

AD-A048 953

AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB OHIO F/G 20/1
USAF BIOENVIRONMENTAL NOISE DATA HANDBOOK: AF/M24T-2 TESTER, PR--ETC(U)
DEC 76 N A FARINACCI

UNCLASSIFIED

AMRL-TR-75-50-VOL-116

NL

| 0F |
ADA048 953



END
DATE
FILMED
2-78
DDC

AD No.

DDC FILE COPY

AD A 048953

AMRL-TR-75-50
Volume 116

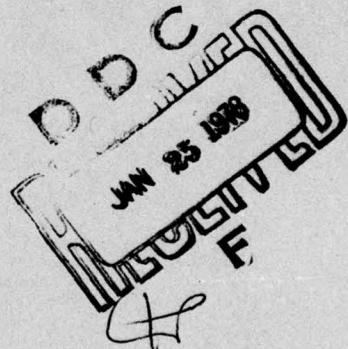


USAF BIOENVIRONMENTAL NOISE DATA HANDBOOK

Volume 116

**AF/M24T-2 Tester, Pressurized Cabin
Leakage, Aircraft**

DECEMBER 1976



Approved for public release; distribution unlimited.

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

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE			READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER <i>(14) AMRL-TR-75-50 Vol 116</i>	2. GOVT ACCESSION NO. <i>(9)</i>	3. RECIPIENT'S DATA FILE NUMBER <i>Technical rept.</i>	4. DISTRIBUTION STATEMENT (When Data Entered) <i>Volume 116 of a series</i>
5. TYPE OF REPORT AND SUBTITLE <i>(6) USAF BIOENVIRONMENTAL NOISE DATA HANDBOOK: AF/M24T-2 Tester, Pressurized Cabin Leakage, Aircraft.</i>	6. PERFORMING ORG. REPORT NUMBER <i>(10) Nick A. Farinacci Capt, USAF, BSC</i>		
7. AUTHOR(s) <i>(10)</i>	8. CONTRACT OR GRANT NUMBER(s) <i>(11)</i>		
9. PERFORMING ORGANIZATION NAME AND ADDRESS <i>Aerospace Medical Research Laboratory Aerospace Medical Division, Air Force Systems Command, Wright-Patterson AFB OH 45433</i>	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS <i>(12) 7231-04-33 62202F 7231-04-36</i>		
11. CONTROLLING OFFICE NAME AND ADDRESS <i>Same as above</i>	12. REPORT DATE <i>(13) Dec 1976</i>		
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office) <i>(12) 18P.</i>	15. NUMBER OF PAGES <i>(14) 18</i>		
16. DISTRIBUTION STATEMENT (of this Report) <i>Approved for public release; distribution unlimited</i>			
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report) <i>(15) JAN 25 1978 DRAFT MULTIPLY</i>			
18. SUPPLEMENTARY NOTES <i>(16)</i>			
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) <i>Noise Noise Environments Bioenvironmental Noise Ground Support Equipment AF/M24T-2 Tester, Pressurized Cabin Leakage, Aircraft</i>			
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) <i>The AF/M24T-2 Tester is an electric motor-driven cabin leakage tester designed to furnish pressurized air to the aircraft at controlled pressures and temperatures during ground pressurization of aircraft cockpits and pressurized compartments. This report provides measured data defining the bioacoustic environments produced by this unit operating inside a large aircraft hangar at normal rated/loaded conditions. Near-field data are reported for 37 locations in a wide variety of physical and psychoacoustic measures: overall and band</i>			

*009 850**over
y/B*

SECURITY CLASSIFICATION OF THIS PAGE(When Data Entered)

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.

SECURITY CLASSIFICATION OF THIS PAGE(When Data Entered)

PREFACE

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

The author acknowledges the efforts of Mr. L. K. Kettler of the University of Dayton and Messers Robert G. Powell and Robert A. Lee who assisted in conducting the field measurements, 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. Norma Peachey typed and prepared the graphics.

ACCESSION for	
NTIS	White Section <input checked="" type="checkbox"/>
DDC	Buff Section <input type="checkbox"/>
ANNOUNCED <input type="checkbox"/>	
JUSTIFICATION	
BY	
DISTRIBUTION/AVAILABILITY CODES	
SPECIAL	
A	

Table of Contents

	<i>Page</i>
INTRODUCTION	3
NEAR-FIELD NOISE	4

List of Tables

NEAR-FIELD NOISE

1. Measurement Location and Test Condition for Operator Noise Measurements	4
2. Measured Sound Pressure Level 1/3 Octave Band	6-8
Octave Band	9-11
3. Measures of Human Noise Exposure	12-14

List of Figures

NEAR-FIELD NOISE

1. Measurement Locations	5
--------------------------------	---

INTRODUCTION

The AF/M24T-2 Tester is an electric motor-driven cabin leakage tester designed to furnish pressurized air to the aircraft at controlled pressures and temperatures during ground pressurization of aircraft cockpits and pressurized compartments.

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 AF/M24T-2 tester.

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 AF/M24T-2 Tester was operated inside, and approximately in the center of a large aircraft hanger (190.5 m long \times 95.1 m wide \times 18.3 m high) with doors closed on a concrete floor at a normal rated condition of loaded (5 PSI). The hanger walls and ceiling were not acoustically treated. No aircraft were in the vicinity of the unit while being measured. On the other hand, no far-field acoustic data were acquired because of the relatively close proximity of the hanger 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 AF/M24T-2 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

AF/M24T-2 Tester, Pressurized Cabin Leakage, Aircraft
Edwards AFB, 9 Jun 1976
FSN 4920-601-6923, Mfr. Part #76150

Measurement Location

1	Operator Control Panel
---	------------------------

Operation

A	Loaded (5 PSI)
---	----------------

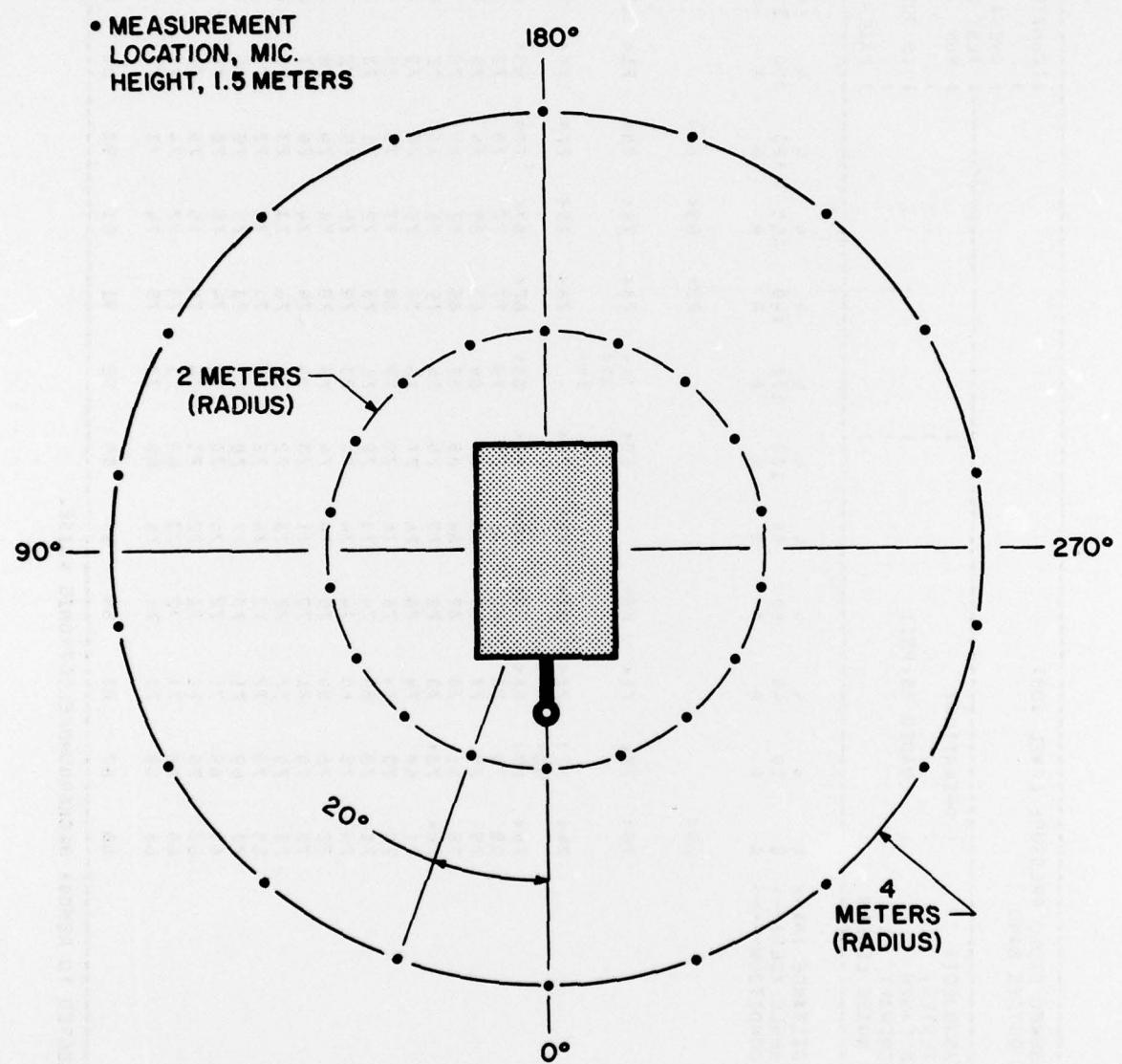


Figure 1. Measurement Locations

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

NOISE SOURCE/SUBJECT:		OPERATION:		IDENTIFICATION:	
AF/M247-2 TESTER, PRESSURIZED CABIN LEAKAGE, AIRCRAFT NEAR FIELD NOISE LEVELS		LOADED (5 PSI)		TEST 76-021-001 RUN 01. 15 JUL 76 PAGE F1	
FREQ (HZ)	DISTANCE (M)→	4	4	4	4
	ANGLE (DEG)→	0	40	60	80
	CONDITION---	A	A	A	A
25	25	69<	69<	72<	69<
50	50	75<	72<	71<	78<
63	63	70<	69<	69<	71<
80	80	76	82	78	80<
100	100	74<	77<	76<	74<
125	125	74<	77<	76<	74<
160	160	70<	69<	69<	67<
200	200	70<	68<	70<	67<
250	250	75	78	81	79
315	315	75	77	80	83
400	400	76	81	82	86
500	500	70<	73	74	85
630	630	71	74	76	87
800	800	73	70	70	85
1000	1000	71	70	71	87
1250	1250	74	75	70	87
1600	1600	72	76	75	87
2000	2000	70	70	71	78
2500	2500	70	70	72	75
3150	3150	69	70	72	74
4000	4000	70	69	73	75
5000	5000	69	69	72	75
6300	6300	69	70	71	74
8000	8000	66	66	72	73
10000	10000	66	66	70	68
OVERALL		86	87	88	89
					90
					91
					92
					93
					94
					95
					96
					97
					98
					99
					91

< LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

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

NOISE SOURCE/SUBJECT:				OPERATION:				IDENTIFICATION:			
AF/M241-2 TESTER, PRESSURIZED CABIN LEAKAGE, AIRCRAFT NEAR FIELD NOISE LEVELS				LOADED (5 PSI)				TEST 76-021-001 RUN 02 15 JUL 76 PAGE F2			
FREQ (HZ)	ANGLE (DEG) -->	DISTANCE (M) -->	NEAR FIELD NOISE LEVELS	A	A	A	A	A	A	A	A
25	31.5	75<	78<	75<	72<	72<	73<	75<	76<	75<	75<
40	50	75<	75<	72<	72<	73<	75<	75<	76<	75<	75<
63	80	70<	70<	71<	68<	72<	73<	73<	74<	72<	73<
100	125	87	86	81	86	80	81	81	83	82<	82<
160	200	88	89	82	88	82	81	84	85	89	86
250	315	69<	69<	70<	70<	70<	70<	73	73	72<	72<
400	500	76	74	76	74	76	76	76	76	77	77
630	800	79	77	80	75	72	79	77	82	80	80
1000	1250	73	71	73	68	75	77	74	73	75	76
1600	2000	77	76	62	78	73	77	73	77	82	81
2500	3150	76	63	83	79	72	78	73	75	77	80
4000	5000	76	76	77	75	71	73	74	74	77	82
6300	8000	75	76	76	75	72	74	73	74	79	81
10000	OVERALL	74	75	76	75	71	72	73	77	78	80
		92	94	92	92	89	90	91	93	95	94
										97	96

< LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

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

NOISE SOURCE/SUBJECT: AF/M24T-2 TESTER, PRESSURIZED CABIN LEAKAGE, AIRCRAFT NEAR FIELD NOISE LEVELS				OPERATION: LOADED (5 PSI)				TEST 76-021-001 RUN 03 15 JUL 76 PAGE F3				IDENTIFICATION: OMEGA 3.2	
FREQ (HZ)	DISTANCE (M) --> ANGLE (DEG) -->	CONDITION-->	A	200	220	240	A	280	300	320	A	340	OPERATOR LOCATION TEST CONDITION 1/A
25	68<	68<											
31.5	71<	71<											
40	72<	75<	77<	77<	78<	78<	79<	77<	77<	77<	77<	74<	
63	75<	75<	73<	73<	75<	75<	76<	76<	77<	77<	72<	72<	
80	75<	75<	75<	75<	75<	75<	76<	76<	76<	76<	82<	82<	
100	79<	80<	80<	80<	80<	80<	79<	79<	79<	79<	72<	72<	
125	79<	71<	72<	72<	76<	76<	70<	70<	71<	71<	72<	74<	
160	74<	73<	73<	74<	74<	74<	71<	71<	72<	72<	73<	73<	
200	81	76	76	76	76	76	72<	72<	74<	74<	73<	73<	
250	86	80	83	83	83	83	77	77	78	80	79	79	
315	87	80	85	85	90	90	94	93	92	92	93	93	
400	500	77	74	73	77	77	75	77	77	77	91	91	
630	82	84	77	62	83	83	78	78	82	82	81	81	
800	83	84	78	62	83	83	78	79	79	82	81	81	
1000	78	76	77	79	78	81	77	77	78	81	76	76	
1250	82	77	80	81	87	83	84	83	85	82	82	90	
1600	83	76	81	81	86	83	85	83	85	82	82	90	
2000	79	76	80	80	80	81	83	83	82	84	77	77	
2500	80	78	80	81	84	85	84	85	85	85	79	79	
3150	78	77	79	80	84	84	82	84	83	83	77	77	
4000	83	81	79	81	81	82	82	84	83	78	78	85	
5000	83	84	80	80	79	81	81	83	83	77	77	84	
6300	85	83	80	80	80	81	81	82	83	82	82	84	
8000	81	80	80	81	80	80	80	81	83	83	77	85	
10000	78	77	78	80	79	79	80	82	82	82	76	82	
OVERALL	95	93	93	95	98	98	98	98	98	97	93	103	

< LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

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

NOISE SOURCE/SUBJECT:		OPERATION:		IDENTIFICATION:	
AF/M247-2 TESTER, PRESSURIZED CABIN LEAKAGE, AIRCRAFT NEAR FIELD NOISE LEVELS		LOADED (5 PSI)		TEST 76-0221-001 RUN 01 15 JUL 76 PAGE J1	
FREQ (HZ)	DISTANCE (M) -->	4	4	4	4
	ANGLE (DEG) -->	0	20	60	80
	CONDITION-->	A	A	A	A
31.5				81	
63	77	81	84	85	84
125	82	80	83	85	88
250	78	81	81	79	80
500	77	77	81	78	79
1000	75	77	81	78	80
2000	74	74	76	77	81
4000	73	73	75	75	78
8000				78	78
OVERALL	85	87	87	89	89
				92	90
				91	90
				88	88
				91	91

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

NOISE SOURCE/SUBJECT:				OPERATIONS:				IDENTIFICATION:			
AF/M24T-2 TESTER, PRESSURIZED CABIN LEAKAGE, AIRCRAFT NEAR FIELD NOISE LEVELS				LOADED (5 PSI)				OMEGA 3.2 TEST 76-021-001 RUN 02 15 JUL 76 PAGE J2			
FREQ (HZ)	DISTANCE (M) --> ANGLE (DEG) -->	4 A	4 A	4 A	4 A	4 A	4 A	2 A	2 A	2 A	2 A
31.5											
63											
125											
250											
500											
1000											
2000											
4000											
8000											
OVERALL		92	94	91	92	89	90	91	93	95	94
										97	96

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

NOISE SOURCE/SUBJECT:		OPERATION:		TEST CONDITION:		TEST CONDITION:		TEST CONDITION:	
AF/H24T-2 TESTER, PRESSURIZED CABIN LEAKAGE, AIRCRAFT NEAR FIELD NOISE LEVELS		LOADED (5 PSI)		1/A		1/A		1/A	
FREQ (HZ)	DISTANCE (M) -->	ANGLE (DEG) -->	ANGLE (DEG) -->	2	2	2	2	2	2
	A	A	A	160	180	200	220	240	260
31.5				73	76	79	77	78	81
63				80	82	80	93	92	93
125				87	82	84	94	93	94
250				66	65	65	91	93	91
500				86	85	83	85	86	85
1000				85	61	65	69	68	67
2000				86	86	64	65	67	66
4000				87	86	84	85	85	86
8000				OVERALL	95	93	95	96	98
									97
									93
									103

TABLE 3
MEASURES OF HUMAN NOISE EXPOSURE

NOISE SOURCE/SUBJECT:		OPERATION:		TEST 76-021-001		IDENTIFICATION:	
AF/M2T-2 TESTER, PRESSURIZED CABIN LEAKAGE, AIRCRAFT NEAR FIELD NOISE LEVELS		LOADED (5 PSI)		RUN 01		OMEGA 3-2	
		15 JUL 76					
		PAGE H1					
DISTANCE (M)→	4	4	4	4	4	4	4
ANGLE (DEG)→	0	20	40	60	80	100	120
CONDITION→	A	A	A	A	A	A	A
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	66	87	88	89	89	91	90
OASLA	63	84	87	86	86	88	87
T	571	480	285	339	339	240	240
MINIMUM QPL EAR HUFFS	61	63	63	65	65	66	67
OASLA*	T	960	960	960	960	960	960
AMERICAN OPTICAL 1700 EAR MUFFS	57	58	58	60	61	63	64
OASLA*	T	960	960	960	960	960	960
V-51R EAR PLUGS	58	60	60	62	63	65	64
OASLA*	T	960	960	960	960	960	960
AMERICAN OPTICAL 1700 EAR MUFFS PLUS V-51R EAR PLUGS	44	44	47	47	48	49	49
OASLA*	T	960	960	960	960	960	960
H-133 GROUND COMMUNICATION UNIT	55	56	59	58	58	59	58
OASLA*	T	960	960	960	960	960	960
COMMUNICATION PREFERRED SPEECH INTERFERENCE LEVEL (PSIL IN DB)	77	79	81	80	81	82	83
PSIL							
ANNOYANCE							
PERCEIVED NOISE LEVEL, TONE CORRECTED (PNLT IN PNDB)							
TONE CORRECTION (C IN DB)							
PNLT	99	100	102	103	102	104	104
C	3	3	3	3	3	3	3

* BASED ON CALCULATED SPL SPECTRUM UNDER PROTECTIVE DEVICE.

TABLE: MEASURES OF HUMAN NOISE EXPOSURE

3

NOISE SOURCE/SUBJECT:		OPERATION:		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)		IDENTIFICATION:						
AF/M24T-2 TESTER, PRESSURIZED CABIN LEAKAGE, AIRCRAFT NEAR FIELD NOISE LEVELS		LOADED (5 PSI)		NO PROTECTION		92	94	91	92	68	90	90	93	95	93	94	96	95
		A	A	OASLC		89	91	91	69	65	68	87	90	92	92	92	94	94
		T	T	OASLA*		202	143	143	202	404	240	285	170	120	120	120	85	85
				MINIMUM QPL EAR MUFFS		68	70	66	68	65	66	67	69	71	69	70	73	71
				AMERICAN OPTICAL 1700 EAR MUFFS		960	960	960	960	960	960	960	960	960	960	960	960	
				OASLA*		63	64	61	63	60	61	62	64	66	64	64	66	
				T		960	960	960	960	960	960	960	960	960	960	960	960	
				V-51R EAR PLUGS		66	67	64	65	61	63	63	66	68	66	67	70	69
				T		960	960	960	960	960	960	960	960	960	960	960	960	
				AMERICAN OPTICAL 1700 EAR MUFFS PLUS V-51R EAR PLUGS		49	50	50	49	46	49	48	51	52	51	51	54	54
				OASLA*		960	960	960	960	960	960	960	960	960	960	960	960	
				T		60	62	63	61	58	60	59	62	64	64	63	65	65
				H-133 GROUND COMMUNICATION UNIT		960	960	960	960	960	960	960	960	960	960	960	960	
				OASLA*		T												
				COMMUNICATION PREFERRED SPEECH INTERFERENCE LEVEL (PSIL IN DB)		83	85	65	63	79	82	81	84	86	85	86	87	88
				ANNOYANCE PERCEIVED NOISE LEVEL, TONE CORRECTED (PNLT IN PNDB)														
				TONE CORRECTION (C IN DB)		185	187	107	105	102	104	103	106	107	107	108	110	110
				PNLT		3	3	3	3	3	3	2	2	2	1	3	3	
				C														

* BASED ON CALCULATED SPL SPECTRUM UNDER PROTECTIVE DEVICE.

TABLE I MEASURES OF HUMAN NOISE EXPOSURE
3

NOISE SOURCE/SUBJECT		OPERATIONS		IDENTIFICATION:	
AF/M241-2 TESTER, PRESSURIZED CABIN				OMEGA 3.2	TEST 76-021-001
LEAKAGE, AIRCRAFT		LOADED (5 PSI)		RUN 03	
NEAR FIELD NOISE LEVELS				15 JUL 76	
				PAGE H3	
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	94	92	95	98	97
OASLA	93	92	93	95	95
T	101	120	143	101	91
MINIMUM QPL EAR MUFFS					
OASLA*	70	68	71	74	71
T	960	960	960	960	960
AMERICAN OPTICAL 1700 EAR MUFFS					
OASLA*	64	62	63	66	68
T	960	960	960	960	960
V-51R EAR PLUGS					
OASLA*	67	65	69	72	71
T	960	960	960	960	960
AMERICAN OPTICAL 1700 EAR MUFFS PLUS					
OASLA*	53	52	51	53	55
T	960	960	960	960	960
H-133 GROUND COMMUNICATION UNIT					
OASLA*	64	63	63	64	67
T	960	960	960	960	960
COMMUNICATION PREFERRED SPEECH INTERFERENCE LEVEL (PSIL IN DB)					
PSIL	87	84	85	87	90
ANNOYANCE PERCEIVED NOISE LEVEL, TONE CORRECTED (PNLT IN PNDB)					
TONE CORRECTION (C IN DB)					
PNLT	110	108	106	109	112
C	3	2	1	3	3
				3	3
				2	2

* BASED ON CALCULATED SPL SPECTRUM UNDER PROTECTIVE DEVICE.