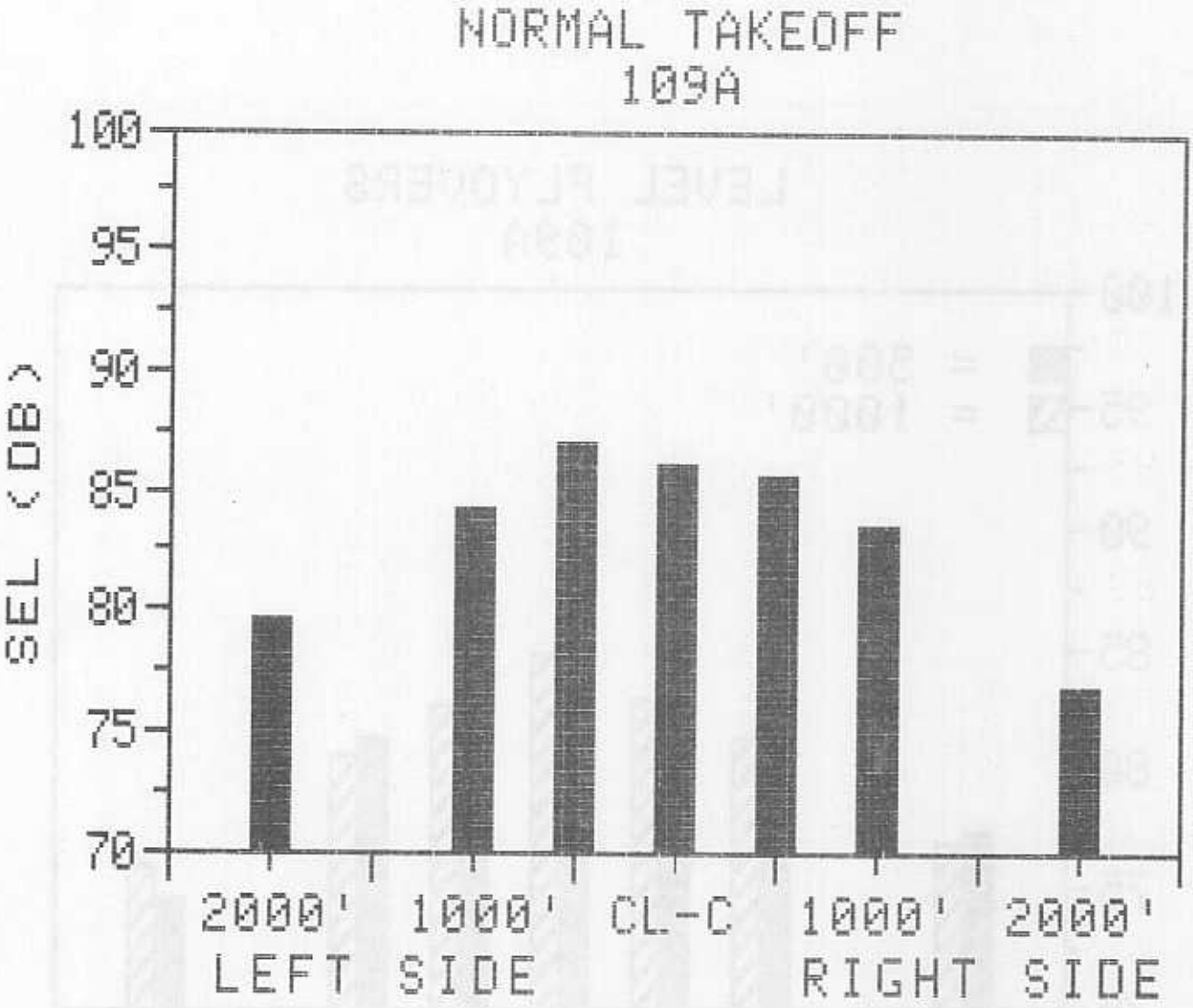
SOUND EXPOSURE LEVEL

THIS SECTION OF THE APPENDIX CONTAINS THE 'AS-MEASURED' SOUND EXPOSURE LEVELS (SEL) FOR ALL FLIGHT EVENTS. THESE DATA ARE PRESENTED IN THE FORM OF BAR CHARTS, SUMMARY TABLES AND INDIVIDUAL EVENT DATA. THE BAR CHARTS SHOW THE FALL OFF IN NOISE LEVEL VERSUS SIDELINE DISTANCE, AND PROVIDE A QUICK LOOK COMPARISON OF THE NOISE LEVELS. PERTINENT FLIGHT PARAMETER INFORMATION READ FROM THE COCKPIT INSTRUMENT PANEL VIDEO RECORDINGS IS ALSO SHOWN BELOW EACH BAR CHART. THE SUMMARY TABLES PRESENT THE AVERAGE NOISE LEVEL, NUMBER OF SAMPLES, STANDARD DEVIATION AND THE 90 PERCENT CONFIDENCE INTERVAL FOR EACH FLIGHT CONDITION. INDIVIDUAL EVENT DATA FOR EACH CONDITION IS THEN GIVEN.



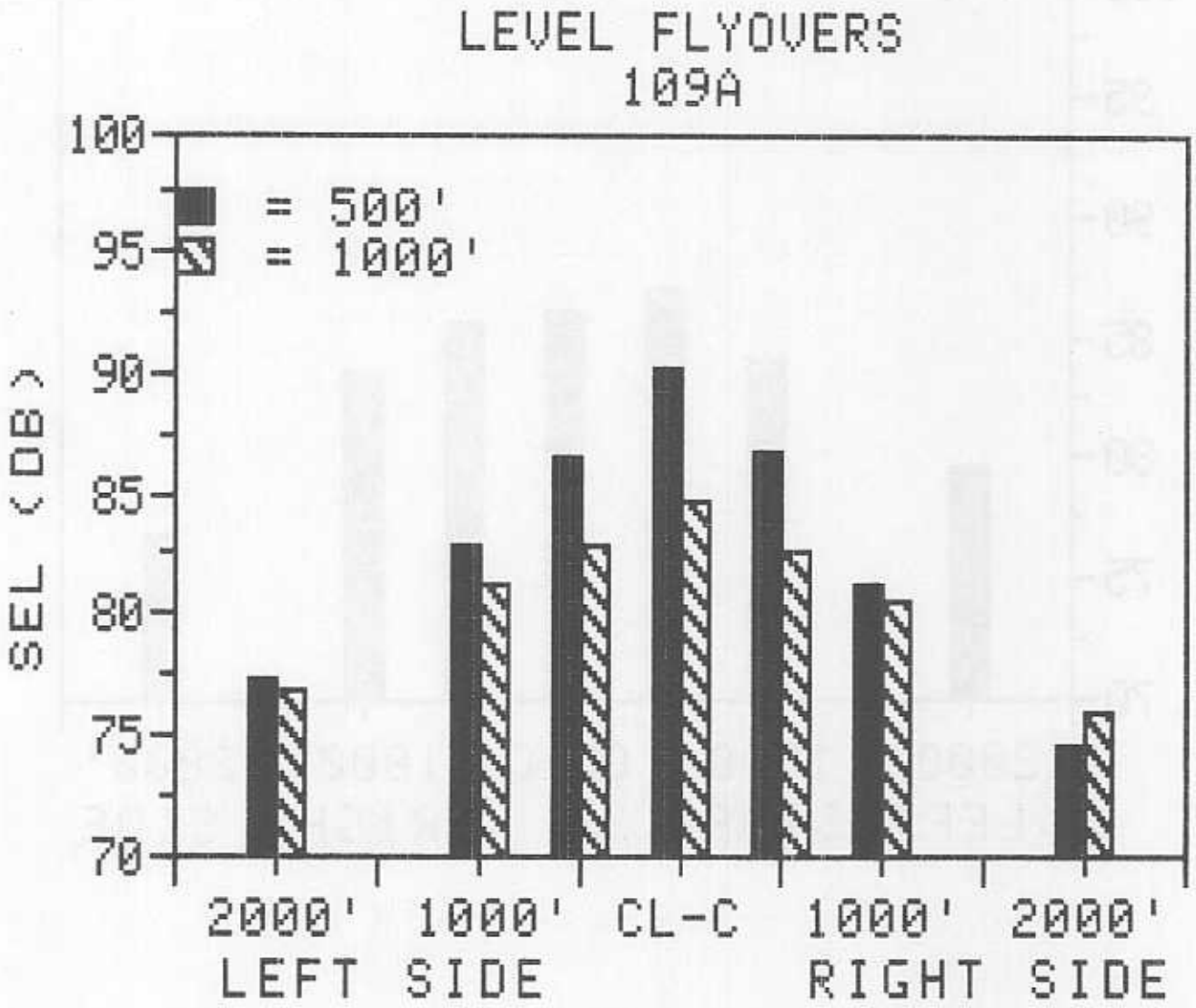
OPERATION	AVG. ALT. OVER CL-C (FT. AGL)	INDICATED AIRSPEED (KTS.)	GLIDESLOPE RANGE (DEG.)
NORMAL APPROACH	460	87-73	4.7-6.1
SIX DEG. APPROACH	410	62	6.0
NOISE ABATEMENT APP. VAR. R/D AND A/S (EVENTS D19-D27)	650	89-69	8.4-4.6

NOTE: ALTITUDE, AIRSPEED AND VERTICAL SPEED DATA READ FROM VIDEO TAPES OF THE INSTRUMENT PANEL. THE GLIDESLOPE RANGE WAS CALCULATED WITHIN ±15 SEC OF THE CL-C MICROPHONE POSITION.



OPERATION	AVG. ALT. OVER CLC (FT. AGL)	INDICATED AIRSPEED (KTS.)
NORMAL TAKEOFF	553	54

NOTE: ALTIMETER AND INDICATED AIRSPEED READINGS MADE WHEN THE HELICOPTER PASSED OVER CLC MICROPHONE POSITION



INDICATED AIRSPEED =145 KTS.

109A SUMMARY SHEET (7/11/84)

SOUND EXPOSURE LEVEL (DB)

	(LEFT SIDE)				(RIGHT SIDE)		
	2000'	1000'	500'	CL-C	500'	1000'	2000'
*** SIX DEG. APPROACH AT VY, 60 KTS. ***							
AVERAGE	76.8	83.4	89.9	97.9	90.5	83.7	76.7
N	6	5	5	6	6	6	6
S.D.	.4	.7	.8	.6	.7	.7	.6
90% CI	.4	.7	.8	.5	.6	.6	.5
*** NORMAL APPROACH ***							
AVERAGE	76.1	81.9	85.7	93.3	88.5	81.5	75.6
N	6	6	6	6	6	6	6
S.D	.9	.5	.6	1.2	.8	.7	.5
90% CI	.7	.4	.5	1.0	.6	.6	.4
*** NOISE ABATEMENT APPROACH (VAR. R/D AND A/S) ***							
AVERAGE	75.5	80.8	84.0	88.0	87.0	82.1	76.2
N	9	8	9	9	9	9	7
S.D	.4	.9	1.2	1.0	.8	.3	.6
90% CI	.3	.6	.7	.6	.5	.2	.5
*** NORMAL TAKEOFF ***							
AVERAGE	79.5	84.2	87.0	86.1	85.5	83.4	76.8
N	5	6	6	6	5	6	6
S.D	.5	.7	.5	.6	.7	.7	.4
90% CI	.5	.5	.4	.5	.7	.6	.3

109A SUMMARY SHEET (7/11/84)

SOUND EXPOSURE LEVEL (DB)

	(LEFT SIDE)				(RIGHT SIDE)		
	2000'	1000'	500'	CL-C	500'	1000'	2000'
*** 500 FT. LEVEL FLYOVER AT 145 KTS. ***							
AVERAGE	77.3	82.9	86.4	90.3	86.7	81.1	74.6
N	6	7	7	7	7	6	5
S.D.	.4	.3	1.0	.8	1.3	.4	.3
90% CI	.4	.2	.7	.6	.9	.4	.3
*** 1000 FT. LEVEL FLYOVER AT 145 KTS. ***							
AVERAGE	76.9	81.1	82.9	84.7	82.6	80.6	75.8
N	6	5	6	6	5	6	6
S.D	.9	.6	.8	.3	1.4	.8	.8
90% CI	.7	.5	.6	.3	1.4	.6	.7

SOUND EXPOSURE LEVEL(DB)

HELICOPTER: AGUSTA 109A TEST DATE: 7/11/84

OPERATION : 6 DEGREE APPROACH AT VY, 60 KTS.

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
A1	77.10	84.40	90.90	97.30	89.20	82.60	76.40
A2	77.00	83.00	--	98.50	90.90	84.80	77.80
A3	76.80	83.80	90.30	98.10	91.30	83.90	76.10
A4	75.90	82.90	89.10	98.30	90.70	83.90	76.90
A5	77.00	82.80	89.00	97.00	90.40	83.60	76.50
A6	76.70	--	90.10	98.00	90.50	83.30	76.30
AVERAGE	76.75	83.38	89.88	97.87	90.50	83.68	76.67
STD. DEV.	0.44	0.69	0.81	0.59	0.71	0.73	0.62
90% C.I.	0.36	0.66	0.78	0.49	0.59	0.60	0.51

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: AGUSTA 109A

TEST DATE: 7/11/84

OPERATION : NORMAL APPROACH

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
B7	77.00	82.20	85.10	92.20	88.00	81.50	75.70
B9	76.90	82.20	86.30	95.50	88.60	81.60	75.60
B11	76.50	82.10	86.20	92.40	87.90	80.90	74.90
B13	75.10	81.90	85.00	93.20	88.80	82.00	75.70
B15	75.00	82.10	85.70	92.70	89.90	82.50	76.30
B17	76.00	81.00	85.90	93.70	88.00	80.50	75.40
AVERAGE	76.08	81.92	85.70	93.28	88.53	81.50	75.60
STD. DEV.	0.88	0.46	0.55	1.22	0.76	0.72	0.46
90% C.I.	0.72	0.38	0.45	1.00	0.63	0.60	0.38

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: AGUSTA 109A

TEST DATE: 7/11/84

OPERATION : NORMAL TAKEOFF

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' WEST	1000' WEST	500' WEST	CL-C	500' EAST	1000' EAST	2000' EAST
C8	79.30	83.00	87.20	85.20	84.90	82.10	76.60
C10	80.30	83.90	87.40	86.20	85.40	83.70	77.50
C12	79.30	84.40	86.70	86.10	84.70	83.80	76.70
C14	79.60	84.70	87.20	87.00	86.20	84.00	76.60
C16	--	84.80	86.20	86.00	--	83.40	76.50
C18	78.90	84.20	87.40	86.30	86.10	83.40	77.10
AVERAGE	79.48	84.17	87.02	86.13	85.46	83.40	76.83
STD. DEV.	0.52	0.66	0.48	0.58	0.68	0.68	0.39
90% C.I.	0.50	0.54	0.39	0.48	0.65	0.56	0.32

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: AGUSTA 109A

TEST DATE: 7/11/84

OPERATION : NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
D19	75.90	80.40	83.00	87.10	86.40	82.10	76.50
D20	75.70	81.30	85.70	89.80	88.60	82.20	76.50
D21	76.00	82.30	85.60	88.90	87.10	82.60	75.60
D22	75.70	81.30	85.00	88.60	87.90	82.20	77.20
D23	75.00	80.80	83.40	88.30	87.20	82.20	75.90
D24	75.70	80.80	83.80	87.60	86.40	81.80	76.40
D25	74.70	79.30	83.30	87.00	86.20	82.10	--
D26	75.30	--	82.80	86.90	86.30	81.80	75.40
D27	75.20	80.40	83.10	88.20	87.20	81.60	--
AVERAGE	75.47	80.83	83.97	88.04	87.03	82.07	76.21
STD. DEV.	0.44	0.87	1.15	0.98	0.81	0.30	0.62
90% C.I.	0.27	0.58	0.71	0.61	0.50	0.18	0.45

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: AGUSTA 109A

TEST DATE: 7/11/84

OPERATION : LEVEL FLYOVER (500 FT. @ 145 KTS.)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' WEST	1000' WEST	500' WEST	CL-C	500' EAST	1000' EAST	2000' EAST
F28	77.30	83.10	85.60	90.60	87.90	--	--
F29	--	82.90	86.40	91.00	86.10	81.00	74.30
F30	77.70	82.70	86.30	91.60	88.30	81.80	74.80
F31	76.70	82.50	87.40	89.80	85.40	81.40	74.80
F32	77.80	83.00	85.40	89.40	87.00	80.60	--
F33	76.90	82.70	88.00	90.30	85.00	80.80	74.30
F34	77.20	83.30	85.80	89.70	87.40	81.00	74.90
AVERAGE	77.27	82.89	86.41	90.34	86.73	81.10	74.62
STD. DEV.	0.43	0.27	0.96	0.78	1.26	0.43	0.29
90% C.I.	0.36	0.20	0.71	0.57	0.92	0.36	0.28

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: AGUSTA 109A TEST DATE: 7/11/84

OPERATION : LEVEL FLYOVER (1000 FT. @ 145 KTS.)

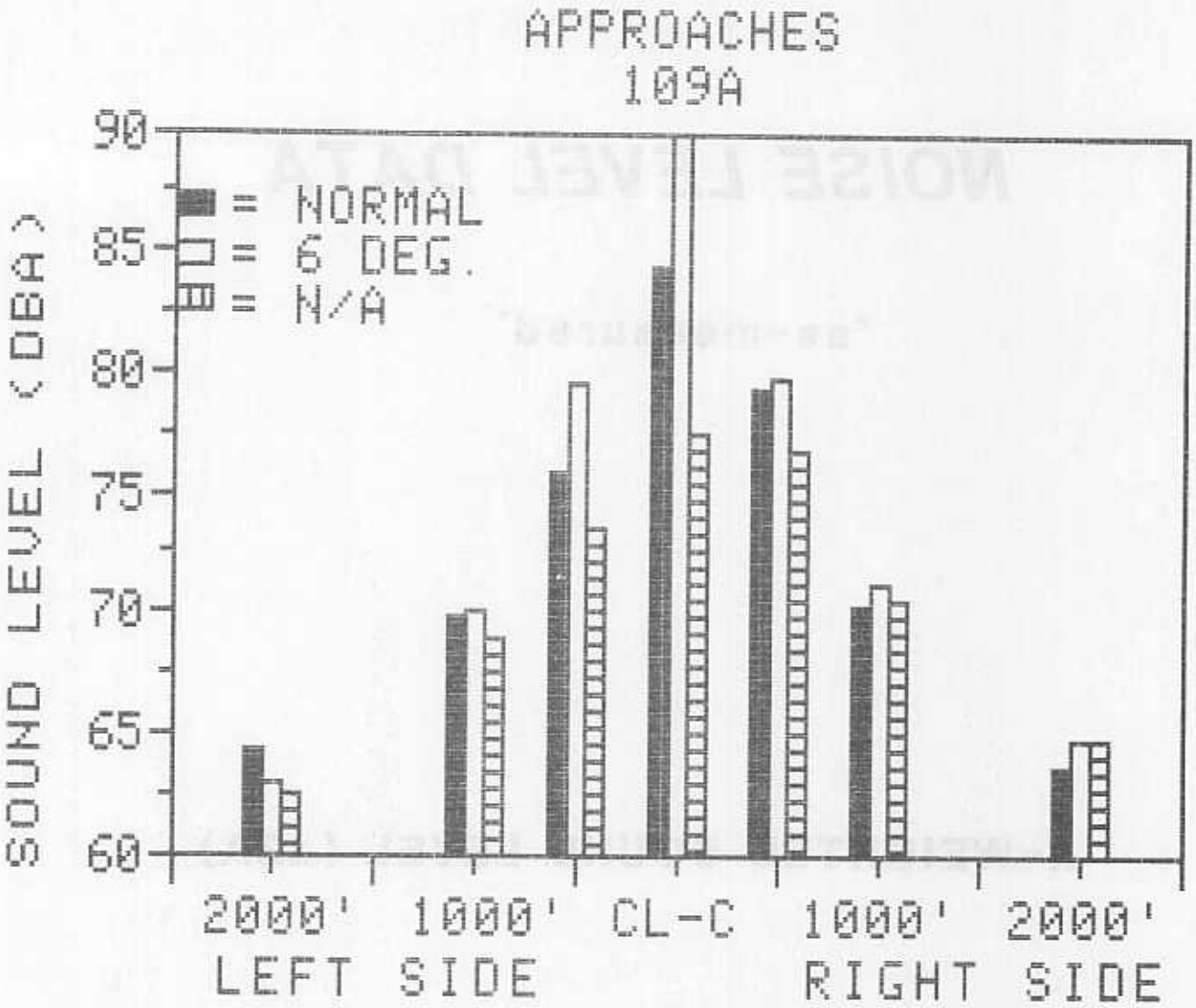
	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' WEST	1000' WEST	500' WEST	CL-C	500' EAST	1000' EAST	2000' EAST
E35	75.60	80.60	83.70	84.60	83.00	80.90	76.00
E36	77.60	81.00	82.20	84.70	83.50	80.40	76.00
E37	76.20	81.30	82.60	84.10	81.00	79.60	74.60
E38	77.80	82.00	83.90	85.00	84.20	81.70	75.70
E39	76.40	80.70	82.10	84.90	81.10	79.90	75.40
E40	77.50	--	83.10	85.00	--	80.80	77.10
AVERAGE	76.85	81.12	82.93	84.72	82.56	80.55	75.80
STD. DEV.	0.90	0.56	0.76	0.34	1.44	0.76	0.82
90% C.I.	0.74	0.54	0.63	0.28	1.37	0.62	0.68

NOISE LEVEL DATA

'as-measured'

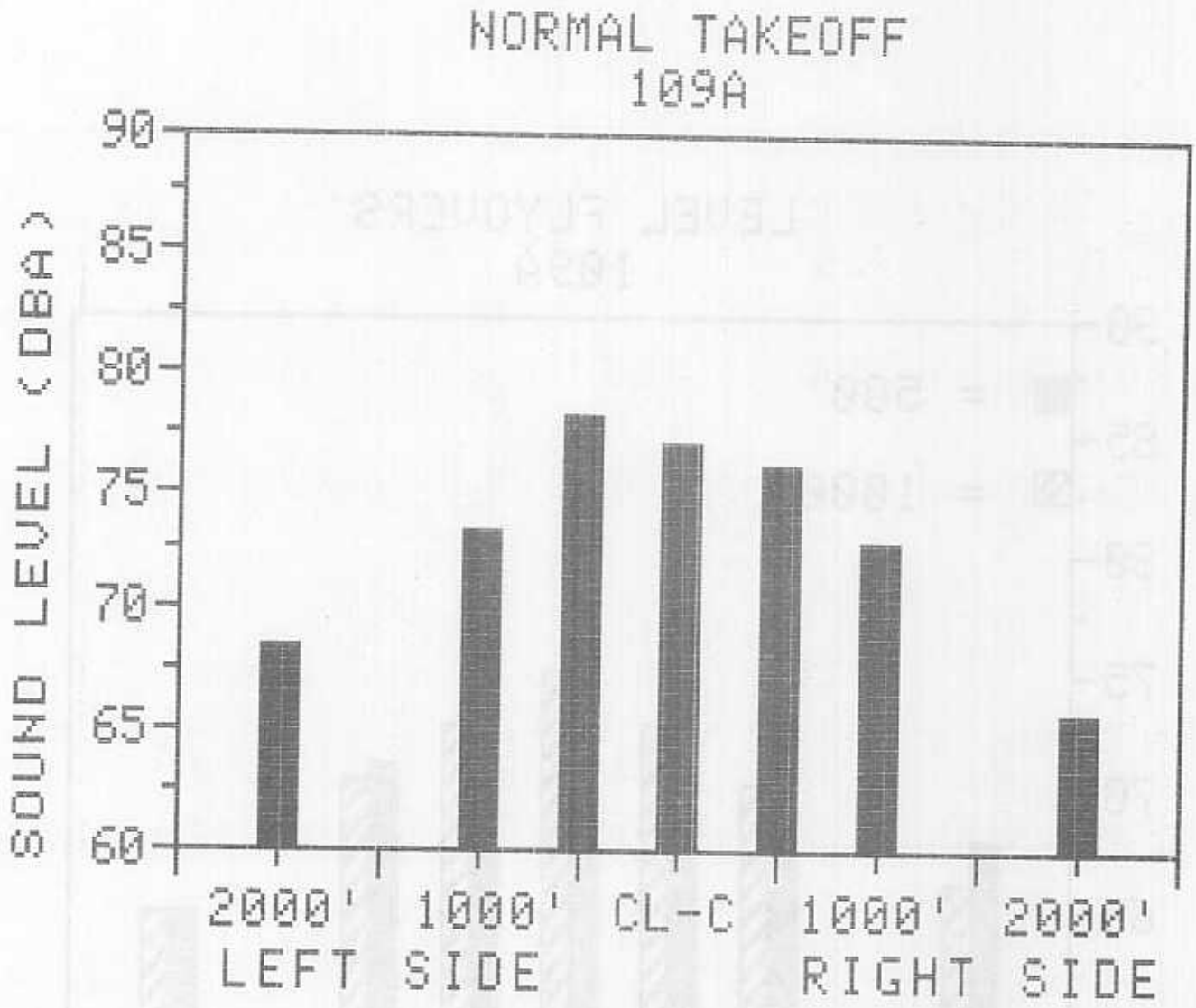
A-WEIGHTED SOUND LEVEL (dBA)

THIS SECTION OF THE APPENDIX CONTAINS THE 'AS-MEASURED' A-WEIGHTED SOUND LEVEL (dBA) FOR ALL FLIGHT EVENTS. THESE DATA ARE PRESENTED IN THE FORM OF BAR CHARTS, SUMMARY TABLES AND INDIVIDUAL EVENT DATA. THE BAR CHARTS SHOW THE FALL OFF IN NOISE LEVEL VERSUS SIDELINE DISTANCE, AND PROVIDE A QUICK LOOK COMPARISON OF THE NOISE LEVELS. PERTINENT FLIGHT PARAMETER INFORMATION READ FROM THE COCKPIT INSTRUMENT PANEL VIDEO RECORDINGS IS ALSO SHOWN BELOW EACH BAR CHART. THE SUMMARY TABLES PRESENT THE AVERAGE NOISE LEVEL, NUMBER OF SAMPLES, STANDARD DEVIATION AND THE 90 PERCENT CONFIDENCE INTERVAL FOR EACH FLIGHT CONDITION. INDIVIDUAL EVENT DATA FOR EACH CONDITION IS THEN GIVEN.



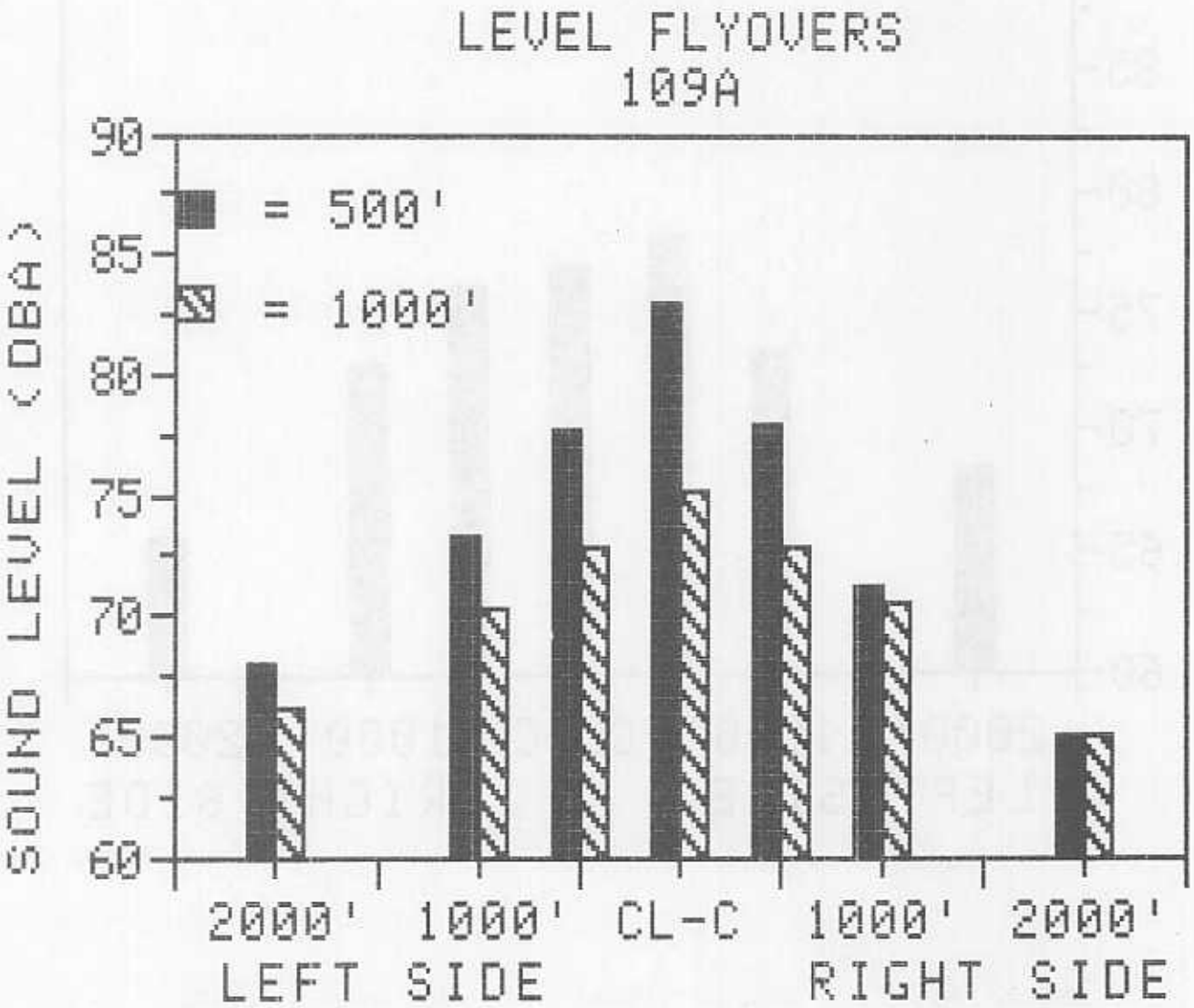
OPERATION	AVG. ALT. OVER CL-C (FT. AGL)	INDICATED AIRSPEED (KTS.)	GLIDESLOPE RANGE (DEG.)
NORMAL APPROACH	460	87-73	4.7-6.1
SIX DEG. APPROACH	410	62	6.0
NOISE ABATEMENT APP. VAR. R/D AND A/S (EVENTS D19-D27)	650	89-69	8.4-4.6

NOTE: ALTITUDE, AIRSPEED AND VERTICAL SPEED DATA READ FROM VIDEO TAPES OF THE INSTRUMENT PANEL. THE GLIDESLOPE RANGE WAS CALCULATED WITHIN ±15 SEC OF THE CL-C MICROPHONE POSITION.



OPERATION	AVG. ALT. OVER CLC (FT. AGL)	INDICATED AIRSPEED (KTS.)
NORMAL TAKEOFF	559	64

NOTE: ALTIMETER AND INDICATED AIRSPEED READINGS MADE WHEN THE HELICOPTER PASSED OVER CLC MICROPHONE POSITION



INDICATED AIRSPEED =145 KTS.

109A SUMMARY SHEET (7/11/84)

A-WEIGHTED SOUND LEVEL (DB)

	(LEFT SIDE)				(RIGHT SIDE)		
	2000'	1000'	500'	CL-C	500'	1000'	2000'
*** SIX DEG. APPROACH AT VY, 60 KTS. ***							
AVERAGE	63.0	70.1	79.5	90.0	79.7	71.2	64.7
N	6	5	5	6	6	6	6
S.D.	.7	.7	1.0	.5	1.0	.7	1.4
90% CI	.6	.6	1.0	.4	.8	.6	1.1
*** NORMAL APPROACH ***							
AVERAGE	64.2	69.9	75.7	84.3	79.3	70.3	63.6
N	6	6	6	6	6	6	6
S.D	.4	.6	.9	2.5	1.1	1.5	.7
90% CI	.3	.5	.7	2.1	.9	1.3	.6
*** NOISE ABATEMENT APPROACH (VAR. R/D AND A/S) ***							
AVERAGE	62.5	69.0	73.6	77.4	76.7	70.6	64.7
N	9	8	9	9	9	9	7
S.D	.8	1.0	1.5	1.6	1.6	1.1	1.0
90% CI	.5	.7	1.0	1.0	1.0	.7	.8
*** NORMAL TAKEOFF ***							
AVERAGE	68.4	73.2	78.2	77.0	76.0	72.9	65.6
N	6	6	6	6	6	6	6
S.D	1.4	1.1	1.0	1.1	.7	.8	1.0
90% CI	1.1	.9	.8	.9	.6	.6	.9

109A SUMMARY SHEET (7/11/84)

A-WEIGHTED SOUND LEVEL (DB)

	(LEFT SIDE)				(RIGHT SIDE)		
	2000'	1000'	500'	CL-C	500'	1000'	2000'
* 500 FT. LEVEL FLYOVER AT 145 KTS. *							
AVERAGE	67.9	73.3	77.7	83.0	77.8	71.3	64.9
N	6	6	7	7	7	7	6
S.D.	1.3	.7	.8	.7	.9	.4	1.5
90% CI	1.0	.6	.6	.5	.7	.3	1.2
* 1000 FT. LEVEL FLYOVER AT 145 KTS. *							
AVERAGE	66.1	70.3	72.9	75.2	72.9	70.6	65.0
N	6	6	7	7	7	7	7
S.D	.8	.5	.8	1.0	1.5	1.3	1.1
90% CI	.7	.5	.7	.8	1.4	1.1	.9

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: AGUSTA 109A

TEST DATE: 7/11/84

OPERATION : 6 DEGREE APPROACH AT VY, 60 KTS.

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
A1	63.60	69.90	81.20	89.40	78.60	70.90	65.50
A2	62.20	70.30	--	90.10	80.20	71.90	64.00
A3	62.10	71.10	79.70	90.90	81.20	72.10	65.00
A4	63.80	69.90	78.60	90.10	78.70	71.50	66.90
A5	63.30	69.30	79.00	89.50	79.60	70.20	63.80
A6	62.80	--	78.90	90.10	80.10	70.80	63.20
AVERAGE	62.97	70.10	79.48	90.02	79.73	71.23	64.73
STD. DEV.	0.72	0.66	1.04	0.54	0.99	0.73	1.35
90% C.I.	0.59	0.63	0.99	0.44	0.81	0.60	1.11

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: AGUSTA 109A

TEST DATE: 7/11/84

OPERATION : NORMAL APPROACH

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
B7	64.20	70.30	74.50	81.60	77.70	69.00	63.70
B9	64.60	70.80	76.30	88.00	79.60	71.00	63.30
B11	64.10	70.00	76.70	83.30	78.90	70.00	63.10
B13	63.60	69.80	76.40	83.20	78.70	70.80	62.70
B15	64.50	69.50	75.00	83.00	80.20	72.50	64.50
B17	64.00	69.10	75.40	86.80	80.80	68.20	64.20
AVERAGE	64.17	69.92	75.72	84.32	79.32	70.25	63.58
STD. DEV.	0.36	0.60	0.88	2.50	1.12	1.53	0.68
90% C.I.	0.30	0.49	0.73	2.06	0.92	1.26	0.56

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: AGUSTA 109A

TEST DATE: 7/11/84

OPERATION : NORMAL TAKEOFF

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' WEST	1000' WEST	500' WEST	CL-C	500' EAST	1000' EAST	2000' EAST
C8	67.50	71.50	77.60	75.40	75.50	71.90	64.10
C10	70.00	72.40	79.50	77.10	76.00	72.50	66.00
C12	68.50	73.50	78.40	77.40	75.90	73.00	65.80
C14	67.10	73.50	77.80	78.50	77.30	74.00	64.70
C16	70.00	74.30	76.70	76.10	76.10	72.40	65.90
C18	67.10	74.00	79.00	77.70	75.20	73.50	67.00
AVERAGE	68.37	73.20	78.17	77.03	76.00	72.88	65.58
STD. DEV.	1.36	1.05	1.01	1.12	0.72	0.77	1.03
90% C.I.	1.13	0.87	0.84	0.92	0.59	0.64	0.85

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: AGUSTA 109A TEST DATE: 7/11/84

OPERATION : NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
D19	64.20	68.20	72.30	76.10	75.40	70.00	64.90
D20	62.20	70.20	76.50	80.00	78.90	70.10	64.80
D21	62.80	70.70	76.00	76.90	75.80	73.00	63.80
D22	62.60	68.90	73.50	78.80	77.60	70.00	66.50
D23	61.40	68.60	72.60	77.10	76.80	69.70	65.10
D24	63.00	68.80	73.10	76.50	75.30	70.30	64.60
D25	61.50	67.50	73.00	76.50	76.60	71.50	--
D26	62.20	--	72.60	75.30	74.60	70.00	63.30
D27	62.70	69.40	72.90	79.50	79.30	71.00	--
AVERAGE	62.51	69.04	73.61	77.41	76.70	70.62	64.71
STD. DEV.	0.84	1.04	1.54	1.63	1.63	1.06	1.02
90% C.I.	0.52	0.70	0.95	1.01	1.01	0.66	0.75

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: AGUSTA 109A TEST DATE: 7/11/84

OPERATION : LEVEL FLYOVER (500 FT. @ 145 KTS.)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' WEST	1000' WEST	500' WEST	CL-C	500' EAST	1000' EAST	2000' EAST
F28	66.70	74.10	76.80	83.20	78.30	71.20	--
F29	--	--	78.00	83.40	78.10	70.90	63.70
F30	68.10	72.50	77.50	84.10	79.30	71.20	65.10
F31	69.20	73.00	79.00	83.50	77.30	72.10	63.50
F32	67.10	73.10	76.90	82.00	76.90	71.00	67.20
F33	69.50	73.10	78.20	82.80	76.80	71.50	63.80
F34	66.70	74.20	77.50	82.30	77.70	71.50	65.90
AVERAGE	67.88	73.33	77.70	83.04	77.77	71.34	64.87
STD. DEV.	1.25	0.67	0.77	0.73	0.88	0.40	1.48
90% C.I.	1.03	0.55	0.56	0.53	0.65	0.30	1.22

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: AGUSTA 109A

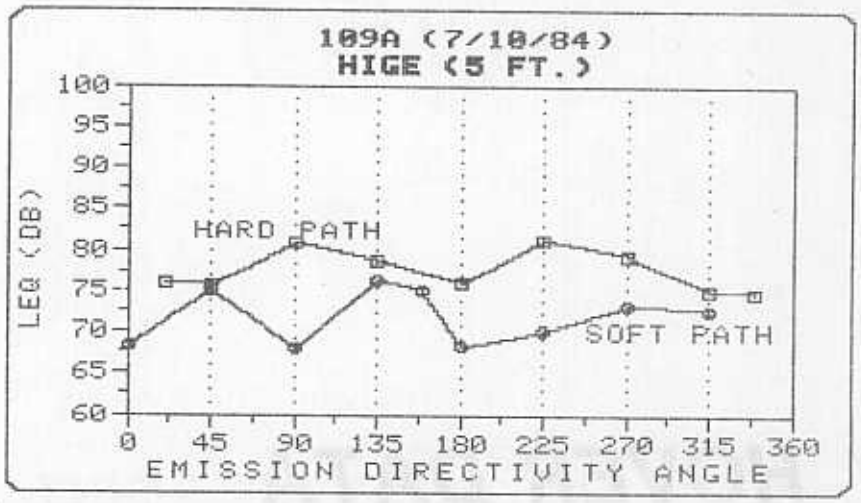
TEST DATE: 7/11/84

OPERATION : LEVEL FLYOVER (1000 FT. @ 145 KTS.)

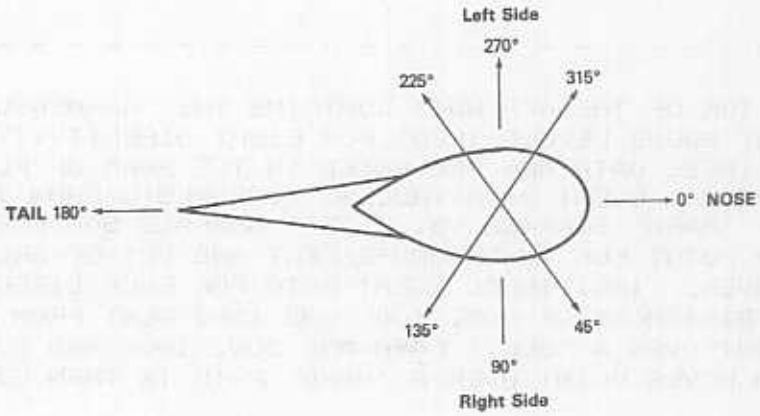
	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' WEST	1000' WEST	500' WEST	CL-C	500' EAST	1000' EAST	2000' EAST
E35	64.70	70.50	73.10	76.90	74.20	72.90	65.20
E36	66.10	69.70	72.60	74.30	72.20	69.80	65.10
E37	65.60	71.00	72.10	74.40	71.00	69.60	64.60
E38	66.90	70.30	73.90	75.40	74.60	70.80	65.00
E39	66.50	70.00	72.00	74.60	72.70	69.60	63.30
E40	66.60	--	73.60	75.30	--	70.90	66.70
AVERAGE	66.07	70.30	72.88	75.15	72.94	70.60	64.98
STD. DEV.	0.81	0.49	0.78	0.97	1.48	1.27	1.09
90% C.I.	0.67	0.47	0.65	0.80	1.41	1.05	0.90

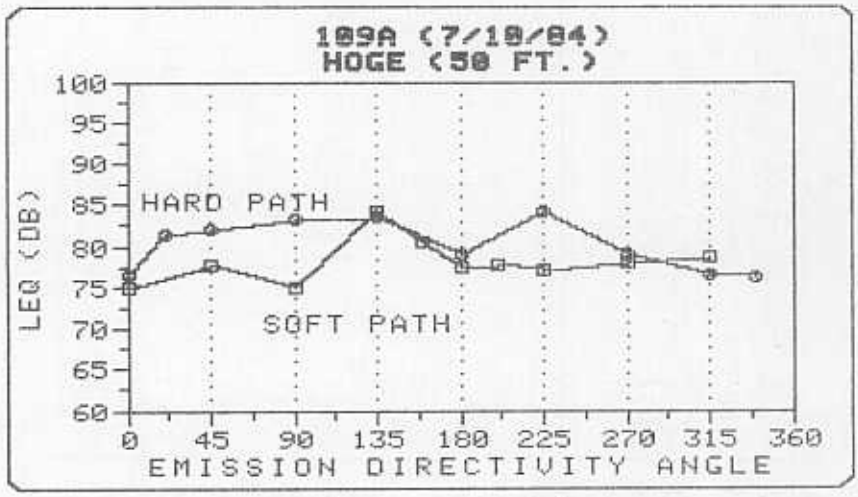
HOVER DATA

THIS SECTION OF THE APPENDIX CONTAINS THE 'AG-MEASURED' EQUIVALENT SOUND LEVELS (LEQ) FOR EIGHT DIRECTIVITY ANGLES. THESE DATA ARE PRESENTED IN THE FORM OF PLOTS AND INDIVIDUAL EVENT DATA TABLES. THE PLOTS SHOW THE EFFECT OF 'HARD' SURFACE VS. 'SOFT' SURFACE 500 FEET FROM THE HOVER POINT FOR IN-GROUND-EFFECT AND OUT-OF-GROUND-EFFECT HOVER. INDIVIDUAL EVENT DATA FOR EACH DIRECTIVITY ANGLE AT DISTANCES OF 500, 1000 AND 1500 FEET FROM HOVER POINT OVER A 'SOFT' PATH AND 500, 1000 AND 2000 FEET FROM HOVER POINT OVER A 'HARD' PATH IS THEN GIVEN.

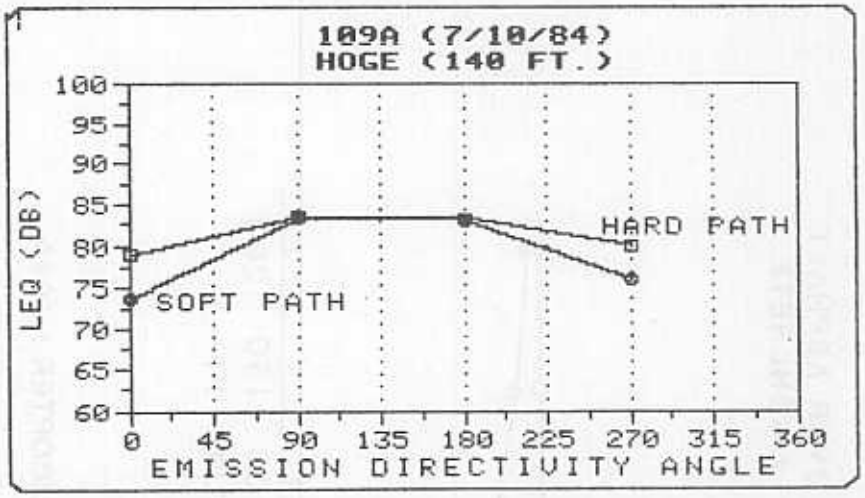


500 FT. FROM HOVER POINT

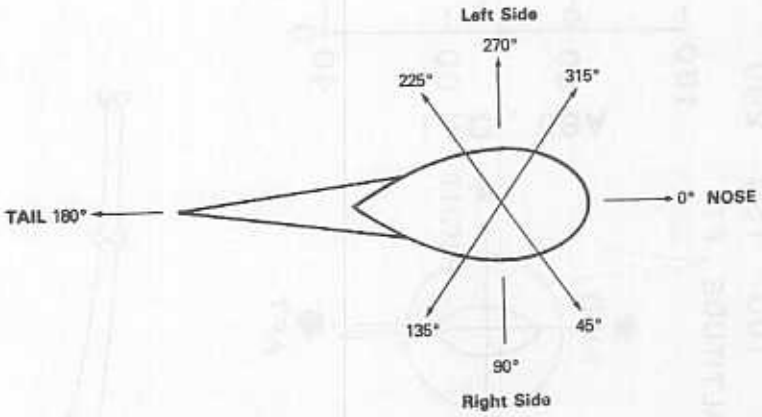


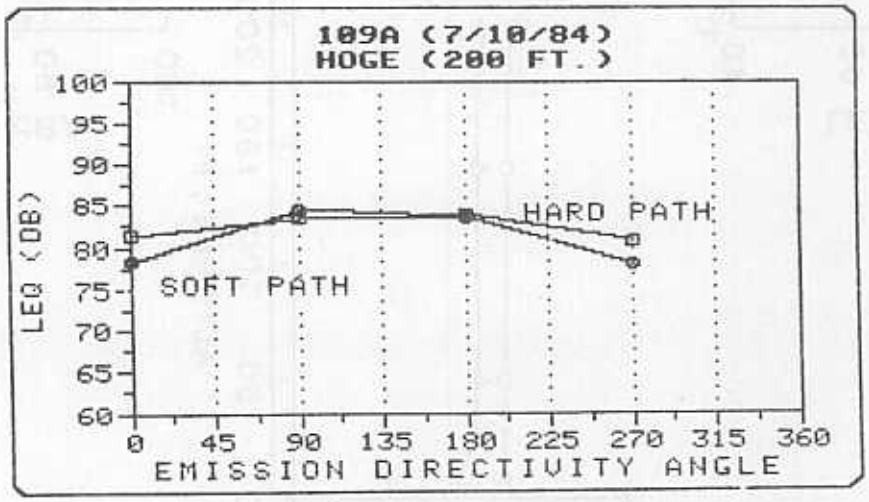


500 FT. FROM HOVER POINT

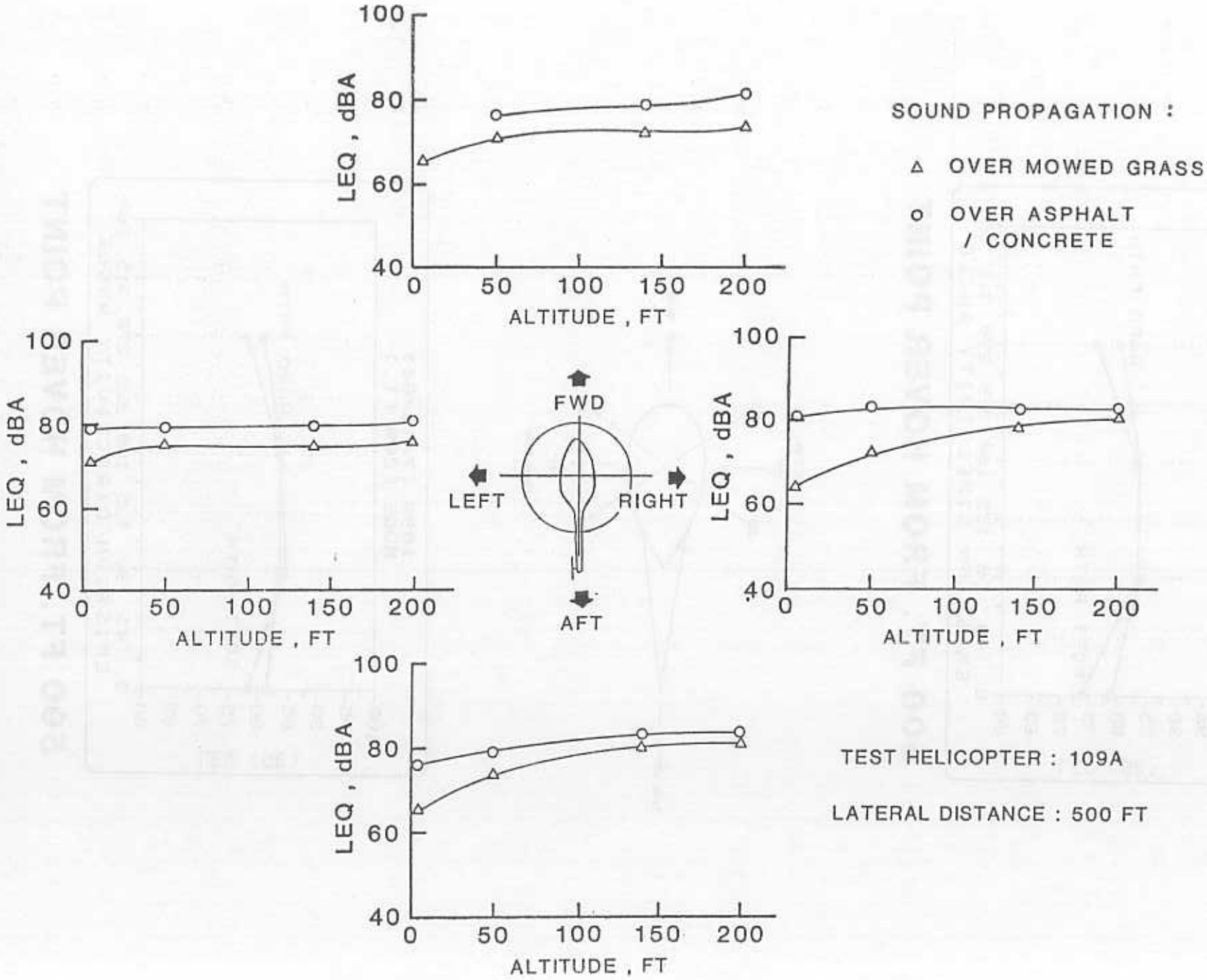


500 FT. FROM HOVER POINT





500 FT. FROM HOVER POINT


100
80
60
40
LEQ , dBA
0
50
100
150
200
ALTITUDE , FT
FWD
LEFT
RIGHT
AFT
SOUND PROPAGATION :
△ OVER MOWED GRASS
○ OVER ASPHALT / CONCRETE
TEST HELICOPTER : 109A
LATERAL DISTANCE : 500 FT

HOVER DATA (LEQ)

HELICOPTER: AGUSTA 109A DATE:7/10-7/11/84

MICROPHONE: 500 FT. FROM HOVER POINT

DIRECTIVITY ANGLES (DEGREES)		(SOFT PATH) HOVER 5 FT. AGL	(SOFT PATH) HOVER 50 FT.AGL	(HARD PATH) HOVER 5 FT. AGL	(HARD PATH) HOVER 50 FT. AGL
(NOSE)	0	65.6	71.1	--	76.6
	45	71.3	75.1	75.5	82.1
(LEFT)	90	64.3	72.4	80.8	83.1
	135	71.8	81.2	78.5	83.6
(TAIL)	180	65.3	73.6	76.0	79.0
	225	67.2	75.0	81.2	84.2
(RIGHT)	270	71.0	75.3	79.1	79.0
	315	69.6	75.6	75.0	76.5

MICROPHONE: 1000 FT. FROM HOVER POINT

DIRECTIVITY ANGLES (DEGREES)		(SOFT PATH) HOVER 5 FT. AGL	(SOFT PATH) HOVER 50 FT.AGL	(HARD PATH) HOVER 5 FT. AGL	(HARD PATH) HOVER 50 FT. AGL
(NOSE)	0	51.5	63.4	67.6	70.6
	45	57.8	67.7	68.0	77.5
(LEFT)	90	52.0	64.3	73.2	78.8
	135	58.9	70.9	71.1	78.0
(TAIL)	180	52.7	64.1	68.2	74.2
	225	53.9	67.8	73.9	78.9
(RIGHT)	270	55.5	67.7	72.0	74.0
	315	55.1	67.9	65.9	70.9

HOVER DATA (LEQ)

HELICOPTER: AGUSTA 109A DATE:7/10-7/11/84

MICROPHONE: 500 FT. FROM HOVER POINT

DIRECTIVITY ANGLES (DEGREES)		(SOFT PATH) HOVER 140' AGL	(SOFT PATH) HOVER 200' AGL	(HARD PATH) HOVER 140' AGL	(HARD PATH) HOVER 200' AGL
(NOSE)	0	72.1	73.7	79.2	81.5
	45	--	--	--	--
(LEFT)	90	79.4	81.7	83.6	83.5
	135	--	--	--	--
(TAIL)	180	81.2	81.6	83.1	83.9
	225	--	--	--	--
(RIGHT)	270	74.4	75.4	79.9	80.7
	315	--	--	--	--

MICROPHONE: 1000 FT. FROM HOVER POINT

DIRECTIVITY ANGLES (DEGREES)		(SOFT PATH) HOVER 140' AGL	(SOFT PATH) HOVER 200' AGL	(HARD PATH) HOVER 140' AGL	(HARD PATH) HOVER 200' AGL
(NOSE)	0	65.5	67.3	69.9	73.2
	45	--	--	--	--
(LEFT)	90	72.1	72.4	82.0	77.5
	135	--	--	--	--
(TAIL)	180	74.1	73.5	75.1	75.8
	225	--	--	--	--
(RIGHT)	270	67.9	69.3	73.6	72.8
	315	--	--	--	--

HOVER DATA (LEQ)

HELICOPTER: AGUSTA 109A DATE:7/10-7/11/84

MICROPHONE: 1500 FT. FROM HOVER POINT

DIRECTIVITY ANGLES (DEGREES)		HOVER 5' AGL (SOFT PATH)	HOVER 50' AGL (SOFT PATH)	HOVER 140' AGL	HOVER 200' AGL
(NOSE)	0	--	55.3	59.9	62.0
	45	47.7	54.5	--	--
(LEFT)	90	--	55.7	66.1	67.7
	135	49.4	55.7	--	--
(TAIL)	180	--	58.5	68.9	68.4
	225	45.8	59.0	--	--
(RIGHT)	270	45.6	60.6	63.4	65.1
	315	--	60.3	--	--

MICROPHONE: 2000 FT. FROM HOVER POINT

DIRECTIVITY ANGLES (DEGREES)		HOVER 5' AGL (HARD PATH)	HOVER 50' AGL (HARD PATH)	HOVER 140' AGL	HOVER 200' AGL
(NOSE)	0	57.7	62.5	62.5	64.9
	45	61.3	68.0	--	--
(LEFT)	90	63.5	71.4	71.8	70.1
	135	61.6	71.8	--	--
(TAIL)	180	59.9	67.3	68.7	66.8
	225	64.8	71.3	--	--
(RIGHT)	270	62.7	66.1	68.3	66.1
	315	59.5	64.1	--	--

RADAR TRACKING

DATA

THIS SECTION OF THE APPENDIX CONTAINS THE HELICOPTER POSITION DATA AND TRACKING PLOTS DERIVED FROM THE FAA'S PORTABLE TRACKING RADAR SYSTEM. THE POSITION DATA LISTS THE CLOSEST POINT OF APPROACH (CPA), TIME OF CPA, ELEVATION ANGLE, RATE OF CLIMB OR DESCENT, THE CLIMB OR DESCENT ANGLE, AND GROUND SPEED FOR ALL FLIGHT CONDITIONS. TRACKING PLOTS OF THE ACTUAL FLIGHT PROFILE FLOWN ARE PROVIDED FOR EACH FLIGHT CONDITIONS.

AGUSTA 109A

POSITION DATA
NOISE MEASUREMENT PROGRAM

CENTERLINE CENTER

DATE:07/11/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
SIX DEG. APPROACH AT VY, 60 KTS.							
1		-----	NO DATA	-----			
2	APP	377.5	86.1	10:20:28.8	-505.6	-5.1	55.7
3	APP	391.9	77.7	10:25:00.2	-536.6	-5.6	54.1
4	APP	385.3	80.8	10:29:27.2	-608.4	-6.1	56.5
5	APP	391.4	86.8	10:34:07.8	-381.0	-3.9	54.5
6	APP	392.4	80.5	10:39:45.5	-636.8	-6.7	53.4
NORMAL APPROACH							
7	APP	380.9	87.3	10:45:01.1	-301.7	-3.2	52.5
9		-----	NO DATA	-----			
11	APP	395.1	75.1	10:13:29.3	-763.5	-5.7	75.9
13	APP	414.3	87.2	10:17:59.3	-428.3	-3.2	76.1
15	APP	428.2	80.9	10:22:34.4	-601.7	-4.4	77.8
17	APP	340.5	73.3	10:27:18.3	-308.5	-2.3	76.7
NORMAL TAKEOFF							
8	DEP	367.0	87.0	10:49:44.7	-507.7	-5.4	53.4
10		-----	NO DATA	-----			
12	DEP	635.8	83.0	10:15:04.0	1610.2	10.5	85.9
14	DEP	629.0	73.4	10:19:39.5	1459.0	9.4	87.0
16	DEP	770.1	87.1	10:24:08.2	1441.9	9.8	82.2
18	DEP	676.2	86.2	10:29:03.4	1278.3	8.0	90.0

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

AGUSTA 109A

POSITION DATA
NOISE MEASUREMENT PROGRAM

CENTERLINE CENTER

DATE:07/11/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)							
19		-----	NO DATA	-----			
20	APP	526.3	88.2	11:12:47.4	-743.2	-6.3	66.0
21	APP	583.1	77.3	11:17:00.8	-1246.2	-10.8	64.5
22	APP	573.0	79.6	11:21:01.9	-1080.6	-9.9	61.4
23	APP	547.2	75.1	11:25:02.5	-1192.0	-9.4	71.2
24	APP	562.0	79.3	11:29:53.9	-1403.0	-12.6	62.1
25	APP	585.2	84.8	11:33:53.6	-1613.7	-12.7	70.7
26	APP	633.7	81.4	11:38:18.8	-1105.7	-9.5	65.4
500 FT. LEVEL FLYOVER AT 145 KTS.							
27	APP	544.9	85.1	11:42:19.9	-999.1	-8.6	65.5
28	F/O	373.1	73.9	11:47:41.6	151.3	0.6	134.9
29	F/O	388.9	78.8	11:49:42.4	68.2	0.2	157.3
30	F/O	409.7	77.0	11:52:40.0	412.5	1.7	136.3
31	F/O	412.6	89.0	11:54:56.8	-34.1	-0.1	158.3
32	F/O	463.1	82.8	11:57:51.8	291.1	1.2	135.3
33	F/O	398.4	85.6	12:00:21.3	124.7	0.4	164.3
34	F/O	422.7	81.6	12:03:22.3	422.9	1.8	132.9
1000 FT. LEVEL FLYOVER AT 145 KTS.							
35		-----	NO DATA	-----			
36	F/O	976.9	85.4	12:09:02.1	167.7	0.7	137.2
37	F/O	983.1	87.1	12:11:31.7	-285.4	-1.1	153.5
38	F/O	920.6	86.5	12:14:23.6	-175.7	-0.7	136.7
39	F/O	1022.7	83.5	12:17:14.2	-192.3	-0.7	152.0
40	F/O	1042.5	88.7	12:19:55.5	191.4	0.8	135.8

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

AGUSTA 109A

POSITION DATA
NOISE MEASUREMENT PROGRAM

500 FT. EAST

DATE:07/11/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
SIX DEG. APPROACH AT VY, 60 KTS.							
1		-----	NO DATA	-----			
2	APP	616.8	37.9	10:20:28.8	-505.8	-5.1	55.7
3	APP	629.6	39.1	10:24:59.4	-551.9	-5.9	53.1
4	APP	626.4	38.6	10:29:25.8	-428.0	-4.4	55.0
5	APP	643.4	37.7	10:34:07.6	-405.9	-4.2	54.5
6	APP	632.8	37.9	10:39:45.5	-637.3	-6.7	53.4
NORMAL APPROACH							
7	APP	633.3	37.3	10:45:00.2	-204.2	-2.2	51.8
9		-----	NO DATA	-----			
11	APP	628.4	39.9	10:13:28.6	-813.9	-5.9	77.2
13	APP	647.6	40.0	10:17:58.8	-334.2	-2.4	78.8
15	APP	700.5	37.6	10:22:34.3	-603.2	-4.4	77.8
17	APP	674.8	30.2	10:27:17.2	-357.1	-2.8	71.9
NORMAL TAKEOFF							
8	DEP	622.4	37.2	10:49:44.5	-499.5	-5.4	52.6
10		-----	NO DATA	-----			
12	DEP	813.3	50.1	10:15:03.3	1592.7	10.6	84.1
14	DEP	784.4	50.5	10:19:39.5	1458.8	9.4	87.0
16	DEP	898.9	58.8	10:24:08.0	1446.0	9.8	82.2
18	DEP	822.5	55.4	10:29:03.4	1278.2	8.0	90.0

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

AGUSTA 109A

POSITION DATA
NOISE MEASUREMENT PROGRAM

500 FT. EAST

DATE:07/11/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)							
19		-----	NO DATA	-----			
20	APP	737.0	45.6	11:12:47.6	-740.4	-6.2	66.8
21	APP	704.2	54.1	11:17:00.8	-1246.2	-10.8	64.5
22	APP	744.8	49.8	11:21:01.8	-1104.3	-10.0	61.6
23	APP	744.7	45.5	11:25:02.5	-1192.0	-9.4	71.2
24	APP	733.3	49.1	11:29:54.0	-1400.8	-12.6	62.0
25	APP	779.3	47.8	11:33:54.1	-1508.6	-11.7	71.9
26	APP	771.7	54.5	11:38:18.8	-1105.4	-9.5	65.4
500 FT. LEVEL FLYOVER AT 145 KTS.							
27	F/O	760.6	46.0	11:42:19.7	-1002.8	-8.6	65.7
28	F/O	700.7	31.1	11:47:41.7	167.8	0.7	135.4
29	F/O	666.8	34.7	11:49:42.3	45.9	0.2	157.8
30	F/O	713.9	34.2	11:52:40.0	412.5	1.7	136.3
31	F/O	643.9	40.0	11:54:56.9	-88.2	-0.3	157.1
32	F/O	716.5	40.1	11:57:51.8	291.1	1.2	135.3
33	F/O	653.2	38.0	12:00:21.5	193.7	0.7	165.3
34	F/O	696.6	37.2	12:03:22.4	441.2	1.9	132.9
1000 FT. LEVEL FLYOVER AT 145 KTS.							
35		-----	NO DATA	-----			
36	F/O	1119.5	60.6	12:09:01.9	103.7	0.4	138.8
37	F/O	1103.7	62.4	12:11:32.3	-270.2	-1.0	153.2
38	F/O	1058.9	60.4	12:14:23.6	-176.1	-0.7	136.7
39	F/O	1095.5	68.3	12:17:14.2	-192.2	-0.7	152.0
40	F/O	1165.1	63.7	12:19:55.5	191.1	0.8	135.8

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

109A

POSITION DATA
NOISE MEASUREMENT PROGRAM

500 FT. WEST

DATE:07/11/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
SIX DEG. APPROACH AT VY, 60 KTS.							
1		-----	NO DATA	-----			
2	APP	629.5	36.4	10:20:29.4	-537.7	-5.5	55.4
3	APP	633.7	38.6	10:24:59.2	-550.3	-5.9	52.8
4	APP	613.8	36.2	10:29:28.1	-739.6	-7.4	56.0
5	APP	617.9	39.1	10:34:08.7	-339.5	-3.4	56.5
6	APP	639.2	37.1	10:39:45.6	-637.5	-6.7	53.4
NORMAL APPROACH							
7	APP	614.2	38.3	10:45:01.4	-347.5	-3.7	53.1
9		-----	NO DATA	-----			
11	APP	607.7	38.8	10:13:29.8	-806.5	-5.9	76.9
13	APP	623.6	41.3	10:17:59.7	-466.3	-3.5	75.2
15	APP	605.2	46.0	10:22:33.8	-618.7	-4.5	78.3
17	APP	527.0	38.2	10:27:18.3	-308.9	-2.3	76.7
NORMAL TAKEOFF							
8	DEP	607.2	37.1	10:49:44.7	-507.6	-5.4	53.4
10		-----	NO DATA	-----			
12	DEP	796.8	52.1	10:15:03.8	1631.5	10.8	84.7
14	DEP	822.3	46.6	10:19:39.3	1464.1	9.4	87.3
16	DEP	913.4	57.8	10:24:08.5	1457.3	10.0	81.2
18	DEP	848.5	52.8	10:29:03.1	1260.4	8.0	89.0

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

AGUSTA 109A

POSITION DATA
NOISE MEASUREMENT PROGRAM

500 FT. WEST

DATE:07/11/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)							
19		-----	NO DATA	-----			
20	APP	688.2	48.4	11:12:48.7	-851.1	-6.9	69.1
21	APP	795.7	42.5	11:17:02.2	-1241.6	-10.8	64.5
22	APP	757.3	47.0	11:21:02.4	-932.4	-8.3	63.2
23	APP	719.6	52.4	11:25:00.8	-1046.2	-8.3	70.9
24	APP	770.8	44.4	11:29:54.8	-1231.0	-10.9	63.1
25	APP	747.3	50.1	11:33:54.4	-1491.0	-11.6	71.8
26	APP	834.4	48.5	11:38:19.1	-1039.6	-9.0	64.7
500 FT. LEVEL FLYOVER AT 145 KTS.							
27	F/O	700.2	47.1	11:42:22.3	-1396.3	-11.4	68.2
28	F/O	529.2	42.6	11:47:41.3	49.0	0.2	134.0
29	F/O	574.3	41.8	11:49:43.0	204.9	0.7	155.5
30	F/O	568.4	44.0	11:52:39.8	374.2	1.6	135.0
31	F/O	653.8	39.1	11:54:56.8	-33.6	-0.1	158.3
32	F/O	622.4	48.2	11:57:52.1	335.4	1.4	137.6
33	F/O	621.8	39.7	12:00:21.3	124.9	0.4	164.3
34	F/O	606.1	44.2	12:03:22.7	500.1	2.1	131.6
1000 FT. LEVEL FLYOVER AT 145 KTS.							
35		-----	NO DATA	-----			
36	F/O	1062.9	66.5	12:09:02.2	168.6	0.7	136.7
37	F/O	1100.6	63.1	12:11:31.7	-285.5	-1.1	153.5
38	F/O	1037.9	62.3	12:14:23.6	-176.1	-0.7	136.7
39	F/O	1165.2	61.6	12:17:14.5	-157.2	-0.6	151.2
40	F/O	1147.6	65.3	12:19:55.4	198.4	0.8	136.0

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

AGUSTA 109A

POSITION DATA
NOISE MEASUREMENT PROGRAM

1000 FT. EAST

DATE:07/11/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
SIX DEG. APPROACH AT VY, 60 KTS.							
1		-----	NO DATA	-----			
2	APP	1055.2	21.5	10:20:28.0	-473.2	-4.8	56.0
3	APP	1066.0	22.0	10:24:58.9	-536.6	-5.7	53.0
4	APP	1062.8	21.7	10:29:25.8	-428.0	-4.4	55.0
5	APP	1083.1	21.4	10:34:07.5	-417.2	-4.3	54.4
6	APP	1069.6	22.0	10:39:44.9	-625.3	-6.5	54.2
NORMAL APPROACH							
7	APP	1073.3	21.1	10:45:00.2	-204.2	-2.2	51.8
9		-----	NO DATA	-----			
11	APP	1062.2	22.4	10:13:28.6	-813.9	-5.9	77.2
13	APP	1079.3	22.8	10:17:58.8	-334.2	-2.4	78.8
15	APP	1138.9	22.2	10:22:34.3	-603.2	-4.4	77.8
17	APP	1134.9	17.5	10:27:17.2	-357.1	-2.8	71.9
NORMAL TAKEOFF							
8	DEP	1065.1	20.8	10:49:44.5	-499.5	-5.4	52.6
10		-----	NO DATA	-----			
12	DEP	1188.0	31.8	10:15:03.3	1592.7	10.6	84.1
14	DEP	1155.5	31.7	10:19:39.5	1458.8	9.4	87.0
16	DEP	1233.8	38.7	10:24:08.0	1446.0	9.8	82.2
18	DEP	1181.4	35.1	10:29:03.4	1278.2	8.0	90.0

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

AGUSTA 109A

POSITION DATA
NOISE MEASUREMENT PROGRAM

1000 FT. EAST

DATE:07/11/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)							
19		-----	NO DATA	-----			
20	APP	1141.2	25.8	11:12:49.8	-993.4	-8.5	65.8
21	APP	1073.2	32.3	11:17:00.8	-1246.2	-10.8	64.5
22	APP	1130.5	31.6	11:21:00.6	-1382.9	-12.4	61.9
23	APP	1144.4	27.7	11:25:02.5	-1192.0	-9.4	71.2
24	APP	1121.5	29.7	11:29:54.0	-1400.8	-12.6	62.0
25	APP	1170.4	29.7	11:33:54.1	-1508.6	-11.7	71.9
26	APP	1135.5	33.7	11:38:18.8	-1105.4	-9.5	65.4
500 FT. LEVEL FLYOVER AT 145 KTS.							
27	F/O	1164.2	28.2	11:42:19.7	-1002.8	-8.6	65.7
28	F/O	1157.7	18.1	11:47:40.7	-107.1	-0.5	133.4
29	F/O	1112.3	20.1	11:49:42.3	45.9	0.2	157.8
30	F/O	1162.5	20.3	11:52:40.0	412.5	1.7	136.3
31	F/O	1076.2	22.7	11:54:56.9	-88.2	-0.3	157.1
32	F/O	1145.6	23.9	11:57:51.8	291.1	1.2	135.3
33	F/O	1092.0	21.7	12:00:21.5	193.7	0.7	165.3
34	F/O	1136.5	21.8	12:03:22.4	441.2	1.9	132.9
1000 FT. LEVEL FLYOVER AT 145 KTS.							
35		-----	NO DATA	-----			
36	F/O	1432.2	43.0	12:09:01.9	103.7	0.4	138.8
37	F/O	1402.1	44.5	12:11:32.4	-278.4	-1.0	153.5
38	F/O	1375.7	42.0	12:14:24.0	-216.2	-0.9	137.6
39	F/O	1361.5	48.3	12:17:14.0	-130.8	-0.5	152.1
40	F/O	1458.7	45.8	12:19:55.5	191.1	0.8	135.8

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

AGUSTA 109A

POSITION DATA
NOISE MEASUREMENT PROGRAM

1000 FT. WEST

DATE:07/11/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
SIX DEG. APPROACH AT VY, 60 KTS.							
1		-----	NO DATA	-----			
2	APP	1070.2	21.3	10:20:27.8	-481.9	-4.9	56.0
3	APP	1071.4	21.8	10:24:59.2	-550.3	-5.9	52.8
4	APP	1047.6	20.4	10:29:28.2	-738.4	-7.4	56.0
5	APP	1053.8	21.8	10:34:08.7	-339.5	-3.4	56.5
6	APP	1076.6	20.2	10:39:47.8	-518.9	-5.9	50.0
NORMAL APPROACH							
7	APP	1053.0	21.3	10:45:01.4	-347.5	-3.7	53.1
9		-----	NO DATA	-----			
11		-----	NO DATA	-----			
13	APP	1026.0	22.7	10:18:01.4	-801.2	-5.9	75.9
15	APP	1016.3	24.4	10:22:35.5	-757.6	-5.7	75.0
17	APP	965.3	20.0	10:27:19.0	-258.0	-1.9	76.6
NORMAL TAKEOFF							
8	DEP	1043.1	20.1	10:49:46.7	-412.0	-4.4	52.3
10		-----	NO DATA	-----			
12	DEP	1168.2	32.7	10:15:03.8	1631.5	10.8	84.7
14	DEP	1204.2	29.9	10:19:39.2	1466.6	9.4	87.8
16	DEP	1254.4	38.2	10:24:08.5	1457.3	10.0	81.2
18	DEP	1217.0	33.9	10:29:03.1	1260.4	8.0	89.0

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

AGUSTA 109A

POSITION DATA
NOISE MEASUREMENT PROGRAM

1000 FT. WEST

DATE:07/11/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)							
19		-----	NO DATA	-----			
20	APP	1073.3	28.8	11:12:48.7	-851.1	-6.9	69.1
21	APP	1191.2	27.0	11:17:02.2	-1241.6	-10.8	64.5
22	APP	1142.5	28.7	11:21:03.9	-1065.5	-10.0	59.8
23	APP	1097.4	31.4	11:25:00.8	-1046.2	-8.3	70.9
24	APP	1166.6	27.7	11:29:54.8	-1231.0	-10.9	63.1
25	APP	1123.9	30.8	11:33:54.4	-1491.0	-11.6	71.8
26	APP	1220.7	30.9	11:38:19.1	-1039.6	-9.0	64.7
500 FT. LEVEL FLYOVER AT 145 KTS.							
27	F/O	1079.3	28.5	11:42:22.3	-1396.3	-11.4	68.2
28	F/O	957.8	22.1	11:47:41.3	49.0	0.2	134.0
29	F/O	993.4	21.7	11:49:41.8	-37.2	-0.1	156.3
30	F/O	988.3	23.7	11:52:39.8	374.2	1.6	135.0
31	F/O	1085.6	22.8	11:54:56.3	104.5	0.4	158.2
32	F/O	1025.4	27.0	11:57:52.1	335.4	1.4	137.6
33	F/O	1053.2	22.4	12:00:20.8	-140.4	-0.5	162.6
34	F/O	1026.2	24.4	12:03:22.7	500.1	2.1	131.6
1000 FT. LEVEL FLYOVER AT 145 KTS.							
35		-----	NO DATA	-----			
36	F/O	1344.5	46.6	12:09:02.2	168.6	0.7	136.7
37	F/O	1400.0	44.6	12:11:31.7	-285.5	-1.1	153.5
38	F/O	1344.9	43.2	12:14:23.8	-203.9	-0.8	137.2
39	F/O	1471.5	44.3	12:17:14.5	-157.2	-0.6	151.2
40	F/O	1431.7	46.9	12:19:55.3	199.0	0.8	136.3

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

AGUSTA 109A

POSITION DATA
NOISE MEASUREMENT PROGRAM

2000 FT. EAST

DATE:07/11/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
SIX DEG. APPROACH AT VY, 60 KTS.							
1		-----	NO DATA	-----			
2	APP	2019.1	11.1	10:20:28.0	-473.2	-4.8	56.0
3	APP	2026.9	11.9	10:24:57.1	-453.0	-4.9	51.7
4	APP	2025.6	11.3	10:29:25.8	-428.0	-4.4	55.0
5	APP	2047.1	11.2	10:34:07.5	-417.2	-4.3	54.4
6	APP	2032.2	11.5	10:39:44.9	-625.3	-6.5	54.2
NORMAL APPROACH							
7	APP	2038.0	11.0	10:45:00.2	-204.2	-2.2	51.8
9		-----	NO DATA	-----			
11	APP	2023.5	11.6	10:13:28.6	-813.9	-5.9	77.2
13	APP	2038.5	11.9	10:17:58.8	-334.2	-2.4	78.8
15	APP	2099.7	12.0	10:22:34.2	-602.5	-4.4	78.1
17	APP	2110.3	9.4	10:27:17.2	-357.1	-2.8	71.9
NORMAL TAKEOFF							
8	DEP	2031.8	10.8	10:49:44.5	-499.5	-5.4	52.6
10		-----	NO DATA	-----			
12	DEP	2100.2	17.4	10:15:03.3	1592.7	10.6	84.1
14	DEP	2063.2	18.8	10:19:41.5	1495.1	9.5	88.3
16	DEP	2109.4	21.5	10:24:08.0	1446.0	9.8	82.2
18	DEP	2081.8	19.1	10:29:03.4	1278.2	8.0	90.0

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

AGUSTA 109A

POSITION DATA
NOISE MEASUREMENT PROGRAM

2000 FT. EAST

DATE:07/11/84

FAA/AEE

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NOISE ABATEMENT APPROACH							
19		-----	NO DATA	-----			
20	APP	2069.1	14.0	11:12:49.8	-993.4	-8.5	65.8
21	APP	1990.7	16.8	11:17:00.8	-1246.2	-10.8	64.5
22	APP	2050.8	16.9	11:21:00.5	-1390.6	-12.4	62.2
23	APP	2076.7	16.0	11:25:01.2	-1114.1	-8.8	70.9
24	APP	2048.7	15.9	11:29:54.0	-1400.8	-12.6	62.0
25	APP	2096.3	16.1	11:33:54.1	-1508.6	-11.7	71.9
26	APP	2043.6	18.1	11:38:18.8	-1105.4	-9.5	65.4
500 FT. LEVEL FLYOVER AT 145 KTS.							
27	F/O	2099.5	15.3	11:42:19.6	-1010.0	-8.6	66.0
28	F/O	2124.0	9.8	11:47:40.7	-107.1	-0.5	133.4
29	F/O	2079.0	10.7	11:49:42.3	45.9	0.2	157.8
30	F/O	2128.8	10.8	11:52:39.6	333.6	1.4	134.0
31	F/O	2031.8	12.1	11:54:56.1	204.7	0.7	158.6
32	F/O	2100.0	12.8	11:57:51.8	291.1	1.2	135.3
33	F/O	2055.1	11.4	12:00:21.5	193.7	0.7	165.3
34	F/O	2098.6	11.7	12:03:22.4	441.2	1.9	132.9
1000 FT. LEVEL FLYOVER AT 145 KTS.							
35		-----	NO DATA	-----			
36	F/O	2267.5	25.6	12:09:01.7	-12.5	-0.1	140.5
37	F/O	2224.7	26.3	12:11:32.4	-278.4	-1.0	153.5
38	F/O	2218.6	24.6	12:14:24.0	-216.2	-0.9	137.6
39	F/O	2156.1	28.4	12:17:14.9	-35.4	-0.1	151.2
40	F/O	2271.8	27.5	12:19:55.0	186.2	0.8	136.8

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

AGUSTA 109A

POSITION DATA
NOISE MEASUREMENT PROGRAM

2000 FT. WEST

DATE:07/11/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
SIX DEG. APPROACH AT VY, 60 KTS.							
1		-----	NO DATA	-----			
**		-----	NO DATA	-----			
3	APP	2028.8	10.2	10:25:02.1	-456.6	-4.7	54.9
4	APP	2006.2	10.2	10:29:28.2	-738.4	-7.4	56.0
5	APP	2010.4	10.3	10:34:10.7	-513.4	-5.0	57.5
6	APP	2026.2	10.2	10:39:47.8	-518.9	-5.9	50.0
NORMAL APPROACH							
7	APP	2014.9	10.6	10:45:01.4	-347.5	-3.7	53.1
9		-----	NO DATA	-----			
11	APP	1974.3	10.8	10:13:29.8	-806.5	-5.9	76.9
13	APP	1962.7	11.3	10:18:01.4	-801.2	-5.9	75.9
15	APP	1952.9	11.7	10:22:36.4	-903.2	-6.8	74.7
17	APP	1924.9	9.5	10:27:19.0	-258.0	-1.9	76.6
NORMAL TAKEOFF							
8	DEP	2000.3	10.0	10:49:46.7	-412.0	-4.4	52.3
10		-----	NO DATA	-----			
12	DEP	2068.0	19.1	10:15:05.9	1736.7	11.2	86.7
14	DEP	2115.0	16.2	10:19:39.2	1466.6	9.4	87.8
16	DEP	2127.8	21.0	10:24:08.5	1457.3	10.0	81.2
18	DEP	2104.8	15.9	10:28:59.6	1404.8	8.9	88.3

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

AGUSTA 109A

POSITION DATA
NOISE MEASUREMENT PROGRAM

2000 FT. WEST

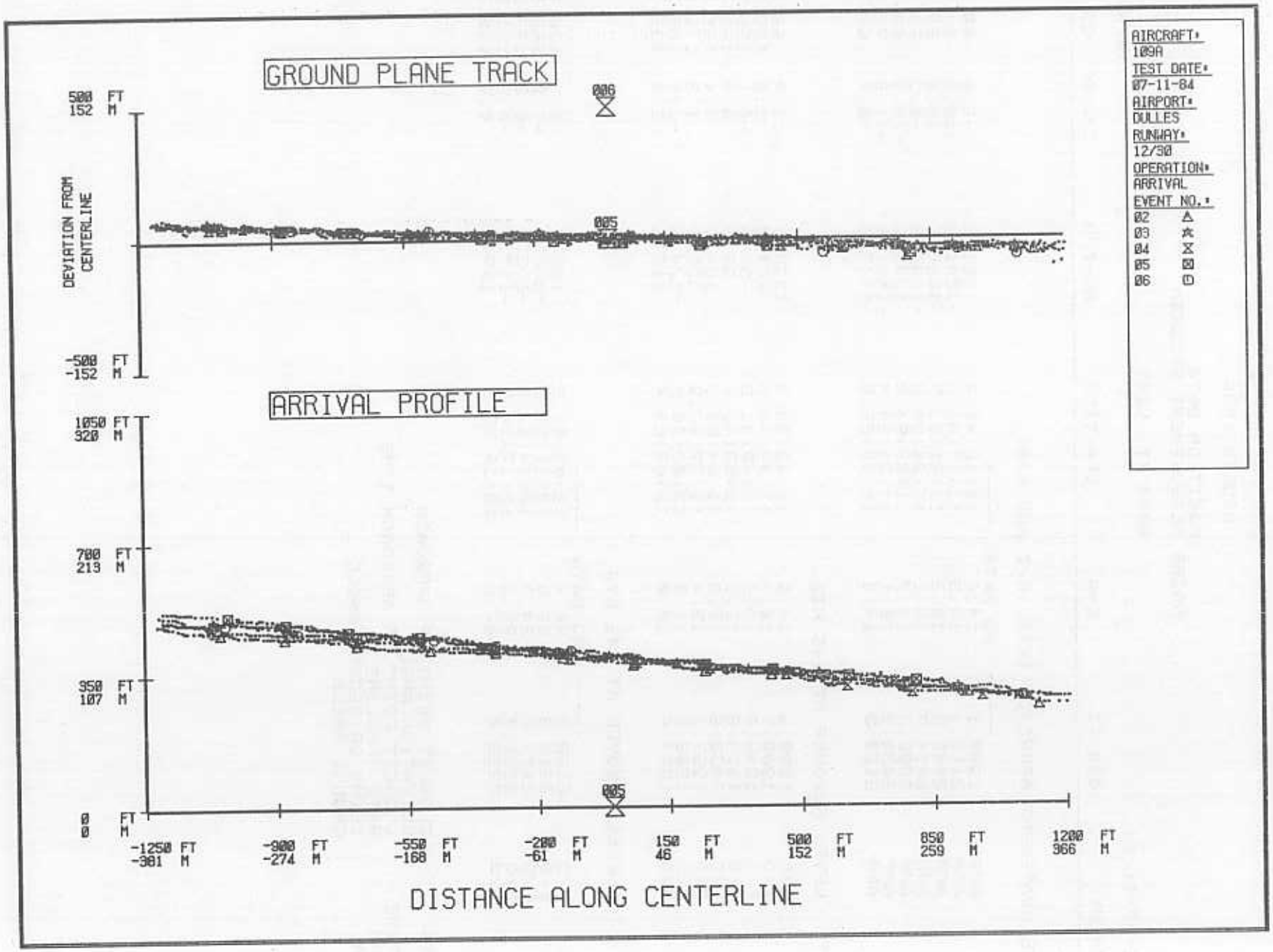
DATE:07/11/84

FAA/AEE

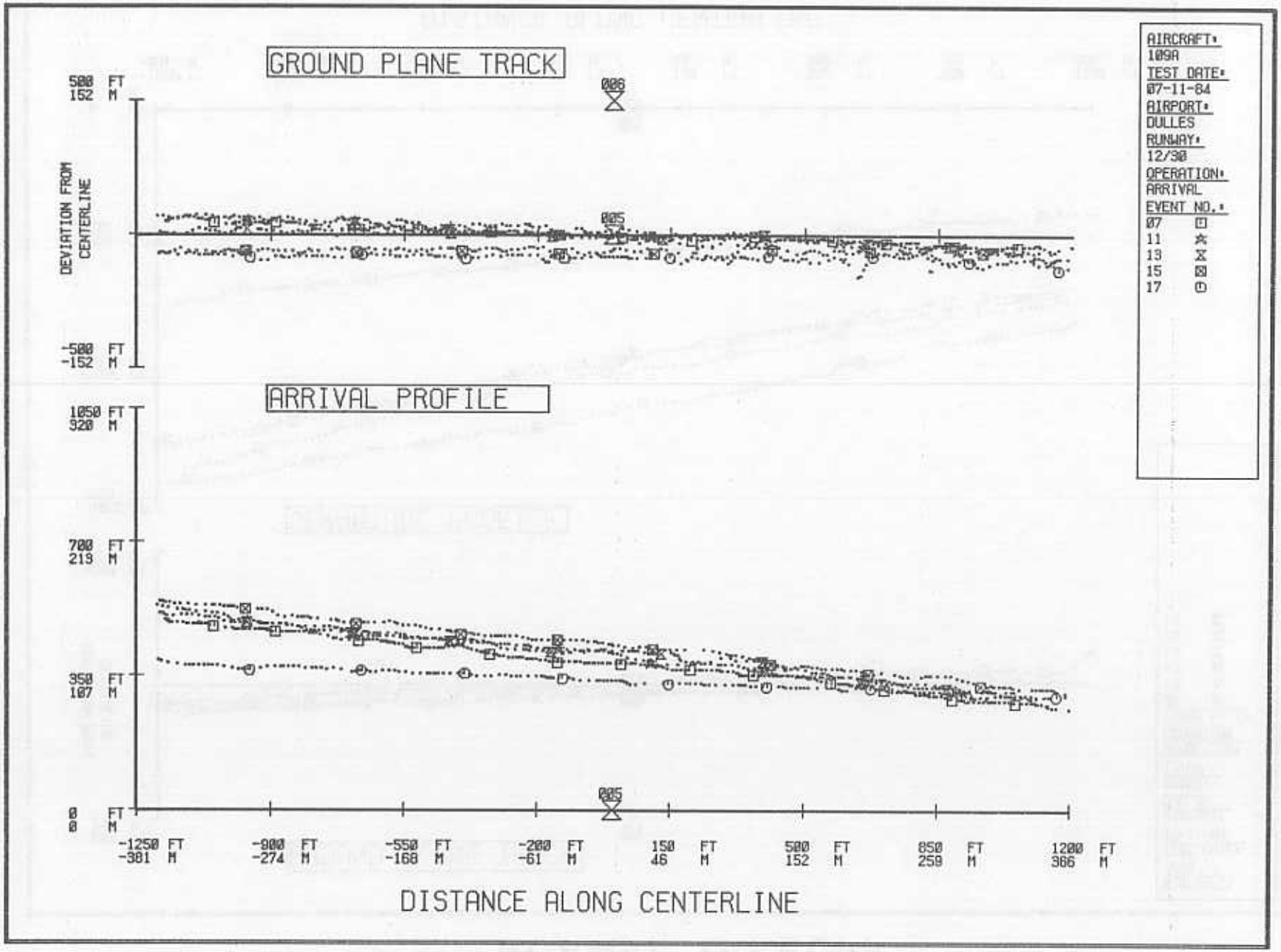
EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)							
19		-----	NO DATA	-----			
20	APP	1998.1	14.6	11:12:48.7	-851.1	-6.9	69.1
21	APP	2115.1	14.5	11:17:02.2	-1241.6	-10.8	64.5
22	APP	2045.5	15.2	11:21:03.9	-1065.5	-10.0	59.8
23	APP	2014.7	16.1	11:25:00.8	-1046.2	-8.3	70.9
24	APP	2092.3	14.7	11:29:54.8	-1231.0	-10.9	63.1
25	APP	2038.2	16.1	11:33:54.4	-1491.0	-11.6	71.8
26	APP	2129.3	14.8	11:38:22.8	-1047.2	-8.7	67.7
500 FT. LEVEL FLYOVER AT 145 KTS.							
27	F/O	1999.5	14.6	11:42:22.3	-1396.3	-11.4	68.2
28	F/O	1909.7	10.7	11:47:42.8	204.2	0.8	139.8
29	F/O	1945.9	10.5	11:49:41.8	-37.2	-0.1	156.3
30	F/O	1914.2	12.3	11:52:41.8	98.0	0.4	140.4
31	F/O	2038.6	11.6	11:54:56.3	104.5	0.4	158.2
32	F/O	1957.1	13.4	11:57:52.9	338.8	1.3	142.9
33	F/O	1998.2	11.5	12:00:20.6	-224.2	-0.8	162.2
34	F/O	1974.6	12.0	12:03:23.4	618.5	2.6	135.7
1000 FT. LEVEL FLYOVER AT 145 KTS.							
35		-----	NO DATA	-----			
36	F/O	2152.3	26.6	12:09:02.2	168.6	0.7	136.7
37	F/O	2218.2	26.0	12:11:32.6	-262.9	-1.0	153.5
38	F/O	2177.2	24.7	12:14:23.8	-203.9	-0.8	137.2
39	F/O	2290.7	26.3	12:17:14.5	-157.2	-0.6	151.2
40	F/O	2232.0	27.6	12:19:55.3	199.0	0.8	136.3

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

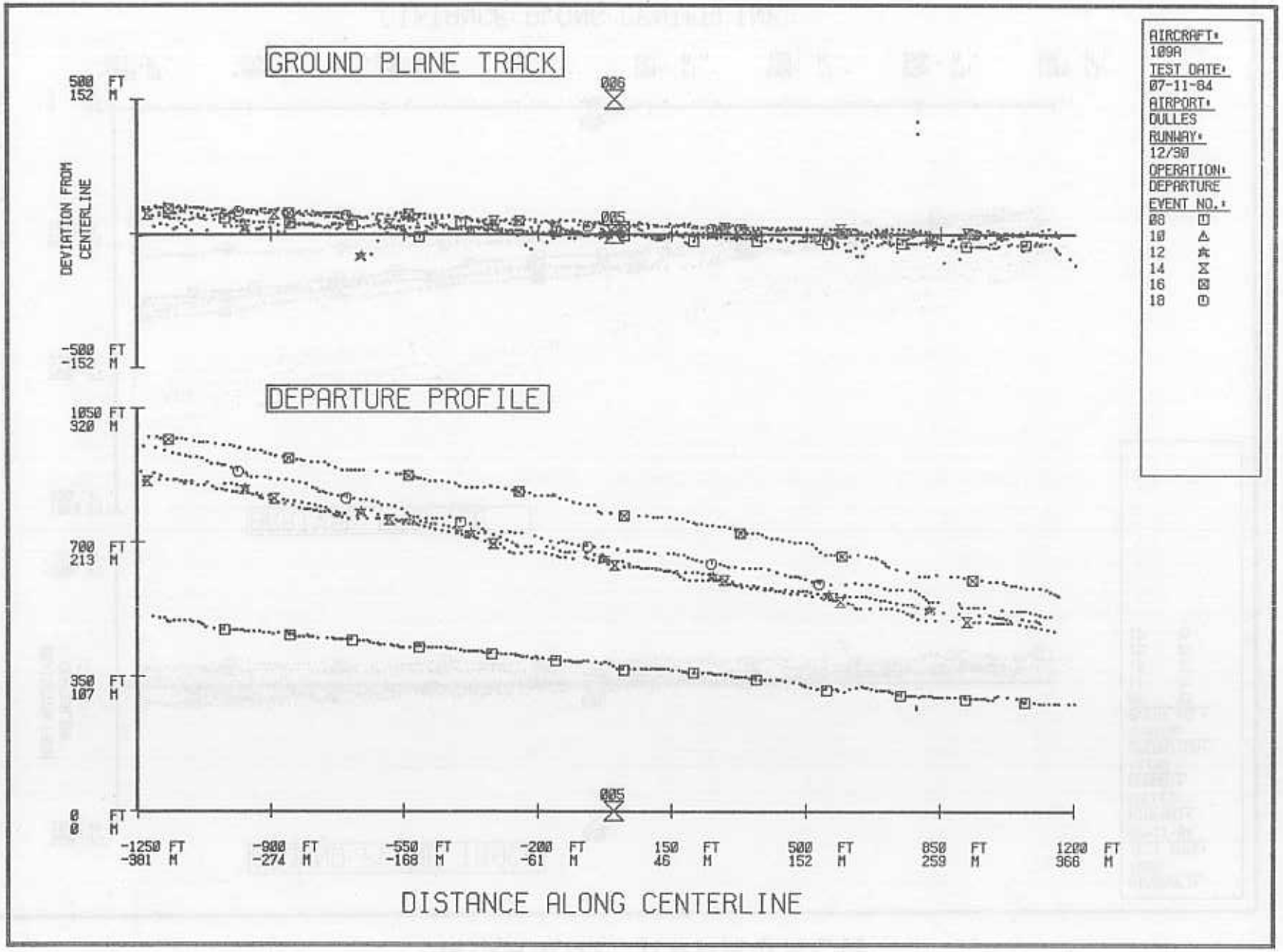
SIX° APPROACH at Vy, 60 Kts.



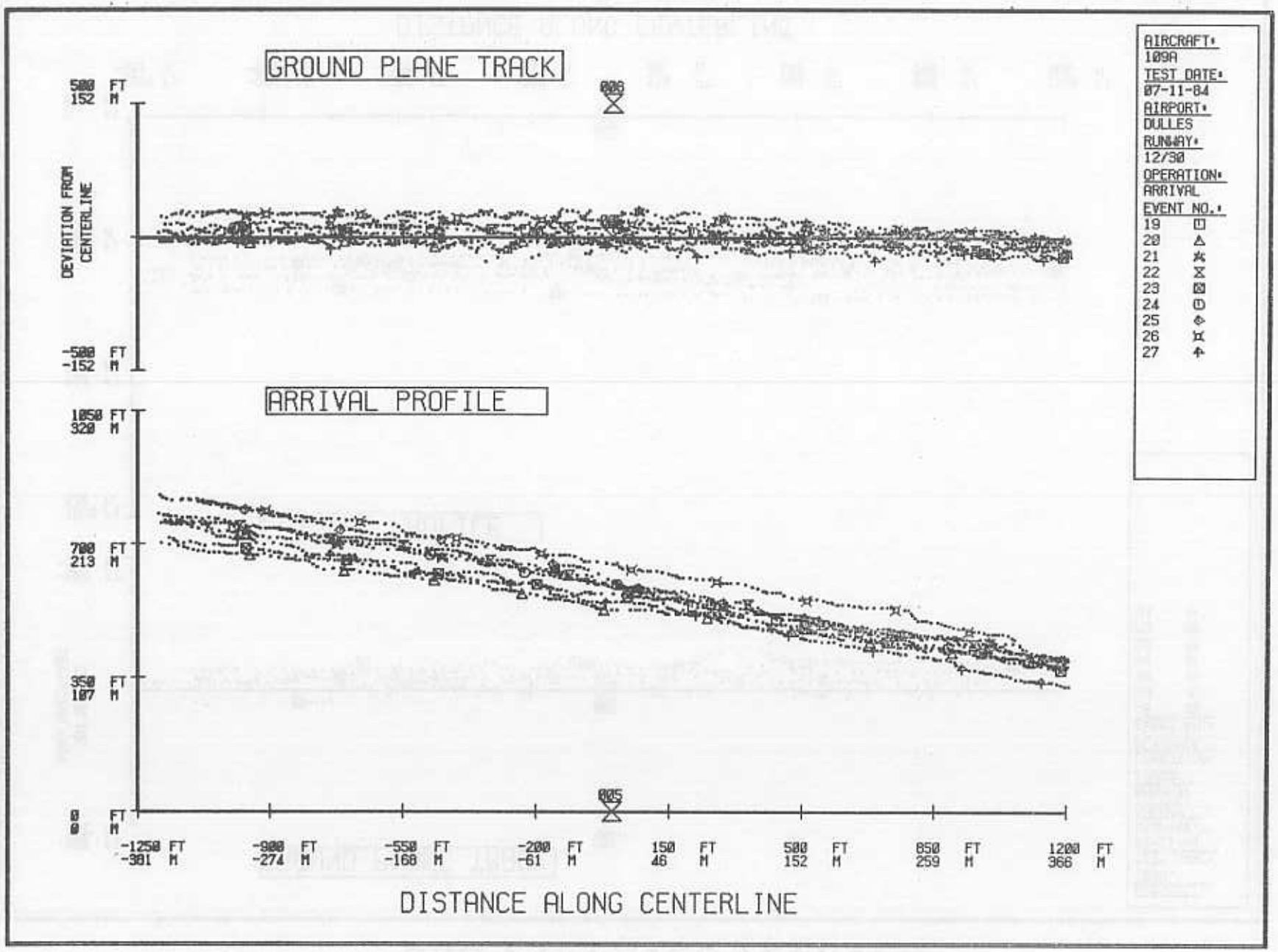
NORMAL APPROACH



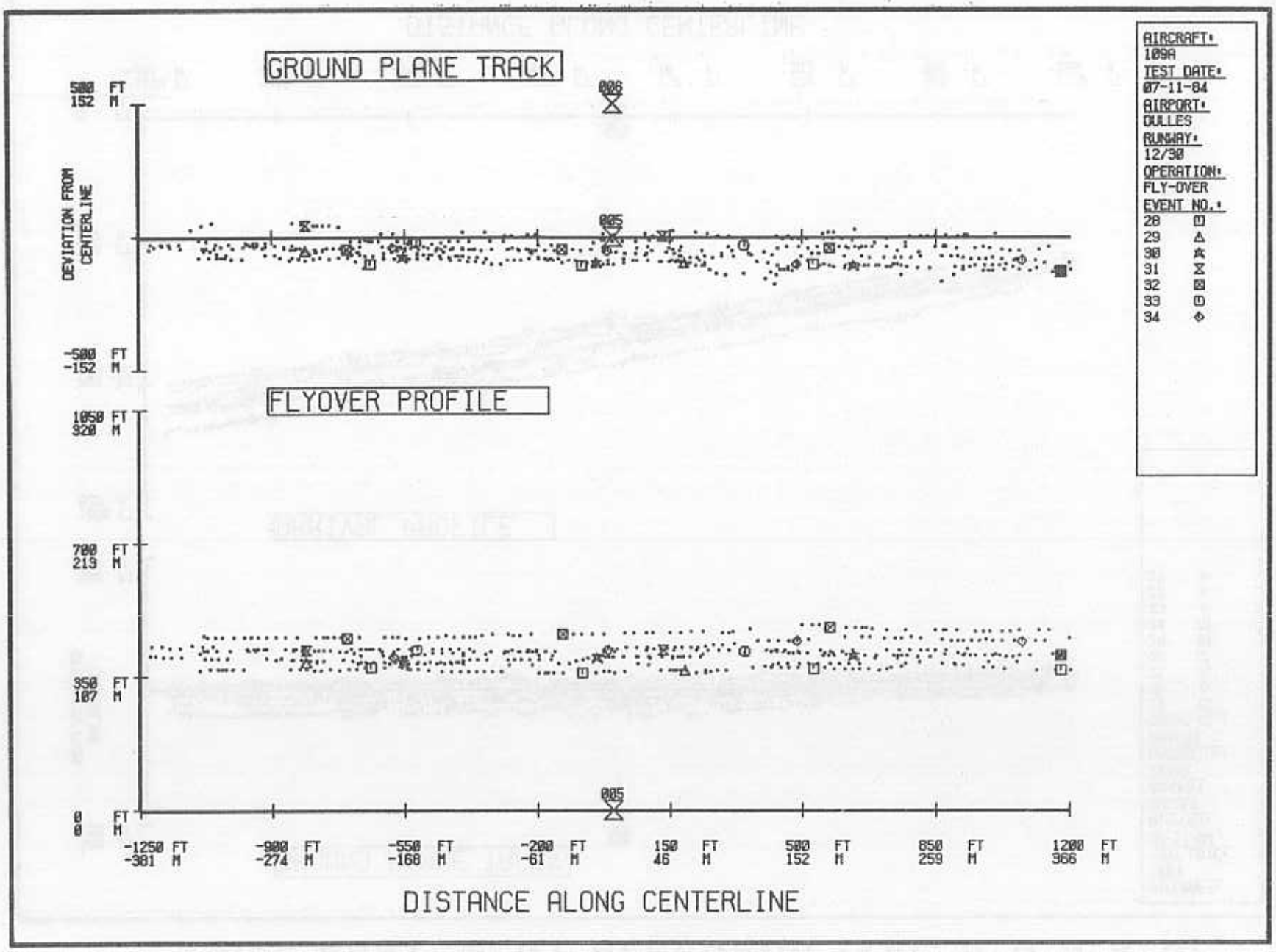
NORMAL TAKEOFF



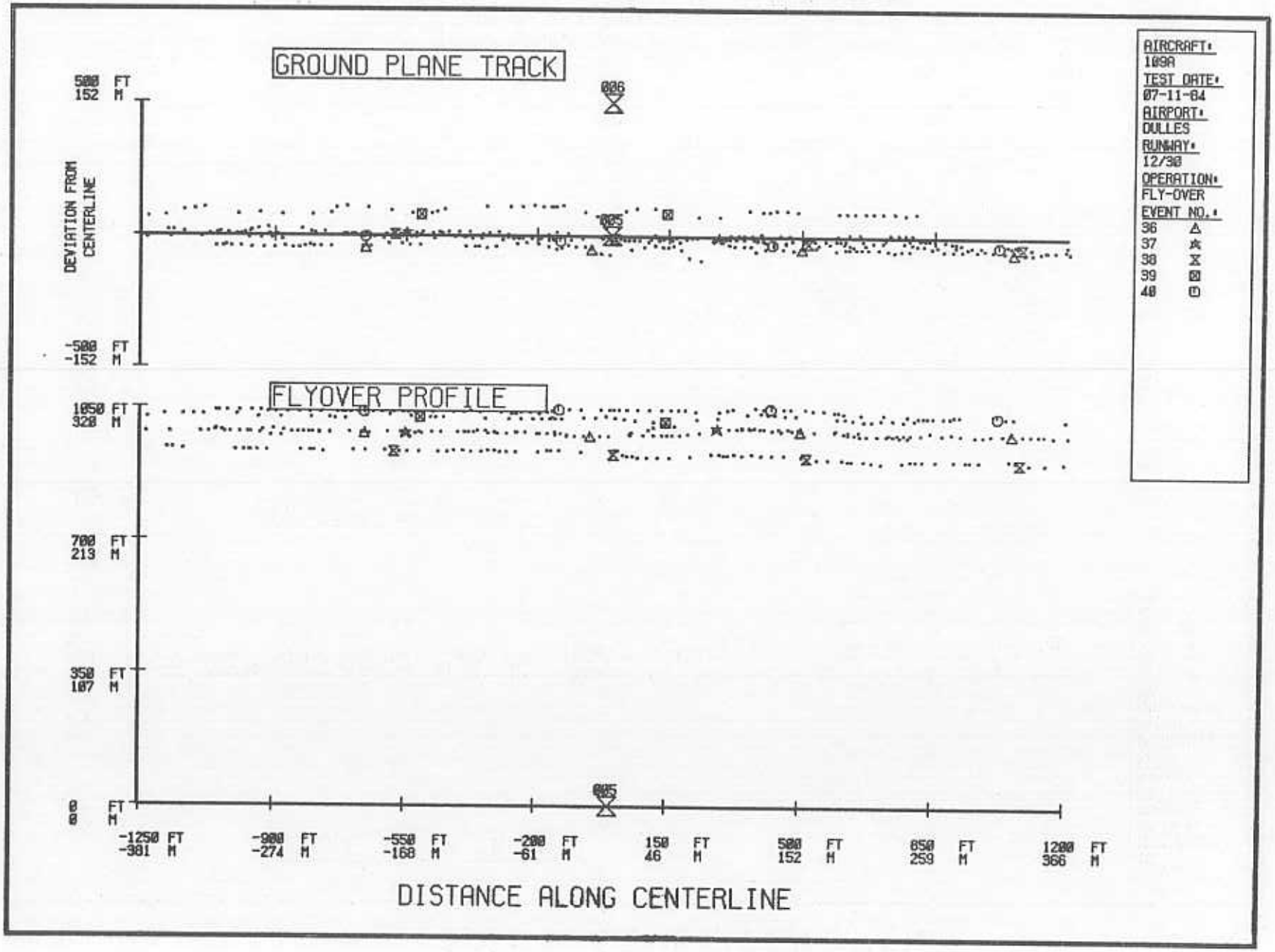
NOISE ABATEMENT APPROACH (Var. R/D & A/S)



500 FT. LEVEL FLYOVER



1000 FT. LEVEL FLYOVER



METEOROLOGICAL

DATA

THIS SECTION OF THE APPENDIX CONTAINS WEATHER DATA FROM SEVERAL TYPES OF METEOROLOGICAL EQUIPMENT: TEN-METER TOWER (MET), GROUND LEVEL PSYCHROMETER, AIRCRAFT OAT, AND PILOT BALLOONS. DATA FROM THE MET TOWER INCLUDE THE TEMPERATURE, RELATIVE HUMIDITY, WIND DIRECTION AND WIND SPEED MEASURED TYPICALLY EVERY 15 MINUTES DURING EACH FLIGHT EVENT. BECAUSE OF A FAILURE OF THE MET TOWER DEW POINT SENSOR, THE RELATIVE HUMIDITY WAS CALCULATED USING TEMPERATURE FROM THE MET TOWER AND DEW POINT FROM THE DULLES MID FIELD WEATHER STATION. GROUND LEVEL (4 FEET) TEMPERATURE AND RELATIVE HUMIDITY ARE GIVEN FOR DIFFERENT TIMES OF EACH TEST DAY, AND THE HELICOPTER'S OAT READINGS ARE SHOWN FOR DIFFERENT FLIGHT ALTITUDES AT VARIOUS TIMES OF THE DAY. THE PILOT BALLOON WIND DATA, TAKEN PERIODICALLY DURING EACH TEST DAY, INDLUDES THE WIND DIRECTION AND WIND SPEED AT VARIOUS ALTITUDES.

METEOROLOGICAL DATA

(MEASURED AT 30 FT. AGL)

HELICOPTER: AGUSTA 109A DATE: 7/10/84

TIME	TEMP. (DEG. F)	R.H. %	WIND DIR. (DEG.)	WIND SPEED AVG. (MPH)	WIND SPEED MAX (MPH)
5,50,140 AND 200 FT. HOVER (SOFT PATH)					
8:00	65	78	040	1	-
8:15	65	--	--	1	-
8:30	66	--	--	2	-
8:45	66	--	--	2	-
9:00	66	81	330	3	-

METEOROLOGICAL DATA

(MEASURED AT 30 FT. AGL)

HELICOPTER: AGUSTA 109A DATE: 7/11/84

TIME	TEMP. (DEG. F)	R.H. %	WIND DIR. (DEG.)	WIND SPEED AVG. (MPH)	WIND SPEED MAX (MPH)
5,50,140 AND 200 FT. HOVER (HARD PATH)					
8:00	74	96	220	2	-
8:15	75	--	220	4	-
8:30	75	--	220	5	-
8:45	78	--	220	5	7
9:00	79	85	220	5	7
9:15	80	--	220	5	-
6 DEGREE APPROACH AT VY, 60 KTS.					
9:30	80	--	220	6	-
9:45	82	--	220	5	-
10:00	83	82	220	5	-
NORMAL APPROACH AND TAKEOFF					
10:00	83	82	220	5	-
10:15	84	--	220	7	-
10:30	84	--	220	7	-
10:45	85	--	220	7	-
11:00	86	68	220	8	-

METEOROLOGICAL DATA

(MEASURED AT 30 FT. AGL)

HELICOPTER: AGUSTA 109A DATE: 7/11/84

TIME	TEMP. (DEG. F)	R.H. %	WIND DIR. (DEG.)	WIND SPEED AVG. (MPH)	WIND SPEED MAX (MPH)
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)					
11:00	86	68	220	8	-
11:15	87	--	220	8	12
11:30	88	--	220	9	12
11:45	88	--	220	8	13
12:00	88	64	220	8	12
500 AND 1000 FT. LEVEL FLYOVERS AT 145 KTS.					
12:00	88	64	220	8	12
12:15	88	--	220	10	13
12:30	89	--	220	10	13
12:45	89	--	220	10	13
1:00	90	58	220	10	14

METEOROLOGICAL DATA

HELICOPTER: AGUSTA 109A

DATE: 07/11/84

TEMPERATURE AND RELATIVE HUMIDITY DATA

(MEASURED AT 4 FT. AGL)

TIME	TEMP.	R.H.
08:20	83 F	59%
08:41	85 F	60%
09:09	86 F	63%
09:20	86 F	60%
09:44	86 F	57%
10:04	85 F	60%
10:22	86 F	60%
10:50	86 F	57%

HELICOPTERS OAT GUAGE DATA

TIME	ALTITUDE	TEMP.
7:50	200'	73 F
	300'	79 F
	400'	79 F
	600'	81 F
	800'	81 F
	1000'	79 F
9:15	200'	79 F
	400'	79 F
	600'	79 F
	800'	81 F
	1000'	81 F
11:00	200'	84 F
	400'	82 F
	600'	82 F
	800'	82 F
	1000'	82 F

PILOT BALLOON WIND DATA

AGUSTA 109A

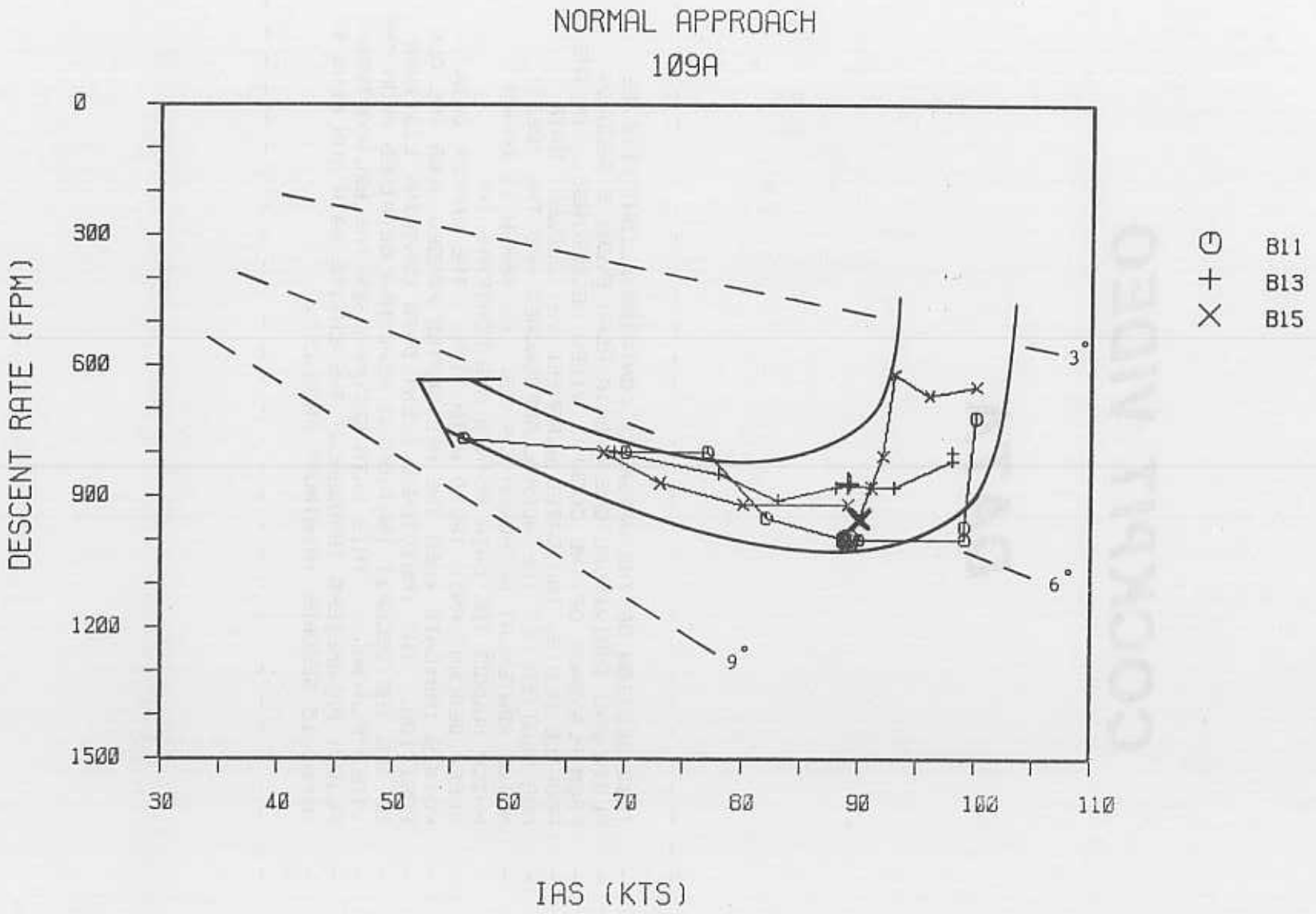
07/11/84

FEET (AGL)	WIND DIR. (DEG.)	WIND SPD. (KTS)	WIND DIR. (DEG.)	WIND SPD. (KTS)
LAUNCH TIME:	8:25		8:55	
SFC	210	5	190	8
354	232	10	217	9
708	237	10	228	10
1033	245	12	244	11
1358	254	13	253	12
	9:24		10:05	
SFC	230	8	200	9
354	217	12	212	14
708	221	13	215	13
1033	228	14	218	12
1358	239	13	225	11
	10:45		11:08	
SFC	220	12	210	12
354	240	11	232	14
708	241	11	235	13
1033	248	12	240	12
1358	252	14	246	13

COCKPIT VIDEO

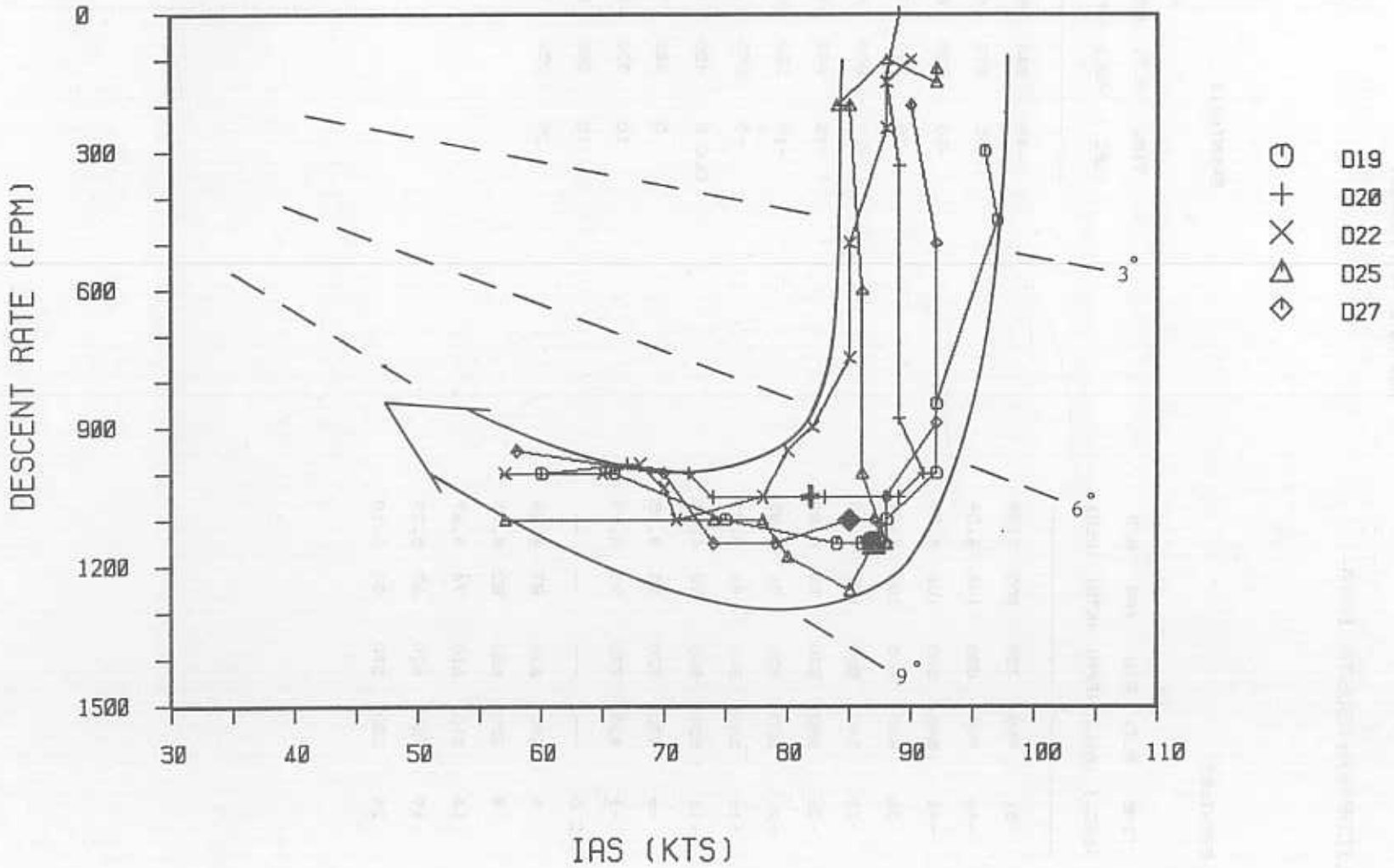
DATA

THIS SECTION OF THE APPENDIX CONTAINS FLIGHT PROFILE PLOTS AND INDIVIDUAL EVENT DATA READ EVERY 5 SECONDS FROM PLAYBACK OF THE COCKPIT VIDEO RECORDINGS. IN THE PROFILE PLOTS, INDICATED AIRSPEED VS. DESCENT RATE ARE PLOTTED FOR THE NORMAL APPROACHES AND THE 'BEST' NOISE ABATEMENT APPROACH EVENTS. AN ARROW IS DRAWN WHICH BOUNDS THE DATA POINTS AND PORTRAYS THE SPEED/DESCENT RATE TREND WITH TIME. THE DARKER DATA POINTS INDICATE WHEN THE HELICOPTER PASSED OVER THE CLC POSITION. THE INDIVIDUAL EVENT DATA CONTAINS LISTINGS OF ALL THE COCKPIT INSTRUMENT READINGS OBTAINED FROM THE VIDEO PLAYBACK. THIS DATA ENCOMPASSES THE HELICOPTERS'S FLIGHT PARAMETERS THROUGHOUT THE ENTIRE DATA RUN PLUS OR MINUS 15 SECONDS (MINIMUM) FROM CLC.


NORMAL APPROACH
109A
DESCENT RATE (FPM)
0
300
600
900
1200
1500
30
40
50
60
70
80
90
100
110
IAS (KTS)
3°
6°
9°
B11
B13
B15

NOISE ABATEMENT APPROACH

109A



COCKPIT VIDEO DATA

NORMAL APPROACH

HELICOPTER: AGUSTA 109A

DATE: 07/11/84

EVENT: B9

TIME (SEC.)	ALT. (AGL)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-51	960	720	105	3.88
-46	900	850	106	4.54
-41	840	800	106	4.27
-36	800	800	106	4.27
-31	740	800	103	4.40
-26	660	830	98	4.80
-21	620	850	96	5.02
-16	560	800	95	4.77
-11	520	800	92	4.93
-6	470	730	93	4.45
-1	430	770	91	4.79
CLC 0	---	---	--	--
4	390	670	87	4.36
9	350	680	82	4.70
14	310	610	74	4.67
19	260	620	67	5.24
24	220	570	53	6.10

EVENT: B11

TIME (SEC.)	ALT. (AGL)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-40	940	900	102	5.00
-35	870	850	100	4.81
-30	820	800	100	4.53
-25	760	750	100	4.25
-20	800	720	100	4.08
-15	640	970	99	5.55
-10	580	1000	99	5.72
-5	505	1000	90	6.30
CLC 0	450	100	89	0.64
5	380	950	82	6.57
10	330	800	77	5.89
15	280	800	70	6.48
20	250	770	56	7.80

COCKPIT VIDEO DATA

NORMAL APPROACH

HELICOPTER:AGUSTA 109A

DATE: 07/11/84

EVENT:B13

TIME (SEC.)	ALT. (AGL)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-45	990	550	95	3.28
-40	930	710	93	4.32
-35	850	850	94	5.12
-30	800	770	96	4.54
-25	760	750	100	4.25
-20	600	800	98	4.62
-15	630	820	98	4.74
-10	550	880	93	5.36
-5	500	880	91	5.48
CLC 0	480	870	89	5.54
5	460	880	88	5.67
10	380	910	83	6.22
15	330	850	78	6.18
20	280	800	69	6.57

EVENT:B15

TIME (SEC.)	ALT. (AGL)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-47	950	670	98	3.87
-42	920	660	101	3.70
-37	900	580	100	3.28
-32	860	620	100	3.51
-27	810	700	101	3.92
-22	750	650	100	3.68
-17	700	670	96	3.95
-12	640	620	93	3.77
-7	600	810	92	4.99
-2	530	880	91	5.48
CLC 0	490	950	90	5.98
5	460	920	89	5.86
10	400	920	80	6.52
15	340	870	73	6.76
20	300	800	68	6.67

EVENT:B17

TIME (SEC.)	ALT. (AGL)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-46	880	850	96	5.02
-41	820	950	102	5.28
-36	730	940	98	5.44
-31	670	780	100	4.42
-26	640	790	106	4.22
-21	560	780	98	4.51
-16	520	780	95	4.65
-11	480	680	93	4.14
-6	460	560	95	3.34
CLC 0	400	510	90	3.21
5	380	470	88	3.02
10	370	480	82	3.31
15	330	500	74	3.83
20	280	610	68	5.08

COCKPIT VIDEO DATA

NOISE ABATEMENT APPROACH

(VAR. R/D AND A/S)

HELICOPTER: AGUSTA 109A

DATE: 07/11/84

EVENT:D19

TIME (SEC.)	ALT. (AGL)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-24	960	300	96	1.77
-19	950	450	97	2.63
-14	920	850	92	5.23
-8	830	1000	92	6.16
-4	740	1100	88	7.09
CLC 0	830	1150	87	7.50
1	840	1150	86	7.59
6	540	1150	84	7.77
11	460	1100	75	8.33
16	370	1000	66	8.60
21	290	1000	60	9.47

EVENT:D20

TIME (SEC.)	ALT. (AGL)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-31	940	0	89	0.00
-26	950	140	88	0.90
-21	940	330	89	2.10
-16	870	880	89	5.60
-11	790	1000	91	6.23
-6	700	1050	89	6.69
-1	610	1050	83	7.18
CLC 0	600	1050	82	7.26
5	520	1050	74	8.05
10	460	1000	72	7.88
15	420	980	67	8.30
20	340	1000	60	9.47

EVENT:D22

TIME (SEC.)	ALT. (AGL)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-34	960	100	90	0.63
-29	960	150	88	0.96
-24	960	250	88	1.61
-19	920	500	85	3.33
-14	890	750	85	5.00
-9	810	900	82	6.22
-4	750	950	80	6.73
CLC 0	---	---	--	--
1	660	1050	78	7.64
6	530	1100	71	8.80
11	480	1030	70	8.35
16	410	980	68	8.18
21	350	1000	65	8.74

COCKPIT VIDEO DATA

NOISE ABATEMENT APPROACH

(VAR. R/D AND A/S)

HELICOPTER: AGUSTA 109A

DATE: 07/11/84

EVENT:D25

TIME (SEC.)	ALT. (AGL)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-36	900	120	92	0.74
-31	900	150	92	0.92
-26	850	100	88	0.64
-21	960	200	84	1.35
-16	960	200	85	1.33
-11	960	600	86	3.95
-6	840	1000	86	6.59
-1	730	1150	88	7.41
CLC 0	720	1150	87	7.50
4	620	1250	85	8.35
9	510	1180	80	8.38
14	440	1100	78	8.01
19	360	1100	74	8.44
24	250	1100	57	10.99
29	170	900	34	15.15

EVENT:D27

TIME (SEC.)	ALT. (AGL)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-27	990	200	90	5.02
-22	960	500	92	5.28
-17	890	890	92	5.44
-12	800	1050	88	4.42
-7	690	1150	88	4.22
-2	600	1100	87	4.51
CLC 0	580	1100	85	4.65
3	540	1150	79	4.14
8	430	1150	74	3.34
13	360	1000	70	3.21
18	280	950	58	3.02
23	220	1100	38	3.31

APPENDIX F

BELL 206L-1

	PAGE NUMBERS
HELICOPTER CHARACTERISTICS	F-454
NOISE LEVEL DATA	
SOUND EXPOSURE LEVEL	
Bar Charts	
Approaches	F-458
Takeoff	F-459
Level Flyovers	F-460
Summary Tables	F-461 - F-462
Individual Event Data	F-463 - F-469
A-WEIGHTED SOUND LEVEL	
Bar Charts	
Approaches	F-472
Takeoff	F-473
Level Flyovers	F-474
Summary Tables	F-475 - F-476
Individual Event Data	F-477 - F-483
RADAR TRACKING DATA	
Position Data	F-486 - F-499
Tracking Plots	F-500 - F-506
METEOROLOGICAL DATA	
10-meter Tower Data	F-508
4 ft. Data and Aircraft DAT Data	F-509
Pilot Balloon Wind Data	F-510
COCKPIT VIDEO DATA	
Normal Approach Plot	F-512
Noise Abatement Approach Plot	F-513
Individual Event Data	F-514 - F-518

HELICOPTER CHARACTERISTICS

HELICOPTER MANUFACTURER :	BELL
HELICOPTER MODEL :	206L-1
TEST HELICOPTER N-NUMBER :	N27694
MAX INTERNAL GROSS WEIGHT :	4050 LBS
NUMBER OF ENGINES :	ONE
UNINSTALLED TAKEOFF POWER :	576 SHP
UNINSTALLED MAX CONTINUOUS PWR. :	489 SHP
NEVER EXCEED SPEED (VNE) :	130 KTS.
MAX SPEED IN LEVEL FLIGHT WITH MAX CONTINUOUS POWER :	110 KTS.
SPEED FOR BEST RATE OF CLIMB (VY) :	57 KTS.
CRUISE SPEED FOR BEST RANGE (VCR) :	100 KTS.
BEST RATE OF CLIMB AT TAKEOFF POWER (BRC) :	1520 FPM
"TOP OF GREEN ARC" ROTOR SPEED :	394 RPM 100%

MAIN AND TAIL ROTOR SPECIFICATIONS

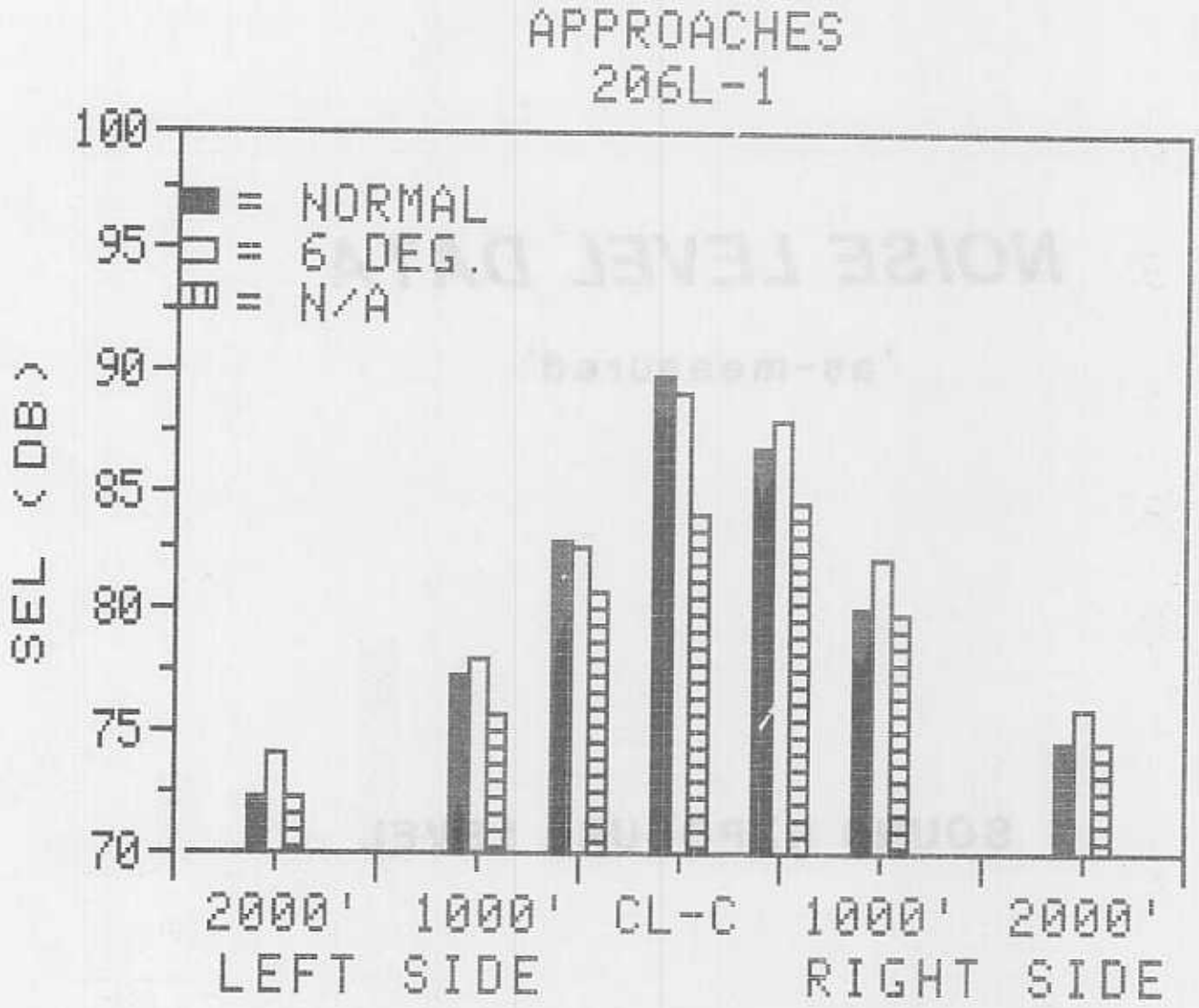
	MAIN	TAIL
DIAMETER (FT.) :	37.0	5.42
NO. OF BLADES :	2	2
TIPSPEED (FPS) :	763	722
TIP SHAPE :	SQUARE	SQUARE

NOISE LEVEL DATA

'as-measured'

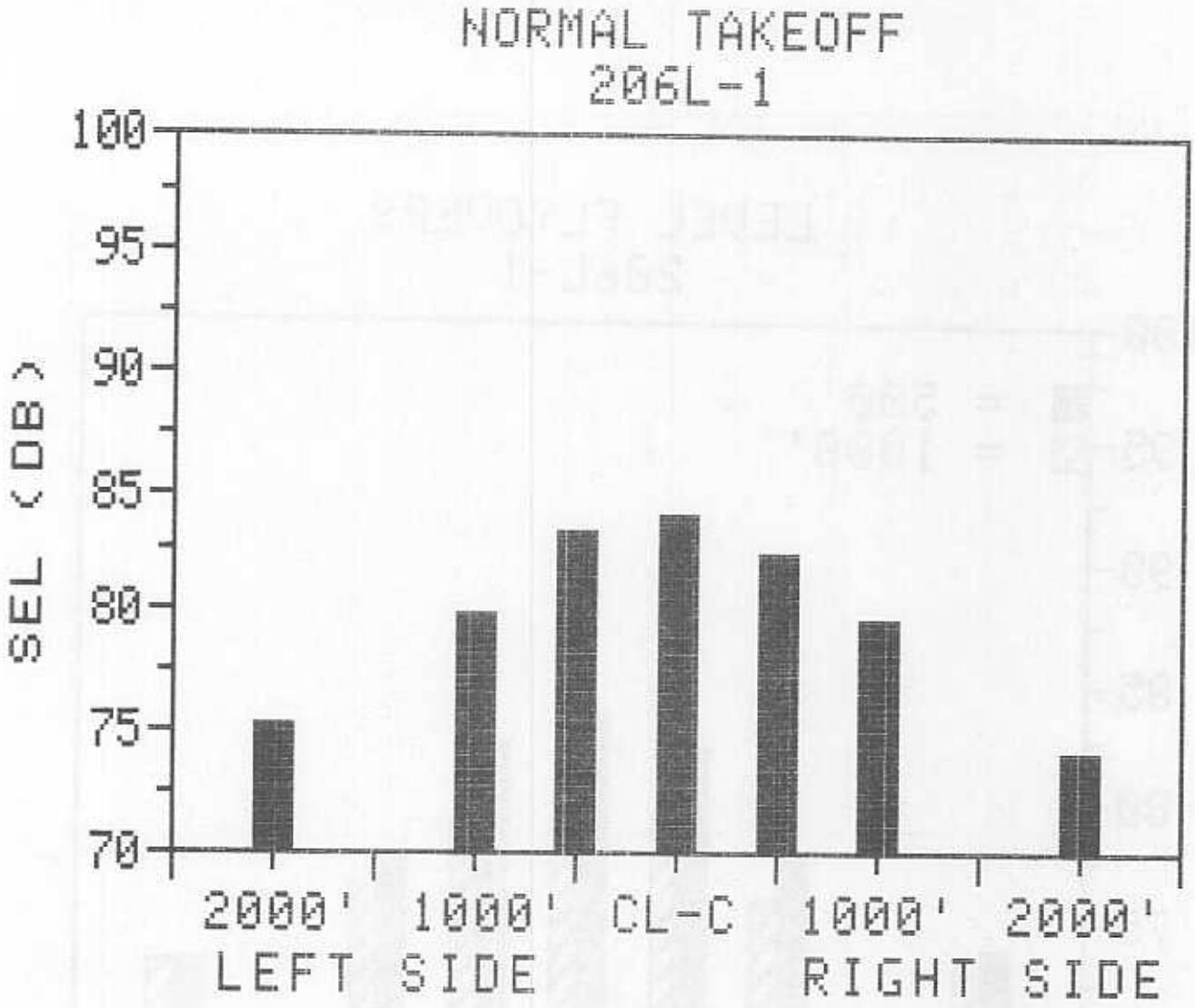
SOUND EXPOSURE LEVEL

THIS SECTION OF THE APPENDIX CONTAINS THE 'AS-MEASURED' SOUND EXPOSURE LEVELS (SEL) FOR ALL FLIGHT EVENTS. THESE DATA ARE PRESENTED IN THE FORM OF BAR CHARTS, SUMMARY TABLES AND INDIVIDUAL EVENT DATA. THE BAR CHARTS SHOW THE FALL OFF IN NOISE LEVEL VERSUS SIDELINE DISTANCE, AND PROVIDE A QUICK LOOK COMPARISON OF THE NOISE LEVELS. PERTINENT FLIGHT PARAMETER INFORMATION READ FROM THE COCKPIT INSTRUMENT PANEL VIDEO RECORDINGS IS ALSO SHOWN BELOW EACH BAR CHART. THE SUMMARY TABLES PRESENT THE AVERAGE NOISE LEVEL, NUMBER OF SAMPLES, STANDARD DEVIATION AND THE 90 PERCENT CONFIDENCE INTERVAL FOR EACH FLIGHT CONDITION. INDIVIDUAL EVENT DATA FOR EACH CONDITION IS THEN GIVEN.



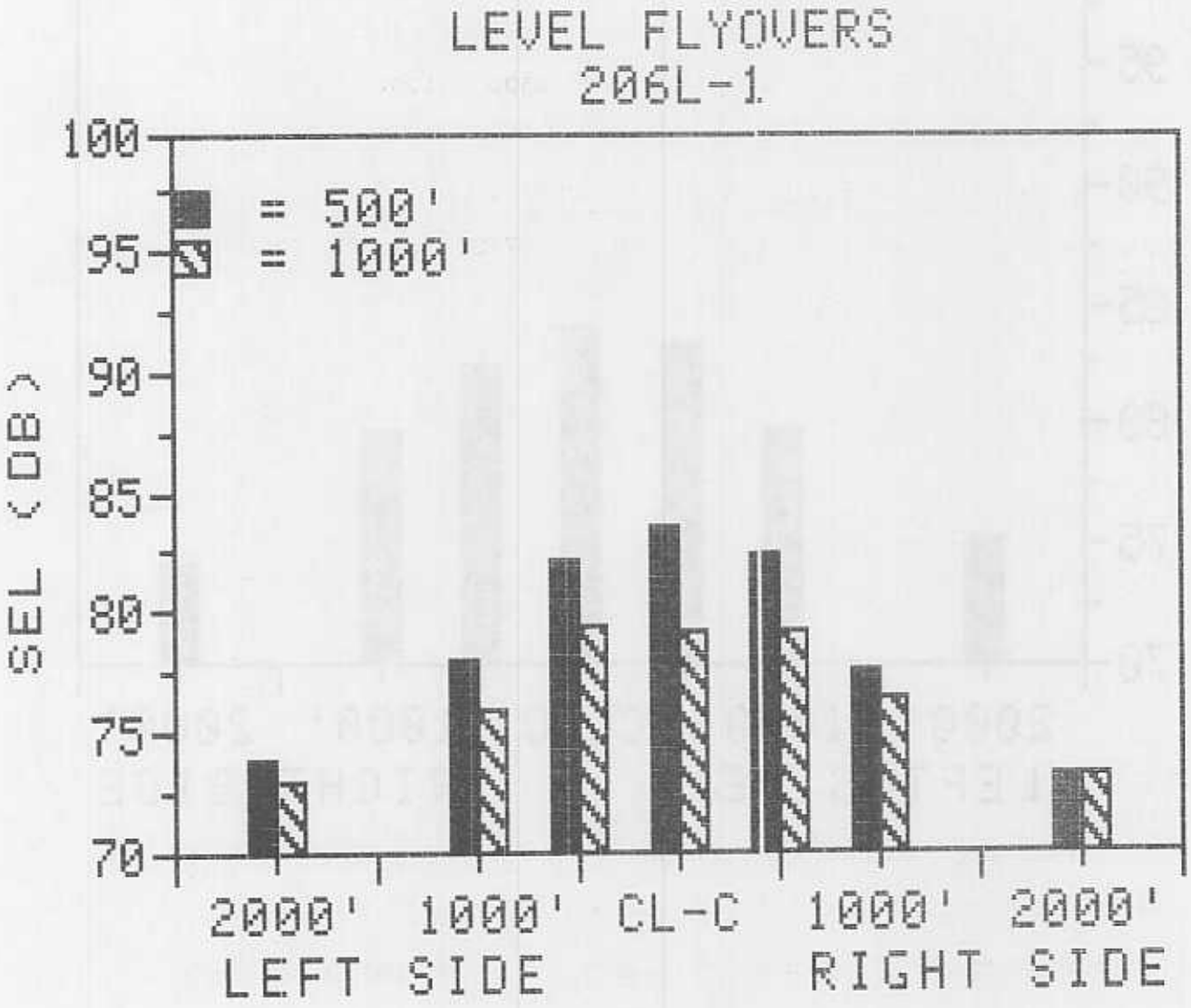
OPERATION	AVG. ALT. OVER CL-C (FT. AGL)	INDICATED AIRSPEED (KTS.)	GLIDESLOPE RANGE (DEG.)
NORMAL APPROACH	300	68-53	2.9-5.5
SIX DEG. APPROACH	380	60	6.0
NOISE ABATEMENT APP. VAR. R/D AND A/S (EVENTS E30-E34)	492	79-49	6.0-7.7

NOTE: ALTITUDE, AIRSPEED AND VERTICAL SPEED DATA READ FROM VIDEO TAPES OF THE INSTRUMENT PANEL. THE GLIDESLOPE RANGE WAS CALCULATED WITHIN ±15 SEC OF THE CL-C MICROPHONE POSITION.



OPERATION	AVG. ALT. OVER CLC (FT. ASL)	INDICATED AIRSPEED (KTS.)
NORMAL TAKEOFF	483	84

NOTE: ALTIMETER AND INDICATED AIRSPEED READINGS MADE WHEN THE HELICOPTER PASSED OVER CLC MICROPHONE POSITION



INDICATED AIRSPEED =100 KTS.

206L-1 SUMMARY SHEET (8/26/84)

SOUND EXPOSURE LEVEL (DB)

	(LEFT SIDE)				(RIGHT SIDE		
	2000'	1000'	500'	CL-C	500'	1000'	2000'
*** SIX DEG. APPROACH AT VY, 57 KTS. ***							
AVERAGE	74.0	77.9	82.6	89.1	87.8	82.1	76.0
N	5	7	7	7	7	7	7
S.D.	.6	.3	.6	.6	.8	.8	1.0
90% CI	.5	.2	.4	.4	.6	.6	.7
*** NORMAL APPROACH ***							
AVERAGE	72.1	77.2	82.7	89.8	86.7	80.0	74.6
N	7	5	7	7	7	7	6
S.D	.6	.5	.6	1.1	1.1	1.1	.6
90% CI	.5	.5	.5	.8	.8	.8	.5
*** NOISE ABATEMENT APPROACH (VAR. R/D AND A/S) ***							
AVERAGE	72.2	76.6	82.0	85.6	85.4	79.8	74.5
N	8	8	8	8	8	5	8
S.D	.6	1.0	.9	1.3	.7	.5	.9
90% CI	.4	.7	.6	.9	.5	.5	.6
*** NOISE ABATEMENT APPROACH (VAR. R/D AND A/S) ***							
AVERAGE	72.1	75.7	80.8	83.9	84.4	79.9	74.5
N	5	5	5	5	5	5	5
S.D	.3	.6	.4	.8	1.1	.6	.6
90% CI	.3	.6	.4	.7	1.0	.6	.6

206L-1 SUMMARY SHEET (8/26/84)

SOUND EXPOSURE LEVEL (DB)

	(LEFT SIDE)				(RIGHT SIDE		
	2000'	1000'	500'	CL-C	500'	1000'	2000'
*** NORMAL TAKEOFF ***							
AVERAGE	75.1	79.7	83.2	83.9	82.4	79.6	74.0
N	7	7	6	7	6	7	7
S.D.	.6	.3	.3	.4	.3	.3	.7
90% CI	.5	.2	.3	.3	.3	.2	.5
*** 500 FT. LEVEL FLYOVER AT 100 KTS. ***							
AVERAGE	73.9	78.0	82.2	83.5	82.3	77.5	73.2
N	4	8	8	7	7	8	4
S.D	.4	.3	.5	.3	.3	.4	.7
90% CI	.4	.2	.3	.2	.2	.2	.9
*** 1000 FT. LEVEL FLYOVER AT 100 KTS. ***							
AVERAGE	72.8	76.0	79.4	79.2	79.2	76.3	73.1
N	4	7	7	7	7	7	3
S.D	.7	.4	.5	.6	.5	.6	.8
90% CI	.9	.3	.3	.5	.4	.5	1.4

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: BELL 206L-1

TEST DATE: 8/26/84

OPERATION : 6 DEGREE APPROACH AT VY, 57 KTS.

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
A1	--	77.80	82.80	88.40	86.50	81.50	75.30
A2	--	78.20	83.10	89.40	88.30	81.20	75.00
A3	73.30	78.00	82.30	88.40	87.90	82.10	76.40
A4	73.80	78.30	81.90	88.60	87.00	82.10	76.10
A5	74.50	77.90	83.50	89.30	88.10	82.10	77.20
A6	73.60	77.80	82.20	89.40	88.20	83.60	77.00
A7	74.60	77.40	82.30	89.90	88.70	81.80	74.80
AVERAGE	73.96	77.91	82.59	89.06	87.81	82.06	75.97
STD. DEV.	0.57	0.30	0.57	0.59	0.78	0.76	0.96
90% C.I.	0.54	0.22	0.42	0.43	0.57	0.56	0.70

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: BELL 206L-1 TEST DATE: 8/26/84

OPERATION : NORMAL APPROACH

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
C8	71.60	--	82.20	90.20	87.50	81.20	75.30
C10	72.70	76.70	83.50	91.40	87.20	80.20	74.90
C12	72.10	76.60	81.90	88.10	86.90	81.30	--
C14	72.90	--	82.20	89.90	84.30	78.10	73.90
C16	71.60	77.70	82.90	89.70	87.10	79.80	74.50
C18	72.30	77.20	83.50	90.20	86.20	79.60	74.00
C20	71.20	77.60	82.50	88.90	87.40	79.80	75.00
AVERAGE	72.06	77.16	82.67	89.77	86.66	80.00	74.60
STD. DEV.	0.62	0.50	0.64	1.05	1.12	1.08	0.57
90% C.I.	0.46	0.48	0.47	0.77	0.82	0.79	0.47

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: BELL 206L-1 TEST DATE: 8/26/84

OPERATION : NORMAL TAKEOFF

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' WEST	1000' WEST	500' WEST	CL-C	500' EAST	1000' EAST	2000' EAST
D9	75.40	80.00	83.20	84.30	82.70	79.60	73.50
D11	75.20	79.80	--	84.20	82.70	80.00	74.50
D13	74.90	79.20	83.40	84.40	82.60	79.70	74.40
D15	76.10	79.90	83.60	83.40	82.50	79.70	74.70
D17	75.30	79.70	83.10	83.50	82.10	79.80	73.40
D19	74.80	79.70	83.20	83.50	82.00	79.30	73.00
D21	74.10	79.40	82.70	83.90	--	79.30	74.30
AVERAGE	75.11	79.67	83.20	83.89	82.43	79.63	73.97
STD. DEV.	0.61	0.28	0.30	0.42	0.31	0.26	0.66
90% C.I.	0.45	0.21	0.25	0.31	0.25	0.19	0.48

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: BELL 206L-1 TEST DATE: 8/26/84

OPERATION : NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
E22	72.00	74.80	81.90	87.20	86.70	79.20	73.00
E23	71.20	76.00	81.80	86.40	85.40	80.20	73.90
E24	73.00	77.00	82.70	87.30	86.00	79.40	73.50
E25	72.40	77.20	81.30	84.70	85.10	80.20	74.90
E26	73.00	76.10	82.70	84.30	84.70	80.20	74.90
E27	72.30	77.20	83.30	85.80	85.60	--	75.20
E28	71.60	78.00	81.40	84.20	85.30	--	75.50
E29	72.20	76.60	80.60	84.50	84.60	--	74.70
AVERAGE	72.21	76.61	81.96	85.55	85.43	79.84	74.45
STD. DEV.	0.62	0.98	0.89	1.30	0.69	0.50	0.88
90% C.I.	0.42	0.65	0.59	0.87	0.46	0.47	0.59

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: BELL 206L-1

TEST DATE: 8/26/84

OPERATION : NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
E30	72.50	76.30	80.20	82.60	83.00	80.20	74.40
E31	72.10	75.90	80.90	84.50	83.90	79.20	74.90
E32	72.00	76.10	81.40	84.30	84.20	80.30	73.60
E33	71.80	75.00	80.80	84.10	85.80	79.30	74.70
E34	72.00	75.10	80.70	83.90	85.00	80.50	75.10
AVERAGE	72.08	75.68	80.80	83.88	84.38	79.90	74.54
STD. DEV.	0.26	0.59	0.43	0.75	1.07	0.60	0.59
90% C.I.	0.25	0.57	0.41	0.71	1.02	0.58	0.56

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: BELL 206L-1 TEST DATE: 8/26/84

OPERATION : LEVEL FLYOVER (500 FT. @ 100 KTS.)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' WEST	1000' WEST	500' WEST	CL-C	500' EAST	1000' EAST	2000' EAST
G35	74.40	78.10	82.90	83.30	81.90	77.40	--
G36	--	78.50	83.00	83.30	82.40	77.40	74.00
G37	73.90	77.80	81.90	--	--	77.50	--
G38	--	78.20	82.30	83.70	82.30	77.80	72.50
G39	73.60	77.90	81.80	83.40	81.90	77.20	--
G40	--	78.20	81.80	83.80	82.60	78.00	73.60
G41	73.70	77.50	81.90	83.10	82.50	76.90	--
G42	--	78.00	81.90	84.00	82.30	77.80	72.60
AVERAGE	73.90	78.03	82.19	83.51	82.27	77.50	73.18
STD. DEV.	0.36	0.30	0.50	0.32	0.28	0.36	0.74
90% C.I.	0.42	0.20	0.33	0.24	0.20	0.24	0.87

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: BELL 206L-1 TEST DATE: 8/26/84

OPERATION : LEVEL FLYOVER (1000 FT. @ 100 KTS.)

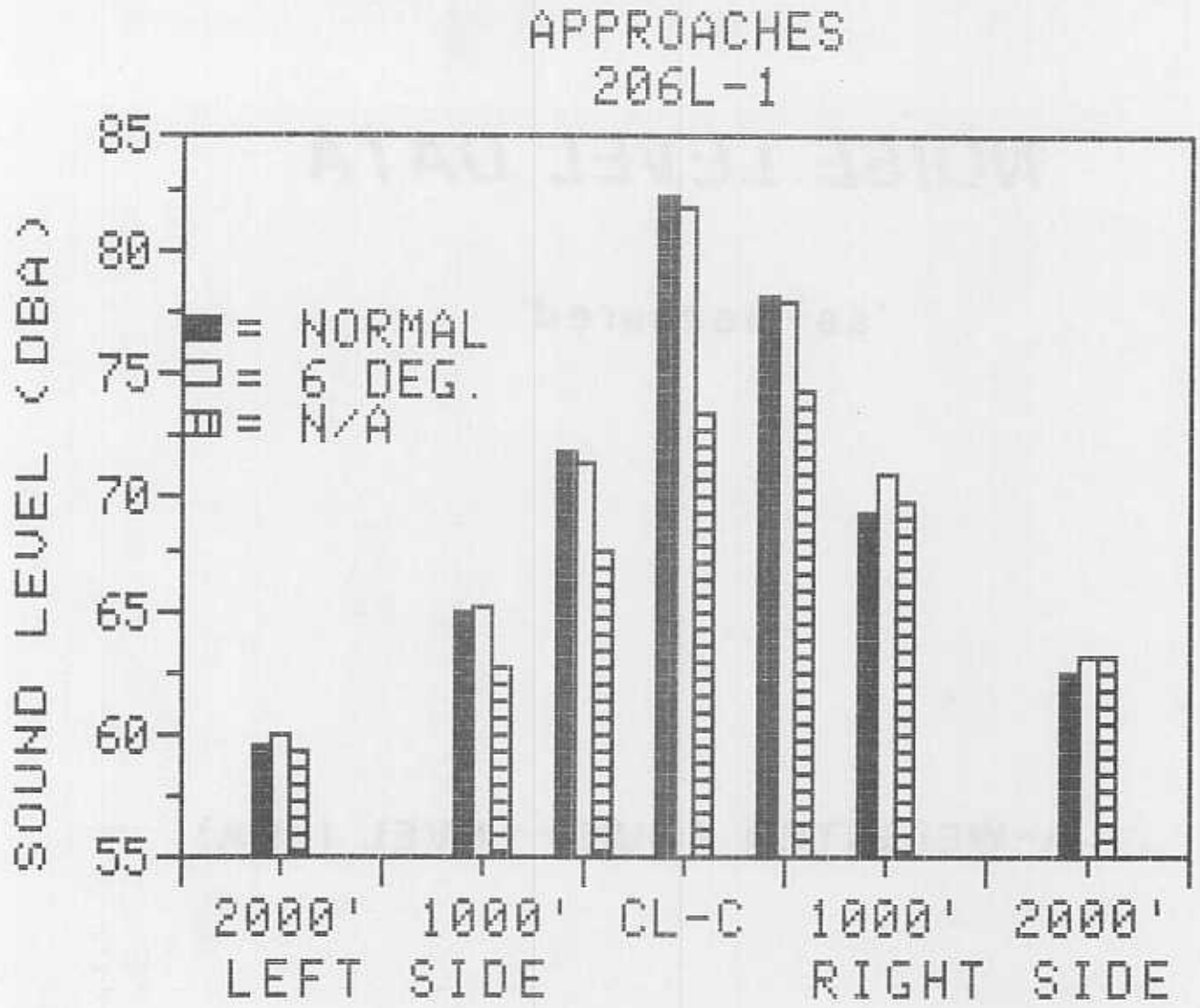
	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' WEST	1000' WEST	500' WEST	CL-C	500' EAST	1000' EAST	2000' EAST
F43	72.30	75.20	78.80	80.10	79.70	76.20	--
F44	--	76.10	79.90	78.80	80.00	77.30	73.90
F45	72.00	76.10	79.70	78.70	79.10	76.10	--
F46	--	76.20	79.10	79.00	79.10	75.60	72.30
F47	73.60	76.20	79.90	79.90	78.80	76.70	--
F48	--	75.70	78.90	78.50	79.10	75.50	73.00
F49	73.10	76.20	79.40	79.50	78.70	76.60	--
AVERAGE	72.75	75.96	79.39	79.21	79.21	76.29	73.07
STD. DEV.	0.73	0.38	0.46	0.62	0.47	0.64	0.80
90% C.I.	0.86	0.28	0.34	0.46	0.35	0.47	1.35

NOISE LEVEL DATA

'as-measured'

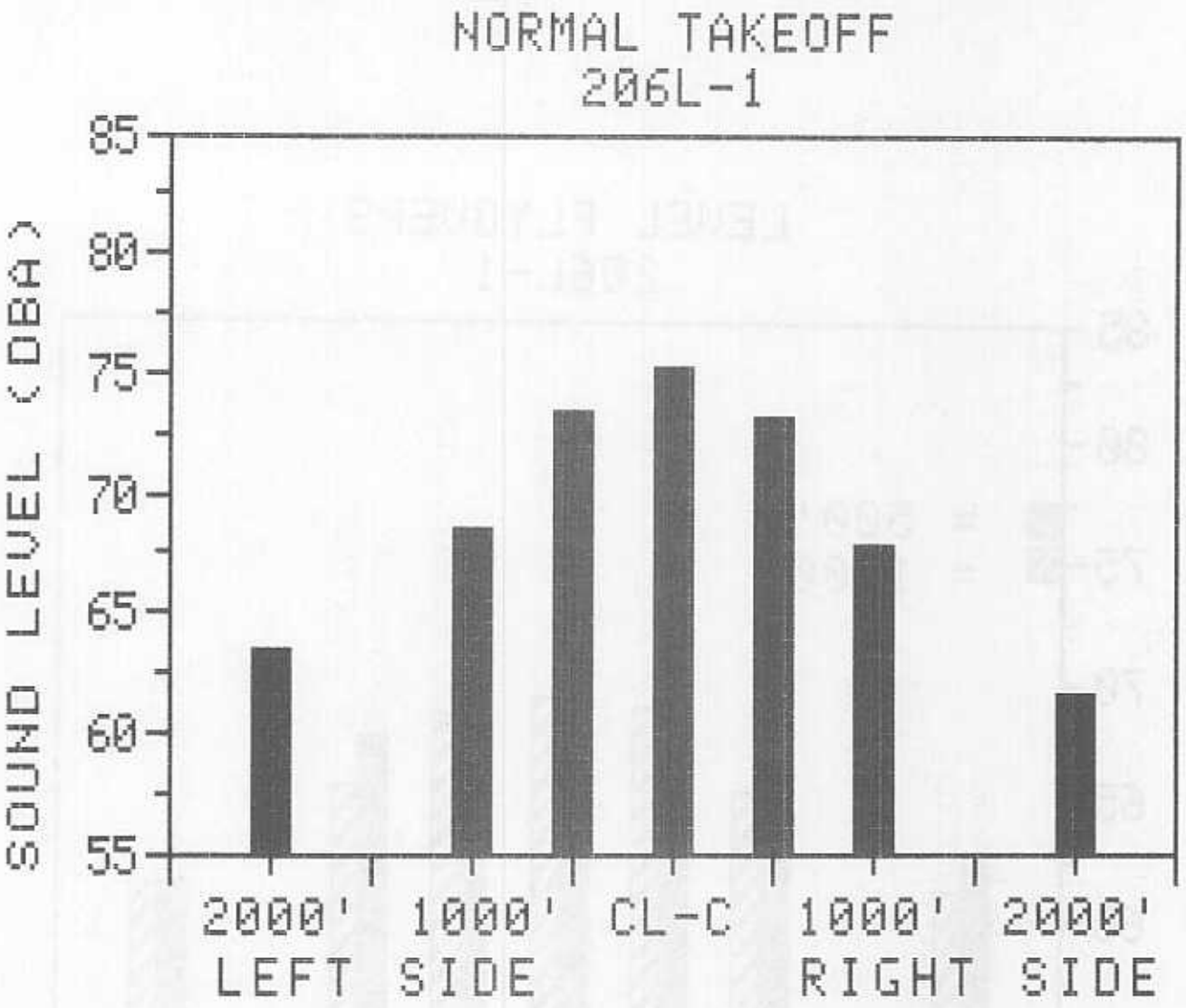
A-WEIGHTED SOUND LEVEL (dBA)

THIS SECTION OF THE APPENDIX CONTAINS THE 'AS-MEASURED' A-WEIGHTED SOUND LEVEL (dBA) FOR ALL FLIGHT EVENTS. THESE DATA ARE PRESENTED IN THE FORM OF BAR CHARTS, SUMMARY TABLES AND INDIVIDUAL EVENT DATA. THE BAR CHARTS SHOW THE FALL OFF IN NOISE LEVEL VERSUS SIDELINE DISTANCE, AND PROVIDE A QUICK LOOK COMPARISON OF THE NOISE LEVELS. PERTINENT FLIGHT PARAMETER INFORMATION READ FROM THE COCKPIT INSTRUMENT PANEL VIDEO RECORDINGS IS ALSO SHOWN BELOW EACH BAR CHART. THE SUMMARY TABLES PRESENT THE AVERAGE NOISE LEVEL, NUMBER OF SAMPLES, STANDARD DEVIATION AND THE 90 PERCENT CONFIDENCE INTERVAL FOR EACH FLIGHT CONDITION. INDIVIDUAL EVENT DATA FOR EACH CONDITION IS THEN GIVEN.



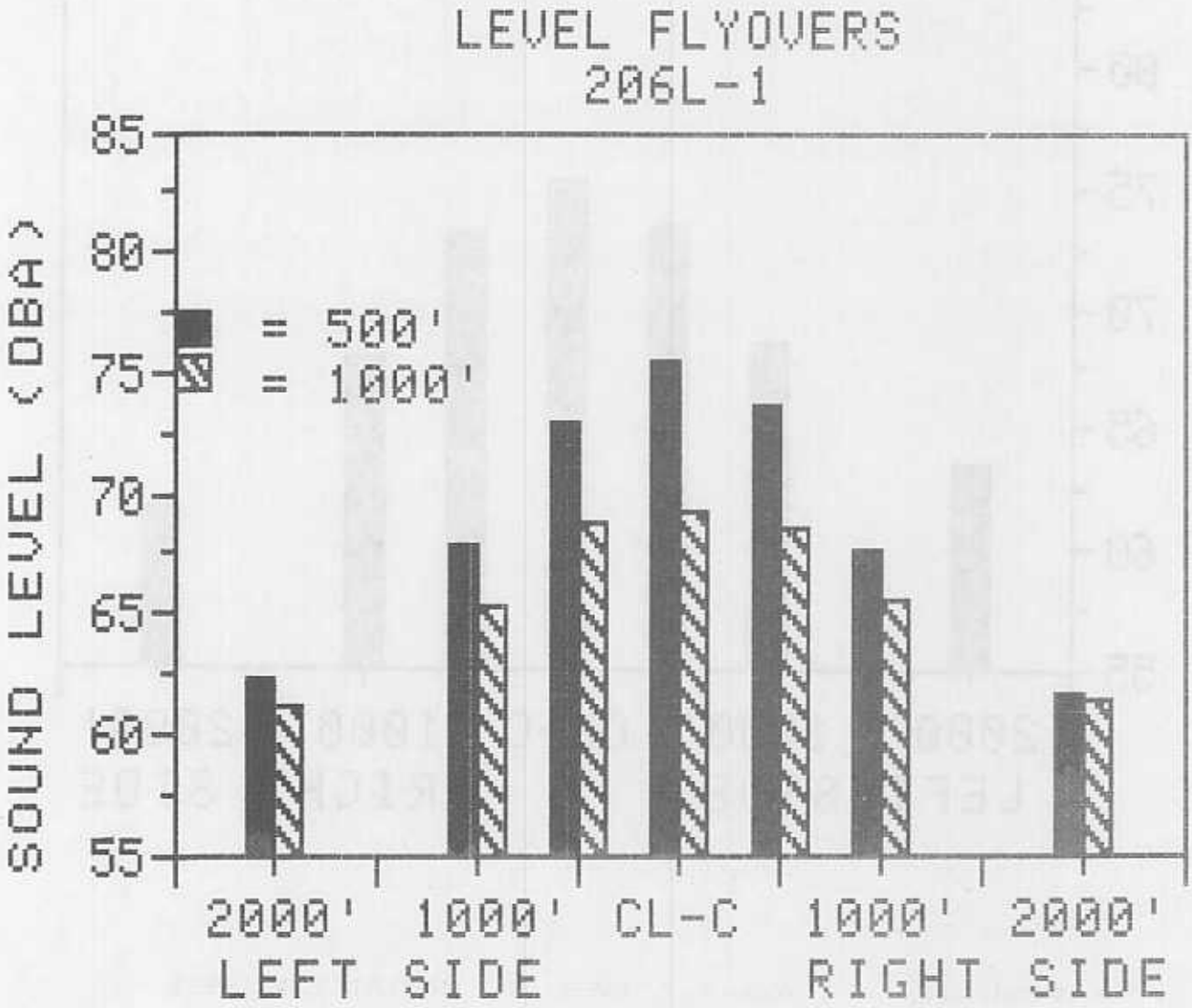
OPERATION	AVG. ALT. OVER CL-C (FT. AGL)	INDICATED AIRSPEED (KTS.)	GLIDESLOPE RANGE (DEG.)
NORMAL APPROACH	300	68-53	2.9-5.5
SIX DEG. APPROACH	380	60	6.0
NOISE ABATEMENT APP. VAR. R/D AND A/S (EVENTS E30-E34)	492	79-49	6.0-7.7

NOTE: ALTITUDE, AIRSPEED AND VERTICAL SPEED DATA READ FROM VIDEO TAPES OF THE INSTRUMENT PANEL. THE GLIDESLOPE RANGE WAS CALCULATED WITHIN ±15 SEC OF THE CL-C MICROPHONE POSITION.



OPERATION	AVG. ALT. OVER CLC (FT. AGL)	INDICATED AIRSPEED (KTS.)
NORMAL TAKEOFF	483	84

NOTE: ALTIMETER AND INDICATED AIRSPEED READINGS MADE WHEN THE HELICOPTER PASSED OVER CLC MICROPHONE POSITION



INDICATED AIRSPEED =100 KTS.

206L-1 SUMMARY SHEET (8/26/84)

A-WEIGHTED SOUND LEVEL (DB)

	(LEFT SIDE)				(RIGHT SIDE		
	2000'	1000'	500'	CL-C	500'	1000'	2000'
*** SIX DEG. APPROACH AT VY, 57 KTS. ***							
AVERAGE	60.0	65.3	71.3	81.8	78.0	70.8	63.1
N	5	7	7	7	7	7	7
S.D.	.9	.9	.7	1.1	.8	1.1	1.0
90% CI	.9	.7	.5	.8	.6	.8	.7
*** NORMAL APPROACH ***							
AVERAGE	59.5	65.0	71.7	82.3	78.1	69.2	62.5
N	7	5	7	7	7	7	6
S.D	1.4	.4	1.1	1.0	1.4	1.3	1.2
90% CI	1.0	.3	.8	.8	1.0	.9	1.0
*** NOISE ABATEMENT APPROACH (VAR. R/D AND A/S) ***							
AVERAGE	58.2	64	69.4	76.5	76.2	68.6	63.2
N	8	8	8	8	8	4	8
S.D	1.0	1.0	.9	2.1	.5	.7	.6
90% CI	.7	.6	.6	1.4	.3	.9	.4
*** NOISE ABATEMENT APPROACH (VAR. R/D AND A/S) ***							
AVERAGE	59.2	62.8	67.6	73.4	74.2	69.6	63.2
N	5	5	5	5	5	5	5
S.D	1.1	1.1	.9	1.2	.8	1.8	1.2
90% CI	1.0	1.0	.9	1.1	.8	1.7	1.1

206L-1 SUMMARY SHEET (8/26/84)

A-WEIGHTED SOUND LEVEL (DB)

	(LEFT SIDE)				(RIGHT SIDE		
	2000'	1000'	500'	CL-C	500'	1000'	2000'
*** NORMAL TAKEOFF ***							
AVERAGE	63.5	68.6	73.4	75.1	73.1	67.8	61.6
N	7	7	7	7	6	7	7
S.D.	.7	.6	.3	.5	.5	.9	1.1
90% CI	.5	.4	.2	.4	.4	.7	.8
*** 500 FT. LEVEL FLYOVER AT 100 KTS. ***							
AVERAGE	62.3	67.9	73	75.5	73.6	67.5	61.6
N	4	8	8	8	8	8	4
S.D	.9	.9	.8	.5	.5	.7	1.2
90% CI	1.0	.6	.5	.3	.4	.4	1.4
*** 1000 FT. LEVEL FLYOVER AT 100 KTS. ***							
AVERAGE	61.2	65.2	68.8	69.3	68.5	65.6	61.3
N	4	7	7	7	7	7	3
S.D	1.2	.6	.8	2.0	1.6	1.2	1.1
90% CI	1.4	.4	.6	1.5	1.2	.8	1.8

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: BELL 206L-1 TEST DATE: 8/26/84

OPERATION : 6 DEGREE APPROACH AT VY, 57 KTS.

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
A1	--	64.30	70.50	80.40	76.90	70.20	61.90
A2	--	66.60	72.20	82.30	78.20	70.10	63.00
A3	58.70	64.30	71.30	80.80	78.50	71.30	64.70
A4	59.70	66.30	71.00	80.90	76.90	69.50	63.90
A5	60.20	65.50	72.30	82.10	78.00	72.10	63.60
A6	60.20	65.00	70.80	83.30	78.80	72.40	62.50
A7	61.30	64.80	70.70	82.90	78.60	70.20	62.20
AVERAGE	60.02	65.26	71.26	81.81	77.99	70.83	63.11
STD. DEV.	0.94	0.92	0.72	1.12	0.79	1.11	1.01
90% C.I.	0.90	0.47	0.53	0.82	0.58	0.81	0.74

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: BELL 206L-1

TEST DATE: 8/26/84

OPERATION : NORMAL APPROACH

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
C8	61.10	--	73.00	82.30	78.90	70.50	63.80
C10	59.00	64.50	73.00	82.70	79.50	69.70	62.30
C12	59.30	65.00	70.80	80.30	78.10	70.50	--
C14	61.30	--	72.20	83.60	75.60	67.00	63.50
C16	59.50	65.50	71.30	82.70	77.80	69.60	61.30
C18	58.80	65.10	71.40	82.70	77.30	68.30	60.80
C20	57.20	65.00	70.10	82.10	79.50	68.80	63.00
AVERAGE	59.46	65.02	71.69	82.34	78.10	69.20	62.45
STD. DEV.	1.41	0.36	1.10	1.02	1.39	1.26	1.21
90% C.I.	1.03	0.34	0.81	0.75	1.02	0.93	1.00

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: BELL 206L-1 TEST DATE: 8/26/84

OPERATION : NORMAL TAKEOFF

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' WEST	1000' WEST	500' WEST	CL-C	500' EAST	1000' EAST	2000' EAST
D9	64.60	69.20	73.50	75.60	73.40	66.80	61.30
D11	64.10	68.70	73.30	75.80	73.60	68.50	61.10
D13	63.00	68.70	73.70	75.20	73.40	67.40	62.20
D15	63.90	69.00	73.70	74.30	73.00	67.50	62.20
D17	63.10	68.90	73.70	74.90	72.70	69.20	60.20
D19	63.10	67.90	73.00	74.80	72.30	66.80	60.90
D21	62.50	67.70	73.00	75.20	--	68.40	63.60
AVERAGE	63.47	68.59	73.41	75.11	73.07	67.80	61.64
STD. DEV.	0.74	0.57	0.32	0.50	0.50	0.92	1.12
90% C.I.	0.54	0.42	0.23	0.37	0.41	0.67	0.82

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: BELL 206L-1 TEST DATE: 8/26/84

OPERATION : NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
E22	58.40	62.80	69.50	78.30	76.90	69.20	62.60
E23	56.20	63.40	69.60	79.90	76.30	69.10	62.10
E24	59.00	64.00	70.40	78.30	76.30	67.70	63.20
E25	59.10	64.60	68.70	75.80	76.70	--	63.60
E26	58.40	63.90	70.10	74.90	75.60	68.20	62.80
E27	57.80	63.50	70.20	75.90	75.80	--	63.30
E28	57.50	63.80	68.20	74.00	75.60	--	63.70
E29	59.10	66.00	68.30	75.20	76.00	--	63.90
AVERAGE	58.19	64.00	69.38	76.54	76.15	68.55	63.15
STD. DEV.	1.00	0.96	0.87	2.05	0.49	0.72	0.61
90% C.I.	0.67	0.64	0.58	1.37	0.33	0.85	0.41

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: BELL 206L-1 TEST DATE: 8/26/84

OPERATION : NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
E30	59.50	63.60	66.80	71.50	73.00	68.90	62.60
E31	59.70	62.90	67.50	74.20	73.70	67.50	64.30
E32	57.90	63.90	69.10	74.40	74.60	72.30	61.40
E33	60.50	62.20	67.60	74.00	75.10	70.00	64.00
E34	58.30	61.30	67.10	73.00	74.50	69.30	63.60
AVERAGE	59.18	62.78	67.62	73.42	74.18	69.60	63.18
STD. DEV.	1.06	1.06	0.89	1.20	0.83	1.76	1.18
90% C.I.	1.01	1.01	0.85	1.14	0.79	1.68	1.13

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: BELL 206L-1

TEST DATE: 8/26/84

OPERATION : LEVEL FLYOVER (500 FT. @ 100 KTS.)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' WEST	1000' WEST	500' WEST	CL-C	500' EAST	1000' EAST	2000' EAST
G35	63.60	67.70	74.10	76.20	73.70	66.50	--
G36	--	68.80	74.10	75.70	74.20	67.30	62.50
G37	61.70	66.50	72.90	75.40	73.50	68.00	--
G38	--	69.10	72.00	74.50	73.40	67.60	59.80
G39	61.90	67.20	72.60	75.40	72.90	66.70	--
G40	--	68.50	73.10	75.80	74.30	68.20	61.60
G41	61.90	67.40	73.10	75.60	73.00	67.40	--
G42	--	67.70	72.10	75.20	74.00	68.30	62.30
AVERAGE	62.28	67.86	73.00	75.48	73.63	67.50	61.55
STD. DEV.	0.89	0.88	0.79	0.50	0.52	0.66	1.23
90% C.I.	1.04	0.59	0.53	0.33	0.35	0.44	1.44

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: BELL 206L-1

TEST DATE: 8/26/84

OPERATION : LEVEL FLYOVER (1000 FT. @ 100 KTS.)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' WEST	1000' WEST	500' WEST	CL-C	500' EAST	1000' EAST	2000' EAST
F43	60.60	65.00	68.40	73.60	68.50	65.20	--
F44	--	64.50	68.90	67.80	70.40	66.90	62.40
F45	59.80	65.30	68.50	67.50	66.90	63.80	--
F46	--	64.80	67.60	68.90	70.70	64.80	60.30
F47	61.90	65.30	69.50	69.30	67.70	67.00	--
F48	--	65.50	68.90	68.70	66.60	65.80	61.10
F49	62.50	66.30	70.00	69.00	68.60	66.00	--
AVERAGE	61.20	65.24	68.83	69.26	68.49	65.64	61.27
STD. DEV.	1.22	0.58	0.78	2.02	1.60	1.15	1.06
90% C.I.	1.44	0.42	0.57	1.48	1.17	0.84	1.79

RADAR TRACKING

DATA

THIS SECTION OF THE APPENDIX CONTAINS THE HELICOPTER POSITION DATA AND TRACKING PLOTS DERIVED FROM THE FAA'S PORTABLE TRACKING RADAR SYSTEM. THE POSITION DATA LISTS THE CLOSEST POINT OF APPROACH (CPA), TIME OF CPA, ELEVATION ANGLE, RATE OF CLIMB OR DESCENT, THE CLIMB OR DESCENT ANGLE, AND GROUND SPEED FOR ALL FLIGHT CONDITIONS. TRACKING PLOTS OF THE ACTUAL FLIGHT PROFILE FLOWN ARE PROVIDED FOR EACH FLIGHT CONDITIONS.

BELL 206L-1

POSITION DATA
NOISE MEASUREMENT PROGRAM

CENTERLINE CENTER

DATE:08/26/84

FAA/AEE

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
SIX DEGREE APPROACH AT VY, 57 KTS.							
1	APP	386.7	78.7	8:51:57.8	-520.2	-4.7	62.8
2		-----	NO DATA	-----			
3	APP	396.8	88.7	9:00:53.1	-554.1	-5.1	61.7
4	APP	389.3	79.9	9:05:16.8	-603.3	-5.3	64.6
5	APP	367.8	80.8	9:11:33.5	-548.0	-4.7	66.5
6	APP	359.2	82.4	9:18:59.0	-697.3	-6.2	63.3
7		-----	NO DATA	-----			
NORMAL APPROACH							
8	APP	321.5	84.4	9:38:26.7	-509.9	-4.3	67.2
10	APP	310.4	84.5	9:43:51.8	-355.2	-3.0	67.9
12	APP	386.4	84.3	9:48:28.6	-669.5	-5.4	69.4
14	APP	234.9	85.7	9:58:39.5	-222.6	-2.0	62.3
16	APP	298.6	84.8	10:11:15.3	-286.5	-2.6	62.0
18	APP	314.5	87.8	10:16:07.9	-462.9	-4.0	65.4
20	APP	319.7	82.7	10:22:25.3	-282.0	-2.4	66.4
NORMAL TAKEOFF							
9	DEP	419.0	84.9	9:40:13.0	735.0	5.6	74.4
11	DEP	428.7	82.9	9:45:40.9	218.4	1.5	79.7
13	DEP	424.4	81.0	9:51:58.4	554.4	4.1	76.7
15	DEP	480.0	80.6	10:05:04.4	607.5	4.6	74.0
17	DEP	462.4	75.7	10:13:02.6	805.3	6.5	70.3
19	DEP	497.8	78.8	10:18:27.1	795.3	6.3	70.8
21	DEP	446.2	85.9	10:24:09.7	694.0	5.2	74.8
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)							
22	APP	317.5	85.3	11:19:47.9	-731.0	-7.1	58.1
23	APP	418.1	87.1	11:23:50.1	-306.7	-2.9	59.8
24	APP	332.0	83.6	11:29:42.8	-698.6	-6.1	64.2
25	APP	433.2	87.4	11:33:51.5	-824.2	-6.6	70.7
26	APP	454.3	81.5	11:40:13.6	-509.9	-4.0	71.8

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

BELL 206L-1

POSITION DATA
NOISE MEASUREMENT PROGRAM

CENTERLINE CENTER

DATE:08/26/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)							
27	APP	391.5	84.3	11:44:27.3	-553.5	-4.9	63.4
28	APP	456.9	84.2	11:48:58.7	-508.2	-4.7	61.3
29	APP	420.3	82.5	11:53:16.6	-484.5	-4.0	69.1
30	APP	596.2	88.9	11:57:43.8	-879.5	-7.1	69.7
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)							
31	APP	433.1	86.6	12:02:15.9	-1144.3	-10.4	61.5
32		-----	NO DATA	-----			
33	APP	471.8	79.7	12:17:19.7	-944.2	-8.4	62.9
34	APP	458.2	78.1	12:21:22.7	-1155.1	-12.1	53.4
500 FT. LEVEL FLYOVER AT 100 KTS.							
35	F/O	405.3	86.7	12:25:26.9	192.5	1.1	102.5
36		-----	NO DATA	-----			
37		-----	NO DATA	-----			
37	F/O	430.6	87.4	12:30:25.2	447.2	2.6	98.8
38	F/O	452.4	82.5	12:32:51.6	76.6	0.4	99.9
39	F/O	434.9	85.3	12:36:12.2	140.5	0.8	98.6
40	F/O	444.8	82.2	12:38:48.5	219.4	1.2	104.4
41	F/O	443.6	81.7	12:44:07.4	195.0	1.1	100.8
42	F/O	444.8	83.5	12:49:25.1	-302.2	-1.7	103.5
1000 FT. LEVEL FLYOVER AT 100 KTS.							
43	F/O	965.7	83.3	12:53:19.0	81.1	0.4	102.6
44	F/O	954.2	84.2	12:56:01.8	149.2	0.8	101.4
45	F/O	944.9	88.0	12:59:22.9	23.4	0.1	100.1
46	F/O	978.3	87.5	13:02:49.1	41.0	0.2	104.7
47	F/O	938.1	87.0	13:06:07.1	502.9	2.8	102.1
48	F/O	963.1	83.9	13:09:05.6	70.3	0.4	100.5
49	F/O	938.0	89.0	13:13:35.8	267.0	1.5	99.2

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

BELL 206L-1

POSITION DATA
NOISE MEASUREMENT PROGRAM

500 FT. EAST

DATE:08/26/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
SIX DEGREE APPROACH AT VY, 57 KTS.							
1	APP	629.5	37.5	8:51:57.7	-518.7	-4.7	62.5
2	APP	786.4	28.6	8:56:33.3	-414.4	-27.5	7.9
3	APP	625.3	39.7	9:00:52.9	-559.6	-5.0	62.6
4	APP	591.7	41.6	9:05:16.1	-728.4	-6.4	64.5
5	APP	604.6	37.1	9:11:33.5	-548.0	-4.7	66.5
6	APP	605.0	36.3	9:18:59.0	-697.3	-6.2	63.3
7		-----	NO DATA	-----			
NORMAL APPROACH							
8	APP	598.9	33.0	9:38:26.4	-493.7	-4.2	66.0
10	APP	584.4	32.7	9:43:51.3	-432.3	-3.6	68.4
12	APP	629.9	38.4	9:48:28.1	-585.1	-4.7	69.9
14	APP	543.4	25.8	9:58:39.6	-217.7	-2.0	62.2
16	APP	601.1	29.9	10:11:15.3	-286.5	-2.6	62.0
18	APP	592.0	32.3	10:16:07.6	-454.9	-3.9	66.4
20	APP	622.3	30.8	10:22:24.9	-247.6	-2.1	66.1
NORMAL TAKEOFF							
9	DEP	611.8	43.1	9:40:12.8	766.0	5.9	73.5
11	DEP	600.1	45.5	9:45:41.1	192.0	1.3	82.4
13	DEP	595.9	44.8	9:51:58.6	518.0	3.8	77.3
15	DEP	664.5	46.1	10:05:04.5	622.2	4.7	74.0
17	DEP	662.8	45.4	10:13:03.9	788.7	5.8	76.2
19	DEP	683.0	47.2	10:18:28.0	580.9	4.4	73.9
21	DEP	655.2	43.0	10:24:09.7	694.0	5.2	74.8
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)							
22	APP	611.5	31.6	11:19:47.8	-745.9	-7.3	57.8
23	APP	643.0	40.8	11:23:49.4	-328.3	-2.8	66.2
24	APP	588.7	34.3	11:29:42.8	-698.6	-6.1	64.2
25	APP	649.6	42.8	11:33:51.2	-761.8	-6.2	69.7
26	APP	661.2	44.2	11:40:12.9	-548.4	-4.3	71.8

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

BELL 206L-1

POSITION DATA
NOISE MEASUREMENT PROGRAM

500 FT. EAST

DATE:08/26/84

FAA/AEE

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)							
27	APP	619.7	39.2	11:44:27.4	-534.9	-4.8	63.1
28	APP	680.5	42.9	11:48:57.9	-467.9	-4.4	60.6
29	APP	686.1	38.1	11:53:16.2	-537.4	-4.5	67.7
30	APP	787.0	49.5	11:57:43.8	-879.5	-7.1	69.7
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)							
31	APP	664.9	40.8	12:02:15.9	-1144.3	-10.4	61.5
32		-----	NO DATA	-----			
33	APP	702.9	40.4	12:17:20.7	-905.7	-8.4	60.2
34	APP	707.3	39.5	12:21:22.7	-1155.1	-12.1	53.4
500 FT. LEVEL FLYOVER AT 100 KTS.							
35	F/O	657.6	38.6	12:25:27.3	220.8	1.2	102.5
36		-----	NO DATA	-----			
37	F/O	668.6	40.3	12:30:25.0	405.8	2.3	99.5
38	F/O	634.6	45.2	12:32:51.6	76.6	0.4	99.9
39	F/O	676.1	40.2	12:36:12.0	219.8	1.3	98.7
40	F/O	624.9	45.4	12:38:48.4	212.5	1.1	104.5
41	F/O	679.1	40.5	12:44:07.2	195.6	1.1	101.2
42	F/O	633.3	44.5	12:49:25.1	-302.2	-1.7	103.5
1000 FT. LEVEL FLYOVER AT 100 KTS.							
43	F/O	1136.5	57.8	12:53:18.5	74.9	0.4	105.1
44	F/O	1032.1	67.1	12:56:01.9	157.2	0.9	101.2
45	F/O	1055.9	63.7	12:59:22.9	23.4	0.1	100.1
46	F/O	1081.0	65.0	13:02:49.6	43.3	0.2	105.1
47	F/O	1082.0	60.2	13:06:07.1	502.9	2.8	102.1
48	F/O	1039.2	67.4	13:09:05.6	70.3	0.4	100.5
49	F/O	1072.0	61.3	13:13:35.8	267.0	1.5	99.2

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

BELL 206L-1

POSITION DATA
NOISE MEASUREMENT PROGRAM

500 FT. WEST

DATE:08/26/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
SIX DEGREE APPROACH AT VY, 57 KTS.							
1	APP	632.3	37.6	8:51:57.3	-546.6	-4.9	62.6
2	APP	1137.0	24.1	8:56:24.1	-1141.7	-8.0	80.4
3	APP	606.3	41.1	9:00:53.7	-556.0	-5.2	59.8
4	APP	650.2	37.1	9:05:16.4	-652.3	-5.6	66.0
5	APP	632.8	35.8	9:11:33.8	-497.4	-4.3	65.5
6	APP	611.5	35.7	9:18:59.2	-686.2	-6.1	63.3
7		-----	NO DATA	-----			
NORMAL APPROACH							
8	APP	571.4	34.1	9:38:26.7	-509.9	-4.3	67.2
10	APP	584.6	32.7	9:43:51.0	-480.6	-3.9	69.6
12	APP	603.8	36.5	9:48:30.5	-547.6	-4.4	69.9
14	APP	529.0	27.5	9:58:40.5	-185.7	-1.7	61.5
16	APP	525.7	34.6	10:11:15.9	-270.7	-2.5	62.1
18	APP	584.6	32.6	10:16:07.4	-474.6	-4.0	66.8
20	APP	553.0	35.1	10:22:25.2	-277.3	-2.4	66.2
NORMAL TAKEOFF							
9	DEP	674.8	38.2	9:40:12.2	801.2	6.3	72.0
11	DEP	667.7	39.7	9:45:39.8	493.3	3.9	72.1
13	DEP	698.9	36.9	9:51:58.4	554.4	4.1	76.7
15	DEP	719.7	41.1	10:05:04.4	607.5	4.6	74.0
17	DEP	680.9	40.9	10:13:02.4	803.8	6.5	69.5
19	DEP	714.7	42.8	10:18:27.0	814.6	6.4	71.5
21	DEP	675.7	41.2	10:24:09.4	712.6	5.3	75.3
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)							
22	APP	557.2	34.4	11:19:48.4	-630.4	-6.1	58.5
23	APP	614.0	43.0	11:23:50.7	-449.9	-4.3	58.6
24	APP	573.5	34.8	11:29:43.5	-537.1	-4.8	63.5
25		-----	NO DATA	-----			
26	APP	686.4	40.8	11:40:13.7	-524.3	-4.1	71.7

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

BELL 206L-1

POSITION DATA
NOISE MEASUREMENT PROGRAM

500 FT. WEST

DATE:08/26/84

FAA/AEE

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)							
27	APP	603.5	39.0	11:44:28.8	-637.7	-6.0	60.1
28	APP	670.8	41.9	11:48:59.9	-459.3	-4.4	58.8
29	APP	614.4	42.9	11:53:16.5	-496.4	-4.1	68.6
30	APP	742.6	53.2	11:57:44.0	-895.8	-7.3	69.1
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)							
31	APP	634.9	42.4	12:02:16.6	-1036.0	-9.7	59.9
32		-----	NO DATA	-----			
33	APP	664.0	44.4	12:17:19.7	-944.2	-8.4	62.9
34	APP	647.9	44.4	12:21:22.6	-1164.6	-12.1	53.6
500 FT. LEVEL FLYOVER AT 100 KTS.							
35	F/O	624.7	41.9	12:25:28.3	254.9	1.4	99.9
36		-----	NO DATA	-----			
37	F/O	648.0	41.6	12:30:25.2	447.2	2.6	98.8
38	F/O	704.7	39.3	12:32:51.9	32.6	0.2	96.9
39	F/O	643.0	42.4	12:36:12.2	140.5	0.8	98.6
40	F/O	702.4	39.3	12:38:48.8	253.4	1.4	105.1
41	F/O	654.0	42.2	12:44:07.4	195.0	1.1	100.8
42	F/O	660.1	41.7	12:49:25.7	-280.5	-1.5	104.8
1000 FT. LEVEL FLYOVER AT 100 KTS.							
43	F/O	1016.5	69.5	12:53:19.7	151.6	0.8	101.9
44	F/O	1113.2	58.8	12:56:01.7	140.3	0.8	101.6
45	F/O	1083.1	60.8	12:59:23.0	28.8	0.2	99.8
46	F/O	1109.3	62.4	13:02:48.3	6.9	0.0	101.3
47	F/O	1041.9	64.2	13:06:07.3	435.9	2.4	101.7
48	F/O	1129.4	58.2	13:09:05.7	65.8	0.4	100.8
49	F/O	1055.0	63.2	13:13:36.0	244.2	1.4	98.4

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

BELL 206L-1

POSITION DATA
NOISE MEASUREMENT PROGRAM

1000 FT. EAST

DATE:08/26/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
SIX DEGREE APPROACH AT VY, 57 KTS.							
1	APP	749.0	29.8	8:51:51.7	-563.1	-4.0	78.9
2	APP	736.2	30.2	8:56:32.8	-474.5	-31.5	7.6
3	APP	1060.0	22.2	9:00:52.9	-559.6	-5.0	62.6
4	APP	1021.8	22.7	9:05:16.1	-728.4	-6.4	64.5
5	APP	1045.6	21.5	9:11:32.9	-547.9	-4.7	65.8
6	APP	1050.3	20.0	9:18:59.0	-697.3	-6.2	63.3
7		-----	NO DATA	-----			
NORMAL APPROACH							
8	APP	1054.6	18.1	9:38:26.4	-493.7	-4.2	66.0
10	APP	1041.4	17.8	9:43:51.3	-432.3	-3.6	68.4
12		-----	NO DATA	-----			
14	APP	628.5	7.0	9:58:46.6	5648.1	18.8	163.9
16	APP	1061.4	16.9	10:11:14.3	-276.6	-2.4	65.0
18	APP	1049.5	17.7	10:16:07.6	-454.9	-3.9	66.4
20	APP	1081.3	17.3	10:22:25.8	-311.9	-2.7	65.4
NORMAL TAKEOFF							
9	DEP	1035.5	23.9	9:40:12.8	766.0	5.9	73.5
11	DEP	1016.2	25.0	9:45:41.1	192.0	1.3	82.4
13	DEP	1012.1	24.4	9:51:57.6	629.7	4.8	74.4
15	DEP	1072.6	27.8	10:05:05.3	623.0	4.7	74.8
17	DEP	1075.5	26.1	10:13:03.9	788.7	5.8	76.2
19	DEP	1087.4	27.6	10:18:28.0	580.9	4.4	73.9
21	DEP	1076.3	25.0	10:24:09.8	689.4	5.2	75.1
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)							
22	APP	748.2	8.7	11:19:55.7	642.9	4.9	74.3
23	APP	1071.7	23.2	11:23:49.4	-328.3	-2.8	66.2
24	APP	658.5	6.4	11:29:50.8	1385.1	11.6	66.3
25	APP	1072.7	24.4	11:33:51.2	-761.8	-6.2	69.7
26	APP	1078.3	25.4	11:40:12.9	-548.4	-4.3	71.8

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

BELL 206L-1

POSITION DATA
NOISE MEASUREMENT PROGRAM

1000 FT. EAST

DATE:08/26/84

FAA/AEE

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)							
27	APP	1055.4	21.9	11:44:27.4	-534.9	-4.8	63.1
28	APP	1101.3	25.0	11:48:57.9	-467.9	-4.4	60.6
29	APP	1123.3	22.2	11:53:16.2	-537.4	-4.5	67.7
30	APP	1176.1	30.7	11:57:43.8	-879.5	-7.1	69.7
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)							
31	APP	1093.8	23.5	12:02:15.9	-1144.3	-10.4	61.5
32		-----	NO DATA	-----			
33	APP	1118.1	24.1	12:17:20.7	-905.7	-8.4	60.2
34	APP	1134.7	25.3	12:21:21.7	-1177.8	-11.7	56.1
500 FT. LEVEL FLYOVER AT 100 KTS.							
35	F/O	1093.7	22.1	12:25:27.3	220.8	1.2	102.5
36		-----	NO DATA	-----			
37	F/O	1098.8	23.3	12:30:25.0	405.8	2.3	99.5
38	F/O	1049.2	25.6	12:32:51.6	76.6	0.4	99.9
39	F/O	1105.0	23.8	12:36:13.1	166.1	0.9	99.6
40	F/O	1038.8	25.5	12:38:48.4	212.5	1.1	104.5
41	F/O	1106.4	23.6	12:44:07.2	195.6	1.1	101.2
42	F/O	1048.5	25.3	12:49:24.5	-324.8	-1.8	103.4
1000 FT. LEVEL FLYOVER AT 100 KTS.							
43	F/O	1463.1	41.2	12:53:18.3	136.4	0.7	106.2
44	F/O	1311.0	46.8	12:56:02.5	208.5	1.2	100.4
45	F/O	1355.1	44.5	12:59:22.7	9.2	0.1	100.5
46	F/O	1369.3	45.8	13:02:49.6	43.3	0.2	105.1
47	F/O	1400.5	42.2	13:06:07.1	502.9	2.8	102.1
48	F/O	1316.2	46.9	13:09:05.6	70.3	0.4	100.5
49	F/O	1384.1	43.0	13:13:35.4	140.7	0.8	99.1

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

BELL 206L-1

POSITION DATA
NOISE MEASUREMENT PROGRAM

1000 FT. WEST

DATE:08/26/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
SIX DEGREE APPROACH AT VY, 57 KTS.							
1	APP	1072.7	21.6	8:51:56.8	-596.4	-5.3	64.0
2	APP	1436.0	18.9	8:56:24.1	-1141.7	-8.0	80.4
3	APP	1035.0	22.8	9:00:53.7	-556.0	-5.2	59.8
4	APP	1091.9	21.2	9:05:16.4	-652.3	-5.6	66.0
5	APP	1078.1	20.2	9:11:33.8	-497.4	-4.3	65.5
6	APP	1057.1	19.8	9:18:59.2	-686.2	-6.1	63.3
7		-----	NO DATA	-----			
NORMAL APPROACH							
8	APP	1025.2	18.3	9:38:26.7	-509.9	-4.3	67.2
10	APP	1041.2	17.1	9:43:53.6	-276.5	-2.3	69.3
12	APP	1013.5	20.9	9:48:30.5	-547.6	-4.4	69.9
14	APP	989.0	14.4	9:58:40.5	-185.7	-1.7	61.5
16	APP	976.2	17.9	10:11:15.9	-270.7	-2.5	62.1
18	APP	1028.3	16.8	10:16:10.9	-266.6	-2.4	63.0
20	APP	1004.9	18.5	10:22:25.2	-277.3	-2.4	66.2
NORMAL TAKEOFF							
9	DEP	1110.0	22.2	9:40:12.2	801.2	6.3	72.0
11	DEP	1088.9	23.2	9:45:39.8	493.3	3.9	72.1
13	DEP	1132.1	20.7	9:51:56.7	594.0	4.6	73.0
15	DEP	1143.4	24.6	10:05:04.4	607.5	4.6	74.0
17	DEP	1099.9	24.0	10:13:02.4	803.8	6.5	69.5
19	DEP	1129.3	25.6	10:18:27.0	814.6	6.4	71.5
21	DEP	1100.7	24.0	10:24:09.4	712.6	5.3	75.3
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)							
22	APP	1006.0	17.6	11:19:50.2	-785.9	-7.8	56.9
23	APP	1035.3	24.0	11:23:50.7	-449.9	-4.3	58.6
24	APP	1019.7	18.9	11:29:43.5	-537.1	-4.8	63.5
25	APP	1062.5	24.9	11:33:50.9	-695.0	-5.7	68.5
26	APP	1112.4	23.9	11:40:13.7	-524.3	-4.1	71.7

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

BELL 206L-1

POSITION DATA
NOISE MEASUREMENT PROGRAM

1000 FT. WEST

DATE:08/26/84

FAA/AEE

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
SIX DEGREE APPROACH AT VY, 57 KTS.							
27	APP	1023.0	21.9	11:44:28.8	-637.7	-6.0	60.1
28	APP	1083.3	24.5	11:48:59.9	-459.3	-4.4	58.8
29	APP	1038.9	23.8	11:53:16.5	-496.4	-4.1	68.6
30	APP	1117.2	32.3	11:57:44.0	-895.8	-7.3	69.1
NOISE ABATEMENT APPROACH							
31	APP	1053.7	24.1	12:02:16.6	-1036.0	-9.7	59.9
32		-----	NO DATA	-----			
33	APP	1071.8	25.4	12:17:20.4	-874.1	-7.9	62.5
34	APP	1061.6	25.4	12:21:22.6	-1164.6	-12.1	53.6
TEST							
35	F/O	1026.2	24.1	12:25:28.3	254.9	1.4	99.9
36		-----	NO DATA	-----			
37	F/O	1045.9	25.9	12:30:26.6	487.5	2.9	95.6
38	F/O	1135.0	23.3	12:32:51.9	32.6	0.2	96.9
39	F/O	1064.5	24.7	12:36:12.5	78.5	0.5	98.1
40	F/O	1126.7	23.4	12:38:46.5	10.5	0.1	102.1
41	F/O	1077.2	24.2	12:44:07.4	195.0	1.1	100.8
42	F/O	1082.9	24.0	12:49:25.7	-280.5	-1.5	104.8
TEST							
43	F/O	1267.2	48.8	12:53:19.7	151.6	0.8	101.9
44	F/O	1437.4	41.6	12:56:01.7	140.3	0.8	101.6
45	F/O	1397.9	42.7	12:59:23.1	36.1	0.2	99.6
46	F/O	1405.8	44.5	13:02:48.3	6.9	0.0	101.3
47	F/O	1333.1	45.9	13:06:07.6	330.9	1.8	102.3
48	F/O	1450.7	41.7	13:09:04.5	78.3	0.4	100.2
49	F/O	1356.6	44.1	13:13:36.0	244.2	1.4	98.4

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

BELL 206L-1

POSITION DATA
NOISE MEASUREMENT PROGRAM

2000 FT. EAST

DATE:08/26/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
SIX DEGREE APPROACH AT VY, 57 KTS.							
1	APP	1377.7	15.8	8:51:51.7	-563.1	-4.0	78.9
2	APP	1222.0	17.5	8:56:30.6	188.6	13.1	8.0
3	APP	2017.9	11.5	9:00:54.2	-547.4	-5.1	60.3
4	APP	1982.8	11.6	9:05:16.1	-728.4	-6.4	64.5
5	APP	2009.8	11.1	9:11:32.9	-547.9	-4.7	65.8
6	APP	2017.0	10.9	9:18:58.4	-628.8	-5.5	64.4
7		-----	NO DATA	-----			
NORMAL APPROACH							
8	APP	2029.5	9.4	9:38:26.4	-493.7	-4.2	66.0
10	APP	2017.4	9.2	9:43:51.3	-432.3	-3.6	68.4
12	APP	2032.9	11.2	9:48:28.1	-585.1	-4.7	69.9
14	APP	1323.8	4.4	9:58:46.7	5648.1	18.8	163.9
16	APP	2037.0	8.8	10:11:14.3	-276.6	-2.4	65.0
18	APP	2025.5	9.1	10:16:07.6	-454.9	-3.9	66.4
20	APP	2056.9	9.1	10:22:25.8	-311.9	-2.7	65.4
NORMAL TAKEOFF							
9	DEP	1991.9	12.3	9:40:12.8	766.0	5.9	73.5
11	DEP	1966.9	12.8	9:45:42.1	463.8	3.0	86.0
13	DEP	1962.7	12.4	9:51:57.6	629.7	4.8	74.4
15	DEP	2010.1	14.8	10:05:06.3	742.4	5.5	76.3
17	DEP	2022.7	13.6	10:13:03.9	788.7	5.8	76.2
19	DEP	2028.2	14.5	10:18:28.0	580.9	4.4	73.9
21	DEP	2027.2	13.4	10:24:10.3	717.7	5.1	78.9
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)							
22	APP	1503.3	4.5	11:19:55.7	642.9	4.9	74.3
23	APP	2029.3	12.1	11:23:49.4	-328.3	-2.8	66.2
24	APP	1364.0	4.8	11:29:50.9	2044.3	20.0	55.3
25	APP	2026.8	12.7	11:33:51.2	-761.8	-6.2	69.7
26	APP	2028.0	13.4	11:40:12.1	-728.4	-5.8	70.7

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

BELL 206L-1

POSITION DATA
NOISE MEASUREMENT PROGRAM

2000 FT. EAST

DATE:08/26/84

FAA/AEE

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)							
27	APP	2018.2	11.3	11:44:27.4	-534.9	-4.8	63.1
28	APP	2052.3	13.2	11:48:57.9	-467.9	-4.4	60.6
29	APP	2084.1	11.9	11:53:16.2	-537.4	-4.5	67.7
30	APP	2100.2	16.7	11:57:43.8	-879.5	-7.1	69.7
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)							
31	APP	2050.6	12.4	12:02:15.9	-1144.3	-10.4	61.5
32		-----	NO DATA	-----			
33	APP	2064.5	12.9	12:17:20.7	-905.7	-8.4	60.2
34	APP	2084.0	13.5	12:21:21.7	-1177.8	-11.7	56.1
500 FT. LEVEL FLYOVER AT 100 KTS.							
35	F/O	2055.1	11.7	12:25:27.3	220.8	1.2	102.5
36		-----	NO DATA	-----			
37	F/O	2056.1	12.3	12:30:25.0	405.8	2.3	99.5
38	F/O	1999.2	13.2	12:32:51.6	76.6	0.4	99.9
39	F/O	2055.5	12.6	12:36:13.1	166.1	0.9	99.6
40	F/O	1988.9	13.1	12:38:48.4	212.5	1.1	104.5
41	F/O	2061.4	12.5	12:44:07.2	195.6	1.1	101.2
42	F/O	1994.9	13.1	12:49:24.5	-324.8	-1.8	103.4
1000 FT. LEVEL FLYOVER AT 100 KTS.							
43	F/O	2310.3	24.8	12:53:18.3	136.4	0.7	106.2
44	F/O	2124.8	26.8	12:56:02.5	208.5	1.2	100.4
45	F/O	2181.7	26.0	12:59:22.0	-61.7	-0.3	102.2
46	F/O	2187.9	26.8	13:02:49.6	43.3	0.2	105.1
47	F/O	2244.4	25.4	13:06:08.0	201.1	1.1	101.6
48	F/O	2128.2	27.1	13:09:06.0	62.2	0.3	100.5
49	F/O	2223.3	25.2	13:13:35.4	140.7	0.8	99.1

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

BELL 206L-1

POSITION DATA
NOISE MEASUREMENT PROGRAM

2000 FT. WEST

DATE:08/26/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
SIX DEGREE APPROACH AT VY, 57 KTS.							
1	APP	2032.9	10.9	8:51:56.3	-610.6	-5.4	63.9
2	APP	1188.5	9.7	8:56:51.4	-196.2	-0.6	173.2
3	APP	1991.4	11.3	9:00:53.7	-556.0	-5.2	59.8
4	APP	2053.9	10.7	9:05:16.4	-652.3	-5.6	66.0
5	APP	2043.1	10.2	9:11:33.8	-497.4	-4.3	65.5
6	APP	2023.1	9.5	9:19:01.0	-330.5	-3.2	57.5
7		-----	NO DATA	-----			
NORMAL APPROACH							
8	APP	1997.4	8.9	9:38:26.7	-509.9	-4.3	67.2
10	APP	1993.8	8.5	9:43:54.2	-267.1	-2.3	67.0
12	APP	1959.8	10.3	9:48:30.5	-547.6	-4.4	69.9
14	APP	1966.4	6.8	9:58:40.5	-185.7	-1.7	61.5
16	APP	1948.5	8.5	10:11:15.9	-270.7	-2.5	62.1
18	APP	1973.8	8.3	10:16:10.9	-266.6	-2.4	63.0
20	APP	1976.8	9.0	10:22:25.2	-277.3	-2.4	66.2
NORMAL TAKEOFF							
9	DEP	2058.6	10.6	9:40:10.5	1019.1	7.6	74.9
11	DEP	2037.6	11.8	9:45:39.8	493.3	3.9	72.1
13	DEP	2082.8	10.7	9:51:56.7	594.0	4.6	73.0
15	DEP	2088.8	12.7	10:05:03.3	670.3	5.1	74.3
17	DEP	2046.4	12.3	10:13:02.4	803.8	6.5	69.5
19	DEP	2071.0	13.3	10:18:27.0	814.6	6.4	71.5
21	DEP	2051.2	12.3	10:24:09.4	712.6	5.3	75.3
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)							
22	APP	1966.2	8.6	11:19:50.3	-819.2	-8.1	56.7
23	APP	1987.0	11.9	11:23:50.7	-449.9	-4.3	58.6
24	APP	1987.7	9.2	11:29:43.5	-537.1	-4.8	63.5
25	APP	2010.9	12.5	11:33:50.9	-695.0	-5.7	68.5
26	APP	2044.2	11.3	11:40:16.5	-1000.3	-8.7	64.5

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

BELL 206L-1

POSITION DATA
NOISE MEASUREMENT PROGRAM

2000 FT. WEST

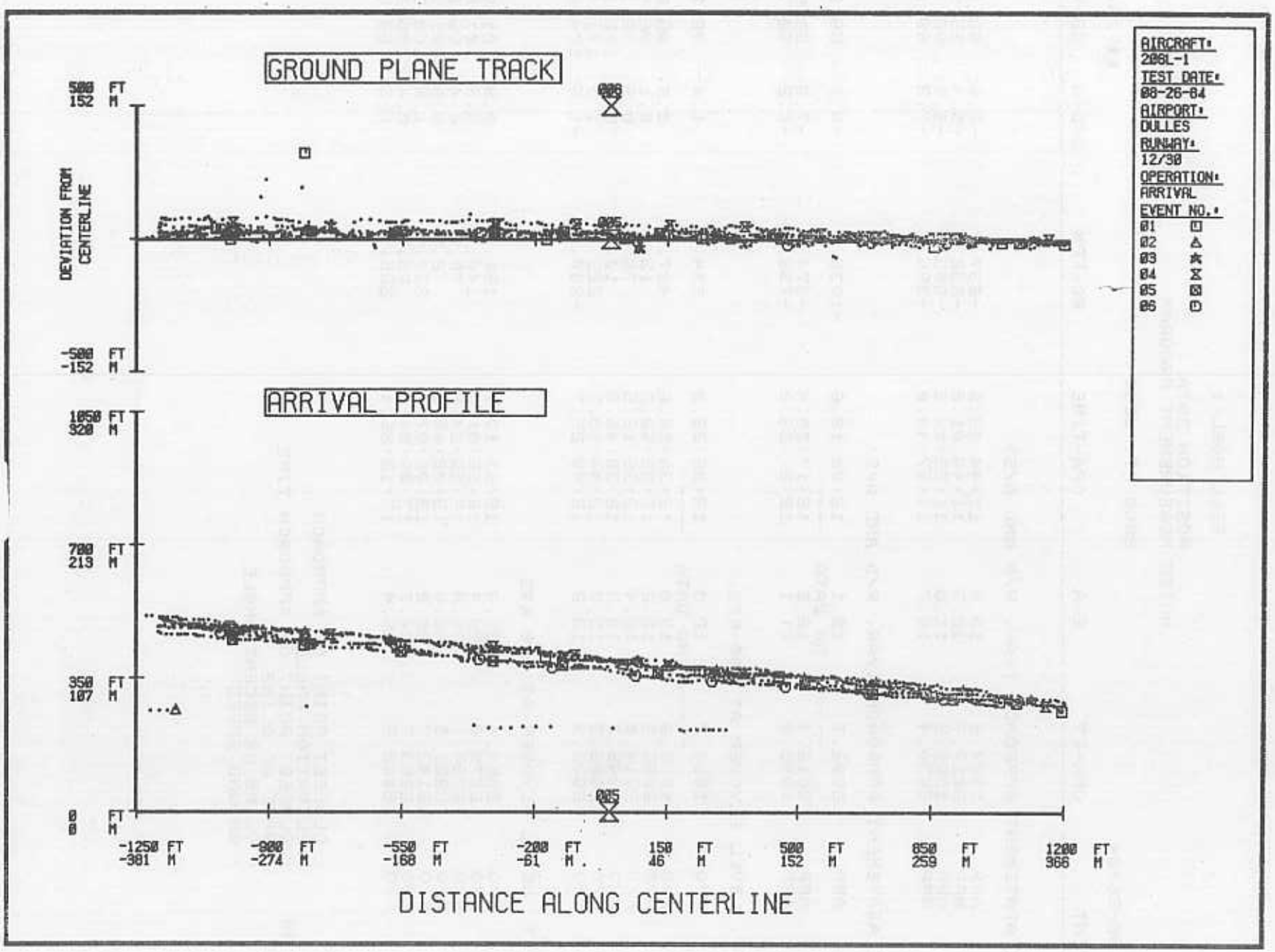
DATE:08/26/84

FAA/AEE

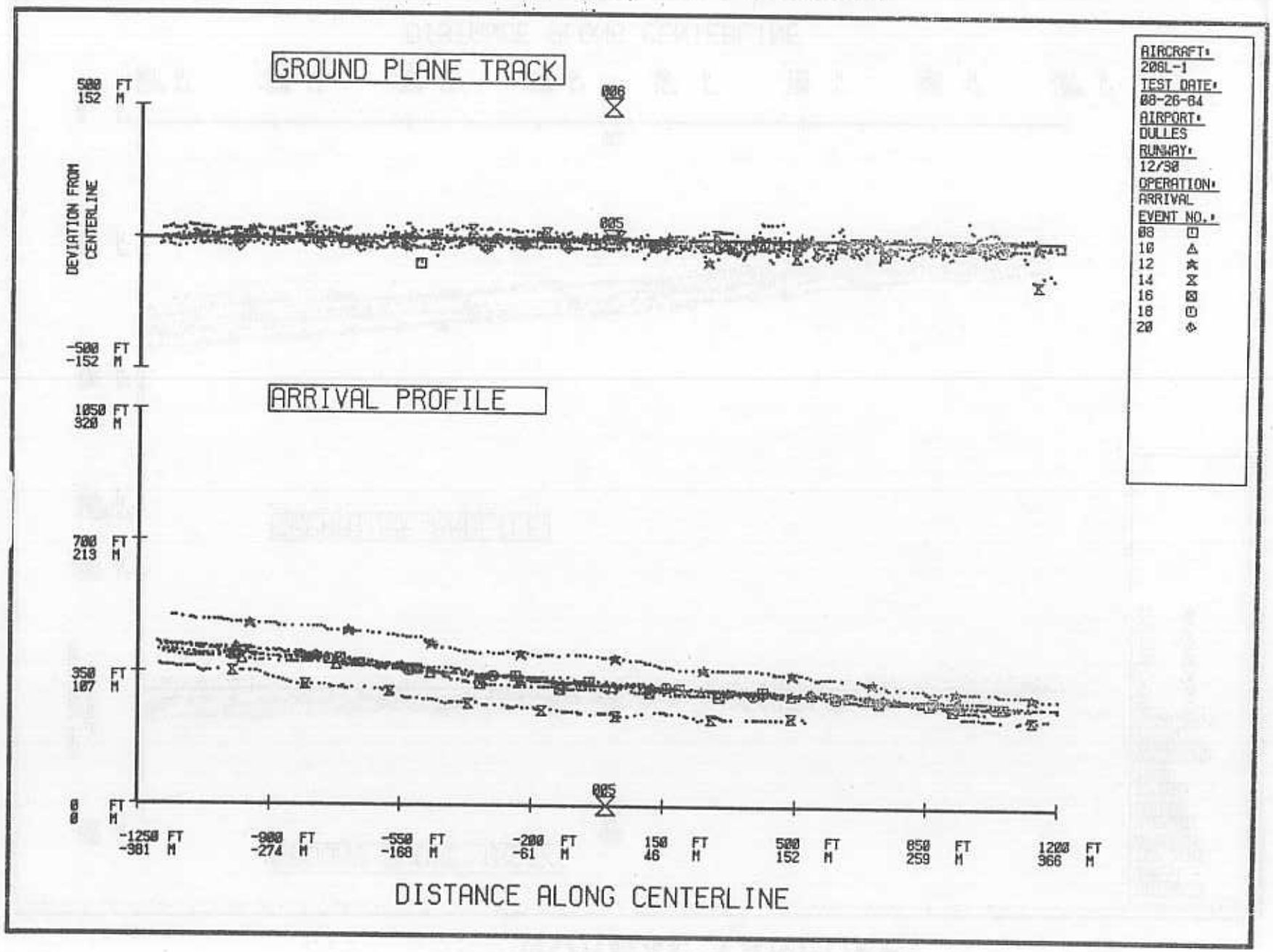
EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)							
27	APP	1974.6	10.8	11:44:28.8	-637.7	-6.0	60.1
28	APP	2017.7	12.3	11:49:01.2	-632.2	-6.4	55.5
29	APP	1989.5	11.6	11:53:18.8	-605.3	-5.5	62.1
30	APP	2030.4	16.7	11:57:44.0	-895.8	-7.3	69.1
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)							
31	APP	2002.7	12.1	12:02:16.6	-1036.0	-9.7	59.9
32		-----	NO DATA	-----			
33	APP	2012.4	12.8	12:17:20.4	-874.1	-7.9	62.5
34	APP	1998.0	11.1	12:21:28.2	-738.3	-8.2	50.7
500 FT. LEVEL FLYOVER AT 100 KTS.							
35	F/O	1966.2	12.0	12:25:28.3	254.9	1.4	99.9
36		-----	NO DATA	-----			
37	F/O	1976.6	13.0	12:30:26.6	487.5	2.9	95.6
38	F/O	2085.2	12.2	12:32:52.2	13.1	0.1	96.4
39	F/O	2014.0	12.4	12:36:12.5	78.5	0.5	98.1
40	F/O	2045.3	12.3	12:38:46.5	10.5	0.1	102.1
41	F/O	2006.8	13.0	12:44:10.7	228.2	1.3	101.4
42	F/O	2032.9	12.2	12:49:25.7	-280.5	-1.5	104.8
1000 FT. LEVEL FLYOVER AT 100 KTS.							
43	F/O	2054.4	27.3	12:53:19.7	151.6	0.8	101.9
44	F/O	2278.0	24.4	12:56:01.7	140.3	0.8	101.6
45	F/O	2224.1	25.0	12:59:24.5	78.3	0.4	99.8
46	F/O	2221.8	26.0	13:02:48.3	6.9	0.0	101.3
47	F/O	2142.7	26.2	13:06:07.6	330.9	1.8	102.3
48	F/O	2283.7	24.7	13:09:04.5	78.3	0.4	100.2
49	F/O	2182.5	25.4	13:13:36.1	225.5	1.3	98.0

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

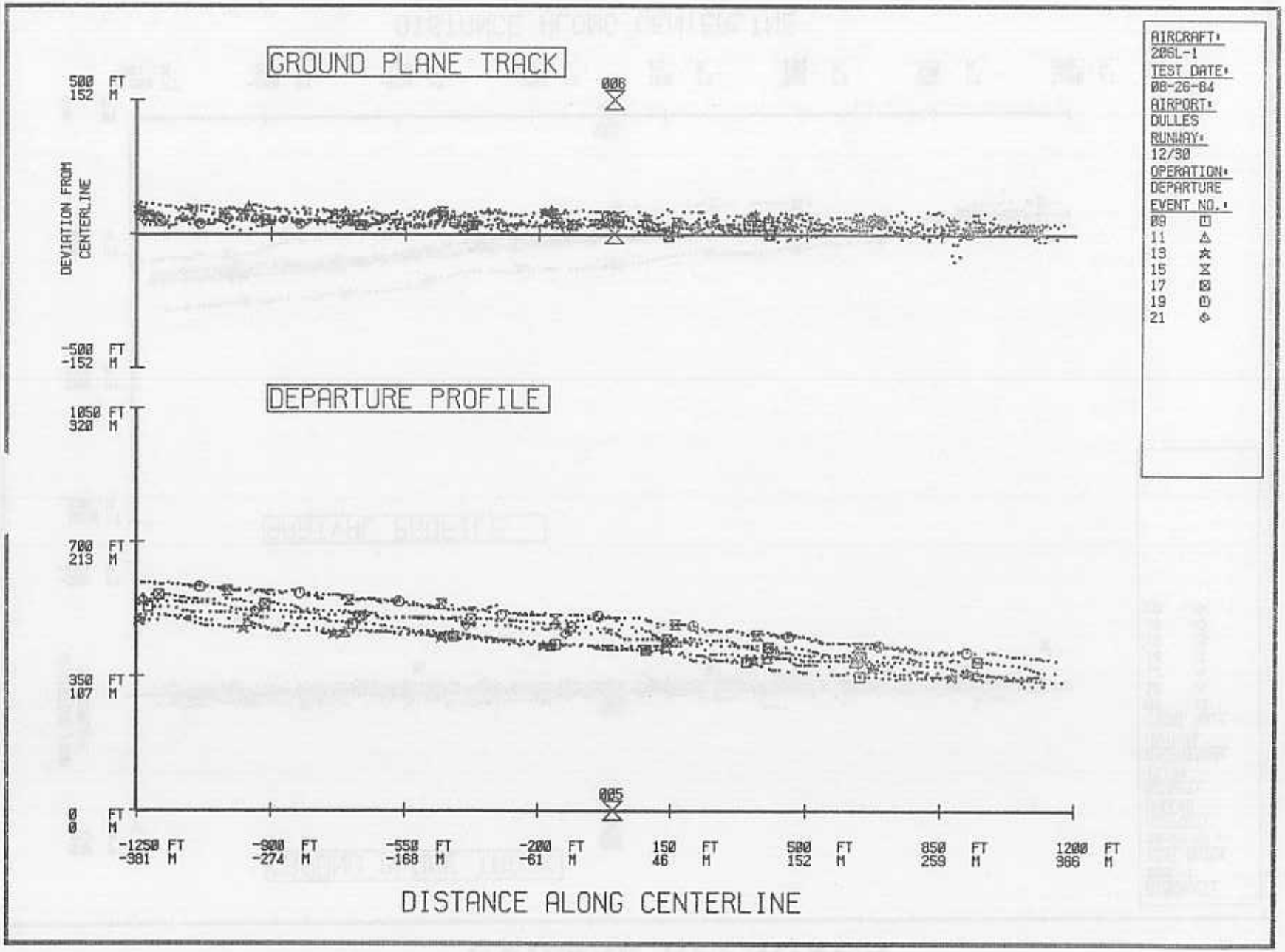
SIX° APPROACH at Vy, 57 Kts.



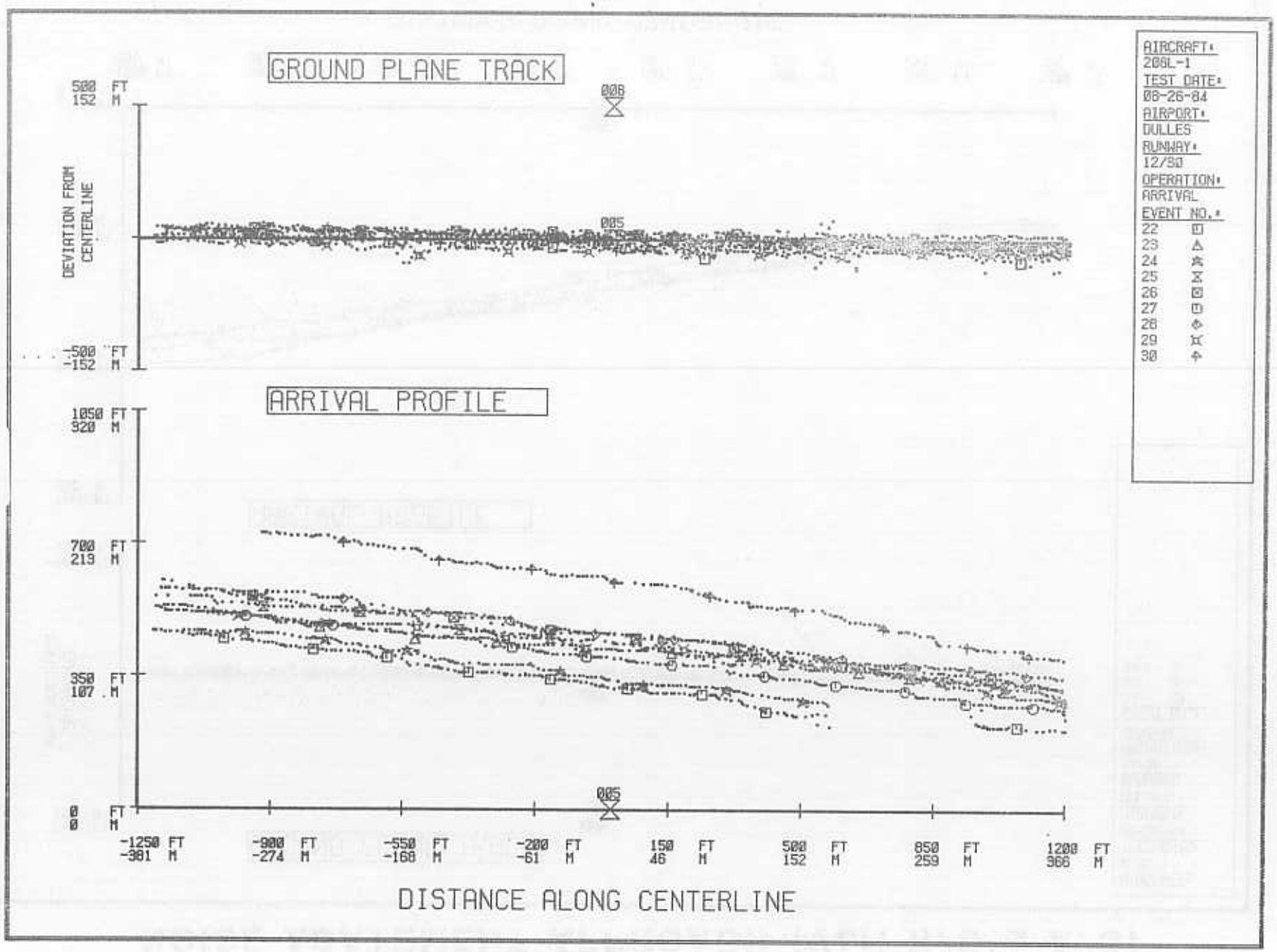
NORMAL APPROACH



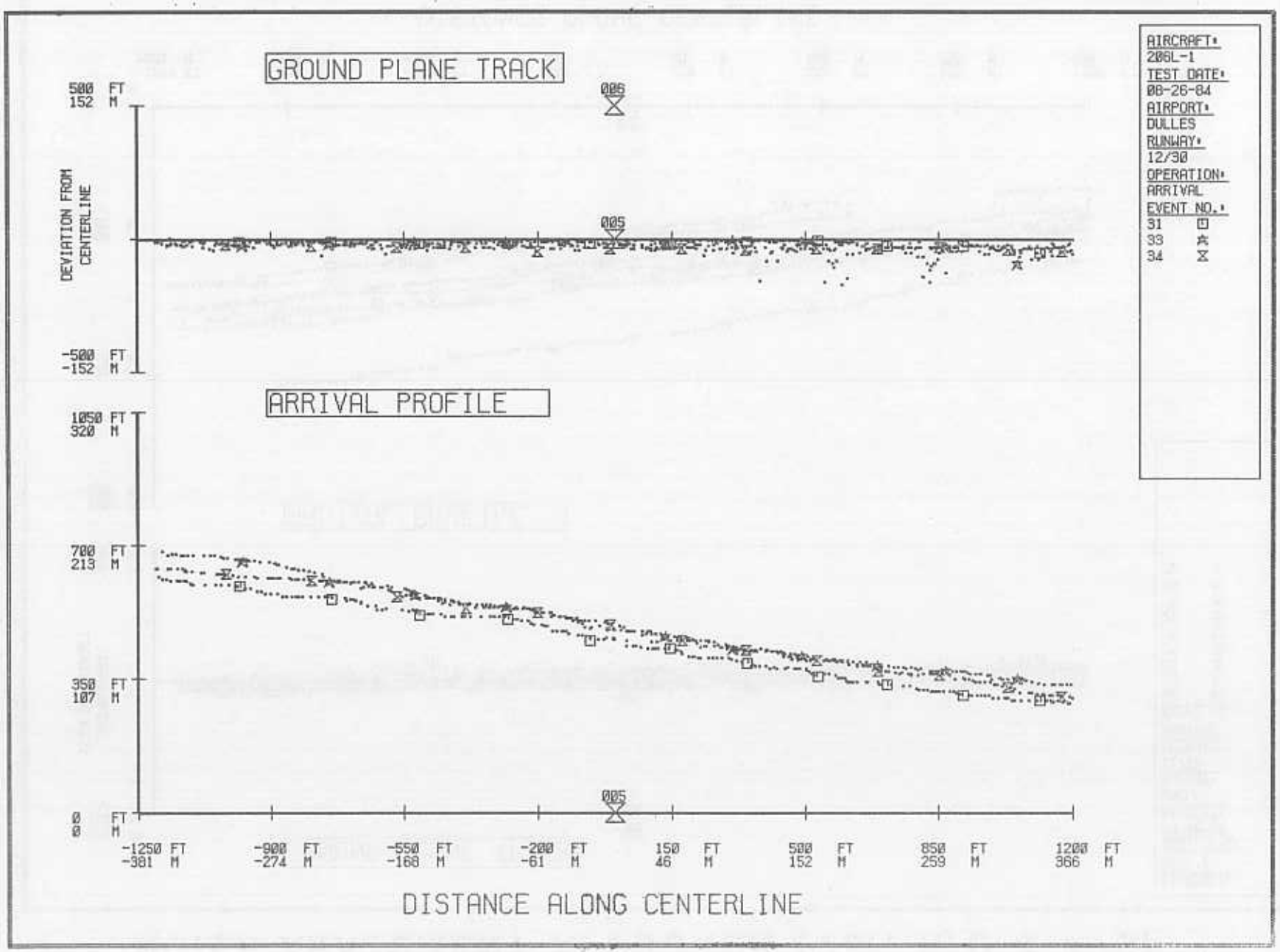
NORMAL TAKEOFF



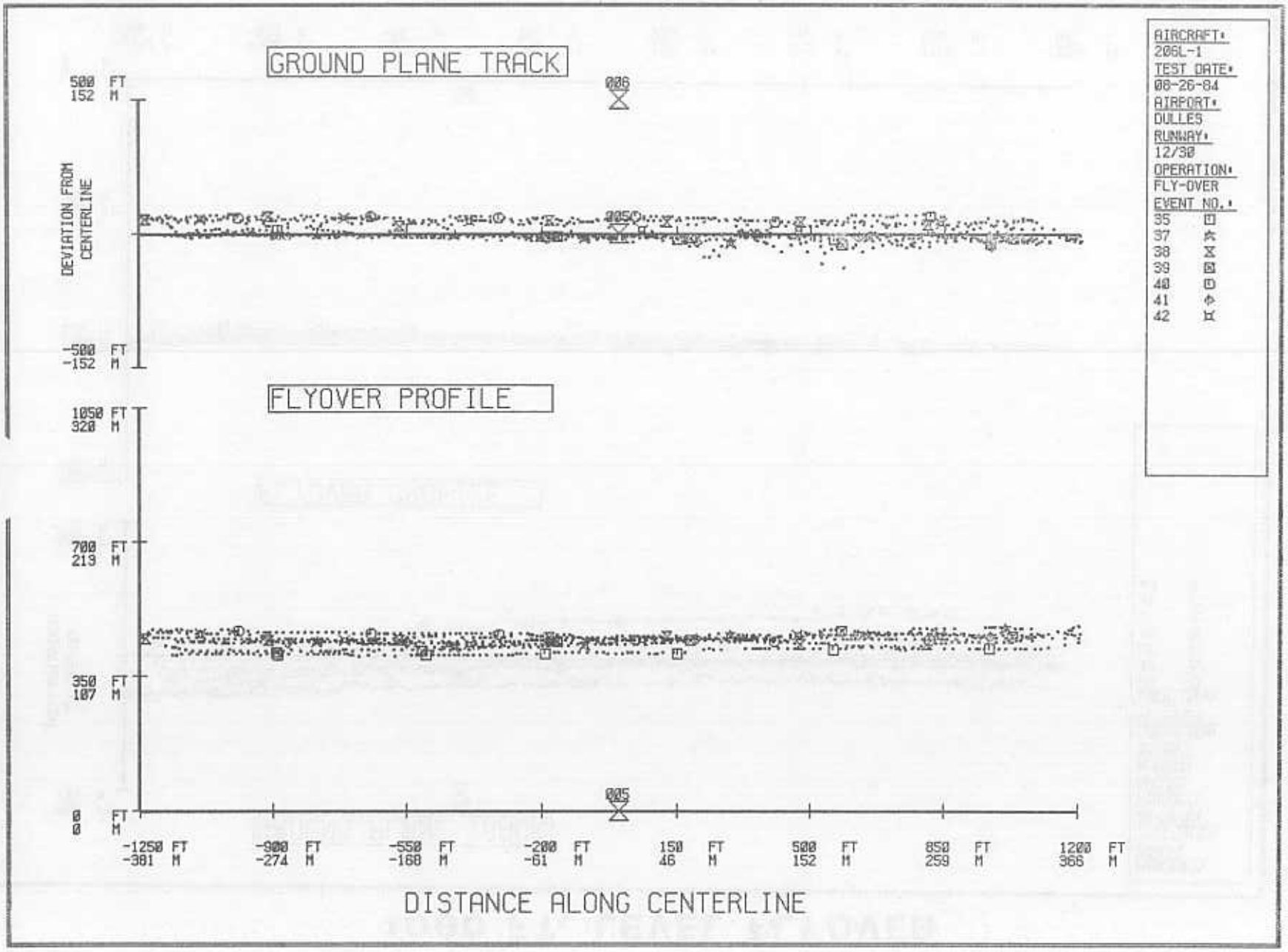
NOISE ABATEMENT APPROACH (Var. R/D & A/S)



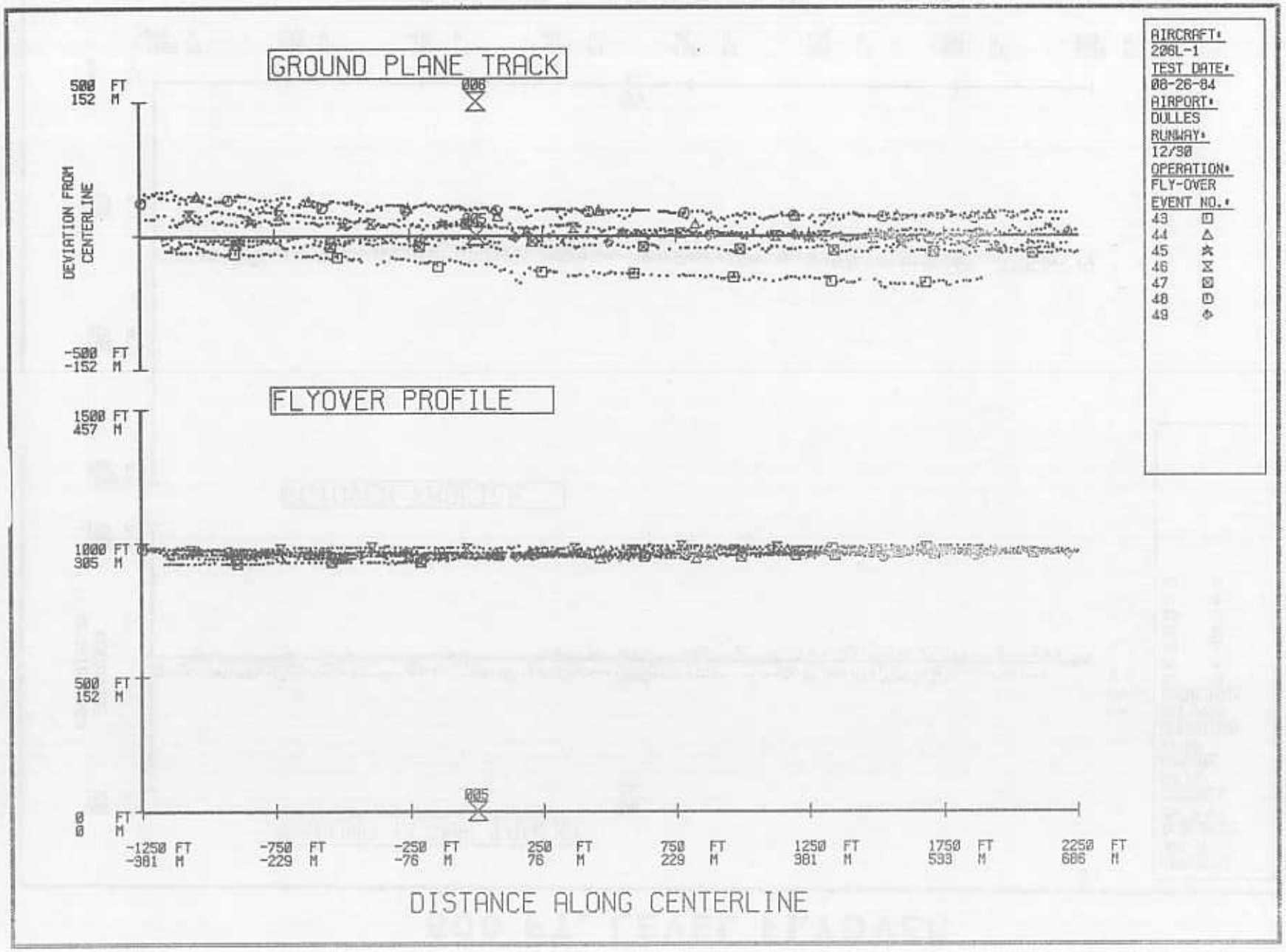
NOISE ABATEMENT APPROACH (Var. R/D & A/S)



500 FT. LEVEL FLYOVER



1000 FT. LEVEL FLYOVER



METEOROLOGICAL

DATA

THIS SECTION OF THE APPENDIX CONTAINS WEATHER DATA FROM SEVERAL TYPES OF METEOROLOGICAL EQUIPMENT: TEN-METER TOWER (MET), GROUND LEVEL PSYCHROMETER, AIRCRAFT OAT, AND PILOT BALLOONS. DATA FROM THE MET TOWER INCLUDE THE TEMPERATURE, RELATIVE HUMIDITY, WIND DIRECTION AND WIND SPEED MEASURED TYPICALLY EVERY 15 MINUTES DURING EACH FLIGHT EVENT. BECAUSE OF A FAILURE OF THE MET TOWER DEW POINT SENSOR, THE RELATIVE HUMIDITY WAS CALCULATED USING TEMPERATURE FROM THE MET TOWER AND DEW POINT FROM THE DULLES MID FIELD WEATHER STATION. GROUND LEVEL (4 FEET) TEMPERATURE AND RELATIVE HUMIDITY ARE GIVEN FOR DIFFERENT TIMES OF EACH TEST DAT, AND THE HELICOPTER'S OAT READINGS ARE SHOWN FOR DIFFERENT FLIGHT ALTITUDES AT VARIOUS TIMES OF THE DAY. THE PILOT BALLOON WIND DATA, TAKEN PERIODICALLY DURING EACH TEST DAY, INDLUDES THE WIND DIRECTION AND WIND SPEED AT VARIOUS ALTITUDES.

METEOROLOGICAL DATA

(MEASURED AT 30 FT. AGL)

HELICOPTER: BELL 206L-1 DATE: 8/26/84

TIME	TEMP. (DEG. F)	R.H. %	WIND DIR. (DEG.)	WIND SPEED AVG. (MPH)	WIND SPEED MAX (MPH)
SIX DEGREE APPROACH AT VY, 57 KTS.					
9:00	66	65	350	3	-
9:15	68	66	350	3	5
9:30	70	61	350	4	-
NORMAL APPROACH AND TAKEOFF75 KTS.					
9:30	70	61	350	4	-
9:45	70	61	350	5	-
10:00	72	62	350	5	-
10:15	74	57	350	4	-
10:30	74	57	350	4	-
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)					
11:30	76	54	200	4	-
11:45	78	50	200	3	-
12:00	78	47	200	6	-
12:15	78	43	200	5	-
12:30	78	43	200	3	-
500 AND 1000 FT. LEVEL FLYOVER AT 100 KTS.					
12:45	80	41	--	3	-
1:00	80	41	270	6	10
1:15	80	41	330	3	6

METEOROLOGICAL DATA

HELICOPTER: BELL 206L-1

DATE: 08/26/84

TEMPERATURE AND RELATIVE HUMIDITY DATA

(MEASURED AT 4 FT. AGL)

TIME	TEMP.	R.H.
	N	
	O	
	D	
	A	
	T	
	A	

HELICOPTERS OAT GUAGE DATA

TIME	ALTITUDE	TEMP.
8:37	200'	64 F
	400'	66 F
	600'	70 F
	800'	70 F
9:30	200'	68 F
	400'	68 F
	600'	70 F
	800'	70 F
10:25	200'	72 F
	400'	72 F
	600'	72 F
	800'	72 F
11:10	200'	77 F
	400'	75 F
	600'	75 F
	800'	73 F

PILOT BALLOON WIND DATA

BELL 206L-1 08/26/84

FEET (AGL)	WIND DIR. (DEG.)	WIND SPD. (KTS)	WIND DIR. (DEG.)	WIND SPD. (KTS)

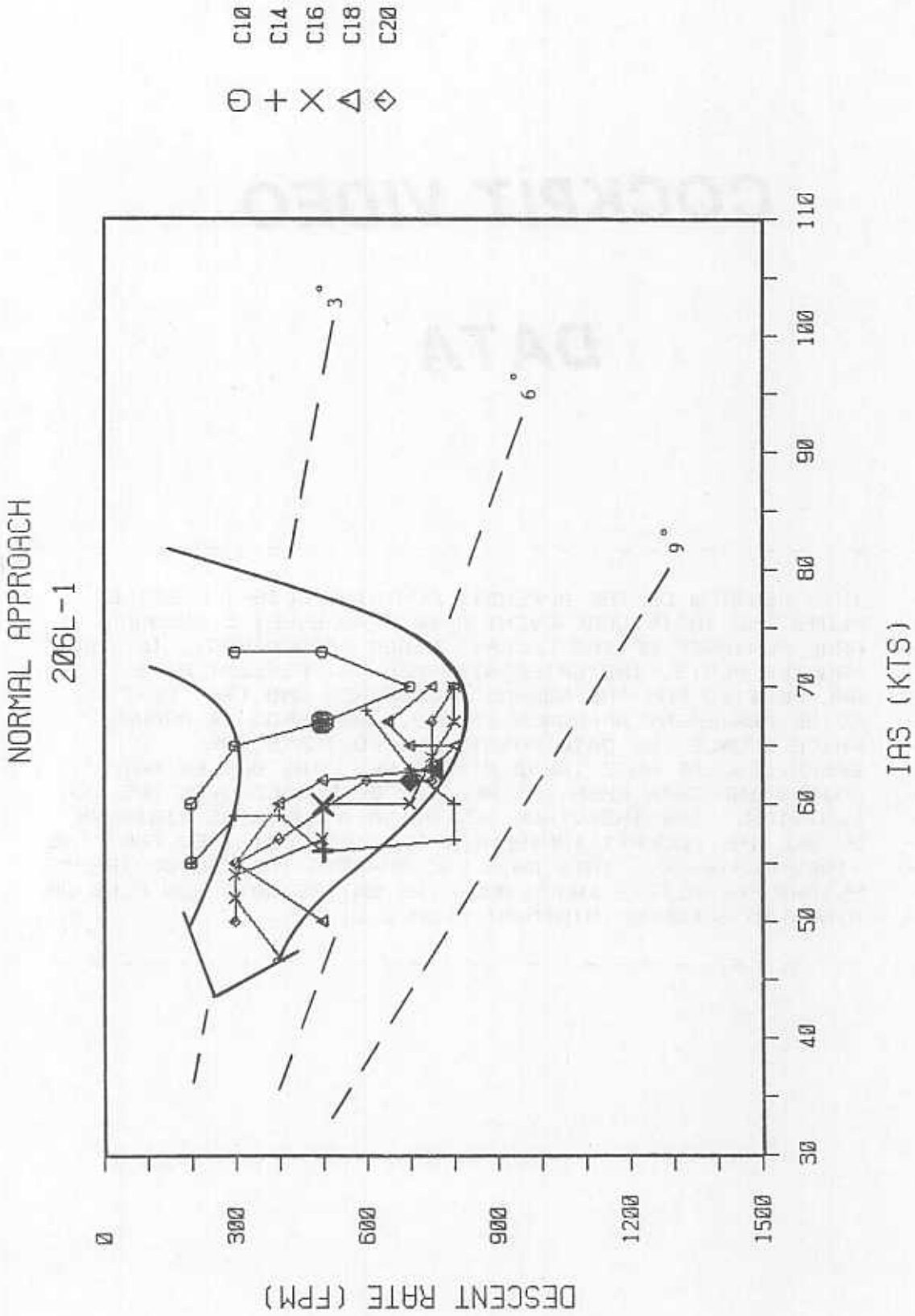
LAUNCH TIME:

---------- NO DATA ----------

COCKPIT VIDEO

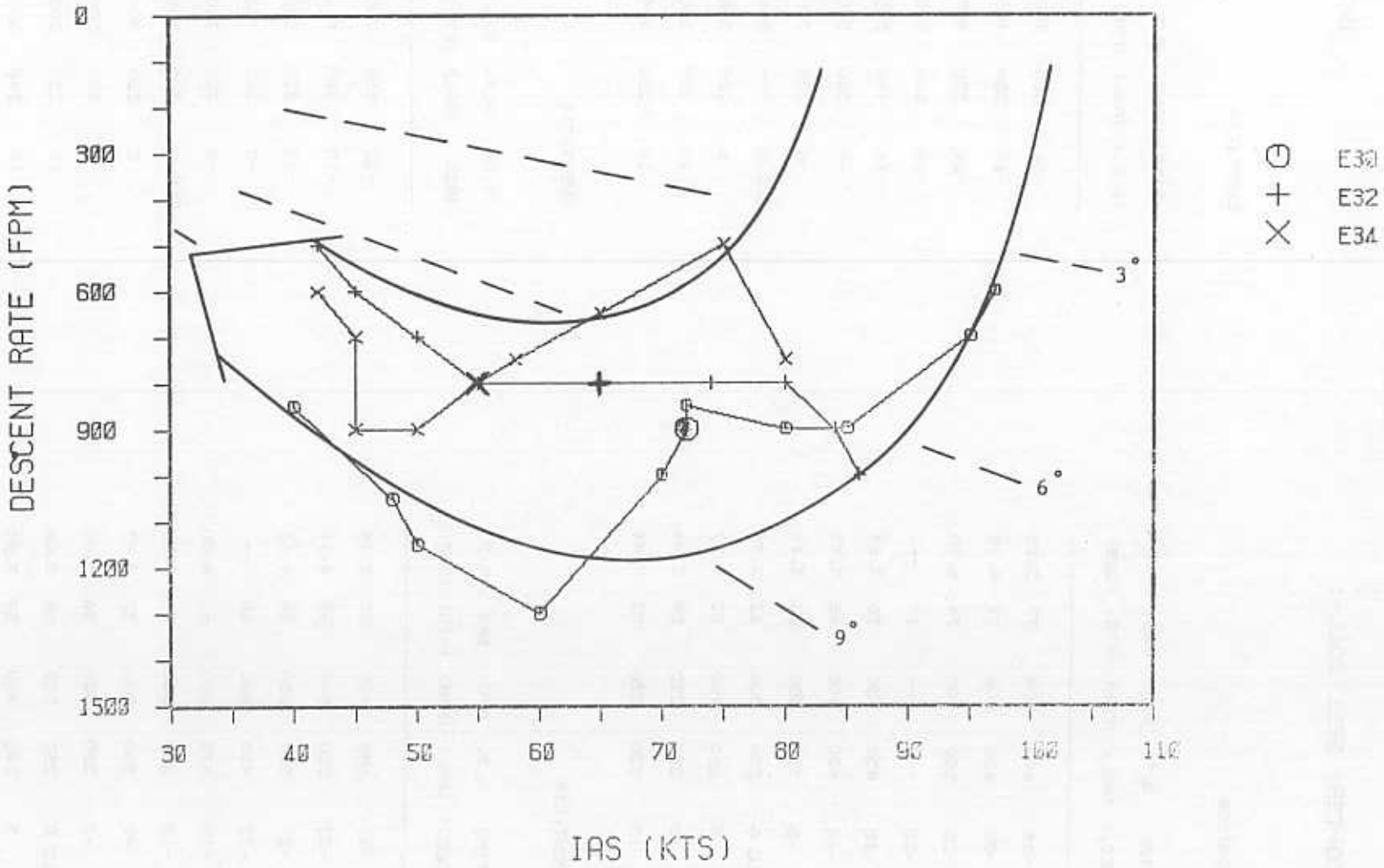
DATA

THIS SECTION OF THE APPENDIX CONTAINS FLIGHT PROFILE PLOTS AND INDIVIDUAL EVENT DATA READ EVERY 5 SECONDS FROM PLAYBACK OF THE COCKPIT VIDEO RECORDINGS. IN THE PROFILE PLOTS, INDICATED AIRSPEED VS. DESCENT RATE ARE PLOTTED FOR THE NORMAL APPROACHES AND THE 'BEST' NOISE ABATEMENT APPROACH EVENTS. AN ARROW IS DRAWN WHICH BOUNDS THE DATA POINTS AND PORTRAYS THE SPEED/DESCENT RATE TREND WITH TIME. THE DARKER DATA POINTS INDICATE WHEN THE HELICOPTER PASSED OVER THE CLC POSITION. THE INDIVIDUAL EVENT DATA CONTAINS LISTINGS OF ALL THE COCKPIT INSTRUMENT READINGS OBTAINED FROM THE VIDEO PLAYBACK. THIS DATA ENCOMPASSES THE HELICOPTERS'S FLIGHT PARAMETERS THROUGHOUT THE ENTIRE DATA RUN PLUS OR MINUS 15 SECONDS (MINIMUM) FROM CLC.


NORMAL APPROACH
206L-1
C10
C14
C16
C18
C20
3°
6°
9°
0
300
600
900
1200
1500
DESCENT RATE (FPM)
30
40
50
60
70
80
90
100
110
IAS (KTS)

NOISE ABATEMENT APPROACH

206L-1



COCKPIT VIDEO DATA

NORMAL APPROACH

HELICOPTER: BELL 206L-1

DATE: 08/26/84

EVENT:C8

TIME (SEC.)	ALT. (AGL)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-35	600	700	77	5.15
-30	620	700	77	5.15
-25	580	900	74	6.90
-20	---	---	72	--
-15	450	450	70	3.64
-10	400	400	66	3.43
-5	350	350	63	3.14
CLC 0	300	300	62	2.74
5	260	260	62	2.37
10	250	250	58	2.44
15	220	220	51	2.44

EVENT:C10

TIME (SEC.)	ALT. (AGL)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-34	580	300	77	2.20
-29	550	400	76	2.98
-24	520	400	75	3.02
-19	500	300	73	2.33
-14	440	500	73	3.88
-9	360	500	73	3.88
-4	330	700	70	5.67
CLC 0	---	500	67	4.23
6	260	300	65	2.61
11	250	200	60	1.89
16	230	200	55	2.06

EVENT:C14

TIME (SEC.)	ALT. (AGL)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-37	600	400	72	3.14
-32	550	500	68	4.16
-27	520	500	68	4.16
-22	460	600	68	--
-17	420	700	63	6.30
-12	360	800	60	7.57
-7	300	800	57	7.97
-2	260	500	56	5.06
CLC 0	250	500	56	5.06
3	240	400	59	3.84
8	230	300	59	2.88
13	220	200	55	2.06

EVENT:C16

TIME (SEC.)	ALT. (AGL)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-23	550	700	72	5.51
-18	480	800	70	6.48
-13	420	800	67	6.77
-8	360	750	64	6.65
-3	320	700	60	6.62
CLC 0	300	500	60	4.72
2	280	500	57	4.97
7	260	500	57	4.97
12	250	300	54	3.14
17	240	300	52	3.27
22	220	400	47	4.82

COCKPIT VIDEO DATA

NORMAL APPROACH

HELICOPTER: BELL 206L-1

DATE: 08/26/84

EVENT:C18

TIME (SEC.)	ALT. (AGL)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-26	580	700	70	5.67
-21	510	750	70	6.07
-16	480	650	67	5.50
-11	420	700	65	--
-6	390	800	65	6.98
CLC 0	300	750	63	6.75
4	280	500	62	4.57
9	260	400	60	3.77
14	250	300	55	3.09
19	220	500	50	5.67

EVENT:C20

TIME (SEC.)	ALT. (AGL)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-23	550	600	73	4.66
-18	500	800	70	6.48
-13	440	750	67	6.35
-8	400	750	63	6.75
-3	340	750	62	6.86
CLC 0	310	700	62	6.40
2	300	600	62	5.48
7	280	400	57	3.97
12	250	300	55	3.09
17	240	300	50	3.40

COCKPIT VIDEO DATA

NOISE ABATEMENT APPROACH

(VAR. R/D AND A/S)

HELICOPTER: BELL 206L-1

DATE: 08/26/84

EVENT:E22

TIME (SEC.)	ALT. (AGL)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-30	650	1000	82	6.92
-25	600	800	74	6.13
-20	540	700	68	5.83
-15	500	650	68	5.42
-10	450	800	65	6.98
-5	420	850	60	8.04
CLC 0	320	900	57	8.97
5	280	900	52	9.84
10	250	500	48	5.90
15	220	400	47	4.82
20	210	400	45	5.04
25	200	300	42	4.04

EVENT:E23

TIME (SEC.)	ALT. (AGL)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-28	700	900	82	6.22
-23	650	800	74	6.13
-18	600	900	70	7.29
-13	540	900	66	7.74
-8	500	750	65	6.54
-3	460	850	58	8.32
CLC 0	380	700	60	6.62
2	380	800	60	7.57
7	340	600	58	5.86
12	300	650	50	7.38
17	250	600	43	7.92
22	220	500	40	7.09

EVENT:E24

TIME (SEC.)	ALT. (AGL)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-25	700	850	75	6.92
-20	600	850	70	6.13
-15	550	900	65	5.83
-10	500	1000	60	5.42
-5	450	900	55	6.98
CLC 0	400	900	55	8.04
5	360	700	55	8.97
10	250	700	54	9.84
15	220	600	52	5.90
20	200	500	45	4.82

EVENT:E25

TIME (SEC.)	ALT. (AGL)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-24	750	900	92	6.22
-19	720	900	92	6.13
-14	640	1000	85	7.29
-9	550	900	78	7.74
-4	460	1000	75	6.54
CLC 0	420	900	68	8.32
6	350	800	60	6.62
11	300	700	55	7.57
16	260	650	50	5.86
21	240	600	48	7.38

COCKPIT VIDEO DATA

NOISE ABATEMENT APPROACH

(VAR. R/D AND A/S)

HELICOPTER: BELL 206L-1

DATE: 08/26/84

EVENT:E26

TIME (SEC.)	ALT. (AGL)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-26	800	650	95	3.87
-21	760	700	90	4.40
-16	680	1000	88	6.44
-11	600	900	84	6.07
-6	540	900	80	6.38
CLC 0	480	900	70	7.29
4	400	900	65	7.86
9	350	800	55	8.26
14	300	700	50	7.95
19	240	750	40	10.67

EVENT:E27

TIME (SEC.)	ALT. (AGL)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-25	700	600	85	4.00
-20	650	600	80	4.25
-15	600	800	80	5.67
-10	540	800	75	6.05
-5	480	900	72	7.09
CLC 0	420	900	65	7.86
5	350	750	60	7.09
10	280	600	55	6.18
15	240	600	50	6.81
20	220	500	46	6.16

EVENT:E28

TIME (SEC.)	ALT. (AGL)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-26	800	650	90	4.09
-21	750	700	88	4.51
-16	700	700	82	4.84
-11	580	900	78	6.54
-6	520	900	75	6.81
CLC 0	440	850	64	7.54
4	400	750	58	7.34
9	350	600	50	6.81
14	320	500	48	5.90
19	260	600	45	7.57
24	240	600	45	7.57

EVENT:E29

TIME (SEC.)	ALT. (AGL)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-20	750	750	90	4.72
-15	650	650	85	4.33
-10	580	900	82	6.22
-5	500	750	78	5.45
CLC 0	420	600	70	4.86
5	400	500	70	4.04
10	360	600	64	5.31
15	300	700	60	6.62
20	260	600	50	6.81

COCKPIT VIDEO DATA

NOISE ABATEMENT APPROACH

(VAR. R/D AND A/S)

HELICOPTER: BELL 206L-1

DATE: 08/26/84

EVENT:E30

TIME (SEC.)	ALT. (AGL)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-27	900	250	100	1.41
-22	880	600	97	3.50
-17	850	700	95	4.17
-12	770	900	85	6.00
-7	700	900	80	6.38
-2	600	850	72	6.69
CLC 0	550	900	72	7.09
3	520	1000	70	8.11
8	440	1300	60	12.35
13	380	1150	50	13.13
18	350	1050	48	12.48
23	240	850	40	12.11

EVENT: E34

TIME (SEC.)	ALT. (AGL)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-24	750	650	84	4.38
-19	700	750	80	5.31
-14	640	500	75	3.77
-9	600	650	65	5.67
-4	540	750	58	7.34
CLC 0	500	800	55	8.26
6	400	900	50	10.24
11	350	900	45	11.39
16	300	700	45	8.84
21	250	600	42	8.11

EVENT:E32

TIME (SEC.)	ALT. (AGL)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-24	700	1000	94	6.03
-19	650	1000	86	6.59
-14	580	900	84	6.07
-9	520	800	80	5.67
-4	480	800	74	6.13
CLC 0	440	800	65	6.98
6	360	800	55	8.26
11	300	700	50	7.95
16	260	600	45	7.57
21	240	500	42	6.75

APPENDIX G

HUGHES 500D

	PAGE NUMBERS
HELICOPTER CHARACTERISTICS	G-521
NOISE LEVEL DATA	
SOUND EXPOSURE LEVEL	
Bar Charts	
Approaches	G-524
Takeoff	G-525
Summary Tables	G-526 - G-527
Individual Event Data	G-528 - G-533
A-WEIGHTED SOUND LEVEL	
Bar Charts	
Approaches	G-536
Takeoff	G-537
Summary Tables	G-538 - G-539
Individual Event Data	G-540 - G-545
RADAR TRACKING DATA	
Position Data	G-548 - G-561
Tracking Plots	G-562 - G-567
METEOROLOGICAL DATA	
10-meter Tower Data	G-570
4 ft. Data and Aircraft OAT Data	G-571
Pilot Balloon Wind Data	G-572
COCKPIT VIDEO DATA	
Normal Approach Plot	G-574
Individual Event Data	G-575 - G-578

N1E0K

HELICOPTER CHARACTERISTICS

HELICOPTER MANUFACTURER :	HUGHES
HELICOPTER MODEL :	500D
TEST HELICOPTER N-NUMBER :	N160K
MAX INTERNAL GROSS WEIGHT :	3000 LBS
NUMBER OF ENGINES :	ONE
UNINSTALLED TAKEOFF POWER :	420 SHP
UNINSTALLED MAX CONTINUOUS PWR. :	370 SHP
NEVER EXCEED SPEED (VNE) :	152 KTS.
MAX SPEED IN LEVEL FLIGHT	
WITH MAX CONTINUOUS POWER :	139 KTS.
SPEED FOR BEST RATE OF CLIMB (VY) :	65 KTS.
CRUISE SPEED FOR BEST RANGE (VCR) :	118 KTS.
BEST RATE OF CLIMB AT	
TAKEOFF POWER (BRC) :	1900 FPM
"TOP OF GREEN ARC" ROTOR SPEED :	523 RPM 109%

MAIN AND TAIL ROTOR SPECIFICATIONS

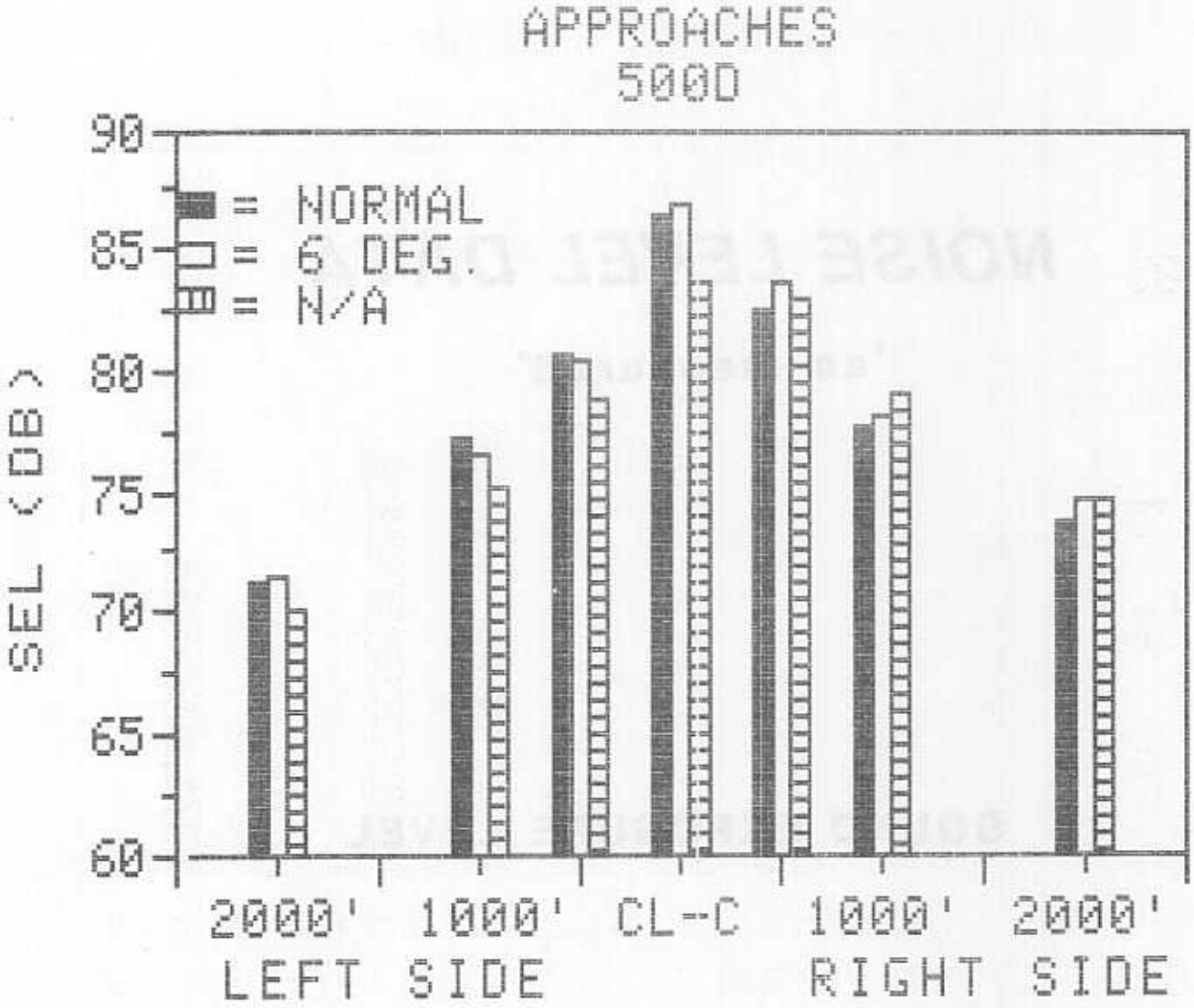
	MAIN	TAIL
DIAMETER (FT.) :	26.41	4.58
NO. OF BLADES :	5	4
TIPSPEED (FPS) @103% :	680	530
TIP SHAPE :	RECTANGULAR	RECTANGULAR

NOISE LEVEL DATA

'as-measured'

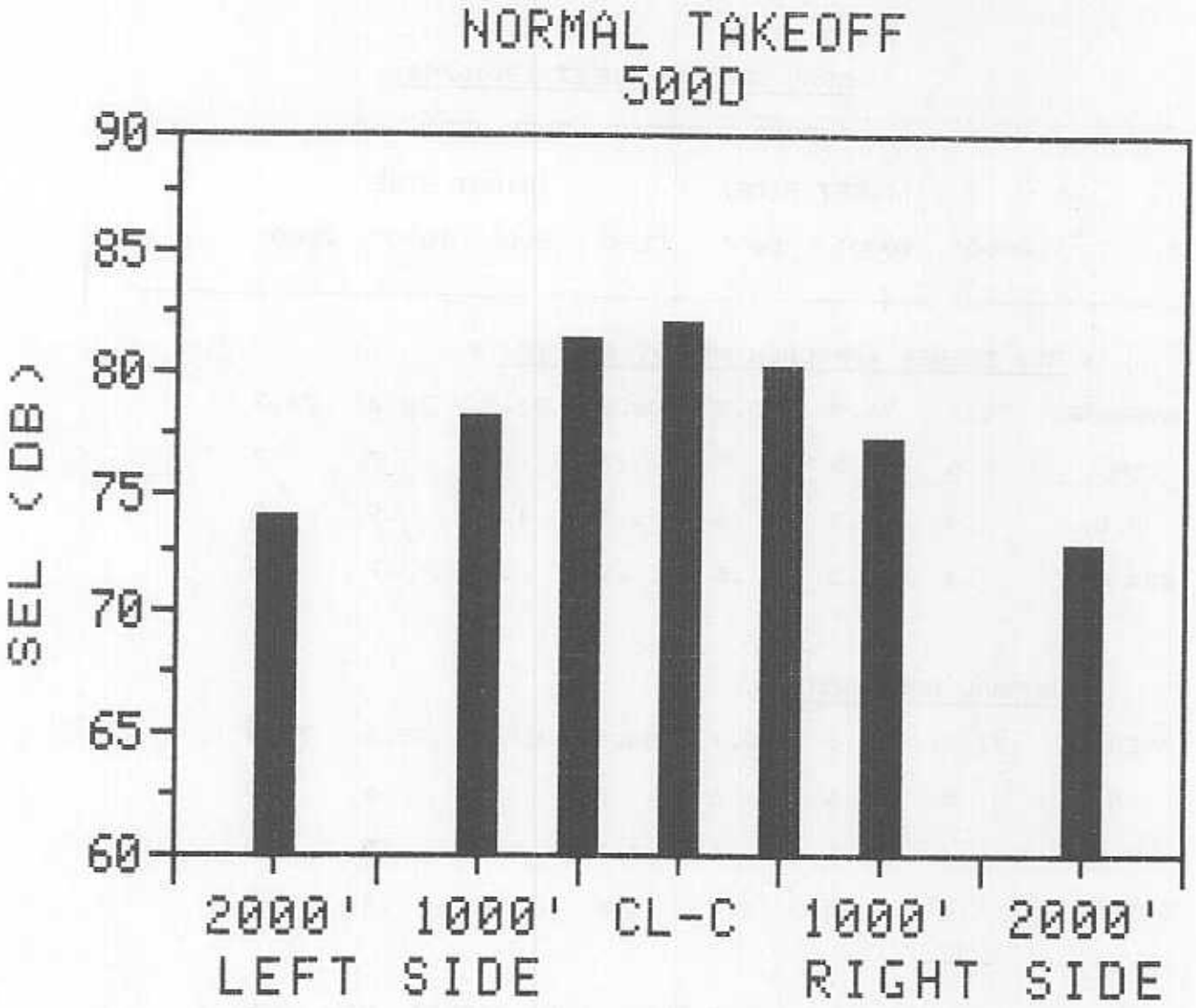
SOUND EXPOSURE LEVEL

THIS SECTION OF THE APPENDIX CONTAINS THE 'AS-MEASURED' SOUND EXPOSURE LEVELS (SEL) FOR ALL FLIGHT EVENTS. THESE DATA ARE PRESENTED IN THE FORM OF BAR CHARTS, SUMMARY TABLES AND INDIVIDUAL EVENT DATA. THE BAR CHARTS SHOW THE FALL OFF IN NOISE LEVEL VERSUS SIDELINE DISTANCE, AND PROVIDE A QUICK LOOK COMPARISON OF THE NOISE LEVELS. PERTINENT FLIGHT PARAMETER INFORMATION READ FROM THE COCKPIT INSTRUMENT PANEL VIDEO RECORDINGS IS ALSO SHOWN BELOW EACH BAR CHART. THE SUMMARY TABLES PRESENT THE AVERAGE NOISE LEVEL, NUMBER OF SAMPLES, STANDARD DEVIATION AND THE 90 PERCENT CONFIDENCE INTERVAL FOR EACH FLIGHT CONDITION. INDIVIDUAL EVENT DATA FOR EACH CONDITION IS THEN GIVEN.



OPERATION	AVG. ALT. OVER CL-C (FT. AGL)	INDICATED AIRSPEED (KTS.)	GLIDESLOPE RANGE (DEG.)
NORMAL APPROACH	360	80-60	2.5-4.3
SIX DEG. APPROACH	430	65	6.0
NOISE ABATEMENT APP. 9 TARGET, VAR. A/S (EVENTS D64-D67)	520	70-59	7.2-8.2

NOTE: ALTITUDE, AIRSPEED AND VERTICAL SPEED DATA READ FROM VIDEO TAPES OF THE INSTRUMENT PANEL. THE GLIDESLOPE RANGE WAS CALCULATED WITHIN ±15 SEC OF THE CL-C MICROPHONE POSITION.



OPERATION	AVG. ALT. OVER CLC (FT. AGL)	INDICATED AIRSPEED (KTS.)
NORMAL TAKEOFF	400	86

NOTE: ALTIMETER AND INDICATED AIRSPEED READINGS MADE WHEN THE HELICOPTER PASSED OVER CLC MICROPHONE POSITION

SOOD SUMMARY SHEET (9/10/84)

SOUND EXPOSURE LEVEL (DB)

	(LEFT SIDE)				(RIGHT SIDE		
	2000'	1000'	500'	CL-C	500'	1000'	2000'
*** SIX DEGREE APPROACH AT VY, 65 KTS. ***							
AVERAGE	71.4	76.5	80.5	86.8	83.7	78.2	74.7
N	6	5	7	7	7	7	7
S.D.	.4	.3	.6	1.2	1.2	.9	.8
90% CI	.3	.2	.5	.9	.9	.7	.6
*** NORMAL APPROACH ***							
AVERAGE	71.3	77.1	80.7	86.4	82.6	77.6	73.8
N	5	6	6	6	6	6	6
S.D	.3	.6	.6	1.7	1.0	.5	.8
90% CI	.3	.5	.5	1.4	.8	.4	.7
*** NOISE ABATEMENT APPROACH (6 DEG. TARGET, VAR. A/S) ***							
AVERAGE	71.1	76.0	79.3	83.6	79.2	74.7	85.2
N	6	6	5	6	6	6	6
S.D	1.0	.7	.7	.7	.7	.6	1.1
90% CI	.8	.6	.6	.6	.6	.5	.9
*** NOISE ABATEMENT APPROACH (9 DEG. TARGET, VAR. A/S) ***							
AVERAGE	70.0	75.1	78.8	83.6	83.0	79.1	74.6
N	4	4	4	4	4	4	4
S.D	.5	.7	.1	.8	.5	.5	.4
90% CI	.6	.8	.1	1.0	.6	.6	.5

500D SUMMARY SHEET (9/10/84)

SOUND EXPOSURE LEVEL (DB)

	(LEFT SIDE)				(RIGHT SIDE		
	2000'	1000'	500'	CL-C	500'	1000'	2000'
* NOISE ABATEMENT APPROACH (12 DEG. TARGET, VAR. A/S) *							
AVERAGE	70.7	75.1	78.7	83.0	82.5	79.3	75.3
N	5	5	5	5	5	5	5
S.D.	1.1	1.0	.1	.5	.5	.5	.5
90% CI	1.0	.9	.1	.5	.5	.5	.5
* NORMAL TAKEOFF *							
AVERAGE	74.0	78.2	81.3	82.1	80.3	77.3	72.9
N	6	6	6	6	6	6	6
S.D	1.1	.4	.6	.6	.4	.5	1.1
90% CI	.9	.3	.5	.5	.3	.4	.9

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: HUGHES 500D TEST DATE: 9/10/84

OPERATION : 6 DEGREE APPROACH AT VY, 65 KTS.)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
A39	71.60	--	81.10	88.20	82.90	77.50	73.90
A40	71.40	76.10	80.50	87.10	83.70	78.50	73.90
A41	--	--	80.80	87.40	83.90	78.40	75.10
A42	71.30	76.80	81.50	87.90	83.80	78.20	75.80
A43	72.00	76.40	79.80	85.70	85.40	80.00	75.40
A44	70.80	76.50	80.00	85.70	84.60	77.90	74.20
A45	71.10	76.50	80.10	85.30	81.50	77.10	74.30
AVERAGE	71.37	76.46	80.54	86.76	83.69	78.23	74.66
STD. DEV.	0.41	0.25	0.62	1.17	1.24	0.93	0.77
90% C.I.	0.34	0.24	0.46	0.86	0.91	0.68	0.56

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: HUGHES 500D

TEST DATE: 9/10/84

OPERATION : NORMAL APPROACH

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
B46	71.50	76.50	79.80	83.00	80.80	77.00	73.60
B48	71.70	76.80	81.10	87.40	82.60	77.40	73.90
B50	71.00	76.90	80.20	87.40	82.40	77.70	72.90
B52	71.20	77.20	81.00	86.80	83.70	77.80	73.60
B54	--	78.20	81.20	86.40	83.40	78.40	75.30
B56	71.10	76.80	80.70	87.40	82.60	77.50	73.50
AVERAGE	71.30	77.07	80.67	86.40	82.58	77.63	73.80
STD. DEV.	0.29	0.60	0.56	1.72	1.01	0.47	0.80
90% C.I.	0.28	0.49	0.46	1.41	0.84	0.39	0.66

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: HUGHES 500D

TEST DATE: 9/10/84

OPERATION : NORMAL TAKEOFF

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' WEST	1000' WEST	500' WEST	CL-C	500' EAST	1000' EAST	2000' EAST
C47	73.60	77.50	80.30	81.40	79.90	78.10	72.50
C49	74.50	78.40	81.50	82.20	80.00	76.90	73.00
C51	73.90	78.00	81.20	81.60	80.40	76.80	72.10
C53	74.30	78.10	81.90	82.20	80.90	77.10	74.00
C55	75.50	78.20	81.60	82.90	80.50	77.70	74.30
C57	72.30	78.70	81.30	82.50	80.30	76.90	71.60
AVERAGE	74.02	78.15	81.30	82.13	80.33	77.25	72.92
STD. DEV.	1.06	0.40	0.55	0.56	0.36	0.53	1.06
90% C.I.	0.88	0.33	0.45	0.46	0.30	0.44	0.88

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: HUGHES 500D

TEST DATE: 9/10/84

OPERATION : NOISE ABATEMENT APPROACH (6 DEG. TARGET, VAR. A/S)

	(LEFT SIDE)			(RIGHT SIDE)			
EVENT NO.	2000' EAST	1000' EAST	500' EAST	500' WEST	1000' WEST	2000' WEST	CL-C
D58	71.50	76.30	79.40	83.90	78.40	74.20	86.00
D59	70.80	75.20	78.30	83.90	80.00	75.30	83.50
D60	70.20	75.60	--	83.10	78.40	73.80	85.20
D61	70.90	76.20	80.00	84.20	79.60	74.90	84.60
D62	70.10	75.60	79.20	82.30	78.90	74.50	86.40
D63	72.80	77.10	79.80	84.10	79.60	75.20	85.70
AVERAGE	71.05	76.00	79.34	83.58	79.15	74.65	85.23
STD. DEV.	1.00	0.68	0.66	0.74	0.68	0.59	1.06
90% C.I.	0.82	0.56	0.63	0.61	0.56	0.49	0.87

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: HUGHES 500D

TEST DATE: 9/10/84

OPERATION : NOISE ABATEMENT APPROACH (9 DEG. TARGET, VAR. A/S)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
D64	69.80	74.70	78.70	82.50	83.30	79.50	74.40
D65	70.10	74.80	78.80	83.60	83.40	79.60	75.00
D66	69.50	74.60	78.80	84.10	82.40	78.60	74.10
D67	70.60	76.10	78.70	84.30	82.70	78.70	74.80
AVERAGE	70.00	75.05	78.75	83.63	82.95	79.10	74.58
STD. DEV.	0.47	0.70	0.06	0.81	0.48	0.52	0.40
90% C.I.	0.55	0.83	0.07	0.95	0.56	0.61	0.47

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: HUGHES 500D

TEST DATE: 9/10/84

OPERATION : NOISE ABATEMENT APPROACH (12 DEG. TARGET, VAR. A/S)

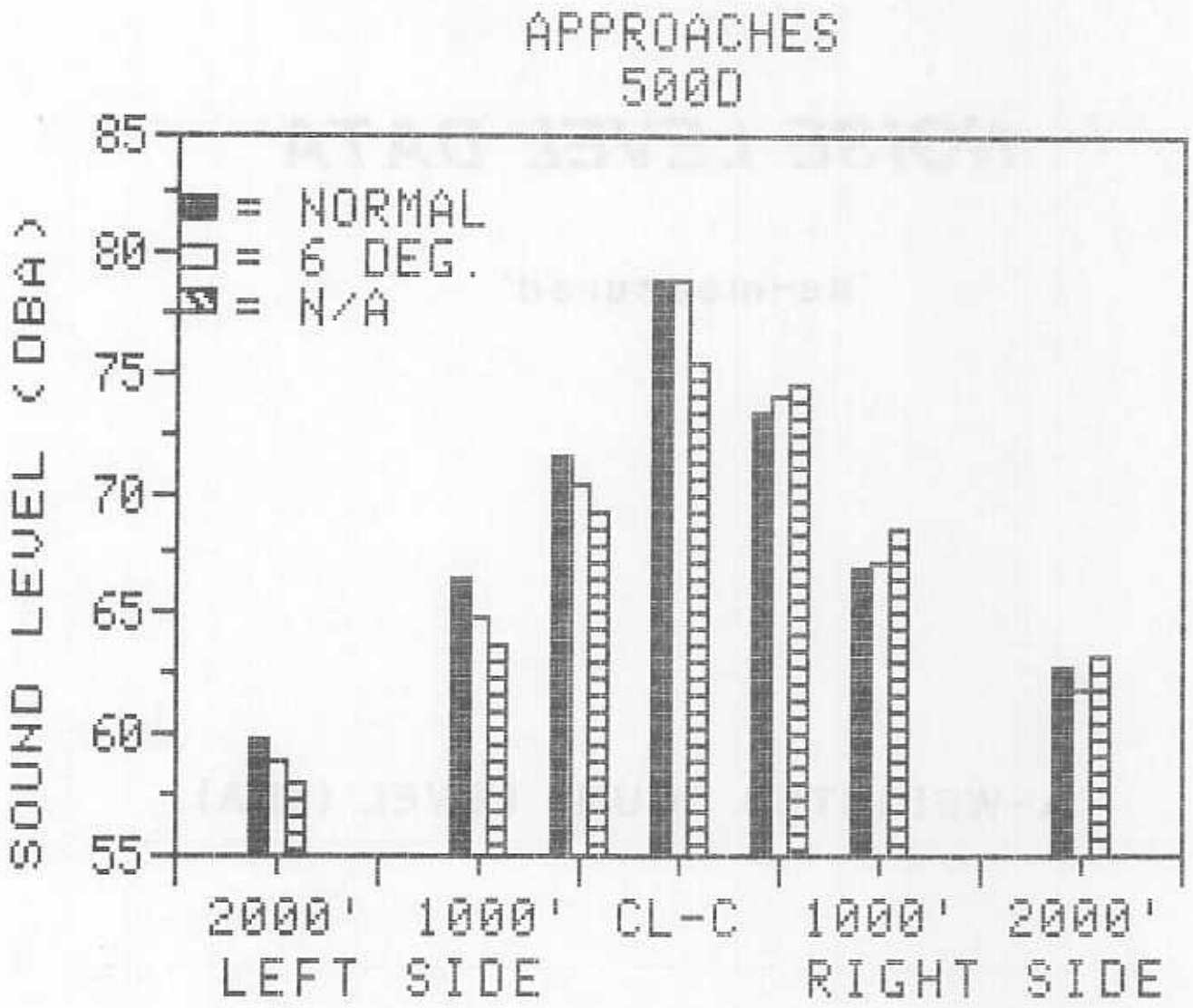
	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
D68	71.50	76.80	78.90	83.50	81.60	78.90	74.70
D69	72.10	75.10	78.60	82.40	82.50	79.40	75.90
D70	70.00	74.60	78.60	83.50	82.70	79.90	74.90
D71	70.30	74.40	78.60	82.50	82.90	79.60	75.70
D72	69.50	74.70	78.70	83.20	82.90	78.70	75.30
AVERAGE	70.68	75.12	78.68	83.02	82.52	79.30	75.30
STD. DEV.	1.08	0.97	0.13	0.54	0.54	0.49	0.51
90% C.I.	1.03	0.93	0.12	0.51	0.51	0.47	0.49

NOISE LEVEL DATA

'as-measured'

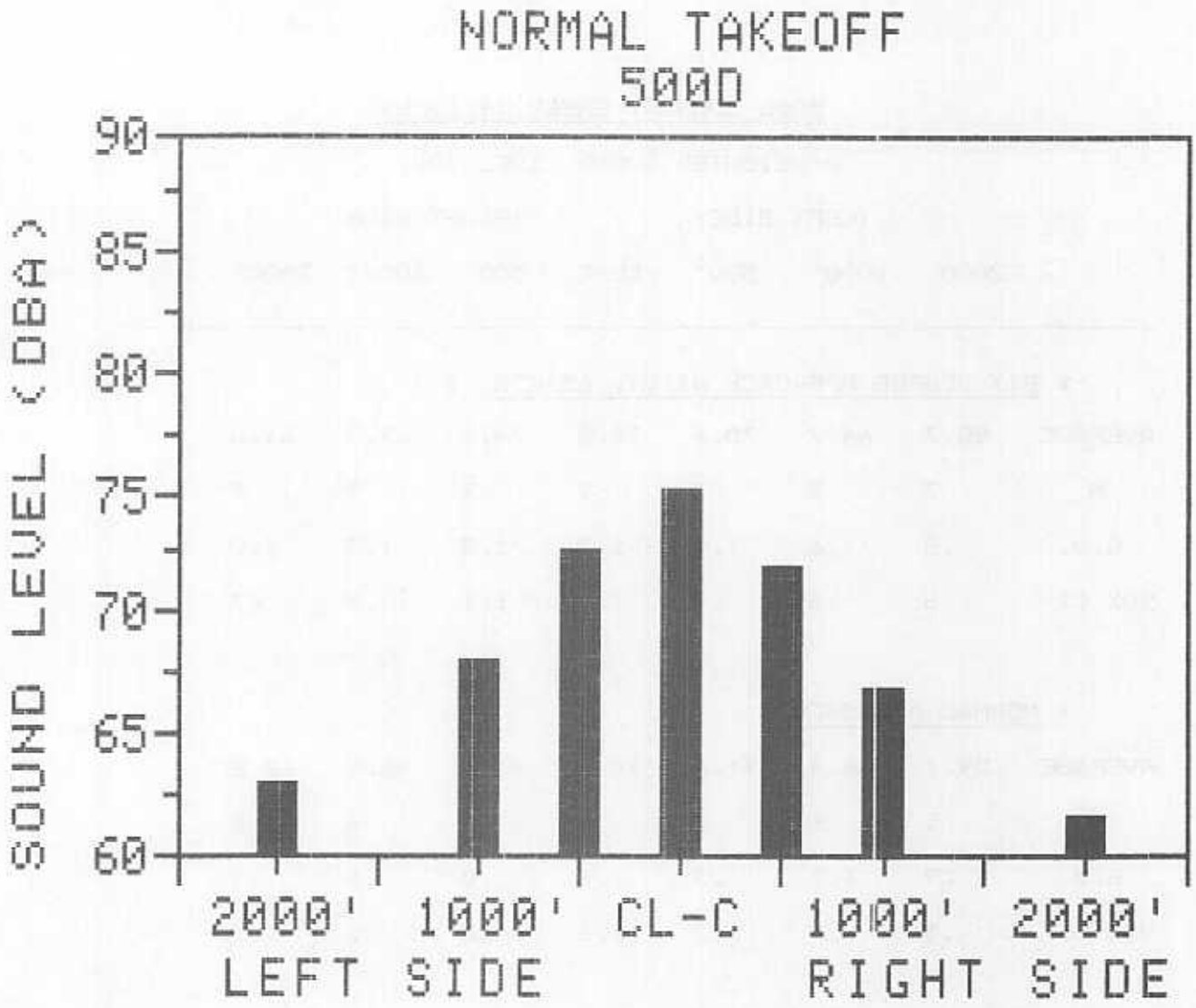
A-WEIGHTED SOUND LEVEL (dBA)

THIS SECTION OF THE APPENDIX CONTAINS THE 'AS-MEASURED' A-WEIGHTED SOUND LEVEL (dBA) FOR ALL FLIGHT EVENTS. THESE DATA ARE PRESENTED IN THE FORM OF BAR CHARTS, SUMMARY TABLES AND INDIVIDUAL EVENT DATA. THE BAR CHARTS SHOW THE FALL OFF IN NOISE LEVEL VERSUS SIDELINE DISTANCE, AND PROVIDE A QUICK LOOK COMPARISON OF THE NOISE LEVELS. PERTINENT FLIGHT PARAMETER INFORMATION READ FROM THE COCKPIT INSTRUMENT PANEL VIDEO RECORDINGS IS ALSO SHOWN BELOW EACH BAR CHART. THE SUMMARY TABLES PRESENT THE AVERAGE NOISE LEVEL, NUMBER OF SAMPLES, STANDARD DEVIATION AND THE 90 PERCENT CONFIDENCE INTERVAL FOR EACH FLIGHT CONDITION. INDIVIDUAL EVENT DATA FOR EACH CONDITION IS THEN GIVEN.



OPERATION	AVG. ALT. OVER CL-C (FT. AGL)	INDICATED AIRSPEED (KTS.)	GLIDESLOPE RANGE (DEG.)
NORMAL APPROACH	360	80-60	2.5-4.3
SIX DEG. APPROACH	430	65	6.0
NOISE ABATEMENT APP. 9 TARGET, VAR. A/S (EVENTS D64-D67)	520	70-59	7.2-8.2

NOTE: ALTITUDE, AIRSPEED AND VERTICAL SPEED DATA READ FROM VIDEO TAPES OF THE INSTRUMENT PANEL. THE GLIDESLOPE RANGE WAS CALCULATED WITHIN ±15 SEC OF THE CL-C MICROPHONE POSITION.



OPERATION	AVG. ALT. OVER CLC (FT. AGL)	INDICATED AIRSPEED (KTS.)
NORMAL TAKEOFF	400	86

NOTE: ALTIMETER AND INDICATED AIRSPEED READINGS MADE WHEN THE HELICOPTER PASSED OVER CLC MICROPHONE POSITION

500D SUMMARY SHEET (9/10/84)

A-WEIGHTED SOUND LEVEL (DB)

	(LEFT SIDE)				(RIGHT SIDE		
	2000'	1000'	500'	CL-C	500'	1000'	2000'
* SIX DEGREE APPROACH AT VY, 65 KTS. *							
AVERAGE	58.7	64.7	70.4	78.8	74.1	67.2	61.8
N	7	5	7	7	7	7	7
S.D.	.8	.6	1.0	1.7	1.5	1.3	1.0
90% CI	.6	.6	.7	1.2	1.1	.9	.7
* NORMAL APPROACH *							
AVERAGE	59.7	66.4	71.6	79.0	73.4	66.9	62.8
N	5	6	6	6	6	6	6
S.D	.9	1.1	.3	1.9	1.0	.6	.9
90% CI	.3	.9	.2	1.6	.8	.5	.7
* NOISE ABATEMENT APPROACH (6 DEG. TARGET, VAR. A/S) *							
AVERAGE	58.5	64.2	69.3	77.1	75.1	68.6	63.6
N	6	6	5	6	6	6	6
S.D	.8	1.0	.9	1.5	.7	1.4	1.7
90% CI	.6	.8	.8	1.2	.6	1.1	1.4
* NOISE ABATEMENT APPROACH (9 DEG. TARGET, VAR. A/S) *							
AVERAGE	58.0	63.6	69.1	75.5	74.4	68.6	63.1
N	4	4	4	4	4	4	4
S.D	.4	1.1	.9	1.1	.3	.6	.4
90% CI	.4	1.3	1.0	1.3	.3	.8	.4

500D SUMMARY SHEET (9/10/84)

A-WEIGHTED SOUND LEVEL (DB)

	(LEFT SIDE)				(RIGHT SIDE		
	2000'	1000'	500'	CL-C	500'	1000'	2000'
* NOISE ABATEMENT APPROACH (12 DEG. TARGET, VAR. A/S) *							
AVERAGE	58.0	63.3	69.0	74.5	73.6	68.8	63.6
N	5	5	5	5	5	4	5
S.D.	1.3	.4	.2	.7	1.1	1.2	.5
90% CI	1.2	.4	.2	.7	1.1	1.4	.4
* NORMAL TAKEOFF *							
AVERAGE	63.3	67.9	72.6	75.1	71.8	66.7	61.5
N	6	6	6	6	6	6	6
S.D	1.2	.7	.6	1.1	.6	.4	1.2
90% CI	1.0	.6	.5	.9	.5	.3	1.0

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: HUGHES 500D TEST DATE: 9/10/84

OPERATION : 6 DEGREE APPROACH AT VY, 65 KTS.

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
A39	58.80	--	71.40	81.20	73.20	66.90	61.00
A40	58.00	64.00	69.70	79.20	73.50	66.90	62.10
A41	59.60	--	70.50	79.70	75.00	68.20	62.90
A42	57.50	65.20	71.90	80.00	73.60	66.40	62.70
A43	58.40	64.60	69.50	76.70	76.30	68.90	62.70
A44	58.80	65.40	69.40	77.10	75.30	68.20	60.70
A45	59.60	64.40	70.50	77.90	71.70	65.20	60.80
AVERAGE	58.67	64.72	70.41	78.83	74.09	67.24	61.84
STD. DEV.	0.78	0.58	0.96	1.65	1.54	1.27	0.98
90% C.I.	0.57	0.55	0.71	1.21	1.13	0.93	0.72

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: HUGHES 500D

TEST DATE: 9/10/84

OPERATION : NORMAL APPROACH

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
B46	59.40	66.40	71.20	75.60	72.20	66.40	62.10
B48	59.50	65.90	72.00	80.20	73.30	66.30	62.30
B50	60.30	66.70	71.40	80.70	74.90	68.00	63.00
B52	58.60	65.50	71.70	79.10	74.30	67.10	62.70
B54	--	68.30	71.70	78.20	72.80	66.50	64.40
B56	60.80	65.50	71.50	80.40	73.00	67.10	62.00
AVERAGE	59.72	66.38	71.58	79.03	73.42	66.90	62.75
STD. DEV.	0.85	1.06	0.28	1.92	1.00	0.64	0.89
90% C.I.	0.28	0.87	0.23	1.59	0.83	0.53	0.74

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: HUGHES 500D

TEST DATE: 9/10/84

OPERATION : NORMAL TAKEOFF

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' WEST	1000' WEST	500' WEST	CL-C	500' EAST	1000' EAST	2000' EAST
C47	62.00	66.90	71.90	73.50	70.80	66.70	60.70
C49	63.80	68.30	73.00	75.50	72.20	67.40	62.20
C51	63.50	67.90	72.50	74.10	71.40	66.20	60.60
C53	64.30	68.80	73.50	75.20	72.50	66.40	63.20
C55	64.00	67.20	72.60	76.60	71.90	66.80	62.20
C57	62.10	68.30	72.20	75.80	72.00	66.60	60.10
AVERAGE	63.28	67.90	72.62	75.12	71.80	66.68	61.50
STD. DEV.	1.17	0.72	0.57	1.14	0.61	0.41	1.21
90% C.I.	0.96	0.60	0.47	0.94	0.50	0.34	1.00

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: HUGHES 500D TEST DATE: 9/10/84

OPERATION : NOISE ABATEMENT APPROACH (6 DEG. TARGET, VAR. A/S)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
D58	58.20	64.70	69.70	77.60	75.80	68.10	63.60
D59	58.50	62.80	67.90	74.50	75.50	69.90	66.80
D60	57.40	64.00	--	77.30	74.40	66.20	61.90
D61	59.80	65.40	70.40	76.60	75.70	69.80	63.80
D62	58.30	63.60	69.40	78.90	74.10	69.20	63.30
D63	58.90	64.90	69.20	77.70	74.90	68.40	62.30
AVERAGE	58.52	64.23	69.32	77.10	75.07	68.60	63.62
STD. DEV.	0.80	0.95	0.91	1.48	0.71	1.38	1.73
90% C.I.	0.63	0.75	0.83	1.17	0.56	1.09	1.37

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: HUGHES 500D

TEST DATE: 9/10/84

OPERATION : NOISE ABATEMENT APPROACH (9 DEG. TARGET, VAR. A/S)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
D64	57.80	62.50	68.40	74.10	74.60	68.90	63.00
D65	58.40	62.70	68.30	75.20	74.50	69.30	63.30
D66	58.20	64.70	69.90	76.60	74.30	68.20	62.60
D67	57.60	64.40	69.80	76.00	74.00	67.90	63.40
AVERAGE	58.00	63.58	69.10	75.48	74.35	68.58	63.08
STD. DEV.	0.37	1.14	0.87	1.08	0.26	0.64	0.36
90% C.I.	0.43	1.33	1.02	1.27	0.31	0.75	0.42

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: HUGHES 500D TEST DATE: 9/10/84

OPERATION : NOISE ABATEMENT APPROACH (12 DEG. TARGET, VAR. A/S)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
D68	60.00	63.30	69.00	74.60	71.70	67.20	62.80
D69	58.10	63.70	68.70	73.80	73.60	69.70	64.00
D70	56.70	62.90	69.00	75.40	73.70	--	63.80
D71	57.80	63.00	69.10	73.70	74.40	69.80	63.70
D72	57.30	63.80	69.10	75.00	74.50	68.40	63.50
AVERAGE	57.98	63.34	68.98	74.50	73.58	68.78	63.56
STD. DEV.	1.25	0.40	0.16	0.74	1.13	1.23	0.46
90% C.I.	1.19	0.38	0.16	0.71	1.07	1.44	0.44

RADAR TRACKING

DATA

THIS SECTION OF THE APPENDIX CONTAINS THE HELICOPTER POSITION DATA AND TRACKING PLOTS DERIVED FROM THE FAA'S PORTABLE TRACKING RADAR SYSTEM. THE POSITION DATA LISTS THE CLOSEST POINT OF APPROACH (CPA), TIME OF CPA, ELEVATION ANGLE, RATE OF CLIMB OR DESCENT, THE CLIMB OR DESCENT ANGLE, AND GROUND SPEED FOR ALL FLIGHT CONDITIONS. TRACKING PLOTS OF THE ACTUAL FLIGHT PROFILE FLOWN ARE PROVIDED FOR EACH FLIGHT CONDITIONS.

HUGHES 500D

POSITION DATA
NOISE MEASUREMENT PROGRAM

CENTERLINE CENTER

DATE:09/10/84

FAA/AEE

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
SIX DEGREE APPROACH AT VY, 65 KTS.							
39	APP	392.4	77.8	12:14:53.3	-884.2	-7.5	65.9
40	APP	411.0	85.3	12:19:17.9	-881.8	-7.3	67.7
41	APP	396.7	84.3	12:23:47.9	-708.1	-5.9	67.8
42	APP	372.2	85.4	12:28:18.8	-631.3	-5.5	65.1
43	APP	389.7	84.5	12:33:15.9	-788.1	-6.8	65.1
44	APP	405.9	79.8	12:36:37.7	-736.2	-6.0	69.5
45	APP	385.8	85.2	12:40:17.1	-477.0	-3.7	73.3
NORMAL APPROACH							
46	APP	340.6	88.1	12:43:25.5	-251.3	-1.7	84.6
48	APP	275.9	87.9	12:47:27.3	-260.4	-1.9	76.3
50	APP	304.2	88.6	12:51:07.5	-450.5	-3.2	78.6
52	APP	353.7	82.2	12:56:11.3	-565.3	-4.2	76.3
54	APP	331.2	88.1	12:59:55.8	-601.3	-4.4	77.6
56	APP	328.0	87.0	13:03:47.4	-593.8	-4.6	73.3
NORMAL TAKEOFF							
47	DEP	392.7	82.9	12:44:57.2	1009.2	6.1	92.8
49	DEP	316.7	86.2	12:48:51.3	546.8	3.3	93.5
51	DEP	344.3	78.3	12:53:49.0	1010.2	6.7	85.1
53	DEP	299.7	81.3	12:57:35.1	1106.9	6.7	92.8
55	DEP	765.7	16.3	13:01:14.9	-6470.3	-16.5	216.0
57		-----	NO DATA	-----			
NOISE ABATEMENT APPROACH (6 DEG. TARGET, VAR. A/S)							
58	APP	423.3	83.0	13:15:35.8	-583.3	-4.5	73.8
59	APP	511.6	76.0	13:18:50.8	-1141.6	-9.2	69.7
60	APP	480.0	88.6	13:22:09.6	-861.7	-6.9	70.7
61	APP	460.6	84.9	13:25:30.5	-695.8	-4.9	80.8
62	APP	362.2	86.3	13:29:01.6	-456.9	-3.7	68.9
63	APP	425.2	78.7	13:36:07.9	-735.5	-6.1	68.2

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

HUGHES 500D

POSITION DATA
NOISE MEASUREMENT PROGRAM

CENTERLINE CENTER

DATE:09/10/84

FAA/AEE

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NOISE ABATEMENT APPROACH (9 DEG. TARGET, VAR. A/S)							
64	APP	487.7	78.1	13:39:00.5	-1132.1	-9.6	66.3
65	APP	478.7	80.2	13:41:48.2	-1078.1	-8.8	68.8
66	APP	416.5	78.8	13:44:34.7	-789.3	-6.1	72.9
67	APP	426.1	84.5	13:47:19.1	-914.3	-7.8	65.6
NOISE ABATEMENT APPROACH (12 DEG. TARGET, VAR. A/S)							
68	APP	534.4	80.8	13:50:49.1	-1110.7	-9.7	64.3
69	APP	628.3	86.5	13:53:44.1	-1270.7	-10.2	69.5
70	APP	461.7	78.9	13:58:48.1	-859.7	-7.2	66.9
71	APP	605.7	81.2	14:01:57.6	-972.9	-7.1	76.9
72	APP	482.1	77.0	14:05:12.3	-1121.6	-9.0	70.2

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

HUGHES 500D

POSITION DATA
NOISE MEASUREMENT PROGRAM

500 FT. EAST

DATE:09/10/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
SIX DEGREE APPROACH AT VY, 65 KTS.							
39	APP	646.4	37.6	12:14:52.9	-976.4	-8.7	63.3
40	APP	663.8	37.6	12:19:18.5	-858.4	-7.1	67.9
41	APP	667.6	36.5	12:23:47.9	-708.0	-5.9	67.8
42	APP	623.9	36.8	12:28:18.7	-648.8	-5.6	65.2
43	APP	659.8	36.2	12:33:15.9	-788.1	-6.8	65.1
44	APP	655.4	37.8	12:36:37.7	-736.2	-6.0	69.5
45	APP	605.1	40.1	12:40:16.9	-495.9	-3.8	73.0
NORMAL APPROACH							
46		-----	NO DATA	-----			
48	APP	574.0	29.1	12:47:26.6	-341.3	-2.5	78.1
50	APP	592.4	31.1	12:51:07.5	-450.4	-3.2	78.6
52	APP	620.9	34.9	12:56:11.2	-556.8	-4.1	76.3
54	APP	601.5	33.6	12:59:55.8	-601.3	-4.4	77.6
56	APP	593.9	33.8	13:03:47.3	-595.5	-4.6	73.3
NORMAL TAKEOFF							
47	DEP	627.7	38.6	12:44:57.2	1008.7	6.1	92.8
49	DEP	588.7	32.8	12:48:51.4	542.4	3.3	93.7
51	DEP	636.2	33.3	12:53:49.5	896.0	5.7	88.3
53	DEP	614.5	30.1	12:57:35.3	1083.1	6.5	93.5
55	DEP	629.0	-1.4	13:01:26.3	2552.0	8.0	178.2
57		-----	NO DATA	-----			
NOISE ABATEMENT APPROACH (6 DEG. TARGET, VAR. A/S)							
58	APP	670.6	39.0	13:15:35.8	-583.1	-4.5	73.8
59	APP	737.3	41.7	13:18:51.5	-1076.7	-8.6	70.3
60	APP	694.1	44.1	13:22:09.5	-868.8	-6.9	70.5
61	APP	673.4	43.2	13:25:30.5	-695.4	-4.9	80.8
62	APP	627.4	35.4	13:29:01.6	-456.8	-3.7	68.9
63	APP	646.8	41.6	13:36:07.1	-823.9	-6.8	67.9

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

HUGHES 500D

POSITION DATA
NOISE MEASUREMENT PROGRAM

500 FT. EAST

DATE:09/10/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NOISE ABATEMENT APPROACH (9 DEG. TARGET, VAR. A/S)							
64	APP	702.5	42.5	13:39:00.7	-1117.7	-9.4	67.0
65	APP	686.0	42.8	13:41:48.6	-981.7	-8.1	68.0
66	APP	636.5	40.0	13:44:34.8	-783.4	-6.0	73.0
67	APP	659.7	40.1	13:47:19.4	-933.7	-7.9	66.6
NOISE ABATEMENT APPROACH (12 DEG. TARGET, VAR. A/S)							
68	APP	694.5	50.8	13:50:48.7	-1091.8	-9.5	64.5
69	APP	804.1	51.5	13:53:44.1	-1270.9	-10.2	69.5
70	APP	666.7	43.0	13:58:48.1	-859.2	-7.2	66.9
71	APP	779.2	51.4	14:01:57.1	-859.0	-6.5	75.0
72	APP	690.4	43.1	14:05:12.3	-1121.6	-9.0	70.2

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

HUGHES 500D

POSITION DATA
NOISE MEASUREMENT PROGRAM

500 FT. WEST

DATE:09/10/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
SIX DEGREE APPROACH AT VY, 65 KTS.							
39	APP	623.2	38.0	12:14:53.3	-884.3	-7.5	65.9
40	APP	609.1	42.1	12:19:18.2	-878.7	-7.3	68.0
41	APP	600.9	40.2	12:23:48.6	-671.3	-5.6	67.1
42	APP	612.5	37.7	12:28:18.5	-690.7	-6.0	65.2
43	APP	604.0	39.7	12:33:16.5	-715.8	-6.3	64.5
44	APP	624.5	39.8	12:36:37.9	-770.6	-6.2	69.6
45	APP	645.1	35.6	12:40:18.4	-486.3	-3.7	75.2
NORMAL APPROACH							
46	APP	594.9	34.9	12:43:25.6	-241.3	-1.6	84.8
48	APP	561.2	29.5	12:47:27.1	-272.3	-2.0	77.5
50	APP	576.0	31.9	12:51:07.3	-474.6	-3.4	78.7
52	APP	603.5	35.5	12:56:11.3	-565.2	-4.2	76.3
54	APP	598.8	34.3	12:59:55.5	-634.2	-4.7	76.7
56	APP	596.0	33.9	13:03:46.9	-577.0	-4.5	73.0
NORMAL TAKEOFF							
47	DEP	592.6	41.4	12:44:56.9	973.6	5.9	92.7
49	DEP	575.3	32.0	12:48:50.3	505.6	3.0	94.3
51	DEP	576.1	35.8	12:53:49.0	1010.4	6.7	85.1
53	DEP	527.8	33.7	12:57:34.8	1122.0	6.8	92.7
55	DEP	917.7	14.0	13:01:14.8	-6596.6	-16.5	220.0
57		-----	NO DATA	-----			
NOISE ABATEMENT APPROACH (6 DEG. TARGET, VAR. A/S)							
58	APP	619.8	42.6	13:15:37.1	-524.8	-4.1	71.9
59	APP	688.3	46.2	13:18:50.8	-1141.6	-9.2	69.7
60	APP	685.9	44.2	13:22:09.9	-844.8	-6.6	72.0
61	APP	686.0	42.1	13:25:30.4	-701.7	-4.9	80.9
62	APP	597.1	36.8	13:29:02.5	-645.7	-5.3	68.2
63	APP	663.5	40.2	13:36:07.4	-811.7	-6.7	67.8

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

HUGHES 500D

POSITION DATA
NOISE MEASUREMENT PROGRAM

500 FT. WEST

DATE:09/10/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NOISE ABATEMENT APPROACH (9 DEG. TARGET, VAR. A/S)							
64	APP	694.3	43.4	13:39:00.5	-1132.0	-9.6	66.3
65	APP	698.0	42.4	13:41:48.3	-1052.9	-8.6	68.8
66	APP	661.6	38.7	13:44:34.5	-814.0	-6.3	72.3
67	APP	652.3	41.3	13:47:18.8	-885.4	-7.5	66.3
NOISE ABATEMENT APPROACH (12 DEG. TARGET, VAR. A/S)							
68	APP	730.0	46.2	13:50:49.6	-1134.5	-9.8	65.0
69	APP	803.4	51.3	13:53:44.1	-1270.9	-10.2	69.5
70	APP	695.3	40.5	13:58:48.2	-846.5	-7.1	66.8
71	APP	771.6	51.2	14:01:58.1	-1106.8	-8.0	77.6
72	APP	695.9	45.0	14:05:11.6	-1146.2	-9.1	70.9

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

HUGHES 500D

POSITION DATA
NOISE MEASUREMENT PROGRAM

1000 FT. EAST

DATE:09/10/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
SIX DEGREE APPROACH AT VY, 65 KTS.							
39	APP	975.4	23.8	12:14:47.8	-787.0	-19.0	22.6
40	APP	1100.2	21.7	12:19:18.5	-858.4	-7.1	67.9
41	APP	1110.8	21.0	12:23:47.9	-708.0	-5.9	67.8
42	APP	1067.6	20.6	12:28:18.7	-648.8	-5.6	65.2
43	APP	1103.3	21.1	12:33:15.7	-808.1	-7.0	64.9
44	APP	1092.9	21.7	12:36:37.7	-736.2	-6.0	69.5
45	APP	1039.4	22.1	12:40:16.9	-495.9	-3.8	73.0
NORMAL APPROACH							
46	APP	1055.7	19.2	12:43:25.0	-330.4	-2.2	85.6
48	APP	1036.7	15.7	12:47:26.6	-341.3	-2.5	78.1
50	APP	1051.2	17.0	12:51:07.0	-512.0	-3.6	79.5
52	APP	1070.3	19.5	12:56:11.2	-556.8	-4.1	76.3
54	APP	1054.5	18.5	12:59:56.4	-521.3	-3.8	76.5
56	APP	1047.5	18.5	13:03:47.3	-595.5	-4.6	73.3
NORMAL TAKEOFF							
47	DEP	1064.8	21.7	12:44:57.2	1008.7	6.1	92.8
49	DEP	1043.5	18.3	12:48:51.9	546.3	3.2	95.1
51	DEP	1087.8	19.1	12:53:49.8	809.3	5.2	88.0
53	DEP	1066.6	13.2	12:57:31.2	895.7	5.2	97.9
55	DEP	594.0	-1.3	13:01:26.3	2552.0	8.0	178.2
57		-----	NO DATA	-----			
NOISE ABATEMENT APPROACH (6 DEG. TARGET, VAR. A/S)							
58	APP	1103.4	23.0	13:15:35.5	-604.7	-4.6	74.0
59	APP	1147.5	25.4	13:18:51.5	-1076.7	-8.6	70.3
60	APP	1110.2	25.9	13:22:09.5	-868.8	-6.9	70.5
61	APP	1091.2	25.4	13:25:29.9	-728.0	-5.1	80.6
62	APP	1075.2	19.9	13:29:01.6	-456.8	-3.7	68.9
63	APP	1074.3	23.7	13:36:07.1	-823.9	-6.8	67.9

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

HUGHES 500D

POSITION DATA
NOISE MEASUREMENT PROGRAM

1000 FT. EAST

DATE:09/10/84

FAA/AEE

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NOISE ABATEMENT APPROACH (9 DEG. TARGET, VAR. A/S)							
64	APP	1116.9	25.2	13:39:00.7	-1117.7	-9.4	67.0
65	APP	1099.1	25.2	13:41:48.6	-981.7	-8.1	68.0
66	APP	1065.8	22.7	13:44:34.8	-783.4	-6.0	73.0
67	APP	1089.2	23.1	13:47:19.4	-933.7	-7.9	66.6
NOISE ABATEMENT APPROACH (12 DEG. TARGET, VAR. A/S)							
68	APP	1082.7	30.3	13:50:48.5	-1061.9	-9.3	64.1
69	APP	1182.5	32.3	13:53:44.1	-1270.9	-10.2	69.5
70	APP	1084.4	24.9	13:58:48.1	-859.2	-7.2	66.9
71	APP	1159.8	31.8	14:01:57.1	-859.0	-6.5	75.0
72	APP	1105.0	25.4	14:05:12.3	-1121.6	-9.0	70.2

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

HUGHES 500D

POSITION DATA
NOISE MEASUREMENT PROGRAM

1000 FT. WEST

DATE:09/10/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
SIX DEGREE APPROACH AT VY, 65 KTS.							
39	APP	1057.3	23.2	12:14:51.9	-282.9	-1.3	120.5
40	APP	1035.4	23.3	12:19:18.2	-878.7	-7.3	68.0
41	APP	1005.2	24.7	12:23:46.2	-778.3	-6.5	67.3
42	APP	1054.3	20.9	12:28:18.5	-690.7	-6.0	65.2
43	APP	1036.8	21.9	12:33:16.5	-715.8	-6.3	64.5
44	APP	1054.8	22.3	12:36:38.0	-786.5	-6.4	69.7
45	APP	1075.7	20.6	12:40:18.5	-497.7	-3.7	75.0
NORMAL APPROACH							
46	APP	1040.5	18.8	12:43:27.2	-341.9	-2.2	86.5
48	APP	1026.5	15.7	12:47:27.1	-272.3	-2.0	77.5
50	APP	1035.1	17.2	12:51:07.3	-474.6	-3.4	78.7
52	APP	1049.3	19.4	12:56:12.0	-645.2	-4.8	75.6
54	APP	1050.7	18.8	12:59:55.5	-634.2	-4.7	76.7
56	APP	1048.2	18.6	13:03:46.9	-577.0	-4.5	73.0
NORMAL TAKEOFF							
47	DEP	1016.1	22.8	12:44:56.9	973.6	5.9	92.7
49	DEP	1018.6	17.5	12:48:50.3	505.6	3.0	94.3
51	DEP	1023.0	20.4	12:53:50.1	733.3	4.7	88.1
53	DEP	982.4	17.5	12:57:34.8	1122.0	6.8	92.7
55	DEP	1252.0	10.3	13:01:14.7	-6687.4	-16.5	223.3
57		-----	NO DATA	-----			
NOISE ABATEMENT APPROACH (6 DEG. TARGET, VAR. A/S)							
58	APP	1024.1	24.3	13:15:37.1	-524.8	-4.1	71.9
59	APP	1089.8	27.2	13:18:50.8	-1141.6	-9.2	69.7
60	APP	1100.9	25.8	13:22:09.9	-844.8	-6.6	72.0
61	APP	1109.4	24.6	13:25:30.4	-701.7	-4.9	80.9
62	APP	1033.2	20.3	13:29:02.5	-645.7	-5.3	68.2
63	APP	1093.7	23.1	13:36:07.4	-811.7	-6.7	67.8

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

HUGHES 500D

POSITION DATA
NOISE MEASUREMENT PROGRAM

1000 FT. WEST

DATE:09/10/84

FAA/AEE

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NOISE ABATEMENT APPROACH (9 DEG. TARGET, VAR. A/S)							
64	APP	1107.1	26.9	13:38:59.5	-1063.3	-8.8	67.6
65	APP	1116.2	24.6	13:41:48.8	-951.9	-7.9	68.0
66	APP	1091.0	21.3	13:44:36.3	-645.5	-5.2	70.0
67	APP	1080.5	23.6	13:47:18.8	-885.4	-7.5	66.3
NOISE ABATEMENT APPROACH (12 DEG. TARGET, VAR. A/S)							
68	APP	1130.4	27.9	13:50:49.6	-1134.5	-9.8	65.0
69	APP	1182.5	32.1	13:53:44.4	-1223.2	-9.8	70.0
70	APP	1120.1	23.8	13:58:48.8	-775.1	-6.5	67.1
71	APP	1142.8	31.9	14:01:58.1	-1106.8	-8.0	77.6
72	APP	1107.9	26.5	14:05:11.6	-1146.2	-9.1	70.9

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

HUGHES 500D

POSITION DATA
NOISE MEASUREMENT PROGRAM

2000 FT. EAST

DATE:09/10/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
SIX DEGREE APPROACH AT VY, 65 KTS.							
39	APP	1782.7	12.9	12:14:47.8	-787.0	-19.0	22.6
40	APP	2061.5	11.5	12:19:18.5	-858.4	-7.1	67.9
41	APP	2076.1	11.2	12:23:47.9	-708.0	-5.9	67.8
42	APP	2034.8	10.7	12:28:18.7	-648.8	-5.6	65.2
43	APP	2068.5	11.2	12:33:15.7	-808.1	-7.0	64.9
44	APP	2055.2	11.4	12:36:37.7	-736.2	-6.0	69.5
45	APP	2002.1	11.4	12:40:16.9	-495.9	-3.8	73.0
NORMAL APPROACH							
46	APP	2026.9	10.0	12:43:25.0	-330.4	-2.2	85.6
48	APP	2016.2	8.1	12:47:26.6	-341.3	-2.5	78.1
50	APP	2028.0	8.8	12:51:07.0	-512.0	-3.6	79.5
52	APP	2040.6	10.4	12:56:10.5	-501.3	-3.7	75.5
54	APP	2027.0	9.6	12:59:56.4	-521.3	-3.8	76.5
56	APP	2021.5	9.6	13:03:47.3	-595.5	-4.6	73.3
NORMAL TAKEOFF							
47	DEP	2028.0	11.3	12:44:57.2	1008.7	6.1	92.8
49	DEP	2017.0	9.4	12:48:51.9	546.3	3.2	95.1
51	DEP	2035.8	7.4	12:53:45.6	994.7	6.3	89.4
53	DEP	1972.3	7.2	12:57:31.2	895.7	5.2	97.9
55	DEP	1329.3	-0.4	13:01:26.3	2552.0	8.0	178.2
57		-----	NO DATA	-----			
NOISE ABATEMENT APPROACH (6 DEG. TARGET, VAR. A/S)							
58	APP	2061.8	12.2	13:15:35.5	-604.7	-4.6	74.0
59	APP	2088.6	13.7	13:18:51.5	-1076.7	-8.6	70.3
60	APP	2057.5	13.7	13:22:09.5	-868.8	-6.9	70.5
61	APP	2039.8	13.4	13:25:29.7	-744.7	-5.2	80.6
62	APP	2044.0	10.6	13:29:00.7	-384.2	-3.1	70.5
63	APP	2031.0	12.4	13:36:07.1	-823.9	-6.8	67.9

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

HUGHES 500D

POSITION DATA
NOISE MEASUREMENT PROGRAM

2000 FT. EAST

DATE:09/10/84

FAA/AEE

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NOISE ABATEMENT APPROACH (9 DEG. TARGET, VAR. A/S)							
64	APP	2061.1	14.2	13:38:59.7	-1072.0	-8.9	67.4
65	APP	2045.1	13.3	13:41:48.6	-981.7	-8.1	68.0
66	APP	2024.2	11.8	13:44:34.8	-783.4	-6.0	73.0
67	APP	2045.9	11.6	13:47:20.6	-863.4	-7.4	65.4
NOISE ABATEMENT APPROACH (12 DEG. TARGET, VAR. A/S)							
68	APP	2011.5	15.8	13:50:48.5	-1061.9	-9.3	64.1
69	APP	2095.2	16.8	13:53:46.0	-1109.2	-8.9	69.7
70	APP	2032.7	13.7	13:58:47.5	-1005.5	-8.4	67.6
71	APP	2078.6	17.2	14:01:57.1	-859.0	-6.5	75.0
72	APP	2051.6	13.5	14:05:12.3	-1121.6	-9.0	70.2

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

HUGHES 500D

POSITION DATA
NOISE MEASUREMENT PROGRAM

2000 FT. WEST

DATE:09/10/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
SIX DEGREE APPROACH AT VY, 65 KTS.							
39	APP	2013.0	11.6	12:14:51.9	-282.9	-1.3	120.5
40	APP	1990.3	11.5	12:19:18.2	-878.7	-7.3	68.0
41	APP	1946.0	12.1	12:23:46.2	-778.3	-6.5	67.3
42	APP	2005.0	10.0	12:28:21.7	-434.4	-3.7	65.9
43	APP	1995.7	10.8	12:33:16.5	-715.8	-6.3	64.5
44	APP	2011.0	11.1	12:36:38.0	-786.5	-6.4	69.7
45	APP	2029.8	10.4	12:40:18.5	-497.7	-3.7	75.0
NORMAL APPROACH							
46	APP	1996.9	9.3	12:43:27.2	-341.9	-2.2	86.5
48	APP	2005.7	7.6	12:47:27.1	-272.3	-2.0	77.5
50	APP	2010.2	8.4	12:51:07.3	-474.6	-3.4	78.7
52	APP	2014.1	9.6	12:56:12.0	-645.2	-4.8	75.6
54	APP	2021.0	9.3	12:59:55.5	-634.2	-4.7	76.7
56	APP	2013.4	8.3	13:03:50.6	-379.6	-2.9	74.1
NORMAL TAKEOFF							
47	DEP	1970.3	11.2	12:44:56.9	973.6	5.9	92.7
49	DEP	1979.1	8.4	12:48:49.4	417.4	2.5	95.8
51	DEP	1986.1	10.0	12:53:50.1	733.3	4.7	88.1
53	DEP	1956.8	8.3	12:57:34.8	1122.0	6.8	92.7
55	DEP	2121.0	5.7	13:01:14.7	-6687.4	-16.5	223.3
57		-----	NO DATA	-----			
NOISE ABATEMENT APPROACH (6 DEG. TARGET, VAR. A/S)							
58	APP	1965.9	12.0	13:15:37.1	-524.8	-4.1	71.9
59	APP	2024.5	13.9	13:18:51.0	-1112.2	-8.9	70.2
60	APP	2043.4	13.4	13:22:09.2	-896.2	-7.1	70.6
61	APP	2045.1	12.1	13:25:32.4	-662.0	-4.9	76.0
62	APP	1994.6	10.0	13:29:02.5	-645.7	-5.3	68.2
63	APP	2048.1	11.8	13:36:07.4	-811.7	-6.7	67.8

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

HUGHES 500D

POSITION DATA
NOISE MEASUREMENT PROGRAM

2000 FT. WEST

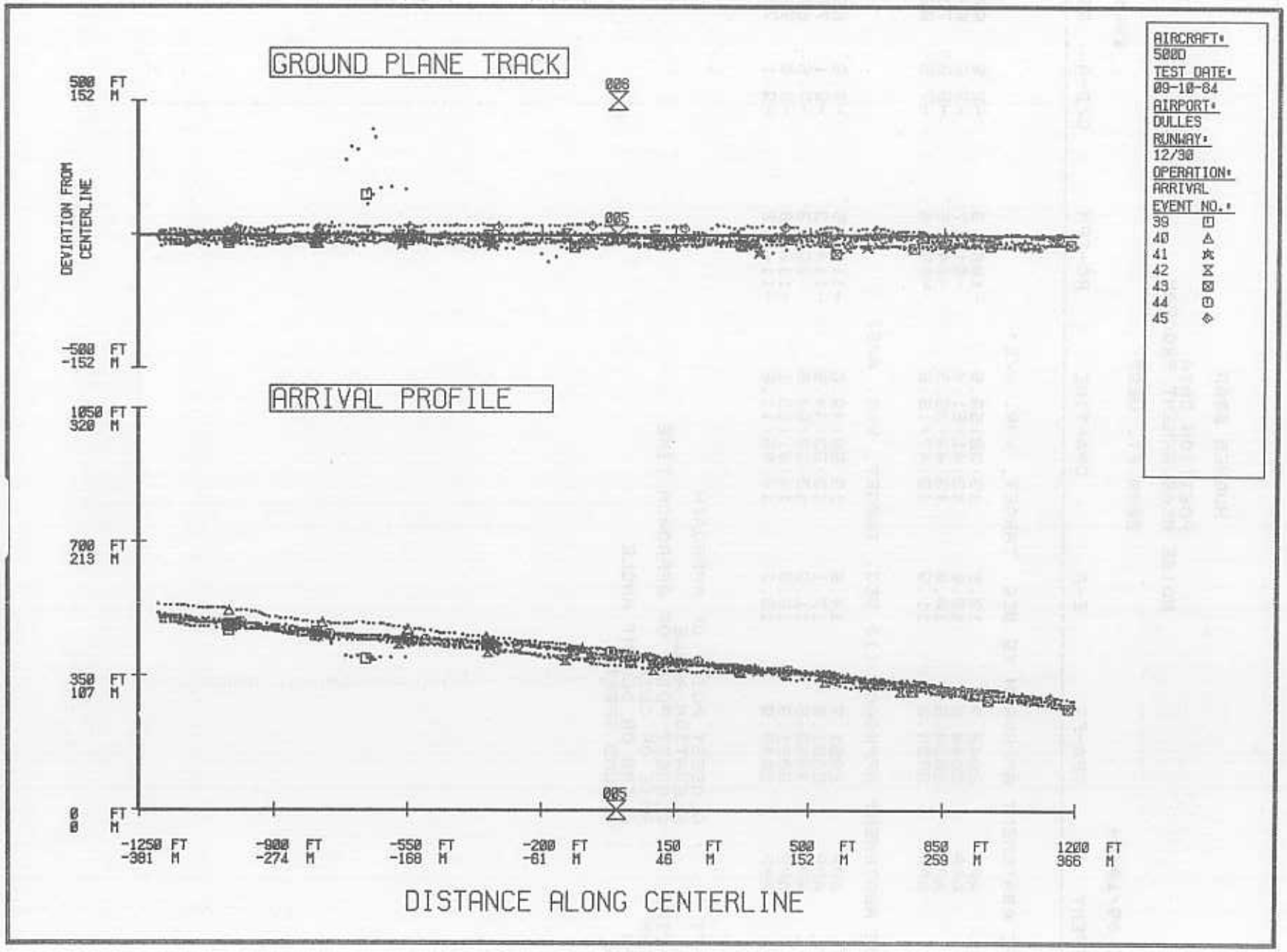
DATE:09/10/84

FAA/AEE

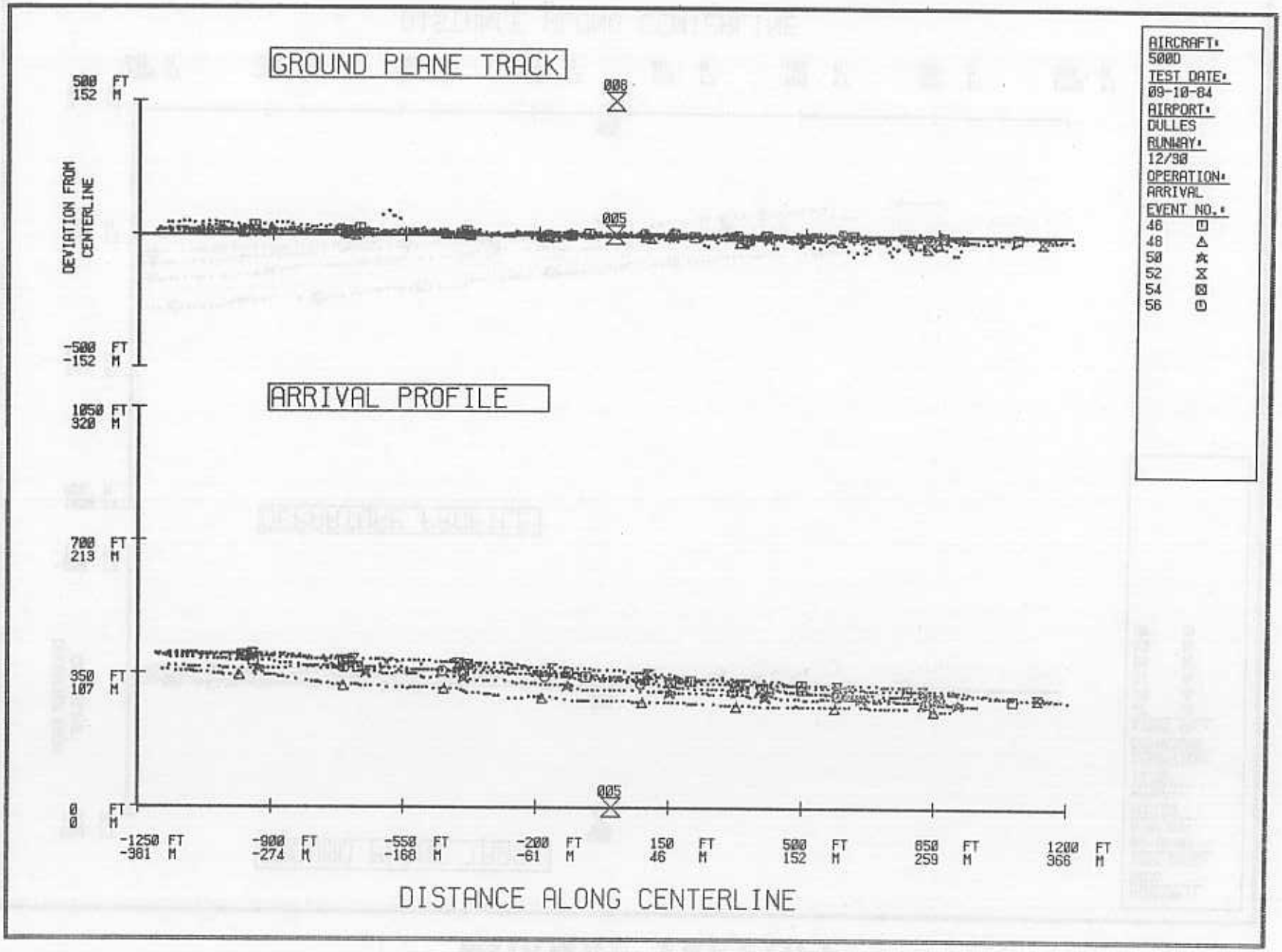
EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NOISE ABATEMENT APPROACH (9 DEG. TARGET, VAR. A/S)							
64	APP	2046.7	13.8	13:38:59.5	-1063.3	-8.8	67.6
65	APP	2044.6	12.0	13:41:51.4	-911.7	-7.6	67.3
66	APP	2034.5	10.9	13:44:36.3	-645.5	-5.2	70.0
67	APP	2034.2	11.9	13:47:18.8	-885.4	-7.5	66.3
NOISE ABATEMENT APPROACH (12 DEG. TARGET, VAR. A/S)							
68	APP	2061.7	14.5	13:50:49.6	-1134.5	-9.8	65.0
69	APP	2091.8	17.1	13:53:44.9	-1146.3	-9.1	70.6
70	APP	2053.5	11.8	13:58:50.5	-891.3	-7.6	66.1
71	APP	2051.3	16.8	14:01:58.1	-1106.8	-8.0	77.6
72	APP	2048.9	13.6	14:05:11.6	-1146.2	-9.1	70.9

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

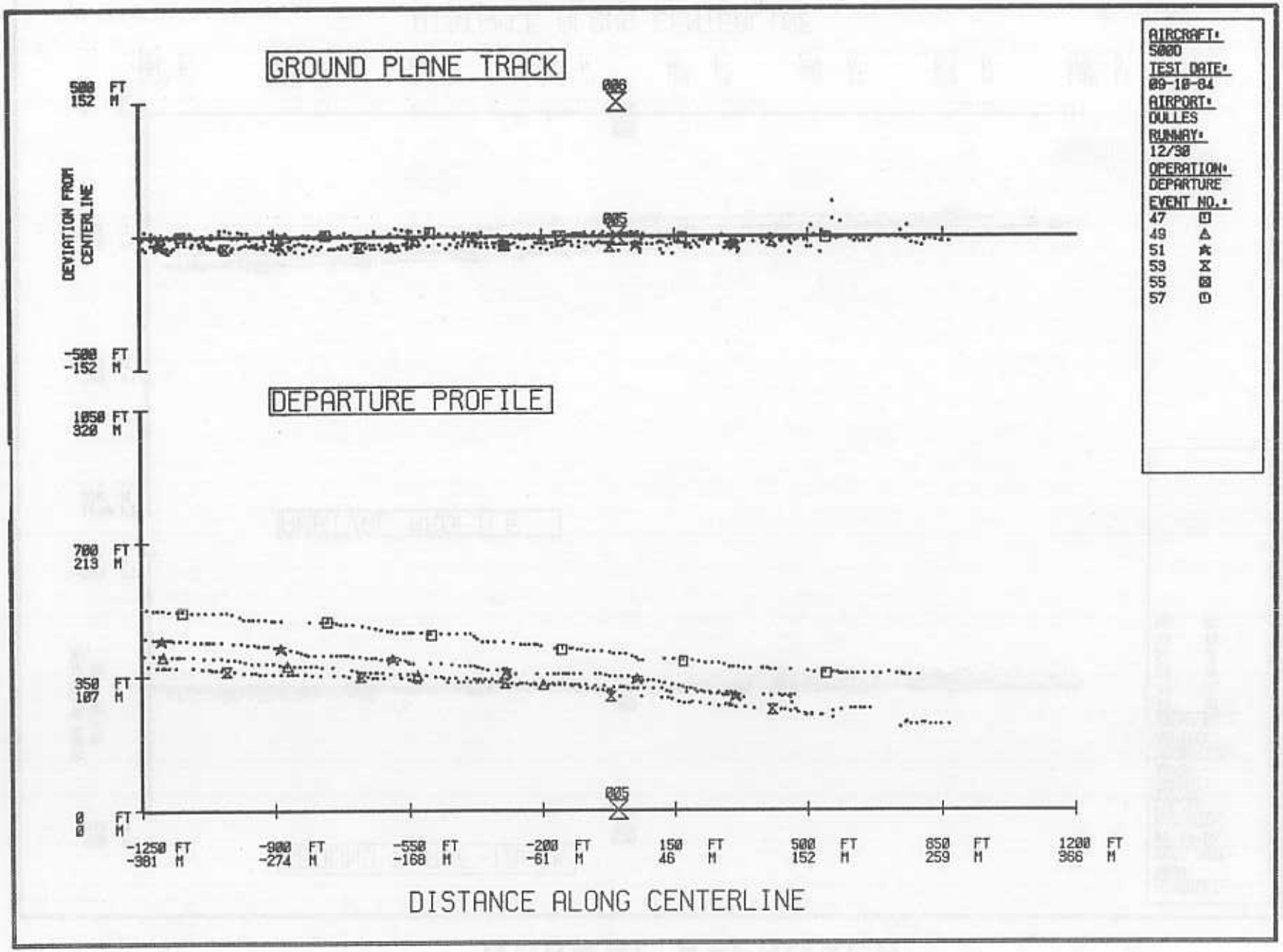
SIX° APPROACH at Vy, 65 Kts.



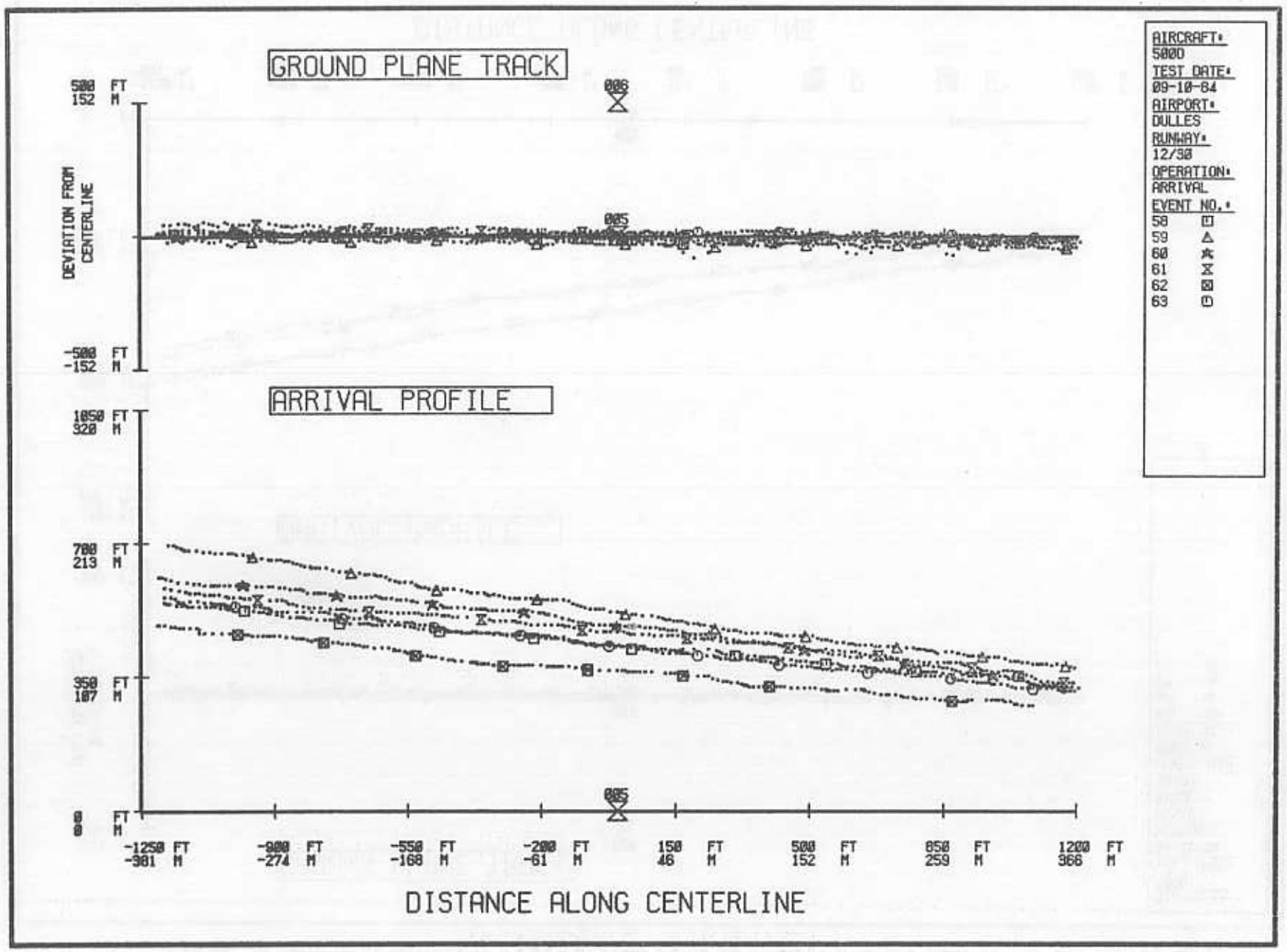
NORMAL APPROACH



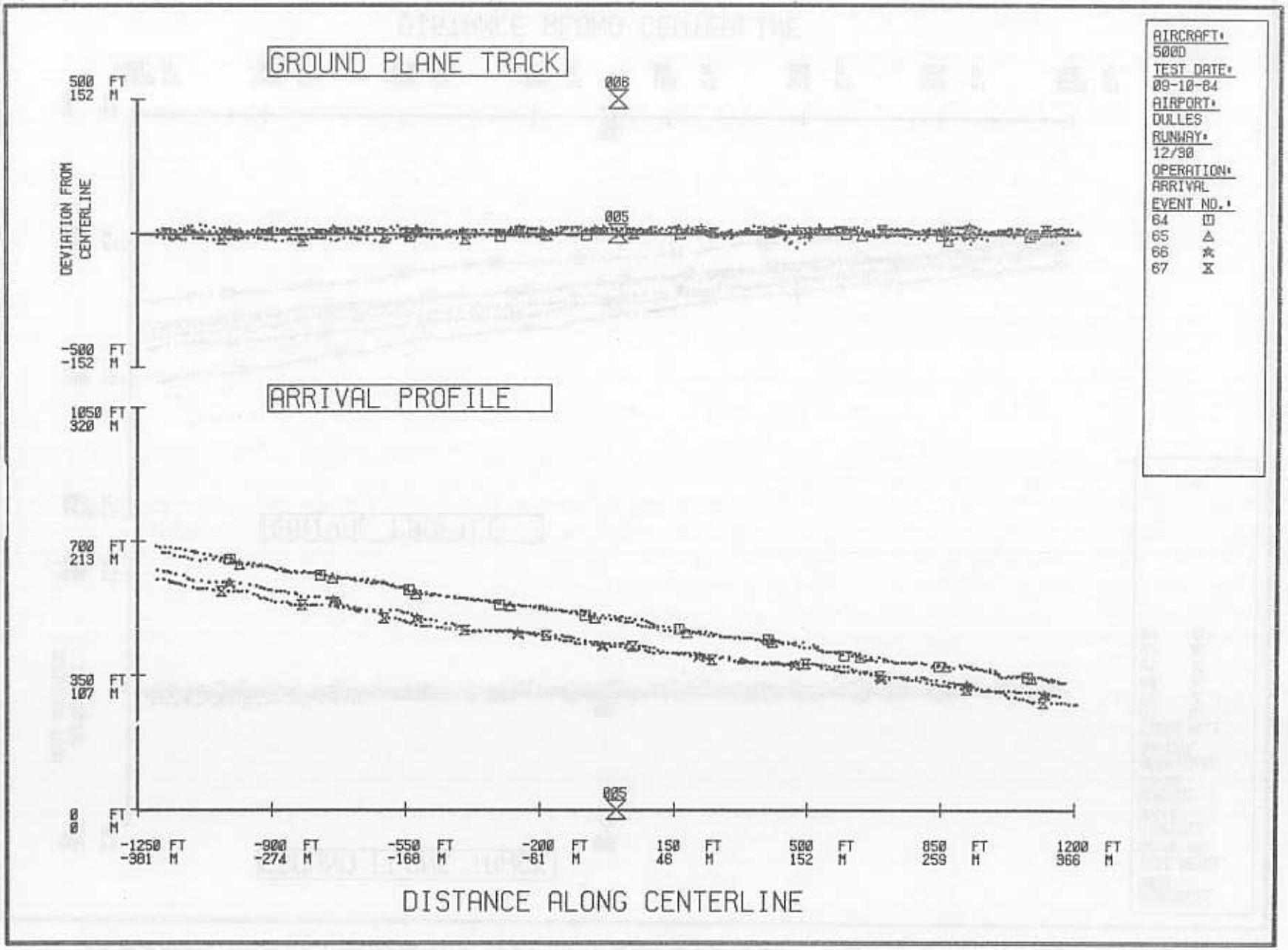
NORMAL TAKEOFF



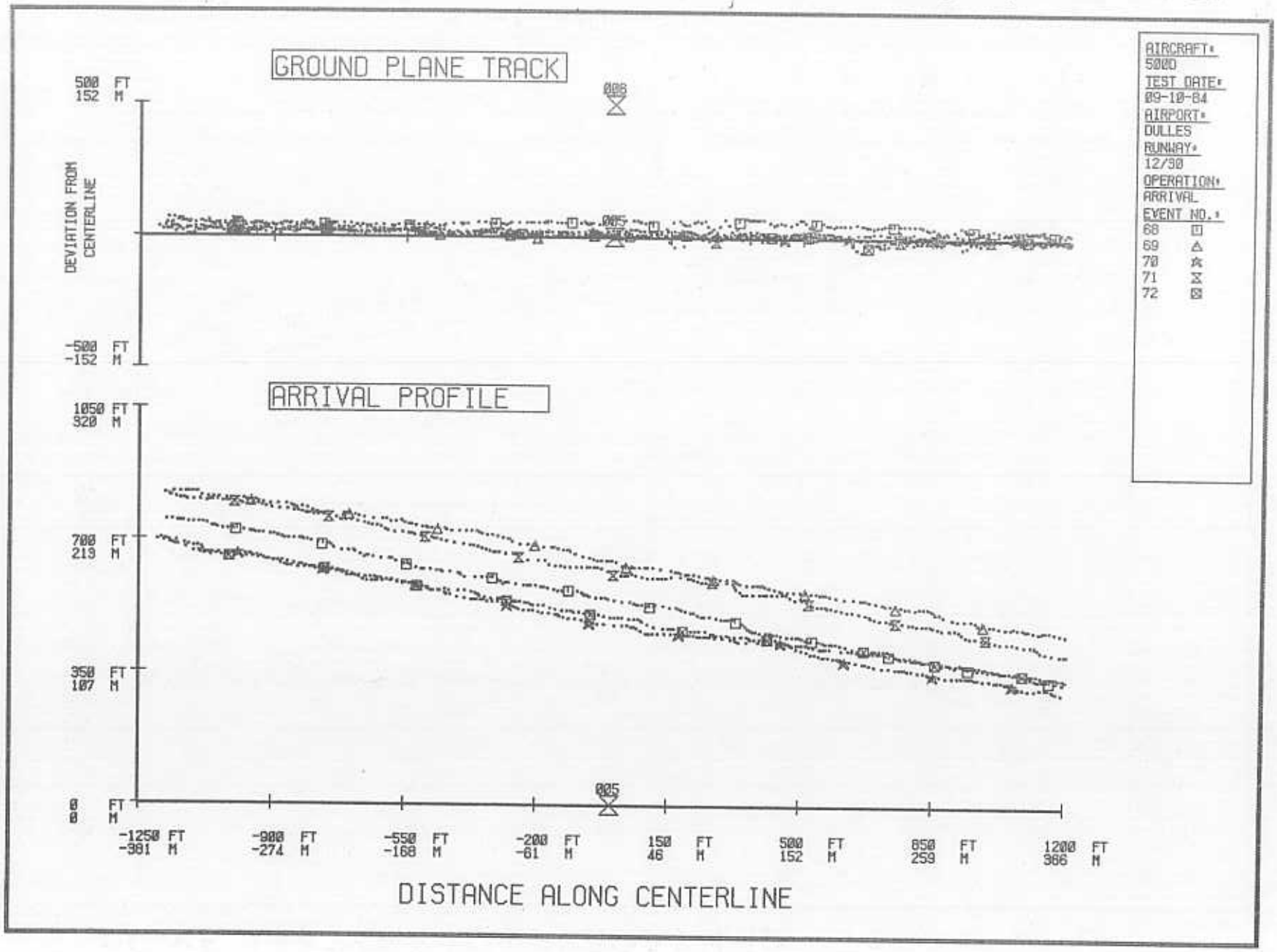
NOISE ABATEMENT APPROACH (6° Target, Var. A/S)



NOISE ABATEMENT APPROACH (9° Target, Var. A/S)



NOISE ABATEMENT APPROACH (12° Target, Var. A/S)



METEOROLOGICAL DATA

THIS SECTION OF THE APPENDIX CONTAINS WEATHER DATA FROM SEVERAL TYPES OF METEOROLOGICAL EQUIPMENT: TEN-METER TOWER (MET), GROUND LEVEL PSYCHROMETER, AIRCRAFT OAT, AND PILOT BALLOONS. DATA FROM THE MET TOWER INCLUDE THE TEMPERATURE, RELATIVE HUMIDITY, WIND DIRECTION AND WIND SPEED MEASURED TYPICALLY EVERY 15 MINUTES DURING EACH FLIGHT EVENT. BECAUSE OF A FAILURE OF THE MET TOWER DEW POINT SENSOR, THE RELATIVE HUMIDITY WAS CALCULATED USING TEMPERATURE FROM THE MET TOWER AND DEW POINT FROM THE DULLES MID FIELD WEATHER STATION. GROUND LEVEL (4 FEET) TEMPERATURE AND RELATIVE HUMIDITY ARE GIVEN FOR DIFFERENT TIMES OF EACH TEST DAT, AND THE HELICOPTER'S OAT READINGS ARE SHOWN FOR DIFFERENT FLIGHT ALTITUDES AT VARIOUS TIMES OF THE DAY. THE PILOT BALLOON WIND DATA, TAKEN PERIODICALLY DURING EACH TEST DAY, INDLUDES THE WIND DIRECTION AND WIND SPEED AT VARIOUS ALTITUDES.

METEOROLOGICAL DATA

(MEASURED AT 30 FT. AGL)

HELICOPTER: HUGHES 500 D DATE: 9/10/84

TIME	TEMP. (DEG. F)	R.H. %	WIND DIR. (DEG.)	WIND SPEED AVG. (MPH)	WIND SPEED MAX (MPH)
SIX DEGREE APPROACH AT 65 KTS.					
12:15	74	58	270	10	14
12:30	74	58	270	8	13
12:45	75	58	270	8	11
NORMAL APPROACH AND TAKEOFF					
1:00	75	58	270	8	13
NOISE ABATEMENT APPROACH (6 DEG. TARGET, VAR. A/S)					
1:15	76	56	270	8	12
1:30	76	54	270	8	12
NOISE ABATEMENT APPROACH (9 DEG. TARGET, VAR. A/S)					
1:45	76	56	270	8	12
NOISE ABATEMENT APPROACH (12 DEG. TARGET, VAR. A/S)					
2:00	76	56	270	8	12

METEOROLOGICAL DATA

HELICOPTER: HUGHES 500D

DATE: 09/10/84

TEMPERATURE AND RELATIVE HUMIDITY DATA

(MEASURED AT 4 FT. AGL)

TIME	TEMP.	R.H.
	N	
	O	
	D	
	A	
	T	
	A	

HELICOPTERS OAT GUAGE DATA

TIME	ALTITUDE	TEMP.
1:10	200'	79 F
	400'	79 F
	600'	75 F
	800'	72 F
1:48	400'	79 F
	600'	75 F
	800'	75 F

PILOT BALLOON WIND DATA

HUGHES 500D 09/10/84

FEET (AGL)	WIND DIR. (DEG.)	WIND SPD. (KTS)	WIND DIR. (DEG.)	WIND SPD. (KTS)

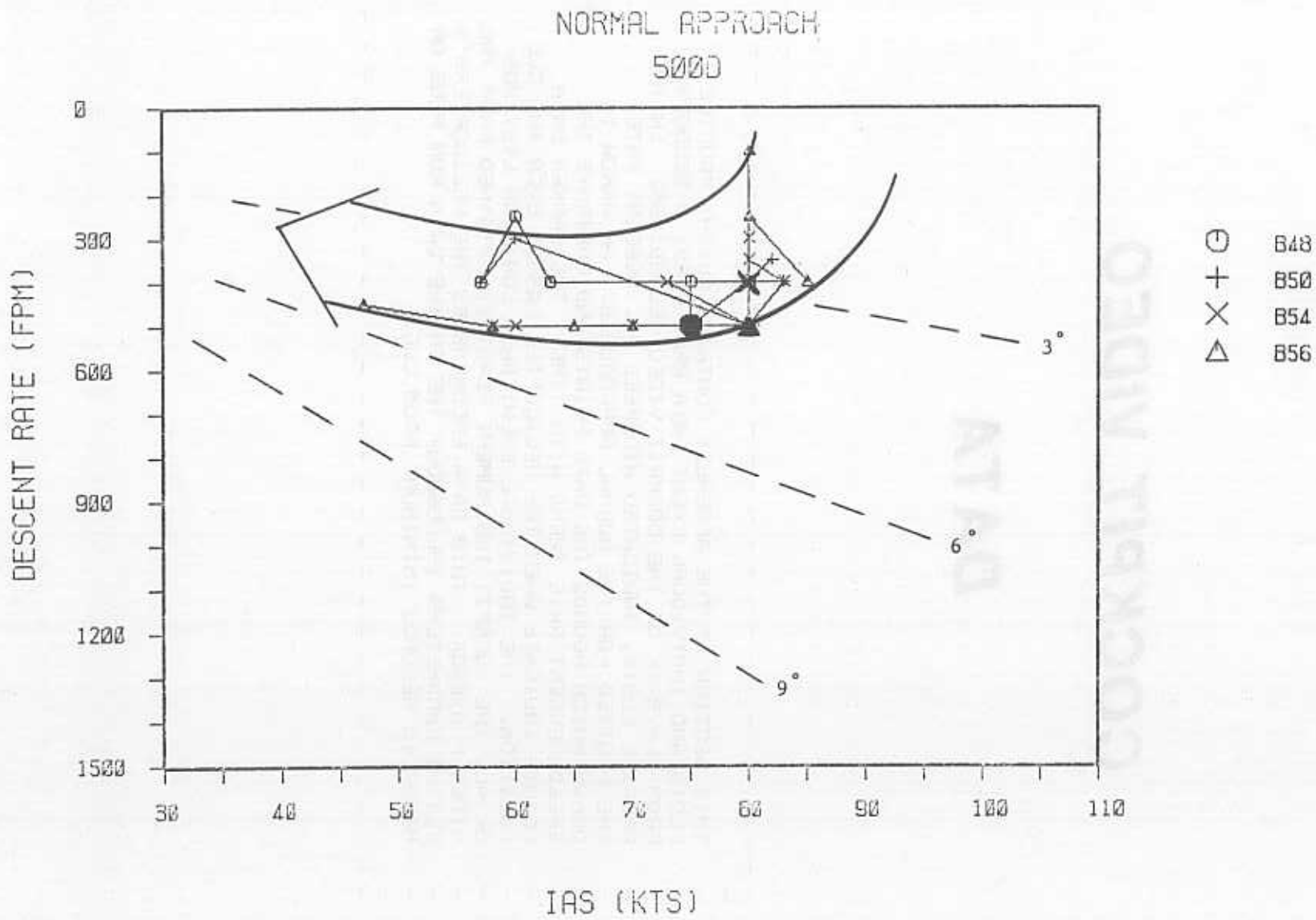
LAUNCH TIME:

---------- NO DATA ----------

COCKPIT VIDEO

DATA

THIS SECTION OF THE APPENDIX CONTAINS FLIGHT PROFILE PLOTS AND INDIVIDUAL EVENT DATA READ EVERY 5 SECONDS FROM PLAYBACK OF THE COCKPIT VIDEO RECORDINGS. IN THE PROFILE PLOTS, INDICATED AIRSPEED VS. DESCENT RATE ARE PLOTTED FOR THE NORMAL APPROACHES. AN ARROW IS DRAWN WHICH BOUNDS THE DATA POINTS AND PORTRAYS THE SPEED/DESCENT RATE TREND WITH TIME. THE DARKER DATA POINTS INDICATE WHEN THE HELICOPTER PASSED OVER THE CLC POSITION. THE INDIVIDUAL EVENT DATA CONTAINS LISTINGS OF ALL THE COCKPIT INSTRUMENT READINGS OBTAINED FROM THE VIDEO PLAYBACK. THIS DATA ENCOMPASSES THE HELICOPTERS'S FLIGHT PARAMETERS THROUGHOUT THE ENTIRE DATA RUN PLUS OR MINUS 15 SECONDS (MINIMUM) FROM CLC.


NORMAL APPROACH
500D
DESCENT RATE (FPM)
0
300
600
900
1200
1500
30
40
50
60
70
80
90
100
110
IAS (KTS)
3°
6°
9°
B48
B50
B54
B56

COCKPIT VIDEO DATA

NORMAL APPROACH

HELICOPTER: HUGHES 500D

DATE: 09/10/84

EVENT:B46

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D) (DEG)
-34	530	30	400	62	3.65
-29	490	30	450	62	4.11
-24	480	38	250	--	--
-19	---	45	200	--	--
-14	450	43	250	60	2.36
-9	420	40	400	60	3.77
-4	400	42	400	62	3.65
CLC 0	370	38	450	63	4.04
6	340	22	450	62	4.11
11	280	15	500	54	5.25
16	200	12	550	45	6.93
21	160	20	500	40	7.09

EVENT:B48

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-30	490	40	100	80	0.71
-25	490	30	250	80	1.77
-20	460	30	400	80	2.83
-15	440	30	400	80	2.83
-10	410	30	400	80	2.83
-5	360	30	500	80	3.54
CLC 0	300	28	500	75	3.77
5	280	25	400	75	3.02
10	260	30	400	63	3.59
15	240	30	250	60	2.36
20	200	17	400	57	3.97

EVENT:B54

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D) (DEG)
-31	550	34	400	77	2.94
-26	540	45	300	80	2.12
-21	520	43	300	80	2.12
-16	510	40	350	80	2.48
-11	480	30	400	83	2.73
-6	440	28	500	80	3.54
-1	410	25	400	73	3.10
CLC 0	400	25	400	80	2.83
4	370	25	500	75	3.77
9	340	20	500	70	4.04
14	300	20	500	60	4.72
19	250	25	500	58	4.88

EVENT:B56

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-30	500	35	500	85	3.33
-25	490	35	300	85	2.00
-20	460	35	400	85	2.66
-15	440	40	250	80	1.77
-10	440	40	100	80	0.71
-5	420	30	400	80	2.83
CLC 0	360	25	500	80	3.54
5	340	25	500	70	4.04
10	300	25	500	65	4.36
15	240	25	500	58	4.88
20	200	20	450	47	5.43

COCKPIT VIDEO DATA

NOISE ABATEMENT APPROACH

(6 DEG. TARGET, VAR. A/S)

HELICOPTER: HUGHES 500D

DATE: 09/10/84

EVENT: D59

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-28	880	35	400	80	2.83
-23	840	35	400	80	2.83
-18	800	28	500	80	3.54
-13	750	26	500	80	3.54
-8	700	22	700	80	4.96
-3	600	18	900	76	6.72
CLC 0	550	--	---	72	--
2	520	17	900	66	7.74
7	460	18	800	58	7.83
12	400	18	800	60	7.57
17	300	15	800	54	8.41
22	240	15	900	40	12.84

EVENT: D60

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-33	880	30	250	75	1.89
-28	840	35	500	80	3.54
-23	780	30	600	80	4.25
-18	730	32	600	82	4.14
-13	670	25	700	77	5.15
-8	620	25	700	73	5.43
-3	560	25	650	70	5.26
CLC 0	530	--	---	--	--
2	500	20	800	70	6.48
7	400	15	900	60	8.52
12	340	15	900	60	8.52
17	240	15	900	52	9.84
22	200	15	700	47	8.46

COCKPIT VIDEO DATA

NOISE ABATEMENT APPROACH

(6 DEG. TARGET, VAR. A/S)

HELICOPTER: HUGHES 500D

DATE: 09/10/84

EVENT:D61

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-29	870	40	100	79	0.72
-24	850	33	450	75	3.40
-19	780	32	600	77	4.41
-14	690	30	850	83	5.80
-9	620	30	900	85	6.00
-4	540	30	800	85	5.33
CLC 0	490	20	800	80	--
6	420	15	800	74	6.13
11	340	15	800	65	6.98
16	260	15	800	52	8.74
21	200	10	700	38	10.48

EVENT:D62

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-33	820	35	350	70	2.83
-28	780	28	500	70	4.04
-23	690	28	700	72	5.51
-18	630	25	700	72	5.51
-13	580	23	650	77	4.78
-8	530	17	700	70	5.67
-3	460	17	700	70	5.67
CLC 0	420	20	700	64	6.20
2	400	25	700	68	5.83
7	350	30	600	63	5.40
12	300	25	550	64	4.87
17	250	22	600	60	5.67

D63

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-40	820	45	0	77	0.00
-35	800	40	400	78	2.90
-30	790	30	350	77	2.57
-25	760	30	400	75	3.02
-20	700	22	550	77	4.04
-15	650	27	600	78	4.36
-10	600	20	600	78	4.36
-5	550	17	650	72	5.11
CLC 0	480	20	650	70	5.26
5	420	20	700	60	6.62
10	360	20	600	60	5.67
15	300	25	600	60	5.67
20	250	23	600	58	5.86

COCKPIT VIDEO DATA

NOISE ABATEMENT APPROACH

(9 DEG. TARGET, VAR. A/S)

HELICOPTER: HUGHES 500D

DATE: 09/10/84

EVENT:D64

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-27	960	35	0	75	0.00
-22	940	28	500	80	3.54
-17	860	18	800	78	5.81
-12	770	16	1000	74	7.67
-7	670	15	1100	70	8.93
-2	580	20	1000	65	8.74
CLC 0	550	20	1000	60	9.47
3	510	20	900	60	8.52
8	420	15	900	60	8.52
13	340	--	900	59	8.66
18	250	15	700	56	7.09

EVENT:D65

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-15	820	17	1000	70	8.11
-10	730	16	1100	65	9.62
-5	640	16	1000	65	8.74
CLC 0	560	20	1000	60	9.47
5	480	18	1000	60	9.47
10	400	20	800	60	7.57
15	320	20	800	62	7.32
20	240	15	800	58	7.83

EVENT:D66

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-32	1000	35	400	80	2.83
-27	980	24	600	73	4.66
-22	910	19	800	70	6.48
-17	800	12	1000	70	8.11
-12	720	13	1100	70	8.93
-7	620	14	1100	70	8.93
-2	520	15	1150	70	9.34
CLC 0	480	15	1000	70	8.11
3	440	15	900	67	7.62
8	360	15	800	70	6.48
13	300	18	800	70	6.48
18	250	28	700	55	7.22

EVENT:D67

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-27	920	15	700	72	5.51
-22	850	15	850	60	8.04
-17	750	13	1000	60	9.47
-12	660	13	1000	60	9.47
-7	570	13	1000	58	9.80
-2	510	15	800	60	7.57
CLC 0	490	17	800	60	7.57
3	440	17	800	60	7.57
8	380	20	800	60	7.57
13	300	20	700	60	6.62
18	250	26	650	60	6.14
23	---	20	550	55	5.67

APPENDIX H

AEROSPATIALE 365N

	PAGE NUMBERS
HELICOPTER CHARACTERISTICS	H-581
NOISE LEVEL DATA	
SOUND EXPOSURE LEVEL	
Bar Charts	
Approaches	H-584
Takeoff	H-585
Level Flyovers	H-586
Summary Tables	H-587 - H-588
Individual Event Data	H-589 - H-595
A-WEIGHTED SOUND LEVEL	
Bar Charts	
Approaches	H-598
Takeoff	H-599
Level Flyovers	H-600
Summary Tables	H-601 - H-602
Individual Event Data	H-603 - H-609
RADAR TRACKING DATA	
Position Data	H-612 - H-625
Tracking Plots	H-626 - H-632
METEOROLOGICAL DATA	
10-meter Tower Data	H-634
4 ft. Data and Aircraft OAT Data	H-635
Pilot Balloon Wind Data	H-636
COCKPIT VIDEO DATA	
Normal Approach Plot	H-638
Noise Abatement Approach Plot	H-639
Individual Event Data	H-640 - H-644

N58OOK

HELICOPTER CHARACTERISTICS

HELICOPTER MANUFACTURER :	AEROSPATIALE
HELICOPTER MODEL :	SA 365N
TEST HELICOPTER N-NUMBER :	N5800K
MAX INTERNAL GROSS WEIGHT :	8818 LBS
NUMBER OF ENGINES :	TWO
UNINSTALLED TAKEOFF POWER :	660 SHP (PER ENGINE)
UNINSTALLED MAX CONTINUOUS PWR. :	586 SHP (PER ENGINE)
NEVER EXCEED SPEED (VNE) :	175 KTS.
MAX SPEED IN LEVEL FLIGHT	
WITH MAX CONTINUOUS POWER :	150 KTS.
SPEED FOR BEST RATE OF CLIMB (VY) :	75 KTS.
CRUISE SPEED FOR BEST RANGE (VCR) :	135 KTS.
BEST RATE OF CLIMB AT	
TAKEOFF POWER (BRC) :	1460 FPM
"TOP OF GREEN ARC" ROTOR SPEED :	350 RPM 100%

MAIN AND TAIL ROTOR SPECIFICATIONS

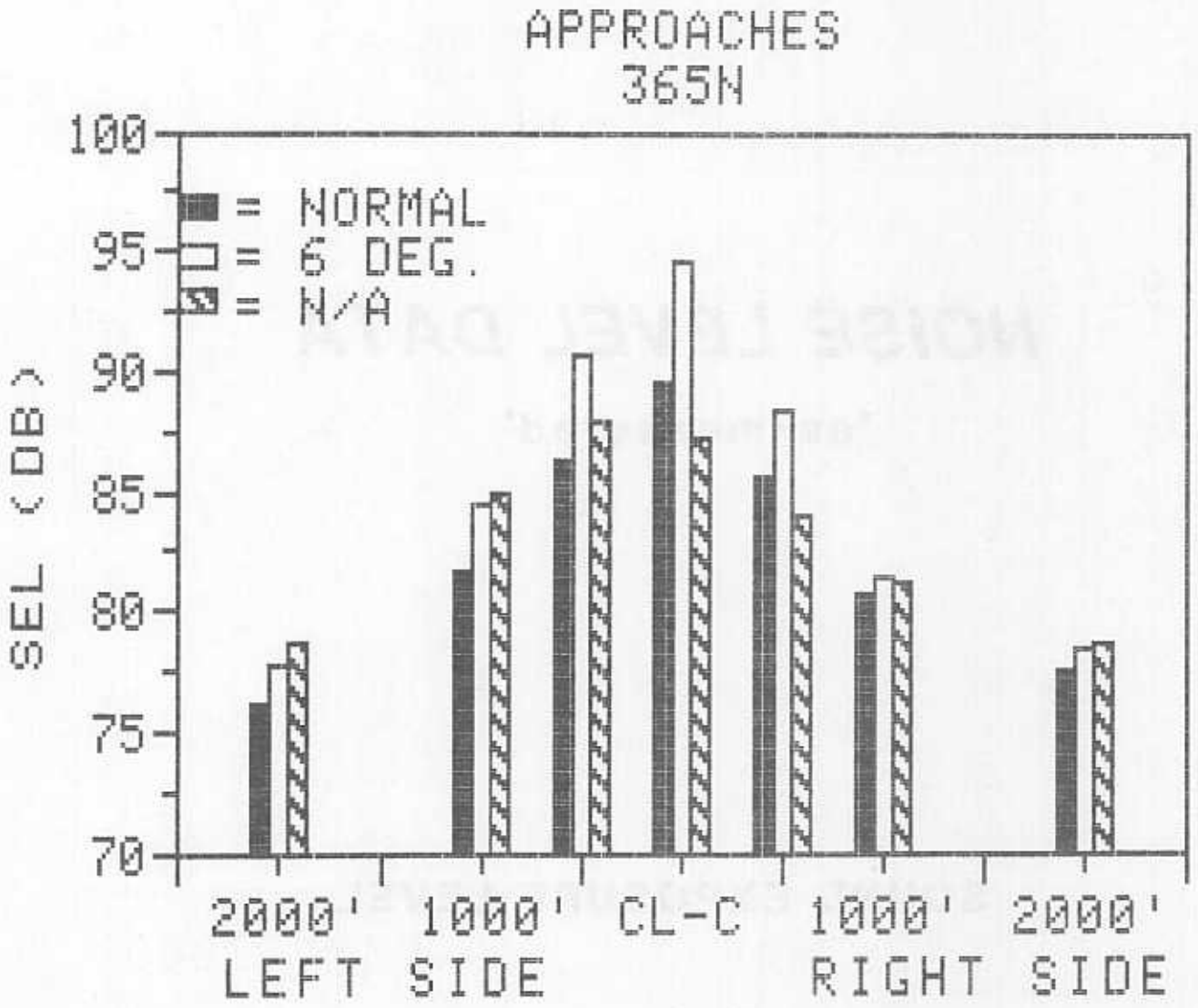
	MAIN	TAIL
DIAMETER (FT.) :	39.1	3.0
NO. OF BLADES :	4	13
TIPSPEED (FPS) :	717	727
TIP SHAPE :	SWEPT	SQUARE

NOISE LEVEL DATA

'as-measured'

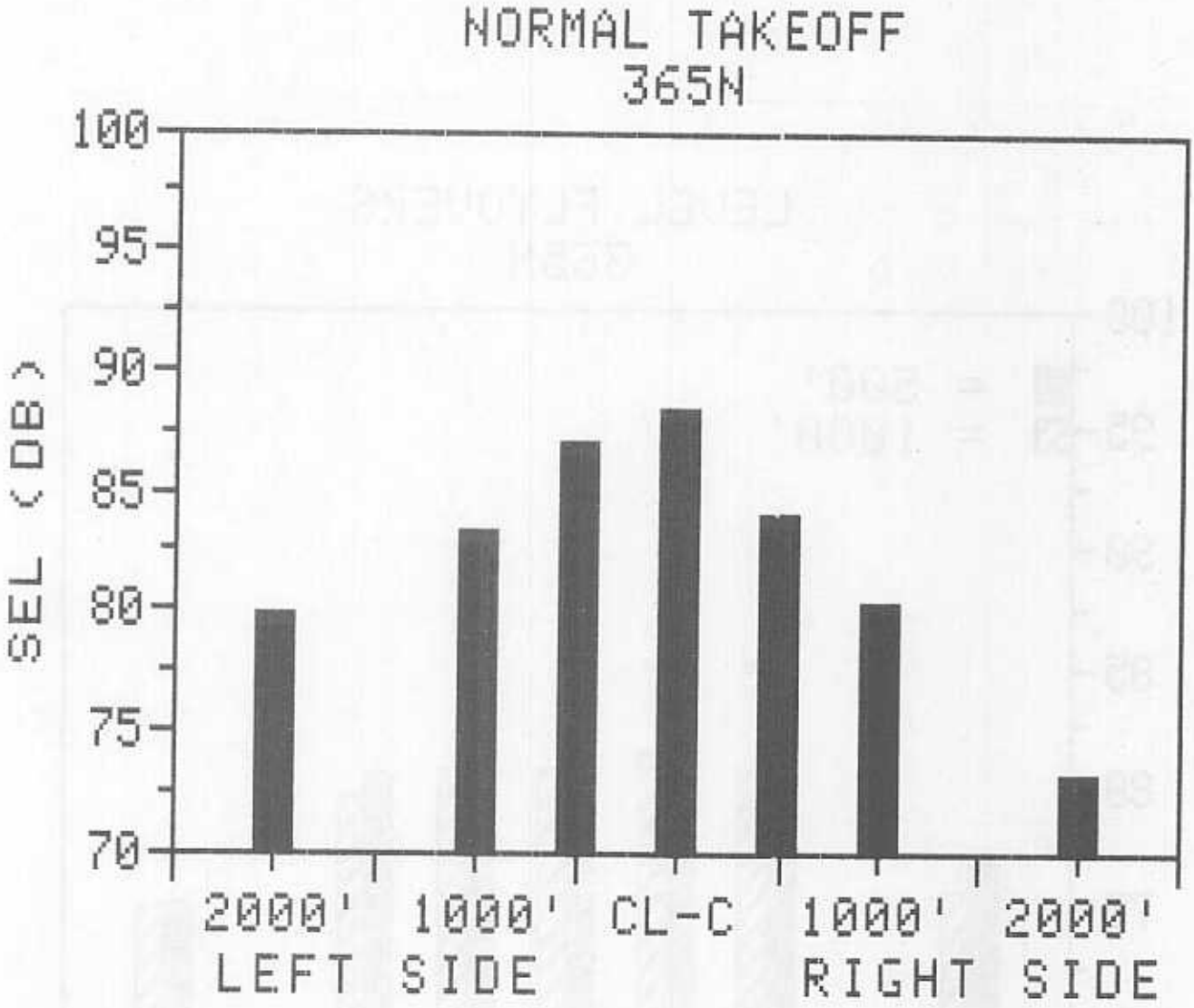
SOUND EXPOSURE LEVEL

THIS SECTION OF THE APPENDIX CONTAINS THE 'AS-MEASURED' SOUND EXPOSURE LEVELS (SEL) FOR ALL FLIGHT EVENTS. THESE DATA ARE PRESENTED IN THE FORM OF BAR CHARTS, SUMMARY TABLES AND INDIVIDUAL EVENT DATA. THE BAR CHARTS SHOW THE FALL OFF IN NOISE LEVEL VERSUS SIDELINE DISTANCE, AND PROVIDE A QUICK LOOK COMPARISON OF THE NOISE LEVELS. PERTINENT FLIGHT PARAMETER INFORMATION READ FROM THE COCKPIT INSTRUMENT PANEL VIDEO RECORDINGS IS ALSO SHOWN BELOW EACH BAR CHART. THE SUMMARY TABLES PRESENT THE AVERAGE NOISE LEVEL, NUMBER OF SAMPLES, STANDARD DEVIATION AND THE 90 PERCENT CONFIDENCE INTERVAL FOR EACH FLIGHT CONDITION. INDIVIDUAL EVENT DATA FOR EACH CONDITION IS THEN GIVEN.



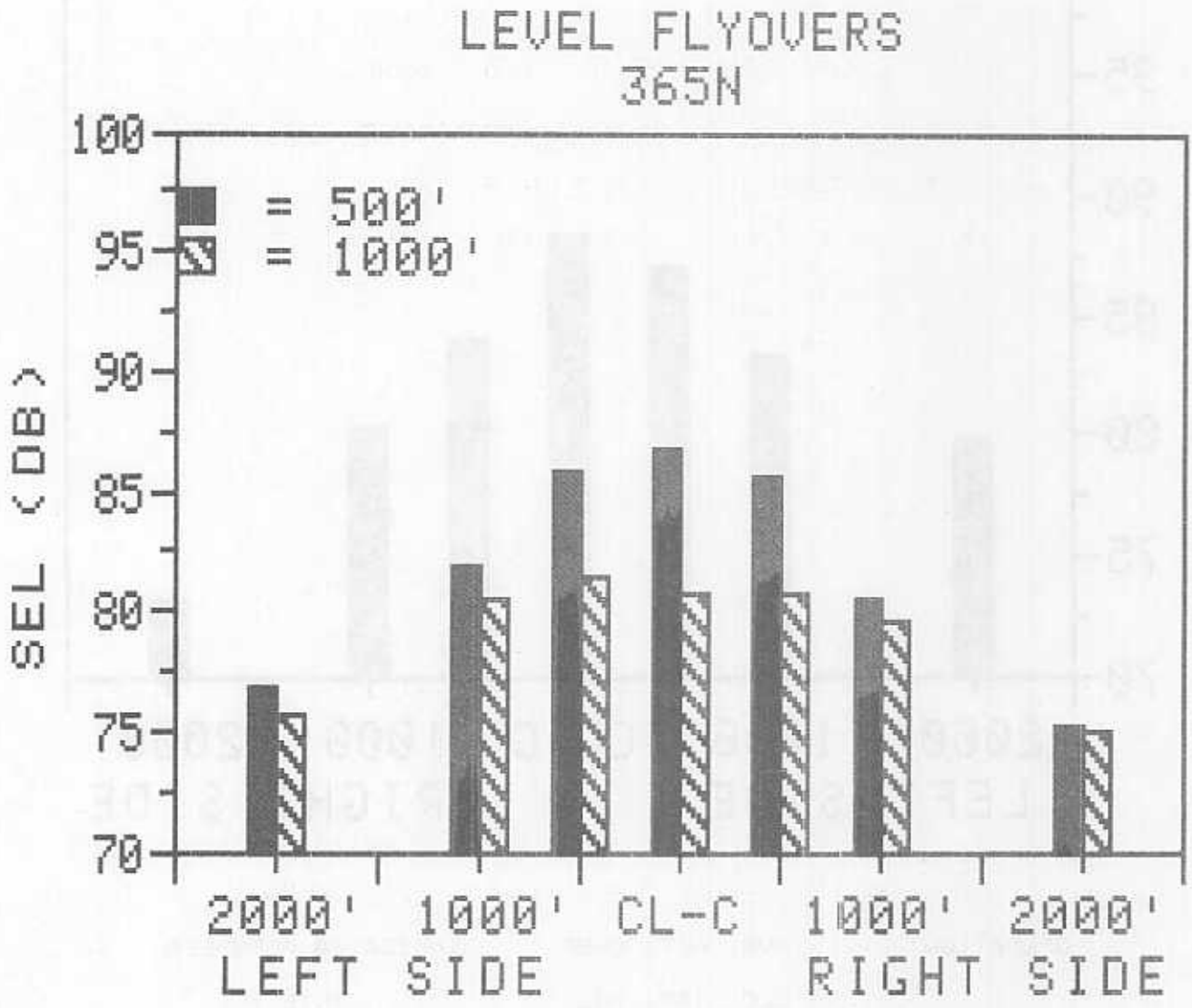
OPERATION	AVG. ALT. OVER CL-C (FT. AGL)	INDICATED AIRSPEED (KTS.)	GLIDESLOPE RANGE (DEG.)
NORMAL APPROACH	400	75-53	0.2-5.7
SIX DEG. APPROACH	380	80	6.0
NOISE ABATEMENT APP. VAR. R/D AND A/S (EVENTS D21-D27)	650	92-60	2.9-11.4

NOTE: ALTITUDE, AIRSPEED AND VERTICAL SPEED DATA READ FROM VIDEO TAPES OF THE INSTRUMENT PANEL. THE GLIDESLOPE RANGE WAS CALCULATED WITHIN ±15 SEC OF THE CL-C MICROPHONE POSITION.



OPERATION	AVG. ALT. OVER CLC (FT. AGL)	INDICATED AIRSPEED (KTS.)
NORMAL TAKEOFF	418	86

NOTE: ALTIMETER AND INDICATED AIRSPEED READINGS MADE WHEN THE HELICOPTER PASSED OVER CLC MICROPHONE POSITION



INDICATED AIRSPEED =135 KTS.

365N SUMMARY SHEET (9/10/84)

SOUND EXPOSURE LEVEL (DB)

	(LEFT SIDE)				(RIGHT SIDE)		
	2000'	1000'	500'	CL-C	500'	1000'	2000'
* SIX DEG. APPROACH AT VY, 75 KTS. *							
AVERAGE	77.8	84.5	90.7	94.6	88.4	81.4	78.4
N	2	8	8	8	8	8	8
S.D.	.1	.7	.7	1.3	.5	.4	.4
90% CI	--	.5	.5	.9	.3	.3	.3
* NORMAL APPROACH *							
AVERAGE	76.1	81.6	86.2	89.4	85.5	80.8	77.6
N	5	10	11	11	11	9	11
S.D	.3	.7	.8	2.0	1.2	.6	.9
90% CI	.3	.4	.4	1.1	.7	.4	.5
* NOISE ABATEMENT APPROACH (VAR. R/D AND A/S) *							
AVERAGE	78.8	84.8	88.0	87.1	83.9	81.3	78.7
N	7	6	7	7	7	7	6
S.D	.5	.5	.4	.6	.9	.8	.5
90% CI	.4	.4	.3	.4	.7	.6	.4
* NOISE ABATEMENT APPROACH (8-9 DEG. TARGET, VAR. A/S) *							
AVERAGE	78.7	84.7	87.5	86.5	82.4	80.4	77.9
N	7	7	7	7	7	7	7
S.D	.5	.3	.6	1.0	.2	.7	.4
90% CI	.4	.3	.4	.7	.1	.5	.3

365N SUMMARY SHEET (9/10/84)

SOUND EXPOSURE LEVEL (DB)

	(LEFT SIDE)				(RIGHT SIDE)		
	2000'	1000'	500'	CL-C	500'	1000'	2000'
*** NORMAL TAKEOFF ***							
AVERAGE	79.9	83.2	86.9	88.3	84.0	80.2	73.2
N	10	10	10	10	10	10	3
S.D.	1.0	.7	1.2	.8	.9	1.1	.3
90% CI	.6	.4	.7	.5	.5	.6	.5
*** 500 FT. LEVEL FLYOVER AT 135 KTS. ***							
AVERAGE	76.7	82.0	85.9	86.7	85.5	80.5	75.2
N	2	4	4	4	4	4	2
S.D	.6	.4	.5	.2	.9	.8	.1
90% CI	--	.5	.6	.3	1.1	.9	--
*** 1000 FT. LEVEL FLYOVER AT 135 KTS. ***							
AVERAGE	75.7	80.5	81.5	80.7	80.7	79.6	75
N	1	2	2	2	2	2	1
S.D	--	.4	.9	.3	.2	1.0	--
90% CI	--	--	--	--	--	--	--

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: AEROSPATIALE 365N DAUPHIN TEST DATE: 9/10/84

OPERATION : 6 DEGREE APPROACH AT VY, 75 KTS.

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
A13	--	83.70	90.60	94.20	88.70	81.30	78.10
A14	--	83.50	89.40	94.30	89.10	80.70	78.10
A15	--	84.30	90.90	92.90	88.40	81.30	78.70
A16	--	84.40	89.90	97.30	88.80	82.20	78.60
A17	--	84.70	90.80	95.30	88.40	81.50	78.60
A18	--	84.90	91.30	94.00	88.10	81.10	78.60
A19	77.90	85.40	91.20	93.50	88.10	81.30	77.60
A20	77.70	85.40	91.20	95.00	87.70	81.70	78.70
AVERAGE	77.80	84.54	90.66	94.56	88.41	81.39	78.38
STD. DEV.	0.14	0.71	0.68	1.34	0.45	0.44	0.40
90% C.I.	--	0.47	0.45	0.90	0.30	0.29	0.27

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: AEROSPATIALE 365N DAUPHIN TEST DATE: 9/10/84

OPERATION : NORMAL APROACH

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
B1	--	82.20	86.80	89.30	86.10	--	77.50
B3	--	82.00	86.10	88.70	85.70	80.70	77.70
B5	--	82.00	86.90	89.30	86.10	81.50	77.80
B7	--	81.90	86.10	88.10	85.40	80.80	77.90
B9	--	81.50	85.80	86.20	84.10	79.70	77.50
B11	--	82.20	87.80	90.90	87.20	80.60	78.80
B35	76.30	--	85.90	89.50	84.60	81.50	78.40
B37	76.30	82.10	85.10	88.70	83.10	--	78.60
B73	76.20	80.60	86.80	92.90	86.00	80.60	75.60
B75	75.60	81.10	86.20	92.20	87.00	81.20	76.80
B77	76.00	80.50	85.10	87.60	84.70	80.30	76.80
AVERAGE	76.08	81.61	86.24	89.40	85.45	80.77	77.58
STD. DEV.	0.29	0.65	0.80	1.96	1.24	0.58	0.92
90% C.I.	0.28	0.38	0.44	1.07	0.68	0.36	0.50

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: AEROSPATIALE 365N DAUPHIN TEST DATE: 9/10/84

OPERATION : NORMAL TAKEOFF

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' WEST	1000' WEST	500' WEST	CL-C	500' EAST	1000' EAST	2000' EAST
C2	80.20	82.90	87.80	87.80	84.50	80.50	--
C4	80.40	83.80	87.90	88.90	84.50	81.00	--
C6	79.90	83.90	88.00	88.80	84.80	81.40	--
C8	79.90	82.70	87.10	88.10	84.20	80.30	--
C10	80.50	83.10	87.80	88.20	84.70	81.00	--
C12	80.40	83.60	88.10	87.80	84.50	81.20	--
C36	80.40	82.70	85.20	87.10	82.70	79.30	72.90
C38	80.80	84.30	86.00	88.60	84.50	80.30	--
C74	78.60	82.50	85.90	89.90	83.40	78.30	73.50
C76	77.70	82.20	85.50	87.70	82.40	78.70	73.10
AVERAGE	79.88	83.17	86.93	88.29	84.02	80.20	73.17
STD. DEV.	0.97	0.69	1.15	0.79	0.87	1.08	0.31
90% C.I.	0.56	0.40	0.67	0.46	0.50	0.63	0.52

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: AEROSPATIALE 365N DAUPHIN TEST DATE: 9/10/84

OPERATION : NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
D21	77.90	--	87.50	87.90	83.10	80.00	--
D22	78.80	84.20	88.40	86.80	83.00	80.80	78.10
D23	78.70	84.80	88.20	87.80	84.80	81.60	78.70
D24	79.30	85.70	88.30	86.70	85.30	82.30	79.20
D25	78.80	84.50	87.80	86.90	83.90	81.80	79.10
D26	79.00	84.80	88.10	87.30	83.20	81.80	79.10
D27	79.40	84.80	87.40	86.40	84.10	80.70	78.10
AVERAGE	78.84	84.80	87.96	87.11	83.91	81.29	78.72
STD. DEV.	0.49	0.50	0.40	0.57	0.89	0.81	0.51
90% C.I.	0.36	0.41	0.29	0.42	0.65	0.59	0.42

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: AEROSPATIALE 365N DAUPHIN TEST DATE: 09/10/84

OPERATION : NOISE ABATEMENT APPROACH (8-9 DEG. TARGET, VAR. A/S)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
D28	78.00	85.00	86.80	84.70	82.60	81.20	78.40
D29	78.50	84.80	88.10	86.10	82.70	81.40	78.20
D30	79.50	85.00	88.10	87.30	82.40	79.40	77.10
D31	78.70	84.50	87.40	86.20	82.20	79.80	77.80
D32	79.10	84.10	86.80	86.60	82.20	80.10	77.90
D33	78.50	84.80	87.90	87.40	82.50	80.60	78.00
D34	78.80	84.40	87.60	87.20	82.30	80.20	78.10
AVERAGE	78.73	84.66	87.53	86.50	82.41	80.39	77.93
STD. DEV.	0.48	0.34	0.56	0.95	0.20	0.73	0.42
90% C.I.	0.35	0.25	0.41	0.70	0.14	0.53	0.30

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: AEROSPATIALE 365N "DAUPHIN" TEST DATE: 9/10/84

OPERATION : LEVEL FLYOVER (500' @135 KTS)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' WEST	1000' WEST	500' WEST	CL-C	500' EAST	1000' EAST	2000' EAST
F78	--	81.60	85.50	86.60	84.80	79.70	75.20
F79	77.10	82.10	85.80	86.70	85.80	81.00	--
F80	--	82.50	85.70	87.00	84.70	79.90	75.10
F81	76.20	81.70	86.70	86.50	86.70	81.30	--
AVERAGE	76.65	81.98	85.93	86.70	85.50	80.48	75.15
STD. DEV.	0.64	0.41	0.53	0.22	0.94	0.79	0.07
90% C.I.	--	0.48	0.62	0.25	1.11	0.93	--

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: AEROSPATIALE 365N DAUPHIN TEST DATE: 9/10/84

OPERATION : LEVEL FLYOVER (1000' @ 135 KTS)

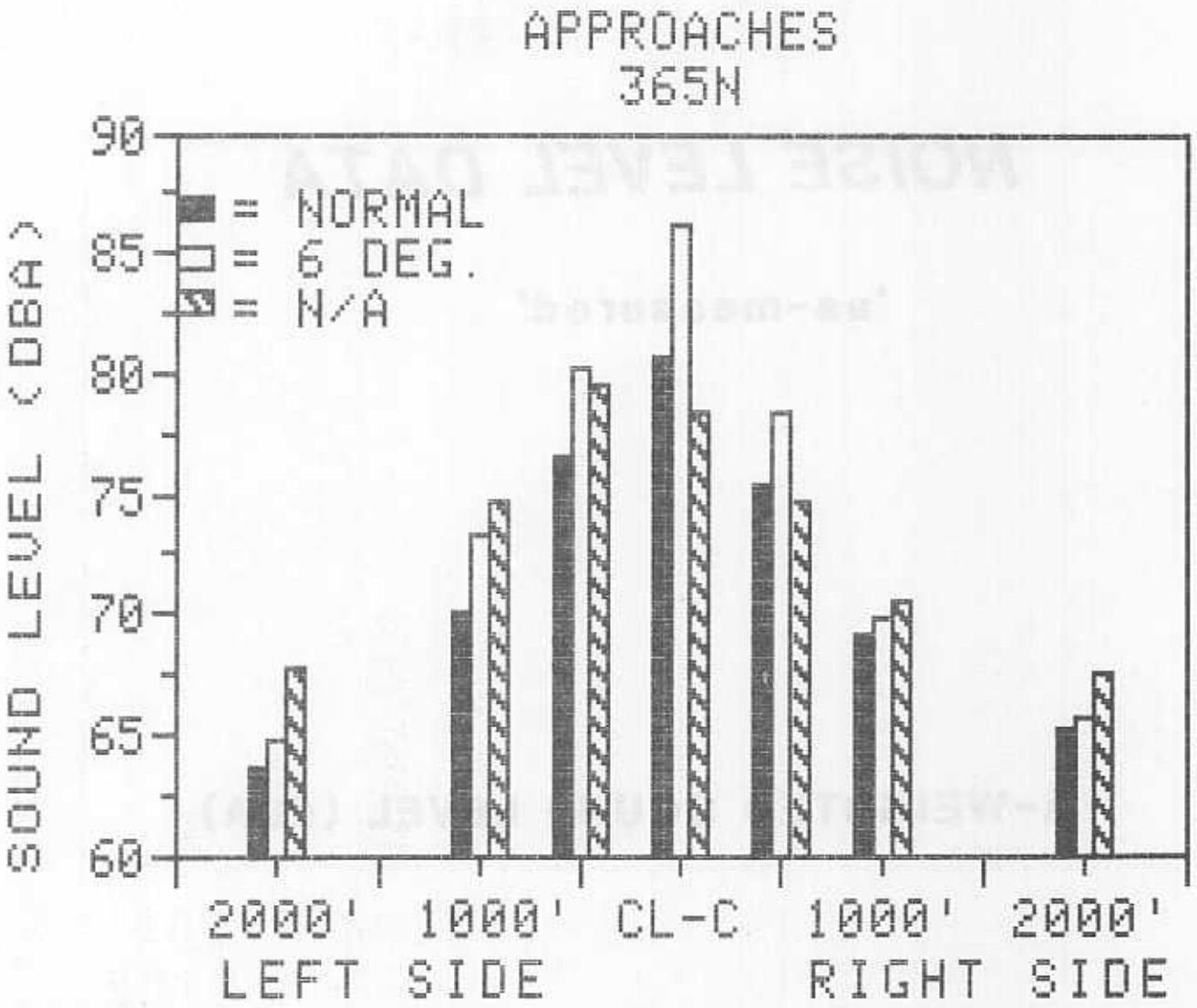
	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' WEST	1000' WEST	500' WEST	CL-C	500' EAST	1000' EAST	2000' EAST
E82	--	80.70	80.90	80.90	80.50	78.90	75.00
E83	75.70	80.20	82.10	80.50	80.80	80.30	--
AVERAGE	75.70	80.45	81.50	80.70	80.65	79.60	75.00
STD. DEV.	--	0.35	0.85	0.28	0.21	0.99	--
90% C.I.	--	--	--	--	--	--	--

NOISE LEVEL DATA

'as-measured'

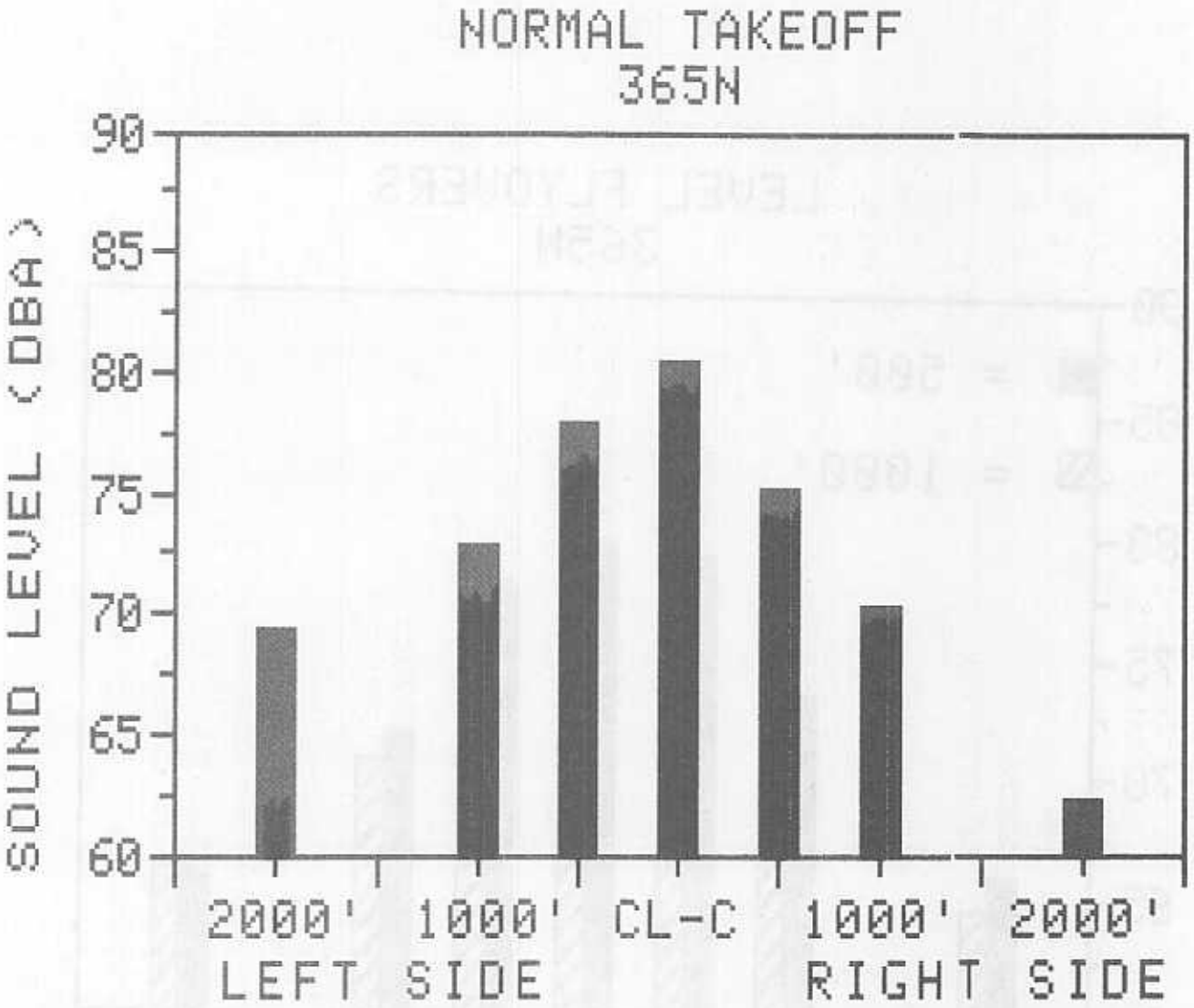
A-WEIGHTED SOUND LEVEL (dBA)

THIS SECTION OF THE APPENDIX CONTAINS THE 'AS-MEASURED' A-WEIGHTED SOUND LEVEL (dBA) FOR ALL FLIGHT EVENTS. THESE DATA ARE PRESENTED IN THE FORM OF BAR CHARTS, SUMMARY TABLES AND INDIVIDUAL EVENT DATA. THE BAR CHARTS SHOW THE FALL OFF IN NOISE LEVEL VERSUS SIDELINE DISTANCE, AND PROVIDE A QUICK LOOK COMPARISON OF THE NOISE LEVELS. PERTINENT FLIGHT PARAMETER INFORMATION READ FROM THE COCKPIT INSTRUMENT PANEL VIDEO RECORDINGS IS ALSO SHOWN BELOW EACH BAR CHART. THE SUMMARY TABLES PRESENT THE AVERAGE NOISE LEVEL, NUMBER OF SAMPLES, STANDARD DEVIATION AND THE 90 PERCENT CONFIDENCE INTERVAL FOR EACH FLIGHT CONDITION. INDIVIDUAL EVENT DATA FOR EACH CONDITION IS THEN GIVEN.



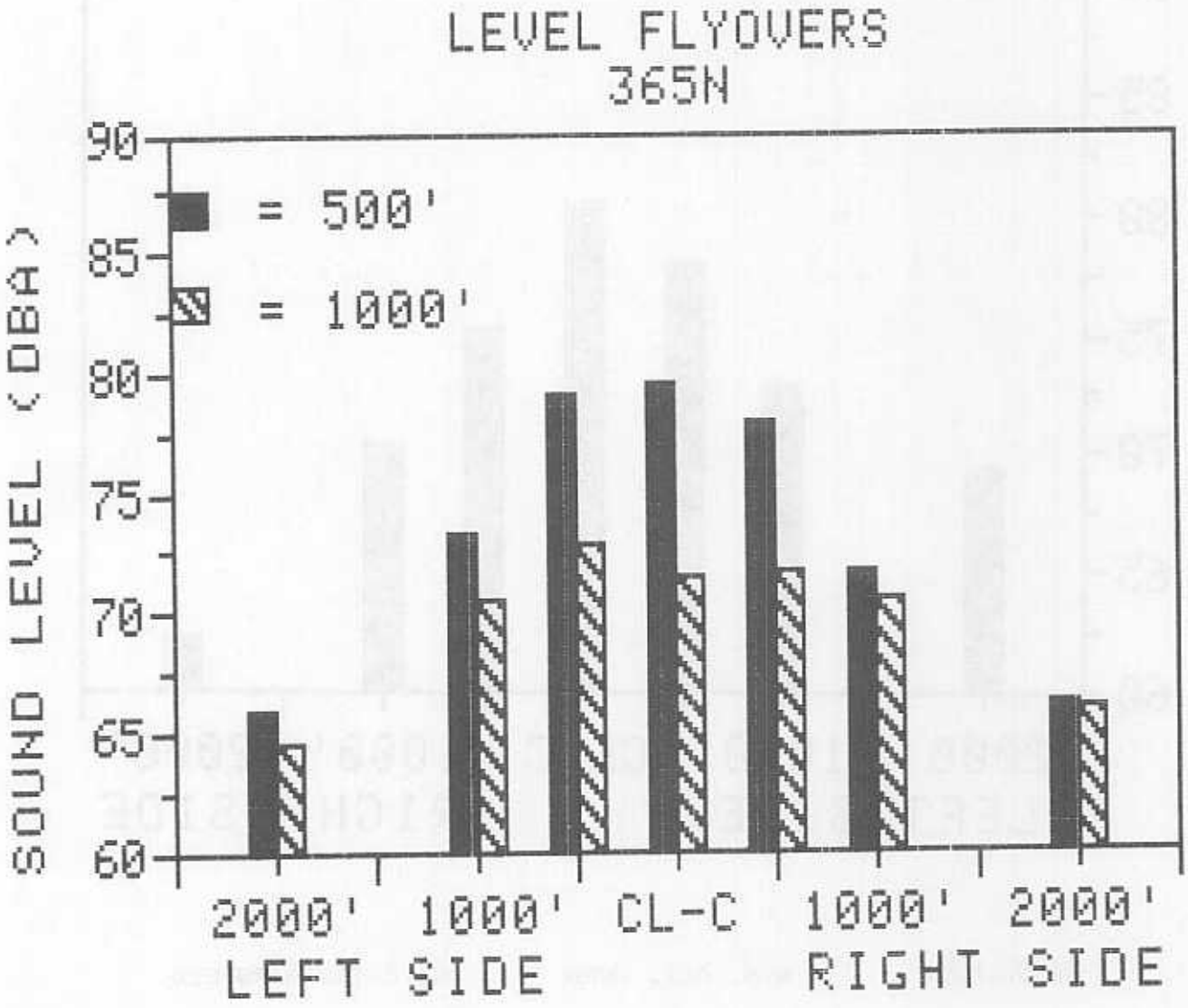
OPERATION	AVG. ALT. OVER CL-C (FT. AGL)	INDICATED AIRSPEED (KTS.)	GLIDESLOPE RANGE (DEG.)
NORMAL APPROACH	400	75-53	0.2-5.7
SIX DEG. APPROACH	380	80	6.0
NOISE ABATEMENT APP. VAR. R/D AND A/S (EVENTS D21-D27)	650	92-60	2.9-11.4

NOTE: ALTITUDE, AIRSPEED AND VERTICAL SPEED DATA READ FROM VIDEO TAPES OF THE INSTRUMENT PANEL. THE GLIDESLOPE RANGE WAS CALCULATED WITHIN ±15 SEC OF THE CL-C MICROPHONE POSITION.



OPERATION	AVG. ALT. OVER CLC (FT. AGL)	INDICATED AIRSPEED (KTS.)
NORMAL TAKEOFF	418	86

NOTE: ALTIMETER AND INDICATED AIRSPEED READINGS MADE WHEN THE HELICOPTER PASSED OVER CLC MICROPHONE POSITION



INDICATED AIRSPEED =135 KTS.

365N SUMMARY SHEET (9/10/84)

A-WEIGHTED SOUND LEVEL (DB)

	(LEFT SIDE)				(RIGHT SIDE)		
	2000'	1000'	500'	CL-C	500'	1000'	2000'
* SIX DEG. APPROACH AT VY, 75 KTS. *							
AVERAGE	64.8	73.2	80.3	86.3	78.3	69.7	65.6
N	2	8	8	8	8	8	8
S.D.	.8	1.6	1.6	1.5	.6	.5	.7
90% CI	--	1.1	1.1	1.0	.4	.3	.5
* NORMAL APPROACH *							
AVERAGE	63.5	70.0	76.4	80.7	75.3	69.2	65.2
N	5	10	11	11	11	9	11
S.D	1.0	.8	.9	2.4	1.4	.5	.9
90% CI	.9	.5	.5	1.3	.8	.3	.5
* NOISE ABATEMENT APPROACH (VAR. R/D AND A/S) *							
AVERAGE	67.7	74.6	79.5	78.4	74.7	70.6	67.5
N	7	6	7	7	7	7	6
S.D	.7	.5	.9	.7	1.2	.9	1.2
90% CI	.5	.4	.7	.5	.9	.7	1.0
* NOISE ABATEMENT APPROACH (8-9 DEG. TARGET, VAR. A/S) *							
AVERAGE	67.4	74	78.2	76.7	72.3	69.1	65.2
N	7	7	7	7	7	7	7
S.D	1.1	1.0	.9	1.0	.4	.8	.8
90% CI	.8	.7	.7	.7	.3	.6	.6

365N SUMMARY SHEET (9/10/84)

A-WEIGHTED SOUND LEVEL (DB)

	(LEFT SIDE)				(RIGHT SIDE)		
	2000'	1000'	500'	CL-C	500'	1000'	2000'
* NORMAL TAKEOFF *							
AVERAGE	69.3	72.9	77.8	80.4	75.2	70.2	62.1
N	10	10	10	10	10	10	3
S.D.	.8	.6	1.2	1.3	.9	.9	.2
90% CI	.5	.3	.7	.8	.5	.5	.4
* 500 FT. LEVEL FLYOVER AT 135 KTS. *							
AVERAGE	65.8	73.3	79.1	79.5	77.9	71.6	66.1
N	2	4	4	4	4	4	2
S.D	.1	.8	.6	.2	.5	.9	1.4
90% CI	--	1.0	.7	.3	.6	1.1	--
* 1000 FT. LEVEL FLYOVER AT 135 KTS. *							
AVERAGE	64.4	70.6	72.7	71.5	71.7	70.5	65.9
N	1	2	2	2	2	2	1
S.D	--	.7	.7	.5	.4	1.1	--
90% CI	--	--	--	--	--	--	--

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: AEROSPATIALE 365N DAUPHIN TEST DATE: 9/10/84

OPERATION : 6 DEGREE APPROACH AT VY, 75 KTS.

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
A13	--	72.60	81.00	86.00	78.50	70.00	65.90
A14	--	71.50	78.80	87.30	78.40	69.20	65.90
A15	--	74.60	82.40	84.90	79.00	69.80	65.80
A16	--	72.50	79.10	87.50	78.50	70.00	65.20
A17	--	72.60	79.80	86.60	78.10	70.00	65.70
A18	--	73.10	80.40	85.20	78.40	70.00	65.30
A19	65.20	74.80	80.90	85.20	78.10	69.20	64.70
A20	64.40	73.90	80.30	87.30	77.60	69.60	66.30
AVERAGE	64.80	73.20	80.34	86.25	78.33	69.73	65.60
STD. DEV.	0.80	1.61	1.62	1.51	0.57	0.50	0.71
90% C.I.	NA	1.08	1.08	1.01	0.38	0.33	0.48

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: AEROSPATIALE 365N DAUPHIN

TEST DATE: 09/10/84

OPERATION : NORMAL APPROACH

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
B1	--	70.00	76.10	80.60	75.50	--	64.50
B3	--	70.60	75.90	79.60	75.30	68.70	65.90
B5	--	70.70	76.60	80.20	75.30	69.30	65.10
B7	--	70.00	75.90	79.50	75.10	69.00	65.20
B9	--	69.80	75.90	76.70	73.60	68.80	65.30
B11	--	71.10	77.30	81.90	77.70	69.00	65.90
B35	63.60	--	76.80	80.90	74.60	69.40	66.40
B37	63.70	70.80	75.10	79.90	73.20	--	65.90
B73	63.90	69.40	78.40	85.00	77.30	70.30	63.20
B75	61.90	69.50	76.30	84.60	76.80	69.20	64.50
B77	64.40	68.40	75.60	78.70	74.30	69.20	64.80
AVERAGE	63.50	70.03	76.35	80.69	75.34	69.21	65.15
STD. DEV.	0.95	0.81	0.90	2.42	1.44	0.47	0.90
90% C.I.	0.90	0.47	0.49	1.32	0.79	0.29	0.49

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: AEROSPATIALE 365N DAUPHIN TEST DATE: 9/10/84

OPERATION : NORMAL TAKEOFF

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' WEST	1000' WEST	500' WEST	CL-C	500' EAST	1000' EAST	2000' EAST
C2	68.60	73.00	78.60	79.40	75.40	69.30	--
C4	70.80	73.50	79.10	81.20	75.00	70.30	--
C6	68.30	72.80	78.30	81.30	74.80	70.50	--
C8	70.00	72.00	77.60	80.30	75.30	71.00	--
C10	69.60	73.00	78.80	80.40	75.80	70.30	--
C12	68.50	73.20	78.60	79.30	75.70	70.40	--
C36	69.30	72.00	75.50	78.80	73.40	69.60	62.20
C38	70.20	73.00	76.40	80.00	76.40	71.90	--
C74	69.10	73.80	78.20	83.50	75.70	68.90	62.30
C76	68.80	73.00	76.90	79.90	74.30	69.50	61.90
AVERAGE	69.32	72.93	77.80	80.41	75.18	70.17	62.13
STD. DEV.	0.82	0.57	1.18	1.34	0.86	0.88	0.21
90% C.I.	0.47	0.33	0.68	0.78	0.50	0.51	0.35

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: AEROSPATIALE 365N DAUPHIN TEST DATE: 9/10/84

OPERATION : NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
D21	67.00	--	78.50	79.10	73.50	69.70	--
D22	66.80	74.10	80.80	78.10	73.50	69.60	66.30
D23	67.30	74.70	80.10	79.40	75.50	70.80	67.00
D24	68.40	75.30	79.90	77.70	76.40	72.10	68.90
D25	68.70	74.10	78.70	78.40	75.00	71.10	67.40
D26	67.70	74.80	79.90	78.30	73.40	71.20	68.90
D27	67.90	74.60	78.40	77.50	75.30	69.90	66.20
AVERAGE	67.69	74.60	79.47	78.36	74.66	70.63	67.45
STD. DEV.	0.71	0.46	0.93	0.69	1.19	0.93	1.21
90% C.I.	0.52	0.38	0.68	0.51	0.87	0.68	1.00

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: AEROSPATIALE 365N DAUPHIN TEST DATE: 9/10/84

OPERATION : NOISE ABATEMENT APPROACH (8-9 DEG. TARGET, VAR. A/S)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
D28	67.20	75.70	76.90	75.00	72.10	70.20	66.00
D29	66.80	74.90	79.60	75.80	72.80	69.80	64.90
D30	68.50	74.10	78.70	77.40	72.40	68.20	63.70
D31	66.00	73.90	78.20	76.60	72.50	68.90	65.80
D32	69.20	73.30	77.20	77.20	71.60	69.00	65.90
D33	67.10	73.30	78.80	77.90	72.50	69.30	65.20
D34	67.00	72.80	78.00	77.00	71.90	68.00	64.70
AVERAGE	67.40	74.00	78.20	76.70	72.26	69.06	65.17
STD. DEV.	1.08	1.01	0.94	1.00	0.41	0.80	0.82
90% C.I.	0.80	0.74	0.69	0.73	0.30	0.58	0.60

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: AEROSPATIALE 365N DAUPHIN TEST DATE: 9/10/84

OPERATION : LEVEL FLYOVER (500 FT. AT 135 KTS.)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' WEST	1000' WEST	500' WEST	CL-C	500' EAST	1000' EAST	2000' EAST
F78	--	73.20	78.80	79.80	77.80	70.40	67.10
F79	65.70	72.40	78.40	79.40	78.60	72.30	--
F80	--	74.40	79.20	79.30	77.60	71.30	65.10
F81	65.90	73.30	79.80	79.30	77.60	72.40	--
AVERAGE	65.80	73.33	79.05	79.45	77.90	71.60	66.10
STD. DEV.	0.14	0.82	0.60	0.24	0.48	0.94	1.41
90% C.I.	--	0.97	0.70	0.28	0.56	1.11	--

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: AEROSPATIALE 365N DAUPHIN TEST DATE: 9/10/84

OPERATION : LEVEL FLYOVER (1000 FT. AT 135 KTS.)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' WEST	1000' WEST	500' WEST	CL-C	500' EAST	1000' EAST	2000' EAST
E82	--	71.10	72.20	71.80	71.40	69.70	65.90
E83	64.40	70.10	73.20	71.10	71.90	71.20	--
AVERAGE	64.40	70.60	72.70	71.45	71.65	70.45	65.90
STD. DEV.	--	0.71	0.71	0.49	0.35	1.06	--
90% C.I.	--	--	--	--	--	--	--

RADAR TRACKING

DATA

THIS SECTION OF THE APPENDIX CONTAINS THE HELICOPTER POSITION DATA AND TRACKING PLOTS DERIVED FROM THE FAA'S PORTABLE TRACKING RADAR SYSTEM. THE POSITION DATA LISTS THE CLOSEST POINT OF APPROACH (CPA), TIME OF CPA, ELEVATION ANGLE, RATE OF CLIMB OR DESCENT, THE CLIMB OR DESCENT ANGLE, AND GROUND SPEED FOR ALL FLIGHT CONDITIONS. TRACKING PLOTS OF THE ACTUAL FLIGHT PROFILE FLOWN ARE PROVIDED FOR EACH FLIGHT CONDITIONS.

AEROSPATIALE 365N DAUPHIN

POSITION DATA
NOISE MEASUREMENT PROGRAM

CENTERLINE CENTER

DATE:09/10/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NORMAL APPROACH							
1	APP	388.7	87.7	8:52:55.0	21.4	0.2	73.2
3	APP	394.7	87.3	8:57:49.3	-59.2	-0.5	73.6
5	APP	395.0	88.8	9:02:26.4	-70.7	-0.5	73.9
7	APP	401.5	81.7	9:06:59.0	173.2	1.4	72.1
9	APP	415.2	88.1	9:11:48.0	-26.2	-0.2	73.4
11	APP	395.0	85.6	9:16:02.8	-418.4	-3.3	70.6
35	APP	401.0	87.7	11:28:01.3	-167.4	-1.4	70.0
37	APP	421.1	86.1	11:31:10.2	57.1	0.4	72.3
73	APP	363.9	79.1	14:12:09.2	-464.8	-3.8	68.7
75	APP	343.6	80.9	14:15:12.3	-226.2	-1.9	67.6
77	APP	348.8	85.9	14:18:51.5	-92.0	-0.8	68.2
NORMAL TAKEOFF							
2	DEP	409.4	86.0	8:54:36.2	509.9	3.6	80.3
4	DEP	399.6	88.6	8:59:26.3	208.6	1.4	87.2
6	DEP	396.9	81.5	9:03:51.7	1044.7	7.2	81.1
8	DEP	409.3	83.8	9:08:25.7	807.4	5.7	80.4
10	DEP	394.5	68.3	9:13:17.0	1328.5	9.1	81.5
12	DEP	420.0	79.5	9:18:03.5	494.5	3.3	84.2
36	DEP	403.3	86.3	11:29:23.8	1192.4	8.3	80.6
38	DEP	432.7	87.3	11:32:30.7	579.7	4.0	81.4
74	DEP	304.8	69.3	14:13:29.0	-532.0	-2.6	116.4
76	DEP	400.2	88.4	14:16:33.8	954.5	6.3	85.5
SIX DEGREE APPROACH AT VY, 75 KTS.							
13	APP	390.0	89.7	9:21:11.0	-634.1	-5.4	66.5
14	APP	390.8	81.4	9:26:24.4	-619.1	-5.0	70.1
15	APP	371.3	85.6	9:29:56.9	-365.2	-2.9	70.4
16	APP	374.5	74.6	9:33:24.1	-484.6	-4.2	65.6
17	APP	350.1	81.8	9:36:57.6	-688.9	-6.1	63.9
18	APP	393.2	85.3	9:40:08.4	-628.1	-5.5	64.3
19	APP	362.9	82.5	9:42:47.2	-714.6	-5.8	69.3
20	APP	352.8	83.6	9:45:48.8	-694.6	-5.9	66.0

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

AEROSPATIALE 365N DAUPHIN

POSITION DATA
NOISE MEASUREMENT PROGRAM

CENTERLINE CENTER

DATE:09/10/84

FAA/AEE

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)							
21	APP	548.1	86.2	10:33:29.1	-1122.7	-7.8	81.2
22	APP	552.0	86.6	10:37:01.9	-1205.4	-8.6	78.8
23	APP	529.9	72.2	10:40:16.9	-1423.7	-9.4	85.2
24	APP	579.7	84.9	10:43:45.7	-1515.2	-9.8	86.5
25	APP	593.3	71.5	10:47:19.6	-1632.7	-10.0	91.1
26	APP	604.0	84.2	10:51:01.5	-1346.8	-8.6	87.4
27	APP	640.5	75.5	10:54:39.2	-1213.7	-7.8	87.9
NOISE ABATEMENT APPROACH (8-9 DEG. TARGET, VAR. A/S)							
28	APP	776.9	87.5	10:57:31.1	-1308.5	-9.0	81.8
29	APP	655.4	73.7	11:01:25.3	-1111.5	-8.3	75.3
30	APP	613.8	88.3	11:05:03.8	-702.5	-5.1	77.5
31	APP	577.4	73.7	11:08:29.6	-1662.6	-13.2	69.8
32	APP	661.9	77.8	11:11:57.1	-1327.5	-10.0	74.3
33	APP	590.6	77.0	11:17:10.9	-1217.6	-8.8	77.4
34	APP	556.3	71.7	11:22:29.8	-1086.5	-8.7	70.2
500 FT. LEVEL FLYOVER AT 135 KTS.							
78	F/O	316.5	86.8	14:20:55.6	-136.2	-0.6	138.2
79	F/O	350.5	86.0	14:23:07.1	96.8	0.4	133.3
80	F/O	362.1	89.4	14:24:53.3	224.4	0.9	142.8
81	F/O	380.0	86.9	14:26:56.2	15.9	0.1	133.6
1000 FT. LEVEL FLYOVER AT 135 KTS.							
82	F/O	896.8	85.7	14:29:13.4	-232.7	-0.9	142.0
83	F/O	856.8	88.6	14:31:17.7	-104.2	-0.4	133.4

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

AEROSPATIALE 365N DAUPHIN

POSITION DATA
NOISE MEASUREMENT PROGRAM

500 FT. EAST

DATE:09/10/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NORMAL APPROACH							
1	APP	620.8	38.9	8:52:55.4	-23.1	-0.2	73.4
3	APP	624.3	39.4	8:57:49.3	-59.4	-0.5	73.6
5	APP	636.4	38.6	9:02:26.4	-71.3	-0.5	73.9
7	APP	637.7	38.9	9:06:58.9	165.9	1.3	72.1
9	APP	640.8	40.6	9:11:48.0	-26.2	-0.2	73.4
11	APP	621.2	39.7	9:16:02.7	-408.5	-3.3	70.8
35	APP	628.3	39.8	11:28:01.7	-221.3	-1.8	70.4
37	APP	669.5	39.1	11:31:10.3	52.8	0.4	72.6
73	APP	630.0	35.2	14:12:09.1	-464.3	-3.8	69.3
75	APP	633.0	32.7	14:15:12.5	-242.2	-2.0	67.7
77	APP	623.5	34.1	14:18:51.5	-92.3	-0.8	68.2
NORMAL TAKEOFF							
2	DEP	630.0	40.7	8:54:36.2	509.7	3.6	80.3
4	DEP	633.8	39.3	8:59:26.3	208.3	1.4	87.2
6	DEP	622.3	39.0	9:03:51.6	1089.1	7.6	80.3
8	DEP	621.0	41.2	9:08:25.7	807.5	5.7	80.4
10	DEP	612.5	37.8	9:13:17.1	1308.4	8.9	82.4
12	DEP	647.5	40.1	9:18:03.4	507.9	3.4	84.0
36	DEP	651.6	38.5	11:29:23.9	1183.8	8.2	80.6
38	DEP	658.8	41.4	11:32:31.1	521.1	3.6	81.6
74	DEP	433.6	51.8	14:13:27.3	5241.1	14.2	204.2
76	DEP	640.1	38.6	14:16:33.2	1114.8	7.4	84.8
SIX DEGREE APPROACH AT VY, 75 KTS.							
13	APP	619.2	39.4	9:21:10.9	-636.3	-5.4	66.2
14	APP	587.3	41.4	9:26:24.3	-600.5	-4.8	70.2
15	APP	581.7	38.4	9:29:57.7	-515.6	-4.2	69.8
16	APP	568.4	40.8	9:33:23.4	-467.8	-4.0	66.7
17	APP	590.9	36.2	9:36:57.7	-659.2	-5.8	63.6
18	APP	613.4	40.1	9:40:07.9	-579.7	-5.0	65.6
19	APP	595.8	37.4	9:42:47.2	-714.4	-5.8	69.3
20	APP	597.0	36.7	9:45:48.5	-704.3	-6.1	65.4

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

AEROSPATIALE 365N DAUPHIN

POSITION DATA
NOISE MEASUREMENT PROGRAM

500 FT. EAST

DATE:09/10/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)							
21	APP	765.7	45.9	10:33:29.0	-1116.4	-7.7	81.9
22	APP	752.3	47.3	10:37:01.9	-1205.6	-8.6	78.8
23	APP	751.8	42.4	10:40:16.9	-1424.0	-9.4	85.2
24	APP	775.4	48.7	10:43:45.5	-1506.9	-9.7	87.0
25	APP	807.0	44.5	10:47:19.5	-1647.2	-10.1	91.0
26	APP	793.8	49.4	10:51:01.5	-1346.6	-8.6	87.4
27	APP	806.5	51.4	10:54:39.0	-1136.9	-7.4	85.8
NOISE ABATEMENT APPROACH (8-9 DEG. TARGET, VAR. A/S)							
28	APP	914.2	57.6	10:57:31.8	-1393.5	-9.7	80.2
29	APP	818.7	53.8	11:01:24.5	-1166.5	-8.3	78.8
30	APP	781.2	52.9	11:05:03.4	-743.2	-5.5	76.6
31	APP	767.5	46.4	11:08:29.6	-1662.3	-13.2	69.8
32	APP	839.8	52.6	11:11:56.5	-1258.5	-9.4	75.1
33	APP	768.5	48.3	11:17:11.0	-1220.9	-8.8	77.9
34	APP	745.9	48.9	11:22:28.9	-1222.5	-9.5	72.4
500 FT. LEVEL FLYOVER AT 135 KTS.							
78	F/O	577.9	33.3	14:20:55.8	-171.7	-0.7	135.5
79	F/O	630.2	33.9	14:23:07.2	132.8	0.6	133.3
80	F/O	601.7	37.1	14:24:53.2	224.4	0.9	142.8
81	F/O	626.3	37.4	14:26:56.5	11.9	0.1	132.5
1000 FT. LEVEL FLYOVER AT 135 KTS.							
82	F/O	997.4	64.0	14:29:13.4	-233.0	-0.9	142.0
83	F/O	1003.8	58.8	14:31:17.7	-103.8	-0.4	133.4

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

Flyover Direction ?

AEROSPATIALE 365N DAUPHIN

POSITION DATA
NOISE MEASUREMENT PROGRAM

500 FT. WEST

DATE:09/10/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NORMAL APPROACH							
1	APP	644.4	37.1	8:52:55.1	9.6	0.1	73.4
3	APP	610.4	40.4	8:57:50.7	-91.2	-0.7	76.6
5	APP	633.3	38.6	9:02:27.3	-105.5	-0.8	74.7
7	APP	612.5	41.7	9:07:00.0	195.9	1.5	74.5
9	APP	641.6	40.6	9:11:49.3	-3.1	0.0	74.4
11	APP	638.8	38.3	9:16:03.3	-414.3	-3.4	68.6
35	APP	634.3	39.7	11:28:00.8	-149.7	-1.2	70.7
37	APP	624.8	42.4	11:31:10.0	63.4	0.5	71.9
73	APP	557.8	39.3	14:12:10.0	-448.6	-3.9	65.7
75	APP	557.8	38.9	14:15:11.8	-161.3	-1.3	67.9
77	APP	582.5	36.7	14:18:51.7	-92.0	-0.8	68.5
NORMAL TAKEOFF							
2	DEP	643.2	38.3	8:54:34.9	800.0	5.6	81.0
4	DEP	631.4	39.0	8:59:27.0	212.3	1.4	87.1
6	DEP	643.5	36.8	9:03:51.3	1181.3	8.6	77.5
8	DEP	671.7	37.3	9:08:25.7	807.5	5.7	80.4
10	DEP	655.8	35.5	9:13:17.4	1271.0	8.5	83.9
12	DEP	651.8	41.2	9:18:04.4	343.5	2.2	87.7
36	DEP	629.4	39.8	11:29:23.8	1192.2	8.3	80.5
38	DEP	610.6	40.6	11:32:28.9	1164.3	8.2	80.1
74	DEP	533.6	32.4	14:13:28.8	-656.6	-3.0	121.9
76	DEP	608.6	41.2	14:16:33.5	961.9	6.3	85.7
SIX DEGREE APPROACH AT VY, 75 KTS.							
13	APP	633.7	38.1	9:21:11.1	-634.0	-5.3	66.9
14	APP	660.1	35.4	9:26:25.8	-556.0	-4.8	65.2
15	APP	609.5	38.2	9:29:56.3	-263.2	-2.1	69.2
16	APP	651.5	34.7	9:33:23.0	-497.0	-4.2	67.5
17	APP	598.3	35.1	9:36:58.4	-492.0	-4.3	64.0
18	APP	618.9	38.3	9:40:09.3	-799.0	-6.9	65.5
19	APP	592.9	39.8	9:42:46.5	-654.8	-5.5	66.8
20	APP	603.0	37.2	9:45:48.0	-689.7	-6.0	64.3

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

AEROSPATIALE 365N DAUPHIN

POSITION DATA
NOISE MEASUREMENT PROGRAM

500 FT. WEST

DATE:09/10/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)							
21	APP	638.2	57.3	10:33:29.8	-1228.9	-9.1	75.7
22	APP	733.2	48.4	10:37:02.6	-1225.2	-8.7	79.3
23	APP	693.1	50.9	10:40:16.4	-1481.7	-10.0	83.3
24	APP	746.1	50.7	10:43:45.7	-1515.1	-9.8	86.5
25	APP	737.8	50.6	10:47:19.4	-1653.3	-10.2	90.8
26	APP	761.7	53.0	10:51:01.2	-1332.9	-8.6	87.3
27	APP	797.1	54.2	10:54:38.3	-971.1	-6.5	84.6
NOISE ABATEMENT APPROACH (8-9 DEG. TARGET, VAR. A/S)							
28	APP	929.4	56.8	10:57:31.5	-1356.7	-9.4	81.3
29	APP	812.1	51.3	11:01:25.2	-1114.2	-8.2	75.9
30	APP	760.6	55.4	11:05:03.0	-792.5	-5.9	75.3
31	APP	759.7	49.6	11:08:29.1	-1615.4	-12.5	71.7
32	APP	810.9	53.5	11:11:56.8	-1303.5	-9.7	75.1
33	APP	764.4	50.9	11:17:10.4	-1206.7	-8.9	76.4
34	APP	736.2	45.8	11:22:29.8	-1086.6	-8.7	70.2
500 FT. LEVEL FLYOVER AT 135 KTS.							
78	F/O	602.2	31.6	14:20:55.5	-133.4	-0.5	139.0
79	F/O	588.1	36.5	14:23:06.5	-0.9	0.0	135.3
80	F/O	615.4	36.1	14:24:53.4	220.8	0.9	142.9
81	F/O	611.5	38.4	14:26:56.3	17.3	0.1	133.5
1000 FT. LEVEL FLYOVER AT 135 KTS.							
82	F/O	1056.9	57.8	14:29:13.4	-233.0	-0.9	142.0
83	F/O	971.4	62.3	14:31:17.4	-127.5	-0.5	134.4

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

AEROSPATIALE 365N DAUPHIN

POSITION DATA
NOISE MEASUREMENT PROGRAM

1000 FT. EAST

DATE:09/10/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NORMAL APPROACH							
1	APP	1053.8	22.4	8:52:56.0	-83.9	-0.6	74.2
3	APP	1060.1	22.1	8:57:49.3	-59.4	-0.5	73.6
5	APP	1074.2	21.8	9:02:26.4	-71.3	-0.5	73.9
7	APP	1072.7	22.3	9:06:59.6	202.3	1.5	74.3
9	APP	1071.9	23.0	9:11:48.0	-26.2	-0.2	73.4
11	APP	1055.1	21.7	9:16:03.7	-373.6	-3.1	67.4
35	APP	1061.4	22.4	11:28:01.7	-221.3	-1.8	70.4
37	APP	1104.0	22.6	11:31:10.3	52.8	0.4	72.6
73	APP	1077.5	19.8	14:12:09.1	-464.3	-3.8	69.3
75	APP	1086.8	18.5	14:15:12.5	-242.2	-2.0	67.7
77	APP	1073.3	18.9	14:18:52.4	-96.7	-0.8	68.6
NORMAL TAKEOFF							
2	DEP	1061.2	22.9	8:54:36.2	509.7	3.6	80.3
4	DEP	1069.4	22.2	8:59:26.3	208.3	1.4	87.2
6	DEP	1056.5	21.9	9:03:51.6	1089.1	7.6	80.3
8	DEP	1049.7	22.7	9:08:25.4	834.8	5.8	80.6
10	DEP	1042.1	23.2	9:13:18.6	874.3	5.5	89.8
12	DEP	1074.2	22.8	9:18:02.8	651.4	4.5	80.9
36	DEP	1087.3	21.6	11:29:23.4	1243.2	8.8	79.4
38	DEP	1085.5	23.8	11:32:31.2	545.9	3.8	82.0
74	DEP	569.0	12.1	14:13:26.4	4675.6	20.4	124.3
76	DEP	1073.6	22.0	14:16:33.2	1114.8	7.4	84.8
SIX DEGREE APPROACH AT VY, 75 KTS.							
13	APP	1054.1	22.2	9:21:10.8	-643.3	-5.5	66.3
14	APP	1018.2	22.6	9:26:24.3	-600.5	-4.8	70.2
15	APP	1013.9	21.0	9:29:57.8	-524.6	-4.2	69.8
16	APP	1001.8	21.9	9:33:23.4	-467.8	-4.0	66.7
17	APP	1037.1	19.8	9:36:57.7	-659.2	-5.8	63.6
18	APP	1046.4	22.3	9:40:07.9	-579.7	-5.0	65.6
19	APP	1038.4	20.5	9:42:47.2	-714.4	-5.8	69.3
20	APP	1042.2	20.2	9:45:48.5	-704.3	-6.1	65.4

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

AEROSPATIALE 365N DAUPHIN

POSITION DATA
NOISE MEASUREMENT PROGRAM

1000 FT. EAST

DATE:09/10/84

FAA/AEE

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)							
21	APP	1171.1	28.1	10:33:29.0	-1116.4	-7.7	81.9
22	APP	1152.1	28.8	10:37:01.9	-1205.6	-8.6	78.8
23	APP	1161.7	26.0	10:40:16.9	-1424.0	-9.4	85.2
24	APP	1167.6	29.0	10:43:46.6	-1503.0	-10.2	82.8
25	APP	1204.3	28.1	10:47:19.5	-1647.2	-10.1	91.0
26	APP	1181.2	30.8	10:51:01.5	-1346.6	-8.6	87.4
27	APP	1178.0	32.5	10:54:39.0	-1136.9	-7.4	85.8
NOISE ABATEMENT APPROACH (8-9 DEG. TARGET, VAR. A/S)							
28	APP	1248.8	38.3	10:57:31.8	-1393.5	-9.7	80.2
29	APP	1183.8	34.0	11:01:24.5	-1166.5	-8.3	78.8
30	APP	1155.1	32.7	11:05:03.4	-743.2	-5.5	76.6
31	APP	1156.0	28.5	11:08:30.3	-1517.2	-12.4	68.3
32	APP	1209.5	33.6	11:11:56.5	-1258.5	-9.4	75.1
33	APP	1153.3	29.9	11:17:11.0	-1220.9	-8.8	77.9
34	APP	1135.7	30.4	11:22:28.4	-1308.8	-10.2	71.9
500 FT. LEVEL FLYOVER AT 135 KTS.							
78	F/O	1031.7	18.0	14:20:55.8	-171.7	-0.7	135.5
79	F/O	1080.7	19.1	14:23:07.4	167.7	0.7	133.4
80	F/O	1045.3	20.4	14:24:53.2	224.4	0.9	142.8
81	F/O	1066.0	21.0	14:26:56.5	11.9	0.1	132.5
1000 FT. LEVEL FLYOVER AT 135 KTS.							
82	F/O	1297.9	43.9	14:29:13.3	-214.1	-0.9	141.9
83	F/O	1334.6	40.1	14:31:17.7	-103.8	-0.4	133.4

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

AEROSPATIALE 365N DAUPHIN

POSITION DATA
NOISE MEASUREMENT PROGRAM

1000 FT. WEST

DATE:09/10/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NORMAL APPROACH							
1	APP	1085.8	21.2	8:52:55.6	-45.1	-0.3	74.0
3	APP	1025.7	22.8	8:57:50.7	-91.2	-0.7	76.6
5	APP	1066.7	21.9	9:02:27.3	-105.5	-0.8	74.7
7	APP	1038.7	23.2	9:07:00.0	195.9	1.5	74.5
9	APP	1061.9	23.3	9:11:49.3	-3.1	0.0	74.4
11	APP	1074.9	21.7	9:16:03.3	-414.3	-3.4	68.6
35	APP	1067.7	22.4	11:28:00.8	-149.7	-1.2	70.7
37	APP	1050.5	23.7	11:31:10.0	63.4	0.5	71.9
73	APP	981.7	21.2	14:12:10.0	-448.6	-3.9	65.7
75	APP	998.1	20.7	14:15:11.8	-161.3	-1.3	67.9
77	APP	1026.5	19.8	14:18:52.6	-102.1	-0.8	68.1
NORMAL TAKEOFF							
2	DEP	1070.4	22.0	8:54:34.9	800.0	5.6	81.0
4	DEP	1059.2	22.8	8:59:25.9	205.9	1.3	88.2
6	DEP	1081.7	21.0	9:03:51.3	1181.3	8.6	77.5
8	DEP	1110.6	22.4	9:08:26.4	731.0	5.0	82.5
10	DEP	1079.5	22.5	9:13:19.4	646.8	4.1	89.3
12	DEP	1079.5	23.5	9:18:04.4	343.5	2.2	87.7
36	DEP	1061.2	22.0	11:29:23.1	1271.4	8.9	80.5
38	DEP	1001.5	23.5	11:32:28.9	1164.3	8.2	80.1
74	DEP	986.5	17.0	14:13:28.8	-656.6	-3.0	121.9
76	DEP	1018.9	26.4	14:16:34.8	968.2	6.2	87.6
SIX DEGREE APPROACH AT VY, 75 KTS.							
13	APP	1073.3	21.5	9:21:11.1	-634.0	-5.3	66.9
14	APP	1096.1	20.6	9:26:25.8	-556.0	-4.8	65.2
15	APP	1049.3	21.2	9:29:56.3	-263.2	-2.1	69.2
16	APP	1099.6	19.8	9:33:23.0	-497.0	-4.2	67.5
17	APP	1038.8	19.5	9:36:58.4	-492.0	-4.3	64.0
18	APP	1050.6	21.5	9:40:09.3	-799.0	-6.9	65.5
19	APP	1028.1	21.8	9:42:46.5	-654.8	-5.5	66.8
20	APP	1043.7	20.7	9:45:47.9	-679.5	-6.0	64.3

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

AEROSPATIALE 365N DAUPHIN

POSITION DATA
NOISE MEASUREMENT PROGRAM

1000 FT. WEST

DATE:09/10/84

FAA/AEE

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)							
21	APP	994.4	32.8	10:33:29.8	-1228.9	-9.1	75.7
22	APP	1119.8	28.2	10:37:03.2	-1296.8	-9.2	79.1
23	APP	1077.1	30.1	10:40:16.4	-1481.7	-10.0	83.3
24	APP	1131.2	30.8	10:43:45.7	-1515.1	-9.8	86.5
25	APP	1112.2	32.3	10:47:19.1	-1624.1	-9.9	91.8
26	APP	1136.2	32.5	10:51:01.2	-1332.9	-8.6	87.3
27	APP	1162.8	33.9	10:54:38.3	-971.1	-6.5	84.6
NOISE ABATEMENT APPROACH (8-9 DEG. TARGET, VAR. A/S)							
28	APP	1268.8	35.3	10:57:33.4	-1676.6	-12.0	78.0
29	APP	1178.7	32.6	11:01:25.2	-1114.2	-8.2	75.9
30	APP	1119.8	34.1	11:05:03.0	-792.5	-5.9	75.3
31	APP	1146.4	30.4	11:08:29.1	-1615.4	-12.5	71.7
32	APP	1164.0	35.8	11:11:56.1	-1273.3	-9.5	74.7
33	APP	1146.1	29.5	11:17:11.5	-1181.8	-8.6	77.1
34	APP	1124.7	28.9	11:22:29.6	-1092.7	-8.6	71.7
500 FT. LEVEL FLYOVER AT 135 KTS.							
78	APP	1059.6	17.4	14:20:55.2	-93.6	-0.4	140.9
79	F/O	1023.7	20.1	14:23:06.5	-0.9	0.0	135.3
80	F/O	1061.5	20.1	14:24:53.4	220.8	0.9	142.9
81	F/O	1050.9	21.3	14:26:56.3	17.3	0.1	133.5
1000 FT. LEVEL FLYOVER AT 135 KTS.							
82	F/O	1390.3	40.4	14:29:13.7	-262.0	-1.0	142.3
83	F/O	1282.0	42.3	14:31:17.4	-127.5	-0.5	134.4

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

AEROSPATIALE 365N DAUPHIN

POSITION DATA
NOISE MEASUREMENT PROGRAM

2000 FT. EAST

DATE:09/10/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NORMAL APPROACH							
1	APP	2010.4	11.6	8:52:56.0	-83.9	-0.6	74.2
3	APP	2022.7	11.5	8:57:49.3	-59.4	-0.5	73.6
5	APP	2037.5	11.4	9:02:26.4	-71.3	-0.5	73.9
7	APP	2032.7	11.5	9:06:58.0	52.9	0.4	72.2
9	APP	2031.0	12.0	9:11:48.0	-26.2	-0.2	73.4
11	APP	2014.7	11.3	9:16:03.7	-373.6	-3.1	67.4
35	APP	2022.3	11.6	11:28:01.7	-221.3	-1.8	70.4
37	APP	2063.9	11.9	11:31:10.3	52.8	0.4	72.6
73	APP	2046.7	10.4	14:12:09.1	-464.3	-3.8	69.3
75	APP	2059.5	9.7	14:15:12.5	-242.2	-2.0	67.7
77	APP	2043.6	9.9	14:18:52.4	-96.7	-0.8	68.6
NORMAL TAKEOFF							
2	DEP	2019.5	11.7	8:54:35.2	728.9	5.1	81.0
4	DEP	2030.4	11.7	8:59:25.5	244.6	1.6	85.2
6	DEP	2015.0	11.3	9:03:51.0	1239.4	9.2	75.8
8	DEP	2008.1	11.7	9:08:25.4	834.8	5.8	80.6
10	DEP	2000.3	11.9	9:13:18.6	874.3	5.5	89.8
12	DEP	2027.4	11.9	9:18:02.8	651.4	4.5	80.9
36	DEP	2048.5	11.4	11:29:23.4	1243.2	8.8	79.4
38	DEP	2040.2	12.5	11:32:31.7	582.4	3.9	84.2
74	DEP	1343.5	5.2	14:13:26.4	4675.6	20.4	124.3
76	DEP	2034.2	11.5	14:16:33.2	1114.8	7.4	84.8
SIX DEGREE APPROACH AT VY, 75 KTS.							
13	APP	2016.2	11.5	9:21:10.8	-643.3	-5.5	66.3
14	APP	1978.8	11.4	9:26:25.2	-645.0	-5.4	66.7
15	APP	1976.0	10.7	9:29:57.8	-524.6	-4.2	69.8
16	APP	1965.7	11.1	9:33:23.4	-467.8	-4.0	66.7
17	APP	2004.5	10.9	9:36:56.4	-841.0	-7.1	67.1
18	APP	2008.0	11.5	9:40:07.9	-579.7	-5.0	65.6
19	APP	2006.1	10.6	9:42:47.2	-714.4	-5.8	69.3
20	APP	2011.3	10.4	9:45:48.5	-704.3	-6.1	65.4

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

AEROSPATIALE 365N DAUPHIN

POSITION DATA
NOISE MEASUREMENT PROGRAM

2000 FT. EAST

DATE:09/10/84

FAA/AEE

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)							
21	APP	2107.4	15.3	10:33:29.0	-1116.4	-7.7	81.9
22	APP	2083.2	15.8	10:37:01.3	-1273.7	-9.2	77.9
23	APP	2101.4	14.0	10:40:17.2	-1384.3	-9.1	85.4
24	APP	2094.1	15.8	10:43:46.6	-1503.0	-10.2	82.8
25	APP	2131.4	15.5	10:47:19.9	-1572.3	-9.8	89.5
26	APP	2101.6	16.4	10:51:02.3	-1389.2	-9.0	86.7
27	APP	2087.1	17.4	10:54:39.5	-1319.9	-8.3	89.0
NOISE ABATEMENT APPROACH (8-9 DEG. TARGET, VAR. A/S)							
28	APP	2122.9	21.5	10:57:31.8	-1393.5	-9.7	80.2
29	APP	2088.8	18.6	11:01:24.5	-1166.5	-8.3	78.8
30	APP	2069.2	17.7	11:05:03.4	-743.2	-5.5	76.6
31	APP	2079.4	15.5	11:08:30.3	-1517.2	-12.4	68.3
32	APP	2115.5	19.3	11:11:55.5	-1278.2	-9.4	76.6
33	APP	2075.6	16.2	11:17:11.0	-1220.9	-8.8	77.9
34	APP	2061.8	16.4	11:22:27.9	-1219.4	-9.5	71.7
500 FT. LEVEL FLYOVER AT 135 KTS.							
78	F/O	2006.3	9.3	14:20:55.8	-171.7	-0.7	135.5
79	F/O	2050.9	10.0	14:23:07.4	167.7	0.7	133.4
80	F/O	2012.6	10.6	14:24:53.6	215.8	0.9	142.9
81	F/O	2030.8	10.9	14:26:56.5	11.9	0.1	132.5
1000 FT. LEVEL FLYOVER AT 135 KTS.							
82	F/O	2135.3	25.0	14:29:13.3	-214.1	-0.9	141.9
83	F/O	2197.2	23.2	14:31:17.7	-103.8	-0.4	133.4

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

AEROSPATIALE 365N DAUPHIN

POSITION DATA
NOISE MEASUREMENT PROGRAM

2000 FT. WEST

DATE:09/10/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NORMAL APPROACH							
1	APP	2046.6	10.7	8:52:55.6	-45.1	-0.3	74.0
3	APP	1974.4	11.3	8:57:50.7	-91.2	-0.7	76.6
5	APP	2024.6	11.0	9:02:27.3	-105.5	-0.8	74.7
7	APP	1993.2	11.6	9:07:00.1	189.3	1.4	74.6
9	APP	2011.6	11.7	9:11:49.3	-3.1	0.0	74.4
11	APP	2034.1	10.9	9:16:03.3	-414.3	-3.4	68.6
35	APP	2025.5	11.2	11:28:00.8	-149.7	-1.2	70.7
37	APP	2004.2	11.8	11:31:10.0	63.4	0.5	71.9
73	APP	1938.5	10.2	14:12:10.0	-448.6	-3.9	65.7
75	APP	1963.5	10.0	14:15:11.8	-161.3	-1.3	67.9
77	APP	1990.6	9.7	14:18:52.6	-102.1	-0.8	68.1
NORMAL TAKEOFF							
2	DEP	2024.2	11.1	8:54:34.9	800.0	5.6	81.0
4	DEP	2013.7	11.4	8:59:25.9	205.9	1.3	88.2
6	DEP	2042.0	10.6	9:03:51.3	1181.3	8.6	77.5
8	DEP	2062.2	11.7	9:08:27.0	679.8	4.7	81.6
10	DEP	2021.2	11.7	9:13:20.3	525.3	3.4	88.1
12	DEP	2019.6	12.0	9:18:05.8	225.8	1.4	92.6
36	DEP	2017.0	11.0	11:29:23.1	1271.4	8.9	80.5
38	DEP	1936.6	11.5	11:32:28.9	1164.3	8.2	80.1
74	DEP	1959.9	8.1	14:13:28.8	-656.6	-3.0	121.9
76	DEP	1957.9	13.0	14:16:34.8	968.2	6.2	87.6
SIX DEGREE APPROACH AT VY, 75 KTS.							
13	APP	2034.8	10.8	9:21:11.1	-634.0	-5.3	66.9
14	APP	2054.5	10.5	9:26:25.8	-556.0	-4.8	65.2
15	APP	2011.7	10.4	9:29:56.2	-270.2	-2.2	69.2
16	APP	2065.7	10.1	9:33:23.0	-497.0	-4.2	67.5
17	APP	2002.6	9.6	9:36:58.4	-492.0	-4.3	64.0
18	APP	2008.2	10.7	9:40:09.3	-799.0	-6.9	65.5
19	APP	1988.9	10.7	9:42:46.5	-654.8	-5.5	66.8
20	APP	2007.3	10.3	9:45:47.9	-679.5	-6.0	64.3

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

AEROSPATIALE 365N DAUPHIN

POSITION DATA
NOISE MEASUREMENT PROGRAM

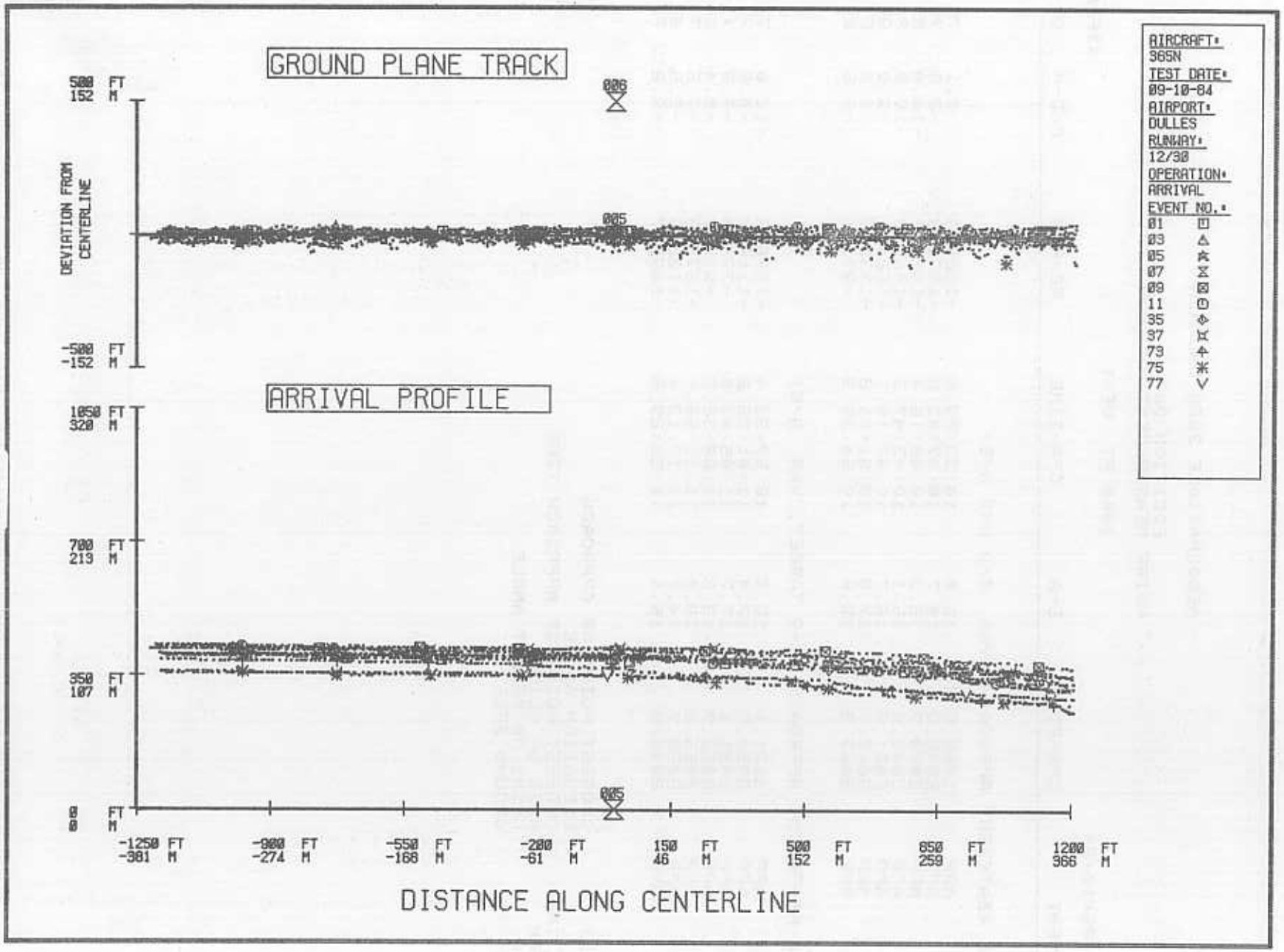
2000 FT. WEST

DATE:09/10/84 **FAA/AEE**

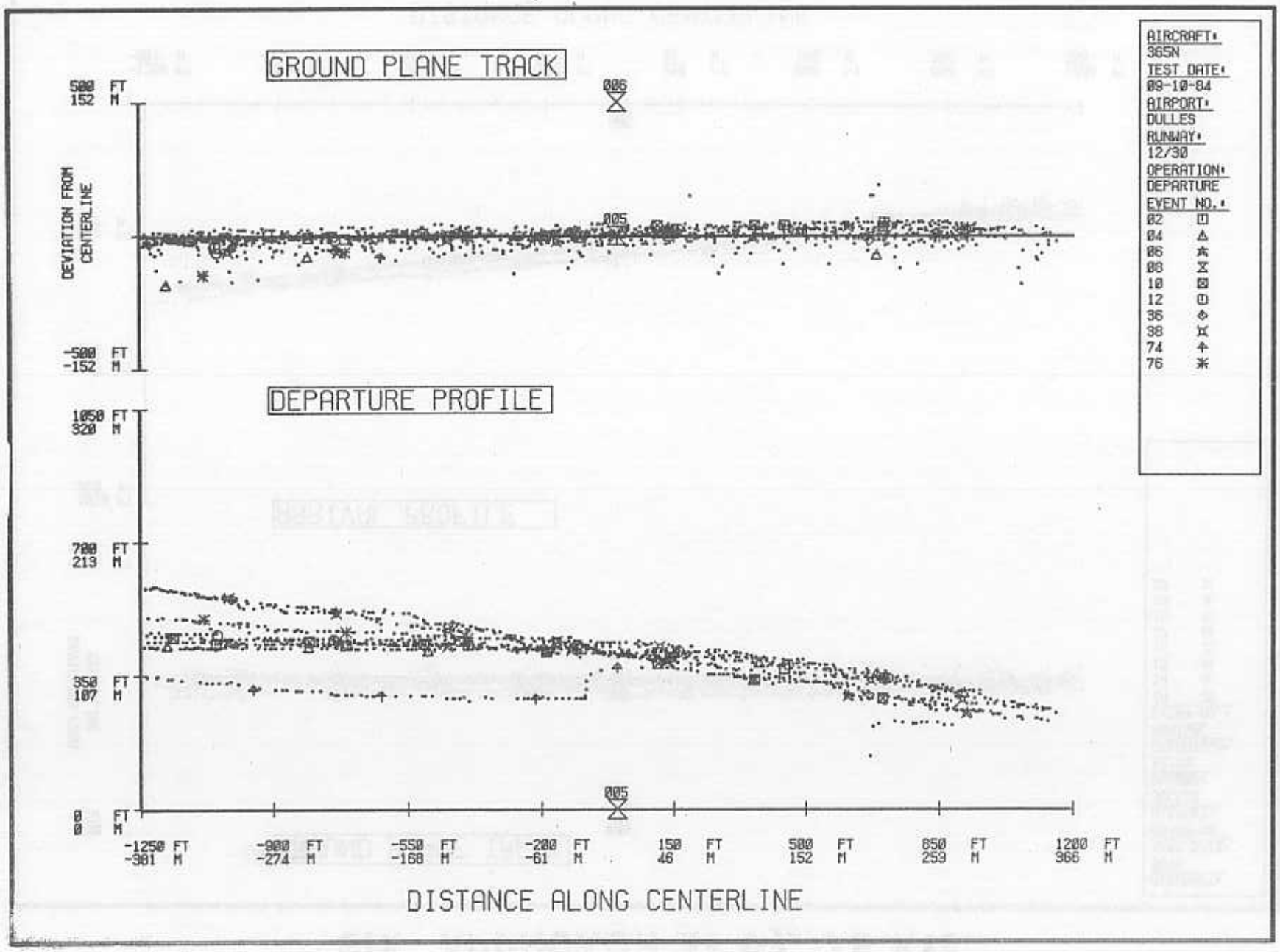
EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)							
21	APP	1906.5	16.0	10:33:29.8	-1228.9	-9.1	75.7
22	APP	2040.9	14.7	10:37:03.2	-1296.8	-9.2	79.1
23	APP	2000.7	15.3	10:40:16.4	-1481.7	-10.0	83.3
24	APP	2048.8	15.1	10:43:47.3	-1465.0	-10.0	81.7
25	APP	2021.9	16.7	10:47:19.1	-1624.1	-9.9	91.8
26	APP	2047.7	17.0	10:51:01.2	-1332.9	-8.6	87.3
27	APP	2065.3	18.0	10:54:38.3	-971.1	-6.5	84.6
NOISE ABATEMENT APPROACH (8-9 TARGET, VAR. A/S)							
28	APP	2131.1	19.8	10:57:33.4	-1676.6	-12.0	78.0
29	APP	2080.5	17.4	11:01:25.2	-1114.2	-8.2	75.9
30	APP	2021.1	17.7	11:05:03.0	-792.5	-5.9	75.3
31	APP	2052.7	13.8	11:08:32.7	-918.3	-8.4	61.3
32	APP	2055.8	19.0	11:11:56.1	-1273.3	-9.5	74.7
33	APP	2058.7	14.7	11:17:13.4	-1106.9	-8.9	69.5
34	APP	2046.9	15.1	11:22:29.6	-1092.7	-8.6	71.7

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

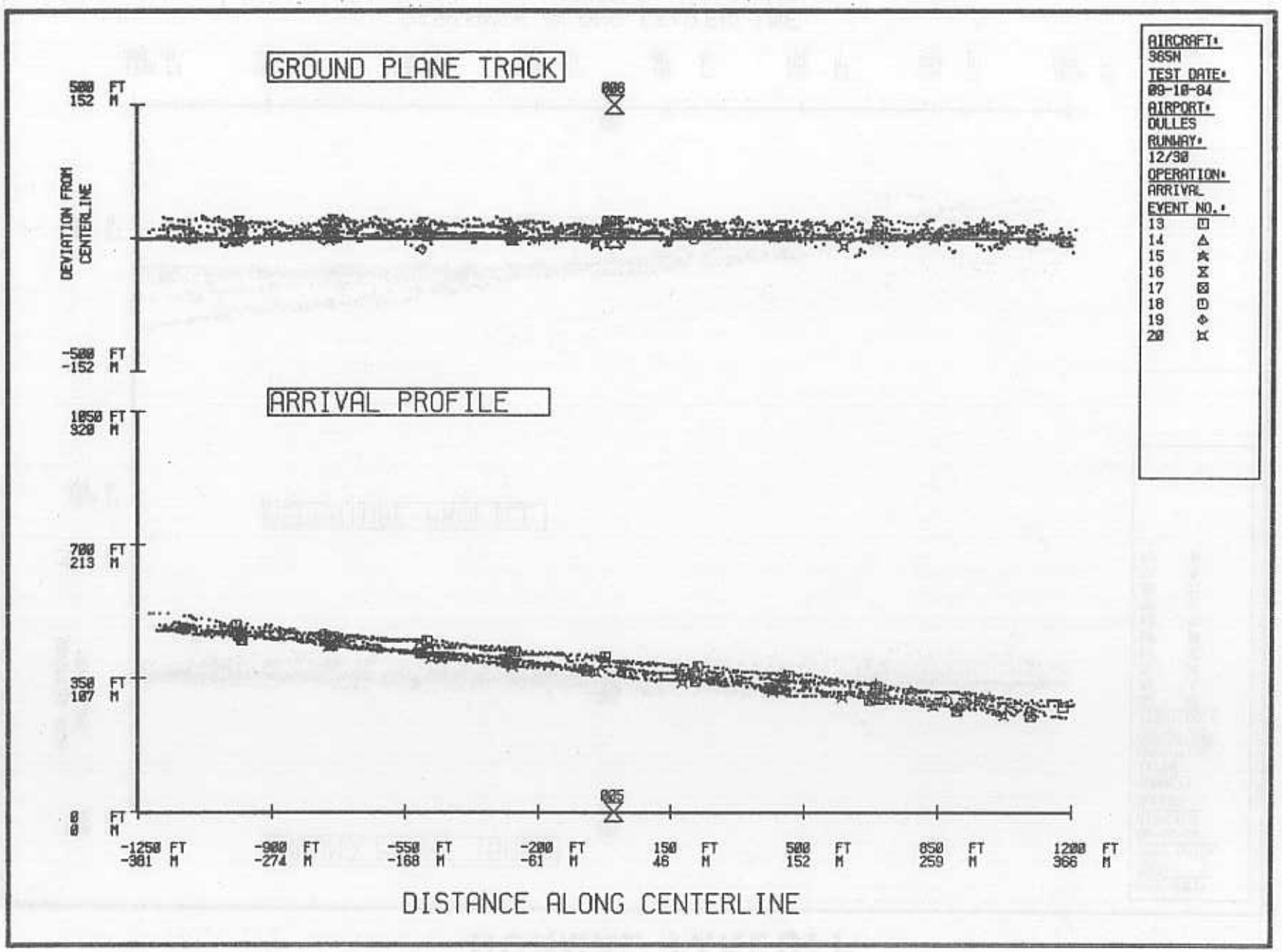
NORMAL APPROACH



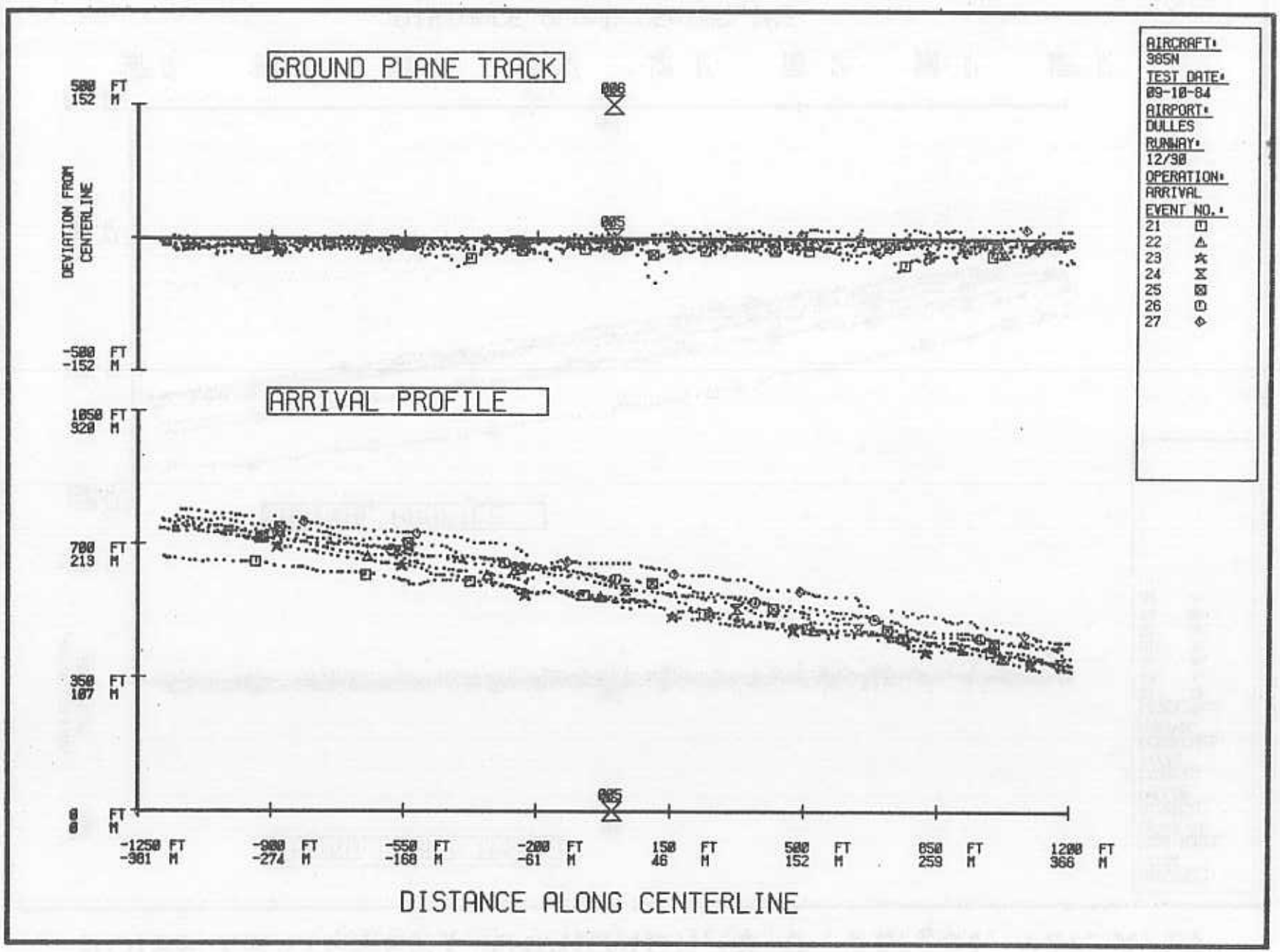
NORMAL TAKEOFF



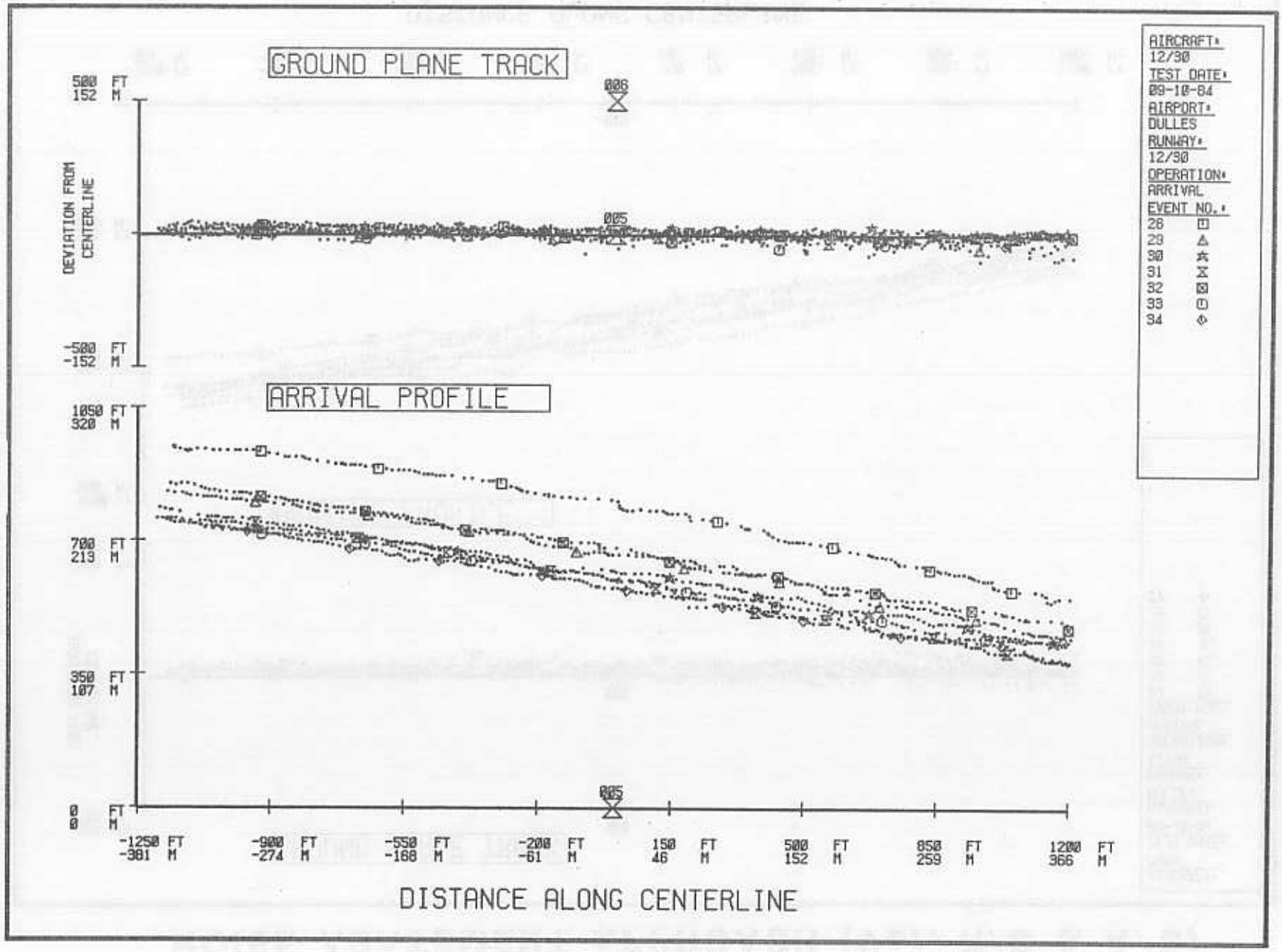
SIX° APPROACH at Vy, 75 Kts.



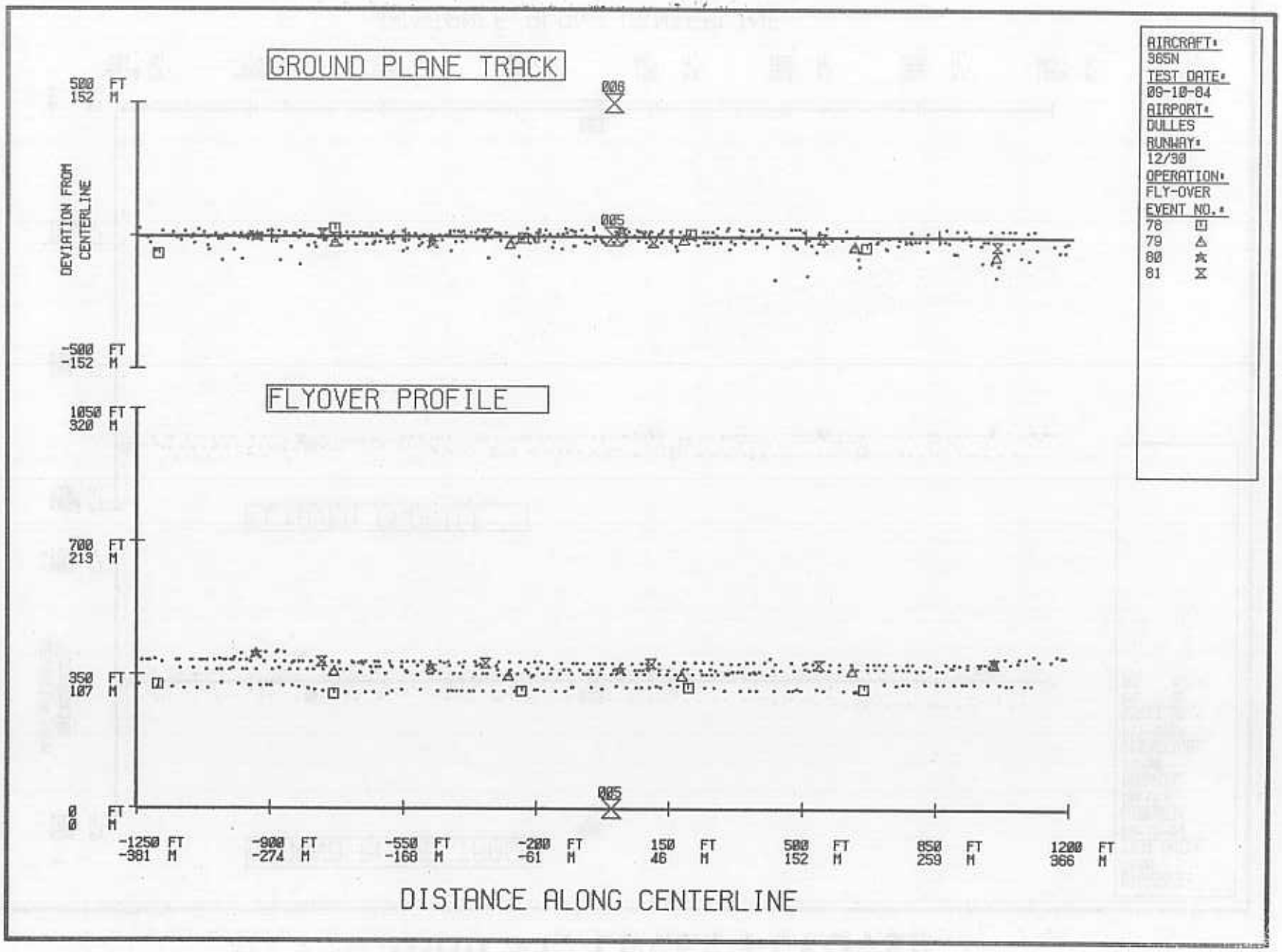
NOISE ABATEMENT APPROACH (Var. R/D & A/S)



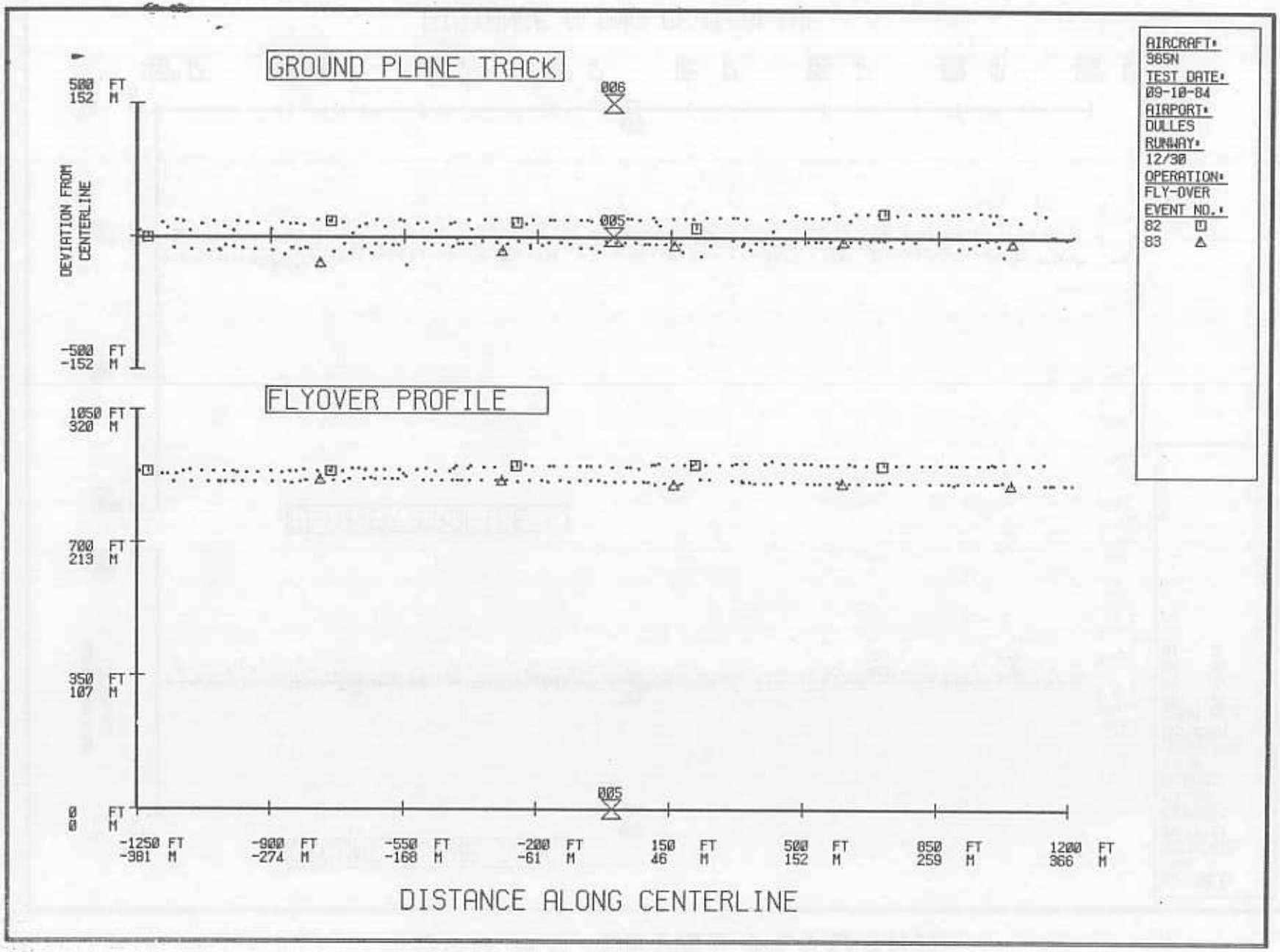
NOISE ABATEMENT APPROACH (8-9° Target, Var. A/S)



500 FT. LEVEL FLYOVER



1000 FT. LEVEL FLYOVER



METEOROLOGICAL

DATA

THIS SECTION OF THE APPENDIX CONTAINS WEATHER DATA FROM SEVERAL TYPES OF METEOROLOGICAL EQUIPMENT: TEN-METER TOWER (MET), GROUND LEVEL PSYCHROMETER, AIRCRAFT OAT, AND PILOT BALLOONS. DATA FROM THE MET TOWER INCLUDE THE TEMPERATURE, RELATIVE HUMIDITY, WIND DIRECTION AND WIND SPEED MEASURED TYPICALLY EVERY 15 MINUTES DURING EACH FLIGHT EVENT. BECAUSE OF A FAILURE OF THE MET TOWER DEW POINT SENSOR, THE RELATIVE HUMIDITY WAS CALCULATED USING TEMPERATURE FROM THE MET TOWER AND DEW POINT FROM THE DULLES MID FIELD WEATHER STATION. GROUND LEVEL (4 FEET) TEMPERATURE AND RELATIVE HUMIDITY ARE GIVEN FOR DIFFERENT TIMES OF EACH TEST DAT, AND THE HELICOPTER'S OAT READINGS ARE SHOWN FOR DIFFERENT FLIGHT ALTITUDES AT VARIOUS TIMES OF THE DAY. THE PILOT BALLOON WIND DATA, TAKEN PERIODICALLY DURING EACH TEST DAY, INDLUDES THE WIND DIRECTION AND WIND SPEED AT VARIOUS ALTITUDES.

METEOROLOGICAL DATA

(MEASURED AT 30 FT. AGL)

HELICOPTER: AEROSPATIALE 365N DAUPHIN DATE: 9/10/84

TIME	TEMP. (DEG. F)	R.H. %	WIND DIR. (DEG.)	WIND SPEED AVG. (MPH)	WIND SPEED MAX (MPH)
NORMAL APPROACH AND TAKEOFF					
8:30	66	76	270	5	-
8:45	67	70	270	5	-
9:00	67	70	270	8	-
9:15	69	70	270	7	-
11:45	74	58	270	8	12
2:15	76	56	270	8	-
SIX DEGREE APPROACH AT VY, 75 KTS.					
9:30	70	68	270	8	-
9:45	70	66	270	8	12
10:00	70	66	270	7	11
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)					
10:30	72	62	270	7	10
10:45	72	64	270	8	12
11:00	72	64	270	8	10
NOISE ABATEMENT APPROACH (8-9 DEG. TARGET, VAR. A/S)					
11:15	73	62	270	8	-
11:30	74	58	270	8	14
500 AND 1000 FT. LEVEL FLYOVER AT 100 KTS.					
2:30	78	54	270	6	9

METEOROLOGICAL DATA

HELICOPTER: AEROSPATIALE 365N DAUPHIN

DATE: 09/10/84

TEMPERATURE AND RELATIVE HUMIDITY DATA

(MEASURED AT 4 FT. AGL)

TIME	TEMP.	R.H.
	N O D A T A	

HELICOPTERS OAT GUAGE DATA

TIME	ALTITUDE	TEMP.
10:30	200'	63 F
	400'	61 F
	600'	61 F
12:24	200'	75 F
	400'	75 F
	600'	72 F

PILOT BALLOON WIND DATA

AEROSPATIALE 365N 09/10/84

FEET (AGL)	WIND DIR. (DEG.)	WIND SPD. (KTS)	WIND DIR. (DEG.)	WIND SPD. (KTS)

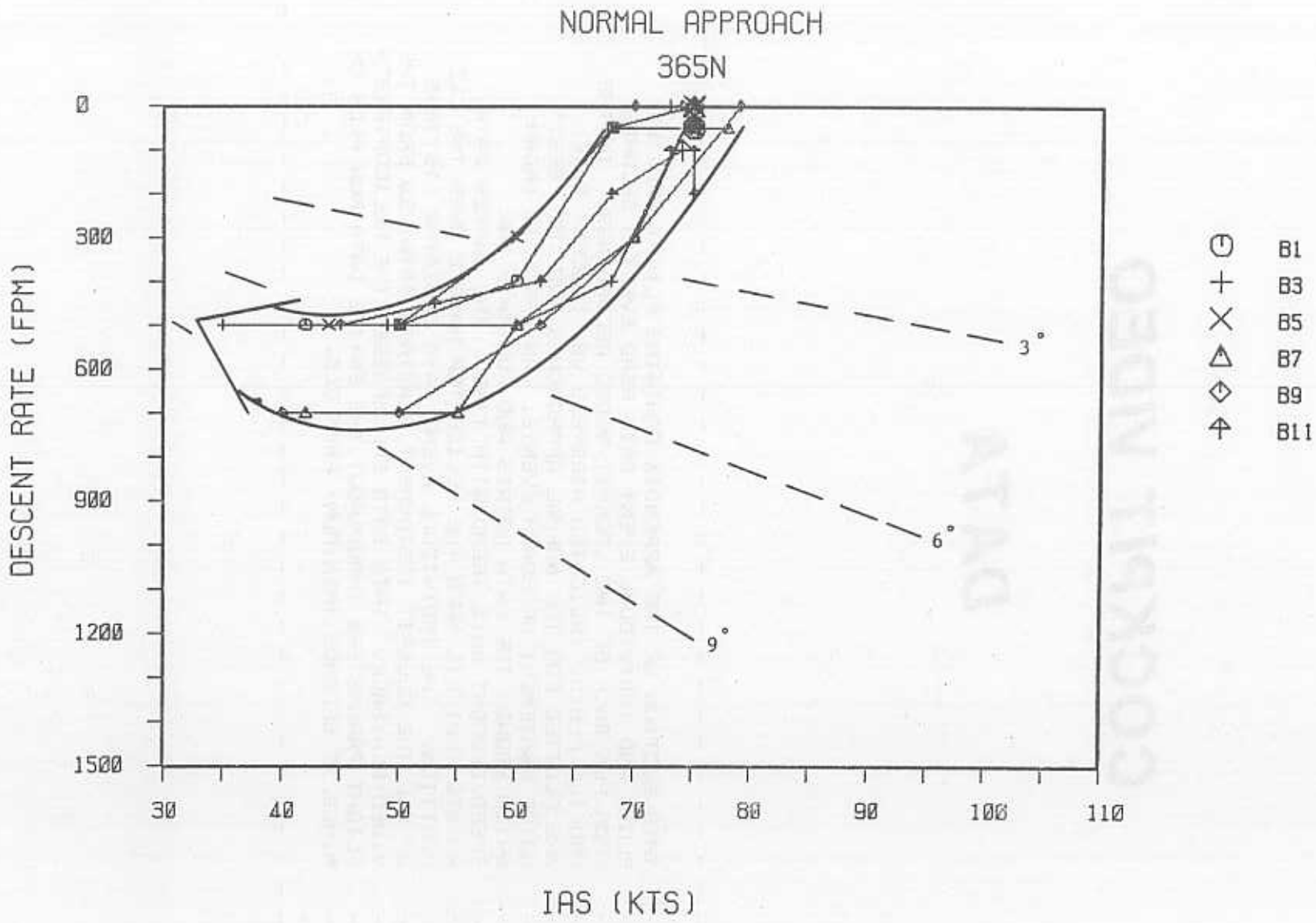
LAUNCH TIME:

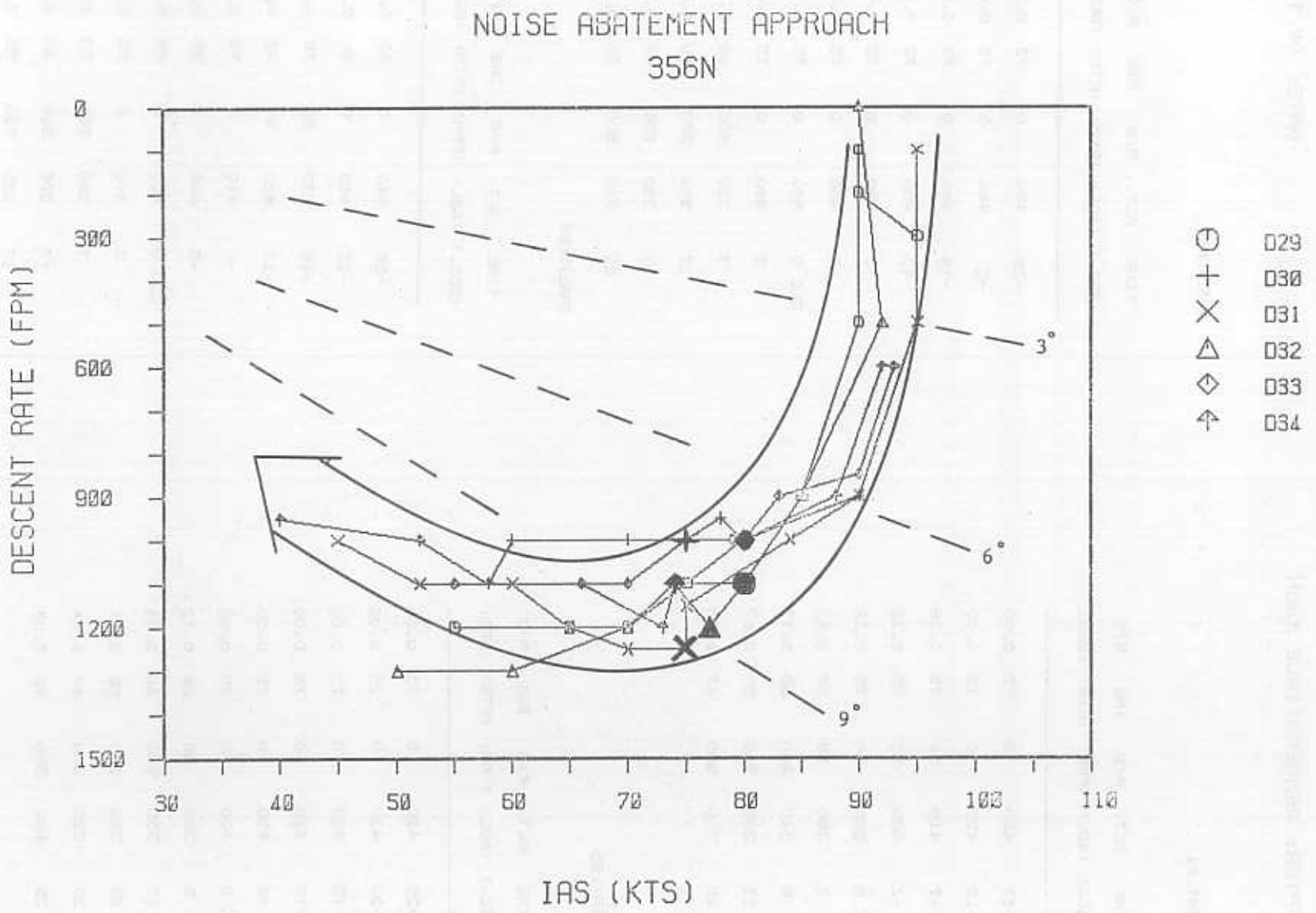
---------- NO DATA ----------

COCKPIT VIDEO

DATA

THIS SECTION OF THE APPENDIX CONTAINS FLIGHT PROFILE PLOTS AND INDIVIDUAL EVENT DATA READ EVERY 5 SECONDS FROM PLAYBACK OF THE COCKPIT VIDEO RECORDINGS. IN THE PROFILE PLOTS, INDICATED AIRSPEED VS. DESCENT RATE ARE PLOTTED FOR THE NORMAL APPROACHES AND THE 'BEST' NOISE ABATEMENT APPROACH EVENTS. AN ARROW IS DRAWN WHICH BOUNDS THE DATA POINTS AND PORTRAYS THE SPEED/DESCENT RATE TREND WITH TIME. THE DARKER DATA POINTS INDICATE WHEN THE HELICOPTER PASSED OVER THE CLC POSITION. THE INDIVIDUAL EVENT DATA CONTAINS LISTINGS OF ALL THE COCKPIT INSTRUMENT READINGS OBTAINED FROM THE VIDEO PLAYBACK. THIS DATA ENCOMPASSES THE HELICOPTERS'S FLIGHT PARAMETERS THROUGHOUT THE ENTIRE DATA RUN PLUS OR MINUS 15 SECONDS (MINIMUM) FROM CLC.


NORMAL APPROACH
365N
DESCENT RATE (FPM)
0
300
600
900
1200
1500
30
40
50
60
70
80
90
100
110
IAS (KTS)
3°
6°
9°
B1
B3
B5
B7
B9
B11


NOISE ABATEMENT APPROACH
356N
DESCENT RATE (FPM)
0
300
600
900
1200
1500
IAS (KTS)
30
40
50
60
70
80
90
100
110
3°
6°
9°
D29
D30
D31
D32
D33
D34

COCKPIT VIDEO DATA

NORMAL APPROACH

HELICOPTER: AEROSPATIALE 365N

DATE: 09/10/84

EVENT: B1

TIME (SEC.)	ALT. (AGL)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-17	420	0	75	0.00
-12	420	0	75	0.00
-7	410	50	75	0.38
-2	400	50	75	0.38
CLC 0	380	50	75	0.38
3	380	50	68	0.42
8	340	400	60	3.77
13	300	500	50	5.67
18	250	500	42	6.75

EVENT: B5

TIME (SEC.)	ALT. (AGL)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-25	420	0	75	0.00
-20	420	0	75	0.00
-15	420	0	75	0.00
-10	420	0	75	0.00
-5	400	0	75	0.00
CLC 0	400	0	75	0.00
5	380	50	68	0.42
10	350	300	60	2.83
15	280	500	50	5.67
20	220	500	44	6.44
25	180	500	40	7.09

EVENT: B3

TIME (SEC.)	ALT. (AGL)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-28	400	0	75	0.00
-23	400	0	75	0.00
-18	400	0	73	0.00
-13	400	0	75	0.00
-8	400	0	75	0.00
-3	400	0	75	0.00
CLC 0	400	0	75	0.00
2	390	0	75	0.00
7	350	400	68	3.33
12	300	500	60	4.72
17	250	500	49	5.78
22	210	500	35	8.11

EVENT: B7

TIME (SEC.)	ALT. (AGL)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-28	440	0	80	0.00
-23	440	0	80	0.00
-18	430	50	78	0.36
-13	420	50	75	0.38
-8	410	0	75	0.00
-3	400	0	75	0.00
CLC 0	400	0	75	0.00
2	400	0	75	0.00
7	380	300	70	2.43
12	300	500	60	4.72
17	250	700	55	7.22
22	200	700	42	9.47

COCKPIT VIDEO DATA

NORMAL APPROACH

HELICOPTER: AEROSPATIALE 365N

DATE: 09/10/84

EVENT:B9

TIME (SEC.)	ALT. (AGL)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-27	440	0	70	0.00
-22	430	0	75	0.00
-15	430	0	74	0.00
-12	420	0	70	0.00
-7	420	0	74	0.00
CLC 0	420	0	75	0.00
3	420	0	79	0.00
8	380	300	70	2.43
13	300	500	62	4.57
18	250	700	50	7.95
23	200	700	40	9.95

EVENT:B11

TIME (SEC.)	ALT. (AGL)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-30	500	100	80	0.71
-25	470	200	78	1.45
-20	440	200	75	1.51
-15	440	100	75	0.75
-10	430	100	73	0.78
-5	420	100	75	0.75
CLC 0	400	100	74	0.76
5	380	200	68	1.66
10	340	400	62	3.65
15	300	450	53	4.81
20	250	500	45	6.30
25	210	500	36	7.88
30	140	500	30	9.47

EVENT:B35

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D) (DEG)
-20	480	38	100	79	0.72
-15	450	40	100	75	0.75
-10	420	45	100	73	0.78
-5	400	48	50	75	0.38
CLC 0	400	32	50	72	0.39
5	390	28	300	68	2.50
10	340	25	400	62	3.65
15	270	26	400	55	4.12
20	250	26	500	48	5.90
25	200	20	500	40	7.09

EVENT:B37

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-14	480	44	200	78	1.45
-9	440	52	100	78	0.73
-4	450	50	0	80	0.00
CLC 0	420	34	0	78	0.00
6	400	25	300	72	2.36
11	340	25	500	62	4.57
16	290	20	500	57	4.97
21	250	15	600	48	7.09
26	180	28	600	38	8.97

COCKPIT VIDEO DATA

NOISE ABATEMENT APPROACH

(VAR. R/D AND A/S)

HELICOPTER: AEROSPATIALE 365N

DATE: 09/10/84

EVENT: D22

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-23	880	22	100	118	0.48
-18	830	18	500	110	2.57
-13	---	15	---	98	0.00
-8	690	16	800	90	5.04
-3	600	18	800	83	5.46
CLC 0	590	--	800	80	5.67
2	520	20	1000	75	7.57
7	420	18	1000	72	7.88
12	350	18	1000	62	9.16
17	260	16	900	57	8.97
22	200	18	900	50	10.24

EVENT: D23

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-25	1020	28	200	120	0.94
-20	1000	18	400	115	1.97
-15	900	14	850	107	4.50
-10	800	8	1050	98	6.07
-5	700	11	1100	90	6.93
CLC 0	600	12	1250	85	8.35
5	490	11	1300	78	9.47
10	380	12	1200	70	9.75
15	280	12	1100	65	9.62
20	200	15	1100	57	10.99
25	130	23	1000	45	12.68

EVENT: D25

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-22	1000	75	0	125	0.00
-17	990	36	100	125	0.45
-12	900	12	700	115	3.45
-7	800	10	1000	110	5.15
-2	700	8	1300	100	7.38
CLC 0	630	-	1300	95	7.77
3	500	8	1200	90	7.57
8	420	8	1400	80	9.95
13	340	8	1400	70	11.39
18	250	11	1200	58	11.79
23	180	15	1000	40	14.29

COCKPIT VIDEO DATA

NOISE ABATEMENT APPROACH

(VAR. R/D AND A/S)

HELICOPTER: AEROSPATIALE 365N

DATE: 09/10/84

EVENT:D26

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-20	1000	30	100	115	0.49
-15	900	21	800	110	4.12
-10	820	15	1000	100	5.67
-5	750	12	1000	98	5.78
CLC 0	640	12	1100	95	6.57
5	500	8	1250	85	8.35
10	400	8	1300	75	9.86
15	300	10	1350	65	11.84
20	220	15	1300	55	13.50
25	120	42	900	43	11.93

EVENT:D27

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-27	1000	75	0	120	0.00
-22	1000	75	0	120	0.00
-17	990	32	50	120	0.24
-12	920	11	700	115	3.45
-7	800	11	1100	105	5.94
-2	720	10	1100	97	6.43
CLC 0	680	8	1100	95	6.57
3	600	8	1300	85	8.69
8	480	8	1500	80	10.67
13	350	9	1450	70	11.80
18	250	15	1400	55	14.56
23	180	58	1200	42	16.39
28	100	70	600	30	11.39

COCKPIT VIDEO DATA

NOISE ABATEMENT APPROACH

(8-9 DEG. TARGET, VAR. A/S)

HELICOPTER: AEROSPATIALE 365N

DATE: 09/10/84

EVENT:D28

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-15	1000	46	0	95	0.00
10	980	30	50	95	0.30
-5	910	16	500	90	3.14
CLC 0	800	8	550	85	3.66
5	680	8	1500	80	10.67
10	520	8	1550	70	12.63
15	400	8	1550	60	14.78
20	---	-	--	--	--
25	200	22	1300	50	14.88
30	120	65	900	50	10.24

EVENT:D29

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-37	990	45	500	95	2.98
-32	980	50	300	90	1.89
-27	940	48	350	95	2.08
-22	920	47	300	95	1.79
-17	900	48	200	90	1.26
-12	900	28	100	90	0.63
-7	840	18	500	90	3.14
-2	740	13	900	85	6.00
CLC 0	700	11	1100	80	7.80
3	640	10	1100	75	8.33
8	510	11	1200	70	9.75
13	420	10	1200	65	10.50
18	300	12	1200	55	12.44

EVENT:D30

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-12	810	22	900	90	5.67
-7	740	29	1000	80	7.09
-2	680	18	950	78	6.91
CLC 0	600	18	1000	75	7.57
3	---	16	--	--	--
8	480	14	1000	70	8.11
13	380	10	1000	60	9.47
18	260	10	1100	58	--
23	200	16	1100	45	13.97
28	130	18	750	30	14.29

EVENT:D31

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-27	980	48	0	95	0.00
-22	970	44	100	95	0.60
-17	950	25	500	95	2.98
-12	860	12	900	90	5.67
-7	800	11	1000	84	6.75
-2	660	10	1150	75	8.71
CLC 0	620	12	1250	75	9.47
3	570	11	1250	70	10.16
8	450	12	1200	65	10.50
13	380	14	1100	60	10.43
18	370	20	1100	52	12.06

COCKPIT VIDEO DATA

NOISE ABATEMENT APPROACH

(8-9 DEG. TARGET, VAR. A/S)

HELICOPTER: AEROSPATIALE 365N

DATE: 09/10/84

EVENT:D32

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-20	1100	32	0	90	0.00
-15	990	20	500	92	3.08
-10	900	13	900	85	6.00
-5	790	12	1100	80	7.80
CLC 0	700	15	1200	77	--
5	600	12	1100	74	8.44
10	480	8	1200	70	9.75
15	370	8	1300	60	--
20	250	10	1300	50	14.88
25	200	22	1100	35	18.08

EVENT:D33

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-18	900	28	600	93	3.65
-13	850	25	850	90	5.35
-8	760	22	900	83	6.15
-3	700	20	900	83	6.15
CLC 0	640	15	1000	80	7.09
2	600	15	1000	79	7.18
7	500	20	1000	75	7.57
12	400	14	1100	70	8.93
17	300	14	1100	66	9.47
22	220	15	1100	55	11.39
27	150	18	900	40	12.84

EVENT:D34

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-22	950	35	0	93	0.00
-17	900	23	600	92	3.69
-12	820	20	900	88	5.80
-7	750	17	1000	80	7.09
-2	640	13	1100	75	8.33
CLC 0	600	13	1100	74	8.44
3	540	13	1200	73	9.34
8	450	14	1100	66	9.47
13	350	18	1100	58	10.79
18	280	15	1000	52	10.95
23	300	25	950	40	13.56

APPENDIX I

BELL 222A (REPEAT)

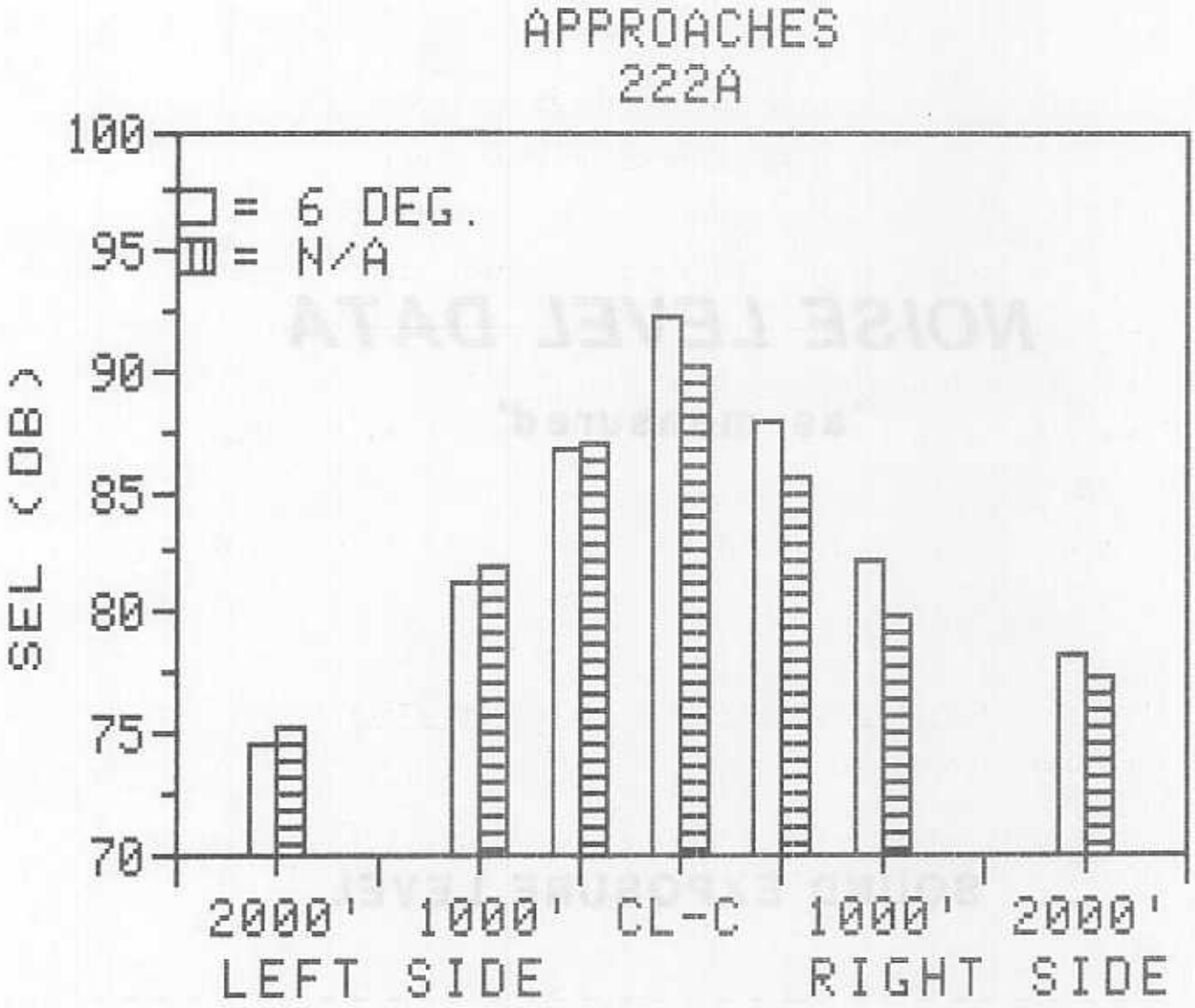
	PAGE NUMBERS
NOISE LEVEL DATA	
SOUND EXPOSURE LEVEL	
Bar Charts	
Approaches	I-650
Summary Tables	I-651
Individual Event Data	I-652 - I-655
A-WEIGHTED SOUND LEVEL	
Bar Charts	
Approaches	I-658
Summary Tables	I-659
Individual Event Data	I-660 - I-663
RADAR TRACKING DATA	
Position Data	I-666 - I-672
Tracking Plots	I-673 - I-677
METEOROLOGICAL DATA	
10-meter Tower Data	I-680
4 ft. Data and Aircraft OAT Data	I-681
Pilot Balloon Wind Data	I-682
COCKPIT VIDEO DATA	
Individual Event Data	I-684 - I-688

NOISE LEVEL DATA

'as-measured'

SOUND EXPOSURE LEVEL

THIS SECTION OF THE APPENDIX CONTAINS THE 'AS-MEASURED' SOUND EXPOSURE LEVELS (SEL) FOR ALL FLIGHT EVENTS. THESE DATA ARE PRESENTED IN THE FORM OF BAR CHARTS, SUMMARY TABLES AND INDIVIDUAL EVENT DATA. THE BAR CHARTS SHOW THE FALL OFF IN NOISE LEVEL VERSUS SIDELINE DISTANCE, AND PROVIDE A QUICK LOOK COMPARISON OF THE NOISE LEVELS. PERTINENT FLIGHT PARAMETER INFORMATION READ FROM THE COCKPIT INSTRUMENT PANEL VIDEO RECORDINGS IS ALSO SHOWN BELOW EACH BAR CHART. THE SUMMARY TABLES PRESENT THE AVERAGE NOISE LEVEL, NUMBER OF SAMPLES, STANDARD DEVIATION AND THE 90 PERCENT CONFIDENCE INTERVAL FOR EACH FLIGHT CONDITION. INDIVIDUAL EVENT DATA FOR EACH CONDITION IS THEN GIVEN.



OPERATION	AVG. ALT. OVER CL-C (FT. AGL)	INDICATED AIRSPEED (KTS.)	GLIDESLOPE RANGE (DEG.)
SIX DEG. APPROACH	440	65	6.0
NOISE ABATEMENT APP. 6 DEGREE AT 45 KTS. (EVENTS B8-B11)	425	57-53	6.5-8.4

NOTE: ALTITUDE, AIRSPEED AND VERTICAL SPEED DATA READ FROM VIDEO TAPES OF THE INSTRUMENT PANEL. THE GLIDESLOPE RANGE WAS CALCULATED WITHIN ±5 SEC OF THE CL-C MICROPHONE POSITION.

222A SUMMARY SHEET (9/11/84)

SOUND EXPOSURE LEVEL (DB)

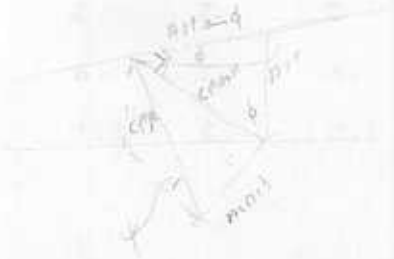
	(LEFT SIDE)				(RIGHT SIDE)		
	2000'	1000'	500'	CL-C	500'	1000'	2000'
* SIX DEG. APPROACH AT VY, 65 KTS. *							
AVERAGE	74.5	81.1	86.7	92.3	88.0	82.1	78.2
N	6	6	7	6	7	7	7
S.D.	.7	1.0	.9	.5	.7	.6	.6
90% CI	.5	.9	.7	.4	.5	.4	.4
* NOISE ABATEMENT APPROACH (6 DEG. 45 KTS.) *							
AVERAGE	75.2	82.0	87.0	90.2	85.6	79.9	77.3
N	4	4	4	4	4	4	4
S.D	.5	1.3	1.5	1.4	1.0	.5	.3
90% CI	.6	1.6	1.7	1.7	1.2	.6	.4
* NOISE ABATEMENT APPROACH (VAR. R/D AND A/S) *							
AVERAGE	75.1	80.1	83.6	88.1	87.8	83.1	79.3
N	9	7	8	8	9	9	9
S.D	.5	.7	.8	1.5	.9	.5	.7
90% CI	.3	.5	.6	1.0	.5	.3	.4
* NOISE ABATEMENT APPROACH (10 DEG. 65 KTS.) *							
AVERAGE	74.8	78.7	83.7	88.6	87.8	83.6	79.3
N	3	3	3	3	3	3	3
S.D	.9	.4	1.3	1.0	.6	.2	.6
90% CI	1.6	.6	2.1	1.7	1.0	.3	1.1

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: BELL 222A TEST DATE: 9/11/84

OPERATION : 6 DEGREE APPROACH AT VY, 65 KTS.

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
A1	74.60	81.00	87.40	92.80	87.40	81.20	77.40
A2	74.30	81.40	86.10	91.60	88.20	82.90	78.70
A3	73.60	79.50	85.30	92.30	88.50	82.20	79.00
A4	74.40	80.90	87.20	92.90	88.30	82.40	78.50
A5	--	82.70	86.60	92.20	88.40	82.40	78.30
A6	75.60	--	86.00	--	86.60	81.80	77.90
A7	74.40	81.20	88.00	91.80	88.30	81.60	77.60
AVERAGE	74.48	81.12	86.66	92.27	87.96	82.07	78.20
STD. DEV.	0.65	1.03	0.93	0.52	0.70	0.57	0.59
90% C.I.	0.53	0.85	0.69	0.43	0.51	0.42	0.43
Ave CPA	1974	1016	585	388	662	1105	2065
Ave φ 6.0							
Ave Alt				390			
B	11.2	22.1	40.7		35.2	20.2	10.7



SOUND EXPOSURE LEVEL (DB)

HELICOPTER: BELL 222A TEST DATE: 9/11/84

OPERATION : NOISE ABATEMENT APPROACH (6 DEG. 45 KTS.)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
B8	76.00	82.90	88.40	89.90	84.90	80.10	77.50
B9	75.00	80.90	86.70	91.80	86.80	80.20	76.90
B10	74.90	83.30	87.80	90.80	86.10	80.10	77.50
B11	75.00	80.70	85.10	88.40	84.70	79.10	77.10
AVERAGE	75.23	81.95	87.00	90.23	85.63	79.88	77.25
STD. DEV.	0.52	1.34	1.45	1.44	1.00	0.52	0.30
90% C.I.	0.61	1.57	1.70	1.70	1.17	0.61	0.35

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: BELL 222A

TEST DATE: 9/11/84

OPERATION : NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
D12	75.10	80.00	84.90	91.30	89.60	82.00	79.00
D13	75.80	80.50	82.90	86.10	86.50	83.60	80.60
D14	75.00	--	82.60	87.50	87.60	83.50	78.90
D15	75.50	79.70	83.40	88.20	88.00	83.10	78.10
D16	74.40	80.90	--	88.50	87.10	82.90	79.80
D17	75.30	--	84.00	88.30	88.20	83.50	79.80
D18	75.50	79.50	83.30	87.60	87.20	82.70	79.50
D19	74.90	80.90	84.60	--	88.10	83.20	79.10
D20	74.40	79.10	83.00	87.10	87.80	83.20	79.00
AVERAGE	75.10	80.09	83.59	88.08	87.79	83.08	79.31
STD. DEV.	0.48	0.70	0.83	1.51	0.87	0.50	0.71
90% C.I.	0.30	0.52	0.55	1.01	0.54	0.31	0.44

SOUND EXPOSURE LEVEL (DB)

HELICOPTER: BELL 222A TEST DATE: 9/11/84

OPERATION : NOISE ABATEMENT APPROACH (10 DEG. 65 KTS.)

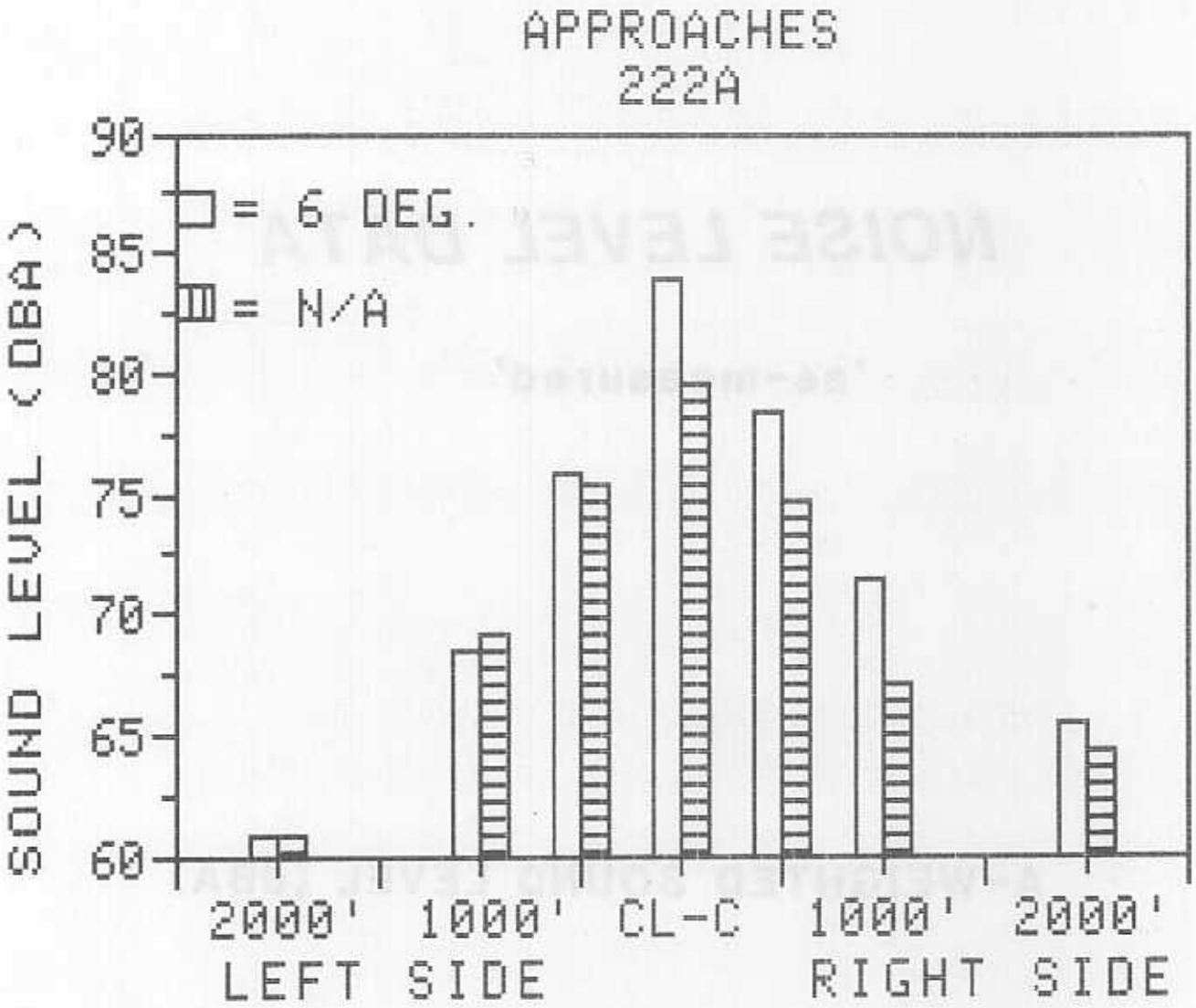
	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
C21	75.30	78.80	83.60	88.20	87.50	83.70	79.00
C22	73.70	78.30	82.50	87.90	87.50	83.70	80.00
C23	75.30	79.00	85.00	89.80	88.50	83.40	78.80
AVERAGE	74.77	78.70	83.70	88.63	87.83	83.60	79.27
STD. DEV.	0.92	0.36	1.25	1.02	0.58	0.17	0.64
90% C.I.	1.56	0.61	2.11	1.72	0.97	0.29	1.08

NOISE LEVEL DATA

'as-measured'

A-WEIGHTED SOUND LEVEL (dBA)

THIS SECTION OF THE APPENDIX CONTAINS THE 'AS-MEASURED' A-WEIGHTED SOUND LEVEL (dBA) FOR ALL FLIGHT EVENTS. THESE DATA ARE PRESENTED IN THE FORM OF BAR CHARTS, SUMMARY TABLES AND INDIVIDUAL EVENT DATA. THE BAR CHARTS SHOW THE FALL OFF IN NOISE LEVEL VERSUS SIDELINE DISTANCE, AND PROVIDE A QUICK LOOK COMPARISON OF THE NOISE LEVELS. PERTINENT FLIGHT PARAMETER INFORMATION READ FROM THE COCKPIT INSTRUMENT PANEL VIDEO RECORDINGS IS ALSO SHOWN BELOW EACH BAR CHART. THE SUMMARY TABLES PRESENT THE AVERAGE NOISE LEVEL, NUMBER OF SAMPLES, STANDARD DEVIATION AND THE 90 PERCENT CONFIDENCE INTERVAL FOR EACH FLIGHT CONDITION. INDIVIDUAL EVENT DATA FOR EACH CONDITION IS THEN GIVEN.



OPERATION	AVG. ALT. OVER CL-C (FT. AGL)	INDICATED AIRSPEED (KTS.)	GLIDESLOPE RANGE (DEG.)
SIX DEG. APPROACH	440	65	6.0
NOISE ABATEMENT APP. 6 DEGREE AT 45 KTS. (EVENTS B8-B11)	425	57-53	6.5-8.4

NOTE: ALTITUDE, AIRSPEED AND VERTICAL SPEED DATA READ FROM VIDEO TAPES OF THE INSTRUMENT PANEL. THE GLIDESLOPE RANGE WAS CALCULATED WITHIN ±15 SEC OF THE CL-C MICROPHONE POSITION.

222A SUMMARY SHEET (9/11/84)

A-WEIGHTED SOUND LEVEL (DB)

	(LEFT SIDE)				(RIGHT SIDE)		
	2000'	1000'	500'	CL-C	500'	1000'	2000'
*** SIX DEG. APPROACH AT VY, 65 KTS. ***							
AVERAGE	60.8	68.5	75.9	83.8	78.3	71.5	65.4
N	6	6	7	6	7	7	7
S.D.	.9	.9	1.7	.7	1.0	.7	.7
90% CI	.7	.7	1.3	.6	.7	.5	.5
*** NOISE ABATEMENT APPROACH (6 DEG. 45 KTS.) ***							
AVERAGE	60.7	69.2	75.3	79.6	74.7	67.1	64.3
N	4	4	4	4	4	4	4
S.D	.5	1.2	1.9	1.6	1.3	1.3	1.9
90% CI	.7	1.5	2.4	2.1	1.6	1.6	2.4
*** NOISE ABATEMENT APPROACH (VAR. R/D AND A/S) ***							
AVERAGE	62.4	67.6	72.6	78.3	78.0	72.1	66.9
N	9	7	9	9	9	9	9
S.D	1.3	.6	.7	1.8	1.3	.6	1.1
90% CI	.8	.5	.4	1.1	.8	.4	.7
*** NOISE ABATEMENT APPROACH (10 DEG. 65 KTS.) ***							
AVERAGE	62.1	65.6	72.0	78.2	78.1	71.2	67.2
N	3	3	3	3	3	3	3
S.D	1.2	.6	2.2	1.3	.7	.6	1.3
90% CI	2.0	.9	3.6	2.1	1.2	1.0	2.2

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: BELL 222A

TEST DATE: 9/11/84

OPERATION : 6 DEGREE APPROACH AT VY, 65 KTS.

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
A1	59.90	68.70	78.00	83.70	78.60	71.80	64.00
A2	59.90	68.90	74.20	82.70	78.60	72.00	66.00
A3	60.20	66.90	73.60	83.90	78.80	72.30	65.40
A4	61.30	68.70	76.40	84.70	78.20	71.40	65.70
A5	--	69.40	75.90	84.40	78.70	71.80	66.00
A6	62.10	--	75.20	--	76.20	70.70	65.40
A7	61.20	68.40	77.90	83.30	79.20	70.50	65.00
AVERAGE	60.77	68.50	75.89	83.78	78.33	71.50	65.36
STD. DEV.	0.90	0.85	1.70	0.73	0.98	0.67	0.70
90% C.I.	0.74	0.70	1.25	0.60	0.72	0.49	0.51

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: BELL 222A TEST DATE: 9/11/84

OPERATION : NOISE ABATEMENT APPROACH (6 DEG. 45 KTS.)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
B8	61.10	69.90	77.80	79.30	74.50	67.10	61.90
B9	59.90	67.80	75.60	81.80	76.50	68.80	65.30
B10	60.70	70.40	74.40	79.40	74.10	66.20	63.90
B11	61.00	68.60	73.50	77.90	73.50	66.10	66.20
AVERAGE	60.68	69.18	75.33	79.60	74.65	67.05	64.33
STD. DEV.	0.54	1.19	1.86	1.62	1.30	1.25	1.87
90% C.I.	0.69	1.51	2.35	2.05	1.64	1.58	2.37

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: BELL 222A

TEST DATE: 9/11/84

OPERATION : NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
D12	62.90	66.90	73.40	82.40	80.70	71.30	66.00
D13	64.40	68.20	71.90	76.10	76.60	72.20	69.10
D14	62.00	--	71.50	77.30	78.20	72.40	65.60
D15	64.30	67.60	72.90	78.60	79.00	72.80	65.70
D16	62.00	68.60	73.70	79.50	77.20	72.70	67.70
D17	62.00	--	72.10	78.00	78.10	72.20	67.40
D18	61.30	67.60	73.00	77.80	77.30	72.10	67.00
D19	60.70	67.00	72.50	78.20	76.80	71.10	66.80
D20	61.80	67.20	72.80	76.90	77.70	72.10	66.70
AVERAGE	62.38	67.59	72.64	78.31	77.96	72.10	66.89
STD. DEV.	1.26	0.63	0.71	1.82	1.27	0.57	1.10
90% C.I.	0.78	0.46	0.44	1.13	0.79	0.35	0.68

A-WEIGHTED SOUND LEVEL (DB)

HELICOPTER: BELL 222A

TEST DATE: 9/11/84

OPERATION : NOISE ABATEMENT APPROACH (10 DEG. 65 KTS.)

	(LEFT SIDE)				(RIGHT SIDE)		
EVENT NO.	2000' EAST	1000' EAST	500' EAST	CL-C	500' WEST	1000' WEST	2000' WEST
C21	63.40	66.20	72.00	77.80	77.50	70.70	65.70
C22	61.10	65.10	69.90	77.20	77.80	71.90	68.20
C23	61.70	65.60	74.20	79.60	78.90	71.10	67.60
AVERAGE	62.07	65.63	72.03	78.20	78.07	71.23	67.17
STD. DEV.	1.19	0.55	2.15	1.25	0.74	0.61	1.31
90% C.I.	2.01	0.93	3.62	2.11	1.24	1.03	2.20

RADAR TRACKING

DATA

THIS SECTION OF THE APPENDIX CONTAINS THE HELICOPTER POSITION DATA AND TRACKING PLOTS DERIVED FROM THE FAA'S PORTABLE TRACKING RADAR SYSTEM. THE POSITION DATA LISTS THE CLOSEST POINT OF APPROACH (CPA), TIME OF CPA, ELEVATION ANGLE, RATE OF CLIMB OR DESCENT, THE CLIMB OR DESCENT ANGLE, AND GROUND SPEED FOR ALL FLIGHT CONDITIONS. TRACKING PLOTS OF THE ACTUAL FLIGHT PROFILE FLOWN ARE PROVIDED FOR EACH FLIGHT CONDITIONS.

BELL 222A

POSITION DATA
NOISE MEASUREMENT PROGRAM

CENTERLINE CENTER

DATE:09/11/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
SIX DEGREE APPROACH AT VY, 65 KTS.							
1		-----	NO DATA	-----			
2	APP	431.3	81.9	13:04:10.1	-770.2	-6.7	64.9
3	APP	393.3	79.3	13:07:54.6	-690.6	-6.7	58.4
4	APP	396.1	79.0	13:12:34.2	-836.8	-6.9	68.1
5	APP	384.1	83.1	13:15:56.0	-687.5	-6.1	63.7
6	APP	364.9	81.5	13:19:30.9	-234.9	-2.1	63.9
7	APP	356.4	84.1	13:22:36.2	-664.3	-5.9	63.5
NOISE ABATEMENT APPROACH (SIX DEGREE AT 45 KTS.)							
8	APP	365.8	79.4	13:26:24.1	-247.0	-3.2	44.0
9	APP	353.1	79.2	13:30:05.9	-683.3	-7.8	49.3
10	APP	389.2	85.2	13:33:14.6	-315.8	-3.7	48.3
11	APP	384.7	86.9	13:36:31.8	-370.7	-4.7	44.6
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)							
12	APP	361.9	87.8	13:39:59.0	-512.0	-4.6	62.4
13	APP	599.8	79.3	13:42:54.7	-1349.7	-10.2	74.1
14	APP	561.5	76.3	13:46:09.2	-944.5	-9.4	56.6
15	APP	452.6	74.0	13:49:30.0	-988.0	-8.4	65.8
16	APP	490.7	72.2	13:52:48.2	-1439.8	-12.0	67.0
17	APP	466.3	82.3	13:55:42.0	-1336.4	-11.4	65.4
18	APP	664.7	81.8	13:59:02.6	-267.2	-2.2	68.4
19	APP	524.8	76.2	14:03:22.7	-1111.2	-13.6	45.2
20	APP	443.6	88.7	14:05:57.9	-899.3	-8.9	56.5
NOISE ABATEMENT APPROACH (TEN DEGREE AT 65 KTS.)							
21	APP	614.7	78.5	14:17:13.0	-991.1	-9.8	56.5
22	APP	566.9	80.7	14:20:23.4	-1207.9	-12.2	55.0
23	APP	545.9	70.4	14:23:31.8	-730.4	-6.4	64.5

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

BELL 222A

POSITION DATA
NOISE MEASUREMENT PROGRAM

500 FT. EAST

DATE:09/11/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
SIX DEGREE APPROACH AT VY, 65 KTS.							
1		-----	NO DATA	-----			
2	APP	602.5	45.6	13:04:09.9	-790.7	-6.6	67.1
3	APP	597.6	41.5	13:07:53.7	-553.2	-5.4	58.1
4	APP	570.7	44.3	13:12:33.6	-694.4	-5.9	65.8
5	APP	586.8	40.8	13:15:56.6	-615.6	-5.5	63.6
6	APP	597.3	37.8	13:19:30.3	-315.1	-2.9	62.3
7	APP	563.8	39.3	13:22:36.0	-662.8	-5.8	64.0
NOISE ABATEMENT APPROACH (SIX DEGREE AT 45 KTS.)							
8	APP	593.2	37.6	13:26:24.0	-158.0	-1.9	46.1
9	APP	575.3	37.3	13:30:06.3	-766.5	-9.1	47.3
10	APP	597.5	41.5	13:33:14.4	-367.3	-4.2	49.1
11	APP	618.6	38.3	13:36:32.6	-487.1	-6.2	44.5
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)							
12	APP	591.8	37.8	13:39:58.9	-490.7	-4.4	62.7
13	APP	726.8	53.8	13:42:54.9	-1382.9	-10.5	73.9
14	APP	713.6	52.6	13:46:08.5	-707.3	-6.6	60.0
15	APP	612.6	46.0	13:49:29.9	-981.6	-8.4	65.7
16	APP	593.7	53.6	13:52:48.0	-1443.2	-11.9	67.4
17	APP	647.5	45.8	13:55:42.0	-1336.2	-11.4	65.4
18	APP	750.8	61.8	13:59:01.9	-411.0	-3.4	68.3
19	APP	632.4	52.2	14:03:23.6	-1079.6	-12.4	48.6
20	APP	647.7	43.4	14:05:57.8	-914.1	-9.0	57.1
NOISE ABATEMENT APPROACH (TEN DEGREE AT 65 KTS.)							
21	APP	710.8	58.2	14:17:12.9	-1004.5	-10.1	55.9
22	APP	728.5	50.6	14:20:23.3	-1215.8	-12.4	54.5
23	APP	687.1	52.8	14:23:30.2	-967.4	-8.5	64.2

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

BELL 222A

POSITION DATA
NOISE MEASUREMENT PROGRAM

500 FT. WEST

DATE:09/11/84

FAA/AEE

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
SIX DEGREE APPROACH AT VY, 65 KTS.							
1		-----	NO DATA	-----			
2	APP	699.2	37.6	13:04:10.1	-777.7	-6.4	68.4
3	APP	664.7	35.4	13:07:54.7	-714.4	-6.8	59.4
4	APP	683.5	34.9	13:12:34.1	-819.4	-6.7	68.4
5	APP	658.1	35.3	13:15:57.1	-529.8	-4.7	64.1
6	APP	628.5	35.0	13:19:31.9	-132.0	-1.2	64.3
7	APP	643.1	33.5	13:22:36.2	-664.4	-5.9	63.5
NOISE ABATEMENT APPROACH (SIX DEGREE AT 45 KTS.)							
8	APP	630.3	34.8	13:26:24.2	-151.5	-1.9	45.7
9	APP	625.4	32.3	13:30:07.3	-663.0	-8.0	46.5
10	APP	657.3	36.3	13:33:14.7	-366.7	-4.2	49.8
11	APP	631.3	37.3	13:36:32.2	-455.9	-5.8	44.3
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)							
12	APP	586.9	38.3	13:39:59.3	-567.7	-5.1	62.3
13	APP	816.8	46.6	13:42:54.6	-1329.7	-10.0	74.5
14	APP	772.2	45.0	13:46:09.7	-967.6	-9.5	57.0
15	APP	724.1	36.9	13:49:30.1	-974.9	-8.3	66.2
16	APP	785.3	36.5	13:52:48.2	-1440.0	-12.0	67.0
17	APP	687.8	40.7	13:55:43.4	-1222.6	-11.1	61.7
18	APP	875.7	49.0	13:59:02.8	-252.9	-2.1	68.9
19	APP	797.6	39.7	14:03:22.7	-1111.1	-13.6	45.2
20	APP	664.3	42.0	14:05:58.0	-887.7	-8.9	56.1
NOISE ABATEMENT APPROACH (TEN DEGREE AT 65 KTS.)							
21	APP	850.4	45.1	14:17:13.4	-948.2	-9.0	59.3
22	APP	779.0	44.0	14:20:24.5	-1253.4	-12.8	54.5
23	APP	781.7	41.1	14:23:31.9	-696.7	-6.1	64.3

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

BELL 222A

POSITION DATA
NOISE MEASUREMENT PROGRAM

1000 FT. EAST

DATE:09/11/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
SIX DEGREE APPROACH AT VY, 65 KTS.							
1		-----	NO DATA	-----			
2	APP	1017.7	25.2	13:04:09.9	-790.7	-6.6	67.1
3	APP	1027.3	20.3	13:07:56.9	-849.3	-7.2	66.6
4	APP	992.2	23.8	13:12:33.6	-694.4	-5.9	65.8
5	APP	1018.2	22.3	13:15:56.6	-615.6	-5.5	63.6
6	APP	1039.3	20.7	13:19:30.3	-315.1	-2.9	62.3
7	APP	1002.8	21.0	13:22:36.0	-662.8	-5.8	64.0
NOISE ABATEMENT APPROACH (SIX DEGREE AT 45 KTS.)							
8	APP	1034.3	20.6	13:26:24.0	-158.0	-1.9	46.1
9	APP	1016.4	20.2	13:30:06.3	-766.5	-9.1	47.3
10	APP	1027.7	22.8	13:33:14.4	-367.3	-4.2	49.1
11	APP	1055.4	21.4	13:36:32.6	-487.1	-6.2	44.5
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)							
12	APP	1031.8	20.6	13:39:59.7	-644.3	-5.8	62.1
13	APP	1092.5	32.6	13:42:54.9	-1382.9	-10.5	73.9
14	APP	1091.3	31.9	13:46:08.0	-627.6	-5.6	62.6
15	APP	1017.3	27.0	13:49:29.0	-1057.9	-9.3	63.6
16	APP	725.2	31.0	13:52:55.1	87.7	0.7	72.8
17	APP	1058.8	26.1	13:55:42.0	-1336.2	-11.4	65.4
18	APP	1080.2	37.9	13:59:01.9	-411.0	-3.4	68.3
19	APP	1005.0	27.9	14:03:25.0	-996.3	-11.9	46.5
20	APP	1068.4	24.7	14:05:57.8	-914.1	-9.0	57.1
NOISE ABATEMENT APPROACH (TEN DEGREE AT 65 KTS.)							
21	APP	1063.7	34.7	14:17:13.1	-983.7	-9.7	56.9
22	APP	1113.2	30.5	14:20:23.3	-1215.8	-12.4	54.5
23	APP	1067.1	31.0	14:23:30.2	-967.4	-8.5	64.2

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

BELL 222A

POSITION DATA
NOISE MEASUREMENT PROGRAM

1000 FT. WEST

DATE:09/11/84

FAA/AEE

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
SIX DEGREE APPROACH AT VY, 65 KTS.							
1		-----	NO DATA	-----			
2	APP	1137.1	22.2	13:04:10.2	-767.0	-6.3	68.8
3	APP	1109.3	20.4	13:07:54.7	-714.4	-6.8	59.4
4	APP	1130.9	20.3	13:12:34.1	-819.4	-6.7	68.4
5	APP	1099.8	20.4	13:15:57.1	-529.8	-4.7	64.1
6	APP	1066.5	19.9	13:19:31.9	-132.0	-1.2	64.3
7	APP	1093.8	17.3	13:22:38.4	-816.4	-7.3	63.2
NOISE ABATEMENT APPROACH (SIX DEGREE AT 45 KTS.)							
8	APP	1077.5	19.6	13:26:24.2	-151.5	-1.9	45.7
9	APP	1071.6	18.3	13:30:07.3	-663.0	-8.0	46.5
10	APP	1095.5	20.2	13:33:17.8	-420.2	-5.1	46.2
11	APP	1072.5	21.0	13:36:32.2	-455.9	-5.8	44.3
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)							
12	APP	1027.5	20.9	13:39:59.3	-567.7	-5.1	62.3
13	APP	1207.3	28.9	13:42:55.5	-1474.1	-11.6	71.1
14	APP	1169.4	27.9	13:46:09.7	-967.6	-9.5	57.0
15	APP	1159.4	22.1	13:49:30.1	-974.9	-8.3	66.2
16	APP	1222.5	22.6	13:52:48.2	-1440.0	-12.0	67.0
17	APP	1099.4	24.2	13:55:43.4	-1222.6	-11.1	61.7
18	APP	1261.7	31.7	13:59:02.8	-252.9	-2.1	68.9
19	APP	1222.2	23.4	14:03:24.3	-1044.5	-12.1	48.1
20	APP	1089.1	24.2	14:05:58.0	-887.7	-8.9	56.1
NOISE ABATEMENT APPROACH (TEN DEGREE AT 65 KTS.)							
21	APP	1252.5	28.9	14:17:13.4	-948.2	-9.0	59.3
22	APP	1175.1	27.6	14:20:24.6	-1262.2	-12.8	54.6

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

BELL 222A

POSITION DATA
NOISE MEASUREMENT PROGRAM

2000 FT. EAST

DATE:09/11/84 **FAA/AEE**

EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
SIX DEGREE APPROACH AT VY, 65 KTS.							
1		-----	NO DATA	-----			
2	APP	1970.0	12.8	13:04:09.9	-790.7	-6.6	67.1
3	APP	1966.8	10.6	13:07:56.9	-849.3	-7.2	66.6
4	APP	1949.3	10.7	13:12:36.0	-807.3	-6.9	65.9
5	APP	1980.1	11.3	13:15:56.6	-615.6	-5.5	63.6
6	APP	2006.7	10.7	13:19:30.3	-315.1	-2.9	62.3
7	APP	1969.5	10.8	13:22:34.8	-662.8	-5.7	65.2
NOISE ABATEMENT APPROACH (SIX DEGREE AT 45 KTS.)							
8	APP	2001.3	10.6	13:26:24.0	-158.0	-1.9	46.1
9	APP	1984.1	10.3	13:30:06.3	-766.5	-9.1	47.3
10	APP	1988.4	11.6	13:33:14.4	-367.3	-4.2	49.1
11	APP	2018.9	11.1	13:36:32.6	-487.1	-6.2	44.5
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)							
12	APP	1997.8	10.6	13:39:59.7	-644.3	-5.8	62.1
13	APP	2005.8	17.2	13:42:54.9	-1382.9	-10.5	73.9
14	APP	2012.1	16.7	13:46:08.0	-627.6	-5.6	62.6
15	APP	1962.5	13.7	13:49:29.0	-1057.9	-9.3	63.6
16	APP	1372.9	16.0	13:52:55.2	82.9	0.7	69.2
17	APP	2003.5	13.3	13:55:43.1	-1185.0	-10.8	61.4
18	APP	1967.9	19.8	13:59:01.9	-411.0	-3.4	68.3
19	APP	1923.8	14.1	14:03:25.8	-764.0	-10.3	41.6
20	APP	2020.1	12.9	14:05:59.0	-745.2	-7.3	57.5
NOISE ABATEMENT APPROACH (TEN DEGREE AT 65 KTS.)							
21	APP	1970.2	18.0	14:17:13.1	-983.7	-9.7	56.9
22	APP	2033.6	17.0	14:20:21.9	-1294.5	-13.2	54.5
23	APP	1992.9	16.1	14:23:30.2	-967.4	-8.5	64.2

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

BELL 222A

POSITION DATA
NOISE MEASUREMENT PROGRAM

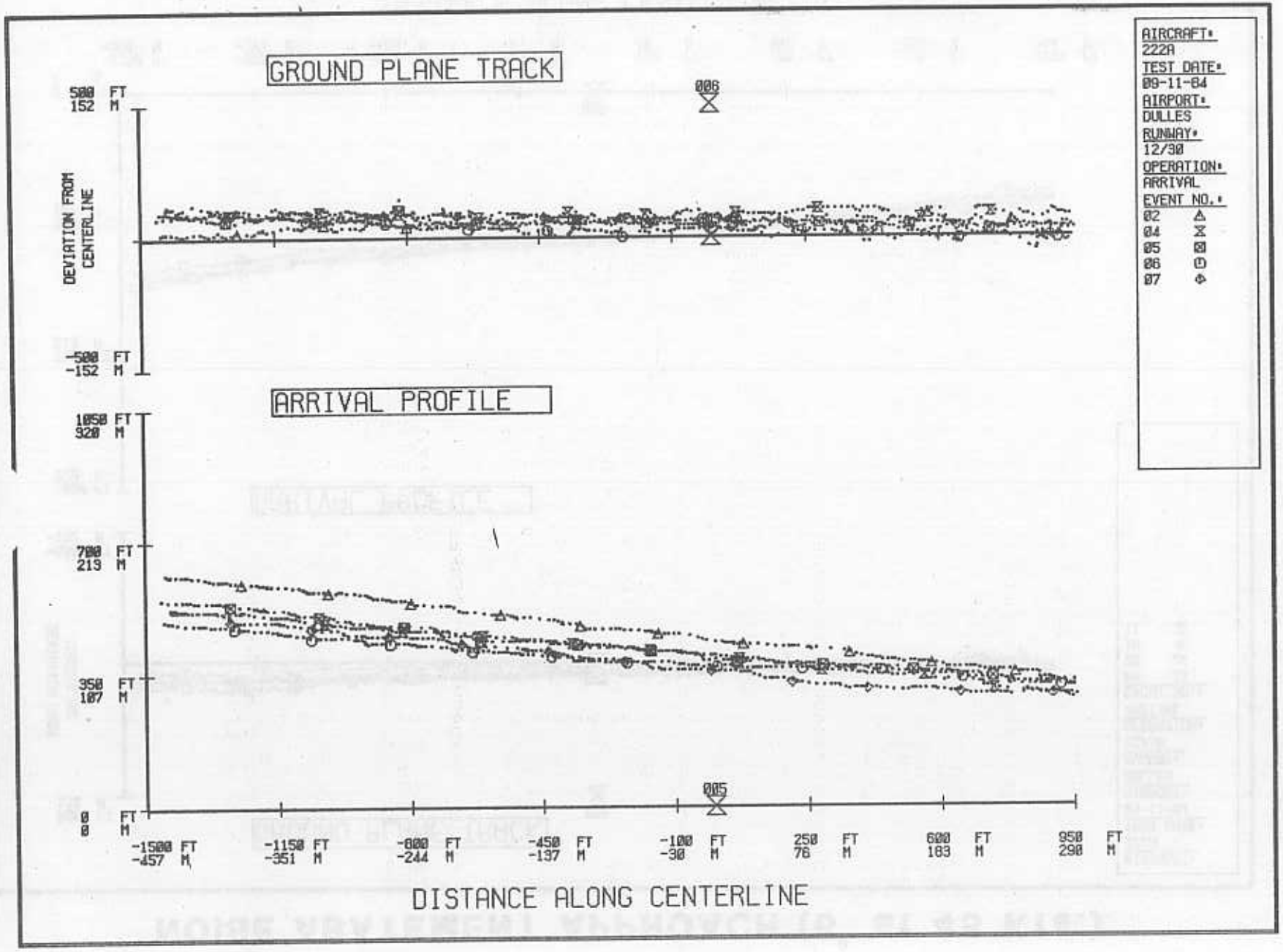
2000 FT. WEST

DATE:09/11/84 **FAA/AEE:

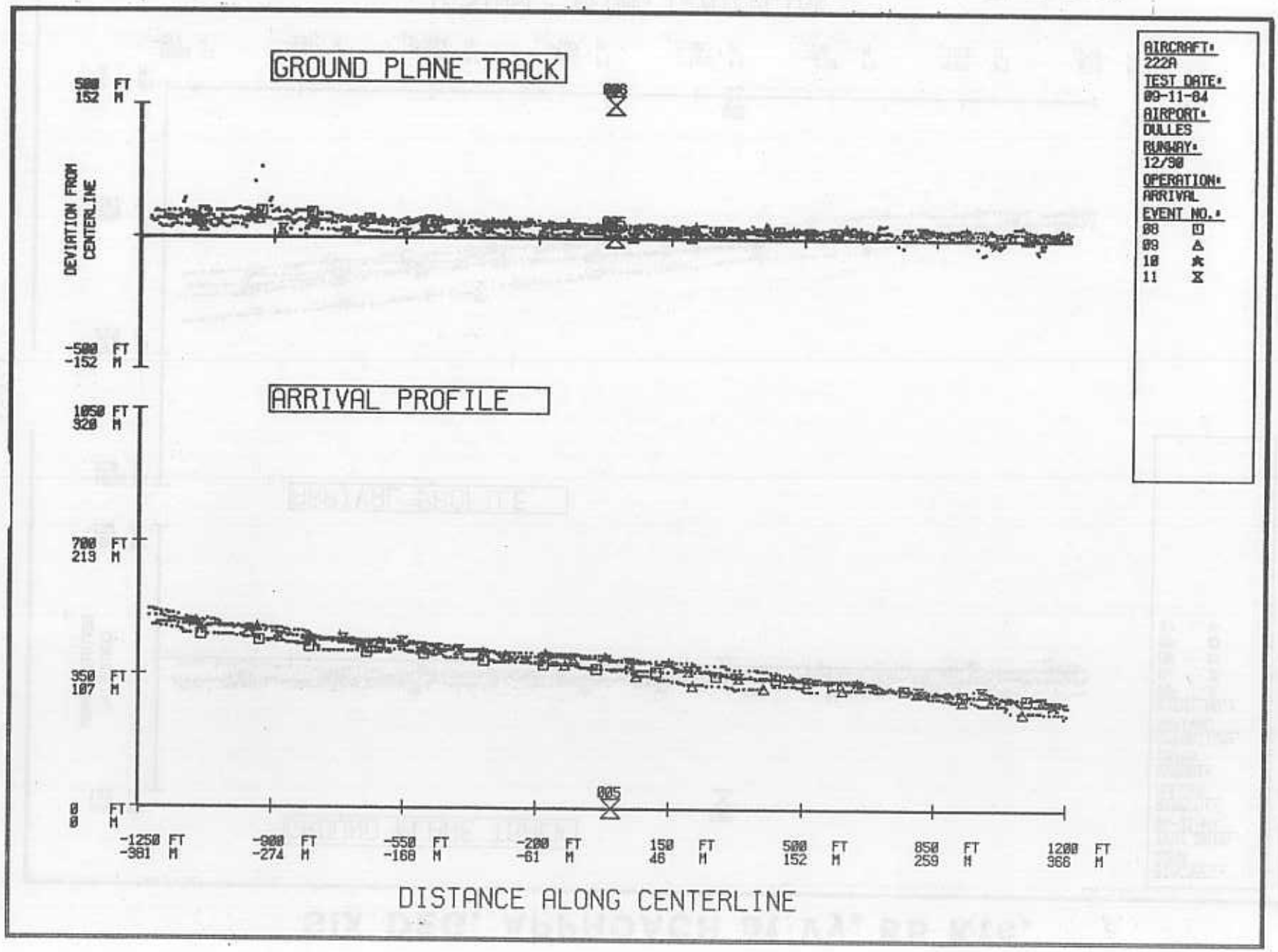
EVENT		CPA-FT	E-A	CPA-TIME	RC-FPM	C/D-A	GS-K
SIX DEGREE APPROACH AT VY, 65 KTS.							
1		-----	NO DATA	-----			
2	APP	2079.3	10.8	13:04:13.0	-790.9	-7.1	62.7
3	APP	2072.7	10.4	13:07:54.7	-714.4	-6.8	59.4
4	APP	2095.3	10.5	13:12:34.1	-819.4	-6.7	68.4
5	APP	2061.6	10.4	13:15:57.1	-529.8	-4.7	64.1
6	APP	2027.5	10.0	13:19:31.9	-132.0	-1.2	64.3
7	APP	2057.4	8.8	13:22:38.4	-816.4	-7.3	63.2
NOISE ABATEMENT APPROACH (SIX DEGREE AT 45 KTS.)							
8	APP	2043.8	9.9	13:26:24.2	-151.5	-1.9	45.7
9	APP	2037.7	9.1	13:30:07.3	-663.0	-8.0	46.5
10	APP	2044.5	10.3	13:33:17.9	-428.5	-5.3	45.8
11	APP	2035.1	10.5	13:36:32.2	-455.9	-5.8	44.3
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)							
12	APP	1991.6	10.2	13:39:59.3	-567.7	-5.1	62.3
13	APP	2125.0	15.6	13:42:55.5	-1474.1	-11.6	71.1
14	APP	2095.9	14.8	13:46:09.7	-967.6	-9.5	57.0
15	APP	2104.9	11.0	13:49:32.1	-1052.3	-9.5	62.2
16	APP	2176.0	12.1	13:52:48.2	-1440.0	-12.0	67.0
17	APP	2041.0	12.4	13:55:43.4	-1222.6	-11.1	61.7
18	APP	2172.8	17.4	13:59:02.8	-252.9	-2.1	68.9
19	APP	2165.2	12.7	14:03:24.3	-1044.5	-12.1	48.1
20	APP	2040.1	12.3	14:05:58.0	-887.7	-8.9	56.1
NOISE ABATEMENT APPROACH (TEN DEGREE AT 65 KTS.)							
21	APP	2176.4	15.0	14:17:15.0	-1103.2	-10.5	58.8
22	APP	2099.9	14.7	14:20:24.6	-1262.2	-12.8	54.6
23	APP	2115.4	13.7	14:23:33.6	-351.0	-3.2	61.2

CPA-FT : CLOSEST POINT OF APPROACH
E-A : ELEVATION ANGLE
CPA-TIME : CLOSEST POINT OF APPROACH TIME
RC-FPM : RATE OF CLIMB
C/D-A : CLIMB OR DECENT ANGLE
GS-K : GROUND SPEED

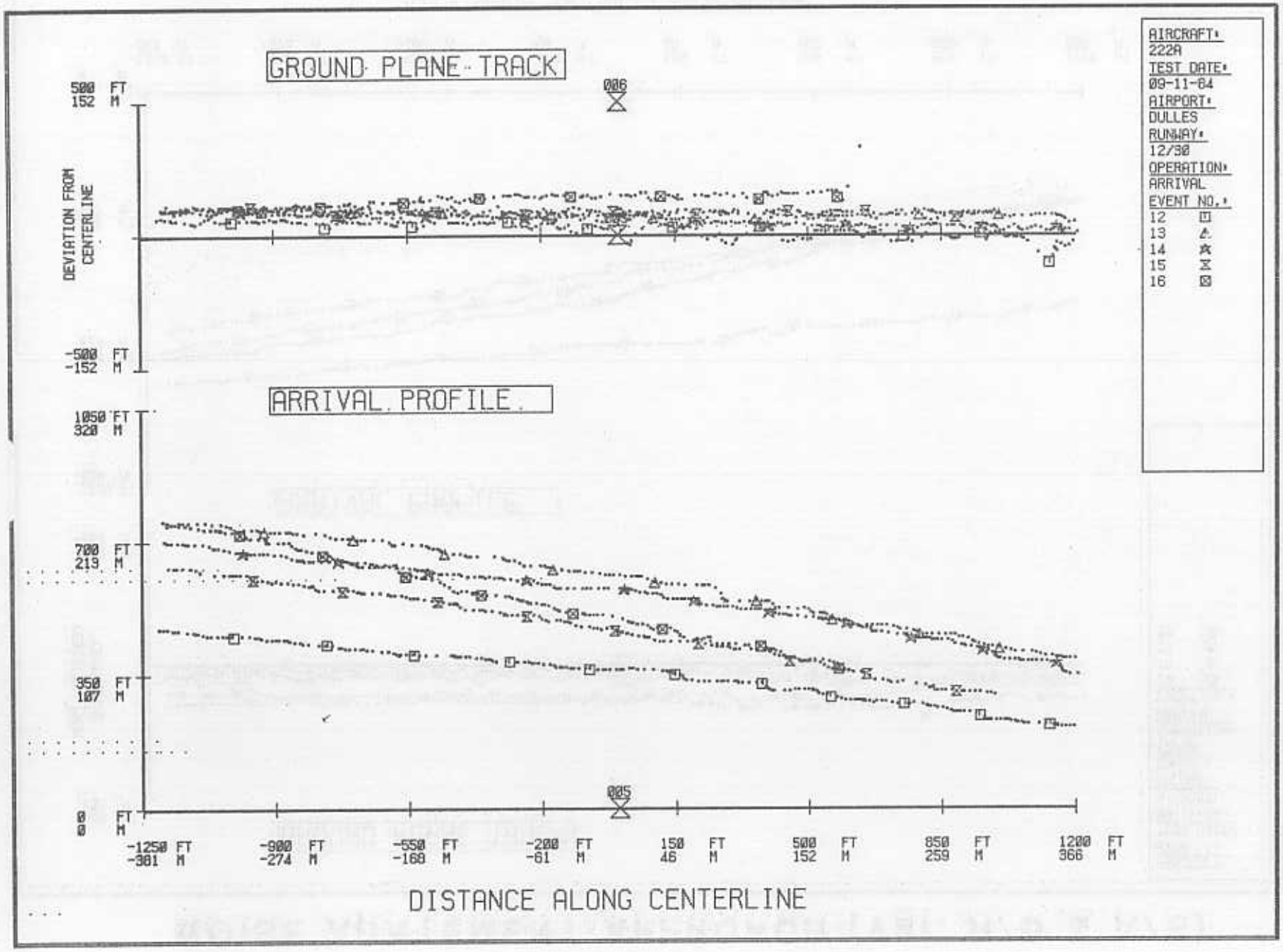
SIX DEG. APPROACH at Vy, 65 Kts.



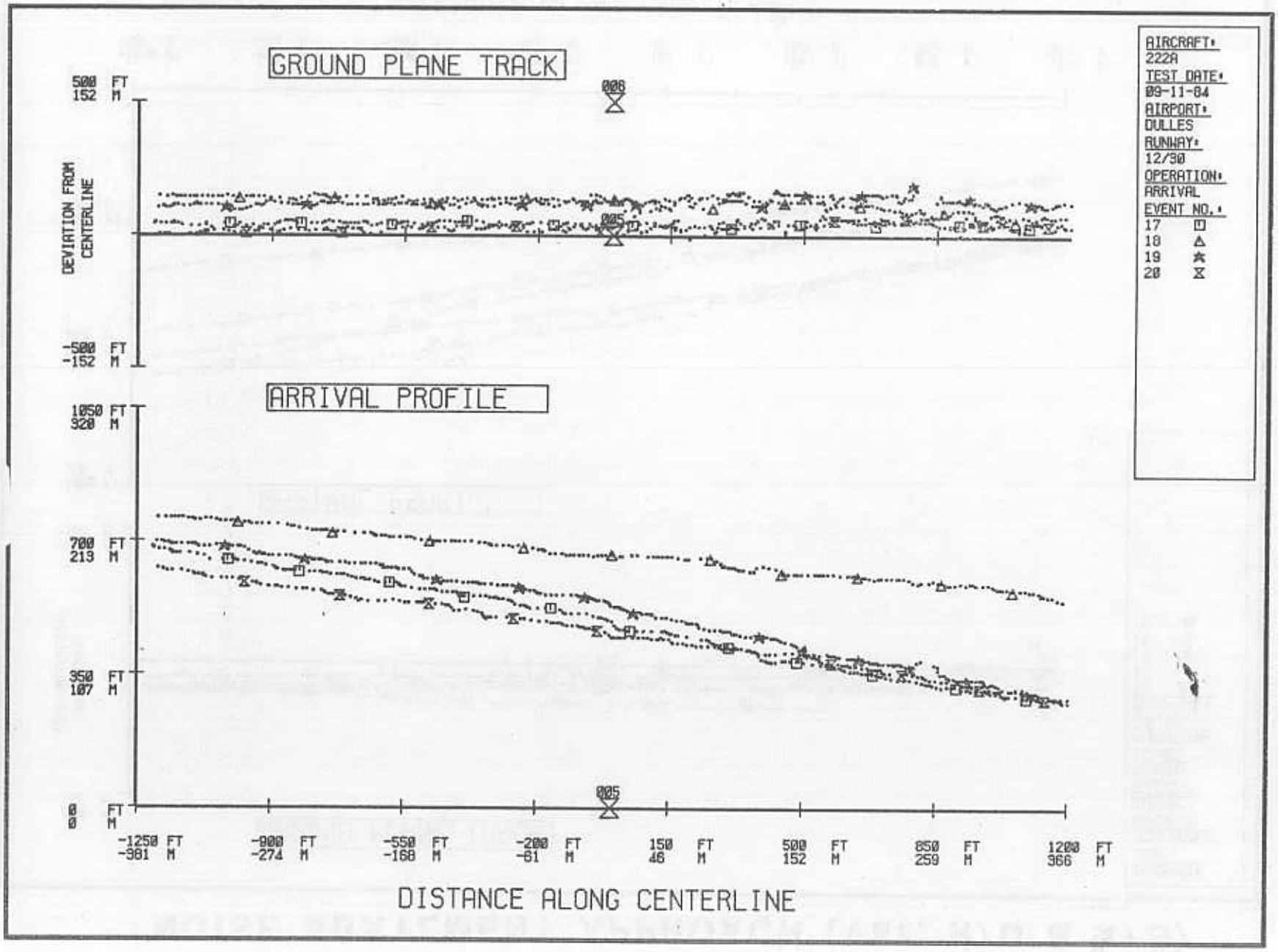
NOISE ABATEMENT APPROACH (6° at 45 Kts.)



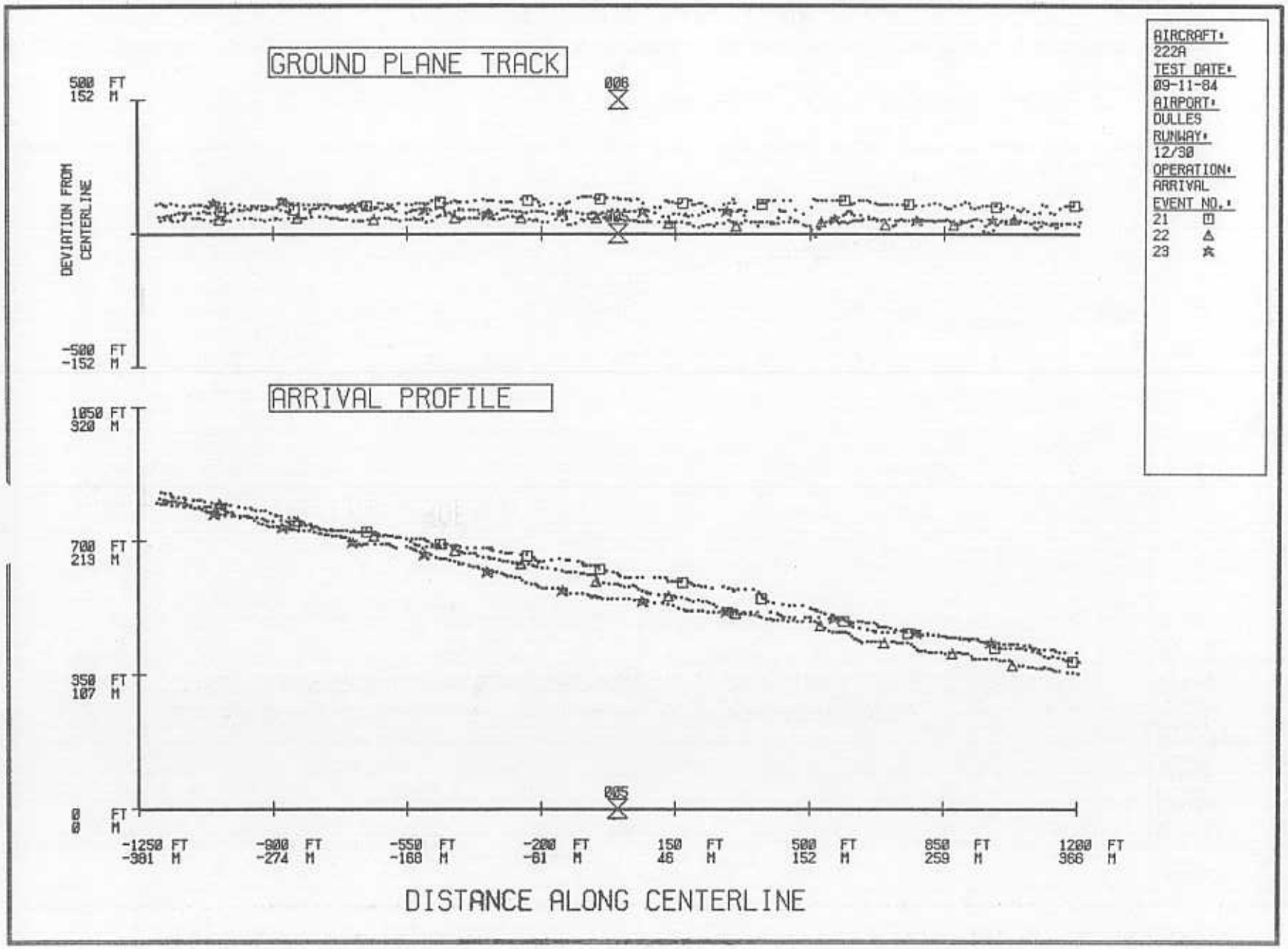
NOISE ABATEMENT APPROACH (Var. R/D & A/S)



NOISE ABATEMENT APPROACH (Var. R/D & A/S)



NOISE ABATEMENT APPROACH (10 Deg. at 65 Kts.)



METEOROLOGICAL

DATA

THIS SECTION OF THE APPENDIX CONTAINS WEATHER DATA FROM SEVERAL TYPES OF METEOROLOGICAL EQUIPMENT: TEN-METER TOWER (MET), GROUND LEVEL PSYCHROMETER, AIRCRAFT OAT, AND PILOT BALLOONS. DATA FROM THE MET TOWER INCLUDE THE TEMPERATURE, RELATIVE HUMIDITY, WIND DIRECTION AND WIND SPEED MEASURED TYPICALLY EVERY 15 MINUTES DURING EACH FLIGHT EVENT. BECAUSE OF A FAILURE OF THE MET TOWER DEW POINT SENSOR, THE RELATIVE HUMIDITY WAS CALCULATED USING TEMPERATURE FROM THE MET TOWER AND DEW POINT FROM THE DULLES MID FIELD WEATHER STATION. GROUND LEVEL (4 FEET) TEMPERATURE AND RELATIVE HUMIDITY ARE GIVEN FOR DIFFERENT TIMES OF EACH TEST DAT, AND THE HELICOPTER'S OAT READINGS ARE SHOWN FOR DIFFERENT FLIGHT ALTITUDES AT VARIOUS TIMES OF THE DAY. THE PILOT BALLOON WIND DATA, TAKEN PERIODICALLY DURING EACH TEST DAY, INDLUDES THE WIND DIRECTION AND WIND SPEED AT VARIOUS ALTITUDES.

METEOROLOGICAL DATA

(MEASURED AT 30 FT. AGL)

HELICOPTER: BELL 222A DATE: 9/11/84

TIME	TEMP. (DEG. F)	R.H. %	WIND DIR. (DEG.)	WIND SPEED AVG. (MPH)	WIND SPEED MAX (MPH)
SIX DEGREE APPROACH AT VY, 65 KTS.					
1:00	69	84	180	5	-
1:15	70	81	180	4	7
1:30	70	81	180	5	-
NOISE ABATEMENT APPROACH (6 DEG., 45 KTS.)					
1:45	71	82	180	5	-
NOISE ABATEMENT APPROACH (VAR. R/D AND A/S)					
2:00	72	79	180	5	-
2:15	72	79	180	5	-
NOISE ABATEMENT APPROACH (10 DEG., 65 KTS.)					
2:30	74	76	180	6	9

METEOROLOGICAL DATA

HELICOPTER: BELL 222A

DATE: 09/11/84

TEMPERATURE AND RELATIVE HUMIDITY DATA

(MEASURED AT 4 FT. AGL)

TIME	TEMP.	R.H.
	N	
	O	
	D	
	A	
	T	
	A	

HELICOPTERS OAT GUAGE DATA

TIME	ALTITUDE	TEMP.
2:10	200'	73 F
	400'	73 F
	600'	72 F
	800'	72 F
	1000'	70 F

PILOT BALLOON WIND DATA

BELL 222A 09/11/84

FEET (AGL)	WIND DIR. (DEG.)	WIND SPD. (KTS)	WIND DIR. (DEG.)	WIND SPD. (KTS)

LAUNCH TIME:

---------- NO DATA ----------

COCKPIT VIDEO

DATA

THIS SECTION OF THE APPENDIX CONTAINS INDIVIDUAL EVENT LISTINGS OF THE COCKPIT INSTRUMENT READINGS READ EVERY 5 SECONDS FROM PLAYBACK OF THE COCKPIT VIDEO RECORDINGS. THIS DATA ENCOMPASSES THE HELICOPTERS'S FLIGHT PARAMETERS THROUGHOUT THE ENTIRE DATA RUN PLUS OR MINUS 15 SECONDS (MINIMUM) FROM CLC.

COCKPIT VIDEO DATA

NOISE ABATEMENT APPROACH

(6 DEGREE, 45 KTS.)

HELICOPTER: BELL 222A

DATE: 09/11/84

EVENT:B8

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-30	640	40	100	45	1.26
-25	600	25	300	45	3.77
-20	570	20	700	45	8.84
-15	520	30	700	43	9.25
-10	---	--	---	--	--
-5	440	30	500	45	6.30
CLC 0	400	30	500	47	6.03
5	390	30	500	45	6.30
10	350	35	500	45	6.30
15	330	30	500	47	6.03
20	300	25	550	45	6.93

EVENT:B10

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-31	660	30	400	45	5.04
-26	620	30	500	45	6.30
-21	580	30	500	45	6.30
-16	540	20	500	45	6.30
-11	520	22	600	48	7.09
-6	460	30	550	45	6.93
CLC 0	440	30	400	48	4.72
5	400	22	500	48	5.90
9	360	28	600	47	7.24
14	320	25	600	46	7.40
19	300	22	600	47	7.24

EVENT:B11

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-38	700	48	100	47	1.20
-33	680	30	100	45	1.26
-28	660	25	500	44	6.44
-23	600	30	600	43	7.92
-18	560	35	600	43	7.92
-13	520	40	500	47	6.03
-8	500	40	500	48	5.90
-3	460	34	500	47	6.03
CLC 0	430	33	500	47	6.03
2	420	30	500	47	6.03
7	370	32	500	47	6.03
12	350	30	500	45	6.30
17	320	22	500	42	6.75
22	270	28	600	42	8.11

COCKPIT VIDEO DATA

NOISE ABATEMENT APPROACH

(VAR. R/D AND A/S)

HELICOPTER: BELL 222A

DATE: 09/11/84

EVENT:D12

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-31	660	28	450	88	2.89
-26	610	22	500	83	3.41
-21	580	42	300	80	2.12
-16	560	25	500	78	3.63
-11	540	22	600	75	4.53
-6	480	19	800	72	6.30
CLC 0	400	15	800	65	6.98
4	360	12	800	60	7.57
9	320	18	800	50	9.09
14	260	25	700	50	7.95
19	240	40	400	50	4.53

EVENT:D13

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-20	870	32	500	95	2.98
-15	840	28	600	94	3.61
-10	760	12	800	87	5.21
-5	720	8	900	78	6.54
CLC 0	680	4	900	74	6.90
5	580	3	1000	70	8.11
10	480	5	1200	67	10.19
15	380	5	1150	70	9.34
20	300	5	1000	48	11.87
25	250	10	900	39	13.17
30	200	42	700	40	9.95

EVENT:D14

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-20	870	20	800	83	0.62
-15	800	12	950	78	3.41
-10	720	12	1000	75	2.12
-5	660	10	900	72	3.63
CLC 0	610	12	900	64	4.53
5	560	10	900	60	6.30
10	470	12	1000	54	6.98
15	370	12	1050	51	7.57
20	300	18	950	50	9.09
25	250	20	900	48	7.95
30	200	65	700	52	4.53

COCKPIT VIDEO DATA

NOISE ABATEMENT APPROACH

(VAR. R/D AND A/S)

HELICOPTER: BELL 222A

DATE: 09/11/84

EVENT:D15

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-26	800	26	400	90	2.98
-21	760	20	650	87	3.61
-16	720	17	800	83	5.21
-11	670	12	900	78	6.54
-6	610	8	900	72	6.90
-1	530	8	900	69	8.11
CLC 0	---	-	---	--	10.19
4	440	8	1000	67	9.34
9	340	15	1000	66	11.87
14	300	23	900	65	13.17
19	240	18	800	58	9.95
24	200	24	700	55	7.22

EVENT:D16

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-29	1020	20	500	83	3.41
-24	970	18	600	80	4.25
-19	920	12	850	75	6.43
-14	840	11	900	70	7.29
-9	760	10	1000	68	8.35
-4	670	7	1300	68	10.88
CLC 0	570	2	1500	65	13.17
6	430	8	1400	68	11.73
11	320	8	1400	62	12.88
16	240	20	1000	60	9.47
21	200	58	600	75	4.53

EVENT:D17

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-28	750	47	200	77	1.47
-23	750	52	100	77	0.73
-18	750	41	100	78	0.73
-13	720	17	700	74	5.36
-8	680	15	900	71	7.19
-3	620	10	900	65	7.86
CLC 0	570	10	1000	54	10.54
2	530	10	1200	53	12.92
7	420	9	1100	50	12.55
12	330	19	900	60	8.52
17	300	10	800	60	7.57
22	260	30	800	57	7.97

COCKPIT VIDEO DATA

NOISE ABATEMENT APPROACH

(VAR. R/D AND A/S)

HELICOPTER: BELL 222A

DATE: 09/11/84

EVENT: D18

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-19	900	18	800	90	5.04
-14	840	18	800	84	5.40
-9	800	12	800	80	5.67
-4	750	18	800	75	6.05
CLC 0	690	15	800	70	6.48
6	660	12	600	60	5.67
11	610	12	800	60	7.57
16	540	10	800	58	7.83
21	480	10	800	50	9.09
26	450	60	300	60	2.83

EVENT: D19

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-28	900	22	700	90	4.40
-23	850	15	800	80	5.67
-18	790	10	800	75	6.05
-13	740	10	700	68	5.83
-8	700	10	700	63	6.30
-3	650	8	800	58	7.83
CLC 0	610	8	900	55	9.30
2	580	8	900	50	10.24
7	480	12	1000	45	12.68
12	400	23	900	43	11.93
17	340	32	800	45	10.11
22	320	35	700	50	7.95

EVENT: D20

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-7	650	10	1000	78	7.27
-4	580	5	1000	75	7.57
CLC 0	540	3	900	70	7.29
4	450	5	1000	60	9.47
9	360	15	900	50	10.24
12	320	22	900	48	10.67
19	280	22	750	48	8.88
24	250	40	700	48	8.28

COCKPIT VIDEO DATA

NOISE ABATEMENT APPROACH

(10 DEG., 65 KTS.)

HELICOPTER: BELL 222A

DATE: 09/11/84

EVENT:C21

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-15	890	15	900	50	10.24
-10	810	12	900	60	8.52
-5	740	12	1000	60	9.47
CLC 0	680	12	1000	60	9.47
5	590	12	1000	50	11.39
10	480	12	1100	50	12.55
15	380	12	1100	60	10.43
20	300	13	1100	60	10.43
25	220	15	900	60	8.52

EVENT:C22

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-23	1000	32	0	65	0.00
-18	990	16	600	57	5.97
-13	920	10	900	58	8.81
-8	840	10	1100	60	10.43
-3	720	8	1200	60	11.39
CLC 0	680	8	1200	60	11.39
2	650	10	1200	60	11.39
7	550	10	1200	58	11.79
12	460	21	1000	58	9.80
17	380	25	900	60	8.52
22	320	20	900	57	8.97
27	280	19	900	52	9.84
32	250	70	600	65	5.23

EVENT:C23

TIME (SEC.)	ALT. (AGL)	Q (%)	R/D (FPM)	IAS (KTS)	R/D (DEG)
-21	1000	20	700	60	6.62
-16	920	18	900	60	8.52
-11	840	15	1100	58	10.79
-6	760	12	1100	58	10.79
-1	680	15	1100	60	10.43
CLC 0	640	16	1100	55	11.39
4	580	20	1100	60	10.43
9	530	22	900	65	7.86
14	460	20	900	55	9.30
19	360	15	900	60	8.52
24	320	11	900	60	8.52
29	250	15	900	50	10.24

☆U.S. GOVERNMENT PRINTING OFFICE: 1985 461 816 20501

B