

EMBRAER 170

UNITED STATES

QUICK REFERENCE HANDBOOK

QRH-1510

DECEMBER 10, 2003

REVISION 1 – FEBRUARY 20, 2004

LIST OF EFFECTIVE PAGES

THE PORTION OF THE TEXT AFFECTED BY THE CHANGE IS INDICATED BY A VERTICAL LINE IN THE OUTER MARGIN OF THE PAGE.

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* EAP6-9	1	EAP13-3	0
* EAP6-10	1	EAP13-4	0
		EAP13-5	0
		EAP13-6	0
* EAP7-1	1		
EAP7-2	0	EAP14-1	0
* EAP7-3	1	EAP14-2	0
* EAP7-4	1	EAP14-3	0
* EAP7-5	1	EAP14-4	0
EAP7-6	0		
* EAP8-1	1		
EAP8-2	0		
EAP8-3	0		
EAP8-4	0		
EAP8-5	0		
* EAP8-6	1		
* EAP8-7	1		
* EAP8-8	1		
* EAP8-9	1		
EAP8-10	0		
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* Asterisk indicates pages changed, added, or deleted by the current revision.

APPLICABILITY

This handbook is applicable to the EMBRAER 170 models.

The procedures contained in this handbook have been developed by the manufacturer for use during the operation of the EMBRAER 170. These procedures are provided as a guidance and should not be construed as prohibiting the development of equivalent procedures.

The use of the on board checklist is based on the assumption that both pilots have been properly trained on the type of aircraft and therefore have a through knowledge of the airplane's systems and procedures.

It further assumes that they know the consequences of not performing the right actions at the right time.

In case of conflicting information between this handbook and the AFM-170/1385, the AFM must prevail.

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NORMAL CHECKLIST

INTRODUCTION

The normal checklist is just a memory aid to assist the pilots so they do not forget actions which, if not carried out, can result in some type of risk to the airplane, to the operational environment, to any of its systems, to its occupants or to the passengers comfort. Specific regulations also ask for items to be included in the checklist.

The normal checklist assumes that the pilots previously accomplished all normal procedures.

The normal checklist is named and divided according to each specific phase of flight and should follow the normal checklist philosophy.

When a disagreement between the response and the checklist answer is found, the checklist should be interrupted until the item is resolved.

Upon completion of the checklist the pilot reading it should state: “_____ Checklist Complete.”

NORMAL CHECKLIST

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NORMAL CHECKLIST

BEFORE START

Pax Signs PanelSET
Pressurization Panel.....SET
Oxygen Masks.....CKD
Flight Instruments..... X-CKD
Thrust LeversIDLE
Trim Panel CKD/SET

Fuel Qty CKD
MCDU.....SET
Doors & Windows CLOSED
Pitch Trim_SET
Red Beacon ON
Emergency/Parking Brake..... AS REQUIRED

AFTER START

Ground EquipmentREMOVED
Slat/Flap....._SET
Flight Controls CKD

BEFORE TAKEOFF

Brakes Temperature CKD
Takeoff Configuration..... CKD
EICAS..... CKD
Crossbleed AS REQUIRED

AFTER TAKEOFF

Landing Gear.....UP
Slat/Flap.....0
Crossbleed AS REQUIRED

APPROACH

Pax Signs PanelSET
AltimetersSET/X-CKD

BEFORE LANDING

Landing Gear..... DOWN
Slat/Flap....._SET

SHUTDOWN

Emergency/Parking Brake..... AS REQUIRED
Hyd Pump 3A OFF
Start/Stop Selectors..... STOP

LEAVING THE AIRPLANE

Pax Signs Panel OFF
GPU/APU OFF
Batteries 1 and 2 OFF

NORMAL CHECKLIST

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EMERGENCY AND ABNORMAL PROCEDURES

INTRODUCTION

The Emergency/Abnormal Procedures published in the Quick Reference Handbook (QRH) are provided to guide the pilots on the right path to solve emergency and abnormal situations and conditions.

In case a discrepancy is found between the QRH and the approved Airplane Flight Manual (AFM), the AFM shall prevail.

In order to use the QRH pilots have to be properly trained on the execution of all operational, emergency and abnormal procedures set forth in the approved AFM and also have a thorough knowledge of the airplane and its systems.

Three blocks of procedures are contained in this manual:

- **Smoke Procedures:** contain all annunciated and non-annunciated smoke related procedures.
- **Non-Annunciated Procedures:** procedures, which are not related to a CAS message but rather to a condition present in the airplane.
- **Annunciated Procedures:** procedures related to a CAS message. These procedures are grouped by system and titled with the correspondent CAS message wording.

Some CAS messages do not have an associated procedure, as they comprise crew awareness alerts. In those cases, a 'Crew Awareness' wording identifies the CAS message in the Index Table.

The emergency/abnormal procedures have priority over the normal checklist.

Some procedures bring a characterization below the title in case any relevant emergency/abnormal condition is present, such as aural warnings, lights, EICAS indications, flight instrument flags and the airplane condition itself.

The actions contained in the bold square boxes are recall items. They must be performed expeditiously, from memory.

EMERGENCY AND ABNORMAL PROCEDURES

Some procedures require landing at the nearest suitable airport. This statement may be presented below the associated emergency/abnormal characterization or at the beginning of a task that requires so. When the crew determines that significant threat to safety is present, they should always accomplish the earliest possible descent and land at the nearest suitable airport regardless of having this statement present in the procedure.

Flying the airplane is always the priority in any emergency/abnormal situation. Checklists should only be called by the PF after the flight path is under control, critical phases of flight (takeoff and landing) have ended and all recall items have been accomplished.

The procedures contained herein assume that:

- Airplane systems were operating normally prior to the failure.
- All emergency/abnormal actions are performed in the order they are presented in the procedure.
- Normal procedures have been properly accomplished.
- System controls were in normal condition prior to initiation of the associated procedure.
- Aural warnings are silenced as applicable. Master Warning/Caution lights are reset as soon as the failure is recognized.
- In case of depressurization and presence of smoke, full-face oxygen masks have been donned and communication has been established.
- Circuit breakers must not be reset.

All tasks foreseen in the procedures have the indication **END** stating that the specific task for that condition is over. No task is over until **END** has been reached.

Upon completion of the procedure the pilot reading it should state: “_____Procedure Complete”.

**EMERGENCY AND ABNORMAL
PROCEDURES**

Smoke

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EMERGENCY

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CRG FWD (AFT) SMOKE	S1-04
ELECTRICAL SYSTEM FIRE OR SMOKE.....	S1-05
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ABNORMAL

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***EMERGENCY AND ABNORMAL
PROCEDURES***

Smoke

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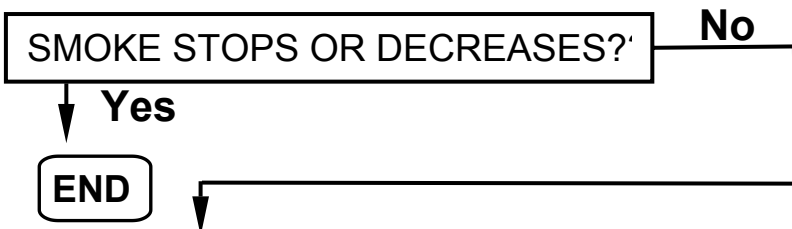
**EMERGENCY AND ABNORMAL
PROCEDURES**

Smoke

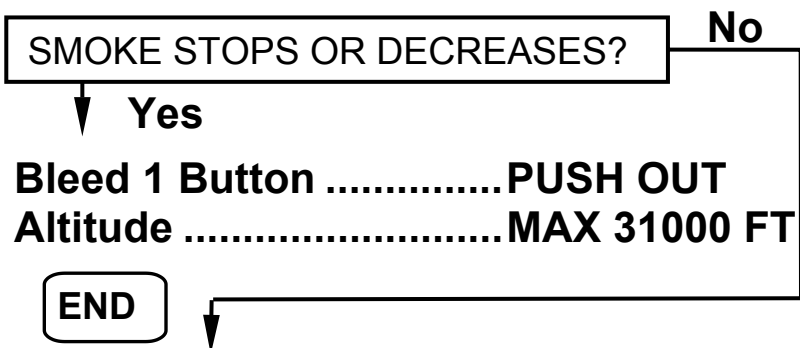
AIR CONDITIONING SMOKE

**LAND AT THE NEAREST SUITABLE
AIRPORT.**

Recirc Fan Button.....PUSH OUT



Pack 1 Button.....PUSH OUT



Bleed 1 ButtonPUSH OUT

AltitudeMAX 31000 FT

Pack 1 Button.....PUSH IN

Pack 2 Button.....PUSH OUT

Bleed 2 ButtonPUSH OUT

AltitudeMAX 31000 FT

If necessary:

Smoke Evacuation

Procedure (S1-8)ACCOMPLISH

END

EMERGENCY AND ABNORMAL PROCEDURES

Smoke

CRG FWD (AFT) SMOKE

Light: Associated Cargo Fire-Extinguishing
Button illuminates.

**Associated Cargo Fire
Extinguishing Button..... PUSH**

**LAND AT THE NEAREST SUITABLE
AIRPORT.**

**Confirm the CRG FWD (AFT) FIREX HI
ARM message extinguishes and the
CRG AFT (FWD) FIREX LO ARM
message is displayed.**

.....Wait 1 minute

**Confirm the CRG FWD (AFT) FIREX LO
ARM message and the cargo fire-
extinguishing button light extinguish.**

END

**EMERGENCY AND ABNORMAL
PROCEDURES**

Smoke

**ELECTRICAL SYSTEM FIRE OR
SMOKE**

**LAND AT THE NEAREST SUITABLE
AIRPORT.**

Recirc Fan Button.....PUSH OUT

SMOKE ORIGIN IDENTIFIED?

No

Yes

Affected SourceREMOVE

END

Emergency LightsOFF

RAT Manual Deploy

LeverPULL

AirspeedMIN 130 KIAS

**Altitude10000 FT OR MEA,
WHICHEVER IS
HIGHER**

IDG 1 SelectorOFF

IDG 2 SelectorOFF

APU Gen Button.....PUSH OUT

NOTE: - Do not accomplish the Elec
Emergency Procedure.

- Refer to the Elec Emergency
Procedure to be aware of the
relevant inoperative items.

BATT DISCHARGING
MESSAGE PRESENTED?

No

Yes

IDG 1 or 2 SelectorAUTO

(Continued on the next page)

EMERGENCY AND ABNORMAL PROCEDURES

Smoke

(Continued from previous page)

SMOKE PERSISTS AND
UNABLE TO LAND SOON?

No

↓ Yes

IDG 1 Selector AUTO

IDG 2 Selector AUTO

DC BUS TIES Switch OFF

TRU 1 Switch OFF

Battery 1 OFF

DC ESS BUS 1 AND DC BUS 1 ARE
DEENERGIZED.

SMOKE STOPS OR DECREASES?

No

↓ Yes

Accomplish the DC BUS 1 OFF
(EAP 5-8) and DC ESS BUS 1 OFF
(EAP 5-10) Procedures. For Landing
Configuration apply:

Emergency Lights ARMED

Gnd Prox Flap

Ovrdr Button PUSH IN

Slat/Flap 3

Set $V_{REF} = V_{REF FULL} + 20$ KIAS or

$V_{REF} = 130$ KIAS (whichever is
higher).

CAUTION: MULTIPLY THE FULL
FLAPS UNFACTORED
LANDING DISTANCE BY
2.30.

END

Battery 1 ON

TRU 1 Switch AUTO

(Continued on the next page)

**EMERGENCY AND ABNORMAL
PROCEDURES**

Smoke

(Continued from previous page)

TRU 2 Switch.....OFF

Battery 2OFF

**DC ESS BUS 2 AND DC BUS 2 ARE
DEENERGIZED.**

SMOKE STOPS OR DECREASES?

No

↓ **Yes**

**Accomplish the DC BUS 2 OFF
(EAP 5-9) and DC ESS BUS 2 OFF
(EAP 5-11) Procedures. For Landing
Configuration apply:**

Emergency LightsARMED

Gnd Prox Flap

Ovrd ButtonPUSH IN

Slat/Flap.....3

Set $V_{REF} = V_{REF FULL} + 20$ KIAS or

**$V_{REF} = 130$ KIAS (whichever is
higher).**

**CAUTION: MULTIPLY THE FULL
FLAPS UNFACTORED
LANDING DISTANCE BY
2.50.**

END

Battery 2AUTO

TRU 2 Switch.....AUTO

TRU ESS SwitchOFF

DC ESS BUS 3 IS DEENERGIZED.

(Continued on the next page)

EMERGENCY AND ABNORMAL PROCEDURES

Smoke

(Continued from the previous page)

SMOKE STOPS OR DECREASES? - No -

↓ Yes

DC ESS BUS 3 OFF

**Procedure (EAP5-12) . ACCOMPLISH
For Landing Configuration:**

Emergency Lights ARMED

Gnd Prox Flap

Ovrđ Button PUSH IN

Slat/Flap 3

Set $V_{REF} = V_{REF FULL} + 20$ KIAS or

**$V_{REF} = 130$ KIAS (whichever is
higher).**

**CAUTION: MULTIPLY THE FULL
FLAPS UNFACTORED
LANDING DISTANCE BY
2.10.**

END

TRU ESS Switch AUTO

DC BUS TIES Switch AUTO

Landing configuration:

Emergency Lights ARMED

Gnd Prox Flap

Ovrđ Button PUSH IN

Slat / Flap 3

Set $V_{REF} = V_{REF FULL} + 20$ KIAS or

$V_{REF} = 130$ KIAS (whichever is higher).

(Continued on the next page)

**EMERGENCY AND ABNORMAL
PROCEDURES**

Smoke

(Continued from the previous page)

CAUTION: MULTIPLY THE FULL
FLAPS UNFACTORED
LANDING DISTANCE
BY 2.10.

If necessary:

Smoke Evacuation

Procedure (S1-8)ACCOMPLISH

If a go around is required:

Slat/Flap.....3

**Airspeed $V_{REF FULL} + 20$
or 130 KIAS
(whichever is
higher)**

END

LAV SMOKE

Establish contact with the cabin crew.

If necessary:

DiversionCONSIDER

Smoke Evacuation

Procedure (S1-8)ACCOMPLISH

END

EMERGENCY AND ABNORMAL PROCEDURES

Smoke

SMOKE EVACUATION

Pressurization Dump

Button..... PUSH IN

**LAND AT THE NEAREST SUITABLE
AIRPORT.**

Cockpit Door..... CLOSE

Cabin Rate VERIFY

**CABIN RATE IS LESS THAN
1000 FT/MIN?**

No

↓ Yes

Pressurization Mode

Selector..... MAN

Pack 1 Button PUSH OUT

Pack 2 Button PUSH OUT

Recirc Fan Button PUSH OUT

EMERGENCY DESCENT

Procedure (NAP1-5) ... ACCOMPLISH

After smoke is cleared:

Pressurization Mode

Selector..... AUTO

Pressurization Dump

Button..... PUSH OUT

Pack 1 Button PUSH IN

Pack 2 Button PUSH IN

Recirc Fan Button PUSH OUT

NOTE: Identify the smoke origin and
do the applicable procedure.

END

***EMERGENCY AND ABNORMAL
PROCEDURES***

Smoke

RECIRC SMOKE

Recirc Fan Button.....PUSH OUT

END

***EMERGENCY AND ABNORMAL
PROCEDURES***

Smoke

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EMERGENCY AND ABNORMAL PROCEDURES

Non Annunciated

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EMERGENCY AND ABNORMAL PROCEDURES

Non Annunciated

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EMERGENCY AND ABNORMAL PROCEDURES

Non Annunciated

CARGO COMPARTMENT FIRE

LAND AT THE NEAREST SUITABLE AIRPORT

Associated Cargo

Fire Extinguishing Button.....PUSH

After CRG AFT (FWD) FIREX HI ARM message is displayed and the associated Cargo Fire Extinguishing Button is illuminated:

Associated Cargo

Fire Extinguishing ButtonPUSH AGAIN

Confirm the CRG FWD (AFT) FIREX HI ARM message extinguishes and the CRG AFT (FWD) FIREX LO ARM message is displayed.

.....Wait 1 minute

Confirm the CRG FWD (AFT) FIREX LO ARM message and the cargo fire-extinguishing button light extinguish.

END

EMERGENCY AND ABNORMAL PROCEDURES

Non Annunciated

DITCHING

Descent:

Cabin Crew NOTIFY
ATC NOTIFY
Transponder 7700
Aural Warning CBs (C7; C31)..... PULL
No Smoking/Fasten Belts..... ON
ELT ON
Landing Data SET

At 10000 FT AGL:

Pressurization Dump Button..... PUSH IN

Approach:

Altimeters SET

At 5000 FT AGL:

Pressurization Mode
Selector MAN
Cabin Alt Controller HOLD DOWN FOR
50 SEC

Ditching Configuration:

Terrain Inhibit Button IN
Landing Gear UP
Slat/Flap MAXIMUM
AVAILABLE
APU Emergency Stop Button..... PUSH IN

NOTE: If engines are not running maintain minimum speed of
130 KIAS.

Just Before Water Contact:

Cabin..... ANNOUNCE IMPACT

After Ditching:

Thrust Levers IDLE
Start/Stop Selectors..... STOP
Fire Extinguishing
Handles PULL AND ROTATE
Emergency Evacuation..... ANNOUNCE
Batteries OFF

END

EMERGENCY AND ABNORMAL PROCEDURES

Non Annunciated

DUAL ENGINE FAILURE

EICAS Indication: FAIL icon inside both N1 indicators.
Both oil pressure indications in red.

Airspeed250 KIAS MIN
RAT Manual Deploy LeverPULL

LAND AT THE NEAREST SUITABLE AIRPORT

APUSTART
Emergency Lights.....OFF
Thrust LeversIDLE

BOTH ENGINES SUCCESSFUL AUTORELIGHT?

No

Yes

Flight Controls Mode Buttons
(Spoilers, Elevators, Rudder)PUSH IN, then OUT

Landing Configuration:

Emergency LightsARMED
Gnd Prox Flap OvrD ButtonPUSH IN
Slat/Flap3
Set $V_{REF} = V_{REF FULL} + 20 \text{ KIAS}$ or $V_{REF} = 130 \text{ KIAS}$
(whichever is higher).

CAUTION: MULTIPLY THE FULL FLAPS UNFACTORED
LANDING DISTANCE BY 2.10.

Airstart Envelope (NAP1-19)CHECK
Fuel Xfeed Selector.....LOW 1
Inoperative Engine(s):
Start/Stop Selector(s).....STOP
Ignition(s).....OVRD
Start/Stop Selector(s).....START, then RUN

DUAL ENGINE FAILURE CONDITION PERSISTS?

No

Yes

Landing Configuration:

Emergency LightsARMED
Slat/Flap3
Set $V_{REF} = V_{REF FULL} + 20 \text{ KIAS}$ or $V_{REF} = 130 \text{ KIAS}$
(whichever is higher).

**FORCED LANDING (NAP1-8) or
DITCHING Procedure (NAP1-2)...ACCOMPLISH**

END

(Continues on the next page)

EMERGENCY AND ABNORMAL PROCEDURES

Non Annunciated

(Continued from the previous page)

Flight Controls Mode Buttons

(Spoilers, Elevators, Rudder)..... PUSH IN, then OUT

After engine(s) stabilized at idle:

Ignition(s) AUTO

Fuel BALANCE

Descent:

Landing Data SET

Approach Aids..... SET

Altimeters SET/CHECK

Landing Configuration:

Emergency Lights ARMED

Gnd Prox Flap Ovrđ Button..... PUSH IN

Landing Gear DOWN

Slat/Flap 3

Set $V_{REF} = V_{REF FULL} + 20 \text{ KIAS}$ or $V_{REF} = 130 \text{ KIAS}$
(whichever is higher).

CAUTION: MULTIPLY THE FULL FLAPS UNFACTORED
LANDING DISTANCE BY 2.10.

If a go around is required:

Slat/Flap 3

Airspeed $V_{REF FULL} + 20 \text{ KIAS}$ or
130 KIAS (whichever
is higher)

END

**EMERGENCY AND ABNORMAL
PROCEDURES**

Non Annunciated

EMERGENCY DESCENT

Fasten Belts Signs.....ON
Altitude10000 FT OR MEA,
WHICHEVER IS
HIGHER
Thrust LeversIDLE
SpeedbrakeFULL OPEN
AirspeedMAX/APPROPRIATE
Transponder.....7700
ATCNOTIFY

END

EMERGENCY EVACUATION

Emergency/Parking Brake.....ON
Thrust LeversIDLE
Start/Stop Selectors.....STOP
Fire Extinguishing Handles.....PULL AND ROTATE
(1-L and 2-R)
APU Emergency Stop Button.....PUSH IN
APU Fire Extinguishing Button.....PUSH
Pressurization Dump Button.....PUSH IN
ATCNOTIFY
Emergency Evacuation.....ANNOUNCE
BatteriesOFF

END

EMERGENCY AND ABNORMAL PROCEDURES

Non Annunciated

ENGINE ABNORMAL START

Affected engine:

Start/Stop Selector STOP

ENGINE DRY MOTORING CONSIDERED?

No

Yes

Affected engine:

Ignition..... OFF

Start/Stop Selector..... START, then RUN

..... Wait 30 seconds

Start/Stop Selector..... STOP

Ignition..... AUTO

If applicable:

ONE ENGINE INOPERATIVE

APPROACH AND LANDING

Procedure (NAP1-28)..... ACCOMPLISH

END

EMERGENCY AND ABNORMAL
PROCEDURES

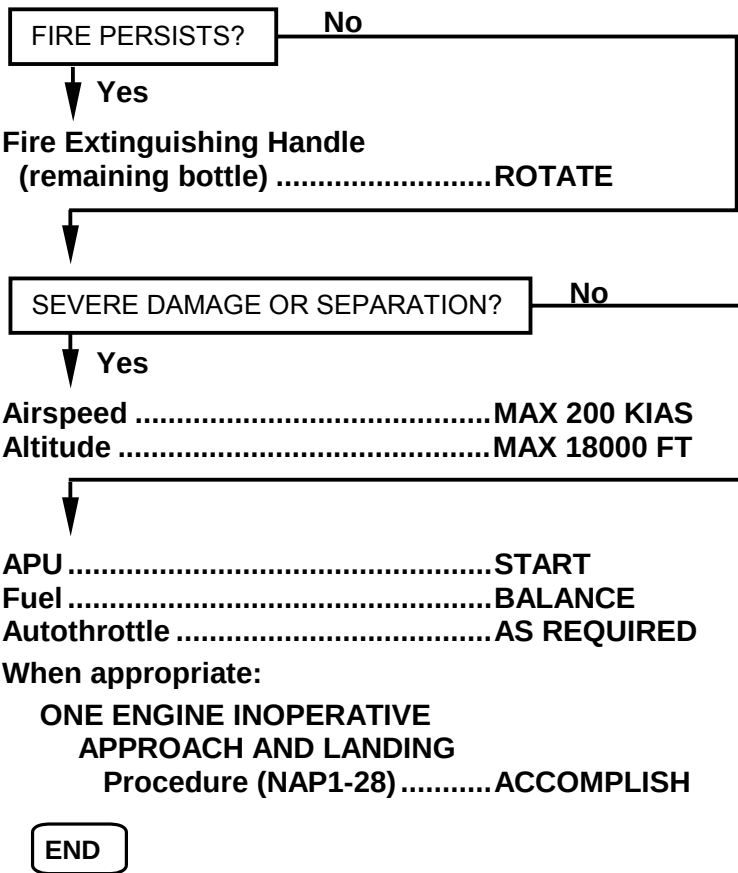
Non Annunciated

ENGINE FIRE, SEVERE DAMAGE OR
SEPARATION

Autothrottle DISENGAGE
Affected engine:
Thrust Lever IDLE
Start/Stop Selector STOP
Fire Extinguishing Handle..... PULL

LAND AT THE NEAREST SUITABLE AIRPORT

Fire Extinguishing Handle.....ROTATE (L or R)
.....Wait 30 seconds.....



EMERGENCY AND ABNORMAL PROCEDURES

Non Annunciated

FORCED LANDING

Descent:

Cabin Crew NOTIFY
ATC NOTIFY
Transponder 7700
Aural Warning CBs (C7; C31)..... PULL
No Smoking/Fasten Belts..... ON
ELT ON
Landing Data SET

At 10000 FT:

Pressurization Dump Button..... PUSH IN

Approach:

Altimeters SET

Landing Configuration:

Terrain Inhibit Button IN
Landing Gear..... DOWN
Slat/Flap..... MAXIMUM
AVAILABLE
APU Emergency Stop Button PUSH IN

NOTE: If engines are not running maintain minimum speed of 130 KIAS and alternate gear extension may be required.

Just Before Touchdown:

Cabin..... ANNOUNCE IMPACT

After Landing:

Thrust Levers IDLE
Start/Stop Selectors..... STOP
Fire Extinguishing Handles..... PULL AND ROTATE
Emergency Evacuation..... ANNOUNCE
Batteries OFF

END

EMERGENCY AND ABNORMAL PROCEDURES

Non Annunciated

FUEL LEAK

LAND AT THE NEAREST SUITABLE AIRPORT

NOTE: An unexpected difference between the total fuel quantity indicated on EICAS and the total fuel quantity indicated on the FMS Fuel Management page may indicate a fuel leak condition.

Fuel Xfeed Selector.....OFF

Affected Fuel Tank.....IDENTIFY

Identify the affected fuel tank using the fuel flow, fuel quantity or visually.

Assymetric Thrust.....AS REQUIRED

LEAK ON THE RH TANK?

No

Yes

APUOFF

If fuel leakage continues and is severe:

The pilot may consider to shutdown the engine at the same side as the apparent fuel leakage. In that case, perform the engine shutdown procedure and pull the fire handle at the same side.

END

APUAS REQUIRED

If fuel leakage continues and is severe:

The pilot may consider to shutdown the engine at the same side as the apparent fuel leakage. In that case, perform the engine shutdown procedure and pull the fire handle at the same side.

END

EMERGENCY AND ABNORMAL PROCEDURES

Non Annunciated

JAMMED CONTROL COLUMN - PITCH

Elev Disc Handle..... PULL

Unrestricted Control Column IDENTIFY

If the failure occurs above 175 KIAS, the current airspeed is the maximum speed for the remainder of the flight.

If the failure occurs below 175 KIAS, the maximum speed for the remainder of the flight is 175 KIAS.

NOTE: Expect lower pitch rates and authority.

CAUTION: DO NOT ENGAGE THE AUTOPILOT.

Relevant Inoperative Item:

AOA Limit

AOA Limit Fail Procedure ACCOMPLISH

Landing configuration:

Slat/Flap..... 5

Set $V_{REF} = V_{REF FULL} + 15 \text{ KIAS}$.

CAUTION: MULTIPLY THE FULL FLAPS UNFACTORED LANDING DISTANCE BY 1.40.

If a go around is required:

Airspeed $V_{REF FULL} + 15 \text{ KIAS}$
(limited to 175 KIAS)

END

EMERGENCY AND ABNORMAL
PROCEDURES

Non Annunciated

JAMMED CONTROL WHEEL - ROLL

Aileron Disc HandlePULL

Unrestricted Control Wheel.....IDENTIFY

If the failure occurs above 175 KIAS, the current airspeed is the maximum speed for the remainder of the flight.

If the failure occurs below 175 KIAS, the maximum speed for the remainder of the flight is 175 KIAS.

CAUTION: DO NOT ENGAGE THE AUTOPILOT.

- NOTE:** - Expect lower roll rates.
- Avoid abrupt and large aileron inputs.
 - Maintain bank angle below 25°.
 - Rudder may be used to help controlling the airplane.
 - Do not accomplish the Spoiler Fault Procedure.

Relevant Inoperative Items:

Affected side aileron
Multi Function Spoiler L3 and R3
Another Multi Function Spoiler pair depending on the affected side.

Landing configuration:

Slat/Flap5

Set $V_{REF} = V_{REF FULL} + 15 \text{ KIAS}$.

CAUTION: • DURING LANDING, A CROSSWIND COMPONENT GREATER THAN 10 KT MUST BE AVOIDED.

- MULTIPLY THE FULL FLAPS UNFACTORED LANDING DISTANCE BY 1.40.

If a go around is required:

Airspeed..... $V_{REF FULL} + 15 \text{ KIAS}$
(limited to 175 KIAS)

END

EMERGENCY AND ABNORMAL PROCEDURES

Non Annunciated

JAMMED RUDDER PEDALS

If the failure occurs above 175 KIAS, the current airspeed is the maximum speed for the remainder of the flight.

If the failure occurs below 175 KIAS, the maximum speed for the remainder of the flight is 175 KIAS.

Relevant Inoperative Item:

Yaw trim

NOTE: Use assymetric thrust for directional control.

Landing configuration:

Slat/Flap..... FULL

Set $V_{REF FULL}$.

CAUTION: DURING LANDING, A CROSSWIND COMPONENT GREATER THAN 10 KT MUST BE AVOIDED.

Before Landing:

Steer Disc Switch

(Right Seat Pilot) PRESS and HOLD

Assymetric Thrust..... MAINTAIN UNTIL
NOSEWHEEL
TOUCHDOWN

After nosewheel touchdown:

Nosewheel Steering Handle PRESS and HOLD

Steer Disc Switch..... RELEASE

Thrust Levers IDLE

Differential Braking..... AS REQUIRED

CAUTION: DO NOT RELEASE THE NOSEWHEEL STEERING HANDLE UNTIL THE AIRPLANE IS COMPLETELY STOPPED.

If a go around is required, proceed as a normal go around limiting the airspeed to 175 KIAS.

NOTE: As assymetric thrust may be required to help controlling the airplane, maximum thrust on both engines may not be possible.

END

EMERGENCY AND ABNORMAL PROCEDURES

Non Annunciated

PITCH TRIM RUNAWAY

A/P Disc Button.....PRESS AND HOLD

Pitch Trim Systems 1 and 2

Cutout ButtonsPUSH IN

A/P Disc Button.....RELEASE

WARNING: DO NOT OPEN THE SPEEDBRAKE.

Prepare to overcome unwanted pitch change:

Pitch Trim System 1

Cutout ButtonPUSH OUT

Pitch Trim SwitchACTUATE

PITCH TRIM NORMAL?

No

Yes

END

Pitch Trim System 1

Cutout ButtonPUSH IN

Pitch Trim System 2

Cutout ButtonPUSH OUT

END

EMERGENCY AND ABNORMAL PROCEDURES

Non Annunciated

ROLL (YAW) TRIM RUNAWAY

A/P Disc Button PRESS AND HOLD

Do not engage the autopilot.

Prepare to overcome unexpected roll or yaw:

A/P Disc Button RELEASE

ROLL (YAW) TRIM NORMAL?

No

Yes

END

A/P Disc Button PRESS AND HOLD

Roll (Yaw) Trim Power

Electronic CB OFF

Select on the MCDU: CB → CB MENU → CB BY SYSTEM →
NEXT → FLT CTRL → ROLL TRIM PWR or YAW TRIM PWR.

A/P Disc Button RELEASE

END

STEERING RUNAWAY

Steer Disc Switch PRESS

Steer the airplane using differential braking and rudder.

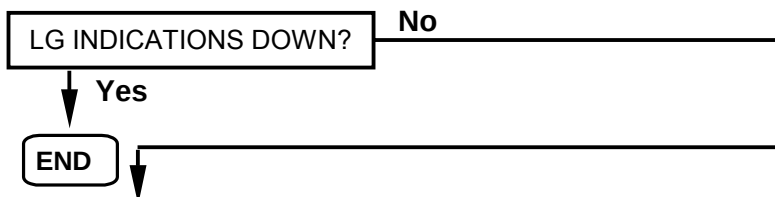
END

EMERGENCY AND ABNORMAL PROCEDURES

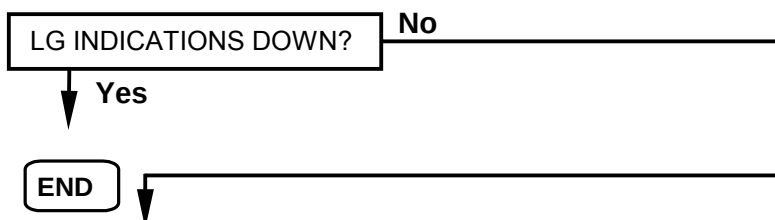
Non Annunciated

ABNORMAL LANDING GEAR EXTENSION

Landing Gear LeverDOWN
Electrical Override Switch.....GEAR DOWN



Alternate Gear Extension Lever.....PULL
Landing Gear Indications.....CHECK



PARTIAL OR GEAR UP LANDING
Procedure (NAP1-29).....ACCOMPLISH

END

BLANK DISPLAY UNIT WITHOUT AUTOMATIC REVERSION

Select the affected side reversionary panel display
selector to PFD or EICAS, as required.

END

EMERGENCY AND ABNORMAL PROCEDURES

Non Annunciated

ENGINE ABNORMAL VIBRATION

EICAS Indication: Engine vibration indication may be displayed in amber.

Autothrottle..... DISENGAGE

ENG VIBRATION DUE TO ICE ACCUMULATION?

No

Yes

**Associated Thrust Lever REDUCE TO IDLE,
THEN ADVANCE TO
MIN 70% N1**

..... Wait 30 seconds

Associated Thrust Lever AS REQUIRED

END

Associated Thrust Lever REDUCE

Reduce thrust to keep vibration within normal range.

**If other engine parameters become abnormal or exceed
operating limits:**

ENGINE SHUTDOWN

Procedure (NAP1-20)..... ACCOMPLISH

END

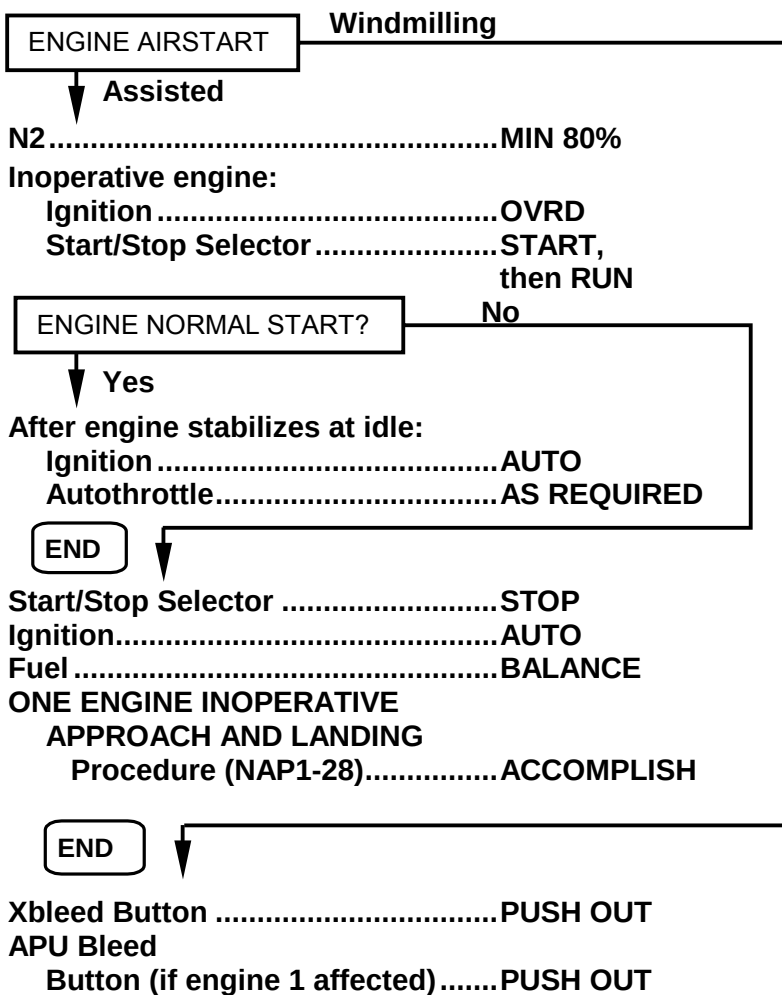
EMERGENCY AND ABNORMAL PROCEDURES

Non Annunciated

ENGINE AIRSTART

- NOTE:** - Windmilling starts accomplished with residual ITT below 90°C are more reliable.
- If flight conditions permit operate the engine at idle for 2 minutes prior to apply engine thrust.

Autothrottle **DISENGAGE**
Airstart Envelope (NAP1-19) **CHECK**



(Continues on the next page)

EMERGENCY AND ABNORMAL PROCEDURES

Non Annunciated

(Continued from the previous page)

Inoperative engine:

N2..... MIN 7.2%
Ignition..... OVRD
Start/Stop Selector..... START,
then RUN

ENGINE NORMAL START?

No

Yes

After engine stabilizes at idle:

Xbleed Button PUSH IN
APU Bleed Button PUSH IN
Ignition..... AUTO
Autothrottle AS REQUIRED

END

Xbleed Button PUSH IN
APU Bleed Button..... PUSH IN
Start/Stop Selector STOP
Ignition AUTO

ONE ENGINE INOPERATIVE

APPROACH AND LANDING

Procedure (NAP1-28) ACCOMPLISH

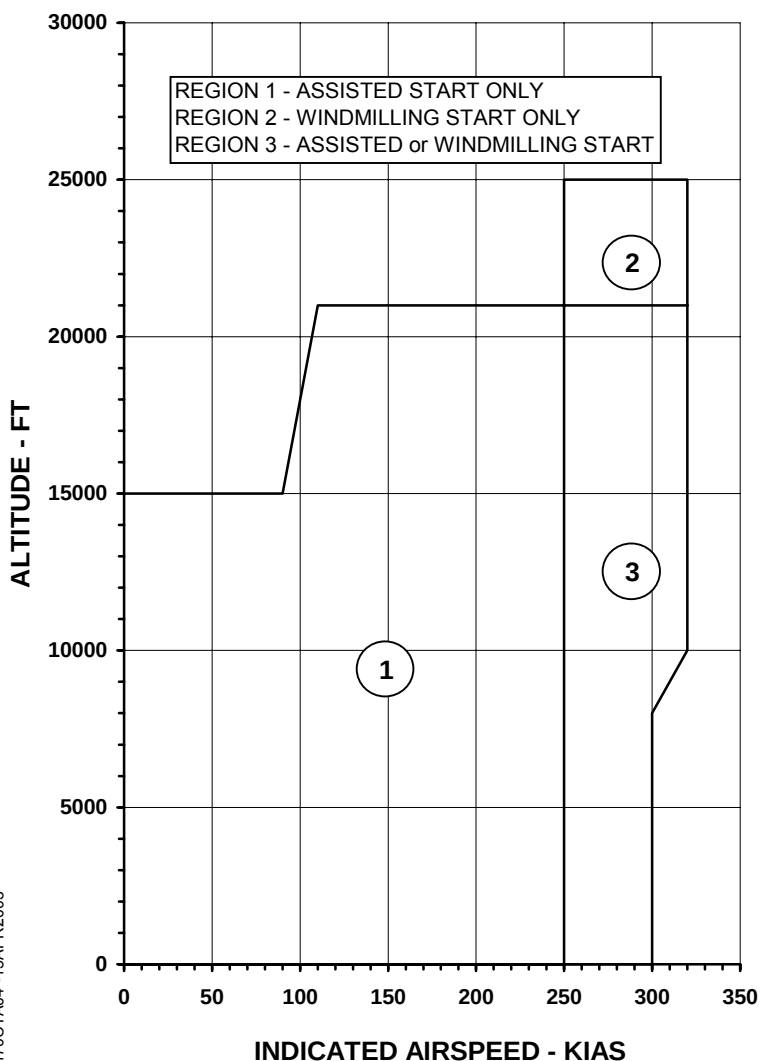
END

EMERGENCY AND ABNORMAL PROCEDURES

Non Annunciated

ENGINE AIRSTART ENVELOPE

ENGINE AIRSTART ENVELOPE



170CTA04 -15APR2003

QRH-1510

ORIGINAL

NAP1-19

EMERGENCY AND ABNORMAL PROCEDURES

Non Annunciated

ENGINE ITT OVERTEMPERATURE

CONDITION: ITT pointer and digits flashing red.

Autothrottle..... DISENGAGE

Associated Thrust Lever..... REDUCE

Reduce engine thrust to keep ITT within limits.

END

ENGINE SHUTDOWN

LAND AT THE NEAREST SUITABLE AIRPORT

Autothrottle..... DISENGAGE

Affected engine:

Thrust Lever..... IDLE

Start/Stop Selector..... STOP

APU..... START

Fuel..... BALANCE

When appropriate:

ONE ENGINE INOPERATIVE

APPROACH AND LANDING

Procedure (NAP1-28)..... ACCOMPLISH

END

GEAR LEVER CAN NOT BE MOVED UP

Landing Gear Lever..... DOWN

LG WOW SYS FAIL

Procedure (EAP13-5)..... ACCOMPLISH

NOTE: The downlock override button may be pressed to move the landing gear lever up if climb performance is required to clear obstacles.

If a go around is required:

Landing Gear..... DOWN

END

EMERGENCY AND ABNORMAL PROCEDURES

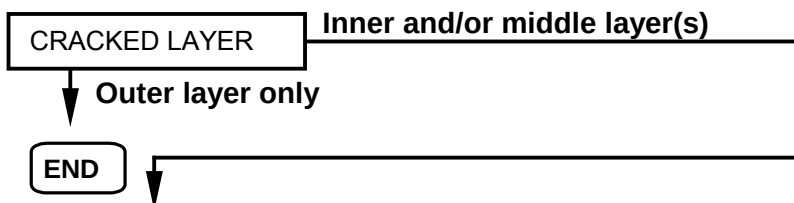
Non Annunciated

IMPAIRED OR CRACKED WINDSHIELD

Affected Windshield

Heating ButtonPUSH OUT
Cockpit DoorCLOSE

NOTE: There is a windshield heating wire between the middle and outer layers that can be used as a reference to determine which layer is cracked. If the wire can be seen without a gap the crack is in the outer layer, and if there is a wire discontinuity, the crack may be located in the middle and/or inner layers.



CAUTION: ACCOMPLISH THE DESCENT IN A MAXIMUM OF 15 MINUTES.

AirspeedMAX 220 KIAS
Altitude10000 FT OR MEA,
WHICHEVER IS
HIGHER

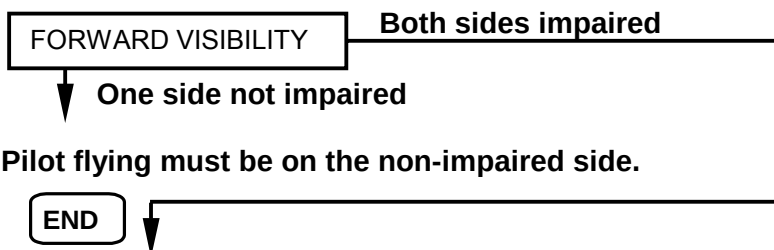
During Descent:

Pressurization Mode
SelectorMAN
Cabin AltitudeINCREASE

NOTE: Maintain cabin altitude at 10000 ft while descending the airplane.

At or below 10000 ft

Pack 1 ButtonPUSH OUT
Pack 2 ButtonPUSH OUT



AirspeedMAX 140 KIAS
Direct Vision WindowOPEN

END

EMERGENCY AND ABNORMAL PROCEDURES

Non Annunciated

LOSS OF APU INDICATIONS

CONDITION: APU RPM or APU EGT indication on EICAS is displayed in amber dashes.

APU ESSENTIAL FOR THE FLIGHT?

No

Yes

Monitor the APU for the remainder of the flight. If any APU fault message is displayed on EICAS:

APU Emergency Stop Button PUSH IN
APU Master Selector OFF
Do not restart the APU.

END

EMERGENCY AND ABNORMAL PROCEDURES

Non Annunciated

LOSS OF HYDRAULIC SYSTEM 1

- NOTE:** - Expect lower roll rates and lower speedbrake efficiency.
- Do not accomplish the SPOILER FAULT procedure.

Relevant Inoperative Items:

Multi Function Spoilers L3, R3, L4 and R4	Engine 1 Reverser
Ground Spoiler L2 and R2	Outboard Brakes
Autopilot	

Plan a long final approach.

Landing configuration:

Slat/FlapFULL

Set V_{REF FULL}.

CAUTION: MULTIPLY THE FULL FLAPS UNFACTORED LANDING DISTANCE BY 1.90.

LOSS OF HYDRAULIC SYSTEM 2

- NOTE:** - Expect lower roll rates and lower speedbrake efficiency.
- Do not accomplish the SPOILER FAULT procedure.

Relevant Inoperative Items:

Multi Function Spoilers L5 and R5	Landing Gear Retraction and Normal Extension
Ground Spoilers L1 and R1	Nosewheel Steering
Engine 2 Reverser	Inboard Brakes

Plan a long final approach.

Landing configuration:

Landing Gear Lever.....DOWN

Alternate Gear Extension Lever .PULL

Slat/FlapFULL

Set V_{REF FULL}.

CAUTION: MULTIPLY THE FULL FLAPS UNFACTORED LANDING DISTANCE BY 1.80.

If a go around is required:

Landing GearDOWN

END

EMERGENCY AND ABNORMAL PROCEDURES

Non Annunciated

LOSS OF HYDRAULIC SYSTEM 3

Back up hydraulic power to R.H. elevator, to rudder and ailerons will not be available.

END

LOSS OF HYDRAULIC SYSTEM 1 AND 2

LAND AT THE NEAREST SUITABLE AIRPORT

- NOTE:** - Expect lower roll and pitch rates.
- Do not accomplish the ELEVATOR FAULT and the SPOILER FAULT procedures.
 - Apply the Emergency/Parking Brake to stop the airplane monitoring the Emergency/Parking Brake light.
 - When the Emergency/Parking Brake light is on, maintain steady pressure since the Anti-Skid protection is not available.

Relevant Inoperative Items:

L.H. Elevator	Nosewheel Steering
Multi Function Spoilers L3, R3, L4, R4, L5 and R5	Engine 1 and Engine 2 Reversers
Ground Spoilers L1, R1, L2 and R2	Outboard and Inboard Brakes
Speedbrake	Landing Gear Retraction and Normal Extension
Autopilot	

Plan a long final approach.

Landing configuration:

Landing Gear Lever..... DOWN

Alternate Gear Extension

Lever PULL

Slat/Flap 5

Set $V_{REF} = V_{REF FULL} + 10$ KIAS.

CAUTION: MULTIPLY THE FULL FLAPS UNFACTORED
LANDING DISTANCE BY 2.70.

If a go around is required:

Landing Gear Lever DOWN

Slat/Flap 5

Airspeed $V_{REF FULL} + 10$ KIAS

END

EMERGENCY AND ABNORMAL PROCEDURES

Non Annunciated

LOSS OF HYDRAULIC SYSTEM 1 AND 3

LAND AT THE NEAREST SUITABLE AIRPORT

- NOTE:** - Expect lower roll rates and lower speedbrake efficiency.
- Do not accomplish the SPOILER FAULT procedure.

Relevant Inoperative Items:

Rudder	Engine 1 Reverser
Multi Function Spoilers L3, R3, L4 and R4	Outboard Brakes
Ground Spoilers L2 and R2	Autopilot

Landing configuration:

Slat/Flap5

Set $V_{REF} = V_{REF FULL} + 10$ KIAS.

- CAUTION:** • AVOID LANDING WITH CROSSWIND COMPONENTS ABOVE 10 KNOTS.
- MULTIPLY THE FULL FLAPS UNFACTORED LANDING DISTANCE BY 2.30.

END

EMERGENCY AND ABNORMAL PROCEDURES

Non Annunciated

LOSS OF HYDRAULIC SYSTEM 2 AND 3

LAND AT THE NEAREST SUITABLE AIRPORT

- NOTE:** - Expect lower roll and pitch rates and lower speedbrake efficiency.
- Do not accomplish the ELEVATOR FAULT and the SPOILER FAULT procedures.

Relevant Inoperative Items:

R.H. Elevator	Engine 2 Reverser
Ailerons	Inboard Brakes
Multi Function Spoilers L5 and R5	Landing Gear Retraction and Normal Extension
Ground Spoilers L1 and R1	Nose Wheel Steering

Plan a long final approach.

Landing configuration:

Landing Gear Lever DOWN

Alternate Gear Extension Lever . PULL

Slat/Flap..... 5

Set $V_{REF} = V_{REF FULL} + 10$ KIAS.

CAUTION: • AVOID LANDING WITH CROSSWIND COMPONENTS ABOVE 10 KNOTS.

- MULTIPLY THE FULL FLAPS UNFACTORED LANDING DISTANCE BY 2.20.

If a go around is required:

Landing Gear Lever DOWN

Slat/Flap..... 5

Airspeed $V_{REF FULL} + 10$ KIAS

END

**EMERGENCY AND ABNORMAL
PROCEDURES**

Non Annunciated

LOSS OF PRESSURIZATION INDICATION

CONDITION: Cabin altitude or cabin ΔP is not being presented, or during use of the pressurization manual control.

AIRPLANE/CABIN ALTITUDE CONVERSION TABLE

AIRPLANE ALTITUDE (ft)	CABIN ALTITUDE (ft)	DIFFERENTIAL PRESSURE (PSID)
10000	600	4.3
11000	700	4.6
12000	800	4.9
13000	1000	5.2
14000	1100	5.5
15000	1300	5.7
16000	1500	6.0
17000	1600	6.2
18000	1800	6.4
19000	2000	6.6
20000	2200	6.8
21000	2500	6.9
22000	2700	7.1
23000	2900	7.3
24000	3100	7.4
25000	3400	7.5
26000	3700	7.6
27000	3900	7.7
28000	4200	7.8
29000	4400	7.9
30000	4700	8.0
31000	5000	8.1
32000	5300	8.1
33000	5600	8.2
34000	5900	8.2
35000	6200	8.2
36000	6500	8.3
37000	6800	8.3
38000	7100	8.3
39000	7400	8.3
40000	7700	8.3
41000	8000	8.3

END

EMERGENCY AND ABNORMAL PROCEDURES

Non Annunciated

ONE ENGINE INOPERATIVE APPROACH AND LANDING

Descent:

Landing Data SET
Approach Aids SET
Altimeters SET/CHECK

Landing Configuration:

Landing Gear DOWN
Slat/Flap 5
Set $V_{REF} = V_{REF FULL} + 20$ KIAS.

CAUTION: MULTIPLY THE FULL FLAPS UNFACTORED
LANDING DISTANCE BY 1.50.

If a go around is required:

Go Around Button PRESS
Thrust Levers TOGA

Rotate the airplane following the flight director
guidance.

NOTE: In case of flight director guidance is
inoperative, rotate the airplane to 8° nose up.

Slat/Flap 2

With positive climb:

Landing Gear UP
Airspeed Approach Climb
Speed (flaps 2)

END

OXYGEN LEAKAGE

CONDITION: Evidence of oxygen leakage through the crew
masks, mask hose, flow indicator or oxygen
lines.

No Smoking ON
Oxygen Test/Reset Button ACTUATE
Altitude AS REQUIRED

END

**EMERGENCY AND ABNORMAL
PROCEDURES**

Non Annunciated

PARTIAL OR GEAR UP LANDING

NOTE: - Plan to land on available gear.
- Burn off fuel to reduce touchdown speed.

Prior to approach:

Cabin CrewNOTIFY
Aural Warning CB's (C7; C31)PULL
APU.....OFF
Pressurization Dump ButtonPUSH IN
Landing Gear Lever.....DOWN
Slat/FlapFULL

Just Before Touchdown:

CabinANNOUNCE

After Landing:

Thrust Levers.....IDLE
Start/Stop SelectorsSTOP
Fire Extinguishing HandlesPULL AND ROTATE
Emergency EvacuationANNOUNCE
Batteries.....OFF

If a go around is required:

Landing Gear Lever.....DOWN

END

EMERGENCY AND ABNORMAL PROCEDURES

Non Annunciated

STRUCTURAL DAMAGE

LAND AT THE NEAREST SUITABLE AIRPORT

Airspeed MAX 200 KIAS

Avoid high maneuvering loads.

FUSELAGE IS DAMAGED?

No

Yes

Altitude 10000 FT OR MEA,
WHICHEVER IS
HIGHER

When reaching 10000 ft:

Pressurization Dump

Button PUSH IN

Establish landing configuration early.

END

EMERGENCY AND ABNORMAL PROCEDURES

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ORH-1510

REVISION 1

EAP0-1

EMERGENCY AND ABNORMAL PROCEDURES

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EMERGENCY AND ABNORMAL PROCEDURES

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EMERGENCY AND ABNORMAL PROCEDURES

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EMERGENCY AND ABNORMAL PROCEDURES

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**EMERGENCY AND ABNORMAL
PROCEDURES**

Airplane General (Cargo Compartment/Doors/Lighting)

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DOOR HYD OPEN	EAP1-4
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EMERGENCY AND ABNORMAL PROCEDURES

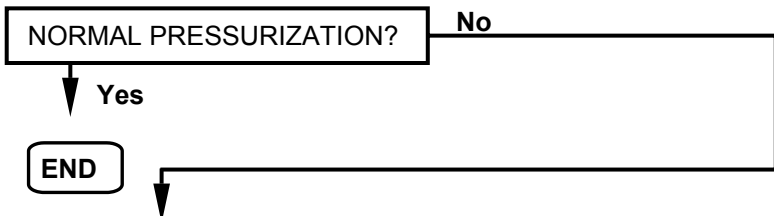
Airplane General (Cargo Compartment/Doors/Lighting)

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EMERGENCY AND ABNORMAL PROCEDURES

Airplane General (Cargo Compartment/Doors/Lighting)

DOOR CRG FWD (AFT) OPEN



LAND AT THE NEAREST SUITABLE AIRPORT.

Altitude..... 10000 FT OR MEA,
WHICHEVER IS HIGHER

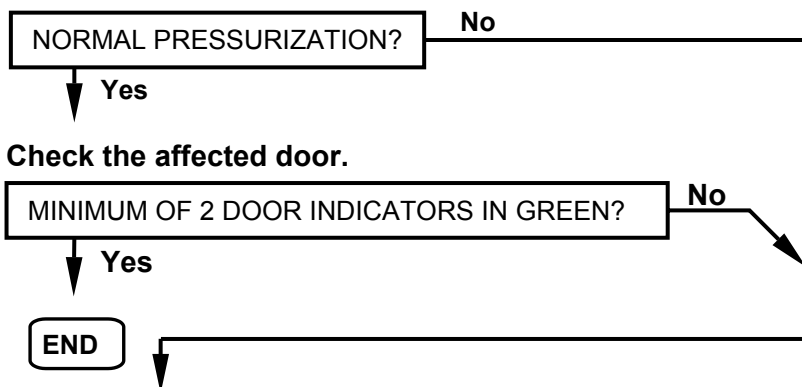
At 10000 ft:

Pressurization Dump Button..... PUSH IN

END

DOOR PAX (SERV) FWD (AFT) OPEN

Fasten Seat Belts ON



LAND AT THE NEAREST SUITABLE AIRPORT.

Altitude..... 10000 FT OR MEA,
WHICHEVER IS HIGHER

At 10000 ft:

Pressurization Dump Button..... PUSH IN

END

EMERGENCY AND ABNORMAL PROCEDURES

Airplane General (Cargo Compartment/Doors/Lighting)

DOOR CENTER (FWD) EBAY OPEN

NORMAL PRESSURIZATION?

No

Yes

END

Altitude 10000 FT OR MEA,
WHICHEVER IS
HIGHER

END

DOOR FUELING OPEN

Monitor the airplane systems.

END

DOOR HYD OPEN

Airspeed MAX 250 KIAS

END

EMER LT NOT ARMED

Emergency Lights..... ARMED

END

EMER LT ON

Emergency Lights..... OFF, then ARMED

END

EMERGENCY AND ABNORMAL PROCEDURES

AMS - Pneumatics/Air
Conditioning/Pressurization

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WARNING

CABIN ALTITUDE HI	EAP2-3
-------------------------	--------

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FWD EBAY FANS FAIL.....	EAP2-7
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PACK 2 LEAK	EAP2-8
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PRES MAN FAIL	EAP2-9
PRESSURIZATION CONVERSION TABLE	EAP2-10
RECIRC SMK DET FAIL	EAP2-11

ADVISORY

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EMERGENCY AND ABNORMAL PROCEDURES

AMS - Pneumatics/Air
Conditioning/Pressurization

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EMERGENCY AND ABNORMAL
PROCEDURES

AMS - Pneumatics/Air
Conditioning/Pressurization

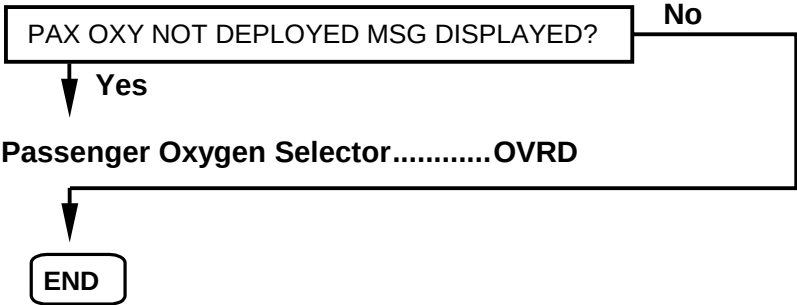
CABIN ALTITUDE HI

EICAS Indication: Cabin Altitude indication in red.

Aural Warning: CABIN

Altitude	10000 FT or MEA, WHICHEVER IS HIGHER
Thrust Levers	IDLE
SpeedBrake	FULL OPEN
Airspeed	MAX/APPROPRIATE
Transponder	7700
ATC	NOTIFY

Cabin AltitudeMONITOR



EMERGENCY AND ABNORMAL PROCEDURES

AMS - Pneumatics/Air
Conditioning/Pressurization

AMS CTRL FAIL

Icing Conditions EXIT/AVOID
Altitude 10000 FT OR MEA,
WHICHEVER IS
HIGHER

At 10000 ft:
Pressurization Dump Button..... PUSH IN

NOTE: – Assisted crossbleed start is not available.
– Pneumatic assisted engine start APU is not
available.

END

BLEED APU LEAK

APU Bleed Button..... PUSH OUT
..... Wait 3 minutes.....

BLEED APU LEAK MESSAGE EXTINGUISHES?

No

Yes

END

APU Emergency Stop Button PUSH IN
APU..... OFF

BLEED APU LEAK MESSAGE EXTINGUISHES?

No

Yes

Bleed 1 Button PUSH OUT
XBleed Button..... PUSH OUT
Verify BLEED 1 OFF and XBLEED SW OFF
messages displayed on EICAS.

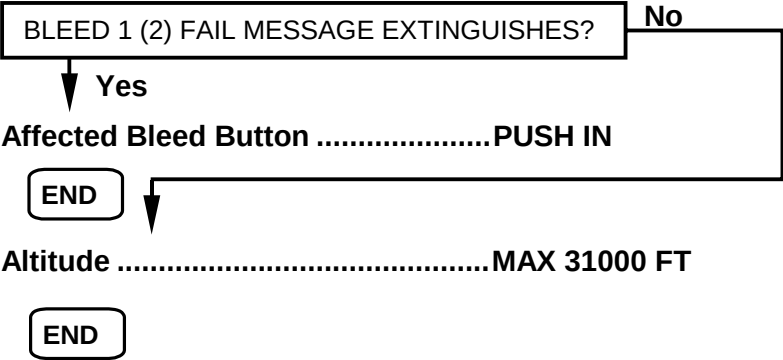
END

**EMERGENCY AND ABNORMAL
PROCEDURES**

AMS - Pneumatics/Air
Conditioning/Pressurization

BLEED 1 (2) FAIL

Affected Bleed ButtonPUSH OUT
.....Wait 1 minute



EMERGENCY AND ABNORMAL PROCEDURES

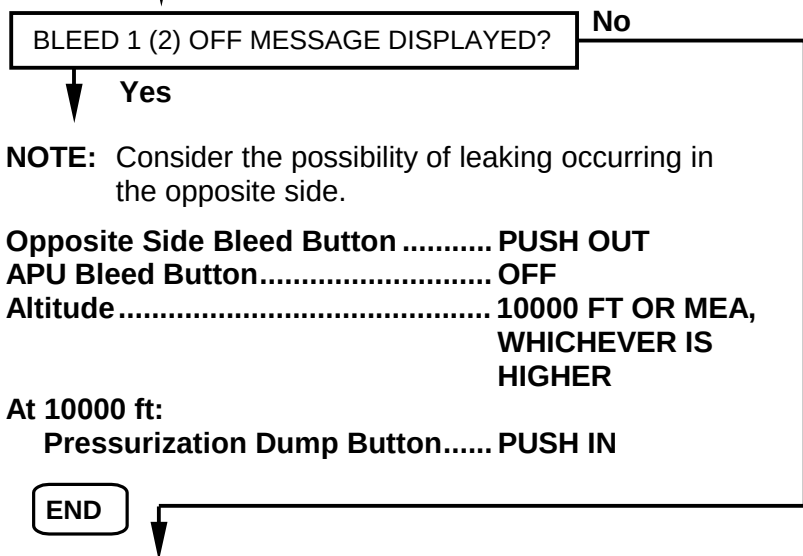
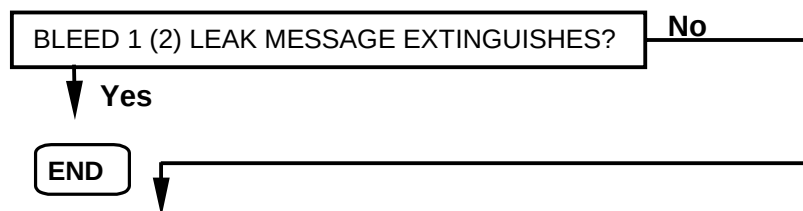
AMS - Pneumatics/Air
Conditioning/Pressurization

BLEED 1 (2) LEAK

Light : Amber stripped bar illuminates inside the affected bleed button.

Affected Bleed Button PUSH OUT
APU Bleed Button (if applicable).... PUSH OUT
XBleed Button..... PUSH OUT
Icing Conditions EXIT/AVOID
Altitude MAX 31000 FT

..... Wait 3 minutes.....



Associated Thrust Lever IDLE
When applicable:
ONE ENGINE INOPERATIVE
APPROACH AND LANDING
Procedure (NAP1-28) ACCOMPLISH

END

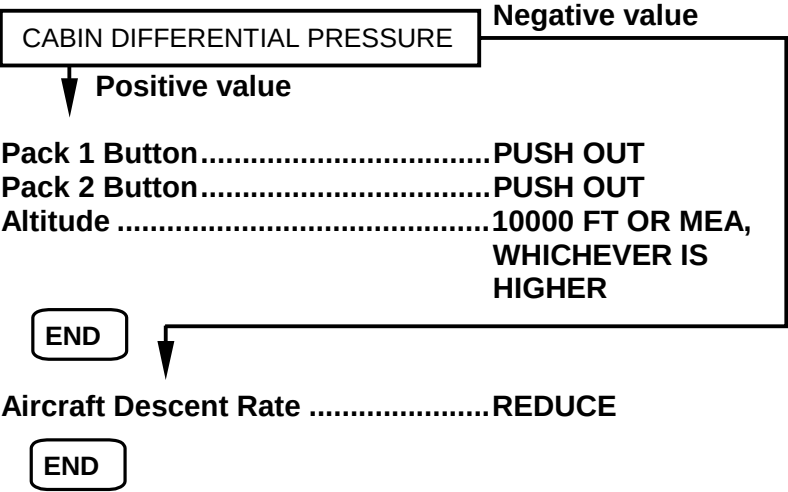
**EMERGENCY AND ABNORMAL
PROCEDURES**

AMS - Pneumatics/Air
Conditioning/Pressurization

CABIN DIFF PRESS FAIL

EICAS Indication: Abnormal cabin altitude indication may be presented.

If Cabin Differential Pressure red limit is reached:



CENTER EBAY FANS FAIL

LAND AT THE NEAREST SUITABLE AIRPORT.

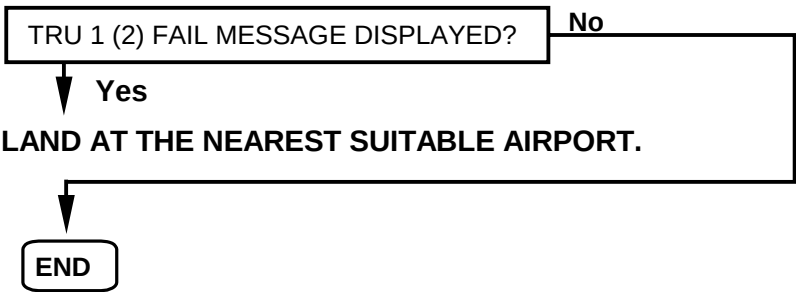
END

CRG FWD VENT FAIL

LAND AT THE NEAREST SUITABLE AIRPORT.

END

FWD EBAY FANS FAIL



EMERGENCY AND ABNORMAL PROCEDURES

AMS - Pneumatics/Air
Conditioning/Pressurization

PACK 1 (2) FAIL

Associated Temperature

Controller..... 12 O'CLOCK
Affected Pack Button PUSH OUT
..... Wait 1 minute.....
Affected Pack Button PUSH IN

PACK 1 (2) FAIL MESSAGE EXTINGUISHES?

No

Yes

After 1 minute:

Associated Temperature

Controller..... OPERATE
NORMALLY

END

Affected Pack Button PUSH OUT
Altitude MAX 31000 FT

END

PACK 2 LEAK

Pack 2 Button PUSH OUT
Altitude MAX 31000 FT
..... Wait 3 minutes.....

PACK 2 LEAK MESSAGE EXTINGUISHES?

No

Yes

END

Icing Conditions EXIT/AVOID
Bleed 2 Button PUSH OUT
XBleed Button..... PUSH OUT

END

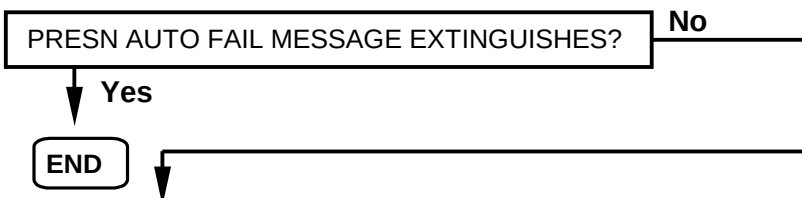
EMERGENCY AND ABNORMAL PROCEDURES

AMS - Pneumatics/Air
Conditioning/Pressurization

PRESN AUTO FAIL

EICAS Indication: Landing Field Elevation indications
showing amber dashes.

Pressurization Mode Selector.....MAN, then AUTO



Pressurization Mode Selector.....MAN

Cabin Alt ControllerAS REQUIRED

Operate the cabin alt controller to set pressurization
according to conversion table (EAP2-10).

At 5000 FT AGL:

**Cabin Alt ControllerHOLD UP FOR
50 SECONDS**

END

PRESN MAN FAIL

**Altitude10000 FT or MEA,
WHICHEVER IS
HIGER**

At 25000 FT:

Pack 1 ButtonPUSH OUT

At 10000 FT:

Pack 2 ButtonPUSH OUT

END

EMERGENCY AND ABNORMAL PROCEDURES

AMS - Pneumatics/Air
Conditioning/Pressurization

PRESSURIZATION CONVERSION TABLE

NOTE: This table must be used to manually control the cabin altitude/ ΔP .

AIRPLANE ALTITUDE (ft)	CABIN ALTITUDE (ft)	DIFFERENTIAL PRESSURE (PSID)
10000	600	4.3
11000	700	4.6
12000	800	4.9
13000	1000	5.2
14000	1100	5.5
15000	1300	5.7
16000	1500	6.0
17000	1600	6.2
18000	1800	6.4
19000	2000	6.6
20000	2200	6.8
21000	2500	6.9
22000	2700	7.1
23000	2900	7.3
24000	3100	7.4
25000	3400	7.5
26000	3700	7.6
27000	3900	7.7
28000	4200	7.8
29000	4400	7.9
30000	4700	8.0
31000	5000	8.1
32000	5300	8.1
33000	5600	8.2
34000	5900	8.2
35000	6200	8.2
36000	6500	8.3
37000	6800	8.3
38000	7100	8.3
39000	7400	8.3
40000	7700	8.3
41000	8000	8.3

END

EMERGENCY AND ABNORMAL PROCEDURES

AMS - Pneumatics/Air
Conditioning/Pressurization

RECIRC SMK DET FAIL

Recirc Fan ButtonPUSH OUT

END

**EMERGENCY AND ABNORMAL
PROCEDURES**

AMS - Pneumatics/Air
Conditioning/Pressurization

BLEED 1 (2) OFF

Altitude MAX 31000 FT

END

PACK 1 (2) OFF

Altitude MAX 31000 FT

END

**EMERGENCY AND ABNORMAL
PROCEDURES**

Autoflight

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AP PITCH TRIM FAIL	EAP3-3
AP ROLL MISTRIM	EAP3-3
AT FAIL	EAP3-3
AT NOT IN HOLD.....	EAP3-3
FD LATERAL MODE OFF	EAP3-4
FD VERT MODE OFF.....	EAP3-4
SHAKER ANTICIPATED	EAP3-4
STALL PROT FAIL.....	EAP3-5

EMERGENCY AND ABNORMAL PROCEDURES

Autoflight

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EMERGENCY AND ABNORMAL PROCEDURES

Autoflight

AP FAIL

Fly the airplane manually.

END

AP PITCH MISTRIM

Control Wheel..... HOLD FIRMLY
A/P Disc Button..... PRESS
Pitch Trim AS REQUIRED
Autopilot AS REQUIRED

END

AP PITCH TRIM FAIL

Control Wheel..... HOLD FIRMLY
A/P Disc Button..... PRESS
Pitch Trim AS REQUIRED

END

AP ROLL MISTRIM

Roll Trim AS REQUIRED

END

AT FAIL

Operate thrust levers manually.

END

AT NOT IN HOLD

Disengage the autothrottle.

END

EMERGENCY AND ABNORMAL PROCEDURES

Autoflight

FD LATERAL MODE OFF

Select a flight director lateral mode.

END

FD VERT MODE OFF

Select a flight director vertical mode.

END

SHAKER ANTICIPATED

Avoid side slipping the airplane.

Airspeed MAX 0.5 MACH

FLAP (SLAT) FAIL MESSAGE PRESENTED?

No

Yes

Slats and flaps external marks can be used to determine the slat and flap position. Use the table presented on the Flap (Slat) Fail Procedure (EAP8-6) to choose the proper landing reference data.

NOTE: If the slats or flaps are in an intermediate position, the pilot must consider the first consequent more retracted position of the failed surface than the one indicated on the external marks.

END

Landing Configuration:

Slat/Flap FULL

Set $V_{REF FULL}$.

END

EMERGENCY AND ABNORMAL PROCEDURES

Autoflight

STALL PROT FAIL

CONDITION: Stick Shaker and AOA Limiting are inoperative.

Avoid side slipping the airplane.

Landing Configuration:

For flaps 5, set $V_{REF} = V_{REF FULL} + 15$ KIAS.

CAUTION: MULTIPLY THE FULL FLAPS
UNFACTORED LANDING DISTANCE
BY 1.40.

For flaps FULL, set $V_{REF} = V_{REF FULL} + 10$ KIAS.

CAUTION: MULTIPLY THE FULL FLAPS
UNFACTORED LANDING DISTANCE
BY 1.22.

END

EMERGENCY AND ABNORMAL PROCEDURES

Autoflight

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**EMERGENCY AND ABNORMAL
PROCEDURES**

Auxiliary Power Unit

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CAUTION

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APU OIL HI TEMP.....	EAP4-4
APU OIL LO PRESS	EAP4-4

EMERGENCY AND ABNORMAL PROCEDURES

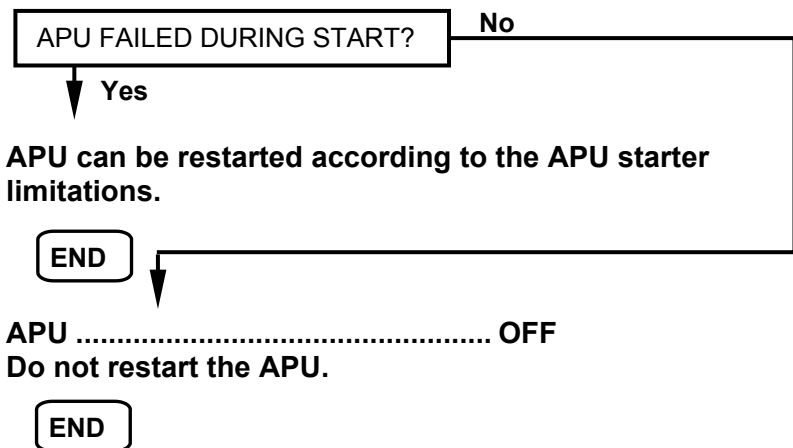
Auxiliary Power Unit

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EMERGENCY AND ABNORMAL PROCEDURES

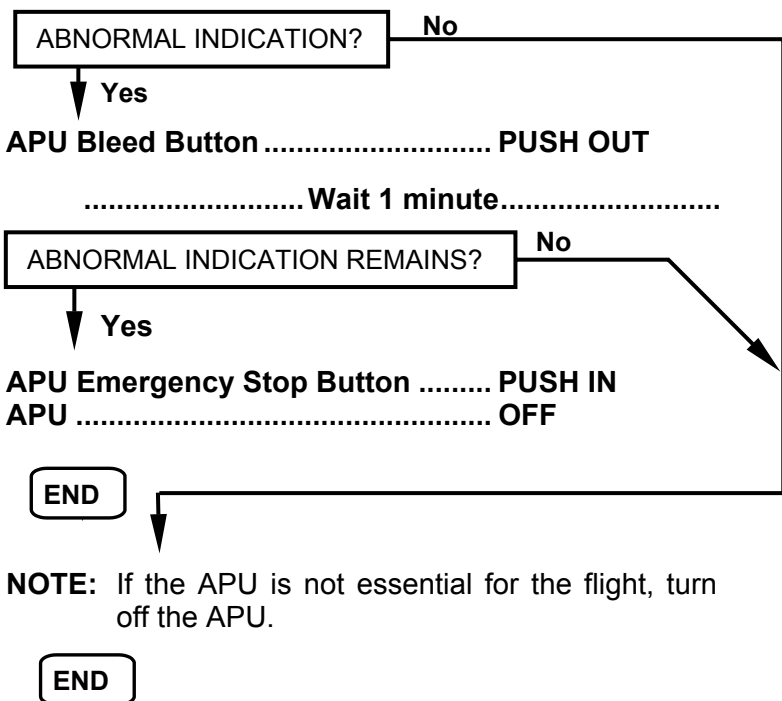
Auxiliary Power Unit

APU FAIL



APU FAULT

EICAS Indication: Abnormal APU EGT indication may be presented.



EMERGENCY AND ABNORMAL PROCEDURES

Auxiliary Power Unit

APU OIL HI TEMP

APU FAULT Procedure (EAP4-3).... ACCOMPLISH

END

APU OIL LO PRESS

APU FAULT Procedure (EAP4-3).... ACCOMPLISH

END

EMERGENCY AND ABNORMAL PROCEDURES

Electrical

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BATT 1-2 OFF	EAP5-3
ELEC EMERGENCY	EAP5-4

CAUTION

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EMERGENCY AND ABNORMAL PROCEDURES

Electrical

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**EMERGENCY AND ABNORMAL
PROCEDURES**

Electrical

BATT DISCHARGING

LAND AT THE NEAREST SUITABLE AIRPORT.

END

BATT 1 (2) OVERTEMP

Associated Battery.....OFF

NOTE: Do not start the APU.

END

BATT 1-2 OFF

LAND AT THE NEAREST SUITABLE AIRPORT.

NOTE: APU start is not available.

END

**EMERGENCY AND ABNORMAL
PROCEDURES**

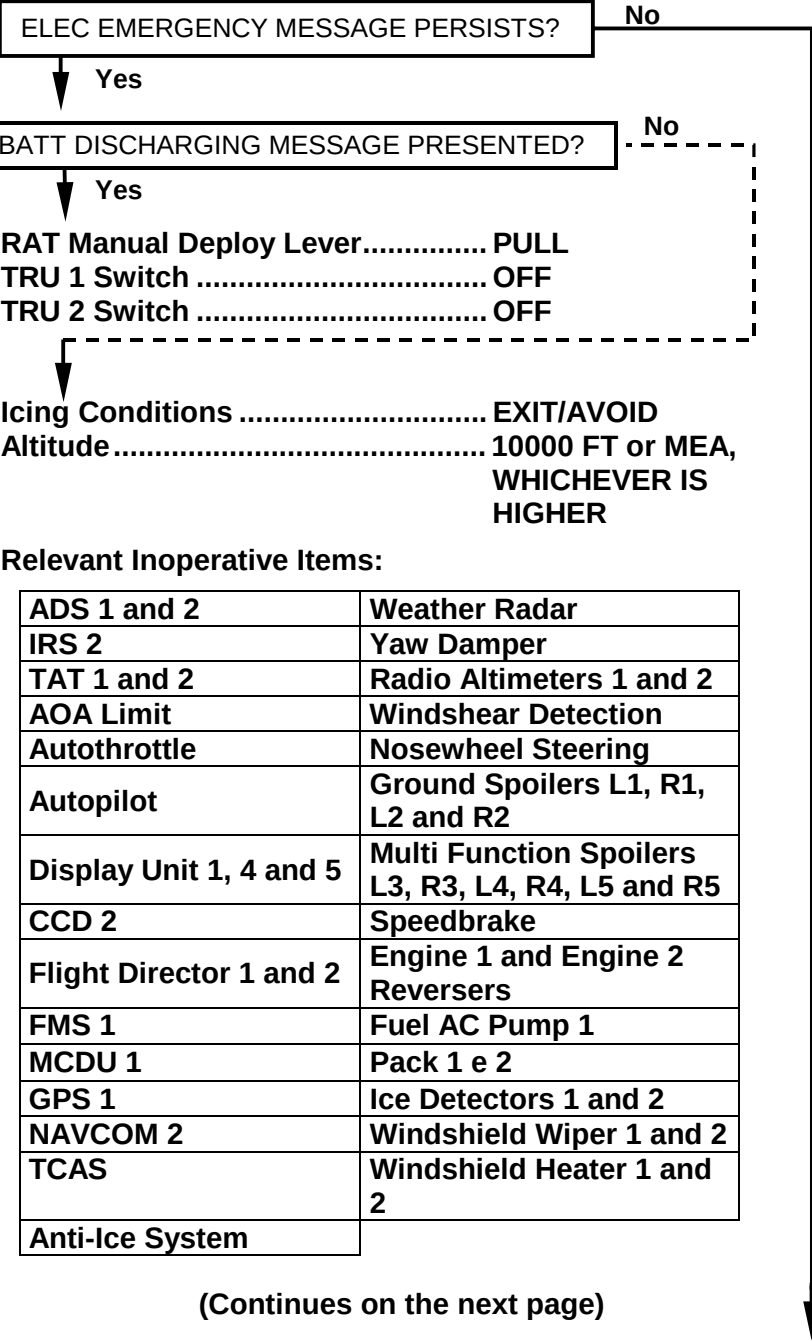
Electrical

ELEC EMERGENCY

LAND AT THE NEAREST SUITABLE AIRPORT.

Airspeed MIN 130 KIAS
APU START
IDG 1 Selector OFF, then AUTO
IDG 2 Selector OFF, then AUTO
Emergency Lights OFF

NOTE: Only two APU start attempts are allowed.



EMERGENCY AND ABNORMAL PROCEDURES

Electrical

(Continued from the previous page)

- NOTE:**
- Avoid side slipping the airplane.
 - On ground, use differential braking and rudder to steer the airplane.
 - The slats and flaps will operate at low rate.

Landing configuration:

Emergency LightsARMED

Gnd Prox Flap Ovrdr ButtonPUSH IN

Slat/Flap3

Set $V_{REF} = V_{REF FULL} + 20$ KIAS or $V_{REF} = 130$ KIAS
(whichever is higher).

CAUTION: MULTIPLY THE FULL FLAPS
UNFACTORED LANDING DISTANCE
BY 2.10.

If a go around is required:

Slat/Flap3

Airspeed $V_{REF FULL} + 20$ KIAS or
130 KIAS (whichever
is higher)

END

Flight Controls Mode Buttons
(Spoilers, Elevators and Rudder)....PUSH IN, then
OUT

Landing configuration:

Emergency LightsARMED

Gnd Prox Flap Ovrdr ButtonPUSH IN

Slat/Flap3

Set $V_{REF} = V_{REF FULL} + 20$ KIAS or $V_{REF} = 130$ KIAS
(whichever is higher).

CAUTION: MULTIPLY THE FULL FLAPS
UNFACTORED LANDING DISTANCE
BY 2.10.

If a go around is required:

Slat/Flap3

Airspeed $V_{REF FULL} + 20$ KIAS or
130 KIAS (whichever
is higher)

END

EMERGENCY AND ABNORMAL PROCEDURES

Electrical

AC BUS 1 OFF

Relevant Inoperative Items:

Fuel AC Pump 1
Hyd Sys 2 Elec Pump
Windshield Wiper 2
Windshield Heater 2
Ice Detector 1

NOTE: - The slats will operate at low rate.
- Fuel Crossfeed Low 2 is not available.

When flying in icing conditions:

Ice Protection Mode Selector..... ON

Two minutes after exiting icing conditions:

Ice Protection Mode Selector..... AUTO

END

AC BUS 2 OFF

Relevant Inoperative Items:

Hyd Sys 1 Elec Pump
Hyd Sys 3 Elec Pump B
Windshield Wiper 1
Windshield Heater 1
Ice Detector 2

NOTE: The flaps will operate at low rate.

When flying in icing conditions:

Ice Protection Mode Selector..... ON

Two minutes after exiting icing conditions:

Ice Protection Mode Selector..... AUTO

END

AC ESS BUS OFF

TRU ESS Switch OFF

Relevant Inoperative Items:

Fuel AC Pump 2
Hyd Sys 3 Elec Pump A

NOTE: – The flaps and slats will operate at low rate.
– Fuel Crossfeed Low 1 is not available.

END

EMERGENCY AND ABNORMAL PROCEDURES

Electrical

AC STBY BUS OFF

Monitor the electrical system.

Relevant Inoperative Items:

Ignition 1A

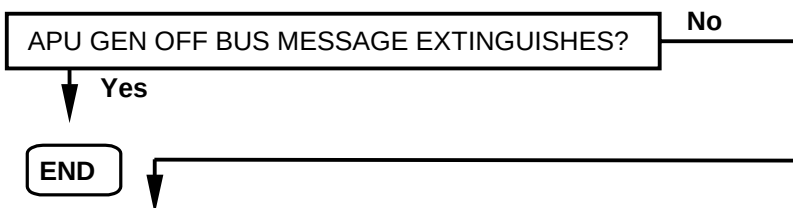
Ignition 2A

NOTE: Engine start with batteries only is not available.

END

APU GEN OFF BUS

APU Gen Button.....PUSH OUT, then IN

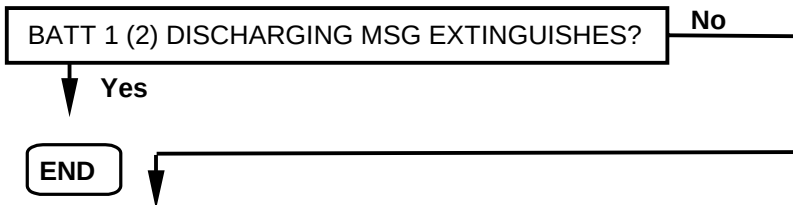


APU Gen Button.....PUSH OUT

END

BATT 1 (2) DISCHARGING

Associated TRU Switch.....OFF, then AUTO



Associated TRU Switch.....OFF

END

BATT 1 OFF

Battery 1VERIFY ON

NOTE: If battery 1 selector is off, APU start is not available.

END

EMERGENCY AND ABNORMAL PROCEDURES

Electrical

BATT 2 OFF

Battery 2..... VERIFY AUTO

END

DC BUS 1 OFF

Autothrottle..... DISENGAGE

Emergency Lights OFF

Altitude MAX 31000 FT

Relevant Inoperative Items:

Autopilot	Engine 1 Reverser
Autothrottle 1	PTU
MCDU 1	Hyd Sys 2 Elec Pump
CCD 2	Radio Altimeter 1
ADS 1	Multi Function Spoiler L5 and R5
Pack 1	Weather Radar
Display Unit 1	Windshield Wiper 2
Display Unit 4	Windshield Heater 2

NOTE: The slats will operate at low rate.

Landing Configuration:

Emergency Lights ARMED

Slat/Flap FULL

Set $V_{REF FULL}$.

CAUTION: MULTIPLY THE FULL FLAPS UNFACTORED LANDING DISTANCE BY 1.15.

END

**EMERGENCY AND ABNORMAL
PROCEDURES**

Electrical

DC BUS 2 OFF

AutothrottleDISENGAGE
AltitudeMAX 31000 FT

Relevant Inoperative Items:

Display Unit 5	Engines Indications	Vibration
ADS 2	NAVCOM 2	
Pack 2	Radio Altimeter 2	
Multi Function Spoilers L3, R3, L4 and R4	Transponder 2	
Roll Trim	TCAS	
Autothrottle 2	HF Transceiver	
Engine 2 Reverser	Speedbrake	
Nosewheel Steering	Windshield Heater 1	
Hyd Sys 1 Elec Pump	Windshield Wiper 1	
Hyd Sys 3 Elec Pump B	Pedal Adjustment Switch	

Landing Configuration:
Slat/FlapFULL
Set V_{REF FULL}

CAUTION: MULTIPLY THE FULL FLAPS UNFACTORED LANDING DISTANCE BY 1.20.

On ground:
Use differential braking and rudder to steer the airplane.

END

EMERGENCY AND ABNORMAL PROCEDURES

Electrical

DC ESS BUS 1 OFF

LAND AT THE NEAREST SUITABLE AIRPORT.

Icing Conditions EXIT/AVOID

Battery 1 OFF

Relevant Inoperative Items:

Display Unit 3	Hydraulic System 2 Depressurization Valve
ADS 1	Digital Audio Panel 1
Multi Function Spoilers L5 and R5	RAT Automatic Deployment
Outboard Brakes	NAVCOM 1
Engine 1 Start Valve	Transponder 1
Ignition 1A	Master Caution 1
Ignition 2A	Oil Pressure Indicator 1
APU	Fuel Quantity 1 Indication
Hyd Sys 3 Elec Pump A	Fwd LAV Smoke Detection

- NOTE:**
- Compass internal light will be lost.
 - FADEC will set flight idle on ground.
 - The flaps will operate at low rate.
 - Engine 2 windmill start is not available.
 - Thrust Reversers, Wing Anti-Ice and Ground Idle may not be available.
 - Expect lower roll rates and lower speedbrake efficiency.
 - Do not accomplish the SPOILER FAULT procedure.

Landing Configuration:

Slat/Flap FULL

Set $V_{REF FULL}$.

CAUTION: MULTIPLY THE FULL FLAPS UNFACTORED LANDING DISTANCE BY 1.70.

On Ground:

Brakes APPLY NORMALLY

If necessary:

Emergency / Parking Brake ... PULL

CAUTION: • APPLY THE EMERGENCY/PARKING BRAKE MONITORING THE EMERGENCY/PARKING BRAKE LIGHT.

- WHEN THE EMERGENCY/PARKING BRAKE LIGHT IS ON, MAINTAIN STEADY PRESSURE SINCE THE ANTI-SKID PROTECTION IS NOT AVAILABLE.

END

EMERGENCY AND ABNORMAL PROCEDURES

Electrical

DC ESS BUS 2 OFF

LAND AT THE NEAREST SUITABLE AIRPORT.

Icing Conditions.....EXIT/AVOID

Battery 2OFF

Relevant Inoperative Items:

Display Unit 2	Inboard Brakes
CCD 1	DC Fuel Pump
ADS 3	Fuel Quantity 2 Indication
IESS	Fuel Crossfeed Operation
ADS Standby	APU Fire Extinguishing
MCDU 2	APU Fuel Shutoff Valve
TCAS	APU Fire Detection
Master Warning/Caution 2	Aft Lavatory Smoke Detection
Aural Warning 2	Engine 2 Oil pressure indication
Digital Audio Panel 2	Engine 1 and Engine 2 Reversers
Multi Function Spoilers L3, R3, L4 and R4	Hydraulic System 1 Depressurization Valve

- NOTE:**
- The slats will operate at low rate.
 - FADEC will set flight idle on ground.
 - Engine 1 windmill start is not available.
 - Thrust Reversers, Wing Anti-Ice and Ground Idle may not be available.
 - Expect lower roll rates and lower speedbrake efficiency.
 - Do not accomplish the SPOILER FAULT procedure.

APUOFF

Landing Configuration:

Slat/FlapFULL

Set V_{REF FULL}

CAUTION: MULTIPLY THE FULL FLAPS UNFACTORED LANDING DISTANCE BY 1.80.

On Ground:

BrakesAPPLY NORMALLY

If necessary:

Emergency/Parking Brake.....PULL

(Continued on the next page)

EMERGENCY AND ABNORMAL PROCEDURES

Electrical

(Continued from the previous page)

CAUTION: • APPLY THE EMERGENCY/PARKING BRAKE
MONITORING THE EMERGENCY PARKING BRAKE LIGHT.

- WHEN THE EMERGENCY/PARKING BRAKE LIGHT IS ON, MAINTAIN STEADY PRESSURE SINCE THE ANTI-SKID PROTECTION IS NOT AVAILABLE.

END

DC ESS BUS 3 OFF

TRU ESS Switch OFF

DC ESS BUS 3 OFF MESSAGE EXTINGUISHES?

No

Yes

END

Relevant Inoperative Items:

Radio Altimeter 3	Fuel Crossfeed Valve
ADS 2	Landing Gear Override Switch
Internal Light of all Switches	Cargo Compartment Fire Bottles
Pax Address	Rudder Trim

NOTE: The flaps will operate at low rate.

APU..... OFF

END

GPU CONNECTED

Before Taxi:

GPU..... DISCONNECT

END

EMERGENCY AND ABNORMAL PROCEDURES

Electrical

IDG 1 (2) OFF BUS

Affected IDG SelectorOFF, then AUTO

IDG 1 (2) OFF BUS MESSAGE EXTINGUISHES?

No

Yes

END

Affected IDG SelectorOFF

APUAS REQUIRED

END

IDG 1 (2) OIL

Light : Affected IDG light becomes amber.

Affected IDG SelectorDISC

END

TRU 1 (2) FAIL

Affected TRU Switch.....OFF, then AUTO

TRU 1 (2) FAIL MESSAGE EXTINGUISHES?

No

Yes

END

Affected TRU Switch.....OFF

END

TRU ESS FAIL

TRU ESS Switch.....OFF

END

EMERGENCY AND ABNORMAL PROCEDURES

Electrical

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EMERGENCY AND ABNORMAL PROCEDURES

Engine

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ENG 1 (2) REV DEPLOYED	EAP6-3
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ENG REF A-I DISAG	EAP6-9
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EMERGENCY AND ABNORMAL PROCEDURES

Engine

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EMERGENCY AND ABNORMAL PROCEDURES

Engine

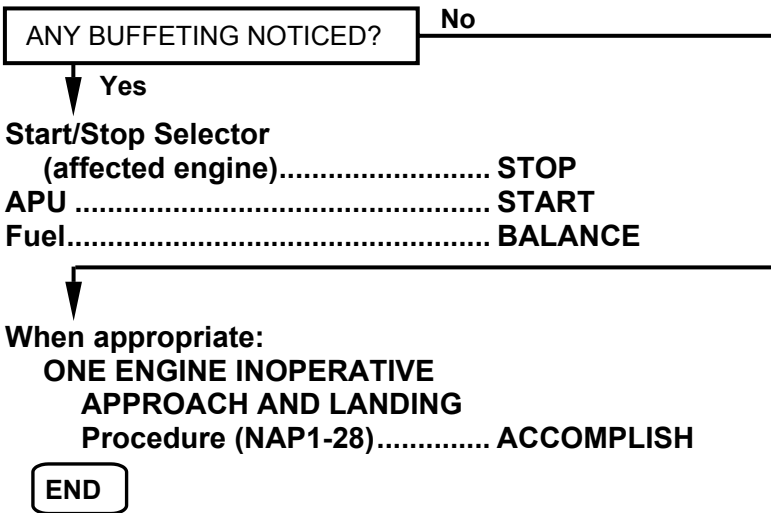
ENG 1 (2) REV DEPLOYED

EICAS Indication: REV icon above the associated ITT indication.

LAND AT THE NEAREST SUITABLE AIRPORT.

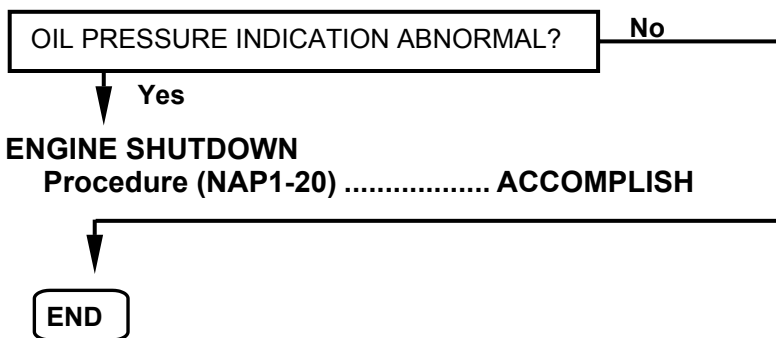
Autothrottle DISENGAGE

Associated Thrust Lever IDLE



ENG 1 (2) OIL LO PRESS

EICAS Indication: Oil pressure indication in amber may be presented.



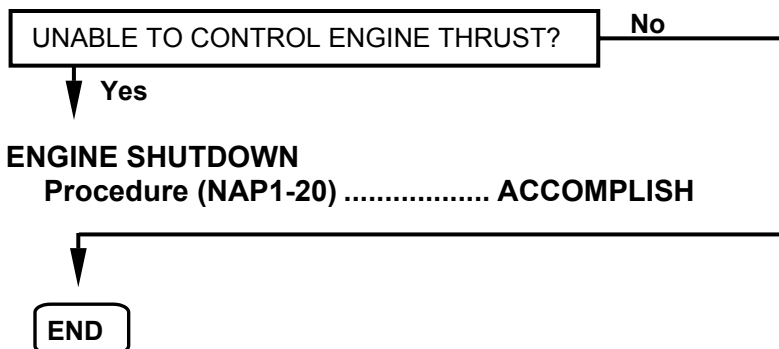
EMERGENCY AND ABNORMAL PROCEDURES

Engine

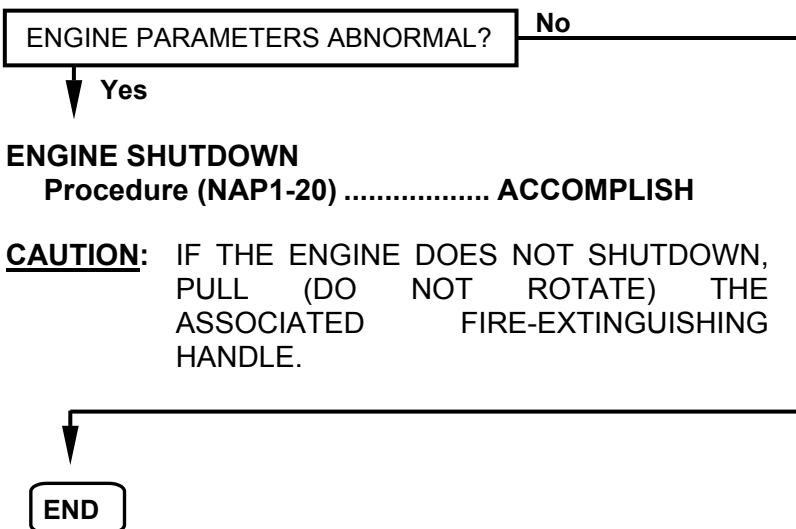
ENG 1 (2) CONTROL FAULT

Autothrottle **DISENGAGE**

CAUTION: AVOID QUICK THRUST LEVER MOVEMENT, HIGH THRUST OPERATION AND THRUST REVERSER.



ENG 1 (2) FADEC OVERTEMP



EMERGENCY AND ABNORMAL PROCEDURES

Engine

ENG 1 (2) FAIL

EICAS Indication: FAIL icon on N1 indication.
Oil Press indication in red.

LAND AT THE NEAREST SUITABLE AIRPORT.

Associated Thrust Lever IDLE

ENGINE SUCCESSFUL AUTO RELIGHTS?

No

Yes

NOTE: If flight conditions permit, operate the engine at idle for 2 minutes prior to apply engine thrust.

END

Start/Stop Selector..... STOP

APU START

FUEL LEAK SUSPECTED?

No

Yes

FUEL LEAK Procedure (NAP1-9).... ACCOMPLISH

END

RESTART CONSIDERED?

No

Yes

Engine Airstart

Procedure (NAP1-17) ACCOMPLISH

END

**ONE ENGINE INOPERATIVE
APPROACH AND LANDING**

Procedure (NAP1-28) ACCOMPLISH

END

EMERGENCY AND ABNORMAL PROCEDURES

Engine

ENG 1 (2) FUEL IMP BYPASS

CAUTION: IF BOTH ENGINES ARE AFFECTED, LAND
AT THE NEAREST SUITABLE AIRPORT.

END

ENG 1 (2) FUEL LO PRESS

Fuel Xfeed Selector OFF
Autothrottle DISENGAGE
Associated Thrust Lever IDLE
Altitude MAX 25000 FT

NOTE: If thrust lever is set above idle, ENG 1 (2) FUEL LO
PRESS message may return.

FUEL LEAK SUSPECTED?

No

Yes

FUEL LEAK Procedure (NAP1-9).... ACCOMPLISH

END

ENG 1 (2) NO DISPATCH

Do not takeoff.

END

ENG 1 (2) OIL LO LEVEL

Do not takeoff.

END

EMERGENCY AND ABNORMAL PROCEDURES

Engine

ENG 1 (2) REV FAIL

Do not takeoff.

END

ENG 1 (2) REV PROT FAULT

Do not takeoff.

END

ENG 1 (2) REV TLA FAIL

ON GROUND?

No

Yes

The associated thrust reverser is not available.

END

Do not move thrust levers below idle.

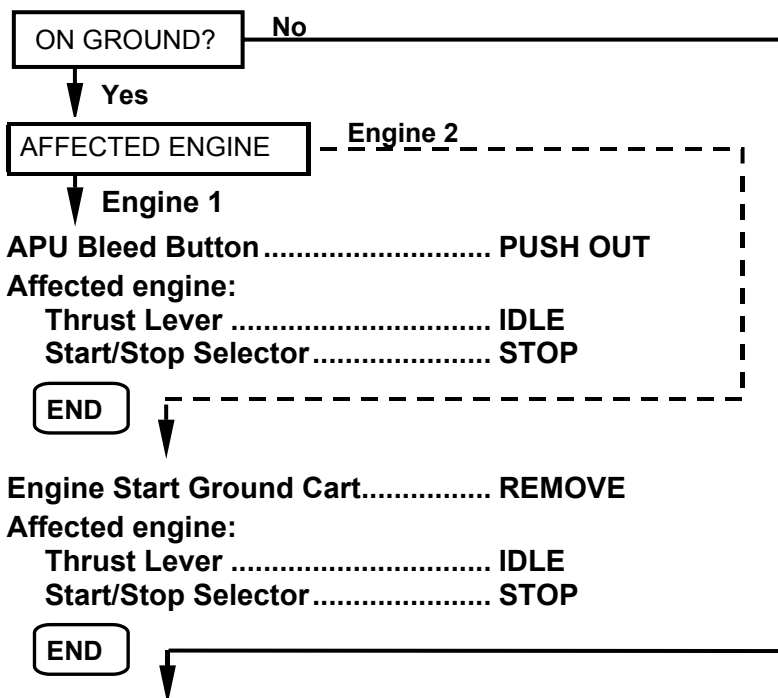
END

EMERGENCY AND ABNORMAL PROCEDURES

Engine

ENG 1 (2) START VLV OPEN

XBleed Button PUSH OUT
Associated Bleed Button PUSH OUT



APU Bleed Button PUSH OUT
Icing Conditions..... EXIT/AVOID
Altitude MAX 31000 FT

CAUTION: IN FLIGHT ASSISTED STARTS ARE NOT POSSIBLE FOR THE AFFECTED ENGINE.

END

ENG 1 (2) TLA FAIL

CONDITION: Associated engine thrust control is lost.

NOTE: The engine thrust will be set to idle automatically.

When appropriate:

ONE ENGINE INOPERATIVE

APPROACH AND LANDING

Procedure (NAP1-28)..... ACCOMPLISH

END

EMERGENCY AND ABNORMAL PROCEDURES

Engine

ENG 1 (2) T2 HEAT FAIL

Icing Conditions EXIT/AVOID

END

ENG EXCEEDANCE

Do not takeoff.

END

ENG NO TAKEOFF DATA

Engine Takeoff Data ENTER

END

ENG REF A-I DISAG

Configure the airplane according to takeoff data or re enter the takeoff data according to the airplane configuration.

END

ENG REF ECS DISAG

Configure the airplane according to takeoff data or re enter the takeoff data according to the airplane configuration.

NOTE: The EICAS message ENG REF ECS DISAG will be always displayed when the following conditions apply simultaneously: The REF ECS is set to ON, the APU is running and the engine thrust levers are set to idle.

END

EMERGENCY AND ABNORMAL PROCEDURES

Engine

ENG THR RATING DISAG

Do not takeoff.

END

ENG TLA NOT TOGA

Move the thrust levers to TOGA position.

END

EMERGENCY AND ABNORMAL
PROCEDURES

Fire Protection

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CAUTION

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APU FIREX FAIL	EAP7-5
CRG AFT (FWD) FIRE SYS FAIL	EAP7-5
ENG 1 (2) FIRE DET FAIL	EAP7-5
RECIRC SMK DET FAIL	refer to EAP2-11

EMERGENCY AND ABNORMAL PROCEDURES

Fire Protection

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EMERGENCY AND ABNORMAL
PROCEDURES

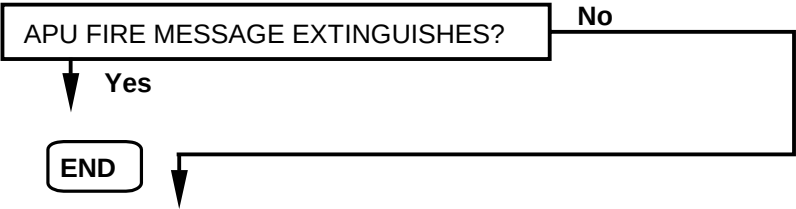
Fire Protection

APU FIRE

Light : APU Emergency Stop Button upper half illuminates in red.

APU Emergency Stop Button.....PUSH IN

APUOFF



APU Fire Extinguishing
ButtonPUSH

END

EMERGENCY AND ABNORMAL PROCEDURES

Fire Protection

ENG 1 (2) FIRE

EICAS Indication: FIRE icon on the associated ITT indicator.

Light : Associated fire handle illuminates.

Autothrottle.....DISENGAGE

Affected engine:

Thrust Lever.....IDLE

Start/Stop SelectorSTOP

Fire Extinguishing HandlePULL

LAND AT THE NEAREST SUITABLE AIRPORT.

Fire Extinguishing Handle ROTATE (L or R)

.....Wait 30 seconds

ENG 1 (2) FIRE MESSAGE PERSISTS?

No

Yes

Fire Extinguishing Handle
(remaining bottle) ROTATE

APU..... START

Fuel..... BALANCE

Autothrottle..... AS REQUIRED

When appropriate:

ONE ENGINE INOPERATIVE

APPROACH AND LANDING

Procedure (NAP1-28)..... ACCOMPLISH

END

EMERGENCY AND ABNORMAL PROCEDURES

Fire Protection

APU FIRE DET FAIL

APUOFF

END

APU FIREX FAIL

APUOFF

END

CRG AFT (FWD) FIRE SYS FAIL

AFFECTED CARGO COMPARTMENT IS EMPTY?

No

Yes

END

LAND AT THE NEAREST SUITABLE AIRPORT.

END

ENG 1 (2) FIRE DET FAIL

If fire is suspected in the affected engine:

ENGINE FIRE, SEVERE DAMAGE

OR SEPARATION

Procedure (NAP1-7)ACCOMPLISH

END

EMERGENCY AND ABNORMAL PROCEDURES

Fire Protection

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EMERGENCY AND ABNORMAL PROCEDURES

Flight Controls

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ELEV NML MODE FAIL	EAP8-3
GROUND SPOILERS FAIL	EAP8-3
RUDDER NML MODE FAIL	EAP8-4
SPOILER NML MODE FAIL	EAP8-4

CAUTION

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ELEVATOR LH (RH) FAIL	EAP8-6
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SPOILER FAULT	EAP8-11
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ADVISORY

AILERON LH (RH) FAIL	EAP8-12
FLAP (SLAT) LO RATE	EAP8-12
FLT CTRL FAULT	EAP8-12

EMERGENCY AND ABNORMAL PROCEDURES

Flight Controls

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EMERGENCY AND ABNORMAL PROCEDURES

Flight Controls

ELEV NML MODE FAIL

Flight Controls Mode

Elevators Button..... PUSH IN

NOTE: Do not accomplish the ELEVATOR FAULT Procedure.

Relevant Inoperative Items:

AOA Limit
Auto Config Trim
Autopilot
Elevator Thrust Compensation

AOA LIMIT FAIL

Procedure (EAP8-5)..... ACCOMPLISH

END

GROUND SPOILERS FAIL

CONDITION: One or more ground spoiler panels have extended inadvertently, have failed to extend when commanded or are unavailable to extend.

Inflight:

Speedbrake CLOSE

Landing configuration:

Slat/Flap FULL

Set $V_{REF FULL}$.

CAUTION: MULTIPLY THE FULL FLAPS UNFACTORED LANDING DISTANCE BY 1.30.

END

EMERGENCY AND ABNORMAL PROCEDURES

Flight Controls

RUDDER NML MODE FAIL

Flight Controls Mode

Rudder Button PUSH IN

NOTE: Do not accomplish the RUDDER FAULT Procedure.

Relevant Inoperative Items:

Yaw Damper

Turn Coordination

END

SPOILER NML MODE FAIL

Speedbrake CLOSE

Flight Controls Mode

Spoilers Button PUSH IN

NOTE: Do not accomplish the SPOILER FAULT Procedure.

Relevant Inoperative Items:

Ground Spoilers

SpeedBrake

Landing configuration:

Slat/Flap FULL

Set $V_{REF FULL}$.

CAUTION: MULTIPLY THE FULL FLAPS
UNFACTORED LANDING DISTANCE
BY 1.45.

END

EMERGENCY AND ABNORMAL PROCEDURES

Flight Controls

AOA LIMIT FAIL

Avoid side slipping the airplane.

NOTE: The stick shaker remains operative.

END

ELEV THR COMP FAIL

Compensate manually any pitch tendency following thrust variations.

END

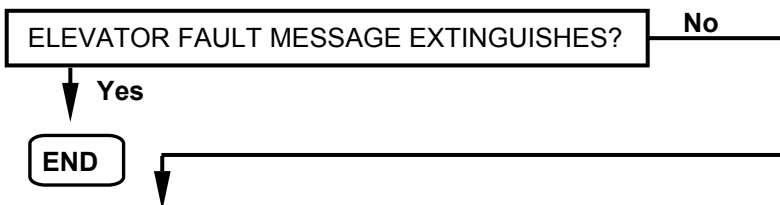
ELEVATOR FAULT

CONDITION: Elevator control has reverted to Direct Mode.

NOTE: If the SPOILER FAULT message is also displayed, accomplish the Spoiler Fault procedure prior to this procedure.

Flight Controls Mode

Elevators Button..... PUSH IN, then OUT



Relevant Inoperative Items:

AOA Limit
Auto Config Trim
Autopilot
Elevator Thrust Compensation

AOA LIMIT FAIL

Procedure (EAP8-5)..... ACCOMPLISH

END

EMERGENCY AND ABNORMAL PROCEDURES

Flight Controls

ELEVATOR LH (RH) FAIL

CONDITION: The associated elevator panel may be jammed or floating damped.

If the failure occurs above 175 KIAS the current airspeed is the maximum speed for the remainder of the flight.

If the failure occurs below 175 KIAS the maximum speed for the remainder of the flight is 175 KIAS.

NOTE: Expect less elevator control authority and slower response, especially during landing flare.

Landing configuration:

Slat/Flap 5

Set $V_{REF} = V_{REF FULL} + 15$ KIAS.

CAUTION: MULTIPLY THE FULL FLAPS
UNFACTORED LANDING DISTANCE BY
1.40.

If a go around is required:

Slat/Flap 5

Airspeed $V_{REF FULL} + 15$ KIAS

END

FLAP (SLAT) FAIL

EICAS Indication: Separate indications for flaps and slats.

Slat/Flap Lever CYCLE

Return the Slat/Flap Lever to the previously selected position and then reselect the desired flap/slat position.

Three cycles may be attempted.

FLAP (SLAT) FAIL MESSAGE PERSISTS?

No

Yes

In order to choose the proper landing reference data from the table below, pilot must use the first consequent more retracted position of the failed surface than the one indicated on the EICAS.

NOTE: – Limit bank angle to 20° maximum.

- If there is no slat or flap position indication on EICAS, slats and flaps external marks can be used to determine the slat and flap position.

(Continues on the next page)

EMERGENCY AND ABNORMAL PROCEDURES

Flight Controls

(Continued from the previous page)

	SLAT FLAP	0	1, 2, 3	4, 5, FULL	
Max Speed	0	V _{MO} /M _{MO}	230 KIAS	180 KIAS	
V _{REF} (KIAS)		V _{REF FULL} +60	V _{REF FULL} +65	V _{REF FULL} +65	
Ldg Coef		2.41	2.48	2.49	
Max Speed	1	230 KIAS	230 KIAS	180 KIAS	
V _{REF} (KIAS)		V _{REF FULL} +50	V _{REF FULL} +35	V _{REF FULL} +35	
Ldg Coef		2.12	1.97	2.00	
Max Speed	2	215 KIAS	215 KIAS	180 KIAS	
V _{REF} (KIAS)		V _{REF FULL} +40	V _{REF FULL} +25	V _{REF FULL} +25	
Ldg Coef		1.82	1.55	1.57	
Max Speed	3	NOT USABLE	200 KIAS	180 KIAS	
V _{REF} (KIAS)			V _{REF FULL} +15	V _{REF FULL} +15	
Ldg Coef			1.42	1.43	
Max Speed	4, 5		200 KIAS	180 KIAS	
V _{REF} (KIAS)			V _{REF FULL} +15	V _{REF FULL} +10	
Ldg Coef			1.31	1.29	
Max Speed	FULL			165 KIAS	165 KIAS
V _{REF} (KIAS)				V _{REF FULL} +10	V _{REF FULL}
Ldg Coef				1.22	Not Applicable

If applicable:

Gnd Prox Flap Ovrld Button..... PUSH IN

If a go around is required, maintain the V_{REF} presented in the applicable slat/flap configuration from the table above.

END

FLT CTRL NO DISPATCH

Do not takeoff.

END

Flight Controls

END

EMERGENCY AND ABNORMAL PROCEDURES

Flight Controls

RUDDER FAIL

CONDITION: The rudder panel may be jammed or floating damped.

LAND AT THE NEAREST SUITABLE AIRPORT.

If the failure occurs above 175 KIAS the current airspeed is the maximum speed for the remainder of the flight.

If the failure occurs below 175 KIAS the maximum speed for the remainder of the flight is 175 KIAS.

Relevant Inoperative Items:

Yaw Trim
Yaw Damper
Turn Coordination

Landing configuration:

Slat/Flap FULL

Set $V_{REF FULL}$.

CAUTION: AVOID LANDING WITH CROSSWIND COMPONENTS ABOVE 10 KTS.

If a go around is required, proceed as a normal go around limiting the airspeed to 175 KIAS.

NOTE: As asymmetric thrust may be required to help controlling the airplane, maximum thrust on both engines may not be possible.

END

EMERGENCY AND ABNORMAL PROCEDURES

Flight Controls

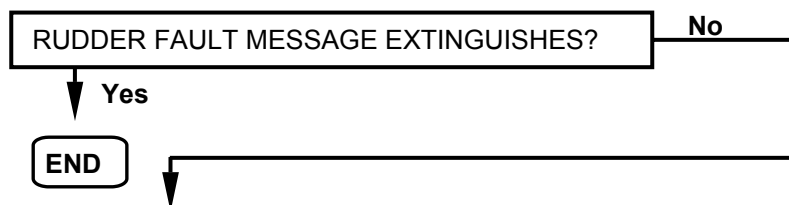
RUDDER FAULT

CONDITION: Rudder control has reverted to Direct Mode.

NOTE: If the SPOILER FAULT message is also displayed, accomplish the Spoiler Fault procedure prior to this procedure.

Flight Controls Mode

Rudder Button PUSH IN, then OUT



Relevant Inoperative Items:

Yaw Damper
Turn Coordination

END

RUDDER LIMITER FAIL

CONDITION: Rudder position limiter is inoperative and rudder authority in flight is 30°.

CAUTION:

- DO NOT APPLY ABRUPT PEDAL COMMANDS.
- DO NOT APPLY FULL RUDDER DEFLECTION.

END

SLAT-FLAP LEVER DISAG

Return the slat/flap lever to previous position and then use it as required.

END

EMERGENCY AND ABNORMAL PROCEDURES

Flight Controls

SPOILER FAULT

CONDITION: One or more Multifunction Spoilers Panels have reverted to Direct Mode, have extended inadvertently or have failed to extend.

Autopilot **DISENGAGE**

Speedbrake..... **CLOSE**

Flight Controls Mode

Spoilers Button..... **PUSH IN, then OUT**

SPOILER FAULT MESSAGE EXTINGUISHES?

No

Yes

END

Relevant Inoperative Items:

Ground Spoilers (partially or fully lost)

SpeedBrake (partially or fully lost)

Landing configuration:

If any spoiler panel is failed opened or if it is not possible to determine the spoiler panel position:

Slat/Flap..... **5**

Set $V_{REF} = V_{REF FULL} + 15 \text{ KIAS}$.

CAUTION: MULTIPLY THE FULL FLAPS UNFACTORED LANDING DISTANCE BY 1.78.

If all spoiler panels are closed:

Slat/Flap..... **FULL**

Set $V_{REF FULL}$.

CAUTION: MULTIPLY THE FULL FLAPS UNFACTORED LANDING DISTANCE BY 1.45.

END

STAB LOCK FAULT

CONDITION: The Horizontal Stabilizer may have a drift rate up to 0.5 deg/min nose up or nose down.

LAND AT THE NEAREST SUITABLE AIRPORT.

Pitch Trim **AS REQUIRED**

CAUTION: DO NOT PRESS ANY PITCH TRIM SYSTEM CUTOUT BUTTON.

EMERGENCY AND ABNORMAL PROCEDURES

Flight Controls

AILERON LH (RH) FAIL

Avoid abrupt and large aileron inputs and limit bank angle to 25°.

Establish landing configuration early.

Landing configuration:

Slat/Flap 5

Set $V_{REF} = V_{REF FULL} + 10 \text{ KIAS}$.

CAUTION: MULTIPLY THE FULL FLAPS
UNFACTORED LANDING DISTANCE BY
1.30.

END

FLAP (SLAT) LO RATE

During approach:

Slat/Flap Actuation..... ANTICIPATE

END

FLT CTRL FAULT

Do not takeoff.

END

EMERGENCY AND ABNORMAL PROCEDURES

FMS/NAV/COM & Flight Instruments

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**EMERGENCY AND ABNORMAL
PROCEDURES**

FMS/NAV/COM & Flight Instruments

ADVISORY

- IRS PRES POS INVALID EAP9-15
- IRS 1 (2) NAV MODE FAIL EAP9-15

EMERGENCY AND ABNORMAL PROCEDURES

FMS/NAV/COM & Flight Instruments

NO TAKEOFF CONFIG

Configure the airplane for takeoff.

END

EMERGENCY AND ABNORMAL PROCEDURES

FMS/NAV/COM & Flight Instruments

ADS 1 (2) FAIL

Confirm the affected ADS automatic reversion.

If necessary:

Affected Reversionary

Panel ADS Button..... PUSH

END

ADS 3 FAIL

Reversion..... AS REQUIRED

END

ADS 1 (2) (3) HTR FAIL

Revert the affected ADS.

END

ADS 4 HTR FAIL

Disregard IESS altitude and airspeed indication.

END

APM FAIL

Do not takeoff.

END

APM MISCOMP

Do not takeoff.

END

EMERGENCY AND ABNORMAL PROCEDURES

FMS/NAV/COM & Flight Instruments

AURAL WRN SYS FAIL

Monitor visual indications.

NOTE: Aural warnings, including EGPWS callouts, are lost. TCAS aural will be operative.

END

AVNX ASCB FAULT

Do not takeoff.

END

AVNX MAU 1A FAIL

LAND AT THE NEAREST SUITABLE AIRPORT.

Icing Conditions.....EXIT/AVOID

Relevant Inoperative Items:

Multi Function Spoilers L5 and R5	MCDU 1 (except circuit breakers page)
Outboard Brakes	Pitch Trim Indication
Weather Radar	Autopilot 1
Left Aileron Indication	ACARS

Landing Configuration:

Slat/FlapFULL

Set $V_{REF FULL}$

On ground:

BrakesAPPLY NORMALLY

If necessary:

Emergency/Parking Brake.....PULL

CAUTION: • APPLY THE EMERGENCY/PARKING BRAKE MONITORING THE EMERGENCY/PARKING BRAKE LIGHT.

- WHEN THE EMERGENCY/PARKING BRAKE LIGHT IS ON, MAINTAIN STEADY PRESSURE SINCE THE ANTI-SKID PROTECTION IS NOT AVAILABLE.
- MULTIPLY THE FULL FLAPS UNFACTORED LANDING DISTANCE BY 1.70.

END

EMERGENCY AND ABNORMAL PROCEDURES

FMS/NAV/COM & Flight Instruments

AVNX MAU 1B FAIL

Relevant Inoperative Items:

Multi Function Spoilers L5 and R5

Pitch Trim Indication

GPS 1

Landing Configuration:

Slat/Flap..... FULL

Set $V_{REF FULL}$

CAUTION: MULTIPLY THE FULL FLAPS
UNFACTORED LANDING BY 1.15.

END

AVNX MAU 2A FAIL

Relevant Inoperative Items:

NoseWheel Steering

FMS 1

On ground:

Steer the airplane using rudder and differential braking.

END

EMERGENCY AND ABNORMAL PROCEDURES

FMS/NAV/COM & Flight Instruments

AVNX MAU 2B FAIL

Relevant Inoperative Items:

Inboard Brakes	EGPWS
Autopilot 1	NAVCOM 2
Right Side Weather Radar Control	IESS - Localizer and Glide Slope Indication
MCDU 2 (except circuit breakers page)	Transponder 2

Landing Configuration:

Slat/FlapFULL

Set V_{REF FULL}

On ground:

BrakesAPPLY NORMALLY

If necessary:

Emergency/Parking Brake.....PULL

- CAUTION:**
- APPLY THE EMERGENCY/PARKING BRAKE MONITORING THE EMERGENCY/PARKING BRAKE LIGHT.
 - WHEN THE EMERGENCY/PARKING BRAKE LIGHT IS ON, MAINTAIN STEADY PRESSURE SINCE THE ANTI-SKID PROTECTION IS NOT AVAILABLE.
 - MULTIPLY THE FULL FLAPS UNFACTORED LANDING DISTANCE BY 1.65.

END

EMERGENCY AND ABNORMAL PROCEDURES

FMS/NAV/COM & Flight Instruments

AVNX MAU 3A FAIL

LAND AT THE NEAREST SUITABLE AIRPORT.

Icing Conditions EXIT/AVOID

Relevant Inoperative Items:

Multi Function Spoiler L3, R3, L4 and R4
Speedbrake
Ground Spoilers
Right Aileron Indication
APU
ADS 3
GPS 2
FMS 2
Autopilot 2

Landing Configuration:

Slat/Flap..... FULL

Set $V_{REF FULL}$.

CAUTION: MULTIPLY THE FULL FLAPS
UNFACTORED LANDING BY 1.20.

END

AVNX MAU 3B FAIL

Relevant Inoperative Items:

Multi Function Spoilers L3, R3, L4 and R4
Pitch Trim Indication
Engine Vibration Indication

Landing Configuration:

Slat/Flap..... FULL

Set $V_{REF FULL}$.

CAUTION: MULTIPLY THE FULL FLAPS
UNFACTORED LANDING BY 1.20.

END

EMERGENCY AND ABNORMAL PROCEDURES

FMS/NAV/COM & Flight Instruments

AVNX MAU 1A (1B) OVHT

Associated CB.....PULL

NOTE: - For MAU 1A OVHT, pull the B6 and B7 CB.
- For MAU 1B OVHT, pull the B15 CB.

Refer to AVNX MAU 1A (1B) FAIL Procedure to be aware of relevant inoperative items.

END

AVNX MAU 2A (2B) OVHT

Associated CB.....PULL

NOTE: - For MAU 2A OVHT, pull the B25 CB.
- For MAU 2B OVHT, pull the B26 and B35 CB.

Refer to AVNX MAU 2A (2B) FAIL Procedure to be aware of relevant inoperative items.

END

AVNX MAU 3A (3B) OVHT

Associated CB.....PULL

NOTE: - For MAU 3A OVHT, pull the B34 CB.
- For MAU 3B OVHT, pull the B27 CB.

Refer to AVNX MAU 3A (3B) FAIL Procedure to be aware of relevant inoperative items.

END

AVNX MAU 1 (2) (3) FAN FAIL

Do not takeoff.

END

EMERGENCY AND ABNORMAL PROCEDURES

FMS/NAV/COM & Flight Instruments

CMS FAIL

Do not takeoff.

END

CREW WRN SYS FAULT

Do not takeoff.

END

DISPLAY CTRL FAIL

NOTE: - PFD selections of VOR, FMS, RA/BARO, Minimums and Baro setting will be locked at the last setting position prior to the failure.

- Disregard altitude callouts from aural system.
- Use IESS for barometric setting and ILS approach.

Relevant Inoperative Items on both pilot and copilot display controllers:

V/L Pushbutton	HSI Pushbutton
Bearing "O" Pushbutton	FPR Pushbutton
Bearing "<>" Pushbutton	RAD/BARO Minimums Knob
FMS Pushbutton	IN/Hpa baro setting knob
PREV Pushbutton	Push STD Pushbutton
WX Pushbutton	

END

DISPLAY CTRL FAULT

Do not takeoff.

END

EICAS FAULT

Crosscheck EICAS information and revert if necessary.

END

EMERGENCY AND ABNORMAL PROCEDURES

FMS/NAV/COM & Flight Instruments

EICAS OVHT

B11 CB.....PULL

Reversionary Panel

SelectorEICAS

END

FMS POS DISAG

Do not use FMS as navigation source.

END

FMS1 (2) - GPS POS DISAG

DUAL FMS INSTALLED?

No

Yes

Select another FMS source.

END

Select another navigation source.

END

GND PROX FAIL

Increase awareness in relation to ground proximity.

END

IRS EXCESSIVE MOTION

AirplaneSTOP

The IRS will restart the alignment after the motion is stopped.

END

EMERGENCY AND ABNORMAL PROCEDURES

FMS/NAV/COM & Flight Instruments

IRS 1 (2) FAIL

Reversionary Panel IRS Button PUSH

END

MCDU 1 (2) OVHT

Associated CB PULL

NOTE: - For MCDU 1 OVHT, pull the B16 CB.
- For MCDU 2 OVHT, pull the B31 CB.

END

MFD 1 (2) FAULT

Crosscheck the affected MFD display information (System Synoptics, MAP, TAS, TAT, SAT, TCAS info, WX radar and Terrain Data) with the opposite side MFD display information. Disregard any non-reliable information from the affected MFD.

END

MFD 1 (2) OVHT

Associated CB PULL

Reversion AS REQUIRED

NOTE: - For MFD 1 OVHT, pull the B29 CB.
- For MFD 2 OVHT, pull the B20 CB.

END

NAVCOM 1 (2) FAIL

Select and use the remaining NAVCOM (VHF, VOR, DME and Transponder).

END

EMERGENCY AND ABNORMAL PROCEDURES

FMS/NAV/COM & Flight Instruments

NAVCOM 1 (2) OVHT

Associated MRC CB.....PULL

NOTE: - For NAVCOM 1 OVHT, pull the C10 CB.
- For NAVCOM 2 OVHT, pull the MRC 2 Electronic CB.

NAVCOM 1 (2) FAIL

Procedure (EAP9-12).....ACCOMPLISH

END

PFD 1 (2) FAULT

Crosscheck the affected PFD display information (Attitude, Airspeed, Altitude, FMA, FPA, Minimums, Baro setting, NAVCOM radio frequencies, HDG and CRS) with the opposite side PFD display information. Disregard any non-reliable information from the affected PFD.

END

PFD 1 (2) OVHT

Associated CB.....PULL

Reversionary Panel

SelectorAS REQUIRED

NOTE: - For PFD 1 OVHT, pull the B19 CB.
- For PFD 2 OVHT, pull the B21 CB.

END

SYS CONFIG FAIL

Do not takeoff.

END

TERRAIN FAIL

Increase awareness in relation to terrain proximity.

END

EMERGENCY AND ABNORMAL PROCEDURES

FMS/NAV/COM & Flight Instruments

VALIDATE CONFIG

Do not takeoff.

END

VHF 1 (2) (3) OVHT

Associated CB PULL

NOTE: - For VHF 1 OVHT, pull the C11 CB.

- For VHF 2 OVHT, pull the VHF 2 Electronic CB.
- For VHF 3 OVHT, pull the VHF 3 Electronic CB.

END

VHF 3 FAIL

Select another VHF source.

END

WINDSHEAR FAIL

Increase awareness in relation to weather, wind and speed variations.

END

EMERGENCY AND ABNORMAL PROCEDURES

FMS/NAV/COM & Flight Instruments

IRS PRES POS INVALID

FMS Present PositionENTER OR REENTER

END

IRS 1 (2) NAV MODE FAIL

Associated Reversionary

Panel IRS ButtonPUSH

END

EMERGENCY AND ABNORMAL PROCEDURES

FMS/NAV/COM & Flight Instruments

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**EMERGENCY AND ABNORMAL
PROCEDURES**

Fuel

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EMERGENCY AND ABNORMAL PROCEDURES

Fuel

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EMERGENCY AND ABNORMAL PROCEDURES

Fuel

FUEL 1 (2) LO LEVEL

EICAS Indication: Associated fuel quantity indication in red.

LAND AT THE NEAREST SUITABLE AIRPORT.

FUEL LEAK SUSPECTED?

No

Yes

FUEL LEAK Procedure (NAP1-9)ACCOMPLISH

END

Fuel Xfeed Selector.....AS REQUIRED

CAUTION: AVOID ATTITUDES IN EXCESS OF 15°
NOSE UP OR DOWN, UNCOORDINATED
MANEUVERS AND NEGATIVE G'S.

END

EMERGENCY AND ABNORMAL PROCEDURES

Fuel

APU FUEL SOV FAIL

Do not restart the APU.

END

ENG 1 (2) FUEL SOV FAIL

AFTER PULLING FIRE HANDLE?

No

Yes

Associated Fuel AC Pump OFF
Fuel Xfeed Selector OFF

END

FUEL AC PUMP 1 (2) FAIL

FUEL AC PUMP 1 AFFECTED?

No

Yes

Fuel Xfeed Selector LOW 1

END

Fuel Xfeed Selector LOW 2

END

FUEL DC PUMP FAIL

Fuel DC Pump Selector OFF

END

EMERGENCY AND ABNORMAL PROCEDURES

Fuel

FUEL IMBALANCE

FUEL LEAK SUSPECTED?

No

Yes

Fuel Leak Procedure (NAP1-9).....ACCOMPLISH

END

ATTITUDEWING LEVEL

Compare total fuel quantity indication on EICAS with fuel remaining information indicated on FMS Fuel Management page. If FMS fuel remaining quantity is lower than EICAS total fuel indication, disregard FMS fuel remaining information and monitor fuel quantities.

RH WING LOWER LEVEL?

No

Yes

Fuel Xfeed Selector.....LOW 2

When the desired balance is achieved:

Fuel Xfeed SelectorOFF

Monitor total fuel indication in EICAS with FMS fuel remaining information.

END

Fuel Xfeed Selector.....LOW 1

When the desired balance is achieved:

Fuel Xfeed SelectorOFF

Monitor total fuel indication in EICAS with FMS fuel remaining information.

END

EMERGENCY AND ABNORMAL PROCEDURES

Fuel

FUEL TANK LO TEMP

Airspeed VMO/MMO

..... Wait 3 minutes.....

FUEL TANK LO TEMP MESSAGE PERSISTS?

No

Yes

Altitude LOWER

END

FUEL XFEED FAIL

FUEL XFEED SELECTOR OFF?

No

Yes

END

Fuel AC Pump
(higher quantity tank) ON

FUEL IS BEING EQUALIZED?

No

Yes

When appropriate:

Fuel Xfeed Selector OFF

Fuel AC Pump

(higher quantity tank) AUTO

END

Fuel Xfeed Selector OFF

Fuel AC Pump

(higher quantity tank) AUTO

Assymmetric Thrust AS REQUIRED

END

EMERGENCY AND ABNORMAL PROCEDURES

Hydraulics

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EMERGENCY AND ABNORMAL PROCEDURES

Hydraulics

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EMERGENCY AND ABNORMAL PROCEDURES

Hydraulics

HYD 1 (2) OVERHEAT

Associated Electric Hydraulic Pump

SelectorOFF

Associated Engine Pump

Shutoff ButtonPUSH IN

HYD 1 (2) SOV FAIL MESSAGE PRESENTED?

No

Yes

LAND AT THE NEAREST SUITABLE AIRPORT.

ENGINE SHUTDOWN

Procedure (NAP1-20).....ACCOMPLISH

Appropriate LOSS OF
HYDRAULIC SYSTEM

Procedure (NAP1-23/24).....ACCOMPLISH

END

HYD 3 OVERHEAT

Electric Hyd Sys 3 Pump A

SelectorOFF

Electric Hyd Sys 3 Pump B

SelectorOFF

LOSS OF HYDRAULIC SYSTEM 3

Procedure (NAP1-24).....ACCOMPLISH

END

EMERGENCY AND ABNORMAL PROCEDURES

Hydraulics

HYD PTU FAIL

PTU Selector ON

END

HYD 1 (2) EDP NOT D-PRESS

An engine windmill restart will not be available.

END

HYD 1 (2) HI TEMP

Associated Electric Hydraulic

Pump Selector OFF

END

HYD 3 HI TEMP

Electric Hydraulic Pump A

Selector OFF

END

HYD 1 (2) LO PRESS

Associated Electric Hydraulic

Pump Selector ON

HYD 1 (2) LO PRESS MESSAGE PERSISTS?

No

Yes

Associated Electric Hydraulic

Pump Selector OFF

Appropriate LOSS OF
HYDRAULIC SYSTEM

Procedure (NAP1-23/24) ACCOMPLISH

END

EMERGENCY AND ABNORMAL PROCEDURES

Hydraulics

HYD 3 LO PRESS

Electric Hydraulic Pump B

SelectorON

Electric Hydraulic Pump A

SelectorOFF

HYD 3 LO PRESS MESSAGE PERSISTS?

No

Yes

Electric Hydraulic Pump B

SelectorOFF

LOSS OF HYDRAULIC SYSTEM

3 Procedure (NAP1-24).....ACCOMPLISH

END

HYD 3 VLV FAIL

AirspeedMIN 130 KIAS

END

**EMERGENCY AND ABNORMAL
PROCEDURES**

Hydraulics

HYD 1 (2) ELEC PUMP FAIL

Associated Electric Hydraulic

Pump Selector..... OFF

END

HYD 3 ELEC PUMP A FAIL

Electric Hydraulic Pump A

Selector OFF

END

HYD 3 ELEC PUMP B FAIL

Electric Hydraulic Pump B

Selector OFF

END

**EMERGENCY AND ABNORMAL
PROCEDURES**

Ice & Rain Protection

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EMERGENCY AND ABNORMAL PROCEDURES

Ice & Rain Protection

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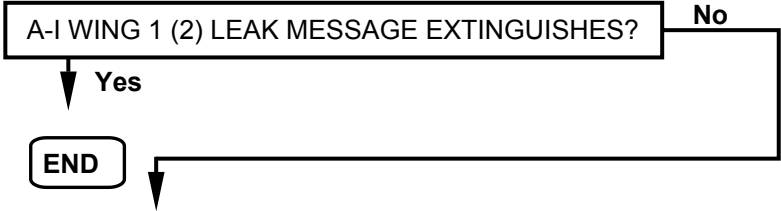
EMERGENCY AND ABNORMAL PROCEDURES

Ice & Rain Protection

A-I WING 1 (2) LEAK

Ice Protection Wing Button PUSH OUT

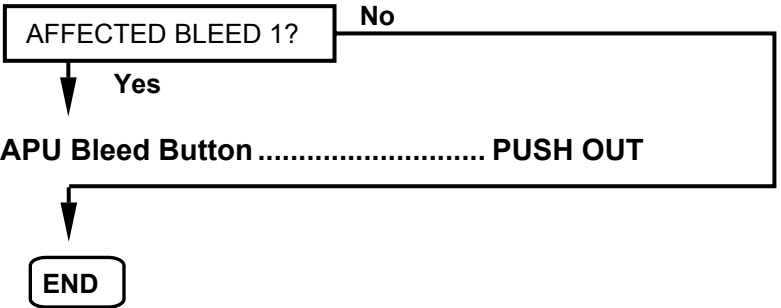
Icing Conditions EXIT/AVOID



Affected Bleed Button PUSH OUT

XBleed Button PUSH OUT

Altitude MAX 31000 FT



EMERGENCY AND ABNORMAL PROCEDURES

Ice & Rain Protection

A-I ENG 1 (2) FAIL

Affected Ice Protection Engine

Button..... PUSH OUT, then IN

A-I ENG 1 (2) FAIL MESSAGE EXTINGUISHES?

No

Yes

END

Ice Protection Mode Selector..... ON

A-I ENG 1 (2) FAIL MESSAGE PERSISTS?

No

Yes

Icing Conditions..... EXIT/AVOID

HIGH ENGINE VIBRATION?

No

Yes

ENGINE ABNORMAL VIBRATION

Procedure (NAP1-16) ACCOMPLISH

After exiting icing conditions:

Ice Protection Mode Selector..... AUTO

END

A-I LO CAPACITY

Thrust Levers ADVANCE

END

EMERGENCY AND ABNORMAL PROCEDURES

Ice & Rain Protection

A-I WING FAIL

Ice Protection Wing Button PUSH OUT, then IN

A-I WING FAIL MESSAGE EXTINGUISHES?

No

Yes

END

Ice Protection Mode Selector ON

A-I WING FAIL MESSAGE PERSISTS?

No

Yes

Ice Protection Mode Selector AUTO

Ice Protection Wing Button PUSH OUT

Icing Conditions EXIT/AVOID

LANDING IN ICING CONDITIONS OR WITH
ICE ACCRETION?

No

Yes

Landing Configuration:

Slat/Flap 5

Set $V_{REF FLAP 5 ICE}$.

CAUTION:

MULTIPLY THE FULL FLAPS UNFACTORED
LANDING DISTANCE BY 1.30.

END

After exiting icing conditions:

Ice Protection Mode Selector AUTO

END

EMERGENCY AND ABNORMAL PROCEDURES

Ice & Rain Protection

A-I WING NO DISPATCH

Do not perform an assisted engine airstart.

END

ICE DETECTOR 1 (2) FAIL

When flying in icing conditions:

Ice Protection Mode

Selector ON

Two minutes after exiting icing conditions:

Ice Protection Mode

Selector AUTO

END

WINDSHIELD 1 (2) HTR FAIL

Affected Windshield Heating

Button..... PUSH OUT, then IN

WINDSHIELD 1 (2) HTR FAIL MSG EXTINGUISHES?

No

Yes

END

Affected Windshield Heating

Button..... PUSH OUT

END

**EMERGENCY AND ABNORMAL
PROCEDURES**

Landing Gear & Brakes

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WARNING

LG LEVER DISAG	EAP13-3
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CAUTION

BRK LH (RH) FAIL	EAP13-4
BRK OVERHEAT	EAP13-4
EMER BRK FAIL	EAP13-5
LG NO DISPATCH	EAP13-5
LG NOSE DOOR OPEN	EAP13-5
LG WOW SYS FAIL	EAP13-5
STEER FAIL	EAP13-5

ADVISORY

BRK CONTROL FAULT	EAP13-6
BRK LH (RH) FAULT	EAP13-6

EMERGENCY AND ABNORMAL PROCEDURES

Landing Gear & Brakes

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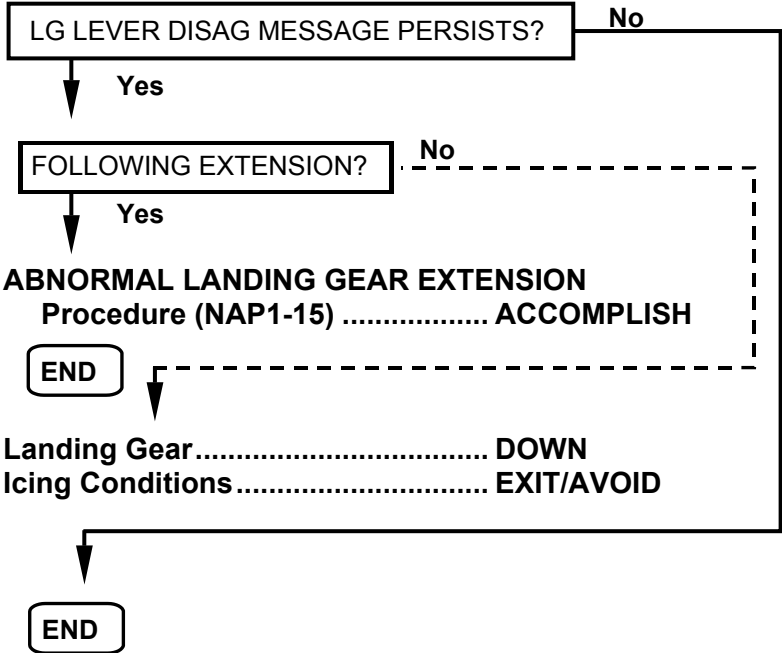
EMERGENCY AND ABNORMAL PROCEDURES

Landing Gear & Brakes

LG LEVER DISAG

EICAS Indication: One or more landing gear indications disagree with the landing gear lever.

Landing Gear Lever CYCLE



EMERGENCY AND ABNORMAL PROCEDURES

Landing Gear & Brakes

BRK LH (RH) FAIL

NOTE: During landing run, Thrust Reverser and/or the Emergency/Parking Brake may be used to stop the airplane.

Landing configuration:

Slat/Flap FULL

Set $V_{REF FULL}$.

CAUTION: •APPLY THE EMERGENCY/PARKING BRAKE
MONITORING THE EMERGENCY/PARKING BRAKE LIGHT.

- WHEN THE EMERGENCY/PARKING BRAKE LIGHT IS ON, MAINTAIN STEADY PRESSURE SINCE THE ANTI-SKID PROTECTION IS NOT AVAILABLE.
- MULTIPLY THE FULL FLAPS UNFACTORED LANDING DISTANCE BY 1.65.

END

BRK OVERHEAT

ON GROUND?

No

Yes

Airplane STOP
Chocks ON
Emergency/Parking Brake OFF

END

Landing Gear DOWN

BRK OVERHEAT MESSAGE PERSISTS?

No

Yes

NOTE: Wait 5 minutes after the BRK OVERHEAT message is no longer displayed to retract the landing gear.

Landing Gear UP

END

EMERGENCY AND ABNORMAL PROCEDURES

Landing Gear & Brakes

EMER BRK FAIL

CONDITION: Emergency/Parking Brake is inoperative.

When parking the airplane, use wheel chocks.

END

LG NO DISPATCH

Do not takeoff.

END

LG NOSE DOOR OPEN

Airspeed..... MAX 250 KIAS

CAUTION: DO NOT MOVE UP THE LANDING GEAR
LEVER, EXCEPT FOR CLIMB
PERFORMANCE TO CLEAR OBSTACLES.

END

LG WOW SYS FAIL

LAND AT THE NEAREST SUITABLE AIRPORT.

Icing Conditions..... EXIT/AVOID

Landing configuration:

Slat/Flap FULL

Set $V_{REF FULL}$.

CAUTION: MULTIPLY THE FULL FLAPS
UNFACTORED LANDING DISTANCE BY
1.30.

NOTE: Thrust Reversers, Steering, Ground Spoilers,
Wing Anti-Ice and Ground Idle may not be
available.

END

STEER FAIL

Steer the airplane using differential braking and rudder.

END

EMERGENCY AND ABNORMAL PROCEDURES

Landing Gear & Brakes

BRK CONTROL FAULT

Brakes APPLY NORMALLY

Landing configuration:

Slat/Flap FULL

Set $V_{REF FULL}$.

END

BRK LH (RH) FAULT

NOTE: During landing run, expect a slight directional tendency.

Brakes APPLY NORMALLY

If necessary:

Emergency/Parking Brake PULL

CAUTION: • APPLY THE EMERGENCY/PARKING BRAKE
MONITORING THE EMERGENCY/PARKING BRAKE
LIGHT.

- WHEN THE EMERGENCY/PARKING BRAKE LIGHT IS ON, MAINTAIN STEADY PRESSURE SINCE THE ANTI-SKID PROTECTION IS NOT AVAILABLE.
- MULTIPLY THE FULL FLAPS UNFACTORED LANDING DISTANCE BY 1.65.

END

**EMERGENCY AND ABNORMAL
PROCEDURES**

Oxygen

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OBSERVER OXY LO PRESS	EAP14-4
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EMERGENCY AND ABNORMAL PROCEDURES

Oxygen

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**EMERGENCY AND ABNORMAL
PROCEDURES**

Oxygen

CREW OXY LO PRESS

Altitude..... 10000 FT OR MEA,
WHICHEVER IS
HIGHER

END

PAX OXY NOT DEPLOYED

If required:
Passenger Oxygen
Selector..... OVRD

END

EMERGENCY AND ABNORMAL PROCEDURES

Oxygen

OBSERVER OXY LO PRESS

OBSERVER SEAT OCCUPIED?

No

Yes

Altitude 10000 FT OR MEA,
WHICHEVER IS
HIGHER

END