



①2 LEVEL III

AMRL-TR-75-50  
Volume 128



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**USAF BIOENVIRONMENTAL NOISE DATA HANDBOOK**  
**Volume 128**  
**T-38 Aircraft In The AF32A-18 Noise Suppressor,**  
**Near And Far-Field Noise**

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This technical report has been reviewed and is approved for publication.

**FOR THE COMMANDER**



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



→ band sound pressure levels, C-weighted and A-weighted sound levels, preferred speech interference level, perceived noise level, and limiting times 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 distance 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 723107, Technology to Define and Assess Environmental Quality of Noise From Air Force Operations.

The author gratefully acknowledges Mr. John Cole and Mr. Robert Powell for their assistance in preparing this report, Mr. Jerry Speakman and Capt Richard Gorman for their assistance in acquiring the raw data, Mr. Keith Kettler, Mr. Henry Mohlman and Mr. Fred Lampley of the University of Dayton for assistance in the mechanics of data processing, and Mrs. Peggy Massie for assistance in typing this report.

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## INTRODUCTION

The T-38A is a twin-engine, double-seat, supersonic trainer powered by two General Electric Company J85-GE-5A engines. The aircraft is manufactured by Northrop Corporation and code named the Talon. The AF32A-18 noise suppressor was built by General Acoustics Corporation to provide noise level reduction for all T-38 aircraft during ground runup operations.

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 T-38 aircraft operating in the AF32A-18 noise suppressor.

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 1 and 2) 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.

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 AF32A-18 noise suppressor system during ground runup operations of the T-38 aircraft. For these tests the aircraft was located in the suppressor at Laughlin AFB with no significant reflecting surfaces in the vicinity except the ground plane. Table 1 gives the surface meteorological conditions and the five 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 one-third octave band root-mean-square sound pressure using a 4- or 8-second integration time to derive a power-averaged level for each location. Figure 1 shows the four near-field locations where ground crew are usually located for maintenance and/or preflight checkout operations. Estimates of noise levels at other locations are difficult in the near-field since the noise source is spatially 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 T-38 aircraft in the AF32A-18 noise suppressor 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**

T-38 Aircraft Suppressor Ground Runup, Laughlin AFB Survey  
 Test #79-733-001, 20 February 1979

*Ground Crew Location*

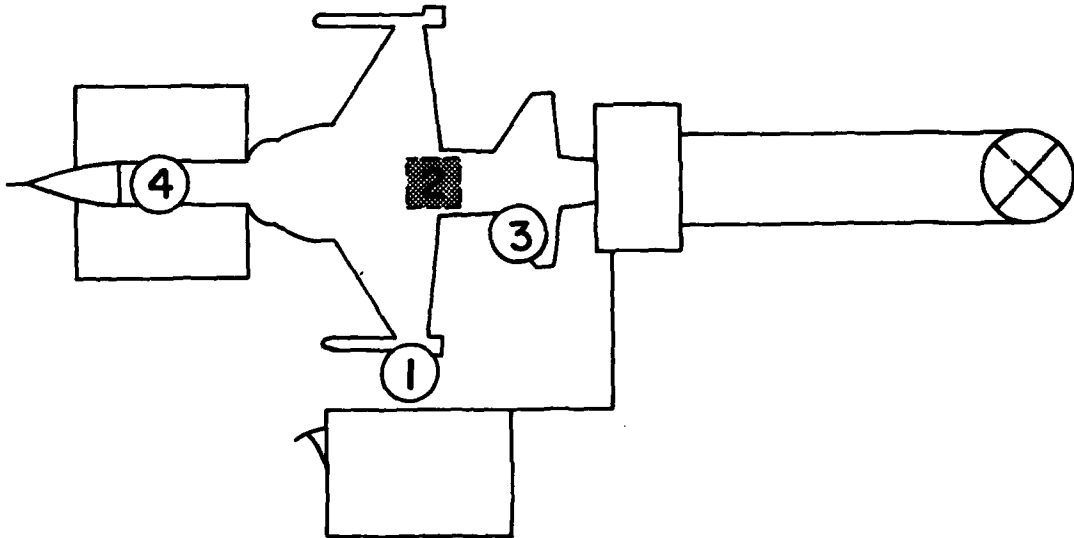
- |   |                             |
|---|-----------------------------|
| 1 | Wing Tip Position           |
| 2 | Leak Check Position         |
| 3 | Engine Maintenance Position |
| 4 | Cockpit (Open Canopy)       |

*Aircraft Engine Operation*

- |   |   |
|---|---|
| A | Idle Power (50% RPM), 500 LBS/HR, Fuel Flow       |
| B | 80% RPM, 1850 LBS/HR, Fuel Flow                   |
| C | 90% RPM, 1900 LBS/HR, Fuel Flow                   |
| D | Military Power (100% RPM), 2200 LBS/HR, Fuel Flow |
| E | Afterburner Power, 2200 LBS/HR, Fuel Flow         |

*Meteorology*

- |              |                 |
|--------------|-----------------|
| Temperature  | 9 C             |
| Bar Pressure | .760 M Hg       |
| Rel Humidity | 86 %            |
| Wind — Speed | 2 M/Sec (4 KTS) |
| — Direction  | 120 Deg         |



**Figure 1. Near-Field Measurement Locations at Laughlin AFB TX**

## FAR-FIELD NOISE

### MEASUREMENTS

AMRL acquired far-field data during a 1-2-hour test period, thus keeping similar meteorological conditions. Figure 2 shows the ground runup pad, ground cover, aircraft orientation and the 19 microphone measurement sites on a semicircle. The center of the 100 meter radius semicircle used in surveying the AF32A-18 noise suppressor was on the ground directly below the center of the exhaust stack.

Table 4 provides cockpit readouts of engine 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 their source where the sound wave-fronts spherically diverge and the noise source may be regarded as a point source.

A portable microphone/tape-recorder system was used to sequentially record the noise at each far-field location. The microphone was attached to a hand held pole, pointed at the source ( $0^\circ$  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. These 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.

### 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 ( $15^\circ\text{C}$  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 T-38 aircraft operating in the AF32A-18 noise suppressor in a standard format.

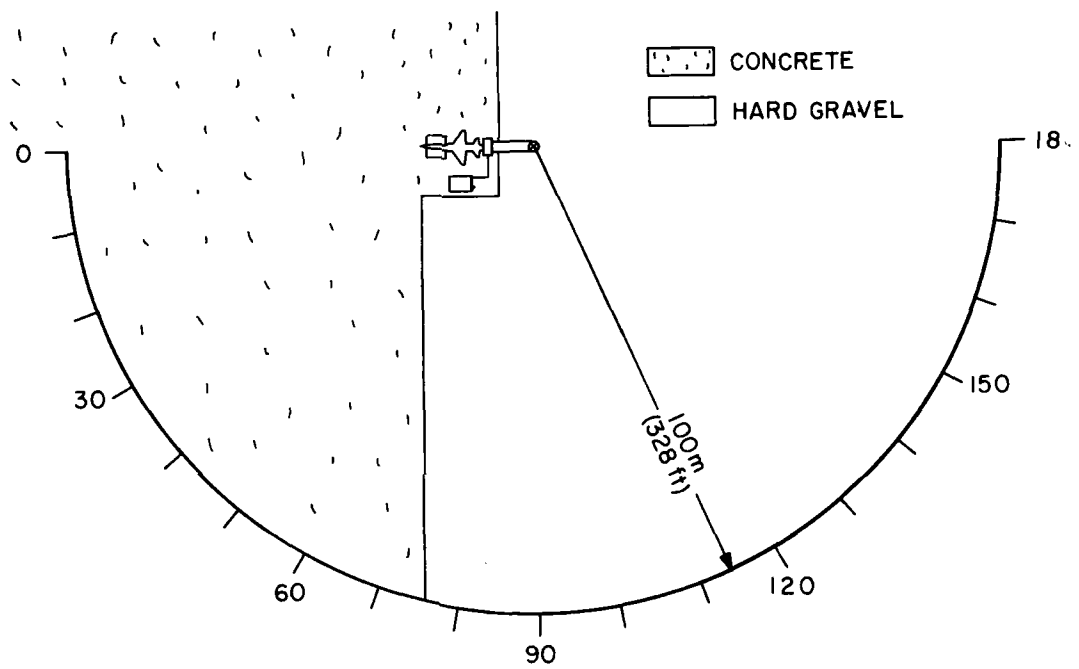
Estimates of the noise levels for intermediate power settings (e.g., 95% RPM) and/or different number of engines operating (e.g., single engine) can be determined as explained in Volume 1 of this handbook.

Figures 4 through 10 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.

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.

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.



**Figure 2. Far-Field Measurement Locations at Laughlin AFB TX**

TABLE: MEASURED SOUND PRESSURE LEVEL (DB)		IDENTIFICATIONS											
1/3 OCTAVE BAND		1/A	2/A	3/A	4/A	1/B	2/B	3/B	4/B	1/C	2/C	3/C	4/C
FREQ (HZ)													
25	78	81	87	80	74	86	90	89	84	91	94	94	90
31.5	81	87	80	75	74	95	97	89	92	100	100	93	95
40	82	94	82	81	81	91	94	86	89	96	99	90	96
50	82	97	87	86	86	85	96	88	85	90	100	94	91
63	81	93	86	76	76	87	99	93	85	92	104	100	89
80	77	92	85	79	79	86	103	93	88	89	108	98	93
100	82	93	90	77	77	90	103	93	86	92	108	95	91
125	90	93	101	80	80	94	99	99	83	95	104	100	87
160	89	94	94	81	81	92	100	98	87	95	103	99	91
200	83	96	89	76	76	92	108	99	83	91	106	97	85
250	79	91	87	79	79	93	105	99	85	95	107	105	89
315	81	95	90	76	76	93	105	100	83	95	106	100	86
400	89	100	91	78	78	95	106	103	87	98	109	102	87
500	81	91	89	76	76	95	105	103	89	101	111	105	93
630	81	91	88	76	76	94	101	102	89	100	106	105	93
800	83	93	91	76	76	96	103	105	88	100	106	107	94
1000	84	94	92	76	76	97	105	106	87	103	108	109	93
1250	86	95	92	78	78	96	105	106	87	102	107	109	92
1600	89	95	95	80	80	97	104	106	87	101	107	110	92
2000	87	94	94	81	81	98	103	106	89	101	106	110	92
2500	89	94	95	81	81	99	104	108	90	100	106	109	92
3150	88	93	95	81	81	99	106	108	91	99	107	108	91
4000	96	102	99	92	92	104	109	109	93	101	108	109	93
5000	88	94	94	82	82	97	105	107	87	100	108	107	92
6300	87	93	94	82	82	101	105	109	92	97	106	106	91
8000	93	100	97	89	89	98	103	107	90	96	107	107	90
10000	85	93	92	81	81	95	102	106	88	95	105	104	88
OVERALL	102	109	100	96	96	110	118	118	103	113	121	120	106

LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

OMEGA 3.2  
TEST 79-733-001  
RUN 01  
06 APR 79  
PAGE F1

OPERATIONS:  
A= IDLE POWER  
B= 80% RPM  
C= 90% RPM

LOCATION/CONDITION





TABLE: MEASURED SOUND PRESSURE LEVEL (DB)		IDENTIFICATIONS											
OCTAVE BAND													
		OMEGA 3.2											
		TEST 79-733-001											
		RUN 02											
		06 APR 79											
		PAGE 32											
NOISE SOURCE/SUBJECT:		OPERATION:											
( T-38 AIRCRAFT IN THE		( D= MILITARY POWER											
( AF32A-10 SUPPRESSOR		( E= AFTERBURNER POWER											
( GROUND CREW													
( NEAR-FIELD NOISE LEVELS													
		LOCATION/CONDITION											
		1/D	2/D	3/D	4/D	1/E	2/E	3/E	4/E				
FREQ (HZ)													
31.5		103	107	100	102	105	109	105	105				
63		98	113	105	100	105	116	110	104				
125		101	112	107	98	105	114	110	104				
250		99	112	108	93	101	114	108	95				
500		100	115	107	101	112	120	111	105				
1000		110	116	109	102	112	118	113	105				
2000		110	117	106	100	111	119	110	101				
4000		106	114	103	97	108	118	107	99				
8000		101	110	97	93	103	114	100	95				
OVERALL		116	123	116	109	118	126	119	112				



MEASURES OF HUMAN NOISE EXPOSURE										IDENTIFICATION:			
1/A	2/A	3/A	4/A	1/B	2/B	3/B	4/B	1/C	2/C	3/C	4/C		
NOISE SOURCE/SUBJECT: ( OPERATION: )													
T-38 AIRCRAFT IN THE ( A= IDLE POWER )													
AF32A-16 SUPPRESSOR ( B= 80% RPM )													
GROUND CREW ( C= 90% RPM )													
NEAR-FIELD NOISE LEVELS ( )													
LOCATION/CONDITION													
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	101	109	107	95	110	118	118	102	112	120	119	105
	OASLA	101	100	106	96	110	117	116	101	112	119	120	104
	T	25	8	11	60	5	P	P	25	3.8	P	P	15
MINIMUM QPL EAR MUFFS													
	OASLA*	76	84	83	70	84	93	92	77	86	96	93	80
	T	960	480	571	960	480	101	120	960	339	60	101	960
AMERICAN OPTICAL 1700 EAR MUFFS													
	OASLA*	71	79	78	66	78	88	86	71	80	91	88	75
	T	960	960	960	960	960	240	339	960	960	143	240	960
V-51R EAR PLUGS													
	OASLA*	72	81	78	67	82	90	90	73	85	93	92	77
	T	960	807	960	960	679	170	170	960	404	101	120	960
AMERICAN OPTICAL 1700 EAR MUFFS PLUS V-51R EAR PLUGS													
	OASLA*	58	67	65	52	68	76	77	60	72	79	79	64
	T	960	960	960	960	960	960	960	960	960	960	960	960
H-133 GROUND COMMUNICATION UNIT													
	OASLA*	72	79	78	66	82	89	91	74	84	91	92	76
	T	960	960	960	960	679	202	143	960	480	143	120	960
COMMUNICATION													
PREFERRED SPEECH INTERFERENCE LEVEL (PSIL IN DB)													
	PSIL	91	100	97	83	101	109	110	93	106	112	112	97
ANNOYANCE													
PERCEIVED NOISE LEVEL, TONE CORRECTED (PNLT IN PNDB)													
TONE CORRECTION (C IN DB)													
	PNLT	119	126	123	115	127	133	133	117	125	134	134	119
	C	3	3	2	3	2	1	1	1	0	1	1	1

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

MEASURES OF HUMAN NOISE EXPOSURE										
NOISE SOURCE/SUBJECT	( OPERATION	1/D	2/D	3/D	4/D	LOCATION/CONDITION	1/E	2/E	3/E	4/E
T-38 AIRCRAFT IN THE	( O= MILITARY POWER									
AF32A-10 SUPPRESSOR	( E= AFTERBURNER POWER									
GROUND CREW	(									
NEAR-FIELD NOISE LEVELS	(									
IDENTIFICATION:										
OMEGA 3.2										
TEST 79-733-001										
RUN 02										
06 APR 79										
PAGE H2										
HAZARD/PROTECTION										
C-WEIGHTED OVERALL SOUND LEVEL (OASLC IN OBC) AT EAR										
A-WEIGHTED OVERALL SOUND LEVEL (OASLA IN OBA) AT EAR										
MAXIMUM PERMISSIBLE TIME (T IN MINUTES) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)										
NO PROTECTION										
OASLC		115	123	116	100		118	126	119	112
OASLA		115	122	114	106		117	125	117	109
T		2.2	P	2.7	11		P	P	P	6
MINIMUM QPL EAR MUFFS										
OASLA*		89	98	91	83		92	101	94	87
T		202	42	143	571		120	25	85	285
AMERICAN OPTICAL 1700 EAR MUFFS										
OASLA*		83	93	86	78		86	95	89	82
T		571	101	339	960		339	71	202	679
V-51R EAR PLUGS										
OASLA*		89	95	88	81		91	98	91	84
T		202	71	240	807		143	42	143	480
AMERICAN OPTICAL 1700 EAR MUFFS PLUS V-51R EAR PLUGS										
OASLA*		75	82	74	67		77	84	78	71
T		960	679	960	960		960	480	960	960
H-133 GROUND COMMUNICATION UNIT										
OASLA*		88	95	86	79		89	97	90	82
T		240	71	339	960		202	50	170	679
COMMUNICATION										
PREFERRED SPEECH INTERFERENCE LEVEL (PSIL IN DB)										
PSIL		110	116	108	101		112	119	111	104
ANNOYANCE										
PERCEIVED NOISE LEVEL, TONE CORRECTED (PNLT IN PNOB)										
TONE CORRECTION (C IN DB)										
PNLT		128	136	128	120		130	140	130	123
C		1	1	1	1		1	2	1	1

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

**TABLE 4**  
**TEST CONDITIONS**  
**FOR FAR-FIELD NOISE MEASUREMENTS**

T-38 Aircraft In The AF32-18 Noise Suppressor  
 Laughlin AFB TX  
 Test #77-733-001, 1 September 1977

*Aircraft Engine Operation*

Idle	Single Engine 48 % 517 C, EGT 500 LBS/HR, Fuel Flow
79% RPM	Single Engine 75 % rpm 405 C, EGT 790 LBS/HR, FF
94% RPM	Single Engine 94 % RPM 500 C, EGT 1425 LBS/HR, FF
Military Power	Single Engine 99.5 % RPM 635 C, EGT 2100 LBS/HR, FF
Afterburner Power	Single Engine 100 % RPM 635 C, EGT 2100 LBS/HR, FF

*Meteorology*

Temperature	30 C
Bar Pressure	.762 M Hg
Rel Humidity	51 %
Wind — Speed	Calm
— Direction	Calm

TABLE: MEASURED SOUND PRESSURE LEVEL (DB)		IDENTIFICATION:																		
1/3 OCTAVE BAND		OMEGA 1.4																		
DISTANCE = 100 METERS		TEST 77-733-001																		
NOISE SOURCE/SUBJECT:		RUN 01																		
( T-38 AIRCRAFT IN THE		METEOROLOGY: 30 C																		
( AF32A-16-SUPPRESSOR		TEMP = .762 M HG																		
( ENGINE J85-GE-5A		BAR PRESS = 51 %																		
( FAR FIELD NOISE		REL HUMID = 2																		
		PAGE 2																		
FREQ	ANGLE (DEGREES)	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
25																				
31.5																				
40																				
50	65<	69<	70<	65<	66<	65<	66<	69<	63<	65<	63<	66<	68<	74<	79	78	74<	73<	74<	75<
63	67<																			
80																				
100																				
125																				
160																				
200																				
250																				
315																				
400																				
630																				
800																				
1000																				
1250																				
1600																				
2000																				
2500																				
3150																				
4000																				
5000																				
6300																				
8000																				
10000																				
OVERALL		75	77	78	77	76	75	73	70	68	69	69	74	80	84	84	79	79	78	79

< LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

TABLE: MEASURED SOUND PRESSURE LEVEL (DB)																			
1/3 OCTAVE BAND																			
DISTANCE = 100 METERS																			
NOISE SOURCE/SUBJECT: ( OPERATION: ) METEOROLOGY: )																			
T-38 AIRCRAFT IN THE ( 75 RPM ENGINE RUNUP ) TEMP = 30 C																			
AF32A-18-SUPPRESSOR ( SINGLE ENGINE ) BAR PRESS = .762 M HG																			
ENGINE J85-GE-5A ( GROUND RUNUP (SUPPRESSED) ) REL HUMID = 51 %																			
FAR FIELD NOISE ( ) PAGE 2																			
FREQ ( HZ) ANGLE (DEGREES)																			
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
25	72<	71<	71<	70<	71<	72<	68<	70<	71<	72<	71<	73<	72<	75<	73<	77	76	72<	
31.5	68<	70<	70<	70<	71<	72<	70<	70<	70<	68<	70<	70<	69<	70<	72<	71<	72<	70<	
40	70<	70<	71<	71<	72<	73<	71<	69<	71<	70<	72<	71<	69<	70<	72<	73<	72<	71<	
50	71<	69<	70<	69<	71<	72	70<	68<	68<	69<	72	71<	69<	70<	71<	72	70<	70<	68<
63	71<	68<	69<	68<	70<	72<	69<	68<	68<	69<	71<	70<	70<	69<	69<	69<	67<	68<	68<
80	67<	66<	67<	65<	68<	70<	68<	65<	65<	65<	66<	66<	65<	66<	66<	66<	65<	67<	66<
100	69<	70<	72<	71<	71<	71<	74<	69<	70<	68<	70<	72<	72<	66<	68<	66<	65<	67<	66<
125	70	70	69	69	69	70	68<	65<	67<	67<	71	73	73	64<	64<	63<	61<	61<	62<
160	70	71	72	74	72	70	66	67	71	67	69	67	67	64<	63<	63<	62<	61<	62<
200	70	65<	66<	68	67	65<	62<	63<	65<	61<	69	69	67	63<	61<	60<	57<	55<	58<
250	69	69	68	69	68	67	60<	62<	70	65<	67	68	68	60<	59<	59<	56<	55<	55<
315	66	65	67	68	67	66	63	60<	68	61<	68	63	61<	57<	57<	56<	51<		
400	62	62	65	62	60	57<	58<	55<	58<	53<	63	59<	55<	50<	54<	52<			
500	61<	61<	62<	62<	59<	55<	58<	55<	54<	57<	56<	57<	56<						
630	61<	58<	59<	59<	55<	52<	53<	54<	52<	53<	52<	52<	52<						
800	59<	56<	55<	57<	52<	52<	52<	52<	52<	54<	53<	52<	52<						
1000	59<	56<	55<	55<	52<	52<	53<	51<	51<	52<	55<	52<	52<						
1250	59<	56<	53<	55<	51<	51<	51<	51<	51<	52<	55<	52<	52<	54<	55<	55<	55<	52<	52<
1600	61	61	55<	57<	63	63	50<	50<	50<	54<	60<	55<	55<	55<	56<	56<	57<	54<	52<
2000	60	58<	55<	58<	52<	52<	50<	50<	50<	54<	60<	55<	55<	55<	57<	57<	54<	52<	52<
2500	58<	57<	52<	55<	49<	49<	50<	50<	50<	49<	54<	51<	51<	58<	60<	58<	54<	52<	52<
3150	58<	56<	52<	55<	52<	52<	52<	52<	52<	53<	53<	53<	53<	58<	60<	58<	54<	52<	52<
4000	63	61	56	59	52<	45<	52<	51<	45<	55<	61	55<	53<	62	65	63	61	55	55
5000	59	55	50	53	47	40<	46<	47	40<	42<	48	52	50	50	59	61	58	54	52
6300	63	56	52	55	48	42<	47	49	43<	43<	46	50	49	49	57	60	59	55	54
8000	59	57	52	54	46	38<	46	47	40<	41<	42<	48	47	51	58	60	58	55	50
10000	53	50	45	49	41<	40<	39<	33<	34<	36<	41<	40<	40<	41<	49	51	49	46	44
OVERALL	81	80	81	81	81	81	80	78	80	76	81	81	80	79	80	80	80	80	78

< LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

TABLE: MEASURED SOUND PRESSURE LEVEL (DB)		IDENTIFICATION:																		
1/3 OCTAVE BAND		OMEGA 1.4																		
DISTANCE = 100 METERS		TEST 77-733-001																		
NOISE SOURCE/SUBJECT:		RUN 03																		
T-38 AIRCRAFT IN THE		METEOROLOGY:																		
AF32A-10-SUPPRESSOR		TEMP = 30 C																		
ENGINE J85-GE-5A		BAR PRESS = 0.762 M HG																		
FAR FIELD NOISE		REL HUMID = 51 %																		
		PAGE 2																		
FREQ	ANGLE (DEGREES)																			
(HZ)		0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
25		76	75	74	74	74	74	76	76	78	80	75	75	75	79	75	77	75	77	78
31.5		77	76	76	74	74	80	78	74	75	77	79	78	78	76	77	76	77	76	76
40		78	79	80	80	80	80	80	79	79	80	80	78	78	79	79	78	80	78	80
50		77	78	79	78	78	78	79	77	80	80	79	77	78	79	80	79	77	79	79
63		82	81	80	80	80	80	80	80	80	80	80	80	80	80	80	79	80	79	82
80		78	76	77	76	74	76	74	76	77	77	75	76	76	76	76	76	76	76	76
100		74	76	73	74	73	71	73	76	73	71	71	71	71	72	71	71	70	70	69
125		78	77	77	74	73	72	74	69	70	70	67	69	71	69	71	67	70	72	71
160		76	73	74	73	71	68	69	69	69	66	66	66	68	67	69	68	64	67	68
200		71	70	71	69	67	65	66	66	65	65	63	63	62	65	65	64	62	60	63
250		70	69	71	72	67	68	68	68	68	69	64	65	62	66	63	64	58	58	57
315		67	68	70	68	64	67	65	67	66	66	62	61	59	61	59	59	58	53	52
400		66	69	73	68	65	65	62	61	58	58	55	54	54	57	58	57	68	68	49
500		64	66	70	67	65	64	61	61	57	54	57	53	54	55	55	55	62	62	62
630		65	65	67	64	63	60	59	58	52	52	53	52	53	52	52	52	69	53	51
800		63	63	63	64	60	60	59	57	51	54	53	53	54	52	53	53	68	56	54
1000		61	64	61	62	60	58	58	54	54	53	53	54	54	52	53	53	61	55	53
1250		59	60	57	59	59	57	56	56	50	52	52	52	52	52	52	53	63	56	54
1600		60	63	58	62	60	58	56	50	50	53	53	53	53	56	56	57	62	58	56
2000		61	62	57	62	60	59	57	50	50	54	54	53	53	57	57	57	61	59	56
2500		59	61	55	62	57	55	55	49	49	52	51	52	53	55	57	57	59	56	54
3150		58	59	54	61	57	54	54	54	51	51	51	52	53	57	58	58	60	56	54
4000		62	66	59	64	60	62	56	52	46	48	54	54	55	57	60	64	64	61	56
5000		60	61	56	64	58	59	55	51	49	51	58	57	58	58	58	61	65	63	59
6300		57	58	52	61	55	54	52	47	45	47	52	52	53	55	58	60	59	58	54
8000		57	61	55	59	54	53	51	46	43	44	49	49	50	56	58	58	58	56	52
10000		52	53	48	54	49	47	45	41	38	40	44	44	44	47	52	52	51	50	46
OVERALL		88	87	88	87	87	87	87	86	87	86	86	86	86	87	86	86	86	85	87

< LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

TABLE: MEASURED SOUND PRESSURE LEVEL (DB)																				
1/3 OCTAVE BAND																				
DISTANCE = 100 METERS																				
NOISE SOURCE/SUBJECT: ( OPERATION: ) METEOROLOGY:																				
T-38 AIRCRAFT IN THE ( MILITARY POWER 99.5 % RPM ) TEMP = 30 C																				
AF32A-18-SUPPRESSOR ( SINGLE ENGINE ) BAR PRESS = .762 M HG																				
ENGINE J85-GE-5A ( GROUND RUNUP (SUPPRESSED) ) REL HUMID = 51 %																				
FAR FIELD NOISE ( ) PAGE 2																				
FREQ	ANGLE (DEGREES)																			
( HZ)	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	
( 25	78	77	78	77	76	77	77	78	79	80	76	78	76	79	77	81	80	80	80	80
( 31.5	79	80	79	79	81	82	78	80	79	78	80	80	80	80	78	79	79	79	79	80
( 40	82	81	82	83	84	82	81	81	82	84	84	83	82	83	83	84	84	84	84	85
( 50	80	82	81	82	81	83	83	82	81	82	82	82	82	83	84	83	82	83	84	84
( 63	84	83	84	84	84	84	84	84	83	83	85	85	85	84	85	86	84	84	86	86
( 80	82	81	86	81	82	80	81	83	81	81	82	82	81	80	83	82	82	82	82	82
( 100	80	81	79	80	78	80	78	79	74	75	76	77	75	79	78	76	77	77	78	76
( 125	83	81	82	80	79	77	72	79	73	71	76	75	77	76	77	77	77	77	76	75
( 160	81	78	78	78	77	75	75	75	71	66	72	72	74	74	74	74	73	74	72	72
( 200	77	73	72	72	70	71	70	69	68	64	67	68	69	70	70	69	67	67	68	68
( 250	72	70	71	71	69	68	68	66	66	62	65	65	66	66	66	64	59	61	58	58
( 315	71	73	73	73	69	66	67	67	65	59	63	63	63	63	63	63	56	57	55	55
( 400	72	76	76	76	72	68	69	67	64	58	60	57	58	59	62	63	56	56	57	57
( 500	70	74	74	74	73	67	65	66	64	58	61	56	57	59	61	59	56	59	58	58
( 630	70	72	71	71	69	67	65	65	63	59	58	55	56	59	60	58	60	63	61	61
( 800	66	70	69	69	68	67	67	66	64	60	58	54	55	58	62	59	63	66	65	65
( 1000	67	69	70	72	70	67	67	67	62	59	56	54	55	58	57	55	59	62	60	60
( 1250	67	70	72	71	71	66	67	68	63	62	55	56	52	55	56	57	59	61	58	58
( 1680	65	69	70	70	68	66	66	67	64	63	55	52	52	52	52	58	61	62	59	59
( 2000	64	68	69	71	67	65	65	66	63	62	53	52	52	52	55	61	58	61	62	58
( 2500	63	68	71	73	66	64	65	65	63	61	51	50	51	54	60	58	59	59	58	58
( 3150	62	68	69	70	65	63	63	62	60	57	52	50	51	52	60	58	56	56	56	56
( 4000	66	68	69	71	66	64	63	62	60	59	53	50	51	57	65	63	63	61	59	59
( 5000	61	65	65	68	63	63	63	61	60	58	51	50	50	55	62	61	59	58	57	57
( 6300	66	71	68	69	68	69	67	66	62	61	57	56	56	60	67	65	65	63	62	62
( 8000	64	62	62	63	61	60	60	56	53	53	47	45	47	55	59	57	56	55	52	52
( 10000	55	55	50	57	55	54	53	50	46	46	42	39	41	47	52	51	49	47	46	46
( OVERALL	91	91	92	91	91	90	90	90	89	90	90	90	90	90	91	91	91	90	91	91

< LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.



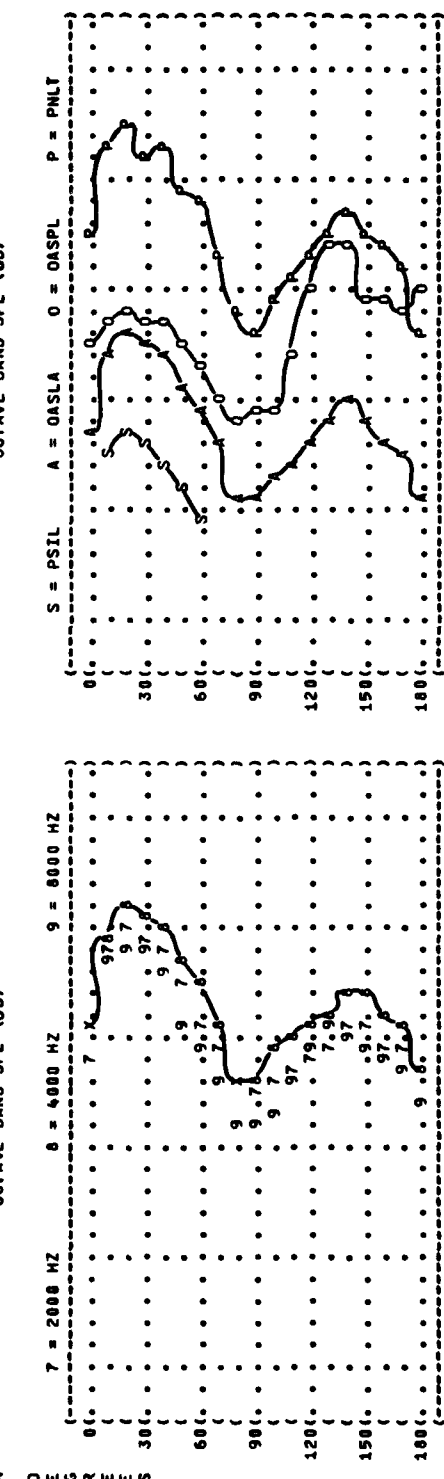
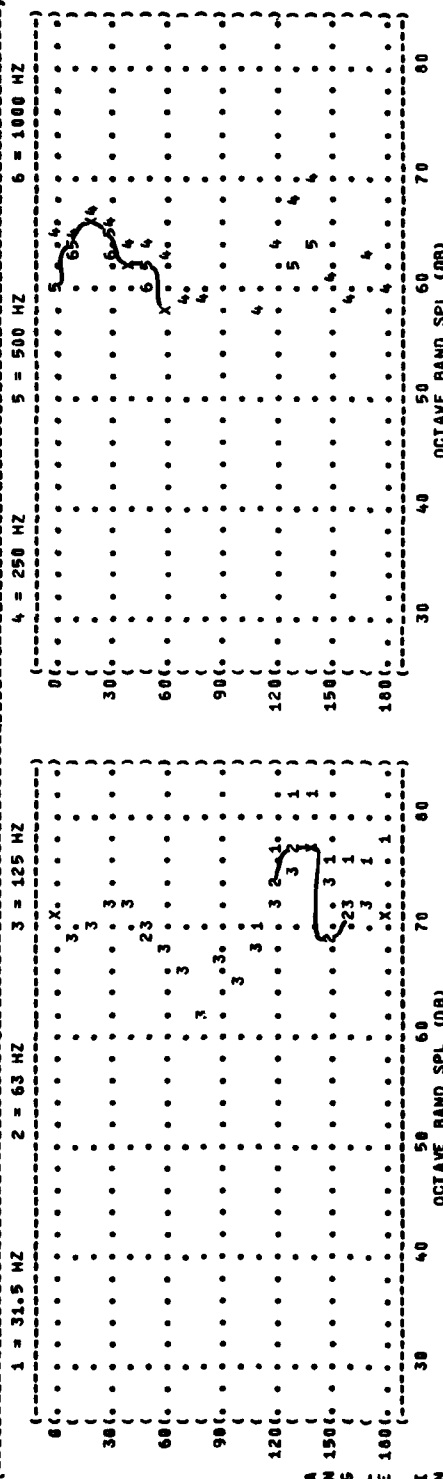


FIGURE 1 NORMALIZED FARFIELD NOISE LEVELS

IDENTIFICATION: OMEGA 1.4  
 TEST 77-733-001  
 RUN 01  
 DATE 14 SEP 78  
 PAGE 6

3 DISTANCE = 100 METERS

NOISE SOURCE/SUBJECT: OPERATION: METEOROLOGY: TEMP: 15 C  
 T-38 AIRCRAFT IN THE IDLE POWER 402 RPM  
 AF32A-18-SUPPRESSOR SINGLE ENGINE BAR PRESS = .760 M HG  
 ENGINE J85-GE-5A GROUND RUNUP (SUPPRESSED) REL HUMID = 78 %  
 FAR FIELD NOISE



DEGRATION

IDENTIFICATION: OMEGA 1.4  
 TEST 77-733-001  
 RUN 02  
 14 SEP 78  
 PAGE 6

NOISE SOURCE/SUBJECT: ( OPERATION )  
 T-38 AIRCRAFT IN THE ( 752 RPM ENGINE RUNUP )  
 AF32A-18-SUPPRESSOR ( SINGLE ENGINE )  
 ENGINE J85-GE-5A ( GROUND RUNUP (SUPPRESSED) )  
 FAR FIELD NOISE

DISTANCE = 100 METERS

METEOROLOGY: TEMP = 15 C  
 BAR PRESS = .760 M HG  
 REL HUMID = 78 %

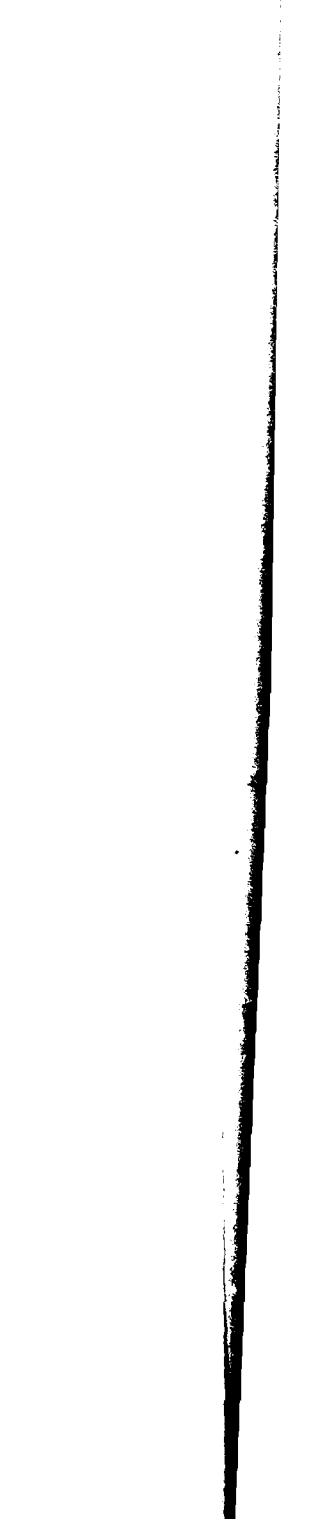
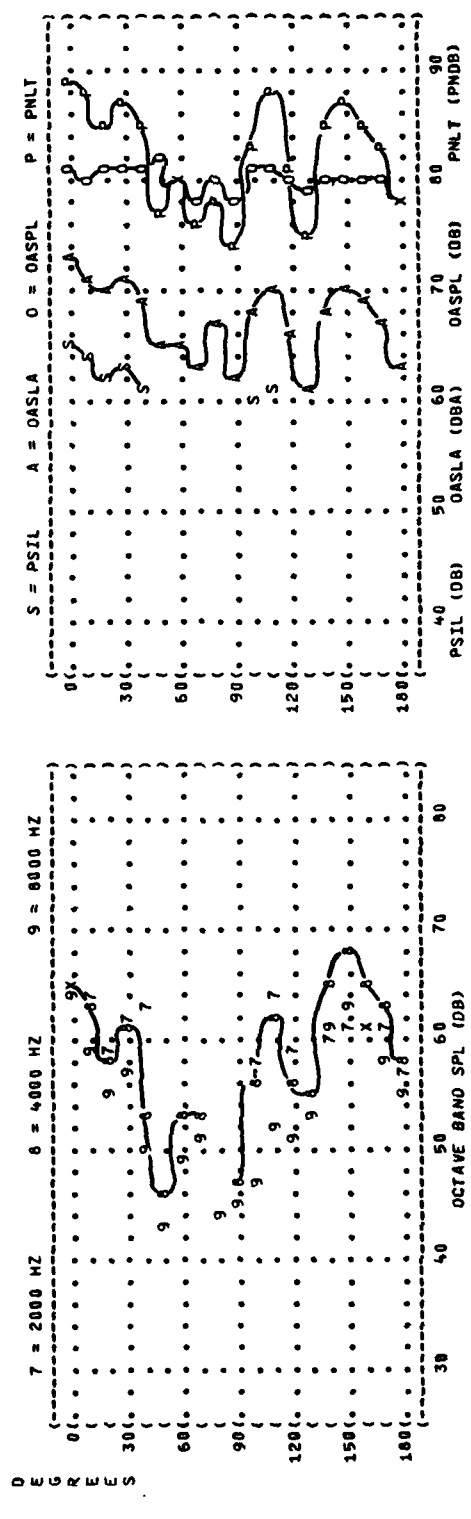
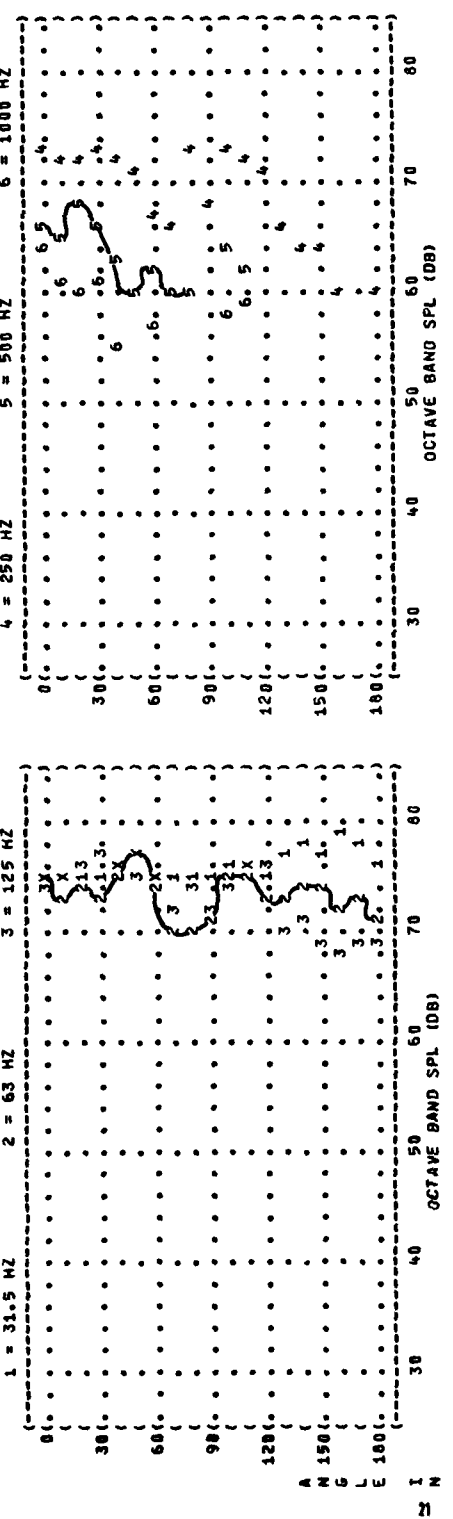
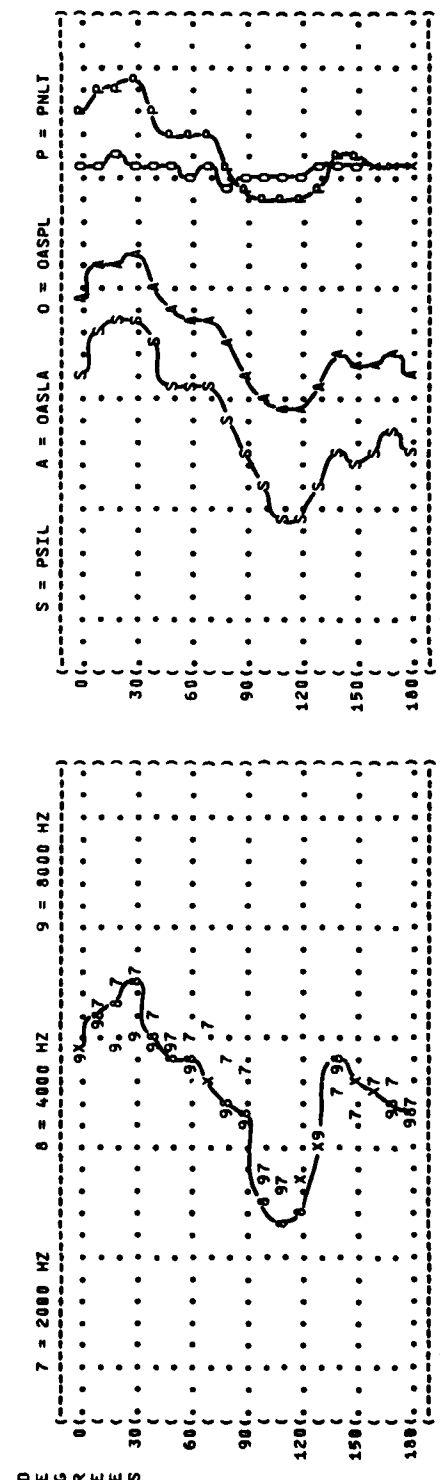
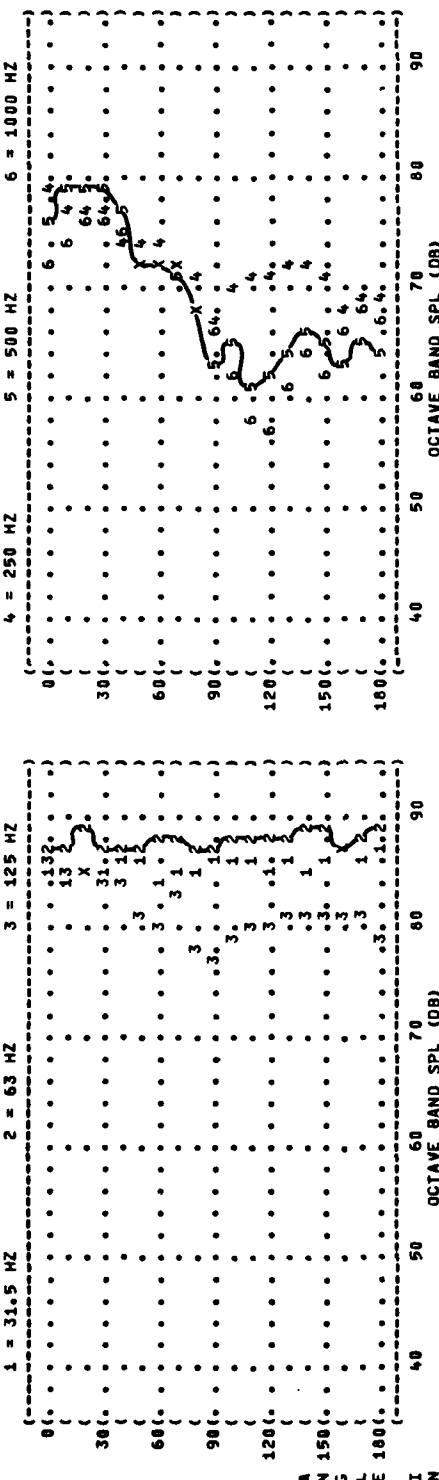




FIGURE 1 NORMALIZED FARFIELD NOISE LEVELS

IDENTIFICATION: )  
 ) OMEGA 1.4  
 ) TEST 77-733-001  
 ) RUN 04  
 ) METEOROLOGY1 )  
 ) TEMP = 15 C  
 ) BAR PRESS = .760 H MG  
 ) REL HUMID = 70 %  
 ) PAGE 6



IN DE CR EE S 60 90 120 150 180  
 40 50 60 70 80 90  
 OCTAVE BAND SPL (DB)  
 S = PSIL A = OASLA O = OASPL P = PNLT  
 PSIL (DB) OASLA (DBA) OASPL (DB) PNLT (PNDB)

IDENTIFICATION: OMEGA 1.4  
 TEST 77-733-001  
 RUN 05  
 14 SEP 78  
 PAGE 6

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

OPERATION: MAX POWER AFTERBURNER  
 SINGLE ENGINE  
 GROUND RUNUP (SUPPRESSED)

NOISE SOURCE/SUBJECT: T-38 AIRCRAFT IN THE  
 AF32A-18-SUPPRESSOR  
 ENGINE J85-GE-5A  
 FAR FIELD NOISE

DISTANCE = 100 METERS

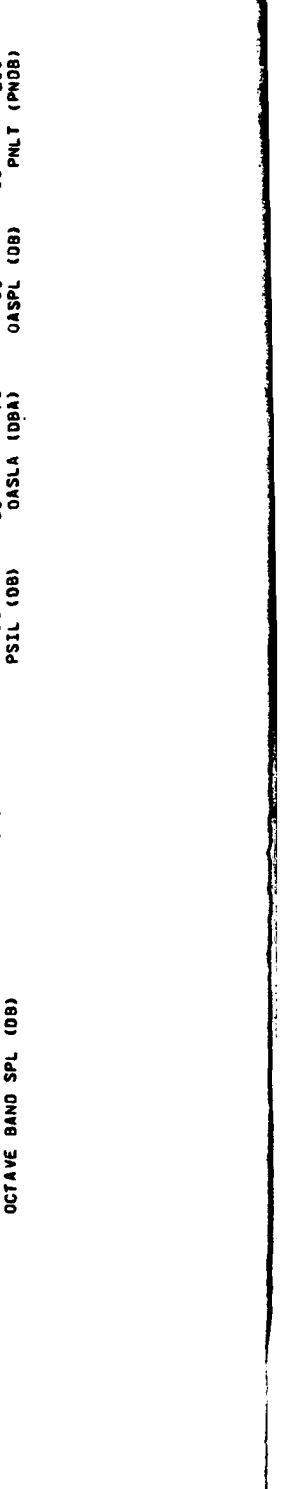
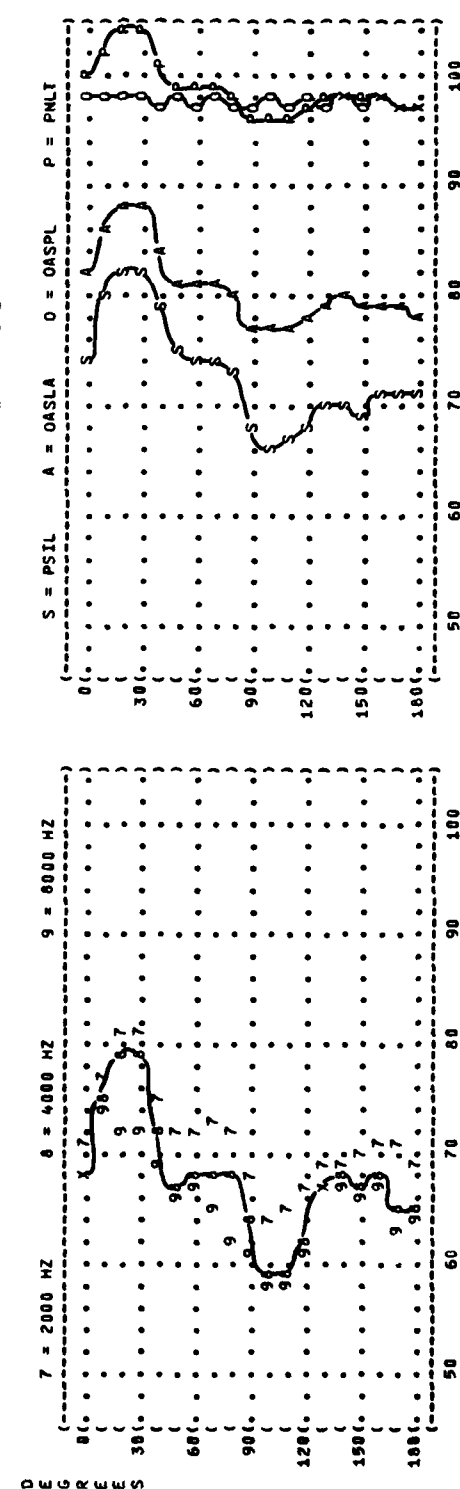
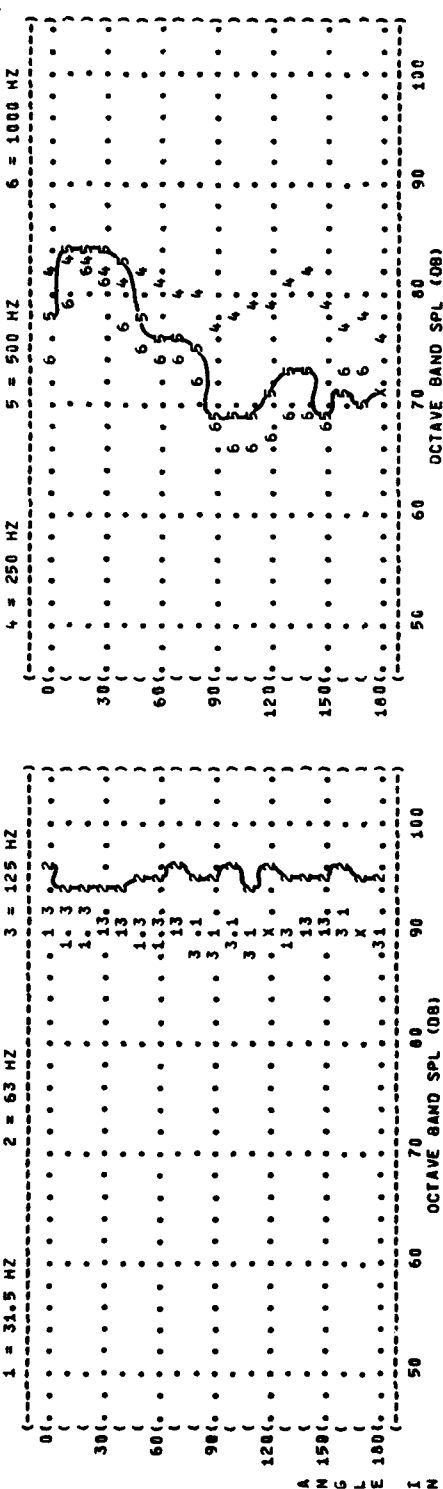


FIGURE 1 NORMALIZED FARFIELD NOISE LEVELS

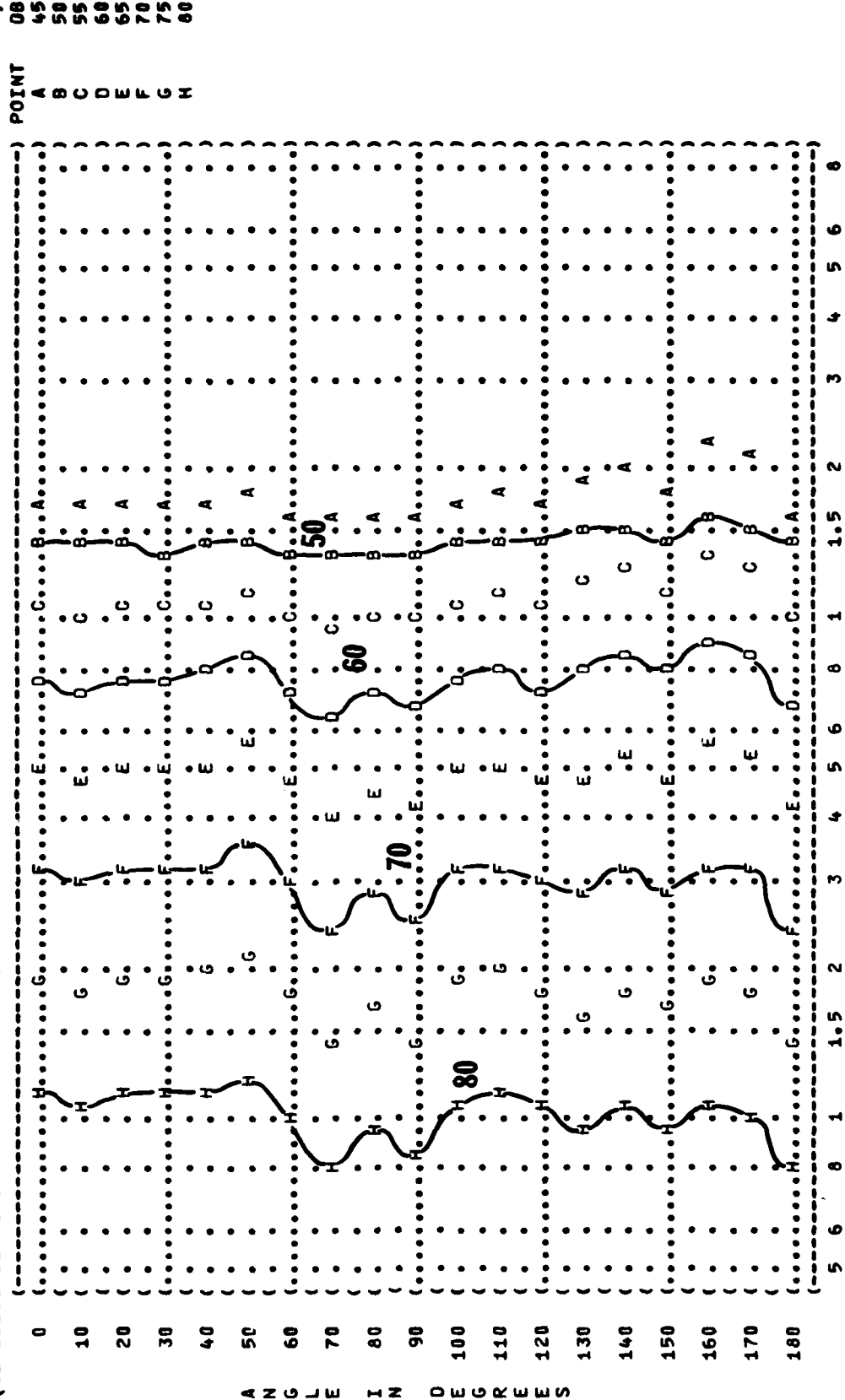
3 DISTANCE = 100 METERS

7 = 2000 HZ    8 = 4000 HZ    9 = 6000 HZ

4 = 250 HZ    5 = 500 HZ    6 = 1000 HZ



( FIGURE: OVERALL SOUND PRESSURE LEVEL (OASPL) )  
 ( EQUAL LEVEL CONTOURS (DB) )  
 ( 4 )  
 ( NOISE SOURCE/SUBJECT: )  
 ( T-38 AIRCRAFT IN THE )  
 ( AF32A-18-SUPPRESSOR )  
 ( ENGINE J85-GE-5A )  
 ( FAR FIELD NOISE )  
 ( OPERATION: )  
 ( 75% RPM ENGINE RUNUP )  
 ( SINGLE ENGINE )  
 ( GROUND RUNUP (SUPPRESSED) )  
 ( METEOROLOGY: )  
 ( TEMP = 15 C )  
 ( BAR PRESS = .760 M HG )  
 ( REL HUMID = 70 % )  
 ( IDENTIFICATION: )  
 ( OMEGA 1.4 )  
 ( TEST 77-733-001 )  
 ( RUN 02 )  
 ( 14 SEP 70 )  
 ( PAGE 13 )



DISTANCE FROM SOURCE (METERS)









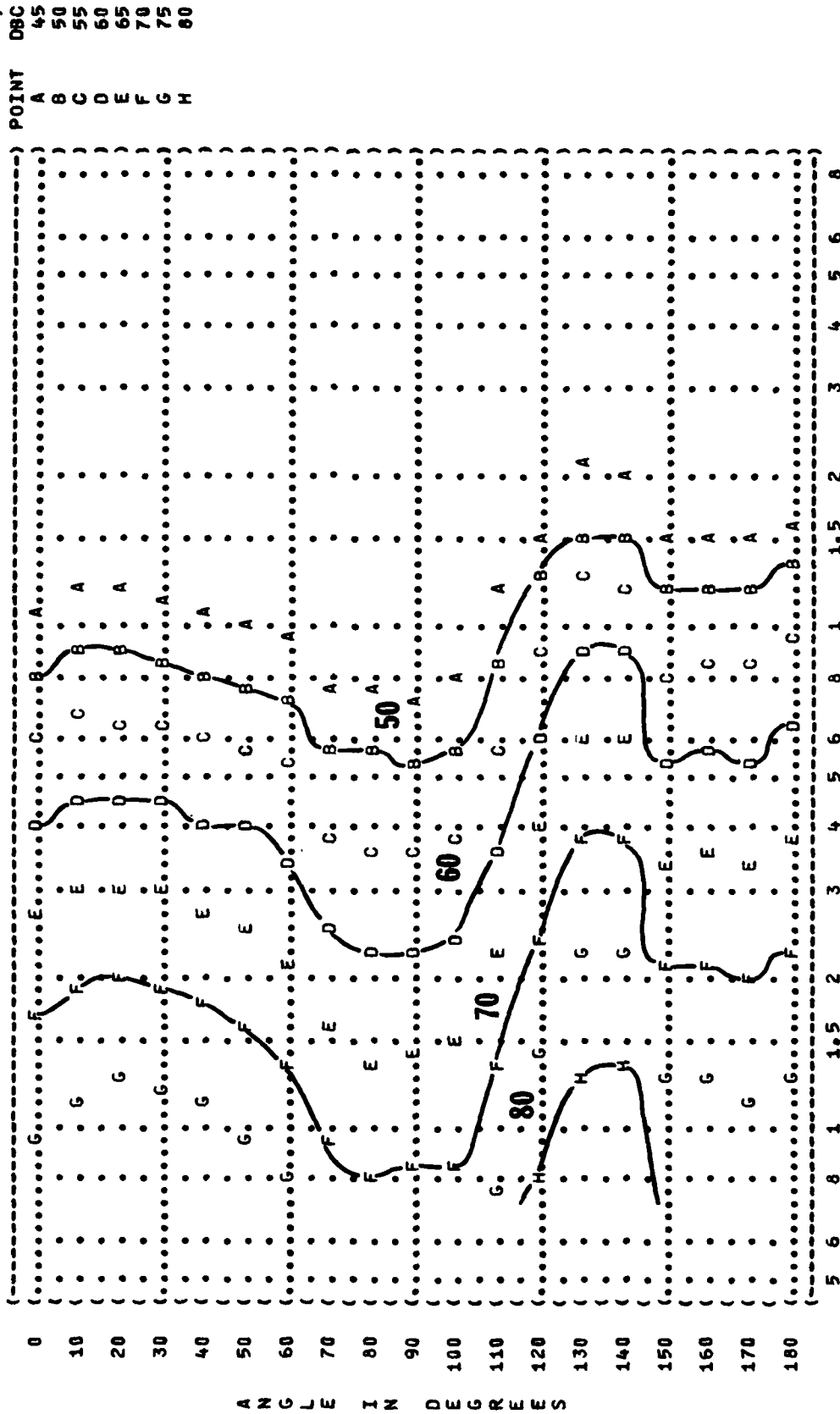
FIGURE 5 C-WEIGHTED OVERALL SOUND LEVEL (OASLC) EQUAL LEVEL CONTOURS (DBC)

IDENTIFICATION: OMEGA 1.4  
 TEST 77-733-001  
 RUN 01  
 14 SEP 78  
 PAGE 14

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

OPERATION: IDLE POWER 48% RPM  
 SINGLE ENGINE  
 GROUND RUNUP (SUPPRESSED)

NOISE SOURCE/SUBJECT: T-38 AIRCRAFT IN THE  
 AF32A-18-SUPPRESSOR ENGINE J85-GE-5A  
 FAR FIELD NOISE

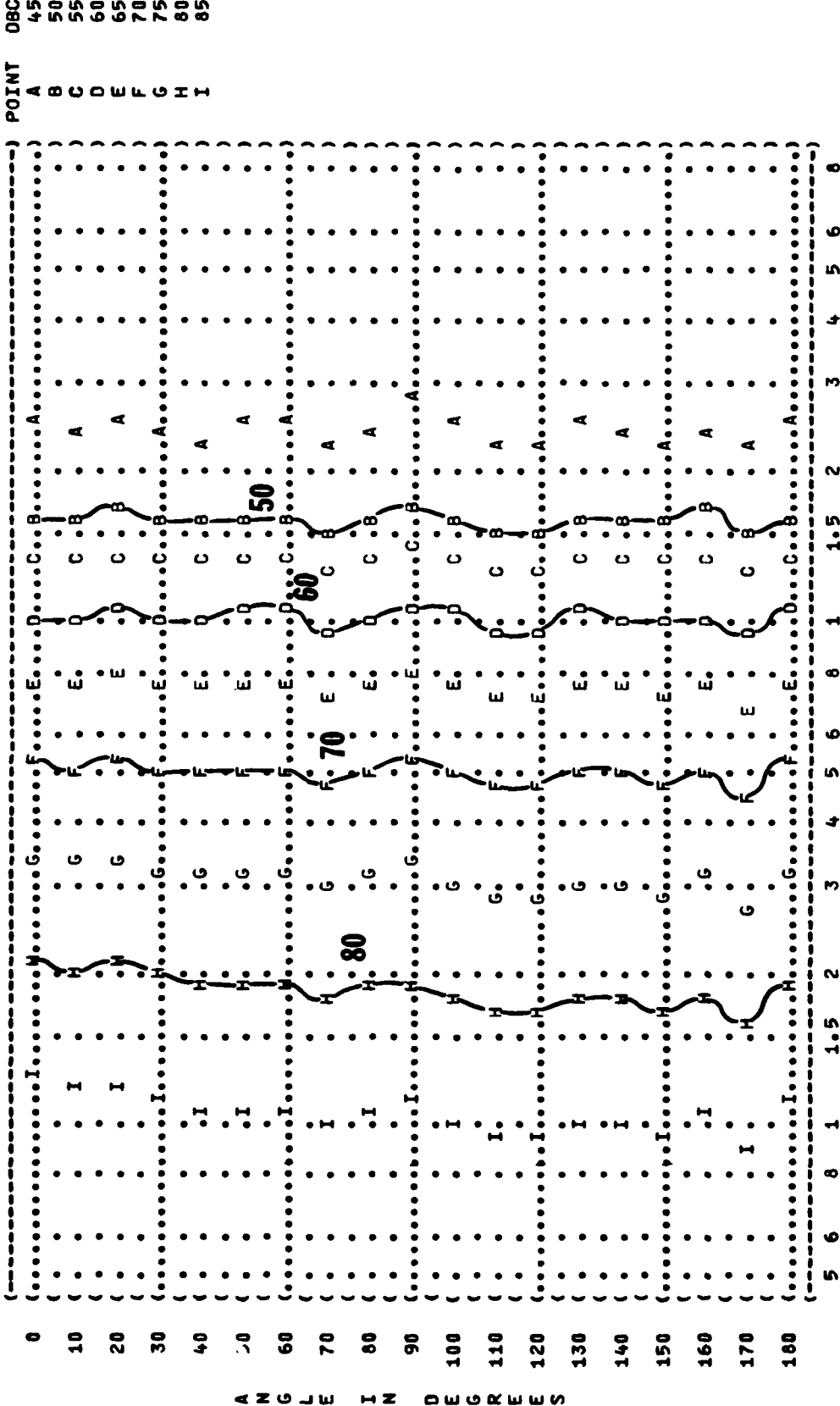


DISTANCE FROM SOURCE (METERS)

ANGL E I N D E G R E E S



(-----) IDENTIFICATION: )  
 ( ) )  
 ( ) OMEGA 1.4 )  
 ( ) TEST 77-733-001 )  
 ( ) RUN 03 )  
 ( ) METEOROLOGY: )  
 ( ) TEMP = 15 C )  
 ( ) BAR PRESS = .760 M HG )  
 ( ) REL HUMID = 70 % )  
 ( ) PAGE 14 )  
 (-----)



( FIGURE: C-WEIGHTED OVERALL SOUND LEVEL (OASLC)  
 ( EQUAL LEVEL CONTOURS (OBC) )  
 ( 5 )

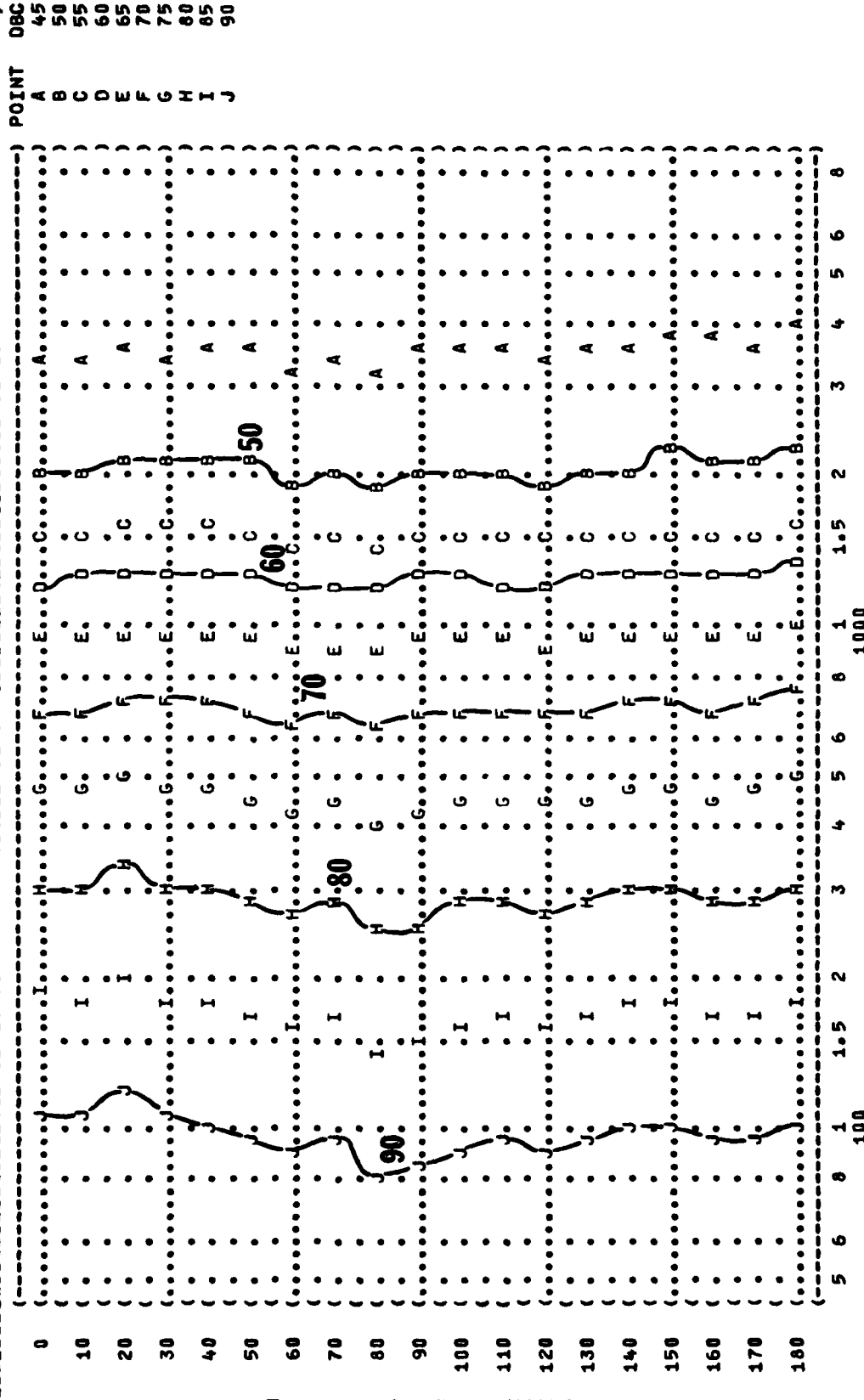
( NOISE SOURCE/SUBJECT: )  
 ( ) OPERATIONS )  
 ( ) 94% RPM POWER RUNUP )  
 ( ) SINGLE ENGINE )  
 ( ) GROUND RUNUP (SUPPRESSED) )  
 ( ) FAR FIELD NOISE )

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

A N G L E I N D E G R E E S

DISTANCE FROM SOURCE (METERS)

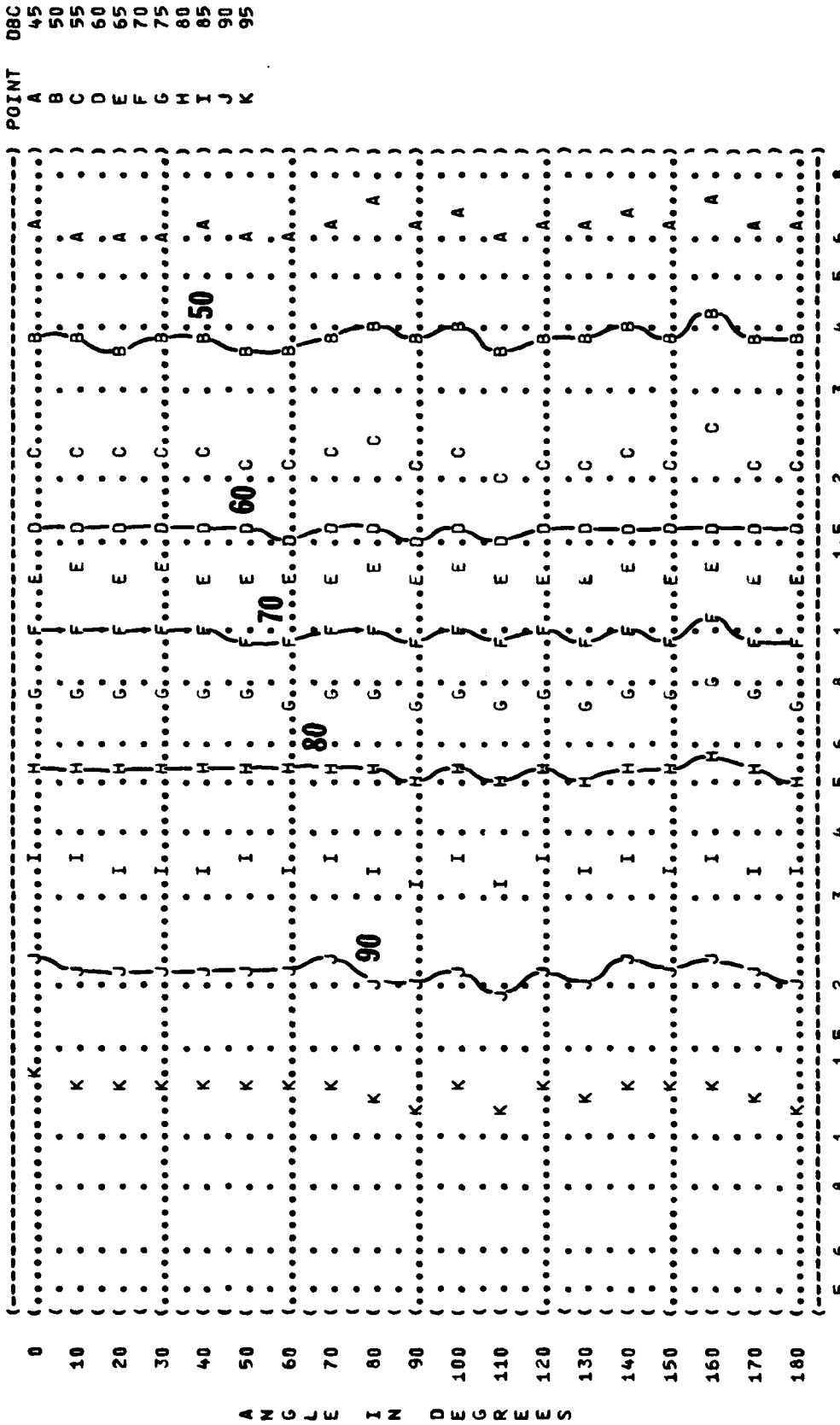
) IDENTIFICATION: )  
 ) OMEGA 1.4 )  
 ) TEST 77-733-001 )  
 ) RUN 04 )  
 ) METEOROLOGY: )  
 ) TEMP = 15 C )  
 ) BAR PRESS = .760 M HG )  
 ) REL HUMID = 70 % )  
 ) OPERATION: )  
 ) MILITARY POWER 99.5 % RPM )  
 ) SINGLE ENGINE )  
 ) GROUND RUNUP (SUPPRESSED) )  
 ) FAR FIELD NOISE )  
 ) PAGE 14 )



) FIGURE 1 C-WEIGHTED OVERALL SOUND LEVEL (OASLGC)  
 ) EQUAL LEVEL CONTOURS (DBC)  
 ) 5 -

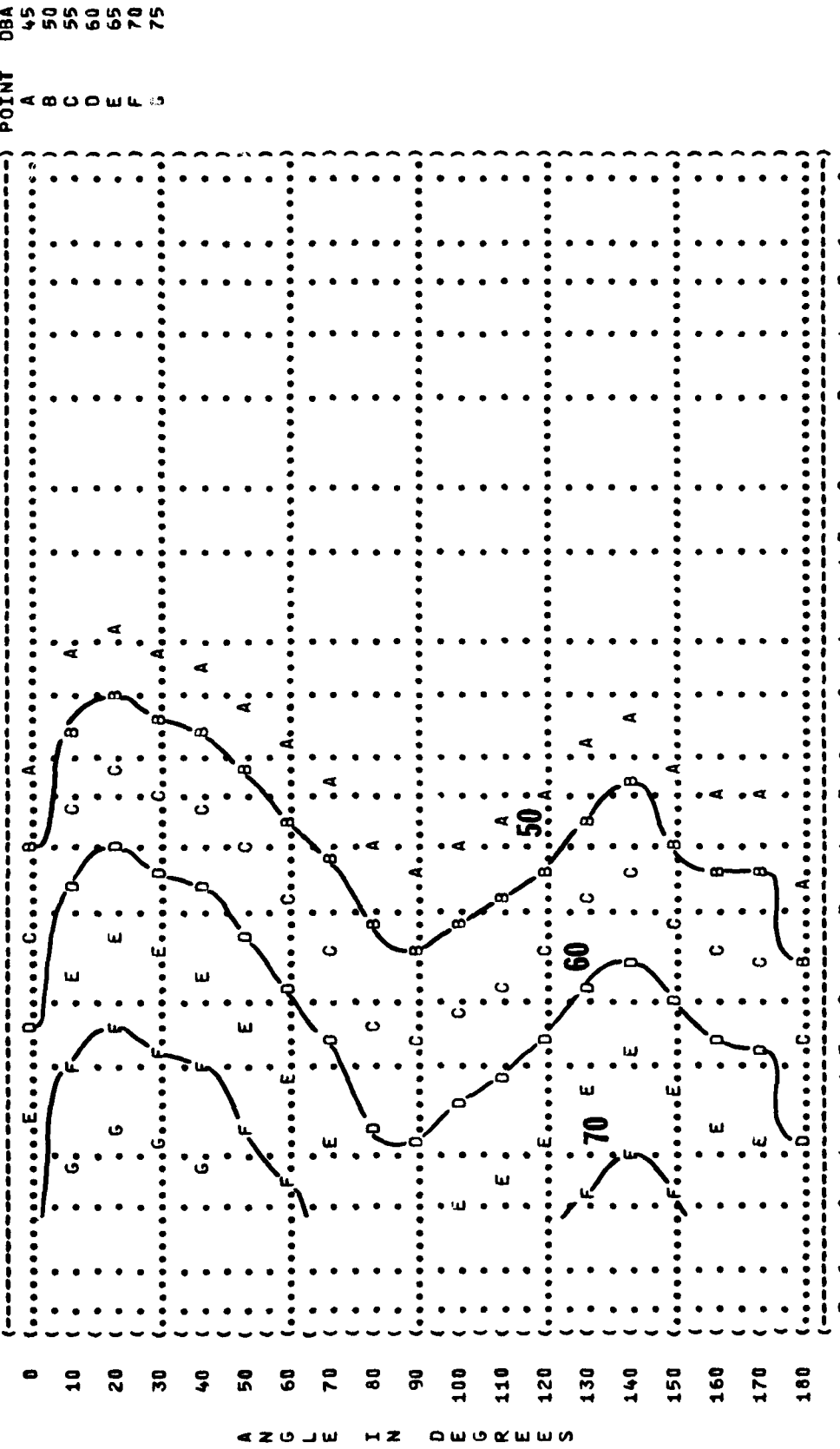
A N G L E I N D E G R E E S

(-----) IDENTIFICATION: )  
 ( ) )  
 ( ) OMEGA 1.4 )  
 ( ) TEST 77-733-001 )  
 ( ) RUN 05 )  
 ( ) METEOROLOGY: )  
 ( ) TEMP = 15 C )  
 ( ) BAR PRESS = .760 M HG )  
 ( ) REL HUMID = 70 % )  
 ( ) OPERATION: )  
 ( ) MAX POWER AFTERBURNER )  
 ( ) SINGLE ENGINE )  
 ( ) GROUND RUNUP (SUPPRESSED) )  
 ( ) PAGE 14 )  
 (-----)



A N G L E I N D E G R E E S

( ( FIGURE 1 A-WEIGHTED OVERALL SOUND LEVEL (OASLA) ) IDENTIFICATION: )  
 ( ( EQUAL LEVEL CONTOURS (DBA) ) )  
 ( ( 6 ) )  
 ( ( NOISE SOURCE/SUBJECT: ) METEOROLOGY: )  
 ( ( T-38 AIRCRAFT IN THE ) ) TEMP = 15 C )  
 ( ( AF32A-18-SUPPRESSOR ) ) SINGLE ENGINE ) BAR PRESS = .760 M HG )  
 ( ( ENGINE J85-GE-5A ) ) GROUND RUNUP (SUPPRESSED) ) REL HUMID = 70 % )  
 ( ( FAR FIELD NOISE ) ) ) PAGE 15 )



DISTANCE FROM SOURCE (METERS)







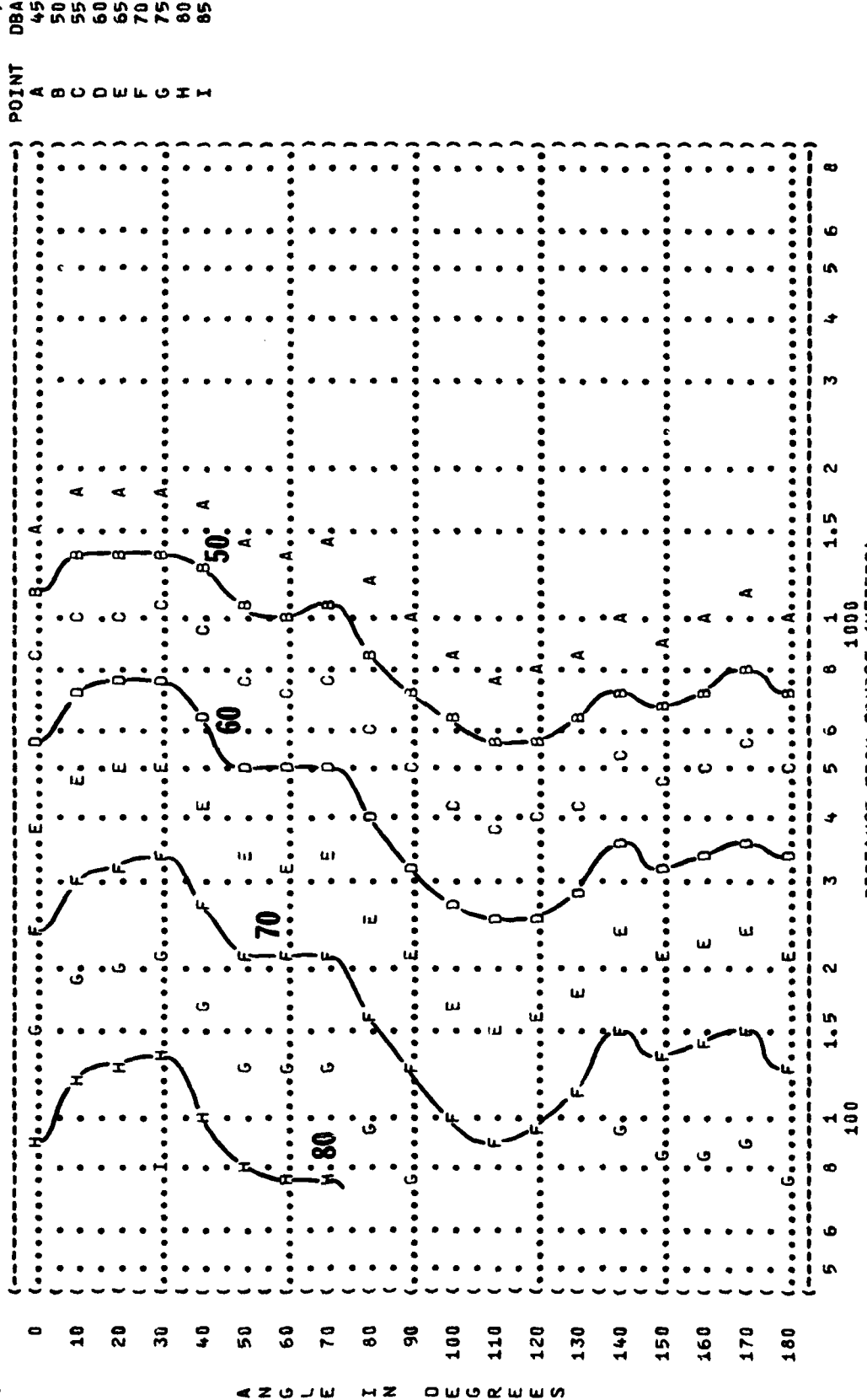
FIGURE 6 A-WEIGHTED OVERALL SOUND LEVEL (OASLA) EQUAL LEVEL CONTOURS (DBA)

IDENTIFICATION: OMEGA 1.4  
 TEST 77-733-001  
 RUN 04  
 14 SEP 78  
 PAGE 15

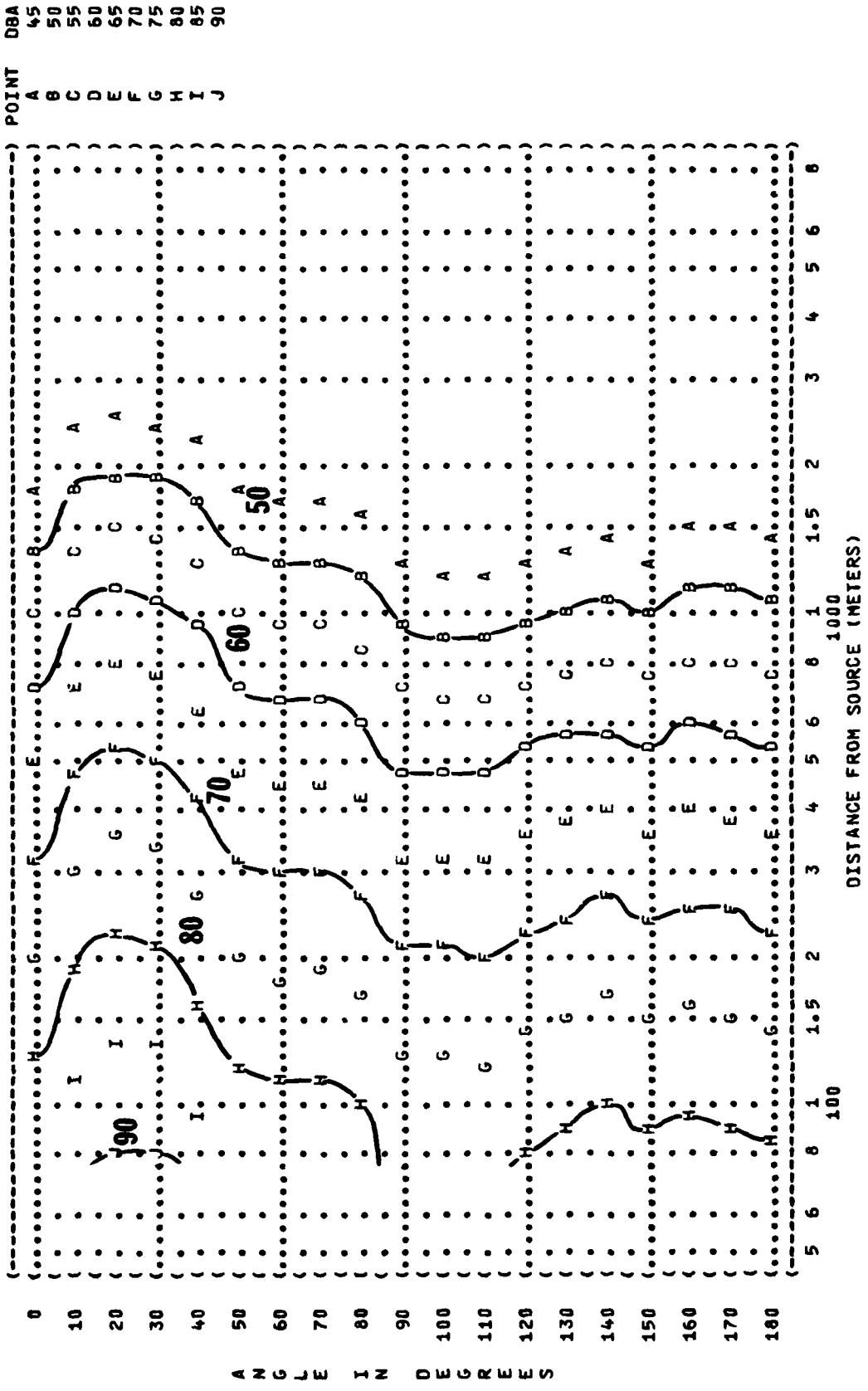
METEOROLOGY:  
 TEMP = 15 C  
 BAR PRESS = .760 M HG  
 REL HUMID = 70 %

OPERATIONS:  
 MILITARY POWER 99.5 % RPM  
 SINGLE ENGINE  
 GROUND RUNUP (SUPPRESSED)

NOISE SOURCE/SUBJECT:  
 T-38 AIRCRAFT IN THE  
 AF32A-18-SUPPRESSOR  
 ENGINE J85-GE-5A  
 FAR FIELD NOISE



IDENTIFICATION: )  
 OMEGA 1.4 )  
 TEST 77-733-001 )  
 RUN 05 )  
 METEOROLOGY: )  
 TEMP = 15 C )  
 BAR PRESS = .760 M HG )  
 REL HUMID = 70 % )  
 OPERATION: )  
 MAX POWER AFTERBURNER )  
 SINGLE ENGINE )  
 GROUND RUNUP (SUPPRESSED) )  
 FAR FIELD NOISE )



DISTANCE FROM SOURCE (METERS)





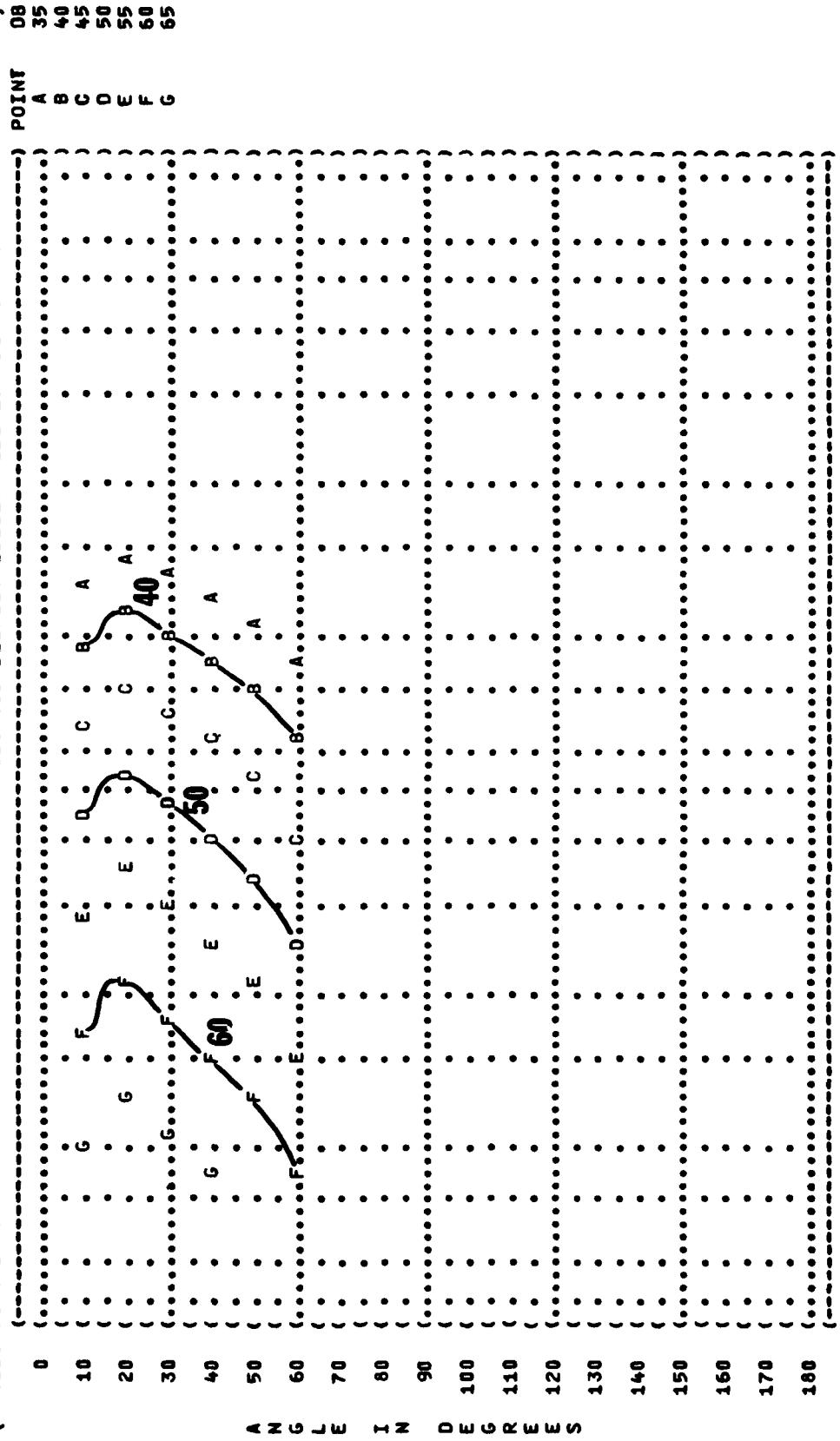








( ) IDENTIFICATION: )  
 ( ) OMEGA 1.4 )  
 ( ) TEST 77-733-001 )  
 ( ) RUN 01 )  
 ( ) METEOROLOGY: )  
 ( ) TEMP = 15 C )  
 ( ) BAR PRESS = .760 M HG )  
 ( ) REL HUMID = 70 % )  
 ( ) PAGE 17 )  
 ( ) POINT OB

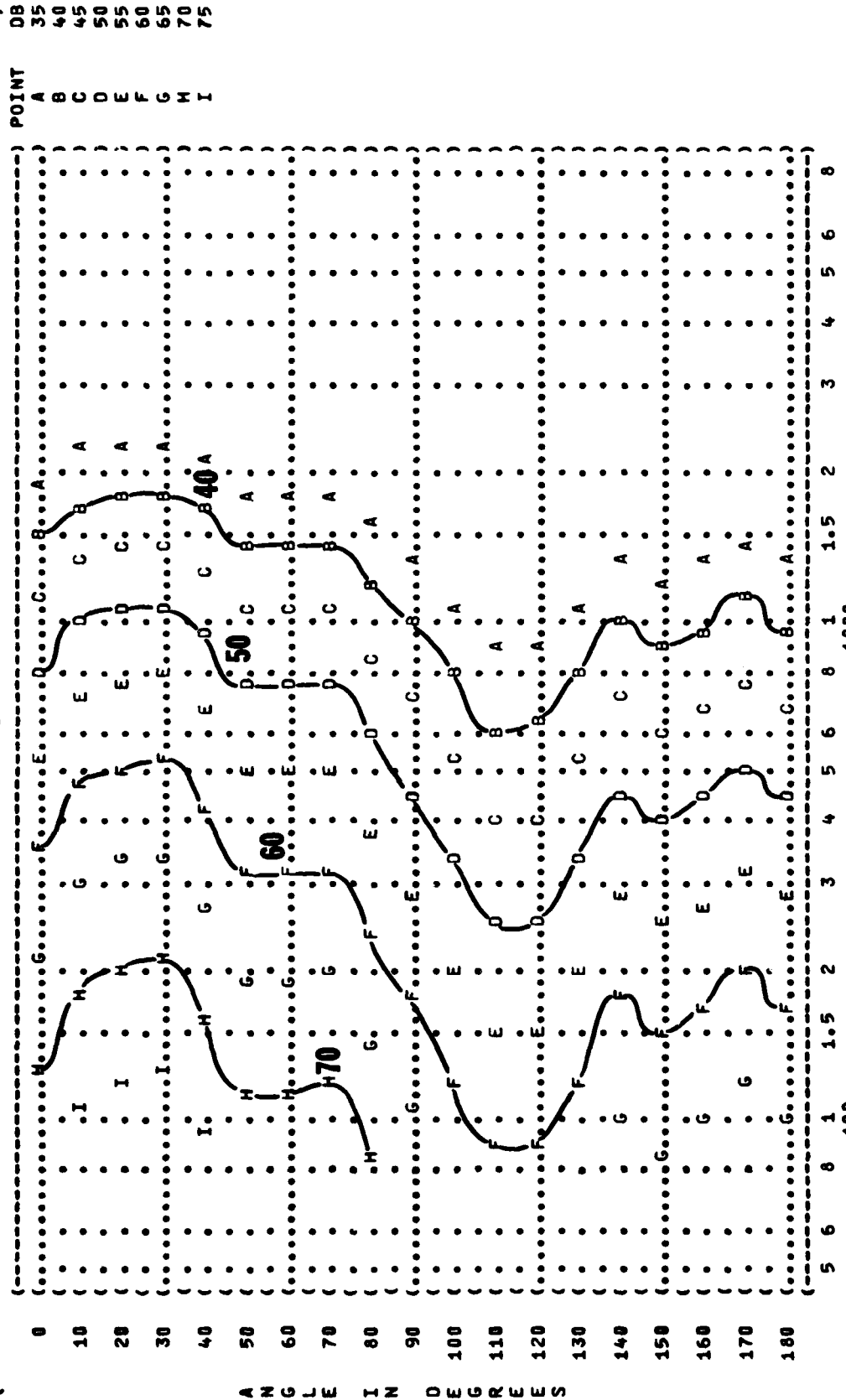


DISTANCE FROM SOURCE (METERS)



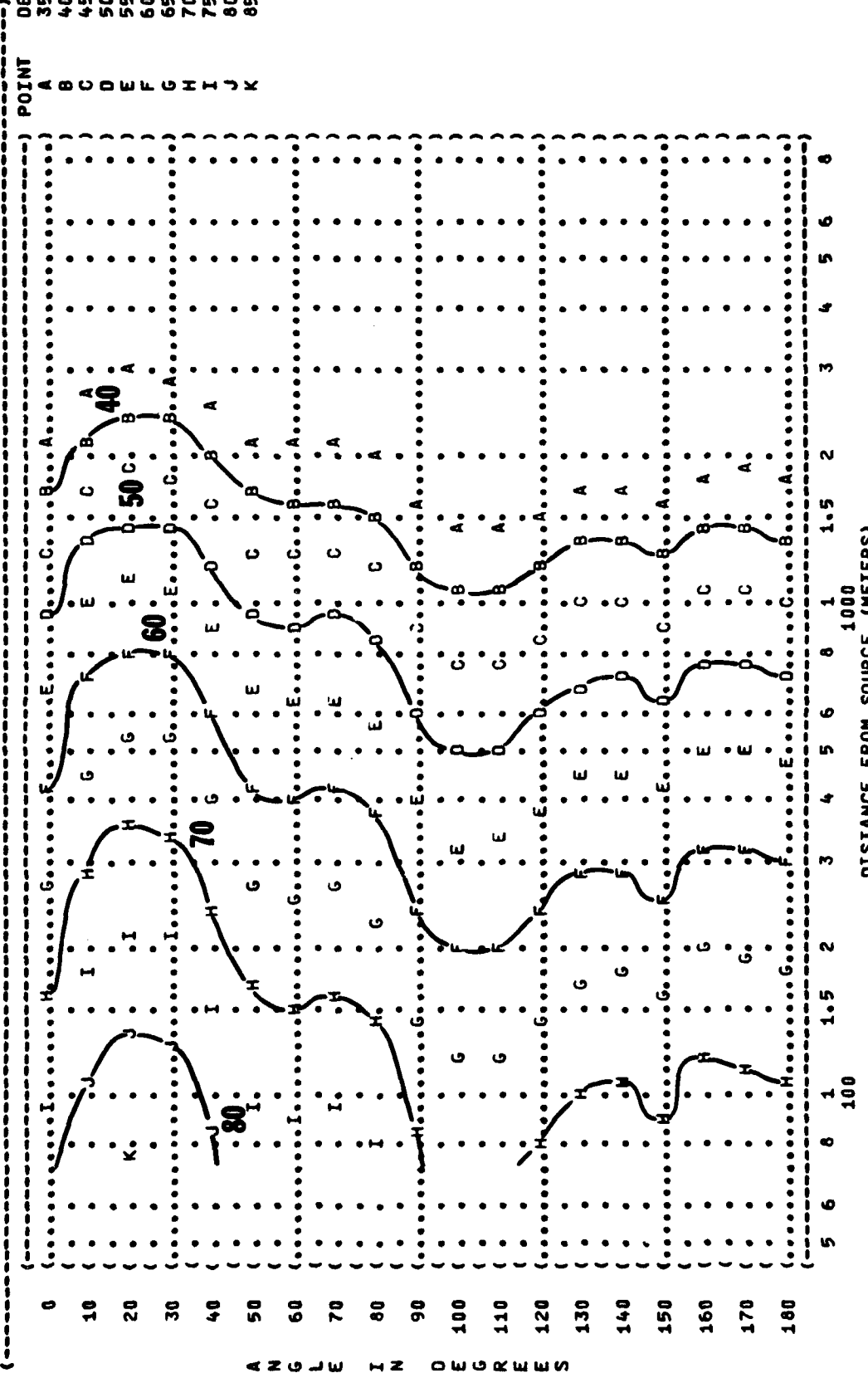


( FIGURE 1 PREFERRED SPEECH INTERFERENCE LEVEL (PSIL) ) IDENTIFICATION: )  
 ( 8 EQUAL LEVEL CONTOURS (DB) ) )  
 ( ) OMEGA 1.4 )  
 ( ) TEST 77-733-001 )  
 ( ) RUN 04 )  
 ( NOISE SOURCE/SUBJECT: ) METEOROLOGY: )  
 ( T-38 AIRCRAFT IN THE ) TEMP = 15 C )  
 ( AF32A-18-SUPPRESSOR ) BAR PRESS = .760 M HG )  
 ( ENGINE J85-GE-5A ) GROUND RUNUP (SUPPRESSED) ) REL HUMID = 70 % )  
 ( FAR FIELD NOISE ) ) PAGE 17 )



A N G L E I N D E G R E E S

) IDENTIFICATION: )  
 ) OMEGA 1.4 )  
 ) TEST 77-733-001 )  
 ) RUN 05 )  
 )  
 ) METEOROLOGY: )  
 ) TEMP = 15 C )  
 ) BAR PRESS = .760 M HG )  
 ) REL HUMID = 70 % )  
 ) 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

) FIGURE: PREFERRED SPEECH INTERFERENCE LEVEL (PSIL)  
 ) EQUAL LEVEL CONTOURS (DB)  
 ) 8

) NOISE SOURCE/SUBJECT: )  
 ) ( OPERATIONS )  
 ) ( MAX POWER AFTERBURNER )  
 ) ( SINGLE ENGINE )  
 ) ( AF32A-16-SUPPRESSOR )  
 ) ( ENGINE J85-GE-5A )  
 ) ( FAR FIELD NOISE )

) DISTANCE FROM SOURCE (METERS)  
 ) 1000  
 ) 100  
 ) 5 6 8 1 1.5 2 3 4 5 6 8









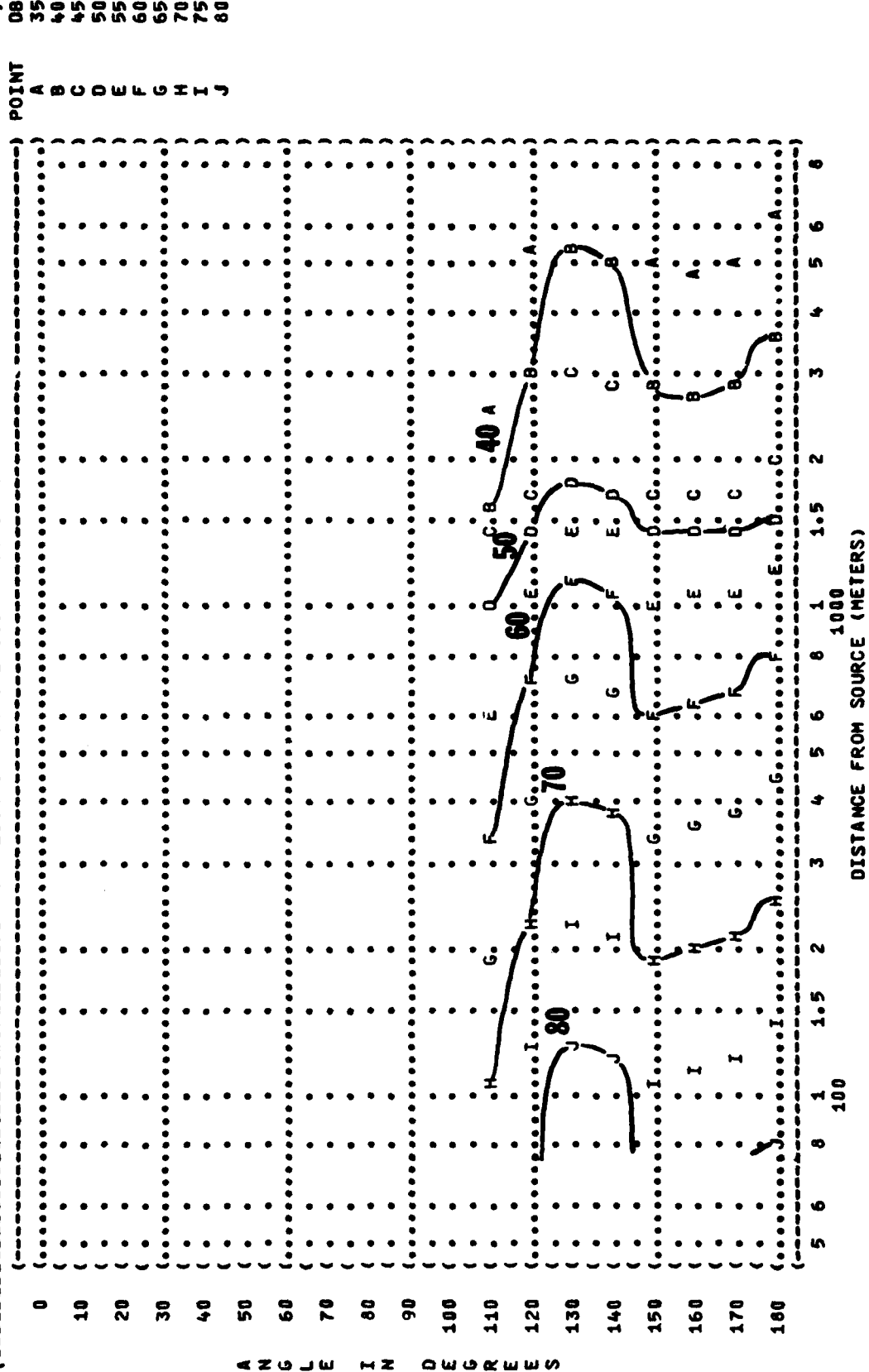




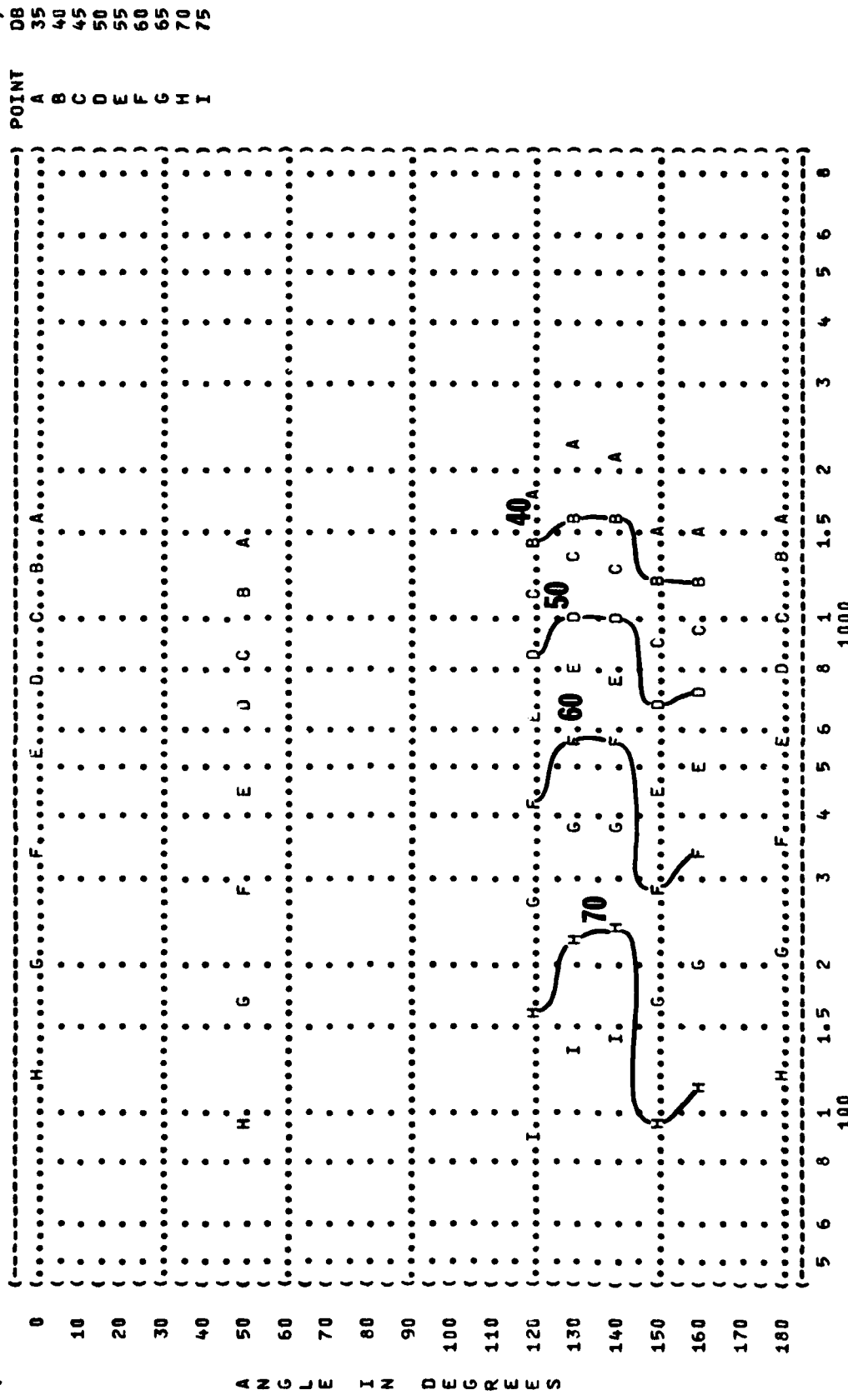




( FIGURE: SOUND PRESSURE LEVEL (SPL) ) IDENTIFICATION: )  
 ( 10 EQUAL LEVEL CONTOURS (DB) ) )  
 ( 31.5 HZ OCTAVE BAND ) )  
 ( NOISE SOURCE/SUBJECT: ) METEOROLOGY: )  
 ( T-38 AIRCRAFT IN THE ) OPERATION: )  
 ( AF32A-18-SUPPRESSOR ) ( IDLE POWER 48X RPM ) TEMP = 15 C )  
 ( ENGINE J85-GE-5A ) ( SINGLE ENGINE ) BAR PRESS = .760 M HG )  
 ( FAR FIELD NOISE ) ( GROUND RUNUP (SUPPRESSED) ) REL HUMID = 70 % )  
 ( ) ( ) PAGE 10 )



( FIGURE: SOUND PRESSURE LEVEL (SPL) ) IDENTIFICATION: )  
 ( EQUAL LEVEL CONTOURS (DB) ) )  
 ( 10 63 HZ OCTAVE BAND ) OMEGA 1.4 )  
 ( ) TEST 77-733-001 )  
 ( ) RUN 01 )  
 ( NOISE SOURCE/SUBJECT: ) METEOROLOGY: )  
 ( T-38 AIRCRAFT IN THE ) IDLE POWER 48% RPM ) TEMP = 15 C )  
 ( AF32A-18-SUPPRESSOR ) SINGLE ENGINE ) BAR PRESS = .760 M HG )  
 ( ENGINE J85-GE-5A ) GROUND RUNUP (SUPPRESSED) ) REL HUMID = 70 % )  
 ( FAR FIELD NOISE ) ) PAGE 19 )



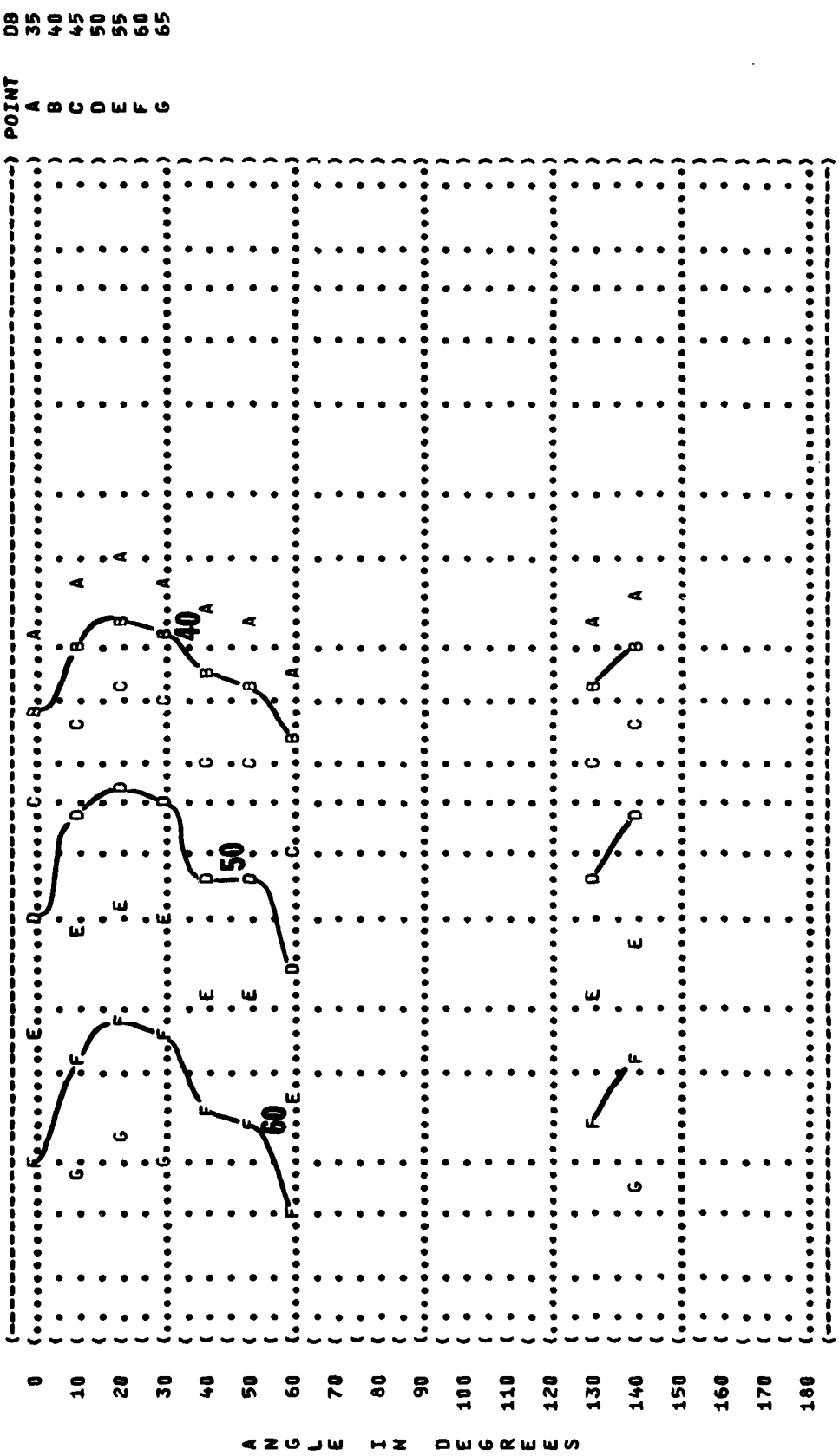
DISTANCE FROM SOURCE (METERS)







( ( FIGURE 1 SOUND PRESSURE LEVEL (SPL)  
 ( ( EQUAL LEVEL CONTOURS (DB)  
 ( ( 10 500 HZ OCTAVE BAND  
 ( ( NOISE SOURCE/SUBJECT: ( OPERATION: ( METEOROLOGY:  
 ( ( T-38 AIRCRAFT IN THE ( IDLE POWER 48% RPM ( TEMP = 15 C  
 ( ( AF32A-18-SUPPRESSOR ( SINGLE ENGINE ( BAR PRESS = .760 M HG  
 ( ( ENGINE J85-GE-5A ( GROUND RUNUP (SUPPRESSED) ( REL HUMID = 70 %  
 ( ( FAR FIELD NOISE ( ( PAGE 22 )



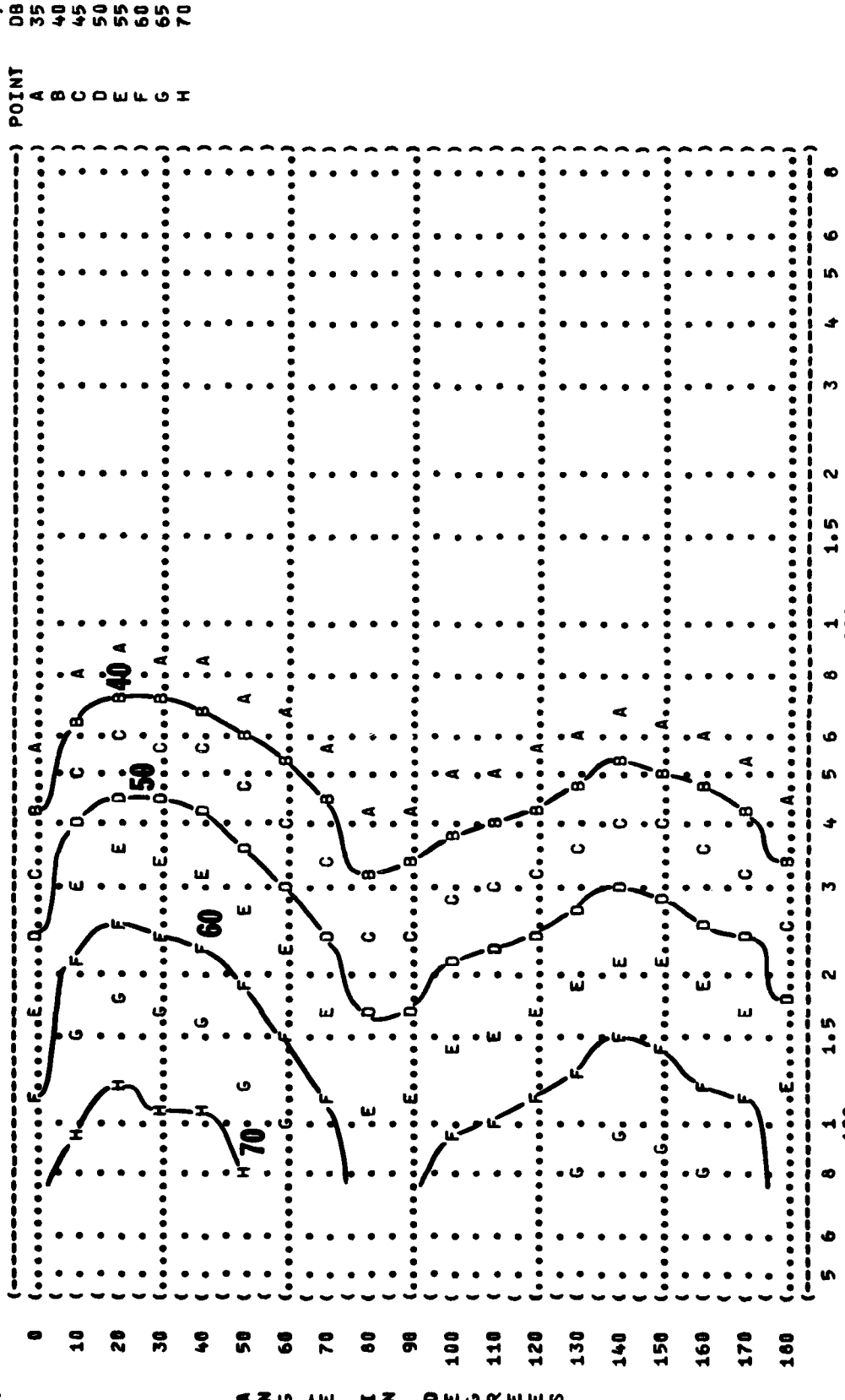
A N G L E I N D E G R E E S

DISTANCE FROM SOURCE (METERS)





) IDENTIFICATION: )  
 ) OMEGA 1.4 )  
 ) TEST 77-733-001 )  
 ) RUN 01 )  
 ) 14 SEP 78 )  
 ) PAGE 25 )  
 ) METEOROLOGY: )  
 ) TEMP = 15 C )  
 ) BAR PRESS = .760 M HG )  
 ) REL HUMID = 70 % )  
 ) OPERATIONS )  
 ) IDLE POWER 48% RPM )  
 ) SINGLE ENGINE )  
 ) GROUND RUNUP (SUPPRESSED) )  
 ) NOISE SOURCE/SUBJECT: )  
 ) T-38 AIRCRAFT IN THE )  
 ) AF32A-18-SUPPRESSOR )  
 ) ENGINE J85-GE-5A )  
 ) FAR FIELD NOISE )



DISTANCE FROM SOURCE (METERS)

1000

100

5 6 8 1 1.5 2 3 4 5 6 8



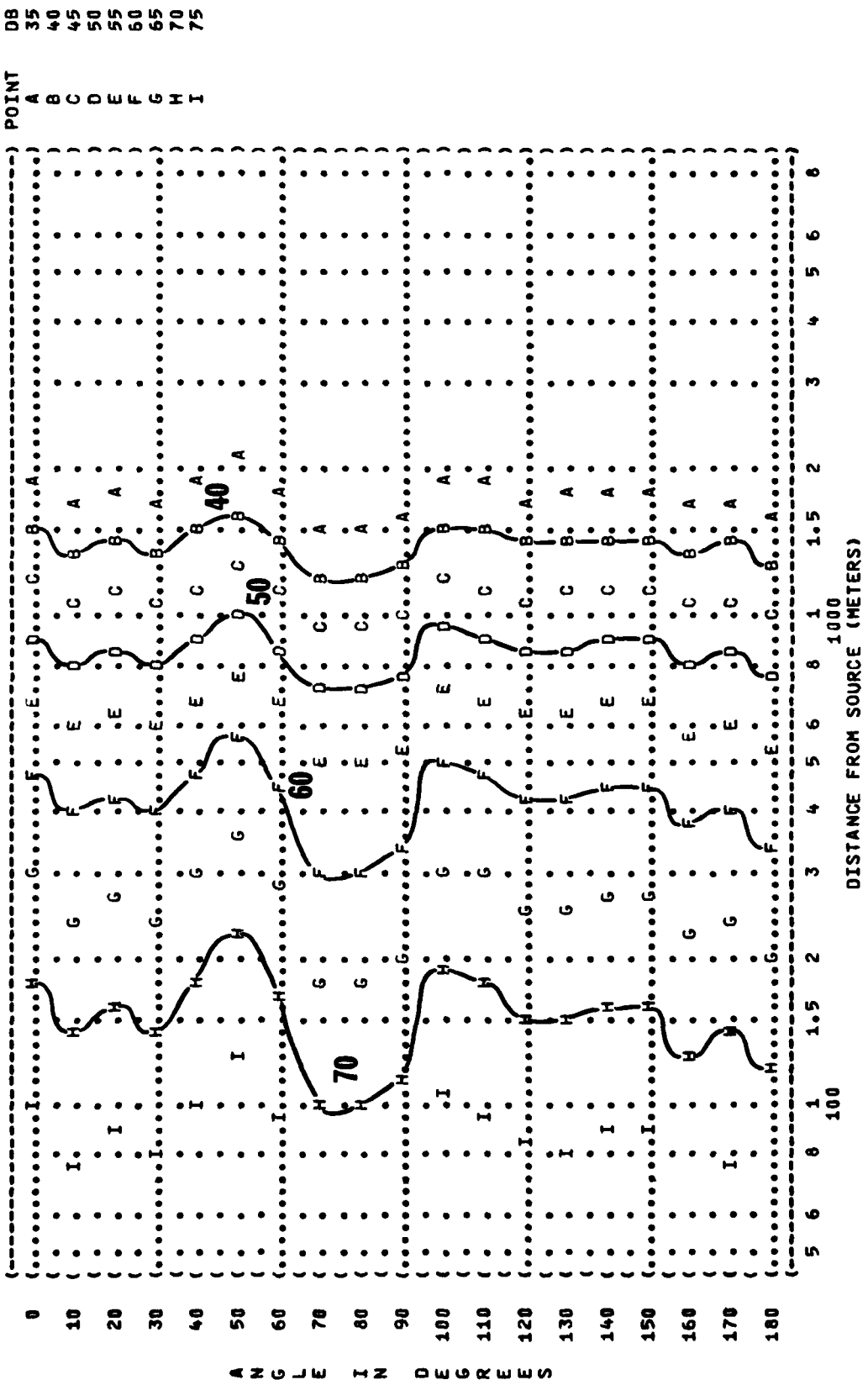
) IDENTIFICATION: )  
 ) OMEGA 1.4 )  
 ) TEST 77-733-001 )  
 ) RUN 02 )  
 )  
 ) METEOROLOGY: )  
 ) TEMP = 15 C )  
 ) BAR PRESS = .760 M HG )  
 ) REL HUMID = 70 % )  
 )  
 ) OPERATION: )  
 ) 75% RPM ENGINE RUNUP )  
 ) SINGLE ENGINE )  
 ) GROUND RUNUP (SUPPRESSED) )  
 )  
 ) NOISE SOURCE/SUBJECT: )  
 ) T-38 AIRCRAFT IN THE )  
 ) AF32A-18-SUPPRESSOR )  
 ) ENGINE J85-GE-5A )  
 ) FAR FIELD NOISE )



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

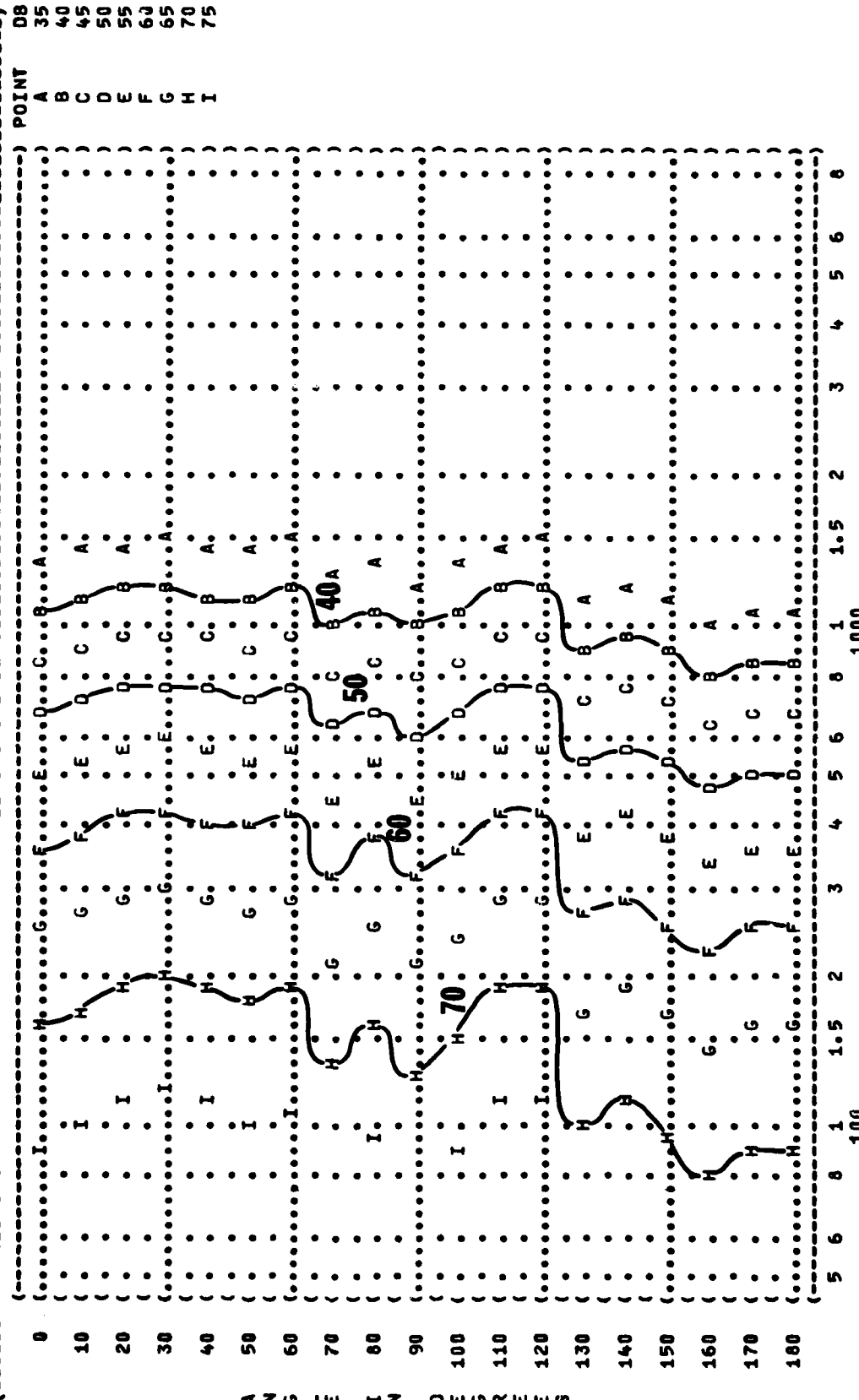
DISTANCE FROM SOURCE (METERS)

( FIGURE: SOUND PRESSURE LEVEL (SPL) ) IDENTIFICATION: )  
 ( EQUAL LEVEL CONTOURS (DB) ) )  
 ( 10 63 HZ OCTAVE BAND ) OMEGA 1.4 )  
 ( ) TEST 77-733-001 )  
 ( ) RUN 02 )  
 ( NOISE SOURCE/SUBJECT: ) METEOROLOGY: )  
 ( T-38 AIRCRAFT IN THE ) TEMP = 15 C )  
 ( AF32A-16-SUPPRESSOR ) SINGLE ENGINE ) BAR PRESS = .760 H HG )  
 ( ENGINE J85-GE-5A ) GROUND RUNUP (SUPPRESSED) ) REL HUMID = 70 % )  
 ( FAR FIELD NOISE ) ) PAGE 19 )





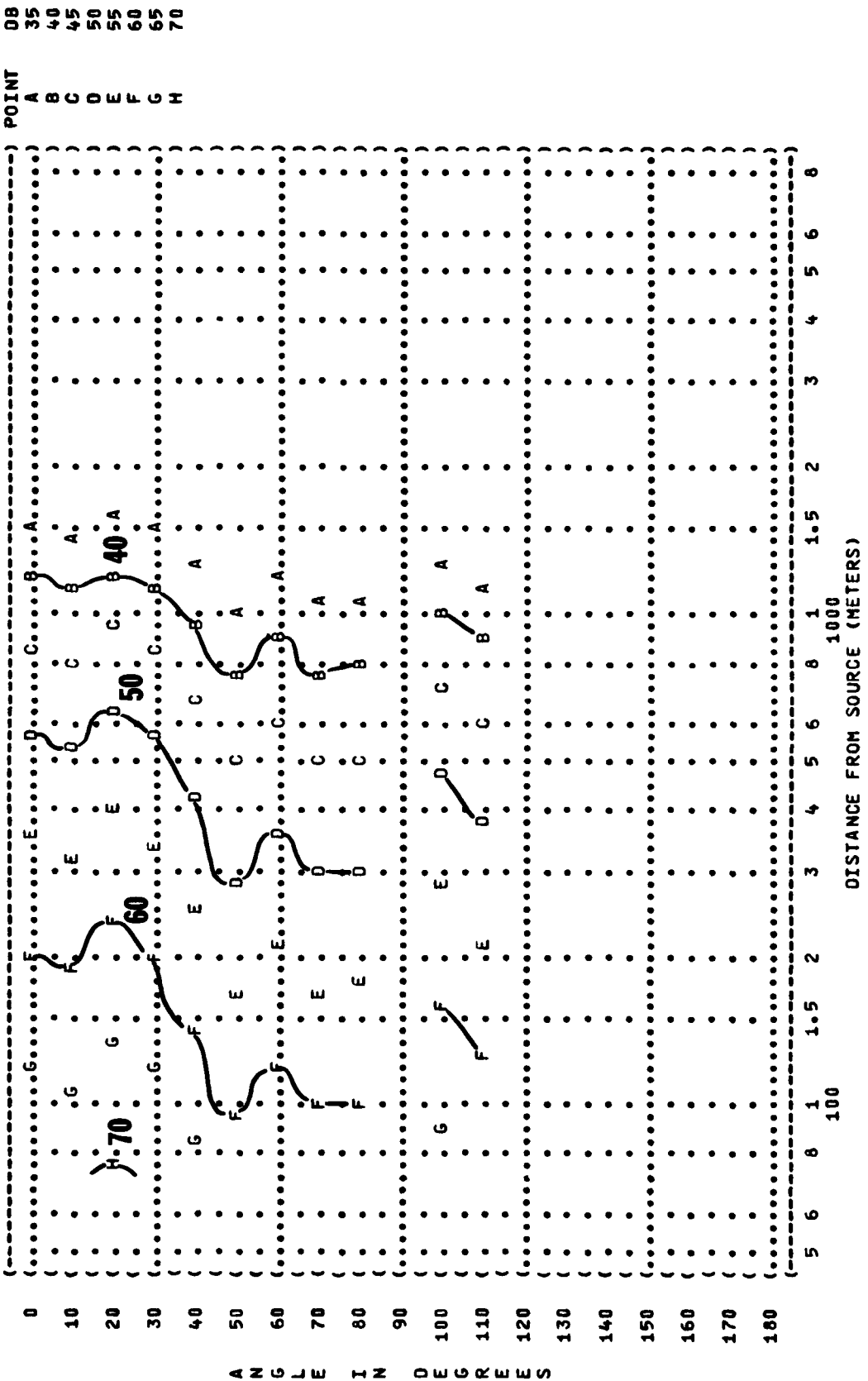
( ( FIGURE: SOUND PRESSURE LEVEL (SPL) ) IDENTIFICATION: )  
 ( ( 10 EQUAL LEVEL CONTOURS (DB) ) )  
 ( ( 125 HZ OCTAVE BAND ) )  
 ( ( NOISE SOURCE/SUBJECT: ) METEOROLOGY: )  
 ( ( T-38 AIRCRAFT IN THE ) TEMP = 15 C )  
 ( ( AF32A-10-SUPPRESSOR ) SINGLE ENGINE ) BAR PRESS = .760 M HG )  
 ( ( ENGINE J85-GE-5A ) GROUND RUNUP (SUPPRESSED) ) REL HUMID = 70 % )  
 ( ( FAR FIELD NOISE ) ) PAGE 20 )  
 ( ( TEST 77-733-001 ) RUN 02 )  
 ( ( OMEGA 1.4 ) )  
 ( ( ) )



DISTANCE FROM SOURCE (METERS)



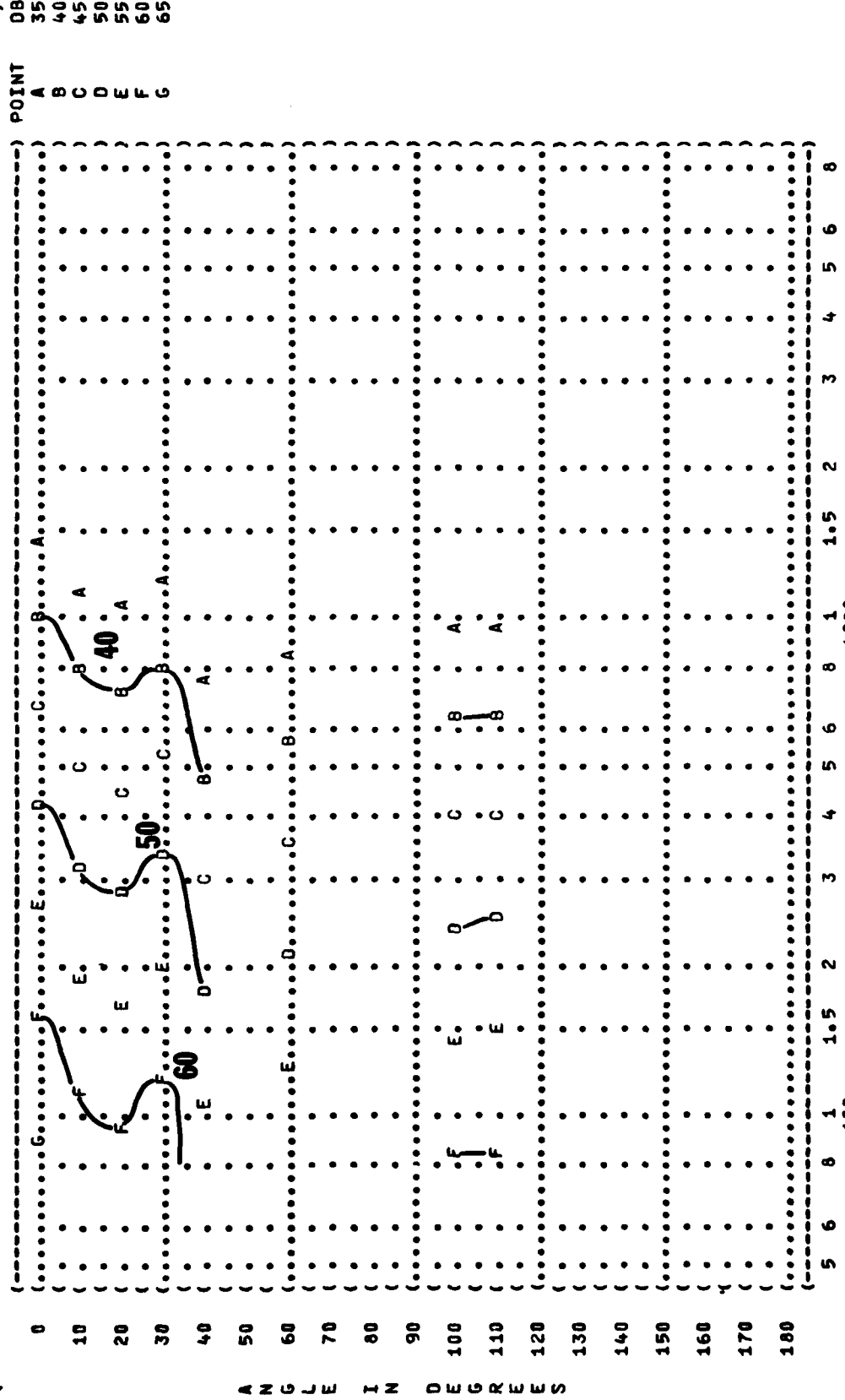
) IDENTIFICATION: )  
 ) OMEGA 1.4 )  
 ) TEST 77-733-001 )  
 ) RUN 02 )  
 ) METEOROLOGY: )  
 ) TEMP = 15 C )  
 ) BAR PRESS = .760 M HG )  
 ) REL HUMID = 70 % )  
 ) OPERATION: )  
 ) 75% RPM ENGINE RUNUP )  
 ) SINGLE ENGINE )  
 ) GROUND RUNUP (SUPPRESSED) )  
 ) FAR FIELD NOISE )  
 ) PAGE 22 )



A N G L E I N D E G R E E S

DISTANCE FROM SOURCE (METERS)

( FIGURE: SOUND PRESSURE LEVEL (SPL) ) IDENTIFICATION: )  
 ( 10 EQUAL LEVEL CONTOURS (DB) ) )  
 ( 1000 HZ OCTAVE BAND ) OMEGA 1.4 )  
 ( ) TEST 77-733-001 )  
 ( ) RUN 02 )  
 ( NOISE SOURCE/SUBJECT: ) METEOROLOGY: )  
 ( T-38 AIRCRAFT IN THE ) TEMP = 15 C )  
 ( AF32A-18-SUPPRESSOR ) SINGLE ENGINE ) BAR PRESS = .760 M HG )  
 ( ENGINE J85-GE-5A ) GROUND RUNUP (SUPPRESSED) ) REL HUMID = 70 % )  
 ( FAR FIELD NOISE ) ) PAGE 23 )



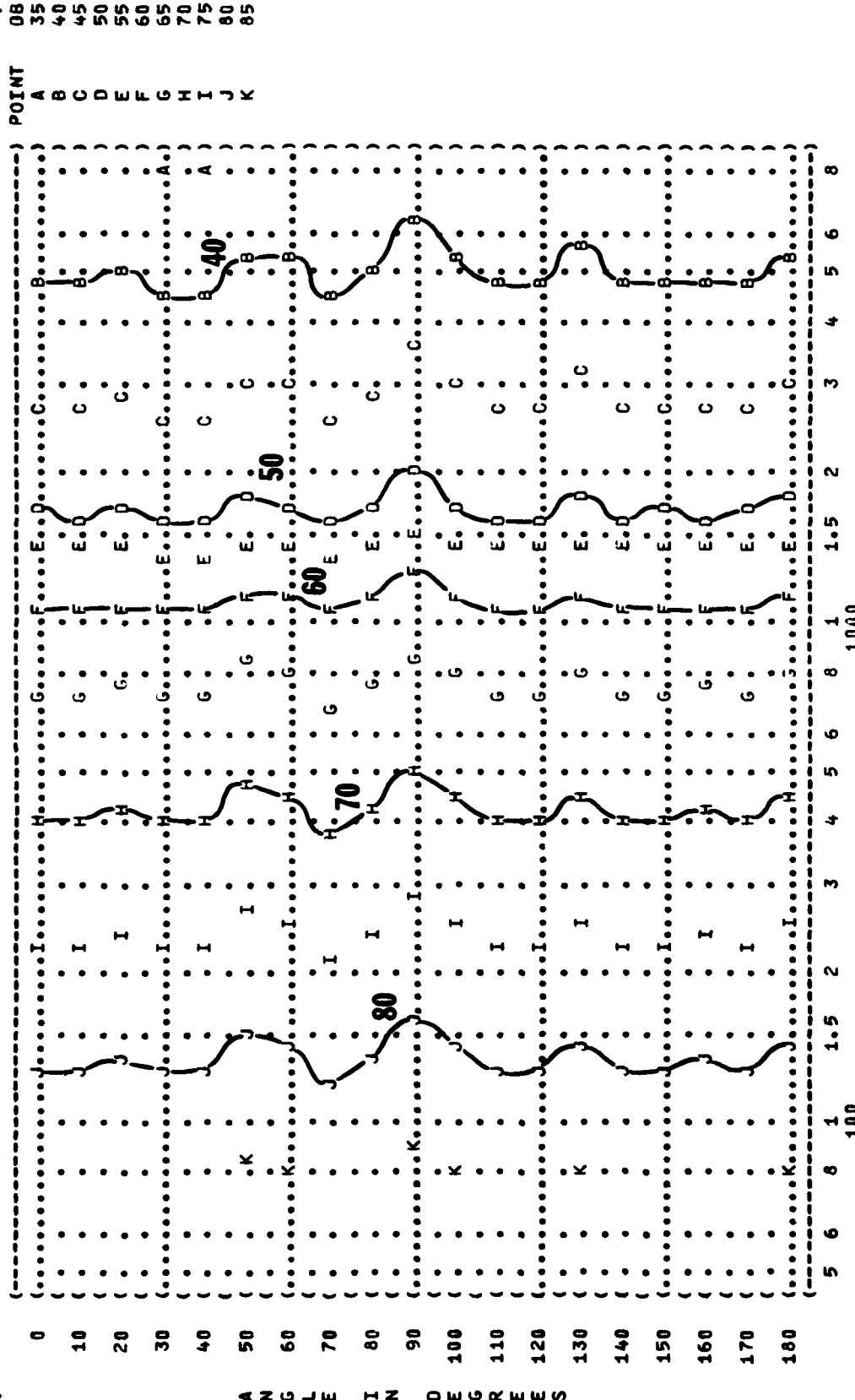
A N G L E I N D E G R E E S







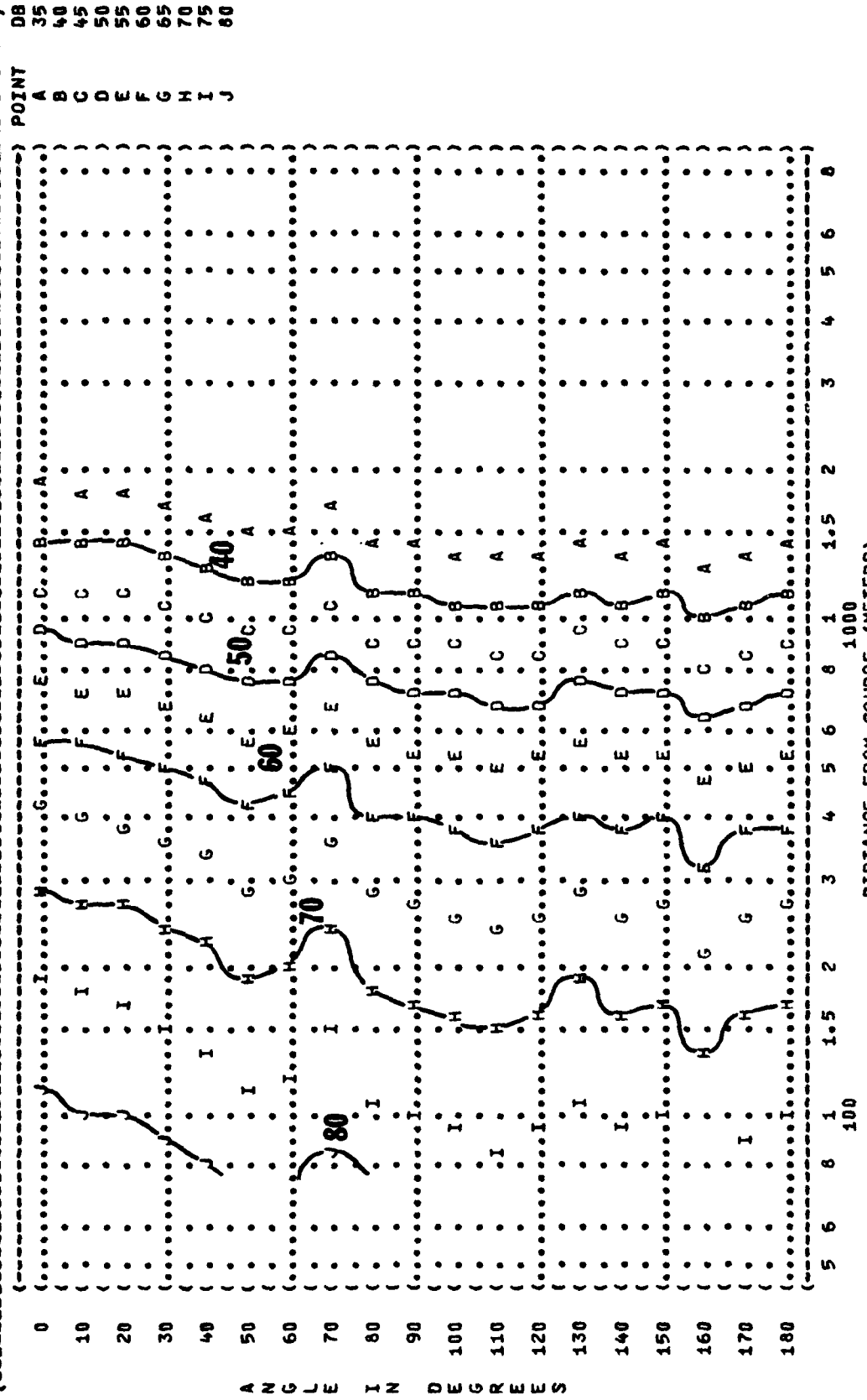
( FIGURE: SOUND PRESSURE LEVEL (SPL) ) IDENTIFICATION: )  
 ( ( 10 EQUAL LEVEL CONTOURS (DB) ) )  
 ( ( 31.5 HZ OCTAVE BAND ) )  
 ( NOISE SOURCE/SUBJECT: ) METEOROLOGY: )  
 ( ( OPERATION: ) )  
 ( ( T-36 AIRCRAFT IN THE ) ) TEMP = 15 C )  
 ( ( AF32A-18-SUPPRESSOR ) ) BAR PRESS = .760 M HG )  
 ( ( ENGINE J85-GE-5A ) ) REL HUMID = 70 % )  
 ( ( FAR FIELD NOISE ) ) ) PAGE 18 )





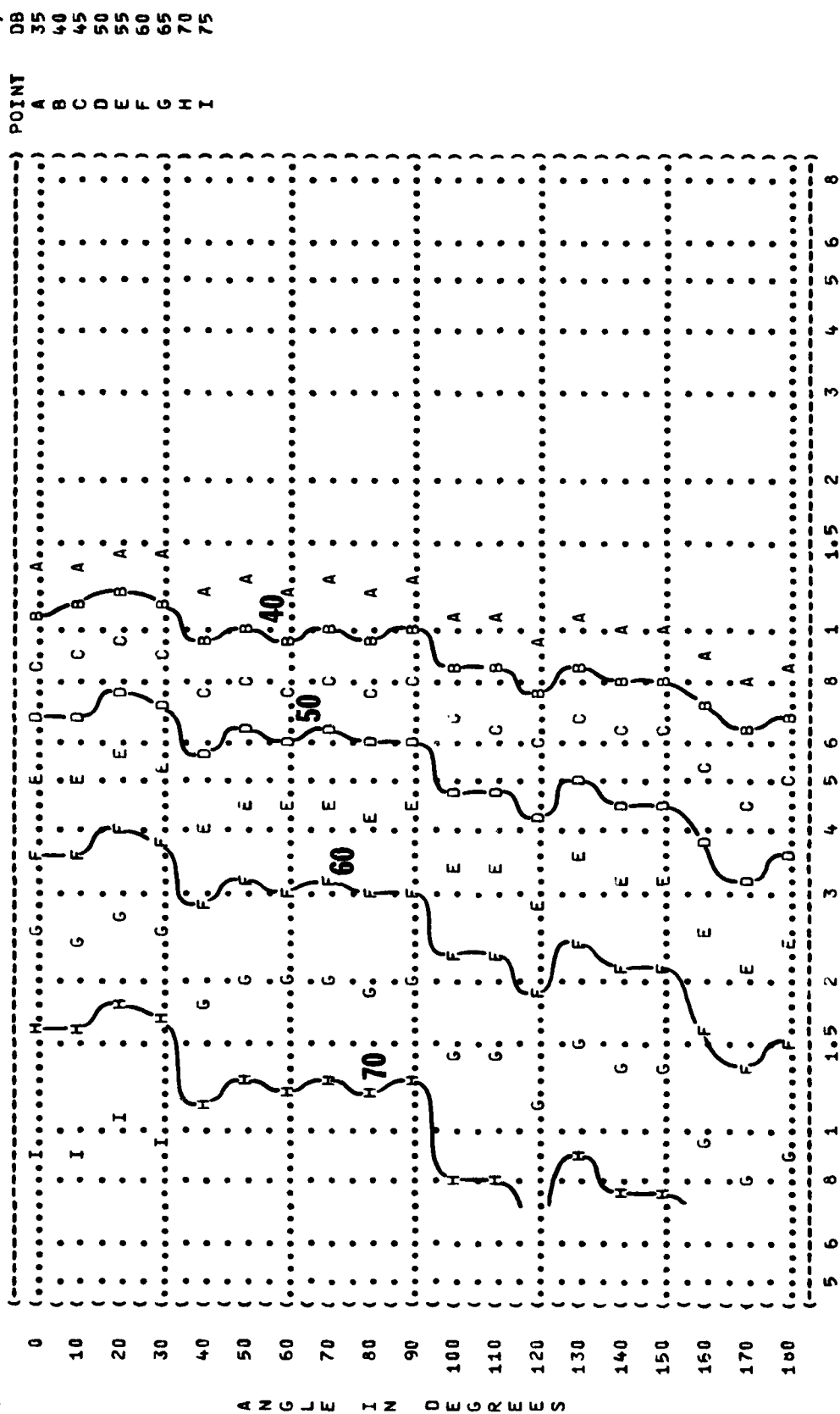


( FIGURE 1 SOUND PRESSURE LEVEL (SPL) ) IDENTIFICATION: )  
 ( EQUAL LEVEL CONTOURS (DB) ) )  
 ( 10 125 HZ OCTAVE BAND ) )  
 ( ) )  
 ( NOISE SOURCE/SUBJECT: ) METEOROLOGY: )  
 ( OPERATIONS ) )  
 ( 7-38 AIRCRAFT IN THE ) TEMP = 15 C )  
 ( AF32A-16-SUPPRESSOR ) BAR PRESS = .760 M HG )  
 ( ENGINE J85-GE-5A ) GROUND RUNUP (SUPPRESSED) ) REL HUMID = 70 % )  
 ( FAR FIELD NOISE ) ) PAGE 20 )



A N G L E I N D E R G R E E S

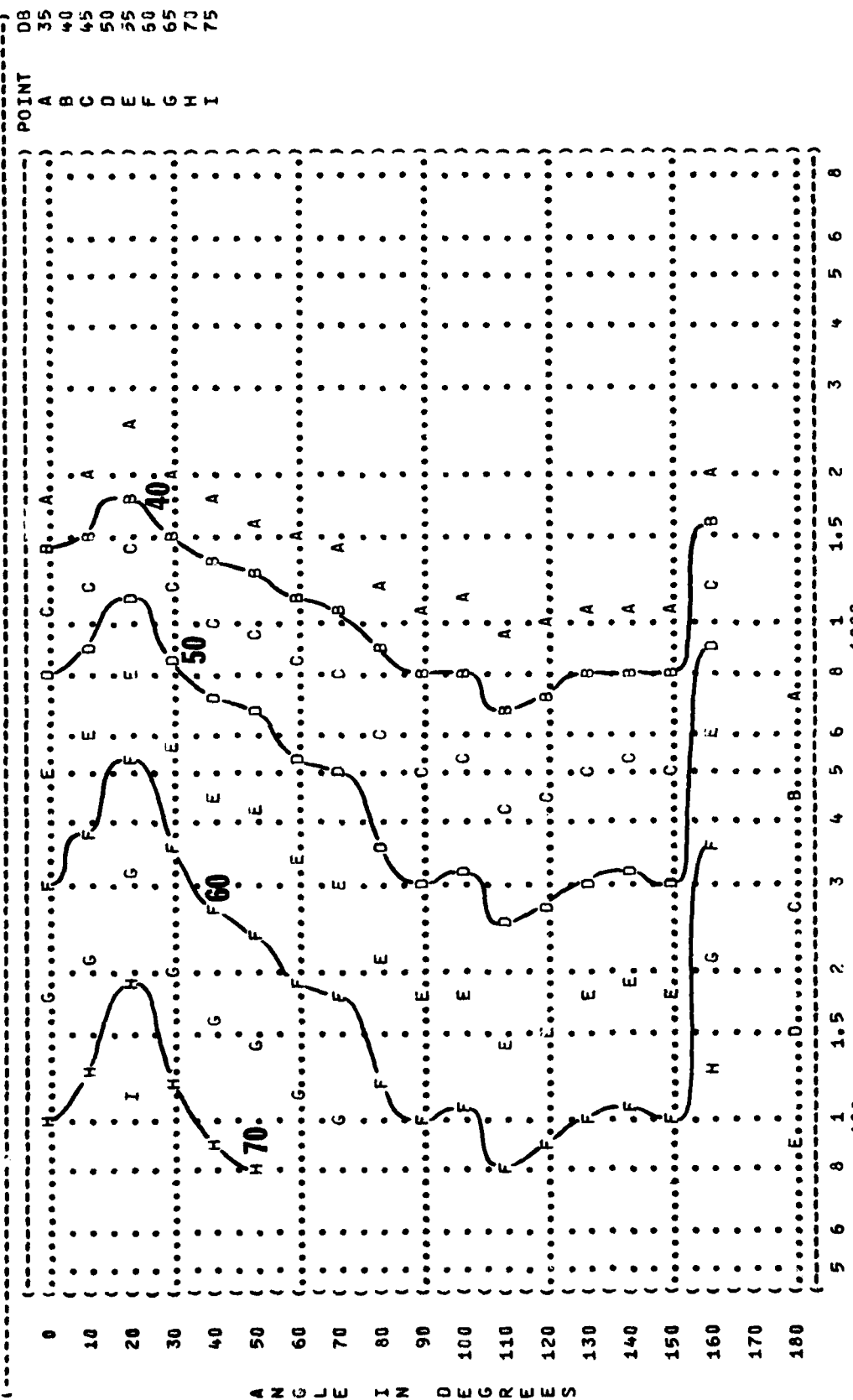
( FIGURE: SOUND PRESSURE LEVEL (SPL) ) IDENTIFICATION: )  
 ( EQUAL LEVEL CONTOURS (DB) ) )  
 ( 10 250 HZ OCTAVE BAND ) )  
 ( NOISE SOURCE/SUBJECT: ) )  
 ( T-38 AIRCRAFT IN THE ) OPERATION: )  
 ( AF32A-18-SUPPRESSOR ) ( 94% RPM POWER RUNUP ) )  
 ( ENGINE J35-65-5A ) ( SINGLE ENGINE ) )  
 ( FAR FIELD NOISE ) ( GROUND RUNUP (SUPPRESSED) ) )  
 ( ) )  
 ( ) ) METEOROLOGY: )  
 ( ) ) TEMP = 15 C )  
 ( ) ) BAR PRESS = .760 H HG )  
 ( ) ) REL HUMID = 70 % )  
 ( ) ) PAGE 21 )



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

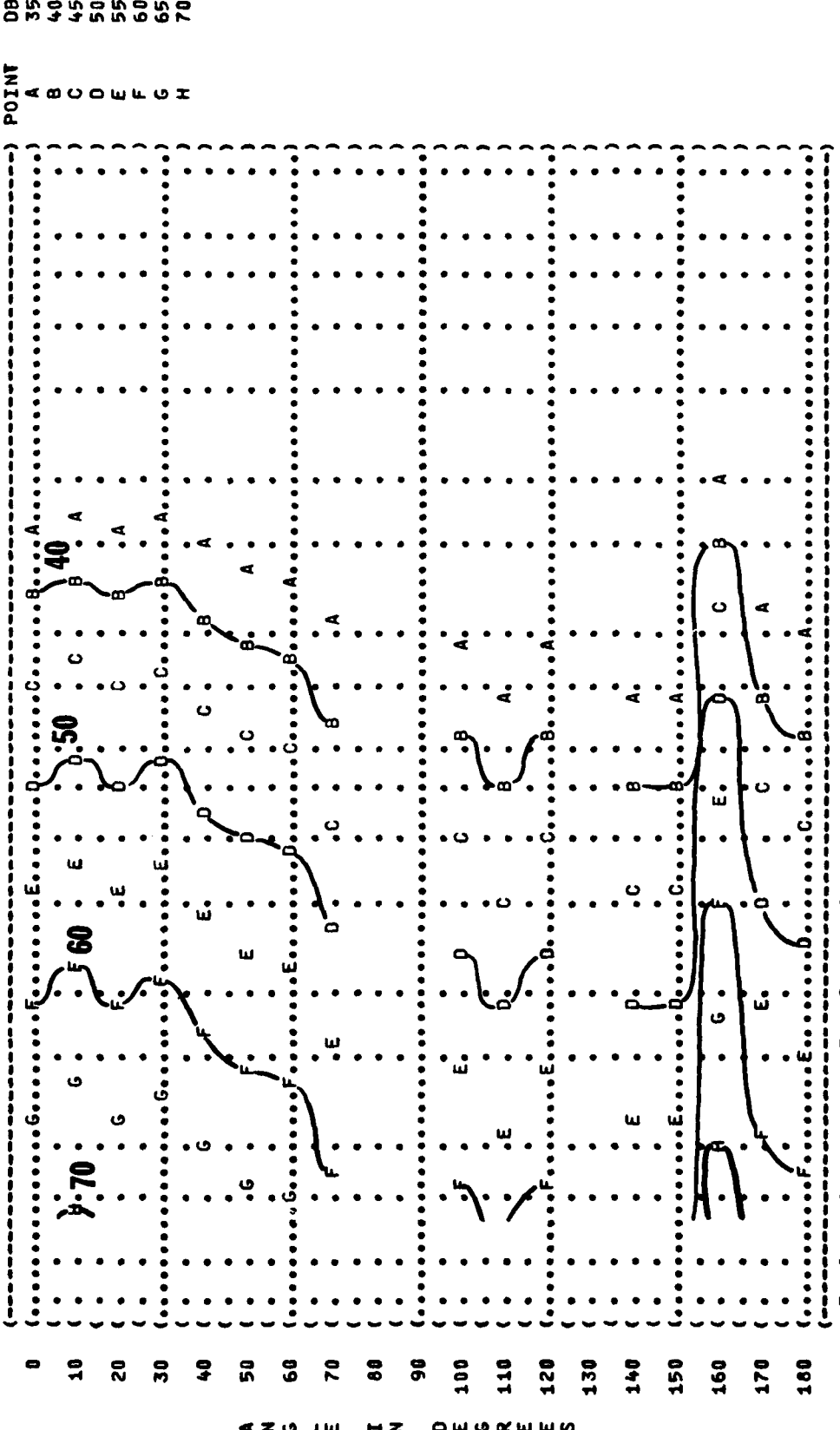
DISTANCE FROM SOURCE (METERS)

) IDENTIFICATION: )  
 ) OMEGA 1.4 )  
 ) TEST 77-733-001 )  
 ) RUN 03 )  
 )  
 ) METEOROLOGY: )  
 ) TEMP = 15 C )  
 ) BAR PRESS = .760 M HG )  
 ) REL HUMID = 70 % )  
 )  
 ) OPERATIONS )  
 ) 94% RPM POWER RUNUP )  
 ) SINGLE ENGINE )  
 ) GROUND RUNUP (SUPPRESSED) )  
 )  
 ) SOURCE/SUBJECT: )  
 ) 1-10 AIRCRAFT IN THE )  
 ) F32A-10-SUPPRESSOR )  
 ) ENGINE J65-GE-5A )  
 ) FAR FIELD NOISE )



DISTANCE FROM SOURCE (METERS)

) IDENTIFICATION: )  
 ) )  
 ) OMEGA 1.4 )  
 ) TEST 77-733-001 )  
 ) RUN 03 )  
 ) )  
 ) METEOROLOGY: )  
 ) )  
 ) TEMP = 15 C )  
 ) BAR PRESS = .760 M HG )  
 ) REL HUMID = 70 % )  
 ) )  
 ) PAGE 23 )  
 ) )

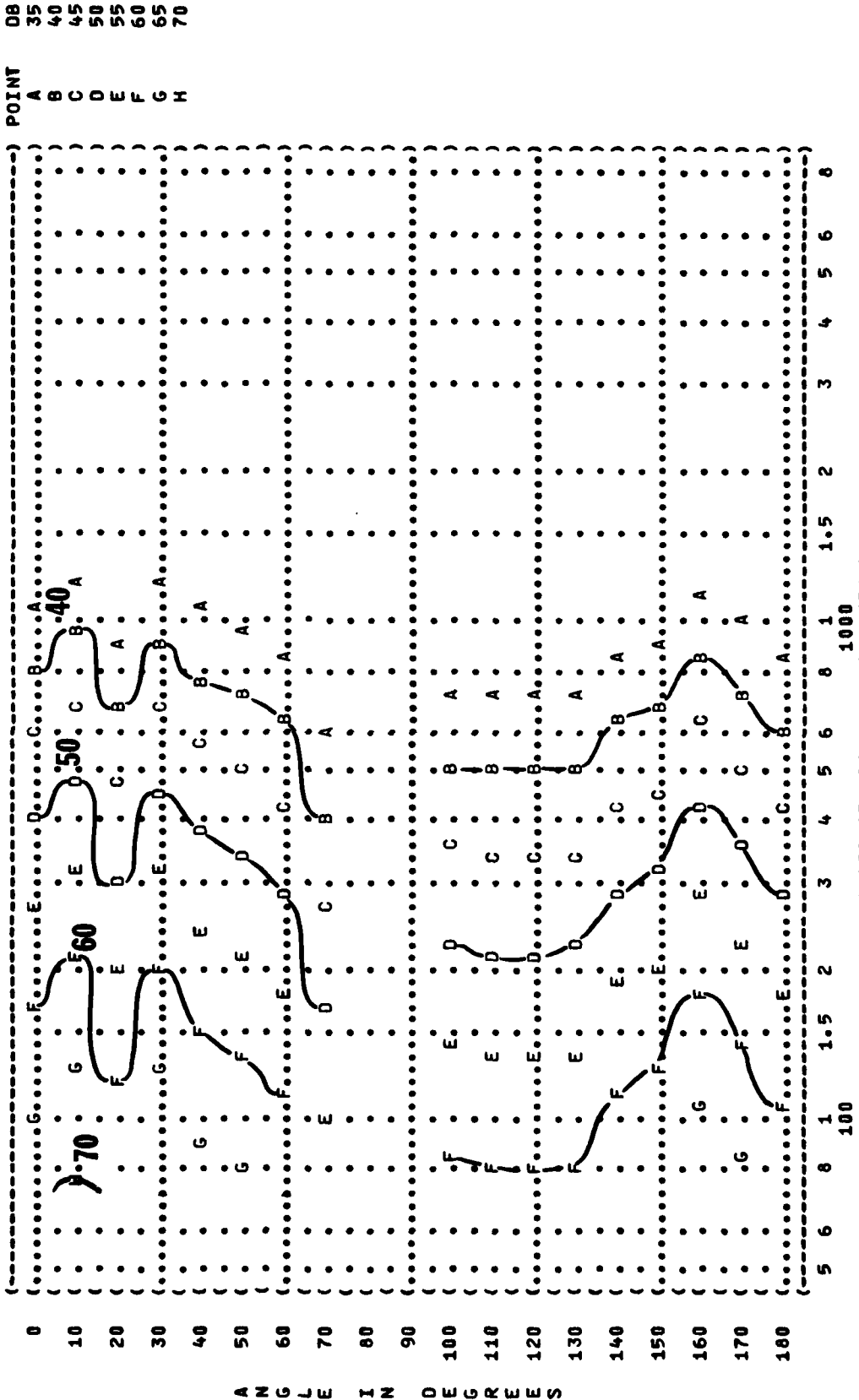


) FIGURE: SOUND PRESSURE LEVEL (SPL)  
 ) EQUAL LEVEL CONTOURS (DB)  
 ) 1000 HZ OCTAVE BAND

) NOISE SOURCE/SUBJECT: )  
 ) ( OPERATION: )  
 ) ( 94% RPM POWER RUNUP )  
 ) ( SINGLE ENGINE )  
 ) ( GROUND RUNUP (SUPPRESSED) )  
 ) ( FAR FIELD NOISE )

DISTANCE FROM SOURCE (METERS)  
 5 6 8 1 1.5 2 3 4 5 6 8 1000

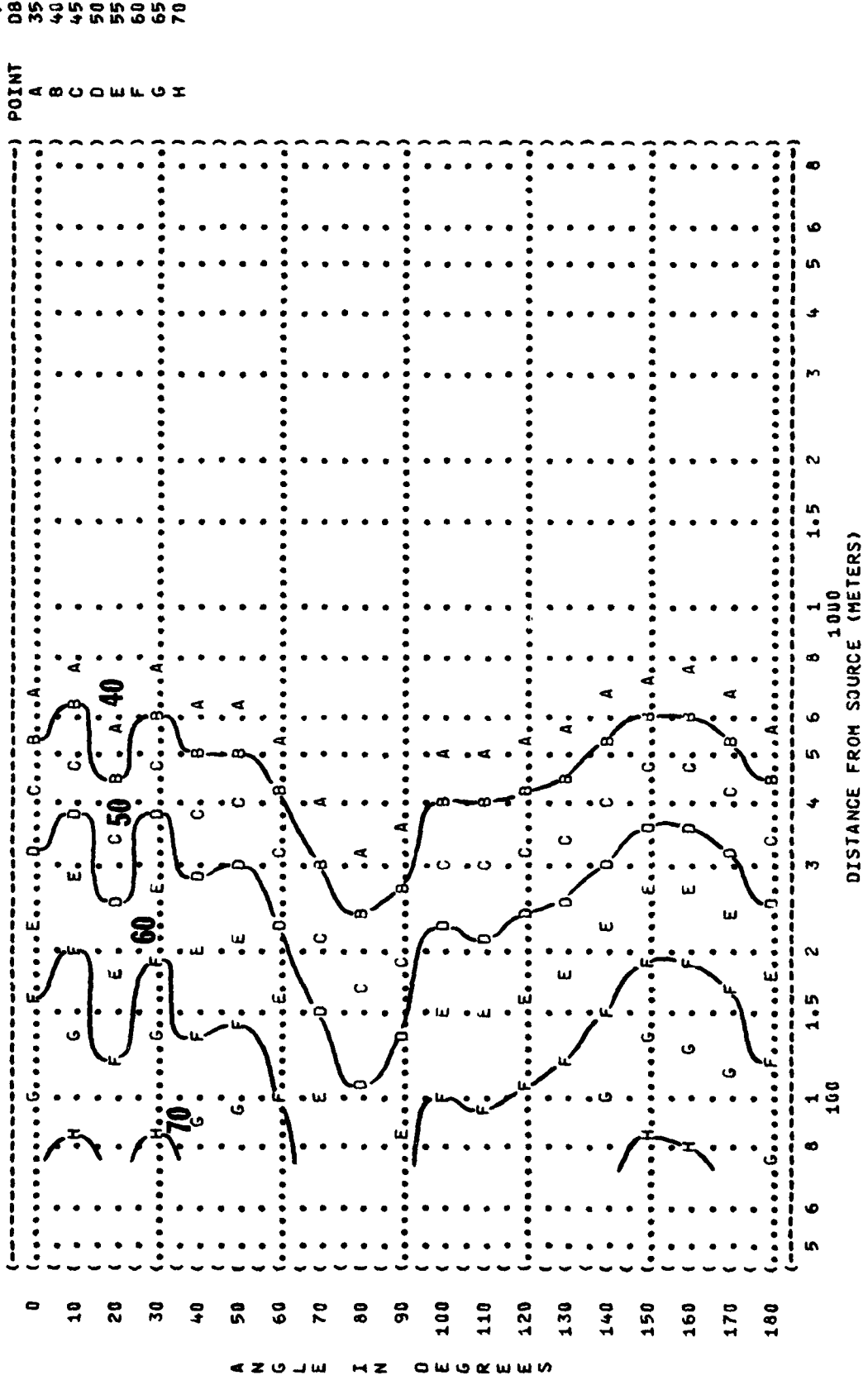
( FIGURE: SOUND PRESSURE LEVEL (SPL) ) IDENTIFICATION: )  
 ( 10 EQUAL LEVEL CONTOURS (DB) ) )  
 ( 2000 HZ OCTAVE BAND ) )  
 ( NOISE SOURCE/SUBJECT: ) )  
 ( T-38 AIRCRAFT IN THE ) OPERATION: )  
 ( AF32A-18-SUPPRESSOR ) ( 94% RPM POWER RUNUP ) )  
 ( ENGINE J85-GE-5A ) ( SINGLE ENGINE ) )  
 ( FAR FIELD NOISE ) ( GROUND RUNUP (SUPPRESSED) ) )  
 ( ) ( ) ) METEOROLOGY: )  
 ( ) ( ) ) TEMP = 15 C )  
 ( ) ( ) ) BAR PRESS = .760 M HG )  
 ( ) ( ) ) REL HUMID = 70 % )  
 ( ) ( ) ) PAGE 24 )



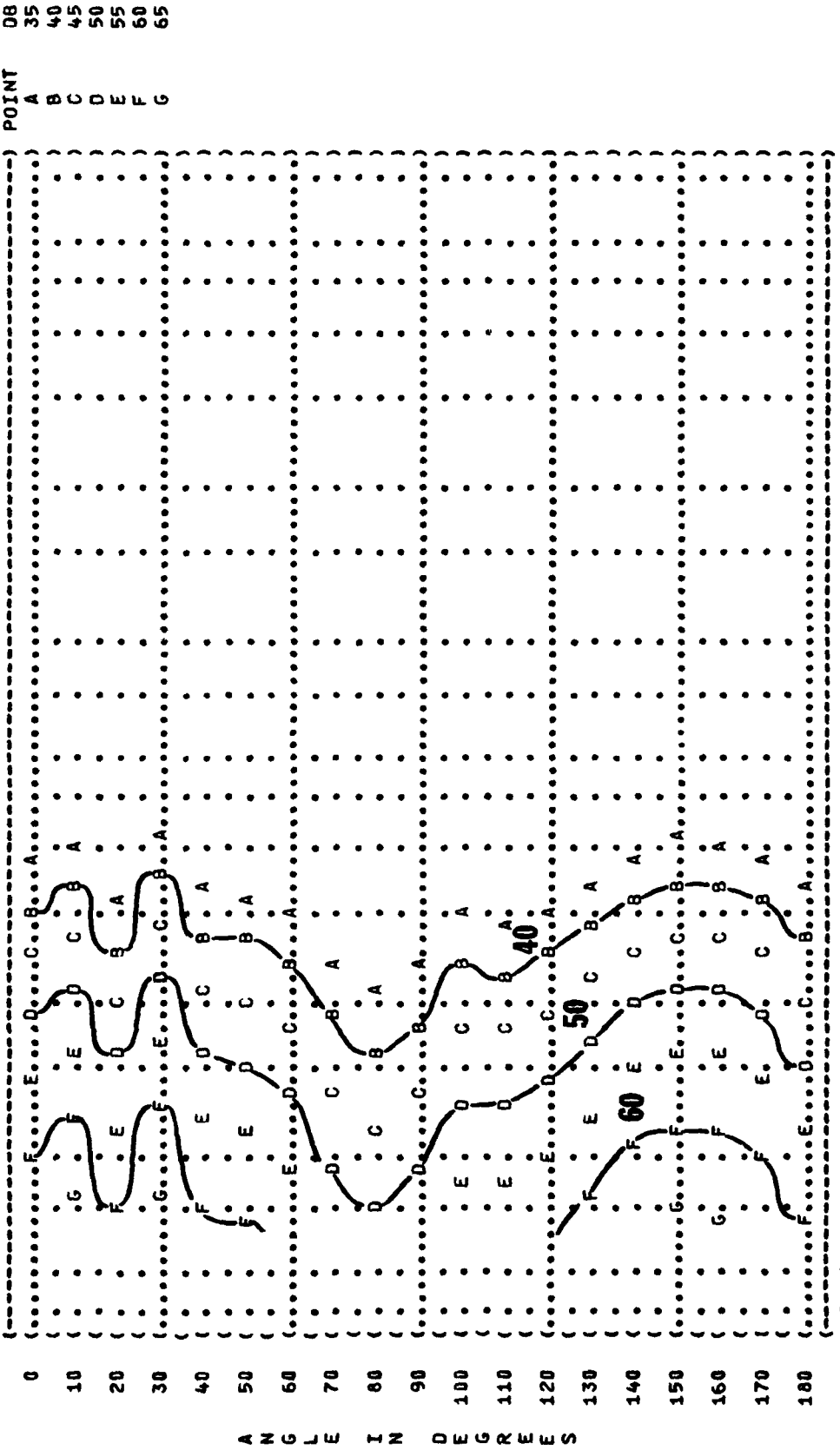
(-----) POINT DB  
 A 35  
 B 40  
 C 45  
 D 50  
 E 55  
 F 60  
 G 65  
 H 70

5 6 8 1 1.5 2 3 4 5 6 8 100 1000  
 DISTANCE FROM SOURCE (METERS)

( FIGURE: SOUND PRESSURE LEVEL (SPL) ) IDENTIFICATION: )  
 ( 10 EQUAL LEVEL CONTOURS (DB) ) )  
 ( 4000 HZ OCTAVE BAND ) OMEGA 1.4 )  
 ( ) TEST 77-733-001 )  
 ( ) RUN 03 )  
 ( NOISE SOURCE/SUBJECT: ) METEOROLOGY: )  
 ( T-38 AIRCRAFT IN THE ) TEMP = 15 C )  
 ( AF32A-18-SUPPRESSOR ) SINGLE ENGINE ) BAR PRESS = .760 M HG )  
 ( ENGINE J85-GE-5A ) GROUND RUNUP (SUPPRESSED) ) REL HUMID = 70 % )  
 ( FAR FIELD NOISE ) ) PAGE 25 )



) IDENTIFICATION: )  
 ) )  
 ) OMEGA 1.4 )  
 ) TEST 77-733-001 )  
 ) RUN 03 )  
 ) )  
 ) METEOROLOGY: )  
 ) TEMP = 15 C )  
 ) BAR PRESS = .760 M HG )  
 ) REL HUMID = 70 % )  
 ) )  
 ) PAGE 26 )  
 ) )

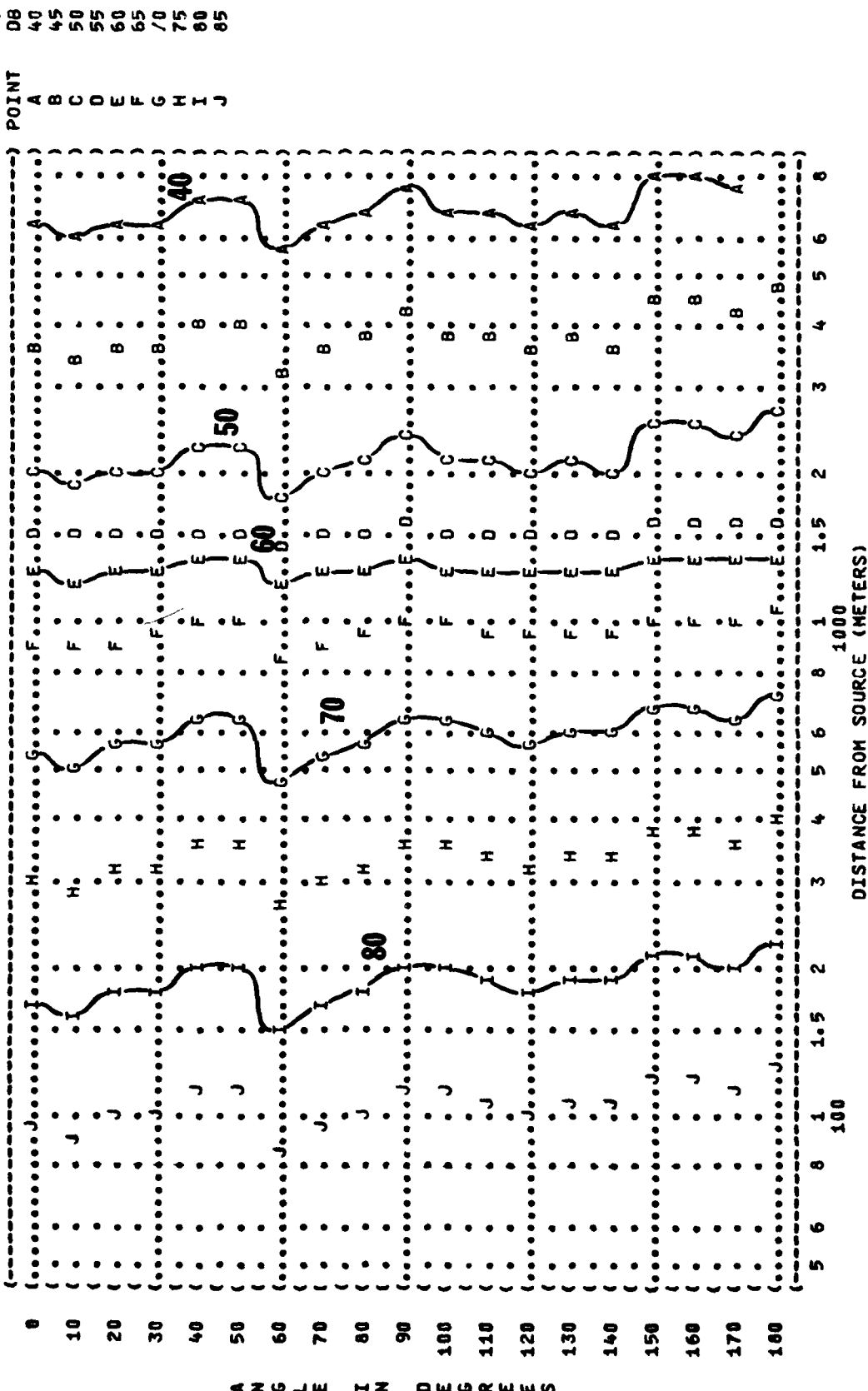


5 6 8 1 1.5 2 3 4 5 6 8  
 100  
 DISTANCE FROM SOURCE (METERS)

A N G L E I N D E G R E E S



IDENTIFICATIONS: OMEGA 1.4  
 TEST 77-733-001  
 RUN 04  
 METEOROLOGY: TEMP = 15 C  
 BAR PRESS = .760 M HG  
 REL HUMID = 70 %  
 PAGE 18

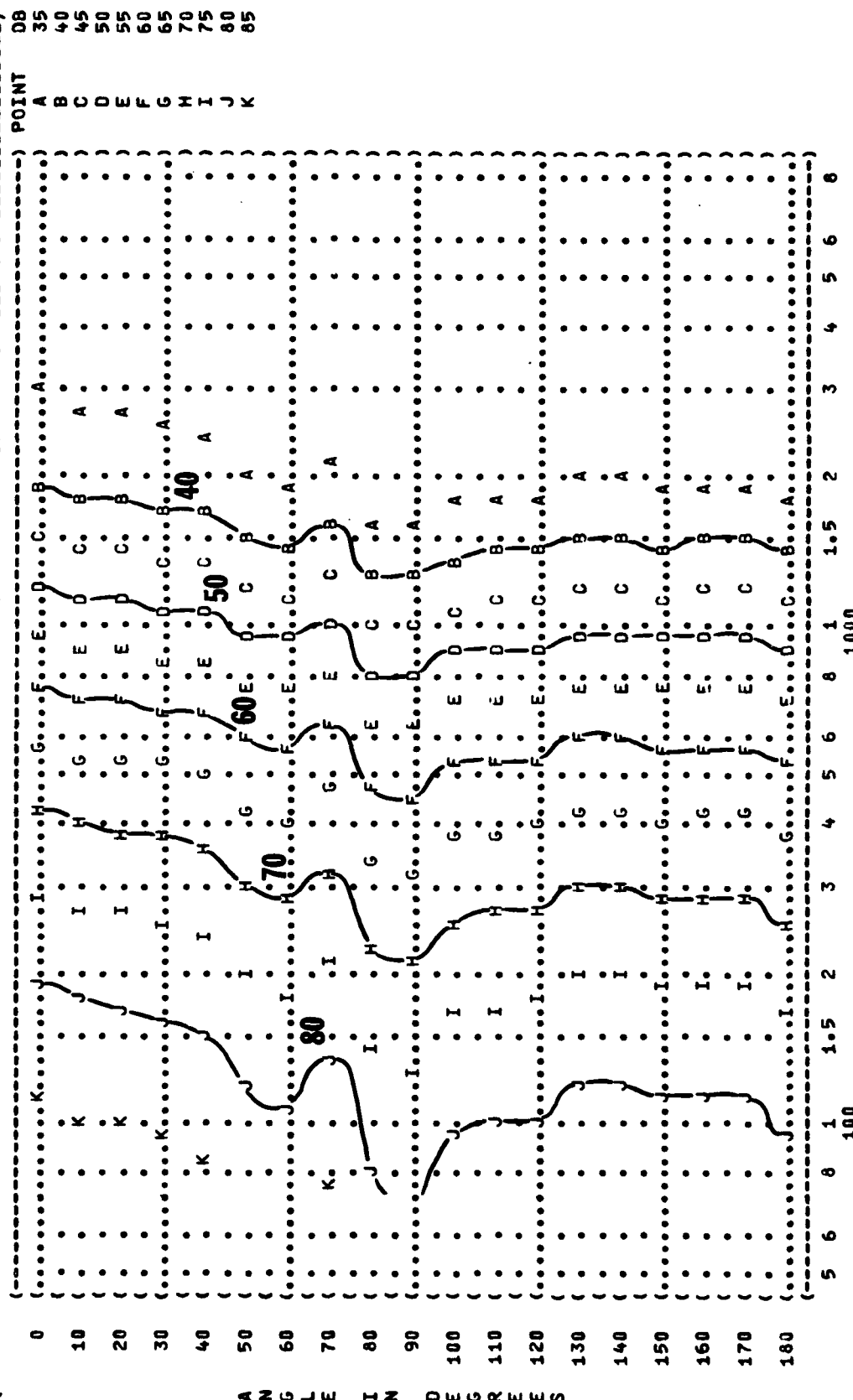


POINT	DB
A	40
B	45
C	50
D	55
E	60
F	65
G	70
H	75
I	80
J	85

ANGLES



(-----)  
 ( FIGURE: SOUND PRESSURE LEVEL (SPL) ) IDENTIFICATION: )  
 ( ( 10 EQUAL LEVEL CONTOURS (DB) ) )  
 ( ( 125 HZ OCTAVE BAND ) )  
 (-----)  
 ( NOISE SOURCE/SUBJECT: ( OPERATION: ) METEOROLOGY: )  
 ( ( T-38 AIRCRAFT IN THE ( MILITARY POWER 99.5 % RPM ) TEMP = 15 C )  
 ( ( AF32A-18-SUPPRESSOR ( SINGLE ENGINE ) BAR PRESS = .760 M HG )  
 ( ( ENGINE J85-GE-5A ( GROUND RUNUP (SUPPRESSED) ) REL HUMID = 70 % )  
 ( ( FAR FIELD NOISE ( ) ) )  
 (-----)  
 ( ) OMEGA 1.4 )  
 ( ) TEST 77-733-001 )  
 ( ) RUN 04 )  
 ( ) 14 SEP 78 )  
 ( ) PAGE 20 )  
 (-----)

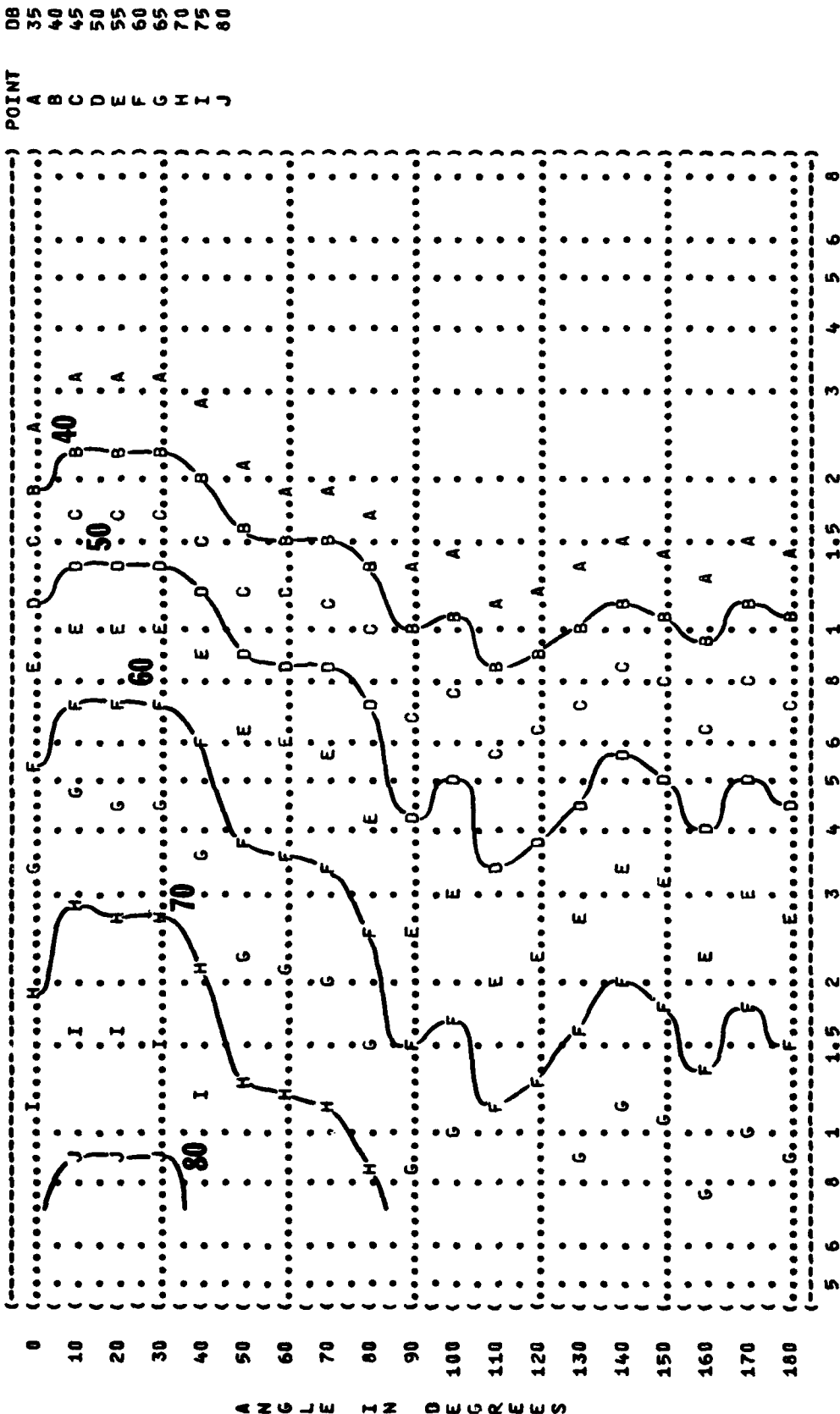


DISTANCE FROM SOURCE (METERS)

A N G L E I N D E G R E E S



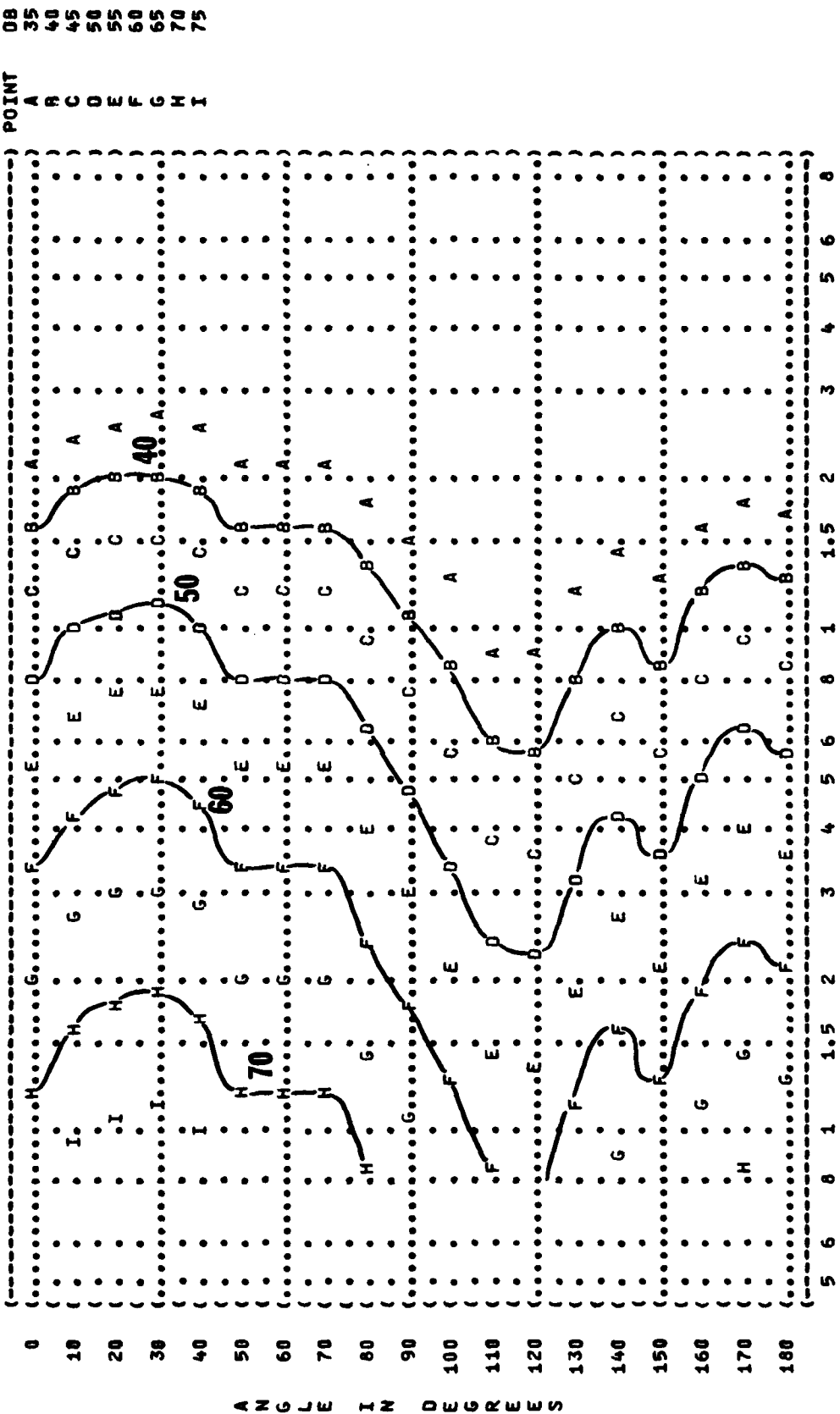
IDENTIFICATION: )  
 OMEGA 1.4 )  
 TEST 77-733-001 )  
 RUN 04 )  
 METEOROLOGY: )  
 TEMP = 15 C )  
 BAR PRESS = .760 M HG )  
 REL HUMID = 70 % )  
 OPERATION: )  
 MILITARY POWER 99.5 % RPM )  
 SINGLE ENGINE )  
 GROUND RUNUP (SUPPRESSED) )  
 NOISE SOURCE/SUBJECT: )  
 T-38 AIRCRAFT IN THE )  
 AF32A-18-SUPPRESSOR )  
 ENGINE J85-GE-5A )  
 FAR FIELD NOISE )



DISTANCE FROM SOURCE (METERS)

ANGLES

( ( FIGURE 1 SOUND PRESSURE LEVEL (SPL)  
 ( ( EQUAL LEVEL CONTOURS (DB)  
 ( ( 1000 HZ OCTAVE BAND  
 ( ( IDENTIFICATIONS )  
 ( ( OMEGA 1.4  
 ( ( TEST 77-733-001 )  
 ( ( RUN 04 )  
 ( ( NOISE SOURCE/SUBJECT ) METEOROLOGY )  
 ( ( 7-38 AIRCRAFT IN THE ) TEMP = 15 C )  
 ( ( AF32A-19-SUPPRESSOR ) BAR PRESS = .760 H HG )  
 ( ( ENGINE J85-GE-5A ) REL HUMID = 70 % )  
 ( ( FAR FIELD NOISE ) )  
 ( ( PAGE 23 ) )

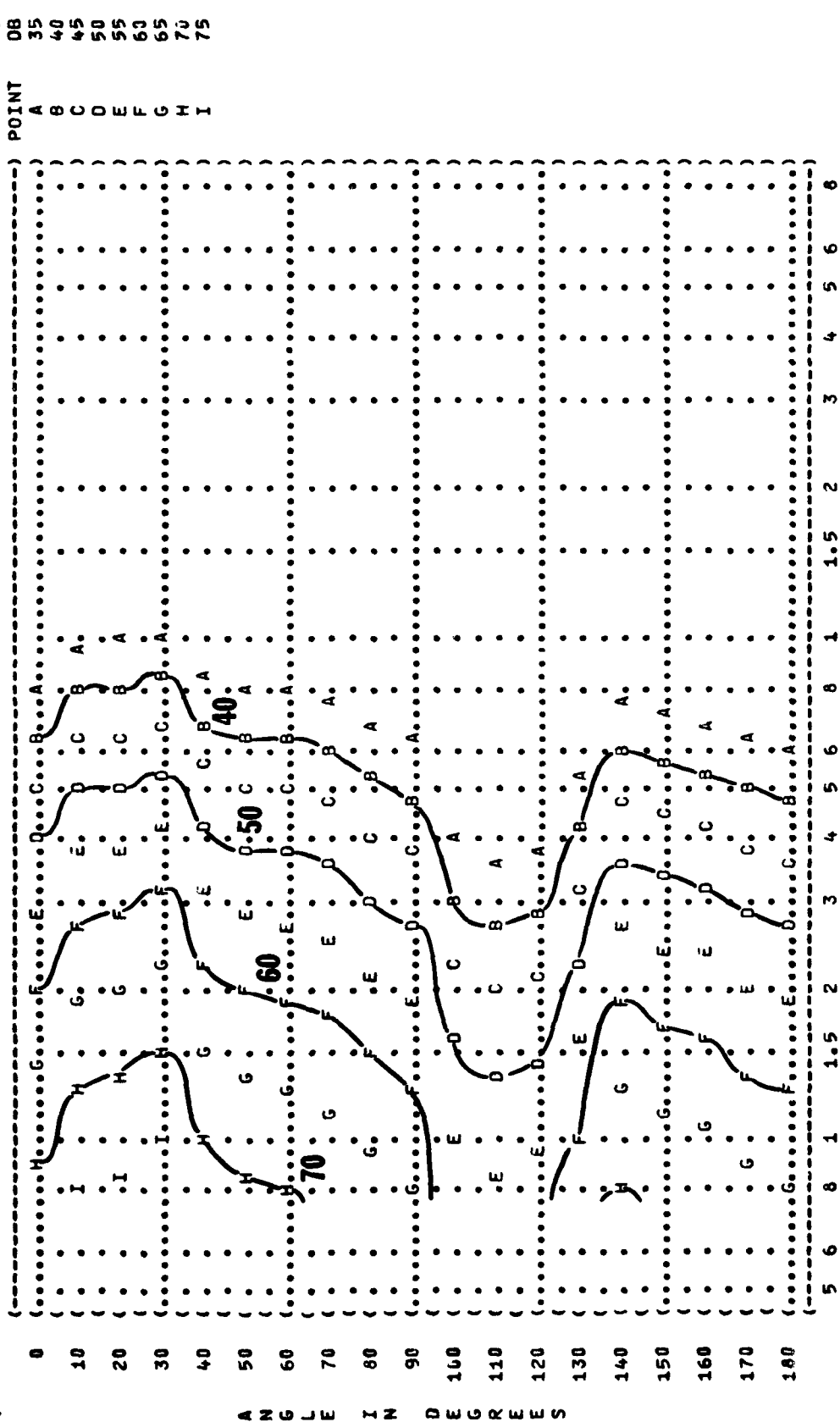


A N  
 G L  
 E I  
 N D  
 E G  
 R E  
 E S

DISTANCE FROM SOURCE (METERS)  
 100  
 1 1.5 2 3 4 5 6 8



) IDENTIFICATION: )  
 ) )  
 ) OMEGA 1.4 )  
 ) TEST 77-733-001 )  
 ) RUN 04 )  
 ) )  
 ) METEOROLOGY: )  
 ) )  
 ) TEMP = 15 C )  
 ) BAR PRESS = .760 M HG )  
 ) REL HUMID = 70 % )  
 ) )  
 ) PAGE 25 )  
 ) )

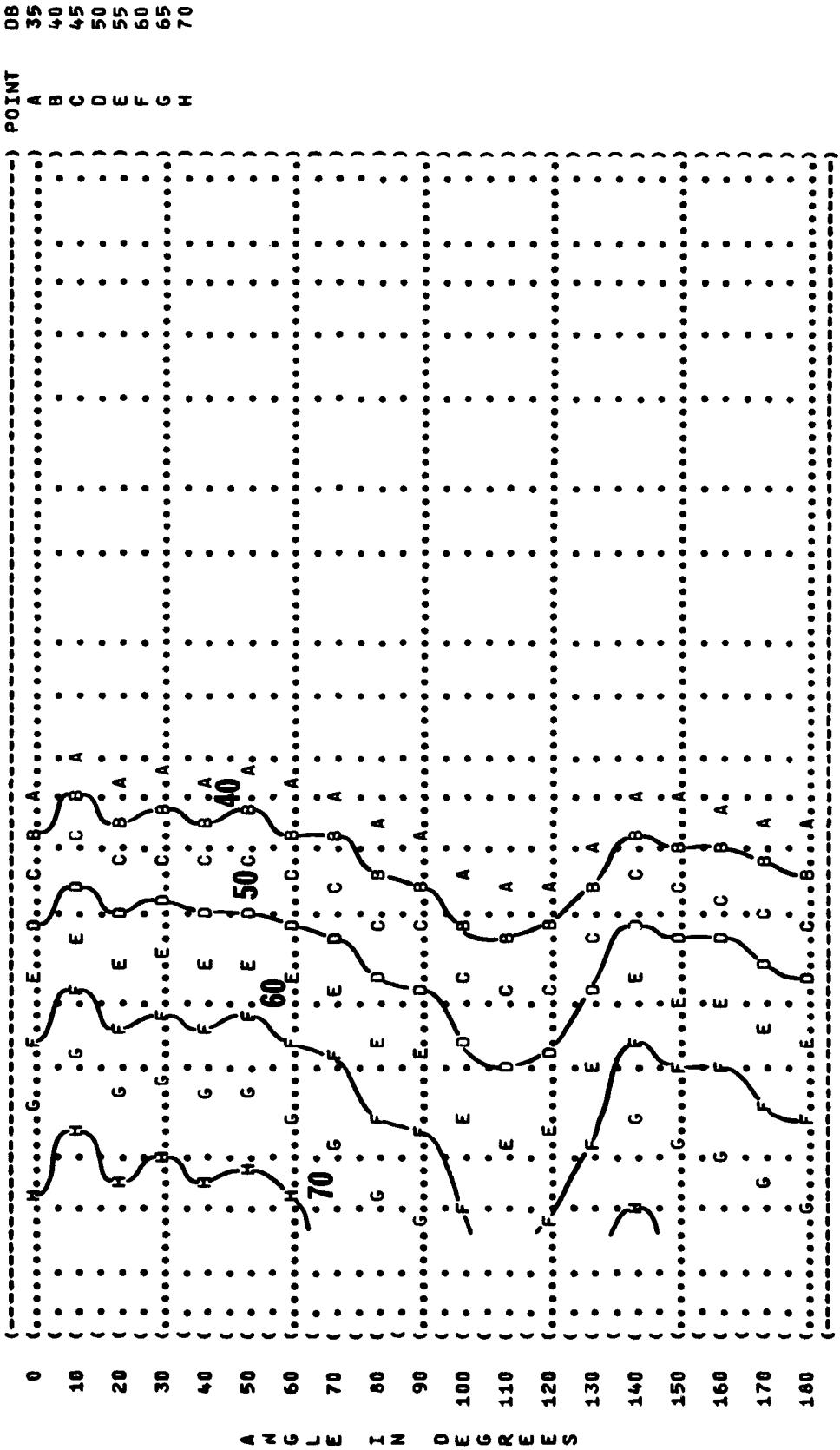


) POINT ) DB )  
 ) A ) 35 )  
 ) B ) 40 )  
 ) C ) 45 )  
 ) D ) 50 )  
 ) E ) 55 )  
 ) F ) 60 )  
 ) G ) 65 )  
 ) H ) 70 )  
 ) I ) 75 )

DISTANCE FROM SOURCE (METERS)



( FIGURE: SOUND PRESSURE LEVEL (SPL)  
 ( EQUAL LEVEL CONTOURS (DB)  
 ( 10 8000 HZ OCTAVE BAND  
 ( NOISE SOURCE/SUBJECT: ( OPERATION: ) METEOROLOGY: )  
 ( T-30 AIRCRAFT IN THE ( MILITARY POWER 99.5 % RPM ) TEMP = 15 C  
 ( AF32A-18-SUPPRESSOR ( SINGLE ENGINE ) BAR PRESS = .760 M HG  
 ( ENGINE J85-GE-5A ( GROUND RUNUP (SUPPRESSED) ) REL HUMID = 70 %  
 ( FAR FIELD NOISE ( ) PAGE 26 )



ALEXANDER S

AD-A079 868

AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB OH  
USAF BIODENVIRONMENTAL NOISE DATA HANDBOOK, VOLUME 128, T-38 AIR--ETC(U)  
JUL 79 R A LEE  
AMRL-TR-75-50-VOL-128

F/G 1/3

UNCLASSIFIED

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2 of 2

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SEARCHED



END

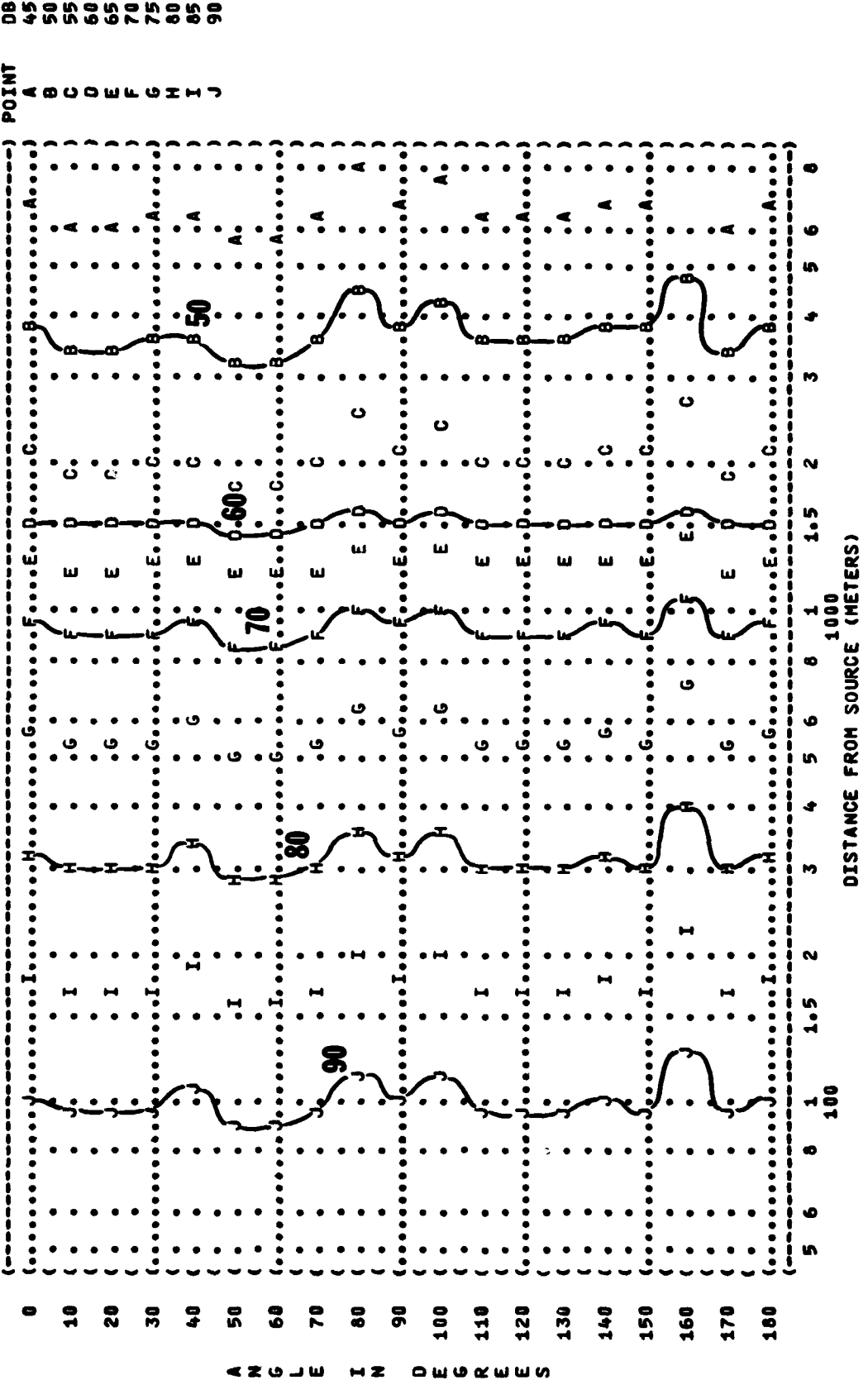
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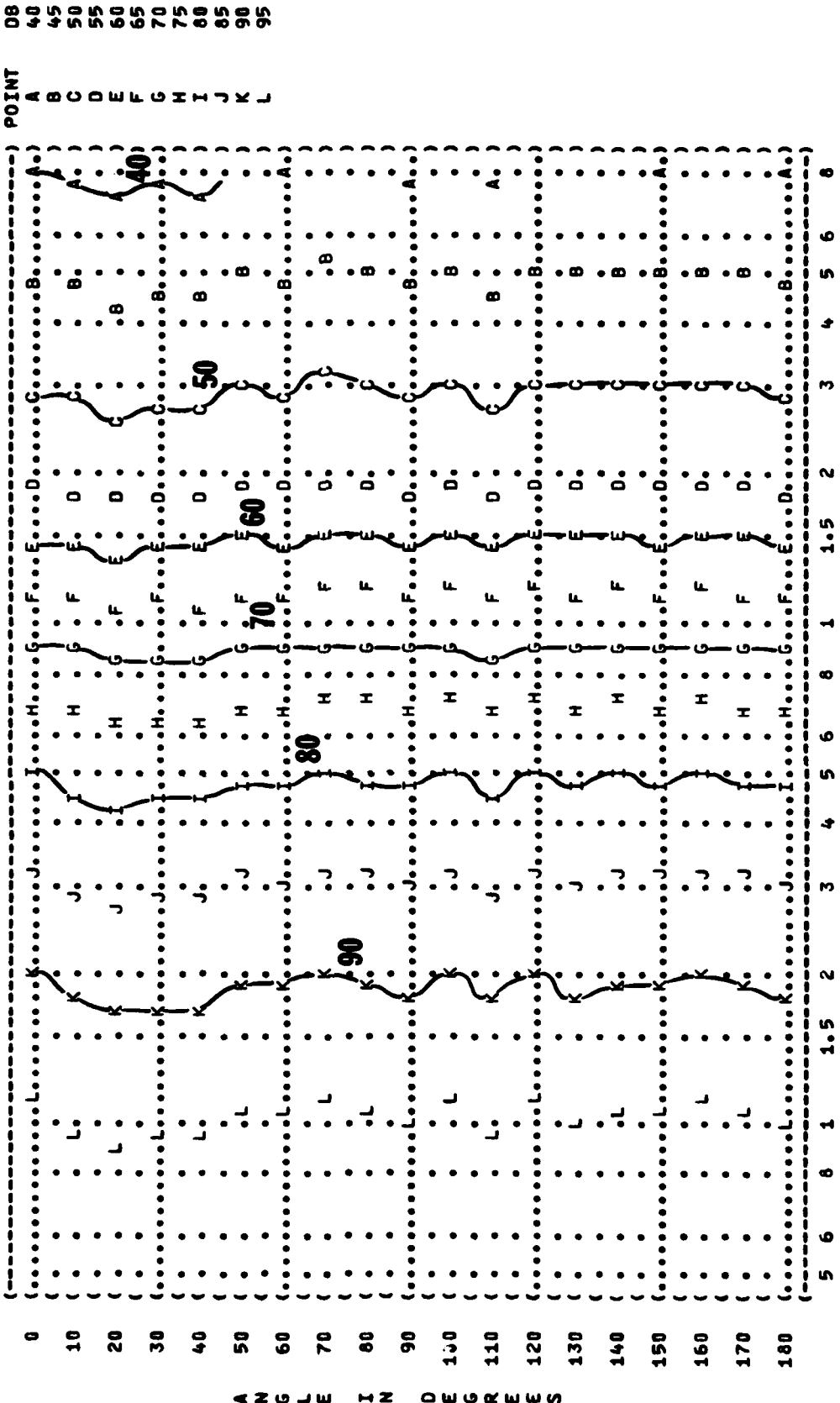
2 -- 80

DOT

( FIGURE: SOUND PRESSURE LEVEL (SPL) ) IDENTIFICATION: )  
 ( EQUAL LEVEL CONTOURS (DB) ) )  
 ( 10 31.5 HZ OCTAVE BAND ) )  
 ( NOISE SOURCE/SUBJECT: ) METEOROLOGY: )  
 ( T-38 AIRCRAFT IN THE ) TEMP = 15 C )  
 ( AF32A-18-SUPPRESSOR ) BAR PRESS = .760 M HG )  
 ( ENGINE J85-GE-5A ) REL HUMID = 70 % )  
 ( FAR FIELD NOISE ) )  
 ( OPERATION: ) RUN 05 )  
 ( MAX POWER AFTERBURNER ) )  
 ( SINGLE ENGINE ) 14 SEP 78 )  
 ( GROUND RUNUP (SUPPRESSED) ) )  
 ( ) PAGE 18 )



IDENTIFICATION: OMEGA 1.4  
 TEST 77-733-001  
 RUN 05  
 METEOROLOGY: TEMP = 15 C  
 BAR PRESS = .760 M HG  
 REL HUMID = 70 %  
 OPERATION: MAX POWER AFTERBURNER  
 SINGLE ENGINE  
 GROUND RUNUP (SUPPRESSED)  
 NOISE SOURCE/SUBJECT: T-38 AIRCRAFT IN THE  
 AF32A-18-SUPPRESSOR  
 ENGINE J85-GE-5A  
 FAR FIELD NOISE

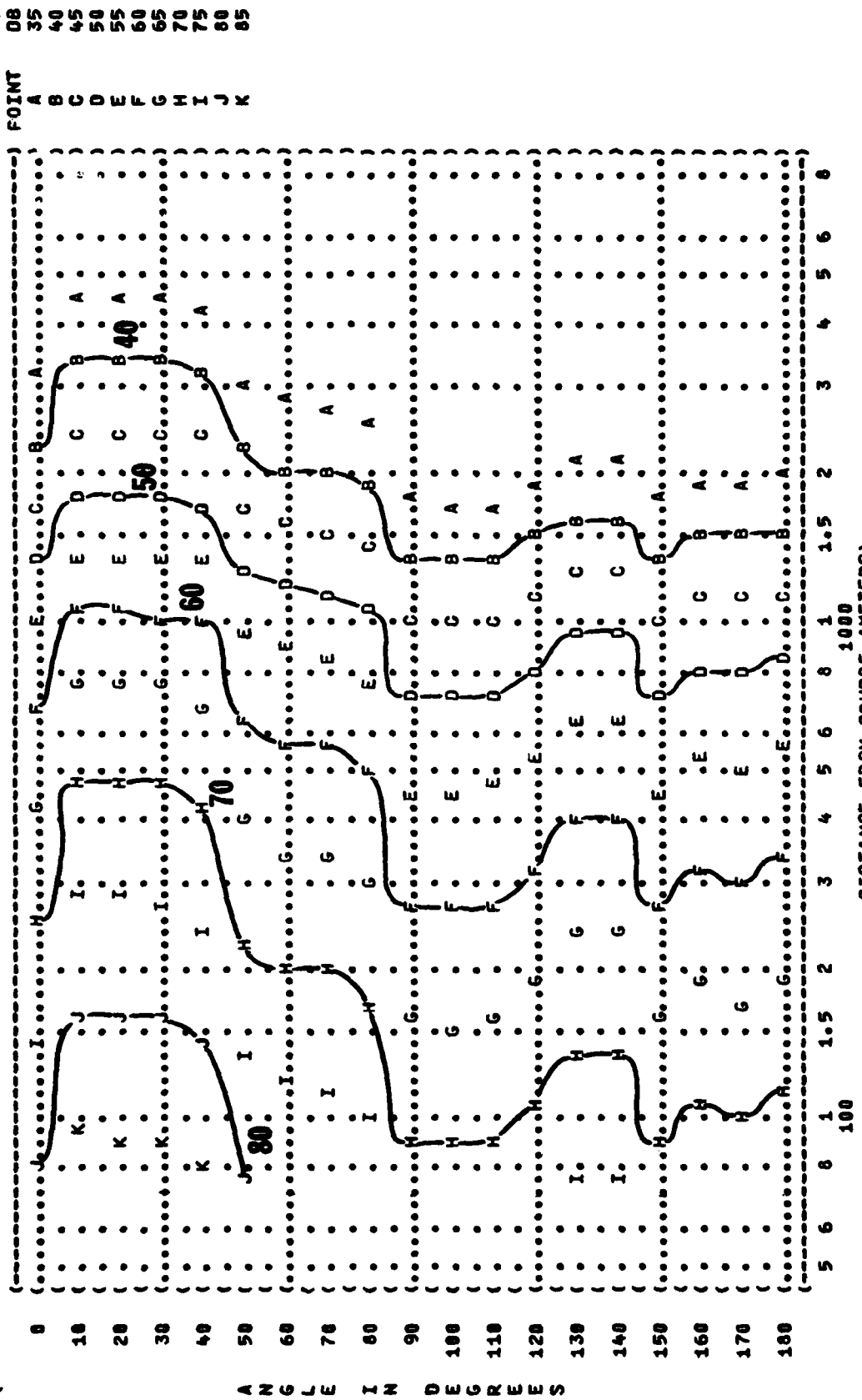


A N G L E I N D E G R E E S





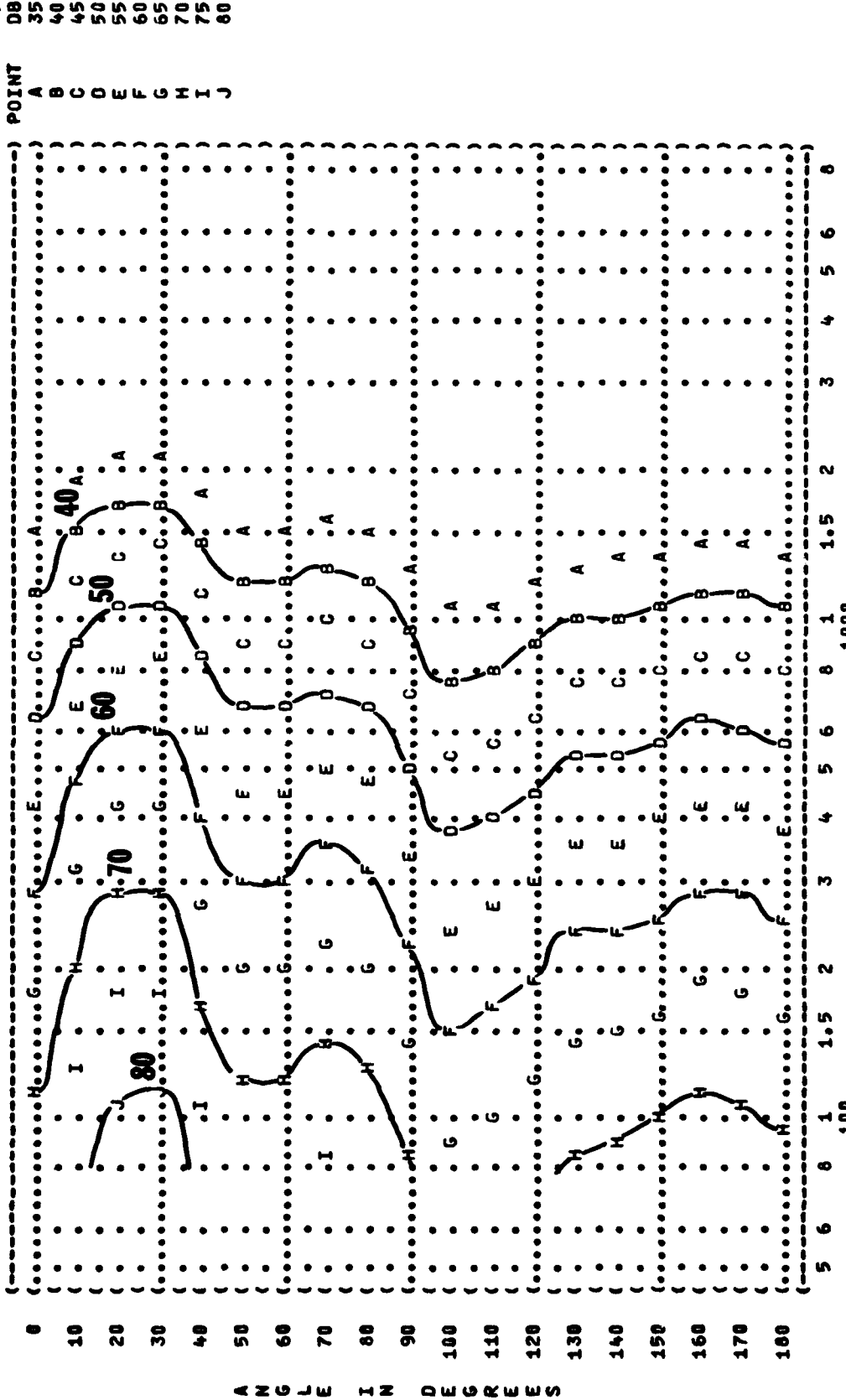
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 )  
 ) OMEGA 1.4  
 ) TEST 77-733-001  
 ) RUN 05  
 )  
 ) METEOROLOGY: )  
 ) TEMP = 15 C )  
 ) BAR PRESS = .760 H MG )  
 ) REL HUMID = 70 % )  
 )  
 ) OPERATIONS )  
 ) MAX POWER AFTERBURNER )  
 ) SINGLE ENGINE )  
 ) GROUND RUNUP (SUPPRESSED) )  
 )  
 ) NOISE SOURCE/SUBJECT: )  
 ) T-38 AIRCRAFT IN THE )  
 ) AF32A-18-SUPPRESSOR )  
 ) ENGINE J85-GE-5A )  
 ) FAR FIELD NOISE )







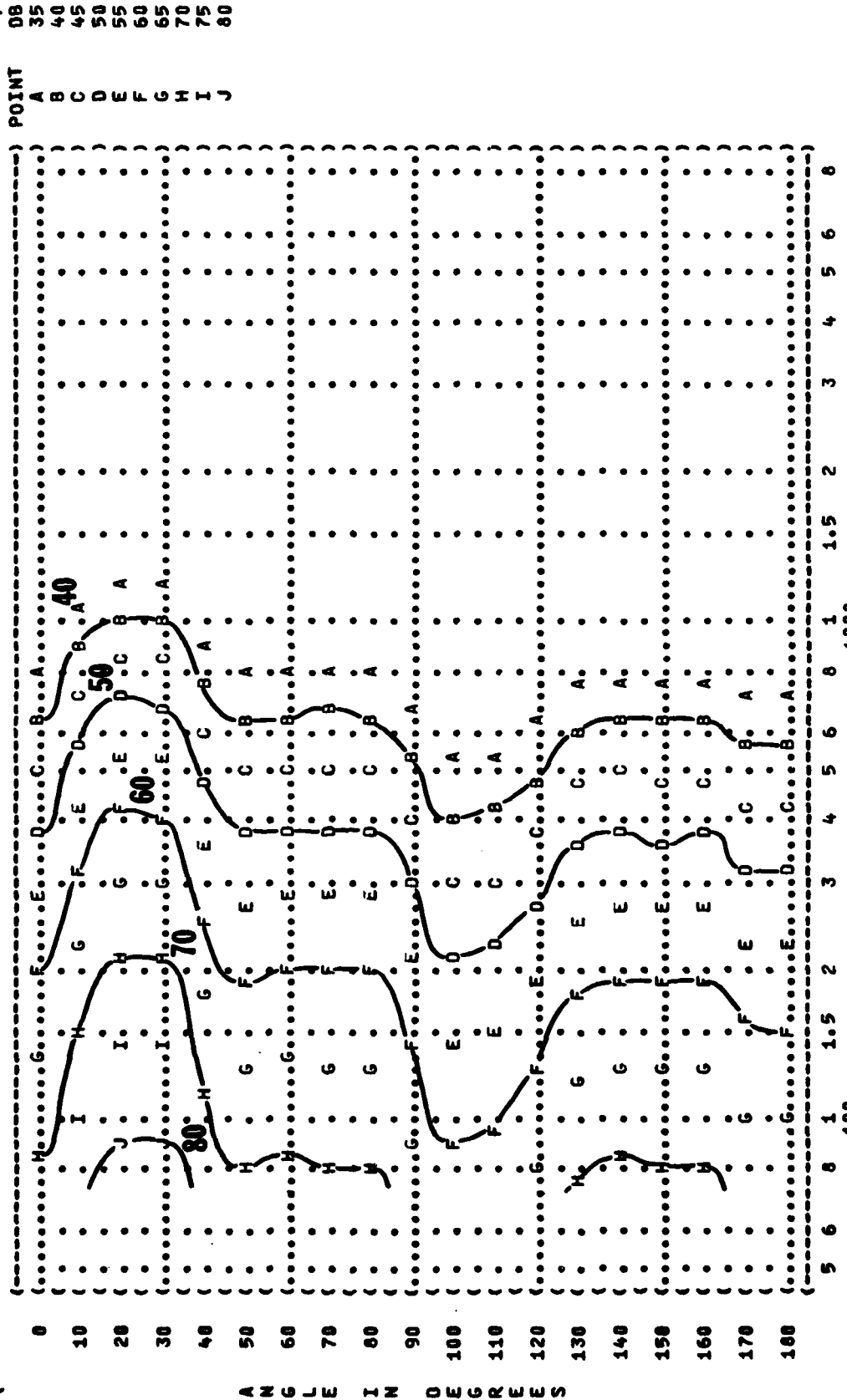
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 ) TEST 77-733-001 )  
 ) RUN 05 )  
 ) 14 SEP 78 )  
 ) PAGE 24 )  
 )  
 ) METEOROLOGY: )  
 ) TEMP = 15 C )  
 ) BAR PRESS = .760 M HG )  
 ) REL HUMID = 70 % )  
 )  
 ) OPERATIONS )  
 ) MAX POWER AFTERBURNER )  
 ) SINGLE ENGINE )  
 ) GROUND RUNUP (SUPPRESSED) )  
 )  
 ) NOISE SOURCE/SUBJECT: )  
 ) T-38 AIRCRAFT IN THE )  
 ) AF32A-18-SUPPRESSOR )  
 ) ENGINE J85-GE-5A )  
 ) FAR FIELD NOISE )



DISTANCE FROM SOURCE (METERS)

A M G L E I N D E G R E E S

) IDENTIFICATION: )  
 ) OMEGA 1.4 )  
 ) TEST 77-733-001 )  
 ) RUN 05 )  
 ) 14 SEP 78 )  
 ) PAGE 25 )  
 ) METEOROLOGY: )  
 ) TEMP = 15 C )  
 ) BAR PRESS = .760 M HG )  
 ) REL HUMID = 70 % )  
 ) OPERATIONS )  
 ) MAX POWER AFTERBURNER )  
 ) SINGLE ENGINE )  
 ) GROUND RUNUP (SUPPRESSED) )  
 ) FAR FIELD NOISE )  
 ) NOISE SOURCE/SUBJECT: )  
 ) T-38 AIRCRAFT IN THE )  
 ) AF32A-10-SUPPRESSOR )  
 ) ENGINE J85-GE-5A )  
 )



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

DISTANCE FROM SOURCE (METERS)

