PMDG MD-11 Simulation

Quick Reference Handbook

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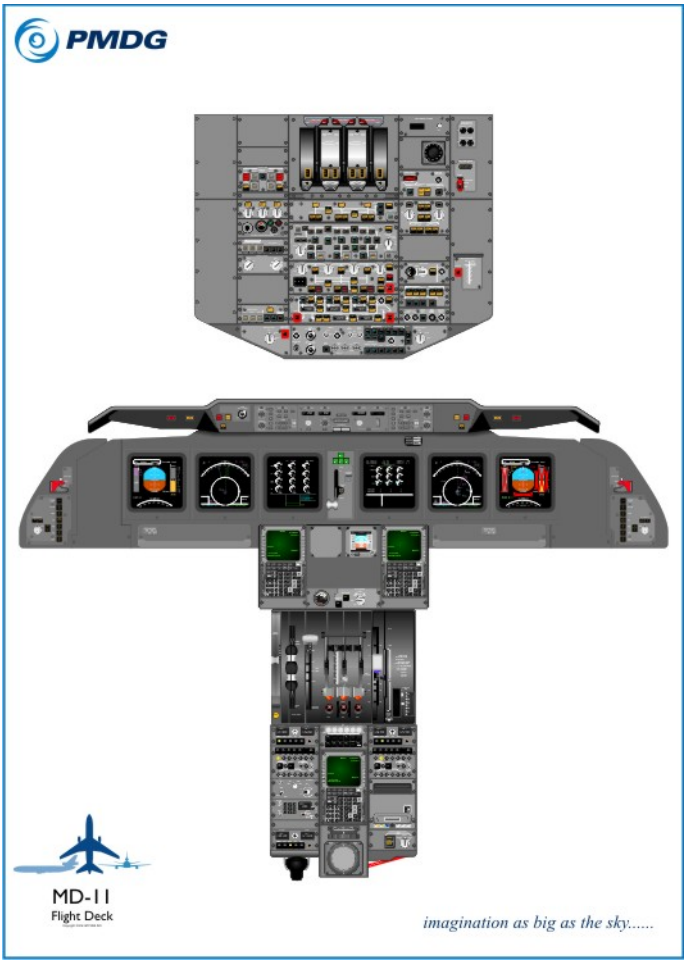

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Quick Reference Handbook Overview and Instructions

The Quick Reference Handbook (QRH) provides procedures and guidance to simulator pilots for resolving various abnormal conditions, alert messages and emergencies that may be presented during the operation of the PMDG MD-11 simulation.

How is this manual used?

The QRH is used any time the crew must resolve an alert message, or an emergency condition that is not accompanied by an alert message. Use the main index to locate procedures for emergencies, or use the chapter indexes to locate procedures that are related to a specific system on the airplane as outlined below.

Emergency Procedure Index

The Emergency Alert page of the QRH contains a list of alert messages that the airplane uses to communicate an Emergency to the crew. The Emergency Alert index contains a list of the alert messages, and the associated chapter number reference in which the appropriate procedure for each emergency is contained.

The Emergency Alert index page of the QRH also contains an Emergency Non-Alert list, with associated chapter numbers. Emergency Non-Alert conditions are those emergency events which should be obvious to the crew and that do not have a single, specific advisory message that will be displayed. An All-Engine-Flameout, for example will be obvious to the crew, and is listed in the Emergency Non-Alert section of the manual. Use the chapter numbers listed beside the event to quickly find the chapter containing the associated procedure.

QRH Chapter Indexes

Each chapter in the QRH contains an index of alert messages and the associated chapter page number on which you will find the

required procedure. If you receive an alert message related to the air system, for example, simply open to the AIR chapter, locate the message on the index, then turn to the page number indicated. The procedure will be listed on this page.

Alerts

▶AIR MANF__FAIL

Consequences:

LAND AT NEAREST SUITABLE AIRPORT

NOTE: In addition to the "AIR MANF__FAIL" alert displayed, an aural warning will sound.

When flight conditions permit,

Associated Throttle . . . . . IDLE

When alert is no longer displayed, operate associated engine at a thrust level that will keep alert from being displayed.

Land at nearest suitable airport.

NOTE: Do not repressurize affected air system.

[END]

▶APU FIRE

Consequences:

LAND AT NEAREST SUITABLE AIRPORT ENG 2 AGENTS TO APU, NONE FOR ENG

NOTE: When the "APU FIRE" alert is displayed, a cockpit aural warning will sound.
APU fire indication may be caused by a fire or rupture of air manifold in APU compartment.
The APU will shut down automatically and the APU bleed air load valve will be commanded closed when the "APU FIRE" alert is displayed or the APU fire handle is pulled. If the air system is in AUTO, pack 2, bleed air 2 and isol valve 1-2 will be commanded off.

APU FIRE Handle/AGT LOW Light . . . PULL AND ROTATE/CHECK

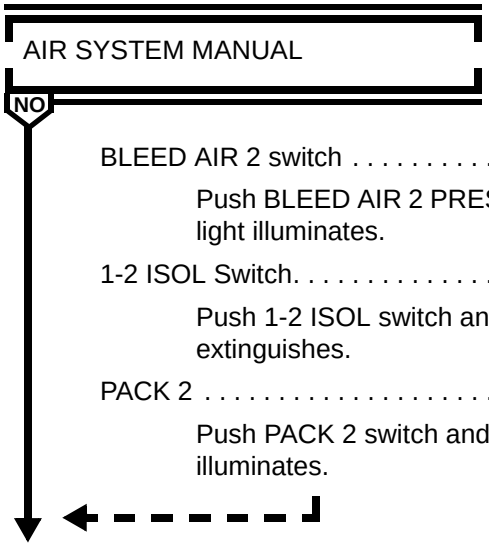
When handle is rotated to discharge agent, verify discharge by observing AGT LOW light adjacent to ENG 2 FIRE handle illuminates.

NOTE: When APU shuts down, "APU FIRE" alert is no longer displayed when signal ceases.
Insure fire handle is pulled to fullest extent before rotating it to discharge agent.
Pulling APU FIRE handle deenergizes APU generator field and arms APU fire extinguishing system.

APU START/STOP Switch . . . . . OFF

Push APU START/STOP switch and observe flashing ON light extinguishes.

NOTE: If APU shuts down due to fire signal. APU START/STOP ON light will flash until OFF is selected.



BLEED AIR 2 switch . . . . . OFF

Push BLEED AIR 2 PRESS switch and observe OFF light illuminates.

1-2 ISOL Switch. . . . . OFF

Push 1-2 ISOL switch and observe ON light extinguishes.

PACK 2 . . . . . OFF

Push PACK 2 switch and observe OFF light illuminates.

After 30 seconds,

FIRE WARNING CONTINUES

NO

Remaining Agent. . . . . DISHCH/CHECK

Pull and rotate handle in opposite direction to discharge remaining agent. Observe appropriate AGT LOW light illuminates.

NOTE: Fire handle is spring-loaded to an intermediate position. It must be pulled again prior to discharge of remaining agent.

All APU and engine 2 fire agents have been depleted.

Land at nearest suitable airport.

[END]

▶BLD AIR__TEMP HI

Consequences:

NONE . . . . . .

NOTE: In addition to the "BLD AIR__TEMP HI" alert displayed, an aural warning will sound.

Affected BLEED AIR Source . . . . . OFF

Push affected BLEED AIR MANF/TEMP HI switch and observe "AIR SYS__OFF" alert is displayed.

NOTE: BLEED AIR MANF/TEMP HI switch is in parallel with BLEED AIR PRESS/OFF switch and operates identically.

After 30 seconds,

"BLD AIR__TEMP HI" ALERT DISPLAYED AGAIN

NO

If flight conditions permit, slowly reduce thrust on associated engine until alert is no longer displayed. Operate engine at a thrust level which will keep alert from being displayed for rest of flight.

[END]

Associated PACK Switch . . . . . OFF

Push associated PACK switch and observe OFF light illuminates.

Associated ISOL Switch . . . . . ON

Push associated ISOL switch and observe ON light illuminates.

[END]

▶CABIN ALTITUDE

Consequences:

NONE

NOTE: In addition to the "CABIN ALTITUDE" alert displayed, an aural warning will sound.

Oxygen Masks. . . . . ON 100%

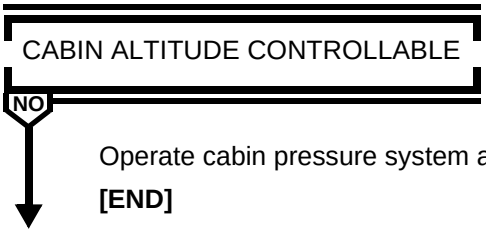
Outflow Valve. . . . . ON 100%

If outflow VALVE is not closed, push CABIN PRESS SYSTEM SELECT switch and observe MANUAL light illuminates. Rotate CABIN PRESS manual rate selector to DESC.

Crew/Courier(s) Communication . . . . . ESTABLISH

AVIONICS FAN Switch . . . . . VERIFY OVRD

If AVNCS FAN switch OVRD light is not illuminated, push the switch and observe OVRD light illuminates.



Operate cabin pressure system as required.

[END]

Perform and emergency decent.

Altitude Select Knob . . . . . REDUCE/PULL

Preselect a lower altitude and pull altitude select knob to initiate descent in pitch mode.

Initiate descent to 10,000 feet or minimum safe altitude, whichever is higher.

SPOILER Handle . . . . . SPD BRK FULL

Squeeze and pull SPOILER handle to SPD BRK FULL.

WARNING: **If structural damage is suspected or turbulence present, do not exceed .82 Mach/ 305 KIAS.**

IAS/MACH Select Knob . . . . . SELECT .85 MACH/320-350 KIAS

Descent . . . . . MAX PITCH 1 0°/MAX BANK 30°

Transponder (Unless Otherwise Required) 7700

NO SMOKE and SEAT BELTS Switches . . . . . ON

The "NO SMOKING" and "SEAT BELTS" alerts will be displayed.

[END]

▶CABIN SMOKE

Consequences:

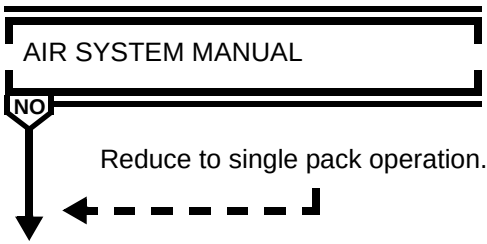
LAND AT NEAREST SUITABLE AIRPORT

NOTE: In addition to the "CABIN SMOKE" alert displayed, an aural warning will sound.

Oxygen Masks ON/100%

Don smoke goggles as required.

Use EMER O2 pressure, as required to purge mask and goggles of smoke and/or fumes.



CABIN AIR Switch . . . . . OFF

Lift guard then push CABIN AIR switch and observe OFF light illuminates.

CABIN PRESS Panel . . . . . SYSTEM MANUAL/CLIMB

Push CABIN PRESS SYSTEM SELECT switch and observe MANUAL light illuminates.

Rotate CABIN PRESS manual rate selector to CLIMB.

After 1 minute,

"CAB AIR NOT OFF" ALERT DISPLAYED

NO

AIR SYSTEM SELECT Switch . . . . . MANUAL

Operating PACK Switch . . . . . OFF

Descend as required to maintain maximum cabin altitude of 25,000 feet to starve fire.

When aircraft is depressurized,
Outflow VALVE Indicator . . . . . SET 9:00 POSITION

Rotate CABIN PRESS manual rate selector to set outflow VALVE indicator to 9:00 position.

NOTE: With no packs operating, selection of a position greater than 9:00 can cause cabin doors to unseat and allow outside air to flow into the cabin.

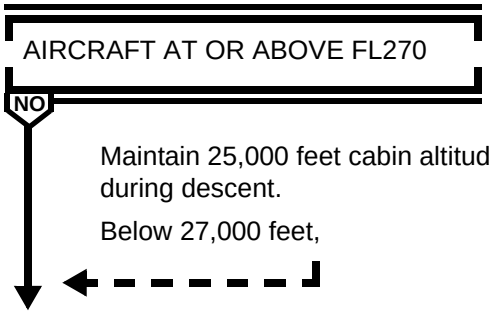
When cockpit is clear of smoke and/or fumes, move oxygen dilution control lever to NORMAL in order to extend usable oygen time.

Land at nearest suitable airport.
After landing and prior to opening door,

Outflow VALVE Indicator . . . . . SET FULL OPEN

Rotate CABIN PRESS manual rate selector to set outflow VALVE indicator to full open.

[END]



Maintain 0.5-psi cabin differential pressure.

When cockpit is clear of smoke and/or fumes, move oxygen dilution control lever to NORMAL in order to extend usable oxygen time.

Just prior to landing,

CABIN PRESS Manual Rate Selector . . . . . CLIMB

When aircraft is depressurized,

Outflow VALVE Indicator. . . . . SET 10:30 POSITION

Rotate CABIN PRESS manual rate selector to set outflow VALVE indicator to 10:30 position.

NOTE: With a pack operating, selection of a position greater than 10:30 can cause a negative pressure in the aircraft. This will cause cabin doors to unseat and allow outside air to flow into the cabin.

Land at the nearest suitable airport.

After landing and prior to opening door,

Outflow VALVE Indicator. . . . . .SET FULL OPEN

Rotate CABIN PRESS manual rate selector to set outflow valve indicator to full open.

[END]

▶CAC MANF FAIL

Consequences:

NONE

NOTE: In addition to the "CAC MANF FAIL" alert displayed, an aural warning will sound.

PACK Switch(es) . . . . . OFF

Push PACK switch(es) and observe OFF light(s) illuminate(s).

AVNCS FAN Switch . . . . . .OVRD

Push AVNCS FAN switch and observe OVRD light is illuminated.

AIRCRAFT ON GROUND

NO

Call maintenance.

[END]

All Engine BLEED AIR Switches . . . . ON (5 SECONDS), THEN OFF

Push all BLEED AIR switches, observe OFF lights are extinguished for 5 seconds (to perform pressure manifold decay check), then push again and observe OFF lights are illuminated.

Compare air system pressure decay rates on synoptic.

BLEED AIR Switch (System With Slowest Rate of Decay) . . . . . ON

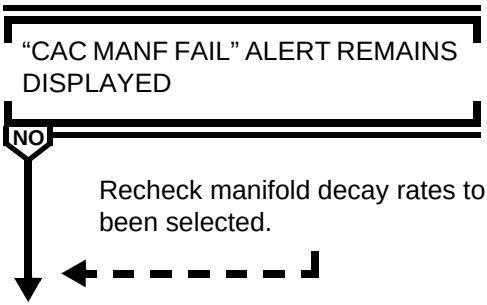
Push BLEED AIR switch for system with slowest decay rate and observe OFF light extinguishes.

Associated PACK Switch . . . . . ON

Push associated PACK switch and observe OFF light extinguishes.

MANF lights on the overhead panel should go off within approximately 5 minutes.

After 5 minutes,



Recheck manifold decay rates to verify correct system has been selected.

Restoration of an additional system may be attempted if required.

CAUTION: Do not repressurize the manifold that has the suspected failure.

AVNCS FAN Switch . . . . . AS REQD

Push AVNCS FAN switch and observe the OVRD light is extinguished.

NOTE: Air system 3 provides heat to the forward cargo compartment and air system 2 provides heat to the aft cargo compartment.

Avoid icing conditions.

[END]

▶CRG FIRE LWR__

Consequences:

LAND AT NEAREST SUITABLE AIRPORT

NOTE: In addition to the "CRG FIRE LWR__" alert displayed, an aural warning will sound.

Flashing CARGO FIRE AGENT DISCH Switch. . . . . .PUSH

NOTE: CARGO FIRE AGENT DISCH switch will continue to flash until LOW light illuminates.

If CARGO FIRE AGENT 1 DISCH LOW light was illuminated due to prior low pressure condition, associated CARGO FIRE AGENT 2 DISCH switch will begin flashing.

If CARGO FIRE AGENT 2 DISCH switch is pushed inadvertently, AGENT 2 cylinder will discharge and associated CARGO FIRE AGENT 1 DISCH switch will continue flashing.

Associated CARGO FLOW Switch . . . . . OFF

Push associated CARGO FLOW switch and observe OFF light illuminates.

Associated CARGO TEMP Selector . . . . . OFF

"CRG FLO AFT DISAG" ALERT DISPLAYED

NO

NOTE: "CRG FLO AFT DISAG" alert may be displayed after a cargo fire procedure is completed and airflow through aft cargo compartment is detected.

AIR SYSTEM SELECT Switch . . . . . MANUAL

Push AIR SYSTEM SELECT switch and observe MANUAL light illuminates.

BLEED AIR 1 Switch . . . . . OFF

Push BLEED AIR 1 switch and observe OFF light illuminates.

PACK 1 Switch . . . . . OFF

Push PACK 1 switch and observe OFF light illuminates.

1-2 and 1-3 ISOL Switches . . . . . OFF

Push 1-2 and 1-3 ISOL switches and observe ON lights extinguish.

NOTE: A jet pump is incorporated in the aft cargo compartment ventilation system. Selecting BLEED AIR 1 OFF shuts down the jet pump.

Depart icing conditions (if applicable).

After approximately 1 minute elapsed time,

CARGO FIRE AGENT DISCH LOW LIGHT ILLUMINATED

NO

Approximately 90 minutes after agent 1 has been discharged, “DISCH CARGO AGENT” alert will be displayed on EAD and CARGO FIRE AGENT 2 DISCH switch will flash. The flashing CARGO FIRE AGENT DISCH switch should be pushed at that time.

NOTE: If “MSC AUTO FAIL” alert is subsequently displayed, manual timing will be required to determine discharge of agent 2.

Land at nearest suitable airport.

[END]

Associated CARGO FIRE AGENT 2 DISCH Switch

(Located Below Flashing Switch). . . . . PUSH

Land at nearest suitable airport.

[END]

▶ENG 2 A-ICE DUCT

Consequences:

NONE

NOTE: In addition to the "ENG 2 A-ICE DUCT" alert displayed, an aural warning will sound

ENGINE 2 Throttle. . . . . IDLE

ENGINE 2 FUEL Switch . . . . . OFF

AIR SYSTEM MANUAL

NO

Engine 2 BLEED AIR Switch . . . . . OFF

Push BLEED AIR 2 switch and observe OFF light illuminates and “AIR SYS 2 OFF” alert is displayed.

PACK 2 Switch . . . . . OFF

Push PACK 2 switch and observe OFF light illuminates.

1-2 ISOL Switch. . . . . ON

Push 1-2 ISOL switch and observe ON light illuminates.

Transponder/TCAS Selector . . . . . TA

Land at nearest suitable airport.

[END]

▶ENGINE__FIRE

Consequences:

LAND AT NEAREST SUITABLE AIRPORT

2 TO ENG, NO ENGINE AGENTS FOR APU

NOTE: In addition to "ENGINE__FIRE" alert, fire warning bell will sound and ENG FIRE handle will be illuminated.

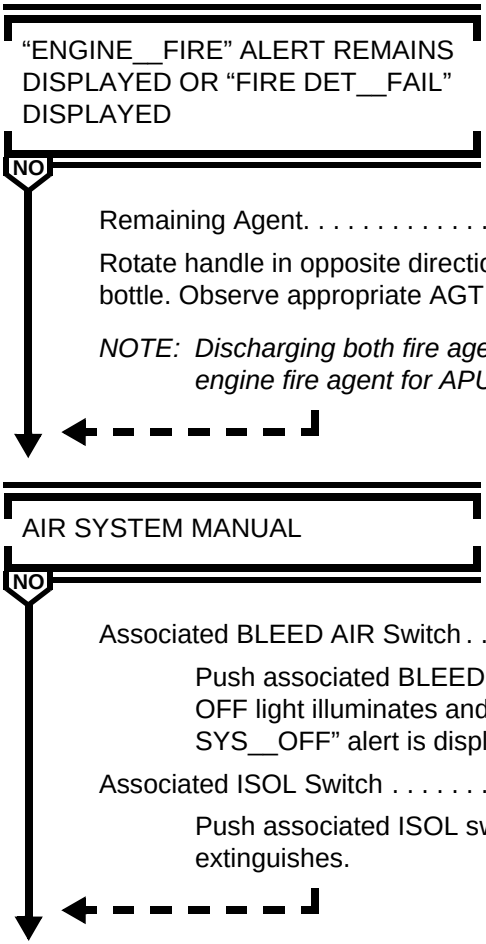
Throttle . . . . . IDLE

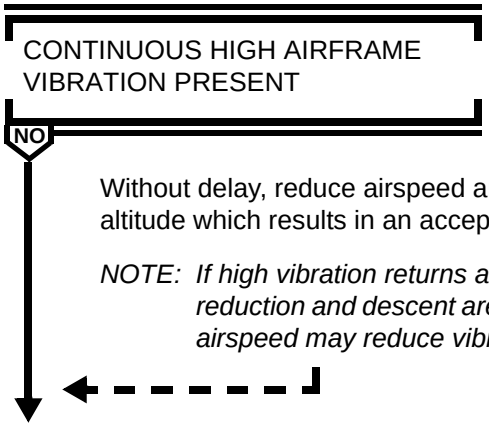
FUEL Switch. . . . . OFF

ENG FIRE Handle/AGT LOW Light . . . . . DOWN, DISCH/CHECK

Pull associated ENG FIRE handle full down. Rotate handle left or right to discharge extinguishing agent. Observe appropriate AGT LOW light illuminates.

After 30 seconds,





Without delay, reduce airspeed and descend to a safe altitude which results in an acceptable vibration level.

NOTE: If high vibration returns and further airspeed reduction and descent are not practicable, increasing airspeed may reduce vibration.

Transponder/TCAS Selector . . . . . TA

Land at nearest suitable airport.

[END]

▶HYD 1 & 2 FAIL

Consequences:

LAND AT NEAREST SUITABLE AIRPORT
CONSIDER FUEL DUMP TO < MAX LDG WT
FLAP EXTENSION/RETRACTION INOP
AUTOPILOT NOT AVAILABLE
PLAN LONG FINAL APPROACH
ALTERNATE GEAR EXTENSION REQUIRED
DO NOT ARM AUTOBRAKES
LEAVE GEAR DOWN FOR GO-AROUND
FLAP < 35, SPOILERS AT NLG TDN ONLY
NOSEWHEEL STEERING RESTRICTED LEFT

NOTE: Increased fuel consumption, up to approximately 15%, may result due to control surface float.
In addition to the display of the "HYD 1 & 2 FAIL" alert, an aural warning will sound.
Hydraulic system controller will not shut off hydraulic pumps in taxi, takeoff, or landing phases of flight.

"HYD 3 ELEV OFF" ALERT DISPLAYED

NO

Elevators are inoperative. Pitch control is available from engine thrust and/or stabilizer trim (one-half rate).

Rudders are inoperative. Directional control is available from ailerons, spoilers, and engine thrust.

NOTE: For additional information, refer to Procedures & Techniques- HYDRAULIC SYSTEM 1 AND 2 FAILURE WITH "HYD 3 ELEV OFF" ALERT procedure.

"RUDDER BOTH INOP" ALERT DISPLAYED

NO

Directional control is available from ailerons, spoilers and engine thrust.

If a wing engine is shut down, a missed approach should not be attempted.

FLAPS EXTENDED

NO

Leave FLAP/SLAT handle in existing position.

GPWS Switch . . . . . FLAP OVRD

Recommended maximum crosswind component is 12 knots. Review effects on controllability:

- AUTOPILOT: Both autopilots are inoperative.
- AUTOTHROTTLES: May be used for approach but must be disconnected before 50 feet AGL if flaps are not in the landing configuration.
- RUDDER: Upper rudder is inoperative. Vmca is 160 KIAS. Recommended maximum crosswind component is 12 knots. Lower rudder is operative through 3-2 nonreversible motor pump if "HYD 3 ELEV OFF" alert is not displayed. If alert is displayed, both rudders are inoperative.
- FLAPS: Inoperative. If second system failure occurred with flaps extended, leave FLAP/SLAT handle in existing position.
- SLATS: Operative. Slats may not extend until speed is reduced. Outboard slats may not retract if they were extended before the loss of pressure occurred. "SLAT DISAG" alert will be displayed when flap/slat handle is in the 0/RET position.
- LANDING GEAR: Use alternate landing gear extension. Maximum speed 230 KIAS.
- SPOILERS: Only one spoiler panel on each wing is operative. With only one hydraulic system operating, spoiler drive system may not have enough power to move handle to ground spoiler position.
- NOSEWH EEL STEERING: Limited to 25° to left and 70° (full) to right.
- BRAKES: System 1 accumulator only; system 2 full brakes. Anti-skid is operative.
- AUTO BRAKE: Do not use. Hydraulic systems 1 and 3 required for normal auto brake operation.
- ELEVATORS: Inboard elevators are operative if "HYD 3 ELEV OFF" alert is not displayed. If displayed, all elevators are inoperative.

- AILERONS: Operative. Normal operation is available through hydraulic system 3.
- STAB TRIM: One-half the normal rate is available. Use trim system sparingly (short periods only).

Reduce gross weight as desired

When ready for approach,

FLAPS RETRACTED

NO

0/EXT APPROACH SPEEDS
HYDRAULIC SYSTEMS 1 & 2 FAIL

Weight (1000 LB)	360	380	400	420	440	460	480	500
Vapp (Vref + 15)	169	173	177	181	185	189	193	196

0/EXT ESTIMATED LANDING DISTANCES (FEET)
HYDRAULIC SYSTEM 1 AND 2 FAIL

General Electric CF6-80C2 Engines

Weight (1000 LB)		360	380	400	420	440	460	480	500
S.L. STD= 15ºC	Dry	6040	6330	6640	6980	7320	7670	8030	8420
	Wet	7510	7870	8220	8590	8960	9320	9700	10110
2000 FT STD= 11ºC	Dry	6430	6750	7080	7460	7830	8200	8600	9030
	Wet	8020	8380	8770	9180	9590	9980	10390	10830
4000 FT STD= 7ºC	Dry	6870	7220	7580	7990	8400	8810	9240	9720
	Wet	8560	8960	9390	9840	10270	10710	11150	11640
6000FT STD= 3ºC	Dry	7360	7740	8140	8580	9040	9490	9970	10490
	Wet	9170	9610	10070	10550	11040	11510	12000	12540

8000 FT STD= -1ºC	Dry	7900	8320	8760	9260	9760	10260	10790	11370
	Wet	9850	10330	10840	11360	11900	12420	12960	13550
10000 FT STD= -5ºC	Dry	8500	8980	9470	10020	10570	11230	11920	12690
	Wet	10610	11130	11700	12280	12860	13530	14240	15000
NOTE:	*Standard day, no wind, Zero Slope, Three engines at maximum reverse thrust to 80 KIAS, then reverse idle to 60 kIAS, then three engines at forward idle to stop (includes air run distances).*								

CORRECTIONS

TEMPERATURE: VALID FROM STD -20ºC TO STD +40ºC		
FEET PER ºC	**DRY**	**WET**
BELOW Standard Day	-19	-23
ABOVE Standard Day	+66	+70

SLOPE: VALID FROM -2% DOWNHILL +2% UPHILL		
FEET PER 1% SLOPE	**DRY**	**WET**
Uphill	-111	-195
Downhill	+659	+907

WIND: VALID FROM -10 KNOT TAILWIND +20 KNOT HEADWIND		
FEET PER KNOT	**DRY**	**WET**
Headwind	-50	-66
Tailwind	+213	+226

FLAP/SLAT Handle 0/EXT

NOTE: Slats may not extend until speed is reduced.

When ready to extend landing gear,

Airspeed . . . . . MAX 230 KIAS

Alternate Gear Extension Lever . . . . . RAISE/LATCH

After three green lights illuminate,

Center Gear Alternate Extension Handle/Lights PULL/4

GREEN GEAR Handle . . . . . DOWN

After 2 minutes,

Alternate Gear Extension Lever . . . . . STOW

AUTO BRAKE Selector . . . . . OFF

Cross threshold at Vapp, reduce sink rate slightly, disconnect autothrottles, retard throttles to idle and fly a positive touchdown. Do not hold aircraft off. Excessive flare will result in float and excessive use of runway.

CAUTION: Tail strike may occur at pitch attitudes greater than 10°.

Manually assist spoiler handle as it deploys.

NOTE: If go-around is required, it is recommended that landing gear not be retracted. If gear retraction is necessary, delay until aircraft is clear of obstacles.

[END]

▶HYD 1 & 3 FAIL

Consequences:

LAND AT NEAREST SUITABLE AIRPORT
CONSIDER FUEL DUMP TO < MAX LDG WT SLAT EXTENSION/RETRACTION INOP IF SLATS EXTENDED, MAX 35 FLAPS IF SLATS RETRACTED, MAX 28 FLAPS AUTOPILOT 2 NOT AVAILABLE
PLAN LONG FINAL APPROACH
ALTERNATE GEAR EXTENSION

REQUIRED DO NOT ARM AUTOBRAKES
FLAP < 35, SPOILERS AT NLG TDN ONLY
BRAKES ON ACCUMULATORS ONLY
NOSEWHEEL STEERING INOPERATIVE

NOTE: Increased fuel consumption, up to approximately 15%, may result due to control surface float.
In addition to the display of the "HYD 1 & 3 FAIL" alert, an aural warning will sound.
Hydraulic system controller will not shut off hydraulic pumps in taxi/takeoff/landing phase of flight.

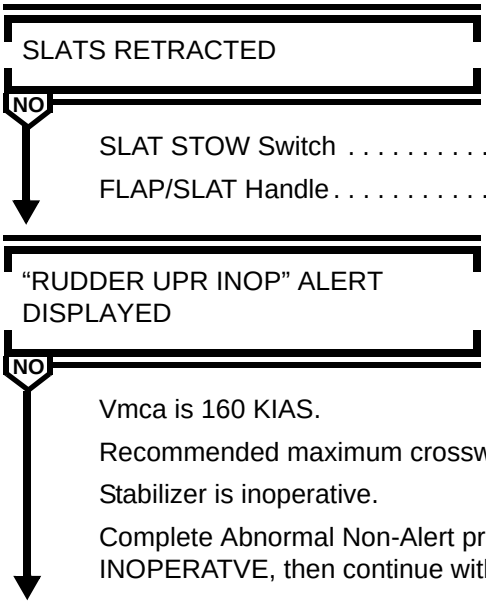
Review effects on controllability:

- AUTOPILOT: Autopilot 1 may be used but manual aircraft trimming must be accomplished for speed or configuration changes.
- SLATS: Inoperative. If second system failure occurred with slats extended, do not attempt to retract slats.
- NOSEWHEEL STEERING: Inoperative.
- AUTOTHROTTLES: May be used for approach but must be disconnected before 50 feet AGL if flaps are not in landing configuration.
- RUDDER: Operative through the 2-1 nonreversible motor pump; Vmca is 140 KIAS. If "RUDDER UPR INOP" alert is displayed, Vmca is 160 KIAS. Recommended maximum crosswind component is 12 knots.
- FLAPS: Flaps may not extend until speed is reduced.
- LANDING GEAR: Use alternate landing gear extension. Maximum speed 230 KIAS.
- SPOILERS: Two spoiler panels on each wing are operative. With only one hydraulic system operating, spoiler drive may not have enough power to move handle to ground spoiler position.
- BRAKES: Accumulators only. Anti-skid is operative.
- AUTO BRAKES: Do not use auto brakes. Brake pressure limited to accumulator pressure only.

- ELEVATORS: Three elevators operative.
- AILERONS: All except right inboard is operative.
- STAB TRIM: Available through the 2-1 nonreversible motor pumps. One-half normal rate is available. No auto trim. Use trim system sparingly (short periods only).

Reduce Gross Weight as desired.

When ready for the approach:



FLAP/SLAT Handle . . . . . .28/EXT POSITION

When ready to extend landing gear:

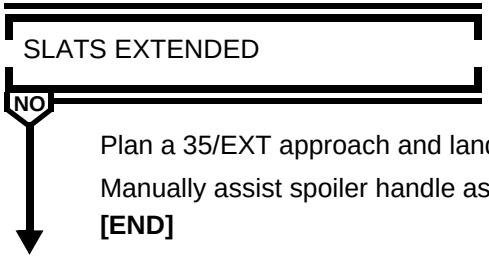
Alternate Gear Extension Lever. . . . . RAISE/LATCH

After three green lights illuminate:

Center Gear Alternate Extension Handle/Lights . . . . PULL/4 GREEN

GEAR Handle . . . . . DOWN

AUTO BRAKE Selector . . . . . OFF



Plan a 35/EXT approach and landing.

Manually assist spoiler handle as it deploys.

[END]

GPWS Switch . . . . . FLAP OVRD

Plan a 28/RET approach and landing.

28/RET APPROACH SPEEDS
HYDRAULIC SYSTEMS 1 AND 3 FAIL

Weight (1000 LB)	360	380	400	420	440	460	480	500
Vapp (Vref + 5)	177	182	186	191	195	199	203	207

28/RET ESTIMATED LANDING DISTANCES (FEET)
HYDRAULIC SYSTEMS 1 AND 3 FAIL

General Electric CF6-80C2 Engines

Weight (1000 LB)		360	380	400	420	440	460	480	500
S.L. STD= 15ºC	Dry	7670	8020	8320	8670	8970	9320	9640	9980
	Wet	9940	10390	10790	11240	11640	12090	12540	12990
2000 FT STD= 11ºC	Dry	8110	8500	8820	9180	9500	9870	10200	10580
	Wet	10580	11060	11490	11970	12400	12890	13340	13840
4000 FT STD= 7ºC	Dry	8610	9010	9350	9740	10080	10470	10830	11220
	Wet	11270	11810	12260	12760	13240	13750	14230	14770
6000FT STD= 3ºC	Dry	9140	9570	9930	10350	10710	11130	11510	11920
	Wet	12080	12630	13110	13660	14150	14700	15230	15790
8000 FT STD= -1ºC	Dry	9720	10180	10560	11010	11390	11840	12240	12680
	Wet	12910	13500	14020	14620	15160	15750	16300	16900
10000 FT STD= -5ºC	Dry	10350	10840	11240	11730	12130	12740	13340	13930
	Wet	13850	14490	15030	15680	16240	17030	17830	18600

NOTE: Standard day, no wind, zero slope, three engines at maximum reverse thrust 80 KIAS, then reverse idle to 60 KIAS, then three engines at forward idle to stop (includes air run distances).

CORRECTIONS

TEMPERATURE: VALID FROM STD -20ºC TO STD +40ºC		
FEET PER ºC	**DRY**	**WET**
Below Standard Day	-21	-29
Above Standard Day	+48	+69

SLOPE: VALID FROM -2% DOWNHILL +2% UPHILL		
FEET PER 1% SLOPE	**DRY**	**WET**
Uphill	-197	-390
Downhill	+560	+1293

WIND: VALID FROM -10 KNOT TAILWIND +20 KNOT HEADWIND		
FEET PER KNOT	**DRY**	**WET**
Headwind	-57	-85
Tailwind	+111	+194

Cross threshold at Vapp, reduce sink rate slightly. Disconnect autothrottles, retard throttles to idle and raise nose of aircraft to at least a level attitude. Do not hold aircraft off. Excessive flare will result in float and excessive use of runway.

CAUTION: Tail strike may occur at pitch attitudes greater that 10°.

Manually assist spoiler handle as it deploys.

[END]

▶HYD 2 & 3 FAIL

Consequences:

LAND AT NEAREST SUITABLE AIRPORT
CONSIDER FUEL DUMP TO < MAX LDG WT AUTOPILOT 1 NOT AVAILABLE PLAN LONG FINAL APPROACH
ALTERNATE GEAR EXTENSION REQUIRED
DO NOT ARM AUTOBRAKES (DEU 910 and Subs only)
FLAP<35, SPOILERS AT NLG TDN ONLY NOSEWHEEL STEERING RESTRICTED RIGHT

NOTE: Increased fuel consumption, up to approximately 15%, may result due to control surface float. In addition to the display of the "HYD 2 & 3 FAIL" alert, an aural warning will sound. Hydraulic system controller will not shut off hydraulic pumps in taxi, takeoff, or landing phase of flight.

Review effects on controllability:

- AUTOPILOT: Autopilot 1 is inoperative.
- AUTOTHROTTLES: Autothrottles must be disconnected before 50 feet AGL.
- RUDDER: Lower rudder is inoperative and "RUDDER LWR INOP" alert will be displayed. Vmca 180 KIAS. Recommended maximum crossword component is 12 knots.
- FLAPS: Flaps may not extend until speed is reduced.
- SLATS: Slats may not extend until speed is reduced. Outboard slats may not retract if they were extended before the loss of pressure occurred. "SLAT DISAG" alert will be displayed when flap/slat handle is in the 0/RET position.
- LANDING GEAR: Use alternate landing gear extension, maximum speed 230 KIAS.
- SPOILERS: Two spoiler panels on each wing are operative. With only one hydraulic system operating, spoilers drive system may

not have enough power to move handle to ground spoiler position.

- NOSEWH EEL STEERING: Limited to 25° to right and 70° (full) to left.
- BRAKES: System 1 full brakes; system 2 accumulator only. Anti-skid is operative.
- AUTO BRAKES: Do not use. Hydraulic systems 1 and 3 required for normal auto brake. Rotate AUTO BRAKE selector to OFF.
- ELEVATORS: Three operative.
- AILERONS: Right inboard aileron operative.
- STAB TRIM: One-half the normal rate is available. Use trim system sparingly (short periods only).
- Lower rudder is inoperative. Vmca is 180 KIAS.

CAUTION: Do not attempt a go-around at speeds below Vmca.

Recommended maximum crosswind component is 12 knots. Reduce gross weight as desired.

FLAP/SLAT Handle . . . . . 28/EXT POSITION

When ready to extend landing gear:

Alternate Gear Extension Lever . . . . . RAISE/LATCH

After three green lights illuminate:

Center Gear Alternate Extension Handle/Lights. . . . .PULL/4 GREEN

Gear Handle . . . . . DOWN

BRAKE Selector . . . . . OFF

28/EXT APPROACH SPEEDS
HYDRAULIC SYSTEMS 2 AND 3 FAIL

Weight (1000 LB)	360	380	400	420	440	460	480	500
Vapp (Vref + 5)	150	154	158	161	165	168	172	175

28/EXT ESTIMATED LANDING DISTANCES (FEET)
HYDRAULIC SYSTEMS 2 AND 3 FAIL

General Electric CF6-80C2 Engines

Weight (1000 LB)		360	380	400	420	440	460	480	500
S.L. STD= 15ºC	Dry	5250	5510	5750	6010	6300	6560	6860	7190
	Wet	6600	6910	7180	7490	7790	8080	8390	8730
2000 FT STD= 11ºC	Dry	5590	5850	6120	6410	6710	7000	7320	7680
	Wet	7030	7340	7660	7980	8310	8610	8950	9320
4000 FT STD= 7ºC	Dry	5950	6240	6520	6840	7170	7480	7830	8220
	Wet	7500	7830	8170	8520	8890	9220	9590	9980
6000FT STD= 3ºC	Dry	6350	6670	6980	7310	7690	8030	8410	8830
	Wet	8010	8380	8740	9110	9520	9890	10280	10730
8000 FT STD= -1ºC	Dry	6800	7150	7490	7850	8250	8630	9050	9540
	Wet	8580	8990	9380	9800	10220	10630	11070	11570
10000 FT STD= -5ºC	Dry	7300	7680	8050	8450	8920	9400	9900	10430
	Wet	9220	9660	10080	10550	11040	11560	12080	12620

NOTE: Standard day, no wind, zero slope, three engines at maximum reverse thrust 80 KIAS, then reverse idle to 60 KIAS, then three engines at forward idle to stop (includes air run distances).

CORRECTIONS

TEMPERATURE: VALID FROM STD -20ºC TO STD +40ºC		
FEET PER ºC	**DRY**	**WET**
Below Standard Day	-16	-19
Above Standard Day	+48	+55

SLOPE: VALID FROM -2% DOWNHILL +2% UPHILL		
FEET PER 1% SLOPE	**DRY**	**WET**
Uphill	-105	-199
Downhill	+501	+779

WIND: VALID FROM -10 KNOT TAILWIND +20 KNOT HEADWIND		
FEET PER KNOT	**DRY**	**WET**
Headwind	-45	-64
Tailwind	+160	+191

Cross threshold at Vapp, reduce sink rate slightly. Disconnect autothrottles, retard throttles to idle and fly to a positive touchdown. Do not hold aircraft off. Excessive flare will result in float and excessive use of runway.

CAUTION: Tail strike may occur at pitch attitudes greater than 10°.

Manually assist spoiler handle as it deploys.

[END]

▶NO MASKS

Consequences:

MANUALLY DEPLOY OXYGEN MASKS

NOTE: In addition to the "NO MASKS" alert displayed, an aural warning will sound.

NO MASKS Switch . . . . . .PUSH AND HOLD 3 TO 5 SECONDS

Open guard, push and hold NO MASKS switch 3 to 5 seconds and observe NO MASKS light is extinguished and "NO MASKS" alert is removed.

NOTE: When NO MASKS switch is pushed, all oxygen compartment doors will open.

[END]

▶TNK__FUEL QTY LO

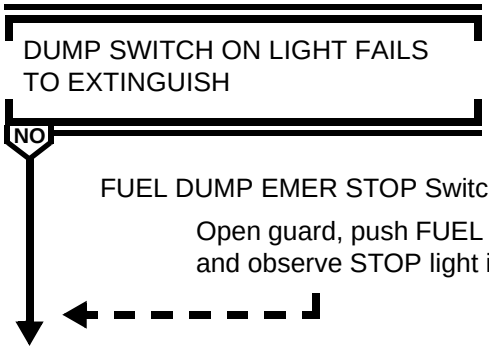
Consequences:

STOP FUEL DUMP

NOTE: In addition to the "TNK__FUEL QTY LO" alert displayed, an aural warning will sound.

DUMP Switch. . . . . OFF

Open guard, push DUMP switch and observe ON light extinguishes.



FUEL DUMP EMER STOP Switch . . . . . .STOP

Open guard, push FUEL DUMP EMER STOP switch and observe STOP light illuminates.

Reschedule fuel distribution as required.

NOTE: This alert is displayed during fuel dump when the inboard compartment for tank 1 or 3, or tank 2 quantity is less than approximately 3,500 pounds.

[END]

Non-Alerts

Airspeed: Lost, Suspect Or Erratic

NOTE: The following information and displays can be considered reliable: PFD attitude, NAV display, ground speed, engine N1and stick shaker.

AFS OVRD Switches . . . . . OFF

Aircraft Pitch/Thrust . . . . . STABILIZE

Disregard IAS/flight director pitch bar and high speed warnings. Use pitch attitude and thrust as the primary flight reference. Should stick shaker be encountered, lower nose to horizon and increase thrust. Resume pitch/thrust reference using the AIRSPEED: LOST, SUSPECT OR ERRATIC tables after the stick shaker ceases.

Flight Director. . . . . OFF

Disregard all alerts and warnings, except stick shaker, until after aircraft is stabilized and safe operations achieved. Alerts and aural warnings can produce conflicting and disorienting cues.

CAUTION: Under certain failures FPA and PLI may be unreliable. Check against primary flight references before using FPA or PLI.

If practical fly to VFR conditions at earliest possible opportunity. After the aircraft is safely stabilized in flight, ensure terrain avoidance.

NOTE: Approximately 10° pitch attitude and MCT thrust will provide a safe initial climb condition if a climb is required.

Pilot and Standby Flight Instruments . . . . . COMPARE

ABLE TO IDENTIFY UNRELIABLE AIR DATA SOURCE

NO

CADC (Unreliable Side). . . . . SELECT TO OTHER SIDE

NOTE: The OVERSPEED aural warning may continue since the CAWS does not know that the CADC switch was activated.

Static Air Switch (Unreliable Side) . . . . . ALT

AIR DATA RETURNS TO NORMAL

NO

AFS OVRD OFF Switch (Reliable Side) . . . NORMAL POSITION

Use autopilot and autothrottles associated with the reliable ADC.

NOTE: The following information and displays may or may not be reliable: FMC (unreliable side) data associated with air data and TAS and WIND on ND (unreliable side).

Continue to monitor pitch, thrust, and airspeed to ensure accuracy of selected instruments.

[END]

Attitude and Thrust . . . . . .ADJUST

Maintain normal pitch attitude and thrust for the phase of flight.

NOTE: The following may or may not be reliable depending on the cause of lost or suspect airspeed: FPA, PLI, low speed pitch protection, VSI, altimeter, altitude reporting, and TCAS. FMS NAV function may be inoperative.
The following will not be reliable: flight director pitch

bar, autothrottle speed protection, high speed pitch protection, and overspeed warning.

Use the following AIRSPEED: LOST, SUSPECT OR ERRATIC tables to determine thrust/pitch relation for remainder of flight.

NOTE: IAS and vertical speed (VS) values in the following tables are approximate.

General Electric CF6-80C2 Engines							
FLIGHT PHASE	**CONFIG**	**PRESSURE ALTITUDE**	**REF**	**WEIGHT (1000 LB)**			
				450	**550**	**600**	**630**
CLIMB Use max thrust (throttles to overboost bar)	Up/RET	5000	Pitch IAS	14.0 250	11.6 275	10.5 288	9.5 299
		FL 100	Pitch IAS	12.5 251	10.0 285	8.5 302	8.0 311
		FL 150	Pitch IAS	10.5 260	8.0 296	7.0 312	6.5 321
		FL 200	Pitch IAS	8.5 270	6.5 305	5.5 322	5.0 331
CRUISE Use N1 for thrust setting	Up/RET	FL 100	Pitch N1 IAS	2.0 76.7 330	3.0 79.1 330	3.0 80.3 330	2.5 81.1 330
		FL 200	Pitch N1 IAS	2.0 83.6 330	2.5 86.1 330	3.0 87.4 330	3.0 88.3 330
		FL 300	Pitch N1 Mach IAS	2.0 89.2 .827 315	2.5 92.4 .827 315	3.0 94.3 .827 315	3.0 95.6 .827 315
		FL 350	Pitch N1 Mach IAS	2.0 91.3 .830 283	- - - -	- - - -	- - - -

General Electric CF6-80C2 Engines

FLIGHT PHASE	CONFIG	PRESSURE ALTITUDE	REF	WEIGHT (1000 LB)			
				450	550	600	630
DESCENT Use Idle thrust	Up/RET	FL 350	Pitch Mach IAS VS	1.0 .768 260 2030	- - - -	- - - -	- - - -
		FL 300	Pitch Mach IAS VS	1.5 .693 260 1920	1.5 .729 275 2040	1.5 .760 287 2140	- - - -
		FL 200	Pitch IAS VS	1.5 260 1760	2.5 260 1770	2.5 273 1850	- - -
		FL 100	Pitch IAS VS	2.0 250 1500	2.5 267 1600	2.5 281 1680	- - -
ARRIVAL LVL FLT Use N1 for thrust setting	Up/RET	5000	Pitch N1 IAS	5.0 58.9 221	5.0 62.3 236	5.0 65.5 250	5.0 67.3 258
	0/EXT	3000	Pitch N1 IAS	8.5 61.5 182	8.5 65.1 194	8.5 68.4 205	8.5 70.3 211
	15/EXT	3000	Pitch N1 IAS	6.0 64.7 174	6.0 68.4 185	6.5 71.8 196	6.5 73.7 202
	28/EXT	3000	Pitch N1 IAS	4.0 70.1 168	4.0 74.0 179	4.5 77.5 189	4.5 79.4 195
APPROACH IAS APPROX Vref +15 Use N1 for thrust setting	35/EXT Gear Down	Descent	Pitch N1 IAS	2.5 62.1 153	2.5 65.6 162	2.5 68.7 171	3.0 70.5 176
	Maintain pitch and adjust power to maintain glide path.						
GO AROUND	28/EXT Gear Up	Sea LVL	Pitch IAS	20.0 180	20.0 172	19.5 171	18.0 176
		5000	Pitch IAS	20.0 160	18.5 162	16.5 171	15.5 177

When ready for approach and landing,

- Maintain VFR conditions.
- Establish landing configuration early.
- Use IRS ground speed and reported winds to verify airspeed.
- Use radar altimeter.
- Use a runway with electronic or visual glideslope.

[END]

All Engine Flameout

NOTE: All engine flameout can be recognized by decrease in EGT, N2, and fuel flow. This will be followed closely by a decrease in N1.

Air-start envelope is 250 KIAS to Vmo, SL to FL300. Control aircraft at an IAS to obtain a minimum N2 of 15% for air start.

ENG IGN OVRD Switch . . . . . .OVRD ON

ADG. . . . . DEPLOY

MINIMUM AIRSPEED FOR CONTROLLABILITY (KIAS)

GROSS WEIGHT (1000 LB)	300	350	400	450	500	550	600
Up/RET	173	187	199	212	223	234	244
0/EXT	155	155	162	172	181	190	199
28/EXT	155	155	155	159	166	175	183

NOTE: If desired, and time permits, CABIN PRESS system may be operated in MANUAL and outflow valve selected CLOSED to minimize cabin rate of climb until an engine restart is achieved. When an engine restarts, return system to automatic mode.

ANY ENGINE RESTARTS

NO

ADG ELEC Switch . . . . . ON

Remaining Engine(s) . . . . . RESTART

Verify all systems are operating as required.

Land at nearest suitable airport.

[END]

Throttles (All) . . . . . IDLE

Flaps/Slats . . . . . MAINTAIN

DITCHING REQUIRED

NO

Landing Gear . . . . . UP

Refer to Abnormal Non-Alert procedure-DITCHING.

[END]

Main Landing Gear . . . . . ALTN EXT

Center gear may be extended as desired.

Move gear handle down.

Do not stow alternate gear extension lever.

[END]

Emergency Descent

Altitude Select Knob . . . . . REDUCE/PULL

Initiate descent to 10,000 feet or minimum safe altitude, whichever is higher.

SPOILER Handle . . . . . SPD BRK FULL

IAS/MACH Select Knob . . . . . SELECT .85 MACH/320-350 KIAS

WARNING: If structural damage is suspected or turbulence present, do not exceed .82 Mach/ 305 KIAS.

Descent . . . . . MAX PITCH 10°/MAX BANK 30°

Transponder (Unless Otherwise Required) 7700

NO SMOKE and SEAT BELTS Switches . . . . . ON

To reactivate boom mike when O2 mask is no longer required,

EROS O2 Mask Doors . . . . . CLOSE

PRESS TO TEST AND RESET Lever . . . . . PUSH

[END]

Reverser Deployed or U/L or REV Displayed in Flight

AIRCRAFT BUFFET OR TRIM CHANGE

NO

Take immediate corrective action as necessary to maintain aircraft control.

Throttle (Affected Engine . . . . . .IDLE

Reverser Levers . . . . . .FULL DOWN (FWD IDLE)

U/L OR REV REMAINS DISPLAYED OR AIRCRAFT BEHAVIOR STILL ABNORMAL

NO

Fuel Switch (Affected Engine . . . . . OFF

Refer to Abnormal Non-Alert Procedure-ENGINE SHUTDOWN IN FLIGHT.

Set autopilot and autothrottles as desired.

Gross Weight . . . . . .REDUCE, AS REQUIRED

Use 35º flaps for landing.

[END]

Continue use of affected engine at Captain's discretion. Set autopilot and autothrottles as required.

[END]

Continue normal engine operation.

[END]

Smoke/Fumes of Electrical, Air Conditioning, or Unknown Origin

CAUTION: Removing the source of ignition from a fire may not cause the fire to extinguish. If conditions permit, delay fuel dump until smoke switch is in its final position. If fuel dump is started prior to or during smoke switch operation, various valves and pumps may not be controllable which may result in an uncontrollable fuel dump.

NOTE: If fumes are identified as fuel/oil and an increase in oil quantity is observed, refer to Abnormal Non-Alert procedure - ENGINE OIL QUANTITY INCREASE.

Oxygen Masks ON/100%

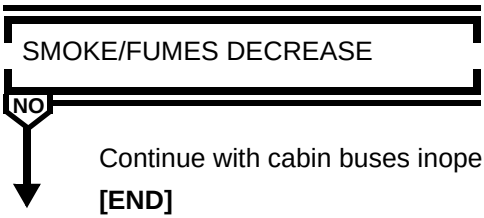
Don smoke goggles as required.

Crew/Courier(s) Communications . . . . . ESTABLISH

EMER LT Switch . . . . . ON

CAB BUS Switch . . . . . OFF

Pause long enough to evaluate whether smoke or fumes decrease.



Continue with cabin buses inoperative.

[END]

CAB BUS Switch . . . . . ON

EMER LT Switch . . . . . ARM

VHF-1 or HF-1 . . . . . SELECT VHF-1 AND/OR HF-1

Autothrottles . . . . . OFF

Throttles . . . . . REDUCE AT LEAST 20% BELOW MCT

FADEC MODE Switches (All Engines) . . . . . SELECT ALTN

AP 1 (If Desired) . . . . . .SELECT

SMOKE ELEC/AIR Selector . . . . . 3/1 OFF

Pause long enough to evaluate if smoke/fumes decreases.

SMOKE/FUMES DECREASE

NO

Leave SMOKE ELEC/AIR selector in 3/1 OFF for remainder of flight.

NOTE: If "FLAP DISAG" alert is displayed, use left inboard flap indication on CONFIG synoptic or PFD to determine flap position.

ENG IGN . . . . . VERIFY A SELECTED

FLAP LIMIT Selector . . . . . .OVRD 1

Manual Thrust Limits . . . . . SELECT G/A

AUTO BRAKE Selector . . . . . OFF

NOTE: G/A switch is inop.

GO AROUND REQUIRED

NO

Autopilot/Autothrottles . . . . . .DISCONNECT

Thrust . . . . . SET

Speed . . . . . Vref(28)+5

When positive rate of climb is indicated,

Gear Handle . . . . . UP

Land at nearest suitable airport.

[END]

SMOKE ELEC/AIR Selector . . . . . 2/3 OFF

Pause long enough to evaluate if smoke/fumes decrease.

SMOKE/FUMES DECREASE

NO

Leave SMOKE ELEC/AIR selector in 2/3 OFF for remainder of flight.

Land at nearest suitable airport.

NOTE: Landing gear position indications may be observed on CONFIG synoptic.
Control wheel trim switches are inoperative. Use LONG TRIM handles when stabilizer trim is desired.

[END]

AP 2 (If Desired) . . . . . SELECT

VHF-2 or HF-2 . . . . . SELECT VHF-2 AND/OR HF-2

SMOKE ELEC/AIR Selector . . . . . 1/2 OFF

Pause long enough to evaluate if smoke/fumes decrease.

SMOKE/FUMES DECREASE

NO

Leave SMOKE ELEC/AIR selector in 1/2 OFF for remainder of flight.

NOTE: If "FLAP DISAG" alert is displayed, use night inboard flap indication on CONFIG synoptic or PFD to determine flap position.

ENG IGN . . . . . VERIFY B SELECTED

FLAP LIMIT Selector . . . . . OVRD 2

Manual Thrust Limits . . . . . SELECT G/A

CAPT FLT DIR OFF Switch . . . . . OFF

AUTO BRAKE Selector . . . . . OFF

NOTE: Autopilot will become inop when IRU 1 and IRU AUX become inop.

G/A switch is inoperative.

GO AROUND REQUIRED

NO

Autopilot/Autothrottles . . . . . .DISCONNECT
Thrust . . . . . SET
Speed . . . . . .Vref (28)+5
When positive rate of climb is indicated,
GEAR Handle . . . . . UP

Land at nearest suitable airport.

[END]

SMOKE ELEC/AIR Selector . . . . . NORM

FADEC MODE Switches (All Engines) . . . . . .PUSH

Land at nearest suitable airport.

[END]

Two Engines Inoperative

NOTE: During a two-engine approach, if a second engine fails on final and the gear is down, add power as required. Set flaps to FLAPS 28, maintain speed to reach Vref + 5 for FLAPS 28 and continue approach. Move GPWS switch to FLAP OVRD, conditions permitting.

Throttles . . . . . MCT
FLAPS (Unless on Final). . . . . UP
Speed (Unless on FInal) . . . . . .DRIFTDOWN OR UP/RET Vmin + 30

NOTE: Delay gear retraction until flaps are up.

Gear (Unless Committed) . . . . . UP
Slats (Unles on Final) . . . . . RET

ENG IN OVRD Switch . . . . . ON
Plan to land at nearest suitable airport.

DRIFTDOWN REQUIRED

NO

Autothrottles . . . . . OFF

Thrust . . . . . MCT

Driftdown Speed Schedule . . . . . Check

DRIFTDOWN

General Electric CF6-80C2 Engines

ALT (1000 FT)	UNITS	INITIAL GROSS WEIGHT (1000 LB)						
		300	350	400	450	500	550	600
40	Kt	223	243	249	Start of driftdown speed			
	Ft	26107	22369	19077	Max one eng alt (airfoil & engine A-ice ON, reduce by 1500 ft.)			
	NMi	343	373	390	Distance to one engine altitude			
	Lb	9069	11117	12983	Fuel burn to one engine altitude			
	Kt	213	229	245	Bottom of driftdown speed one eng altitude			
	Lb/Hr	9914	11634	13402	Fuel flow at one engine altitude			
35	Kt	220	240	258	275	279		
	Ft	26055	22328	19051	15741	12677		
	NMi	301	338	364	398	422		
	Lb	8397	10591	12613	15077	17475		
	Kt	213	230	245	259	272		
	Lb/Hr	9939	11652	13414	14998	16658		
30	Kt	218	237	254	271	287	302	312
	Ft	25950	22255	18998	15699	15644	9224	5147
	NMi	238	292	327	365	397	450	539
	Lb	7044	9644	11874	14458	17021	20978	27452
	Kt	214	230	245	259	272	284	294
	Lb/Hr	9989	11685	13439	15019	16672	18128	19278

DRIFTDOWN

General Electric CF6-80C2 Engines

ALT (1000 FT)	UNITS	INITIAL GROSS WEIGHT (1000 LB)						
		300	350	400	450	500	550	600
25	Kt		234	251	268	283	298	312
	Ft		22086	18902	15628	12584	9169	5095
	NMi		213	274	323	361	418	510
	Lb		7462	10517	13419	16199	20284	26826
	Kt		231	245	259	272	284	294
	Lb/Hr		11760	13484	15053	16699	18148	19296
20	Kt			249	265	280	294	308
	Ft			18645	15492	12481	9074	5008
	NMi			167	260	313	378	474
	Lb			6894	11413	14789	19158	25787
	Kt			247	260	273	284	294
	Lb/Hr			13605	15120	16744	18182	19326
15	Kt					278	292	305
	Ft					12239	8903	4854
	NMi					230	320	424
	Lb					11476	16963	23951
	Kt					273	285	295
	Lb/Hr					17850	18246	19379
10	Kt						290	303
	Ft						8438	4550
	NMi						200	345
	Lb						11236	20312
	Kt						286	296
	Lb/Hr						18413	19484

Minimum Safe Altitude/Range Capability . . . . . DETERMINE

Fuel Dump. . . . . CONSIDER

Driftdown Altitude . . . . . SELECT

Review the following and then continue checklist.

At bottom of driftdown:

- Level at maximum one engine altitude.
- Maintain altitude and allow aircraft to accelerate to 290 KIAS as gross weight is reduced by fuel burn.
- Maintain 290 KIAS for cruise/climb (autothrottles may be used).

Appropriate Engine Shutdown Procedure . . . . . COMPLETE

ENG IGN OVRD Switch . . . . . OFF

NOTE: Consider fuel dump to reduce gross weight to minimum practical.

Autothrottles . . . . . AS REQUIRED

Altimeters . . . . . SET/CROSS CHECKED

GPWS. . . . . FLAP OVRD

At or below 10,000 feet MSL,

AIR MANUAL

NO

Pack Switches (All) . . . . . OFF

HYDRAULIC SYSTEM MANUAL

NO

1-3/2-3 RMPs . . . . . ON

Maintain clean configuration and UP/RET Vmin + 30 until maneuvering has been completed.

TWO ENGINES INOPERATIVE SPEEDS

Weight (1000 LB)	360	380	400	420	440	460	480	500
Up/RET Vmin +30	219	224	229	234	239	244	249	253
0/EXT Vmin +30	184	188	192	196	200	204	208	211
0/Ext Vmin +15	169	173	177	181	185	189	193	196

0/EXT ESTIMATED LANDING DISTANCES (FEET) TWO ENGINES INOPERATIVE

General Electric CF6-80C2 Engines

WEIGHT (1000 LB)		360	380	400	420	440	460	480	500
S.L. STD= 15ºC	Dry	5080	5330	5560	5800	6070	6290	6540	6800
	Wet	6970	7350	7690	8060	8450	8780	9160	9540
2000 FT STD= 7ºC	Dry	5660	5960	6220	6510	6820	7080	7380	7680
	Wet	7840	8280	8680	9110	9570	9960	10410	10860
6000 FT STD= 3ºC	Dry	6000	6310	6610	6920	7260	7540	7860	8190
	Wet	8340	8820	9250	9720	10220	10640	11130	11620
8000 FT STD= -1ºC	Dry	6360	6710	7030	7360	7740	8040	8400	8770
	Wet	8890	9400	9880	10380	10930	11400	11930	12470
10000 FT STD= -5ºC	Dry	6770	7150	7490	7860	8270	8670	9130	9630
	Wet	9490	10050	10570	11120	11730	12330	12990	13720

NOTE: Standard day, no wind, zero slope, no reverse thrust (includes air run distances).

CORRECTIONS

TEMPERATURE: VALID FROM STD -20ºC TO STD +40ºC		
FEET PER ºC	**DRY**	**WET**
BELOW Standard Day	-15	-22
ABOVE Standard Day	+44	+64

SLOPE: VALID FROM -2% DOWNHILL +2% UPHILL		
FEET PER 1% SLOPE	**DRY**	**WET**
Uphill	-77	-182
Downhill	+320	+788

WIND: VALID FROM -10-KNOT TAILWIND +20-KNOT HEADWIND		
FEET PER KNOT	**DRY**	**WET**
Headwind	-37	-61
Tailwind	+134	+213

Review the following MISSED APPROACH caution.

CAUTION: Do not attempt a go-around under any of the following conditions:

- Less than 1,000 feet AGL.
- Airspeed below 0/EXT Vmin + 30.
- Gear is extended.
- Hydraulic 1 or 3 failed and Service Bulletin MD11-27-062 or production equivalent incorporated (outboard slats will not retract). "SLAT DISAG" alert will be displayed when flap/slat handle is in the 0/RET position.
- Weight, altitude and temperature in excess of those shown in the following chart.

MAXIMUM WEIGHT FOR TWO ENGINES INOPERATIVE MISSED APPROACH

General Electric CF6-80C2 Engines

PRESS ALT	TEMPERATURE MAXIMUM WEIGHT (1000 LB)								
					STD TEMP				
S.L.	-65ºC 519	-45ºC 523	-25ºC 527	-5ºC 530	15ºC 532	25ºC 535	35ºC 490	45ºC 454	55ºC 417
2000 FT	-69ºC 500	-49ºC 505	-29º 509	-9ºC 512	11ºC 513	21ºC 515	31ºC 472	41ºC 437	51º 402
4000 FT	-73ºC 487	-53ºC 490	-33ºC 492	-13ºC 491	7ºC 490	17º 489	27ºC 457	37ºC 419	47ºC 387
6000 FT	-77º 465	-57ºC 466	-37ºC 467	-17ºC 466	3ºC 464	13ºC 462	23ºC 444	33ºC 408	43ºC 372
8000 FT	- -	-61ºC 439	-41ºC 437	-21ºC 434	-1ºC 431	9ºC 430	19ºC 427	29ºC 395	39º 358
10000 FT	- -	-65ºC 408	-45ºC 406	-25ºC 403	-5ºC 401	5ºC 399	15ºC 398	25ºC 381	35ºC 349
NOTE: Packs off, engine and airfoil ice protection off.									

On final,

FLAP/SLAT Handle 0/EXT

Speed . . . . . 0/EXT Vmin + 30

NOTE: For go-around protection, maintain 0/EXT Vmin + 30 until committed to land (1,000 feet AGL). Achieve Vmin + 15 at or above 50 feet AGL.

MISSED APPROACH REQUIRED

NO

Go-Around Thrust . . . . . SET

FLAP/SLAT Handle . . . . . UP/RET

Speed . . . . . UP/RET Vmin + 30

Maintain approach descent rate during slat retraction until attaining UP/RET Vmin +30, then initiate climb.

[END]

At 1,000 feet AGL,

GEAR Handle/Lights . . . . . DOWN/4 GREEN

NOTE: Do not use autobrakes.

Spoilers. . . . . .ARM

Speed (Achieve at or above 50 feet) . . . . . 0/EXT Vmin + 15

Zero rudder trim before touchdown.

NOTE: Do not attempt to achieve a smooth touchdown. At threshold, reduce throttles to idle and use a slight flare. Excessive flare will result in float, excessive use of runway and possible tail strike.

Reverse Thrust. . . . . AS REQUIRED

[END]

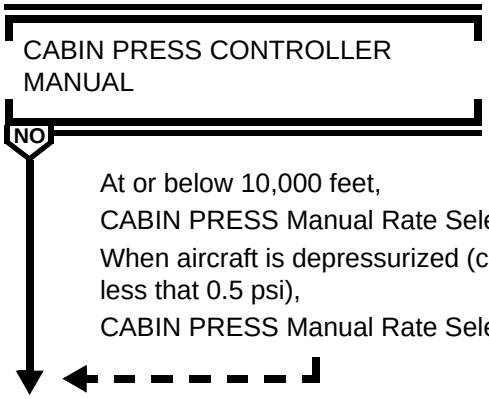
Ditching

Crew and Couriers . . . . . ALERT
Transponder . . . . . SET 7700
ATC . . . . . ADVISE
Fuel Quantity . . . . . REDUCE
Vapp . . . . . CHECKED
APU . . . . . VERIFY OFF
First Aid and Survival Equipment/Loose Equipment . . . . . STOWED
Left Observer's Seat . . . . . FACING FORWARD
Right Observer's Seat (If Occupied) . . . . . FACING FORWARD
NO SMOKE/SEAT BELTS . . . . . ON
Courier(s) Ditching Preparation . . . . . COMPLETED
Crew Vests, Belts, Harnesses . . . . . ON/FASTENED
DITCHING Switch . . . . . ON

AIR SYSTEM MANUAL

NO

AVNCS FAN Switch . . . . . OVRD
At or below 10,000 feet,
PACK/BLEED Switches . . . . . OFF



Crew/Courier(s) Briefing . . . . . COMPLETED

NOTE: When beginning final approach, advise crew and courier(s) to brace for impact (30 seconds prior to touchdown) and not to release harness until aircraft has come to complete stop.

GEAR Handle/Lights . . . . . UP/OFF

FLASP/SLAT Handle 50/EXT

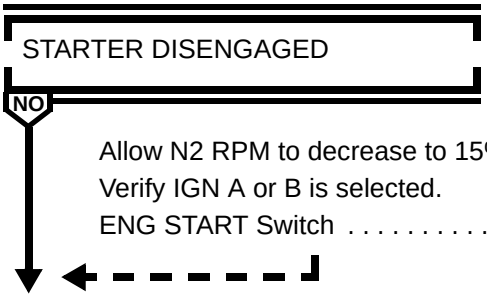
NOTE: Continuous aural warnings will sound. If time permits, prior to leaving aircraft, move all ENG FIRE handles to full forward. If cockpit door is jammed, exit via smoke panel. If debris jams exit to cabin, use windows.

[END]

Engine Abnormal Start

(HOT, HUNG, OR NO START)

FUEL Switch . . . . . OFF



Allow N2 RPM to decrease to 15% or less.
Verify IGN A or B is selected.
ENG START Switch . . . . . PULL

Motor engine with starter for 30 seconds.

ENG START Switch . . . . . PUSH

Determine type of abnormal start:

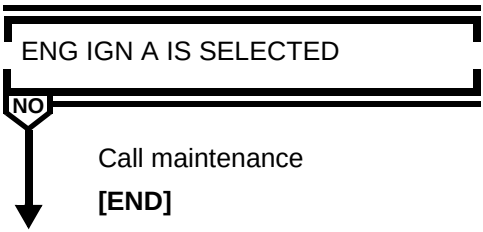
Hot Start

Record maximum EGT and elapsed time EGT was above 750ºC.

Call Maintenance.

[END]

Hung Start/No Start - Engine 1 or 3



Call maintenance

[END]

Select ENG IGN A and attempt another start.

Observe started air pressure, starting fuel flow, maximum N2 achieved, and maximum EGT.

If unsuccessful, call maintenance.

[END]

HUNG START/NO START - ENGINE 2

Select other ENG IGN (A or B) and attempt another start.

Observe started air pressure, starting fuel flow, maximum N2 achieved, and maximum EGT.

If unsuccessful, call maintenance.

[END]

Engine Compressor Stall(s)

ENGINE OPERATION NORMAL

NO

Continue engine operation.

[END]

Autothrottles . . . . . DISENGAGE

Throttle (Affected Engine). . . . . RETARD TO IDLE

ENG IGN OVRD Switch . . . . . OVRD ON

Associated ENG & WING or TAILO ANTI-ICE Switches . . . . . ON

ECON Switch . . . . . OFF

ENGINE OPERATION NORMAL

NO

CAUTION: Continued operation of an engine that exhibits stall tendencies must be done with extreme caution. If a high EGT becomes evident or a rapid EGT rise occurs during slow throttle advance, or if an increase in vibration level is noted, shut down engine.

Throttle (Affected Engine) . . . . . (SLOWLY) ADVANCE

NOTE: If compressor stall recurs, at Captain's discretion, operate engine at a reduced thrust level at which compressor stall is not experienced.

If compressor stall does not recur, continue engine operation. Monitor engine indications.

ENG IGN OVRD Switch . . . . . OFF
ENG, WING and TAIL ANTI-ICE Switches . . AS REQUIRED
ECON Switch . . . . . ON

Shut down affected engine. Refer to ENGINE SHOUTDOWN IN FLIGHT in this section.

[END]

Engine Oil Quantity Increase

NOTE: Slight increase/decrease in oil quantity may be normal. Use this procedure when continuous oil quantity increase is observed, oil quantity increase is accompanied by secondary indications, or oil quantity exceeds 21 units of fuel/oil fumes are detected.

Maintain normal thrust settings.

FUEL/FUMES DETECTED

NO

AIR SYSTEM SELECT Switch . . . . . MANUAL
Associated BLEED AIR Switch . . . . . OFF
Associated PACK Switch . . . . . OFF
Associated ISOL Switch . . . . . ON

NOTE: When in icing with only one bleed air source, exit icing area and maintain ice protection until clear of icing.

Log malfunction.

[END]

Engine Oil Quantity Lo/Decreasing

Continue engine operation.

If oil pressure/temperature become abnormal, shut down affected engine. Refer to Abnormal Non-Alert procedure - ENGIINE SHUTDOWN IN FLIGHT.

[END]

Engine Primary Instrument Loss

NOTE: If engine parameters are lost (indicated by amber X's over N1, 2, EGT, and fuel flow), use this procedure to determine the status of the engine.

AIRCRAFT ON GROUND

NO

Call maintenance.

[END]

Observe EAD.

"FUEL OFF" DISPLAYED ABOVE FUEL FLOW ON AFFECTED ENGINE

NO

Shut down affected engine.

Refer to Abnormal Non-Alert procedure - ENGINE SHUTDOWN IN FLIGHT.

NOTE: If "FUEL OFF" alert is displayed, it indicates a FADEC power failure has occurred and the engine has been shut down.
Engine shutdown can be confirmed by checking the electrical system status.

[END]

Operate the affected engine throttle by continually aligning it with other throttles. Do not allow affected throttle to lead others.

NOTE: If "FUEL OFF" alert is not displayed, it indicates a FADEC data failure has occurred. The engine will continue to operate and respond to throttle movement.

Continue flight and log malfunction.

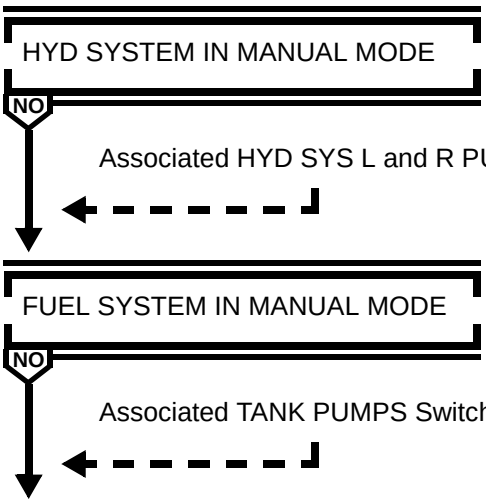
[END]

Engine Restart In Flight

NOTE: Do not attempt to restart an engine if it has been shut down because of engine fire or if there are indications of engine damage.

Throttle . . . . . VERIFY IDLE

FUEL Switch . . . . . VERIFY OFF



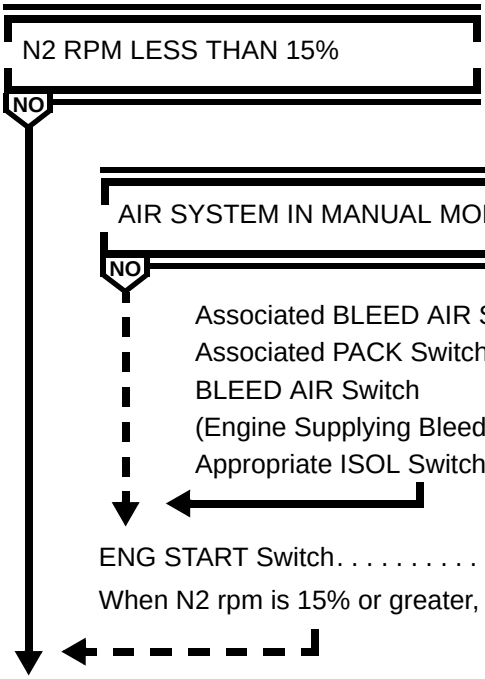
Air starts may be attempted at any altitude and airspeed.

Recommended altitude and airspeed for air starts are as follows:

- Above 10,000 feet, greater than 220 KIAS
- Below 10,000 feet, greater than 250 KIAS

ENG IGN OVRD Switch . . . . . OVRD ON

NOTE: If cyan lightning strike does not appear on EGT display (ENG IGN OVRD switch inoperative), select engine ignition A and B. Additionally, place engine anti-ice switch to ON for the appropriate engine, as this action also activates the engine ignition system. If a restart is not completed within 60 seconds, the engine anti-ice can be selected again.

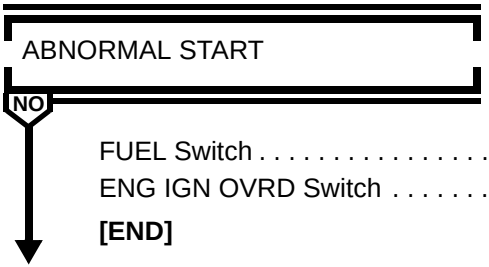


Associated BLEED AIR Switch. . . . . .VERIGFY OFF
Associated PACK Switch . . . . . VERIFY OFF
BLEED AIR Switch
(Engine Supplying Bleed for Start) . . . . . VERIFY ON
Appropriate ISOL Switch . . . . . VERIFY ON

ENG START Switch. . . . . PULL

When N2 rpm is 15% or greater,

FUEL Switch. . . . . .ON



FUEL Switch . . . . . OFF
ENG IGN OVRD Switch . . . . . OFF

[END]

Unless thrust is required for safety of flight, observe 1-minute warm-up at idle and gradually resume normal operation.

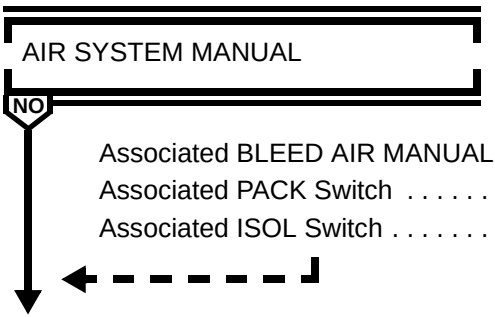
ENG IGN OVRD Switch. . . . . OFF

Verify fuel, hydraulic, air and electrical systems are operating in the desired mode.

[END]

Engine Shutdown In Flight

Throttle. . . . . .IDLE
FUEL Switch . . . . . OFF



Associated BLEED AIR MANUAL. . . . . VERIFY OFF
Associated PACK Switch . . . . . OFF
Associated ISOL Switch . . . . . ON

Transponder/TCAS Selector . . . . . .TA

Consider landing at nearest suitable airport.

[END]

Evacuation

Couriers . . . . . ALERT

After aircraft has stopped,

Outflow Valve . . . . . VERIFY OPEN

PARK BRAKE Handle . . . . . PARK

FUEL Switches . . . . . OFF

EVACUATION Command . . . . . INITIATE

ENG FIRE Handles . . . . . DOWN/DISXHARGE

APU FIRE Handle. . . . . PULL/ROTATE

EMER PWR Selector . . . . . OFF

BAT Switch . . . . . OFF

[END]

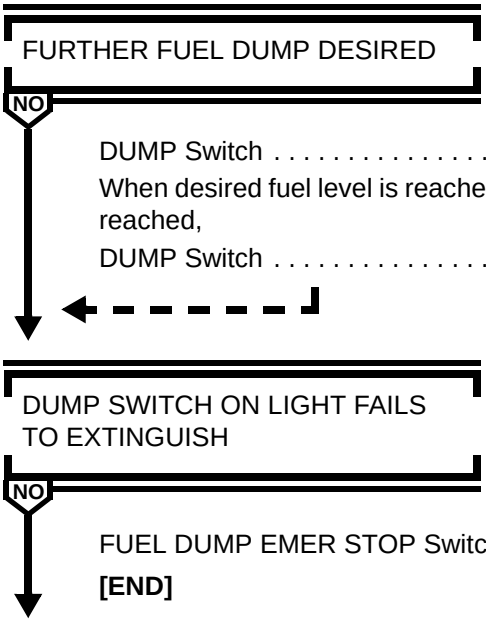
Fuel Dump

DUMP Switch . . . . . ON

NOTE: When fuel dump is terminated at the FMS DUMP TO GW value, "DUMP VLV L DISAG" and "DUMP VLV R DISAG" alerts will be displayed.

If fuel dump does not terminate at the FMS DUMP TO GW value, "FMS DUMP DISABLED" alert will be displayed. If fuel dumps below the low level dump shutoff (approximately 11,500 pounds per tank), "FUEL DUMP LEVEL" alert will be displayed

When desired fuel level is reached or calculated dump time is reached, DUMP Switch . . . . . OFF



No further crew action required.

[END]

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Air

AIR SYS 1-2 OFF

When manifolds 1 and 2 are no longer displayed red on synoptic,
BLEED AIR 2 Switch . . . . . ON

"AIR SYS 1-2 OFF" ALERT DISPLAYED AGAIN WITHIN 15 MINUTES

NO

PACK 2 Switch . . . . . OFF

Do not repressurize air system 2.

When manifolds 1 and 2 are no longer displayed red on synoptic, BLEED AIR 1 Switch . . . . . ON

"AIR SYS 1-2 OFF" ALERT DISPLAYED AGAIN WITHIN 15 MINUTES

NO

PACK 1 Switch . . . . . OFF

Do not repressurize air system 1 or 2.

[END]

No further crew action required.

[END]

Do not repressurize air system 1.

[END]

AIR SYS__PRES LO

Affected BLEED AIR Source . . . . . OFF
Associated PACK Switch . . . . . OFF
Associated ISOL Switch . . . . . ON

[END]

BLEED AIR__FAULT

Throttle for Affected Bleed Air System . . . . . SLOWLY ADVANCE

"BLEED AIR__FAULT" REMOVED

NO

If safety of flight permits, operate engine at or above thrust level necessary to keep "BLEED AIR__FAULT" alert from being displayed.

[END]

Return throttles as needed.
Affected BLEED AIR Source . . . . . OFF
Associated PACK . . . . . OFF
Associated ISOL Switch . . . . . ON

NOTE: When in icing with only one bleed air source, exit icing area and maintain ice protection until clear of icing. When airfoil anti-ice use has been terminated, the affected bleed air source may be reinstated for normal usage.

[END]

TAIL A-ICE DISAG

CAUTION: Leading edge of horizontal stabilizer may be damaged if tail anti-ice is operated for more than 30 seconds on the ground.

AIRCRAFT ON GROUND

NO

TAIL ANTI-ICE Switch . . . . . OFF
AIR APU Switch . . . . . OFF
Notify maintenance to remove external air.
BLEED AIR 2 Switch. . . . . VERIFY OFF
1-2 ISOL Switch . . . . . VE RIFY OFF
[END]

TAIL ANTI-ICE SWITCH OFF

NO

Assume tail anti-ice is on.

AIR SYSTEM MANUAL

NO

After landing,
BLEED AIR 2 Switch . . . . . OFF
1-2 ISOL Switch . . . . . OFF

After landing, do not pressurize pneumatic system 2.
[END]

Depart icing area.

After departing icing area,

TAIL ANTI-ICE Switch . . . . . OFF

Land with maximum of 35º flaps.

[END]

TRIM AIR OFF

COCKPIT Temperature Selector . . . . . .SET AS DESIRED

NOTE: Select cockpit zone, set temperature at least 4ºF/2ºC less than cabin zone set temperature (cyan).

[END]

WING A-ICE__DISAG

CAUTION: Slats may be damaged if wing anti-ice is operated on ground for more than 30 seconds.

AIRCRAFT ON GROUND

NO

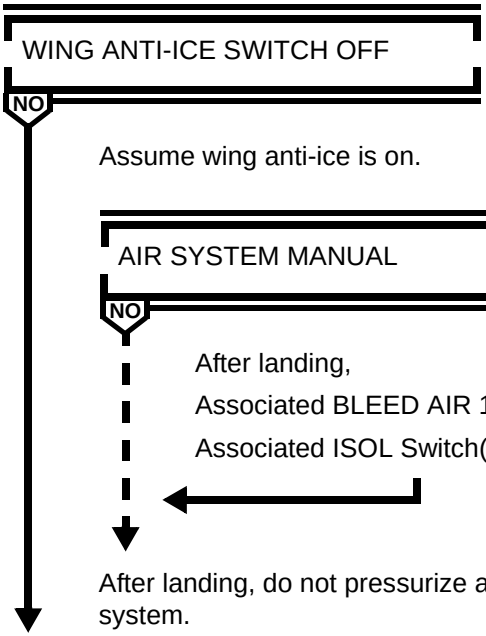
WING ANTI-ICE Switch. . . . . OFF

Notify maintenance to remove external air.

Associated BLEED AIR 1 or 3 Switch . . . . . VERIFY OFF

Associated ISOL Switch(es) . . . . . VERIFY OFF

[END]



WING ANTI-ICE Switch . . . . . OFF

Depart icing area.

[END]

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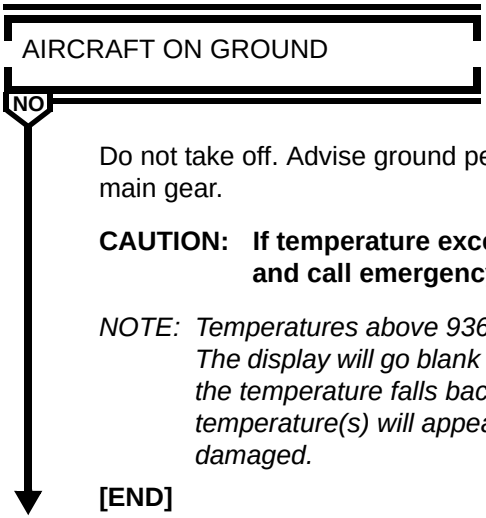
Configuration

BRAKE OVERHEAT



Do not take off. Advise ground personnel to remain clear of main gear.

CAUTION: If temperature exceeds 800ºC, stop aircraft and call emergency services.

NOTE: Temperatures above 936ºC cannot be measured. The display will go blank for the affected brake(s). As the temperature falls back below 936ºC, the temperature(s) will appear again if sensors are not damaged.

[END]

Flight conditions permitting, extend landing gear for cooling for 10 minutes or until alert is not displayed.

Record applicable brake position(s) and maximum temperature reading in maintenance log.

[END]

FLAP DISAG

Place FLAP/SLAT handle to match flap position. Allow several seconds for system response. If alert remains displayed, select the last symmetrical configuration.

PROBLEM WAS ASYMMETRIC FLAPS

NO

Land at nearest suitable airport using existing flap/slat setting.

If final flap setting is less than 35º,

GPWS Switch . . . . . FLAP OVRD

Autobrakes . . . . . OFF

At 50 feet,
Autothrottles . . . . . OFF

[END]

ALERT APPEARED DURING ATTEMPTED FLAP RETRACTION

NO

Land at nearest suitable airport.

If flaps now less than 50º, further extension may be attempted if desired.

NOTE: If after selecting a greater flap setting, flaps do not move as selected, place FLAP/SLAT handle to match actual flap position.

If final flap setting is less than 35º,

GPWS Switch . . . . . FLAP OVRD

Autobrakes . . . . . OFF

ALERT APPEARED DURING
ATTEMPTED FLAP RETRACTION

NO (Continued)

At 50 feet,
Autothrottles . . . . . OFF

[END]

Airspeed . . . . . REDUCE

Reduce speed to minimum maneuver speed displayed on PFD.

NOTE: During the next step, FLAP/SLAT handle forces will be higher than normal.

Place FLAP/SLAT handle to 50/EXT, then return handle to desired position. Allow several seconds for system response. (This action may allow flaps to reset to normal operation.)

FLAPS EXTEND AS DESIRED

NO

No further crew action is required.

[END]

Return FLAPS/SLAT handle to match actual flap position.

FLAP POSITION 0 DEGREES

NO

Refer to Abnormal Non-Alerts Procedures - NO FLAPS/SLAT ESTENDING LANDING.

[END]

Land with existing flap/setting.

If flaps less than 35º,

GPWS Swtich . . . . . FLAP OVRD

Autobrakes . . . . . OFF

At 50 feet,

Autothrottles . . . . . OFF

[END]

LSAS ALL FAIL

Autopilot . . . . . DISCONNECT

LSAS Switches . . . . . ALL OFF

Any One LSAS Switch . . . . . ON

ASSOCIATED LSAS LIGHT ILLUMINATED

NO

Associated LSAS Switch . . . . . OFF

Attempt to restore remaining LSAS channels by pushing any one LSAS switch on and observe its FAIL light. Any LSAS switch that illuminates FAIl should be pushed to OFF prior to pushing next switch.

ANY LSAS CHANNEL OPERATIVE

NO

Attempt to reengage autopilot.

NOTE: Autopilot requires an operative inboard LSAS channel.

[END]

LSAS is inoperative. Autopilot is not available.

NOTE: Pitch rate damper, pitch protection and positive nose lowering will not be available.

Pitch sensitivity increases with altitude,

Avoid over-controlling. Also avoid pitch attitudes above 7 degrees during landing.

[END]

SEL ELEV MAN

"SEL FADEC ALTN" AND/OR "SEL FLAP LIM OVRD" AND/OR "IAS COMPARATOR MONITOR" ALSO DISPLAYED

NO

Refer to Emergency Non-Alert Procedure - AIRSPEED LOST, SUSPECT OR ERRATIC.

[END]

ELEV FEEL Selector . . . . . MANUAL

ELF Speed . . . . . SET AS REQUIRED

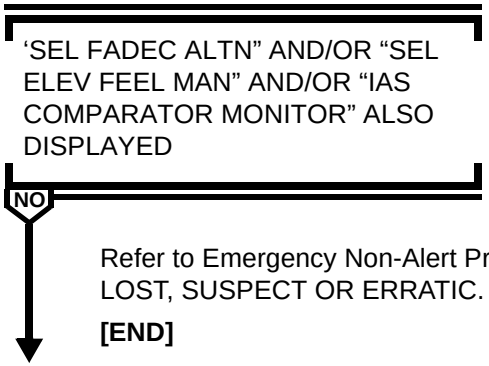
NOTE: When ELEV FEEL is in MANUAL, ELF speed is displayed on CONFIG synoptic.

Slew ELF reference speed bug to maintain approximate agreement with aircraft indicated airspeed.

[END]

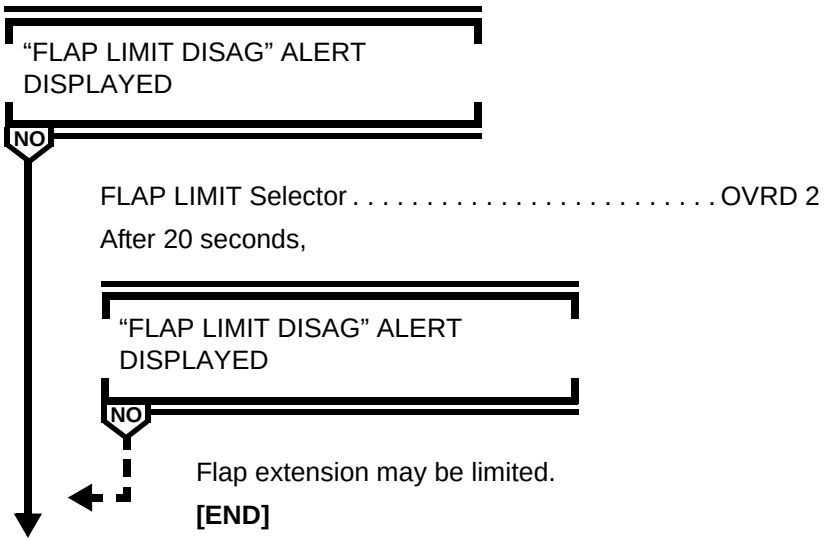
SEL FLAP LIM OVRD

NOTE: FLAP LIMIT MANUAL light will be illuminated.



FLAP LIMIT Selector . . . . . OVRD 1

After 20 seconds,



Observe placarded flap limit speed.

[END]

SLAT DISAG

ALERT APPEARED DURING CLIMBOUT, WITH SLATS EXTENDED AND FLAPS/SLAT HANDLE IN A SLAT EXTENDED POSITION

NO

Stick shaker may actuate temporarily.

If flaps greater than 15º, retract to 15º.

Accelerate and retract flaps and slats on schedule.

CAUTION: Anticipate "SLAT DISAG" alert to appear during extension. Utilize "ALERT APPEARED DURING ATEEMPTED EXTENSION" decision point in this procedure.

[END]

AIRSPEED ABOVE 280 KIAS/.55 MACH

NO

FLAP/SLAT Handle . . . . . UP/RET

[END]

FLAP/SLAT Handle. . . . . 10/EXT or GREATER

Plan a normal flap/slat landing

[END]

FLAP/SLAT Handle . . . . . UP/RET

SLAT STOW Handle . . . . . SLAT STOW

FLAT/SLAT Handle . . . . . 0/EXT POSITION

GPWS Switch . . . . . FLAP OVRD

Plan a 28/RET landing

NOTE: Autothrottles will not automatically retard at 50 feet with flaps less than landing range. Autothrottles must be disconnected prior to 50 feet AGL.

15/RET REFERENCE SPEEDS
SLATS DISAG

Weight (1000 LB)	360	380	400	420	440	460	480	500
Vref	178	183	187	192	197	201	206	210

25/RET REFERENCE SPEEDS
SLATS DISAG

Weight (1000 LB)	360	380	400	420	440	460	480	500
Vref	173	177	182	186	190	195	199	204

28/RET APPROACH SPEEDS
SLATS DISAG

Weight (1000 LB)	360	380	400	420	440	460	480	500
Vapp (Vref +5)	177	181	185	190	194	198	203	207

28/RET LANDING DISTANCES (FEET)
SLATS DISAG

General Electric CF6-80C2 Engines									
Weight (1000 LB)		360	380	400	420	440	460	480	500
S.L. STD= 15ºC	Dry	6810	7200	7540	7930	8300	8700	9060	9450
	Wet	8300	8740	9130	9580	10010	10460	10880	11310
2000 FT STD= 11ºC	Dry	7260	7690	8050	8480	8870	9310	9710	10130
	Wet	8860	9330	9760	10240	10690	11190	11640	12110
4000 FT STD= 7ºC	Dry	7770	8230	8620	9100	9520	10000	10440	10900
	Wet	9460	9980	10440	10980	11460	11990	12480	12991
6000 FT STD= 3ºC	Dry	8320	8830	9270	9780	10250	10770	11250	11760
	Wet	10140	10710	11210	11790	12310	12880	13420	13980
8000 FT STD= -1ºC	Dry	8950	9500	9980	10550	11070	11640	12170	12730
	Wet	10900	11510	12060	12690	13260	13890	14470	15080
10000 FT STD= -5ºC	Dry	9650	10260	10790	11420	11990	12770	13640	14270
	Wet	11740	12410	13010	13700	14330	15160	15970	16740

NOTE: Standard day, no wind, Zero Slope, Three engines at maximum reverse thrust to 80 KIAS, then reverse idle to 60 kIAS, then three engines at forward idle to stop (includes air run distances).

CORRECTIONS

TEMPERATURE: VALID FROM STD -20ºC TO STD +40ºC		
FEET PER ºC	**DRY**	**WET**
BELOW Standard Day	-22	-26
ABOVE Standard Day	+72	+77

SLOPE: VALID FROM -2% DOWNHILL +2% UPHILL		
FEET PER 1% SLOPE	**DRY**	**WET**
Uphill	-141	-237
Downhill	+701	+1004

WIND: VALID FROM -10 KNOT TAILWIND +20 KNOT HEADWIND		
FEET PER KNOT	**DRY**	**WET**
Headwind	-54	-69
Tailwind	+202	+228

Cross threshold at Vapp and reduce sink rate slightly. Disconnect autothrottles, retard throttles to idle and raise nose of aircraft to at least a level attitude. Do not hold aircraft off. Excessive flare will result in float and excessive use of runway.

Tail strike may occur at deck angles greater than 10º.

[END

FLAP/SLAT Handle 0/EXT

Plan a normal flap/slat landing.

[END

USE MAIN SPOILERS

Determine landing distance from the following applicable tables.

At Nose Gear Touchdown . . . . . DEPLOY SPOILERS

NOTE: The pitch rate damper, pitch protection and positive nose lowering may not be available

50/EXT ESTIMATED LANDING DISTANCES (FEET)
USE MAIN SPOILERS

General Electric CF6-80C2 Engines

Weight (1000 LB)		360	380	400	420	440	460	480	500
S.L. STD= 15ºC	Dry	4315	4480	4650	4803	4949	5126	5274	5453
	Wet	5156	5388	5604	5805	6008	6240	6443	6677
2000 FT STD= 11ºC	Dry	4520	4695	4876	5039	5195	5384	5542	5734
	Wet	5466	5688	5927	6140	6355	6605	6827	7084
4000 FT STD= 7ºC	Dry	4738	4925	5118	5292	5459	5661	5830	6036
	Wet	5777	6021	6275	6510	6743	7007	7241	7527
6000 FT STD= 3ºC	Dry	4975	5175	5381	5568	5747	5963	6145	6367
	Wet	6125	6395	6658	6917	7166	7449	7710	7999
8000 FT STD= -1ºC	Dry	5229	5443	5663	5864	6057	6290	6488	6725
	Wet	6497	6787	7084	7354	7628	7939	8212	8538
10000 FT STD= -5ºC	Dry	5505	5734	5972	6188	6418	6693	6931	7208
	Wet	6920	7220	7544	7842	8155	8532	8853	9223

NOTE: Standard day, no wind, Zero Slope, Three engines at maximum reverse thrust to 80 KIAS, then reverse idle to 60 kIAS, then forward idle to stop (includes air run distances).

CORRECTIONS

TEMPERATURE: VALID FROM STD -20ºC TO STD +40ºC		
FEET PER ºC	**DRY**	**WET**
BELOW Standard Day	-12	-14
ABOVE Standard Day	+25	+35

SLOPE: VALID FROM -2% DOWNHILL +2% UPHILL		
FEET PER 1% SLOPE	**DRY**	**WET**
Uphill	-84	-137
Downhill	+229	+444

WIND: VALID FROM -10 KNOT TAILWIND +20 KNOT HEADWIND		
FEET PER KNOT	**DRY**	**WET**
Headwind	-32	-46
Tailwind	+83	+132

35/EXT ESTIMATED LANDING DISTANCES (FEET)
USE MAN SPOILERS

General Electric CF6-80C2 Engines

Weight (1000 LB)		360	380	400	420	440	460	480	500
S.L. STD= 15ºC	Dry	4632	4803	4974	5155	5340	5496	5685	5856
	Wet	5577	5795	6020	6257	6502	6717	6969	7197
2000 FT STD= 11ºC	Dry	4856	5039	5221	5414	5613	5780	5983	6465
	Wet	5890	6131	6173	6631	6893	7128	7394	7642
4000 FT STD= 7ºC	Dry	5096	5291	5486	5693	5906	6085	6304	6500
	Wet	6249	6509	6763	7037	7317	7571	7864	8133
6000 FT STD= 3ºC	Dry	5357	5566	5775	5998	6227	6420	6655	6867
	Wet	6631	6914	7190	7489	7798	8060	8380	8674
8000 FT STD= -1ºC	Dry	5637	5862	6087	6326	6574	6782	7037	7317
	Wet	7047	7348	7660	7980	8308	8600	8943	9324
10000 FT STD= -5ºC	Dry	5943	6185	6428	6687	6963	7267	7546	7854
	Wet	7513	7841	8166	8522	8888	9294	9675	10074

NOTE: Standard day, no wind, Zero Slope, Three engines at maximum reverse thrust to 80 KIAS, then reverse idle to 60 kIAS, then three engines at forward idle to stop (includes air run distances).

CORRECTIONS

TEMPERATURE: VALID FROM STD -20ºC TO STD +40ºC		
FEET PER ºC	**DRY**	**WET**
BELOW Standard Day	-13	-16
ABOVE Standard Day	+95	+143

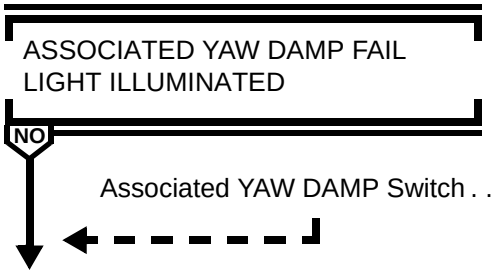
SLOPE: VALID FROM -2% DOWNHILL +2% UPHILL		
FEET PER 1% SLOPE	**DRY**	**WET**
Uphill	-94	-155
Downhill	+275	+522

WIND: VALID FROM -10 KNOT TAILWIND +20 KNOT HEADWIND		
FEET PER KNOT	**DRY**	**WET**
Headwind	-35	-50
Tailwind	+95	+143

YAW DAMP ALL FAIL

YAW DAMP Switches . . . . . ALL OFF

Any One YAW DAMP Switch . . . . . ON



Associated YAW DAMP Switch . . . . . OFF

Attempt to restore remaining yaw damp channels by pushing any one YAW DAMP switch on and observing its FAIL light. Any YAW DAMP switch that illuminates FAIL should be pushed to OFF prior to pushing next switch.

[END]

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Electrical

BUS L EMER AC OFF

EMER PWR Selector . . . . . OFF

DISPLAY UNITS 1 AND/OR 3 OPERATING

NO

NOTE: The left emergency AC bus sensing circuit has failed.

If subsequent electrical malfunction(s) occur requiring use of emergency power, rotate EMER PWR selector to ARM or ON and deploy the ADG.

NOTE: The emergency power system is designed to provide power for approximately 15 minutes until the ADG is deployed.

No further crew action required.

[END]

Land at the nearest suitable airport.

Captain's EIS SOURCE Selector . . . . . AUX (OR 2)

Captain's CADC Switch . . . . . CAPT ON 2

Captain's IRS Switch . . . . . .CAPT ON AUX

"ENG IGN NOT ARMED" LEVEL 1 ALERT DISPLAYED

NO

ENG IGN Switch . . . . . SELECT B

If subsequent electrical malfunction(s) occur requiring use of emergency power, rotate the EMER PWR selector to ARM or ON and deploy the ADG.

NOTE: The emergency power system is designed to provide power for approximately 15 minutes until the ADG is deployed.

[END]

BUS L EMER DC OFF

EMER PWR Selector . . . . . OFF

CAPTAIN'S FLIGHT DIRECTOR AND/OR AUTOPILOT 1 OPERATIONAL

NO

The left emergency DC bus sensing circuit has failed.

If subsequent electrical malfunction(s) occur requiring use of emergency power, rotate the EMER PWR selector to ARM or ON and deploy the ADG.

NOTE: The emergency power system is designed to provide power for approximately 15 minutes until the ADG is deployed.

No further crew action required.

[END]

Land at nearest suitable airport.

If subsequent electrical malfunction(s) occur requiring use of emergency power, rotate EMER PWR selector to ARM or ON and deploy the ADG.

NOTE: The emergency power system is designed to provide power for approximately 15 minutes until the ADG is deployed.

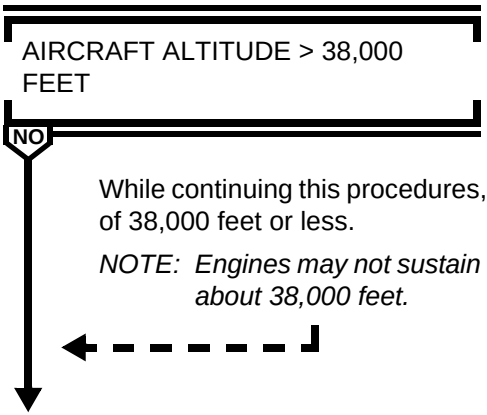
[END]

GEN ALL OFF

CAUTION: With all generators off, the HYD, AIR and FUEL panel illumination will not be functioning. Operation of switches on these panels could change system configuration. These changes would not be indicated to the crew.

NOTE: Battery emergency power is limited to 15 minutes until ADG is deployed.

ENG IGN OVRD Switch . . . . . OVRD ON



While continuing this procedures, begin descent to an altitude of 38,000 feet or less.

NOTE: Engines may not sustain fuel suction feed at altitudes about 38,000 feet.

ELEC SYSTEM MANUAL

NO

Gen Switches With OFF Light Illuminated . . . . . .PUSH

CAUTION: Only one reset attempt is permitted.

GENERATOR BUSES 1 AND 3 POWERED

NO

EMER PWR Selector . . . . . OFF THEN ARM

If required, start engine 2. Refer to Abnormal Non-Alert procedure - ENGINE RESTART IN FLIGHT.

Land at nearest suitable airport.

[END]

ADG . . . . . DEPLOY

ADG ELEC Switch . . . . . .ON

NOTE: Horizontal stabilizer trim is available only through the LONG TRIM handles on the pedestal.

CAPT SISP FMS and APPR Switches . . . . . .PUSH

NOTE: SISP lights will not illuminate; however, the switches are functional

If required, restart engine 2. Refer to Abnormal Non-Alert procedure - ENGINE RESTART IN FLIGHT.

NOTE: Landing gear position indications on the instrument panel and configuration synoptic are not available when DC bus 2 and DC bus 3 are not powered. Flap position indications on the PFD and configuration synoptic are not available when AC bus 1 and AC bus 3 are not powered.

AIRSPEED KNOWN AT TIME OF FAILURE

NO

Refer to following chart for maximum landing flap setting.

AIRSPEED AT TIME OF FAILURE	MAXIMUM LANDING FLAP SETTING
At or above 211 KIAS	22º
191 KIAS to 210 KIAS	28º
176 KIAS to 190 KIAS	35º
At or below 176 KIAS	50º

Land at nearest suitable airport.

Refer to tables listed below for configuration speeds and estimated landing distances.

22/EXT APPROACH SPEEDS
GEN ALL OFF

Weight (1000 LB)	360	380	400	420	440	460	480	500
Vapp = Vref +5	149	153	157	160	164	167	171	174

FLAP 22/EXT ESTIMATED LANDING DISTANCES (FEET)
GEN ALL OFF

General Electric CF6-80C2 Engines

Weight (1000 LB)		360	380	400	420	440	460	480	500
S.L. STD= 15ºC	Dry	6850	7180	7500	7830	8140	8510	8840	9220
	Wet	10590	11050	11500	11970	12940	13410	10880	13960
2000 FT STD= 11ºC	Dry	7270	7620	7970	8320	8660	9050	9410	9820
	Wet	11290	11780	12270	12770	13250	13810	14320	14910
4000 FT STD= 7ºC	Dry	7730	8100	8470	8860	9220	9640	10030	10480
	Wet	12040	12570	13090	13640	14150	14750	15300	15940
6000 FT STD= 3ºC	Dry	8220	8630	9030	9450	9840	10290	10710	11200
	Wet	12870	13440	14000	14590	15140	15790	16380	17070
8000 FT STD= -1ºC	Dry	8760	9200	9630	10080	10500	11000	11450	11980
	Wet	13750	14360	14970	15600	16200	16900	17540	18290
10000 FT STD= -5ºC	Dry	9350	9830	10300	10810	11340	11880	12440	13020
	Wet	14720	15380	16040	16770	17500	18260	19040	19850

NOTE: Standard day, no wind, zero slope, no anti-skid, manual spoilers, flight idle, and no reverse thrust. (includes Air Run Distances).

CORRECTIONS

TEMPERATURE: VALID FROM STD -20ºC TO STD +40ºC		
FEET PER ºC	**DRY**	**WET**
BELOW Standard Day	-23	-37
ABOVE Standard Day	+57	+86

SLOPE: VALID FROM -2% DOWNHILL +2% UPHILL		
FEET PER 1% SLOPE	**DRY**	**WET**
Uphill	-241	-112
Downhill	+904	+2655

WIND: VALID FROM -10 KNOT TAILWIND +20 KNOT HEADWIND		
FEET PER KNOT	**DRY**	**WET**
Headwind	-67	-112
Tailwind	+215	+416

28/EXT APPROACH SPEED GEN ALL OFF								
Weight (1000 LB)	360	380	400	420	440	460	480	500
Vapp = Vref +5	147	151	155	158	162	165	169	172

28/EXT ESTIMATED LANDING DISTANCES (FEET)
GEN ALL OFF

General Electric CF6-80C2 Engines

Weight (1000 LB)		360	380	400	420	440	460	480	500
S.L. STD= 15ºC	Dry	6720	7040	7350	7720	8010	8330	8650	9020
	Wet	10290	10730	11170	11680	12100	12550	13010	13530
2000 FT STD= 11ºC	Dry	7130	7470	7810	8200	8520	8860	9200	9600
	Wet	10970	11440	11910	12460	12910	13390	13880	14440
4000 FT STD= 7ºC	Dry	7570	7940	8300	8720	9060	9430	9810	10230
	Wet	11690	12190	12700	13290	13780	14290	14830	15430
6000 FT STD= 3ºC	Dry	8060	8450	8840	9300	9670	10060	10470	10930
	Wet	12490	13030	13580	14210	14730	15290	15860	16510
8000 FT STD= -1ºC	Dry	8580	9000	9420	9920	10320	10750	11190	11690
	Wet	13340	13920	14510	15190	15750	16360	16980	17670
10000 FT STD= -5ºC	Dry	9150	9610	10070	10600	11070	11600	12150	12710
	Wet	14270	14900	15530	16270	16920	17650	18410	19200

NOTE: Standard day, no wind, zero slope, no anti-skid, manual spoilers, flight idle, and no reverse thrust. (includes Air Run Distances).

CORRECTIONS

TEMPERATURE: VALID FROM STD -20ºC TO STD +40ºC		
FEET PER ºC	**DRY**	**WET**
BELOW Standard Day	-23	-36
ABOVE Standard Day	+54	+82

SLOPE: VALID FROM -2% DOWNHILL +2% UPHILL		
FEET PER 1% SLOPE	**DRY**	**WET**
Uphill	-238	-650
Downhill	+875	+2523

WIND: VALID FROM -10 KNOT TAILWIND +20 KNOT HEADWIND		
FEET PER KNOT	**DRY**	**WET**
Headwind	-67	-110
Tailwind	+208	+398

35/EXT APPROACH SPEEDS
GEN ALL OFF

Weight (1000 LB)	360	380	400	420	440	460	480	500
Vapp = Vref +5	145	149	152	155	159	162	166	170

35/EXT ESTIMATED LANDING DISTANCES (FEET)
GEN ALL OFF

General Electric CF6-80C2 Engines

Weight (1000 LB)		360	380	400	420	440	460	480	500
S.L. STD= 15ºC	Dry	6519	6827	7126	7505	7778	8064	8369	8724
	Wet	9868	10286	10713	11225	11616	12017	12456	12942
2000 FT STD= 11ºC	Dry	6913	7240	7570	7968	8269	8576	8893	9276
	Wet	10516	10963	11413	11969	12390	12814	13276	12802
4000 FT STD= 7ºC	Dry	7331	7694	8043	8464	8784	9120	9480	9873
	Wet	11198	11669	12164	12752	13216	13664	14179	14738
6000 FT STD= 3ºC	Dry	7808	8179	8557	9023	9372	9721	10112	10543
	Wet	11957	12466	13000	13627	14115	14611	15149	15755
8000 FT STD= -1ºC	Dry	8304	8704	9111	9621	9999	10381	10801	11271
	Wet	12763	13313	13878	14559	15079	15624	16210	16844
10000 FT STD= -5ºC	Dry	8848	9286	9733	10253	10675	11192	11716	12252
	Wet	13642	14238	14839	15551	16135	16834	17552	18309

NOTE: Standard day, no wind, zero slope, no anti-skid, manual spoilers, flight idle, and no reverse thrust. (includes Air Run Distances).

CORRECTIONS

TEMPERATURE: VALID FROM STD -20ºC TO STD +40ºC		
FEET PER ºC	**DRY**	**WET**
BELOW Standard Day	-22	-34
ABOVE Standard Day	+51	+77

SLOPE: VALID FROM -2% DOWNHILL +2% UPHILL		
FEET PER 1% SLOPE	**DRY**	**WET**
Uphill	-230	-616
Downhill	+825	+2335

WIND: VALID FROM -10 KNOT TAILWIND +20 KNOT HEADWIND		
FEET PER KNOT	**DRY**	**WET**
Headwind	-66	-107
Tailwind	+198	+375

50/EXT APPROACH SPEEDS
GEN ALL OFF

Weight (1000 LB)	360	380	400	420	440	460	480	500
Vapp = Vref +5	145	149	152	155	159	162	166	170

FLAP 50/EXT ESTIMATED LANDING DISTANCES (FEET)
GEN ALL OFF

General Electric CF6-80C2 Engines

Weight (1000 LB)		360	380	400	420	440	460	480	500
S.L. STD= 15ºC	Dry	5910	6190	6470	6730	6990	7290	7550	7860
	Wet	8700	9080	9470	9830	10180	10590	10950	11370
2000 FT STD= 11ºC	Dry	6250	6550	6860	7140	7410	7740	8010	8340
	Wet	9250	9650	10070	10450	10830	11270	11650	12110
4000 FT STD= 7ºC	Dry	6630	6950	7280	7580	7870	8220	8510	8870
	Wet	9840	10270	10720	11130	11530	12000	12410	12900
6000 FT STD= 3ºC	Dry	7030	7380	7730	8060	8370	8740	9060	9450
	Wet	10490	10950	11430	11870	12300	12810	13250	13770
8000 FT STD= -1ºC	Dry	7470	7840	8220	8570	8910	9310	9660	10080
	Wet	11170	11670	12180	12650	13110	13660	14140	14700
10000 FT STD= -5ºC	Dry	7950	8650	8760	9140	9540	10020	10440	10920
	Wet	11920	12450	13010	13520	14060	1410	15270	15920

NOTE: Standard day, no wind, zero slope, no anti-skid, manual spoilers, flight idle, and no reverse thrust. (includes Air Run Distances).

CORRECTIONS

TEMPERATURE: VALID FROM STD -20ºC TO STD +40ºC		
FEET PER ºC	**DRY**	**WET**
BELOW Standard Day	-19	-30
ABOVE Standard Day	+44	+65

SLOPE: VALID FROM -2% DOWNHILL +2% UPHILL		
FEET PER 1% SLOPE	**DRY**	**WET**
Uphill	-197	-506
Downhill	+662	+1806

WIND: VALID FROM -10 KNOT TAILWIND +20 KNOT HEADWIND		
FEET PER KNOT	**DRY**	**WET**
Headwind	-59	-96
Tailwind	+171	+320

[END]

Plan a 22/EXT approach and landing.

Refer to 22/EXT APPROACH SPEED and ESTIMATED LANDING DISTANCE tables in this procedure.

Land at nearest suitable airport.

[END]

GEN BUS__FAULT

ELEC SYSTEM MANUAL

NO

Associated GEN Switch. . . . . PUSH to RESET

CAUTION: Only one reset attempt is permitted.

GEN BUS POWERED

NO

"EMER PWR ON" ALERT DISPLAYED AND/OR EMER PWR ON LIGHT ILLUMINATED

NO

EMER PWR Selector. . . . . OFF THEN ARM

[END]

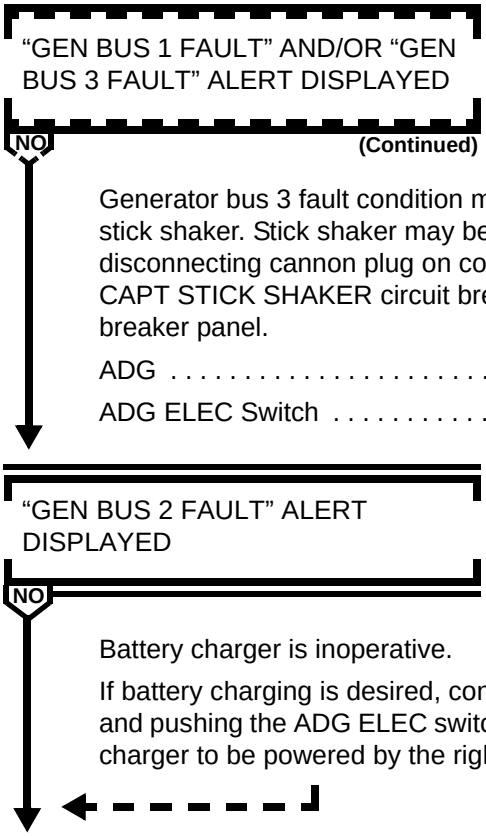
No further crew action required.

[END]

"GEN BUS 1 FAULT" AND/OR "GEN BUS 3 FAULT" ALERT DISPLAYED

NO

Generator bus 1 fault condition may cause activation of right stick shaker. Stick shaker may be deactivated by disconnecting cannon plug on control column or pulling F/O STICK SHAKER circuit breaker on overhead circuit breaker panel.



Continue with affected circuits inoperative.

Land at the nearest suitable airport.

Review applicable consequences.

[END]

GEN DRIVE__FAULT

ANY OTHER ENGINE GENERATOR OPERATING

NO

DRIVE Switch . . . . . DISC

[END]

Do not disconnect IDG. Continue with “GEN DRIVE__FAULT” alert displayed.

[END]

GEN__OFF

Associated GEN Switch . . . . . PUSH TO RESET

CAUTION: Only one reset attempt is permitted.

If reset attempt is not successful, continue flight with generator inoperative.

[END]

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Engines

ENG__EGT HI

Affected Throttle. . . . . .RETARD

EGT REMAINS ABOVE REDLINE

NO

Shut down engine.

Refer to Abnormal Non-Alert procedure - ENGINE SHUTDOWN IN FLIGHT

[END]

EGT EXCEEDED 1000°C

NO

Throttle (Affected Engine) . . . . . FLIGHT IDLE

Use higher thrust at Captain's discretion.

NOTE: If any engine indications are abnormal at minimum thrust, a precautionary shutdown should be considered.

[END]

Operate engine at a throttle setting necessary to maintain EGT below red line.

[END]

ENG__OIL PRES LO

OR ENGINE OIL PRESSURE BELOW REDLINE

INDICATOR PRESSURE BELOW REDLINE AND "ENG__OIL PRES LO" ALERT DISPLAYED

NO

Shut down affected engine. Refer to Abnormal Non-Alert procedure - ENGINE SHUTDOWN IN FLIGHT

[END]

Associated oil quantity,

Temperature and Pressure . . . . . MONITOR

[END]

ENG__OIL TEMP HI

Throttle . . . . . .ADJUST

NOTE: Advanced throttle results in increased fuel flow and may decrease oil temperature.

Record maximum temperature reading in maintenance log.

NOTE: Operation in caution range is permissible for 15 minutes. Operation above redline is not permitted.

OIL TEMPERATURE WITHIN LIMITS

NO

Continue engine operation. Monitor oil temperature.

[END]

Shut down engine.

Refer to Abnormal Non-Alert procedure - ENGINE SHUTDOWN IN FLIGHT.

[END]

ENG__RPM HI

Affected Throttle. . . . . .RETARD

RPM REMAINS ABOVE REDLINE

NO

Shut down engine.

Refer to Abnormal Non-Alert procedure - ENGINE SHUTDOWN IN FLIGHT.

[END]

RPM EXCEEDED 124% N1 OR 114% N2

NO

Throttle (Affected Engine) . . . . . FLIGHT IDLE

Use higher thrust only at Captain's discretion.

NOTE: If any engine indications are abnormal at minimum thrust, a precautionary shutdown should be considered.

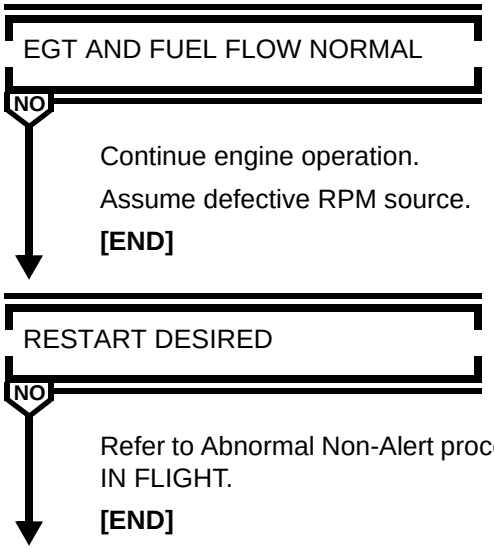
[END]

Operate engine at a throttle setting necessary to maintain N1 and N2 below relines.

[END]

ENG__RPM LO

Observe engine parameters on EAD.



Refer to Abnormal Non-Alert procedure - ENGINE SHUTDOWN IN FLIGHT.

[END]

SELECT FADEC ALTN

"SEL FLAP LIM OVRD" AND/OR
"SEL ELEV FEEL MAN" AND/OR
"IAS COMPARATOR MONITOR"
ALSO DISPLAYED

NO

Refer to Emergency Non-Alert procedure - AIRSPEED: LOST, SUSPECT OR ERRATIC.

[END]

Autothrottles . . . . . DISENGAGE

Associated Throttle . . . . . REDUCE AT LEAST 20% BELOW MCT

Illuminated FADEC MODE Switch . . . . . PUSH

Associated FADEC MODE Switch . . . . . PUSH AGAIN

NOTE: First push selects FADEC ALTN mode. Second push attempts to return FADEC to normal mode.

"SELECT FADEC ALTN" ALERT
EXTINGUISHES

NO

Autothrottles . . . . . ENGAGE

[END]

Illuminated FADEC MODE Switch . . . . . PUSH

Associated Throttle . . . . . SET AS DESIRED

Remaining Engines (One at a Time) . . . REDUCE THRUST/SELECT ALTN

Autothrottles . . . . . ENGAGE

During landing roll, limit reverse thrust to 90% N1.

[END]

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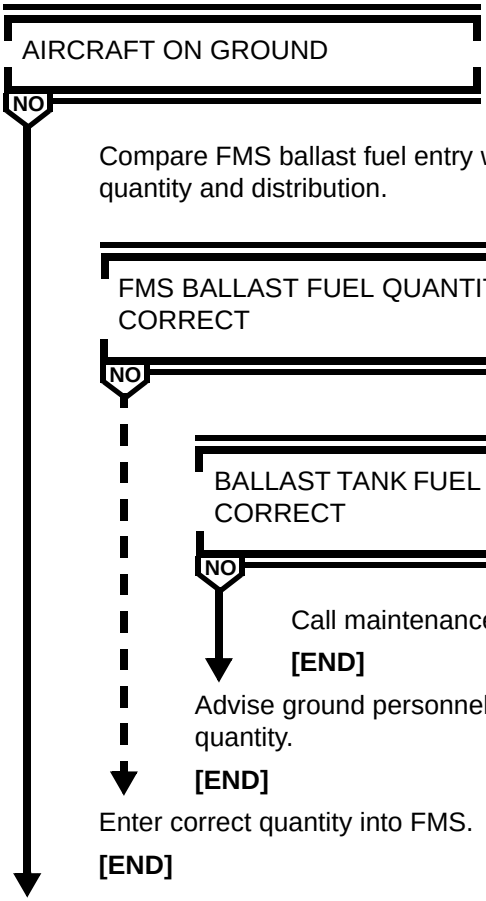
Fuel

BALST FUEL DISAG



FUEL SYSTEM SELECT Switch . . . . . MANUAL

Operate fuel pumps as necessary to stop erroneous transfer.

[END]

CG OUT OF LIMIT

NOTE: Alert may appear after fuel dump is completed and DUMP switch is moved to OFF, even if fuel system is operating in automatic mode.

FUEL SYSTEM AUTO MODE

NO

Observe FUEL synoptic.

FUEL BEING RESCHEDULED

NO

No further action required.

[END]

FUEL SYSTEM SELECT Switch . . . . . MANUAL

Reschedule fuel distribution and monitor fuel usage as required.

[END]

DUMP VLV__DISAG

DUMP SWITCH ON

NO

Fuel dump time will be increased.

[END]

Do not pressurize the fuel crossfeed manifold for remainder of flight.

Tank TRANS Switches (All) . . . . . VERIFY OFF

Tank XFEED Switches (All) . . . . . VERIFY OFF

[END]

FUEL DUMP LEVEL

DUMP Switch. . . . . OFF

DUMP SWITCH LIGHT FAILS TO EXTINGUISH

NO

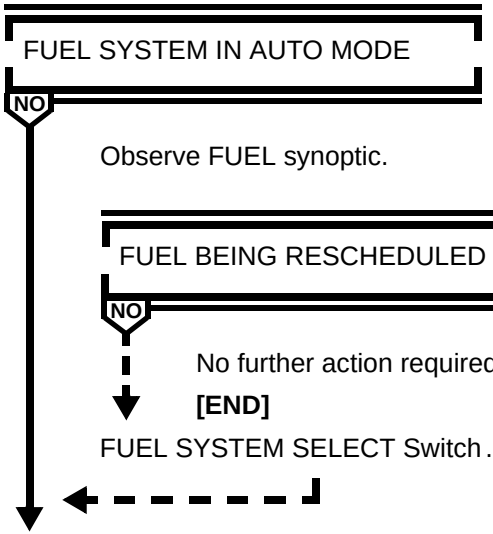
FUEL DUMP EMER STOP Switch . . . . . STOP

[END]

No further action required.

[END]

FUEL OFF SCHEDULE



Reschedule fuel distribution and monitor fuel usage as required.

[END]

FUEL QTY ALERTS

FUEL SYSTEM SELECT Switch . . . . . MANUAL

OVERHEAD FUEL QUANTITY READOUTS BLANK

NO

NOTE: Fuel quantity system is inoperative. Use FMS UFOB on WEIGHT INIT PAGE to determine fuel remaining. FMS UFOB and GW are now calculated using fuel flow only.

TANKS 1 AND 3 FILL VALVES ARMED

NO

TANK FILL Valve Switches (All) . . VERIFY ARM/FILL

When “TAIL PUMPS LO” alert is displayed,

TAIL TANK TRANS Switch. . . . . OFF

When “AUX UPR PUMPS LO” alert is displayed,

AUX TANK L and R TRANS Switches . . . . . OFF

TANK 2 TRANS Switch . . . . . ON

If “TNK__DFUEL QTY LO” alert is displayed,

Tank XFEED Switches (All) . . . . . ON

NOTE: FMS UFOB and GW are not accurate during or after fuel dump. If fuel dump is required, calculate dump time by using 5,000 pounds per minute dump rate. When fuel dump time has elapsed, push dump switch off. Subtract the amount of fuel dumped from FMS UFOB. Enter the result as FMS UFOB.

[END]

TANK 2 FILL Valve Switch. . . . . ARM/FILL

When “TAIL PUMPS LO” alert is displayed,

TAIL TANK TRANS Switch . . . . . OFF

When “AUX UPR PUMPS LO” alert is displayed,

AUX TANK L and R TRANS Switches. . . . . OFF

If “TNK__FUEL QTY LO” alert is displayed,

All TANK FEED Switches . . . . . ON

NOTE: FMS UFOB and GW are not accurate during or after fuel dump. If fuel dump is required, calculate dump time by using 5,000 pounds per minute dump rate. When fuel dump time has elapsed, push dump switch off. Subtract the amount of fuel dumped from FMS UFOB. Enter the result as FMS UFOB>

[END]

First Officer’s EIS SOURCE Selector. . . . . AUX (OR 1)

“FUEL QTY ALERTS” REMAINS DISPLAYED

NO

First Officer’s EIS Source Selector . . . ORIGINAL POSITION

Monitor fuel quantity readouts on overhead panel.

NOTE: On the system synoptic, an X will cover the area of removed or invalid data. Subsequent alerts for removed or invalid data will not be displayed.

FMS UFOB and GW are not now calculated using fuel flow only. If fuel dump is required, calculate dump time using 5,000 pounds per minute rate. When fuel dump time has elapsed, push dump switch off. After fuel dump add total fuel on overhead fuel panel and enter the amount as FMS UFOB.

[END]

Fuel quantity alerts and system display data are normal.

FUEL SYSTEM SELECT Switch . . . . . AS REQUIRED

[END]

FUEL QTY FAULT

(AMBER, "X"ED, OR FROZEN)

Select appropriate procedure below:

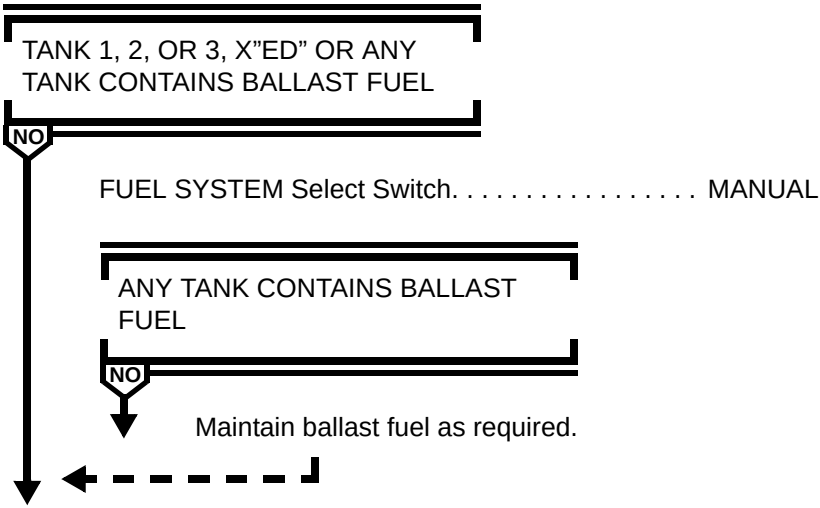
IF TANK FUEL QUANTITY ON SD - AMBER

NOTE: Affected tank fuel qty is valid, but displayed in amber.

Enter fuel quantity fault in maintenance log.

[END]

IF TANK FUEL QUANTITY ON SD - "X"ED



Calculate fuel quantity in affected tank.

NOTE: Calculate fuel quantity in affected tank by subtracting the sum of the total fuel used and the total fuel of operational gages from the departure fuel.

FMS UFOB and GW are now calculated using fuel flow only.

FMS UFOB and GW are not accurate during or after fuel dump. If fuel dump is required, calculate dump time by using 5,000 pounds per minute dump rate. When fuel dump time has elapsed, push dump switch off and subtract the amount of fuel dumped from FMS UFOB. Enter the result as FMS UFOB.

IF FUEL QUANTITIES DO NOT CHANGE (FROZEN)

FUEL SYSTEM SELECT Switch . . . . . MANUAL

NOTE: Fuel quantity system is inop. Subtract total fuel used from departure fuel. Enter the result as FMS UFOB on WEIGHT INIT page. FMS UFOB and GW are now calculated using fuel flow only.

TANKS 1 AND 3 FILL VALVES CAN BE LATCHED IN ARM

NO

TANK FILL Valve Switches (All). . . . . VERIFY ARM/FILL

When “TAIL PUMPS LO” alert is displayed,

TAIL TANK TRANS . . . . . OFF

When “AUX UPR PUMPS LO” alert is displayed,

AUX TANK L and R TRANS Switches. . . . . OFF

TANK 2 TRANS Switch . . . . . ON

If “TNK__FUEL QTY LO” alert is displayed,

Tank XFEED Switches (All) . . . . . ON

NOTE: If an extra crew member is available, consider cycling FUEL QTY NORNMAL POWER and FUEL QUANTITY ALTN POWER C/Bs (located on the upper main C/B panel) simultaneously to attempt to

restore system operation.
FMS UFOB and GW are not accurate during or after fuel dump. If fuel dump required, calculate dump time by using 5,000 pounds per minute dump rate. When fuel dump time has elapsed, push dump switch off. Subtract the amount of the fuel dumped from FMS UFOB. Enter the result as FMS UFOB.

[END]

Tank 2 FILL Valve Switch . . . . . VERIFY ARM/FILL

When "TAIL PUMPS LO" alert is displayed,

TAIL TANK TRANS Switch . . . . . OFF

When "AUX UPR PUMPS LO" alert is displayed,

AUX TANK L and R TRANS Switches . . . . . OFF

If "TNK__FUEL QTY LO" alert is displayed,

Tank XFEED Switches (All) . . . . . ON

NOTE: If an extra crew member is available, consider cycling FUEL QTY NORMAL POWER and FUEL QUANTITY ALTN POWER C/Bs (located on the upper main C/B panel) simultaneously to attempt to restore system operation.

FMS UFOB and GW are not accurate during or after fuel dump. If fuel dump required, calculate dump time by using 5,000 pounds per minute dump rate. When fuel dump time has elapsed, push dump switch off. Subtract the amount of the fuel dumped from FMS UFOB. Enter the result as FMS UFOB.

[END]

LAT FUEL UNBAL

NOTE: If a fuel leak is suspected, accomplish the "FUEL LEAK" procedure in the Abnormal Non-Alert section to this manual.

The "FUEL QTY/USED CHK" alert is inhibited with the fuel system in MANUAL mode.

If alert appeared during fuel dump, complete or terminate fuel dump prior to accomplishing this procedure.

FUEL SYSTEM IN AUTO MODE

NO

FUEL BEING RESCHEDULED

NO

No further action required.

[END]

FUEL SYSTEM SELECT Switch . . . . . MANUAL

FUEL CROSSFEED DESIRED

NO

Tank TRANS Switch (Supplying Tank . . . . . ON

Tank XFEED Switche(s) (Receiving Engine[s]) . . . . . ON

Tank PUMPS Switch(es) (Receiving Engine[s]) . . . . . OFF

Fuel Quantities . . . . . MONITOR

When tank quantities are approximately balanced,
Tank PUMPS Switch(es) (Receiving Engine[s]) . . . . . ON
Tank XFEED Switch(es) (Receiving Engine[s]). . . . . OFF
Tank TRANS Switch (supplying Tank). . . . . OFF
[END]

Tank TRANS Switch (Supplying Tank). . . . . ON
Tank FILL Switch(es) (Receiving Tank[s]) . . . . . PUSH AND HOLD
Fuel Quantities. . . . . MONITOR
When tank quantities are approximately balanced,
Tank FILL Switch(es) (Receiving Tank[s]) . . . . . RELEASE
Tank TRANS Switch (Supplying Tank). . . . . OFF

[END]

TANK FUEL QTY LO

Tank 2 PUMPS Switch . . . . . ON
TAIL TANK ALT PUMP Switch . . . . . OFF

CAUTION: Immediate action is required to prevent flameout of engine 2 due to fuel starvation.

[END]

TAIL PUMPS LO

TAIL TANK QUANTITY LESS THAN 1,000 POUNDS

NO

TAIL TANK TRANS Switch . . . . . OFF

[END]

TAIL TANK ALT PUMP Switch . . . . . ON

CAUTION: Observe synoptic to verify fuel supply from tail tank alternate pump to engine 2. The next action will cause engine 2 to flame out if tail tank alternate pump is not supplying fuel to engine 2.

Tank 2 PUMPS Switch . . . . . OFF

CAUTION: Do not allow fuel quantity in tail tank to decrease below 1,000 pounds as flameout of engine 2 could occur.

When tail tank quantity has decreased to 1,000 pounds or “TAIL FUEL QTY LO” alert is displayed,

Tank 2 PUMPS Switch . . . . . ON

TAIL TANK ALT PUMP Switch . . . . . OFF

[END]

TANK__PUMPS LO

Associated TANK TRANS Switch. . . . . ON

Associated XFEED Switch . . . . . ON

Associated tank PUMPS Switch. . . . . OFF

[END]

TNK__AFT PMP LO

Associated tank TRANS Switch . . . . . ON
Associated XFEED Switch . . . . . ON

TNK__FWD PMP LO

At top of descent,

TANK FUEL QUANTITY LESS THAN 11,500 POUNDS

NO

Associated XFEED Switch . . . . . ON
Another XFEED Switch . . . . . ON

[END]

No further crew action required.

[END]

TNK__XFER PMP LO

Associated XFEED . . . . . ON
Associated Tank TRANS Switch . . . . . OFF

[END]

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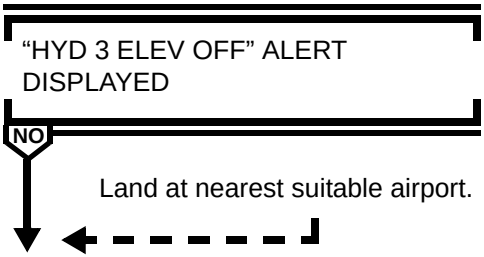
Hydraulics

HYD 1 FAIL

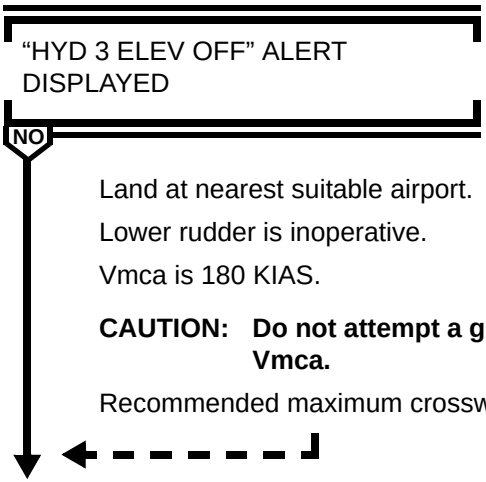


AUTO BRAKE Selector . . . . . OFF

Plan a 35/EXT landing.

[END]

HYD 2 FAIL



Plan a 35/EXT landing.

[END]

HYD 3 FAIL

NOTE: Autoland is not approved.Auto pilot must be disconnected by 100 feet AGL.

Autopilot GA not recommended.

Plan a 35/EXT landing.

When gear extension is required,

Airspeed . . . . . .MAX 230 KIAS

Main Gear Alternate Extension Lever. . . . . RAISE/LATCH

After three green lights illuminate,

Center Gear Alternate Extension Handle/Lights. PULL/4GREEN

GEAR Handle. . . . . DOWN

AUTO BRAKE Selector . . . . . OFF

Autopilot . . . . . DISCONNECT BY 100 FEET AGL

[END]

HYD__PRES LO

Affected HYD PUMP Switch(es). . . . . OFF

Repressurize system for approach and landing.

If system does not repressurize,

Refer to Abnormal Alert procedure - HYD1 FAIL, HYD2 FAIL, or HYD3 FAIL, as appropriate.

[END]

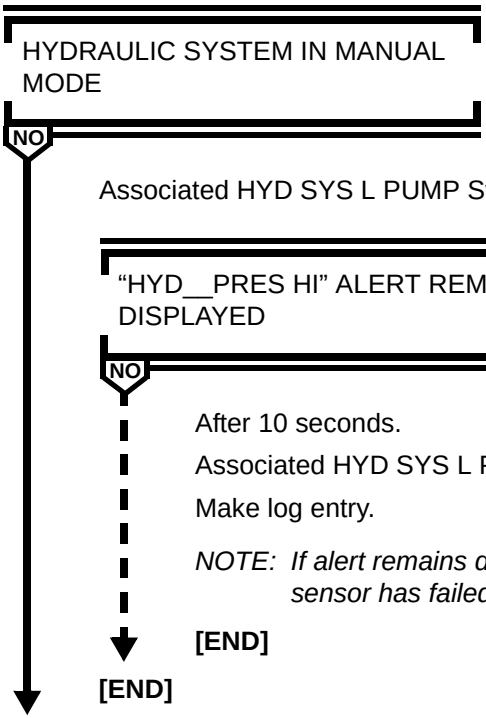
HYD__QTY LO

Affected HYD SYS PUMP and RMP Switches . . . . . OFF

NOTE: Hydraulic system may be used for approach and landing.

[END]

HYD__PRES HI



Make log entry.

NOTE: If alert remains displayed, system, pressure sensor has failed.

[END]

HYD__TEMP HI

AIRCRAFT IN FLIGHT

NO

If phase of flight permits.

Affected HYD SYS PUMPs and RMP Switches . . . . . OFF

NOTE: Hydraulic system should be on for approach and landing.

[END]

Flight Controls . . . . . .CYCLE

NOTE: Cycling flight controls, with affected engine hydraulic pumps operating, will circulate and cool hydraulic fluid and may cause "HYD__TEMP HI" alert to extinquish. If alert remains displayed, call maintenance.

[END]

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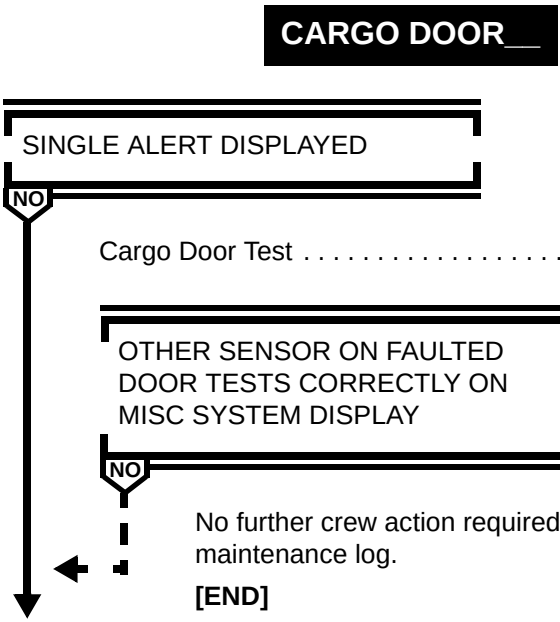
Miscellaneous



CABIN PRESS SYSTEM SELECT Switch. . . . . MANUAL

Rotate CABIN PRESS manual rate selector towards CLIMB and observe indicator moves toward OP.

Descend aircraft to 15,000 feet or minimum safe altitude, whichever is higher.

Reduce cabin differential pressure to 2 psi or less.

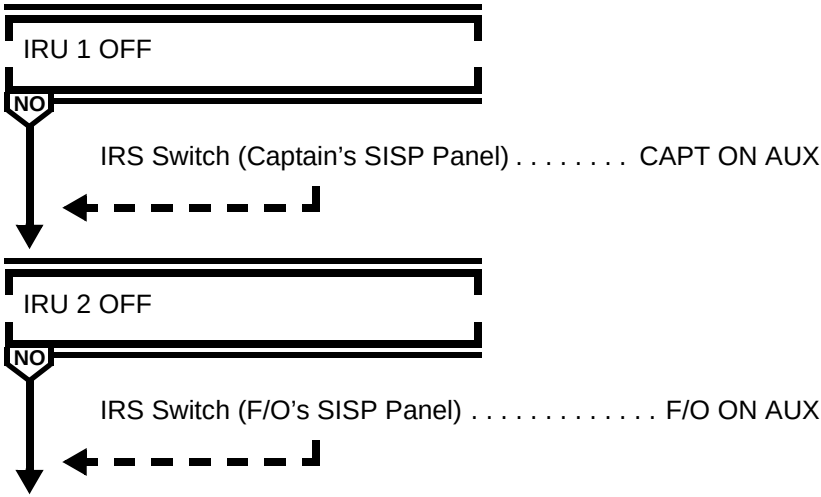
NOTE: An aircraft altitude of 15,000 feet provides 9,500-feet cabin altitude at 2-psi differential pressure.

Land at nearest suitable airport.

[END]

IRU__FAIL

Associated IRS Mode Selector. . . . . OFF



[END]

MSC AUTO FAIL

Operate engine ignition manually. Refer to Supplemental Procedures under Eng/APU.

-ENGINE IGNITION MANUAL OPERATION

The ENG START switch must be held out. Release the switch when the engine reaches 45% N2.

NOTE: If a cargo fire condition exists, manual timing of agent discharge is required.

If a "CRG FIRE LWR__" alert is received, both AGENT DISCH lights will remain illuminated as long as the fire is detected. Only agent 1 should be discharged, followed by 90 minutes to agent 2.

[END]

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Introduction

This section lists and describes all level 1 and 0 alerts. The level 1 alerts are listed alphabetically, along with their consequences, action/awareness code, and a description of the alert. Some alerts apply only to some aircraft based on configuration (e.g., GE or PW engines, passenger, combi, or freighter), or may be a customer-selectable option. These alerts are identified as "optional," "combi," etc.

Flight crew response to a level 1 alert may differ based on how the alert is presented. There are no written Volume 1 procedure for level 1 alerts except for the "No Takeoff" list. If a level 1 alert appears on the ground prior to takeoff, this lists should be consulted. Level 1 alerts can be displayed in the following ways:

Level 1 Alerts

Displayed on EAD

Level 1 alerts that appear on the EAD with or without accompanying MASTER CAUTION lights are caused by a condition requiring crew response. The nature of the response is contained in the title of the alert, in the associated consequence statements, or is intuitive by the nature of the alert. When an alert appears on the EAD, the PNF should announce the alert condition and push the illuminated cue switch to reset the MASTER CAUTION lights and display the synoptic. In some instances, the alert will be removed from the EAD and be replaced by a reminder message in the lower right-hand corner of the EAD.

Displayed on the Synoptic with Flashing Reminder Message on EAD

Alerts that appear only on the synoptic are annunciated by a flashing reminder message in the lower right-hand corner of the EAD and illumination of the associated systems display control panel cue switch. There is no accompanying MASTER CAUTION light. These alerts indicate a condition that requires crew awareness, and is usually a result of the automatic system controller performing an action in response to a fault, or system

degradation not requiring a flight crew procedure. When a flashing reminder message appears on the EAD, the PNF should push the illuminated systems display cue switch when time and condition permit. This will display the synoptic and reset the flashing reminder message.

Displayed on Synoptic only, with No Flashing Reminder Message on EAD:

These alerts indicate system conditions that may be a result of a deliberate flight crew action, an abnormal switch position or an automatic system controller normal action. There are no MASTER CAUTION lights or flashing reminder messages associated with these alerts. Some of these level 1 alerts may be accompanied by a steady reminder message on the EAD. These alerts are advisory only and require no flight crew response.

Level 0 Alerts

The level 0 alerts are listed alphabetically after the level 1 alerts. Since level 0 alerts generally display system status information and are not caused by abnormal conditions, there are no action codes or consequences associated with these alerts. There are no Volume 1 procedures associated with level 0 alerts.

The following sections list all the level 1 and 0 alerts alphabetically by level. This list is all inclusive; therefore, some alerts may not be applicable for all customers. These particular alerts are identified by parentheses next to the title of the alert (for example: freighter, GE, optional).

Level 1 alerts are accompanied by an action code which is one of the following:

NO T/O	Do not take off unless MEL relief for the related system discrepancy is documented in the aircraft's maintenance log. If in flight, review Consequence message(s). Continue to an appropriate destination considering Consequence message(s) and maintenance/MEL relief requirements for subsequent departures. Make an appropriate maintenance log book entry.
MAINT	Consult maintenance prior to takeoff for appropriate disposition. MEL procedures and limitations may apply. In flight, if not restricted by the consequence message, continue to destination and make appropriate log book entry.
N/A	No specific flight crew action is required. These alerts generally appear to inform the crew of an automatic system controller normal action, a result of a maintenance action taken to comply with the MEL, or alerts that appear only in flight as a result of an associated problem.
SW	This alert is the result of flight crew inaction or a deliberate flight crew action and reflects an abnormal switch or control position. The flight crew should confirm the desired configuration.

Some level 1 alerts have associated consequence statements on the system synoptic display. These consequences are listed when they apply.

Level 1 Alerts

ALERT	CODE	CONSEQUENCE(S)/DESCRIPTION
AC TIE FAULT	NO T/O	Consequences: DO NOT CONNECT EXTERNAL POWER LEAVE AC TIE BUS ISOLATED APU MAY BE USED IF AVAILABLE The AC TIE bus is inoperative and all bus tie relays are locked out.
AC TIE__OFF (1,2,3)	NO T/O SW	Consequences: NONE The respective AC TIE has been manually selected OFF by the crew, or automatically selected OFF by the electrical system due to a fault.
ADG ELEC SW ON	SW	Consequences: NONE The ADG ELEC switch on the electrical panel has been selected ON.
AFSC FAULT	MAINT	Consequences: NONE There is an internal fault detected by the ancillary fuel system controller. System operation may be affected.
A-ICE SENSOR FAIL	MAINT	Consequences: DEPART ICING AREA Anti-ice may be inoperative.
A-ICE SYS MANUAL (Optional)	MAINTSW	Consequences: NONE The automatic anti-ice system has reverted to MANUAL because of fault or has been selected to MANUAL by the flight crew. The auto anti-ice system will revert MANUAL if the AIR system is selected to MANUAL.

ALERT	CODE	CONSEQUENCE(S)/DESCRIPTION
A-ICE TEST FAIL (Optional)	MAINT	Consequences: NONE The flight crew initiated airfoil anti-ice test has failed. Wing or tail surface anti-icing may be inoperative.
AIL DEFLECT INOP (Effective with Service Bulletin 27-27 or production equivalent and Service Bulletin 31-69 (DEU 909 and subs) or production equivalent).	MAINT	Consequences: NONE Aileron deflection system command signals are inoperative.
AIR COND DOOR	MAINT	Consequences: NONE One or more of the air conditioning pack access doors is not closed and latched.
AIR DATA HTR ON	MAINT	Consequences: NONE An air data probe heater is on when it should be off.
AIR__ISOL DISAG (1-2, 1-3)	MAINT	Consequences: DO NOT CONNECT ACTIVE BLEEDS The respective pneumatic isolation valve is not in the commanded position. If the valve is open, the crew should not allow two active bleed sources to be interconnected.

ALERT	CODE	CONSEQUENCE(S)/DESCRIPTION
AIR LRU INOP	N/A	Consequences: NONE Maintenance action has been taken to declare an air conditioning pack, pneumatic, or manifold sensor inoperative. The system can be operated in auto mode and will not use the affected component.
AIR MANF TST FAIL	NO T/O	Consequences: NONE The automatic test of the air manifold failure detection system has failed.
AIR SYS 1 OFF	MAINTSW	Consequences: IF MANF FAILED DO NOT REPRESSURIZE WING ANTI-ICE NOT AVAILABLE NO FWD GALLEY VENT DEGRADED AFT CARGO VENTILATION Air system 1 is OFF. This could occur automatically as a result of a manifold failure (main manifold, anti-ice manifold, or pack manifold), or as a result of an airfoil anti-ice valve open on the ground. It will also occur as a result of the engine fire handle being pulled (AIR system auto only) or flight crew manually selecting the AIR system to OFF. If the MANF light remains illuminated for an extended period of time, but the “AIR MANF__FAIL” alert is not displayed, the system is depressurized.

ALERT	CODE	CONSEQUENCE(S)/DESCRIPTION
AIR SYS 2 OFF	MAINT SW	Consequences: IF MANF FAILED DO NOT REPRESSUREZE TAIL ANTI-ICE NOT AVAILABLE FLAP 35 FOR LDG IF ICE SUSPECTED NO AFT/CTR CRAGO HEAT NO AFT GALLEY VENT Air system 2 is OFF. This could occur automatically as a result of a manifold failure (main manifold, anti-ice manifold, or pack manifold), or as a result of an airfoil anti-ice valve open on the ground. It will also occur as a result of number 2 engine or APU fire handle being pulled (AIR system only) or flight crew manually selecting the AIR system to OFF. If the MANF light remains illuminated for an extended period of time, but the “AIR MANF__FAIL” alert is not displayed, the system is depressurized.

ALERT	CODE	CONSEQUENCE(S)/DESCRIPTION
AIR SYS 3 OFF	MAINTSW	Consequences: NONE IF MANF FAILED DO NOT REPRESSURIZE WING ANTI-ICE NOT AVAILABLE NO FWD CARGO HEAT Air system 3 is OFF. This could occur automatically as a result of a manifold failure (main manifold, anti-ice manifold, or pack manifold), or as a result of an airfoil anti-ice valve open on the ground. It will also occur as a result of the engine fire handle being pulled (AIR system auto only) or flight crew manually selecting the AIR system to OFF. If the MANF light remains illuminated for an extended period of time, but the “AIR MANF__FAIL” alert is not displayed, the system is depressurized.
AIR SYS MANUAL	SA	Consequences: NONE The AIR system is MANUAL mode.
AIR SYS TEST FAIL	NO T/O	Consequences: NONE The automatic test of the AIR system has failed. A second test may be performed. If alert is displayed again, call maintenance.
ANTI-SKID FAULT	MAINT	Consequences: NONE There is a fault in the anti-skid system. Anti-skid will function normally.
ANTI-SKID OFF	SW	Consequences: NONE the ANTI-SKID switch is OFF.

ALERT	CODE	CONSEQUENCE(S)/DESCRIPTION
AOA HEAT__FAIL (L,R)	MAINT	Consequences: NONE The respective angle of attack probe heater has failed.
APU AUTO SHUTDOWN	MAINT	Consequences: DO NOT ATTEMPT RESTART The APU has automatically shut down. An attempt may be made to restart the APU from the APU panel.
APU DOOR DISAG	MAINT	Consequences: NONE The APU inlet/exhaust door is not in the commanded position.
APU FAIL	MAINT	Consequences: NONE The APU has automatically shut down due to a failure. A restart should not be attempted.
APU FAULT	MAINT	Consequences: NONE There is a fault in the APU control circuit. APU operation may not be affected.
APU FIRE AGENT LO (Effective for aircraft with an APU dedicated fire bottle installed). (DEU 909 and subs)	MAINT	Consequences: NONE The APU dedicated fire extinguisher container has low pressure.
APU FSO NOT CLSD	NO T/O	Consequences: NONE The APU fuel shutoff valve did not close following a normal or emergency shutdown.

ALERT	CODE	CONSEQUENCE(S)/DESCRIPTION
APU FUEL PRES LO	MAINT SW	Consequences: ALTERNATE FUEL SOURCE MAY BE REQD Fuel pressure to the APU may be too low for APU operation. When the FUEL system is in manual mode, fuel pressure may be supplied by an alternate source.
APU MAINT DOOR	MAINT	Consequences: NONE The APU DOOR switch on the upper maintenance panel is in the OPEN position and the APU inlet door is open.
APU STARTER FAULT	MAINT	Consequences: NONE An APU starting system fault exists and the APU should not be started. If the APU is already running, operation may be continued.
ATC XPDR__FAIL (1,2)	MAINT	Consequences: NONE The respective Air Traffic Control transponder has failed. This alert may also appear during the transponder and TCAS test
AUTO BRAKE OFF	SW	Consequences: NONE The AUTO BRAKE selector is in the OFF position and the landing gear handle is down.
AUTOPILOT SINGLE	MAINT	Consequences: NONE Only one autopilot is available.
AUTO SLAT FAIL	NO T/O	Consequences: NONE The auto slat extension is inoperative.

ALERT	CODE	CONSEQUENCE(S)/DESCRIPTION
AUTO TRIM FAIL	NO T/O	Consequences: NONE The automatic pitch trim is inoperative. Manual trim is operative.
AUX LWR PUMPS LO	MAINT	Consequences: FUEL IN LWR AUX TANK IS UNUSABLE Both fuel pumps in the lower auxiliary tank have low pressure.
AUX LWR__PMP LO (L, R)	MAINT	Consequences: NONE With the FUEL system in manual mode, the respective fuel pump outlet pressure is low and the pump should be considered inoperative. The rate of fuel transfer from the lower auxiliary fuel tank will be slower.
AUX LWR__PMP OFF (L, R)	MAINT	Consequences: NONE With the FUEL system in auto mode, the fuel system controller has detected low pressure in the respective pump and turned the pump off. The rate of fuel transfer from the lower auxiliary fuel tank will be slower.
AUX UPR PUMPS LO	MAINT	Consequences: FUEL IN TANK IS UNUSABLE Both fuel pumps in the upper auxiliary fuel tank have low pressure.
AUX UPR__PUMP LO (L, R)	MAINT	Consequences: NONE With the FUEL system in manual mode, the respective fuel pump outlet pressure is low and the pump should be considered inoperative. The rate of fuel transfer from the upper auxiliary fuel tank will be slower.

ALERT	CODE	CONSEQUENCE(S)/DESCRIPTION
AUX UPR__PUMP OFF (L, R)	MAINT	Consequences: NONE With fuel system in auto mode, the fuel system controller has detected low pressure in the respective pump and turned the pump off. The rate of fuel transfer from the upper auxiliary fuel tank will be slower.
AVNCS EXT ACC DR	MAINT	Consequences: NONE The external avionics access door is not closed and latched.
AVNCS FAN OVRD	MAINT SW	Consequences: NONE The avionics exhaust fan is operating in flight. In normal operation, this fan is off in flight. It is automatically turned on if cooling flow goes below normal or if manually selected ON by the flight crew.
AVNCS NOSE WHL DR	MAINT	Consequences: NONE The external avionics nose wheel access door is not closed and latched.
BALST SW/ FMS XCHK	MAINTSW	Consequences: NONE The tail tank ballast switches on the maintenance panel are not in agreement with the declared ballast in the FMS.
BAT CHARGER INOP	NO T/O	Consequences: NONE The battery charger is inoperative. This alert is inhibited in flight.
BAT CHARGING	NO T/O	Consequences: NONE The battery is being charged. This alert is normally displayed for a short time after an APU start or emergency power test.

ALERT	CODE	CONSEQUENCE(S)/DESCRIPTION
BAT DISCHARGING	NO T/O	Consequences: LAND AT NEAREST SUITABLE AIRPORT BATTERY DIRECT BUS MAY FAIL Abnormal battery discharge is indicated.
BAT LOW	NO T/O	Consequences: LAND AT NEAREST SUITABLE AIRPORT Battery voltage is below limit.
BAT SWITCH OFF	NO T/O SW	Consequences: NONE The battery switch has been manually selected to the OFF position.
BLEED AIR__OFF (1, 2, 3)	MAINT SW	Consequences: NONE The respective engine bleed valve is closed, but the associated air system can be pressurized by another source.
BLEEDS NOT OFF	SW	Consequences: NONE This alert appears if a PACKS OFF takeoff is selected (packs and anti-ice off) and the bleeds were not selected OFF prior to advancing the throttles for takeoff.
BRAKE DIFF TEMP	MAINT	Consequences: NONE There is a significant difference in the brake temperatures.

ALERT	CODE	CONSEQUENCE(S)/DESCRIPTION
BUS AC 1 OFF (DEU 909 and subs)	NO T/O	Consequences: GPWS INOPERATIVE AUTO GROUND SPOILERS INOPERATIVE AC BUS 1 is unpowered or associated sensing circuit has failed.
BUS AC 2 OFF (DEU 909 and subs)	NO T/O	Consequences: NONE AC BUS 2 is unpowered or the associated sensing circuit has failed.
BUS AC 3 OFF (DEU 909 and subs)	NO T/O	Consequences: AUTO EXTENSION INOPERATIVE AC BUS 3 is unpowered or the associated sensing circuit has failed.
BUS AC GND OFF (DEU 909 and subs)	NO T/O	Consequences: NONE AC ground service bus is unpowered or the associated sensing circuit has failed.

ALERT	CODE	CONSEQUENCE(S)/DESCRIPTION
BUS DC 1 OFF (DEU 909 and subs)	NO T/O	Consequences: WING ANTI-ICE INOPERATIVE ALTITUDE ALERT AURAL WARNING INOP HYD 1 PRESSURE INDICATION INVALID AUTO GROUND SPOILERS INOPERATIVE ENG 1 REVERSE INOPERATIVE ENG 3 REVERSE INOPERATIVE DC BUS 1 is unpowered or the associated sensing circuit has failed.
BUS DC 2 OFF (DEU 909 and subs)	NO T/O	Consequences: ENG 2 REVERSE INOPERATIVE HYD 2 PRESSURE INDICATION INVALID DC BUS 2 is unpowered or the associated sensing circuit has failed.

ALERT	CODE	CONSEQUENCE(S)/DESCRIPTION
BUS DC 3 OFF (DEU 909 and subs)	NO T/O	Consequences: TAIL ANTI-ICE INOPERATIVE AUTO SLAT EXTENSION INOPERATIVE HYD 3 PRESSURE INDICATION INVALID CABIN ALT ALERT & AURAL WARNING INOP LANDING GEAR AURAL WARNING INOP AUTO BRAKE INOP DC BUS 3 is unpowered or associated sensing circuit has failed.
BUS DC CABIN OFF (DEU 909 and subs)	NO T/O	Consequences: NONE DC CABIN BUS is unpowered or the associated sensing circuit has failed.
BUS DC GND OFF (DEU 909 and subs)	NO T/O	Consequences: NONE DC GROUND SERVICE BUS is unpowered or the associated sensing circuit has failed.
BUS R EMER AC OFF (DEU 909 and subs)	NO T/O	Consequences: NONE RIGHT EMERGENCY AC BUS is unpowered or the associated sensing circuit has failed.
BUS R EMER DC OFF (DEU 909 and subs)	NO T/O	Consequences: NONE RIGHT EMERGENCY DC BUS is unpowered or the associated sensing circuit has failed.

ALERT	CODE	CONSEQUENCE(S)/DESCRIPTION
CAB AIR NOT OFF (Freighter)	MAINT	Consequences: NONE The cabin air shutoff valve has been commanded closed as a result of an upper deck cargo fire, but has not closed. (refer to Emergency Alerts- CABIN SMOKE.)
CAB DOOR OVWING__ (L, R)	MAINT SW	Consequences: NONE The respective main cabin passenger door is not closed and armed.
CAB PRES SYS MAN	SW	Consequences: MAX CABIN DP FOR LANDING 0.5 PSI The cabin pressurization system is in manual mode.
CABIN AIR OFF (Freighter)	SW	Consequences: NONE The cabin air to the cargo compartment is selected OFF.
CABIN BUS SW OFF	SW	Consequences: NONE The CAB BUS switch has been manually selected OFF. This removes power from the cabin buses.
CABIN CRG FLO OFF (Combi)	MAINT	Consequences: NONE The cabin cargo compartment airflow has been turned off.
CABIN CRG TEMP HI (Combi)	N/A	Consequences: NONE The temperature in the upper deck cargo area exceeds 104ºF/140ºC. This alert is only displayed after the aircraft has been in flight for more than 30 minutes.

ALERT	CODE	CONSEQUENCE(S)/DESCRIPTION
CABIN CRG TEMP LO (Combi)	N/A	Consequences: NONE The temperature in the upper deck cargo area exceeds 34ºF/1ºC. This alert is only displayed after the aircraft has been in flight for more than 30 minutes.
CABIN DOOR__ (AFT L, AFT R, FWD L, FWD R, MID L, MID R)	MAINT SW	Consequences: NONE The respective main cabin passenger door is not closed and armed.
CABIN INFLO LO	N/A	Consequences: MONITOR CABIN ALTITUDE Cabin altitude is climbing, outflow valve is closed and one or more packs are commanded ON. If AIR SYSTEM SELECT switch is in AUTO, the AVNCS FAN switch will revert to OVRD and remain in override until aircraft is on the ground.
CABIN PRES RELIEF	MAINT	Consequences: MAINTAIN DP<9.1 PSI USE MANUAL SYSTEM ONLY IF REQD Cabin differential pressure has exceeded 8.76 psi and pressure relief valve(s) is open.
CABIN RATE	N/A	Consequences: NONE The cabin rate of climb or descent exceed limits (approximately 1500-fpm climb or 750-fpm descent).

ALERT	CODE	CONSEQUENCE(S)/DESCRIPTION
CAC AIR FLO OFF	MAINT	Consequences: POSSIBLE AVIONIC FAILURE ON GND All CAC fans are inoperative.
CAC DOOR	MAINT	Consequences: NONE The center accessory compartment external access door is not closed and latched.
CAC MANF DECAY CK	N/A	Consequences: NONE A manifold failure condition has been detected in the CAC and a decay check is being performed to isolate the affected air system. This alert will be displayed for the duration of the check.
CARGO FIRE AGT LO	MAINT	Consequences: NONE The pressure in one or more of the cargo fire agent bottles is low
CARGO FLOW AFT OFF	SW	Consequences: NONE The CARGO FIRE AFT FLOW switch has been manually selected OFF.
CARGO FLO FWD OFF	SW	Consequences: NONE The CARGO FIRE FWD FLOW switch has been manually selected OFF.
CAWS FAULT	MAINT	Consequences: NONE Some functions of the central aural warning system may be inoperative.

ALERT	CODE	CONSEQUENCE(S)/DESCRIPTION
CG DISAG	SW	Consequences: NONE There is a disagreement between the aircraft center of gravity (CG) displayed on the system display and the CG entered in the flight management system. Confirm fuel load and enter data.
COLD FUEL RECIRC	N/A	Consequences: NONE The fuel system controller is automatically circulating fuel in tanks 1 and 3 or the tail tank to increase the fuel temperature. If the fuel temperature continues to drop to within 3ºC of the freeze point, the “FUEL TEMP LO” alert will be displayed.
COMBI EXH FAIL (Combi)	MAINT	Consequences: NONE The combi exhaust system has failed, or the automatic system test did not execute.
COMBI EXH FAULT (Combi)	MAINT	Consequences: NONE A non-critical component of the combi exhaust system has failed.
CPC FAULT	MAINT	Consequences: NONE One of the two cabin pressure controllers is inoperative.
CREW REST OPEN (Optional)	SW MAINT	Consequences: NONE The expandable crew rest module is not properly stowed and latched. This alert is not displayed when the aircraft is above 17,750 feet.

ALERT	CODE	CONSEQUENCE(S)/DESCRIPTION
CRG DOOR TST FAIL	MAINT	Consequences: NONE The cargo door test has failed.
CRG DR__DISAG (FWD, AFT, CTR, UPR)	MAINT	Consequences: NONE A disagree condition exists between systems A and B of the respective cargo door warning system.
CRG FIRE TST FAIL	MAINT	Consequences: NONE The cargo fire test has failed.
CRG FLO AFT DISAG	MAINT	Consequences: NONE The aft compartment ventilation flow is in disagreement with the commanded position of the switch on the cargo fire panel.
CRG FLO FWD DISAG	MAINT	Consequences: NONE The forward compartment ventilation flow is in disagreement with the commanded position of the switch on the cargo fire panel.
CRG TEMP CTL OFF	SW	Consequences: NONE One or more of the CARGO TEMPERATURE control selectors are set in the OFF position. I the cargo temperature control was turned off in response to a “SEL__ TEMP OFF” alert, one attempt may be made to restore the system after the cargo temperature returns to normal.

ALERT	CODE	CONSEQUENCE(S)/DESCRIPTION
DC TIE__OFF (1,3)	NO T/O SW	Consequences: NONE The respective DC TIE relay has been manually selected OFF by the flight crew or automatically opened by the ELECTRICAL system due to a fault.
DEU OP DISAG	NO T/O	Consequences: NONE The option codes which determine the DEU configuration are different between operative DEUs.
DEU__OP DISAG (1, 2, AUX)	NO T/O	Consequences: NONE The option code in the respective DEU, which determines the DEU configuration, is different from the other two DEUs.
DEU P/N DISAG	NO T/O	Consequences: NONE The P/Ns which determine the DEU configuration are different between operative DEUs.
DEU__P/N DISAG (1, 2, AUX)	NO T/O	Consequences: NONE The P/N in the respective DEU, which determines the DEU configuration, is different from the other two DEUs.
DFAU FAULT	MAINT	Consequences: NONE Some or all DFDR parameters are not being recorded.
DFDR OFF	MINT N/A	Consequences: NONE The flight data recorder is not operating. On the ground, the DFDR requires engines operating and parking brakes released to operate.

ALERT	CODE	CONSEQUENCE(S)/DESCRIPTION
DISARM SPOILERS	SW	Consequences: NONE Auto spoilers are inoperative.
DISCH CARGO AGENT	MAINT	Consequences: NONE Approximately 90 minutes have elapsed since the first CRG FIRE AGENT was discharged. The flashing CRG FIRE AGENT DISCH switch should be pushed. If “CRG FIRE LWR__” alert was not displayed, discharging the extinguishing agent may cause the “CRG FIRE LWR__” alert to display for a few seconds.
DOOR OPEN	N/A	Consequences: NONE One or more aircraft cabin doors are not closed and armed, or one or more cargo or external access doors are not closed and latched.
ECON OFF	SW	Consequences: NONE The air conditioning ECON switch has been selected OFF. The packs command maximum available flow and the cabin recirculation fans will not operate.
ELEC SYS MANUAL	SW	Consequences: NONE The ELECTRICAL system is in manual mode.
ELEV FEEL MANUAL	SW	Consequences: NONE The ELEV FEEL (elevator load feel) selector is out of the AUTO position.

ALERT	CODE	CONSEQUENCE(S)/DESCRIPTION
EMER LT BAT__LO (1, 2, 3, 4, 5, 6)	NO T/O (Passenger & Combi) MAINT (Freighter)	Consequences: NONE This alert is displayed during the emergency lights test when the emergency lights battery voltage is low. Takeoff is permitted per MEL.
EMER LTS DISARM	SW	Consequences: NONE The EMER LT switch is not in the ARM position. This alert is displayed if the switch is in the OFF or ON position.
EMER PWR ON	NO T/O SW	Consequences: NONE The emergency electrical power has been automatically or manually selected ON.
EMER PWR SW OFF	SW	Consequences: NONE The EMER PWR selector has been selected OFF.
EMER PWR TST FAIL	NO T/O	Consequences: NONE The emergency electrical power preflight test has failed. (Aircraft battery must be sufficiently charged for a successful test.)
ENG__A-ICE DISAG (1, 2, 3)	MAINT	Consequences: MAY HAVE TO DEPART ICING AREA The affected engine cowl anti-ice valve is in disagreement with the commanded position

ALERT	CODE	CONSEQUENCE(S)/DESCRIPTION
ENG 2 A-ICE DUCT (Effective for aircraft fuselage 574 and previous, burst anti-ice duct detection not installed)	MAINT	Consequences: NONE This alert indicates a leak in the number 2 engine anti-ice duct. A secondary shroud allows continued use of ice protection.
ENG 2 A-ICE OFF (Effective for aircraft 575 and subs, burst anti-ice duct detection installed)	NO T/O	Consequences: DEPART ICING AREA ENGINE 2 A-ICE DUCT HAS FAILED A leak in the engine 2 anti-ice duct was detected and the engine anti-ice valve automatically closed and latched. If ENG 2 ANTI-ICE switch is selected OFF, “ICE DETECTED” alert (option) will be displayed until clear of icing.
ENG DUCT TST FAIL (Effective for aircraft fuselage 575 and subs, burst anti-ice duct detection installed)	NO T/O	Consequences: NONE The engine 2 anti-ice duct test has failed.

ALERT	CODE	CONSEQUENCE(S)/DESCRIPTION
ENG__FADEC ALTN (1, 2, 3)	sw	Consequences: NONE The respective ENG FADEC MODE switch is in the ALTN position, or the throttle has been pushed through the overboost bar. The FADEC is operating in a degraded mode and care should be taken to avoid exceeding thrust limits. If reset is desired, refer to Abnormal Alert procedure (Level 2) SELECT FADEC ALTN.
ENG__FADEC MAINT (1, 2, 3)	NO T/O	Consequences: NONE The FADEC has detected an engine fault or combination of faults that could affect engine operation.
ENG FIRE AGENT LO	NO T/O	Consequences: NONE One or more of the engine fire extinguisher containers has low pressure. Observing the overhead panel AGT LOW lights will indicate the affected container.
ENG__FSO CLOSED (1, 3)	NO T/O	Consequences: NONE The respective engine fire fuel shutoff valve is closed (fuel off) with the engine fire handle in the NORM (up) position.
ENG__FSO NOT CLSD (1, 3)	NO T/O	Consequences: NONE The respective engine fire fuel shutoff valve is not closed with the engine fire handle in the FUEL & HYD OFF (down) position.

ALERT	CODE	CONSEQUENCE(S)/DESCRIPTION
ENG__FUEL FILTER (1, 2, 3)	NO T/O	Consequences: NONE the respective fuel filter is clogged and engine fuel may be bypassing the filter. If this alert condition occurs when aircraft is in flight, monitor engine operation.
ENGINE IGN MANUAL	MAINT	Consequences: USE MANUAL IGNITION PROCEDURES Automatic control of the engine ignition system is inoperative. Manual operation of ignition is required.
ENG IGN NOT ARMED	NO T/O SW	Consequences: NONE SELECT IGNITION AS REQUIRED The automatic ignition is not armed. IGN A or B has been deselected due to power interruption or deselected by the crew. Select IGN A or B as required.
ENG__NAC TEMP HI (1, 2, 3) (Optional)	MAINT	Consequences: NONE The respective engine nacelle temperature is significantly higher than that of the other two engines.
ENG__OIL BYPASS (1, 2, 3)(Optional) (DEU 908 and subs) (PW)	NO T/O	Consequences: NONE The primary engine oil filter is clogged. Oil is being routed through the secondary bypass filter.

ALERT	CODE	CONSEQUENCE(S)/DESCRIPTION
ENG__SUCT FEED (1, 3)	NO T/O	Consequences: NONE The respective engine is on suction feed only. This alert will only appear with the FSC in AUTO, when all boost pumps and crossfeeds for the engine are off. Monitor engine operation.
ENG__VIB HI (1, 2, 3) (Optional) (DEU 908 and subs) (PW)	MAINT	Consequences: NONE An engine surge has been detected. This alert will only appear during flight.
ENGINE__VIB HI (1, 2, 3) (Optional)	MAINT	Consequences: NONE Engine vibration exceeds 4.0 units. Other engine parameters should be monitored, but no action is required if other engine parameters are normal.
EPGS FAULT	MAINT	Consequences: NONE A fault exists in the smoke switch circuit, an APU generator failure exists, or a generator (engine or APU) auto reset has been used.
FADEC__B/U PWR (1, 2, 3) (Optional)	NO T/O	Consequences: NONE The respective FADEC is operating on backup aircraft power. In flight, engine operation is unaffected.
FADEC GND PWR ON	SW	Consequences: NONE One or more of the FADEC GND PWR switches on the maintenance panel are on. The switches should be selected OFF prior to engine start.

ALERT	CODE	CONSEQUENCE(S)/DESCRIPTION
FD G/A ONLY	N/A	Consequences: NONE The go-around mode of the autopilot is not available.
FIRE DET__FAIL (1, 2, 3)	NO T/O	Consequences: NONE Both loops of the respective engine fire detector system failed. Fire detection is inoperative.
FIRE DET APU FAIL	MAINT	Consequences: NONE Both loops of the APU fire detector system have failed. Fire detection is inoperative.
FIRE DET APU FAULT (DEU 909 and subs)	MAINT	Consequences: NONE One of the two fire detector loops on the respective engine is inoperative. Fire detection capability is not affected.
FIRE DET__FAULT (1, 2, 3) (DEU 909 and subs)	MAINT	Consequences: NONE One of the two fire detector loops on the respective engine is inoperative. Fire detection capability is not affected.
FIRE DET FAULT (DEU 908 and previous)	MAINT	Consequences: NONE One of the two fire detector loops on either an engine or the APU is inoperative. Fire detection capability is not affected.

ALERT	CODE	CONSEQUENCE(S)/DESCRIPTION
FLAP LIMIT DISAG	MAINT	Consequences: FLAP EXTENSION MAY BE LIMITED With the FLAP LIM selector in either override position, the flap limit actuator did not attain the override position within 20 seconds. The other flap limit override position should be selected.
FLAP LIMIT OVRD	SW	Consequences: NONE The FLAP LIMIT selector is out of the AUTO position.
FMS DUMP DISABLED	N/A	Consequences: DUMPING TO LOW LEVEL SHUTOFF Fuel dump termination at the FMS dump to gross weight value is disabled.
FSC CONFIG (DEU 908 and subs)	NO T/O	Consequences: NONE The FSC and DEU are not in agreement on the aircraft fuel system configuration.
FSC FAULT	MAINT	Consequences: NONE The FSC has detected an internal fault. The FUEL system will continue to operate in the auto mode.
FSC MODE FAULT	NO T/O	Consequences: NONE The FSC has detected an operating mode or mode selection (AUTO/ MANUAL) disagreement between processors.

ALERT	CODE	CONSEQUENCE(S)/DESCRIPTION
FUEL CONTAMINATED	NO T/O	Consequences: LAND AT NEAREST SUITABLE AIRPORT Two or more fuel filters are clogged, fuel may be contaminated.
FUEL DUMP ON	SW	Consequences: NONE The fuel DUMP switch is in the ON position.
FUEL LRU INOP	N/A	Consequences: NONE Maintenance has taken action to declare a fuel system component inoperative. The auto controller will reconfigure around the inoperative component in auto mode.
FUEL MANF DRAIN	NO T/O SW	Consequences: DO NOT USE FUEL XFEED MANIFOLD Fuel manifold drain has been commanded, either automatically by FSC, or manually by the crew pushing the MANF DRAIN switch.
FUEL QTY 2 DISAG	MAINT	Consequences: NONE There is a discrepancy in the tank 2 fuel quantity indication. This alert comes on if the fuel quantity measurement disagrees with the position of the 10,000-pound float in tank.
FUEL QTY TST FAIL	MAINT	Consequences: NONE The fuel quantity system test has failed.

ALERT	CODE	CONSEQUENCE(S)/DESCRIPTION
FUEL SYS MANUAL	SW	Consequences: NONE The fuel system is manual mode.
FUEL SYS TST FAIL	NO T/O	Consequences: NONE The automatic fuel system preflight test has failed.
FUEL TEMP FAIL	MAINT	Consequences: NONE The wing or tail fuel tank temperature sensor is inoperative.
FUEL TEMP LO	NO T/O	Consequences: DESCEND TO WARMER ALTITUDE The fuel temperature in tank 1, 3 or the tail is within 3ºC of the fuel freeze temperature.
FUEL VALVE FAULT	MAINT	Consequences: NONE Either the tail fill isolation valve, the aux fill isolation valve, or the left or right outboard fill/manifold drain valve is inoperative. The FSC may be operated in auto mode; however, tail fuel management may be affected.
FUEL XFEED__DISAG (1, 2, 3)	MAINT	Consequences: NONE The respective fuel crossfeed valve has failed open or closed.
FWD AUX XFER REQD (Optional) DEU 909 and subs)	SW	Consequences: NONE Reminds crew to start transferring fuel from the fwd aux tank(s) to the upper aux tank. Alert is inhibited below 17,750 ft baro altitude.

ALERT	CODE	CONSEQUENCE(S)/DESCRIPTION
FWD AUX__PMP LO (1L, 1R, 2L, 2R) (Optional)	MAINT	Consequences: NONE The respective fuel pump outlet pressure is low and the pump should be considered inoperative. The rate of fuel transfer from the forward auxiliary fuel tank will be slower.
FWD AUX__PUMP LO (L, R) (Optional) (DEU 908 and previous)	MAINT	Consequences: NONE The respective fuel pump outlet pressure is low and the pump should be considered inoperative. The rate of fuel transfer from the forward auxiliary fuel tank will be slower.
GALLEY BUS OFF (Passenger, Combi)	MAINT SW	Consequences: NONE One or more galley buses are not powered. To select galley bus power, ELECTRICAL system must be in manual mode.
GEN APU OFF	MAINT	Consequences: NONE The APU generator has been automatically turned OFF by the ELECTRICAL system due to a fault, or the APU FIRE handle has been pulled.
GEN DRIVE DISC	MAINT SW	Consequences: NONE One or more of the electrical generators have been disconnected.

ALERT	CODE	CONSEQUENCE(S)/DESCRIPTION
GEN__OFF (1, 2, 3)	MAINT SW	Consequences: NONE The respective generator is OFF. In auto mode, a protective trip and one auto reset attempt has occurred, or the generator has been commanded on but the generator relay has not closed or the generator is failed. In manual mode, the respective generator has been turned OFF by the flight crew.
GPWS FAIL (Without terrain awareness functions installed)	MAINT	Consequences: NONE The ground proximity warning system has failed. This alert normally appears during GPWS test or if the DITCHING switch is selected ON.
GPWS FAIL (DEU 911 and subs with terrain awareness functions installed but PWS not installed)	MAINT	Consequences: NONE The ground proximity and terrain awareness functions have failed.
GPWS FAIL (DEU 911 and subs with terrain awareness functions and PWS installed)	MAINT	Consequences: SELECT ANY ND TO WXR The ground proximity and terrain awareness functions have failed. Select WXR on either ND.

ALERT	CODE	CONSEQUENCE(S)/DESCRIPTION
GPWS FAULT (DEU 911 and subs) (Optional)	MAINT	Consequences: NONE One or more of the GPWS modes (except terrain) is inoperative.
HYD 3 ELEV OFF	NO T/O	Consequences: 3-2 NRMP INOPERATIVE The elevator shutoff valve in hydraulic system 3 is closed. Hydraulic system 3 pressure is not powering the elevators.
HYD LRU INOP	N/A	Consequences: NONE Maintenance has been taken action to declare a hydraulic system component inoperative. The auto controller will reconfigure around the inoperative component in the auto mode.
HYD__OFF (1, 2, 3)	NO T/O	Consequences: HYD SYS MAY BE USED FOR APPR & LDG AP1 TRIM INOP, USE AP2 (sys 3 only) the respective hydraulic system has been turned off. In auto, the HSC will attempt to restore the system when the flaps, slats or gear are extended. If system does not repressurize for approach and landing, refer to Abnormal Alert procedure HYD__FAIL.

ALERT	CODE	CONSEQUENCE(S)/DESCRIPTION
HYD__PRES LO (1, 2, 3)	NO T/O	Consequences: NONE The pressure in the respective hydraulic system is less than 2,400 psi with the hydraulic system controller in auto mode. The HSC will turn off the affected system when the aircraft is in clean configuration or above 17,750 ft. If system does not repressurize for approach and landing, refer to Abnormal Alert procedure HYD__FAIL.
HYD PRES TST FAIL	NO T/O	Consequences: NONE The flight crew initiated hydraulic pressure test has failed. A second test may be performed. If alert is displayed again, call maintenance.
HYD PUMP__<2800 (1L, 1R, 2L, 2R, 3L, 3R)	MAINT	Consequences: NONE The respective hydraulic pump pressure is less than 2800 psi during the engine-driven pump preflight test. The test is accomplished by the HSC during each engine start. This alert will be displayed in conjunction with a “HYD PUMP TST FAIL” alert.
HYD PUMP__ FAULT (1L, 1R, 2L, 2R, 3L, 3R)	MAINT SW	Consequences: NONE The respective engine-driven hydraulic pump pressure or temperature is out of limits. The HSC will turn off the affected pump when the aircraft is in cruise.
HYD PUMP__OFF (1L, 1R, 2L, 2R, 3L, 3R)	MAINT SW	Consequences: NONE the respective engine-driven hydraulic pump is OFF.

ALERT	CODE	CONSEQUENCE(S)/DESCRIPTION
HYD PUMP TST FAIL	NO T/O	Consequences: NONE The engine-driven hydraulic pump pressure test during engine start has failed. A manual pump test is required for takeoff. Operate the hydraulic system in AUTO if the manual pump test passes.
HYD__QTY LO (1, 2, 3)	NO T/O	Consequences: NONE the respective hydraulic system fluid quantity is low. This alert is displayed if there is less than 4.75 gallons (systems 1 and 2) or 6.0 (system 3) on the ground prior to engine start, or less than 2.5 gallons after engine start.
HYS__RMP DISAG (1, 2, 3)	NO T/O	Consequences: NONE The respective hydraulic reversible motor pump valve is not in the commanded position.
HYD SYS MANUAL	SW	Consequences: NONE The hydraulic system controller is in manual mode.
HYD SYS 3 ISOL	NO T/O	Consequences: NONE The flight control bypass valve is closed. Hydraulic system 3 pressure is not available to the flight controls.
HYD__TEMP HI (1, 2, 3)	NO T/O	Consequences: NONE The temperature in the respective hydraulic system reservoir has exceeded normal limits.

ALERT	CODE	CONSEQUENCE(S)/DESCRIPTION
ICE DETECTED (Optional)	SW	Consequences: NONE This alert is displayed only for aircraft equipped with ice detectors or with automatic anti-icing system if the system is operating in manual. The ice detector system has detected ice formation. Engine and airfoil anti-ice should be turned ON.
ICE DETECTED (Optional)	MAINT	Consequences: A-ICE SYSTEM INOPERATIVE DEPART ICING AREA. This alert is displayed only for aircraft equipped with automatic anti-icing system if the system is operating in the automatic mode. The alert indicates ice has been detected but the anti-ice is not on. The anti-ice system should be considered inoperative.
ICE DETECTOR FAIL (Optional)	MAINT	Consequences: USE VISUAL CUES FOR ICE CONDITIONS Both channels of the dual ice detection system are inoperative. Automatic anti-ice (if installed) is inoperative. The crew is required to use visual means of detecting ice.

ALERT	CODE	CONSEQUENCE(S)/DESCRIPTION
ICE DET SIGNLE (Optional)	MAINT	Consequences: USE VISUAL CUES FOR ICE CONDITIONS One channel of the dual ice detection system is inoperative. The ice detection system is no longer the primary means of ice detection, and the flight crew is responsible for determining icing conditions.
IRU BAT LO	MAINT	Consequences: NONE One or more of the inertial reference unit backup batteries is not fully charged.
IRU__NAV FAIL (1, 2, AUX)	MAINT	Consequences: ATTITUDE DATA REMIANS USABLE. The navigation function of the respective inertial reference unit has failed.
IRU__NO ALIGN (1, 2, AUX)	MAINT SW	Consequences: NONE The respective inertial reference unit did not align. The crew should confirm present position coordinates are entered.
IRU OFF	SW	Consequences: NONE One or more of the inertial reference unit mode selector are OFF in flight.
IRU__ON BAT (1, 2, AUX)	MAINT N/A	Consequences: NONE The respective inertial reference unit is operating on backup battery power. The battery will provide approximately 15 minutes of power.

ALERT	CODE	CONSEQUENCE(S)/DESCRIPTION
LAVATORY SMOKE (Optional)	MAINT	Consequences: COORDINATE WITH CABIN CREW A smoke detector is activated in one or more lavatories. Refer to Abnormal Non-Alert procedure-SMOKE REPORTED BY CABIN CREW.
LDG ALTITUDE	SW	Consequences: NONE The landing field elevation may be set by turning the MANUAL LDG ALT knob on the cabin pressure control panel. Automatic operation may be restored by selecting the cabin pressure controller to MANUAL and back to AUTO.
LSAS ALL OFF	SW	Consequences: AUTOPILOT NOT AVAILABLE All four LSAS switches are OFF.
LSAS__OFF (L INBD, L OUTBD, R INBD, R OUTBD)	SW	Consequences: NONE The respective LSAS switch is OFF.
LWR CARGO TEMP LO	N/A	Consequences: NONE The lower cargo compartment temperature is low. This alert is inhibited until 30 minutes after takeoff.
MANUAL G/A ONLY	MAINT	Consequences: NONE Autopilot and flight director go-around modes are not available.
NO AUTOLAND	MAINT	Consequences: NONE The autoland mode is not available.

ALERT	CODE	CONSEQUENCE(S)/DESCRIPTION
NO ICE DETECT (Optional)	SW	Consequences: NONE The ice detection system indicates icing conditions do not exist. Anti-ice systems may be turned off.
OPEN OUTFLO VALVE	MAINT	Consequences: CABIN PRESSURIZED CABIN DOORS MAY NOT OPEN Cabin pressure exceed allowable limits to open doors while aircraft is on ground.
PACK__FLO DISAG (1, 2, 3)	MAINT	Consequences: NONE The respective air conditioning pack flow is in disagreement with the commanded position.
PACKS NOT OFF	SW	Consequences: NONE During a packs off (bleeds on) takeoff, one or more packs are not off. The crew should select all packs off.
PACK__OFF (1, 2, 3)	MAINT SW	Consequences: NONE The respective air conditioning pack is OFF, either selected manually by the crew, or automatically by the ESC due to a fault or configuration requirement.
PARTITION DR OPEN (Combi)	SW	Consequences: NONE The door that provides access to the upper deck cargo area is not closed.

ALERT	CODE	CONSEQUENCE(S)/DESCRIPTION
PAX AIR FLO LO (Passenger & Combi)	N/A	Consequences: NONE The cabin air inflow from the air conditioning packs is below desired limit based on the number of passengers. This alert is only displayed in flight and only if all packs are operating.
PITOT HEAT AUX	NO T/O	Consequences: STBY AIRSPEED MAY BE UNRELIABLE The aux pitot tube heater is inoperative.
PITOT HEAT__ (CAPT, FO)	NO T/O	Consequences: SELECT ALTERNATE CADC Captain's or first officer's pitot tube heater is inoperative.
PITOT HEAT OFF	MAINT	Consequences: NONE The PITOT HEAT switch on the upper maintenance panel is in the OVRD OFF position.
PRED WSHEAR FAIL (DEU 909 and subs) (Optional)	MAINT	Consequences: NONE The weather radar predictive windshear function has failed, or data from the weather radar is not valid.
PRED WSHEAR FAULT (DEU 911 and subs) (Optional)	MAINT	Consequences: SELECT ANY ND TO WXR The predictive windshear system may not be fully operative. Select WXR on either ND.

ALERT	CODE	CONSEQUENCE(S)/DESCRIPTION
RETRACT SPD BRK	SW	Consequences: NONE Speedbrakes and flaps extended in flight.
REV__FAULT (1,2, 3)	MAINT	Consequences: NONE The respective thrust reverser pressure indication system has failed.
REV__PRESS FAULT (1, 2, 3)	NO T/O	Consequences: NONE Either the thrust reverser system is pressurized or the pressure switch has failed to the closed position. One additional associated reverser system failure could cause an uncommanded reverser deployment.
ROLL CWS FAIL (Optional)	MAINT	Consequences: NONE Roll control wheel steering is inoperative.
RUDDER BOTH INOP	NO T/O	Consequences: AILERON/THRUST FOR YAW CONTROL NO GO-AROUND WITH WING ENG INOP there is no hydraulic power available to the rudders.
RUDDER LWR INOP	NO T/O	Consequences: VMCA 180 KIAS CROSSWIND LIMIT REDUCED There is no hydraulic power available to the lower rudder. Recommended maximum crosswind component is 12 knots.

ALERT	CODE	CONSEQUENCE(S)/DESCRIPTION
RUDDER UPR INOP	NO T/O	Consequences: Vmca 160 kIAS CROSSWIND LIMIT REDUCED There is no hydraulic power available to the upper rudder. Recommended maximum crosswind component is 12 knots.
RUD STBY LWR OFF	NO T/O	Consequences: NONE The 3-2 non-reversible motor pump is inoperative. Standby hydraulic power to the lower rudder is not available.
RUD STBY UPR OFF	NO T/O	Consequences: NONE The 2-1 non-reversible motor pump is inoperative. Standby hydraulic power to the upper rudder and stabilizer trim motor is not available.
SEL AIR SYS MAN	MAINT	Consequences: USE MANUAL SYSTEM PROCEDURES The AIR system has reverted to manual mode. the SELECT/MANUAL switch should be pushed to lock the AIR system in the manual mode. This alert will then be replaced by “AIR SYS MANUAL” alert.
SEL APU AIR OFF	SW	Consequences: USE ENGINE AIR APU air switch is ON and cabin is pressurized.

ALERT	CODE	CONSEQUENCE(S)/DESCRIPTION
SEL CAB PRES MAN	MAINT	USE MANUAL SYSTEM PROCEDURES The cabin pressure system has reverted to manual mode. The SELECT/ MANUAL switch should be pushed to lock the cabin pressure control system in manual mode/ This alert will then be replaced by “CAB PRES SYS” alert.
SEL ELEC SYS MAN	MAINT	Consequences: NONE The ELECTRICAL system has reverted to manual mode. The SELECT/ MANUAL switch should be pushed to lock the ELECTRICAL system in manual mode. This alert will then be replaced by “ELEC SYS MAN” alert.
SEL ELEV FEEL LO	SW	Consequences: NONE IAS is less than 200 knots and ELF speed indicator is more than 200 knots with ELF selector in MANUAL position.
SEL FUEL SYS MAN	MAINT	Consequences: USE MANUAL SYSTEM PROCEDURES The FUEL system has reverted to manual mode. The SELECT/MANUAL switch should be pushed to lock the FUEL system in manual mode. This alert will then be replaced by “FUEL SYS MAN” alert.
SEL FWD AUX OFF (Optional) (DEU 909 and subs)	SW	Consequences: NONE Both the left and right forward aux pumps are commanded on and low pressure is sensed in both pumps with no fuel remaining in tank(s).

ALERT	CODE	CONSEQUENCE(S)/DESCRIPTION
SEL HYD PMP__OFF (1L, 1R, 2L, 2R, 3L, 3R)	NO T/O	Consequences: HYD PUMP FAULT The respective pump pressure is low or the temperature is high.
SEL HYD SYSMAN	MAINT	Consequences: USE MANUAL SYSTEMS PROCEDURES The HYDRAULIC system has reverted to manual mode. The SELECT/ MANUAL switch should be pushed to lock the HYDRAULIC system in manual mode. This alert will then be replaced by “HYD SYS MAN” alert.
SEL LSAS__OFF (LOB, ROB, LIB, RIB)	MAINT	Consequences: LSAS CHAN FAILED The respective LSAS channel has failed.
SEL PACK__OFF (1, 2, 3)	MAINT	Consequences: PACK OVERHEATING The respective pack discharge temperature has exceeded its limits.
SEL__TEMP OFF (AFT, FWD)	MAINT	Consequences: LOWER CARGO TEMP HI Temperature in the respective lower cargo compartment exceeds limits. When the associated cargo temperature returns to normal, one attempt may be made to restore the system.

ALERT	CODE	CONSEQUENCE(S)/DESCRIPTION
SEL YAW__OFF (UPR A, UPR B, LWR A, LWR B)	MAINT	Consequences: YAW DAMP CHAN FAIL The respective yaw damp channel has failed.
SET LDG ALTITUDE	MAINT	Consequences: NONE The cabin pressure controller is not receiving landing field elevation data from the FMS. The landing field elevation should be set manually. Automatic operation may be restored by selecting the cabin pressure controller to MANUAL and back to AUTO.
SINGLE LAND	MAINT	Consequences: NONE The autoland availability is reduced from DUAL LAND to SINGLE LAND.
SLATS INHIBITED (DEU 908 and subs)	NO T/O	Consequences: NONE The SLAT MACH INHIBIT relay is preventing slats from extending (electrically controlled slats).
SLAT STOW (DEU 908 and subs)	NO T/O SW	Consequences: NONE The SLAT STOW switch is activated (electrically controlled slats).
SMOKE SW IN USES	SW	Consequences: NONE The SMOKE switch on the electrical panel is out of the NORM position.
STALL WARN FAIL	NO T/O	Consequences: NONE The stall warning function is inoperative.

ALERT	CODE	CONSEQUENCE(S)/DESCRIPTION
START AIR PRES LO	N/A	Consequences: NONE Air pressure is low and may cause an abnormal engine start.
TAIL ALT PUMP LO	MAINT	Consequences: NONE The tail tank ALT PUMP pressure is low. Additional pumps should be turned on to prevent a possible engine 2 flameout.
TAIL ALT PUMP OFF	MAINT	Consequences: NONE With the FUEL system in auto mode, the fuel system controller has detected low pressure from the tail ALT PUMP and turned the pump off. If there is fuel in the tail tank, it may be trapped.
TAIL FUEL FWD (DEU 908 and subs)	MAINT	Consequences: CRUISE PREFORMANCE MAY BE AFFECTED Control of aircraft CG by tail fuel management has been terminated. The FSC will transfer all fuel out of the tail tank. If required, refer to Supplemental procedure- TAIL FUEL FWD.
TAIL__PUMP LO (L, R)	MAINT	Consequences: NONE The respective tail tank fuel transfer pump pressure is low. The rate of fuel transfer from the tail tank will be slower.
TAIL__PUMP OFF (L, R)	MAINT	Consequences: NONE With the FUEL system in auto mode, the fuel system controller has detected a fault in the respective tail tank transfer pump and turned the pump off.

ALERT	CODE	CONSEQUENCE(S)/DESCRIPTION
TANK__PUMP S LO (1, 2, 3)	NO T/O	Consequences: NONE All the boost pumps in the respective main fuel tank have low pressure.
TANK__ PUMPS OFF (1, 2, 3)	NO T/O SW	Consequences: NONE All the boost pumps in the respective main fuel tank have been selected OFF.
TAT PROBE HEAT	MAINT	Consequences: NONE The total air temperature probe heater is inoperative.
TERRIAN FAIL (DEU 911 and subs) (Optional)	MAINT	Consequences: NONE The terrain awareness functions of the GPWS have failed.
TERRAIN NOT AVAIL (DEU 911 and subs) (Optional)	N/A	Consequences: NONE The terrain awareness functions are disabled automatically due to an inadequate navigation sensor position.
TIRE DIFF PRESS	NO T/O	Consequences: NONE The tires on one axle have significantly different tire pressure.
TIRE PRS LO	NO T/O	Consequences: NONE One or more tire pressures are below normal.
TNK__AFT PMP LO (1, 2L, 2R, 3)	MAINT	Consequences: NONE The respective fuel pump pressure is low.

ALERT	CODE	CONSEQUENCE(S)/DESCRIPTION
TNK__AFT PMP OFF (1, 2L, 2R, 3)	MAINT	Consequences: NONE With the FUEL system in auto mode, the FSC has detected a fault in the respective fuel tank pump and has turned the pump off.
TNK__FUEL QTY LO (1, 2, 3)	NO T/O	Consequences: NONE The fuel quantity in tank 1 or 3 inboard compartment, or tank 2, is less than approximately 3,500 pounds.
TNK__FWD PMP LO (1, 2, 3)	MAINT	Consequences: NONE The respective fuel pump pressure is low.
TNK__FWD PMP OFF (1, 2, 3)	MAINT	Consequences: NONE With the FUEL system in auto mode, the FSC has detected a fault in the respective fuel tank pump and has turned the pump off.
TNK__TIP FUEL LO (1, 3)	MAINT	Consequences: NONE tank 1 or 3 tip compartment is not full when there is more than 6,000 pounds of fuel in the inboard compartment. This alert (level 1) appears in the auto mode only and the FSC will take corrective action once the engines are started.
TNK__TIP TRAPPED (1, 3)	MAINT N/A	Consequences: FUEL IN TIP TANK IS UNUSABLE Fuel in the tip tank is not transferring to the inboard compartment.
TNK__XFER PMP LO (1, 2, 3)	MAINT	Consequences: NONE The respective tank transfer pump pressure is low.

ALERT	CODE	CONSEQUENCE(S)/DESCRIPTION
TNK__XFER PMP OFF (1, 2, 3)	MAINT	Consequences: NONE With the FUEL system in auto mode, the FSC has detected a fault in the respective transfer pump and turned the pump off.
TR__FAIL (1, 2A, 2B, 3)	MAINT	Consequences: NONE The respective transformer/rectifier has failed. A nuisance “TR__FAIL” alert may be displayed during engine start or shutdown when the generator buses are powered from different unparalleled sources such as external power and engine driven generator(s) or APU generator and engine driven generator(s). The alert should be considered valid when all generator buses are paralleled or when only the APU generator or external power is powering the generator buses.
UNABLE RNP (FMS-911 and subs and DEU-909 and subs)	MAINT SW	Consequences: NONE The required navigation performance (RNP) cannot presently be met. ATC may need to be informed.
WBS FAULT (Optional)	MAINT	Consequences: NONE The weight and balance computer is not receiving valid gross weight or CG.
WSHEAR DET FAIL	MAINT	Consequences: NONE The windshear detection system is inoperative.
WSHLD DEFOG OFF	SW	Consequences: NONE The WINDSHIELD DEFOG switch is OFF.

ALERT	CODE	CONSEQUENCE(S)/DESCRIPTION
WSHLD HEAT__FAIL (L, R)	MAINT	Consequences: NONE The respective windshield heater is inoperative.
YAW DAMP ALL OFF	SW	Consequences: AUTOPILOT AVAILABLE ONLY IN CRUISE All four YAW DAMP switches are OFF.
YAW DMP__OFF (LWR A, LWR B, UPR A, UPR B)	SW	Consequences: NONE The respective YAW DAMP switch is OFF.
ZONE TEMP SEL MAN	SW	Consequences: NONE One or more of the zone temperature control selectors have been selected to OFF.

Level 0 Alerts

ALERT	CONSEQUENCE(S)/DESCRIPTION
ACARS MESSAGE (Optional)	The ACARS system has received a message.
ACARS NO COM (Optional)	The ACARS system has no available communications link.
A-ICE ALL ON	The engine and airfoil anti-ice switches are ON.
A-ICE SYS TEST (Optional)	This alert is displayed on the ground when the flight crew selects airfoil anti-ice ON. This initiates an automatic test, which will last for 15 seconds.
AIRFOIL A-ICE ON	The WING and/or TQAIL ANTI-ICE has been commanded ON.
AIR ISOL__ON (1-2, 1-3)	The respective pneumatic system isolation valve has been commanded ON (valve open).
APU SYS TEST	The automatic air system preflight test is in progress.
APU AIR/ELEC ON	The APU is providing air and electrical power.
APU ON	The APU is running.
APU POWER AVAIL	APU electrical power is available, but not powering any buses.
APU POWER ON	APU electrical power is connected to at least one of the three buses.
AUTO BRAKE__ (MAX, MED, MIN, T.O.)	The AUTO BRAKE selector is in the indicated position.
BLEEDS ALL OFF	All three bleeds have been turned OFF for a bleeds off takeoff.
CABIN DOORS OPEN	All of the cabin doors are disarmed.
CARGO DOOR TEST	The cargo door test is in progress.

ALERT	CONSEQUENCE(S)/DESCRIPTION
CARGO FIRE TEST (DEU 908 and subs)	The cargo fire test is in progress.
CDU__MENU REQUEST (1,2)	A message is displayed on the MENU page of the MCDU.
COMBI EXH TEST (Combi)	The automatic combi exhaust control system preflight test is in progress.
EMER LTS TST PASS	The cockpit and cabin emergency lights test is successful.
ENG__A-ICE ON (1,2,3)	The respective engine anti-ice switch is ON.
ENGINE A-ICE ON	All three engine anti-ice switches are ON.
ENGINE COOL (Optional)	This alert indicates the engines have adequately cooled for shutdown after landing. The alert is displayed 90 seconds after the reversers are stowed, and removed when the first engine is shut down.
ENGINE IGN ON	Automatic control of the engine ignition system is inoperative and ignition is ON.
ENG IGN OVRD ON	The engine ignition override function has been selected ON.
EXT POWER AVAIL	External power is connected and available for use.
EXT POWER ON	External electrical power is powering the AC TIE bus.
FUEL SYS TEST	The automatic preflight fuel system test is in progress. The FUEL system should not be selected to MANUAL, or engines started during the test.
FUEL XFEED__ON (1,2,3)	The respective fuel crossfeed switch is ON.
GLY EXT POWER ON (Passenger & Combi)	External power is connected to the galley buses.

ALERT	CONSEQUENCE(S)/DESCRIPTION
GLY EXT PWR AVAIL (Passenger & Combi)	Galley external electrical power is connected and available for use.
GPWS FLAP OVRD	The ground proximity warning system (GPWS) switch is in the FLAP OVRD position. This will prevent ground proximity warnings when flaps are less than landing flap on approach.
HYD AUX PUMP ON	One or both of the hydraulic system aux pumps are ON.
HYD PRESS TEST	The automatic preflight hydraulic pressure test is in progress.
HYD__RMP ON (1-2, 2-3)	The respective hydraulic system reversible motor pump is ON.
IRU IN ALIGN	One or more of the inertial reference units are in alignment mode. The aircraft should not be moved during alignment.
NO SMOKING	The NO SMOKING signs in the cabin are ON.
PACKS ALL OFF	All three air conditioning packs are OFF for a packs off takeoff.
PARK BRAKE ON	The parking brake lever is set and the parking brake engaged.
PRED WSHEAR OFF (DEU 909 and subs) (Optional)	The weather radar is OFF when it should be ON. Predictive windshear alerting capability is not available.
REFUELING	The refueling panel is armed. Aircraft should not be dispatches in the refueling mode.
SEAT BELTS	The SEAT BELTS signs in the cabin are ON.
TERRAIN OVRD (DEU 911 and subs) (Optional)	Terrain override has been selected.
VHF-3VOICE (Optional)	This alert is displayed when the ACARS is in voice mode.

ALERT	CONSEQUENCE(S)/DESCRIPTION
WHEEL BRAKE INOP	A wheel brake has been rendered inoperative by maintenance. Aircraft performance must be adjusted accordingly.
WHLD HEAT HI	The left and/or right windshield heat is ON and in HIGH mode.
WSHLD HEAT ON	The left and/or right windshield hear is ON and in NORM mode.

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Checklists

Cockpit Preparation

• (1.)	SD Status Page	CKD	C/FO
2.	HYD Panel	AUTO or MAN CKD	FO
•	[MANUAL]		
	- HYD System Display	SEL	
	- AUX PUMP 1	ON/CK	
	- AUX PUMP 2	ON/CK	
	- 1-3 RMP	ON/CK	
	- System 1 & 3 Pressure	CK	
	- 1-3 RMP	OFF	
	- 2-3 RMP	ON/CK	
	- System 2 Pressure	CK	
	- 2-3 RMP	OFF	
	- AUX PUMP 1	OFF/CK	
	- AUX PUMP 2	OFF	
3.	Fuel Panel	AUTO or MAN CKD	FO
•	[MANUAL]		
	- Fuel System Display	SEL	
	- TANK Pumps/ XFEEDs	CK	
	- TRANS Pumps/FILL Valves	CK	
	- ALT PUMP	CK	
(4.)	Exterior Lights	SET	FO

• Items must be accomplished for full stop taxi-back
( ) Items must be accomplished for transit check

(Cockpit Preparation - Continued)

(5.)	EVAC Command	ARMD	FO
6.	Oxygen System/Masks	CKD/SET 100%	C/FO
7.	T/O Warning System	CKD	FO
(8.)	FUEL Switches	OFF	C
• (9.)	Rudder/AIL Trim	CKD	C
• (10.)	FMS	SET/CKD	C/FO
• (11.)	FLAP T.O. SEL	SET	C/FO
(12.)	FCP	SET	C/FO
(13.)	IRS	TAXI	C/FO
* (14.)	AUTO BRAKE	T.O.	C/FO

Before Start

1.	Doors/Windows	CLOSED/LOCKED	C/FO
2.	PARK BRAKE	AS REQD	C
3.	BCN	ON	FO
4.	Engine Ignition	A or B	C
5.	FUEL Panel	AUTO or MAN SET	FO
	• [MANUAL]		
	- 1,2, & 3 PUMPS	ON	
6.	AIR Panel	AUTO OR MAN SET	FO
	• [MANUAL]		
	- ISOL Valves	ON	
	- PACKS	OFF	
	- BLEEDS	OFF	
	-		
	-		

• Items must be accomplished for full stop taxi-back
( ) Items must be accomplished for transit check

After Start

1.	ANTI-ICE	AS REQD	FO
2.	AIR Panel	AUTO or MAN SET	FO
•	[MANUAL]		
	- ISOL Valves	OFF	
	- PACKs	ON	
	- BLEEDS	ON	
3.	APU	OFF	FO
4.	HYD Panel	AUTO or MAN CKD	FO
•	[MANUAL]		
	- HYD System Display	SEL	
	- HYD Pumps	CK/SET	
5.	Ground Equipment/Gear Pins	REMOVED	C
6.	Cabin Report	RCVD	C

Taxi

• 1.	FLAPS	FLAPS__	C/FO
• 2.	Spoilers	ARMD	C/FO
3.	Flight Controls	CKD	C/FO
• 4.	STAB TRIM	SET/__	C/FO
• 5.	Takeoff Data	CONFRIM/SET	C/FO

• Items must be accomplished for full stop taxi-back

Before Takeoff

• 1.	EAD	CKD	C/FO
• 2.	Hi-INIT/LDG LTs	ON	C/FO
• 3.	HYD Panel	AUTO OR MAN SET	C/FO
	• [MANUAL]		
	- 1-3, 2-3 RMPs	ON	
• 4.	AIR Panel	AUTO OR MAN SET	FO
	• [MANUAL]		
	- PACKs	AS REQD	
	- BLEEDS	AS REQD	
• 5.	WX Radar/Transponder	ON/AS REQD	FO

After Takeoff

** 1.	GEARS/Lights	UP/LTS OFF	PNF
2.	AIR Panel	AUTO OR MAN SET	PNF
	• [MANUAL]		
	- PACKs	ON	
	- BLEEDS	ON	
** 3.	Spoiler Handle	DISARMD	PNF
** 4.	AUTO BRAKE	OFF	PNF
5.	FLAPS/SLATS	UP/RET	PNF
6.	HYD Panel	AUTO OR MAN SET	PNF
	• [MANUAL]		
	- 1-3, RMPs	OFF	
	-		
	-		

** Items must be accomplished downwind between multiple approaches.
• Items must be accomplished for full stop taxi-back.

(After Takeoff - Continued)

7.	FUEL Panel	AUTO OR MAN SET	PNF
•	[MANUAL]		
	- L & R AUX TRANS Pumps	ON	
	- TAIL TANK TRANS Pumps	ON	
	- FILL Valves	ARM	
	- TANK 2 TRANS Pump	ON	
8.	EAD	CKD	PNF
9.	SEAT BELTS	AS REQD	PNF
10.	Exterior Lights	AS REQD	PNF
11.	Altimeter	__SET/CROSS CKD	PF/PNF

Descent/Approach

** 1.	Landing Data	CKD/SET	PF/PNF
2.	WINDSHLD ANTI-ICE	AS REQD	PNF
** 3.	DH/MDA	__SET	PF/PNF
4.	SEAT BELTS	ON	PNF
** 5.	Altimeters	__SET/CROSS CKD	PF/PNF
6.	HYD Panel	AUTO OR MAN SET	PNF
•	[MANUAL]		
	- 1-3, 2-3 RMPs	ON	
7.	Exterior Lights	AS REQD	PNF

** Items must be accomplished downwind between multiple approaches.

Before Landing

1.	GEAR/Lights	DOWN/__GREEN	PF/PNF
2.	Spoilers	ARMD	PF/PNF
3.	AUTO BRAKE	CKD/SET__	PF/PNF
4.	FLAPS	FLAPS__	PF/PNF
5.	Altimeters	__SET/CROSS CKD	PF/PNF
6.	EAD	CKD	PF/PNF

After Landing

1.	Spoilers	RET	FO
2.	FLAPS/SLATS	UP/RET	FO
3.	WX RADAR/Transponder	OFF/STBY	FO
4.	AUTO BRAKE	OFF	FO
5.	STAB TRIM	3 ANU	FO
6.	Exterior Lights	SET	FO
7.	ANTI-ICE	AS REQD	FO
8.	APU	ON	FO

Parking

1.	ANTI-ICE	OFF	C/FO
2.	HYD Panel	AUTO OR MAN SET	FO
•	[MANUAL]		
	- 1-3, 2-3 RMPs	OFF	
3.	FUEL Switches	OFF	C/FO
4.	SEAT BELTS	OFF	FO
5.	FUEL Panel	AUTO OR MAN SET	FO
•	[MANUAL]		
	- 1, 2, & 3 Pumps	OFF	

(Parking - Continued)

6.	EMER PWR	OFF	FO
7.	Exterior Lights	OFF	FO
8.	PARK BRAKE (Chocks In)	REL	C/FO
9.	IRS	AS REQD	C/FO
10.	SD STATUS	REVIEWED	C/FO

Leaving Aircraft

1.	EMER LT	OFF	FO
2.	EVAC Command (Passenger Configuration)	OFF	FO
3.	APU (If Not Required)	OFF	FO
4.	BAT	OFF	FO

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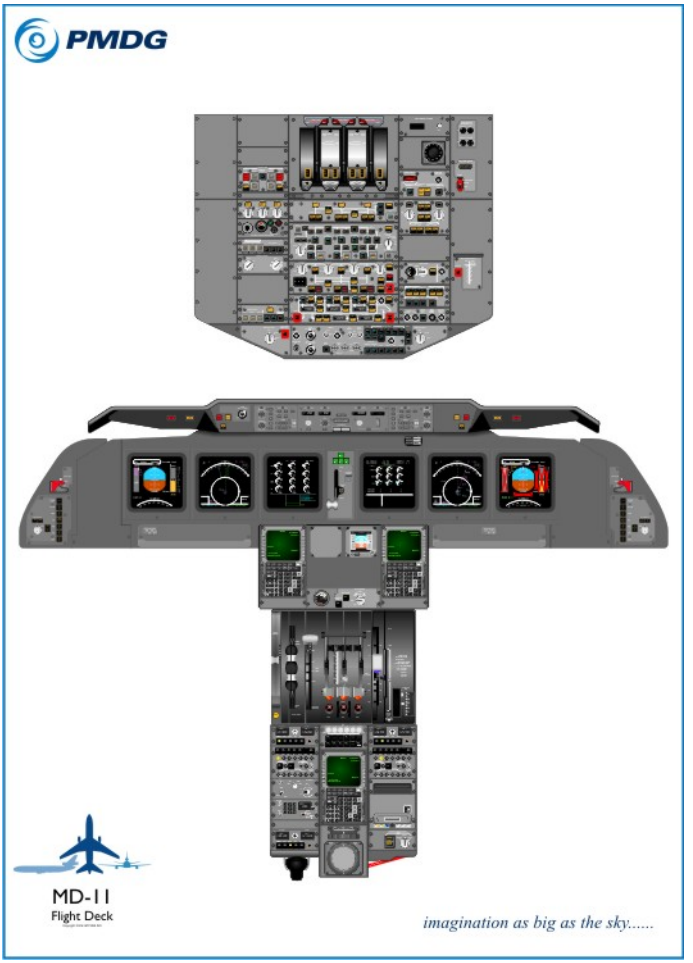

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