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FEB 77 R G POWELL
UNCLASSIFIED AMRL-TR-75-50-VOL-80 NL

1 OF 1
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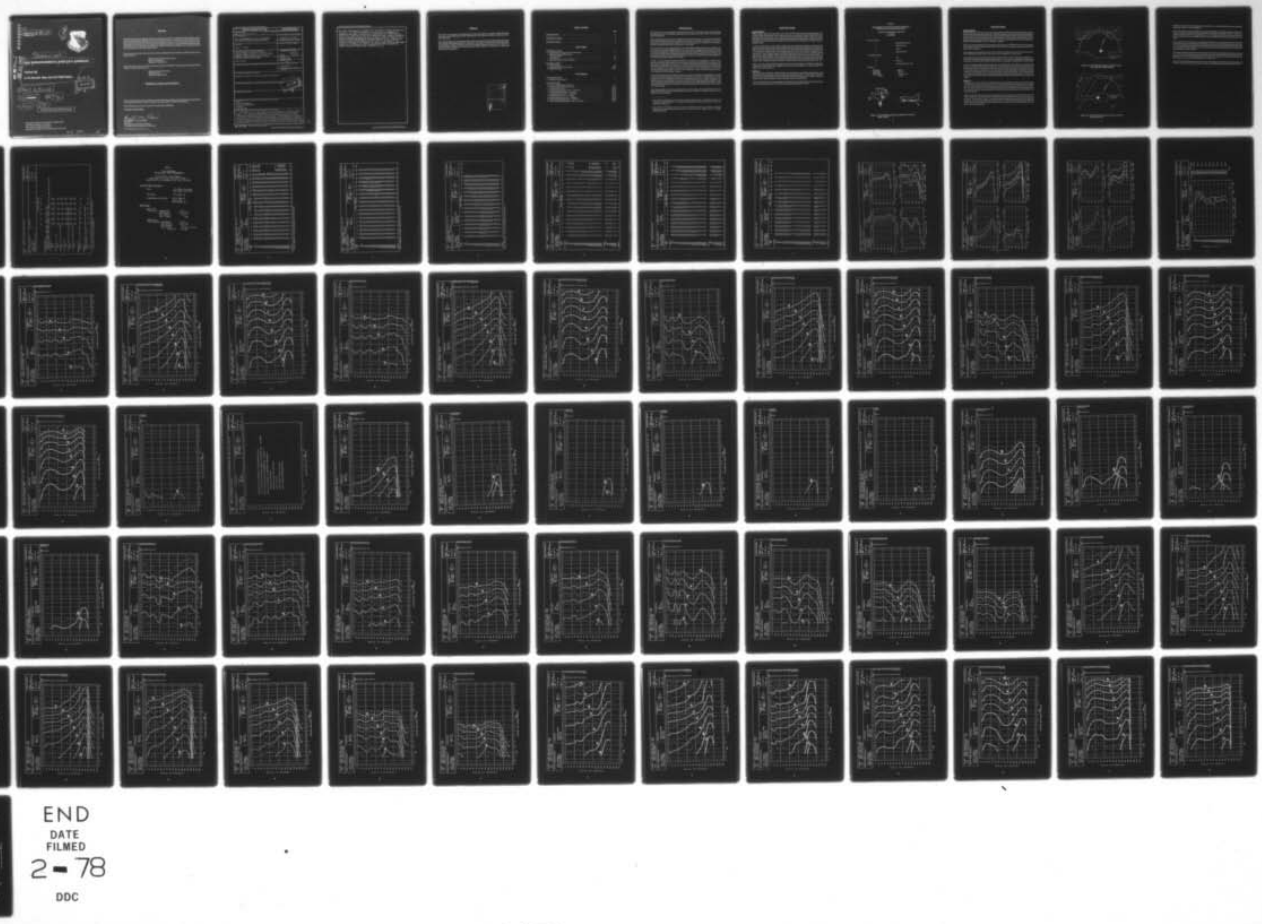

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Volume 80

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Technical rept.

USAF BIOENVIRONMENTAL NOISE DATA HANDBOOK.

Volume 80.

A-7D Aircraft, Near and Far-Field Noise.

Robert G. Powell

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AEROSPACE MEDICAL RESEARCH LABORATORY
AEROSPACE MEDICAL DIVISION
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FOR THE COMMANDER

HENNING E. VON GIERKE
Director
Biodynamics and Bionics Division
Aerospace Medical Research Laboratory

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20. ABSTRACT *(Continue on reverse side if necessary and identify by block number)*

The USAF A-7D is a close support aircraft powered by a TF41-A1 turbofan engine. This report provides measured and extrapolated data defining the bioacoustic environments produced by this aircraft operating on a concrete runup pad for three engine/power configurations. Near-field data are reported for four locations in a wide variety of physical and psychoacoustic measures: overall and band sound pressure levels, C-weighted and A-weighted sound levels, preferred speech interference level, perceived noise level, and limiting times

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for total daily exposure of personnel with and without standard Air Force ear protectors. Far-field data measured at 19 locations are normalized to standard meteorological conditions and extrapolated from 75-8000 meters to derive sets of equal-value contours for these same seven acoustic measures as functions of angle and distances from the source. Refer to Volume 1 of this handbook, "USAF Bioenvironmental Noise Data Handbook, Vol 1: Organization, Content and Application", AMRL-TR-75-50(1) 1975, for discussion of the objective and design of the handbook, the types of data presented, measurement procedures, instrumentation, data processing definitions of quantities, symbols, equations, applications, limitations, etc.

PREFACE

This report was prepared by the Biodynamic Environment Branch, Aerospace Medical Research Laboratory, under Project/Task 723104, Measurement and Prediction of Noise Environments of Air Force Operations.

The author gratefully acknowledges Mr. John Cole for his assistance in preparing this report, Col Justus Rose and Mr. Robert England for their assistance in acquiring the raw data, Mr. Keith Kettler, Mr. Henry Mohlman and Mr. David Eilerman of the University of Dayton for assistance in the mechanics of data processing, and Mrs. Norma Peachey and Mr. Mike Patterson for assistance in typing and preparation of the graphics.

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INTRODUCTION

The USAF A-7D is a close support aircraft powered by a TF41-A1 turbofan engine. The aircraft was manufactured by the LTV Aerospace Corporation and the engine by the Allison Division of the General Motors Corporation.

This volume provides measured and extrapolated data defining bioacoustic environments produced by this aircraft during ground runup operations. Such data are essential to evaluate ear protection requirements, limiting personnel exposure times, voice communication capabilities, and annoyance problems associated with ground runups of the A-7D aircraft.

This volume is one of a series published by the Aerospace Medical Research Laboratory (AMRL) under the same report number (AMRL-TR-75-50) as a multi-volume handbook that quantifies the noise environments produced at flight/ground crew locations and in surrounding communities by operations of Air Force aircraft and ground support equipment. The far-field, community-type, noise data in the handbook describe the noise produced during *ground operations* of aircraft, ground support equipment, and other ground-based equipment or facilities.

Volume 1 of this handbook discusses the objectives and design of the handbook, the types of data presented, measurement procedures, instrumentation, data processing, definitions of quantities, symbols, equations, applications, limitations, etc. Volume 2 provides a method and data for adjusting the handbook's far-field noise data, which are for standard meteorological conditions (15°C temperature, 70% rel humidity, 0.760 meters Hg barometric pressure), to derive comparable data for other meteorological conditions. *Refer to Volumes 1 and 2* (references 2 and 3) for such information because it is not repeated in other handbook volumes.

A cumulative index lists those aerospace systems contained in the handbook, and identifies the specific volumes containing each type of environmental noise data available (i.e., inflight/flight crew and passenger noise, near-field/ground crew noise, far-field/community noise). Volume numbers are assigned sequentially as individual volumes are published. This index is periodically updated as individual volumes are published and is available upon request from AMRL/BBE, Wright-Patterson AFB, OH 45433. Organizations on the distribution list for the handbook will automatically receive a copy of each updated index.

Direct any questions concerning the technical data in this report and other handbook volumes to: AMRL/BBE, Wright-Patterson AFB, OH 45433; AUTOVON 78-53675 or 78-53664; Commercial (513) 255-3675 or (513) 255-3664.

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1. Cole, John N., *USAF Bioenvironmental Noise Data Handbook Volume 1: Organization, Content and Application,* AMRL-TR-75-50 (1), Aerospace Medical Research Laboratory, Wright-Patterson Air Force Base, Ohio, 1975.

2. Cole, John N., *USAF Bioenvironmental Noise Data Handbook, Volume 2: Procedure to Evaluate Effects of Non-standard Meteorological Conditions on Far-Field Noise,* AMRL-TR-75-50 (2), AMRL, WPAFB, OH, 1975.

NEAR-FIELD NOISE

MEASUREMENTS

AMRL acquired near-field noise data on the A-7D aircraft during ground runup operations of its turbofan engine. For these tests the aircraft was located on a concrete runup pad at Eglin AFB with no significant reflecting surfaces in the vicinity except the ground plane. Table 1 gives the surface meteorological conditions and the three engine/power conditions. The ground-crew chief selected power conditions and near-field locations generally used during routine maintenance or engine runup for preflight checks.

At each near-field location a test engineer randomly moved a hand-held microphone in and around each location, probing all areas where a crew member's head would normally be located. He recorded all the noise samples on magnetic tape. During analysis of each sample, he determined the octave band root-mean-square sound pressure 4- or 8-sound integration time to derive a power-averaged level for each location. Figure 1 shows the four near-field locations where ground crews are usually located for maintenance and/or preflight checkout operaions. Estimates of noise levels at other locations are difficult in the near-field since the noise source is sptially distributed i.e., not a point source. The noise levels at near-field locations can vary widely depending upon relative distances from each noise source (intake noise, exhaust noise, panel resonances, internal engine noise through the engine wall, etc).

Table 1 lists the numeric/alphabetic designators used on the data pages in this report to identify the measurement locations and test conditions. For example, the designator 1/A means ground crew location 1 and test condition A.

RESULTS

The measured data presented in Table 2 define the sound pressure levels (SPL) produced by the A-7D aircraft at the four ground crew locations. This table includes the overall, 1/3 octave band, and octave band levels. From these data one can calculate the variety of measures given in Table 3, which are widely used to assess the effects of noise on personnel and their performance.

All near-field data are for the meteorological conditions at the time of test but are valid for all typical airbase meteorology because of the short sound propagation distances involved.

TABLE 1

MEASUREMENT LOCATIONS AND TEST CONDITIONS
FOR NEAR-FIELD NOISE MEASUREMENTS

A-7D Aircraft, Ground Runup, Eglin AFB
11 Aug 71
Tail # 88221

Ground Crew Location

1	Engine Start, Fire Guard
2	Wheel Chock Pull
3	Pin Pull
4	Engine Trim Panel

Aircraft Engine Operation

A	Idle
B	85% RPM
C	Intermediate (Military) Power

Meteorology

Temperature	26.7 C
Bar Pressure	0.758 M Hg
Rel Humidity	83 %
Wind — Speed	2.1 M/Sec (4 kt)
— Direction	320 Deg

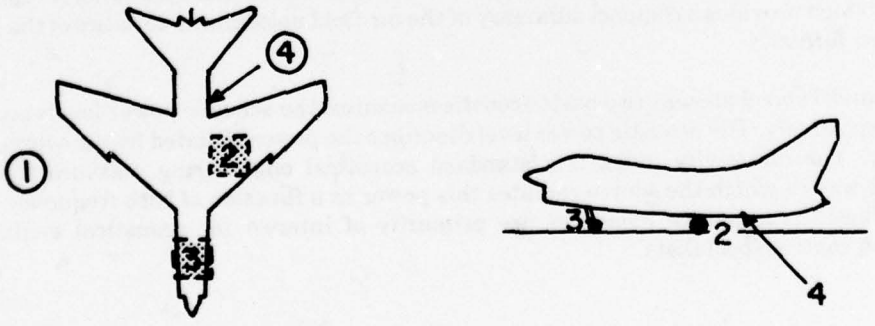


Figure 1. Near-Field Measurement Locations at Trim Pad Eglin AFB FL

FAR-FIELD NOISE

MEASUREMENTS

AMRL acquired far-field data during 1-hour test periods at both Edwards and Eglin AF bases. Figure 2 shows the ground runup pads, ground cover, aircraft orientation and the 19 microphone measurement sites on each semicircle. The centers of the 75 meter radius semicircles used in surveying the TF41-A1 engines were on the ground directly below the intersection of the aircraft's centerline and the plane passing through the engine's exhaust-nozzle exit. The ground runup pads did not have blast deflectors; therefore, the jet exhausts were in a "free-flow" condition.

Table 4 provides cockpit readouts of some engines characteristics (% RPM, fuel flow, etc.) for each power setting used in the far-field tests. Also listed in this table are the surface meteorological conditions during data acquisition.

All microphone measurement sites are in the acoustic far-field of the source where the sound wavefronts spherically diverge and the noise source may be regarded as a point source.

Test personnel acquired far-field noise data at Eglin AFB by using a hand-held microphone (1.7 meters/5½ feet above the ground plane and pointed at the noise source, 0° incidence) and sequentially recording 5-10 seconds of data at each far-field location on a portable microphone/tape recorder system.

A similar microphone/tape-recorder system was used to sequentially record the noise at each far-field location at Edwards AFB. However, at Edward's the microphone was attached to a hand-held pole, pointed at the source (0° angle of incidence) and vertically scanned from 0.5 to 3 meters for a period of 5-10 seconds during data acquisition at each microphone location. Both Eglin's and Edward's samples were then time-integrated to derive a root-mean-square sound pressure level. Vertical scanning and time-integrating together reduce anomalies frequently present in data acquired by a fixed height microphone and now constitute the standard far-field data acquisition/reduction technique used by the AMRL.

RESULTS

Table 5 lists the overall and 1/3 octave band SPL measured at the far-field locations under meteorological conditions at the time of the test. Data in all other figures and tables are based on these levels. These data were normalized to 100 meters distance and standard meteorological conditions (15°C temperature, 70% relative humidity, 0.760 meter Hg barometric pressure) and used to derive the graphic data in Figure 3 which provides a compact summary of the far-field noise characteristics of the A-7D aircraft in a standard format.

Figure 4 and Table 6 present two basic acoustic measures, the acoustic power levels and the directivity index, respectively. The acoustic power level describes the power radiated by the source as a function of frequency. The directivity index is a standard acoustical engineering measure that describes the geometric way in which the source radiates this power as a function of both frequency and angle from source. These basic source measures are primarily of interest for acoustical engineers and noise generation/control specialists.

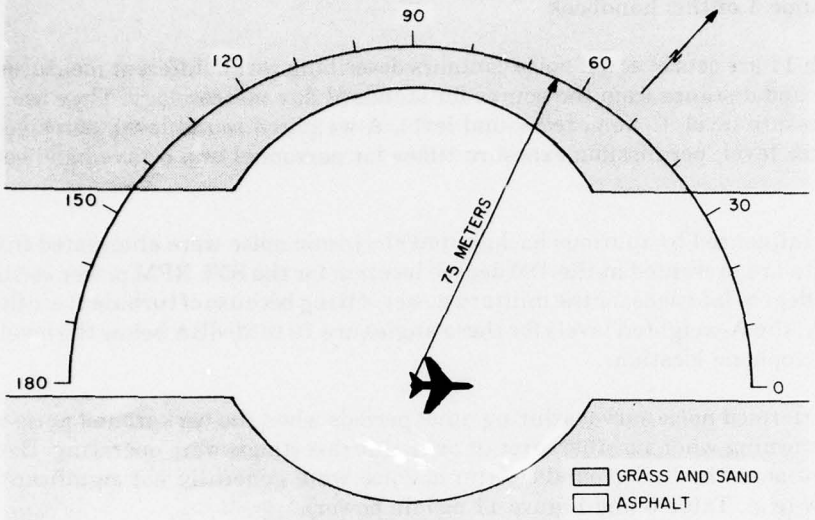


Figure 2(a). Far-Field Measurement Locations at the Hot Cargo Pad, Eglin AFB FL

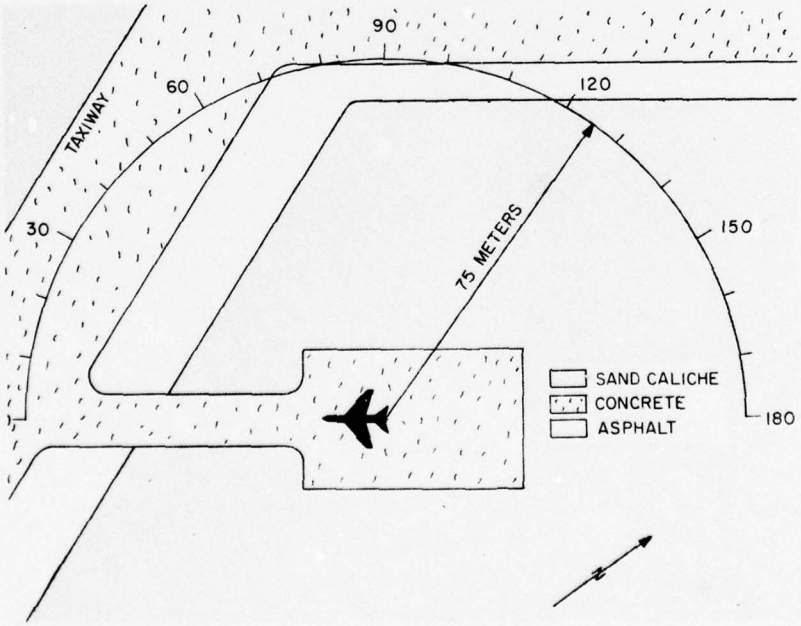


Figure 2(b). Far-Field Measurement Locations at Pad 17 Edwards AFB CA

Estimates of noise levels for intermediate power conditions (e.g., 88% engine RPM) can be determined as explained in Volume 1 of this handbook.

Figures 5 through 11 are sets of equal noise contours describing seven different measures of noise as a function of angle and distance from the source for standard day meteorology. They are, respectively, overall sound pressure level, C-weighted sound level, A-weighted sound level, perceived noise level, speech interference level, permissible exposure times for personnel and octave band sound pressure levels.

Data excessively influenced by spurious background/electronic noise were eliminated from all figures and tables. No data are presented at the 180 degree location for the 85% RPM power setting and at the 160, 170, and 180 degree locations for the military power setting because of turbulent air flow behind the aircraft. Typically, the A-weighted levels for these angles are 10 to 20 dBA below the level measured at the preceding microphone location.

Test personnel performed noise surveys during quiet periods when the background noise was minimal, e.g., early in the morning when no other aircraft or engine test stands were operating. Data eliminated because they were near the background/electronic noise were generally not significant because the levels were so low (e.g., Table 5 and Figure 11 at idle power).

Volume 2 of the handbook describes the influence of meteorology on far-field noise environments, and provides, if required, the factors necessary to adjust the handbook's standard meteorological day data.

TABLE: 2 — MEASURED SOUND PRESSURE LEVEL (DB) 1/3 OCTAVE BAND

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
GROUND CREW
NEAR FIELD NOISE LEVELS

OPERATION:

IDENTIFICATION:
OMEGA 3.2
TEST 71-019-100
RUN 01
04 DEC 74

FREQ (HZ)	LOCATION/CONDITION 1/A	2/A	3/A	4/A	4/B	4/C
25	93	88	83	86	90	96
31.5	96	96	90	87	91	95
40	90	97	87	92	94	98
50	88	88	92	97	96	99
63	89	90	97	105	98	104
80	89	90	98	100	99	103
100	91	89	85	92	104	108
125	96	94	88	94	104	111
160	94	92	83	90	106	114
200	88	89	82	89	104	113
250	85	87	81	88	103	111
315	85	84	78	86	105	115
400	85	87	81	85	105	119
500	89	99	90	90	105	125
630	84	86	83	86	105	125
800	80	85	81	85	105	123
1000	86	90	85	87	103	120
1250	94	97	98	92	101	118
1600	83	87	87	88	102	117
2000	84	95	90	88	102	116
2500	84	87	88	86	106	115
3150	83	85	84	84	103	114
4000	84	86	83	82	101	111
5000	83	86	81	81	100	109
6300	84	87	83	81	99	109
8000	84	86	83	81	100	109
10000	83	83	78	79	99	108
OVERALL	104	106	104	108	117	131

LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

TABLE:	MEASURED SOUND PRESSURE LEVEL (DB)	IDENTIFICATION:
2	OCTAVE BAND	
		OMEGA 3.2
		TEST 71-019-100
NOISE SOURCE/SUBJECT:	OPERATION:	RUN 01
A-70 AIRCRAFT		04 DEC 74
GROUND CREW		
NEAR FIELD NOISE LEVELS		PAGE J1

	LOCATION/CONDITION					
FREQ (HZ)	1/A	2/A	3/A	4/A	4/B	4/C
31.5	98	100	92	93	96	101
63	93	94	101	106	102	107
125	99	97	91	97	109	116
250	91	92	85	93	109	118
500	91	100	91	92	109	128
1000	95	98	98	94	108	125
2000	88	96	93	92	109	121
4000	88	90	88	87	106	116
8000	88	90	86	85	104	114
OVERALL	104	106	104	108	117	131

TABLE: MEASURES OF HUMAN NOISE EXPOSURE

3

IDENTIFICATION:

OMEGA 3.2
TEST 71-019-100
RUN 01

04 DEC 74

PAGE H1

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
GROUND CREW
NEAR FIELD NOISE LEVELS

OPERATION:

	LOCATION/CONDITION					
	1/A	2/A	3/A	4/A	4/B	4/C
HAZARD/PROTECTION						
C-WEIGHTED OVERALL SOUND LEVEL (OASLC IN DBC) AT EAR						
A-WEIGHTED OVERALL SOUND LEVEL (OASLA IN DBA) AT EAR						
MAXIMUM PERMISSIBLE TIME (T IN MINUTES) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)						
NO PROTECTION						
OASLC	103	105	104	107	116	131
OASLA	98	103	101	98	115	130
T	42	18	25	42	2.2	P
MINIMUM QPL EAR MUFFS						
OASLA*	79	81	79	83	92	106
T	960	807	960	571	120	11
AMERICAN OPTICAL 1700 EAR MUFFS						
OASLA*	74	76	75	80	87	100
T	960	960	960	960	285	30
V-51R EAR PLUGS						
OASLA*	73	77	75	74	89	106
T	960	960	960	960	202	11
AMERICAN OPTICAL 1700 EAR MUFFS PLUS V-51R EAR PLUGS						
OASLA*	61	64	63	63	75	91
T	960	960	960	960	960	143
H-133 GROUND COMMUNICATION UNIT						
OASLA*	72	75	74	75	88	101
T	960	960	960	960	240	25
COMMUNICATION						
PREFERRED SPEECH INTERFERENCE LEVEL (PSIL IN DB)						
PSIL	91	98	94	93	109	125
ANNOYANCE						
PERCEIVED NOISE LEVEL, TONE CORRECTED (PNLT IN PNDB)						
TONE CORRECTION (C IN DB)						
PNLT	115	120	117	114	130	142
C	3	4	4	1	1	1

* BASED ON CALCULATED SPL SPECTRUM UNDER PROTECTIVE DEVICE.
P ADDITIONAL EAR PROTECTION REQUIRED.

TABLE 4

TEST CONDITIONS
FOR FAR-FIELD NOISE MEASUREMENTS

A-7D Aircraft, Ground Runups
Eglin AFB FL, 23 July 1971, Tail # 88221
Edwards AFB CA, 25 September 1972, Tail # 6714584

Aircraft Engine Operation

Idle	54 % RPM, Core Speed
	950 LBS/HR, Fuel Flow
85% Runup	85 % RPM, NC
Intermediate (Military)	99.5 % RPM, NC
	574 C, EGT
	8200 LBS/HR, FF

Meteorology

Eglin AFB		
(Idle, 85%)	Temperature	22.2 C
	Bar Pressure	0.760 M Hg
	Rel Humidity	84 %
	Wind - Speed	Calm
Edwards AFB		
(Intermediate)	Temperature	20.0 C
	Bar Pressure	0.700 M Hg
	Rel Humidity	65 %
	Wind - Speed	5.1 M/Sec (10 Kt)
	- Direction	260 Deg

TABLE: 5

MEASURED SOUND PRESSURE LEVEL (DB)
1/3 OCTAVE BAND
DISTANCE = 75 METERS

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-004
RUN 01
06 MAY 75
PAGE 2

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
IDLE
54% RPM
FREE FLOW

METEOROLOGY:
TEMP = 22 C
BAR PRESS = .760 M HG
REL HUMID = 84 %

FREQ (HZ)	ANGLE (DEGREES) 0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
25	68<	70<	68<	69<	70<	68<				66<		66<	66<	69<	72<	72<	74<	73<	72<
31.5	73<	75<	72<	70<	71<	68<	67<	68<	73<	71<	69<	69<	72<	74<	76<	76<	77	75<	74<
40	75<	76<	75<	75<	75<	72<	72<	77	75<	74<	74<	77	78	78	79	79	81	78	76
50	78	78	78	77	75	72<	78	77	75	79	77	78	80	80	82	80	81	77	74
63	73<	76<	81	81	78	80	84	79	02	81	80	82	83	83	85	83	83	77<	71<
80	75	75	80	79	79	82	81	83	81	83	81	82	83	84	84	81	80	71<	68<
100	75	74<	75<	74<	74<	74<	79	73<	74<	76	72<	75	75	78	78	76	72<		
125	77	77	72<	78	74	78	78	79	78	79	79	80	80	82	83	80	75		
160	73	72<	67<	73	73	70<	73	73	74	75	74	76	76	78	79	74	68<		
200	69<	70<	64<	69<	71<	68<	70<	71<	73	72<	72<	74	76	75	75	71<	63<		
250	64<	65<	66<	66<	65<	65<	67<	68<	71	70<	69<	72	74	72	72	67<			
315	66	66	67	65	69	68	68	66	68	69	70	72	73	75	73	68	56<		
400	69	70	70	69	71	69	68	69	70	71	73	75	76	77	76	69	55<		
500	69	69	69	71	72	69	72	73	73	74	74	75	80	77	76	70	53<		
630	69	69	68	69	68	67	67	65	66	68	70	73	76	75	71	68	51<		
800	68	68	68	70	68	65	65	66	66	69	71	73	77	76	71	68	53<		
1000	71	70	70	70	67	68	66	63	64	65	68	71	73	72	70	68	54		
1250	86	78	77	83	77	83	82	76	73	68	71	74	74	73	71	69	61	44<	41<
1600	71	69	69	70	71	72	69	66	66	70	73	77	75	72	71	68	54	41<	
2000	73	74	74	76	71	71	69	66	65	69	72	77	77	73	70	66	55	43<	40<
2500	75	76	73	71	79	73	69	65	65	69	73	77	77	73	72	66	55	42<	39<
3150	74	74	74	76	72	69	67	62	63	67	71	77	76	71	69	59	48	40<	39<
4000	77	78	76	77	76	72	69	64	64	68	74	78	78	75	72	59	49	41<	40<
5000	79	78	78	79	76	73	70	63	61	65	72	76	78	75	71	58	47	39<	38<
6300	76	75	74	77	75	73	69	62	61	65	70	73	75	74	72	56	46	37<	35<
8000	74	75	74	74	74	73	67	62	60	64	70	74	75	75	73	58	46<	37<	
10000	70	70	70	70	69	65	63	58	59	64	69	70	71	70	67	54	42<		
OVERALL	90	88	89	90	88	89	89	88	88	89	88	91	91	91	92	89	88	83	81

< LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

TABLE 5: MEASURED SOUND PRESSURE LEVEL (DB)
1/3 OCTAVE BAND
DISTANCE = 75 METERS

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-004
RUN 02
06 MAY 75
PAGE 2

NOISE SOURCE/SUBJECT:
A-70 AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
85% RPM
FREE FLOW

METEOROLOGY:
TEMP = 22 C
BAR PRESS = .760 M HG
REL HUMID = 84 %

FREQ (HZ)	ANGLE (DEGREES) 0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
25	70<	71<	71<	73<	73<	75<	75<	78	78	79	80	81	84	90	92	92	90	89	
31.5	73<	72<	74<	74<	74<	75<	75<	79	79	82	81	83	88	92	94	95	92	91	
40	73<	76	75<	76	77	77	78	79	82	84	84	86	90	95	98	96	94	91	
50	75	75	75	77	78	77	78	82	83	85	86	88	93	98	101	99	94	87	
63	77<	78	77<	76<	80	80	80	82	84	87	88	89	94	100	103	99	93	81	
80	78	78	79	79	80	80	82	84	85	87	89	91	96	103	105	100	91	76	
100	81	80	81	82	81	83	85	87	88	91	92	95	100	107	109	102	92	74<	
125	82	83	83	85	83	85	87	90	91	93	94	98	103	111	113	105	90	78	
160	83	82	85	85	85	86	88	90	91	94	95	99	103	111	114	104	87	75	
200	83	83	85	84	85	85	87	89	90	92	94	98	103	108	114	102	78	74	
250	81	82	83	83	84	85	85	88	89	91	93	97	100	105	112	95	77	70<	
315	82	84	84	84	85	85	87	89	90	93	96	99	102	107	110	90	77	68	
400	84	87	86	87	89	87	91	92	95	97	98	102	104	107	109	93	76	66	
500	81	85	85	87	89	88	90	92	93	94	97	100	105	105	106	91	69	62	
630	77	81	81	82	84	84	87	87	89	93	96	99	101	103	102	88	66	63	
800	78	81	83	84	84	84	87	89	91	93	95	98	101	103	101	91	65	60	
1000	76	78	81	81	82	83	83	85	87	89	91	95	96	98	98	88	63	57	
1250	75	78	81	82	83	84	84	86	87	89	90	93	96	95	95	85	62	54	
1600	73	76	79	79	81	83	83	85	85	89	90	93	96	95	92	82	59	54	
2000	77	78	79	81	81	84	83	84	86	88	89	91	93	94	91	79	58	54	
2500	83	83	81	83	83	84	82	82	83	88	88	89	92	92	87	73	59	55	
3150	84	83	82	80	82	84	82	82	83	88	89	88	88	88	84	69	56	57	
4000	83	83	81	77	79	80	80	80	82	90	93	89	88	88	82	66	55	53	
5000	83	83	80	79	79	78	78	80	81	86	89	87	86	86	80	63	53	51	
6300	82	81	76	79	77	77	77	79	81	85	87	86	85	85	79	62	51	47	
8000	78	78	75	74	75	75	75	77	81	85	88	86	85	84	79	63	51	47	
10000	74	72	69	70	71	71	71	73	76	81	84	80	80	80	74	60	47	43<	
OVERALL	94	95	96	96	97	97	99	101	102	105	107	109	113	118	121	111	101	96	

< LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

TABLE 5: MEASURED SOUND PRESSURE LEVEL (DB)
1/3 OCTAVE BAND
DISTANCE = 75 METERS

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-051
RUN 01
20 MAY 75
PAGE 2

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
MILITARY POWER
99.5% RPM
FREE FLOW

METEOROLOGY:
TEMP = 20 C
BAR PRESS = .700 M HG
REL HUMID = 65 %

FREQ (HZ)	ANGLE (DEGREES) 0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
25	80	79	80	81	82	79	84	85	84	86	85	87	91	95	100	101			
31.5	81	82	82	82	84	83	84	87	87	87	88	88	95	99	103	104			
40	83	83	84	83	85	85	85	86	90	90	91	92	97	103	107	105			
50	84	85	86	86	86	87	88	89	92	93	95	97	102	108	111	108			
63	86	86	87	88	88	90	91	92	93	93	96	98	102	110	113	109			
80	87	88	88	88	89	90	91	93	95	96	98	100	106	113	117	110			
100	89	89	90	92	91	92	93	94	97	99	100	102	109	118	119	111			
125	92	91	92	92	93	92	95	95	99	101	102	103	112	119	119	112			
160	94	92	96	94	95	95	96	97	101	104	104	106	113	122	121	114			
200	92	94	95	96	95	97	97	99	103	104	105	107	112	122	121	115			
250	92	95	96	97	96	97	98	99	103	103	104	108	112	118	119	116			
315	96	100	100	101	99	98	98	99	100	102	104	108	112	117	114	114			
400	104	109	109	107	107	105	102	99	101	100	102	106	109	114	114	112			
500	103	108	109	109	109	106	103	100	98	101	101	107	108	113	115	110			
630	100	105	108	109	108	108	106	103	99	99	101	105	108	113	115	106			
800	96	101	104	106	106	106	104	103	101	100	101	104	108	113	115	102			
1000	94	99	102	104	104	103	101	101	102	102	102	104	110	112	114	100			
1250	91	96	100	102	103	102	101	100	101	103	102	103	108	110	112	100			
1600	90	96	98	101	103	102	101	101	101	103	103	104	106	110	112	99			
2000	88	93	96	99	100	100	100	100	100	101	102	104	104	109	109	97			
2500	87	92	95	99	100	100	100	100	100	101	103	106	105	108	109	96			
3150	87	91	94	97	99	99	100	99	100	101	102	105	104	106	108	96			
4000	83	88	92	95	96	97	97	98	98	99	101	102	102	105	106	93			
5000	82	87	91	94	95	96	96	96	97	99	100	101	101	104	105	92			
6300	78	83	88	90	92	93	94	94	94	96	97	98	98	101	103	89			
8000	75	80	85	88	89	90	90	91	92	93	94	95	96	99	102	87			
10000	69	74	78	82	84	86	85	85	86	88	89	91	92	96	99	84			
OVERALL	109	113	115	115	115	115	113	112	113	114	115	118	122	129	129	123			

LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

TABLE: DIRECTIVITY INDEX (DB)

6

IDENTIFICATION:

OMEGA 1.4
TEST 75-002-004
RUN 01
06 MAY 75
PAGE 4

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
IDLE
54% RPM
FREE FLOW

METEOROLOGY:
TEMP = 22 C
BAR PRESS = .760 M HG
REL HUMID = 84 %

FREQ (HZ)	ANGLE (DEGREES) 0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
1/3 OCTAVE																			
25	1	2	1	1	3	0				-1		-1	-1	1	4	5	6	5	4
31.5	1	3	-0	-2	-1	-4	-5	-4	1	-1	-3	-3	0	2	3	4	5	3	2
40	-1	-1	-2	-2	-1	-5	-5	0	-1	-3	-2	1	2	2	3	3	4	2	-0
50	-0	-0	-0	-1	-4	-7	-0	-1	-3	1	-1	-0	1	2	4	2	3	-1	-4
63	-8	-6	-1	-1	-4	-1	2	-3	-0	-0	-2	0	1	1	3	1	1	-5	-10
80	-6	-7	-2	-2	-3	0	-1	1	-1	1	-1	-0	1	2	3	-1	-2	-11	-14
100	-0	-1	-1	-1	-1	-1	3	-2	-1	0	-3	-0	-0	2	3	0	-3		
125	-2	-3	-7	-2	-5	-1	-1	-0	-1	0	-0	1	1	3	4	0	-4		
160	-1	-3	-7	-1	-1	-4	-1	-1	-0	0	-0	1	1	3	4	-1	-6		
200	-4	-2	-8	-3	-2	-5	-3	-1	1	-0	-0	1	3	3	3	-2	-9		
250	-6	-5	-4	-4	-4	-5	-3	-2	1	-0	-0	3	4	2	3	-3			
315	-4	-4	-3	-5	-2	-2	-2	-4	-2	-1	-0	2	3	5	3	-2	-14		
400	-4	-2	-2	-3	-1	-3	-4	-4	-3	-1	0	2	3	5	3	-3	-17		
500	-6	-5	-5	-3	-3	-5	-2	-2	-1	-0	-1	1	5	3	2	-4	-21		
630	-2	-1	-2	-1	-2	-3	-4	-5	-4	-2	-1	2	5	4	1	-3	-19		
800	-3	-3	-3	-1	-3	-6	-6	-5	-5	-2	-0	2	6	5	0	-3	-18		
1000	3	1	1	1	-2	-1	-3	-6	-5	-3	-1	3	4	3	1	-1	-15		
1250	9	1	0	6	-0	6	5	-1	-4	-9	-6	-3	-3	-4	-6	-8	-16	-33	-36
1600	-1	-3	-3	-2	-1	-0	-3	-6	-6	-2	1	5	3	-0	-1	-4	-18	-30	
2000	1	2	2	4	-1	-2	-3	-6	-7	-3	-1	4	4	0	-2	-6	-17	-29	-32
2500	2	2	-0	-3	6	-0	-5	-9	-8	-5	-1	4	4	-0	-2	-8	-18	-31	-34
3150	2	2	2	4	1	-3	-4	-9	-9	-5	-1	5	4	-0	-3	-13	-23	-31	-32
4000	3	4	2	3	2	-1	-4	-10	-10	-5	-0	4	4	1	-2	-15	-25	-32	-34
5000	6	4	5	5	3	-0	-4	-10	-12	-8	-2	3	4	1	-3	-16	-27	-34	-35
6300	4	3	2	5	3	2	-3	-9	-11	-7	-2	2	3	2	-0	-16	-26	-35	-37
8000	3	4	2	3	2	2	-4	-10	-12	-8	-2	2	3	4	1	-14	-25	-35	
10000	3	2	2	2	2	-2	-5	-9	-9	-4	2	3	4	2	-1	-13	-25		
OCTAVE																			
31.5	-0	1	-1	-1	-0	-4	-5	-1	-1	-2	-3	-0	1	2	3	3	5	2	1
63	-5	-4	-1	-2	-3	-1	1	-1	-1	0	-1	0	1	2	3	1	1	-5	-9
125	-1	-2	-4	-1	-3	-2	0	-1	-1	0	-1	1	1	3	3	0	-4		
250	-4	-3	-5	-4	-2	-4	-3	-2	0	-0	-0	2	3	3	3	-2	-12		
500	-4	-3	-3	-3	-2	-4	-3	-3	-2	-1	-0	2	5	4	2	-4	-19		
1000	7	1	-0	5	-1	5	4	-2	-4	-6	-3	-1	1	0	-3	-5	-16		
2000	1	1	0	1	3	-1	-4	-7	-7	-3	0	5	4	0	-2	-6	-18	-30	-35
4000	4	4	3	4	2	-1	-4	-10	-10	-6	-1	4	4	1	-2	-15	-25	-33	-34
8000	3	3	2	4	3	1	-4	-9	-11	-7	-1	2	3	3	0	-14	-26	-35	
OVERALL	1	-1	-1	0	-1	-1	-0	-2	-2	-1	-1	1	2	2	2	-0	-1	-6	-8

TABLE: DIRECTIVITY INDEX (DB)

6

IDENTIFICATION:

OMEGA 1.4
TEST 75-002-004
RUN 02
06 MAY 75
PAGE 4

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
85% RPM
FREE FLOW

METEOROLOGY:
TEMP = 22 C
BAR PRESS = .760 M HG
REL HUMID = 84 %

FREQ (HZ)	ANGLE (DEGREES) 0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
1/3 OCTAVE																			
25	-15	-14	-14	-12	-12	-10	-10	-7	-7	-6	-5	-4	-1	5	7	7	5	4	
31.5	-14	-15	-13	-13	-14	-12	-12	-9	-8	-5	-6	-4	0	4	7	7	5	3	
40	-17	-14	-15	-14	-13	-13	-12	-11	-8	-6	-6	-4	-0	5	8	6	4	1	
50	-18	-17	-18	-16	-14	-16	-14	-11	-10	-8	-7	-5	1	5	8	6	1	-5	
63	-17	-17	-17	-18	-14	-15	-14	-12	-10	-7	-7	-5	-1	5	9	5	-1	-13	
80	-18	-18	-17	-17	-16	-16	-15	-12	-11	-9	-8	-5	0	6	9	4	-5	-20	
100	-19	-20	-19	-18	-19	-17	-15	-13	-12	-9	-8	-5	-0	7	9	2	-8	-26	
125	-21	-21	-20	-19	-21	-19	-17	-14	-13	-11	-9	-6	-1	7	10	1	-13	-26	
160	-22	-22	-19	-20	-19	-18	-16	-14	-13	-10	-9	-6	-1	6	10	-1	-17	-29	
200	-20	-20	-18	-20	-19	-18	-17	-14	-13	-11	-9	-6	-1	5	11	-2	-26	-30	
250	-20	-19	-18	-18	-17	-16	-16	-13	-12	-10	-8	-4	-1	4	11	-6	-24	-31	
315	-19	-17	-17	-17	-16	-16	-13	-12	-10	-7	-5	-2	1	6	10	-11	-24	-32	
400	-18	-14	-15	-14	-13	-14	-11	-9	-7	-5	-3	1	3	6	8	-9	-26	-35	
500	-18	-14	-14	-12	-10	-11	-9	-8	-7	-5	-3	0	6	6	7	-8	-30	-37	
630	-19	-16	-16	-14	-13	-13	-10	-9	-7	-3	-1	3	5	6	5	-9	-31	-34	
800	-19	-15	-13	-12	-12	-12	-9	-7	-6	-4	-1	1	5	7	5	-5	-32	-36	
1000	-17	-15	-12	-12	-11	-10	-9	-7	-5	-3	-1	3	4	6	6	-5	-29	-36	
1250	-16	-12	-9	-9	-8	-7	-7	-5	-4	-2	-1	3	5	5	5	-6	-29	-36	
1600	-17	-14	-11	-11	-10	-7	-7	-6	-5	-1	0	2	6	5	2	-8	-31	-36	
2000	-11	-10	-9	-8	-7	-5	-5	-5	-3	-1	0	2	5	5	2	-9	-31	-34	
2500	-4	-4	-6	-4	-4	-3	-5	-5	-4	1	1	2	5	5	0	-14	-28	-32	
3150	-1	-2	-3	-5	-4	-1	-4	-4	-3	2	4	2	2	2	-1	-17	-30	-28	
4000	-3	-4	-5	-9	-7	-7	-6	-7	-4	3	6	2	1	2	-5	-20	-32	-33	
5000	-1	-1	-4	-5	-5	-6	-6	-4	-3	2	5	3	2	2	-4	-21	-31	-33	
6300	-1	-2	-7	-4	-5	-6	-6	-4	-2	2	4	3	2	2	-4	-21	-32	-35	
8000	-5	-5	-7	-8	-8	-7	-7	-5	-2	2	5	3	3	2	-4	-20	-31	-35	
10000	-5	-6	-9	-9	-7	-8	-7	-5	-2	3	6	2	2	2	-4	-18	-31	-35	
OCTAVE																			
31.5	-15	-14	-14	-13	-13	-12	-12	-9	-8	-6	-6	-4	-0	5	8	7	4	2	
63	-18	-17	-17	-17	-15	-16	-14	-12	-10	-8	-7	-5	0	6	9	5	-2	-11	
125	-21	-21	-20	-19	-20	-18	-16	-14	-13	-10	-9	-6	-1	7	10	1	-13	-27	
250	-20	-19	-18	-19	-18	-17	-15	-13	-12	-10	-7	-4	-0	5	11	-4	-25	-31	
500	-18	-14	-15	-13	-12	-13	-10	-9	-7	-4	-2	1	4	6	7	-8	-27	-36	
1000	-17	-15	-12	-11	-11	-10	-9	-7	-5	-3	-1	2	4	6	5	-5	-30	-36	
2000	-9	-8	-9	-8	-7	-5	-6	-5	-4	-1	0	2	5	5	2	-9	-30	-34	
4000	-2	-3	-4	-6	-5	-4	-5	-5	-3	3	5	2	2	2	-3	-19	-31	-31	
8000	-3	-3	-7	-6	-7	-6	-7	-4	-2	2	5	3	2	2	-4	-20	-32	-35	
OVERALL	-17	-16	-16	-16	-15	-15	-13	-11	-10	-7	-5	-2	1	6	9	-1	-10	-16	

TABLE: DIRECTIVITY INDEX (DB) 6

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-051
RUN 01
20 MAY 75
PAGE 4

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
MILITARY POWER
99.5% RPM
FREE FLOW

METEOROLOGY:
TEMP = 20 C
BAR PRESS = .700 M HG
REL HUMID = 65 %

FREQ (HZ)	ANGLE (DEGREES) 0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
1/3 OCTAVE																			
25	-12	-13	-12	-11	-10	-13	-8	-7	-8	-6	-7	-5	-1	3	8	9			
31.5	-14	-13	-13	-13	-12	-12	-11	-9	-9	-8	-7	-7	0	4	8	9			
40	-15	-15	-14	-15	-13	-13	-13	-12	-8	-8	-7	-6	-1	5	9	7			
50	-19	-18	-17	-16	-16	-15	-14	-13	-10	-10	-7	-5	-0	6	9	6			
63	-18	-18	-17	-16	-15	-14	-13	-12	-11	-10	-8	-5	-2	6	9	5			
80	-20	-19	-19	-19	-18	-17	-16	-14	-12	-11	-9	-7	-1	6	10	3			
100	-21	-21	-20	-18	-19	-18	-17	-16	-13	-11	-10	-8	-1	8	9	1			
125	-19	-20	-19	-19	-18	-19	-16	-16	-11	-10	-9	-8	1	8	8	2			
160	-20	-22	-17	-20	-19	-18	-17	-16	-12	-10	-10	-7	-0	9	8	1			
200	-21	-19	-18	-17	-18	-16	-16	-14	-10	-9	-8	-6	-1	9	8	2			
250	-19	-16	-15	-14	-15	-14	-13	-12	-8	-8	-7	-3	1	7	8	5			
315	-13	-9	-9	-9	-10	-11	-12	-11	-9	-8	-5	-1	3	8	5	5			
400	-4	1	1	-1	-1	-3	-6	-9	-7	-8	-6	-2	1	6	6	4			
500	-5	-0	1	1	1	-2	-5	-8	-10	-7	-7	-1	0	5	7	2			
630	-8	-3	0	1	1	0	-2	-5	-8	-8	-7	-3	0	5	7	-2			
800	-11	-6	-4	-1	-2	-2	-3	-5	-6	-8	-6	-3	1	6	8	-5			
1000	-13	-7	-4	-3	-3	-3	-5	-6	-5	-5	-5	-3	3	6	8	-7			
1250	-14	-9	-5	-3	-2	-3	-4	-5	-4	-2	-3	-2	3	5	7	-5			
1600	-15	-9	-7	-4	-2	-3	-4	-4	-4	-2	-2	-1	1	5	7	-6			
2000	-15	-10	-7	-4	-3	-3	-3	-3	-3	-2	-1	1	1	6	6	-6			
2500	-16	-11	-8	-4	-3	-3	-3	-3	-3	-2	-0	3	2	5	6	-7			
3150	-16	-12	-8	-5	-3	-3	-3	-3	-2	-1	-0	3	2	4	6	-6			
4000	-17	-12	-9	-5	-4	-3	-3	-3	-2	-1	1	1	1	4	6	-7			
5000	-18	-13	-9	-6	-4	-3	-3	-3	-2	-0	0	2	1	5	6	-7			
6300	-19	-14	-9	-7	-5	-4	-3	-3	-3	-1	0	1	1	4	6	-8			
8000	-19	-14	-10	-7	-6	-4	-4	-4	-2	-1	-0	1	2	4	7	-8			
10000	-22	-17	-12	-9	-7	-5	-6	-5	-5	-3	-2	0	1	6	8	-7			
OCTAVE																			
31.5	-14	-14	-14	-14	-12	-13	-11	-10	-8	-8	-7	-6	-1	5	8	8			
63	-19	-18	-18	-17	-17	-16	-15	-13	-11	-10	-8	-6	-1	6	9	4			
125	-20	-21	-18	-19	-18	-18	-17	-16	-12	-10	-9	-8	0	8	8	1			
250	-18	-14	-14	-13	-14	-14	-14	-13	-9	-8	-7	-4	1	8	7	4			
500	-5	-0	1	0	0	-1	-4	-7	-8	-8	-7	-2	1	6	7	2			
1000	-12	-7	-4	-2	-2	-2	-4	-5	-5	-5	-5	-3	2	6	8	-6			
2000	-15	-10	-7	-4	-3	-3	-3	-3	-3	-2	-1	1	1	5	6	-6			
4000	-17	-12	-9	-5	-4	-3	-3	-3	-2	-1	0	2	1	4	6	-7			
8000	-19	-14	-9	-7	-5	-4	-4	-3	-3	-1	-0	1	2	5	7	-7			
OVERALL	-12	-8	-6	-6	-6	-7	-8	-9	-8	-7	-6	-4	1	7	8	2			

FIGURE: NORMALIZED FARFIELD NOISE LEVELS

3 DISTANCE = 100 METERS

NOISE SOURCE/SUBJECT:

A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:

IDLE
54% RPM
FREE FLOW

METEOROLOGY:

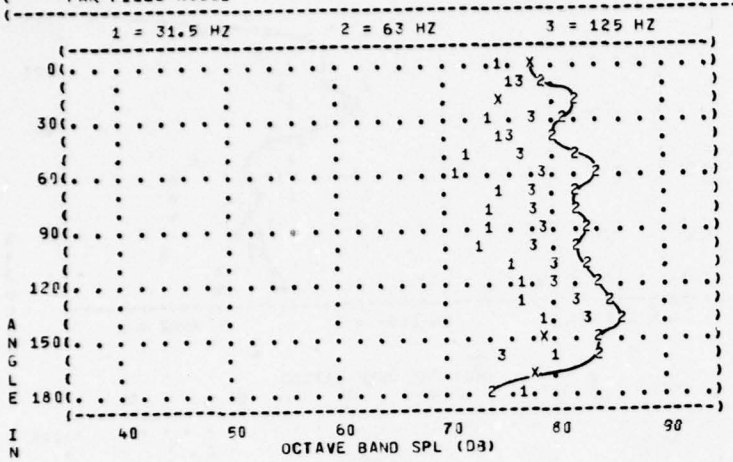
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

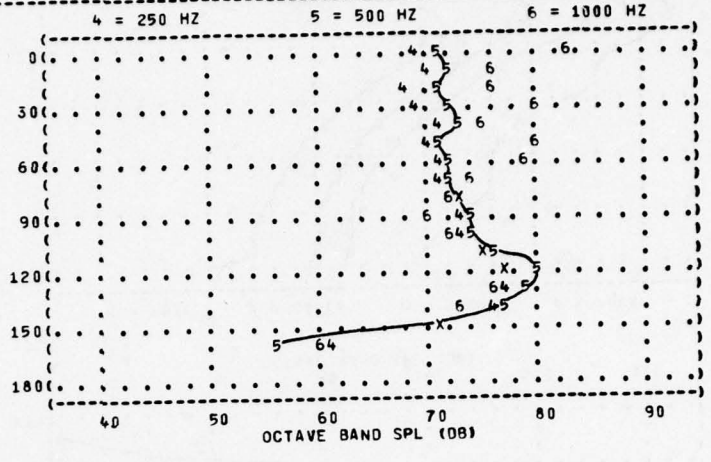
IDENTIFICATION:

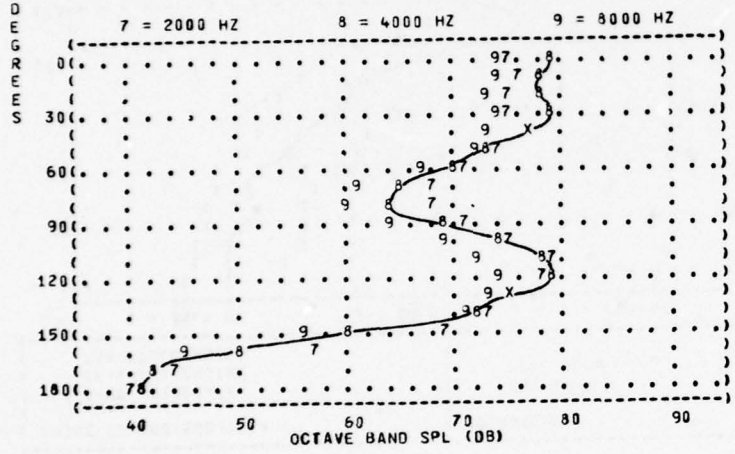
OMEGA 1.4
TEST 75-002-004
RUN 01

06 MAY 75

PAGE 6







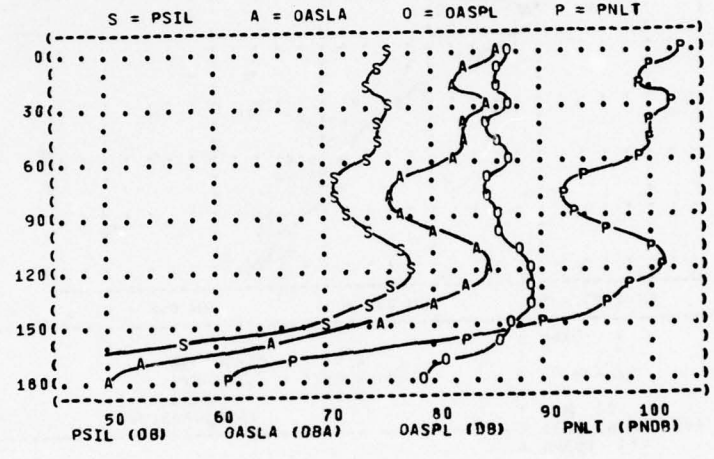


FIGURE: 3 NORMALIZED FARFIELD NOISE LEVELS

DISTANCE = 100 METERS

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
85% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-004
RUN 02
06 MAY 75
PAGE 6

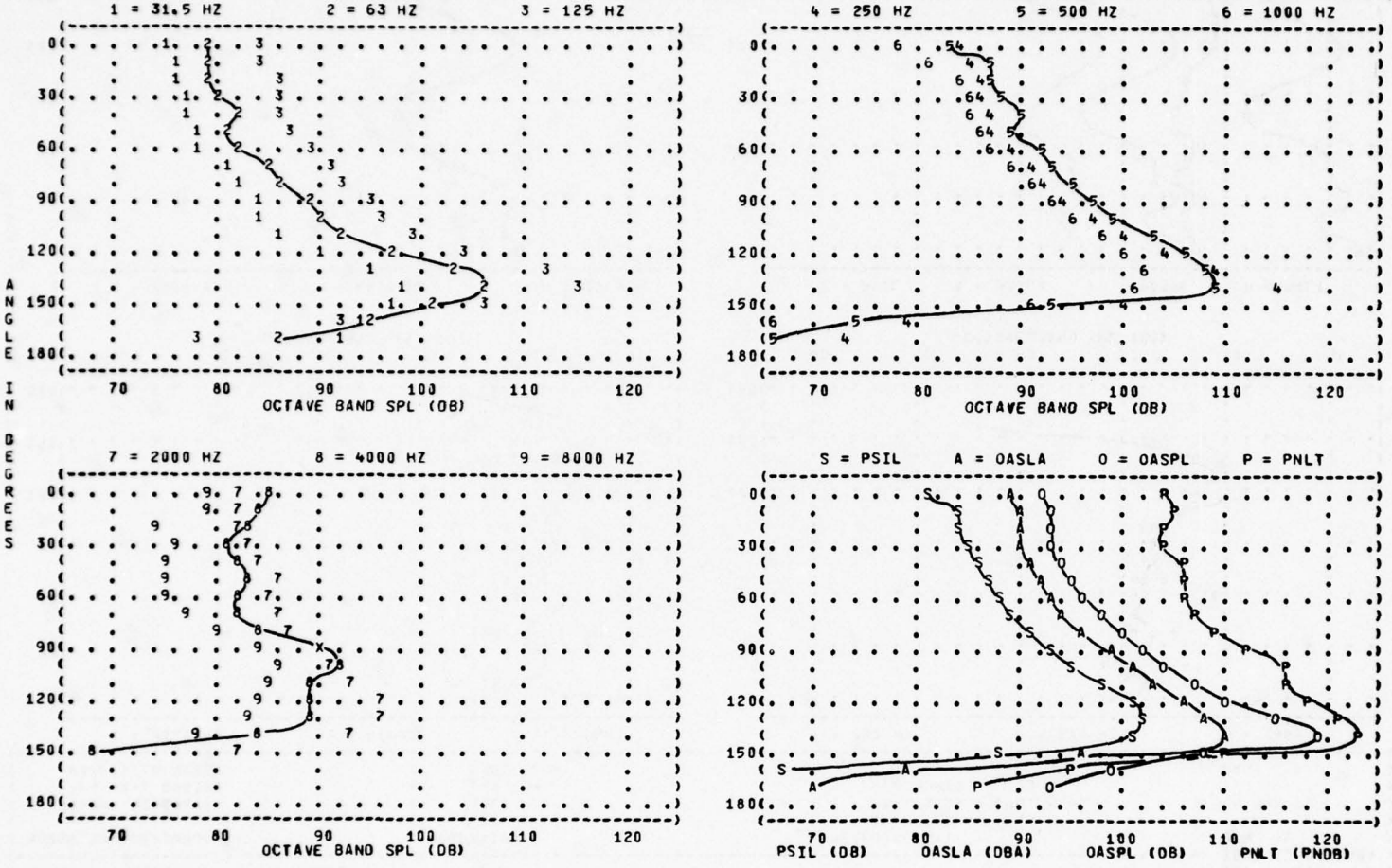


FIGURE: NORMALIZED FARFIELD NOISE LEVELS

3 DISTANCE = 100 METERS

NOISE SOURCE/SUBJECT:

A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:

MILITARY POWER
99.5% RPM
FREE FLOW

METEOROLOGY:

TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:

OMEGA 1.4
TEST 75-002-051
RUN 01
20 MAY 75
PAGE 6

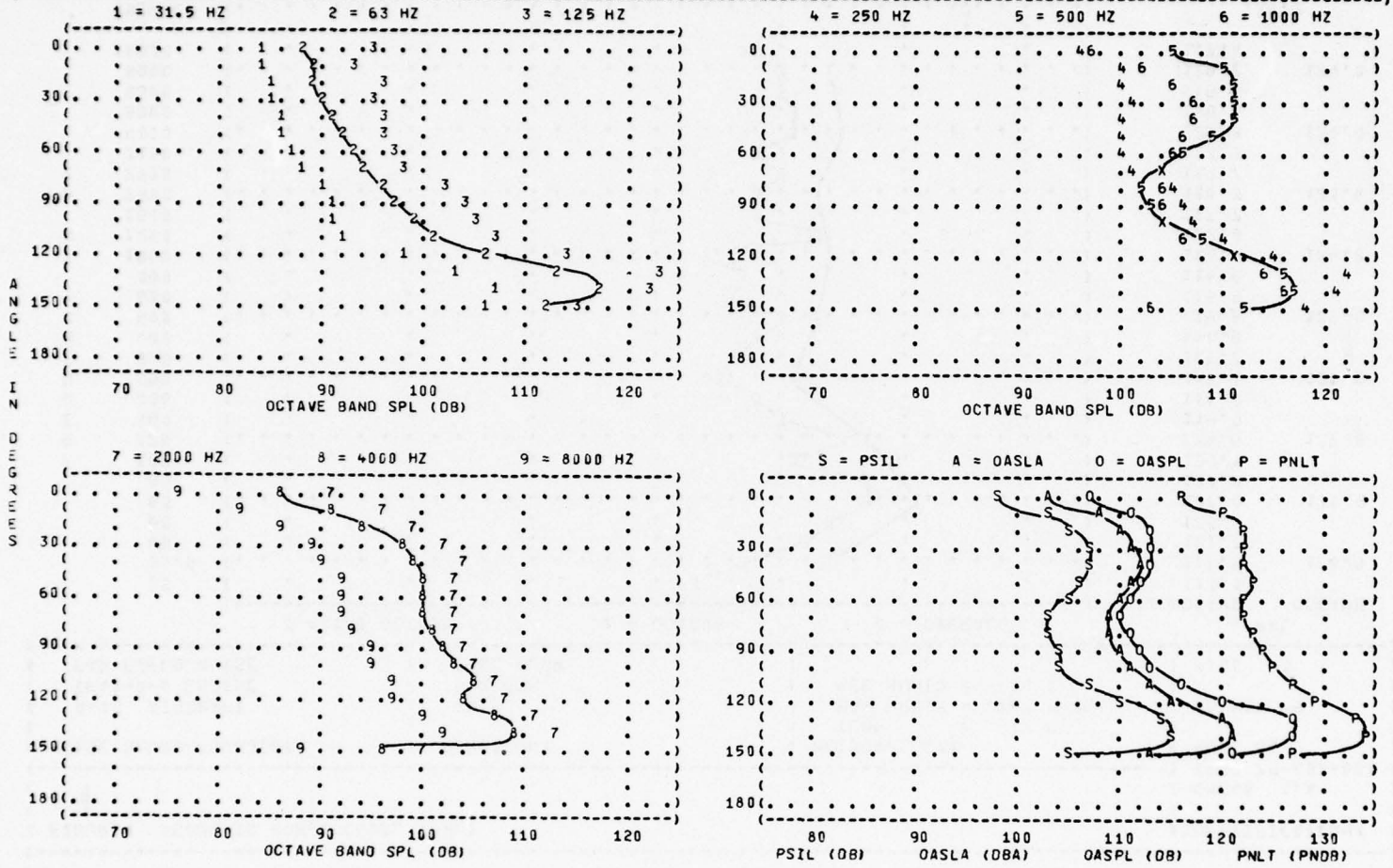


FIGURE: ACOUSTIC POWER LEVEL (PWL)

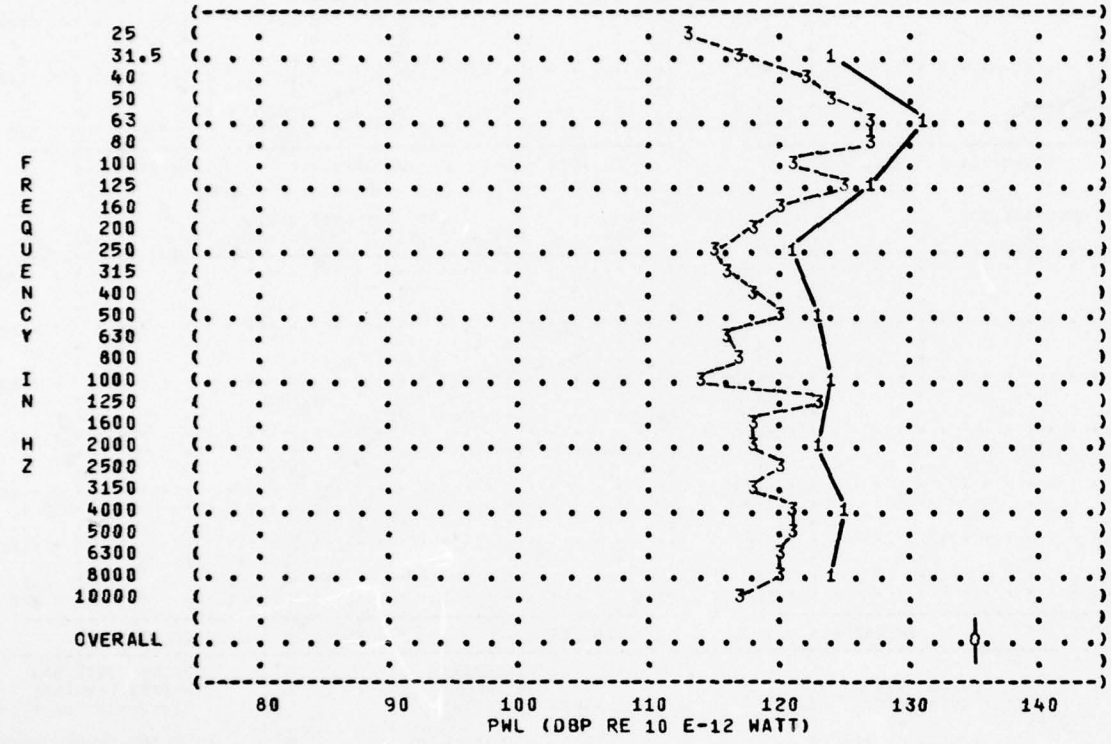
4

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
IDLE
54% RPM
FREE FLOW

METEOROLOGY:
TEMP = 22 C
BAR PRESS = .760 M HG
REL HUMID = 84 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-004
RUN 01
06 MAY 75
PAGE 3



	PWL 1/3 OCTAVE	PWL OCTAVE
25	113.1	
31.5	117.5	123.5
40	121.7	
50	123.5	
63	127.0	130.9
80	127.0	
100	120.7	
125	124.5	127.0
160	119.9	
200	118.0	
250	115.1	121.2
315	115.7	
400	117.9	
500	119.6	122.9
630	115.9	
800	116.6	
1000	114.4	124.2
1250	122.8	
1600	117.7	
2000	118.3	123.4
2500	119.7	
3150	118.3	
4000	120.8	124.9
5000	120.8	
6300	119.6	
8000	120.2	124.0
10000	117.4	
OVERALL		135.2

FIGURE: ACOUSTIC POWER LEVEL (PWL)

4

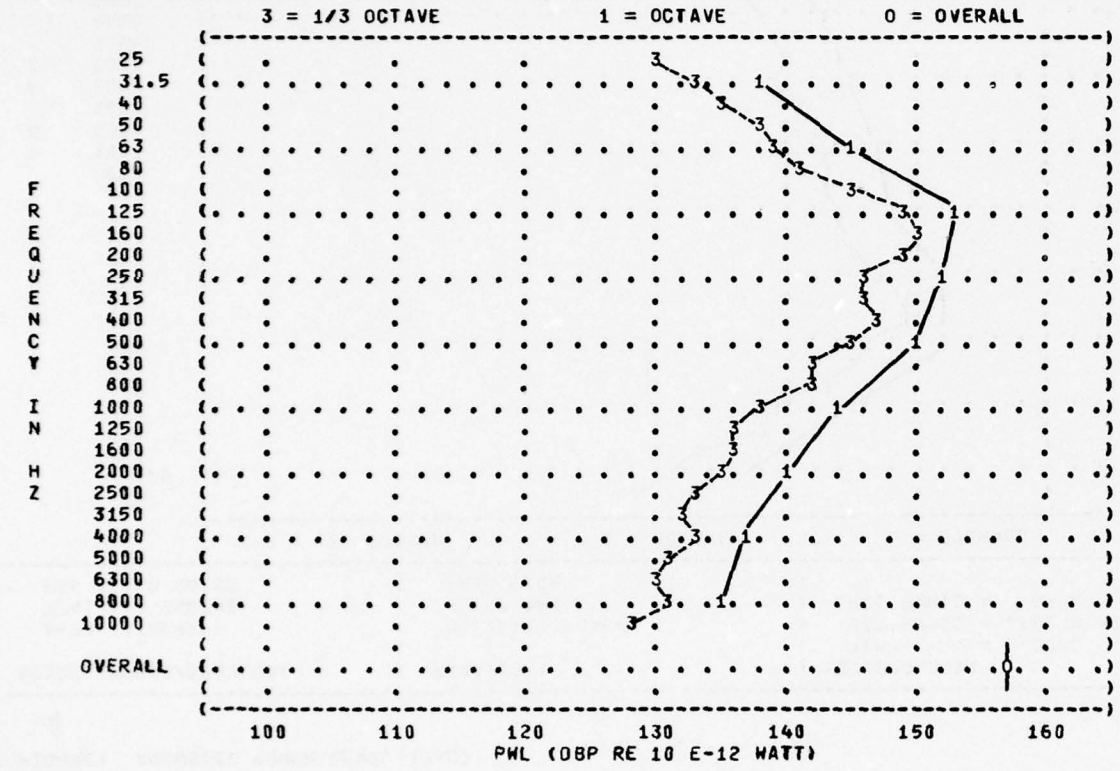
IDENTIFICATION:

OMEGA 1.4
TEST 75-002-004
RUN 02
06 MAY 75
PAGE 3

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
85% RPM
FREE FLOW

METEOROLOGY:
TEMP = 22 C
BAR PRESS = .760 M HG
REL HUMID = 84 %



	PWL 1/3 OCTAVE	PWL OCTAVE
25	130.3	
31.5	132.6	138.0
40	135.3	
50	137.9	
63	139.4	144.6
80	141.4	
100	145.2	
125	148.9	153.0
160	149.5	
200	148.9	
250	146.3	152.0
315	146.0	
400	146.7	
500	144.6	149.6
630	142.0	
800	141.8	
1000	138.0	144.1
1250	136.4	
1600	136.1	
2000	134.5	139.6
2500	133.3	
3150	132.0	
4000	133.5	137.1
5000	131.1	
6300	130.5	
8000	131.1	134.9
10000	128.2	
OVERALL		157.2

FIGURE: ACOUSTIC POWER LEVEL (PWL)

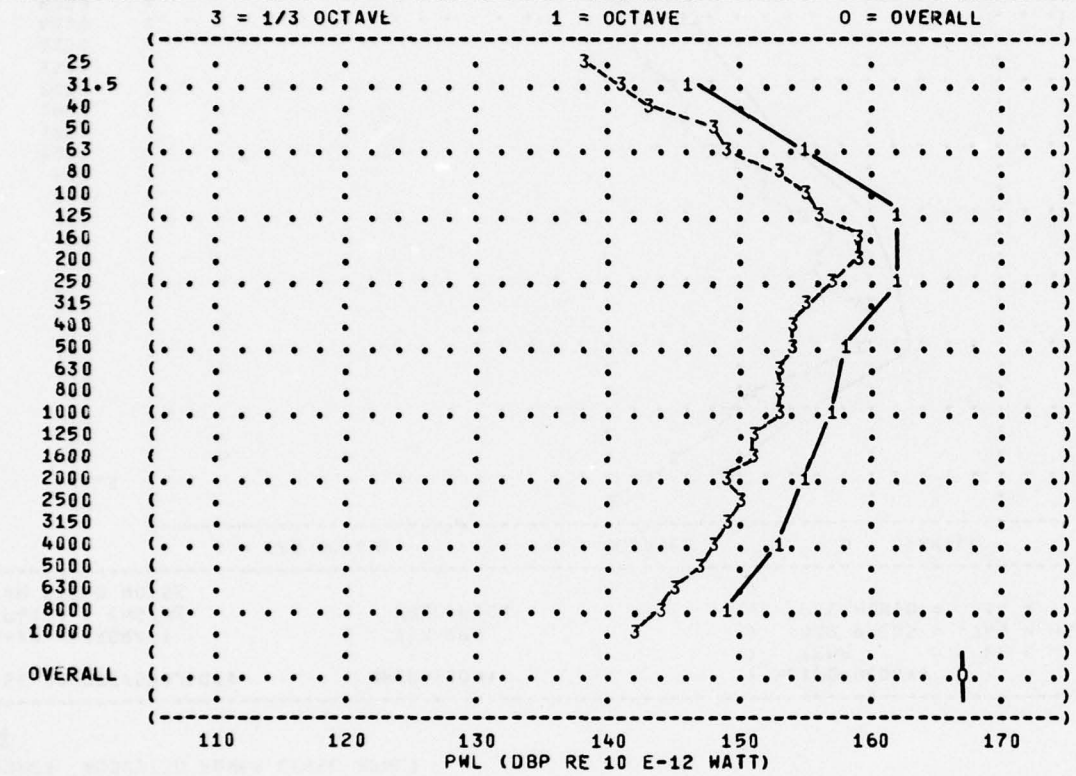
4

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
MILITARY POWER
99.5% RPM
FREE FLOW

METEOROLOGY:
TEMP = 20 C
BAR PRESS = .700 M HG
REL HUMID = 65 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-051
RUN 01
20 MAY 75
PAGE 3



	PWL 1/3 OCTAVE	PWL OCTAVE
25	137.7	
31.5	140.9	146.1
40	143.5	
50	147.9	
63	149.4	155.1
80	152.5	
100	155.5	
125	156.4	162.0
160	159.1	
200	158.7	
250	156.8	161.9
315	155.1	
400	153.8	
500	153.7	158.4
630	153.5	
800	153.0	
1000	152.6	157.1
1250	151.2	
1600	151.1	
2000	149.5	154.9
2500	149.7	
3150	149.3	
4000	147.6	152.9
5000	147.2	
6300	145.3	
8000	144.1	148.8
10000	142.2	
OVERALL	167.2	

FIGURE 5 OVERALL SOUND PRESSURE LEVEL (OASPL) EQUAL LEVEL CONTOURS (DB)

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
IDLE
54% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-004
RUN 01
06 MAY 75
PAGE 13

POINT	DB
A	45
B	50
C	55
D	60
E	65
F	70
G	75
H	80
I	85
J	90

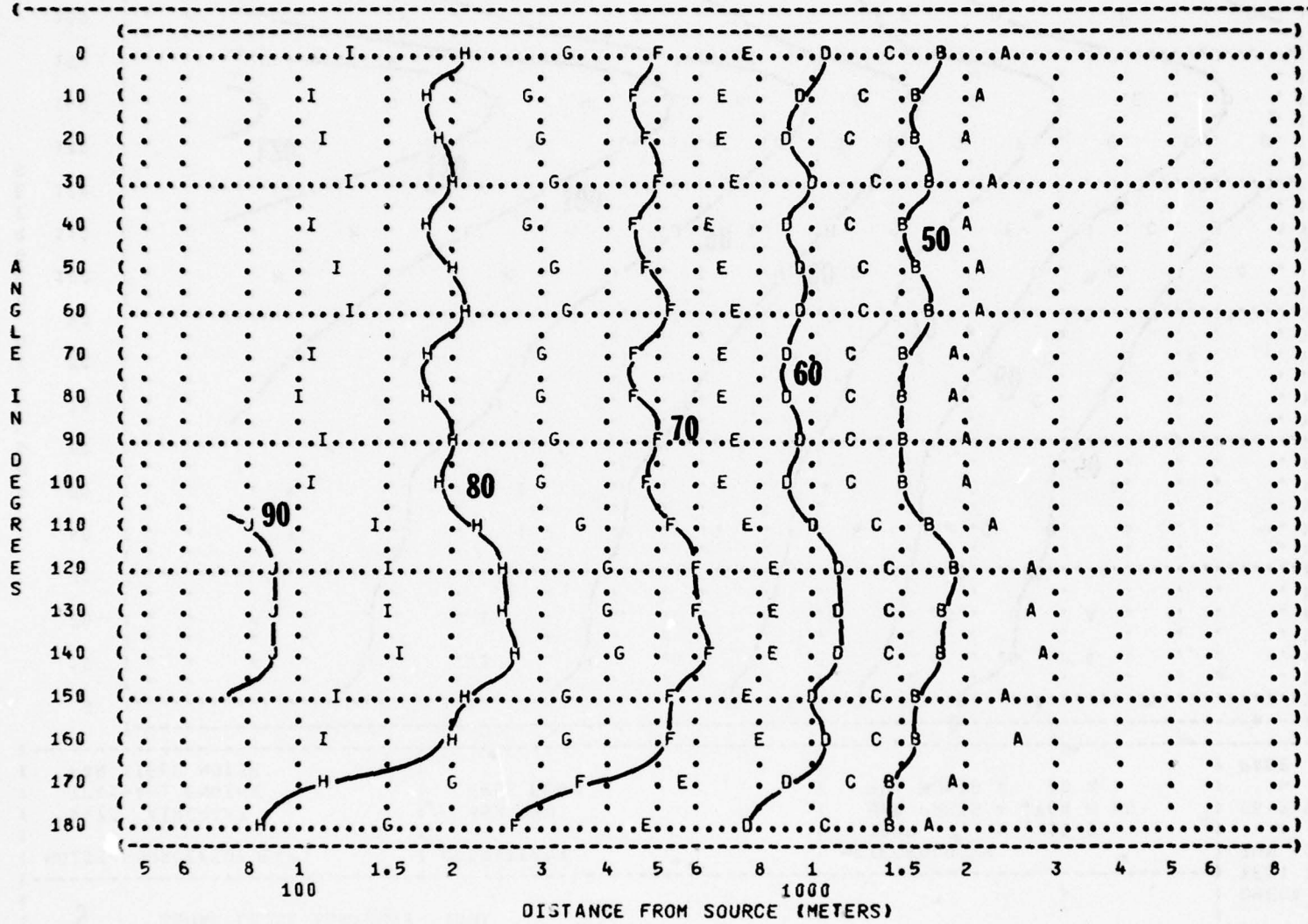


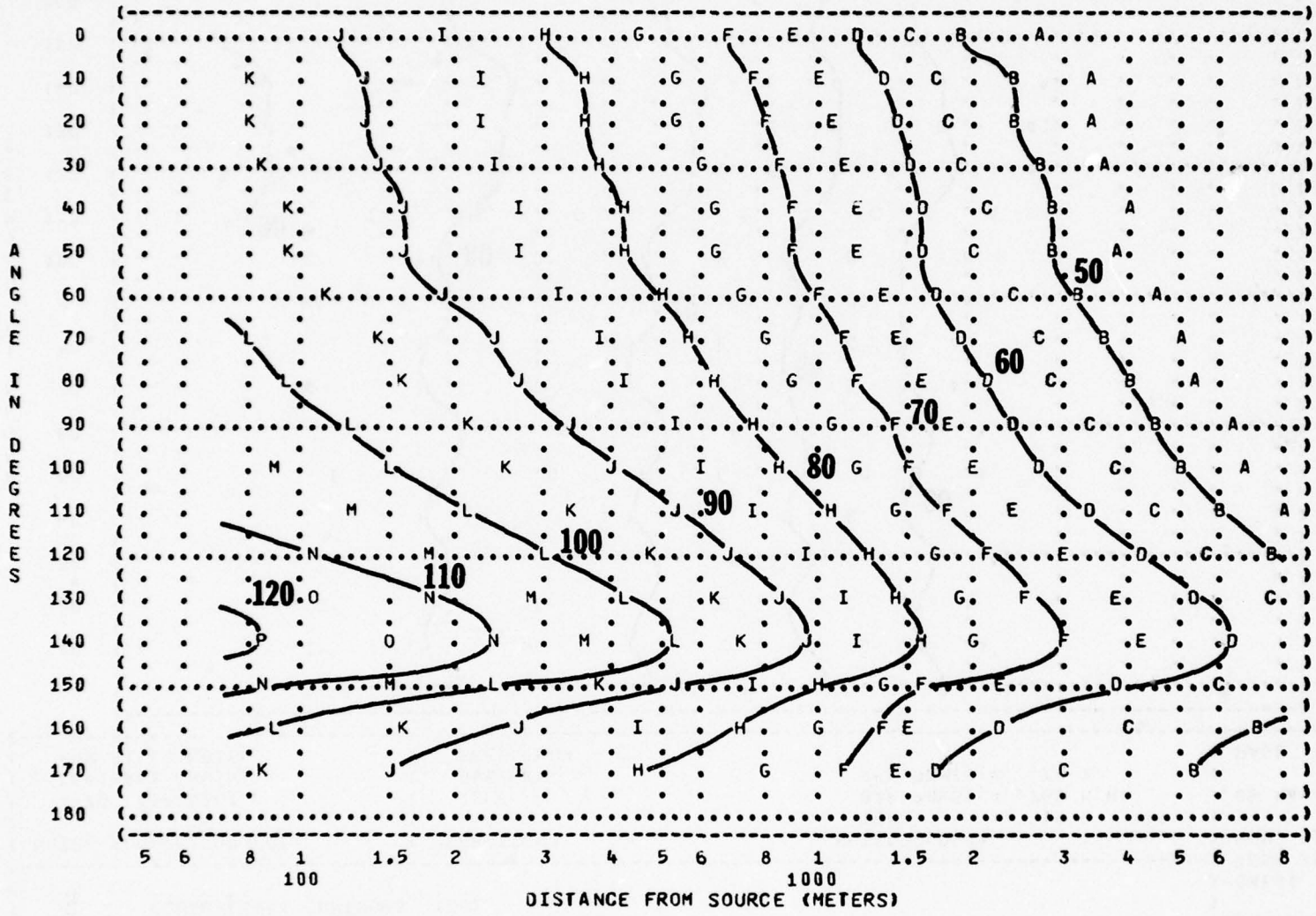
FIGURE 5 OVERALL SOUND PRESSURE LEVEL (OASPL) EQUAL LEVEL CONTOURS (DB)

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-004
RUN 02
06 MAY 75
PAGE 13

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
85% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %



POINT	DB
A	45
B	50
C	55
D	60
E	65
F	70
G	75
H	80
I	85
J	90
K	95
L	100
M	105
N	110
O	115
P	120

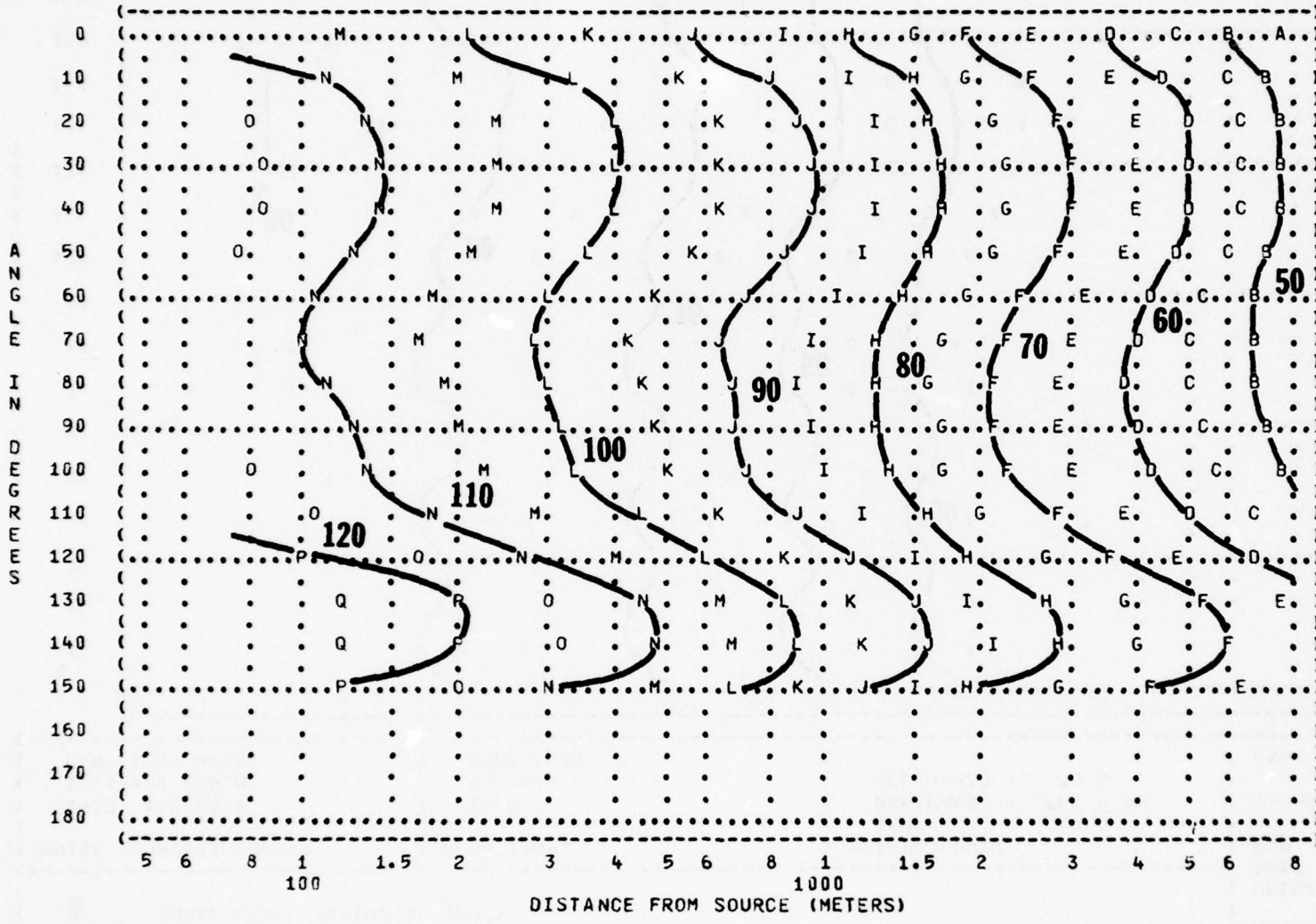
FIGURE: 5 OVERALL SOUND PRESSURE LEVEL (OASPL) EQUAL LEVEL CONTOURS (DB)

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-051
RUN 01
20 MAY 75
PAGE 13

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
MILITARY POWER
99.5% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %



POINT	DB
A	45
B	50
C	55
D	60
E	65
F	70
G	75
H	80
I	85
J	90
K	95
L	100
M	105
N	110
O	115
P	120
Q	125

FIGURE 6: C-WEIGHTED OVERALL SOUND LEVEL (OASLC) EQUAL LEVEL CONTOURS (DBC)

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-004
RUN 01
06 MAY 75
PAGE 14

NOISE SOURCE/SUBJECT:
A-70 AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
IDLE
54% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

POINT	DBC
A	45
B	50
C	55
D	60
E	65
F	70
G	75
H	80
I	85
J	90

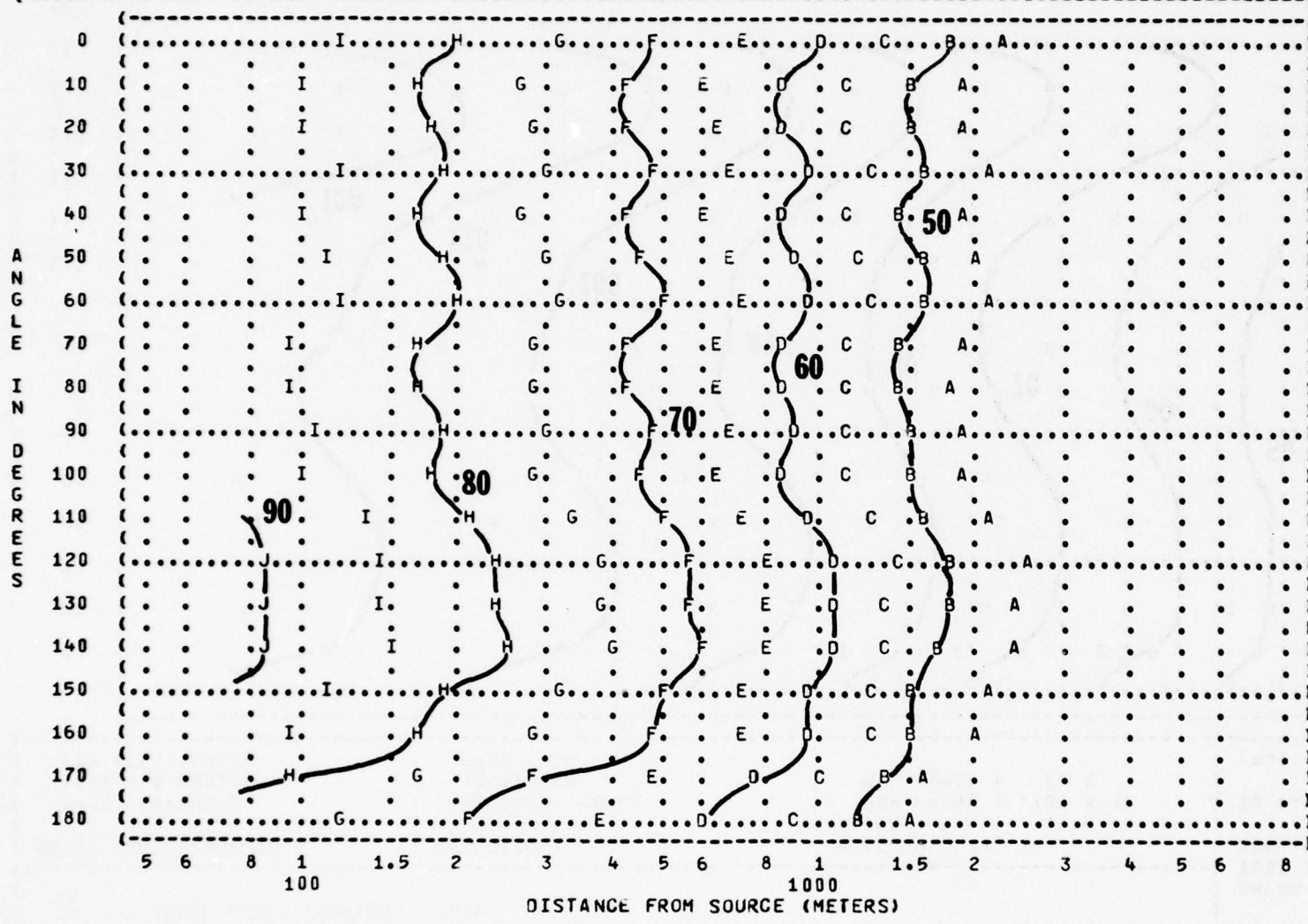


FIGURE: 6

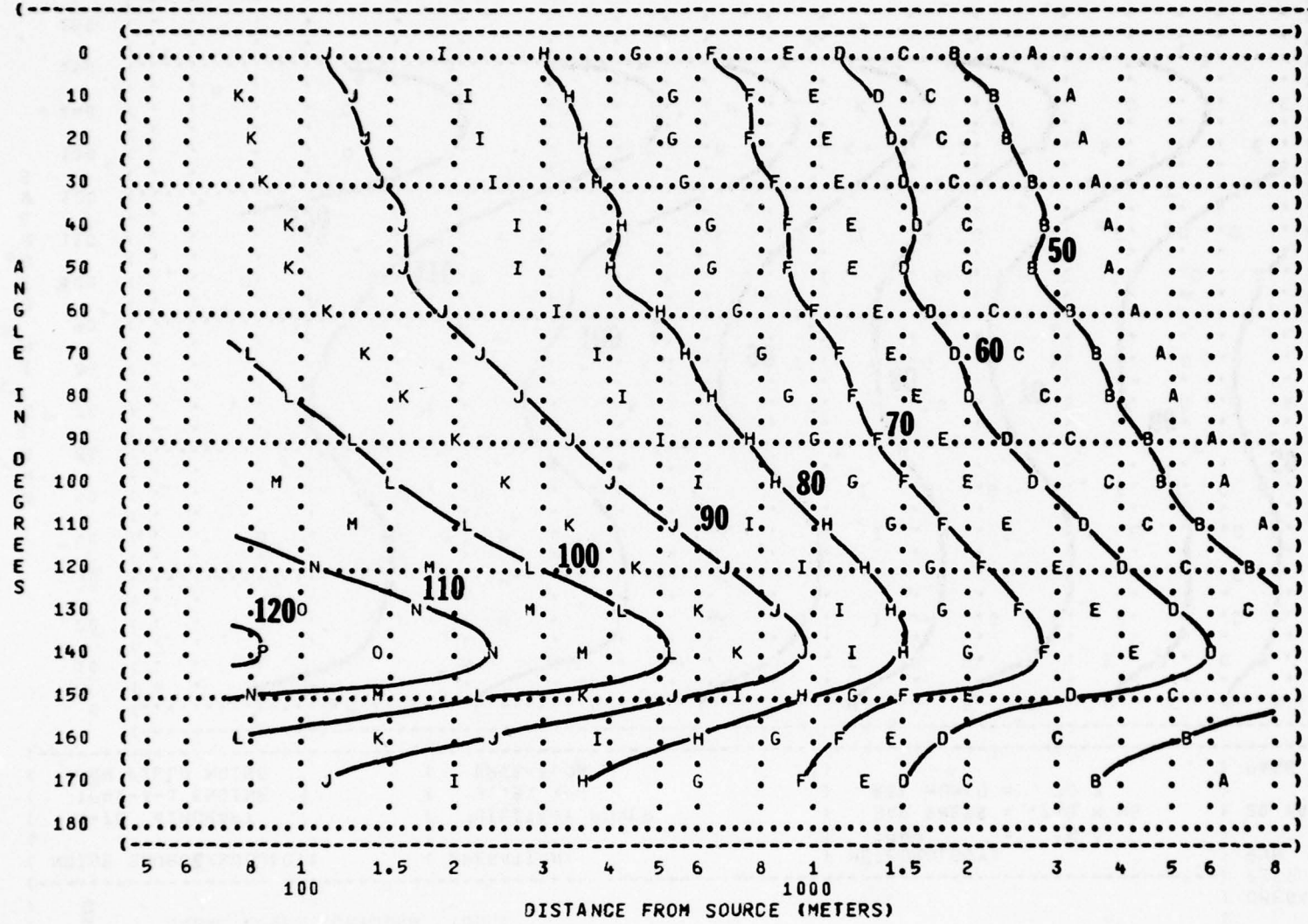
C-WEIGHTED OVERALL SOUND LEVEL (OASLC)
EQUAL LEVEL CONTOURS (DBC)

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
85% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-004
RUN 02
06 MAY 75
PAGE 14



POINT	DBC
A	45
B	50
C	55
D	60
E	65
F	70
G	75
H	80
I	85
J	90
K	95
L	100
M	105
N	110
O	115
P	120

FIGURE: 6

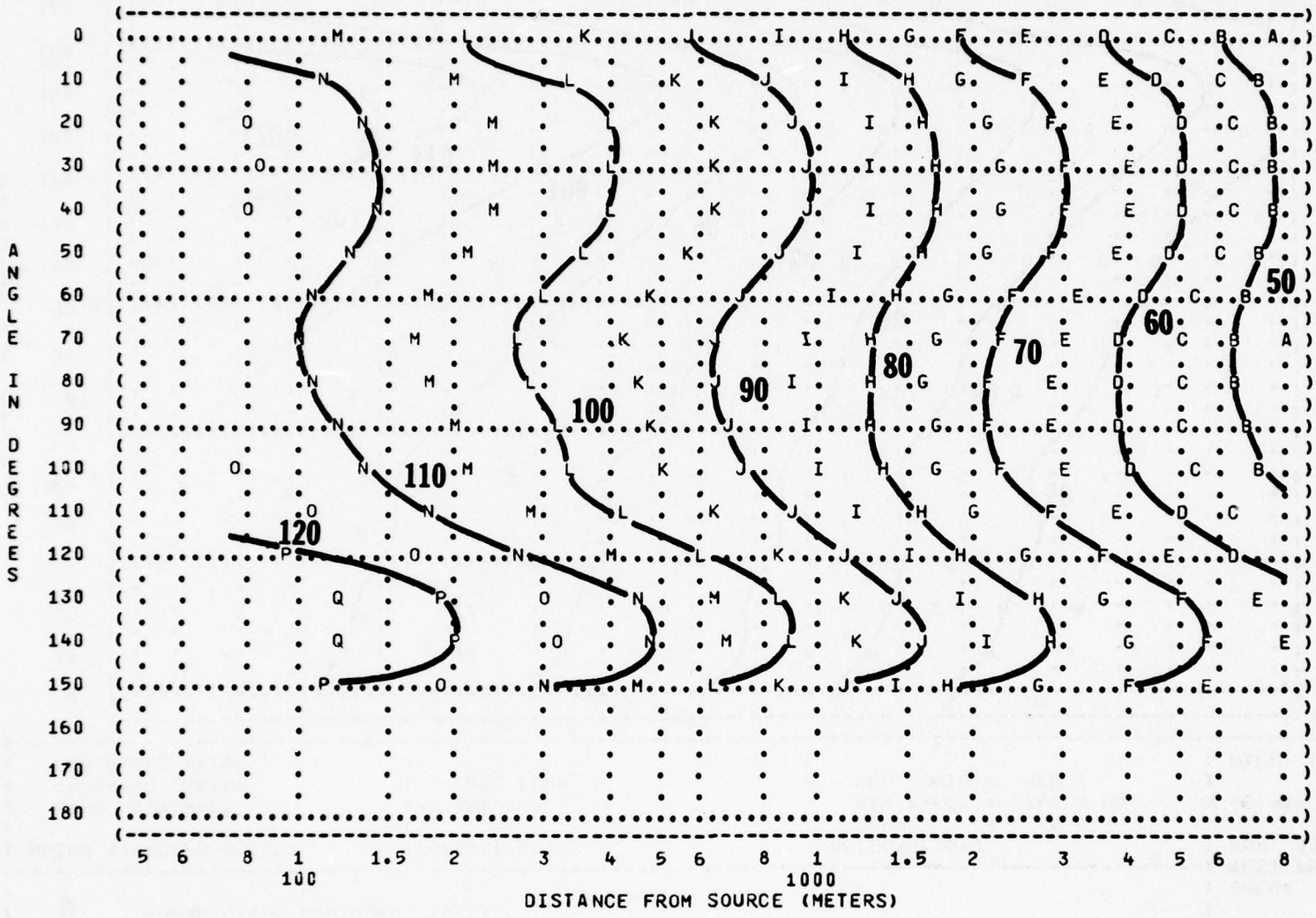
C-WEIGHTED OVERALL SOUND LEVEL (OASLC)
EQUAL LEVEL CONTOURS (DBC)

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
MILITARY POWER
99.5% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-051
RUN 01
20 MAY 75
PAGE 14



POINT	DBC
A	45
B	50
C	55
D	60
E	65
F	70
G	75
H	80
I	85
J	90
K	95
L	100
M	105
N	110
O	115
P	120
Q	125

FIGURE 7: A-WEIGHTED OVERALL SOUND LEVEL (OASLA) EQUAL LEVEL CONTOURS (DBA)

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-004
RUN 01
06 MAY 75
PAGE 15

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
IDLE
54% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

POINT	DBA
A	45
B	50
C	55
D	60
E	65
F	70
G	75
H	80
I	85

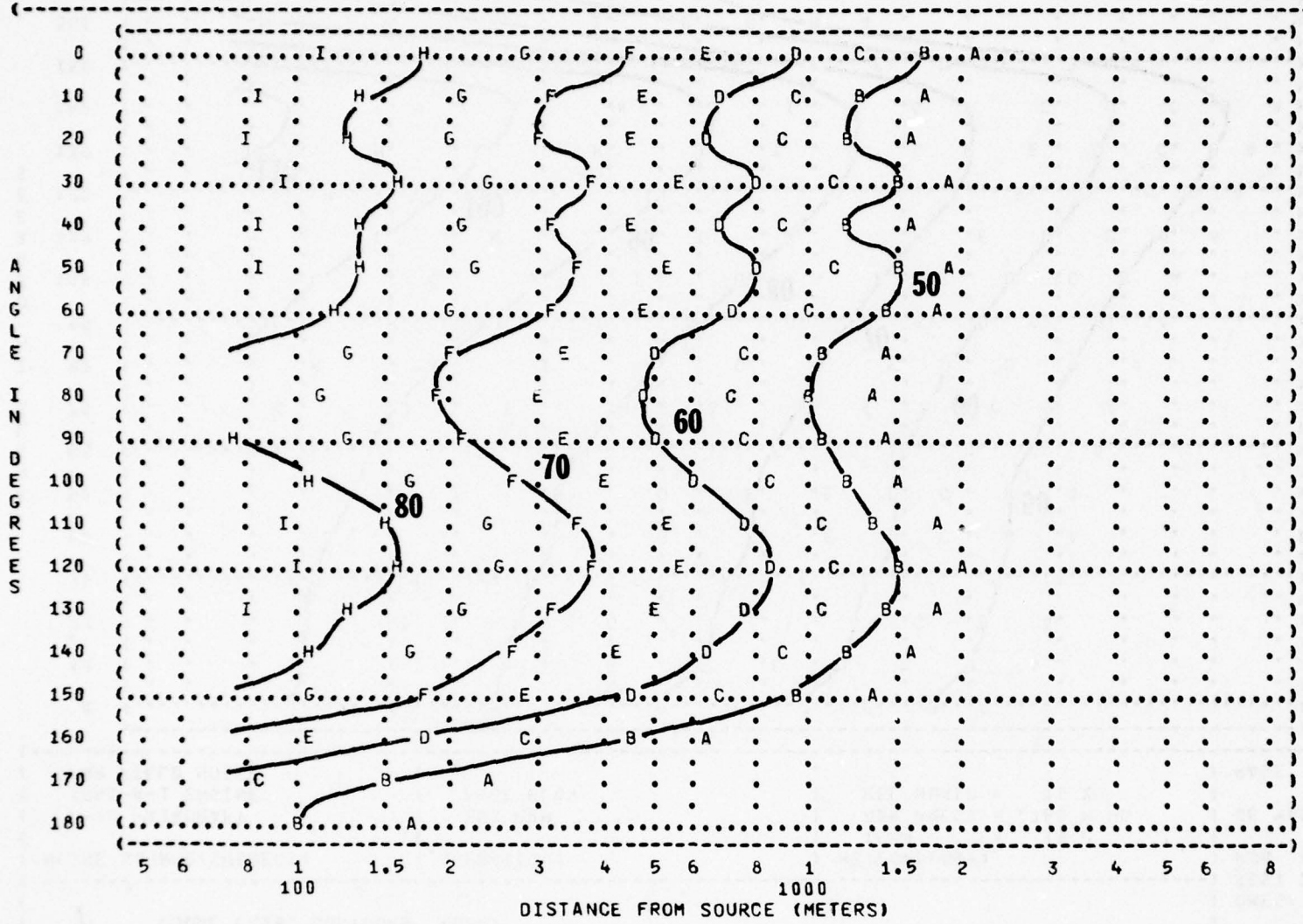


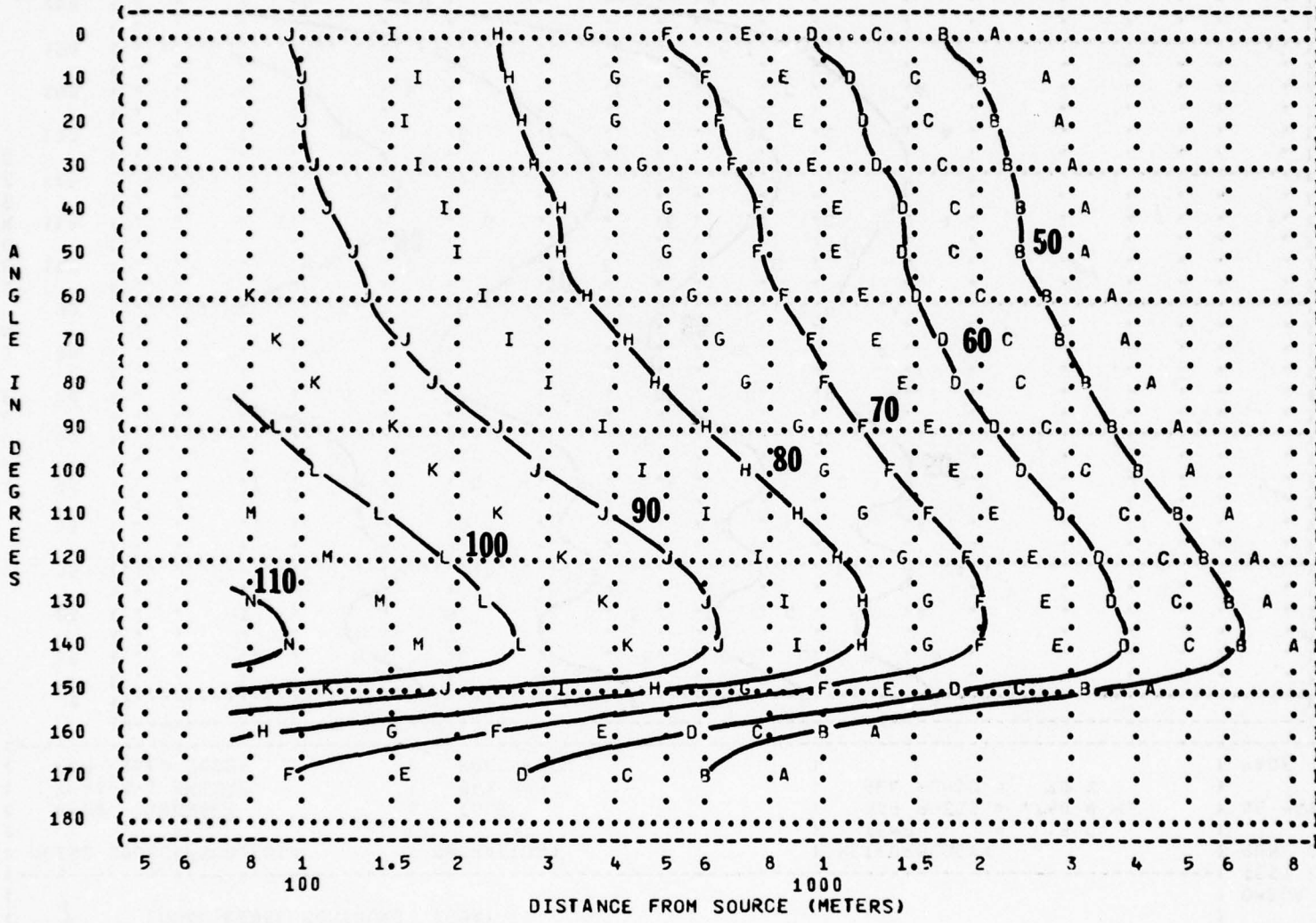
FIGURE: 7 A-WEIGHTED OVERALL SOUND LEVEL (OASLA) EQUAL LEVEL CONTOURS (DBA)

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
85% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-004
RUN 02
06 MAY 75
PAGE 15



POINT	DBA
A	45
B	50
C	55
D	60
E	65
F	70
G	75
H	80
I	85
J	90
K	95
L	100
M	105
N	110

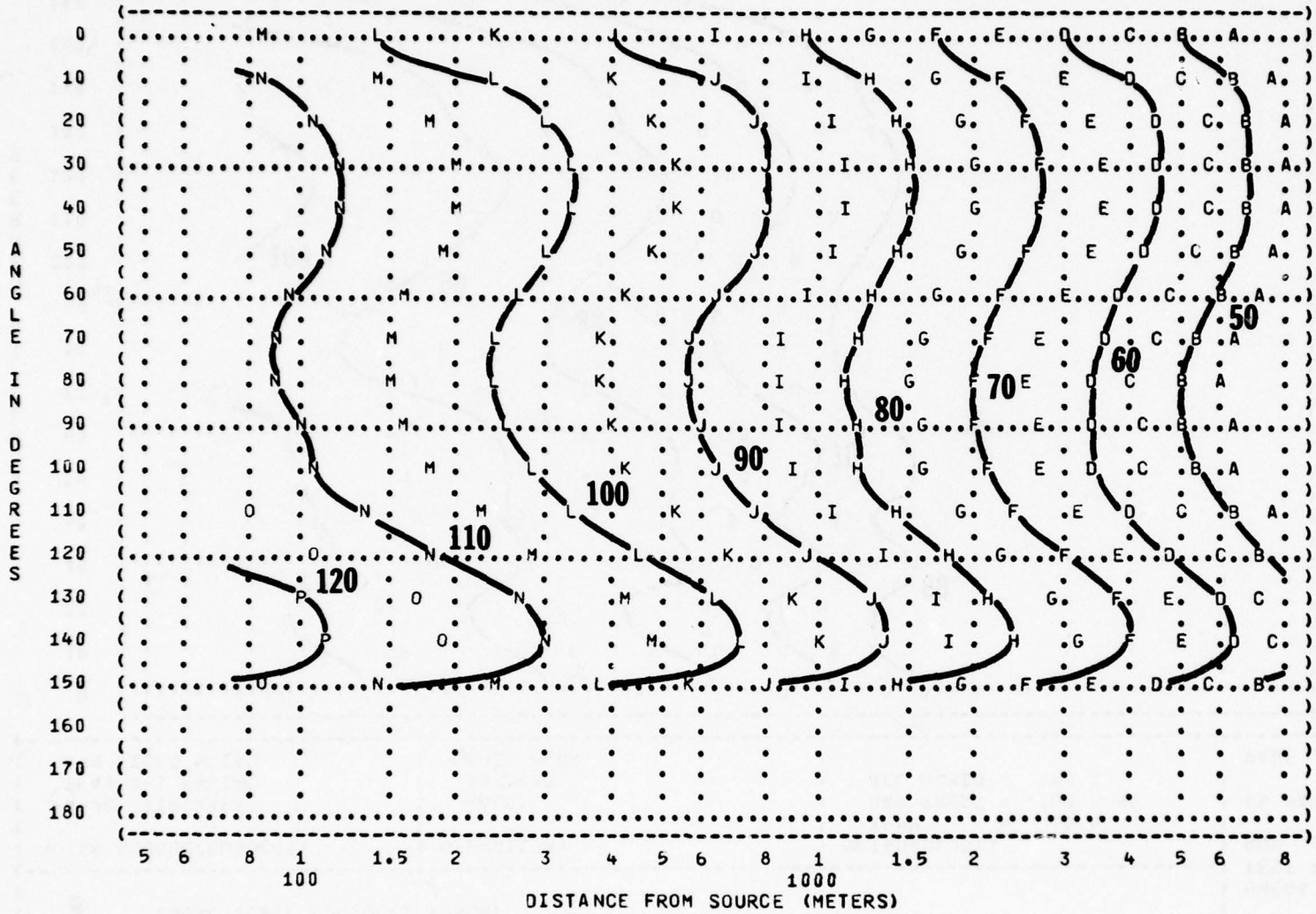
FIGURE 7: A-WEIGHTED OVERALL SOUND LEVEL (OASLA) EQUAL LEVEL CONTOURS (DBA)

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-051
RUN 01
20 MAY 75
PAGE 15

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
MILITARY POWER
99.5% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %



POINT	DBA
A	45
B	50
C	55
D	60
E	65
F	70
G	75
H	80
I	85
J	90
K	95
L	100
M	105
N	110
O	115
P	120

FIGURE 8 PERCEIVED NOISE LEVEL WITH SMOOTH TONE CORRECTION (PNLT)
EQUAL LEVEL CONTOURS (PNDB)

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-004
RUN 01
06 MAY 75
PAGE 16

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
IDLE
54% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

POINT	PNDB
A	60
B	65
C	70
D	75
E	80
F	85
G	90
H	95
I	100
J	105

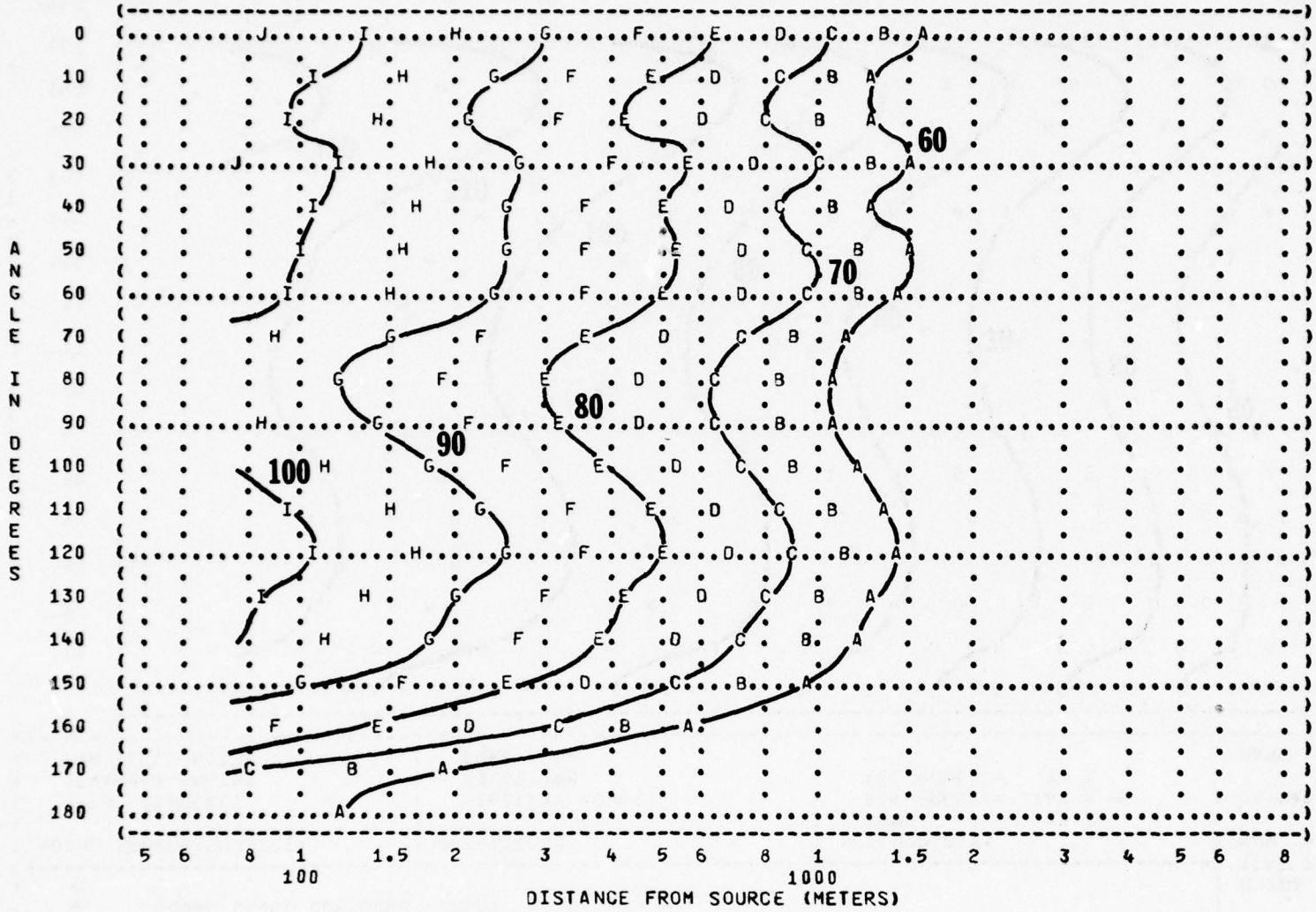


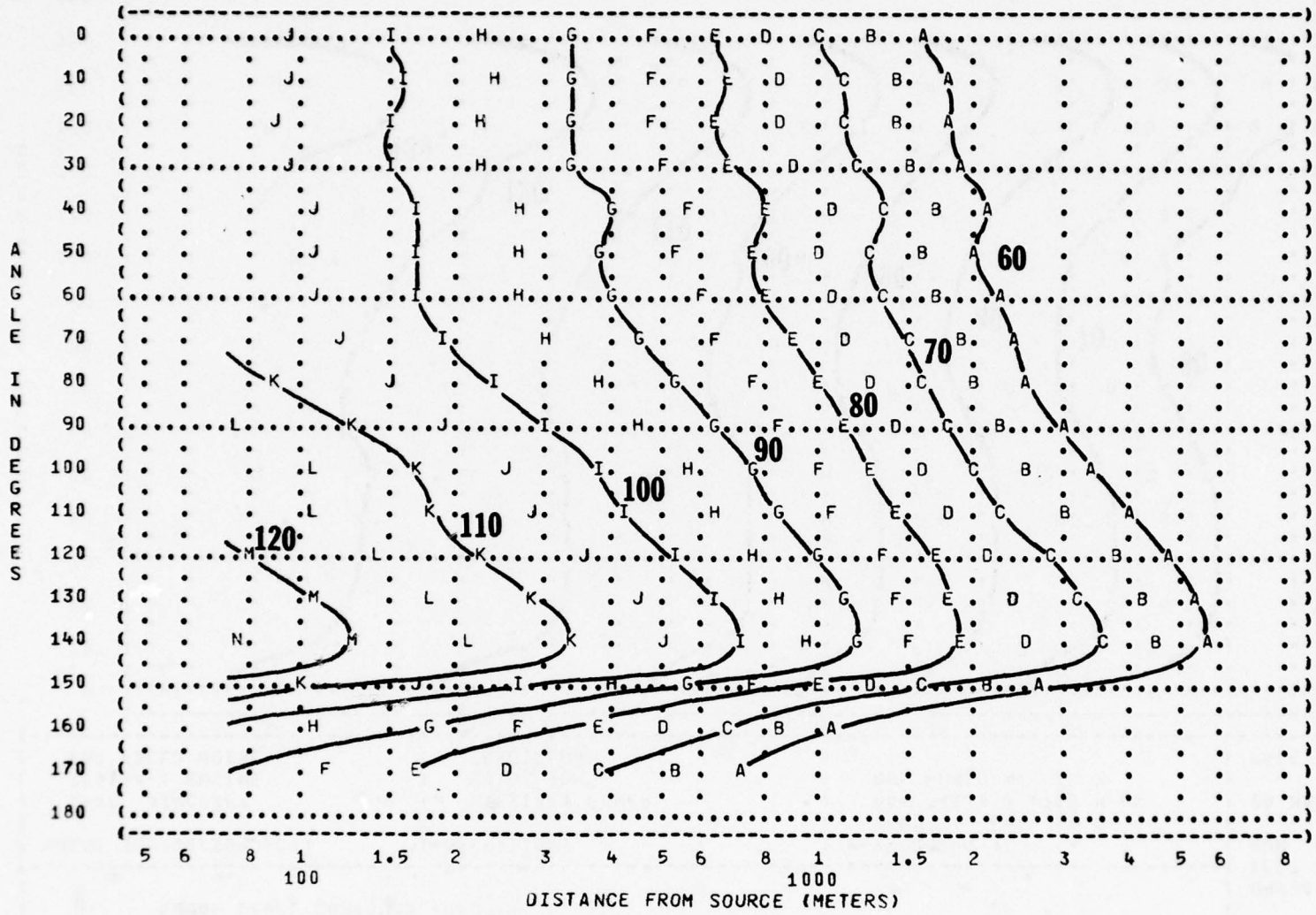
FIGURE 8: PERCEIVED NOISE LEVEL WITH SMOOTH TONE CORRECTION (PNLT)
EQUAL LEVEL CONTOURS (PNDB)

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
85% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-004
RUN 02
06 MAY 75
PAGE 16



POINT	PNDB
A	60
B	65
C	70
D	75
E	80
F	85
G	90
H	95
I	100
J	105
K	110
L	115
M	120
N	125

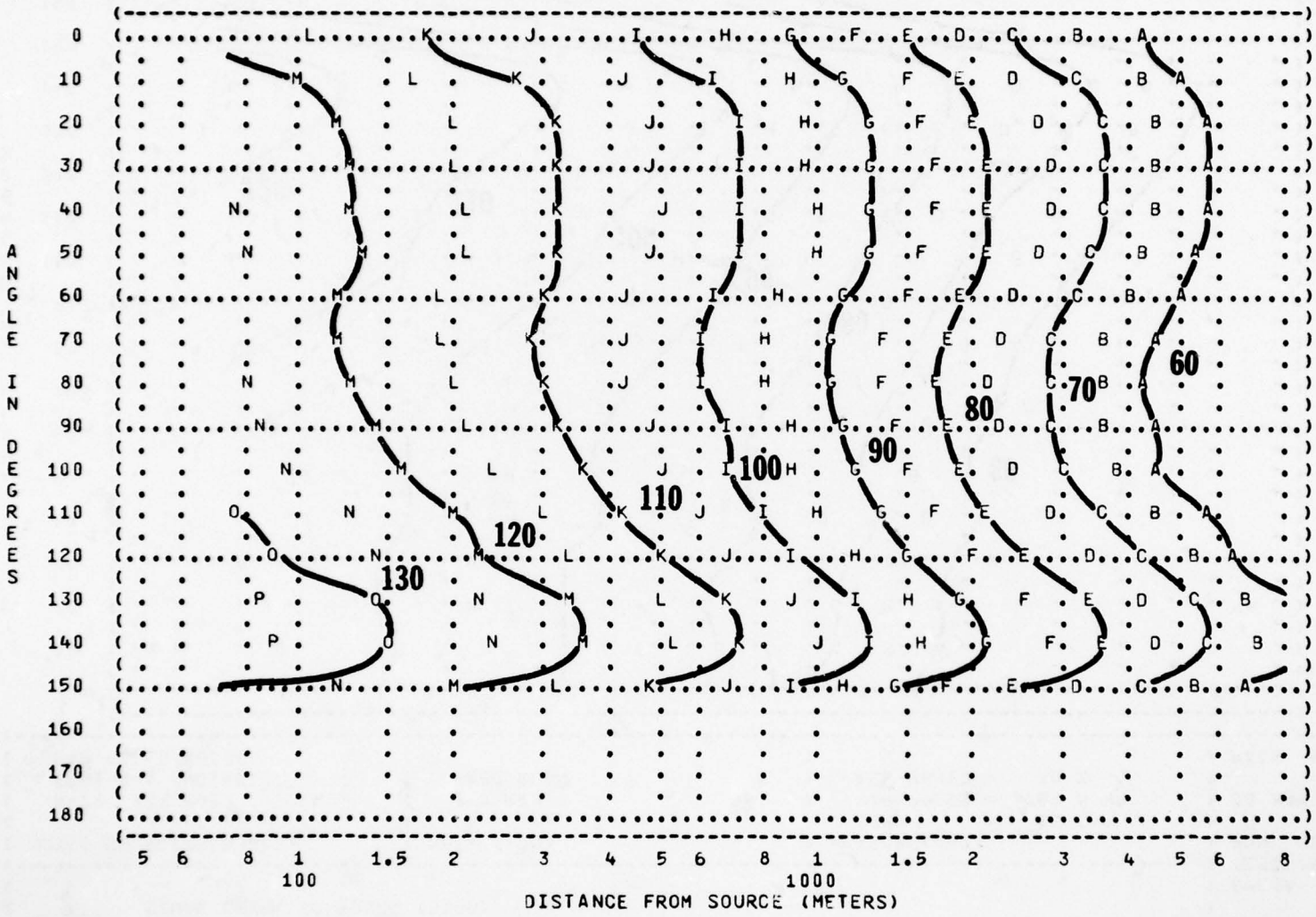
FIGURE 8 PERCEIVED NOISE LEVEL WITH SMOOTH TONE CORRECTION (PNLT) EQUAL LEVEL CONTOURS (PNDB)

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-051
RUN 01
20 MAY 75
PAGE 16

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
MILITARY POWER
99.5% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %



POINT	PNDB
A	60
B	65
C	70
D	75
E	80
F	85
G	90
H	95
I	100
J	105
K	110
L	115
M	120
N	125
O	130
P	135

FIGURE 9 PREFERRED SPEECH INTERFERENCE LEVEL (PSIL) EQUAL LEVEL CONTOURS (DB)

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-004
RUN 01
06 MAY 75
PAGE 17

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
IDLE
54% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

POINT	DB
A	35
B	40
C	45
D	50
E	55
F	60
G	65
H	70
I	75
J	80

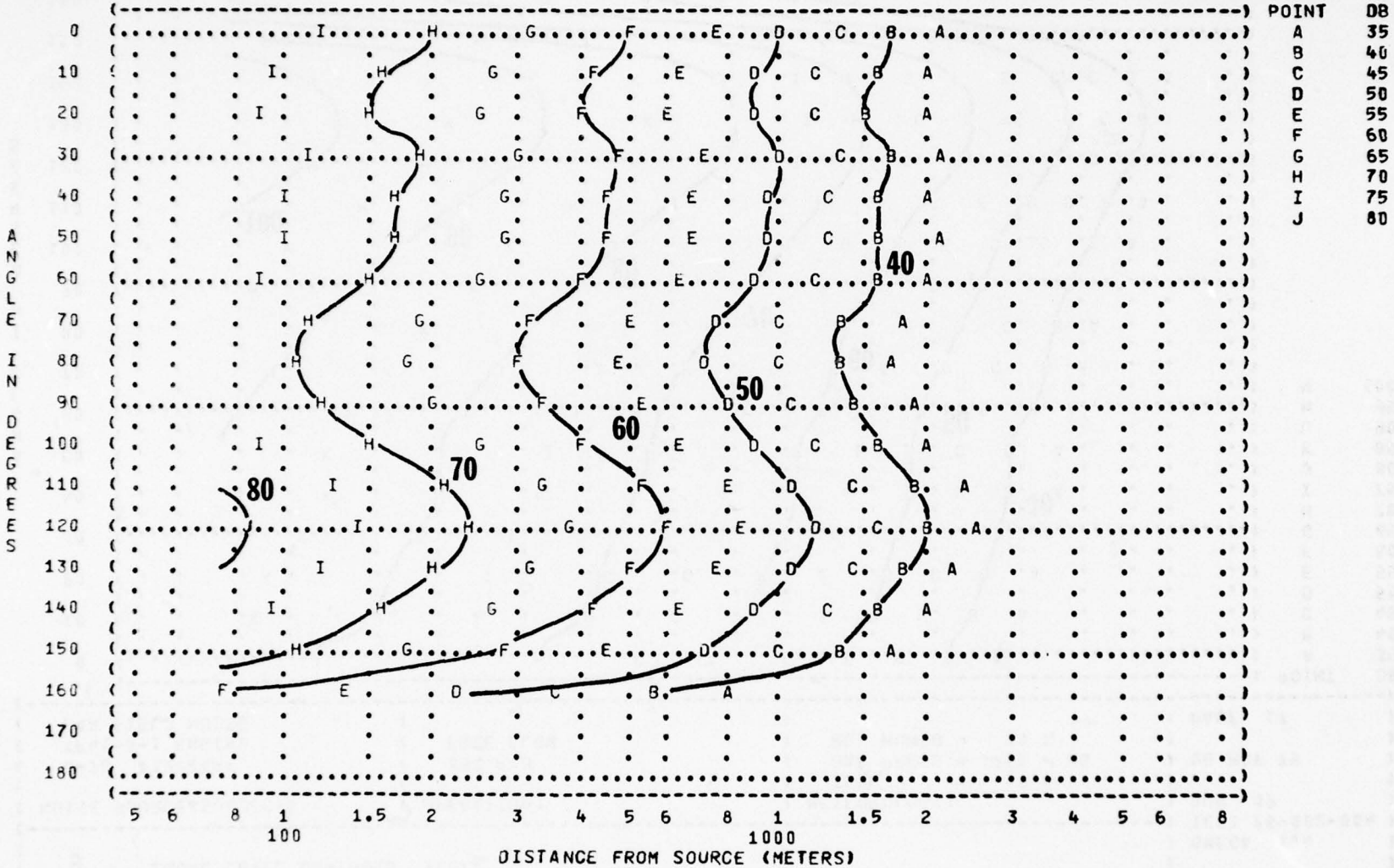


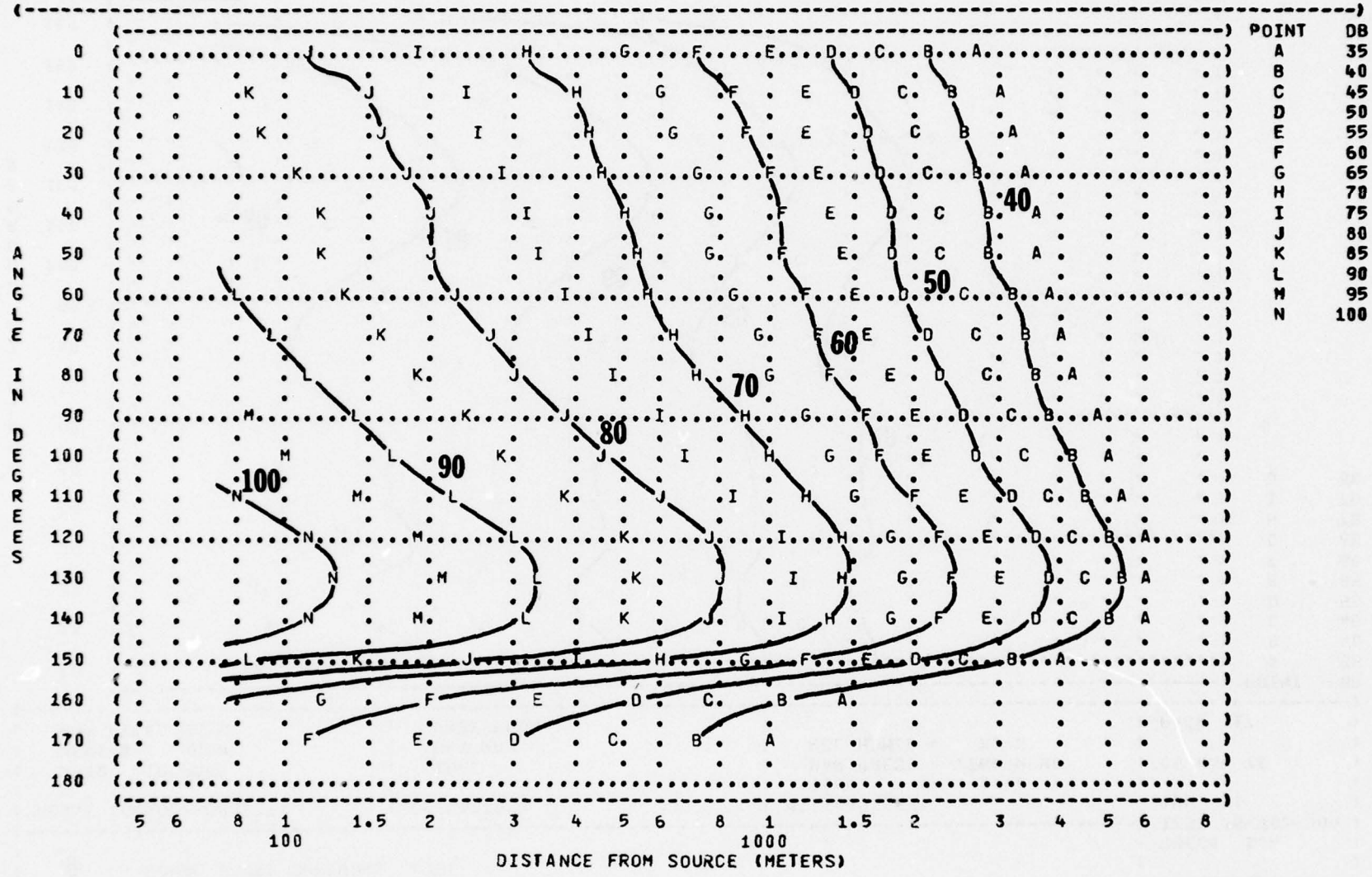
FIGURE 9: PREFERRED SPEECH INTERFERENCE LEVEL (PSIL)
EQUAL LEVEL CONTOURS (DB)

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
85% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-004
RUN 02
06 MAY 75
PAGE 17



POINT	DB
A	35
B	40
C	45
D	50
E	55
F	60
G	65
H	70
I	75
J	80
K	85
L	90
M	95
N	100

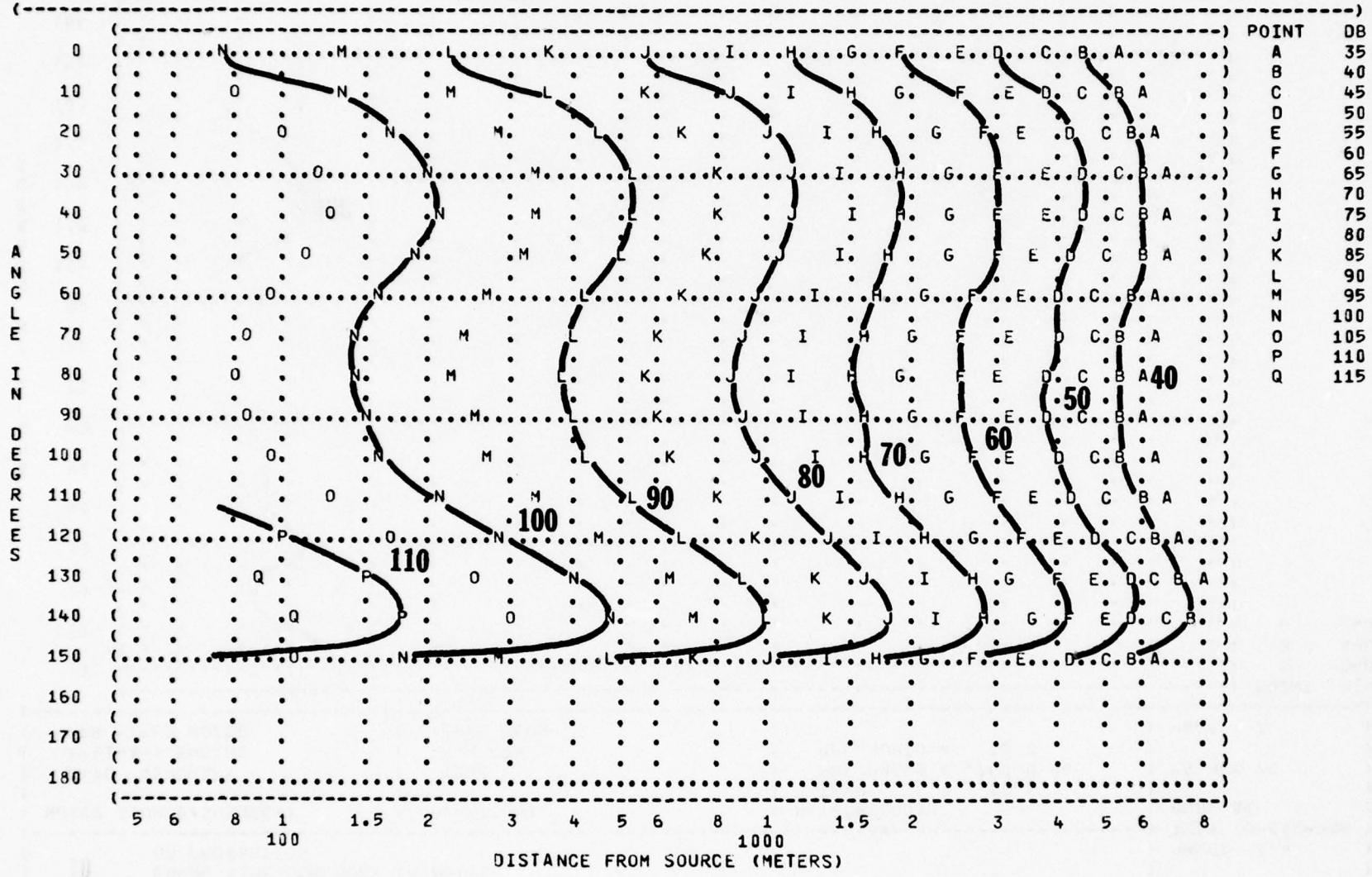
FIGURE 9: PREFERRED SPEECH INTERFERENCE LEVEL (PSIL) EQUAL LEVEL CONTOURS (DB)

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-051
RUN 01
20 MAY 75
PAGE 17

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
MILITARY POWER
99.5% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %



POINT	DB
A	35
B	40
C	45
D	50
E	55
F	60
G	65
H	70
I	75
J	80
K	85
L	90
M	95
N	100
O	105
P	110
Q	115

FIGURE 10: MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)
EQUAL TIME CONTOURS (MINUTES)
NO PROTECTION

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-004
RUN 01
06 MAY 75
PAGE 7

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
IDLE
54% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

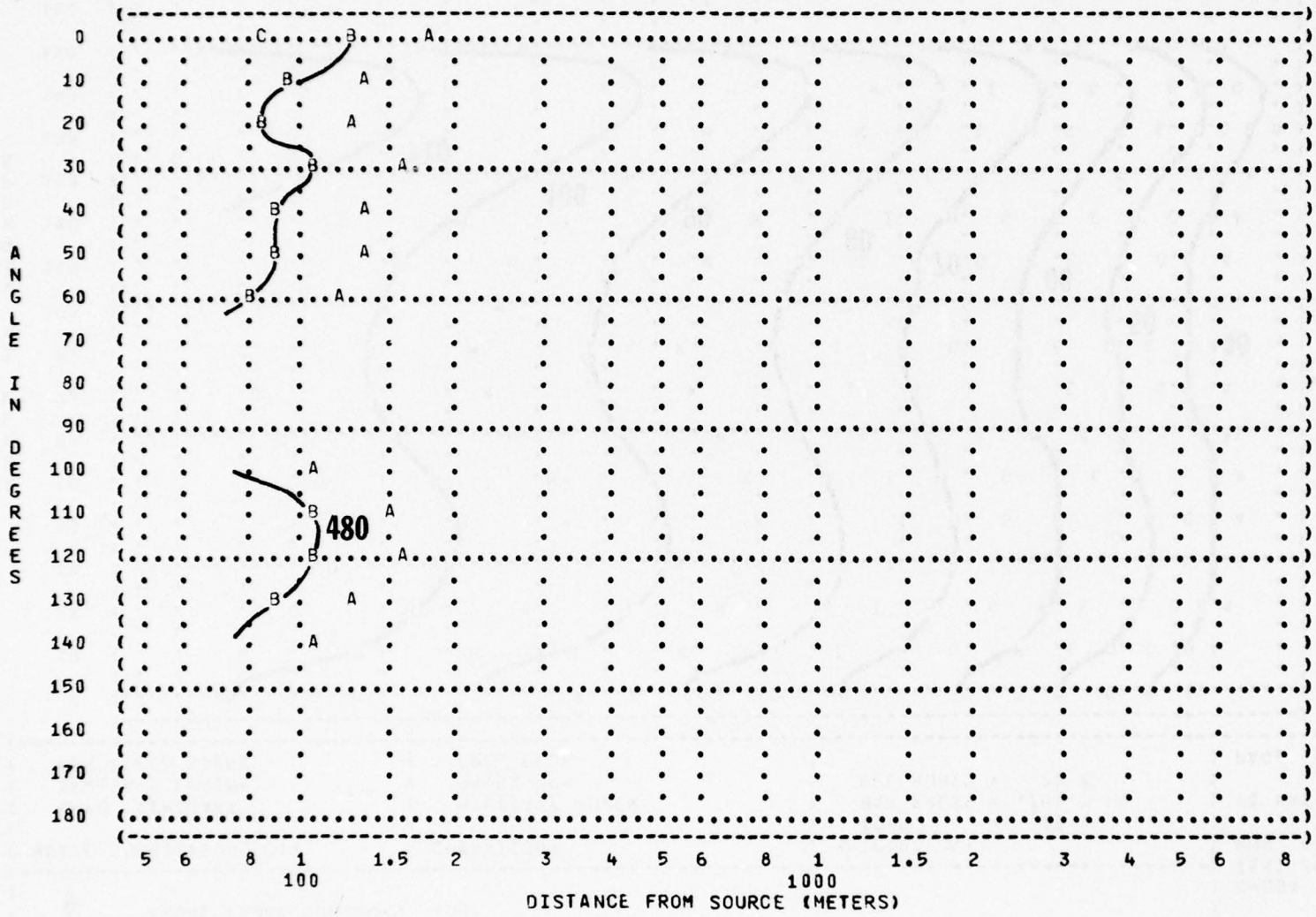


FIGURE 10 MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)
EQUAL TIME CONTOURS (MINUTES)

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-004
RUN 01
06 MAY 75
PAGE 8

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
IDLE
54% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

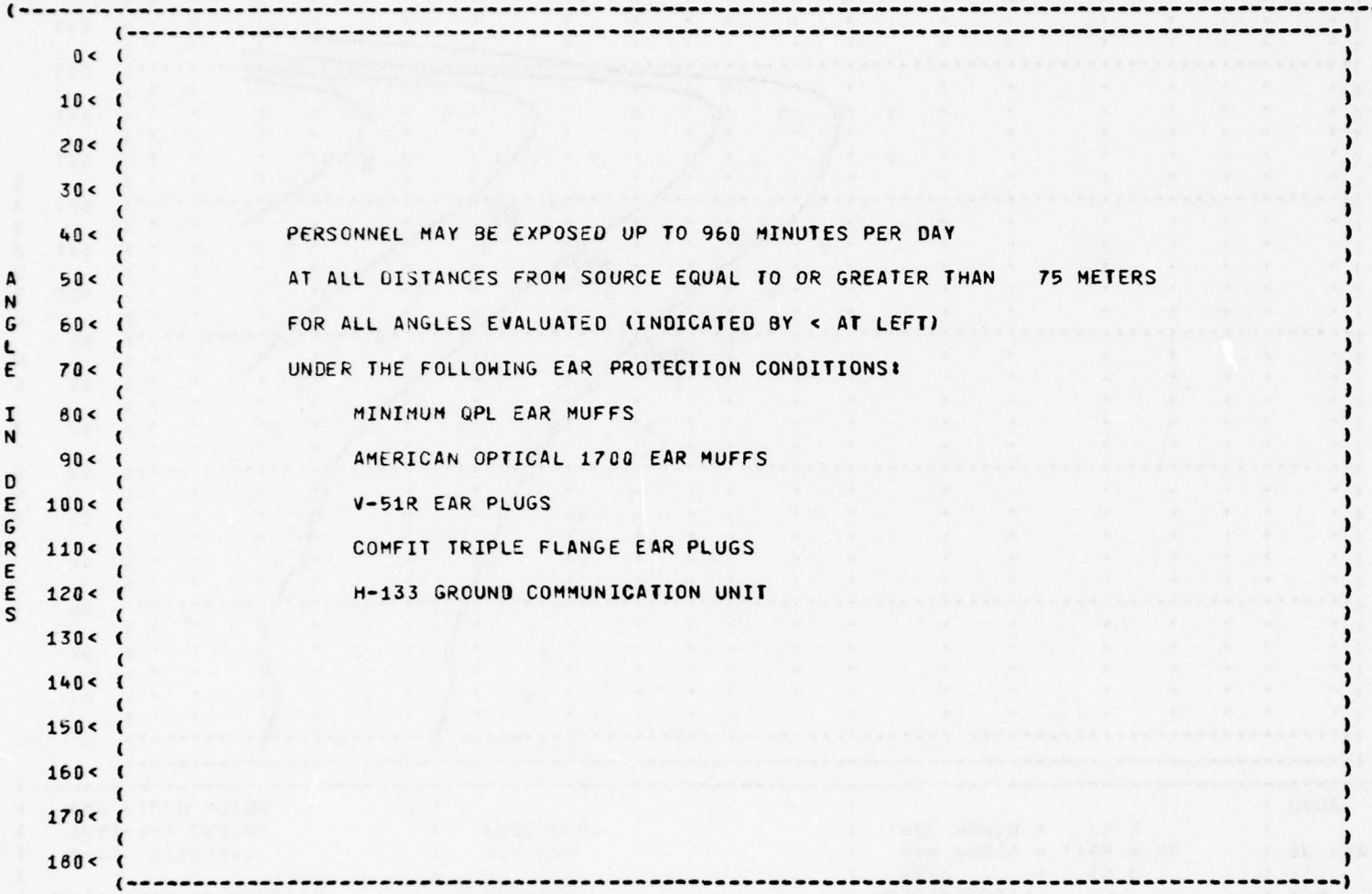


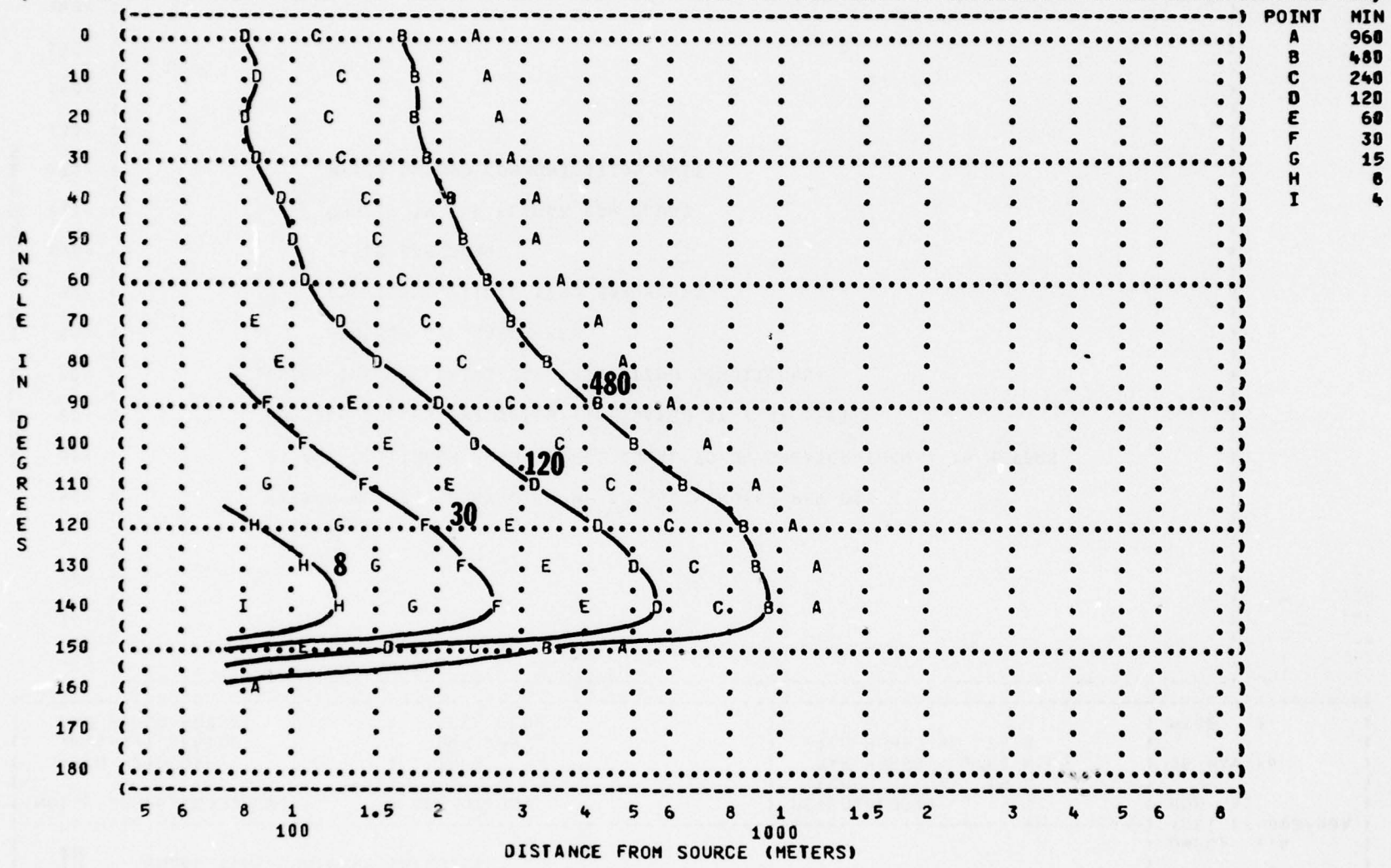
FIGURE: 10 MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)
EQUAL TIME CONTOURS (MINUTES)
NO PROTECTION

IDENTIFICATION:
OMEGA 1.4
TEST 75-802-004
RUN 02
06 MAY 75
PAGE 7

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
85% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %



POINT	MIN
A	960
B	480
C	240
D	120
E	60
F	30
G	15
H	8
I	4

FIGURE 10 MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)
EQUAL TIME CONTOURS (MINUTES)
MINIMUM QPL EAR MUFFS

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-004
RUN 02
06 MAY 75
PAGE 8

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
85% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

POINT	MIN
A	960
B	480
C	240
D	120
E	60

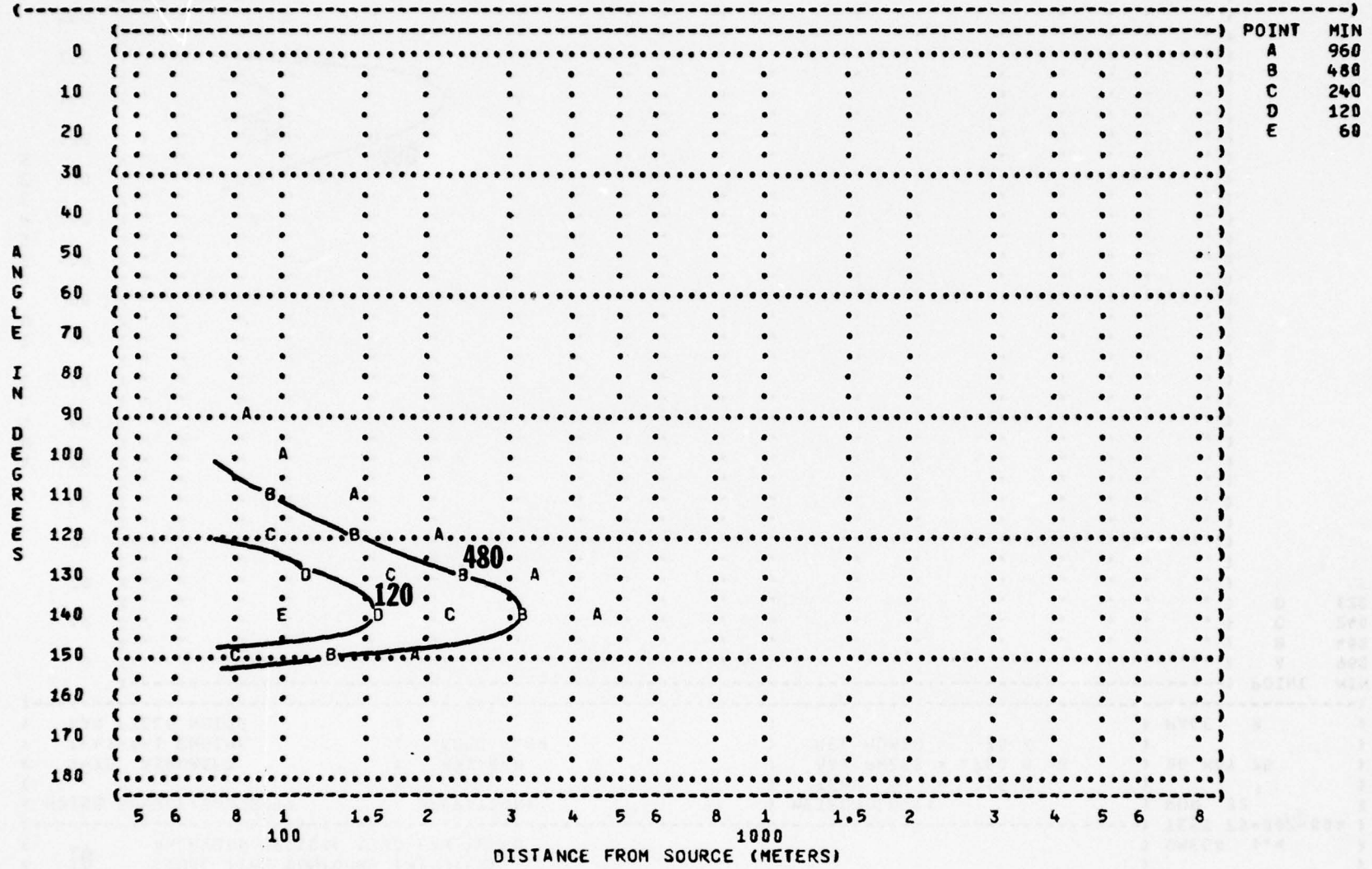


FIGURE: 10

MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)
EQUAL TIME CONTOURS (MINUTES)
AMERICAN OPTICAL 1700 EAR MUFFS

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-004
RUN 02
06 MAY 75
PAGE 9

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
85% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

POINT	MIN
A	960
B	480
C	240
D	120

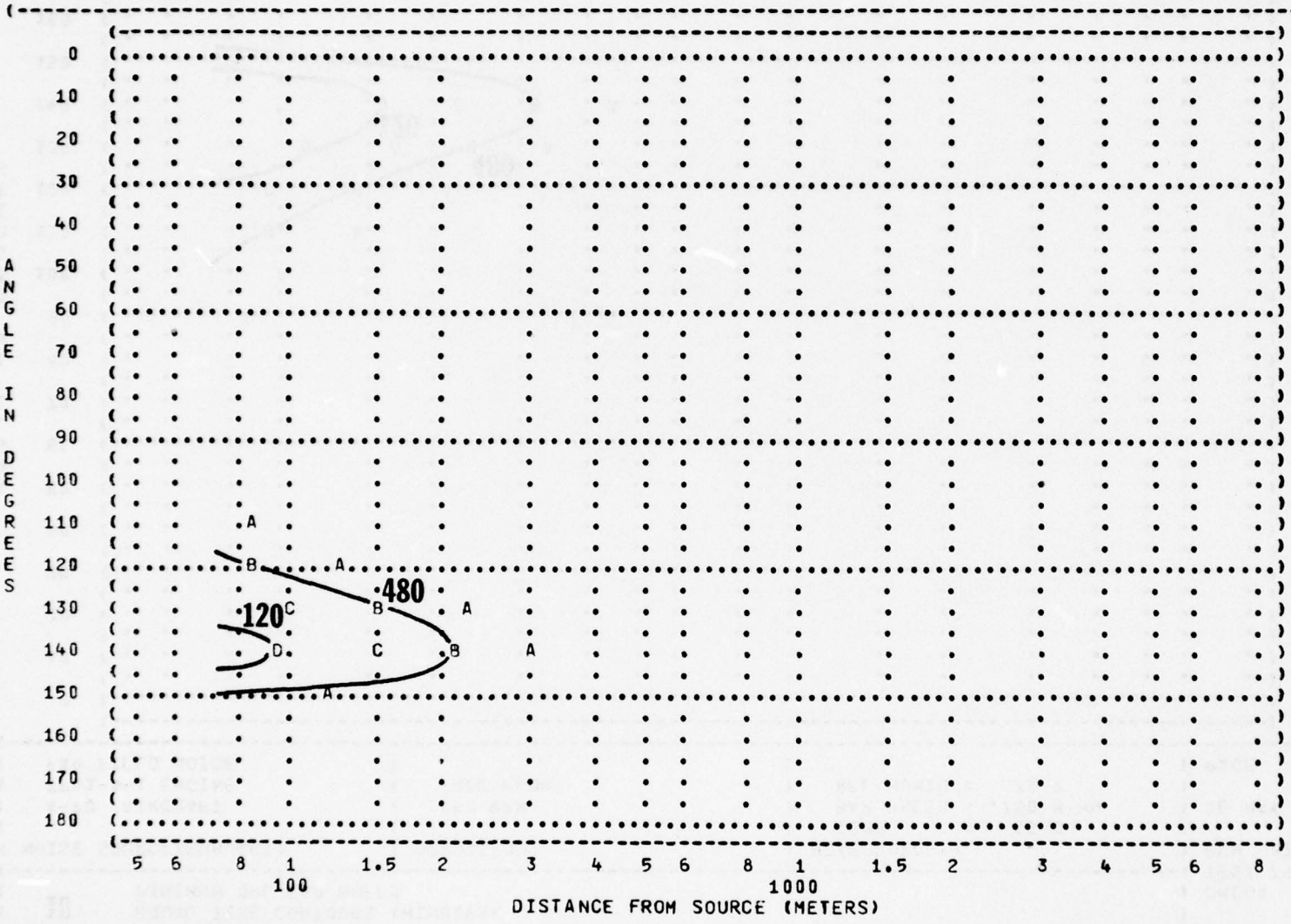


FIGURE: 10 MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)
EQUAL TIME CONTOURS (MINUTES)
V-51R EAR PLUGS

NOISE SOURCE/SUBJECT:
A-70 AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
85% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-004
RUN 02
06 MAY 75
PAGE 10

POINT	MIN
A	960
B	480
C	240

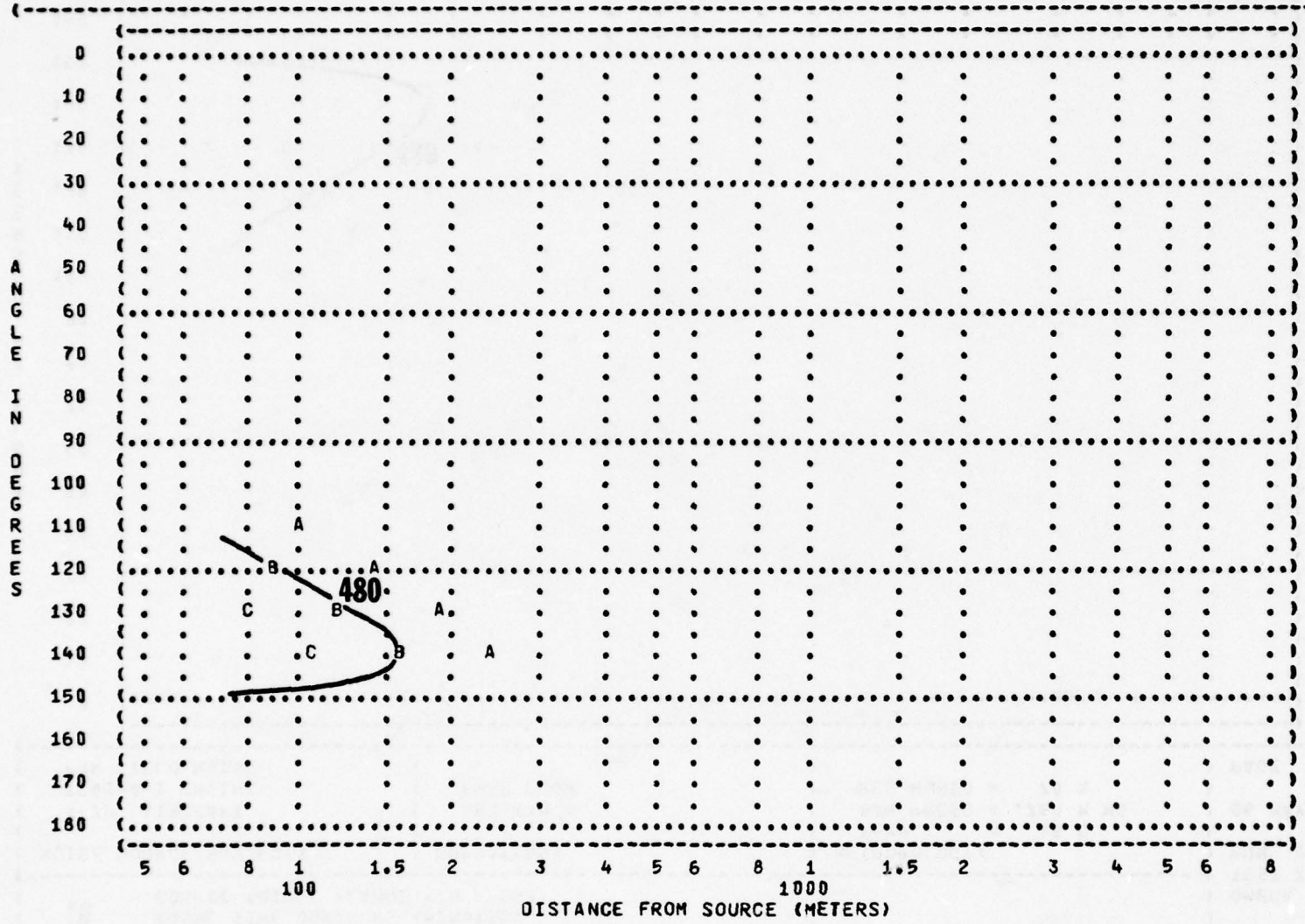


FIGURE 10: MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)
EQUAL TIME CONTOURS (MINUTES)
COMFIT TRIPLE FLANGE EAR PLUGS

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-004
RUN 02
06 MAY 75
PAGE 11

NOISE SOURCE/SUBJECT:
A-70 AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
85% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

POINT	MIN
A	960
B	480
C	240

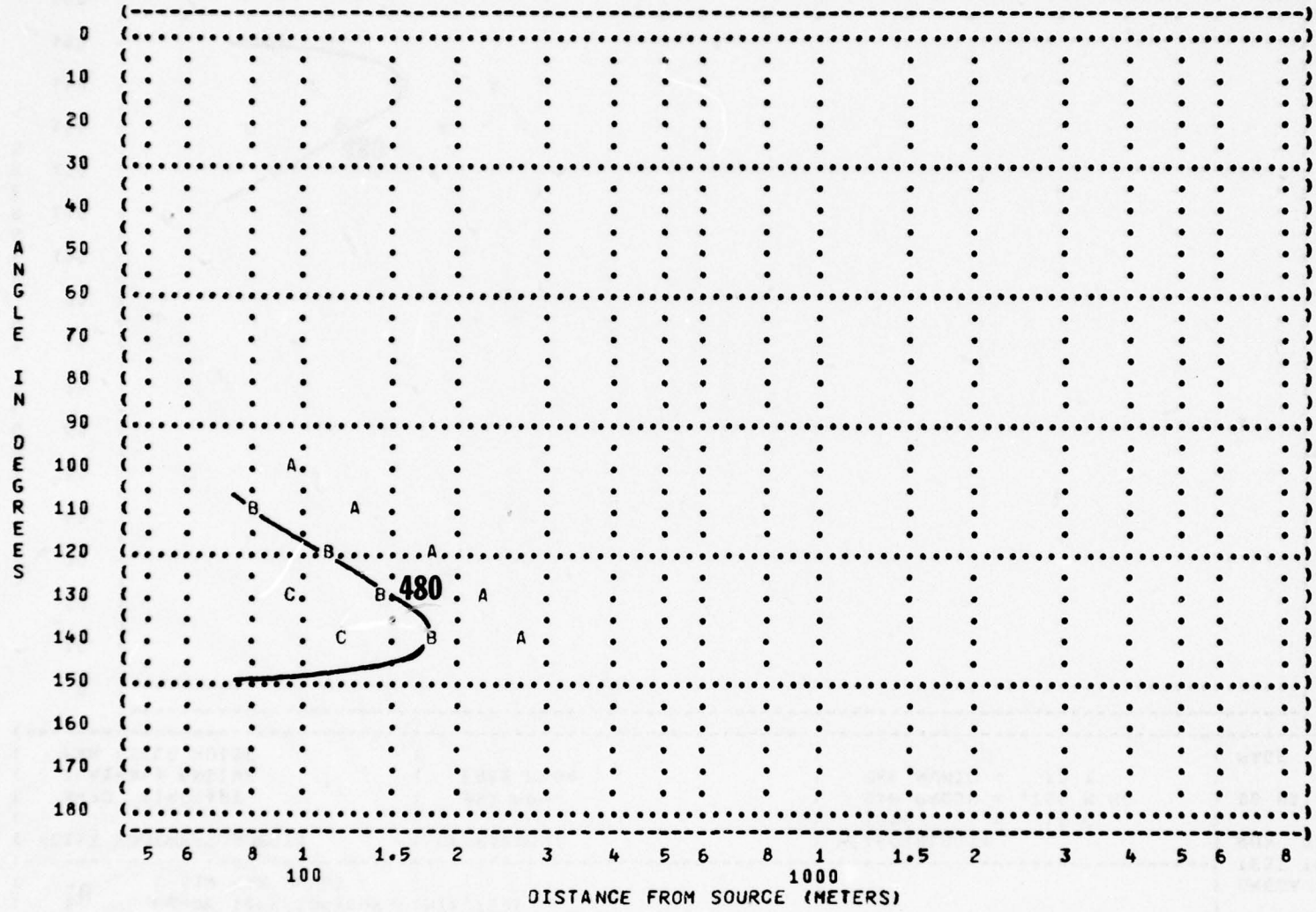


FIGURE: 10

MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)
EQUAL TIME CONTOURS (MINUTES)
H-133 GROUND COMMUNICATION UNIT

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-004
RUN 02
06 MAY 75
PAGE 12

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
85% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

POINT	MIN
A	960
B	480

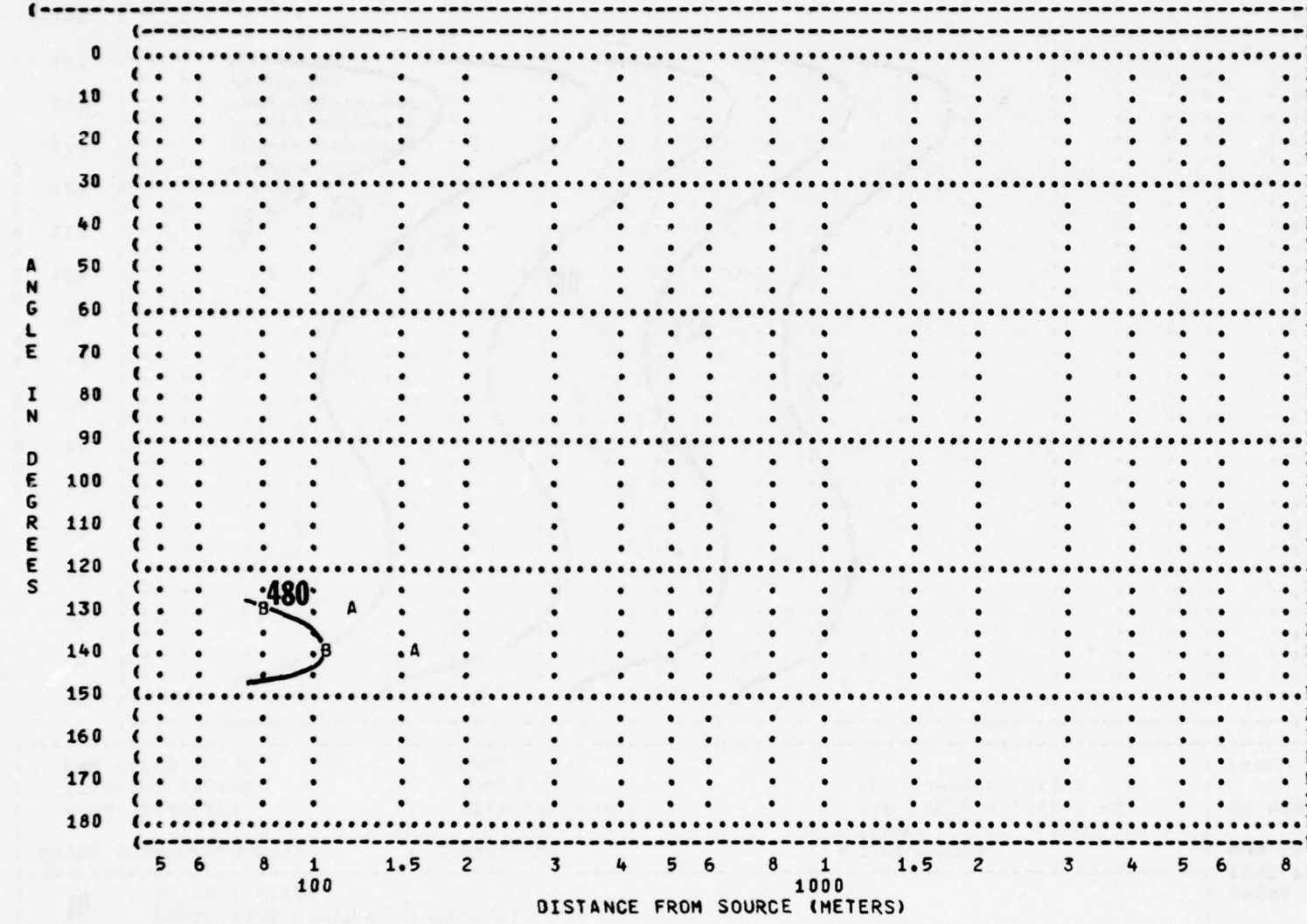


FIGURE: 10

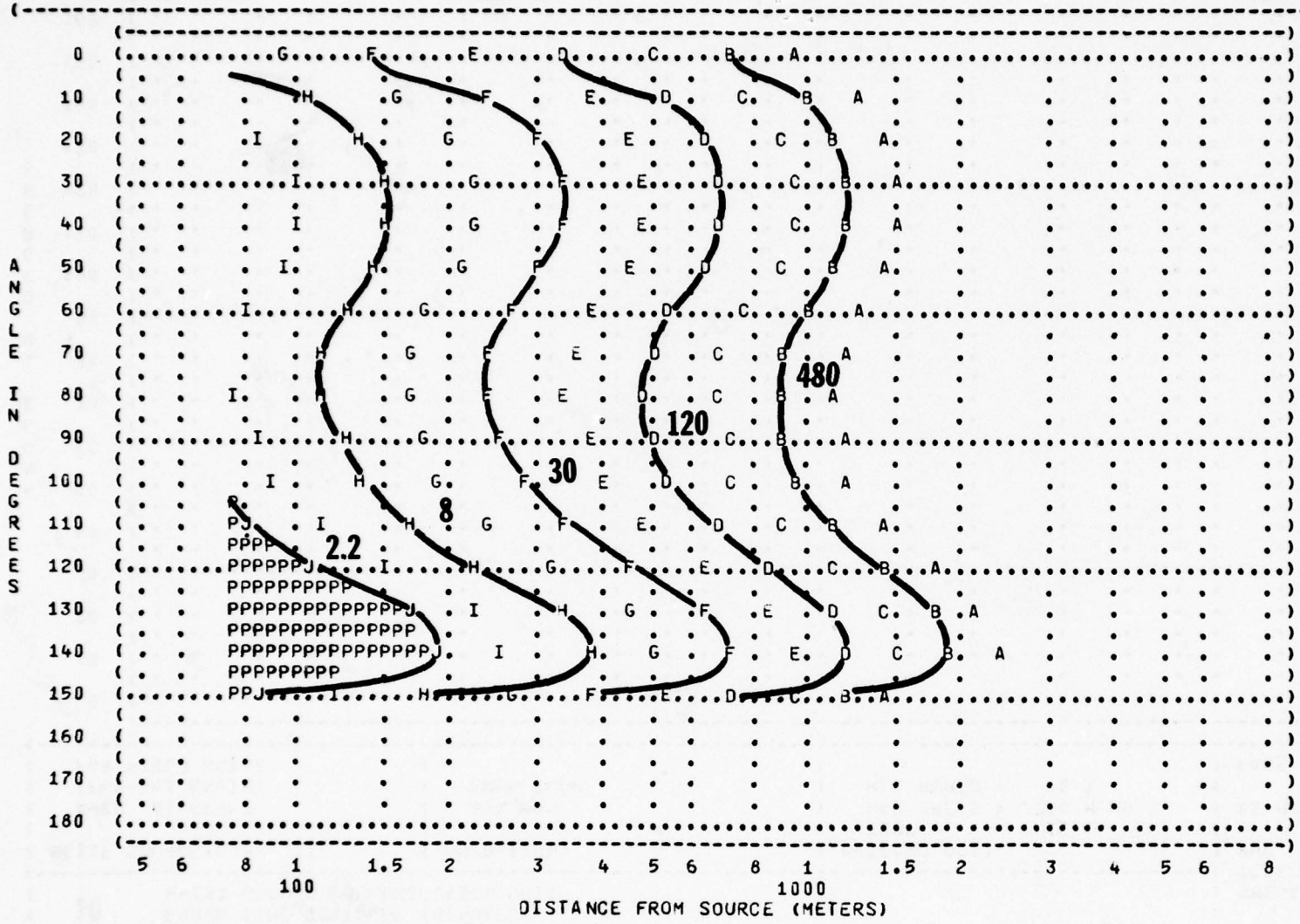
MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)
EQUAL TIME CONTOURS (MINUTES)
NO PROTECTION

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
MILITARY POWER
99.5% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-051
RUN 01
20 MAY 75
PAGE 7



POINT	MIN
A	960
B	480
C	240
D	120
E	60
F	30
G	15
H	8
I	4
J	2.2

P ADDITIONAL EAR PROTECTION REQUIRED.

FIGURE: 10

MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)
EQUAL TIME CONTOURS (MINUTES)
MINIMUM QPL EAR MUFFS

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
MILITARY POWER
99.5% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-051
RUN 01

20 MAY 75

PAGE 8

POINT	MIN
A	960
B	480
C	240
D	120
E	60
F	30
G	15

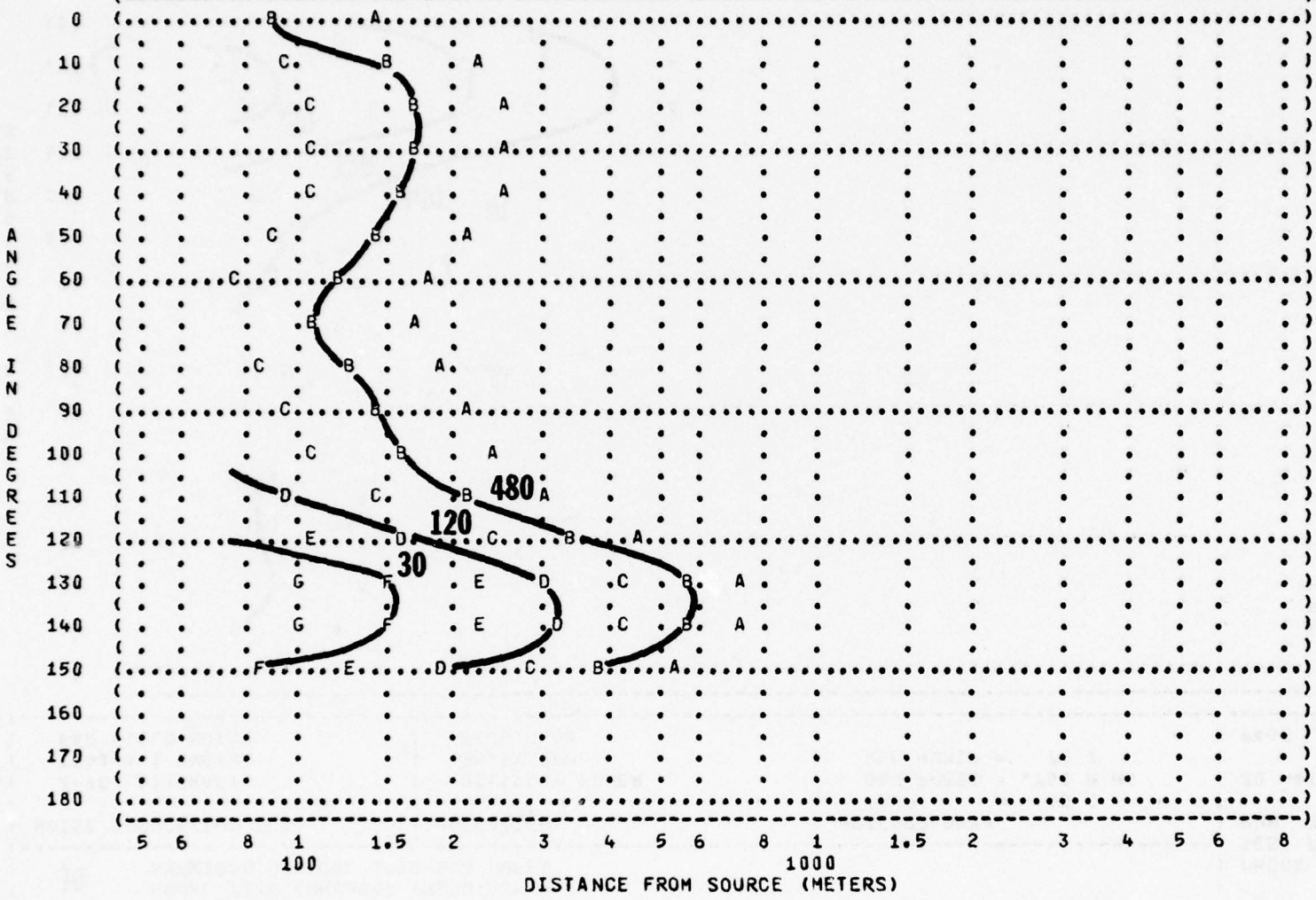


FIGURE: 10

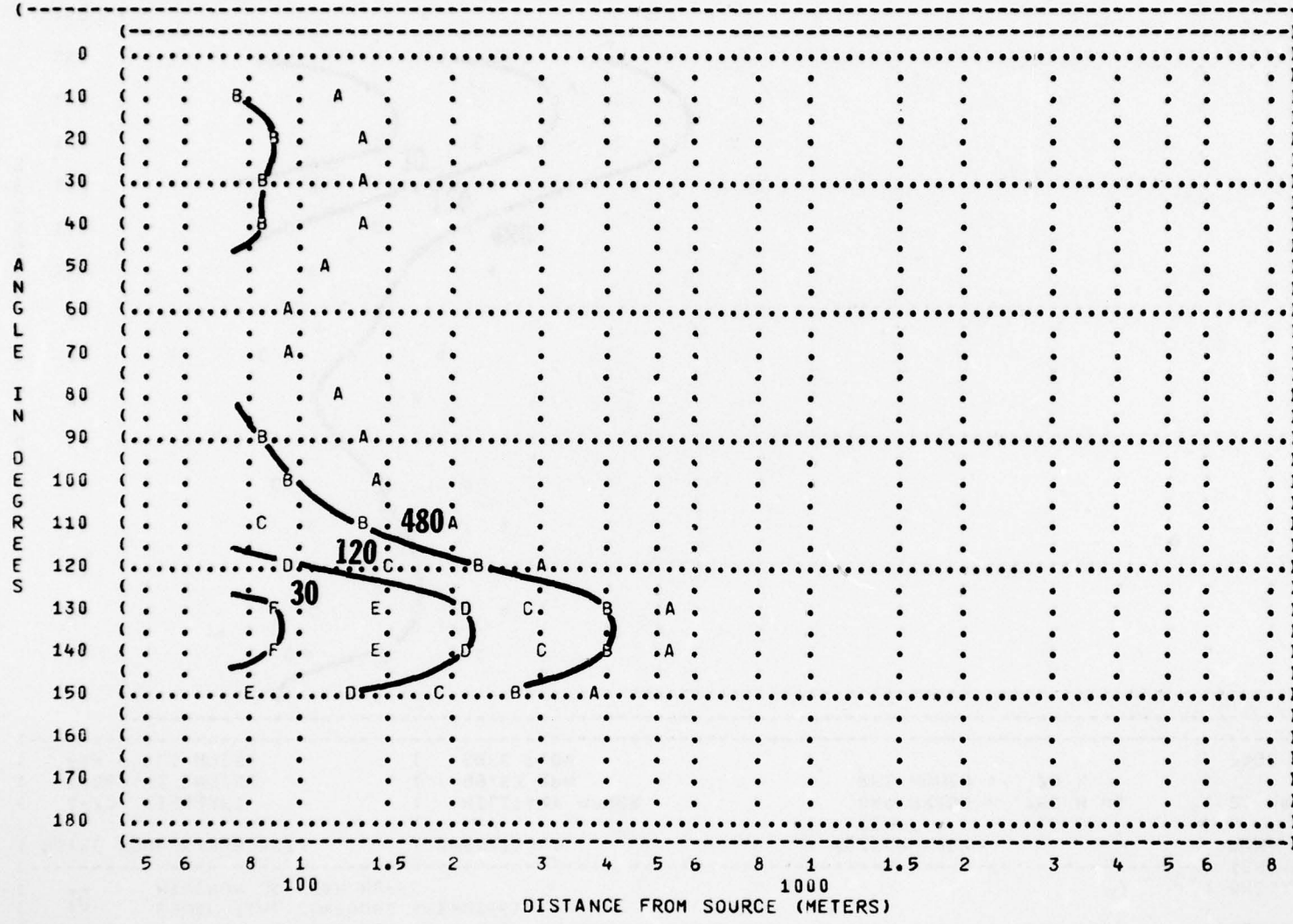
MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)
EQUAL TIME CONTOURS (MINUTES)
AMERICAN OPTICAL 1700 EAR MUFFS

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
MILITARY POWER
99.5% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-051
RUN 01
20 MAY 75
PAGE 9



POINT	MIN
A	960
B	480
C	240
D	120
E	60
F	30

05

FIGURE: 10

MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)
EQUAL TIME CONTOURS (MINUTES)
V-51R EAR PLUGS

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
MILITARY POWER
99.5% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-051
RUN 01
20 MAY 75
PAGE 10

POINT	MIN
A	960
B	480
C	240
D	120
E	60

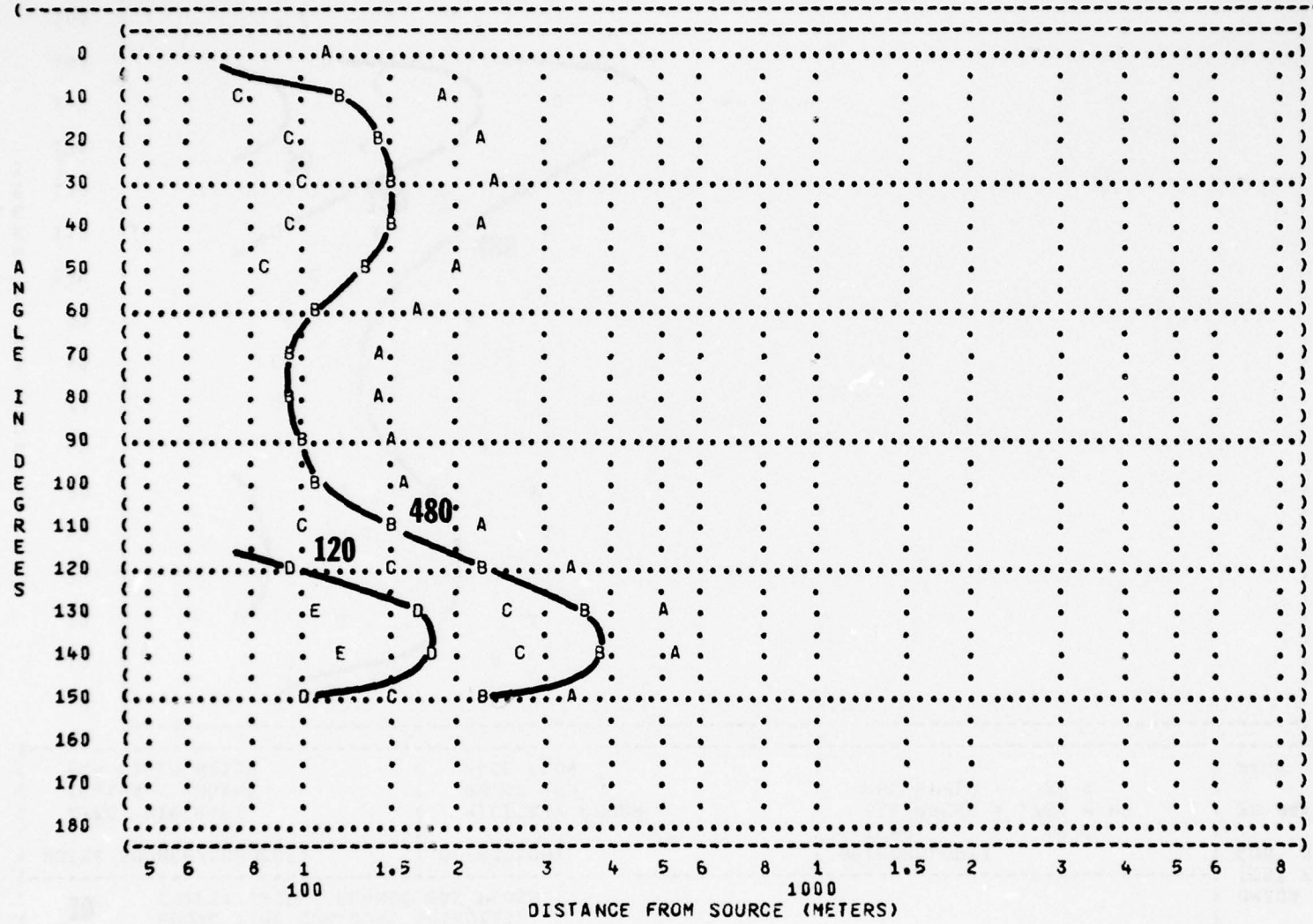


FIGURE 10: MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)
EQUAL TIME CONTOURS (MINUTES)
COMFIT TRIPLE FLANGE EAR PLUGS

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-051
RUN 01
20 MAY 75
PAGE 11

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
MILITARY POWER
99.5% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

POINT	MIN
A	960
B	480
C	240
D	120
E	60
F	30

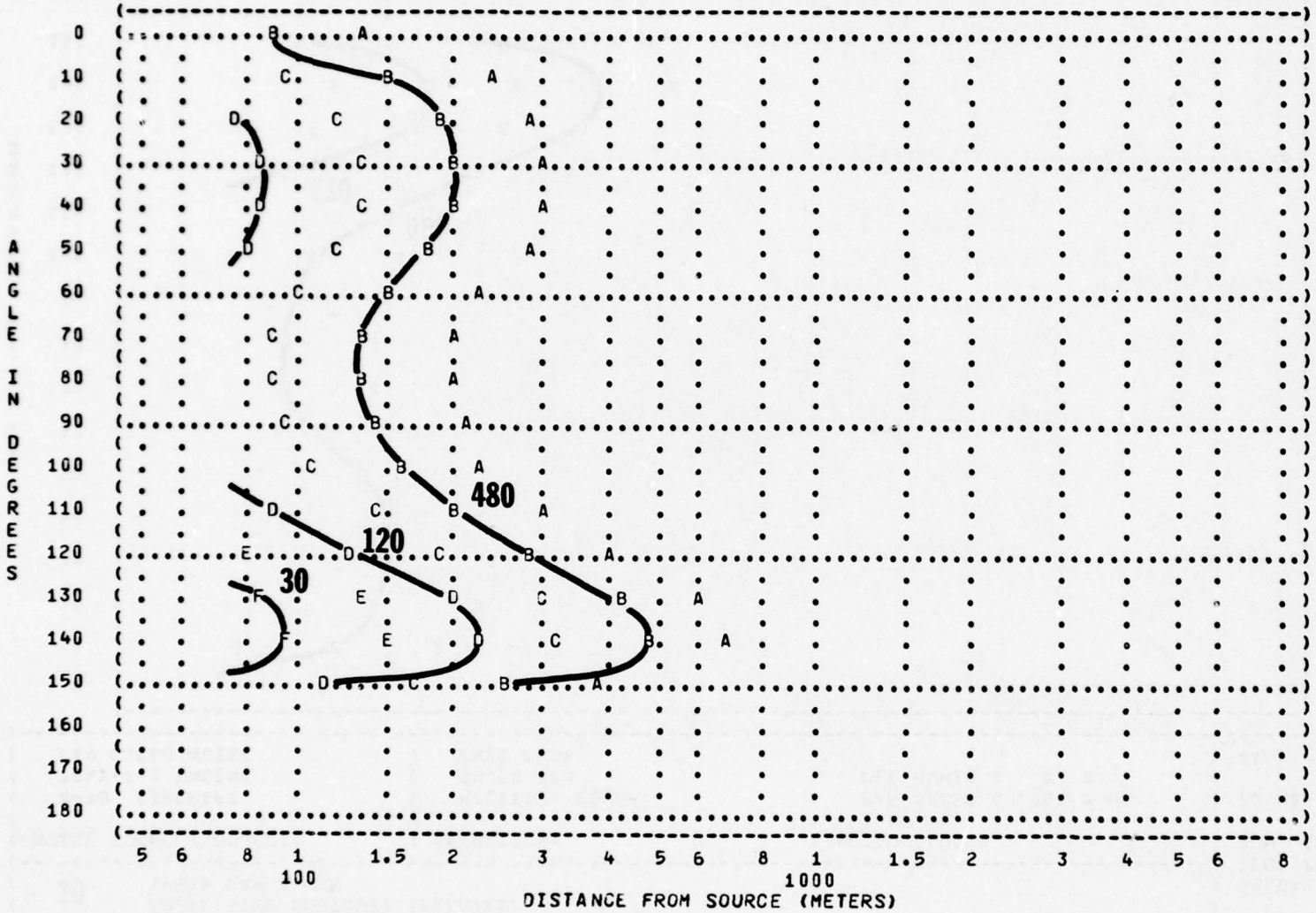


FIGURE: 10

MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)
EQUAL TIME CONTOURS (MINUTES)
H-133 GROUND COMMUNICATION UNIT

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-051
RUN 01
20 MAY 75
PAGE 12

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
MILITARY POWER
99.5% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

POINT	MIN
A	960
B	480
C	240
D	120
E	60

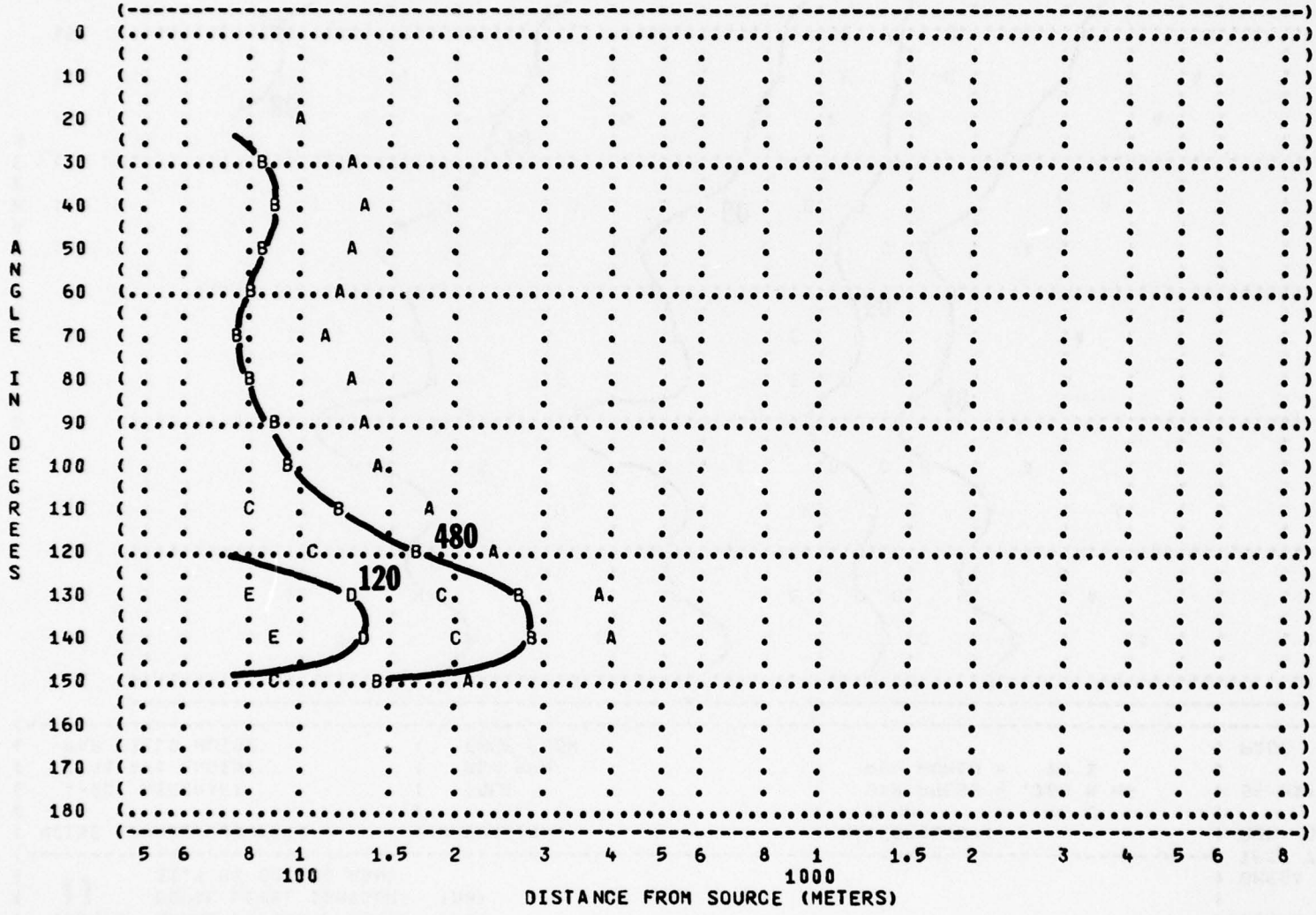


FIGURE 11: SOUND PRESSURE LEVEL (SPL) EQUAL LEVEL CONTOURS (DB) 31.5 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
IDLE
54% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-004
RUN 01
06 MAY 75
PAGE 18

POINT	DB
A	35
B	40
C	45
D	50
E	55
F	60
G	65
H	70
I	75
J	80

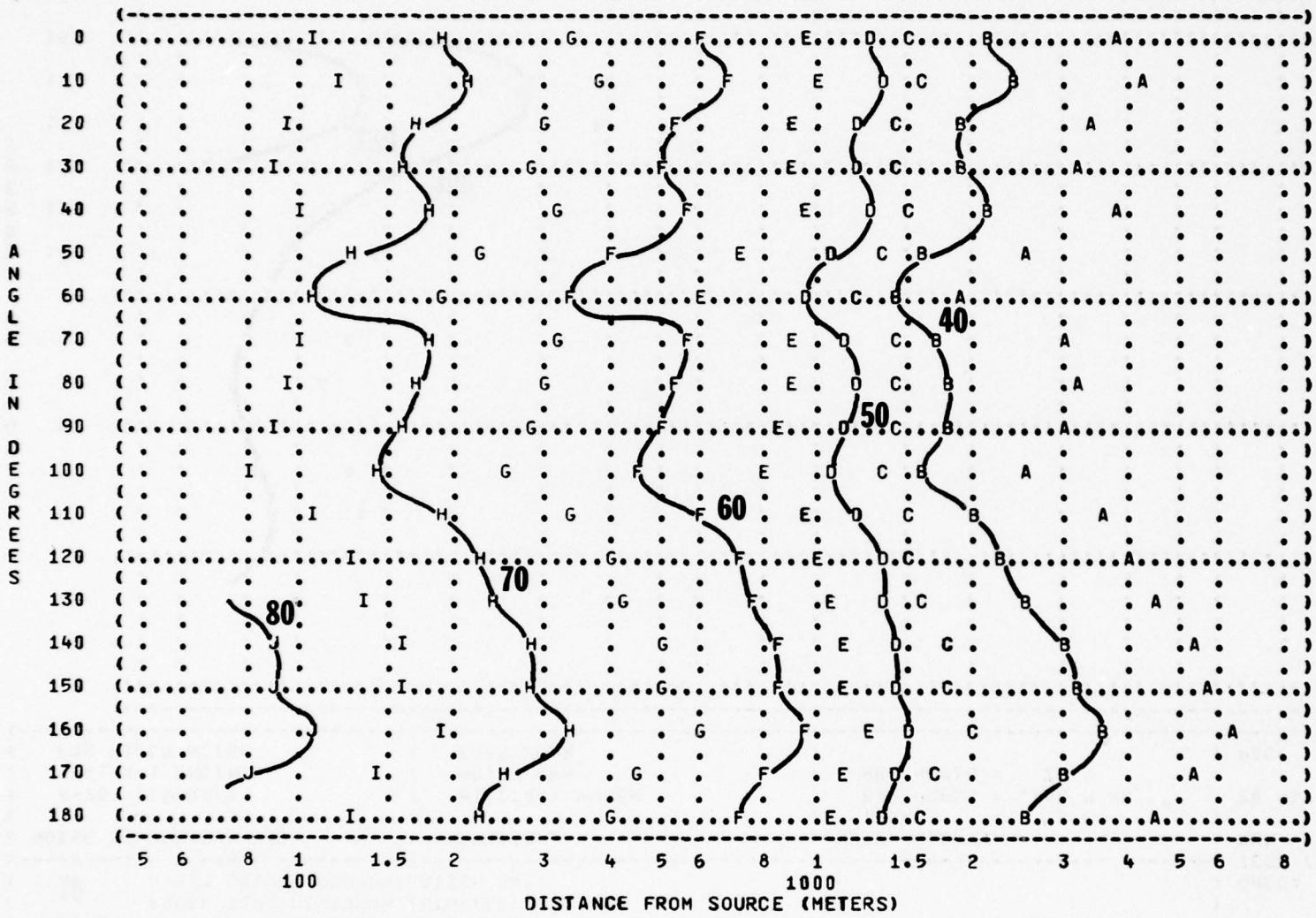


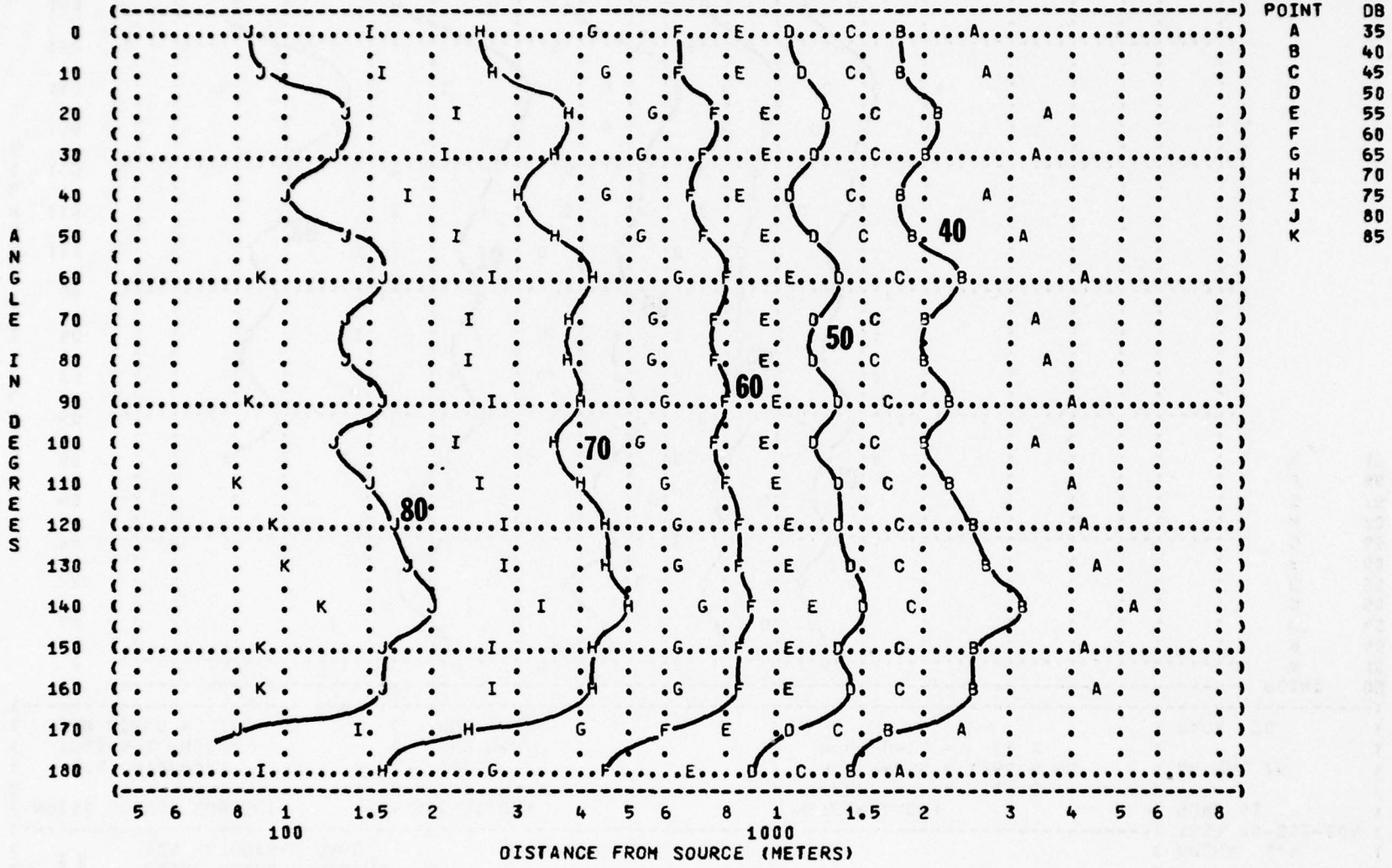
FIGURE: 11 SOUND PRESSURE LEVEL (SPL) EQUAL LEVEL CONTOURS (DB) 63 HZ OCTAVE BAND

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-004
RUN 01
06 MAY 75
PAGE 19

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
IDLE
54% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %



POINT	DB
A	35
B	40
C	45
D	50
E	55
F	60
G	65
H	70
I	75
J	80
K	85

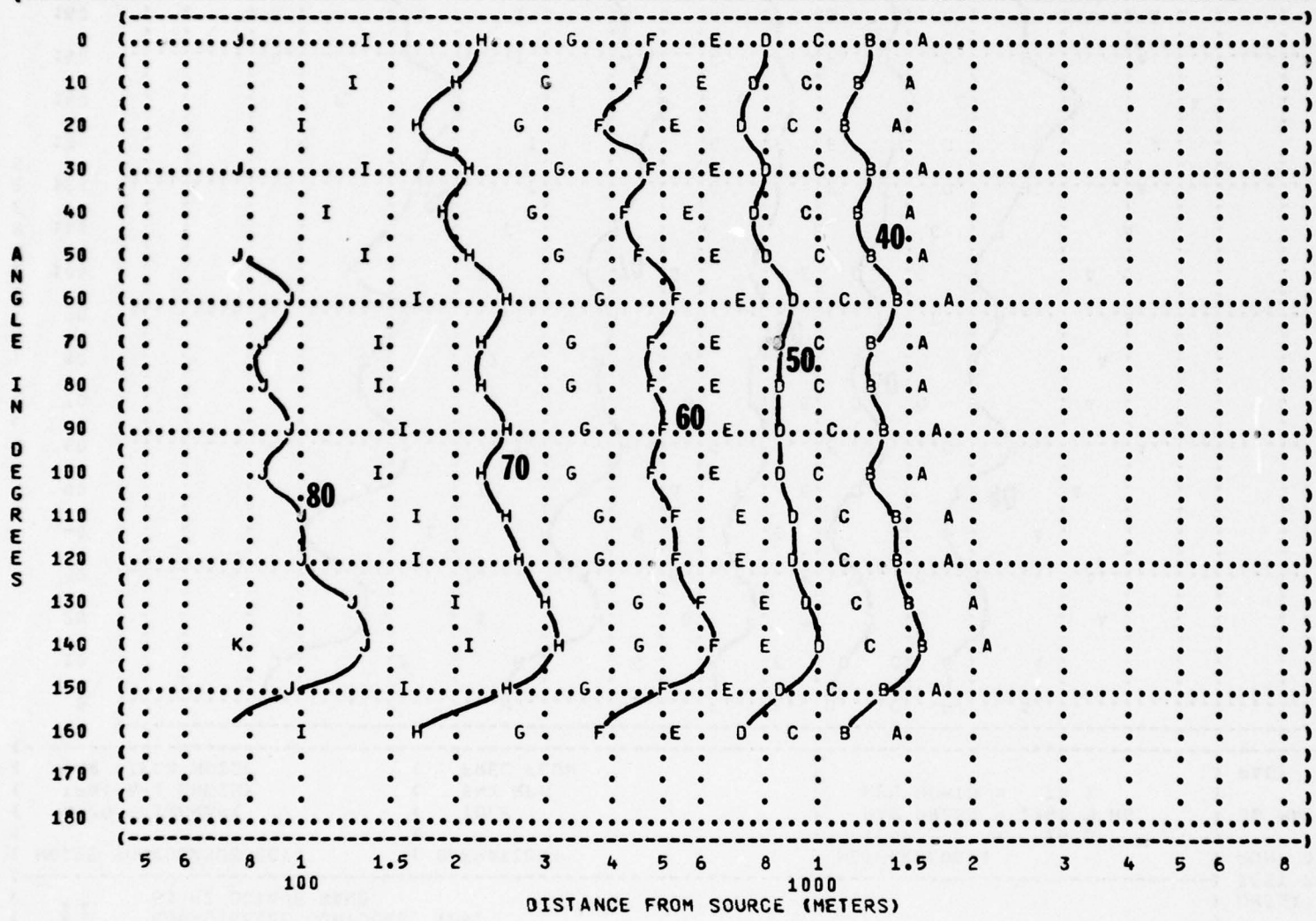
FIGURE 11 SOUND PRESSURE LEVEL (SPL) EQUAL LEVEL CONTOURS (DB) 125 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
IDLE
54% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-004
RUN 01
06 MAY 75
PAGE 20



POINT	DB
A	35
B	40
C	45
D	50
E	55
F	60
G	65
H	70
I	75
J	80
K	85

FIGURE 11: SOUND PRESSURE LEVEL (SPL) EQUAL LEVEL CONTOURS (DB) 250 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
IDLE
54% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-004
RUN 01
06 MAY 75
PAGE 21

POINT	DB
A	35
B	40
C	45
D	50
E	55
F	60
G	65
H	70
I	75

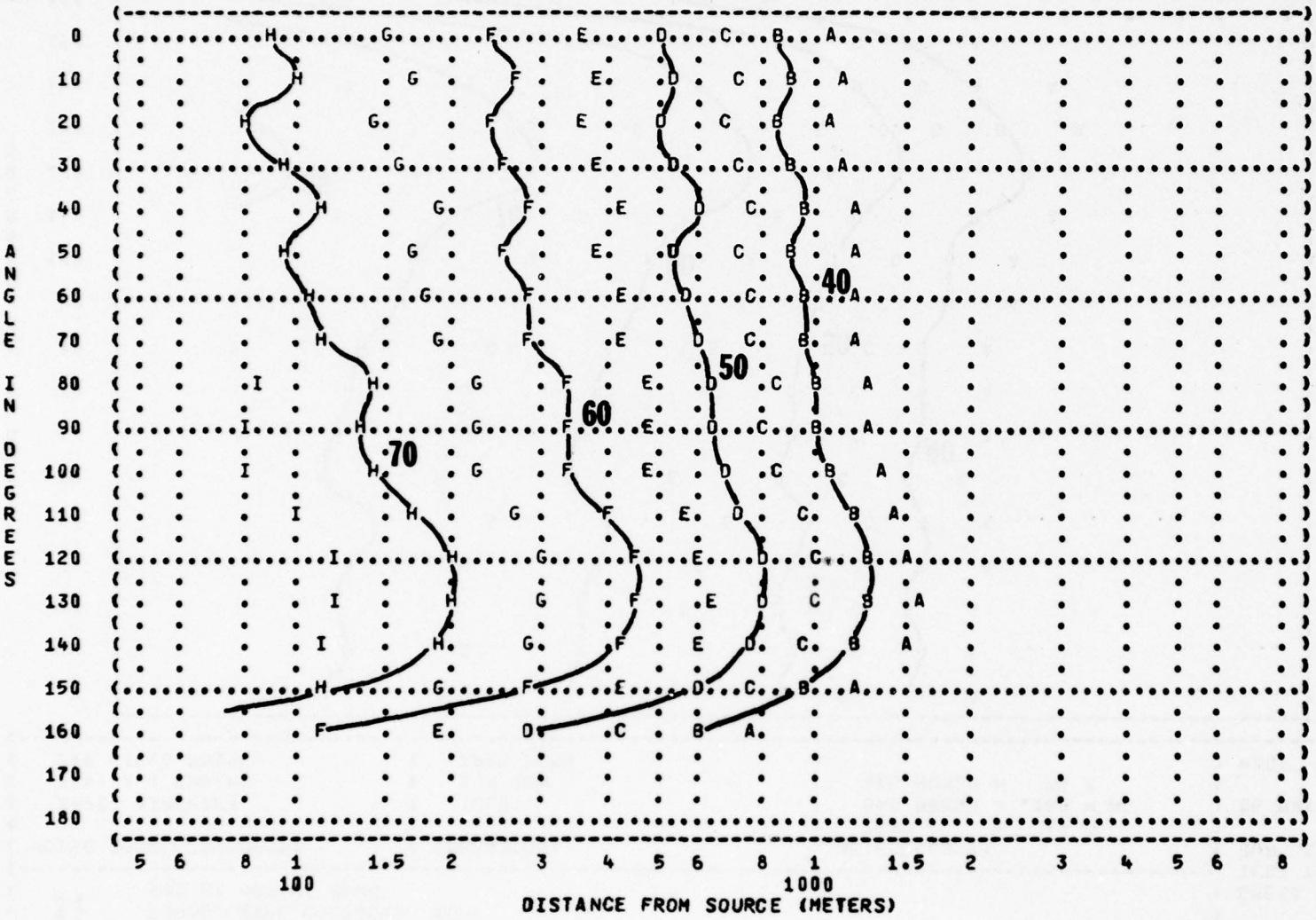


FIGURE 11: SOUND PRESSURE LEVEL (SPL) EQUAL LEVEL CONTOURS (DB) 500 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
IDLE
54% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-004
RUN 01
06 MAY 75
PAGE 22

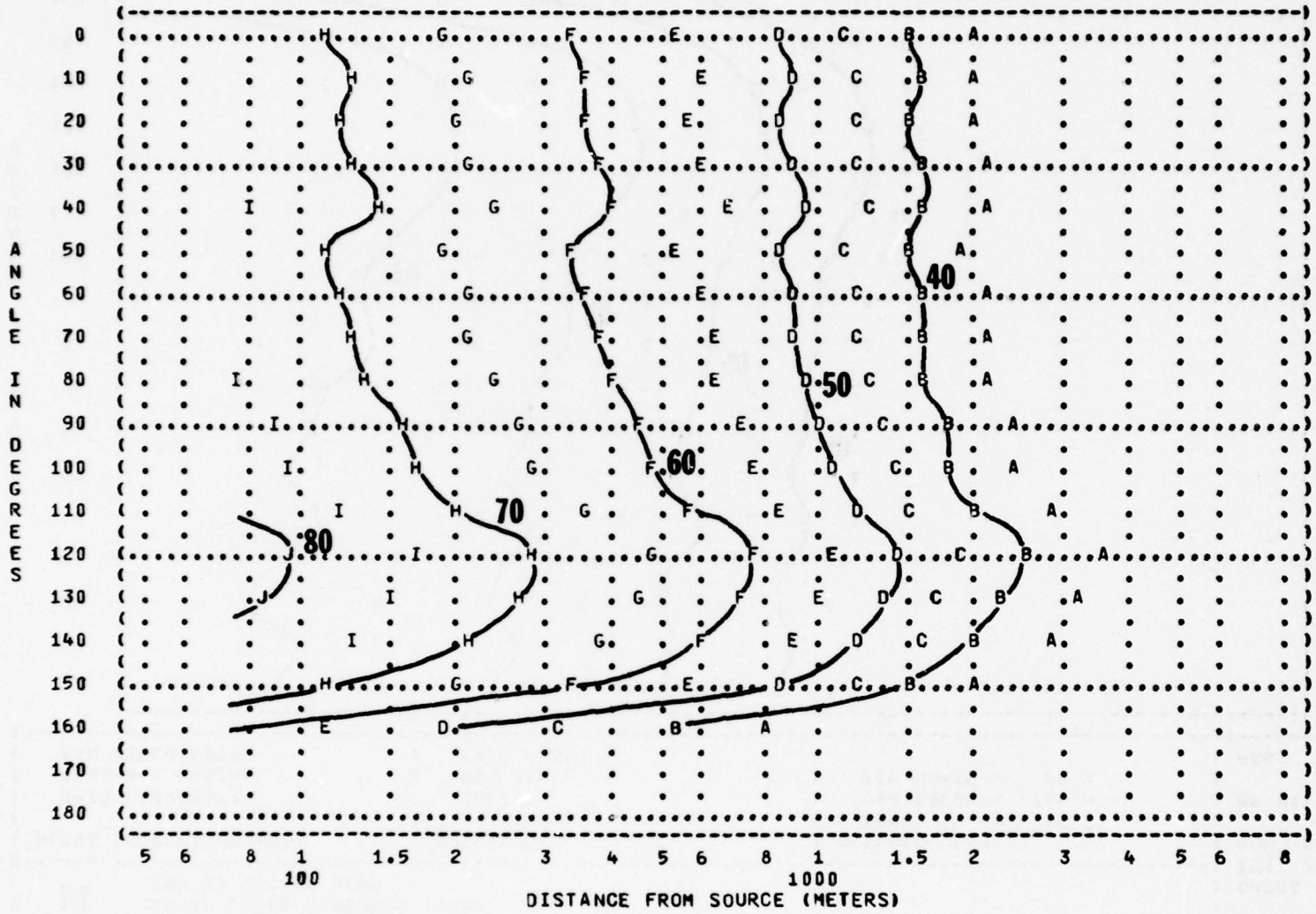


FIGURE 11 SOUND PRESSURE LEVEL (SPL) EQUAL LEVEL CONTOURS (DB) 1000 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
IDLE
54% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-004
RUN 01
06 MAY 75
PAGE 23

POINT	DB
A	35
B	40
C	45
D	50
E	55
F	60
G	65
H	70
I	75
J	80
K	85

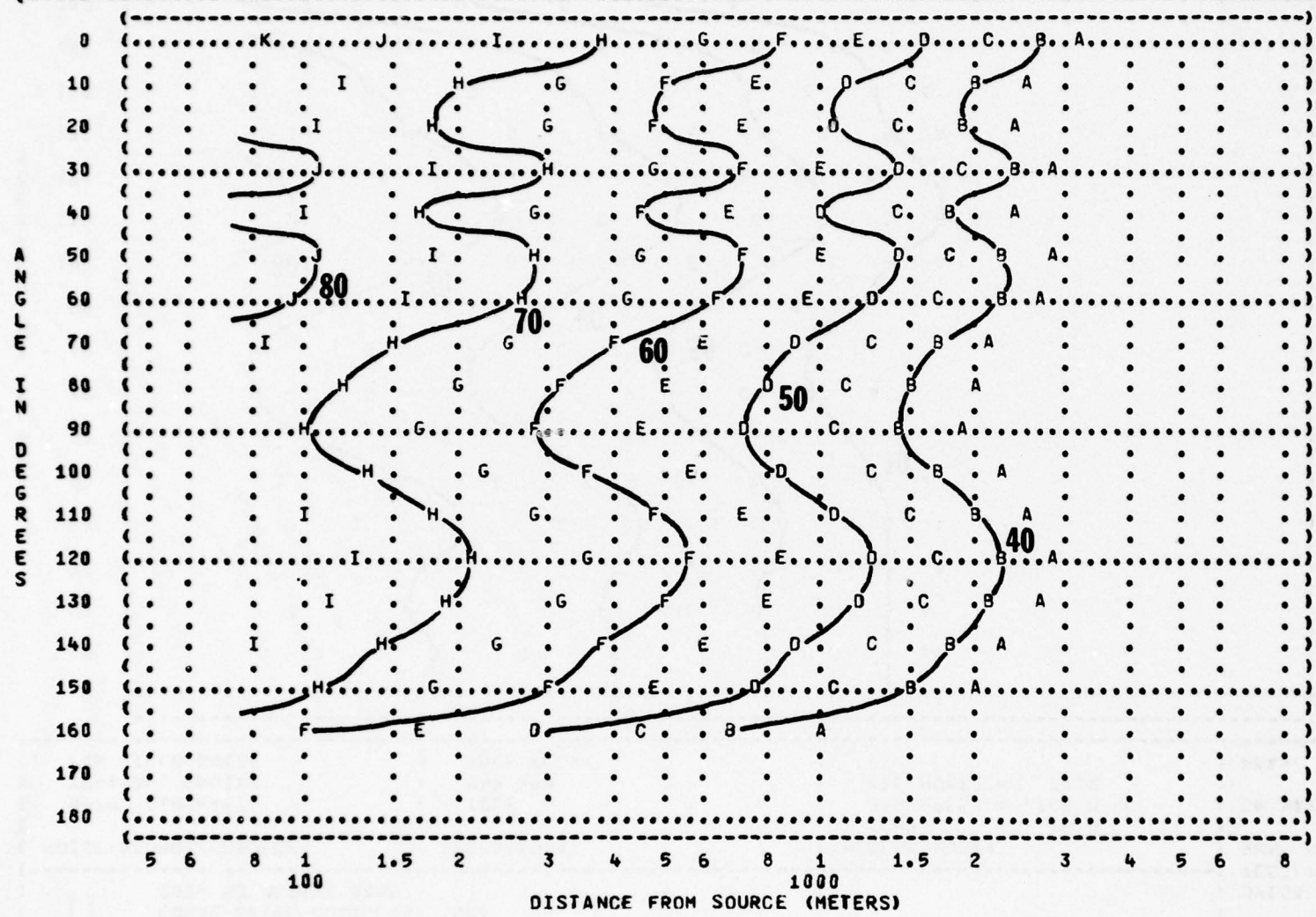


FIGURE: 11

SOUND PRESSURE LEVEL (SPL)
EQUAL LEVEL CONTOURS (DB)
2000 HZ OCTAVE BAND

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-004
RUN 01
06 MAY 75
PAGE 24

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
IDLE
54% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

POINT	DB
A	35
B	40
C	45
D	50
E	55
F	60
G	65
H	70
I	75
J	80

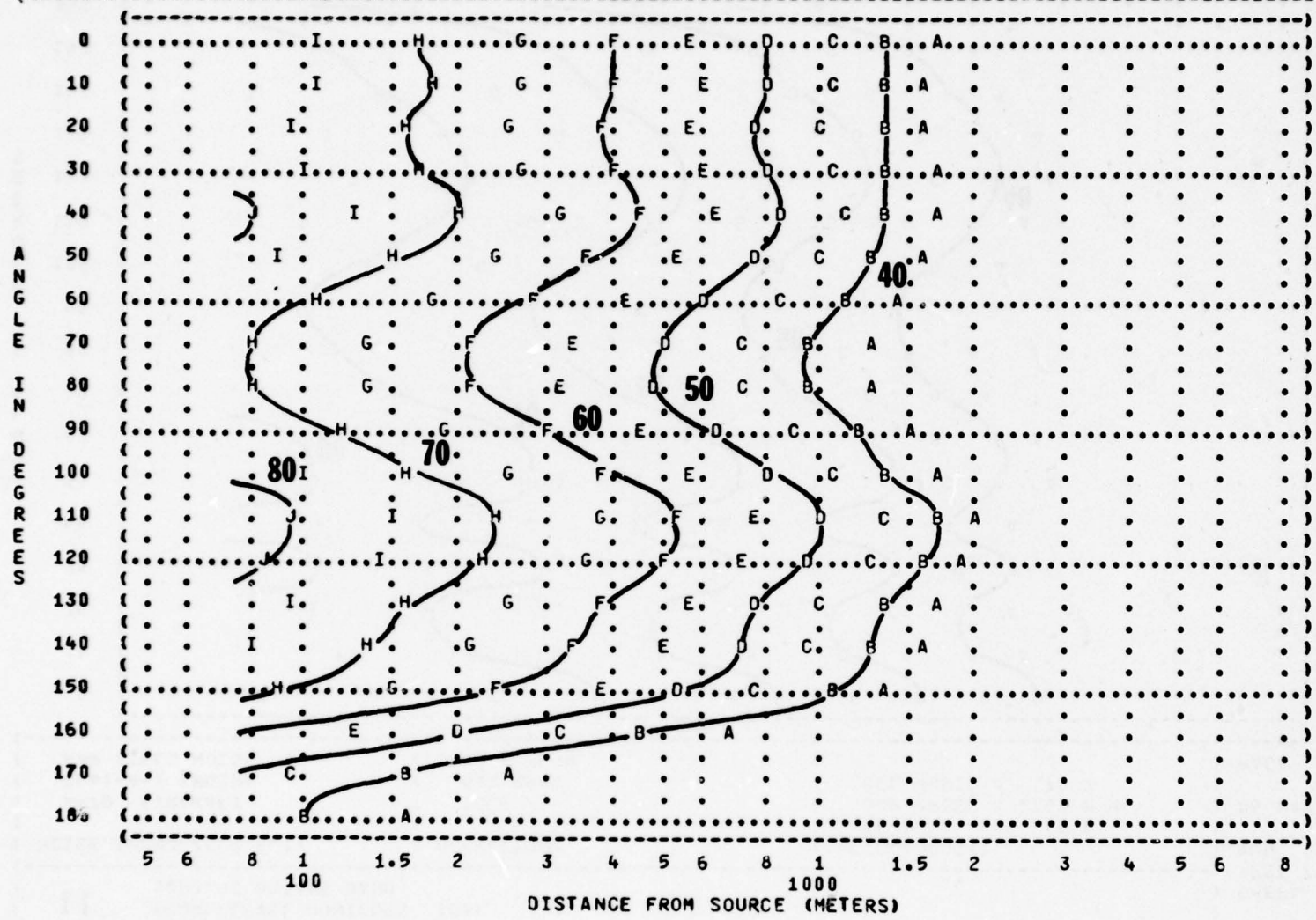


FIGURE 11: SOUND PRESSURE LEVEL (SPL) EQUAL LEVEL CONTOURS (DB) 4000 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT:
A-70 AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
IDLE
54% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-004
RUN 01
06 MAY 75
PAGE 25

POINT	DB
A	35
B	40
C	45
D	50
E	55
F	60
G	65
H	70
I	75
J	80

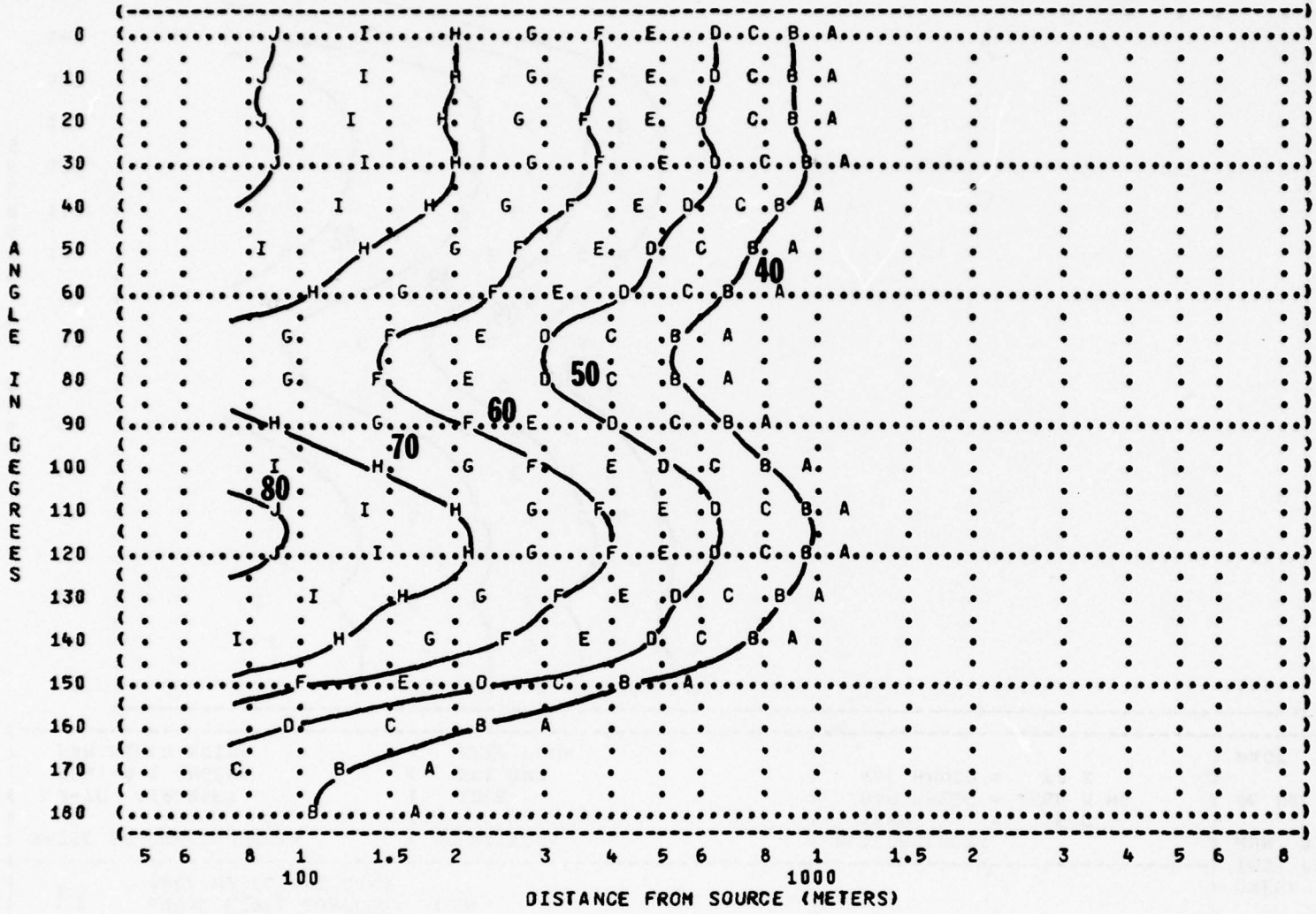


FIGURE 11: SOUND PRESSURE LEVEL (SPL) EQUAL LEVEL CONTOURS (DB) 8000 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
IDLE
54% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-004
RUN 01
06 MAY 75
PAGE 26

POINT	DB
A	35
B	40
C	45
D	50
E	55
F	60
G	65
H	70
I	75

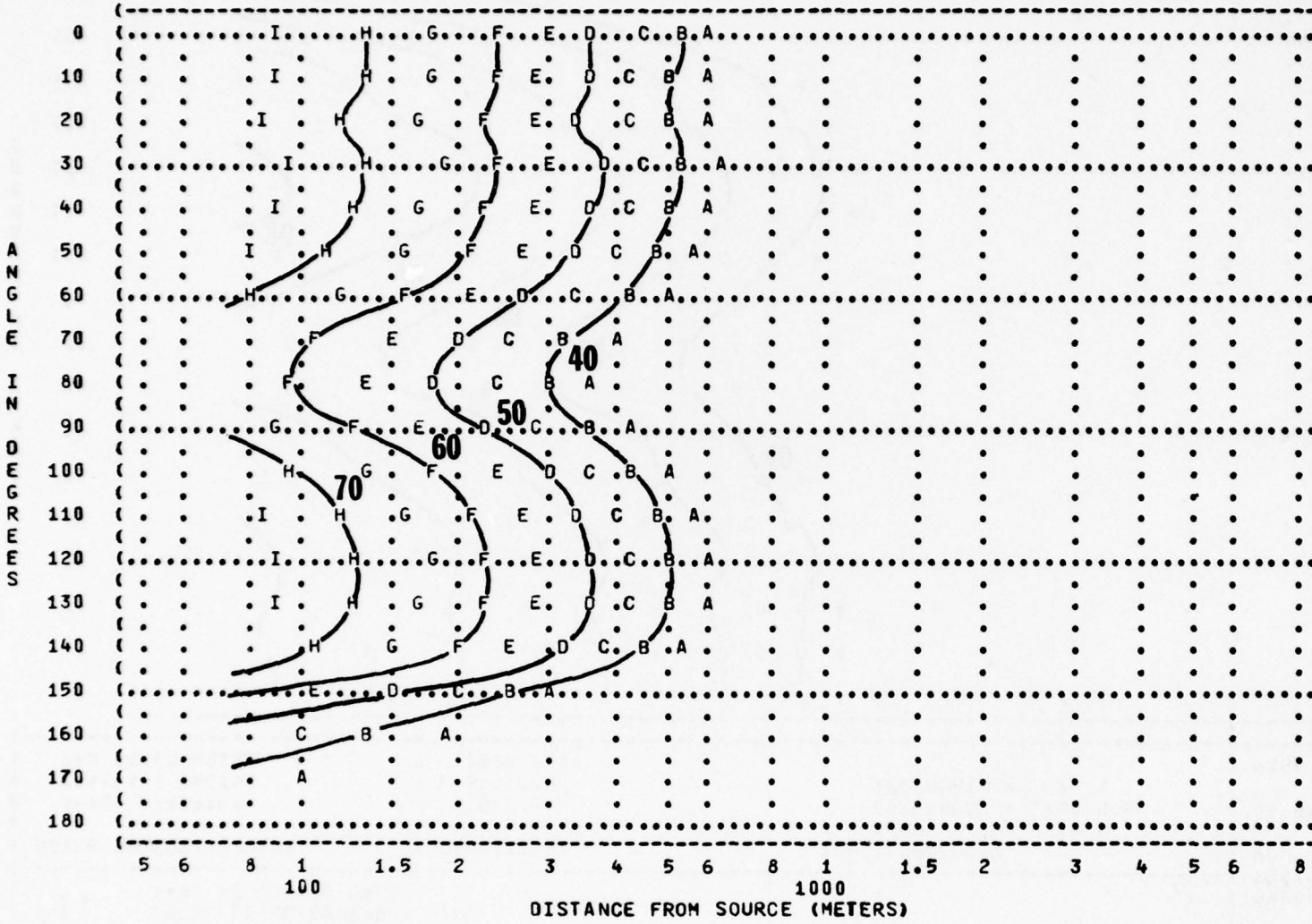


FIGURE 11 SOUND PRESSURE LEVEL (SPL) EQUAL LEVEL CONTOURS (DB) 31.5 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
85% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-004
RUN 02
06 MAY 75
PAGE 18

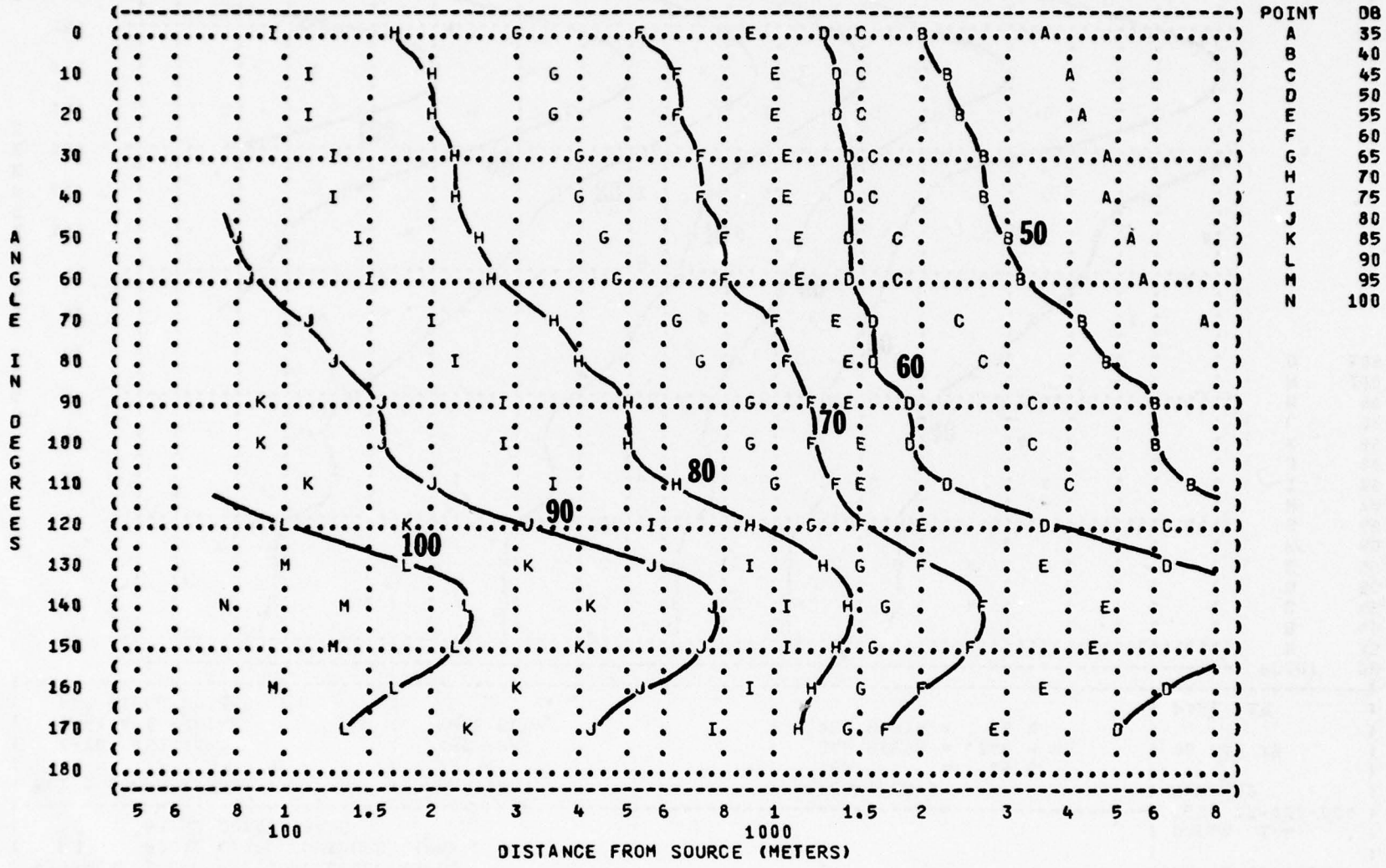


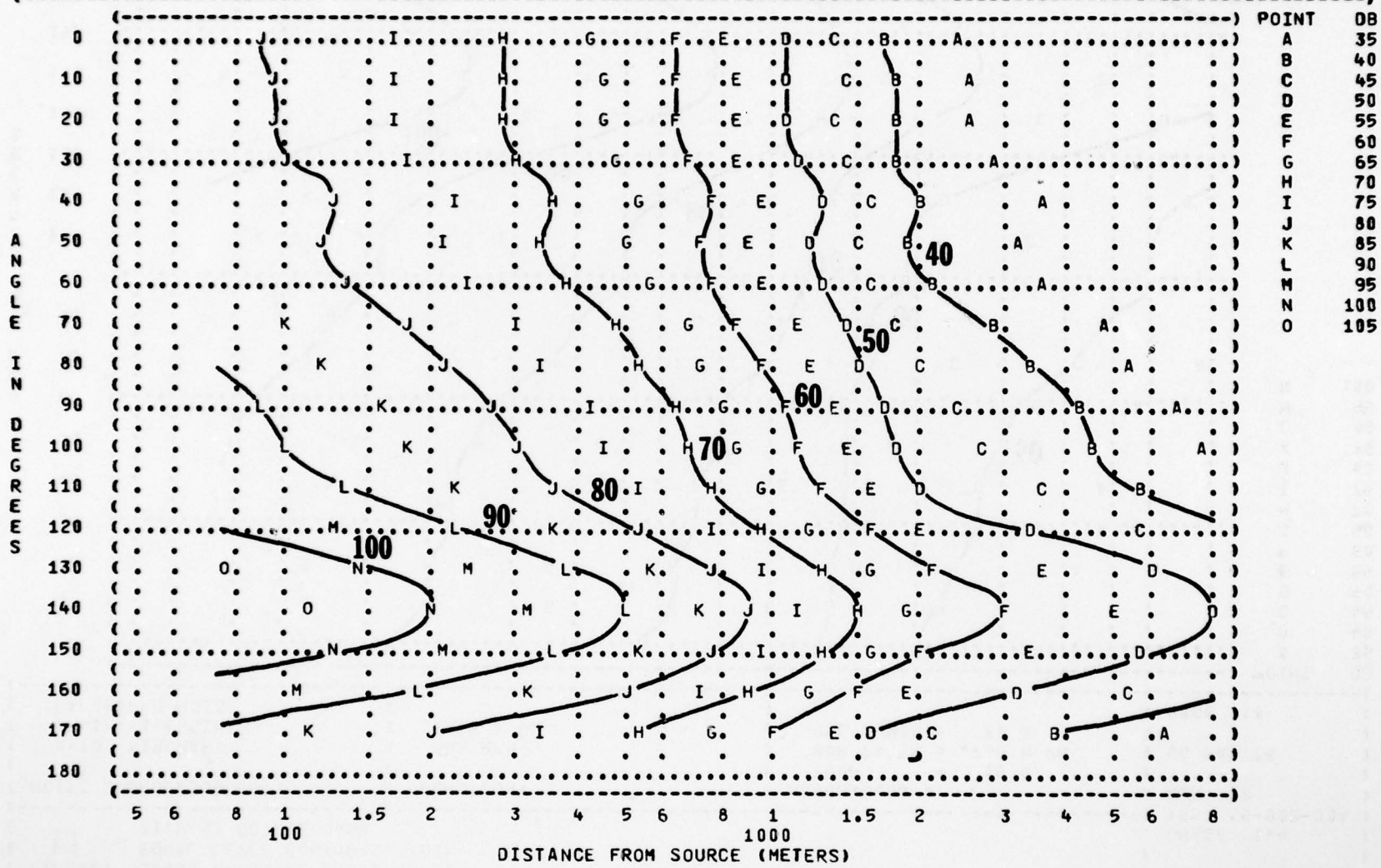
FIGURE 11 SOUND PRESSURE LEVEL (SPL) EQUAL LEVEL CONTOURS (DB) 63 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
85% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-004
RUN 02
06 MAY 75
PAGE 19



POINT	DB
A	35
B	40
C	45
D	50
E	55
F	60
G	65
H	70
I	75
J	80
K	85
L	90
M	95
N	100
O	105

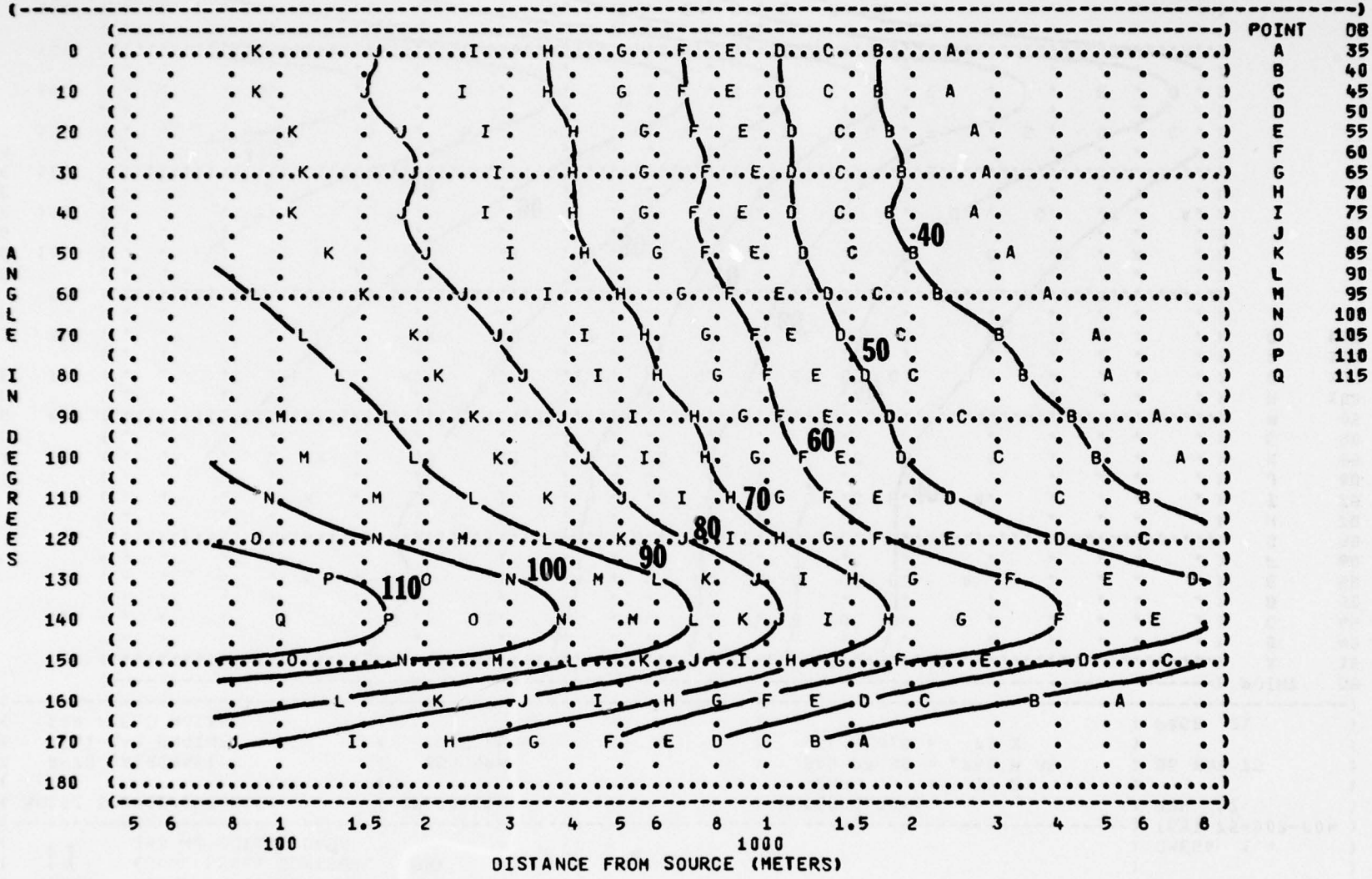
FIGURE 11 SOUND PRESSURE LEVEL (SPL) EQUAL LEVEL CONTOURS (DB) 125 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT:
A-70 AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
85% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-004
RUN 02
06 MAY 75
PAGE 20



POINT	DB
A	35
B	40
C	45
D	50
E	55
F	60
G	65
H	70
I	75
J	80
K	85
L	90
M	95
N	100
O	105
P	110
Q	115

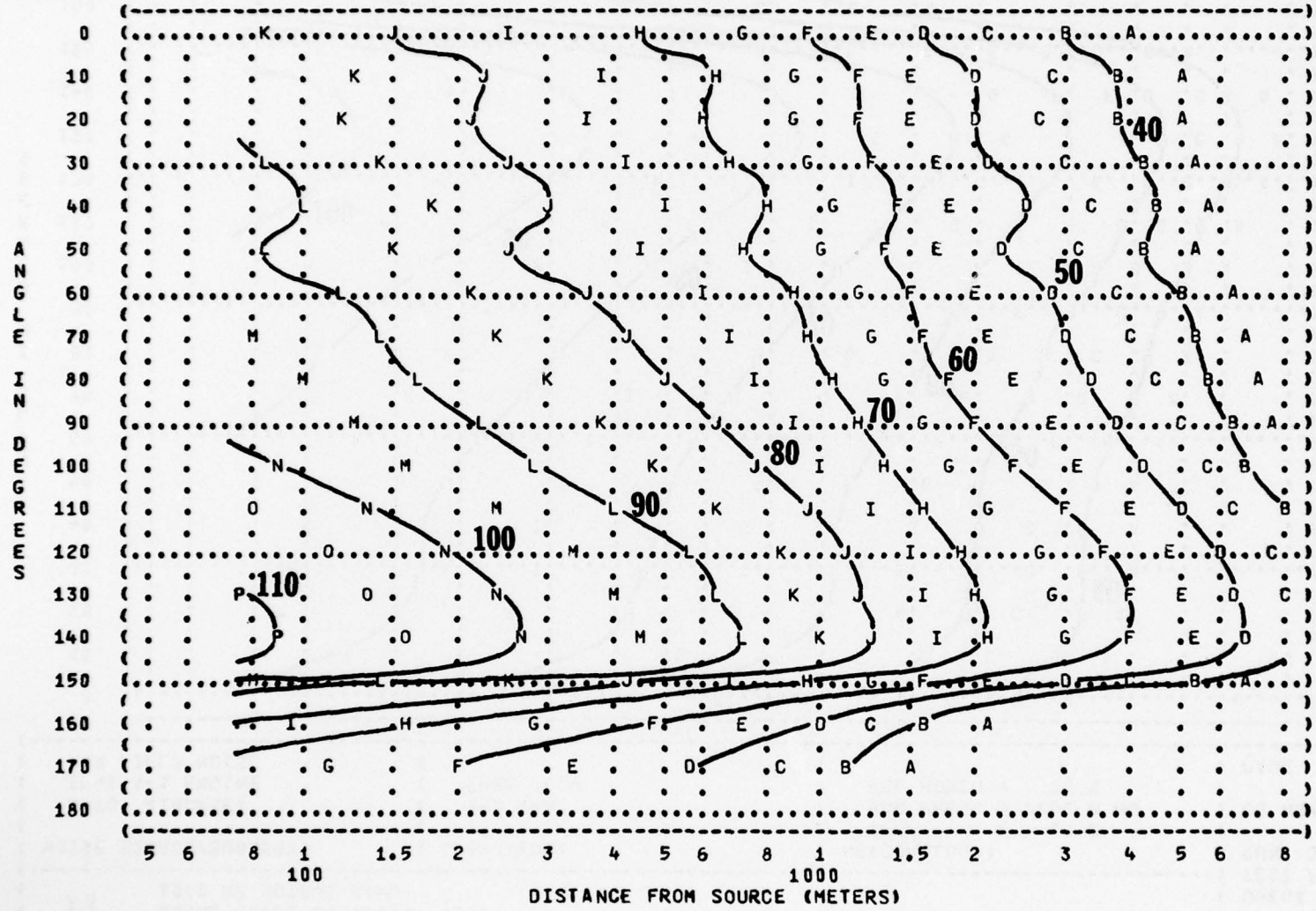
FIGURE 11: SOUND PRESSURE LEVEL (SPL) EQUAL LEVEL CONTOURS (DB) 500 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
85% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-004
RUN 02
06 MAY 75
PAGE 22



POINT	DB
A	35
B	40
C	45
D	50
E	55
F	60
G	65
H	70
I	75
J	80
K	85
L	90
M	95
N	100
O	105
P	110

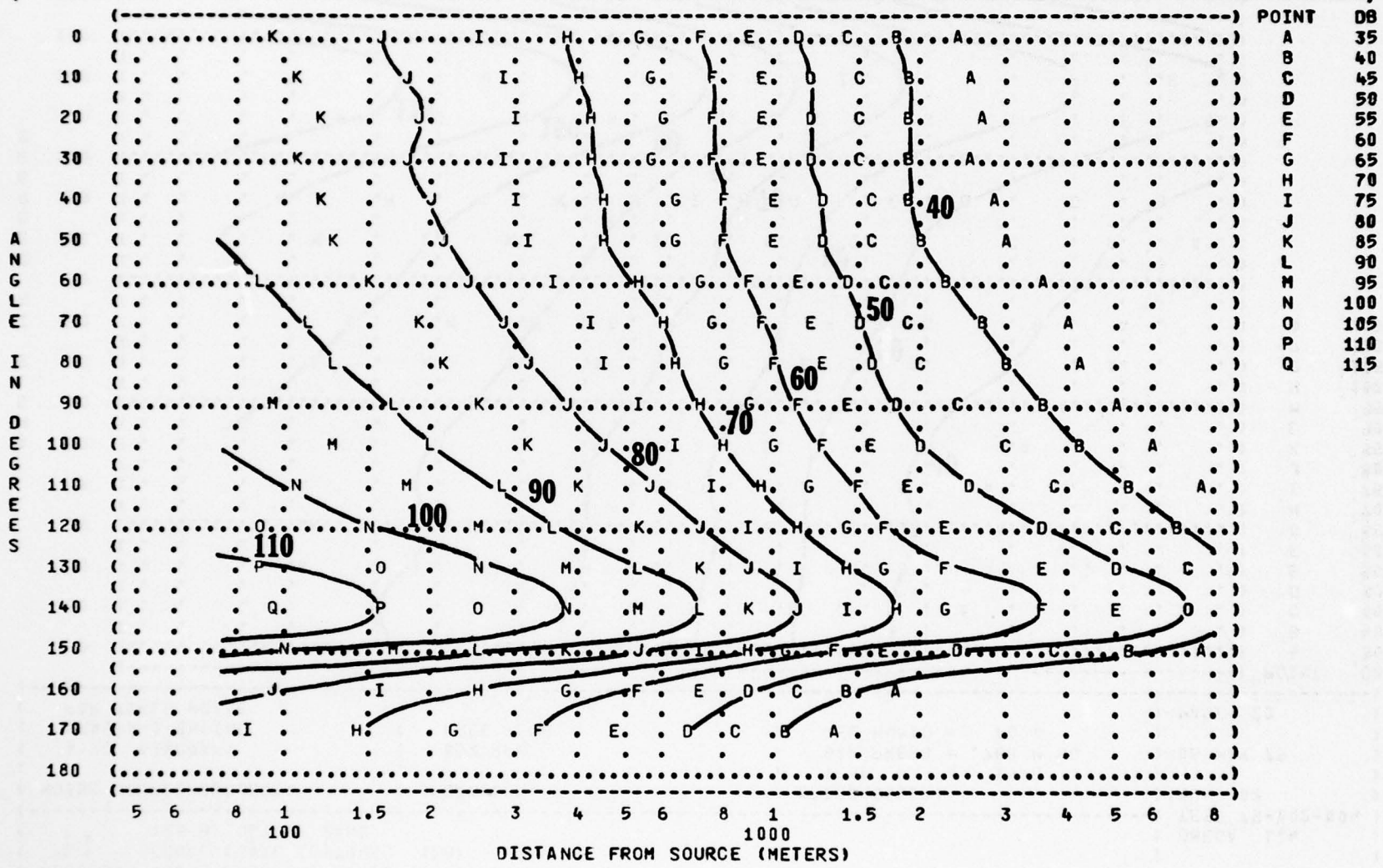
FIGURE: 11 SOUND PRESSURE LEVEL (SPL) EQUAL LEVEL CONTOURS (DB) 250 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
85% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-004
RUN 02
06 MAY 75
PAGE 21



POINT	DB
A	35
B	40
C	45
D	50
E	55
F	60
G	65
H	70
I	75
J	80
K	85
L	90
M	95
N	100
O	105
P	110
Q	115

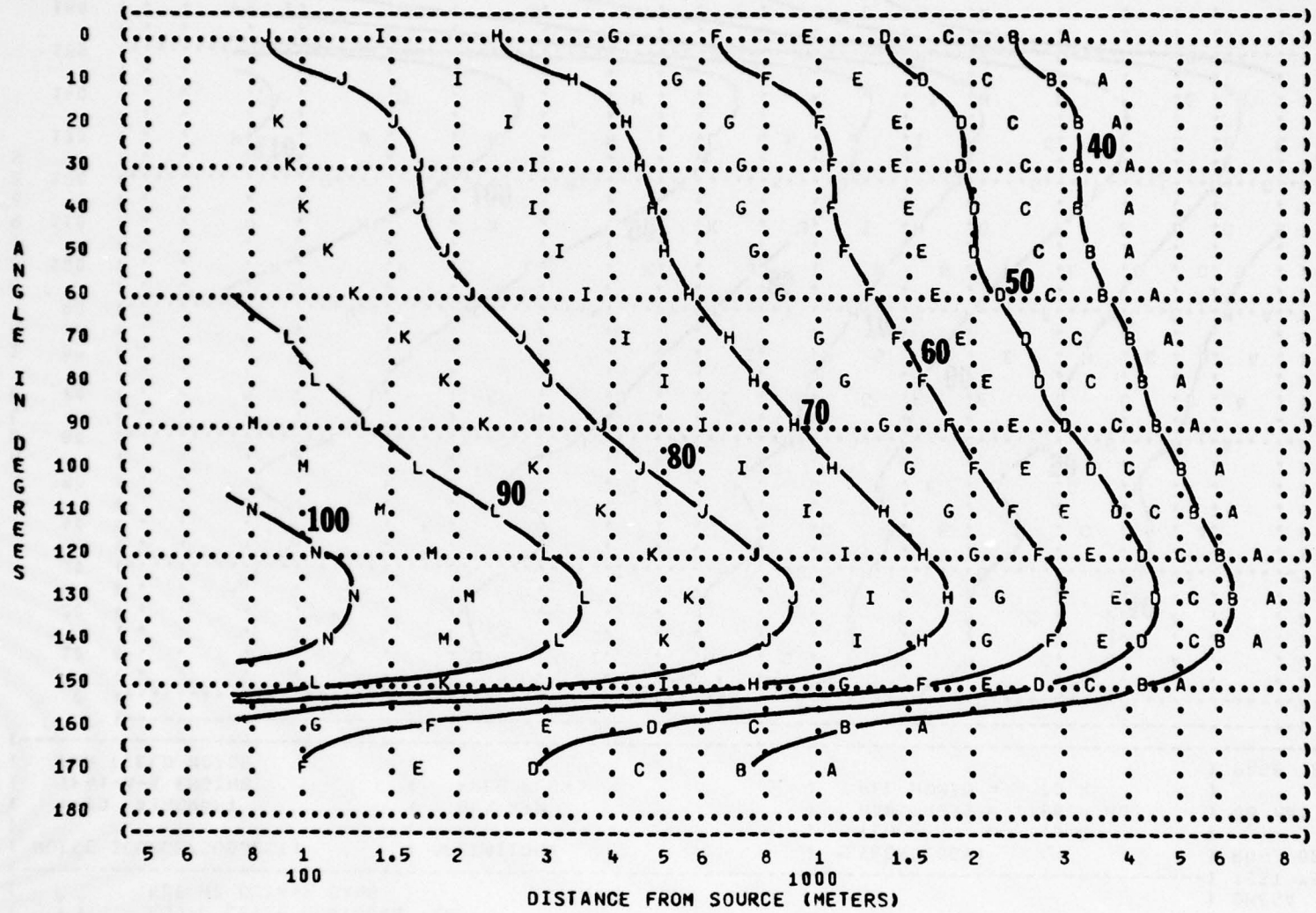
FIGURE: 11 SOUND PRESSURE LEVEL (SPL) EQUAL LEVEL CONTOURS (DB) 1000 HZ OCTAVE BAND

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-004
RUN 02
06 MAY 75
PAGE 23

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
85% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %



POINT	DB
A	35
B	40
C	45
D	50
E	55
F	60
G	65
H	70
I	75
J	80
K	85
L	90
M	95
N	100

FIGURE: 11

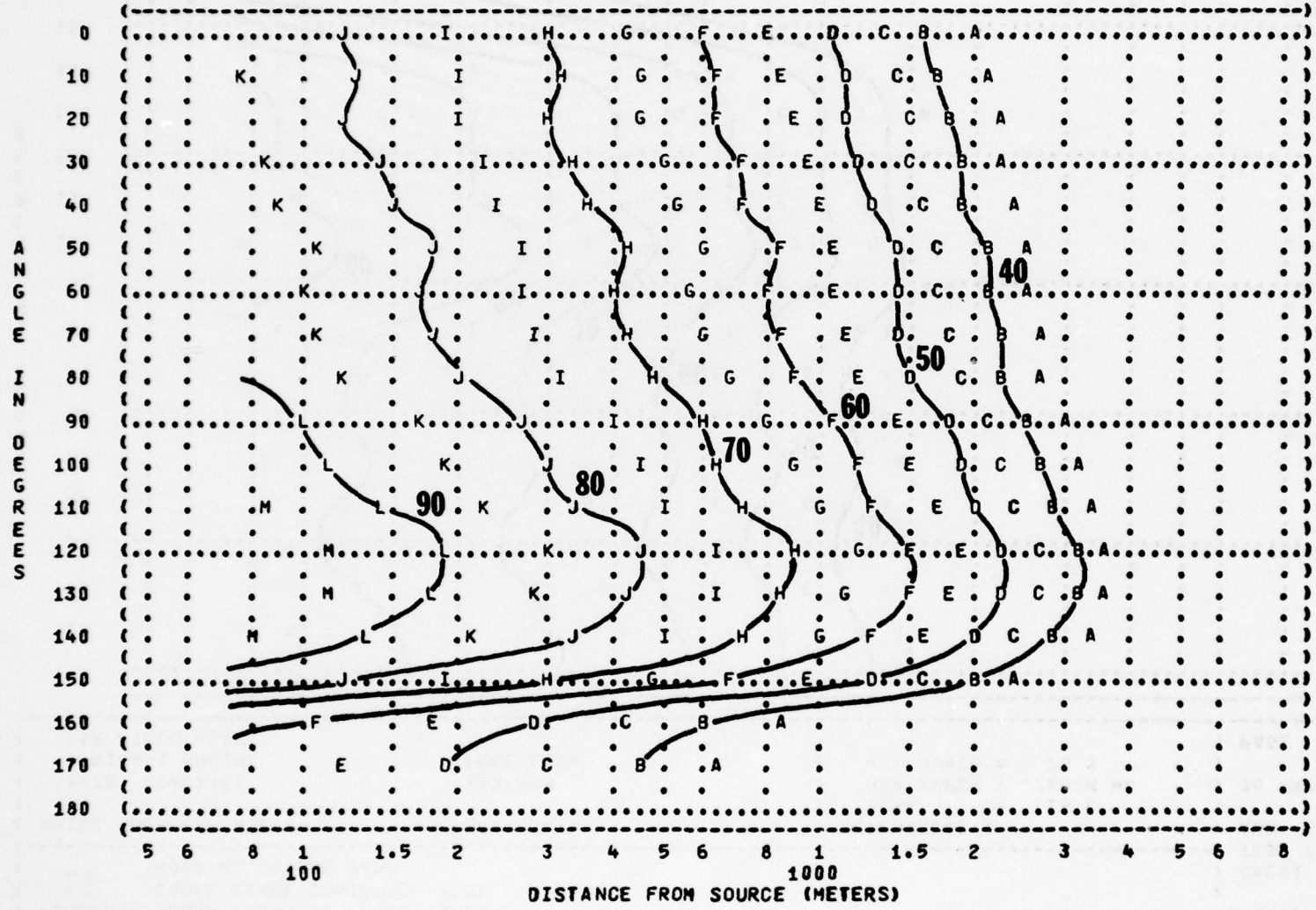
SOUND PRESSURE LEVEL (SPL)
EQUAL LEVEL CONTOURS (DB)
2000 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
85% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-004
RUN 02
06 MAY 75
PAGE 24



POINT	DB
A	35
B	40
C	45
D	50
E	55
F	60
G	65
H	70
I	75
J	80
K	85
L	90
M	95

FIGURE 11 SOUND PRESSURE LEVEL (SPL) EQUAL LEVEL CONTOURS (DB) 4000 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
85% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-004
RUN 02
06 MAY 75
PAGE 25

POINT	DB
A	35
B	40
C	45
D	50
E	55
F	60
G	65
H	70
I	75
J	80
K	85
L	90
M	95

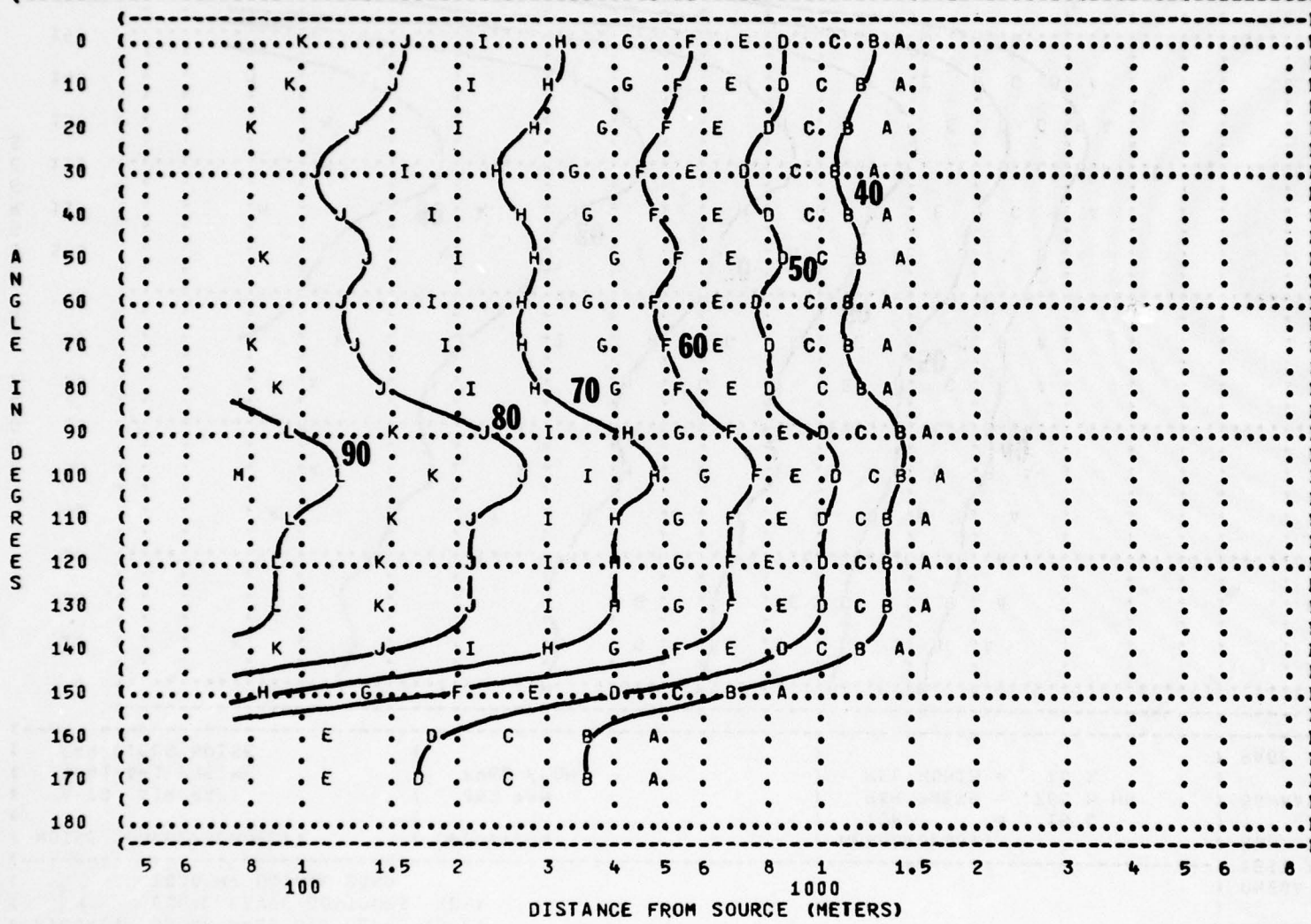


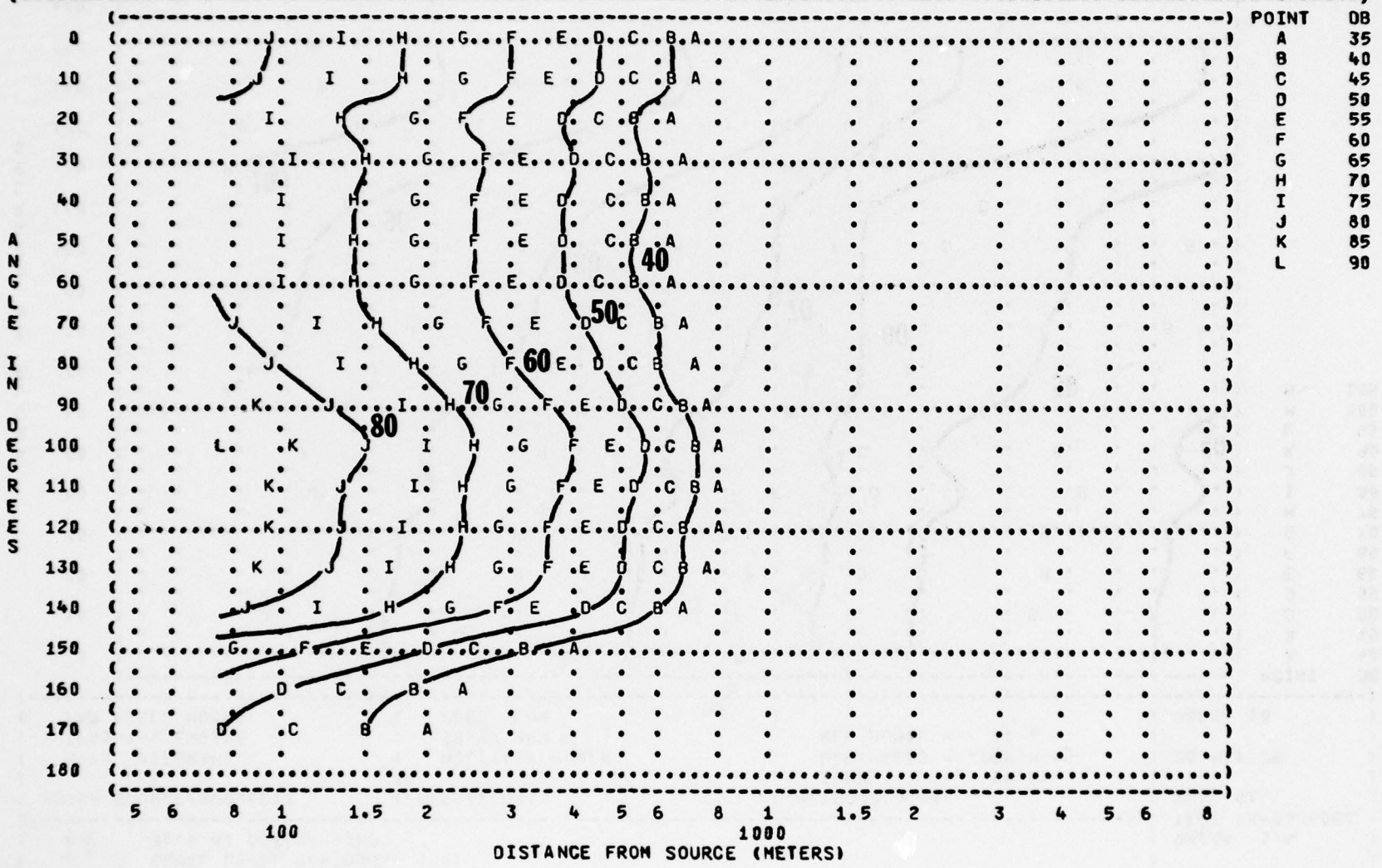
FIGURE 11: SOUND PRESSURE LEVEL (SPL) EQUAL LEVEL CONTOURS (DB) 8000 HZ OCTAVE BAND

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-004
RUN 02
06 MAY 75
PAGE 26

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
85% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %



POINT	DB
A	35
B	40
C	45
D	50
E	55
F	60
G	65
H	70
I	75
J	80
K	85
L	90

FIGURE 11: SOUND PRESSURE LEVEL (SPL) EQUAL LEVEL CONTOURS (DB) 31.5 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
MILITARY POWER
99.5% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-051
RUN 01
20 MAY 75
PAGE 18

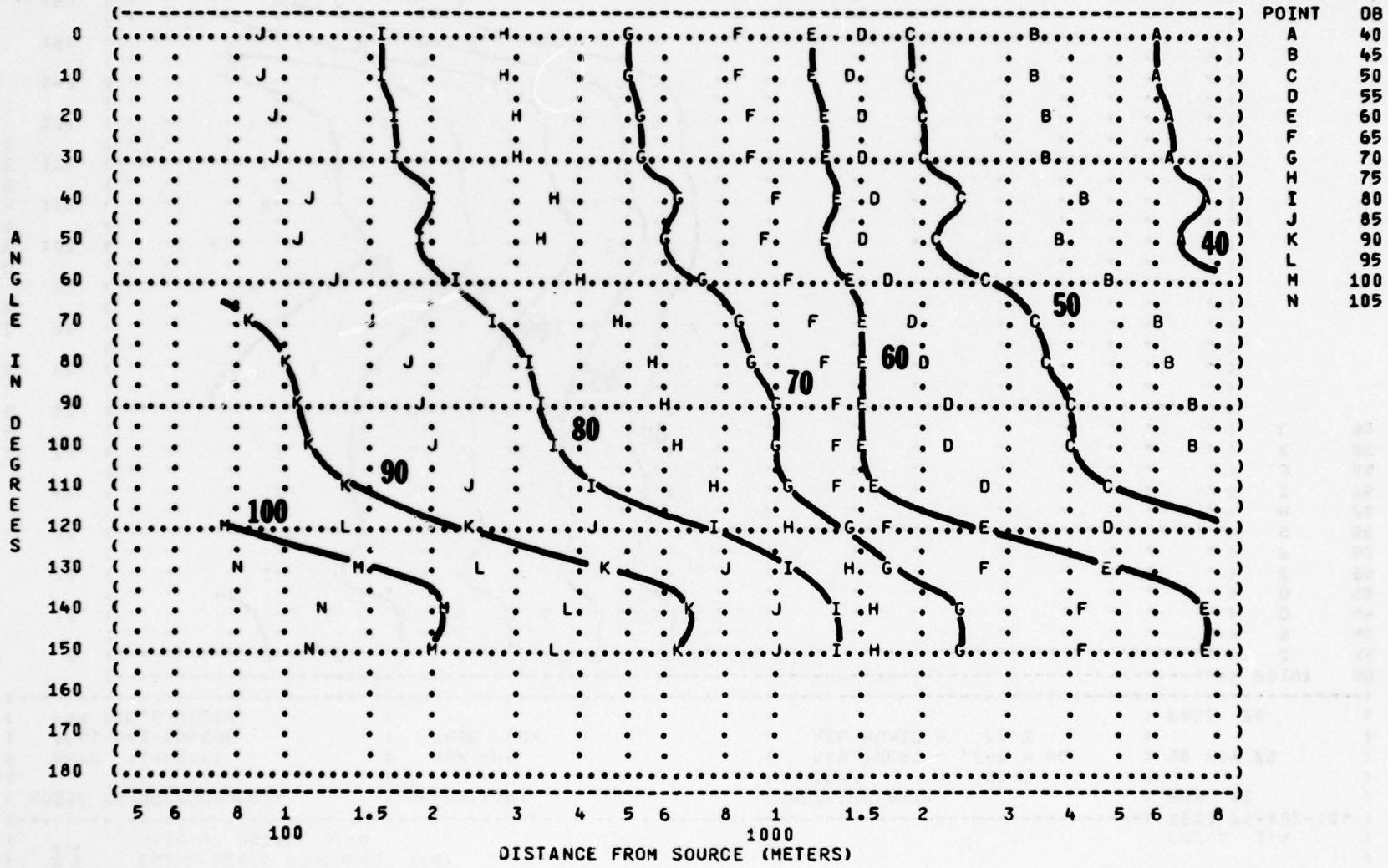


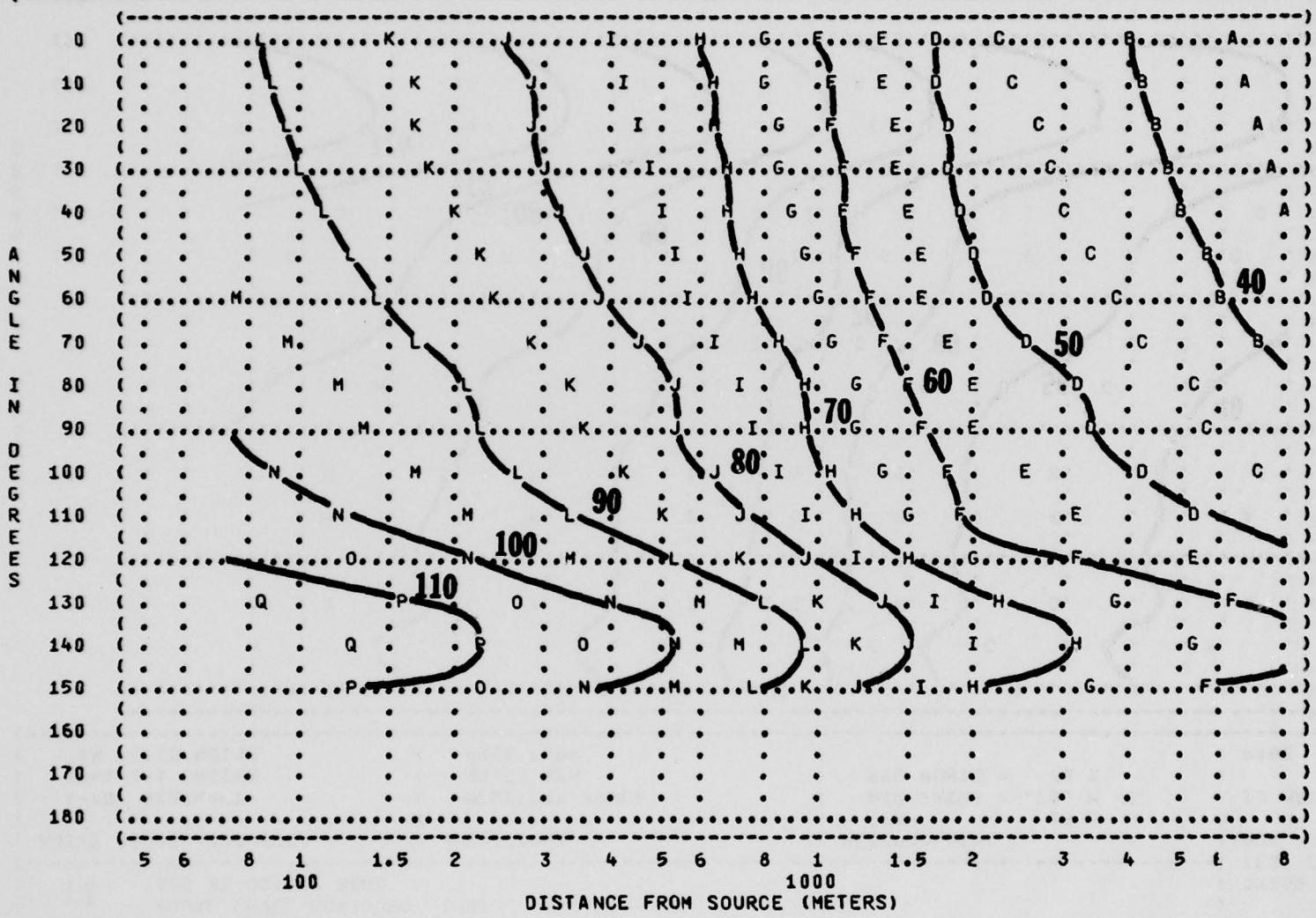
FIGURE 11: SOUND PRESSURE LEVEL (SPL) EQUAL LEVEL CONTOURS (DB) 63 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
MILITARY POWER
99.5% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-051
RUN 01
20 MAY 75
PAGE 19



POINT	DB
A	35
B	40
C	45
D	50
E	55
F	60
G	65
H	70
I	75
J	80
K	85
L	90
M	95
N	100
O	105
P	110
Q	115

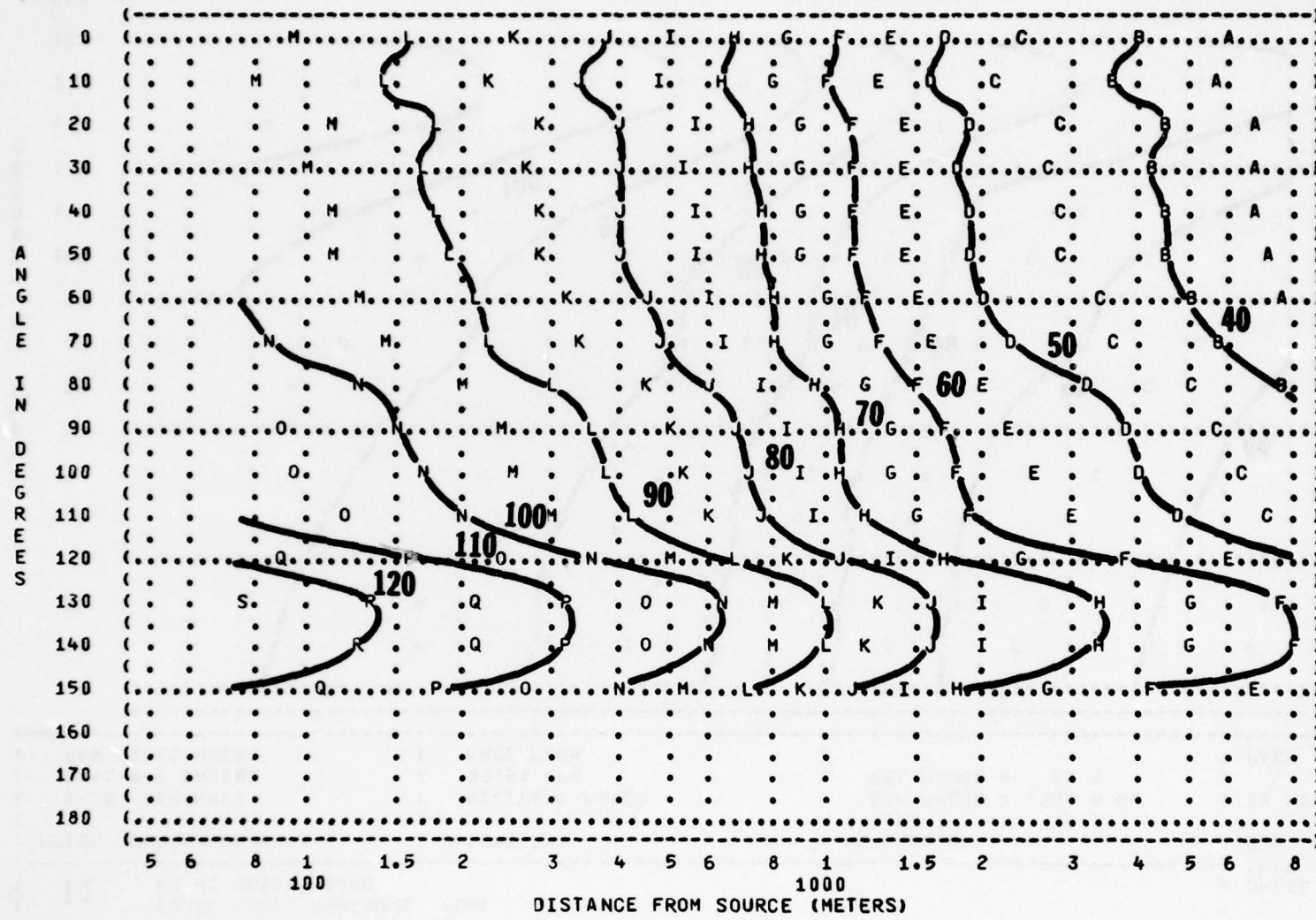
FIGURE 11: SOUND PRESSURE LEVEL (SPL) EQUAL LEVEL CONTOURS (DB) 125 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
MILITARY POWER
99.5% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-051
RUN 01
20 MAY 75
PAGE 20



POINT	DB
A	35
B	40
C	45
D	50
E	55
F	60
G	65
H	70
I	75
J	80
K	85
L	90
M	95
N	100
O	105
P	110
Q	115
R	120
S	125

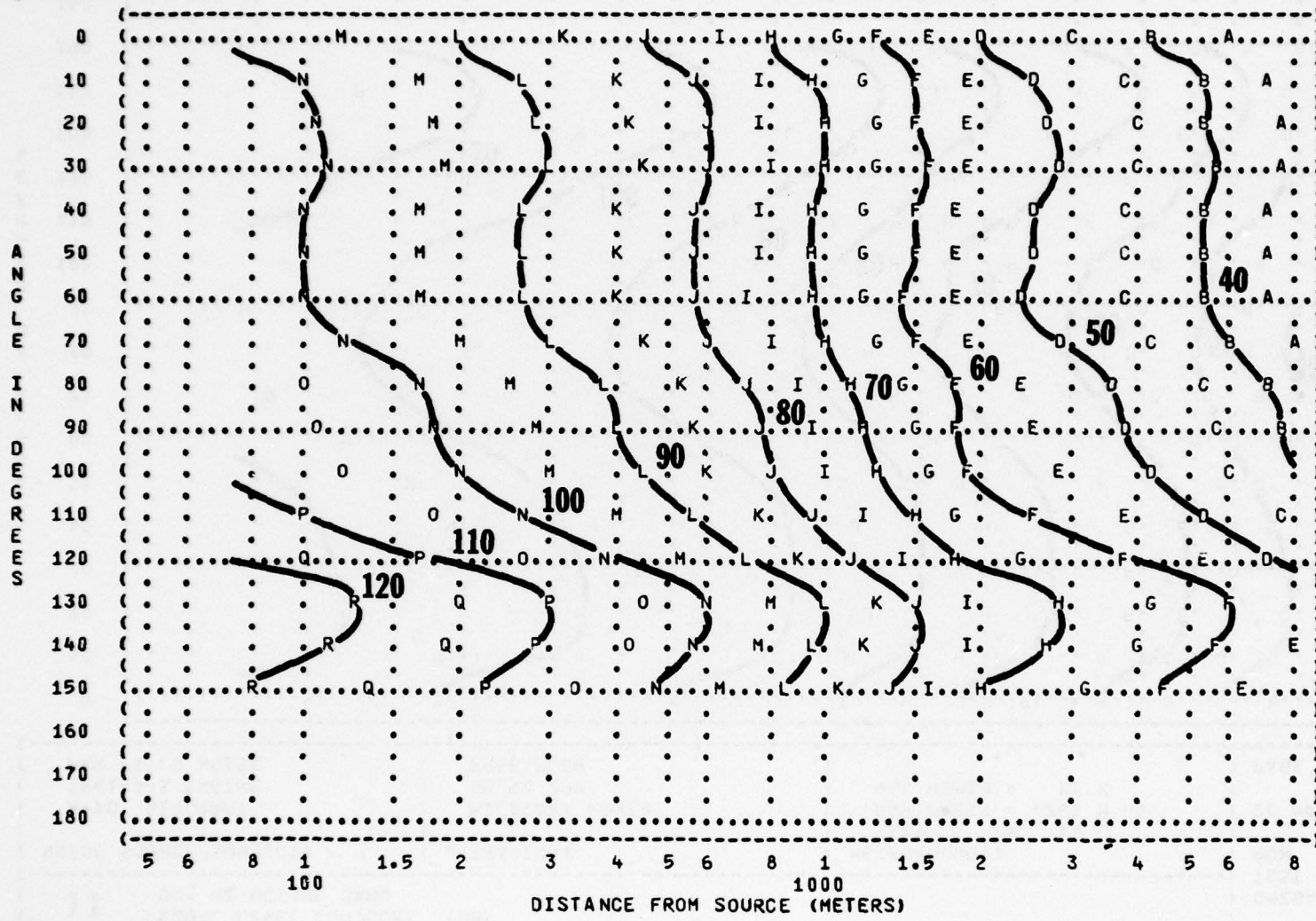
FIGURE: 11 SOUND PRESSURE LEVEL (SPL) EQUAL LEVEL CONTOURS (DB) 250 HZ OCTAVE BAND

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-051
RUN 01
20 MAY 75
PAGE 21

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
MILITARY POWER
99.5% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %



POINT	DB
A	35
B	40
C	45
D	50
E	55
F	60
G	65
H	70
I	75
J	80
K	85
L	90
M	95
N	100
O	105
P	110
Q	115
R	120

FIGURE: 11

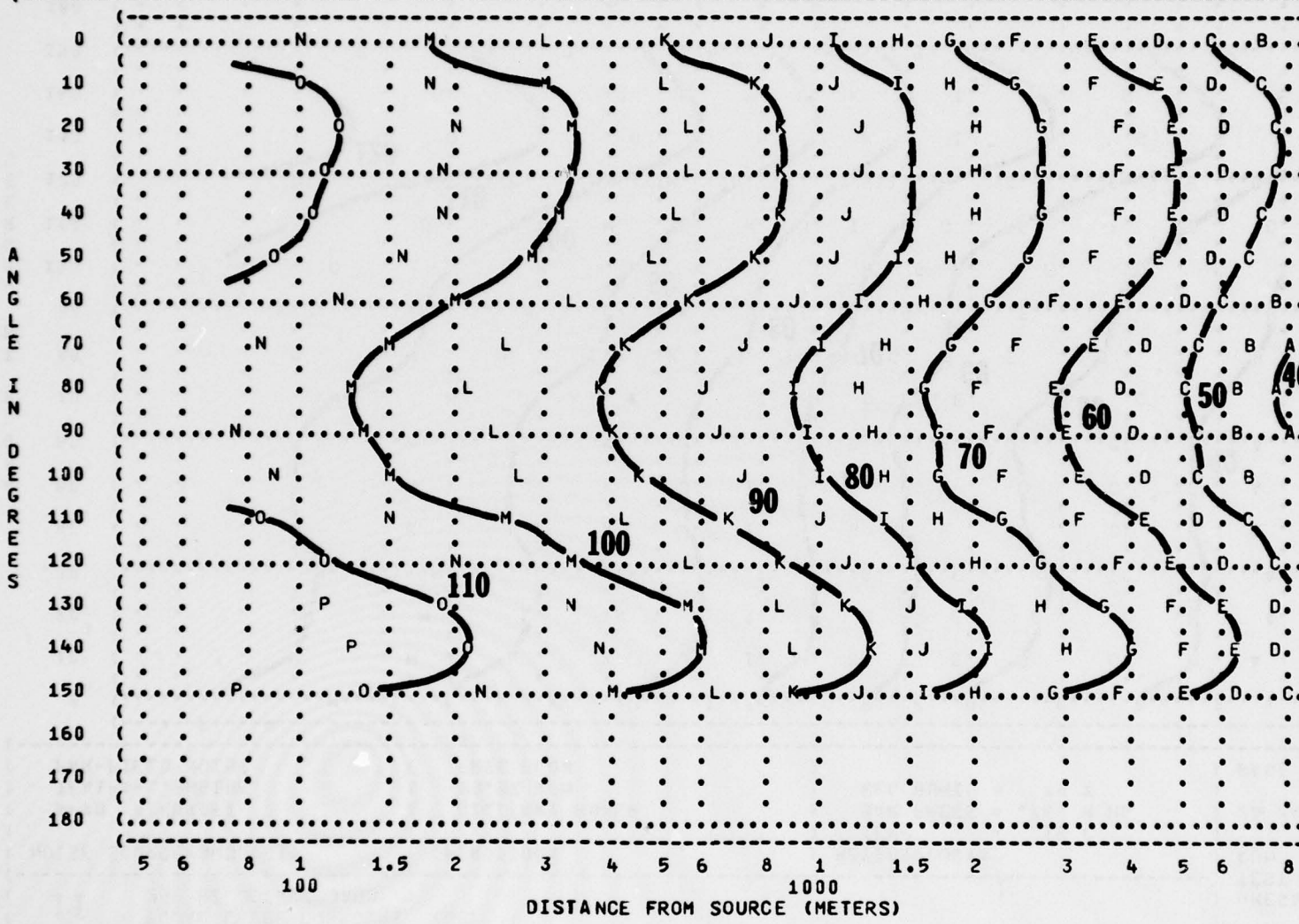
SOUND PRESSURE LEVEL (SPL)
EQUAL LEVEL CONTOURS (DB)
500 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
MILITARY POWER
99.5% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-051
RUN 01
20 MAY 75
PAGE 22



POINT	DB
A	40
B	45
C	50
D	55
E	60
F	65
G	70
H	75
I	80
J	85
K	90
L	95
M	100
N	105
O	110
P	115

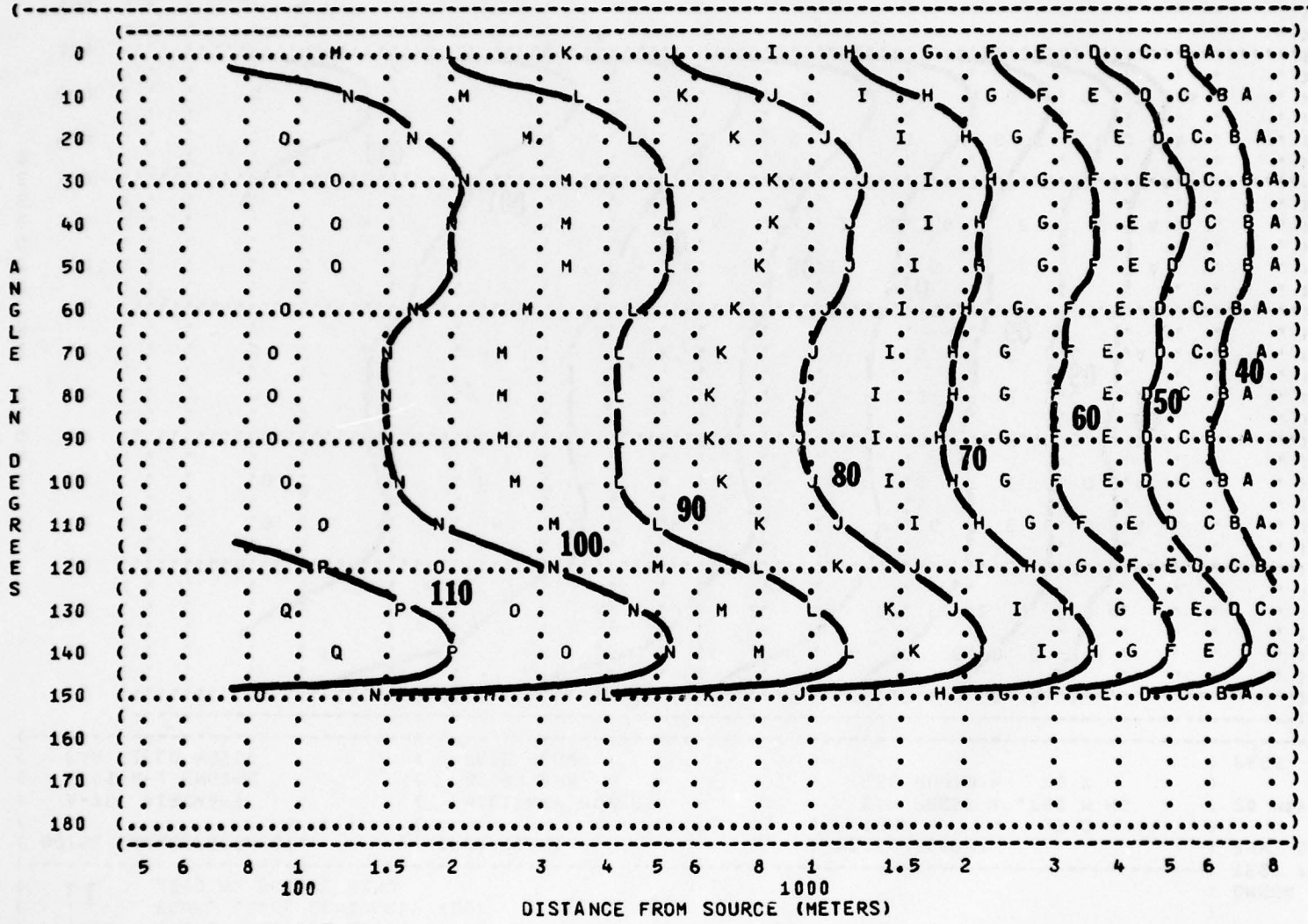
FIGURE 11: SOUND PRESSURE LEVEL (SPL) EQUAL LEVEL CONTOURS (DB) 1000 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT:
A-70 AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
MILITARY POWER
99.5% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-051
RUN 01
20 MAY 75
PAGE 23



POINT	DB
A	35
B	40
C	45
D	50
E	55
F	60
G	65
H	70
I	75
J	80
K	85
L	90
M	95
N	100
O	105
P	110
Q	115

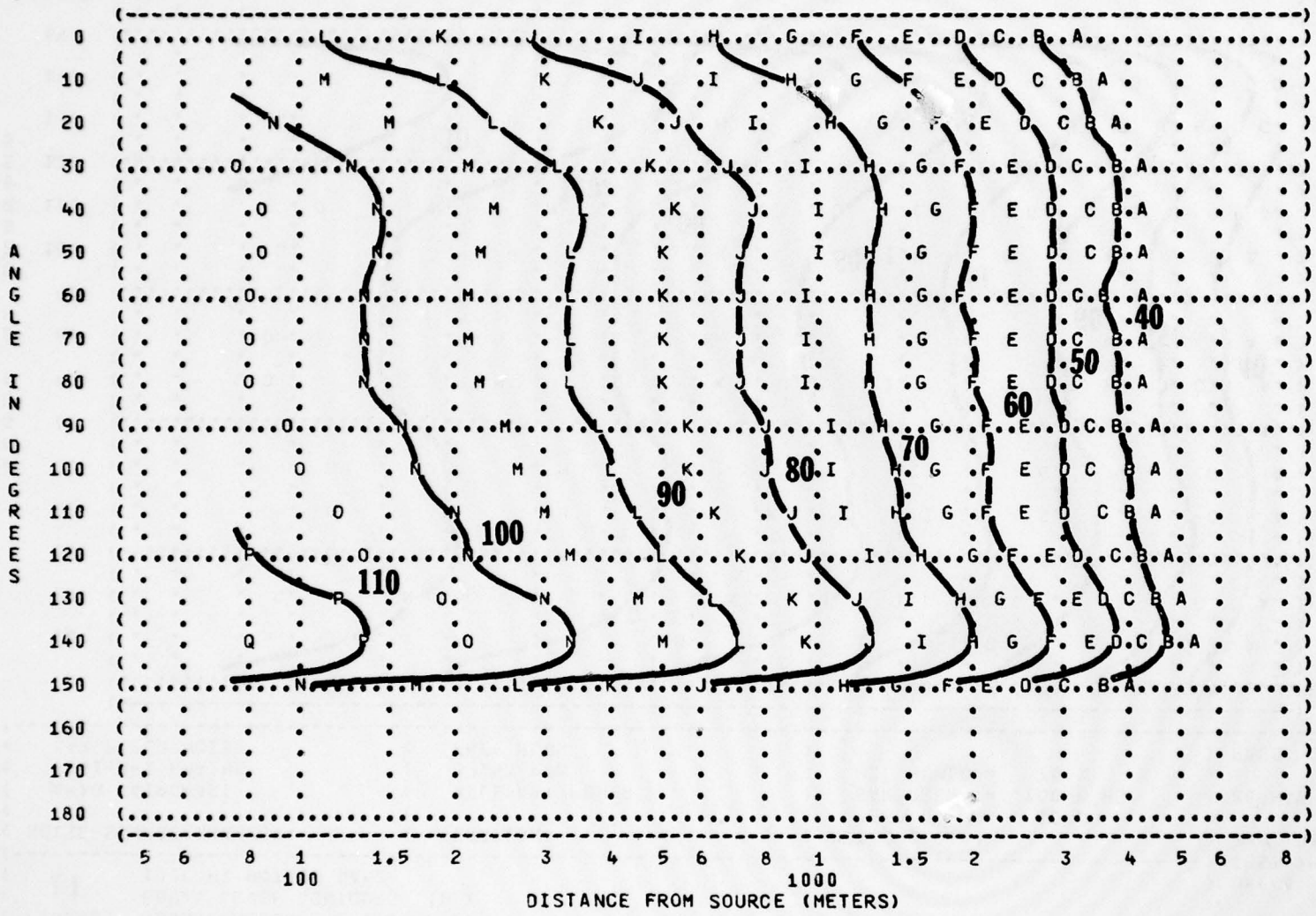
FIGURE 11: SOUND PRESSURE LEVEL (SPL) EQUAL LEVEL CONTOURS (DB) 2000 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
MILITARY POWER
99.5% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-051
RUN 01
20 MAY 75
PAGE 24



POINT	DB
A	35
B	40
C	45
D	50
E	55
F	60
G	65
H	70
I	75
J	80
K	85
L	90
M	95
N	100
O	105
P	110
Q	115

FIGURE 11

SOUND PRESSURE LEVEL (SPL)
EQUAL LEVEL CONTOURS (DB)
4000 HZ OCTAVE BAND

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-051
RUN 01
20 MAY 75
PAGE 25

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
MILITARY POWER
99.5% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

POINT	DB
A	35
B	40
C	45
D	50
E	55
F	60
G	65
H	70
I	75
J	80
K	85
L	90
M	95
N	100
O	105
P	110

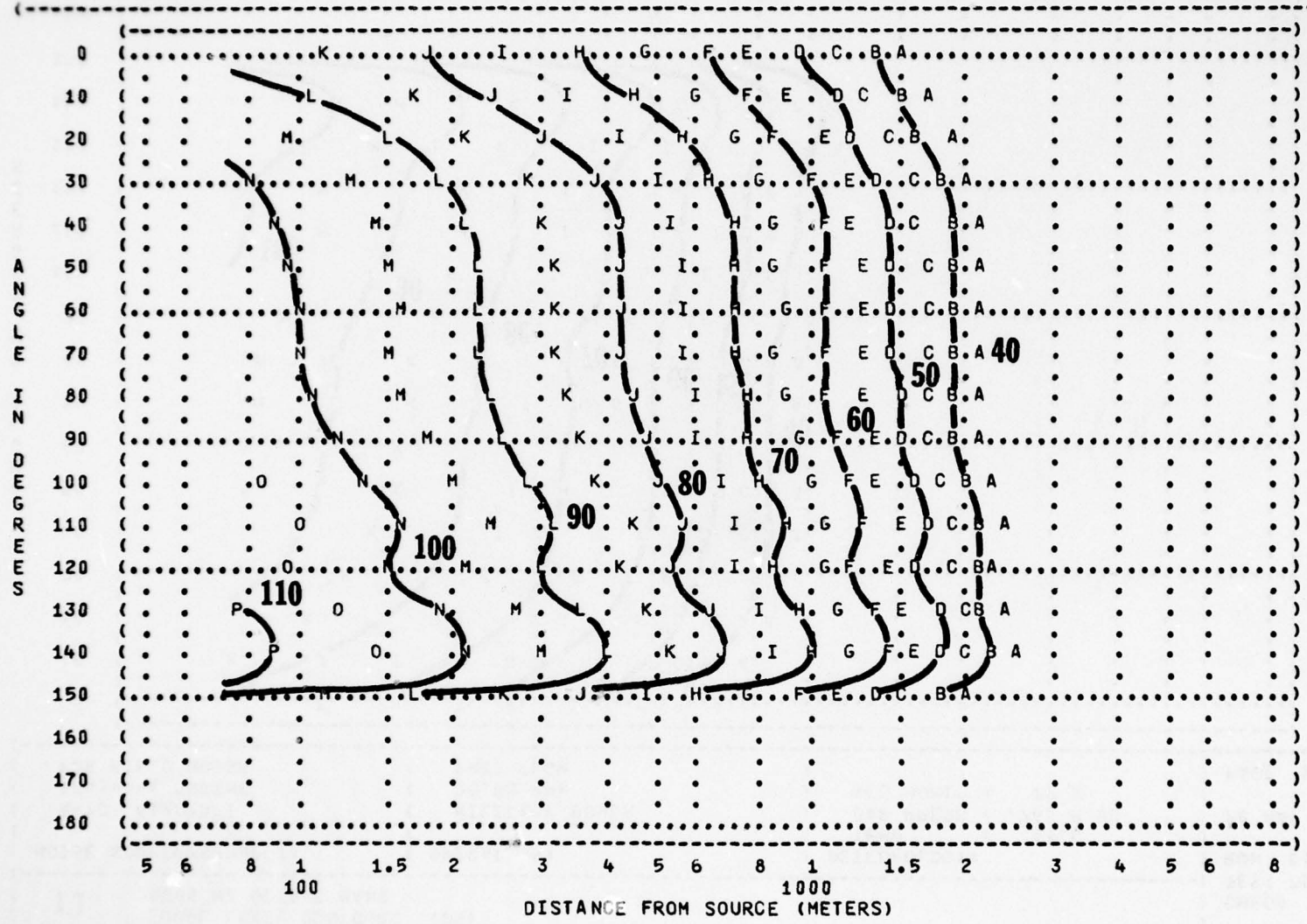


FIGURE: 11

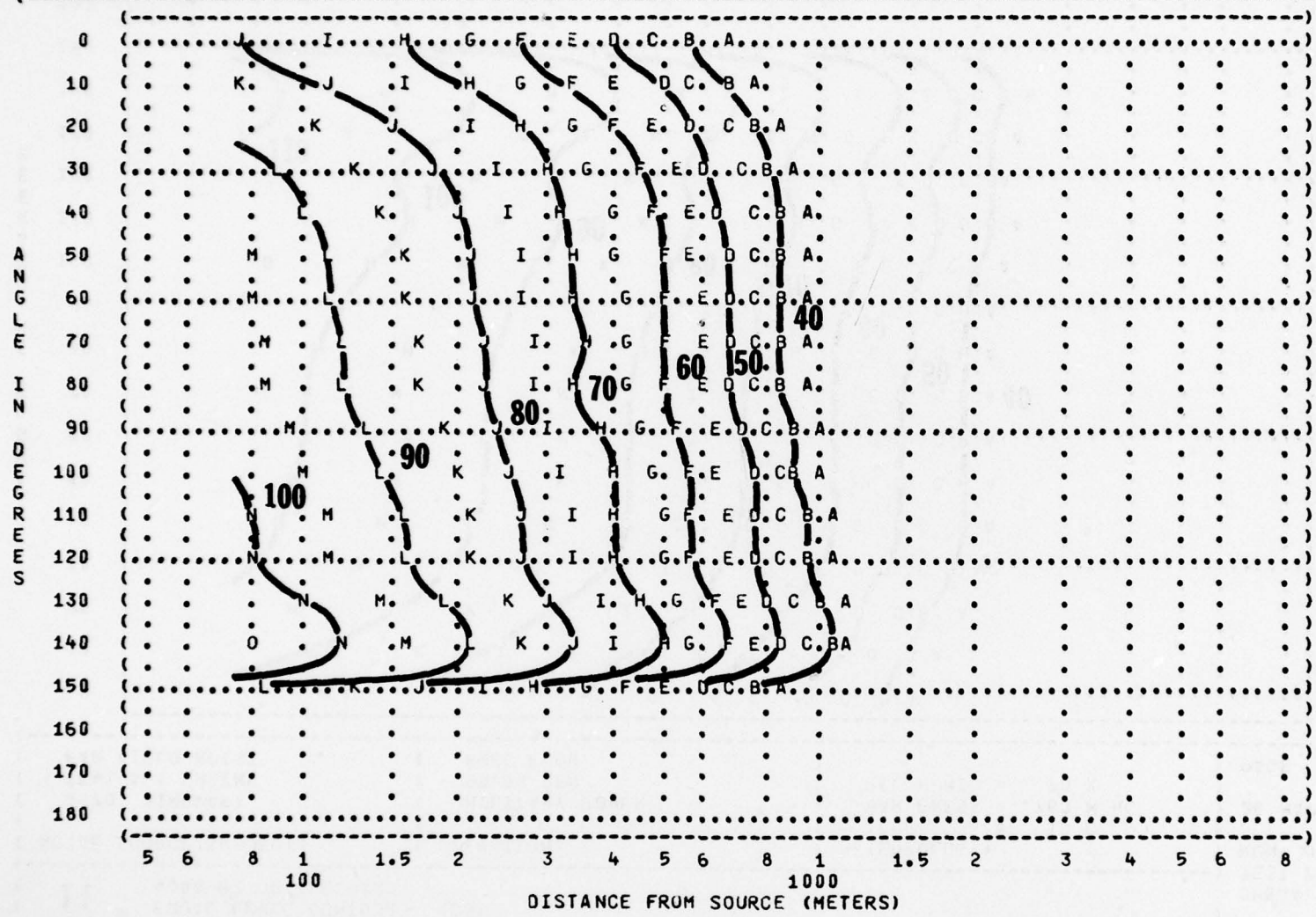
SOUND PRESSURE LEVEL (SPL)
EQUAL LEVEL CONTOURS (DB)
8000 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT:
A-7D AIRCRAFT
TF41-A-1 ENGINE
FAR FIELD NOISE

OPERATION:
MILITARY POWER
99.5% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-051
RUN 01
20 MAY 75
PAGE 26



POINT	DB
A	35
B	40
C	45
D	50
E	55
F	60
G	65
H	70
I	75
J	80
K	85
L	90
M	95
N	100
O	105

*U.S.Government Printing Office: 1977 — 757-080/242