AD-A053 714 AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB OHIO F/G 1/5
USAF BIOENVIRONMENTAL NOISE DATA HANDBOOK. VOLUME 118. MD-4 GEN--ETC(U)
DEC 77 R W GORMAN

UNCLASSIFIED AMRL-TR-75-50-VOL-118 NL

| OF |
AD
A053714

END
DATE
FILMED
6 -78
DDC

AMRL-TR-75-50
Volume 118

USAF BIOENVIRONMENTAL NOISE DATA HANDBOOK

Volume 118

MD-4 Generator

DECEMBER 1977

AEROSPACE MEDICAL RESEARCH LABORATORY
AEROSPACE MEDICAL DIVISION
AIR FORCE SYSTEMS COMMAND
WRIGHT-PATTERSON AIR FORCE BASE, OHIO 45433

NOTICES

When US Government drawings, specifications, or other data are used for any purpose other than a definitely related Government procurement operation, the Government thereby incurs no responsibility nor any obligation whatsoever, and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data, is not to be regarded by implication or otherwise, as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

Please do not request copies of this report from Aerospace Medical Research Laboratory. Additional copies may be purchased from:

National Technical Information Service
5285 Port Royal Road
Springfield, Virginia 22161

Federal Government agencies and their contractors registered with Defense Documentation Center should direct requests for copies of this report to:

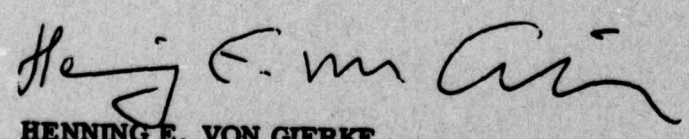
Defense Documentation Center
Cameron Station
Alexandria, Virginia 22314

TECHNICAL REVIEW AND APPROVAL

This report has been reviewed by the Information Office (OI) and is releasable to the National Technical Information Service (NTIS). At NTIS, it will be available to the general public, including foreign nations.

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

AIR FORCE/56780/20 February 1978 — 300

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE

READ INSTRUCTIONS BEFORE COMPLETING FORM

(14) 1. REPORT NUMBER: AMRL-TR-75-50- VOL-118

2. GOVT ACCESSION NO. (9)

3. RECIPIENT'S CATALOG NUMBER: Technical rept.

(6) 4. TITLE (and Subtitle): USAF BIOENVIRONMENTAL NOISE DATA HANDBOOK, MD-4 Generator.

5. TYPE OF REPORT & PERIOD COVERED: Volume 118 of a series

6. PERFORMING ORG. REPORT NUMBER

(10) 7. AUTHOR(s): Richard W. Gorman, Capt, USAF, BSC

8. CONTRACT OR GRANT NUMBER(s): (17) 04

9. PERFORMING ORGANIZATION NAME AND ADDRESS
Aerospace Medical Research Laboratory
Aerospace Medical Division, Air Force
Systems Command, Wright-Patterson AFB OH 45433

10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
62202F (16) 7231-04-33
7231-04-36

11. CONTROLLING OFFICE NAME AND ADDRESS
Same as above

(11) 12. REPORT DATE: Dec 77

13. NUMBER OF PAGES: 26

14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)

(12) 15. SECURITY CLASS. (of this report): 27p.

15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

Approved for public release; distribution unlimited.

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Noise
Noise Environments
Bioenvironmental Noise
Ground Support Equipment
MD-4 Generator

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

The MD-4 Generator is a motor driven generator set designed to furnish alternating current for hangers, maintenance shops and industrial facilities where precision bench mockup and test equipment requiring precise power are operated and tested. This report provides measured data defining the bioacoustic environments produced by this unit operating inside a large aircraft hanger at normal rated conditions. Near-field data are reported for 37

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

ØØ9 85Ø

locations in a wide variety of physical and psychoacoustic measures: overall and band sound pressure levels, C-weighted and A-weighted sound levels, preferred speech interference level, perceived noise level, and limiting times for total daily exposure of personnel with and without standard Air Force ear protectors. 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 723-104, Measurement and Prediction of Noise Environments of Air Force Operations.

The author acknowledges the efforts of Mr. Robert G. Powell who assisted in collection of the noise data, and Mr. John N. Cole who established the data analysis requirements and assisted in the preparation of this report. Mr. Henry Mohlman and Mr. David Eilerman of the University of Dayton assisted in the mechanics of data processing, and Mrs. Peggy Massie typed and prepared the graphics.

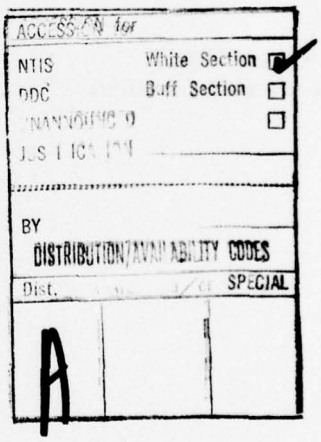


Table of Contents

List of Tables

List of Figures

INTRODUCTION

The MD-4 Generator is a motor-driven generator set designed to furnish alternating current for hangars, maintenance shops, and industrial facilities where precision bench mockup and test equipment requiring precise power are operated and tested.

This volume provides measured data defining the 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 MD-4 generator.

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 (15C 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 the updated index as it is generated.

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

A standard MD-4 generator was operated inside, and approximately in the center of a large aircraft hangar (190.5 m long x 95.1 m wide x 18.3 m high) on a concrete floor at normal rated conditions. The hangar walls and ceiling were not acoustically treated. No aircraft were in the vicinity of the unit while being measured. No far-field acoustic data were acquired because of the relatively close proximity of the hangar walls.

Figure 1 identifies 36 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. These locations 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 locations/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 MD-4 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 4 meters) you can interpolate between the 36 measured data points.

TABLE 1

MEASUREMENT LOCATION AND TEST CONDITION
FOR OPERATOR NOISE MEASUREMENTS

MD-4 Generator, Edwards AFB, 10 May 77

Measurement Location	
1	Operator Control Panel
Operation	
A	Electrically loaded by 24T-8
B	Unloaded

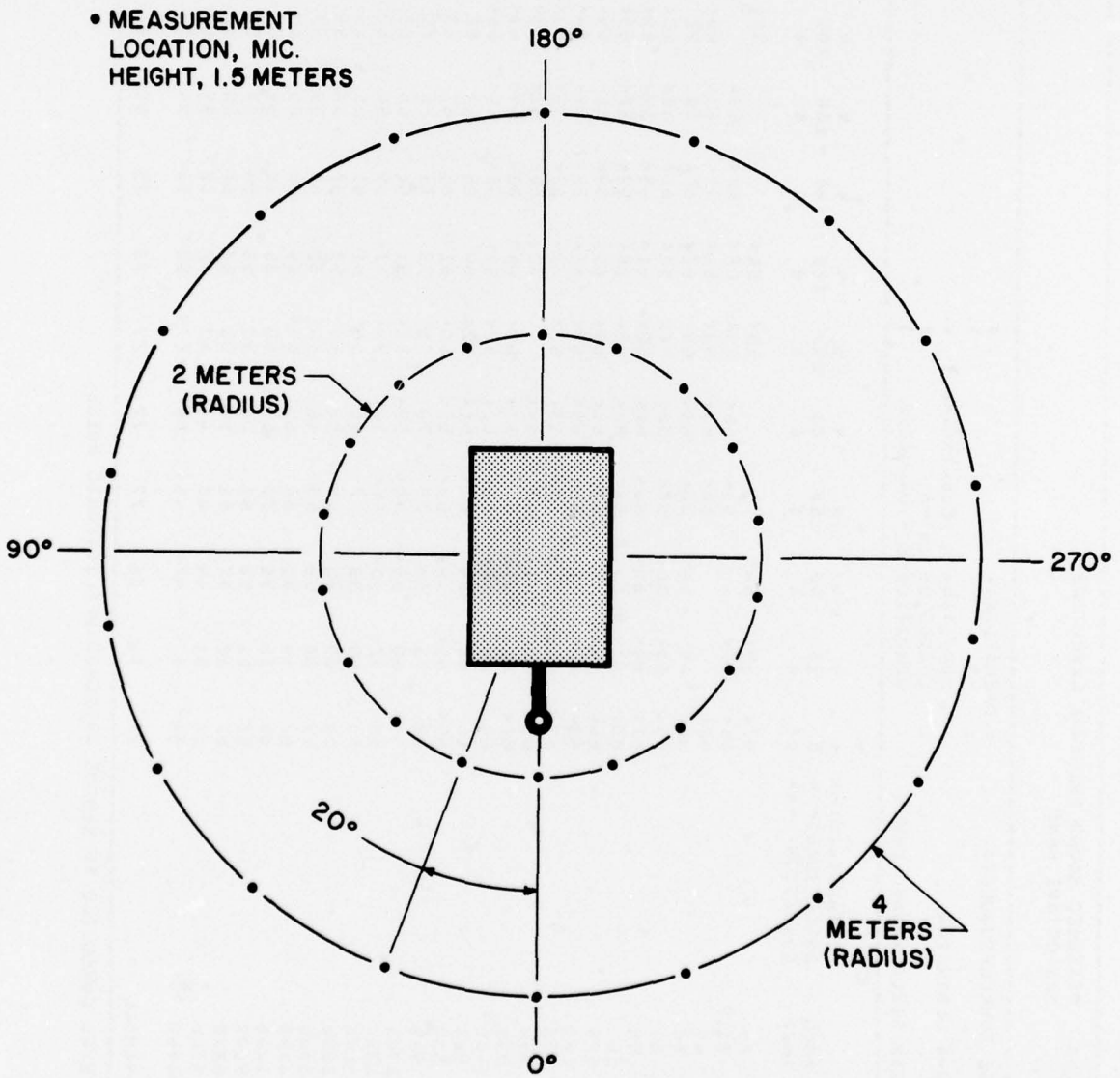


Figure 1. Measurement Locations

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

IDENTIFICATION:
OMEGA 3.2
TEST 77-005-001
RUN 01
10 MAY 77
PAGE F1

NOISE SOURCE/SUBJECT:
MD-4 GENERATOR
NEAR FIELD NOISE LEVELS

OPERATION:
CONDITION A -ELECTRICALLY LOADED BY 24T-8
CONDITION B - UNLOADED

FREQ (HZ)	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
25		57<	55<	54<			55<	54<			57<	54<	55<	57<
31.5		68<	65<		65<	68<	69<	67<	66<	63<			64<	65<
40		62<			60<	63<	63<	61<	61<	61<	60<	60<	60<	
50		67<	69	69	66<	63<	68	62<	67<	70	71	73	74	70
63		59<	60<	60<	57<	56<	58<	58<	61<	60<	60<	62<	63<	60<
80		61<	60<	60<	60<	61<	62<	61<	59<	62<	62<	63<	64	63<
100		63<	63<	64<	64<	66<	68<	66<	62<	67<	65<	68<	69<	68<
125		65<	64<		68<	65<	65<	65<	63<	65<	64<		65<	65<
160		63<	62<	64<	64<	66<	63<	63<	66<	64<	64<	66<	66<	65<
200		62<	61<	61<	62<	63<	63<	62<	62<	62<	63<	66<	64<	64<
250		63<	61<	61<	62<	64<		62<	60<	62<	63<	62<	61<	63<
315		62<	61<	61<	61<	62<	62<	64<	63<	64<	64<	65<	66	63<
400		69	65<	64<	61<	62<	62<	64<	65<	66<	66<	65<	64<	65<
500		66	66	64	62<	61<	62<	64	66	68	67	65	64	64
630		60<	61<	59<	60<	59<	60<	61<	62	63	63	63	62	62
800		69	73	68	70	70	71	73	74	75	71	77	75	73
1000		59<	60	58<	58<	57<	58<	61	62	64	62	63	63	61
1250		58<	57<	55<	56<	54<	54<	57<	59	60	62	58<	59	58
1600		58	59	59	57	58	58	61	61	61	59	59	61	61
2000		56	56	55	54	53	55	58	57	59	59	59	58	58
2500		59	60	59	59	56	55	60	60	65	63	62	59	60
3150		63	64	61	60	60	59	64	65	66	65	67	62	61
4000		55	56	55	53	52	55	56	58	60	61	60	58	56
5000		57	61	56	61	56	60	59	66	63	60	61	60	61
6300		60	62	57	61	56	60	63	67	66	65	64	64	62
8000		51	51	49	48	48	47	52	53	55	55	55	53	51
10000		50<	50<	47<	46<	46<	47<	50<	52<	54	55	55	51<	51<
OVERALL		77	78	76	77	77	77	78	79	80	78	80	80	79

< LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

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

IDENTIFICATION: OMEGA 3.2 TEST 77-005-001 RUN 02 10 MAY 77 PAGE F2

NOISE SOURCE/SUBJECT: MD-4 GENERATOR NEAR FIELD NOISE LEVELS

OPERATION: CONDITION A -ELECTRICALLY LOADED BY 24T-8 CONDITION B - UNLOADED

FREQ (HZ)	DISTANCE (M) ->	4	4	4	4	4	2	2	2	2	2	2	2	2
	ANGLE (DEG) -->	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		57<	58<	56<	59<	60<	57<	57<	55<	55<	55<	55<	56<	56<
31.5		66<	67<	66<	69<	69<	68<	67<	64<	65<	67<	67<	66<	66<
40			60<		62<	62<	63<	60<				60<	60<	
50		68	72	62<	67<	67<	69	66<	65<	67<	68	68	68	67<
63		58<	62<	56<	59<	59<	61<	59<	59<	60<	60<	60<	60<	60<
80		66	62<	62<	61<	62<	63<	62<	62<	61<	62<	61<	62<	62<
100		71	67<	67<	65<	64<	66<	63<	65<	65<	66<	67<	67<	67<
125		64<	63<	65<	70<	64<		63<			64<	66<	66<	69<
160		63<	65<	65<	63<	62<	72	70	67<	66<	66<	65<	67<	69<
200		63<	66<	67<	63<	62<	68<	67<	66<	66<	67<	66<	65<	66<
250		66<	66<	67<	64<	62<	70<	70<	68<	67<	64<	65<	68<	66<
315		63<	65<	67	69	68	68	72	73	69	66	66<	68	68
400		63<	64<	63<	65<	67	73	71	69	68	66<	67	67	66<
500		63<	63<	64	64	66	69	68	67	68	65	65	67	68
630		60<	60<	62	63	64	66	64	64	64	63	62	64	69
800		65	72	73	74	78	79	73	77	76	75	72	73	82
1000		58<	60	60	60	61	65	63	64	63	61	61	63	67
1250		57<	57<	57<	57<	58	63	61	61	59	57<	58	60	64
1600		59	59	61	61	60	64	62	63	64	61	61	63	68
2000		56	56	55	56	56	61	60	59	58	57	57	61	61
2500		57	56	57	58	63	66	63	63	60	59	60	64	65
3150		60	59	58	59	64	68	68	65	65	61	64	68	69
4000		54	52	53	56	57	61	61	57	57	56	56	60	63
5000		58	56	54	61	60	62	67	59	61	64	65	68	65
6300		59	56	56	61	62	65	68	63	64	65	66	70	68
8000		48	47<	47	49	51	56	55	52	52	52	52	56	57
10000		47<	46<	46<	48<	49<	54	53<	51<	51<	50<	50<	55	57
OVERALL		77	79	78	79	81	83	81	81	80	79	79	80	84

< LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

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

IDENTIFICATION: OMEGA 3.2 / TEST 77-005-001 / RUN 03 / 10 MAY 77 / PAGE F3

NOISE SOURCE/SUBJECT: MD-4 GENERATOR — NEAR FIELD NOISE LEVELS

OPERATION: CONDITION A -ELECTRICALLY LOADED BY 24T-8; CONDITION B - UNLOADED

FREQ (HZ)	DISTANCE (M) ->	2	2	2	2	2	2	2	2	2	2	OPERATOR LOCATION
	ANGLE (DEG) -->	160	180	200	220	240	260	280	300	320	340	TEST CONDITION
	CONDITION---->	A	A	A	A	A	A	A	A	A	A	1/A
25		54<	58<	56<	60<	57<	61<	57<	58<	59<	56<	62<
31.5		64<	65<	64<	67<	66<	70<	67<	68<	69<	67<	67<
40		60<	62<			65<	67<	64<	67<	66<	65<	63<
50		62<	67<	66<	67<	64<	70	66<	67<	65<	64<	66<
63		59<	60<	61<	59<	60<	61<	58<	60<	60<	63<	64
80		63<	63<	65	65	64	65	62<	63<	66	66	68
100		67<	67<	68<	67<	68<	69<	68<	68<	69<	67<	69<
125		66<	65<	67<	66<		63<		65<	66<	67<	72<
160		70	71	68<	69<	66<	65<	63<	64<	67<	73	82
200		66<	67<	60<	66<	63<	66<	66<	66<	66<	68<	74
250		68<	70<	70<	68<	67<	66<	65<	67<	69<	70<	75
315		68	68	69	68	66	67	64<	67	70	69	76
400		69	70	70	69	68	65<	66<	67	70	72	75
500		68	67	67	67	66	63<	65	65	66	68	73
630		67	66	69	67	65	61<	63	63	66	66	71
800		73	75	78	72	72	69	74	75	79	78	83
1000		69	67	66	66	62	61	62	61	64	64	71
1250		63	63	64	63	59	57<	59	59	60	61	69
1600		64	62	62	64	63	62	61	62	62	67	71
2000		63	64	63	61	60	57	57	57	61	59	67
2500		67	67	67	64	62	60	60	62	62	64	70
3150		68	67	73	69	64	62	61	65	64	65	73
4000		64	64	64	63	58	55	56	55	59	59	67
5000		69	69	68	67	63	64	64	57	61	61	75
6300		70	70	70	68	65	65	64	60	62	63	76
8000		58	59	59	57	53	51	51	52	52	53	63
10000		59	58	59	55	51<	49<	50<	51<	52<	53<	64
OVERALL		81	82	83	81	79	79	79	80	82	83	88

< LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

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

IDENTIFICATION:
OMEGA 3.2
TEST 77-005-001
RUN 04
10 MAY 77
PAGE F4

NOISE SOURCE/SUBJECT:
MD-4 GENERATOR
NEAR FIELD NOISE LEVELS

OPERATION:
CONDITION A -ELECTRICALLY LOADED BY 24T-8
CONDITION B - UNLOADED

FREQ (HZ)	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----> B	B	B	B	B	B	B	B	B	B	B	B	B
25	64<		61<			54<				62<	55<		59<
31.5	68<	64<	65<	64<	66<	68<	66<	66<					67<
40	62<	61<	63<		62<	62<							63<
50	69	66<	68	65<	61<	65<				60<	59<		60<
63	63<	57<	61<	56<	56<	57<	53<	53<	56<	58<	59<	56<	55<
80	63<	60<	59<	57<	55<	58<	55<	57<	59<	59<	58<	60<	59<
100	65<	62<	61<	64<	62<	62<	61<	62<	61<	59<	59<	61<	64<
125	65<	63<		68<	65<	64<			63<	63<		63<	65<
160	66<	62<	64<	63<	65<	64<	61<	65<	63<	62<	65<	64<	64<
200	65<	62<	61<	60<	61<	61<	60<	60<	59<	59<	59<	59<	61<
250	62<			60<	65<		62<	60<	61<	62<	61<		
315	61<	60<	60<	60<	61<	61<	65<	64<	63<	64<	66<	63<	61<
400	66<	66<	63<	61<	63<	62<	64<	63<	65<	65<	65<	64<	64<
500	64	66	64	62<	60<	63<	62<	64	67	66	64	65	63<
630	61<	61<	59<	59<	58<	61<	60<	64	63	62	64	62	61<
800	67	72	66	72	73	75	66	79	74	74	79	75	76
1000	58<	58<	58<	57<	58<	60	59<	63	63	61	64	63	61
1250	57<	57<	55<	55<	54<	55<	56<	58	58	59	58<	58	56<
1600	57	57	59	57	58	60	61	62	60	57	60	60	60
2000	56	55	55	53	53	56	58	57	59	58	58	56	56
2500	59	59	58	57	56	57	59	59	65	63	61	59	58
3150	61	63	61	60	60	60	64	63	66	68	67	62	59
4000	56	56	55	51	51	56	56	57	58	59	58	57	54
5000	61	60	58	63	54	58	63	61	67	59	62	60	57
6300	61	61	58	64	55	59	64	63	68	64	64	64	62
8000	54	50	49	48	48	48	51	52	54	53	52	51	51
10000	51<	49<	48<	47<	44<	46<	50<	51<	54	54	52<	51<	48<
OVERALL	78	77	76	77	77	78	75	80	78	78	81	78	78

< LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

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

IDENTIFICATION: OMEGA 3.2 / TEST 77-005-001 / RUN 05 / 10 MAY 77 / PAGE F5

NOISE SOURCE/SUBJECT: MD-4 GENERATOR — NEAR FIELD NOISE LEVELS

OPERATION: CONDITION A -ELECTRICALLY LOADED BY 24T-8; CONDITION B - UNLOADED

FREQ (HZ)	DISTANCE (M) ->	4	4	4	4	4	2	2	2	2	2	2	2	2
	ANGLE (DEG) -->	260	280	300	320	340	0	20	40	60	80	100	120	140
	CONDITION ---->	B	B	B	B	B	B	B	B	B	B	B	B	B
25		55<	57<	54<	62<	56<	61<	57<		56<		55<	59<	55<
31.5		66<	66<	65<	68<	68<	69<	67<	65<	66<	64<	66<	66<	
40					63<		64<					60<	62<	
50					61<	57<	62<	58<	60<	57<	57<		60<	
63		55<	55<	57<	59<	55<	61<	59<	58<	57<	57<	56<	60<	58<
80		59<	58<	57<	61<	58<	61<	59<	59<	59<	61<	58<	60<	61<
100		63<	60<	59<	62<	60<	61<	59<	60<	60<	62<	62<	62<	62<
125		65<	63<	60<	68<	63<					63<	64<	65<	67<
160		62<	63<	62<	63<	61<	73	68<	67<	66<	65<	65<	67<	67<
200		62<	62<	62<	60<	61<	68<	66<	65<	65<	66<	66<	64<	64<
250				61<		63<	70<	71<	68<	68<	64<	65<	66<	67<
315		60<	59<	64<	65<	64<	67	71	72	69	65<	64<	67	65<
400		60<	62<	62<	63<	64<	72	70	68	67	65<	66<	68	67
500		61<	63<	63<	63<	65	69	69	69	67	65	66	66	68
630		58<	58<	61<	62	65	66	65	64	63	64	62	64	69
800		67	71	76	75	78	80	75	78	76	80	72	73	85
1000		58<	57<	60	60	62	65	63	63	62	64	59	63	68
1250		54<	54<	55<	55<	58<	62	60	60	58	57<	57<	59	63
1600		54<	58	61	58	56	65	62	63	59	58	62	62	67
2000		51<	52<	53	54	55	61	60	58	57	57	57	60	61
2500		53	54	57	58	61	66	63	62	62	60	58	64	66
3150		58	58	58	59	63	66	68	65	66	63	61	67	70
4000		50	49	51	52	55	60	62	57	56	55	56	59	63
5000		64	57	55	57	59	61	68	64	59	62	61	68	71
6300		65	58	57	58	61	63	68	65	61	62	62	69	72
8000		48	45<	47	48	50	54	54	52	53	51	51	55	58
10000		44<		46<	51<	47<	53<	51<	52<	51<	49<	49<	53<	57
OVERALL		75	75	78	78	80	83	81	81	80	81	78	80	86

< LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

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

IDENTIFICATION: OMEGA 3.2 / TEST 77-005-001 / RUN 06 / 10 MAY 77 / PAGE F6

NOISE SOURCE/SUBJECT: MD-4 GENERATOR — NEAR FIELD NOISE LEVELS

OPERATION: CONDITION A -ELECTRICALLY LOADED BY 24T-8; CONDITION B - UNLOADED

FREQ (HZ)	DISTANCE (M) ->	2	2	2	2	2	2	2	2	2	2	OPERATOR LOCATION
	ANGLE (DEG) -->	160	180	200	220	240	260	280	300	320	340	TEST CONDITION
	CONDITION---->	B	B	B	B	B	B	B	B	B	B	1/B
25		62<	57<	57<	63<	57<	59<	57<	58<	59<	60<	62<
31.5		64<	63<	64<	67<	67<	69<	68<	69<	69<	70<	68<
40		62<			63<		60<	60<	62<	61<	69<	68<
50		60<			63<	59<	58<	58<	58<	58<	64<	64<
63		61<	59<	57<	60<	58<	62<	58<	58<	59<	59<	67
80		62<	60<	62<	62<	60<	58<	57<	59<	61<	61<	69
100		62<	61<	61<	61<	62<	61<	62<	61<	61<	60<	70
125		65<	66<	66<	65<		63<		66<	65<	63<	72<
160		71	72	69<	67<	67<	66<	63<	64<	66<	71	82
200		66<	67<	66<	64<	63<	65<	66<	65<	66<	67<	74
250		68<	68<	67<	66<	66<	65<	64<	66<	68<	71<	75
315		65<	66	67	65<	65<	64<	61<	67	68	68	76
400		70	71	69	68	68	63<	63<	67	70	71	75
500		69	68	68	67	66	64	66	66	68	67	74
630		67	65	67	65	64	62	63	64	67	66	72
800		74	75	77	78	77	72	74	79	82	78	84
1000		68	66	66	64	63	62	62	64	66	64	71
1250		62	64	63	62	59	56<	57<	59	61	62	69
1600		63	65	62	63	65	58	62	64	60	66	72
2000		63	63	63	60	58	57	55	57	61	58	68
2500		67	67	68	65	63	61	61	63	64	63	71
3150		69	69	72	68	67	63	64	66	67	66	75
4000		64	64	63	62	58	54	55	54	58	59	68
5000		68	69	70	62	61	62	65	61	60	63	75
6300		72	71	72	65	62	64	65	62	60	65	76
8000		60	59	58	57	54	50	51	52	53	52	65
10000		59	58	57	54	52<	49<	49<	51<	51<	52<	65
OVERALL		81	81	82	81	80	78	78	81	84	82	89

< LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

TABLE: MEASURED SOUND PRESSURE LEVEL (DB)
2 OCTAVE BAND

IDENTIFICATION:
OMEGA 3.2
TEST 77-005-001
RUN 01
10 MAY 77
PAGE J1

NOISE SOURCE/SUBJECT:
MD-4 GENERATOR
NEAR FIELD NOISE LEVELS

OPERATION:
CONDITION A -ELECTRICALLY LOADED BY 24T-8
CONDITION B - UNLOADED

FREQ (HZ)	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
31.5		69	66		66	69	70	68	67	65	62	61	66	65
63		68	70	69	67	66	69	65	68	71	71	73	75	71
125		69	68	67	71	70	70	69	69	70	69	70	72	71
250		67	66	66	66	67	65	68	66	67	68	69	69	68
500		71	69	68	66	66	66	68	70	71	70	69	68	69
1000		70	73	69	70	70	71	74	75	75	72	77	75	73
2000		63	63	63	62	61	61	64	64	67	65	65	64	65
4000		65	66	63	64	62	63	65	69	69	67	68	65	64
8000		61	62	58	62	57	60	63	67	66	66	65	64	63
OVERALL		77	78	76	77	77	77	78	79	80	78	80	80	79

TABLE: 2 MEASURED SOUND PRESSURE LEVEL (DB) OCTAVE BAND

IDENTIFICATION:
OMEGA 3.2
TEST 77-005-001
RUN 02
10 MAY 77
PAGE J2

NOISE SOURCE/SUBJECT:
MD-4 GENERATOR
NEAR FIELD NOISE LEVELS

OPERATION:
CONDITION A -ELECTRICALLY LOADED BY 24T-8
CONDITION B - UNLOADED

FREQ (HZ)	DISTANCE (M) ->	4	4	4	4	4	2	2	2	2	2	2	2	2
	ANGLE (DEG) -->	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
31.5		67	68	67	70	70	70	68	65	66	67	68	68	66
63		71	73	66	68	69	71	68	68	68	69	69	70	69
125		72	70	70	71	68	73	71	69	69	70	71	71	73
250		69	71	72	71	70	73	75	74	72	71	70	72	72
500		67	67	68	69	70	75	73	72	72	70	70	71	72
1000		66	72	73	74	78	79	73	78	76	75	72	73	82
2000		62	62	63	63	65	69	66	67	66	64	65	67	70
4000		62	61	60	64	66	70	71	66	66	66	68	71	71
8000		59	57	57	61	63	66	68	63	64	65	66	70	68
OVERALL		77	79	78	79	81	83	81	81	80	79	79	80	84

TABLE: 2 MEASURED SOUND PRESSURE LEVEL (DB) OCTAVE BAND

IDENTIFICATION:
OMEGA 3.2
TEST 77-005-001
RUN 03
10 MAY 77
PAGE J3

NOISE SOURCE/SUBJECT:
MD-4 GENERATOR
NEAR FIELD NOISE LEVELS

OPERATION:
CONDITION A -ELECTRICALLY LOADED BY 24T-8
CONDITION B - UNLOADED

FREQ (HZ)	DISTANCE (M)-> / ANGLE (DEG)--> / CONDITION---->	2 160 A	2 180 A	2 200 A	2 220 A	2 240 A	2 260 A	2 280 A	2 300 A	2 320 A	2 340 A	OPERATOR LOCATION TEST CONDITION 1/A
31.5		65	67	65	58	69	72	69	71	71	69	71
63		66	69	69	69	68	71	68	69	69	69	71
125		73	73	73	72	70	71	69	71	72	75	82
250		72	73	73	72	70	71	70	71	74	74	80
500		73	73	73	73	71	68	70	70	72	74	78
1000		75	76	78	73	72	69	74	75	79	78	84
2000		70	70	69	68	67	64	64	66	66	69	74
4000		72	72	74	72	67	66	66	66	67	67	77
8000		71	70	71	69	65	65	65	61	63	63	76
OVERALL		81	82	83	81	79	79	79	80	82	83	88

TABLE: 2 MEASURED SOUND PRESSURE LEVEL (DB) OCTAVE BAND

IDENTIFICATION:
OMEGA 3.2
TEST 77-005-001
RUN 04
10 MAY 77
PAGE J4

NOISE SOURCE/SUBJECT:
MD-4 GENERATOR
NEAR FIELD NOISE LEVELS

OPERATION:
CONDITION A -ELECTRICALLY LOADED BY 24T-8
CONDITION B - UNLOADED

FREQ (HZ)	DISTANCE (M) -> / ANGLE (DEG) --> / CONDITION ---->	4 0 B	4 20 B	4 40 B	4 60 B	4 80 B	4 100 B	4 120 B	4 140 B	4 160 B	4 180 B	4 200 B	4 220 B	4 240 B
31.5		70	66	68		67	69							69
63		70	67	69	66	63	66	58	59	60	64	63	61	63
125		70	67	66	70	69	68	64	67	67	67	66	68	69
250		68	64	64	65	67	64	68	66	66	67	68	65	64
500		69	70	67	66	66	67	67	68	70	69	69	68	68
1000		68	72	66	72	73	75	67	79	75	75	79	75	76
2000		62	62	63	61	61	63	64	65	67	65	65	63	63
4000		64	65	63	65	61	63	66	66	70	69	68	65	62
8000		62	61	59	64	56	59	64	64	68	64	65	64	62
OVERALL		78	77	76	76	77	78	75	80	78	78	81	78	78

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

IDENTIFICATION:
OMEGA 3.2
TEST 77-005-001
RUN 05
10 MAY 77
PAGE J5

NOISE SOURCE/SUBJECT:
MD-4 GENERATOR
NEAR FIELD NOISE LEVELS

OPERATION:
CONDITION A -ELECTRICALLY LOADED BY 24T-8
CONDITION B - UNLOADED

FREQ (HZ)	DISTANCE (M)-> / ANGLE (DEG)--> / CONDITION---->	4 260 B	4 280 B	4 300 B	4 320 B	4 340 B	2 0 B	2 20 B	2 40 B	2 60 B	2 80 B	2 100 B	2 120 B	2 140 B
31.5		67	67	66	70	68	70	67		66		68	68	
63		60	60	60	65	61	66	63	64	62	63	60	65	63
125		68	67	68	70	66	73	69	68	67	68	69	70	71
250		64	64	67	66	68	73	75	74	72	70	70	71	70
500		64	66	67	67	69	74	73	72	71	69	70	71	73
1000		68	71	76	75	78	80	75	78	76	80	72	74	85
2000		58	60	63	61	63	69	67	66	65	63	64	67	70
4000		65	61	60	61	65	68	71	67	67	66	65	71	74
8000		65	58	57	59	61	64	68	65	62	63	62	69	72
OVERALL		75	75	78	78	80	83	81	81	80	81	78	80	86

TABLE: 2 MEASURED SOUND PRESSURE LEVEL (DB) OCTAVE BAND											IDENTIFICATION: OMEGA 3.2 TEST 77-005-001 RUN 06 10 MAY 77 PAGE J6
NOISE SOURCE/SUBJECT: MD-4 GENERATOR NEAR FIELD NOISE LEVELS	OPERATION: CONDITION A -ELECTRICALLY LOADED BY 24T-8 CONDITION B - UNLOADED										
DISTANCE (M)->	2	2	2	2	2	2	2	2	2	2	OPERATOR LOCATION
FREQ (HZ) ANGLE (DEG)-->	160	180	200	220	240	260	280	300	320	340	TEST CONDITION
CONDITION---->	B	B	B	B	B	B	B	B	B	B	1/8
31.5	68	64	65	69	67	70	69	70	70	73	72
63	66	62	63	66	64	65	62	63	64	67	72
125	72	73	71	70	68	68	65	69	69	72	83
250	71	72	71	70	69	69	69	71	72	74	80
500	73	73	73	71	71	68	69	71	73	73	79
1000	75	76	77	78	77	72	74	79	82	78	84
2000	70	70	70	68	67	63	65	67	67	68	75
4000	72	73	74	69	68	66	68	67	68	68	78
8000	73	71	72	66	63	64	65	63	61	65	76
OVERALL	81	81	82	81	80	78	78	81	84	82	89

TABLE: MEASURES OF HUMAN NOISE EXPOSURE

3

IDENTIFICATION:
OMEGA 3.2
TEST 77-005-001
RUN 01
10 MAY 77
PAGE H1

NOISE SOURCE/SUBJECT: MD-4 GENERATOR
NEAR FIELD NOISE LEVELS

OPERATION:
CONDITION A -ELECTRICALLY LOADED BY 24T-8
CONDITION B - UNLOADED

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 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	77	77	75	76	76	77	77	78	79	78	80	80	78
OASLA	73	75	72	73	72	73	75	77	77	75	78	76	75
T	960	960	960	960	960	960	960	960	960	960	960	960	960
MINIMUM QPL EAR MUFFS													
OASLA*	53	52	51	52	52	52	53	53	54	53	54	55	54
T	960	960	960	960	960	960	960	960	960	960	960	960	960
AMERICAN OPTICAL 1700 EAR MUFFS													
OASLA*	48	47	46	47	47	47	47	48	49	48	50	50	49
T	960	960	960	960	960	960	960	960	960	960	960	960	960
V-51R EAR PLUGS													
OASLA*	49	51	48	48	48	49	51	52	53	51	54	52	51
T	960	960	960	960	960	960	960	960	960	960	960	960	960
AMERICAN OPTICAL 1700 EAR MUFFS PLUS V-51R EAR PLUGS													
OASLA*	35	37	33	35	34	35	37	38	39	37	40	39	37
T	960	960	960	960	960	960	960	960	960	960	960	960	960
H-133 GROUND COMMUNICATION UNIT													
OASLA*	46	47	45	46	45	46	48	49	50	48	51	49	48
T	960	960	960	960	960	960	960	960	960	960	960	960	960
COMMUNICATION													
PREFERRED SPEECH INTERFERENCE LEVEL (PSIL IN DB)													
PSIL	68	68	66	66	66	66	69	69	71	69	70	69	69
ANNOYANCE													
PERCEIVED NOISE LEVEL, TONE CORRECTED (PNLT IN PNDB)													
TONE CORRECTION (C IN DB)													
PNLT	90	91	88	89	88	89	92	93	94	92	94	92	91
C	3	4	3	4	4	4	4	4	4	3	4	4	4

* BASED ON CALCULATED SPL SPECTRUM UNDER PROTECTIVE DEVICE.

TABLE: 3 MEASURES OF HUMAN NOISE EXPOSURE														IDENTIFICATION: OMEGA 3.2 TEST 77-005-001 RUN 02 10 MAY 77 PAGE H2
NOISE SOURCE/SUBJECT: MD-4 GENERATOR NEAR FIELD NOISE LEVELS	OPERATION: CONDITION A -ELECTRICALLY LOADED BY 24T-8 CONDITION B - UNLOADED													
DISTANCE (M)->	4	4	4	4	4	2	2	2	2	2	2	2	2	
ANGLE (DEG)-->	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	
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	77	78	78	79	80	83	81	81	80	79	78	80	84	
OASLA	71	74	74	76	78	81	78	79	78	76	76	78	83	
T	960	960	960	960	960	807	960	960	960	960	960	960	571	
MINIMUM QPL EAR MUFFS														
OASLA*	54	53	54	54	54	58	56	56	55	54	54	55	58	
T	960	960	960	960	960	960	960	960	960	960	960	960	960	
AMERICAN OPTICAL 1700 EAR MUFFS														
OASLA*	49	49	49	49	49	52	51	51	49	49	49	50	52	
T	960	960	960	960	960	960	960	960	960	960	960	960	960	
V-51R EAR PLUGS														
OASLA*	47	50	51	52	55	57	54	55	54	53	51	52	59	
T	960	960	960	960	960	960	960	960	960	960	960	960	960	
AMERICAN OPTICAL 1700 EAR MUFFS PLUS V-51R EAR PLUGS														
OASLA*	34	37	37	38	41	43	39	41	40	38	37	39	45	
T	960	960	960	960	960	960	960	960	960	960	960	960	960	
H-133 GROUND COMMUNICATION UNIT														
OASLA*	45	47	47	48	51	53	50	51	50	48	48	50	55	
T	960	960	960	960	960	960	960	960	960	960	960	960	960	
COMMUNICATION														
PREFERRED SPEECH INTERFERENCE LEVEL (PSIL IN DB)														
PSIL	65	67	68	69	71	74	71	72	71	69	69	70	75	
ANNOYANCE														
PERCEIVED NOISE LEVEL, TONE CORRECTED (PNLT IN PNDB)														
TONE CORRECTION (C IN DB)														
PNLT	87	90	90	92	95	97	95	94	93	92	92	95	99	
C	2	4	4	4	5	5	3	4	4	4	4	3	5	

* BASED ON CALCULATED SPL SPECTRUM UNDER PROTECTIVE DEVICE.

TABLE: MEASURES OF HUMAN NOISE EXPOSURE

3

IDENTIFICATION:

OMEGA 3,2
TEST 77-005-001
RUN 03
10 MAY 77
PAGE H3

NOISE SOURCE/SUBJECT: MD-4 GENERATOR
NEAR FIELD NOISE LEVELS

OPERATION:
CONDITION A -ELECTRICALLY LOADED BY 24T-8
CONDITION B - UNLOADED

DISTANCE (M)->	2	2	2	2	2	2	2	2	2	2	OPERATOR LOCATION
ANGLE (DEG)--->	160	180	200	220	240	260	280	300	320	340	TEST CONDITION
CONDITION---->	A	A	A	A	A	A	A	A	A	A	1/A
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	81	81	82	80	79	78	79	79	82	82	88
OASLA	79	79	81	78	76	74	76	77	80	80	86
T	960	960	807	960	960	960	960	960	960	960	339
MINIMUM QPL EAR MUFFS											
OASLA*	56	57	57	56	54	54	53	55	57	58	64
T	960	960	960	960	960	960	960	960	960	960	960
AMERICAN OPTICAL 1700 EAR MUFFS											
OASLA*	51	52	52	51	49	49	48	50	52	53	59
T	960	960	960	960	960	960	960	960	960	960	960
V-51R EAR PLUGS											
OASLA*	54	54	56	53	51	49	52	53	57	56	61
T	960	960	960	960	960	960	960	960	960	960	960
AMERICAN OPTICAL 1700 EAR MUFFS PLUS V-51R EAR PLUGS											
OASLA*	40	41	42	39	37	36	38	39	42	42	48
T	960	960	960	960	960	960	960	960	960	960	960
H-133 GROUND COMMUNICATION UNIT											
OASLA*	51	52	54	51	48	47	48	49	52	52	58
T	960	960	960	960	960	960	960	960	960	960	960
COMMUNICATION											
PREFERRED SPEECH INTERFERENCE LEVEL (PSIL IN DB)											
PSIL	72	73	74	71	70	67	70	70	73	74	79
ANNOYANCE											
PERCEIVED NOISE LEVEL, TONE CORRECTED (PNLT IN PNDB)											
TONE CORRECTION (C IN DB)											
PNLT	95	96	98	94	92	90	92	93	96	96	103
C	2	3	3	2	3	3	4	4	5	4	4

* BASED ON CALCULATED SPL SPECTRUM UNDER PROTECTIVE DEVICE.

TABLE: MEASURES OF HUMAN NOISE EXPOSURE

3

IDENTIFICATION:
OMEGA 3.2
TEST 77-005-001
RUN 04
10 MAY 77
PAGE H4

NOISE SOURCE/SUBJECT: MD-4 GENERATOR
NEAR FIELD NOISE LEVELS

OPERATION:
CONDITION A -ELECTRICALLY LOADED BY 24T-8
CONDITION B - UNLOADED

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---->	B	B	B	B	B	B	B	B	B	B	B	B	B
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	77	76	75	76	76	78	75	80	78	78	81	77	78
OASLA	72	74	71	74	74	76	73	79	77	76	80	76	76
T	960	960	960	960	960	960	960	960	960	960	960	960	960
MINIMUM QPL EAR MUFFS													
OASLA*	53	51	50	52	51	52	50	53	53	52	54	52	52
T	960	960	960	960	960	960	960	960	960	960	960	960	960
AMERICAN OPTICAL 1700 EAR MUFFS													
OASLA*	48	46	45	47	46	46	45	47	47	47	48	46	47
T	960	960	960	960	960	960	960	960	960	960	960	960	960
V-51R EAR PLUGS													
OASLA*	48	50	46	49	50	52	47	56	52	52	56	52	53
T	960	960	960	960	960	960	960	960	960	960	960	960	960
AMERICAN OPTICAL 1700 EAR MUFFS PLUS V-51R EAR PLUGS													
OASLA*	34	36	32	36	36	38	33	42	38	38	42	38	39
T	960	960	960	960	960	960	960	960	960	960	960	960	960
H-133 GROUND COMMUNICATION UNIT													
OASLA*	45	46	44	46	46	48	45	51	50	49	52	48	48
T	960	960	960	960	960	960	960	960	960	960	960	960	960
COMMUNICATION													
PREFERRED SPEECH INTERFERENCE LEVEL (PSIL IN DB)													
PSIL	66	68	65	66	67	68	66	71	70	70	71	69	69
ANNOYANCE													
PERCEIVED NOISE LEVEL, TONE CORRECTED (PNLT IN PNDB)													
TONE CORRECTION (C IN DB)													
PNLT	89	90	87	90	90	91	89	95	93	94	95	91	92
C	3	4	2	4	5	5	2	5	4	4	5	4	5

* BASED ON CALCULATED SPL SPECTRUM UNDER PROTECTIVE DEVICE.

TABLE: MEASURES OF HUMAN NOISE EXPOSURE

3

IDENTIFICATION:

OMEGA 3.2
TEST 77-005-001
RUN 05
10 MAY 77
PAGE H5

NOISE SOURCE/SUBJECT: MD-4 GENERATOR
NEAR FIELD NOISE LEVELS

OPERATION:
CONDITION A -ELECTRICALLY LOADED BY 24T-8
CONDITION B - UNLOADED

DISTANCE (M)->	4	4	4	4	4	2	2	2	2	2	2	2	2
ANGLE (DEG)-->	260	280	300	320	340	0	20	40	60	80	100	120	140
CONDITION---->	B	B	B	B	B	B	B	B	B	B	B	B	B
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	74	75	78	78	80	83	81	81	79	81	77	79	86
OASLA	72	72	76	75	78	81	78	79	77	80	75	78	85
T	960	960	960	960	960	807	960	960	960	960	960	960	404
MINIMUM QPL EAR MUFFS													
OASLA*	50	50	52	53	53	57	56	55	54	55	53	54	59
T	960	960	960	960	960	960	960	960	960	960	960	960	960
AMERICAN OPTICAL 1700 EAR MUFFS													
OASLA*	44	44	46	47	47	52	51	50	49	49	48	49	52
T	960	960	960	960	960	960	960	960	960	960	960	960	960
V-51R EAR PLUGS													
OASLA*	46	49	53	52	55	57	54	56	54	57	51	52	61
T	960	960	960	960	960	960	960	960	960	960	960	960	960
AMERICAN OPTICAL 1700 EAR MUFFS PLUS V-51R EAR PLUGS													
OASLA*	33	35	39	38	41	43	40	41	40	43	36	38	47
T	960	960	960	960	960	960	960	960	960	960	960	960	960
H-133 GROUND COMMUNICATION UNIT													
OASLA*	43	45	48	48	51	53	51	51	50	52	47	50	57
T	960	960	960	960	960	960	960	960	960	960	960	960	960
COMMUNICATION													
PREFERRED SPEECH INTERFERENCE LEVEL (PSIL IN DB)													
PSIL	63	66	68	68	70	74	72	72	71	71	69	70	76
ANNOYANCE													
PERCEIVED NOISE LEVEL, TONE CORRECTED (PNLT IN PNDB)													
TONE CORRECTION (C IN DB)													
PNLT	88	88	91	91	94	97	95	95	93	95	90	94	101
C	3	5	5	5	5	5	4	5	4	5	4	3	5

* BASED ON CALCULATED SPL SPECTRUM UNDER PROTECTIVE DEVICE.

TABLE: 3 MEASURES OF HUMAN NOISE EXPOSURE

IDENTIFICATION:
OMEGA 3.2
TEST 77-005-001
RUN 06
10 MAY 77
PAGE H6

NOISE SOURCE/SUBJECT: MD-4 GENERATOR
NEAR FIELD NOISE LEVELS

OPERATION:
CONDITION A -ELECTRICALLY LOADED BY 24T-8
CONDITION B - UNLOADED

DISTANCE (M) ->	2	2	2	2	2	2	2	2	2	2	OPERATOR LOCATION
ANGLE (DEG) -->	160	180	200	220	240	260	280	300	320	340	TEST CONDITION
CONDITION---->	B	B	B	B	B	B	B	B	B	B	1/8
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	81	81	82	81	80	77	78	81	84	82	89
OASLA	80	80	81	80	78	74	76	79	82	80	87
T	960	960	807	960	960	960	960	960	679	960	285
MINIMUM QPL EAR MUFFS											
OASLA*	56	57	56	55	54	52	52	55	57	57	65
T	960	960	960	960	960	960	960	960	960	960	960
AMERICAN OPTICAL 1700 EAR MUFFS											
OASLA*	51	51	50	49	48	47	46	49	51	51	59
T	960	960	960	960	960	960	960	960	960	960	960
V-51R EAR PLUGS											
OASLA*	54	54	55	56	54	50	52	56	59	56	62
T	960	960	960	960	960	960	960	960	960	960	960
AMERICAN OPTICAL 1700 EAR MUFFS PLUS V-51R EAR PLUGS											
OASLA*	40	40	42	42	40	36	38	42	45	42	48
T	960	960	960	960	960	960	960	960	960	960	960
H-133 GROUND COMMUNICATION UNIT											
OASLA*	52	52	54	52	51	47	48	52	54	52	59
T	960	960	960	960	960	960	960	960	960	960	960
COMMUNICATION											
PREFERRED SPEECH INTERFERENCE LEVEL (PSIL IN DB)											
PSIL	73	73	73	73	72	68	69	72	74	73	79
ANNOYANCE											
PERCEIVED NOISE LEVEL, TONE CORRECTED (PNLT IN PNDB)											
TONE CORRECTION (C IN DB)											
PNLT	96	96	98	96	94	90	92	95	98	95	103
C	2	3	4	5	4	3	4	5	5	4	4

* BASED ON CALCULATED SPL SPECTRUM UNDER PROTECTIVE DEVICE.

☆U.S.Government Printing Office: 1978 — 757-080/372