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**THE NASA DIGITAL VGH PROGRAM -
EXPLORATION OF METHODS AND FINAL RESULTS**

Volume III - B 727 Data 1978-1980: 1765 HOURS

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FOREWORD

This report was prepared by Eagle Engineering, Inc., Hampton Division, under contract NASW 4430, sponsored by NASA Langley Research Center and the Federal Aviation Administration Technical Center under the FAA-NASA Interagency Agreement No. DTFA03-890-A-00019 of 13 June 1989. This report fulfills the requirement of the Program Plan for the National Aging Aircraft Research Program, DOT/FAA/CT-88/32, August 1989, Paragraph 2.3.2.1, Flight Loads.

The Eagle Engineering, Inc. effort was performed by Norman L. Crabill and administered under the direction of Joseph W. Stickle (NASA Langley Research Center) and Thomas DeFiore (FAA Technical Center).

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THE NASA DIGITAL VGH PROGRAM

EXPLORATION OF METHODS AND FINAL RESULTS

VOLUME III: B 727 Data 1978-1980: 1765 HOURS

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SUMMARY

Data obtained from the Digital Flight Data Recorder System of B 727 aircraft in 985 flights and 1765 hours of airline revenue operations are presented as an extension of the work documented in Volume I of this report. Data on conditions with flap deployment and autopilot use are given. In addition, acceleration statistics are presented from about 26 hours on nonrevenue flights. No discussion of the data is presented.

INTRODUCTION

This document presents the results of the NASA DVGH Program obtained during 1978-1980 operations of Boeing 727 aircraft. This Volume is an extension of the work and methods documented in Volume I. The data reduction analysis and methods and data presentation are essentially the same as those reported in Volume I. However, this report does contain additional data on autopilot usage and some limited acceleration-derived exceedance data obtained from nonrevenue flights.

AIRCRAFT AND INSTRUMENTATION

Aircraft

The aircraft type was the Boeing 727-200 with three Pratt and Whitney JT8D-15 turbofan engines. Characteristics of the aircraft used in the data reduction process are given in Table I; the configuration is shown in figure 1.

Instrumentation

The data were obtained from the Digital Flight Data Recorder system described in Volume I. Measurements were:

<u>Parameter</u>	<u>Range and Units</u>	<u>Samples per Second</u>
$a_n + 1$	-3g to +6g	4
a_y	-1g to +1g	4
CAS	100 to 450 kts	1
HP	-1,000 to 50,000 ft	1
FLP	-5° to 60°	1
Autopilot Status	Off or Not-Off	Discrete
Cabin Pressure	0 to ~ 15 psia	1

Note that Spoiler data are not reported here, although they were in Volume I. Flap deflection (FLP) is for the inboard right trailing-edge flap as shown in figure 1. The cabin pressure data type is new, and was not available in the tests reported in Volumes I and II.

SCOPE OF DATA

Data were collected from up to 20 aircraft operating in regular airline service over the service area, shown in figure 2, during 1978 through 1980: Almost all of the data (985 flights and 1765 hours) were obtained during passenger-carrying revenue service; a small amount (64 flights and 25.9 hours) was obtained during nonrevenue service (ferry flights mainly, although some training and maintenance flights may have been included). Due to operational difficulties, it was not practical to obtain continuous data from one aircraft as in Volumes I and II; it was therefore decided to obtain the data from any of the twenty 727-200 aircraft being operated by the airline over the service route during the 22 months of the test.

DATA REDUCTION PROCESS

The Data Reduction Process is basically the same as described in Volume I. The filter used to separate maneuver and gust accelerations was similar to that described in Volume I except that the high limit of the band pass was set at 1.5 Hz based on an inspection of representative spectra. Although the results of reference 13 in Volume I indicate that the operation of the autopilot can cause up to a 20 percent reduction in the normal acceleration peak response to continuous turbulence, it was decided, after consultation with the industry, not to account for this in deriving U_{de} , in order to maintain comparability with the earlier VGH results, even though the autopilot status was being monitored.

RESULTS

Flight and Acceleration Derived Statistics

Presentation of Flight Profile Statistics results is as described in Volume II. Flight Profile Statistics are given in Percent of Time, and as Maximum Values on a Percent of Flight basis for Entire Flights (flaps up or down) and for Flaps Deflected. For operations reported in this volume, the conditions existing at flap retraction after lift-off, and the conditions existing at flap deflection before landing are given.

Acceleration Derived Statistics are also presented as in Volume I, except that with Flaps Deflected, the maximum a_n per flight and the Equivalent Airspeed occurring are presented for the various flap detents in take off and landing. Also new are level crossing counts for the Acceleration Derived quantities for non-revenue flights. All other results are for revenue flights. The Acceleration Derived quantities are subject to the same limitations discussed in Volume I, which indicates that the exceedances derived from the DFDR system at 4 samples per second may be significantly less than if actual peak values were counted.

The detailed Flight Profile and Acceleration Derived Statistics are given in figures 3 through 24, as shown in Table II. No discussion of the data is presented.

Autopilot Usage and Effects

Autopilot status was monitored as off, or on, without regard to the exact on-mode for 223 hours of operations. The autopilot was on about 56 percent of the time; 23.7 percent of the time that

the autopilot was on, the low amplitude limit cycle in normal acceleration noted in Volumes I and II appeared. Its characteristics are summarized in figure 25. This phenomenon is believed to be due to off-nominal autopilot operation in the altitude-hold mode and is more fully discussed in Volumes I and II.

Cabin Pressure

Absolute cabin pressure was measured and used to compute the quantity "Maximum Differential Cabin Pressure per Flight" by using the measured absolute cabin pressure and the standard atmosphere based on the indicated pressure altitude. The distribution of this quantity as a function of the percent of flights is shown in figure 26.

CONCLUDING REMARKS

Data obtained from the Digital Flight Data Recorder system of B 727-200 aircraft in 985 flights and 1765 hours of airline revenue operations are presented as an extension of the work documented in Volume I of this report. Some new data on conditions with flap deployment and autopilot usage are given. In addition, acceleration statistics are presented from about 26 hours on nonrevenue flights. No general discussion of the data is presented.

TABLE I

BOEING B 727 CHARACTERISTICS USED IN THE ANALYSIS

O Geometrical Characteristics

- o Wing Area = 1560 ft²
- o Wing Mean Chord = 15.06 ft

O Lift Curve Slope $C_{L\alpha}$ per degree

- o Flaps up = f(M,HP)
- o Flaps down

<u>M</u>	<u>HP = 0</u>	<u>20 kft</u>	<u>40 kft</u>	<u>FLP, deg</u>	<u>HP ≈ 0</u>
.2	.0980	.0980	.0980	0	.0980
.4	.0920	.0975	.1010	5	.1110
.5	.0890	.0965	.1025	10	.1150
.6	.0870	.0978	.1050	25 (TO)	.1167
.7	.0845	.0990	.1100	40 (LD)	.1056
.8	-	.1040	.1185		
.9	-	.1150	.1325		

- o Weight was computed linearly with time from takeoff to landing as described in Appendix C in Volume I.

TABLE II
INDEX OF FLIGHT PROFILE AND ACCELERATION STATISTICS

FLIGHT PROFILE STATISTICS

o ENTIRE FLIGHTS

Figure Number	Subject	Page Numbers
3	Weight vs. Flight Duration	12-17
4	Altitudes and Gross Weights	18
5	Altitudes and Airspeeds	19-22
6	Altitude Summary	23
7	Maximum Altitudes	24-25

o FLAPS DEFLECTED

8	Flap Detent Use	26
9	Weights, Altitudes and Airspeeds	27-36
10	Flap Deflection Times	37-39
11	Equivalent Airspeeds and Detents	40
12	Flap Use above 10,000 ft	41

TABLE II (continued)
ACCELERATION DERIVED STATISTICS

o ENTIRE FLIGHTS

Figure Number	Subject	Page Numbers
13	Normal Acceleration Exceedances	
(a)	a_n matrix	42
(b)	a_{rM} matrix	43
(c)	a_{nG} matrix	44
(d)-(m)	a_n, a_{rM}, a_{nG} plots	45-54
14	Lateral Acceleration Exceedances	
(a)	a_y matrix	55
(b)-(k)	a_y plots	56-65
15	U_{de} Exceedances	
(a)	U_{de} matrix	66
(b)-(k)	U_{de} plots	67-76
16	Peak Positive and Negative a_n vs. Altitude	
(a)	a_n matrix	77
(b)-(k)	a_n plots	78-87
17	Peak Positive and Negative a_{rM} vs. Altitude	
(a)	a_{rM} matrix	88
(b)-(k)	a_{rM} plots	89-98
18	Peak Positive and Negative a_{nG} vs. Altitude	
(a)	a_{nG} matrix	99
(b)-(k)	a_{nG} plots	100-109

TABLE II (concluded)

19	Peak Positive and Negative U_{de} vs. Altitude	
(a)	U_{de} matrix	110
(b)-(k)	U_{de} plots	111-120
o	FLAPS DEFLECTED	
	Figure Number	Subject Page Numbers
20	a_n Exceedances with Flaps Deflected	
(a)	Take Off Detents matrix	121
(b)	Take Off Detents plot	122
(c)	Landing Detents matrix	123
(d)	Landing Detents plot	124
21	Peak Positive and Negative a_n per flight and EAS bands	
(a)-(d)	Take Off Detents	125-128
(e)-(j)	Landing Detents	129-134
o	NON-REVENUE FLIGHTS	
	Figure Number	Subject Page Numbers
22	Normal Acceleration Exceedances	
(a)	a_n matrix	135
(b)	a_{nM} matrix	136
(c)	a_{nG} matrix	137
(d)-(m)	a_n, a_{nM}, a_{nG} plots	138-147
23	Lateral Acceleration Exceedances	
(a)	a_y matrix	148
(b)-(k)	a_y plots	149-158
24	U_{de} Exceedances	
(a)	U_{de} matrix	159
(b)-(k)	U_{de} plots	160-169

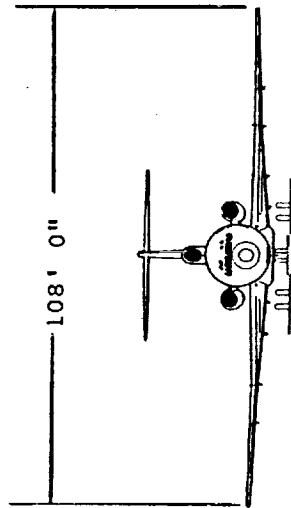
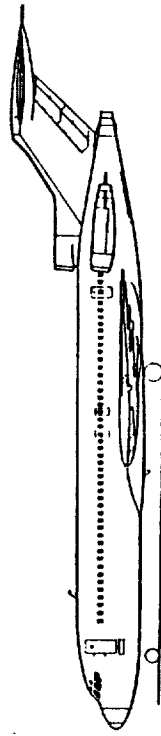
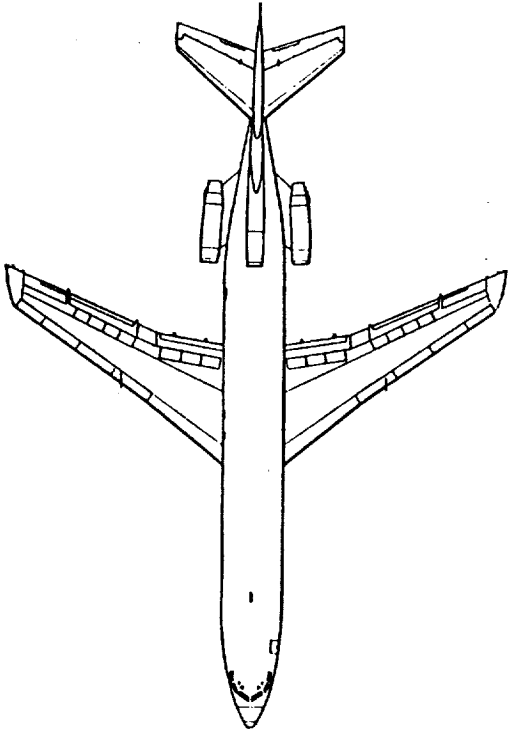
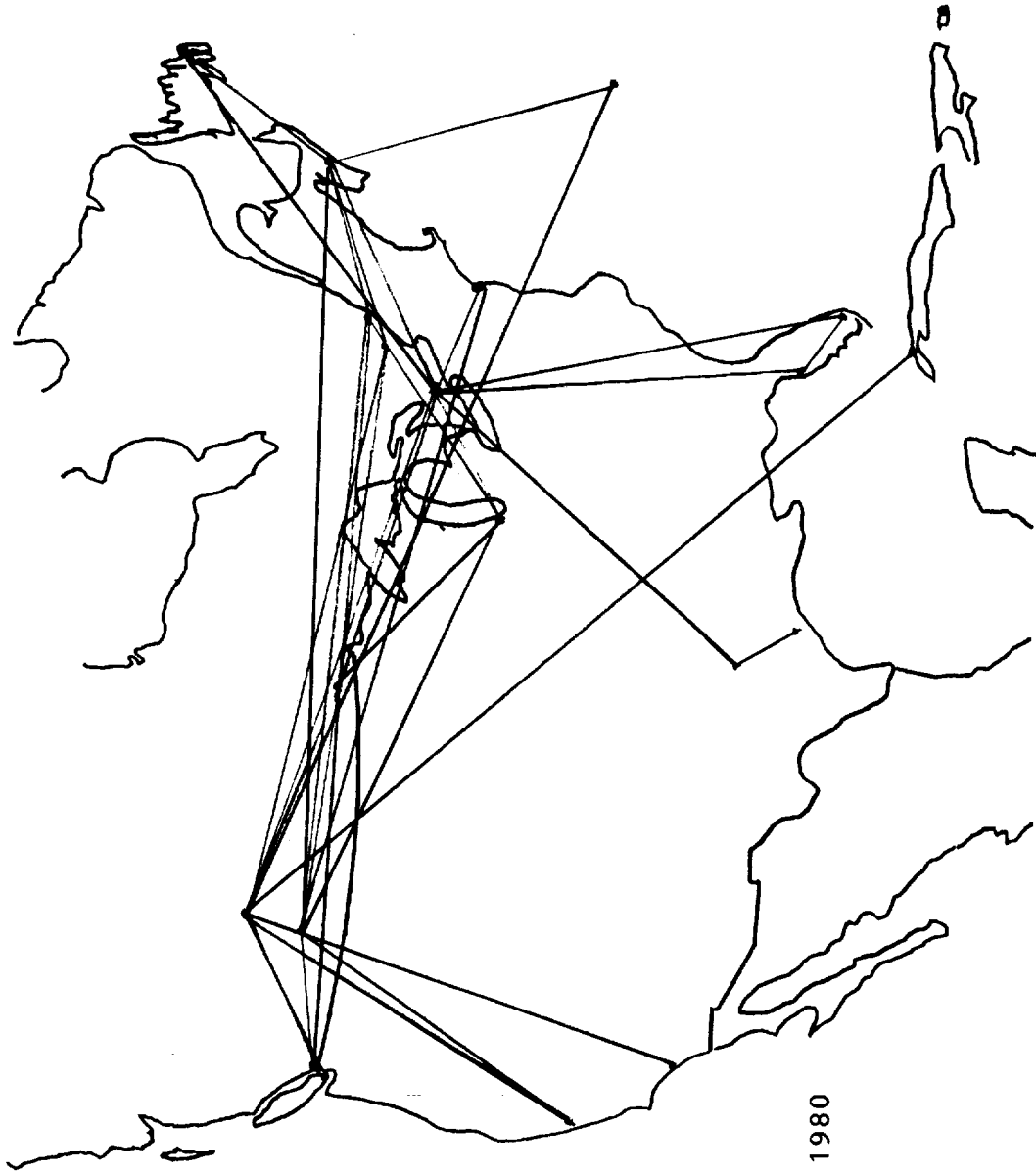


Figure 1.- Three view drawing of aircraft.



June 1978 - April 1980
985 Flights
1765 Hours
723,033 N.Miles

Figure 2. - Location of service area and scope of data.

DURATION OF FLIGHT, HOURS	PERCENT OF FLIGHTS											TOTAL PERCENT ALL FLIGHTS	
	110 TO 120 KILBS	120 TO 130 KILBS	130 TO 140 KILBS	140 TO 150 KILBS	150 TO 160 KILBS	160 TO 170 KILBS	170 TO 180 KILBS	180 TO 190 KILBS	190 TO 200 KILBS	200 TO 210 KILBS	TO		
6.5-7.0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.0-6.5	0	0	0	0	0	0	0	0	0	0	0	0	0
5.5-6.0	0	0	0	0	0	0	0	0	0	0	0	0	0
5.0-5.5	0	0	0	0	0	0	0	0.1	0	0	0	0	0
4.5-5.0	0	0	0	0	0	0	0	0.1	0.3	0.3	0.5	0.5	0
4.0-4.5	0	0	0	0	0.1	0	0	0.1	0.5	0.7	0.7	0	0
3.5-4.0	0	0	0	0	0	0	0.3	0.3	1.0	0.4	0.4	0	0
3.0-3.5	0	0	0	0	0.1	0.1	0.4	2.7	2.0	0.4	0.3	0	0
2.5-3.0	0	0	0.1	0.1	1.1	4.6	5.1	5.1	4.2	0.3	0.3	0	0
2.0-2.5	0	0	0.2	1.9	4.7	4.7	5.4	5.4	1.6	0	0	0	0
1.5-2.0	0	0.1	1.0	4.3	4.4	4.4	4.3	4.3	0.3	0	0	0	0
1.0-1.5	0	0.6	4.0	6.1	6.1	1.7	1.7	0.1	0.1	0.1	0	0	0
.8-1.0	0	0.1	2.9	6.2	2.9	0.2	0.2	0	0	0	0	0	0
.6-.8	0	1.4	4.1	1.7	0.8	0	0	0	0	0	0	0	0
.5-.6	0	0.8	1.4	0.4	0	0	0	0	0	0	0	0	0
.4-.5	0	0.3	0.5	0.1	0	0	0	0	0	0	0	0	0
.3-.4	0	0.1	1.1	0.1	0.1	0.1	0	0	0	0	0	0	0
.0-.3	0	0	1.0	0	0	0	0	0	0	0	0	0	0
TOTAL PERCENT ALL FLIGHTS	0	3.5	16.3	23.0	24.3	19.9	10.2	2.3	0.5	0	0	0	0

(a) Gross weight at take off

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Figure 3.- Percent of flights, weights vs durations.

DURATION OF FLIGHT, HOURS	PERCENT OF FLIGHTS															
	110 TO 120 KLBS	120 TO 130 KLBS	130 TO 140 KLBS	140 TO 150 KLBS	150 TO 160 KLBS	160 TO 170 KLBS	170 TO 180 KLBS	180 TO 190 KLBS	190 TO 200 KLBS	200 TO 210 KLBS	TO 200	TO 210	TO KLBS	TO KLBS		
	KLBS	KLBS	KLBS	KLBS	KLBS	KLBS	KLBS	KLBS	KLBS	KLBS	KLBS	KLBS	KLBS	KLBS		
6.5-7.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.0-6.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5.5-6.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5.0-5.5	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4.5-5.0	0	0.2	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0
4.0-4.5	0.1	0.1	0.4	0.9	0.2	0	0	0	0	0	0	0	0	0	0	0
3.5-4.0	0	0.4	0.7	1.1	0.1	0	0	0	0	0	0	0	0	0	0	0
3.0-3.5	0.1	0.1	2.9	2.3	0.2	0	0	0	0	0	0	0	0	0	0	0
2.5-3.0	0.1	2.5	5.6	6.2	0.9	0	0	0	0	0	0	0	0	0	0	0
2.0-2.5	0.1	2.1	5.5	5.3	0.8	0	0	0	0	0	0	0	0	0	0	0
1.5-2.0	0.3	2.4	5.5	4.7	1.4	0	0	0	0	0	0	0	0	0	0	0
1.0-1.5	0.6	4.4	8.2	5.2	1.0	0.1	0	0	0	0	0	0	0	0	0	0
.8-1.0	0.1	2.3	5.6	4.2	0.2	0	0	0	0	0	0	0	0	0	0	0
.6-1.8	0.7	3.7	2.1	1.5	0	0	0	0	0	0	0	0	0	0	0	0
.5-1.6	0.6	1.2	0.7	0.1	0	0	0	0	0	0	0	0	0	0	0	0
.4-1.5	0	0.8	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0
.3-1.4	0	0.6	0.7	0.1	0	0	0	0	0	0	0	0	0	0	0	0
.0-1.3	0	0.2	0.8	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL PERCENT ALL FLIGHTS	2.7	21.2	39.3	31.7	4.9	0.1	0	0.1	0	0	0	0	0	0	0	0

(b) Gross weight at landing

Figure 3.- Continued.

DURATION OF FLIGHT, HOURS	PERCENT OF FLIGHTS										
	0 TO 10 KILBS	10 TO 20 KILBS	20 TO 30 KILBS	30 TO 40 KILBS	40 TO 50 KILBS	50 TO 60 KILBS	60 TO 70 KILBS	70 TO 80 KILBS	80 TO 90 KILBS	90 TO 100 KILBS	TO
6.5-7.0	0	0	0	0	0	0	0	0	0	0	0
6.0-6.5	0	0	0	0	0	0	0	0	0	0	0
5.5-6.0	0	0	0	0	0	0	0	0	0	0	0
5.0-5.5	0	0	0	0	0	0	0.1	0	0	0	0
4.5-5.0	0	0	0	0	0.1	0.4	0.2	0	0	0	0
4.0-4.5	0	0	0	0	0.3	1.0	0.4	0	0	0	0
3.5-4.0	0	0	0	0.1	1.5	0.6	0.1	0	0	0	0
3.0-3.5	0	0	0	0.8	4.7	0.2	0	0	0	0	0
2.5-3.0	0	0	0.4	8.4	5.6	0.7	0.2	0	0	0	0
2.0-2.5	0	0	1.9	9.5	1.8	0.5	0	0	0	0	0
1.5-2.0	0	0.1	8.3	4.6	1.2	0.1	0	0	0	0	0
1.0-1.5	0	4.7	11.5	3.5	0	0	0	0	0	0	0
.8-1.0	0	5.3	6.6	0.5	0	0	0	0	0	0	0
.6-.8	0	4.0	3.9	0.2	0	0	0	0	0	0	0
.5-.6	0	1.6	1.0	0	0	0	0	0	0	0	0
.4-.5	0	0.8	0.1	0	0	0	0	0	0	0	0
.3-.4	0	1.0	0.3	0.1	0	0	0	0	0	0	0
.0-.3	0	0.9	0.1	0	0	0	0	0	0	0	0
TOTAL PERCENT ALL FLIGHTS	0	18.4	34.1	27.7	15.2	3.6	1.0	0	0	0	0

(c) Fuel weight at take off

Figure 3.- Continued.

DURATION OF FLIGHT, HOURS	PERCENT OF FLIGHTS														
	0 10 KILBS	10 20 KILBS	20 30 KILBS	30 40 KILBS	40 50 KILBS	50 60 KILBS	60 70 KILBS	70 80 KILBS	80 90 KILBS	90 100 KILBS	TO	TO	TO	TO	
6.5-7.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.0-6.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5.5-6.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5.0-5.5	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0
4.5-5.0	0.3	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0
4.0-4.5	0.3	1.3	0.1	0	0	0	0	0	0	0	0	0	0	0	0
3.5-4.0	0.7	1.4	0.2	0	0	0	0	0	0	0	0	0	0	0	0
3.0-3.5	0.6	5.1	0	0	0	0	0	0	0	0	0	0	0	0	0
2.5-3.0	2.8	10.9	1.3	0.3	0	0	0	0	0	0	0	0	0	0	0
2.0-2.5	2.5	9.5	1.4	0.3	0	0	0	0	0	0	0	0	0	0	0
1.5-2.0	2.8	9.8	1.4	0.2	0	0	0	0	0	0	0	0	0	0	0
1.0-1.5	6.0	11.7	1.9	0	0	0	0	0	0	0	0	0	0	0	0
.8-1.0	4.2	7.6	0.6	0	0	0	0	0	0	0	0	0	0	0	0
.6-.8	1.4	6.2	0.4	0	0	0	0	0	0	0	0	0	0	0	0
.5-.6	1.0	1.6	0	0	0	0	0	0	0	0	0	0	0	0	0
.4-.5	0.3	0.5	0.1	0	0	0	0	0	0	0	0	0	0	0	0
.3-.4	0.1	1.2	0.1	0	0	0	0	0	0	0	0	0	0	0	0
.0-.3	0.3	0.7	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL PERCENT ALL FLIGHTS	23.5	68.1	7.6	0.8	0	0	0	0	0	0	0	0	0	0	0

(d) Fuel weight at landing

Figure 3.- Continued.

DURATION OF FLIGHT, HOURS	PERCENT OF FLIGHTS										TOTAL PERCENT ALL FLIGHTS	18.6	13.9	17.3	12.1	3.4	1.4	1.9	0.5			
	0 TO 5 KLS	5 TO 10 KLS	10 TO 15 KLS	15 TO 20 KLS	20 TO 25 KLS	25 TO 30 KLS	30 TO 35 KLS	35 TO 40 KLS	40 TO 45 KLS	45 TO 50 KLS												
6.5-7.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6.0-6.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5.5-6.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5.0-5.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4.5-5.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4.0-4.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.5-4.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.0-3.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.5-3.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.0-2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.5-2.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.0-1.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.8-1.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.6-8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.5-6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.4-5	0.7	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.3-4	1.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.0-.3	1.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL PERCENT ALL FLIGHTS	3.1	27.8	18.6	13.9	17.3	12.1	3.4	1.4	1.9	0.5												

(e) Fuel burn vs flight duration

Figure 3.- Continued.

DURATION OF FLIGHT, HOURS	PERCENT OF FLIGHTS											TOTAL PERCENT ALL FLIGHTS	
	0 TO 5 KILBS	5 TO 10 KILBS	10 TO 15 KILBS	15 TO 20 KILBS	20 TO 25 KILBS	25 TO 30 KILBS	30 TO 35 KILBS	35 TO 40 KILBS	40 TO 45 KILBS	45 TO 50 KILBS			
6.5-7.0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.0-6.5	0	0	0	0	0	0	0	0	0	0	0	0	0
5.5-6.0	0	0	0	0	0	0	0	0	0	0	0	0	0
5.0-5.5	0	0	0.1	0	0	0	0	0	0	0	0	0	0
4.5-5.0	0	0.2	0.1	0.2	0.2	0.2	0	0	0	0	0	0	0
4.0-4.5	0.1	0.1	0.1	0.1	0.1	0.5	0.8	0	0	0	0	0	0
3.5-4.0	0	0.3	0.2	0.4	0.6	0.8	0.8	0	0	0	0	0	0
3.0-3.5	0.1	0.1	1.0	1.2	1.6	1.4	1.4	0.2	0	0	0	0	0
2.5-3.0	0.1	1.4	3.5	3.7	2.9	2.9	2.9	0.8	0	0	0	0	0
2.0-2.5	0.4	1.1	2.0	3.7	3.2	3.0	3.0	0.3	0	0	0	0	0
1.5-2.0	0.4	1.3	3.2	2.9	2.5	3.5	3.5	0.4	0	0	0	0	0
1.0-1.5	0.5	1.9	4.0	4.7	4.3	3.9	3.9	0.2	0	0	0	0.2	0
.8-1.0	0.2	1.1	2.2	2.8	2.8	3.0	3.0	0.1	0	0	0	0	0
.6-0.8	1.5	2.4	1.8	0.6	0.7	0.8	0.8	0.1	0	0	0	0	0
.5-0.6	0.4	1.1	0.4	0.5	0.2	0	0	0	0	0	0	0	0
.4-0.5	0	0.4	0.5	0	0	0	0	0	0	0	0	0	0
.3-0.4	0.1	0.3	0.8	0.2	0	0	0	0	0	0	0	0	0
.0-0.3	0	0.1	0.5	0.2	0.2	0	0	0	0	0	0	0	0
TOTAL PERCENT ALL FLIGHTS	3.9	12.0	20.5	21.2	19.9	20.2	2.1	0	0	0	0	0.2	0

(f) Payload weight vs flight duration

Figure 3.- Continued.

PRESSURE ALTITUDE BANDS

GROSS WEIGHT KILS	-500 TO 4500 FT	4500 TO 9500 FT	9500 TO 14500 FT	14500 TO 19500 FT	19500 TO 24500 FT	24500 TO 29500 FT	29500 TO 34500 FT	34500 TO 39500 FT	39500 TO 44500 FT	-500 TO 44500 FT
110-120	0	0.0010	0.0019	0.0018	0.0019	0.0063	0.0039	0.0027	0.0194	0.0194
120-130	0.0465	0.0857	0.0795	0.1009	0.0791	0.0416	0.0482	0	0.5392	0.5392
130-140	0.2202	0.3546	0.3144	0.3859	0.3245	0.3332	0.2751	0	2.4787	2.4787
140-150	0.3102	0.5463	0.5024	0.6175	0.6682	0.8287	0.8364	0	4.3120	4.3120
150-160	0.3400	0.4355	0.5773	0.5539	0.7399	1.0099	0.3211	0	4.6513	4.6513
160-170	0.2963	0.5203	0.4823	0.6159	0.6686	0.9154	0.1230	0	4.0131	4.0131
170-180	0.1457	0.2086	0.2476	0.2787	0.2824	0.2558	0.0082	0	1.6894	1.6894
180-190	0.0367	0.0646	0.0538	0.0611	0.0690	0.0481	0.0029	0	0.3913	0.3913
190-200	0.0094	0.0148	0.0110	0.0130	0.0062	0.0025	0	0	0.0662	0.0662
200-210	0	0	0	0	0	0	0	0	0	0
PERCENT TOTAL TIME =	1.4051	2.4289	2.2467	2.7464	2.8397	3.4416	1.2188	0.0027	18.1607	18.1607
AVE GROSS WEIGHT IN ALTITUDE BAND	153.90	154.12	154.14	153.93	154.66	154.81	146.81	115.00		

PERCENT TOTAL TIME =

1.4051

AVE GROSS WEIGHT
IN ALTITUDE BAND

153.90

LEVEL

110-120	0.0016	0.0144	0.0206	0.0019	0.0038	0.0006	0.0420	0.1376	0.0155	0.2379
120-130	0.0595	0.0504	0.1365	0.0200	0.0760	0.2034	0.2281	1.4587	0.0001	2.2328
130-140	0.1620	0.1488	0.2217	0.0198	0.1446	0.6966	1.3455	7.9540	0	10.6928
140-150	0.1294	0.1413	0.1740	0.0590	0.1249	0.8922	4.8961	13.7972	0	20.2143
150-160	0.0358	0.0268	0.0578	0.0274	0.0763	0.6861	8.4492	9.6020	0	18.9614
160-170	0	0.0013	0	0	0.0031	0.3615	5.6321	2.7331	0	8.7312
170-180	0	0.0040	0.0019	0	0	0.0757	2.1943	0.0716	0	2.3474
180-190	0	0	0	0	0	0.0409	0.2074	0.0203	0	0.2686
190-200	0	0	0	0	0	0.0020	0	0	0	0.0020
200-210	0	0	0	0	0	0	0	0	0	0
PERCENT TOTAL TIME =	0.3884	0.3870	0.6125	0.1282	0.4287	2.9570	22.9968	35.7745	0.0156	63.6885
AVE GROSS WEIGHT IN ALTITUDE BAND	138.57	138.50	136.95	142.03	139.74	147.35	155.96	146.14	115.08	

PERCENT TOTAL TIME =

0.3884

AVE GROSS WEIGHT
IN ALTITUDE BAND

138.57

DESCENT

110-120	0.0943	0.0666	0.0432	0.0217	0.0160	0.0113	0.0095	0.0050	0.0005	0.2679
120-130	0.8297	0.6679	0.4520	0.2731	0.2448	0.1649	0.1188	0.0583	0	2.8096
130-140	1.5349	1.4288	1.0561	0.6545	0.6110	0.5597	0.4932	0.1905	0	6.5287
140-150	1.3454	1.3249	1.0466	0.7116	0.7032	0.6953	0.6394	0.2270	0	6.6875
150-160	0.2115	0.2618	0.2491	0.1874	0.1990	0.2486	0.3061	0.1032	0	1.7667
160-170	0.0057	0.0041	0.0032	0.0025	0.0027	0.0138	0.0353	0.0040	0	0.0713
170-180	0	0	0	0	0	0.0012	0.0013	0	0	0.0025
180-190	0.0024	0.0040	0.0028	0.0016	0.0019	0.0017	0.0015	0.0007	0	0.0167
190-200	0	0	0	0	0	0	0	0	0	0
200-210	0	0	0	0	0	0	0	0	0	0
PERCENT TOTAL TIME =	4.0239	3.7581	2.8529	1.8525	1.7786	1.6945	1.5981	0.5887	0.0005	18.1509
AVE GROSS WEIGHT IN ALTITUDE BAND	136.94	137.87	136.61	139.24	139.73	141.25	142.67	141.47	115.00	

PERCENT TOTAL TIME =

4.0239

AVE GROSS WEIGHT
IN ALTITUDE BAND

136.94

PERCENT TIME =

HOURLS IN ALTITUDE & CLIMB (LEVEL, DESCENT) & GROSS WEIGHT BANDS

TOTAL FLIGHTS 985.00

TOTAL TIME 1765.59

TOTAL ALTITUDE 723033.26

Figure 4.- Percent time in altitude and gross weight bands.

PRESSURE ALTITUDE BANDS

TIME INTERVAL, HRS IN ALTITUDE BAND	PRESSURE ALTITUDE BANDS									
	-500 TO 4500 FT	4500 TO 9500 FT	9500 TO 14500 FT	14500 TO 19500 FT	19500 TO 24500 FT	24500 TO 29500 FT	29500 TO 34500 FT	34500 TO 39500 FT	39500 TO 44500 FT	44500 TO 49500 FT
6.50-7.00	0	0	0	0	0	0	0	0	0	0
6.00-6.50	0	0	0	0	0	0	0	0	0	0
5.50-6.00	0	0	0	0	0	0	0	0	0	0
5.00-5.50	0	0	0	0	0	0	0	0	0	0
4.50-5.00	0	0	0	0	0	0	0	0	0	0
4.00-4.50	0	0	0	0	0	0	0	0.102	0	0
3.50-4.00	0	0	0	0	0	0	0	0.203	0	0
3.00-3.50	0	0	0	0	0	0	0	0.711	0.406	0
2.50-3.00	0	0	0	0	0	0.102	1.929	1.320	1.320	0
2.00-2.50	0	0	0	0	0	0.305	3.147	5.787	0	0
1.50-2.00	0	0	0	0	0	0.305	4.975	11.168	0	0
1.00-1.50	0	0	0	0	0	0.609	7.716	11.777	0	0
.90-1.00	0	0	0	0	0	0.406	1.929	2.741	0	0
.80-.90	0	0	0	0	0.102	0.102	2.030	2.944	0	0
.70-.80	0	0	0	0	0	0.203	2.335	2.437	0	0
.60-.70	0	0	0	0	0	0.406	1.827	2.234	0	0
.50-.60	0	0	0.102	0	0	0.406	2.944	3.756	0	0
.45-.50	0	0	0	0	0	0.609	1.827	2.234	0	0
.40-.45	0.102	0	0.102	0.203	0.203	0.203	1.218	3.249	0	0
.35-.40	0	0.102	0.102	0.203	0.203	0.305	2.030	2.234	0	0.102
.30-.35	0	0	0.102	0.203	0.203	1.929	2.538	0.609	0.102	0
.25-.30	0.305	0.203	0.406	0.305	0.203	1.827	2.843	1.624	0	0
.20-.25	1.015	0.812	1.218	0.406	1.320	2.132	3.756	1.320	0	0
.15-.20	7.817	9.543	7.716	0.711	3.046	7.614	2.640	1.117	0	0
.10-.15	46.294	41.827	36.447	6.497	14.518	16.548	15.635	0.305	0	0
.05-.10	35.939	47.005	52.893	87.107	76.650	60.508	22.944	0.203	0	0
.00-.05	8.528	0.305	0	2.538	0.711	0.711	0.203	0.203	0.102	0
TOTAL HOURS IN ALT BAND	102.7106	105.5062	104.0697	74.6388	87.4622	132.2994	495.0259	663.5437	0.3311	0.3311
TOTAL PERCENT TIME IN ALT BAND	5.8174	5.9757	5.8943	4.2274	4.9537	7.4932	28.0375	37.5820	0.0188	0.0188

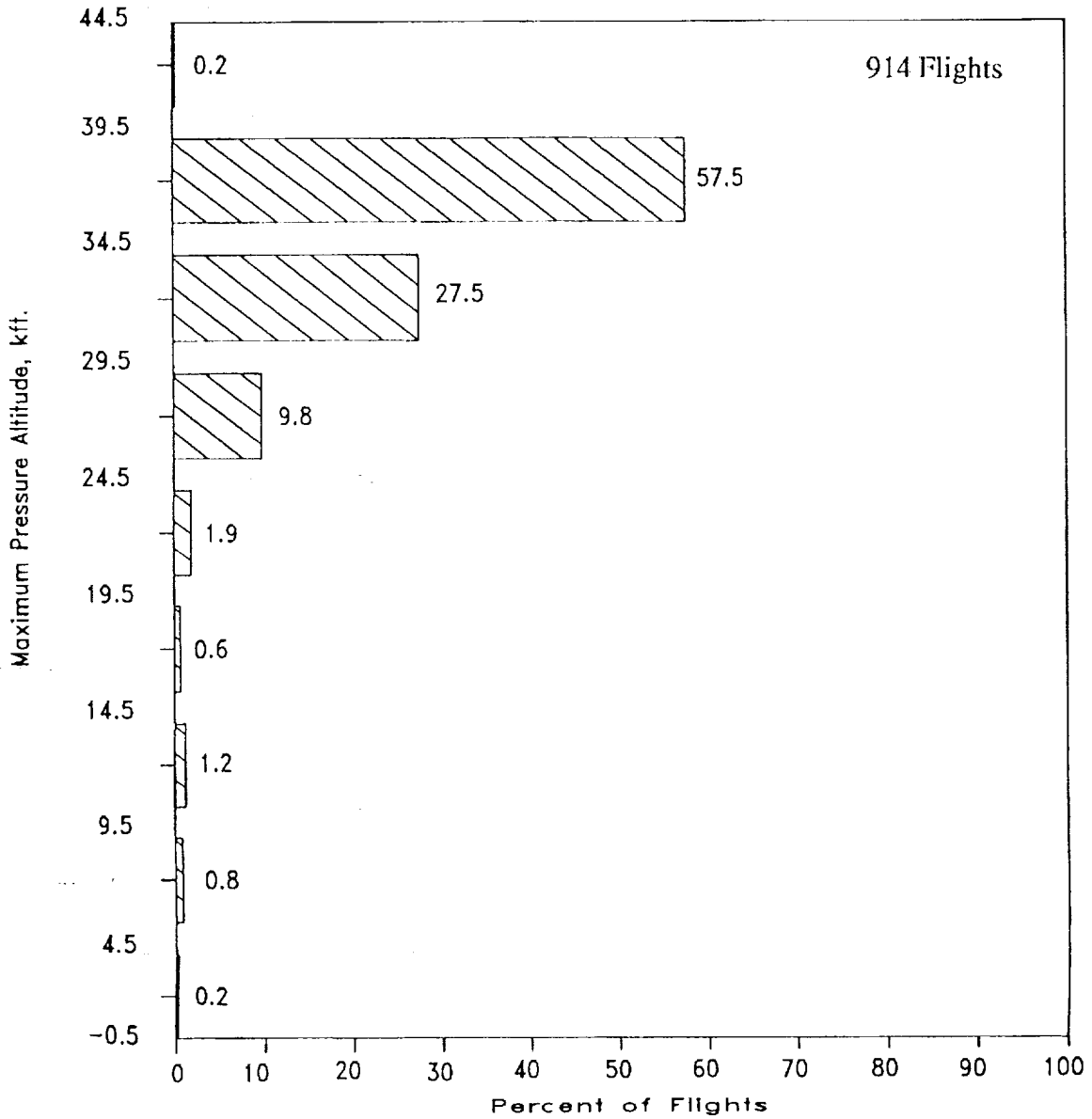
Figure 6. - Percent of flights vs time in altitude bands.

PERCENT OF FLIGHTS

DURATION OF FLIGHT, HOURS	-500 TO 4500 FT		9500 TO 14500 FT		14500 TO 19500 FT		19500 TO 24500 FT		24500 TO 29500 FT		29500 TO 34500 FT		34500 TO 39500 FT		39500 TO 44500 FT	
	4500 FT	9500 FT	14500 FT	19500 FT	24500 FT	29500 FT	34500 FT	39500 FT	44500 FT	49500 FT	54500 FT	59500 FT	64500 FT	69500 FT	74500 FT	79500 FT
6.5-7.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.0-6.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5.5-6.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5.0-5.5	0	0	0	0	0	0	0	0	0	0	0	0.1	0	0	0	0
4.5-5.0	0	0	0	0	0	0	0	0	0	0	0	0.7	0	0	0	0
4.0-4.5	0	0	0	0	0	0	0	0	0	0.7	1.0	1.0	0	0	0	0
3.5-4.0	0	0	0	0	0	0	0	0	0	0.4	1.9	1.9	0	0	0	0
3.0-3.5	0	0	0	0	0	0	0	0	0	2.2	3.5	3.5	0	0	0	0
2.5-3.0	0	0	0	0	0	0	0	0.1	3.8	3.8	11.5	11.5	0	0	0	0
2.0-2.5	0	0	0	0	0	0	0	0.2	3.4	3.4	10.2	10.2	0.1	0	0	0
1.5-2.0	0	0	0	0	0	0	0	0	3.7	3.7	10.7	10.7	0	0	0	0
1.0-1.5	0	0	0	0	0	0	0	0.5	6.7	6.7	12.3	12.3	0.1	0	0	0
.8-1.0	0	0	0	0	0	0	0.1	1.1	5.5	5.5	5.7	5.7	0	0	0	0
.6-.8	0	0	0	0	0.1	0.6	6.1	1.0	1.0	1.0	0.2	0.2	0	0	0	0
.5-.6	0	0	0	0	0	0.7	1.8	0.1	0.1	0.1	0	0	0	0	0	0
.4-.5	0	0	0.3	0.2	0.3	0.3	0	0.1	0.1	0	0	0	0	0	0	0
.3-.4	0	0	0.9	0.3	0.2	0.2	0	0	0	0	0	0	0	0	0	0
.0-.3	0.2	0.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL PERCENT ALL FLIGHTS	0.2	0.8	1.2	0.6	1.9	9.8	27.5	57.7	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2

(a) Maximum altitude vs flight duration matrix

Figure 7.- Percent of flights to maximum altitude.



(b) Percent of flights to maximum pressure altitude per flight : Plot.

Figure 7.- Concluded.

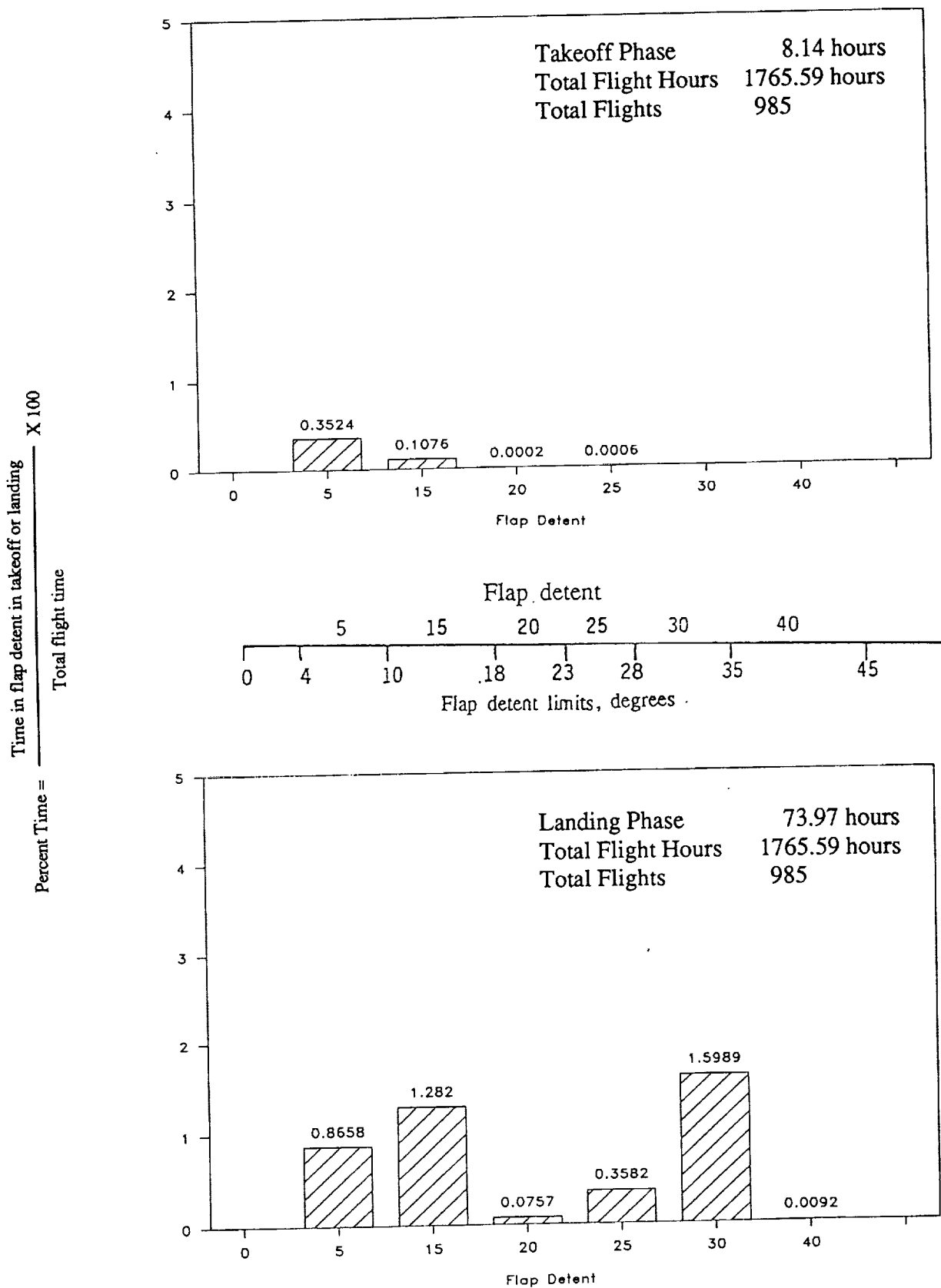
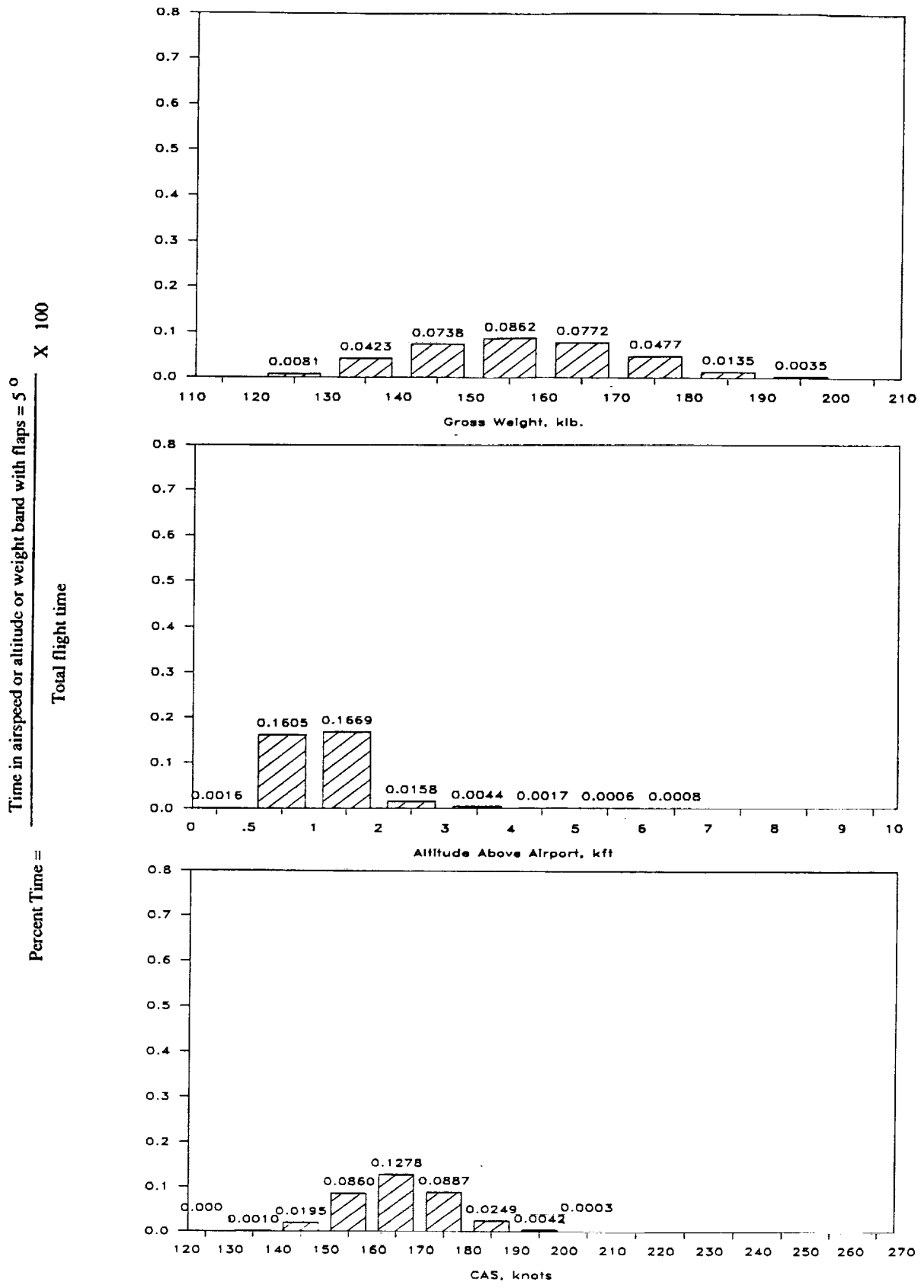
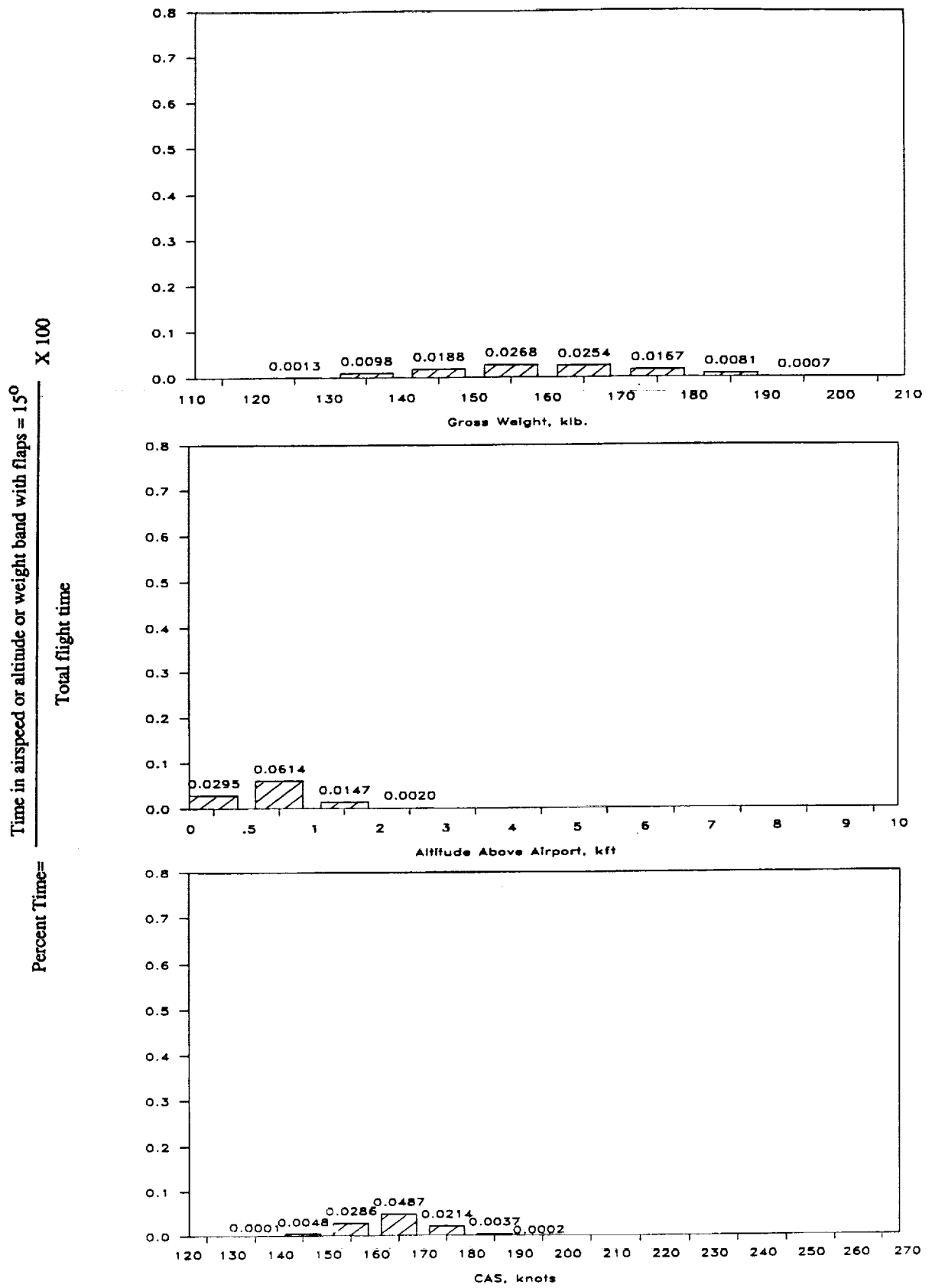


Figure 8.- Percent of total flight time at each flap detent.

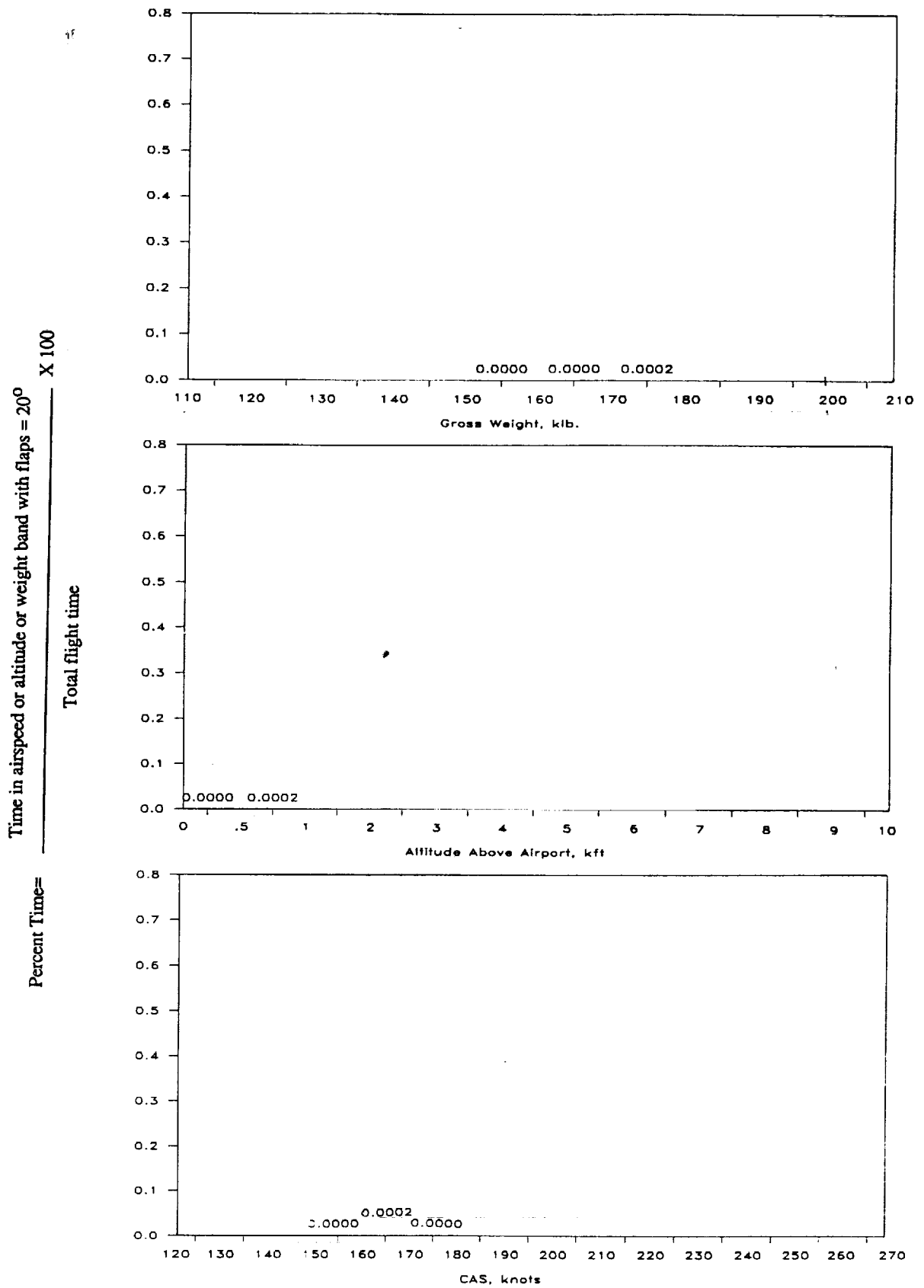


(a) Takeoff, flaps=5⁰; 6.2223 hours

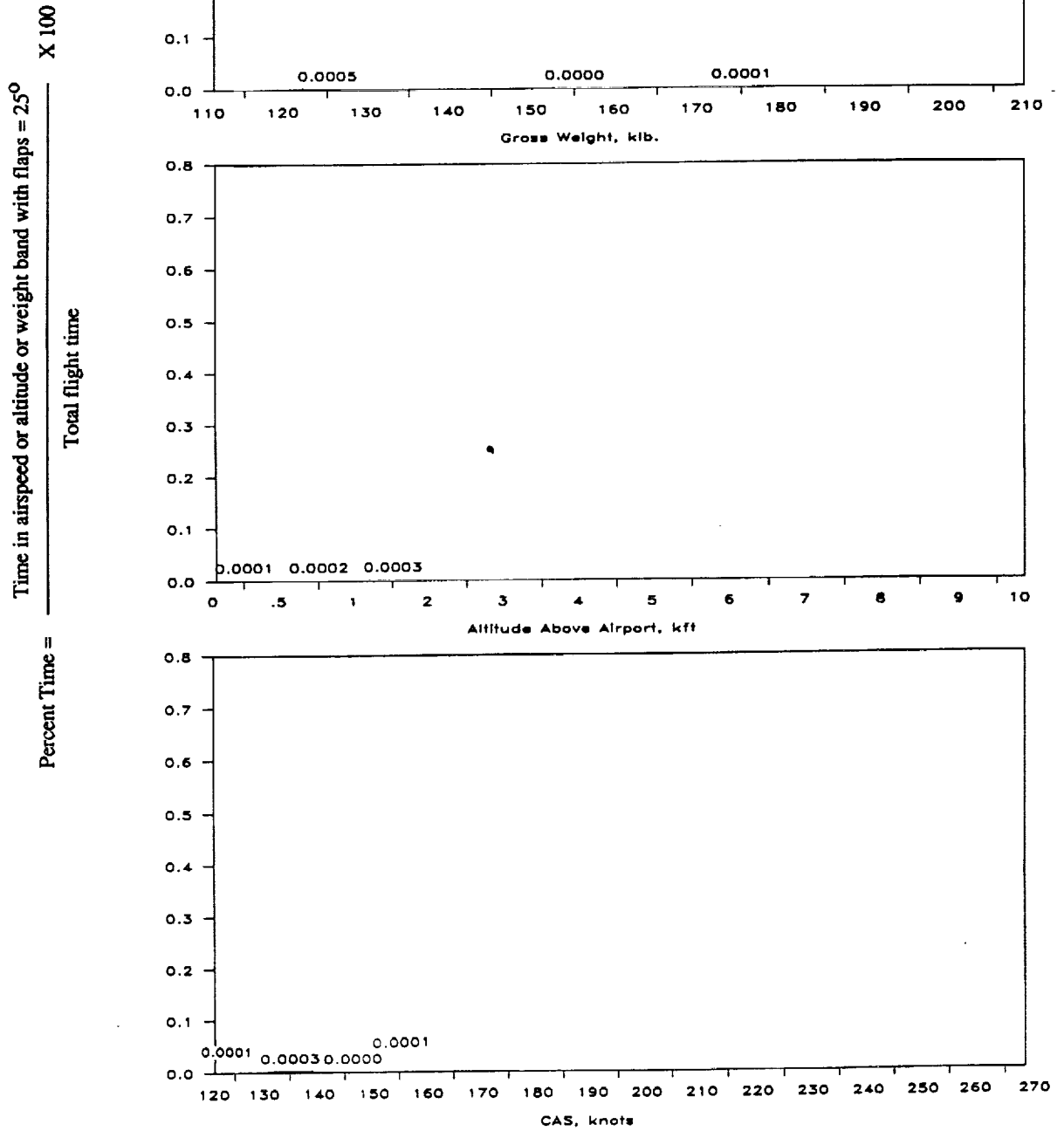
Figure 9.- Gross weight, altitude above airport, and airspeed time distributions.



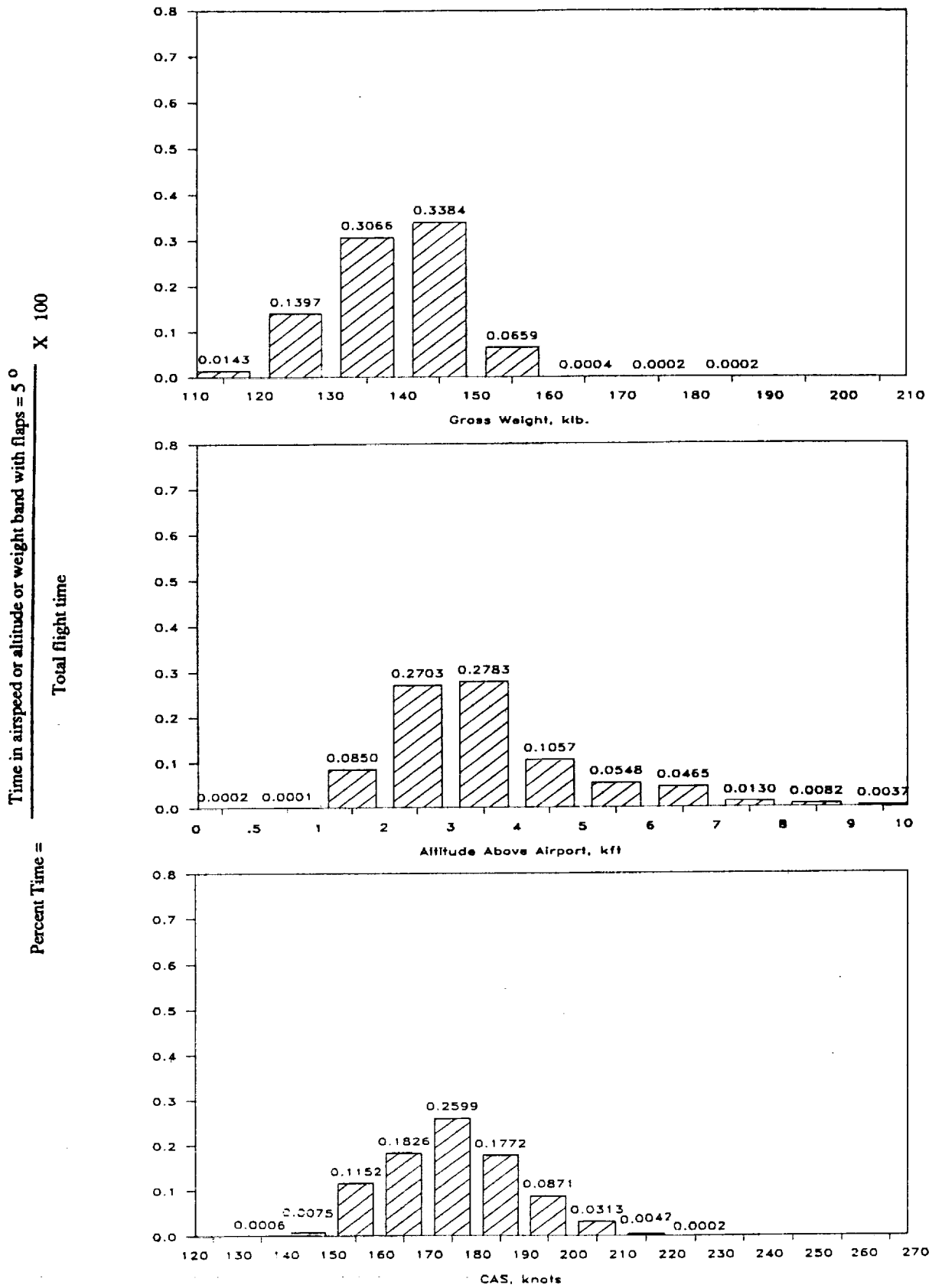
(b) Takeoff, flaps=15°; 1.8993 hours



(c) Takeoff, flaps=20°; 0.0033 hours

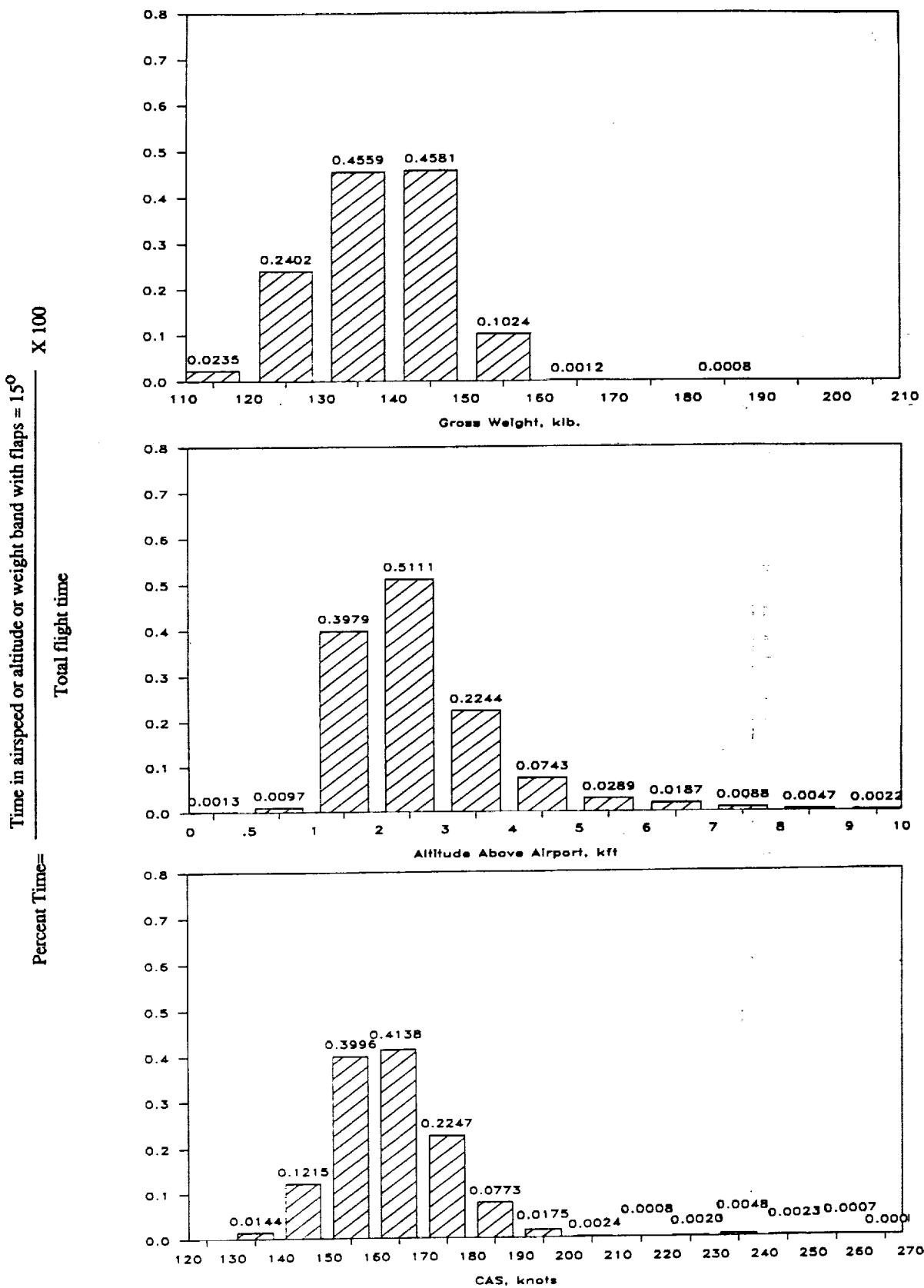


(d) Takeoff, flaps=25°; .0108 hours



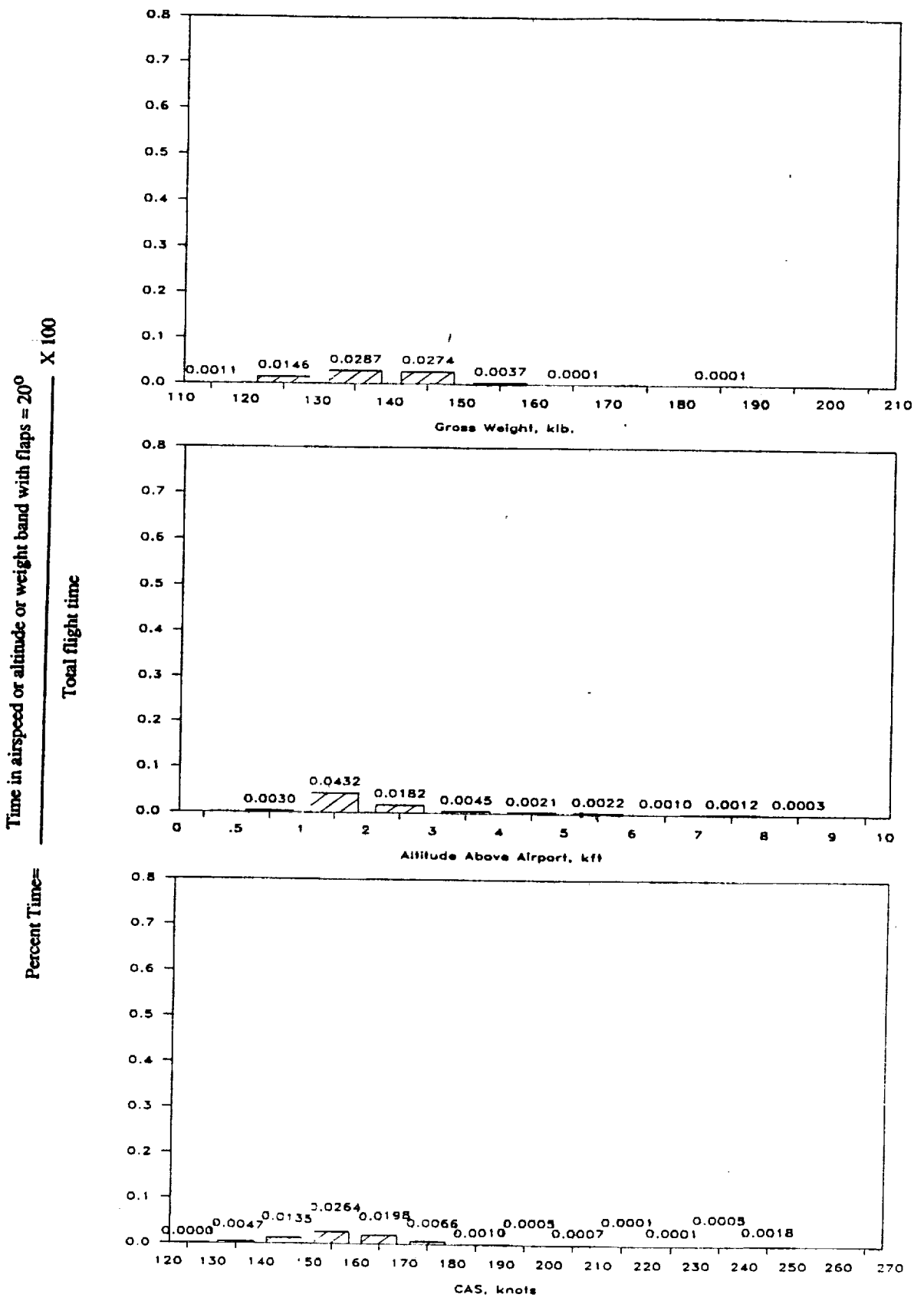
(e) Landing, flaps=5°; 15.2862 hours

Figure 9.- Continued.



(f) Landing, flaps=15°; 22.635 hours

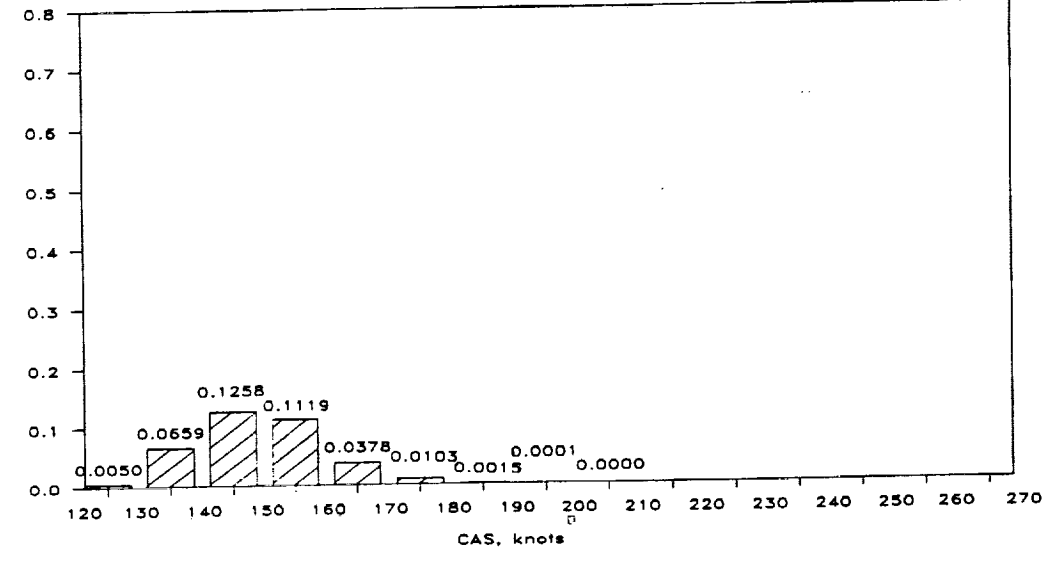
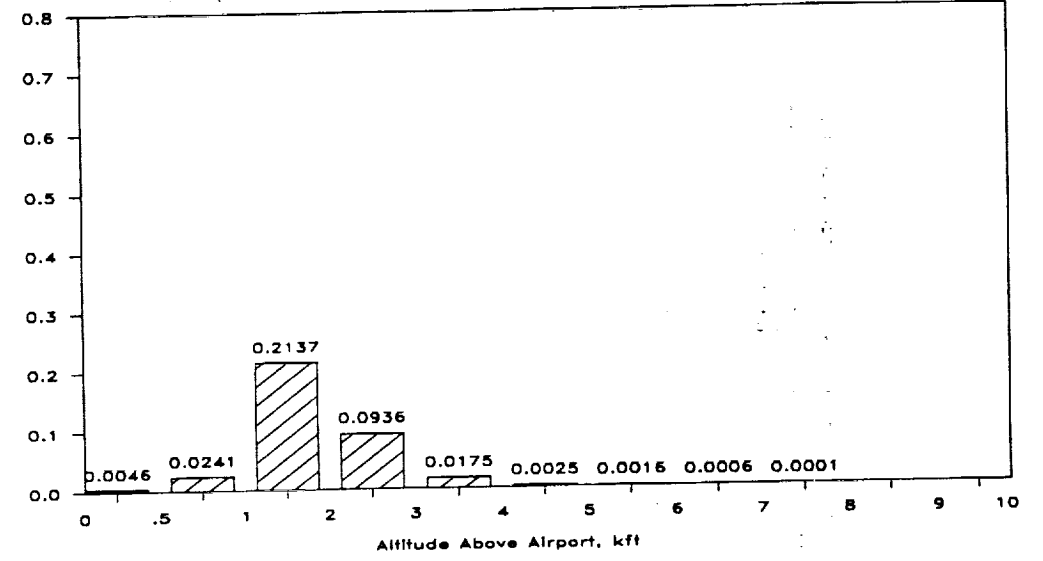
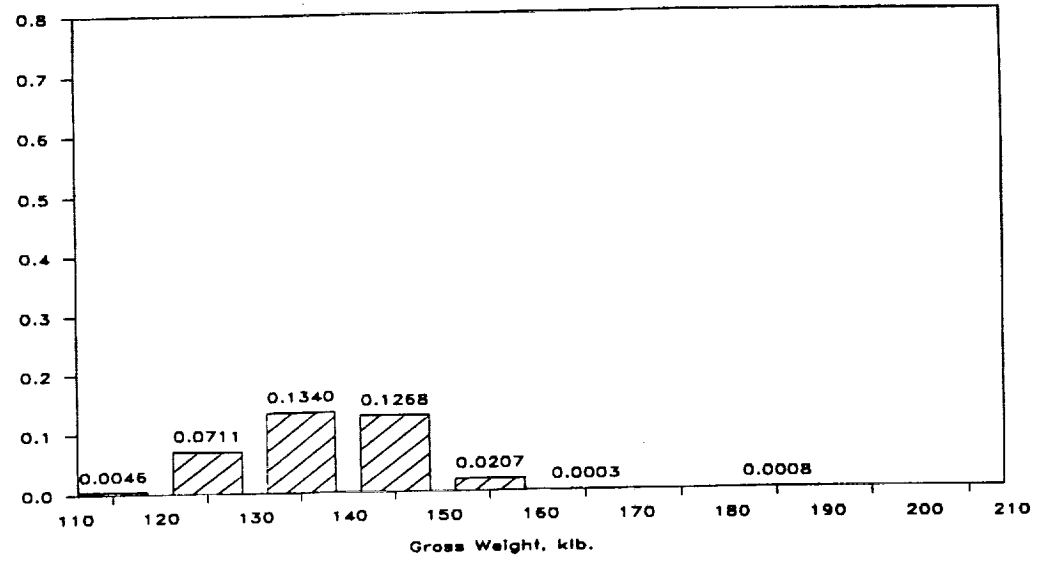
Figure 9.- Continued.



(g) Landing, flaps=20⁰; 1.3367 hours

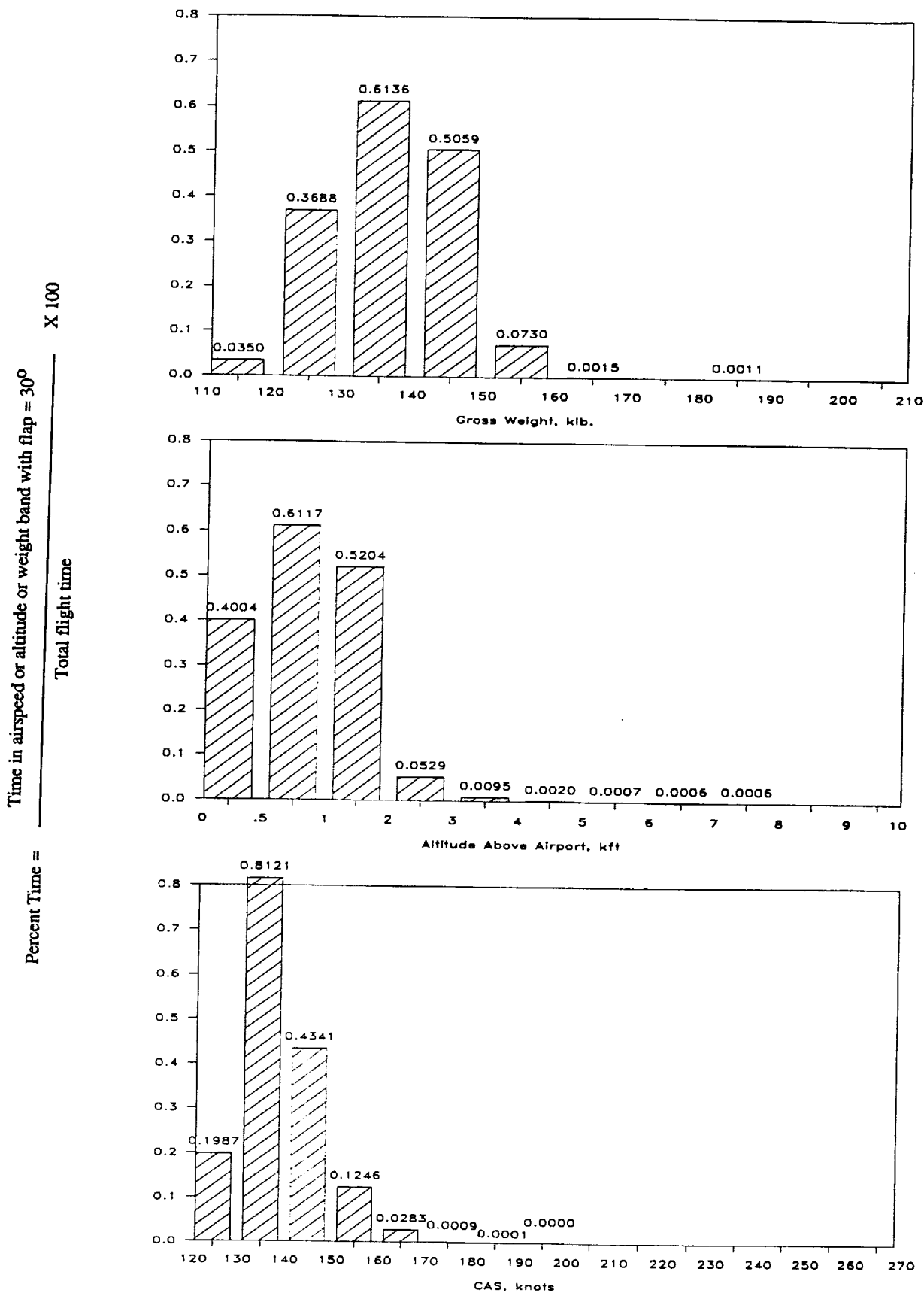
Figure 9.- Continued.

Time in airspeed or altitude or weight band with flaps = 25°
 X 100
 Total flight time
 Percent Time =



(h) Landing, flaps=25°; 6.3246 hours

Figure 9.- Continued.



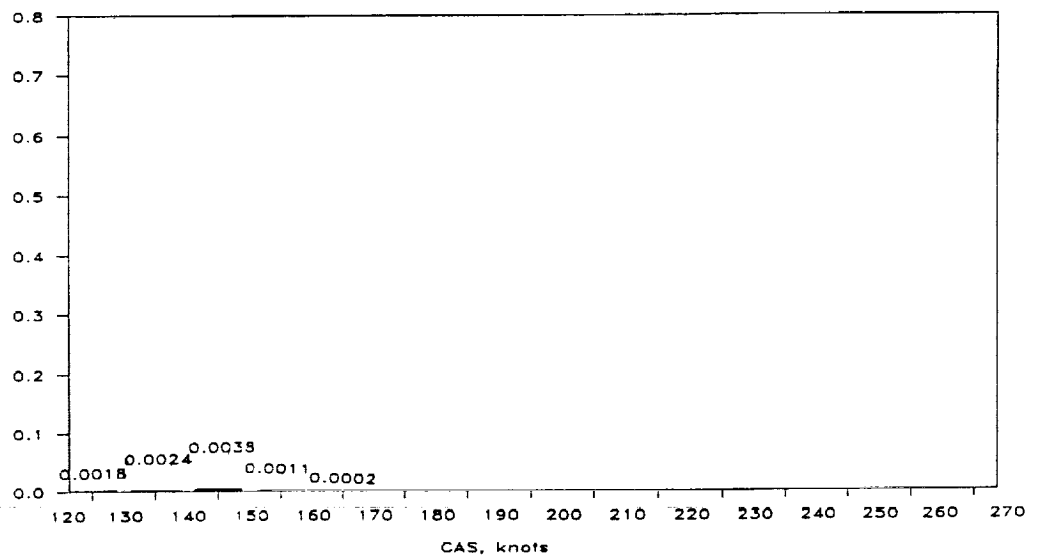
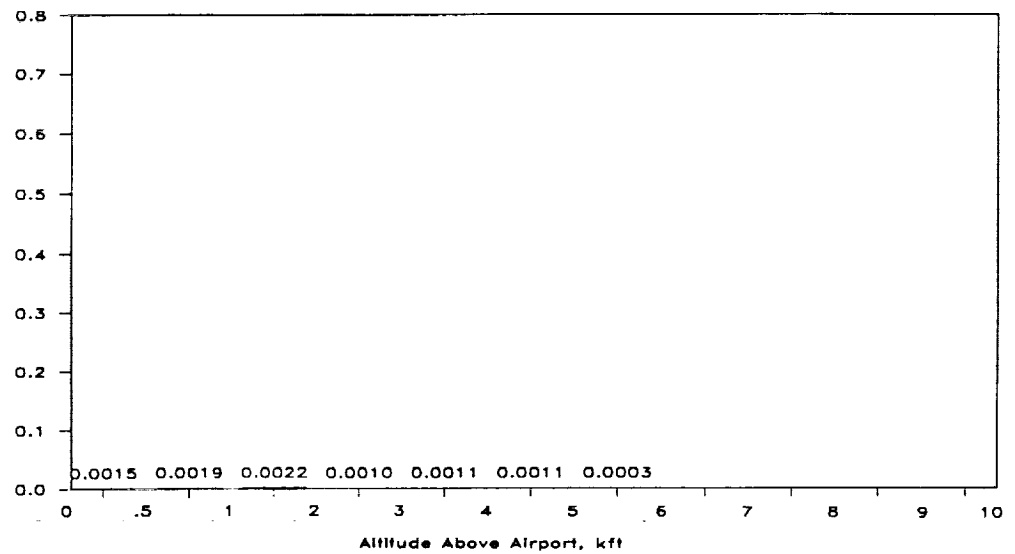
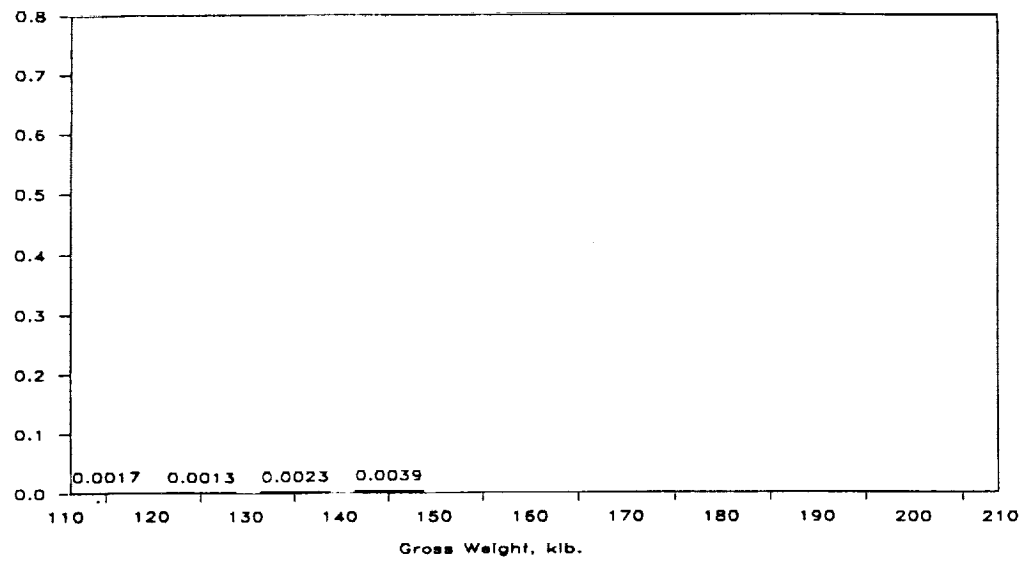
(i) Landing, flaps=30°; 28.2303 hours

Figure 9.- Continued.

Time in airspeed or altitude or weight band with flap = 40°
 X 100

Total flight time

Percent time =



(j) Landing, flaps=40°; 0.1619 hours

Figure 9.- Concluded.

ORIGINAL PAGE IS
OF POOR QUALITY

TIME AFTER LIFTOFF, MINUTES	FLAP DEFLECTION, DEGREES					
	35.0	28.0	23.0	18.0	10.0	4.0
0.0 - 0.1	0	0	0.1	0.2	44.0	2.2
0.1 - 0.2	0	0	0.1	0	22.2	7.8
0.2 - 0.3	0	0	0	0.1	5.8	15.7
0.3 - 0.4	0	0	0	0	3.9	17.4
0.4 - 0.5	0	0	0.1	0	1.8	14.9
0.5 - 0.6	0	0	0	0	1.2	14.7
0.6 - 0.8	0	0	0	0	1.8	14.2
0.8 - 1.0	0	0	0	0	0.2	6.6
1.0 - 1.2	0	0	0	0	0	3.0
1.2 - 1.4	0	0	0	0	0	0.8
1.4 - 1.6	0	0	0	0	0.1	0.3
1.6 - 1.8	0	0	0	0	0.1	0.3
1.8 - 2.0	0	0	0	0	0	0.4
2.0 - 2.2	0	0	0	0	0	0
2.2 - 2.4	0	0	0	0	0	0.2
2.4 - 2.6	0	0	0	0	0	0.1
2.6 - 2.8	0	0	0	0	0	0
2.8 - 3.0	0	0	0	0	0	0
3.0 - 3.5	0	0	0	0	0	0
3.5 - 4.0	0	0	0	0	0	0
4.0 - 4.5	0	0	0	0	0	0.1
4.5 - 5.0	0	0	0	0	0	0
5.0 - 6.0	0	0	0	0	0	0
6.0 - 7.0	0	0	0	0	0	0
7.0 - 8.0	0	0	0	0	0	0
8.0 - 9.0	0	0	0	0	0	0
9.0 - 10.0	0	0	0	0	0	0
10.0 - 15.0	0	0	0	0	0	0
15.0 - 20.0	0	0	0	0	0	0
20.0 - 25.0	0	0	0	0	0	0
0.0 - 25.0	0	0	0.3	0.3	79.1	98.9

Notes:
 1) 985 Flights
 2) The first 15 seconds after lift off for each flight are not included.
 3) Flap deflections less than 4 degrees were considered to be zero.

(a) Take off: Percent of flights vs times when take off flap deflection is reduced to less than indicated values

Figure 10.- Flap deflection times.

FLAP DEFLECTION, DEGREES

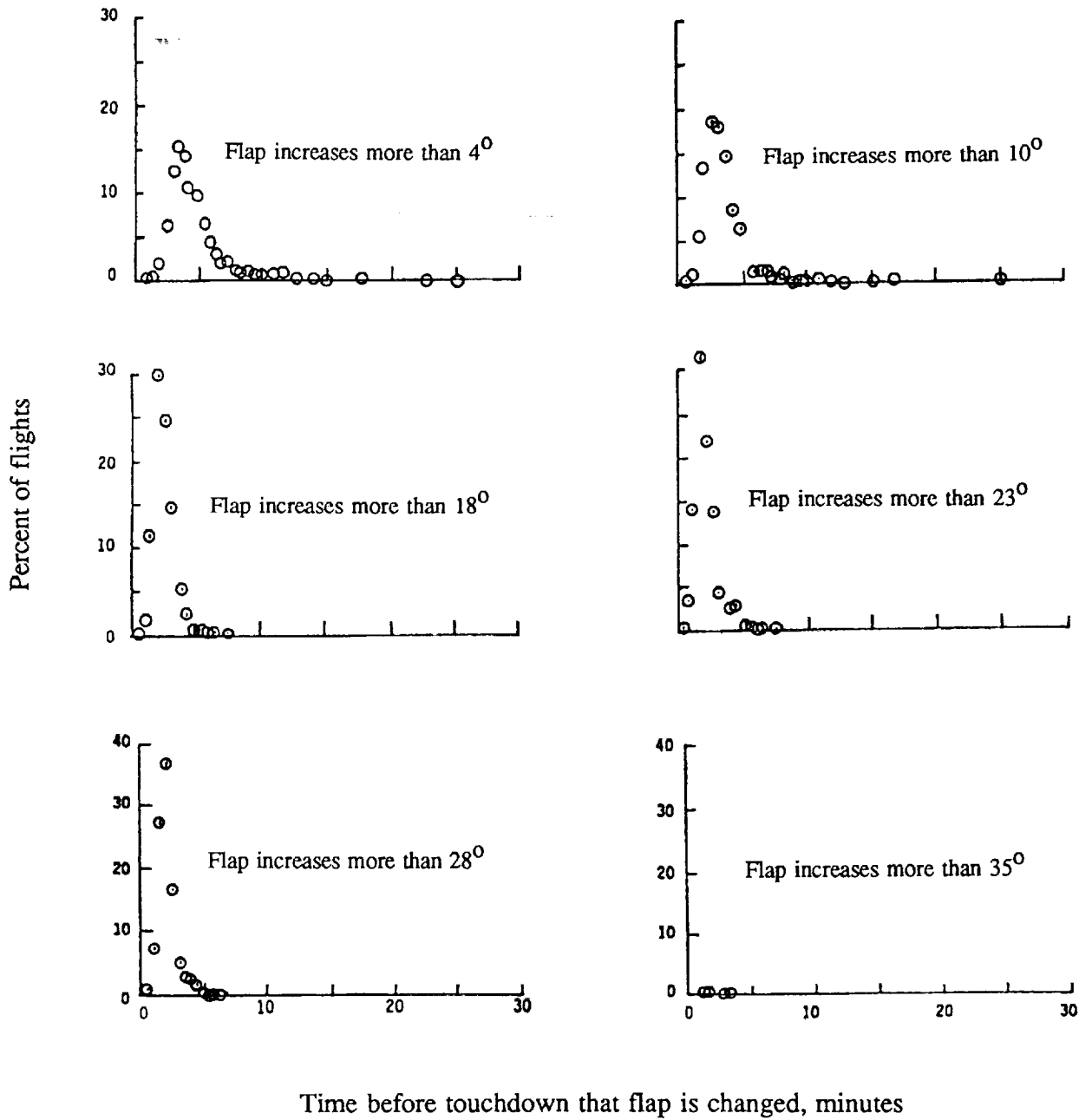
TIME BEFORE TOUCHDOWN, MINUTES	4.0	10.0	18.0	23.0	28.0	35.0
0.0 - 0.5	0	0	0.1	0.3	0.6	0
0.5 - 1.0	0.2	0.4	2.2	3.4	7.8	0
1.0 - 1.5	0.8	1.7	11.6	14.2	27.3	0.1
1.5 - 2.0	2.5	5.8	29.9	32.9	36.6	0.2
2.0 - 2.5	6.5	13.2	24.4	22.8	16.9	0
2.5 - 3.0	12.4	18.9	14.8	14.2	5.6	0.2
3.0 - 3.5	15.3	18.2	5.4	4.8	1.4	0.2
3.5 - 4.0	13.6	14.9	2.8	2.2	1.2	0
4.0 - 4.5	10.4	8.3	2.4	2.4	0.9	0
4.5 - 5.0	9.8	6.6	0.7	0.6	0.1	0
5.0 - 5.5	6.8	3.2	0.4	0.3	0.2	0
5.5 - 6.0	4.7	1.9	0.2	0.3	0.1	0
6.0 - 6.5	3.2	1.7	0.3	0.2	0.1	0
6.5 - 7.0	2.2	1.1	0	0	0.1	0
7.0 - 7.5	2.4	0.7	0.2	0.2	0	0
7.5 - 8.0	1.3	0.4	0	0	0	0
8.0 - 8.5	1.0	0.8	0	0	0	0
8.5 - 9.0	1.5	0.2	0	0	0	0
9.0 - 9.5	0.8	0.3	0	0	0	0
9.5 - 10.0	0.6	0.4	0	0	0	0
10.0 - 11.0	0.8	0.3	0	0	0	0
11.0 - 12.0	0.9	0.2	0	0	0	0
12.0 - 13.0	0.3	0.1	0	0	0	0
13.0 - 14.0	0.3	0	0.1	0	0	0
14.0 - 15.0	0.1	0.1	0	0	0	0
15.0 - 17.0	0.3	0.2	0	0	0	0
17.0 - 19.0	0	0	0	0	0	0
19.0 - 21.0	0	0	0	0	0	0
21.0 - 23.0	0.1	0	0	0	0	0
23.0 - 25.0	0.1	0.1	0	0	0	0
25.0 - 30.0	0	0	0	0	0	0
30.0 - 35.0	0	0	0	0	0	0
35.0 - 40.0	0	0	0	0	0	0
40.0 - 60.0	0.1	0	0	0	0	0
0.0 - 60.0	99.3	99.9	95.6	98.9	99.0	0.7

Notes:

- 1) 985 flights
- 2) The last 15 seconds before touchdown on each flight are not included.
- 3) Flap deflections less than 4 degrees were considered to be zero.

(b) Landing: Percent of flights vs times when take off flap deflection is reduced to greater than indicated values

Figure 10.- Continued.



(c) Landing : Plots of data from Figure 10(b)

Figure 10.- Concluded.

FLAP RANGE	FLAP DETENT	120 TO 130 KTS	130 TO 140 KTS	140 TO 150 KTS	150 TO 160 KTS	160 TO 170 KTS	170 TO 180 KTS	180 TO 190 KTS	190 TO 200 KTS	200 TO 210 KTS	210 TO 220 KTS	220 TO 230 KTS	230 TO 240 KTS	240 TO 250 KTS	250 TO 260 KTS	260 TO 270 KTS	270 TO 280 KTS	280 TO 290 KTS	290 TO 300 KTS	300 TO 310 KTS	310 TO 320 KTS	
35-40	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28-35	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23-28	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18-23	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10-18	15	0	0	2	22	36	16	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4-10	5	0	0	0	1	16	35	31	13	2	0	0	0	0	0	0	0	0	0	0	0	0

(a) Take off

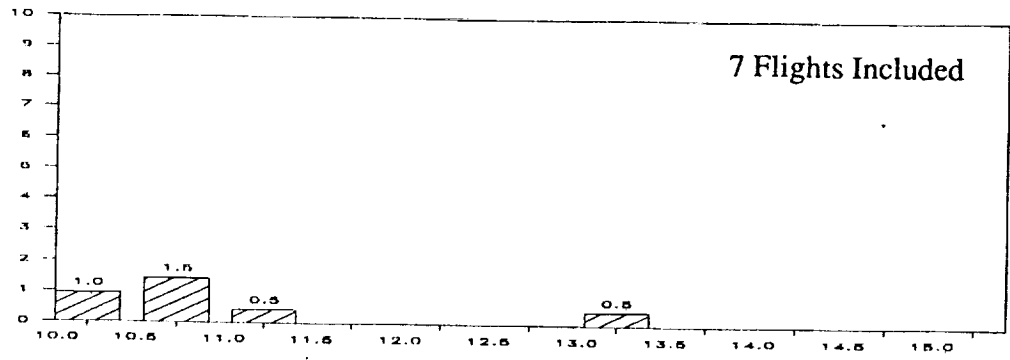
FLAP RANGE	FLAP DETENT	120 TO 130 KTS	130 TO 140 KTS	140 TO 150 KTS	150 TO 160 KTS	160 TO 170 KTS	170 TO 180 KTS	180 TO 190 KTS	190 TO 200 KTS	200 TO 210 KTS	210 TO 220 KTS	220 TO 230 KTS	230 TO 240 KTS	240 TO 250 KTS	250 TO 260 KTS	260 TO 270 KTS	270 TO 280 KTS	280 TO 290 KTS	290 TO 300 KTS	300 TO 310 KTS	310 TO 320 KTS	
4-10	5	0	0	0	1	4	16	27	30	17	4	0	0	0	0	0	0	0	0	0	0	0
10-18	15	0	0	1	7	18	27	28	13	4	0	0	0	0	0	0	0	0	0	0	0	0
18-23	20	0	3	17	32	31	11	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23-28	25	0	3	19	36	29	9	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28-35	30	1	16	34	32	13	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35-45	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

(b) Landing

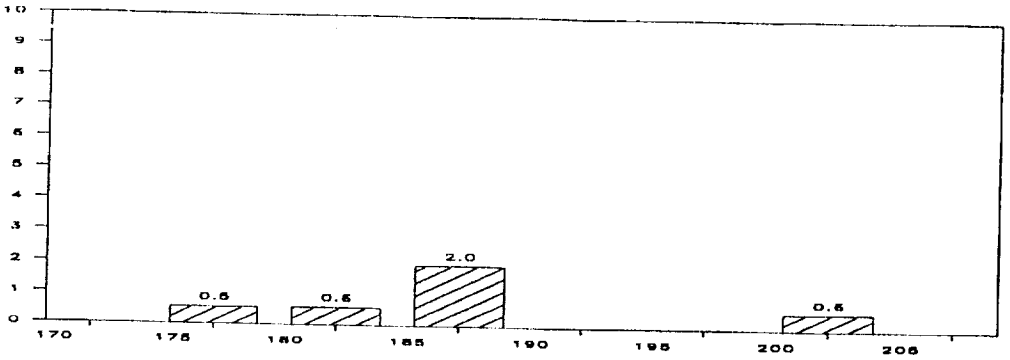
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Figure 11.- Percent of lights vs equivalent airspeed at flap detent change.

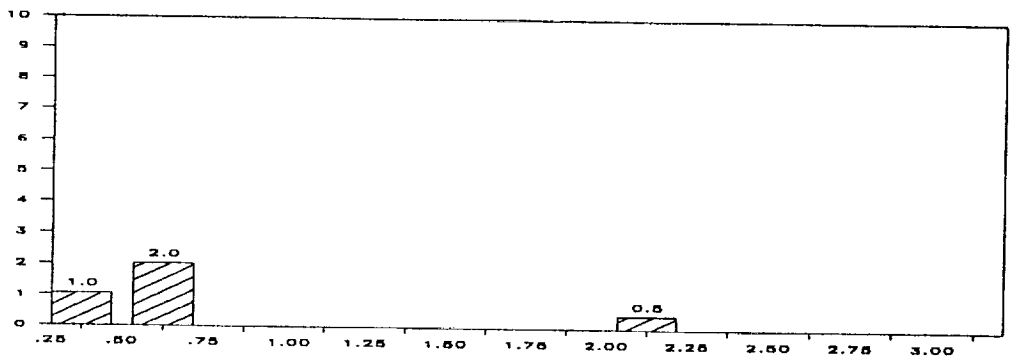
Number of Flights



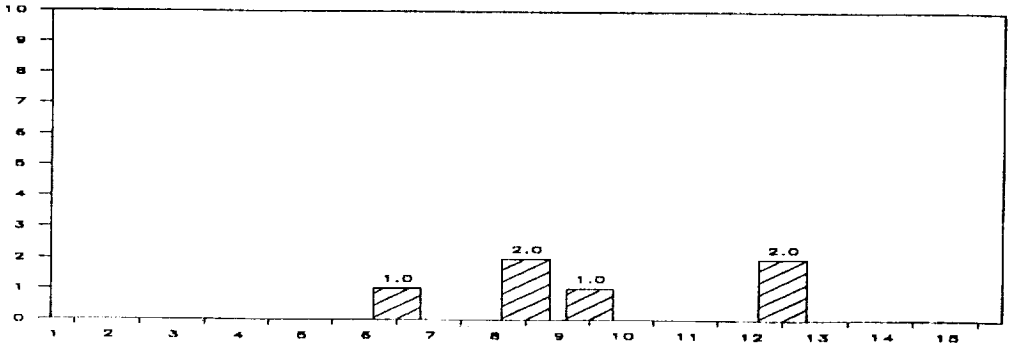
(a) Pressure altitude at initial flap deflection, kft.



(b) Calibrated airspeed at initial flap deflection, kft.



(c) Minutes above 10,000 ft. that flaps deflected > .5 degrees



(d) Minutes before touchdown of initial flap detection

Figure 12.- Flap use above 10,000 feet altitude.

PRESSURE ALTITUDE BANDS

LEVEL g's	-500 TO		4500 TO		9500 TO		14500 TO		19500 TO		24500 TO		29500 TO		34500 TO		39500 TO		-500 TO	
	4500 FT	9500 FT	9500 FT	14500 FT	14500 FT	19500 FT	19500 FT	24500 FT	24500 FT	29500 FT	29500 FT	34500 FT	34500 FT	39500 FT	39500 FT	44500 FT	44500 FT	44500 FT	44500 FT	44500 FT
1.60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.60	0.01	0	0	0.01	0	0	0	0.03	0.03	0.05	0.04	0	0	0	0	0	0	0	0	0.01
.50	0.03	0.01	0.09	0.02	0.09	0.03	0.05	0.13	0.13	0.07	0.07	0	0	0	0	0	0	0	0	0.03
.40	0.11	0.09	0.69	0.52	0.33	0.33	0.39	0.28	0.28	0.07	0.07	0	0	0	0	0	0	0	0	0.03
.30	0.91	7.04	7.04	4.05	2.10	2.10	2.18	1.47	1.47	1.47	1.47	0.03	0.03	0	0	0	0	0	0	0.19
.20	10.19	34.50	23.60	15.84	7.05	7.05	6.33	4.82	4.82	4.82	4.82	1.25	1.25	0	0	0	0	0	0	1.70
.15	34.50	79.62	79.62	51.88	28.87	28.87	23.72	17.32	17.32	17.32	17.32	5.83	5.83	0	0	0	0	0	0	5.85
.10	108.23	245.26	245.26	195.96	142.55	142.55	112.53	93.77	93.77	93.77	93.77	41.56	41.56	3.02	3.02	3.02	3.02	3.02	3.02	20.46
.05	322.04	564.41	564.41	585.57	671.23	671.23	744.40	980.28	980.28	980.28	980.28	1102.65	1102.65	24.16	24.16	24.16	24.16	24.16	24.16	85.63
0	684.93	191.96	191.96	170.66	149.69	149.69	141.17	103.38	103.38	103.38	103.38	46.40	46.40	800.34	800.34	800.34	800.34	800.34	800.34	925.62
-.05	285.33	41.84	41.84	36.12	22.58	22.58	21.54	15.61	15.61	15.61	15.61	6.22	6.22	48.32	48.32	48.32	48.32	48.32	48.32	82.46
-.10	69.54	9.59	9.59	7.17	4.39	4.39	4.94	3.64	3.64	3.64	3.64	1.09	1.09	0	0	0	0	0	0	15.00
-.15	14.22	2.23	2.23	1.89	1.18	1.18	1.50	1.13	1.13	1.13	1.13	0.26	0.26	0	0	0	0	0	0	3.08
-.20	2.88	0.12	0.12	0.34	0.24	0.24	0.38	0.33	0.33	0.33	0.33	0.03	0.03	0	0	0	0	0	0	0.74
-.30	0.17	0.01	0.01	0.07	0.09	0.09	0.19	0.19	0.19	0.19	0.19	0.01	0.01	0	0	0	0	0	0	0.10
-.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.03
-.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.01
-.60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-.70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-.80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-1.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-1.20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-1.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-1.60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FLIGHT HOURS @ ALT	102.71	105.51	104.07	74.64	87.46	132.30	495.03	663.54	0.33	1765.59	1765.59	1765.59	1765.59	1765.59	1765.59	1765.59	1765.59	1765.59	1765.59	1765.59
FLIGHT MILES @ ALT	18522.12	26173.93	33995.36	28461.45	36365.13	58863.40	223579.81	296925.11	146.91	723033.21	723033.21	723033.21	723033.21	723033.21	723033.21	723033.21	723033.21	723033.21	723033.21	723033.21

TOTAL FLIGHTS 985
 TOTAL FLIGHT HOURS FLAPS UP AND DOWN 1765.59
 TOTAL FLIGHT MILES FLAPS UP AND DOWN 723033.21

(a) a_n Level crossing counts pre hour within pressure altitude bands

Figure 13.- Normal acceleration exceedances.

PRESSURE ALTITUDE BANDS

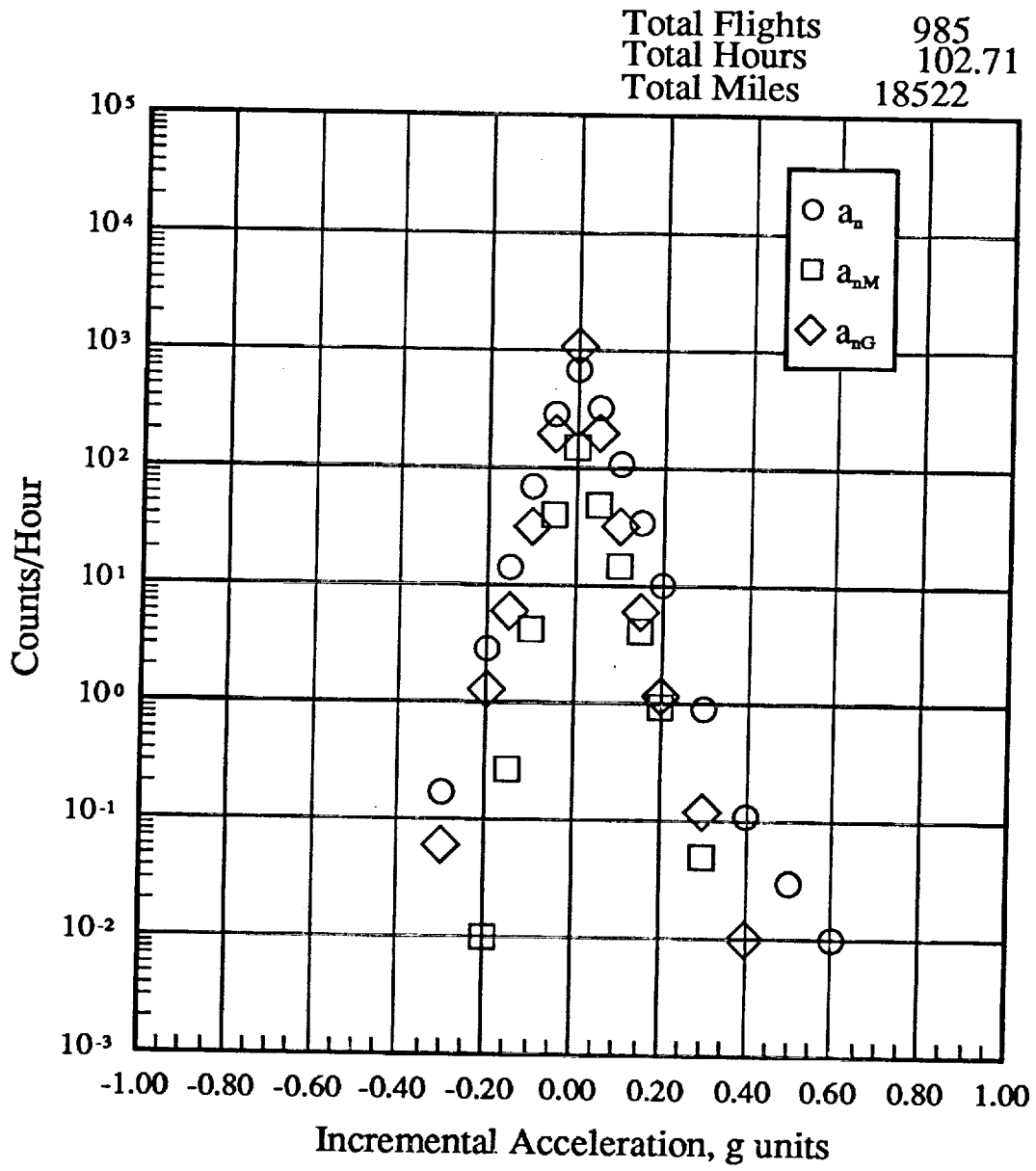
a _{nm} LEVEL G'S	-500 TO		4500 TO		9500 TO		14500 TO		19500 TO		24500 TO		29500 TO		34500 TO		39500 TO		-500 TO	
	4500 FT	9500 FT	9500 FT	14500 FT	14500 FT	19500 FT	19500 FT	24500 FT	24500 FT	29500 FT	29500 FT	34500 FT	34500 FT	39500 FT	39500 FT	44500 FT	44500 FT	44500 FT	44500 FT	44500 FT
1.60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.30	0.05	0.04	0.04	0	0	0	0	0	0.01	0	0	0	0	0	0	0	0	0	0	0
.20	0.94	0.80	0.35	0.15	0.13	0.06	0.03	0.03	0.06	0.14	0.04	0.01	0.01	0	0	0	0	0	0	0.01
.15	4.16	2.98	1.98	0.55	0.55	0.39	0.14	0.04	0.04	0.04	0.04	0.04	0.04	0	0	0	0	0	0	0.15
.10	14.75	12.59	7.85	3.04	2.23	1.73	0.56	0.28	0.56	0.56	0.28	0.28	0.28	0	0	0	0	0	0	0.67
.05	48.62	45.16	35.01	19.01	14.20	11.93	4.77	3.34	4.77	4.77	3.34	3.34	3.34	0	0	0	0	0	0	2.71
0	149.23	118.70	114.90	96.59	98.10	119.21	151.36	158.30	151.36	151.36	158.30	158.30	158.30	193.29	193.29	193.29	193.29	193.29	193.29	12.58
-.05	39.92	29.88	27.81	17.20	15.54	11.07	5.55	3.91	5.55	5.55	3.91	3.91	3.91	0	0	0	0	0	0	142.39
-.10	4.25	3.87	3.97	1.58	1.36	1.16	0.50	0.45	1.16	1.16	0.50	0.45	0.45	0	0	0	0	0	0	11.10
-.15	0.27	0.47	0.34	0.15	0.18	0.16	0.03	0.06	0.16	0.16	0.03	0.06	0.06	0	0	0	0	0	0	1.24
-.20	0.01	0.05	0.02	0.01	0.06	0.03	0.01	0.01	0.03	0.03	0.01	0.01	0.01	0	0	0	0	0	0	0.12
-.30	0	0	0.01	0	0	0.01	0	0	0.01	0.01	0	0	0	0	0	0	0	0	0	0.01
-.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-.60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-.70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-.80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-1.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-1.20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-1.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-1.60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FLIGHT HOURS @ ALT	102.71	105.51	104.07	74.64	87.46	132.30	495.03	663.54	132.30	495.03	663.54	663.54	663.54	0.33	0.33	0.33	0.33	0.33	0.33	1765.59
FLIGHT MILES @ ALT	18522.12	26173.93	33995.36	28461.45	36365.13	58863.40	223579.81	296925.11	58863.40	223579.81	296925.11	296925.11	296925.11	146.91	146.91	146.91	146.91	146.91	146.91	723033.21
																			TOTAL FLIGHTS	985
																			TOTAL FLIGHT HOURS FLAPS UP AND DOWN	1765.59
																			TOTAL FLIGHT MILES FLAPS UP AND DOWN	723033.21

(b) a_{nm} Level crossing counts per hour within pressure altitude bands

PRESSURE ALTITUDE BANDS

a ₀ G LEVEL g's	-500 TO		4500 TO		9500 TO		14500 TO		19500 TO		24500 TO		29500 TO		34500 TO		39500 TO		-500 TO			
	4500 FT	9500 FT	14500 FT	19500 FT	24500 FT	29500 FT	34500 FT	39500 FT	44500 FT	49500 FT	54500 FT	59500 FT	64500 FT	69500 FT	74500 FT	79500 FT	84500 FT	89500 FT	94500 FT	44500 FT	49500 FT	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.80	0	0	0	0	0	0	0	0	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
.70	0	0	0	0	0	0	0	0	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
.60	0	0	0	0	0	0	0	0	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
.50	0	0	0	0	0	0	0	0	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
.40	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
.30	0.12	0.06	0.16	0.16	0.16	0.16	0.16	0.16	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
.20	1.16	1.14	0.86	0.86	0.86	0.86	0.86	0.86	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
.15	6.05	4.12	2.90	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93
.10	32.15	17.52	11.90	8.17	8.17	8.17	8.17	8.17	8.17	8.17	8.17	8.17	8.17	8.17	8.17	8.17	8.17	8.17	8.17	8.17	8.17	8.17
.05	197.19	105.34	74.31	53.48	47.57	47.57	47.57	47.57	47.57	47.57	47.57	47.57	47.57	47.57	47.57	47.57	47.57	47.57	47.57	47.57	47.57	47.57
0	1083.63	1139.33	1258.02	1521.30	1615.16	1615.16	1615.16	1615.16	1615.16	1615.16	1615.16	1615.16	1615.16	1615.16	1615.16	1615.16	1615.16	1615.16	1615.16	1615.16	1615.16	1615.16
-.05	194.46	106.43	75.56	54.19	48.07	48.07	48.07	48.07	48.07	48.07	48.07	48.07	48.07	48.07	48.07	48.07	48.07	48.07	48.07	48.07	48.07	48.07
-.10	31.63	16.89	11.61	8.15	7.91	7.91	7.91	7.91	7.91	7.91	7.91	7.91	7.91	7.91	7.91	7.91	7.91	7.91	7.91	7.91	7.91	7.91
-.15	6.02	3.93	2.84	1.98	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23
-.20	1.29	1.03	0.95	0.75	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
-.30	0.06	0.09	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
-.40	0	0	0.01	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
-.50	0	0	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
-.60	0	0	0	0	0	0	0	0	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
-.70	0	0	0	0	0	0	0	0	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
-.80	0	0	0	0	0	0	0	0	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
-1.00	0	0	0	0	0	0	0	0	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
-1.20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-1.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-1.60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FLIGHT HOURS @ ALT	102.71	105.51	104.07	74.64	87.46	87.46	87.46	87.46	87.46	87.46	87.46	87.46	87.46	87.46	87.46	87.46	87.46	87.46	87.46	87.46	87.46	87.46
FLIGHT MILES @ ALT	18522.12	26173.93	33995.36	28461.45	36365.13	36365.13	36365.13	36365.13	36365.13	36365.13	36365.13	36365.13	36365.13	36365.13	36365.13	36365.13	36365.13	36365.13	36365.13	36365.13	36365.13	36365.13
TOTAL FLIGHTS			132.30	495.03	663.54	663.54	663.54	663.54	663.54	663.54	663.54	663.54	663.54	663.54	663.54	663.54	663.54	663.54	663.54	663.54	663.54	663.54
TOTAL FLIGHT HOURS FLAPS UP AND DOWN			58863.40	223579.81	296925.11	296925.11	296925.11	296925.11	296925.11	296925.11	296925.11	296925.11	296925.11	296925.11	296925.11	296925.11	296925.11	296925.11	296925.11	296925.11	296925.11	296925.11
TOTAL FLIGHT MILES FLAPS UP AND DOWN			985	1765.59	1765.59	1765.59	1765.59	1765.59	1765.59	1765.59	1765.59	1765.59	1765.59	1765.59	1765.59	1765.59	1765.59	1765.59	1765.59	1765.59	1765.59	1765.59

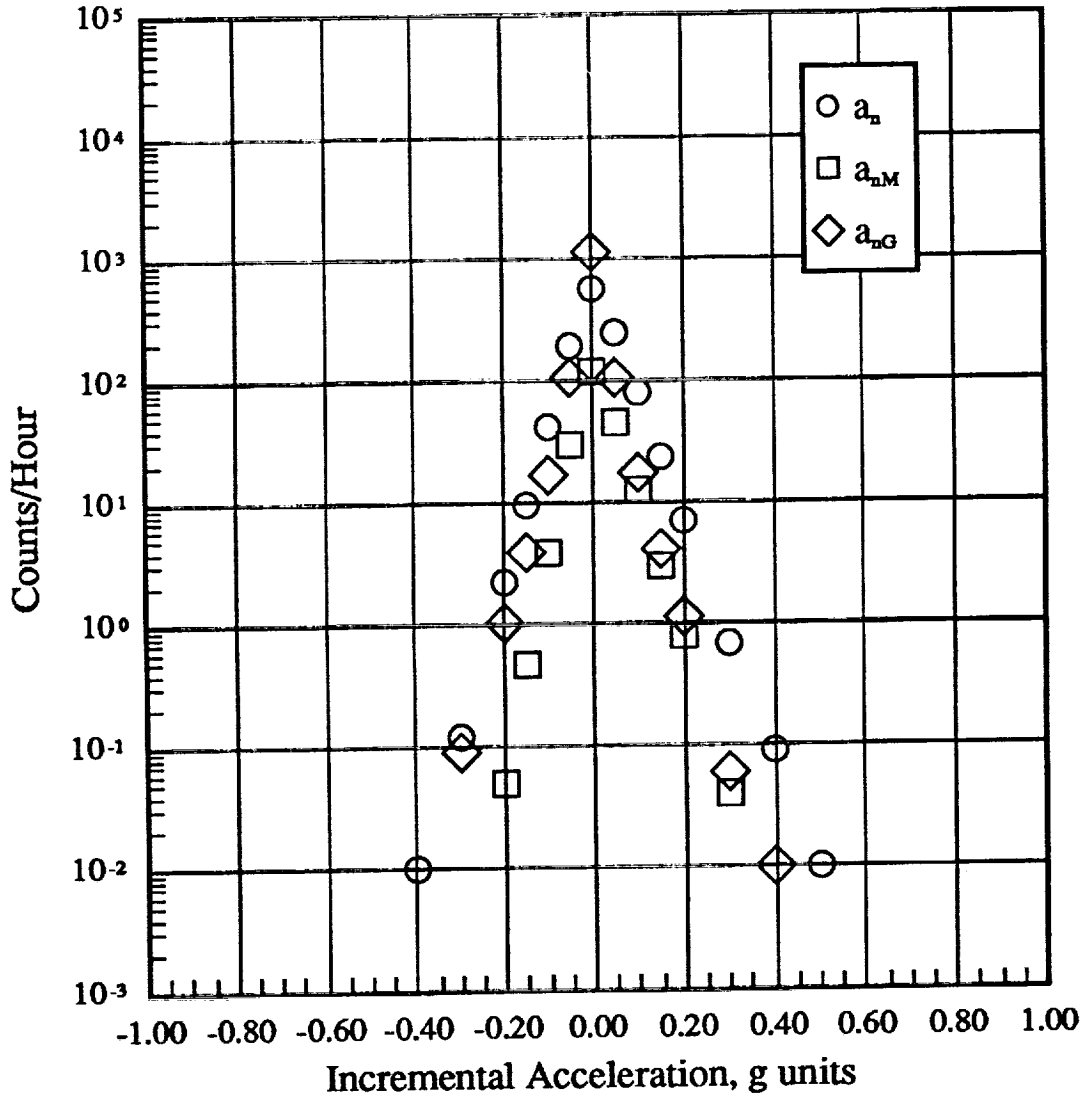
(c) a₀G Level crossing counts per hour within pressure altitude bands



(d) a_n , a_{nM} , a_{nG} , -500 to 4500 feet altitude

Figure 13.- Continued.

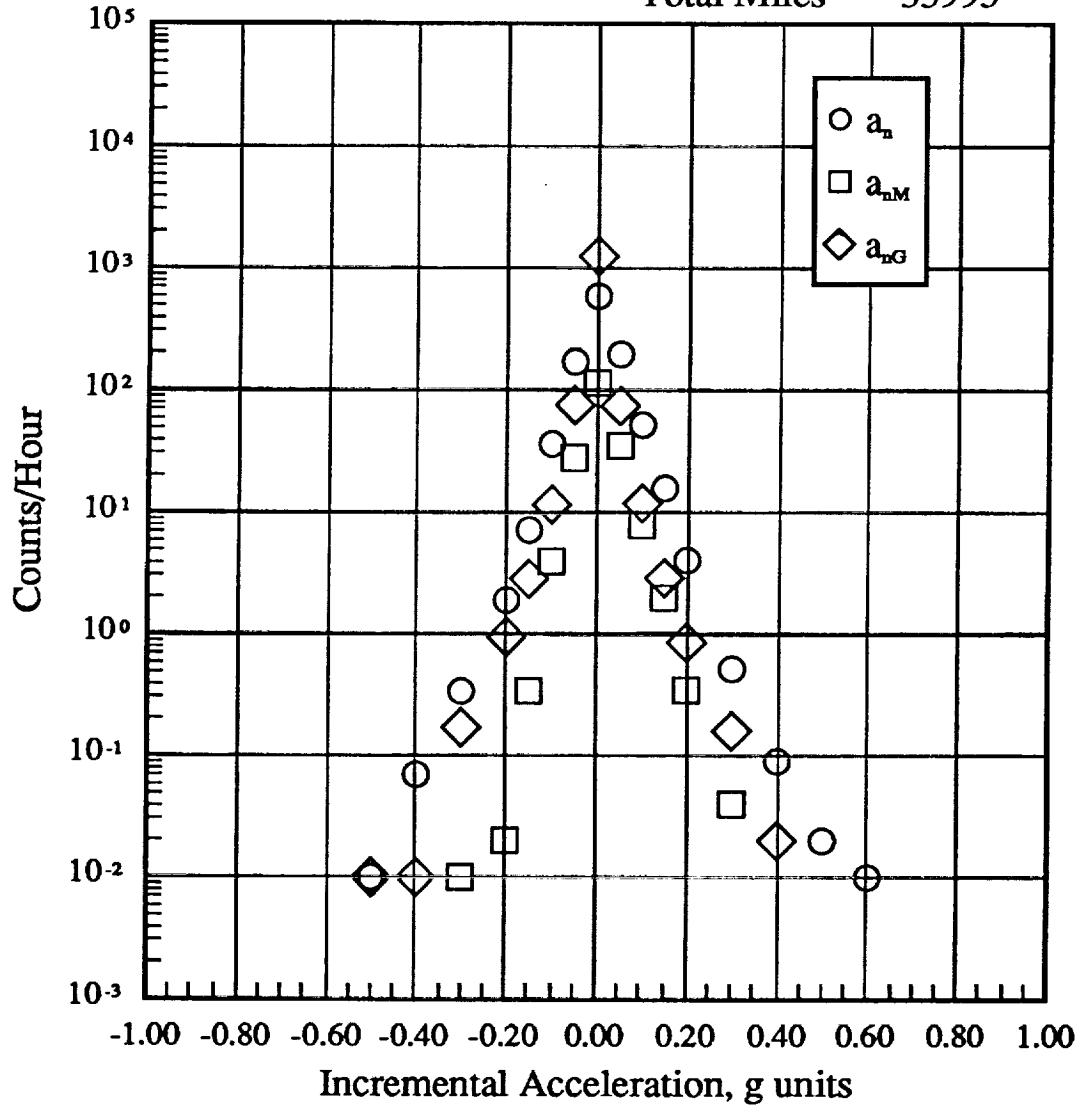
Total Flights 985
 Total Hours 105.51
 Total Miles 26174



(e) a_n , a_{nM} , a_{nG} , 9500 to 14500 feet altitude

Figure 13.- Continued.

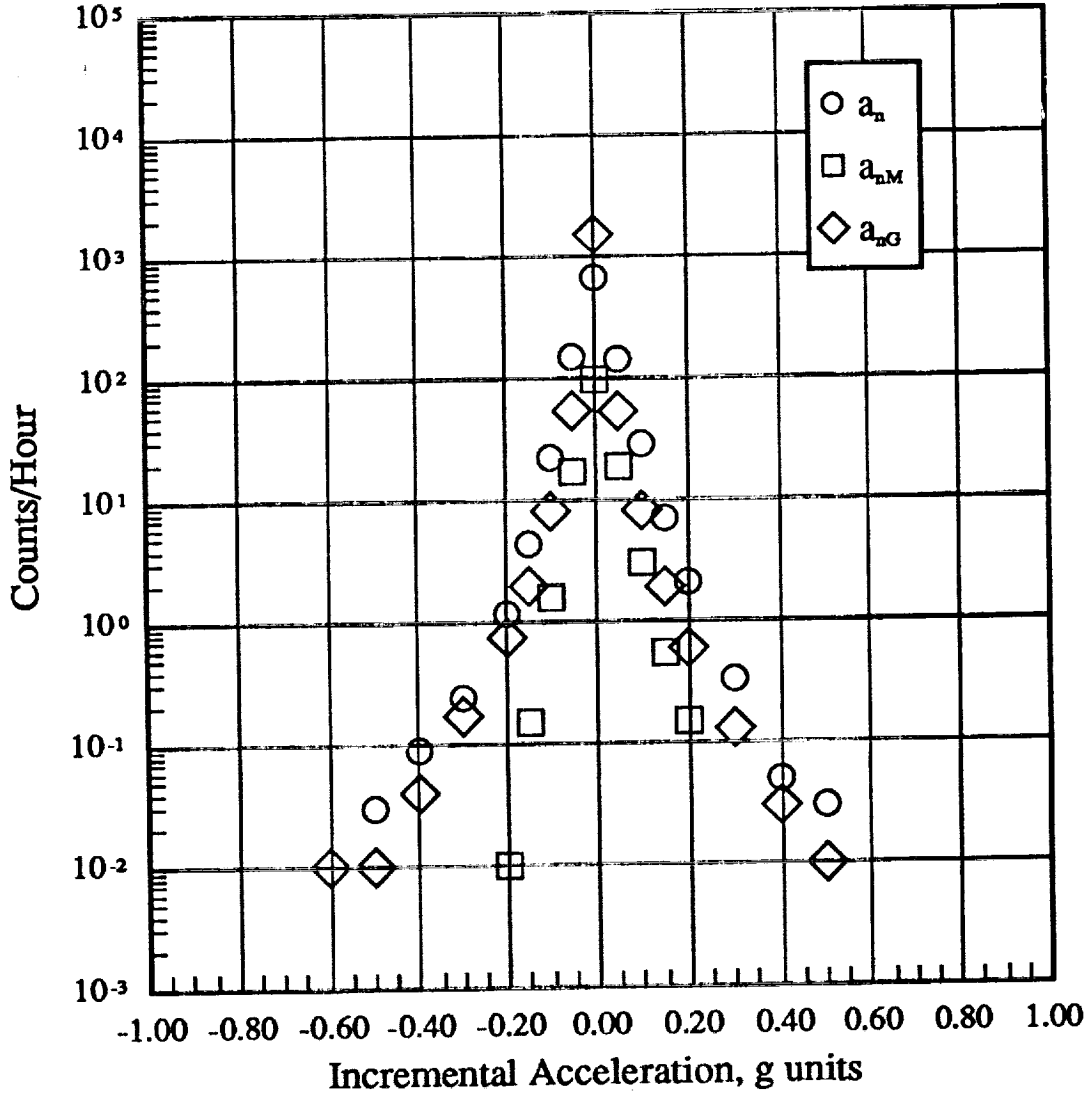
Total Flights 985
 Total Hours 104.07
 Total Miles 33995



(f) a_n , a_{nM} , a_{nG} , 9500 to 14500 feet altitude

Figure 13.- Continued.

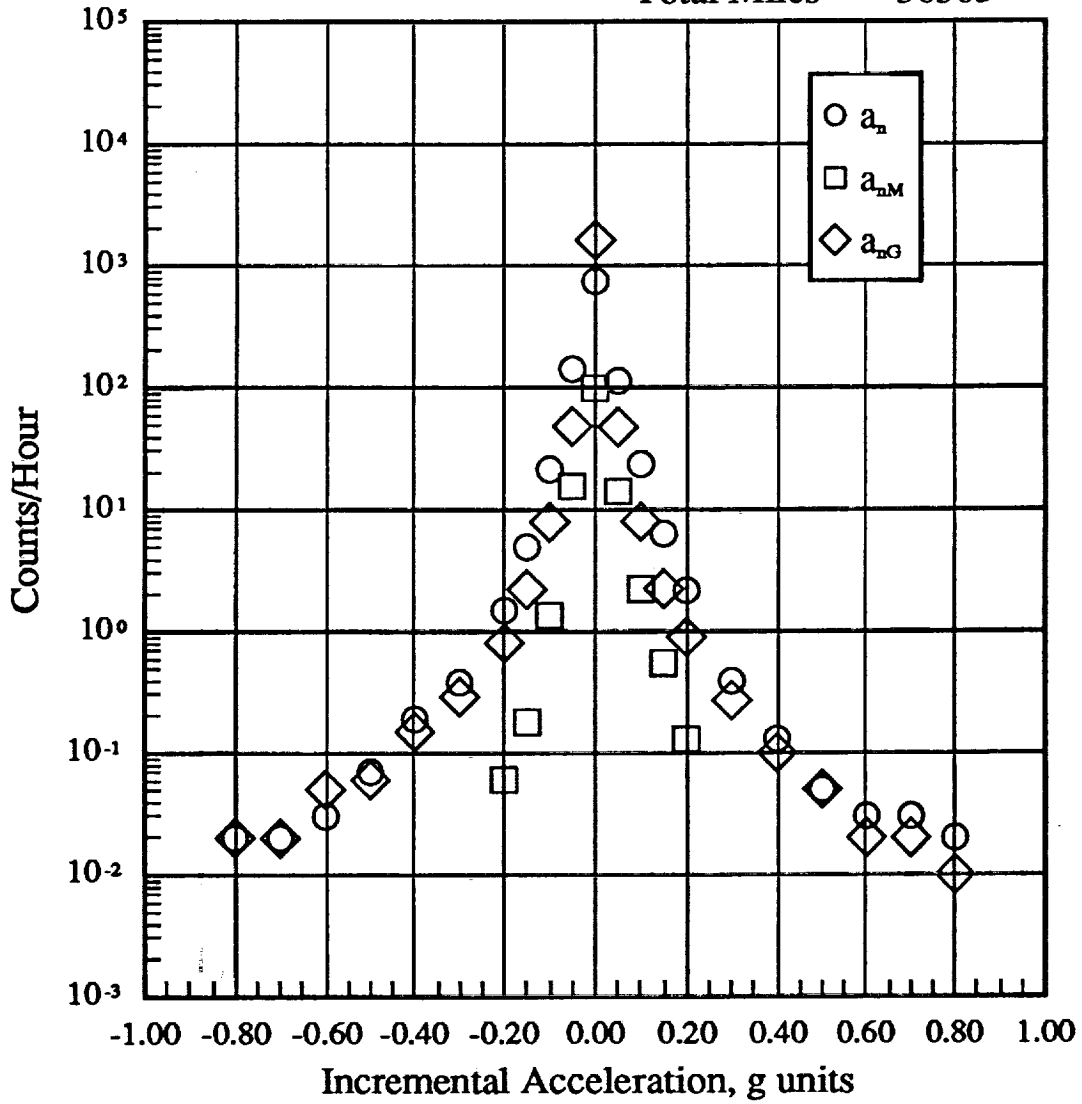
Total Flights 985
 Total Hours 74.64
 Total Miles 28461



(g) a_n , a_{nM} , a_{nG} , 14500 to 19500 feet altitude

Figure 13.- Continued.

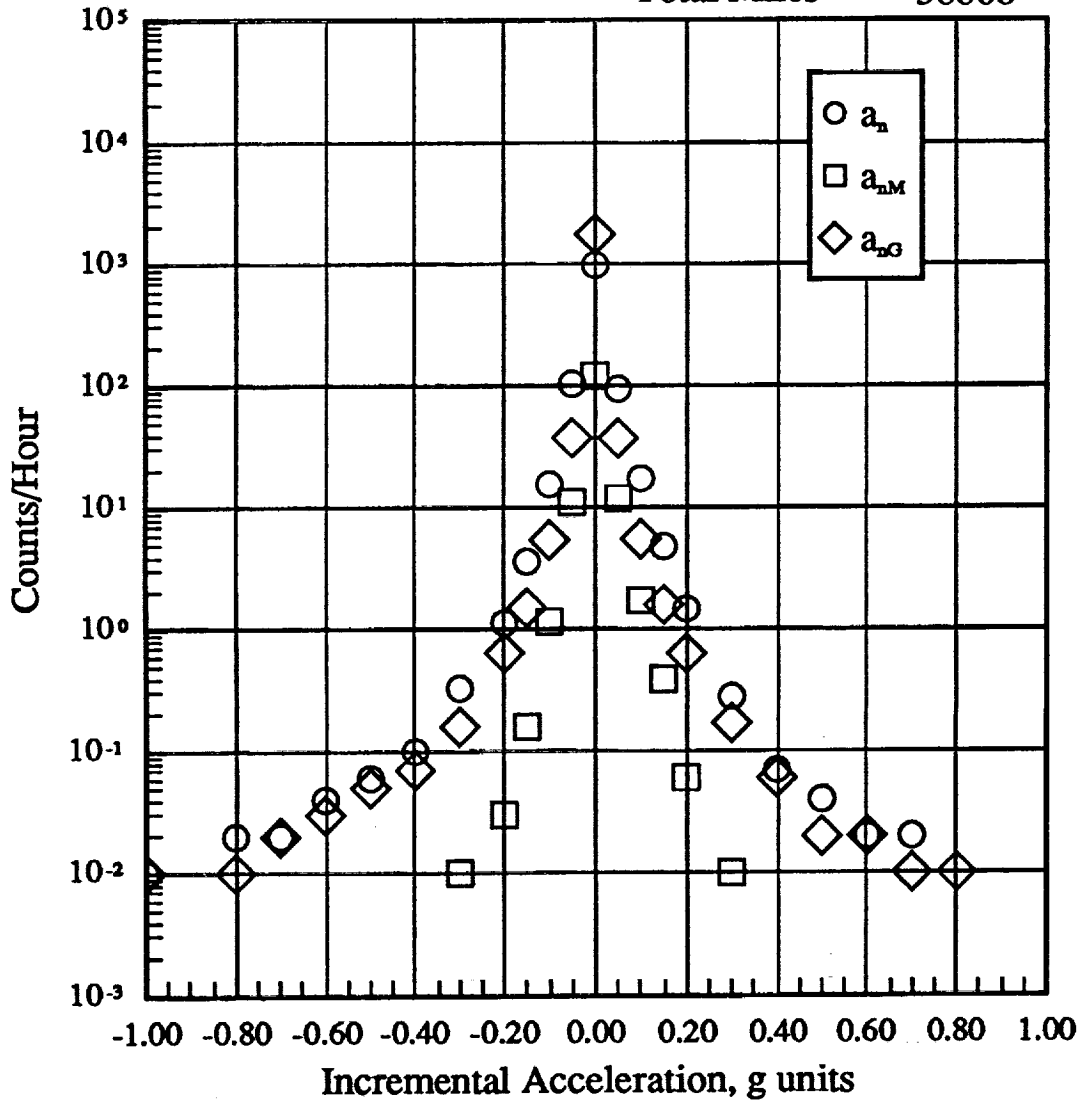
Total Flights 985
 Total Hours 87.46
 Total Miles 36365



(h) a_n , a_{nM} , a_{nG} , 19500 to 24500 feet altitude

Figure 13.- Continued.

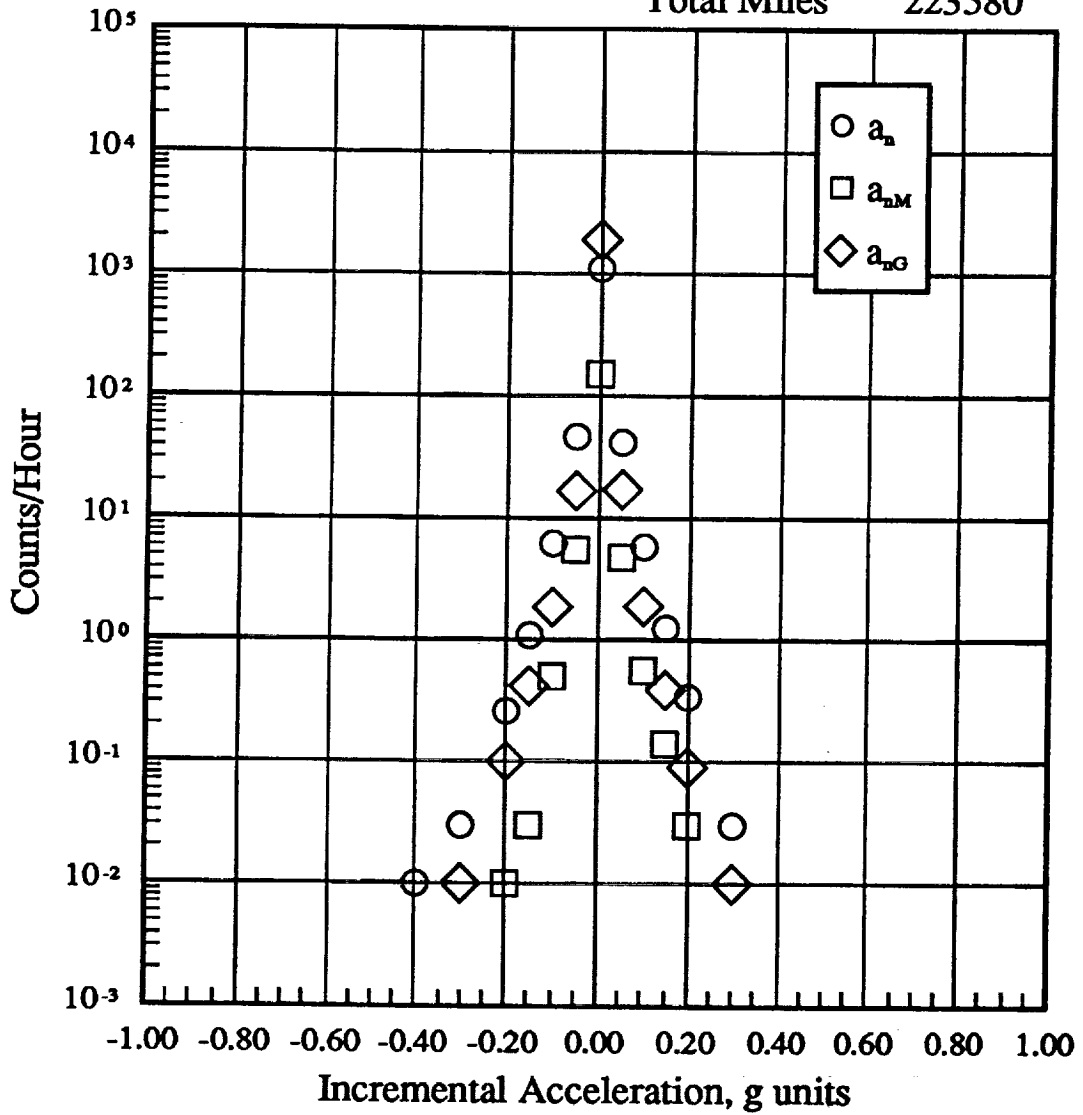
Total Flights 985
 Total Hours 132.80
 Total Miles 58868



(i) a_n , a_{nM} , a_{nG} , 24500 to 29500 feet altitude

Figure 13.- Continued.

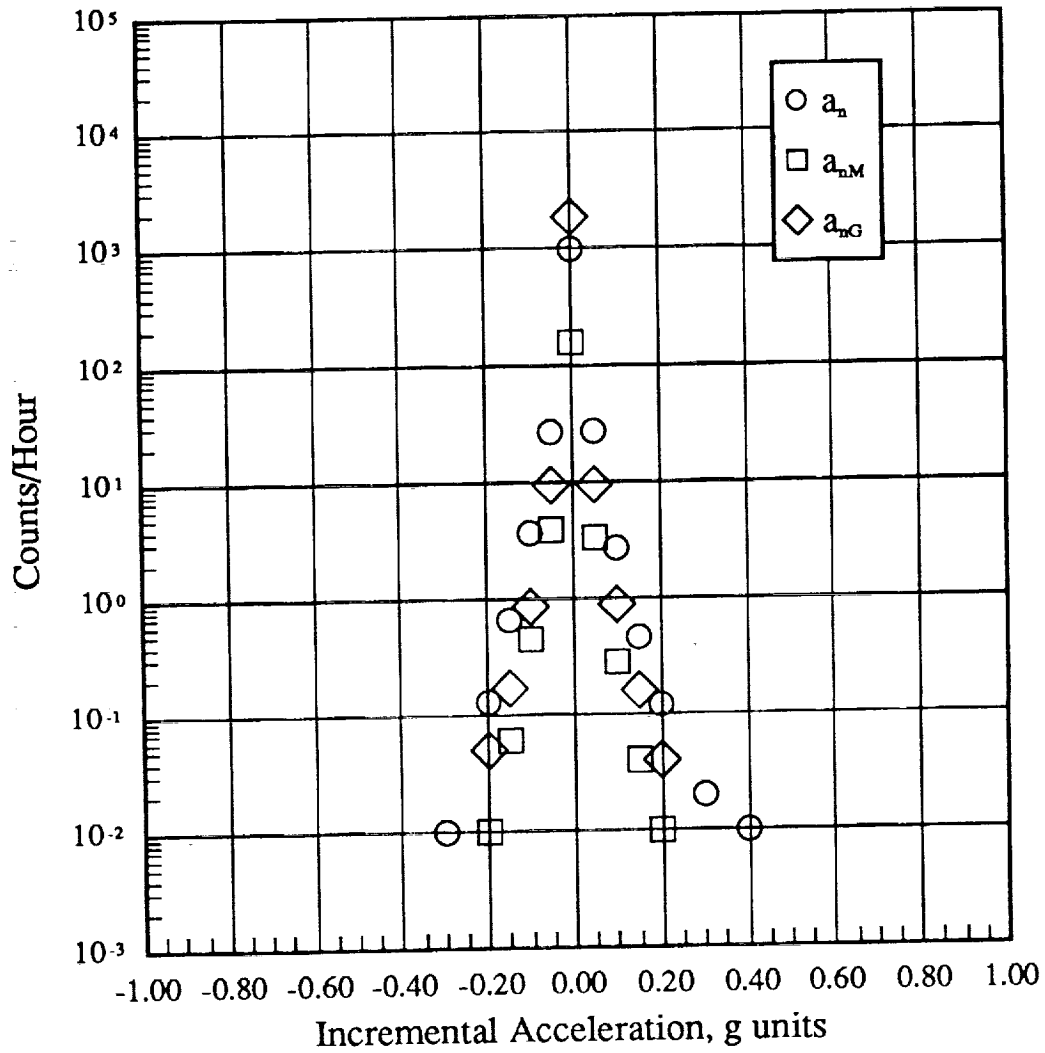
Total Flights 985
 Total Hours 495.03
 Total Miles 223580



(j) a_n, a_{nM}, a_{nG} , 29500 to 34500 feet altitude

Figure 13.- Continued.

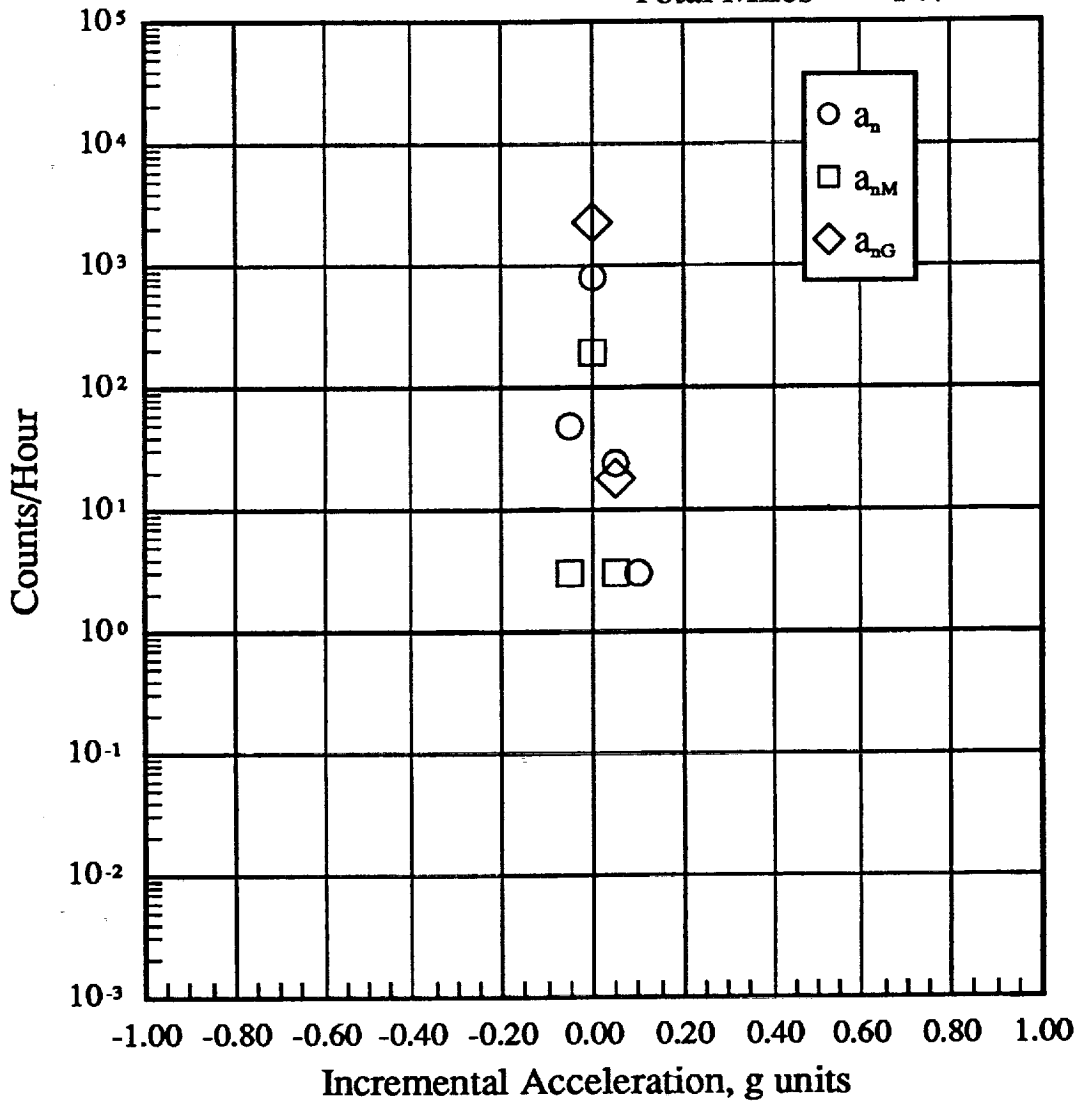
Total Flights 985
 Total Hours 663.54
 Total Miles 296925



(k) a_n , a_{nM} , a_{nG} , 34500 to 39500 feet altitude

Figure 13.- Continued.

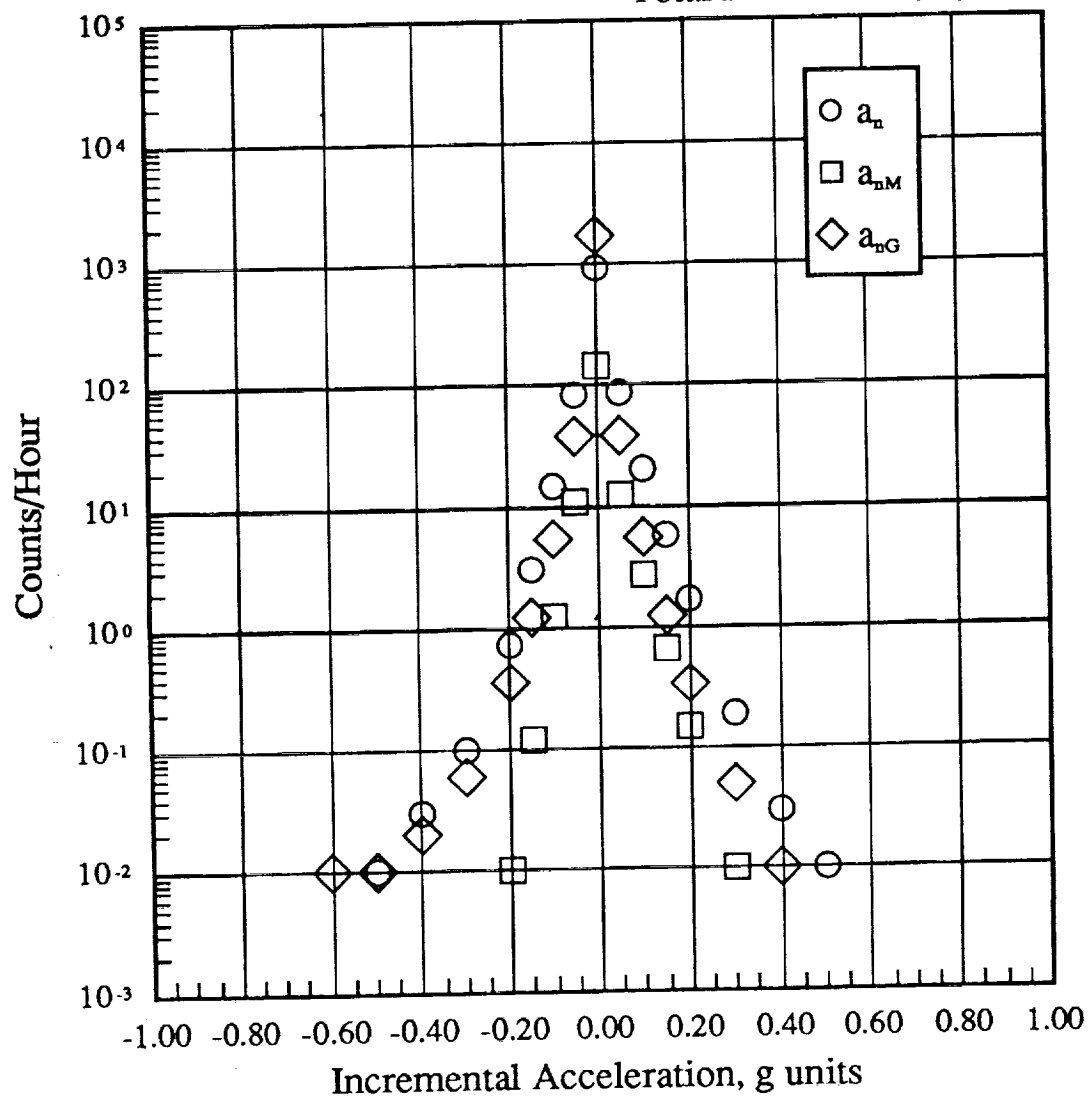
Total Flights 985
 Total Hours .33
 Total Miles 147



(1) a_n , a_{nM} , a_{nG} , 39500 to 44500 feet altitude

Figure 13.- Continued.

Total Flights 985
Total Hours 1765.59
Total Miles 723083



(m) a_n , a_{nM} , a_{nG} , -500 to 44500 feet altitude

Figure 13.- Concluded.

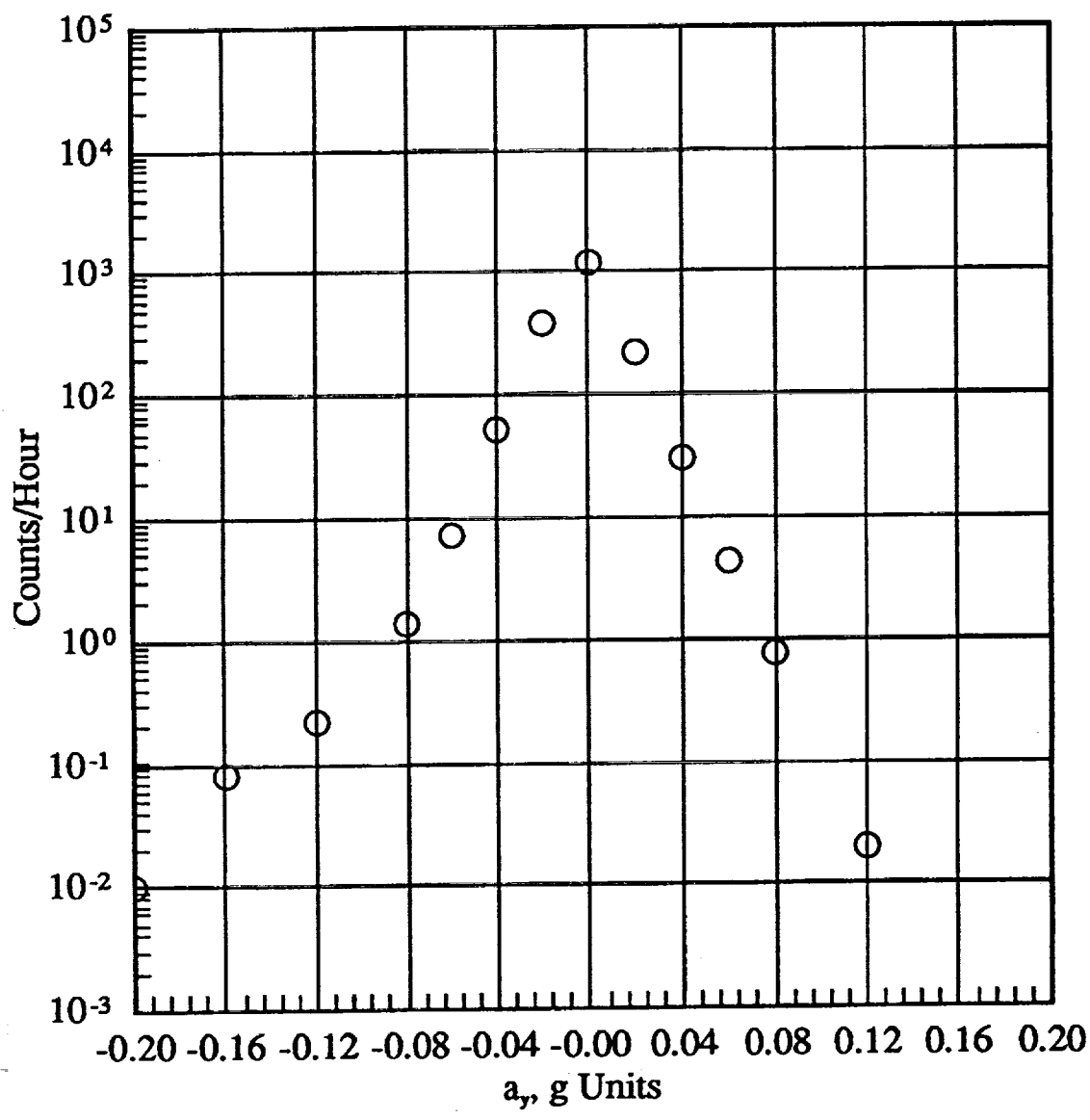
PRESSURE ALTITUDE BANDS

a _y LEVEL g's	-500 TO		4500 TO		9500 TO		14500 TO		19500 TO		24500 TO		29500 TO		34500 TO		39500 TO		-500 TO																					
	4500 FT		9500 FT		14500 FT		19500 FT		24500 FT		29500 FT		34500 FT		39500 FT		44500 FT		44500 FT																					
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																			
.48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																			
.44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																			
.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																			
.36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																			
.32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																			
.28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																			
.24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																			
.20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																			
.16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																			
.12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																			
.08	0.02	0	0.02	0	0.02	0.03	0.08	0.08	0.09	0.01	0.01	0.01	0.01	0.02	0	0	0	0	0	0.01	0.02																			
.06	0.76	0.22	0.20	0.21	0.33	0.27	0.33	0.27	0.33	0.05	0.02	0.05	0.02	0.02	0	0	0	0	0.02	0.13	0.13																			
.06	4.35	1.35	0.73	0.74	1.03	0.74	1.03	0.74	1.03	0.74	0.74	1.03	0.28	0.09	0	0	0	0	0.28	0.63	0.63																			
.04	30.91	9.62	4.26	3.48	4.07	3.48	4.07	3.48	4.07	3.48	3.10	1.45	0.73	0	0	0	0	0	3.89	3.89	3.89																			
.02	222.65	87.94	42.08	31.31	30.20	31.31	30.20	31.31	30.20	30.20	26.18	14.49	9.33	6.04	6.04	6.04	6.04	6.04	33.04	33.04	33.04																			
0	1205.53	900.69	839.85	900.22	970.23	1111.53	1245.60	1121.27	1522.15	1113.78	53.46	53.46	53.46	53.46	53.46	53.46	53.46	53.46	1113.78	1113.78	1113.78																			
-.02	387.15	171.07	88.58	65.09	47.43	65.09	47.43	65.09	47.43	47.43	32.89	14.62	10.20	0	0	0	0	0	53.46	53.46	53.46																			
-.04	53.20	15.85	7.10	5.23	5.08	5.23	5.08	5.23	5.08	5.08	3.61	1.32	0.57	0	0	0	0	0	5.79	5.79	5.79																			
-.06	7.29	1.78	1.06	0.99	1.28	0.99	1.28	0.99	1.28	1.28	0.87	0.23	0.08	0	0	0	0	0	0.86	0.86	0.86																			
-.08	1.38	0.27	0.19	0.32	0.53	0.32	0.53	0.32	0.53	0.53	0.36	0.04	0.01	0	0	0	0	0	0.19	0.19	0.19																			
-.12	0.22	0	0.03	0	0.18	0	0.18	0	0.18	0.18	0.11	0	0	0	0	0	0	0	0.03	0.03	0.03																			
-.16	0.08	0	0.01	0	0.08	0	0.08	0	0.08	0.08	0.06	0	0	0	0	0	0	0	0.01	0.01	0.01																			
-.20	0.01	0	0	0	0.03	0	0.03	0	0.03	0.03	0.04	0	0	0	0	0	0	0	0.01	0.01	0.01																			
-.24	0.01	0	0	0	0.01	0	0.01	0	0.01	0.01	0.02	0	0	0	0	0	0	0	0.01	0.01	0.01																			
-.28	0.01	0	0	0	0	0	0	0	0	0	0.01	0	0	0	0	0	0	0	0	0	0																			
-.32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																			
-.36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																			
-.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																			
-.44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																			
-.48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																			
FLIGHT HOURS @ ALT	102.71	105.51	104.07	74.64	87.46	74.64	87.46	87.46	87.46	87.46	132.30	495.03	663.54	0.33	0.33	0.33	0.33	0.33	1765.59	1765.59	1765.59																			
FLIGHT MILES @ ALT	18522.12	26173.93	33995.36	28461.45	36365.13	28461.45	36365.13	36365.13	36365.13	36365.13	58863.40	223579.81	296925.11	146.91	146.91	146.91	146.91	146.91	723033.21	723033.21	723033.21																			
																				TOTAL FLIGHTS	985																			
																				TOTAL FLIGHT HOURS FLAPS UP AND DOWN	1765.59																			
																				TOTAL FLIGHT MILES FLAPS UP AND DOWN	723033.21																			

(a) a_y Level crossing counts per hour within pressure altitude bands

Figure 14.- Lateral acceleration exceedances.

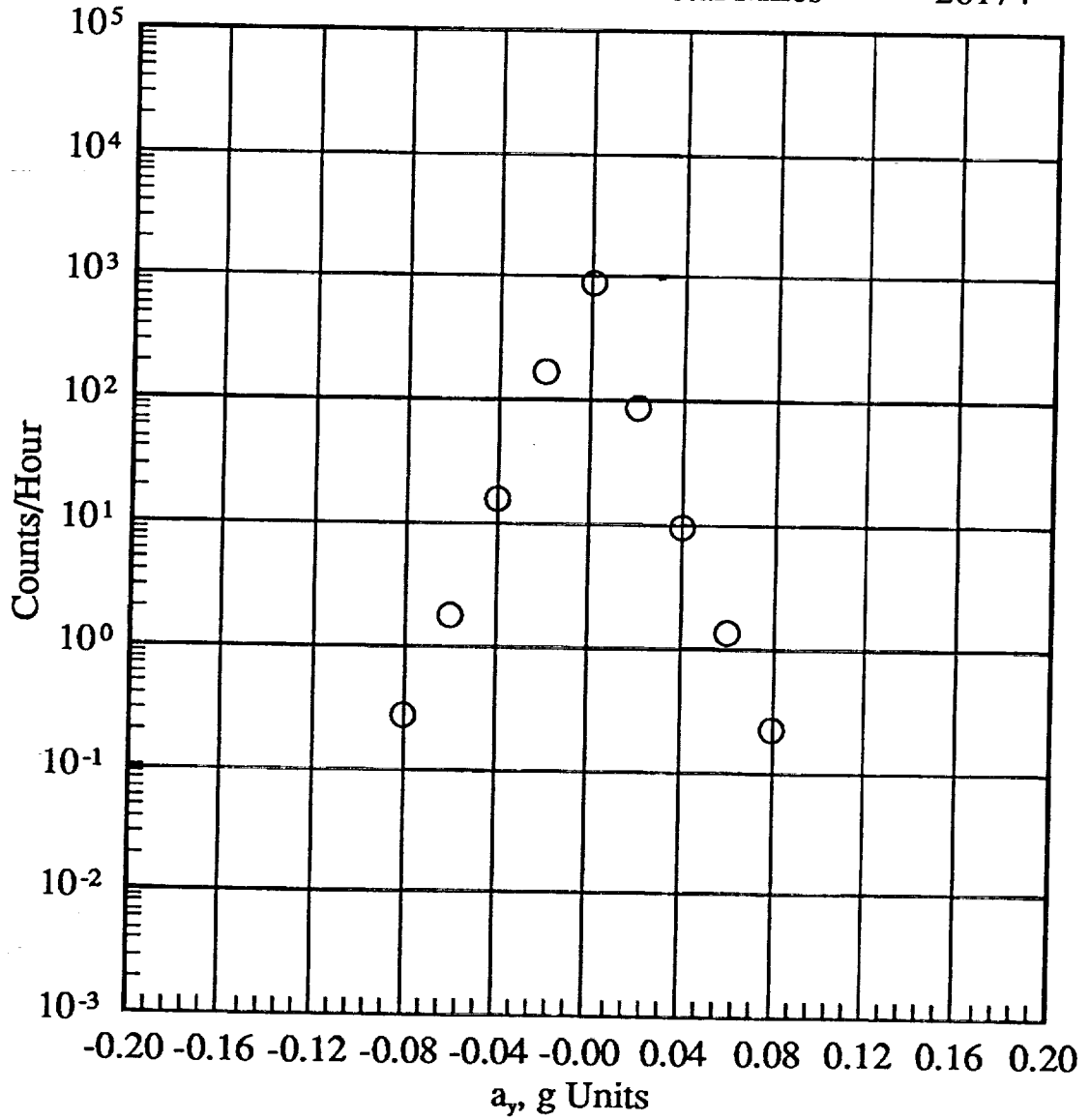
Total Flights	985
Total Hours	102.71
Total Miles	18522



(b) -500 to 4500 feet altitude

Figure 14.- Continued.

Total Flights	985
Total Hours	105.51
Total Miles	26174

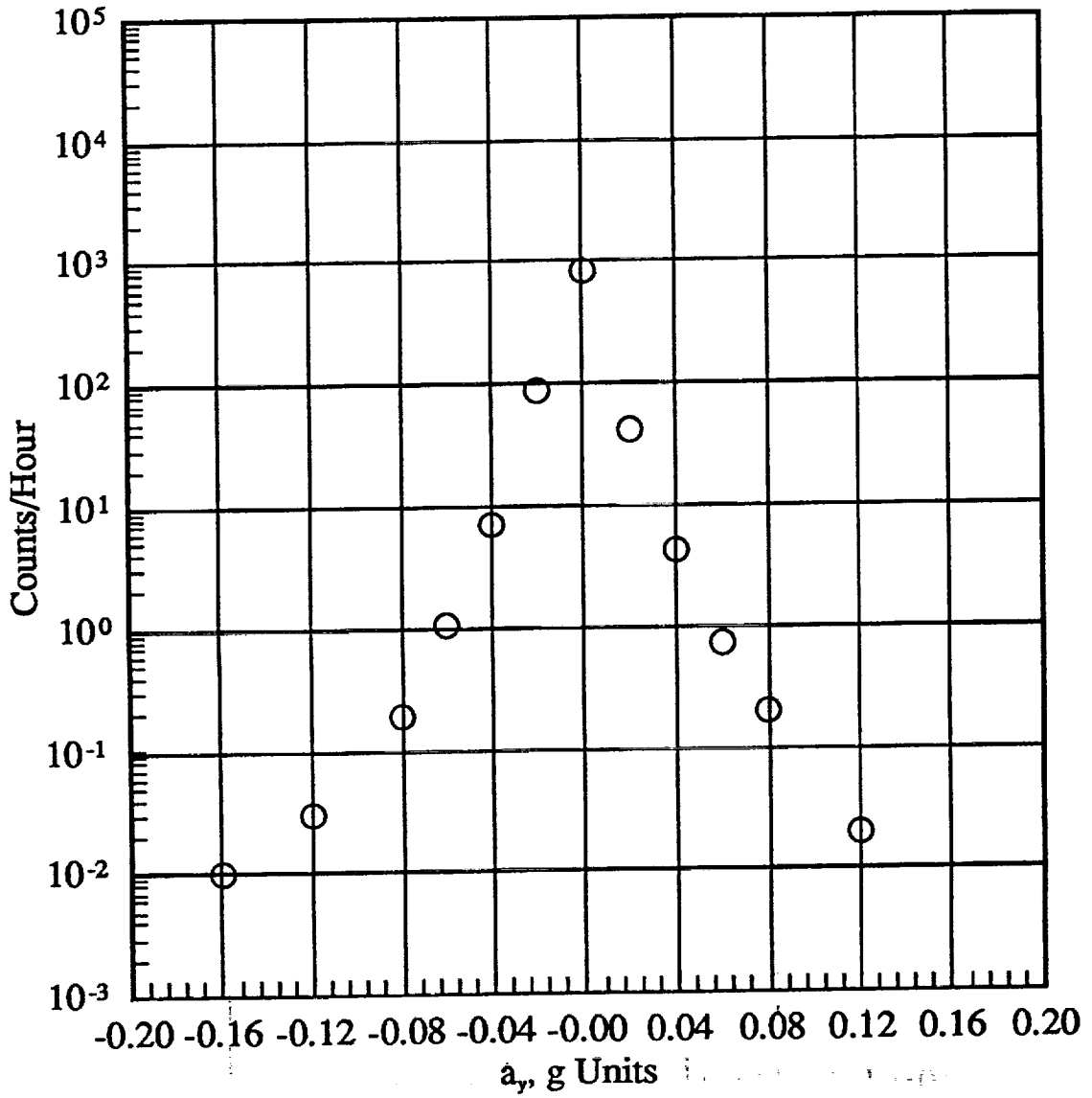


(c) 4500 to 9500 feet altitude

Figure 14.- Continued.

Total Flights
Total Hours
Total Miles

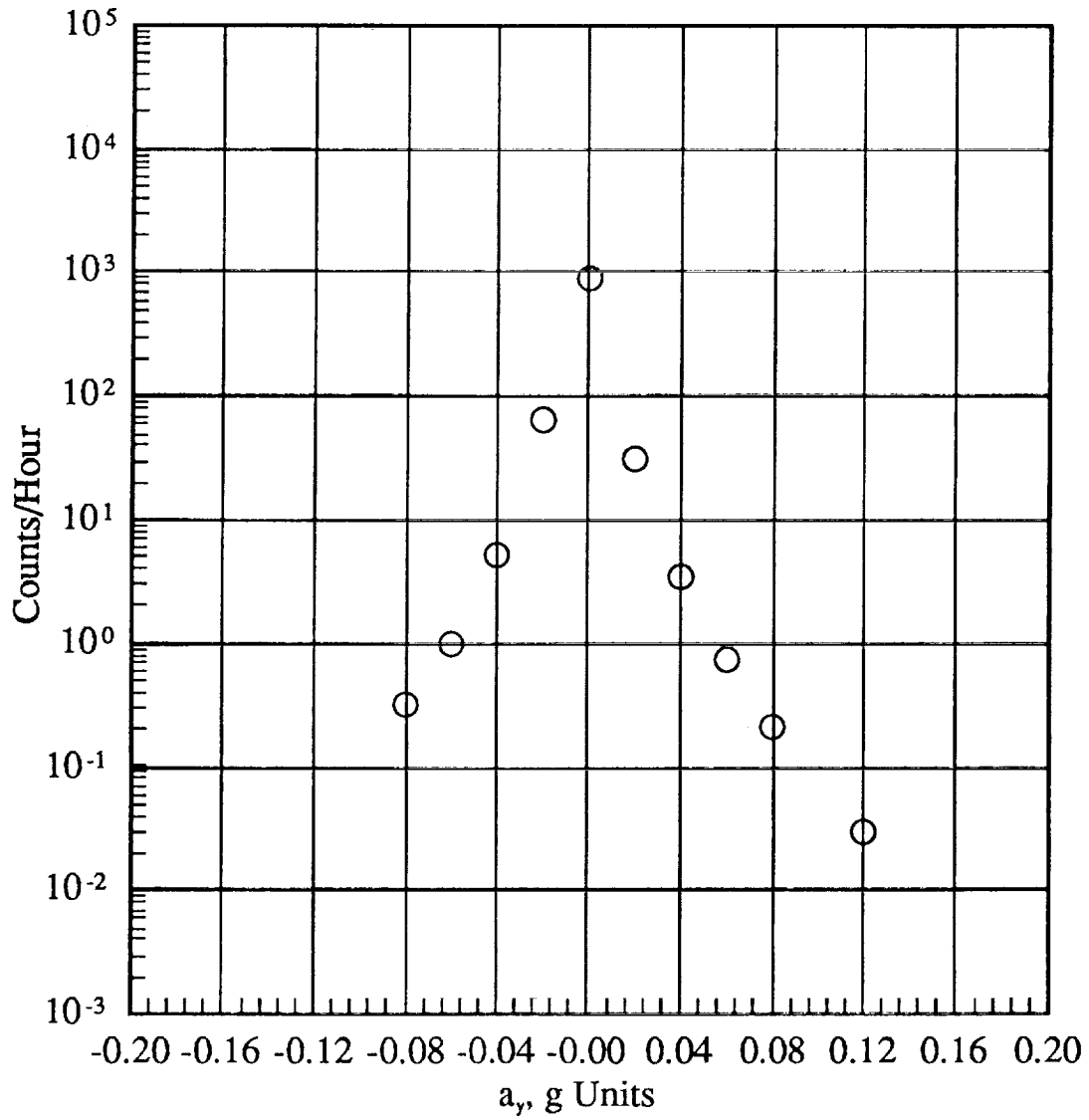
985
104.07
33995



(d) 9500 to 14500 feet altitude

Figure 14.- Continued.

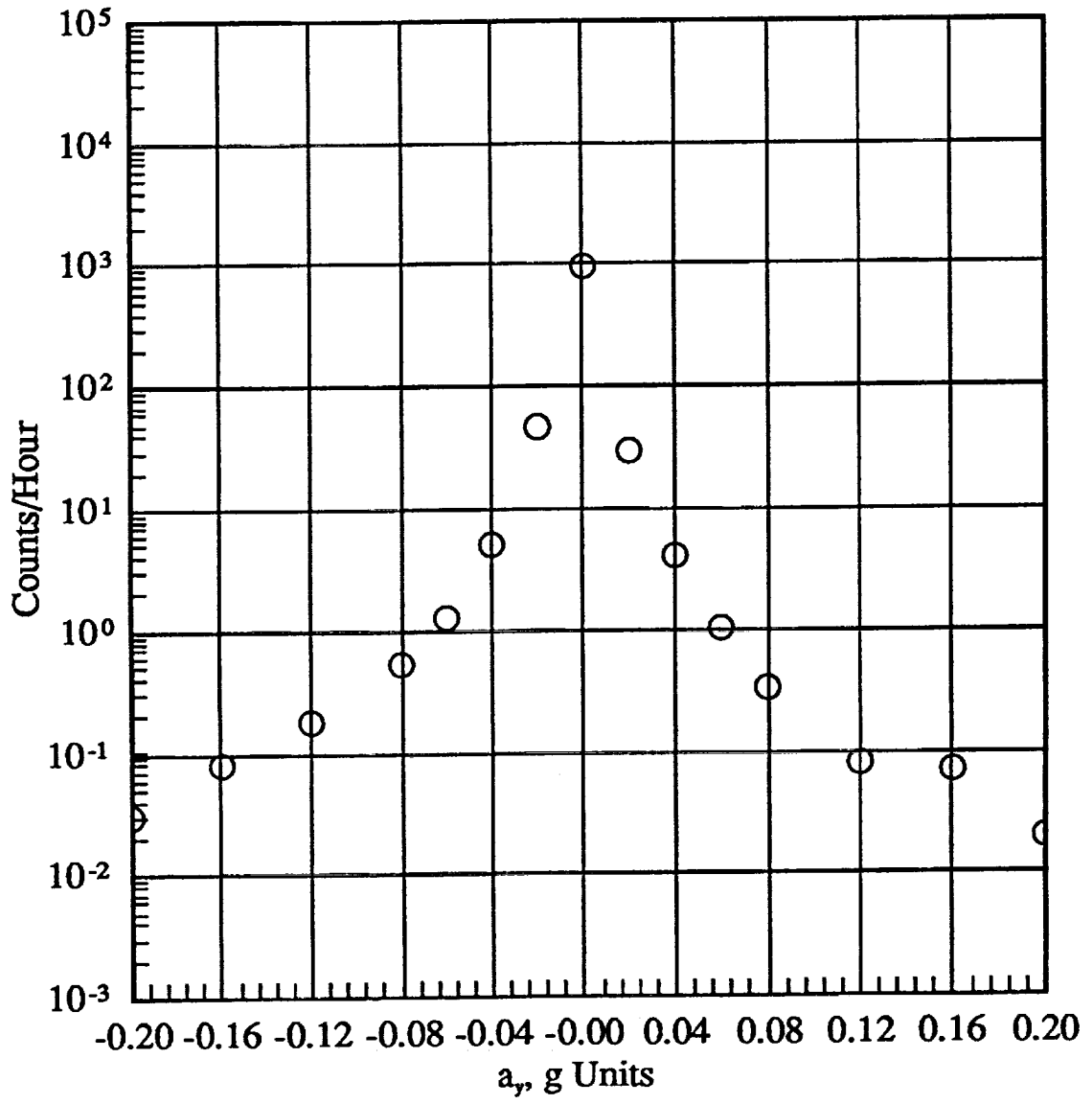
Total Flights 985
Total Hours 74.64
Total Miles 28461



(e) 14500 to 19500 feet altitude

Figure 14.- Continued.

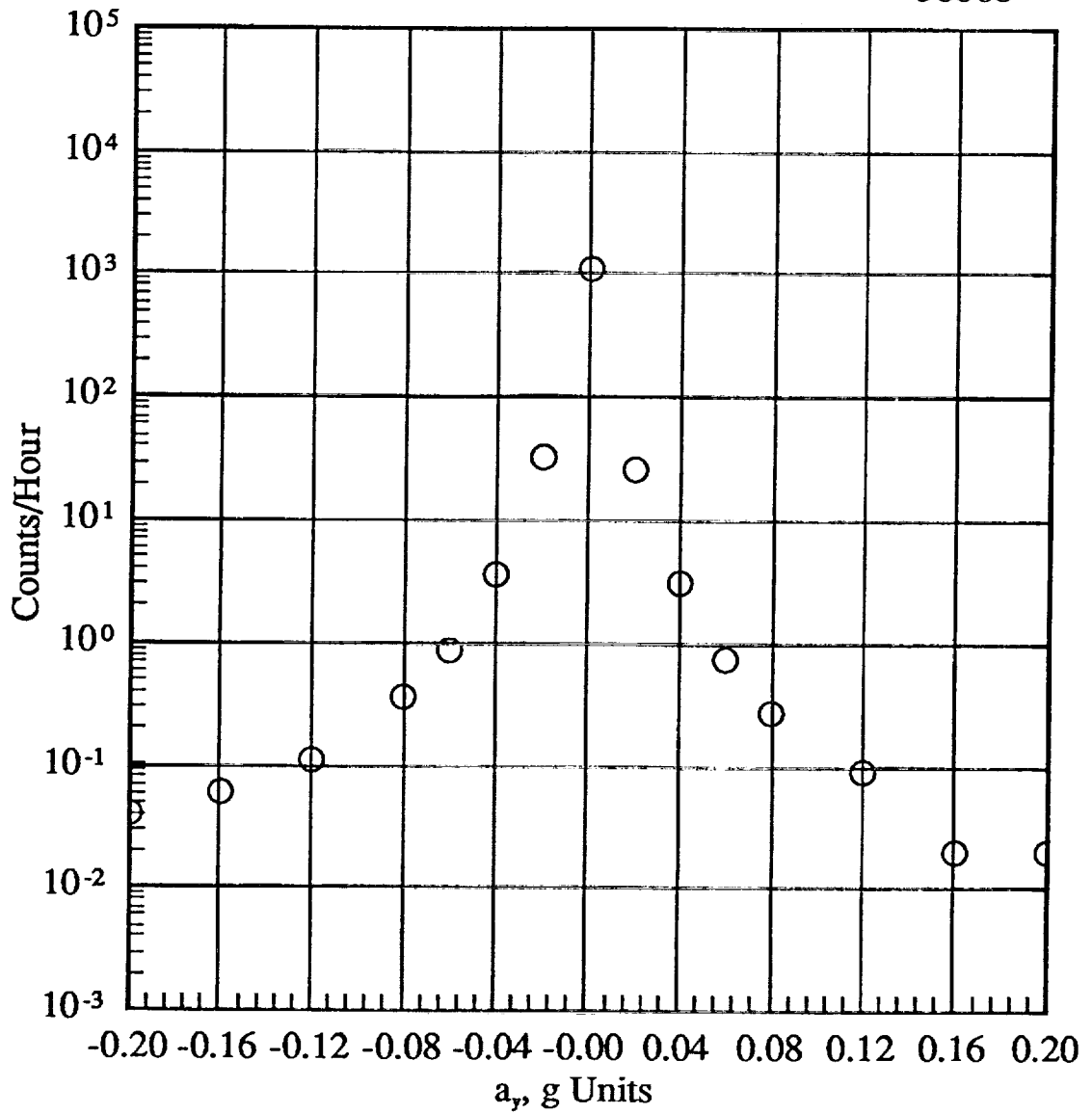
Total Flights	985
Total Hours	87.46
Total Miles	36365



(f) 19500 to 24500 feet altitude

Figure 14.- Continued.

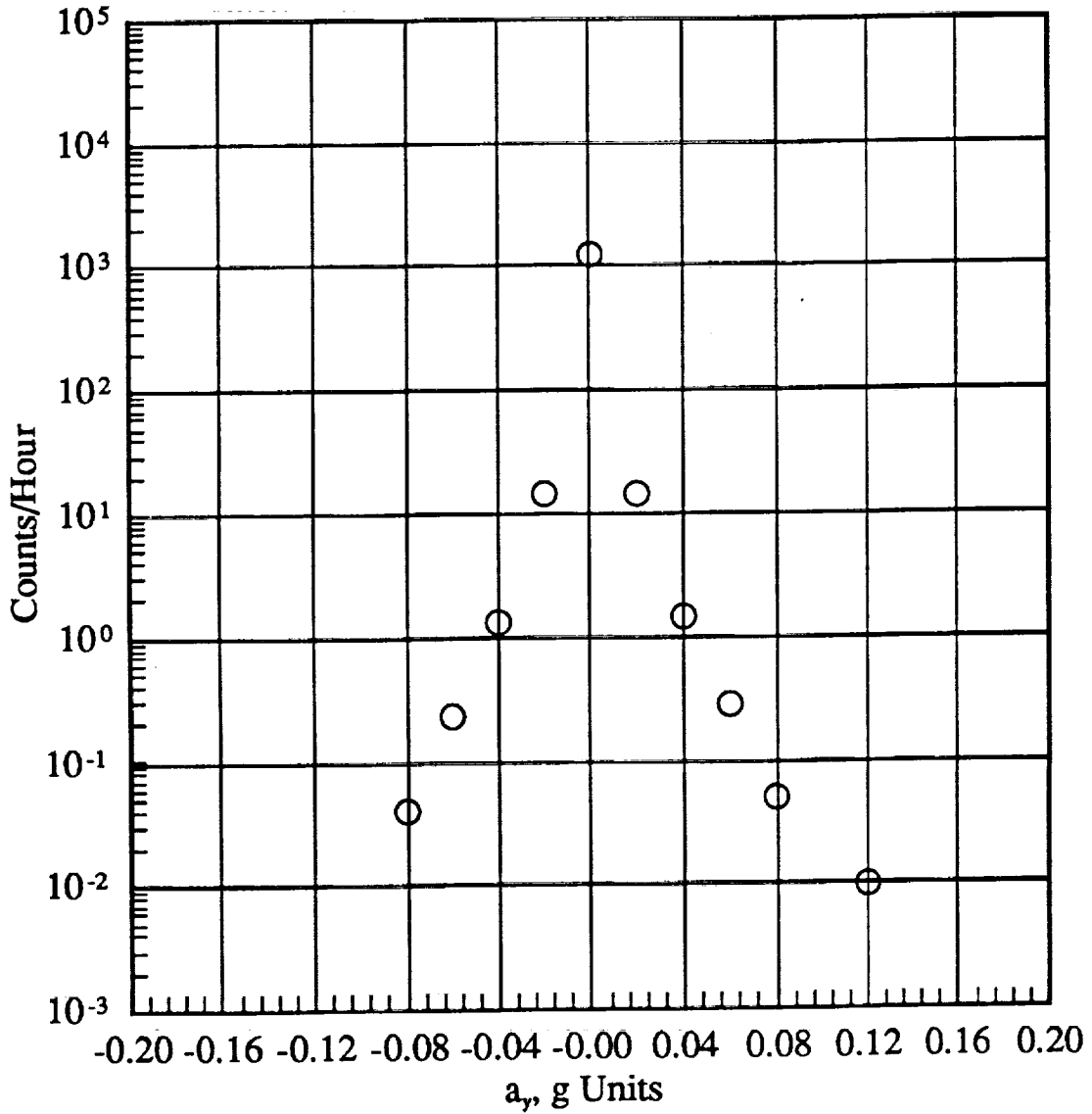
Total Flights	985
Total Hours	132.30
Total Miles	58868



(g) 24500 to 29500 feet altitude

Figure 14.- Continued.

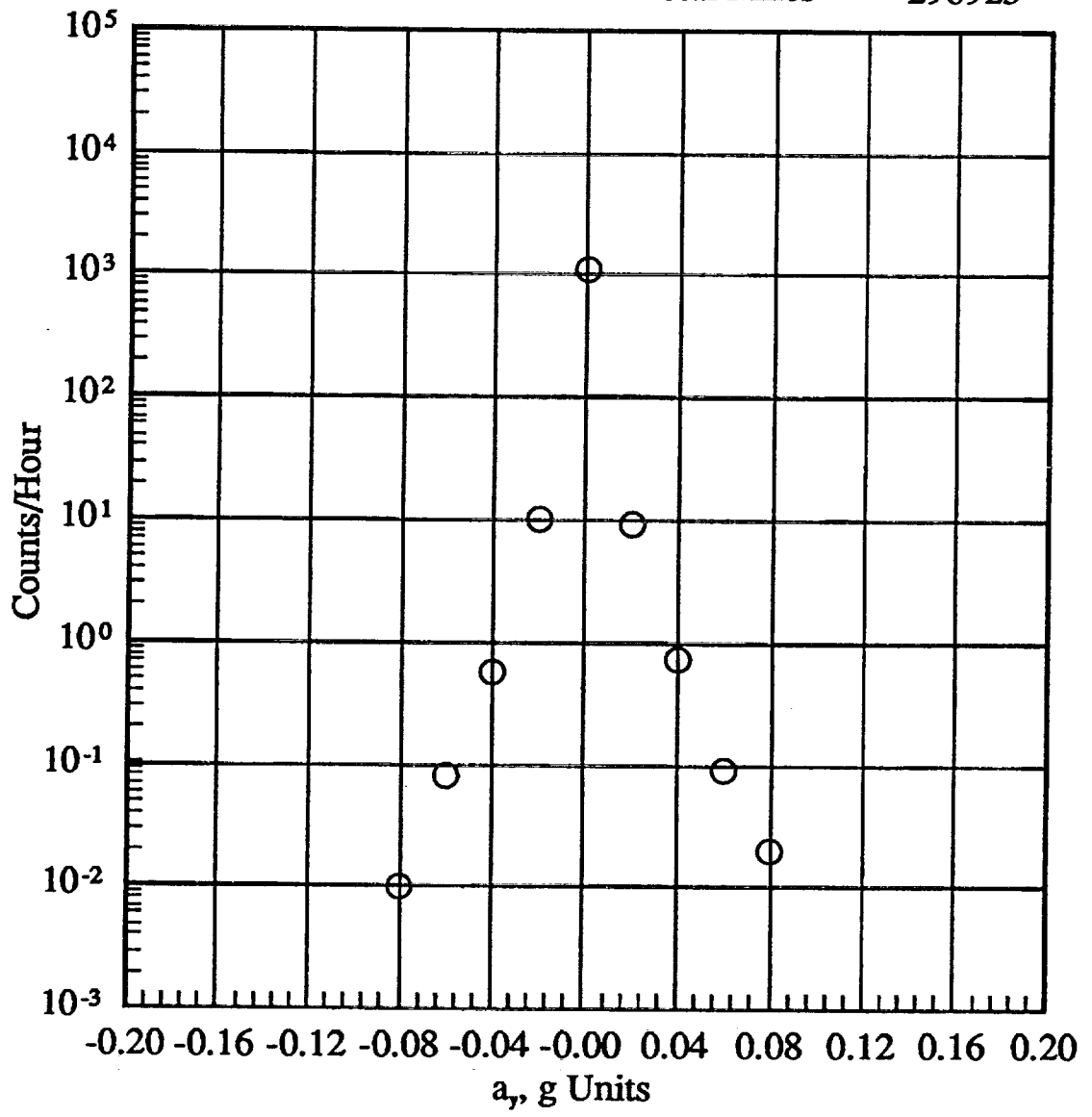
Total Flights 985
Total Hours 495.03
Total Miles 223580



(h) 29500 to 34500 feet altitude

Figure 14.- Continued.

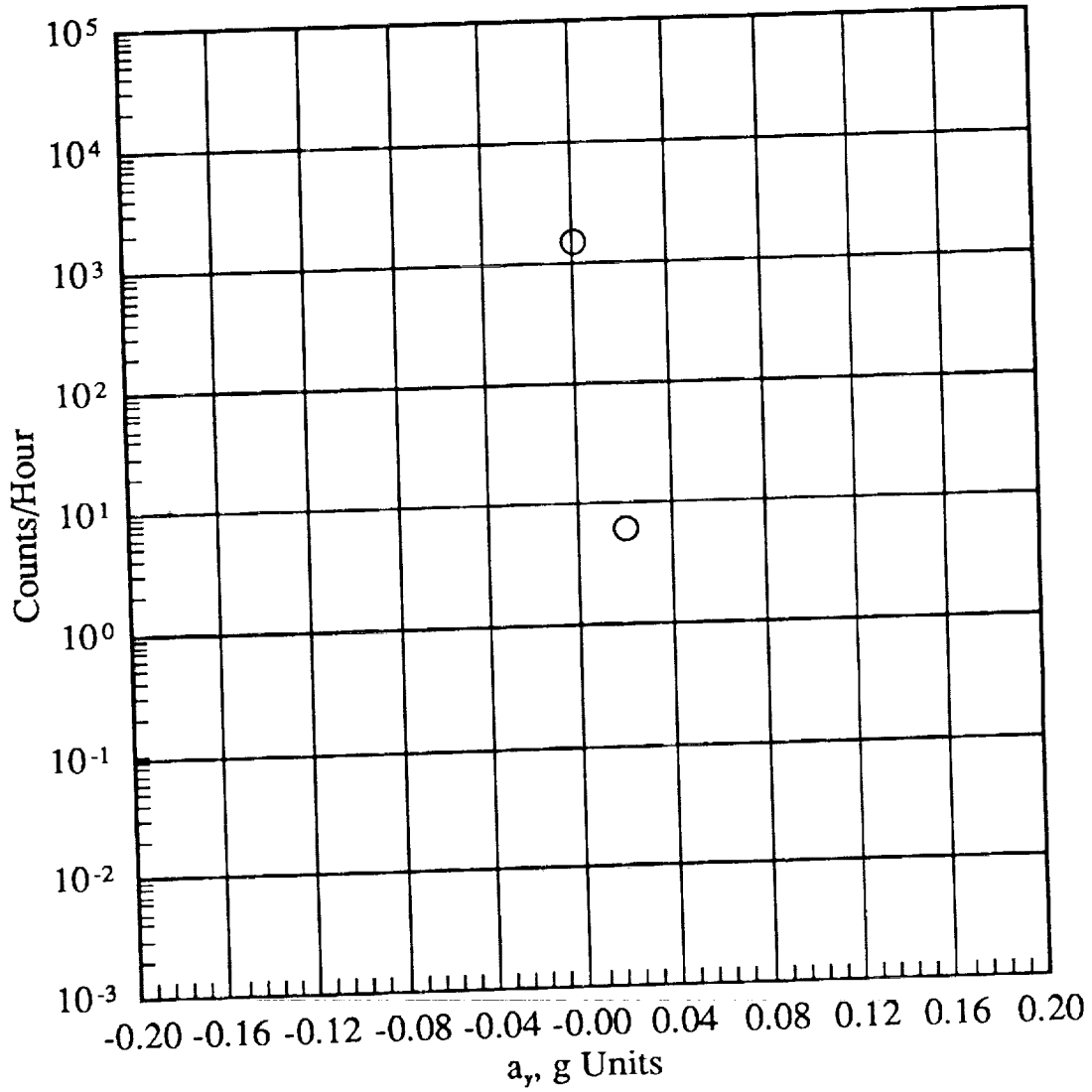
Total Flights 985
 Total Hours 663.54
 Total Miles 296925



(i) 34500 to 39500 feet altitude

Figure 14.- Continued.

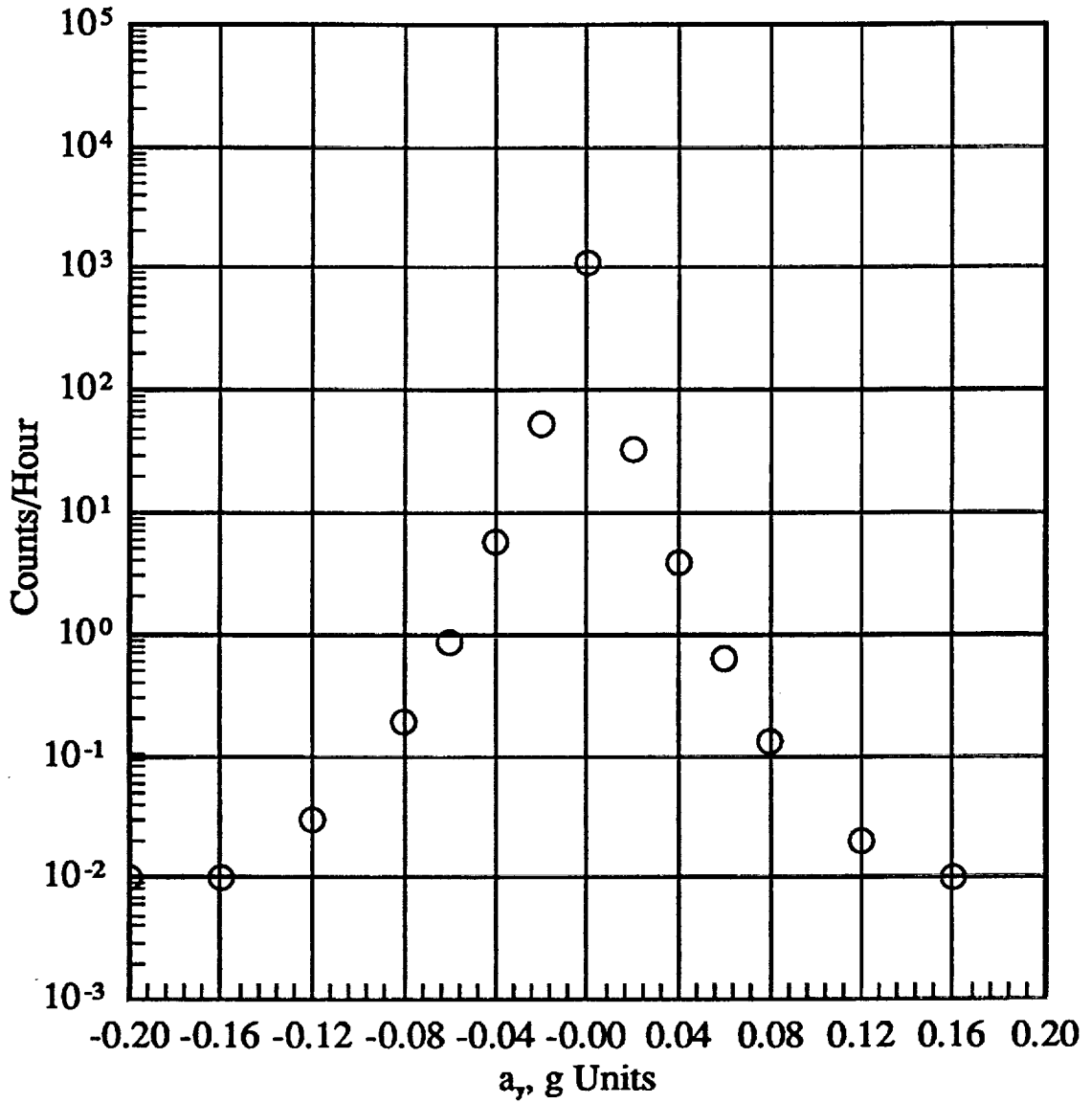
Total Flights	985
Total Hours	0.33
Total Miles	147



(j) 39500 to 44500 feet altitude

Figure 14.- Continued.

Total Flights	,985
Total Hours	1765.59
Total Miles	723033.21



(k) -500 to 44500 feet altitude

Figure 14.- Concluded.

PRESSURE ALTITUDE BANDS

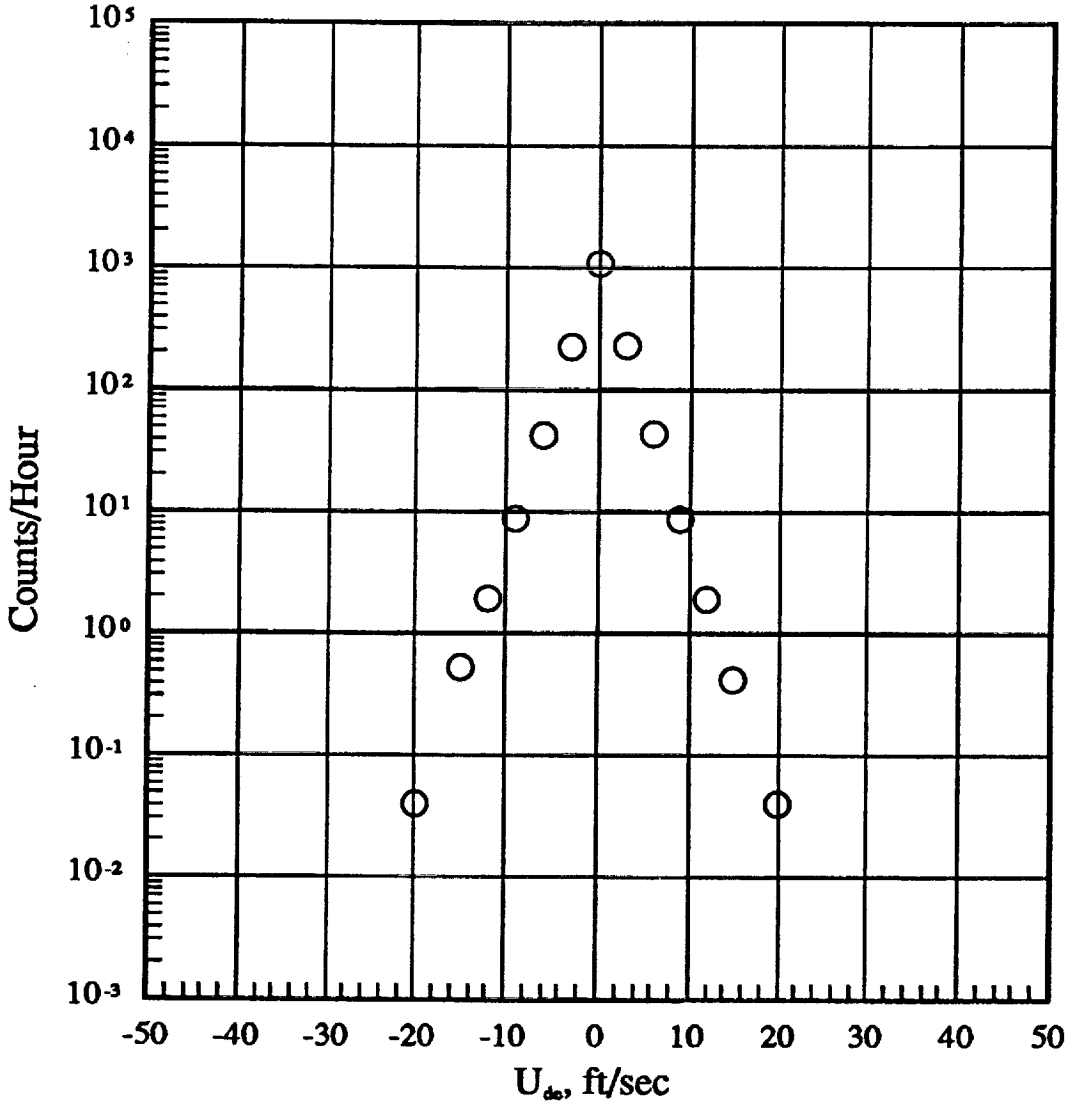
U _{de} DERIVED GUST VELOCITY LEVEL FT/SEC	-500 TO 4500 FT		4500 TO 9500 FT		9500 TO 14500 FT		14500 TO 19500 FT		19500 TO 24500 FT		24500 TO 29500 FT		29500 TO 34500 FT		34500 TO 39500 FT		39500 TO 44500 FT		-500 TO 44500 FT	
	FLIGHT HOURS @ ALT FLIGHT MILES @ ALT	102.71 18522.12	105.51 26173.93	104.07 33995.36	74.64 28461.45	87.46 36365.13	132.30 58863.40	495.03 223579.91	663.54 296925.11	0.33 146.91	1765.59 723033.21									
100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0.01	0.05	0.02	0	0	0	0	0	0	0	0	0
20	0.04	0.01	0	0	0	0	0	0.03	0.10	0.05	0	0	0	0	0	0	0	0	0.01	0.04
15	0.42	0.08	0.07	0.03	0.07	0.03	0.08	0.18	0.11	0.05	0	0	0	0	0	0	0	0	0.17	0.17
12	1.92	0.36	0.22	0.08	0.22	0.08	0.18	0.56	0.28	0.03	0.01	0	0	0	0	0	0	0	0.74	0.74
9	8.75	2.00	0.75	0.24	0.75	0.24	1.63	1.98	1.18	0.22	0.10	0	0	0	0	0	0	0	3.72	3.72
6	43.58	10.39	3.58	1.63	3.58	1.63	13.17	8.59	3.64	1.70	0	0	0	0	0	0	0	0	23.12	23.12
3	228.43	73.75	30.02	16.55	30.02	16.55	1615.16	1749.36	1896.69	2068.12	0	0	0	0	0	0	0	0	1707.62	1707.62
0	1083.63	1139.33	1258.02	1521.30	1258.02	1521.30	13.55	8.53	3.50	1.67	0	0	0	0	0	0	0	0	22.88	22.88
-3	223.92	74.65	30.31	16.53	30.31	16.53	1.73	1.06	0.25	0.11	0	0	0	0	0	0	0	0	3.64	3.64
-6	42.44	10.08	3.65	1.76	3.65	1.76	0.59	0.29	0.03	0.01	0	0	0	0	0	0	0	0	0.76	0.76
-9	8.84	2.03	0.80	0.42	0.80	0.42	0.25	0.12	0.01	0	0	0	0	0	0	0	0	0	0.18	0.18
-12	1.94	0.40	0.27	0.15	0.27	0.15	0.04	0.13	0.07	0	0	0	0	0	0	0	0	0	0.05	0.05
-15	0.53	0.09	0.05	0.04	0.05	0.04	0.06	0.04	0.01	0	0	0	0	0	0	0	0	0	0.01	0.01
-20	0.04	0.01	0.01	0.01	0.01	0.01	0	0	0.01	0.01	0	0	0	0	0	0	0	0	0	0
-30	0	0	0	0	0	0	0	0	0.01	0.01	0	0	0	0	0	0	0	0	0	0
-40	0	0	0	0	0	0	0	0	0	0.01	0	0	0	0	0	0	0	0	0	0
-50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

FLIGHT HOURS @ ALT FLIGHT MILES @ ALT	102.71 18522.12	105.51 26173.93	104.07 33995.36	74.64 28461.45	87.46 36365.13	132.30 58863.40	495.03 223579.91	663.54 296925.11	0.33 146.91	1765.59 723033.21
TOTAL FLIGHTS	985									
TOTAL FLIGHT HOURS FLAPS UP AND DOWN	1765.59									
TOTAL FLIGHT MILES FLAPS UP AND DOWN	723033.21									

(a) U_{de} Level crossing counts per hour withing pressure altitude bands

Figure 15.- U_{de} exceedances.

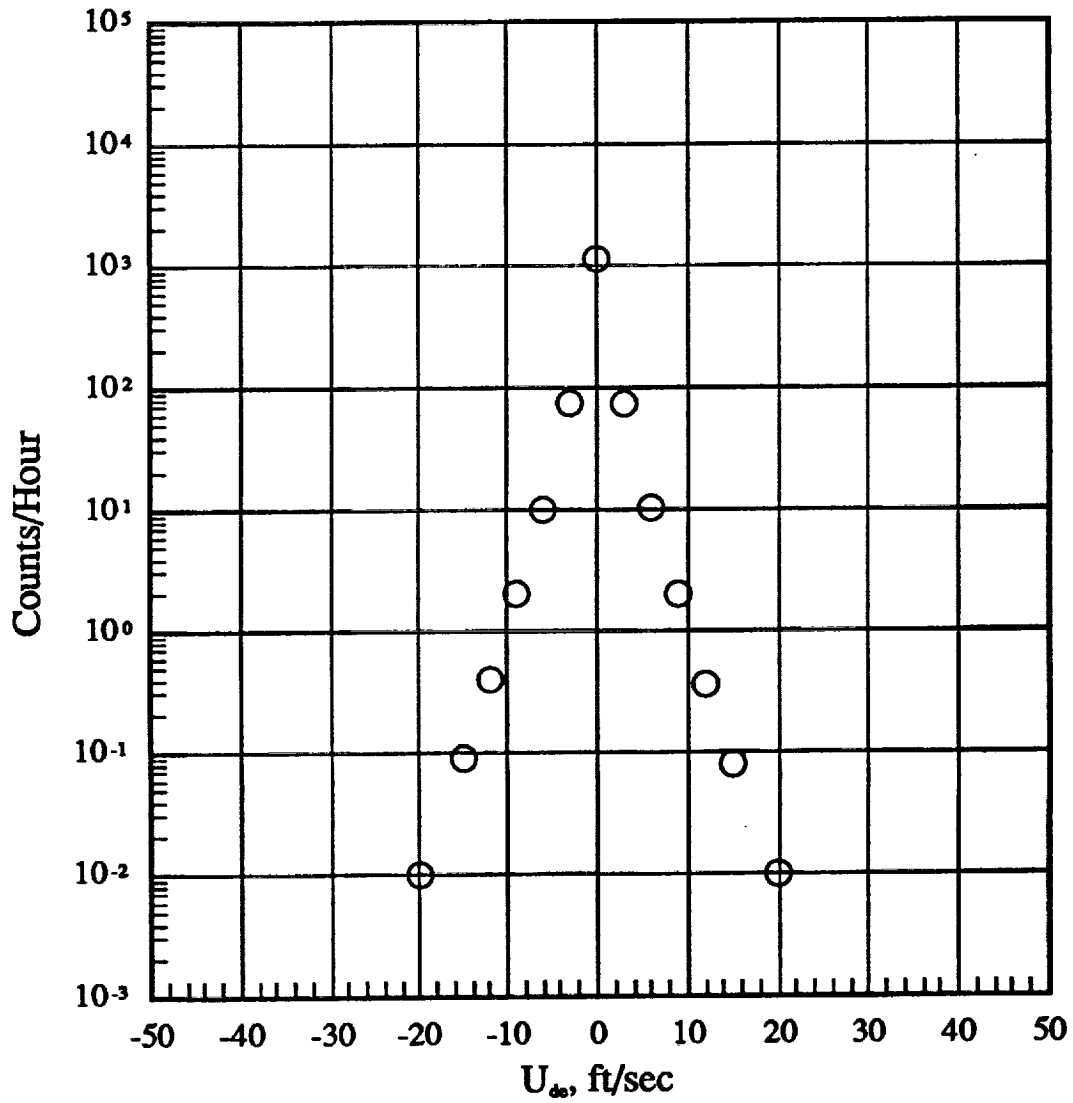
Total Flights 985
 Total Hours 102.71
 Total Miles 18522



(b) -500 to 4500 feet altitude

Figure 15.- Continued.

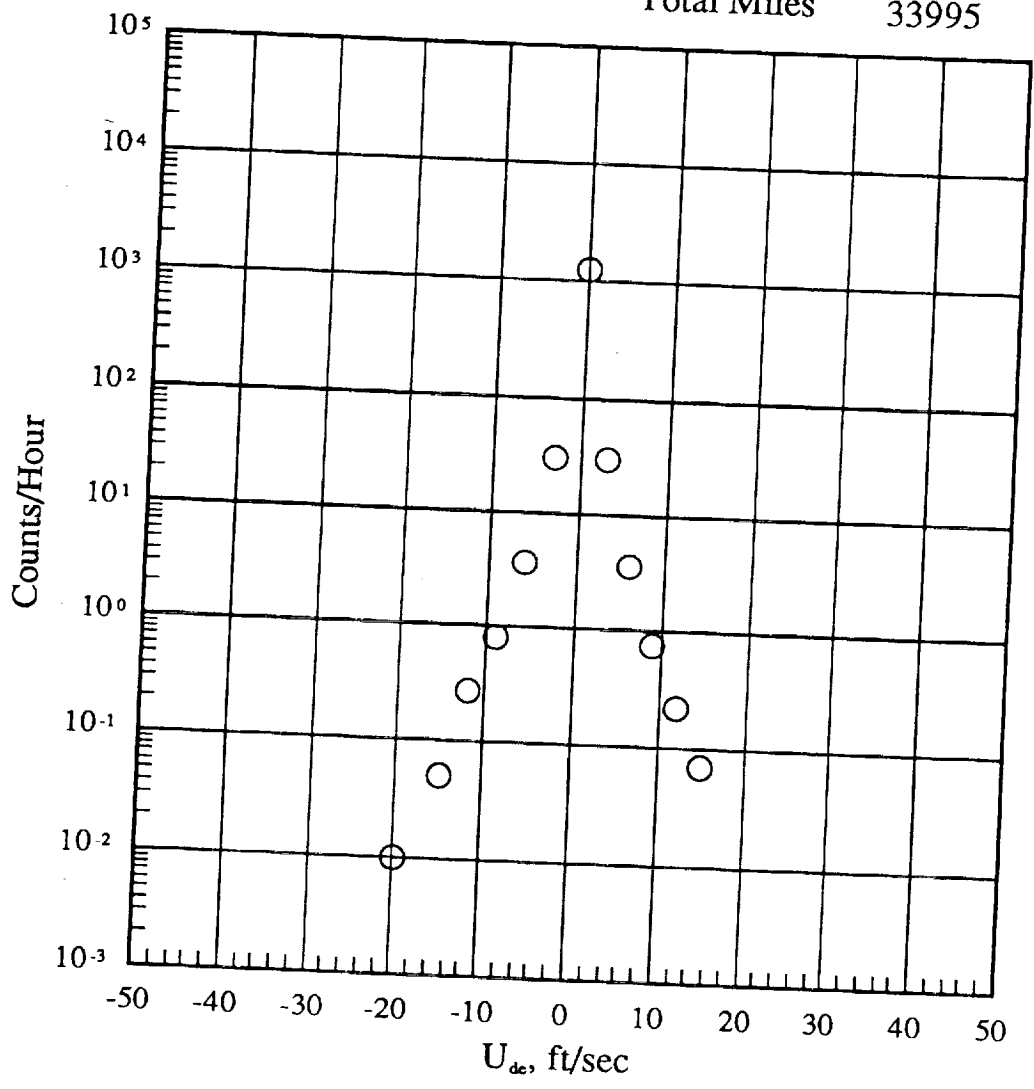
Total Flights	985
Total Hours	105.51
Total Miles	26174



(c) 4500 to 9500 feet altitude

Figure 15.- Continued.

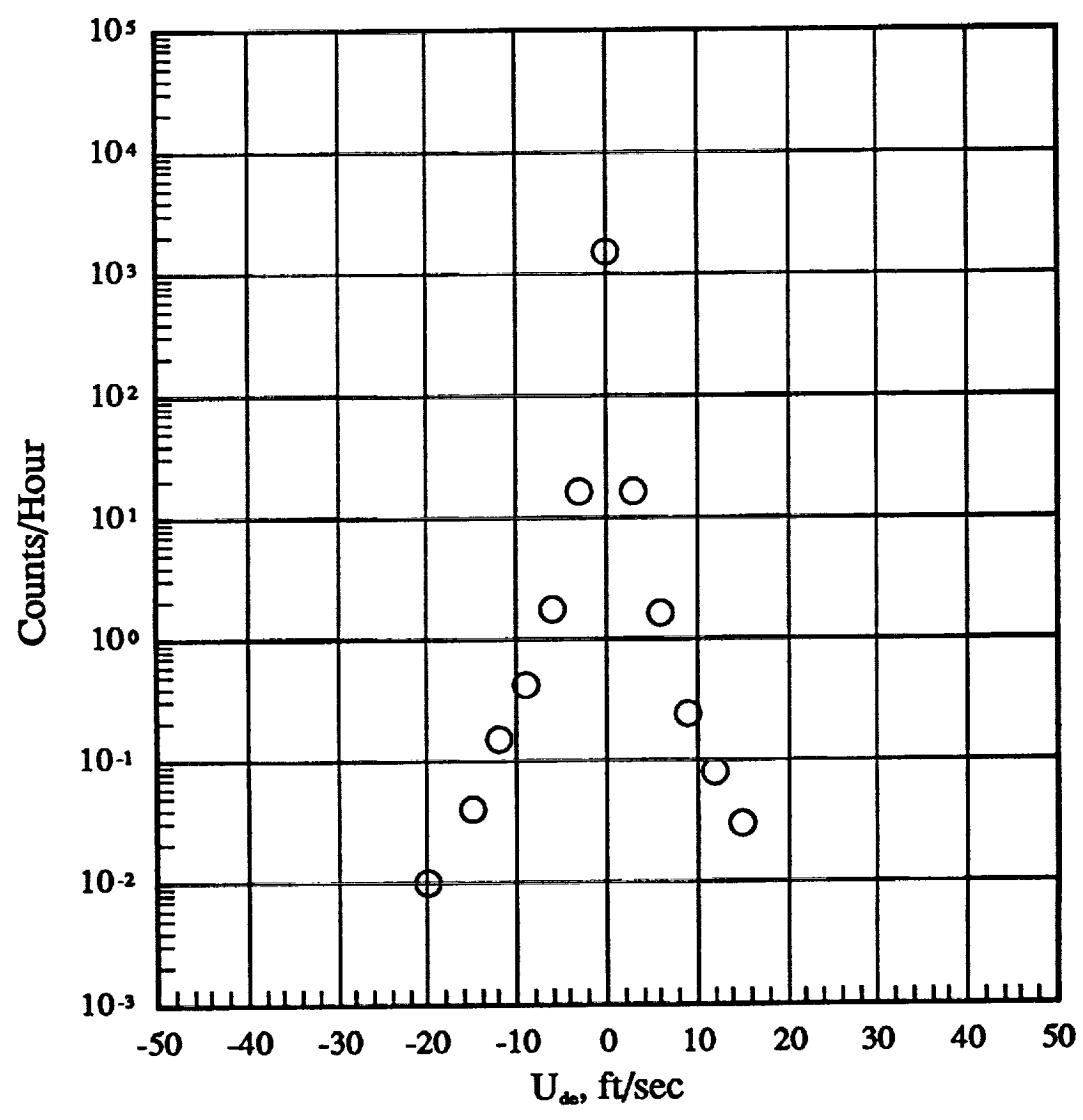
Total Flights 985
Total Hours 104.07
Total Miles 33995



(d) 9500 to 14500 feet altitude

Figure 15.- Continued.

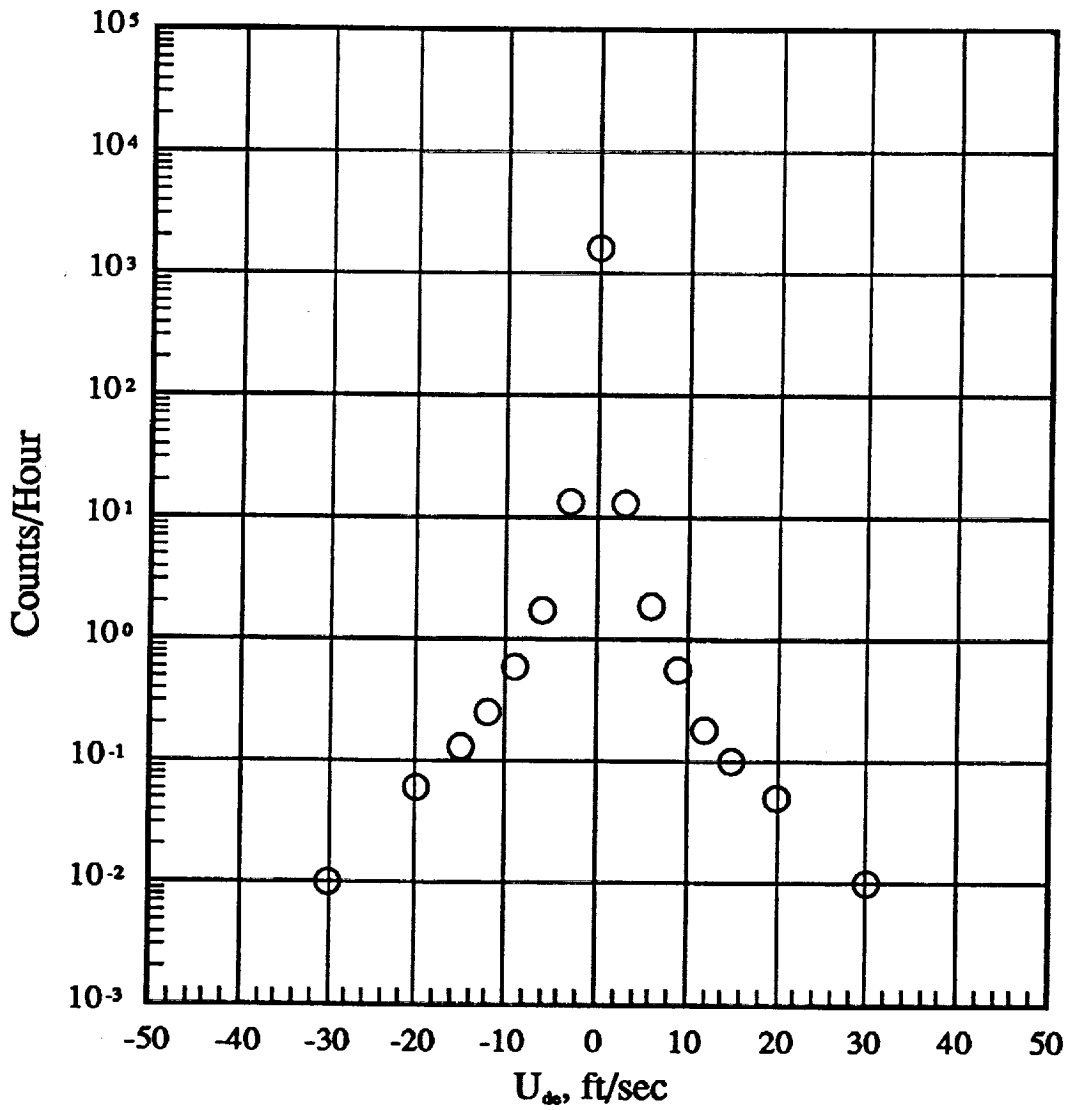
Total Flights	985
Total Hours	74.64
Total Miles	28461



(e) 14500 to 19500 feet altitude

Figure 15.- Continued.

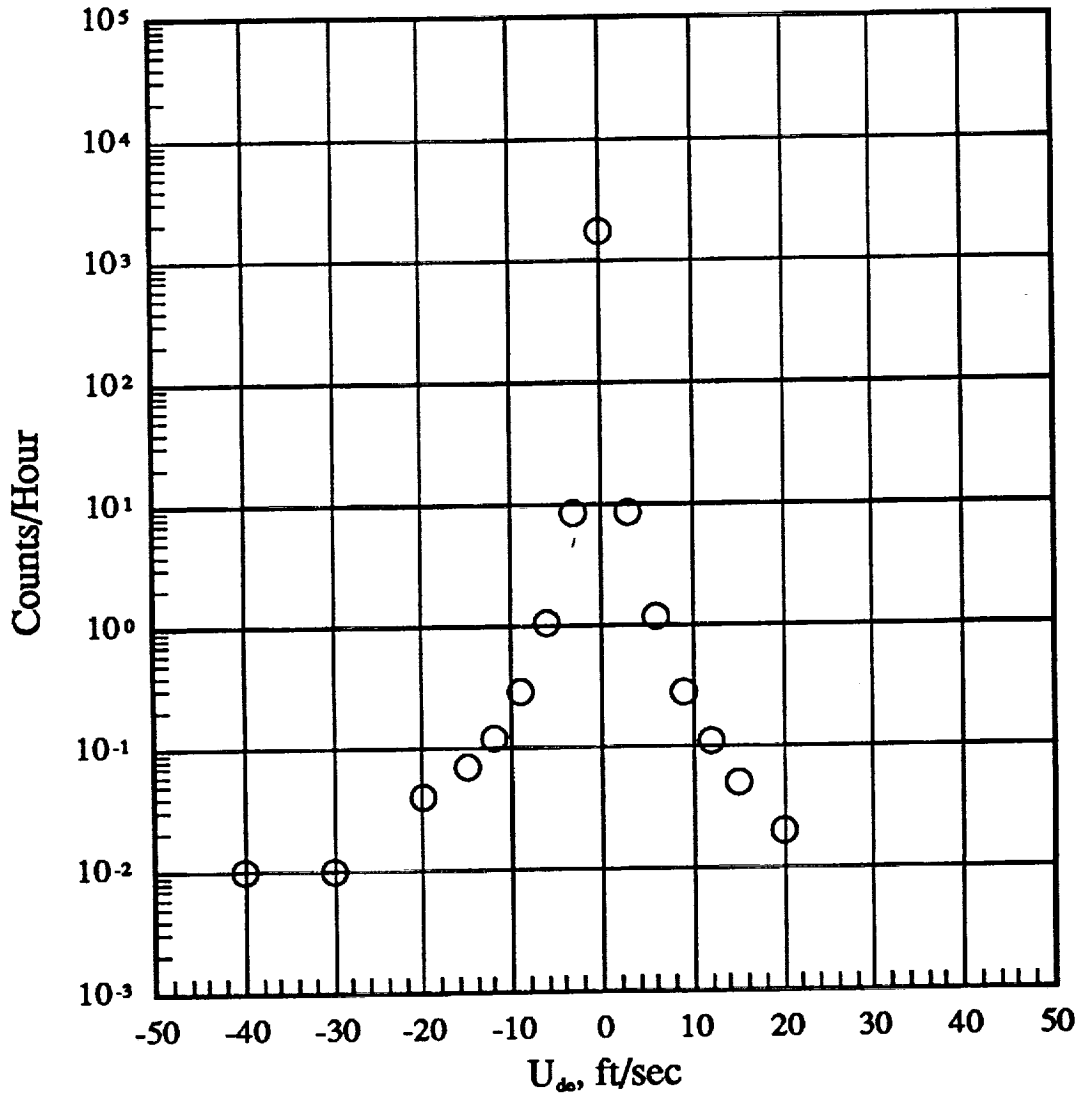
Total Flights 985
Total Hours 87.46
Total Miles 36365



(f) 19500 to 24500 feet altitude

Figure 15.- Continued.

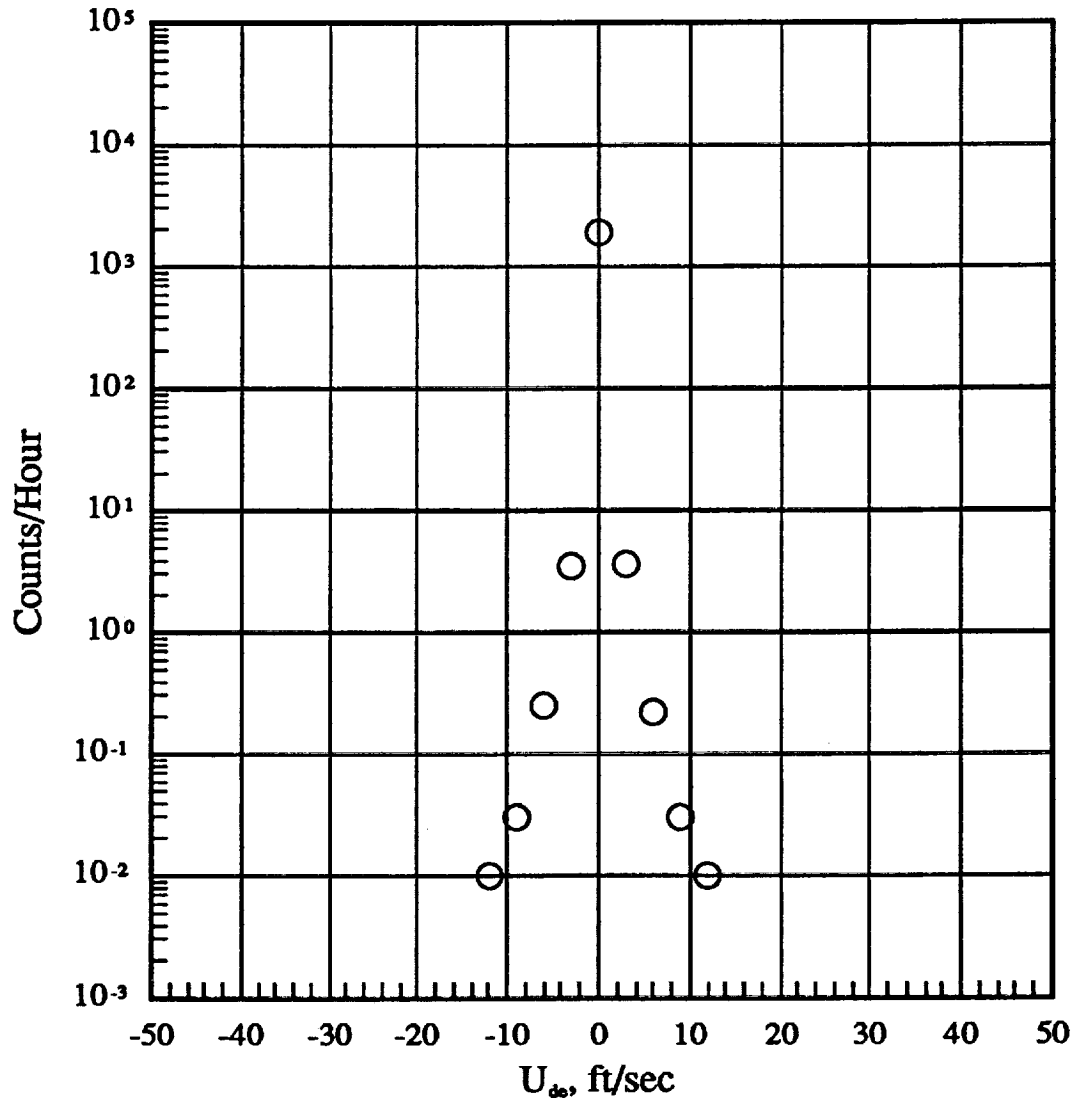
Total Flights 985
 Total Hours 132.80
 Total Miles 58868



(g) 24500 to 29500 feet altitude

Figure 15.- Continued.

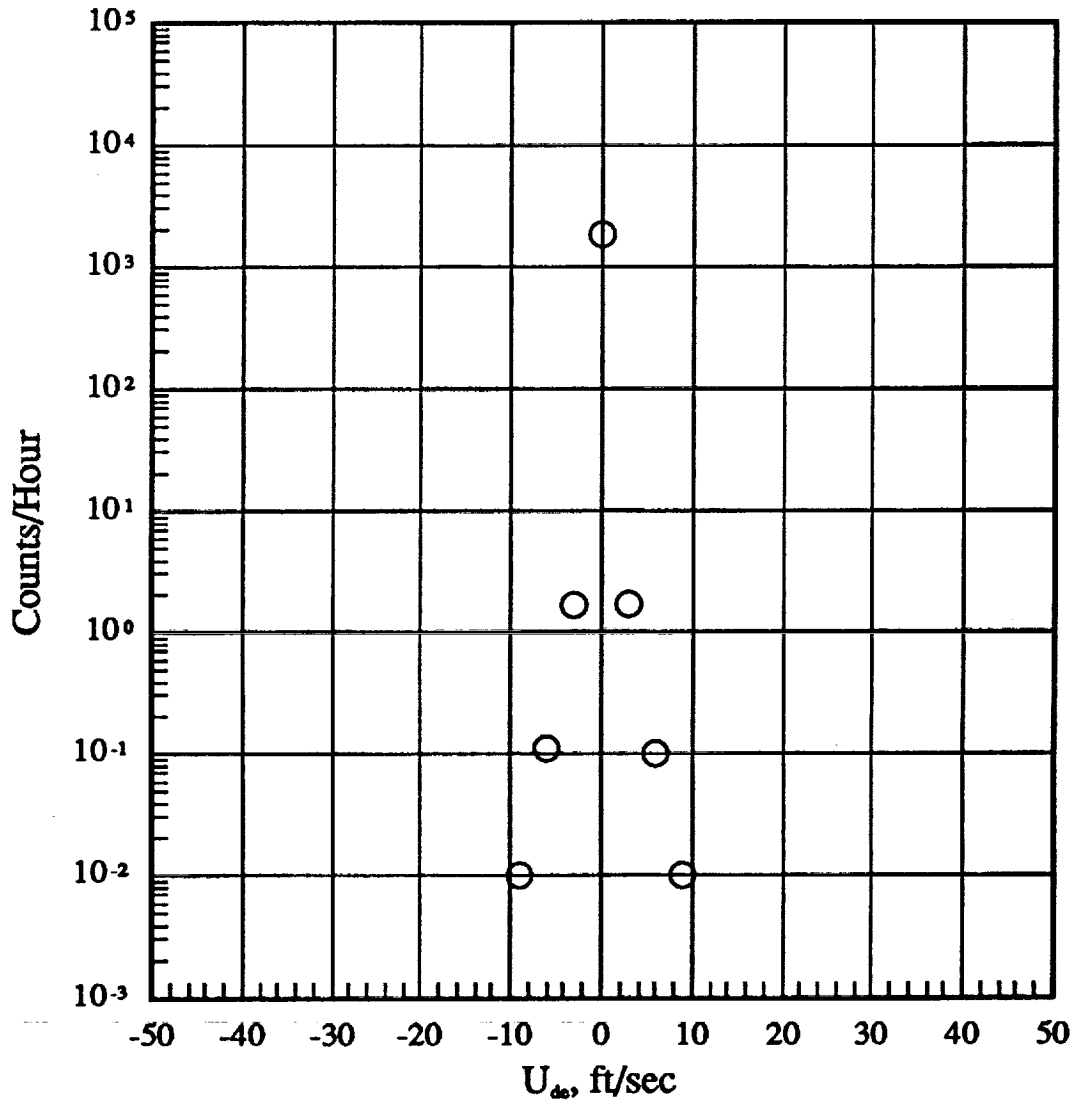
Total Flights 985
Total Hours 465.03
Total Miles 223580



(h) 29500 to 34500 feet altitude

Figure 15.- Continued.

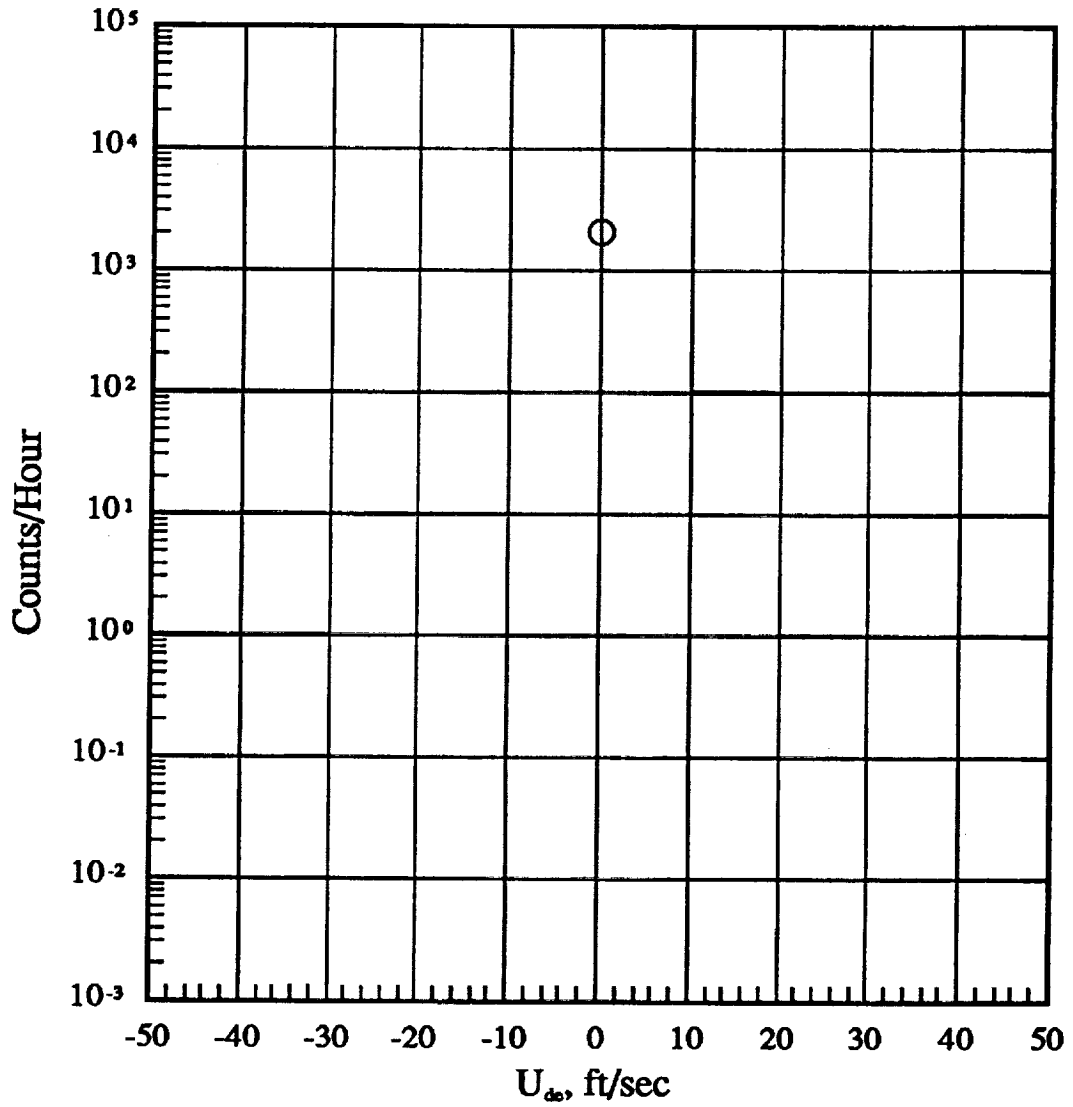
Total Flights 985
Total Hours 663.54
Total Miles 296925



(i) 34500 to 39500 feet altitude

Figure 15.- Continued.

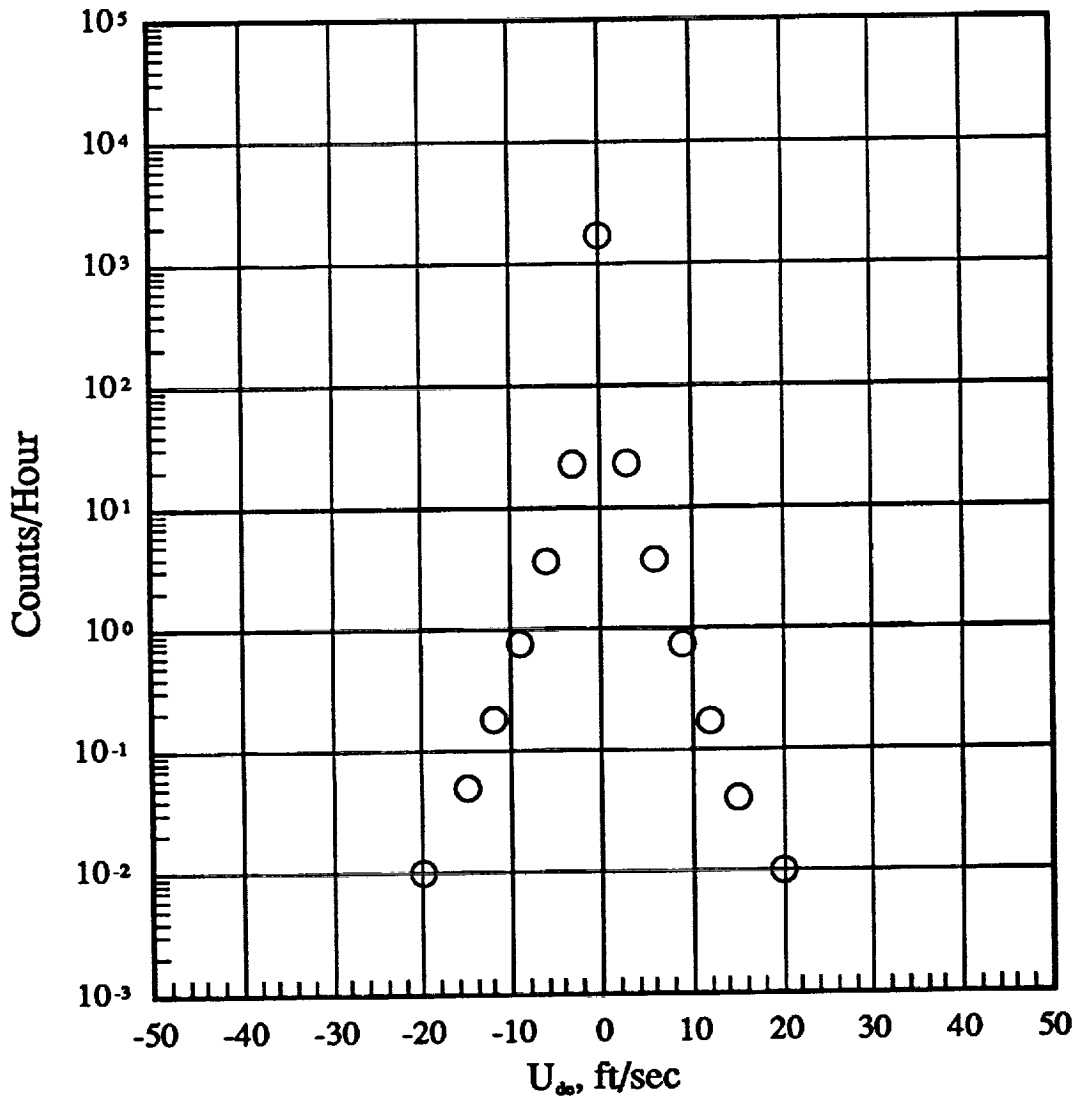
Total Flights 985
Total Hours 147.33
Total Miles



(j) 39500 to 44500 feet altitude

Figure 15.- Continued.

Total Flights 985
Total Hours 1765.59
Total Miles 723083



(k) -500 to 44500 feet altitude

Figure 15.- Concluded.

PRESSURE ALTITUDE BANDS

g's FROM LEVEL FOR EACH FLIGHT	TO	PRESSURE ALTITUDE BANDS										TOTAL FLIGHTS		
		-500 TO 4500 FT	4500 TO 9500 FT	9500 TO 14500 FT	14500 TO 19500 FT	19500 TO 24500 FT	24500 TO 29500 FT	29500 TO 34500 FT	34500 TO 39500 FT	39500 TO 44500 FT	-500 TO 44500 FT			
1.60	1.80	0	0	0	0	0	0	0	0	0	0	0	0	0
1.40	1.60	0	0	0	0	0	0	0	0	0	0	0	0	0
1.20	1.40	0	0	0	0	0	0	0	0	0	0	0	0	0
1.00	1.20	0	0	0	0	0	0	0	0	0	0	0	0	0
.80	1.00	0	0	0	0	0.10	0	0	0	0	0	0	0	0.10
.70	.80	0	0	0	0	0	0	0	0	0	0	0	0	0
.60	.70	0	0	0.10	0	0	0	0	0	0	0	0	0	0.20
.50	.60	0.20	0.10	0.10	0.20	0	0.10	0.10	0.10	0.10	0	0	0	0.80
.40	.50	0.50	0.60	0.30	0.10	0.10	0.20	0.10	0.20	0.10	0.10	0	0	1.90
.30	.40	4.50	3.00	1.20	0.50	0.50	0.50	0.70	0.70	0.50	0.50	0	0	11.50
.20	.30	19.70	12.60	6.70	2.10	2.20	2.00	2.60	2.60	1.10	1.10	0	0	49.10
.15	.20	10.70	6.60	3.90	1.20	0.40	1.00	2.80	2.80	1.10	1.10	0	0	27.70
.10	.15	2.80	2.40	1.10	0.10	0.10	0.20	0.80	0.80	0.60	0.60	0	0	8.20
.05	.10	0.10	0.10	0.10	0	0	0	0	0	0.10	0.10	0	0	0.40
-.05	-.10	0.20	0.10	0	0	0	0	0	0	0.30	0.30	0	0	0.60
-.10	-.15	6.90	3.20	3.60	0.40	0.80	0.70	2.20	2.20	2.40	2.40	0	0	20.30
-.15	-.20	14.80	6.00	5.60	2.60	1.50	1.30	3.00	3.00	3.00	3.00	0	0	38.00
-.20	-.30	11.40	8.00	4.40	1.80	1.70	2.00	2.30	2.30	2.20	2.20	0	0	33.90
-.30	-.40	1.40	1.10	1.10	0.20	0.40	0.40	0.60	0.60	0.30	0.30	0	0	5.40
-.40	-.50	0	0.10	0.20	0.20	0.10	0.10	0.20	0.20	0.10	0.10	0	0	1.10
-.50	-.60	0	0	0	0.10	0.10	0.10	0.10	0.10	0	0	0	0	0.40
-.60	-.70	0	0	0	0	0.10	0	0	0	0	0	0	0	0.10
-.70	-.80	0	0	0	0	0	0	0	0	0	0	0	0	0
-.80	-.1.00	0	0	0	0	0.10	0	0	0	0	0	0	0	0.10
-1.00	-1.20	0	0	0	0	0	0	0	0	0	0	0	0	0
-1.20	-1.40	0	0	0	0	0	0	0.10	0	0	0	0	0	0.10
-1.40	-1.60	0	0	0	0	0	0	0	0	0	0	0	0	0
-1.60	-1.80	0	0	0	0	0	0	0	0	0	0	0	0	0
FLIGHT HOURS @ ALT		102.71	105.51	104.07	74.64	87.46	132.30	495.03	663.54	0.33	1765.59			
FLIGHT MILES @ ALT		18522.12	26173.93	33995.36	28461.45	36365.13	58863.40	223579.81	296925.11	146.91	723033.21			

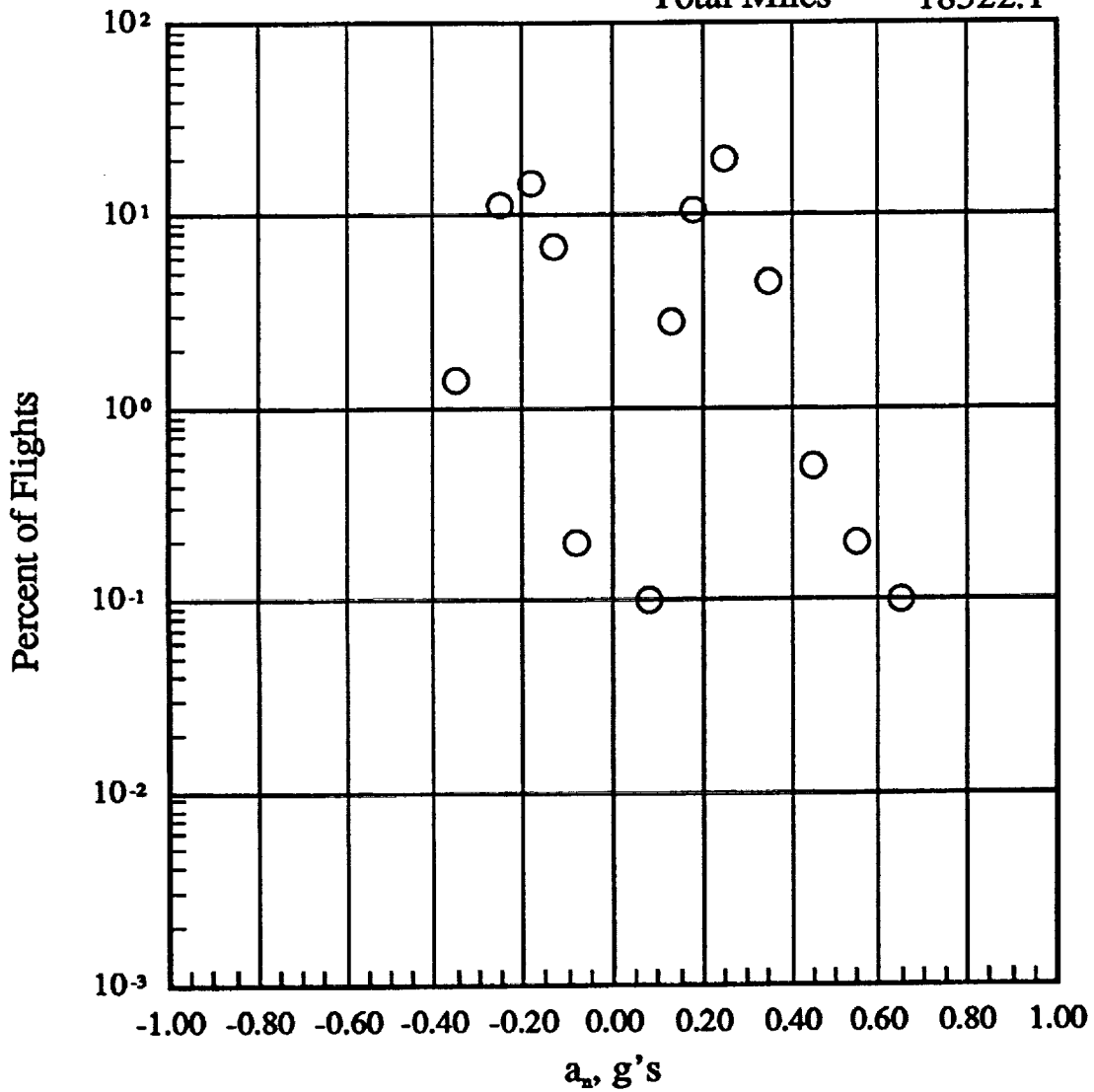
TOTAL FLIGHTS

985

(a) Percent of flights where peak positive and negative a_n per flight occurs within pressure altitude bands, any flap

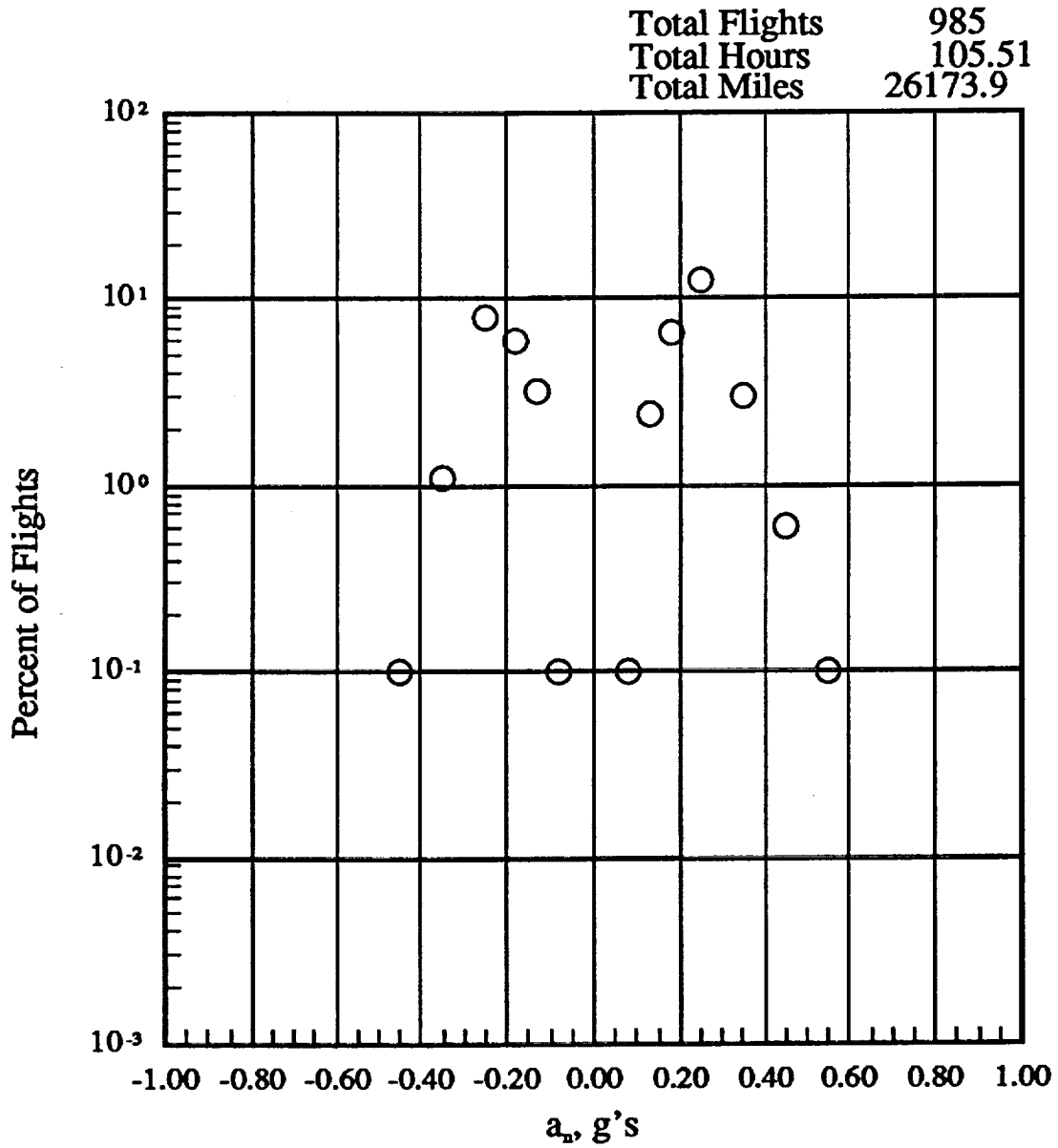
Figure 16.- Peak positive and negative a_n vs altitude.

Total Flights 985
 Total Hours 102.71
 Total Miles 18522.1



(b) -500 to 4500 feet altitude

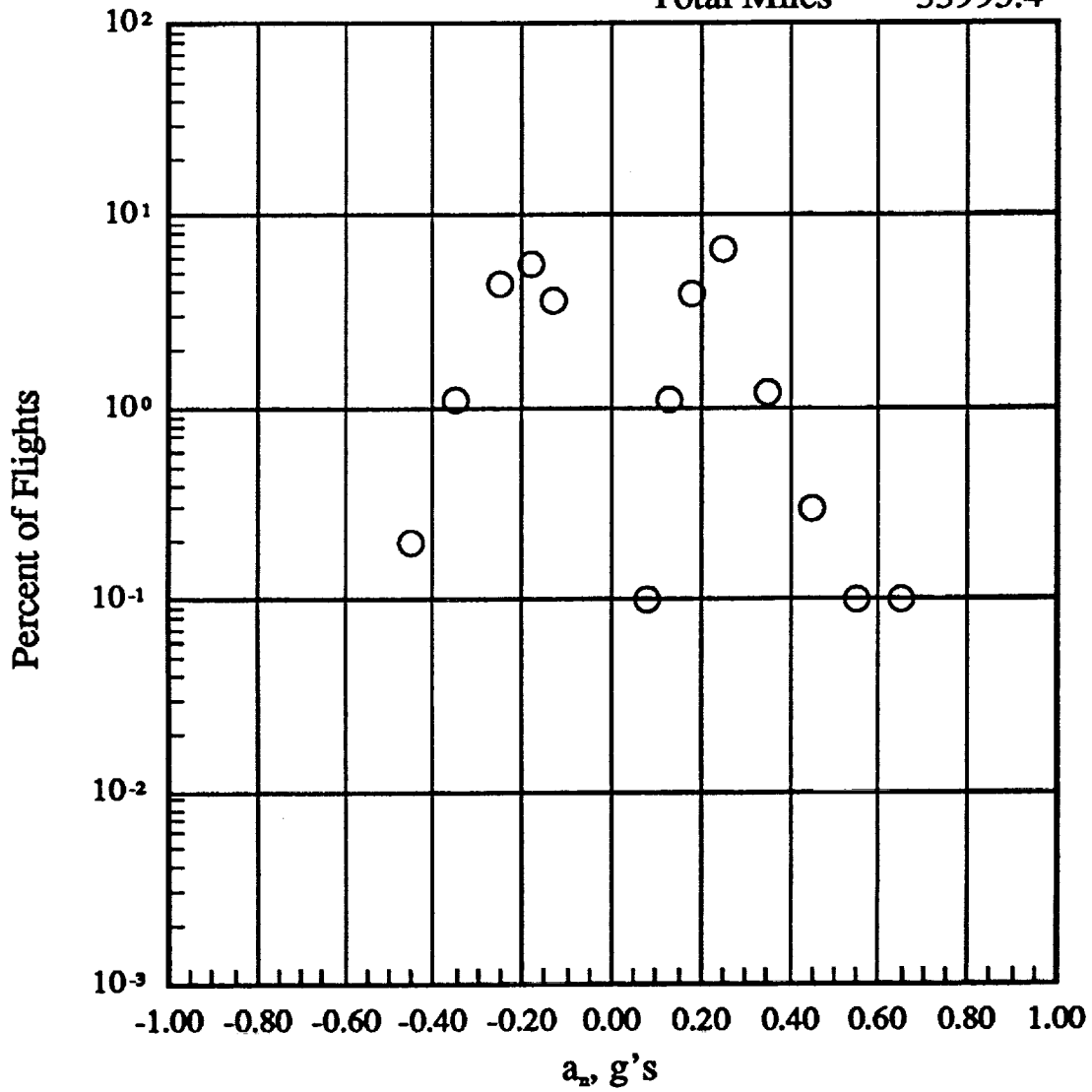
Figure 16.- Continued.



(c) 4500 to 9500 feet altitude

Figure 16.- Continued.

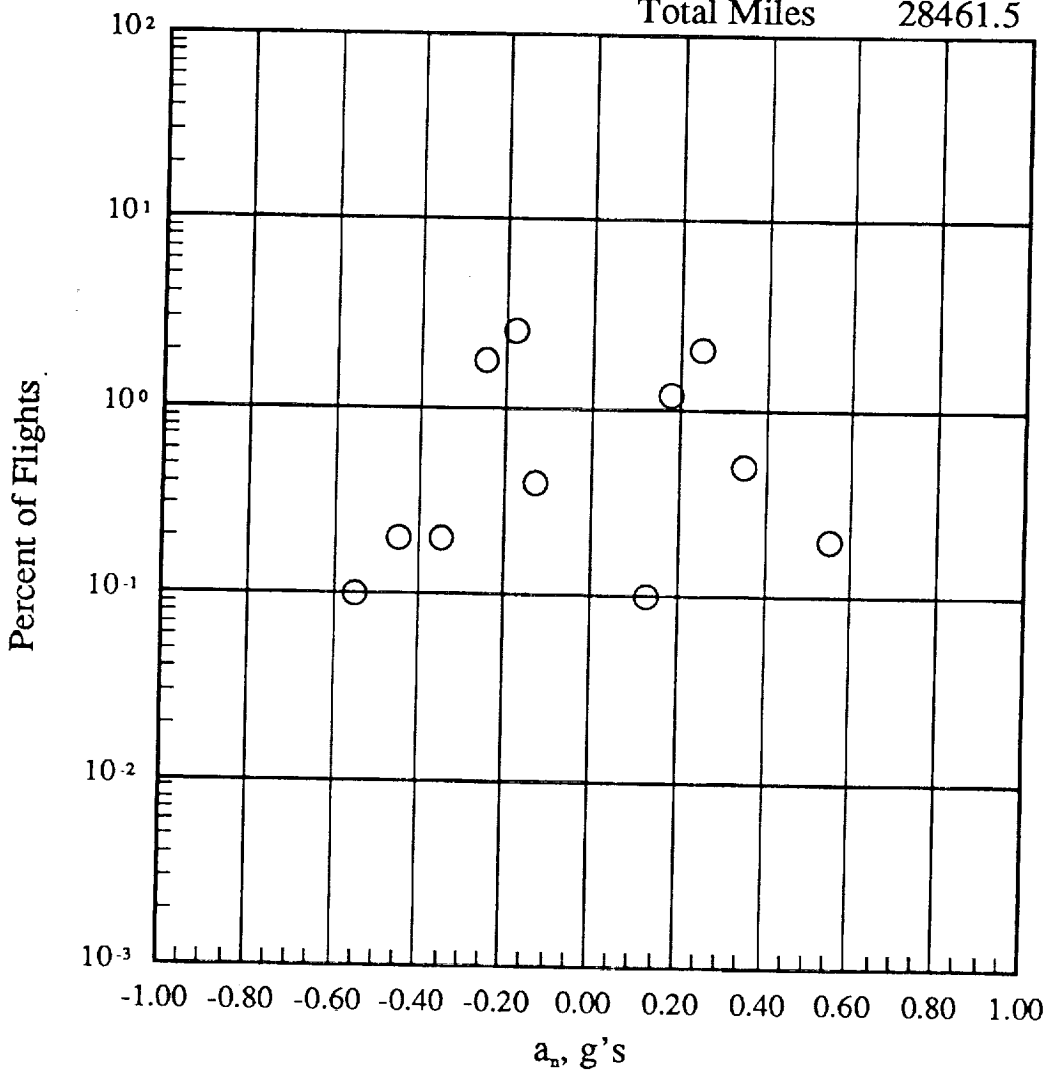
Total Flights 985
 Total Hours 104.07
 Total Miles 33995.4



(d) 9500 to 14500 feet altitude

Figure 16.- Continued.

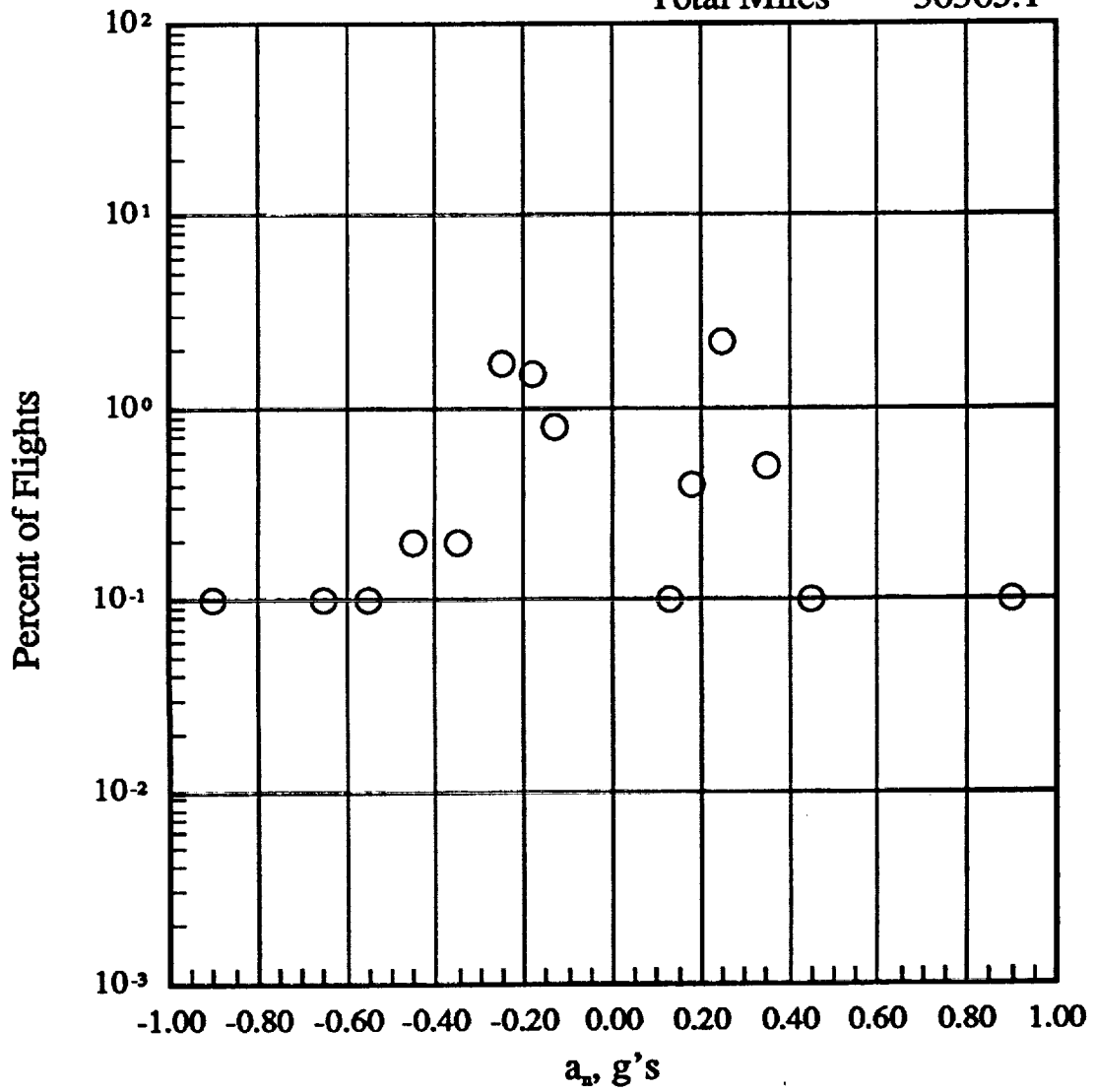
Total Flights 985
 Total Hours 74.64
 Total Miles 28461.5



(e) 14500 to 19500 feet altitude

Figure 16.- Continued.

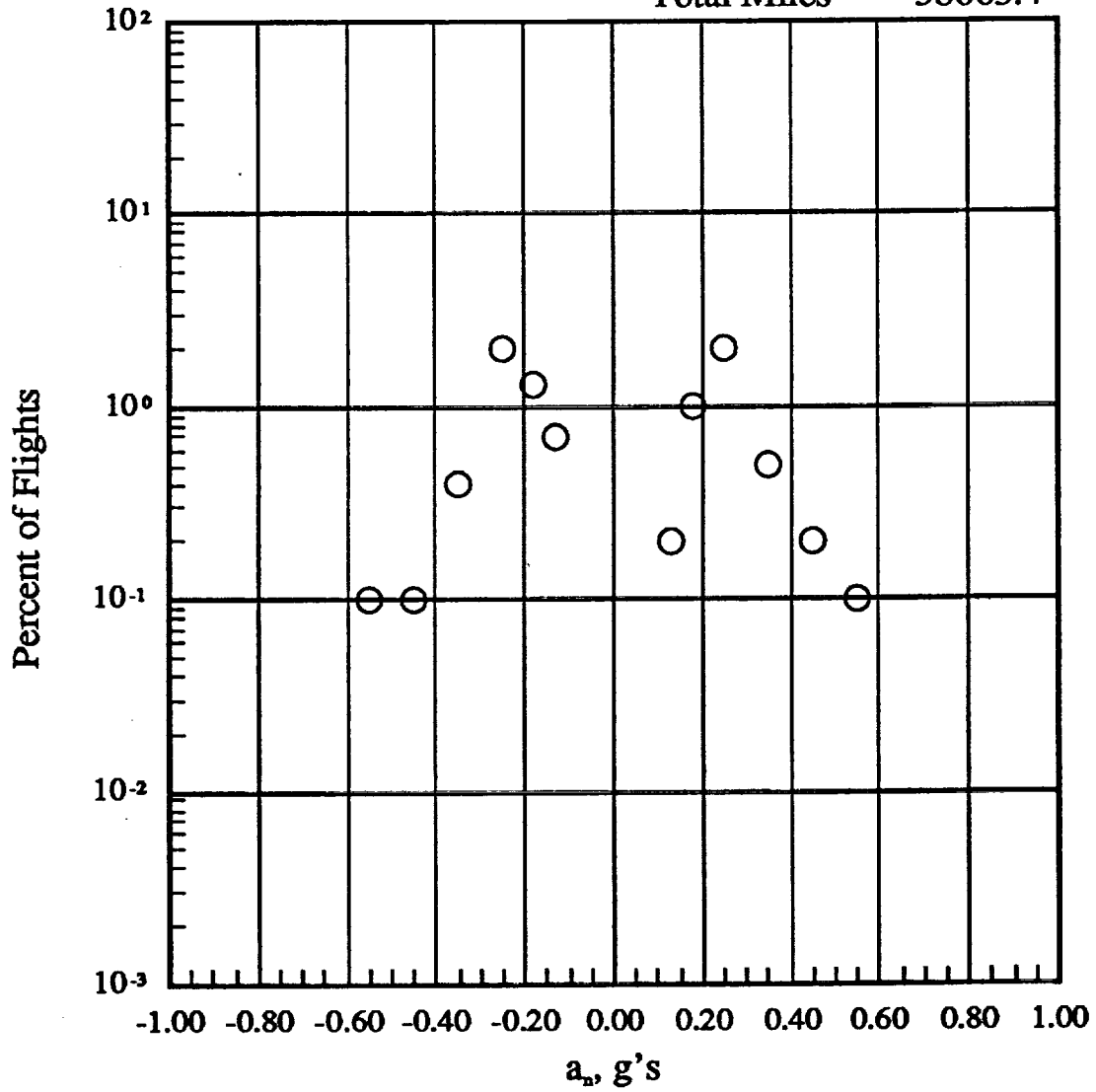
Total Flights 985
 Total Hours 87.46
 Total Miles 36365.1



(f) 19500 to 24500 feet altitude

Figure 16.- Continued.

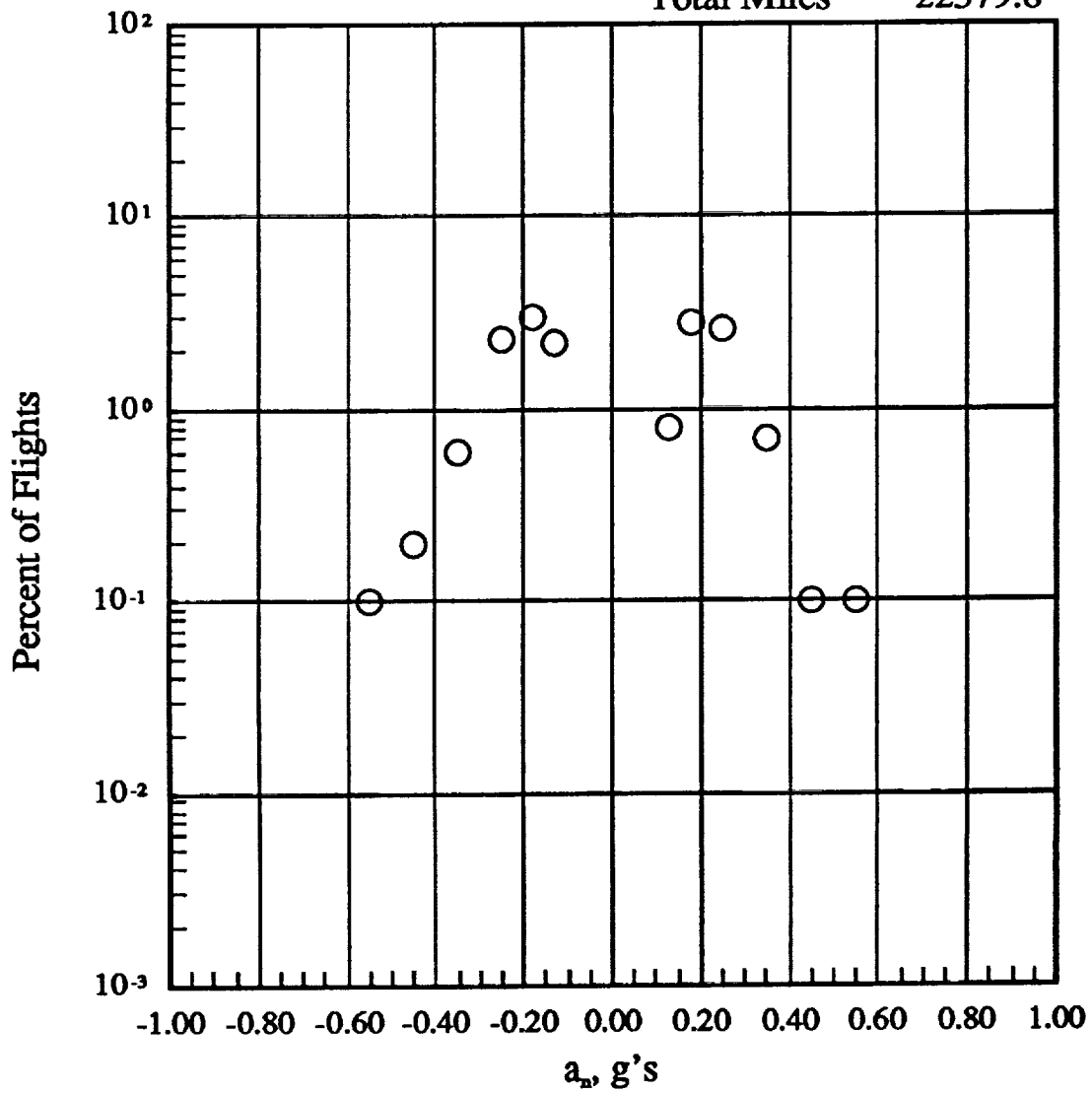
Total Flights 985
 Total Hours 132.3
 Total Miles 58663.4



(g) 24500 to 29500 feet altitude

Figure 16.- Continued.

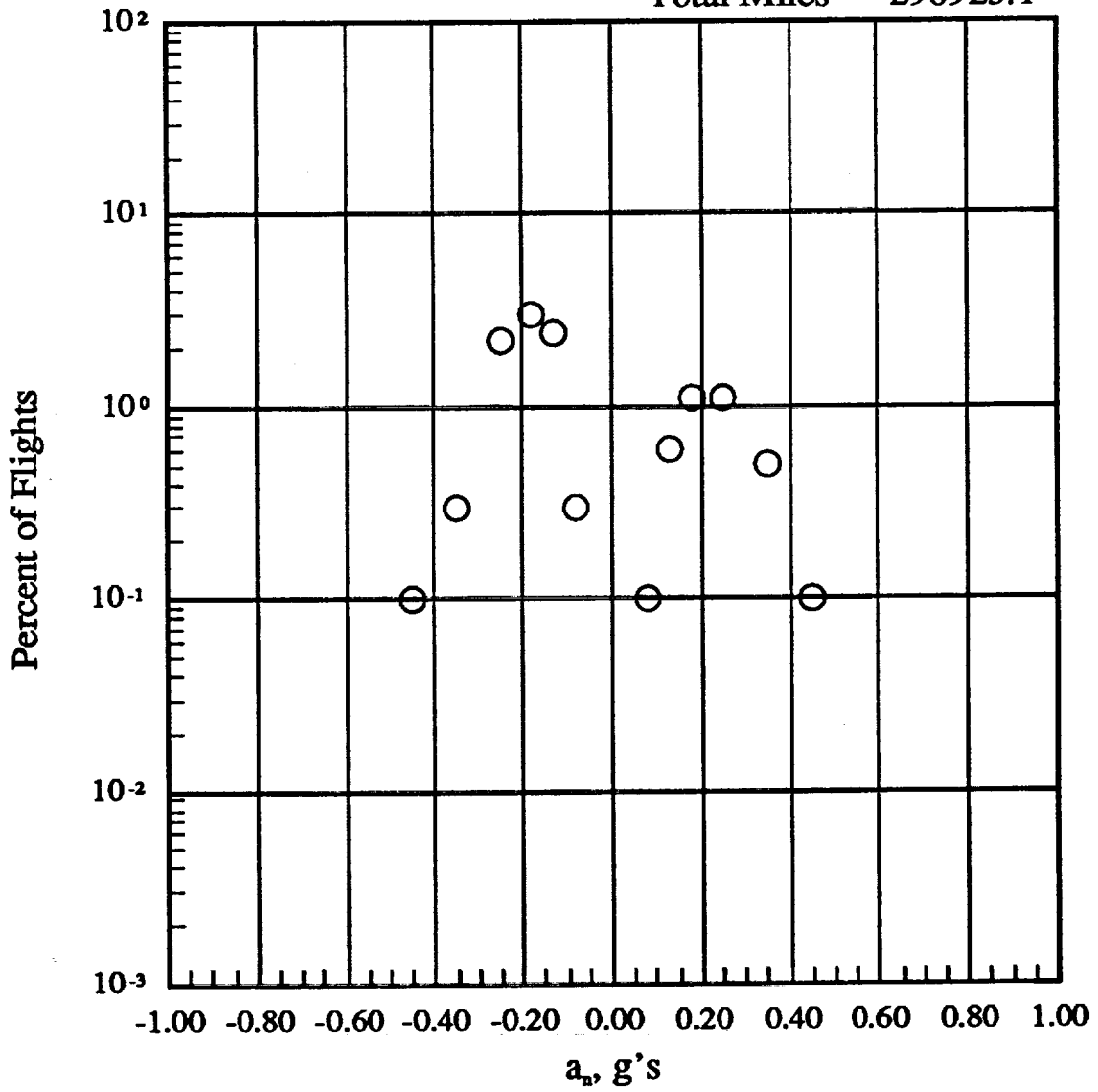
Total Flights 985
 Total Hours 495.03
 Total Miles 22379.8



(h) 29500 to 34500 feet altitude

Figure 16.- Continued.

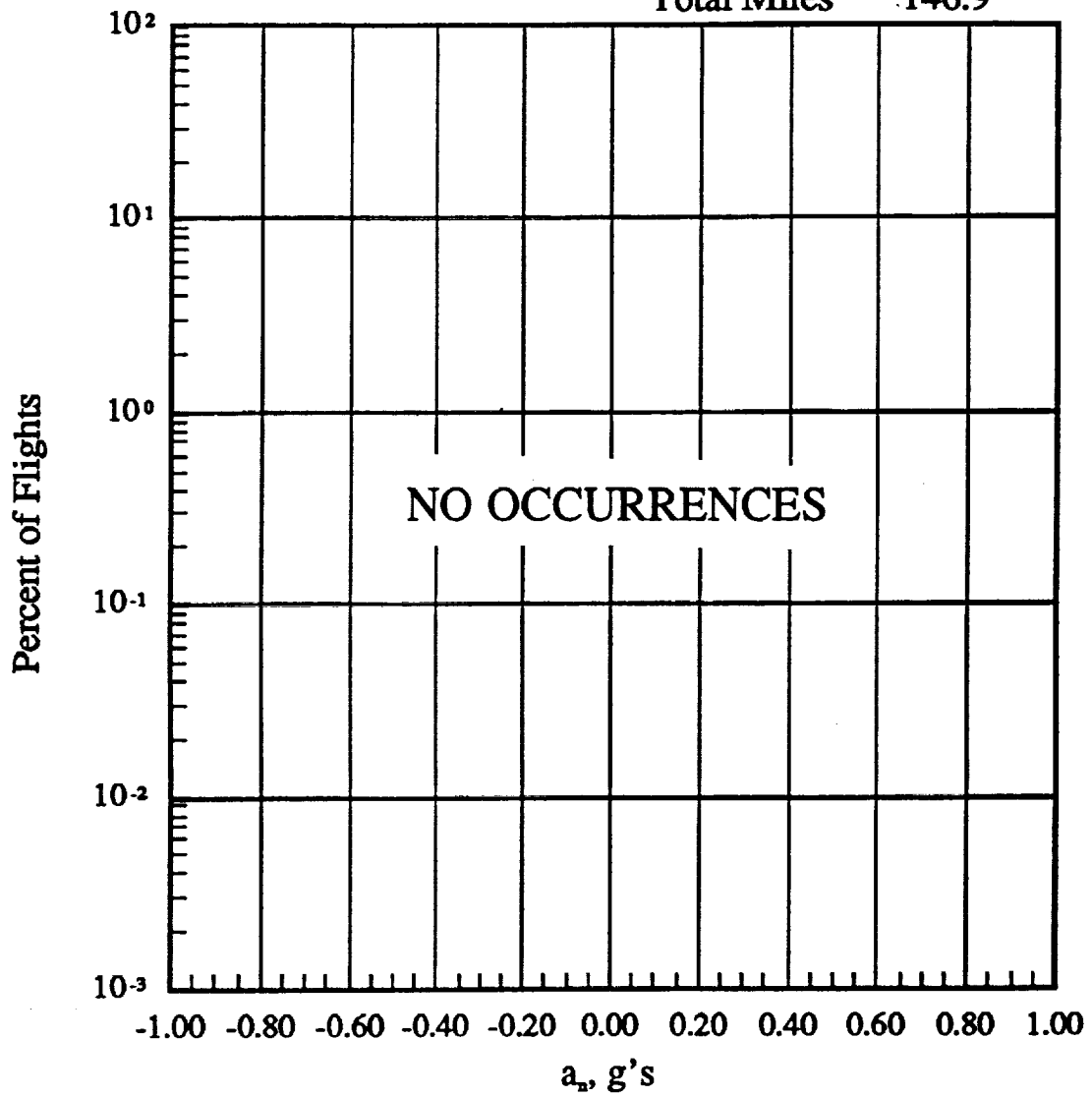
Total Flights 985
 Total Hours 663.54
 Total Miles 296925.1



(i) 34500 to 39500 feet altitude

Figure 16.- Continued.

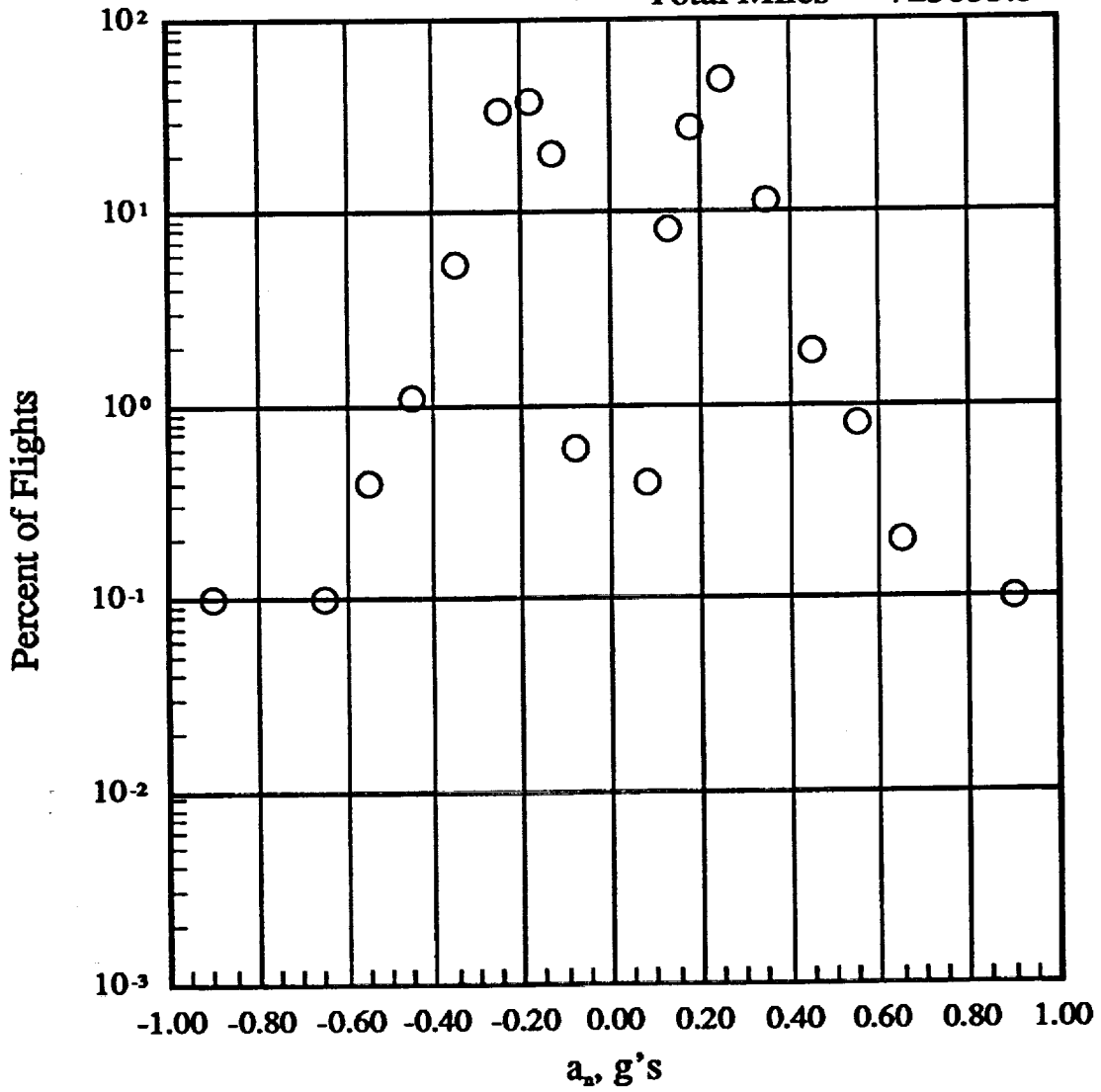
Total Flights 985
Total Hours .33
Total Miles 146.9



(j) 39500 to 44500 feet altitude

Figure 16.- Continued.

Total Flights 985
 Total Hours 1765.59
 Total Miles 723033.3



(k) -500 to 44500 feet altitude

Figure 16.- Concluded.

PRESSURE ALTITUDE BANDS

FLIGHT HOURS @ ALT FLIGHT MILES @ ALT	PRESSURE ALTITUDE BANDS										TOTAL FLIGHTS	
	-500 TO 4500 FT	4500 TO 9500 FT	9500 TO 14500 FT	14500 TO 19500 FT	19500 TO 24500 FT	24500 TO 29500 FT	29500 TO 34500 FT	34500 TO 39500 FT	39500 TO 44500 FT	-500 TO 44500 FT		
1.60	0	0	0	0	0	0	0	0	0	0	0	0
1.40	0	0	0	0	0	0	0	0	0	0	0	0
1.20	0	0	0	0	0	0	0	0	0	0	0	0
1.00	0	0	0	0	0	0	0	0	0	0	0	0
.80	0	0	0	0	0	0	0	0	0	0	0	0
.70	0	0	0	0	0	0	0	0	0	0	0	0
.60	0	0	0	0	0	0	0	0	0	0	0	0
.50	0	0	0	0	0	0	0	0	0	0	0	0
.40	0	0	0	0	0	0	0	0	0	0	0	0
.30	0.50	0.40	0.30	0	0	0	0	0	0	0	0	0
.20	6.70	6.20	2.40	0.90	0.70	0.80	0.40	0.40	0	0	0	1.30
.15	15.70	9.00	5.50	1.40	1.40	1.60	0.30	0.30	0	0	0	18.60
.10	13.60	10.50	5.60	1.80	1.00	2.20	1.20	1.20	0	0	0	36.40
.05	1.90	1.30	1.50	0.10	0.10	0.30	0.30	0.30	0	0	0	37.70
												6.00
-0.05	6.60	3.40	3.40	0.60	0.80	2.70	3.60	3.60	0	0	0	21.80
-0.10	12.40	10.40	13.20	2.10	2.50	7.80	9.20	9.20	0	0	0	61.80
-0.15	2.30	3.60	2.40	0.70	0.70	0.90	2.10	2.10	0	0	0	14.10
-0.20	0.10	0.50	0.10	0.10	0.30	0.20	0.30	0.30	0	0	0	1.90
-0.30	0	0	0.10	0	0	0.10	0	0	0	0	0	0.30
-0.40	0	0	0	0	0	0	0	0	0	0	0	0
-0.50	0	0	0	0	0	0	0	0	0	0	0	0
-0.60	0	0	0	0	0	0	0	0	0	0	0	0
-0.70	0	0	0	0	0	0	0	0	0	0	0	0
-0.80	0	0	0	0	0	0	0	0	0	0	0	0
-1.00	0	0	0	0	0	0	0	0	0	0	0	0
-1.20	0	0	0	0	0	0	0	0	0	0	0	0
-1.40	0	0	0	0	0	0	0	0	0	0	0	0
-1.60	0	0	0	0	0	0	0	0	0	0	0	0
-1.80	0	0	0	0	0	0	0	0	0	0	0	0
FLIGHT HOURS @ ALT	102.71	105.51	104.07	74.64	87.46	132.30	663.54	663.54	0.33	1765.59		
FLIGHT MILES @ ALT	18522.12	26173.93	33995.36	28461.45	36365.13	58863.40	296925.11	296925.11	146.91	723033.21		

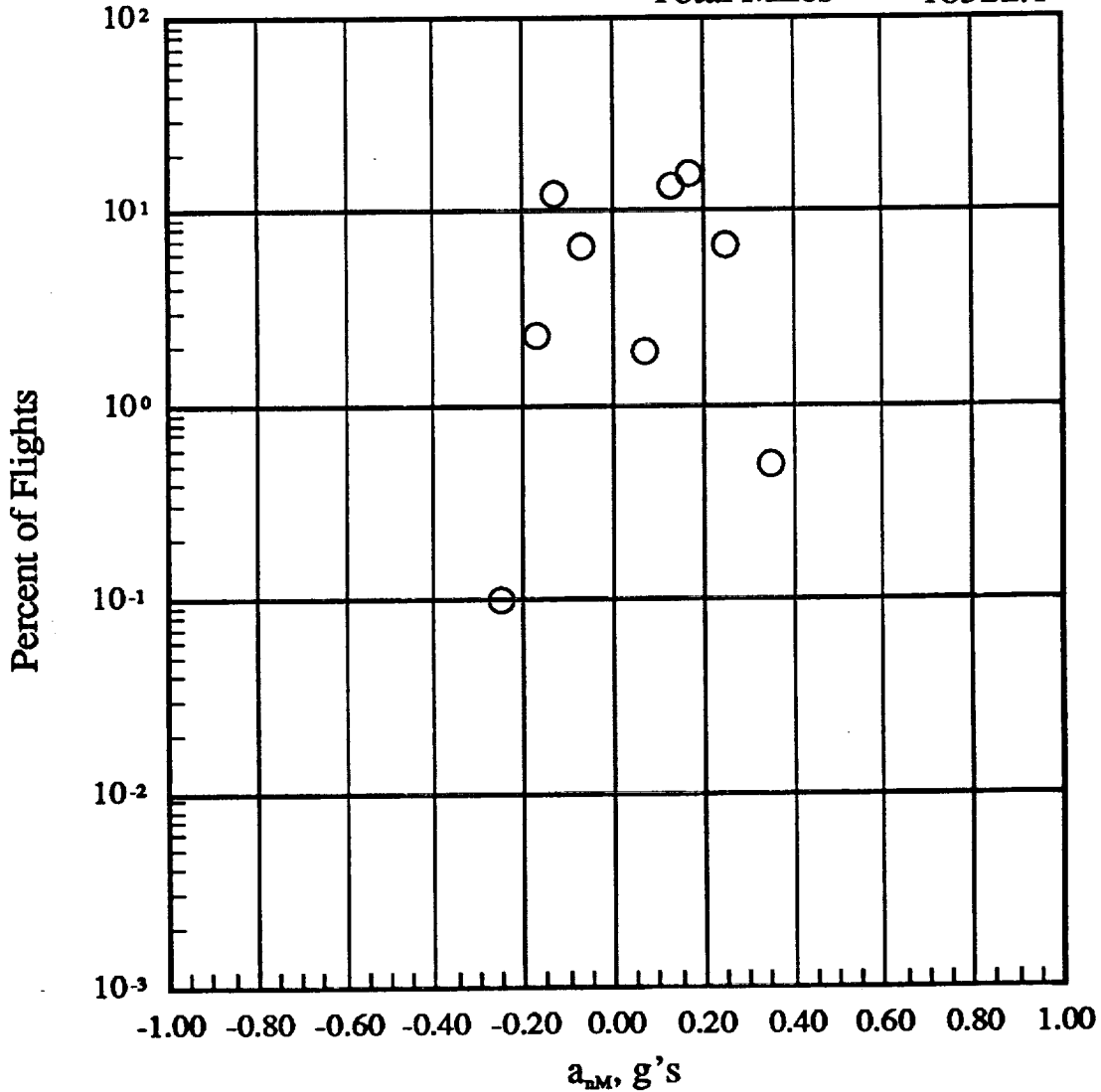
TOTAL FLIGHTS

985

(a) Percent of flights where peak positive and negative a_{NM} per flight occurs within pressure altitude bands, any flap

Figure 17.- Peak positive and negative a_{NM} vs altitude.

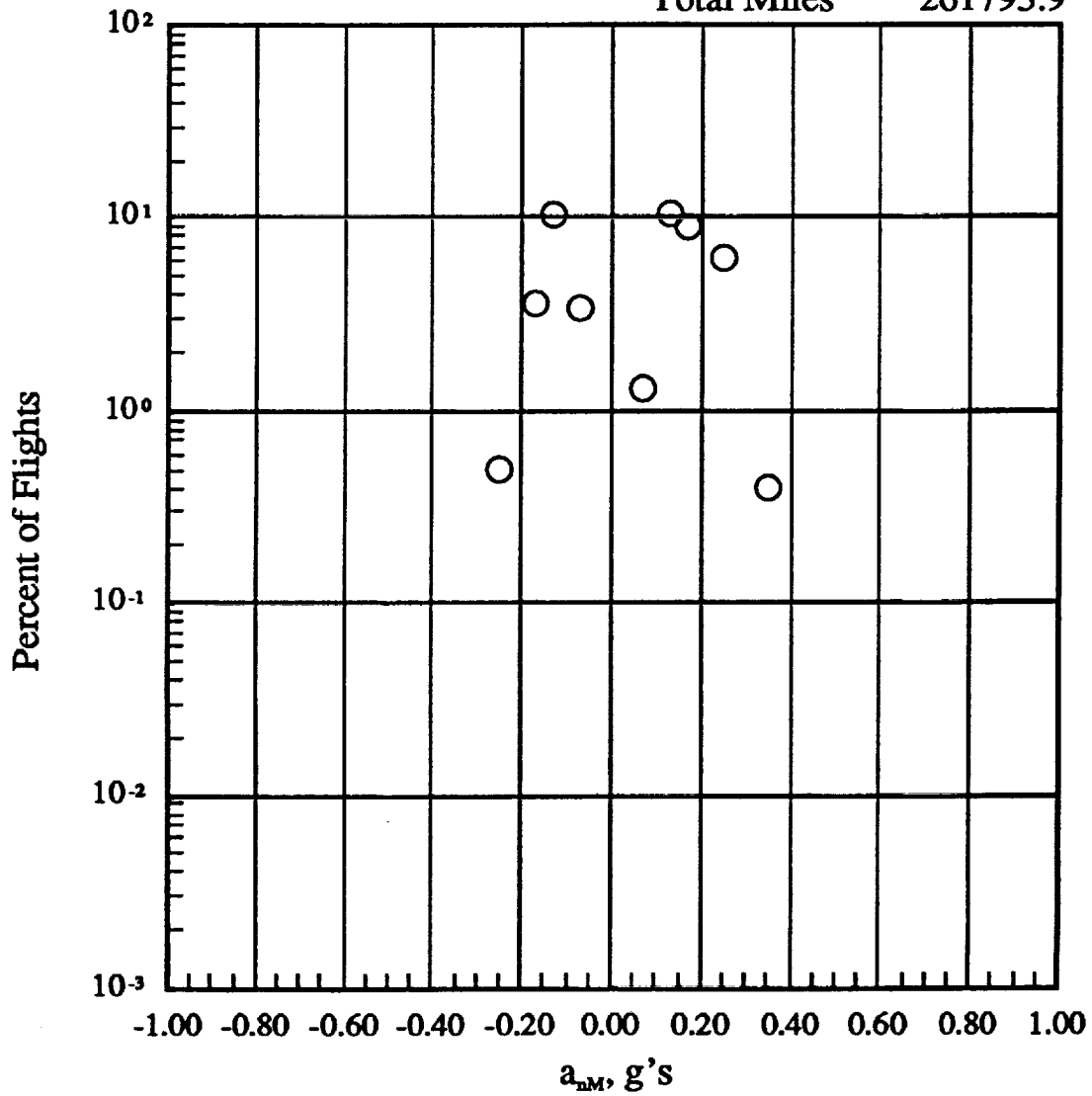
Total Flights 985
 Total Hours 102.71
 Total Miles 18522.1



(b) -500 to 4500 feet altitude

Figure 17.- Continued.

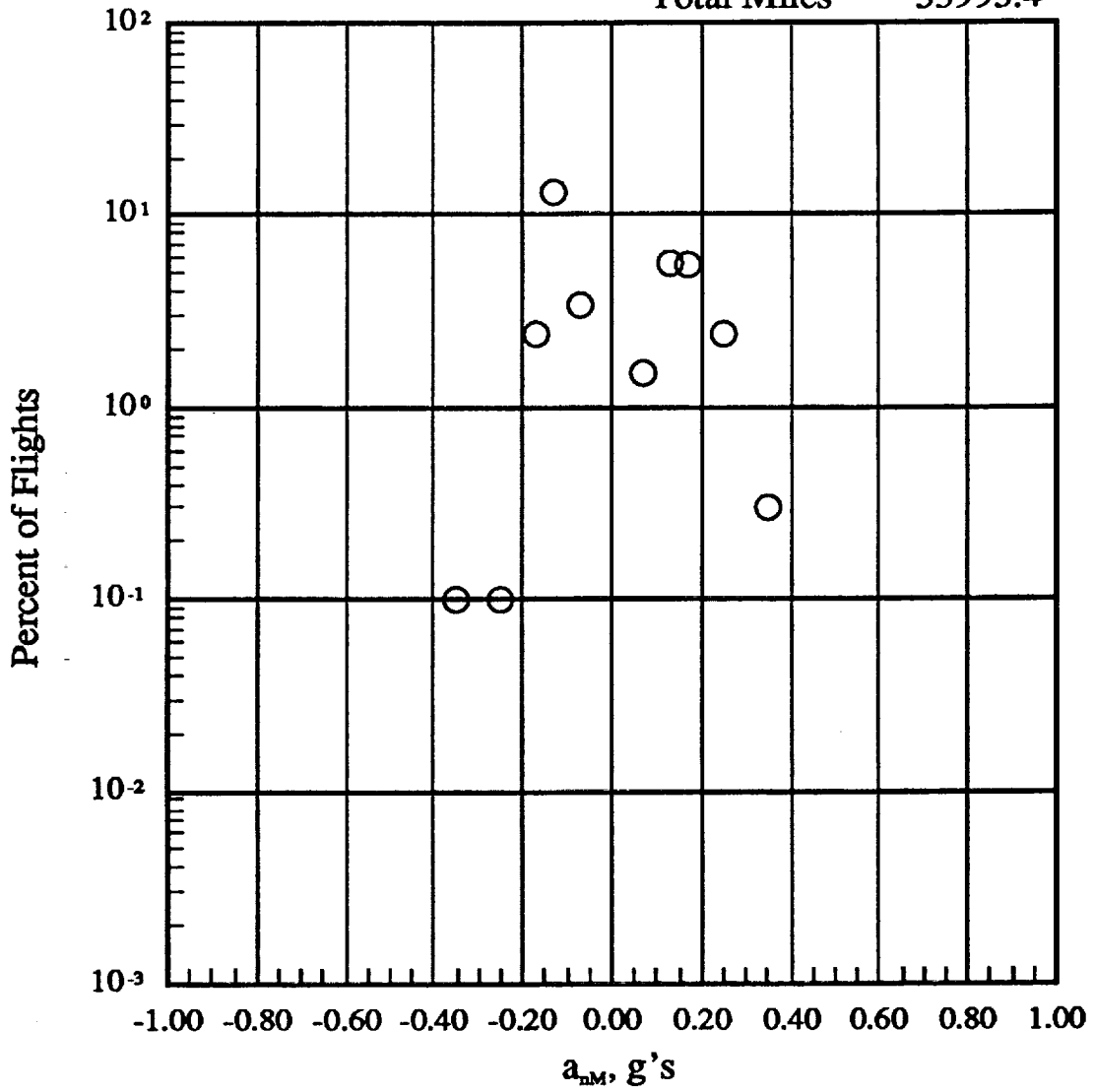
Total Flights 985
 Total Hours 105.51
 Total Miles 261793.9



(c) 4500 to 9500 feet altitude

Figure 17.- Continued.

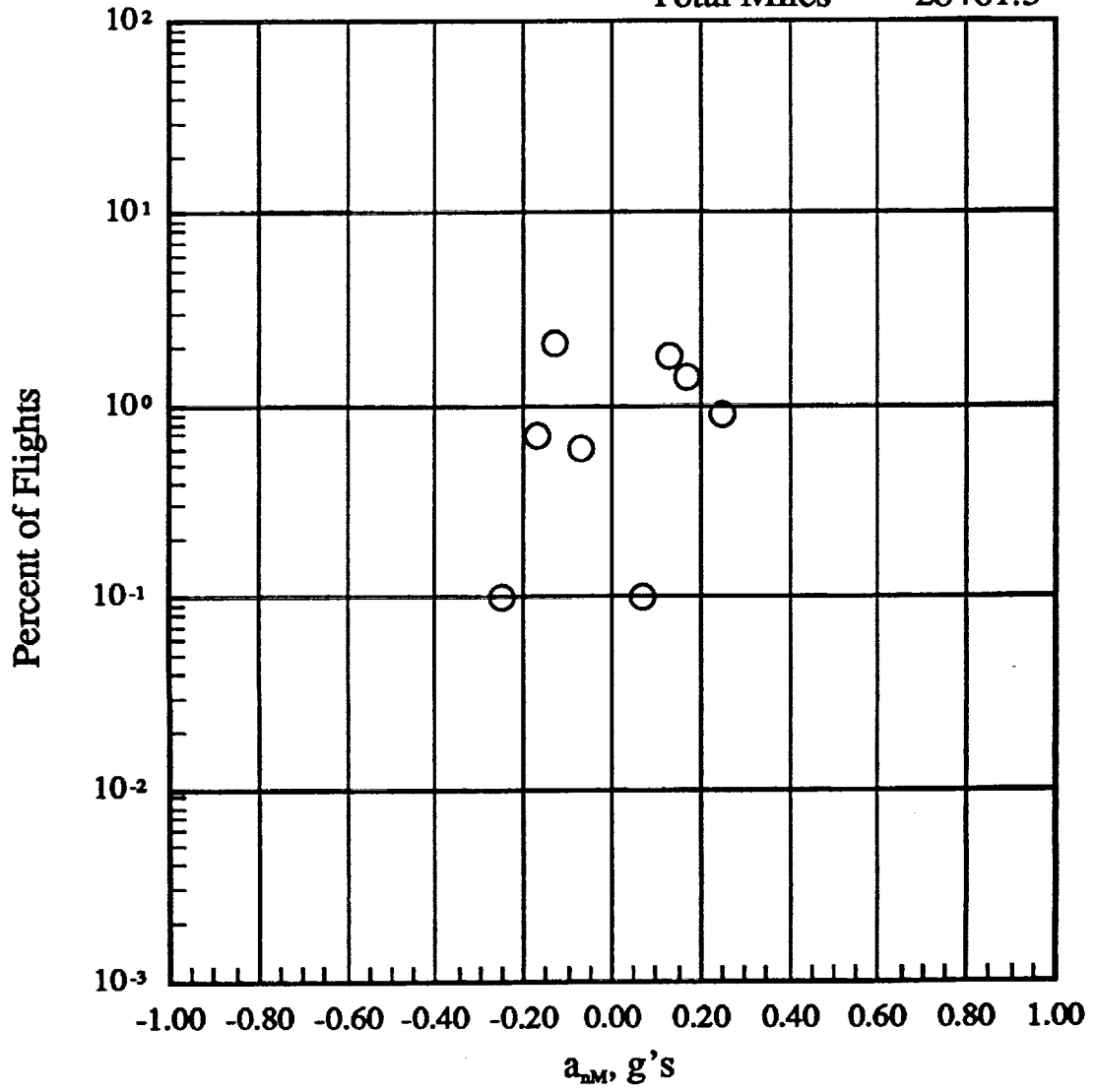
Total Flights 986
 Total Hours 104.07
 Total Miles 33995.4



(d) 9500 to 14500 feet altitude

Figure 17.- Continued.

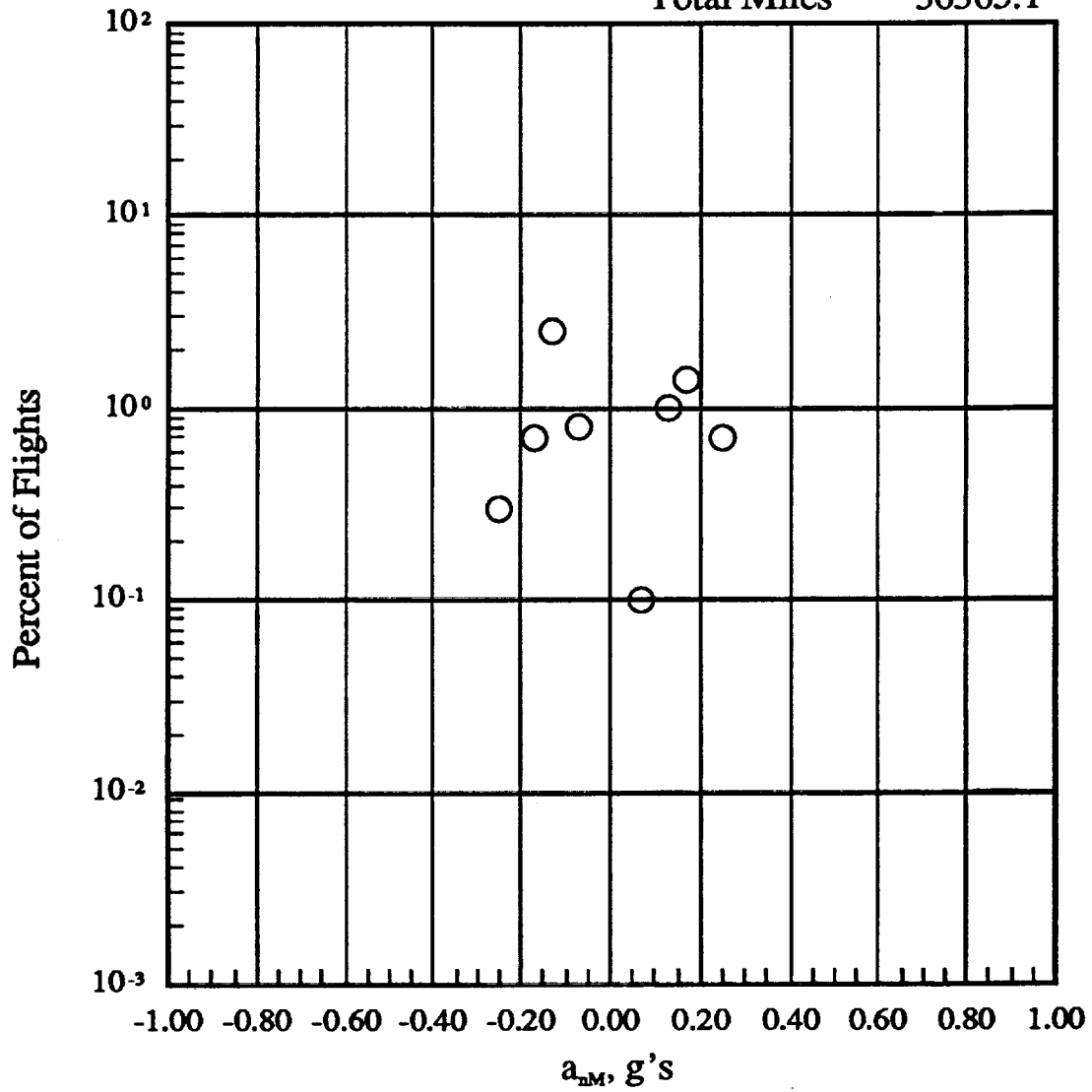
Total Flights 985
 Total Hours 74.64
 Total Miles 28461.5



(e) 14500 to 19500 feet altitude

Figure 17.- Continued.

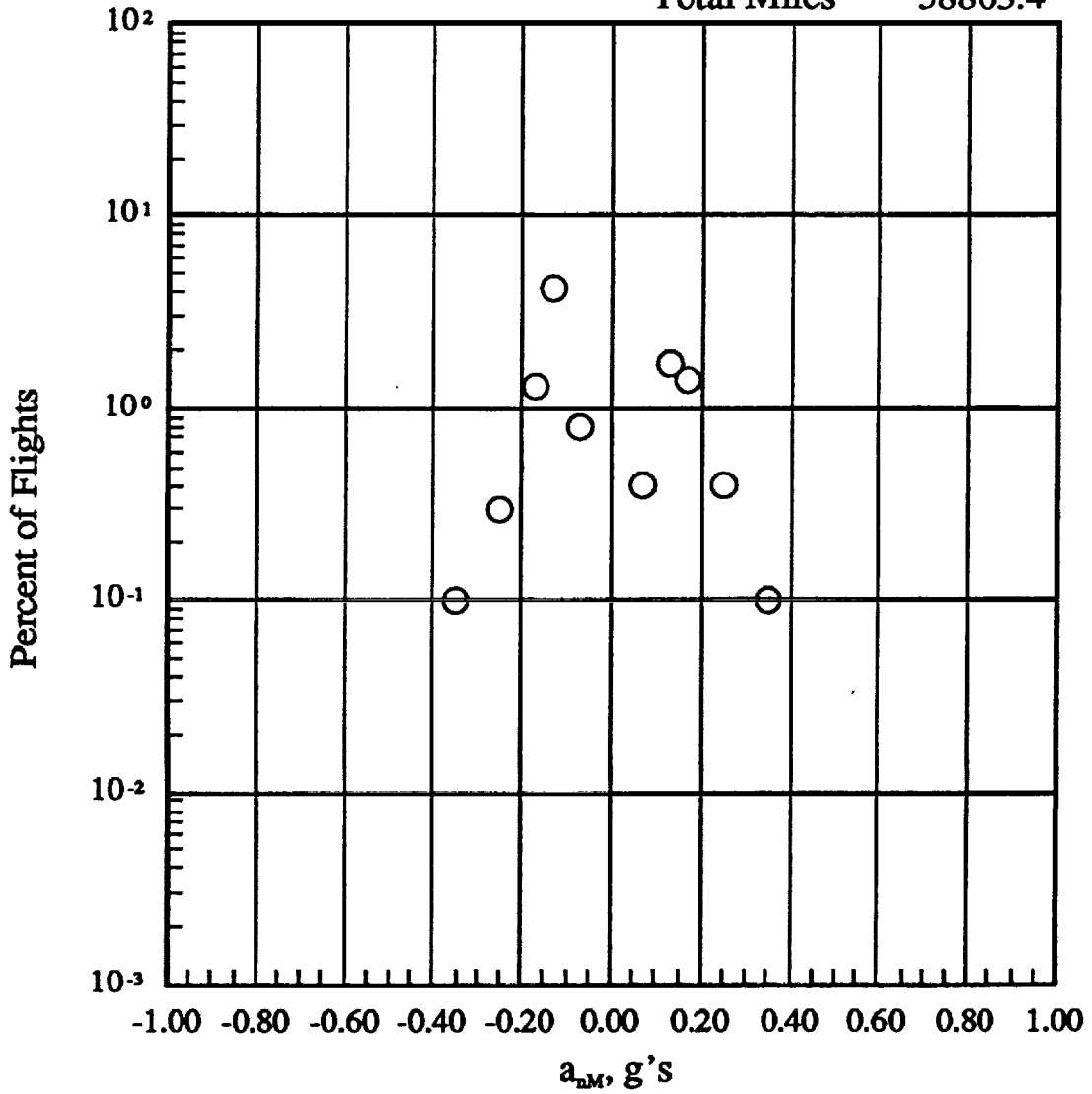
Total Flights 985
 Total Hours 87.46
 Total Miles 36365.1



(f) 19500 to 24500 feet altitude

Figure 17.- Continued.

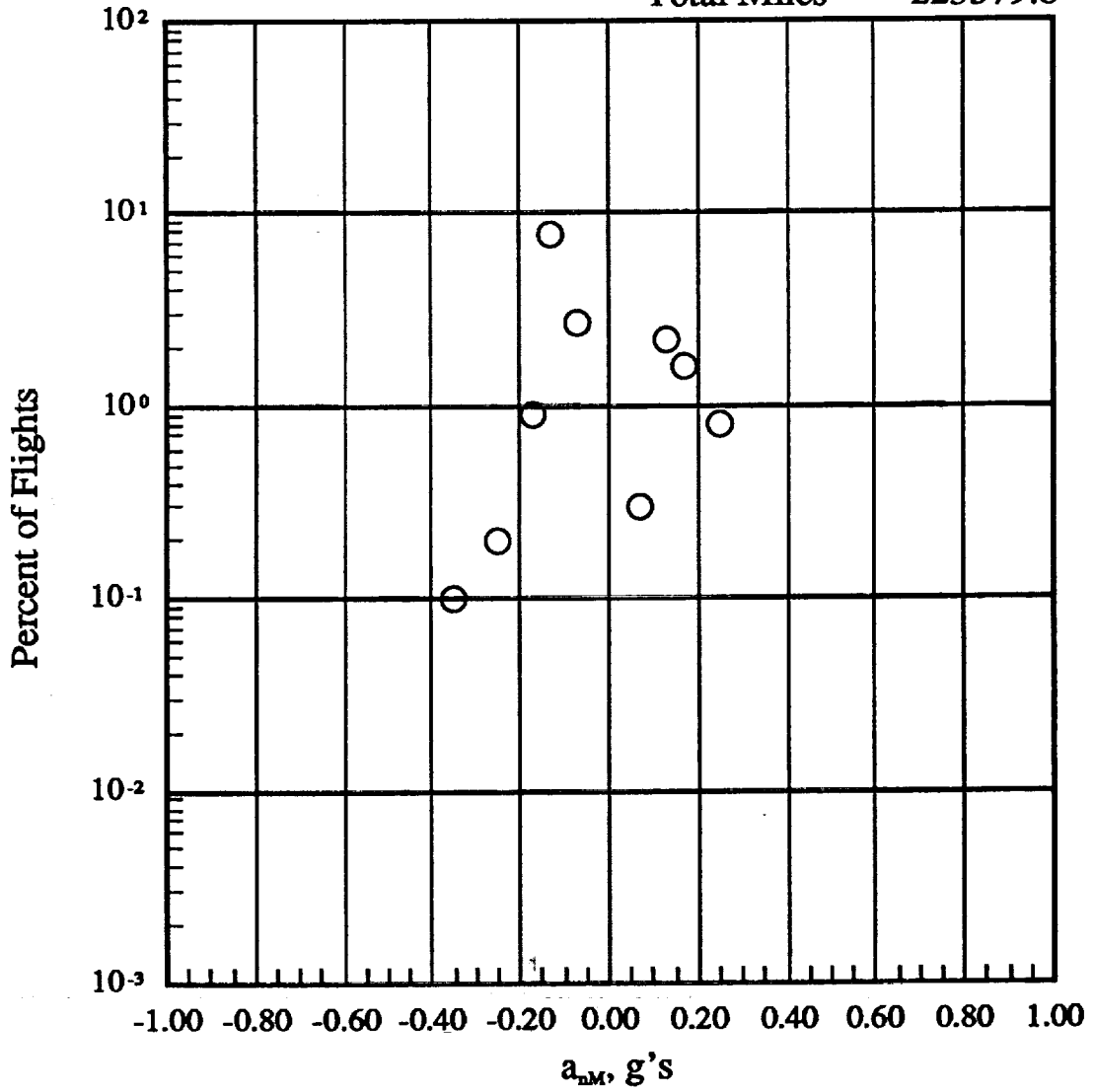
Total Flights 985
 Total Hours 132.30
 Total Miles 58863.4



(g) 24500 to 29500 feet altitude

Figure 17.- Continued.

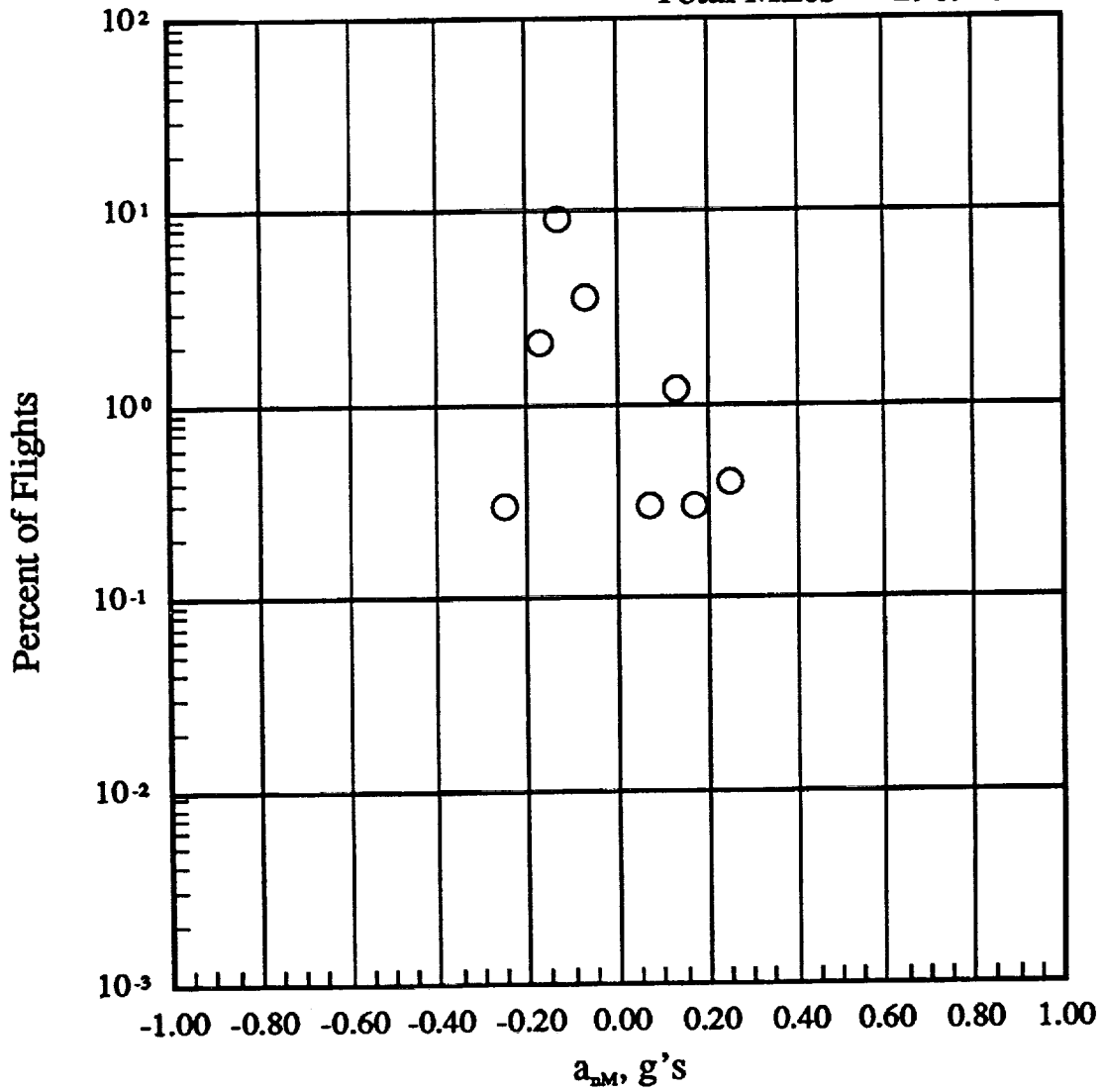
Total Flights 985
 Total Hours 495.03
 Total Miles 223579.8



(h) 29500 to 34500 feet altitude

Figure 17.- Continued.

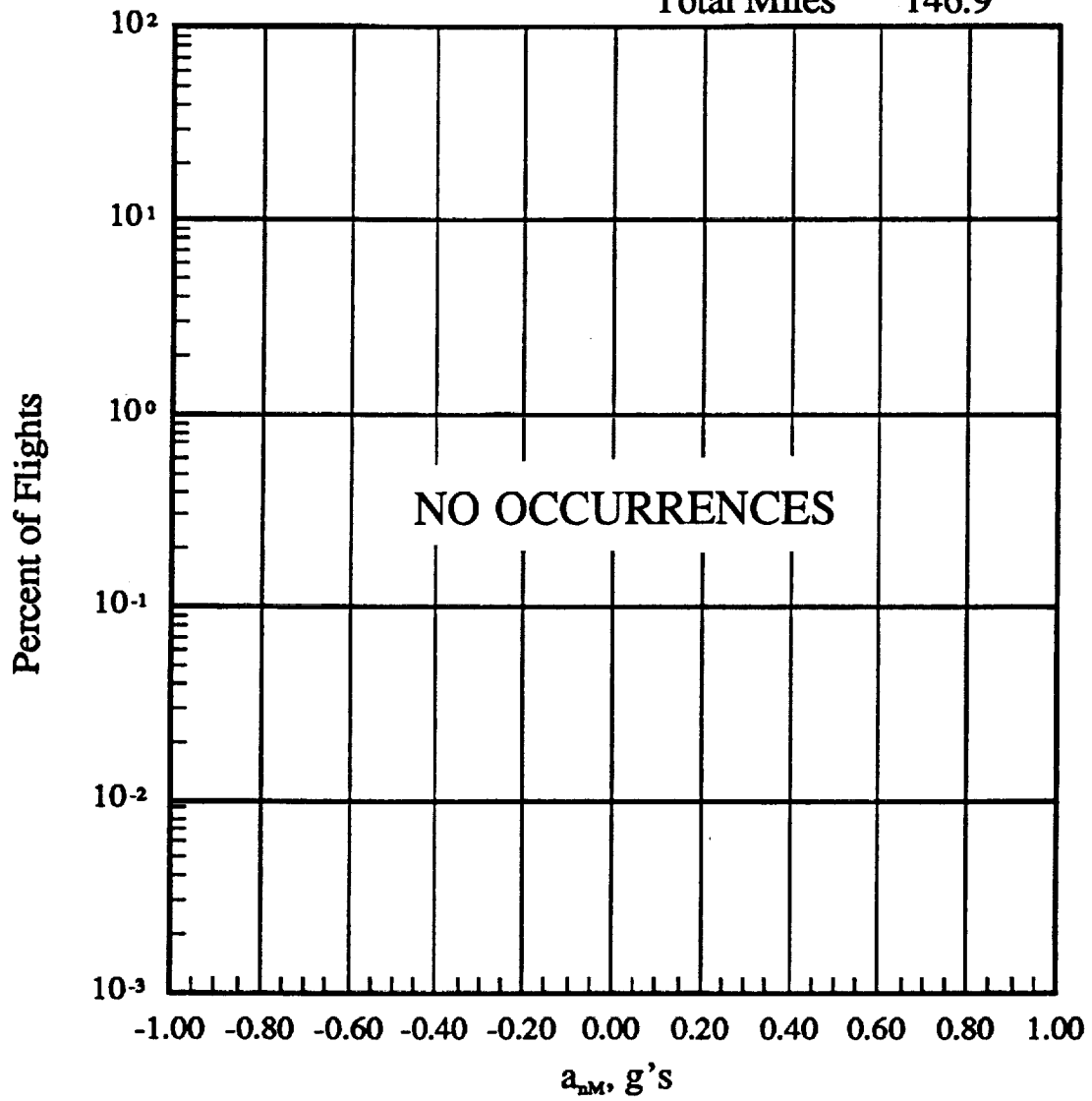
Total Flights 985
 Total Hours 663.54
 Total Miles 296925.1



(i) 34500 to 39500 feet altitude

Figure 17.- Continued.

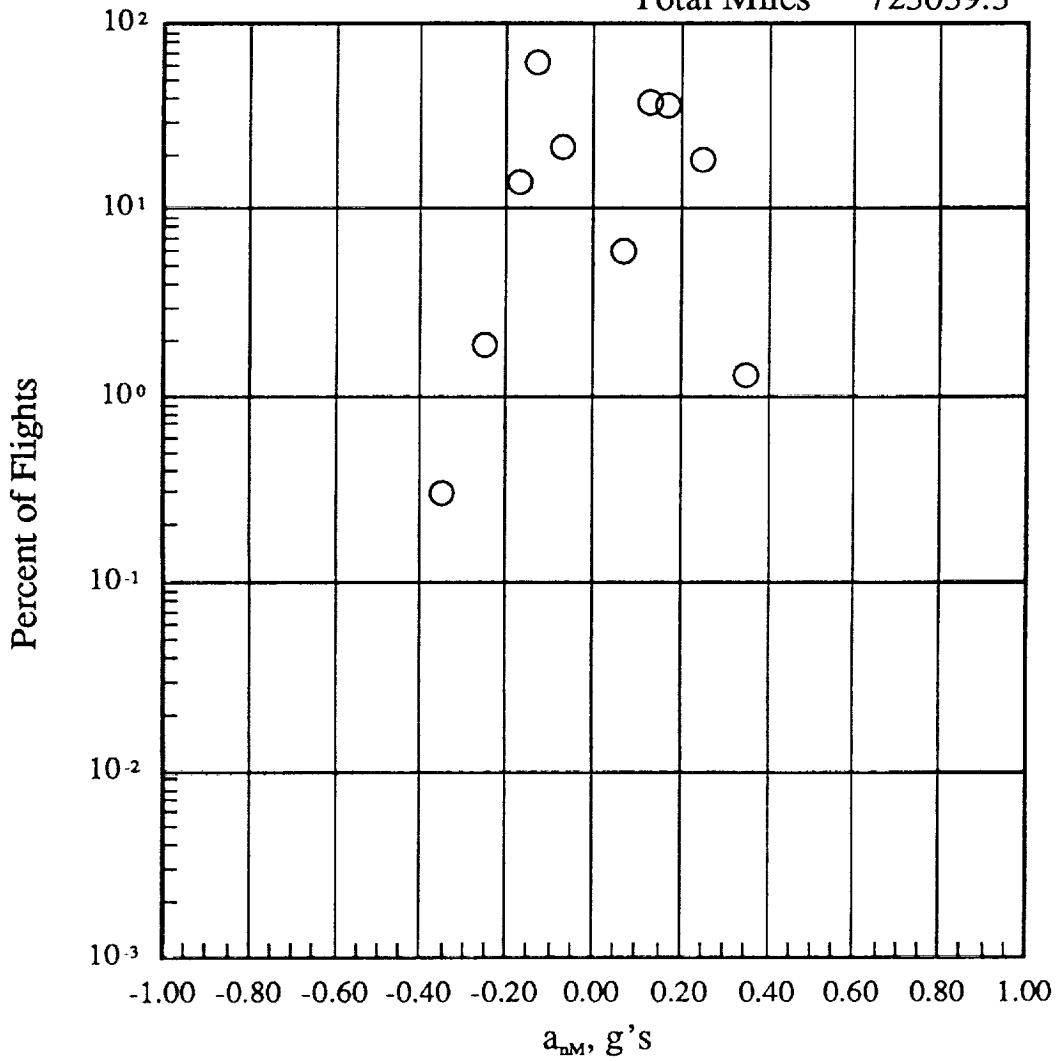
Total Flights 985
Total Hours .33
Total Miles 146.9



(j) 39500 to 44500 feet altitude

Figure 17.- Continued.

Total Flights 985
 Total Hours 1765.59
 Total Miles 723039.3



(k) -500 to 44500 feet altitude

Figure 17.- Concluded.

PRESSURE ALTITUDE BANDS

G'S FROM	TO	-500 TO		4500 TO		9500 TO		14500 TO		19500 TO		24500 TO		29500 TO		34500 TO		39500 TO		-500 TO	
		4500 FT	9500 FT	14500 FT	19500 FT	24500 FT	29500 FT	34500 FT	39500 FT	44500 FT	49500 FT	54500 FT	59500 FT	64500 FT	69500 FT	74500 FT	79500 FT	84500 FT	89500 FT	94500 FT	99500 FT
1.60	1.80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.40	1.60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.20	1.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.00	1.20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.80	1.00	0	0	0	0	0	0.10	0	0	0	0	0	0	0	0	0	0	0	0	0	0.10
.70	.80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.60	.70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.50	.60	0	0	0	0.10	0	0	0.10	0	0	0.10	0	0	0	0	0	0	0	0	0	0.20
.40	.50	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0	0.10	0.10	0	0	0.10	0	0	0	0	0	0	0.60
.30	.40	0.80	0.50	0.70	0.20	0.30	0.20	0.30	0	0.20	0.30	0.10	0.10	0.20	0.10	0.10	0.10	0	0	0	2.80
.20	.30	6.00	4.70	1.70	1.30	1.40	1.40	1.10	1.40	1.10	1.40	1.10	1.40	1.10	1.40	1.10	1.40	0	0	0	18.80
.15	.20	11.50	4.80	3.50	1.70	1.60	1.70	1.60	1.20	1.20	1.20	1.20	2.50	1.20	2.50	1.20	2.40	0	0	0	28.00
.10	.15	13.70	5.80	5.10	2.00	1.60	1.60	1.60	1.00	1.00	1.00	1.00	2.80	1.00	2.80	1.00	2.40	0	0	0	34.50
.05	.10	5.10	2.30	1.70	0.80	0.30	0.30	0.30	1.20	1.20	1.20	1.20	1.60	1.20	1.60	1.30	1.30	0	0	0	14.40
-.05	-.10	5.70	2.80	1.80	0.80	0.50	0.50	0.50	1.00	1.00	1.00	1.00	1.40	1.00	1.40	1.00	1.30	0	0	0	16.00
-.10	-.15	14.30	5.50	4.40	2.10	1.60	1.60	1.60	1.40	1.40	1.40	1.40	2.30	1.40	2.30	1.30	1.30	0	0	0	33.00
-.15	-.20	11.10	4.70	3.60	1.70	1.40	1.40	1.40	0.70	0.70	0.70	0.70	1.40	0.70	1.40	0.70	1.50	0	0	0	27.10
-.20	-.30	6.30	3.90	2.70	1.20	0.50	0.50	0.50	1.40	1.40	1.40	1.40	1.30	1.30	1.30	1.50	1.50	0	0	0	18.90
-.30	-.40	0.60	1.00	0.70	0.30	0.30	0.30	0.30	0.20	0.20	0.20	0.20	0.30	0.20	0.30	0.20	0.20	0	0	0	3.70
-.40	-.50	0	0	0	0.10	0	0.10	0	0	0	0	0	0	0	0	0	0	0	0	0	0.20
-.50	-.60	0	0	0	0	0.10	0	0.10	0	0.10	0	0.10	0	0	0.10	0	0	0	0	0	0.40
-.60	-.70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.10
-.70	-.80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-.80	-.90	0	0	0	0	0	0.10	0	0	0	0.10	0	0	0	0	0	0	0	0	0	0.10
-1.00	-1.20	0	0	0	0	0	0	0	0	0	0	0.10	0	0	0	0	0	0	0	0	0.10
-1.20	-1.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-1.40	-1.60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-1.60	-1.80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

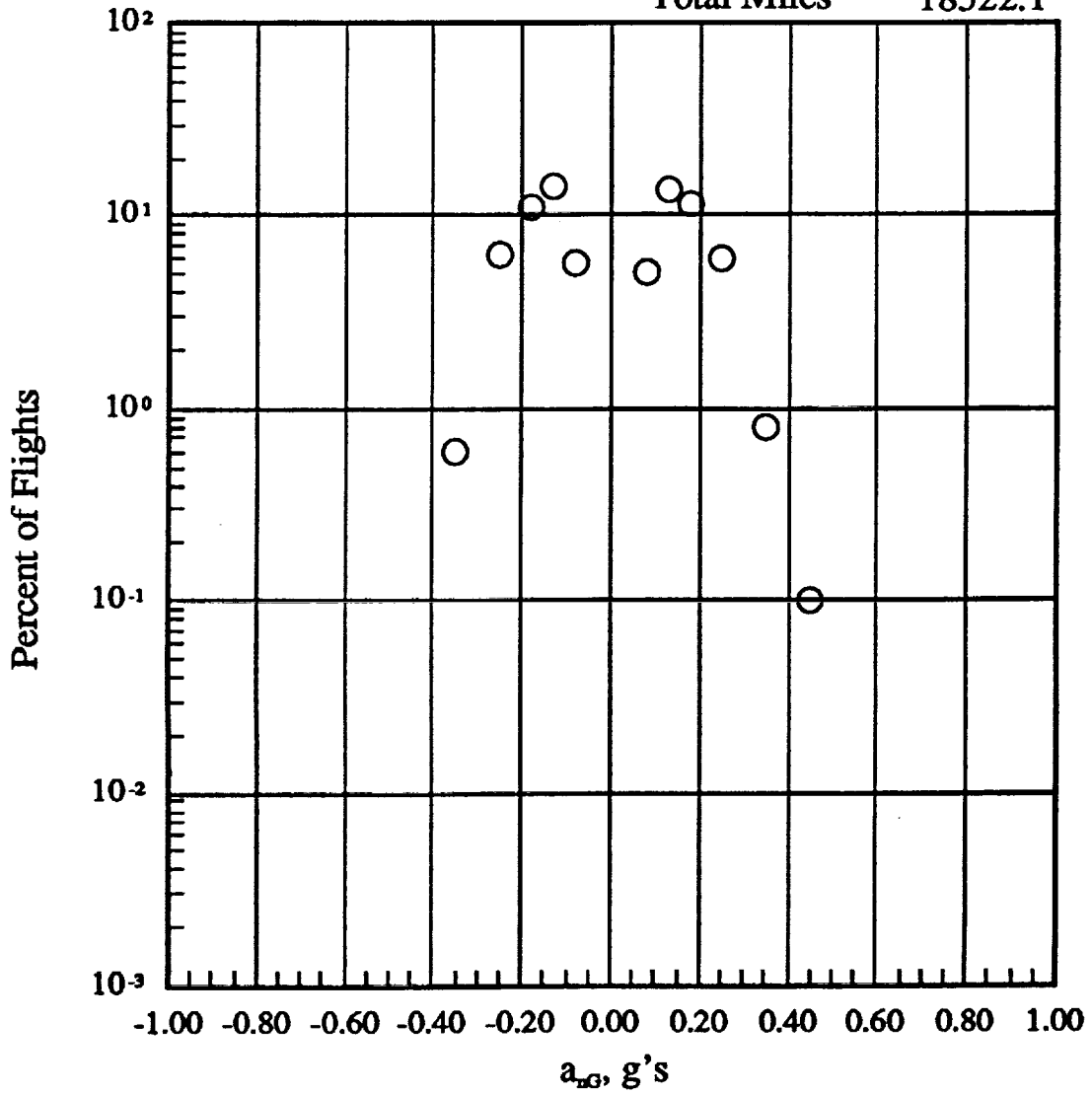
FLIGHT HOURS @ AIT	102.71	105.51	104.07	74.64	87.46	132.30	495.03	663.54	0.33	1765.59
FLIGHT MILES @ AIT	18522.12	26173.93	33995.36	28461.45	36365.13	58863.40	223579.81	296925.11	146.91	723033.21

TOTAL FLIGHTS 985

(a) Percent of flights where peak positive and negative a_{Tg} per flight occurs within pressure altitude bands, any flap

Figure 18.- Peak positive and negative a_{Tg} vs altitude.

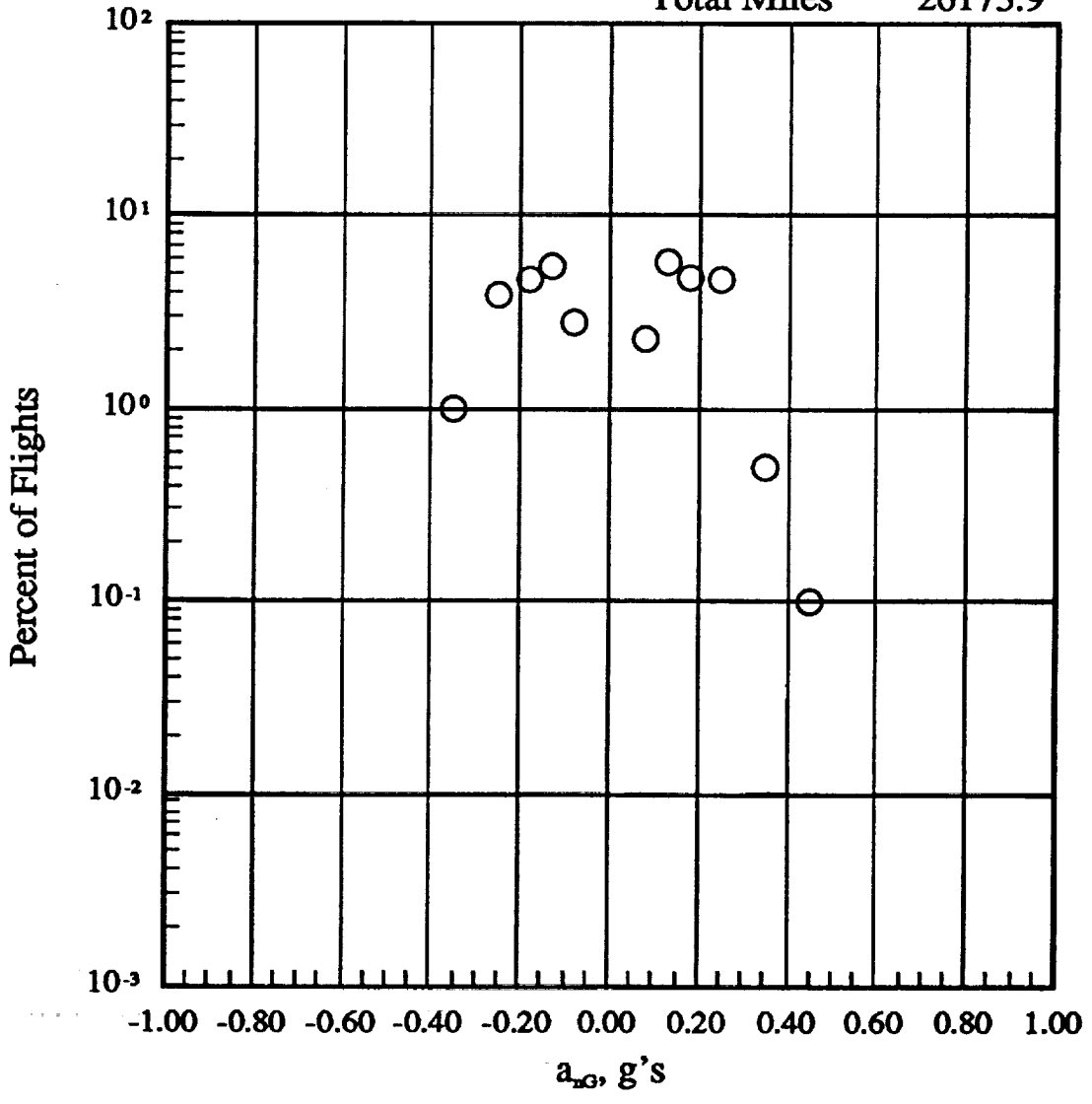
Total Flights 985
 Total Hours 102.71
 Total Miles 18522.1



(b) -500 to 4500 feet altitude

Figure 18.- Continued.

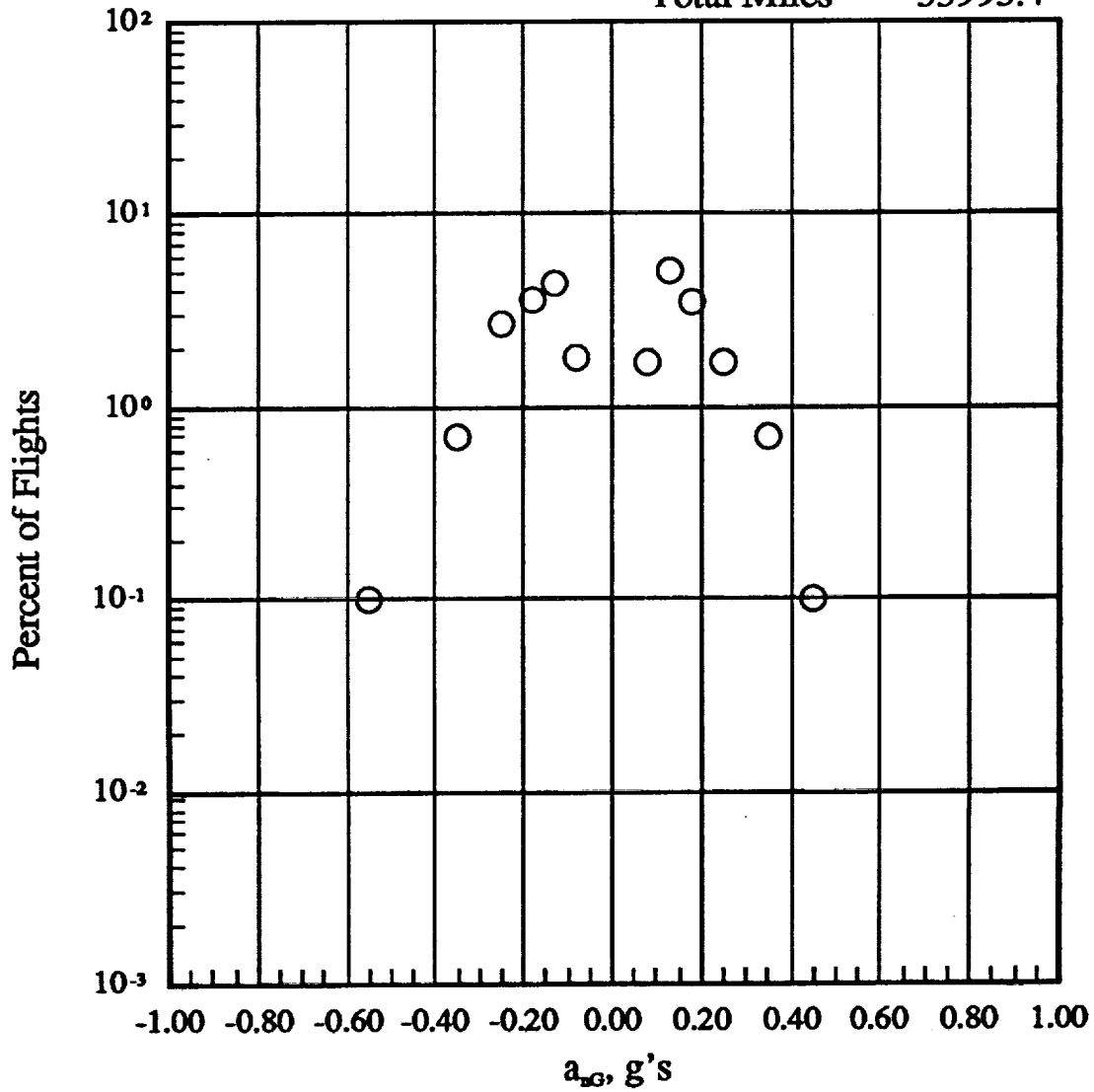
Total Flights 985
 Total Hours 105.51
 Total Miles 26173.9



(c) 4500 to 9500 feet altitude

Figure 18.- Continued.

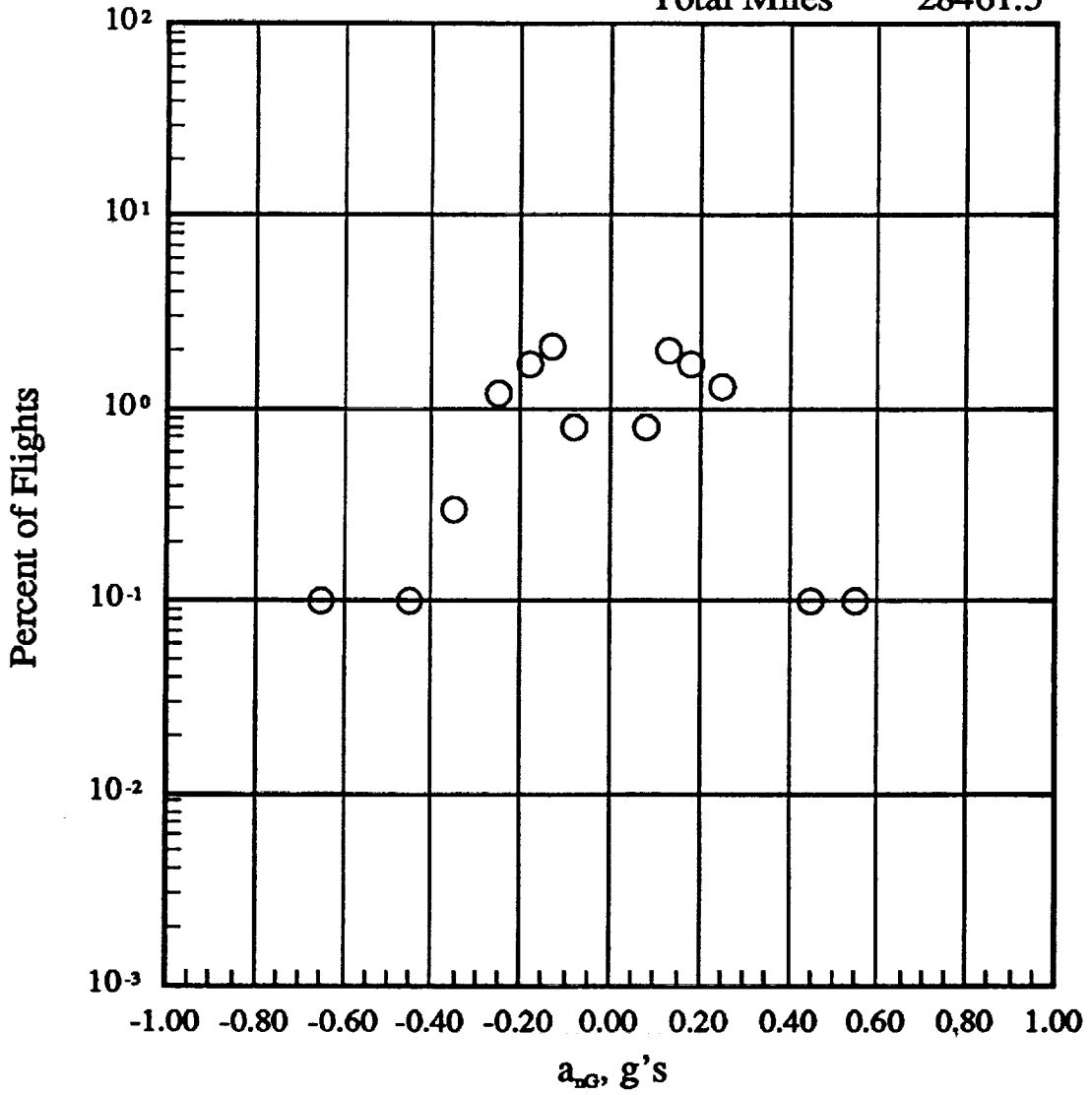
Total Flights 985
 Total Hours 104.07
 Total Miles 33995.4



(d) 9500 to 14500 feet altitude

Figure 18.- Continued.

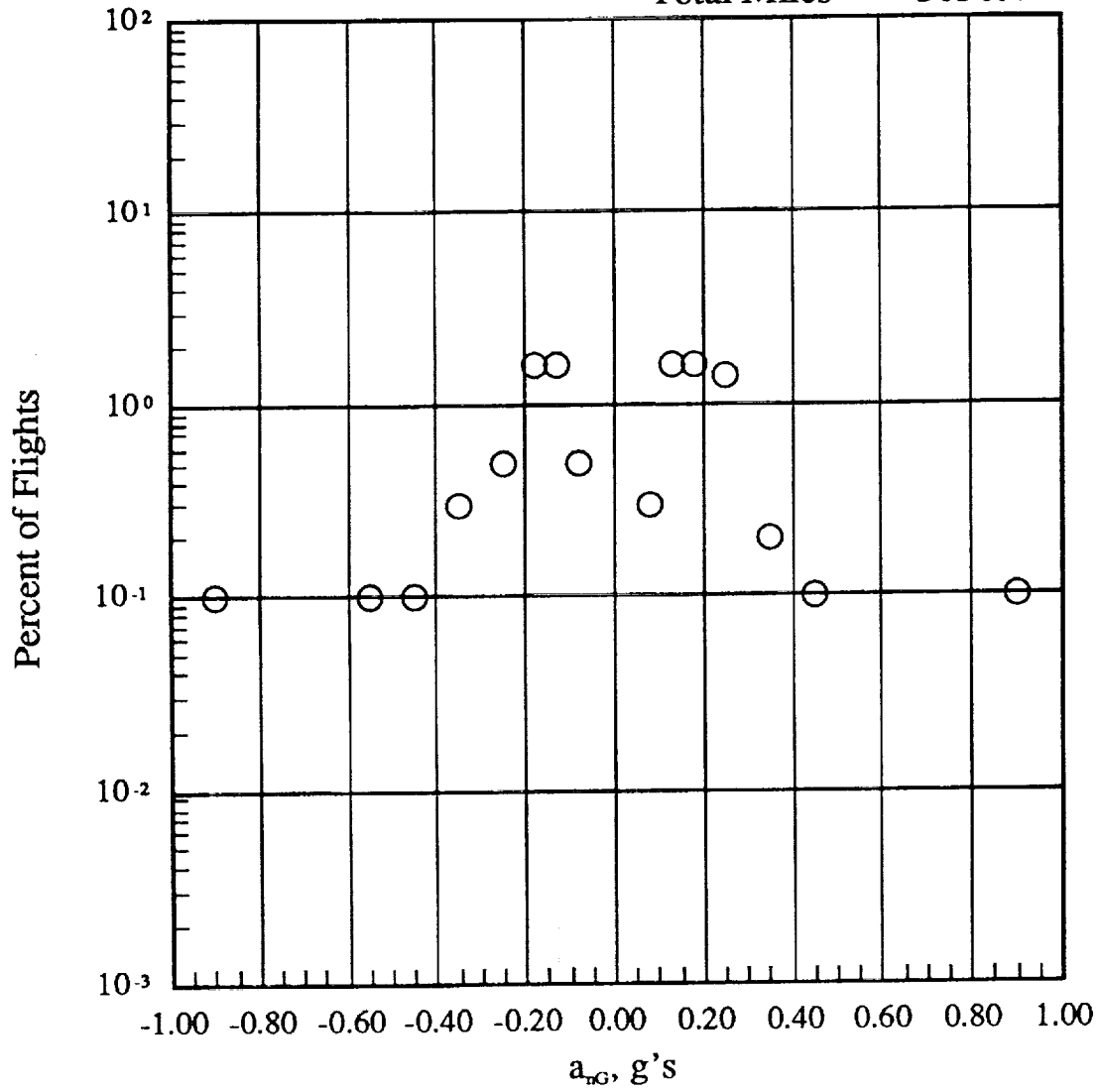
Total Flights 985
 Total Hours 74.64
 Total Miles 28461.5



(e) 14500 to 19500 feet altitude

Figure 18.- Continued.

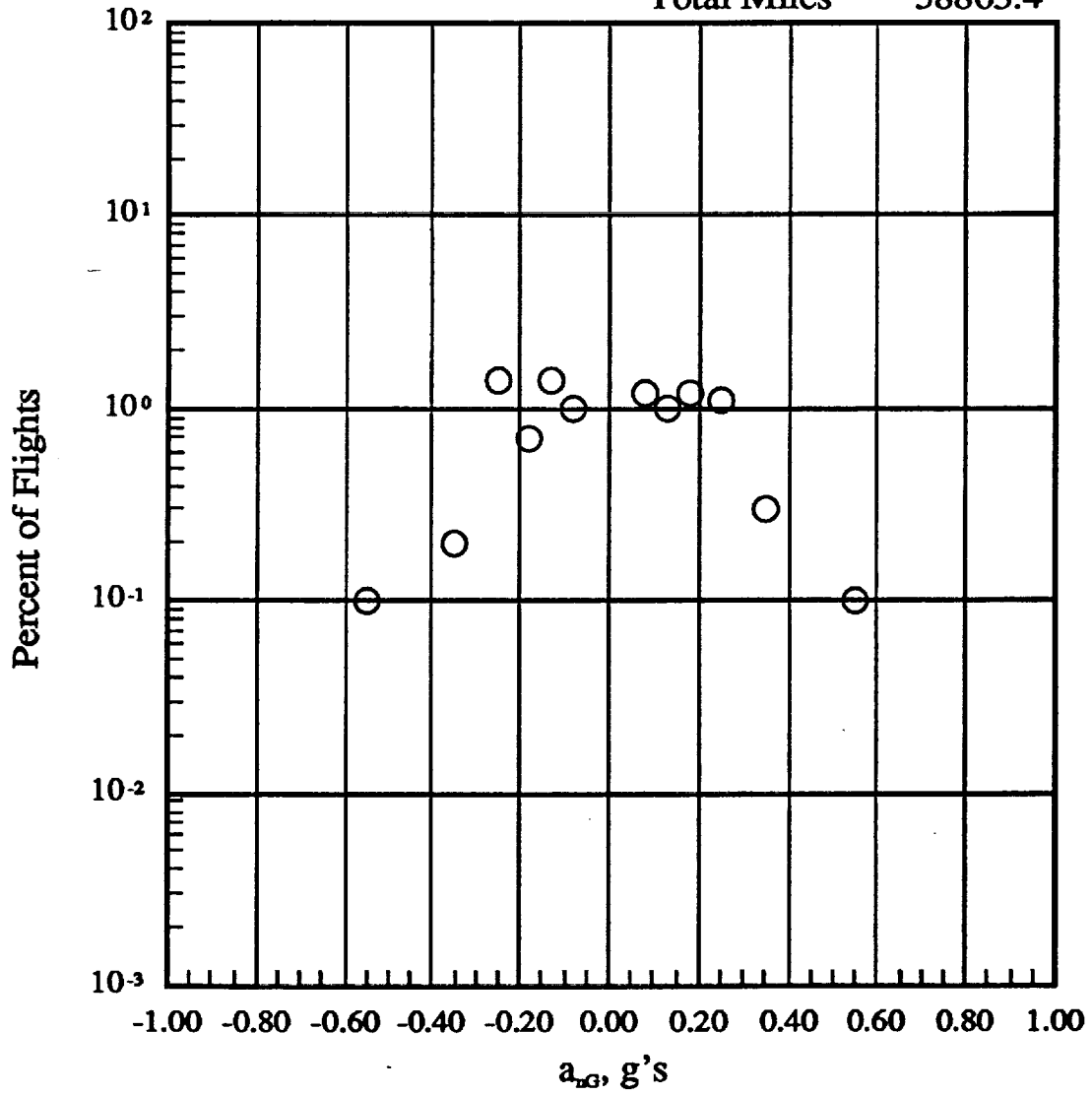
Total Flights 985
 Total Hours 87.46
 Total Miles 36365.1



(f) 19500 to 24500 feet altitude

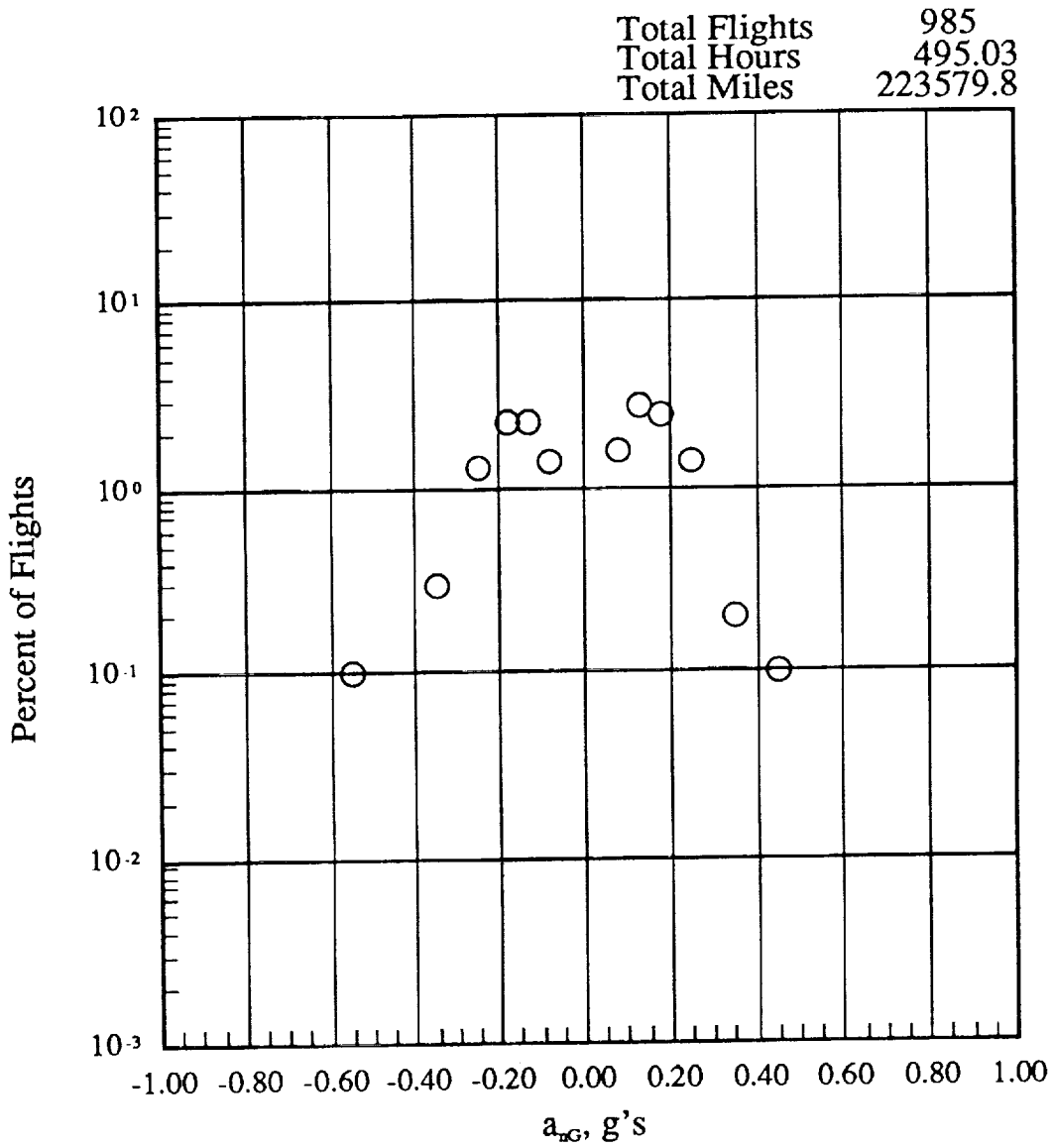
Figure 18.- Continued.

Total Flights 895
 Total Hours 132.30
 Total Miles 58863.4



(g) 24500 to 29500 feet altitude

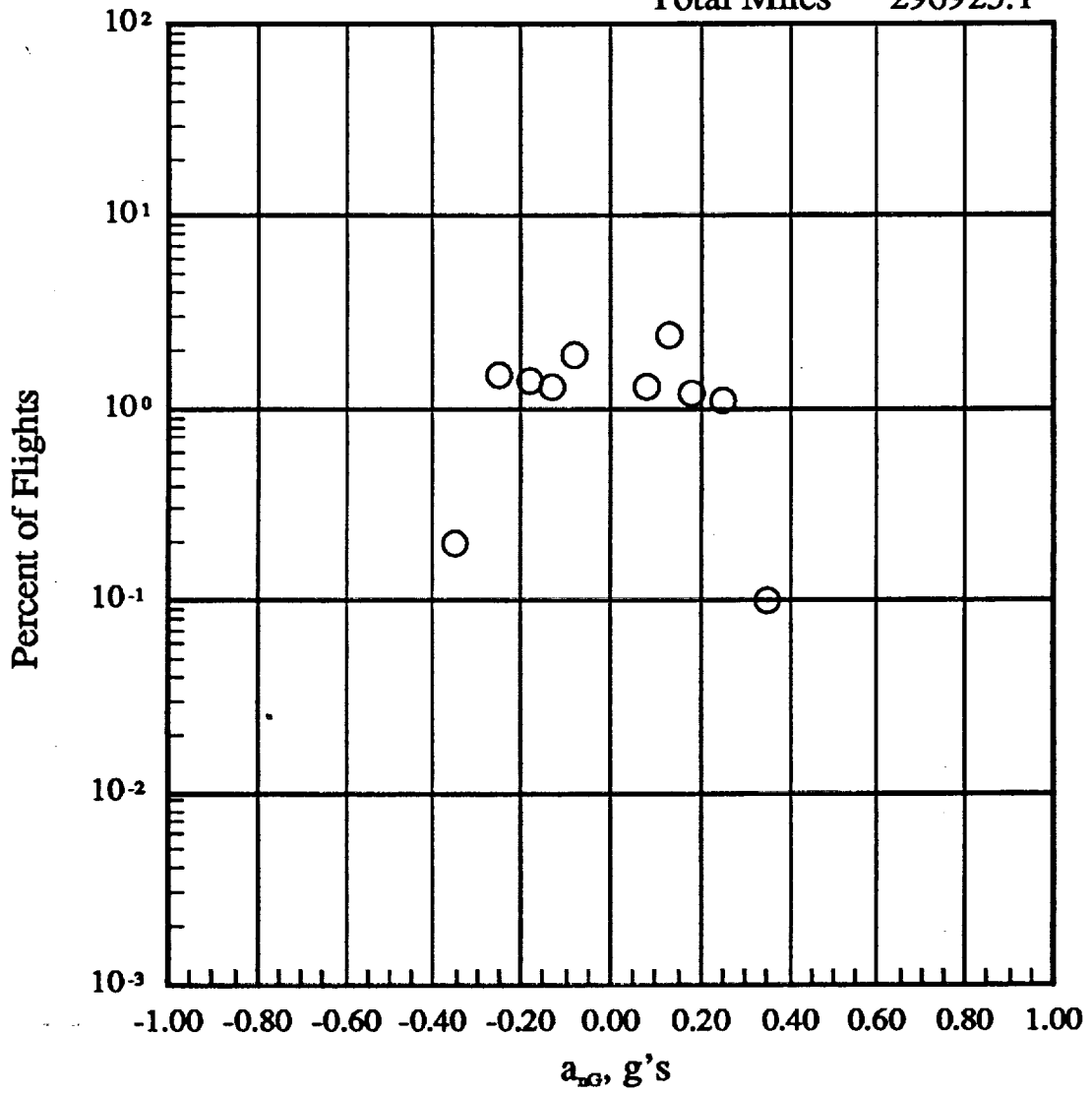
Figure 18.- Continued.



(h) 29500 to 34500 feet altitude

Figure 18.- Continued.

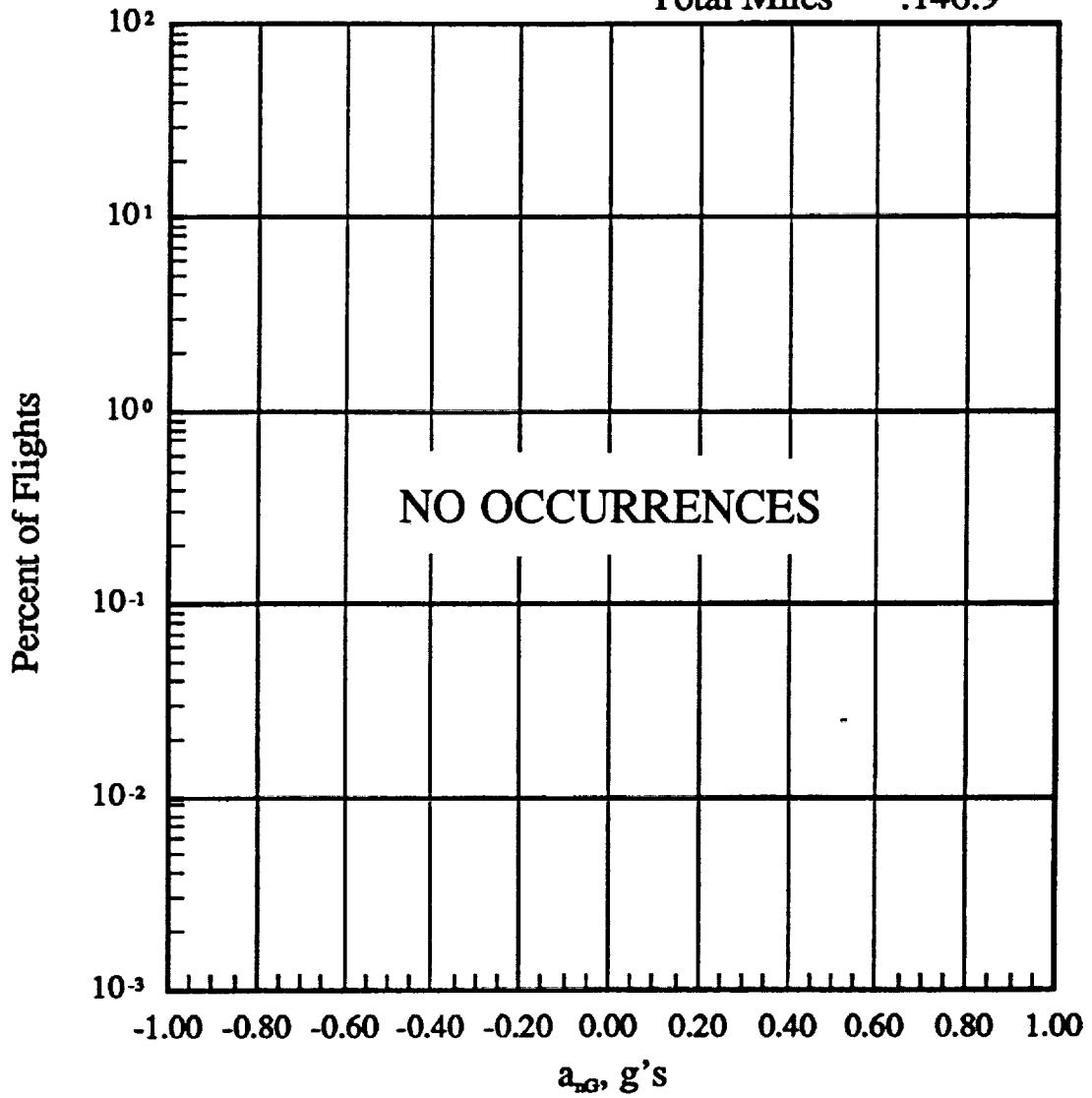
Total Flights 985
 Total Hours 663.54
 Total Miles 296925.1



(i) 34500 to 39500 feet altitude

Figure 18.- Continued.

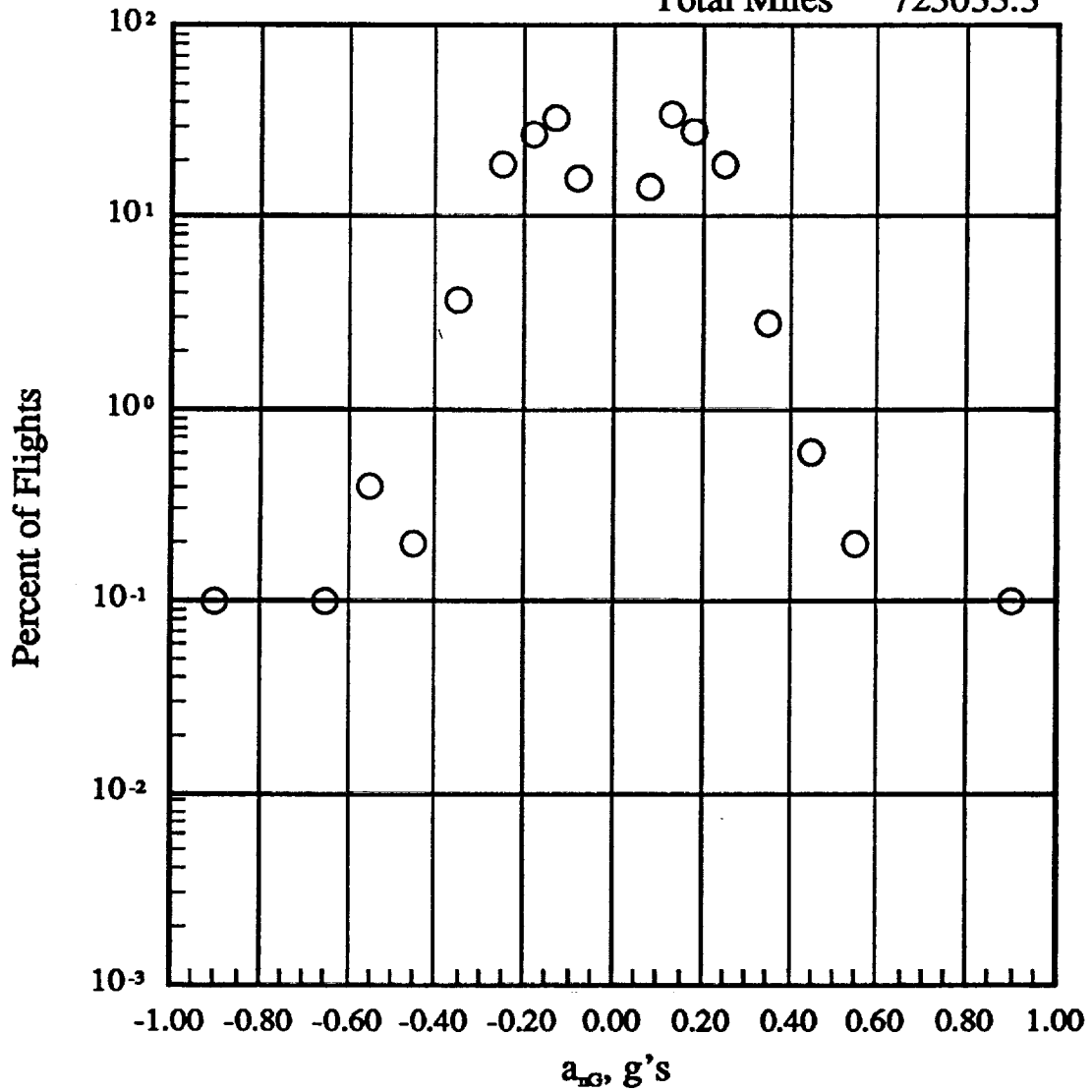
Total Flights 985
Total Hours .33
Total Miles .146.9



(j) 39500 to 44500 feet altitude

Figure 18.- Continued.

Total Flights 985
 Total Hours 1765.59
 Total Miles 723033.3



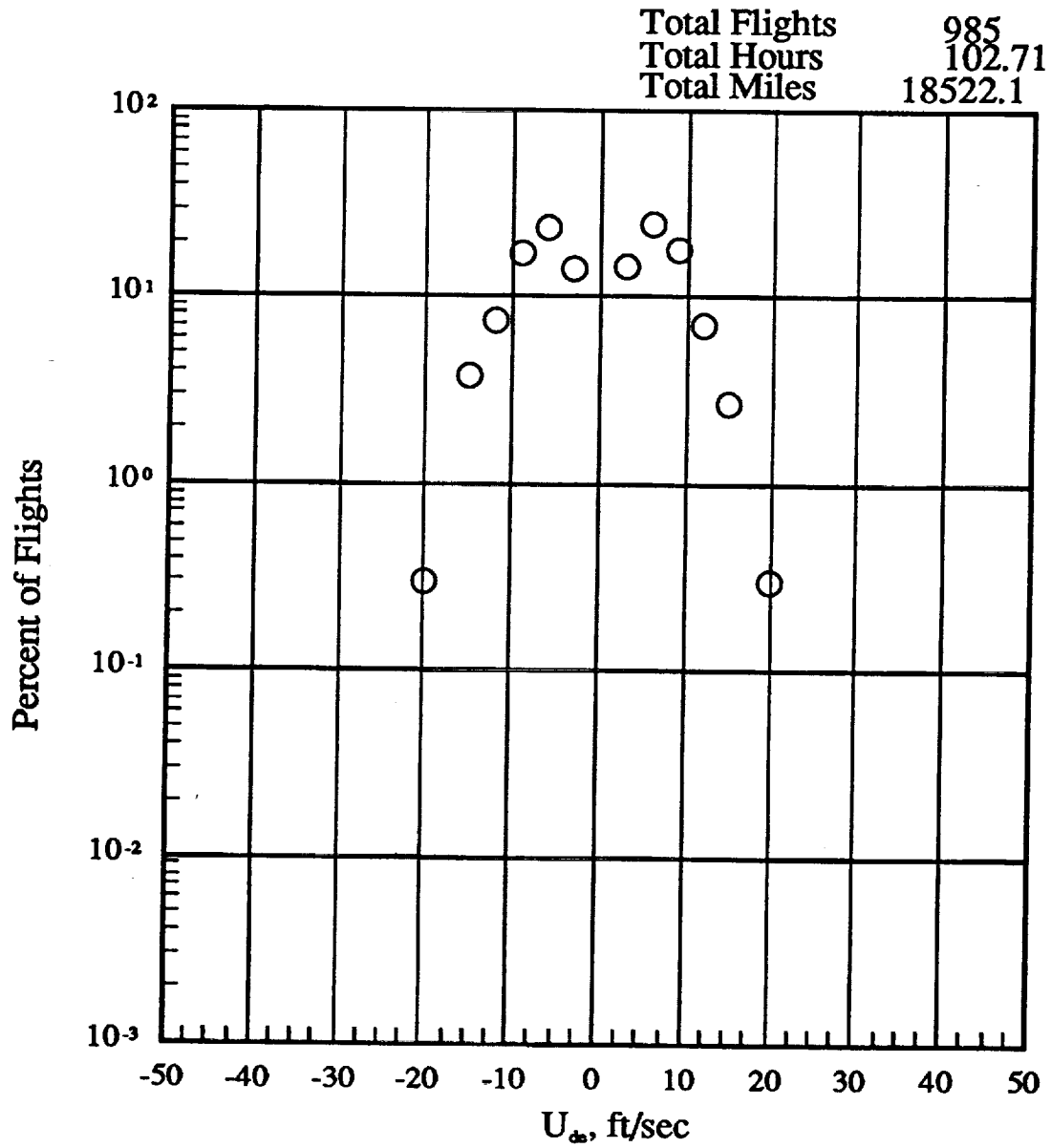
(k) -500 to 44500 feet altitude

Figure 18.- Concluded.

MAXIMUM U_{DE} LEVEL FOR EACH FLIGHT FT/SEC	-500 TO		4500 TO		9500 TO		14500 TO		19500 TO		24500 TO		29500 TO		34500 TO		39500 TO		-500 TO		
	4500 FT	9500 FT	9500 FT	14500 FT	14500 FT	19500 FT	19500 FT	24500 FT	24500 FT	29500 FT	29500 FT	34500 FT	34500 FT	39500 FT	39500 FT	44500 FT	44500 FT	44500 FT	44500 FT	44500 FT	
100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
30	0	0	0	0	0	0	0	0	0.10	0	0	0	0	0	0	0	0	0	0	0.10	
20	0.30	0.10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.40	
15	2.70	0.60	0.30	0.20	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0	0	0	0	0	4.20	
12	7.10	1.60	0.50	0	0	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0	0	0	9.60	
9	18.10	4.20	1.10	0.20	0.20	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0	0	0	0	25.10	
6	24.80	5.30	2.60	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.60	0	0	0	36.60	
3	14.70	3.10	1.90	0.80	0.80	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.70	0	0	0	0	23.20	
-3	14.30	4.40	1.80	0.70	0.70	0.60	0.60	0.60	0.60	0.60	0.20	0.20	0.20	0.20	0.40	0	0	0	0	23.40	
-6	23.70	4.40	2.20	1.00	1.00	0.40	0.40	0.40	0.40	0.40	0.90	0.90	0.90	0.90	0.90	0	0	0	0	34.50	
-9	17.30	4.00	0.80	0.30	0.30	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.60	0	0	0	0	24.30	
-12	7.50	1.90	0.50	0.20	0.20	0	0	0	0	0	0.10	0.10	0.10	0.10	0	0	0	0	0	10.30	
-15	3.80	0.70	0.20	0.10	0.10	0.20	0.20	0.20	0.20	0.20	0.10	0.10	0.10	0.10	0	0	0	0	0	5.30	
-20	0.30	0.10	0.10	0.10	0.10	0.20	0.20	0.20	0.20	0.20	0	0	0	0	0	0	0	0	0	0.80	
-30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
-40	0	0	0	0	0	0	0	0	0	0	0.10	0.10	0.10	0.10	0	0	0	0	0	0.10	
-50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
-70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
-80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
-90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
-100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
FLIGHT HOURS @ ALT	102.71	105.51	104.07	74.64	87.46	132.30	495.03	663.54	1765.59												
FLIGHT MILES @ ALT	18522.12	26173.93	33995.36	28461.45	36365.13	58863.40	223579.81	296925.11	723033.21												
TOTAL FLIGHTS																					985

(a) Percent of flights where peak positive and negative U_{de} per flight occurs within pressure altitude bands, any flap

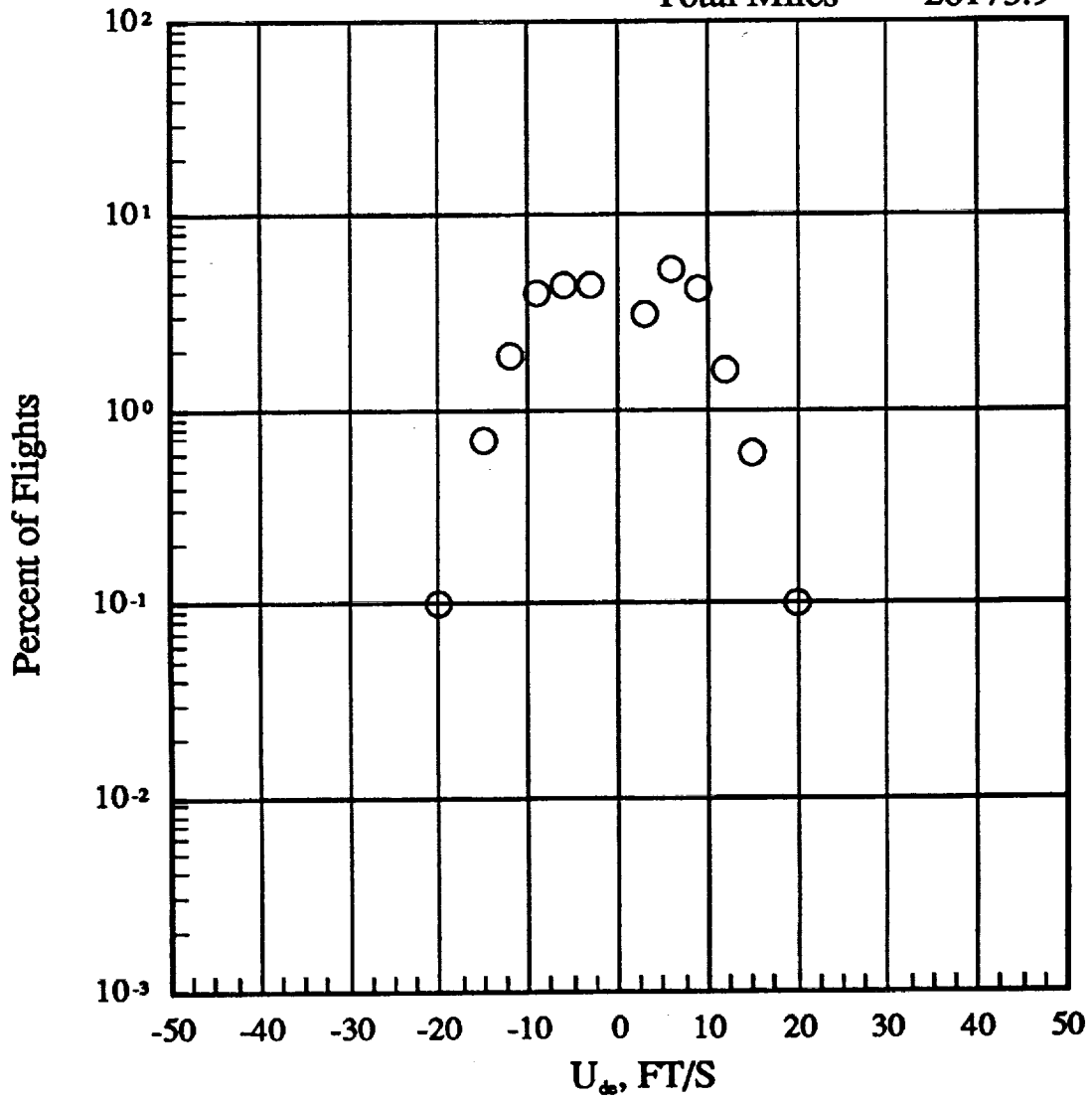
Figure 19.- Peak positive and negative U_{de} vs altitude.



(b) -500 to 4500 feet altitude

Figure 19.- Continued.

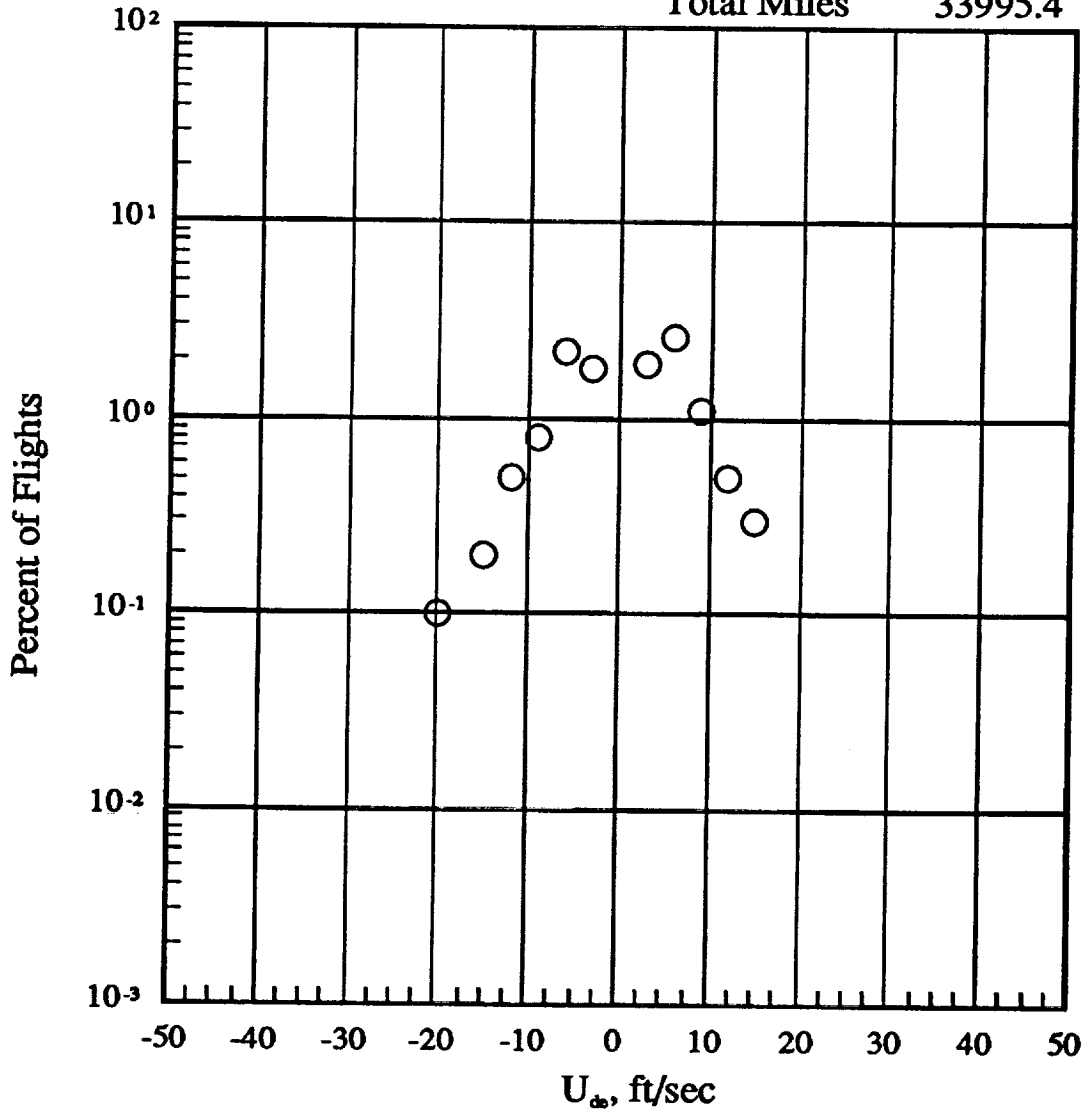
Total Flights 985
 Total Hours 105.51
 Total Miles 26173.9



(c) 4500 to 9500 feet altitude

Figure 19.- Continued.

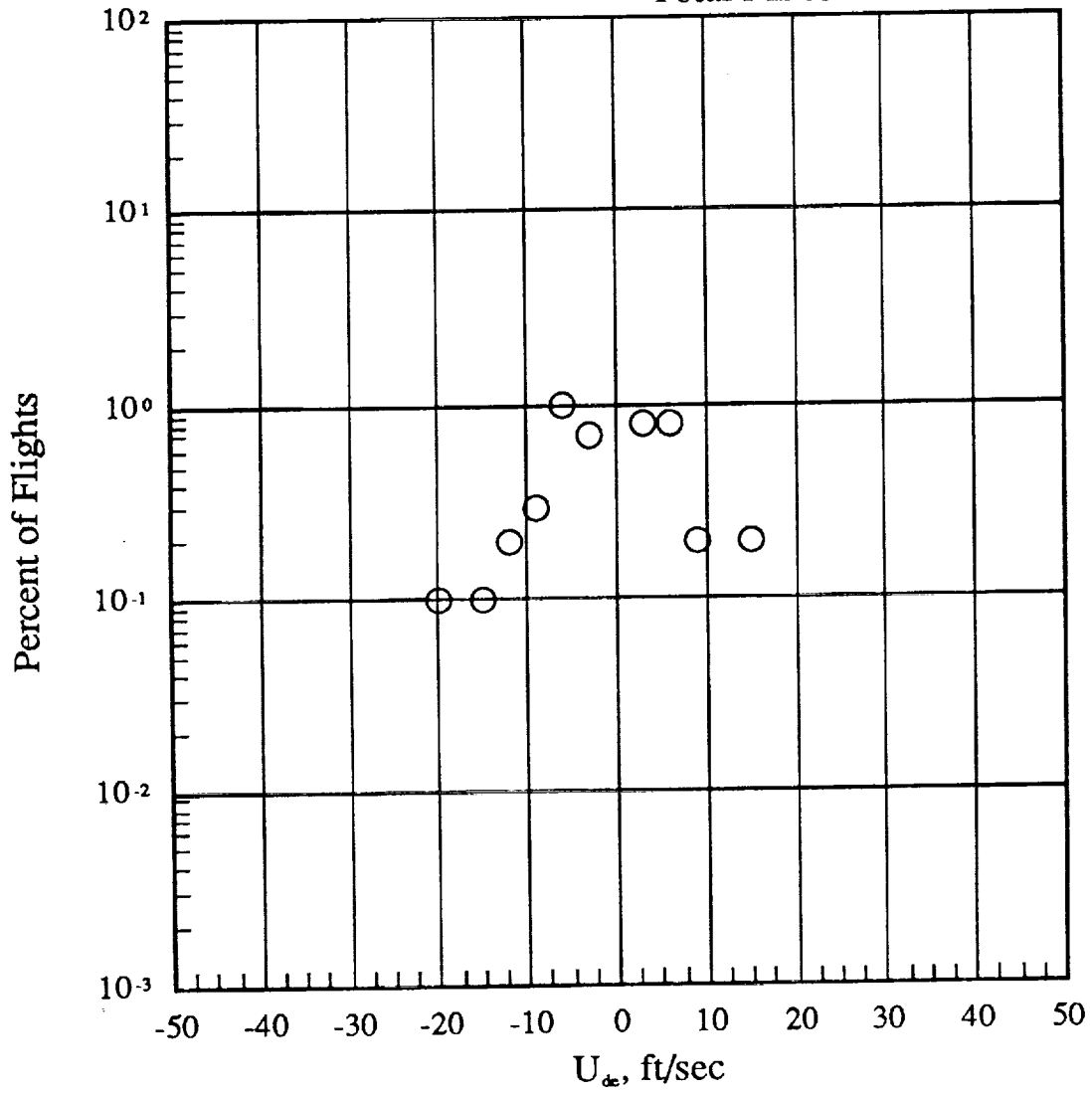
Total Flights 985
 Total Hours 104.07
 Total Miles 33995.4



(d) 9500 to 14500 feet altitude

Figure 19.- Continued.

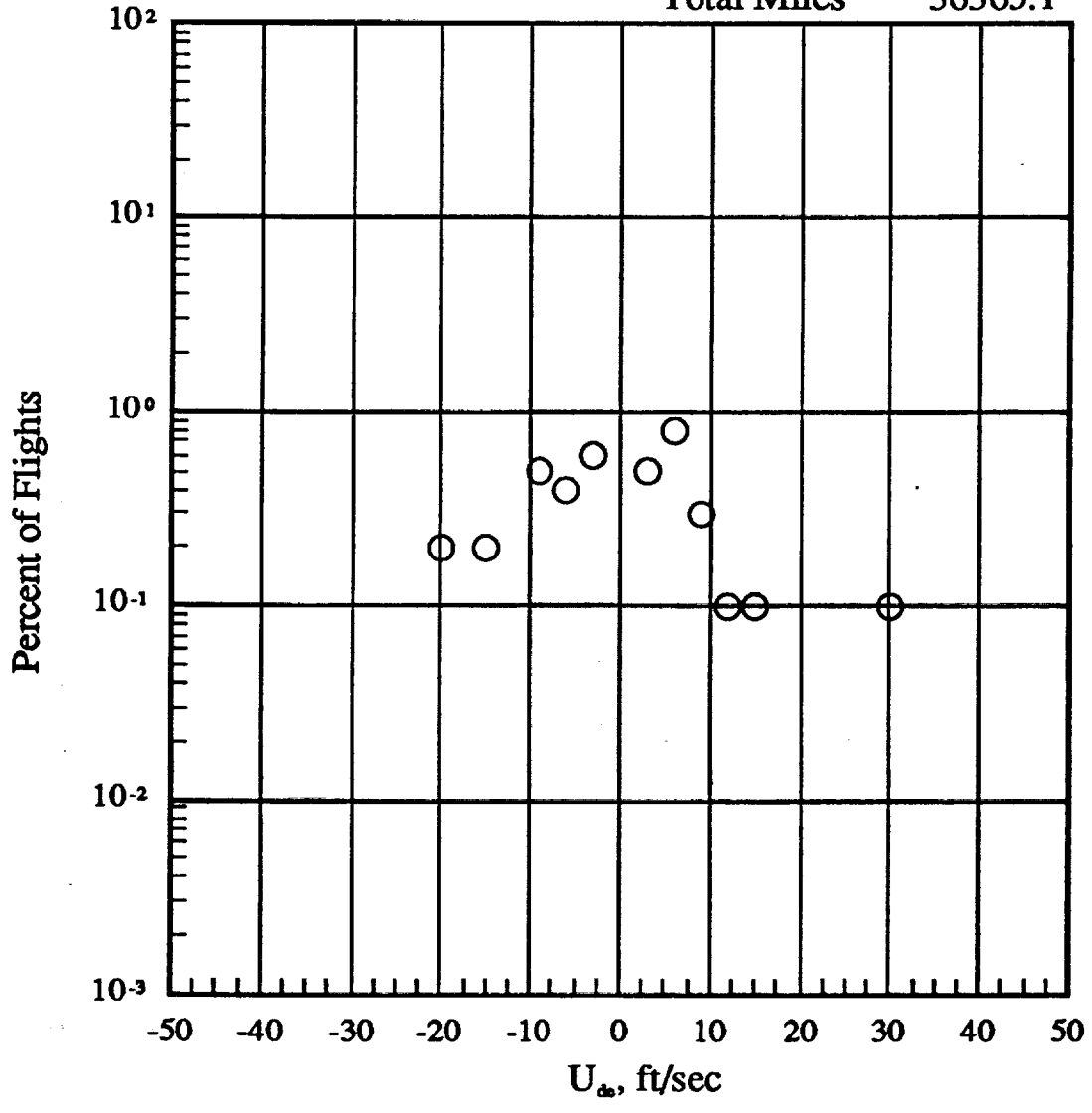
Total Flights 985
 Total Hours 74.64
 Total Miles 28461.5



(e) 14500 to 19500 feet altitude

Figure 19.- Continued.

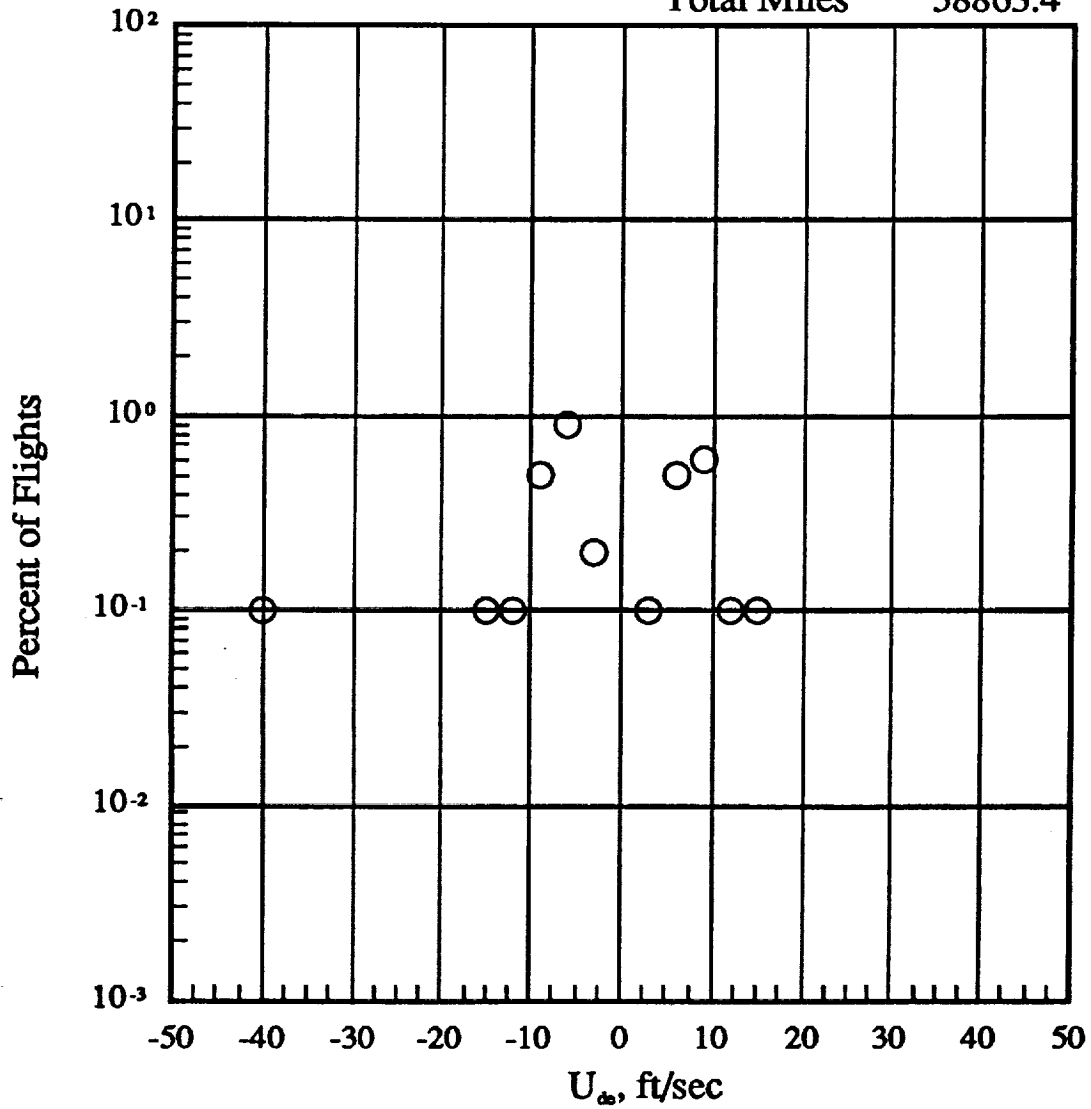
Total Flights 985
 Total Hours 87.46
 Total Miles 36365.1



(f) 19500 to 24500 feet altitude

Figure 19.- Continued.

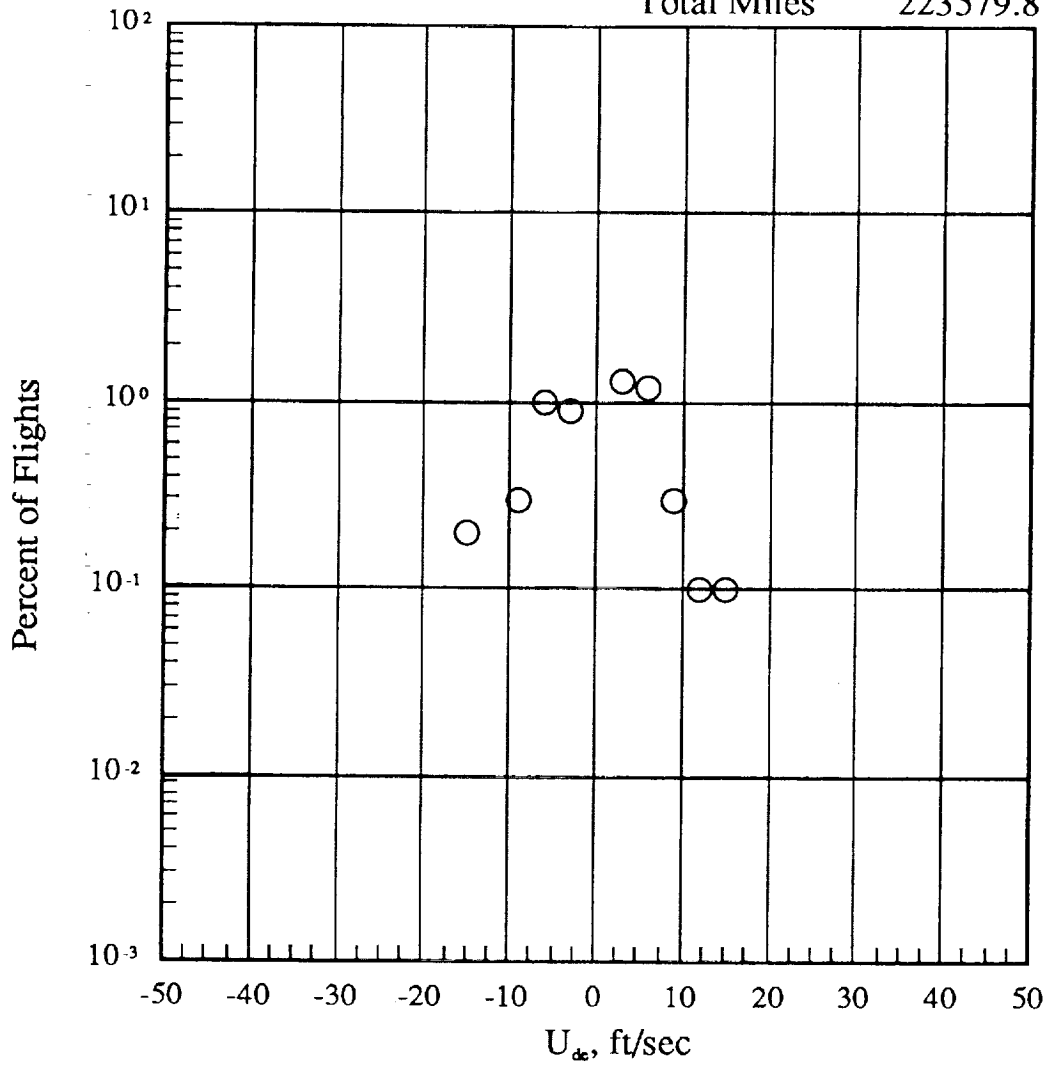
Total Flights 985
 Total Hours 132.30
 Total Miles 58863.4



(g) 24500 to 29500 feet altitude

Figure 19.- Continued.

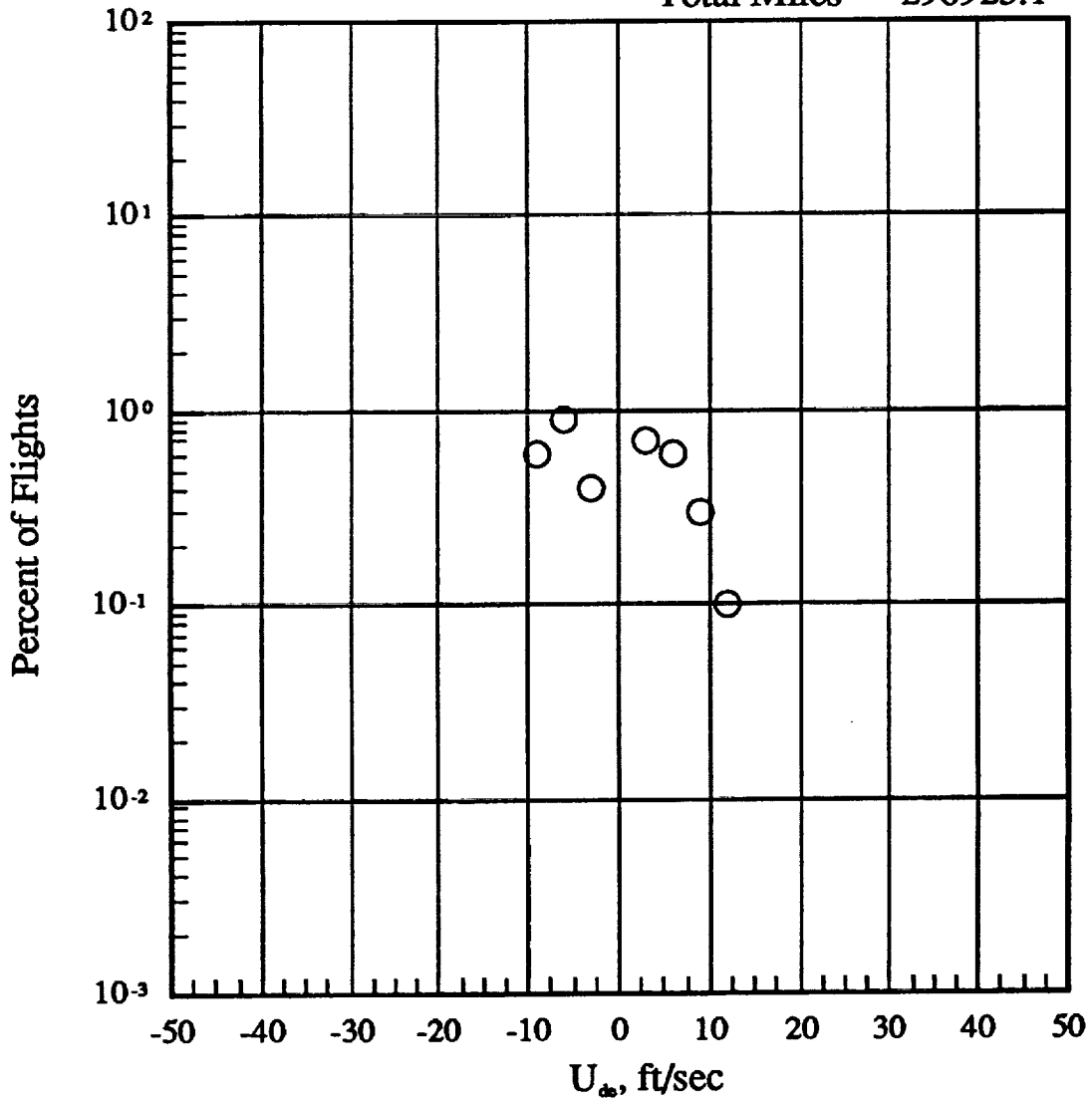
Total Flights 985
 Total Hours 495.03
 Total Miles 223579.8



(h) 29500 to 34500 feet altitude

Figure 19.- Continued.

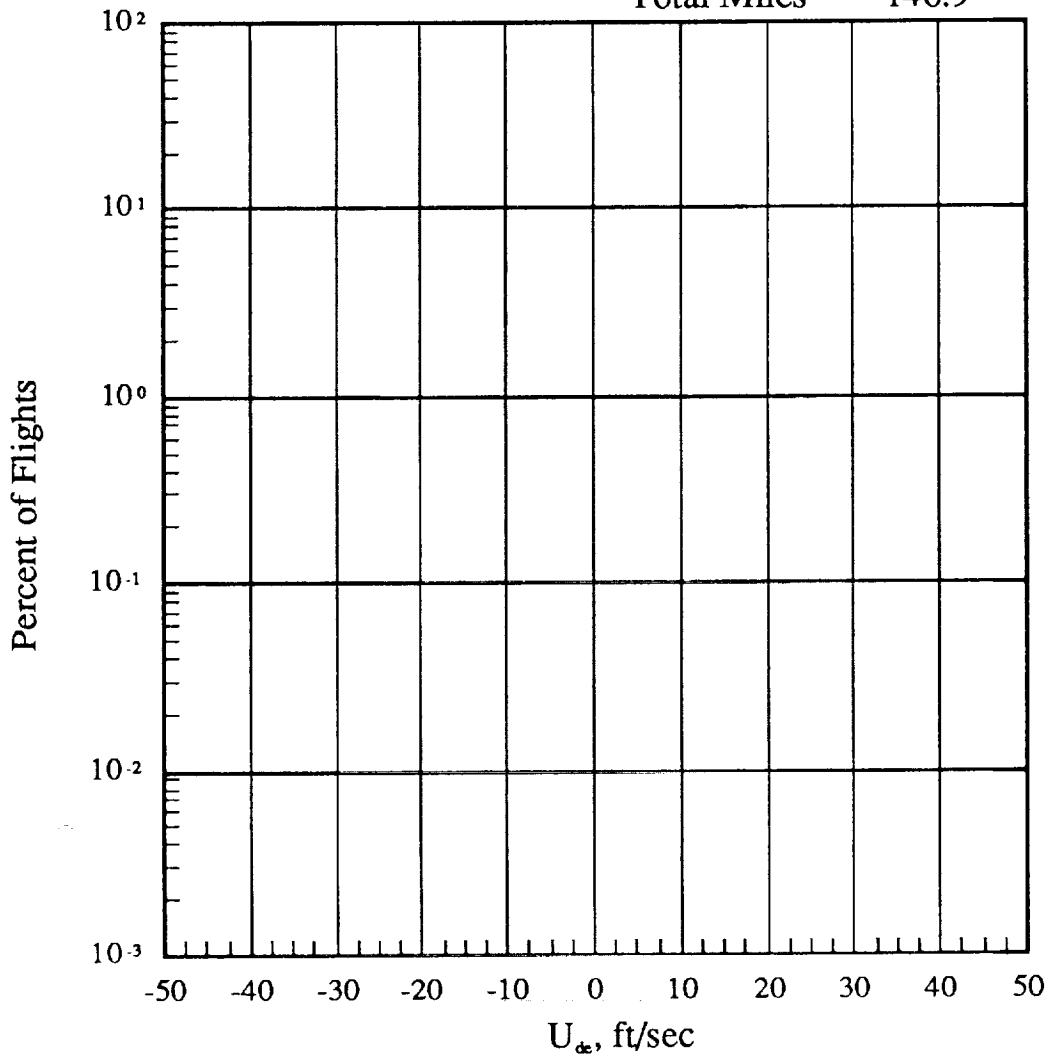
Total Flights 985
Total Hours 663.54
Total Miles 296925.1



(i) 34500 to 39500 feet altitude

Figure 19.- Continued.

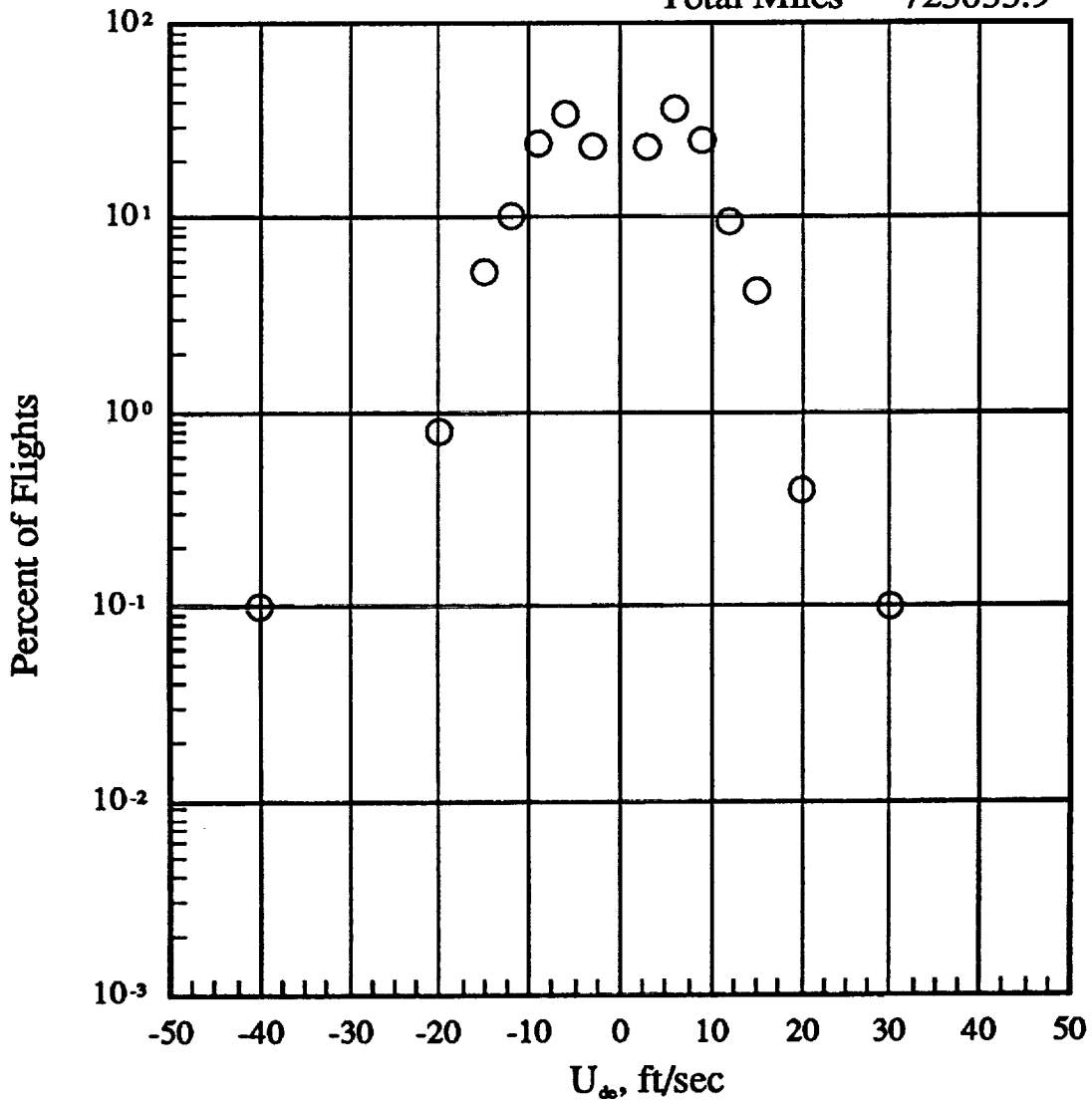
Total Flights 985
Total Hours 0.33
Total Miles 146.9



(j) 39500 to 44500 feet altitude

Figure 19.- Continued.

Total Flights 985
 Total Hours 1765.59
 Total Miles 723033.9



(k) -500 to 44500 feet altitude

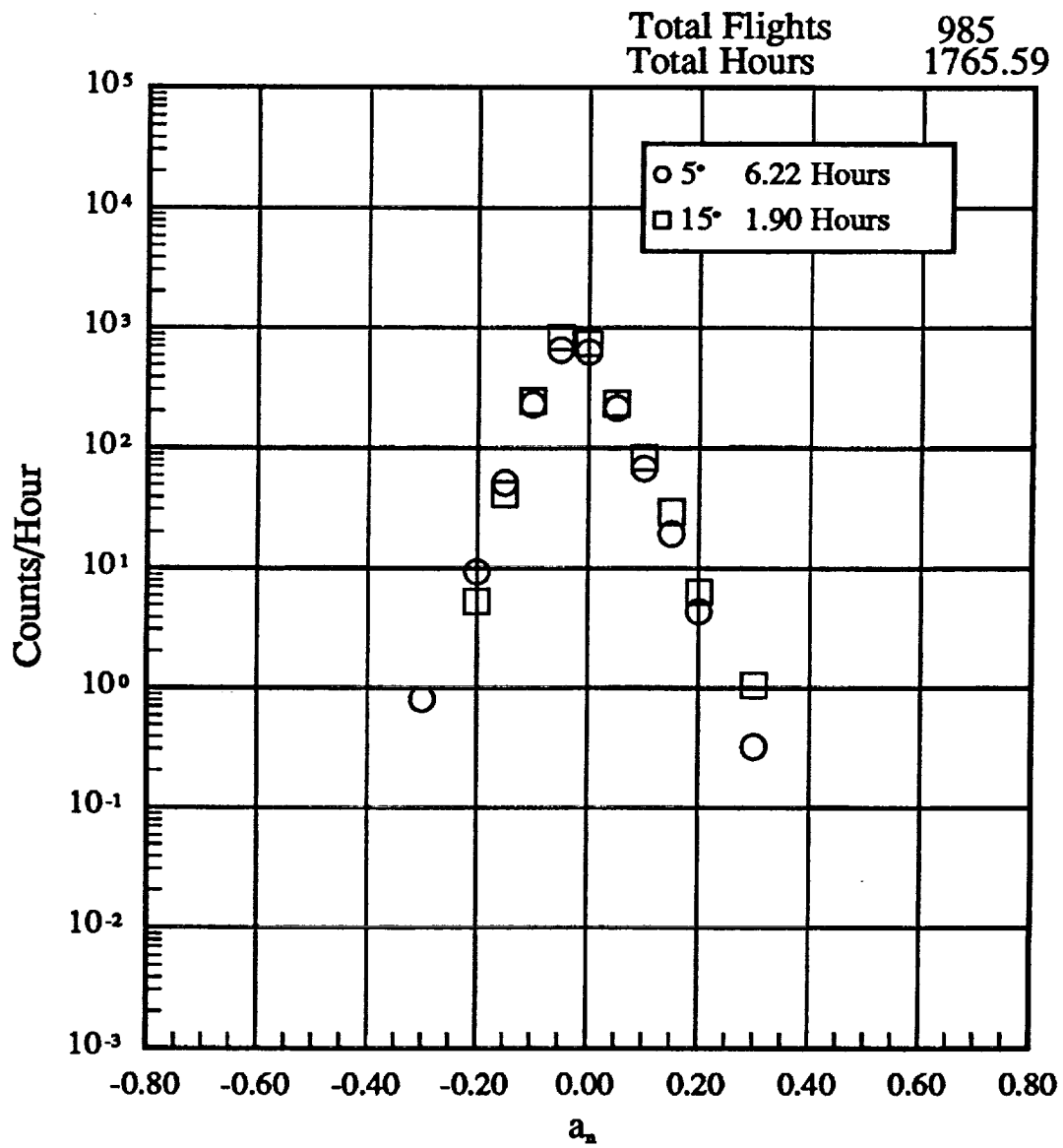
Figure 19.- Concluded.

FLAP DETENT

LEVEL g's	FLAP DETENT					TOTAL HOURS	TOTAL FLIGHTS	TOTAL FLIGHT HOURS FLAPS UP AND DOWN	TOTAL FLIGHT MILES FLAPS UP AND DOWN	
	5	15	20	25	30					
1.60	0	0	0	0	0	0	0	0	0	
1.40	0	0	0	0	0	0	0	0	0	
1.20	0	0	0	0	0	0	0	0	0	
1.00	0	0	0	0	0	0	0	0	0	
.80	0	0	0	0	0	0	0	0	0	
.70	0	0	0	0	0	0	0	0	0	
.60	0	0	0	0	0	0	0	0	0	
.50	0	0	0	0	0	0	0	0	0	
.40	0	0	0	0	0	0	0	0	0	
.30	0.321	1.053	0	0	0	0	0	0	0	
.20	4.339	6.318	0	0	0	0	0	0	0	
.15	19.446	29.484	0	0	0	0	0	0	0	
.10	67.178	82.662	0	0	0	0	0	0	0	
.05	214.069	232.190	0	92.308	0	0	0	0	0	
0	626.297	733.952	300.000	184.615	0	0	0	0	0	
-.05	651.368	830.830	1200.000	1200.000	0	0	0	0	0	
-.10	229.015	244.826	600.000	369.231	0	0	0	0	0	
-.15	50.946	41.068	0	0	0	0	0	0	0	
-.20	9.321	5.265	0	0	0	0	0	0	0	
-.30	0	0	0	0	0	0	0	0	0	
-.40	0	0	0	0	0	0	0	0	0	
-.50	0	0	0	0	0	0	0	0	0	
-.60	0	0	0	0	0	0	0	0	0	
-.70	0	0	0	0	0	0	0	0	0	
-.80	0	0	0	0	0	0	0	0	0	
-1.00	0	0	0	0	0	0	0	0	0	
-1.20	0	0	0	0	0	0	0	0	0	
-1.40	0	0	0	0	0	0	0	0	0	
-1.60	0	0	0	0	0	0	0	0	0	
FLIGHT HOURS IN DETENT						6.222	1.899	0.003	0.011	0
TOTAL HOURS										8.14
TOTAL FLIGHTS										985
TOTAL FLIGHT HOURS FLAPS UP AND DOWN										1765.59
TOTAL FLIGHT MILES FLAPS UP AND DOWN										723033.21

(a) Take off

Figure 20.- a_{11} exceedances with flaps deflected.



(b) Take off

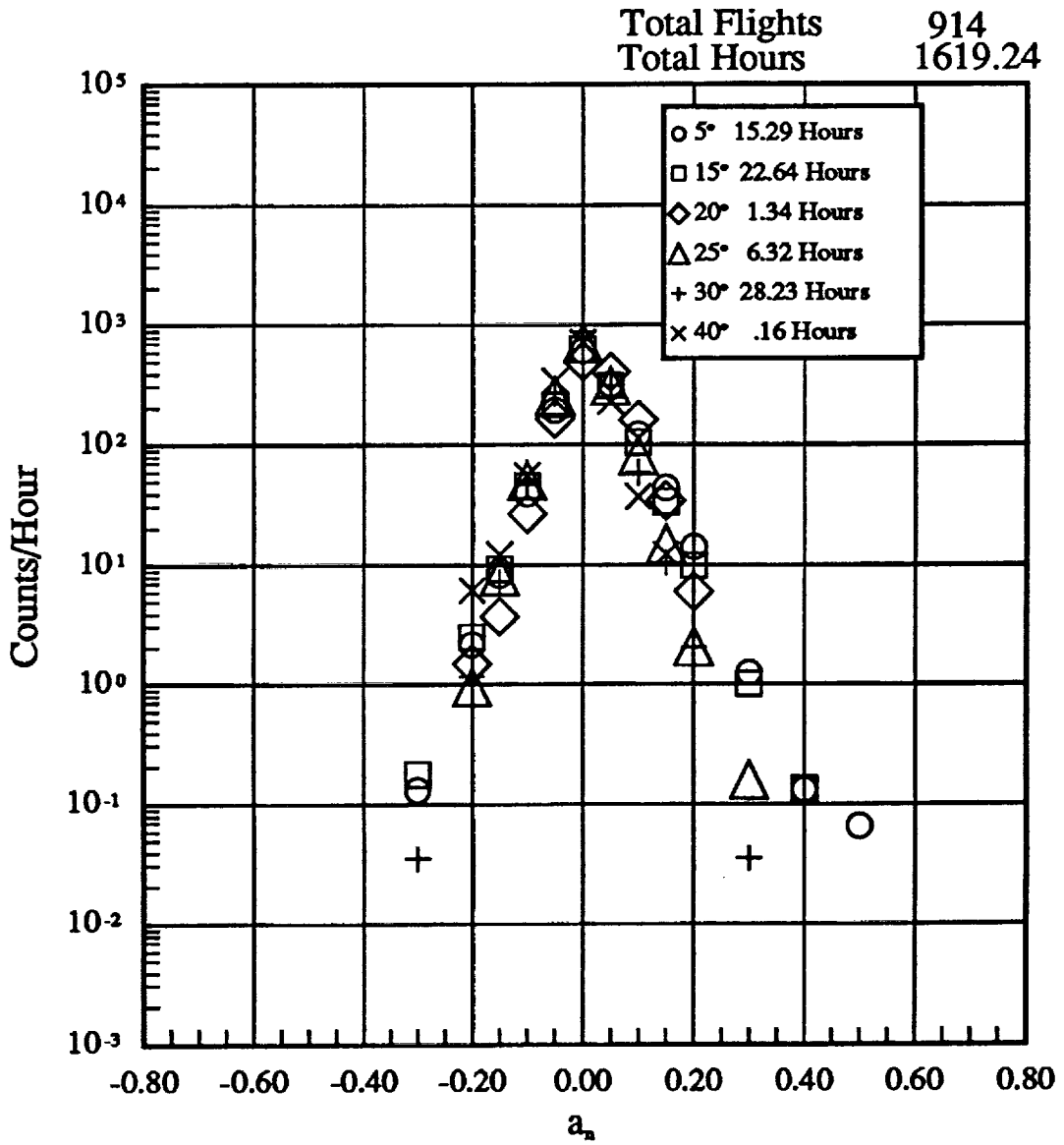
Figure 20.- Continued.

FLAP DETENT

FLIGHT HOURS IN DETENT	FLAP DETENT										TOTAL HOURS	TOTAL FLIGHTS	TOTAL FLIGHT HOURS FLAPS UP AND DOWN	TOTAL FLIGHT MILES FLAPS UP AND DOWN			
	5	15	20	25	30	40	45	73.97	985	1765.59					723033.21		
1.60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.50	0.065	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.40	0.131	0	0.133	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.30	1.243	1.016	0	0.158	0.035	0	0	0	0	0	0	0	0	0	0	0	0
.20	14.261	9.896	5.985	2.055	2.055	0	0	0	0	0	0	0	0	0	0	0	0
.15	43.700	33.620	34.414	15.021	10.485	12.350	0	0	0	0	0	0	0	0	0	0	0
.10	121.413	104.440	160.100	80.638	58.412	37.050	0	0	0	0	0	0	0	0	0	0	0
.05	317.869	314.557	401.746	308.795	310.021	228.473	0	0	0	0	0	0	0	0	0	0	0
0	606.430	622.841	492.269	698.070	871.013	716.295	0	0	0	0	0	0	0	0	0	0	0
-.05	193.574	215.242	164.589	256.143	266.097	339.623	0	0	0	0	0	0	0	0	0	0	0
-.10	39.382	45.593	26.933	50.280	46.581	55.575	0	0	0	0	0	0	0	0	0	0	0
-.15	8.243	9.366	3.741	8.064	7.226	12.350	0	0	0	0	0	0	0	0	0	0	0
-.20	2.159	2.518	1.496	0.949	1.169	6.175	0	0	0	0	0	0	0	0	0	0	0
-.30	0.131	0.177	0	0	0.035	0	0	0	0	0	0	0	0	0	0	0	0
-.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-.60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-.70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-.80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-1.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-1.20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-1.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-1.60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FLIGHT HOURS IN DETENT	15.286	22.635	1.337	6.325	28.230	0.162	0	0	0	0	0	0	0	0	0	0	0

(c) Landing

Figure 20.- Continued.



(d) Landing.

Figure 20.- Concluded.

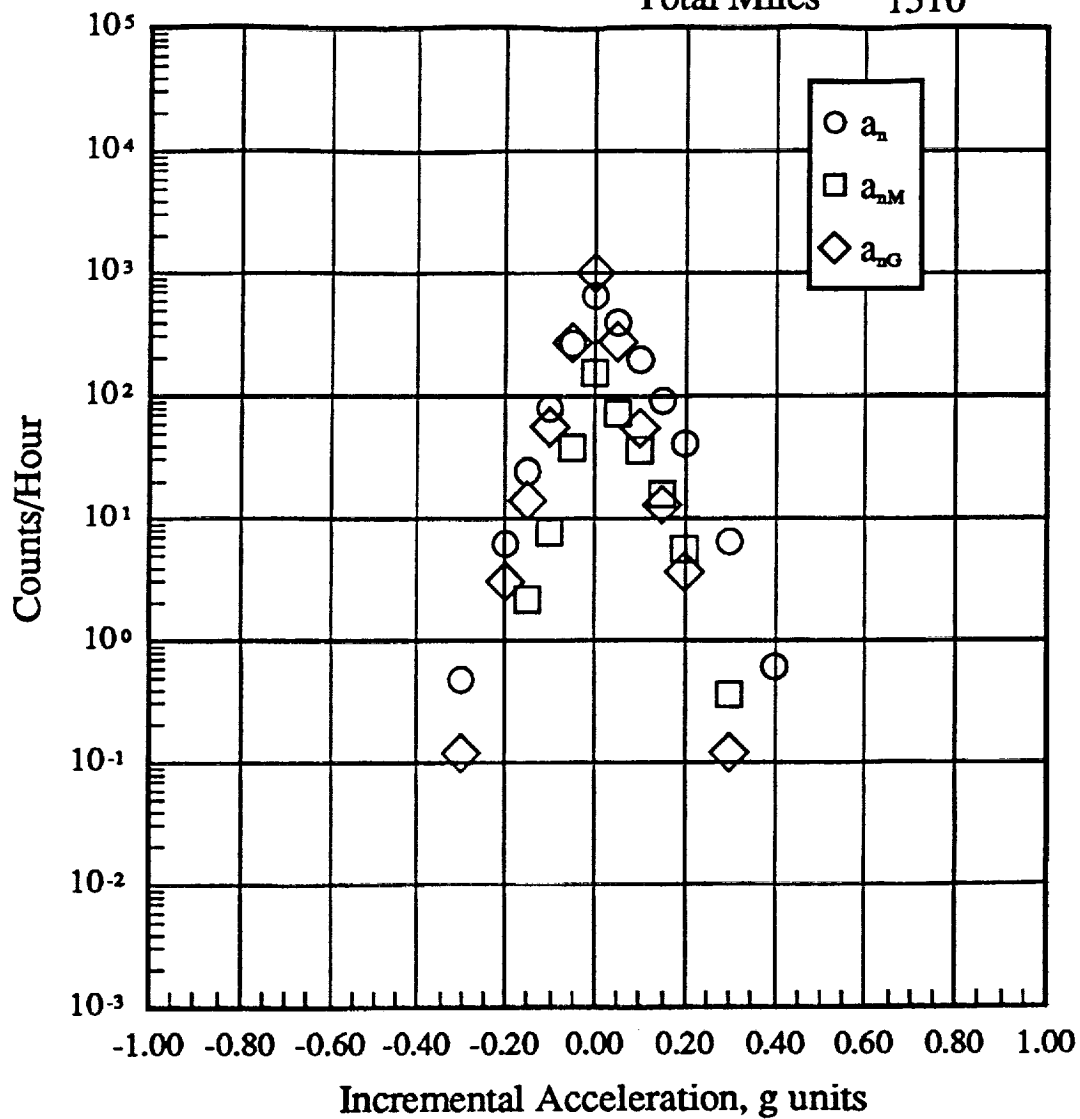
MAXIMUM a_n LEVEL FOR EACH FLIGHT		EAS KTS												TOTAL FLIGHTS INCLUDED								
FROM	TO	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	310	320
1.80	1.80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.40	1.60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.20	1.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.00	1.20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.80	1.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.70	0.80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.60	0.70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.50	0.60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.40	0.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.30	0.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.20	0.30	0	0	0	1	3	3	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0
.15	0.20	0	0	0	3	6	5	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0
.10	0.15	0	0	2	5	9	7	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0
.05	0.10	0	0	4	7	11	9	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0
-0.05	-0.10	0	0	4	10	16	9	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0
-0.10	-0.15	0	0	2	8	7	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-0.15	-0.20	0	0	1	2	3	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-0.20	-0.30	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-0.30	-0.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-0.40	-0.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-0.50	-0.60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-0.60	-0.70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-0.70	-0.80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-0.80	-1.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-1.00	-1.20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-1.20	-1.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-1.40	-1.60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-1.60	-1.80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL FRAMES @ EAS		0	11	131	377	554	387	199	77	17	0	2	1	0	1	0	0	0	0	0	0	0
FLIGHT HOURS @ EAS		0	0.2	2.1	7.0	7.0	4.0	1.6	0.4	0.1	0	0	0.1	0	0	0	0	0	0	0	0	0
FLIGHT MILES @ EAS		0	35	325	1136	1212	732	302	87	17	4	9	24	8	3	1	0	0	0	0	0	0

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(f) Landing: flaps 15 degree detent

Figure 21.- Continued.

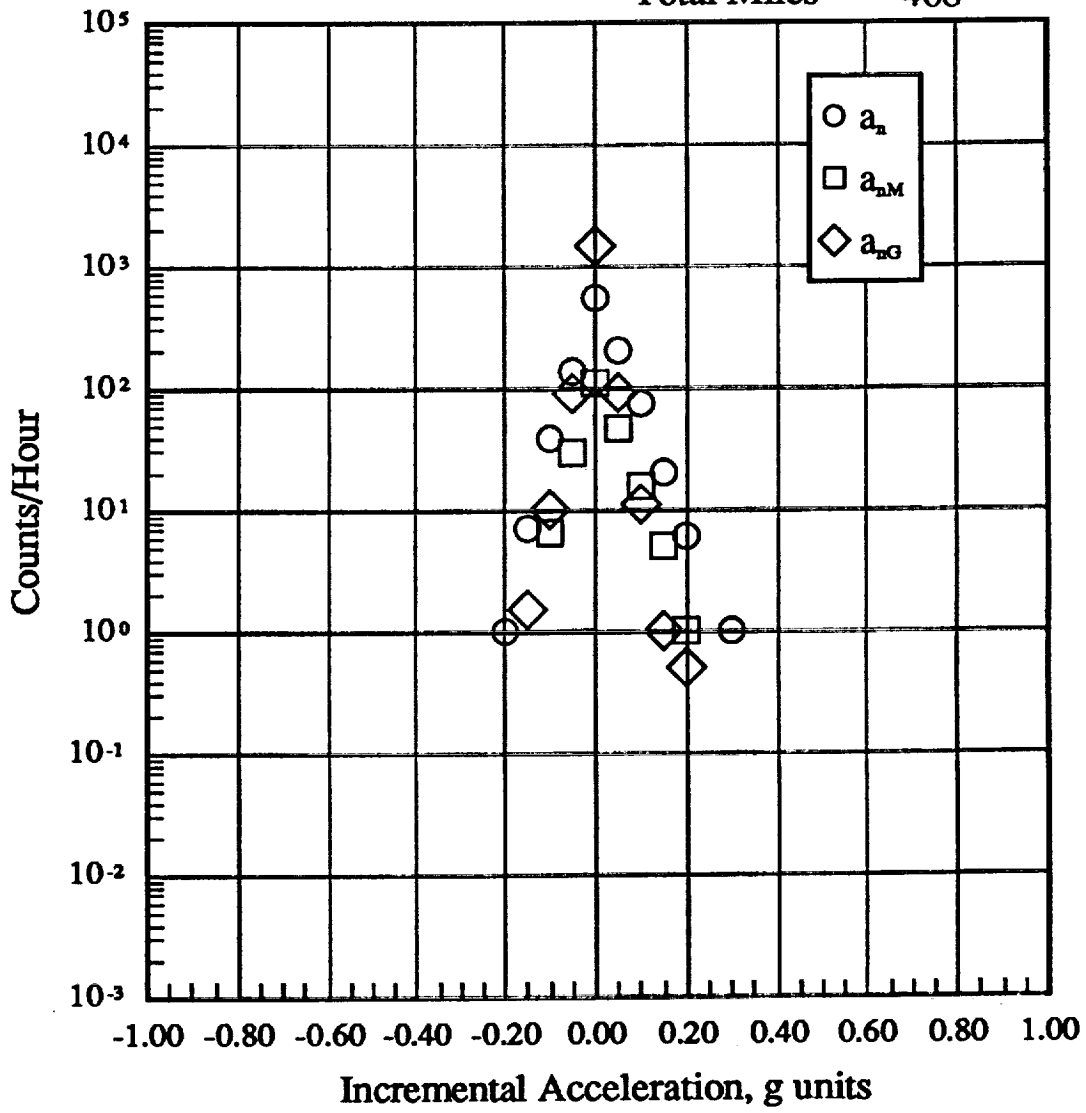
Total Flights 64
 Total Hours 8.25
 Total Miles 1510



(d) a_n , a_{nM} , a_{nG} , -500 to 4500 feet altitude

Figure 22.- Continued.

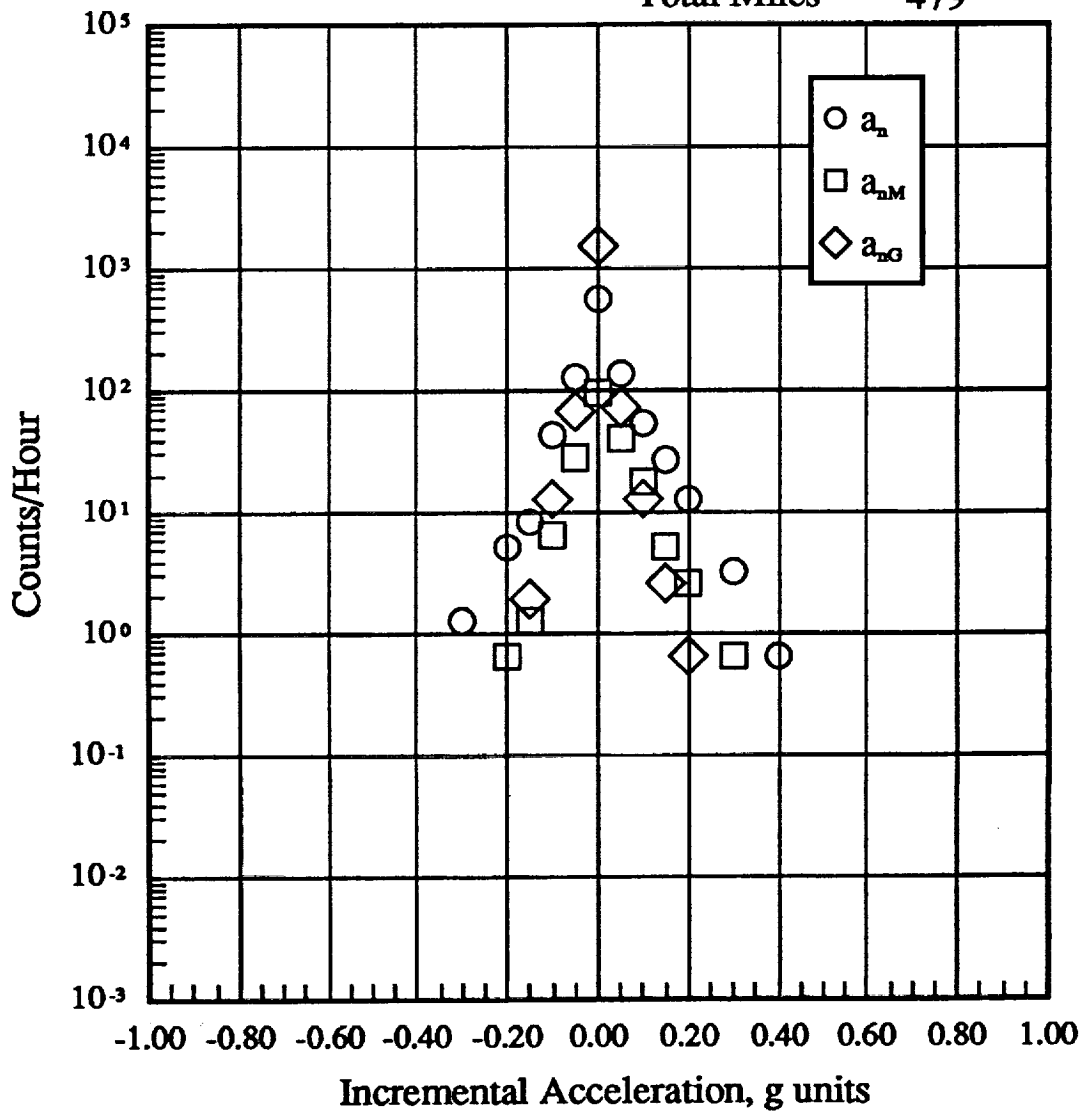
Total Flights 64
 Total Hours 1.95
 Total Miles 468



(e) a_x , a_M , a_G , 4500 to 9500 feet altitude

Figure 22.- Continued.

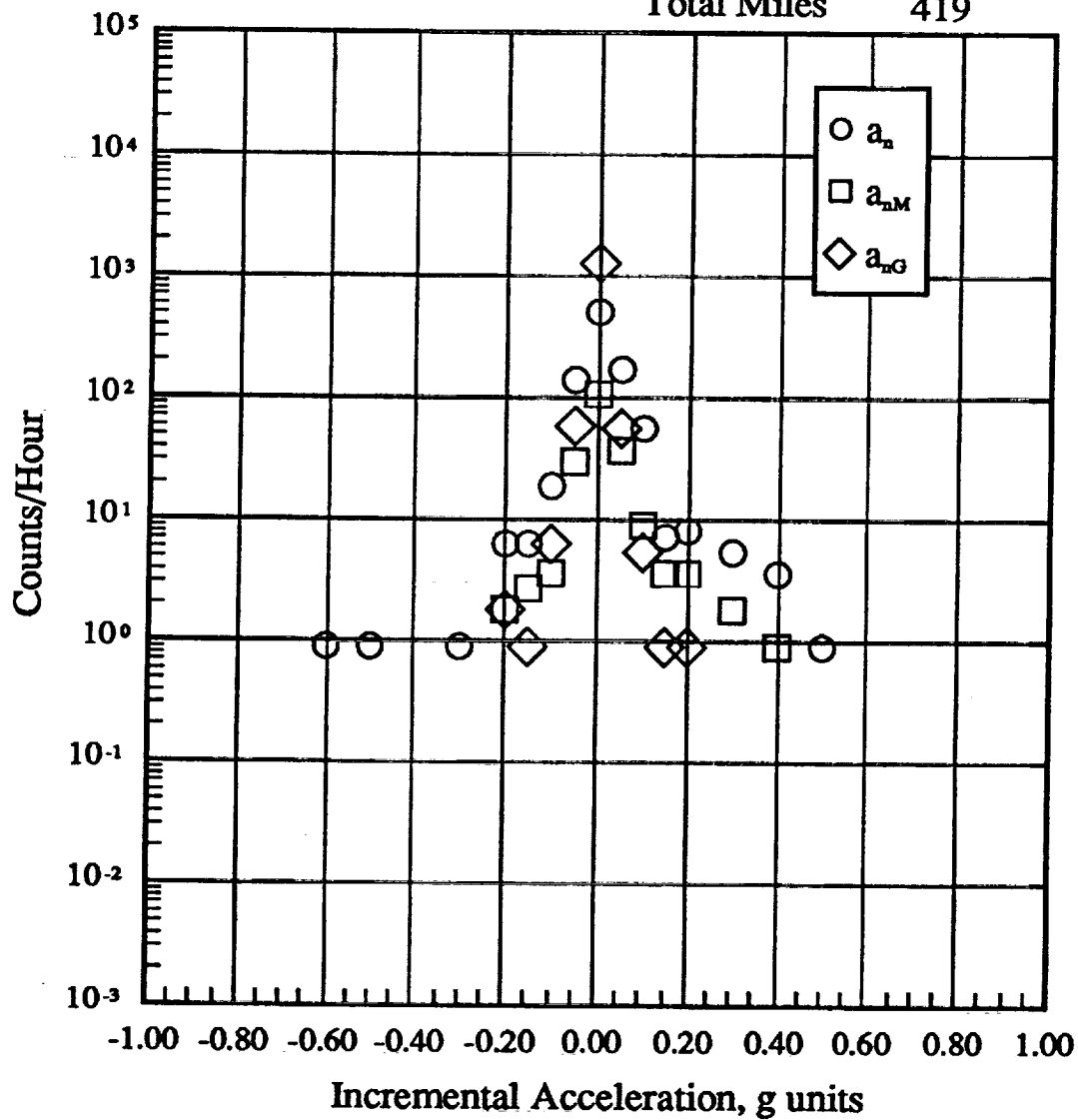
Total Flights 94
 Total Hours 1.55
 Total Miles 479



(f) a_n , a_{nM} , a_{nG} , 9500 to 14500 feet altitude

Figure 22.- Continued.

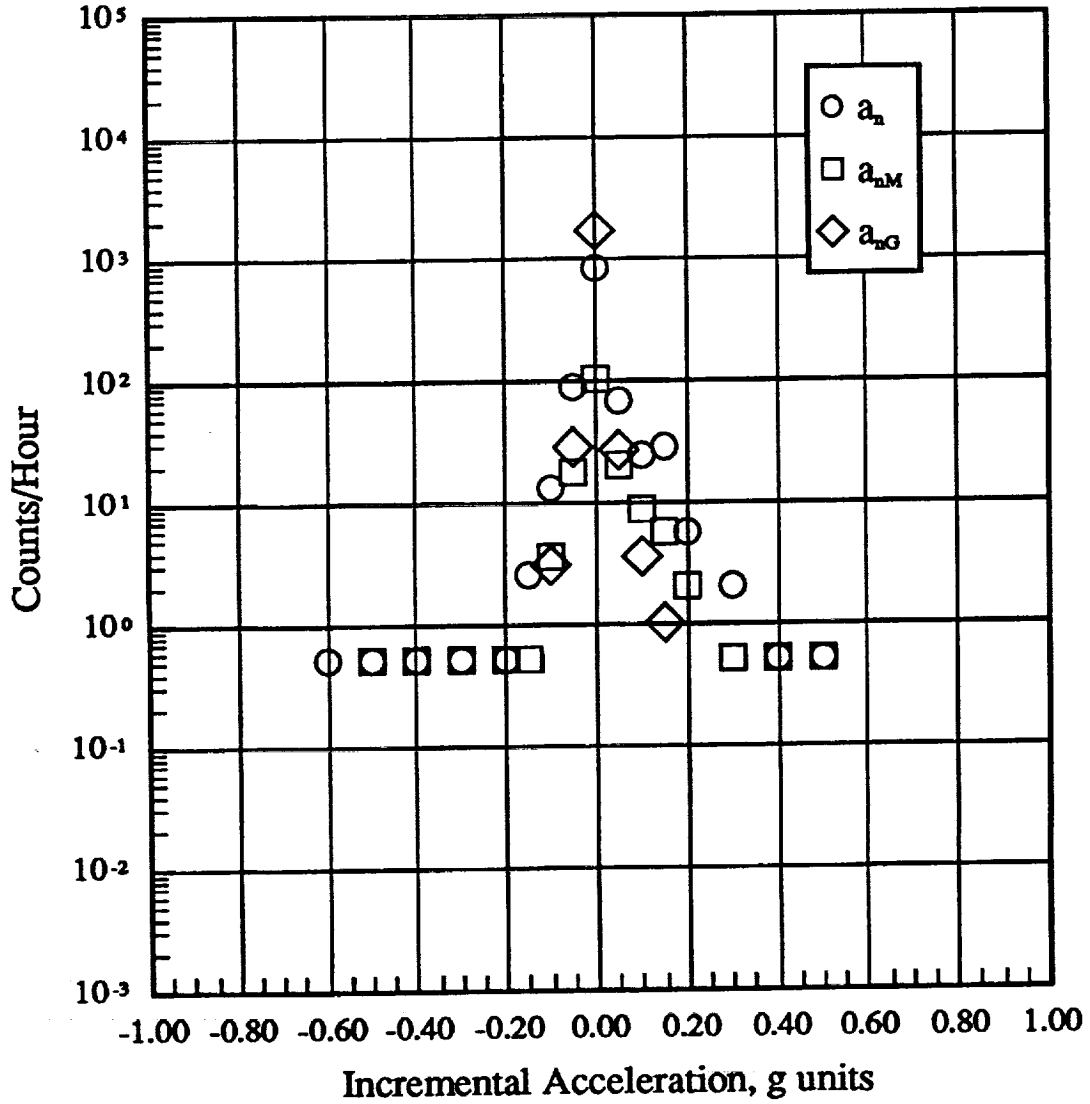
Total Flights 94
 Total Hours 1.11
 Total Miles 419



(g) a_n , a_{nM} , a_{nG} , 14500 to 19500 feet altitude

Figure 22.- Continued.

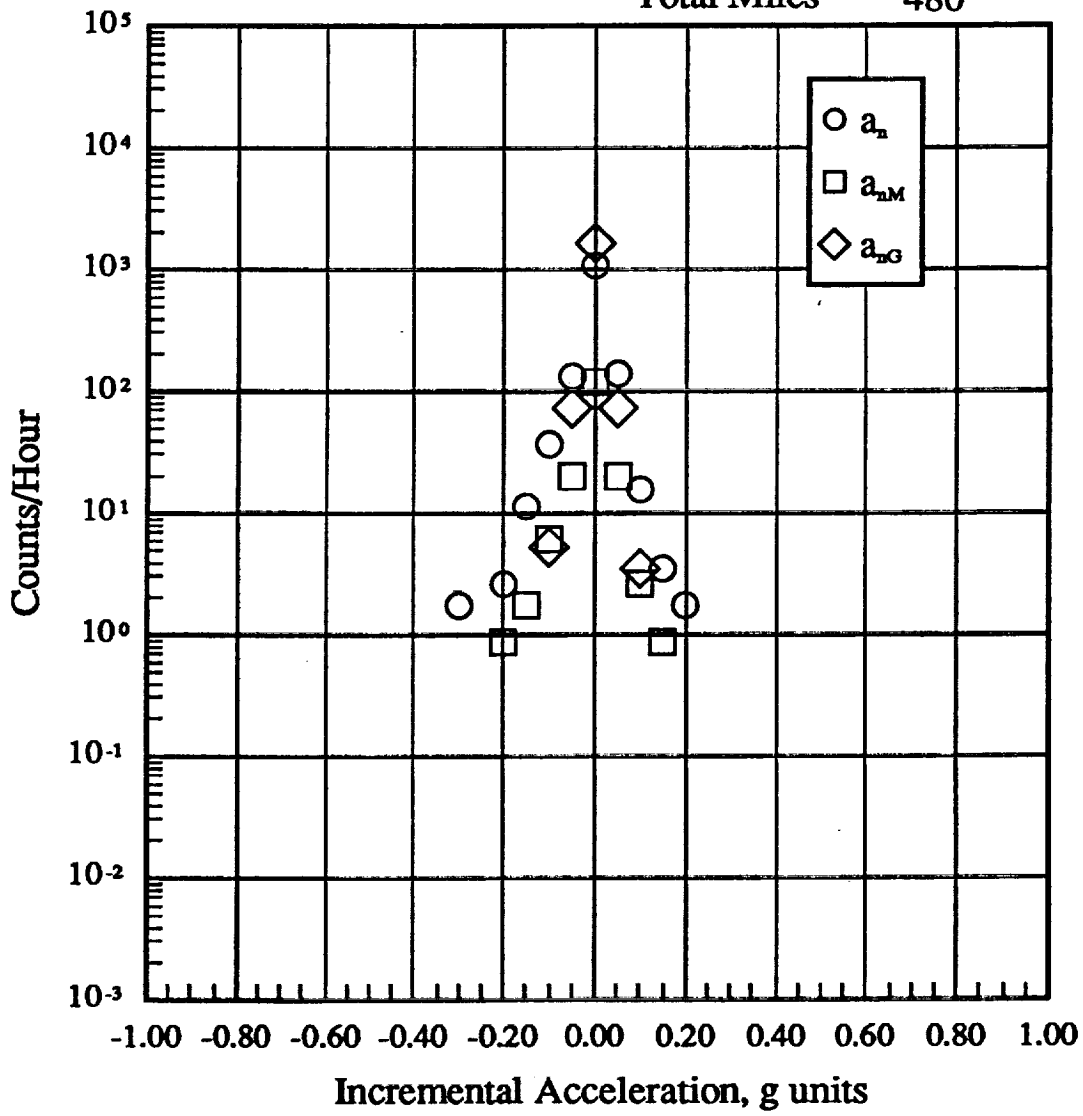
Total Flights 64
 Total Hours 1.93
 Total Miles 771



(h) a_n , a_{nM} , a_{nG} , 19500 to 24500 feet altitude

Figure 22.- Continued.

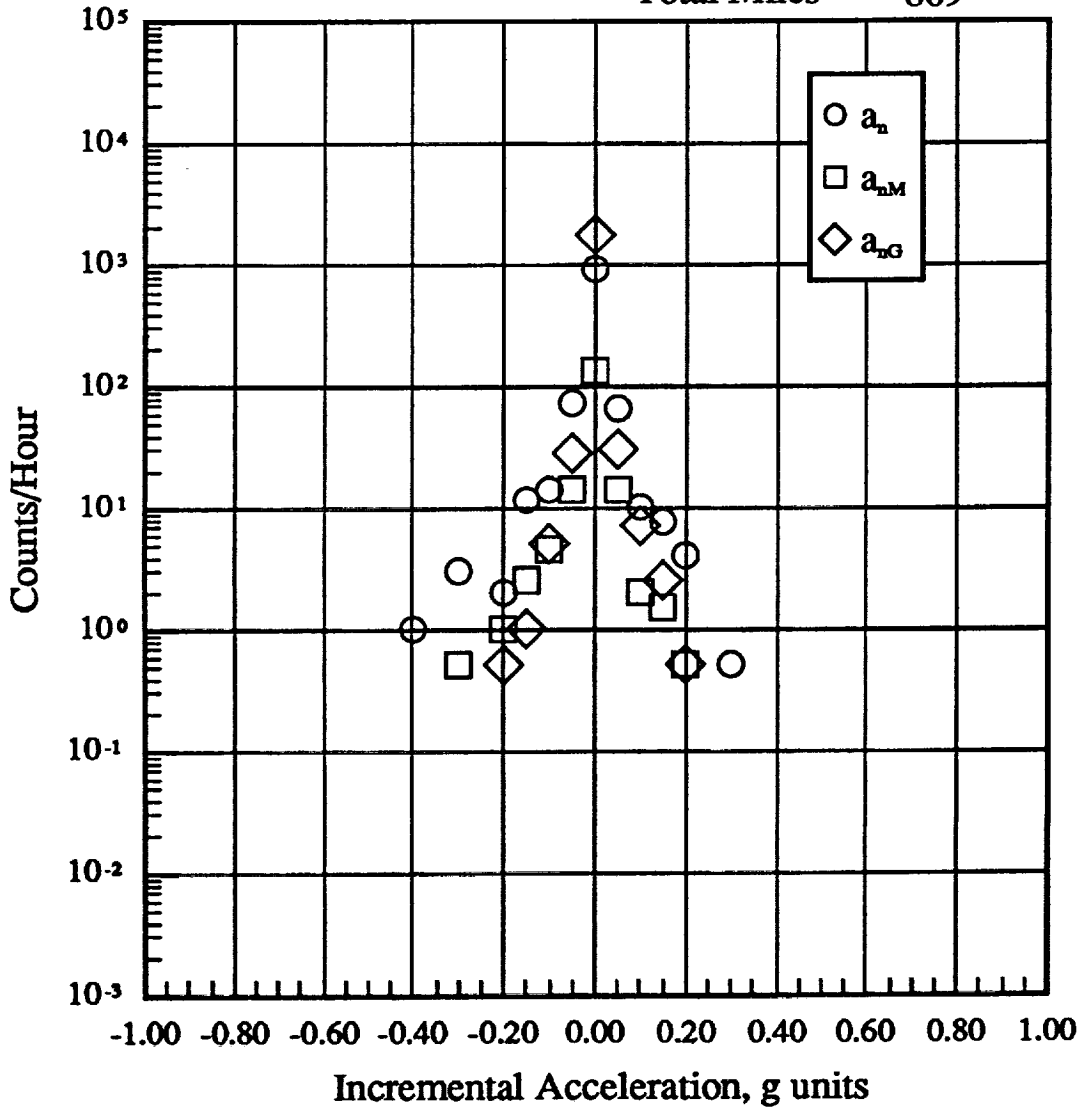
Total Flights 64
 Total Hours 1.14
 Total Miles 480



(i) a_n , a_{nM} , a_{nG} , 24500 to 29500 feet altitude

Figure 22.- Continued.

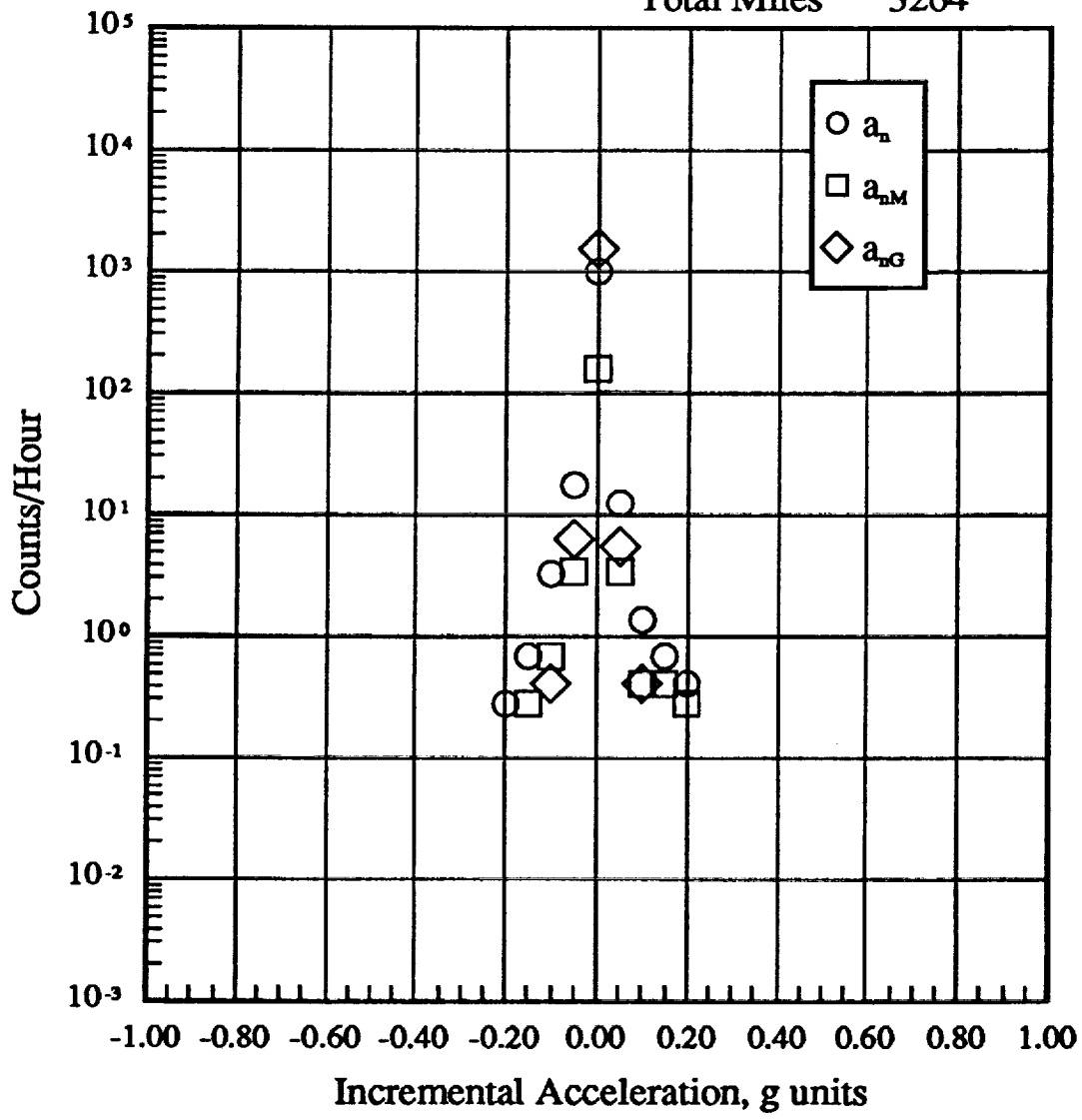
Total Flights 64
 Total Hours 1.94
 Total Miles 869



(j) a_n , a_{nM} , a_{nG} , 29500 to 34500 feet altitude

Figure 22.- Continued.

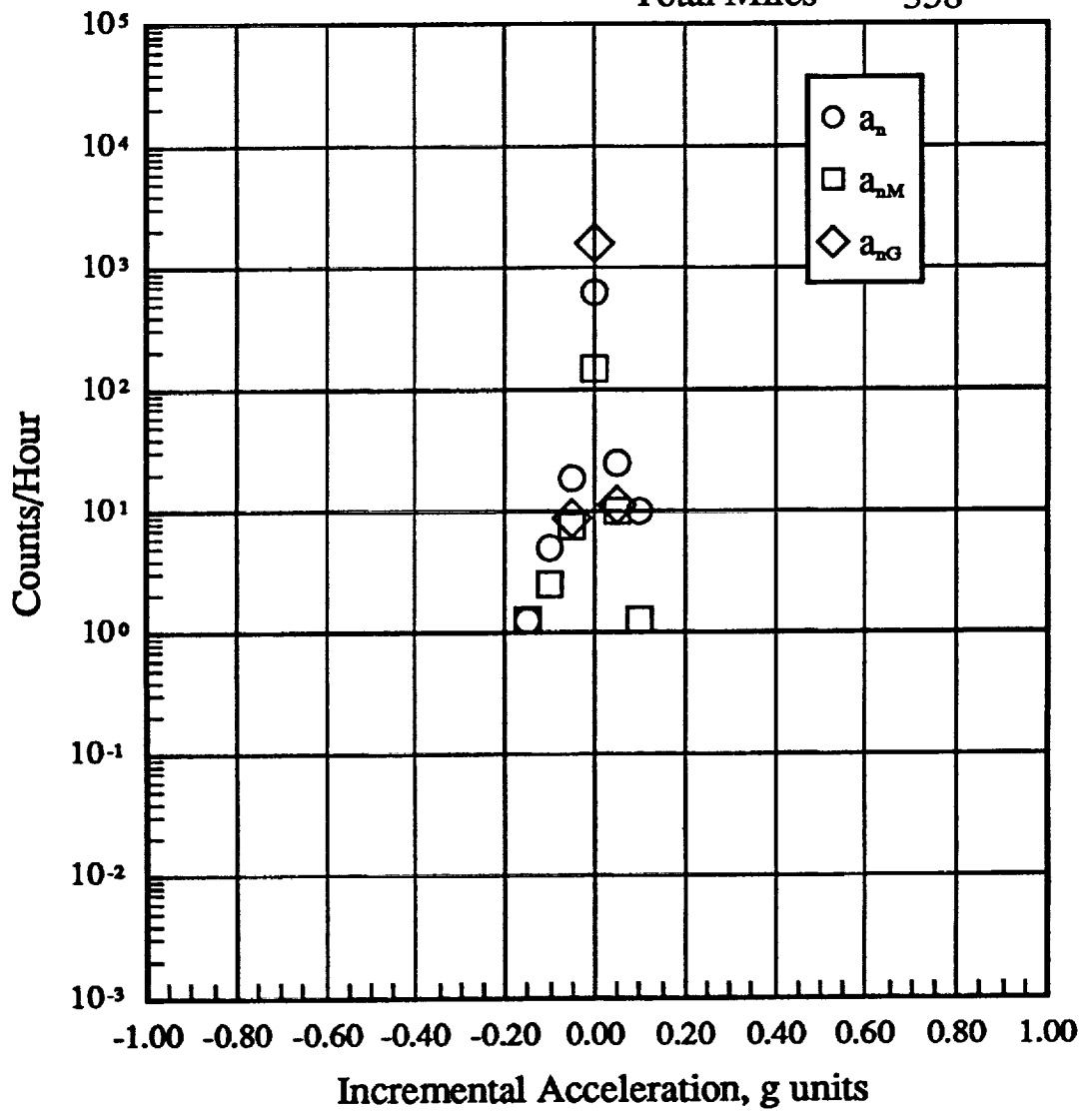
Total Flights 64
 Total Hours 7.26
 Total Miles 3264



(k) a_n , a_{nM} , a_{nG} , 34500 to 39500 feet altitude

Figure 22.- Continued.

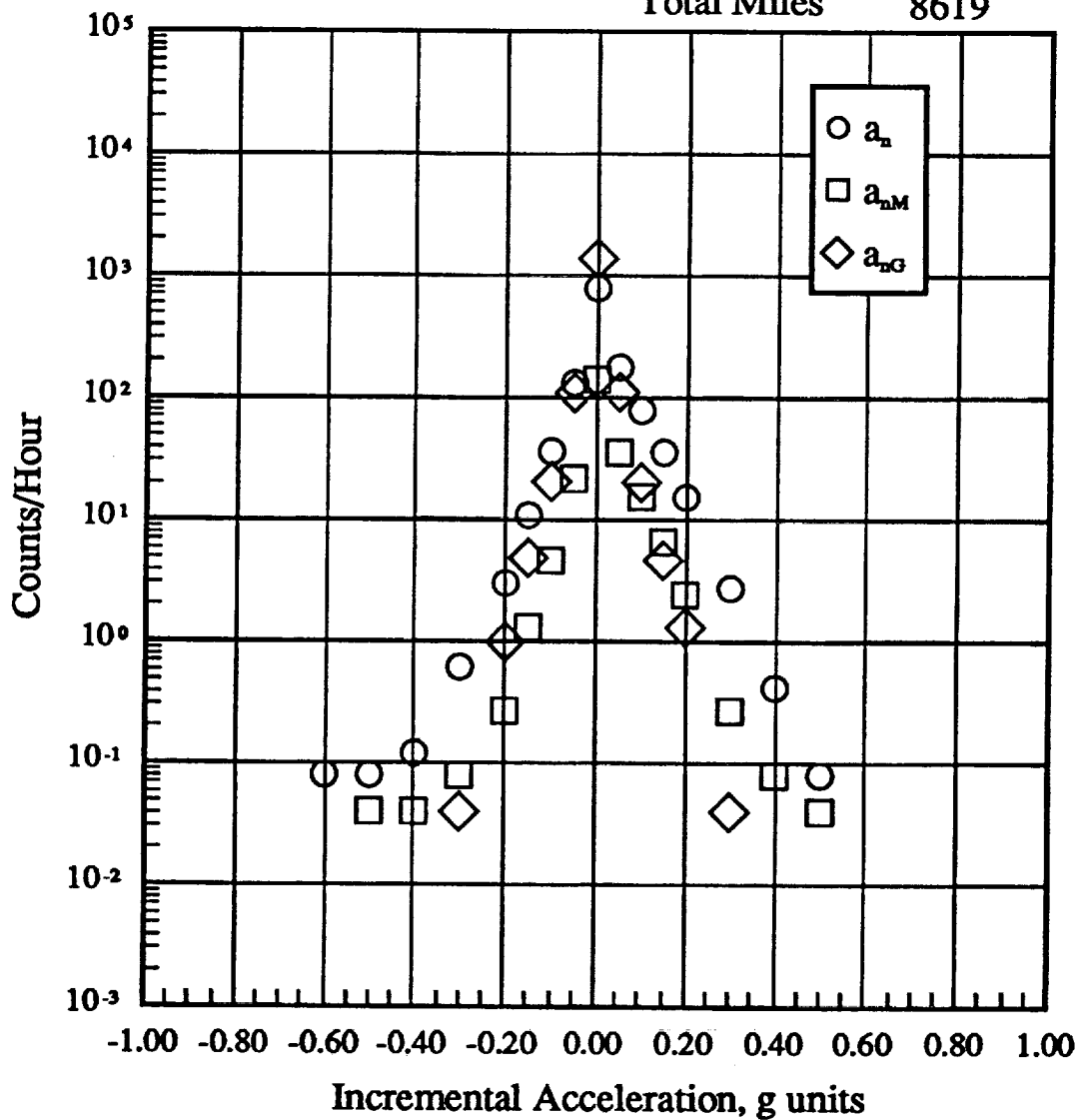
Total Flights 64
 Total Hours 80
 Total Miles 358



(l) a_n , a_{nM} , a_{nG} , 39500 to 44500 feet altitude

Figure 22.- Continued.

Total Flights 64
 Total Hours 25.98
 Total Miles 8619



(m) a_n , a_{nM} , a_{nG} , -500 to 44500 feet altitude

Figure 22.- Continued.

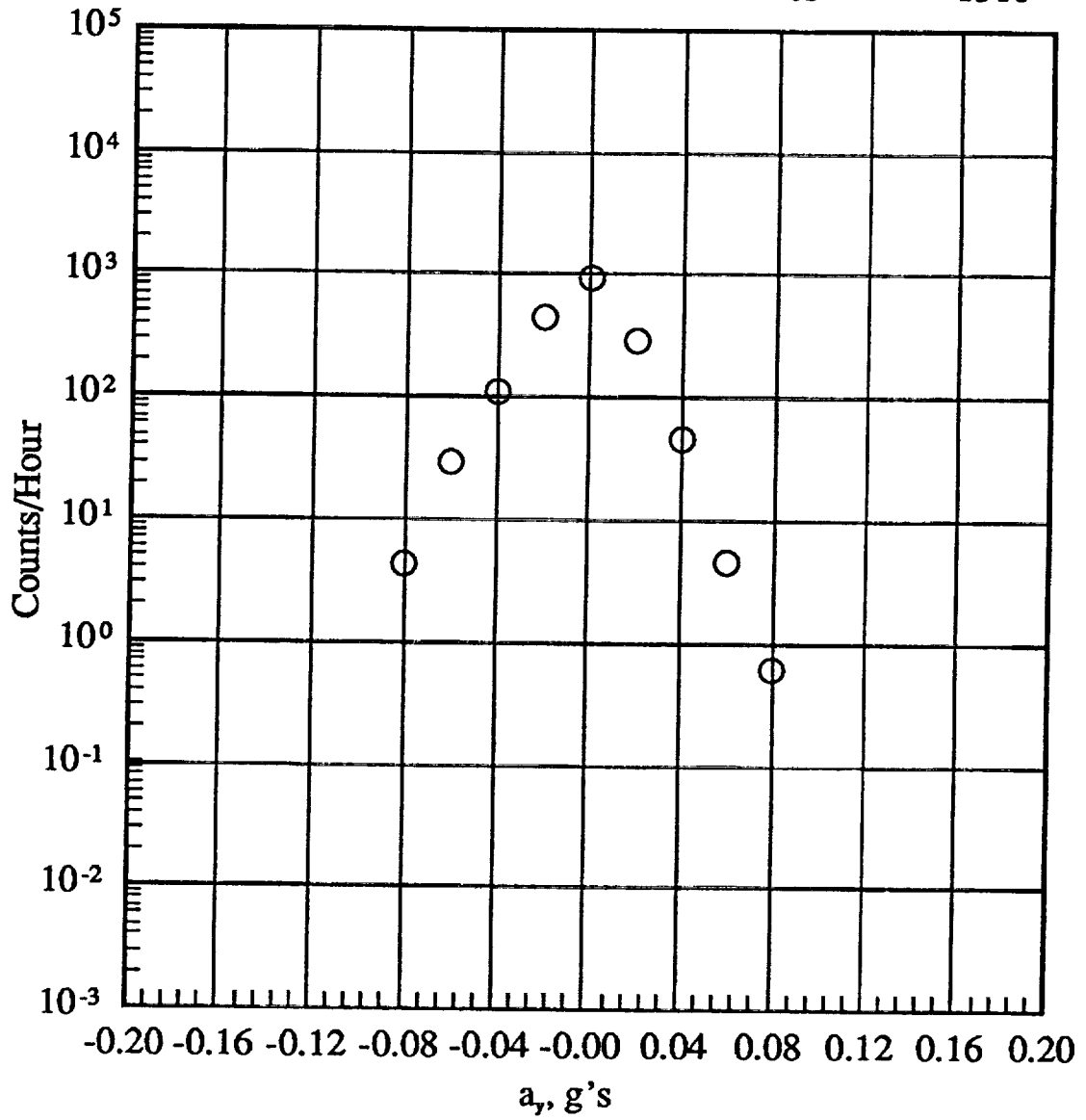
LEVEL G'S	-500 TO		4500 TO		9500 TO		14500 TO		19500 TO		24500 TO		29500 TO		34500 TO		39500 TO		-500 TO	
	4500 FT		9500 FT		14500 FT		19500 FT		24500 FT		29500 FT		34500 FT		39500 FT		44500 FT		44500 FT	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.08	0.61	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.19
.06	4.60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.50
.04	46.77	4.09	1.94	0.90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15.54
.02	293.92	87.00	39.46	9.93	6.73	0	0	0	0	0	0	0	0	0	0	0	0	0	0	106.55
0	951.42	543.61	458.01	745.82	836.62	0	0	0	0	0	0	0	0	0	0	0	0	0	0	971.42
-.02	453.24	176.08	80.22	34.31	36.22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	168.29
-.04	111.34	17.40	2.59	2.71	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37.21
-.06	29.93	2.05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9.68
-.08	4.36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.39
-.12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-.16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-.20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-.24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-.28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-.32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-.36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-.44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-.48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FLIGHT HOURS @ ALT	8.25	1.95	1.55	1.11	1.93	1.14	1.94	1.94	1.94	1.14	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	25.93
FLIGHT MILES @ ALT	1509.73	468.11	479.05	419.35	770.93	480.15	869.28	869.28	869.28	480.15	869.28	869.28	869.28	869.28	869.28	869.28	869.28	869.28	869.28	8618.85
TOTAL FLIGHTS	64																			
TOTAL FLIGHT HOURS FLAPS UP AND DOWN	25.93																			
TOTAL FLIGHT MILES FLAPS UP AND DOWN	8618.85																			

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(a) a_y Level crossing counts per hour within pressure altitude bands

Figure 23.- Lateral acceleration exceedances: Non-revenue flights.

Total Flights 64
Total Hours 8.25
Total Miles 1510

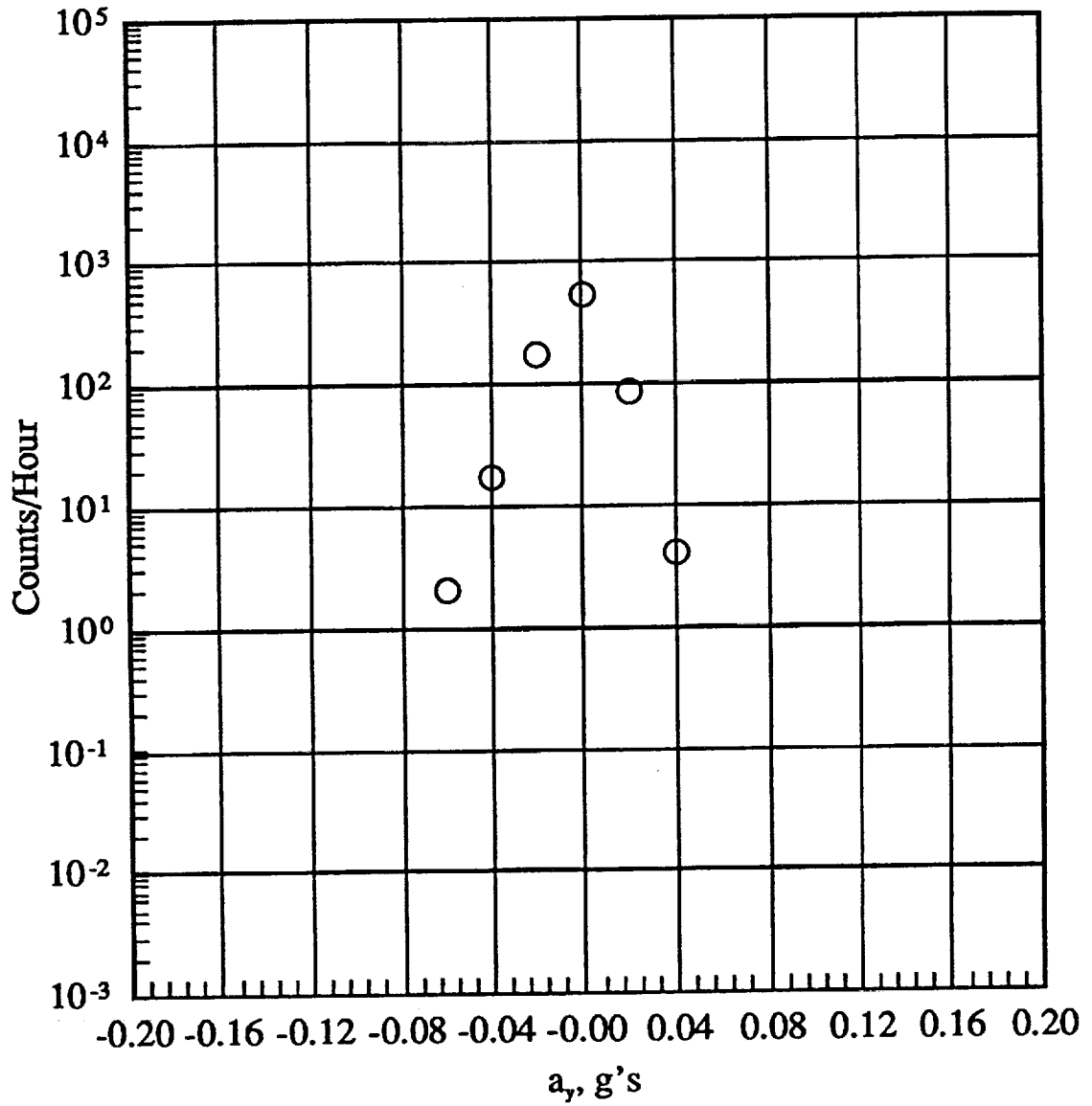


(b) -500 to 4500 feet altitude

Figure 23.- Continued.

Total Flights
Total Hours
Total Miles

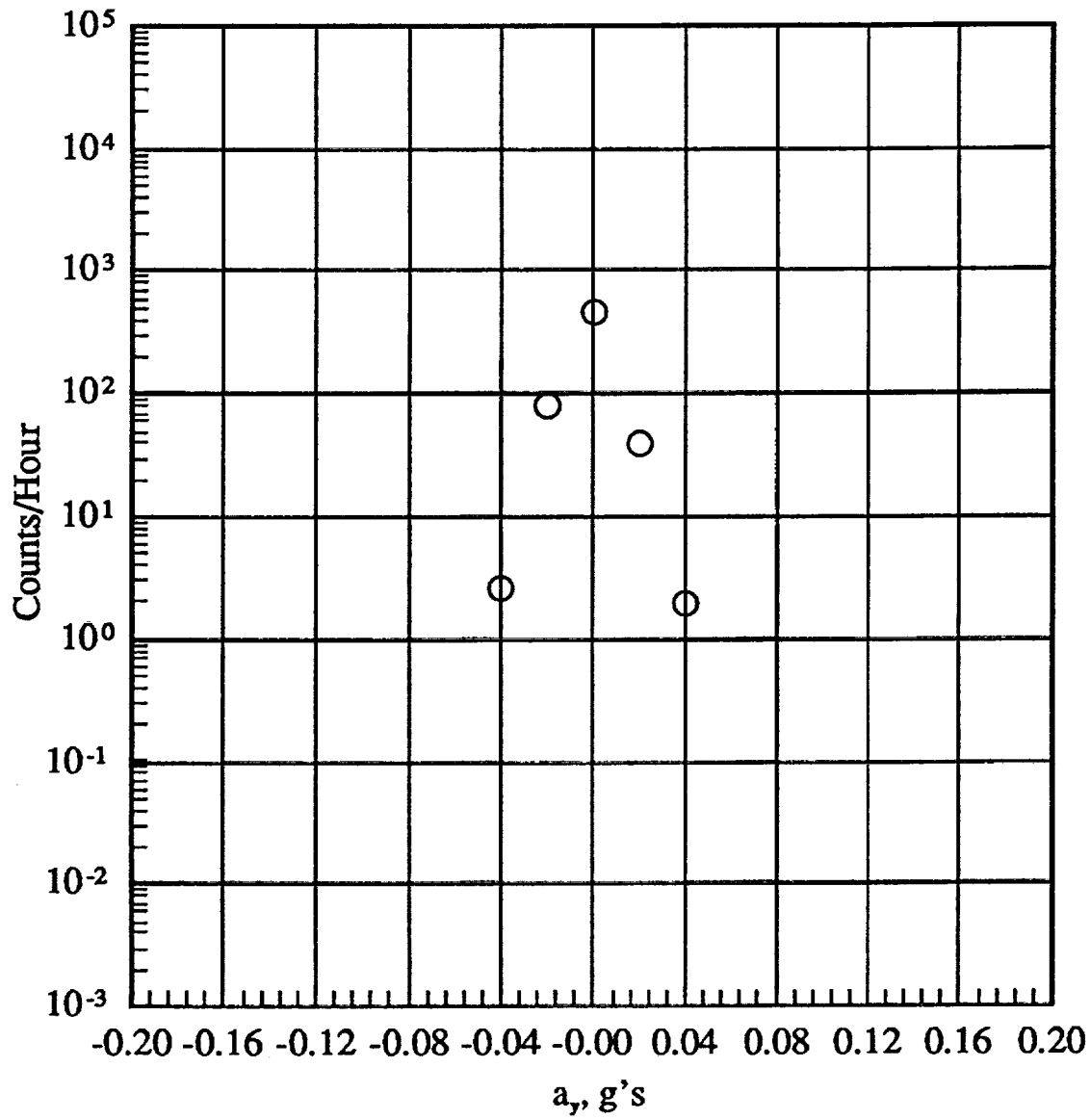
64
1.95
468



(c) 4500 to 9500 feet altitude

Figure 23.- Continued.

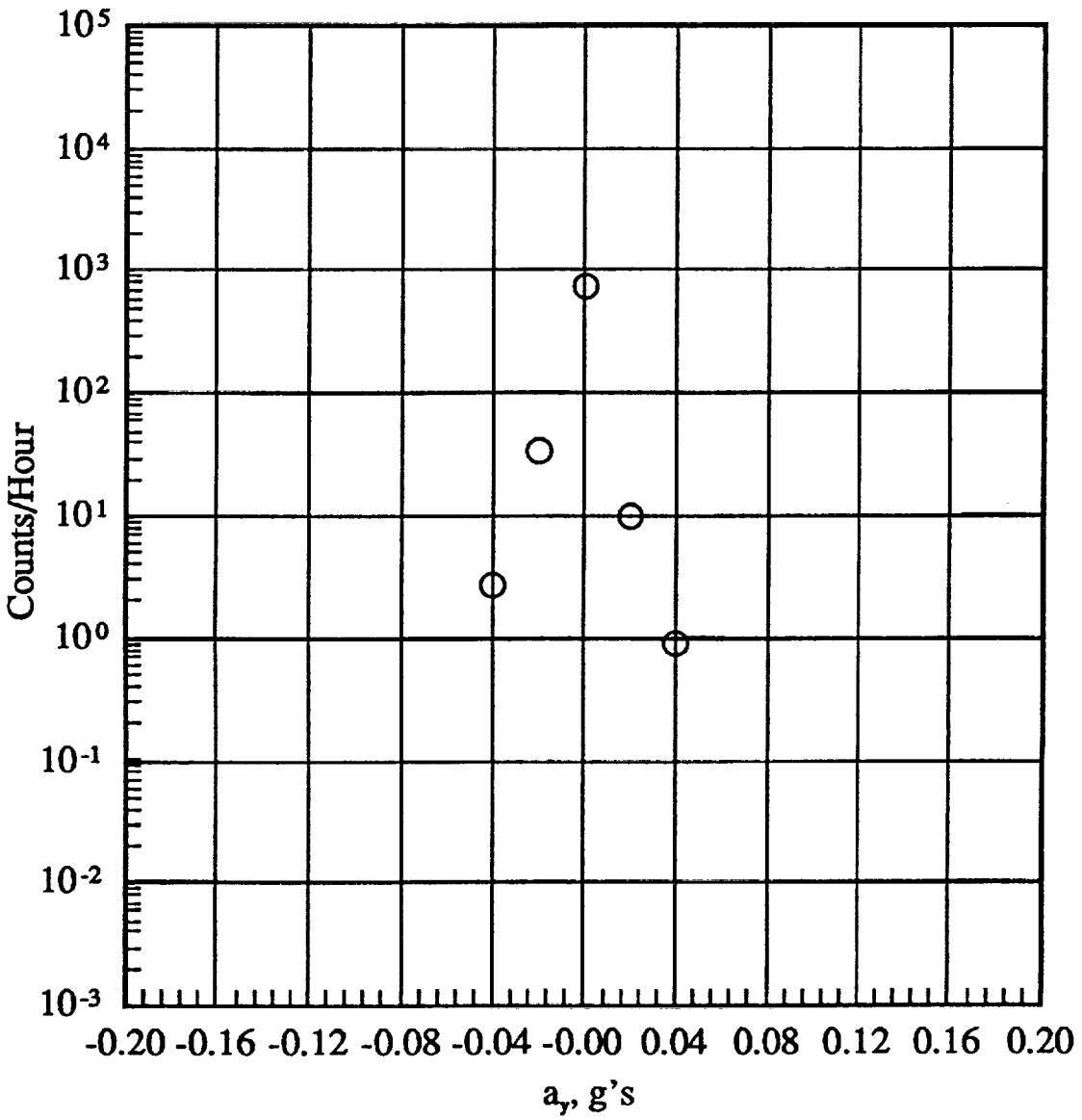
Total Flights 64
 Total Hours 1.55
 Total Miles 479



(d) 9500 to 14500 altitude

Figure 23.- Continued.

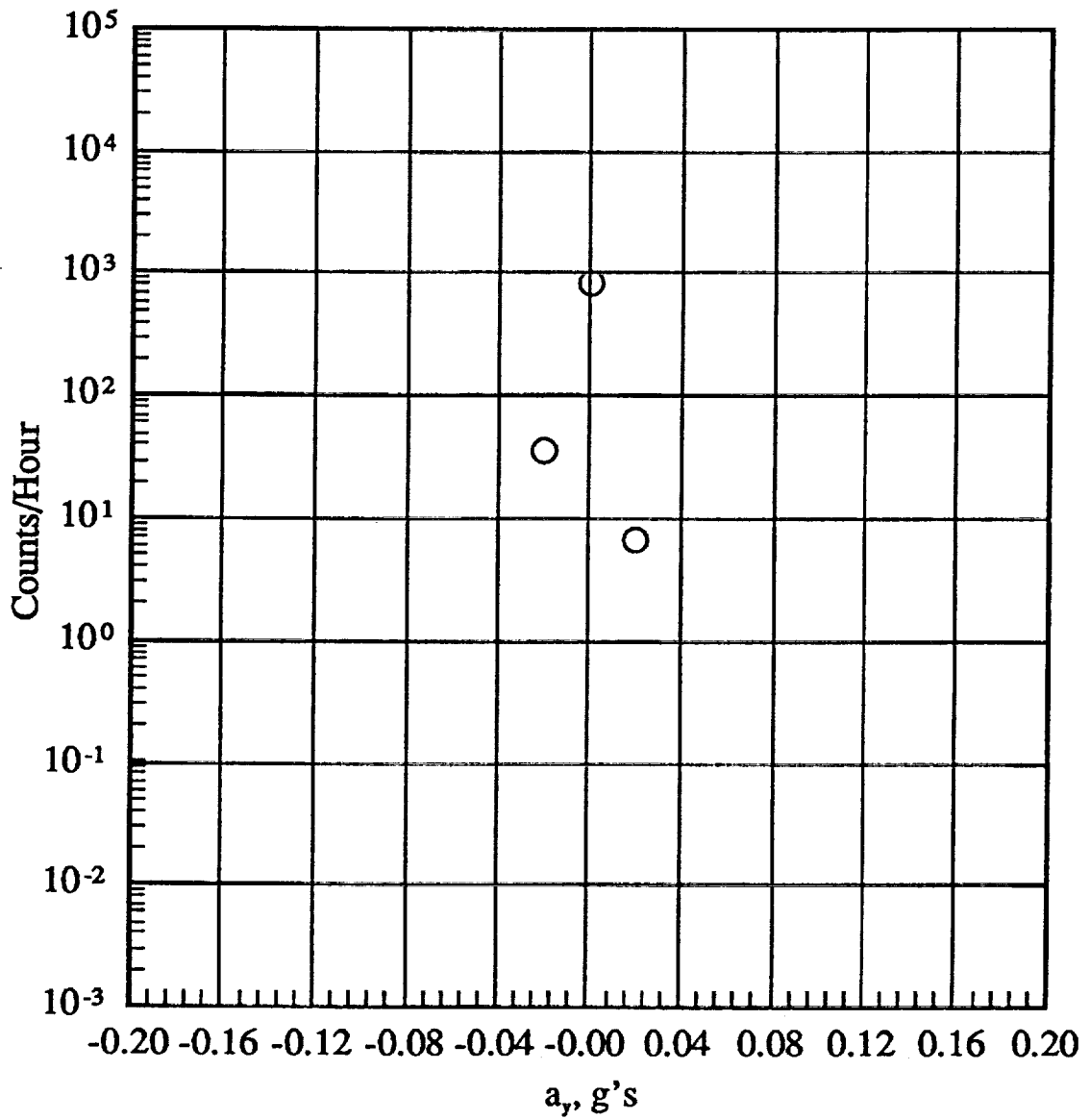
Total Flights	64
Total Hours	1.11
Total Miles	419



(e) 14500 to 19500 feet altitude

Figure 23.- Continued.

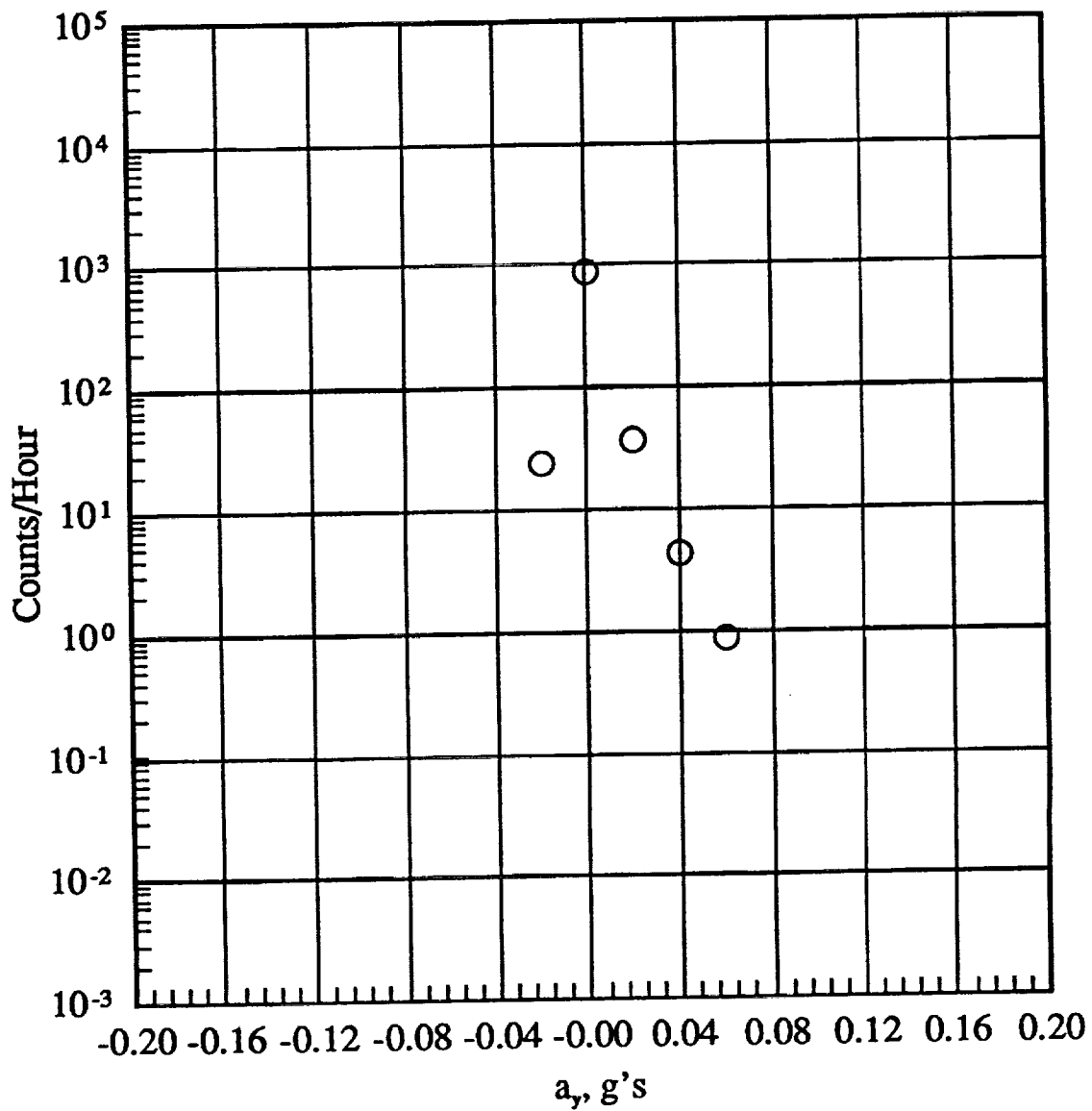
Total Flights 64
Total Hours 1.93
Total Miles 771



(f) 19500 to 24500 feet altitude

Figure 23.- Continued.

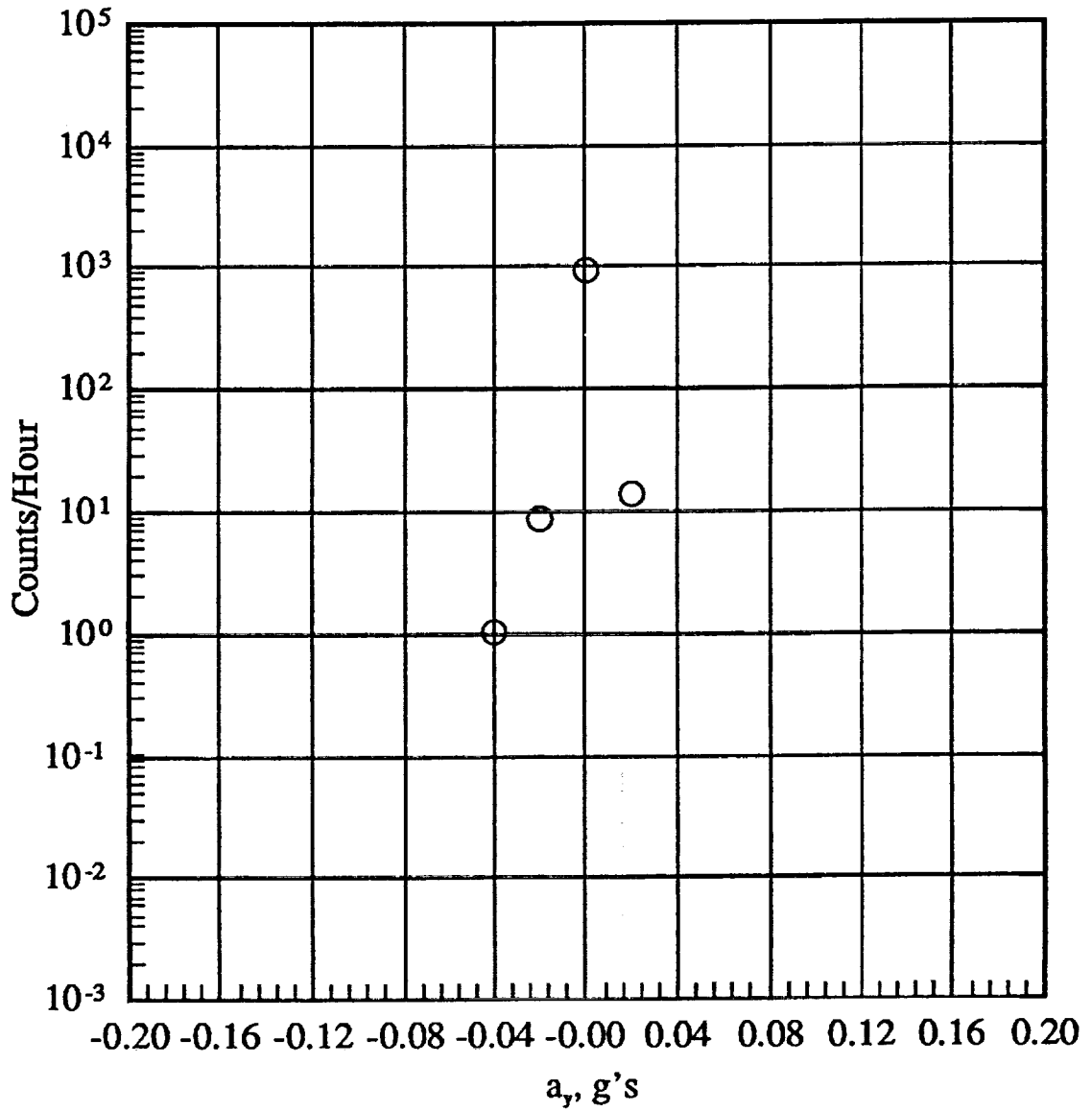
Total Flights	64
Total Hours	1.14
Total Miles	480



(g) 24500 to 29500 feet altitude

Figure 23.- Continued.

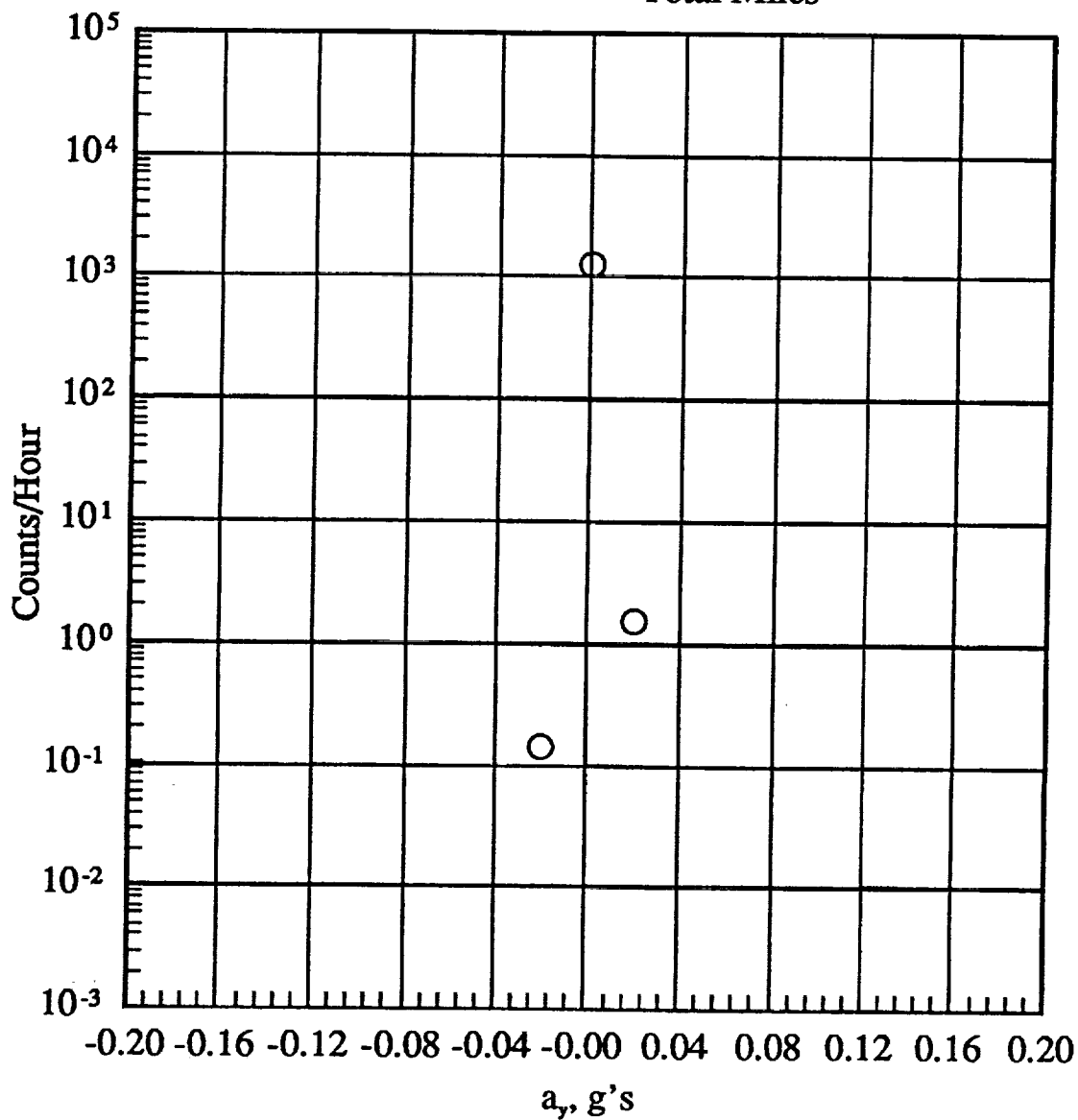
Total Flights	64
Total Hours	1.94
Total Miles	869



(h) 29500 to 34500 feet altitude

Figure 23.- Continued.

Total Flights 64
Total Hours 7.26
Total Miles 3264

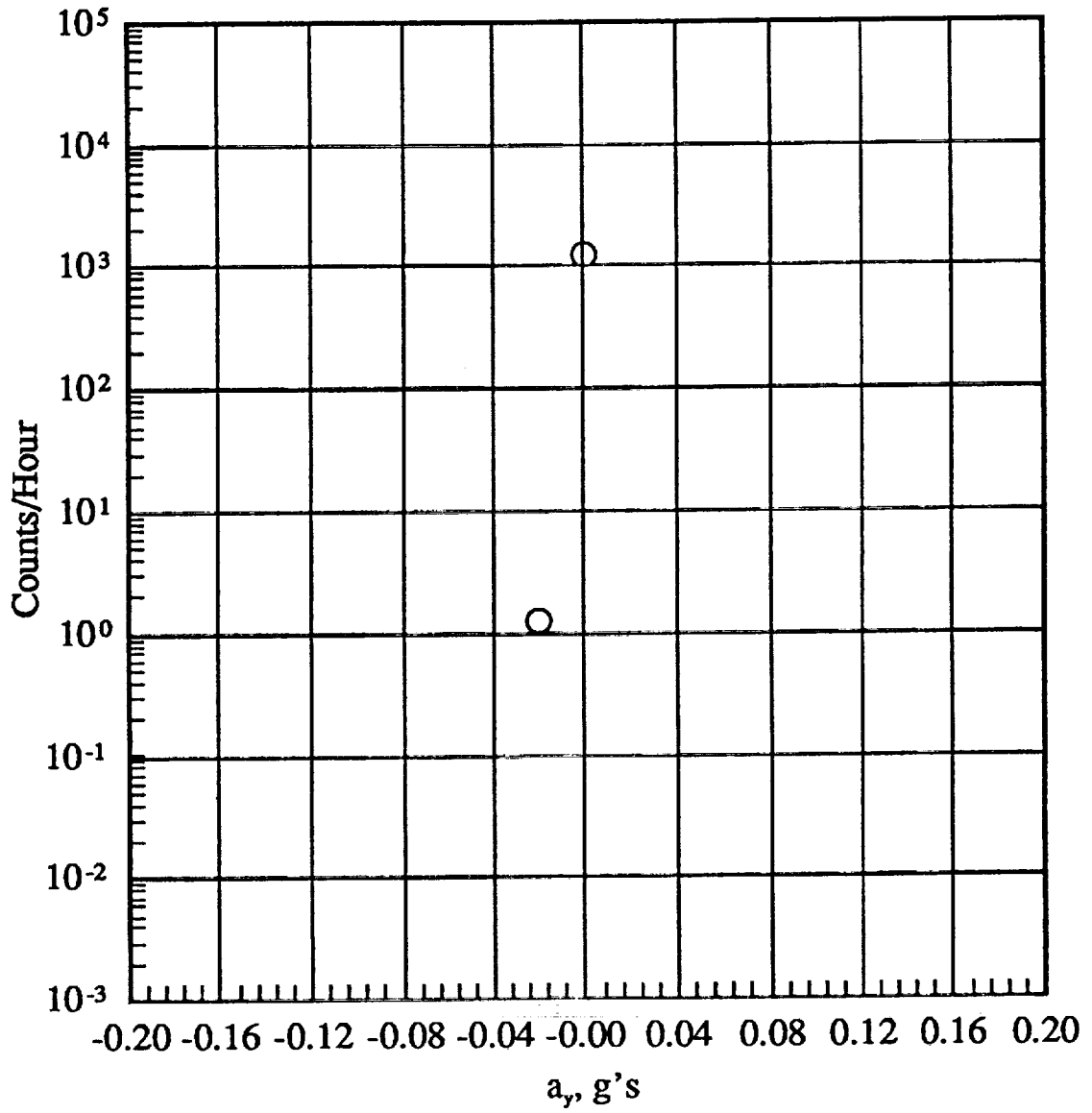


(i) 34500 to 39500 feet altitude

Figure 23.- Continued.

Total Flights
Total Hours
Total Miles

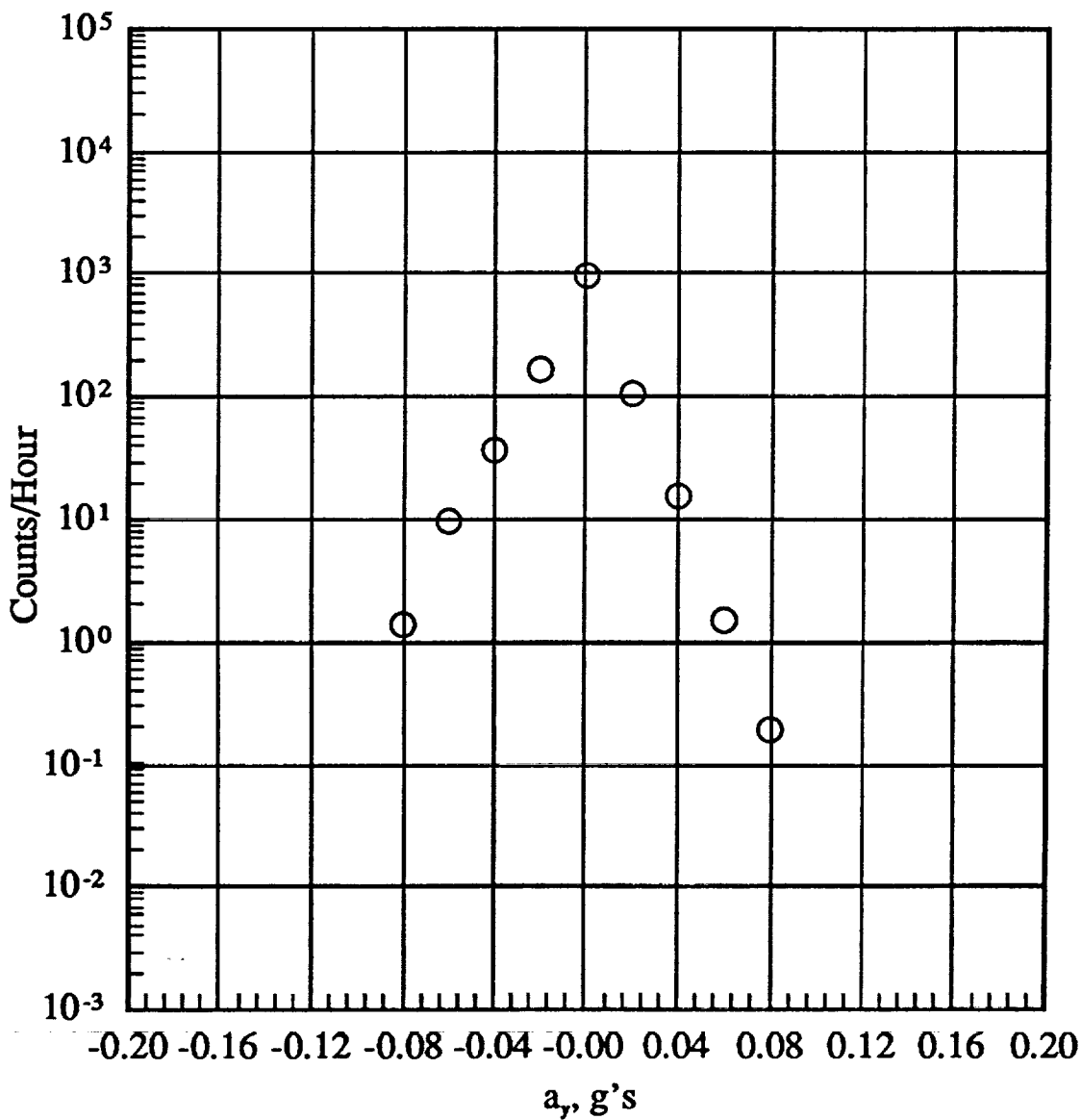
64
358.80



(j) 39500 to 44500 feet altitude

Figure 23.- Continued.

Total Flights 64
 Total Hours 25.98
 Total Miles 8619



(k) -500 to 44500 feet altitude

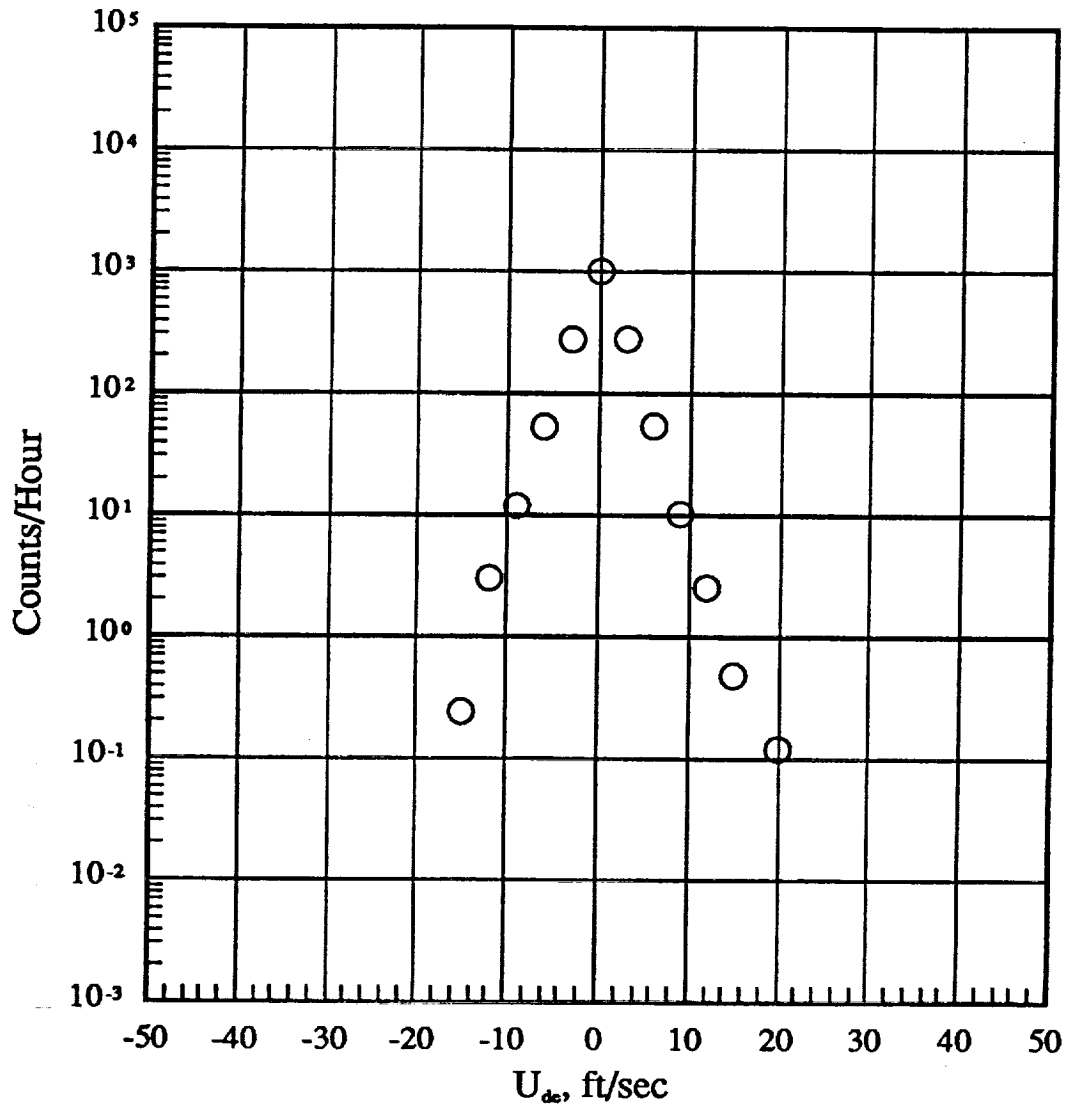
Figure 23.- Concluded.

U_{de}		DERIVED GUST VELOCITY LEVEL FT/SEC												FLIGHT HOURS @ ALT		FLIGHT MILES @ ALT	
		-500 TO 4500 FT	4500 TO 9500 FT	9500 TO 14500 FT	14500 TO 19500 FT	19500 TO 24500 FT	24500 TO 29500 FT	29500 TO 34500 FT	34500 TO 39500 FT	39500 TO 44500 FT	-500 TO 44500 FT						
100	0	0	0	0	0	0	0	0	0	0	0						
90	0	0	0	0	0	0	0	0	0	0	0						
80	0	0	0	0	0	0	0	0	0	0	0						
70	0	0	0	0	0	0	0	0	0	0	0						
60	0	0	0	0	0	0	0	0	0	0	0						
50	0	0	0	0	0	0	0	0	0	0	0						
40	0	0	0	0	0	0	0	0	0	0	0						
30	0	0	0	0	0	0	0	0	0	0	0						
20	0.12	0	0	0	0	0	0	0	0	0	0					0.04	
15	0.48	0	0	0	0	0	0	0	0	0	0					0.15	
12	2.54	0	0	0	0	0	0	0	0	0	0					0.81	
9	10.30	0	0.51	0	0	0	0	0	0	0	0					3.32	
6	53.91	6.14	6.14	0.65	0.90	0	0	1.03	0	0	0					17.78	
3	279.50	52.72	25.88	9.93	3.62	0	0	6.70	0.41	0	0					96.02	
0	1005.46	1486.99	1538.98	1278.56	1713.08	1645.66	1762.90	1543.03	1598.47	1391.52	0					191.52	
-3	276.72	59.89	21.35	14.45	4.66	4.37	5.67	0.41	0	0	0					95.56	
-6	53.07	4.61	0.65	0	0	0	0.52	0	0	0	0					17.31	
-9	11.99	1.02	0	0	0	0	0	0	0	0	0					3.89	
-12	3.03	0	0	0	0	0	0	0	0	0	0					0.96	
-15	0.24	0	0	0	0	0	0	0	0	0	0					0.08	
-20	0	0	0	0	0	0	0	0	0	0	0					0	
-30	0	0	0	0	0	0	0	0	0	0	0					0	
-40	0	0	0	0	0	0	0	0	0	0	0					0	
-50	0	0	0	0	0	0	0	0	0	0	0					0	
-60	0	0	0	0	0	0	0	0	0	0	0					0	
-70	0	0	0	0	0	0	0	0	0	0	0					0	
-80	0	0	0	0	0	0	0	0	0	0	0					0	
-90	0	0	0	0	0	0	0	0	0	0	0					0	
-100	0	0	0	0	0	0	0	0	0	0	0					0	
		8.25	1.95	1.55	1.11	1.93	1.14	1.94	7.26	0.80						25.93	
		1509.00	468.11	479.05	419.35	770.93	480.15	869.28	3264.04	359.21						8618.85	
													TOTAL FLIGHTS	64			
													TOTAL FLIGHT HOURS FLAPS UP AND DOWN	25.93			
													TOTAL FLIGHT MILES FLAPS UP AND DOWN	8618.85			

(a) U_{de} Level crossing counts per hour within pressure altitude bands

Figure 24.- U_{de} exceedances: Non-revenue flights.

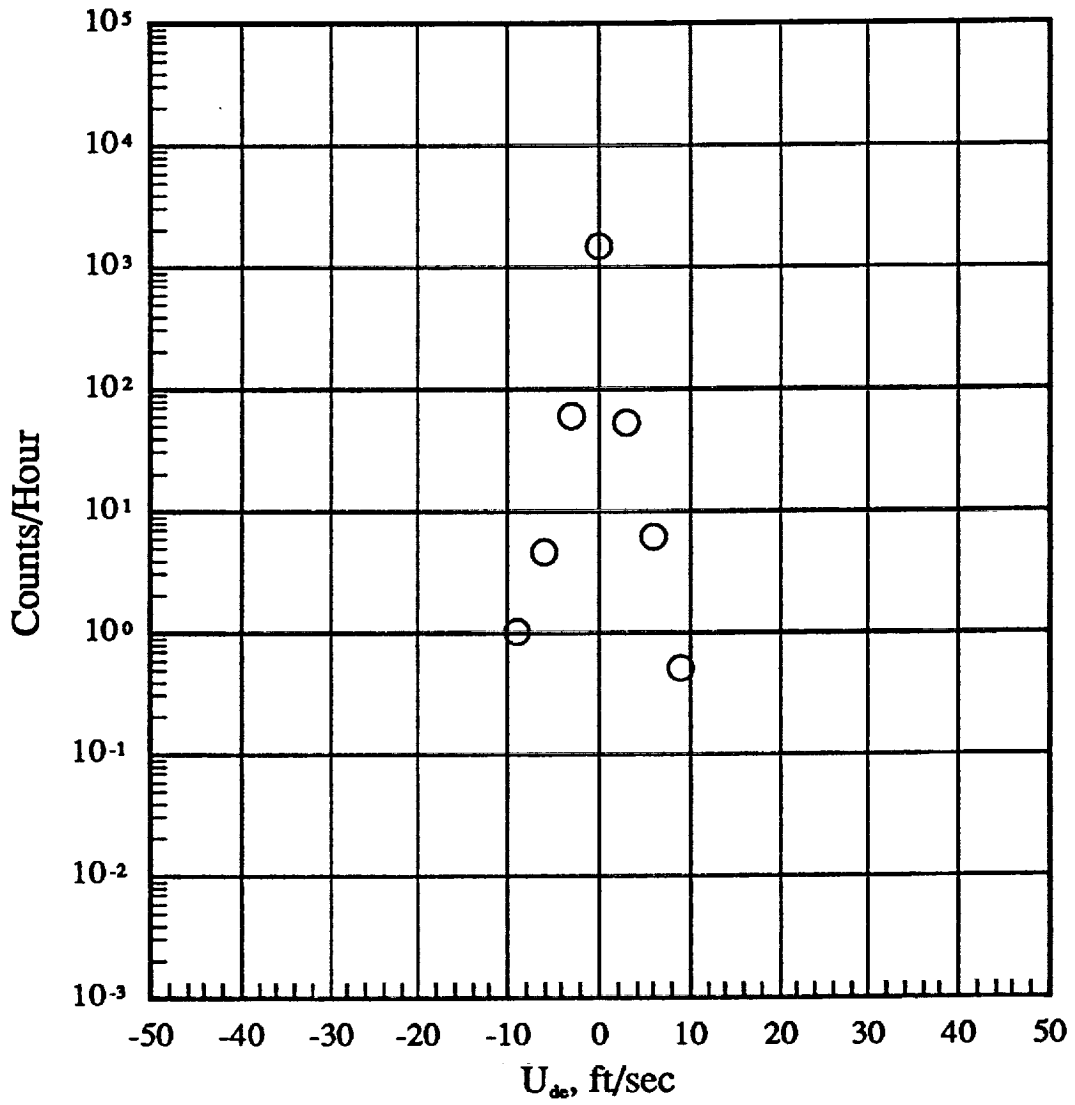
Total Flights	64
Total Hours	8.25
Total Miles	1510



(b) -500 to 4500 feet altitude

Figure 24.- Continued.

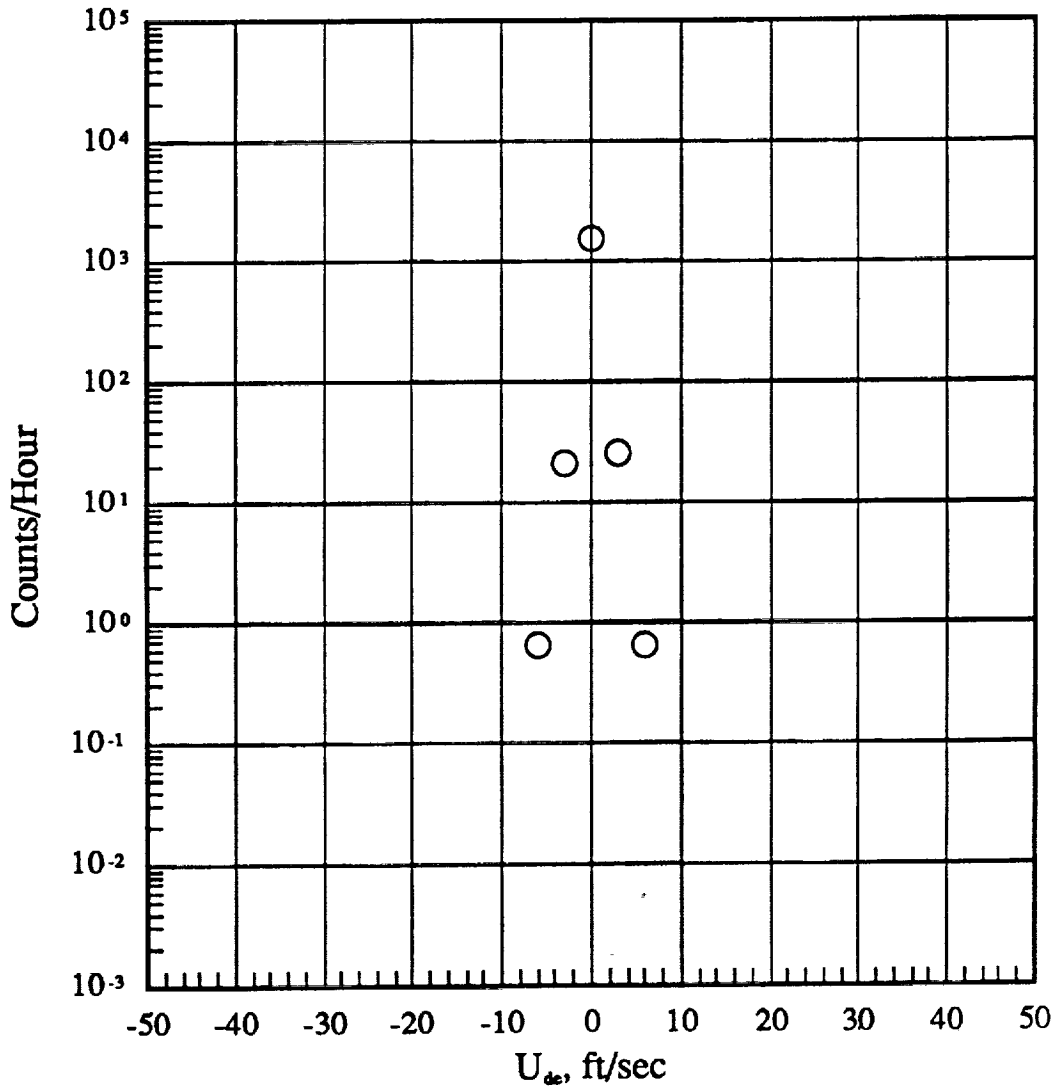
Total Flights	64
Total Hours	1.95
Total Miles	468



(c) 4500 to 9500 feet altitude

Figure 24.- Continued.

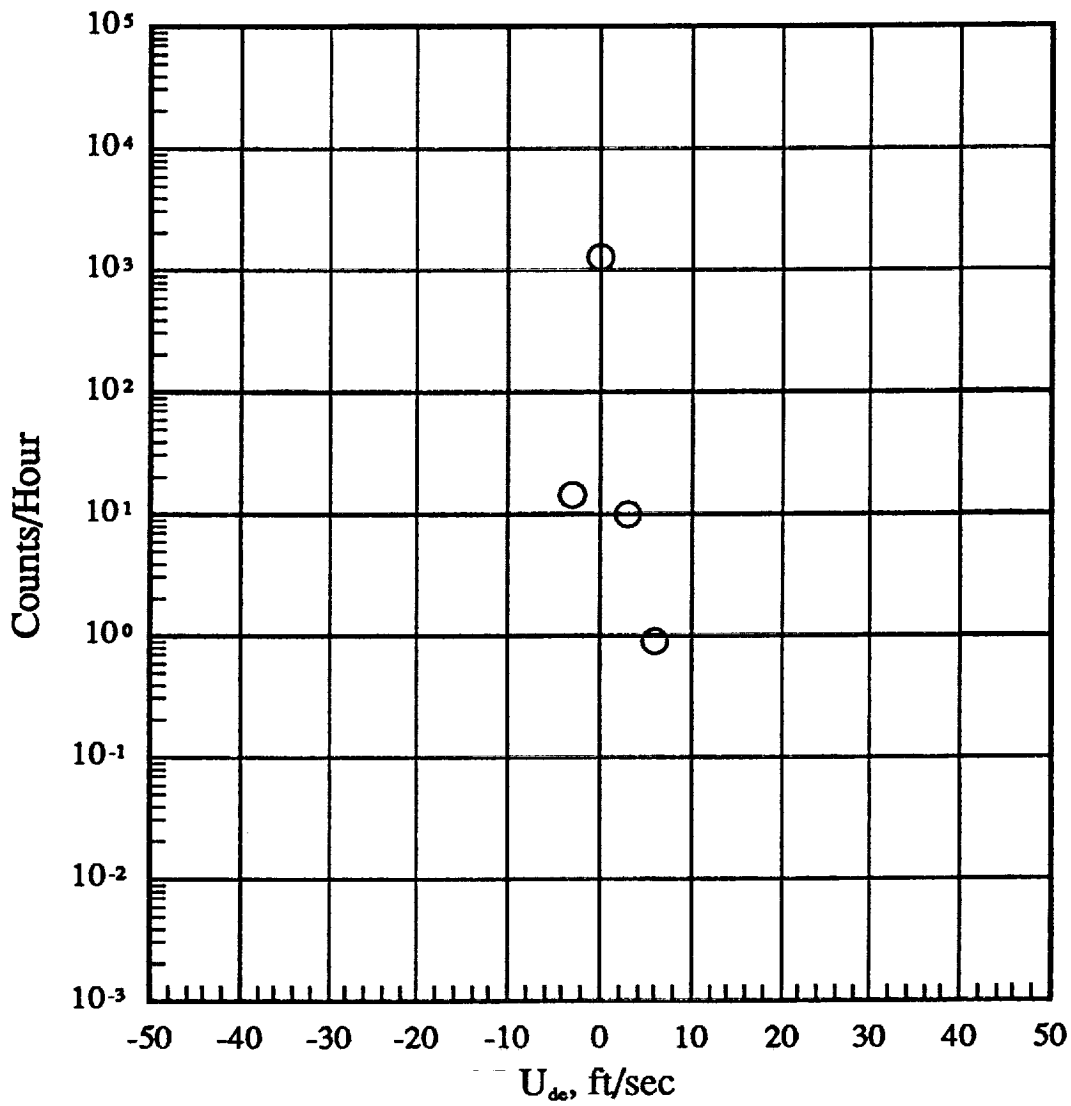
Total Flights 64
Total Hours 1.55
Total Miles 479



(d) 9500 to 14500 feet altitude

Figure 24.- Continued

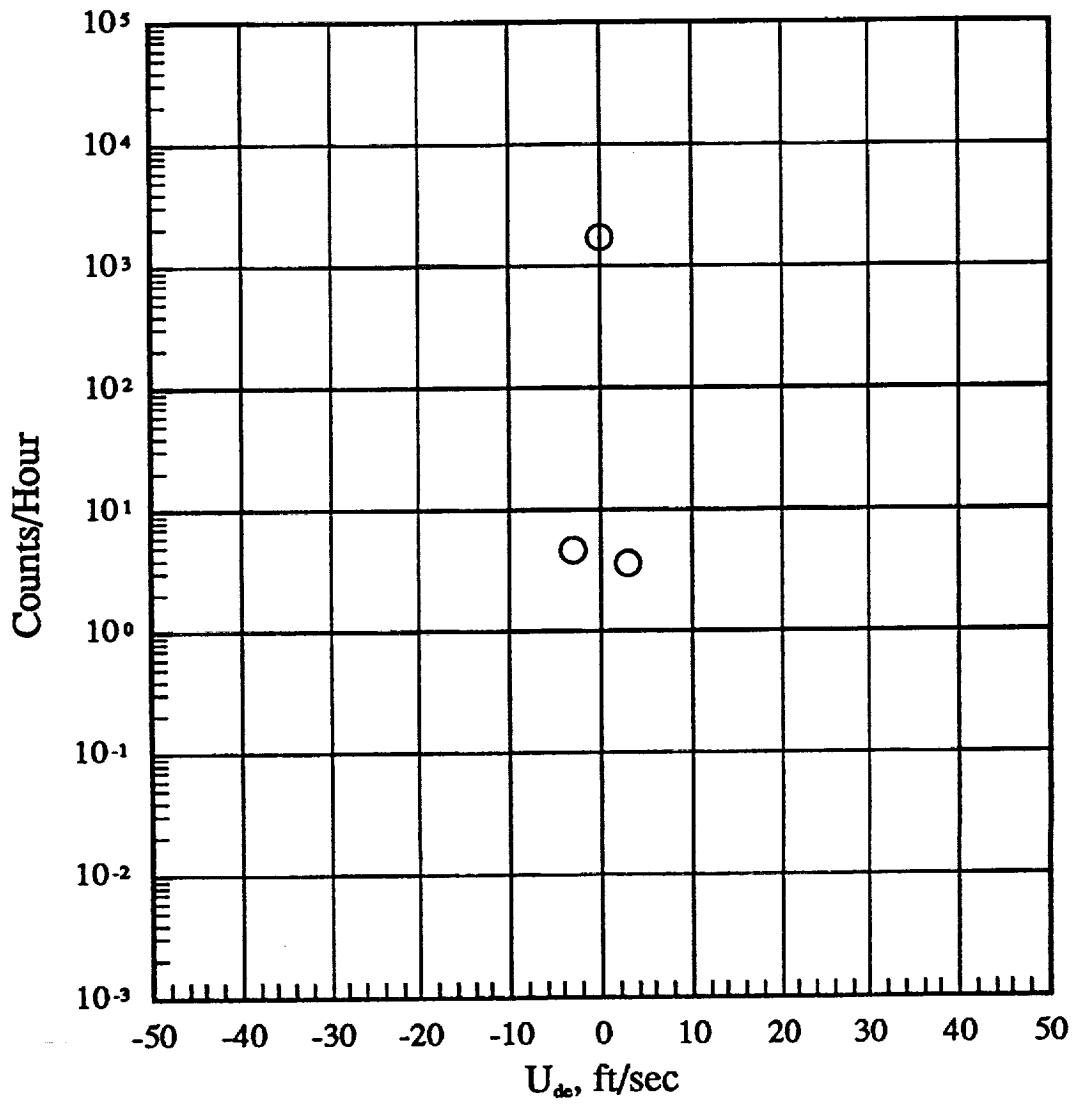
Total Flights	64
Total Hours	1.11
Total Miles	419



(e) 14500 to 19500 feet altitude

Figure 24.- Continued.

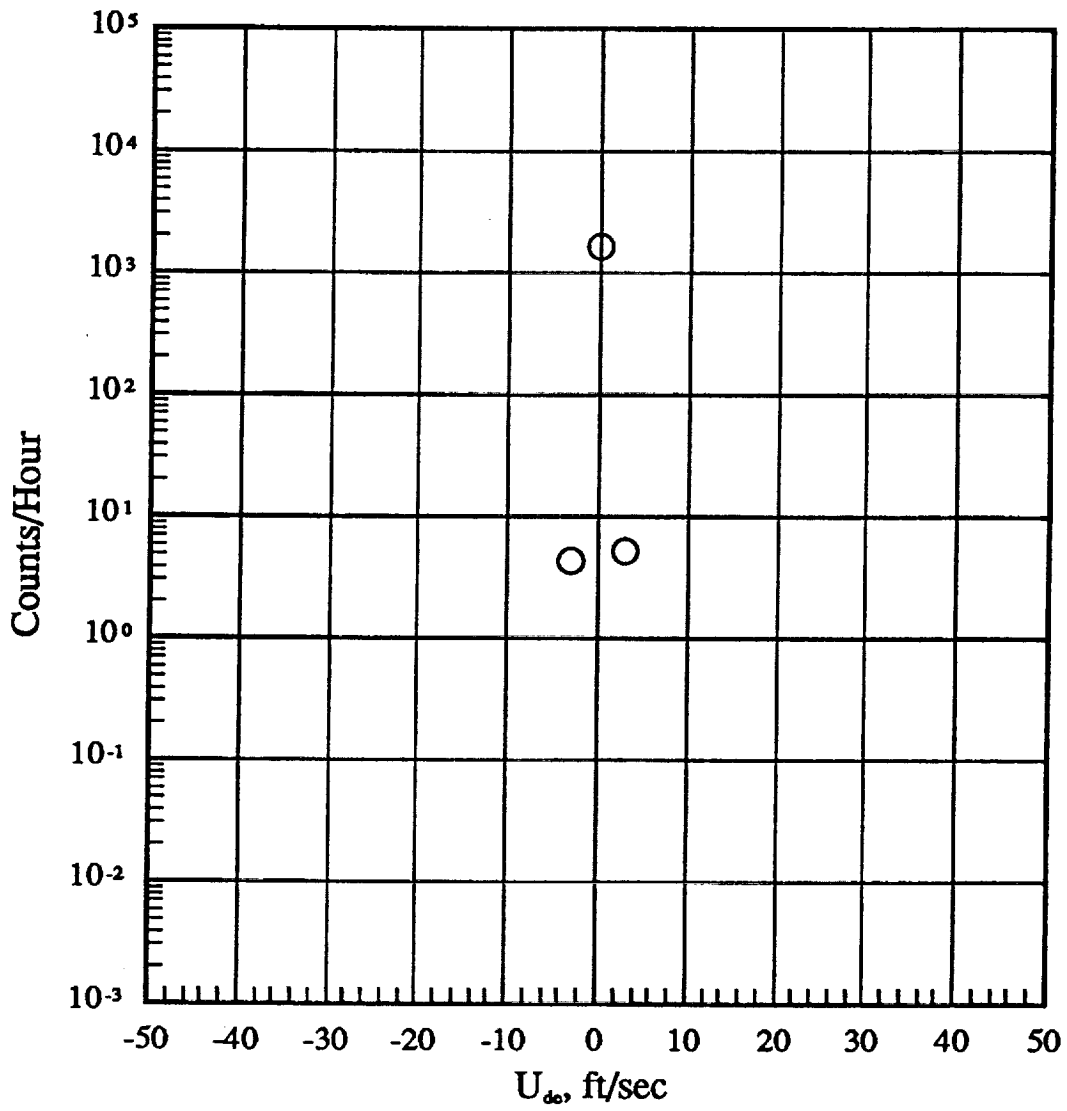
Total Flights	64
Total Hours	1.93
Total Miles	771



(f) 19500 to 24500 feet altitude

Figure 24.- Continued.

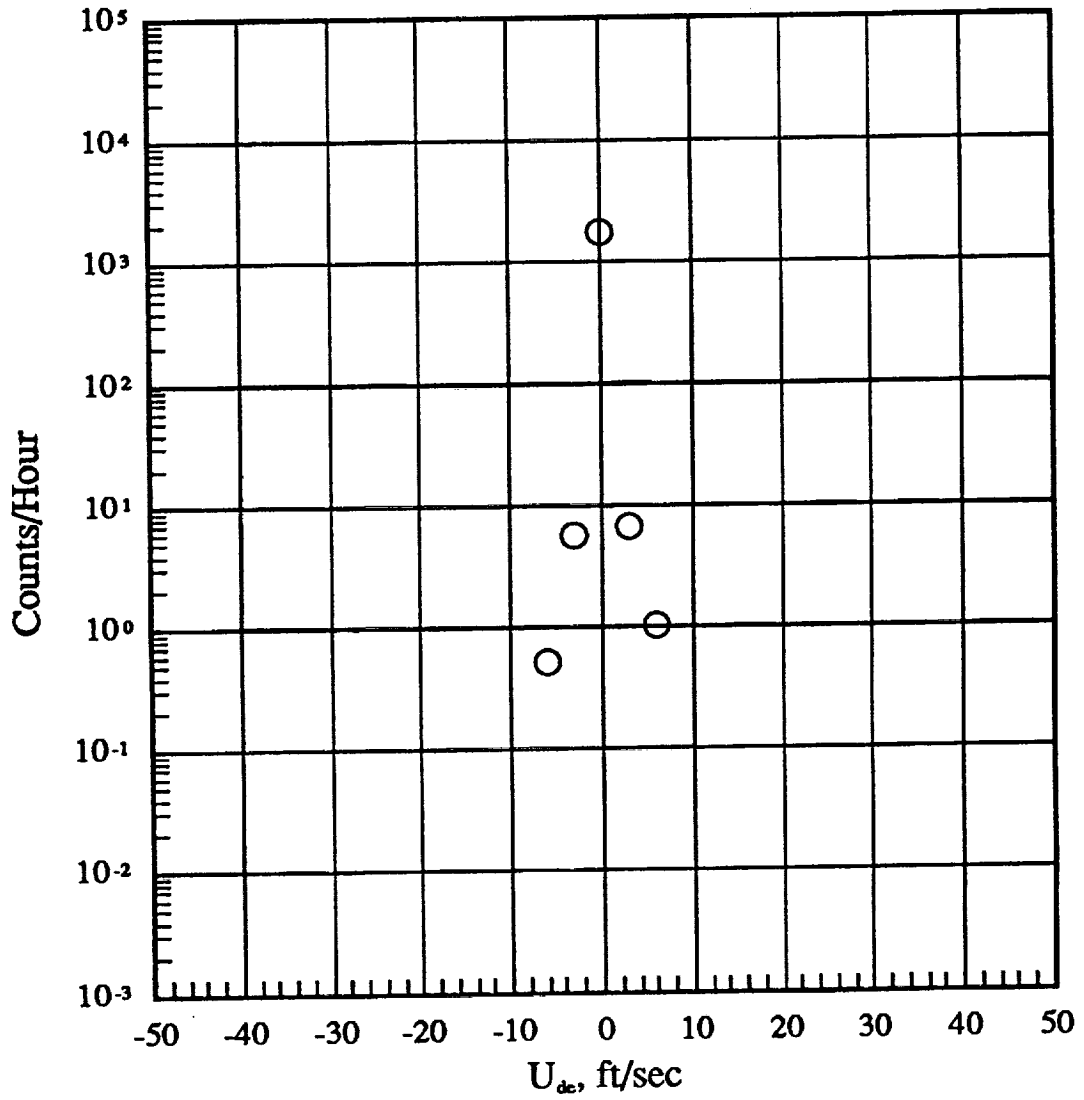
Total Flights 64
Total Hours 1.14
Total Miles 480



(g) 24500 to 29500 feet altitude

Figure 24.- Continued.

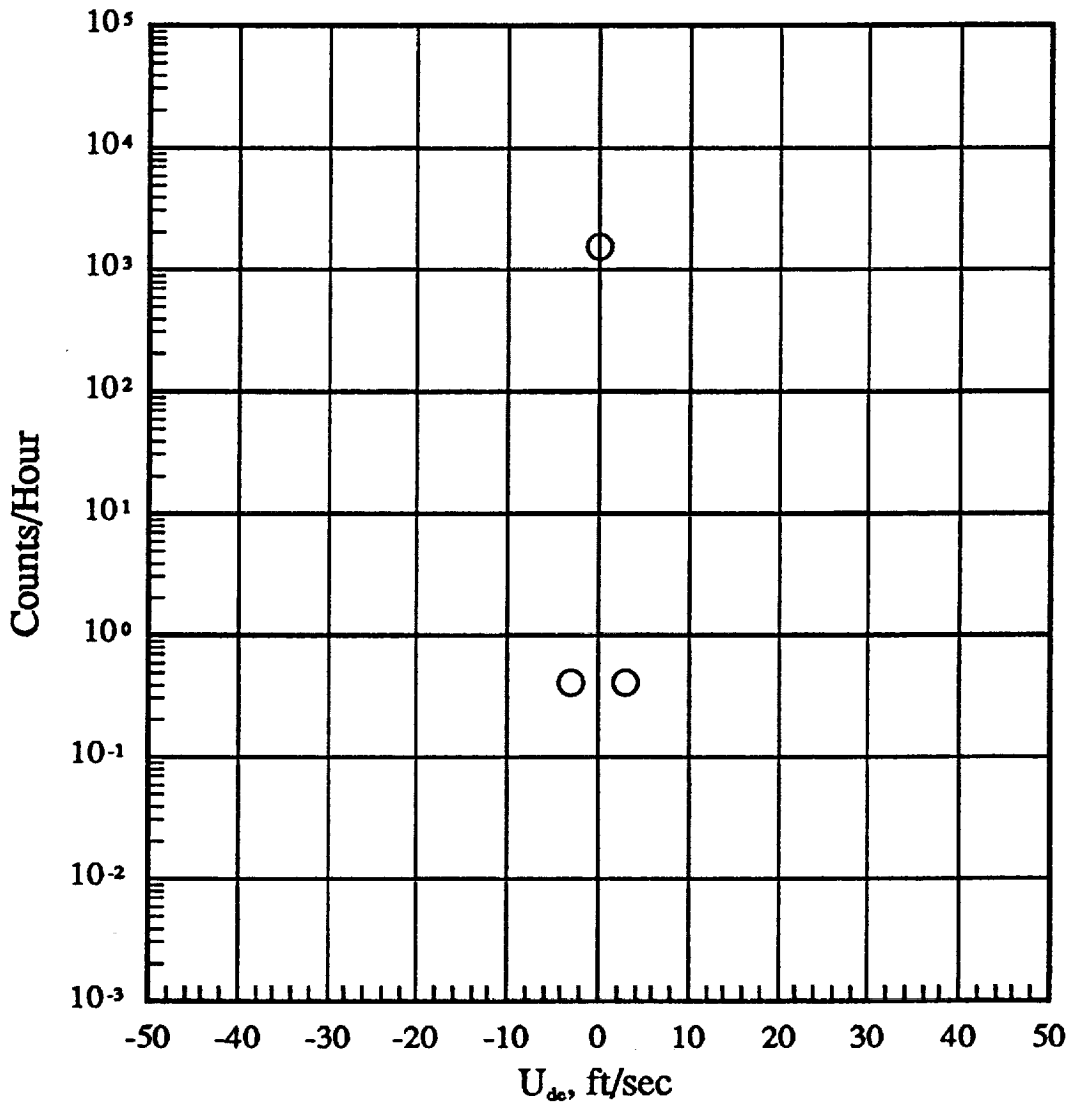
Total Flights	64
Total Hours	1.94
Total Miles	869



(h) 29500 to 34500 feet altitude

Figure 24.- Continued.

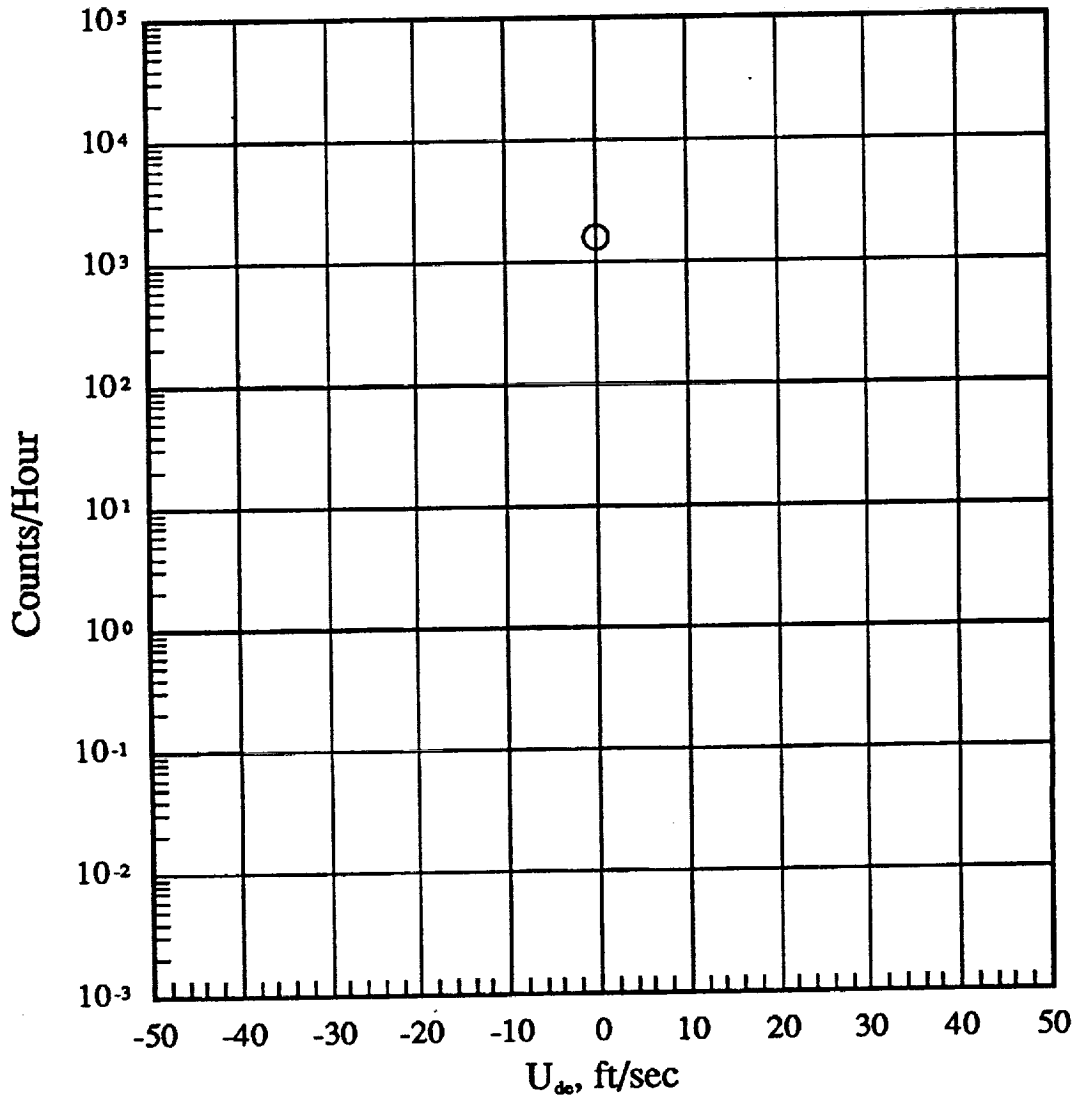
Total Flights 64
Total Hours 7.26
Total Miles 3264



(i) 34500 to 39500 feet altitude

Figure 24.- Continued.

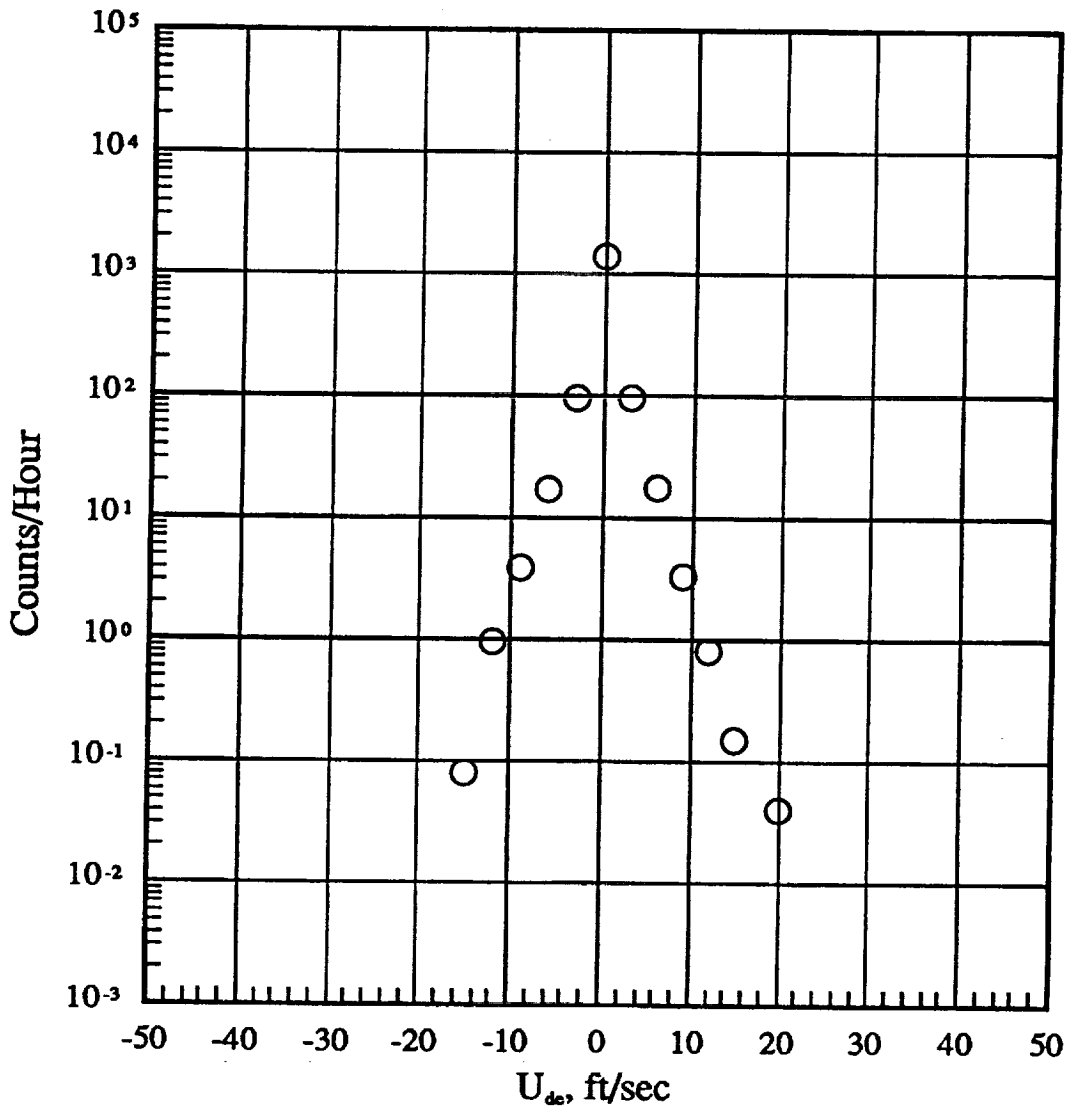
Total Flights 64
Total Hours 358.08
Total Miles



(j) 39500 to 44500 feet altitude

Figure 24.- Continued.

Total Flights	64
Total Hours	25.98
Total Miles	8619



(k) -500 to 44500 feet altitude

Figure 24.- Concluded.

DATA FROM 223 HOURS & 146 FLIGHTS

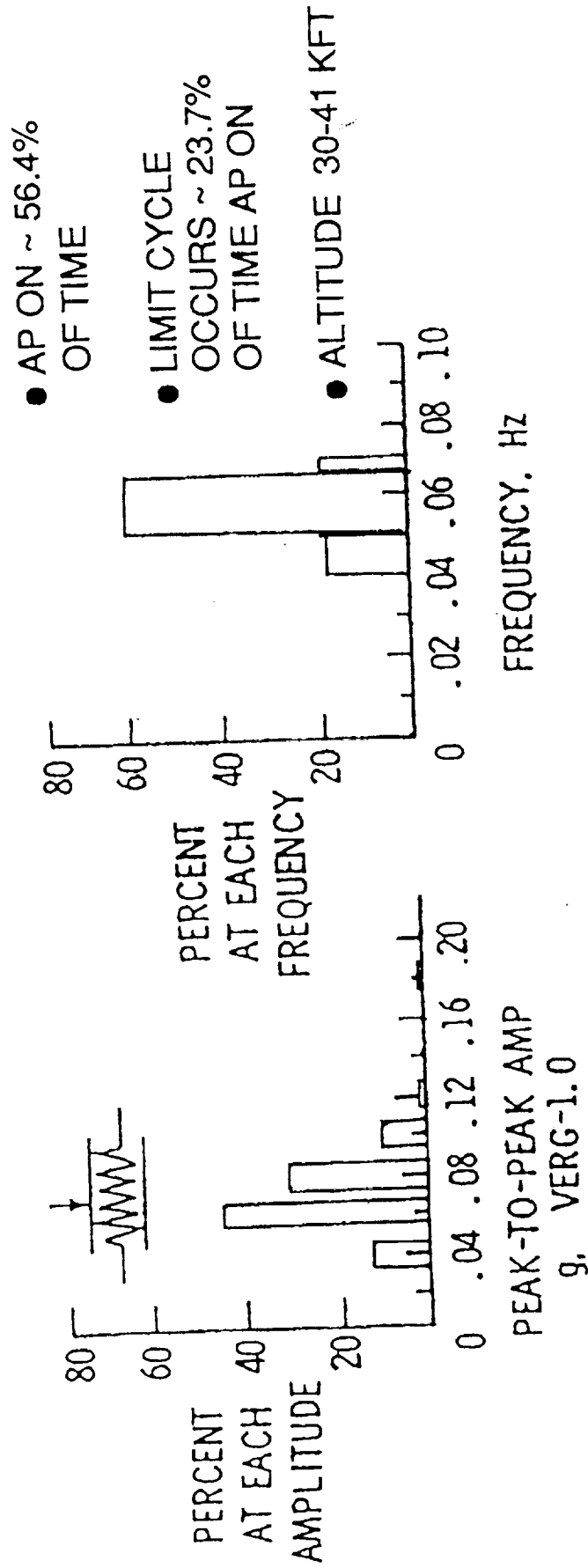


Figure 25.- Autopilot "limit cycle" experience.

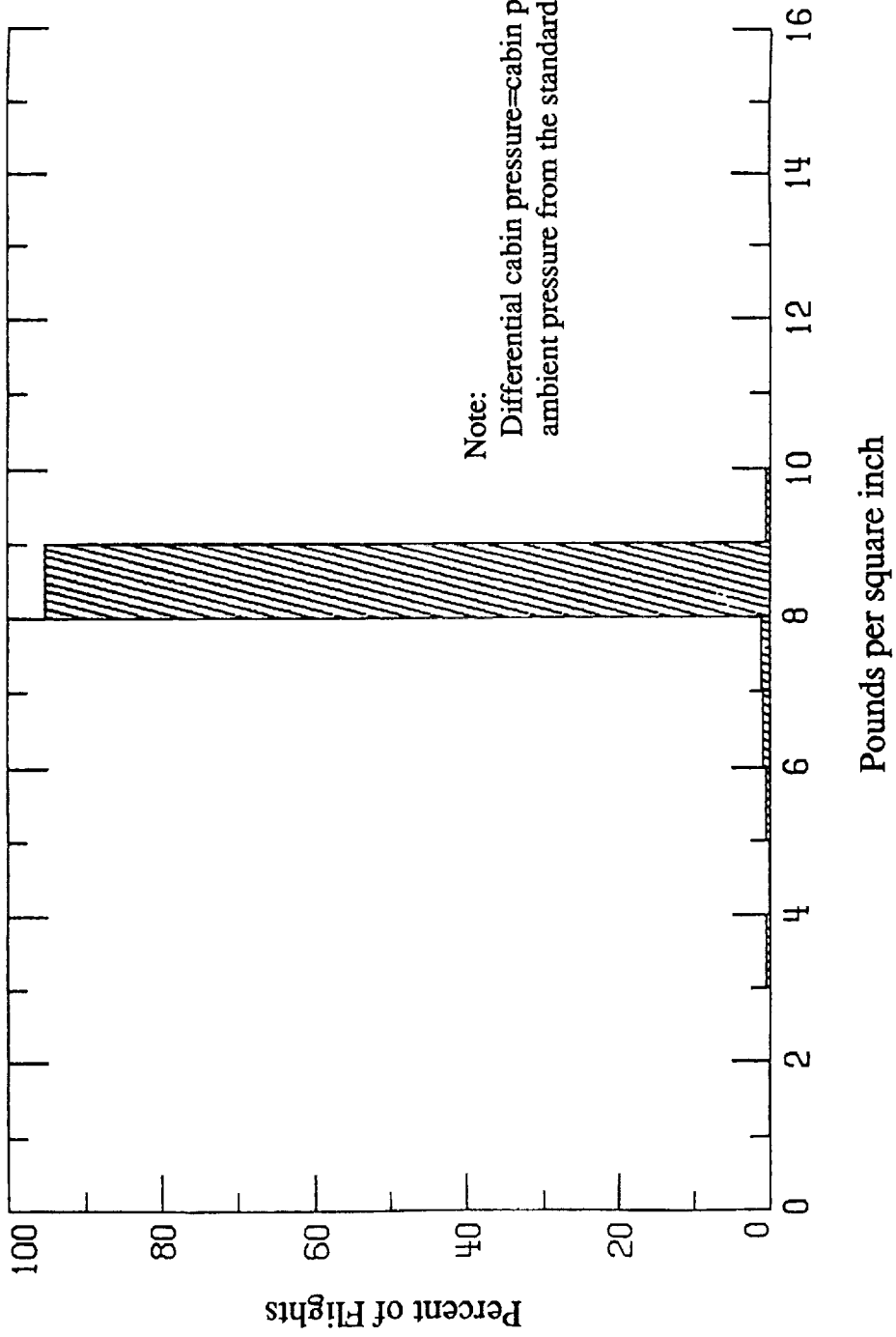


Figure 26.- Maximum differential cabin pressure per flight; Percent of flights.



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