# SECTION 3A

ABNORMAL PROCEDURES

TABLE OF CONTENTS

## 3A.1 GENERAL

This section contains recommended procedures for different abnormal system and/or flight conditions. Refer to Section 9 “Supplements” for additional emergency procedures associated with optional or particular equipment.

Many abnormal procedures require immediate action by the pilot, leaving little time to consult the abnormal procedures. Prior knowledge of these procedures and a thorough understanding of the airplane systems are prerequisites for safe airplane handling.

The abnormal procedures use the terms “Land as soon as possible” and “Land as soon as practical.” For the purposes of these procedures, these terms are defined as follows:

- Land as soon as possible – Land without delay at the nearest suitable airport where a safe approach and landing is reasonably assured.
- Land as soon as practical – Landing airport and duration of flight are at the discretion of the pilot. Extended flight beyond the nearest suitable airport where a safe approach and landing is reasonably assured is not recommended.

Abnormal procedures alone cannot protect against all situations. Good airmanship must be used in conjunction with the emergency procedures to manage the emergency.

## 3A.2 DRY MOTORING

1. POWER Lever ..... IDLE
2. PROP Lever ..... FEATHER
3. COND Lever ..... FUEL CUTOFF
4. BATT 1 & BATT 2 Switches ..... ON
5. L & R FUEL PUMP Switches ..... ON
6. IGNITER Switch ..... AUTO
7. STARTER GEN Switch ..... ON
8. START Switch ..... PRESS & RELEASE

9. Motor at least 15 seconds.

10. STARTER GEN Switch ..... OFF
11. L & R FUEL PUMP Switches ..... OFF
12. BATT 1 & BATT 2 Switches ..... OFF

## 3A.3 ENGINE

### 3A.3.1 ENGINE DOES NOT SHUT DOWN

1. FUEL TANK SELECTOR Knob ..... OFF

*After $N_G$ is below 10%:*

2. STARTER GEN Switch ..... OFF
3. L & R FUEL PUMP Switches ..... OFF
4. BATT 1 & BATT 2 Switches ..... OFF
5. Maintenance required.

## 3A.4 LANDING GEAR

### 3A.4.1 LANDING GEAR FAILS TO RETRACT

Conditions:

- LANDING GEAR control up, and
- One or more gear position indicators remain red after a normal gear actuation movement period

1. Airspeed.....BELOW $V_{LO}$ (150 KIAS)
2. Landing gear indicators ..... CHECK
3. LANDING GEAR Control.....DOWN, WAIT FOR GEAR EXTENSION TO COMPLETE, THEN UP

NOTE

Slowing down and/or reducing power will often allow the gear to retract.

4. *If landing gear retraction failure persists:*
   a. LANDING GEAR Control .....DOWN
   b. Land as soon as practical.

5. *If* HYD PRESS *Caution appears:*
   a. Refer to HYD PRESS (3A.8.16)

NOTE

If either the left or right main gear does not indicate up-and-locked with the LANDING GEAR control in the UP position, the hydraulic pump will remain active, eventually resulting in a HYD PRESS Caution.

## 3A.4.2 LANDING GEAR FAILS TO EXTEND

Conditions:

- LANDING GEAR control DOWN, and
- One or more gear position indicators not indicating down and locked (green) after a normal gear actuation movement period

1. Airspeed ..... BELOW 150 KIAS
2. Landing gear indicators ..... CHECK
3. LANDING GEAR Control ..... UP, WAIT FOR GEAR RETRACTION TO COMPLETE, THEN DOWN

4. *If landing gear fails to extend normally:*
   a. Airspeed ..... BELOW 150 KIAS
   b. LANDING GEAR Control ..... DOWN
   c. Emergency Gear Extension Handle ..... ACTIVATE

**WARNING**

**AFTER EMERGENCY GEAR DEPLOYMENT, DO NOT ATTEMPT TO RETRACT GEAR.**

   d. POWER Lever ..... AS REQUIRED
   e. Airspeed ..... BELOW 150 KIAS

❖ *IF ALL LANDING GEARS INDICATE UNSAFE:*

5. Perform LANDING WITH GEAR UP (3.8.2).

❖ *IF EITHER OR BOTH MAIN LANDING GEAR INDICATES UNSAFE*

5. Perform LANDING WITH MAIN GEAR UNSAFE (3A.5.1).

❖ *IF NOSE LANDING GEAR INDICATES UNSAFE:*

5. Perform LANDING WITH NOSE LANDING GEAR UNSAFE (3A.5.2).

***Amplification***

The emergency gear extension may only be used once per flight and will require servicing after its use.

NOTE

A failure of any of the up-lock or landing gear actuators results in an inability to extend the associated gear.

NOTE

Although a loss of hydraulic pressure is independent from the loss of nitrogen pressure, a single hose is common to both fluid paths, a blockage or leakage of which could conceivably be a single point of failure common to both extension functions.

## 3A.5 ABNORMAL LANDINGS

### 3A.5.1 LANDING WITH MAIN GEAR UNSAFE

Condition:

- LANDING GEAR control DOWN
- One or both main landing gear not indicating down and locked (green)

1. If able, have ground personnel visually verify gear position.

2. FUEL AUTO SEL Switch ..... OFF
3. FUEL TANK SELECTOR Knob ..... SELECT SIDE WITH FAILED GEAR
   (to lighten wing; maximum fuel imbalance 20 US gal)
4. Passengers ..... BRIEF
5. Flaps ..... FULL
6. Approach Speed (Normal Mode) ..... 95 KIAS

7. Touchdown gently on good gear; avoid sideloading; avoid heavy braking.
8. Use full aileron during roll-out to lift the wing with the unsafe landing gear.
9. Roll straight ahead; do not turn.

10. POWER Lever ..... IDLE (avoid reverse)
11. PROP Lever ..... FEATHER
12. COND Lever ..... FUEL CUTOFF
13. FUEL TANK SELECTOR Knob ..... OFF

*After the airplane has stopped:*

14. BATT 1 & BATT 2 Switches ..... OFF
15. Airplane ..... EVACUATE

***Amplification***

Choose a runway with headwind or crosswind blowing from failed gear side. Align the airplane to land on the runway edge opposite the failed landing gear.

If the gear collapses, maintain directional control with rudder and opposite brakes.

Do not taxi the airplane before the deficiency is rectified.

### 3A.5.2 LANDING WITH NOSE GEAR UNSAFE

Condition:

- LANDING GEAR control DOWN
- Nose landing gear not indicating down and locked (green)

1. If able, have ground personnel visually verify gear position.

2. Passengers ..... BRIEF
3. Flaps ..... FULL
4. Approach Speed (Normal Mode) ..... 95 KIAS

5. Land on main wheels, keep nose high.

6. POWER Lever ..... IDLE
7. PROP Lever ..... FEATHER
8. COND Lever ..... FUEL CUTOFF
9. FUEL TANK SELECTOR Knob ..... OFF

10. Lower nose wheel slowly; use gentle to no braking.

*After the airplane has stopped:*

11. BATT 1 & BATT 2 Switches ..... OFF
12. Airplane ..... EVACUATE

***Amplification***

The nose gear is considered unsafe for landing when it is not indicating down and locked (green).

After landing, stop on the runway and do not taxi the airplane before the deficiency is rectified.

If the gear collapses, maintain directional control with rudder and differential brakes.

### 3A.5.3 FLAT TIRE DURING LANDING

1. Direction ..... CONTROL USING BRAKES AND NOSE WHEEL STEERING
2. Brakes ..... MINIMIZE BRAKING IF ABLE
3. POWER Lever ..... REVERSE AS REQUIRED
4. Stop the airplane to minimize damage to wheels.
5. Perform SHUTDOWN (4.3.15).

## 3A.5.4 LANDING WITH FAILED BRAKES

Conditions:

- Wheel brakes ineffective
- Brake pedal excessively soft when pressed
- Asymmetric braking

1. *If only one brake is inoperative:*
   a. Choose runway with crosswind from the side of the inoperative brake, if possible.
   b. Land on the side of the runway corresponding to the inoperative brake.

*After touchdown:*

2. POWER Lever ..... REVERSE AS REQUIRED

3. Maintain directional control with nose wheel steering.
4. Bring airplane to a stop with gentle use of reverse thrust and gentle application of remaining brake.

*After airplane stops:*

5. POWER Lever ..... IDLE
6. PROP Lever..... FEATHER
7. COND Lever ..... FUEL CUTOFF
8. Tow airplane to parking.

## 3A.6 PRESSURIZATION/OXYGEN

### 3A.6.1 CABIN DOES NOT DEPRESSURIZE BEFORE LANDING

1. GROUND FRESH AIR Switch ..... OFF
2. DUMP VALVE Switch ..... ON
3. PRESS AIR Switch ..... OFF
4. DOOR SEAL Switch..... OFF
5. Maintenance required prior to next pressurized flight.

## 3A.7 FLIGHT ENVIRONMENT

### 3A.7.1 FROST/MOISTURE ON INTERNAL WINDSHIELD

1. DEFROST Switch ..... ON

**CAUTION**

USE OF DEFROST TOGETHER WITH EMERG PRESS IS PROHIBITED.

2. *If windshield does not clear:*
   a. AIR COND Switch ..... ON
   b. Climate Fan Control..... MAXIMUM (clockwise)
   c. Manually clean enough area for visibility using cloth rag.

## 3A.8 CAUTION (AMBER) CAS MESSAGES — IN FLIGHT

### 3A.8.1 ALTERNATOR ON

**ALTERNATOR ON**

Conditions:

- Standby alternator is on
- Alternator is generating power, and
- BATT 1 V below 28.0

1. Descend to FL190 or below.
2. Monitor both battery voltages for indication of discharge.
3. ALTN AMPS Indicator ..... MONITOR

*If battery voltages decrease over time:*

4. Reduce electrical load.
5. Land as soon as practical.

*After departing from icing conditions and airframe is clear of residual ice:*

6. Reduce electrical load.
7. Land as soon as practical.

NOTE

Standby alternator use is limited to one hour.

NOTE

Alternator output is internally limited to 41 amps. Additional load will result in battery voltage being reduced.

### 3A.8.2 AUTO FUEL FAIL

**AUTO FUEL FAIL**

Condition:

- Automatic fuel selector controller is failed

1. FUEL AUTO SEL Switch ..... OFF
2. FUEL TANK SELECTOR Knob ..... OPERATE MANUALLY

**CAUTION**

MAXIMUM FUEL IMBALANCE BETWEEN TANKS IS 20 US GALLONS.

### 3A.8.3 AUTO FUEL OFF

**AUTO FUEL OFF**

Condition:

- Automatic fuel selector switch is OFF

1. FUEL AUTO SEL Switch..... ON

2. *If* *AUTO FUEL OFF* *Caution displayed:*
   a. FUEL AUTO SEL Switch ..... OFF
   b. FUEL TANK SELECTOR Knob ..... OPERATE MANUALLY

**CAUTION**

MAXIMUM FUEL IMBALANCE BETWEEN TANKS IS 20 US GALLONS.

### 3A.8.4 AUTO PTRM FAIL

**AUTO PTRM FAIL**

Conditions:

- Autopilot engaged, and
- Trim monitor detects an automatic pitch trim failure.

1. Monitor flight path.

2. *If autopilot deviates from commanded flight path:*
   a. Control Yoke ..... GRASP AND MAINTAIN CONTROL
   b. AP/TRIM DISC Switch ..... PRESS AND RELEASE
   c. TRIM RESET Switch ..... PRESS AND RELEASE
   d. Elevator..... MANUALLY RETRIM AS REQUIRED

3. Land as soon as practical.

## 3A.8.5 BATT VOLTS LO

**BATT 1 VOLTS LO**
**BATT 2 VOLTS LO**

Conditions:

- Battery voltage is below 25.0 V with engine running, or
- Battery voltage is below 24.2 V with engine not running

1. STBY ALTN Switch..... CHECK ON
2. ALTN AMP Indicator .....CHECK

*3. If ALTN AMP indicator is 0:*
   a. STBY ALTN Switch .....OFF, WAIT 5 SECS, ON

4. Monitor both battery voltages for indication of discharge.
5. Land as soon as possible.

***Amplification***

This should only occur in the event of a generator failure and possible alternator failure, and the batteries have been drawn down over time.

## 3A.8.6 DIFF P HIGH

**DIFF P HIGH**

Condition:

- Differential pressure greater than 6.9 psid

1. EMERG PRESS Switch..... OFF
2. HI PRESS AIR Switch ..... OFF

3. *If* DIFF P HIGH *Caution remains:*
   a. Set landing field elevation in PFD to 10,000 ft.
   b. Descend to 10,000 ft or minimum safe altitude (if higher).
   c. DUMP VALVE Switch ..... ON

4. *If* DIFF P HIGH *Caution remains:*
   a. PRESS AIR Switch ..... OFF
   b. GROUND FRESH AIR Switch ..... ON

NOTE

Use of supplemental oxygen may be required.

5. Land as soon as practical.

NOTE

Flight at lower altitudes significantly decreases fuel efficiency and range.

### 3A.8.7 DOOR SEAL OFF

**DOOR SEAL OFF**

Conditions:

- Door seal switch is OFF

1. DOOR SEAL Switch..... ON

### 3A.8.8 DUCT TEMP HIGH

**DUCT TEMP HIGH**

Condition:

- Cabin bleed air duct temperature is high

1. POWER Lever.....REDUCE TO MINIMUM PRACTICAL
2. EMERG PRESS Switch ..... OFF
3. HI PRESS AIR Switch..... OFF
4. Climate Hot Air Control .....FULL COLD (counterclockwise)
5. DEFROST Switch ..... OFF
6. WINDSH HEAT Switch ..... OFF

NOTE

Windshield heat may be turned back on, if necessary for forward visibility, five minutes prior to landing.

7. *If* *DUCT TEMP HIGH* *Caution remains after 5 minutes:*
   a. Reduce power and descend immediately to 10,000 ft or minimum safe altitude (if higher).
   b. PRESS AIR Switch..... OFF
   c. Land as soon as practical.

NOTE

Flight at lower altitudes significantly decreases fuel efficiency and range.

## 3A.8.9 FLAPS FAIL

### FLAPS FAIL

Conditions:

- Flaps did not reach selected position within 15 seconds, or
- Flap limit switch failure

1. Visually determine flap position.

2. *If flaps in FULL position:*
   a. FLAPS Switch ..... T/O
   b. FLAPS Circuit Breaker (**R B** ╠3►) ..... RESET (maximum 1 time)
   c. Observe flap position and movement.
   *d. If flaps fail to move:*
      i. Maximum bank angle ..... 30 DEGREES
      ii. Minimize maneuvering flight.

3. FLAPS Circuit Breaker (**R B** ╠3►) ..... PULL

4. Minimum Airspeed ..... 115 KIAS

5. Maximum Airspeed ..... 180 KIAS MAXIMUM (Flaps UP to T/O)
   130 KIAS MAXIMUM (Flaps greater than T/O)

6. Land as soon as practical.

**CAUTION**

ALLOW FOR LANDING DISTANCE INCREASE OF 65% MORE THAN FLAPS FULL.

**CAUTION**

WHEN LANDING IN PUSHER ICE MODE, INCREASE LANDING DISTANCE BY 20%. THIS MODE IS ACTIVE WHEN DE-ICE BOOTS OR PROP HEAT IS SELECTED ON.

### 3A.8.10 FUEL FILT BLOCK

**FUEL FILT BLOCK**

Condition:

- Fuel filter bypass is impending or has occurred

1. Fuel Pressure ..... MONITOR
2. Land as soon as possible.
3. Maintenance required.

***Amplification***

Fuel is or may soon be bypassing the fuel filter for delivery to the engine.

Any existing particulate matter in the fuel supply may block fuel flow through the fuel control unit, causing an engine flame-out.

### 3A.8.11 FUEL IMBALANCE

**FUEL IMBALANCE**

Condition:

- More than a 20-gallon imbalance between fuel tanks

NOTE

During uncoordinated flight, the fuel indicators may temporarily indicate a fuel imbalance. Restoring the aircraft to coordinated flight will return the fuel indicators to a balanced condition and automatically clear the FUEL IMBALANCE caution.

1. FUEL QTY ..... CHECK
2. FUEL AUTO SEL Switch ..... OFF
3. FUEL TANK SELECTOR Knob ..... FULLEST TANK

*Once fuel tanks are balanced again:*

4. FUEL AUTO SEL Switch ..... ON

5. *If FUEL IMBALANCE Caution reappears:*
   a. FUEL AUTO SEL Switch ..... OFF
   b. FUEL TANK SELECTOR Knob ..... OPERATE MANUALLY

3A.8.12 FUEL PRESS LOW

## FUEL PRESS LOW

Condition:

- Fuel pressure at the engine pump inlet is less than 10 psi

1. L & R FUEL PUMP Switches..... CHECK ON
2. FUEL AUTO SEL Switch ..... OFF
3. FUEL TANK SELECTOR Knob ..... SWITCH TANKS

❖ *IF* *FUEL PRESS LOW* *CAUTION EXTINGUISHES:*

4. FUEL QTY ..... CHECK REMAINING
5. Switch fuel tanks only as necessary to remain within fuel imbalance limitations.

❖ *IF* *FUEL PRESS LOW* *CAUTION PERSISTS*

6. POWER Lever..... REDUCE TO MINIMUM NECESSARY FOR CONTINUED FLIGHT, AVOID HIGH POWER AND RAPID THROTTLE MOVEMENTS

7. Descend to FL210 or below.
8. Land as soon as practical.

**CAUTION**

EXTENDED OPERATION WITH FUEL PRESSURE BELOW 5 PSI MAY RESULT IN ENGINE DAMAGE.

NOTE

Record the amount of time the engine has run with fuel pressure at or below 5 PSI in the engine logbook.

### 3A.8.13 FUEL PUMP OFF

**L FUEL PUMP OFF**
**R FUEL PUMP OFF**

Condition:

- Left or right fuel pump switch is OFF

1. L and/or R FUEL PUMP Switches ..... ON

2. *If* L/R FUEL PUMP OFF *Caution persists:*
   a. IGNITER Switch ..... ON
   b. FUEL QTY .....CHECK REMAINING
   c. FUEL AUTO SEL Switch ..... OFF
   d. FUEL TANK SELECTOR Knob .....TANK WITH OPERABLE PUMP
   e. Descend to FL210 or below.
   f. Switch fuel tanks as necessary to remain within fuel imbalance limitations.
   g. Land as soon as possible.

**CAUTION**

MAXIMUM FUEL IMBALANCE BETWEEN TANKS IS 20 US GALLONS.

**CAUTION**

EXTENDED OPERATION WITH FUEL PRESSURE BELOW 5 PSI MAY RESULT IN ENGINE DAMAGE.

NOTE

Record the amount of time the engine has run with fuel pressure at or below 5 PSI in the engine log book.

### 3A.8.14 FUEL QTY LOW

**L FUEL QTY LOW**
**R FUEL QTY LOW**

Condition:

- Less than 15 gallons in the affected fuel tank

1. FUEL QTY.....CHECK REMAINING
2. IGNITER Switch ..... ON
3. FUEL AUTO SEL Switch..... OFF
4. FUEL TANK SELECTOR Knob .....SWITCH TO FULLEST TANK
5. Land as soon as possible.

**CAUTION**

AVOID UNCOORDINATED FLIGHT (SLIPS OR SKIDS) AND HIGH PITCH ATTITUDES GREATER THAN 10 DEGREES.

## 3A.8.15 GEAR MISCOMP

**GEAR MISCOMP**

Conditions:

- One or more landing gears are sensing both up and locked, and down and locked

*Before landing:*

1. Landing Gear ..... DOWN

2. *If unable to verify landing gear in down-and-locked position:*
   a. Perform LANDING GEAR FAILS TO EXTEND (3A.4.2).

NOTE

Maximum speed with a GEAR MISCOMP is 150 KIAS.

## 3A.8.16 HYD PRESS

**HYD PRESS**

Conditions:

- Hydraulic system pressurizing for more than 20 seconds

**CAUTION**

LANDING GEAR MAY NOT OPERATE NORMALLY.

1. Airspeed ..... 150 KIAS OR LESS

2. *If any landing gear indicates in-transit or unsafe:*
   a. Landing Gear Control ..... DOWN

3. *If HYD PRESS Caution does not extinguish:*
   a. GEAR CTRL Circuit Breaker (**L B** 1►) ..... PULL

4. Land as soon as practical.

**CAUTION**

MAINTAIN AIRSPEED AT OR BELOW 150 KIAS.

NOTE

Operation with the GEAR CTRL circuit breaker pulled will open the fuel return line from the engine to the left tank. Monitor fuel levels for imbalance.

— PROCEDURE CONTINUES ON NEXT PAGE —

5. *Prior to landing, if the landing gear is not already down and locked:*
   a. GEAR CTRL Circuit Breaker (**L B** ╠1►).....RESET
   b. Landing Gear Control ..... DOWN
   c. If [*HYD PRESS*] Caution illuminates:
      i. GEAR CTRL Circuit Breaker (**L B** ╠1►) .....PULL

6. *If the landing gear is not down and locked:*
   a. Execute LANDING GEAR FAILS TO EXTEND (3A.4.2).

### 3A.8.17 ICE

**ICE**

Conditions:
- Airframe icing conditions detected.
- Ice protection systems (prop heat and de-ice boots) are not on.

1. IGNITER Switch ..... ON
2. PITOT STALL HT Switch..... ON
3. PROP HEAT Switch ..... ON
4. INERT SEP Switch ..... ON
5. [INERT SEP ON] Advisory.....CHECK ON
6. DE-ICE BOOTS Switch ..... ON
   (OAT at or above -40°C)
7. WINDSH HEAT Switch.....AS REQUIRED
8. ICE LIGHT Switch .....AS REQUIRED

### 3A.8.18 ICE DETECT FAIL

**ICE DETECT FAIL**

Condition:
- Advisory Ice Detector has failed.

❖ *IF IN ICING CONDITIONS:*

1. Wing Leading Edge.....MONITOR

NOTE

The wing leading edge turbulators may be used as a reference area for determining if the aircraft is free from ice. If ice is visible on other areas of the aircraft, those should be cleared as well before IPS are turned off.

❖ *IF <u>NOT</u> IN ICING CONDITIONS:*

1. Avoid icing conditions.

## 3A.8.19 INERT SEP FAIL

**INERT SEP FAIL**

Condition:

- Inertial separator is not in the commanded position within 30 seconds of the INERT SEP switch being selected ON or OFF

1. INERT SEP Switch ..... OFF

2. Exit/avoid icing conditions.

3. *If* INERT SEP FAIL *Caution does not extinguish:*
   a. INERT SEP Circuit Breaker (**R B** ╠**1►**) ..... PULL
   b. Depart heavy precipitation conditions as soon as possible.

## 3A.8.20 MAN PTRM FAIL

**MAN PTRM FAIL**

Conditions:

- Uncommanded pitch trim motion, or
- Pitch trim not responding to commands.

1. AP/TRIM DISC Switch ..... PRESS AND HOLD

**CAUTION**

HOLD THE CONTROL YOKE FIRMLY. SIGNIFICANT FORCE ON THE CONTROL YOKE MAY BE REQUIRED.

2. TRIM DISC Caution ..... DISPLAYED
3. AP/TRIM DISC Switch ..... RELEASE
4. ELEV TRIM Circuit Breaker (**R T** ╠**3►**) ..... PULL
5. TRIM RESET Switch ..... PRESS AND RELEASE
6. AIRSPEED ..... ADJUST TO RELIEVE FORCES
7. Land as soon as practical.

### 3A.8.21 MISTRIM

**P MISTRIM**
**R MISTRIM**
**Y MISTRIM**

Condition:

- Autopilot indicates out-of-trim condition.

1. Monitor flight path.

2. If autopilot deviates from commanded flight path:
   a. Control Yoke ..... GRASP AND MAINTAIN CONTROL
   b. AP/TRIM DISC Switch ..... PRESS AND RELEASE
   c. Trim the airplane.

**CAUTION**

MANUAL ELEVATOR (PITCH) TRIM WILL CAUSE THE AUTOPILOT TO DISCONNECT. MANUAL RUDDER (YAW) TRIM WILL CAUSE THE YAW DAMPER TO DISCONNECT. HOLD THE CONTROL YOKE FIRMLY. SIGNIFICANT FORCE ON THE CONTROL YOKE MAY BE REQUIRED.

### 3A.8.22 NITROGEN LOW

**NITROGEN LOW**

Conditions:

- Nitrogen pressure in the emergency landing gear extension system is less than 1700 psi

1. N2PRES ..... MONITOR

2. *If nitrogen pressure is less than 1500 PSI:*
   a. Land as soon as practical.

NOTE

When nitrogen pressure drops below 1500 PSI, there may be insufficient pressure to utilize the emergency landing gear extension system.

3A.8.23 OAT FAIL

## OAT FAIL

Conditions:

- Faults in one or both OAT systems are detected.

1. Watch for visible moisture.

2. *If visible moisture is detected:*
   a. IGNITER Switch ..... ON
   b. PITOT STALL HT Switch ..... ON
   c. PROP HEAT Switch ..... ON
   d. INERT SEP Switch ..... ON
   e. INERT SEP ON Advisory ..... CHECK ON
   f. DE-ICE BOOTS Switch ..... ON
   g. WINDSH HEAT Switch ..... AS REQUIRED
   h. ICE LIGHT Switch ..... AS REQUIRED

3. Exit/avoid icing conditions.

4. Monitor airspeed.

NOTE

WSH HT ON Caution/Warning may erroneously be displayed during windshield heat operation.

3A.8.24 OXY SYS OFF

**OXY SYS OFF**

Condition:
- The oxygen bottle regulator switch is closed

1. OXYGEN BOTTLE Switch ..... ON

2. *If* OXY SYS OFF *Caution persists:*
   a. OXY PANEL Circuit Breaker (**L B ◄4**╣)..... RESET

3. *If* OXY SYS OFF *Caution persists and range considerations allow:*
   a. Descend to FL250.

NOTE

Flight at lower altitudes significantly decreases fuel efficiency and range.

3A.8.25 OXYGEN LOW

**OXYGEN LOW**

Condition:
- Oxygen bottle pressure is less than 600 psi

❖ *IF ANY OXYGEN MASKS ARE IN USE:*

2. Shut off passenger oxygen to preserve oxygen for crew:
   a. EMERG OXYGEN Switch ..... OFF
   b. PAX OXY Circuit Breaker (**L B ◄12**╣)..... PULL
3. Descend to 10,000 ft or minimum safe altitude (if higher).

❖ *IF ALL OXYGEN MASKS ARE NOT IN USE AND RANGE CONSIDERATIONS PERMIT:*

2. Descend to FL250.

NOTE

Flight at lower altitudes significantly decreases fuel efficiency and range.

3A.8.26 PITOT HEAT OFF

**PITOT HEAT OFF**

Condition:
- PITOT STALL HT switch is OFF

1. PITOT STALL HT Switch ..... ON

— PROCEDURE CONTINUES ON NEXT PAGE —

2. *If message persists:*
   a. Exit/avoid icing conditions.
   b. Avoid visible moisture.

   c. *If all airspeed indicating systems have failed and symptoms persist:*
      i. Perform a precautionary landing, flying by reference to attitude, altitude, and power instruments.
   d. Land as soon as practical.

### 3A.8.27 PITOT HT FAIL

**L PITOT HT FAIL**
**R PITOT HT FAIL**

Condition:
- PITOT STALL HT Switch is selected ON, and
- The affected pitot heat is failed

1. PITOT STALL HT Switch.....OFF, THEN ON

2. Exit/avoid icing conditions and avoid visible moisture.

3. *If* L PITOT HT FAIL *Caution does not extinguish:*
   a. L PITOT HEAT Circuit Breaker (**L B ◄6╢**)..... PULL
   b. Pilot's (Left) PFD ..... SELECT ADC2 SENSOR
   c. Notify ATC of loss of RVSM capability.

4. *If* R PITOT HT FAIL *Caution does not extinguish:*
   a. R PITOT HEAT Circuit Breaker (**R B ╟5►**)..... PULL
   b. Copilot's (Right) PFD ..... SELECT ADC1 SENSOR
   c. Notify ATC of loss of RVSM capability.

***Amplification***

The Standby Instrument references the left pitot tube for airspeed.

If the L PITOT HT FAIL Caution appears, expect the possibility of unreliable airspeed indication from ADC1 and the Standby Instrument during operations in visible moisture with an outside air temperature below +4°C.

If the R PITOT HT FAIL Caution appears, expect the possibility of unreliable airspeed indication from ADC2 during operations in visible moisture with an outside air temperature below +4°C.

If necessary, fly by reference to attitude, altitude, and power instruments.

### 3A.8.28 PITOT RELAY FAIL

**PITOT RELAY FAIL**

Condition:

- Pitot heat in “on ground” mode

1. PITOT STALL HT Switch ..... OFF, THEN ON

2. *If* PITOT RELAY FAIL *Caution remains:*
   a. Exit/avoid icing conditions.
   b. Remain clear of visible moisture.
   c. Land as soon as practical.

### 3A.8.29 PRESS AIR OFF

**PRESS AIR OFF**

Condition:

- PRESS AIR switch is OFF

1. PRESS AIR Switch ..... ON

### 3A.8.30 PROP HEAT FAIL

**PROP HEAT FAIL**

Conditions:

- PROP HEAT switch is ON, and
- Outside air temperature is less than 0°C, and
- No propeller heat current is sensed

1. PROP HEAT Switch ..... OFF, WAIT 5 SECS, ON

2. *If* PROP HEAT FAIL *Caution reappears:*
   a. PROP HEAT Switch ..... OFF

3. Exit/avoid icing conditions and avoid visible moisture.

NOTE

Pusher Ice Mode will remain active unless both the PROP HEAT and DE-ICE BOOTS switches are turned off.

## 3A.8.31 PUSH MODE FAIL

**PUSH MODE FAIL**

Condition:

- SPS pusher schedule does not match airplane configuration

1. Minimum Airspeed ..... FLAPS UP: 130 KIAS
   FLAPS T/O: 125 KIAS
   FLAPS FULL: 110 KIAS

**CAUTION**

WHEN LANDING IN PUSHER ICE MODE INCREASE LANDING DISTANCE BY 20%.

***Amplification***

If the PUSH MODE FAIL Caution is displayed when both the prop heat and de-ice boots systems are off, then the Pusher Ice Mode schedule is incorrectly active. This may cause the SPS to activate at a lower angle of attack (higher airspeed) than expected. The pilot should fly higher minimum airspeeds to avoid inadvertent activation of the SPS.

If the PUSH MODE FAIL Caution is displayed when either the prop heat or de-ice boots system is on, the Pusher Ice Mode schedule is incorrectly not active. This may cause the SPS to activate at a higher angle of attack (lower airspeed) than expected. The pilot should fly higher minimum airspeeds to avoid unprotected stalls.

## 3A.8.32 PUSHER ICE MODE

**PUSHER ICE MODE**

Condition:

- Pusher Ice Mode is enabled, and
- Landing Gear Down

1. Approach Speeds ..... Flaps T/O: 119 – 130 KIAS (Pusher Ice Mode)

3A.8.33 PUSHER OFF

**PUSHER OFF**

Condition:

- No power to the pusher servo.

1. PUSHER Circuit Breaker (**L B ◄1╣**).....RESET
(maximum 1 time)

2. *If* *PUSHER OFF* *Caution persists:*
   a. Minimum Speeds:

| | | SPS/PUSHER | |
|---|---|---|---|
| | | NORMAL MODE | ICE MODE |
| Flaps | UP | 100 KIAS | 115 KIAS |
| | T/O | 95 KIAS | 110 KIAS |
| | FULL | 80 KIAS | - |

**WARNING**

**STALL PREVENTION IS NOT PROVIDED WITH THE PUSHER OFF. DO NOT DECELERATE BELOW THE AIRSPEEDS IN THE MINIMUM SPEEDS TABLE.**

3A.8.34 STALL CMP FAIL

**L STALL CMP FAIL**
**R STALL CMP FAIL**

Condition:

- Stall Prevention System fault.

1. PUSHER Circuit Breaker (**L B ◄1╣**).....PULL

2. Minimum Speeds:

| | | SPS/PUSHER | |
|---|---|---|---|
| | | NORMAL MODE | ICE MODE |
| Flaps | UP | 100 KIAS | 115 KIAS |
| | T/O | 95 KIAS | 110 KIAS |
| | FULL | 80 KIAS | - |

**WARNING**

**STALL PREVENTION IS NOT PROVIDED WITH THE PUSHER CIRCUIT BREAKER PULLED. DO NOT DECELERATE BELOW THE AIRSPEEDS IN THE MINIMUM SPEEDS TABLE.**

**CAUTION**

If both stall computers have failed, GFC 700 Autopilot Underspeed Protection (USP) will not be provided in Altitude Critical Modes (ALT, GS, GP, T/O and GA).

## 3A.8.35 STALL HT FAIL

**L STALL HT FAIL**
**R STALL HT FAIL**

Conditions:

- PITOT STALL HT switched ON, and
- One or more stall heaters is failed on affected stall sensor

1. Exit/avoid icing conditions and avoid visible moisture.

2. PITOT STALL HT Switch.....OFF, THEN ON

3. *If* L STALL HT FAIL *Caution persists:*
   a. L STALL HEAT Circuit Breaker (**R T ╠7►**) ..... PULL
   b. SPS CMP 1A Circuit Breaker (**L T ◄6╣**)..... PULL
   c. SPS CMP 1B Circuit Breaker (**L B ◄10╣**) ..... PULL
   d. PUSHER Circuit Breaker (**L B ◄1╣**) ..... PULL

4. *If* R STALL HT FAIL *Caution persists:*
   a. R STALL HEAT Circuit Breaker (**R B ╠4►**) ..... PULL
   b. SPS CMP 2A Circuit Breaker (**L T ◄5╣**)..... PULL
   c. SPS CMP 2B Circuit Breaker (**L B ◄9╣**) ..... PULL
   d. PUSHER Circuit Breaker (**L B ◄1╣**) ..... PULL

5. Minimum Speeds:

| | | SPS/PUSHER | |
|---|---|---|---|
| | | NORMAL MODE | ICE MODE |
| Flaps | UP | 100 KIAS | 115 KIAS |
| | T/O | 95 KIAS | 110 KIAS |
| | FULL | 80 KIAS | - |

**WARNING**

**A FROZEN STALL SENSOR MAY CAUSE ERRONEOUS INFORMATION TO THE STALL PREVENTION SYSTEM AND MAY CAUSE THE STICK PUSHER OR STICK SHAKER TO ACTIVATE ERRONEOUSLY.**

**WARNING**

**IF EITHER OF THE STALL PREVENTION SYSTEM COMPUTERS ARE DISABLED, STALL PREVENTION (I.E. PUSHER) IS NOT PROVIDED. IF BOTH STALL PREVENTION SYSTEM COMPUTERS ARE DISABLED STALL WARNING (I.E. SHAKER) IS ALSO NOT PROVIDED. DO NOT DECELERATE BELOW THE AIRSPEEDS IN THE MINIMUM SPEEDS TABLE.**

— PROCEDURE CONTINUES ON NEXT PAGE —

**CAUTION**

DISABLING BOTH SPS COMPUTERS WILL CAUSE PUSHER ICE MODE TO BE DISPLAYED, AND WHEN ICE PROTECTION SYSTEMS ARE OFF, AN ADDITIONAL ICE MODE FAIL CAUTION WILL BE DISPLAYED.

**CAUTION**

IF BOTH STALL COMPUTERS HAVE BEEN DISABLED, GFC 700 AUTOPILOT UNDERSPEED PROTECTION (USP) WILL NOT BE PROVIDED IN ALTITUDE CRITICAL MODES (ALT, GS, GP, T/O AND GA).

NOTE

If both stall computers have been disabled, the angle of attack indicators will become inoperative.

### 3A.8.36 STARTER ON

**STARTER ON**

Condition:

- The starter has been engaged for more than 60 seconds

1. GEN AMP Indicator ..... CHECK
2. *If GEN AMP is negative:*
   *a.* STARTER GEN Switch ..... OFF
3. Land as soon as practical.

**CAUTION**

THE HYDRAULIC SYSTEM MAY NOT PRESSURIZE AND MAY REQUIRE USE OF THE EMERGENCY LANDING GEAR EXTENSION SYSTEM. SEE LANDING GEAR FAILS TO EXTEND (3A.4.2).

NOTE

The open fuel purge circuit will return fuel to the left wing, which may trigger a FUEL IMBALANCE Caution. See FUEL IMBALANCE (3A.8.11).

3A.8.37 TRIM DISC

## TRIM DISC

Condition:

- Trim system has been disconnected

❖ *IF TRIM SYSTEM STILL OPERATIVE AND DESIRED:*

1. TRIM RESET Button .....PRESS AND RELEASE

❖ *IF TRIM SYSTEM IS INOPERATIVE:*

1. Airspeed.....ADJUST TO RELIEVE FORCES

**CAUTION**

SIGNIFICANT FORCE ON THE CONTROL YOKE MAY BE REQUIRED AS AIRSPEED IS CHANGED.

3A.8.38 WSH HEAT ON

## WSH HEAT ON

Conditions:

- WINDSH HEAT switch is ON, and
- OAT is greater than 5°C

1. WINDSH HEAT Switch.....OFF

## 3A.9 CAUTION (AMBER) CAS MESSAGES — ON GROUND

### 3A.9.1 BATT VOLTS LO — ON GROUND

**BATT 1 VOLTS LO**
**BATT 2 VOLTS LO**

Conditions:

- Battery voltage is below 25.0 V with engine running, or
- Battery voltage is below 24.2 V with engine not running.

❖ *BEFORE START*

1. Charge batteries to 24.2 V or greater prior to attempting engine start.
2. Verify battery voltage without GPU.

❖ *AFTER START*

1. STARTER GEN Switch ..... ON
2. STBY ALTN Switch ..... ON
3. AIR COND Switch ..... OFF

### 3A.9.2 FLAPS FAIL — ON GROUND

**FLAPS FAIL**

Condition:

- Flaps did not reach selected position within 15 seconds, or
- Flap limit switch failure

1. Maintenance required before flight.

### 3A.9.3 GEAR MISCOMP — ON GROUND

**GEAR MISCOMP**

Condition:

- One or more landing gears are sensing both up and locked, and down and locked.

1. Maintenance required before flight.

### 3A.9.4 ICE — ON GROUND

**ICE**

Condition:

- Airframe icing condition detected, or
- Ice detector is dirty, and
- Ice protection systems (prop heat and de-ice boots) are not on.

1. PFD Alert Softkey ..... PRESS TO ACKNOWLEDGE

2. *If not in airframe icing conditions and* ICE *caution remains:*
   a. Clean ice detector.

### 3A.9.5 ICE DETECT FAIL — ON GROUND

**ICE DETECT FAIL**

Condition:

- Advisory Ice Detector has failed.

1. Maintenance required before flight into known icing.

### 3A.9.6 INERT SEP FAIL — ON GROUND

**INERT SEP FAIL**

Condition:

- Inertial separator is not in the commanded position within 30 seconds of the INERT SEP switch being selected ON or OFF

1. INERT SEP Switch ..... OFF
2. Maintenance required before flight into known icing.

### 3A.9.7 NITROGEN LOW — ON GROUND

**NITROGEN LOW**

Condition:

- Nitrogen pressure in the emergency landing gear extension system is less than 1700 psi

1. N2PRES ..... CHECK

2. *If nitrogen pressure is less than 1500 PSI and nitrogen system servicing is not possible:*
   a. Flight must be conducted with landing gear down.

NOTE

Extended flight with gear down significantly decreases fuel efficiency and range.

### 3A.9.8 OAT FAIL — ON GROUND

**OAT FAIL**

Condition:

- Faults in one or both OAT systems are detected.

1. Maintenance required before flight into known icing.

### 3A.9.9 OXYGEN LOW — ON GROUND

**OXYGEN LOW**

Condition:

- Oxygen bottle pressure is less than 600 psi.

1. *If oxygen system servicing is not possible:*
   a. Entire flight must be conducted at or below FL250, or the pilot must carry sufficient additional supplemental oxygen to provide for an emergency descent in the event of rapid depressurization in cruise.

NOTE
Oxygen quantity may be insufficient for a smoke event.

### 3A.9.10 PITOT HT FAIL — ON GROUND

**L PITOT HT FAIL**
**R PITOT HT FAIL**

Condition:

- PITOT STALL HT Switch is selected ON, and
- The affected pitot heat is failed

1. PITOT STALL HT Switch ..... OFF
2. Maintenance required before flight.

### 3A.9.11 PUSHER OFF — ON GROUND

**PUSHER OFF**

Condition:

- No power to the pusher servo.

1. Maintenance required before flight.

### 3A.9.12 STALL CMP FAIL — ON GROUND

**L STALL CMP FAIL**
**R STALL CMP FAIL**

Condition:

- Stall Prevention System fault.

1. Maintenance required before flight.

### 3A.9.13 STALL HT FAIL — ON GROUND

**L STALL HT FAIL**
**R STALL HT FAIL**

Conditions:

- PITOT STALL HT switched ON, and
- One or more stall heaters is failed on affected stall sensor

1. PITOT STALL HT Switch ..... OFF
2. Maintenance required before flight.

### 3A.9.14 STARTER ON — ON GROUND

**STARTER ON**

Condition:

- The starter has been engaged for more than 60 seconds.

1. STARTER GEN Switch ..... OFF, THEN ON

2. *If* *STARTER ON* *Caution remains:*
   a. STARTER GEN Switch ..... OFF
   b. Perform SHUTDOWN (4.3.17).
   c. Maintenance required before flight.