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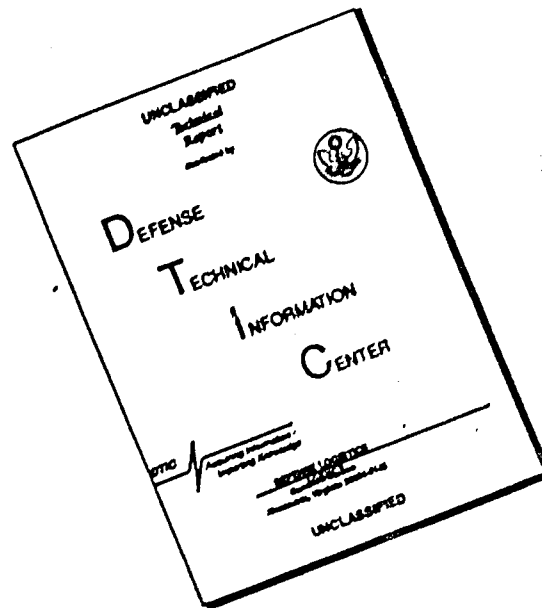
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Maneuver Load Data From C-130 Aircraft

XEROX

Lawrence Phillips

STRUCTURES BRANCH
FLIGHT DYNAMICS LABORATORY

MARCH 1961

WRIGHT AIR DEVELOPMENT DIVISION

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Maneuver Load Data From C-130 Aircraft

Lawrence Phillips

Structures Branch
Flight Dynamics Laboratory

March 1961

Project No. 1367
Task No. 13637

WRIGHT AIR DEVELOPMENT DIVISION
AIR RESEARCH AND DEVELOPMENT COMMAND
UNITED STATES AIR FORCE
WRIGHT-PATTERSON AIR FORCE BASE, OHIO

FOREWORD

This report was prepared in the Structural Loads Section, Structures Branch, Flight Dynamics Laboratory, Aeromechanics Division, Directorate of Advanced Systems Technology, Wright Air Development Division, Wright-Patterson Air Force Base, Ohio. Data acquisition and processing were accomplished by the University of Dayton Research Institute (UDRI), Dayton, Ohio, under Air Force Contract AF 33(616)-5406 (follow-on 6719), Research and Development Project 1367, "Structural Design Criteria," Task 13637, "Collection and Statistical Analysis of Structural Flight Data." Mr. Lawrence Phillips of the Flight Dynamics Laboratory was project engineer in charge of the basic research and development work which were performed by the UDRI.

The data upon which this report is based were collected on C-130A and B aircraft while performing normal missions. These aircraft were based at Sewart Air Force Base from June 1959 to June 1960.

Acknowledgement is made to Mr. James Gallico and Mr. John Nash of UDRI for the assistance provided in the preparation of the data and the report.

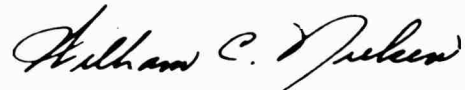
ABSTRACT

This report presents structural flight load data from C-130A and B aircraft performing normal operations and analyses of the data. This information is intended for use in determining design criteria for future flight vehicles and in estimating the effect of these missions on a structure of this type in terms of structural fatigue and estimated life.

PUBLICATION REVIEW

This report has been reviewed and is approved.

FOR THE COMMANDER:



WILLIAM C. NIELSEN
Colonel, USAF
Chief, Flight Dynamics Laboratory

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SECTION I

INTRODUCTION

A flight load recording program on C-130 aircraft assigned to the Tactical Air Command was initiated by WADD as part of the continuous effort to collect structural loads data which are used as a basis for establishing and refining structural design criteria.

The flight loads data presented in this report were collected during normal operations of C-130A and B aircraft stationed at Sewart Air Force Base, Tennessee. The useful data collected on the C-130A and B aircraft from June 1959 to June 1960 totaled, respectively, 528.3 and 548.7 hours.



Figure 1. C-130 Aircraft

SECTION II

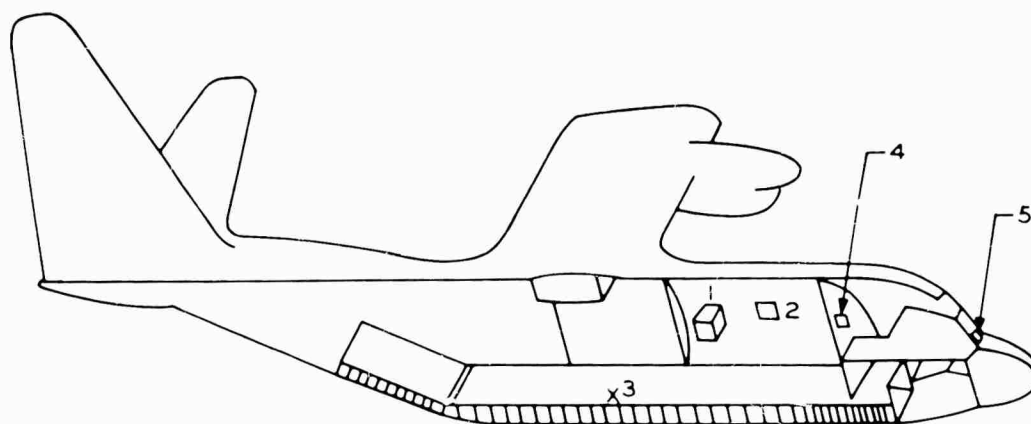
DISCUSSION

A. Data Recording System

The Hathaway Flight Analyzers were installed in each of fifteen aircraft. The Flight Analyzer is an instrument which records a number of variable quantities during the flight of an aircraft; these are: normal acceleration, airspeed, and altitude, which are recorded simultaneously versus time on a single chart. Recording is done on a special chart with dimensions of 9 inches wide by 50 feet long and is driven at a speed of 120 inches per hour. The traces are impressed on the chart by electrical discharges from styli which are actuated by the effects of

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sensing elements. This instrument has a frequency response flat to approximately 5 cps.



1. HATHAWAY FLIGHT ANALYZER
2. CARGO OUTLET BOX & CIRCUIT BREAKER
3. APPROXIMATE CENTER OF GRAVITY
4. APPROXIMATE POINT OF STATIC LINE CONNECTION
5. APPROXIMATE POINT OF PITOT LINE CONNECTION

Figure 2. Sectional Drawing of the C-130 Aircraft Depicting the Positioning of the Hathaway Flight Analyzer, Components, and the Approximate Center of Gravity

B. Data Processing

Desired information was extracted from the Flight Analyzer charts either by manual graphite transcriptions to a Mark Sense card or by employing the semiautomatic Benson-Lehner reader. Subsequently, as the Mark Sense cards were passed through the IBM 519, the graphite markings sensitized a device for the punching of holes representing the magnitudes of the original transcriptions. The Benson-Lehner reader converted the analog form of the trace deflections into digital information, transcribing the extracted and modified data into paper tape and/or IBM cards. Then the punched cards and/or tape were fed into a digital electronic computer, the Burroughs 205, for the performance of all computational tasks. Other equipment employed in the data processing included the IBM 101 Statistical Sorter and the IBM 407 Tabulator.

Deviations of the normal load factor trace which departed from either of two threshold levels and endured for two seconds or more before returning to the threshold level were interpreted as being attributed to the maneuvering effect. All other deviations were attributed to gusts and were not read.

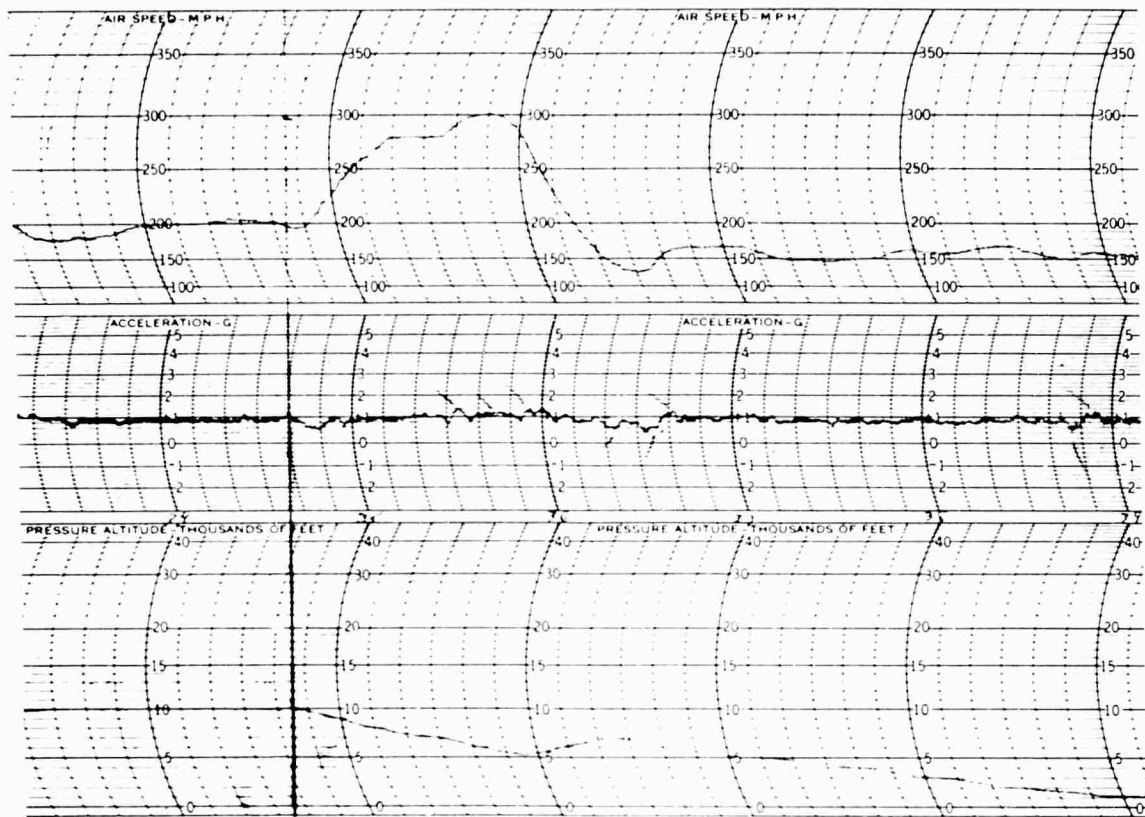


Figure 3. Sample of a Portion of the Hathaway Flight Analyzer Chart

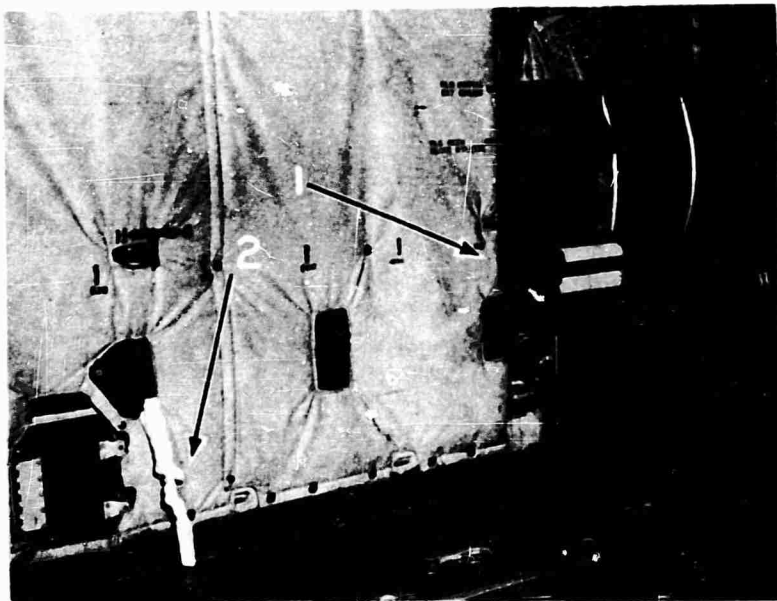


Figure 4. View of the Hathaway Flight Analyzer Installation (1) and the Approximate Center of Gravity Position (2)

Positive and negative threshold levels were established, respectively, at 1.2 and 0.8 g's. Only the maxima of such deviations were read.

Data recording and data processing results are within $\pm 7\%$ of the actual values.

C. Methods of Analysis

Probability curves were constructed using the cumulative frequency of occurrence of a load factor in excess of a given load factor experienced as a function of time, i. e., the number of hours of flight time necessary before one such load factor is expected to occur. These values of flight time were plotted on semi-log graph paper against the given load factor, and a curve was drawn through the points.

SECTION III

DATA PRESENTATION

The recorded maneuver load factors of the C-130A and B are plotted on design V-n diagrams in Figures 5 and 6, respectively. These diagrams show that the instrumented aircraft did not exceed the limits of the design positive and negative load factors during the 1077 hours flown in this recording program. To illustrate further the operational comparisons of the two models of C-130 aircraft, histograms showing the percentage of flight time spent at selected airspeed and altitude ranges are presented in Figures 8 and 9. The histograms show that the C-130B, which was designed for optimum cruise conditions, spent a greater percentage of time at higher airspeed (250 to 400 knots) and altitude (20,000 to 35,000 feet) ranges than did the C-130A, which was designed for optimum performance characteristics. Probability curves showing the rate of occurrence of maneuver load factors are plotted in Figure 7. This figure shows that C-130B aircraft were subjected to a greater frequency of occurrence of load factors in the range of 1.5 to 2.0 g's than were the C-130A aircraft.

Tabulations of the distribution of maneuver load factors by equivalent airspeed in selected altitude and gross weight ranges are presented in Tables 1 through 4 for the C-130A aircraft and in Tables 5 through 8 for the C-130B aircraft. In Tables 1 through 8 the airspeed values given are the mid-points of 25-knot intervals, i. e., 187 knots represents the mid-point of the range of 175 to 199 knots. Also, the load factor values given represent the mid-point of 1-g ranges, i. e., 1.5 g represents the mid-point of the range of 1.45 to 1.54 g's. The exceptions to this are the threshold values, .8 and 1.2 g's, which represent the beginning points of the ranges of .8 to .75 g's and 1.2 to 1.24 g's.

SECTION IV

CONCLUSIONS

1. The instrumented aircraft did not exceed the limit design load factors during the 1077 hours flown during this recording program.

2. The C-130B aircraft spent a greater percentage of time at the higher airspeed (250 to 400 knots) and altitude (20,000 to 35,000 feet) ranges than did the C-130A aircraft.

3. The C-130B aircraft were subjected to a greater frequency of occurrence of load factors in the range of 1.5 to 2.0 g's than were the C-130A aircraft.

4. The C-130 data contained herein are considered adequate for performing a fatigue analysis.



Figure 5. C-130A V-n Diagram and Tabulation of Maneuvers

6

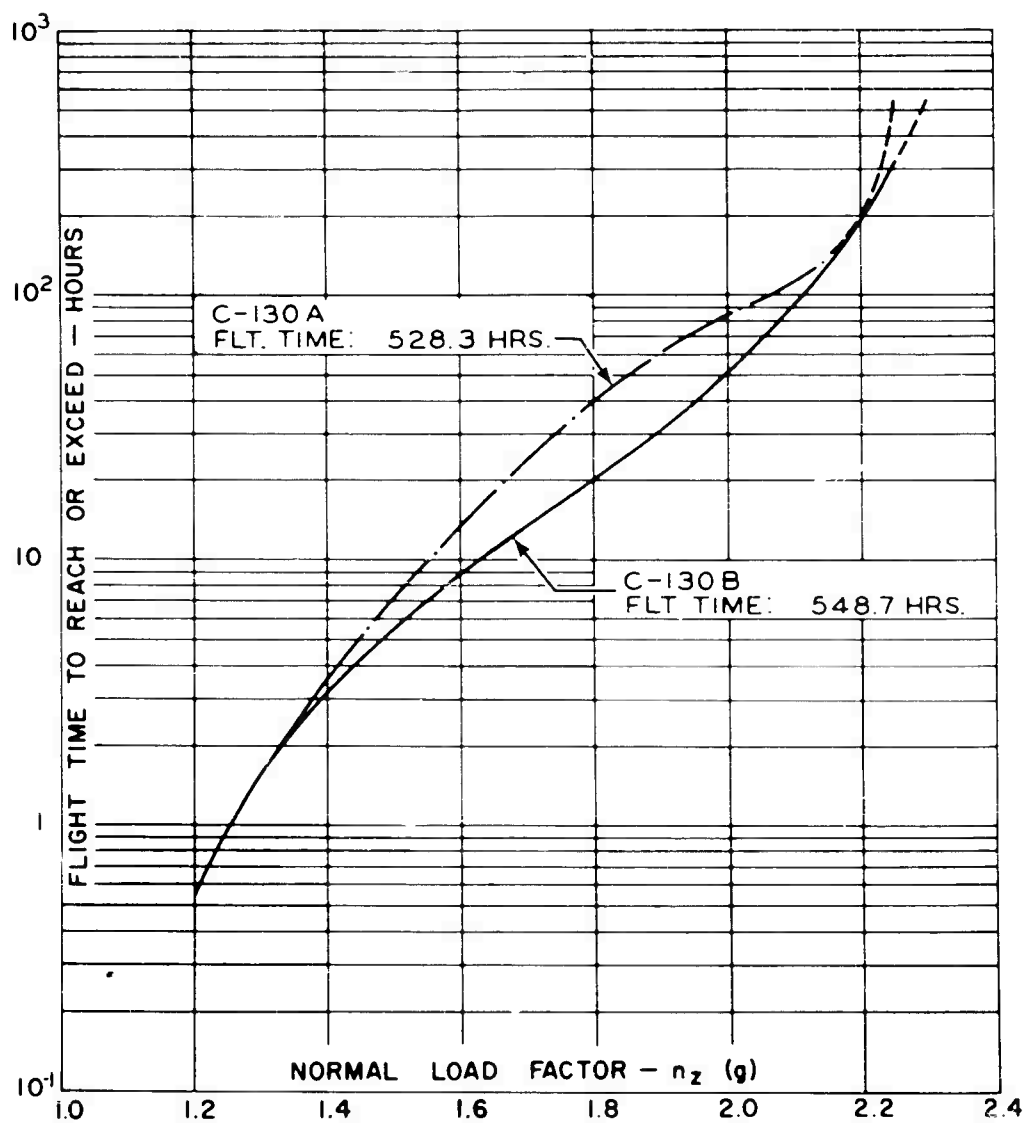
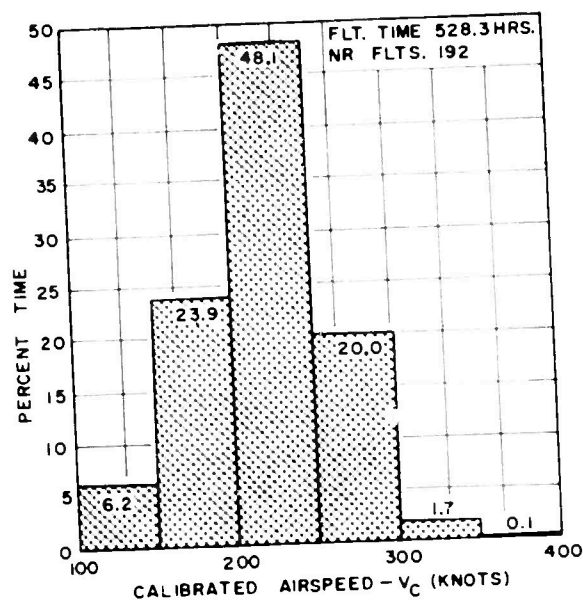
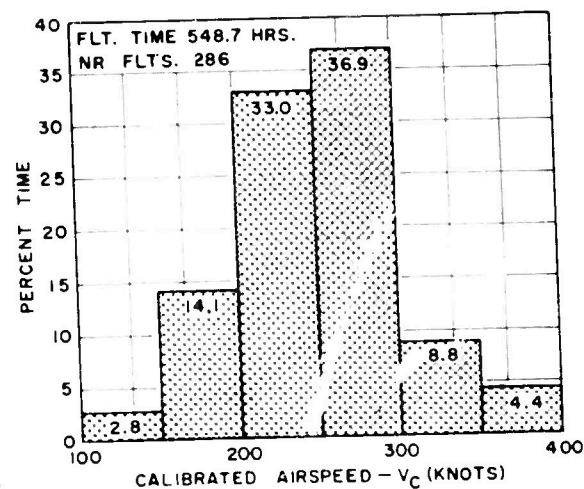


Figure 7. C-130 Probability Curves - Maneuver Loads

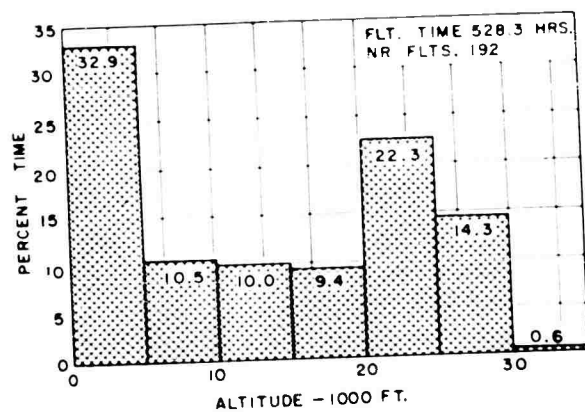


a. C-130A

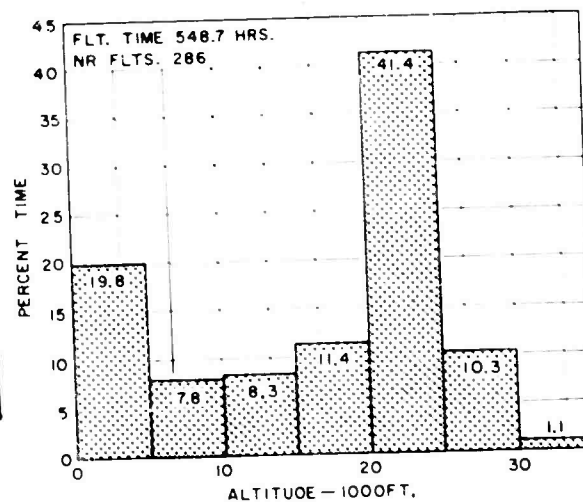


b. C-130B

Figure 8. Percent of Total Flight Time Spent at Selected Airspeed Ranges; a. C-130A, b. C-130B



a. C-130A



b. C-130B

Figure 9. Percent of Total Flight Time Spent at Selected Altitude Ranges; a. C-130A, b. C-130B

Table 1

Distribution of C-130A Maneuver Load Factors by Equivalent Airspeed and by Gross Weight Ranges for Altitudes Ranging from 0 to 5,000 Feet

65,000 to 120,000 lbs.

V _e (Knots)	LOAD FACTOR n _g (g)																				Total
	0.3	0.4	0.5	0.6	0.7	0.8	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3			
112					2		12	3			2									42	
137						12	91	222		11	15	3	1							428	
162				3	2	11	12	172		52	12	7	3							349	
187					6	20	59	214		88	96	27		3	5					419	
212						7	7	108		17				4		2				419	
237							3	9	43				1							99	
262									2											21	
287							1		1		2	1								1	
312										1											
Total:		1	1	1	17	77	362	934	292	76	18	14	9	12	1	4	1	3		1000	

65,000 to 80,000 lbs.

V _e (Knots)	LOAD FACTOR (g)																			Total
	0.3	0.4	0.5	0.6	0.7	0.8	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3		
112							4												5	
137						13	52	18	1										81	
162			1			9	33	15	2					2					63	
187						6	27	9	6										92	
212						1	24	10		1									49	
237							2												4	
262																				
287																				
312																				
Total	1	1	1	1	2	9	43	34	51	9	1		2			1	1		254	

80,000 to 95,000 lbs.

V _e (Knots)	LOAD FACTOR n _g (g)																			Total
	0.3	0.4	0.5	0.6	0.7	0.8	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3		
112							2	8	21	2	1								27	
137							14	119	93	22	3								252	
162							63	100	31	7	3	1							222	
187							10	97	110	95	29	18	9	9	3		2		284	
212							22	120	223	95	10	2	9	2	9		2		287	
237								9	19	2									63	
262																			17	
287																			12	
312																			2	
Total		2	1	14	54	214	429	142	61	29	13	8	1	4		4	1		1141	

95,000 to 110,000 lbs.

V _e (Knots)	LOAD FACTOR n _g (g)																			Total
	0.3	0.4	0.5	0.6	0.7	0.8	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3		
112							1	3		3									10	
137							1	23	43	13	4								64	
162			1				2	11	22	15	3	3							55	
187							4	11	18	10	10		2	1	1	1			81	
212							3	32	33	7	6	2	1						96	
237							1	3	13	3									21	
262									2	3									9	
287																	1		1	
312																				
Total			1		1	11	42	144	52	24	6	4	1	1	1	1		1	140	

110,000 to 120,000 lbs.

V _e (Knots)	LOAD FACTOR n _g (g)																				Total
	0.3	0.4	0.5	0.6	0.7	0.8	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3			
112																					
137																				1	
162																				10	
187																				12	
212																				1	
237																				2	
262																				2	
287																				2	
312																				2	
Total							2	3	10	7	1	2	1							34	

Table 2

Distribution of C-130A Maneuver Load Factors by Equivalent Airspeed
and by Gross Weight Ranges for Altitudes Ranging from 5,000 to 15,000 Feet

65,000 to 120,000 lbs.

V _e (Knots)	LOAD FACTOR n _z (g)																			Total
	0.3	0.4	0.5	0.6	0.7	0.8	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3		
112			1		1	2	12	8											24	
137						0	10	23	4			1							44	
162					1	3	17	41	5	1									58	
187						3	10	41	12	2	3	1							72	
212						2	10	37	6	4	3								62	
237						2	11	54	18	1		1							86	
262								34	17	3	1								58	
287								1	4		1								6	
312																				
Total			1		2	18	73	219	62	11	8	3	1						198	

65,000 to 80,000 lbs.

V _e (Knots)	LOAD FACTOR n _z (g)																			Total
	0.3	0.4	0.5	0.6	0.7	0.8	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3		
112																			0	
137																			0	
162																			2	
187																			0	
212																			0	
237																			10	
262																			8	
287																			2	
312																				
Total							8	33		1									54	

80,000 to 95,000 lbs.

V _e (Knots)	LOAD FACTOR n _z (g)																			Total
	0.1	0.4	0.5	0.6	0.7	0.8	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3		
112					2	4													8	
137					4	2	14	3											27	
162					3	24	37	4	1										62	
187					3	10	33	12	4	3	1								64	
212					2	10	14	5	1										32	
237					2	10	43	11	1		1	1							69	
262							24	14	2	1									44	
287							1	2		1									4	
312																				
Total					2	15	56	171	40	5	4	3	1						314	

95,000 to 110,000 lbs.

V _e (Knots)	LOAD FACTOR · n _z (g)																			Total
	0.3	0.4	0.5	0.6	0.7	0.8	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3		
112						5	3													
137					1			1												
162						2	1	1												
187																				
212						1	1			1										
237							1													
262							6													
287									1											
312																				
Total					1	8	11	2	1	1									24	

110,000 to 120,000 lbs.

V _e (Knots)	LOAD FACTOR																			Total
	n _z (g)																			
	0.1	0.2	0.3	0.4	0.7	0.8	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3		
112																				
137																				
162																				
187																				
212																				
237																				
262																				
287																				
312																				
Total							1	4			1									

Table 3

Distribution of C-130A Maneuver Load Factors by Equivalent Airspeed
and by Gross Weight Ranges for Altitudes Ranging from 15,000 to 25,000 Feet

65,000 to 120,000 lbs.

V _e (Knots)	0.1	0.4	0.5	0.6	0.7	0.8	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	Total
112						1	1												2
137						2	4	11	8	4									24
162						2	25	26	8	1									60
187						3	25	57	14	4									100
212						3	25	52	17	1									102
237						4	32	4	2										43
262						6	2		2										13
287																			1
312																			1
Total	1					13	85	188	43	16									353

65,000 to 80,000 lbs.

V _e (Knots)	0.1	0.4	0.5	0.6	0.7	0.8	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	Total
112							1	1											2
137							2	2											4
162						1	2	2											5
187							4	8											12
212							11	1											12
237							1												1
262																			0
287																			0
312																			0
Total	1					1	10	32	3	2		1							48

80,000 to 95,000 lbs.

V _e (Knots)	0.1	0.4	0.5	0.6	0.7	0.8	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	Total
112							1												1
137							2	2											4
162							23	22											45
187							17	43											60
212							23	33	18										74
237							3	25	1										30
262							3	3											6
287																			0
312																			0
Total	1					3	73	4	4	4									24

95,000 to 110,000 lbs.

V _e (Knots)	0.1	0.4	0.5	0.6	0.7	0.8	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	Total
112																			0
137																			0
162																			0
187																			0
212																			0
237																			0
262																			0
287																			0
312																			0
Total	1					2	24	5	1										24

110,000 to 120,000 lbs.

V _e (Knots)	0.1	0.4	0.5	0.6	0.7	0.8	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	Total
112																			0
137																			0
162																			0
187																			0
212																			0
237																			0
262																			0
287																			0
312																			0
Total	1						1												1

Table 4

Distribution of C-130A Maneuver Load Factors by Equivalent Airspeed
and by Gross Weight Ranges for Altitudes Ranging from 25,000 to 35,000 Feet

65,000 to 110,000 lbs.

V _e (Knots)	LOAD FACTOR n _y (g)																	Total
	0.1	0.4	0.5	0.6	0.7	0.8	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	
112																		
137																		13
162																		8
187																		34
212																		17
237																		6
262																		2
287																		
312																		
Total							5	19	62	8	3	2						100

65,000 to 80,000 lbs.

V _e (Knots)	LOAD FACTOR n _y (g)																	Total
	0.1	0.4	0.5	0.6	0.7	0.8	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	
112																		
137																		2
162																		1
187																		2
212																		9
237																		
262																		
287																		
312																		
Total							1	4	4	1	1							11

80,000 to 95,000 lbs.

V _e (Knots)	LOAD FACTOR n _y (g)																	Total
	0.1	0.4	0.5	0.6	0.7	0.8	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	
112																		
137																		22
162																		1
187																		22
212																		22
237																		6
262																		2
287																		
312																		
Total							5	14	55	7	1	2						86

95,000 to 110,000 lbs.

V _e (Knots)	LOAD FACTOR n _y (g)																	Total
	0.1	0.4	0.5	0.6	0.7	0.8	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	
112																		
137																		
162																		
187																		
212																		4
237																		
262																		
287																		
312																		
Total							1	1		1								5

Table 5

Distribution of C-130B Maneuver Load Factors by Equivalent Airspeed and by Gross Weight Ranges for Altitudes Ranging from 0 to 5,000 Feet

75,000 to 130,000 lbs.

V _e (Knots)	LOAD FACTOR n _g (g)																			Total
	0.3	0.4	0.5	0.6	0.7	0.8	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3		
112							57	19	11	2	1			9					106	
137							45	86	63	8	2	3	1	1					131	
162							45	139	19	12			1	1					248	
187							43	141	14	28	13	10	8	3	2			2	340	
212							38	156	90	33	13	9	10	4	5	1	2		425	
237							5	7	10	12	5	1	2	1					55	
262							2	4	7	4	2								25	
287							1	2											3	
312																			8	
Total		1	6	19	68	274	727	123	104	42	24	22	13	8	5	5		2	1578	

75,000 to 80,000 lbs.

V _e (Knots)	LOAD FACTOR n _g (g)																			Total
	0.3	0.4	0.5	0.6	0.7	0.8	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3		
112																				
137							3	2											5	
162							2												4	
187							3												3	
212						1	9	3											12	
237																			1	
262																				
287																				
312																				
Total							2	4	6	2									16	

80,000 to 95,000 lbs.

V _e Knots	LOAD FACTOR n _g (g)																			Total
	0.3	0.4	0.5	0.6	0.7	0.8	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3		
112						2	5	3											10	
137						1	12	82	21										86	
162						2	11	32	3										58	
187						2	11	32	3										58	
212						9	12	12	43	3	2								72	
237																			2	
262																			2	
287																				
312																				
Total						2	10	21	45	60	4	6	4						116	

95,000 to 110,000 lbs.

V _e (Knots)	LOAD FACTOR n _g (g)																			Total
	0.3	0.4	0.5	0.6	0.7	0.8	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3		
112							5	25	7	6	1			1					43	
137					2		3	16	125	33	1	2	1						216	
162						3	2	16	95	25		3							163	
187							1	6	24	41	44	15	10	6	5	2	1	2	199	
212							2	28	36	74	62	26	3	9	10	3	4	3	280	
237			1	2			2	7	19	13	9	3	1	2	1			1	82	
262																			25	
287																			9	
312																				
Total			1	4	6	42	155	451	192	37	30	14	17	8	5	5	5	2	994	

110,000 to 130,000 lbs.

V _e (Knots)	LOAD FACTOR n _g (g)																			Total
	0.3	0.4	0.5	0.6	0.7	0.8	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3		
112					1		2	19	9	4	1	1		2	1				40	
137					2	1	1	7	8	1				1	1	1			23	
162							6	9	5		2								23	
187																				
212						1	17	34	12	5	2	2	3	1	1				82	
237						2	6	33	12	4	1	1			1				60	
262						1		6	2	2									11	
287																				
312																				
Total					3	5	32	108	55	16	6	5	5	4	1				242	

Table 6

Distribution of C-130B Maneuver Load Factors by Equivalent Airspeed
and by Gross Weight Ranges for Altitudes Ranging from 5,000 to 15,000 Feet

75,000 to 130,000 lbs.

V _e (Knots)	LOAD FACTOR n _z (g)																							Total
	0.3	0.4	0.5	0.6	0.7	0.8	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3						
112																								26
137																								15
162																								32
187																								20
212																								45
237																								51
262																								80
287																								23
312																								
Total																								319

75,000 to 80,000 lbs.

V _e (Knots)	LOAD FACTOR n _z (g)																							Total
	0.3	0.4	0.5	0.6	0.7	0.8	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3						
112																								
137																								
162																								
187																								
212																								
237																								
262																								
287																								
312																								
Total																								12

80,000 to 95,000 lbs.

V _e (Knots)	LOAD FACTOR n _z (g)																							Total
	0.3	0.4	0.5	0.6	0.7	0.8	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3						
112																								2
137																								5
162																								1
187																								6
212																								11
237																								8
262																								25
287																								3
312																								
Total																								61

95,000 to 110,000 lbs.

V _e (Knots)	LOAD FACTOR n _z (g)																							Total
	0.3	0.4	0.5	0.6	0.7	0.8	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3						
112																								26
137																								10
162																								26
187																								38
212																								22
237																								28
262																								48
287																								7
312																								
Total																								216

110,000 to 130,000 lbs.

V _e (Knots)	LOAD FACTOR n _z (g)																							Total
	0.3	0.4	0.5	0.6	0.7	0.8	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3						
112																								
137																								3
162																								5
187																								
212																								9
237																								4
262																								6
287																								3
312																								
Total																								30

Table 7

Distribution of C-130B Maneuver Load Factors by Equivalent Airspeed
and by Gross Weight Ranges for Altitudes Ranging from 15,000 to 25,000 Feet

75,000 to 130,000 lbs.

V _e (Knots)	LOAD FACTOR n _z (g)																				Total
	0.3	0.4	0.5	0.6	0.7	0.8	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3			
112						2	7	4	1											14	
137					1	3	6	2	1											22	
162						1	5	27	15	3	1	1								57	
187						4	14	36	17	4					1					76	
212						2	13	40	17	5	1									78	
237							4	17	4	7	1						1			32	
262								29	3	1	2									36	
287								2		2										4	
312																					
Total:					1	12	50	154	58	22	5	1	1				1			309	

75,000 to 80,000 lbs.

V _e (Knots)	LOAD FACTOR n _z (g)																							Total
	0.3	0.4	0.5	0.6	0.7	0.8	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3						
112																								
137																								
162																								
187																								
212							2	1															3	
237																								
262																								
287																								
312																								
Total:							2	1																

80,000 to 95,000 lbs.

V _e (Knots)	LOAD FACTOR n _z (g)																							Total
	0.3	0.4	0.5	0.6	0.7	0.8	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3						
112							1	2											3					
137					2	3	3	3	2										22					
162							4	3		1	1								22					
187						2	5	15	3	1	1								23					
212							6	21	5	1	1								36					
237							3	3	3	1	1								16					
262								4	1	2									7					
287																			1					
312																								
Total:						5	20	47	17	4	4	2							111					

95,000 to 110,000 lbs.

V _e (Knots)	LOAD FACTOR n _z (g)																							Total
	0.3	0.4	0.5	0.6	0.7	0.8	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3						
112						2		5	2	2													12	
137							3	6	2														11	
162						2		23	12	2													42	
187							10	15	12	4													47	
212						2	5	14	2														24	
237								4	1	5								1					12	
262								15	2														17	
287								2		1													3	
312																								
Total:						7	27	48	38	6							1						177	

110,000 to 130,000 lbs.

V _e (Knots)	LOAD FACTOR																							n _z (g)	Total
	0.1	0.4	0.5	0.6	0.7	0.8	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3							
112								1																	
137																									
162							2	1		1														5	
187							1	2	2	1			1											6	
212								3																3	
237								4																4	
262								1																1	
287																									
312																									
Total							3	11	2	1			1											18	

Table 8

Distribution of C-130B Maneuver Load Factors by Equivalent Airspeed
and by Gross Weight Ranges for Altitudes Ranging from 25,000 to 30,000 Feet

80,000 to 110,000 lbs.

V (Knots)	LOAD FACTOR n_z (g)																			Total
	0.1	0.4	0.5	0.6	0.7	0.8	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3		
112							1												1	
137								1											1	
162									1										1	
187						1	3	5	3										12	
212							1	2	1										11	
237									2										2	
262							1												1	
287																				
312																				
Total						1	6	10	8						2				33	

80,000 to 95,000 lbs.

V _e (Knots)	LOAD FACTOR n _z (g)																			Total
	0.1	0.4	0.5	0.6	0.7	0.8	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3		
112																				
137																				
162																				
187																			1	
212							4	1											5	
237																				
262																				
287																				
312																				
Total:						1	4	1											6	

95,000 to 110,000 lbs.

V _e (Knots)	LOAD FACTOR n _z (g)																			Total
	0.1	0.4	0.5	0.6	0.7	0.8	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3		
112																				1
137								1	2											1
162								3												1
187					1		2	5	3											11
212						1		3												6
237									2											2
262																				1
287							1													
312																				
Total					1	5	14													27

UNCLASSIFIED	Acrospace Ground Equipment Engineering Division, Wright Air Development Division, Wright-Patterson Air Force Base, Ohio SUPPRESSION OF NOISE IN GROUND SUPPORT EQUIPMENT, by Harold D. Swann, March 1961, 45 p. incl. illus. (System Nr. 102-A) (WADD-TN-61-6) Unclassified report. The purpose of this investigation was to determine a relatively inexpensive, palliative method of reducing the acoustical noise levels of Ground Support Equipment (GSE). The major problem was found to be the engine exhaust noise emanating from standard Air Force "Packets," air-cooled, internal combustion engines. Of lesser importance (over)	UNCLASSIFIED
UNCLASSIFIED	were such items as generators, air blowers, pumps, and gear trains. The findings of this effort indicate that the noise level of any Packette engine-driven unit of GSE can be significantly reduced, without causing deleterious effects on power output, by effective muffling and other palliative methods.	UNCLASSIFIED
UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED

Aerospace Ground Equipment Engineering Division, Wright Air Development Division, Wright-Patterson Air Force Base, Ohio SUPPRESSION OF NOISE IN GROUND SUPPORT EQUIPMENT, by Harold D. Swann. March 1961. 45 p. incl. illus. (System Nr. 102-A) (WADD-TN-61-6) Unclassified report. The purpose of this investigation was to determine a relatively inexpensive, palliative method of reducing the acoustical noise levels of Ground Support Equipment (GSE). The major problem was found to be the engine exhaust noise emanating from standard Air Force "Pakette," air-cooled, internal combustion engines. Of lesser importance (over)	UNCLASSIFIED	UNCLASSIFIED
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(over)

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(over)

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AD 255-752

Transmittal of Errata Sheet,
WADD Tech Note 61-44

Transmitted herewith is one copy of the corrected Library Reference card for each copy of WADD Tech Note 61-44 previously transmitted to you or your organization. During the printing operation the Library Reference cards for WADD Tech Note 61-6 were inadvertently inclosed in WADD Tech Note 61-44.



1-2 22 10

Structures Branch, Flight Dynamics Laboratory, Wright Air Development Division, Wright-Patterson Air Force Base, Ohio. MANEUVER LOAD DATA FROM C-130 AIR-CRAFT, by Lawrence Phillips. March 1961. 22p. incl. illus. (Proj. 1367; Task 13637) (WADD TN 61-44) Unclassified report. This report presents structural flight load data from C-130A and B aircraft performing normal operations and analyses of the data. This information is intended for use in determining design criteria for future flight vehicles and in estimating the effect of these missions on a structure of this type in terms of structural fatigue and estimated life. (over)	UNCLASSIFIED	UNCLASSIFIED
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	UNCLASSIFIED	UNCLASSIFIED
	UNCLASSIFIED	UNCLASSIFIED

Structures Branch, Flight Dynamics Laboratory, Wright Air Development Division, Wright-Patterson Air Force Base, Ohio. MANEUVER LOAD DATA FROM C-130 AIRCRAFT, by Lawrence Phillips. March 1961. 22p. incl. illus. (Proj. 1367; Task 13637) (WADD TN 61-44) Unclassified report. This report presents structural flight load data from C-130A and B aircraft performing normal operations and analyses of the data. This information is intended for use in determining design criteria for future flight vehicles and in estimating the effect of these missions on a structure of this type in terms of structural fatigue and estimated life.	Structures Branch, Flight Dynamics Laboratory, Wright Air Development Division, Wright-Patterson Air Force Base, Ohio. MANEUVER LOAD DATA FROM C-130 AIRCRAFT, by Lawrence Phillips. March 1961. 22p. incl. illus. (Proj. 1367; Task 13637) (WADD TN 61-44) Unclassified report. This report presents structural flight load data from C-130A and B aircraft performing normal operations and analyses of the data. This information is intended for use in determining design criteria for future flight vehicles and in estimating the effect of these missions on a structure of this type in terms of structural fatigue and estimated life.	Structures Branch, Flight Dynamics Laboratory, Wright Air Development Division, Wright-Patterson Air Force Base, Ohio. MANEUVER LOAD DATA FROM C-130 AIRCRAFT, by Lawrence Phillips. March 1961. 22p. incl. illus. (Proj. 1367; Task 13637) (WADD TN 61-44) Unclassified report. This report presents structural flight load data from C-130A and B aircraft performing normal operations and analyses of the data. This information is intended for use in determining design criteria for future flight vehicles and in estimating the effect of these missions on a structure of this type in terms of structural fatigue and estimated life.	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED
UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED