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USAF BIOENVIRONMENTAL NOISE DATA HANDBOOK. VOLUME 40. OV-10A IN--ETC(U)
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Volume 40

USAF BIOENVIRONMENTAL NOISE DATA HANDBOOK

Volume 40

OV-10A In-Flight Crew Noise

NOVEMBER 1977

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

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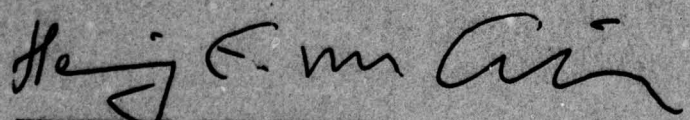

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) The OV-10A is a USAF multi-purpose counter-insurgency aircraft whose uses include forward air control, strike reconnaissance, and light logistics transport. This report provides measured data defining the bioacoustic environments at flight crew locations inside this aircraft during normal flight operations. Data are reported for 1 location 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 with-	

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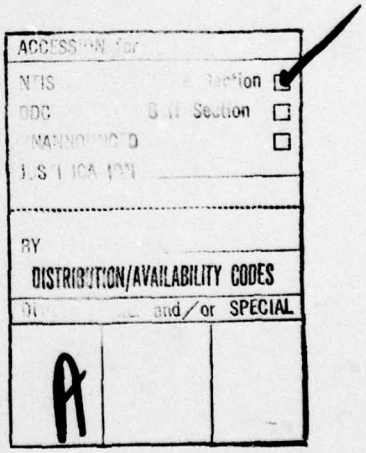
out standard Air Force ear protectors. Refer to Volume 1 of this handbook, "USAF Bioenvironmental Noise Data Handbook, Vol 1: Organization, Content and Application," AMRL-TR-75-50(1) 1975, for discussion of the objective and design of the handbook, the types of data presented, measurement procedures, 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 72310418, Measurement of Noise and Vibration Environments of Air Force Operations. Col Justus F. Rose, Jr. conducted the field measurements and performed the data analysis; Capt Nick Farinacci prepared this report.

The authors acknowledge the efforts of Mr. John N. Cole who established the data analysis requirements and assisted in the preparation of this report, and Mr. Henry Mohlman and Mr. David Eilerman of the University of Dayton who assisted in the mechanics of data processing.



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INTRODUCTION

The OV-10A is a USAF multi-purpose counter-insurgency aircraft whose uses include forward air control, strike reconnaissance, and light logistics transport. This aircraft, which is manufactured by North American Aviation, Incorporated, Columbus Division, is powered by two T76-G-10/12 turboprop engines rated at 715 shp at 41,730 rpm maximum take-off power. Each engine drives a Hamilton Standard three-blade constant-speed, 2.6 m diameter propeller through a 0.048 gear reduction. The engines are manufactured by The Garrett Corporation, AiResearch Manufacturing Company.

This volume provides measured data defining the 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 OV-10A aircraft. Additional data on the OV-10A have been published (reference 1). Noise measurements are described for internal and near-field during engine starting and pre-takeoff phases of the OV-10A operations and for internal during airborne operations.

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 aerospace ground equipment. The far-field, community-type, noise data in the handbook describe the noise produced during *ground operations* of aircraft, aerospace ground 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 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., in-flight/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.

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1. Gasaway, Donald, *Noise Associated with Operation of Air Force OV-10A*, SAM-TR-70-51 (AD 713882), USAF School of Aerospace Medicine, Brooks Air Force Base, Texas, 1970.

2. Cole, John N., *USAF Bioenvironmental Noise Data Handbook, Volume 1: Organization, Content and Application*, AMRL-TR-75-50 (1) (AD A-031865), Aerospace Medical Research Laboratory, Wright-Patterson Air Force Base, Ohio, 1975

IN-FLIGHT NOISE

MEASUREMENTS

All noise measurements were made on-board two standard-configured OV-10A aircraft during typical speed, altitude, and flight maneuver conditions. These levels describe the standard OV-10A 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 one flight crew location. Table 1 lists the measurement location 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 was randomly moved external to the headgear in a region 0.2-0.3 meter from the head and the resultant samples analyzed using a 4- or 8-second integration time to obtain a power-averaged level that effectively smooths out short-duration fluctuations and best describes the exposure.

RESULTS

The measured data presented in Table 2 define the sound pressure levels (SPL) produced inside the OV-10A aircraft at the specified location. 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 LOCATION AND TEST CONDITIONS

OV-10A, Eglin AFB, 28 Jul 1971, Serial # 66-13553;
Hurlburt Fld., 5 Aug 1971, Serial # 67-14605

LOCATION	*POSITION*	*HEIGHT ABOVE DECK*
1	Aft Cockpit	Seated Head Level

CONDITION	*DESCRIPTION*
A	Ground power unit operating, right rear canopy closed, front right canopy open.
B	Ground power unit operating, both right canopies open.
C	Left engine start, ground power unit operating, front right canopy open.
D	Right engine start, left engine idle, ground power unit operating, front right canopy open.
E	Idle power (both engines), front right canopy open.
F	Taxiing, Torque below 600#-ft, 70% RPM, front right canopy open.
G	Takeoff, 1390-1440#-ft. torque, 101% RPM.
H	Initial acceleration, gear and flaps up, condition level — T/O and Land.
I	Climb, 1500#-ft. torque, 120 KIAS, condition lever — T/O and Land.
J	Climb, 2.0M PA /, 1150#-ft, torque, 120 KIAS, condition lever — T/O and Land.

TABLE 1 (Continued)

MEASUREMENT LOCATION AND TEST CONDITIONS

OV-10A, Eglin AFB, 28 Jul 1971, Serial # 66-13553;
Hurlburt Fld., 5 Aug 1971, Serial # 67-14605

CONDITION	*DESCRIPTION*
K	Level flight, 3.5M PA, 1100#-ft. torque, 160 KIAS, 90-95% RPM, condition lever — Normal Flight.
L	Cruise, 3.8M PA, 1100#-ft. torque, 175 KIAS, 90-95% RPM, condition lever — Normal Flight.
M	Cruise, 3.0M PA, 1200#-ft. torque, 185 KIAS, 90-95% RPM, condition lever — Normal Flight.
N	Climb, 3.0M PA ↗, 1050#-ft. torque, 135 KIAS, condition lever, Normal Flight.
P	Climb, 6.0M PA ↗, 1000#-ft. torque, 120 KIAS, 92% RPM, condition lever — Normal Flight.
Q	Cruise, 7.0M PA, 1000#-ft. torque, 150 KIAS, 93% RPM, condition lever — Normal Flight.
R	Cruise, 7.0M PA, 1000#-ft. torque, 165 KIAS, 95% RPM, condition lever — Normal Flight.
S	Descent, 7.0M PA ↘, 1100#-ft. torque, 200 KIAS.
T	Descent, 2.5M PA ↘, 1300#-ft. torque, 210 KIAS.
U	Descent, 2.0M PA ↘, 600#-ft. torque, 150 KIAS, condition lever — T/O and Land.
V	Formation join-up, 1100#-ft. torque, 130 KIAS, 98% RPM, condition lever — T/O and Land.
W	Climb, 4.0M PA ↗, 1250#-ft. torque, 130 KIAS, 98% RPM, condition lever — T/O and Land.
X	Cruise, 5.0M PA, 900#-ft. torque, 160 KIAS, 98% RPM, condition lever — T/O and Land.
Y	BDU High Angle dive bomb pattern, 3500′ entry, 2300′ release, release airspeed — 255 KIAS, 45° dive angle, recovery 1300′ minimum, 600-800#-ft. torque, 98% RPM, condition lever — T/O and Land.
Z	Rocket pass, 3500′ entry, 1800′ release, recovery 1300′ minimum, release airspeed 255 KIAS, 30° dive angle, condition lever — T/O and Land.
AA	Same as K — recovery (gear warning horn actuated), condition lever — T/O and Land.
BB	Strafing run, 3000′ entry, 2000/1500′ fire, recovery 1000′ minimum, 220 KIAS, 20° dive angle, condition lever — T/O and Land.
CC	BDU Low Angle dive bomb pattern, 2500′ entry, 700′ release, 300′ minimum recovery, 220 KIAS, 10° dive angle, condition lever — T/O and Land.
DD	Cruise, 3.5M PA, 1000#-ft. torque, 160 KIAS, 98% RPM, condition lever — T/O and Land.
EE	Descent (Clean), 3.5M PA ↘, 650#-ft. torque, 170 KIAS, 97% RPM, condition lever — T/O and Land.
FF	VFR overhead pattern, initial 1500′, 1100#-ft. torque, 160 KIAS, condition lever — T/O and Land.
GG	GCA pattern, gear and flaps down, 700#-ft. torque, condition lever — T/O and Land, final approach.
HH	Pitchout, gear warning horn actuated, condition lever — T/O and Land.
II	Final approach (including turn to final) gear and flaps down, condition lever — T/O and Land.
JJ	Touchdown and landing roll.
KK	Prop. reverse during landing roll.
LL	Taxiing, both right canopies open.

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

IDENTIFICATION:
OMEGA 3.2
TEST 74-093-001
RUN 01
17 JAN 75
PAGE F1

NOISE SOURCE/SUBJECT:
OV-10A AIRCRAFT
INFLIGHT NOISE LEVELS

OPERATION:

LOCATION/CONDITION

FREQ (HZ)	1/A	1/B	1/C MIN	1/C MAX	1/D MIN	1/D MAX	1/E	1/F	1/G	1/H	1/I	1/J	1/K
25	59	63	80	91	85	101	88	82	100	105	98	96	100
31.5	72	71	80	79	90	87	88	82	103	94	95	94	96
40	73	81	92	81	99	87	89	85	93	100	89	87	91
50	77	74	86	77	90	82	81	78	86	96	84	82	86
63	76	75	86	88	93	97	96	97	88	90	87	87	90
80	82	78	84	104	87	106	85	86	96	99	96	100	102
100	90	74	83	85	85	86	81	79	114	114	113	114	115
125	74	74	83	83	88	93	93	90	97	97	95	93	96
160	70	86	89	93	89	96	89	85	95	95	93	97	97
200	76	79	82	86	84	91	86	85	115	113	110	111	110
250	73	80	83	90	84	89	84	80	98	98	99	100	101
315	67	72	77	86	84	91	86	88	104	108	109	105	103
400	63	66	77	86	84	91	89	87	98	103	103	101	102
500	62	66	76	85	83	93	93	92	98	99	98	101	100
630	64	72	78	87	84	94	91	88	97	102	100	99	97
800	64	68	74	83	82	93	88	88	91	92	93	88	91
1000	62	69	73	81	83	94	92	89	90	93	91	89	89
1250	61	66	72	80	85	92	90	88	88	90	90	89	91
1600	61	66	71	79	83	93	90	89	87	89	89	88	92
2000	62	67	72	79	86	94	94	93	88	89	88	88	90
2500	60	63	70	77	86	93	94	93	86	87	86	85	89
3150	59	63	71	77	86	93	94	94	85	87	87	86	91
4000	59	62	69	78	87	100	96	97	86	86	86	84	87
5000	55	60	67	74	88	98	94	96	82	83	83	81	85
6300	54	58	67	73	82	92	91	93	83	83	82	80	83
8000	53	57	66	73	82	96	96	101	83	81	81	79	83
10000	50	54	62	73	85	95	92	94	81	81	80	80	82
12500	49	54	62	69	81	92	93	93	82	84	82	81	81
16000	50	55	59	68	78	91	90	91	81	80	79	78	79
OVERALL	91	90	96	105	103	111	106	107	118	118	116	117	117

LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

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

IDENTIFICATION:
OMEGA 3.2
TEST 74-093-001
RUN 02
17 JAN 75
PAGE F2

NOISE SOURCE/SUBJECT:
OV-10A AIRCRAFT
INFLIGHT NOISE LEVELS

OPERATION:

FREQ (HZ)	LOCATION/CONDITION 1/L	1/M	1/N	1/P	1/Q	1/R	1/S	1/T	1/U	1/V	1/W	1/X	1/Y
25	99	100	95	96	99	98	100	101	108	91	90	94	96
31.5	95	94	93	93	93	94	95	95	91	84	85	87	89
40	91	91	89	88	90	89	92	93	89	77	78	80	83
50	87	88	85	84	85	85	88	88	85	76	76	79	83
63	91	92	87	85	89	90	93	94	100	85	84	88	92
80	98	104	98	100	97	97	102	104	113	97	93	94	99
100	110	117	111	113	110	108	115	116	94	115	111	111	115
125	96	98	93	93	95	95	98	98	97	93	92	93	96
160	94	98	92	98	94	96	97	97	104	91	94	91	100
200	105	110	105	112	106	109	107	106	96	109	112	109	118
250	104	102	100	102	102	100	101	105	98	96	96	95	107
315	106	104	102	105	104	103	103	107	92	105	104	103	116
400	101	103	99	102	101	102	104	103	92	99	100	98	111
500	99	99	102	100	100	99	101	101	90	99	100	96	106
630	99	97	98	102	95	98	99	99	90	100	101	99	108
800	91	93	89	90	90	92	95	95	88	91	92	92	101
1000	90	92	88	89	89	91	94	96	88	88	89	90	101
1250	90	92	89	89	90	91	93	94	90	88	89	91	98
1600	90	93	88	88	90	91	94	95	89	87	88	90	97
2000	91	92	88	88	89	91	94	94	89	87	88	91	98
2500	90	91	86	86	89	90	94	94	87	85	86	90	96
3150	93	94	87	86	90	92	96	97	89	85	86	90	96
4000	88	89	84	84	87	88	93	93	86	84	85	88	95
5000	85	87	81	81	83	86	90	91	84	81	82	85	93
6300	84	85	81	80	82	84	88	89	83	80	81	84	92
8000	83	85	79	79	82	84	88	89	82	79	80	82	92
10000	82	84	79	79	80	82	85	86	81	79	79	80	89
12500	81	82	79	79	79	81	84	85	78	82	81	81	88
16000	80	81	77	77	78	79	84	84	78	78	78	79	87
OVERALL	114	119	114	117	114	114	117	118	115	116	115	114	122

LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

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

IDENTIFICATION:
OMEGA 3.2
TEST 74-093-001
RUN 03
17 JAN 75
PAGE F3

NOISE SOURCE/SUBJECT:
OV-10A AIRCRAFT
INFLIGHT NOISE LEVELS

OPERATION:

FREQ (HZ)	LOCATION/CONDITION 1/Z	1/AA	1/BB	1/CC	1/DD	1/EE	1/FF	1/GG	1/HH	1/II	1/JJ	1/KK	1/LL
25	97	96	97	96	94	94	96	98	91	98	99	100	97
31.5	90	89	91	92	91	90	89	98	89	92	99	95	97
40	83	83	83	82	81	80	81	95	80	93	95	91	95
50	84	85	85	82	81	82	81	87	81	91	95	91	92
63	92	92	96	90	89	90	89	90	89	93	93	93	109
80	97	96	100	95	93	94	94	95	96	95	99	105	98
100	111	110	113	109	108	109	108	111	110	107	101	119	88
125	95	94	99	93	92	92	90	93	91	91	88	97	99
160	97	95	100	93	90	90	91	93	92	95	88	95	91
200	114	113	115	112	108	106	108	110	108	114	103	109	92
250	104	103	106	96	92	91	93	96	98	100	92	103	87
315	113	111	114	102	100	99	99	105	106	109	97	108	91
400	110	110	111	107	103	104	104	101	108	109	98	105	97
500	105	105	107	103	97	96	95	97	105	105	89	101	101
630	106	106	107	102	99	99	101	97	107	109	94	102	97
800	100	101	102	96	91	90	92	90	100	97	86	98	96
1000	99	102	100	94	90	91	91	88	103	93	86	96	96
1250	99	100	100	95	95	97	99	88	96	90	86	95	99
1600	98	98	100	97	91	94	95	87	93	90	85	94	101
2000	98	97	101	94	91	92	93	87	96	91	85	93	102
2500	97	103	99	94	92	93	93	85	108	88	83	90	102
3150	98	109	98	94	90	92	93	84	109	89	83	89	103
4000	95	107	96	92	88	89	89	84	109	88	82	88	106
5000	94	101	94	90	86	87	87	81	100	86	79	85	105
6300	93	97	92	88	84	85	84	81	99	86	79	85	101
8000	91	103	93	87	82	84	83	79	106	86	78	85	109
10000	89	98	89	85	80	81	81	78	99	83	77	82	100
12500	88	95	88	85	82	83	83	82	98	83	81	82	99
16000	88	101	88	84	79	80	80	78	107	81	77	80	98
OVERALL	119	119	120	116	113	113	113	115	119	118	109	120	116

LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

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

IDENTIFICATION:
OMEGA 3.2
TEST 74-093-001
RUN 01

17 JAN 75

PAGE J1

NOISE SOURCE/SUBJECT:
OV-10A AIRCRAFT
INFLIGHT NOISE LEVELS

OPERATION:

FREQ (HZ)	LOCATION/CONDITION 1/A	1/B	1/C MIN	1/C MAX	1/D MIN	1/D MAX	1/E	1/F	1/G	1/H	1/I	1/J	1/K
31.5	76	81	92	92	99	101	93	88	105	107	100	98	101
63	84	81	90	104	95	107	96	97	97	101	97	100	102
125	90	87	90	94	92	98	94	91	114	114	113	114	115
250	78	83	86	93	89	95	90	90	115	114	113	112	111
500	68	74	81	91	89	98	96	94	102	106	106	105	105
1000	67	72	78	86	88	98	95	93	94	96	96	93	95
2000	65	70	75	83	90	98	97	97	91	93	93	92	95
4000	63	66	74	81	92	103	99	100	89	90	90	89	93
8000	57	61	70	78	88	99	98	102	87	86	86	84	87
16000	53	57	64	71	83	94	94	95	85	85	84	82	83
OVERALL	91	90	96	105	103	111	106	107	118	118	116	117	117

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

IDENTIFICATION: OMEGA 3.2 TEST 74-093-001 RUN 02 17 JAN 75 PAGE J2

NOISE SOURCE/SUBJECT: OV-10A AIRCRAFT INFLIGHT NOISE LEVELS

OPERATION:

FREQ (HZ)	LOCATION/CONDITION 1/L	1/M	1/N	1/P	1/Q	1/R	1/S	1/T	1/U	1/V	1/W	1/X	1/Y
31.5	100	102	98	98	100	100	101	102	108	92	91	95	97
63	99	105	98	100	98	98	103	104	113	97	94	95	99
125	110	117	111	113	110	108	115	116	105	115	111	111	115
250	110	111	107	113	109	110	109	111	100	110	112	110	120
500	104	105	105	106	104	104	106	106	95	104	105	103	113
1000	95	97	93	94	94	96	99	100	93	94	95	96	105
2000	95	97	92	92	94	95	99	99	93	91	92	95	102
4000	94	96	89	89	92	94	98	99	91	89	89	93	100
8000	88	89	84	84	86	88	92	93	86	84	84	87	96
16000	83	84	81	81	82	83	87	87	81	83	83	83	90
OVERALL	114	119	114	117	114	114	117	118	115	116	115	114	122

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

IDENTIFICATION:
OMEGA 3.2
TEST 74-093-001
RUN 03
17 JAN 75
PAGE J3

NOISE SOURCE/SUBJECT:
OV-10A AIRCRAFT
INFLIGHT NOISE LEVELS

OPERATION:

FREQ (HZ)	LOCATION/CONDITION 1/Z	1/AA	1/BB	1/CC	1/DD	1/EE	1/FF	1/GG	1/HH	1/II	1/JJ	1/KK	1/LL
31.5	98	97	98	97	95	96	97	102	93	100	103	102	101
63	98	97	101	96	95	95	95	97	97	98	101	105	109
125	111	110	113	109	108	109	108	111	110	108	101	119	100
250	117	116	118	112	108	107	108	112	111	115	104	112	95
500	112	112	114	109	105	106	106	104	112	112	100	108	104
1000	104	105	106	100	97	98	100	93	105	99	91	101	102
2000	102	105	105	100	96	98	98	91	108	95	89	97	106
4000	100	111	101	97	93	94	95	88	112	92	86	92	109
8000	96	105	96	92	87	88	88	84	108	90	83	89	110
16000	91	102	91	87	84	85	84	83	108	85	82	84	101
OVERALL	119	119	120	116	113	113	113	115	119	118	109	120	116

TABLE: MEASURES OF HUMAN NOISE EXPOSURE

3

IDENTIFICATION:
OMEGA 3.2
TEST 74-093-001
RUN 01
28 APR 76
PAGE H1

NOISE SOURCE/SUBJECT:
OV-10A AIRCRAFT
INFLIGHT NOISE LEVELS

OPERATION:

	LOCATION/CONDITION												
	1/A	1/B	1/C MIN	1/C MAX	1/D MIN	1/D MAX	1/E	1/F	1/G	1/H	1/I	1/J	1/K
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	91	89	95	105	101	110	105	105	118	118	116	117	117
OASLA	75	80	85	93	97	107	105	106	107	108	107	106	106
T	960	960	404	101	50	9	13	11	9	8	9	11	11
HGU-2A/P HELMET WITH H-154													
OASLA*	73	76	80	87	84	94	91	93	105	105	103	103	103
T	960	960	960	285	480	85	143	101	13	13	18	18	18
HGU-2A/P HELMET WITH H-154(A)													
OASLA*	70	72	76	85	79	88	82	81	101	101	100	99	99
T	960	960	960	404	960	240	679	807	25	25	30	36	36
HGU-2A/P HELMET WITH CUSTOM LINER													
OASLA*	74	78	82	90	88	97	94	93	106	106	105	105	104
T	960	960	679	170	240	50	85	101	11	11	13	13	15
COMMUNICATION													
PREFERRED SPEECH INTERFERENCE LEVEL (PSIL IN DB)													
PSIL	67	72	78	87	89	98	96	95	96	99	98	97	98
ANNOYANCE													
PERCEIVED NOISE LEVEL, TONE CORRECTED (PNLT IN PNDB)													
TONE CORRECTION (C IN DB)													
PNLT	95	96	101	110	113	124	120	121	125	125	123	123	124
C	2	2	1	1	1	2	1	2	3	3	3	3	3

* BASED ON CALCULATED SPL SPECTRUM UNDER PROTECTIVE DEVICE.

TABLE: MEASURES OF HUMAN NOISE EXPOSURE

3

IDENTIFICATION:
OMEGA 3.2
TEST 74-093-001
RUN 02
28 APR 76
PAGE H2

NOISE SOURCE/SUBJECT:
OV-10A AIRCRAFT
INFLIGHT NOISE LEVELS

OPERATION:

	LOCATION/CONDITION												
	1/L	1/M	1/N	1/P	1/Q	1/R	1/S	1/T	1/U	1/V	1/W	1/X	1/Y
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	114	118	113	116	113	113	116	118	114	116	115	114	122
OASLA	106	107	104	107	105	106	108	109	101	105	106	105	115
T	11	9	15	9	13	11	8	6	25	13	11	13	2.2
HGU-2A/P HELMET WITH H-154													
OASLA*	101	103	99	103	100	101	101	103	96	101	102	100	111
T	25	18	36	18	30	25	25	18	60	25	21	30	4.5
HGU-2A/P HELMET WITH H-154(A)													
OASLA*	97	100	95	99	97	97	98	99	93	98	99	96	107
T	50	30	71	36	50	50	42	36	101	42	36	60	9
HGU-2A/P HELMET WITH CUSTOM LINER													
OASLA*	103	105	102	105	103	103	104	105	97	103	104	102	113
T	18	13	21	13	18	18	15	13	50	18	15	21	3.2
COMMUNICATION													
PREFERRED SPEECH INTERFERENCE LEVEL (PSIL IN DB)													
PSIL	98	100	97	97	97	99	101	102	94	96	97	98	107
ANNOYANCE													
PERCEIVED NOISE LEVEL, TONE CORRECTED (PNLT IN PNDB)													
TONE CORRECTION (C IN DB)													
PNLT	122	126	121	123	121	122	125	126	118	123	123	122	131
C	2	3	3	3	2	2	2	3	1	3	3	3	3

* BASED ON CALCULATED SPL SPECTRUM UNDER PROTECTIVE DEVICE.

TABLE: 3 MEASURES OF HUMAN NOISE EXPOSURE

IDENTIFICATION:
OMEGA 3.2
TEST 74-093-001
RUN 03
28 APR 76
PAGE H3

NOISE SOURCE/SUBJECT:
OV-10A AIRCRAFT
INFLIGHT NOISE LEVELS

OPERATION:

	LOCATION/CONDITION												
	1/Z	1/AA	1/BB	1/CC	1/DD	1/EE	1/FF	1/GG	1/HH	1/II	1/JJ	1/KK	1/LL
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	119	119	120	115	112	112	113	115	118	117	108	120	115
OASLA	113	116	114	109	105	106	107	105	117	111	100	109	114
T	3.2	P	2.7	6	13	11	9	13	P	4.5	30	6	2.7
HGU-2A/P HELMET WITH H-154													
OASLA*	107	107	109	103	99	99	100	102	105	106	95	104	101
T	9	9	6	18	36	36	30	21	13	11	71	15	25
HGU-2A/P HELMET WITH H-154(A)													
OASLA*	104	103	105	99	95	94	95	98	99	102	91	101	90
T	15	18	13	36	71	85	71	42	36	21	143	25	170
HGU-2A/P HELMET WITH CUSTOM LINER													
OASLA*	110	110	112	106	102	102	103	104	108	109	97	107	102
T	5	5	3.8	11	21	21	18	15	8	6	50	9	21
COMMUNICATION													
PREFERRED SPEECH INTERFERENCE LEVEL (PSIL IN DB)													
PSIL	106	107	108	103	99	101	102	96	108	102	93	102	104
ANNOYANCE													
PERCEIVED NOISE LEVEL, TONE CORRECTED (PNLT IN PNDB)													
TONE CORRECTION (C IN DB)													
PNLT	129	134	130	125	122	122	122	122	134	126	116	127	130
C	3	3	2	3	3	3	3	3	3	3	2	3	2

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

*U.S.Government Printing Office: 1978 — 757-080/378