# SECTION 3
# EMERGENCY PROCEDURES

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AMPLIFIED PROCEDURES

## INTRODUCTION

Section 3 provides checklist and amplified procedures for coping with emergencies that may occur. Emergencies caused by airplane or engine malfunctions are extremely rare if proper preflight inspections and maintenance are practiced. Enroute weather emergencies can be minimized or eliminated by careful flight planning and good judgment when unexpected weather is encountered. However, should an emergency arise, the basic procedures described in this section should be considered and applied as necessary to correct the problem. Emergency procedures associated with ELT, and other optional systems can be found in Section 9.

**WARNING**

**THERE IS NO SUBSTITUTE FOR PROPER AND COMPLETE PREFLIGHT PLANNING HABITS AND THEIR CONTINUAL REVIEW IN MINIMIZING EMERGENCIES. BE THOROUGHLY KNOWLEDGEABLE OF HAZARDS AND CONDITIONS WHICH REPRESENT POTENTIAL DANGERS, AND BE AWARE OF THE CAPABILITIES AND LIMITATIONS OF THE AIRPLANE.**

## AIRSPEEDS FOR EMERGENCY OPERATION

Engine Failure After Takeoff:

| | |
|---|---|
| Wing Flaps Up | 95 KIAS |
| Wing Flaps Down | 80 KIAS |

Maneuvering Speed:

| | |
|---|---|
| 8000 lbs | 150 KIAS |
| 6300 lbs | 134 KIAS |
| 4600 lbs | 115 KIAS |

| Maximum Glide: | With Cargo Pod | Without Cargo Pod |
|---|---|---|
| 8000 lbs | 96 KIAS | 99 KIAS |
| 6300 lbs | 85 KIAS | 88 KIAS |
| 4600 lbs | 72 KIAS | 75 KIAS |

Precautionary Landing (Engine Power/Flaps Down) . . . . . 80 KIAS

Landing Without Engine Power:

| | |
|---|---|
| Wing Flaps Up | 95 KIAS |
| Wing Flaps Down | 80 KIAS |

# OPERATIONAL CHECKLIST

Procedures in the Operational Checklists portion of this section shown in **bold-faced** type are immediate-action items which should be committed to memory.

## ENGINE FAILURES

### ENGINE FAILURE DURING TAKEOFF ROLL

1. **Power Lever - BETA range.**
2. **Brakes - APPLY.**
3. Wing Flaps - RETRACT.

If airplane cannot be stopped on remaining runway:

4. Fuel Condition Lever - CUTOFF.
5. Fuel Shutoff - OFF (pull out).
6. Fuel Tank Selectors - OFF (warning horn will sound).
7. Battery Switch - OFF.

### ENGINE FAILURE IMMEDIATELY AFTER TAKEOFF

1. **Airspeed - 85 KIAS**
2. Propeller - FEATHER.
3. Wing Flaps - AS REQUIRED (20° recommended)
4. Fuel Condition Lever - CUTOFF.
5. Fuel Shutoff - OFF (pull out).
6. Fuel Tank Selectors - OFF (warning horn will sound).
7. Battery - OFF.

### ENGINE FAILURE DURING FLIGHT

1. **Airspeed - 95 KIAS.**
2. **Power Lever - IDLE.**
3. **Propeller Control Lever - FEATHER.**
4. **Fuel Condition Lever - CUTOFF.**
5. Wing Flaps - UP.
6. Fuel Boost Switch - OFF.
7. Fuel Shutoff - OFF (pull out).
8. Ignition Switch - NORM.
9. Standby Power Switch (if installed) - OFF.

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## ENGINE FAILURES (Continued)

### ENGINE FAILURE DURING FLIGHT (Continued)

10. Electrical Load - REDUCE as follows:
    A. Avionics Bus 2 Switch - OFF.
    B. Flashing Beacon - OFF.
    C. Strobe Lights - OFF.
    D. Ice Protection (if installed) - CONSIDER (if pitot heat is required, pull the RIGHT PITOT HEAT circuit breaker and turn pitot heat switch ON).
    E. Vent Fans - OFF.
    F. GEN CONT and GEN FIELD Circuit Breakers - PULL (top row, last two breakers on forward end).
    G. Autopilot Circuit Breaker - PULL (third row from bottom, second breaker from forward end).
11. Landing - Refer to Emergency Landing Without Engine Power checklist.

### ENGINE FLAMEOUT DURING FLIGHT

1. **If Gas Generator Speed (Ng) Is Above 50%:**
   **A. Power Lever - IDLE.**
   **B. Ignition Switch - ON.**
   C. Power Lever - AS DESIRED after satisfactory relight as evidenced by normal ITT and $N_g$.
   D. Ignition Switch - OFF if cause of flameout has been corrected.
2. **If Gas Generator Speed (Ng) Is Below 50%:**
   **A. Fuel Condition Lever - CUTOFF.**
   B. Refer to Airstart checklists for engine restart.

## AIRSTART

### STARTER ASSIST (Preferred Procedure)

1. Electrical Load - REDUCE.
2. Standby Power Switch (if installed) - OFF.
3. Avionics Power Switches - OFF.
4. Ignition Switch - NORM.
5. Air Conditioner (if installed) - OFF.
6. Bleed Air Heat Switch - OFF.
7. Emergency Power Lever - NORMAL.
8. Power Lever - IDLE.
9. Propeller Control Lever - MIN RPM.

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## AIRSTART (Continued)

### STARTER ASSIST (Preferred Procedure) (Continued)

10. Fuel Condition Lever - CUTOFF.
11. Fuel Shutoff - ON (push in).
12. Fuel Tank Selectors - LEFT ON, RIGHT ON.
13. Battery Switch - ON.
14. Fuel Boost Switch - ON (check AUX FUEL PUMP ON annunciator ON, FUEL PRESS LOW annunciator OFF).
15. Altitude - 20,000 feet maximum.
16. Starter Switch - START and OBSERVE.
    A. IGNITION ON Annunciator - CHECK ON.
    B. Engine Oil Pressure - CHECK for indication.
    C. Ng - 12% MINIMUM.
17. Fuel Condition Lever - LOW IDLE and OBSERVE.
    A. ITT - MONITOR (1090°C maximum).
    B. Ng - 52% MINIMUM.
18. Starter Switch - OFF.

**WARNING**

**IF CONDITIONS EXIST, SUCH AS HEAVY PRECIPITATION OR NEARLY EMPTY FUEL TANKS, TURN THE IGNITION SWITCH ON.**

19. Fuel Boost Switch - Norm (unless it cycles on and off; then leave ON.)
20. Fuel Condition Lever - HIGH IDLE.
21. Propeller control Lever - AS DESIRED.
22. Power Lever - AS DESIRED.
23. Electrical Equipment - AS REQUIRED.

### NO STARTER ASSIST

1. Generator Switch - TRIP and release.
2. Standby Power Switch (if installed) - OFF.
3. Avionics Power Switches - OFF.
4. Air Conditioner (if installed) - OFF.
5. Bleed Air Heat Switch - OFF.
6. Emergency Power Lever - NORMAL.
7. Power Lever - IDLE.
8. Propeller Control Lever - MIN RPM.
9. Fuel Condition Lever - CUTOFF.

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## AIRSTART (Continued)
## NO STARTER ASSIST (Continued)

10. Fuel Shutoff - ON (push in).
11. Fuel Tank Selectors - LEFT ON, RIGHT ON.
12. Battery Switch - ON.
13. Fuel Boost Switch - ON (check AUX FUEL PUMP ON annunciator ON, FUEL PRESS LOW annunciator OFF).
14. Ignition Switch - ON, check IGNITION ON annunciator ON.
15. Airspeed - 100 KIAS minimum (140 KIAS if propeller is feathered).
16. Altitude - 20,000 feet maximum (15,000 feet if propeller is feathered).

**CAUTION**

DO NOT ATTEMPT A RESTART WITHOUT STARTER ASSIST IF Ng TACHOMETER INDICATES ZERO RPM.

17. Ng Indicator - CHECK STABLE.
18. Fuel Condition Lever - LOW IDLE and OBSERVE.
    A. ITT - MONITOR (1090°C maximum).
    B. Ng - 52% MINIMUM.
19. Ignition Switch - NORM (Ng 52% or above) unless conditions warrant leaving ON.

**WARNING**

**IF CONDITIONS EXIST, SUCH AS HEAVY PRECIPITATION OR NEARLY EMPTY FUEL TANKS, TURN THE IGNITION SWITCH ON.**

20. Fuel Boost Switch - NORM (unless it cycles on and off); then leave ON.
21. Fuel Condition Lever - HIGH IDLE.
22. Propeller Control Lever - AS DESIRED.
23. Power Lever - AS DESIRED.
24. Generator Switch - RESET and release.
25. Electrical and Avionics Equipment - AS REQUIRED.

# FORCED LANDINGS

## EMERGENCY LANDING WITHOUT ENGINE POWER

1. Seats, Seat Belts, Shoulder Harnesses - SECURE.
2. Airspeed - 95 KIAS (Flaps UP).
   - 80 KIAS (Flaps DOWN).
3. Power Lever - IDLE.
4. Propeller Control Lever - FEATHER.
5. Fuel Condition Lever - CUTOFF.
6. Fuel Boost Switch - OFF.
7. Ignition Switch - NORM.
8. Standby Power Switch (if installed) - OFF.
9. Nonessential Equipment - OFF.
10. Fuel Shutoff - OFF (pull out).
11. Fuel Tank Selectors - OFF (warning horn will sound).
12. Wing Flaps - AS REQUIRED (FULL recommended).
13. Crew Doors - UNLATCH PRIOR TO TOUCHDOWN.
14. Battery Switch - OFF when landing is assured.
15. Touchdown - SLIGHTLY TAIL LOW.
16. Brakes - APPLY HEAVILY.

## PRECAUTIONARY LANDING WITH ENGINE POWER

1. Seats, Seat Belts, Shoulder Harnesses - SECURE.
2. Wing Flaps - 10°.
3. Airspeed - 90 KIAS.
4. Selected Field - FLY OVER, noting terrain and obstructions.
5. All Electrical Switches (except Battery and Generator) -OFF.
6. Wing Flaps - FULL DOWN (on final approach).
7. Airspeed - 80 KIAS.
8. Crew Doors - UNLATCH PRIOR TO TOUCHDOWN.
9. Generator Switch - TRIP and release.
10. Battery Switch - OFF.
11. Touchdown - SLIGHTLY TAIL LOW.
12. Fuel Condition Lever - CUTOFF.
13. Brakes - APPLY HEAVILY.

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## FORCED LANDINGS (Continued)

### DITCHING

1. Radio - TRANSMIT MAYDAY ON 121.5 MHz, giving location and intentions and SQUAWK 7700 if transponder is installed.
2. Heavy Objects in Cabin - SECURE if passenger is available to assist.
3. Seats, Seat Belts, Shoulder Harnesses - SECURE.
4. Wing Flaps - FULL DOWN.
5. Power - ESTABLISH 300 FT/MIN DESCENT AT 80 KIAS.
6. Approach:
   High Winds - INTO THE WIND.
   Light Winds, Heavy Swells - PARALLEL TO SWELLS.
7. Face - CUSHION at touchdown with folded coat or similar object.
8. Touchdown - NO FLARE, maintain descent attitude.
9. Airplane - EVACUATE.
10. Life Vests and Raft - INFLATE when outside cabin.

**WARNING**

**THE AIRPLANE HAS NOT BEEN FLIGHT TESTED IN ACTUAL DITCHINGS, THUS THE ABOVE RECOMMENDED PROCEDURE IS BASED ENTIRELY ON THE BEST JUDGMENT OF CESSNA AIRCRAFT COMPANY.**

## SMOKE AND FIRE

### ENGINE FIRE IN FLIGHT

**(Red ENGINE FIRE Annunciator ON or OFF)**

1. **Power Lever - IDLE.**
2. **Propeller Control Lever - FEATHER.**
3. **Fuel Condition Lever - CUTOFF.**
4. **Fuel Shutoff - OFF.**
5. **Cabin Heat Firewall Shutoff Control - PULL OFF.**
6. Forward Side Vents - CLOSE.
7. Overhead Vents - OPEN.
8. Ventilation Fans (if installed) - ON.
9. Wing Flaps - 10°-30°.
10. Airspeed - 80 KIAS.
11. Forced Landing - EXECUTE (as described in Emergency Landing Without Engine Power).

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## SMOKE AND FIRE (Continued)

### ELECTRICAL FIRE IN FLIGHT

1. **Battery Switch - OFF.**
2. **Generator Switch - TRIP and release.**
3. **Standby Power Switch (if installed) - OFF.**

**WARNING**

**WITHOUT ELECTRICAL POWER, ALL ELECTRICALLY-OPERATED GYROS AND ENGINE INSTRUMENTS, FUEL BOOST PUMP, ANNUNCIATOR LIGHTS, WING FLAPS AND ALL AVIONICS WILL BE INOPERATIVE. VACUUM-DRIVEN GYROS WILL STILL BE OPERATIVE. (FOR AIRPLANES WITH A KFC-150 OR KFC-225 AUTOPILOT, VACUUM-DRIVEN GYROS ARE THE PILOT'S HORIZON GYRO AND RIGHT-HAND DIRECTIONAL GYRO. FOR AIRPLANES WITH A KFC-250 AUTOPILOT, VACUUM-DRIVEN GYROS ARE THE RIGHT-HAND HORIZON AND DIRECTIONAL GYROS.)**

4. **Vents - CLOSED (to avoid drafts).**
5. **Bleed Air Heat Switch - OFF.**
6. **Fire Extinguisher - ACTIVATE (if available).**

**WARNING**

**OCCUPANTS SHOULD USE OXYGEN MASKS (IF INSTALLED) UNTIL SMOKE CLEARS. AFTER DISCHARGING AN EXTINGUISHER WITHIN A CLOSED CABIN, VENTILATE THE CABIN.**

7. Avionics Power Switches - OFF.
8. All Other Electrical Switches - OFF.

If fire appears out and electrical power is necessary for continuance of flight:

9. Battery Switch and Standby Power Switch (if installed) - ON.
10. Generator Switch - RESET and release.
11. Circuit Breakers - CHECK for faulty circuit; do not reset.
12. Radio Switches - OFF.
13. Avionics Power Switches - ON.
14. Radio and Electrical Switches - ON one at a time, with delay after each until short circuit is localized.

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## SMOKE AND FIRE (Continued)

### ELECTRICAL FIRE IN FLIGHT (Continued)

15. Vents - OPEN when it is ascertained that fire is completely extinguished.
16. Bleed Air Heat - ON as desired.

### CABIN FIRE

1. **Battery Switch - OFF.**
2. **Generator Switch - TRIP and release.**
3. **Standby Power Switch (if installed) - OFF.**

**WARNING**

**WITHOUT ELECTRICAL POWER, ALL ELECTRICALLY-OPERATED GYROS AND ENGINE INSTRUMENTS, FUEL BOOST PUMP, ANNUNCIATOR LIGHTS, WING FLAPS AND ALL AVIONICS WILL BE INOPERATIVE. VACUUM-DRIVEN GYROS WILL STILL BE OPERATIVE. (FOR AIRPLANES WITH A KFC-150 OR KFC-225 AUTOPILOT, VACUUM-DRIVEN GYROS ARE THE PILOT'S HORIZON GYRO AND RIGHT-HAND DIRECTIONAL GYRO. FOR AIRPLANES WITH A KFC-250 AUTOPILOT, VACUUM-DRIVEN GYROS ARE THE RIGHT-HAND HORIZON AND DIRECTIONAL GYROS.)**

4. **Vents - CLOSED (to avoid drafts).**
5. **Bleed Air Heat Switch - OFF.**
6. **Fire Extinguisher - ACTIVATE (if available).**

**WARNING**

**OCCUPANTS SHOULD USE OXYGEN MASKS (IF INSTALLED) UNTIL SMOKE CLEARS. AFTER DISCHARGING AN EXTINGUISHER WITHIN A CLOSED CABIN, VENTILATE THE CABIN.**

7. Land the airplane as soon as possible.

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## SMOKE AND FIRE (Continued)

### CARGO COMPARTMENT FIRE

1. Make use of oxygen masks and smoke goggles.
2. Vents -- CLOSED.
3. Bleed Air Heat Switch -- OFF.
4. Fire Extinguisher -- USE as necessary.
5. Cabin Ventilation -- After discharging fire extinguisher, ventilate the cabin to evacuate smoke and gases.
6. Land as soon as possible.

### WING FIRE

1. **Pitot/Static Heat Switch - OFF.**
2. **Stall Heat Switch - OFF.**
3. **Strobe Lights Switch - OFF.**
4. **Navigation Lights Switch - OFF.**
5. **Landing and Taxi Light Switches - OFF.**
6. **Radar (if installed) - OFF.**
7. Ventilation Fans (if installed) - OFF.

**WARNING**

**PERFORM A SIDESLIP AS REQUIRED TO KEEP FLAMES AWAY FROM THE FUEL TANK AND CABIN. LAND THE AIRPLANE.**

### CABIN FIRE DURING GROUND OPERATIONS

1. **Power Lever - IDLE.**
2. **Brakes - AS REQUIRED.**
3. **Propeller Control Lever - FEATHER.**
4. **Fuel Condition Lever - CUTOFF.**
5. **Battery Switch - OFF.**
6. **Airplane - EVACUATE.**
7. Fire - EXTINGUISH.

# ICING

**THE FOLLOWING WEATHER CONDITIONS MAY BE CONDUCIVE TO SEVERE IN-FLIGHT ICING - As Required by AD 96-09-15, Paragraph (a) (2):**

1. Visible rain at temperatures below 0 degrees Celsius ambient air temperature.
2. Droplets that splash or splatter on impact at temperatures below 0 degrees Celsius ambient air temperature.

**PROCEDURES FOR EXITING THE SEVERE ICING ENVIRONMENT - As Required by AD 96-09-15, Paragraph (a) (2):**

These procedures are applicable to all flight phases from takeoff to landing. Monitor the ambient air temperature. While severe icing may form at temperatures as cold as -18 degrees Celsius, increased vigilance is warranted at temperatures around freezing with visible moisture present. If the visual cues specified in Section 2 Limitations for identifying severe icing conditions are observed, accomplish the following:

1. Immediately request priority handling from Air Traffic Control to facilitate a route or an altitude change to exit the severe icing conditions in order to avoid extended exposure to flight conditions more severe than those for which the airplane has been certificated.
2. Avoid abrupt and excessive maneuvering that may exacerbate control difficulties.
3. Do not engage the autopilot.
4. If the autopilot is engaged, hold the control wheel firmly and disengage the autopilot.
5. If an unusual roll response or uncommanded roll control movement is observed, reduce the angle-of-attack.
6. Do not extend flaps during extended operation in icing conditions. Operation with flaps extended can result in a reduced wing angle-of-attack, with the possibility of ice forming on the upper surface further aft on the wing than normal, possibly aft of the protected area.
7. If the flaps are extended, do not retract them until the airframe is clear of ice.
8. Report these weather conditions to Air Traffic Control.

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## ICING (Continued)

### INADVERTENT ICING ENCOUNTER

1. **Ignition Switch - ON.**
2. **Inertial Separator - BYPASS.**
3. **Pitot/Static Heat Switch - ON.**
4. **Stall Warning Heat Switch - ON.**
5. **Windshield Anti-ice Switch(es) (if installed) - AUTO.**
6. **Prop Anti-ice Switch (if installed) - AUTO.**
7. **Turn back or change altitude** to obtain an outside air temperature that is less conducive to icing.
8. Bleed Air Heat Switch and Temp Control - ON and ADJUST.
9. Push Fwd Cabin Heat control full in and pull Defrost control full out to obtain maximum windshield defroster effectiveness.
10. Propeller RPM - INCREASE to 1900 RPM to minimize ice build-up.

**CAUTION**

IF EXCESSIVE VIBRATION IS NOTED, MOMENTARILY REDUCE PROPELLER RPM TO 1600 WITH THE PROPELLER CONTROL, THEN RAPIDLY MOVE THE CONTROL FULL FORWARD. CYCLING THE RPM FLEXES THE PROPELLER BLADES AND HIGH RPM INCREASES CENTRIFUGAL FORCE, CAUSING ICE TO SHED MORE READILY.

11. Ignition Switch - OFF after 5 minutes operation.
12. If icing conditions are unavoidable, plan a landing at the nearest airport. With an extremely rapid ice build-up, select a suitable "off-airport" landing site.
13. With an ice accumulation of 1/4 inch or more on the wing leading edges, be prepared for a significantly higher power requirement, approach speed and stall speed and longer landing roll.
14. If necessary, set up a forward slip for visibility through the left portion of the windshield during the landing approach.

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## ICING (Continued)

## INADVERTENT ICING ENCOUNTER (Continued)

15. Use a minimum approach speed of 105 KIAS, select the minimum flap setting required, and maintain extra airspeed consistent with available field length. With ice suspected on the airframe, or operating at 4°C or less in visible moisture, **Do Not Extend Flaps Beyond 20° for Landing.**

**WARNING**

**WITH HEAVY ICE ACCUMULATIONS ON THE HORIZONTAL STABILIZER LEADING EDGE, DO NOT EXTEND FLAPS WHILE ENROUTE OR HOLDING. WHEN LANDING IS ASSURED, SELECT THE MINIMUM FLAP SETTING REQUIRED, NOT TO EXCEED 20°, AND MAINTAIN EXTRA AIRSPEED CONSISTENT WITH AVAILABLE FIELD LENGTH. DO NOT RETRACT THE FLAPS AFTER THEY HAVE BEEN EXTENDED, UNLESS REQUIRED FOR GO-AROUND. THEN RETRACT FLAPS IN INCREMENTS WHILE MAINTAINING 5 TO 10 KNOTS EXTRA AIRSPEED.**

16. Land on the main wheels first, avoiding a slow and high flare.
17. Missed approaches should be avoided whenever possible because of severely reduced climb capability. However, if a go-around is mandatory, make the decision much earlier in the approach than normal. Apply takeoff power and maintain 90 to 105 KIAS while retracting the flaps slowly in small increments.

## STATIC SOURCE BLOCKAGE (Erroneous Instrument Reading Suspected)

1. **Static Pressure Alternate Source Valve - PULL FULL ON.**

**NOTE**

The alternate static source is connected to the left-hand flight panel instruments only.

2. Refer to Section 5 for airspeed and altimeter corrections.
3. Autopilot (if installed) - DISENGAGE altitude hold mode.

# ENGINE MALFUNCTIONS

## LOSS OF OIL PRESSURE (Red OIL PRESS LOW Annunciator ON)

1. Oil Pressure Gage - CHECK oil pressure indication. If oil pressure gage confirms annunciator warning, proceed in accordance with Engine Failures checklists or at the discretion of the pilot and consistent with safety, continue engine operation in preparation for an emergency landing as soon as possible.

## FUEL CONTROL UNIT MALFUNCTION IN THE PNEUMATIC OR GOVERNOR SECTIONS (Engine Power Falls Back To IDLE)

1. **Power Lever - IDLE.**
2. **Emergency Power Lever - AS REQUIRED (maintain 65% $N_g$ minimum during flight).**

**CAUTION**

THE EMERGENCY POWER LEVER OVERRIDES NORMAL FUEL CONTROL FUNCTIONS AND RESULTS IN THE DIRECT OPERATION OF THE FUEL METERING VALVE. UTILIZE SLOW AND SMOOTH MOVEMENT OF THE EMERGENCY POWER LEVER TO AVOID ENGINE SURGES, AND/OR EXCEEDING ITT, $N_G$, AND TORQUE LIMITS.

## GEAR BOX CONTAMINATION (Amber CHIP DETECTOR Annunciator ON)

1. Engine Gages - CAREFULLY MONITOR engine gages for abnormal oil pressure, oil temperature, or power indications.
2. If engine gages are normal, proceed to destination, and determine cause of chip detector annunciator warning prior to next flight.
3. If engine gages confirm chip detector annunciator warning, proceed in accordance with Engine Failures checklists, or at the discretion of the pilot and consistent with safety, continue engine operation in preparation for an emergency landing as soon as possible.

# FUEL SYSTEM MALFUNCTION/INADVERTENT FUEL FLOW INTERRUPTION PROCEDURES

## LOSS OF FUEL PRESSURE (Amber FUEL PRESS LOW Annunciator ON)

1. **Fuel Boost Switch - ON.**
2. If FUEL PRESS LOW annunciator extinguishes:
   A. Carefully monitor fuel quantity and cabin odor for evidence of a fuel leak.
   B. Land as soon as practical and determine cause for motive flow failure before next flight.
3. If FUEL PRESS LOW annunciator and AUX FUEL PUMP ON annunciator are illuminated:
   A. Carefully monitor engine gages for sign of fuel starvation.
   B. Land as soon as possible.

## FUEL FLOW INTERRUPTION TO FUEL RESERVOIR (Red RESERVOIR FUEL LOW Annunciator ON)

1. **Fuel Tank Selectors - LEFT ON, RIGHT ON.**
2. **Ignition Switch - ON.**
3. **Fuel Boost Switch - ON.**
4. If RESERVOIR FUEL LOW annunciator remains illuminated and there is usable fuel in the wing tanks:
   A. Carefully monitor engine gages and FUEL PRESS LOW annunciator for signs of fuel starvation.
   B. Land as soon as possible and determine cause of RESERVOIR FUEL LOW warning.

**WARNING**

**IF THERE ARE SIGNS OF FUEL STARVATION, PREPARE FOR A FORCED LANDING (AS DESCRIBED IN EMERGENCY LANDING WITHOUT ENGINE POWER).**

## FUEL TANK SELECTOR OFF DURING ENGINE START (Red FUEL SELECT OFF Annunciator ON And Both Fuel Selector Warning Horns Activated)

1. **Left and Right Fuel Tank Selectors - ON.**

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# FUEL SYSTEM MALFUNCTION/INADVERTENT FUEL FLOW INTERRUPTION PROCEDURES
(Continued)

## FUEL LEVEL LOW WITH SINGLE TANK SELECTED
**(Red FUEL SELECT OFF And Amber LEFT Or RIGHT FUEL LOW Annunciators ON And Fuel Selector Warning Horn Activated)**

1. **Left and Right Fuel Tank Selectors - ON** (turning both fuel tank selectors ON will extinguish the red FUEL SELECT OFF annunciator and silence the warning horn).

# FLAP SYSTEM MALFUNCTION PROCEDURES

## ASYMMETRIC FLAP EXTENSION OR SUDDEN FLAP RETRACTION ON ONE SIDE

1. **Apply aileron and rudder to stop the roll.**
2. **Flap Selector - UP.**
3. **Airspeed - SLOW to 100 KIAS or less.**
4. If both flaps retract to a symmetrical setting:
   A. Plan a flaps up landing.
   B. Refer to Section 5 (notes above landing performance tables) for increase in approach speed and landing distance.
5. If both flaps cannot be retracted to a symmetrical setting:
   A. Land as soon as practical.
   B. Maintain a minimum airspeed of 90 KIAS on the approach and avoid a nose high flare on landing.

## FLAPS FAIL TO EXTEND OR RETRACT

1. Flap Motor and STBY Flap Motor Circuit Breakers - CHECK IN.
2. If flaps still fail to extend or retract:
   Earlier Airplanes:
   A. Guarded Standby Flap Motor Switch (Overhead) - MOVE GUARD, and POSITION SWITCH TO STBY.
   B. Standby Flap Motor Up/Down Switch (Overhead) - UP or DOWN (hold switch until flaps reach desired position, except release switch before flaps reach full up or full down travel)

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# FUEL SYSTEM MALFUNCTION/INADVERTENT FUEL FLOW INTERRUPTION PROCEDURES
(Continued)

## FLAPS FAIL TO EXTEND OR RETRACT (Continued)

Later Airplanes:

A. Guarded and Safetied Standby Flap Motor Switch (Overhead) - MOVE GUARD, breaking safety wire, and POSITION SWITCH TO STBY.

B. Guarded and Safetied Flap Motor Up/Down Switch (Overhead) - MOVE GUARD, breaking safety wire, and position switch UP or DOWN (hold switch until flaps reach desired position, except release switch before flaps reach full up or full down travel).

**CAUTION**

WITH THE STANDBY FLAP SYSTEM IN USE, LIMIT SWITCHES WHICH NORMALLY SHUT OFF THE PRIMARY FLAP MOTOR WHEN REACHING THE FLAP TRAVEL LIMITS ARE ELECTRICALLY INACTIVATED. THEREFORE, THE PILOT MUST RELEASE THE STANDBY FLAP MOTOR UP/DOWN SWITCH BEFORE THE FLAPS REACH THEIR TRAVEL LIMIT TO PREVENT OVERLOADING AND DAMAGE TO THE FLAP SYSTEM.

3. Guarded Standby Flap Motor Switch - Leave in STBY position until after landing when maintenance action can be accomplished.

# LANDING GEAR MALFUNCTION PROCEDURES

## LANDING WITH FLAT MAIN TIRE

1. Airplane - FLY as desired to lighten fuel load.
2. Fuel Selectors - POSITION ONE SIDE OFF TO LIGHTEN LOAD ON SIDE OF FLAT TIRE (maximum fuel unbalance of 200 pounds).
3. Approach - NORMAL (flaps FULL).
4. Touchdown - INFLATED TIRE FIRST. Hold airplane off flat tire as long as possible with aileron control.
5. Directional Control - MAINTAIN using brake on wheel with inflated tire as required.

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# LANDING GEAR MALFUNCTION PROCEDURES
(Continued)

## LANDING WITH FLAT NOSE TIRE

1. Passengers and Baggage - MOVE AFT if practical (remain within approved C.G. envelope).
2. Approach - NORMAL (flaps FULL).
3. Touchdown - NOSE HIGH. Hold nose wheel off as long as possible during roll.
4. Brakes - MINIMUM necessary.

# ELECTRICAL POWER SUPPLY SYSTEM MALFUNCTIONS

## BATTERY TEMPERATURE HIGH
**(Amber BATTERY HOT Annunciator On) (Ni-Cad Battery Equipped Airplanes Only)**

1. **Battery Switch - OFF.**
2. Ammeter - CHECK with selector switch in BATT position.
   A. If ammeter shows zero indication:
      (1) Annunciator light should extinguish.
   B. If ammeter shows charge indication:
      (1) Generator Switch - TRIP and release.
      (2) Standby Power Switch (if installed) - OFF.
      (3) All Electrical System Switches - OFF.

If standby electrical system is **NOT** installed:

(4) Wait five minutes after annunciator extinguished.
(5) Generator Switch - RESET and release.
(6) Ammeter - CHECK with selector switch in BATT position.
(7) If ammeter shows charge indication:
   (a) Generator Switch - TRIP and release.
(8) If ammeter shows zero indication:
   (a) Reinstate electrical systems as required.
   (b) Monitor BATTERY HOT annunciator.

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## ELECTRICAL POWER SUPPLY SYSTEM MALFUNCTIONS (Continued)

### BATTERY TEMPERATURE HIGH
**(Amber BATTERY HOT Annunciator On) (Ni-Cad Battery Equipped Airplanes Only)** (Continued)

If standby electrical system **IS** installed:

(4) Bus 1 Pwr and Bus 2 Pwr Circuit Breakers - PULL OFF (total of six circuit breakers).
(5) Avionics Switches - OFF.
(6) Standby Power Switch - ON.
(7) Avionics Standby Power Switch - LIFT GUARD, TURN ON.
(8) Avionics Bus Tie Switch - LIFT GUARD, TURN ON.
(9) Reinstate essential electrical systems, exercising caution not to exceed capacity of standby electrical system.

3. As Soon as Practical - LAND.

### BATTERY OVERHEATED
**(Red BATTERY OVERHEAT Annunciator On) (Ni-Cad Battery Equipped Airplanes Only)**

1. **Battery Switch - CHECK OFF.**
2. Generator Switch - TRIP and release.
3. Standby Power Switch (if installed) - OFF.
4. All Electrical System Switches - OFF.

If standby electrical system is **NOT** installed:

5. Wait 5 minutes after BATTERY HOT and BATTERY OVERHEAT annunciators are extinguished.
6. Generator Switch - RESET and release.
7. Ammeter - CHECK with selector switch in BATT position.
   A. If ammeter shows charge indication:
      (1) Generator Switch - TRIP and release.
   B. If ammeter shows zero indication:
      (1) Reinstate electrical systems as required.
      (2) Monitor BATTERY HOT and BATTERY OVERHEAT annunciators.
8. As Soon as Practical - LAND

(Continued Next Page)

# ELECTRICAL POWER SUPPLY SYSTEM MALFUNCTIONS (Continued)

## BATTERY OVERHEATED
**(Red BATTERY OVERHEAT Annunciator On) (Ni-Cad Battery Equipped Airplanes Only)** (Continued)

If standby electrical system **IS** installed:

5. Bus 1 Pwr and Bus 2 Pwr Circuit Breakers - PULL OFF (total of 6 circuit breakers.)
6. Avionics Switches - OFF.
7. Standby Power Switch - ON.
8. Avionics Standby Power Switch - LIFT GUARD, TURN ON.
9. Avionics Bus tie Switch - LIFT GUARD, TURN ON.
10. Reinstate essential electrical systems, exercising caution not to exceed capacity of standby electrical system.
11. As Soon as Practical - LAND.

## GENERATOR FAILURE
**(Red VOLTAGE LOW and/or Red GENERATOR OFF Annunciators On)**

1. Volt/Ammeter Selector Switch - VOLTS. If voltage is near normal of 28.5 volts, assume fault in VOLTAGE LOW annunciator circuit and continue flight to destination monitoring voltage and generator output.

**CAUTION**

A RED **VOLTAGE LOW** WARNING FOLLOWED BY A **BUS 1** OR **BUS 2** CIRCUIT BREAKER OPENING MAY BE A FEEDER FAULT THAT HAS ISOLATED ITSELF. **DO NOT** RESET THE BREAKER. THE **VOLTAGE LOW** WARNING SHOULD EXTINGUISH.

If voltage is less than 24.5 volts:

2. Volt/Ammeter Selector Switch - GEN and monitor ammeter.
3. If generator output is zero:
   A. GEN CONT and GEN FIELD Circuit Breakers - PUSH IN.
   B. Generator Switch - RESET and release.

(Continued Next Page)

## ELECTRICAL POWER SUPPLY SYSTEM MALFUNCTIONS (Continued)

### GENERATOR FAILURE
**(Red VOLTAGE LOW and/or Red GENERATOR OFF Annunciators On)** (Continued)

4. If generator output is still zero:
   A. Generator Switch - TRIP.
   B. Electrical Load - REDUCE as follows:
      (1) Avionics Bus 2 Switch - OFF.
      (2) Flashing Beacon - OFF.
      (3) Strobe Lights - OFF.
      (4) Ice Protection (if installed) - CONSIDER (if pitot heat is required, pull the RIGHT PITOT HEAT circuit breaker and turn pitot heat switch on).
      (5) Vent Fans - OFF.
      (6) Air Conditioner (if installed) - OFF.
      (7) GEN CONT and GEN FIELD Circuit Breakers - PULL (top row, last two breakers on forward end).
      (8) A/P CONT Circuit Breaker - PULL.

To reactivate the avionics fan and the disabled section of the audio amplifier if desired:

(1) Pull all AVIONICS BUS 2 circuit breakers except AVIONICS FAN and AUDIO AMP breakers (second row from bottom, last two breakers on forward end).
(2) Avionics Bus 2 Switch - ON.

C. Flight - TERMINATE as soon as practical.

**NOTE**

If optional standby electrical system is installed, the flight may be continued to destination with the GENERATOR OFF annunciator illuminated. Refer to emergency procedures of Standby Electrical System supplement in Section 9.

5. If generator output resumes:
   A. Volt/Ammeter Selector Switch - VOLTS and monitor voltmeter. If voltage increases past 29 volts, expect the generator to trip off again. If this occurs, turn off the nonessential radio and electrical equipment and land as soon as practical.

(Continued Next Page)

## ELECTRICAL POWER SUPPLY SYSTEM MALFUNCTIONS (Continued)

### STARTER CONTACTOR DOES NOT DISENGAGE AFTER ENGINE START

**(Amber STARTER ENERGIZED Annunciator On)**

1. **Battery Switch - OFF.**
2. **Auxiliary Power Unit - OFF, then DISENGAGE.**
3. **Fuel Condition Lever - CUTOFF.**
4. Engine Shutdown - COMPLETE.

## EMERGENCY DESCENT PROCEDURES

### ROUGH AIR

1. Seats, Seat Belts, Shoulder Harnesses - SECURE.
2. Power Lever - IDLE.
3. Propeller Control Lever - MAX (full forward)
4. Wing Flaps - UP.
5. Weights and Airspeed:

   8000 Pounds - 150 KIAS

   6300 Pounds - 134 KIAS

   4600 Pounds - 115 KIAS

### SMOOTH AIR

1. Seats, Seat Belts, Shoulder Harnesses - SECURE.
2. Power Lever - IDLE.
3. Propeller Control Lever - MAX (full forward)
4. Wing Flaps - 10°.
5. Airspeed - 175 KIAS.

# INADVERTENT OPENING OF AIRPLANE DOORS IN FLIGHT

## UPPER HALF OF CARGO DOOR OR UPPER HALF OF PASSENGER AIRSTAIR DOOR OPEN
**(Red DOOR WARNING Annunciator On)**
**(Standard 208 Only)**

1. Airspeed - MAINTAIN LESS THAN 100 KIAS.
2. Wing Flaps - FULL (wing downwash with flaps extended will move the doors near their normally closed position).
3. If available or practical, have a second crew member go aft to close and latch door.
4. If landing is required with door open:
   A. Approach and Landing - NORMAL.

## LOWER HALF OF PASSENGER AIRSTAIR DOOR OPEN
**(Standard 208 Only)**

1. Airspeed - MAINTAIN LESS THAN 100 KIAS.
2. Flight Controls - MANEUVER for return for landing.
3. Wing Flaps - FULL.
4. Approach - NORMAL.
5. Landing - SLIGHTLY TAIL LOW; avoid nose high flare.

## RIGHT OR LEFT CREW DOORS OPEN

1. Airspeed - MAINTAIN LESS THAN 125 KIAS.
2. Door - PULL CLOSED and LATCH.

## CARGO POD DOOR(S) OPEN

1. Airspeed - MAINTAIN LESS THAN 125 KIAS.
2. Land - AS SOON AS PRACTICAL.
   A. Approach - NORMAL.
   B. Landing - AVOID A NOSE HIGH FLARE.

# AMPLIFIED PROCEDURES

The following Amplified Procedures elaborate upon information contained in the Operational Checklists portion of this section. These procedures also include information not readily adaptable to a checklist format, and material to which a pilot could not be expected to refer in resolution of a specific emergency.

**NOTE**

If a red or non-dimmable amber annunciator illuminates at night and becomes an unacceptable distraction to the pilot because of its brightness level, it may be extinguished for the remainder of the flight by pushing in on the face of the light assembly and allowing it to pop out. To reactivate the annunciator, pull the light assembly out slightly and push back in. For further details, refer to Section 7, Annunciator Panel.

## ENGINE FAILURE

If an engine failure occurs during the takeoff roll, the most important thing to do is stop the airplane on the remaining runway. Those extra items on the checklist will provide added safety after a failure of this type.

Prompt lowering of the nose to maintain airspeed and establish a glide attitude is the first response to an engine failure after takeoff. Feathering the propeller substantially reduces drag, thereby providing increased glide distance. In most cases, the landing should be planned straight ahead with only small changes in direction to avoid obstructions. Altitude and airspeed are seldom sufficient to execute a 180° gliding turn necessary to return to the runway. The checklist procedures assume that adequate time exists to secure the fuel and electrical systems prior to touchdown.

After an engine failure in flight, the best glide speed as shown in Figure 3-1 should be established as quickly as possible. Propeller feathering is dependent on existing circumstances and is at the discretion of the pilot. Maximum RPM selection will provide increased gas generator windmilling speed for emergency restarts in the event of a starter failure. On the other hand, to obtain the maximum glide, the propeller must be feathered.

(Continued Next Page)

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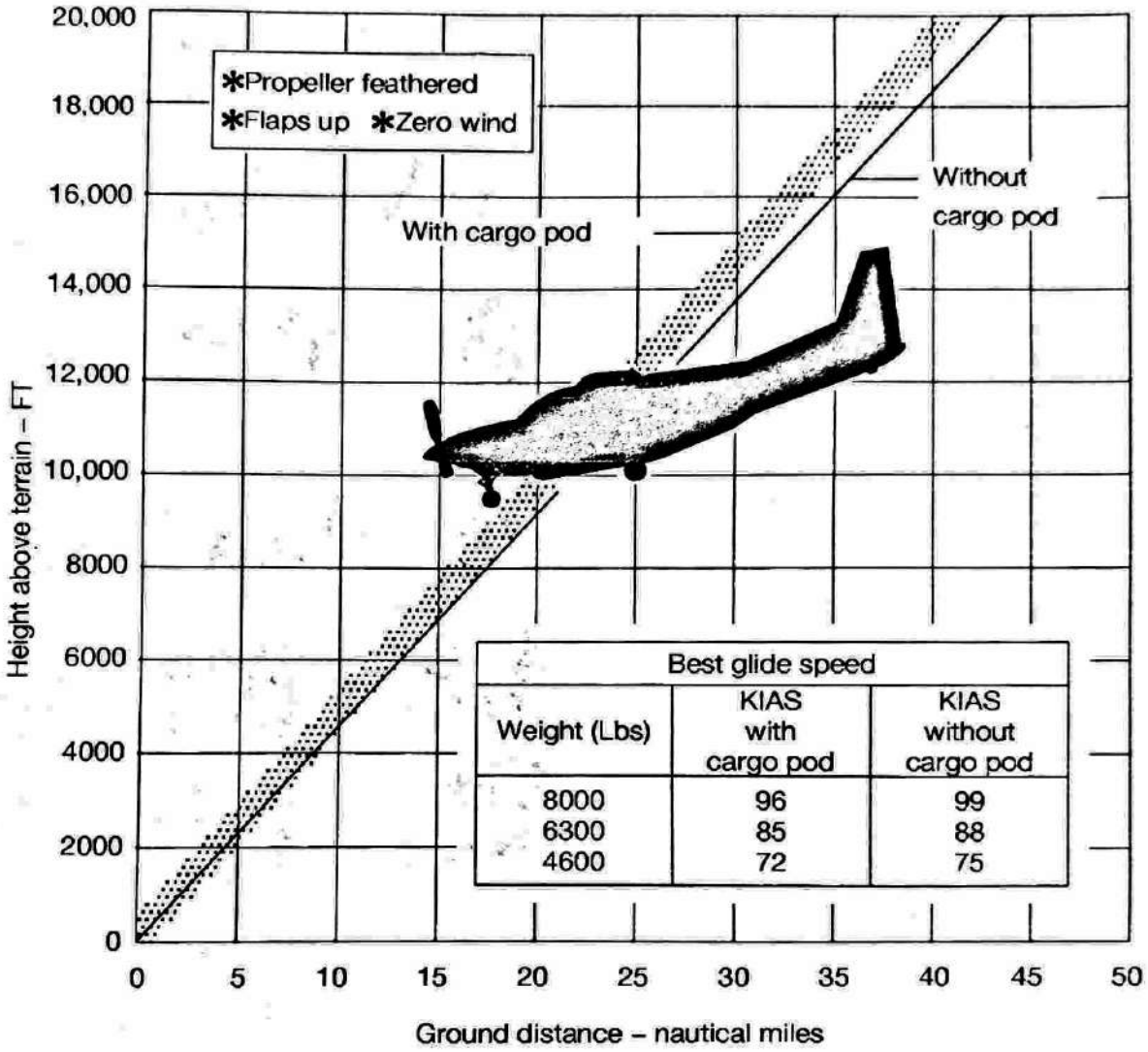


| Best glide speed | | |
|---|---|---|
| Weight (Lbs) | KIAS with cargo pod | KIAS without cargo pod |
| 8000 | 96 | 99 |
| 6300 | 85 | 88 |
| 4600 | 72 | 75 |

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Figure 3-1. Maximum Glide

## ENGINE FAILURE (Continued)

While gliding toward a suitable landing area, an effort should be made to identify the cause of the power loss. An engine **failure** might be identified by abnormal temperatures, mechanical noises or high vibration levels in conjunction with the power loss. A **flameout** will be noticed by a drop in ITT, torque and % Ng.

**CAUTION**

DO NOT ATTEMPT TO RESTART AN ENGINE THAT IS DEFINITELY KNOWN TO HAVE FAILED.

A flameout may result from the engine running out of fuel, or possibly may be caused by unstable engine operation. Unstable engine operation such as a compressor surge (possible due to a bleed valve malfunction) may be identifiable by an audible popping noise just before flameout. Once the fuel supply has been restored to the engine or cause of unstable engine operation eliminated, the engine may be restarted.

The best airstart technique is to initiate the relight procedure immediately after a flameout occurs, provided the pilot is certain that the flameout was not the result of some malfunction that might make it hazardous to attempt a relight.

Regardless of airspeed or altitude, there is always the possibility that the engine may light up successfully just as soon as the ignition is turned on. In an emergency, turn on the ignition just as soon as possible after flameout, provided the gas generator speed has not dropped below 50%. Under these circumstances, it is not necessary to shut off the fuel or feather the propeller. The power lever, however, should be retarded to IDLE position.

If a flameout has occurred and the gas generator speed has dropped below 50%, the fuel condition lever should be moved to the CUTOFF position before an airstart is attempted.

**CAUTION**

THE PILOT SHOULD DETERMINE THE REASON FOR POWER LOSS BEFORE ATTEMPTING AN AIRSTART.

(Continued Next Page)

## ENGINE FAILURE (Continued)

Propeller feathering is dependent on circumstances and is at the discretion of the pilot. However, if engine oil pressure drops below 15 psi, the propeller should be feathered.

If an airstart is to be attempted, follow the checklist procedures. The Starter Assist procedure is preferred since it results in cooler engine starts. Successful airstarts (with starter assist) may be achieved at all airspeeds normally flown and up to an altitude of 14,000 feet. However, above 14,000 feet, or with the gas generator RPM below 10%, starting temperatures tend to be higher and caution is required.

**CAUTION**

THE FUEL CONDITION LEVER MAY BE MOVED MOMENTARILY TO CUTOFF AND THEN BACK TO LOW IDLE IF OVERTEMPERATURE TENDENCIES ARE ENCOUNTERED. THIS REDUCES THE FLOW OF FUEL TO THE COMBUSTION CHAMBER.

If the engine starter is inoperative, follow the No Starter Assist checklist procedures for an airstart.

**CAUTION**

- IF A RISE IN Ng AND ITT ARE NOT INDICATED WITHIN 10 SECONDS, PLACE FUEL CONDITION LEVER TO CUTOFF AND ABORT START. REFER TO ENGINE FAILURE DURING FLIGHT AND EMERGENCY LANDING WITHOUT POWER CHECKLISTS.
- EMERGENCY AIRSTARTS MAY BE ATTEMPTED BELOW 10% Ng AND OUTSIDE THE NORMAL AIRSPEED ENVELOPE, BUT ITT SHOULD BE CLOSELY MONITORED. THE FUEL CONDITION LEVER MAY BE MOVED ALTERNATELY TO CUTOFF AND THEN BACK TO LOW IDLE IF OVERTEMPERATURE TENDENCIES ARE ENCOUNTERED.
- DO NOT ATTEMPT AN AIRSTART WITHOUT STARTER ASSIST WITH 0% Ng.

# FORCED LANDINGS

If all attempts to restart the engine fail and a forced landing is imminent, select a suitable field and prepare for the landing as discussed under the Emergency Landing Without Engine Power checklist.

Before attempting an "off-airport" landing with engine power available, one should fly over the landing area at a safe but low altitude to inspect the terrain for obstructions and surface conditions, proceeding as discussed under the Precautionary Landing With Engine Power checklist.

**NOTE**

The overhead fuel tank selectors control shutoff valves at the wing fuel tank outlets. To minimize the possibility of a fire, these selectors may be turned OFF during the final stage of an approach to an "off-airport" landing. With the selectors turned OFF, there is adequate fuel in the fuel reservoir tank for 3 minutes of maximum continuous power operation or approximately 9 minutes idle power operation. A warning horn will sound with both fuel selectors turned OFF. If it is objectionable, it may be silenced by pulling the START CONT circuit breaker.

**WARNING**

**IF THE PRECAUTIONARY LANDING IS ABORTED, TURN THE FUEL TANK SELECTORS BACK ON AFTER INITIATING THE BALKED LANDING.**

Prepare for ditching by securing or jettisoning heavy objects located in the baggage area and collect folded coats for protection of occupants' faces at touchdown. Transmit Mayday message on 121.5 MHz giving location and intentions and squawk 7700 if a transponder is installed. Avoid a landing flare because of difficulty in judging height over a water surface. The checklists assume the availability of power to make a precautionary water landing. If power is not available, plan to touch down at minimum possible speed in a normal nose up landing attitude.

## LANDING WITHOUT ELEVATOR CONTROL

Using power lever and elevator trim control, trim for approximately 500 fpm descent with 20° flaps at 85 KIAS. Then control the glide angle by adjusting power. If required, make small trim changes to maintain approximately 85 KIAS as power is adjusted during the approach.

The landing flare can be accomplished by a gentle power reduction accompanied by nose up trim. At forward C.G. loadings, it may be necessary to make a small power increase in the final flare stage to bring the nose up and prevent touchdown on the nose first. After touchdown, move the power lever to idle.

## SMOKE AND FIRE

In the event a fire is encountered, the following information will be helpful in dealing with the emergency as quickly and safely as possible.

The preflight checklist in Section 4 is provided to aid the pilot in detecting conditions which could contribute to an airplane fire. As a fire requires a combustible material, oxygen and a source of ignition, close preflight inspection should be given to the engine compartment and the underside of the wing and fuselage. Leaks in the fuel or oil systems can lead to a ground or inflight fire.

**WARNING**

**FLIGHT SHOULD NOT BE ATTEMPTED WITH KNOWN FUEL OR OIL LEAKS. THE PRESENCE OF FUEL OR UNUSUAL OIL STAINS MAY BE AN INDICATION OF SYSTEM LEAKS AND SHOULD BE CORRECTED PRIOR TO FLIGHT.**

Probable causes of an engine fire are a malfunction of the fuel control unit and improper starting procedures. Improper procedures such as starting with the emergency power lever out of NORMAL position or introducing fuel into the engine when gas generator speed is below 10% RPM will cause a hot start which may result in an engine fire. In the event that this occurs, proceed in accordance with the Engine Fire During Start On Ground checklist.

If an airplane fire is discovered on the ground or during takeoff, but prior to committed flight, the airplane should be stopped and evacuated as soon as practical.

(Continued Next Page)

## SMOKE AND FIRE (Continued)

Engine fires originating in flight must be controlled as quickly as possible in an attempt to prevent major structural damage. Immediately shut off all fuel to the engine and shut down the engine. Close the cabin heat firewall shutoff control and forward side vents. To avoid drawing fire into the cabin, open the overhead vents, turn the ventilation fans ON if they are installed, extend 10° to 30° flaps and slow down to 80-85 KIAS. This provides a positive cabin pressure in relation to the engine compartment. An engine restart should not be attempted.

An open foul weather window produces a low pressure in the cabin. To avoid drawing the fire into the cabin, the foul weather window should be kept closed.

A fire or smoke in the cabin should be controlled by identifying and shutting down the faulty system. Smoke may be removed by opening the cabin ventilation controls. When the smoke is intense, the pilot may choose to expel the smoke through the foul weather window. The foul weather window should be closed immediately if the fire becomes more intense when the window is opened.

The initial indication of an electrical fire is usually the odor of burning insulation. The checklist for this problem should result in elimination of the fire.

## EMERGENCY OPERATION IN CLOUDS (Vacuum System Failure)

In the event of a complete vacuum system failure during flight, the directional indicator and attitude indicator will be disabled, and the pilot will have to rely on the turn and bank indicator if he inadvertently flies into clouds. If an autopilot is installed, it too can be affected and must be turned off. Refer to Section 9, Supplements, for additional details concerning autopilot operation. The following instructions assume that only the electrically-powered turn and bank indicator is operative, and that the pilot is not completely proficient in instrument flying.

## EXECUTING A 180° TURN IN CLOUDS

Upon inadvertently entering the clouds, an immediate plan should be made to turn back as follows:

1. Note the compass heading.
2. Note the time of the minute hand and observe the position of the sweep second hand on the clock.
3. When the sweep second hand indicates the nearest half minute, initiate a standard rate left turn, holding the needle of the turn and bank indicator in position for a standard rate left turn for 60 seconds. Then roll back to level flight by centering the needle, making sure the ball is also centered.
4. Check accuracy of the turn by observing the compass heading which should be the reciprocal of the original heading.
5. If necessary, adjust heading primarily with skidding motions rather than rolling motions so that the compass will read more accurately.
6. Maintain altitude and airspeed by cautious application of elevator control. Avoid overcontrolling by keeping the hands off the control wheel as much as possible and steering only with rudder.

## EMERGENCY DESCENT THROUGH CLOUDS

If conditions preclude reestablishment of VFR flight by a 180° turn, a descent through a cloud deck to VFR conditions may be appropriate. If possible, obtain radio clearance for an emergency descent through clouds. To guard against a spiral dive, choose an easterly or westerly heading to minimize compass card swings due to changing bank angles. In addition, keep hands off the control wheel and steer a straight course with rudder control by monitoring the turn and bank indicator. Occasionally check the compass heading and make minor corrections to hold an approximate course. Before descending into the clouds, set up a stabilized let-down condition as follows:

1. Reduce power to set up a 500 to 800 feet/minute rate of descent.
2. Adjust the elevator, aileron, and rudder trim control wheels for a stabilized descent at 115 KIAS.
3. Keep hands off control wheel.
4. Monitor turn and bank indicator and make corrections by rudder alone.
5. Adjust rudder trim to relieve unbalanced rudder force, if present.
6. Check trend of compass card movement and make cautious corrections with rudder to stop turn.
7. Upon breaking out of clouds, resume normal cruising flight.

## RECOVERY FROM A SPIRAL DIVE

If a spiral is encountered, proceed as follows:

1. Retard the power lever to IDLE.
2. Stop the turn by using coordinated aileron and rudder control to center the needle and ball.
3. Cautiously apply control wheel back pressure to slowly reduce the airspeed to 115 KIAS.
4. Adjust the elevator trim control to maintain a 115 KIAS glide.
5. Keep hands off the control wheel, using rudder control to hold a straight heading. Use rudder trim to relieve unbalanced rudder force, if present.
6. Upon breaking out of clouds, resume normal cruising flight.

## INADVERTENT FLIGHT INTO ICING CONDITIONS

Intentional flight into known icing conditions is prohibited unless a complete flight into known icing equipment package is installed. During instrument flights, however, icing conditions may be encountered inadvertently and, therefore, some corrective action will be required as shown in the checklist. Initiation of a climb is usually the best ice avoidance action to take; however, alternatives are descent to warmer air or course reversal.

## STATIC SOURCE BLOCKED

If erroneous instrument readings are suspected due to water, ice or other foreign matter in the pressure lines going to the standard external static pressure source, the alternate static source valve should be pulled on. A chart in Section 5 provides a correction which may be applied to the indicated airspeeds and altitudes resulting from inaccuracies in the alternate static source pressures.

**NOTE**

The altitude hold mode of the autopilot should be disengaged before actuating the alternate static source valve.

## SPINS

Intentional spins are prohibited in this airplane. Should an inadvertent spin occur, the following recovery technique may be used.

1. RETARD POWER LEVER TO IDLE POSITION.
2. PLACE AILERONS IN NEUTRAL POSITION.
3. APPLY AND **HOLD** FULL RUDDER OPPOSITE TO THE DIRECTION OF ROTATION.
4. IMMEDIATELY AFTER THE RUDDER REACHES THE STOP, MOVE THE CONTROL WHEEL **BRISKLY** FORWARD FAR ENOUGH TO BREAK THE STALL. Full down elevator may be required at aft center of gravity loadings to assure optimum recoveries.
5. **HOLD** THESE CONTROL INPUTS UNTIL ROTATION STOPS. Premature relaxation of the control inputs may extend the recovery.
6. AS ROTATION STOPS, NEUTRALIZE RUDDER AND MAKE A SMOOTH RECOVERY FROM THE RESULTING DIVE.

**NOTE**

If disorientation precludes a visual determination of the direction of rotation, the needle of the turn and bank indicator or the symbolic airplane of the turn coordinator may be referred to for this information.

# ENGINE MALFUNCTIONS

## LOSS OF OIL PRESSURE

The complete loss of oil pressure, as evidenced by the low oil pressure annunciator being illuminated and confirmed by the oil pressure gage reading, implies that the pilot will eventually lose control of the propeller as the propeller springs and counterweights drive the propeller blades into feather. Also, the engine will eventually seize. Therefore, if the pilot elects to continue to operate the engine after loss of oil pressure, engine and propeller operation should be closely monitored for indication of the onset of propeller feathering or engine seizure and the engine failure checklist should be completed at that time. Operation of the engine at a reduced power setting (preferably at the minimum power required for the desired flight regime) will generally prolong the time to loss of engine/propeller thrust.

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## ENGINE MALFUNCTIONS (Continued)

### LOSS OF OIL PRESSURE (Continued)

Operation of the engine with the oil pressure in the yellow arc is not considered critical, but is a cause for concern and should be tolerated only for the completion of the flight. Continued monitoring of the oil pressure gage will provide an early indication of dropping oil pressure due to insufficient oil supply or a malfunctioning oil pump, and will give the pilot additional time to divert to a suitable emergency landing area with the engine operating.

### FUEL CONTROL UNIT MALFUNCTION IN THE PNEUMATIC OR GOVERNOR SECTIONS

A malfunction in the pneumatic or governor sections of the fuel control unit may cause engine power to decrease to minimum flow idle. Symptoms of this type failure would be an ITT indication in the typical idle range of 500°C to 600°C, Ng of 48% or above (increases with altitude), and no engine response to power lever movement. If this type of malfunction has occurred, the emergency power lever (fuel control manual override) may be used to restore engine power. To use the manual override system, place the power lever at its IDLE position and move the emergency power lever forward of its IDLE gate and advance as required.

**CAUTION**

WHEN USING THE FUEL CONTROL MANUAL OVERRIDE SYSTEM, ENGINE RESPONSE MAY BE MORE RAPID THAN WHEN USING THE POWER LEVER. UTILIZE SLOW AND SMOOTH MOVEMENT OF THE EMERGENCY POWER LEVER TO AVOID ENGINE SURGES, AND/OR EXCEEDING ITT, NG, AND TORQUE LIMITS.

**NOTE**

- When using the emergency power lever, monitor gas generator RPM when reducing power near idle, to keep it from decreasing below 65% in flight.
- The emergency power lever may have a dead band, such that no engine response is observed during the initial forward travel from the IDLE position.

## GEAR BOX CONTAMINATION

Contamination of the reduction gear box as evidenced by the chip detector annunciator being illuminated does not by itself demand any immediate action by the pilot. If this annunciation is accompanied by signs of engine distress (fluctuation in engine power gage indications, or erratic engine operation), engine operation may be continued at the discretion of the pilot consistent with crew safety. However, the power gages should be closely monitored for further degradation in torque or RPM indications, or engine operation, which implies that seizure is imminent. The engine failure checklist should be completed at that time.

## FUEL SYSTEM MALFUNCTION / INADVERTENT FUEL FLOW INTERRUPTION PROCEDURES

Fuel flows by gravity from the wing tanks, through fuel tank shutoff valves at the inboard end of each wing tank, and on to the reservoir located under the center cabin floorboard. After engine start, the main ejector pump (located in the reservoir) provides fuel to the engine-driven fuel pump at approximately 10 psi.

If the main ejector pump should malfunction, a pressure switch will activate the amber FUEL PRESS LOW annunciator as well as turn on the auxiliary boost pump (when the fuel boost switch is in the NORM position) anytime the fuel pressure drops below approximately 4.75 psi.

Anytime the level of fuel in the reservoir drops to approximately one-half full, the red RESERVOIR FUEL LOW annunciator will illuminate. If this occurs, the pilot should immediately verify that both fuel tank selectors (located in the overhead panel) are ON and turn on the ignition and fuel boost switches.

**WARNING**

**THERE IS ONLY ENOUGH FUEL IN THE RESERVOIR FOR APPROXIMATELY 1-1/2 MINUTES OF ENGINE OPERATION AT MAXIMUM CONTINUOUS POWER AFTER ILLUMINATION OF THE RESERVOIR FUEL LOW ANNUNCIATOR.**

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## FUEL SYSTEM MALFUNCTION / INADVERTENT FUEL FLOW INTERRUPTION PROCEDURES (Continued)

If the fuel tank selectors have been left off, turning them on will quickly fill the reservoir and extinguish the RESERVOIR FUEL LOW annunciator. Once the cause of the RESERVOIR FUEL LOW condition has been determined and corrected (annunciator extinguished), the ignition and fuel boost switches can be returned to their NORM positions.

A fuel selector off warning system advises the pilot if both fuel tank selectors are in the OFF position before engine start, if either fuel tank selector is OFF during engine start, or if one fuel tank selector is OFF and the fuel level in the tank being used drops below approximately 25 gallons. The warning system includes a red annunciator labeled FUEL SELECT OFF and two warning horns. If the FUEL SELECT WARN circuit breaker has popped or the START CONT circuit breaker has been pulled (possibly for ground maintenance), the FUEL SELECT OFF annunciator will be illuminated even with both fuel tank selectors in the ON position. This is a warning to the pilot that the fuel selector off warning system has been deactivated. See Section 7 for further details on the fuel selector off warning system.

## ELECTRICAL POWER SUPPLY SYSTEM MALFUNCTIONS

### BATTERY MALFUNCTIONS

If the optional nickel cadmium battery is installed, a battery temperature monitoring system is provided to detect an incipient thermal problem. The BATTERY HOT annunciator indicates internal battery temperature is 140°F or higher. The BATTERY OVERHEAT annunciator indicates battery temperature has reached 160°F. In either case, it is necessary to stop providing charging current to the battery from the airplane power system. This is accomplished by turning the battery switch off using the checklist procedures. During these procedures, the volt/ammeter (in BATT position) should be used to verify that charging current is reduced to zero. A battery temperature of 160°F may be critical and the flight should be terminated as soon as practical. A battery temperature of 140°F is critical if the temperature and charging current continue to rise. Under high ambient temperature (above 100°F) conditions, a battery temperature of 140°F is not critical if a decreasing charging current trend is verified and maintained by monitoring the volt/ammeter selected to the BATT position.

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# ELECTRICAL POWER SUPPLY SYSTEM MALFUNCTIONS (Continued)

## GENERATOR OR MAIN BUS MALFUNCTIONS

Illumination of the VOLTAGE LOW annunciator is a warning that the power distribution bus voltage is low enough to start discharging the battery. The volt/ammeter (in VOLTS position) is used to verify the low bus voltage. A low or zero reading of the volt/ammeter (in GEN position) confirms that the charge is insufficient or generator output current is zero. If the GENERATOR OFF annunciator is illuminated, it indicates that the generator contactor has disconnected the generator from the power distribution bus. The most likely causes of a generator trip (disconnection) are line surges, tripped circuit breakers or accidental switch operation. In these cases, follow the checklist procedures to restore generator operation.

The airplane is equipped with two starter contactors. One is used for starts on external power and the other for battery starts. If either contactor does not open after reaching approximately 46% $N_g$, the amber STARTER ENERGIZED annunciator will remain illuminated. In most cases when this occurs, the generator will not transfer to the generate mode, and the GENERATOR OFF annunciator will remain illuminated. Under these conditions, it will be necessary to shut down the engine using checklist procedures and correct the malfunction prior to flight.

The electrical power distribution system consists of a primary power distribution bus in the engine compartment which receives power from the battery and the generator, and two (No. 1 and No. 2) main power buses located in the circuit breaker panel. The main buses are each connected to the power distribution bus by three feeder cables. Each feeder cable is protected by a fuse link and a circuit breaker. This multiple feeder system provides automatic isolation of a feeder cable ground fault. If one of the three 30-amp feeder circuit breakers on either bus opens, it should be assumed that a feeder cable ground fault has been isolated, and attempted resetting of these breakers prior to troubleshooting is not recommended. The electrical load on the affected bus should be maintained below the remaining 60-ampere capacity.

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# ELECTRICAL POWER SUPPLY SYSTEM MALFUNCTIONS (Continued)

## LOSS OF ELECTRICAL POWER

The design of the electrical power system, due to the self-exciting feature of the generator and the multiple protected busing system, minimizes the possibility of a complete electrical power loss. However, a fault to ground (airframe) on the generator or battery cables can be identified by one or more of the following: illumination of the GENERATOR OFF annunciator, sudden dimming of lights, contactor chattering, circuit breaker tripping, or arcing noises. The volt/ammeter provides further information concerning the location of the fault, or the system affected by the fault. In the event of the above indications, the portion of the system containing the fault should be isolated. The battery should be disconnected first by turning the battery switch to OFF. Then, following the checklist procedures for Generator Failure should result in restoration of electrical power to the distribution buses. The volt/ammeter should be monitored to assure that ground fault currents have been shut off and the capacity of the remaining power source(s) is not exceeded.

## PARTIAL AVIONICS POWER FAILURE

Avionics power is supplied to the No. 1 and No. 2 avionics buses from the power distribution bus in the engine compartment through separate protected feeder cables. In the event of a feeder cable failure, both avionics buses can be connected to the remaining feeder by closing the guarded avionics bus tie switch. If a ground fault has occurred on one feeder, it will be necessary to verify the avionics power switch/breaker associated with the affected feeder is off before the avionics bus tie switch will restore power to both avionics buses. The maximum avionics load with one feeder should be limited to 30 amperes. Nonessential avionics equipment should be turned off.

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# ELECTRICAL POWER SUPPLY SYSTEM MALFUNCTIONS (Continued)

## STANDBY ELECTRICAL SYSTEM MALFUNCTIONS

An operational check of the standby electrical system is performed by following the Normal Procedures, Before Takeoff checklist. With the generator supplying the electrical load and the standby power switch ON, both the amber annunciators, STBY ELECT PWR ON and STBY ELECT PWR INOP, should be extinguished.

The volt/ammeter should indicate zero amps in the ALT position. If the STBY ELECT PWR INOP annunciator is illuminated, it indicates that the alternator has no output. If a line voltage surge or temporary condition has tripped the ACU (alternator control unit), then cycling the standby power switch to OFF, then back ON, may reset the ACU and restore standby power.

If, due to a power system malfunction, the standby electrical system is carrying part of the electrical load (more than 10 amps), the STBY ELECT PWR ON annunciator will be illuminated and the volt/ammeter (in ALT position) will indicate the amount of current being supplied by the standby electrical system.

To attempt to restore main power, refer to the Section 3 emergency procedures for Loss Of Electrical Power. If this attempt is successful, the standby electrical system will revert to its normal no-load condition and the STBY ELECT PWR ON annunciator will extinguish. If main electrical power cannot be restored, reduce nonessential loads as necessary to remain within the 75-amp capability of the standby electrical system. Loads in excess of this capability will be indicated by illumination of the VOLTAGE LOW annunciator and the volt/ammeter showing discharge current (in the BATT position).

## INADVERTENT OPENING OF AIRPLANE DOORS IN FLIGHT

If any of the airplane doors should inadvertently open in flight, the airplane should be slowed to 125 KIAS or less to reduce buffeting of the doors. If the upper cargo door is open, slow to 100 KIAS or less and lower flaps to full down so that wing downwash will move the door towards its normally closed position. Closing the upper cargo door (or upper half of the passenger door on the Standard 208) can be accomplished after airspeed has been reduced by pulling the door forcefully closed and latching the door. If the door cannot be closed in flight, a landing should be made as soon as practical in accordance with the checklist procedures. On Cargo Versions, an open cargo door cannot be closed in flight since the inside of the upper door has no handle.

If any cargo pod doors inadvertently open in flight, the airplane should be slowed to 100 KIAS or less and landed as soon as practical. During the landing, avoid a nose-high flare to prevent dragging on the runway a door that is open on the rear area of the cargo pod.

## EMERGENCY EXITS

Use of the crew entry doors, the passenger entry doors, and the cargo doors for emergency ground egress from the Standard 208 is illustrated in Figure 3-2. Emergency ground egress from the Cargomaster is accomplished by exiting the airplane through the left and right crew entry doors as shown in Figure 3-2.

**WARNING**

- **DO NOT ATTEMPT TO EXIT THE CARGOMASTER THROUGH THE CARGO DOORS. SINCE THE INSIDE OF THE UPPER DOOR HAS NO HANDLE, EXIT FROM THE AIRPLANE THROUGH THESE DOORS IS NOT POSSIBLE.**
- **WHEN EXITING THE AIRPLANE, AVOID THE PROPELLER AREA.**

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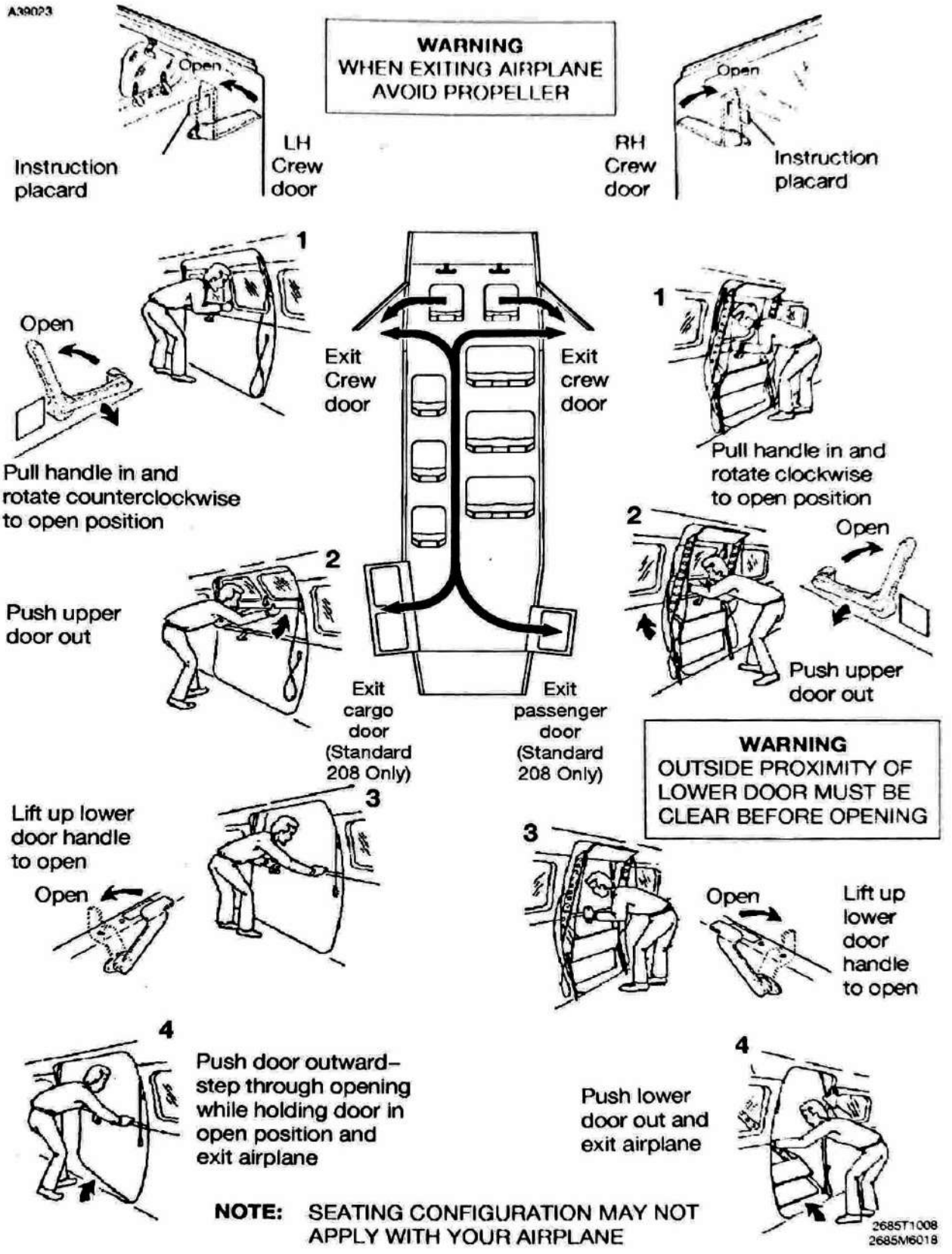


**NOTE:** SEATING CONFIGURATION MAY NOT APPLY WITH YOUR AIRPLANE

Figure 3-2. Emergency Exits