

AIR AMERICA

C - 47

FLIGHT MANUAL

Page: A4 - 11
 Effective: 1 Sept. 1968

TIME TO CLIMB-STANDARD DAY MAX POWER SINGLE - ENGINE

PROPELLER-FEATHERED ON INOPERATIVE ENGINE

□ R/C = 100 FT/MIN.

MODEL(S): C-47
 C-117 AND R4D

BASED ON: FLIGHT TEST DATA
 DATA AS OF: 11 JULY 1957

ENGINE(S): (2) R-1830-90C
 (HIGH BLOWER INOPERATIVE)
 -90D AND -92

FUEL GRADE: 100/130
 FUEL DENSITY: 6.0 LB/GAL

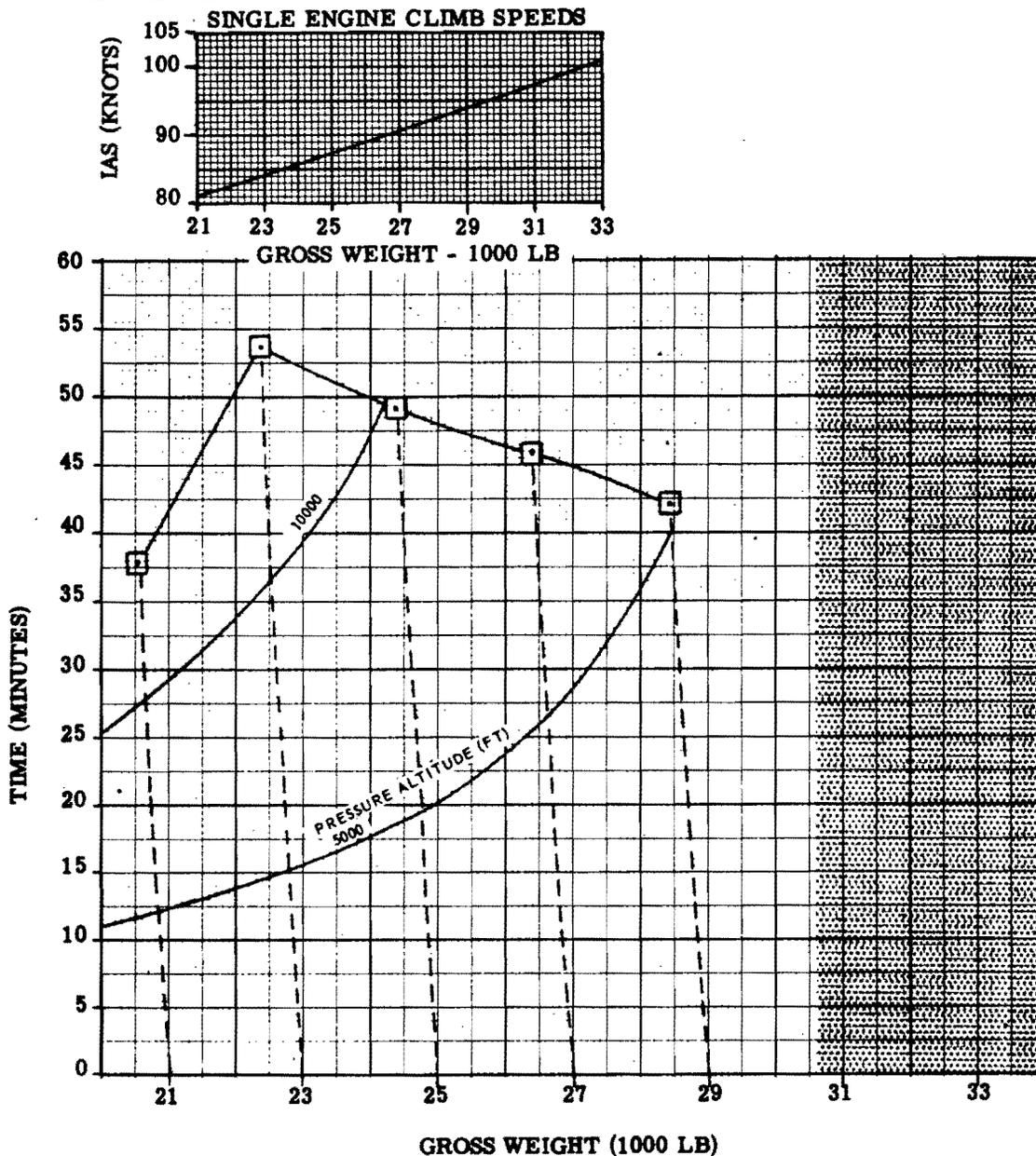


Figure A4-5. Time To Climb - Standard Day - MAX Power - Single Engine. (Sheet 1 of 2)

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DISTANCE TO CLIMB-STANDARD DAY

MAX POWER SINGLE - ENGINE

PROPELLER-FEATHERED ON INOPERATIVE ENGINE

□ R/C = 100 FT/MIN.

MODEL(S): C-47
C-117 AND R4D

BASED ON: FLIGHT TEST DATA
DATA AS OF: 11 JULY 1957

ENGINE(S): (2) R-1830-90C
(HIGH BLOWER INOPERATIVE)
-90D AND -92

FUEL GRADE: 100/130
FUEL DENSITY: 6.0 LB/GAL

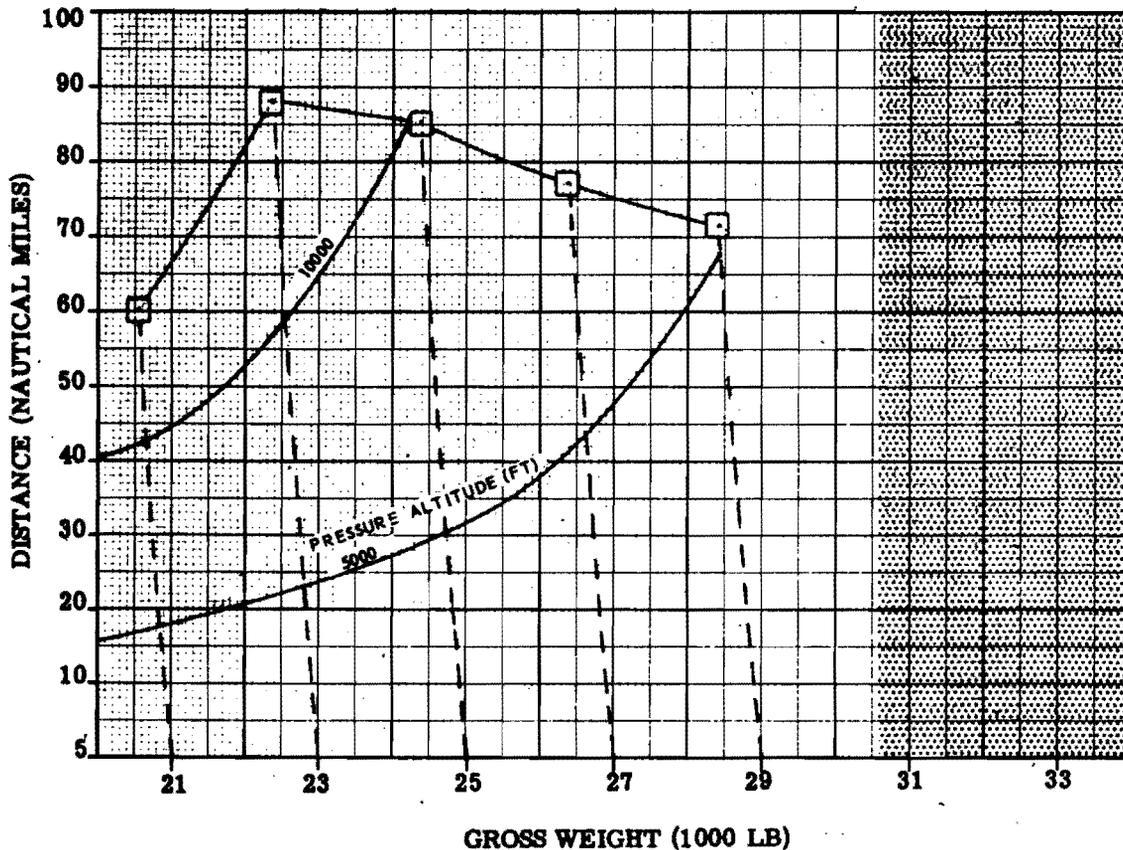


Figure A4-5. Distance To Climb - MAX Power - Single Engine. (Sheet 2 of 2)

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TIME TO CLIMB-HOT DAY

MAX POWER SINGLE - ENGINE

PROPELLER-FEATHERED ON INOPERATIVE ENGINE

□ R/C = 100 FT/MIN.

MODEL(S): C-47,
C-117 AND R4D

BASED ON: FLIGHT TEST DATA
DATA AS OF: 11 JULY 1957

ENGINE(S): (2) R-1830-90C
(HIGH BLOWER INOPERATIVE
-90D AND -92

FUEL GRADE: 100/130
FUEL DENSITY: 6.0 LB/GAL

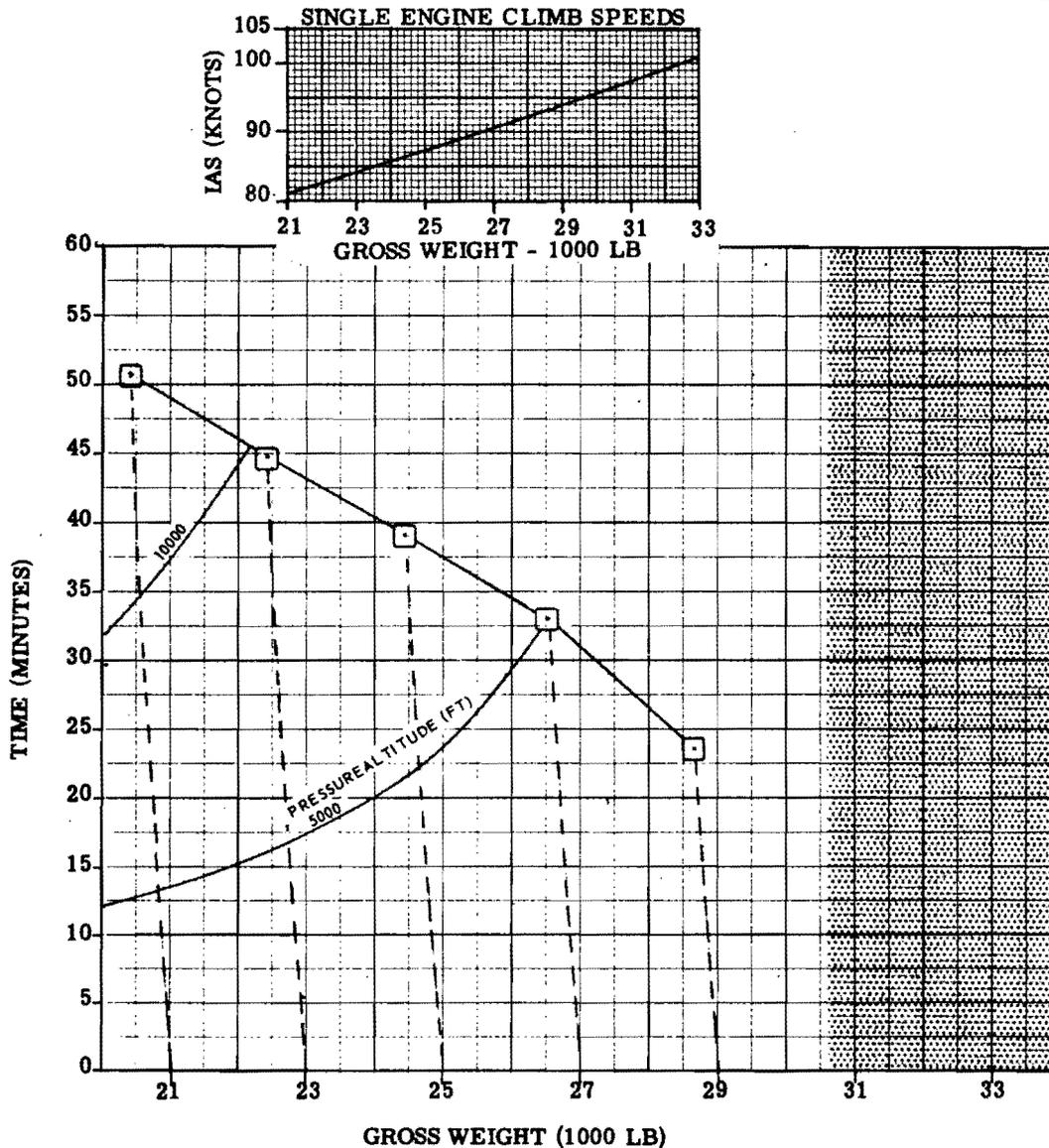


Figure A4-6. Time To Climb - Hot Day - Maximum Power - Single Engine. (Sheet 1 of 2)

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DISTANCE TO CLIMB-HOT DAY

MAX POWER SINGLE - ENGINE

PROPELLER-FEATHERED ON INOPERATIVE ENGINE

□ R/C = 100 FT/MIN.

MODEL(S): C-47
C-117 AND R4D

BASED ON: FLIGHT TEST DATA
DATA AS OF: 11 JULY 1957

ENGINE(S): (2) R-1830-90C
(HIGH BLOWER INOPERATIVE
-90D AND -92

FUEL GRADE: 100/130
FUEL DENSITY: 6.0 LB/GAL

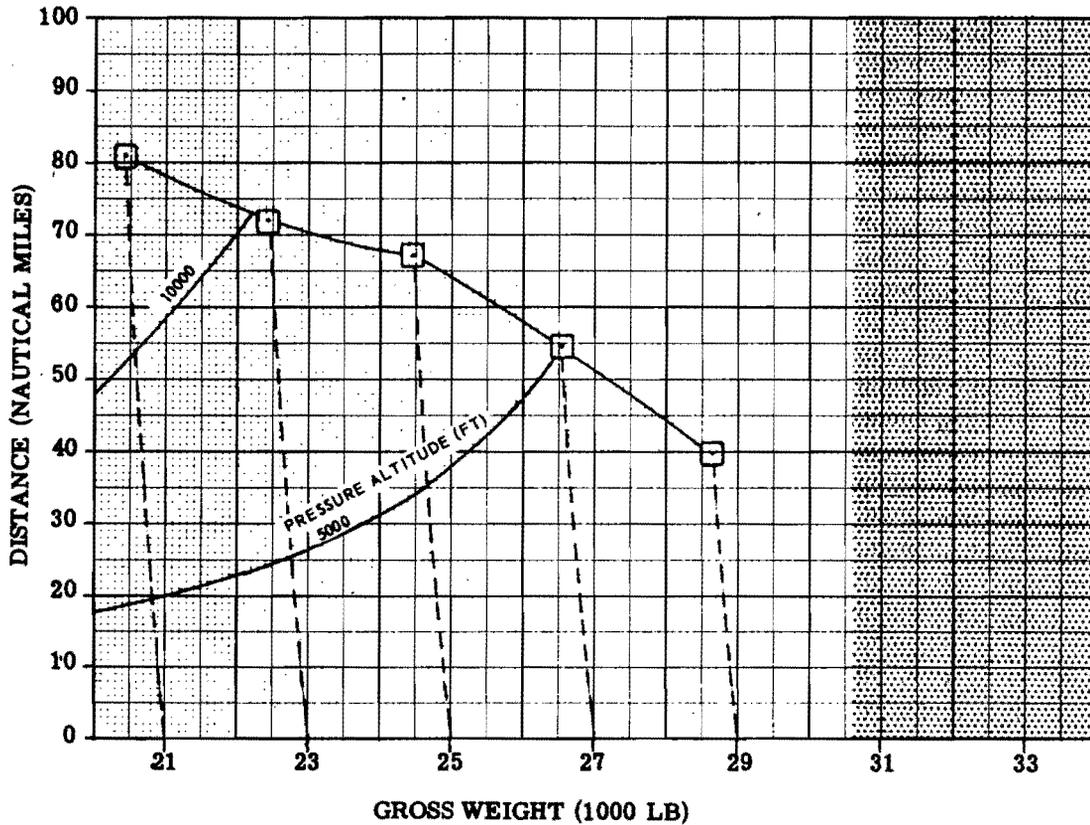


Figure A4-6. Distance To Climb - Hot Day - Maximum Power - Single Engine. (Sheet 2 of 2)

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TIME TO CLIMB - STANDARD DAY

METO POWER SINGLE - ENGINE

PROPELLER-FEATHERED ON INOPERATIVE ENGINE

□ R/C = 100 FT/MIN.

MODEL(S): C-47,
C-117 AND R4D

BASED ON: FLIGHT TEST DATA
DATA AS OF: 11 JULY 1957

ENGINE(S): (2) R-1830-90C
(HIGH BLOWER INOPERATIVE)
-90D AND -92

FUEL GRADE: 100/130
FUEL DENSITY: 6.0 LB/GAL

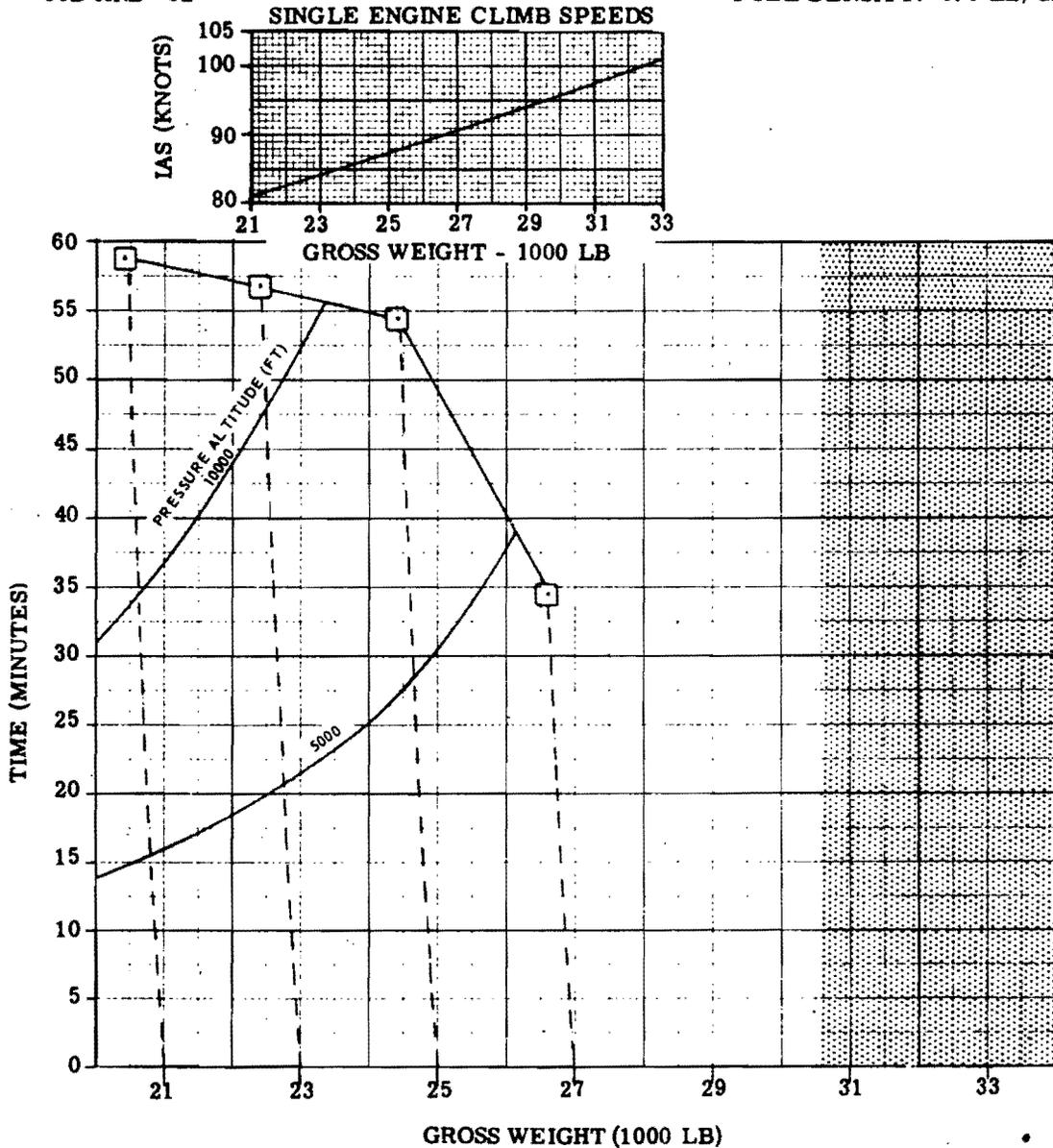


Figure A4.7. Time To Climb - Standard Day - METO Power - Single Engine. (Sheet 1 of 2)

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DISTANCE TO CLIMB - STANDARD DAY

METO POWER SINGLE - ENGINE

PROPELLER-FEATHERED ON INOPERATIVE ENGINE

□ R/C = 100 FT/MIN.

MODEL(S): C-47,
C-117 AND R4D

BASED ON: FLIGHT TEST DATA
DATA AS OF: 11 JULY 1957

ENGINE(S): (2) R-1830-90C
(HIGH BLOWER INOPERATIVE
-90D AND -92

FUEL GRADE: 100/130
FUEL DENSITY: 6.0 LB/GAL

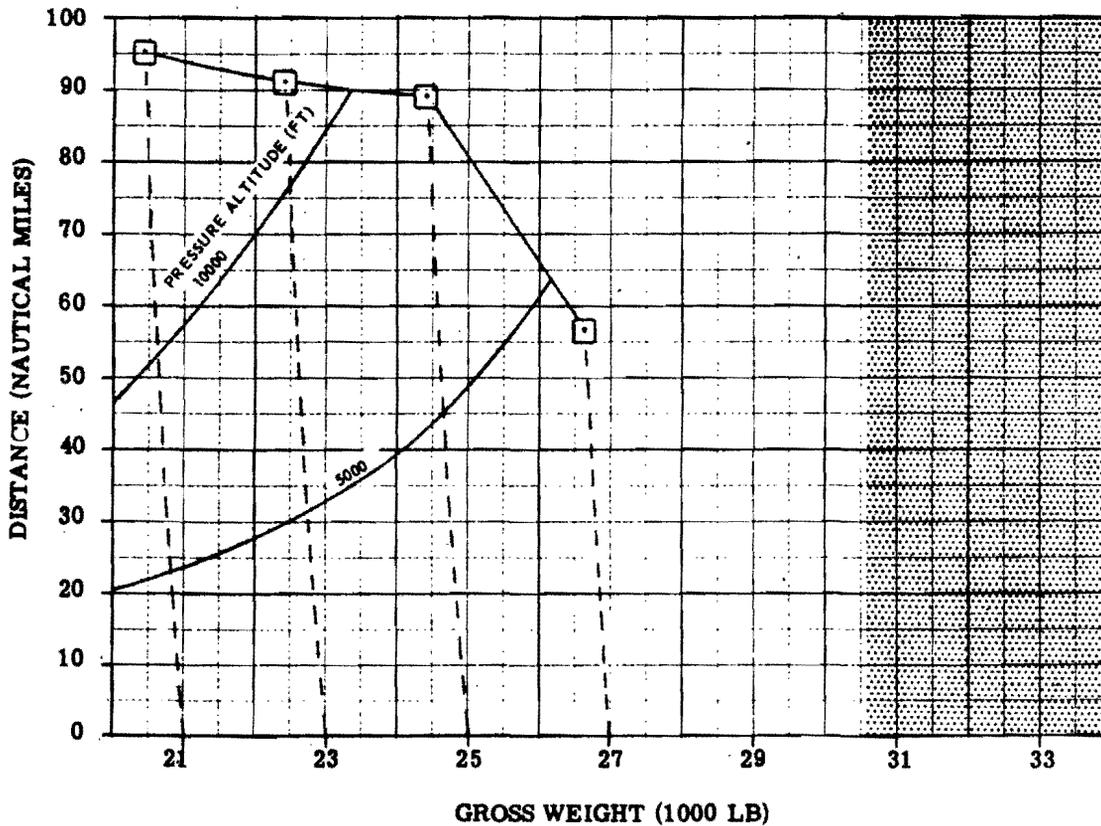


Figure A4-7. Distance to Climb - Standard Day - METO Power - Single Engine (Sheet 2 of 2)

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TIME TO CLIMB - HOT DAY

METO POWER SINGLE - ENGINE
PROPELLER-FEATHERED ON INOPERATIVE ENGINE

□ R/C = 100 FT/MIN.

MODEL(S): C-47,
C-117 AND R4D

BASED ON: FLIGHT TEST DATA
DATA AS OF: 11 JULY 1957

ENGINE(S): (2) R-1830-90C
(HIGH BLOWER INOPERATIVE)
-90D AND -92

FUEL GRADE: 100/130
FUEL DENSITY: 6.0 LB/GAL

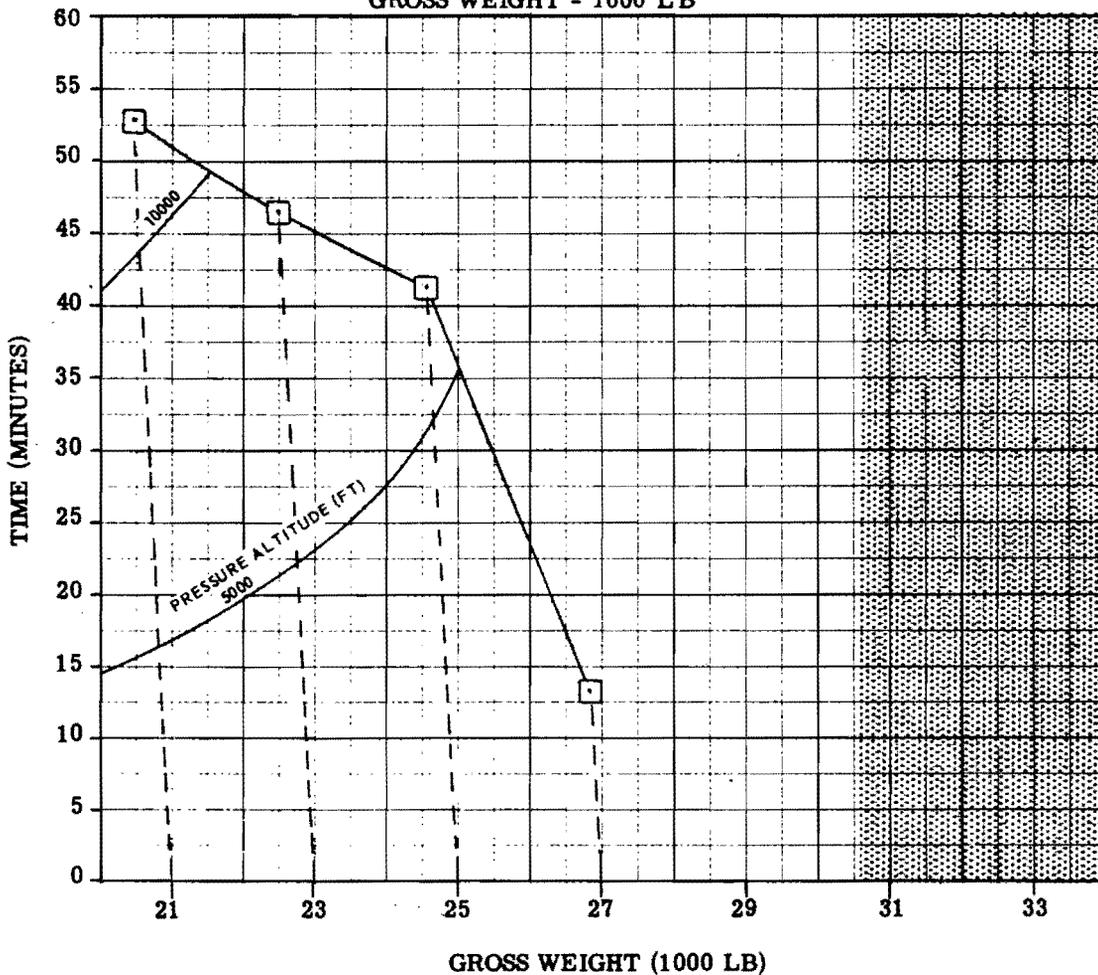
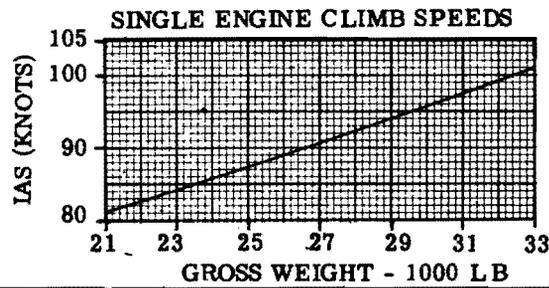


Figure A4-8. Time To Climb - Hot Day - METO Power - Single Engine. (Sheet 1 of 2)

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DISTANCE TO CLIMB - HOT DAY

METO POWER SINGLE - ENGINE

PROPELLER-FEATHERED ON INOPERATIVE ENGINE

□ R/C = 100 FT/MIN.

MODEL(S): C-47,
C-117 AND R4D

BASED ON: FLIGHT TEST DATA
DATA AS OF: 11 JULY 1957

ENGINE(S): (2) R-1830-90C
(HIGH BLOWER INOPERATIVE)
-90D AND -92

FUEL GRADE: 100/130
FUEL DENSITY: 6.0 LB/GAL

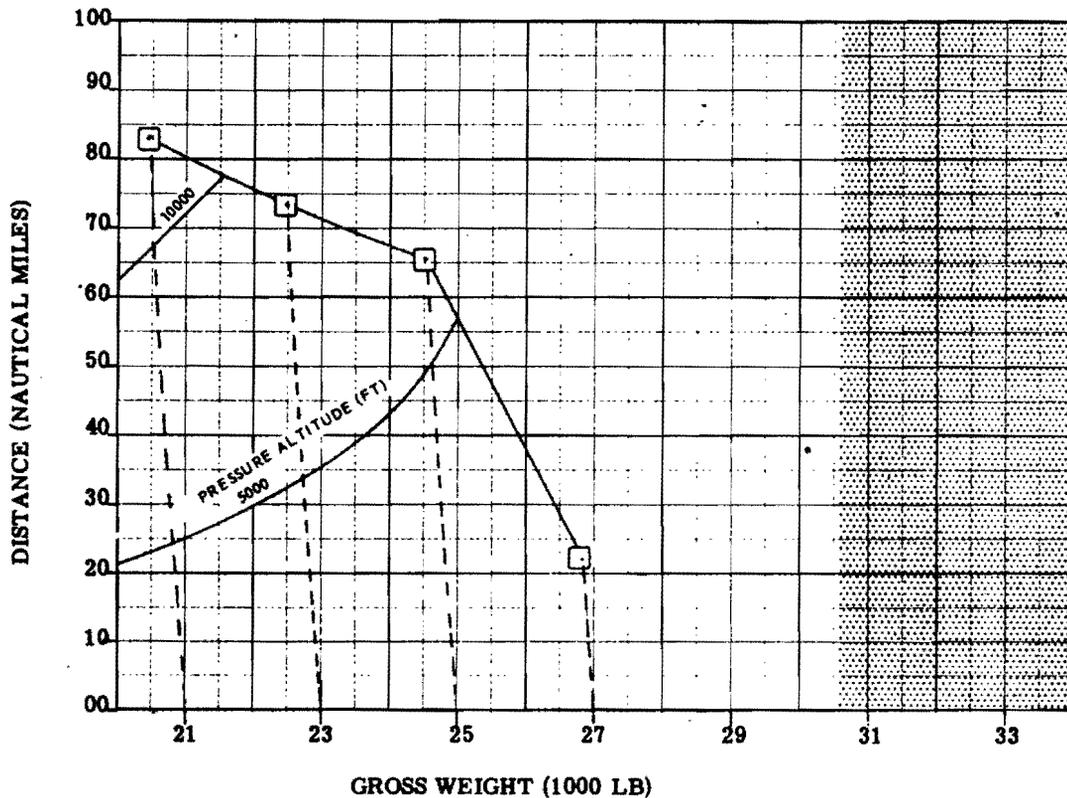


Figure A4.8. Distance To Climb - Hot Day - METO Power - Single Engine. (Sheet 2 of 2)

MODEL(S): C-47,
C-117 AND R4D

RATE OF CLIMB METO POWER

ENGINE(S): (2) R-1830-90C
(HIGH BLOWER INOPERATIVE)
-90D AND -92

TWO-ENGINE WING FLAPS - UP COWL FLAPS - TRAIL POSITION

FUEL GRADE: 100/130
FUEL DENSITY: 6.0 LB/GAL

2550 RPM

BASED ON: FLIGHT TEST DATA
DATA AS OF: 11 JULY 1957

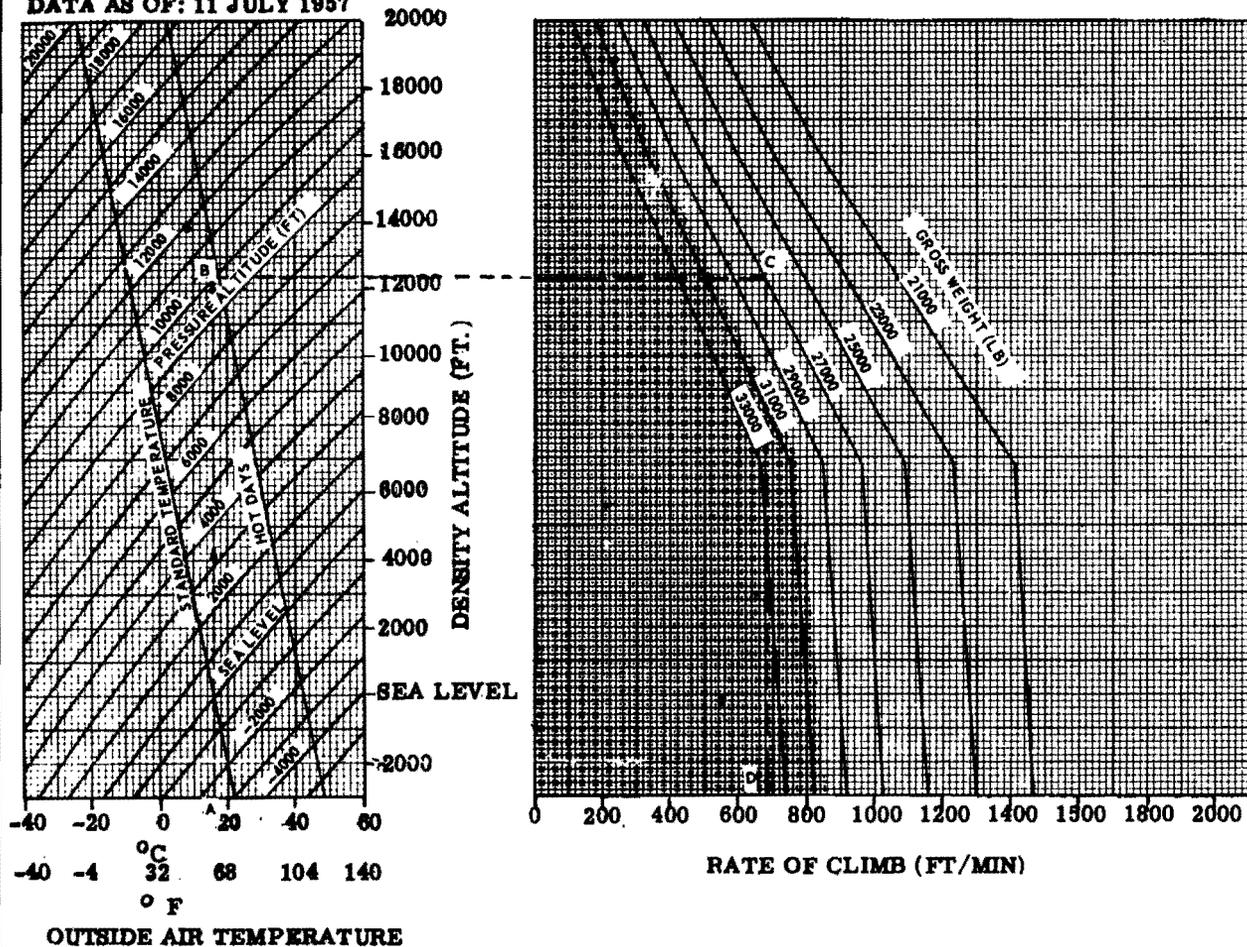


Figure A4-15. Rate of Climb - METO Power - 2550 RPM - Two Engine.

MODEL(S): C-47,
C-117 AND R4D

RATE OF CLIMB CLIMB POWER

ENGINE(S): (2) R-1830-90C
(HIGH BLOWER INOPERATIVE)
-90D AND -92

TWO ENGINE - 2350 RPM

FUEL GRADE: 100/130
FUEL DENSITY: 6.0 LB/GAL

BASED ON: FLIGHT TEST DATA
DATA AS OF: 11 JULY 1957

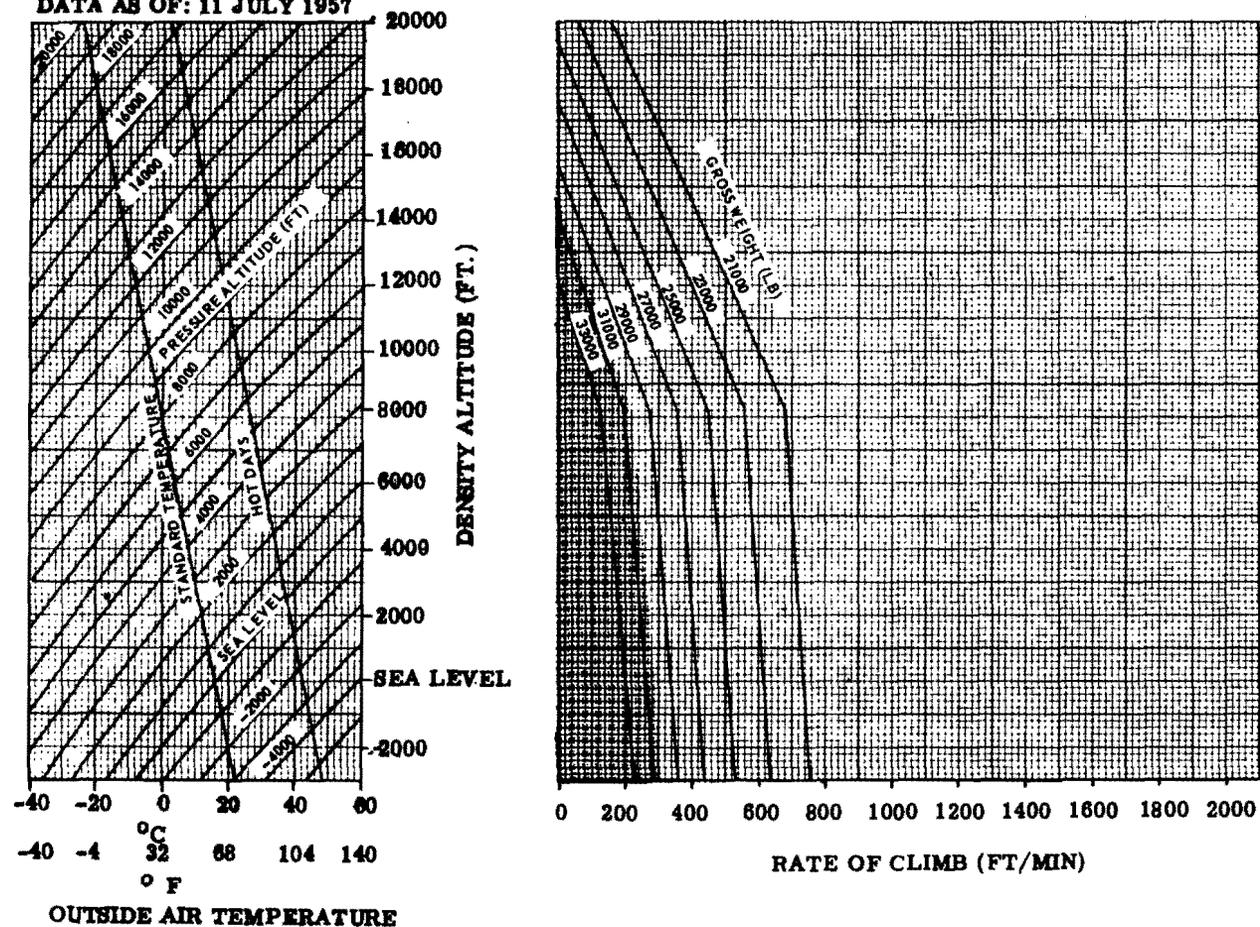


Figure A4-16. Rate of Climb - Climb Power - 2350 RPM - Two Engine.

MODEL(S): C-47,
C-117 AND R4D

RATE OF CLIMB - METO POWER

ENGINE(S): (2) R-1830-90C
(HIGH BLOWER INOPERATIVE)
-90D AND -92

SINGLE ENGINE PROPELLER -
FEATHERED ON INOPERATIVE ENGINE
2550 RPM

FUEL GRADE: 100/130
FUEL DENSITY: 6.0 LB/GAL

WING FLAPS - UP COWL FLAPS - TRAIL POSITION

BASED ON: FLIGHT TEST DATA
DATA AS OF: 11 JULY 1957

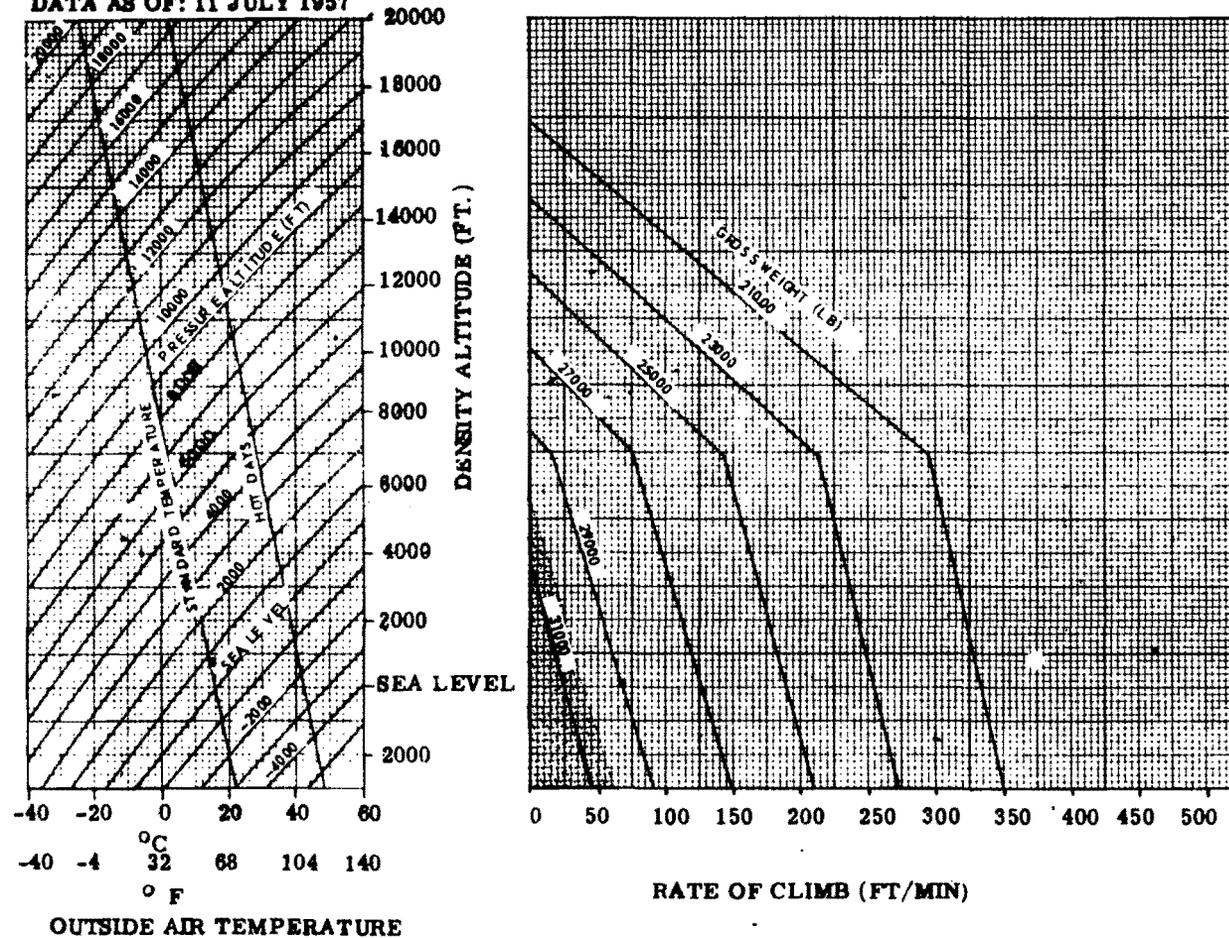


Figure A4-20. Rate of Climb - METO Power - 2550 RPM - Single Engine.

MODEL(S): C-47,
C-117 AND R4D

RATE OF CLIMB - CLIMB POWER

ENGINE(S): (2) R-1830-90C
(HIGH BLOWER INOPERATIVE)
-90D AND -92

SINGLE ENGINE - PROPELLER FEATHERED ON INOPERATIVE ENGINE

2350 RPM

FUEL GRADE: 100/130
FUEL DENSITY: 6.0 LB/GAL

WING FLAPS - UP COWL FLAPS - TRAIL POSITION

BASED ON: FLIGHT TEST DATA
DATA AS OF: 11 JULY 1957

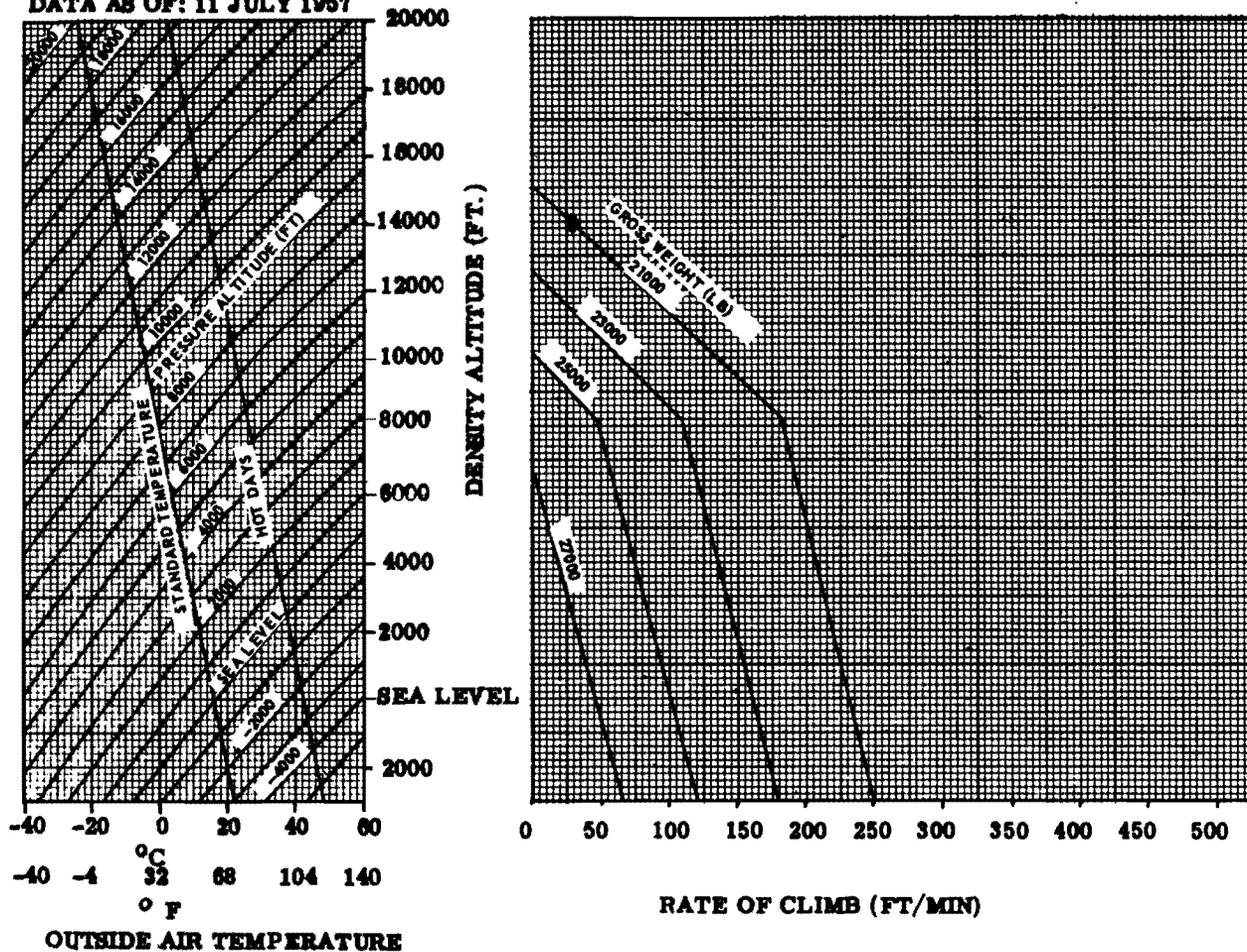


Figure A4-21. Rate of Climb - Climb Power - 2350 RPM - Single Engine.

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SINGLE-ENGINE SAWTOOTH CLIMB

CONFIGURATION I (CLEAN)

FLAPS UP

COWL FLAPS CLOSED ON INOPERATIVE ENGINE

TAKEOFF POWER AND COWL FLAPS TRAIL

ON OPERATING ENGINE

GROSS WEIGHT — 26,000 LBS

CONDITIONS

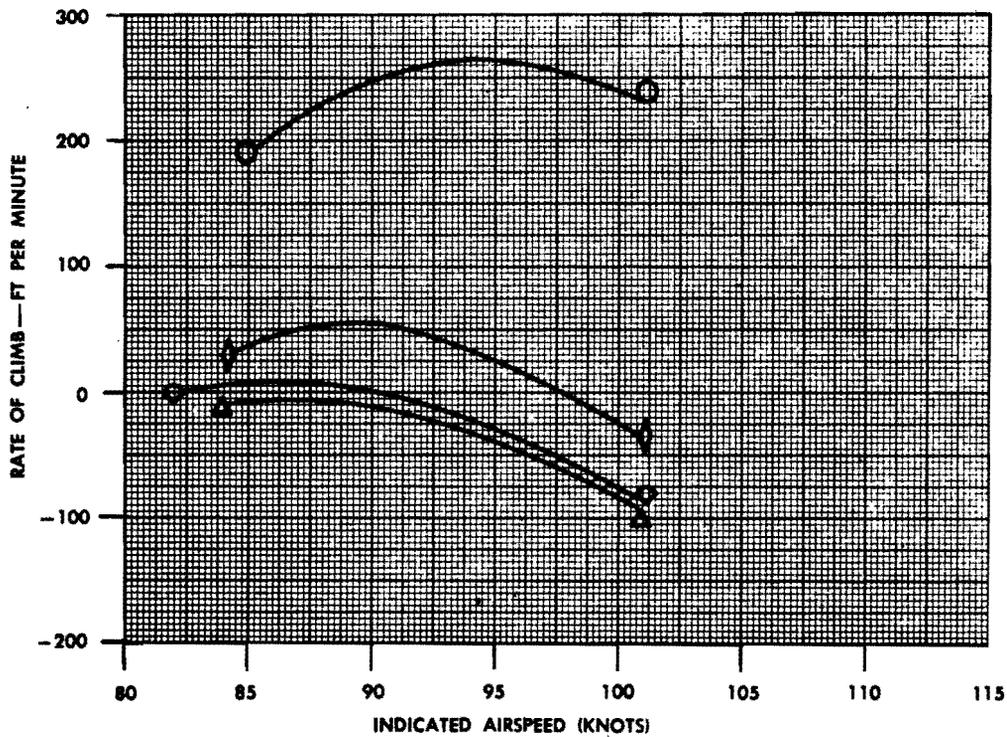
3000 FEET

NACA STANDARD DAY

BASED ON: FLIGHT TEST DATA

DATA AS OF: 11 JULY 1957

MODEL(S): C-47,
C-117 AND R4D



- - PROP FEATHERED, GEAR UP
- ◇ - PROP FEATHERED, GEAR DOWN
- - PROP WINDMILLING, GEAR UP
- △ - PROP WINDMILLING, GEAR UP, 4 ATO UNITS INSTALLED

ENGINE(S): (2) R-1830-90C
(HIGH BLOWER INOPERATIVE)
-90D AND -92

FUEL GRADE: 100/130
FUEL DENSITY: 6.0 LB/GAL

Figure A4-25. Single Engine Sawtooth Climb.

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EMERGENCY CEILING STANDARD DAY

100 FT/MIN RATE OF CLIMB AT METO POWER
CLEAN CONFIGURATION

SAMPLE PROBLEM:

- A. GROSS WEIGHT = 27000 POUNDS.
- B. TWO ENGINE - WITH SKIS CURVE.
- C. PRESSURE ALTITUDE = 22000 FEET.

MODEL(S): C-47,
C-117 AND R4D

ENGINE(S): (2) R-1830-90C
(HIGH BLOWER INOPERATIVE)
-90D AND -92

BASED ON: FLIGHT TEST DATA
DATA AS OF: 11 JULY 1957

FUEL GRADE: 100/130
FUEL DENSITY: 6.0 LB/GAL

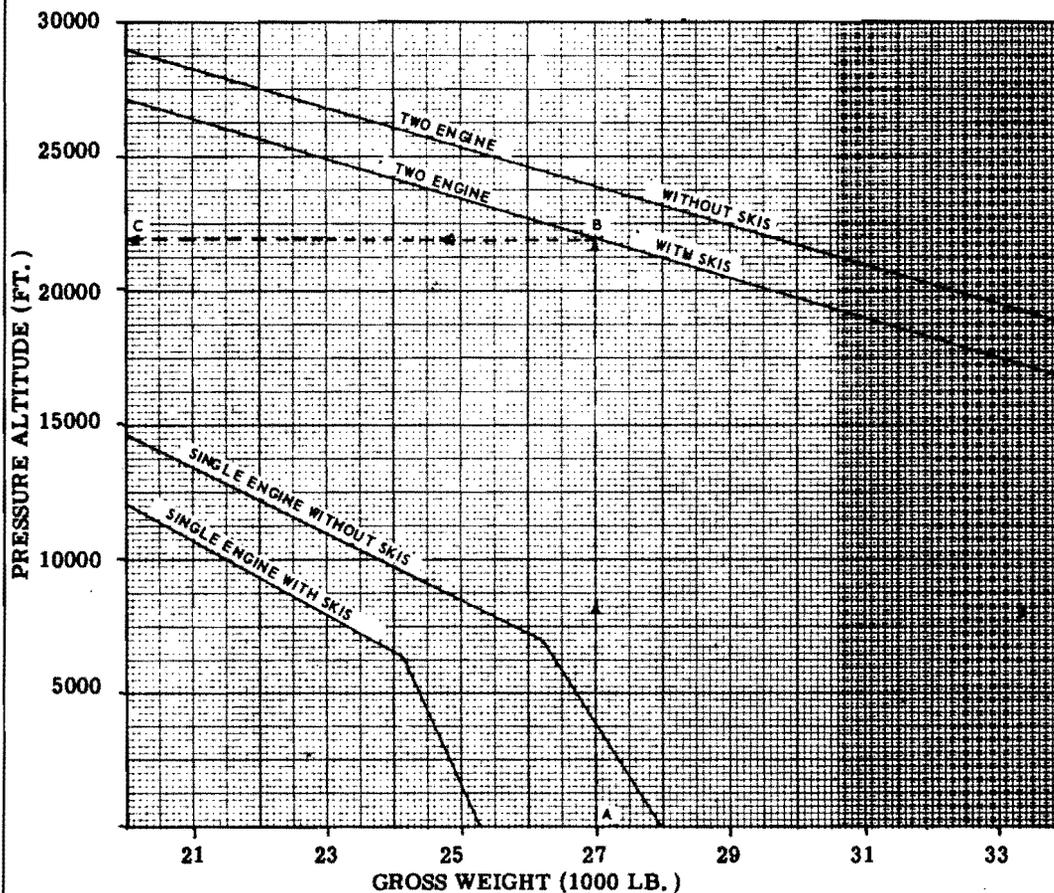


Figure A4-26. Emergency Ceiling - Standard Day.

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PART FIVE
RANGE

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DISCUSSION OF CHARTS.

The range performance is presented in three types of charts: long range power condition, flight planning for long range cruise condition, and level flight performance. Maximum endurance power conditions charts are also provided.

LEVEL FLIGHT PERFORMANCE

The level flight performance charts (figure A5-1 and A5-2) are used to determine the equivalent and true airspeeds, and the brake horsepower required per engine for level flight performance with and without skis during two engine operation at various combinations of gross weight and density altitude.

Enter the chart at the recommended long range airspeed curve, Point A, and proceed to the known gross weight curve, Point B. From this intersection, proceed horizontally to the known density altitude and read the required brake horsepower per engine for two engine operation, Point C. To determine the correct equivalent airspeed at this setting, proceed from Point B, vertically to the equivalent airspeed scale, Point D. The true airspeed may be determined by projecting a line vertically from Point D to the known density altitude, Point E, and interpolating the true airspeed at this point.

LONG RANGE POWER CONDITIONS

The long range power conditions charts (figure A5-3 through A5-6) are presented with sheet 1 of 2 and 2 of 2 on facing pages. Sheet 1 of 2 shows recommended true airspeed (TAS), brake horsepower, RPM, and manifold pressure. Sheet 2 of 2 shows fuel flow (pounds per hour) and specific range (nautical miles per pound of fuel). Charts are included for two engine and single engine long range operation at various weights in low blower, auto rich and auto lean carburetor settings. Enter each chart at the aircraft's initial cruise gross weight (or any desired intermediate gross weight) and proceed vertically from bottom to top. To gain maximum range efficiency from use of the chart, recompute power settings at least once each hour for the new gross weight (decreased as fuel is consumed). These charts are based on the recommended long range airspeed curve (99 percent maximum range) on the level flight performance charts (figure A5-1 and A5-2). A sample problem is presented on the first chart of this series.

FLIGHT PLANNING CHART FOR LONG RANGE CRUISE CONDITION

The flight planning charts for long range cruise condition (figures A5-7 through A5-13) are used to determine the fuel consumed and the time elapsed for a cruise operation when the required distance to

cruise and either the initial or final aircraft cruise gross weight are known. In the event initial and final cruise gross weights are known, both the range and time to cruise may be obtained from the charts.

The charts are constructed for use with two and single-engine power conditions. The vertical scales labeled range and time, are presented only to find the difference in nautical miles (aircraft range) or time in (100 minutes) due to fuel consumption between initial and final cruise gross weights. A sample problem is included on the first chart of this series (figure A5-7).

Enter the chart with the given gross weight (Point A). Draw a line vertically to the time curve (Point B). Extend the line vertically from Point B to the range curve (Point C). Draw a line horizontally from Point C to the range scale (Point D). Subtract mission range from the value shown at Point D and reenter the range scale with this value (Point E). Draw a line horizontally from Point E to intersect the range curve (Point F). From Point F, draw a line vertically to the time curve (Point G) and extend to the gross weight scale (Point H). Subtract the value at Point H from the value at Point A to obtain the fuel required for the mission range. Similarly, time may be found by drawing a horizontal line from the time curve Point B and Point G, to the time scale, Point I and Point J. The difference between the values shown at Point I and Point J is the time corresponding to the mission range.

MAXIMUM ENDURANCE POWER CONDITIONS

The maximum endurance power conditions charts (figures A5-14 and A5-15) present the calibrated airspeed (CAS), brake horsepower, rpm, manifold pressure and fuel flow for maximum endurance conditions at various gross weights for operation with two engines. Where applicable, the charts contain altitude curves which show operation in auto rich or auto lean mixture in low blower.

To determine CAS, power, rpm, manifold pressure, and fuel flow values, enter the chart at the aircraft gross weight and proceed vertically. The desired values may then be read as the vertical line intersects the particular curve. The endurance in hours is obtained by dividing the amount of fuel remaining to be used by the average total fuel flow in pounds per hour occurring between the initial and final gross weights. Where sudden changes occur in the fuel flow curve, the endurance calculation should be separated into parts at the gross weight where the break occurs, and the separate endurance times added together.

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LEVEL FLIGHT PERFORMANCE TWO ENGINE

MODEL(S): C-47,
C-117 AND R4D

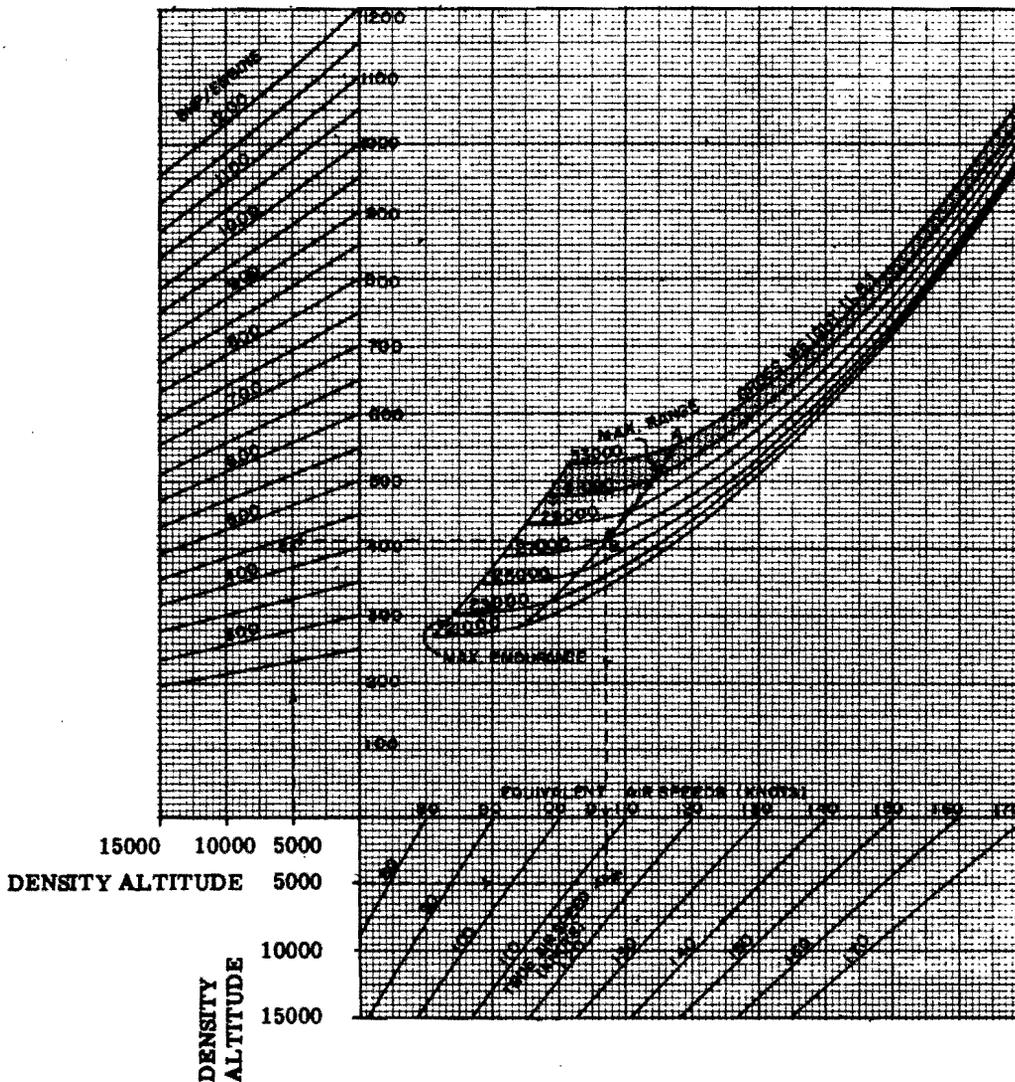
ENGINE(S): (2) R-1830-90C
(HIGH BLOWER INOPERATIVE)
-90D AND -92

BASED ON: FLIGHT TEST DATA
DATA AS OF: 11 JULY 1957

FUEL GRADE: 100/130
FUEL DENSITY: 6.0 LB/GAL

SAMPLE PROBLEM:

- A. MAXIMUM RANGE.
- B. GROSS WEIGHT = 27000 POUNDS.
- C. BRAKE HORSEPOWER PER ENGINE = 440 AT 5000 FEET DENSITY ALTITUDE.
- D. EQUIVALENT AIRSPEED = 107 KNOTS.
- E. TRUE AIRSPEED = 115 KNOTS AT 5000 FEET DENSITY ALTITUDE.



A5-1. Level Flight Performance - Two Engines.

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LONG RANGE POWER CONDITIONS STANDARD DAY - TWO ENGINES

MODEL(S): C-47;
C-117; and R4D

ENGINE(S): (2) R-1830-90C
(HIGH BLOWER INOPERATIVE) -90D AND -92

FUEL GRADE: 100/130
FUEL DENSITY: 6 LB/GAL

BASED ON: FLIGHT TEST
DATA AS OF: 11 JULY 1957

AUTO LEAN _____

AUTO RICH -----

SAMPLE PROBLEM:

- A, F. GROSS WEIGHT - 27000 pounds.
- B, C, D, E, G and H. Altitude - 10,000 feet, standard day.
- BB. True airspeed - 124.5 knots.
- CC. Brake horsepower - 480.
- DD. RPM - 1700.
- EE. Manifold pressure - 27.5 IN. HG.
- GG. Fuel flow - 405 pounds per hour.
- HH. Specific range - .305 nautical miles per pound of fuel.

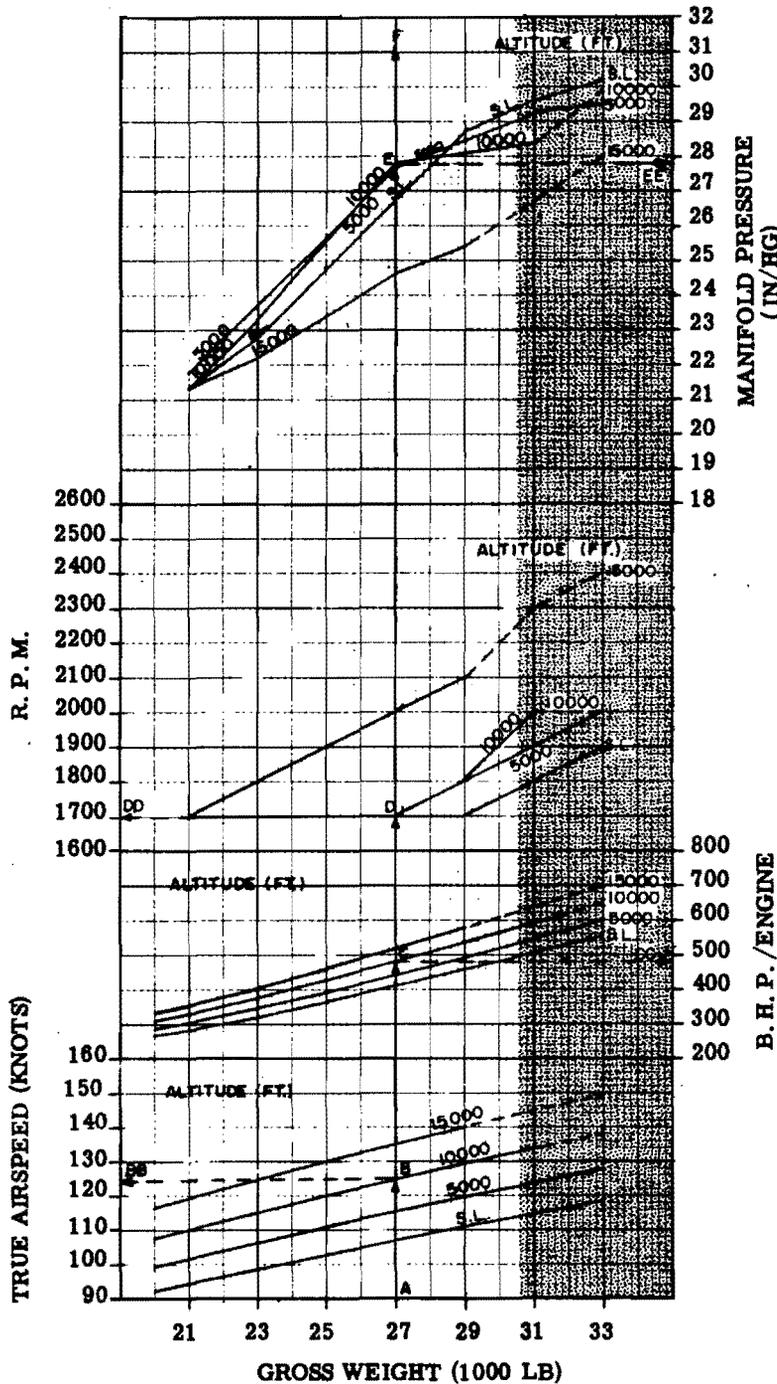


Figure A5-3. Long Range Power Conditions - Standard Day - Two Engines (Sheet 1 of 2)

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LONG RANGE POWER CONDITIONS STANDARD DAY-TWO ENGINES

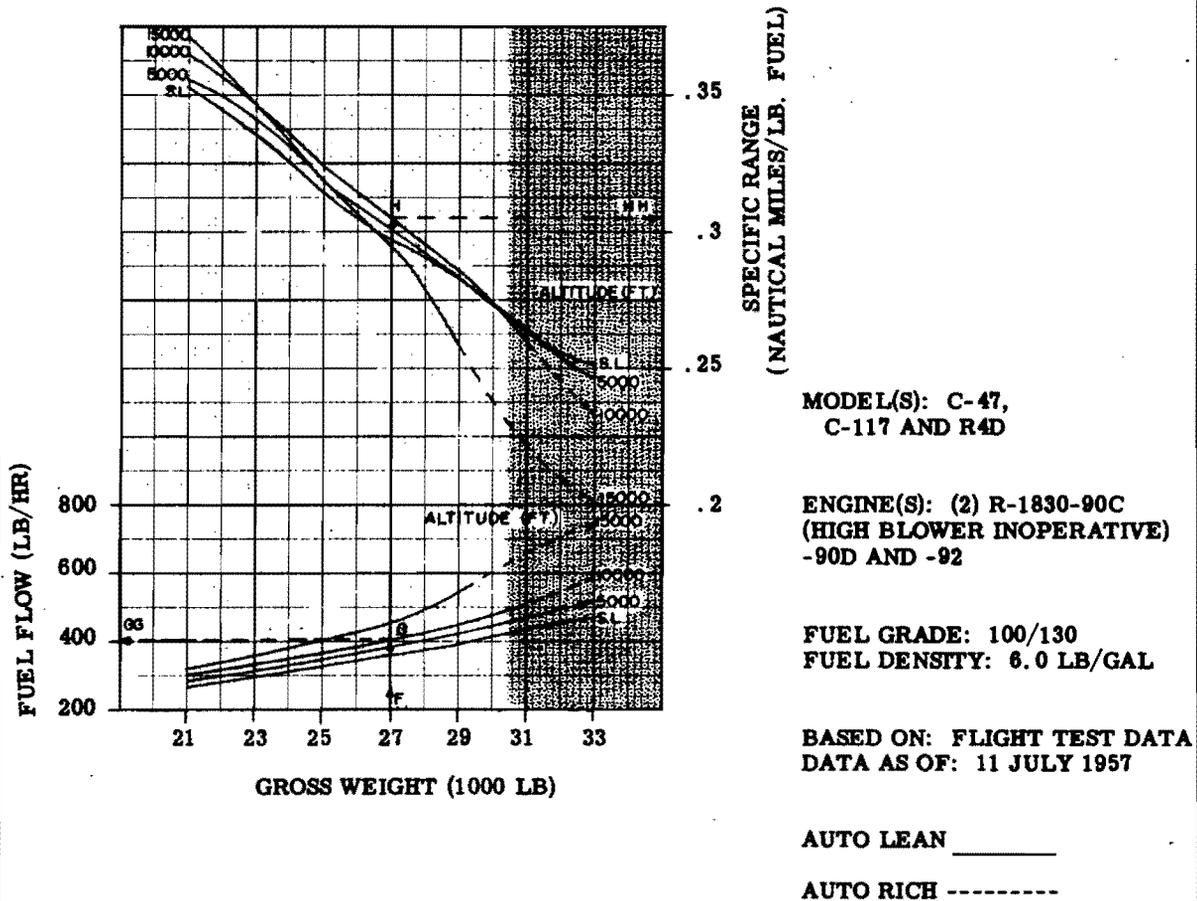


Figure A5-3. Long Range Power Conditions - Standard Day - Two Engines (Sheet 2 of 2)

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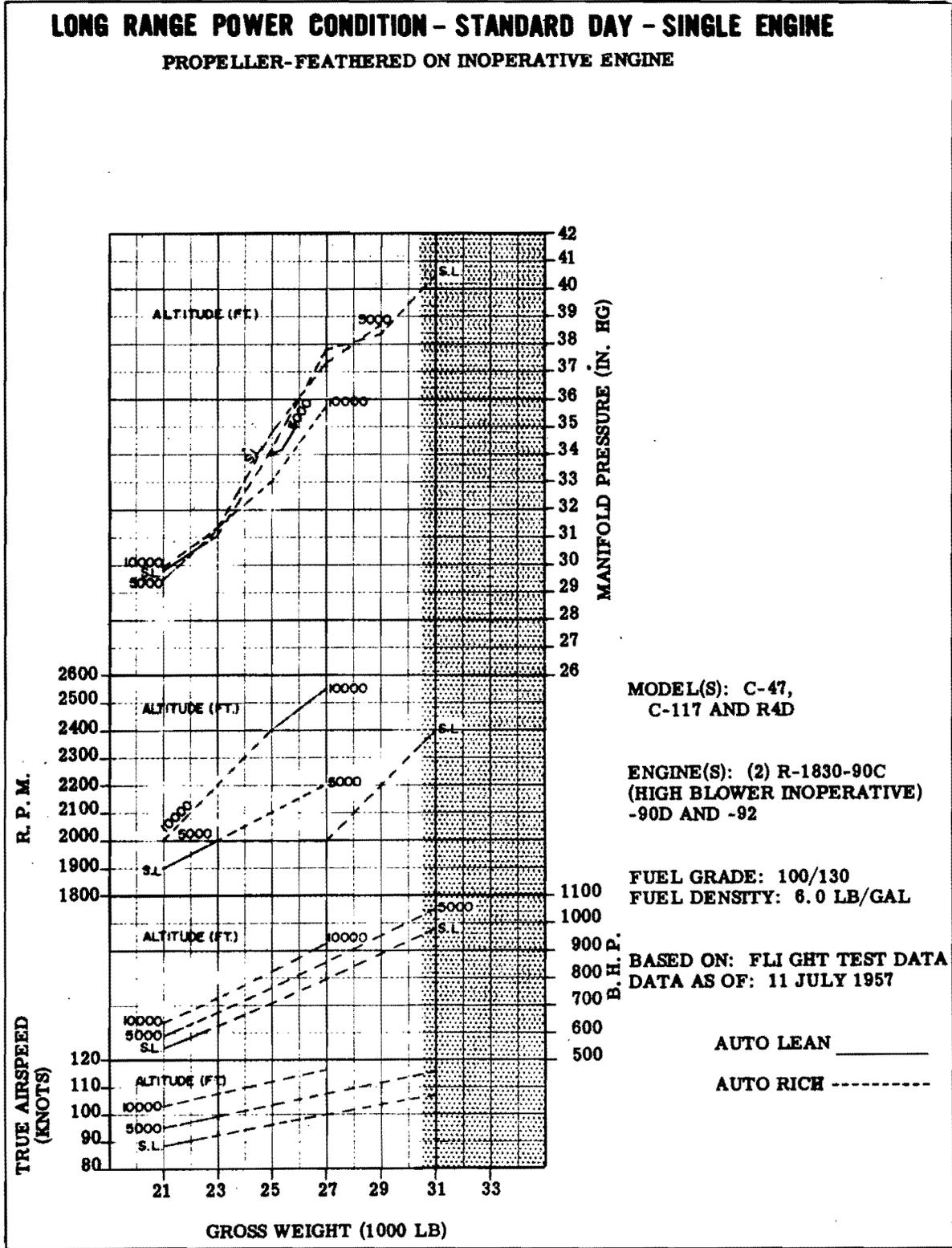


Figure A5-5. Long Range Power Condition - Standard Day - Single Engine (Sheet 1 of 2)

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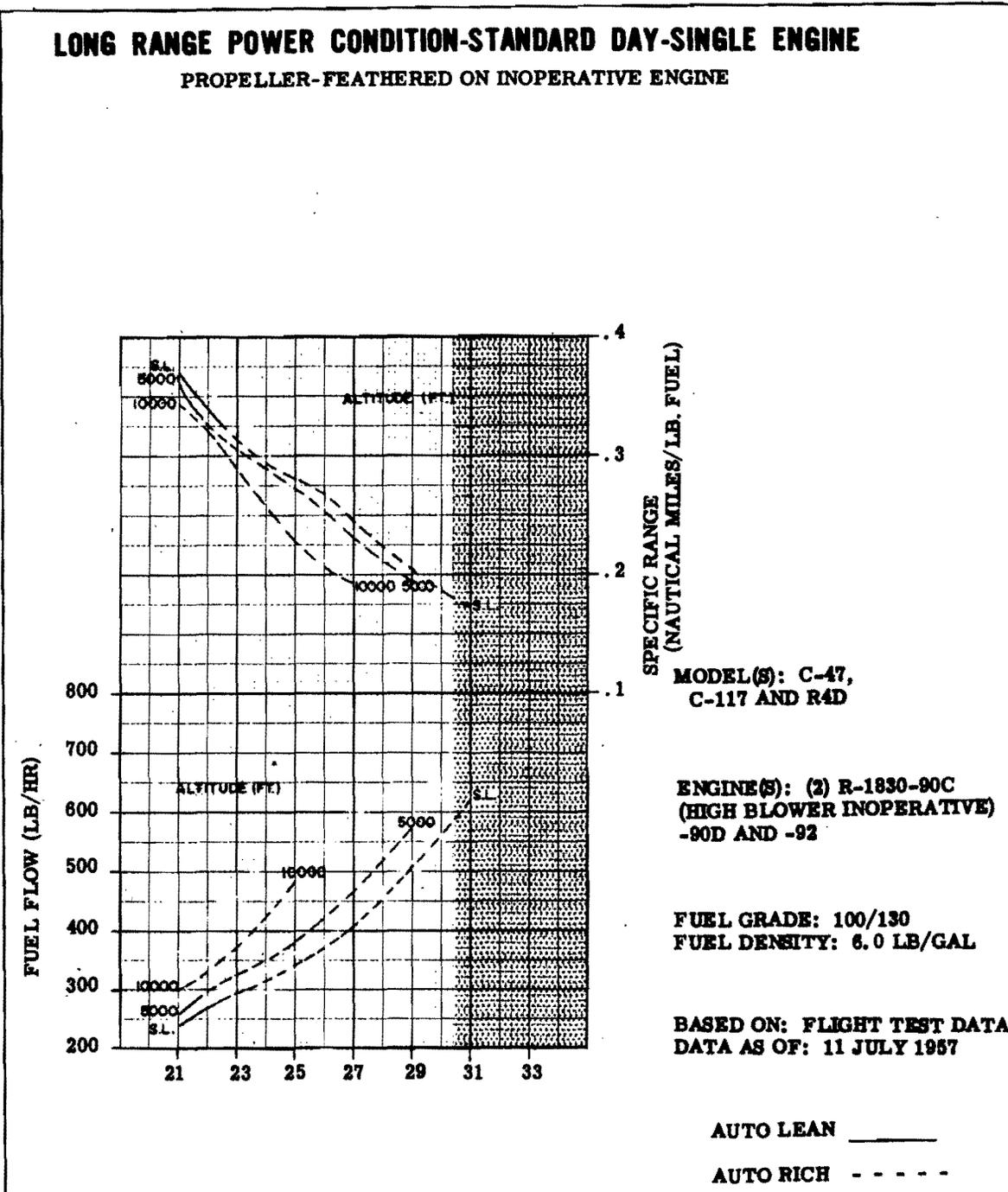


Figure A5-5. Long Range Power Condition - Standard Day - Single Engine (Sheet 2 of 2)

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FLIGHT PLANNING FOR LONG RANGE CRUISE CONDITION - TWO ENGINE SEA LEVEL

MODEL(S): C-47,
C-117 AND R4D

BASED ON: FLIGHT TEST DATA
DATA AS OF: 11 JULY 1957

ENGINE(S): (2) R-1830-90C
(HIGH BLOWER INOPERATIVE)
-90D AND -92

FUEL GRADE: 100/130
FUEL DENSITY: 6.0 LB/GAL

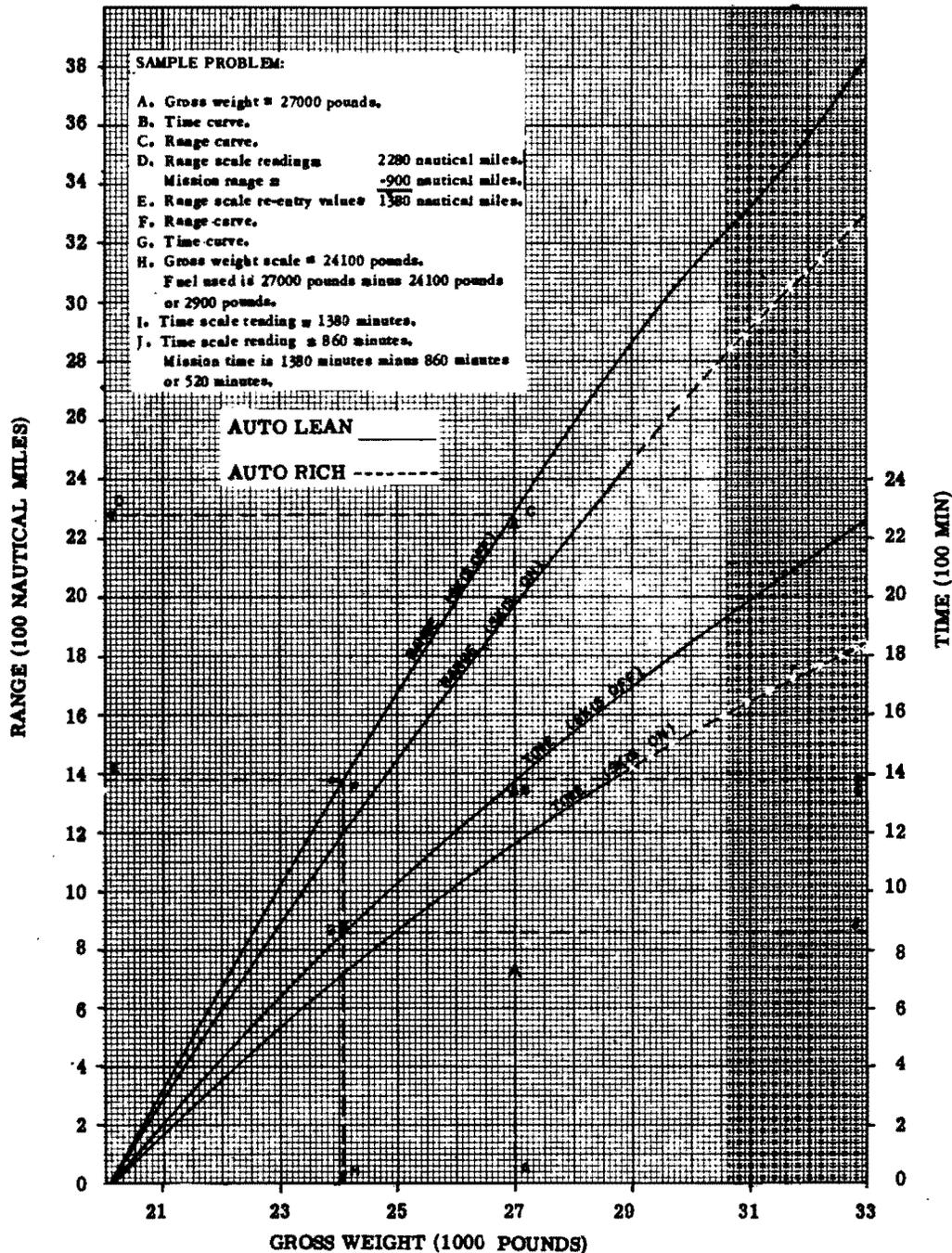


Figure A5-7. Flight Planning for Long Range Cruise Condition - Two Engines - Sea Level.

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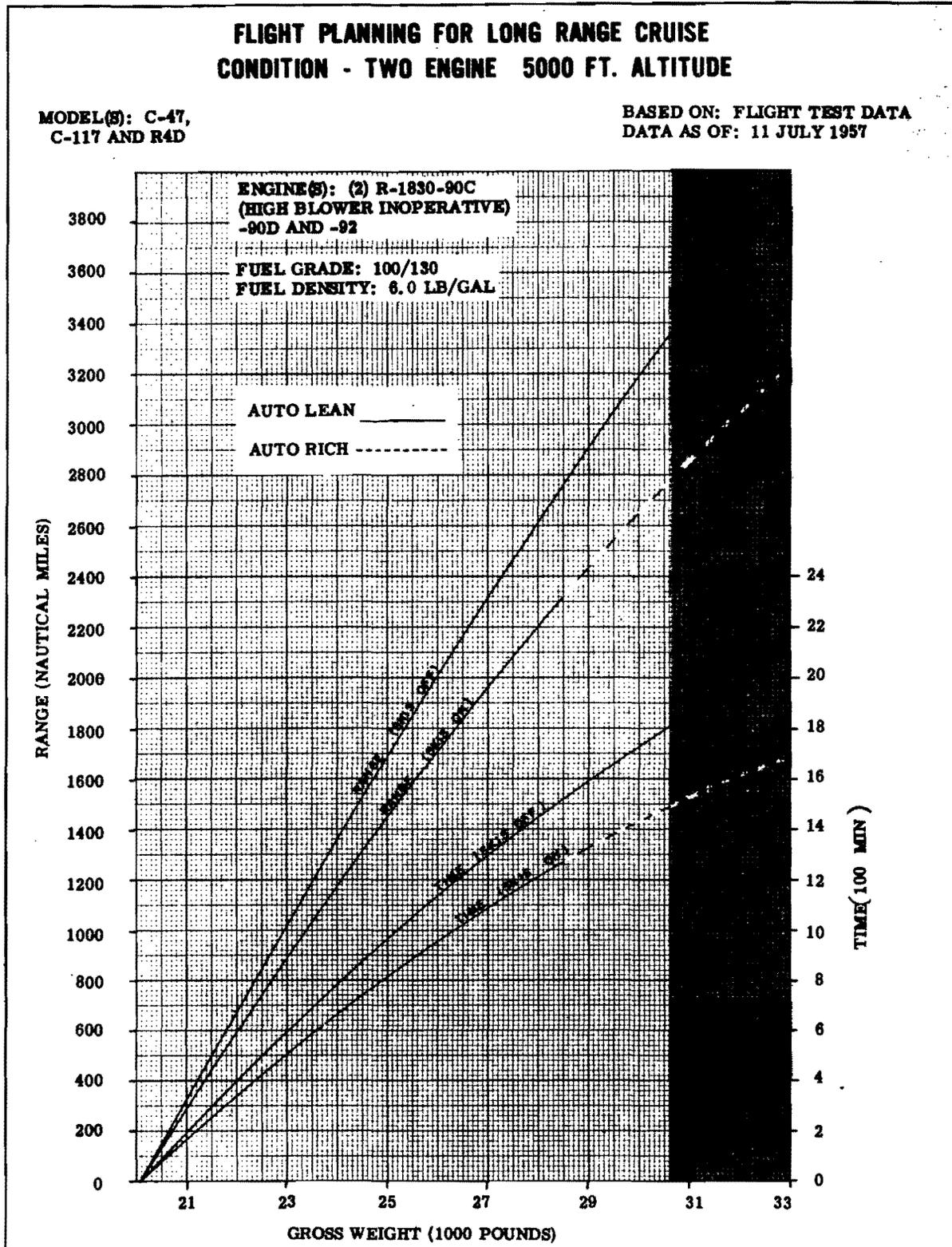


Figure A5-8. Flight Planning for Long Range Cruise Condition - Two Engines - 5000 Ft.

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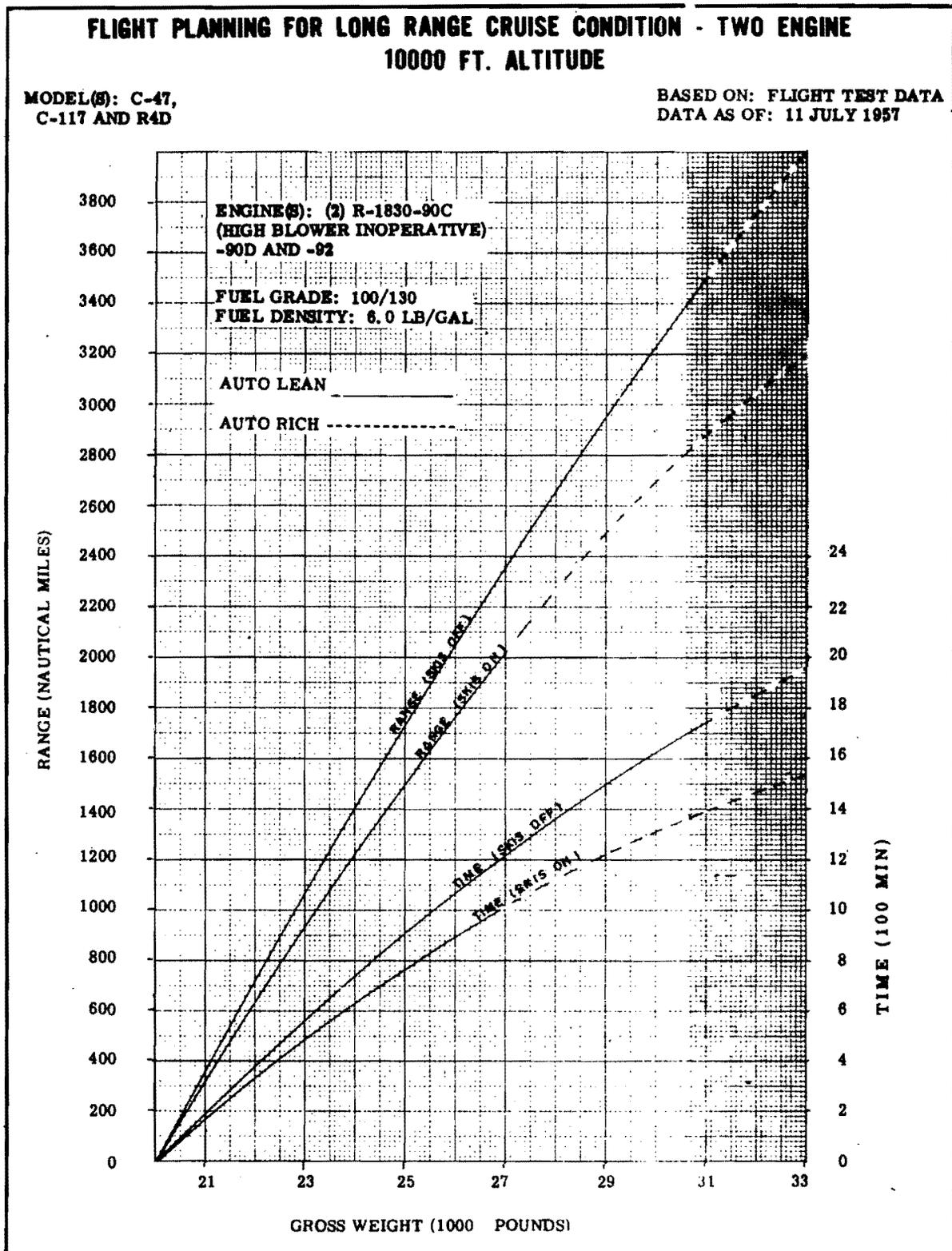


Figure A5-9. Flight Planning for Long Range Cruise Condition - Two Engines - 10000 Ft.

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FLIGHT PLANNING FOR LONG RANGE CRUISE CONDITION - TWO ENGINE (15000 FT. ALTITUDE)

MODEL(S): C-47,
C-117 AND R4D

BASED ON: FLIGHT TEST DATA
DATA AS OF: 11 JULY 1957

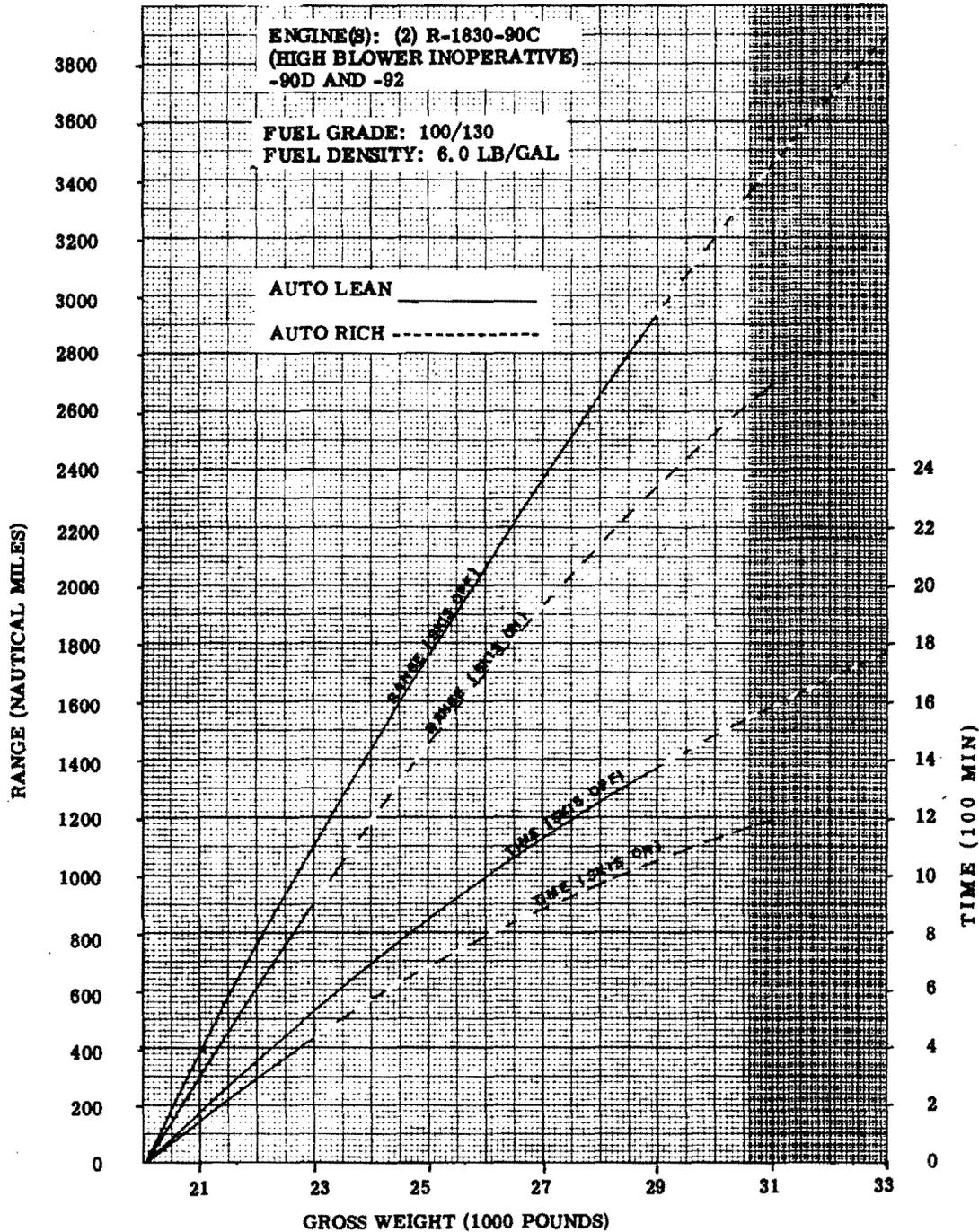


Figure A5-10. Flight Planning for Long Range Cruise Condition - Two Engines - 15000 Ft.

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FLIGHT PLANNING FOR LONG RANGE CRUISE CONDITION SINGLE-ENGINE SEA LEVEL

PROPELLER: FEATHERED ON INOPERATIVE ENGINE

MODEL(S): C-47,
C-117 AND R4D

BASED ON: FLIGHT TEST DATA
DATA AS OF: 11 JULY 1957

ENGINE(S): (2) R-1830-90C
(HIGH BLOWER INOPERATIVE)
-90D AND -92

FUEL GRADE: 100/130
FUEL DENSITY: 6.0 LB/GAL

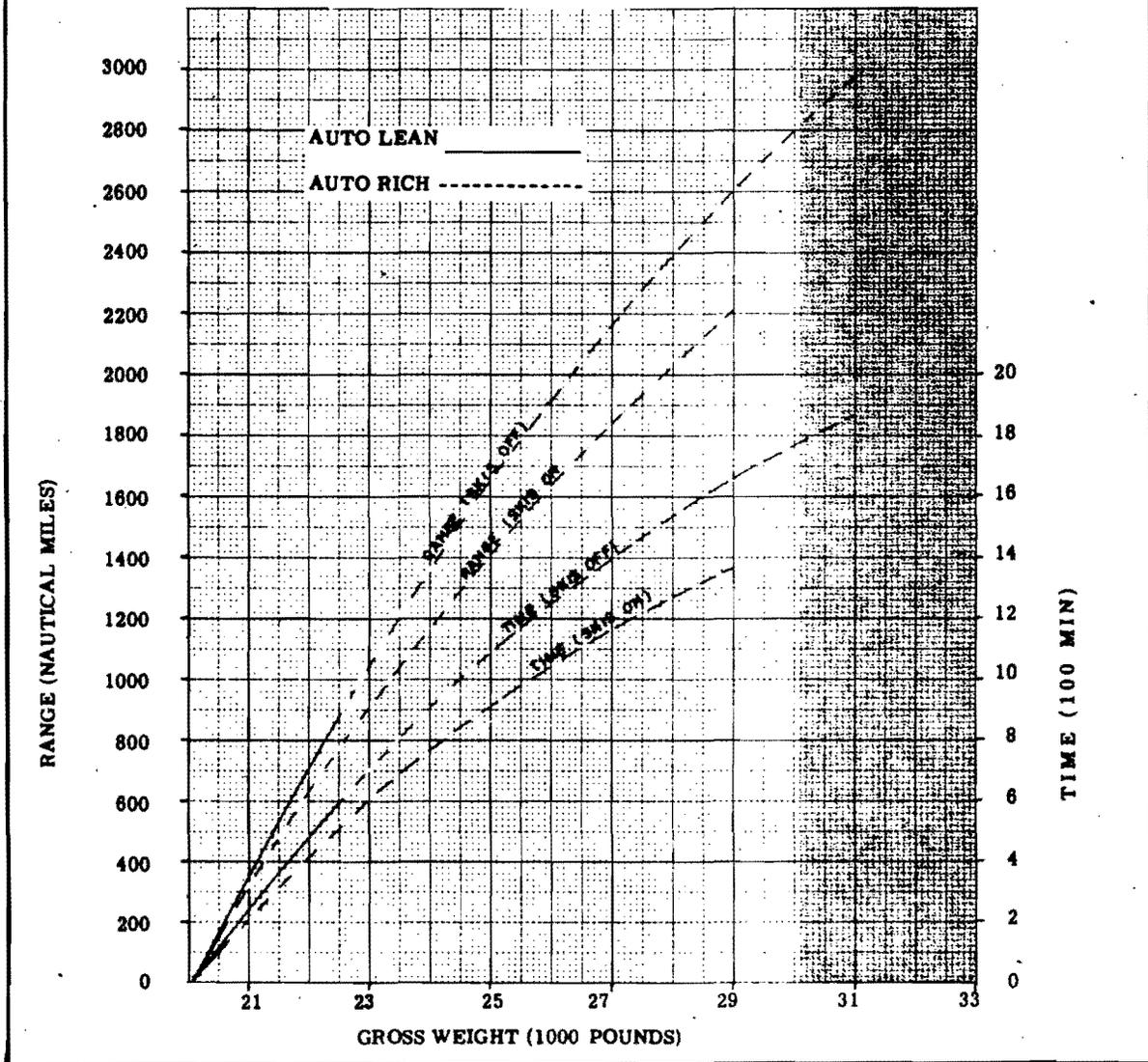


Figure A5-11. Flight Planning for Long Range Cruise Condition - Single Engine - Sea Level.

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FLIGHT PLANNING FOR LONG RANGE CRUISE CONDITION SINGLE ENGINE (5000 FT.)

PROPELLER-FEATHERED ON INOPERATIVE ENGINE

MODEL(S): C-47,
C-117 AND R4D

ENGINE(S): (2) R-1830-90C
(HIGH BLOWER INOPERATIVE)
-90D AND -92

BASED ON: FLIGHT TEST DATA
DATA AS OF: 11 JULY 1957

FUEL GRADE: 100/130
FUEL DENSITY: 6.0 LB/GAL

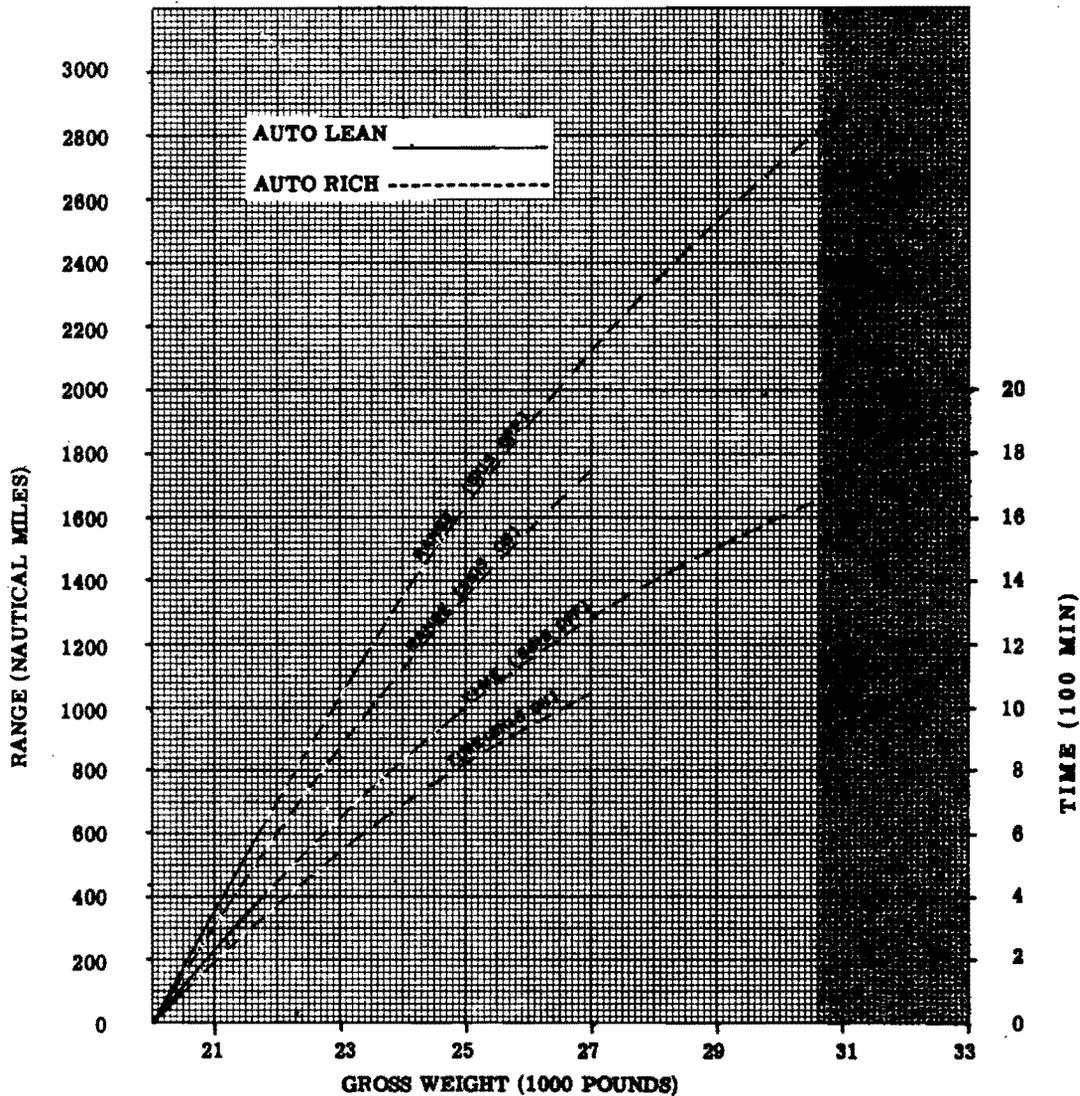


Figure A5-12. Flight Planning for Long Range Cruise Condition - Single Engine - 5000 Ft.

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FLIGHT PLANNING FOR LONG RANGE CRUISE CONDITION - SINGLE-ENGINE (10000 FT.)

PROPELLER-FEATHERED ON INOPERATIVE ENGINE

MODEL(S): C-47
C-117 AND R4D

ENGINE(S): (2) R-1830-90C
(HIGH BLOWER INOPERATIVE)
-90D AND -92

BASED ON: FLIGHT TEST DATA
DATA AS OF: 11 JULY 1957

FUEL GRADE: 100/130
FUEL DENSITY: 6.0 LB/GAL

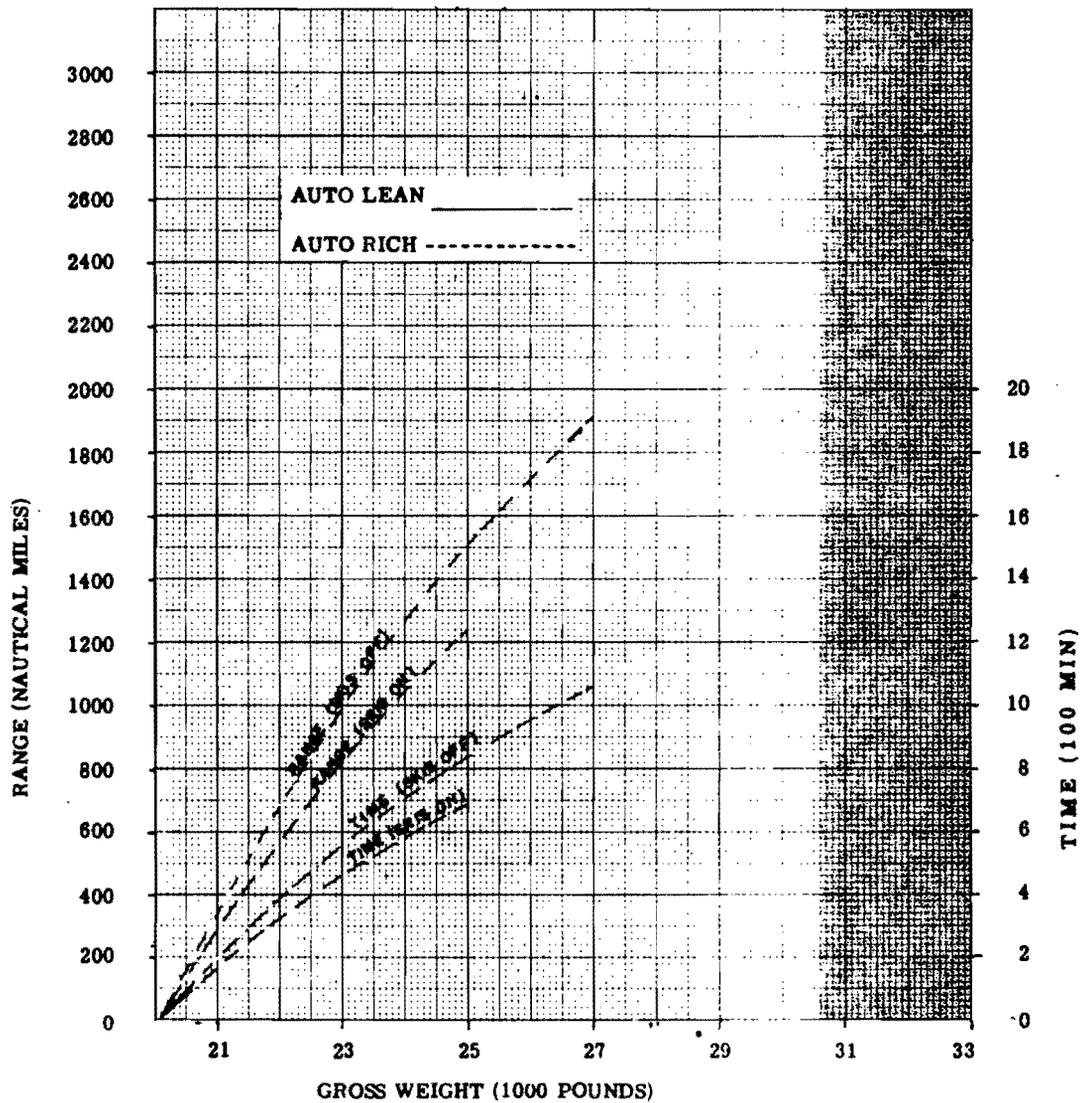


Figure A5-13. Flight Planning for Long Range Cruise Condition - Single Engine - 10000 Ft.

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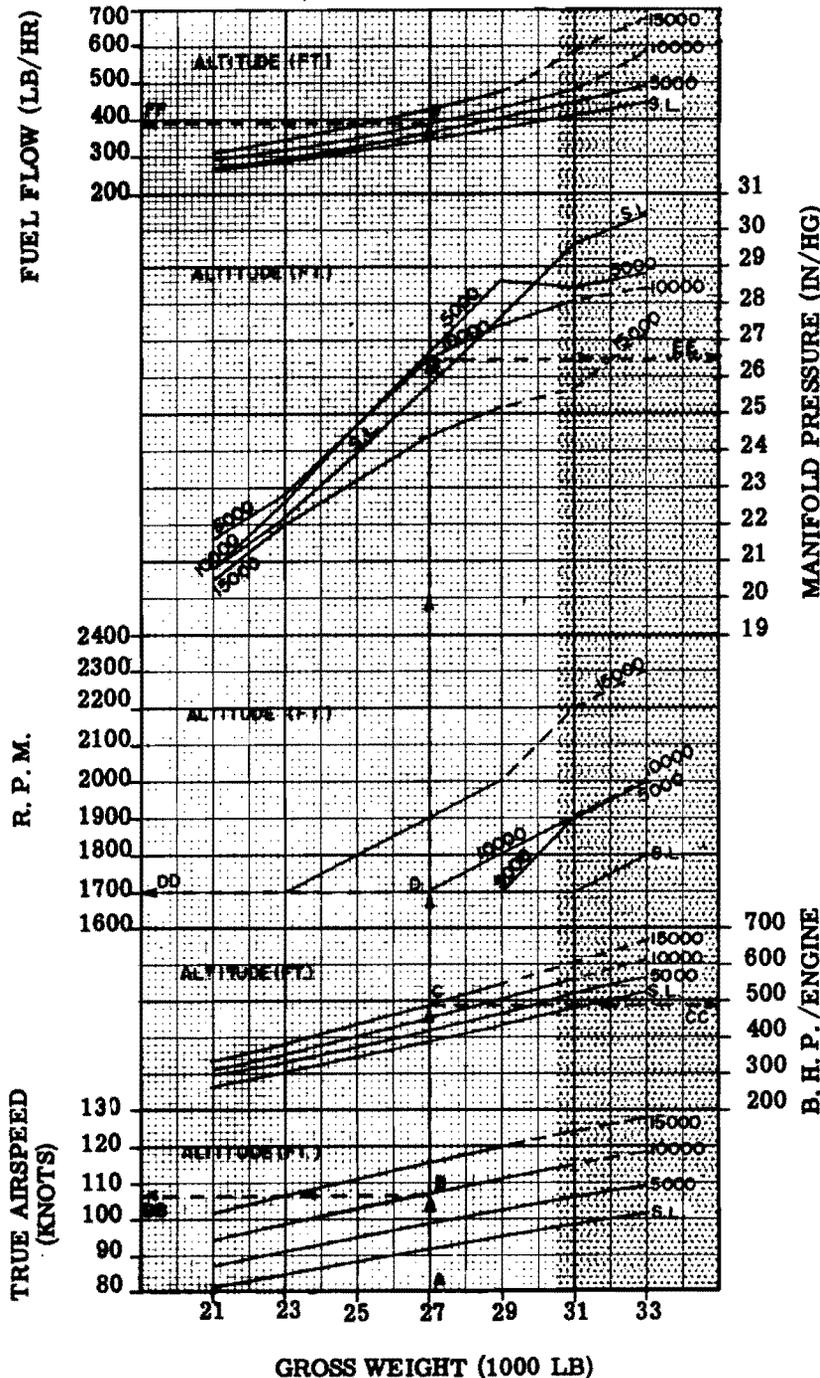
MAXIMUM ENDURANCE POWER CONDITION - TWO-ENGINE STANDARD DAY

MODEL(S): C-47,
C-117 AND R4D

BASED ON: FLIGHT TEST DATA
DATA AS OF: 11 JULY 1957

ENGINE(S): R-1830-90C
(HIGH BLOWER INOPERATIVE)
-90D AND -92

FUEL GRADE: 100/130
FUEL DENSITY: 6.0 LB/GAL



AUTO LEAN _____
AUTO RICH -----

SAMPLE PROBLEM

- A. GROSS WEIGHT = 27000 POUNDS.
- B, C, D, E AND F = 10,000 FEET ALTITUDE.
- BB. TRUE AIRSPEED = 106.5 KNOTS.
- CC. BRAKE HORSEPOWER = 450.
- DD. RPM = 1700.
- EE. MANIFOLD PRESSURE = 26.5.
- FF. FUEL FLOW = 390 POUNDS PER HOUR.

Figure A5-14. Maximum Endurance Power Condition - Two Engines.

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PART SIX
LANDING

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DISCUSSION OF CHARTS.

The landing charts are included to enable the pilot to determine the length of the runway necessary to land the aircraft safely under various conditions of wind, temperature, altitude, and runway surface. Since the length of the landing ground run depends to a great extent on the coefficient of friction (μ) numerical values of μ are shown on the landing ground run charts (figures A6-1 through A6-4) corresponding to the most commonly encountered runway surface conditions.

LANDING GROUND RUN

The landing ground run charts (figures A6-1 through A6-4) are used to determine that landing ground run distance for density altitudes (up to 16,000 feet), gross weight, actual wind component, and runway surface condition. The charts are based on the recommended touchdown speed obtained from the characteristic landing speeds chart (figure A6-5). These charts give ground run only; to compute landing distance from a 50-foot height, first determine landing ground run for prevailing runway surface conditions, then add 90 percent of the landing ground run for hard runway surface. The sum of these two distances will give the approximate total landing distance from a 50-foot height.

CHARACTERISTIC LANDING SPEEDS.

The characteristic landing speed chart (figure A6-5) presents recommended touchdown speeds in both knots and MPH indicated airspeed with zero, $\frac{1}{4}$, $\frac{1}{2}$, and full flaps for various aircraft gross weights. All lines represent the 110 percent power off stall speed for the flap position shown. Enter the chart at the planned landing gross weight and proceed vertically to the appropriate speed curve, then proceed horizontally to the indicated airspeed.

POWER-OFF STALL SPEEDS.

Power-off stall speed charts (figure A6-6 through A6-9) are included for zero, $\frac{1}{4}$, $\frac{1}{2}$ and full DOWN (45°) flap settings. The power-off stall speeds were determined with the throttles in the CLOSED position. When power is maintained on the engines, the airflow over the wings behind the propellers is increased and therefore increases lift and lower the stalling speed. This effect varies with power setting.

SAMPLE PROBLEM:

GIVEN:

1. Outside Air Temperature = 14°C
2. Pressure Altitude = 2000 feet
3. Gross Weight = 27000 pounds
4. Reported Headwind = 20 knots
5. Runway Surface Condition = Sod
6. Wing Flaps = 45 Degrees

FIND:

1. Landing Groundrun Distance

SOLUTION:

1. From Figure A1-4, determine density altitude = 2300 feet
2. Enter Figure A6-1 with this density altitude (2300 feet, Point A) and proceed horizontally to the desired gross weight (27000 pounds, point B)
3. From this point extend a line down to the base line of the wind correction grid (Point C).
4. Follow the contour line to 50 percent of the reported headwind (10 knots, Point D)
5. From Point D extend a line down to the base line of the Runway Surface Condition Correction grid (Point E).
6. Follow the contour line to runway surface condition (Point F, Sod).
7. From this point extend a line down to the landing Ground Run Distance (Point G) and read Landing Ground Run Distance of 1750 feet.

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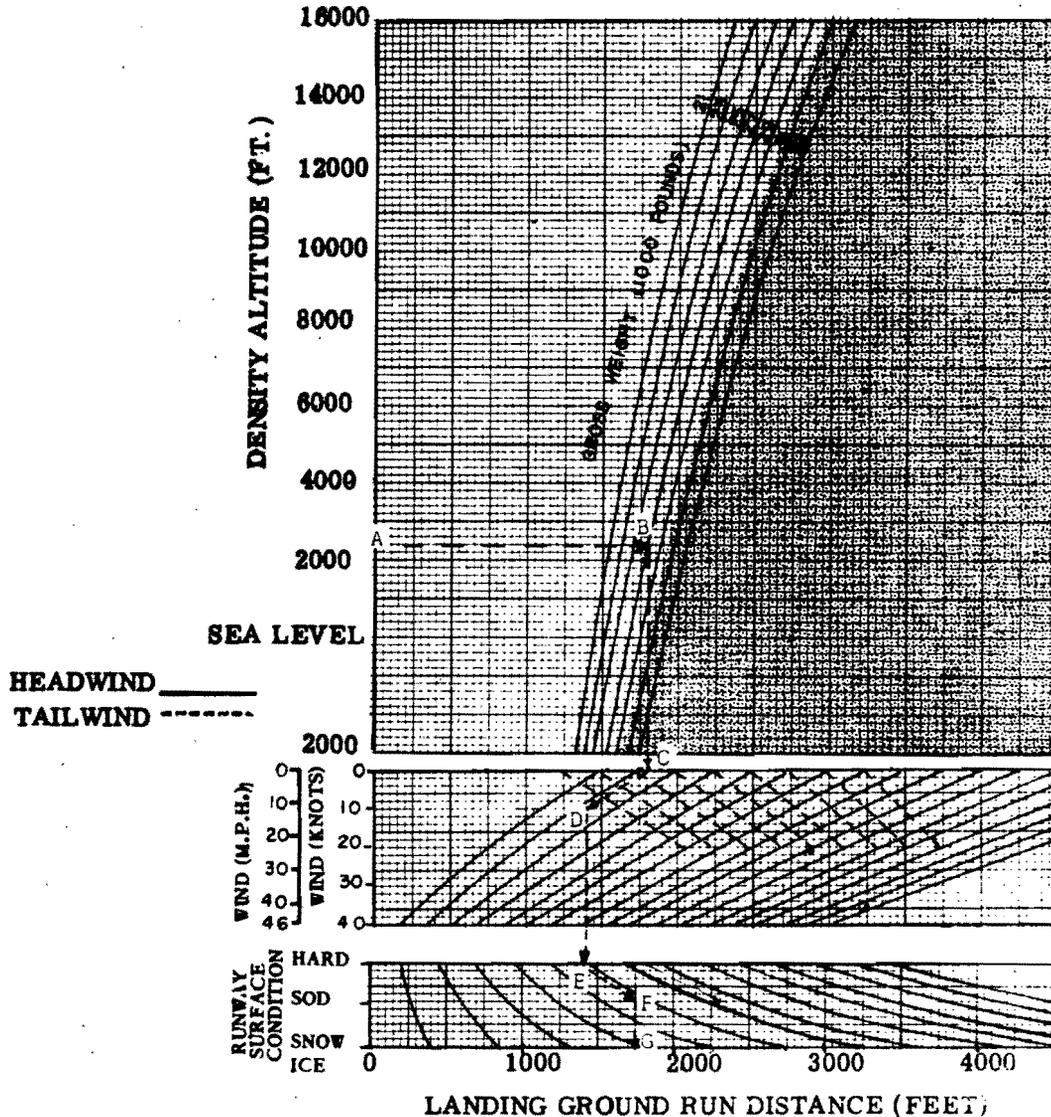
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LANDING GROUND RUN

TOUCHDOWN AT 1.1V_s
WING FLAPS = 45 DEGREES
IDLE POWER

BASED ON: FLIGHT TEST DATA
DATA AS OF: 11 JULY 1957

MODEL(S): C-47, C-117
AND R4D



LANDING GROUND RUN DISTANCE (FEET)
ENGINE(S): (2) R-1830-90C
(HIGH BLOWER INOPERATIVE)
-90D AND -97

NOTE:

1. Speed at 50 foot height = 120 percent of stall speed.
2. Speed at touchdown = 110 percent of stall speed.
3. Wing flaps = 45 degrees.
4. This chart is for landing ground run distance only. Air run from a 50 foot height to touchdown is approximately 30 percent of landing ground run on hard surface for 45 degrees flap. Total landing distance from a 50 foot height is the sum of the air run plus the ground run distance for any prevailing runway surface condition.
5. Use 50 percent of reported headwinds and 150 percent of reported tailwinds with the wind correction grid, if wind is measured at a source other than runway. This is a recommended procedure which may be revised at the discretion of the pilot, depending upon the source of measurement of the wind data.

Figure A6-1. Landing Ground Run - Touchdown at 1.1V_s - Wing Flaps - 45 Degrees.

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LANDING GROUND RUN

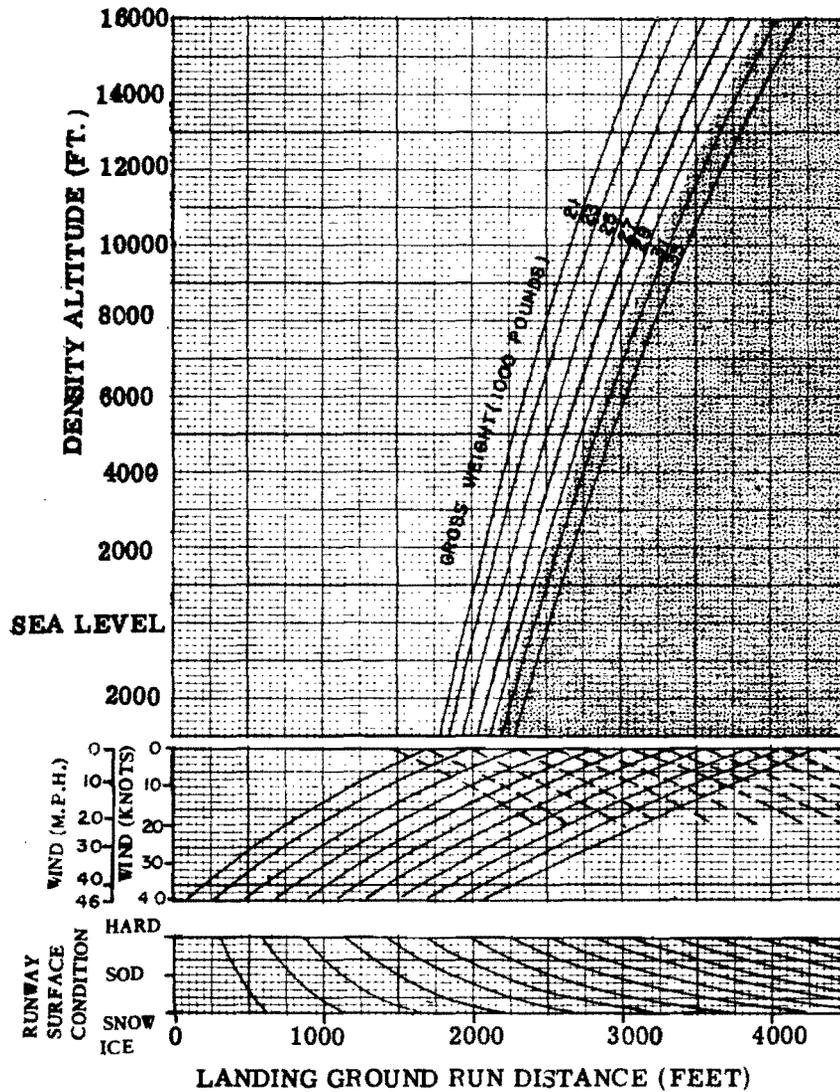
TOUCHDOWN AT 1.1V_s

WING FLAPS = 0 DEGREES

IDLE POWER

BASED ON: FLIGHT TEST DATA
DATA AS OF: 11 JULY 1957

MODEL(S): C-47, C-117
AND R4D



HEADWIND _____
TAILWIND - - - - -

ENGINE(S): (2) R-1830-90C
(HIGH BLOWER INOPERATIVE)
-90D AND -92

NOTE:

1. Speed at 50 feet height = 120 percent of stall speed.
2. Speed at touchdown = 110 percent of stall speed.
3. Wing flaps = 0 degrees.
4. This chart is for landing ground run distance only. Air run from a 50 feet height to touchdown is approximately 90 percent of landing ground run on hard surface for 0 degrees

5. Total landing distance from a 50 feet height is the sum of the air run plus the ground run distance for any prevailing runway surface condition.
- Use 50 percent of reported headwinds and 150 percent of reported tailwinds with the wind correction grid, if wind is measured at a source other than runway. This is a recommended procedure which may be revised at the discretion of the pilot, depending upon the source of measurement of the wind data.

Figure A6-2. Landing Ground Run - Touchdown at 1.1V_s - Wing Flaps - 0 Degrees.

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NOTE

The attached charts, Figure 1 and Figure 2 replace the Runway Surface Condition grids on Figure A6-1, page A6-3 and Figure A6-2, page A6-4 respectively.

1. PURPOSE

To provide landing on slippery runway distance factors and to advise flight crews of the new runway conditions reporting system.

2. GENERAL

Explanation of Terms

RCR - Runway condition reading

P - Patchy

WR - Wet runway

SLR - Slush on runway

LSR - Loose snow on runway

PSR - Packed snow on runway

IR - Ice on runway

- a. In order to notify pilots of slippery runway conditions at terminal airfield, the following system of reporting has been established:

(1) A teletype sequence will report runway conditions as a series of letters followed by a two digit number. The letter portion is the runway surface condition; the number portion is the runway condition reading (RCR.) The letter "P" may follow this sequence to indicate patchy conditions. A report of SLR 06 P would indicate slush on runway, RCR of 06, and patchy conditions.

(2) Air Traffic Control will report information concerning Runway Surface Condition and RCR in plain language for aircraft enroute and anticipating a landing.

3. INSTRUCTIONS.

- a. Determine landing ground run distance for hard runway from the Appendix of the Flight Manual.
- b. Use appropriate curve in this Safety Supplement for your planned landing configuration.
- c. Enter the unusual runway conditions chart with this landing ground run distance, go right to the reported RCR line and then down to obtain the actual ground run distance.

NOTE

If no RCR is available, use 12 for wet runways and 06 for icy runways.

When using ICAO Reports, use RCR 23 for GOOD; RCR 12 for MEDIUM; RCR 06 for POOR.

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**EFFECT OF UNUSUAL
RUNWAY CONDITIONS ON
LANDING GROUND ROLL**

MODELS(S): C-47, C-117
AND R4D
BASED ON: ESTIMATED DATA
DATA AS OF: 1 APRIL 1963
ENGINE(S): (2) R-1830-90C
(HIGH BLOWER INOPERATIVE)
-90D AND -92

RUNWAY SURFACE	RUNWAY CONDITION READING(RCR)
DRY CONCRETE OR MACADAM	23
DRY TURF	15
WET CONCRETE OR MACADAM	12
SNOW OR WET GRASS	08
ICE	06

TOUCHDOWN AT $1.1V_s$
WING FLAPS 0 DEGREES
IDLE POWER

Note: Runway Condition Reading used on landing charts 23.

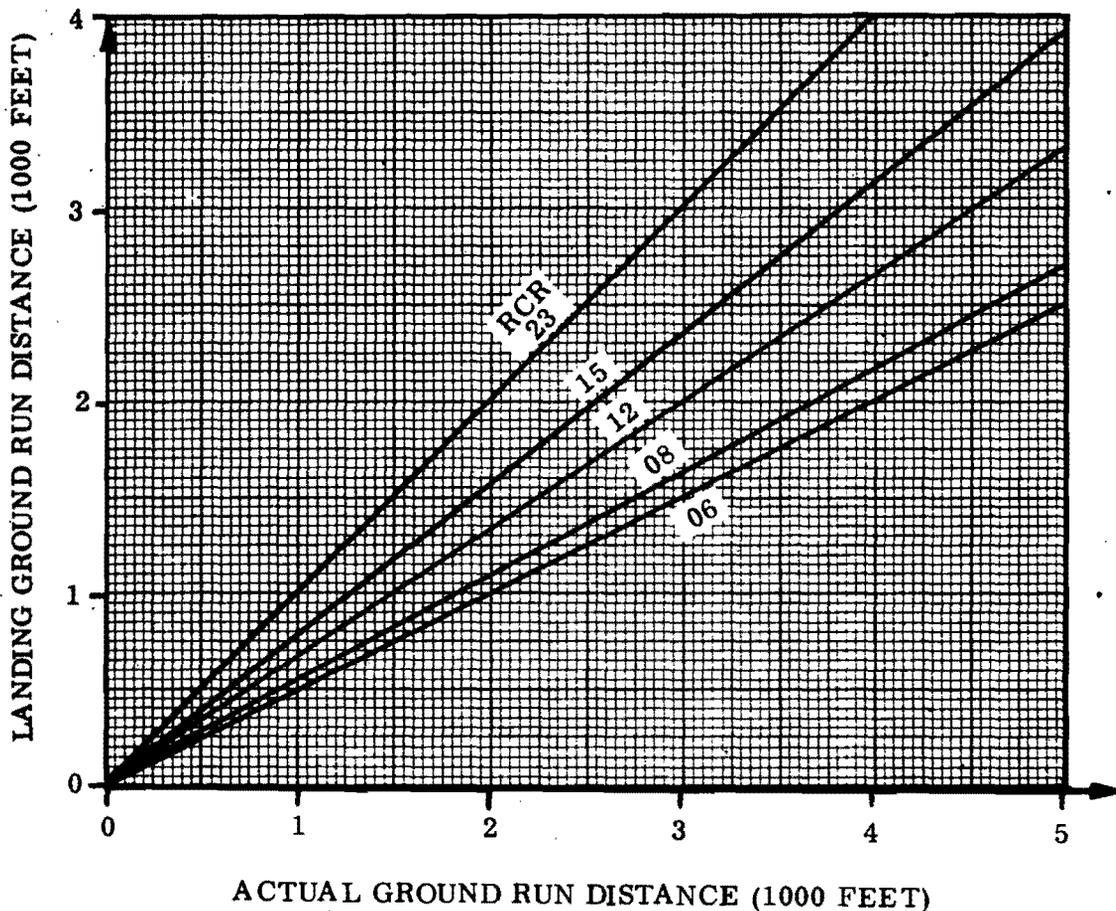


Fig. A6-3

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EFFECT OF UNUSUAL
RUNWAY CONDITIONS ON
LANDING GROUND ROLL

MODELS(S): C-47, C-117
AND R4D
BASED ON: ESTIMATED DATA
DATA AS OF: 1 APRIL 1963
ENGINE(S): (2) R-1830-90C
(HIGH BLOWER INOPERATIVE)
-90D AND -92

RUNWAY SURFACE	RUNWAY CONDITION READING(RCR)
DRY CONCRETE OR MACADAM	23
DRY TURF	15
WET CONCRETE OR MACADAM	12
SNOW OR WET GRASS	08
ICE	06

TOUCHDOWN AT 1.1V_S
WING FLAPS 45 DEGREES
IDLE POWER

Note: Runway Condition Reading used on landing charts 23.

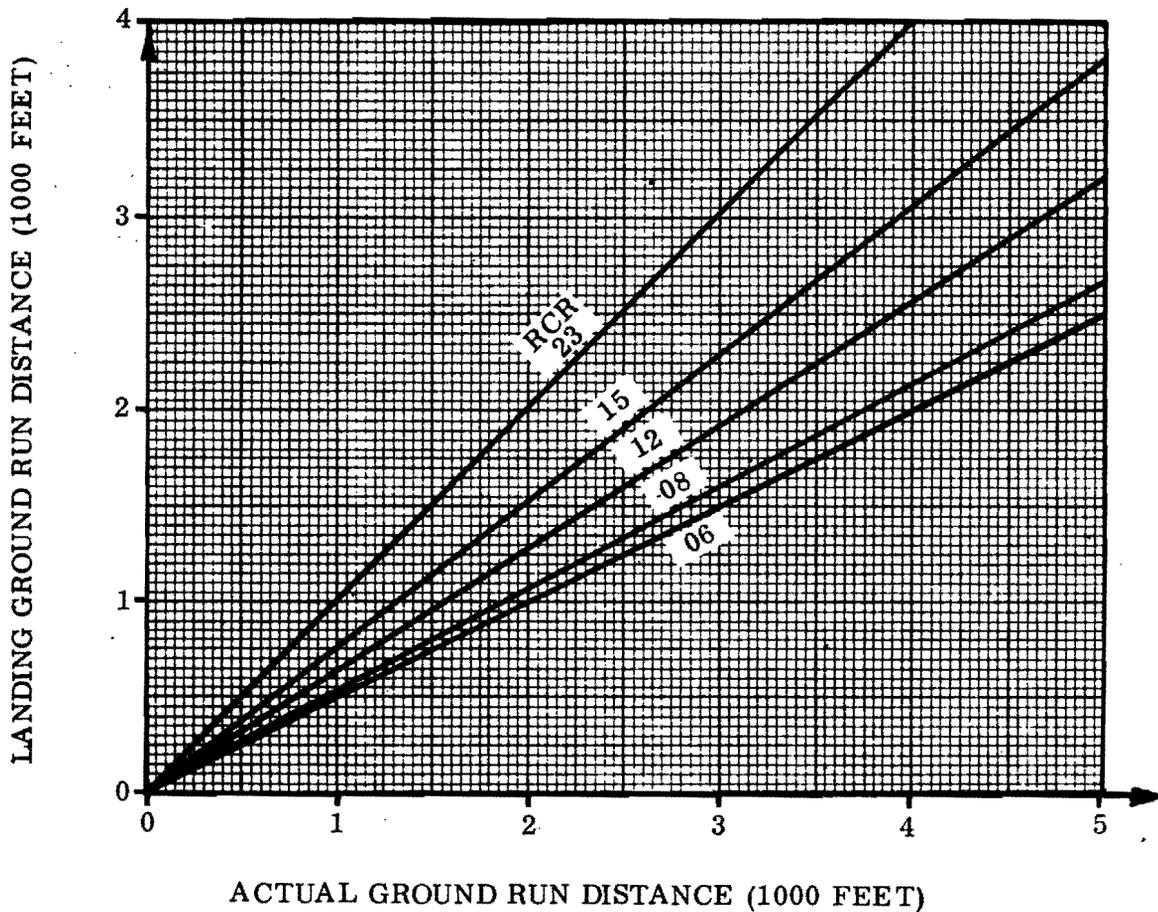


Figure A6-4

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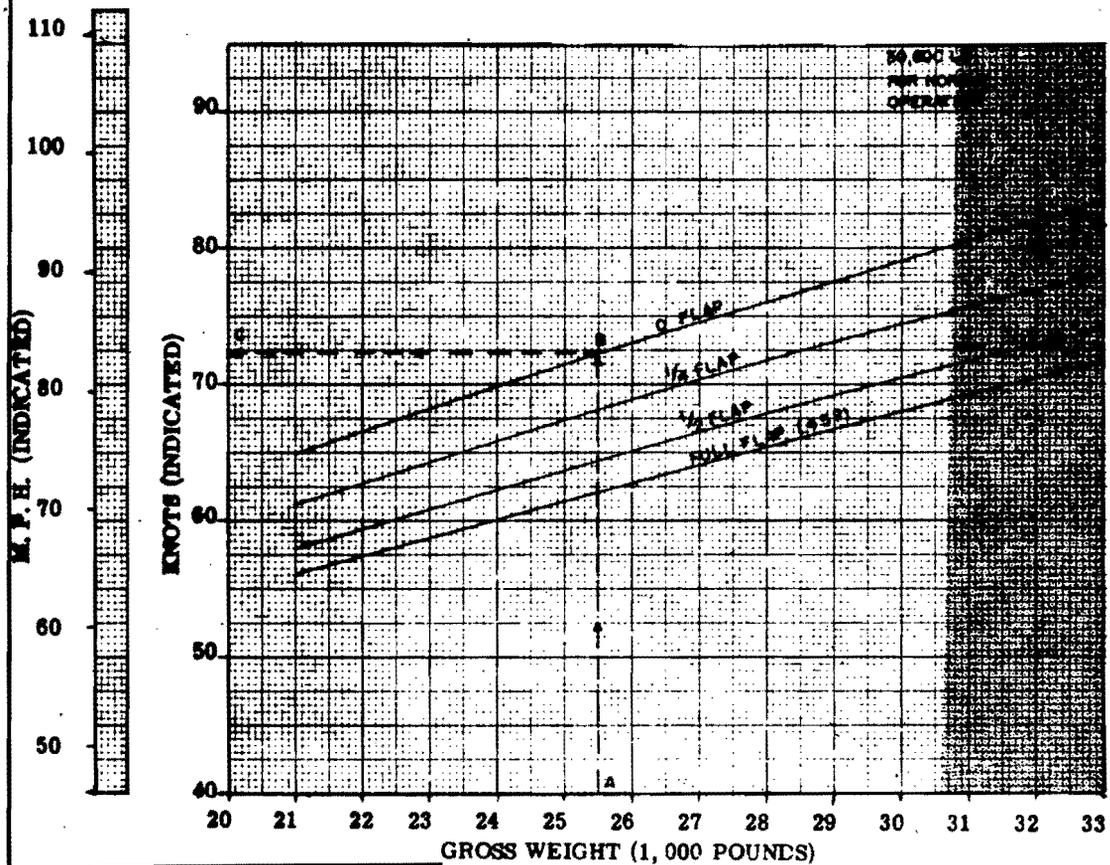
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CHARACTERISTIC LANDING SPEEDS TOUCHDOWN AT 1.1V_s

MODELS: C-47, C-117,
AND R4D

BASED ON: FLIGHT TEST DATA
DATA AS OF: 1 DECEMBER 1949

ENGINE(S): (2) R-1830-90C
(HIGH JFLOWER INOPERATIVE)
- 90D and -92



CONVERSION TABLE

TO GET FROM TOUCHDOWN SPEED
1.1V_s TO:

	MULTIPLY BY
THRESHOLD (1.2V _{stall})	1.09
FINAL APPROACH (1.3V _{stall})	1.182
BEFORE TURNING FINAL (1.4V _{stall})	1.272

NOTE:

1. SPEED OVER A 50 FEET HEIGHT IS 1.2V_s.
2. SPEEDS GIVEN ARE AIRSPEED INDICATOR READINGS.
3. A FIVE KNOT CORRECTION FOR POSITION ERROR HAS BEEN SUBTRACTED.
4. NO INSTRUMENT ERROR IS INCLUDED.

SAMPLE PROBLEM:

GIVEN:

1. GROSS WEIGHT = 25,500 POUNDS (POINT A).
2. WING FLAP SETTING = ZERO (POINT B).

FIND:

1. TOUCHDOWN SPEED = 72.2 KNOTS (POINT C).

Figure A6-5. Characteristic Landing Speeds - Touchdown at 1.1V_s.

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POWER OFF STALL SPEEDS 0 FLAPS

MODEL(S): C-47, C-117
AND R4D

BASED ON: FLIGHT TEST DATA
DATA AS OF: 1 DECEMBER 1949

ENGINE(S): (2) R-1830-90C
(HIGH BLOWER INOPERATIVE)
-90D AND -92

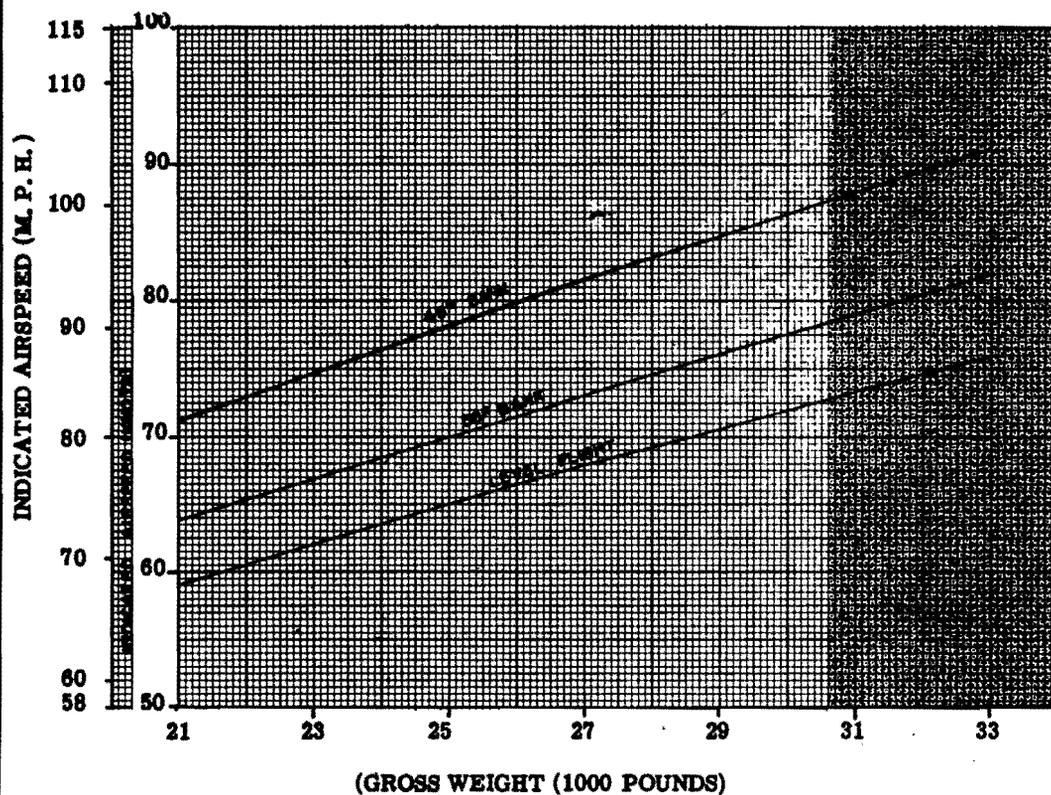


Figure A6-6. Power Off Stall Speeds - 0 Flaps.

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POWER OFF STALL SPEEDS 1/4 FLAPS

MODEL(S): C-47,
C-117 AND R4D

BASED ON: FLIGHT TEST DATA
DATA AS OF: 1 DECEMBER 1949

ENGINE(S): (2) R-1830-90C
(HIGH BLOWER INOPERATIVE)
-90D AND -92

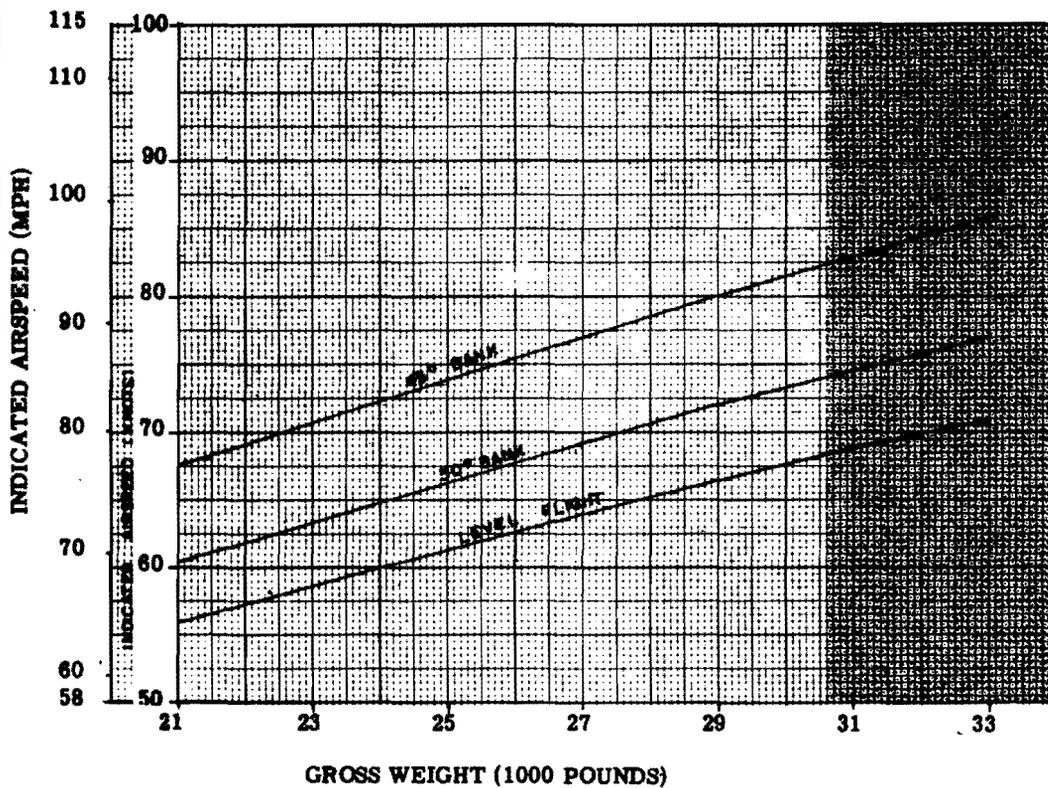


Figure A6-7. Power Off Stall Speeds - 1/4 Flaps.

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POWER OFF STALL SPEEDS 1/2 FLAPS

MODEL(S): C-47,
C-117, AND R4D

BASED ON: FLIGHT TEST DATA
DATA AS OF: 1 DECEMBER 1949

ENGINE(S); (2) R-1830-90C
(HIGH BLOWER INOPERATIVE)
-90D AND -92

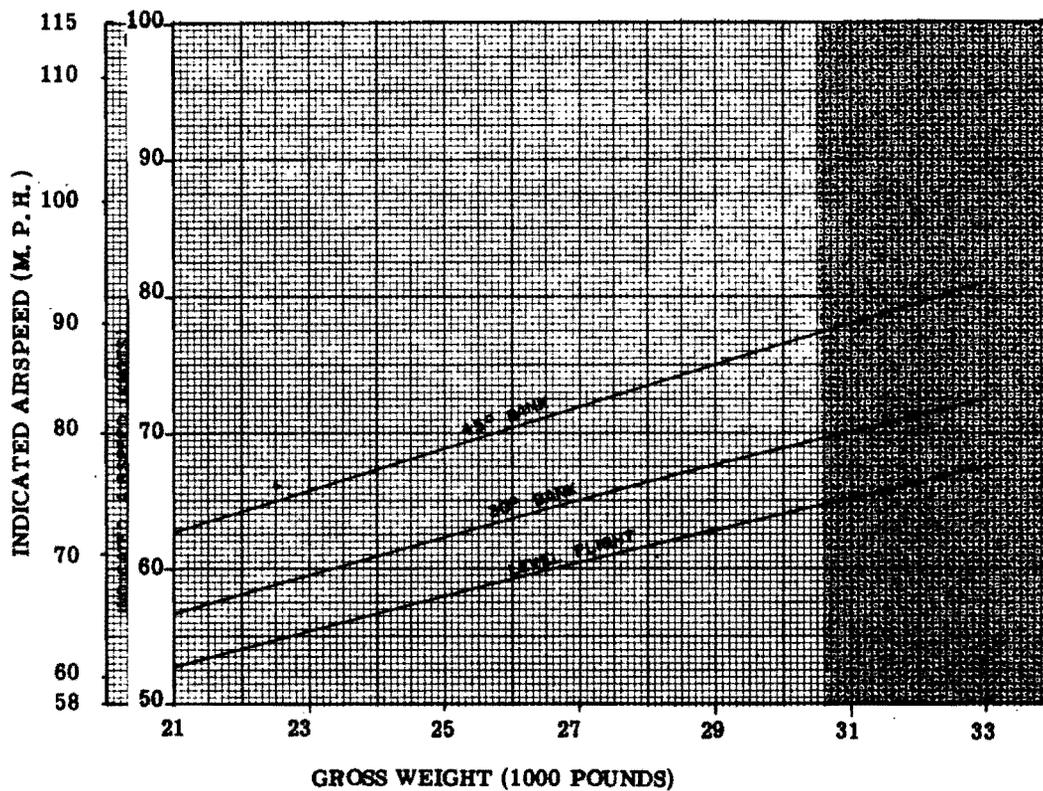


Figure A6-8. Power Off Stall Speeds - 1/2 Flaps.

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POWER OFF STALL SPEEDS FULL FLAPS

MODEL(S): C-47,
C-117, and R4D

BASED ON: FLIGHT TEST DATA
DATA AS OF: 1 DECEMBER 1949

ENGINE(S): (2) R-1830-90C
(HIGH BLOWER INOPERATIVE)
-90D AND -92

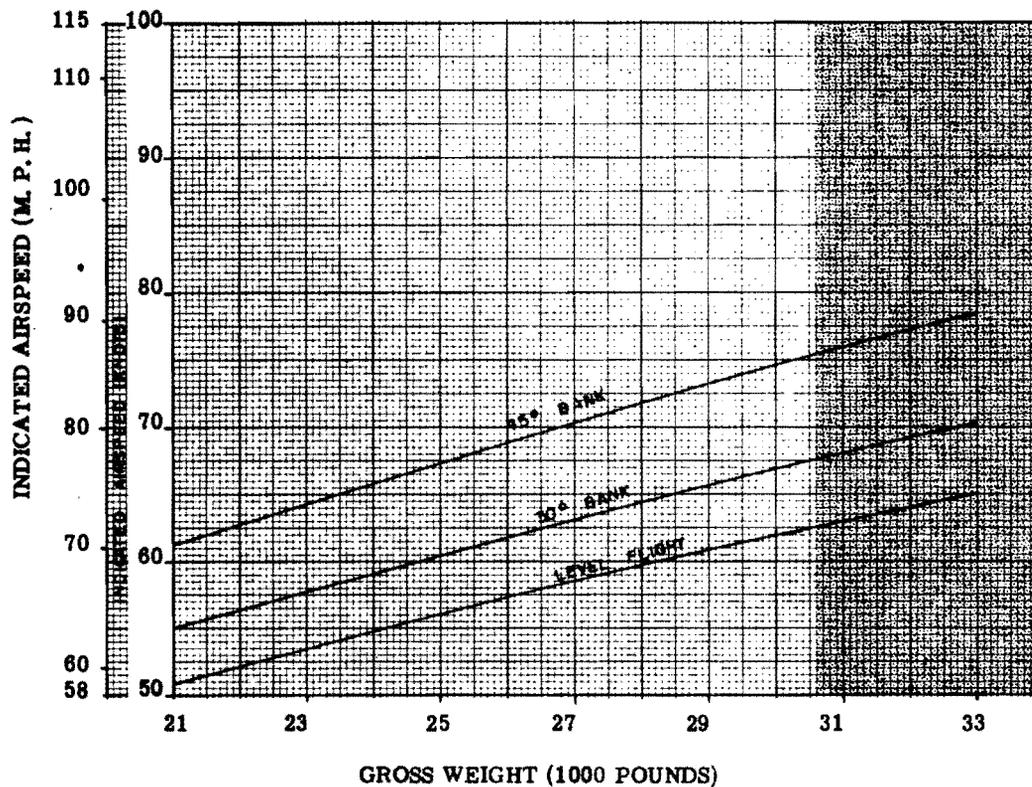


Figure A6-9. Power Off Stall Speeds - Full Flaps.

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PART SEVEN
MISSION PLANNING

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TAKE-OFF AND LANDING DATA CARD

A take-off and landing data card is included in T. O. IC-47-CL-1-1 to provide readily available information for take-off and landing. Prior to each flight, applicable data should be computed and entered on the cards. This information can then be reviewed by the pilot or read aloud by the copilot as a checklist item immediately prior to take-off and landing. A sample is shown on page A7-5.

SOURCES OF INFORMATION

Information for items on the take-off and landing data cards may be found in the following paragraphs.

TAKE-OFF DATA

Refusal Distance---Obtained from the Take-Off Performance--Speed During Ground Run chart (figure A3-9).

Refusal Speed---Obtained from the Take-Off Performance--Refusal Speed chart (figure A3-11).

Take-Off Speed---Obtain from the Take-Off Performance--Characteristic Take-Off Speed chart (figure A3-14).

LANDING IMMEDIATELY AFTER TAKE-OFF DATA

120 Percent Power-Off Stalling Airspeed--Obtained from the Characteristic Landing Speed chart (figure A6-5).

110 Percent Power-Off Stalling Airspeed--Obtained from the Characteristic Landing Speed chart (figure A6-5).

Take-Off Speed---Obtained from the Take-Off Performance--Characteristics Take-Off Speed chart (figure A3-14).

CONDITIONS DATA

Gross Weight (Actual)--Basic aircraft operating weight, plus fuel, cargo, and crew.

Gross Weight Limited by Single-Engine Climb--Obtained from the Take-Off Gross Weight Limited by Single-Engine Climb Performance chart (figure A3-1).

Pressure Altitude---Obtained from weather briefing or tower operator.

Outside Air Temperature---Obtained from aircraft temperature gage.

Dew Point---Obtained from weather briefing.

Specific Humidity---Obtained from weather briefing.

Density Altitude---Obtained from the Density Altitude Chart (figure A1-4).

Runway Length---Obtained from operations or Flight Information Publications (FLIP) charts.

Runway Slope---Obtained from operations or Flight Information Publications (FLIP) charts.

Wind Component---Obtained from weather briefing.

LANDING DATA

Landing Gross Weight---Take-Off weight less fuel consumed.

Wind Component---Obtained from tower operator.
Threshold Airspeed (120 percent of Power-Off Stalling Airspeed)---Obtained from the Characteristic Landing Speeds Chart (figure A6-5).

Touchdown Speed (110 Percent of Power-Off Stalling Airspeed)---Obtained from the Characteristic Landing Speed chart (figure A6-5).

Take-Off Speed---Obtained from the Take-Off Performance--Characteristic Take-Off Speed chart (figure A3-14).

SAMPLE PROBLEM

Sample problems are provided to clarify the use of the performance charts where applied to a typical mission and to emphasize the need for adequate mission planning.

LONG RANGE OPERATION PROBLEM

The following sample problem is a typical search mission for this type aircraft. The mission requires that the aircraft Take-Off - Climb to 10,000 feet density altitude; cruise out for 1 hour at 10,000 feet density altitude then descend to 1000 feet density altitude; search for 4 hours at 1000 feet density altitude; climb to 7000 feet density altitude; then cruise at 7000 feet density altitude and land at the point of departure. All climbs will be made using climb power settings. Both cruises will be made using recommended long range airspeeds and power settings. The 1000 foot search will be made using the recommended maximum endurance airspeeds and power settings. The mission requires that the aircraft return to the base with sufficient fuel to cruise 30 minutes at sea level, plus an additional 10 percent of Take-Off fuel load.

CONDITIONS

TAKE-OFF CONDITIONS

Pressure Altitude -----Sea Level

Outside Air Temperature-----24°C

Specific Humidity-----0.015

Headwind at 50-foot Height-----20 Knots.

Runway Length Available-----4000 Feet

Runway Slope (up hill)-----0.015

Runway Surface Condition-----Hard Surface

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TAKE-OFF GROSS WEIGHT

Take-Off gross weight limited by single-engine climb performance (see figure A3-1)---30,600 pounds. Aircraft operating weight, empty, including oil (gross weight less fuel and cargo)----21,000 pounds.

CRUISE CONDITIONS

Headwind -----None
Temperature at 10,000 feet density altitude --- -5°C
Temperature at 7000 feet density altitude --- 1°C
Temperature at 1000 feet pressure altitude --- 11°C

TAKE-OFF AND ABORT CRITERIA

Take-Off ground run (see figure A3-2)----- 2050 feet.
Take-Off ground run as corrected by the runway slope correction chart (see figure A3-10)----- 2250 feet.
Take-Off speed (see figure A3-14)----- 80 KIAS.
Refusal speed (see figure A3-11) ----- 72 KIAS.
Refusal distance (see figure A3-9) ----- 1820 feet.
Fuel consumed during warmup and take-off (estimated) ----- 270 pounds.
Distance to clear a 50 foot obstacle ----- (figure A3-2) ----- 4480 feet.

CLIMB TO 10,000 FEET DENSITY ALTITUDE

Climb to 10,000 feet density altitude will be made at climb power settings. The gross weight at start of climb is 30,330 pounds ($30,600 - 270 = 30,330$). The time and distance to climb, and the gross weight at end of climb are determined from figure A4-3 as follows:

Time to climb ----- 41.5 minutes.
Distance to climb ----- 97 nautical miles.
Gross weight at end of climb ----- 29,600 pounds.
Fuel consumed during climb is 730 pounds -----
---($30,330 - 29,600 = 730$).
Best climb speed - 126 KIAS

CRUISE AT 10,000 FEET DENSITY ALTITUDE

Cruise at 10,000 feet density altitude and descent to 1000 feet pressure altitude will be made at long range power settings. The gross weight at beginning of cruise is 29,600 pounds. Range during cruise and gross weight at end of cruise for a zero wind condition are determined from figure A5-9 as follows:

Range ----- 120 nautical miles.
Gross weight at end of cruise ----- 29, 150 pounds.
Fuel consumed during cruise is 450 pounds -----
---($29,600 - 29,150 = 450$).
The average airspeed is 120 knots.

The recommended power settings and airspeed during cruise for an initial gross weight of 29,600 pounds are determined from figure A5-3 and are as follows:

True airspeed ----- 130.5 Knots.
Brake horsepower per engine ----- 550.
RPM ----- 1860.
Manifold pressure ----- 28.2 inches Hg.
Fuel flow ----- 470 pounds per hour.
Nautical miles per pound ----- 0.278.

NOTE

The long range power condition charts are based on long range cruising operation; therefore, it is essential that conditions of the 99 percent maximum range power conditions curves be followed. Power settings should be changed at least every hour in order that range and time performance on the long range prediction curves be attainable. The fuel flow data will facilitate the determination of the new gross weight at the time of the power change. At the end of one hour cruise at the initial power setting, the gross weight will be 29,150 pounds ($29,600 - 450 = 29,150$). New power settings can then be read at this new weight.

SEARCH AT 1000 FEET DENSITY ALTITUDE

Search at 1000 feet density altitude with zero degrees wing flaps will be made at the speed and power settings recommended for the maximum endurance. To maintain operation at optimum efficiency, it is necessary to recompute and readjust power settings at least once each hour based on the gross weight change due to fuel consumed. The recommended brake horsepower for the first hour's operation is determined from figure A5-14 as follows:

True airspeed ----- 96 Knots.
Brake horsepower per engine ----- 445.
Fuel consumed during the first hour of cruise is determined to be 385 pounds per hour from figure A5-14.

Power settings for the first hour of cruise at 445 bhp per engine are determined from figures A5-14 as follows:

Manifold pressure ----- 28 inches Hg
RPM ----- 1700.
Fuel consumed (fortwo engines) ----- 385 pounds.

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At the beginning of the second hour's cruise the gross weight will be 28,765 pounds ($29150 - 385 = 28,765$). Power settings and fuel consumption for each remaining hour of cruise are computed in the same manner.

After computing power settings and fuel flow for all 4 hours of cruise, the total fuel consumed is determined to be 1495 pounds and the gross weight at end of cruise is 27655 pounds ($29150 - 1495 = 27655$). Range during cruise is estimated to be 380 nautical miles by multiplying time during cruise by average true airspeed during cruise ($4 \times 95 = 380$).

CLIMB TO 7000 FEET DENSITY ALTITUDE.

Climb to 7000 feet density altitude will be made at climb power settings. The gross weight at start of climb is 27,655 pounds. The time and distance to climb, and the gross weight at end of climb are determined from figure A4-3 as follows:

Time to climb ----- 16.8 minutes.
Distance to climb ----- 37.7 nautical miles.
Gross weight at end of climb ----- 27,280 pounds.
Fuel consumed during climb from 1000 feet to 7000 feet is 375 pounds ($27,655 - 27,280 = 375$).
Best climb speed - 120 KIAS.

CRUISE AT 7000 FEET DENSITY ALTITUDE

Cruise at 7000 feet density altitude will be made at long range power settings. The gross weight at beginning of cruise is 27,280 pounds. The range to cruise to point of departure is determined to be 179.3 nautical miles. Time during cruise and gross weight at end of cruise for zero wind conditions are determined by interpolation from figures A5-8 and A5-9 and are as follows:

Time ----- 90 minutes.
Gross weight at end of cruise ----- 26,700 pounds.
Fuel consumed during cruise is 580 pounds.

The recommended power settings and airspeed during cruise for an initial gross weight of 27,280 pounds are determined from figure A5-3 and are as follows:

True airspeed ----- 119 Knots.
Brake horsepower ----- 465.
RPM ----- 1720.
Manifold pressure ----- 27.9 inches Hg.
Fuel flow ----- 400 pounds per hour.
Nautical miles per pound ----- 0.299.

NOTE

The long range power condition charts are based on long range cruising operation; therefore, it is essential that conditions of the 99 percent maximum range power conditions curves be followed. Power settings should be changed at least every hour in order that range and time performance on the long range prediction curves be attainable. The fuel flow data will facilitate the determination of the new gross weight at the time of the power change.

RESERVE FUEL AND CARGO

To determine the amount of cargo that can be carried, the reserve fuel load must be computed. The reserve fuel for this sample problem is 10 percent of the total mission fuel plus sufficient fuel to cruise for 30 minutes at sea level. Fuel required to cruise for 30 minutes at sea level, for gross weight at end of cruise at 7000 feet density altitude is determined from figure A5-3 as follows. Fuel flow per engine is determined to be 180 lb/hr. Therefore, fuel required to cruise 30 minutes is 180 pounds. Ten percent of the total mission fuel plus sufficient fuel to cruise for 30 minutes at sea level is 408 pounds. Therefore, the total reserve fuel is 588 pounds ($180 + 408 = 588$). Fuel load at take-off can now be determined as follows:

Fuel required for mission --- 3900 pounds ($30,600 - 26,700 = 3900$).
Reserve fuel ----- 588 pounds.
Total fuel load at take-off ----- 4489 pounds.

Operating weight empty plus fuel load at take-off is 25489 pounds ($21000 + 4489 = 25489$). Therefore, maximum cargo load is 5111 pounds ($30600 - 25489 = 5111$).

LANDING **IMMEDIATE LANDING**

Pressure altitude ----- sea level.
Outside air temperature ----- 24°C .
Headwind at 50-foot weight ----- 10 knots.
Runway surface condition ----- hard surface.
Landing gross weight ----- take-off gross weight less fuel consumed.
For warm-up and take-off (270 pounds) --- $30600 - 270 = 30330$ pounds.
Threshold speed (figure A6-5) ----- 75 knots.
Touchdown speed (figure A6-5) ----- 69 knots.

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Landing ground roll distance with full flaps (figure A6-1) ----- 1675 feet.
Two engine go-around best climb speed \pm 126 KIAS.
Single engine go-around best climb speed \pm 97 KIAS.

DESTINATION LANDING

Pressure altitude ---- sea level.
Outside air temperature ---- 30°C.
Headwind at 50-foot height ----- 16 knots.
Runway surface condition ----- hard surface.
Landing gross weight ----- 26700 pounds.
Threshold speed (figure A6-5) ----- 69 knots
Touchdown speed (figure A6-5) ----- 64 knots.
Landing ground roll distance with full flaps (figure A6-1) ----- 1400 feet.
Two engine go-around best climb speed \pm 119 KIAS.
Single engine go-around best climb speed \pm 97 KIAS.

TAKEOFF AND LANDING DATA CARD

GROSS WEIGHT 30,600 LB.
RUNWAY LENGTH 4,000 FT. SLOPE 0.015 UP HILL.
PRESSURE ALTITUDE SEA LEVEL.
OAT 75 °F 24 °C SPECIFIC HUMIDITY 0.015.

TAKEOFF PERFORMANCE

REFUSAL SPEED 72 KIAS.
REFUSAL DISTANCE 1,820 FT.
TAKEOFF SPEED 80 KIAS. TAKEOFF DISTANCE 2250 FT.
TWO ENGINE CLIMB SPEED 126 KIAS.
SINGLE ENGINE CLIMB SPEED 97 EAS.

IMMEDIATE/DESTINATION LANDING

THRESHOLD SPEED 75/69 KIAS. TOUCHDOWN SPEED 69/64 KIAS.
LANDING DISTANCE 1675/1400 FT.
DESTINATION TWO-ENGINE GO-AROUND SPEED 119 KIAS.
DESTINATION SINGLE-ENGINE GO-AROUND SPEED 91 KIAS.

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SECTION X
WEIGHT AND BALANCE

NOTE

This Section supersedes the C-47 Weight and Balance Manual, dated 1 Jan 1968 and all revisions thereto. Current Operational Empty Weights and Indexes should be obtained from the duty dispatcher.

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TERMS AND DEFINITIONS

Terms and definitions listed below are extracted from the GLOSSARY OF STANDARD WEIGHT TERMINOLOGY FOR COMMERCIAL AIRCRAFT (developed by the American Society of Aeronautical Weight Engineers and approved by the IATA Technical Committee as Engineering Guidance Material for distribution to IATA Member Airlines. - Revised September 1964).

1. Actual Zero Fuel Weight (AZFW)

The "Actual Zero Fuel Weight" of an aircraft is the "Operational Empty Weight" plus "Payload". It must never exceed the "Maximum Design Zero Fuel Weight".

2. Basic Empty Weight (BEW)

"Basic Empty Weight" is the "Delivery Empty Weight" plus or minus the net weight of "Standard Item Variations".

3. Delivery Empty Weight (DEW)

"Delivery Empty Weight" is the "Manufacturer's Empty Weight" plus the "Standard Items".

4. Drainable Unusable Fuel

"Drainable Unusable Fuel" is the "Unusable Fuel" minus that portion of the "Trapped Fuel" which is unusable.

5. Estimated Normal Payload (ENP)

The "Estimated Normal Payload" of an aircraft is a specific payload selected by an operator for statistical and other related purposes and consists of the total weight of passengers, according to the seating configuration and at the passenger unit weights allowable, and/or the overall placarded cargo and baggage compartment weight capacities at densities experienced by that operator. It must never exceed the "Maximum Payload" or the "Weight Limited Payload".

6. Fleet Empty Weight (FEW)

"Fleet Empty Weight" is an average "Basic Empty Weight" which may be used for a fleet or group of aircraft of the same model and configuration. The weight of any fleet member cannot vary more than the tolerance established by the applicable governmental regulations.

7. Guaranteed Weight

"Guaranteed Weight" must be a clearly defined weight which the manufacturer guarantees to meet subject to certain tolerances and adjustments. The weight and tolerances are derived through mutual agreement of the manufacturer and the customer.

Note: This term is not regularly used by the Company.

8. Manufacturer's Empty Weight (MEW)

The "Manufacturer's Empty Weight" is the weight of the structure, power-plant, furnishings, systems and other items of equipment that are considered an integral part of a particular aircraft configuration. It is essentially a "dry" weight, including only those fluids which are contained in a closed system (such as hydraulic fluid).

9. Maximum Design Flight Weight (MFW)

"Maximum Design Flight Weight" is the maximum weight for flight as limited by aircraft strength and other airworthiness requirements. "Flaps up" condition will be inferred unless otherwise stated.

Note: This term is not regularly used by the Company.

10. Maximum Design Fuel Transfer Weight (MFTW)

"Maximum Design Fuel Transfer Weight" is the maximum weight for initiating fuel transfer between any tanks which, if performed at a greater weight, will cause a critical structural condition.

Note: This term is not regularly used by the Company.

11. Maximum Design Landing Weight (MLW)

The "Maximum Design Landing Weight" is the maximum landing weight at which the aircraft will not exceed governmental or other structural limitations.

12. Maximum Design Take-Off Weight (MTOW)

The "Maximum Design Take-off Weight" of an aircraft is the maximum weight authorized by applicable governmental regulations for the take-off condition of a dispatch loaded aircraft and it excludes the weight of taxi and run-up fuel. This is the maximum aircraft weight at brake release or start of take-off run.

Note: The following is a Company term and definition:

Maximum Take-Off Weight This Flight

The "Maximum Take-Off Weight This Flight" of an aircraft is the maximum weight authorized for the take-off condition of a dispatch loaded aircraft when the limitations (if applicable) imposed by the:

- a. Operational Take-Off Weight
- b. Maximum Design Landing Weight

have been computed for the particular flight. The over-riding limitation shall apply. The Maximum Take-Off Weight This Flight must never exceed the Maximum Design Take-Off Weight.

13. Maximum Design Taxi Weight (MTW)

"Maximum Design Taxi Weight" is the maximum weight allowed for ground manoeu-