

AIRCRAFT REVIEW -----

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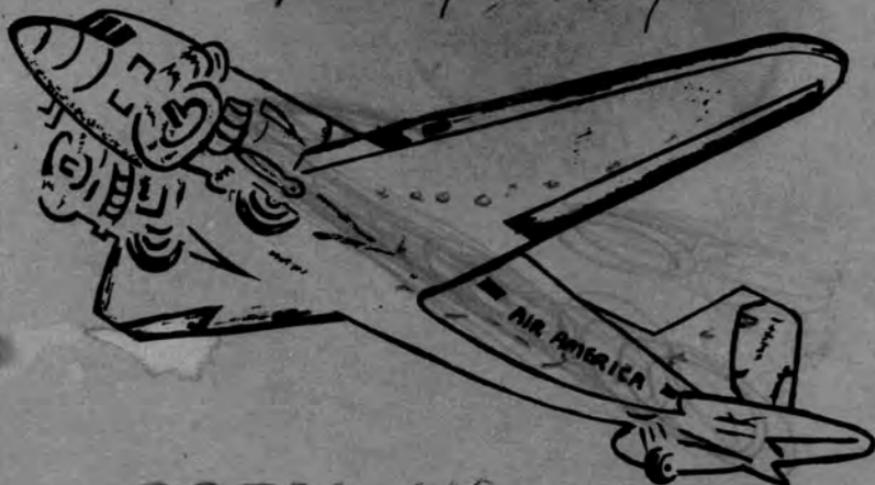
COMMUNICATIONS -----

FLIGHT GUIDE

C - 47

DC-3

TENG, T. Y.



COPY 148

FLYING DIVISION



NOTES

## PREFLIGHT CHECKLIST

### INTERIOR INSPECTION

1. Aft CO<sub>2</sub> Extinguisher ..... CHECKED/SA FETIED
2. Tail Cone ..... CHECKED
3. Access Door ..... CLOSED
4. Gibson Girl ..... AS REQUIRE D
5. First Aid Kit ..... CHECKED
6. Emergency Exits ..... SECURED
7. Cabin (Load Secured, Cleanliness, Weight and Balance) ..... CHECKED
8. Forward Fire Extinguisher. CHECKED/SA FETIED
9. Crash Axe and Dip Stick ..... CHECKED
10. Forward Entrance Door ..... SECURED
11. Aux. Hyd. Oil Supply ..... CHECKED
12. Over-head Escape Hatch ..... SECURED
13. Battery and Ignition ..... OFF
14. Clear Vision Windows ..... SECURED
15. Landing Gear Latch Lever ..... POSITIVE LOCK
16. Trim Tabs ..... CHECKED AND NEUTRAL
17. Circuit Breakers and Fuses ..... CHECKED
18. Log Book ..... CHECKED

*FIRST AID KIT*

### EXTERIOR INSPECTION

1. Wing Flaps.
  - a. For dents, damage, or distortion.
  - b. Flap actuating cylinders for leaks (hydraulic) and secureness.
2. Wing Attachment Bolts.
3. Aileron.
  - a. For holes, damage, or distortion.
  - b. Static wicks.
  - c. Aileron hinges, bonding, and trim tab for secureness.

NOTE: Place aileron in approximately 3/4" droop and on passing to right side, check right

aileron for desired droop.

4. Wing Tip.

- a. Wing tip for damage.
- b. Wing tip light and reflector.

5. Leading Edge of Wing.

- a. For damage.
- b. Inspection panels secured.
- c. Landing light.

6. Left Engine.

- a. Exhaust Stacks - Condition and Security.
- b. Fuel and Oil leaks.
- c. General condition.
- d. Engine drain lines.
- e. Cowling for security.

7. Left Propeller.

- a. Check for nicks and cracks.
- b. Oil leaks around blades and dome.
- c. Prop dome retainer ring safetied.
- d. C-clip on front of prop dome.
- e. Slinger ring.
- f. Prop governor and control cable.
- g. Oil delivery lines.

8. Left Nacelle.

- a. Landing gear down lock pin for binding.
- b. Landing gear strut extension and condition.
- c. Fittings.
- d. Tire condition and slippage marks.
- e. Brakes and hydraulic lines.
- f. Oil coolers and doors.
- g. "Y" drain safetied.
- h. Cables and plumbing.
- i. Firewall shutoff valves.
- j. Electrical connections.
- k. CB Extinguisher pressure and connections.

## 9. Fuselage.

- a. Check pitot masts - check pitot covers OFF, and static holes clean.
- b. Battery compartment and drain.
- c. Check hydraulic leaks.
  - (i) Check pitot heaters.
  - (ii) Check anti-icing equipment in anticipated cold weather operations.
- d. Nose access panel secured.
- e. Check antennas and radio wires.
- f. Check fuel tank drain for water.
- g. Stress plates.
- h. Fire extinguishers thermal discharge discs.

## 10. Fuel Booster Pumps - Checked.

## 11. Right Engine, Nacelle, propeller and wing - same as left side.

## 12. Fuselage.

- a. Inspect tail - wheel
  - (i) Check tire and inflation and slippage mark.
  - (ii) Check ground wire.
- b. Check inside tail-wheel cone.
  - (i) Check oleo-strut.
  - (ii) Check tail-wheel fittings.
  - (iii) Check general area in tail-wheel cone.

## 13. Tail Section (Empennage)

Check and inspect outward along leading edge horizontal stabilizer.

- a. Check for damage - check condition of de-icer boots.
- b. Check elevators for full-throw note torque and hinges, etc. for damage or looseness and bonding.

- c. Check rudder for full throw - check for damage.
- d. Note radio antenna wires at top of tail fin.
- e. Check static dischargers.
- f. Check trim tabs hinges and bonding, tail lights/rotating beacon.
- g. Continue inspection clockwise around tail section to fuselage, thence forward to main cabin door.
- h. Door pins, jettison handle secure/safetied.

14. First Officer.

Completes the following duties.

- a. Dips fuel tanks for quantity.
- b. Checks oil quantity.
- c. Assures fuel and oil caps are secure.
- d. Checks the general condition of top of wings and engine nacelles.
- e. Removes, stows and secures control locks and pitot covers.

## C-47 COCKPIT CHECKLIST

PRE-FLIGHT

- PCP 1. Exterior/Interior Inspection .. COMPLETED  
 PCP 2. Circuit Breakers & Fuses ..... CHECKED  
 PCP 3. Pitot Covers ..... REMOVED  
 PCP 4. External Control Locks ..... STOWED  
 PCP 5. Aircraft Log & Papers ..... ABOARD  
 PCP 6. Flight Kit ..... ABOARD

BEFORE STARTING ENGINES

\* Denotes Thru Flight Checklist Items.

- PCP 1. Seat & Rudder Pedals ..... ADJUSTED  
 \*P 2. Landing Gear Latch Lever . POSITIVE LOCK  
 \*P 3. Hydraulic Fluid Level ..... CHECKED  
 P 4. Auto-Pilot Emergency Shutoff Valve ... OFF  
 P 5. Star Valve ..... OFF  
 \*P 6. Wing Flap Lever ..... NEUTRAL  
 CP 7. Hydraulic Handpump & Pressure . CHECKED  
 \*P 8. Landing Gear Lever ..... NEUTRAL  
 P 9. Fire Extinguisher Switches/Handles... SET  
 P 10. Firewall Shutoff Switches/Handles .... SET  
 P 11. Auto-Pilot ..... OFF  
 \*P 12. Parking Brakes ..... SET  
 P 13. Radio & Electrical Switches ..... OFF  
 P 14. Alarm Bell (If Installed) ..... CHECKED  
 \*P 15. Battery Switch/External Power ... ON/OFF  
 \*P 16. No Smoking/Seat Belt Signs ..... ON  
 PCP 17. Lights ..... SET  
 \*P 18. Ignition Switches .....  
 . MASTER ON/INDIVIDUAL SWITCHES OFF  
 P 19. Fire Detection System ..... CHECKED  
 CP 20. Static Selector ..... NORMAL  
 \*CP 21. Fuel Quantity ..... CHECKED  
 \*PCP 22. Fuel Tank Selectors ..... SET  
 P 23. Oil Coolers ..... COLD  
 CP 24. Carburetor Air ..... COLD  
 CP 25. Mixtures ..... IDLE CUT-OFF  
 P 26. Throttles ..... SET

P	27. Props .....	FORWARD
*P	28. Manifold Pressure .....	CHECKED
*PCP	29. Fire Guard Posted .....	CLEAR #2

BEFORE TAXI

*P	1. External Power .....	REMOVED
*P	2. Battery Switch .....	ON
CP	3. Generators .....	CHECKED/ON
*CP	4. Booster Pumps .....	OFF
*CP	5. Hydraulic System Pressure ...	CHECKED
*CP	6. Inverters .....	CHECKED & SET
*CP	7. Radios .....	CHECKED & SET
CP	8. Fuel Tank Selectors .....	CHECK
*PCP	9. Engine Instruments .....	CHECKED
PCP	10. Flight Instruments ....	CHECK/UNCAGED
P	11. Ignition Grounding .....	CHECKED
*P	12. Gear Pins .....	STOWED
*PCP	13. Chocks .....	REMOVED
*PCP	14. Doors & Hatches .....	SECURED

TAXI

*PCP	1. Brakes & Pressure .....	CHECKED
*PCP	2. Flight Instruments .....	CHECKED

ENGINE RUN-UP

*P	1. Tail Wheel .....	LOCKED
*P	2. Parking Brakes .....	SET
CP	3. Manifold Valves .....	BLEED
P	4. Auto-Pilot .....	BLEED
*PCP	5. Engine Instruments .....	CHECKED
CP	6. Fuel Tank Selectors .....	SET
P	7. Propeller (1700 RPM) .....	CHECKED
PCP	8. Generators .....	CHECKED
P	9. Feathering .....	CHECKED
CP	10. Carburetor Air .....	CHECKED & COLD
*PCP	11. Ignition .....	CHECKED

The remainder of the checklists must be completed in their entirety.

### BEFORE TAKE-OFF

- |     |                                    |                    |
|-----|------------------------------------|--------------------|
| P   | 1. Flaps .....                     | UP                 |
| PCP | 2. Engine & Flight Instruments.... | CHECKED            |
| CP  | 3. Mixtures .....                  | AUTO-RICH          |
| P   | 4. Props .....                     | FORWARD            |
| P   | 5. Trim .....                      | SET                |
| PCP | 6. Radios .....                    | SET                |
| P   | 7. Crew Briefing .....             | COMPLETED          |
| CP  | 8. Booster Pumps .....             | ON                 |
| P   | 9. Anti-Collision Light .....      | ON                 |
| PCP | 10. Flight Controls ....           | FREE & FULL TRAVEL |
| P   | 11. Tail Wheel .....               | LOCKED             |

### AFTER TAKE-OFF

- |     |  |             |
|-----|--|-------------|
| CP  | 1. Landing Gear .....  | UP          |
| PCP | 2. METO Power (MAP 42.5" RPM 2550) ..                            | SET         |
| PCP | 3. Temperature & Pressures .....                                 | CHECKED     |
| CP  | 4. Landing Gear Lever .....                                      | NEUTRAL     |
| PCP | 5. Climb Power (1000 feet) MAP on Climb<br>Chart RPM 2350) ..... | SET         |
| PCP | 6. Wing Check .....  | COMPLETED   |
| P   | 7. No Smoking/Seat Belt Sign ..                                  | AS REQUIRED |
| CP  | 8. Booster Pumps .....   | OFF         |

### CRUISE

- |     |                             |             |
|-----|-----------------------------|-------------|
| CP  | 1. Cruise Power .....       | SET         |
| PCP | 2. Engine Instruments ..... | CHECKED     |
| CP  | 3. Mixtures .....           | AS REQUIRED |

### DESCENT

- |     |                                  |             |
|-----|----------------------------------|-------------|
| PCP | 1. Approach & Landing Data ..... | CHECKED     |
| PCP | 2. Altimeters .....              | SET         |
| CP  | 3. Fuel Tank Selectors .....     | SET         |
| P   | 4. Auto-Pilot .....              | OFF         |
| CP  | 5. Hydraulic Fluid Level .....   | CHECKED     |
| CP  | 6. Mixtures .....                | AS REQUIRED |
| P   | 7. Magnetos ... (Optional) ..... | CHECKED     |

BEFORE LANDING

- |    |                                     |                    |
|----|-------------------------------------|--------------------|
| P  | 1. No Smoking/Seat Belt Signs ..... | ON                 |
| CP | 2. Carburetor Air .....             | COLD               |
| CP | 3. Booster Pumps .....              | ON                 |
| CP | 4. Mixtures .....                   | AUTO-RICH          |
| CP | 5. Landing Gear .....               | DOWN/POSITIVE LOCK |
| CP | 6. Propellers .....                 | RPM 2350           |
| CP | 7. Brake/System Pressures .....     | CHECKED            |
| CP | 8. Landing Gear Lights .....        | GREEN              |
| CP | 9. Flaps .....                      | AS REQUIRED        |

AFTER LANDING

- |    |                                |              |
|----|--------------------------------|--------------|
| CP | 1. Flaps .....                 | UP & NEUTRAL |
| P  | 2. Props .....                 | FORWARD      |
| CP | 3. Hydraulic Pressures .....   | CHECKED      |
| CP | 4. Inverters .....             | OFF          |
| CP | 5. Booster Pumps .....         | OFF          |
| CP | 6. Pitot Heat .....            | OFF          |
| CP | 7. Anti-Collision Lights ..... | OFF          |
| CP | 8. Radios (Not In Use) .....   | OFF          |
| CP | 9. Trim Tabs .....             | NEUTRAL      |
| CP | 10. Heaters .....              | OFF          |

PARKING

- |     |   |           |
|-----|---|-----------|
| P   | 1. Tail Wheel .....                             | LOCKED    |
| P   | 2. Parking Brakes .....                         | SET       |
| P   | 3. Throttles .....                              | RPM 1200  |
| CP  | 4. Mixtures (Right Engine First) IDLE CUT-OFF   |           |
| P   | 5. Ignition Switches .....                      | OFF       |
| CP  | 6. Radios .....                                 | OFF       |
| CP  | 7. Fuel Tank Selectors .....                    | OFF       |
| CP  | 8. Wheel Chocks .....                           | INSTALLED |
| P   | 9. Brakes .....                                 | OFF       |
| PCP | 10. All Switches (Except Generators).....       | OFF       |
| CP  | 11. Gear & Flap Levers .....                    | SPLIT     |
| PCP | 12. Log Book & Papers .....                     | COMPLETED |
| PCP | 13. Windows, Hatches, & Doors ....              | SECURED   |
| PCP | 14. Gear Pins, Control Locks, Pitot Covers .... | INSTALLED |

## THRU FLIGHT CHECKLIST

BEFORE STARTING ENGINES

1. Latch Lever ..... POSITIVE LOCK
2. Hydraulic Fluid Level ..... CHECKED
3. Wing Flap Lever ..... NEUTRAL
4. Landing Gear Lever ..... NEUTRAL
5. Parking Brakes ..... SET
6. No Smoking Seat Belt Signs ..... ON
7. Ignition Switches ..... MASTER ON
8. Fuel Quantity ..... CHECKED
9. Fuel Tank Selectors ..... SET
10. Battery Switch/External Power ..... ON/OFF
11. Manifold Pressure ..... CHECKED
12. Fire Guard Posted ..... CLEAR #2

BEFORE TA XI

1. External Power ..... REMOVED
2. Battery Switch ..... ON
3. Booster Pumps ..... OFF
4. Hydraulic System Pressure ..... CHECKED
5. Inverters ..... SET
6. Radios ..... ON
7. Engine Instruments ..... CHECKED
8. Gear Pins, Control Locks, Pitot Covers .....  
..... REMOVED
9. Chocks ..... REMOVED
10. Doors & Hatches ..... SECURED

TAXI

1. Brakes & Pressure ..... CHECKED
2. Flight Instruments ..... CHECKED

ENGINE RUNUP

1. Tail Wheel ..... LOCKED
2. Parking Brakes ..... SET
3. Engine Instruments ..... CHECKED
4. Ignition ..... CHECKED

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C-47 EMERGENCY CHECKLISTENGINE FAILURE/FIRE IN FLIGHT

Maintain controlled flight. Increase power, and retract flaps and gear if required.

1. FEATHER PROPELLER..... BUTTON IN
2. MIXTURE ..... IDLE CUT-OFF
3. CHECK PROPELLER.....
- ..... FEATHERED-BUTTON OUT
4. CHECK FOR FIRE ..... FIRE/NO FIRE

IF NO FIRE EXISTS: OMIT #5 & 6

5. FIREWALL SHUTOFF VALVE ..... CLOSED
6. FIRE EXTINGUISHER ..... DISCHARGED
7. Ignition ..... OFF
8. Carburetor Alcohol ..... OFF
9. Propeller Alcohol ..... OFF
10. Fuel Booster Pump Switch ..... OFF
11. Fuel Tank Selector ..... OFF
12. Propeller Control ..... AFT
13. Generator Switch ..... OFF
14. Flap & Gear Controls ..... NEUTRAL

NOTE: For SC-47 only, position fuel tank fuel crossfeed, and fuel dump controls to dump excess fuel immediately after completing item #8.

ENGINE UNFEATHERING

1. Airspeed ..... 117 KNOTS MAX
2. Firewall Shutoff Valve ..... OPEN
3. Starter Switch ..... 8 BLADES
4. Fuel Tank Selector ..... AS REQUIRED
5. Carburetor Air ..... COLD
6. Throttle ..... CLOSED
7. Propeller Control ..... AFT
8. Ignition Switch ..... BOTH
9. Fuel Booster Pump ..... ON
10. Feathering Button ..... IN TO 800 RPM

11. Propeller Governing ..... RPM 1200
12. Mixture ..... AUTO RICH
13. Warm engine (RPM 1500, MAP 15") .....  
..... APPLY POWER
14. Generator Switch ..... ON
15. Fuel Booster Pump ..... OFF

#### OVERSPEEDING AND RUNWAY PROPELLER

1. REDUCE AIRSPEED .....  
. NOT BELOW SAFE SINGLE ENGINE SPEED ( $V_2$ )
2. THROTTLE ..... CLOSED
3. PROPELLER CONTROL ..... AFT
4. FEATHER BUTTON  
(To Below RPM 2700) .. INTERMITTENTLY IN
5. IF GOVERNOR CONTROL NOT ESTABLISHED ...  
..... FEATHER

#### ELECTRICAL FIRES (Source Unknown)

1. BATTERY & GENERATOR SWITCHES ..... OFF
2. HAND FIRE EXTINGUISHERS .... COMBAT FIRE
3. OXYGEN ..... 100%
4. VENTILATION ..... AS REQUIRED
5. All Switches/Circuit Breakers .... OFF/TRIPPED
6. Generator Switches (One at a time) ..... ON
7. Battery Switch ..... ON
8. Inverter Switch ..... ON
9. Circuit Breakers/Switches (One at a time) .... ON
10. Isolate Fire/Smoke Cause
11. Landing Soon As Practicable

#### SMOKE ELIMINATION

1. Clear Vision Windows ..... OPEN
2. Main Cabin Door ..... OPEN
3. All Other Hatches, Door, & Windows ... CLOSED

LANDING GEAR EMERGENCY EXTENSION

1. Star Valve ..... OFF
2. Landing Gear Lever ..... DOWN
3. Handpump (Pump Gear Down) ..... OPERATE
4. Landing Gear Lever ..... NEUTRAL
5. Warning Lights ..... GREEN - ON  
RED - OFF
6. Visual Check ..... GEAR DOWN
7. Landing Gear Latch Lever ..... POSITIVE LOCK
8. Warning Horn (Retard Throttle) ..... CHECKED

BRAKE SYSTEM FAILURE (Pressure Below 600 psi)

1. Star Valve ..... OFF
2. Hydraulic Handpump ..... OPERATE
3. Brake Pedals ..... STEADY APPLICATION

ENGINE SMOKE & FLAME IDENTIFICATION CHART

	Cause	Action
PUFFS OF BLACK FROM EXHAUST ROUGH ENGINE.	Detonation, afterfire, and backfire. Also fouled plugs or failing valves. If fuel pump drive shaft is broken, engine receives insufficient fuel and mixture leans excessively. Indicated generally by high CHT, high CAT, fluctuating MAP, and fuel pressure drop. Lean mixtures cause high CHT. High CAT, above 40 C (104 F), produces detonation. Fluctuation in MAP and fuel flow will result from violent backfire. If detonation continues, engine failure and fire are imminent.	Decrease CAT and CHT and enrich mixture, checking for proper rpm and MAP correlation. Increase airspeed.
THIN WISPS OF BLUISH-GREY SMOKE FROM COWL FLAPS AND EXHAUST AREAS.	Oil leaking onto exhaust stacks and vaporizing. Not a dangerous condition if oil leak is not excessive. No instrument indications except for possible drop in oil quantity.	Normally, no action is necessary unless fire develops. If fire occurs, shut down engine, removing source of heat and fuel, and fire should go out.
GREY SMOKE COMING FROM COWL FLAP OR FORWARD ENGINE SECTION.	Cylinder failure, exhaust stack failure. If condition results in blown cylinder head or open exhaust stack, fire and black smoke will appear in exhaust stream.	During takeoff or when more than single engine power is required for safety, reduce power slightly and let engine operate until safe altitude and airspeed are obtained, then feather engine.

**ENGINE SMOKE & FLAME IDENTIFICATION CHART**

	<b>Cause</b>	<b>Action</b>
<b>LIGHT ORANGE-COLORED FIRE COMING FROM EXHAUST.</b>	On ground at idling speeds indicates too rich mixture. In flight, usually at high power settings, this can occur and indicates too rich mixture. There will be no instrument indications.	On ground, increase throttle and blow fire out. In flight, move mixture control slightly to lean mixture.
<b>HEAVY BLACK SMOKE FROM EXHAUST.</b>	Induction fire. Instruments will indicate sudden drop of MAP and rpm CAT is not reliable indicator because instrument records temperature of air flowing through carburetor, not induction system heat.	Perform engine failure fire procedure. Fire should burn itself out without damaging engine.
<b>DENSE WHITE SMOKE FROM EXHAUST AND/OR COWL FLAP AREAS.</b>	Induction fire in advanced stages. Very dangerous condition. CAT will rise rapidly to maximum reading.	Action in above should have been taken to extinguish fire before it reaches this stage. Use engine failure/fire procedures. Alert crew for bail out. If fire does not go out within 30 seconds, it may be best to order crew to bail out as fire will probably cause explosion in wing.
<b>BLACK SMOKE FROM ACCESSORY SECTION.</b>	Oil fire in accessory section. Fire warning light should come on. CAT will be abnormally high, accompanied by loss of power.	Use engine failure/fire procedures.
<b>BLACK SMOKE AND ORANGE FLAME FROM ACCESSORY SECTION.</b>	Fuel fire in accessory section generally caused by broken fuel line. Low fuel pressure and abnormally high CHT are instrument indications. Fire warning light will come on. Engine operation may be erratic, depending upon malfunction.	Shut off fuel as quickly as possible and use engine failure/fire procedures. Prepare to abandon aircraft if fire does not go out.

LIMITATIONSAIRSPEED

0 - $\frac{1}{4}$ Flaps .....	104 KIAS
$\frac{1}{2}$ Flaps .....	100 KIAS
Full Flaps .....	97 KIAS
Maximum for extending landing gear .....	140 KIAS
Maximum for level flight .....	*177 KIAS
Never exceed speed .....	**221 KIAS

(\* Reduce 2 knots for each 1000 lb above 26,000  
 \*\* Reduce 6 knots for each 1000 lb above 26,000)

OIL PRESSURE

Minimum for flight .....	65 PSI
Normal .....	65 - 110 PSI
Maximum .....	110 PSI

FUEL PRESSURE

Minimum for flight .....	16 PSI
Normal (14 - 16 USA F) .....	16 - 18 PSI
Maximum .....	20 PSI

VACUUM PRESSURE

Minimum .....	3.75 IN. HG
Normal .....	3.75 - 4.25 IN. HG
Maximum .....	4.25 IN. HG

MANIFOLD PRESSURE

Auto Lean permitted .....	600 BHP & BELOW
Auto Rich required .....	ABOVE 600 BHP
METO Power (Uncorrected) .....	42.5 IN. HG
Maximum .....	48 IN. HG

At any power, 10 or more inches of excessive MAP requires engine change. Below METO power 5 - 10 in. Hg. excessive MAP for more than 5 seconds duration requires engine inspection. Any excessive MAP for over 15 sec. at or above METO power requires engine change.

TACHOMETER

Dangerous empennage vibration	....	1300 - 1700 RPM
Auto Lean Permitted	.....	1700 - 2050 RPM
Auto Rich required	.....	2050 - 2700 RPM
Maximum Continuous (METO)	.....	2550 RPM
Maximum (2 minute limit)	.....	2700 RPM
Engine overspeed (Must be inspected)	.....	
	.....	2900 - 3050 RPM
Engine overspeed (Engine change)	.....	
	.....	above 3050 RPM
Crankshaft vibration	.....	2100 - 2300 RPM

CARBURETOR AIR TEMPERATURE

Possible Icing	.....	-10 <sup>o</sup> C - +15 <sup>o</sup> C
Normal	.....	+15 <sup>o</sup> C - +38 <sup>o</sup> C
Detonation	.....	+50 <sup>o</sup> C

CYLINDER HEAD TEMPERATURE

Auto Lean permitted	.....	150 - 232 <sup>o</sup> C
Auto Rich required	.....	232 - 270 <sup>o</sup> C
Maximum	.....	270 <sup>o</sup> C

OIL TEMPERATURE

Minimum	.....	40 <sup>o</sup> C
Normal	.....	60 - 80 <sup>o</sup> C
Maximum	.....	100 <sup>o</sup> C

HYDRAULIC PRESSURE

Minimum	.....	600 PSI
Normal	.....	600 - 875 PSI
Maximum	.....	900 PSI
Normal (some Company Aircraft)	.....	800 - 1000 PSI
Maximum (some Company Aircraft)	.....	1100 PSI

AUTO PILOT OIL PRESSURE

Minimum	.....	105 PSI
Normal	.....	110 - 130 PSI
Maximum	.....	140 PSI

FLUID SERVICING

## Oil

Tank capacity	29 gal.
Usable	22 gal.
Reserved for feathering	<u>3 gal.</u>
Total (Normal Service)	25 gal.

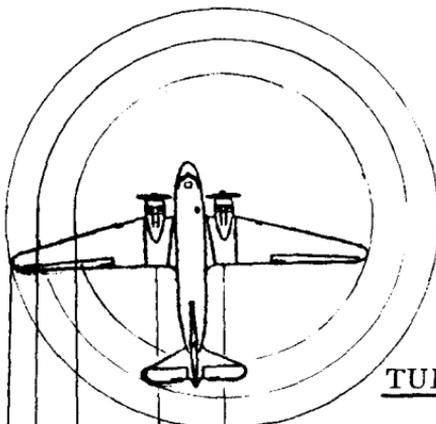
Maximum Oil Consumption 1.5 GPH

If consumption above 1.5, RMD should be consulted for conditions permitting ferry flight to maintenance base.

## Hydraulic Oil - Reservoir

Usable to engine pumps	7 qts.
Reserved for handpump	<u>3 qts.</u>
Total (Normal Service)	10 qts.

Fuel - Main Tanks - R. H.	204 gal.	(202)
	L. H. 204 gal.	(202)
Auxiliary - R. H.	200 gal.	(199)
	L. H. 200 gal.	<u>(199)</u>
	Total	(802)

TURNING RADIUS DIAGRAM

Outer Main Gear - 18 Ft. 6 In.

Inner Wingtip - 39 Ft. 8 In.

Horizontal Stabilizer - 49 Ft. 4 In.

Outer Wing Tip - 57 Ft. 6 In.



STANDARDS AND GRADING CRITERIA

Steep Turns	Angle of bank	$\pm 10^{\circ}$
	Airspeed	$\pm 10$ Kts
	Altitude	$\pm 100$ Ft.
	Roll out	$\pm 10^{\circ}$
Slow Flight	Airspeed	$\pm 5$ Kts
	Altitude	$\pm 50$ Ft.
	Heading	$\pm 5^{\circ}$
Approach to Stalls	Altitude	+ 50 Ft.
		- 100 Ft.
Normal Turns and holding	Heading	$\pm 5^{\circ}$
	Angle of bank	$\pm 5^{\circ}$
	Airspeed	$\pm 5$ Kts
Level Flight	Altitude	$\pm 50$ Ft.
	Heading	$\pm 5^{\circ}$
	Altitude	$\pm 50$ Ft.
Tracking	Altitude	$\pm 50$ Ft.
	Track	$\pm 5^{\circ}$
	Localizer	$\pm 2^{\circ}$
Instrument approaches (including rapid descent and pullup)	Airspeed	+ 5 Kts
	Glide path	Within 50 Ft.
	Altitude	$\pm 50$ Ft. (except at minimum: + 50 - 0 Ft.)

GRADE

- 1 Well Above Average (90-100)
- 2 Above Average (85-89)
- 3 Average (80-84)
- 4 Below Average (70-79)
- 5 Unsatisfactory (0-69)

## TIME TO CLIMB-HOT DAY

CLIMB POWER TWO ENGINE

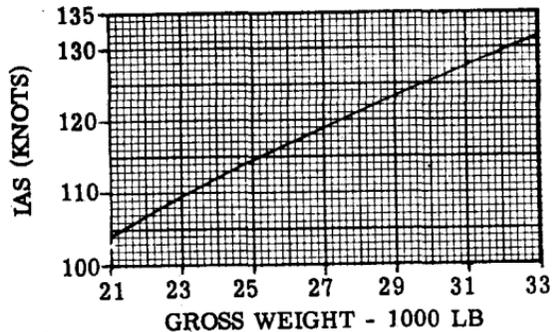
MODEL(S): C-47,  
C-117 AND R4D

R/C = 100 FT/MIN.

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

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

CLIMB POWER TWO ENGINE CLIMB SPEEDS



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

Tailwheel locked,  
release brakes,  
apply Max  
Power.

43-52 Knots,  
tail starts  
to rise.

V<sub>mc</sub> (76 KIAS)

Fly off  
at V<sub>2</sub> -  
(84 KIAS.)

Positive rate  
of climb - Gear  
Up, maintain V<sub>2</sub>.

Climb at V<sub>2</sub>  
Until gear is  
up, accelerate  
to 95 KIAS and  
reduce to METO  
power (RPM 2550  
MAP 42.5). Main-  
tain until cir-  
cling minimums.

At circling  
minimums or  
clear of obstruc-  
tions, accelerate  
to 105 KIAS and  
reduce to climb  
power (RPM 2350  
MAP-See Climb  
Chart.)

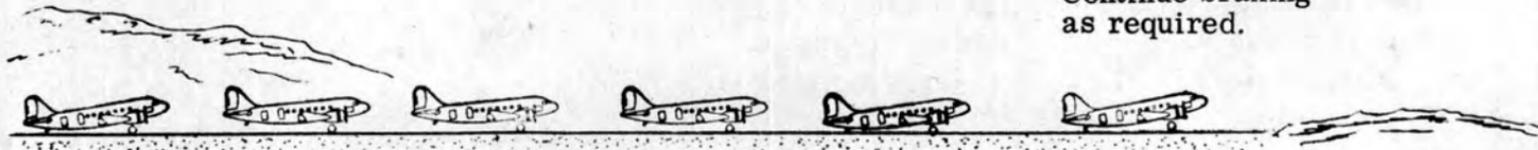


NORMAL  
TAKEOFF

Engine failure  
prior to V2  
(84 KIAS)

Close throttles,  
apply brakes, and  
fly tailwheel to  
runway with elevator.

Continue braking  
as required.



REJECTED TAKE OFF

NORMAL  
TAKEOFF

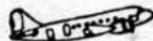
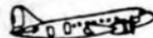
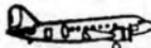
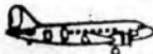
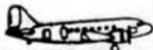
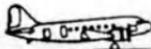
After  $V_2$ ,  
(84 KIAS)  
engine fails.

Continue takeoff,  
maintain  $V_2$  and  
when a positive  
climb is established,  
gear up.

Identify and feather  
failed engine, apply  
appropriate  
emergency proce-  
dures.

Climb at  $V_2$  until  
obstruction clearance  
altitude (circling  
minimums.)

Accelerate to  
95 KIAS and re-  
duce to METO  
(observe 2 min.  
max. power limit.)



ENGINE FAILURE AFTER  $V_2$

Tailwheel locked,  
hold brakes and  
apply power to MAP  
35. Release brakes  
and apply Max. Power.

Tail low attitude,  
allow aircraft to  
fly off at 52-61  
KIAS. ( $V_{mc}$  76 KIAS.)

Positive rate  
of climb, gear  
up. Accelerate  
to  $V_2$  (84 KIAS.)

Clear of obstacles;  
flaps up, accelerate  
to 95 KIAS and reduce  
to METO power (RPM  
2550, MAP 42.5.)

At circling  
minimums or  
clear of obstruc-  
tions, accelerate  
to 105 KIAS and  
reduce to climb  
power (RPM 2350  
MAP - See Climb  
Chart.)

39 KIAS.  
Flaps  $\frac{1}{4}$



MINIMUM RUN TAKE-OFF

Climb at 95 KIAS  
until circling minimums.

STEEP TURNS

A/S 120 KIAS  
 Flaps UP  
 Gear UP  
 RPM (A/R) 2050  
 MAP 28 (approx)

SLOW FLIGHT

A/S 70 KIAS  
 Flaps. ALL CONFIG.  
 Gear UP & DOWN  
 RPM 2350 (A/R)  
 MAP As Required.

APPROACH TO STALLS

Clean Config.	Approach Config.	Landing Config.
Flaps UP	Flaps $\frac{1}{4}$	Flaps Full Down
Gear UP	Gear DOWN	Gear DOWN
RPM 2050	RPM 2350	RPM 2550
MAP 12	MAP 12	MAP 12
	Bank $20^{\circ}$	

Approaches to stalls will begin at 90  
 KIAS & complete at 90 KIAS. Mixture A/R.

APPROXIMATE STALLING SPEEDS (IAS)

## LEVEL - POWER OFF

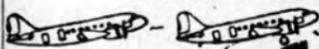
GROSS WT. (LBS)	0 FLAP KTS.	$\frac{1}{4}$ FLAP Kts.	$\frac{1}{4}$ FLAP Kts.	FULL FLAP Kts.
28,000	70	66	62	60
27,000	68	64	61	59
26,000	66	63	59	57
25,000	65	62	58	56
23,000	62	59	55	53
21,000	59	56	53	51

HOLDING

A/S 105 KIAS  
 Flaps UP  
 Gear UP  
 RPM 2050 Short Hold MAP 23 approx.  
 RPM 1700 Long Hold MAP 27 approx.  
 Mixture A/L

Instructor/Check Pilot will assign time for simulated high station passage.

30 seconds prior to high station: Gear DOWN, Flaps  $\frac{1}{4}$ , RPM 2350, 95 KIAS, Before Landing Checklist COMPLETE.



INITIAL AP-PROACH

105 KIAS.

Descent & Before Landing checklist COMPLETED up to Gear.

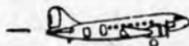
At high station: Flaps FULL, MAP approx. 15", descend at 1000'/min.



150' above altitude, Flaps UP. MAP approx. 23", 95 KIAS.

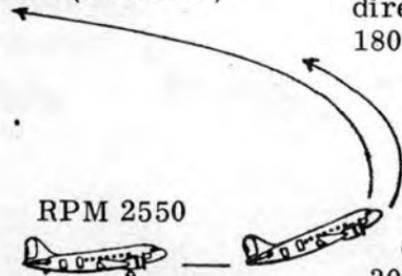


95 KIAS.



Maintain 95 KIAS.

Engine failure: "Max Power, " 15° bank, feather failed engine, climb at V2 (84 KIAS.)



Change direction 180°, climb 1000'.

RPM 2550

One minute and 45 seconds after high station.

METO Power, Gear Up, 30° bank turn, climb at 95 Knots.

Two minutes after High Station.

% STALL SPEED (IAS)

Gross Weight 26000 Pounds

GEAR DOWN

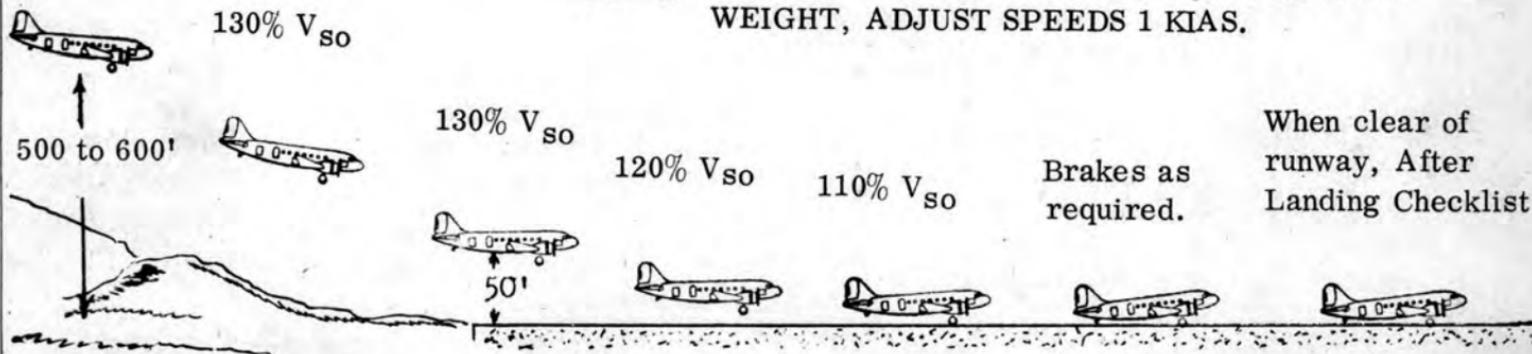
Before Landing

Checklist COMPLETE,

Final Flaps.

	VSO	110%	120%	130%	140%
CLEAN	66	73	79	86	92
$\frac{1}{4}$ FLAPS	63	69	76	82	89
$\frac{1}{2}$ FLAPS	59	65	71	77	83
FULL FLAPS	57	63	68	74	80

NOTE: FOR EVERY 1000 lb. CHANGE IN AIRCRAFT WEIGHT, ADJUST SPEEDS 1 KIAS.

NORMAL LANDING

% STALL SPEED (IAS)

Gross Weight 26000 Pounds

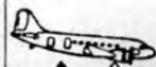
	VSO	110%	120%	130%	140%
GEAR DOWN	66	73	79	86	92
Before Landing	63	69	76	82	89
Checklist COMPLETE,	59	65	71	77	83
95 KIAS.	57	63	68	74	80

NOTE FOR EVERY 1000 lb. CHANGE IN AIRCRAFT WEIGHT, ADJUST SPEEDS 1 KIAS.

WARNING:

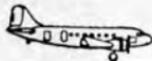
Below 300' altitude with gear & flaps fully extended, a successful go-around cannot be expected.

When clear of runway After Landing Checklist.



Flaps as required.

500'  
to  
600'

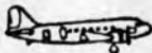


130% V<sub>SO</sub>

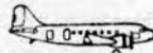


50'

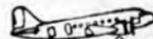
120% V<sub>SO</sub>



110% V<sub>SO</sub>



Brakes as required



SINGLE ENGINE LANDING

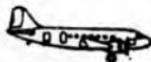
GEAR DOWN  
Before Landing Checklist:  
COMPLETE.



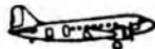
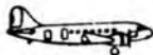
Flaps, Full Down  
130% V<sub>so</sub>



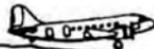
120% V<sub>so</sub>



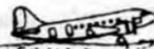
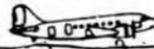
110% V<sub>so</sub>



105% V<sub>so</sub>



Flaps  $\frac{1}{4}$   
Brakes as  
required.



100'

MINIMUM RUN (STOL) LANDING

% STALL SPEED (IAS)

Gross Weight 26000 Pounds

	VSO	105%	110%	120%	130%
CLEAN	66	70	73	79	86
$\frac{1}{4}$ FLAPS	63	66	69	76	82
$\frac{1}{2}$ FLAPS	59	62	65	71	77
FULL FLAPS	57	60	63	68	74

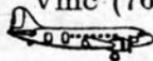
NOTE FOR EVERY 1000 lb. CHANGE IN AIRCRAFT WEIGHT, ADJUST SPEEDS 1 KIAS.



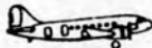
### Normal Approach

Apply Maximum  
Power, flaps  $\frac{1}{4}$ .

Accelerate to  
V<sub>mc</sub> (76 KIAS)



Rate of descent  
arrested, Gear  
Up



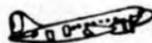
Accelerate to  
V<sub>2</sub> (84 KIAS)



After Gear  
retracted,  
Flaps UP, climb  
at V<sub>2</sub> (84 KIAS)



Proceed as  
for Normal  
Take-off.



BALKED LANDING

METO POWER SETTINGS  
1060 Brake Horsepower Per Engine  
AUTO RICH

PRESSURE ALTITUDE (FEET)	MANIFOLD PRESSURE (In Hg) AT CARBURETOR AIR TEMPERATURE (°C)						RPM	LB/HR
	-20 <sup>0</sup>	-10 <sup>0</sup>	0 <sup>0</sup>	+10 <sup>0</sup>	+20 <sup>0</sup>	+30 <sup>0</sup>		PER ENG
10,000								
9,000								
8,000								
7,000	39.4	40.2	40.9					
6,000	39.3	40.1	40.9	41.6	42.3			
5,000	39.5	40.3	41.1	41.8	42.6	43.3		
4,000	39.7	40.5	41.3	42.0	42.8	43.5		
3,000	39.9	40.7	41.5	42.2	43.0	43.7		
2,000	40.0	40.3	41.6	42.3	43.1	43.8	2550	735.00
1,000	40.0	40.8	41.6	42.3	43.1	43.8		
0	40.0	40.8	41.6	42.3	43.1	43.8		

HIGH SPEED CRUISE  
 CONSTANT CRUISE POWER SETTINGS  
 640 Brake Horsepower Per Engine  
 AUTO RICH

PRESSURE ALTITUDE (FEET)	MANIFOLD PRESSURE (In. Hg) AT CARBURETOR AIR TEMPERATURE (°C)						RPM	FUEL FLOW LB/HR
	-20°	-10°	0°	+10°	+20°	+30°		PER ENG
11,000	28.2	28.7	29.3	29.8			2050	332.50
10,000	28.2	28.7	29.3	29.8	30.3	30.8		
9,000	28.4	28.9	29.4	30.0	30.5	31.0		
8,000	28.4	29.0	29.5	30.1	30.6	31.1		
7,000	28.6	29.2	29.7	30.3	30.8	31.3		
6,000	28.7	29.3	29.8	30.4	31.0	31.4		
5,000	28.8	29.4	29.9	30.5	31.0	31.5		
4,000	28.8	29.4	29.9	30.5	31.0	31.5		
3,000	29.0	29.5	30.1	30.6	31.2	31.7		
2,000	29.2	29.7	30.3	30.8	31.4	31.9		
1,000	29.2	29.8	30.4	30.9	31.5	32.0		
0	29.4	30.0	30.6	31.1	31.7	32.2		

CONSTANT CRUISE POWER SETTINGS  
600 Brake Horsepower Per Engine  
AUTO LEAN  
COMPANY STANDARD CRUISE

PRESSURE ALTITUDE (FEET)	MANIFOLD PRESSURE (In. Hg.) AT CARBURETOR AIR TEMPERATURE (°C)						RPM	FUEL FLOW LB/HR
	-20 <sup>o</sup>	-10 <sup>o</sup>	0 <sup>o</sup>	+10 <sup>o</sup>	+20 <sup>o</sup>	+30 <sup>o</sup>		PER ENG
11,000	27.2	27.7	28.3	28.8	29.3	29.8	2050	265.50
10,000	27.4	27.9	28.5	29.0	29.5	30.0		
9,000	29.2	29.8	30.3	29.2	29.7	30.2		
8,000	29.2	29.8	30.3	30.9	31.4	32.0	1900	255.00
7,000	29.2	29.8	30.3	30.9	31.4	32.0		
6,000	29.3	29.9	30.4	31.0	31.5	32.1		
5,000	29.4	29.9	30.5	31.1	31.6	32.1		
4,000	29.5	30.0	30.6	31.2	31.7	32.2		
3,000	29.5	30.1	30.7	31.2	31.8	32.3		
2,000	29.7	30.3	30.9	31.4	32.0	32.5		
1,000	29.9	30.5	31.1	31.6	32.2	32.7		
0	30.0	30.6	31.2	31.7	32.3	32.8		

CONSTANT CRUISE POWER SETTINGS  
500 Brake Horsepower Per Engine  
AUTO LEAN

PRESSURE ALTITUDE (FEET)	MANIFOLD PRESSURE (In Hg) AT CARBURETOR AIR TEMPERATURE (°C)						RPM	FUEL FLOW LB/HR
	-20°	-10°	0°	+10°	+20°	+30°		PER ENG
11,000	26.1	26.5	27.0	26.3	26.7	27.0	1900	219.00
10,000	27.5	26.6	27.0	27.3	27.5	27.8	1700	210.00
9,000	27.7	28.0	28.5	27.5	27.9	28.2		
8,000	27.9	28.4	28.7	29.1	29.5	29.8		
7,000	28.0	28.5	28.9	29.3	29.6	29.9		
6,000	28.2	28.6	29.0	29.4	29.8	30.1		
5,000	28.3	28.7	29.2	29.6	29.9	30.2		
4,000	28.4	28.8	29.3	29.8	30.0	30.3		
3,000	28.5	28.9	29.4	29.9	30.2	30.5		
2,000	28.7	29.1	29.6	30.0	30.4	30.7		
1,000	28.8	29.2	29.7	30.2	30.5	30.8		
0	28.9	29.4	29.3	30.3	30.7	31.0		

STANDARD HOLDING  
 CONSTANT CRUISE POWER SETTINGS  
 400 Brake Horsepower Per Engine  
 AUTO LEAN

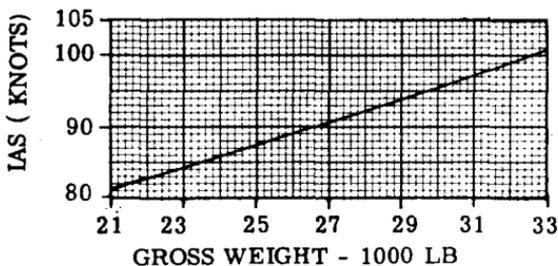
PRESSURE ALTITUDE (FEET)	MANIFOLD PRESSURE (In. Hg) AT CARBURETOR AIR TEMPERATURE (°C)						RPM	FUEL FLOW LB/HR
	-20°	-10°	0°	+10°	+20°	+30°		PER ENG
11,000	23.1	23.6	23.9	24.3	24.5	24.7	1700	177.50
10,000	23.3	23.7	24.0	24.3	24.6	24.9		
9,000	23.4	23.7	24.1	24.4	24.7	25.0		
8,000	23.5	23.8	24.3	24.4	24.8	25.1		
7,000	23.6	24.0	24.4	24.6	24.9	25.2		
6,000	23.8	24.1	24.5	24.8	25.1	25.4		
5,000	23.9	24.3	24.6	25.0	25.3	25.6		
4,000	24.0	24.4	24.8	25.2	25.5	25.8		
3,000	24.2	24.6	24.9	25.4	25.7	26.0		
2,000	24.4	24.8	25.1	25.5	25.9	26.3		
1,000	24.6	25.0	25.3	25.7	26.1	26.5		
0	24.8	25.3	25.5	25.8	26.3	26.6		

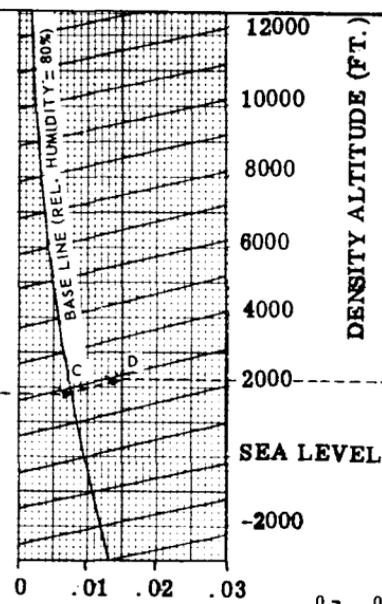
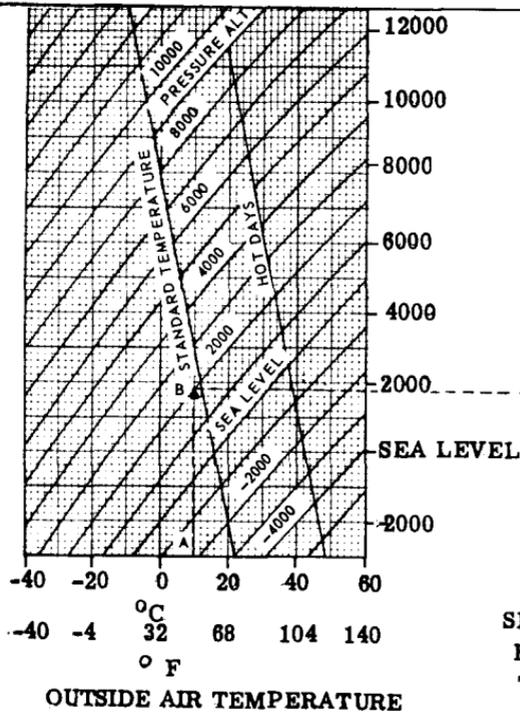
MAXIMUM ENDURANCE  
 CONSTANT CRUISE POWER SETTINGS  
 300 Brake Horsepower Per Engine  
 AUTO LEAN

PRESSURE ALTITUDE (FEET)	MANIFOLD PRESSURE (In. Hg) AT CARBURETOR AIR TEMPERATURE ( $^{\circ}$ C)						RPM	FUEL FLOW LB/HR
	-20 $^{\circ}$	-10 $^{\circ}$	0 $^{\circ}$	+10 $^{\circ}$	+20 $^{\circ}$	+30 $^{\circ}$		PER ENG
11,000							1700	142.00
10,000	18.8	19.2	19.4	19.6	19.9	20.2		
9,000	19.0	19.3	19.6	19.8	20.1	20.3		
8,000	19.2	19.5	19.8	20.0	20.3	20.6		
7,000	19.4	19.7	19.9	20.2	20.5	20.8		
6,000	19.6	19.9	20.1	20.5	20.7	20.9		
5,000	19.8	20.0	20.2	20.7	20.9	21.1		
4,000	20.0	20.2	20.4	20.9	21.1	21.3		
3,000	20.2	20.5	20.7	21.1	21.3	21.5		
2,000	20.4	20.7	20.95	21.3	21.5	21.7		
1,000	20.6	21.0	21.2	21.5	21.7	21.9		
0	20.8	21.2	21.5	21.7	21.9	22.1		

PERFORMANCE DATA

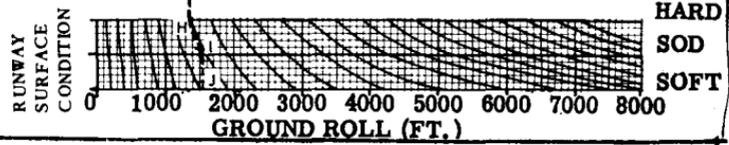
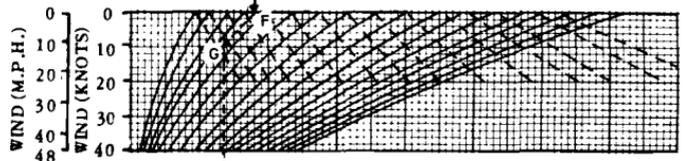
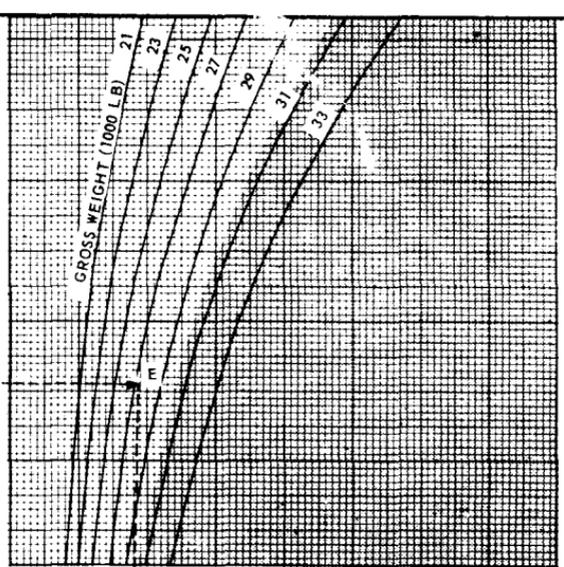
<u>Abbreviation</u>	<u>IAS (Kts)</u>	<u>Remarks</u>
Vne (Reduce 6 Knots for each 1000 pounds above 26,000)	221	Never exceed
Vno (Reduce 2 Knots for each 1000 pounds above 26,000)	177	Normal operating
Vle	140	Landing Gear operating
Vb	122	Max speed in turbulence
Vfe	104	Flap Extension $\frac{1}{4}$
	100	Flap Extension $\frac{1}{2}$
	97	Flap Extension Full
V <sub>x</sub>	84	Best angle of climb (single engine)
V <sub>2</sub> (V <sub>1</sub> )	84	Safe S. E. Speed
V <sub>mc</sub>	76	Minimum Control
	105	Normal Climb
	105	Holding
V <sub>y</sub>	See chart	Best Rate of climb (single engine)





SPECIFIC HUMIDITY  
 HEADWIND \_\_\_\_\_  
 TAILWIND - - - - -

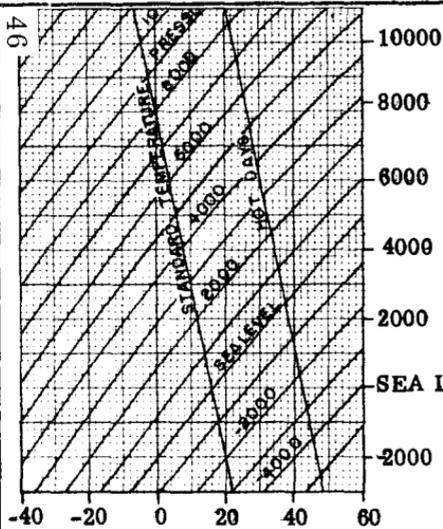
To obtain the approximate distance over a 50 foot obstacle, multiply the zero wind, hard surface runway take-off ground roll distance by 1.95 (ratio of distance over a 50 foot obstacle to take-off ground roll distance).



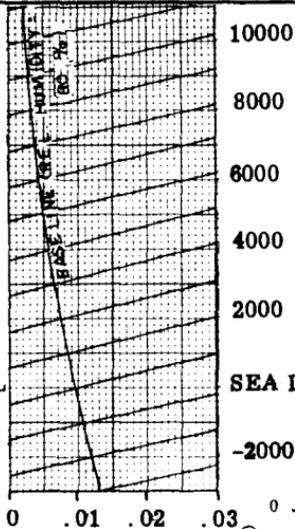
# TAKE - OFF PERFORMANCE

WING FLAPS = UP

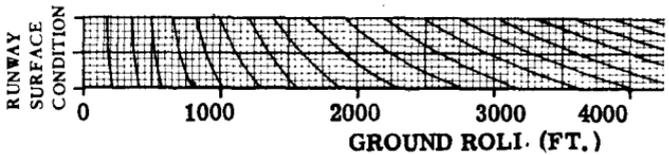
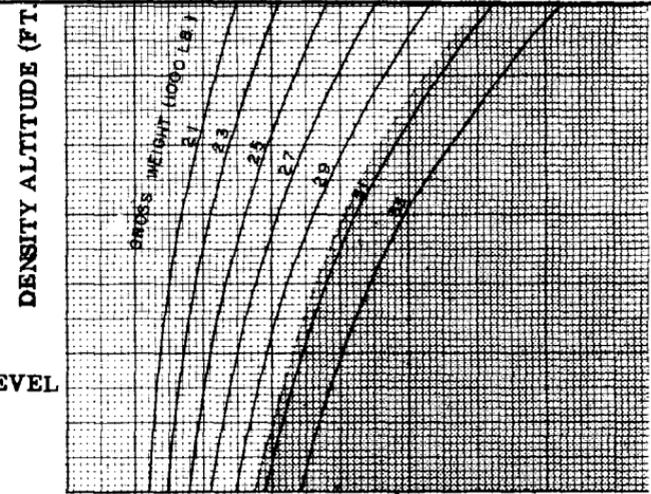
45



°C  
 -40 -4 32 68 104 140  
 °F  
**OUTSIDE AIR TEMPERATURE**



**SPECIFIC HUMIDITY**  
 HEADWIND \_\_\_\_\_  
 TAILWIND -----



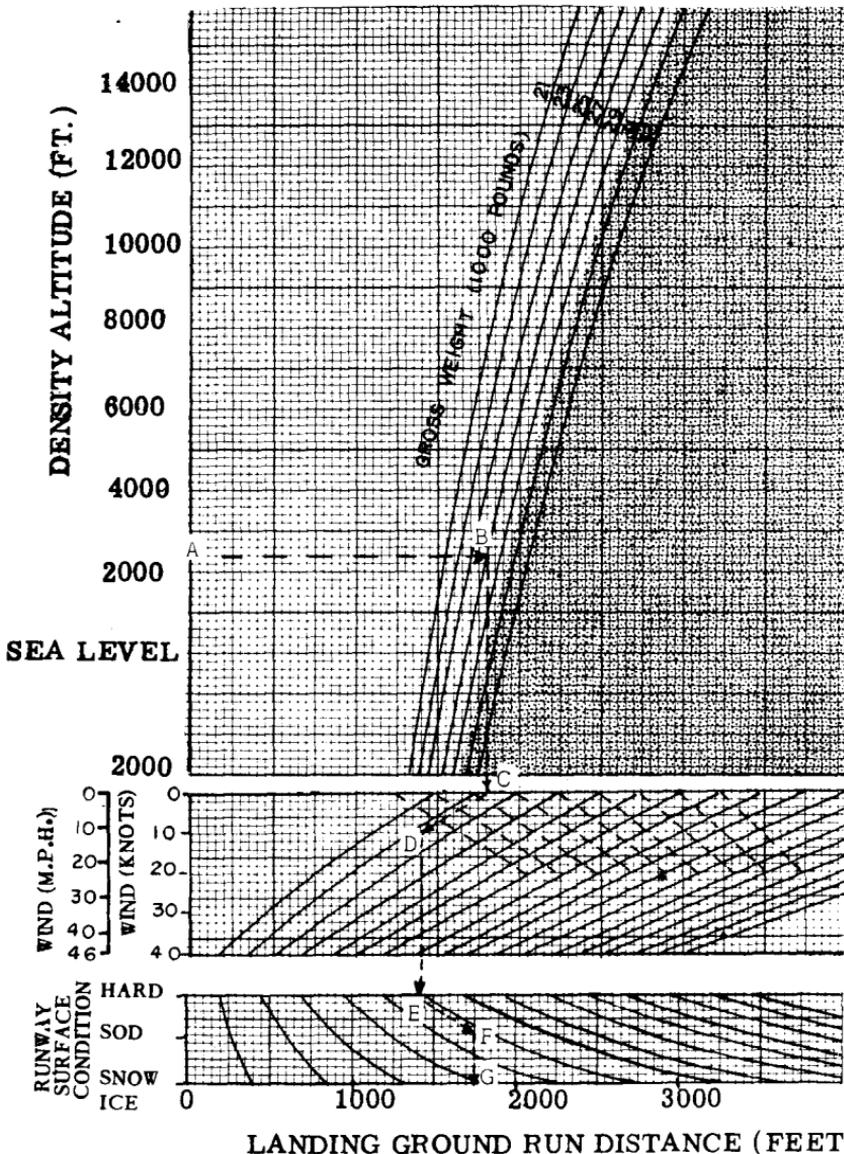
## TAKE - OFF PERFORMANCE

WING FLAPS = 1/4 DOWN

● To obtain the approximate distance over a 50 foot obstacle, multiply the zero wind, hard surface runway take-off ground roll distance by 1.95 (ratio distance over a 50 foot obstacle to take-off ground roll distance).

# LANDING GROUND RUN

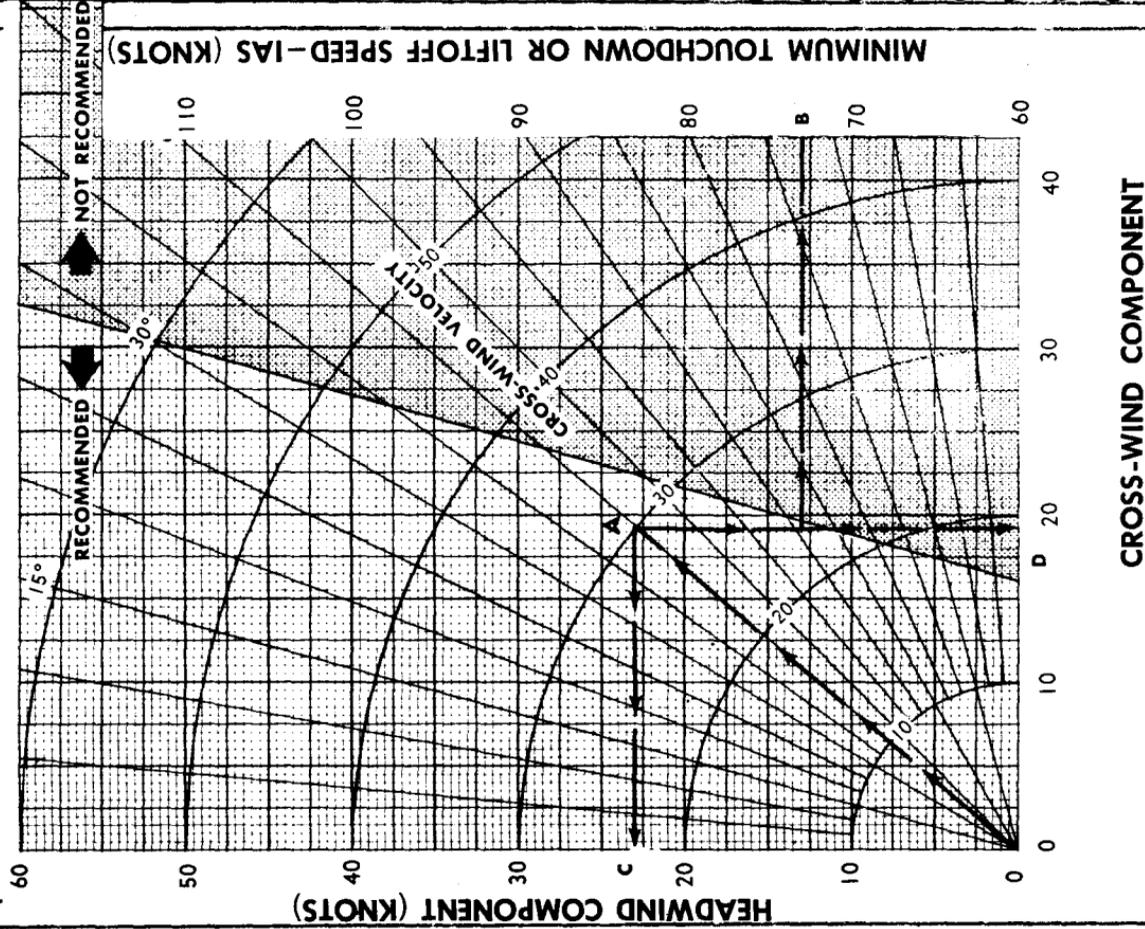
TOUCHDOWN AT 1.1Vs  
WING FLAPS = 45 DEGREES  
IDLE POWER



LANDING GROUND RUN DISTANCE (FEET)

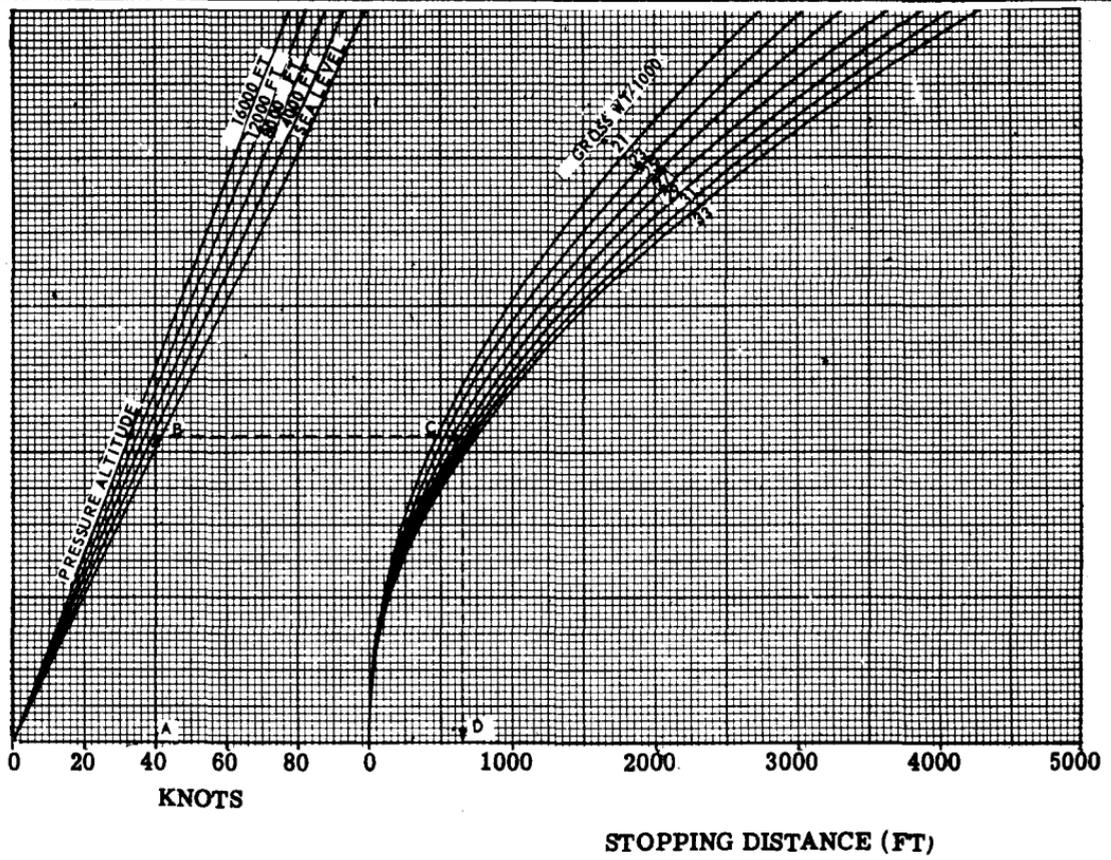
1. Speed at 50 foot height = 120 percent of stall speed.
2. Speed at touchdown = 110 percent of stall speed.
3. Wing flaps = 45 degrees.
4. This chart is for landing ground run distance only. Air run from a 50 foot height to touchdown is approximately 30 percent of landing ground run on hard surface for 45 degree flap.

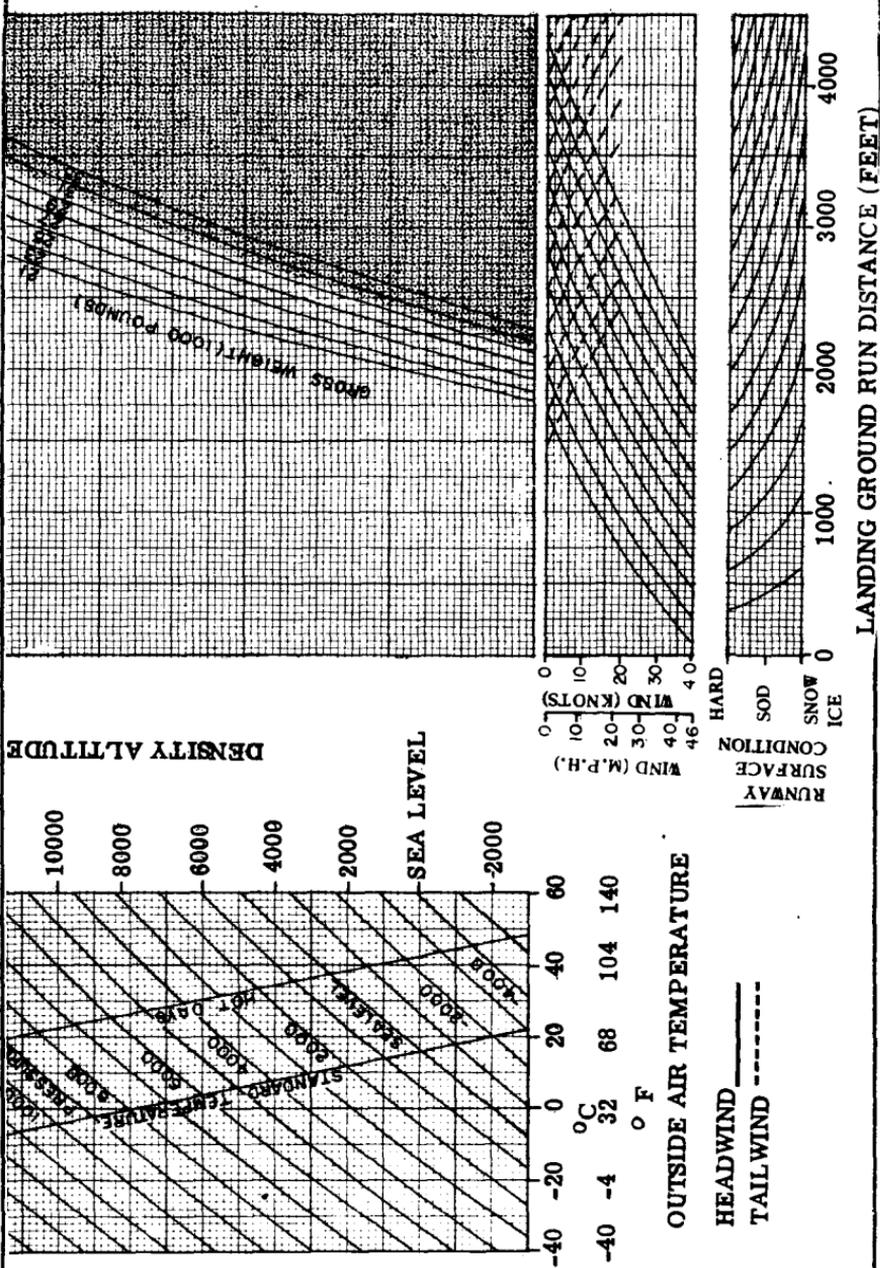
HEADWIND ———  
TAILWIND - - - -



# DISTANCE TO STOP - ABORTED TAKE - OFF

WING FLAPS = UP





This chart is for landing ground run distance only. Air run from a 50 feet height to touch-down is approximately 50 percent of landing ground run on hard surface for 0 degrees flap. 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.

**LANDING GROUND RUN**  
WING FLAPS = 0 DEGREES

AIRCRAFT REVIEW

1. Given: Gross weight - 26000 pounds;  
Pressure altitude - 2000 feet;  
OAT +10°C; Hard surface, Level  
runway; No wind.

Determine the accelerate stop distance if the takeoff is aborted at 70 KIAS :

- a. 3150 feet.
- b. 3325 feet.
- c. 3750 feet.

2. Given: Gross weight - 26000; Pressure altitude -  
Sea level; OAT +10°C; Hard surface, Level  
runway; No wind.

Determine the minimum runway length for takeoff:

- a. 1000 feet.
- b. 1100 feet.
- c. 1200 feet.
- d. 1300 feet.

3. The wheel base turning radius of the C-47 aircraft is:

- a. 57 feet 6 inches.
- b. 48 feet 11 inches.
- c. 49 feet 4 inches.
- d. 66 feet 9 inches.

4. During landing gear retraction, the latch lever will not remain in the "unlocked" position. The most probable cause for this malfunction is:

- a. Binding or jammed gear lock.
- b. Broken cables.
- c. Cables off the routing pulleys.
- d. Broken or missing latch spring.

During the above problem, the latch lever will not go to the "unlocked" position. The most probable cause for this malfunction is:

- a. Binding or jammed gear lock.
  - b. Broken cables.
  - c. Cables off the routing pulleys.
  - d. Broken or missing latch spring.
6. In the event of inverter failure there \_\_\_\_\_ an automatic changeover relay that switches on the spare inverter.
- a. Is
  - b. Is not
7. On some aircraft, the bus priority relay will automatically disconnect the Main Junction Box #2 bus and the Radio Junction Box #2 bus when either or both generators are not supplying DC power. To override the bus priority relay you must assure that:
- (a) Ground test power switch is "ON", light "ON".
  - (b) Ground test power switch is "OFF", light "OFF".
8. Maximum allowable oil consumption for C-47 is:
- (a) 1.5 GPH
  - (b) 1.8 GPH
  - (c) 1.5 GPH at main base, 1.8 at out station one time flight to main base.

9. During flight at 9000 feet, the fuel pressure suddenly drops to 10 psi or less on an engine, but the engine continues to operate normally. The gross weight of the aircraft is 25000 pounds and the minimum enroute altitude to destination is 2000 feet. Your first reaction will be:
- Place fuel boost pump switch "ON".
  - Reduce power and descend to a lower altitude.
  - Place mixture on that engine to idle-cut off.
  - Continue to destination and report discrepancy to maintenance.
10. In the above question fuel pressure drops to zero and engine begins to fail. You place the fuel boost pump switch "ON" and notice no increase in fuel pressure. Assuming full fuel tanks CB's in, your reaction should be (HC-47 excepted):
- Change fuel tank selection.
  - Feather affected engine.
  - Turn cross feed "ON".
11. Your first reaction to counteract engine failure due to fuel starvation is:
1. Turn fuel boost pump "ON".
  2. Change fuel tank selection.
  3. Retard throttle on affected engine.
12. Concerning fuel requirements for IFR flight, your destination has an approach facility approved for a ceiling of 400 feet and one mile. Your forecast weather for 2 hours before until 2 hours after your ETA is 1500 ft. overcast and visibility 3 miles. What are your fuel requirements for this flight?

- a. Fuel from departure point to destination plus 45 minutes reserve computed at cruise fuel consumption.
  - b. Fuel from departure point to destination, thence to your alternate computed at cruise fuel consumption plus 45 minutes reserve computed at maximum endurance fuel consumption.
  - c. Fuel from departure point to destination, thence to your alternate plus 45 minutes reserve computed at cruise fuel consumption.
  - d. None of the above.
13. For your IFR flight, the destination has a forecast weather of 1000 overcast and visibility 2 miles. What are your fuel requirements for this flight?
- a. Fuel from departure point to destination plus 45 minutes reserve computed at cruise fuel consumption.
  - b. Fuel from departure point to destination, thence to your alternate computed at cruise fuel consumption plus 45 minutes reserve computed at maximum endurance fuel consumption.
  - c. Fuel from departure point to destination, thence to your alternate plus 45 minutes reserve computed at cruise fuel consumption.
  - d. None of the above.
14. The following are mandatory weather and safety of flight reports:
1. The time and altitude of passing reporting points.
  2. Any unforecast weather and conditions encountered.
  3. Any other information relating to safety of flight.
    - a. True.
    - b. False.

15. The following are mandatory ATC reports:
1. The time and altitude reaching a holding fix or point to which cleared.
  2. When vacating any previously assigned altitude.
  3. When leaving any assigned holding fix.
  4. When leaving final approach fix inbound on final approach.
  5. When an approach has been missed.
  6. A correct estimate any time it becomes apparent that a previously submitted estimate to a reporting point will be in error in excess of 3 minutes.
16. Upon take-off it is discovered that the co-pilot's airspeed indicator is inoperative you would:
- a. Return and land immediately.
  - b. Continue to destination, if able, under VFR conditions.
  - c. Continue to destination even if under IFR conditions.
17. During engine start it is discovered that the left tachometer is inoperative. You would:
- a. Continue flight.
  - b. Shut-down and have it repaired.
  - c. Continue flight only if left manifold pressure is operative.
18. The flight attendant reports puff's of black smoke from the right engine exhaust. Your first action would be to:
- a. Feather engine immediately.
  - b. Place mixture control to auto-rich.
  - c. Monitor the engine and see if it gets worse.
  - d. None of the above.

19. The co-pilot reports bluish-grey smoke from cowl flaps and exhaust areas. Your action would be to:
- Use engine fire procedures immediately.
  - Feather engine immediately.
  - Enrich mixture.
  - Do nothing immediately, but monitor condition and if fire occurs use engine fire procedures.
  - None of above.
20. Your landing runway is 30. Your wind is from  $250^{\circ}$  at 26 knots. It is safe to land if your touchdown speed is above:
- 70 Knots.
  - 78 Knots.
  - 60 Knots.
  - 76 Knots.
21. You are required to make a STOL approach and figure your touchdown speed will be 65 Knots. What is the maximum recommended cross-wind component you can have to make a safe landing?
- 16 Knots.
  - 20 Knots.
  - 15 Knots.
  - $17\frac{1}{2}$  Knots.

931

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