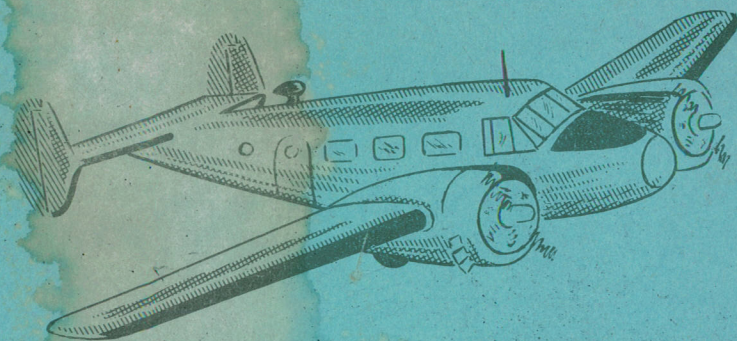


TC 11

# EXPEDITOR



## AIRCRAFT OPERATING AND EMERGENCY PROCEDURES

ISSUED ON THE AUTHORITY OF THE  
AIR OFFICER COMMANDING TRAINING COMMAND

COMPILED BY CFS  
FROM INFORMATION CONTAINED IN EO 05-45B-1  
AND APPROPRIATE TRAINING COMMAND  
DIRECTIVES

May 1964

*R-25C- Replaces all previous issues*

## RECORD OF AMENDMENTS

The amendments promulgated in the under-mentioned Amendment Lists have been made in this publication.

[illegible]

EXTERNAL CHECK

PRE-EXTERNAL CHECK

Controls unlocked  
Fuel quantity  
Prop anti-icers  
Mixture ICO  
Trims run through & neutral  
Undercarriage down  
Flaps down & off  
Switches Off

LEFT WING

Wing surface  
Fuel & oil caps  
Flaps & aileron  
Trim tab  
Bonding & static wires  
Left nav light  
Under wing surface  
De-icer boot & leading edge  
Landing light

LEFT ENGINE & NACELLE

Covers and inlet plugs removed  
Cowlings  
Wheel well  
Wheel (condition and creep max  
1/2 mark)  
Chocks in place  
Brake hoses  
Inspect propeller blades  
(ensure pulled through)

NOSE SECTION

Nose compartment  
Nose fuel filler cover  
Pitot tubes  
Fire extinguisher  
Antenna  
Vent duct scoops

RIGHT ENGINE &  
NACELLE

Same as left engine &  
nacelle

RIGHT WING

Same as left wing

RIGHT FUSELAGE

Drift meter and recorder  
Static vent clear  
Top antennae  
Fuselage undamaged  
Anti-collision Light

TAIL GEAR ASSEMBLY

Wheel (condition and  
creep mark)  
Oleo ext approx 3"  
Static wire

EMPENNAGE

De-icer boots  
Panels, plugs and fairings  
Stabilizer surfaces &  
bonding wires  
Trim tabs neutral  
Static dischargers  
Nav lights  
Tail cone drain clear

LEFT FUSELAGE

Static vent  
Upper and lower nav lights  
Fuselage undamaged

## NOTES FOR BFIs

1. Drain sediment and moisture from fuel tank sumps before first flight of the day.
2. This BFI authority does not authorize a pilot to undertake the correction of unserviceabilities.

## INTERNAL CHECK

## Radios

## Baggage

## First Aid Kit

Sarah

Rear cabin extinguisher

Main door secure

## Spare bulbs

Forced landing instructions, emergency maps

## Safety equipment

Emergency exit

Astrodome

Signal cartridges and Very Pistol

## PRE START CHECK

### Seat & safety belt

Cross feed off

Reset parking brake

Oil shut-off in & wired (not fitted 3T)

Oil bypass (as applicable)

Fuel selected nose tank

Flaps (check operation & raise)

Cowl flaps (operating & open)

Manifold heat cold & release tension

Pitch full fine

Throttles cracked

Mixture Rich

Oil shutters closed

Battery switch off (unless start on internals)

## Circuit breakers

## Anti-collision lights On

Radios off

Tail wheel unlocked

FOR NIGHT FLYING ADD:

Exterior lights (Nav lights On)

Compass light

Instrument lighting

Cabin and cockpit lights

Extension light

STARTING PROCEDURE

Note FBP reading on MP gauge

Fire guard in position

Fire extinguisher right

Prime (7 strokes cold, 10-15 OAT -20 or below)

"All Clear"

Starter selected right

Depress starter (turn engine at least 8 blades)

Switch ignition on

Depress booster button

Oil pressure (20 PSI within 30 secs)

Check suction operating

Start left engine

Signal battery cart away

Battery switch On

Generators On

Inverter & compass slave ON

WARM-UP

700 RPM for 30 seconds

1000 RPM

Oil by-pass in slowly at 40°C

Do not close cowl flaps for warm-up

### TARMAC CHECK

Radio panel (Switch ON all units)

Floor items

Pedestal items

Left to right across panel (press to test all lights)

De-icer boot operation

Radio panel (Check operation of all units)

### TAXIING PROCEDURE

Fuel on rear tanks

Tail wheel unlocked

Chocks (Signal for removal)

Landing Lights ON for night taxiing

Release parking brakes

Check brakes are operating as soon as possible

Check flight instruments while taxiing to run-up position

### RUN-UP PROCEDURE

Parking brakes on

Idle at minimum RPM

Dead and live mag check

1000 RPM both engines

Fuel on front tanks

Check temperatures within limits

1500 RPM both engines

Ensure generators operate - check warning lights out

Exercise RPM - Min drop 300 RPM

Check feathering action - Depress each button to get 200 to 300

RPM drop

Manifold Heat - Ensure 10° heat rise

Mixture - Move slowly to ICO until drop noted then return to rich

1000 RPM both engines

Right throttle to FBP (RPM within 50 of corrected reference)

Check mags - Max drop 100 RPM, Max difference 40 RPM

Check temps and pressures

Check idling (500 to 600 RPM)

Idle 1000 RPM

Repeat procedure left engine

PRE TAKE-OFF PROCEDURE

Harness (check passengers seat belts)  
Door & windows closed  
Trims set (rudder & aileron neutral, elevator 1/2 unit nose down)  
Tension adjusted  
Temps & pressures checked within limits  
Mixture Rich  
Manifold heat (As required)  
Pitch fine  
Fuel - Front tanks check contents, Primer OFF and Cross-feed OFF  
Flap as required  
Oil shutters set as required  
Oil bypass cold  
Gyros set & uncaged  
Battery, generator and magneto switches On  
Pitot heat On  
Anti-Collision Light On  
De-icer boots Off  
Suction 4.25 to 4.75"  
Check free and proper movement of controls  
Take-off briefing (Ensure first officer understands procedures)  
Cowl Flaps to Trail  
Tail wheel Locked (On Runway)

POST TAKE-OFF PROCEDURE

Undercarriage Up - check red light On  
Flaps up at safe altitude  
Power reduced to maximum continuous settings  
(33 1/2" 2200 RPM)  
Check temps and pressures  
At the desired altitude, reduce to climbing setting (28" 2000 RPM)  
Set carb air for +5 to +10°C and oil shutters to maintain 60 to 70° C.

### PRE-LANDING PROCEDURE

Harness secure

Fuel on front tanks, and check contents

Check brakes

Mixture Rich - Manifold heat as required

Undercarriage when required

Flaps as required

### POST-LANDING PROCEDURE

Unlock Tail Wheel

Taxi clear of runway

Flaps up

Cowl flaps open - oil shutters open

Pitch fine

Unnecessary switches and pitot heat off

Unessential radios off

### SHUT-DOWN PROCEDURE

Brakes Set

Check mags ground out at idling

Oil dilute as required

1,000 rpm

Right mixture to ICO - Throttle open as rpm decrease

Check suction and repeat for left engine

Flaps down

Radios off

Gyros caged

All switches off (Anti-collision light Off)

Fuel off

Controls locked

Tail wheel locked

Cabin door closed

Pitot covers on

Chocks in place

Check tail wheel straight and locking pin engaged

## GENERAL INFORMATION

|                      |                                   |                  |
|----------------------|-----------------------------------|------------------|
| Wing Span            | 47'7"                             |                  |
| Length               | 34' 2 3/4"                        |                  |
| Height               | 9' 2 1/2"                         |                  |
| Max T/O Weight       | 9300 lbs                          |                  |
| Max Landing Weight   | 9000 lbs                          |                  |
| Engine Rating        | 450 HP at SL at 2300 RPM & 36" MP |                  |
| Fuel Tank Capacities | Nose                              | 67 Imp Gals      |
|                      | Fronts                            | 63 Imp Gals each |
|                      | Rears                             | 21 Imp Gals each |
| Fuel Specifications  | Normal                            | 80/87 Oct        |
|                      | Alternate                         | 91/98 Oct        |
|                      |                                   | 100/130 Oct      |

NOTE: When using Alternate fuels, cruise between 280 and 296 BHP at 1900 RPM or higher.

## OPERATING LIMITATIONS

|                |  |
|----------------|--|
| Take-off Power | 2300 RPM   |
|                | 36" Hg MP (1 Min Limit)                                |
|                | Mixture Full Rich                                      |
|                | CHT 260 C Max (232 C for extended emergency operation) |
|                | Oil Temp 85 C Max                                      |
|                | Oil Press 90 Psi Max                                   |
|                | Fuel Press 5 Psi Max                                   |

NOTE: 1 minute limit for two engine operation but may be maintained as long as necessary for single engine operation.

|                          |                            |
|--------------------------|----------------------------|
| Maximum Continuous Power | 2200 RPM                   |
|                          | 33 1/2" Hg MP              |
|                          | Mixture Full Rich          |
|                          | CHT 232 C Max              |
|                          | Oil Temp 85 C Max          |
|                          | Oil Press 50 to 90 Psi Max |
|                          | Fuel Press 5 Psi Max       |

Climbing Power            2000 RPM  
                             28" Hg MP  
                             Mixture Full Rich  
                             CHT 232°C Max  
                             Oil Temp 85°C Max  
                             Oil Press 50 to 90 Psi Max  
                             Fuel Press 5 Psi Max

Engine Limitations

RPM                        Max Overspeed 2350 RPM  
                             Max T/O 2300 RPM  
                             Cruising 1700 to 2200 RPM

Man Press                Max T/O 36"  
                             Cruising 18" to 33 1/2"

Oil Temp                Min 40°C  
                             Normal 60 to 70°C  
                             Max 85°C

Oil Press                Min 50 Psi  
                             Normal 70 to 90 Psi  
                             Max 90 Psi

Fuel Press               Min 2.25 Psi  
                             Normal 3 to 5 Psi  
                             Max 5 Psi

CHT                      Min 120°C  
                             Normal 150 to 232°C  
                             Max 260°C

Carb Air Temp           Plus 5°C to plus 10°C at all times

Suction                Min 4.25"  
                             Normal 4.25" to 4.75"  
                             Max 4.75"

De-Icing                Min 7 Psi  
                             Normal 7 to 9 Psi  
                             Max 9 Psi

### Air Speed Position Error Correction Chart

The Expeditor air speed correction is +4 knots

#### Air Speed Limitations

|                             |      |
|-----------------------------|------|
| Max Smooth Air              | 220K |
| Max Rough Air               | 175K |
| Max to Lower Flaps          | 100K |
| Max to Lower U/C            | 110K |
| Max to Lower Landing Lights | 95K  |
| Max with Lights Extended    | 105K |

| <u>Stalling Air Speeds</u> | <u>Power On</u> | <u>Power Off</u> |
|----------------------------|-----------------|------------------|
| U/C and Flap Up            | 75K             | 80K              |
| U/C and Flap Down          | 70K             | 75K              |

#### Recommended Air Speeds

|                   |                 |
|-------------------|-----------------|
| Normal Climb      | 105K or 500 fpm |
| Max Range         | 125K            |
| Max Endurance     | 95K             |
| Max Glide         | 95K             |
| Severe Turbulence | 130K            |

#### Single Engine Air Speeds

|                       |      |
|-----------------------|------|
| Safety Speed          | 80K  |
| Recommended S/E Climb | 95K  |
| Min Trim              | 90K  |
| Max S/E Range         | 110K |

## OPERATING PROCEDURES

### Normal Take-off

No Flap  
2300 RPM 36" MP  
Airborne 65-75K

### Minimum Run Take-off

10° Wing Flap  
30" MP on the brakes  
2300 RPM 36" on roll  
Airborne 65-70K

### Crosswind Take-off

No Flap  
2300 RPM 36" MP  
Into wind aileron  
Airborne 75-80K

NOTE: 1. No crosswind take-off to be attempted if wind over 40 mph including gusts, or when the crosswind component exceeds 15 mph at 90°.

### Climb to desired altitude (optional procedure)

2200 RPM 33 1/2" MP  
(MP corrected for OAT)  
105K

### Normal Climb

2000 RPM 28" MP  
105K or 500 fpm

### Flight Through Turbulence

- Ensure all loose equipment is secure
- Fasten seat belts No Smoking
- Fuel on fullest tanks
- 2000 RPM
- Airspeed 130K
- Check instrument and align gyros
- Prop anti-icer ON (if necessary)
- Lights ON (if lightning anticipated)
- Unnecessary radios OFF
- In heavy precip, close cowl

# CRUISE CONTROL CHART

| Altitude          | Standard<br>Temperature | RPM  |      |      |      |
|-------------------|-------------------------|------|------|------|------|
|                   |                         | 1700 | 1800 | 1900 | 2000 |
| Sea Level         | 15°C                    | 30.5 | 30.5 | 30.5 | 30.5 |
| 2000'             | 11°C                    | 29.5 | 29.5 | 29.5 | 29.5 |
| 4000'             | 7°C                     | 29.0 | 29.0 | 29.0 | 29.0 |
| 6000'             | 3°C                     | 28.0 | 28.0 | 28.0 | 28.0 |
| 8000'             | -1°C                    | 26.5 | 27.0 | 27.5 | 27.5 |
| 10000'            | -5°C                    | 24.8 | 25.5 | 25.5 | 26.5 |
| Limiting BHP      |                         | 253  | 268  | 283  | 298  |
| Approx Fuel Conts |                         | 33   | 35   | 37.5 | 40   |

## NOTES:

1. Do not exceed the listed MP for the selected RPM at the cruising altitude.
2. If carb heat is left in the cold position decrease the MP listed by .5 for every 10°C the carb air temperature is below standard for the cruising altitude.

### Cruising for Max Range

- 1700 RPM
- MP to maintain 125K
- Mixture Lean

### Cruising for Max Endurance

- 1700 RPM
- MP to maintain 95K
- Mixture Lean

### NOTE:

To simulate sudden engine failure at any time, retard throttle on desired engine.

To simulate feathered engine below 1000' above ground, advance throttle to approximately 12" MP and the pitch setting commensurate with that of the live engine.

To simulate feathered engine above 1000' above ground, reduce RPM to minimum, retaining 1" MP for every 100 RPM indicated. To recover, increase pitch to desired setting and then advance throttle to desired MP.

Ensure temperatures and pressures remain within limits. If necessary, warm up at 1500 RPM and 15" MP.

### Fuel Management

Unless fuel is critical, the tanks should not be run dry due to the possibility of damaging the fuel quantity indicating system and the danger of engine failure through detonation or inability to regain fuel pressure through air locks.

#### All Seats Occupied

Take-off on Front Tanks)

- Rear tanks
- Front Tanks to 1/4
- Nose Tank
- Front Tanks

#### Pilots Seats Occupied

Take-off on Front Tanks)

- Nose Tank
- Rear Tanks
- Front Tanks

#### Nav Flights (3N & 3NM)

Take-off on Front Tanks)

- Rear Tanks
- Nose Tank
- Front Tanks

## Fuel Transfer

To crossfeed fuel from one main plane to the engine on the opposite side, (eg, left main plane to right engine) make the following selections:

- Suction Cross Feed "ON"
- Right fuel tank selector "OFF"
- Wobble pump to maintain pressure above 3 lbs

## NOTES:

1. Under the above conditions the left fuel tank is supplying fuel to both engines. Similarly fuel may be transferred from the right tank to both engines.
2. If either engine is inoperative, crossfeed must be used with caution, because of the fire hazard.

## Landing Procedures

### Downwind

- Approximately 105K, Cruising RPM and 20" MP

### Normal Landing

- Flap as required - Base 95K
- Final 90K
- Cross button at 85K

### Crosswind Landing

- Refer to X Wind Component Chart
- Approach Speed Normal
- Flap as required
- Slightly higher than normal touch-down speed

### Flapless Landing

- Approach 95K
- Cross button at 90K

### Minimum Run Landing

- 2000 RPM downwind
- Full flap lowered earlier than normal
- Base 95K
- Final 85K
- Cross button at 75K

ershoot or Missed Approach - (CFS Recommended Procedure)

ss than 300' above the ground

- Apply Max Power (2300 RPM 36" MP)
- U/C Up
- Flaps fully up at 80K
- Attain 95K for climb as soon as possible
- Reduce to Maximum Continuous Power
- Post-take-off check
- Reduce to climbing power at a pre-determined altitude

or above 300' above the ground

- Apply maximum continuous power (2200 RPM & 33 1/2" MP)
- U/C Up
- Flaps fully up at 80K
- Attain 95K for climb as soon as possible
- Post-take-off check
- Reduce to climbing power (2000 RPM and 28" MP)

FOR MAINTENANCE FLIGHT TEST ONLY

athering in Flight

- When it is desired to feather a propeller, carry out the following procedure
- Check that the feathering oil dilution switch is in the "WINTER" position if the OAT is below 0°C
- Check both generators are charging
- Throttle Closed
- Propeller fully Coarse
- Mixture control Idle Cut-Off
- Ignition Switches Off
- Feathering button Depress
- Fuel tank selector Off cross feed Off
- Generator switch Off

feathering in Flight

- Feathering oil dilution switch "Summer" position
- Propeller Fully Coarse
- Throttle Closed
- Mixture Idle Cut-Off
- Fuel On
- If propeller has been feathered for more than two minutes, rotate the engine two revolutions with starter prior to unfeathering
- Ensure generator of operating engine charging
- Hold feathering button in until 400 to 600 rpm attained
- Guard Up
- Ignition On
- Mixture Rich
- Generator On
- Warm up at 1500 rpm and 15" MP. When temperatures reach minimum, adjust power as required

## COLD WEATHER OPERATION

External Check - Ensure that snow, ice and frost have been removed from the aircraft surfaces. De-icer fluid may be used, but precaution must be taken because of the fire hazard. Check controls for movement and all vents for freedom from ice. Ensure each propeller is pulled through five complete revolutions by hand.

Internal Check - All de-icer and anti-icer equipment must be checked prior to flight. An additional supply of anti-icer fluid should be carried.

Starting - If engine fires irregularly, close throttle and run on prime. Cowl flaps are to be open at all times on the ground.

Warm-up - Use manifold heat to improve vapourization and prevent backfiring. Do not idle above 1000 RPM until oil temp reaches 40°C. No electrical equipment should be used until generators are supplying current.

Taxiing - Caution must be exercised when using brakes on slush, ice or hard snow. Use manifold heat as required for taxiing.

Run-up - Move feathering dilution switch to "Winter" if OAT 0°C or below. Operate pitch levers through at least three complete cycles.

Take-off - When ambient temperature is:

- (a) below standard ICAN decrease the manifold pressure 1" for each 10°C the temperature is below that standard; and
- (b) below -20°C use carburettor heat to maintain +5 to +10°C carb mix temperature and 36" MP during take-off.

After take-off from slushy or wet runways, leave the undercarriage down for a few seconds longer to remove slush before retracting, and cycle through another lowering and retraction.

In-Flight - Maintain manifold heat temp at +5°C to +10°C at all times. Exercise props through full range every half hour. Maintain oil temps at upper limits. Oil by-pass controls are to be IN at all times during flight.

Descent & Landing - Maintain CHT above 120°C during descent approach and landing. Manifold heat adjusted as required for landing.

Oil Dilution

- Oil temperature 40°C or below prior to dilution
- Winter/Summer switch as applicable
- 1400 RPM
- Oil dilution switches ON
- Hold switches on for length of time as indicated in table below
- During the dilution period the CSUs and feathering mechanisms should be exercised three times each
- Continue to oil dilute while shutting-down engines

Dilute in Accordance with the Following Table

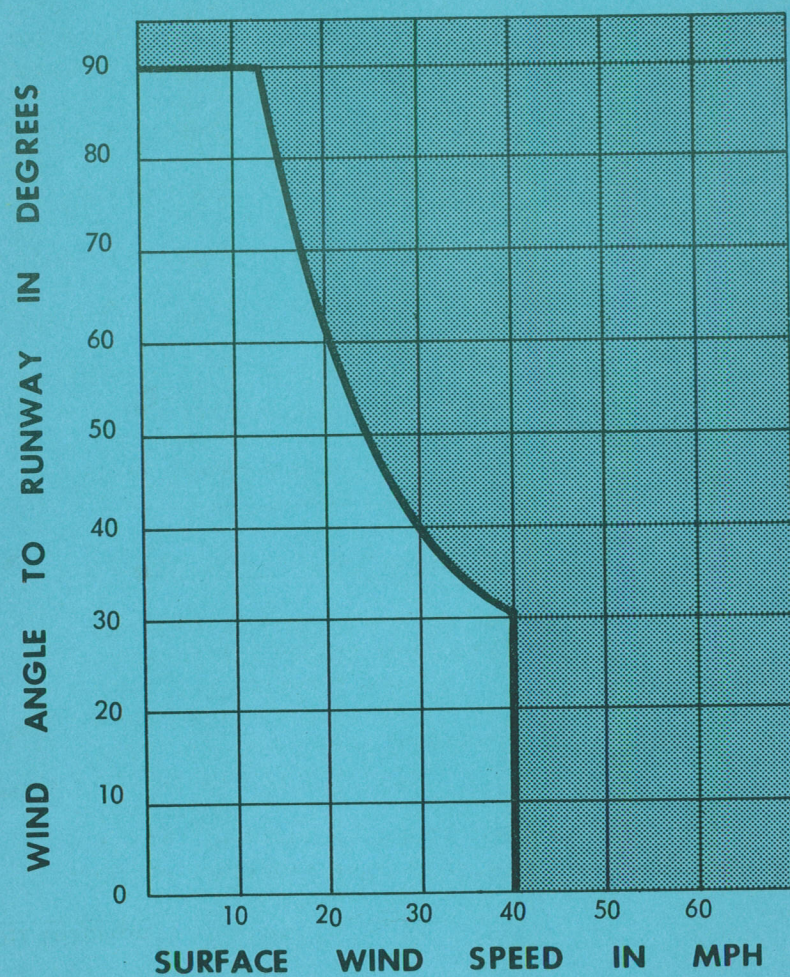
| Starting Temperature Expected                               | Dilution Period |
|---|-----------------|
| Above 0°C   | No Dilution     |
| 0°C to -10°C  | 1 Minute        |
| -10°C to -20°C  | 2 Minutes       |
| -20°C to -30°C  | 3 Minutes       |
| -30°C to -40°C  | 4 Minutes       |
| Add one minute dilution for each additional 5°C below -40°C |                 |

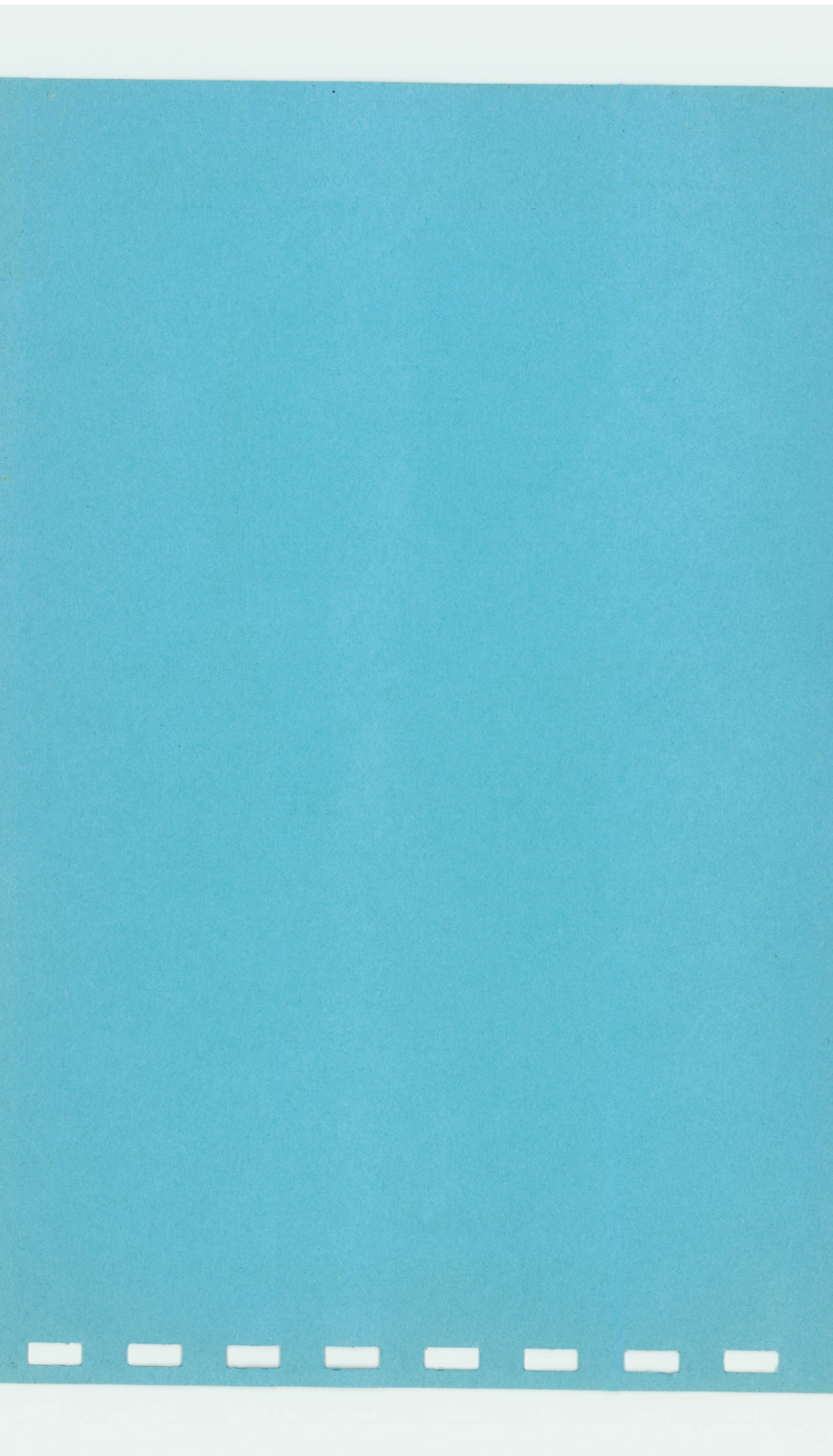
Boil off periods to remain as specified in current EO -5-45B-1.

# EXPEDITOR

## CROSS-WIND COMPONENT GRAPH

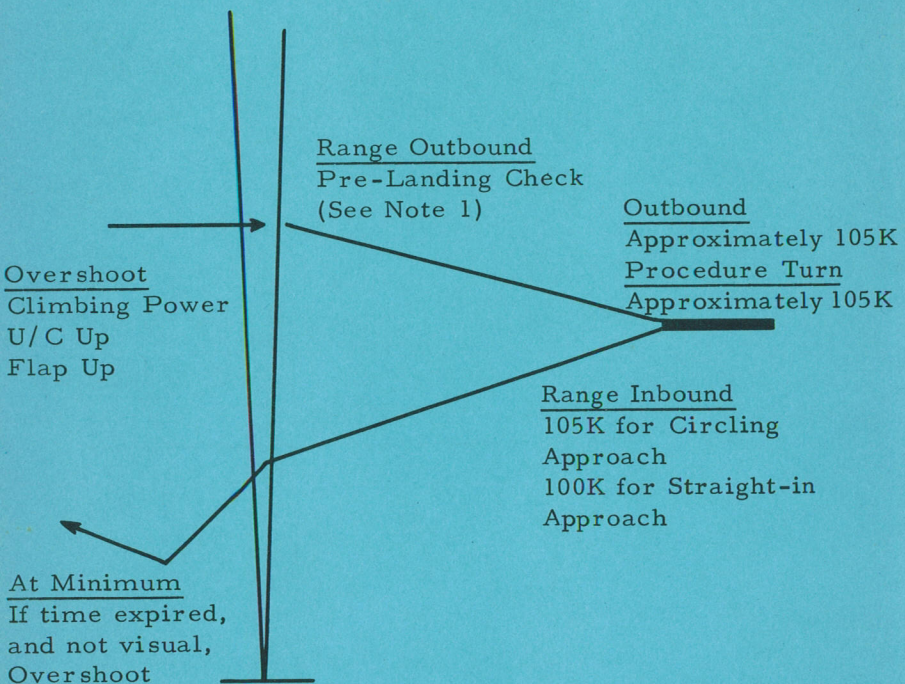
AIRCRAFT IS NOT TO BE OPERATED IF  
SURFACE WIND EXCEEDS 40 MPH IN  
ANY DIRECTION





## STANDARD RANGE APPROACH

When Marker Received  
on High, Power 20" MP  
(Approximately 105K)



### NOTE:

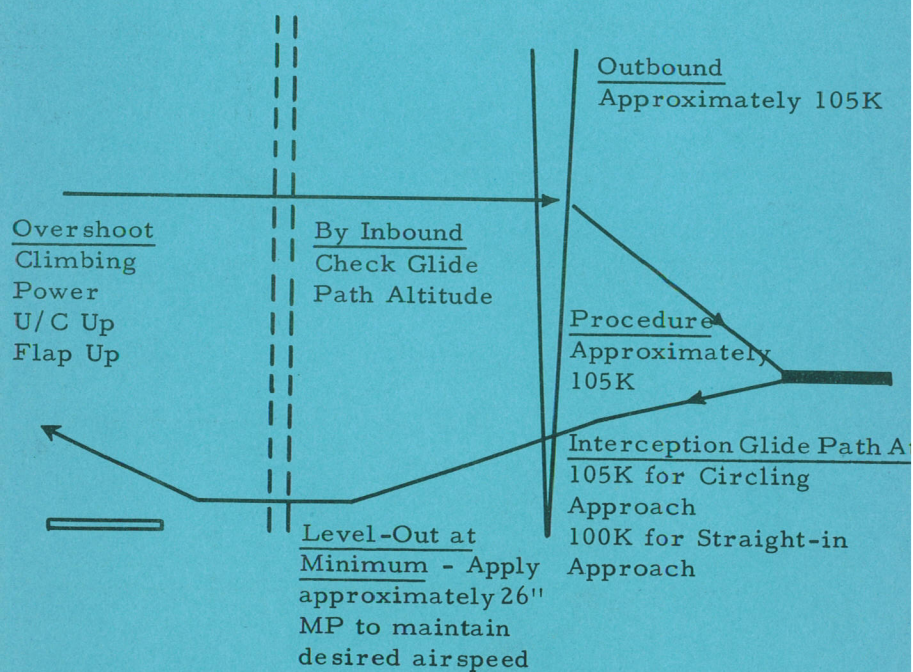
U/C may be lowered at pilot's discretion, but if both engines are operating, it should be lowered, upon commencing final descent to the field.

## ILS APPROACH

On Transition  
Check Localizer  
Set Radios for the  
appropriate frequency

When Marker Received on  
High, Reduce to 20" MP  
(Approximately 105K)

By Outbound  
Pre-Landing  
Check  
(See Note 1)



### NOTES:

1. U/C may be lowered at pilot's discretion, but if both engines are operating, it should be lowered upon intercepting the glide path.
2. Approximately 20" MP will maintain airspeed on Glide Path at a rate of descent of 500 fpm.

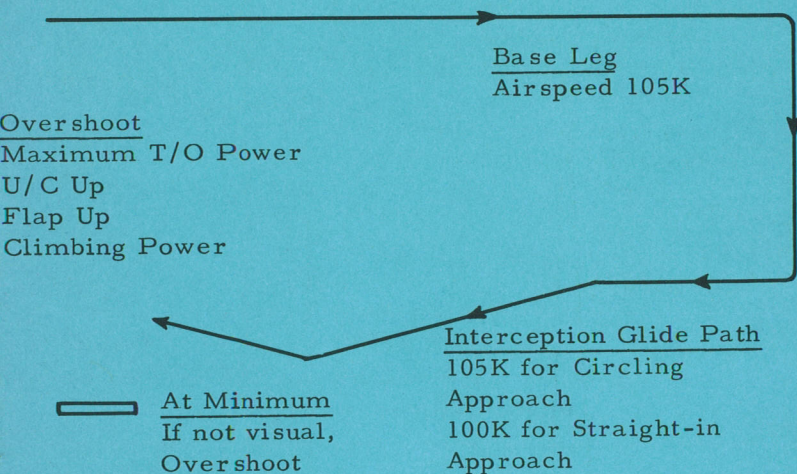
## GCA APPROACH

Downwind

20" MP (Approximately 105K)

Pre-Landing Check (See Note 1)

Re-set Co-pilots DI



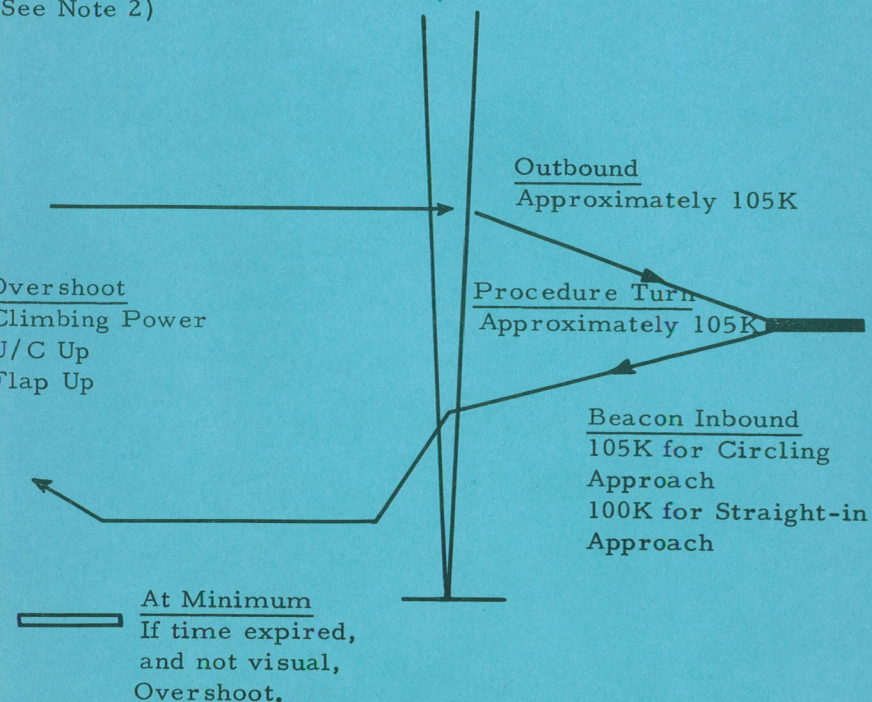
### NOTES:

1. U/C may be lowered at pilot's discretion, but should normally be lowered upon intercepting the glide path.
2. Approximately 20" MP will maintain airspeed on Glide Path at a rate of descent of 500 fpm.
3. Overshoot power of "Max T/O Power" is based on the premise that the aircraft will be less than 300' above the ground.

## ADF APPROACH

When it is certain that the aircraft is in close proximity to the beacon, power 20" MP (Approximately 105K) (See Note 2)

Beacon Outbound  
Pre-Landing Check  
(See Note 1)



### NOTES:

1. U/C may be lowered at pilot's discretion, but if both engines are operating, should be lowered upon commencing final descent to the field.
2. DO NOT reduce power prior to passing beacon outbound purely on an ETA.

## SINGLE ENGINE PROCEDURES

### Engine Failure Before Becoming Airborne

- Throttles CLOSED
- Apply brakes
- Mixture ICO
- Switches OFF
- Fuel OFF
- Alter direction of aircraft as necessary to avoid obstacles

### Engine Failure During Take-off - Below Safety Speed

If unable to continue:

- Throttles CLOSED
- Mixture ICO
- Switches OFF
- Fuel OFF
- U/C as required
- Flaps down
- Battery & Generators Off

### Engine Failure During Take-off - Safety Speed Attained

- Control - Maintain at least 80K
- Power (2300 RPM 36" MP)
- Drag
  - U/C Up
  - Flap Up
  - Close dead engine throttle
  - Guard down
  - Feather
  - Cowl gills dead engine closed
- Trim - Rough rudder Only
- Attempt to attain 95K for climb
- Reduce to 33 1/2 MP and 2200 RPM for climb
- Subsequent Check
  - Mixture ICO
  - Fuel Off
  - Ignition Switches Off
  - Generator Switches Off

NOTE:

To simulate sudden engine failure at any time retard throttle on desired engine.

To simulate feathered engine below 1000' above ground, advance throttle to approximately 12" MP and the pitch setting commensurate with that of the live engine.

To simulate feathered engine above 1000' above ground, reduce RPM to minimum, retaining 1" MP for every 100 RPM indicated.

Ensure temperatures and pressures remain within limits. necessary warm up at 1500 RPM and 15" MP.

Engine Failure During Flight (More than 1000' AGL)

- Control - Maintain 110K if possible
- Power - Apply 2200 RPM & 33 1/2 MP
- Drag - U/C & Flap Up
- Close dead throttle
- Trim - Rough Rudder Only
- GMS - Fuel Pressure
- Mixture Rich
- Check for Carb Ice
- Switches ON

IF UNABLE to determine cause:

- Guard Down
- Feather
- Mixture ICO
- Fuel OFF when Prop stops
- Switches OFF
- Generator OFF
- Prop anti-icer Off

Single Engine Letdown Procedures

- Normal procedures and speeds are recommended with the exception of the U/C.
- If carrying out a straight-in approach, lower U/C when commencing final descent (GCA Glide Path, ILS Glide path or final descent from range or Beacon)
- If carrying out a circling approach, do not lower U/C or flap until visual, and on base or turning final on approach.

Single Engine Circuit and Landing

- Normal engine-assisted approach
- U/C as required
- Hold flap until landing assured
- Make final approach at 95K
- Cross button at 85K

#### Single Engine Overshoot

- Decision Early
- Apply Take-off power settings (2300 RPM 36" MP)
- Maintain minimum of 80K
- U/C and Flap Up
- Initiate climb at 95K
- Reduce power settings to 33 1/2" and 2200 RPM

#### Runaway Propeller

- Turn UP AND AWAY from affected prop until brought under control
- Throttle CLOSED
- Guard Down
- FEATHER
- After prop feathered, shut engine down
- If unable to feather, reduce airspeed and altitude to keep RPM below 2200

#### ENGINE AND AIRCRAFT FIRES

##### Engine Fire on Ground

- Throttles CLOSED
- Mixtures ICO
- Fuel OFF
- Switches OFF
- Fight fire with ground apparatus (if necessary use the engine fire extinguisher)
- Evacuate aircraft

##### Engine Fire During Flight

- Throttle Closed
- Guard Down
- Feather
- Mixture ICO
- Fuel Off
- Oil shut-off Closed (When fitted)
- Cowl flaps Closed
- Prop anti-icer Off
- Mags Off
- Select fire extinguisher - discharge when propeller stops rotating
- Set aircraft up for asymmetric flight (Ensure generator switch Off)
- CAUTION! Do not restart dead engine

NOTE: After the fire has been extinguished and the engine has cooled, the prop anti-icer may be used if required.

#### Electrical Fire (Source Unknown)

- Battery Master & Generators OFF
- Electrical & Radio Equipment OFF
- Battery and Generator ON
- Electrical & Radio Equipment ON one at a time until source discovered
- Leave Offending Equipment OFF
- Use Hand Extinguisher as necessary

#### ELECTRICAL FAILURES

#### Emergency U/C Lowering

- Circuit breaker on left subpanel OUT
- Air Speed 110K Max
- Check crank handle not engaged and hand clear
- Raise cover and DEPRESS clutch
- Hold pedal depressed and rotate crank
- Handle forward at top of stroke
- When no longer possible to crank, release pedal
- Check teeth engaged and pedal full back
- Green light ON

#### Emergency Flap Operation

- Selector OFF
- Hand crank to raise or lower flap as desired

#### Smoke Elimination

to eliminate smoke from cabin after a fire is extinguished:

- Cockpit side windows OPEN
- Cockpit and Cabin Cold Air ON
- Roof Exhaust Grills OPEN

### Ditching

- Alert passengers - Ensure all seat belts secured
- Institute emergency radio procedures
- Ensure that all baggage tied down
- Jettison loose equipment and unnecessary cargo
- Assume normal approach speed
- Check U/C up
- Lower 1/2 flap
- Adjust lighting as required
- Ditch at lowest airspeed possible with nose high along wave crest and parallel to swell
- Proceed to rear and supervise boarding of dinghy

### Forced Landing

- Alert passengers - Ensure all seat belts secured
- Institute emergency radio procedures
- Ensure that all baggage tied down
- Jettison loose equipment and unnecessary cargo before touchdown
- Fuel OFF
- Ignition Switches OFF
- Wing flaps DOWN
- U/C as required
- Battery and Generators OFF

### Abandoning in Flight

- Alert passengers
- Institute emergency radio procedures
- Air Speed 90K
- Jettison Cabin Door
- Level Flight till occupants out
- Head towards uninhabited area
- Trim slightly nose down
- Kneel on Cabin floor
- ROLL out head first

NOTE: REFER TO LOCAL UNIT ORDER FOR EXACT LOCATION OF SAFETY EQUIPMENT AND FOR INDIVIDUAL DUTIES DURING DITCHING, FORCED LANDING OR ABANDONING AIRCRAFT.



# TRAINING COMMAND PILOT'S CHALLENGE CHECKLIST

## EXPEDITOR AIRCRAFT

| Challenge | Capt's Reply | Co-Pilot's Reply |
|-----------|--------------|------------------|
|-----------|--------------|------------------|

### PRE-START CHECK

|                       |                   |             |
|-----------------------|-------------------|-------------|
| Load & Travelling L14 | Checked & Carried |             |
| External Check        | Completed         |             |
| Internal Check        | Completed         |             |
| Fuel Contents         | Checked           |             |
| Prop Anti-Icer        | Checked           |             |
| Seat & Safety Belts   | Adjusted          | Adjusted    |
| Crossfeed             | OFF               |             |
| Fire Extinguisher     | Selected          |             |
| Parking Brakes        | Reset             |             |
| Oil Shut-off          | IN                |             |
| Oil Bypass            | Adjusted          |             |
| Fuel                  | ON Nose           |             |
| Flaps                 | Checked & Up      |             |
| Cowl Flaps            | Checked & Open    |             |
| Carb Heat             | Cold & Unlocked   |             |
| Pitch                 | Fine              |             |
| Throttles             | Cracked           |             |
| Mixture               | Rich              |             |
| Oil Shutters          | Closed            |             |
| Battery               | (As required)     |             |
| Circuit Breakers      | IN                |             |
| Anti-collision Lights | ON                |             |
| Nav Lights            | (Night - On)      |             |
| Radios                | OFF               |             |
| Chocks                | In Place          |             |
| Fire Guard            | Standing By       | Standing By |

### PRE-TAXI CHECK

|                     |              |         |
|---------------------|--------------|---------|
| External Power      | Disconnected |         |
| Battery & Generator |              |         |
| Switches            | ON           |         |
| Inverter & Compass  |              |         |
| Switches            | ON           |         |
| Gyros               |              | Uncaged |
| Fuel                | On Rears     |         |
| Tail Wheel          | Unlocked     |         |
| Chocks              | Removed      | Removed |

### Co-Pilot's Reply

|                   |           |               |
|-------------------|-----------|---------------|
| Parking Brakes    | Set       |               |
| Magnetos          | Checked   |               |
| Radios            |           | Checked & Set |
| Gyros             | Checked   | Checked       |
| Fuel              | On Fronts |               |
| Temps & Pressures | Checked   |               |

|                      |  |         |
|----------------------|--|---------|
| Harness              | Secured  | Secured |
| Doors & Windows      | Closed   | Closed  |
| Trims                | Set  |         |
| Tension              | Set  |         |
| Temps & Pressures    | Checked  |         |
| Mixture              | Rich   |         |
| Carb Heat            | Cold   |         |
| Pitch                | Fine   |         |
| Fuel                 | On Fronts,<br>Contents Checked                   |         |
| Primer               | OFF  |         |
| Crossfeed            | OFF  |         |
| Flaps                | Set  |         |
| Cowl Flaps           | Trail  |         |
| Oil Shutters         | Set  |         |
| Oil Bypass           | IN   |         |
| Gyros                | Set  |         |
| Switches             | ON   |         |
| Pitot Heat           | ON   |         |
| Anti-collision light | ON (Night-Nav lights<br>to steady)               |         |
| De-icer boots        | OFF  |         |
| Suction              |  | Checked |
| Controls             | Free & proper movement                           |         |
| Tail wheel           | Unlocked before taxiing<br>then locked on runway |         |
| Take off Briefing    | As Required                                      |         |

|                   |     |                    |
|-------------------|-----|--------------------|
| Undercarriage     |     | Up-Red Light<br>ON |
| Flaps             |     | UP                 |
| Power             |     | Climb Power<br>Set |
| Landing Lights    | OFF |                    |
| Temps & Pressures |     | Checked            |

| <u>Challenge</u> | <u>Capt's Reply</u> | <u>Co-Pilot's Reply</u> |
|------------------|---------------------|-------------------------|
|------------------|---------------------|-------------------------|

PRE-LANDING CHECK

|               |                  |               |
|---------------|------------------|---------------|
| Seat Belts    | Secure           | Secure        |
| Fuel          | Fronts. Contents |               |
|               | Checked          |               |
| Brakes        | Checked          |               |
| Mixture       |                  | Rich          |
| Carb Heat     |                  | (As required) |
| Undercarriage | When required    |               |

FINAL LANDING CHECK

|               |                |
|---------------|----------------|
| Undercarriage | Down & Checked |
|---------------|----------------|

POST-LANDING CHECK

|                      |      |          |
|----------------------|------|----------|
| Tail Wheel           |      | Unlocked |
| Flaps                |      | Up       |
| Cowl Flaps           | Open |          |
| Pitch                |      | Fine     |
| Pitot Heat           | Off  |          |
| Radios (Unessential) |      | Off      |

POST-SHUT-DOWN CHECK

|                      |          |       |
|----------------------|----------|-------|
| Parking Brakes       | Set      |       |
| Mixture              | ICO      |       |
| Flaps                | Down     |       |
| Radios               | Off      |       |
| Gyros                |          | Caged |
| Switches             | Off      |       |
| Anti-Collision Light | Off      |       |
| Fuel                 | Off      |       |
| Controls             | Locked   |       |
| Tail Wheel           | Locked   |       |
| Cabin Door           | Closed   |       |
| Pitot Covers         | On       |       |
| Chocks               | In Place |       |

PRE-STALL/SLOW FLYING CHECK

|                |                                |
|----------------|--------------------------------|
| Fuel           | Fullest tanks contents checked |
| Undercarriage  | As Required                    |
| Flaps          | As Required                    |
| Gills          | As Required                    |
| Mixture        | Rich                           |
| Carb Heat      | Set                            |
| Pitch          | 2000 rpm                       |
| Altitude       | Sufficient                     |
| Loose Articles | Secured                        |
| Locality       | Suitable                       |
| Look Around    |                                |

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| 2 FTS Moose Jaw               | 30                   |
| 4 FTS Penhold                 | 50                   |
| 1 AFS Rivers                  | 150                  |
| 2 AFS Portage                 | 50                   |
| 3 AFS Gimli                   | 30                   |
| FIS Moose Jaw                 | 100                  |
| FIS Portage                   | 10                   |
| Practice Flt Camp Borden      | 15                   |
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| CFS Gimli                     | 40                   |
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| Practice Flt Comox            | 10                   |
| <u>ATCHQ</u>                  |                      |
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### TARMAC CHECK

Radio panel (Switch ON all units)  
Floor items  
Pedestal items  
Left to right across panel (press to test all lights)  
De-icer boot operation  
Radio panel (Check operation of all units)

### TAXIING PROCEDURE

Fuel on rear tanks  
Tail wheel unlocked  
Chocks (Signal for removal)  
Landing Lights ON for night taxiing  
Release parking brakes  
Check brakes are operating as soon as possible  
Check flight instruments while taxiing to run-up position

### RUN-UP PROCEDURE

Parking brakes on  
Idle at minimum RPM  
Dead and live mag check  
1000 RPM both engines  
Fuel on front tanks  
Check temperatures within limits  
1500 RPM both engines  
Ensure generators operate - check warning lights out  
Exercise RPM - Min drop 300 RPM  
Check feathering action - Depress each button to get 200 to 300 RPM drop  
Manifold Heat - Ensure 10° heat rise  
Mixture - Move slowly to ICO until drop noted then return to rich  
1000 RPM both engines  
Right throttle to FBP (RPM within 50 of corrected reference)  
Check mags - Max drop 100 RPM, Max difference 40 RPM  
Check temps and pressures  
Check idling (500 to 600 RPM)  
Idle 1000 RPM  
Repeat procedure left engine

### GENERAL INFORMATION

|                      |                                   |                  |
|----------------------|-----------------------------------|------------------|
| Wing <b>S</b> pan    | 47'7"                             |                  |
| Length               | 34' 2 3/4"                        |                  |
| Height               | 9' 2 1/2"                         |                  |
| Max T/O Weight       | 9300 lbs                          |                  |
| Max Landing Weight   | 9000 lbs                          |                  |
| Engine Rating        | 450 HP at SL at 2300 RPM & 36" MP |                  |
| Fuel Tank Capacities | Nose                              | 67 Imp Gals      |
|                      | Fronts                            | 63 Imp Gals each |
|                      | Rears                             | 21 Imp Gals each |
|                      | Normal                            | 80/87 Oct        |
|                      | Alternate                         | 91/98 Oct        |
| Fuel Specifications  |                                   | 100/130 Oct      |

NOTE: When using Alternate fuels, cruise between 280 and 296 BHP at 1900 RPM or higher.

### OPERATING LIMITATIONS

|                |  |
|----------------|--|
| Take-off Power | 2300 RPM   |
|                | 36" Hg MP (1 Min Limit)                                |
|                | Mixture Full Rich                                      |
|                | CHT 260 C Max (232 C for extended emergency operation) |
|                | Oil Temp 85 C Max                                      |
|                | Oil Press 90 Psi Max                                   |
|                | Fuel Press 5 Psi Max                                   |

NOTE: 1 minute limit for two engine operation but may be maintained as long as necessary for single engine operation.

|                          |                            |
|--------------------------|----------------------------|
| Maximum Continuous Power | 2200 RPM                   |
|                          | 33 1/2" Hg MP              |
|                          | Mixture Full Rich          |
|                          | CHT 232 C Max              |
|                          | Oil Temp 85 C Max          |
|                          | Oil Press 50 to 90 Psi Max |
|                          | Fuel Press 5 Psi Max       |

### Cruising for Max Range

- 1700 RPM
- MP to maintain 125K
- Mixture Lean

### Cruising for Max Endurance

- 1700 RPM
- MP to maintain 95K
- Mixture Lean

### NOTE:

To simulate sudden engine failure at any time, retard throttle on desired engine.

To simulate feathered engine below 1000' above ground, advance throttle to approximately 12" MP and the pitch setting commensurate with that of the live engine.

To simulate feathered engine above 1000' above ground, reduce RPM to minimum, retaining 1" MP for every 100 RPM indicated. To recover, increase pitch to desired setting and then advance throttle to desired MP.

Ensure temperatures and pressures remain within limits. If necessary, warm up at 1500 RPM and 15" MP.

### Fuel Management

Unless fuel is critical, the tanks should not be run dry due to the possibility of damaging the fuel quantity indicating system and the danger of engine failure through detonation or inability to regain fuel pressure through air locks.

#### All Seats Occupied

(Take-off on Front Tanks)

- Rear tanks
- Front Tanks to 1/4
- Nose Tank
- Front Tanks

#### Pilots Seats Occupied

(Take-off on Front Tanks)

- Nose Tank
- Rear Tanks
- Front Tanks

#### Nav Flights (3N & 3NM)

(Take-off on Front Tanks)

- Rear Tanks
- Nose Tank
- Front Tanks

Overshoot or Missed Approach - (CFS Recommended Procedure)

Less than 300' above the ground

- Apply Max Power (2300 RPM 36" MP)
- U/C Up
- Flaps fully up at 80K
- Attain 95K for climb as soon as possible
- Reduce to Maximum Continuous Power
- Post-take-off check
- Reduce to climbing power at a pre-determined altitude

At or above 300' above the ground

- Apply maximum continuous power (2200 RPM & 33 1/2" MP)
- U/C Up
- Flaps fully up at 80K
- Attain 95K for climb as soon as possible
- Post-take-off check
- Reduce to climbing power (2000 RPM and 28" MP)

FOR MAINTENANCE FLIGHT TEST ONLY

Feathering in Flight

- When it is desired to feather a propeller, carry out the following procedure
- Check that the feathering oil dilution switch is in the "WINTER" position if the OAT is below 0°C
- Check both generators are charging
- Throttle Closed
- Propeller fully Coarse
- Mixture control Idle Cut-Off
- Ignition Switches Off
- Feathering button Depress
- Fuel tank selector Off cross feed Off
- Generator switch Off

Unfeathering in Flight

- Feathering oil dilution switch "Summer" position
- Propeller Fully Coarse
- Throttle Closed
- Mixture Idle Cut-Off
- Fuel On
- If propeller has been feathered for more than two minutes, rotate the engine two revolutions with starter prior to unfeathering
- Ensure generator of operating engine charging
- Hold feathering button in until 400 to 600 rpm attained
- Guard Up
- Ignition On
- Mixture Rich
- Generator On
- Warm up at 1500 rpm and 15" MP. When temperatures reach minimum, adjust power as required

Descent & Landing - Maintain CHT above 120°C during descent, approach and landing. Manifold heat adjusted as required for landing.

Oil Dilution

- Oil temperature 40°C or below prior to dilution
- Winter/Summer switch as applicable
- 1400 RPM
- Oil dilution switches ON
- Hold switches on for length of time as indicated in table below
- During the dilution period the CSUs and feathering mechanisms should be exercised three times each
- Continue to oil dilute while shutting-down engines

Dilute in Accordance with the Following Table

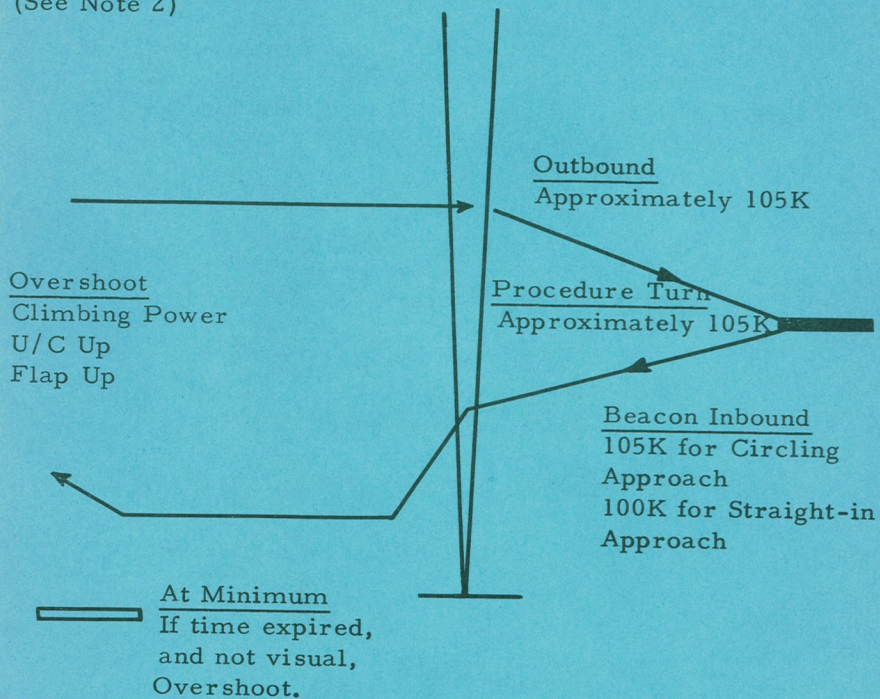
| Starting Temperature Expected                               | Dilution Period |
|---|-----------------|
| Above 0°C   | No Dilution     |
| 0°C to -10°C  | 1 Minute        |
| -10°C to -20°C  | 2 Minutes       |
| -20°C to -30°C  | 3 Minutes       |
| -30°C to -40°C  | 4 Minutes       |
| Add one minute dilution for each additional 5°C below -40°C |                 |

Boil off periods to remain as specified in current EO -5-45B-1.

## ADF APPROACH

When it is certain that the aircraft is in close proximity to the beacon, power 20" MP (Approximately 105K) (See Note 2)

Beacon Outbound  
Pre-Landing Check  
(See Note 1)



### NOTES:

1. U/C may be lowered at pilot's discretion, but if both engines are operating, should be lowered upon commencing final descent to the field.
2. DO NOT reduce power prior to passing beacon outbound purely on an ETA.

NOTE:

To simulate sudden engine failure at any time retard throttle on desired engine.

To simulate feathered engine below 1000' above ground, advance throttle to approximately 12" MP and the pitch setting commensurate with that of the live engine.

To simulate feathered engine above 1000' above ground, reduce RPM to minimum, retaining 1" MP for every 100 RPM indicated.

Ensure temperatures and pressures remain within limits. If necessary warm up at 1500 RPM and 15" MP.

Engine Failure During Flight (More than 1000' AGL)

- Control - Maintain 110K if possible
- Power - Apply 2200 RPM & 33 1/2 MP
- Drag - U/C & Flap Up
  - Close dead throttle
- Trim - Rough Rudder Only
- GMS - Fuel Pressure
  - Mixture Rich
  - Check for Carb Ice
  - Switches ON

IF UNABLE to determine cause:

- Guard Down
- Feather
- Mixture ICO
- Fuel OFF when Prop stops
- Switches OFF
- Generator OFF
- Prop anti-icer Off

Single Engine Letdown Procedures

- Normal procedures and speeds are recommended with the exception of the U/C.
- If carrying out a straight-in approach, lower U/C when commencing final descent (GCA Glide Path, ILS Glide path or final descent from range or Beacon)
- If carrying out a circling approach, do not lower U/C or flap until visual, and on base or turning final on approach.

Single Engine Circuit and Landing

- Normal engine-assisted approach
- U/C as required
- Hold flap until landing assured
- Make final approach at 95K
- Cross button at 85K

#### Electrical Fire (Source Unknown)

- Battery Master & Generators OFF
- Electrical & Radio Equipment OFF
- Battery and Generator ON
- Electrical & Radio Equipment ON one at a time until source discovered
- Leave Offending Equipment OFF
- Use Hand Extinguisher as necessary

#### ELECTRICAL FAILURES

#### Emergency U/C Lowering

- Circuit breaker on left subpanel OUT
- Air Speed 110K Max
- Check crank handle not engaged and hand clear
- Raise cover and DEPRESS clutch
- Hold pedal depressed and rotate crank
- Handle forward at top of stroke
- When no longer possible to crank, release pedal
- Check teeth engaged and pedal full back
- Green light ON

#### Emergency Flap Operation

- Selector OFF
- Hand crank to raise or lower flap as desired

#### Smoke Elimination

To eliminate smoke from cabin after a fire is extinguished:

- Cockpit side windows OPEN
- Cockpit and Cabin Cold Air ON
- Roof Exhaust Grills OPEN

ChallengeCapt's ReplyCo-Pilot's ReplyPRE-RUNUP CHECK

|                   |           |               |
|-------------------|-----------|---------------|
| Parking Brakes    | Set       |               |
| Magnetos          | Checked   |               |
| Radios            |           | Checked & Set |
| Gyros             | Checked   | Checked       |
| Fuel              | On Fronts |               |
| Temps & Pressures | Checked   |               |

PRE-TAKE-OFF CHECK

|                      |  |         |
|----------------------|--|---------|
| Harness              | Secured  | Secured |
| Doors & Windows      | Closed   | Closed  |
| Trims                | Set  |         |
| Tension              | Set  |         |
| Temps & Pressures    | Checked  |         |
| Mixture              | Rich   |         |
| Carb Heat            | Cold   |         |
| Pitch                | Fine   |         |
| Fuel                 | On Fronts,<br>Contents Checked                   |         |
| Primer               | OFF  |         |
| Crossfeed            | OFF  |         |
| Flaps                | Set  |         |
| Cowl Flaps           | Trail  |         |
| Oil Shutters         | Set  |         |
| Oil Bypass           | IN   |         |
| Gyros                | Set  |         |
| Switches             | ON   |         |
| Pitot Heat           | ON   |         |
| Anti-collision light | ON (Night-Nav lights<br>to steady)               |         |
| De-icer boots        | OFF  |         |
| Suction              |  | Checked |
| Controls             | Free & proper movement                           |         |
| Tail wheel           | Unlocked before taxiing<br>then locked on runway |         |
| Take off Briefing    | As Required                                      |         |

POST TAKE-OFF CHECK

|                   |     |                    |
|-------------------|-----|--------------------|
| Undercarriage     |     | Up-Red Light<br>ON |
| Flaps             |     | UP                 |
| Power             |     | Climb Power<br>Set |
| Landing Lights    | OFF |                    |
| Temps & Pressures |     | Checked            |

ChallengeCapt's ReplyCo-Pilot's ReplyPRE-LANDING CHECK

|               |                  |               |
|---------------|------------------|---------------|
| Seat Belts    | Secure           | Secure        |
| Fuel          | Fronts. Contents |               |
|               | Checked          |               |
| Brakes        | Checked          |               |
| Mixture       |                  | Rich          |
| Carb Heat     |                  | (As required) |
| Undercarriage | When required    |               |

FINAL LANDING CHECK

|               |                |
|---------------|----------------|
| Undercarriage | Down & Checked |
|---------------|----------------|

POST-LANDING CHECK

|                      |      |          |
|----------------------|------|----------|
| Tail Wheel           |      | Unlocked |
| Flaps                |      | Up       |
| Cowl Flaps           | Open |          |
| Pitch                |      | Fine     |
| Pitot Heat           | Off  |          |
| Radios (Unessential) |      | Off      |

POST-SHUT-DOWN CHECK

|                      |          |       |
|----------------------|----------|-------|
| Parking Brakes       | Set      |       |
| Mixture              | ICO      |       |
| Flaps                | Down     |       |
| Radios               | Off      |       |
| Gyros                |          | Caged |
| Switches             | Off      |       |
| Anti-Collision Light | Off      |       |
| Fuel                 | Off      |       |
| Controls             | Locked   |       |
| Tail Wheel           | Locked   |       |
| Cabin Door           | Closed   |       |
| Pitot Covers         | On       |       |
| Chocks               | In Place |       |

PRE-STALL/SLOW FLYING CHECK

|                |                                |
|----------------|--------------------------------|
| Fuel           | Fullest tanks contents checked |
| Undercarriage  | As Required                    |
| Flaps          | As Required                    |
| Gills          | As Required                    |
| Mixture        | Rich                           |
| Carb Heat      | Set                            |
| Pitch          | 2000 rpm                       |
| Altitude       | Sufficient                     |
| Loose Articles | Secured                        |
| Locality       | Suitable                       |
| Look Around    |                                |

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| Practice Flt Comox            | 10                   |
| <u>ATCHQ</u>                  |                      |
| 438 Sqn St. Hubert            | 15                   |
| 131 KU North Bay              | 25                   |
| UICP Practice Flt Toronto     | 12                   |
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## TABLE OF CONTENTS

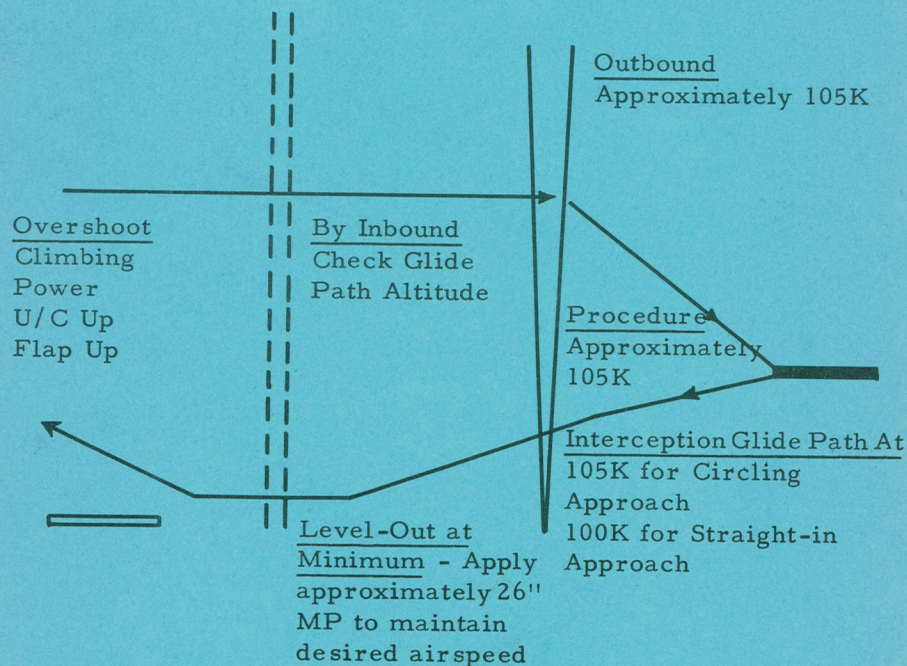
|  |                  |
|--|------------------|
| AIR SPEED Limitations, Recommended, etc.....   | 9                |
| ABANDONING, Crash Landing, Ditching Drill..... | 26               |
| CHECKLIST, Procedures .....                    | 1, 2, 3, 4, 5, 6 |
| Challenge .....                                | 27, 28, 29       |
| CLIMB, Normal .....                            | 10               |
| Max Continuous .....                           | 7                |
| COLD WEATHER OPERATION .....                   | 15, 16           |
| CRUISE, Range and Endurance .....              | 12               |
| Control Chart .....                            | 11               |
| Max Continuous.....                            | 7                |
| ENGINE, Limitations .....                      | 8                |
| Operating Limitations .....                    | 7                |
| FIRES, Engine and Fuselage .....               | 24               |
| Electrical .....                               | 25               |
| FLAP, Emergency Operation .....                | 25               |
| FUEL, Transfer .....                           | 13               |
| Tank Capacities & Specifications .....         | 7                |
| Cruise Control Chart.....                      | 11               |
| Management .....                               | 12               |
| GENERAL INFORMATION .....                      | 7, 8             |
| LANDING PROCEDURES .....                       | 13               |
| Crosswind Component Graph .....                | 17               |
| Procedures, Single Engine .....                | 23               |
| LET-DOWN Procedures .....                      | 18, 19, 20, 21   |
| MAINTENANCE FLIGHT TEST .....                  | 14               |
| OIL DILUTION.....                              | 16               |
| OVERSHOOT, Two Engine .....                    | 14               |
| Single Engine .....                            | 24               |
| SINGLE ENGINE PROCEDURE                        |                  |
| Engine Failure .....                           | 22, 23           |
| Let-down and Handling.....                     | 23               |
| Runaway Propeller.....                         | 24               |
| TAKE-OFF, Procedures .....                     | 10               |
| Crosswind Component Chart.....                 | 17               |
| Limitations .....                              | 7                |
| TURBULENCE, Flight Through .....               | 10               |
| UNDERCARRIAGE, Emergency Lowering .....        | 25               |

## ILS APPROACH

On Transition  
Check Localizer  
Set Radios for the  
appropriate frequency

When Marker Received on  
High, Reduce to 20" MP  
(Approximately 105K)

By Outbound  
Pre-Landing  
Check  
(See Note 1)



### NOTES:

1. U/C may be lowered at pilot's discretion, but if both engines are operating, it should be lowered upon intercepting the glide path.
2. Approximately 20" MP will maintain airspeed on Glide Path at a rate of descent of 500 fpm.