DEC 5

R.A. 1395d

RM No. L6K16

NACA

RESEARCH MEMORANDUM

EVALUATION OF GUST AND DRAFT VELOCITIES FROM

FLIGHTS OF P-61c AIRPLANES WITHIN THUNDERSTORMS

AUGUST 7, 1946 TO AUGUST 13, 1946

AT ORLANDO, FLORIDA

By

Harold B. Tolefson

Langley Memorial Aeronautical Laboratory
Langley Field, Va.

NATIONAL ADVISORY COMMITTEE
FOR AERONAUTICS

WASHINGTON

NACA LIBRARY
LANGLEY MEMORIAL AERONAUTICAL
LABORATORY
Langley Field, Va.

NASA Technical Library
3 1176 01437 0143

NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS

RESEARCH MEMORANDUM

EVALUATION OF GUST AND DRAFT VELOCITIES FROM FLIGHTS OF P-61c AIRPLANES WITHIN THUNDERSTORMS AUGUST 7, 1946 TO AUGUST 13, 1946 AT ORLANDO, FLORIDA

By H. B. Tolefson

This report presents the results obtained from gust and draft velocity measurements within thunderstorms for the period August 7, 1946 to August 13, 1946 at Orlando, Florida. These data are summarized in tables I and II and are of the type presented in reference 1 for previous flights.

In several of the surveys, indications of ambient air temperature were obtained from photo-observer records. These data are summarized in table III.

Langley Memorial Aeronautical Laboratory
National Advisory Committee for Aeronautics
Langley Field, Va.

C. C. Shufflebarger for
Harold B. Tolefson
Aeronautical Engineer

Approved: Richard V. Rhode
Richard V. Rhode
Chief of Aircraft Loads Division

CGB

REFERENCE

1. Tolefson, H. B.: Evaluation of Gust and Draft Velocities from Flights of P-61c Airplanes within Thunderstorms. IV - July 19, 1946 to July 20, 1946 at Orlando, Florida. NACA RM No. L6J16b, 1946.

TABLE I.- SUMMARY OF GUST MEASUREMENTS FROM FLIGHTS

OF P-61c AIRPLANES WITHIN THUNDERSTORMS

Space interval ft × 10^3	Pressure altitude (ft)	Maximum effective gust velocity $U_{e_{max}}$ (fps)		Maximum true gust velocity $U_{t_{max}}$ (fps)		Gust gradient distance (ft)		No. of gusts
August 7, 1946 - Flight 18								
Airplane 351 Traverse 1	Time (EST) 134853 - 135043 Length of traverse 126.1 sec - (a) Initial heading (deg) 200							
		(a)	(a)	(a)	(a)	(a)	(a)	(a)
Airplane 351 Traverse 2	Time (EST) 135831 - 140140 Length of traverse 227.0 sec - (a) Initial heading (deg) 190							
		(a)	(a)	(a)	(a)	(a)	(a)	(a)
Airplane 351 Traverse 3	Time (EST) -(b) Length of traverse 109.1 sec - (a) Initial heading (deg) - (b)							
		(a)	(a)	(a)	(a)	(a)	(a)	(a)
Airplane 351 Traverse 4	Time (EST) 141655 - 141737 Length of traverse 94.8 sec - (a) Initial heading (deg) 80							
		(a)	(a)	(a)	(a)	(a)	(a)	(a)
Airplane 351 Traverse 5	Time (EST) 142237 - 142458 Length of traverse 184.5 sec - (a) Initial heading (deg) 175							
		(a)	(a)	(a)	(a)	(a)	(a)	(a)

[a]Failure in operation of airspeed-altitude recorder prevented computations for gust velocities and lengths of traverses in feet.

[b]No motion-picture records obtained.

NATIONAL ADVISORY
COMMITTEE FOR AERONAUTICS

TABLE I.- SUMMARY OF GUST MEASUREMENTS - Continued

Space interval ft × 10^3	Pressure altitude (ft)	Maximum effective gust velocity $U_{e_{max}}$ (fps)		Maximum true gust velocity $U_{t_{max}}$ (fps)		Gust gradient distance (ft)		No. of gusts
August 7, 1946 - Flight 18								
Airplane 327 Traverse 1	Time (EST) 135053 - 135611 Length of traverse 324.2 sec, 98,924 ft Initial heading (deg) 160							
0 - 3	20,500	1.9	-----	15.9	-----	61	---	2
3 - 6		5.5	-3.5	8.6	-----	96	---	7
6 - 9		7.1	-4.5	6.5	-----	255	---	4
9 - 12		2.9	-4.8	----	-----	---	---	2
12 - 15		4.8	-3.5	----	-----	---	---	3
15 - 18		4.8	-4.5	----	-----	---	---	4
18 - 21		7.7	-8.7	----	-----	---	---	3
21 - 24		6.8	-----	8.9	-----	153	---	2
24 - 27		5.8	-----	8.9	-----	150	---	2
27 - 30		----	-----	----	-----	---	---	0
30 - 33		----	-4.8	----	-7.2	---	206	2
33 - 36		5.5	-3.5	8.3	-----	193	---	2
36 - 39		4.5	-----	----	-----	---	---	1
39 - 42		8.7	-4.5	----	-----	---	---	4
42 - 45	21,000	4.8	-2.9	----	-----	---	---	3
45 - 48		4.2	-5.2	----	-----	---	---	4
48 - 51		----	-3.9	----	-----	---	---	1
51 - 54		----	-----	----	-----	---	---	0
54 - 57	20,500	4.8	-2.9	----	-----	---	---	2
57 - 60		----	-----	----	-----	---	---	0
60 - 63		----	-----	----	-----	---	---	0
63 - 66	21,000	----	-3.5	----	-8.6	---	316	2
66 - 69		----	-7.4	----	-----	---	---	2
69 - 72		5.5	-2.9	6.7	-----	316	---	4
72 - 75		8.7	-10.9	----	-----	---	---	2
75 - 78		----	-3.9	----	-----	---	---	1
78 - 81		----	-----	----	-----	---	---	0
81 - 84		----	-----	----	-----	---	---	0
84 - 87		----	-----	----	-----	---	---	0
87 - 90		----	-----	----	-----	---	---	0
90 - 93		----	-----	----	-----	---	---	0
93 - 96		----	-----	----	-----	---	---	0
96 - 99		----	-----	----	-----	---	---	0

NATIONAL ADVISORY
COMMITTEE FOR AERONAUTICS

TABLE I.- SUMMARY OF GUST MEASUREMENTS - Continued

Space interval ft × 10^3	Pressure altitude (ft)	Maximum effective gust velocity $U_{e_{max}}$ (fps)		Maximum true gust velocity $U_{t_{max}}$ (fps)		Gust gradient distance (ft)		No. of gusts
August 7, 1946 - Flight 18								
Airplane 327 Traverse 2	Time (EST) 140232 - 140327; Length of traverse 56.7 sec, 20,356 ft; Initial heading (deg) 330							
0 - 3	21,500	5.1	-3.2	----	-----	---	---	3
3 - 6		6.1	-13.1	----	-----	---	---	7
6 - 9		11.5	-7.7	----	-----	---	---	5
9 - 12	21,000	6.7	-3.5	----	-----	---	---	6
12 - 15		13.5	-----	----	-----	---	---	3
15 - 18	21,500	----	-----	----	-----	---	---	0
18 - 21		----	-----	----	-----	---	---	0
Airplane 327 Traverse 3	Time (EST) 140430 - 140626; Length of traverse 96.0 sec, 34,644 ft; Initial heading (deg) 20							
0 - 3	21,500	7.4	-4.8	----	-12.2	---	243	5
3 - 6		9.6	-9.3	12.4	-7.9	489	176	5
6 - 9		7.4	-9.0	----	-21.5	---	339	8
9 - 12	22,000	8.3	-9.6	----	-25.1	---	416	2
12 - 15		5.8	-5.1	----	-8.0	---	243	2
15 - 18	21,500	11.2	-6.7	----	-10.2	---	183	5
18 - 21		7.4	-3.5	----	-----	---	---	3
21 - 24	22,000	----	-2.2	----	-----	---	---	1
24 - 27		----	-3.2	----	-7.2	---	215	1
27 - 30		6.7	-6.4	----	-----	---	---	5
30 - 33		9.9	-4.8	----	-8.9	---	338	4
33 - 36		----	-2.9	----	-----	---	---	1
Airplane 327 Traverse 4	Time (EST) 141647 - 141838; Length of traverse 124.6 sec, 46,382 ft; Initial heading (deg) 60							
0 - 3	21,500	4.4	-----	11.0	-----	288	---	2
3 - 6		3.2	-6.0	9.7	-----	245	---	3
6 - 9		----	-----	----	-----	---	---	0
9 - 12	21,000	4.4	-----	----	-----	---	---	1
12 - 15		----	-----	----	-----	---	---	0

NATIONAL ADVISORY
COMMITTEE FOR AERONAUTICS

TABLE I.- SUMMARY OF GUST MEASUREMENTS - Continued

Space interval ft × 10^3	Pressure altitude (ft)	Maximum effective gust velocity $U_{e_{max}}$ (fps)		Maximum true gust velocity $U_{t_{max}}$ (fps)		Gust gradient distance (ft)		No. of gusts
August 7, 1946 - Flight 18								
Airplane 327 Traverse 4	Time (EST) 141647 - 141838 Length of traverse 124.6 sec, 46,382 ft Initial heading (deg) 60							
15 - 18	21,000	5.7	-----	----	-----	---	---	1
18 - 21	21,500	----	-----	----	-----	---	---	0
21 - 24		----	-3.8	----	-----	---	---	1
24 - 27		5.7	-----	----	-----	---	---	2
27 - 30		2.9	-4.4	----	-----	---	---	3
30 - 33		----	-2.9	----	-8.5	---	110	3
33 - 36		7.3	-6.0	10.7	-----	214	---	2
36 - 39	21,000	3.8	-3.8	7.3	-----	113	---	3
39 - 42		7.3	-7.3	11.4	-----	78	---	3
42 - 45		7.3	-----	----	-----	---	---	2
45 - 48		----	-----	----	-----	---	---	0
Airplane 327 Traverse 5	Time (EST) 142516 - 142805 Length of traverse 184.1 sec, 67,131 ft Initial heading (deg) 160							
0 - 3	21,500	----	-3.8	----	-----	---	---	1
3 - 6		3.2	-4.1	----	-----	---	---	2
6 - 9		12.0	-3.2	----	-----	---	---	3
9 - 12		7.3	-11.0	----	-----	---	---	5
12 - 15		----	-----	----	-----	---	---	0
15 - 18		----	-4.7	----	-----	---	---	1
18 - 21		11.0	-7.9	----	-----	---	---	6
21 - 24		7.3	-11.7	12.7	-----	105	---	3
24 - 27	21,000	9.1	-2.8	----	-14.2	---	180	3
27 - 30		5.0	-2.8	----	-----	---	---	2
30 - 33		9.8	-2.8	----	-----	---	---	8
33 - 36	21,500	4.7	-6.9	15.2	-----	291	---	2
36 - 39		5.7	-3.8	----	-----	---	---	4
39 - 42		7.9	-----	20.2	-----	543	---	2
42 - 45		6.9	-----	----	-----	---	---	2
45 - 48		7.6	-7.9	----	-----	---	---	5
48 - 51		5.4	-3.8	----	-----	---	---	3
51 - 54		8.5	-----	----	-----	---	---	2
54 - 57		9.5	-4.4	----	-----	---	---	5

NATIONAL ADVISORY
COMMITTEE FOR AERONAUTICS

TABLE I.- SUMMARY OF GUST MEASUREMENTS - Continued

Space interval ft × 10^3	Pressure altitude (ft)	Maximum effective gust velocity $U_{e_{max}}$ (fps)		Maximum true gust velocity $U_{t_{max}}$ (fps)		Gust gradient distance (ft)		No. of gusts
August 7, 1946 - Flight 18								
Airplane 327 Traverse 5	Time (EST) 142516 - 142805 Length of traverse 184.1 sec, 67,131 ft Initial heading (deg) 160							
57 - 60	21,500	6.9	-7.6	----	-8.2	---	184	5
60 - 63		11.0	-7.6	23.5	-----	491	---	3
63 - 66		4.4	-----	----	-----	---	---	2
66 - 69		3.8	-----	----	-----	---	---	1
Airplane 347 Traverse 1	Time (EST) - (c) Length of traverse 318.8 sec, 99,208 ft Initial heading (deg) 190							
0 - 3	16,000	2.6	-1.6	----	-2.9	---	94	2
3 - 6		----	-2.6	----	-7.3	---	31	2
6 - 9		----	-----	----	-----	---	---	0
9 - 12		7.4	-2.6	----	-6.2	---	63	5
12 - 15		4.5	-----	8.7	-----	64	---	2
15 - 18		5.8	-3.2	----	-9.0	---	128	6
18 - 21		2.6	-3.5	7.2	-8.5	32	125	4
21 - 24		9.9	-----	21.2	-----	538	---	4
24 - 27		6.4	-4.8	10.2	-4.5	126	154	7
27 - 30		7.7	-----	5.8	-----	89	---	3
30 - 33		9.0	-9.9	7.6	-21.4	59	476	3
33 - 36		2.2	-5.1	5.6	-----	148	---	4
36 - 39		7.7	-3.2	----	-----	---	---	3
39 - 42		----	-----	----	-----	---	---	0
42 - 45		4.8	-5.5	----	-----	---	---	4
45 - 48		4.2	-2.2	5.9	-5.6	31	123	3
48 - 51		----	-----	----	-----	---	---	0
51 - 54		8.0	-8.0	----	-8.0	---	118	10
54 - 57		10.6	-6.1	15.5	-----	62	---	10
57 - 60	16,500	15.7	-6.1	----	-----	---	---	10
60 - 63		15.1	-18.3	8.6	-----	101	---	11
63 - 66		12.5	-9.9	8.9	-----	156	---	7
66 - 69		----	-----	5.0	-----	30	---	1
69 - 72		5.5	-4.8	----	-15.7	---	479	3
72 - 75		8.3	-5.8	15.4	-----	122	---	7
75 - 78		10.3	-2.6	9.9	-----	63	---	3

[c]Clock not in field of view of motion-picture camera.

NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS

TABLE I.- SUMMARY OF GUST MEASUREMENTS - Continued

Space interval ft × 10^3	Pressure altitude (ft)	Maximum effective gust velocity $U_{e_{max}}$ (fps)		Maximum true gust velocity $U_{t_{max}}$ (fps)		Gust gradient distance (ft)		No. of gusts
August 7, 1946 - Flight 18								
Airplane 347 Traverse 1		Time (EST) - (c) Length of traverse 318.8 sec, 99,208 ft Initial heading (deg) 190						
78 - 81	16,500	12.8	-9.0	7.5	-----	65	---	7
81 - 84		10.6	-2.9	13.7	-8.6	32	65	4
84 - 87		5.8	-6.7	9.9	-----	63	---	7
87 - 90		8.0	-4.8	18.1	-----	31	---	6
90 - 93		7.4	-5.8	----	-----	---	---	4
93 - 96		6.4	-4.2	----	-----	---	---	7
96 - 99		9.6	-2.6	----	-----	---	---	7
99 - 102		----	-----	----	-----	---	---	0
Airplane 347 Traverse 2		Time (EST) - (c) Length of traverse 384.2 sec, 117,443 ft Initial heading (deg) 270						
0 - 3	16,000	6.7	-10.5	18.7	-9.0	27	114	10
3 - 6		10.8	-5.7	----	-11.6	---	287	7
6 - 9		11.4	-10.5	7.4	-----	59	---	6
9 - 12		7.9	-9.9	----	-----	---	---	6
12 - 15		5.4	-12.1	----	-----	---	---	9
15 - 18		----	-2.9	----	-5.1	---	174	1
18 - 21		8.6	-5.1	12.2	-----	88	---	6
21 - 24		8.3	-8.3	16.3	-21.3	28	208	7
24 - 27		13.4	-----	----	-----	---	---	2
27 - 30		3.2	-10.2	----	-----	---	---	6
30 - 33		5.1	-5.4	8.4	-----	154	---	5
33 - 36		7.9	-10.5	----	-----	---	---	2
36 - 39		8.3	-2.5	----	-----	---	---	4
39 - 42		4.8	-----	10.9	-----	31	---	1
42 - 45		2.5	-2.5	----	-4.4	---	157	4
45 - 48		----	-----	----	-----	---	---	0
48 - 51		----	-----	----	-----	---	---	0
51 - 54		2.5	-1.0	4.8	-6.2	63	62	2
54 - 57		----	-----	----	-----	---	---	0
57 - 60		----	-----	----	-----	---	---	0
60 - 63		----	-----	----	-----	---	---	0
63 - 66		9.2	-----	18.7	-----	480	---	1

[c]Clock not in field of view of motion-picture camera.

NATIONAL ADVISORY
COMMITTEE FOR AERONAUTICS

TABLE I.- SUMMARY OF GUST MEASUREMENTS - Continued

Space interval ft × 10^3	Pressure altitude (ft)	Maximum effective gust velocity $U_{e_{max}}$ (fps)		Maximum true gust velocity $U_{t_{max}}$ (fps)		Gust gradient distance (ft)		No. of gusts
August 7, 1946 - Flight 18								
Airplane 347 Traverse 2	Time (EST) - (c) Length of traverse 384.2 sec, 117,443 ft Initial heading (deg) 270							
66 - 69	16,000	10.5	-----	17.9	-----	519	---	1
69 - 72		----	-----	----	-----	---	---	0
72 - 75		----	-----	----	-----	---	---	0
75 - 78		4.1	-----	----	-----	---	---	1
78 - 81		----	-3.5	----	-5.6	---	188	1
81 - 84		----	-5.7	----	-9.4	---	338	1
84 - 87		----	-4.8	----	-8.4	---	215	3
87 - 90		4.1	-----	----	-----	---	---	1
90 - 93		4.1	-----	5.8	-----	94	---	1
93 - 96		4.1	-2.5	----	-----	---	---	3
96 - 99		4.1	-4.1	----	-8.9	---	155	6
99 - 102		3.8	-5.4	----	-9.9	---	154	4
102 - 105		5.4	-2.9	12.3	-----	30	---	6
105 - 108		----	-4.5	----	-6.7	---	206	3
108 - 111		3.2	-5.4	5.8	-6.6	91	30	3
111 - 114		7.6	-3.8	----	-----	---	---	4
114 - 117		----	-----	----	-----	---	---	0
117 - 120		----	-2.5	----	-----	---	---	1
Airplane 347 Traverse 3	Time (EST) - (c) Length of traverse 400.0 sec, 135,117 ft Initial heading (deg) 350							
0 - 3	16,500	7.6	-5.7	----	-----	---	---	5
3 - 6		5.0	-7.3	----	-16.5	---	460	2
6 - 9		9.5	-11.4	----	-----	---	---	7
9 - 12		7.3	-12.9	----	-25.5	---	141	8
12 - 15		10.7	-6.9	----	-----	---	---	6
15 - 18		5.4	-4.7	----	-9.0	---	67	4
18 - 21		4.4	-7.9	8.8	-----	160	---	4
21 - 24		15.1	-6.0	----	-15.2	---	326	2
24 - 27		4.7	-18.9	----	-----	---	---	2
27 - 30		----	-2.5	----	-----	---	---	1
30 - 33		10.4	-12.6	----	-----	---	---	3

[c]Clock not in field of view of motion-picture camera.

NATIONAL ADVISORY
COMMITTEE FOR AERONAUTICS

TABLE I.- SUMMARY OF GUST MEASUREMENTS - Continued

Space interval ft × 10^3	Pressure altitude (ft)	Maximum effective gust velocity $U_{e_{max}}$ (fps)		Maximum true gust velocity $U_{t_{max}}$ (fps)		Gust gradient distance (ft)		No. of gusts
August 7, 1946 - Flight 18								
Airplane 347 Traverse 3	Time (EST) - (c) Length of traverse 400.0 sec, 135,117 ft Initial heading (deg) 350							
33 - 36	16,500	12.9	-2.2	17.0	-----	233	---	2
36 - 39		----	-6.0	----	-----	---	---	3
39 - 42		4.7	-1.6	----	-6.7	---	132	2
42 - 45		----	-5.0	----	-----	---	---	1
45 - 48		----	-2.8	----	-11.5	---	547	1
48 - 51		7.3	-2.5	----	-6.7	---	65	3
51 - 54		----	-----	----	-----	---	---	0
54 - 57		8.8	-7.6	----	-----	---	---	2
57 - 60		10.7	-4.4	----	-7.8	---	132	3
60 - 63		6.9	-2.2	10.5	-10.4	173	34	6
63 - 66		----	-5.7	----	-----	---	---	1
66 - 69		6.0	-----	----	-----	---	---	2
69 - 72		6.6	-2.2	----	-----	---	---	3
72 - 75		----	-----	----	-----	---	---	0
75 - 78		9.2	-----	----	-----	---	---	1
78 - 81		----	-----	----	-----	---	---	0
81 - 84		----	-2.5	----	-----	---	---	1
84 - 87		----	-2.5	----	-10.1	---	333	1
87 - 90		6.6	-2.5	----	-----	---	---	4
90 - 93		6.0	-7.3	10.6	-----	193	---	2
93 - 96		8.8	-4.7	10.5	-----	163	---	2
96 - 99		6.9	-----	10.3	-----	270	---	2
99 - 102		5.7	-5.7	10.1	-----	205	---	2
102 - 105		9.2	-6.3	----	-11.8	---	335	4
105 - 108		12.0	-5.0	----	-----	---	---	9
108 - 111		8.8	-14.5	----	-----	---	---	5
111 - 114		6.0	-6.9	9.0	-----	67	---	6
114 - 117		20.2	-6.3	----	-----	---	---	4
117 - 120		11.4	-5.4	----	-----	---	---	10
120 - 123		10.7	-6.9	----	-----	---	---	6
123 - 126		19.3	-12.3	----	-----	---	---	7
126 - 129		2.2	-16.7	----	-----	---	---	6
129 - 132		7.6	-3.5	----	-----	---	---	5
132 - 135		----	-----	----	-----	---	---	0
135 - 138		----	-----	----	-----	---	---	0

[c]Clock not in field of view of motion-picture camera.

NATIONAL ADVISORY
COMMITTEE FOR AERONAUTICS

TABLE I.- SUMMARY OF GUST MEASUREMENTS - Continued

Space interval ft × 10^3	Pressure altitude (ft)	Maximum effective gust velocity $U_{e_{max}}$ (fps)		Maximum true gust velocity $U_{t_{max}}$ (fps)		Gust gradient distance (ft)		No. of gusts
August 7, 1946 - Flight 18								
Airplane 347 Traverse 4	Time (EST) - (c) Length of traverse 125.6 sec, 41,892 ft Initial heading (deg) 210							
0 - 3	16,000	21.3	-6.0	----	-----	---	---	6
3 - 6		13.2	-10.0	14.5	-24.7	125	283	6
6 - 9		6.0	-12.5	----	-----	---	---	4
9 - 12		----	-11.9	----	-13.8	---	122	1
12 - 15		7.5	-6.0	---	-----	---	---	3
15 - 18		20.7	-9.4	32.6	-----	200	---	4
18 - 21		8.8	-15.4	---	-10.6	---	71	4
21 - 24		7.8	-6.0	----	-----	---	---	5
24 - 27		4.4	-10.4	----	-----	---	---	11
27 - 30		9.7	-3.1	----	-----	---	---	6
30 - 33		4.4	-8.5	16.1	-----	128	---	4
33 - 36		6.9	-4.1	----	-----	---	---	5
36 - 39		----	-----	----	-----	---	---	0
39 - 42		----	-6.3	----	-----	---	---	1
Airplane 345 Traverse 1	Time (EST) - (b) Length of traverse 158.5 sec - (a) Initial heading (deg) - (b)							
		(a)	(a)	(a)	(a)	(a)	(a)	(a)
Airplane 345 Traverse 2	Time (EST) - (b) Length of traverse 190.0 sec - (a) Initial heading (deg) - (b)							
		(a)	(a)	(a)	(a)	(a)	(a)	(a)

[a]Failure in operation of airspeed-altitude recorder prevented computations for gust velocities and length of traverses in feet.

[b]No motion-picture records obtained.

[c]Clock not in field of view of motion-picture camera.

NATIONAL ADVISORY
COMMITTEE FOR AERONAUTICS

TABLE I - SUMMARY OF GUST MEASUREMENTS - Continued

Space interval ft × 10^3	Pressure altitude (ft)	Maximum effective gust velocity $U_{e_{max}}$ (fps)		Maximum true gust velocity $U_{t_{max}}$ (fps)		Gust gradient distance (ft)		No. of gusts
August 7, 1946 - Flight 18								
Airplane 345 Traverse 3	Time (EST) - (b) Length of traverse 391.0 sec - (a) Initial heading (deg) - (b)							
		(a)	(a)	(a)	(a)	(a)	(a)	(a)
Airplane 345 Traverse 4	Time (EST) - (b) Length of traverse 125.6 sec - (a) Initial heading (deg) - (b)							
		(a)	(a)	(a)	(a)	(a)	(a)	(a)
Airplane 345 Traverse 5	Time (EST) - (b) Length of traverse 120.1 sec - (a) Initial heading (deg) - (b)							
		(a)	(a)	(a)	(a)	(a)	(a)	(a)
Airplane 345 Traverse 6	Time (EST) - (b) Length of traverse 39.3 sec - (a) Initial heading (deg) - (b)							
		(a)	(a)	(a)	(a)	(a)	(a)	(a)

[a]Failure in operation of airspeed-altitude recorder prevented computations for gust velocities and length of traverses in feet.

[b]No motion-picture records obtained.

NATIONAL ADVISORY
COMMITTEE FOR AERONAUTICS

TABLE I.- SUMMARY OF GUST MEASUREMENTS - Continued

Space interval ft × 10^3	Pressure altitude (ft)	Maximum effective gust velocity $U_{e_{max}}$ (fps)		Maximum true gust velocity $U_{t_{max}}$ (fps)		Gust gradient distance (ft)		No. of gusts
August 12, 1946 - Flight 19								
Airplane 345 Traverse 1	Time (EST) - (b) Length of traverse 124.4 sec, 43,799 ft Initial heading (deg) - (b)							
0 - 3	25,500	13.1	-10.8	----	-----	---	---	3
3 - 6		7.7	-9.2	----	-9.0	---	34	7
6 - 9		20.4	-7.3	----	-----	---	---	13
9 - 12		8.0	-13.7	13.2	-----	33	---	6
12 - 15		22.3	-12.1	----	-----	---	---	2
15 - 18		----	-----	----	-----	---	---	0
18 - 21		8.0	-4.1	----	-11.9	---	68	3
21 - 24		10.2	-10.5	----	-----	---	---	8
24 - 27		5.7	-7.0	----	-8.1	---	36	8
27 - 30	26,000	5.4	-6.7	----	-----	---	---	8
30 - 33		4.5	-7.3	----	-----	---	---	9
33 - 36	26,500	7.3	-8.0	----	-6.7	---	37	6
36 - 39		5.1	-8.6	----	-4.2	---	35	6
39 - 42		3.8	-11.2	7.9	-----	101	---	4
42 - 45		10.2	-3.5	----	-10.6	---	35	5
Airplane 345 Traverse 2	Time (EST) - (b) Length of traverse 183.4 sec, 64,317 ft Initial heading (deg) - (b)							
0 - 3	25,500	5.7	-4.7	13.7	-----	30	---	9
3 - 6		14.6	-13.6	24.7	-13.0	99	161	7
6 - 9		2.8	-10.8	----	-----	---	---	9
9 - 12		12.0	-9.2	----	-----	---	---	4
12 - 15		6.0	-7.0	10.3	-----	70	---	11
15 - 18		4.1	-7.6	7.6	-----	70	---	4
18 - 21		4.4	-14.2	----	-----	---	---	8
21 - 24		8.2	-7.9	12.0	-----	35	---	4
24 - 27		3.5	-9.5	9.3	-4.8	141	36	6
27 - 30		7.6	-7.2	----	-----	---	---	9
30 - 33		----	-4.4	----	-----	---	---	3
33 - 36		12.3	-9.8	----	-13.6	---	72	4
36 - 39		10.8	-4.7	----	-----	---	---	10
39 - 42		14.2	-16.5	----	-----	---	---	5

[b]No motion-picture records obtained.

NATIONAL ADVISORY
COMMITTEE FOR AERONAUTICS

TABLE I.- SUMMARY OF GUST MEASUREMENTS - Continued

Space interval ft × 10^3	Pressure altitude (ft)	Maximum effective gust velocity $U_{e_{max}}$ (fps)		Maximum true gust velocity $U_{t_{max}}$ (fps)		Gust gradient distance (ft)		No. of gusts
August 12, 1946 - Flight 19								
Airplane 345 Traverse 2	Time (EST) - (b) Length of traverse 183.4 sec, 64,317 ft Initial heading (deg) - (b)							
42 - 45	26,000	16.5	-----	----	-----	---	---	1
45 - 48		10.8	-8.2	----	-12.1	---	35	5
48 - 51	26,500	12.3	-6.6	----	-----	---	---	6
51 - 54		10.4	-8.2	9.0	-----	37	---	9
54 - 57	27,000	13.9	-10.1	----	-----	---	---	9
57 - 60		9.8	-11.4	----	-----	---	---	6
60 - 63	27,500	19.0	-13.0	----	-----	---	---	4
63 - 66		16.5	-13.9	----	-----	---	---	3
Airplane 351 Traverse 1	Time (EST) 141715 - 142008 Length of traverse 177.3 sec, 59,983 ft Initial heading (deg) 270							
0 - 3	21,000	----	-----	----	-----	---	---	3
3 - 6		6.7	-8.9	----	-18.6	---	60	5
6 - 9		19.1	-12.1	35.0	-----	144	---	6
9 - 12		13.7	-10.2	----	-19.1	---	99	6
12 - 15		16.2	-14.6	----	-19.9	---	88	7
15 - 18	21,500	18.8	-9.9	----	-----	---	---	7
18 - 21		8.3	-7.9	----	-20.1	---	197	10
21 - 24	22,000	8.9	-----	----	-----	---	---	5
24 - 27	22,500	11.1	-14.9	----	-----	---	---	6
27 - 30	23,000	11.1	-15.3	----	-21.4	---	61	9
30 - 33	23,500	----	-5.7	----	-----	---	---	6
33 - 36		11.1	-14.3	19.4	-----	287	---	6
36 - 39	24,000	11.4	-6.0	----	-----	---	---	3
39 - 42		9.5	-10.2	10.5	-----	229	---	5
42 - 45		9.2	-7.0	18.8	-11.9	333	235	2
45 - 48	24,500	5.1	-11.1	----	-13.6	---	239	4
48 - 51		5.7	-7.9	----	-14.3	---	73	7
51 - 54		5.1	-----	----	-----	---	---	3
54 - 57		5.1	-3.8	----	-----	---	---	3
57 - 60		----	-----	----	-----	---	---	1

[b] No motion-picture records obtained.

NATIONAL ADVISORY
COMMITTEE FOR AERONAUTICS

TABLE I.- SUMMARY OF GUST MEASUREMENTS - Continued

Space interval ft × 10^3	Pressure altitude (ft)	Maximum effective gust velocity $U_{e_{max}}$ (fps)		Maximum true gust velocity $U_{t_{max}}$ (fps)		Gust gradient distance (ft)		No. of gusts
August 12, 1946 - Flight 19								
Airplane 351 Traverse 2	Time (EST) 142920 - 143206 Length of traverse 184.9 sec, 61,721 ft Initial heading (deg) 70							
0 - 3	21,500	9.5	-8.2	----	-----	---	---	7
3 - 6		8.8	-4.7	----	-----	---	---	4
6 - 9		7.9	-6.6	----	-----	---	---	3
9 - 12		22.1	-8.2	----	-----	---	---	3
12 - 15		12.6	-5.4	10.4	-----	36	---	4
15 - 18		11.7	-----	19.4	-----	39	---	6
18 - 21	22,000	6.0	-----	9.4	-----	203	---	3
21 - 24	22,500	9.5	-10.1	----	-----	---	---	4
24 - 27		6.3	-8.2	7.9	-----	161	---	4
27 - 30		5.4	-4.1	----	-----	---	---	5
30 - 33		5.4	-6.0	19.4	-----	95	---	4
33 - 36		14.8	-11.4	30.2	-----	127	---	4
36 - 39	23,000	----	-----	----	-----	---	---	0
39 - 42		10.1	-6.9	----	-17.4	---	66	5
42 - 45		12.0	-5.0	25.7	-10.3	63	32	6
45 - 48	23,500	6.3	-5.0	----	-----	---	---	6
48 - 51	24,000	9.5	-8.8	----	-24.2	---	93	5
51 - 54		12.0	-12.9	36.6	-----	315	---	5
54 - 57	24,500	13.9	-11.7	----	-----	---	---	5
57 - 60	25,000	9.2	-7.6	----	-----	---	---	4
60 - 63		----	-----	----	-----	---	---	0
Airplane 351 Traverse 3	Time (EST) 144312 - 144627 Length of traverse 224.0 sec, 69,481 ft Initial heading (deg) 220							
0 - 3	21,000	----	-----	----	-----	---	---	0
3 - 6		----	-----	----	-----	---	---	0
6 - 9		5.3	-5.3	----	-17.6	---	243	3
9 - 12		----	-----	----	-----	---	---	5
12 - 15		6.3	-5.0	----	-----	---	---	8
15 - 18		8.1	-11.3	17.5	-----	32	---	4
18 - 21		10.9	-10.0	----	-----	---	---	5
21 - 24		13.8	-----	----	-14.3	---	64	6
24 - 27		----	-13.1	----	-----	---	---	2

NATIONAL ADVISORY
COMMITTEE FOR AERONAUTICS

TABLE I.- SUMMARY OF GUST MEASUREMENTS - Continued

Space interval ft × 10^3	Pressure altitude (ft)	Maximum effective gust velocity $U_{e_{max}}$ (fps)		Maximum true gust velocity $U_{t_{max}}$ (fps)		Gust gradient distance (ft)		No. of gusts
August 12, 1946 - Flight 19								
Airplane 351 Traverse 3	Time (EST) 144312 - 144627 Length of traverse 224.0 sec, 69,481 ft Initial heading (deg) 220							
27 - 30	21,500	14.4	-8.4	----	-----	---	---	4
30 - 33		----	-6.9	----	-----	---	---	2
33 - 36		----	-----	----	-----	---	---	1
36 - 39		----	-4.4	----	-----	---	---	1
39 - 42	21,000	11.3	-----	----	-----	---	---	2
42 - 45		11.6	-----	----	-----	---	---	2
45 - 48		11.3	-----	12.1	-----	67	---	4
48 - 51		7.5	-7.5	----	-7.8	---	67	6
51 - 54		6.6	-----	----	-----	---	---	3
54 - 57		7.2	-----	----	-----	---	---	4
57 - 60	21,500	4.4	-8.4	----	-----	---	---	2
60 - 63		8.1	-5.6	13.6	-----	89	---	6
63 - 66		4.7	-----	----	-----	---	---	7
66 - 69		5.9	-5.9	----	-11.0	---	193	5
69 - 72		----	-----	----	-----	---	---	0
Airplane 351 Traverse 4	Time (EST) 145430 - (d) Length of traverse 546.9 sec, 178,987 ft Initial heading (deg) 40							
0 - 3	20,500	----	-----	----	-----	---	---	1
3 - 6		----	-----	----	-----	---	---	2
6 - 9		----	-----	----	-----	---	---	1
9 - 12		----	-----	----	-----	---	---	1
12 - 15		----	-----	----	-----	---	---	4
15 - 18		----	-----	----	-----	---	---	5
18 - 21		----	-----	----	-----	---	---	0
21 - 24		----	-6.2	----	-----	---	---	3
24 - 27		----	-----	----	-----	---	---	2
27 - 30		5.3	-----	10.9	-----	61	---	5
30 - 33		4.0	-----	----	-----	---	---	1
33 - 36		6.2	-----	----	-12.2	---	63	5
36 - 39		----	-----	----	-----	---	---	4
39 - 42		----	-----	----	-----	---	---	3

[d]Film supply for motion-picture camera exhausted before end of traverse.

NATIONAL ADVISORY
COMMITTEE FOR AERONAUTICS

TABLE I.- SUMMARY OF GUST MEASUREMENTS - Continued

Space interval ft × 10^3	Pressure altitude (ft)	Maximum effective gust velocity $U_{e_{max}}$ (fps)		Maximum true gust velocity $U_{t_{max}}$ (fps)		Gust gradient distance (ft)		No. of gusts
August 12, 1946 - Flight 19								
Airplane 351 Traverse 4	Time (EST) 145430 - (d) Length of traverse 546.9 sec, 178,987 ft Initial heading (deg) 40							
42 - 45	20,500	----	-4.0	----	-----	---	---	4
45 - 48		7.1	-----	----	-----	---	---	4
48 - 51		----	-----	----	-----	---	---	4
51 - 54		6.2	-7.1	32.3	-----	251	---	3
54 - 57		----	-5.9	----	-9.3	---	125	4
57 - 60		6.2	-4.0	11.6	-10.8	251	157	6
60 - 63		9.3	-4.0	10.2	-----	93	---	5
63 - 66		5.3	-5.9	----	-16.4	---	32	6
66 - 69		----	-7.1	9.7	-----	156	---	4
69 - 72		----	-5.3	----	-----	---	---	4
72 - 75		8.7	-----	14.6	-13.8	118	29	5
75 - 78		6.2	-8.1	11.5	-----	127	---	5
78 - 81		10.3	-11.5	----	-----	---	---	9
81 - 84		7.5	-6.2	----	-----	---	---	6
84 - 87		6.5	-----	----	-----	---	---	7
87 - 90		----	-4.3	----	-----	---	---	5
90 - 93		12.7	-7.1	----	-4.0	---	150	7
93 - 96	21,000	7.1	-5.0	----	-11.6	---	146	8
96 - 99		----	-11.5	----	-----	---	---	2
99 - 102		----	-----	----	-----	---	---	0
102 - 105		12.1	-6.8	----	-9.0	---	32	5
105 - 108	21,500	14.9	-10.6	----	-12.2	---	66	8
108 - 111		9.0	-12.7	20.5	-----	66	---	4
111 - 114	22,000	8.7	-8.4	----	-12.4	---	134	6
114 - 117		13.7	-13.4	14.3	-15.2	34	100	6
117 - 120		6.8	-5.3	17.3	-----	116	---	3
120 - 123		----	-7.1	----	-----	---	---	5
123 - 126		21.7	-23.3	----	-----	---	---	6
126 - 129		16.2	-5.6	----	-----	---	---	3
129 - 132	21,500	13.0	-11.5	20.1	-12.0	103	106	5
132 - 135		23.0	-10.3	----	-5.1	---	74	6
135 - 138		----	-----	----	-----	---	---	1
138 - 141		----	-----	----	-----	---	---	0
141 - 144		----	-----	----	-----	---	---	0

[d]Film supply for motion-picture camera exhausted before end of traverse.

NATIONAL ADVISORY
COMMITTEE FOR AERONAUTICS

TABLE I.- SUMMARY OF GUST MEASUREMENTS - Continued

Space interval ft × 10^3	Pressure altitude (ft)	Maximum effective gust velocity $U_{e_{max}}$ (fps)		Maximum true gust velocity $U_{t_{max}}$ (fps)		Gust gradient distance (ft)		No. of gusts
August 12, 1946 - Flight 19								
Airplane 351 Traverse 4	Time (EST) 145430 - (d) Length of traverse 546.9 sec, 178,987 ft Initial heading (deg) 40							
144 - 147	21,500	----	-----	----	-----	---	---	0
147 - 150		----	-----	----	-----	---	---	0
150 - 153		----	-----	----	-----	---	---	0
153 - 156		----	-----	----	-----	---	---	0
156 - 159		----	-----	----	-----	---	---	0
159 - 162		----	-----	----	-----	---	---	0
162 - 165	22,000	----	-----	----	-----	---	---	0
165 - 168		----	-----	----	-----	---	---	0
168 - 171		----	-----	----	-----	---	---	0
171 - 174		----	-----	----	-----	---	---	0
174 - 177		----	-----	----	-9.2	---	332	1
177 - 180		----	-----	----	-----	---	---	1
Airplane 351 Traverse 5	Time (EST) 150813 - (d) Length of traverse 432.3 sec - (e) Initial heading (deg) 200							
0 - 3	21,000	7.1	-4.9	----	-----	---	---	7
3 - 6		14.2	-7.4	28.2	-----	130	---	4
6 - 9		12.3	-5.5	----	-----	---	---	6
9 - 12		20.7	-14.2	----	-----	---	---	13
12 - 15	21,500	7.7	-17.0	----	-17.9	---	61	9
15 - 18		19.4	-10.2	37.8	-----	173	---	8
18 - 21	21,000	7.4	-5.9	----	-----	---	---	5
21 - 24		5.2	-4.9	9.6	-7.4	186	158	2
24 - 27		10.8	-6.2	----	-----	---	---	9
27 - 30		14.8	-----	----	-----	---	---	5
30 - 33	21,500	7.4	-6.8	----	-----	---	---	5
33 - 36		7.4	-8.9	----	-----	---	---	8
36 - 39		----	-6.2	----	-7.6	---	125	5
39 - 42	22,000	7.7	-6.8	18.5	-----	67	---	7
42 - 45		5.9	-5.5	----	-----	---	---	3
45 - 48		17.0	-----	----	-----	---	---	6

[d]Film supply for motion-picture camera exhausted before end of traverse.

[e]Film supply for airspeed-altitude recorder exhausted before end of traverse.

NATIONAL ADVISORY
COMMITTEE FOR AERONAUTICS

TABLE I.- SUMMARY OF GUST MEASUREMENTS - Continued

Space interval ft × 10^3	Pressure altitude (ft)	Maximum effective gust velocity $U_{e_{max}}$ (fps)		Maximum true gust velocity $U_{t_{max}}$ (fps)		Gust gradient distance (ft)		No. of gusts
August 12, 1946 - Flight 19								
Airplane 351 Traverse 5	Time (EST) 150813 - (d) Length of traverse 432.3 sec - (e) Initial heading (deg) 200							
48 - 51	22,000	13.6	-15.7	----	-27.5	---	130	7
51 - 54		13.3	-----	----	-----	---	---	1
54 - 57		6.8	-9.2	20.4	-----	103	---	6
57 - 60		----	-----	----	-----	---	---	1
60 - 63		----	-4.9	----	-----	---	---	6
63 - 66		----	-3.7	----	-----	---	---	5
66 - 69		8.0	-6.2	----	-----	---	---	6
69 - 72		----	-----	----	-----	---	---	1
72 - 75		----	-3.7	----	-----	---	---	3
75 - 78		10.5	-8.6	----	-12.4	---	64	5
78 - 81	22,500	11.4	-5.9	----	-----	---	---	5
81 - 84		6.5	-9.2	----	-----	---	---	5
84 - 87		6.5	-6.5	----	-----	---	---	4
87 - 90		6.5	-----	12.3	-----	157	---	2
90 - 93		----	-----	----	-----	---	---	2
93 - 96		----	-----	----	-----	---	---	3
96 - 99		----	-5.2	13.0	-----	31	---	6
99 - 102		----	-5.2	----	-----	---	---	2
102 - 105	22,000	----	-----	----	-----	---	---	1
105 - 108		----	-----	----	-----	---	---	0
108 - 111		4.9	-4.9	----	-7.7	---	66	5
111 - 114		----	-----	----	-----	---	---	4
114 - 117		----	-----	----	-----	---	---	2
117 - 120		----	-----	----	-----	---	---	1
120 - 123		6.2	-6.2	----	-----	---	---	4
123 - 126		----	-4.0	----	-----	---	---	2
126 - 129		----	-3.7	----	-5.4	---	98	1
129 - 132		6.8	-----	----	-----	---	---	3
[e]132 - 135		----	-----	----	-----	---	---	0

[d]Film supply for motion-picture camera exhausted before end of traverse.

[e]Film supply for airspeed-altitude recorder exhausted before end of traverse.

NATIONAL ADVISORY
COMMITTEE FOR AERONAUTICS

TABLE I.- SUMMARY OF GUST MEASUREMENTS - Continued

Space interval ft × 10^3	Pressure altitude (ft)	Maximum effective gust velocity $U_{e_{max}}$ (fps)		Maximum true gust velocity $U_{t_{max}}$ (fps)		Gust gradient distance (ft)		No. of gusts
August 12, 1946 - Flight 19								
Airplane 347 Traverse 1	Time (EST) 151837 - 152045; Length of traverse - (a); Initial heading (deg) 290							
(a)								
Airplane 344 Traverse 1	Time (EST) 142130 - 142700; Length of traverse 352.9 sec, 83,246 ft; Initial heading (deg) 270							
0 - 3	11,000	----	-----	----	-----	---	---	0
3 - 6		12.4	-13.0	13.3	-14.9	46	97	10
6 - 9		6.3	-5.1	----	-9.6	---	48	5
9 - 12		----	-----	----	-----	---	---	0
12 - 15		----	-----	----	-----	---	---	0
15 - 18		----	-----	----	-----	---	---	1
18 - 21		6.3	-5.4	16.3	-----	46	---	12
21 - 24		11.4	-10.1	----	-7.2	---	48	18
24 - 27		5.4	-9.2	----	-----	---	---	13
27 - 30		11.7	-13.0	----	-----	---	---	9
30 - 33	10,500	14.6	-3.8	----	-10.5	---	97	8
33 - 36	11,000	3.5	-15.2	----	-----	---	---	12
36 - 39		21.2	-14.6	----	-19.0	---	69	8
39 - 42		8.9	-7.3	11.6	-----	78	---	8
42 - 45		8.9	-10.1	12.2	-----	24	---	6
45 - 48		11.7	-6.7	----	-----	---	---	10
48 - 51		10.5	-8.9	----	-----	---	---	5
51 - 54		6.7	-7.0	----	-14.3	---	211	9
54 - 57		5.1	-2.9	----	-----	---	---	5
57 - 60		4.1	-4.4	----	-6.6	---	24	5
60 - 63		5.1	-5.1	----	-11.8	---	69	7
63 - 66		7.6	-7.9	15.2	-11.8	24	94	11
66 - 69		11.1	-3.5	10.5	-6.5	100	81	10
69 - 72		6.0	-9.5	----	-----	---	---	6
72 - 75		3.8	-8.2	----	-----	---	---	6
75 - 78		5.7	-2.9	----	-----	---	---	5
78 - 81		5.7	-----	----	-----	---	---	3
81 - 84		7.3	-6.7	----	-----	---	---	5

[a]Failure in operation of airspeed-altitude recorder prevented computations for gust velocities and lengths of traverses in feet.

NATIONAL ADVISORY
COMMITTEE FOR AERONAUTICS

TABLE I.- SUMMARY OF GUST MEASUREMENTS - Continued

Space interval ft × 10^3	Pressure altitude (ft)	Maximum effective gust velocity $U_{e_{max}}$ (fps)		Maximum true gust velocity $U_{t_{max}}$ (fps)		Gust gradient distance (ft)		No. of gusts
August 12, 1946 - Flight 19								
Airplane 344 Traverse 2	Time (EST) 143300 - 143905 Length of traverse 388.0 sec, 100,856 ft Initial heading (deg) 80							
0 - 3	11,000	----	-----	----	-----	---	---	0
3 - 6		3.2	-6.9	7.7	-----	47	---	4
6 - 9		9.5	-10.1	13.6	-11.3	48	48	7
9 - 12		5.4	-8.2	----	-7.2	---	68	4
12 - 15		----	-5.0	----	-----	---	---	2
15 - 18		8.5	-5.0	----	-7.1	---	49	3
18 - 21		3.2	-8.3	----	-12.9	---	143	9
21 - 24		10.1	-----	9.4	-----	72	---	13
24 - 27		8.5	-8.8	----	-11.4	---	119	8
27 - 30		11.3	-4.1	----	-----	---	---	10
30 - 33		5.7	-5.4	----	-----	---	---	8
33 - 36		6.6	-10.4	----	-----	---	---	8
36 - 39		----	-----	----	-----	---	---	4
39 - 42		6.3	-6.0	10.6	-----	76	---	7
42 - 45		8.2	-16.4	----	-----	---	---	11
45 - 48		8.2	-3.8	6.4	-----	56	---	13
48 - 51		6.0	-5.7	----	-7.7	---	26	12
51 - 54		13.9	-8.8	----	-10.9	---	79	4
54 - 57		11.3	-14.2	----	-----	---	---	9
57 - 60		5.7	-4.1	8.7	-10.0	51	51	9
60 - 63		7.9	-12.9	----	-----	---	---	19
63 - 66		10.1	-10.1	----	-----	---	---	14
66 - 69		7.9	-9.8	----	-----	---	---	21
69 - 72		11.7	-7.9	----	-----	---	---	8
72 - 75		10.7	-10.1	----	-----	---	---	12
75 - 78	10,500	6.6	-10.7	----	-----	---	---	9
78 - 81		7.6	-6.0	----	-10.9	---	56	6
81 - 84		8.5	-10.0	----	-----	---	---	9
84 - 87		8.5	-8.2	----	-----	---	---	10
87 - 90		9.5	-14.5	12.5	-----	56	---	9
90 - 93		5.4	-10.4	----	-----	---	---	12
93 - 96	11,000	12.6	-8.2	5.3	-----	29	---	11
96 - 99	10,500	11.0	-2.5	----	-----	---	---	11
99 - 102		4.4	-5.7	----	-----	---	---	4

NATIONAL ADVISORY
COMMITTEE FOR AERONAUTICS

TABLE I.- SUMMARY OF GUST MEASUREMENTS - Continued

Space interval ft × 10^3	Pressure altitude (ft)	Maximum effective gust velocity $U_{e_{max}}$ (fps)		Maximum true gust velocity $U_{t_{max}}$ (fps)		Gust gradient distance (ft)		No. of gusts
August 12, 1946 - Flight 19								
Airplane 344 Traverse 3	Time (EST) 144552 - (d); Length of traverse 371.6 sec - (e); Initial heading (deg) 240							
0 - 3	10,500	14.1	-11.6	----	-11.4	---	27	13
3 - 6		8.1	-18.1	----	-----	---	---	20
6 - 9	11,000	12.2	-8.8	----	-----	---	---	11
9 - 12		24.7	-5.3	9.6	-----	82	---	10
12 - 15		15.6	-5.6	----	-----	---	---	10
15 - 18		10.3	-13.4	15.7	-----	49	---	12
18 - 21		9.7	-13.1	----	-----	---	---	8
21 - 24		10.3	-11.9	----	-----	---	---	14
24 - 27		9.1	-3.1	----	-8.1	---	70	7
27 - 30	11,500	3.1	-6.3	----	-15.3	---	127	13
30 - 33		7.8	-7.5	----	-----	---	---	6
33 - 36		7.5	-8.8	----	-----	---	---	7
36 - 39		2.8	-6.3	----	-9.8	---	78	6
39 - 42		----	-4.7	----	-----	---	---	2
42 - 45		10.3	-3.4	----	-----	---	---	5
45 - 48		7.8	-5.3	----	-----	---	---	7
48 - 51		6.3	-4.1	----	-----	---	---	7
51 - 54		----	-----	----	-----	---	---	3
54 57		8.4	-----	5.7	-----	111	---	5
57 - 60		7.8	-5.0	----	-----	---	---	14
60 - 63		7.2	-6.9	----	-----	---	---	6
63 - 66		4.4	-3.8	----	-----	---	---	7
66 - 69		3.8	-5.0	5.2	-8.5	51	51	4
69 - 72		6.9	-6.3	15.5	-----	50	---	8
72 - 75		2.8	-6.9	----	-----	---	---	6
75 - 78		6.6	-5.0	7.9	-11.7	108	54	9
78 - 81		7.2	-4.4	----	-----	---	---	9
[e]81 - 84		4.1	-----	8.8	-----	53	---	5

[d]Film supply for motion-picture camera exhausted before end of traverse.

[e]Film supply for airspeed-altitude recorder exhausted before end of traverse 3.

NATIONAL ADVISORY
COMMITTEE FOR AERONAUTICS

TABLE I.- SUMMARY OF GUST MEASUREMENTS - Continued

Space interval ft × 10^3	Pressure altitude (ft)	Maximum effective gust velocity $U_{e_{max}}$ (fps)	Maximum true gust velocity $U_{t_{max}}$ (fps)	Gust gradient distance (ft)	No. of gusts
August 12, 1946 - Flight 19					
Airplane 344 Traverse 4	Time (EST) 145830 - (d) Length of traverse 504.0 sec - (e) Initial heading (deg) 50				
(e)					
Airplane 344 Traverse 5	Time (EST) 151310 - 151910 Length of traverse - (e) Initial heading (deg) 220				
(e)					
Airplane 331 Traverse 1	Time (EST) 142420 - 142855 Length of traverse 260.4 sec - (a) Initial heading (deg) 260				
(a)					
Airplane 331 Traverse 2	Time (EST) 143653 - 144103 Length of traverse 270.5 sec - (a) Initial heading (deg) 80				
(a)					
Airplane 331 Traverse 3	Time (EST) 144452 - 145125 Length of traverse 397.0 sec - (a) Initial heading (deg) 240				
(a)					
Airplane 331 Traverse 4	Time (EST) 145654 - 150311 Length of traverse 253 sec - (a) Initial heading (deg) 40				
(a)					

[a]Failure in operation of airspeed-altitude recorder prevented computations for gust velocities and lengths of traverses in feet.

[d]Film supply for camera exhausted before end of traverse.

[e]Film supply for airspeed-altitude recorder exhausted before end of traverse 3.

NATIONAL ADVISORY
COMMITTEE FOR AERONAUTICS

TABLE I - SUMMARY OF GUST MEASUREMENTS - Continued

Space interval ft × 10^3	Pressure altitude (ft)	Maximum effective gust velocity $U_{e_{max}}$ (fps)		Maximum true gust velocity $U_{t_{max}}$ (fps)		Gust gradient distance (ft)		No. of gusts
August 12, 1946 - Flight 19								
Airplane 331 Traverse 5	Time (EST) 151020 - (d) Length of traverse 515 sec - (a) Initial heading (deg) 200							
(a)								
August 13, 1946 - Flight 20								
Airplane 351 Traverse 1	Time (EST) 163454 - 164035 Length of traverse 410.4 sec, 144,376 ft Initial heading (deg) 20							
0 - 3	26,000	5.4	-----	----	-----	---	---	1
3 - 6		----	-10.8	----	-----	---	---	4
6 - 9		7.0	-5.4	----	-12.1	---	64	2
9 - 12		8.2	-7.6	----	-----	---	---	3
12 - 15		----	-----	----	-----	---	---	0
15 - 18		----	-----	----	-----	---	---	0
18 - 21		5.4	-----	----	-----	---	---	1
21 - 24		7.9	-2.9	----	-----	---	---	2
24 - 27		8.6	-7.6	----	-----	---	---	4
27 - 30		7.3	-8.9	----	-----	---	---	2
30 - 33		6.7	-8.9	22.6	-----	297	---	2
33 - 36		5.7	-11.1	----	-----	---	---	5
36 - 39		12.4	-10.5	----	-----	---	---	7
39 - 42		14.3	-5.1	----	-----	---	---	6
42 - 45	26,500	9.8	-15.2	----	-----	---	---	5
45 - 48		----	-4.8	----	-----	---	---	1
48 - 51	27,000	----	-----	----	-----	---	---	0
51 - 54		----	-----	----	-----	---	---	0
54 - 57		----	-4.1	----	-21.2	---	347	1
57 - 60		----	-5.4	----	-----	---	---	1
60 - 63		----	-----	----	-----	---	---	0
63 - 66		----	-----	----	-----	---	---	0
66 - 69		----	-----	----	-----	---	---	0
69 - 72		6.3	-8.2	12.9	-----	238	---	2

[a]Failure in operation of airspeed-altitude recorder prevented computations for gust velocities and lengths of traverses in feet

[d]Film supply for camera exhausted before end of traverse.

NATIONAL ADVISORY
COMMITTEE FOR AERONAUTICS

TABLE I.- SUMMARY OF GUST MEASUREMENTS - Continued

Space interval ft × 10^3	Pressure altitude (ft)	Maximum effective gust velocity $U_{e_{max}}$ (fps)		Maximum true gust velocity $U_{t_{max}}$ (fps)		Gust gradient distance (ft)		No. of gusts
August 13, 1946 - Flight 20								
Airplane 351 Traverse 1	Time (EST) 163454 - 164035 Length of traverse 410.4 sec, 144,376 ft Initial heading (deg) 20							
72 - 75	27,000	6.7	-5.1	----	-----	---	---	2
75 - 78		8.9	-6.0	----	-----	---	---	5
78 - 81		9.5	-9.8	----	-----	---	---	3
81 - 84		13.3	-7.6	----	-----	---	---	10
84 - 87		8.6	-12.4	----	-----	---	---	3
87 - 90		9.8	-9.2	----	-----	---	---	2
90 - 93	27,500	9.8	-4.8	12.6	-----	77	---	4
93 - 96		9.5	-5.4	17.3	-19.6	38	148	5
96 - 99		11.4	-11.7	----	-----	---	---	7
99 - 102		----	-12.7	----	-----	---	---	2
102 - 105	28,000	13.6	-13.0	----	-----	---	---	6
105 - 108		9.5	-----	----	-----	---	---	1
108 - 111		7.9	-9.5	----	-----	---	---	5
111 - 114		9.8	-----	20.4	-----	148	---	2
114 - 117		----	-8.6	----	-----	---	---	2
117 - 120		6.0	-7.9	17.1	-----	219	---	4
120 - 123		7.3	-3.8	12.6	-----	145	---	3
123 - 126		----	-----	----	-----	---	---	0
126 - 129		----	-5.1	----	-----	---	---	1
129 - 132	28,500	----	-5.4	----	-11.3	---	207	1
132 - 135		----	-----	----	-----	---	---	0
135 - 138		----	-5.4	----	-----	---	---	1
138 - 141	28,000	----	-----	----	-----	---	---	0
141 - 144		----	-----	----	-----	---	---	0
144 - 147		----	-----	----	-----	---	---	0
Airplane 351 Traverse 2	Time (EST) 165902 - 170320 Length of traverse 272.1 sec, 91,011 ft Initial heading (deg) 140							
0 - 3	26,000	13.1	-7.8	----	-----	---	---	4
3 - 6		8.1	-14.4	15.6	-----	62	---	2
6 - 9		18.7	-5.3	----	-----	---	---	5
9 - 12		18.4	-9.4	----	-----	---	---	7
12 - 15		6.6	-10.0	----	-----	---	---	5

NATIONAL ADVISORY
COMMITTEE FOR AERONAUTICS

TABLE I.- SUMMARY OF GUST MEASUREMENTS - Continued

Space interval ft x 10^3	Pressure altitude (ft)	Maximum effective gust velocity $U_{e_{max}}$ (fps)		Maximum true gust velocity $U_{t_{max}}$ (fps)		Gust gradient distance (ft)		No. of gusts
August 13, 1946 Flight 20								
Airplane 351 Traverse 2	Time (EST) 165902 - 170320 Length of traverse 272.1 sec, 91,011 ft Initial heading (deg) 140							
15 - 18	26,000	9.4	-11.9	----	-21.7	---	292	3
18 - 21		7.5	-10.3	----	-----	---	---	7
21 - 24		(f)						
Airplane 351 Traverse 3	Time (EST) 171058 - 171640 Length of traverse 440.3 sec, 155,937 ft Initial heading (deg) 270							
		(f)						
Airplane 351 Traverse 4	Time (EST) 172202 - 172240 Length of traverse 42.0 sec, 15,399 ft Initial heading (deg) 90							
0 - 3	26,000	----	-----	----	-----	---	---	0
3 - 6		----	-----	----	-----	---	---	0
6 - 9		----	-----	----	-----	---	---	0
9 - 12		4.9	-----	----	-----	---	---	1
12 - 15		2.8	-4.6	----	-----	---	---	2
15 - 18		----	-----	----	-----	---	---	0
Airplane 351 Traverse 5	Time (EST) 172550 - 172731 Length of traverse 118.6 sec, 45,956 ft Initial heading (deg) 90							
0 - 3	26,000	----	-----	----	-----	---	---	0
3 - 6		----	-----	----	-----	---	---	0
6 - 9		----	-----	----	-----	---	---	0
9 - 12		----	-----	----	-----	---	---	0
12 - 15		----	-----	----	-----	---	---	0
15 - 18		10.4	-12.3	----	-----	---	---	6
18 - 21		16.3	-4.3	----	-----	---	---	6
21 - 24	26,500	12.6	-6.1	----	-----	---	---	9
24 - 27		----	-7.7	----	-----	---	---	1

[f]Failure in operation of accelerometer prevented further computations for gust velocities.

NATIONAL ADVISORY
COMMITTEE FOR AERONAUTICS

TABLE I.- SUMMARY OF GUST MEASUREMENTS - Continued

Space interval ft × 10^3	Pressure altitude (ft)	Maximum effective gust velocity $U_{e_{max}}$ (fps)		Maximum true gust velocity $U_{t_{max}}$ (fps)		Gust gradient distance (ft)		No. of gusts
August 13, 1946 - Flight 20								
Airplane 351 Traverse 5	Time (EST) 172550 - 172731; Length of traverse 118.6 sec, 45,956 ft; Initial heading (deg) 90							
27 - 30	26,500	----	-10.1	----	-----	---	---	2
30 - 33		----	-----	----	-----	---	---	0
33 - 36		----	-----	----	-----	---	---	0
36 - 39		----	-----	----	-----	---	---	0
39 - 42		----	-----	----	-----	---	---	0
42 - 45		----	-----	----	-----	---	---	0
45 - 48		----	-----	----	-----	---	---	0
Airplane 347 Traverse 1	Time (EST) - (c); Length of traverse 150.5 sec, 55,465 ft; Initial heading (deg) 360							
0 - 3	21,000	8.6	-6.4	9.1	-----	144	---	5
3 - 6		8.6	-5.1	----	-----	---	---	6
6 - 9		4.1	-3.2	----	-----	---	---	5
9 - 12		7.3	-8.3	----	-13.3	---	253	7
12 - 15		7.0	-9.2	----	-----	---	---	6
15 - 18		5.7	-----	----	-----	---	---	1
18 - 21		2.9	-2.2	----	-----	---	---	2
21 - 24		3.2	-1.9	----	-5.9	---	73	2
24 - 27		3.8	-2.2	----	-----	---	---	2
27 - 30		----	-2.5	----	-----	---	---	1
30 - 33		6.4	-10.5	----	-----	---	---	5
33 - 36		10.2	-7.6	----	-----	---	---	4
36 - 39		12.4	-14.9	----	-----	---	---	5
39 - 42		12.7	-7.3	----	-----	---	---	7
42 - 45		6.0	-5.7	----	-----	---	---	6
45 - 48	22,000	4.8	-7.0	----	-----	---	---	5
48 - 51		9.2	-4.8	----	-----	---	---	6
51 - 54		6.4	-9.2	----	-----	---	---	6
54 - 57		----	-2.2	----	-----	---	---	1

[c]Clock not in field of view of motion-picture camera.

NATIONAL ADVISORY
COMMITTEE FOR AERONAUTICS

TABLE I.- SUMMARY OF GUST MEASUREMENTS - Continued

Space interval ft × 10^3	Pressure altitude (ft)	Maximum effective gust velocity $U_{e_{max}}$ (fps)		Maximum true gust velocity $U_{t_{max}}$ (fps)		Gust gradient distance (ft)		No. of gusts
August 13, 1946 - Flight 20								
Airplane 347 Traverse 2	Time (EST) - (c) Length of traverse 139.5 sec, 47,954 ft Initial heading (deg) 90							
0 - 3	20,500	3.4	-2.8	5.3	-----	142	---	6
3 - 6		5.0	-5.3	6.9	-15.1	71	314	4
6 - 9		4.4	-4.4	----	-----	---	---	4
9 - 12		5.0	-----	----	-----	---	---	1
12 - 15		----	-----	----	-----	---	---	0
15 - 18		1.9	-4.0	----	-----	---	---	2
18 - 21		6.2	-----	9.8	-----	214	---	3
21 - 24	21,000	5.9	-4.7	----	-----	---	---	2
24 - 27		3.1	-4.4	----	-12.1	---	207	5
27 - 30		5.9	-4.7	----	-13.1	---	105	5
30 - 33		3.1	-4.4	----	-----	---	---	3
33 - 36		----	-5.9	----	-----	---	---	3
36 - 39		10.0	-5.0	18.9	-----	132	---	6
39 - 42		2.5	-4.7	----	-----	---	---	2
42 - 45		7.8	-3.1	----	-----	---	---	2
45 - 48		2.5	-5.0	8.7	-----	342	---	4
Airplane 347 Traverse 3	Time (EST) - (c) Length of traverse 182.5 sec, 64,664 ft Initial heading (deg) 250							
0 - 3	21,000	----	-2.2	----	-----	---	---	1
3 - 6		3.7	-2.8	----	-----	---	---	3
6 - 9		5.6	-----	----	-----	---	---	1
9 - 12		2.5	-3.7	----	-----	---	---	3
12 - 15		6.5	-2.5	----	-----	---	---	3
15 - 18		2.8	-3.7	----	-5.3	---	109	3
18 - 21	21,500	----	-5.3	----	-----	---	---	2
21 - 24		4.0	-2.5	8.3	-----	417	---	4
24 - 27		5.0	-6.5	----	-9.4	---	171	4
27 - 30		3.4	-4.3	11.1	-----	142	---	2
30 - 33		4.7	-4.7	----	-----	---	---	7
33 - 36		6.2	-9.6	----	-18.6	---	286	5
36 - 39		15.2	-2.8	9.1	-----	106	---	5

[c]Clock not in field of view of motion-picture camera.

NATIONAL ADVISORY
COMMITTEE FOR AERONAUTICS

TABLE I - SUMMARY OF GUST MEASUREMENTS - Continued

Space interval ft × 10^3	Pressure altitude (ft)	Maximum effective gust velocity $U_{e_{max}}$ (fps)		Maximum true gust velocity $U_{t_{max}}$ (fps)		Gust gradient distance (ft)		No. of gusts
August 13, 1946 - Flight 20								
Airplane 347 Traverse 3	Time (EST) - (c) Length of traverse 182.5 sec, 64,664 ft Initial heading (deg) 250							
39 - 42		4.0	-7.5	----	-----	---	---	7
42 - 45		16.5	-5.6	----	-----	---	---	4
45 - 48		13.0	-19.6	----	-----	---	---	7
48 - 51		11.2	-7.8	35.3	-----	381	---	4
51 - 54	22,500	12.4	-19.9	25.2	-----	244	---	8
54 - 57		4.3	-8.7	----	-----	---	---	4
57 - 60		13.0	-4.7	18.9	-----	104	---	4
60 - 63		9.6	-9.6	21.5	-----	174	---	6
63 - 66		----	-4.3	----	-----	---	---	1
Airplane 347 Traverse 4	Time (EST) - (b) Length of traverse 263.3 sec, 94,316 ft Initial heading (deg) - (b)							
0 - 3	21,000	----	-----	----	-----	---	---	0
3 - 6		----	-----	----	-----	---	---	0
6 - 9		----	-----	----	-----	---	---	0
9 - 12		----	-----	----	-----	---	---	0
12 - 15		2.8	-----	----	-----	---	---	1
15 - 18		----	-----	----	-----	---	---	0
18 - 21		6.8	-6.2	----	-15.8	---	244	5
21 - 24		17.3	-20.4	----	-----	---	---	8
24 - 27		21.0	-10.8	----	-----	---	---	7
27 - 30	21,500	8.0	-5.6	13.8	-----	108	---	6
30 - 33		4.9	-7.4	----	-----	---	---	6
33 - 36		3.4	-2.5	----	-----	---	---	3
36 - 39	22,000	----	-----	----	-----	---	---	0
39 - 42		----	-----	----	-----	---	---	0
42 - 45		----	-----	----	-----	---	---	0
45 - 48		7.4	-2.5	----	-----	---	---	2
48 - 51		11.1	-22.5	----	-----	---	---	6
51 - 54		14.5	-5.9	----	-----	---	---	8

[b]No motion-picture records obtained.

[c]Clock not in field of view of motion-picture camera.

NATIONAL ADVISORY
COMMITTEE FOR AERONAUTICS

TABLE I.- SUMMARY OF GUST MEASUREMENTS - Continued

Space interval ft × 10^3	Pressure altitude (ft)	Maximum effective gust velocity $U_{e_{max}}$ (fps)		Maximum true gust velocity $U_{t_{max}}$ (fps)		Gust gradient distance (ft)		No. of gusts
August 13, 1946 - Flight 20								
Airplane 347 Traverse 4	Time (EST) - (b); Length of traverse 263.3 sec, 94,316 ft; Initial heading (deg) - (b)							
54 - 57	22,000	11.4	-11.1	----	-21.1	---	152	7
57 - 60		9.3	-6.8	----	-----	---	---	9
60 - 63		9.6	-6.8	----	-13.6	---	218	6
63 - 66		6.2	-7.1	----	-----	---	---	5
66 - 69	22,500	3.1	-4.9	----	-----	---	---	7
69 - 72		2.5	-2.5	----	-----	---	---	4
72 - 75		4.6	-7.1	----	-16.7	---	401	2
75 - 78		6.2	-4.9	----	-----	---	---	4
78 - 81		----	-----	----	-----	---	---	0
81 - 84		4.0	-----	11.9	-----	70	---	2
84 - 87		4.3	-2.8	----	-8.9	---	216	5
87 - 90	22,000	----	-4.6	----	-4.6	---	74	3
90 - 93		4.9	-4.0	9.4	-7.8	189	266	2
93 - 96		----	-----	----	-----	---	---	0
Airplane 344 Traverse 1	Time (EST) 163330 - 163353; Length of traverse 28.0 sec - (a); Initial heading (deg) 280							
		(a)						
Airplane 344 Traverse 2	Time (EST) 163514 - 163814; Length of traverse 185.0 sec - (a); Initial heading (deg) 20							
		(a)						
Airplane 344 Traverse 3	Time (EST) 165345 - 165902; Length of traverse 338.8 sec - (a); Initial heading (deg) 90							
		(a)						

[a]Failure in operation of airspeed-altitude recorder prevented computations for gust velocities and lengths of traverses in feet.

[b]No motion-picture records obtained.

NATIONAL ADVISORY
COMMITTEE FOR AERONAUTICS

TABLE I.- SUMMARY OF GUST MEASUREMENTS - Continued

Space interval ft × 10^3	Pressure altitude (ft)	Maximum effective gust velocity $U_{e_{max}}$ (fps)		Maximum true gust velocity $U_{t_{max}}$ (fps)		Gust gradient distance (ft)		No. of gusts
August 13, 1946 - Flight 20								
Airplane 344 Traverse 4	Time (EST) 170622 - 170850 Length of traverse 169.1 sec - (a) Initial heading (deg) 250							
		(a)						
Airplane 344 Traverse 5	Time (EST) - (b) Length of traverse 162.4 sec - (a) Initial heading (deg) - (b)							
		(a)						
Airplane 327 Traverse 1	Time (EST) 162816 - 163100 Length of traverse 224.5 sec, 70,579 ft Initial heading (deg) 350							
0 - 3	11,000	9.3	-2.9	----	-----	---	---	3
3 - 6		13.8	-11.8	----	-----	---	---	5
6 - 9		11.8	-12.2	----	-----	---	---	4
9 - 12		18.9	-3.8	----	-----	---	---	5
12 - 15		15.0	-15.7	----	-----	---	---	9
15 - 18	11,500	15.0	-11.5	----	-----	---	---	3
18 - 21		11.2	-8.3	29.3	-----	---	292	6
21 - 24		17.3	-5.1	----	-----	---	---	6
24 - 27		----	-----	----	-----	---	---	0
27 - 30		----	-3.8	----	-4.0	---	66	2
30 - 33		9.9	-8.0	19.0	-20.0	161	226	5
33 - 36		15.0	-8.3	----	-----	---	---	5
36 - 39	12,000	8.6	-5.8	----	-----	---	---	4
39 - 42		12.8	-5.1	12.9	-11.0	148	29	7
42 - 45		11.2	-9.6	----	-10.1	---	54	5
45 - 48		8.0	-11.8	----	-----	---	---	6
48 - 51		----	-6.4	----	-11.0	---	245	1
51 - 54		4.8	-7.0	----	-5.5	---	92	4
54 - 57		10.9	-4.5	13.2	-----	97	---	4
57 - 60		7.7	-13.1	----	-----	---	---	6
60 - 63		9.0	-8.3	11.7	-----	131	---	4

[a]Failure in operation of airspeed-altitude recorder prevented computations for gust velocities and lengths of traverses in feet.

[b]No motion-picture records obtained.

NATIONAL ADVISORY
COMMITTEE FOR AERONAUTICS

TABLE I.- SUMMARY OF GUST MEASUREMENTS - Continued

Space interval ft × 10^3	Pressure altitude (ft)	Maximum effective gust velocity $U_{e_{max}}$ (fps)		Maximum true gust velocity $U_{t_{max}}$ (fps)		Gust gradient distance (ft)		No. of gusts
August 13, 1946 - Flight 20								
Airplane 327 Traverse 1	Time (EST) 162816 - 163100; Length of traverse 224.5 sec, 70,579 ft; Initial heading (deg) 350							
63 - 66	12,000	7.7	-6.7	----	-----	---	---	3
66 - 69		7.4	-2.2	----	-----	---	---	3
69 - 72		----	-2.9	----	-----	---	---	1
Airplane 327 Traverse 2	Time (EST) - (b); Length of traverse 119.7 sec, 31,475 ft; Initial heading (deg) - (b)							
0 - 3	11,000	6.3	-----	----	-----	---	---	0
3 - 6		13.6	-18.3	14.2	-----	78	---	5
6 - 9		12.6	-8.5	----	-----	---	---	9
9 - 12	11,500	23.7	-17.0	----	-----	---	---	5
12 - 15		20.5	-9.8	----	-----	---	---	7
15 - 18		16.7	-18.6	----	-57.5	---	403	5
18 - 21		12.3	-6.9	----	-----	---	---	3
21 - 24		18.0	-10.7	----	-----	---	---	5
24 - 27		13.6	-9.5	----	-17.9	---	52	5
27 - 30		14.5	-3.5	----	-----	---	---	2
30 - 33		----	-----	----	-----	---	---	0
Airplane 327 Traverse 3	Time (EST) - (b); Length of traverse 193.7 sec, 52,619 ft; Initial heading (deg) - (b)							
0 - 3	11,000	9.4	-6.3	----	-----	---	---	5
3 - 6		10.0	-8.8	----	-----	---	---	9
6 - 9		18.8	-12.2	35.3	-32.2	143	175	5
9 - 12	11,500	9.1	-24.8	16.9	-26.7	55	55	5
12 - 15		5.6	-----	----	-----	---	---	1
15 - 18		----	-----	----	-----	---	---	0
18 - 21		5.0	-----	----	-----	---	---	1
21 - 24		9.4	-4.4	----	-5.7	---	132	3
24 - 27		16.6	-9.1	----	-----	---	---	4
27 - 30		9.1	-4.4	----	-----	---	---	5

[b]No motion-picture records obtained.

NATIONAL ADVISORY
COMMITTEE FOR AERONAUTICS

TABLE I.- SUMMARY OF GUST MEASUREMENTS - Continued

Space interval ft × 10^3	Pressure altitude (ft)	Maximum effective gust velocity $U_{e_{max}}$ (fps)		Maximum true gust velocity $U_{t_{max}}$ (fps)		Gust gradient distance (ft)		No. of gusts
August 13, 1946 – Flight 20								
Airplane 327 Traverse 3	Time (EST) - (b) Length of traverse 193.7 sec, 52,619 ft Initial heading (deg) - (b)							
30 - 33	11,500	8.5	-6.9	14.7	-----	87	---	1
33 - 36		5.3	-4.4	11.5	-8.8	82	164	4
36 - 39		8.5	-2.5	----	-7.1	---	85	3
39 - 42		7.2	-3.4	----	-----	---	---	5
42 - 45		----	-----	----	-----	---	---	0
45 - 48		----	-----	----	-----	---	---	0
48 - 51		----	-----	----	-----	---	---	0
51 - 54		6.9	-----	----	-----	---	---	1
Airplane 327 Traverse 4	Time (EST) - (b) Length of traverse 370.3 sec, 115,633 ft Initial heading (deg) - (b)							
0 - 3	11,000	----	-----	----	-----	---	---	1
3 - 6		----	-----	----	-----	---	---	0
6 - 9		6.2	-----	----	-----	---	---	1
9 - 12		----	-----	----	-----	---	---	0
12 - 15		----	-----	----	-----	---	---	0
15 - 18		----	-----	----	-----	---	---	0
18 - 21		----	-2.8	----	-----	---	---	1
21 - 24		----	-----	----	-----	---	---	0
24 - 27		3.7	-----	----	-----	---	---	1
27 - 30		----	-----	----	-----	---	---	0
30 - 33		----	-----	----	-----	---	---	0
33 - 36		----	-----	----	-----	---	---	0
36 - 39		----	-----	----	-----	---	---	0
39 - 42		----	-----	----	-----	---	---	0
42 - 45		----	-----	----	-----	---	---	0
45 - 48		----	-----	----	-----	---	---	0
48 - 51		----	-----	----	-----	---	---	0
51 - 54		----	-----	----	-----	---	---	0
54 - 57		----	-----	----	-----	---	---	0
57 - 60		----	-----	----	-----	---	---	0
60 - 63		----	-----	----	-----	---	---	0
63 - 66		4.4	-----	----	-----	---	---	1

[b]No motion-picture records obtained.

NATIONAL ADVISORY
COMMITTEE FOR AERONAUTICS

TABLE I.- SUMMARY OF GUST MEASUREMENTS - Continued

Space interval ft × 10^3	Pressure altitude (ft)	Maximum effective gust velocity $U_{e_{max}}$ (fps)		Maximum true gust velocity $U_{t_{max}}$ (fps)		Gust gradient distance (ft)		No. of gusts
August 13, 1946 - Flight 20								
Airplane 327 Traverse 4	Time (EST) - (b) Length of traverse 370.3 sec, 115,633 ft Initial heading (deg) - (b)							
66 - 69	11,000	----	-----	----	-----	---	---	0
69 - 92		----	-----	----	-----	---	---	1
72 - 75		----	-----	----	-----	---	---	0
75 - 78		5.6	-6.2	----	-----	---	---	3
78 - 81		12.2	-4.1	12.8	-----	89	---	3
81 - 84		7.2	-----	----	-----	---	---	2
84 - 87		3.1	-----	----	-----	---	---	1
87 - 90		----	-----	----	-----	---	---	1
90 - 93		5.6	-7.8	----	-----	---	---	2
93 - 96		6.2	-----	----	-----	---	---	1
96 - 99		----	-----	----	-----	---	---	0
99 - 102		----	-----	----	-----	---	---	0
102 - 105		----	-----	----	-----	---	---	0
105 - 108		----	-----	----	-----	---	---	0
108 - 111		----	-----	----	-----	---	---	0
111 - 114		----	-----	----	-----	---	---	0
114 - 117		----	-----	----	-----	---	---	0
Airplane 331 Traverse 1	Time (EST) 162647 - 163253 Length of traverse 452.6 sec, 128,748 ft Initial heading (deg) 340							
0 - 3	5,500	3.5	-2.9	----	-----	---	---	4
3 - 6		----	-2.9	----	-----	---	---	5
6 - 9		2.9	-2.9	----	-6.9	---	29	6
9 - 12		2.9	-6.1	----	-----	---	---	6
12 - 15		8.0	-2.9	9.9	-8.2	30	30	6
15 - 18		9.0	-7.4	----	-----	---	---	7
18 - 21		7.7	-4.5	----	-----	---	---	4
21 - 24		3.8	-5.1	----	-----	---	---	4
24 - 27		6.1	-4.5	----	-----	---	---	4
27 - 30		4.5	-4.5	12.2	-----	86	---	4
30 - 33		3.8	-4.5	----	-5.9	---	59	7
33 - 36		4.5	-7.1	----	-----	---	---	4
36 - 39		9.6	-2.9	15.1	-----	119	---	5

[b]No motion-picture records obtained.

NATIONAL ADVISORY
COMMITTEE FOR AERONAUTICS

TABLE I.- SUMMARY OF GUST MEASUREMENTS - Continued

Space interval ft × 10^3	Pressure altitude (ft)	Maximum effective gust velocity $U_{e_{max}}$ (fps)		Maximum true gust velocity $U_{t_{max}}$ (fps)		Gust gradient distance (ft)		No. of gusts
August 13, 1946 - Flight 20								
Airplane 331 Traverse 1	Time (EST) 162647 - 163253 Length of traverse 452.6 sec, 128,748 ft Initial heading (deg) 340							
39 - 42	5,500	7.4	-12.5	15.7	-----	148	---	9
42 - 45		13.1	-8.0	12.7	-----	161	---	5
45 - 48		15.4	-9.0	----	-----	---	---	7
48 - 51		7.4	-5.4	----	-----	---	---	7
51 - 54		11.5	-3.2	17.9	-----	199	---	4
54 - 57		6.7	-3.2	11.5	-----	53	---	7
57 - 60		----	-----	----	-----	---	---	0
60 - 63		8.3	-----	9.3	-----	136	---	3
63 - 66	6,000	4.2	-12.5	----	-19.3	---	159	6
66 - 69		11.5	-7.7	----	-----	---	---	7
69 - 72	5,500	8.0	-3.2	12.2	-----	141	---	4
72 - 75		8.3	-9.6	----	-10.9	---	68	5
75 - 78		5.8	-3.5	----	-----	---	---	3
78 - 81		10.6	-9.0	12.0	-----	29	---	7
81 - 84		5.8	-2.2	----	-----	---	---	2
84 - 87		----	-----	----	-----	---	---	0
87 - 90		3.8	-----	----	-----	---	---	4
90 - 93		----	-----	----	-----	---	---	0
93 - 96		----	-----	----	-----	---	---	0
96 - 99		11.2	-11.5	----	-----	---	---	4
99 - 102		9.3	-2.9	----	-----	---	---	7
102 - 105		----	-3.8	----	-----	---	---	2
105 - 108		3.8	-3.2	8.0	-----	174	---	3
108 - 111		3.8	-----	7.6	-----	28	---	4
111 - 114		11.9	-4.5	20.6	-----	141	---	4
114 - 117		----	-7.7	----	-----	---	---	1
117 - 120		4.5	-2.9	----	-4.6	---	88	6
120 - 123		----	-4.5	----	-----	---	---	3
123 - 126		----	-3.2	----	-----	---	---	1
126 - 129		3.8	-5.4	----	-----	---	---	4

NATIONAL ADVISORY
COMMITTEE FOR AERONAUTICS

TABLE I.- SUMMARY OF GUST MEASUREMENTS - Continued

Space interval ft × 10^3	Pressure altitude (ft)	Maximum effective gust velocity $U_{e_{max}}$ (fps)		Maximum true gust velocity $U_{t_{max}}$ (fps)		Gust gradient distance (ft)		No. of gusts
August 13, 1946 - Flight 20								
Airplane 331 Traverse 2	Time (EST) 164758 - 165321 Length of traverse 345.9 sec, 91,692 ft Initial heading (deg) 100							
0 - 3	6,000	----	-----	----	-----	---	---	0
3 - 6		5.1	-----	----	-----	---	---	4
6 - 9		----	-----	----	-----	---	---	0
9 - 12		----	-----	----	-----	---	---	0
12 - 15		----	-----	----	-----	---	---	0
15 - 18		----	-----	----	-----	---	---	0
18 - 21		----	-----	----	-----	---	---	0
21 - 24		----	-----	----	-----	---	---	0
24 - 27		----	-----	----	-----	---	---	0
27 - 30		4.7	-----	8.5	-----	39	---	1
30 - 33		----	-----	----	-----	---	---	0
33 - 36		----	-3.5	----	-----	---	---	1
36 - 39		----	-3.5	----	-----	---	---	2
39 - 42		4.4	-----	7.2	-----	76	---	1
42 - 45		3.5	-4.1	----	-----	---	---	4
45 - 48		----	-3.5	----	-----	---	---	1
48 - 51		----	-----	----	-----	---	---	0
51 - 54		----	-----	----	-----	---	---	0
54 - 57		----	-----	----	-----	---	---	0
57 - 60		----	-----	----	-----	---	---	0
60 - 63		7.3	-----	----	-----	---	---	1
63 - 66		----	-7.3	----	-11.3	---	163	1
66 - 69		----	-3.2	----	-----	---	---	2
69 - 72		6.3	-6.3	----	-----	---	---	8
72 - 75		3.5	-13.3	----	-27.5	---	339	7
75 - 78		10.4	-14.2	----	-----	---	---	6
78 - 81		----	-9.2	----	-----	---	---	1
81 - 84		----	-----	----	-----	---	---	0
84 - 87		----	-4.1	----	-----	---	---	1
87 - 90		----	-----	----	-----	---	---	0
90 - 93		----	-4.1	----	-----	---	---	1

NATIONAL ADVISORY
COMMITTEE FOR AERONAUTICS

TABLE I.- SUMMARY OF GUST MEASUREMENTS - Continued

Space interval ft × 10^3	Pressure altitude (ft)	Maximum effective gust velocity $U_{e_{max}}$ (fps)		Maximum true gust velocity $U_{t_{max}}$ (fps)		Gust gradient distance (ft)		No. of gusts
August 13, 1946 - Flight 20								
Airplane 331 Traverse 3	Time (EST) 170145 - 170508 Length of traverse 224.9 sec, 58,200 ft Initial heading (deg) 270							
0 - 3	6,000	6.0	-7.5	----	-----	---	---	3
3 - 6		3.1	-3.5	----	-----	---	---	5
6 - 9		4.1	-4.7	----	-----	---	---	4
9 - 12		6.9	-----	----	-----	---	---	3
12 - 15		----	-----	----	-----	---	---	0
15 - 18		----	-----	----	-----	---	---	0
18 - 21		6.3	-3.1	----	-----	---	---	6
21 - 24		3.1	-6.3	----	-8.3	---	54	4
24 - 27		9.7	-9.7	6.4	-18.4	107	163	6
27 - 30		----	-4.1	----	-----	---	---	2
30 - 33		4.7	-----	----	-----	---	---	1
33 - 36		4.7	-6.3	----	-8.8	---	136	3
36 - 39	5,500	8.2	-8.2	----	-8.4	---	52	4
39 - 42		4.1	-4.1	----	-7.0	---	52	4
42 - 45		3.1	-3.5	5.0	-8.0	76	78	3
45 - 48		3.5	-3.5	----	-----	---	---	3
48 - 51		----	-----	----	-----	---	---	0
51 - 54	6,000	----	-4.7	----	-----	---	---	1
54 - 57		5.7	-5.3	9.0	-----	93	---	6
57 - 60		----	-3.5	----	-----	---	---	1
Airplane 331 Traverse 4	Time (EST) 170935 - 171432 Length of traverse 317.0 sec, 79,109 ft Initial heading (deg) 20							
0 - 3	5,500	----	-3.4	----	-----	---	---	1
3 - 6		4.1	-----	----	-----	---	---	1
6 - 9		----	-2.2	----	-----	---	---	1
9 - 12		----	-3.1	----	-----	---	---	1
12 - 15		4.7	-4.1	----	-----	---	---	3
15 - 18		----	-4.1	----	-----	---	---	2
18 - 21		----	-5.0	----	-----	---	---	2
21 - 24		----	-----	----	-----	---	---	0
24 - 27		----	-5.0	----	-----	---	---	1
27 - 30		4.4	-4.4	----	-----	---	---	5

NATIONAL ADVISORY
COMMITTEE FOR AERONAUTICS

TABLE I.- SUMMARY OF GUST MEASUREMENTS - Concluded

Space interval ft × 10^3	Pressure altitude (ft)	Maximum effective gust velocity $U_{e_{max}}$ (fps)		Maximum true gust velocity $U_{t_{max}}$ (fps)		Gust gradient distance (ft)		No. of gusts
August 13, 1946 - Flight 20								
Airplane 331 Traverse 4	Time (EST) 170935 - 171432 Length of traverse 317.0 sec, 79,109 ft Initial heading (deg) 20							
30 - 33	5,500	3.4	-9.1	----	-9.1	---	24	4
33 - 36		17.8	-4.4	----	-----	---	---	6
36 - 39		----	-10.3	----	-7.2	---	71	2
39 - 42		----	-----	----	-----	---	---	0
42 - 45		3.4	-4.4	----	-8.2	---	170	3
45 - 48		----	-----	----	-----	---	---	0
48 - 51		----	-3.8	----	-----	---	---	2
51 - 54		4.7	-6.3	----	-----	---	---	5
54 - 57		4.7	-3.4	----	-----	---	---	5
57 - 60		6.9	-11.3	----	-----	---	---	4
60 - 63		7.2	-7.8	----	-----	---	---	9
63 - 66		5.9	-5.0	----	-----	---	---	3
66 - 69		10.6	-6.6	----	-20.8	---	239	7
69 - 72		7.2	-7.8	----	-----	---	---	8
72 - 75	6,000	7.5	-5.9	----	-----	---	---	6
75 - 78		4.4	-5.0	----	-----	---	---	5
78 - 81		----	-2.2	----	-----	---	---	2

NATIONAL ADVISORY
COMMITTEE FOR AERONAUTICS

TABLE II.- SUMMARY OF DRAFT MEASUREMENTS FROM FLIGHTS

OF P-61c AIRPLANES WITHIN THUNDERSTORMS

Date	Flight no.	Airplane no.	Assigned altitude (ft)	Traverse no.	Draft location from cloud entry (ft)		Draft extent (ft)	Average draft velocity (fps)
					Start	End		
8-7-46	18	351	24,000	[a]1				
				[a]2				
				[a]3				
				[a]4				
				[a]5				
		327	21,000	[b]1				
				[b]2				
				3	5,627	8,738	3,111	24.7
				4	19,526	23,888	4,362	13.0
				5	20,379	22,631	2,252	31.3
					34,459	39,234	4,775	12.1
					39,234	45,423	6,189	-9.4
		347	16,000	1	4,613	11,535	6,922	-10.3
					11,535	18,152	6,617	11.1
					56,212	60,912	4,700	28.2
					84,162	87,868	3,706	-11.4
				2	25,706	28,812	3,106	30.0
					91,647	101,366	9,719	7.2
				3	35,643	38,304	2,661	-25.0
					43,572	48,915	5,343	-11.3
				4	2,533	5,962	3,429	49.8

[a]Failure in operation of airspeed-altitude recorder prevented computations for draft data.

[b]No draft velocities indicated by records.

NATIONAL ADVISORY
COMMITTEE FOR AERONAUTICS

TABLE II - SUMMARY OF DRAFT MEASUREMENTS - Continued

Date	Flight no.	Airplane no.	Assigned altitude (ft)	Traverse no.	Draft location from cloud entry (ft)		Draft extent (ft)	Average draft velocity (fps)
					Start	End		
8-7-46	18	345	11,000	[a]1				
				[a]2				
				[a]3				
				[a]4				
				[a]5				
				[a]6				
8-12-46	19	345	26,000	1	23,136	36,058	12,922	31.8
				2	13,700	18,300	4,600	17.4
					42,164	47,089	4,925	16.2
					51,884	55,953	4,069	52.1
		351	21,000	[c]1	11,018	12,708	1,690	43.0
					19,001	25,546	6,545	56.4
					26,328	31,160	4,832	44.7
					36,321	40,876	4,555	45.3
					42,941	45,766	2,825	45.2
				2	38,625	52,827	14,202	29.5
				[b]3				
				4	54,413	70,000	15,587	9.4
					109,200	114,500	5,300	18.3
				5	28,100	39,750	11,650	30.7
					57,500	64,800	7,300	7.6
		347	16,000	[a]1				

[a]Failure in operation of airspeed-altitude recorder prevented computations for draft velocities.

[b]No draft velocities indicated by records.

[c]Average draft velocity 31.6 feet per second.

NATIONAL ADVISORY
COMMITTEE FOR AERONAUTICS

TABLE II.- SUMMARY OF DRAFT MEASUREMENTS - Continued

Date	Flight no.	Airplane no.	Assigned altitude (ft)	Traverse no.	Draft location from cloud entry (ft)		Draft extent (ft)	Average draft velocity (fps)
					Start	End		
8-12-46	19	344	11,000	[b]1				
				2	6,150	8,100	1,950	26.5
					21,835	24,975	3,140	21.1
					34,950	38,350	3,400	-23.4
					51,386	53,151	1,765	-33.6
					71,050	80,150	9,100	16.8
				3	2,534	5,280	2,746	26.4
					24,550	30,660	6,110	27.0
				[d]4				
				[d]5				
		331	6,000	[a]1				
				[a]2				
				[a]3				
				[a]4				
				[a]5				
8-13-46	20	351	26,000	1	89,488	101,857	12,369	29.3
				2	14,976	20,917	5,941	24.7
					20,917	30,350	9,433	-20.5
					35,768	56,419	20,651	21.9
					64,100	78,800	14,700	-11.1
				3	98,703	106,705	8,002	15.5
					135,374	149,192	13,818	4.8
				[b]4				
				5	19,428	24,190	4,762	41.3

[a]Failure in operation of airspeed-altitude recorder prevented computations for draft velocities.

[b]No draft velocities indicated by records.

[d]Film supply for airspeed-altitude recorder exhausted.

NATIONAL ADVISORY
COMMITTEE FOR AERONAUTICS

TABLE II.- SUMMARY OF DRAFT MEASUREMENTS - Concluded

Date	Flight no.	Airplane no.	Assigned altitude (ft)	Traverse no.	Draft location from cloud entry (ft)		Draft extent (ft)	Average draft velocity (fps)
					Start	End		
8-13-46	20	347	21,000	1	18,750	30,375	11,625	12.3
				2	28,598	41,275	12,677	7.1
				3	6,695	11,531	4,836	17.8
					11,531	15,056	3,525	-24.2
					22,105	28,226	6,121	10.3
					43,530	55,758	12,228	30.7
				4	27,600	34,850	7,250	24.9
		344	16,000	1	(a)			
				2	(a)			
				3	(a)			
				4	(a)			
				5	(a)			
		327	11,000	1	9,481	16,079	6,598	25.1
				[b]2				
				[b]3				
				[b]4				
		331	6,000	1	14,471	17,927	3,456	20.9
					59,866	64,116	4,250	24.6
				[b]2				
				[b]3				
				4	27,854	33,119	5,265	-14.3
					67,060	72,849	5,789	17.4

[a]Failure in operation of airspeed-altitude recorder prevented computations for draft data.

[b]No draft velocities indicated by records.

NATIONAL ADVISORY
COMMITTEE FOR AERONAUTICS

TABLE III.- SUMMARY OF MEASUREMENTS OF AMBIENT

AIR TEMPERATURE WITHIN THUNDERSTORMS

Date	Flight no.	Airplane no.	Traverse no.	Time (EST)	Distance from cloud entry (ft)	Milliammeter reading
8-12-46	19	331	1	142440		210
				142500		210
				142530		210
				142600		220
				142630		230
				142700		240
				142730		245
				142800		245
				142830		240
				142855		240
			2	143653		220
				143730		225
				143800		230
				143830		230
				143900		225
				143930		220
				144000		220
				144030		220
				144103		220
			3	144452		200
				144530		205
				144600		220
				144630		230
				144700		245
				144734		230
				144800		220
				144830		220
				144900		220
				144930		225
				145000		230
				145030		220
				145100		220
				145125		220
			4	145654		220
				145730		220
				145800		220
				145830		220
				145900		220

TABLE III.- SUMMARY OF MEASUREMENTS - Continued

Date	Flight no.	Airplane no.	Traverse no.	Time (EST)	Distance from cloud entry (ft)	Milliammeter reading
8-12-46	19	331	4	145930		220
				150000		210
				150030		210
				150100		220
				150130		220
				150200		220
				150230		220
				150300		210
				150311		215
			5	151030		205
				151045		200
				151100		200
				151115		200
				151130		210
				151145		220
				151200		220
				151215		220
				151230		230
				151245		240
				151300		240
				151315		240
				151330		240
				151345		225
				151400		180
				151415		180
				151430		150
				151445		130
				151500		110
				151515		50
				151530		40
				151545		25
				151557		10
8-13-46	20	327	1	162842	7,850	300
				162850	11,800	400
				162900	13,300	300
				162902	14,000	400
				162905	14,900	300
				162909	16,000	400
				162913	17,250	300
				162920	19,300	400
				162925	20,900	320

TABLE III.- SUMMARY OF MEASUREMENTS - Concluded

Date	Flight no.	Airplane no.	Traverse no.	Time (EST)	Distance from cloud entry (ft)	Milliammeter reading
8-13-46	20	327	1	162928	22,000	400
				162945	27,100	300
				163010	35,250	325
				163018	37,750	400
				163035	43,000	315
				163046	46,100	400
		331	1	162700	3,750	180
				162730	12,600	180
				162800	21,400	200
				162830	30,100	190
				162900	35,000	200
				162930	47,400	200
				163000	55,800	210
				163030	63,800	210
				163100	71,900	220
				163130	80,100	210
				163200	88,500	200
				166230	96,800	190

NATIONAL ADVISORY
COMMITTEE FOR AERONAUTICS

NASA Technical Library
3 1176 01437 0143