

FAA APPROVED
A I R P L A N E F L I G H T M A N U A L

MAULE AIRCRAFT CORPORATION
MOULTRIE, GEORGIA

MODEL M-4-180 SERIES
(INCLUDES MODELS M-4-180S, M-4-180T, M-4-180C)

AIRPLANE SERIAL NO. _____

FAA IDENT. NUMBER _____

(THIS DOCUMENT MUST BE KEPT IN THE AIRPLANE AT ALL TIMES)

APPROVED:

John F. Vogel

ENGINEERING & MANUFACTURING BRANCH

SOUTHERN REGION

DATE

10-20-70

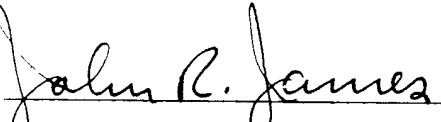
MAULE AIRCRAFT CORPORATION

AIRPLANE FLIGHT MANUAL

MAULE M-4-180 SERIES

LOG OF REVISIONS

PAGE i

REV.	TO PAGES	DESCRIPTION	APPROVAL AND DATE
A	3, 4, 5	Added " <u>PREFLIGHT INSPECTION</u> " to II PROCEDURES.	 Manager, Atlanta Aircraft Certification Office FAA, Central Region Date: <u>May 1, 1984</u>

MAULE M-4-180C

LOG OF SUPPLEMENTS

SUPP. NO.	NO. OF PAGES	DESCRIPTION	APPROVAL DATE
1	2	Operation of aircraft with Right Rear Door removed.	05/12/83
2	4	Operation of aircraft with Wing Tip Auxiliary Fuel Tanks installed.	06/11/97
3	Cover, i-iii, 1-23	Installation of Lycoming O-360-C1F or C4F Engine - Maule Modification Kit No. 17.	06/03/97
-	5	Installation of Apollo MX20 Multi-Function Display - Maule Drawing 7265A.	08/15/02
-	8	Installation of GARMIN GNC-420 (GPS/COMM) System per Maule Drawing 7251A.	06/30/03
-	9	Installation of GARMIN GNS-530 (GPS/NAV/COMM) System per Maule Drawing 7253A.	06/30/03
-	4	Installation of GARMIN GTX-330 Mode S Transponder Traffic Information System (TIS) per Maule Drawing 7255A.	06/30/03

MAULE MODEL M-4-180
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The capitalized statements in Section I and II below are required placards and must be in plain view of the pilot.

I. LIMITATIONS:

The following limitations must be observed in the operation of this airplane:

- | | |
|------------------|---|
| A. Engine | 6A-355-B1A |
| B. Engine Limits | For all operations - 2800 RPM
Full throttle - 180 H.P. |
| C. Fuel | 80/87 Minimum Grade Aviation Gasoline |
| D. Propellers | McCauley 2A34C22-N/S84SF-6 |

E. Power Plant Instruments:

- | | |
|--------------------|--|
| Cylinder Head Temp | Green Arc: 200-390° F.
(Normal Operating Range)
Red Radial: 390° F. |
| Manifold Pressure | Green Arc: 14.5-29.0 In. Hg.
Red Radial: 29.0 In. Hg. |
| Oil Temperature | Green Arc: 100-235° F.
(Normal Operating Range)
Red Radial: 235° F. |
| Oil Pressure | Green Arc: 55-80 psi
(Normal Operating Range)
Yellow Arc: (Caution) 0-55 psi
Red Radial: 80 psi |
| Tachometer | Green Arc: 1800-2800 RPM
(Normal Operating Range)
Red Radial: 2800 RPM |
| Fuel Pressure | Green Arc: .5-9 psi
Red Radials: .5 and 9 psi |

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F. Airspeed Limits: (Calibrated Airspeed)

Never Exceed (V_{ne})	180 mph (156K)	(Red Radial)
Caution Range	145-180 (126-156K)	(Yellow Arc)
Design Cruising Speed (V_c)	145 mph (126K)	
Normal Operating Range	62-145 mph (54-126K)	(Green Arc)
Max. Design Maneuvering Speed (V_p)	125 mph (109K)	
Max. Flap Extension Speed (V_f)	90 mph (78K)	
Flap Operating Range	56-90 mph (49-78K)	(White Arc)

Note: Airspeed Instrument Markings and their Significance:

1. Radial RED line marks the never exceed speed, which is the maximum safe airspeed.
2. YELLOW Arc on indicator denotes range of speeds in which operations should be conducted with caution and only in smooth air.
3. GREEN Arc denotes normal operating speed range.
4. WHITE Arc denotes speed range in which flaps may be safely lowered.

G. Maneuvers: Normal Category Maneuvers only are approved.

H. Flight Load Factors: (At Maximum gross weight of 2300 Lbs.)

Maximum positive Load factor:

Flaps Up: 3.8g Flaps Extended 1.9g

Maximum negative Load factor:

No inverted maneuvers approved.

I. Maximum Weight - 2300 Lbs.

J. Center of Gravity Limits: (+15.6) to (+19.0) at 2300 Lbs.
 (+14.5) to (+20.5) at 2100 Lbs.
 (+11.1) to (+20.5) at 1500 Lbs. or less

Straight line variation between points given.
 Datum: Wing Leading Edge

NOTE: It is the responsibility of the airplane owner and the pilot to insure that the airplane is properly loaded. SEE LOADING INSTRUCTIONS provided IN THE WEIGHT AND BALANCE SECTION OF THE AIRPLANE FLIGHT MANUAL.

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K. OPERATIONAL LIMITATIONS:

"THIS AIRPLANE MUST BE OPERATED AS A NORMAL CATEGORY AIRPLANE IN COMPLIANCE WITH THE OPERATION LIMITATIONS STATED IN THE FORM OF PLACARDS, MARKINGS AND MANUAL."

"NO ACROBATIC MANEUVERS INCLUDING SPINS APPROVED."

"ROUGH AIR OR MANEUVERING SPEED: 125 MPH (109K)"

Types of Operation Authorized:

"THIS AIRPLANE APPROVED FOR NIGHT IFR NON-ICING FLIGHT WHEN EQUIPPED IN ACCORDANCE WITH FAR 91 OR FAR 135."

L. Warning: Flight into icing condition not approved.

M. Fuel System Operation:

Take off and land on fullest main tank.

"FUEL REMAINING IN TANK WHEN INDICATOR READS ZERO CANNOT BE USED SAFELY IN FLIGHT."

II. PROCEDURES

PREFLIGHT INSPECTION:

A. INTERIOR:

- 1. BAT. Switch.....ON
- 2. Fuel gauges.....CHECK INDICATIONS
- 3. All Electrical Switches.....OFF
- 4. BAT. Switch.....OFF
- 5. Flaps.....FULL DOWN

B. EXTERIOR: Begin at the left front door, proceed around the left wing to the nose area, then around the right wing and back to the fuselage, then around the tail section.

- 1. Fuel drains behind step.....DRAIN (2)
- 2. Left Flap.....CHECK HINGES & CONTROL ATTACHMENT
- 3. Aileron.....CHECK HINGES & CONTROL ATTACHMENT
- 4. Wing Top.....CHECK FOR WRINKLES AS INDICATION OF INTERNAL DAMAGE
- 5. Wing Main & Aux Fuel Tank Drains.....DRAIN (2)
- 6. Wing tip and nav. light.....CHECK FOR DAMAGE
- 7. Auxiliary fuel tank.....VISUALLY CHECK QUANTITY
- 8. Landing light.....CHECK FOR DAMAGE
- 9. Wing Tiedown.....REMOVE
- 10. Pitot tube.....REMOVE COVER
- 11. Stall Warning Switch.....CHECK FOR FREEDOM OF MOVEMENT
- 12. Main Fuel Tank.....VISUALLY CHECK QUANTITY
- 13. Left Landing Gear.....CHECK TIRE INFLATION AND BRAKE LINE SECURITY
- 14. Bottom left side of cowl.....DRAIN GASCOLATOR (1)
- 15. Top Cowl; Oil access door.....CHECK OIL QUANTITY

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II PROCEDURES (Cont'd)

16. Propeller.....CHECK LEADING EDGE FOR DAMAGE
17. Air inlets.....CHECK FOR FOREIGN OBJECTS, INSPECT
VISIBLE CONNECTIONS AND COMPONENTS
18. Right landing gear.....CHECK TIRE INFLATION AND BRAKE LINE
SECURITY
19. Right wing and controls.....INSPECT SAME AS LEFT WING
20. Wing Main & Aux Fuel Tank Drains.....DRAIN (2)
21. Right fuselage side and top.....INSPECT FOR WRINKLES AS INDICATION
OF INTERNAL DAMAGE
22. Static port.....CLEAR
23. Right Stabilizer.....CHECK ATTACHMENT POINTS AND STRUT
24. Right Elevator.....CHECK HINGE POINTS
25. Rudder.....CHECK HINGE POINTS, CONTROL ATTACH-
MENTS AND NAV. LIGHT
26. Tailwheel.....CHECK INFLATION, ATTACHMENTS,
REMOVE TIEDOWNS
27. Left Elevator.....CHECK TAB CONTROLS AND ALL HINGE
POINTS
28. Left Stabilizer.....CHECK ATTACHMENT AND STRUT
29. Left Fuselage side and bottom.....CHECK FOR WRINKLES AS INDICATION
OF INTERNAL DAMAGE
30. Left side Static port.....CLEAR

NORMAL FLIGHT OPERATIONS:

A. Normal Procedures:

1. Wing FLAP Settings:

TAKEOFF	15°	(First Notch)
Cruise	0°	(Full Up-Retracted)
LANDING	35°	(Second Notch)

2. Recommended Climb Speed: 90 MPH (CAS) at sea level.
3. Right Rudder Trim: Use of right rudder trim is recommended during takeoff and climb and high speed level flight to reduce the amount of right rudder force required. During level flight at moderate speeds and glide, the trim control should be in the OFF position.
4. Stall warning Indicator: The electric stall warning system will light a red light on the instrument panel at approximately seven mph above the stalling speed. It will be inoperative when the master switch is off.
5. Loss of altitude prior to recovery from a stall may be as much as 200 feet.
6. Maximum 90° crosswind velocity demonstrated: 20 mph.

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II PROCEDURES (Cont'd)

7. Anti-collision Beacon: (when installed)

WARNING: ANTI-COLLISION LIGHT MAY CAUSE ADVERSE EFFECT ON PILOT WHEN FLYING IN OVERCAST OR HAZE. RECOMMEND IT BE TURNED OFF UNDER THESE CONDITIONS.

8. Electrical System Operation:

"DO NOT TURN OFF ALTERNATOR IN FLIGHT EXCEPT IN CASE OF EMERGENCY."

9. Short Field Take Off:

For minimum take off, ground roll and clearing obstacles, use 15° Flaps (First Notch).

B. Emergency Procedures:

1. Air restart
Check Selected Tank Has Fuel
Check mixture rich
Use Aux. Pump for engine restart.
2. Engine Failure
Use 15° flap setting (first notch), maintain 85 mph. (74) CAS.
If air restart is not possible, cut ignition and master switches.
Execute forced landing.
3. Engine Fire
Turn fuel valve OFF.
Open throttle to full position.
Turn ignition switch OFF.

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SECTION IV AIRPLANE FLIGHT MANUAL

WEIGHT AND BALANCE INFORMATION

FOR M-4-180S, M-4-180T, M-4-180C

1. It is the responsibility of the airplane owner and the pilot to insure that the airplane is loaded properly. The empty weight, empty C. G. are noted on your Weight and Balance Data Sheet as delivered from the factory. If the airplane has been altered, refer to the latest approved repair and alteration form (ACA-337) for this information.
2. It is possible to load the airplane outside of the rear center of gravity limits. The airplane center of gravity should be carefully checked whenever there will be rear seat passengers, or baggage in the rear seat area and/or baggage compartment.
3. Using the empty weight C. G. location and moment from the Weight and Balance report and following the example, the moment may be readily calculated which, when plotted on the charts, will quickly show whether or not the C.G. is within limits.

EXAMPLE: Empty weight of 1313 lbs. moment of 14705 in.lb.

Empty Weight (Licensed)	Wt	Arm	Moment
	1313	11.2	14705
Oil (5.8 qt.)	10.7	-37.0	-396
Pilot and front seat passenger	340		7140)
Fuel (40 gallons)	240		5800)From Graph
Baggage	100		7200)Page 4
	2003.7		34449

Locate this point (2003.7 lbs and 34449 in ins.) on the Center of Gravity. Envelope graph, and since the point falls within the envelope, the above loading meets all balance requirements.

WEIGHT AND BALANCE DATA

AIRCRAFT REG. NO. _____ SERIAL NO. _____ LAND PLANE _____

1. Level airplane using the leveling lug and mark on the bottom of right wing at the root end. (Distance between lug and mark is 31 inches.)

2. Datum is at the leading edge of wing.

3. Other Data: Datum Line Leading Edge of Wing
 Minus Arm Plus Arm

(L) Wheel base-actual measured horizontal distance from the rear wheel weight point (Center of tailwheel axle) to the main wheel weight point (Center of front axle) _____ inches.

(D) Actual measured horizontal distance from the main wheel weight point (Center main wheel axle to datum line) _____ inches.

(T) Tailwheel Net Weight

(W) Total Empty Weight

4. Weight:

Right main wheel	_____	lbs.
Left main wheel	_____	lbs.
Tailwheel w/tare	_____	
	Tare- _____	Net Minus
		tare _____ lbs.
TOTAL EMPTY WEIGHT		_____ lbs.

** The above empty weight includes the unuseable fuel of 18.0lbs. at 24.0 inches, unuseable oil of 6.0 lbs at -37.0 inches and all items of equipment as marked on the equipment list.

5. Solving for the empty weight center of gravity:

$$C. G. = \frac{(L \times T)}{W} - D = C. G. \text{ Inches}$$

$$C. G. = \text{_____ inches}$$

$$C. G. \text{ inches} \times (w) = C. G. \text{ Moment's}$$

6. Conclusive Data:

A. Empty weight: _____ lbs

B. Empty center of gravity _____ inches

C. Empty center C. G. Moment _____ in lbs

D. Useful load _____ lbs.

7. For aircraft loading and corresponding center of gravity locations use weight and balance instruction attached.

8. Center of gravity range:

(+15.6) to (+19.0) at 2300 lbs.

(+14.5) to (+20.5) at 2100 lbs.

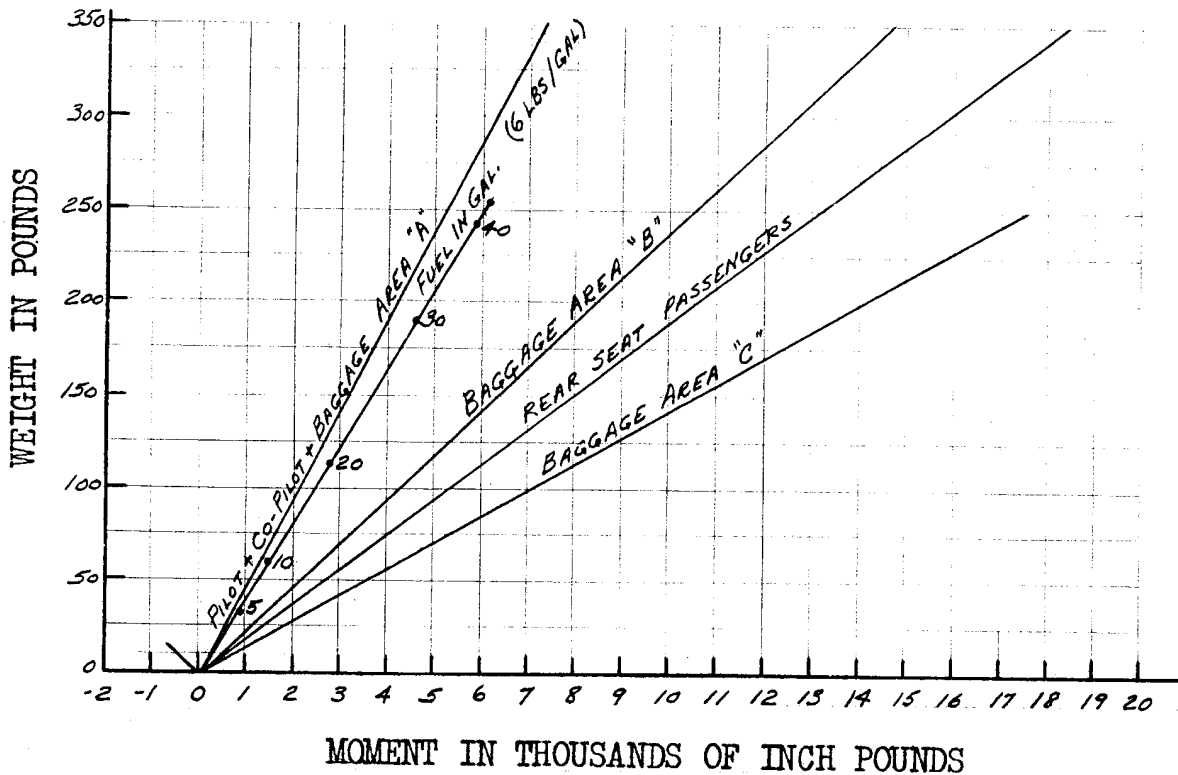
(+11.0) to (+20.5) at 1500 lbs or less

* Straight line variations between points

BY _____ DATE _____

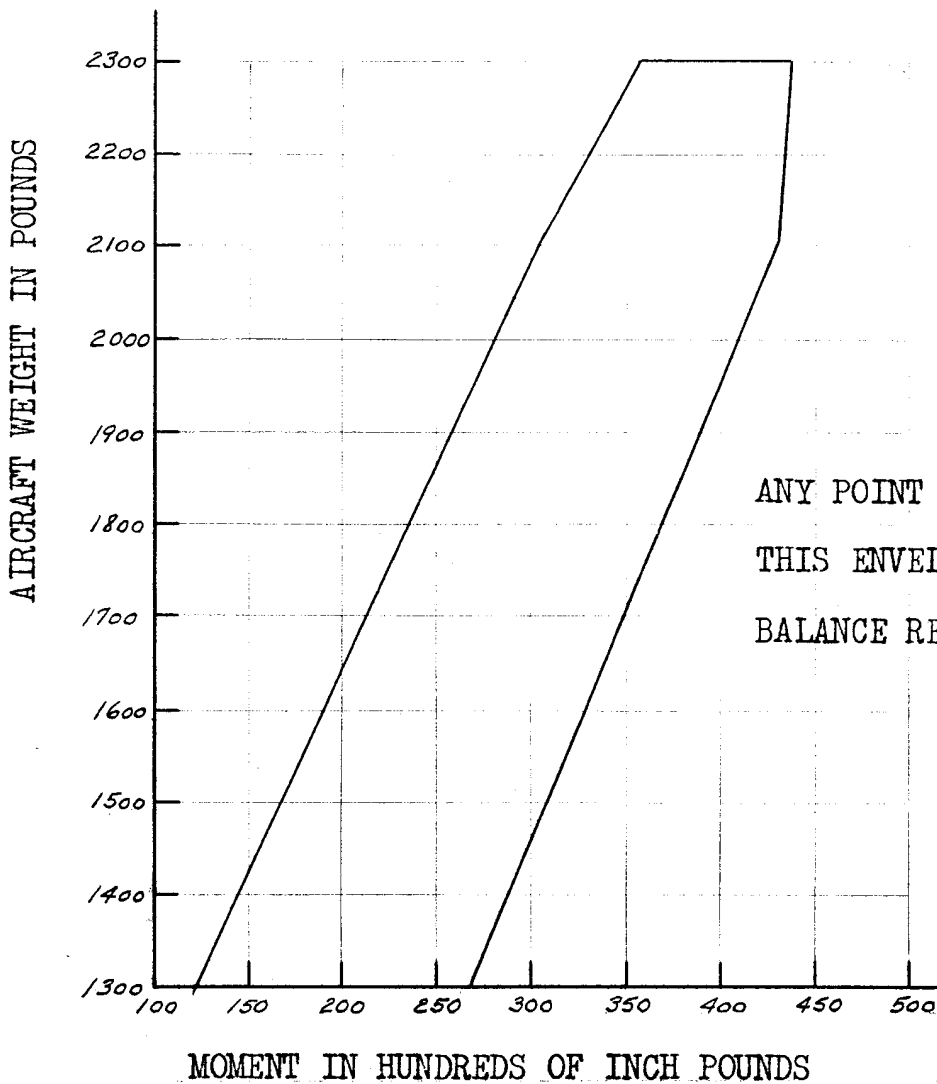
NOTES:

1. ADD WEIGHT TO BE CARRIED TO THE LICENSED EMPTY WEIGHT OF THE AIRCRAFT.
2. ADD MOMENTS IN THOUSANDS OF INCH POUNDS OF THESE ITEMS TO THE EMPTY AIRCRAFT MOMENT IN THOUSANDS OF INCH POUNDS.
3. FIND POINT ON CENTER OF GRAVITY ENVELOPE ON PAGE 4.
4. FOR BAGGAGE AREAS SEE PAGE 3.



LOADING GRAPH FOR MODEL M-4-180 SERIES

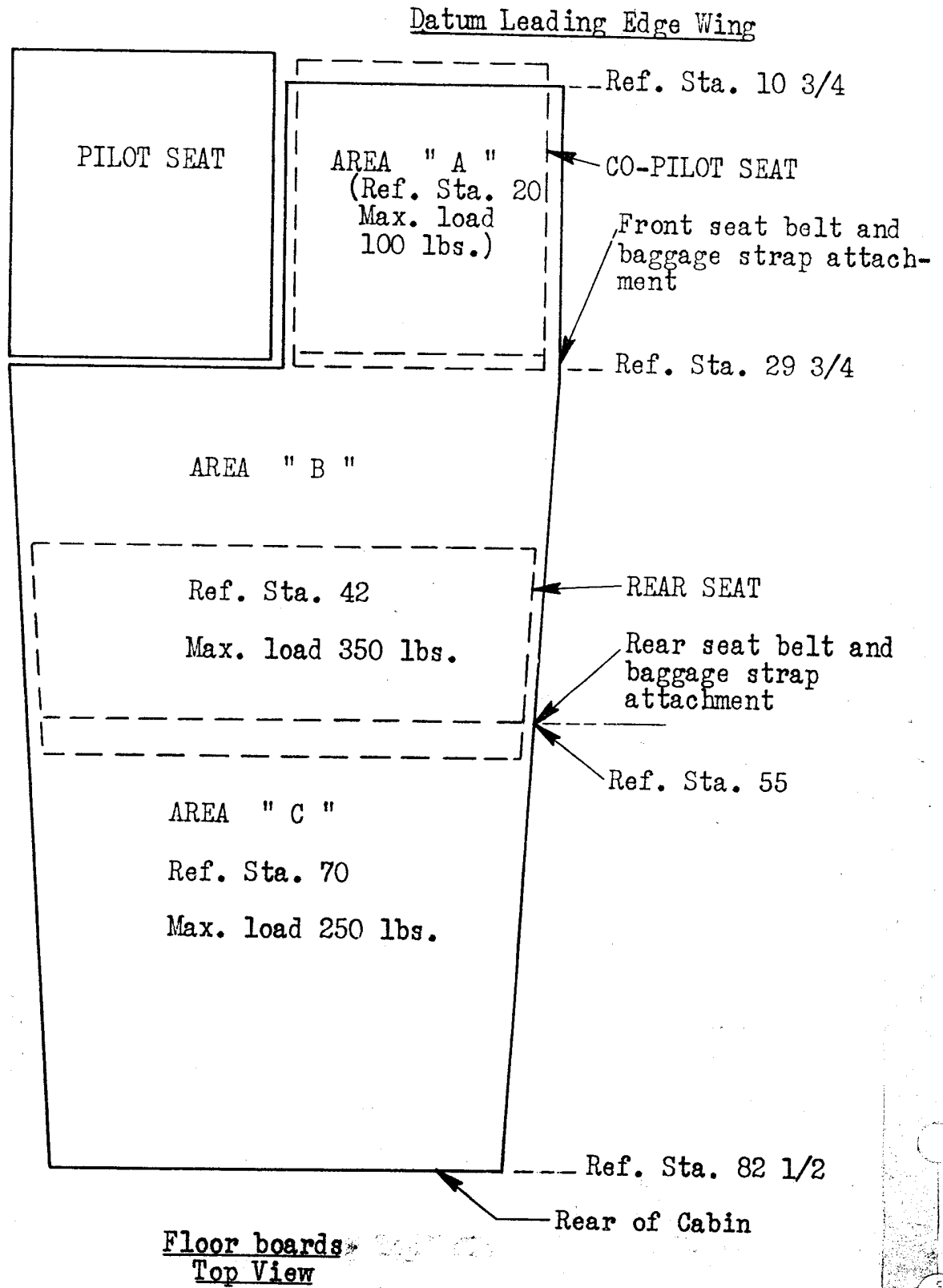
DATE: 7 AUG. 1970



ANY POINT FALLING WITHIN
THIS ENVELOPE MEETS ALL
BALANCE REQUIREMENTS

CENTER OF GRAVITY ENVELOPE
FOR M-4-180 SERIES

DATE 7 AUG 1970



BAGGAGE AREA CHART

11 Aug 1970