AD NUMBER
ADA800140
CLASSIFICATION CHANGES
TO: **unclassified**
FROM: **confidential**
LIMITATION CHANGES
TO: **Approved for public release; distribution is unlimited.**
FROM: **Distribution authorized to DoD only; Administrative/Operational Use; 10 APR 1950. Other requests shall be referred to Air Materiel Command, Wright-Patterson AFB, OH 45433. Pre-dates formal DoD distribution statements. Treat as DoD only.**
AUTHORITY
AFSC ltr dtd 2 Jun 1970; AFSC ltr dtd 2 Jun 1970

CLASSIFICATION CHANGED

ATI

FROM CONFIDENTIAL TO UNCLASSIFIED

78222

ON 29 November 1954 By authority of S List No. 58

This action was rendered by Arthur E Creech OSA
Name in full Date

78 222

Stability and Control Flight Tests of XB-46 (Bomber) Airplane, USAF No. 45-59582 (FTD Project No. 49B173) - and Appendixes I and II (Memorandum Report). (None)

Ritchey, Wallace M.; Dennen, Richard L.
Air Materiel Command, Flight Test Div., Dayton, O. MCRFT-2282
(Same)

April '50 Confd'l U. S. English 59 photos, graphs (Same)

Stability and control flight tests of the XB-46 high-speed, high-altitude, medium bomber powered by four J-35 turbojet engines were performed. The test flights were flown at a take-off gross weight of 86,000 lb including a crew of four, full fuel tanks, 44 gal of oil, and 1610 lb of lead-shot as ballast to locate the CG at 25, 19, and 26.6% MAC, respectively. Longitudinal stability and control characteristics of the airplane were satisfactory for the configurations and CG positions tested. Laterally, however, the feeler ailerons were unsatisfactory under flight conditions in which the spoiler ailerons were locked. It is therefore recommended that the lateral control system be redesigned to allow full use of the spoilers throughout the speed range of the airplane.

LIMITED. Route requests through AMC, Attn: MCRFTR for approval.

B -46 - Flight tests

Aerodynamics (2)
Performance (2)

B-46

Hq AMC Form No. 80-34A-2
(24 Jun 47)

TITLE SHEET

HEADQUARTERS
AIR MATERIEL COMMAND
WRIGHT-PATTERSON AIR FORCE BASE, DAYTON, OHIO

MEMORANDUM REPORT ON

MCRFTR/WMR/elm
Date 10 April 1950

SUBJECT: Stability and Control Flight Tests of XB-46 Airplane, USAF No. 45-59582 (FTD Project No. 49E173)

OFFICE MCRFTR-152 Contract or Order No.

SERIAL No. MCRFT-2282 Expenditure Order No.

A. PURPOSE:

1. The purpose of these tests was to obtain pilots' comments and factual data on stability and control characteristics of the XB-46 airplane, USAF No. 45-59582.

B. FACTUAL DATA:

2. Introduction.

Stability and control flight tests were conducted at Wright-Patterson Air Force Base, Dayton, Ohio, by authority of the Chief, Flight Test Division, and consisted of 23 flights, totalling 41:20 hours, between 9 August 1948 and 26 July 1949.

3. Description of the Airplane.

a. The XB-46, USAF No. 45-59582, was built by the Consolidated-Vultee Aircraft Corporation, and was designed as a high speed, high altitude medium bomber, built without external armament or radar protuberances of any kind, and powered by four J-35 engines. The dimensions of the airplane were: length, 105.5 feet; span, 113 feet; and height to top of rudder, 28 feet. The airplane was tested in the following configurations: Power Approach (PA), Cruise (C), Glide (G), Landing (L) and Power (P), as defined in USAF Specification No. 1815-B (Flying Qualities of Piloted Airplanes). The fuel system was modified in such a manner that it was possible to counteract the tendency of the center of gravity to move aft from its mid or aft position as fuel was consumed. A connecting line was placed in the fuel system so that the most aft tank could feed No. 2 engine (regularly fed by the most forward tank) in addition to its regular engine, No. 1, and a counter would record the additional fuel being used from the most aft tank.

WF-L-24 MAR 48 10M

CONFIDENTIAL

b. Special instrumentation was installed in both the pilot's panel and the photo-observer panel as shown in Figures 6 and 7, Appendix II. The open photo-observer panel, which could be read in flight by the observer, was located in the nose section and the camera, which recorded the photo-panel readings, could be controlled by the pilot, copilot, or observer. Strain gages were installed on the pilot's pedals and a force wheel was installed in order to measure the control forces applied by the pilot. A boom, one chord in length, was installed on each wing tip, one for a swiveling pitot head and the other for a yaw vane.

4. Description of the Tests.

a. The instrumented airplane was weighed on platform scales at Wright-Patterson Air Force Base. The test flights were flown at a take-off gross weight of 86,000 pounds, including a crew of four, full fuel tanks, 44 gallons of oil, and 1610 pounds of lead shot. The lead shot was originally loaded into the bomb bay in such a manner as to locate the center of gravity at 25% MAC with the landing gear in its retracted position. Later, to locate the center of gravity at 19%, the ballast was divided, and 1210 pounds were placed in the nose and 400 pounds in the forward end of the bomb bay. Lastly, all of the ballast was to be placed in a ballast box in the tail to obtain a CG position of 31%; thus, it was planned to fly at all three CG positions at the same take-off gross weight. Lowering the landing gear moved the CG aft about one and one-half percent.

b. Flight tests were conducted as outlined in AAF Technical Report No. 5242 ("Stability and Control Flight Test Methods," by Perkins and Walkowicz). Complete longitudinal tests were run at the mid-CG positions of 25% MAC (gear up) and 26.6% MAC (gear down). At the forward CG position of 19% MAC, data on static and maneuvering longitudinal stability were obtained only in the power configuration. The project was cancelled because maintenance difficulties, aggravated by lack of spare parts, required a prohibitive number of man-hours to keep the aircraft in flying condition.

5. Discussion of Results.

The stability and control flight tests were incomplete. Quantitative results are given for longitudinal stability as the result of flights made with the CG in its mid-position and one flight with the CG in its forward position. No flights were made to measure lateral and directional stability.

a. Mechanical Characteristics of Control Systems.

In all cases, except for up elevator, the static control friction forces (which include the dead weight of the control surfaces) exceeded those limits prescribed in USAF Specification No. 1815-B; although, in flight, these friction forces were not objectionable to the pilots. The friction was measured in a closed hangar at a temperature of about 70°F. The friction forces, obtained as required in the above specification, are as follows:

CONFIDENTIAL

Control	Position	Movement	Static Friction - Pounds
Elevator	Neutral	Up	2.5
	Neutral	Down	19.4
Aileron (Spoilers Locked)	Neutral	Left	7.6
	Neutral	Right	7.6
Aileron (Spoilers Unlocked)	Neutral	Left	7.6
	Almost Full Left	Left	33.
	Neutral	Right	7.6
	Almost Full Right	Right	39.4
Rudder	Neutral	Left	30.
	Almost Full Left	Left	52.
	Neutral	Right	25.6
	Almost Full Right	Right	48.

b. Dynamic Longitudinal Stability.

During the flight testing the pilots observed that there was a noticeable amount of flexure in the fuselage resulting from buffeting in rough air or from a deliberate oscillation of the controls. This flexure was of a much greater magnitude than either of the pilots had previously experienced in any other airplane, and although it did not seem to affect the dynamic longitudinal stability adversely, this flexure was great enough to cause a difference of opinion between the pilots as to its significance. The airplane was longitudinally dynamically stable in all configurations and speeds tested. The short period oscillation of normal acceleration, following an abrupt deflection and release of the elevator control, was completely damped in one cycle, as shown in Figures 1 and 2, Appendix I.

c. Static Longitudinal Stability.

Static longitudinal stability results are incomplete because only in the power configuration was the airplane tested at two CG positions. At 10,000 feet and in configuration (P), the airplane possessed satisfactory static stick-fixed and stick-free longitudinal stability. The stick-fixed and stick-free neutral points were determined in Figure 13 from the slopes of the curves in Figures 11 and 12, Appendix I. The CG position for neutral stability is shown in Figure 14, Appendix I, for various values of C_L. The elevator control throughout the range of speeds tested was very satisfactory, both in feel and in effectiveness.

d. Elevator Control in Take-Off and Landing.

Take-offs were made with 30° flaps and residual heat doors closed and landings were made from a very flat approach at idle power and with

full flaps. The elevator control was adequate for both take-offs and landings with the CG at 20.6 and 26.6% MAC. The rudder control in these tests was also adequate, the greatest force required in landing being 100 pounds whereas the limit prescribed in USAF Specification No. 1815-B is 180 pounds. Time histories of a take-off and landing are shown in Figures 21 and 22, Appendix I. Both tests were made with the CG at 26.6% MAC. Figure 21 illustrates that the nose wheel was lifted at about 68 knots.

e. Longitudinal Control: Maneuvering.

Wind-up turns were conducted in configuration (P) at 10,000 feet with the CG position at 19% and 25% MAC, and at 30,000 feet with the CG position at 25% MAC. Results of these tests, as shown in Figures 23 and 24, Appendix I, indicate the elevator control force gradient at the forward CG position was five pounds above the top limit of 60 pounds prescribed in USAF Specification No. 1815-B. The position of the maneuver points for each altitude is shown in Figure 24, Appendix I, as the CG position at which the elevator wheel force gradient becomes zero. The elevator control in maneuvering flight was excellent. Normal accelerations of 2.2G were obtained with less than half the available up elevator travel of 25°, as shown in Figure 25, Appendix I. The elevator angle required in maneuvering flight increases sharply above a lift coefficient of 0.9.

f. Longitudinal Trim Changes.

Tests were conducted at 10,000 feet, with the CG position at 25% MAC, to determine the elevator force required to maintain a given trim speed after changing power, flap, or gear setting. As shown in the table below, the trim changes in Item 3 required a pull force, as specified in USAF Specification No. 1815-B, and the other forces were low enough to comply with the specification.

Longitudinal Trim Changes 10,000 Feet

	Trim Speed (Knots) (Elev. Force Zero)	Flaps	Gear	RPM	Variable	Elev. Force Required to Maintain Trim Speed - Pounds
1.	156	Up	Up	6400	Gear down	10.8 push
2.	156	Up	Down	6400	Flaps down	15.1 push
3.	125	Down	Down	7200	Power off (3700)	2.7 pull
4.	125	Down	Down	Off (3500)	Full power (7700)	14.5 push
5.	125	Down	Down	7700	Gear up	9.4 pull
6.	125	Down	Up	7700	Flaps up	0.9 push
7.	125	Take off (30°)	Up	7700	Flaps up	1.5 push

	Trim Speed (Knots) (Elev. Force Zero)	Flaps	Gear	RPM	Variable	Elev. Force Required to Maintain Trim Speed - Pounds
8.	106	Down	Down	Level flt (7200)	Full power (7700)	4.3 push
9.	106	Take off (30°)	Down	7700	Gear up	8.9 pull
10.	358	Up	Up	7700	Power off (5500)	3.5 pull

g. Trimming Devices.

Each elevator had an electrically-actuated trim tab. The airplane was easy to trim and the tab was irreversible. Figure 26, Appendix I, shows the tab angle required to trim the airplane at various speeds in the configurations (P), (G), and (L). It was found, however, that with the CG in the forward position of 20.6% MAC, the elevator trim was not powerful enough to trim the airplane in configuration PA at an indicated air speed of 106 knots at 10,000 feet. The airplane could be trimmed to about 110 knots in that configuration and it is believed that the airplane could have been trimmed at 106 knots at 23% MAC, which was the maximum forward CG position suggested by the manufacturer. The rudder and aileron trim tabs were irreversible and gave sufficient control to trim the airplane wings level in all configurations and speeds tested, with the exception that with the wing flaps full down, the airplane became left wing heavy and full right aileron trim was insufficient to trim out this condition.

h. High Speed Requirements.

(1) This airplane was flown at a maximum Mach number of about 0.76 in a dive at 10,000 feet and there was no buffeting or shaking of the controls or of the airplane, no control force reversal, nor any erratic behavior which might have been attributed to compressibility effects and which would have placed a limit on the maximum speed of the aircraft.

(2) At 30,000 feet it was possible to descend at 2000 feet per minute, in a clean configuration, at an indicated speed of 208 knots, which would fulfill the requirement of Specification 1815-B.

i. Straight-ahead stalls were made at 10,000 feet with the CG in mid-position. Approach to the stall was indicated by tail buffeting, which gave ample warning in all cases except for the (PA) configurations, when the warning was only 1.5 knots above the stall. Stalling characteristics were normal with no noticeable tendency to roll. Stalling speeds for four configurations are shown below. Time histories for these stalls are given in Figures 27 through 30, Appendix I. On entering the stall, the wings were held level, and no rolling tendency following loss of lift after the stall, was observed.

Trim Speed (Knots)	Config.	Gross Weight	CG Position	RPM	V_c Knots	Stall Warning (Knots)
222	CR	75,100	25%	6400	115	5
160	G	74,700	25%	3600	114	7
106	PA	71,900	26.6%	7200	88	1.5
120	L	71,400	26.6%	3600	89	4

Accelerated stalls were made at the completion of the "windup turns." Figure 31, Appendix I, shows the time history of a stall out of a turn at 10,000 feet in configuration (P). The warning for these stalls was given by a buffeting of the tail surfaces. The stalls themselves exhibited no drastic pitching or rolling tendencies.

j. Lateral and Directional Stability and Control.

(1) No quantitative data were obtained from lateral or directional stability and control flight tests, but, qualitatively, the lateral control was unsatisfactory. Lateral control, below 240 knots indicated air speed, was obtained by spoilers and small "feeler" ailerons and above that speed, because of their bouncing tendency, the spoilers were locked into the wing and only the ailerons were used. The effectiveness was very good when the spoilers were used; however, with them locked, the lateral control effectiveness was very low, although adequate for safe flight. Lateral control forces were excessive at all speeds because the major part of the aileron forces was produced by the "feeler" ailerons. The spoilers did not come into effect until the ailerons were displaced appreciably, thus causing a dead spot in the control effectiveness which was particularly noticeable in landing.

(2) Directional control was excellent at all speeds and very little rudder was required even with asymmetric power.

k. Left Wing Heaviness.

Left wing heaviness in flight was encountered with the wing flaps full down. This condition is believed to have been caused by the right flap traveling down slightly farther than the left and the inability of the small "feeler" ailerons to trim out the resulting left wing heavy condition.

l. Elevator Spring Tab.

Forward or aft movement of the control column was transmitted directly to elevator spring tabs and indirectly through springs to the elevators. These spring tabs proved to be very effective. Figures 32 through 38, Appendix I, show the variation of spring tab angle with elevator wheel force. The data for these curves were recorded on the flights to determine the static and maneuvering longitudinal stability, and the equivalent air speed is marked for each point. The air loads on the tabs result in an increased slope with an increase in speed. There was an appreciable amount of friction in the operation of the spring tabs which could account for the difference in maximum tab deflection illustrated in Figures 32, 36, and 38, Appendix I.

C. CONCLUSIONS:

6. Longitudinal stability and control characteristics of the XB-46 airplane were satisfactory for the configurations and CG positions tested. Laterally, however, the feeler ailerons were unsatisfactory under flight conditions in which the spoiler ailerons were locked.

D. RECOMMENDATIONS:

7. Prior to further development of this airplane or if this airplane is to be maintained in flying condition for an extended period, it is recommended that:

a. The lateral control system be redesigned to allow full use of the spoilers throughout the speed range of the airplane.

b. Cause of the left wing heaviness with full flaps be determined and corrected.

Memorandum Report No. MCRFT-2282
10 April 1950

Prepared by: WALLACE M. RITCHEY
Engineer, Aerodynamics Branch
Flight Research Section
Test Engineering Subdivision

And: RICHARD L. DENNEN, 1st Lt, USAF
Engineer, Aerodynamics Branch
Flight Research Section
Test Engineering Subdivision

Flown by: for PAUL M. BUTLAN, Major, USAF
Chief, Instrumentation Section
Test Engineering Subdivision

And: CHARLES J. CLEMENCE, JR., Capt, USAF
Pilot, Bomber Operations Section
Operations Subdivision

Concurred in: LEO C. MOON, Lt Colonel, USAF
Chief, Test Engineering Subdivision

Approved by: FRANKLIN R. PAUL, Colonel, USAF
Chief, Flight Test Division

2 Incls
Appendix I
Appendix II

Memorandum Report No. MCRFT-2282
10 April 1950

Distribution:

1 Directorate, Research and Development, MCR
2 Director of Research and Development, Hq USAF, Washington 25, D. C.
3 CG, Air University, ATTN: Dept of AF Library, Maxwell AFB, Alabama
4 CG, Strategic Air Command, Offutt AFB, Nebraska
5 CG, Air Defense Command, Mitchel AFB, New York
6 CG, Tactical Air Command, Langley AFB, Virginia
7 Commander, Military Air Transport Service, Andrews AFB, Washington 25, D. C.
8 Air Proving Ground Liaison Officer, MCLATG
9-12 Bureau of Aeronautics General Representative, BAGR (4 copies)
13-14 Aircraft Laboratory, Engineering Division, MCREXA (2 copies)
15 Aerodynamics Branch, Aircraft Laboratory, Engineering Division, MCREXA-3
16-17 Aircraft Projects Section, Engineering Division, MCREOA (2 copies)
18 Flight Data Branch, Aircraft Projects Section, Engineering Division, MCREOA-9
19 Bomber Operations Section, Flight Test Division, MCRFOB
20-21 Performance Engineering Section, Flight Test Division, MCRFTP (2 copies)
22 Instrumentation Section, Flight Test Division, MCRFTI
23-26 Flight Research Section, Flight Test Division, MCRFTR (4 copies)
27 Aircraft and Missiles Section, Procurement Division, MCPPXA
28 Technical Analysis Division, Intelligence Dept., MCIA
29 Performance and Characteristics Branch, Intelligence Dept., MCIAXA-1
30 AMC Experimental Test Pilot School, MCRFXS
31 Technical Engineering Section, Edwards AFB, Muroc, California
32-35 NACA Liaison Office, TSXNA (4 copies)

Memorandum Report No. MCRFT-2252
10 April 1950

APPENDIX I

Memorandum Report No. MCRFT-2282
10 April 1950

Operational Limitations

Design Gross Weight 91,000 pounds

Maximum Speed-Extending Landing Gear - 213 knots

Maximum Speed-Extending Full Flaps - 182 knots

Maximum Speed - Operation of Spoilers - 240 knots

Load Factors

Limit Maneuver Load Factors 3.00 positive

1.50 negative

(The limit maneuver load factors were limited to three-quarters of the above values because the aircraft structure had not been statically tested.)

The maximum travel of the control surfaces are listed below (degrees):

Aileron - L: + 17, -16

R: + 16, -17

Aileron Trim Tabs - L: + 11, -9.5

R: + 10.5, -9.5

Spoilers - +45, -3

Elevator - +24.6, -9

Elevator Trim Tab - L: +10, -10
R: +10, -11

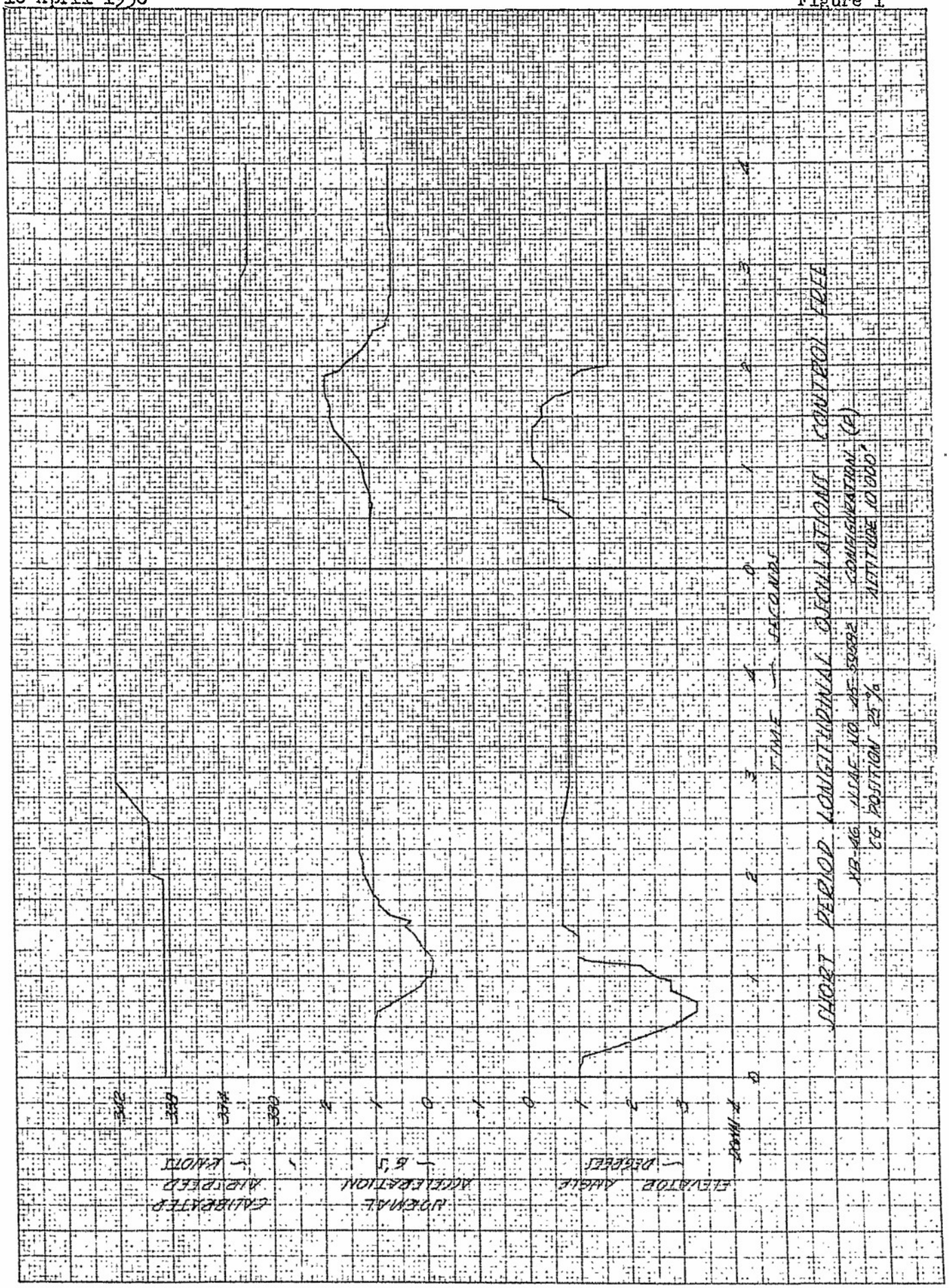
Elevator Spring Tabs - +3.5, -12

Rudder - ±13

Rudder Trim Tab - ±7

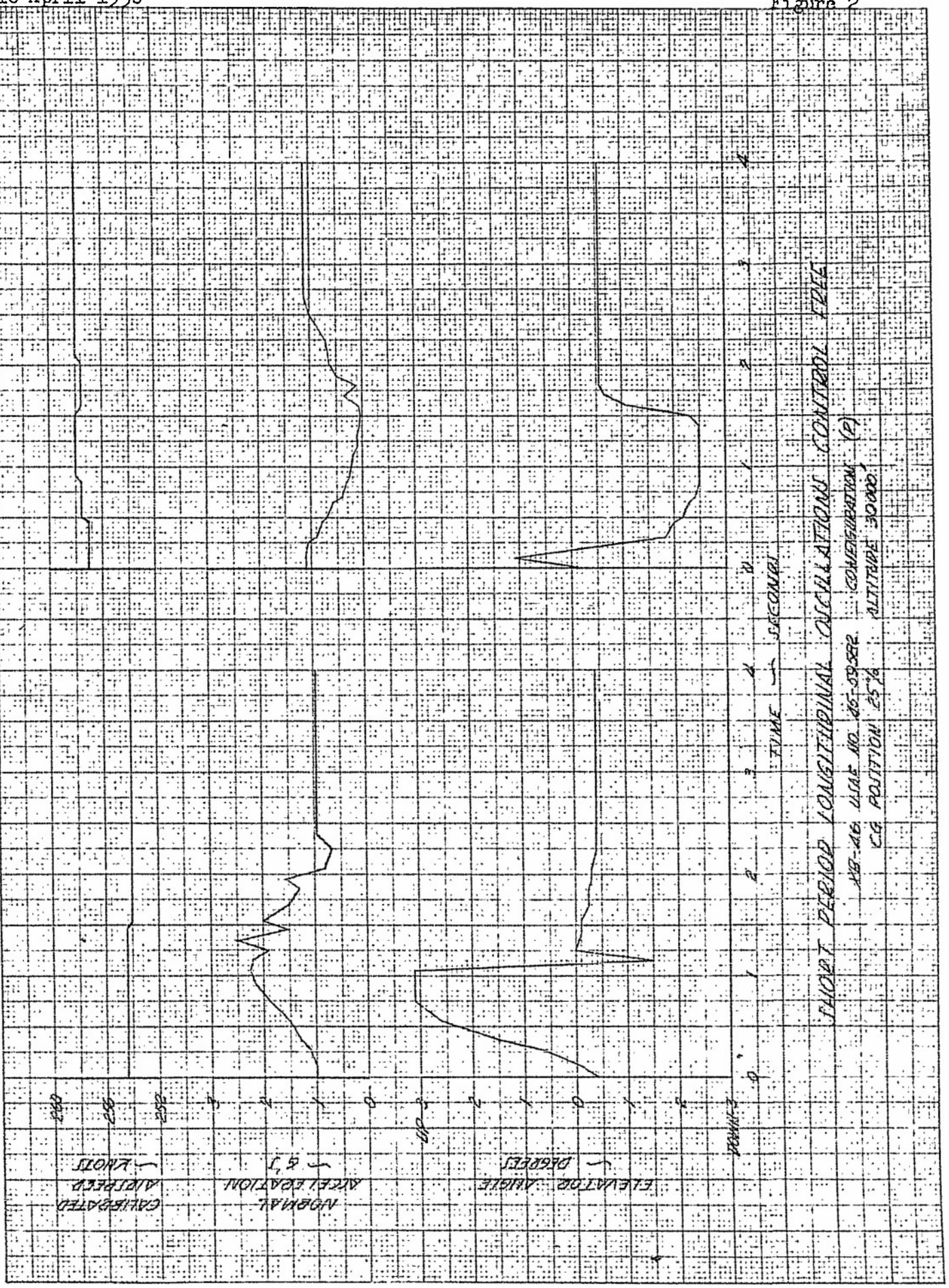
Rudder Spring Tab - ±8

Figure 1



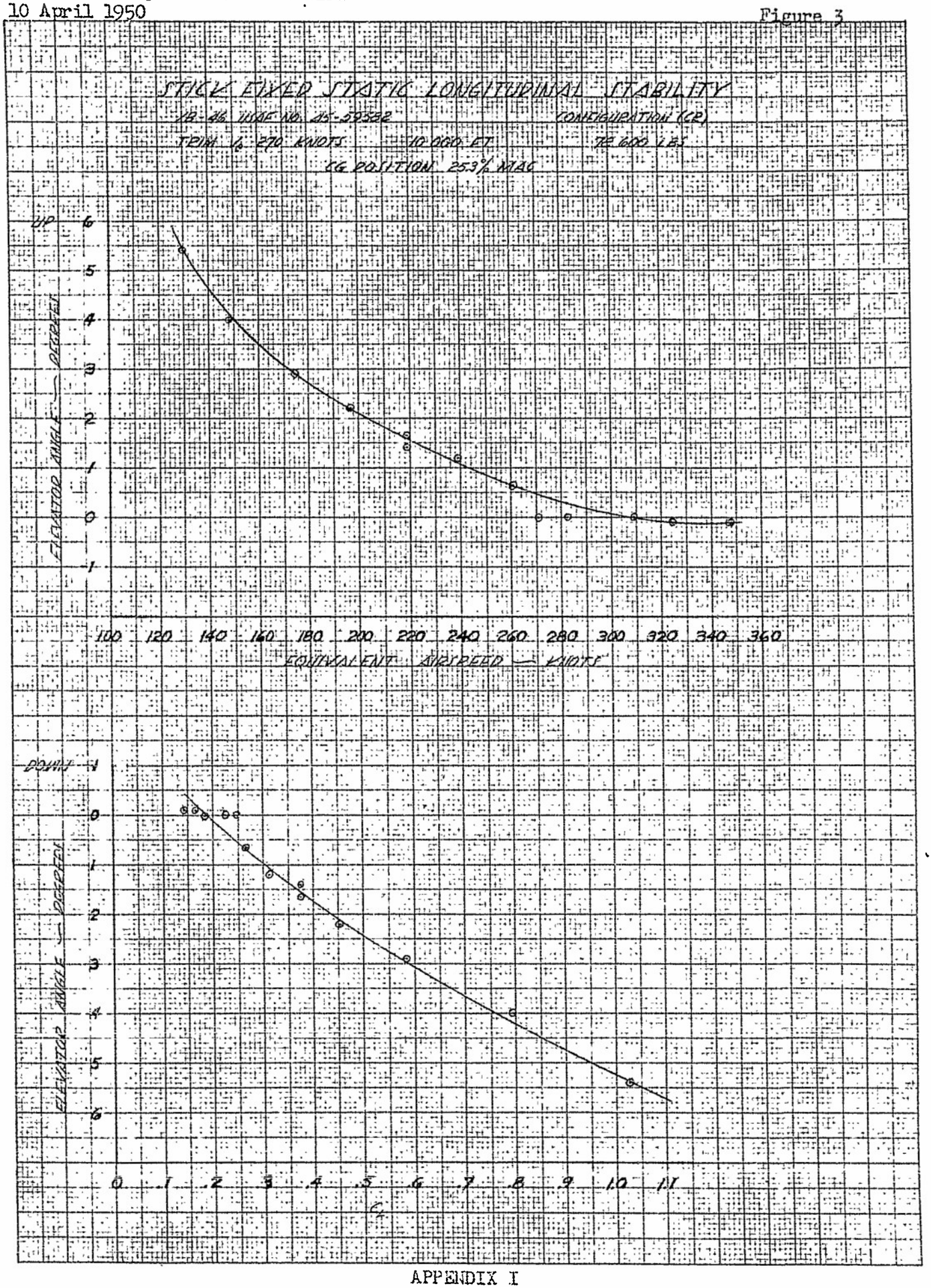
APPENDIX I

Figure 2



APPENDIX I

Figure 3



APPENDIX I

Figure 4

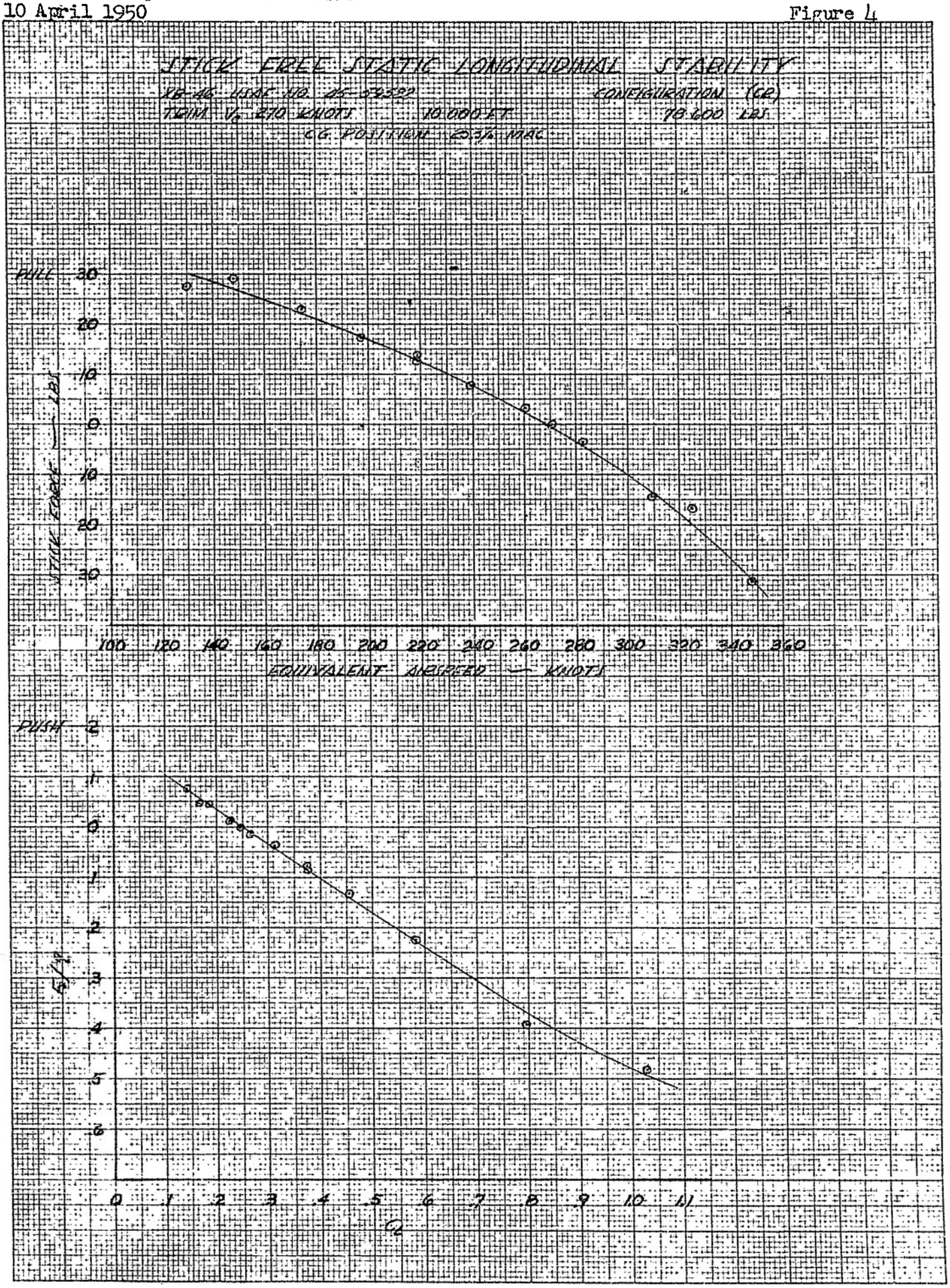

STICK FREE STATIC LONGITUDINAL STABILITY
XB-46 USAF NO. 45-59522 CONFIGURATION (CR)
TRIM V_I 270 KNOTS 10,000 FT 78,600 LBS
C.G. POSITION 25% MAC
FULL
PUSH
STICK FORCE — LBS
100 120 140 160 180 200 220 240 260 280 300 320 340 360
EQUIVALENT AIRSPEED — KNOTS
0 .1 .2 .3 .4 .5 .6 .7 .8 .9 1.0 1.1
CL

Figure 5

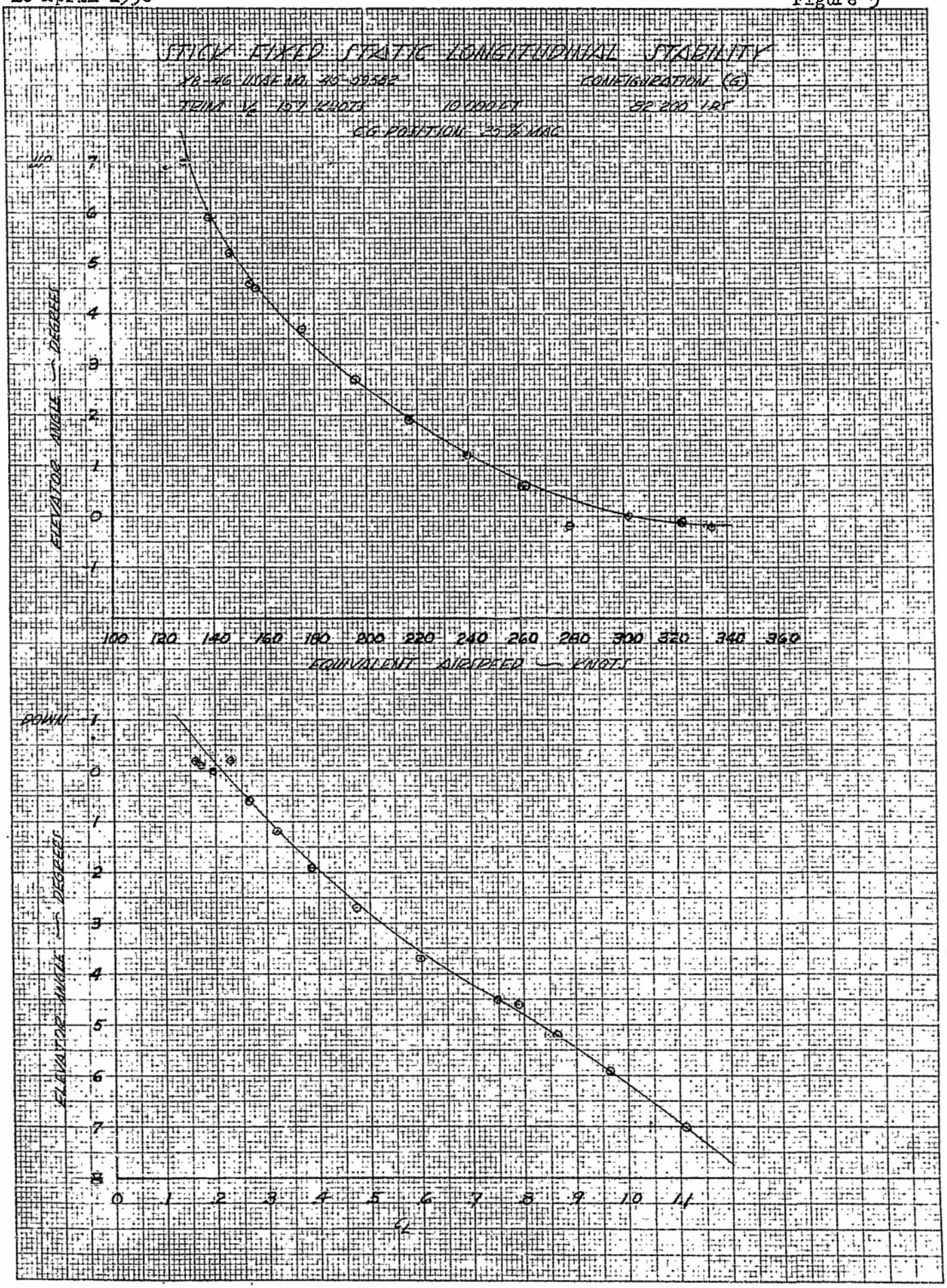
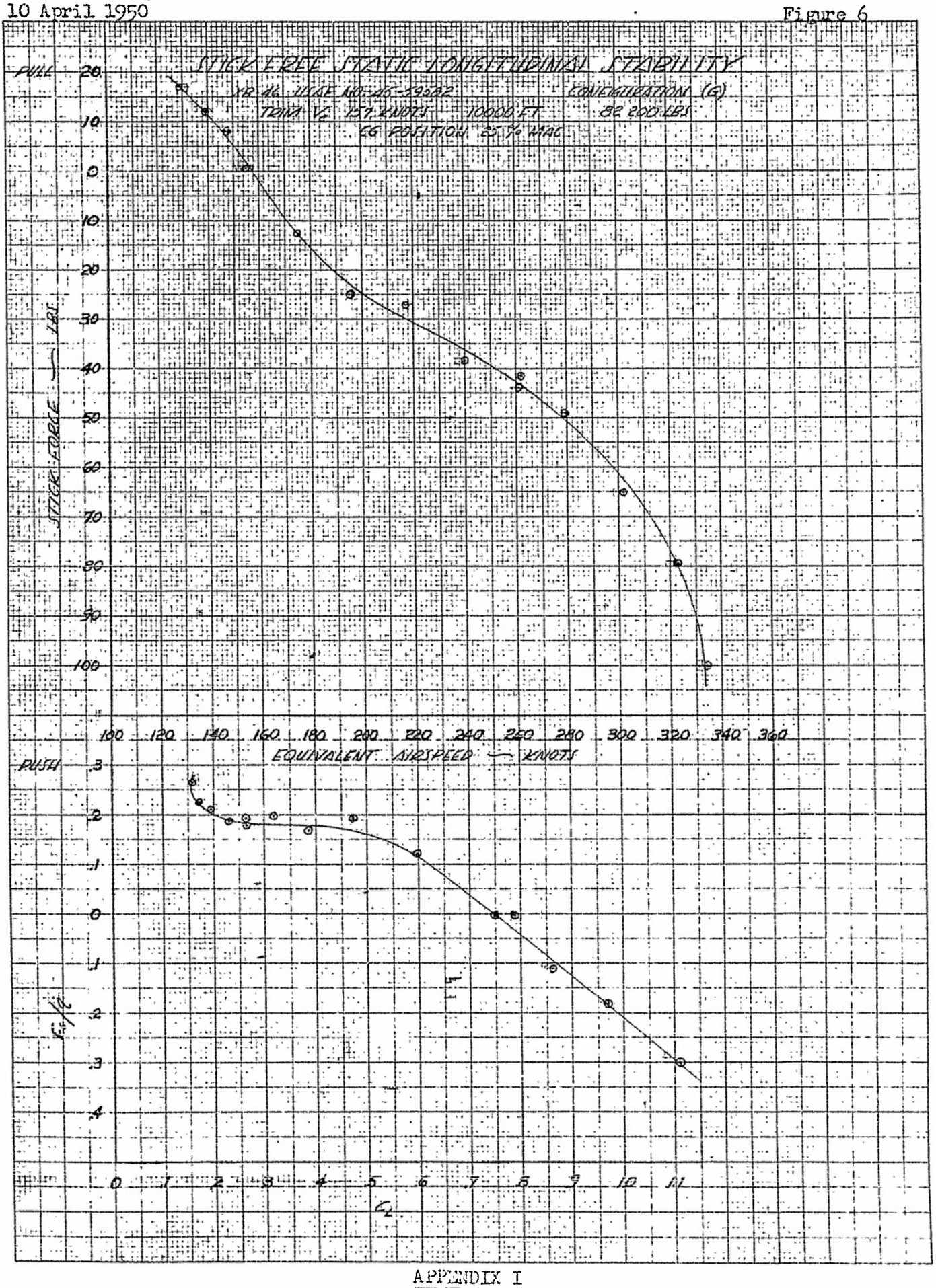
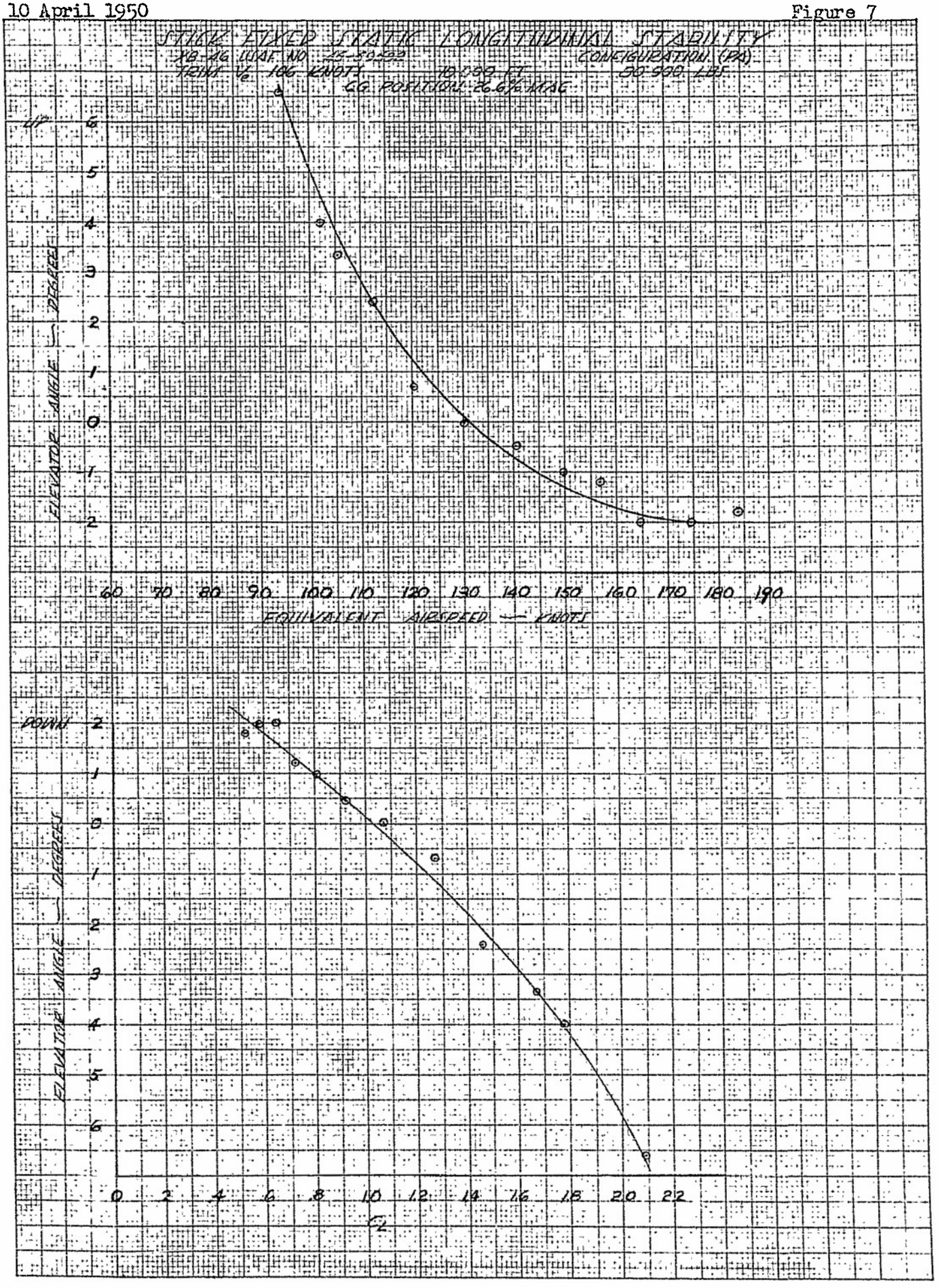

STICK FIXED STATIC LONGITUDINAL STABILITY
XB-46 (BASE NO. 45-59582
CONFIGURATION (G)
POWER V2 157 KNOTS 10,000 FT
52,200 LBS
C.G. POSITION 25% MAC
ELEVATOR ANGLE — DEGREES
EQUIVALENT AIRSPEED — KNOTS
POWER
ELEVATOR ANGLE — DEGREES

Figure 6



APPENDIX I

Figure 7



APPENDIX I

Figure 8

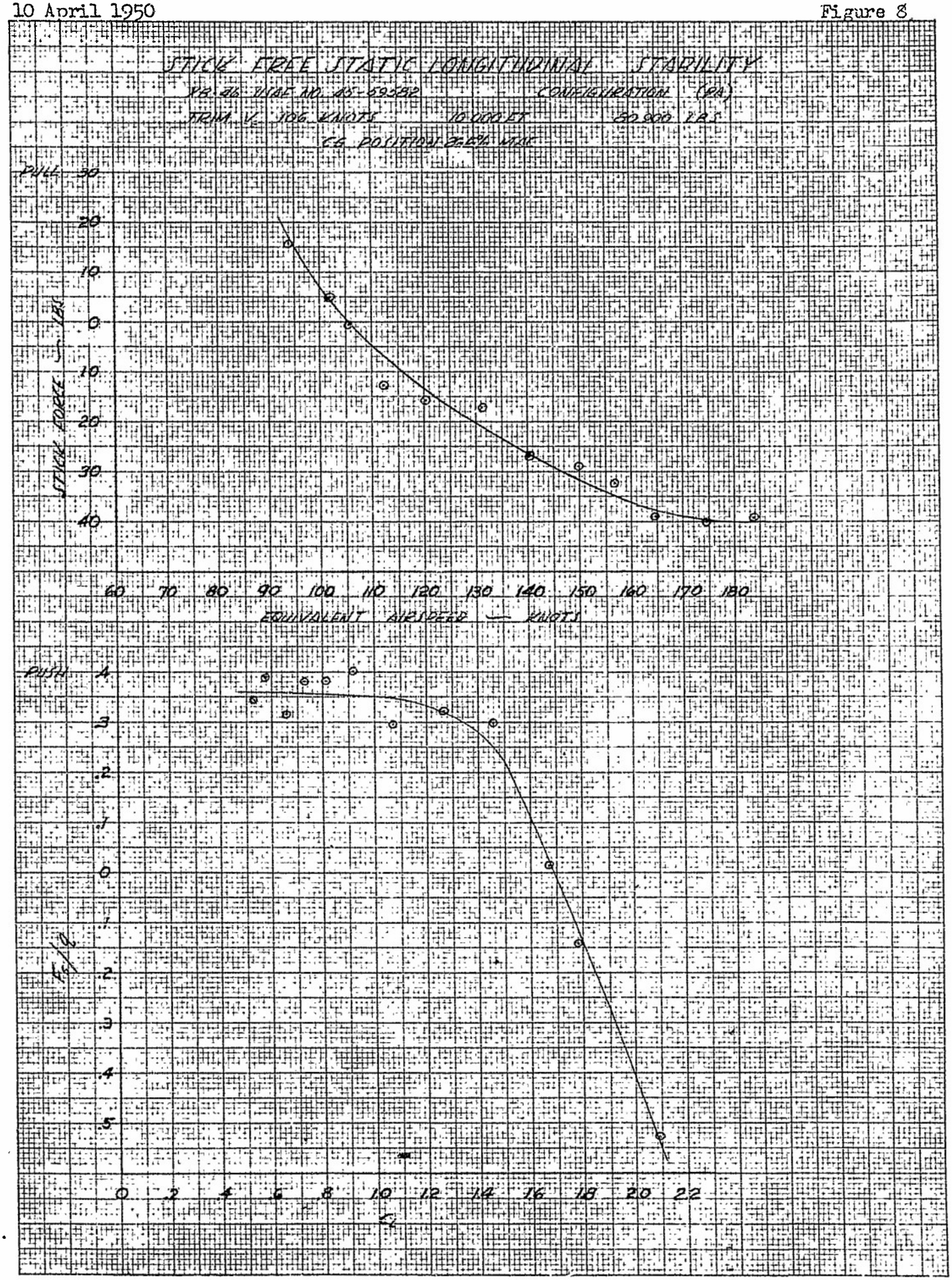
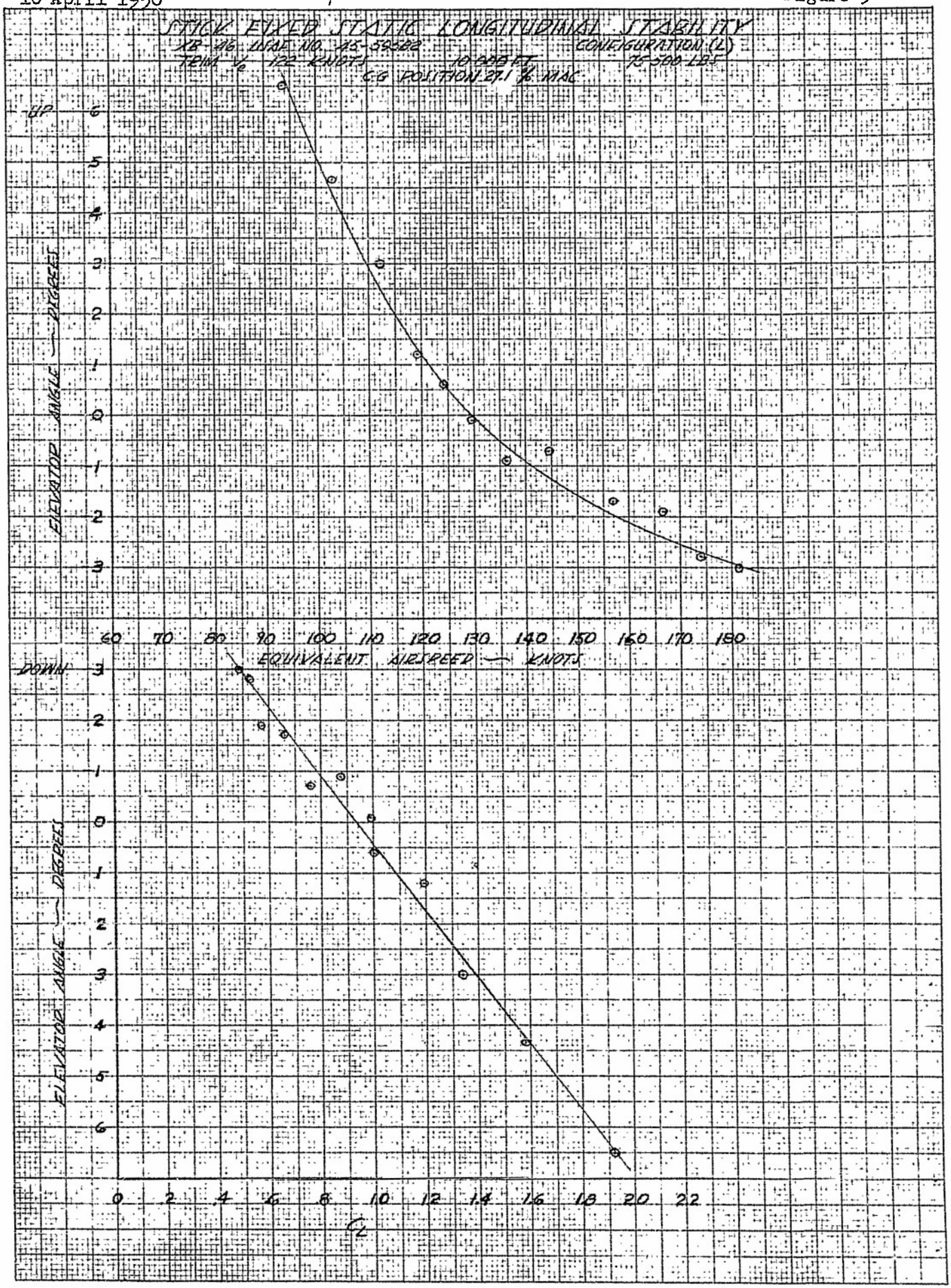
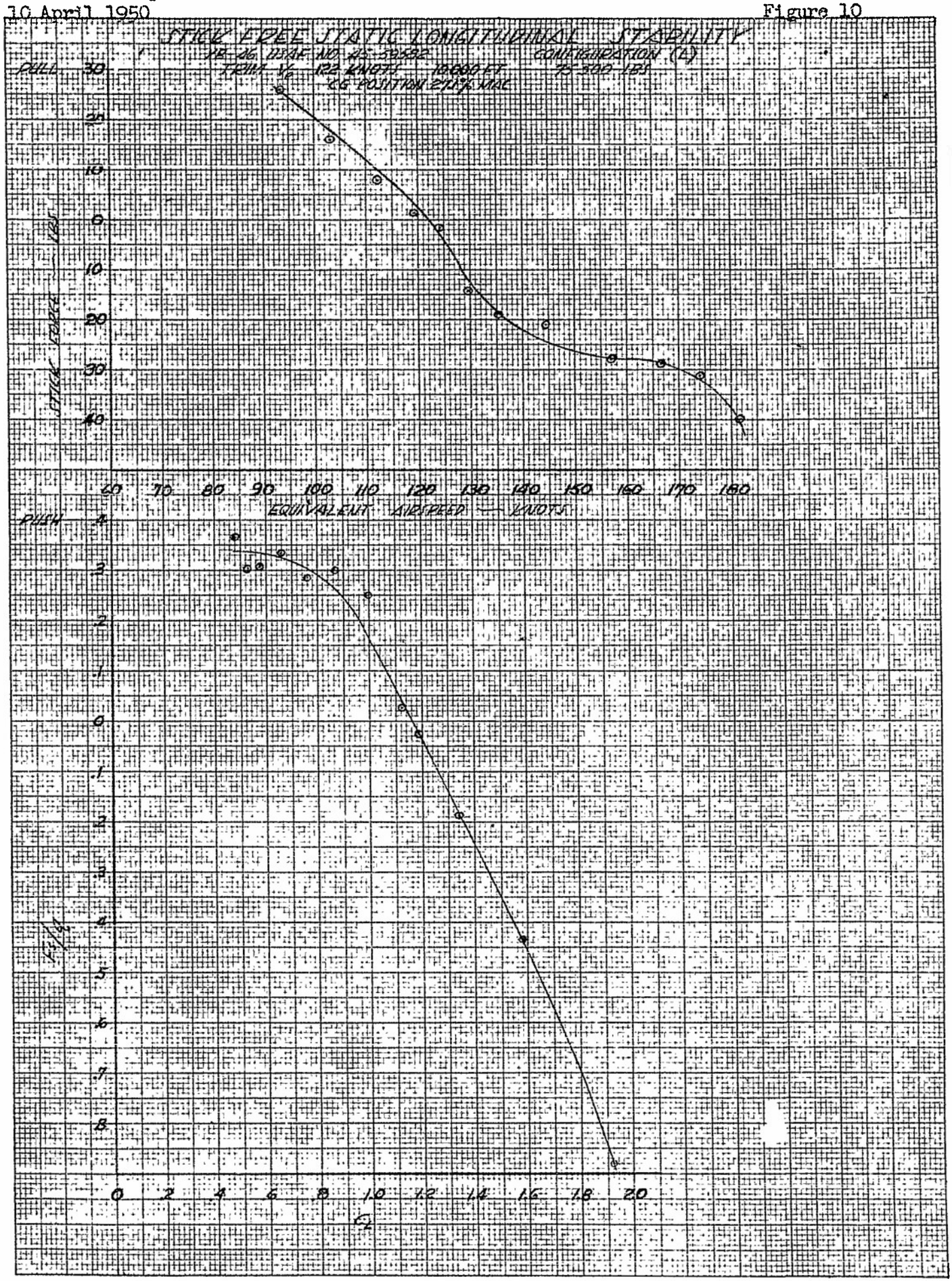

STICK FREE STATIC LONGITUDINAL STABILITY
V2-46 WING NO. 45-59382 CONFIGURATION (9A)
TRIM V_c 106 KNOTS 10,000 FT 50,800 LBS
C.G. POSITION 26.6% MAC
PULL
PUSH
STICK FORCE — LBS
60 70 80 90 100 110 120 130 140 150 160 170 180
EQUIVALENT AIRSPEED — KNOTS

Figure 9



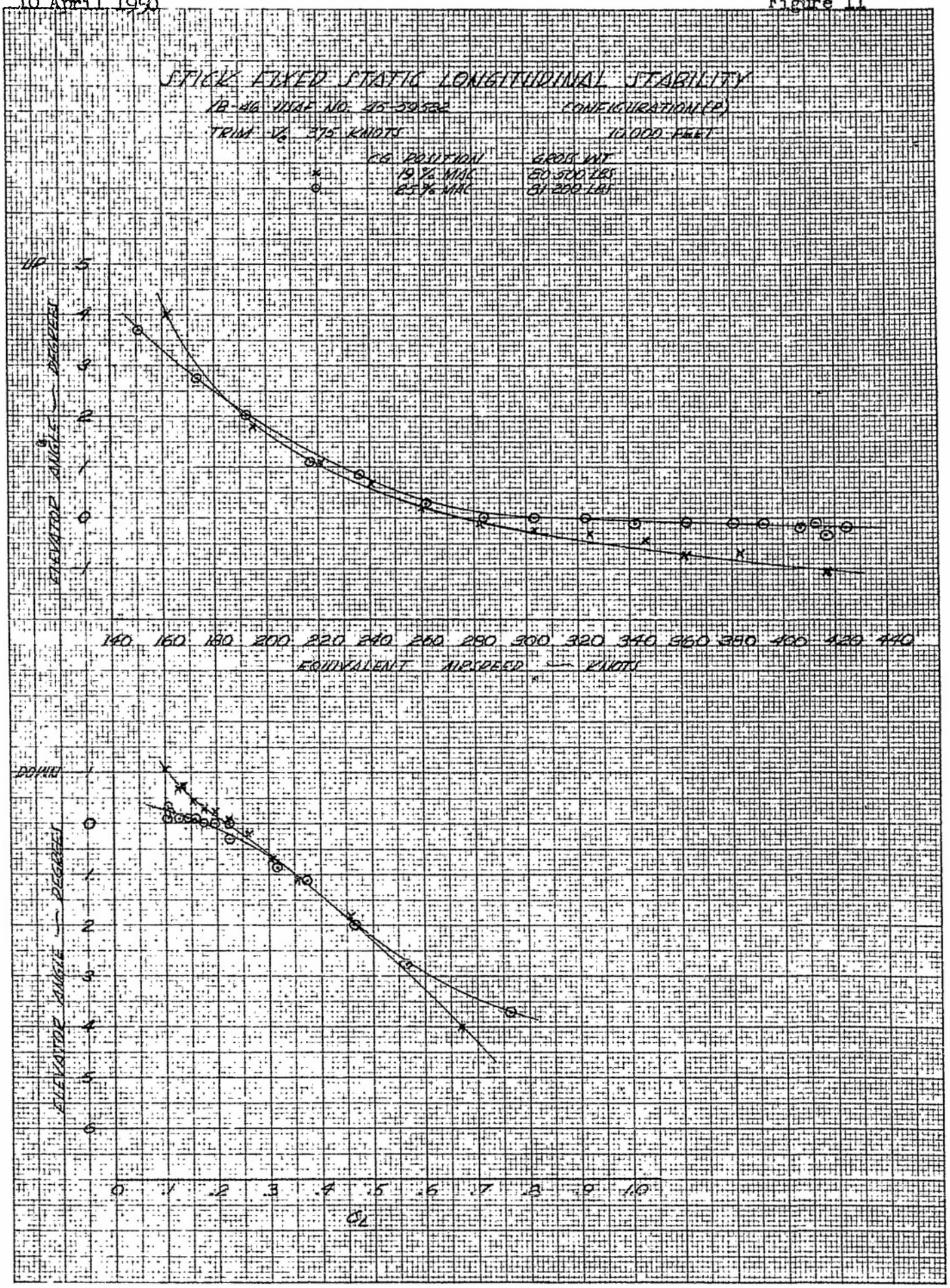
APPENDIX I

Figure 10



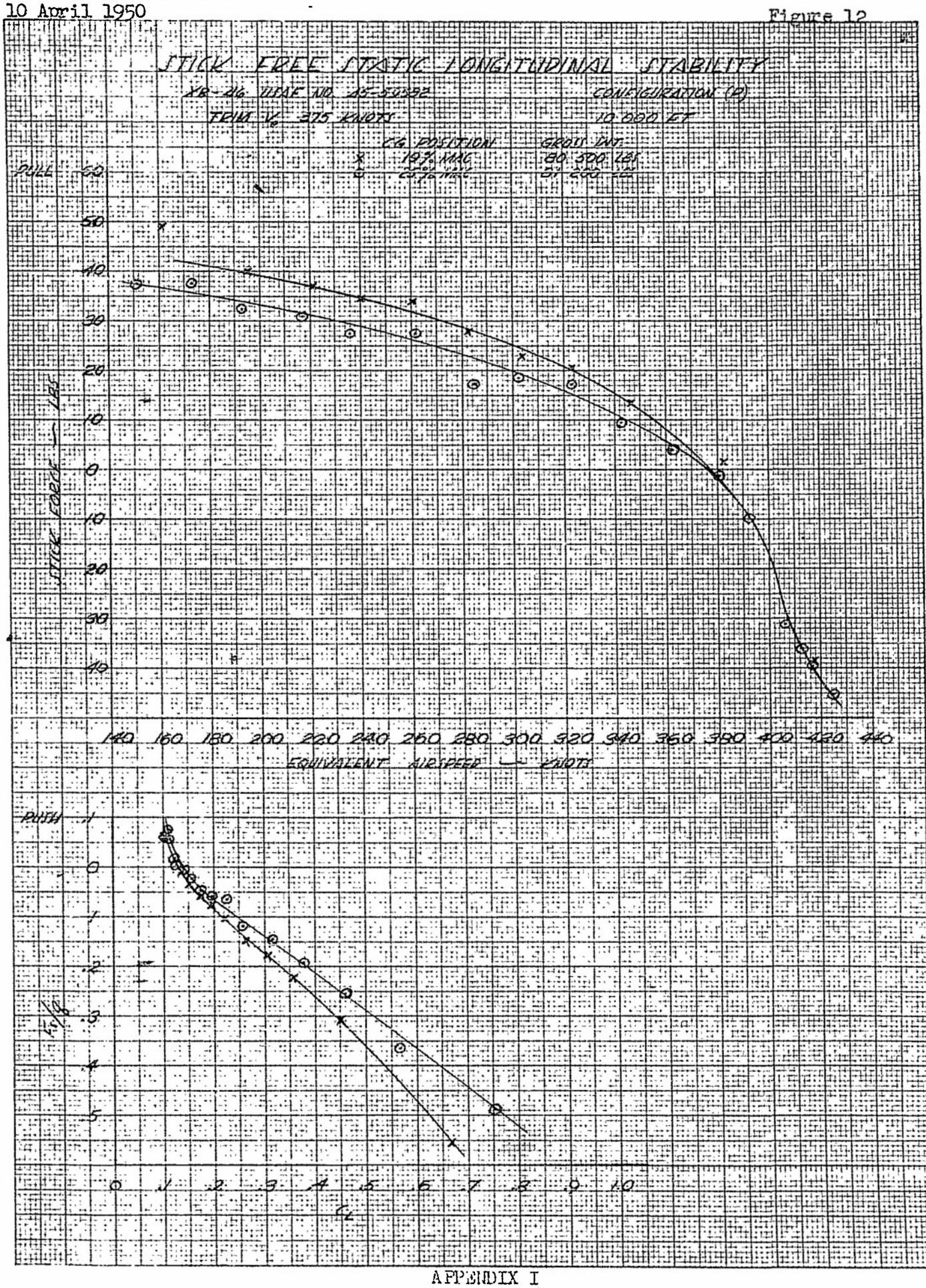
APPENDIX I

Figure 11



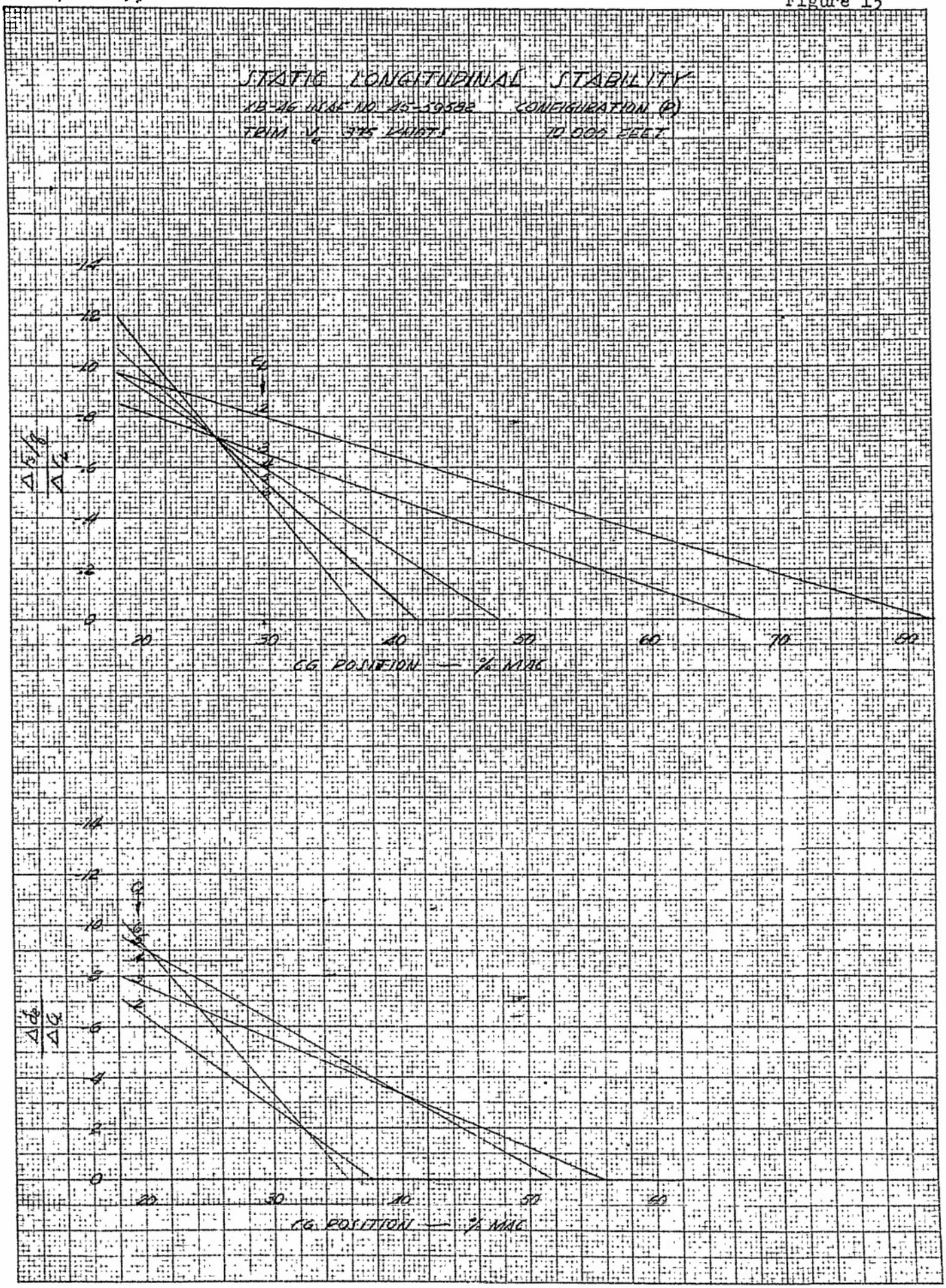
APPENDIX I

Figure 12



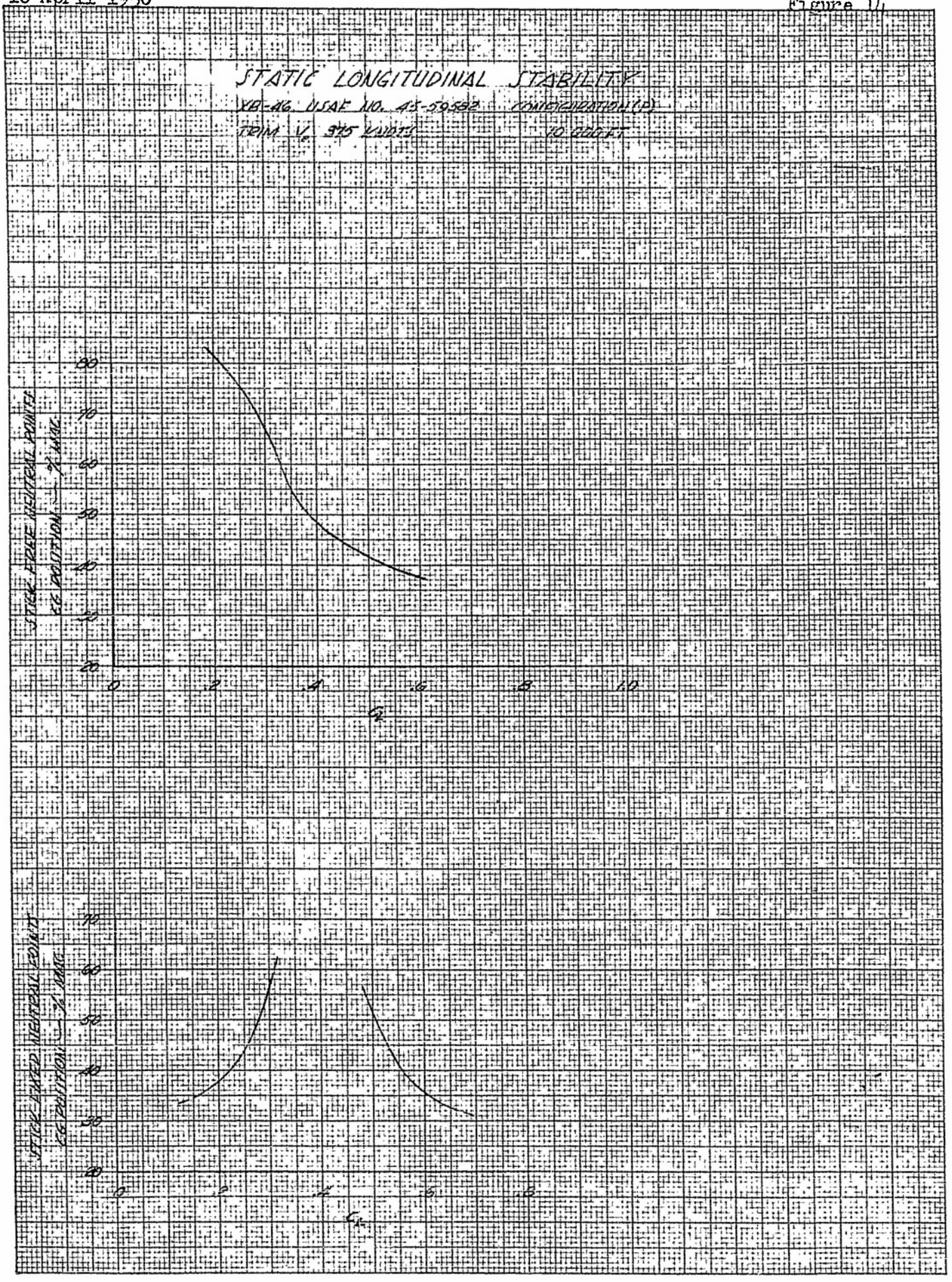
APPENDIX I

Figure 13



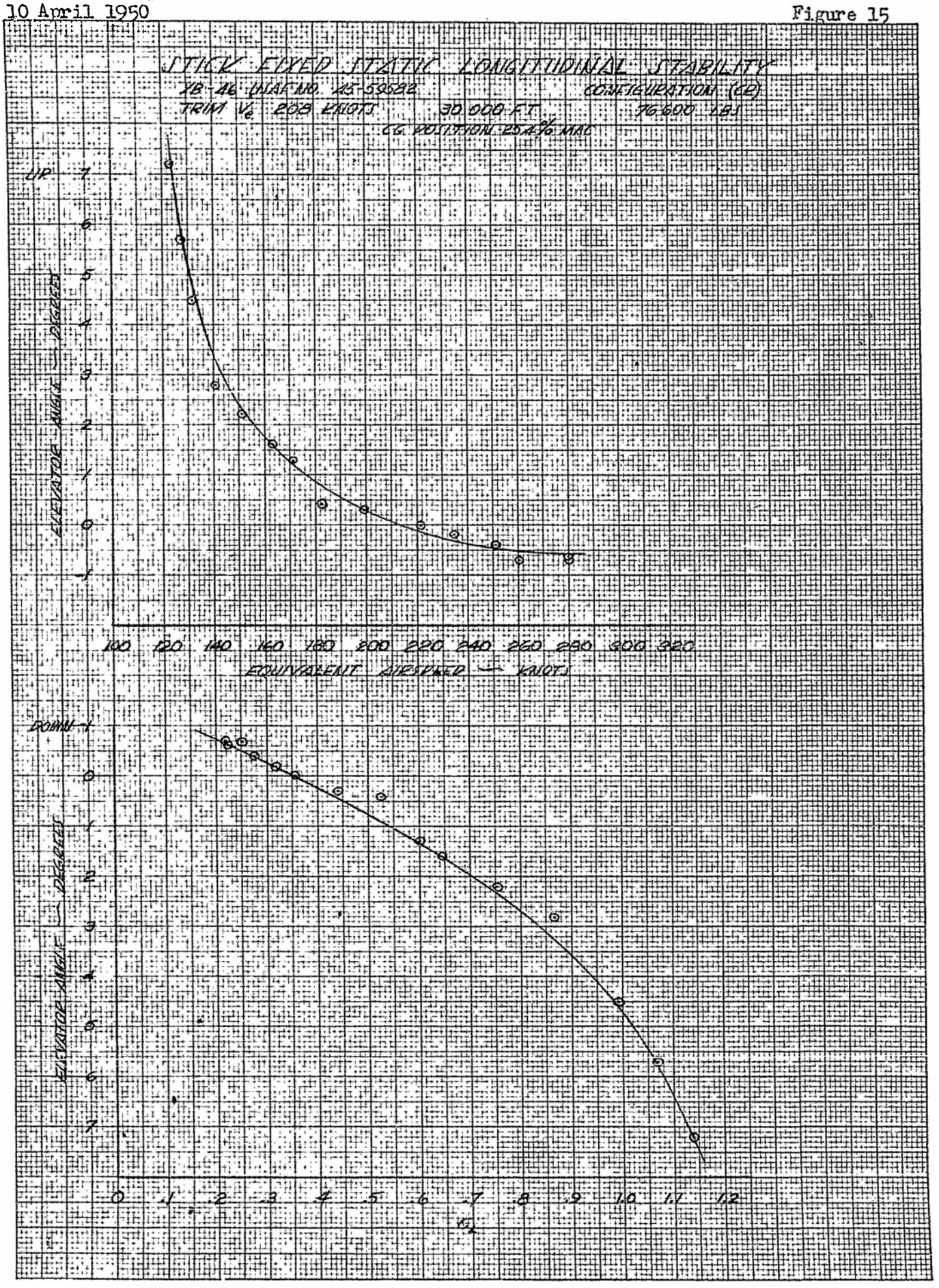
APPENDIX I

Figure 14



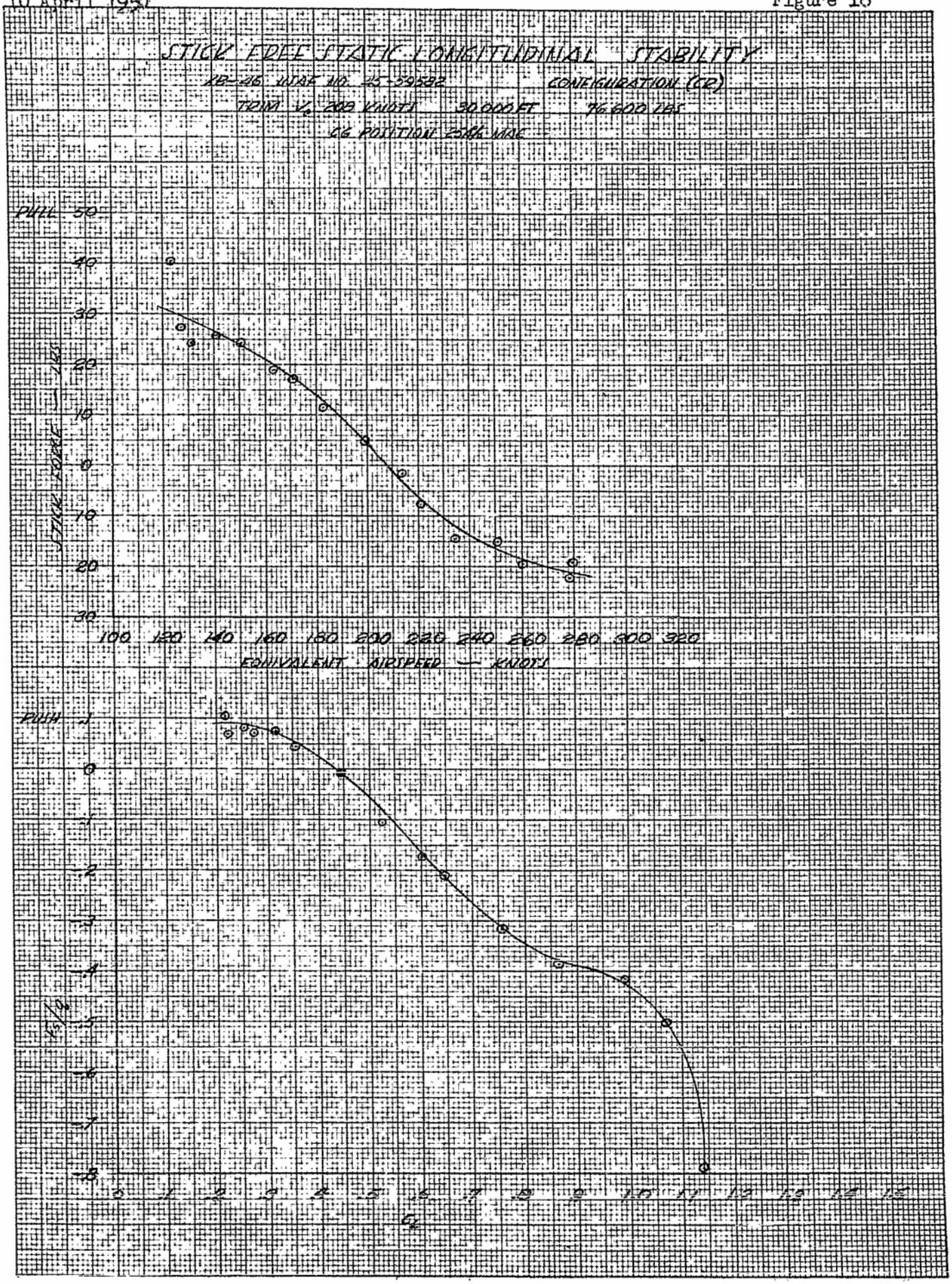
APPENDIX I

Figure 15



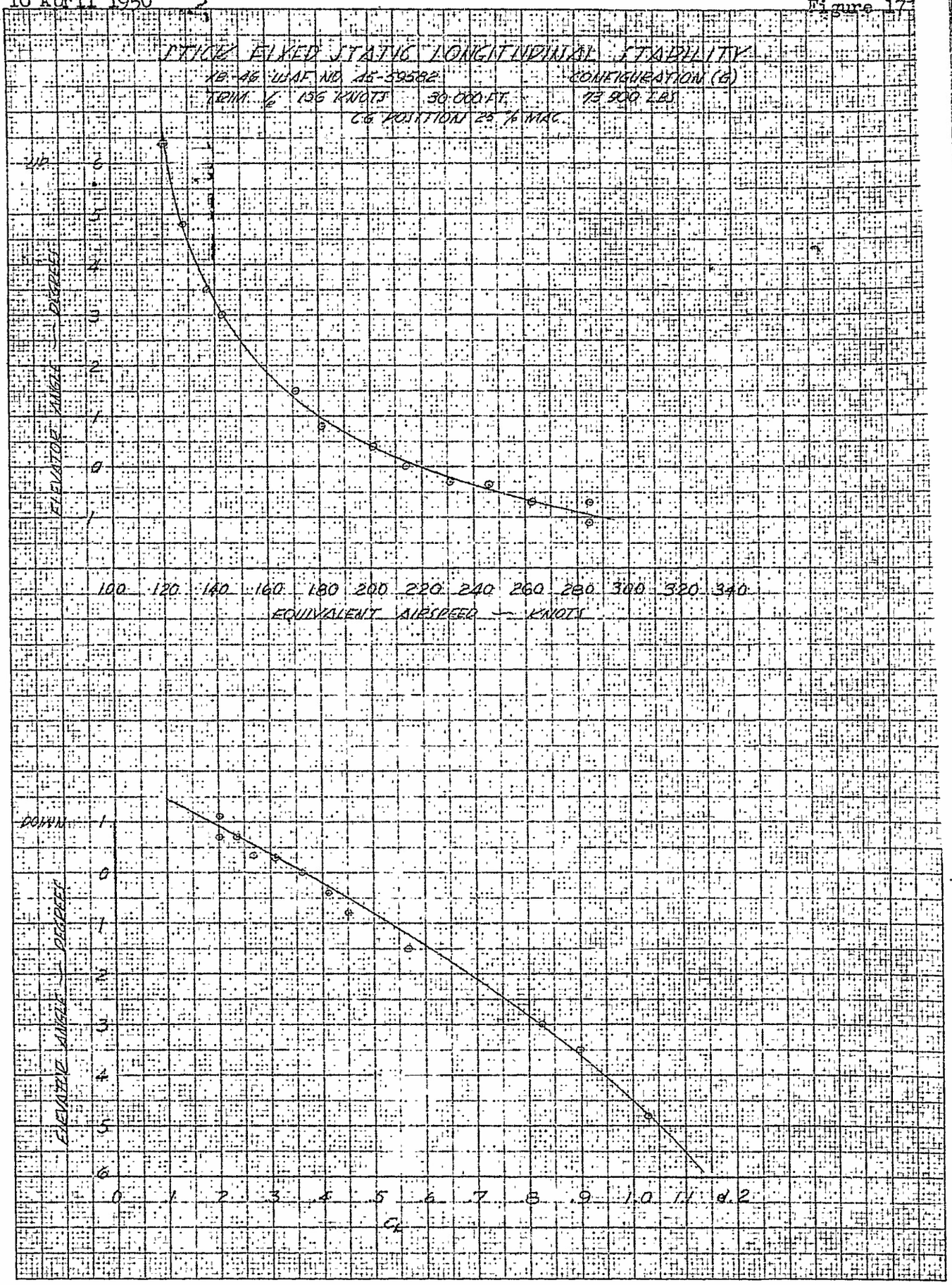
APPENDIX I

Figure 16



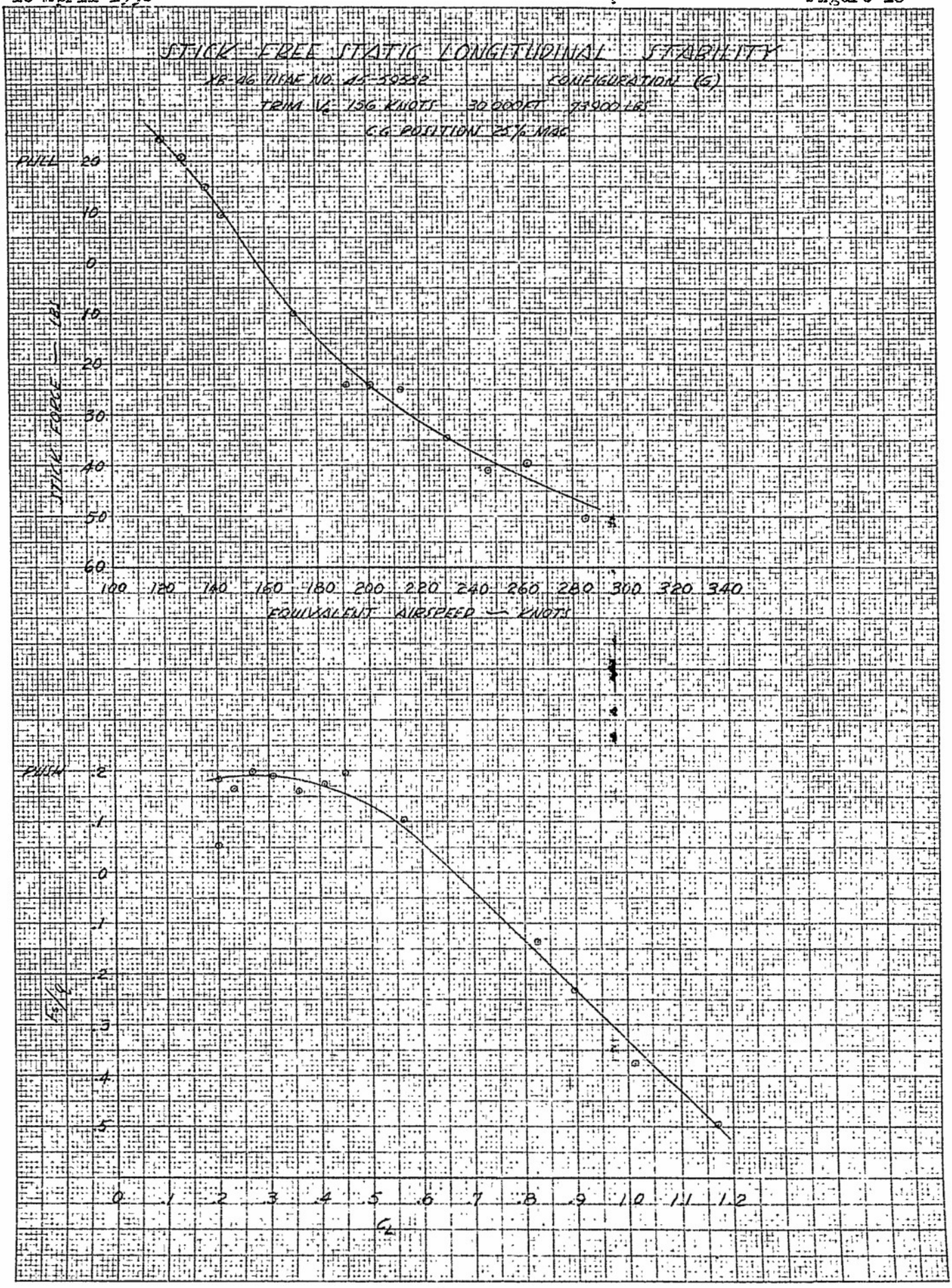
APPENDIX I

Figure 17



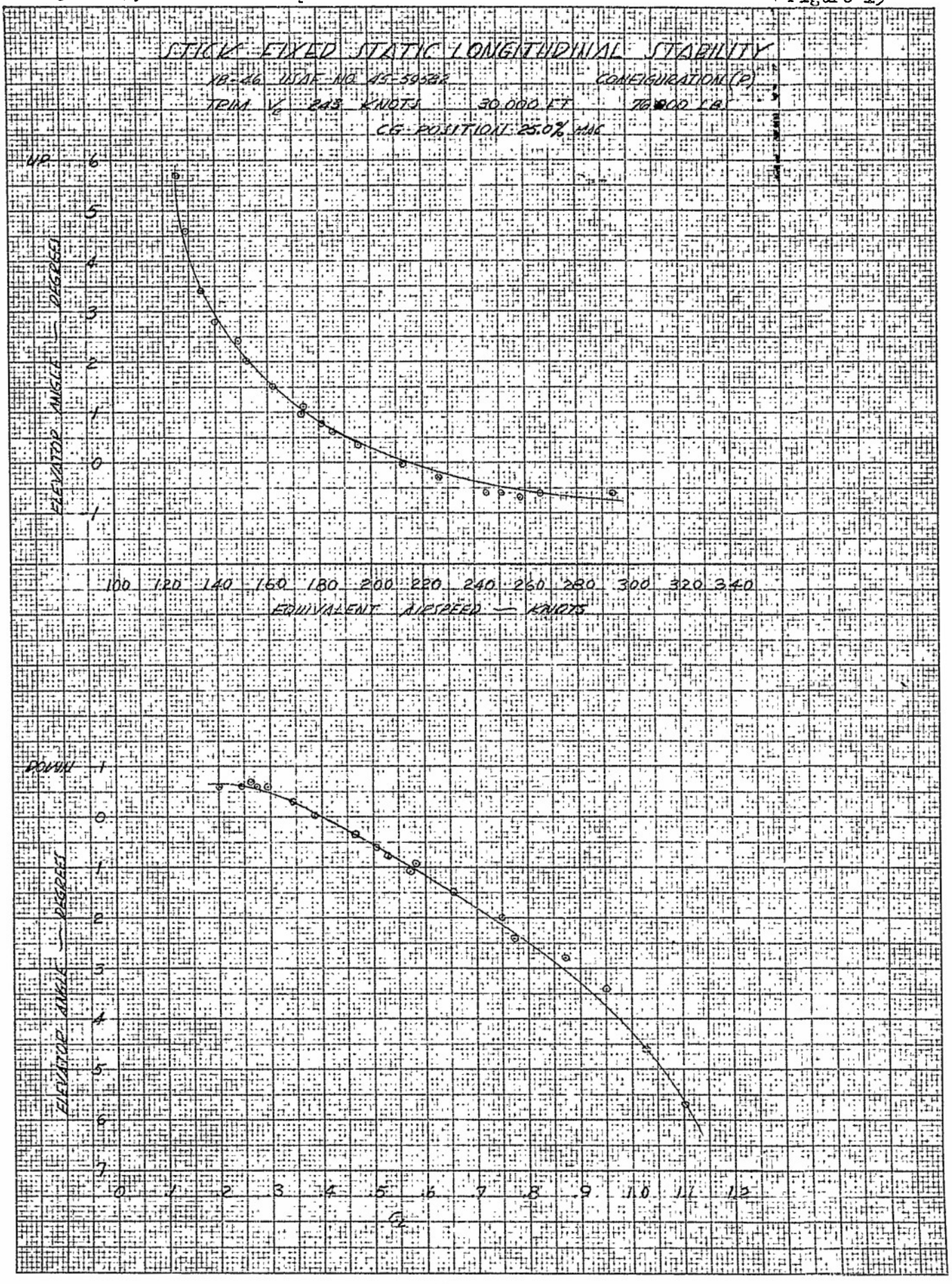
APPENDIX I

Figure 18



APPENDIX I

Figure 19



APPENDIX I

Figure 20

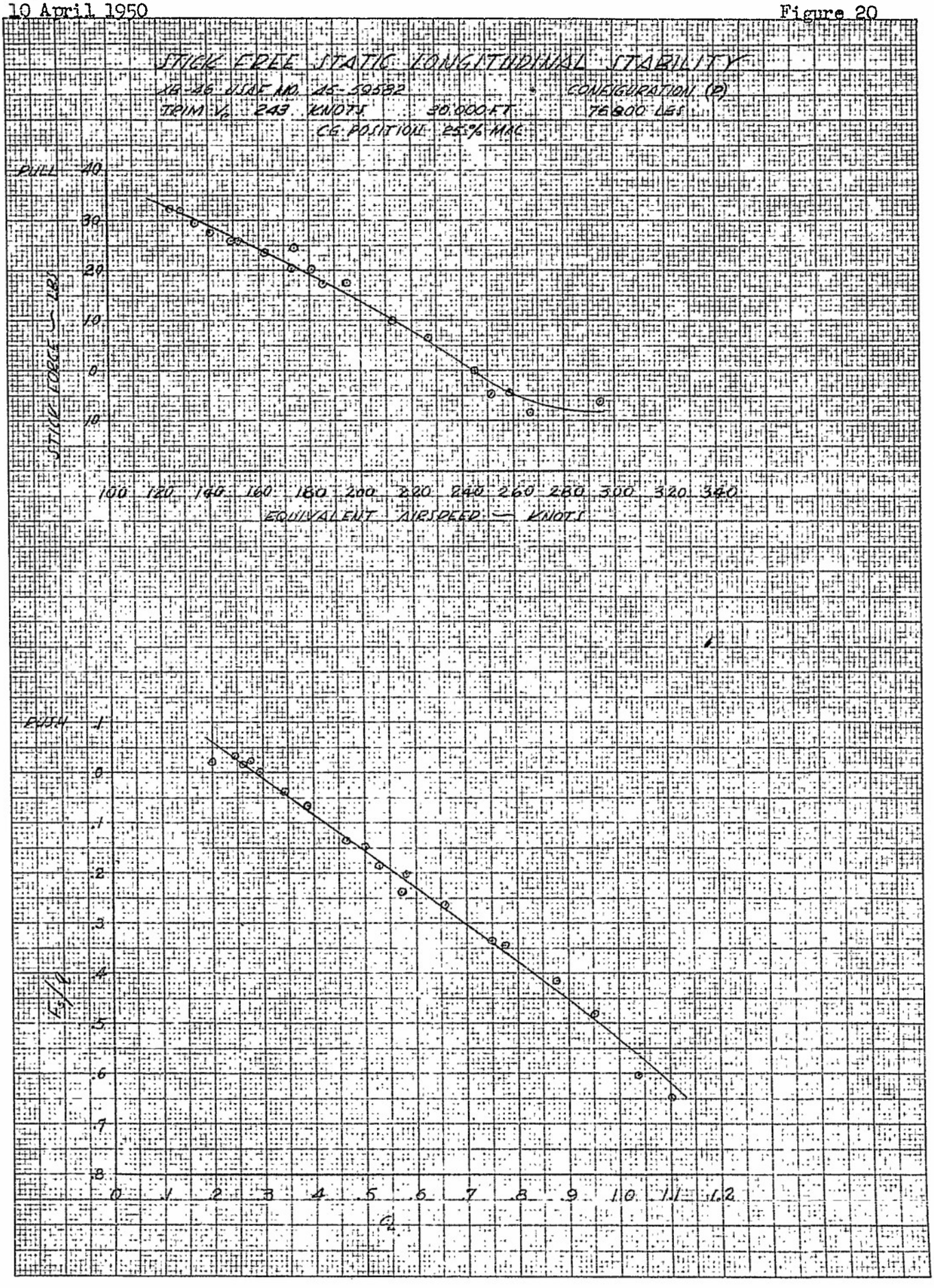


Figure 21

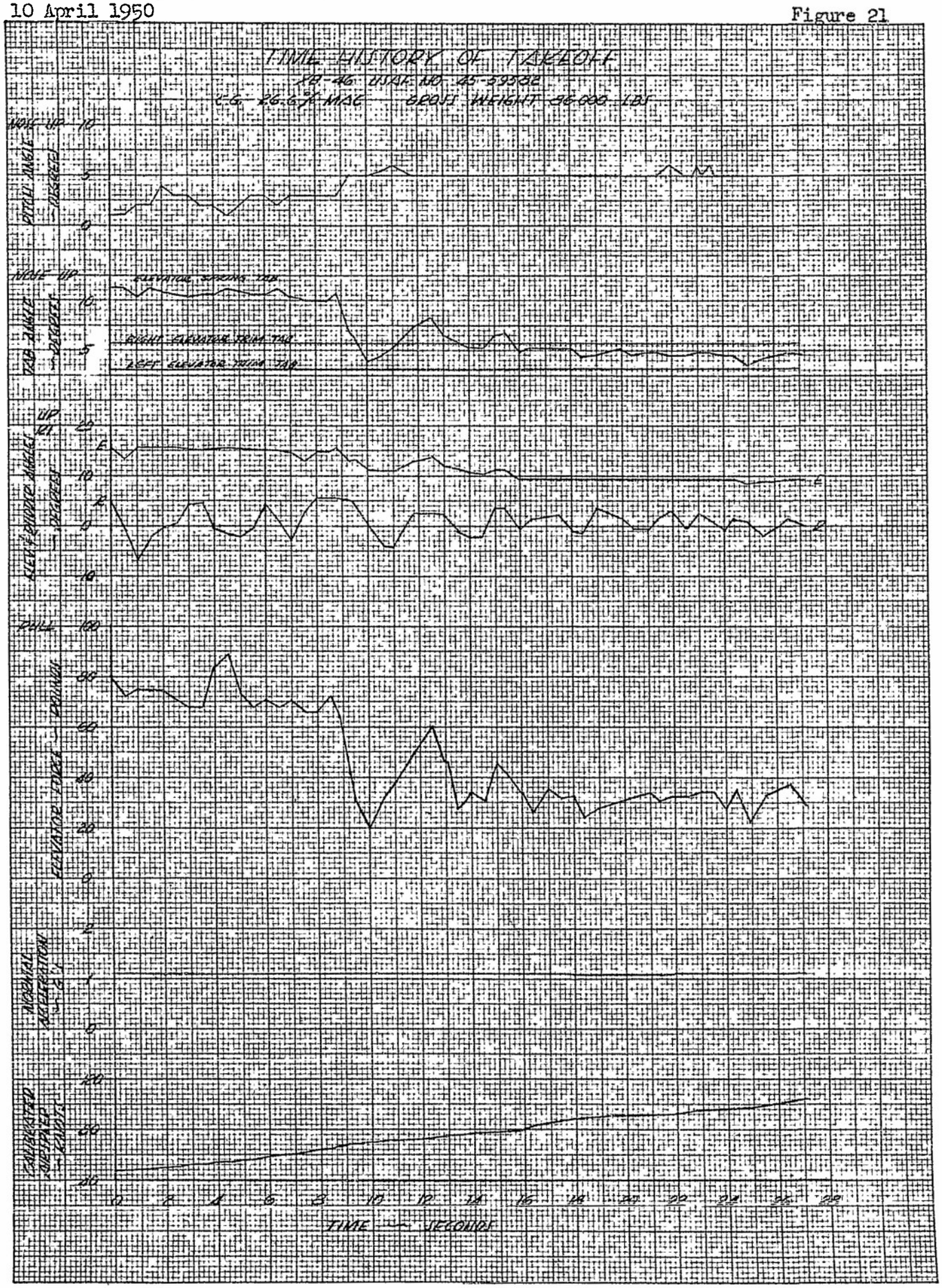
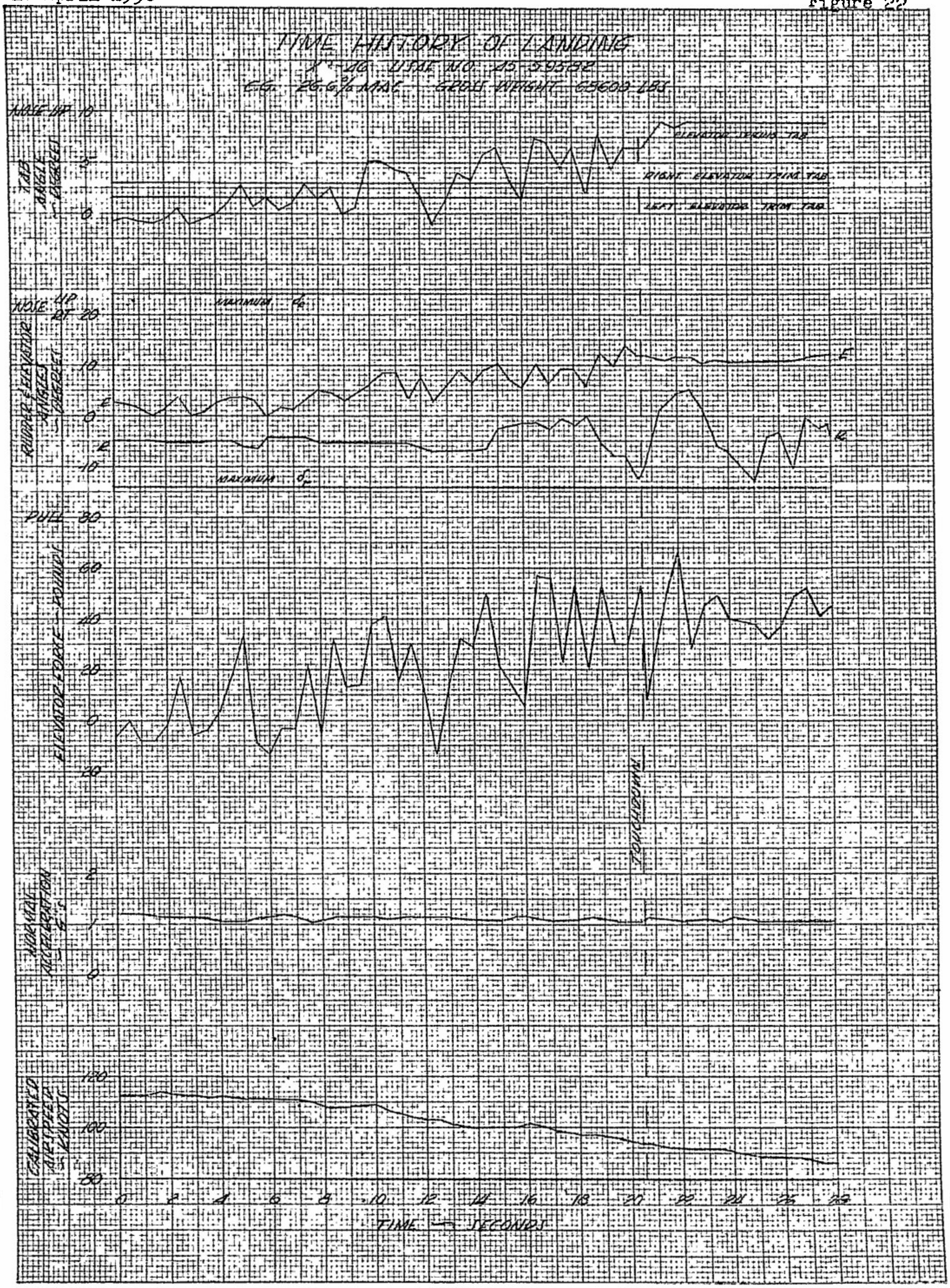
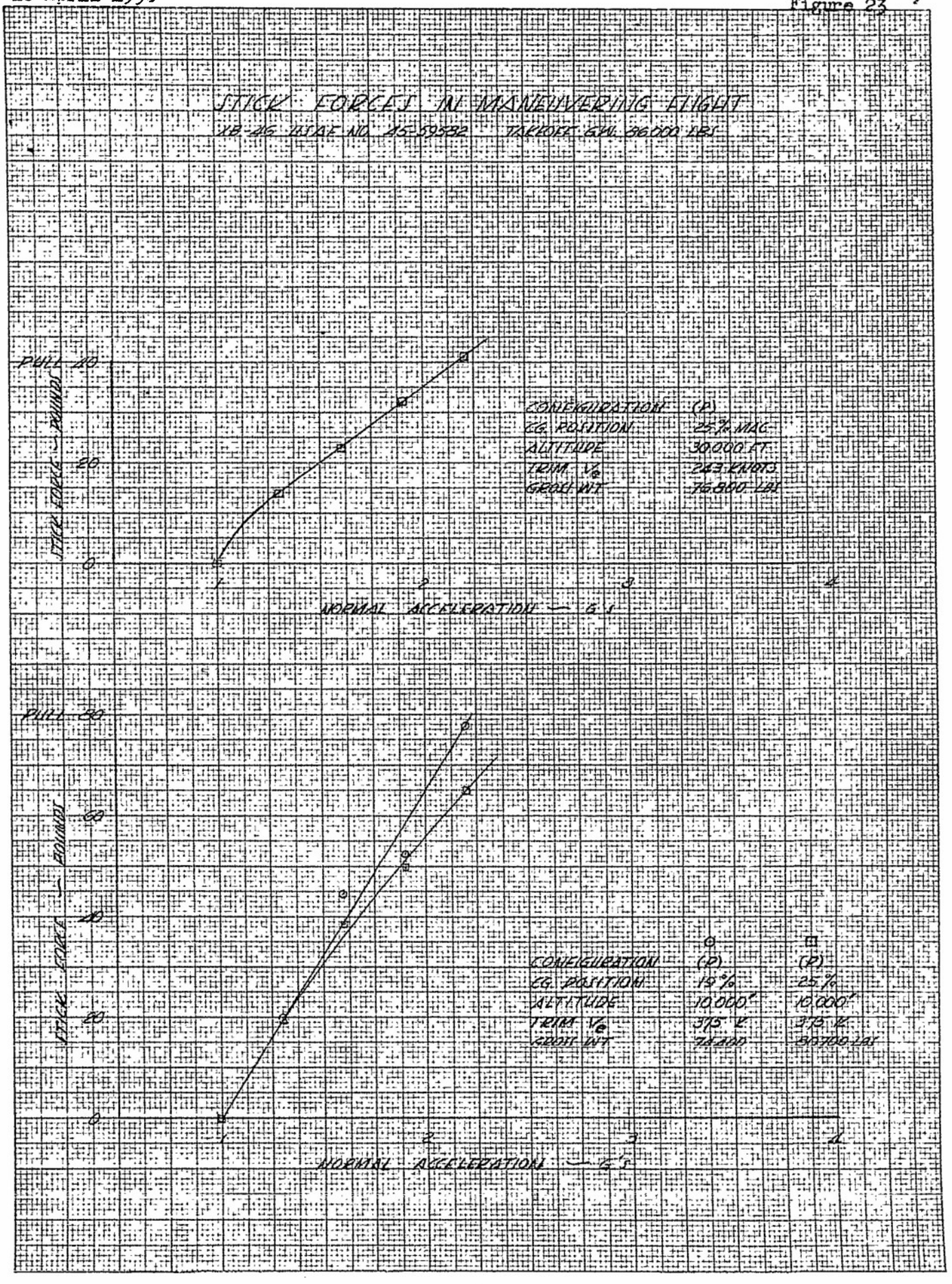

TIME HISTORY OF TAKEOFF
XB-46 USAF NO 45-59582
C.G. 26.6% MAC GROSS WEIGHT 86,000 LBS
NOSE UP
NOSE DOWN
ELEVATOR SERVO TAB
RIGHT ELEVATOR SERVO TAB
LEFT ELEVATOR SERVO TAB
PULL
PUSH
TIME — SECONDS

Figure 22



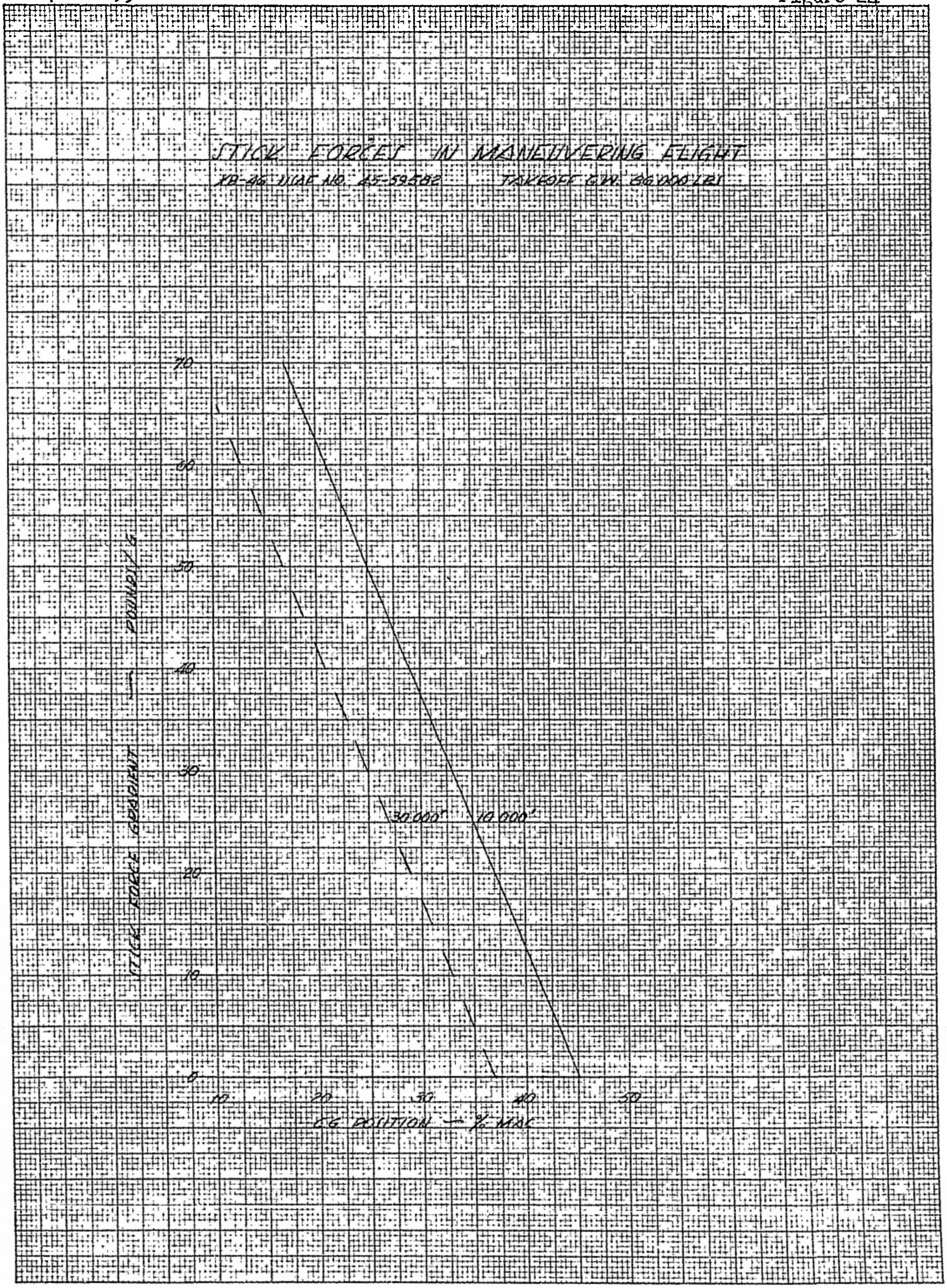
APPENDIX I

Figure 23



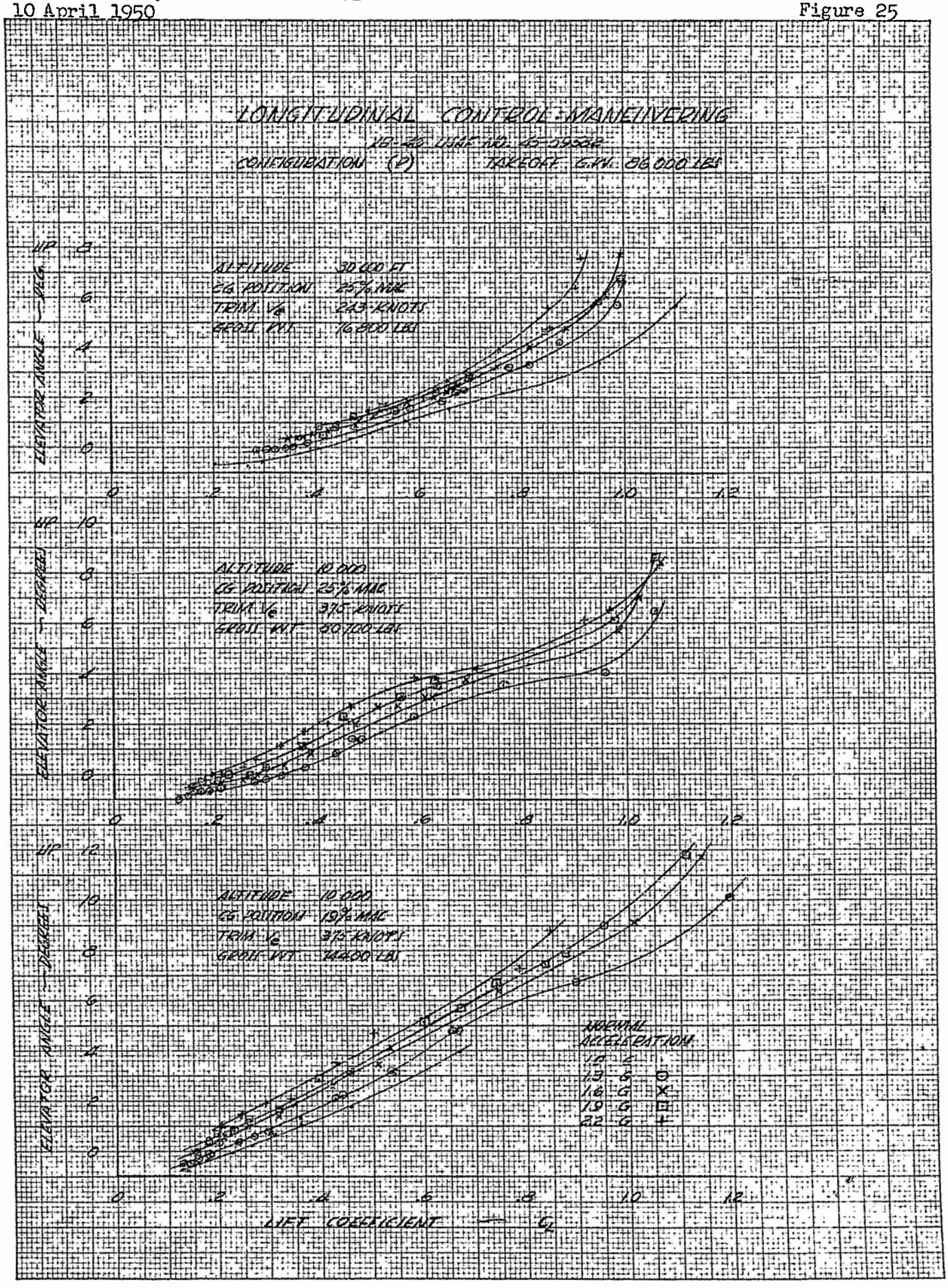
APPENDIX I

Figure 24



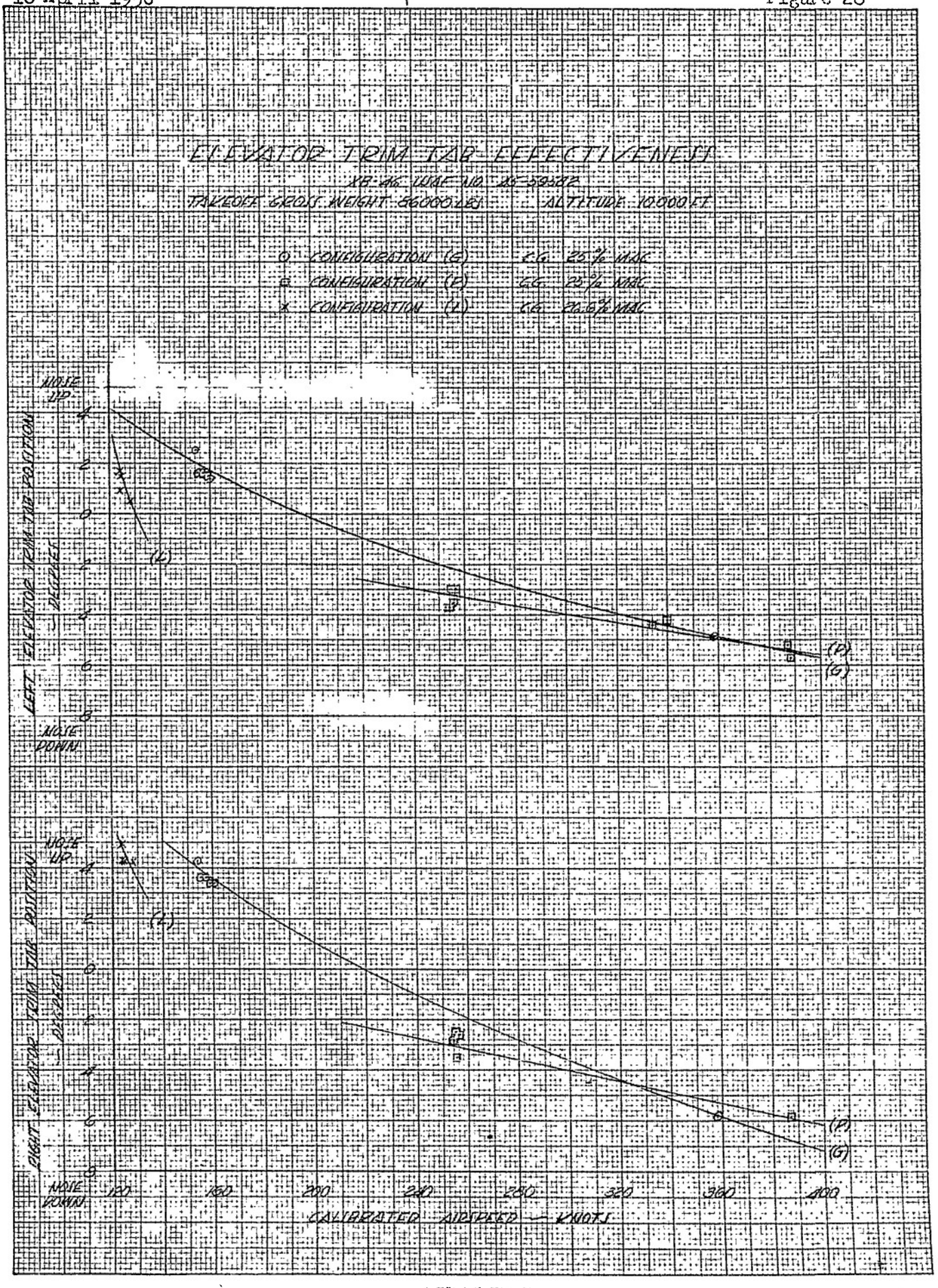
APPENDIX I

Figure 25



APPENDIX I

Figure 26



APPENDIX I

Figure 27

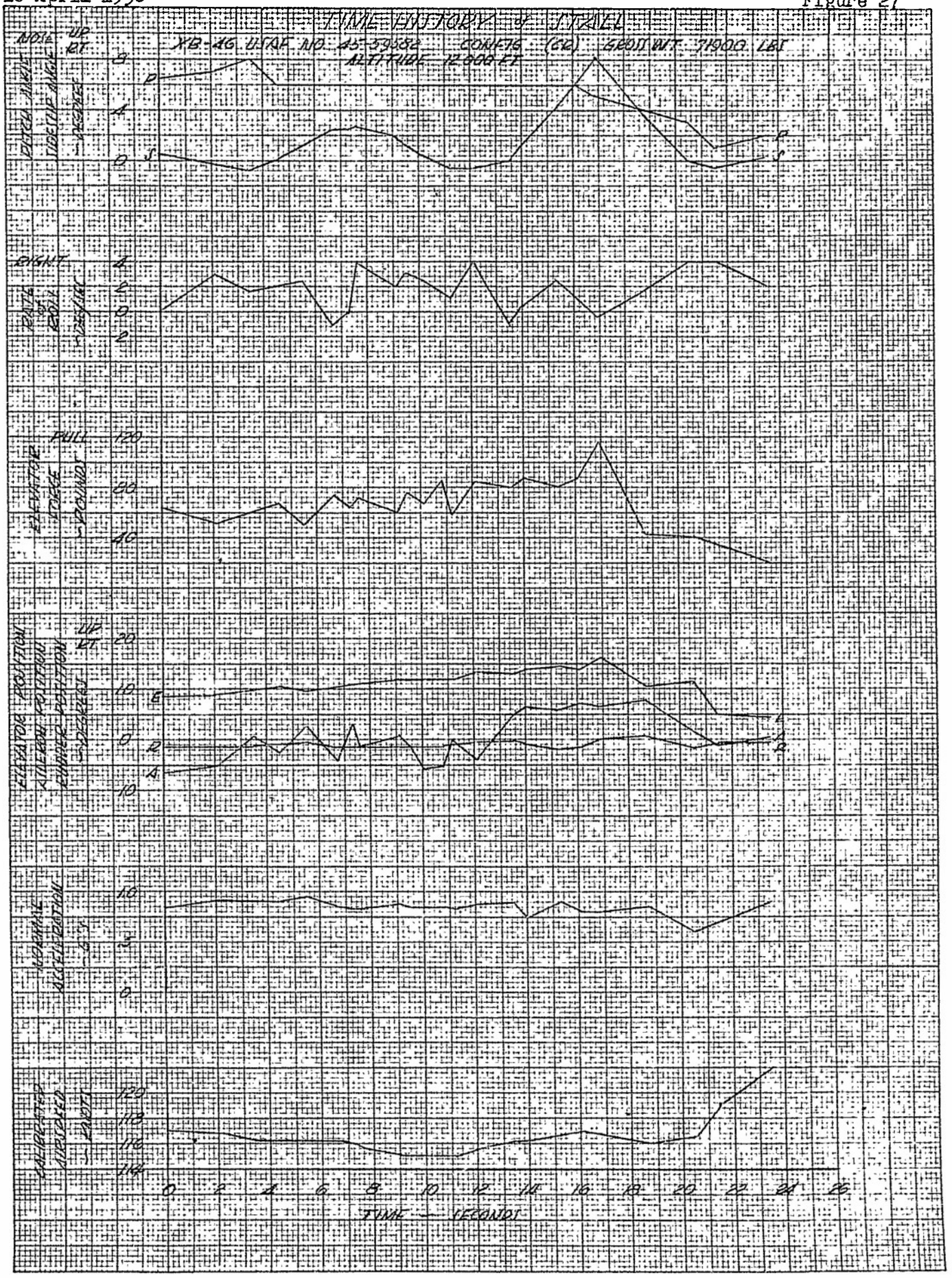
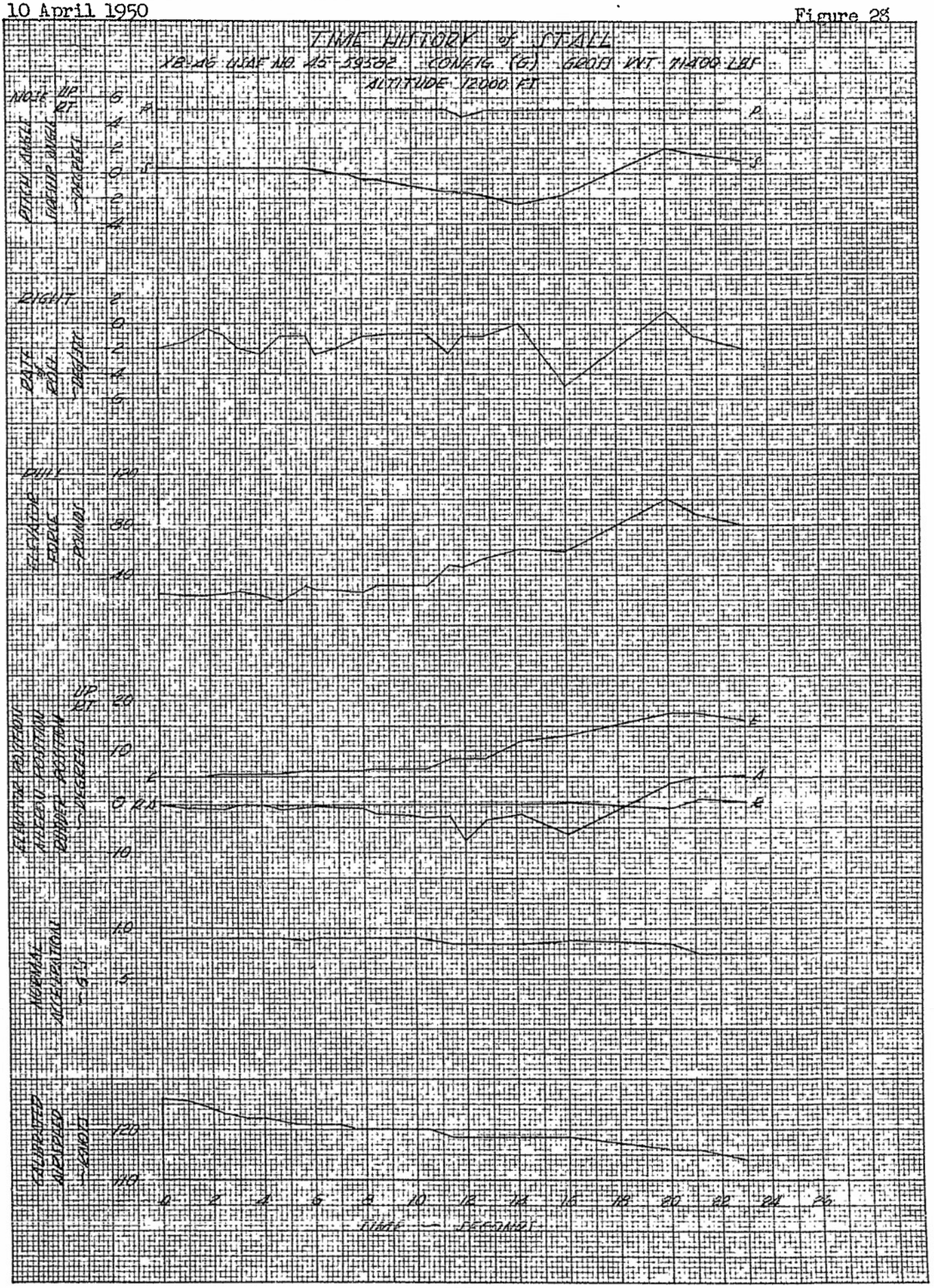

TIME HISTORY OF FLIGHT
XB-46 USAF NO. 45-59582 CONFIG (C2) GROSS WT. 71900 LBS
ALTITUDE 12000 FT
NORMAL ACCELERATION
AILERON
RUDDER
ELEVATOR
AILERON CONTROL FORCE
RUDDER CONTROL FORCE
ELEVATOR CONTROL FORCE
AILERON TRIM TAB POSITION
RUDDER TRIM TAB POSITION
ELEVATOR TRIM TAB POSITION
TIME — SECONDS

Figure 28



APPENDIX I

Memorandum Report No. MCRET-2282
10 April 1950

Figure 29

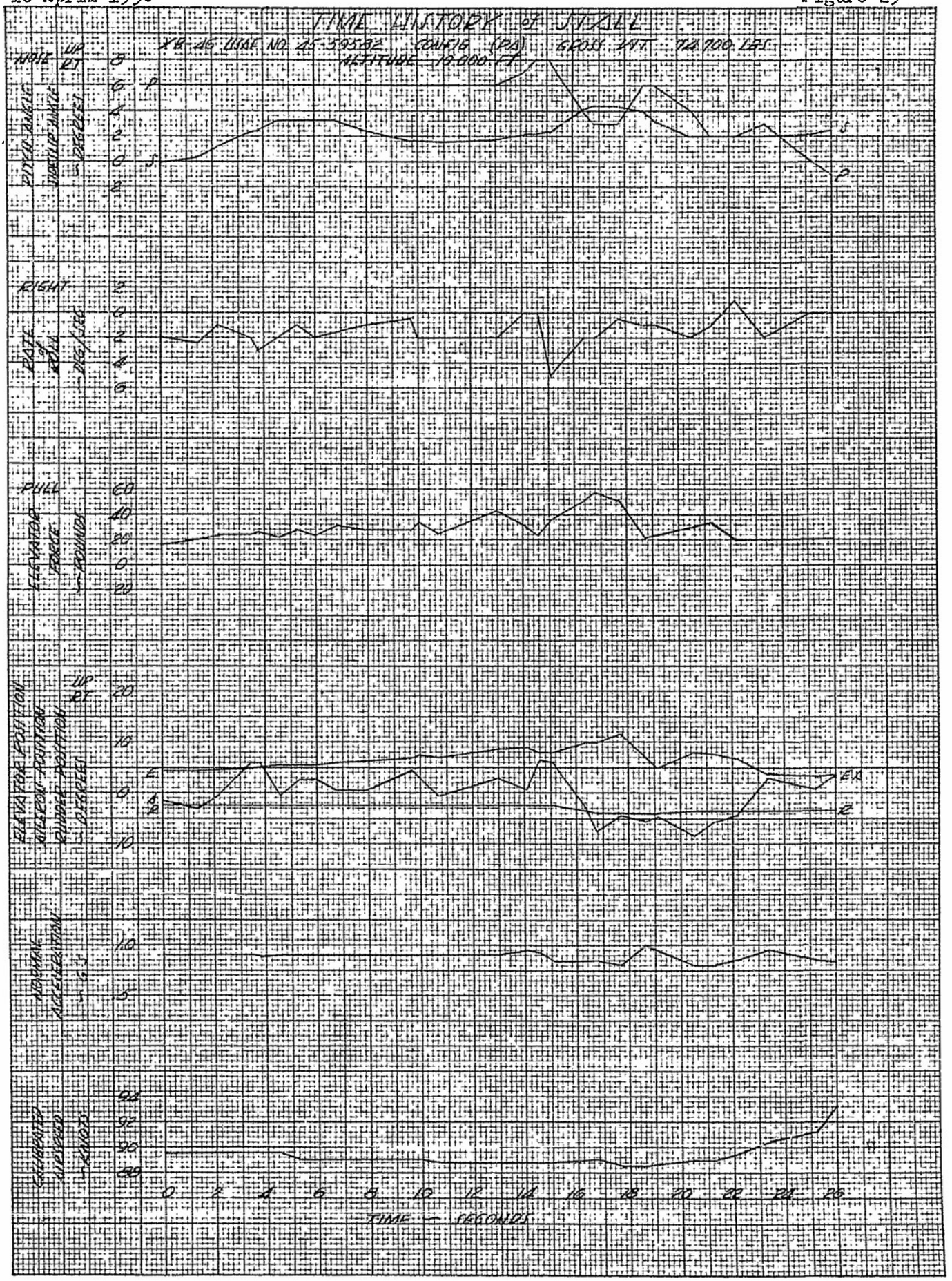
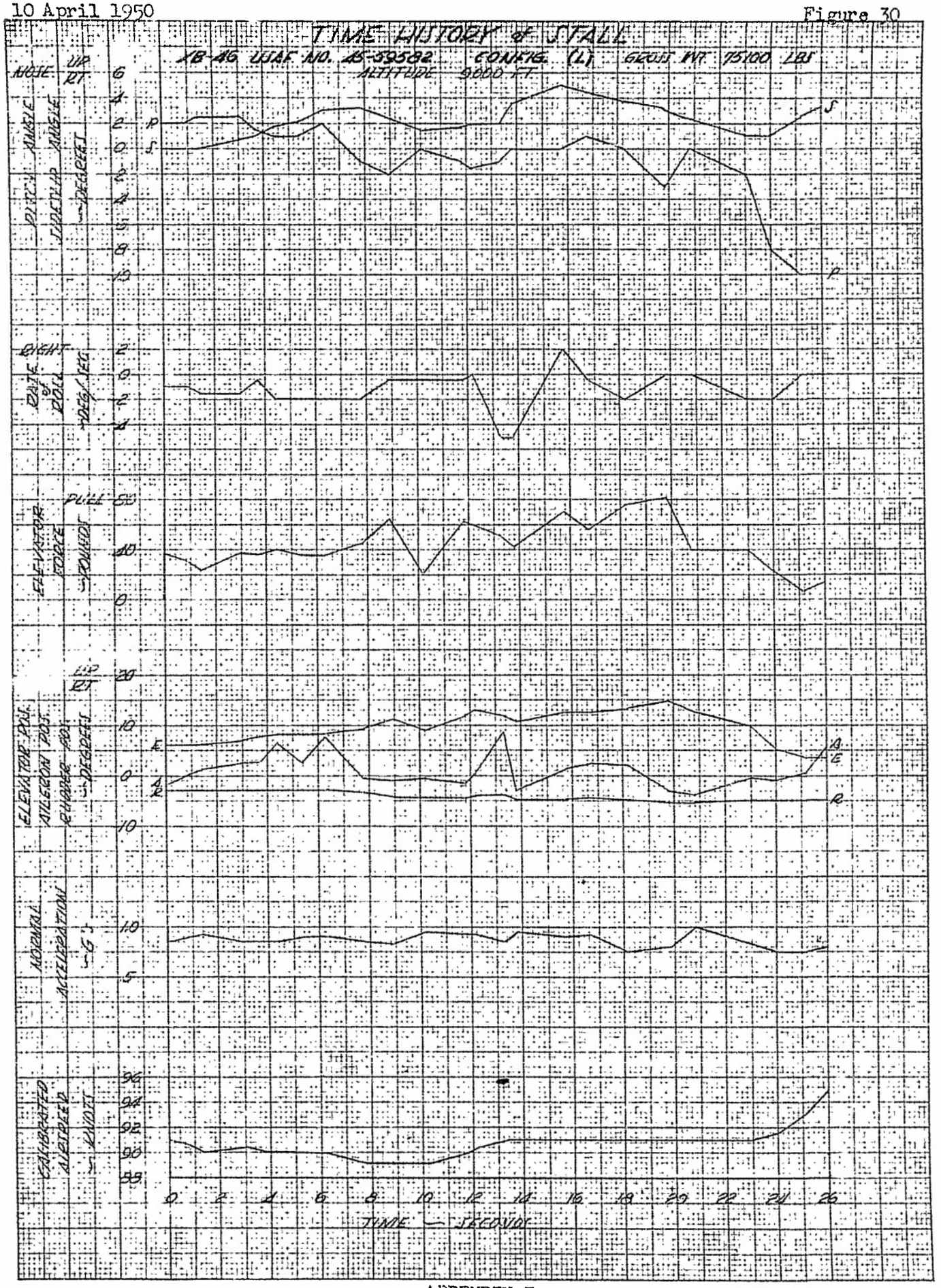


Figure 30



APPENDIX I

Figure 31

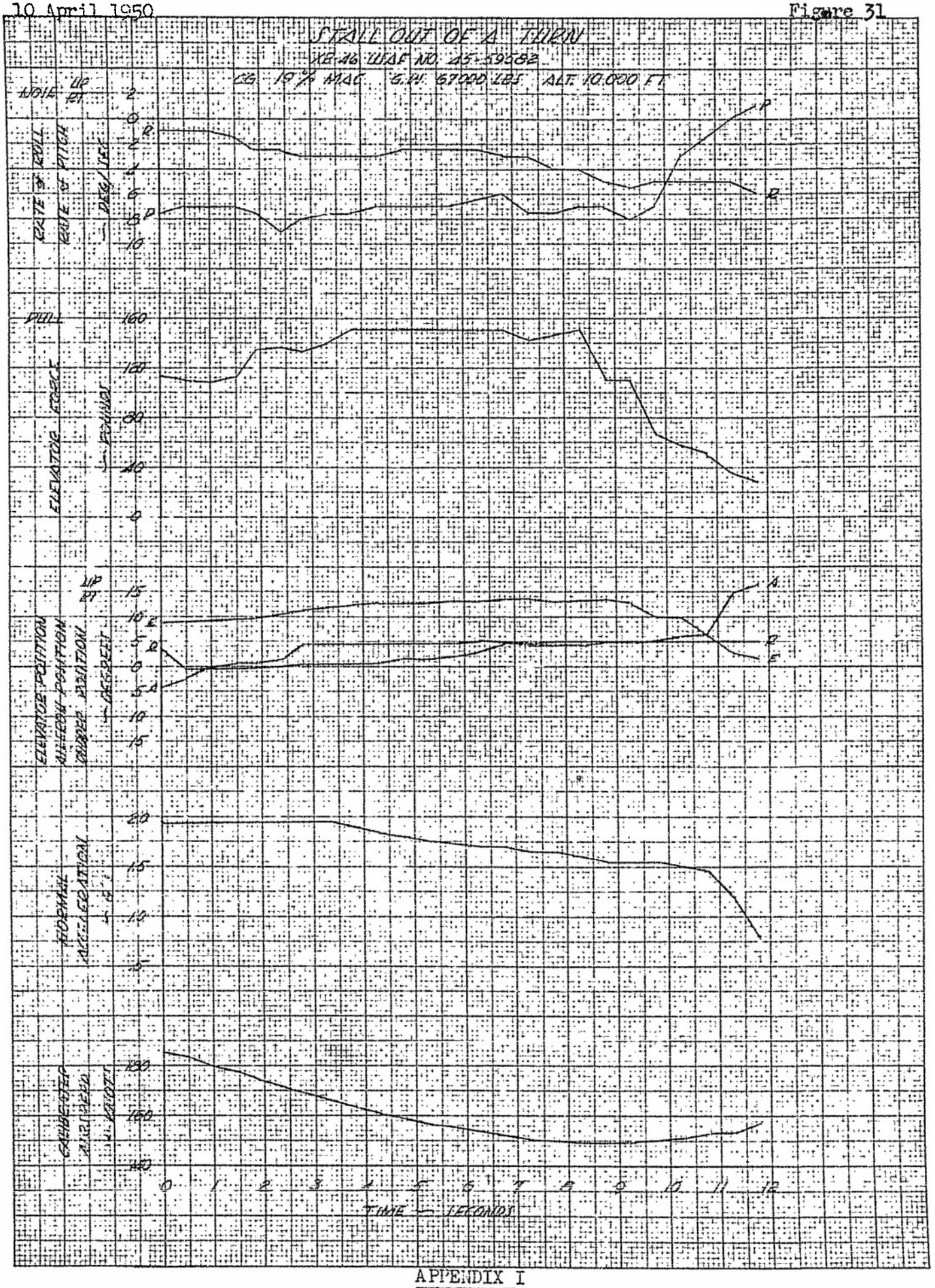
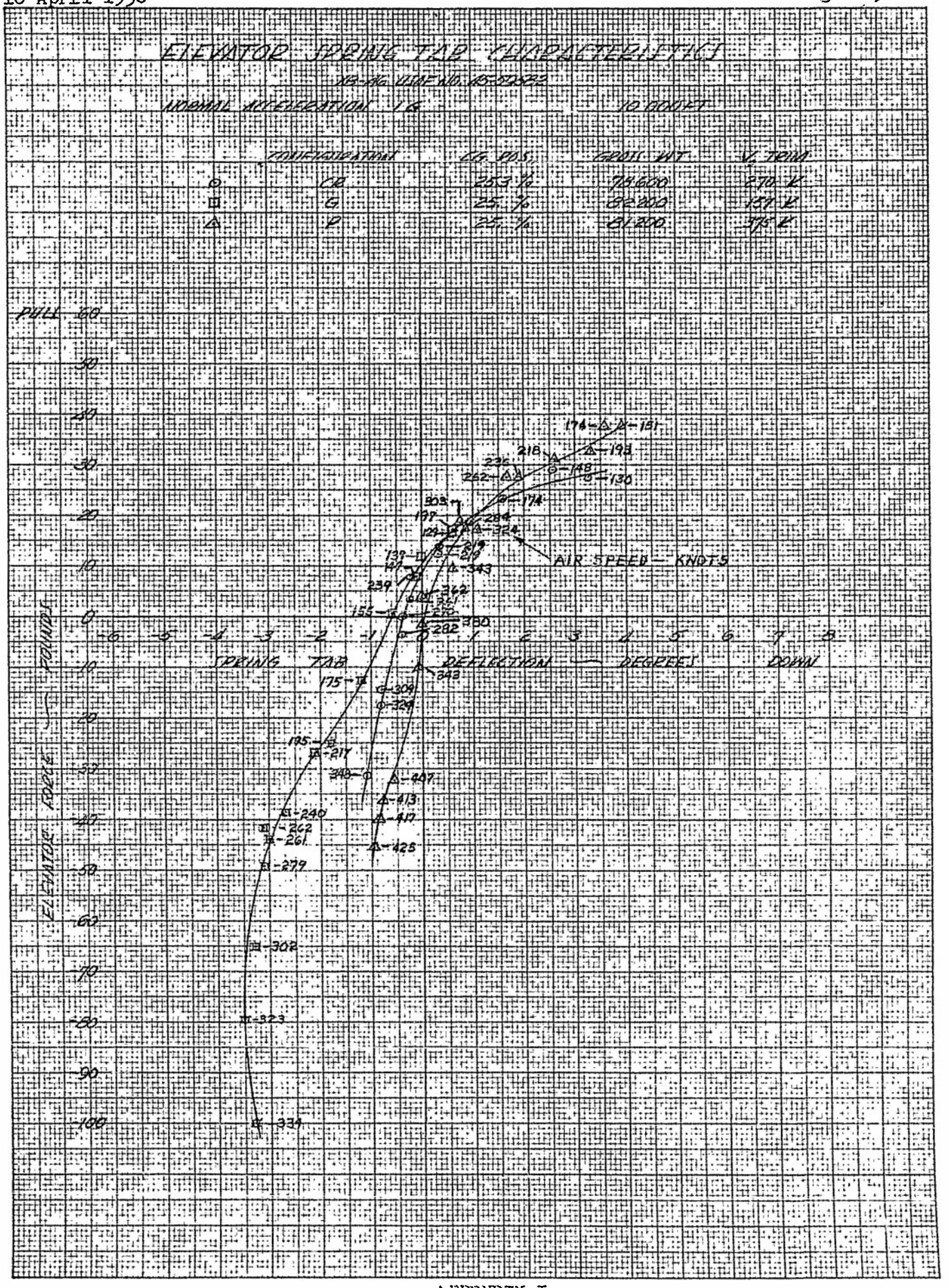
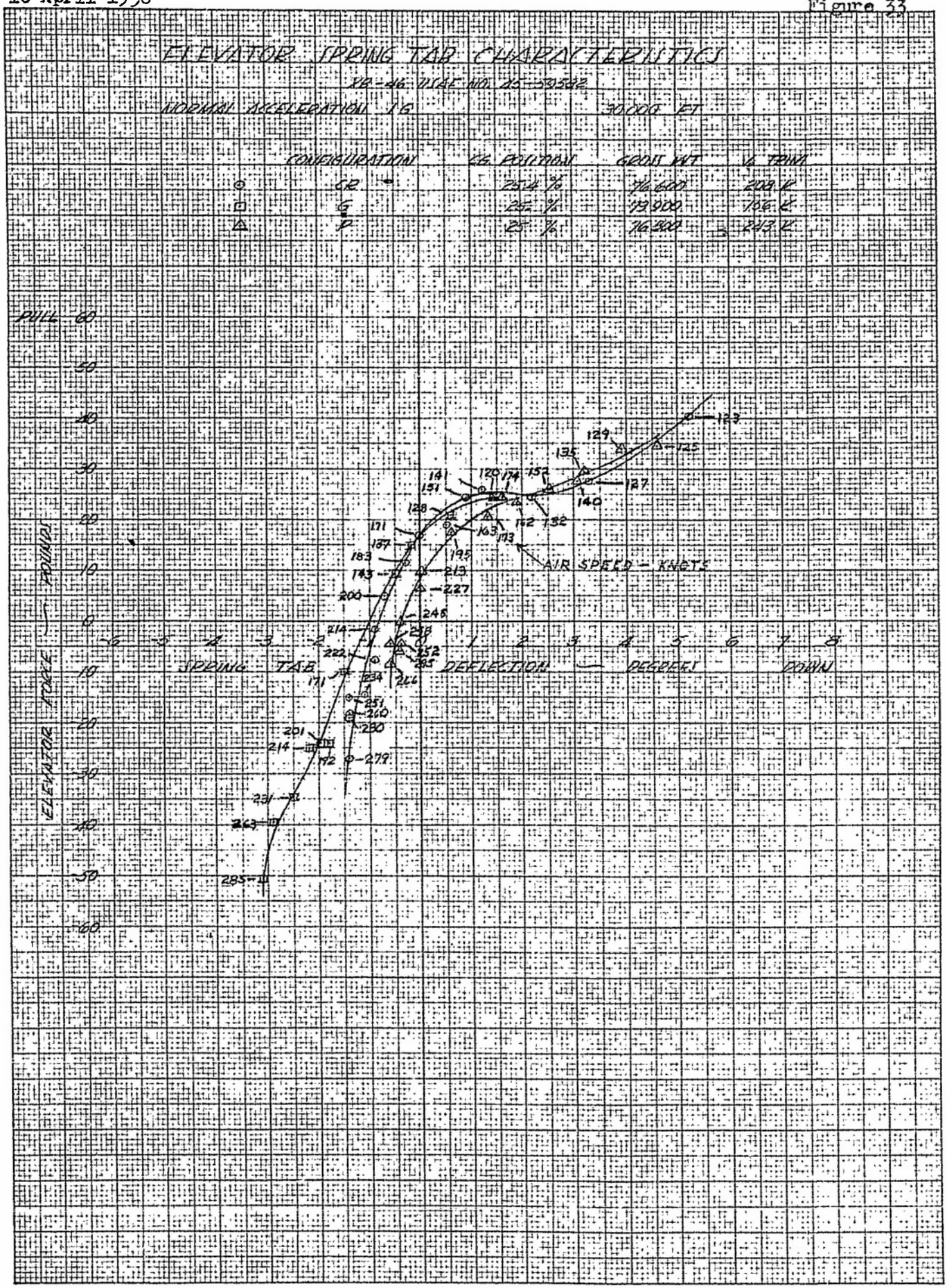

STALL OUT OF A TURN
XB-46 USAF NO. 45-59582
CG 19% MAC G.W. 67000 LBS ALT. 10,000 FT
AILERON
RATE OF ROLL
RATE OF PITCH
DEG/SEC
ELEVATOR FORCE
PULL
PUSH
POUNDS
ELEVATOR POSITION
AILERON POSITION
RUDDER POSITION
UP
DOWN
NORMAL ACCELERATION
CALIBRATED AIRSPEED
KNOTS
TIME — SECONDS
P
Q
R
A
E
S
D

Figure 32



APPENDIX I

Figure 33



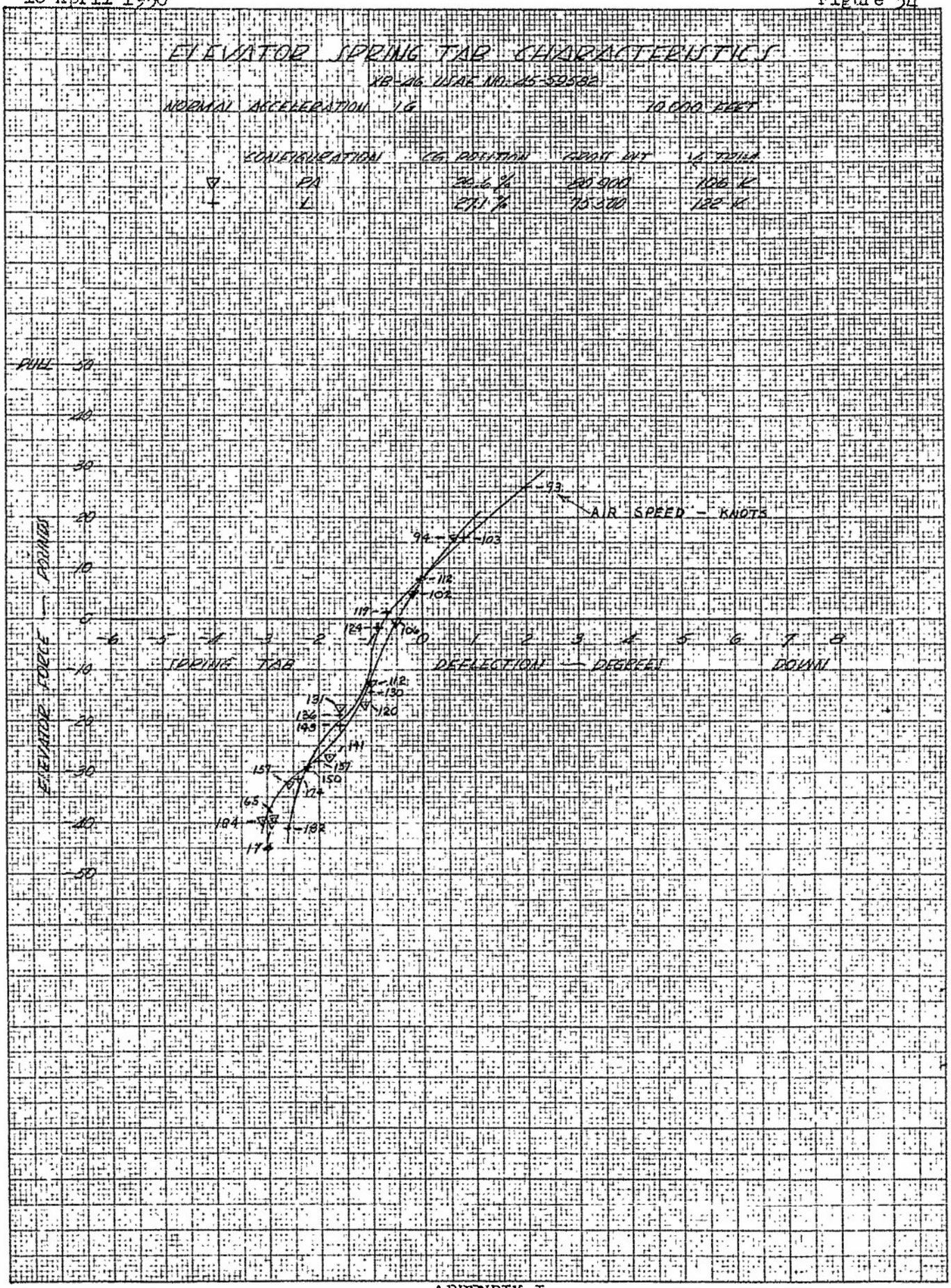

ELEVATOR SPRING TAB CHARACTERISTICS
XB-16 USAF NO. 45-59582
NORMAL ACCELERATION 1G
10,000 FEET
CONFIGURATION
CG POSITION
GROSS WT
1G STALL
PA
20.6 %
80,900
106 K
L
27.1 %
75,300
122 K
FULL
30
20
10
0
-10
-20
-30
-40
-50
ELEVATOR FORCE — POUNDS
-6
-5
-4
-3
-2
-1
0
1
2
3
4
5
6
7
8
UP
DEFLECTION — DEGREES
DOWN
TRIM TAB
AIR SPEED — KNOTS
93
94
103
112
102
117
124
104
131
136
130
120
149
141
157
159
150
174
165
184
182
174

Figure 35

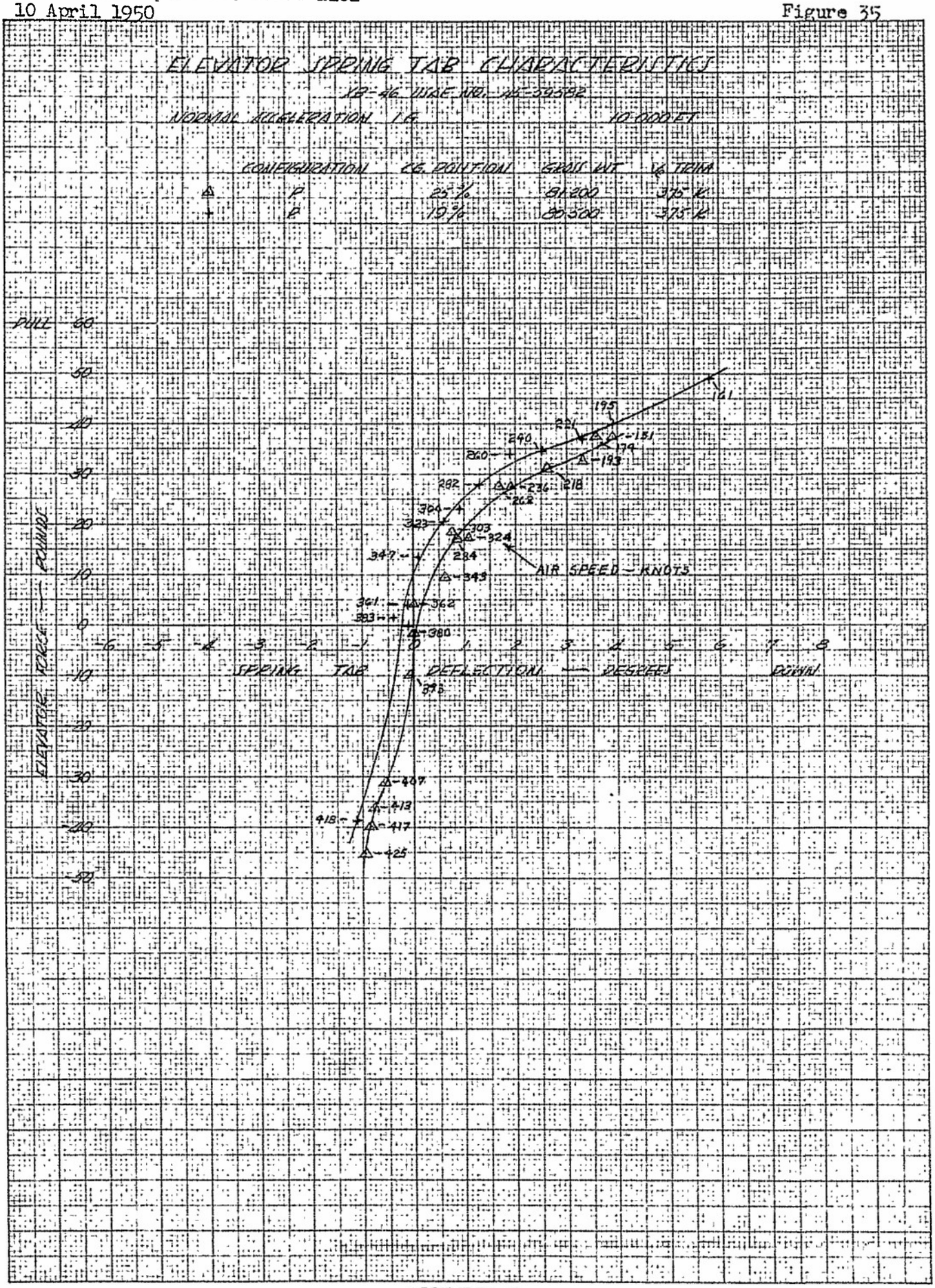
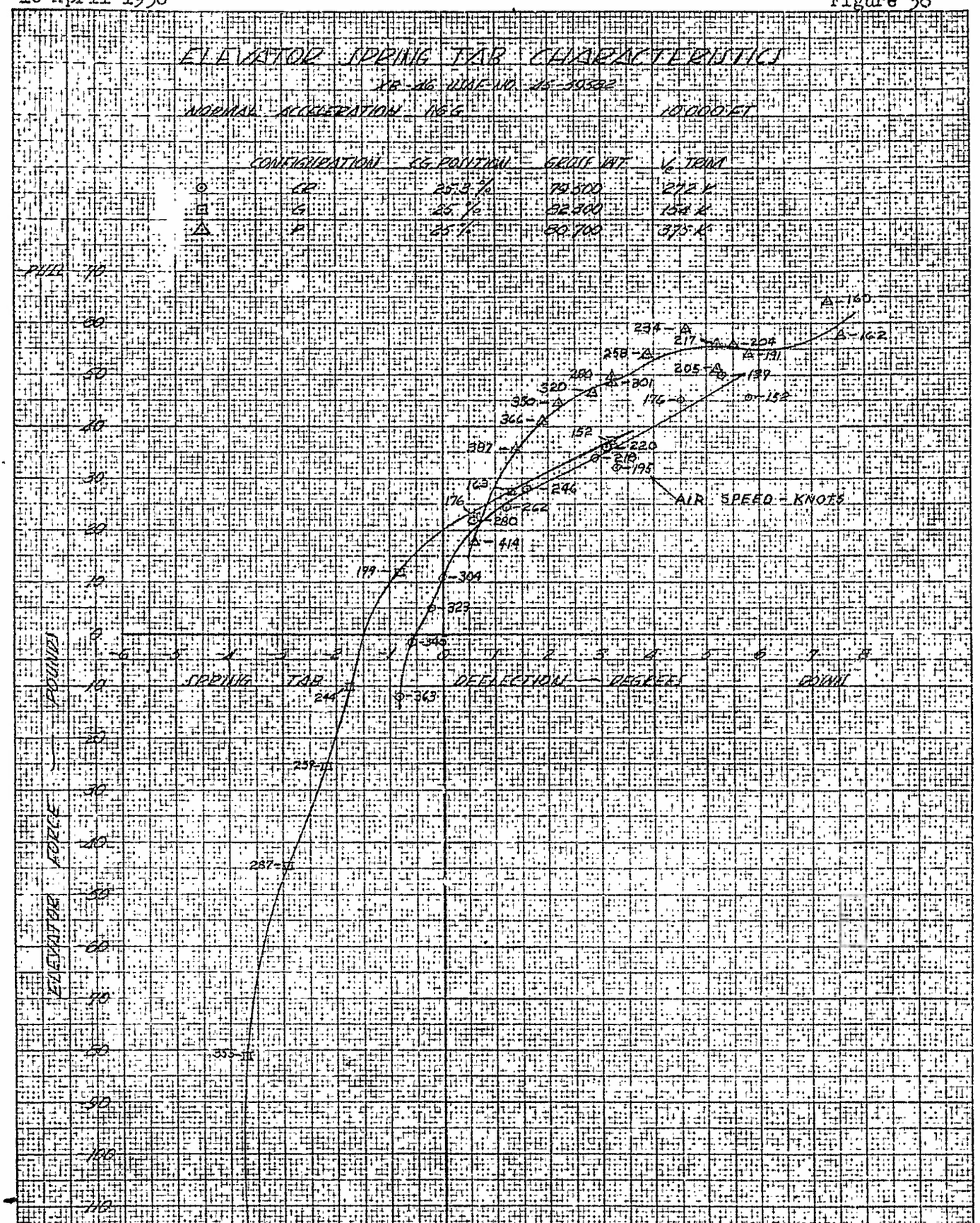


Figure 36


ELEVATOR SPRING TAB CHARACTERISTICS
NORMAL ACCELERATION 1.0 G
10,000 FT
CONFIGURATION
CG POSITION
GROSS WT
V_i TRIM
25.3 %
79,500
1272 K
25. %
82,300
1344 K
25. %
80,700
375 K
PULL UP
PUSH OVER
ELEVATOR FORCE
SPRING TAB DEFLECTION — DEGREES
AIR SPEED - KNOTS

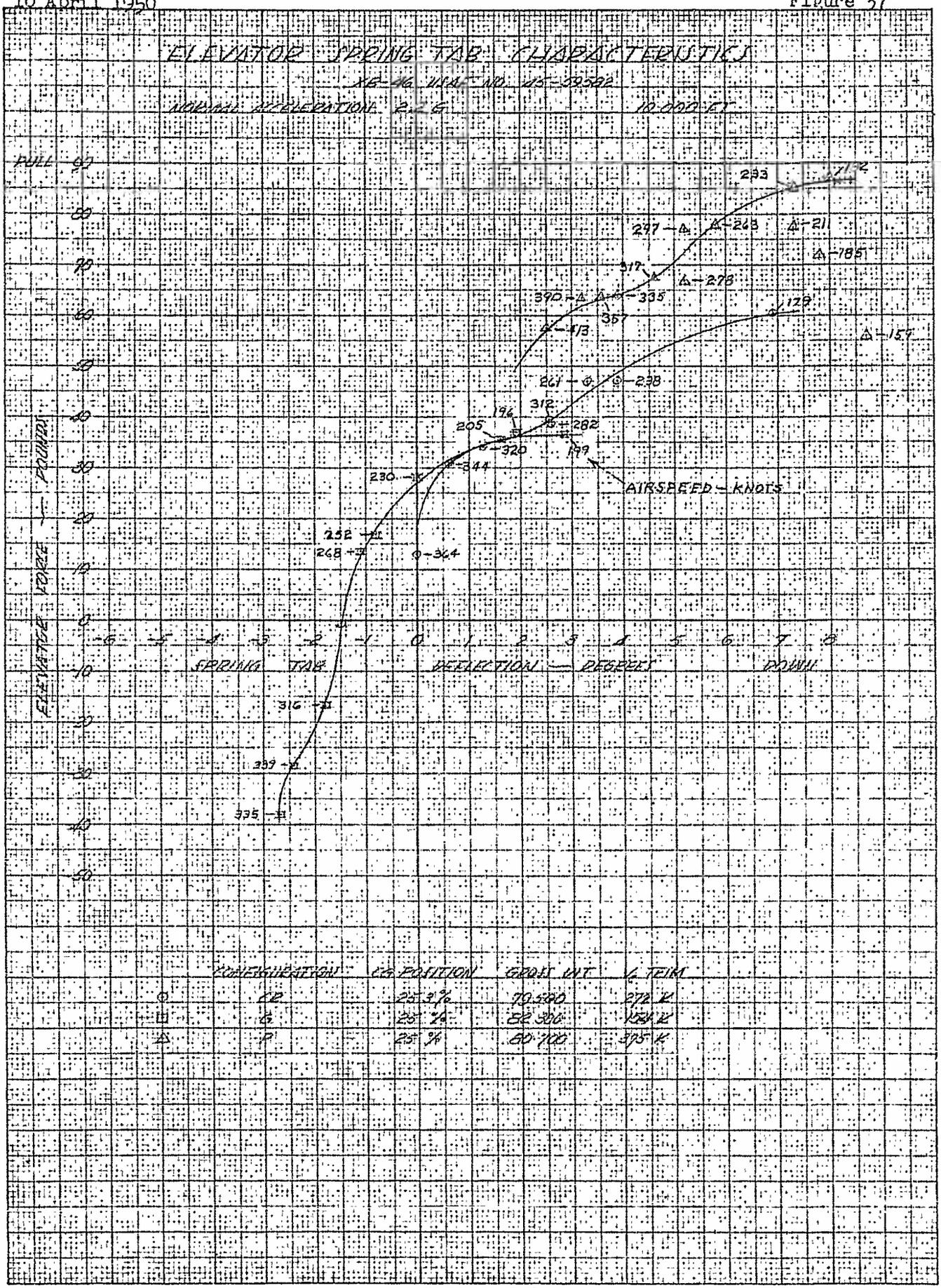

ELEVATOR SPRING TAB CHARACTERISTICS
XG-46 WAC NO 45-28582
NORMAL ACCELERATION 2.2 G
10,000 FT
PULL UP
PUSH OVER
ELEVATOR FORCE — POUNDS
SPRING TAB DEFLECTION — DEGREES
AIRSPEED — KNOTS
CONFIGURATION
CG POSITION
GROSS WT.
V_i TEST
25 3/4
25 1/4
25 %
79,500
82,300
80,700
272 K
KEM K
395 K

Figure 38

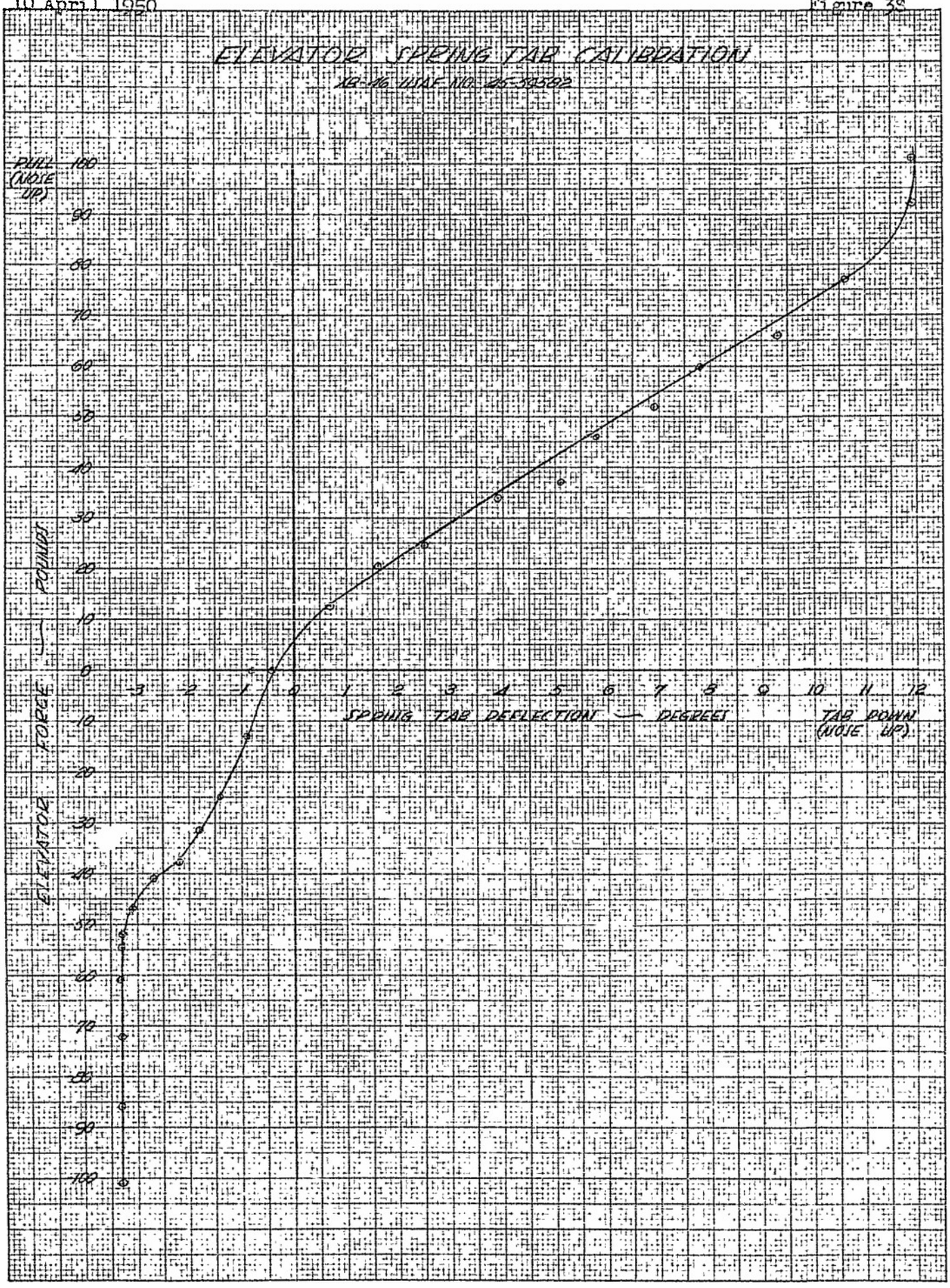
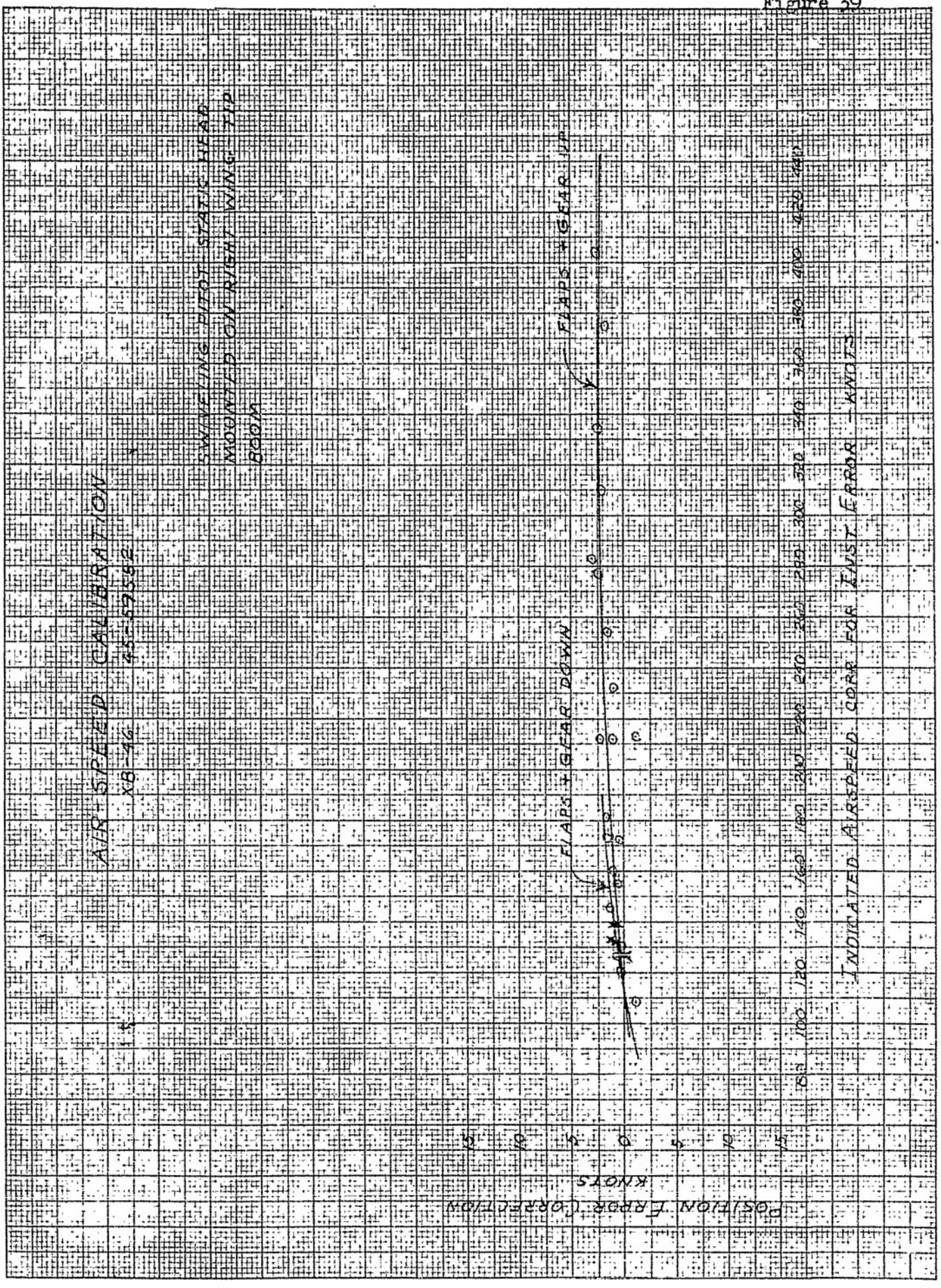

ELEVATOR SPRING TAB CALIBRATION
XB-46 USAF NO. 45-59582
PULL (NOSE UP)
POUNDS
PUSH (NOSE DOWN)
100
90
80
70
60
50
40
30
20
10
0
10
20
30
40
50
60
70
80
90
100
-3
-2
-1
0
1
2
3
4
5
6
7
8
9
10
11
12
SPRING TAB DEFLECTION — DEGREES
TAB DOWN (NOSE UP)

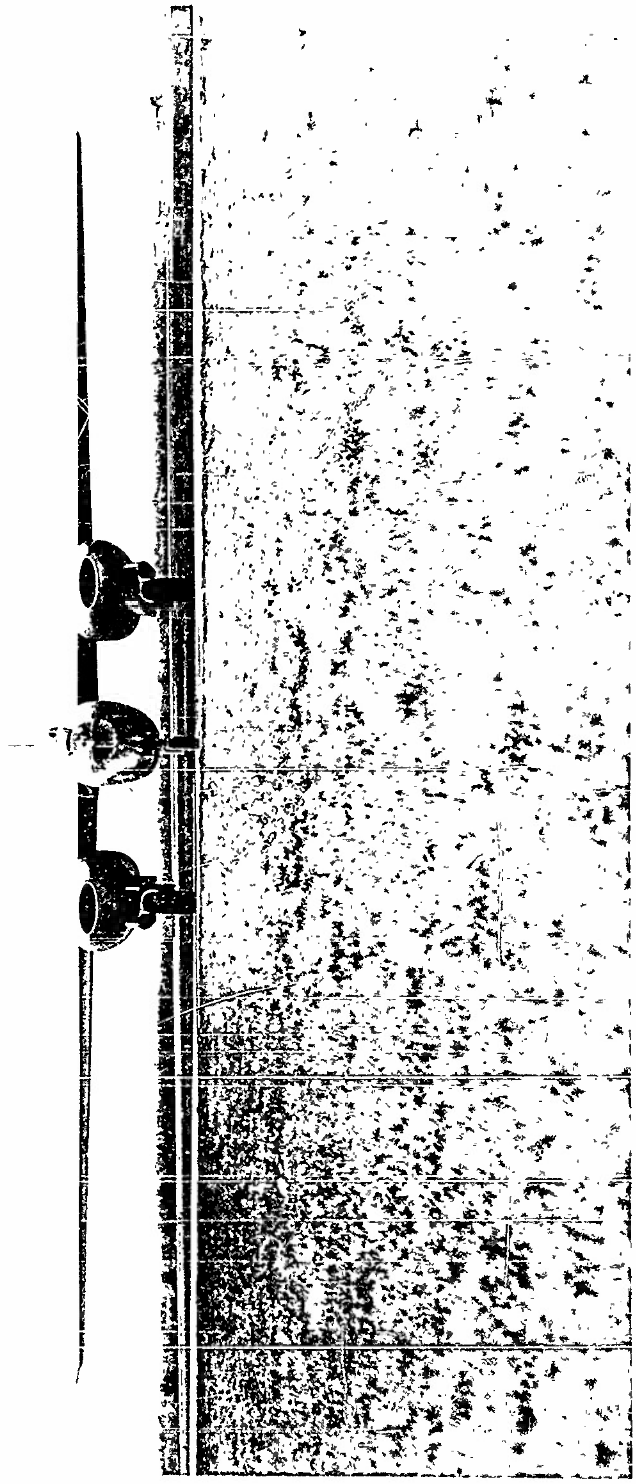
Figure 39


AIRSPEED CALIBRATION
XB-46
43-59582
BOOM MOUNTED ON RIGHT WING TIP
SWIVELING PITOT-STATIC HEAD
FLAPS + GEAR UP
FLAPS + GEAR DOWN
INDICATED AIRSPEED - KNOTS
POSITION ERROR CORRECTION - KNOTS

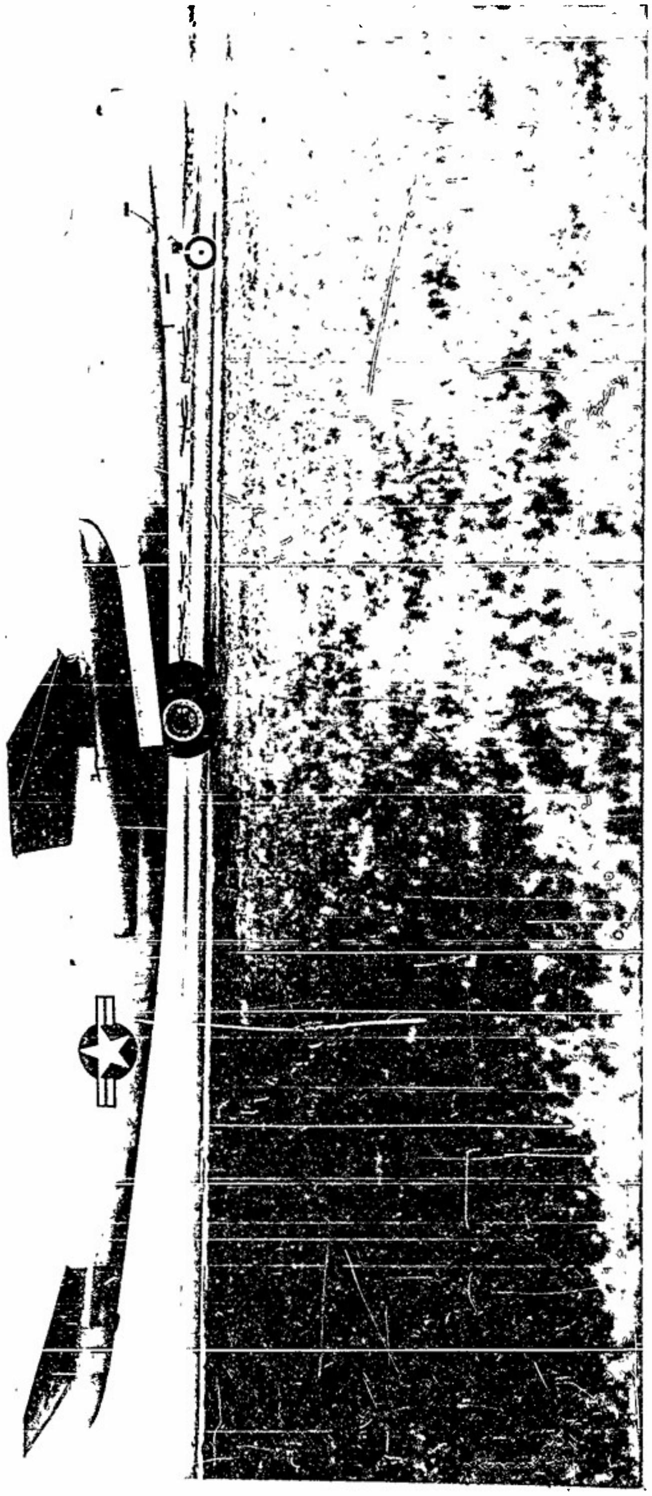
Memorandum Report No. MCRT-2282
10 April 1950

APPENDIX II

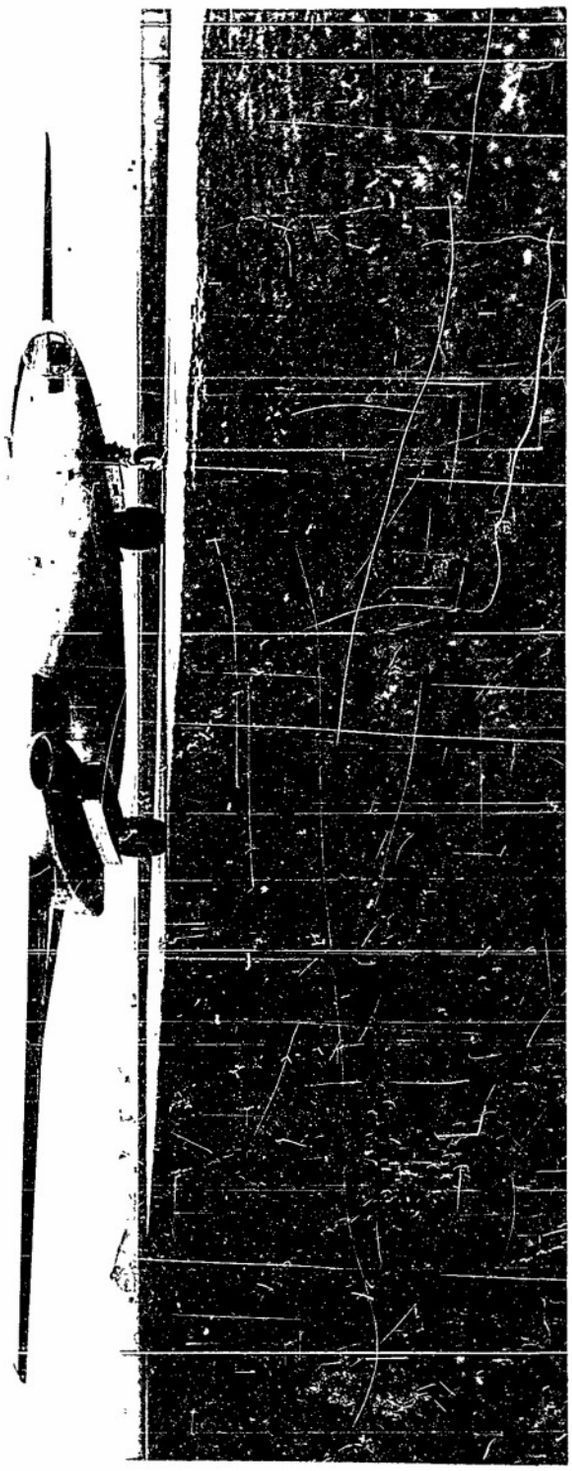
Photographs of XB-46 Airplane, USAF No. 45-59582



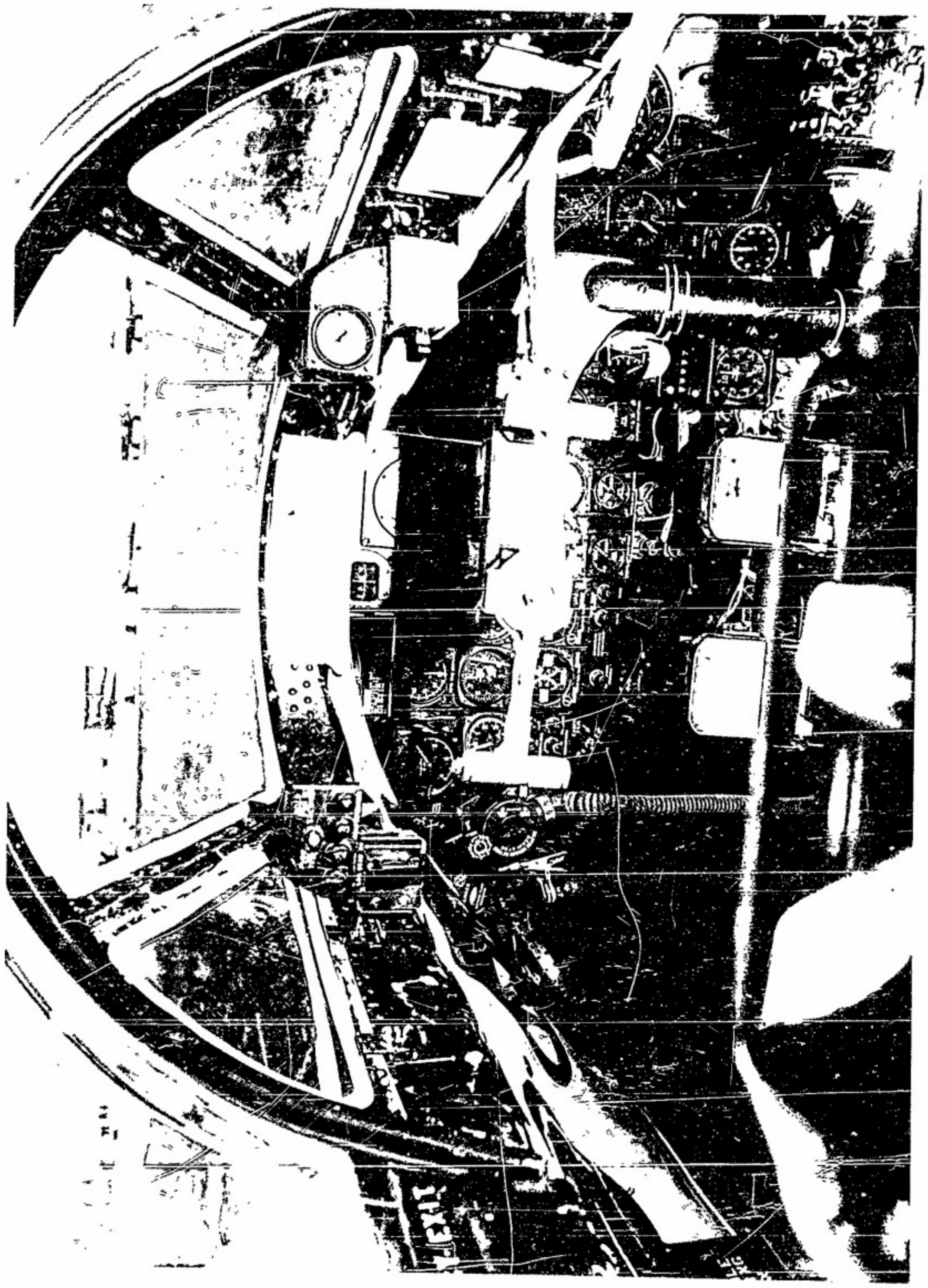
50 - 4 - 162



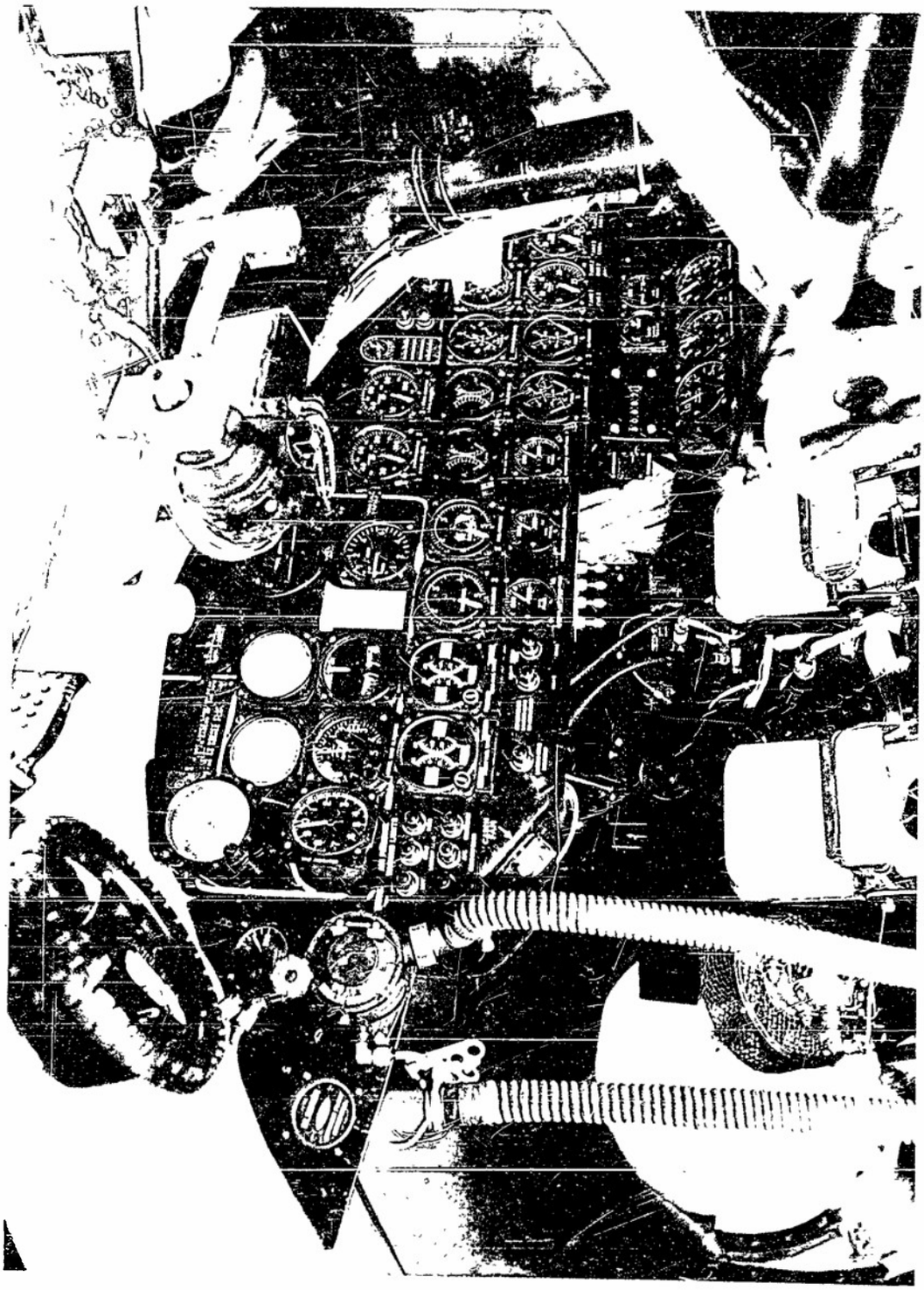
50 - 4 - 163



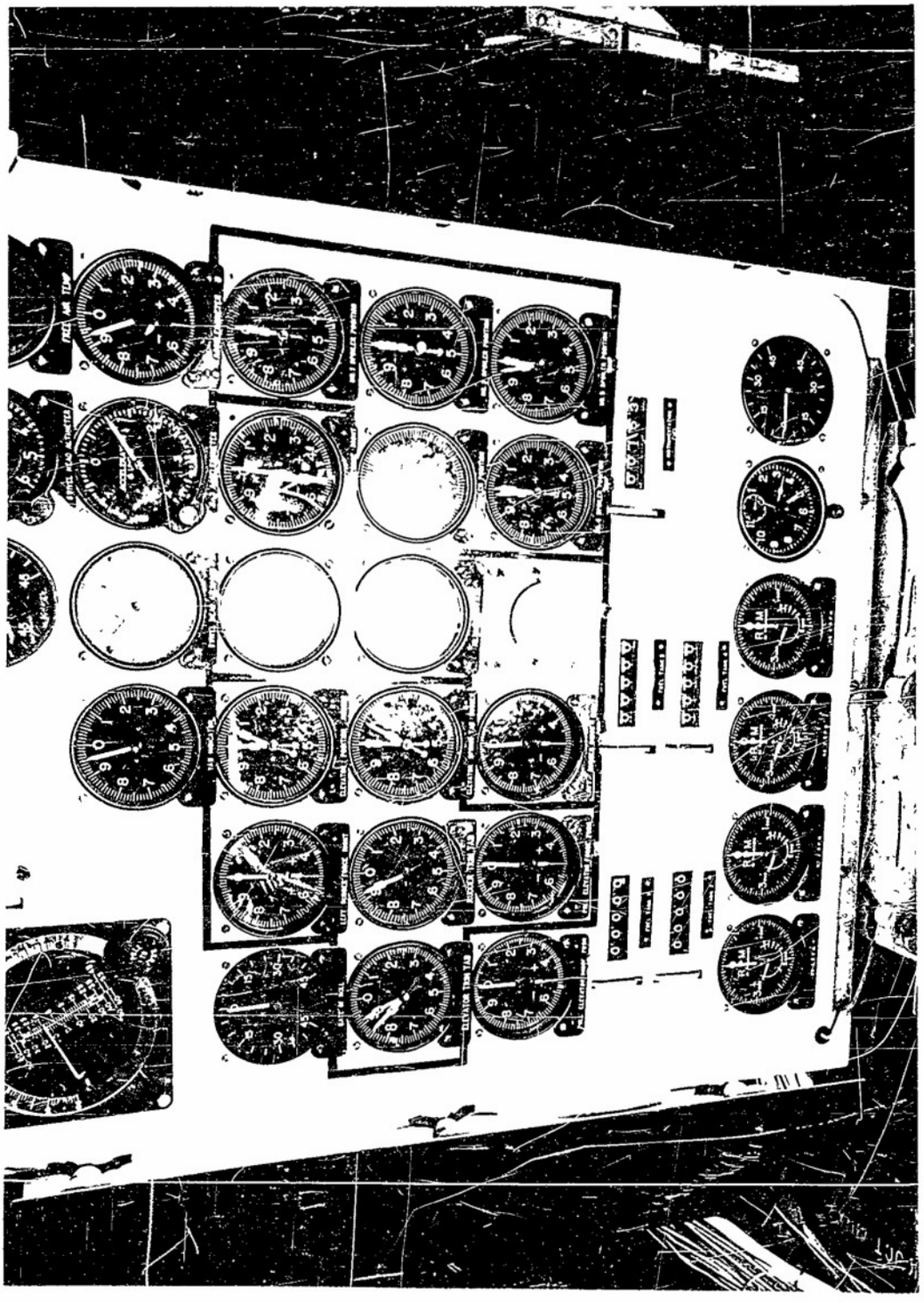
50 - [illegible] - 164



50 - 4 - 165

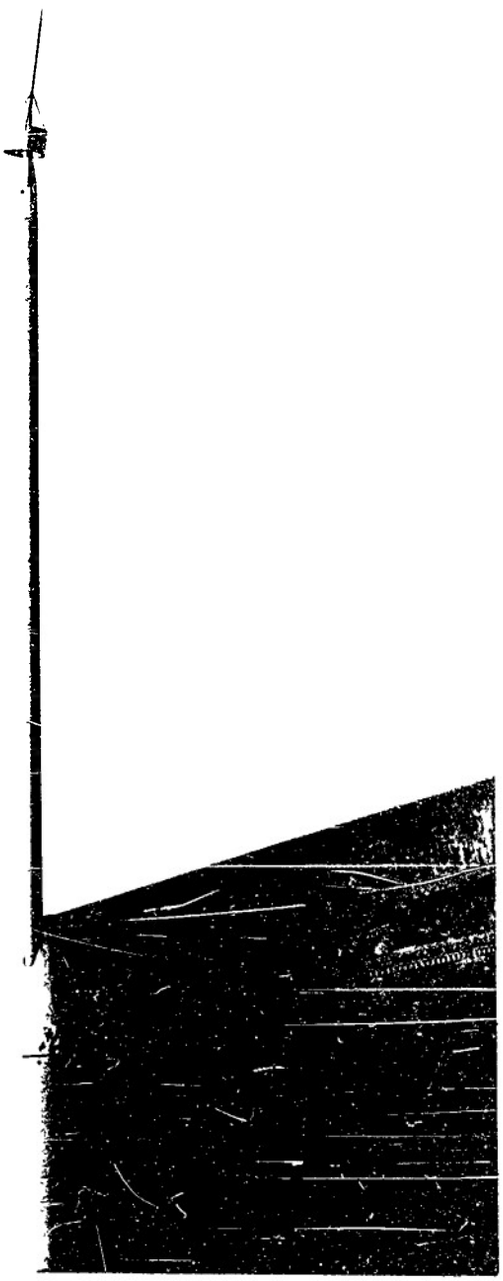


Jo - 1 - 1b6



50 - 4 - 167

50 - 4 - 106



CLASSIFICATION CHANGED

ATI

FROM CONFIDENTIAL TO UNCLASSIFIED

78222

ON 29 November 1954 By authority of List No. 58

This action was rendered by Arthur E. Creech OSA

Name in full Date

Document Service Center, ASTIA