AD-A120 508 USAF BIOENVIRONMENTAL NOISE DATA HANDBOOK VOLUME 150 1/1
C-140 IN-FLIGHT CREW NOISE(U) AIR FORCE AEROSPACE
MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB.. H K HILLE
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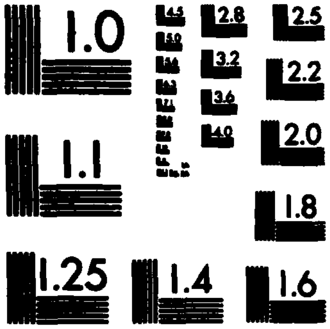

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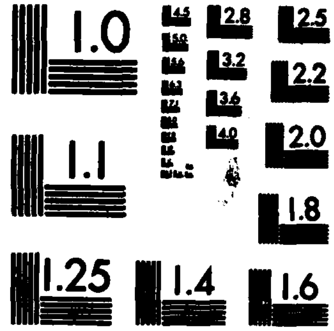

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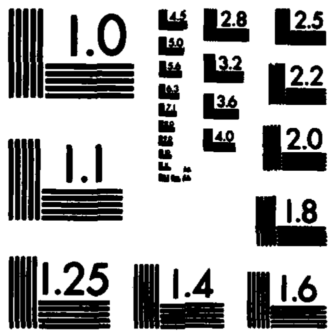

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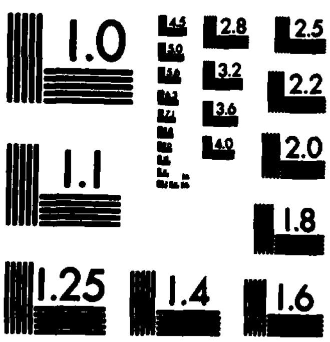

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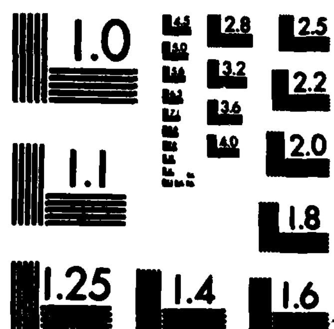

MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

AMRL-TR-75-50
Volume 150

USAF BIOENVIRONMENTAL NOISE DATA HANDBOOK

Volume 150

C-140 IN-FLIGHT CREW NOISE

SEPTEMBER 1982

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

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AMRL-TR-75-50, Vol. 150

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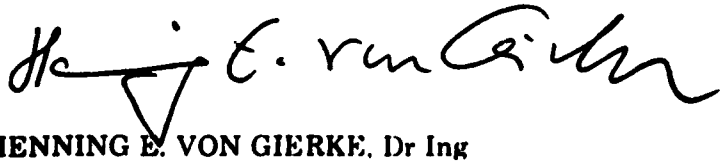
This technical report has been reviewed and is approved for publication.

FOR THE COMMANDER



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SECURITY CLASSIFICATION OF THIS PAGE *(When Data Entered)*

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER AMRL-TR-75-50, Vol. 150	2. GOVT ACCESSION NO. AD-A120 508	3. RECIPIENT'S CATALOG NUMBER
4. TITLE *(and Subtitle)* USAF BIOENVIRONMENTAL NOISE DATA HANDBOOK: C-140 In-flight Crew Noise		5. TYPE OF REPORT & PERIOD COVERED Volume 150 of a series 6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) Harald K. Hille		8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS Air Force 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 72310918
11. CONTROLLING OFFICE NAME AND ADDRESS Same as above		12. REPORT DATE September 1982 13. NUMBER OF PAGES 18
14. MONITORING AGENCY NAME & ADDRESS*(if different from Controlling Office)*		15. SECURITY CLASS. *(of this report)* Unclassified 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
In-flight Crew Noise
C-140 Aircraft

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

The C-140 is a USAF transport aircraft used for operational support. This report provides measured data defining the bioacoustic environments at flight crew/passenger locations inside this aircraft during normal flight operations. Date are reported for seven 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

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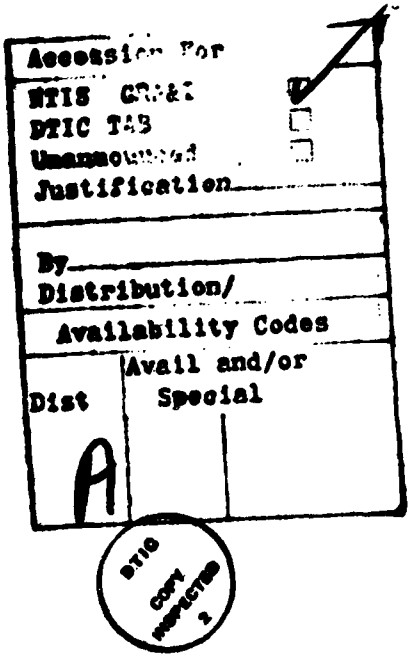
noise level, and limiting times for total daily exposure of personnel with and without standard Air Force ear protectors. Refer to Volume 1 of this handbook, "USAF Bioenvironmental Noise Data Handbook, Vol. 1: Organization, Content and Application," AMRL-TR-75-50(1) 1975, for discussion of the objective 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, Air Force Aerospace Medical Research Laboratory, under Project/Task 723109, Communication and Performance Capability and Operational Noises. The author acknowledges the efforts of Mr. John Cole who established the data analysis requirements, Mr. Henry Mohlman, and Mr. Fred Lampley of the University of Dayton who assisted in the mechanics of data processing and Mrs. Norma Peachey who typed this report and prepared it for publication.

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INTRODUCTION

The C-140 Jet Star is a transport aircraft used for operational support and is manufactured by the Lockheed-Georgia Company. The aircraft is powered by four J60-P-5A turbojet engines each rated at 3000 lbs. thrust. The engine is manufactured by the United Technologies Corp., Pratt & Whitney Aircraft Division.

This volume provides measured and extrapolated data defining bioacoustic environments produced inside the aircraft. Such data are essential to evaluate ear protection requirements, limiting personnel exposure times, voice communication capabilities, and annoyance problems associated with operations of the C-140 aircraft.

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.

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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.

IN-FLIGHT NOISE

MEASUREMENTS

All noise measurements were made on-board a standard-configured C-140 aircraft during typical speed, altitude, and flight maneuver conditions. These levels describe the standard C-140 environments, but may not be representative of those levels encountered if the aircraft has been configured differently (e.g., major equipment or structural changes).

Acoustic measurements were made at various flight crew and passenger locations. Table 1 lists the measurement locations and test conditions as numeric/alphabetic designators which are used on the data pages. The designator 1/A means measurement location 1 and test condition A.

The microphone position was at ear level external to headgear in a region 0.2-0.3 meter from the head when an individual was present. At unoccupied locations, measurements were made at ear level throughout a volume where the head would normally be located. In both cases, the microphone was randomly moved throughout a spherical volume approximately 0.3 meter in diameter and the resultant samples analyzed using a 4- or 8- second integration time to obtain a power-averaged level, which effectively smooths out short-duration fluctuations and best describes the exposure.

Although the presence of a crew member or passenger at a measurement location affects the resultant sound field, the magnitude of such effects is generally small and not significant in determining exposure limits or voice communication capabilities. Consequently, no distinction is made in this report between occupied and unoccupied measurement locations.

RESULTS

The measured data presented in Table 2 define the sound pressure levels (SPL) produced inside the C-140 aircraft at the seven specified locations. This table includes the overall, 1/3 octave band, and octave band levels. From these data, C-weighted and A-weighted sound levels, maximum permissible time for one exposure per day (AFR 161-35) with and without standard Air Force ear protectors, preferred speech interference level, and perceived noise level are calculated and presented in Table 3. These measures are widely used to assess the effects of noise on personnel and their performance.

TABLE 1

MEASUREMENT LOCATIONS AND TEST CONDITIONS
C-140, ANDREWS AFB, 7 JUNE 1982

LOCATION	POSITION	HEIGHT ABOVE DECK
1	Pilot/Copilot	Seated Head Level
2	Flight Engineer/Navigator	Seated Head Level
3	First Row Seats, Centerline	40" Above Deck
4	Second Row Seats, Centerline	40" Above Deck
5	Third Row Seats, Centerline	40" Above Deck
6	Fourth Row Seats, Centerline	40" Above Deck
7	Pantry Aft of Aircraft	40" Above Deck

CONDITION	DESCRIPTION
A	APU Running - Cockpit Door + Aircraft Door Open
B	Ground Runup, Idle
C	Taxi
D	Ground Runup, Military
E	Takeoff/Roll
F	Lift Off, Gear Up, Climb to 3,000 ft.
G	Cruise, 4,000 ft. - 250 KIAS
H	Climb thru 13,000 ft. - .55M
I	Cruise, 28,000 ft. - Normal Speed
J	Cruise, 28,000 ft. - High Speed
K	Cruise, 17,000 ft. - High Speed
L	Cruise, 17,000 ft. - Medium Speed, 300 KIAS
M	Cruise, 11,000 ft. - 300 KIAS
N	Cruise, 11,000 ft. - 250 KIAS
O	Descending to 8,000 ft. - Flaps 20°
P	Descending to 3,000 ft. - Flaps 20°
Q	Approach, Gear Down, 1,000 ft. - Flaps 45°
R	Landing, Touch Down, Reverse Thrust

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

IDENTIFICATION:
OMEGA 3.2
TEST CD-082-001
RUN 01
20 JUL 82
PAGE F1

NOISE SOURCE/SUBJECT:
C-140
IN-FLIGHT CREW NOISE

OPERATION:

FREQ (HZ)	LOCATION/CONDITION 1/A	2/A	1/B	2/B	3/B	1/C	1/D	1/E	1/F	1/G	2/G	1/H
25	67	70	67	61	70	81	81	90	77	74	75	75
31.5	66	68	64	61	64	79	77	88	76	72	69	75
40	61	63	63	61	63	77	77	93	75	71	68	75
50	58	61	71	63	65	76	75	90	71	71	66	70
63	61	62	65	60	65	76	77	85	80	75	83	82
80	65	65	71	61	66	80	79	88	81	70	76	75
100	65	68	77	72	67	73	73	83	72	67	68	69
125	71	76	82	79	72	74	77	87	72	71	74	69
160	67	72	71	69	66	68	77	85	71	65	69	64
200	63	68	69	66	63	63	74	78	66	66	69	64
250	68	73	72	70	67	68	75	78	69	68	71	65
315	68	74	68	65	63	67	78	78	71	69	72	69
400	73	75	63	69	65	64	80	78	74	76	73	72
500	73	75	64	69	65	67	77	74	74	79	75	71
630	71	78	63	66	60	68	80	75	73	80	81	78
800	71	78	60	63	60	66	78	75	73	78	79	79
1000	69	75	58	59	60	63	73	72	69	78	79	80
1250	67	73	63	65	66	66	72	72	70	77	77	79
1600	67	74	57	61	61	66	70	71	69	75	77	79
2000	64	71	53	58	56	66	65	65	64	72	74	75
2500	63	71	55	55	55	61	63	64	62	69	72	73
3150	60	67	53	53	58	56	62	63	63	70	66	71
4000	57	65	50	53	54	59	58	58	61	64	64	67
5000	58	65	48	50	50	51	57	54	62	60	60	62
6300	55	62	50	51	53	50	62	56	63	58	59	59
8000	56	62	49	50	51	50	54	53	58	55	57	58
10000	58	66	48	46	49	47	52	52	57	55	58	57
OVERALL	81	86	85	82	79	87	90	98	87	88	89	89

LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

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

IDENTIFICATION:
OMEGA 3.2
TEST CD-082-001
RUN 02
20 JUL 82
PAGE F2

NOISE SOURCE/SUBJECT:
C-140
IN-FLIGHT CREW NOISE

OPERATION:

FREQ (HZ)	LOCATION/CONDITION 2/H	1/I	2/I	3/I	4/I	5/I	6/I	7/I	1/J	2/J	3/J	4/J
25	72	73	71	70	72	69	65	67	73	71	71	71
31.5	67	72	67	69	69	70	70	64	72	67	70	74
40	68	72	67	71	71	69	72	70	71	66	74	74
50	67	68	65	70	71	69	70	76	68	66	72	71
63	86	81	85	81	86	82	83	97	84	84	83	80
80	79	76	79	76	77	74	74	85	82	81	77	75
100	67	67	66	73	73	73	72	74	69	68	76	74
125	73	69	70	74	76	78	80	81	75	75	77	79
160	67	63	67	68	70	71	71	75	69	70	72	72
200	68	61	67	69	72	71	73	78	68	70	72	74
250	73	65	71	74	77	77	79	84	72	73	79	77
315	71	68	70	76	79	75	76	78	72	75	79	78
400	70	72	70	74	76	76	81	77	73	75	79	81
500	73	72	74	78	80	78	83	81	76	80	81	80
630	80	77	79	81	82	82	82	85	81	81	85	85
800	82	80	81	80	81	81	82	83	83	84	82	83
1000	80	80	81	78	78	77	78	79	83	84	80	78
1250	79	81	80	74	75	75	75	77	85	83	77	76
1600	79	81	82	73	74	73	73	75	86	86	76	74
2000	77	77	79	70	70	70	70	72	82	82	72	71
2500	73	74	76	67	67	67	67	68	78	79	69	68
3150	70	73	73	63	63	64	64	66	76	78	66	65
4000	67	70	72	59	60	61	61	63	74	76	62	63
5000	62	67	68	53	55	57	58	59	71	72	57	59
6300	59	63	65	51	53	57	58	61	68	68	55	58
8000	56	59	60	50	53	57	59	64	63	63	55	58
10000	54	56	56	48	51	55	57	61	59	58	52	56
OVERALL	91	89	91	89	91	89	91	98	93	93	92	91

LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

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

IDENTIFICATION:
OMEGA 3.2
TEST CD-082-001
RUN 03
20 JUL 82
PAGE F3

NOISE SOURCE/SUBJECT:
C-140
IN-FLIGHT CREW NOISE

OPERATION:

FREQ (HZ)	LOCATION/CONDITION 5/J	6/J	7/J	1/K	1/L	1/M	1/N	1/O	1/P	1/Q	1/R
25	73	70	71	73	74	74	72	73	69	75	85
31.5	71	73	70	72	72	72	73	70	68	75	80
40	72	74	74	70	70	72	75	69	70	76	83
50	72	70	78	69	69	70	73	69	69	82	78
63	91	80	97	82	82	79	82	71	69	78	78
80	83	75	88	71	72	71	69	66	67	76	82
100	80	74	74	67	67	71	69	64	65	72	75
125	79	79	81	73	71	73	76	68	67	78	79
160	74	72	77	66	65	65	71	58	64	80	76
200	73	74	77	68	66	68	68	61	61	78	75
250	80	77	83	71	70	70	75	62	61	74	75
315	77	78	79	72	72	71	77	63	66	74	74
400	80	80	80	73	72	72	74	65	68	74	77
500	83	80	82	77	74	76	74	66	78	70	79
630	83	84	85	81	80	80	76	71	80	68	80
800	82	83	83	83	81	81	75	70	76	68	79
1000	79	78	82	83	82	81	73	69	69	64	75
1250	76	76	78	83	82	82	70	68	71	62	72
1600	75	74	76	82	80	80	69	65	63	61	68
2000	71	71	73	79	76	77	66	60	58	54	64
2500	68	68	70	76	73	74	61	55	56	50	61
3150	65	65	67	74	72	72	55	50	59	48	61
4000	62	62	64	72	69	70	50	47	51	45	55
5000	58	59	61	70	65	66	45	45	45	44	48
6300	58	58	61	67	61	62	44	44	44	43	46
8000	59	58	64	62	58	58	45	45	45	45	46
10000	57	55	61	58	56	56	46	47	47	47	48
OVERALL	94	91	99	91	90	90	87	81	85	89	92

LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

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

IDENTIFICATION:
OMEGA 3.2
TEST CD-082-001
RUN 01

20 JUL 82

PAGE J1

NOISE SOURCE/SUBJECT:
C-140
IN-FLIGHT CREW NOISE

OPERATION:

FREQ (HZ)	LOCATION/CONDITION 1/A	2/A	1/B	2/B	3/B	1/C	1/D	1/E	1/F	1/G	2/G	1/H
31.5	70	73	70	66	71	84	83	95	81	77	76	80
63	67	67	74	66	70	82	82	93	83	77	84	83
125	73	78	83	80	74	77	80	90	76	73	76	73
250	72	77	74	72	70	71	81	83	74	73	76	71
500	77	81	68	73	69	72	84	81	78	83	82	80
1000	74	80	65	67	68	70	80	78	76	82	83	84
2000	70	77	60	64	63	69	72	73	71	77	80	81
4000	63	71	55	57	60	61	64	65	67	71	69	73
8000	61	68	54	54	56	54	63	59	65	61	62	63
OVERALL	81	86	85	82	79	87	90	98	87	88	89	89

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

IDENTIFICATION:
OMEGA 3.2
TEST CD-082-001
RUN 02
20 JUL 82
PAGE J2

NOISE SOURCE/SUBJECT:
C-140
IN-FLIGHT CREW NOISE

OPERATION:

FREQ (HZ)	LOCATION/CONDITION 2/H	1/I	2/I	3/I	4/I	5/I	6/I	7/I	1/J	2/J	3/J	4/J
31.5	74	77	73	75	76	74	75	72	77	73	77	78
63	87	82	86	82	87	83	84	97	86	86	84	81
125	75	72	73	77	78	79	81	83	76	77	80	81
250	76	70	74	79	81	80	81	86	76	78	82	81
500	81	79	80	83	84	84	87	87	82	84	87	87
1000	85	85	85	83	83	83	84	85	89	88	85	84
2000	82	83	85	75	76	75	75	77	88	88	78	76
4000	72	75	76	65	65	66	66	68	79	81	68	68
8000	61	65	67	55	57	61	63	67	69	69	59	62
OVERALL	91	89	91	89	91	89	91	98	93	93	92	91

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

IDENTIFICATION:
OMEGA 3.2
TEST CD-082-001
RUN 03
20 JUL 82
PAGE J3

NOISE SOURCE/SUBJECT:
C-140
IN-FLIGHT CREW NOISE

OPERATION:

FREQ (HZ)	LOCATION/CONDITION 5/J	6/J	7/J	1/K	1/L	1/M	1/N	1/O	1/P	1/Q	1/R
31.5	77	77	77	76	77	77	78	76	74	80	88
63	92	81	98	82	83	80	82	74	73	84	84
125	83	81	83	74	73	76	78	69	70	83	82
250	82	81	85	75	75	75	79	67	68	81	79
500	87	87	87	83	81	82	79	73	82	76	83
1000	84	84	86	88	87	86	78	74	78	70	81
2000	77	76	78	84	82	83	71	66	65	62	70
4000	67	67	70	77	74	75	56	53	60	51	62
8000	63	62	67	69	64	64	50	50	50	50	52
OVERALL	94	91	99	91	90	90	87	81	85	89	92

TABLE: MEASURES OF HUMAN NOISE EXPOSURE

3

NOISE SOURCE/SUBJECT:
C-140
IN-FLIGHT CREW NOISE

OPERATION:

IDENTIFICATION:
OMEGA 3.2
TEST CD-082-001
RUN 01

20 JUL 82

PAGE H1

	LOCATION/CONDITION											
	1/A	2/A	1/B	2/B	3/B	1/C	1/D	1/E	1/F	1/G	2/G	1/H
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	86	84	82	78	85	89	97	86	87	89	89
OASLA	78	84	73	74	72	75	84	83	80	86	86	87
T	960	480	960	960	960	960	480	571	960	339	339	285
MINIMUM GPL EAR MUFFS												
OASLA*	57	62	63	60	55	61	65	72	62	62	63	62
T	960	960	960	960	960	960	960	960	960	960	960	960
V-51R EAR PLUGS												
OASLA*	55	60	50	51	48	52	61	62	56	61	62	62
T	960	960	960	960	960	960	960	960	960	960	960	960
FLENTS EAR PLUGS												
OASLA*	54	60	51	51	48	52	61	63	56	61	62	61
T	960	960	960	960	960	960	960	960	960	960	960	960
H-157 IN-FLIGHT COMMUNICATION UNIT												
OASLA*	59	63	63	60	56	61	66	72	63	63	65	64
T	960	960	960	960	960	960	960	960	960	960	960	960
COMMUNICATION												
PREFERRED SPEECH INTERFERENCE LEVEL (PSIL IN DB)												
PSIL	74	79	65	68	66	70	79	77	75	81	82	82
ANNOYANCE												
PERCEIVED NOISE LEVEL, TONE CORRECTED (PNLT IN PNDB)												
TONE CORRECTION (C IN DB)												
PNLT	90	97	90	88	87	91	97	97	92	97	98	98
C	1	1	2	1	2	2	1	0	0	1	1	1

* BASED ON CALCULATED SPL SPECTRUM UNDER PROTECTIVE DEVICE.

TABLE: 3 MEASURES OF HUMAN NOISE EXPOSURE

IDENTIFICATION: OMEGA 3.2 TEST CD-082-001 RUN 02 20 JUL 82 PAGE H2

NOISE SOURCE/SUBJECT: C-140 IN-FLIGHT CREW NOISE

OPERATION:

	LOCATION/CONDITION											
	2/W	1/I	2/I	3/I	4/I	5/I	6/I	7/I	1/J	2/J	3/J	4/J
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	90	89	91	88	91	89	91	98	93	93	91	91
OASLA	88	88	89	85	86	86	87	88	92	93	88	88
T	240	240	202	404	339	339	285	240	120	101	240	240
MINIMUM GPL EAR MUFFS												
OASLA*	64	62	64	64	66	65	67	73	66	67	67	66
T	960	960	960	960	960	960	960	960	960	960	960	960
V-51R EAR PLUGS												
OASLA*	63	62	63	62	63	62	64	66	66	66	65	65
T	960	960	960	960	960	960	960	960	960	960	960	960
FLENTS EAR PLUGS												
OASLA*	62	62	63	62	63	62	64	66	65	66	65	64
T	960	960	960	960	960	960	960	960	960	960	960	960
H-157 IN-FLIGHT COMMUNICATION UNIT												
OASLA*	66	64	66	65	67	66	68	74	69	69	68	68
T	960	960	960	960	960	960	960	960	960	960	960	960
COMMUNICATION												
PREFERRED SPEECH INTERFERENCE LEVEL (PSIL IN DB)												
PSIL	83	82	83	80	81	81	82	83	86	87	83	82
ANNOYANCE												
PERCEIVED NOISE LEVEL, TONE CORRECTED (PNLT IN PNDB)												
TONE CORRECTION (C IN DB)												
PNLT	100	100	101	96	97	97	99	102	105	105	99	99
C	1	1	1	1	1	1	2	1	1	1	1	1

* BASED ON CALCULATED SPL SPECTRUM UNDER PROTECTIVE DEVICE.

TABLE: MEASURES OF HUMAN NOISE EXPOSURE

3

IDENTIFICATION:

OMEGA 3.2
TEST CD-082-001
RUN 03

20 JUL 82

PAGE H3

NOISE SOURCE/SUBJECT:
C-140
IN-FLIGHT CREW NOISE

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)

	LOCATION/CONDITION										
	5/J	6/J	7/J	1/K	1/L	1/M	1/N	1/O	1/P	1/Q	1/R
NO PROTECTION											
OASLC	94	91	98	91	90	90	87	80	84	88	90
OASLA	88	88	89	91	89	89	81	76	82	77	84
T	240	240	202	143	202	202	807	960	679	960	480
MINIMUM QPL EAR MUFFS											
OASLA*	69	66	73	64	63	63	62	54	60	64	66
T	960	960	960	960	960	960	960	960	960	960	960
V-51R EAR PLUGS											
OASLA*	65	65	67	65	64	64	58	52	59	56	61
T	960	960	960	960	960	960	960	960	960	960	960
FLENTS EAR PLUGS											
OASLA*	65	64	67	64	63	63	59	52	59	57	61
T	960	960	960	960	960	960	960	960	960	960	960
H-157 IN-FLIGHT COMMUNICATION UNIT											
OASLA*	70	68	74	67	65	65	64	55	60	66	67
T	960	960	960	960	960	960	960	960	960	960	960

COMMUNICATION
PREFERRED SPEECH INTERFERENCE LEVEL (PSIL IN DB)

	5/J	6/J	7/J	1/K	1/L	1/M	1/N	1/O	1/P	1/Q	1/R
PSIL	83	82	84	85	83	84	76	71	75	69	78

ANNOYANCE
PERCEIVED NOISE LEVEL, TONE CORRECTED (PNLT IN PNDB)
TONE CORRECTION (C IN DB)

	5/J	6/J	7/J	1/K	1/L	1/M	1/N	1/O	1/P	1/Q	1/R
PNLT	100	99	102	102	100	100	93	87	93	90	96
C	1	1	1	1	1	1	1	1	2	0	1

* BASED ON CALCULATED SPL SPECTRUM UNDER PROTECTIVE DEVICE.

*U.S. GOVERNMENT PRINTING OFFICE: 1982—659-088/2081