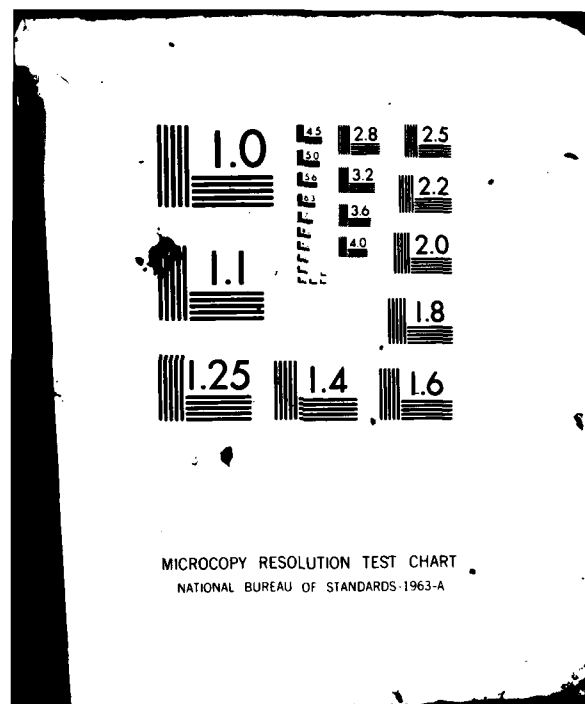


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USAF BIOENVIRONMENTAL NOISE DATA HANDBOOK. VOLUME 163. GPC-28 C--ETC(U)
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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) The GPC-28 is a gasoline engine-driven compressor with a 120 volt 60 Hz generator used for general purpose maintenance. This report provides measured and extrapolated data defining the bioacoustic environments produced by this unit operating outdoors on a concrete apron at a normal rated condition. Near-field data are reported for 37 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			

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level, and limiting times for total daily exposure of personnel with and without standard Air Force ear protectors. Far-field data measured at 36 locations are normalized to standard meteorological conditions and extrapolated from 10 - 1600 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.

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PREFACE

This report was prepared by the Biodynamic Environment Branch, Air Force Aerospace Medical Research Laboratory, under Project/Task 723107, Measurement Prediction of Noise Environments of Air Force Operations.

The author gratefully acknowledges Mr. John N. Cole for his assistance in preparing this report, Mr. Robert G. Powell for his assistance in acquiring the raw data, Mr. Henry T. Mohlman and Mr. Fred Lampley of the University of Dayton for their assistance in the mechanics of data processing and Mrs. Norma Peachey who typed and prepared the graphics.



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FAR-FIELD NOISE

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INTRODUCTION

The GPC-28 is a gasoline engine-driven compressor with 120 volt 60 Hz generator used for general purpose maintenance. This unit is manufactured by T.A. Pelsue Company.

This volume provides measured and extrapolated data defining bioacoustic environments produced by this unit. Such data are essential to evaluate ear protection requirements, limiting personnel exposure times, voice communication capabilities, and annoyance problems associated with operations of the GPC-28.

This volume is one of a series published by the Air Force Aerospace Medical Research Laboratory (AFAMRL) 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. Refer to Volume 1 (reference 1) 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 AFAMRL/BBE, Wright-Patterson AFB, OH 45433. Organizations on the distribution list for the handbook will automatically receive a copy of each updated index as it is generated.

Direct any questions concerning the technical data in this report and other handbook volumes to: AFAMRL/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.*

NEAR-FIELD NOISE

MEASUREMENTS

A standard GPC-28 was operated outdoors on a concrete apron at a normal rated condition. Table 1 notes the surface meteorological conditions at the time of measurement.

Figure 1 identifies 72 noise measurement locations at a height of 1.5 meters above the concrete apron (nominal ear level of ground crew). The 0 degree reference direction passes through the tow bar. The 36 locations on the two inner circles are in the acoustic near-field of the source where the sound wave fronts generally do not spherically diverge and the source appears to be spatially distributed (i.e., not a point source). Consequently, these near-field data cannot be extrapolated to longer distances but do properly define the levels at locations close to the unit.

Near-field measurements were also made at ear level at the operator control panel. Table 1 lists the numeric alphabetic designators used on the data pages in this report to identify the operator measurement location and test conditions. The designator 1/A means operator location 1 and test condition A. Such a descriptor is essential in many handbook volumes that involve multiple combinations of location/conditions. It is used in this report to maintain format consistency.

RESULTS

The measured data presented in Table 2 define the sound pressure levels (SPL) produced by the GPC-28 unit at the 37 specified, near-field locations. This table includes the overall, 1/3 octave band, and octave band levels. From these data one can calculate the variety of measures in Table 3 which are widely used to assess the effects of noise on personnel and their performance.

For data at other intermediate near-field locations (i.e., for radial distances less than 10 meters) you can interpolate between the 72 measured data points. 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 distances over which the sound is propagated.

TABLE 1
MEASUREMENT LOCATIONS AND TEST CONDITIONS
FOR OPERATOR NOISE MEASUREMENTS

GPC-28 Compressor
Tyndall AFB, 19 June 1980
4940-80-XXX-3973, Field # G151

Measurement Location	
1	Operator Control Panel
Operation	
A	Compressor On
Meteorology	
Temperature	29 °C
Bar Pressure	.761 m Hg
Rel Humidity	69 %
Wind - Speed	3.1 m/sec (6 Kts)

FAR-FIELD NOISE

MEASUREMENTS

Noise measurements were also made on the same GPC-28 under the same test conditions at the outer circle locations on Figure 1. These 36 locations are in the acoustic far-field of the source where the sound wave fronts spherically diverge and the unit may be regarded as a point noise source. Under these far-field conditions, the measured data can be extrapolated to longer distances.

RESULTS

Table 4 lists the overall and 1/3 octave band SPL measured at the 36 far-field locations under the meteorological conditions at the time of the test. These data were normalized to 10 meters distance and standard meteorological conditions (15C temperature, 70% relative humidity, 0.760 meter Hg barometric pressure) and used to derive the graphic data in Figure 2 which provides a compact summary of the far-field noise characteristics of the GPC-28 in a standard format.

These measured data were also used to derive sets of equal noise contours (Figures 3 through 9) describing seven different measures of noise as a function of angle and distance from the source for standard day meteorology. Note that Figure 8 contours identify limiting exposure times for personnel. Missing data points on any of the contours are the result of eliminating measured data which contained excessive influence of spurious background noise present at the time of measurement. In some cases contour levels at these missing data points were estimated and indicated with dashed lines.

TABLE 1 MEASURED SOUND PRESSURE LEVEL (DB)														IDENTIFICATION#	
2 1/3 OCTAVE BAND														OMEGA 3.2	
														TEST BA-000-003	
NOISE SOURCE/SUBJECT: (OPERATION#)														RUN 01	
GPC-26 COMPRESSOR (COMPRESSOR ON)														06 APR 82	
NEAR FIELD NOISE LEVELS ()														PAGE F1	
LOCATION/CONDITION															
FREQ	DISTANCE (M)-->		4	4	4	4	4	4	4	4	4	4	4	4	4
(HZ)	ANGLE (DEG)-->		0	20	40	60	80	100	120	140	160	180	200	220	240
	CONDITION-->>		A	A	A	A	A	A	A	A	A	A	A	A	A
25															
31.5					74<		74<	75<	75<	76<	76<	76<	74<		
40															
50															
63					72<		72<	72<		72<	72<	72<	72<		
80															
100			73	72<	72		70<	73<	68<	67<	59<	70<	70<	69<	67<
125			70<	69<	68<		65<	56<				63<	65<	64<	63<
160			68<	67<	67<		65<	64<	60<	59<	59<	60<			
200			65<	63<	61<		61<	62<	60<	56<	56<	58<	57<		
250			59<				55<	57<	58<	56<	55<				
315			62<	60<	58<		58<	60<	59<	59<	57<	58<	59<	58<	61<
400			61<	60<	60<		66	66	64	65	63	64	57<	63	65
500			64	60	63		64	64	61	64	64	62	60	64	65
630			57	59	61		59	59	58	60	55<	57	53<	53<	52<
800			52<	55	57		57	57	57	55	53<	53<	55	55	56
1000			59	60	63		63	61	58	58	56<	57	58	57	56<
1250			57	58	61		61	62	60	61	57	56	54<	59	57
1600			54	58	61		61	60	56	59	56	55	53	55	56
2000			52	55	58		59	59	57	57	55	51	52	51	54
2500			52	57	58		59	56	57	58	55	52	53	55	55
3150			53	57	60		59	59	57	59	56	53	53	55	46
4000			54	57	59		61	60	58	60	56	53	55	56	56
5000			50	54	57		57	55	55	55	52	48	50	51	51
6300			46	51	55		56	53	53	54	50	45	47	49	49
8000			45<	53	57		57	54	55	56	52	47<	48<	50	51
10000			44<	50	54		53	51	51	53	49	44<	45<	47<	48
OVERALL			77	76	73		79	79	77	79	78	79	78	73	72

< LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

TABLE: MEASURED SOUND PRESSURE LEVEL (DB)													IDENTIFICATION:	
2 1/3 OCTAVE BAND													OMEGA 3.2	
NOISE SOURCE/SUBJECT: (OPERATION:)													TEST BA-000-003	
GPC-26 COMPRESSOR (COMPRESSOR ON)													RUN 02	
NEAR FIELD NOISE LEVELS ()													06 APR 82	
()													PAGE F2	

LOCATION/CONDITION														
FREQ	DISTANCE (M)-->	4	4	4	4	2	2	2	2	2	2	2	2	2
(HZ)	ANGLE (DFG)-->	260	280	300	320	340	0	20	40	60	80	100	120	140
	CONDITION----	A	A	A	A	A	A	A	A	A	A	A	A	A
25														
31.5						72<	78<	79<	79<	90<	81<	81<	81<	79<
40														
50														
63							73<	74<	74<	76<	76<	77<	77<	75<
80														
100		65<	67<	68<	70<	72<	71<	71<	73	74	75	75	73	68<
125		64<	67<	68<	69<	71<	73	73	73	73	72<	70<	67<	
160			61<	66<	67<	68<	77	77	74	73	75	76	75	70
200			60<	63<	65<	65<	77	75	69	74	74	72	71	69
250		55<	58<	58<	56<	57<	68	65<	68	67	65<	62<	61<	63<
315		59<	61<	61<	51<	62<	66	62<	65	66	64	65	63<	64
400		62	63	60<	60<	62	64	65	65	65	63	72	68	68
500		61	65	66	64	65	64	66	65	71	71	69	71	69
630		55<	58	55<	56	57	62	62	63	65	66	69	66	61
800		57	59	61	58	56	59	62	67	63	64	65	63	61
1000		59	62	62	62	57	62	66	69	68	69	71	66	65
1250		60	63	62	61	58	62	64	67	68	71	68	66	65
1600		58	58	61	60	57	60	62	66	69	63	68	66	64
2000		54	56	58	58	55	58	58	65	65	65	65	64	61
2500		57	58	60	58	56	58	60	64	66	66	66	65	63
3150		57	59	59	59	55	58	61	64	67	68	67	67	64
4000		57	60	62	61	56	58	60	65	67	68	68	65	63
5000		57	55	55	57	52	54	56	62	63	64	63	62	60
6300		50	53	54	53	40	52	55	60	51	53	61	60	59
8000		52	55	56	54	53	53	56	62	63	64	63	52	61
10000		49	50	52	53	48	50	54	59	60	59	58	57	58
OVERALL		72	75	74	76	79	84	83	84	85	85	85	85	83

< LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.														

< LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

TABLE 1 MEASURED SOUND PRESSURE LEVEL (DB)											
1/3 OCTAVE BAND											
IDENTIFICATION:											
2											
NOISE SOURCE/SUBJECT: (OPERATIONS)											
GPD-28 COMPRESSOR (COMPRESSOR ON)											
NEAR FIELD NOISE LEVELS ()											
()											
()											
()											
LOCATION/CONDITION											
OPERATOR LOCATION											
TEST CONDITION											
1/A											
FRFQ	DISTANCE (M) -->	2	2	2	2	2	2	2	2	2	OPERATOR LOCATION
(HZ)	ANGLE (DEG) -->	100	180	200	220	240	260	280	300	320	TEST CONDITION
	CONDITION -->	A	A	A	A	A	A	A	A	A	1/A
25											
31.5		78<	79<	75<	77<	76<	76<	76<	76<	77<	80<
40											
50											
63		75<	76<	75<	75<	73<	73<	72<	73<	72<	77<
80											
100		65<	68<	67<	69<	65<	66<	67<	66<	69<	74
125			52<	62<	56<	67<	69<	71<	72<	73<	79
160		67<	70	63<	66<	65<	64<	65<	71	74	82
200		65<	60	69	68	69	69	70	70	72	81
250		60<	60<	65	67	69	67	60	70	68	72
315		61<	61<	64	66	67	68	70	70	68	73
400		65	63	64	65	63	64	66	66	64	71
500		67	64	64	62	65	65	66	69	67	70
630		60	60	62	59	62	64	66	62	63	65
800		59	57	58	60	59	62	62	64	60	65
1000		63	62	63	63	63	57	67	65	66	66
1250		62	61	62	63	64	65	66	66	66	65
1600		59	58	60	60	63	65	63	65	64	63
2000		55	55	57	58	60	62	62	63	61	62
2500		57	56	57	59	61	64	64	64	64	60
3150		59	56	59	60	62	64	66	66	64	61
4000		59	58	60	61	62	65	66	65	65	61
5000		55	52	55	56	59	59	60	62	60	59
6300		52	49	52	54	55	56	59	59	59	56
8000		54	49	53	55	55	59	60	60	54	58
10000		51	47<	50	52	55	55	56	57	53	57
OVERALL		81	81	81	81	81	81	81	82	83	88

< LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

TABLE# MEASURED SOUND PRESSURE LEVEL (DB)													IDENTIFICATION#
2													
OCTAVE BAND													
NOISE SOURCE/SUBJECT:													
GPC-28 COMPRESSOR													TEST RA-030-003
NEAR FIELD NOISE LEVELS													RUN 01
													06 APR 82
													PAGE J1
LOCATION/CONDITION													
FREQ	DISTANCE (M)-->	4	4	4	4	4	4	4	4	4	4	4	
ANGLE (DEG)-->	0	20	40	60	80	100	120	140	160	180	200	220	240
(HZ)	CONDITION----	A	A	A	A	A	A	A	A	A	A	A	A
31.5													
63													
125		75	74	74	72	72	68	60	59	71	71	70	68
250		68	67	63	64	65	64	62	59	61	61		
500		65	64	66	63	59	65	68	67	66	62	67	58
1000		61	64	66	65	65	63	63	59	60	61	62	61
2000		58	61	64	64	64	62	63	60	57	58	58	60
4000		57	61	64	64	63	62	63	59	57	58	58	59
8000		50	56	60	60	58	58	59	55	50	52	54	54
OVERALL		77	76	75	75	75	73	73	72	73	73	73	72

TABLE 1 MEASURED SOUND PRESSURE LEVEL (dBA)														IDENTIFICATION	
OCTAVE BAND															
2														OMEGA 307	
														TEST 9A-000-003	
NOISE SOURCE/SUBJECT:				OPERATION:								RUN 02			
GPC-2* COMPRESSOR				COMPRESSOR ON											
NEAR FIELD NOISE LEVELS												06 APR 82			
												PAGE J2			
LOCATION/CONDITION															
FREQ	DISTANCE (M) -->	4	4	4	4	4	2	2	2	2	2	2	2	2	2
(HZ)	ANGLE (DEG) -->	260	280	300	320	340	0	20	40	60	80	100	120	140	140
	CONDITION ---->	A	A	A	A	A	A	A	A	A	A	A	A	A	A
31.5															
63															
125		58	71	77	73	75	79	73	76	78	79	79	77	72	
250		60	65	66	67	69	78	75	72	75	74	73	72	71	
500		65	68	67	66	67	68	69	69	72	74	76	74	72	
1000		63	66	66	65	62	66	69	72	72	73	73	70	69	
2000		61	62	65	63	61	69	65	70	71	71	71	69	68	
4000		61	63	64	64	60	62	64	69	71	72	71	70	67	
8000		55	58	59	58	54	56	59	65	66	67	66	65	64	
OVERALL		72	75	76	76	77	62	61	61	62	63	62	61	78	

TABLE: MEASURED SOUND PRESSURE LEVEL (Db)										IDENTIFICATION:	
OCTAVE BAND										TEST RA-000-003	
NOISE SOURCE/SUBJECT:										RJN 03	
GPC-78 COMPRESSOR										06 APR 82	
NEAR FIELD NOISE LEVELS										PAGE J3	
LOCATION/CONDITION										OPERATOR LOCATION	
FREQ	DISTANCE (M) -->	2	2	2	2	2	2	2	2	2	TEST CONDITION
(HZ)	ANGLE (DEG) -->	160	180	200	220	240	260	280	300	320	17A
CONDITION ----> A A A A A A A A A A A											
31.5											
63											
125		70	72	71	72	71	72	73	76	77	84
250		68	69	71	72	73	73	74	74	73	82
500		69	67	68	67	68	69	72	71	70	74
1000		66	65	66	67	67	70	70	70	67	70
2000		67	61	63	64	66	68	68	69	68	66
4000		63	61	63	64	66	68	69	69	58	65
8000		57	53	57	58	61	62	63	63	58	61
OVERALL		75	75	76	77	77	78	79	80	80	87

TABLE: MEASURES OF HUMAN NOISE EXPOSURE												IDENTIFICATION:	
3												OMEGA 3.2	
NOISE SOURCE/SUBJECT:												TEST RA-000-003	
GPC-28 COMPRESSOR												RUN 01	
NEAR FIELD NOISE LEVELS												06 APR 82	
												PAGE 41	
LOCATION/CONDITION													
DISTANCE (M)-->	4	4	4	4	4	4	4	4	4	4	4	4	4
ANGLE (DEG)-->	0	20	40	60	80	100	120	140	160	180	200	220	240
CONDITION-->	A	A	A	A	A	A	A	A	A	A	A	A	A
HAZARD/PROTECTION													
C-WEIGHTED OVERALL SOUND LEVEL (OASLC IN DBC) AT FAR													
A-WEIGHTED OVERALL SOUND LEVEL (OASLA IN DBA) AT FAR													
MAXIMUM PERMISSIBLE TIME (T IN MINUTES) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)													
NO PROTECTION													
OASLC	77	76	73		70	78	75	77	77	77	76	73	72
OASLA	68	69	71		72	71	70	70	68	67	66	68	68
T	360	960	960		960	960	960	960	960	960	960	960	960
MINIMUM SPL EAR MUFFS													
OASLA*	55	54	55		54	54	50	51	51	52	52	50	50
T	360	960	960		960	960	960	960	960	960	960	960	960
AMERICAN OPTICAL 1700 EAR MUFFS													
OASLA*	50	49	51		50	50	45	48	48	49	49	45	44
T	960	960	960		960	960	960	960	960	960	960	960	960
V-51R EAR PLUGS													
OASLA*	45	44	46		47	47	45	46	44	44	42	44	45
T	360	960	960		960	960	960	960	960	960	960	960	960
AMERICAN OPTICAL 1700 EAR MUFFS PLUS V-51R EAR PLUGS													
OASLA*	32	32	35		34	34	31	33	32	32	32	30	30
T	960	960	960		960	960	960	960	960	960	960	960	960
H-133 GROUND COMMUNICATION UNIT													
OASLA*	44	44	47		46	46	43	45	44	44	43	41	41
T	960	960	960		960	960	960	960	960	960	960	960	960
COMMUNICATION													
PREFERRED SPEECH INTERFERENCE LEVEL (PSIL IN DB)													
PSIL	62	63	65		66	66	64	65	62	61	60	62	63
ANNOYANCE													
PERCEIVED NOISE LEVEL, TONE CORRECTED (PNLT IN PNDB)													
TONE CORRECTION (C IN DB)													
PNLT	82	84	87		87	96	84	85	83	80	81	83	82
C	2	1	1		1	1	1	1	2	1	2	2	1

* BASED ON CALCULATED SPL SPECTRUM UNDER PROTECTIVE DEVICE.

TABLE: MEASURES OF HUMAN NOISE EXPOSURE												IDENTIFICATION
3												OMEGA 3.2
												TEST BA-000-003
NOISE SOURCE/SUBJECT: (OPERATION:)												PUN 02
GPC-28 COMPRESSOR (COMPRESSOR ON)												06 APR 82
NEAR FIELD NOISE LEVELS ()												PAGE 02
LOCATION/CONDITION												
DISTANCE (M)-->	4	4	4	4	4	2	2	2	2	2	2	2
ANGLE (DEG)-->	260	280	300	320	340	0	20	40	60	80	100	120
CONDITION----->	A	A	A	A	A	A	A	A	1	A	A	A
HAZARD/PROTECTION												
C-WEIGHTED OVERALL SOUND LEVEL (OASLC IN DB) AT EAR												
A-WEIGHTED OVERALL SOUND LEVEL (OASLA IN DB) AT EAR												
MAXIMUM PERMISSIBLE TIME (T IN MINUTES) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)												
NO PROTECTION												
OASLC	72	74	75	76	78	83	83	82	84	84	84	81
OASLA	63	71	72	71	69	73	74	77	78	73	79	75
T	960	960	960	960	960	960	960	960	960	960	960	960
MINIMUM 2PL EAR MUFFS												
OASLA*	49	51	57	53	55	60	59	59	60	60	59	56
T	960	960	960	960	960	960	960	960	960	960	960	960
AMERICAN OPTICAL 1700 EAR MUFFS												
OASLA*	43	46	48	48	50	56	55	54	55	56	56	52
T	960	960	960	960	960	960	960	960	960	960	960	960
V-51R EAR PLUGS												
OASLA*	44	46	46	45	46	51	51	51	57	53	54	50
T	960	960	960	960	960	960	960	960	960	960	960	960
AMERICAN OPTICAL 1700 EAR MUFFS PLUS V-51R EAR PLUGS												
OASLA*	30	33	33	33	33	38	38	39	40	41	41	39
T	960	960	960	960	960	960	960	960	960	960	960	960
H-133 GROUND COMMUNICATION UNIT												
OASLA*	42	44	45	45	45	50	50	51	52	53	57	51
T	960	960	960	960	960	960	960	960	960	960	960	960
COMMUNICATION												
PREFERRED SPEECH INTERFERENCE LEVEL (PSIL IN DB)												
PSIL	63	65	66	65	63	66	68	70	72	72	73	71
ANNOYANCE												
PERCEIVED NOISE LEVEL, TONE CORRECTED (PNLT IN PNB)												
TONE CORRECTION (C IN DB)												
PNLT	87	86	88	87	84	88	89	92	94	94	94	93
C	0	2	3	2	2	1	1	2	2	1	2	1

* BASED ON CALCULATED SPL SPECTRUM UNDER PROTECTIVE DEVICE.

TABLE 1: MEASURED SOUND PRESSURE LEVEL (DB)																			IDENTIFICATION:		
1/3 OCTAVE BAND																			OMEGA 1.4		
DISTANCE = 10 METERS																			TEST BA-000-037		
NOISE SOURCE/SUBJECT:									OPERATIONS:									METEOROLOGY:		RUN 01	
GPM-2P COMPRESSOR									COMPRESSOR ON									TEMP = 23 C			
FAR FIELD NOISE LEVELS																		BAR PRESS = 1,061 MM HG		06 APR 82	
																		REL HUMID = 69 %		PAGE 7	
FREQ (HZ)																			ANGLE (DEGREES)		
25																					
31.5																					
40																					
50																					
63																					
80																					
100																			65< 55<		
125																			63< 62<		
160																			64< 65<		
200																			61< 61<		
250																					
315																			53< 53<		
400																			58< 55<		
500																			52< 52<		
630																			47< 45<		
800																			49< 48<		
1000																			56< 53<		
1250																			55< 53<		
1600																			54< 51<		
2000																			51< 49<		
2500																			51< 49<		
3150																			50< 49<		
4000																			52< 51<		
5000																			48< 49<		
6300																			46< 47<		
8000																			45< 44<		
10000																			44< 41<		
OVERALL																			74 74 73 70 70 67 67 63 63 65 65 66 66		
< LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.																					

< LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

TABLE: MEASURED SOUND PRESSURE LEVEL (DB)											IDENTIFICATION:								
1/3 OCTAVE BAND																			
DISTANCE = 10 METERS																			

NOISE SOURCE/SUBJECT:											OPERATION:			METEOROLOGY:			TEST 98-900-003		
GPC-28 COMPRESSOR											COMPRESSOR ON			TEMP = 29 C			RUN 02		
FAR FIELD NOISE LEVELS														BAR PRESS = .761 M Hg			06 APR 90		
														REL HUMID = 69 %			PAGE 2		

FREQ ANGLE (DEGREES)																			
(HZ)	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340			
25																			
31.5																			
40																			
50																			
63																			
80																			
100	65<	66<	65<	65<	64<	67<	62<				63<	63<	64<	56<	66<	67<			
125			61<	62<		62<				61<	61<	63<	64<	64<	66<	67<			
160	59<									58<	60<	62<	64<	65<	67<	67<			
200	59<	57<						53<	58<	58<	57<	59<	62<	64<	66<	66<			
250																			
315			55<	55<	54<	58<	53<	53<	54<	54<	54<	53<	54<	54<	56<	59<			
400	51<	55<	55<	52<	55<	56<	56<	55<	56<	56<	55<	55<	54<	53<	53<	54<			
500	49<	50<	52<		53<	50<	52<	52<	53<	52<	50<	52<	50<	50<	44<	51<			
530	48<	48<	46<	43<	47<	49<	48<	47<	48<	50<	48<	51<	48<	45<	46<	50<			
600	48<	49<	48<	50<	48<	49<	47<	40<	49<	49<	50<	52<	49<	48<	47<	49<			
1000	51<	53<	53<	53<	50<	55<	55<	53<	55<	53<	55<	56<	53<	52<	50<	51<			
1250	48<	47<	50<	51<	50<	53<	53<	52<	54<	54<	53<	54<	53<	52<	52<	50<			
1600	46<	45<	47<	43<	49<	49<	51<	51<	50<	50<	51<	51<	51<	48<	47<	47<			
2000	46<	46<	46<	46<	47<	49	48	48	49	50	50	51	51	49	47<	45<			
2500	45<	45<	46<	47<	48	49	43	43	51	51	51	51	51	49	49	47<			
3150	43<	43<	45<	45<	47	48	40	48	48	47	50	51	49	50	47	46			
4000	47	50	52	50	51	53	54	54	54	53	54	55	55	54	51	49			
5000	42	45	45	45	45	47	46	47	47	48	48	49	49	50	47	45			
6300	39<	43	44	44	43	45	44	44	45	46	46	47	47	47	45	47			
8000		41<	43<	42<	43<	43<	43<	44<	45<	45<	46<	47<	47<	46<	44<	42<			
10000		40<	42<	41<	42<	40<	40<	41<	42<	42<	43<	44<	44<	45<	43<	41<			
OVERALL	68	67	68	68	66	69	66	64	65	66	67	63	69	70	71	73			

< LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.																			

< LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

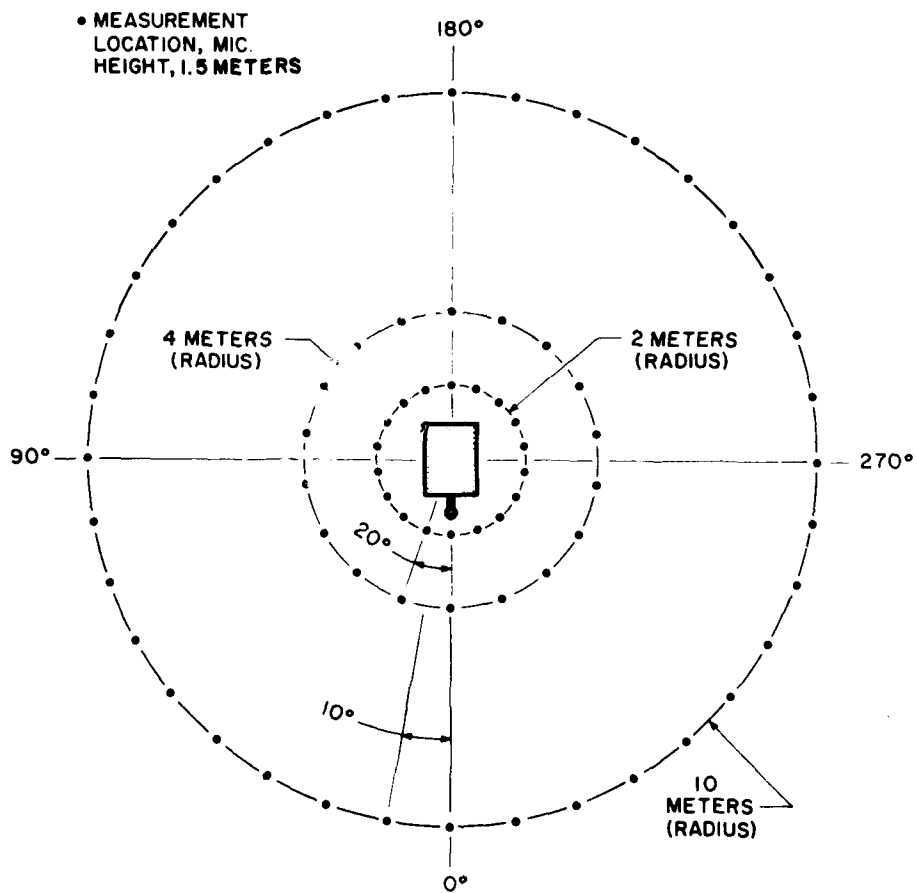


Figure 1. Measurement Locations

FIGURE: NORMALIZED FARFIELD NOISE LEVELS			IDENTIFICATION:
2	DISTANCE = 10 METERS		OMEGA 1.4
NOISE SOURCE/SUBJECT:			TEST BA-103-001
GPC-2A COMPRESSOR			RUN 01
FAR FIELD NOISE LEVELS			06 APR 42
			PAGE 4
OPERATION:			
COMPRESSOR ON			
METEOROLOGICAL:			
TEMP = 15 C			
BAR PRESS = 1060 MM HG			
REL HUMID = 70 %			

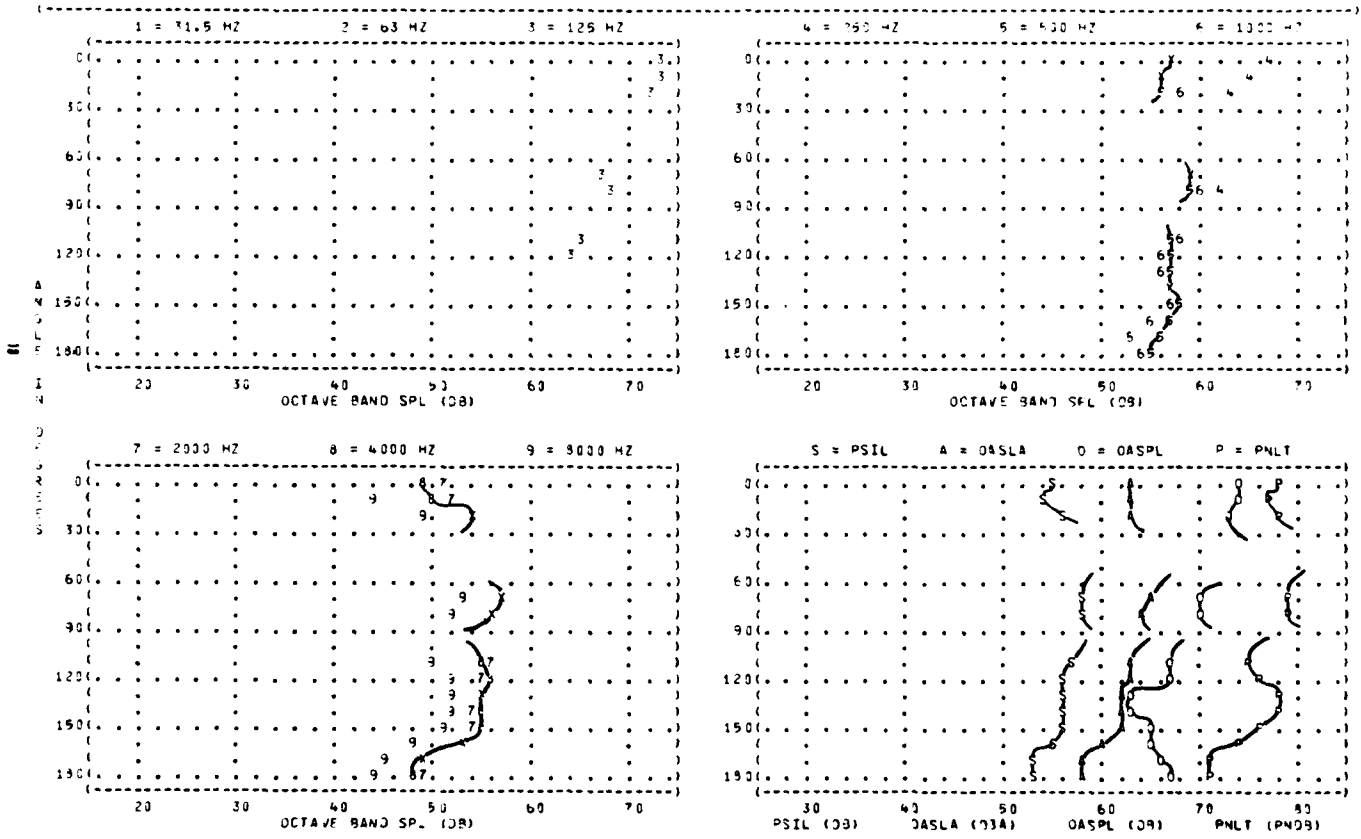


FIGURE 1 NORMALIZED FARFIELD NOISE LEVELS

2

DISTANCE = 10 METERS

NOISE SOURCE/SUBJECT:
GPC-20 COMPRESSOR
FAR FIELD NOISE LEVELS

OPERATION:
COMPRESSOR ON

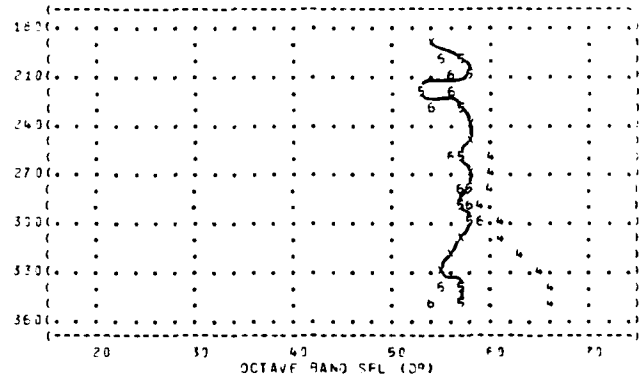
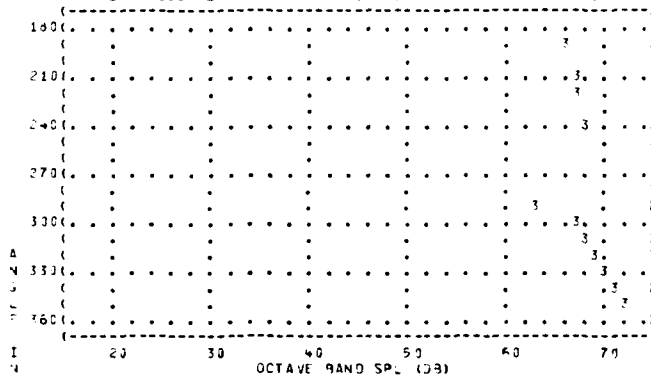
METEOROLOGY:
TEMP = 15 C
BAR PRESS = 1.060 M HG
WFL HUMID = 70 %

IDENTIFICATION

OMEGA 114
TEST 11-111-11
RUN 11
06 APR 51
FAC 11

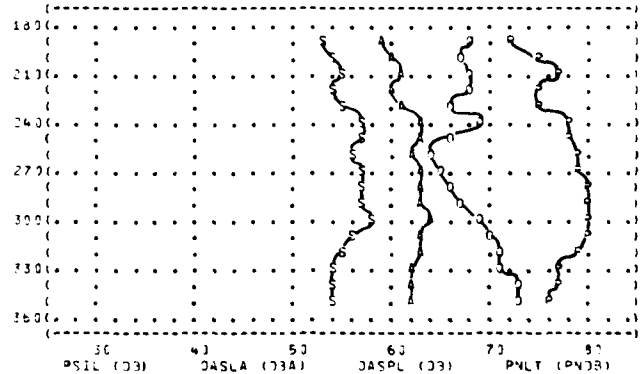
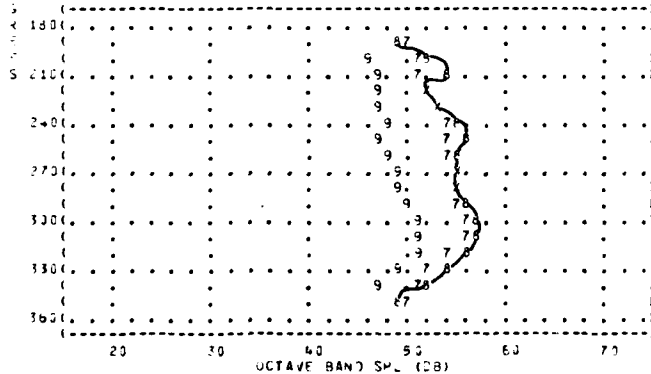
1 = 31.5 HZ 2 = 63 HZ 3 = 125 HZ

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

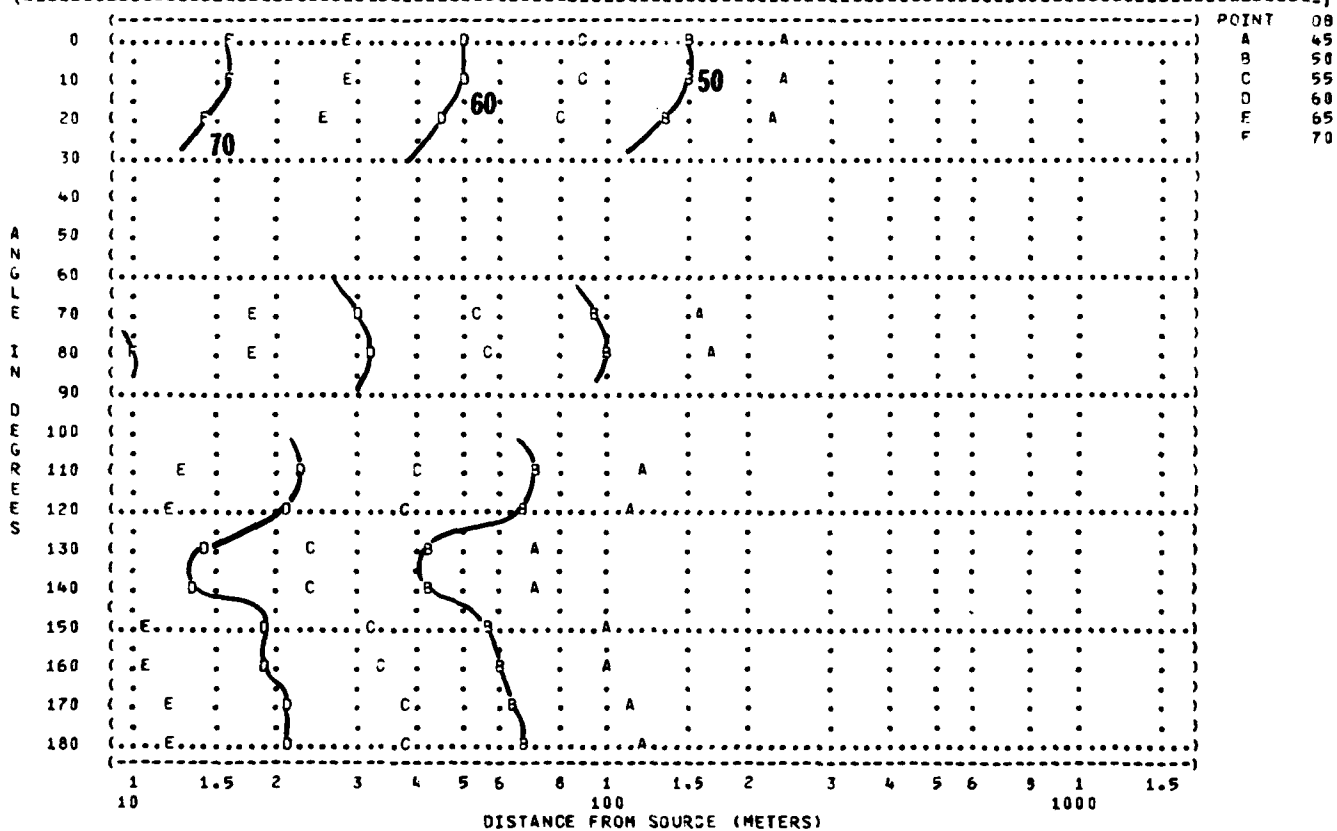


7 = 2000 HZ 8 = 4000 HZ 9 = 8000 HZ

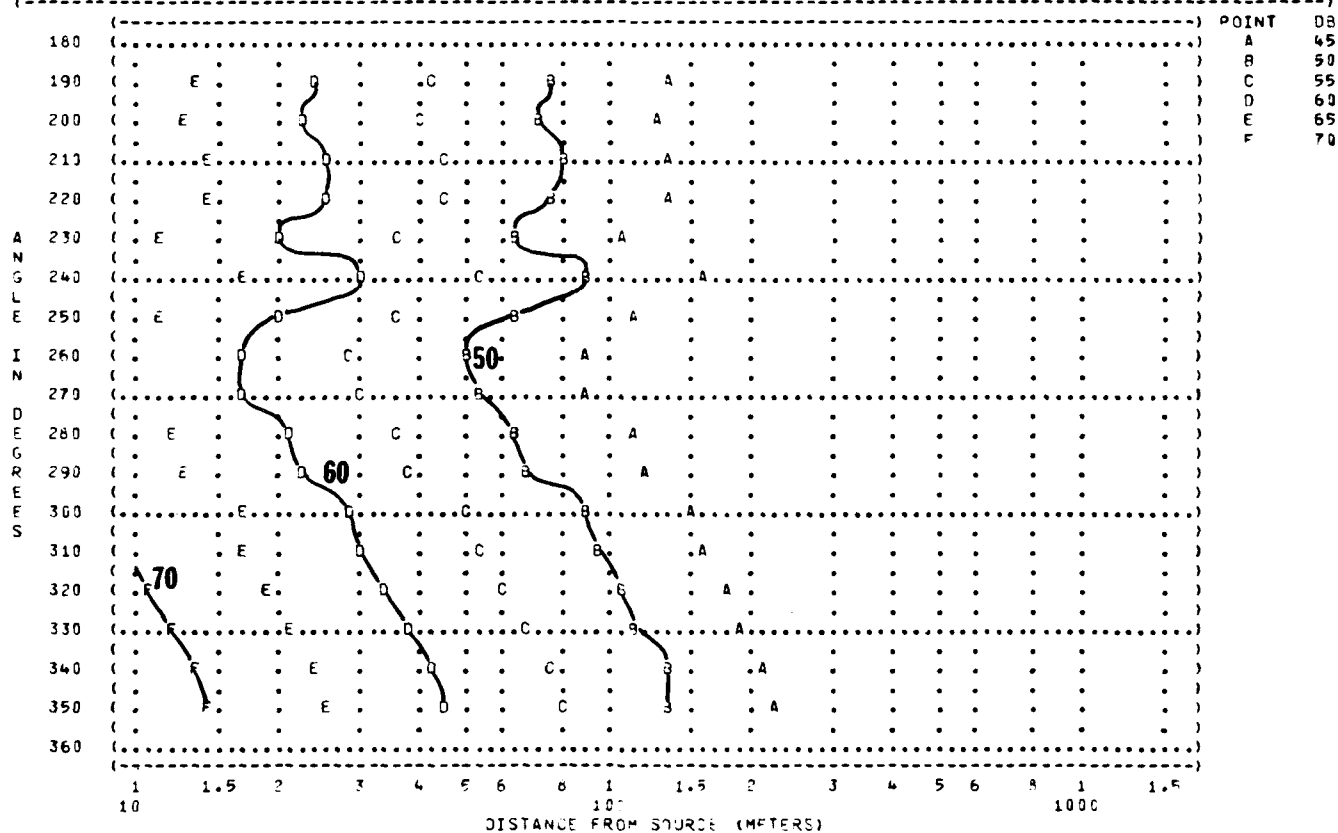
S = PSIL A = DASLA U = DASPL P = PNLT



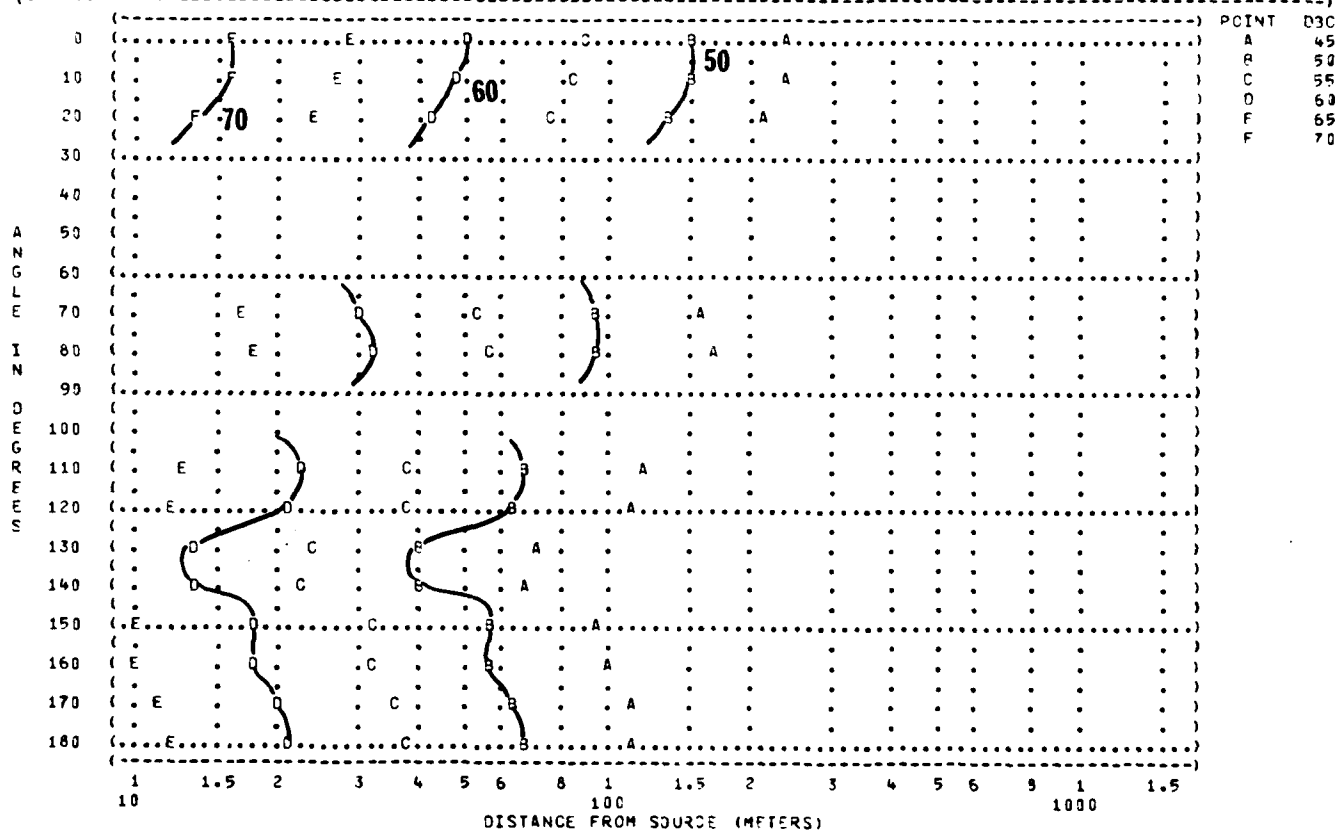
(FIGURE: OVERALL SOUND PRESSURE LEVEL (OASPL))
 (3 EQUAL LEVEL CONTOURS (DB)) IDENTIFICATION:)
 () OMEGA 1.4)
 () TEST 9A-000-003)
 (NOISE SOURCE/SUBJECT:) OPERATION:) METEOROLOGY:)
 (GPC-28 COMPRESSOR) COMPRESSOR ON) TEMP = 15 C)
 (FAR FIELD NOISE LEVELS)) BAR PRESS = .760 M HG)
 () REL HUMID = 70 %)
 () PAGE 11)



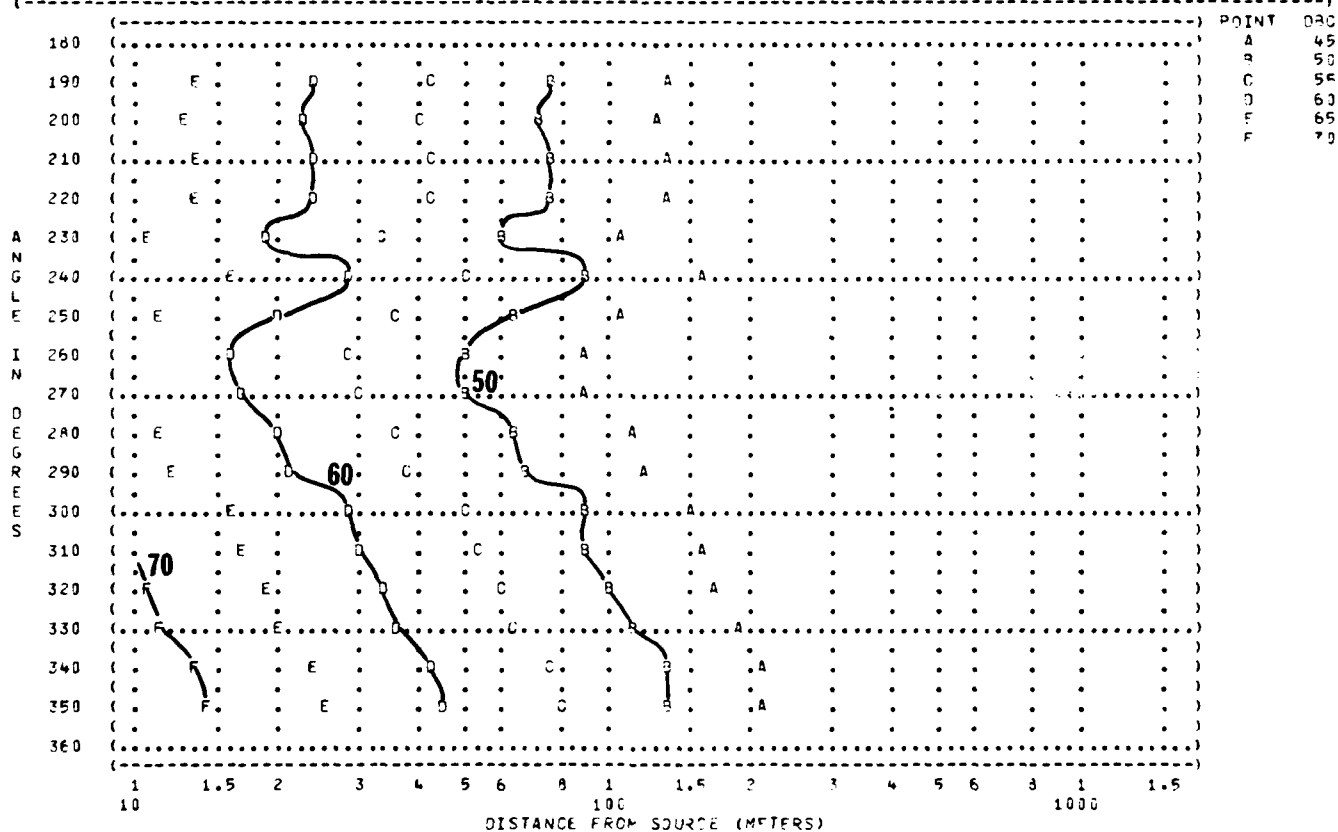
(FIGURE: OVERALL SOUND PRESSURE LEVEL (OASPL))
 (3 EQUAL LEVEL CONTOURS (DB))
 (IDENTIFICATION:)
 () OMEGA 1.4)
 (TEST BA-000-003)
 (NOISE SOURCE/SUBJECT: (OPERATION:) METEOROLOGY:)
 (GPC-2A COMPRESSOR (COMPRESSOR ON) TEMP = 15 C)
 (FAR FIELD NOISE LEVELS () BAR PRESS = .760 M HG)
 () REL HUMID = 70 %)
 () PAGE 11)



(FIGURE: C-WEIGHTED OVERALL SOUND LEVEL (OASLC)) IDENTIFICATION:)
 (4 EQUAL LEVEL CONTOURS (DBC)))
 (NOISE SOURCE/SUBJECT: (OPERATION:) METEOROLOGY:)
 (GPC-28 COMPRESSOR (COMPRESSOR ON) TEMP = 15 C)
 (FAR FIELD NOISE LEVELS () BAR PRESS = .760 M HG)
 () REL HUMID = 70 %)
 () PAGE 12)



(FIGURE: C-WEIGHTED OVERALL SOUND LEVEL (OASLC)) IDENTIFICATION:)
 (4 EQUAL LEVEL CONTOURS (CBC)))
 ())
 () OMEGA 1.4)
 (TEST BA-030-003)
 (NOISE SOURCE/SUBJECT: (OPERATION:) METEOROLOGY:)
 (GPC-28 COMPRESSOR (COMPRESSOR ON) TEMP = 15 C)
 (FAR FIELD NOISE LEVELS () BAR PRESS = .760 M HG)
 () REL HUMID = 70 %)
 ())
 () PAGE 12)



(FIGURE 5 A-WEIGHTED OVERALL SOUND LEVEL (OASL))
 (EQUAL LEVEL CONTOURS (DBA))
 (IDENTIFICATION:)
 ()
 () OMEGA 1.4)
 (TEST BA-000-003)
 (NOISE SOURCE/SUBJECT:) (OPERATION:) (METEOROLOGY:) (RUN 01)
 (GPC-28 COMPRESSOR) (COMPRESSOR ON) (TEMP = 15 C)
 (FAR FIELD NOISE LEVELS) () (BAR PRESS = .760 M HG) (06 APR 82)
 () () (REL HUMID = 70 %)
 () () (PAGE 13)

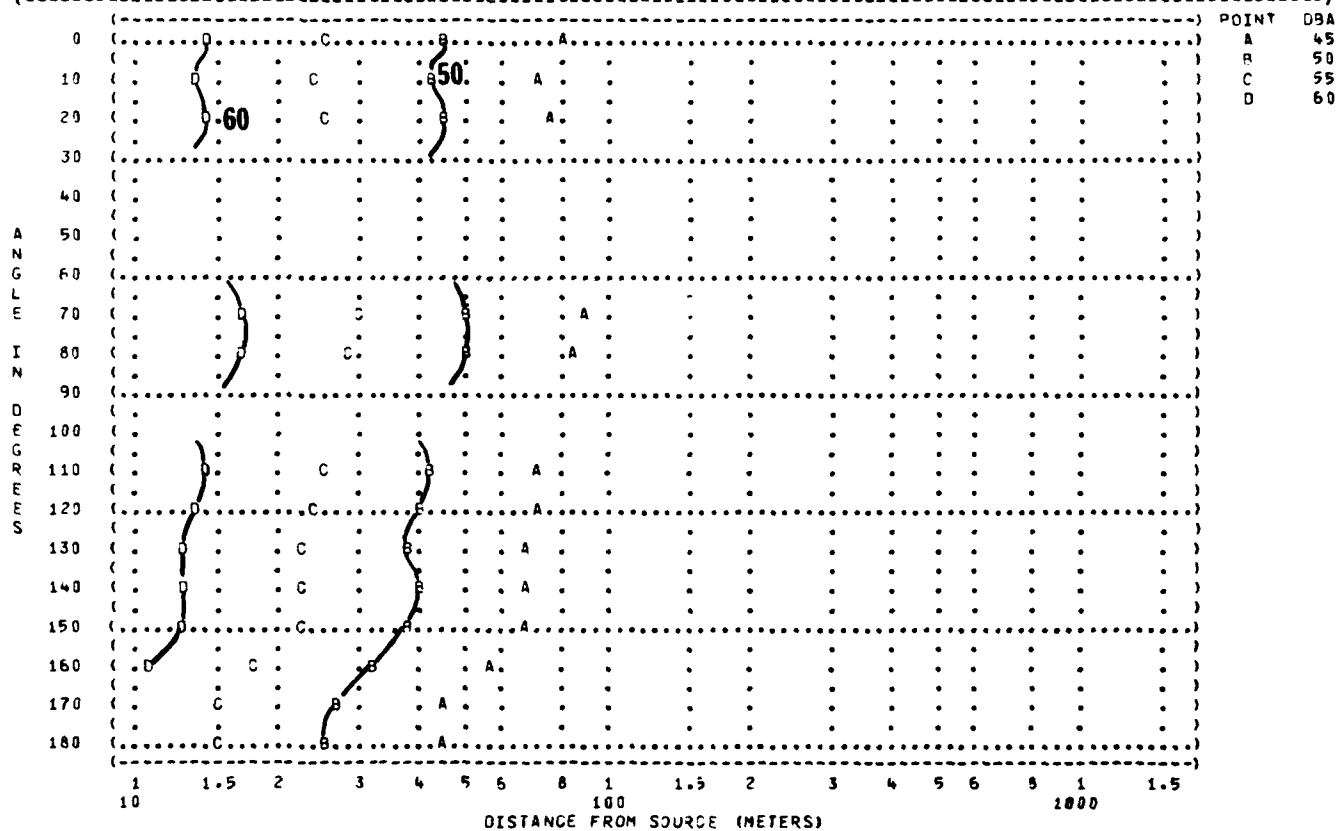
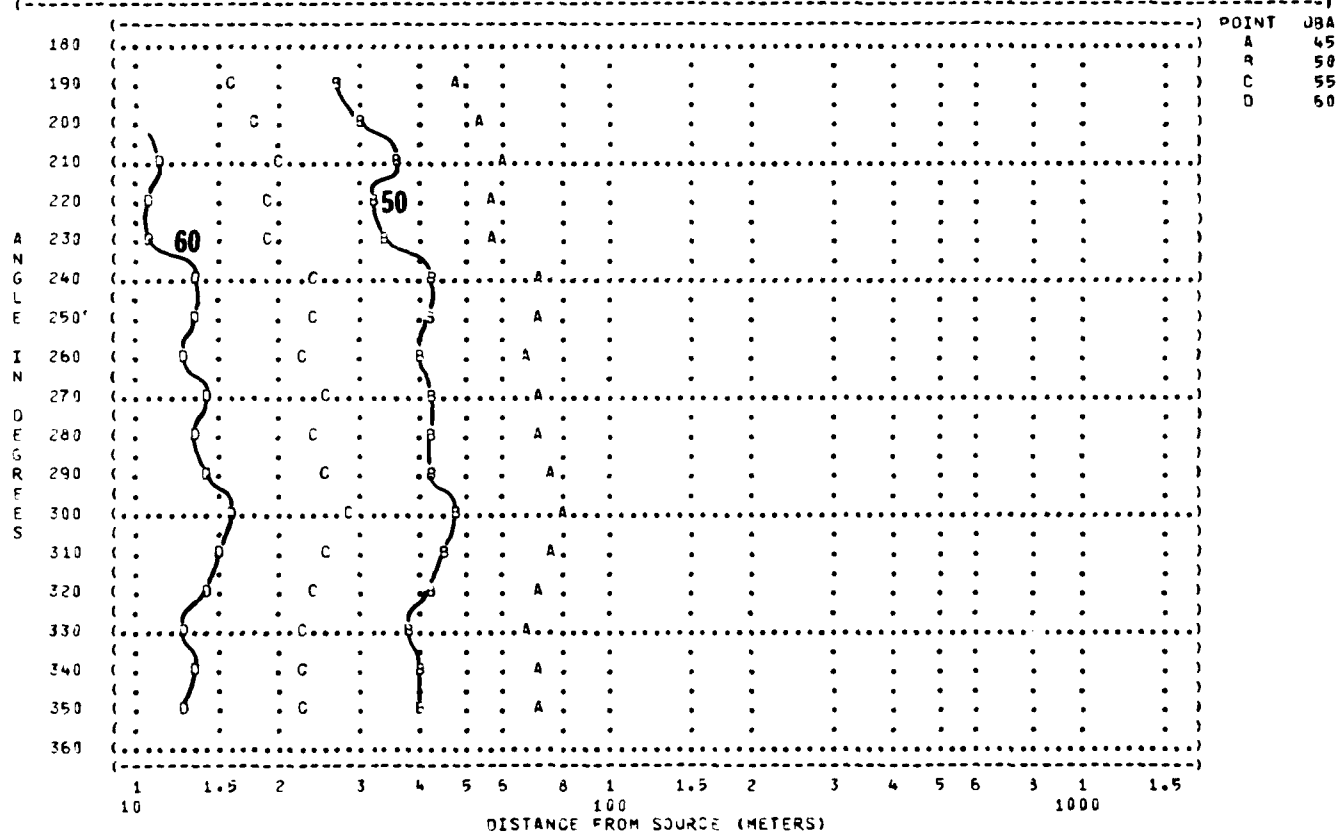


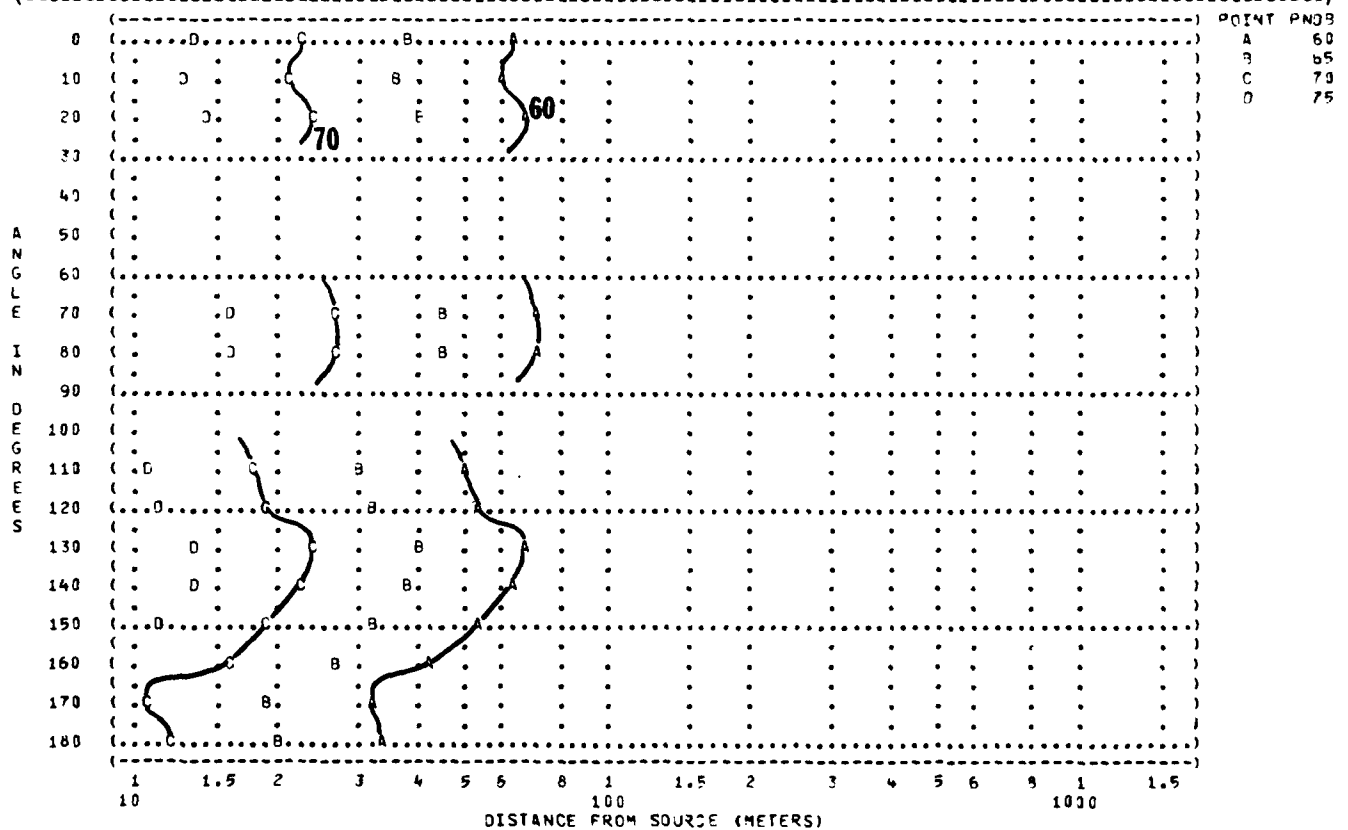
FIGURE: A-WEIGHTED OVERALL SOUND LEVEL (OASLA)
 5 EQUAL LEVEL CONTOURS (DBA)

IDENTIFICATION:
 OMEGA 1.4
 TEST BA-000-003
 RUN 02
 06 APR 82
 PAGE 13

NOISE SOURCE/SUBJECT: (OPERATION:) METEOROLOGY:
 GPC-28 COMPRESSOR (COMPRESSOR ON) TEMP = 15 C
 FAR FIELD NOISE LEVELS () BAR PRESS = .760 M HG
 () REL HUMID = 70 %



(FIGURE: PERCEIVED NOISE LEVEL, TONE CORRECTED (PNLT))
 (6 EQUAL LEVEL CONTOURS (PNDB))
 (NOISE SOURCE/SUBJECT: (OPERATION:) METEOROLOGY:) IDENTIFICATION:)
 (GPC-28 COMPRESSOR (COMPRESSOR ON) TEMP = 15 C))
 (FAR FIELD NOISE LEVELS () BAR PRESS = .760 M HG))
 () REL HUMID = 70 %))
 () PAGE 14)



6

1 CMEGA 1-6

1 OMEGA 1.6 1

- -) TEST RA-000-003)

(FAR FIELD NOISE LEVELS

COMPRESSOR UN

9AF PRESS

RAF PRESS = .760 " H3

REL HUMID = 70 %

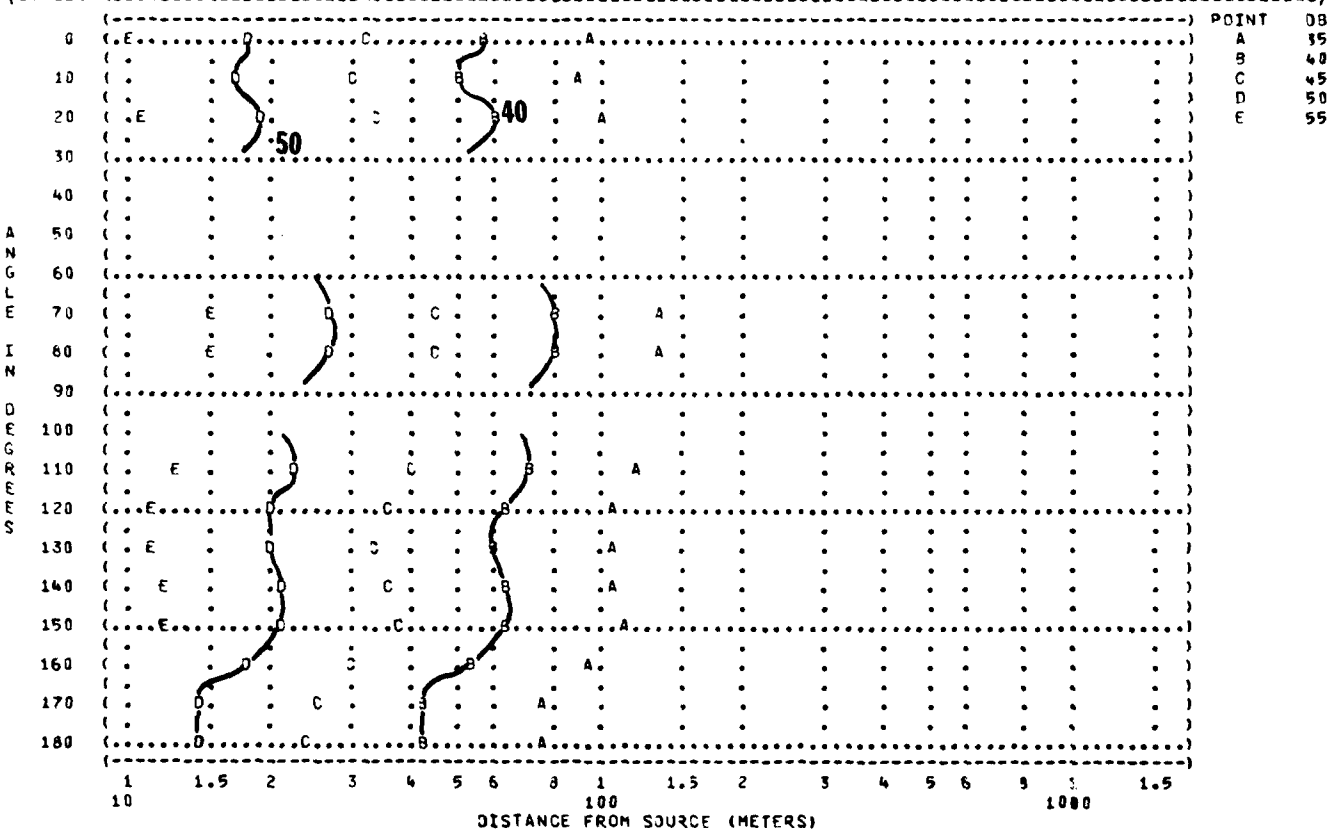
1 RUN 02

06 APR 82

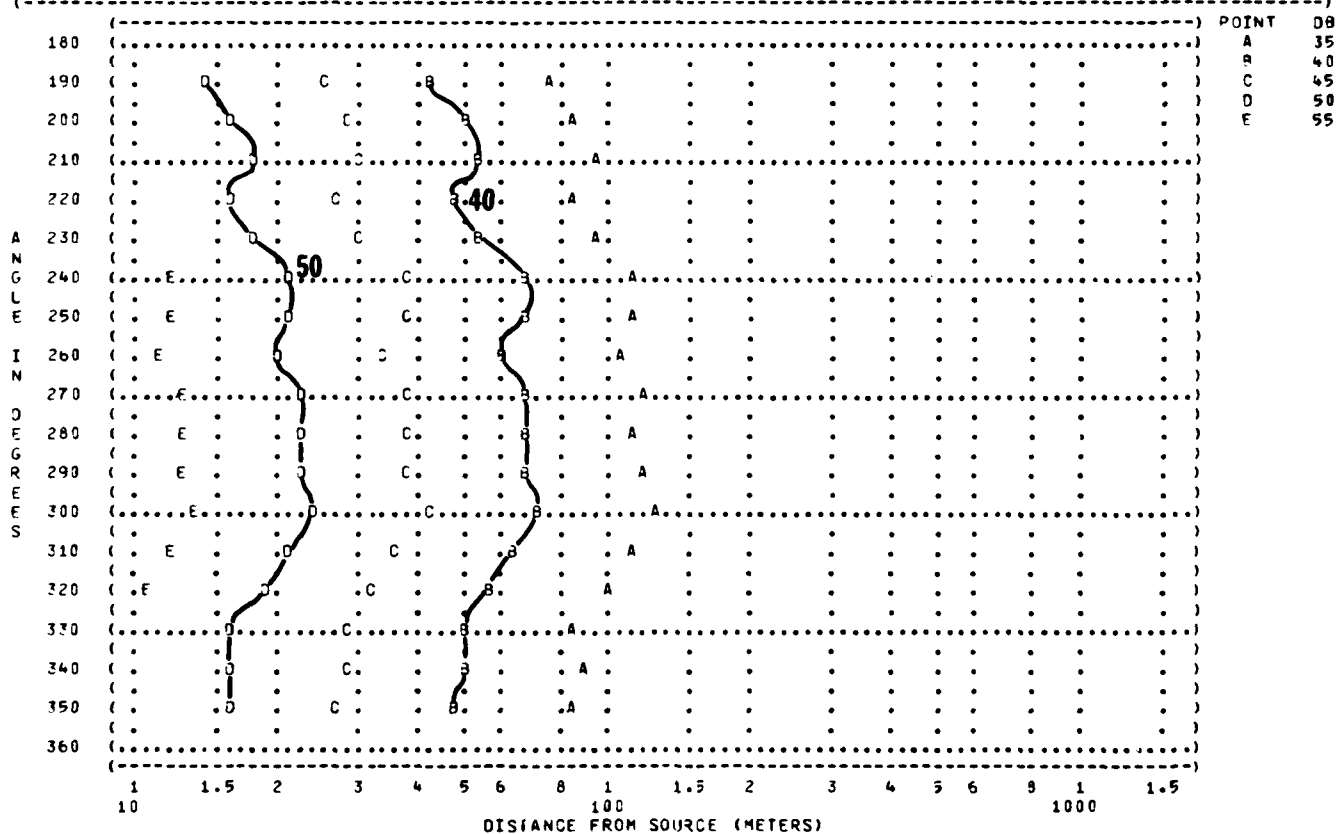
PAGE 16



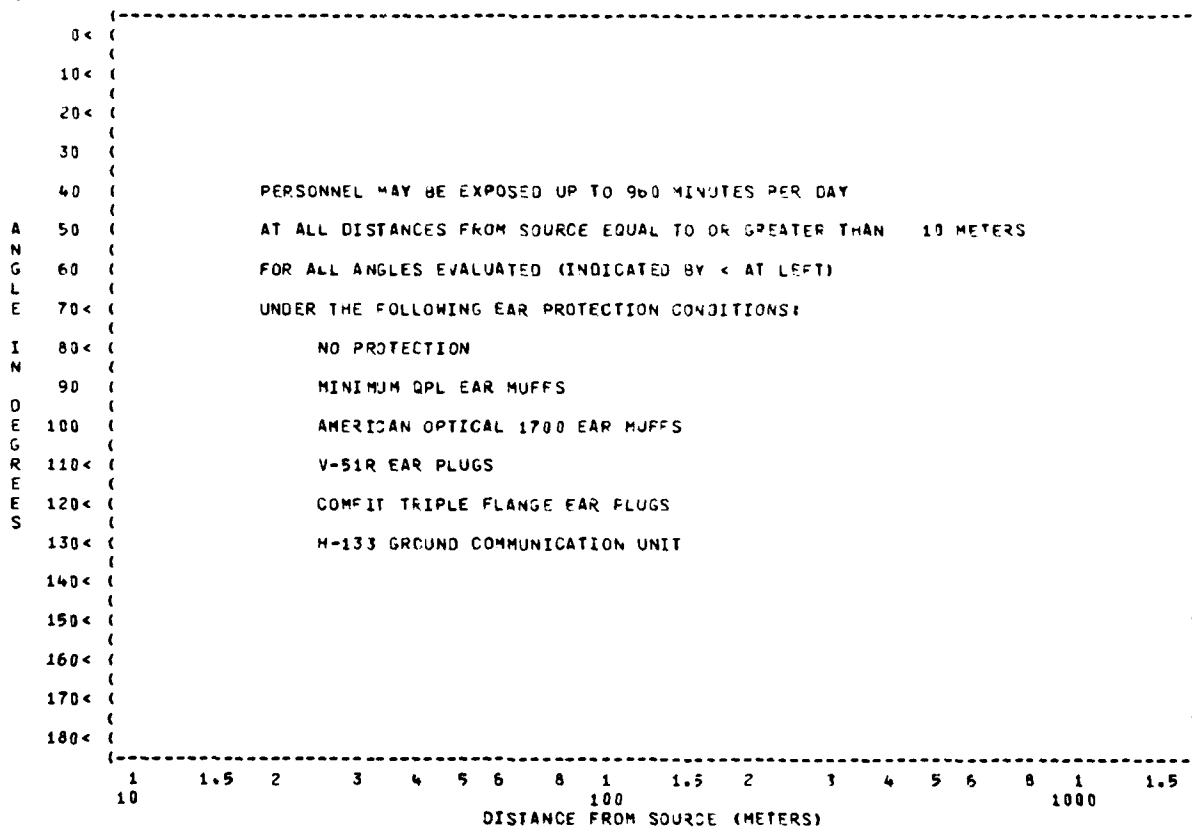
(FIGURE 7) (FIGURE 1) (FIGURE 1)
 (7) (7) (7)
 (NOISE SOURCE/SUBJECT:) (OPERATIONS:) (METEOROLOGY:) (IDENTIFICATION:)
 (GPC-28 COMPRESSOR) (COMPRESSOR ON) (TEMP = 15 C) (TEST BA-000-003)
 (FAR FIELD NOISE LEVELS) () (BAR PRESS = .760 M HG) (RUN 01)
 () () (REL HUMID = 70 %) (06 APR 87)
 () () () (PAGE 15)



(FIGURE: PREFERRED SPEECH INTERFERENCE LEVEL (PSIL)			IDENTIFICATION:
(7 EQUAL LEVEL CONTOURS (C9)			
(NOISE SOURCE/SUBJECT:			OMEGA 1.4
(GPC-28 COMPRESSOR			TEST BA-000-003
(FAR FIELD NOISE LEVELS			RUN 02
(OPERATIONS:			06 APR 82
(COMPRESSOR ON			PAGE 15
(METEOROLOGY:			
(TEMP = 15 C			
(BAR PRESS = .760 M HG			
(REL HUMID = 70 %			



(FIGURE: MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)) (8 EQUAL TIME CONTOURS (MINUTES))			) IDENTIFICATION:)) OMFGA 1.4)) TEST RA-003-003)) RUN 01)) 06 APR 87)) PAGE 5)
(NOISE SOURCE/SUBJECT:) (CPC-28 COMPRESSOR) (FAR FIELD NOISE LEVELS)	(OPERATION:) (COMPRESSOR ON) () ()	) METEOROLOGY:)) TEMP = 15 C)) BAR PRESS = .750 M HG)) REL HUMID = 70 %))	



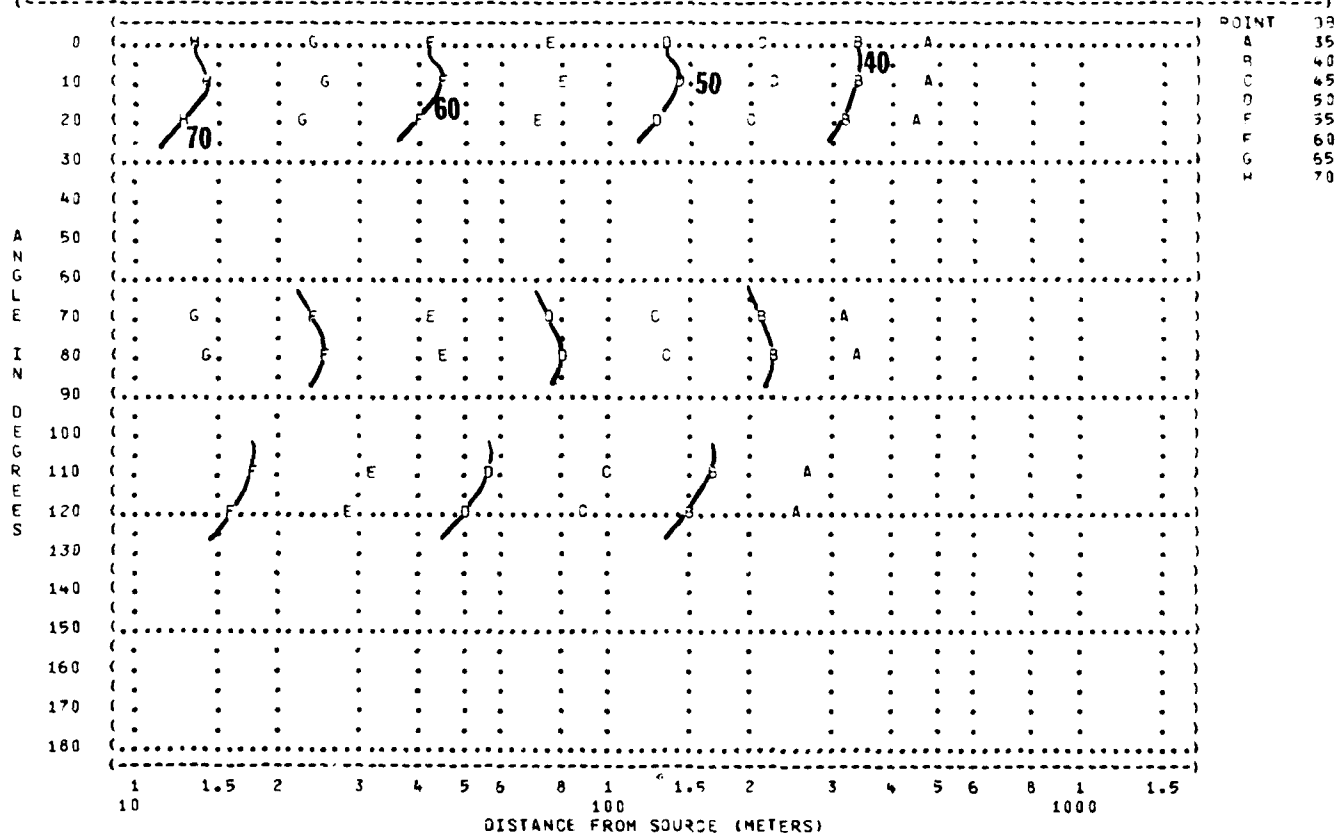
(-----
 (FIGURE: SOUND PRESSURE LEVEL (SPL)) IDENTIFICATION:)
 (9 EQUAL LEVEL CONTOURS (CB)))
 (31.5 HZ OCTAVE BAND) OMEGA 1.4)
 (-----
 (NOISE SOURCE/SUBJECT: (OPERATION:) METEOROLOGY:) TEST BA-000-003)
 (GPC-28 COMPRESSOR (COMPRESSOR ON) TEMP = 15 C) RUN 01)
 (FAR FIELD NOISE LEVELS () BAR PRESS = .760 M HG) 06 APR 82)
 (() REL HUMID = 70 %))
 (() PAGE 16)
 (-----
 (NO CONTOUR DATA---EITHER NO INPUT DATA WERE COMPUTED (=9999.0))
 (OR MINIMUM CONTOUR LEVEL REQUESTED IS GREATER THAN MAXIMUM COMPUTED LEVEL.)
 (-----

(FIGURE: SOUND PRESSURE LEVEL (SPL)			(IDENTIFICATION:)
(9	(EQUAL LEVEL CONTOURS (DB)		()
(	(31.5 HZ OCTAVE BAND		()
(-----)			()
(NOISE SOURCE/SUBJECT:	(OPERATION:	(METEOROLOGY:	()
(GPC-28 COMPRESSOR	(COMPRESSOR ON	(TEMP = 15 C	()
(FAR FIELD NOISE LEVELS	(	(BAR PRESS = .760 M HG	()
(	(	(REL HUMID = 70 %	()
(	(	(	()
(-----)			()
(NO CONTOUR DATA---EITHER NO INPUT DATA WERE COMPUTED (=9999.0)			()
(OR MINIMUM CONTOUR LEVEL REQUESTED IS GREATER THAN MAXIMUM COMPUTED LEVEL.			()
(			()
(-----)			()

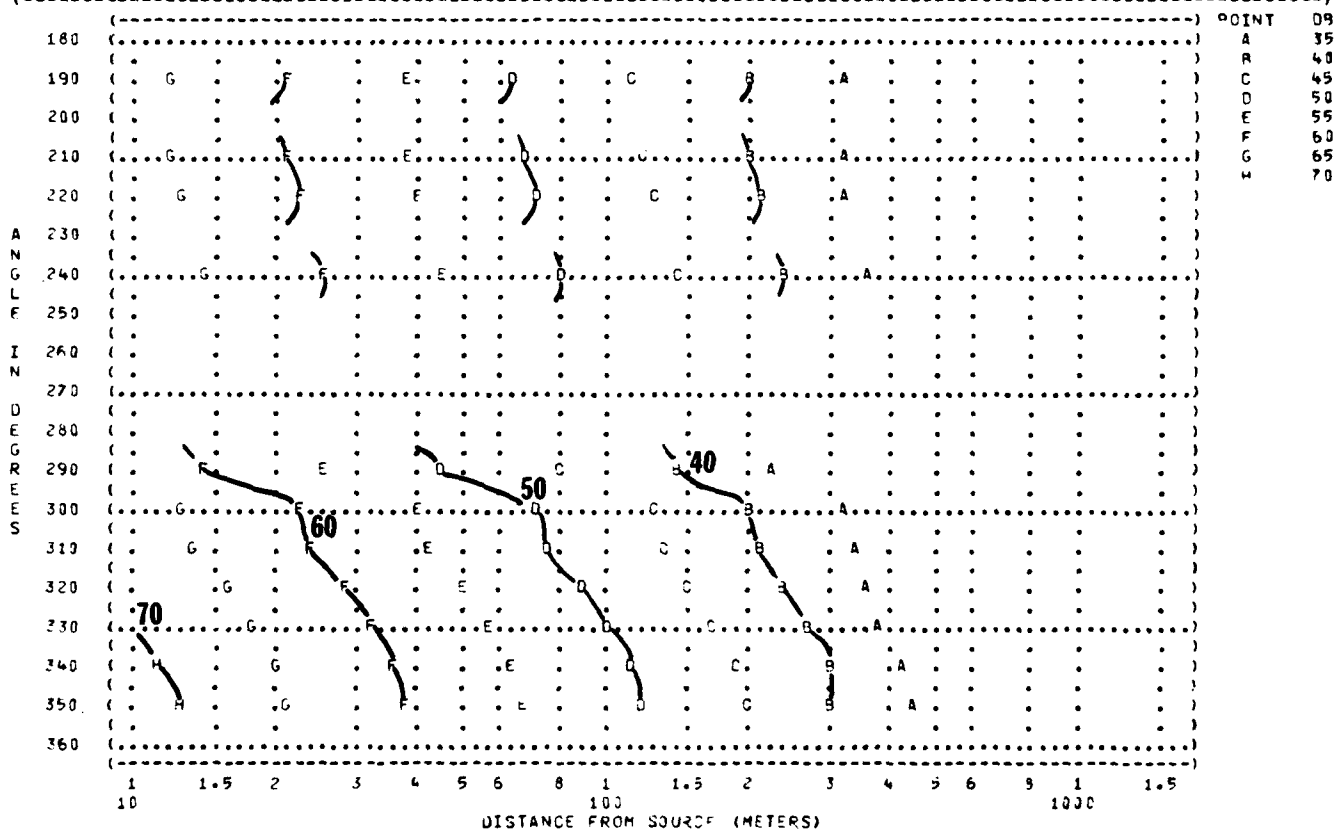
(-----)
 (FIGURE: SOUND PRESSURE LEVEL (SPL)) IDENTIFICATION:)
 (9 EQUAL LEVEL CONTOURS (DB)))
 (63 HZ OCTAVE BAND))
 (-----)
 (NOISE SOURCE/SUBJECT: (OPERATION:) METEOROLOGY:)
 (GPC-28 COMPRESSOR (COMPRESSOR ON) TEMP = 15 C)
 (FAR FIELD NOISE LEVELS () BAR PRESS = .760 M HG)
 () REL HUMID = 70 %)
 ())
 (-----)
 (NO CONTOUR DATA---EITHER NO INPUT DATA WERE COMPUTED (=9999.0))
 (OR MINIMUM CONTOUR LEVEL REQUESTED IS GREATER THAN MAXIMUM COMPUTED LEVEL.)
 ()
 (-----)

(FIGURE: SOUND PRESSURE LEVEL (SPL)			(IDENTIFICATION:)
(9	(EQUAL LEVEL CONTOURS (DB)		()
(	(63 HZ OCTAVE BAND		()
(-----)			()
(NOISE SOURCE/SUBJECT:	(OPERATION:	(METEOROLOGY:	(TEST 9A-000-003)
(GPC-28 COMPRESSOR	(COMPRESSOR ON	(TEMP = 15 C	(RUN 02)
(FAR FIELD NOISE LEVELS	(	(BAR PRESS = .760 M HG	(06 APR 82)
(	(	(REL HUMID = 70 %	()
(	(	(	(PAGE 17)
(-----)			()
(NO CONTOUR DATA---EITHER NO INPUT DATA WERE COMPUTED (=9999.0)			()
(OR MINIMUM CONTOUR LEVEL REQUESTED IS GREATER THAN MAXIMUM COMPUTED LEVEL.			()
(-----)			()

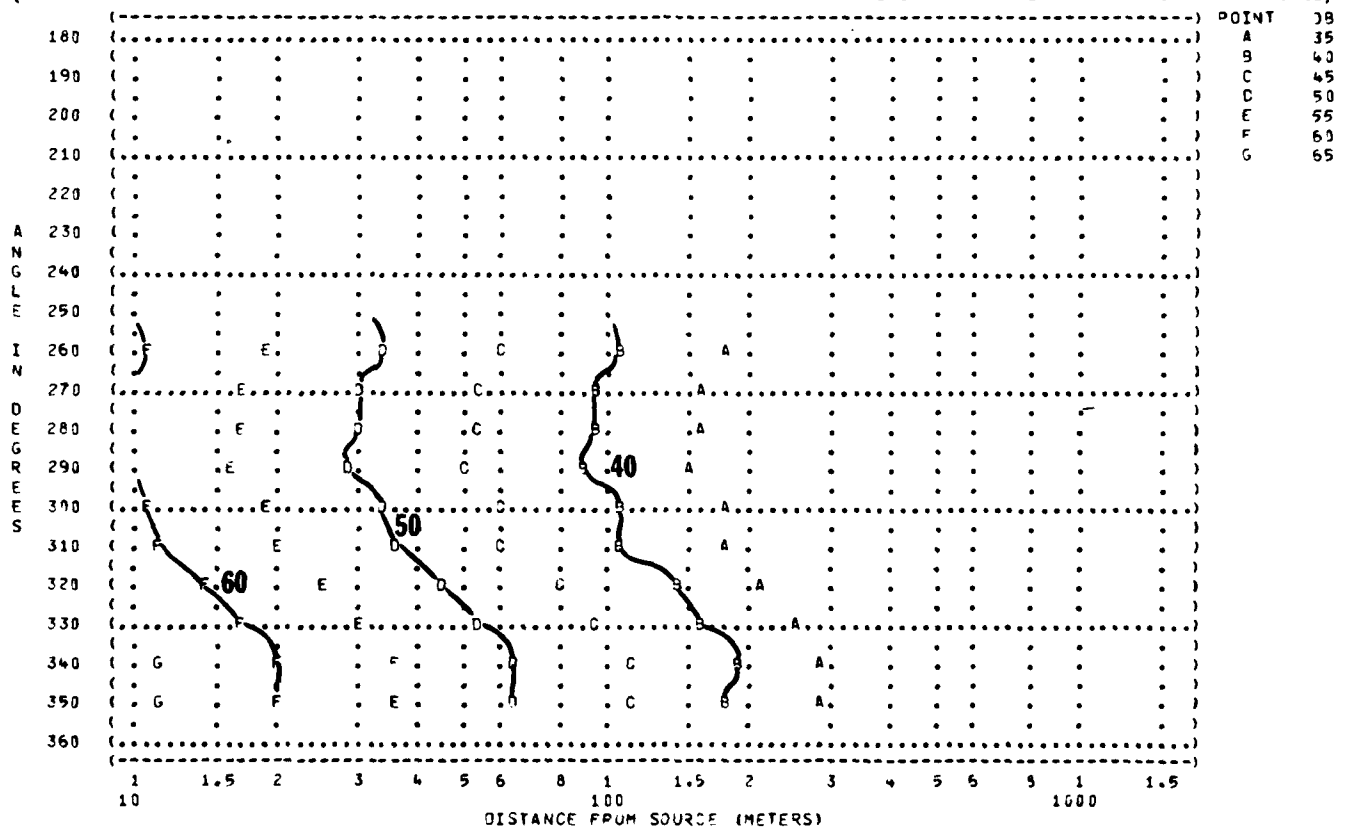
(FIGURE: SOUND PRESSURE LEVEL (SPL)) IDENTIFICATION:)
 (9 EQUAL LEVEL CONTOURS (CB)))
 (125 HZ OCTAVE BAND))
 (NOISE SOURCE/SUBJECT: (OPERATION:) METEOROLOGY:) TEST RA-000-003)
 (GPC-24 COMPRESSOR (COMPRESSOR ON) TEMP = 15 C) RUN 01)
 (FAR FIELD NOISE LEVELS () BAR PRESS = .760 M Hg) 06 APR 92)
 () REL HUMID = 70 %))
 () PAGE 18)



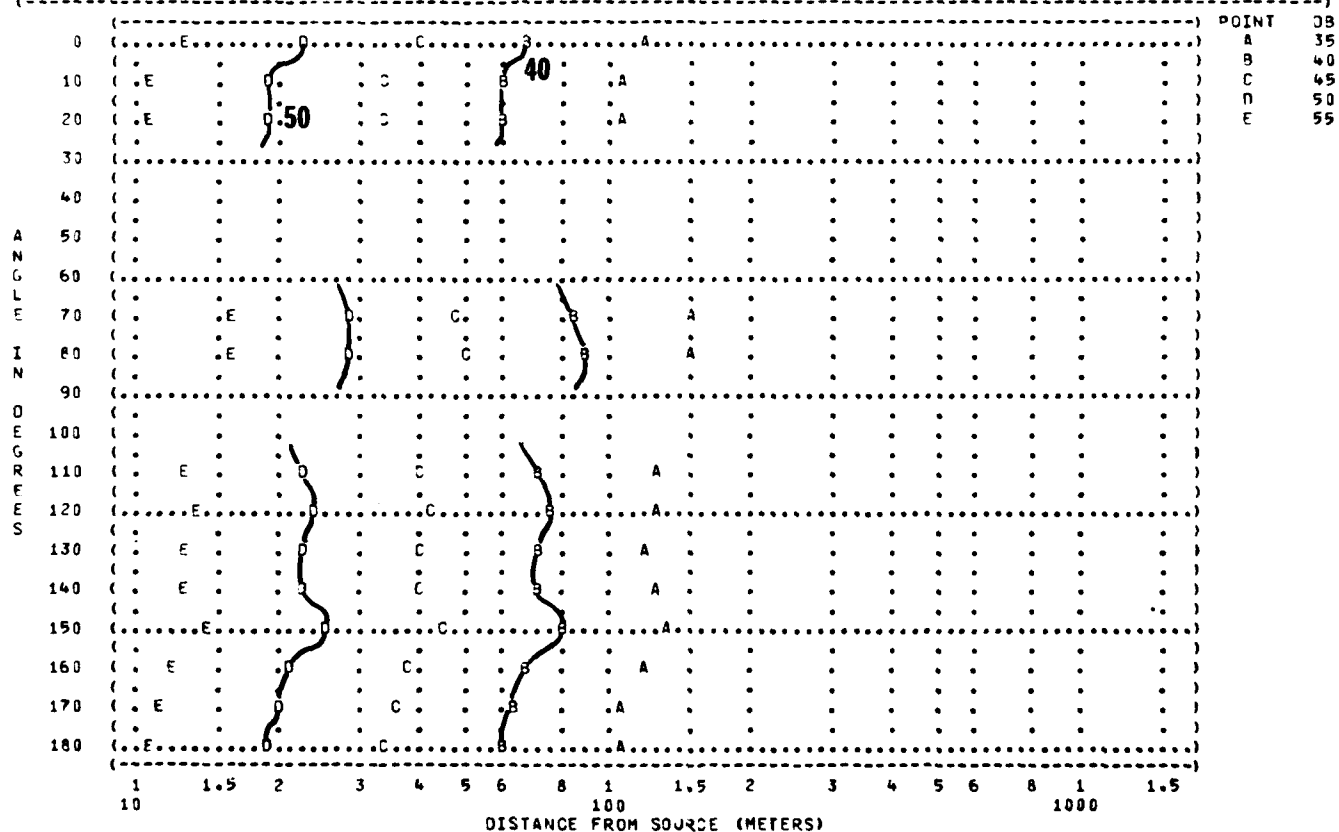
(FIGURE: SOUND PRESSURE LEVEL (SPL) (9 EQUAL LEVEL CONTOURS (DB) (125 HZ OCTAVE BAND			) IDENTIFICATION:))) OMEGA 1.4) TEST 9A-000-003) RUN 02) 06 APR 92) PAGE 1A
(NOISE SOURCE/SUBJECT: (GPC-28 COMPRESSOR (FAR FIELD NOISE LEVELS	(OPERATION: (COMPRESSOR ON	) METEOROLOGY:) TEMP = 15 C) BAR PRESS = .760 MM HG) REL HUMID = 70 %	



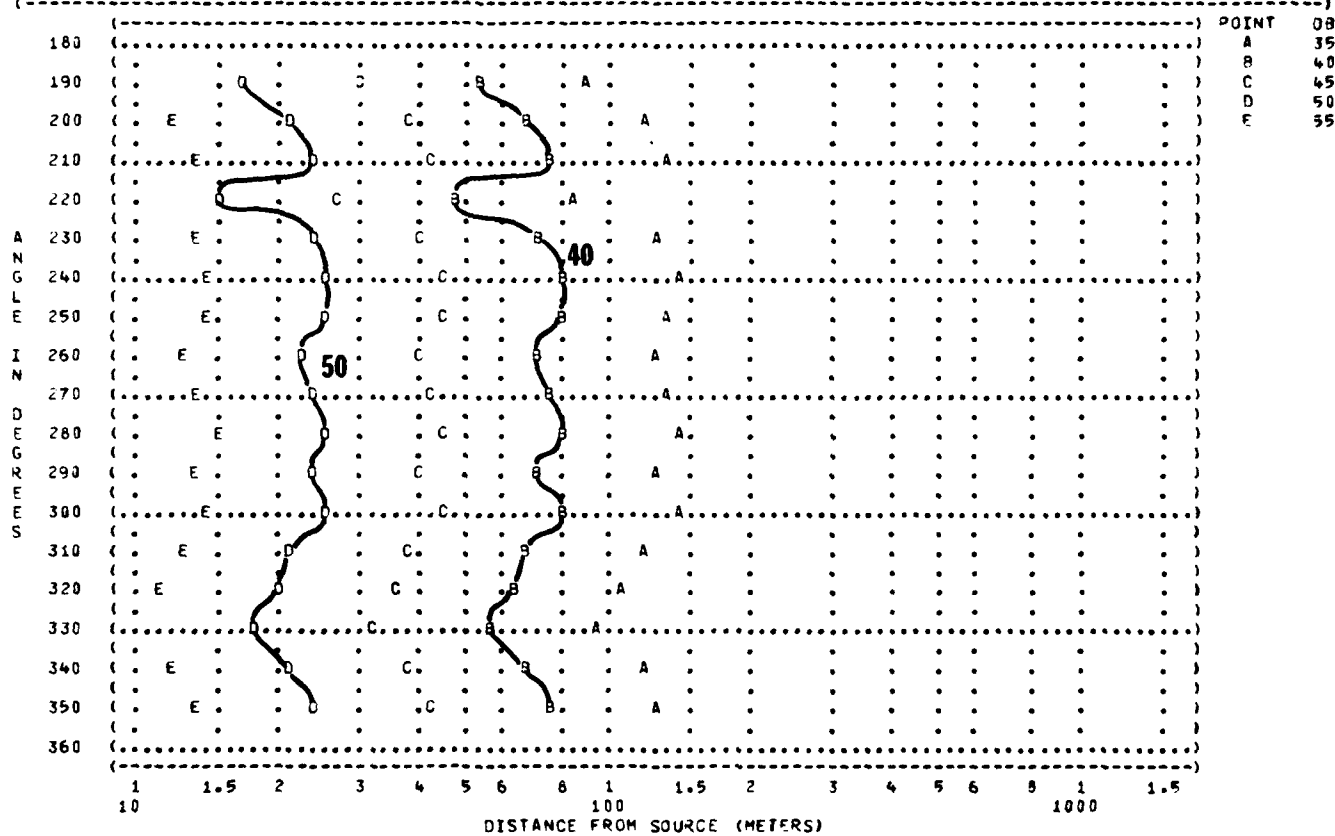
(FIGURE: SOUND PRESSURE LEVEL (SPL) (9 EQUAL LEVEL CONTOURS (DB) (250 HZ OCTAVE BAND			) IDENTIFICATION:)) OMEGA 1.4) TEST RA-030-003) RUN 02) 06 APR 87) PAGE 19
(NOISE SOURCE/SUBJECT: (GPC-28 COMPRESSOR (FAR FIELD NOISE LEVELS	(OPERATION: (COMPRESSOR ON	) METEOROLOGY:) TEMP = 15 C) BAR PRESS = .760 M HG) REL HUMID = 70 %	



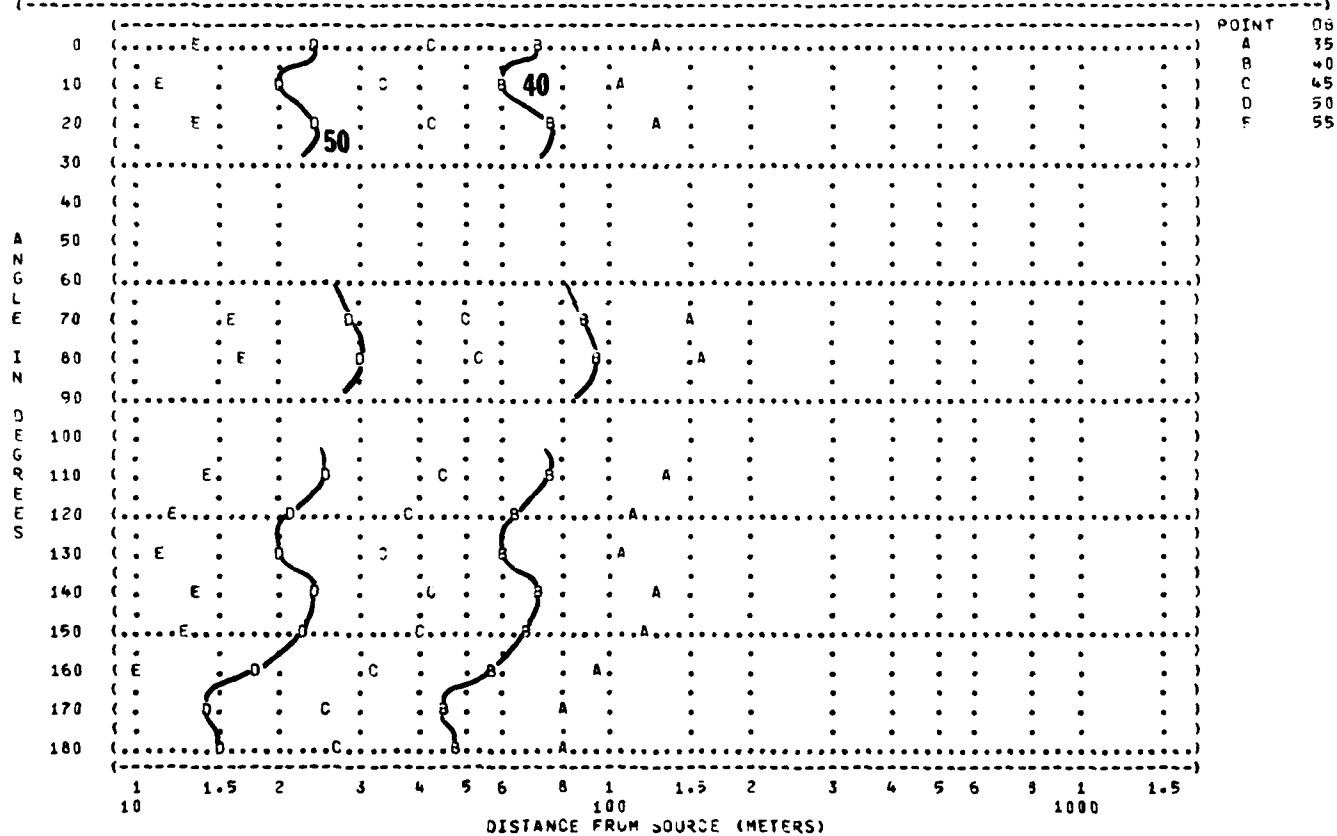
(FIGURE: SOUND PRESSURE LEVEL (SPL) (9 EQUAL LEVEL CONTOURS (DB) (500 HZ OCTAVE BAND			) IDENTIFICATION:))) OMEGA 1.4) TEST RA-000-003) RUN 01) 16 APR 92) PAGE 20
(NOISE SOURCE/SUBJECT: (GPC-20 COMPRESSOR (FAR FIELD NOISE LEVELS	(OPERATIONS: (COMPRESSOR ON	) METEOROLOGY:) TEMP = 15 C) BAR PRESS = .760 M HG) REL HUMID = 70 %	



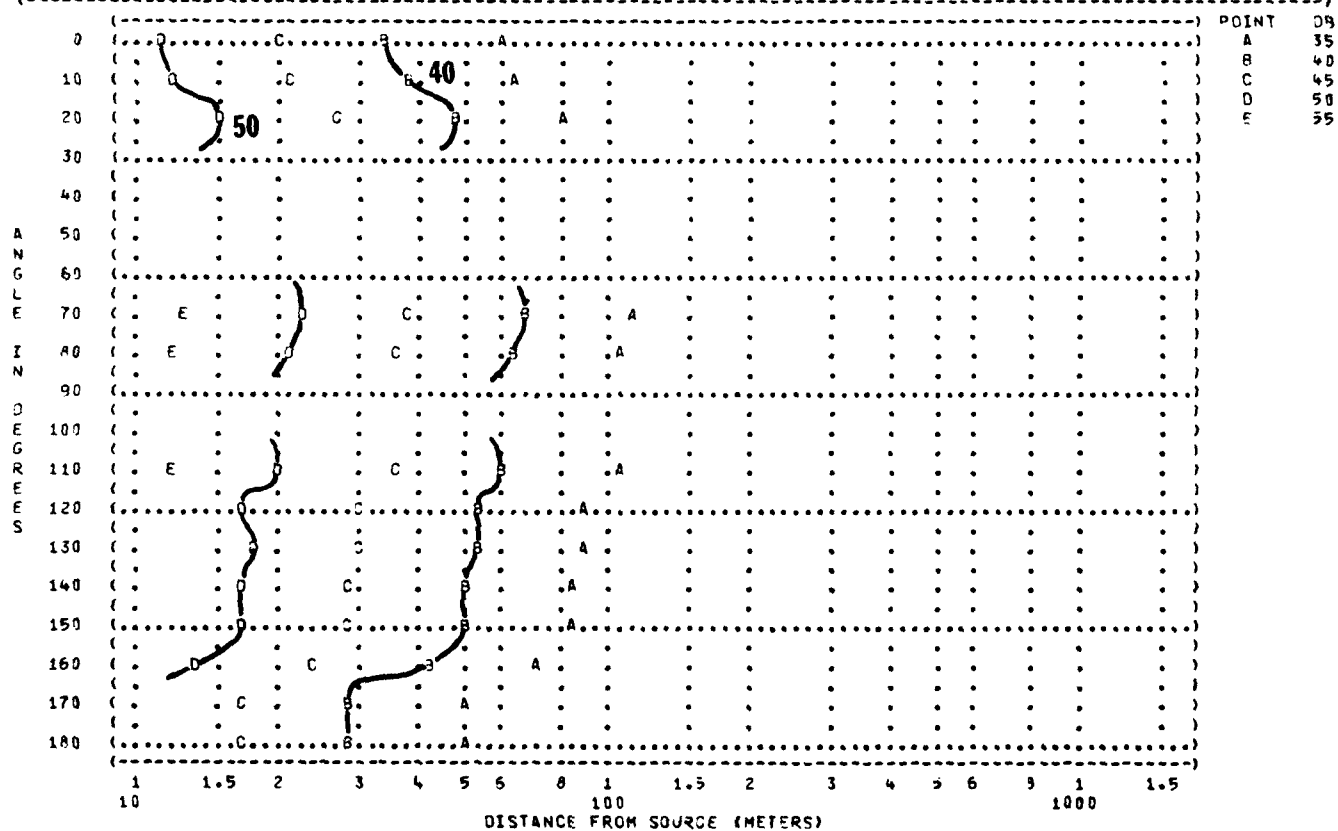
(FIGURE: SOUND PRESSURE LEVEL (SPL)			) IDENTIFICATION:)	
(9 EQUAL LEVEL CONTOURS (DB)			) OMEGA 1.4)	
(500 HZ OCTAVE BAND			) TEST 9A-000-003)	
(NOISE SOURCE/SUBJECT:		(OPERATION:	) METEOROLOGY:	
(GPC-26 COMPRESSOR		(COMPRESSOR ON	) TEMP = 15 C)	
(FAR FIELD NOISE LEVELS		(	) BAR PRESS = .760 M HG)	
(		(	) REL HUMID = 70 %)	
(		(	) PAGE 20)	



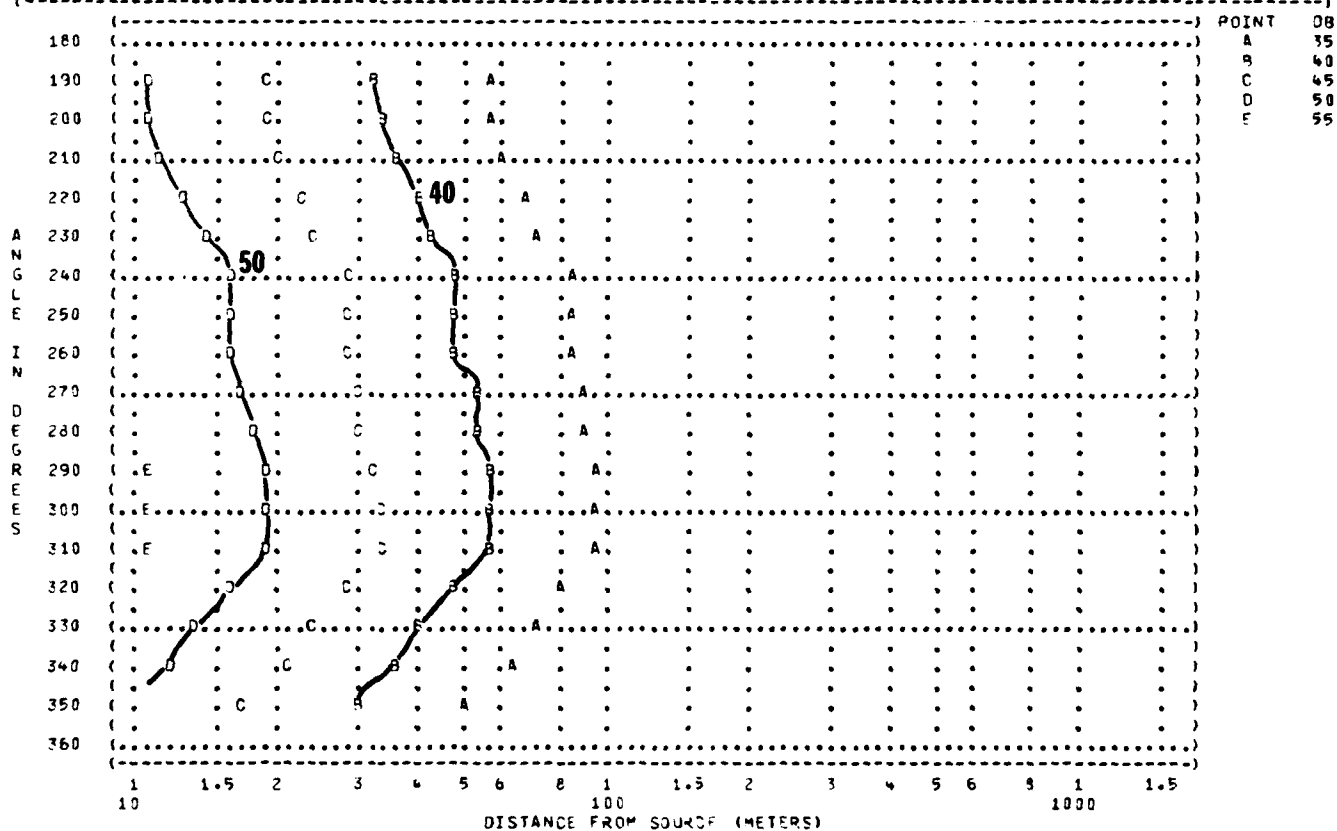
(FIGURE: SOUND PRESSURE LEVEL (SPL)) IDENTIFICATION:)
 (9 EQUAL LEVEL CONTOURS (dB)))
 (1000 HZ OCTAVE BAND))
 (NOISE SOURCE/SUBJECT: (OPERATION:) METEOROLOGY:)
 (GPC-28 COMPRESSOR (COMPRESSOR ON) TEMP = 15 C)
 (FAK FIELD NOISE LEVELS () BAR PRESS = .763 M HG)
 () REL HUMID = 70 %)
 () PAGE 21)



(FIGURE: SOUND PRESSURE LEVEL (SPL)) IDENTIFICATION:)
 (9 EQUAL LEVEL CONTOURS (C3)))
 (2000 HZ OCTAVE BAND))
 (NOISE SOURCE/SUBJECT: (OPERATION:) METEOROLOGY:)
 (GPC-28 COMPRESSOR (COMPRESSOR ON) TEMP = 15 C)
 (FAR FIELD NOISE LEVELS () BAR PRESS = .760 M HG)
 () REL HUMID = 70 %)
 () PAGE 22)



(FIGURE: SOUND PRESSURE LEVEL (SPL) (9 EQUAL LEVEL CONTOURS (DB) (2000 HZ OCTAVE BAND			) IDENTIFICATION:))) OMEGA 1.4)) TEST BA-000-003)) RUN 02)) 06 APR 82))) PAGE 22)
(NOISE SOURCE/SUBJECT: (GPC-28 COMPRESSOR (FAR FIELD NOISE LEVELS	(OPERATIONS: (COMPRESSOR ON	) METEOROLOGY:) TEMP = 15 C) BAR PRESS = .760 M Hg) REL HUMID = 70 %	



(FIGURE: SOUND PRESSURE LEVEL (SPL)			) IDENTIFICATION:)	
(9 EQUAL LEVEL CONTOURS (DB)			))	
(4000 HZ OCTAVE BAND			) OMEGA 1.4)	
(NOISE SOURCE/SUBJECT:)			) TEST BA-000-003)	
(GPC-28 COMPRESSOR	(OPERATION: COMPRESSOR ON	) METEOROLOGY: TEMP = 15 C	) RUN 02)	
(FAR FIELD NOISE LEVELS	()	) BAR PRESS = .760 M HG	) 06 APR 92)	
()	()	) REL HUMID = 70 %	))	
()	()	))	) PAGE 23)	

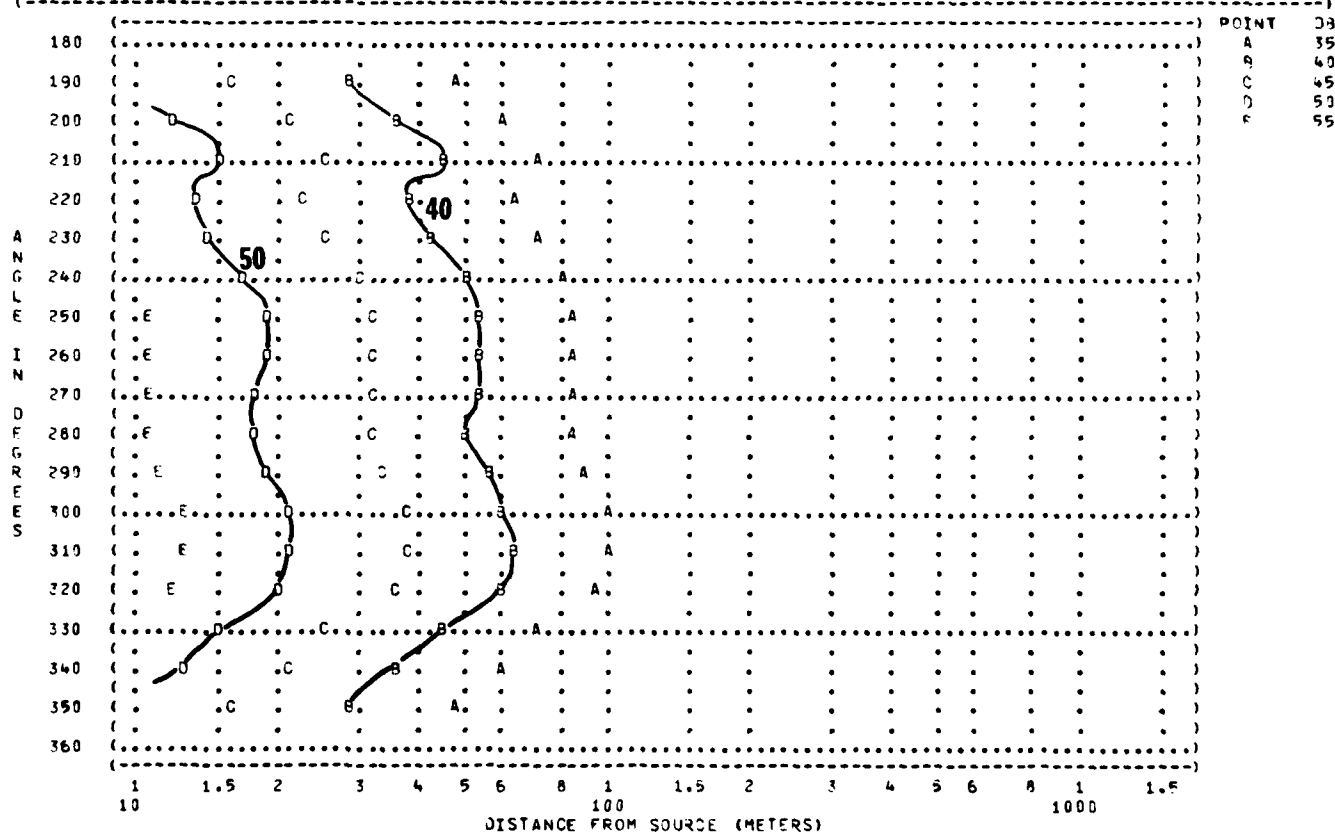
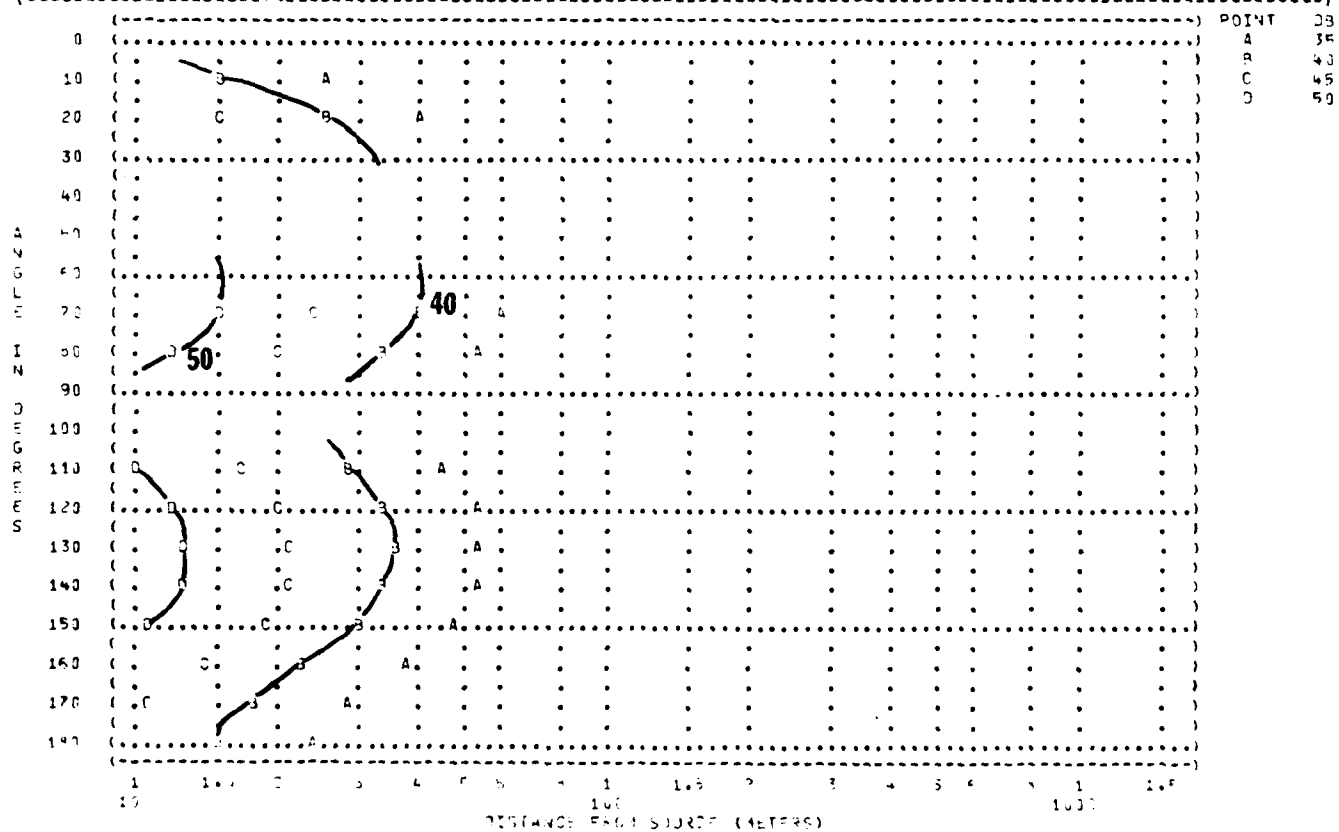
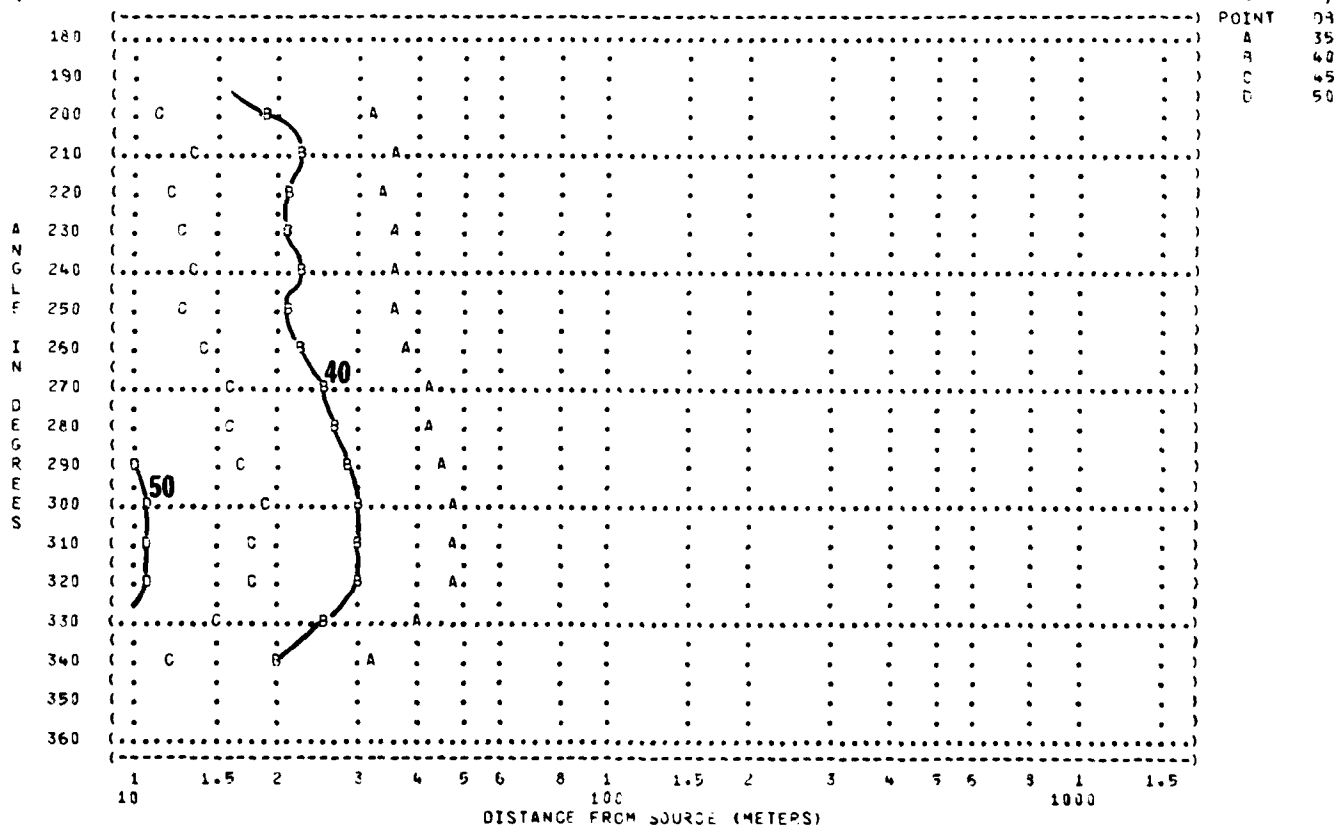


FIGURE 9 SOUND PRESSURE LEVEL (SPL) EQUAL LEVEL CONTOURS (dB) 6330 HZ OCTAVE BAND			IDENTIFICATION:) OMEGA 1.4) TEST RA-010-003) RUN 01) 06 APR 82) PAGE 24
NOISE SOURCE/SUBJECT: GPC-26 COMPRESSOR FAR FIELD NOISE LEVELS	OPERATIONS: COMPRESSOR ON	METEOROLOGY:) TEMP = 15 C) BAR PRESS = .760 M HG) REL HUMID = 70 %	



(FIGURE: SOUND PRESSURE LEVEL (SPL)) IDENTIFICATION:)
 (9) EQUAL LEVEL CONTOURS (LB)))
 (0000 HZ OCTAVE BAND))
 (NOISE SOURCE/SUBJECT:) OPERATION:) METEOROLOGY:) TEST RA-000-003)
 (GPC-26 COMPRESSOR) COMPRESSOR ON) TEMP = 15 C) RUN 12)
 (FAR FIELD NOISE LEVELS)) BAR PRESS = .760 M HG) 06 APR 82)
 ()) REL HUMID = 70 %))
 ())) PAGE 24)



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