

## AQP TASK LISTING EXAMPLE

### 1 PERFORM PRE-DEPARTURE GROUND OPERATIONS

#### 1.1 Perform Mission Preparation Procedures

1.1.1 Comply with Company, FAA and other applicable guidance and regulations regarding mission preparation

1.1.1.1 [C] Know and comply with Dispatch guidance in Company's General Operations Manual

1.1.1.2 [C] Know and comply with Weather guidance in Company's General Operations Manual

1.1.1.3 [C] Know and comply with Weight and Balance guidance in the Company's General Operations Manual

1.1.1.4 [C] Know and comply with Filing ATC Flight Plans guidance in the Company's General Operations Manual

1.1.1.5 [C] Know and comply with Preflight guidance in the AIM

1.1.2 Communicate with Dispatch or applicable parties and acquire mission and flight planning documentation/information

1.1.2.1 [A] Communicate with Dispatch or applicable agency (in-person/telephone)

1.1.2.2 [M] Acquire appropriate flight planning and mission documentation

1.1.2.3 [A] Receive appropriate flight briefings from Dispatch and/or appropriate agencies (i.e. weather, FSS, maintenance, company, etc)

1.1.3 Assess environmental conditions affecting mission

1.1.3.1 [C] Review significant weather alerts

1.1.3.2 [C] Review severe weather advisories

1.1.3.3 [C] Review applicable current/previous hourly/special weather observations for originating, destination and alternate airports

1.1.3.4 [C] Review applicable terminal forecasts for originating, destination and alternate airports

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 1.1.3.5 [C] Review applicable PIREPS
- 1.1.3.6 [C] Review applicable SIGMETS
- 1.1.3.7 [C] Review terrain/obstacles of destination(s) and alternate(s)
- 1.1.3.8 [C] Discern weather impact on mission (i.e., alternates, flight delays, employment of special procedures)
  
- 1.1.4 Assess operational conditions affecting mission
  - 1.1.4.1 [M] Acquire origination, destination and alternate airport local procedural, noise abatement, and NOTAM information
  - 1.1.4.2 [C] Check airfields' and route information and assess mission impact
  - 1.1.4.3 [C] Consider impact of origination or destination airport congestion
  - 1.1.4.4 [C] Assess aircrew qualifications and restrictions
  
- 1.1.5 Assess aircraft maintenance conditions affecting mission
  - 1.1.5.1 [C] Acquire aircraft maintenance history
  - 1.1.5.2 [C] Review open discrepancies against MEL requirements and assess operational impact
  - 1.1.5.3 [C] Review deferred discrepancies against MEL requirements and assess operational impact
  - 1.1.5.4 [A] Communicate with Dispatch/Maintenance to rectify appropriate maintenance concerns
  
- 1.1.6 Assess mission documentation for accuracy and completeness and make adjustments as necessary
  - 1.1.6.1 [C] Check release, Ship No., Flt No., Crew
  - 1.1.6.2 [C] Review route/altitude
  - 1.1.6.3 [C] Perform fuel analysis
  - 1.1.6.4 [C] Perform weight analysis
  - 1.1.6.5 [C] Ensure flight plan complies with environmental, operational, and maintenance restriction
  - 1.1.6.6 [C] Analyze Flt Plan for errors (i.e. routing, wind vs. F/S, courses, times, fuel burn, etc.)

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- 1.1.6.7 [A] Coordinate fuel, route/altitude, weight, or itinerary changes with Dispatch or appropriate agency
- 1.1.7 Prepare flight and mission documentation as necessary  
(also refer to task 12.2.1 as necessary)
  - 1.1.7.1 [C] Verify flight plan Waypoint Coordinates comply with flight plan routing
  - 1.1.7.2 [M] Prepare Flight Attendant Briefing Form if appropriate
  - 1.1.7.3 [M] Prepare Passenger Maps if appropriate
- 1.1.8 Ensure applicable parties are briefed or are in receipt of required documentation pertinent to the mission
  - 1.1.8.1 [M] Leave a signed copy of Release with Dispatch or appropriate agency
  - 1.1.8.2 [M] Leave original signature copy of flight plan with Dispatch or appropriate agency
- 1.2 Perform Preflight/Before Start Procedures
  - 1.2.1 Comply with Company, FAA and other applicable guidance and regulations regarding preflight/before start operations
    - 1.2.1.1 [C] Know and comply with General Flight Operations guidance in Company's General Operations Manual
    - 1.2.1.2 [C] Know and comply with Weather guidance in Company's General Operations Manual
    - 1.2.1.3 [C] Know and comply with Weight and Balance guidance in the Company's General Operations Manual
    - 1.2.1.4 [C] Know and comply with Aircraft guidance in the Company's General Operations Manual
    - 1.2.1.5 [C] Know and comply with Preflight guidance in the Company's General Operations Manual
  - 1.2.2 Check aircraft maintenance status
    - 1.2.2.1 [C] Review the aircraft logbook

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- 1.2.2.2 [A] Report any maintenance discrepancy to applicable dispatch, aircrew, and maintenance personnel
- 1.2.3 Perform Initial Powerup Procedures {if required}
  - 1.2.3.1 [M] Establish Battery Power
  - 1.2.3.2 [M] Establish standby Electrical Power
  - 1.2.3.3 [C] Prepare for standby electrical power
    - 1.2.3.3.1 [K] Ensure hydraulic pumps will not come on when electrical power is applied
    - 1.2.3.3.2 [K] Ensure inadvertent flap operation will not occur when electrical power is applied
    - 1.2.3.3.3 [K] Ensure landing gear is in proper position when electrical power is applied
    - 1.2.3.3.4 [C] Prepare appropriate exterior lighting
  - 1.2.3.4 [M] Establish external electrical power
  - 1.2.3.5 [M] Start the APU
  - 1.2.3.6 [M] Establish APU electrical power
  - 1.2.3.7 [C] Prepare interior lighting for Preflight
  - 1.2.3.8 [C] Perform IRS Alignment in accordance with task 10.11 as necessary
- 1.2.4 Perform Exterior Inspection Procedure - FO  
(Also refer to tasks under 11.1.1 as applicable)
  - 1.2.4.1 Check Nose Gear Area
    - 1.2.4.1.1 [C] Check wheels and tires for condition
    - 1.2.4.1.2 [C] Check hydraulic cylinders for fluid leaks
    - 1.2.4.1.3 [C] Check strut inflation and that polished area is visible
    - 1.2.4.1.4 [C] Check steering linkage is connected and pin is locked
    - 1.2.4.1.5 [K] Note the steering pin is in place
    - 1.2.4.1.6 [C] When environmental conditions are applicable, accomplish tasks in 11.1.1
  - 1.2.4.2 Check Nose Section
    - 1.2.4.2.1 [C] Check radome is secure with no visible damage

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- 1.2.4.2.2 [C] Check static discharge strips are in place
- 1.2.4.2.3 [C] Check windshield wiper stowed, if applicable
- 1.2.4.3 Check Forward Fuselage Right Side
  - 1.2.4.3.1 [C] Check stall warning sensor for damage
  - 1.2.4.3.2 [C] Check pitot static probes for damage
  - 1.2.4.3.3 [C] Check passenger doors not in use are closed with handles stowed
  - 1.2.4.3.4 [C] Check wing illumination light for damage
  - 1.2.4.3.5 [C] Check pack inlet and exit doors open
  - 1.2.4.3.6 [C] Check that access panels are closed and fastened
- 1.2.4.4 Check Right Wing
  - 1.2.4.4.1 [C] Check condition of right landing light lens
  - 1.2.4.4.2 [C] Check right wing lower surface panels are closed and there are no visible fluid leaks
  - 1.2.4.4.3 [C] Check leading edge flaps for damage and are stowed
  - 1.2.4.4.4 [C] Check that fuel vents are unobstructed
  - 1.2.4.4.5 [C] Check that fuel jettison nozzle is unobstructed and there are no visible fuel leaks
  - 1.2.4.4.6 [C] Check outboard wing position/navigation lights for damage
  - 1.2.4.4.7 [C] Check outboard wing static wicks are in place
  - 1.2.4.4.8 [C] Check the trailing edge ailerons and flaps for damage
  - 1.2.4.4.9 [C] When environmental conditions are applicable, accomplish tasks in 11.1.2
- 1.2.4.5 Check Right Wing Engine(s) and Pylon(s)
  - 1.2.4.5.1 [C] Check cowling and access panels
  - 1.2.4.5.2 [C] Check engine exhaust area for condition and damage
  - 1.2.4.5.3 [C] Check that thrust reverser(s) are stowed
  - 1.2.4.5.4 [C] Check fan air exit and inlet cowl for damage and obstructions

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- 1.2.4.5.5 [C] Check for no excess fluid accumulation under nacelle
  - 1.2.4.5.6 [C] Check fan air inlet probe undamaged
  - 1.2.4.5.7 [C] When environmental conditions are applicable, accomplish tasks in 11.1.2
- 1.2.4.6 Check Right Gear Area
- 1.2.4.6.1 [C] Check right wing/body gear area
  - 1.2.4.6.2 [C] Check for break wear indications
  - 1.2.4.6.3 [C] Check wheels and tires for condition and damage
  - 1.2.4.6.4 [C] Check hydraulic cylinders and lines for any visible leaks
  - 1.2.4.6.5 [C] Check strut inflation with polished area visible
  - 1.2.4.6.6 [C] Check that gear pins are removed
  - 1.2.4.6.7 [C] When environmental conditions are applicable, accomplish tasks in 11.1.2
- 1.2.4.7 Check Aft Fuselage
- 1.2.4.7.1 [C] Check Aft Fuselage to ensure passenger doors not in use are closed
  - 1.2.4.7.2 [C] Check fuselage skin for damage and no evidence of fluid leaks
  - 1.2.4.7.3 [C] Check drain mast for no damage
  - 1.2.4.7.4 [C] Check outflow valves are open and there is no visible damage
  - 1.2.4.7.5 [C] Check that no access panels are open
  - 1.2.4.7.6 [C] Check condition of APU inlet area
  - 1.2.4.7.7 [C] When environmental conditions are applicable, accomplish tasks in 11.1.2
- 1.2.4.8 Check empennage and control surfaces
- 1.2.4.8.1 [C] Check control surfaces for condition and for no visible fluid leaks
  - 1.2.4.8.2 [C] Check that access panels are closed and fastened
  - 1.2.4.8.3 [C] Check navigation lights for condition
  - 1.2.4.8.4 [C] Check APU exhaust area for condition
  - 1.2.4.8.5 [C] Check static wick dischargers in place
  - 1.2.4.8.6 [C] Check horizontal stabilizer in the neutral position
  - 1.2.4.8.7 [C] View top of wings for condition and verify wing spoilers retracted

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- 1.2.4.8.8 [C] When environmental conditions are applicable, accomplish tasks under 11.1.2
- 1.2.4.9 Check Left Gear Area
  - 1.2.4.9.1 [C] Check left wing/body gear area
  - 1.2.4.9.2 [C] Check for break wear indications
  - 1.2.4.9.3 [C] Check wheels and tires for condition and damage
  - 1.2.4.9.4 [C] Check hydraulic cylinders and lines for any visible leaks
  - 1.2.4.9.5 [C] Check strut inflation with polished area visible
  - 1.2.4.9.6 [C] Check that gear pins are removed
  - 1.2.4.9.7 [C] When environmental conditions are applicable, accomplish tasks in 11.1.2
- 1.2.4.10 Check Left Wing Engine(s) and Pylon(s)
  - 1.2.4.10.1 [C] Check cowling and access panels
  - 1.2.4.10.2 [C] Check engine exhaust area for condition and damage
  - 1.2.4.10.3 [C] Check that thrust reverser(s) are stowed
  - 1.2.4.10.4 [C] Check fan air exit and inlet cowl for damage and obstructions
  - 1.2.4.10.5 [C] Check for no excess fluid accumulation under nacelle
  - 1.2.4.10.6 [C] Check fan air inlet probe undamaged
  - 1.2.4.10.7 [C] When environmental conditions are applicable, accomplish tasks in 11.1.2
- 1.2.4.11 Check Left Wing
  - 1.2.4.11.1 [C] Check the trailing edge ailerons and flaps for damage
  - 1.2.4.11.2 [C] Check outboard wing static wicks are in place
  - 1.2.4.11.3 [C] Check outboard wing position/navigation lights for damage
  - 1.2.4.11.4 [C] Check that fuel jettison nozzle is unobstructed and there are no visible fuel leaks
  - 1.2.4.11.5 [C] Check that fuel vents are unobstructed

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- 1.2.4.11.6 [C] Check leading edge flaps for damage and are stowed
- 1.2.4.11.7 [C] Check left wing lower surface panels are closed and there are no visible fluid leaks
- 1.2.4.11.8 [C] Check condition of left landing light lens
- 1.2.4.11.9 [C] When environmental conditions are applicable, accomplish tasks in 11.1.2
- 1.2.4.12 Check Forward Fuselage Left Side
  - 1.2.4.12.1 [C] Check passenger doors not in use are closed with handles stowed
  - 1.2.4.12.2 [C] Check cabin pressure relief valves closed
  - 1.2.4.12.3 [C] Check pitot static probes for visible damage or obstructions
  - 1.2.4.12.4 [C] If environmental conditions are applicable, accomplish tasks in 11.1.2
- 1.2.5 Perform Interior Inspection Procedure  
(Also refer to tasks under 10.1 and 12.2.2 as applicable)
  - 1.2.5.1 Perform Captain Procedural Flow
    - 1.2.5.1.1 [M] Set the EFIS Control Map Switches for Flight
    - 1.2.5.1.2 [C] Prepare the Flight Director for flight
    - 1.2.5.1.3 [C] Prepare the Autothrottle System for taxi
    - 1.2.5.1.4 [C] Prepare the Autoflight Altitude for flight
    - 1.2.5.1.5 [C] Prepare the Autopilot for flight
    - 1.2.5.1.6 [C] Prepare Panel Lighting for flight
    - 1.2.5.1.7 [C] Prepare Crew Oxygen System for flight
    - 1.2.5.1.8 [C] Prepare the Weather Radar display for flight
    - 1.2.5.1.9 [C] Prepare the Flight Director Instrument Source for flight
    - 1.2.5.1.10 [C] Prepare the Navigation Instrument Source for flight
    - 1.2.5.1.11 [C] Prepare the EFIS/EICAS Interface Unit Instrument Source for flight
    - 1.2.5.1.12 [C] Prepare the Inertial Reference System Instrument Source for flight

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- 1.2.5.1.13 [C] Prepare the Air Data Computer Instrument Source for flight
- 1.2.5.1.14 [M] Set the Clock for flight
- 1.2.5.1.15 [C] Prepare the Chronograph/Elapsed Time for flight
- 1.2.5.1.16 [C] Prepare the Radio Magnetic Indicator (RMI) for flight
- 1.2.5.1.17 [C] Prepare the Display Transfer for flight
- 1.2.5.1.18 [C] Prepare the Primary Flight Display (PFD) for flight
  - 1.2.5.1.18.1 [C] Check Flight Mode Annunciator (FMA)
  - 1.2.5.1.18.2 [C] Check Airspeed Indicator
  - 1.2.5.1.18.3 [C] Check Attitude Indicator
  - 1.2.5.1.18.4 [C] Check Altitude Indication
  - 1.2.5.1.18.5 [C] Check Vertical Speed Indication
  - 1.2.5.1.18.6 [C] Check Heading Indication
  - 1.2.5.1.18.7 [C] Check Warning Flags
- 1.2.5.1.19 [C] Prepare the Navigation Display (ND) for flight - Map Display
- 1.2.5.1.20 [C] Prepare the Brake Source System for flight
- 1.2.5.1.21 [C] Prepare the Standby Attitude Indicator for flight
- 1.2.5.1.22 [C] Prepare the Standby Airspeed Indicator for flight
- 1.2.5.1.23 [C] Prepare the Standby Altimeter for flight
- 1.2.5.1.24 [C] Prepare the FMS-CDU (Control Display Unit) for engine start in accordance with tasks under 10.12
- 1.2.5.1.25 [C] Set the Parking Brakes for engine start
- 1.2.5.1.26 [C] Prepare the Speedbrake System for flight
- 1.2.5.1.27 [C] Prepare the Thrust Levers for engine start
- 1.2.5.1.28 [C] Prepare Fuel Control for engine start
- 1.2.5.1.29 [C] Prepare the Stabilizer Trim Hydraulics for flight
- 1.2.5.1.30 [C] Prepare the Flaps for taxi
- 1.2.5.1.31 [C] Prepare the Very High Frequency (VHF) radios for flight
- 1.2.5.1.32 [C] Prepare the High Frequency (HF) Radios for flight

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- 1.2.5.1.33 [C] Prepare the Audio Selector Panel for flight
- 1.2.5.1.34 [C] Prepare the No Smoking Signs for flight
- 1.2.5.1.35 [C] Prepare the Emergency Evacuation System for flight
- 1.2.5.1.36 [M] Adjust the seat position for flight
- 1.2.5.1.37 [M] Adjust the rudder pedal position for flight

1.2.5.2 Perform First Officer Procedural Flow

- 1.2.5.2.1 [C] Check the emergency equipment for flight
- 1.2.5.2.2 [C] Prepare the Overhead Panel for flight
- 1.2.5.2.3 [C] Check circuit breakers for flight
- 1.2.5.2.4 [C] Prepare the Electronic Engine Control System for flight
- 1.2.5.2.5 [C] Prepare the Inertial Reference System for flight
- 1.2.5.2.6 [M] Activate the Galley and Utility power
- 1.2.5.2.7 [C] Prepare the Electrical System for engine start
- 1.2.5.2.8 [C] Prepare Engine Hydraulic Pumps for engine start
- 1.2.5.2.9 [C] Prepare Emergency Lights for flight
- 1.2.5.2.10 [C] Prepare Audio System for flight
- 1.2.5.2.11 [C] Prepare the Service Interphone for flight
- 1.2.5.2.12 [C] Prepare the Engine Fire Protection System for flight
- 1.2.5.2.13 [C] Prepare the APU Fire Protection for flight
- 1.2.5.2.14 [C] Prepare the Cargo Fire Protection System for flight
- 1.2.5.2.15 [C] Prepare the Ignition System for engine start
- 1.2.5.2.16 [C] Prepare the Fuel Jettison System for flight
- 1.2.5.2.17 [C] Prepare the Fuel Crossfeed Valves for flight
- 1.2.5.2.18 [C] Prepare the Fuel Pumps for before engine start
- 1.2.5.2.19 [C] Prepare the Nacelle and Wing Anti-ice System for engine start
- 1.2.5.2.20 [C] Prepare the Window Heat System for flight

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- 1.2.5.2.21 [C] Prepare the Passenger Oxygen System for flight
- 1.2.5.2.22 [C] Prepare the Yaw Damper for flight
- 1.2.5.2.23 [C] Prepare the Cabin Altitude System for flight
- 1.2.5.2.24 [M] Set Cabin Conditioned Air Temperature
- 1.2.5.2.25 [C] Prepare the Environmental Control System for flight
- 1.2.5.2.26 [C] Prepare the Pneumatic System to supply aft cargo heat
- 1.2.5.2.27 [C] Prepare the Equipment Cooling System for flight
- 1.2.5.2.28 [C] Establish air conditioning
- 1.2.5.2.29 [C] Prepare the APU to supply bleed air to the Pneumatics System
- 1.2.5.2.30 [C] Prepare the Pneumatics System for engine start
- 1.2.5.2.31 [C] Prepare the Indicator Light Intensity for flight
- 1.2.5.2.32 [C] Prepare the Storm Lights for after start
- 1.2.5.2.33 [C] Prepare the Flight Deck Door for before takeoff
- 1.2.5.2.34 [C] Prepare Logo Lights for flight
- 1.2.5.2.35 [C] Prepare Wing Lights for flight
- 1.2.5.2.36 [C] Prepare Beacon Lights for before start
- 1.2.5.2.37 [C] Prepare Strobe Lights for before start
- 1.2.5.2.38 [C] Prepare Runway Turnoff Lights for after start
- 1.2.5.2.39 [C] Prepare Navigation Lights for after start
- 1.2.5.2.40 [C] Prepare Landing Lights for after start
- 1.2.5.2.41 [C] Prepare the Flight Director for flight
- 1.2.5.2.42 [C] Prepare the EICAS Display Select for preflight
- 1.2.5.2.43 [C] Set the Flight Instrument Control Panel for flight
- 1.2.5.2.44 [C] Set the EFIS Control Map Switches for flight
- 1.2.5.2.45 [C] Prepare Panel Lighting for flight
- 1.2.5.2.46 [C] Prepare the Heaters for flight
- 1.2.5.2.47 [C] Prepare Crew Oxygen System for flight

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- 1.2.5.2.48 [M] Set the Weather Radar Display for flight
- 1.2.5.2.49 [C] Prepare the Flight Director Instrument Source for flight
- 1.2.5.2.50 [C] Prepare the Navigation Instrument Source for flight
- 1.2.5.2.51 [C] Prepare the EFIS/EICAS Interface Unit Instrument Source for flight
- 1.2.5.2.52 [C] Prepare the Inertial Reference System Instrument Source for flight
- 1.2.5.2.53 [C] Prepare the Air Data Computer Instrument Source for flight
- 1.2.5.2.54 [M] Set the Clock for flight
- 1.2.5.2.55 [C] Prepare the Chronograph/Elapsed time for flight
- 1.2.5.2.56 [C] Prepare Display Transfer for flight
- 1.2.5.2.57 [C] Prepare the Primary Flight Display (PFD) for flight
- 1.2.5.2.58 [C] Prepare the Navigation Display (ND) for flight - Map Display
- 1.2.5.2.59 [C] Prepare the Ground Proximity Warning System for flight
- 1.2.5.2.60 [C] Prepare the Alternate Flaps for flight
- 1.2.5.2.61 [C] Prepare the Alternate Gear Extension System for flight
- 1.2.5.2.62 [C] Prepare the EICAS brightness for flight
- 1.2.5.2.63 [C] Prepare the EICAS EIU Source for flight
- 1.2.5.2.64 [C] Prepare the Flight Management Reference for flight
- 1.2.5.2.65 [C] Prepare the Flight Management Heading System for flight
- 1.2.5.2.66 [C] Prepare the EICAS display for engine start - Primary Engine Display
- 1.2.5.2.67 [C] Prepare the EICAS display for engine start - Secondary Engine Display
- 1.2.5.2.68 [C] Prepare the Flight Management System Data Base
- 1.2.5.2.69 [C] Insert data into the FMS-CDU
- 1.2.5.2.70 [C] Insert Inertial Reference System Present Position
- 1.2.5.2.71 [C] Prepare the FMS-CDU (Control Display Unit) for engine start in accordance with tasks under 10.12
- 1.2.5.2.72 [C] Prepare the Weather Radar for flight

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- 1.2.5.2.73 [C] Prepare the Audio Control Panel for the Cabin Interphone Check
- 1.2.5.2.74 [C] Verify Cabin Interphone Operation
- 1.2.5.2.75 [C] Transmit on the Interphone System
- 1.2.5.2.76 [C] Prepare the Radio Control Panel for flight
- 1.2.5.2.77 [C] Prepare the Very High Frequency (VHF) radios for flight
- 1.2.5.2.78 [C] Prepare the High Frequency (HF) radios for flight
- 1.2.5.2.79 [C] Prepare the Audio Selector Panel for flight
- 1.2.5.2.80 [C] Prepare the ATC Transponder for taxi
- 1.2.5.2.81 [C] Prepare the Autobrake System for taxi
- 1.2.5.2.82 [C] Adjust the seat position for flight
- 1.2.5.2.83 [C] Adjust the rudder pedal position for flight

### 1.2.5.3 Perform Final Cockpit Preparation

- 1.2.5.3.1 [C] Receive final paperwork
- 1.2.5.3.2 [A] Communicate as necessary with cabin and flight crew
- 1.2.5.3.3 [C] Communicate as necessary with company (ACARS/Radio)
- 1.2.5.3.4 [C] Communicate as necessary with maintenance (ACARS/Radio)
- 1.2.5.3.5 [C] Receive departure ATIS (ACARS/Radio)
- 1.2.5.3.6 [C] Receive ATC Clearance (ACARS/Radio)
- 1.2.5.3.7 [A] Complete Departure Briefing
- 1.2.5.3.8 [A] Complete Flight Attendant Briefing
- 1.2.5.3.9 [C] Prepare the FMS-CDU for flight - DEPT
- 1.2.5.3.10 [C] Ensure the Fuel Load is correct for flight
- 1.2.5.3.11 [C] Prepare the FMS-CDU for flight - PERF INIT
- 1.2.5.3.12 [C] Prepare Thrust Reference for flight
- 1.2.5.3.13 [C] Verify airspeed and flap settings
- 1.2.5.3.14 [C] Prepare the FMS-CDU for flight - PRE-FLIGHT COMPLETE
- 1.2.5.3.15 [C] Prepare the AFDS speed control logic for takeoff
- 1.2.5.3.16 [C] Prepare the Autopilot Lateral Navigation for flight
- 1.2.5.3.17 [C] Prepare the Autopilot Vertical Navigation for flight

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1.2.5.3.18 [C] Enter appropriate information into ACARS

1.2.5.4 Perform Before Start Procedures

- 1.2.5.4.1 [A] Call for "Before Start" Checklist
- 1.2.5.4.2 [A] Read "Before Start" Checklist
- 1.2.5.4.3 [A] Verify from Lead Flight Attendant that the "Cabin Interior Walkaround/Emergency Equipment Inspection" is completed
- 1.2.5.4.4 [C] Verify "Before Start" Checklist items complied with
- 1.2.5.4.5 [A] Obtain Pushback/Start Clearance (ACARS/Radio)
- 1.2.5.4.6 [A] Notify Ground Crew of Pushback/Engine Start

1.3 Perform Start/Backing Procedures

(Also refer to tasks under 9.1 and 9.2 as applicable)

1.3.1 Comply with Company, FAA and other applicable guidance and regulations regarding start/backing operations

- 1.3.1.1 [C] Know and comply with Engine Start and Taxi Flight Operations guidance in Company's General Operations Manual
- 1.3.1.2 [C] Know and comply with ATC Airport Operations guidance in the Company's General Operations Manual
- 1.3.1.3 [C] Know and comply with the Departure Procedures guidance in the AIM

1.3.2 Perform Pushback Procedure

- 1.3.2.1 [A] Receive interphone call from ground crew that cargo doors have been checked
- 1.3.2.2 [C] Check IRS in NAV
- 1.3.2.3 [C] Check Door Lights out
- 1.3.2.4 [M] Set Hydraulic Panel for engine start
- 1.3.2.5 [M] Set Fuel Panel for engine start
- 1.3.2.6 [K] Ensure Air Conditioning Packs are OFF for engine start
- 1.3.2.7 [M] Release brakes
- 1.3.2.8 [M] Receive start clearance from ground crew on interphone

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

### 1.3.3 Perform Engine Start Procedure

- 1.3.3.1 [A] Advise "Start <Engine #>" (then each successive engine)
- 1.3.3.2 [K] Verify pneumatic pressure is shown on EICAS within normal limits
- 1.3.3.3 [A] Announce on interphone "Starting <Engine #>"
- 1.3.3.4 [M] Position START selector to GND
- 1.3.3.5 [A] Announce "Rotation" with first indication of N2 on EICAS
- 1.3.3.6 [A] Announce "Oil Pressure" at first indication
- 1.3.3.7 [A] Announce "N1" with the first indication of low compressor rotation
- 1.3.3.8 [M] Position the FUEL CONTROL switch to RUN at maximum motoring RPM
- 1.3.3.9 [C] Monitor and interpret EICAS Engine symbols and engine displays for normal indication until stabilized at idle
  - 1.3.3.9.1 [C] Determine EGT rises within 20 seconds after selecting RUN, or will have ignition failure
  - 1.3.3.9.2 [C] Determine oil pressure prior to initiating fuel flow
  - 1.3.3.9.3 [C] Determine N1 indication after EGT rise
  - 1.3.3.9.4 [C] Determine no N2 stagnation, no decreases in RPM, or no failure to reach stabilized idle within 90 seconds after initiating fuel flow
- 1.3.3.10 [K] Observe start switch releases at 50% N2 and the start valve light extinguishes
- 1.3.3.11 [K] For abnormal starts, know to refer to task 1.3.3
- 1.3.3.12 [M] Repeat start sequence for all successive engines
- 1.3.3.13 [A] Release ground coordinator when rotation of the last engine is observed
- 1.3.3.14 [A] Advise ground crew when to remove external power and air if air supply was used during start

### 1.3.4 Engine Start Abort {if applicable}

#### 1.3.4.1 Abort Engine Start

- 1.3.4.1.1 [M] Turn FUEL CONTROL switch to CUTOFF

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 1.3.4.1.2 [C] Determine if engine start light has not extinguished
- 1.3.4.1.3 [C] Select GND on Engine Start Selector
- 1.3.4.1.4 [C] Observe Starter Duty Cycle
- 1.3.4.1.5 [C] Communicate with Dispatch and Maintenance
- 1.3.4.1.6 [C] Communicate with Cabin crew and passengers
- 1.3.4.1.7 [K] Know that when decision is not to restart engine go to task 8.3
- 1.3.4.1.8 [K] Know that when decision is to delay engine start, perform task 1.3.2

#### 1.3.4.2 Perform Immediate Engine Restart

- 1.3.4.2.1 [M] Set Ignition Selector to BOTH
- 1.3.4.2.2 [M] Set Fuel Control Switch to RUN
- 1.3.4.2.3 [K] Know that when engine will not start or abort is necessary, perform task 1.3.3.1

#### 1.3.5 Perform After Start Procedures

(Also refer to tasks under 11.1.3 as necessary)

- 1.3.5.1 [C] Shutdown the APU after engine start
- 1.3.5.2 [C] Prepare hydraulic pumps for flight
- 1.3.5.3 [C] Prepare the Nacelle anti-ice for flight
- 1.3.5.4 [C] Prepare anti-ice systems as appropriate
- 1.3.5.5 [C] Prepare the air-conditioning system for flight
- 1.3.5.6 [C] Prepare storm lights for flight
- 1.3.5.7 [C] Prepare the navigation and runway lights for before takeoff
- 1.3.5.8 [C] Prepare the landing lights for climb
- 1.3.5.9 [C] Prepare the stabilizer trim for takeoff
- 1.3.5.10 [C] Prepare the rudder trim for flight
- 1.3.5.11 [C] Prepare the aileron trim for flight
- 1.3.5.12 [C] Prepare the Crew Alerting System (CAS) for messages
- 1.3.5.13 [C] Confirm Nosewheel steering lockout pin reinstalled after tow bar separation
- 1.3.5.14 [A] Advise ground crew to remove ground equipment for airplane taxi
- 1.3.5.15 [A] Obtain taxi clearance (ACARS/Radio)

#### 1.4 Perform Predeparture-Taxi Procedures

(Also refer to tasks under 11.1.4 as applicable)

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

1.4.1 Comply with Company, FAA and other applicable guidance and regulations regarding pre-departure-taxi operations

1.4.1.1 [C] Know and comply with Engine Start and Taxi Flight Operations guidance in Company's General Operations Manual

1.4.1.2 [C] Know and comply with ATC Airport Operations guidance in the Company's General Operations Manual

1.4.1.3 [C] Know and comply with the Departure Procedures guidance in the AIM

1.4.2 Conduct Takeoff Briefing

1.4.2.1 [A] Brief the type of takeoff

1.4.2.2 [A] Brief the direction of turn after takeoff

1.4.2.3 [A] Brief the initial heading

1.4.2.4 [A] Brief the assigned altitude

1.4.2.5 [A] Brief the destination and planned cruising altitude

1.4.2.6 [A] Brief the abort takeoff procedures

1.4.2.7 [A] Brief the emergency return procedures

1.4.2.8 [A] Brief the ATC clearance

1.4.3 Perform Taxi Procedures

1.4.3.1 [C] Prepare parking brake for taxi

1.4.3.2 [M] Apply thrust to move the airplane

1.4.3.3 [C] Adjust taxi speed as required

1.4.3.4 [M] Steer airplane as desired

1.4.3.5 [C] Ensure PFD and ND are ready for flight

1.4.3.6 [M] Prepare flaps for flight

1.4.3.7 [M] Check aileron freedom of movement

1.4.3.8 [M] Check elevator freedom of movement

1.4.3.9 [M] Check rudder freedom of movement

1.4.3.10 [C] Prepare flight crew for takeoff

1.4.3.11 [C] Prepare Cabin Crew for takeoff

1.4.3.12 [C] Complete the "Before Takeoff" Checklist

1.4.3.13 [C] Obtain ATC Takeoff Clearance

1.4.3.14 [C] Prepare the transponder for flight

1.4.4 Perform Takeoff Final Items

1.4.4.1 [A] Verify Flight Attendants notified of takeoff

1.4.4.2 [K] Verify Flaps set appropriately

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 1.4.4.3 [K] Verify Fuel Control System set appropriately
- 1.4.4.4 [K] Verify transponder code set appropriately
- 1.4.4.5 [K] Verify Autobrakes set to RTO
- 1.4.4.6 [K] Verify Air-conditioning Packs set to TWO OFF
- 1.4.4.7 [K] Verify no "out-of-limits" ice buildup on wings
- 1.4.4.8 [M] Turn strobe lights ON
- 1.4.4.9 [K] Turn outboard landing lights on
- 1.4.4.10 [C] Check final approach for landing aircraft as taking the active runway for takeoff
- 1.4.4.11 [M] Operate the aircraft so as to align the airplane on the runway centerline in the appropriate takeoff position

## 2 **PERFORM TAKEOFF**

(Also refer to tasks under 9.1, 9.2 and 10.12 as applicable)

### 2.1 Comply with Company, FAA and other applicable guidance and regulations regarding takeoff operations

- 2.1.1 [C] Know and comply with Takeoff and Climb Flight Operations guidance in Company's General Operations Manual
- 2.1.2 [C] Know and comply with ATC Airport Operations guidance in the Company's General Operations Manual
- 2.1.3 [C] Know and comply with the Departure Procedures guidance in the AIM

### 2.2 Assess takeoff environment

(Also refer to tasks under 11.3.1 and 11.3.2 as applicable)

- 2.2.1 [C] Evaluate weather conditions (i.e. icing, visibility, wind, thunderstorms, rain, etc.)
- 2.2.2 [C] Evaluate runway conditions (i.e. ice/snow, standing water, debris, lighting, etc.)
- 2.2.3 [C] Evaluate airfield conditions (i.e. obstructions, conflicting traffic, etc.)
- 2.2.4 [A] Communicate with ATC to make adjustments to takeoff or departure requirements based on surrounding conditions
- 2.2.5 [C] Plan adjustments to takeoff and departure procedures in accordance with surrounding environment

### 2.3 Perform Takeoff Roll to V1

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

(Also refer to tasks under 11.1.5, 11.3.3, 11.3.5 and 12.1 as applicable)

- 2.3.1 [C] Select HDG HOLD on MCP when aligned with runway
- 2.3.2 [C] Ensure brakes are released
- 2.3.3 [M] Apply thrust to appropriate level to check engines and allow to stabilize
- 2.3.4 [K] Observe all engine indications rising normally on EICAS
- 2.3.5 [K] Observe and evaluate EPR and N1 on EICAS
- 2.3.6 [M] Advance throttles to approximate takeoff thrust setting
- 2.3.7 [K] Observe Thrust Ref on PFD
- 2.3.8 [K] Observe Thrust Hold on PFD at 65 knots
- 2.3.9 [M] Maintain wings level with aileron control
- 2.3.10 [M] Maintain runway directional control with rudder
- 2.3.11 [C] Compare upper EICAS that the EPR indicates reference thrust
- 2.3.12 [K] Observe reference thrust is as programmed on FMC
- 2.3.13 [M] Position throttles to match the EPRs reference
- 2.3.14 [C] Match green line or digital EPR reference on the EICAS
- 2.3.15 [A] Call "80 KNOTS THROTTLE HOLD" at 80 knots
- 2.3.16 [K] Ensure throttle adjustments after attaining 80 knots are only to maintain engine parameters within limits
- 2.3.17 [K] Observe V1 on the Airspeed Indicator
- 2.3.18 [A] Call "V1"

#### 2.4 Perform Rejected Takeoff

(Also refer to tasks under 11.1.6 as applicable)

- 2.4.1 [C] Recognize situation threatening to safety of flight
- 2.4.2 [M] Initiate an aborted take-off
- 2.4.3 [A] Call out situation
- 2.4.4 [C] Decide to reject takeoff
- 2.4.5 [A] Call out "Aborting/Rejected Takeoff"
- 2.4.6 [M] Move throttles to idle
- 2.4.7 [C] Select reverse thrust
- 2.4.8 [M] Push Autothrottle Disconnect switch
- 2.4.9 [M] Apply maximum braking
- 2.4.10 [K] Know that using manual braking disconnects RTO autobraking
- 2.4.11 [K] Know that below 85 knots, autobrakes are not activated

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 2.4.12 [A] Notify ATC tower of abort
- 2.4.13 [A] Notify Flight Attendants of situation when time permits
- 2.4.14 [C] Determine necessity for Emergency Evacuation
- 2.4.15 [C] When needed, perform Emergency Evacuation procedure (9.2.3)
- 2.4.16 [M] Maneuver aircraft to taxi clear of runway
- 2.4.17 [C] Check brake energy no Gear Synoptic of EICAS and/or brake energy chart in the manual
- 2.4.18 [C] Determine if emergency equipment needed

## 2.5 Perform Takeoff from V<sub>1</sub> to 1000 feet AGL

- 2.5.1 [M] Remove hand from throttles
- 2.5.2 [A] Call "VR" 3 to 5 knots prior to actual VR
- 2.5.3 [M] Pull back on yoke to begin rotation of aircraft to charted takeoff pitch attitude
- 2.5.4 [K] Observe pitch attitude on PFD and adjust pitch attitude accordingly
- 2.5.5 [C] Comply with local or ATC climb restrictions
- 2.5.6 [C] Observe appropriate bank limitations on departure
- 2.5.7 [A] Call "Positive Rate of Climb, Gear Up" after observing positive climb established on altimeter, vertical speed and outside reference
- 2.5.8 [M] Lift gear handle to the UP position
- 2.5.9 [K] Observe EICAS gear up position
- 2.5.10 [M] Move gear handle to off position
- 2.5.11 [A] Call "1000 feet above"

## 2.6 Perform Takeoff with Engine Failure at or after V<sub>1</sub>

- 2.6.1 [C] Recognize engine failure
- 2.6.2 [M] Maintain directional control by smoothly applying rudder proportionate with engine thrust decay
- 2.6.3 [M] At V<sub>R</sub> smoothly rotate to appropriate pitch attitude
- 2.6.4 [M] Maintain appropriate airspeed
- 2.6.5 [M] Apply rudder and aileron, as appropriate to maintain lateral airborne directional control
- 2.6.6 [M] Disengage autothrottles
- 2.6.7 [A] Declare an emergency with the appropriate controlling agency
- 2.6.8 [C] Perform Engine Fire/Failure procedure (9.1.1.5)
- 2.6.9 [C] Perform emergency return landing procedures (9.2.2) when applicable

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 2.6.10 [C] Observe appropriate bank limitations on departure
- 2.6.11 [A] Call "Positive Rate of Climb, Gear Up" after observing positive climb established on altimeter, vertical speed and outside reference
- 2.6.12 [M] Lift gear handle to the UP position
- 2.6.13 [K] Observe EICAS gear up position
- 2.6.14 [M] Move gear handle to off position
- 2.6.15 [A] Call "1000 feet above"

### 3 **PERFORM CLIMB**

(Also refer to tasks under 9.1, 9.2, 10.12, 11.1.7 and 11.1.8 as applicable)

- 3.1 Comply with Company, FAA and other applicable guidance and regulations regarding climb operations
  - 3.1.1 [C] Know and comply with Takeoff and Climb Flight Operations guidance in Company's General Operations Manual
  - 3.1.2 [C] Know and comply with ATC Altimeter Settings and IFR Departure guidance in the Company's General Operations Manual
  - 3.1.3 [C] Know and comply with the Departure Procedures guidance in the AIM
- 3.2 Perform Initial Climb to 3000 ft.
  - 3.2.1 [K] Observe speed bug passing Flaps 5 speed bug on PFD
  - 3.2.2 [A] Call for flaps 5
  - 3.2.3 [M] Set flaps to 5
  - 3.2.4 [M] Select Thrust on MCP
  - 3.2.5 [M] Select FLCH
  - 3.2.6 [M] Engage autopilot in CMD if desired
  - 3.2.7 [M] When turn is desired, enter desired heading in the HDG Window and select HDG SEL on the MCP
  - 3.2.8 [M] When cleared to intercept the SID or cleared on course, arm LNAV on the MCP
  - 3.2.9 [C] Monitor aircraft tracking progress on the HSI with the MAP Mode selected on the HSI Control Panel.
  - 3.2.10 [C] Check airspeed window on MCP for correct airspeed
  - 3.2.11 [M] Ensure the initial climb speed for flaps up configuration on MCP is set

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 3.2.12 [K] Observe the speed bug passing the flaps 1 bug on the PFD
- 3.2.13 [A] Call for flaps 1
- 3.2.14 [M] Set flaps to 1
- 3.2.15 [K] Observe the speed bug passing the flaps up bug
- 3.2.16 [A] Call for flaps up
- 3.2.17 [M] Set flaps to 0
- 3.2.18 [M] Set CLB or CLB 2 Thrust as appropriate
- 3.2.19 [M] Use VNAV as appropriate
- 3.2.20 [C] Comply with local or ATC airspeed restrictions when applicable
- 3.2.21 [A] Call 1000 feet above MSL

### 3.3 Perform Climb to Cruise Altitude

- 3.3.1 [M] Select VNAV
- 3.3.2 [C] Perform After Takeoff Checklist as appropriate
- 3.3.3 [C] Evaluate weather conditions (i.e. icing, visibility, wind, thunderstorms, rain, etc.)
- 3.3.4 [A] Communicate with ATC to make adjustments to departure flight path and climb requirements based on surrounding conditions
- 3.3.5 [C] Plan adjustments to departure procedures in accordance with surrounding environment
- 3.3.6 [C] Observe airspeed restriction of 250 KIAS below 10,000 feet AGL
- 3.3.7 [M] Turn Packs Control selectors to normal if required
- 3.3.8 [M] Turn Landing Lights OFF as appropriate
- 3.3.9 [C] Ensure aircraft accelerates to appropriate climb speed above 10,000 feet
- 3.3.10 [M] Set altimeters for 29.92 passing transition level (FL 180)
- 3.3.11 [C] Ensure aircraft maintains appropriate climb schedule to cruise altitude
- 3.3.12 [C] Ensure appropriate cruise altitude is set in the FMS
- 3.3.13 [C] Ensure appropriate Cruise speed schedule is set in the FMS
- 3.3.14 [A] Make appropriate "Callouts" in the climb

## 4 PERFORM ENROUTE-CRUISE

(Also refer to tasks under 9.1, 9.2, 10.12, 11.1.8, 11.2, 12.2.3, 12.2.4 and 12.2.5 as applicable)

- 4.1 Comply with Company, FAA and other applicable guidance and regulations regarding enroute-cruise operations

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 4.1.1 [C] Know and comply with Jepperson-Sanderson or NOAA flight navigation guidance
- 4.1.2 [C] Know and comply with Enroute Procedures in AIM
- 4.2 Perform Enroute Communication Procedures
  - 4.2.1 [A] Perform passenger briefings after leveloff
  - 4.2.2 [A] Perform cockpit crew communications
    - 4.2.2.1 [A] Complete Cruise checklist if appropriate
    - 4.2.2.2 [A] Callout fault/warning messages as appropriate
    - 4.2.2.3 [A] Make standard callouts as appropriate
    - 4.2.2.4 [A] Perform augmented crew turnover briefing as applicable
      - 4.2.2.4.1 [A] Communicate A/C current position and assigned altitude
      - 4.2.2.4.2 [A] Communicate current clearance versus flight plan and any route/altitude requests
      - 4.2.2.4.3 [A] Communicate waypoints loaded versus flight plan
      - 4.2.2.4.4 [A] Communicate navigation system(s) accuracy
      - 4.2.2.4.5 [A] Communicate frequencies and controlling agency
      - 4.2.2.4.6 [A] Communicate fuel status/optimal altitude
      - 4.2.2.4.7 [A] Communicate enroute, destination, and alternate weather
      - 4.2.2.4.8 [A] Communicate any incidents or irregularities
      - 4.2.2.4.9 [A] Communicate last company position report
      - 4.2.2.4.10 [A] Communicate A/C system status and maintenance logbook entries
      - 4.2.2.4.11 [M] Complete appropriate forms as necessary
      - 4.2.2.4.12 [M] Relieving captain signs master flight plan when change in command occurs
  - 4.2.2.5 [A] Perform communications with cabin crew
    - 4.2.2.5.1 [A] Discuss turbulence situation and passenger seating requirements as appropriate

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 4.2.2.5.2 [A] Discuss special passenger requirements and time available for cabin service
- 4.2.2.5.3 [A] Discuss aircraft servicing requirements and cabin discrepancies
- 4.2.2.6 [A] Perform communications with company
  - 4.2.2.6.1 [A] Communicate rerouting, delay, schedule change, or gate information with dispatch
  - 4.2.2.6.2 [A] Acquire destination airport status/weather from dispatch
  - 4.2.2.6.3 [A] Discuss aircraft systems discrepancy, systems troubleshooting, continuation criteria, and/or deferral actions with maintenance
  - 4.2.2.6.4 [M] Input appropriate data into ACARS as required
  - 4.2.2.6.5 [C] Respond to ACARS inquiries
- 4.2.2.7 [A] Perform communications with ATC
  - 4.2.2.7.1 [A] Respond to traffic callouts, vectors, or clearance changes
  - 4.2.2.7.2 [A] Read back ATC clearances
  - 4.2.2.7.3 [A] Respond to weather and/or delay information

#### 4.3 Perform Enroute System Configuration Procedures

- 4.3.1 [C] Configure fuel system as appropriate
- 4.3.2 [M] Set ignition system as appropriate
- 4.3.3 [M] Adjust cabin temperature as required
- 4.3.4 [M] Set anti-ice systems as appropriate
- 4.3.5 [C] Monitor warning lights/gauges

#### 4.4 Perform Enroute Situational Assessment

- 4.4.1 [C] Monitor weather using cues from visual observance, radio communications, weather radar depictions, and ACARS reports
- 4.4.2 [C] Assess engine ignition requirements due to anti-ice usage, turbulence or heavy precipitation
- 4.4.3 [C] Assess anti/de-ice requirements due to TAT indication, inflight visibility and visible moisture

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 4.4.4 [C] Comply with autothrottle guidance
- 4.4.5 [C] Maintain position/terrain awareness using cues from visual observance, from instrumentation, and from FMS in relation to published flight documentation
- 4.4.6 [C] Comply with guidance on navigating published courses/headings

#### 4.5 Perform Enroute Navigation Procedures

- 4.5.1 [M] Tune applicable navigation avionics (i.e., ILS, VOR, ADF, DME, etc.) as appropriate
- 4.5.2 [M] Maneuver aircraft to comply with radar vectors
- 4.5.3 [M] Maneuver aircraft to comply with traffic separation/avoidance
- 4.5.4 [M] Set appropriate modes on MCP (i.e. HDG SEL, LNAV, VOR/LOC)

### 5 **PERFORM DESCENT/HOLDING**

(Also refer to tasks under 9.1, 9.2, 10.12, 11.1.9 and 11.2 as applicable)

#### 5.1 Comply with Company, FAA and other applicable guidance and regulations regarding descent/holding operations

- 5.1.1 [C] Know and comply with Holding ATC guidance in the Company's Operations Manual
- 5.1.2 [C] Know and comply with applicable guidance from Arrival Procedures in the AIM

#### 5.2 Perform initial descent from cruise altitude to FL 180

##### 5.2.1 Perform initial descent communications

##### 5.2.1.1 [A] Perform ATC communications

5.2.1.1.1 [A] Respond to traffic callouts, vectors, clearance restrictions, discretionary descent clearances, etc.

5.2.1.1.2 [A] Read back ATC clearances

##### 5.2.1.2 [A] Perform cockpit crew communications

5.2.1.2.1 [A] Perform captain's initial briefing to include intentions for arrival

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- procedures and desires for approach execution
- 5.2.1.2.2 [A] Make lateral track mode and vertical profile mode AFDS callouts
  - 5.2.1.2.3 [A] Make appropriate anti-ice callouts
  - 5.2.1.2.4 [A] Make appropriate altitude callouts
  - 5.2.1.2.5 [A] Make appropriate MCP callouts
  - 5.2.1.2.6 [A] Perform appropriate communications with cabin crew regarding descent
  - 5.2.1.2.7 [A] Perform communication with company (dispatch/ramp), to obtain destination updates, gate information, arrival updates, etc.
  - 5.2.1.2.8 [A] Perform communication with passengers regarding descent, as required
  - 5.2.1.2.9 [A] Perform ACARS data communication by responding to ACARS inquiries, sending/receiving gate requests, etc.
- 5.2.2 Assess environmental factors during initial descent
- 5.2.2.1 [C] Monitor weather from available resources (i.e. weather radar, ACARS, visual, PIREPS, ATC, etc.)
  - 5.2.2.2 [C] Maintain position and terrain awareness through flight documents and nav aids
- 5.2.3 Assess descent initiation criteria
- 5.2.3.1 [C] Evaluate abnormal/adverse weather effects such as convective buildups, strong winds aloft, or icing
  - 5.2.3.2 [C] Assess operational factors such as ATC directed descents, proximity to destination, aircraft weight, etc.
  - 5.2.3.3 [C] Assess descent method (i.e. manual, V/S, FL CH, or VNAV)
- 5.2.4 Reconfigure systems for descent
- 5.2.4.1 [C] Check circuit breakers
  - 5.2.4.2 [M] Configure fuel system as required
  - 5.2.4.3 [M] Set anti-ice system as required
  - 5.2.4.4 [C] Monitor warning systems/lights
  - 5.2.4.5 [M] Apply spoilers as necessary

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

## 5.2.5 Fly initial descent lateral track

- 5.2.5.1 [M] Maneuver aircraft to appropriate headings and courses to comply with published arrival/profile descent procedure
- 5.2.5.2 [M] Tune navigation avionics appropriately
- 5.2.5.3 [M] Perform course intercept tracking
- 5.2.5.4 [M] Maneuver aircraft to appropriate headings to comply with radar vectors
- 5.2.5.5 [M] Set FMC/MCP data
  - 5.2.5.5.1 [C] Ensure appropriate arrival/approach procedure/transition is selected
  - 5.2.5.5.2 [M] Set appropriate AFDS mode (e.g. HDG SEL, LNAV, VOR/LOC, heading set knob)
  - 5.2.5.5.3 [M] Perform required LNAV functions in accordance with tasks under 10.12.2
  - 5.2.5.5.4 [C] Monitor lateral path
- 5.2.5.6 [C] Maintain traffic separation using cues from TCAS, ATC, or visual, as appropriate
- 5.2.5.7 [C] Reference published navigation courses/headings and determine/announce appropriate frequency, course changes or heading changes

## 5.2.6 Fly initial descent vertical profile

- 5.2.6.1 [M] Maneuver the aircraft to comply with assigned altitudes, time/distance altitude constraints, published restrictions, ATC assigned altitudes, and vertical profile targets in accordance with the Arrival/Profile Descent procedure
- 5.2.6.2 [M] Maintain appropriate airspeed by assessing power control/requirements and optimizing drag configuration
- 5.2.6.3 [M] Set appropriate altitudes in MCP as required
- 5.2.6.4 [C] Comply with appropriate FMS descent tasks under 10.12.5.3

## 5.3 Perform approach descent from FL 180 to approach

### 5.3.1 Perform initial descent communications

- 5.3.1.1 [A] Perform ATC communications

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 5.3.1.1.1 [A] Respond to traffic callouts, vectors, clearance restrictions, discretionary descent clearances, etc.
- 5.3.1.1.2 [A] Read back ATC clearances
- 5.3.1.2 [A] Perform cockpit crew communications
  - 5.3.1.2.1 [A] Perform approach landing briefing to cover NOTAMS, terrain/obstacles, MSA, MEA, crew duty assignments, runway exit plan, ground orientation after low visibility approaches, traffic watch, etc.
  - 5.3.1.2.2 [A] Perform instrument approach briefing to include approach plate number, approach date, navaid identifiers/frequencies, inbound course, final approach fix/crossing altitude, DH or MDA, time to MAP and/or VDP, missed approach procedures, etc.
  - 5.3.1.2.3 [A] Make lateral track mode and vertical profile mode AFDS callouts
  - 5.3.1.2.4 [A] Make appropriate anti-ice callouts
  - 5.3.1.2.5 [A] Make appropriate altitude callouts
  - 5.3.1.2.6 [A] Make appropriate MCP callouts
  - 5.3.1.2.7 [A] Perform appropriate communications with cabin crew regarding descent updates to include 5 minute notification
  - 5.3.1.2.8 [A] Perform communication with company (dispatch/ramp), to obtain destination updates, gate information, arrival updates, etc.
  - 5.3.1.2.9 [A] Perform communication with passengers regarding descent, as required
  - 5.3.1.2.10 [A] Perform ACARS data communication by responding to ACARS inquiries, sending/receiving gate requests, etc.
- 5.3.2 Assess environmental factors during initial descent
  - 5.3.2.1 [C] Monitor weather from available resources (i.e. weather radar, ACARS, visual, PIREPS, ATC, etc.)
  - 5.3.2.2 [C] Maintain position and terrain awareness through flight documents and nav aids

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

### 5.3.3 Assess descent continuation criteria

- 5.3.3.1 [C] Evaluate abnormal/adverse weather effects such as convective buildups, strong winds aloft, or icing
- 5.3.3.2 [C] Re-assess operational factors such as ATC directed descents, proximity to destination, aircraft weight, etc.
- 5.3.3.3 [C] Re-assess descent method (i.e. manual, V/S, FL CH, or VNAV)

### 5.3.4 Reconfigure systems for descent

- 5.3.4.1 [C] Compute landing data
- 5.3.4.2 [M] Set airspeed indicator external bugs as appropriate
- 5.3.4.3 [M] Set mode S TCAS transponder (if TCAS is installed)
- 5.3.4.4 [M] Set altimeter passing transition altitude (FL 180 to local altimeter setting)
- 5.3.4.5 [M] Set altimeter bugs for instrument approach, as appropriate
- 5.3.4.6 [C] Check pressurization system
- 5.3.4.7 [M] Set external lights appropriately
- 5.3.4.8 [M] Configure fuel system
- 5.3.4.9 [M] Set seat belt warning system
- 5.3.4.10 [M] Set no smoking warning system
- 5.3.4.11 [C] Monitor hydraulic systems
- 5.3.4.12 [M] Test and monitor master caution system
- 5.3.4.13 [M] Set autobrake system as appropriate
- 5.3.4.14 [M] Set autobrake system as appropriate
- 5.3.4.15 [M] Set DH altitude bugs as appropriate
- 5.3.4.16 [K] Observe for warning lights/gauges
- 5.3.4.17 [K] Observe flight instrument displays/indications
- 5.3.4.18 [M] Comply with guidance on intermediate flaps maneuvering speed and landing flaps target speed when setting internal airspeed bug
- 5.3.4.19 [M] Comply with guidance for manual compute and setting go around N1 for inoperative FMC
- 5.3.4.20 [C] Consider options and judgement in display of external lights below FL 180
- 5.3.4.21 [C] Consider runway selection/exit planning factors such as operating technique considerations, runway assigned by ATC, taxiway opportunities, visibility

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- restrictions, active runway combinations, ground traffic, and terminal location
- 5.3.4.22 [C] Consider runway length, runway condition, and desired stopping distance for determining appropriate autobrake setting as appropriate
- 5.3.4.23 [M] Comply with guidance in turning on no smoking signs no later than 5 minutes prior to landing
- 5.3.4.24 [M] Comply with guidance on CAT II or CAT III approaches, DH or MDA approaches, and VFR approaches when setting altitude bugs
- 5.3.4.25 [M] Comply with guidance on using autothrottles with the autopilot engaged and disengaging if excessive hunting (turbulence, mountain wave, etc) is incurred
- 5.3.4.26 [C] Consider information on setting of airspeed bugs to appropriate airspeed to allow going to Flaps 1 if engine fails on go-around
- 5.3.4.27 [C] Consider guidance on setting mode S TCAS transponder with TA or TA/RA as applicable, or using "below" for arrival to assess traffic
- 5.3.4.28 [M] Perform approach/descent checklist
- 5.3.5 Fly approach descent lateral track
  - 5.3.5.1 [M] Maneuver aircraft to appropriate headings and courses to comply with published arrival/profile descent procedure and in accordance with AIM procedures
  - 5.3.5.2 [M] Tune navigation avionics appropriately
  - 5.3.5.3 [M] Perform course intercept tracking
  - 5.3.5.4 [M] Maneuver aircraft to appropriate headings to comply with radar vectors
  - 5.3.5.5 [M] Set FMC/MCP data
    - 5.3.5.5.1 [C] Ensure appropriate arrival/approach procedure/transition is selected
    - 5.3.5.5.2 [M] Set appropriate AFDS mode (e.g. HDG SEL, LNAV, VOR/LOC, heading set knob)
    - 5.3.5.5.3 [M] Perform required LNAV functions in accordance with tasks under 10.12.5.3
    - 5.3.5.5.4 [C] Monitor lateral path
  - 5.3.5.6 [C] Maintain traffic separation using cues from TCAS, ATC, or visual, as appropriate

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 5.3.5.7 [C] Reference published navigation courses/headings and determine/announce appropriate frequency, course changes or heading changes
- 5.3.5.8 [C] Consider guidance on ATC effects on FMC routings where vectors may cause abandonment of FMC route
- 5.3.6 Fly approach descent vertical profile
  - 5.3.6.1 [M] Maneuver the aircraft to comply with assigned altitudes, time/distance altitude constraints, published restrictions, ATC assigned altitudes, and vertical profile targets
  - 5.3.6.2 [M] Maneuver the aircraft to modify the descent path in consideration of factors such as ground speed, aircraft weight, and engine anti-ice usage
  - 5.3.6.3 [M] Maintain appropriate airspeed by assessing power control/requirements and optimizing drag configuration
  - 5.3.6.4 [M] Set appropriate altitudes in MCP as required
  - 5.3.6.5 [C] Comply with appropriate FMS descent tasks under 10.12.3.7
- 5.4 Perform holding procedures
  - 5.4.1 Perform ATC communications
    - 5.4.1.1 [A] Respond to traffic callouts, vectors, clearance restrictions, discretionary descent clearances, etc.
    - 5.4.1.2 [A] Read back ATC clearances
    - 5.4.1.3 [C] Assess holding instructions
    - 5.4.1.4 [A] Transmit required holding calls
  - 5.4.2 Perform cockpit crew communications
    - 5.4.2.1 [A] Perform entry/exit briefing to include intentions for holding procedures, FMC/MCP usage, and navaid usage
    - 5.4.2.2 [A] Make lateral track mode and vertical profile mode AFDS callouts
    - 5.4.2.3 [A] Make appropriate anti-ice callouts
    - 5.4.2.4 [A] Make appropriate altitude callouts
    - 5.4.2.5 [A] Make appropriate MCP callouts

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 5.4.2.6 [A] Perform appropriate communications with cabin crew regarding approach/descent
  - 5.4.2.7 [A] Perform communication with company (dispatch/ramp), to obtain weather updates, alternate/diversion information, coordinate diversion if necessary, arrival updates, etc.
  - 5.4.2.8 [A] Perform communication with passengers regarding approach/descent, as required
  - 5.4.2.9 [A] Perform ACARS data communication by responding to ACARS inquiries, sending/receiving delay related information, etc.
- 5.4.3 Assess environmental factors during initial descent
- 5.4.3.1 [C] Monitor weather from available resources (i.e. weather radar, ACARS, visual, PIREPS, ATC, etc.)
  - 5.4.3.2 [C] Maintain position and terrain awareness through flight documents and nav aids
- 5.4.4 Assess divert decision factors
- 5.4.4.1 [C] Assess weather
    - 5.4.4.1.1 [C] Review significant weather alerts for CAT, mountain wave activity, low level windshear, etc.
    - 5.4.4.1.2 [C] Review severe weather advisory for the valid time, affected area, and nature of severe weather
    - 5.4.4.1.3 [C] Review current/previous hourly/special weather observations of destination station, preferred diversion station, designated alternate(s), and destination area stations
    - 5.4.4.1.4 [C] Review terminal forecasts for the arrival time window at the destination station, preferred diversion station and the designated alternate(s)
    - 5.4.4.1.5 [C] Review PIREPS
    - 5.4.4.1.6 [C] Review SIGMETS
  - 5.4.4.2 [C] Assess NOTAMS

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 5.4.4.3 [C] Review destination and alternate operational factors such as airfield status, active runways, field conditions, delays, and acceptance rate
- 5.4.4.4 [C] Assess destination and alternate station status such as parking availability and servicing status
- 5.4.4.5 [C] Assess fuel factors
  - 5.4.4.5.1 [C] Compute/modify holding fuel to commit to the destination and to commit to the alternate
  - 5.4.4.5.2 [C] Compute/modify enroute time/burnout fuel to commit to the destination/approach/missed approach and to commit to the alternate
- 5.4.4.6 [C] Specify divert decision criteria
  - 5.4.4.6.1 [C] Assess ATC imposed EFC or EAC times
  - 5.4.4.6.2 [C] Establish divert decision times/fuels for the commit to destination or commit to alternate
- 5.4.5 Fly holding pattern lateral track
  - 5.4.5.1 [M] Tune and select appropriate holding nav aids
  - 5.4.5.2 [M] Perform FMC/MCP holding procedures from task ( )
  - 5.4.5.3 [C] Review published/charted holding pattern instructions including reference nav aid, reference airway, holding fix, leg length, and turn direction
  - 5.4.5.4 [C] Review non-published ATC holding instructions to include hold orientation direction, holding fix, reference nav aid, leg length, and turn direction
  - 5.4.5.5 [C] Maintain traffic separation using cues from TCAS, ATC, or visual, as appropriate
  - 5.4.5.6 [C] Reference published navigation courses/headings and determine/announce appropriate frequency, course changes or heading changes
  - 5.4.5.7 [C] Ensure holding entry complies with AIM guidelines

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

5.4.6 Fly holding pattern vertical profile

- 5.4.6.1 [M] Maneuver the aircraft to comply with assigned altitudes, time/distance altitude constraints, published restrictions, and ATC assigned altitudes
- 5.4.6.2 [M] Maneuver the aircraft to modify the descent path in consideration of factors such as ground speed, aircraft weight, and engine anti-ice usage
- 5.4.6.3 [M] Maintain appropriate holding airspeeds by assessing manual or autopilot power control/requirements
- 5.4.6.4 [M] Set appropriate altitudes in MCP as required
- 5.4.6.5 [C] Comply with appropriate FMS holding tasks ( )

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

## 6 PERFORM APPROACH

(Also refer to tasks under 9.1, 9.2, 10.12, 11.2, 11.3.4 and 11.3.5 as applicable)

6.1 Comply with Company, FAA and other applicable guidance and regulations regarding approach operations

6.1.1 [C] Know and comply with Flight Operations Approach and Landing guidance in the Company's Operations Manual

6.1.2 [C] Know and comply with ATC Instrument Approach guidance in the Company's Operations Manual

6.1.3 [C] Know and comply with ATC Radar Approach guidance in the Company's Operations Manual

6.1.4 [C] Know and comply with applicable guidance from Arrival Procedures in the AIM

6.2 Assess environmental factors for approach

6.2.1 [C] Monitor weather from available resources (i.e. weather radar, ACARS, visual, PIREPS, ATC, etc.)

6.2.2 [C] Maintain position and terrain awareness through flight documents and nav aids

6.2.3 [C] Consider information on landing RVR reports

6.3 Assess approach continuation decision factors

6.3.1 [C] Assess weather criteria

6.3.1.1 [C] Comply with individual/aircraft visibility, RVR, or ceiling minimums as applicable

6.3.1.2 [C] Evaluate abnormal adverse weather effects such as thunderstorms, windshear alerts or excessive wind alerts

6.3.2 [C] Assess operational factors

6.3.2.1 [C] Assess external inputs from the tower, ATC directives, or other aircraft

6.3.2.2 [C] Assess internal warnings from the GPWS or other crewmembers

6.3.2.3 [C] Assess applicable navaid, lighting, or other ground equipment status (reported or observed)

6.3.3 [C] Assess aircraft status

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 6.3.3.1 [C] Assess thrust, primary flight control, and secondary flight control systems for functionality
- 6.3.3.2 [C] Assess applicable avionics/AFS systems for functionality
- 6.3.4 [C] Comply with approach reference information/guidance
  - 6.3.4.1 [C] Know and comply with applicable Approach and Arrival information in the Airman's Information manual and in the Flight Operations and Policy manuals
  - 6.3.4.2 [C] For VOR approaches, ensure dual navigation receivers are functional
  - 6.3.4.3 [C] For VOR approaches, ensure VORs agree within 3 degrees
  - 6.3.4.4 [C] For DME approaches, ensure DME is operational
  - 6.3.4.5 [C] For NDB approaches, ensure visibility and ceilings sufficient for approach
  - 6.3.4.6 [C] Ensure visibility is greater than required prior to starting approach
  - 6.3.4.7 [C] For CAT I full ILS approach, ensure 1 flight director or autopilot coupler is operating in approach mode
  - 6.3.4.8 [C] Ensure runway is 15% longer than FAR required and has precision instrument markings when visibility is less than 3/4 mile or 4,000 RVR
  - 6.3.4.9 [C] For starting CAT I ILS approach, ensure localizer, glide slope, outermarker or FAF, approach light system, runway markings and centerline lights are sufficient and operational
  - 6.3.4.10 [C] For raw data CAT I ILS approach, ensure visibility is no less than 3/4 mile/4000 RVR and restricted to localizer only minimums
  - 6.3.4.11 [C] For CAT II ILS approach ensure all aircrew, aircraft and airport requirements are met prior to starting the approach
  - 6.3.4.12 [C] For CAT III ILS approach, ensure all aircrew, aircraft and airport requirements are met prior to starting the approach
  - 6.3.4.13 [C] Know and comply with CAT I approach procedures in the Flight Operations and Policy manuals and in the Airman's Information Manual (AIM)

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 6.3.4.14 [C] Know and comply with CAT II approach procedures in the Flight Operations and Policy manuals and in the Airman's Information Manual (AIM)
- 6.3.4.15 [C] Know and comply with CAT III approach procedures in the Flight Operations and Policy manuals and in the Airman's Information Manual (AIM)

#### 6.4 Perform a Precision Approach

##### 6.4.1 Configure aircraft for maneuvering

- 6.4.1.1 [A] Call for flaps 1 at the appropriate airspeed
- 6.4.1.2 [M] Select flaps to 1 degree
- 6.4.1.3 [M] Set IAS/Mach speed window to 10 knots above Flaps 1 bug
- 6.4.1.4 [K] Observe the airspeed indicator
- 6.4.1.5 [A] Call for flaps 5 at the appropriate airspeed
- 6.4.1.6 [M] Select flaps to 5 degrees
- 6.4.1.7 [M] Set IAS/Mach speed to 10 knots above the Flaps 5 bug
- 6.4.1.8 [K] Observe the airspeed indicator
- 6.4.1.9 [A] Call for flaps 10 at the appropriate airspeed
- 6.4.1.10 [M] Select Flaps 10 degrees
- 6.4.1.11 [M] Set the IAS/Mach speed to 10 knots above the Flaps 10 bug
- 6.4.1.12 [C] Notify flight attendants on approach with NO SMOKING signal or over interphone as applicable

##### 6.4.2 Maneuver the aircraft as directed by ATC

- 6.4.2.1 [M] Maneuver the aircraft laterally using the MCP (manually) by pushing the HDG SEL button and adjusting the heading with the heading selector
- 6.4.2.2 [M] Maneuver the aircraft laterally using the FMC (auto by selecting LNAV
- 6.4.2.3 [M] Maneuver the aircraft vertically using the MCP by setting the desired altitude in the altitude window and selecting FLCH
- 6.4.2.4 [M] Adjust rudder trim as required to compensate for asymmetrical thrust if performing an engine out ILS approach

##### 6.4.3 Use FMS Approach Mode (autoland)

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 6.4.3.1 [M] Select APPROach mode on the MSP
- 6.4.3.2 [C] For a monitored approach, ensure the first officer flying the aircraft and the Captain prepared to make landing/missed approach decision
- 6.4.3.3 [K] Observe LOC and G/S appear in white on the PFD - ARMED
- 6.4.3.4 [K] Observe for Localizer to become active
- 6.4.3.5 [K] Observe for localizer Capture
- 6.4.3.6 [K] Observe for white to green of LOC on the PFD
- 6.4.3.7 [K] Observe for G/S to become active
- 6.4.3.8 [M] Select missed approach altitude in the MCP

#### 6.4.4 Configure aircraft for landing

- 6.4.4.1 [A] Call for gear down and flaps 20 at the appropriate airspeed
- 6.4.4.2 [M] Move the gear lever to the DOWN position
- 6.4.4.3 [M] Move the flap handle to the 20 position
- 6.4.4.4 [M] Position IAS/Mach speed window to the flaps 10 bug
- 6.4.4.5 [A] Call for flaps 25 at the appropriate airspeed
- 6.4.4.6 [M] Move flap handle to the 25 position
- 6.4.4.7 [M] Position IAS/Mach speed window to Vref plus 5
- 6.4.4.8 [M] Arm the speedbrakes
- 6.4.4.9 [M] Remove the rudder trim at pilot's discretion - no later than 500 feet - if performing an engine out ILS approach

#### 6.4.5 Perform approach communications

- 6.4.5.1 [A] Receive approach clearance from ATC
- 6.4.5.2 [M] Change to Tower frequency on the radio tuning panel to obtain landing clearance
- 6.4.5.3 [A] Perform standard callouts for a monitored approach (CAT I or CAT III), if applicable, in accordance with the FOM
- 6.4.5.4 [A] Perform standard callouts for a precision approach, if applicable, in accordance with the FOM

#### 6.4.6 Challenge/Response to Landing Check

- 6.4.6.1 [C] Verify both altimeters set appropriately for local altimeter setting (in mb)
- 6.4.6.2 [C] Verify flight attendants notified

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 6.4.6.3 [C] Verify Gear indicating down and locked
- 6.4.6.4 [C] Verify flaps indicating in the 25 position
- 6.4.6.5 [C] Verify the speedbrakes armed
- 6.4.7 Perform vertical navigation at final approach fix,
  - 6.4.7.1 [K] Observe G/S capture
  - 6.4.7.2 [K] Observe white G/S annunciator change to green
- 6.4.8 Achieve Decision Height
  - 6.4.8.1 [K] Observe altitude window
  - 6.4.8.2 [C] Make decision to go around if visual reference to the runway environment is insufficient to complete the landing, if a safe landing is not possible, or if instructed to do so by ATC
  - 6.4.8.3 [C] At decision height, if necessary, "minimums, go around", and perform missed approach procedure (refer to task 6.5)
- 6.5 Perform a non-precision approach
  - 6.5.1 Configure aircraft for maneuvering
    - 6.5.1.1 [A] Call for flaps 1 at the appropriate airspeed
    - 6.5.1.2 [M] Select flaps to 1 degree
    - 6.5.1.3 [M] Set IAS/Mach speed window to 10 knots above Flaps 1 bug
    - 6.5.1.4 [K] Observe the airspeed indicator
    - 6.5.1.5 [A] Call for flaps 5 at the appropriate airspeed
    - 6.5.1.6 [M] Select flaps to 5 degrees
    - 6.5.1.7 [M] Set IAS/Mach speed to 10 knots above the Flaps 5 bug
    - 6.5.1.8 [K] Observe the airspeed indicator
    - 6.5.1.9 [A] Call for flaps 10 at the appropriate airspeed
    - 6.5.1.10 [M] Select Flaps 10 degrees
    - 6.5.1.11 [M] Set the IAS/Mach speed to 10 knots above the Flaps 10 bug
    - 6.5.1.12 [C] Notify flight attendants on approach with NO SMOKING signal or over interphone as applicable
  - 6.5.2 Maneuver the aircraft as directed by ATC
    - 6.5.2.1 [M] Maneuver the aircraft laterally using the MCP (manually) by pushing the HDG SEL button and

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- adjusting the heading with the heading selector
- 6.5.2.2 [M] Maneuver the aircraft laterally using the FMC (auto by selecting LNAV
- 6.5.2.3 [M] Maneuver the aircraft vertically using the MCP by setting the desired altitude in the altitude window and selecting FLCH
- 6.5.2.4 [M] Adjust rudder trim as required to compensate for asymmetrical thrust if performing an engine out ILS approach
- 6.5.3 Use LNAV for the approach
  - 6.5.3.1 [M] Select LNAV on the MSP
  - 6.5.3.2 [K] Monitor raw data on ND
  - 6.5.3.3 [K] Observe LNAV appear in white on the PFD - ARMED
  - 6.5.3.4 [K] Observe for LNAV CAPTURE
  - 6.5.3.5 [K] Observe for white to green change of LNAV on the PFD
- 6.5.4 Perform localizer approach procedures
  - 6.5.4.1 [M] Select LOC on the MSP
  - 6.5.4.2 [K] Monitor raw data on ND
  - 6.5.4.3 [K] Observe LOC appear in white on the PFD - ARMED
  - 6.5.4.4 [K] Observe for LOC CAPTURE
  - 6.5.4.5 [K] Observe for white to green change of LOC on the PFD
- 6.5.5 Perform Airport Surveillance Radar (ASR) approach procedures
  - 6.5.5.1 [M] Push Heading Select switch
  - 6.5.5.2 [K] Observe for green HDG on PFD
- 6.5.6 Configure aircraft for landing no later than 2 miles prior to final approach fix
  - 6.5.6.1 [M] Select MDA or step-down fix altitude on the MCP altitude window
  - 6.5.6.2 [A] Call for gear down and flaps 20 at the appropriate airspeed
  - 6.5.6.3 [M] Move gear lever to the DOWN position
  - 6.5.6.4 [M] Move the flap handle to the 20 position

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 6.5.6.5 [M] Position IAS/Mach speed window to the flaps 10 bug
  - 6.5.6.6 [A] Call for flaps 25 at the appropriate airspeed
  - 6.5.6.7 [M] Arm the speedbrakes
  - 6.5.6.8 [M] Move flap handle to the 25 position
  - 6.5.6.9 [M] Position IAS/Mach speed window to Vref plus 5
- 6.5.7 Perform approach communications
- 6.5.7.1 [A] Receive approach clearance from ATC
  - 6.5.7.2 [M] Change to Tower frequency on the radio tuning panel to obtain landing clearance
  - 6.5.7.3 [A] Perform standard callouts for a nonprecision approach, if applicable, in accordance with the FOM
  - 6.5.7.4 [A] Perform standard callouts for a visual approach, if applicable, in accordance with the FOM
- 6.5.8 Challenge/Response to Landing Check
- 6.5.8.1 [C] Verify both altimeters set to the local altimeter setting (in/mb)
  - 6.5.8.2 [C] Verify flight attendants notified of landing
  - 6.5.8.3 [C] Verify the landing gear is down and indicating in the green
  - 6.5.8.4 [C] Verify the flaps are in the proper landing configuration
  - 6.5.8.5 [C] Verify that the speedbrakes are armed
- 6.5.9 Perform vertical navigation at final approach
- 6.5.9.1 [M] Select V/S switch on the MSP
  - 6.5.9.2 [M] Select the vertical speed descent rate on the MSP as appropriate
  - 6.5.9.3 [M] Start timing for missed approach point if appropriate
- 6.5.10 Achieve the MDA for a nonprecision approach
- 6.5.10.1 [M] Slowly zero vertical speed to stop descent at the MDA or select altitude hold 10% of the vertical speed above the MDA and as altitude sinks to MDA select altitude hold again
  - 6.5.10.2 [A] Call for missed approach to be set in the MSP Altitude Window

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 6.5.10.3 [M] Set the missed approach altitude in the MSP Altitude Window
- 6.5.11 Achieve MDA if performing a monitored approach
  - 6.5.11.1 [A] First Officer, flying, calls out "Minimums"
  - 6.5.11.2 [K] Captain, not flying, decides to land or go around
  - 6.5.11.3 [K] When the decision is to land, the Captain assumes control of the aircraft and lands (refer to task 7)
  - 6.5.11.4 [K] When the decision is to go around, the first officer performs the go around (refer to task 6.5)
- 6.5.12 Achieve MAP
  - 6.5.12.1 [M] Maneuver the aircraft to maintain MDA altitude and final approach track
  - 6.5.12.2 [K] Identify the MAP from timing, DME, radar identification, as appropriate
  - 6.5.12.3 [C] Make decision to go around if visual reference to the runway environment is insufficient to complete the landing, if a safe landing is not possible, or if instructed to do so by ATC
- 6.6 Perform Missed Approach Procedure
  - 6.6.1 [M] Push TOGA switch
  - 6.6.2 [M] Standby to apply rudder as necessary if performing an engine out ILS approach
  - 6.6.3 [A] Call for "go around, thrust flaps 10"
  - 6.6.4 [M] Select flaps 10
  - 6.6.5 [A] Call "rotate \_\_ degrees"
  - 6.6.6 [A] Call "positive rate" when altimeter and VSI indicate a positive rate of climb
  - 6.6.7 [A] Call for gear up and check missed approach altitude
  - 6.6.8 [M] Select gear up and check MCP altitude
  - 6.6.9 [A] Communicate missed approach to ATC
  - 6.6.10 [A] Call for LNAV or heading select
  - 6.6.11 [M] Select LNAV or heading select (<400 AGL)
  - 6.6.12 [A] Call for "FLCH Speed Bug to VzF"
  - 6.6.13 [M] Select FLCH, set speed bug to VzF

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 6.6.14 [M] Re-adjust rudder trim to counteract asymmetrical thrust if performing an engine out ILS approach
- 6.6.15 [A] When speed bug reaches flaps 5 bug, call for flaps 5 thrust if applicable
- 6.6.16 [M] Select flaps 5 and select thrust if SPEED not annunciated
- 6.6.17 [A] When speed reaches flaps 1 bug, call for flaps 1
- 6.6.18 [M] Select flaps 1
- 6.6.19 [A] When speed reaches flaps UP, call for flaps up
- 6.6.20 [M] Select flaps up
- 6.6.21 [A] State intentions to ATC
- 6.6.22 [M] Re-perform Approach Phase as appropriate (refer to task 6)

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

## 7 PERFORM LANDING

(Also refer to tasks under 9.1, 9.2, 10.12, 11.1.10, 11.2, 11.3.4, and 11.3.5 as applicable)

7.1 Comply with Company, FAA and other applicable guidance and regulations regarding landing operations

7.1.1 [C] Know and comply with Approach and Landing Flight Operations guidance in the Company's Operations Manual

7.1.2 [C] Know and comply with ATC Airport Operations guidance in the Company's Operations Manual

7.1.3 [C] Know and comply with applicable guidance from Arrival Procedures in the AIM

7.2 Perform normal landing

7.2.1 [A] Perform appropriate communications during landing

7.2.2 [A] Manage crew activities during landing

7.2.3 [M] Use flaps 25 and appropriate airspeed when performing a jam stabilizer landing

7.2.4 [C] Monitor Instrument Landing System

7.2.4.1 [C] Monitor glideslope deviation at 100 ft flare tone

7.2.4.2 [C] Check to see if aircraft is over threshold (if possible)

7.2.4.3 [M] Perform flare maneuver at 35 ft flare tone (manually raise nose) if performing manual landing

7.2.4.4 [K] Observe flare maneuver at 35 ft flare tone

7.2.4.5 [K] Observe IDLE on AP annunciator of PFD at 20 ft flare tone monitor altitude

7.2.4.6 [M] Retard throttles to idle (if landing manually) or ensure throttles retard to idle if using autothrottles

7.2.4.7 [M] Maintain attitude at 20 ft flare tone if performing manual landing

7.2.4.8 [K] Observe ROLLOUT ARMED on AP Annunciator of PFD at 5 ft

7.2.4.9 [K] Observe touchdown

7.2.4.10 [K] Observe lowering of the nose to the runway after touchdown

7.2.4.11 [K] Observe auto speedbrakes lever deployment

7.2.4.12 [K] Retard the throttles to idle (if performing a manual landing) or ensure the

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

throttles retard to idle if using autothrottles

- 7.2.5 [M] Use Reverse Thrust
    - 7.2.5.1 [M] Raise all four reverse thrust levers to detent
    - 7.2.5.2 [M] Reverse symmetrical operating engine reverse thrust levers (may be less than all engines if performing an engine out landing)
    - 7.2.5.3 [M] Moderate reverse thrust as necessary after green REV indication
    - 7.2.5.4 [C] Monitor airspeed
    - 7.2.5.5 [M] Move reverse thrust to idle reverse at 80 knots
    - 7.2.5.6 [M] Move reverse thrust out of reverse at 60 knots
  - 7.2.6 [C] Ensure auto braking activation and monitor operation
  - 7.2.7 [M] Apply manual toe brakes when executing manual braking
  - 7.2.8 [M] Disengage autopilot at 60 knots ground speed when applicable
  - 7.2.9 [A] Communicate with ATC tower for turn off instructions
  - 7.2.10 [M] Turn off runway
- 7.3 Perform a go-around (when necessary)
- 7.3.1 [M] Initiate go-around
    - 7.3.1.1 [C] Monitor glideslope deviation at 100 ft flare tone
    - 7.3.1.2 [C] Check to see if aircraft is over threshold (if possible)
    - 7.3.1.3 [A] Call for go-around
    - 7.3.1.4 [M] Push TOGA switch
    - 7.3.1.5 [M] Activate TOGA button and push operating engine throttles up to go-around power
    - 7.3.1.6 [A] Call for go-around EPR Flaps 10
    - 7.3.1.7 [M] Select flaps 10

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 7.3.1.8 [K] Verify power if performing a one-engine out go-around
  - 7.3.1.9 [M] Adjust rudder appropriately if performing a one-engine out go-around
  - 7.3.1.10 [A] Call positive rate of climb
  - 7.3.1.11 [A] Call for gear up as appropriate
  - 7.3.1.12 [M] Select gear up
  - 7.3.1.13 [A] Communicate missed approach to crew and ATC
  - 7.3.1.14 [A] Call for LNAV for heading select
  - 7.3.1.15 [M] Select LNAV or Heading Select
  - 7.3.1.16 [A] Call for FLCH speed bug to VzF
  - 7.3.1.17 [M] Move FLCH speed bug to VzF
- 7.3.2 [M] Retract flaps on schedule
- 7.3.2.1 [A] Call for Flaps 5 when speed reaches flaps 5 bug
  - 7.3.2.2 [M] Select Flaps 5
  - 7.3.2.3 [A] Call for Flaps 1 when speed reaches flaps 1 bug
  - 7.3.2.4 [M] Select Flaps 1
  - 7.3.2.5 [A] When speed reaches Flaps UP bug, call for Flaps UP
  - 7.3.2.6 [M] Select Flaps UP

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

## 8 PERFORM POSTARRIVAL GROUND OPERATIONS

(Also refer to tasks under 9.1, 9.2, 10.12, and 12.2.6 as applicable)

8.1 Comply with Company, FAA and other applicable guidance and regulations regarding postarrival ground operations

8.1.1 [C] Know and comply with Flight Operations Parking and Termination guidance in the Company's Operations Manual

8.1.2 [C] Know and comply with ATC Airport Operations guidance in the Company's Operations Manual

8.2 Perform taxi-in

8.2.1 [M] Discontinue automatic braking, if on

8.2.2 [M] Maneuver aircraft to clear the runway

8.2.3 [A] Call for Flaps up after landing

8.2.4 [M] Place flaps up

8.2.5 [M] Place speedbrake lever forward

8.2.6 [M] Turn landing lights off

8.2.7 [M] When weight permits, shut down applicable engines for taxi by moving applicable fuel control switches to OFF

8.2.8 [M] Perform First Officer flow pattern

8.2.8.1 [M] Turn off anti-collision (strobe) lights

8.2.8.2 [M] Place weather radar selector to TEST or OFF

8.2.8.3 [M] Retract flaps on command (if not already done)

8.2.8.4 [M] Place stab trim to appropriate setting

8.2.8.5 [M] Place/verify flight directors are off

8.2.8.6 [M] Select field elevation on AFDS MCP

8.2.8.7 [M] Turn off engine and wing anti-ice

8.2.8.8 [M] Start the APU at the proper time (refer to task )

8.2.9 [A] Communicate with ATC ground control

8.2.10 [A] Call for After Landing Check

8.2.11 [C] Perform After Landing Check

8.2.11.1 [C] Verify that landing and strobe lights are off

8.2.11.2 [C] Verify that flaps are up

8.2.11.3 [C] Verify that speedbrakes are forward

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 8.2.11.4 [C] Verify that stabilizer is at proper position
  - 8.2.11.5 [C] Verify that weather radar is off
  - 8.2.11.6 [C] Verify that anti-ice is off
  - 8.2.11.7 [C] Verify the APU is started, if necessary
  - 8.2.11.8 [A] Call After Landing Check complete
- 8.2.12 [A] Communicate with company on ACARS or radio as appropriate
- 8.3 Perform gate parking
- 8.3.1 [M] Perform First Officer parking duties
    - 8.3.1.1 [M] Turn on Flight Attendant Advisory light
    - 8.3.1.2 [C] Verify that Flight Attendant Advisory is on
    - 8.3.1.3 [M] Select APU or external power
    - 8.3.1.4 [M] Turn off beacon
    - 8.3.1.5 [M] Turn fuel pumps off
    - 8.3.1.6 [M] Place cargo heat switch off
    - 8.3.1.7 [C] Check status display on EICAS
  - 8.3.2 [M] Perform Captain parking duties
    - 8.3.2.1 [M] Set brakes
    - 8.3.2.2 [M] Depress toe brakes
    - 8.3.2.3 [M] Pull parking brake handle
    - 8.3.2.4 [A] Call for seat belt sign off
    - 8.3.2.5 [M] Turn off seatbelt sign
    - 8.3.2.6 [M] Shut down engines
    - 8.3.2.7 [M] Move remaining engines fuel control switches to cutoff
    - 8.3.2.8 [M] Turn hydraulic demand pumps to OFF
    - 8.3.2.9 [M] Write up any maintenance items
- 8.4 Perform shutdown
- 8.4.1 [A] Call for parking check
  - 8.4.2 [C] Perform parking checklist
    - 8.4.2.1 [C] Verify seat belt sign OFF
    - 8.4.2.2 [C] Verify fuel control switches in cutoff
    - 8.4.2.3 [C] Verify hydraulic system demand pumps OFF
    - 8.4.2.4 [C] Verify beacon off
    - 8.4.2.5 [C] Verify fuel pumps off
    - 8.4.2.6 [C] Verify cargo heat OFF
    - 8.4.2.7 [C] Verify parking brake OFF

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 8.4.2.8 [C] Verify IRS in NAV (off)
- 8.4.3 [M] Perform Captain shutdown duties
  - 8.4.3.1 [M] Complete logbook
  - 8.4.3.2 [K] Identify conditions that affect subsequent flights
  - 8.4.3.3 [M] Turn off internal lights
- 8.4.4 [M] Perform First Officer shutdown duties
  - 8.4.4.1 [M] Turn window heat switches OFF
  - 8.4.4.2 [M] After passengers are all off, turn off emergency lights
  - 8.4.4.3 [M] Turn off packs
  - 8.4.4.4 [M] Turn off exterior lights (if power will be turned off)
  - 8.4.4.5 [M] Turn off interior lights
  - 8.4.4.6 [M] Turn off APU
  - 8.4.4.7 [M] Turn off battery switch once the APU is off
- 8.4.5 [A] Call for the Securing Check
- 8.4.6 [C] Perform the Securing Check
  - 8.4.6.1 [C] Verify window heat switches are OFF
  - 8.4.6.2 [C] Verify the emergency lights are OFF
  - 8.4.6.3 [C] Verify the packs are OFF
  - 8.4.6.4 [C] Verify the exterior lights are OFF
  - 8.4.6.5 [C] Verify the interior lights are OFF
  - 8.4.6.6 [C] Verify the APU is OFF
  - 8.4.6.7 [C] Verify the battery switch is OFF

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

## 9 APPLY NON-NORMAL/EMERGENCY PROCEDURES

### 9.1 Apply Non-Normal/Emergency System Procedures

#### 9.1.1 Apply Fire/Smoke Procedures

##### 9.1.1.1 Apply APU Fire Procedure (memory item)

- 9.1.1.1.1 [K] Recognize appropriate EICAS alerting message
- 9.1.1.1.2 [M] Pull, then rotate APU Fire Handle
- 9.1.1.1.3 [M] Rotate APU Fire handle to remaining bottle {if APU FIRE light remains illuminated after 30 seconds}

##### 9.1.1.2 Apply Cabin/Cockpit Smoke After Engine Start

- 9.1.1.2.1 [K] When a hung start or excessive motoring is experience, delay turning on the PACK switch on the affected side until airborne and after flap retraction
- 9.1.1.2.2 [M] Turn PACK SELECTOR (affected sided) to OFF position {if oil smell or smoke persists after ENGINE BLEED AIR switch has been turned on}
- 9.1.1.2.3 [K] Check to ensure ISLN VALVE is closed
- 9.1.1.2.4 [C] Ensure that maximum altitude is FL 350

##### 9.1.1.3 Apply Cargo Fire Procedure

- 9.1.1.3.1 [K] Recognize appropriate EICAS alerting message
- 9.1.1.3.2 [M] Turn CARGO COMPARTMENT switch to ARMED position
- 9.1.1.3.3 [M] Discharge No. 1 Bottle by pushing and holding switch for 1 second
- 9.1.1.3.4 [M] Position one Pack Control selection to OFF
- 9.1.1.3.5 [M] Position one Pack Control selection to OFF
- 9.1.1.3.6 [C] Land at nearest airport, but not to exceed 1 1/2 hours of flying time
- 9.1.1.3.7 [K] Set Flight Deck Temp Selector to FUEL COOL
- 9.1.1.3.8 [M] Discharge No. 2 Bottle after 40 minutes {or during approach if less than 40

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minutes} by pushing and holding switch for 1 second

9.1.1.4 Apply Equipment Smoke Procedure

- 9.1.1.4.1 [K] Recognize appropriate EICAS alerting message
- 9.1.1.4.2 [M] Set Equipment Cooling switch to NORMAL {if Equipment Cooling switch is in ALTN and smoke enters cockpit}

9.1.1.5 Apply Engine Fire/Failure Procedure **(memory item)**

- 9.1.1.5.1 [C] Comply with Engine Fire/Failure procedures IAW Company's Operations Manual
- 9.1.1.5.2 [M] Idle the throttle
- 9.1.1.5.3 [M] Disengage autothrottle {if on}
- 9.1.1.5.4 [M] Position Fuel Control switch to CUTOFF
- 9.1.1.5.5 [M] Pull Fire Handle {if fire warning is indicated}
- 9.1.1.5.6 [M] Rotate Fire Handle to stop and hold for 1 second {if fire warning remains}
- 9.1.1.5.7 [M] Rotate Fire handle to stop on the remaining bottle and hold for 1 second {if fire warning remains after 30 seconds}
- 9.1.1.5.8 [M] Start APU
- 9.1.1.5.9 [M] Open Fuel Crossfeed
- 9.1.1.5.10 [C] Maintain normal fuel distribution
  - 9.1.1.5.10.1 [M] Turn Pumps to OFF position in tank with the least amount of fuel {if fuel imbalance occurs}
  - 9.1.1.5.10.2 [M] Turn Pumps to ON position when quantities are equal
- 9.1.1.5.11 [M] Turn Pack Control selector to OFF position {if wing anti-ice is required}
- 9.1.1.5.12 [K] Ensure ISLN Valve is open {if wing anti-ice is required}
- 9.1.1.5.13 [M] Ensure ISLN Valve is closed {when anti-ice is no longer required}
- 9.1.1.5.14 [M] Position Ground Prox Flap Ovrdr switch to OVRD for landing preparation

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 9.1.1.5.15 [K] Use Flaps 20 and Vref 20 for landing and Flaps 5 for go-around
- 9.1.1.6 Apply Wheel Well Fire Procedure
  - 9.1.1.6.1 [K] Recognize appropriate EICAS alerting message
  - 9.1.1.6.2 [M] Move Gear Handle down
  - 9.1.1.6.3 [M] Move Gear Handle up {after 20 minutes}
- 9.1.1.7 Apply Smoke Identification/Removal **(memory item)**
  - 9.1.1.7.1 [C] Isolate the faulty component for the remainder of the flight {if smoke source can be readily determined}
  - 9.1.1.7.2 [C] Ensure Oxygen Masks on 100%
  - 9.1.1.7.3 [M] Apply Smoke Goggles as required
  - 9.1.1.7.4 [M] Position Emergency Oxygen switch to ON
  - 9.1.1.7.5 [C] Descend and proceed to nearest airport
    - 9.1.1.7.5.1 [K] Observe MEA requirements
    - 9.1.1.7.5.2 [C] Land as soon as conditions permit
  - 9.1.1.7.6 [C] Use autopilot as required
  - 9.1.1.7.7 [M] Close Cockpit Door
  - 9.1.1.7.8 [M] Turn Utility Bus switches off
  - 9.1.1.7.9 [M] Turn Left Recir Fan off
  - 9.1.1.7.10 [C] Establish Crew Communications
    - 9.1.1.7.10.1 [M] Position Oxy/Boom switch to OXY
    - 9.1.1.7.10.2 [C] Ensure positive check-in of PNF on the cabin interphone with a flight attendant
    - 9.1.1.7.10.3 [C] Designate a flight attendant to maintain continuous cabin interphone contact with PNF
  - 9.1.1.7.11 [C] Accomplish cabin inspection procedures
  - 9.1.1.7.12 [C] Advise flight attendants to check galleys, lavs, and entire cabin for smoke source
  - 9.1.1.7.13 [K] Check that Seat Belt/No Smoking Sign is ON
  - 9.1.1.7.14 [C] Proceed to Clean-up checklist {if smoke stops}

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 9.1.1.7.15 [C] Select 9,500' landing altitude {if aircraft is above 10,000' and smoke continues}
- 9.1.1.7.16 [M] Position Auto Rate Control to MAX
- 9.1.1.7.17 [M] Position Both Pack Control selectors to AUTO
- 9.1.1.7.18 [M] Position Cabin Altitude Mode Selector to MAN {if aircraft altitude is 10,000' and below}
- 9.1.1.7.19 [M] Position Manual Control to CLIMB and hold until outflow valve reaches full open
- 9.1.1.7.20 [M] Position Both Pack Control selectors to AUTO
- 9.1.1.7.21 [A] Report to flight attendant
- 9.1.1.7.22 [A] Confirm results of cabin inspection with flight attendant
- 9.1.1.7.23 [K] Check that Emergency Light switch is ON {if fire is reported in normal cabin lighting}
- 9.1.1.7.24 [C] Advise flight attendant to turn off all Cabin Lighting Control switches at forward and aft Flight Attendant Control Panels
- 9.1.1.7.25 [C] Ensure that all cabin lighting is OFF

9.1.1.8 Apply Fire/Overheat System FAIL Warning Procedure

- 9.1.1.8.1 [K] Recognize appropriate EICAS alerting message
- 9.1.1.8.2 [M] Reset the System Fail switch

9.1.2 Apply Door Open Warning Procedure

- 9.1.2.1 [K] Recognize appropriate EICAS alerting message
- 9.1.2.2 [K] Check Door Handles {if ENTRY DOORS Light is illuminated}
- 9.1.2.3 [K] Check Cabin altitude and Rate
- 9.1.2.4 [M] Position Seat Belt/No Smoking Sign to ON {if pressurization is not normal and/or entry handle will not close}
- 9.1.2.5 [M] Set Landing Altitude selector to 10,000' or MEA if higher
- 9.1.2.6 [C] Descend to 10,000' MSL or MEA {whichever is higher}

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 9.1.2.7 [C] Leave packs and recir fans operating
- 9.1.3 Apply Abnormal Air Conditioning and Pressurization Systems Procedures
  - 9.1.3.1 Apply Cabin Altitude (Loss of pressurization) Procedure
    - 9.1.3.1.1 [K] Recognize appropriate EICAS alerting message
    - 9.1.3.1.2 [C] Check Cabin Altitude and Rate
      - 9.1.3.1.2.1 [C] Check Outflow Valve Operation
      - 9.1.3.1.2.2 [C] Check Pack Operation
    - 9.1.3.1.3 [C] Initiate Emergency Descent {if cabin cannot be controlled}
    - 9.1.3.1.4 [K] Verify PASS OXY ON light illumination {if cabin altitude exceeds 14,000'}
  - 9.1.3.2 Apply Cabin Auto Inoperative Procedure
    - 9.1.3.2.1 [K] Recognize appropriate EICAS message
    - 9.1.3.2.2 [M] Set Cabin Altitude Mode selector to MAN
    - 9.1.3.2.3 [M] Position Manual Control to CLIMB or DESCEND to obtain and maintain desired cabin altitude at a rate that cannot exceed 500 fpm
  - 9.1.3.3 Apply Pack Off Procedure
    - 9.1.3.3.1 [K] Recognize appropriate EICAS alerting message
    - 9.1.3.3.2 [K] Pack SELECTOR is OFF
    - 9.1.3.3.3 [K] Duct pressure is too low to keep pack valve open
    - 9.1.3.3.4 [C] Ensure maximum altitude is FL 350
  - 9.1.3.4 Apply Pack Inoperative Procedure
    - 9.1.3.4.1 [K] Recognize appropriate EICAS alerting message
    - 9.1.3.4.2 [M] Set Pack Control selector to STBY-N
    - 9.1.3.4.3 [K] Allow Pack to cool for 5 minutes {if INOP remains}
    - 9.1.3.4.4 [M] Reset Pack Reset Switch

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 9.1.3.4.5 [K] Control Temperature by selecting STBY-C  
ir STBY-W as required
- 9.1.3.4.6 [M] Position Pack Control selector to OFF  
{if INOP will not reset or illuminates  
again}
- 9.1.3.4.7 [K] Check that maximum altitude is at FL 350
- 9.1.3.5 Apply Pack Overtemperature Procedure
  - 9.1.3.5.1 [K] Recognize appropriate EICAS alerting  
message
  - 9.1.3.5.2 [M] Reset the Pack Reset switch
  - 9.1.3.5.3 [M] Set the Pack Control selection to OFF  
{if INOP/PACK OFF will not reset or  
illuminates again}
  - 9.1.3.5.4 [C] Ensure that maximum altitude is at FL350
- 9.1.3.6 Apply Cargo Overheat Warning Procedure
  - 9.1.3.6.1 [K] Recognize appropriate EICAS alerting  
message
  - 9.1.3.6.2 [K] Check that Cargo Heat switch (s) are  
OFF {if cargo heat is not required}
- 9.1.3.7 Apply Forward Equipment Valve Warning Procedure
  - 9.1.3.7.1 [K] Recognize appropriate EICAS alerting  
message
  - 9.1.3.7.2 [M] Set Equip Cooling sector to STBY
  - 9.1.3.7.3 [K] if VALVE remains illuminated after 30  
seconds, pressurization may not be  
possible
  - 9.1.3.7.4 [K] Do Not Take Off with VALVE illuminated
- 9.1.3.8 Apply Forward Equipment Overheat Warning  
Procedure
  - 9.1.3.8.1 [K] Recognize appropriate EICAS alerting  
message
  - 9.1.3.8.2 [M] Set Equip Cooling selector to STBY
  - 9.1.3.8.3 [M] Set Equip Cooling selector to OVRD {if  
OVHT re-illuminates after a 5 minute  
delay}
- 9.1.3.9 Apply Forward Equipment Cooling Warning  
Procedure

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or  
problem solving), M (Psychomotor skill), A (attitude),

- 9.1.3.9.1 [K] Recognize appropriate EICAS alerting message
  - 9.1.3.9.2 [K] No cooling airflow detected
  - 9.1.3.9.3 [K] Know that avionics and electrical equipment on standby buses is reliable for 90 minutes
  - 9.1.3.9.4 [K] Know that continued flight beyond 90 minutes can result in a loss of essential avionics and electrical equipment
- 9.1.3.10 Apply Flight Deck Temperature INOP Warning Procedure
- 9.1.3.10.1 [K] Recognize appropriate EICAS alerting message
  - 9.1.3.10.2 [M] Set Flight Deck Temp Control to MANUAL Position {if Flight Deck INOP is illuminated}
  - 9.1.3.10.3 [M] Position trim air valve as required
- 9.1.3.11 Apply Cabin Temperature INOP Warning Procedure
- 9.1.3.11.1 [K] Recognize appropriate EICAS alerting message
  - 9.1.3.11.2 [K] Check that Compartment Temp Control is OFF {if FWD, MID (if installed) or AFT INOP is illuminated}
    - 9.1.3.11.2.1 [K] Know that it prevents trim air valve from cycling
    - 9.1.3.11.2.2 [K] Know that it allows temperature to be controlled by coolest adjacent compartment
- 9.1.3.12 Apply Erratic Compartment Temperature Procedure
- 9.1.3.12.1 Recognize appropriate EICAS alerting message
  - 9.1.3.12.2 Set Trim Air switch to OFF position {if the affected compartment temperature continues too warm or too cold}
    - 9.1.3.12.2.1 [K] Know that it shuts off trim air and schedules operating pack(s) to

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- provide a preselected mean temperature
- 9.1.3.12.2.2 [K] Know that additional temperature control may be obtained by use of Pack Control Selectors in STBY mode
- 9.1.4 Apply Abnormal Autoflight System Procedures
- 9.1.4.1 Apply Mode Control Panel Failure Procedure
- 9.1.4.1.1 [M] To correct a failure of any mode to disengage, manually disengage the autopilot and turning both flight directors OFF
- 9.1.4.1.2 [M] To correct a failure of any mode to engage, manually disengage the autopilot and turning both flight directors OFF, the ON
- 9.1.5 Apply APU Fault Procedure
- 9.1.5.1 [K] Recognize appropriate EICAS alerting message
- 9.1.5.2 [M] Turn APU Selector OFF then ON {with APU FAULT message}
- 9.1.5.3 [K] Know that if the FAULT light extinguishes, a restart may be attempted
- 9.1.5.4 [K] Know not to attempt an APU Start {with APU FUEL VAL message}
- 9.1.6 Apply Abnormal Communications/Radar Systems Procedure
- 9.1.6.1 Apply Radar Malfunctions Procedure
- 9.1.6.1.1 [M] Turn Mode Selector to OFF position {if one or more of the fault codes appear on the radar scope}
- 9.1.6.1.2 [K] Know that if system is left ON, further damage will occur
- 9.1.6.2 Apply ACARS System Inop Procedure
- 9.1.6.2.1 [K] Manually complete Pilot's Paysheet
- 9.1.6.2.2 [K] Manually complete Station's Time Slip
- 9.1.6.2.3 [K] Manually complete Flight Attendants Pay Tab

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 9.1.6.2.4 [K] Accomplish required company radio reports per Company communications chart
- 9.1.6.2.5 [M] Disengage autothrottles {when the aircraft is stabilized in cruise}
- 9.1.6.2.6 [K] Allow engines to stabilize {when the aircraft is stabilized in cruise}
- 9.1.6.2.7 [M] Press EVENT RECORD button on the EICAS Control Panel
- 9.1.6.2.8 [M] Autothrottles may be re-engaged
- 9.1.6.2.9 [K] When desired, the EICAS maintenance panel may be used to call up the PERF/APU DISPLAYS
  - 9.1.6.2.9.1 [M] Press the PERF/APU button
  - 9.1.6.2.9.2 [M] Press the MAN button
- 9.1.6.2.10 [M] Record data on Engine Appliance Report form
- 9.1.6.2.11 [M] Return the lower EICAS CRT display to Engine mode by pressing ENGINE switch on EICAS control panel

9.1.6.3 Apply ACARS No Comm Procedure

- 9.1.6.3.1 [M] Press the ENT/SEND button
- 9.1.6.3.2 [K] If NO COMMUNICATION remains annunciated, enter discrepancy in Aircraft Log book

9.1.7 Apply Abnormal Electrical Systems Procedures

9.1.7.1 Apply BUS ISLN Warning Procedure

- 9.1.7.1.1 [K] Recognize appropriate EICAS alerting message
- 9.1.7.1.2 [K] Know not to actuate the Bus Tie switches in flight {actuation may inhibit automatic protective features}

9.1.7.2 Apply GENERATOR DRIVE Warning Procedure

- 9.1.7.2.1 [K] Recognize appropriate EICAS alerting message
- 9.1.7.2.2 [M] Push the Generator Drive Disconnect switch to prevent damage to the unit
- 9.1.7.2.3 [M] Start the APU
- 9.1.7.2.4 [K] Know that the APU may not start above FL 350

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

9.1.7.3 Apply GENERATOR OFF Warning Procedure

- 9.1.7.3.1 [K] Recognize appropriate EICAS alerting message
- 9.1.7.3.2 [M] Turn the GEN CONT switch OFF then ON
- 9.1.7.3.3 [M] Start the APU {if left of right Gen Cont OFF light remains illuminated}
- 9.1.7.3.4 [K] Know that the APU may not start above FL 350

9.1.7.4 Apply STANDBY BUS OFF Warning Procedure

- 9.1.7.4.1 [K] Recognize appropriate EICAS alerting message
- 9.1.7.4.2 [M] Turn the Standby Power Selector to BAT position
- 9.1.7.4.3 [K] Know that the battery will provide standby AC and DC power for approximately thirty minutes
- 9.1.7.4.4 [M] Turn the Standby Power Selector to AUTO position {if the Standby Power Bus OFF light remain illuminated
  - 9.1.7.4.4.1 [K] Know that this restores the battery charger
  - 9.1.7.4.4.2 [K] Know that most failed components will either be obvious or indicated on EICAS
  - 9.1.7.4.4.3 [K] Know that CAT III is not available
  - 9.1.7.4.4.4 [K] Know that communications will be available with the right VHF Comm

9.1.7.5 Apply UTILITY BUS OFF Warning Procedure

- 9.1.7.5.1 [K] Recognize appropriate EICAS alerting message
- 9.1.7.5.2 [M] Turn the Utility Bus switch OFF then ON {if two generator sources are available}

9.1.7.6 Apply AC BUS(ES) OFF Warning Procedure

- 9.1.7.6.1 [K] Recognize appropriate EICAS alerting message
- 9.1.7.6.2 [M] Turn Gen Cont switch(s) OFF then ON
- 9.1.7.6.3 [K] Know to attempt one reset to restore power

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 9.1.7.6.4 [M] Start the APU {if one or both BUS OFF light(s) remain illuminated}
- 9.1.7.6.5 [K] Know that APU may not start above FL 350
- 9.1.7.6.6 [M] Reset the Mode Control Panel {if both BUS OFF light were illuminated and AC Power is restored}
- 9.1.7.6.7 [M] Reactivate the FMS Route
- 9.1.7.6.8 [M] Re-enter the Performance Data
- 9.1.7.6.9 [C] Maintain Straight and Level Att {if IRS ALIGN light(s) are illuminated}
- 9.1.7.6.10 [M] Position IRS Mode Selector to ATT
- 9.1.7.6.11 [M] Turn IRS Display Selector to HDG
- 9.1.7.6.12 [M] Enter the Heading
  - 9.1.7.6.12.0.1 [M] Enter the heading via the FMS CDU or the IRS panel
  - 9.1.7.6.12.0.2 [K] Know that the IRS may require periodic heading update
- 9.1.7.6.13 [K] All Autopilot's are inoperative {if left BUS OFF light is illuminated}
- 9.1.7.6.14 [K] Know that the L & C Flight Director is inoperative
- 9.1.7.6.15 [K] Know that the flap indicator is inoperative
- 9.1.7.6.16 [K] Know that the R Autopilot/Flight Director is inoperative {if Right BUS OFF is illuminated}
- 9.1.7.6.17 [C] Avoid icing conditions {if both BUS OFF light remain illuminated}
- 9.1.7.6.18 [C] Control pressurization manually, at pattern altitude position outflow valve full open
- 9.1.7.6.19 [K] Know that the EICAS is inoperative; use standby engine indicator
- 9.1.7.6.20 [C] Use left VOR and RDMI as required for navigation
- 9.1.7.6.21 [C] Use standby attitude ILS indicators if required for approach
- 9.1.7.6.22 [K] Know to use manual speedbrakes after landing
- 9.1.7.6.23 [K] Know thrust reversers are inoperative
- 9.1.7.6.24 [K] Know Master Caution is inoperative
- 9.1.7.6.25 [K] Know Anti-skid for outboard wheels is inoperative
- 9.1.7.6.26 [K] Know that Gear and flaps operate normally with no flap indication

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 9.1.7.6.27 [K] Know to use manual stab trim with no trim indication
- 9.1.7.6.28 [M] Position the APU selector to OFF {if both buses are off}
- 9.1.7.6.29 [M] Push the RAM AIR TURBINE switch
- 9.1.7.6.30 [K] Know that when operating with standby power only, flight beyond 30 minutes will result in battery depletion

#### 9.1.8 Apply Abnormal Flight Control Systems Procedures

##### 9.1.8.1 Apply STABILIZER TRIM (FAULT) Warning Procedure

- 9.1.8.1.1 [K] Recognize appropriate EICAS alerting message
- 9.1.8.1.2 [M] Actuate the Stabilizer Trim Levers

##### 9.1.8.2 Apply UNSCHEDULED STABILIZER TRIM Warning Procedure

- 9.1.8.2.1 [K] Recognize appropriate EICAS alerting message
- 9.1.8.2.2 [M] Turn Stab Trim switch to CUTOFF
- 9.1.8.2.3 [M] Disengage the Autopilot
- 9.1.8.2.4 [K] Know that higher than normal control column force may be required to prevent unwanted pitch change during autopilot disengagement
- 9.1.8.2.5 [M] Position the Stab Trim Cutout switch to NORMAL {one at a time}
- 9.1.8.2.6 [M] Turn the affected Stab Trim switch to CUTOFF {if unscheduled trim re-occurs}
- 9.1.8.2.7 [M] Engage unaffected Autopilot

##### 9.1.8.3 Apply YAW DAMPER Warning Procedure

- 9.1.8.3.1 [K] Recognize appropriate EICAS alerting message
- 9.1.8.3.2 [M] Position the Inoperative Yaw Damp switch to OFF

#### 9.1.9 Apply Abnormal Flight Instrument Systems Procedures

##### 9.1.9.1 Apply RADIO ALTIMETER Warning Procedure by

- 9.1.9.1.1 [K] Recognize RA flag in ADI

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 9.1.9.1.2 [M] Position the EFI Instr Source selector to ALTN
- 9.1.9.2 Apply AIRSPEED OR ALTIMETER FAIL Warning Procedure
  - 9.1.9.2.1 [M] Position the Air Data switch (affected side) to ALTN
  - 9.1.9.2.2 [K] Know that the TAS/SAT Indicator is supplied data from R-ADC only and does not switch to opposite ADC when ALTN is pushed
- 9.1.10 Apply Abnormal Fuel System Procedures
  - 9.1.10.1 Apply FUEL CONFIGURATION Warning Procedure
    - 9.1.10.1.1 [K] Recognize appropriate EICAS alerting message
    - 9.1.10.1.2 [C] Check tank quantity
    - 9.1.10.1.3 [M] Open the Crossfeed Valve {if a lateral unbalance exists}
    - 9.1.10.1.4 [M] Position the Pump switches (Low Tank) to OFF
    - 9.1.10.1.5 [M] Position the Pump switches to ON when FUEL CONFIG light extinguishes or when quantities are balanced
    - 9.1.10.1.6 [C] Ensure Crossfeed Valve is closed
    - 9.1.10.1.7 [M] Position the Center Tank Pump switches to ON when the center tank contains fuel
    - 9.1.10.1.8 [K] Know that if the center tank pump PRESS lights are illuminated usable fuel on board will be less than the total indicated
  - 9.1.10.2 Apply FUEL CROSSFEED Warning Procedure
    - 9.1.10.2.1 [K] Recognize appropriate EICAS alerting message
    - 9.1.10.2.2 [C] Achieve Fuel Balance by varying engine thrust as flight conditions permit
  - 9.1.10.3 Apply FUEL PUMP Warning Procedure

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 9.1.10.3.1 [K] Recognize appropriate EICAS alerting message
- 9.1.10.3.2 [C] Continue normal operation when one main tank PRESS light is illuminated
- 9.1.10.3.3 [M] Open the Crossfeed Valve when one center tank PRESS light is illuminated
- 9.1.10.3.4 [M] Close the Crossfeed Valve when center tank fuel is depleted
- 9.1.10.3.5 [C] Determine fuel requirements when both center tank PRESS lights are illuminated
- 9.1.10.3.6 [C] Check that available main tank fuel is sufficient for planned flight
  
- 9.1.10.4 Apply FUEL QUANTITY Warning Procedure
  - 9.1.10.4.1 [M] Select Progress Page 2 when fuel quantity indication is suspect
  - 9.1.10.4.2 [C] Verify fuel quantity and/or fuel used
  - 9.1.10.4.3 [K] Know that a 3,000 lbs. difference between totalizer and calculated fuel causes the USE prompts to appear
  - 9.1.10.4.4 [M] Select USE prompt corresponding to most accurate fuel indication
  
- 9.1.10.5 Apply FUEL SYSTEM PRESSURE Warning Procedure
  - 9.1.10.5.1 [K] Recognize appropriate EICAS alerting message
  - 9.1.10.5.2 [M] Open the Crossfeed Valve {if required thrust cannot be maintained}
  - 9.1.10.5.3 [M] Position Engine Start selector to CONT
  
- 9.1.10.6 Apply FUEL TEMPERATURE Warning Procedure
  - 9.1.10.6.1 [K] Know that minimum fuel temperature is  $-37^{\circ}$  C
  - 9.1.10.6.2 [M] Increase the Total Air Temp when fuel temperature is less than  $-37^{\circ}$  C
  - 9.1.10.6.3 [K] Know that total air temperature may be increased by descending to a lower (warmer) altitude, descent between 3,000 to 5,000 feet below optimum should be sufficient, and Fifteen minutes to an hour may be required to increase fuel temperature

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

9.1.10.7 Apply LOW FUEL Warning Procedure

- 9.1.10.7.1 [K] Recognize appropriate EICAS alerting message
- 9.1.10.7.2 [M] Open the Crossfeed Valve
- 9.1.10.7.3 [C] Check that all Pump switches are ON
- 9.1.10.7.4 [K] Know to avoid high nose up attitude and excessive acceleration

9.1.10.8 Apply FUEL JETTISON NOZZLE Warning Procedure

- 9.1.10.8.1 [K] Recognize appropriate EICAS alerting message
- 9.1.10.8.2 [C] Check Flap position when nozzle switch is ON and valve failed CLOSED or flaps at 25 or 30
- 9.1.10.8.3 [M] Reposition Flaps as required
- 9.1.10.8.4 [K] Fuel Jettison time will be extended when valve light remains illuminated
- 9.1.10.8.5 [K] Ensure that crew is aware when nozzle switch is off and valve failed to open
- 9.1.10.8.6 [M] Turn Fuel Jettison Nozzle switches OFF when on ground

9.1.10.9 Apply FUEL JETTISON PUMP Warning Procedure

- 9.1.10.9.1 [K] Recognize appropriate EICAS alerting message
- 9.1.10.9.2 [K] Know associated Fuel Jettison Pump is inoperative
- 9.1.10.9.3 [K] Know that fuel Jettison time will be extended

9.1.10.10 Apply FUEL JETTISON TRANSFER VALVE Warning Procedure

- 9.1.10.10.1 [K] Recognize appropriate EICAS alerting message
- 9.1.10.10.2 [K] Know fuel jettison time will be extended when jettison selector is ON and valve fail closed
- 9.1.10.10.3 [K] Ensure that the crew is aware when jettison selector is OFF and valve is failed open

9.1.11 Apply Abnormal Hydraulic Systems Procedures

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

9.1.11.1 Apply RAM AIR TURBINE UNLOCKED Warning Procedure

- 9.1.11.1.1 [K] Recognize appropriate EICAS alerting message
- 9.1.11.1.2 [K] When RAT does not deploy, know to operate normally when PRESS remains extinguished
- 9.1.11.1.3 [K] Know that a minimal increase in fuel flow will occur when Ram Air Turbine PRESS light is illuminated

9.1.11.2 Apply ALTN FLAP/GEAR EXTENSION Warning Procedure

- 9.1.11.2.1 [C] Check that Gnd Prox Flap Ovrdr switch is positioned to OVRD
- 9.1.11.2.2 [M] Set the Alternate Flap Pos selector to the detent closest to the indicated flap position
- 9.1.11.2.3 [M] Position Alternate Flap switches to ALTN
- 9.1.11.2.4 [M] Set Alternate Flap Pos selector and extend flaps as required
- 9.1.11.2.5 [M] Turn Gear Handle to OFF position
- 9.1.11.2.6 [K] Know that unless gear handle is OFF, alternate gear extension may not be possible
- 9.1.11.2.7 [M] Position Altn Gear Extension switch to DN
- 9.1.11.2.8 [C] Ensure there are 3 green Gear Down lights
  - 9.1.11.2.8.1 [K] Know that nose gear may take up to 60 seconds
  - 9.1.11.2.8.2 [K] Know that gear door lights will remain illuminated
- 9.1.11.2.9 [M] Position Gear Handle to DN
- 9.1.11.2.10 [M] Turn Reserve Brake switch ON to provide reserve brake capability
- 9.1.11.2.11 [K] Know if Right Electric Hydraulic Pump PRESS light remains illuminated, reserve brakes may not be available

9.1.11.3 Apply HYDRAULIC RESERVOIR Warning Procedure

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 9.1.11.3.1 [K] Recognize appropriate EICAS alerting message
- 9.1.11.3.2 [K] Know that a HYD RSVR PRES EICAS message may indicate an intermittent loss of system pressure
- 9.1.11.3.3 [M] Pull the PTU C/B(overhead Panel at D-31) when HYD EICAS message appears (time and conditions permitting}
- 9.1.11.3.4 [M] Turn Engine Pump switch to OFF position
- 9.1.11.3.5 [C] Monitor the Hyd Qty Ind (status page)
  - 9.1.11.3.5.1 [M] Turn Engine Pump switch to OFF position when quantity continues to decrease
  - 9.1.11.3.5.2 [M] Turn Elec Pump switch to OFF position
  - 9.1.11.3.5.3 [M] Turn Engine Pump switch to OFF position when quantity continues to decrease
- 9.1.11.3.6 [M] Turn the Elec-1 Pump switch to OFF position when the C HYD QTY EICAS message appears (time & conditions permitting}
- 9.1.11.3.7 [C] Monitor the Hyd Qty Ind (status page)
  - 9.1.11.3.7.1 [M] Turn the C Elec-1 Pump switch to ON position when quantity continues to decrease
  - 9.1.11.3.7.2 [M] Turn the C Elec-2 Pump switch to OFF position
- 9.1.11.3.8 [M] Turn the Engine Pump switch to OFF position when R HYD QTY EICAS message appears (time & conditions permitting)
- 9.1.11.3.9 [C] Monitor the Hyd Qty Ind (status page)
  - 9.1.11.3.9.1 [M] Turn the Engine Pump switch to the ON position when quantity continues to decrease
  - 9.1.11.3.9.2 [M] Turn the Elec Pump switch to the OFF position
  - 9.1.11.3.9.3 [M] Turn the Engine Pump switch to the OFF position when the quantity continues to decrease

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 9.1.11.3.10 [K] Know to continue approach/landing using good pumps only when hydraulic leak is isolated to a specific pump
- 9.1.11.3.11 [M] Push in the PTU C/B (overhead panel D-31) when the leak is in the L System
- 9.1.11.3.12 [K] Know that the PTU uses reserve fluid (if available) to power flaps/slats, landing gear and nose wheel steering
- 9.1.11.3.13 [M] Turn Pump switches to ON position when the lead is not isolated to a specific pump}
- 9.1.11.3.14 [M] Turn Pump switches to OFF position when the Pump Low Pressure light(s) are illuminated
  
- 9.1.11.4 Apply PUMP OVERHEAT Warning Procedure
  - 9.1.11.4.1 [K] Recognize appropriate EICAS alerting message
  - 9.1.11.4.2 [M] Turn the Pump switch-selector to the OFF position
  
- 9.1.11.5 Apply PUMP PRESSURE Warning Procedure
  - 9.1.11.5.1 [K] Recognize appropriate EICAS alerting message
  - 9.1.11.5.2 [M] Turn the Pump switch to OFF position
  
- 9.1.11.6 Apply SYSTEM(S) PRESSURE Warning Procedure
  - 9.1.11.6.1 [K] Recognize appropriate EICAS alerting message
  - 9.1.11.6.2 [M] Turn Pump switch(s) to OFF position and refer to task 9.2.4
  - 9.1.11.6.3 [C] Accomplish the Altn Flap/gear Ext when required
    - 9.1.11.6.3.1 [K] Know that an autopilot stabilizer trim is inoperative
    - 9.1.11.6.3.2 [K] Know Autobrakes are inoperative
  - 9.1.11.6.4 [M] Turn Gnd Prox OvrD switch to OVRD when two systems are inoperative
  - 9.1.11.6.5 [C] Accomplish Flaps 20 Landing

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

9.1.11.6.6 [K] Know that the crosswind limit is 20 knots

## 9.1.12 Apply Abnormal Ice/Rain Protection System Procedures

### 9.1.12.1 Apply ENGINE ANTI-ICE Warning Procedure

9.1.12.1.1 [K] Recognize appropriate EICAS alerting message

9.1.12.1.2 [C] Avoid icing conditions when Engine Anti-ice switch is ON or AUTO (ER only) and valve has failed CLOSED

9.1.12.1.3 [K] Know to leave both Eng Anti-ice switches on

9.1.12.1.3.1 [K] Know that this provides continuous ignition

9.1.12.1.3.2 [K] Know to automatically reduces thrust limits for bleed corrections

9.1.12.1.4 [M] Turn the Eng Anti-ice switch (failed side) to ON position when Engine Anti-ice switch is OFF, and the valve has failed OPEN

9.1.12.1.4.1 [K] Know that this automatically reduces thrust limits for bleed corrections

9.1.12.1.4.2 [K] Know to avoid high thrust when total air temperature is above 10 degrees C

### 9.1.12.2 Apply ICE DETECTOR ON/OFF Warning Procedure

9.1.12.2.1 [K] Recognize appropriate EICAS alerting message

9.1.12.2.2 [M] Turn Eng and Wing Anti-ice switches to the ON position when ICE DET ON message is displayed

9.1.12.2.3 [M] Turn Eng and Wing Anti-ice switches to the OFF position when ICE DET OFF message is displayed

### 9.1.12.3 Apply WINDOW ARCHING/DELAMINATION SHATTERING OR CRACKED Procedure

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 9.1.12.3.1 [K] Know the front windows have a thin protective outer layer
  - 9.1.12.3.2 [K] Know the strength of the windshield is unaffected if the outer layer shatters.
  - 9.1.12.3.3 [M] Turn the Window Heat switch to OFF position
- 9.1.12.4 Apply PROBES Warning Procedure
- 9.1.12.4.1 [K] Recognize appropriate EICAS alerting message
  - 9.1.12.4.2 [C] Monitor the Flight Instruments
  - 9.1.12.4.3 [K] Know that formation of ice on the affected pitot or probe may cause erroneous indications of airspeed, altitude, and rate of climb
  - 9.1.12.4.4 [M] Turn the Air Data switch (affected side) to the ALTN position when the Capt's or First Officer's pitot heat fails
  - 9.1.12.4.5 [M] Press the instrument source Air Data switch for affected side and check that ALTN appears in switch
  - 9.1.12.4.6 [K] Know that the Left Aux Pitot - Standby Airspeed Indicator, Elevator Feel Computer, and Cabin Differential Pressure may be affected by associated Probe/Vane heat failures {if L or R Aux Pitot, L or R AOA, or TAT heat fails}
  - 9.1.12.4.7 [K] Know that the Right Aux - Elevator Feel Computer may be affected by associated Probe/Vane heat failures
  - 9.1.12.4.8 [K] Know that the Left or Right Angle of Attack Vane - Left or Right Air Data Computer may be affected by associated Probe/Vane heat failures
  - 9.1.12.4.9 [K] Know that the TAT - Air Data Computer may be affected by associated Probe/Vane heat failures
  - 9.1.12.4.10 [K] Know that the TAT or Left and Right Angle of Attack Sensors - Autothrottle will disconnect and cannot be reengaged
- 9.1.12.5 Apply WINDOW HEAT Warning Procedure

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 9.1.12.5.1 [K] Recognize appropriate EICAS alerting message
  - 9.1.12.5.2 [M] Turn affected Window Heat switch OFF/ON and allow 10 seconds OFF minimum for cooling period and controller reset
  - 9.1.12.5.3 [M] Turn affected Window Heat switch to OFF position when INOP illuminates again
- 9.1.12.6 Apply WING ANTI-ICE Warning Procedure
- 9.1.12.6.1 [K] Recognize appropriate EICAS alerting message
  - 9.1.12.6.2 [M] Turn Wing Anti-ice switch to OFF position when Wing Anti-ice switch is ON and illuminated VALVE has failed closed
  - 9.1.12.6.3 [K] Avoid icing conditions
  - 9.1.12.6.4 [M] Turn APU Bleed Air switch to OFF position when Wing Anti-ice switch is OFF, illuminated VALVE has failed open}
  - 9.1.12.6.5 [M] Turn Eng Bleed (affected side) to OFF position after landing
  - 9.1.12.6.6 [C] Check that ISLN Valve is CLOSED after landing
- 9.1.12.7 Apply ICE DETECTOR Warning Procedure
- 9.1.12.7.1 [K] Recognize appropriate EICAS alerting message
  - 9.1.12.7.2 [K] Know that the Primary Ice Detection System is inoperative
  - 9.1.12.7.3 [M] Operate Engine and Wing Anti-ice Systems manually
- 9.1.12.8 Apply ICING ENGINE Warning Procedure
- 9.1.12.8.1 [K] Recognize appropriate EICAS alerting message
  - 9.1.12.8.2 [K] Know that the Engine Anti-ice selector is OFF and engine icing is detected
  - 9.1.12.8.3 [M] Turn Engine Anti-ice selector to ON position
- 9.1.12.9 Apply ICING WING Warning Procedure
- 9.1.12.9.1 [K] Recognize appropriate EICAS alerting message

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 9.1.12.9.2 [K] Know that the Wing Anti-ice selector is OFF and wing icing is detected
- 9.1.12.9.3 [M] Turn Wing Anti-ice selector to ON position

### 9.1.13 Apply Abnormal Landing Gear System Procedures

#### 9.1.13.1 Apply AUTOBRAKES Warning Procedure

- 9.1.13.1.1 [K] Recognize appropriate EICAS alerting message
- 9.1.13.1.2 [M] Reselect the Auto Brakes selector
- 9.1.13.1.3 [M] Turn Auto Brakes selector to OFF position {if AUTO BRAKES lights again}

#### 9.1.13.2 Apply GEAR HANDLE LOCKED DOWN Warning Procedure

- 9.1.13.2.1 [M] Push the Gear Handle Lock Ovrdr switch
- 9.1.13.2.2 [C] Ensure Gear Handle is up

#### 9.1.13.3 Apply PARKING BRAKE Warning Procedure

- 9.1.13.3.1 [K] Recognize appropriate EICAS alerting message
- 9.1.13.3.2 [K] Know that when the PARKING BRAKE light illuminates in flight, the Anti-skid system is inoperative

#### 9.1.13.4 Apply BRAKE SOURCE Warning Procedure

- 9.1.13.4.1 [K] Recognize appropriate EICAS alerting message
- 9.1.13.4.2 [M] Turn the Reserve Bks switch to ON position
- 9.1.13.4.3 [M] Turn the Auto Brakes selector to OFF position {if BRAKE SOURCE light remains}
- 9.1.13.4.4 [M] Turn the Anti-skid switch to OFF position

9.1.13.4.4.1 [K] Know that ONLY accumulator pressure is available for braking and approximately 6-7 brake applications are available

9.1.13.4.4.2 [M] Apply steady brake pressure until stopped

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

## 9.1.14 Apply Abnormal Navigation System Procedures

### 9.1.14.1 Apply FMC FAIL/SINGLE FMC OPERATION Warning Procedure

- 9.1.14.1.1 [K] Recognize appropriate EICAS alerting message
- 9.1.14.1.2 [M] Turn the FMC Instr Source selector switch to ALTN position
- 9.1.14.1.3 [K] Know that when an autopilot is engaged in LNAV and/or VNAV mode when associated FMC fails, disengage that autopilot and engage autopilot not associated with failed FMC (left FMC is associated with the left and center autopilot, right FMC is associated with the right autopilot)
- 9.1.14.1.4 [K] Know that when the left FMC fails, use the right autopilot and if the right FMC fails, use the left or center autopilot
- 9.1.14.1.5 [K] Know that when the HSI is in MAP or PLAN mode, the pilot selecting ALTN must keep their HSI map range scale the same as pilot in NORM with VOR and ILS modes are not affected
- 9.1.14.1.6 [K] Know that when operating in Flight Director mode with both F/D switches ON, LNAV and VNAV will engage only if the right autopilot is engaged {left FMC Inoperative}
- 9.1.14.1.7 [K] Know that when the left F/D switch is turned OFF, then the right Flight Director can be used in the LNAV and VNAV modes {left MFC inoperative}
- 9.1.14.1.8 [K] Know that all autopilots and F/Ds will operate when the left FMC is inoperative
- 9.1.14.1.9 [K] Know that LNAV and VNAV modes operate as usual in Flight Director mode and using the left or center autopilot when the right FMC is inoperative
- 9.1.14.1.10 [M] Turn L FMC Instr Source selector switch to CDU L {both FMCs inoperative}
- 9.1.14.1.11 [M] Turn R FMC Instr Source selector switch to CDU {both FMCs inoperative}

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 9.1.14.1.12 [K] Route modifications must be entered into both FMC - CDUs
- 9.1.14.1.13 [M] Enter any new waypoints by latitude and longitude
- 9.1.14.1.14 [M] Manually tune the Navigation Radios
- 9.1.14.2 Apply FMC RESYNC Warning Procedure
  - 9.1.14.2.1 [M] Pull the respective C/B (E9 for the left, E30 for the right FMC)
  - 9.1.14.2.2 [K] Know to leave the breaker pulled until the loading is complete
  - 9.1.14.2.3 [M] Reset the C/B
  - 9.1.14.2.4 [K] Know that the initialized FMC will then resync the other FMC
- 9.1.14.3 Apply ILS FAIL Warning Procedure
  - 9.1.14.3.1 [M] Position the EFI Instr Source selector switch to ALTN when the ILS or G/S fails
- 9.1.14.4 Apply ILS TUNING FAIL Warning Procedure
  - 9.1.14.4.1 [C] Verify the ILS Course & Freq when the AFDS fails to capture ILS localizer and/or ILS tuning is suspect
    - 9.1.14.4.1.1 [C] Aurally identify the ILS (3)
    - 9.1.14.4.1.2 [C] Verify correct COURSE and FREQUENCY on both HSIs by selecting ILS or EXP ILS on HSI control panel
    - 9.1.14.4.1.3 [K] Know that the Center ILS frequency and/or course can be verified by selecting alternate EFI
    - 9.1.14.4.1.4 [K] Know that after ILS course and frequency are tuned and verified, both aurally and visually, the MAP mode (one side only) may be reselected for approach if desired
  - 9.1.14.4.2 [M] Position the EFI Instr Source selector switch (affected side) to ALTN {if course or frequency display on one HSI is incorrect}

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 9.1.14.4.2.1 [K] Know that when correct course and frequency are now displayed on both HSIs, ILS approach may be continued
- 9.1.14.4.2.2 [K] Know that when course or frequency display in either HSI is still in error, ILS approach is prohibited
- 9.1.14.4.3 [M] Select the correct course and /or frequency when course or frequency display on both HSIs is incorrect
  - 9.1.14.4.3.1 [M] Disregard ILS control panel display and, by tuning the respective knob, select correct course and/or frequency using HSI display reference
  - 9.1.14.4.3.2 [K] Know that when the correct course and frequency are not displayed on both HSIs, the ILS approach may be continued
  - 9.1.14.4.3.3 [K] Know that when the course or frequency display in either HSI is still in error, the ILS approach is prohibited
- 9.1.14.5 Apply IRS ON DC Warning Procedure
  - 9.1.14.5.1 [K] Recognize appropriate EICAS alerting message
  - 9.1.14.5.2 [M] Position the IRS Instr Source selector switch to ALTN {if L or R IRS ON DC is illuminated}
- 9.1.14.6 Apply IRS DC FAIL Warning Procedure
  - 9.1.14.6.1 [K] Recognize appropriate EICAS alerting message
  - 9.1.14.6.2 [M] Position the IRS Instr Source selector switch to ALTN {if L or R DC FAIL is illuminated}
- 9.1.14.7 Apply IRS FAULT Warning Procedure
  - 9.1.14.7.1 [M] Position the IRS Instr Source selector switch to ALTN {if L or R FAULT is illuminated}

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

9.1.14.8 Apply IRS ALIGN LIGHT(S) FLASHING Warning Procedure

- 9.1.14.8.1 [M] Select the Pos Int Page
- 9.1.14.8.2 [M] Enter the present position
  - 9.1.14.8.2.1 [M] Re-enter the correct present position on SET IRS POS line. Box prompts for SET IRS POS data need not be displayed if present position has previously been entered, existing position may be overwritten
  - 9.1.14.8.2.2 [K] Know that two or three attempts may be necessary to extinguish the flashing ALIGN light(s)
- 9.1.14.8.3 [M] Position the IRS Display selector to PPOS {if ALIGN light(s) continue to flash}
- 9.1.14.8.4 [M] Enter the latitude by typing the latitude in the display beginning with N or S, then push ENT key
- 9.1.14.8.5 [M] Enter the longitude by typing longitude in display beginning with E or W, then push ENT key
- 9.1.14.8.6 [M] Position the IRS Mode selector(s) to OFF when the ALIGN light(s) continue to flash
  - 9.1.14.8.6.1 [K] Know to wait until ALIGN light extinguishes (approx. 30 seconds)
  - 9.1.14.8.6.2 [M] Position the IRS Mode selector(s) to NAV {after ALIGN light(s) extinguish(es)}
    - 9.1.14.8.6.2.1 [C] Verify ALIGN light(s) illuminated steady.
    - 9.1.14.8.6.2.2 [M] Enter present position using the CDU first, followed by the IRS Mode Control Panel if necessary
    - 9.1.14.8.6.2.3 [K] Know that maintenance action is required when ALIGN light(s) continue to flash

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

9.1.14.9 Apply MULTIPLE IRS FAULTS Warning Procedure

- 9.1.14.9.1 [K] Maintain a straight and level attitude
- 9.1.14.9.2 [C] Ensure failed IRS Mode selectors are set to ATT
- 9.1.14.9.3 [K] Know that Align light will be illuminated for 30 seconds
- 9.1.14.9.4 [M] Position the IRS Display selector to HDG
- 9.1.14.9.5 [M] Enter the Heading via the IRS panel
- 9.1.14.9.6 [K] Know that the IRS may require periodic heading update

9.1.15 Apply Abnormal Pneumatic Systems Procedures

9.1.15.1 Apply ENGINE BLEED VALVE / ENGINE HI STAGE / ENGINE BLEED OFF Warning Procedure

- 9.1.15.1.1 [K] Recognize appropriate EICAS alerting message
- 9.1.15.1.2 [M] Reset the Eng Bleed Air switch (affected side)
- 9.1.15.1.3 [M] Position the Eng Bleed Air switch OFF (affected side) when light(s) do not extinguish or illuminate again
- 9.1.15.1.4 [M] Position the Pack Control selector to OFF (affected side) when wing anti-ice is required
- 9.1.15.1.5 [M] OPEN the ISLN Valve (affected side)
- 9.1.15.1.6 [M] CLOSE the ISLN Valve when anti-ice is no longer required

9.1.15.2 Apply BLEED DUCT LEAK Warning Procedure

- 9.1.15.2.1 [K] Recognize appropriate EICAS alerting message
- 9.1.15.2.2 [M] Position the Eng Bleed Air switch to OFF (affected side)
- 9.1.15.2.3 [C] Check that ISLN Valve is CLOSED (affected side)
- 9.1.15.2.4 [M] Slowly retard the Thrust lever (affected side) until the DUCT LEAK light extinguishes
- 9.1.15.2.5 [K] Know to avoid icing conditions

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 9.1.15.2.6 [K] Know not to use wing anti-ice and that symmetrical icing may occur
- 9.1.15.3 Apply BODY DUCT LEAK Warning Procedure
  - 9.1.15.3.1 [K] Recognize appropriate EICAS alerting message
  - 9.1.15.3.2 [C] Ensure that Center ISLN Valve is CLOSED
  - 9.1.15.3.3 [M] Turn the APU Bleed Air switch to OFF position {if APU is operating}
  - 9.1.15.3.4 [K] Know that the ADP will be inoperative
- 9.1.15.4 Apply ENGINE BLEED OFF / ENGINE BLEED / ENGINE BLEED OVHT Warning Procedure
  - 9.1.15.4.1 [K] Recognize appropriate EICAS alerting message
  - 9.1.15.4.2 [M] Reset the Eng Bleed Air switch (affected side)
  - 9.1.15.4.3 [M] Turn the Eng Bleed Air switch to OFF position (affected side) {if light(s) do not extinguish or illuminate again}
  - 9.1.15.4.4 [M] Turn Pack Control selector to OFF position (affected side) {if wing anti-ice is required}
  - 9.1.15.4.5 [M] OPEN the ISLN Valve (affected side)
  - 9.1.15.4.6 [M] CLOSE the ISLN Valve {when anti-ice is no longer required}
- 9.1.15.5 Apply ENGINE STRUT DUCT LEAK Warning Procedure
  - 9.1.15.5.1 [K] Recognize appropriate EICAS alerting message
  - 9.1.15.5.2 [M] Turn Eng Bleed Air switch to OFF position (affected side)
  - 9.1.15.5.3 [K] Know to avoid icing conditions
  - 9.1.15.5.4 [K] Know not to use wing anti-ice
- 9.1.16 Apply Abnormal Powerplant Procedures
  - 9.1.16.1 Apply ABORTED ENGINE STARTS Procedure (**memory item**)
    - 9.1.16.1.1 [K] Recognize no oil pressure prior to initiating fuel flow

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 9.1.16.1.2 [K] Recognize no EGT rise within 20 seconds after fuel flow initiated
  - 9.1.16.1.3 [K] Recognize no N1 indication after EGT rise
  - 9.1.16.1.4 [K] Recognize rapid EGT rise toward limit
  - 9.1.16.1.5 [K] Recognize when N2 stagnates, decreases in RPM, or fails to reach stabilized idle within 90 seconds after initiating fuel flow
  - 9.1.16.1.6 [M] Select CUTOFF the Fuel Control switch
  - 9.1.16.1.7 [M] Hold the Engine Start selector on GND
  - 9.1.16.1.8 [K] Know to motor engine for 30 seconds minimum
  - 9.1.16.1.9 [K] Know not to reselect GND until N2 is approx. 0, unless a greater emergency exists, when the start selector returned to AUTO
  - 9.1.16.1.10 [K] Know to use both IGN selectors when both engine limit(s) are not exceeded and immediate re-start is desired
  - 9.1.16.1.11 [M] Position the Fuel Control switch to RUN
  - 9.1.16.1.12 [M] Position the Engine Start selector to AUTO when engine limit(s) is exceeded or immediate re-start is not desired
  - 9.1.16.1.13 [K] Know that when a hung start or excessive motoring is experienced, delay turning on the PACK switch on the affected side until airborne and after flap retraction
  - 9.1.16.1.14 [M] Turn the Pack switch to OFF position (affected side) when an oil smell or smoke is experienced after ENGINE BLEED AIR switch has been turned on
  - 9.1.16.1.15 [C] Check that ISLN Valve is CLOSED
  - 9.1.16.1.16 [C] Ensure maximum altitude is FL 350
- 9.1.16.2 Apply OIL PRESSURE Warning Procedure
- 9.1.16.2.1 [K] Recognize appropriate EICAS alerting message
  - 9.1.16.2.2 [C] Check Oil Pressure Indication
  - 9.1.16.2.3 [C] Accomplish the Engine Fire/Failure Procedure when oil pressure in red limit
  - 9.1.16.2.4 [M] Reduce the thrust to minimum required when oil pressure is in amber band

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 9.1.16.2.5 [K] Know to proceed with normal engine operation when the oil pressure is normal and engine oil pressure light is illuminated
- 9.1.16.3 Apply FUEL SPAR OR ENGINE VALVE Warning Procedure
  - 9.1.16.3.1 [K] Recognize appropriate EICAS alerting message
  - 9.1.16.3.2 [K] Know that when the ENG VAL light remains illuminated after the FUEL CONTROL SW is positioned to CUTOFF, the engine will continue to run for approx. one minute.
  - 9.1.16.3.3 [K] Know not to start engine with the SPAR VALVE or ENG VALVE illuminated
- 9.1.16.4 Apply LOSS OF ALL ENGINES Procedure (memory item)
  - 9.1.16.4.1 [C] Comply with In-flight Engine Failure or Shutdown procedures IAW Company's Operations Manual
  - 9.1.16.4.2 [K] Know that the CABIN ALTITUDE warning may occur during descent
  - 9.1.16.4.3 [M] Position the Engine start selector(s) to FLT
  - 9.1.16.4.4 [C] Check that RAT is UNLKD
  - 9.1.16.4.5 [C] Maintain proper airspeed
  - 9.1.16.4.6 [M] Idle the throttles when engine does not recover
  - 9.1.16.4.7 [M] Position the Fuel Control switches to CUTOFF then RUN
    - 9.1.16.4.7.1 [K] Know to remain approx. 30 seconds in each position
    - 9.1.16.4.7.2 [K] Know to repeat until engine start is achieved
  - 9.1.16.4.8 [M] Start the APU
  - 9.1.16.4.9 [M] Reactivate the FMS route after restoring AC Power
  - 9.1.16.4.10 [M] Re-enter the Performance Data
  - 9.1.16.4.11 [C] Maintain a straight and level attitude when IRS ALIGN light(s) are illuminated

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 9.1.16.4.12 [M] Position the IRS Mode selector to ATT (affected IRSs)
  - 9.1.16.4.13 [M] Position the IRS Display selector to HDG
  - 9.1.16.4.14 [K] Know to enter the heading via the FMS CDU or enter heading via IRS panel
- 9.1.16.5 Apply OIL FILTER Warning Procedure
- 9.1.16.5.1 [K] Recognize appropriate EICAS alerting message
  - 9.1.16.5.2 [M] Reduce the throttle until the message disappears
  - 9.1.16.5.3 [K] Know to operate the engine at that thrust setting
  - 9.1.16.5.4 [C] Accomplish the Engine Fire/Failure Procedure when the message remains
- 9.1.16.6 Apply OIL TEMPERATURE Warning Procedure
- 9.1.16.6.1 [M] Reduce throttle when the temperature is in the amber band
  - 9.1.16.6.2 [K] Know to operate the engine at the reduce power setting
  - 9.1.16.6.3 [C] Accomplish the Engine Fire/Failure procedure when the temperature is in the amber band for 15 minutes or reaches red line
- 9.1.16.7 Apply STARTER CUTOUT Warning Procedure
- 9.1.16.7.1 [K] Recognize appropriate EICAS alerting message
  - 9.1.16.7.2 [M] Position the Engine Start selector to AUTO
  - 9.1.16.7.3 [M] Position the Eng Bleed switch to OFF (affected side) when the VALVE light remains illuminated
  - 9.1.16.7.4 [M] CLOSE the ISLN Valve (affected side)
  - 9.1.16.7.5 [M] Disconnect the Ground Pneumatic Source when in use
  - 9.1.16.7.6 [A] Call maintenance to manually close the valve
  - 9.1.16.7.7 [K] Know to avoid icing conditions when in flight
  - 9.1.16.7.8 [K] Know that Wing anti-ice is inoperative on affected side

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

9.1.16.8 Apply ELECTRONIC ENGINE CONTROL Warning Procedure

- 9.1.16.8.1 [K] Recognize appropriate EICAS alerting message
- 9.1.16.8.2 [K] Know to reduce the throttle (affected side) to less than 70% N1 to prevent overspeeding the engine when deactivating EEC when at a safe altitude
- 9.1.16.8.3 [M] Position the EEC Control switch to OFF (affected side)
- 9.1.16.8.4 [M] Restore throttle power setting (affected side)
- 9.1.16.8.5 [K] Reduce the throttle (opposite side) to less than 70% N 1 to prevent overspeeding the engine when deactivating the EEC
- 9.1.16.8.6 [M] Position the EEC Control switch OFF (opposite side)
- 9.1.16.8.7 [M] Restore the throttle power setting (opposite side)

9.1.16.9 Apply ENGINE OVERHEAT Warning Procedure

- 9.1.16.9.1 [K] Recognize appropriate EICAS alerting message
- 9.1.16.9.2 [M] Position the Eng Bleed switch to OFF
- 9.1.16.9.3 [M] Reduce the throttle until light extinguishes
- 9.1.16.9.4 [C] Accomplish the Engine Fire/Failure Procedure when L or R ENG OVHT remains illuminated
  - 9.1.16.9.4.1 [M] Position the Pack Control selector to OFF (affected side) when the wing anti-ice is required
  - 9.1.16.9.4.2 [M] OPEN the ISLN Valve (affected side)
  - 9.1.16.9.4.3 [C] Ensure anti-ice valve is CLOSED when anti-ice is no longer required

9.1.16.10 Apply IN FLIGHT START Procedure

- 9.1.16.10.1 [K] Know that an inflight start may be attempted when airspeed and altitude is within the flight start envelope

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- displayed on EICAS or in the ODM Abnormal Section
- 9.1.16.10.2 [C] Observe normal start indications
  - 9.1.16.10.3 [K] Know to abort start if EGT fails to rise within 45 seconds after RUN selected
  - 9.1.16.10.4 [M] Set both IGN selectors when X-BLD is not displayed on EICAS
  - 9.1.16.10.5 [M] Position the Engine Start selector to FLT
  - 9.1.16.10.6 [M] Position the Fuel Control switch to RUN after 15% N2 and allow approx. 90 seconds for engine to stabilize at idle RPM
  - 9.1.16.10.7 [M] Position the Pack selector to OFF (affected side) when the X-BLD is displayed on EICAS
  - 9.1.16.10.8 [M] OPEN the ISLN Valve (affected side)
  - 9.1.16.10.9 [M] Select both IGN selectors
  - 9.1.16.10.10 [M] Position the Engine Start selector to GND
  - 9.1.16.10.11 [K] Know that it may require holding in GND until 10% N2
  - 9.1.16.10.12 [M] Position the Fuel Control switch to RUN at 15% N2
  - 9.1.16.10.13 [M] Position the Engine Start selector to AUTO after engine is started
  - 9.1.16.10.14 [M] Position the Pack Control selector to AUTO
  - 9.1.16.10.15 [C] Ensure that ISLN Valve (L & R) are CLOSED
  - 9.1.16.10.16 [C] Accomplish the Engine Fire/Failure procedure when the engine does not start
- 9.1.16.11 Apply REVERSER UNLOCKED Warning Procedure
- 9.1.16.11.1 [K] Recognized appropriate EICAS alerting message
  - 9.1.16.11.2 [K] Know to place throttle to idle and reverse lever full down when engine was inadvertently placed in reverse
  - 9.1.16.11.3 [C] Use normal engine operation when there is no Yaw, Buffet, Loss of Airspeed, or restriction to Throttle Movement
  - 9.1.16.11.4 [M] Retract the flaps and leave handle in up position when there is no Yaw,

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- Buffet, Loss of Airspeed, or Restriction to Throttle Movement
- 9.1.16.11.5 [K] Know that this prevents slat damage from turbulence created by the open reverser cowl
  - 9.1.16.11.6 [M] Place the throttle to idle
    - 9.1.16.11.6.1 [M] Disengage the autothrottle when on
    - 9.1.16.11.6.2 [M] Position Fuel Control switch to CUTOFF (affected side)
  - 9.1.16.11.7 [M] Start the APU
  - 9.1.16.11.8 [K] Know that the APU may not start above FL 350
  - 9.1.16.11.9 [M] OPEN the Fuel Crossfeed
  - 9.1.16.11.10[C] Maintain normal fuel distribution
    - 9.1.16.11.10.1 [M] Position Pumps to OFF {if fuel imbalance occurs}
    - 9.1.16.11.10.2 [M] Position all Pumps to ON {when quantities are equal}
  - 9.1.16.11.11[M] Position One Pack Control selector to OFF when anti-ice is required
  - 9.1.16.11.12[M] OPEN the ISLN Valve (affected side)
  - 9.1.16.11.13[C] Ensure the ISLN Valve is CLOSED when wing anti-ice is no longer needed
  - 9.1.16.11.14[K] Know to use TRAILING EDGE FLAPS 20 and Vref 30 +30 knots for landing
  - 9.1.16.11.15[M] Position the Engine Start selector to CONT
  - 9.1.16.11.16[M] Position the Gnd Prox Flap Ovrdr switch to OVRD
  - 9.1.16.11.17[M] Position the Altn TE Flap switch to ALTN
  - 9.1.16.11.18[K] Know not to ARM Alternate Leading Edge Slats
  - 9.1.16.11.19[M] Position the Altn TE Flap Pos selector to SET
    - 9.1.16.11.19.1 [M] Extend FLAPS 20 maximum as necessary
    - 9.1.16.11.19.2 [M] Retract flaps electrically for go-around, as required

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

#### 9.1.16.12 Apply STARTER CUTOUT Warning Procedure

- 9.1.16.12.1 [K] Recognize appropriate EICAS alerting message
- 9.1.16.12.2 [M] Position the Engine Start selector to AUTO
- 9.1.16.12.3 [M] Position the Eng Bleed switch to OFF (affected side) when VALVE light remains illuminated
- 9.1.16.12.4 [M] CLOSE the ISLN Valve (affected side)
- 9.1.16.12.5 [M] Disconnect the ground Pneumatic Source when in use
- 9.1.16.12.6 [A] Call maintenance to manually close the valve
- 9.1.16.12.7 [K] Know to avoid icing conditions, when in flight, since wing anti-ice is inop on affected side

#### 9.1.16.13 Apply ENGINE EEC MODE Warning Procedure

- 9.1.16.13.1 [K] Recognize appropriate EICAS alerting message
- 9.1.16.13.2 [K] Reduce throttle to less than 70% N1 to prevent overboosting the engine when placing EEC to ALTN (on the affected side at a safe altitude)
- 9.1.16.13.3 [M] Position the EEC switch to ALTN (affected side)
- 9.1.16.13.4 [M] Restore throttle power setting (affected side)
- 9.1.16.13.5 [M] Reduce throttle to less than 70% N1 to prevent overboosting the engine when placing EEC to ALTN (on the opposite side)
- 9.1.16.13.6 [M] Position the EEC switch to ALTN (opposite side)
- 9.1.16.13.7 [M] Restore throttle power setting (opposite side)
- 9.1.16.13.8 [C] Observe N1 limits while in ALT mode and make manual corrections if anti-ice is used
- 9.1.16.13.9 [K] Know that autothrottles will be inoperative

#### 9.1.16.14 Apply ENGINE LIMIT PROTECTION Warning Procedure

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 9.1.16.14.1 [K] Recognize appropriate EICAS alerting message
- 9.1.16.14.2 [C] Observe the thrust limits
- 9.1.16.14.3 [K] Know that when overboost limits are exceeded, the engine may shutdown

9.1.16.15 Apply ENGINE LOW IDLE Warning Protection

- 9.1.16.15.1 [K] Recognize appropriate EICAS alerting message
- 9.1.16.15.2 [M] Advance the throttle when the engine anti-ice is required
- 9.1.16.15.3 [M] Increase the thrust slowly until message extinguishes

9.2 Apply Non-Normal/Emergency Operational Procedures

9.2.1 Comply with Non-Normal/Emergency Company Operational Policies

- 9.2.1.1 [C] Comply with Aircraft Accident procedures IAW the Company's Operations Manual
- 9.2.1.2 [C] Comply with the Communications Failure procedures IAW the Company's Operations Manual
- 9.2.1.3 [C] Comply with the Hijacking procedures IAW the Company's Operations Manual
- 9.2.1.4 [C] Comply with the Sabotage Threat procedures IAW the Company's Operations Manual
- 9.2.1.5 [C] Comply with the Medical Emergencies procedures IAW the Company's Operations Manual

9.2.2 Comply with Jeppesen Emergency Data

- 9.2.2.1 [C] Comply with United States Emergency Data
  - 9.2.2.1.1 [K] Know Pilot Responsibility and Authority
  - 9.2.2.1.2 [K] Know Emergency Conditions - Request Assistance Immediately
  - 9.2.2.1.3 [K] Know Radar Service for VFR Aircraft in Difficulty
  - 9.2.2.1.4 [K] Know Transponder Emergency Operation
  - 9.2.2.1.5 [K] Know Direction Finding Instrument Approach Procedure
  - 9.2.2.1.6 [K] Know Intercept and Escort Procedure
  - 9.2.2.1.7 [K] Know Emergency Locator Transmitters

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 9.2.2.1.8 [K] Know FAA Sponsored Explosives Detection (Dog/Handler Team) Locations
- 9.2.2.1.9 [K] Know Search and Rescue
- 9.2.2.1.10 [K] Know Visual Emergency Signals
- 9.2.2.1.11 [K] Know Distress and Urgency Communications
- 9.2.2.1.12 [K] Know Obtaining Emergency Assistance
- 9.2.2.1.13 [K] Know Ditching Procedures
- 9.2.2.1.14 [K] Know Special Emergency (Air Piracy)
- 9.2.2.1.15 [K] Know Fuel Dumping
- 9.2.2.1.16 [K] Know Two-Way Radio Communications Failure
- 9.2.2.1.17 [K] Know Transponder Operations During Two-Way Communications Failure
- 9.2.2.1.18 [K] Know Reestablishing Radio Contact
- 9.2.2.2 [C] Comply with International Civil Aviation Organization (ICAO) Emergency Data
  - 9.2.2.2.1 [K] Know Emergency Procedures
  - 9.2.2.2.2 [K] Know Unlawful Interference Guidance
  - 9.2.2.2.3 [K] Know Emergency Descent Guidance
  - 9.2.2.2.4 [K] Know Distress and Urgency Radiotelephony Communications Procedures
  - 9.2.2.2.5 [K] Know Interception Procedures
  - 9.2.2.2.6 [K] Know Search and Rescue Procedures
- 9.2.3 Apply Emergency Descent Procedure
  - 9.2.3.1 [K] Know that this procedure assumes structural integrity of the aircraft, but if structural integrity is in doubt, limit speed and avoid high maneuvering loads
  - 9.2.3.2 [C] Accomplish Descent
    - 9.2.3.2.1 [C] Obtain lower altitude clearance (conditions permitting)
    - 9.2.3.2.2 [C] Check throttles in idle
    - 9.2.3.2.3 [M] Extend speedbrakes
    - 9.2.3.2.4 [C] Descend at VMO/MMO
    - 9.2.3.2.5 [C] Level off at 10,000 ft. or MEA whichever is higher
    - 9.2.3.2.6 [C] Check pressurization
- 9.2.4 Apply Flight With Inoperative Flight Control Procedures

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

9.2.4.1 Apply AUTOMATIC SPEEDBRAKE Warning Procedure

- 9.2.4.1.1 [K] Recognize appropriate EICAS alerting message
- 9.2.4.1.2 [K] Know not to ARM Speedbrake
- 9.2.4.1.3 [M] Manually deploy speedbrakes after landing
- 9.2.4.1.4 [C] See ARM for landing weight restrictions

9.2.4.2 Apply FLAP LOAD RELIEF Warning Procedure

- 9.2.4.2.1 [K] Recognize appropriate EICAS alerting message
- 9.2.4.2.2 [C] Check flap position and do not exceed placarded airspeed

9.2.4.3 Apply NOFLAPS/NO SLATS LANDING Procedure

- 9.2.4.3.1 [K] Know that the Captain must make all NO FLAP/NO SLATS Landing
- 9.2.4.3.2 [M] Position Engine Start selectors to CONT when NO FLAPS/NO SLATS landing is necessary
- 9.2.4.3.3 [K] Know that this provides ignition for landing with leading edge slats retracted
- 9.2.4.3.4 [M] Position the Ground Proximity Flap Override switch to OVRD
- 9.2.4.3.5 [M] Maneuver at appropriate speed until on final
- 9.2.4.3.6 [K] Know to use longest runway available
- 9.2.4.3.7 [C] Establish a ten mile final
- 9.2.4.3.8 [K] Know that when an ILS is available, you may use the autopilot for the approach and landing
- 9.2.4.3.9 [M] Extend the gear at first indication of G/S movement
- 9.2.4.3.10 [K] Use appropriate speed for landing
- 9.2.4.3.11 [K] Use control throttles on final and disregard ALPHA indication
- 9.2.4.3.12 [M] Set auto brakes to MAX AUTO
- 9.2.4.3.13 [M] Arm auto speed brakes
- 9.2.4.3.14 [M] Retard throttles to idle when the landing is assured
- 9.2.4.3.15 [M] Fly the A/C onto the runway when manually flying
- 9.2.4.3.16 [M] Use max reverse

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 9.2.4.3.17 [K] Know that with flaps not extended, the G/A mode of the F/D and the autopilot will not be armed, unless an ILS approach is executed
  - 9.2.4.3.18 [K] Know not to Autoland A/C when Ground Speed exceeds 165 kts
- 9.2.4.4 Apply RUDDER RATIO Warning Procedure
- 9.2.4.4.1 [K] Recognize appropriate EICAS alerting message
  - 9.2.4.4.2 [K] Know to avoid large and abrupt rudder inputs above 160 knots
  - 9.2.4.4.3 [C] Ensure the maximum crosswind is 15 knots when L HYD SYS PRESS is normal
  - 9.2.4.4.4 [K] Know autoland is prohibited
- 9.2.4.5 Apply SPOILERS Warning Procedure
- 9.2.4.5.1 [K] Recognize appropriate EICAS alerting message
  - 9.2.4.5.2 [K] Know that when adverse flying characteristics are encountered when flaps 30 are selected for landing, due to a deployed spoiler, use a different flap setting that does not degrade handling characteristics of the aircraft
  - 9.2.4.5.3 [K] Know that spoiler capability is reduced
- 9.2.4.6 Apply AILERON LOCKOUT Warning Procedure
- 9.2.4.6.1 [K] Recognize appropriate EICAS alerting message
  - 9.2.4.6.2 [K] Know that the outboard aileron(s) may not be locked out and to avoid large aileron inputs at high airspeeds
  - 9.2.4.6.3 [K] Know that the outboard aileron(s) may not be unlocked and large control aileron inputs may be required at low airspeeds
- 9.2.4.7 Apply LEADING EDGE SLAT ASYM Warning Procedure
- 9.2.4.7.1 [K] Recognize appropriate EICAS alerting message
  - 9.2.4.7.2 [M] Position the Altn LE Slat switch to CYCLE ALTN & OFF

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 9.2.4.7.3 [M] Position the Gnd Prox Flap Ovrđ switch to OVRD when the above action does not return the system to normal
  - 9.2.4.7.4 [M] Use existing flaps and Vref 20 for landing when indicated flap position is 20 or greater
  - 9.2.4.7.5 [C] Ensure airspeed is 210 KTS MAX
  - 9.2.4.7.6 [K] Know that this prevents possible slat damage in the event slats have extended beyond the takeoff position
  - 9.2.4.7.7 [M] Set the Altn Flaps Pos selector to a position that agrees with the flap handle
  - 9.2.4.7.8 [M] Position the Altn TE Flap switch to ALTN
  - 9.2.4.7.9 [K] Know not to ARM alternate LE SLATS
  - 9.2.4.7.10 [M] Set the ALTN Flap Pos selector
  - 9.2.4.7.11 [K] Use TE flaps 20 and appropriate airspeed for landing
  - 9.2.4.7.12 [M] Extend/retract flaps as required
- 9.2.4.8 Apply LEADING EDGE SLAT DISAGREE Warning Procedure
- 9.2.4.8.1 [K] Recognize appropriate EICAS alerting message
  - 9.2.4.8.2 [M] Position the Altn LE Slat switch to CYCLE ALTN & OFF
  - 9.2.4.8.3 [M] Position the Gnd Prox Flap Ovrđ switch to OVRD when the above action does not return the system to normal
  - 9.2.4.8.4 [M] Use existing flaps and appropriate airspeed for landing when indicated flap position is 20 or greater
  - 9.2.4.8.5 [C] Ensure that airspeed is 210 Kts MAX when indicated flap position is 20 or less
    - 9.2.4.8.5.1 [K] Know that this prevents possible slat damage in the event slats have extended beyond takeoff position
    - 9.2.4.8.5.2 [M] Set the Altn Flaps Pos selector to agree with the flap handle
    - 9.2.4.8.5.3 [M] Position the Altn LE & TE switches to ALTN
    - 9.2.4.8.5.4 [M] Set the Altn Flaps Pos selector when LEADING EDGE light extinguishes

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 9.2.4.8.5.4.1 [K] Know to use flaps 20 and appropriate speed for landing
- 9.2.4.8.5.4.2 [M] Extend/retract flaps as required
- 9.2.4.8.5.5 [M] Position the Altn LE Slat switch to OFF when LEADING EDGE light fails to extinguish or reilluminates
  - 9.2.4.8.5.5.1 [K] Know not to extend LE SLATS
  - 9.2.4.8.5.5.2 [M] Set the Altn Flaps Pos selector
  - 9.2.4.8.5.5.3 [K] Know to use TE flaps 20 and appropriate airspeed for landing
  - 9.2.4.8.5.5.4 [M] Extend/retract flaps as required
- 9.2.4.9 Apply TRAILING EDGE FLAP ASYM Warning Procedure
  - 9.2.4.9.1 [K] Recognize appropriate EICAS alerting message
  - 9.2.4.9.2 [M] Position the Altn TE Flap switch to CYCLE ALTN & OFF
  - 9.2.4.9.3 [M] Position the Gnd Prox Flap OvrD switch to OVRD when the above action does not return the system to normal
    - 9.2.4.9.3.1 [K] Know not to ARM the alternate TE Flaps
    - 9.2.4.9.3.2 [K] Know to use appropriate airspeed for landing with indicated flap position at various degree settings
    - 9.2.4.9.3.3 [K] Know that when a flap position is greater than 20 and a go-around is executed, the landing configuration warning siren will sound after gear retraction
    - 9.2.4.9.3.4 [K] Know to silence the siren, push the GND PROX/CONFIG GEAR OVRD switch
- 9.2.4.10 Apply TRAILING EDGE FLAP DISAGREE Warning Procedure
  - 9.2.4.10.1 [K] Recognize appropriate EICAS alerting message
  - 9.2.4.10.2 [M] Position the Altn TE Flap switch to CYCLE ALTN & OFF

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 9.2.4.10.3 [M] Position the Gnd Prox Flap Ovrđ switch to OVRD when the above action does not return the system to normal
- 9.2.4.10.4 [K] Know to use existing flaps and Vref 20 for landing when indicated flap position is 20 or greater
- 9.2.4.10.5 [M] Set the Altn Flaps Pos selector when the indicate flap position is less than 20
  - 9.2.4.10.5.1 [K] Position the selector to agree with flap handle
  - 9.2.4.10.5.2 [M] Position the Altn LE & TE switches to ALTN
  - 9.2.4.10.5.3 [M] Set the Altn Flaps Pos Selector when the TRAILING EDGE light extinguishes
    - 9.2.4.10.5.3.1 [K] Use flaps 20 and Vref for landing
    - 9.2.4.10.5.3.2 [K] Extend or retract flaps as required
  - 9.2.4.10.5.4 [M] Position the Altn LE & TE switches to OFF when the TRAILING EDGE light fail to extinguish or illuminates again
    - 9.2.4.10.5.4.1 [K] Know to use Vref 30 +40 knots for landing when indicated flap position is 5 or less
    - 9.2.4.10.5.4.2 [K] Know to use Vref 30 +20 knots for landing when indicated flap position is between 5 and 20
    - 9.2.4.10.5.4.3 [K] Know to use Vref 20 for landing when indicated flap position is at or greater than 20
- 9.2.4.10.6 [K] Know that when flap position is greater than 20 and go-around is executed, the landing configuration warning siren will sound after gear retraction
- 9.2.4.10.7 [K] Know to silence the siren, push the GND PROX/CONFIG GEAR OVRD switch

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 9.2.5 Apply GND PROX PULL UP Warning Procedure
  - 9.2.5.1 [C] Apply go-around thrust and climb at best angle until clear of terrain when PULL UP warning occurs and the cause is not apparent
- 9.2.6 Apply Hydraulic System Inoperative Flight Procedures
  - 9.2.6.1 Apply Flight With L System Inoperative Procedure
    - 9.2.6.1.1 [M] Accomplish Flaps 20 landing
      - 9.2.6.1.1.1 [K] Know to use Flaps 20 and  $V_{REF} 30 + 20$  knots for landing
      - 9.2.6.1.1.2 [K] Know that auto speedbrake may be inoperative
      - 9.2.6.1.1.3 [K] Know that the left thrust reverser is inoperative
      - 9.2.6.1.1.4 [K] Know that the left autopilot is inoperative
      - 9.2.6.1.1.5 [K] Know that PTU power may not be available if hydraulic fluid is lost and nose wheel steering may be inoperative
    - 9.2.6.1.2 [M] Accomplish Altn Flap/Gear Ext (task 9.1.11.2)
  - 9.2.6.2 Apply Flight With C System Inoperative Procedure
    - 9.2.6.2.1 [K] Know that the left and center autopilots are inoperative
    - 9.2.6.2.2 [K] Know that the left autopilot stabilizer trim is inoperative
  - 9.2.6.3 Apply Flight With R System Inoperative Procedure
    - 9.2.6.3.1 [K] Know that the right trust reverser is inoperative
    - 9.2.6.3.2 [K] Know that the autobrakes are inoperative
    - 9.2.6.3.3 [K] Know that the right autopilot is inoperative

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

9.2.6.4 Apply Flight With L and C System Inoperative Procedure

9.2.6.4.1 [M] Accomplish Flaps 20 landing

9.2.6.4.1.1 [K] Know to use Flaps 20 and  $V_{REF}$  30 + 20 knots for landing

9.2.6.4.1.2 [K] Know that the crosswind limit is 20 knots

9.2.6.4.1.3 [K] Know that the left thrust reverser is inoperative

9.2.6.4.1.4 [K] Know that the left and center autopilot is inoperative

9.2.6.4.1.5 [K] Know that PTU power may not be available if hydraulic fluid is lost and that the nose wheel steering and autospeedbrakes may be inoperative

9.2.6.4.2 [M] Accomplish Altn Flap/Gear Ext (task 9.1.11.2)

9.2.6.5 Apply Flight With L and R System Inoperative Procedure

9.2.6.5.1 [M] Accomplish Flaps 20 landing

9.2.6.5.1.1 [K] Know to use Flaps 20 and  $V_{REF}$  30 + 20 knots for landing

9.2.6.5.1.2 [K] Know that the crosswind limit is 20 knots

9.2.6.5.1.3 [K] Know that both thrust reversers are inoperative

9.2.6.5.1.4 [K] Know that autobrakes are inoperative

9.2.6.5.1.5 [K] Know that the left and right autopilot is inoperative

9.2.6.5.1.6 [K] Know that PTU power may not be available if hydraulic fluid is lost and that the nose wheel steering and autospeed brakes will be inoperative

9.2.6.5.2 [M] Accomplish Altn Flap/Gear Ext (task 9.1.11.2)

9.2.6.6 Apply Flight With C and R System Inoperative Procedure

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 9.2.6.6.1 [M] Set the GND PROX OVRD Switch to OVRD
- 9.2.6.6.2 [M] Accomplish Flaps 20 landing
  - 9.2.6.6.2.1 [K] Know to use Flaps 20 and  $V_{REF} 30 + 20$  knots for landing
  - 9.2.6.6.2.2 [K] Know that the crosswind limit is 20 knots
  - 9.2.6.6.2.3 [K] Know that the right thrust reverser is inoperative
  - 9.2.6.6.2.4 [K] Know that autobrakes are inoperative
  - 9.2.6.6.2.5 [K] Know that all autopilots are inoperative
  - 9.2.6.6.2.6 [K] Know that elevator feel is inoperative
  - 9.2.6.6.2.7 [K] Know that stabilizer trim is inoperative
- 9.2.7 Apply Landing Gear System Inoperative Flight Procedures
  - 9.2.7.1 Apply Landing With ANTI\_SKID (FAULT) Warning Procedure
    - 9.2.7.1.1 [K] Recognize appropriate EICAS alerting message
    - 9.2.7.1.2 [K] Leave anti-skid on
    - 9.2.7.1.3 [K] Braking effectiveness is reduced
    - 9.2.7.1.4 [K] Check ARM
    - 9.2.7.1.5 [K] Brake with caution
  - 9.2.7.2 Apply Flight With GEAR DOORS Warning Procedure
    - 9.2.7.2.1 [K] Recognize appropriate EICAS alerting message
    - 9.2.7.2.2 [C] Observe EXTEND or EXTENDED limit speed
    - 9.2.7.2.3 [K] If placing gear handle in UP position extinguishes DOORS light, leave handle UP for remainder of flight, but continue observing speed restriction
    - 9.2.7.2.4 [K] If the problem occurs on approach, either recycle gear or land with DOORS light illuminated
  - 9.2.7.3 Apply Landing With BRAKE SOURCE Warning Procedure

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 9.2.7.3.1 [K] Recognize appropriate EICAS alerting message
- 9.2.7.3.2 [M] Position the Reserve Bks & Strg switch to ON
- 9.2.7.3.3 [M] Position the Auto Brakes selector to OFF {if BRAKE SOURCE light remains illuminated}
- 9.2.7.3.4 [M] Position the Anti-skid switch to OFF
  - 9.2.7.3.4.1 [K] Only accumulator pressure is available for braking
  - 9.2.7.3.4.2 [K] Apply steady brake pressure until stopped
- 9.2.7.4 Apply Flight/Landing With DRAG BRACE OR SIDE BRACE Warning Procedure
  - 9.2.7.4.1 [K] Recognize appropriate EICAS alerting message
  - 9.2.7.4.2 [K] If DRAG BRACE message is displayed, increase airspeed to 270 Knots Max. Until GEAR Extinguishes
  - 9.2.7.4.3 [K] If SIDE BRACE message is displayed, decrease airspeed to VREF Min. Until GEAR extinguishes
  - 9.2.7.4.4 [C] Prepare Partial or Gear Up Landing {if either DRAG or SIDE BRACE message remains
    - 9.2.7.4.4.1 [K] Use FLAPS 30 for LANDING
    - 9.2.7.4.4.2 [K] Use speedbrakes manually after landing
  - 9.2.7.4.5 [M] Position Gnd Prox Config Gear Ovrdr switch to OVRD
  - 9.2.7.4.6 [M] Position Pack Control selectors to OFF {at pattern altitude}
  - 9.2.7.4.7 [M] Position Fuel Pump switches to OFF
- 9.2.7.5 Apply Flight/Landing With GEAR DISAGREE Warning Procedure
- 9.2.7.6 Apply Braking With RESERVE BRAKE VALVE Warning Procedure

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 9.2.7.6.1 [K] Recognize appropriate EICAS alerting message
- 9.2.7.6.2 [K] If CENTER Hydraulic System is inop, nose wheel steering will be inoperative
- 9.2.7.6.3 [K] If RIGHT and CENTER Hydraulic System is inop, ONLY accumulator pressure is available for braking
  - 9.2.7.6.3.1 [M] Apply steady brake pressure until stopped
  - 9.2.7.6.3.2 [K] Approximate brake applications available 5-6
- 9.2.7.6.4 [M] Position Anti-skid to OFF
- 9.2.7.7 Apply Flight With TAIL SKID Warning Procedure
  - 9.2.7.7.1 [K] Tail skid position disagrees with gear handle position
  - 9.2.7.7.2 [K] If tail strike is suspected, advise ATC. Debris on runway could cause foreign object damage
- 9.2.8 Apply Powerplant System Malfunction Flight Procedure
  - 9.2.8.1 Apply REVERSER ISLN VALVE Warning Procedure
    - 9.2.8.1.1 [K] Recognize appropriate EICAS alerting message
    - 9.2.8.1.2 [K] Exercise caution when selecting reverse thrust
    - 9.2.8.1.3 [K] Asymmetrical reverse thrust possible
    - 9.2.8.1.4 [K] In-flight reverse protection may be inoperative
  - 9.2.8.2 Apply EEC INOPERATIVE FOR TAKEOFF Warning Procedure
    - 9.2.8.2.1 [K] The EEC inoperative N1 settings for takeoff and go-around as well as the takeoff speeds are not the same as for EEC operative
    - 9.2.8.2.2 [M] Position both EEC switches to OFF
    - 9.2.8.2.3 [M] Set the Thrust Mode Panel

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 9.2.8.2.3.1 [K] T.O. and T.O. 2 N1 will be 3-5% higher than for EEC operative
  - 9.2.8.2.3.2 [K] TMC/Autothrottle may maintain engine thrust within limits with EEC inoperative
  - 9.2.8.2.4 [C] Compute V1, Vr, & V2
  - 9.2.8.2.5 [K] Takeoff is not authorized from runways shorter than 5000 feet if EEC is inoperative
  - 9.2.8.2.6 [K] As throttles are advanced to T.O. thrust, EEC OFF EICAS caution message will appear and caution aural will sound
- 9.2.9 Apply Passenger Evacuation Procedure (**memory item**)
- 9.2.9.1 [M] Set the Parking Brake
  - 9.2.9.2 [C] Discharge the fire bottles, if needed, by pulling the applicable engine or APU fire handle
  - 9.2.9.3 [C] Open the outflow valve, if required
  - 9.2.9.4 [C] When the outflow valve is not open, place the cabin altitude selector to MAN and rotate the cabin altitude manual control selector to CLIMB
  - 9.2.9.5 [A] Ensure communication with appropriate ATC agency (i.e. tower, ground) stating nature of problem, soles on board, intentions, etc.
  - 9.2.9.6 [C] Give the evacuation command by alerting the Flight Attendants/Passengers by PA of the need to evacuate or use the ALERT call button to signal evacuation, if prearranged
- 9.2.10 Apply Emergency Landing/Ditching Procedures
- 9.2.10.1 Apply Pre Landing/Ditching Procedure
    - 9.2.10.1.1 [A] Advise crew to prepare for emergency landing (or ditching)
    - 9.2.10.1.2 [A] Send distress message (MAYDAY), giving aircraft identification, type, position, heading, airspeed, altitude, fuel remaining in hours and minutes, nature or distress, intentions, and assistance desired
    - 9.2.10.1.3 [C] Set course for most logical point of landing under existing circumstances

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 9.2.10.1.4 [C] Accomplish cockpit emergency preparations as conditions dictate
  - 9.2.10.1.5 [M] Open cockpit door and stow loose articles
  - 9.2.10.1.6 [K] Follow Coast Guard ditching recommendations
  - 9.2.10.1.7 [C] Accomplish cockpit emergency preparations as conditions dictate
  - 9.2.10.1.8 [M] Fasten seat belt and shoulder harness
  - 9.2.10.1.9 [A] Signal cabin crew/passengers when touchdown is imminent, using PA system if operative
  - 9.2.10.1.10 [M] When ditching, don life vest
- 9.2.10.2 Apply Flight Configuration Procedures Below 5,000' Procedure
- 9.2.10.2.1 [M] Set the Ground Proximity Warning System to OVRERIDE
  - 9.2.10.2.2 [C] Ensure the air-conditioning packs are OFF
  - 9.2.10.2.3 [C] Ensure the regulation of cabin altitude is selected to MANUAL
  - 9.2.10.2.4 [C] Ensure the outflow valves are CLOSED
- 9.2.10.3 Apply Flight on Approach Procedure
- 9.2.10.3.1 [M] Turn emergency light ON
  - 9.2.10.3.2 [C] Ensure the gear handle is up
  - 9.2.10.3.3 [M] Set flaps to 30
  - 9.2.10.3.4 [C] Maintain airspeed at  $V_{REF}$  and 200-300 FPM sink rate
- 9.2.10.4 Apply Post Landing/Ditching Evacuation Procedure
- 9.2.10.4.1 [A] Order evacuation
  - 9.2.10.4.2 [C] Proceed to applicable areas of the cabin to assist in evacuation
  - 9.2.10.4.3 [C] Direct evacuation as appropriate
  - 9.2.10.4.4 [M] When ditching, take radio beacon
  - 9.2.10.4.5 [C] When ditching, assist in securing and launching life rafts
  - 9.2.10.4.6 [C] When ditching, assist in assembling passengers/rafts away from the aircraft and board raft

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

## 10 APPLY SYSTEM OPERATION PROCEDURES

### 10.1 Apply General Aircraft System Operations

#### 10.1.1 Apply Cockpit Door Operation

- 10.1.1.1 [C] Advise intention to enter cockpit by calling on the interphone
- 10.1.1.2 [K] Do not lean on door
- 10.1.1.3 [K] After knocking to gain entrance, pilot will unlock door. Listen for the solenoid to operate
- 10.1.1.4 [M] Push the door open after hearing the solenoid
- 10.1.1.5 [K] Do not force door

#### 10.1.2 Apply Indicator Lights Test

- 10.1.2.1 [M] Push ON the Indicator Lights Test switch
- 10.1.2.2 [M] Push and hold switch for a minimum of 3 sec. to prevent unwanted EFIS message
- 10.1.2.3 [M] Push ON and hold switch while observing all indicator lights in cockpit. Releasing the switch turns all the indicator lights off
- 10.1.2.4 [C] Observe all indicator lights in the cockpit, except lights in the fuel control and APU/Engine Fire switches, illuminate. Observe ADI and HSI display a test pattern and TEST OK message
- 10.1.2.5 [K] Illuminates IRS Data Display characters
- 10.1.2.6 [K] Flight crews should make a maintenance log write-up for bulb failure and not attempt to relamp indicator lights or switch lights
- 10.1.2.7 [M] Push OFF the Indicator Lights Test switch

#### 10.1.3 Apply Entry Door Operation

- 10.1.3.1 [M] Position the arming lever to SLIDE DISARM {Opening}
  - 10.1.3.1.1 [C] Observe armed indicator out of view, arming lever release button extended and girt bar lockdown indications show blank
  - 10.1.3.1.2 [K] Slide disarms automatically when door is opened from outside
- 10.1.3.2 [M] Rotate Door Handle to UP position

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 10.1.3.2.1 [M] Rotate handle slowly. Ensure opposite handle path is clear. Avoid path of repositioning handle if door is locked or unlocked from opposite side
- 10.1.3.3 [M] Raise the door
  - 10.1.3.3.1 [M] Raise the door until uplatch is engaged. The left forward door may be raised electrically using the main door switch
- 10.1.3.4 [M] Lower the door {closing}
  - 10.1.3.4.1 [M] Raise door slightly, push and hold uplatch release button, then lower door approximately 2 inches. Release button and continue to lower door until closed
- 10.1.3.5 [M] Rotate the door handle to the DOWN position
  - 10.1.3.5.1 [M] Rotate the handle slowly. Ensure the inside handle path is clear
- 10.1.3.6 [M] Position the Arming lever to SLIDE ARMED
  - 10.1.3.6.1 [M] While pushing the arming lever release button, position the arming lever to SLIDE ARMED
  - 10.1.3.6.2 [C] Observe the armed indicator in view and girt bar lockdown indications show yellow

## 10.2 Apply Autoland Annunciator Test

- 10.2.1 [M] Push the Annunciator Test Switch 1
- 10.2.2 [C] Observe LAND 3 and NO LAND 3 in view
- 10.2.3 [M] Push the Annunciator Test Switch 2
- 10.2.4 [C] Observe LAND 2 and NO AUTOLAND in view

## 10.3 Apply Radar Operation

- 10.3.1 [K] Effective gain control and tilt management are very important keys to effective weather detection

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 10.3.2 [C] Perform Preflight Test procedure
  - 10.3.2.1 [M] Position mode selector to TEST
  - 10.3.2.2 [M] Position range selector to 80
  - 10.3.2.3 [M] Position gain control to AUTO
  - 10.3.2.4 [C] Observe proper test pattern
- 10.3.3 [K] The GAIN knob will provide variable gain control for weather returns when out of the AUTO position. A blue CAL appears in the upper right area of the indicator whenever variable gain control is active. Rotating the GAIN knob counterclockwise decreases gain from "MAX" to "MIN". The level of selected gain is indicated by a blue readout MAX 9, 8, 7, 6, 5, 4, 3, 2, 1, or MIN below CAL
- 10.3.4 [M] Set mode selector to WX {before takeoff}
- 10.3.5 [M] Set range control to short range
- 10.3.6 [M] Slowly rotate the antenna to + 15 degrees, then down to + 4 degrees while observing for weather
- 10.3.7 [M] Slowly rotate antenna full up and then down to where ground return appears, then back to 4 degrees {climb}
- 10.3.8 [K] If course changes of 45 degrees or more are made, repeat this procedure
- 10.3.9 [C] Reduce radar tilt approximately 1 degree for each 2 degrees reduction in aircraft pitch
- 10.3.10 [M] Set range at 10 or 20 nm {cruise}
- 10.3.11 [C] Adjust tilt so that ground return is just visible at the top of the indicator
- 10.3.12 [C] Select the next higher range and again adjust tilt so that the ground return is just visible
- 10.3.13 [K] Repeat this procedure for each range up to the longest range to be used
- 10.3.14 [K] This procedure assures that weather at short range which would normally lie undetected beneath the radar beam will be detected. A range greater than 160 nm usually displays significant ground return, even at the optimum setting
- 10.3.15 [K] Tilt should be readjusted each time the radar range is changed
- 10.3.16 [M] Tilt antenna 1 degree up for each 10,000 feet of descent {descent}
- 10.3.17 [K] At approx. 15,000 feet, it may be necessary to tilt the antenna up 1 degree for each 5,000

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- feet of descent to keep the display free from ground return
- 10.3.18 [K] AUX mode provides for display of ACARS data
- 10.3.19 [K] WX mode provides for display of weather
- 10.3.20 [K] TURB mode provides for display for turbulence and weather up to 40 nm and weather only beyond 40 nm
- 10.3.21 [K] Turbulence display is not affected by position of gain control knob
- 10.3.22 [K] Ground mapping may be used for observing terrain features. Gain can be manually controlled to assist in highlighting terrain features

#### 10.4 Apply ACARS Operation

##### 10.4.1 Perform ACARS Ground Set-up (aircraft at gate) Procedures

- 10.4.1.1 [M] Set the parking brake
- 10.4.1.2 [M] Turn the RADAR Selector to AUX
- 10.4.1.3 [K] Know that there is no entry required on the Crew Data Page

##### 10.4.2 Perform Flight Data Procedures

- 10.4.2.1 [M] Press the FLT Data key
- 10.4.2.2 [K] Know that the CDU will display FLT DATA
- 10.4.2.3 [M] Press the Test key for the CDU to display LINKTEST
- 10.4.2.4 [M] Press ENT/SEND key
- 10.4.2.5 [C] Verify that the correct GMT appears on radar display after GMT
- 10.4.2.6 [M] Press the LINE key three times
- 10.4.2.7 [K] Know that the CDU displays FLIGHT NO.
- 10.4.2.8 [M] Enter the flight number
- 10.4.2.9 [M] Press the ENT/SEND key
- 10.4.2.10 [K] Know that the CDU displays FLIGHT DATE
- 10.4.2.11 [M] Enter the date that the flight is scheduled to depart
- 10.4.2.12 [M] Press the ENT/SEND key
- 10.4.2.13 [K] Know that the CDU displays DEPT STN
- 10.4.2.14 [K] Know that the departure station is automatically updated from the last destination but if a change is desired, clear, press Space, then enter the new destination

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 10.4.2.15 [M] Press the ENT/SEND key
  - 10.4.2.16 [K] Know that the CDU will display DEST STN
  - 10.4.2.17 [M] Enter the new destination station
  - 10.4.2.18 [M] Press the ENT/SEND key
  - 10.4.2.19 [K] Know that the CDU displays FUEL BDD
  - 10.4.2.20 [M] Enter the Fuel Boarded
  - 10.4.2.21 [K] Know that this is not a required entry but use the fueling slip if entry is desired
  - 10.4.2.22 [M] Press the ENT/SEND key
  - 10.4.2.23 [K] Know that the CDU displays GROSS WT
  - 10.4.2.24 [M] Enter the Gross Weight figure on AWABS
  - 10.4.2.25 [M] Press the ENT/SEND key
- 10.4.3 Perform the End Of Flight Entry (aircraft at gate, parking brake set) Procedure
- 10.4.3.1 [M] Press the FLT DATA key
  - 10.4.3.2 [K] Know that the CDU display shows FUEL REM
  - 10.4.3.3 [M] Enter the Fuel Remaining
  - 10.4.3.4 [M] Press the ENT/SEND key
  - 10.4.3.5 [K] Know that the CDU display shows LA.
  - 10.4.3.6 [M] Enter the Landing Plot
  - 10.4.3.7 [K] Know to enter a 1 (for CAPT0 or 2 (for F/O) when not at the end of rotation
  - 10.4.3.8 [K] Know to enter 3 (for CAPT) or 4 (for F/O) when at end of rotation
  - 10.4.3.9 [M] Press the ENT/SEND key
  - 10.4.3.10 [K] Know that the "IN" message will be sent
- 10.4.4 Perform Security Message Procedure
- 10.4.4.1 [K] Know that this feature has been deactivated
  - 10.4.4.2 [K] Know to refer to the Quick Reference Section Hijack Procedures in the Manual
- 10.4.5 Perform Return Message Procedure
- 10.4.5.1 [K] Know that when returning to departure airport after takeoff, a return message must be sent, otherwise ACARS will assume arrival at destination
  - 10.4.5.2 [M] Press the RTN key
  - 10.4.5.3 [K] Know that the CDU display shows RTN TIME
  - 10.4.5.4 [M] Enter the Return GMT when the estimated return time is known

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 10.4.5.4.1 [M] Press the ENT/SEND key
- 10.4.5.4.2 [K] Know that the return message will be sent to ground with ETA

10.4.5.5 [M] Press the ENT/SEND key if the estimated return time is not known so that the return message will be sent to the ground with no ETA

10.4.5.6 [M] Cancel a Return Message

- 10.4.5.6.1 [M] Press the RTN key
- 10.4.5.6.2 [M] Enter CX
- 10.4.5.6.3 [M] Press ENT/SEND

#### 10.4.6 Perform Diversion Message

- 10.4.6.1 [M] Press MISC key
- 10.4.6.2 [K] Know that the CDU displays MISC
- 10.4.6.3 [M] Enter 1
- 10.4.6.4 [M] Press ENT/SEND
- 10.4.6.5 [K] Know that the CDU displays DIVERSION
- 10.4.6.6 [M] Press LINE key
- 10.4.6.7 [K] Know that the CDU displays DEST STN
- 10.4.6.8 [M] Enter the Diversion Destination
- 10.4.6.9 [M] Press ENT/SEND
- 10.4.6.10 [M] Enter ENT/SEND
- 10.4.6.11 [K] Know that the CDU displays the ETA
- 10.4.6.12 [M] Enter the ETA(GMT)
- 10.4.6.13 [M] Press the ENT/SEND key
- 10.4.6.14 [K] Know that the CDU shows FUEL
- 10.4.6.15 [M] Enter Fuel Remaining
- 10.4.6.16 [M] Press the ENT/SEND key twice

10.4.6.16.1 [K] Know that the diversion message is entered into memory and sent to the ground

10.4.6.16.2 [K] Observe DIVERT TO; field is now filled with diversion destination station code

10.4.6.16.3 [K] Know that the original departure and destination stations remain as loaded

#### 10.4.7 Perform Delay Message Procedure

10.4.7.1 [M] Press the DLA key

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 10.4.7.1.1 [K] Know that the CDU display shows DLA
- 10.4.7.1.2 [K] Know when the desired delay is entered by number, the appropriate code will display
- 10.4.7.1.3 [M] Enter "1" for Estimated Time of Departure, "2" for Revised ETA at Destination Station, "3" for Estimated Time of Approach Clearance, "4" for Estimated Further Clearance, "5" for Return IN Time, and "6" for Return OUT Time.
- 10.4.7.1.4 [M] Press the ENT/SEND key
- 10.4.7.1.5 [K] Know that the CDU displays TIME
- 10.4.7.1.6 [M] Enter the Time (GMT) as appropriate for the delay
- 10.4.7.1.7 [M] Press the ENT/SEND key
- 10.4.7.1.8 [K] Know that the message is entered into memory and sent to the ground

#### 10.4.8 Perform Position Message Procedure

- 10.4.8.1 [M] Press the CRT DISP key
- 10.4.8.2 [M] Press the POS key
- 10.4.8.3 [K] Know that the CDU display shows position
- 10.4.8.4 [K] Know to notice that on the radar display, GMT, FL, SAT, and MACH fields are already filled in with current operating data
- 10.4.8.5 [M] Press the LINE key three times
- 10.4.8.6 [K] Know that the CDU display shows CURRENT POS
- 10.4.8.7 [M] Enter the three letter identifier of the present position
- 10.4.8.8 [M] Press the ENT/SEND key
- 10.4.8.9 [K] Know that the CDU displays NEXT REPORT
- 10.4.8.10 [M] Enter the three letter identifier of the next reporting point
- 10.4.8.11 [M] Press the ENT/SEND key three times
- 10.4.8.12 [K] Know that the CDU displays TIME OVER
- 10.4.8.13 [M] Enter the Estimated Time Over Next Position Report (GMT)
- 10.4.8.14 [M] Press the ENT/SEND key
- 10.4.8.15 [M] Press the LINE key twice
- 10.4.8.16 [K] Know that the CDU displays WIND SPEED
- 10.4.8.17 [M] Enter the Wind Speed in knots from the FMC display
- 10.4.8.18 [M] Press the ENT/SEND key
- 10.4.8.19 [K] Know that the CDU displays WIND DIR

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 10.4.8.20 [M] Enter the wind direction in degrees from the FMC display
- 10.4.8.21 [M] Press the ENT/SEND key
- 10.4.8.22 [K] Know that the CDU displays SKY
- 10.4.8.23 [M] Enter the Sky Condition, using simple language (12 chars max)
- 10.4.8.24 [M] Press the ENT/SEND key
- 10.4.8.25 [K] Know that the CDU displays TURB
- 10.4.8.26 [M] Enter the Turbulence Condition, using simple language (11 chars max)
- 10.4.8.27 [M] Press the ENT/SEND key twice
- 10.4.8.28 [K] Know that the message will be entered into memory and sent to ground

#### 10.4.9 Perform Engine Data Procedures

- 10.4.9.1 [M] Press the ENG DATA key
- 10.4.9.2 [M] Press the ENT/SEND key
- 10.4.9.3 [K] Observe Engine Data page fills in with current operating data and that the message has been sent to ground

#### 10.4.10 Perform Message Waiting Procedure

- 10.4.10.1 [K] Recognize the "Message Waiting" on the CDU
- 10.4.10.2 [M] Press the PAGE key
- 10.4.10.3 [K] Observe the message on the radar scope

#### 10.4.11 Perform the ACARS GMT Update (Manual)

- 10.4.11.1 [K] Know that this procedure should be used only if unable to obtain the GMT update from the TEST Procedure
- 10.4.11.2 [K] Know that the aircraft must be at the gate, at least one door open and parking brake SET
- 10.4.11.3 [M] Press the FLT DATA key
- 10.4.11.4 [M] Press the LINE key
- 10.4.11.5 [M] Enter the GMT
- 10.4.11.6 [M] Press the ENT/SEND key

#### 10.5 Apply HF System Test

- 10.5.1 [K] Know not to operate the HF transmitter while fueling operations are in progress
- 10.5.2 [M] Position the mode selector to USB or AM

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 10.5.3 [K] Know that the use of USB is preferable for all the HF communications
- 10.5.4 [M] Select HF Frequency
  - 10.5.4.1 [K] Know to see ATIS/RAMP PARKING/PUSHBACK FREQUENCY chart for HF ATL frequency
  - 10.5.4.2 [K] Know to call on VHF to arrange HF check
- 10.5.5 [M] Push the HF Mic selector switch
- 10.5.6 [M] Key the microphone
- 10.5.7 [K] Know that a 1,000 Hz coupler tone can be heard up to 20 seconds during HF Antenna turning. When the HF Antenna is tuned to that frequency, the 1,000 Hz ceases and the HF system is ready to transmit
- 10.5.8 [C] Ensure that Transmit and Receive has been accomplished
- 10.5.9 [M] Position mode selector to OFF {when test is completed}

#### 10.6 Apply Electrical Power Test

- 10.6.1 [K] Know that the airplane must be on the ground with all buses powered
- 10.6.2 [M] Position the Standby Power selector to BAT
- 10.6.3 [C] Observe the battery DISCH light illuminates, the MAIN BAT DISCH EICAS message is displayed and the standby power OFF light remains extinguished
- 10.6.4 [M] Position the Standby Power selector to AUTO
- 10.6.5 [C] Observe the batter DISCH light extinguish and standby power OFF light remains extinguished

#### 10.7 Apply Engine, APU, Cargo, and Wheel Well Fire/Overheat Test

- 10.7.1 [M] Push the Engine/ APU/ Cargo Fire/ Overheat Test switch
  - 10.7.1.1 [C] Observe the fire bell ring intermittently and the caution aural sound
  - 10.7.1.2 [C] Observe the master WARNING
  - 10.7.1.3 [C] Observe the master CAUTION
  - 10.7.1.4 [C] Observe the discrete FIRE warning
  - 10.7.1.5 [C] Observe the fuel control switches
  - 10.7.1.6 [C] Observe L and R ENG OVHT
  - 10.7.1.7 [C] Observe L, R and APU fire handles

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 10.7.1.8 [C] Observe the FWD and AFT cargo fire
- 10.7.1.9 [K] Know that the master CAUTION light and beeper are not active with both fuel control switches in CUTOFF
- 10.7.2 [M] Push the Wheel Well Fire Test switch
  - 10.7.2.1 [C] Observe the fire bell ring intermittently
  - 10.7.2.2 [C] Observe the master WARNING light illuminate
  - 10.7.2.3 [C] Observe the discrete FIRE warning light illuminate
  - 10.7.2.4 [C] Observe the WHL WELL FIRE light illuminate
- 10.8 Apply Air Data Computer Test
  - 10.8.1 [K] Know that the IRSs must be aligned and in NAV
  - 10.8.2 [M] Position the L Air Data Computer Test switch to AIR DATA CMPTR and make the following observations on the Captain's instruments
    - 10.8.2.1 [C] Observe siren sound {initial 2 seconds}
    - 10.8.2.2 [C] Observe WARNING and OVSP lights illuminate
    - 10.8.2.3 [C] Observe that only 1/2 of the OVSP light illuminates
    - 10.8.2.4 [K] Vertical speed, altimeter, airspeed and Mack flags appear {next 5 seconds}
    - 10.8.2.5 [K] Airspeed indications decrease
    - 10.8.2.6 [K] Airspeed and Mack flags disappear {next 23 seconds}
    - 10.8.2.7 [K] Airspeed indications increase to 137 KIAS and 357 KIAS Vmo.
    - 10.8.2.8 [K] Altimeter increases to 10,000 feet, then altimeter flag disappears
  - 10.8.3 [M] Position the R Air Data Computer Test switch to AIR DATA CMPTR
  - 10.8.4 [K] Know to use the above observations, except using First Officer's instruments
  - 10.8.5 [M] Position the Flight Recorder Test switch to TEST
  - 10.8.6 [C] Observe the OFF light extinguish
- 10.9 Apply Fuel Jettison
  - 10.9.1 [K] Know not to jettison fuel with flaps 25 or 30
  - 10.9.2 [M] Position the Fuel Jettison selector to ON

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 10.9.3 [M] Position the Fuel Jettison Nozzle switches to ON
- 10.9.4 [K] Know that fuel jettison is from center tank only and the time required to empty full center tank is approx. 50 minutes
- 10.9.5 [M] Position the Fuel Jettison Nozzle switches to OFF {when jettison is complete}
- 10.9.6 [M] Position the Fuel Jettison selector to OFF
- 10.9.7 [C] Verify the Vref speed for new gross weight during landing preparation

#### 10.10 Apply ILS Test Procedure

- 10.10.1 [K] Know that this procedure requires the HSI mode and standby attitude ILS selectors to be in ILS position, and airplane heading selected in the ILS front course indicator
- 10.10.2 [M] Push the ILS Test Switch
- 10.10.3 [K] Observe, during the initial 3 seconds, the G/S and LOC flags appearing, and glideslope/localizer deviation scales disappear on HSI
- 10.10.4 [K] Observe, during the next 2 seconds, the G/S and LOC flags disappear and the glideslope/localizer deviation scales re-appear on HSI
- 10.10.5 [K] Observe, during the next 3 seconds, the glideslope/localizer deviation pointers indicate 1 dot up and 1 dot left respectively
- 10.10.6 [K] Observe, during the next 2 seconds, the glideslope/localizer deviation pointers move down and right respectively
- 10.10.7 [K] Observe, during the next 3 seconds, the glideslope/localizer deviation pointers indicate 1 dot down and 1 dot right respectively
- 10.10.8 [K] Observe the indications return to normal

#### 10.11 Apply IRS Alignment

##### 10.11.1 Apply initial alignment (full alignment)

- 10.11.1.1 [M] Position the IRS Mode Selectors to NAV
- 10.11.1.2 [C] Verify the ALIGN lights are off
- 10.11.1.3 [K] Observe ON DC lights illuminate momentarily and after 10 seconds, the ALIGN lights illuminate

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 10.11.1.4 [M] Select the Pos Init Page
- 10.11.1.5 [M] Enter the Present Position on SET IRS POS line using the most accurate latitude and longitude information available
- 10.11.1.6 [K] Know that 10 minutes after selecting NAV, observe ALIGN lights extinguished
- 10.11.1.7 [K] Know that IRS ALIGN lights must be extinguished prior to moving airplane

10.11.2 Apply realign at intermediate stops

- 10.11.2.1 [M] Rotate IRS mode selectors to ALIGN then back to NAV
- 10.11.2.2 [K] Know that if more than 30 seconds are required to enter IRS position on CDU, delay positioning IRS mode selectors to NAV until present position is entered
- 10.11.2.3 [M] Select POS INIT Page
- 10.11.2.4 [M] Enter present position on SET IRS POS line using the most accurate latitude and longitude information available
- 10.11.2.5 [K] Observe Align lights extinguished thirty seconds after selecting NAV

10.12 Apply FMS Operation Procedure

10.12.1 Initialize FMS

10.12.1.1 Check Identification Page

- 10.12.1.1.1 [K] Observe both CDU's display
- 10.12.1.1.2 [M] Correct aircraft model as appropriate
- 10.12.1.1.3 [M] Correct engines as appropriate
- 10.12.1.1.4 [M] Correct Nav Data Active Data

10.12.1.2 Select Position Initialization Page

- 10.12.1.2.1 [M] Position IRS selectors to NAV
- 10.12.1.2.2 [M] Enter present position in SET IRS POS line
- 10.12.1.2.3 [M] Enter reference airport using 4 letter ICAO code
- 10.12.1.2.4 [M] Enter gate number
- 10.12.1.2.5 [M] Enter gate LAT. & LONG. into prompt boxes
- 10.12.1.2.6 [K] Observe correct position displayed on LAST POS line

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 10.12.1.2.7 [K] Observe correct GMT time
- 10.12.1.2.8 [K] Know that align lights must be extinguished prior to moving airplane

#### 10.12.1.3 Select Route Page

- 10.12.1.3.1 [M] Clear previous route
- 10.12.1.3.2 [K] Know that entry or re-entry of origin clears previous route
- 10.12.1.3.3 [K] Know that if EXEC light illuminates, press EXECUTE, but if this step is not performed, the RUNWAY prompt may not appear
- 10.12.1.3.4 [M] Enter runway and route information
- 10.12.1.3.5 [K] Know that if runway and/or SID is not known, it may be entered later
- 10.12.1.3.6 [K] Know that if SID is to be used, use the DEPARTURE page and select the appropriate SID
- 10.12.1.3.7 [K] Know that if the SID is runway dependent, a runway must be selected before the HSI will display the SID
- 10.12.1.3.8 [K] Know that when entering an airway on the route page, the beginning waypoint of the segment must be entered before the airway entry will be accepted
- 10.12.1.3.9 [K] Know that both the beginning and ending waypoints must be entered before the airway can be displayed on the HSI map

#### 10.12.1.4 Select Performance Initialization Page

- 10.12.1.4.1 [C] Verify fuel quantity
- 10.12.1.4.2 [K] Know that lack of automatically displayed or inaccurate fuel quantity information on the performance initialization page indicates invalid fuel quantity indications on the overhead panel
- 10.12.1.4.3 [M] Enter zero fuel weight
- 10.12.1.4.4 [M] Enter fuel reserve
- 10.12.1.4.5 [M] Enter Cost Index
- 10.12.1.4.6 [M] Enter cruise altitude or verify correct
- 10.12.1.4.7 [M] Enter forecast cruise winds and ISA deviation or top of climb temperature

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

### 10.12.1.5 Select Takeoff Page

- 10.12.1.5.1 [C] Verify preflight complete
- 10.12.1.5.2 [K] Know that if the SID is not used, PRE-FLT STATUS and DEPARTURE prompt may be displayed
- 10.12.1.5.3 [K] Know not to fill in Temp Box on this page

### 10.12.2 Apply lateral navigation procedures

#### 10.12.2.1 Proceed direct to a waypoint

- 10.12.2.1.1 [M] Select Direct Intercept Page
- 10.12.2.1.2 [M] Enter desired waypoint in the DIRECT TO boxes
- 10.12.2.1.3 [K] Observe HSI for modified route
- 10.12.2.1.4 [M] Press Execute

#### 10.12.2.2 Intercept a leg or airway to a waypoint

- 10.12.2.2.1 [M] Select the LEGS page
- 10.12.2.2.2 [M] Enter first waypoint to be passed after intercepting Leg or airway in INTC LEG boxes
- 10.12.2.2.3 [K] Observe waypoint display on upper left line
- 10.12.2.2.4 [M] If required, enter leg's inbound course in INTC CRS boxes
- 10.12.2.2.5 [K] Observe HSI for modified route
- 10.12.2.2.6 [M] Press Execute
- 10.12.2.2.7 [M] Use HDG SEL mode and map display to establish an appropriate intercept track
- 10.12.2.2.8 [M] Arm LNAV
- 10.12.2.2.9 [K] If the airplane heading will not intercept the selected leg or airway, a NOT ON INTERCEPT HEADING message will appear on the scratch pad line

#### 10.12.2.3 Route discontinuity/modification

- 10.12.2.3.1 [M] Select Legs or Route Page and line select waypoints in desired sequence
- 10.12.2.3.2 [K] Observe HSI for modified route
- 10.12.2.3.3 [M] Return to the Legs Page to link discontinuities and to ensure waypoint

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

sequence is consistent with the clearance

10.12.2.3.4 [M] Press Execute

#### 10.12.2.4 Deleting a waypoint

10.12.2.4.1 [M] Select Legs Page

10.12.2.4.2 [K] Know that the delete function cannot be used to erase the active waypoint or an active holding pattern

10.12.2.4.3 [M] Remove waypoint(s) using the Delete key

10.12.2.4.4 [M] Link any discontinuities that exist

10.12.2.4.5 [M] Press Execute

#### 10.12.2.5 Entering a crossing radial from a fix as a waypoint

10.12.2.5.1 [M] Select Fix Page and enter desired fix identifier

10.12.2.5.2 [M] Enter desired radial from fix on the DNTKFX (downtrack fix) line or an ABM (abeam) line if desired radial is perpendicular to course

10.12.2.5.3 [M] Line select DNTKFX or ABM line to scratch pad

10.12.2.5.4 [M] Select Legs Page (or Direct Intercept Page if fix is prior to active waypoint) and line select fix/radial/distance to desired waypoint sequence

10.12.2.5.5 [K] Observe HSI for modified route

10.12.2.5.6 [M] Press Execute

#### 10.12.2.6 Entering an along track SPD/ALT crossing waypoint

10.12.2.6.1 [M] Select Legs Pages

10.12.2.6.2 [M] Line select reference waypoint to scratchpad

10.12.2.6.3 [M] Enter slash (/) then a minus (-) if before the reference waypoint, followed by distance

10.12.2.6.4 [M] Line select scratchpad entry to reference waypoint

10.12.2.6.5 [M] Enter desired speed/altitude for crossing waypoint

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

10.12.2.7 Enter waypoint not in data base

- 10.12.2.7.1 [M] Select Legs, Direct Intercept or Route Page
- 10.12.2.7.2 [M] Construct the point by specifying it in radial/DME, VOR radial/VOR radial crossing, or latitude and longitude
- 10.12.2.7.3 [M] Line select waypoint in the desired sequence
- 10.12.2.7.4 [K] Observe HSI for proper sequence
- 10.12.2.7.5 [M] Press Execute

10.12.2.8 Enter a contingency routing

- 10.12.2.8.1 [M] Select Route Page
- 10.12.2.8.2 [M] Line select Route Page 2
- 10.12.2.8.3 [M] Enter desired route information
- 10.12.2.8.4 [K] Observe HSI that RTE 2 information correct
- 10.12.2.8.5 [M] Activate when desired
- 10.12.2.8.6 [K] Observe DIRECT TO and INTC LEG TO prompts appear
- 10.12.2.8.7 [M] Use appropriate prompts to link present position with new route
- 10.12.2.8.8 [M] Press Execute

10.12.2.9 Enter a destination change

- 10.12.2.9.1 [M] Select Route Page
- 10.12.2.9.2 [M] Enter new destination using Route or Legs Page
- 10.12.2.9.3 [M] Press Execute

10.12.2.10 Enter an offset

- 10.12.2.10.1 [M] Select Route Page
- 10.12.2.10.2 [M] Enter desired OFFSET direction (L or R) then distance over prompt dashes (6R)
- 10.12.2.10.3 [M] Press Execute
- 10.12.2.10.4 [K] Know that FMS computes 45° intercept from original to offset path if outside 2½ NM, 10° intercept within 2½ NM
- 10.12.2.10.5 [K] Offset automatically terminates at last waypoint, approach procedure, route discontinuity, or use of Direct

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

Intercept Page, and AFDS goes to HDG Hold

#### 10.12.2.11 Inhibit Navaid

- 10.12.2.11.1 [M] Select Nav Data Page
- 10.12.2.11.2 [M] Enter Navaid identifier below inhibit prompt
- 10.12.2.11.3 [K] Know that 2 navaids can be entered
- 10.12.2.11.4 [K] Know that overwriting or use of DELETE key clears previous entry

#### 10.12.2.12 Apply Holding

- 10.12.2.12.1 [K] Know that when flying an offset, holding is in relation to the offset
- 10.12.2.12.2 [M] Select Hold Page
- 10.12.2.12.3 [K] Observe HOLD AT and PPOS (present position) or NEXT HOLD prompt displayed
- 10.12.2.12.4 [M] Know to select NEXT HOLD and observe HOLD AT and PPOS displayed if NEXT HOLD prompt is displayed
- 10.12.2.12.5 [M] Enter desired holding fix
- 10.12.2.12.6 [K] Know if holding at present position is desired, line select PPOS
- 10.12.2.12.7 [K] Know that the INBD CRS/DIR for a present position hold cannot be changed
- 10.12.2.12.8 [K] Know that if holding at a waypoint is desired, enter waypoint in scratch pad and line select to prompt boxes
- 10.12.2.12.9 [K] Observe modified route correctly displayed on HSI
- 10.12.2.12.10 [K] Know if holding details displayed are incorrect or inadequate, enter correct information on appropriate line
- 10.12.2.12.11 [M] Press Execute
- 10.12.2.12.12 [K] Know that prior to entering the holding pattern, the HOLD may be deleted on the LEGS page
- 10.12.2.12.13 [K] Know that if the winds are less than 50 knots when at or below 14,000' or less than 75 knots when above 14,000' and when arriving at the holding fix, to accomplish a

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

minimum turn radius holding pattern by disengaging LNAV and using Heading Select Mode with maximum bank angle selected pattern

#### 10.12.2.13 Apply exit hold

- 10.12.2.13.1 [M] Select Hold Page
- 10.12.2.13.2 [M] Line select EXIT HOLD
- 10.12.2.13.3 [K] Observe EXIT HOLD prompt changes to EXIT ARMED
- 10.12.2.13.4 [M] Press Execute
- 10.12.2.13.5 [K] Know that when flying an offset path holding pattern, canceling the offset deletes the holding pattern

#### 10.12.3 Apply vertical navigation FMS procedures

##### 10.12.3.1 Apply temporary speed restrictions

- 10.12.3.1.1 [M] Push IAS/MACH selector on MCP
- 10.12.3.1.2 [M] Set desired speed
- 10.12.3.1.3 [K] Know VNAV altitude profile remains active
- 10.12.3.1.4 [M] Push IAS/MACH selector to resume original speed schedule

##### 10.12.3.2 Apply temporary altitude restriction

- 10.12.3.2.1 [M] Set level off altitude on MCP
- 10.12.3.2.2 [K] Observe VNAV disengaged and ALT HOLD and SPD display on ADI when altitude reached
- 10.12.3.2.3 [M] Set new altitude on MCP to resume climb or descend
- 10.12.3.2.4 [M] Engage VNAV

##### 10.12.3.3 Apply speed/altitude constraint at waypoint

- 10.12.3.3.1 [M] Select Legs Page
- 10.12.3.3.2 [M] Enter speed/altitude
- 10.12.3.3.3 [K] Know that if constraint is to cross the waypoint at a specific altitude, enter the altitude only
- 10.12.3.3.4 [K] Know that if constraint is to cross at or above altitude, enter "A" after altitude

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 10.12.3.3.5 [K] Know that if constraint is to cross between two altitudes, enter lower altitude followed by "A", then enter upper altitude followed by "B"
- 10.12.3.3.6 [K] Know that speed entry must be followed by a slash (/) mark and altitude
- 10.12.3.3.7 [M] Press Execute
- 10.12.3.3.8 [M] Delete constraint
  - 10.12.3.3.8.1 [M] Use DELETE key and line select to desired line
  - 10.12.3.3.8.2 [K] Observe FMC computed values appear
  - 10.12.3.3.8.3 [M] Press Execute
- 10.12.3.4 Apply speed/altitude transition and restriction
  - 10.12.3.4.1 [M] Select Climb or Descent Page
  - 10.12.3.4.2 [M] Enter speed/altitude
  - 10.12.3.4.3 [M] Press Execute
  - 10.12.3.4.4 To delete transition or restriction
    - 10.12.3.4.4.1 [M] Use DELETE key and line select to desired line
    - 10.12.3.4.4.2 [M] Press Execute
- 10.12.3.5 Apply climb or descend direct (to delete all altitude constraints at waypoints between current altitude and MCP altitude)
  - 10.12.3.5.1 [M] Select Climb or Descent Page
  - 10.12.3.5.2 [M] Select CLB/DES DIR
  - 10.12.3.5.3 [K] Know that CLB DIR or DES DIR prompt will only be displayed when climb/descent is active and an altitude constraint exists at a waypoint between current altitude and either cruise or end of descent altitude
  - 10.12.3.5.4 [M] Press Execute
- 10.12.3.6 Apply cruise altitude change
  - 10.12.3.6.1 [M] Set new altitude on MCP
  - 10.12.3.6.2 [M] Select Cruise Page
  - 10.12.3.6.3 [M] Enter new cruise altitude on CRZ ALT line

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 10.12.3.6.4 [M] Press Execute
- 10.12.3.6.5 [M] Engage VNAV, if not already engaged

#### 10.12.3.7 Apply Descent

- 10.12.3.7.1 [M] Select Arrivals Page
- 10.12.3.7.2 [M] Select appropriate STAR, transition, & approach or runway
- 10.12.3.7.3 [M] Select Descent Page
- 10.12.3.7.4 [M] Fly ECON SPD unless directed by ATC
- 10.12.3.7.5 [M] Enter cruise altitude under TAI/ON prompt
- 10.12.3.7.6 [K] Know that if only the destination has been entered, and no defined altitude/speed restriction below cruise altitude is entered, no T/D calculation is displayed, and a blank descent page will appear
- 10.12.3.7.7 [K] Know if only a runway is entered to define the end of descent (E/D) point, a descent page is created to an E/D of 2,000 feet AGL with a target speed of 170 knots 8 nm from the runway
- 10.12.3.7.8 [K] Know that an attempt should be made to initiate descent 15 nm prior to programmed T/D
- 10.12.3.7.9 [M] Set altitude window on MCP
- 10.12.3.7.10 [M] Select DES NOW
- 10.12.3.7.11 [K] Know that DES NOW prompt will only be displayed prior to reaching programmed T/D
- 10.12.3.7.12 [M] Press Execute
- 10.12.3.7.13 [K] Know that descent will begin at 1,000 - 1,500 feet per minute until intercepting the ECON descent profile and at that point throttles will retard to idle

#### 10.12.4 Apply FMS progress functions

##### 10.12.4.1 Apply flight progress data check

- 10.12.4.1.1 [M] Select Progress Page
- 10.12.4.1.2 [C] Check distance to go and ETA for next two waypoints and destination

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 10.12.4.2 Determine distance to cross radial from a fix
  - 10.12.4.2.1 [M] Select Fix Page
  - 10.12.4.2.2 [M] Enter desired fix identifier on FIX line
  - 10.12.4.2.3 [M] Enter desired radial from fix on DNTKFX or select ABM line if desired radial from fix is perpendicular to course
  - 10.12.4.2.4 [K] Observe distance to go
- 10.12.4.3 Determine DTG and ETA to downpath waypoint or alternate
  - 10.12.4.3.1 [M] Select Progress Page 1
  - 10.12.4.3.2 [M] Enter downpath waypoint or alternate airport waypoint by overwriting the displayed destination waypoint
  - 10.12.4.3.3 [K] Know that DTG and ETA to waypoint (identified as ENROUTE WPT) will be displayed
  - 10.12.4.3.4 [K] Know that leaving and returning to page returns original destination
- 10.12.5 Apply FMS performance data entry
  - 10.12.5.1 Enter cruise waypoint winds
    - 10.12.5.1.1 [M] Select Legs Page
    - 10.12.5.1.2 [M] Select Route Data Page
    - 10.12.5.1.3 [M] Enter cruise winds
  - 10.12.5.2 Apply step climb evaluation
    - 10.12.5.2.1 [M] Select Cruise Page
    - 10.12.5.2.2 [M] Enter step to altitude
    - 10.12.5.2.3 [M] Enter wind direction/speed
    - 10.12.5.2.4 [C] Check savings
  - 10.12.5.3 Apply descent forecast
    - 10.12.5.3.1 [M] Select Descent Page
    - 10.12.5.3.2 [M] Select Forecast Page
    - 10.12.5.3.3 [C] Check transition level
    - 10.12.5.3.4 [M] Enter TAI ON altitude (if required)
    - 10.12.5.3.5 [M] Enter wind altitude
    - 10.12.5.3.6 [M] Enter wind direction/speed

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

## 10.13 Apply Battery Start

- 10.13.1 [K] Know to use when aircraft is not powered and two ground air sources are needed to start the engines
- 10.13.2 [C] Complete the Ext/Int Preflight the same as NORMAL expanded procedures
- 10.13.3 [M] Position Battery switch to ON {Logbook check}
- 10.13.4 [M] Position Stby Power to AUTO
- 10.13.5 [M] Set the Hydraulic Panel
  - 10.13.5.1 [M] Turn engine pumps to ON position
  - 10.13.5.2 [M] Turn Right System Electric Pump 767 to AUTO
  - 10.13.5.3 [C] Ensure all other pumps are OFF
- 10.13.6 [M] Position the Landing Gear level DOWN, 3 green
- 10.13.7 [M] Position Flap Lever to agree with flap position
- 10.13.8 [M] Position the Alternate Flaps to NORM/OFF
- 10.13.9 [M] Position the Pack Control selector to OFF
- 10.13.10 [K] Pack valves, if open, must be closed manually prior to start of engine
- 10.13.11 [C] Ensure the ISLN Valve(s) are OPEN
- 10.13.12 [K] Know that if valve(s) for desired engine start are not open, the valve must be manually opened
- 10.13.13 [M] Position the Engine Ignition selector to 1 or 2
- 10.13.14 [M] Set the Park Brake
- 10.13.15 [M] Position the Fuel Control switch(s) to CUTOFF
- 10.13.16 [C] Establish communication with ground maintenance
- 10.13.17 [C] Accomplish Engine Start
  - 10.13.17.1 [K] Use STANDBY ENGINE indicator for start
  - 10.13.17.2 [C] Observe EGT start limit
- 10.13.18 [C] Check the Electrical Panel
- 10.13.19 [C] Observe AC BUS OFF and Utility BUS OFF lights extinguish
- 10.13.20 [C] Accomplish Normal Checklist Items

## 10.14 Apply Crossbleed Start

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 10.14.1 [K] Know that the APU must be shutdown or the APU Bleed Valve must be closed
- 10.14.2 [C] Check that area behind aircraft is clear
- 10.14.3 [M] Position the Bleed Air switch to OPEN on operating engine
- 10.14.4 [M] Advance thrust on operating engine to approximately 70% N2 and accomplish ENGINE START procedure

#### 10.15 Apply Manual Override Start

- 10.15.1 [K] Know that the engine with an inoperative start valve may be started by operating the valve manually
- 10.15.2 [C] Establish communication with ground maintenance
- 10.15.3 [M] Position Engine Start selector to GROUND
- 10.15.4 [C] Ensure Start Valve is OPEN
  - 10.15.4.1 [K] Direct ground maintenance to open valve
  - 10.15.4.2 [C] Announce N2 rotation
- 10.15.5 [M] Position the Fuel Control switch to RUN
- 10.15.6 [M] CLOSE the Start Valve
  - 10.15.6.1 [K] When 50% N2 is observed, direct ground maintenance to close start valve
  - 10.15.6.2 [C] Verify start valve is closed by observing that START VALVE light is extinguished
- 10.15.7 [K] Do not accelerate or start other engine until ground maintenance reports area is clear

#### 10.16 Apply EICAS Test Procedure

- 10.16.1 [M] PUSH EICAS Test Switch
- 10.16.2 [C] Observe TEST OK message displays
- 10.16.3 [M] PUSH EICAS Test Switch again

#### 10.17 Apply Ground Proximity Warning Test Procedure

- 10.17.1 [M] Momentarily select the GND PROX position with the Ground Proximity Test Switch
- 10.17.2 [C] Observe GND PROX BITE STATUS message on lower EICAS for 6 seconds
- 10.17.3 [C] Observe "GLIDESLOPE" aural sounds and GND PROX light illuminated

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 10.17.4 [C] Observe the "PULL UP" aural sound and master WARNING and PULL UP lights illuminated
- 10.17.5 [C] Observe the "WINDSHEAR" aural sound and master WARNING and WINDSHEAR lights illuminated
  
- 10.18 Apply Landing Configuration Warning Test Procedure
  - 10.18.1 [M] Select the LDG position with the Configuration Test Switch
  - 10.18.2 [C] Observe siren sounds, master WARNING and CONFIG lights illuminated and GEAR NOT DOWN message display on the EICAS
  
- 10.19 Apply Takeoff Configuration Warning Test Procedure
  - 10.19.1 [M] Select the T/O position with the Configuration Test Switch
  - 10.19.2 [C] Observe siren sounds, master WARNING and CONFIG lights and appropriate configuration warning message(s) display
  
- 10.20 Apply Stall Warning Test Procedure
  - 10.20.1 [K] Heed CAUTION that with Leading Edge Slats in takeoff position and left hydraulic system pressurized, the leading edge slats will extend to landing position during the test
  - 10.20.2 [M] Select STALL with the L Stall Warning Test Switch and observe the left control column vibrating
  - 10.20.3 [M] Select STALL with the R Stall Warning Test Switch and observe the right control column vibrating

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

## 11 APPLY ENVIRONMENTAL-INDUCED PROCEDURES

### 11.1 Apply Cold Weather Procedures

#### 11.1.1 Apply Exterior Inspection

- 11.1.1.1 [K] Ensure exterior surfaces are free of frost, ice and snow
- 11.1.1.2 [K] Ensure APU Door, Air Conditioning Inlet and Exit, Outflow Valves, Landing Gear Doors and control surfaces are free of snow and ice and movement unobstructed
- 11.1.1.3 [C] Observe all doors, controls and other honeycomb areas for bulges caused by frozen moisture
- 11.1.1.4 [C] Ensure Engine inlet protective covers are removed and engine inlets/cowling are free of snow and ice
- 11.1.1.5 [K] Check Pitot Static ports are clear
- 11.1.1.6 [C] Ensure the APU bleed air valve and both pack valves are closed through de-icing treatment until completion if APU operation is desired
- 11.1.1.7 [C] Complete another inspection after de-icing is complete to ensure all ice and snow has been removed

#### 11.1.2 Apply After Start Procedures

- 11.1.2.1 [C] Ensure Engine anti-ice is ON after start when the ambient temperature is 50°F (10°C) or below and visible moisture is present, there is less than a 5° dewpoint spread, or the runway and taxiways are wet
- 11.1.2.2 [C] Apply engine run up at 10 minute intervals for 15 second duration at 60% N1 when operating during prolonged ground operation, when icing exists, to minimize the possibility of engine ice buildup

#### 11.1.3 Apply Taxi Procedures

- 11.1.3.1 [C] Ensure De-Icing Fluid is applied as close to takeoff as possible , with rule of thumb being 15 minutes
- 11.1.3.2 [C] Ensure engine inlet bleed air is not used for air conditioning until the engine has

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

operated for 5 minutes after de-icing fluid has been used in the vicinity of the engine

- 11.1.3.3 [K] Ensure not to taxi on single engine when icy or slippery conditions exist
- 11.1.3.4 [K] Ensure flaps are not extended while taxiing to prevent slush accumulation in the flap areas
- 11.1.3.5 [K] Ensure delay of Taxi and Before Takeoff checklists completion, if flaps are up for taxi, until flaps are properly positioned and a control check is completed
- 11.1.3.6 [C] Observe the FLAP POSITION Indicator closely for positive movement when operating the flaps and if flaps stop, immediately place FLAP Lever to the indicated position
- 11.1.4.7 [C] Apply a static run up to as high a thrust level as practical, with stable engine operation observed, prior to takeoff break release

#### 11.1.4 Apply Takeoff Procedures

- 11.1.4.1 [C] Determine affect of snow, slush, or standing water on takeoff performance
- 11.1.4.2 [C] Determine affect of slush and standing water on takeoff acceleration
- 11.1.4.3 [C] Determine affect of precipitation in any form on stopping capability in case of a rejected takeoff or emergency return landing
- 11.1.4.4 [C] Ensure the AUTOBRAKE Selector is in the RTO position for takeoff
- 11.1.4.5 [C] Ensure reduced thrust is not used on runways that are not dry

#### 11.1.5 Apply Rejected Takeoff Procedures

- 11.1.5.1 [M] Extend spoilers, use maximum allowable symmetrical reverse thrust and maximum braking
- 11.1.5.2 [M] Correct back to centerline by reducing reverse thrust to reverse idle; releasing

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

brakes; using rudder, steering, and differential braking when a side slip develops

#### 11.1.6 Apply After Takeoff Procedure

- 11.1.6.1 [C] Activate Engine Anti-ice prior to entering icing conditions
- 11.1.6.2 [C] Activate Wing Anti-ice when necessary above 400 feet AGL

#### 11.1.7 Apply Climb and Cruise Procedures

- 11.1.7.1 [C] Ensure Engine Anti-ice is activated when TAT is 10°C or below and fog, rain, sleet, ice crystals or snow is present, except when the SAT is below -40°C
- 11.1.7.2 [C] Ensure Engine N1 is maintained above TAI CURSOR on EICAS
- 11.1.7.3 [C] Cancel the "Ice Detection On" message when it is noted so that the "Ice Detection Off" message will be more readily recognized when it comes on
- 11.1.7.4 [C] Turn off ice protection systems when icing conditions no longer exist

#### 11.1.8 Apply Descent Procedures

- 11.1.8.1 [K] Recognize an increase in the distance needed for descent by approximately 20 - 25% due to the increase in thrust required for use of Wing or Engine Anti-ice
- 11.1.8.2 [K] Recognize that icing often forms unexpectedly and may occur when there is no visible evidence of ice forming
- 11.1.8.3 [K] Use Engine Anti-ice whenever icing **conditions** exist or are anticipated (TAT is 10°C or less and visible moisture is present)
- 11.1.8.4 [C] Check the ARM for the missed approach climb limit weight penalty, after flying in moderate to heavy icing and temperature at destination airport is below 46°F
- 11.1.8.5 [C] Ensure a Log Book entry is made whenever moderate to severe icing is encountered for extended periods of time during and or holding, particularly at N1 speeds below 70%

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

### 11.1.9 Apply Landing Procedures

- 11.1.9.1 [C] Use Autobrakes for maximum stopping effectiveness
- 11.1.9.2 [C] Avoid excessive approach speed
- 11.1.9.3 [C] Touchdown within 1500 feet from the approach end of the runway
- 11.1.9.4 [C] Assure spoilers deploy
- 11.1.9.5 [C] Use maximum allowable symmetrical reverse thrust
- 11.1.9.6 [C] Reduce reverse thrust to reverse idle by 60 knots and select forward idle at normal taxi speed
- 11.1.9.7 [C] When slide slipping off the runway, select reverse idle and release brakes to return to centerline
- 11.1.9.8 [C] Recognize that aircraft will tend to drift off the runway nose first with forward thrust and tail first with reverse thrust
- 11.1.9.9 [C] Recognize that reverse thrust may reduce forward visibility due to blowing snow
- 11.1.9.10 [C] Avoid abrupt steering inputs

### 11.1.10 Apply Postarrival Ground Procedures

- 11.1.10.1 [C] Do not retract flaps for taxi when icing conditions existed during approach or slush is present
- 11.1.10.2 [C] Make a visual inspection of flap areas prior to retraction
- 11.1.10.3 [C] When conditions warrant, leave Engine Anti-ice on during taxi to the gate
- 11.1.10.4 [M] Apply Securing For Cold Weather Procedures when the airplane is to be parked for an extended period and the temperature is expected to be 0°C (32°F) or below
  - 11.1.10.4.1 [M] Set Pack Control Selectors to OFF
  - 11.1.10.4.2 [M] Set Outflow Valve to CLOSED
  - 11.1.10.4.3 [M] Set Cabin Altitude Mode Selector to MAN
  - 11.1.10.4.4 [M] Set Cabin Altitude Manual Control to DESCEND
  - 11.1.10.4.5 [C] Observe outflow valve position indicator move to CL
  - 11.1.10.4.6 [M] Ensure Doors and Side Windows are CLOSED

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

## 11.2 Apply Turbulent Air Penetration Procedures

- 11.2.1 [M] Set airspeed to 290 knots or Mach 0.78, whichever is higher, to provide optimum controllability and low/high speed buffet margins in turbulent air
- 11.2.2 [C] When encountering clear air turbulence, maintain wings level and smoothly control pitch attitude
- 11.2.3 [K] Use the ADI as the primary instrument
- 11.2.4 [K] Do not use sudden or large control inputs since, in extreme vertical wind currents, large attitude changes may occur
- 11.2.5 [K] Do not change stabilizer trim after establishing trim setting for penetration speed
- 11.2.6 [K] Allow altitude and airspeed variations to vary and maintain attitude since large airspeed and altitude variations may occur in severe turbulence
- 11.2.7 [M] Set thrust for penetration speed and avoid large thrust changes
- 11.2.8 [M] Set Ignition to ON
- 11.2.9 [C] When the autopilot is engaged in command mode, disengage when the airplane response to turbulence is so abrupt that it is uncomfortable for the crew and passengers
- 11.2.10 [C] When the autothrottles are engaged, disengage them (and set an N1 appropriate for altitude and gross weight) when throttle movement in response to turbulence is excessive
- 11.2.11 [K] Prefer to use the autopilot VNAV mode over the vertical speed mode for turbulence operations
- 11.2.12 [K] Do not allow the airspeed to decrease and remain below the turbulent penetration speed as buffet margin will be reduced and considerable time and fuel will be required to regain cruise speed
- 11.2.13 [C] When encountering severe turbulence, descend approximately 4,000 feet below optimum altitude to ensure an increased buffet margin and make the descent prior to entering the area of severe turbulence if possible

## 11.3 Apply Windshear Avoidance Procedures

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

11.3.1 Evaluate weather conditions for danger signals of windshear

- 11.3.1.1 [C] Monitor Pilot Reports (PIREPs)
- 11.3.1.2 [C] Monitor Low Level Windshear Advisory System (LLWAS) reports
- 11.3.1.3 [C] Assess for wet thunderstorm microburst conditions
- 11.3.1.4 [C] Assess for dry microburst conditions
- 11.3.1.5 [C] Assess frontal activity with other weather conditions related to microburst development
- 11.3.1.6 [C] Assess surface wind activity for possible microburst conditions
- 11.3.1.7 [M] Use the color weather radar to assist in detection of microburst conditions

11.3.2 Apply Takeoff Precautions During Unstable Weather Conditions

- 11.3.2.1 [M] Use Normal Takeoff Thrust (TO on EICAS)
- 11.3.2.2 [M] Select the most favorable runway
- 11.3.2.3 [M] Select normal flaps
- 11.3.2.4 [M] Use Flight Directors ONLY on aircraft equipped with a Windshear Warning and Guidance System with Go-Around switch activated to engage the Windshear Guidance System
- 11.3.2.5 [M] Set  $V_1$ ,  $V_R$ , and  $V_2$  based on actual takeoff weight
- 11.3.2.6 [C] Compute an increased  $V_R$  based on the runway allowable takeoff weight for the runway
  - 11.3.2.6.1 [C] Mentally note the increased  $V_R$  and delay rotation to that speed
  - 11.3.2.6.2 [K] Do not increase rotation speed more than 20 knots
  - 11.3.2.6.3 [M] Make a continuous takeoff rotation at the increased  $V_R$  with a normal initial climb pitch attitude

11.3.3 Comply With Go/No-Go Guidelines

- 11.3.3.1 [C] When airspeed changes occur during takeoff roll of  $\pm 15$  knots or more **prior to  $V_1$** , abort unless runway remaining is clearly sufficient

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 11.3.3.2 [C] When airspeed changes occur during takeoff roll of  $\pm 15$  knots or more **at or after**  $V_1$ , apply max available thrust, begin rotation approximately 2,000 ft. from the end of the usable runway surface even if the airspeed is below  $V_R$  and then apply the Standard Recovery Technique (11.3.5)

#### 11.3.4 Apply Approach Precautions During Unstable Weather Conditions

- 11.3.4.1 [C] Select the most favorable runway
- 11.3.4.2 [M] Select Flaps 30 if suitable for the runway
- 11.3.4.3 [C] Fly the approach, not to exceed  $V_{REF\ 30} + 20$  knots down to near touchdown
- 11.3.4.4 [C] Minimize thrust reductions after stabilized on the approach
- 11.3.4.5 [C] Ensure the Flight Director is disengaged or ignored during a windshear recovery on aircraft which are not equipped with a Windshear Warning and Guidance System
- 11.3.4.6 [C] Ensure the autopilot is disengaged during a windshear recovery on aircraft which are not equipped with a Windshear Warning and Guidance System

#### 11.3.5 Apply Windshear Standard Recovery Technique (SRT) Procedures

- 11.3.5.1 [C] Initiate SRT when an unstabilized flight path or marginal aircraft performance is indicated with windshear below 1,000' AGL, severe or extreme turbulence encountered below 1000' AGL, stall warning encountered, or Ground Proximity Warning ("pull-up")
- 11.3.5.2 [M] Apply SRT When Ground Contact is a Factor
  - 11.3.5.2.1 [M] Apply maximum available thrust by aggressively pushing throttles full forward ("firewall"), and disconnecting autothrottles, if engaged
  - 11.3.5.2.2 [M] Rotate at a smooth gradual rate toward a target pitch attitude of  $15^\circ$ , roll wings level if possible, simultaneously with thrust application, and ensure the autopilot is disengaged

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 11.3.5.2.3 [C] Respect any stall warnings by stopping rotation if the stick shaker or buffet is encountered
  - 11.3.5.2.4 [M] Control flight path with pitch by using 15° nose up pitch throughout the recovery unless ground contact is imminent then increase gradually pitch attitude to stop the descent
  - 11.3.5.2.5 [C] Minimize gear and flap changes until ground contact is no longer a factor
  - 11.3.5.2.6 [A] When conditions permit, report in detail the windshear encounter to tower and use the PIREP to ensure that it is rebroadcast
- 11.3.5.3 [C] Apply SRT When Ground Contact is Not a Factor or is No Longer a Factor
- 11.3.5.3.1 [C] Ensure aggressive thrust application within limits by the EEC or by manual means
  - 11.3.5.3.2 [C] Adjust target pitch attitude as appropriate for the conditions
  - 11.3.5.3.3 [C] Appropriate configurations changes may be made as desired
  - 11.3.5.3.4 [C] Accelerate back to normal speed

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

## 12 APPLY SPECIAL OPERATIONS PROCEDURES

12.1 Apply Guidance for Unscheduled Operations IAW the Company's Operations Manual

- 12.1.1 [C] Comply with guidance and requirements for charter flights
- 12.1.2 [C] Comply with guidance and requirements for Operational Ferry Flights
- 12.1.3 [C] Comply with guidance and requirements for Pilot Training Flights
- 12.1.4 [C] Comply with guidance and requirements for Maintenance Test and Ferry flights
- 12.1.5 [C] Comply with guidance and requirements for the use of U.S. Air Force Bases
- 12.1.6 [C] Comply with guidance and requirements for the use of U.S Navy/Marine Bases

12.2 Apply Packs Off Takeoff Procedures

- 12.2.1 [M] Set Pack Control Selectors to OFF just prior to takeoff
- 12.2.2 [M] Set Pack Control Selectors to AUTO
- 12.2.3 [C] Select one pack AUTO at 400' AGL minimum
- 12.2.4 [C] Select the other pack when pressurization stabilizes

12.3 Apply Transoceanic Operations Procedures

12.3.1 Apply International Operations IAW Company's Operations Manual

- 12.3.1.1 [C] Comply with Augmented Crew Procedures
- 12.3.1.2 [C] Comply with Oceanic Procedures
- 12.3.1.3 [C] Comply with INS Procedures
- 12.3.1.4 [C] Comply with Crew Fuel Record Procedures
- 12.3.1.5 [C] Comply with Navigation Charts Procedures
- 12.3.1.6 [C] Comply with Oceanic Communications Guidance
- 12.3.1.7 [C] Comply with ICAO Flight Plan Procedures
- 12.3.1.8 [C] Comply with North Atlantic Track System Procedures
- 12.3.1.9 [K] Know Emergency Airfield Guidance
- 12.3.1.10 [K] Comply with Retention of Flight Documents Procedures
- 12.3.1.11 [C] Comply with Customs, Immigration and Quarantine Procedures

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

### 12.3.2 Apply Preflight Planning Procedures

- 12.3.2.1 [C] Confirm company/computer flight plan agrees with ICAO flight plan
- 12.3.2.2 [C] Confirm NAT message and coordinates agree with Company/computer flight plan and ICAO flight plan
- 12.3.2.3 [C] Confirm company/computer flight plan waypoints and oceanic coordinates agree with navigation charts
- 12.3.2.4 [M] Fill out plotting chart
- 12.3.2.5 [M] Fill out passenger briefing maps
- 12.3.2.6 [C] Check Transoceanic Flight Folder contents

### 12.3.3 Apply Predeparture Ground Procedures

- 12.3.3.1 [C] Align/Initialize and load navigation systems
- 12.3.3.2 [C] Check navigation systems' Present Position and flight plan data
- 12.3.3.3 [C] Check required Transoceanic Folder documents are aboard prior to pushback
- 12.3.3.4 [C] Check each IRS groundspeed readout prior to takeoff while taxiing

### 12.3.4 Apply Enroute/Cruise Procedures

#### 12.3.4.1 Apply Enroute Procedures

- 12.3.4.1.1 [C] Perform FMC and IRS accuracy checks prior to reaching the last navaid or position definable by navaids
- 12.3.4.1.2 [C] Obtain enroute HF frequencies and SELCAL check
- 12.3.4.1.3 [M] Select TRUE with the HSI Heading Reference Switch on Oceanic Track entry
- 12.3.4.1.4 [C] Monitor 121.5 plus Oceanic common VHF frequency in Oceanic airspace
- 12.3.4.1.5 [M] Set transponder to code 2000 on track/route when required
- 12.3.4.1.6 [C] Complete AIREP and make position reports

#### 12.3.4.2 Apply Approaching Waypoint Procedures

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 12.3.4.2.1 [C] Verify the waypoint identifier/coordinates and heading of the next waypoint on the LEGS page and compare with flight plan
- 12.3.4.2.2 [M] Line select the next waypoint into the scratchpad
- 12.3.4.2.3 [M] Press INDEX on the CDU
- 12.3.4.2.4 [M] Select NAV DATA
- 12.3.4.2.5 [M] Select the appropriate scratchpad data
- 12.3.4.2.6 [C] Verify the lat/long data matches the flight plan
- 12.3.4.2.7 [M] Return to the LEGS page
- 12.3.4.2.8 [C] Compare with the lat/long of waypoint on flight plan
- 12.3.4.2.9 [C] Verify waypoint identifier/coordinates, distance and ETA of the NEXT waypoints on the PROGRESS page and compare with the master flight plan
- 12.3.4.2.10 [M] Line select the next waypoint into the scratchpad
- 12.3.4.2.11 [M] Press INDEX on the CDU
- 12.3.4.2.12 [M] Select NAV DATA
- 12.3.4.2.13 [M] Select the appropriate scratchpad data
- 12.3.4.2.14 [C] Verify the lat/long data matches the flight plan
- 12.3.4.2.15 [M] Select the PROGRESS page using the function key
- 12.3.4.2.16 [C] Verify distance and ETA of the NEXT waypoint and compare with the flight plan
- 12.3.4.2.17 [M] Prepare the AIREP
- 12.3.4.2.18 [M] Select the appropriate PROGRESS page and record totalizer and computed fuel remaining on the master flight plan
- 12.3.4.2.19 [M] Note and record wind to the nearest 5 degree and 5 knot value
- 12.3.4.2.20 [M] Record the SAT
- 12.3.4.2.21 [C] Verify that the estimate for the next compulsory waypoint is valid if the NEXT waypoint is non-compulsory
- 12.3.4.2.22 [M] Select the LEGS page
- 12.3.4.2.23 [M] Select RTE DATA
- 12.3.4.2.24 [C] Verify the next compulsory waypoint ETA against the master flight plan

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- 12.3.4.2.25 [M] Select PROGRESS page on the CDU
- 12.3.4.3 Apply over the waypoint flow pattern
  - 12.3.4.3.1 [M] Select POSITION on EFIS control panel
  - 12.3.4.3.2 [C] Compare IRU position with FMC position, if available
  - 12.3.4.3.3 [C] Compare VOR/DME raw data position with FMC/IRU position if VOR/DME is available
  - 12.3.4.3.4 [C] Verify leg switch on the LEGS page of the FMC
  - 12.3.4.3.5 [C] Verify leg switch on the PROGRESS page of the FMC
  - 12.3.4.3.6 [M] Transmit Airep if required
  - 12.3.4.3.7 [M] Draw diagonal line through waypoint verification check on the master flight plan
- 12.3.4.4 Apply after waypoint passing procedures
  - 12.3.4.4.1 [C] Verify maintaining track outbound, observe proper LNAV and VNAV indications displayed on PFD and ND, if possible
  - 12.3.4.4.2 [M] Approximately ten minutes after passing each waypoint, when not in an ATC radar controlled environment and when VOR/DME raw data position is not available, plot the A/C position on the plotting chart
  - 12.3.4.4.3 [M] Select INIT REF on the CDU
  - 12.3.4.4.4 [M] Select INDEX
  - 12.3.4.4.5 [M] Select POSITION
  - 12.3.4.4.6 [M] Select NEXT PAGE
  - 12.3.4.4.7 [M] Line select the FMC position to the scratchpad and plot this position on the plotting chart (Jeppesen chart if no plotting chart is available)
- 12.3.4.5 Make A/C systems check by reviewing synoptics
  - 12.3.4.5.1 [M] Select STATUS on the secondary EICAS and note any status messages for relay to maintenance
  - 12.3.4.5.2 [M] Note hydraulic, oxygen and oil quantities

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- 12.3.4.5.3 [M] Select FUEL on secondary EICAS control panel and note individual fuel tank quantities, fuel distribution
- 12.3.4.5.4 [M] Select ECS on the secondary EICAS control panel and verify that cabin temperatures are normal
- 12.3.4.5.5 [M] After checks complete, return secondary EICAS display to ENGINE

12.3.5 Apply Abnormal Procedures on Track/Route When Needed

12.3.5.1 Apply Intentional Departure From Track, Altitude, or Mach

- 12.3.5.1.1 [C] When unable to continue flight in accordance with ATC clearance due to weather, mechanical failure, or other inflight emergency, attempt to obtain clearance to deviate from altitude, track, or Mach prior to initiating action
- 12.3.5.1.2 [C] Use the radio telephony DISTRESS (Mayday) or URGENT (Pan) signal as appropriate
- 12.3.5.1.3 [C] When clearance cannot be obtained prior to deviating from flight plan, broadcast your position, including track code or route designator, and your intentions on 121.5 mhz at frequent intervals until a new ATC clearance is received
- 12.3.5.1.4 [C] When unable to comply with the provisions of an ATC clearance, initiate a turn 90 degrees right or left, considering your position relative to the track system, proximity to unfriendly airspace, and location of the diversion airport
- 12.3.5.1.5 [C] Plan to acquire a track separated from your assigned track by 30 nautical miles in the North Atlantic airspace and 25 nautical miles in the Pacific airspace
- 12.3.5.1.6 [C] When able to maintain altitude, attain appropriate hemispheric altitude by, in the Atlantic, climbing or descending 1,000' if at or above FL 290,

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climbing or descending 500' if below FL 290, and in the Pacific, climbing or descending 500' regardless of the altitude

- 12.3.5.1.7 [C] On European flights, when immediate diversion is necessary and the course to the alternate airport will cross any track on the NAT system, descend to FL 270 or lower before crossing any of the NAT tracks unless otherwise cleared by ATC

#### 12.3.5.2 Apply Deviations From Track Procedures

- 12.3.5.2.1 [C] When deviating around weather, plan to divert no more than 20 miles off course
- 12.3.5.2.2 [C] Attempt to obtain approval from ATC should it be necessary to deviate farther
- 12.3.5.2.3 [C] Broadcast your intentions to other aircraft on emergency frequency 121.5 mhz and oceanic common frequency when it becomes necessary to deviate from assigned track due to unforeseen meteorological conditions and time does not permit receiving an approval from ATC

#### 12.3.5.3 Apply Engine Loss and Driftdown Procedures

- 12.3.5.3.1 [C] Set MCRT on remaining engine(s)
- 12.3.5.3.2 [C] Fly the aircraft at recommended driftdown speed, and plan to update profile speeds as necessary during driftdown
- 12.3.5.3.3 [C] Initiate turn 90 degrees to track and advise all concerned on both ATC and Emergency frequencies
- 12.3.5.3.4 [C] Fly offset track of 25 or 30 miles as appropriate until new ATC clearance is received
- 12.3.5.3.5 [C] Consult ODM or recommended driftdown profile and power settings
- 12.3.5.3.6 [A] Advise Company, Cabin crew, and Passengers of intentions

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),

- 12.3.5.3.7 [C] Review diversion procedures and Ditching Procedures ( )
- 12.3.5.4 Apply Loss of Communications Procedures
  - 12.3.5.4.1 [C] Attempt to relay position reports through other aircraft or ground stations on the VHF frequencies, listed in the Operating Manual, when you lose HF communications while on track
  - 12.3.5.4.2 [C] When unable to make contact by other means, use 121.5 mhz
- 12.3.6 Apply Coast-in & Arrival Procedures
  - 12.3.6.1 [C] Check coast-in accuracy of navigation systems using VOR/DME
  - 12.3.6.2 [C] Check fuel crossfeed valve prior to descent
  - 12.3.6.3 [M] Set HSI Heading Ref Switch to Normal leaving Oceanic Track
  - 12.3.6.4 [C] Ensure all company reports sent
- 12.3.7 Apply Postarrival Ground Procedures
  - 12.3.7.1 [C] Log IRS drift data after parked at gate
  - 12.3.7.2 [M] Put required items into Transoceanic Folder and return to dispatch

Key: K (knowledge skill), C (Cognitive skill greater than knowledge - rule using or problem solving), M (Psychomotor skill), A (attitude),