SECTION II

EMERGENCY PROCEDURES

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IN-FLIGHT EMERGENCIES (Cont'd)

THRUST REVERSER SYSTEM MALFUNCTION

NOTE

With in-flight thrust reverser deployment (one reverser), the airplane is readily controllable. During flight below 15,000 feet and at airplane weights less than 20,000 lbs., altitude can be maintained with one reverser deployed and its engine shut down.

Thrust reverser malfunction in-flight is indicated by the following:

1. UNLOCK THRUST REV AUTO STOW and MASTER CAUTION lights ..... ON
2. An inadvertent thrust reverser deployment in-flight will result in heavy buffet which decreases as the respective engine thrust is decreased.

If a thrust reverser malfunction is indicated in-flight, proceed as follows:

3. Power lever (affected engine) ..... IDLE
4. Airspeed ..... Reduce to below 180 KIAS
5. Thrust reverser levers ..... Stowed
6. THRUST REV control switch ..... OFF

NOTE

- *Thrust reverser operation will not be available until the THRUST REV switch is placed back at ON.*
- *When using the thrust reversers on landing an asymmetric thrust condition may occur, depending upon the condition that initiated the automatic stow.*

7. If thrust reverser fails to stow ..... Shut down affected engine
8. Land as soon as practical.

HYDRAULIC SYSTEM FAILURE

NOTE

When a landing is made using the auxiliary system, the system will be depleted when the AUX pressure reaches about 1700 psi, after which alternate braking must be used.

When the HYD PRESS/PWR OFF caution and MASTER CAUTION lights illuminate, this is an indication that electrical power to the hydraulic pump has been interrupted, proceed as follows:

1. Hydraulic pump power control circuit breaker ..... Check in
2. HYDRAULIC PUMP switch ..... manual

   If the pump runs, the HYD PRESS/PWR OFF caution light indicates either an over temp. or time condition exists. If the pump does not run proceed to step 3.
3. HYDRAULIC PUMP switch .... OFF & RESET
4. HYD BUS reset button ..... Depress
5. HYDRAULIC PUMP switch ..... AUTO
6. HYD PRESS/PWR OFF and MASTER CAUTION lights ..... Check off
7. Pressure not normal ..... HYDRAULIC PUMP switch at MANUAL (max. 1 min.)

CAUTION

When the MANUAL switch position is used:

a. Do not exceed 1 minute of continuous operation.

b. Release switch when pressure reaches top of green arc.

NOTE

The MANUAL position may be used before selection of the auxiliary hydraulic system. Selection of the MANUAL position permits hydraulic pump motor operation in the event of failure of the automatic hydraulic pump control circuit.

8. Pressure not normal ..... HYDRAULIC PUMP switch OFF
9. SPOILERS control switch ..... OFF

The auxiliary hydraulic power supply, powered by an accumulator, provides a backup system. This accumulator provides hydraulic power for wheel brakes, nosewheel steering, and spoilers. The auxiliary accumulator should be used only when required to augment, or be used in place of, the normal system.

IN-FLIGHT EMERGENCIES (Cont'd)

HYDRAULIC SYSTEM FAILURE (Cont'd)

10. Use emergency gear lowering procedure for landing.
11. HYDRAULIC AUX SYS.....ON for landing

    After the auxiliary system has been used, the AUX SYS switch should be placed at OFF to conserve hydraulic pressure for subsequent operation.

TRIM SYSTEM FAILURE

Runaway Trim

If at any time during trimming of the airplane, it is observed that the trimming action continues beyond a selected position, proceed as follows:

1. Actuate primary flight controls to counteract trim condition.

NOTES

- ***Since the autopilot will attempt to counteract the runaway trim, there may be a noticeable pitch change when it is disengaged.***
- ***All trimming action will stop with the autopilot disconnect button depressed (pilot ro copilot control wheel). With the autopilot disconnect button held depressed, place the trim selector switch at ALT and subsequent trimming will be accomplished using the alternate trim switches.***

2. Autopilot disconnect button ..... Hold at disconnect
3. Trim system selector ..... Select ALT and retrim

   If malfunction occurs on ALT trim, proceed to step 4.
4. Trim system selector .....OFF
5. Make remainder of flight without trim.

TRIM FAILURE

If any of the three trim systems should fail in either extreme-travel position, the force required to neutralize the controls or to move the control surface to the opposite extreme is not beyond physical capabilities. If a failure occurs in the rudder trim switch or the normal trim switch on the control wheel, proceed as follows:

1. Trim circuit breakers .....Check In

NOTE

With alternate trim selected, the autopilot will be automatically disconnected.

2. Trim system selector .....ALT
3. Trim .....As required

HORIZONTAL STABILIZER TRIM INOPERATIVE

Cruise Trim

In the event of an inoperative horizontal stabilizer during flight, proceed as follows:

NOTE

If the horizontal stabilizer becomes inoperative while trimmed in a normal cruise attitude, use the following procedure to affect a comfortable descent and landing:

1. Decrease airspeed to approximately .....75M/250 KIAS
2. Land with flaps up.

Landing Trim

In the event that the stabilizer becomes inoperative in the landing position, and a go-around is required, proceed as follows:

NOTE

If the go-around is made in the approach configuration (10° flap), maintain flap setting and use a speed of 140 KIAS.

1. Power levers ..... In-flight take-off N_1 power setting
2. FLAP handle .....Leave DN
3. LDG GEAR handle.....Leave DOWN
4. When sufficient altitude is reached, reduce thrust to prevent exceeding 130 KIAS. Wheel force will be approximately 20 pounds.

LANDING EMERGENCIES (Cont'd)

TIRE FAILURE (Cont'd)

2. Thrust reversers ..... As required
3. Brakes after nosewheel down ..... As required
4. Nose wheel steering ..... As required

Main Gear Tire

With a main gear tire failed, proceed as follows:

NOTE

With a main gear tire failed, directional control of the airplane is marginal without nosewheel steering.

Normal Approach and Touchdown

1. FLAP handle ..... Max 20°
2. Thrust reversers ..... As required

   Use light braking to maintain directional control.
3. Brakes..... As requied
4. Nose wheel steering ..... As required

EMERGENCY BRAKING

An emergency braking system is provided for use in case of a hydraulic system failure. To initiate emergency braking, proceed as follows:

CAUTION

- ***When the PARK BRAKE/EMERG BRAKE handle is pulled, check that it is locked in the first detented locked position.***

NOTES

- ***The anti-skid system and wing spoilers (GND AUTO) are inoperative when using the emergency braking procedure.***
- ***If the normal or auxiliary hydraulic pressure is not available, the wing spoilers will not be available even in the AIR mode.***

1. PARK BRAKE/EMERG BRAKE handle ... Pull to first detent

Pulling the PARK BRAKE/EMER BRAKE handle in the cockpit routes hydraulic pressure from the emergency brake accumulator when toe pressure is applied to the top of the rudder pedals. The number of brake applications that may be made by the flight crew is dependent upon the accumulator charge and may be depleted in a very short time. It is recommended that as soon as the aircraft is safely stopped, the flight crew should request towing assistance. The aircraft should then be towed to the ramp and parked. When committed to emergency braking, do not revert to normal braking until the failure has been corrected by maintenance. After the malfunction has been corrected, the PARK BRAK/EMERG BRAKE control handle must be repositioned (pushed in) before normal power braking is available.

ANTI-SKID SYSTEM FAILURE

A failure of the anti-skid system will be indicated by the ANTI-SKID OFF or LH or RH SKID caution light being illuminated. The anti-skid light will illuminate with an electrical power interruption to the anti-skid system.

CAUTION

With the ANTI-SKID switch at OFF, anti-skid wheel protection will not be available. Use caution during landing and subsequent wheel braking. Use light pedal application after touchdown and increase pedal application as speed decreases.

NOTE

With the anti-skid system OFF, the wing spoilers will not be operable in the GND AUTO mode.

1. ANTI-SKID switch..... OFF
2. Anti-skid system circuit breakers ..... Out
3. PARK BRAKE/EMERG BRAKE handle ..... Not fully stowed

If the ANTI-SKID OFF light or a SKID light should illuminate during flight or system reliability is questioned, place the ANTI-SKID switch at OFF.

The LH or RH SKID lights illuminate whenever the ANTI-SKID switch control is positioned ON, the weight of the airplane is on the landing gear and anti-skid valve pressure is dumped from the indicated wheel brake for more than (1) second at ground speeds from 200 knots down to 15 knots. They also illuminate when the ANTI-SKID control switch is positioned at TEST and the LDG GEAR handle is DOWN.

With the ANTI-SKID switch at OFF and the SPOILERS GND AUTO FAIL caution lights illuminated, spoilers may be extended using the following procedures:

1. SPOILER mode selector switch ..... AIR

   Prior to touchdown select the AIR position
2. SPOILERS control switch ..... EXT

   Spoilers may be extended as desired after touchdown.

LANDING EMERGENCIES (Cont'd)

LANDING WITH COMPLETE HYDRAULIC SYSTEM FAILURE

NOTES

- ***With the PARK BRAKE/EMERG BRAKE pulled out, the anti-skid and wing spoiler (GND AUTO) system is rendered inoperative.***
- ***The number of brake applications that may be made by the flight crew is dependent upon the accumlator charge and may be depleted in a very short time.***
- ***It is recommended that as soon as the aircraft is safely stopped, the flight crew should request towing assistance. The aircraft should then be towed to the ramp and parked.***

For a landing with a complete hydraulic system failure (both normal and auxiliary systems have failed), proceed as follows:

1. Extend landing gear using the Landing Gear Emergency Extension procedures in this Section.
2. Pull PARK BRAKE/EMERG BRAKE handle to the first detent.
3. ANTI-SKID switch..... OFF

ENGINE FIRE AFTER SHUTDOWN

If a fire- or overheat-warning light comes on or there are other indications of fire after shutdown, proceed as follows:

NOTE

The appearance of black smoke from the tailpipe of either engine after shutdown indicates burning oil or fuel, which could damage the engine. In case either fumes or smoke is present, the engine should be motored the same as for an engine fire.

1. Power levers ..... OFF
2. Batteries..... ON
3. ELEC MASTER switch ..... ON
4. ENGINE MASTER switch (affected engine) ..... ON
5. Motor engine with starter ..... 30 seconds

   If fire persists, continue motoring. After 90 seconds of motoring, actuate fire extinguisher system and turn off ELEC MASTER switch.

   If the fire still continues, pull the FIRE PULL handle, actuate the fire extinguishing system and turn off the ELEC MASTR switch. If conditions permit, before leaving the airplane, turn off all electrical switches.

LANDING WITH ICE ACCUMULATION

In the event that icing conditions are encountered and the wing anti-ice system is inoperative, exposure to icing conditions for 8 to 10 minutes can cause an inch or more of ice to accumulate on the airplane leading edges. If it is necessary to land with visible ice accumulation on the wing leading edges, increase normal V_{REF} speeds and touchdown speeds by 20 knots. Use flaps down for landing and use thrust reverser to minimize risk of exceeding the landing kinetic energy limits of the wheel fuse plugs. With the increased V_{REF} speeds, the fuse plug limits on landing weight will be about 70% of those shown on the Landing Kinetic Energy Chart in Section VII. The increased landing speeds will increase the landing distance values shown on the Landing Distance Chart in Section VII.

Figure 7-150 assumes prompt application of brakes once the nosewheel is on the ground. Delay of brake application until the thrust reversers have slowed the airplane about 20 knots from the airspeed at thrust reverser application will alleviate this weight restriction. This would assume that field length is not a limitation.