DC-3

COMMUNICATIONS

GROUND	TOWER	DEP CON	RADAR	ENROUTE	CONTROL				NAME

7 Dec 1967

NOTES

Changes + Corrections Noted From Memorandum Dated 20 June 68

PREFLIGHT CHECKLIST

INTERIOR INSPECTION

1. Aft CO_2 Extinguisher ..... CHECKED/SAFETIED
2. Tail Cone ..... CHECKED
3. Access Door ..... CLOSED
4. Gibson Girl ..... AS REQUIRED
5. First Aid Kit ..... CHECKED
6. Emergency Exits ..... SECURED
7. Cabin (Load Secured, Cleanliness, Weight and Balance) ..... CHECKED
8. Forward Fire Extinguisher. CHECKED/SAFETIED
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

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

[illegible]ection for desired droop.

4. Wing Tip.

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

5. Leading Edge of Wing.

[illegible] for damage
a. Inspection panels secured
b. Landing light

6. Left Engine.

a. Exhaust Stacks - Condition and Security.
b. Fuel and Oil leaks.
c. General condition
d. Engine mount 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. Fire wall 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	[illegible]

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 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 TAXI

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

C-47 EMERGENCY CHECKLIST

ENGINE 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

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. Fluction in MAP and fuel flow will result from violent backfire. If detonation continues, engine failure and fire are imminent.	Increase 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, remove 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 area.	During takeoff or when more than single engine power is required for safety, reduce power slightly and let engine [illegible]

ENGINE SMOKE & FLAME IDENTIFICATION CHART

	Cause	Action
LIGHT ORANGE-COLORED FIRE COMING FROM EXHAUST.	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.
HEAVY BLACK SMOKE FROM EXHAUST.	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.
DENSE WHITE SMOKE FROM EXHAUST AND/OR COWL FLAP AREAS.	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 maybe best to order crew to bail out as fire will probably cause explosion in wing.
BLACK SMOKE FROM ACCESSORY SECTION.	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.
BLACK SMOKE AND ORANGE FLAME FROM ACCESSORY SECTION.	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.

LIMITATIONS

AIRSPEED

0 - ¼ Flaps	104 KIAS
½ 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 USAF)	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°C - +15°C
Normal	+15°C - +38°C
Detonation	+50°C

CYLINDER HEAD TEMPERATURE

Auto Lean permitted	150 - 232°C
Auto Rich required	232 - 270°C
Maximum	270°C

OIL TEMPERATURE

Minimum	40°C
Normal	60 - 80°C
Maximum	100°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

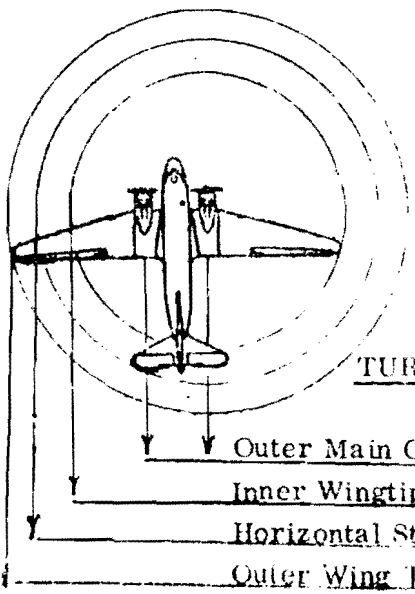
Tank capacity	29 gal.
Usable	22 gal.
Reserved for feathering	3 gal.
Total (Normal Service)	25 gal.
Maximum Oil Consumption	1.5 GPH

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	3 qts.
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.	(199)
	Total	(802)



TURNING RADIUS DIAGRAM

WEIGHT LIMITATIONS

Basic Operating : Aircraft No.	See Operating Manual Basic Operating Weight.
Average	19,500

Maximum Takeoff ..... 28,000 POUNDS
Maximum Zero Fuel ..... 28,000 POUNDS
Recommended Landing ..... 26,000 POUNDS
Above 26,000 pounds use CAUTION. Do not land in a tail low attitude.

Center of Gravity Limits

Forward 11.0%
Rearward 28.0%

Flight Load Acceleration Limits

26,000 pounds ..... +3.0G
28,000 pounds ..... +2.75G

STANDARDS AND GRADING CRITERIA

Steep Turns	Angle of bank	± 10°
	Airspeed	± 10 Kts
	Altitude	± 100 Ft.
	Roll out	± 10°
Slow Flight	Airspeed	± 5 Kts
	Altitude	± 50 Ft.
	Heading	± 5°
Approach to Stalls	Altitude	+ 50 Ft. - 100 Ft.
	Heading	± 5°
Normal Turns and holding	Angle of bank	± 5°
	Airspeed	± 5 Kts
	Altitude	± 50 Ft.
Level Flight	Altitude	± 50 Ft.
	Heading	± 5°
Tracking	Altitude	± 50 Ft.
	Track	± 5°
	Localizer	± 2°
Instrument approaches (including rapid descent and pullup)	Airspeed	+ 5 Kts
	Glide path	Within 50 Ft.
	Altitude	± 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)

Tailwheel locked, release brakes, apply Max Power.

43-52 Knots, tail starts to rise.

Fly off at V2 - (84 KIAS.)

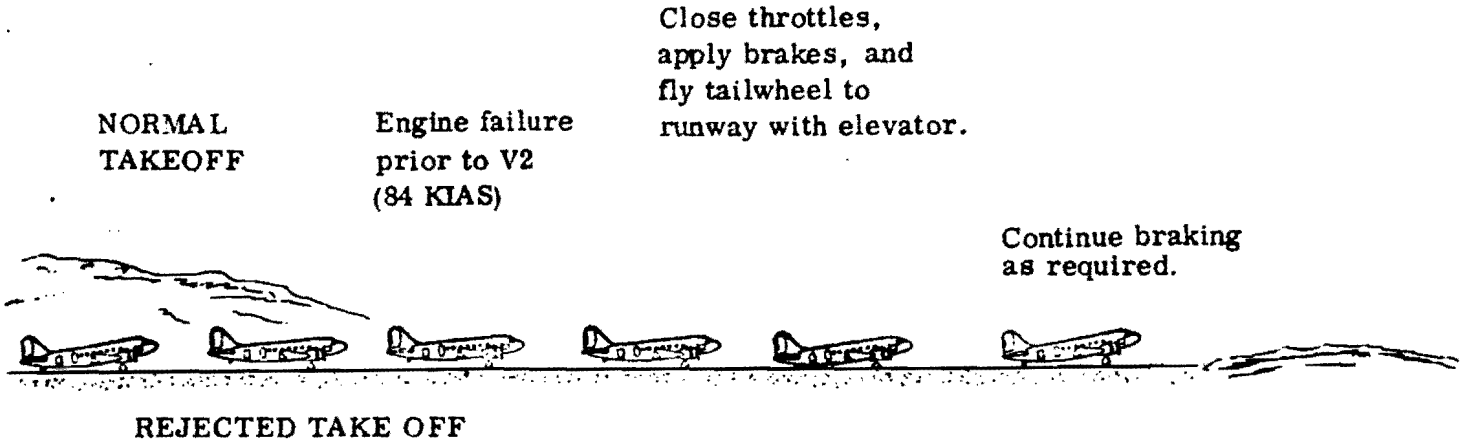
Vmc (76 KIAS)

Positive rate of climb - Gear Up, maintain V2.

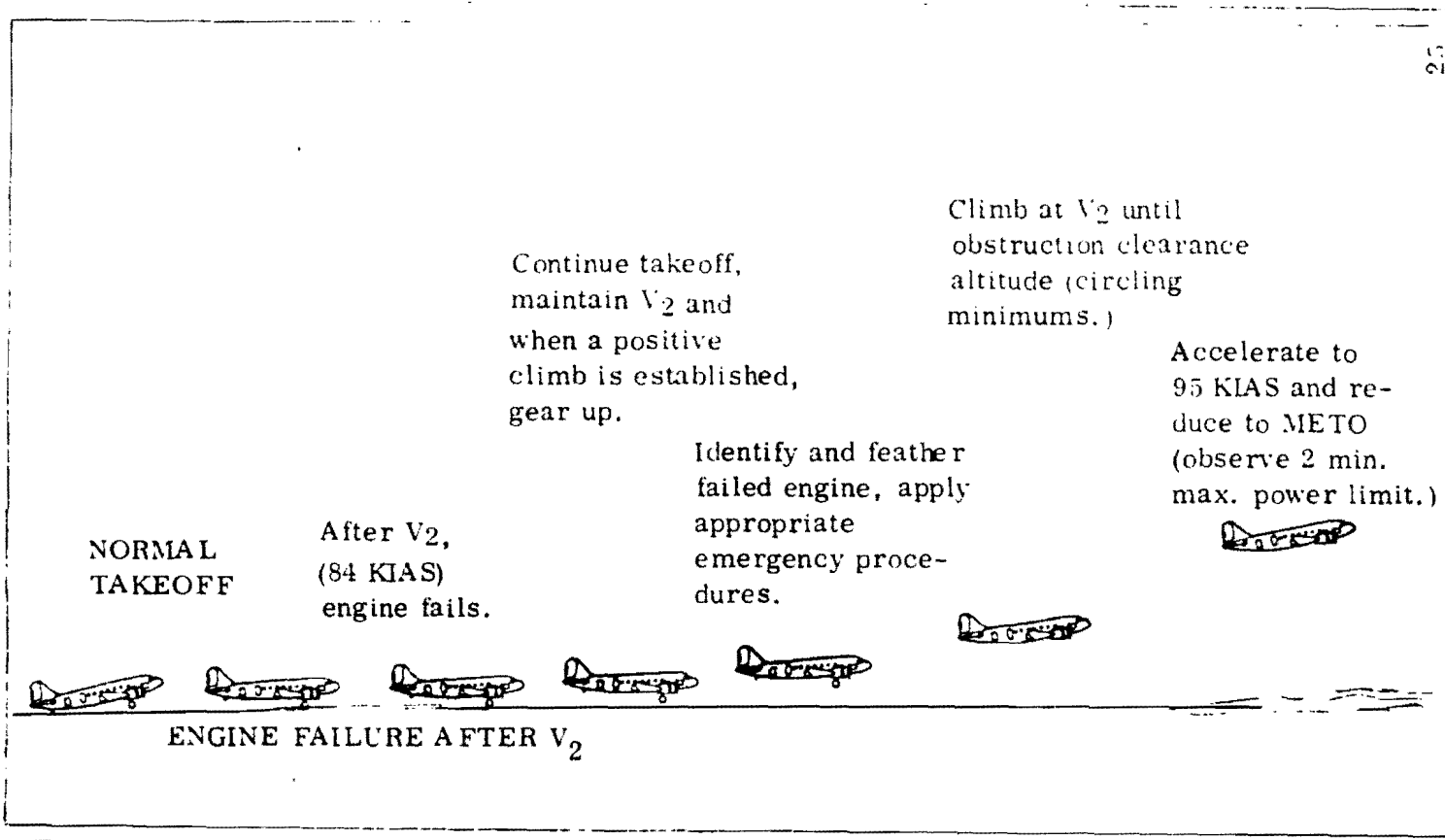
Climb at V_2 Until gear is up, accelerate to 95 KIAS and reduce to METO power (RPM 2550 MAP 42.5). Maintain until circling minimums.

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

NORMAL TAKEOFF


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

GEAR DOWN



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. (Vmc 76 KIAS.)

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

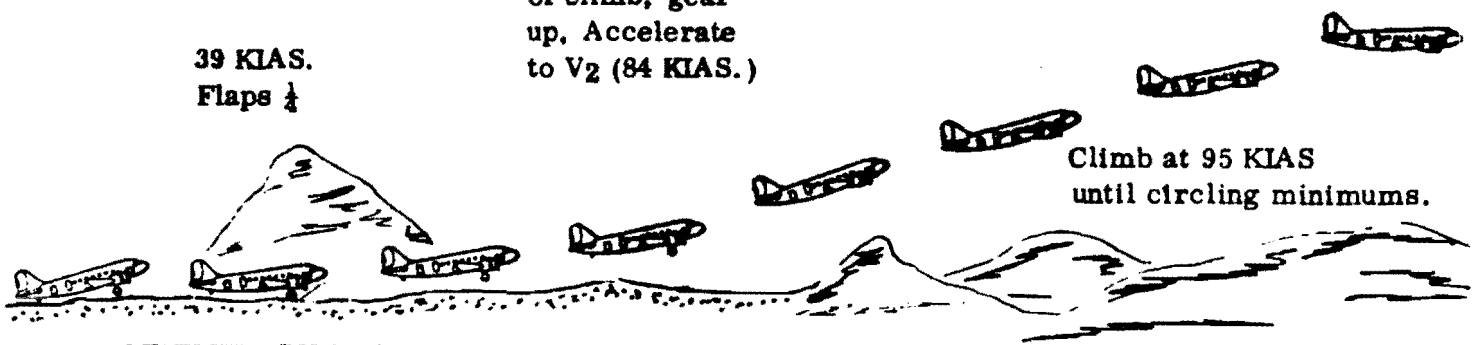
39 KIAS. Flaps $\frac{1}{4}$

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

CLIMB AS

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

Climb at 95 KIAS until circling minimums.



MINIMUM RUN TAKE-OFF

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	¼	Flaps	Full Down
Gear	UP	Gear	DOWN	Gear	DOWN
RPM	2050	RPM	2350	RPM	2550
MAP	12	MAP	12	MAP	12
		Bank	20°		

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.	¼ FLAP Kts.	½ 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	

Cruise Configuration

RPM 2050, MAP 12"
Flaps UP, Gear UP

Maintain heading & regain any lost altitude.

Accelerate to 90 KIAS.

Maintain heading & altitude.

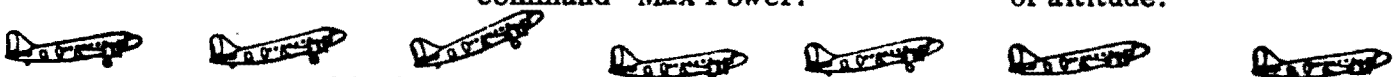
When onset of the initial buffet is felt: lower nose to the horizon, level the wings and simultaneously command "Max Power."

Approach Configuration

RPM 2350, MAP 12"
Flaps ¼, Gear DOWN

When onset of the initial buffet is felt: lower nose to the horizon, level the wings, and simultaneously command "Max Power."

Flaps UP after 0° flap stall speed, maintain heading & regain any loss of altitude.



Maintain altitude & 20° bank.

Rate-of descent arrested Gear Up.

Accelerate to 90 KIAS.

Landing Configuration

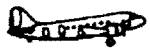
(RPM 2550 is used during training rather than the normal landing RPM 2350.)

RPM ~~2550~~ 2350, MAP 12"
Flaps FULL DOWN,
Gear DOWN.

When onset of the initial buffet is felt: lower the nose to the horizon, level the wings and simultaneously command "Max Power" and "Flaps ¼"

Flaps UP after 0° flap stall speed, maintain heading & regain any loss of altitude.




Maintain heading & altitude.

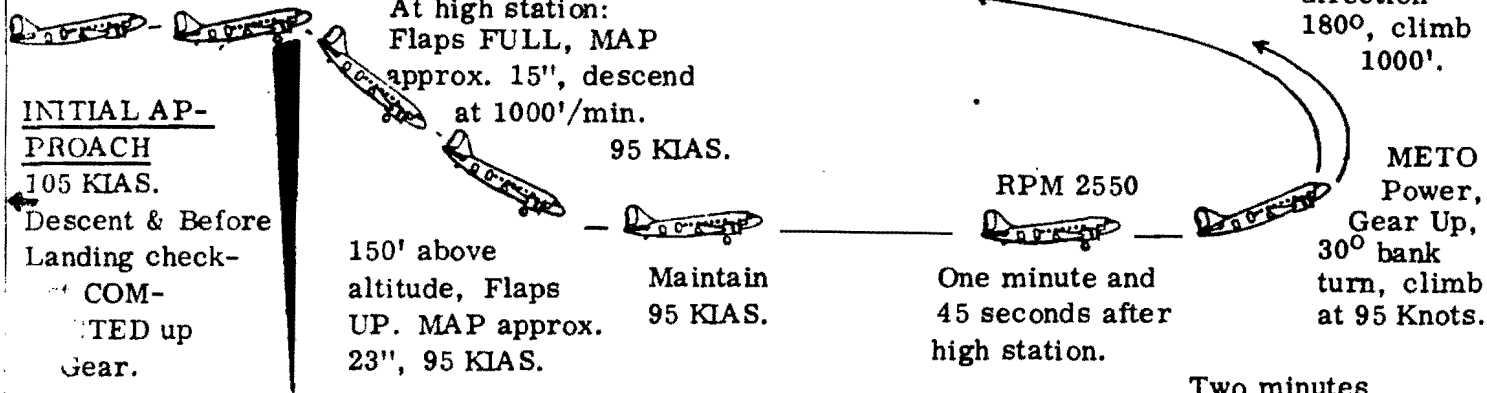
Rate-of-descent arrested Gear UP.

Accelerate to 90 KIAS.

NOTE: 1. During training in this maneuver, METO power will be used in lieu of Maximum Power.

2. During this maneuver the pilot will handle the throttles & F/O set RPM.

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



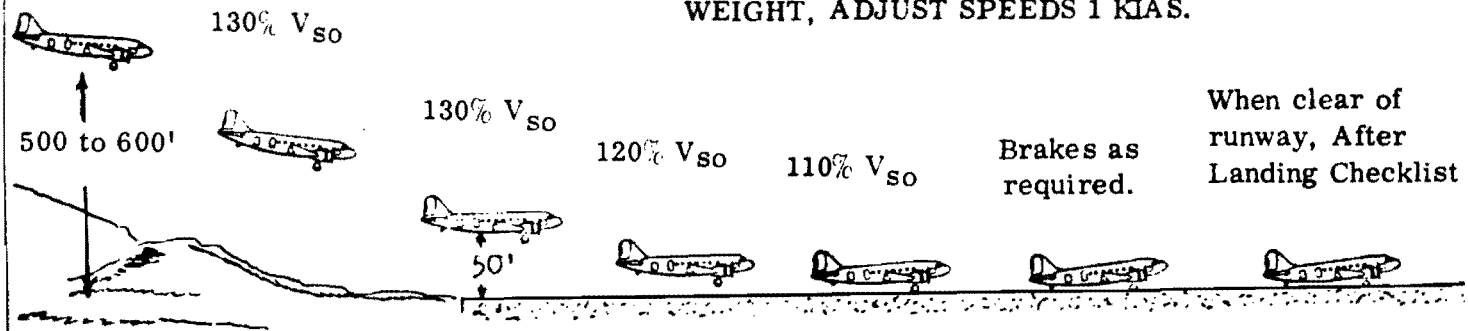
% STALL SPEED (IAS)

Gross Weight 26000 Pounds

GEAR DOWN
Before Landing
Checklist COMPLETE,
Final Flaps.

	VSO	110%	120%	130%	140%
CLEAN	66	73	79	86	92
¼ FLAPS	63	69	76	82	89
½ 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

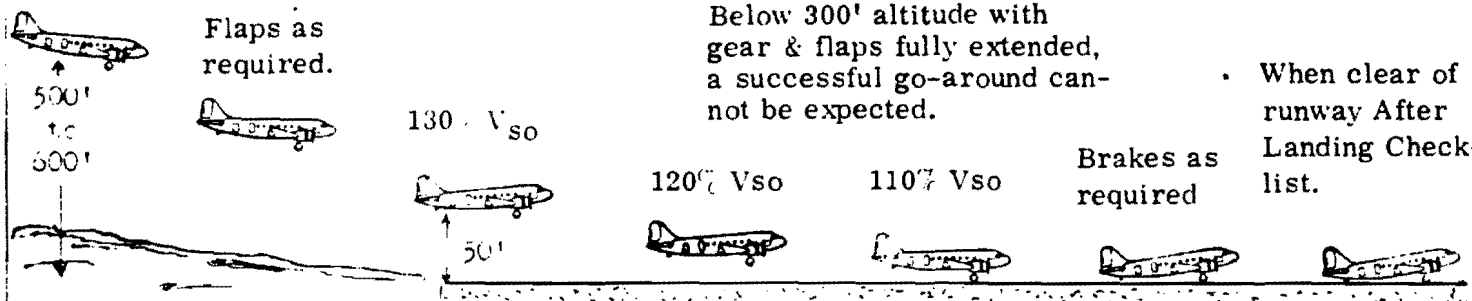
	VSO	110%	120%	130%	140%
CLEAN	66	73	79	86	92
¼ FLAPS	63	69	76	82	89
½ FLAPS	59	65	71	77	83
FULL FLAPS	57	63	68	74	80

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

GEAR DOWN
Before Landing
Checklist COMPLETE,
95 KIAS.

WARNING:

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



SINGLE ENGINE LANDING

Before Landing Checklist

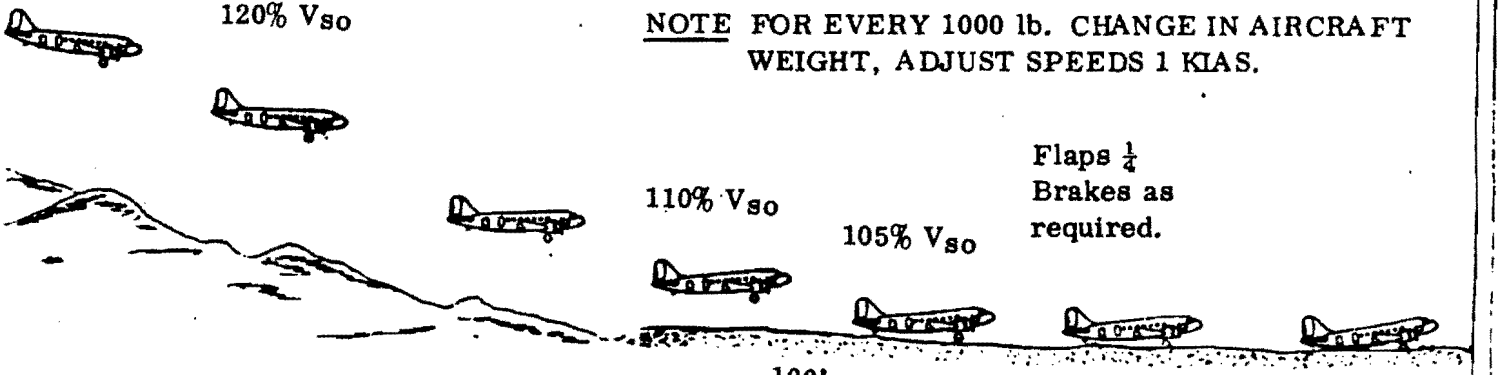
COMPLETE.

Flaps, Full Down
130% V_{so}

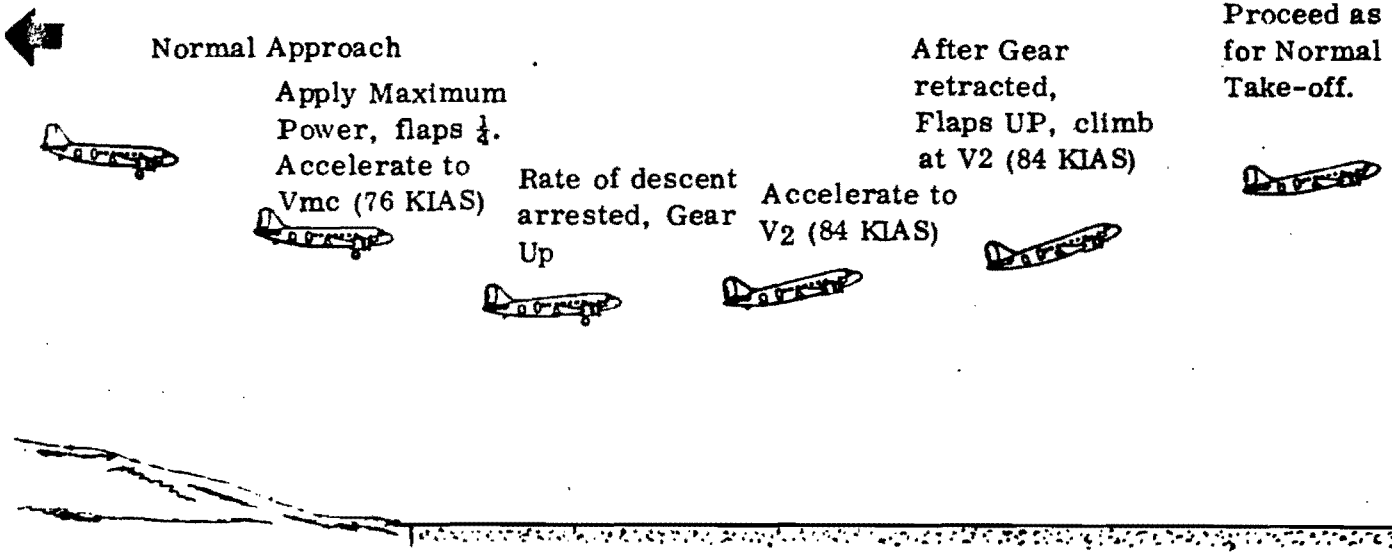
Gross Weight 26000 Pounds

	VSO	105%	110%	120%	130%
CLEAN	66	70	73	79	86
¼ FLAPS	63	66	69	76	82
½ 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.



MINIMUM RUN (STOL) LANDING



BALKED LANDING

METO POWER SETTINGS
1060 Brake Horsepower Per Engine
AUTO RICH

PRESSURE ALTITUDE (FEET)	MANIFOLD PRESSURE (In Hg) AT CARBURETOR AIR TEMPERATURE (^{o}C)						RPM	LB/HR
	-20^{o}	-10^{o}	0^{o}	+10^{o}	+20^{o}	+30^{o}		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		

CLIMB POWER SETTINGS
850 Brake Horsepower Settings
AURO 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								
10,000	33.7	34.3						
9,000	33.7	34.4	34.8	35.3	35.7	36.1		
8,000	33.8	34.4	34.8	35.4	35.8	36.2		
7,000	33.8	34.5	34.9	35.5	35.9	36.3	2350	500
6,000	33.8	34.5	34.9	35.6	36.0	36.4		
5,000	33.9	34.6	35.0	35.6	36.0	36.4		
4,000	33.9	34.6	35.0	35.7	36.1	36.5		
3,000	34.0	34.7	35.1	35.8	36.2	36.6		
2,000	34.2	34.7	35.2	35.9	36.3	36.7		
1,000	34.3	34.8	35.3	35.9	36.3	36.7		
0	34.4	34.8	35.4	36.0	36.4	36.8		

CONSTANT CRUISE POWER SETTINGS
700 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								
10,000								
9,000	30.4	31.0	31.6					
8,000	30.5	31.1	31.6	32.2	32.8			
7,000	30.6	31.1	31.7	32.3	32.9	33.4		
6,000	30.7	31.3	31.9	32.5	33.1	33.6		
5,000	30.9	31.5	32.1	32.7	33.3	33.8		
4,000	31.0	31.6	32.2	32.8	33.3	33.9	2050	336.00
3,000	31.2	31.6	32.4	33.0	33.5	34.1		
2,000	31.3	31.8	32.4	33.0	33.6	34.2		
1,000	31.3	31.9	32.5	33.1	33.7	34.3		
0	31.4	32.0	32.6	33.2	33.8	34.4		

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 (^{o}C)						RPM	FUEL FLOW LB/HR
	-20^{o}	-10^{o}	0^{o}	+10^{o}	+20^{o}	+30^{o}		PER ENG
11,000	28.2	28.7	29.3	29.8				
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	2050	332.50
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		

[redacted]NST[redacted]T C[redacted]E P[redacted]ER [redacted]TIN[redacted]

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 PER ENG
	-20°	-10°	0°	+10°	+20°	+30°		
11,000	27.2	27.7	28.3	28.8	29.3	29.8		
10,000	27.4	27.9	28.5	29.0	29.5	30.0	2050	265.50
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		
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	1900	255.00
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		
9,000	27.7	28.0	28.5	27.5	27.9	28.2	1800	215.00
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	1700	210.00
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

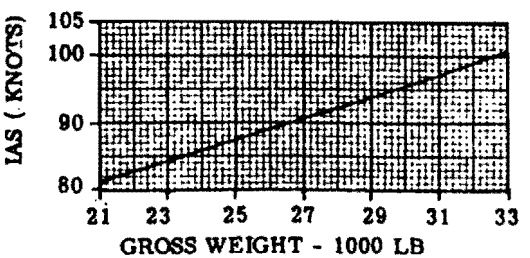
PRESSURE ALTITUDE (FEET)	MANIFOLD PRESSURE (In. Hg) AT CARBURETOR AIR TEMPERATURE (°C)						RPM	FUEL FLOW LB/HR
	-20°	-10°	0°	+10°	+20°	+30°		PER ENG
11,000	23.1	23.6	23.9	24.3	24.5	24.7		
10,000	23.3	23.7	24.0	24.3	24.6	24.9		
9,000	23.4	23.7	24.1	24.4	24.7	25.0	1700	177.50
8,000	23.5	23.8	24.3	24.4	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		

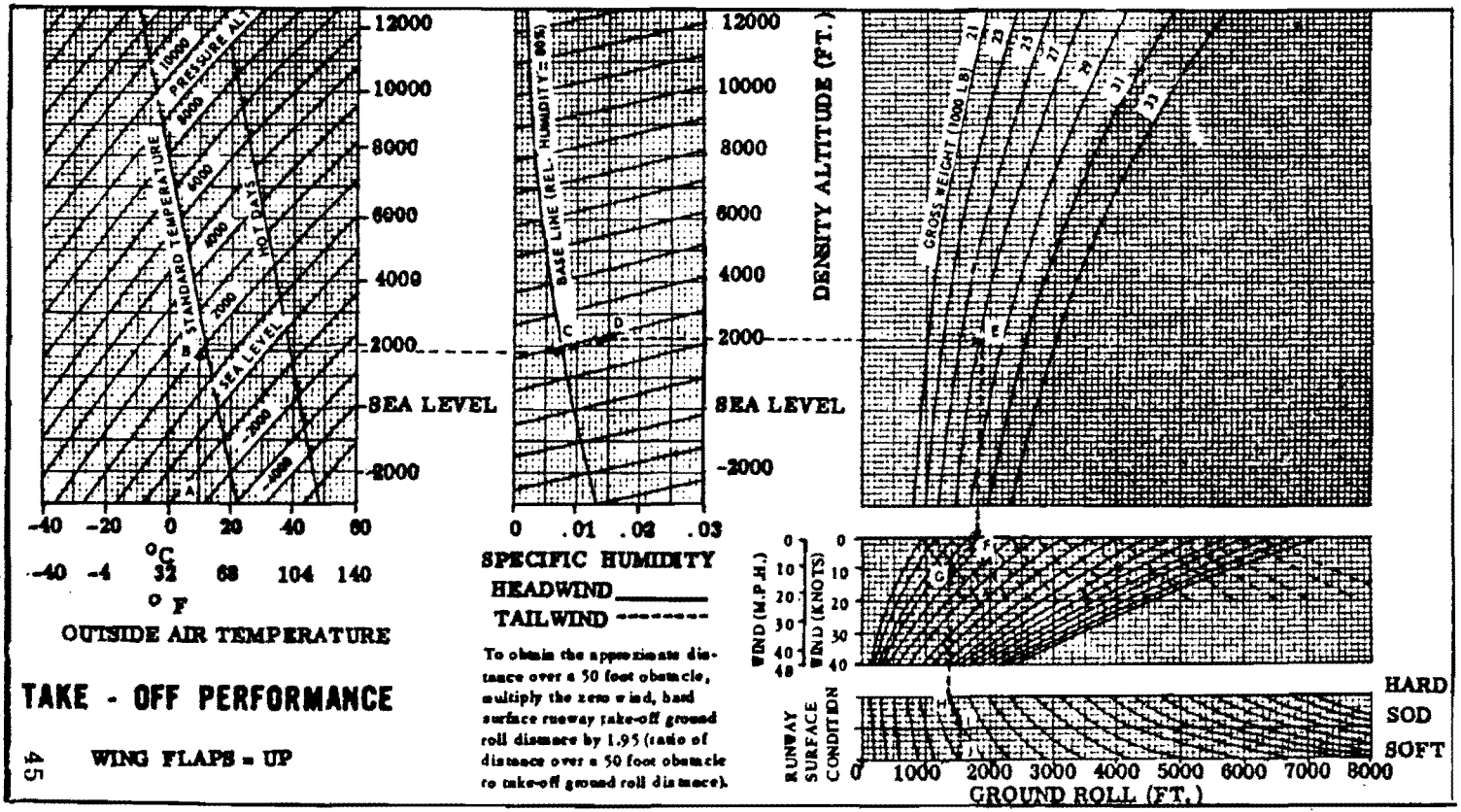
MAXIMUM ENDURANCE
CONSTANT CRUISE POWER SETTINGS
300 Brake Horsepower Per Engine
AUTO LEAN

PRESSURE ALTITUDE (FEET)	MANIFOLD PRESSURE (In. Hg) AT CARBURETOR AIR TEMPERATURE (°C)						RPM	FUEL FLOW LB/HR PER ENG
	-20°	-10°	0°	+10°	+20°	+30°		
11,000								
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	1700	142.00
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

Abbreviation	IAS (Kts)	Remarks
Vne	221	Never exceed
	(Reduce 6 Knots for each 1000 pounds above 26,000)	
Vno	177	Normal operating
	(Reduce 2 Knots for each 1000 pounds above 26,000)	
Vle	140	Landing Gear operating
Vb	122	Max speed in turbulance
Vfe	104	Flap Extension $\frac{1}{4}$
	100	Flap Extension $\frac{1}{2}$
	97	Flap Extension Full
Vx	84	Best angle of climb (single engine)
V_2 (V_1)	84	Safe S.E. Speed
V_{mc}	76	Minimum Control
	105	Normal Climb
	105	Holding
V_y	See chart	Best Rate of climb (single engine)

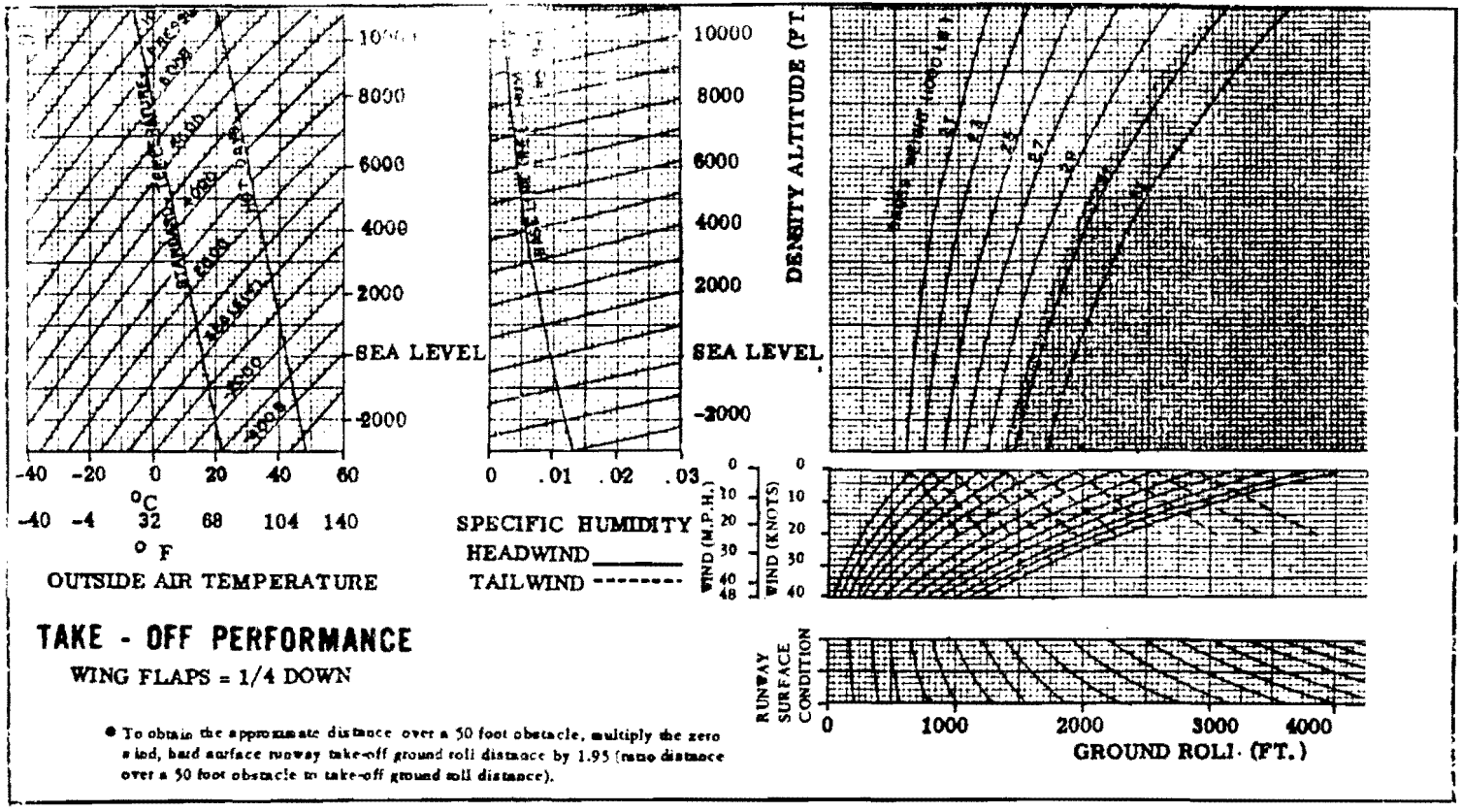




TAKE - OFF PERFORMANCE

WING FLAPS = UP

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).



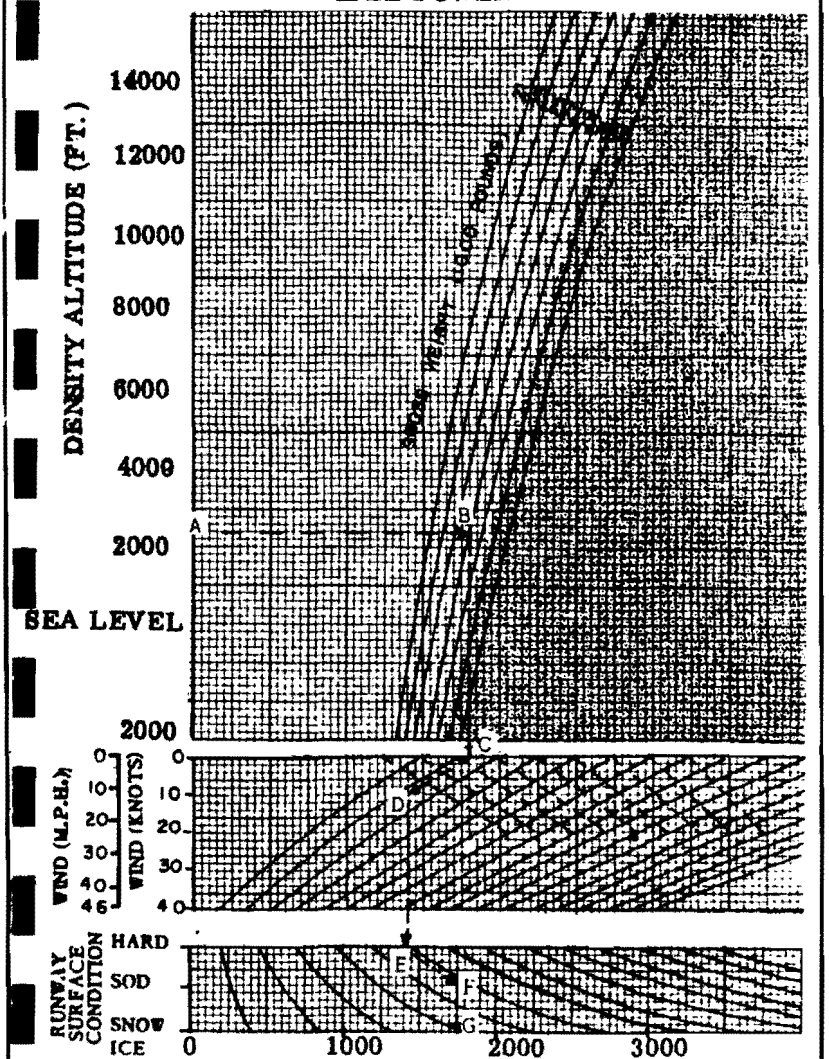
TAKE - OFF PERFORMANCE

WING FLAPS = 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 (zero distance over a 50 foot obstacle to take-off ground roll distance).

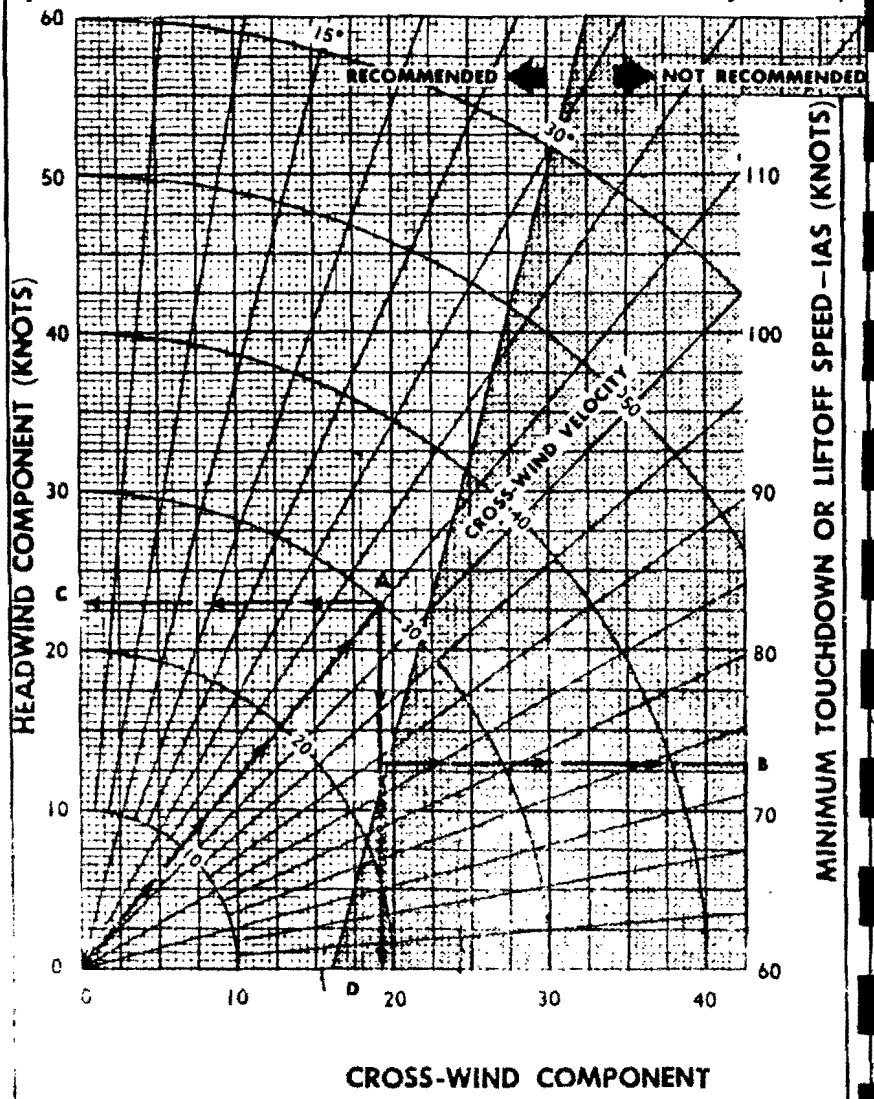
LANDING GROUND RUN

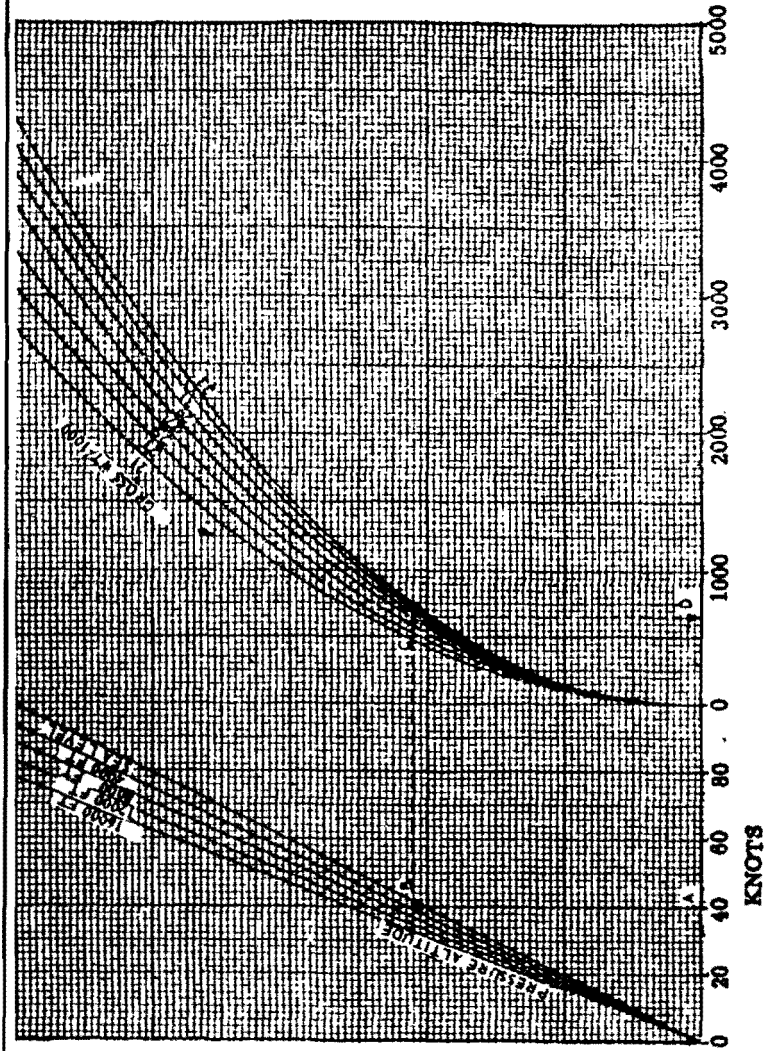
TOUCHDOWN AT 1.1Vs
WING FLAPS = 45 DEGREES
IDLE POWER



HEADWIND ____
TAILWIND ----

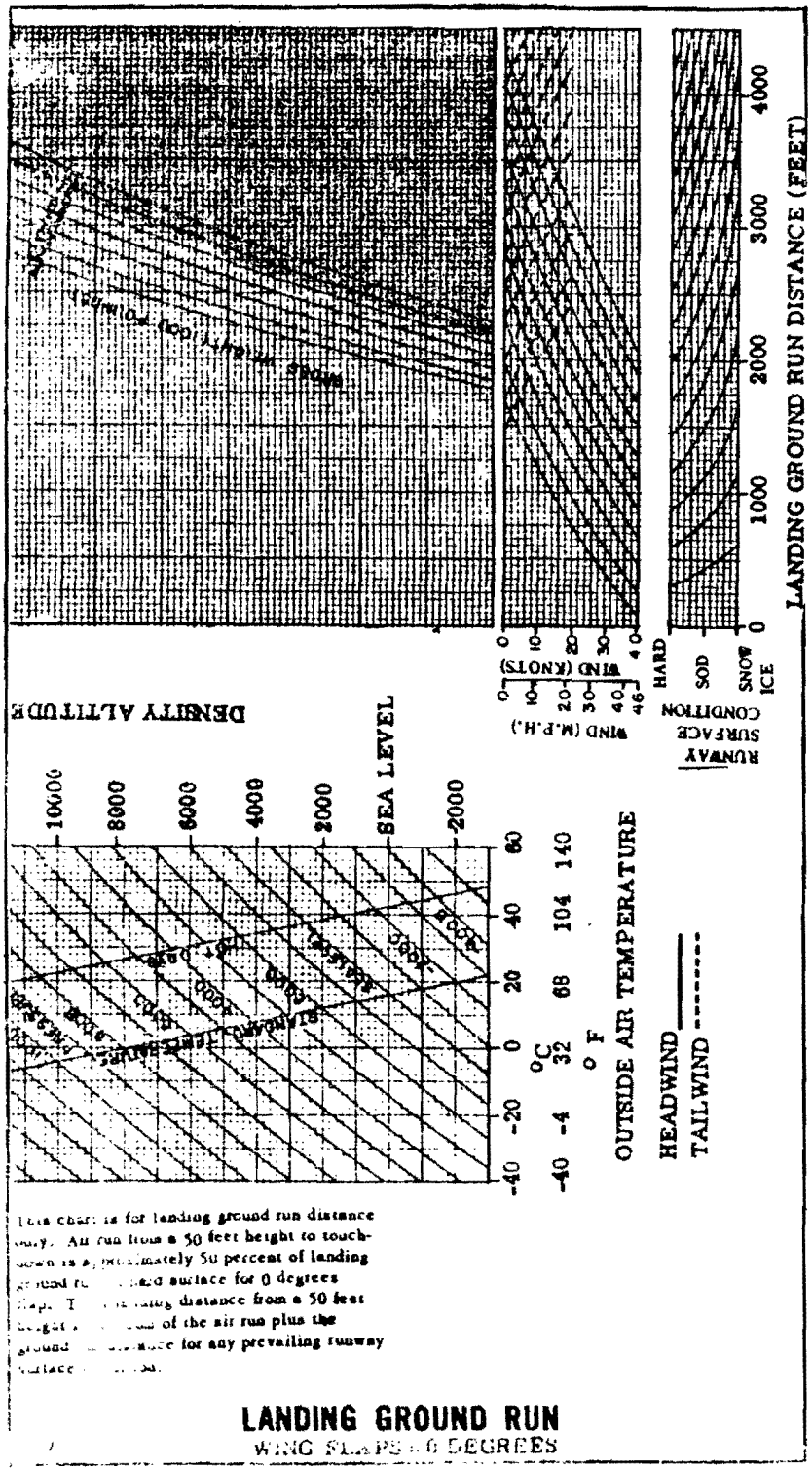
1. Speed at 50 foot height = 120 percent of stall speed.
2. Speed at touchdown = 110 percent of stall speed.
3. Wing flaps = 45 degrees.
4. This chart is for landing ground run distance only. Air run from a 50 foot height to touchdown is approximately 30 percent of landing ground run on hard surface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


RECOMMENDED
NOT RECOMMENDED
15°
30°
45°
CROSS-WIND VELOCITY
10
20
30
40
50
HEADWIND COMPONENT (KNOTS)
0
10
20
30
40
50
60
C
CROSS-WIND COMPONENT
0
10
20
30
40
D
MINIMUM TOUCHDOWN OR LIFTOFF SPEED—IAS (KNOTS)
60
70
80
90
100
110
B



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 touchdown is approximately 50 percent of landing ground run on hard surface for 0 degrees flaps. To find landing distance from a 50 feet height add 50 percent 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.

5. 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:

   a. Place fuel boost pump switch "ON".
   b. Reduce power and descend to a lower altitude.
   c. Place mixture on that engine to idle-cut off.
   d. 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):

    a. Change fuel tank selection.
    b. Feather affected engine.
    c. 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 concumption 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 distination, 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 attendent 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:

    a. Use engine fire procedures immediately.
    b. Feather engine immediately.
    c. Enrich mixture.
    d. Do nothing immediately, but monitor condition and if fire occurs use engine fire procedures.
    e. None of above.

20. Your landing runway is 30. Your wind is from 250° at 26 knots. It is safe to land if your touchdown speed is above:

    a. 70 Knots.
    b. 78 Knots.
    c. 60 Knots.
    d. 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?

    a. 16 Knots.
    b. 20 Knots.
    c. 15 Knots.
    d. 17½ Knots.