

# Canadian Virtual Airlines

## Aircraft Operating Instructions

### Canadair/Bombardier CRJ-200 Series

#### Preface

This document has been prepared to help virtual pilots in CVA with basic procedures to enjoy successfully flying the Canadair/Bombardier Regional Jet aircraft in FS2002 and 2004. There are 2 types of flight simulator pilots: those that like to jump in, engines running, file GPS direct and go; those that prefer to start cold-and-dark cockpit, research their flight planned route, plan a realistic fuel load and conduct a more immersive experience. This training document has various benefits for both types of flightsim pilots.

I am not a CRJ pilot, nor a licensed pilot. I am an aviation enthusiast and flightsim addict since the early days of Flight Assignment:ATP. I am also employed as an Air Traffic Controller in the Halifax Terminal specialty with NavCanada. I have had the opportunity to discuss various aspects of CRJ flying with pilots from Air Canada, ACA Jazz and ComAir and am constantly trying to improve my scope of knowledge.

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The airframes we will be discussing in this document are, in my opinion, the 2 finest CRJ-200 models available for FS2002 and FS2004.

**Payware** model & panel is the Wilco/FeelThere CRJ Experience available at <http://www.wilcopub.com/>.

**Freeware** exterior model is the Project Opensky CRJ-200 & updated FDE 2004\_8\_2 available at <http://projectopensky.com/>.

**Panels** available at <http://www.avsim.com>

**FS2002** – crj200\_pnl.zip

**FS2004** – replacement\_project\_opensky\_crj\_panel.zip

**Sound** – FS2002 & 2004 – crj2k2snd.zip

They are both excellent models and each has its advantages/disadvantages. Remarkably they are quite similar in performance and capabilities and either should perform well for you. When a difference in procedures between the two is required for this reference it will be noted.

Please note that this is not a definitive flying document for the CRJ. It is a CVA company procedures document – that has been developed using common sense, general knowledge, discussion with real world operators and to simulate the aircraft performance with the limitations of Flight Simulation 2002/2004. If you have questions about procedures contained in this document feel free to contact the author of this document or another senior CVA member for clarification. The CVA forums are also an excellent source of information on CRJ ops and other flight sim related topics.

This manual is divided into the following sections

1. Aircraft
2. Pre-Flight
3. Start and Taxi
4. Take Off and Climb
5. Enroute
6. Descent
7. Approach
8. Appendices

#### 1. Aircraft

The Canadair/Bombardier Regional Jet pioneered the new 50 seat jet class, and has since become a sales success. The CRJ is designed to offer the high speed advantages of much larger jets, with similar standards of service while at the same time offering operating economics, particularly over longer stage lengths, close to that of comparable size turboprops.

**Powerplants** - Two 9220lb CF-34-3B1s

**Performance** - High speed cruise 459kt - typical cruising speed 424kt. Range with max payload at long range cruising speed and reserves over 2005nm

**Weights** - Empty 30,292lb - max takeoff 53,000lb

**Dimensions** - Wing span 69ft 7in - length 87ft 10in - height 20ft 5in

**Capacity** - Flightcrew of two. Typical one class seating for 50 at four abreast and 31in pitch. Max seating for 52. Corporate Jetliner corporate shuttle configurations seat from 18 to 30.

**History** - The concept of a stretched airliner derivative of the Challenger is not new, Canadair (now part of Bombardier Aerospace) originally studied a 24 seat stretched development of the CL-600 up to 1981. Design studies for a stretched airliner based on the 601 however were first undertaken in 1987, leading Canadair to launch the Regional Jet program on March 31 1989. The first of three development aircraft took to the skies for the first time on May 10 1991. Transport Canada certification was awarded on July 31 1992, allowing the first customer delivery to Lufthansa that October.

The original CRJ-100 series - the 100, 100ER and 100LR - was augmented by the 200 series (with more efficient engines) in 1995. The Series 200 is available in standard 200, long range 200LR with optional greater fuel capacity, and the extended range Series 200ER (all three are offered in B form with CF34-3B1s for improved hot and high performance). Corporate shuttle configurations are also available as the Corporate Jetliner and the SE (Special Edition).

## 2. Pre-Flight

Prior to commencing your CVA FlightSim trip – you should have, at the very least, determined your departure point, flight planned route and destination. As mentioned earlier, flight sim enthusiasts vary in their immersion into the hobby – from flying exact real world flightplans coinciding with actual departure times, passenger loads, fuel and weather, to those that jump in and let ‘er go.

This instruction will provide you with a ‘middle ground’ theory that should provide you with a reasonable level of entertainment and challenge to your simulated flying. We will assume that you are flying a standard CVA company route, commencing with a ‘cold and dark’ flightdeck and will be flying online with squawkbox and the VATSIM network.

### Your pre-flight paperwork should include:

- ◆ the departure **airport diagram**
- ◆ the SID (**standard instrument departure**) (if applicable) filed or likely to be assigned
- ◆ your flightplanned route
- ◆ the STAR (**standard terminal arrival**) filed or likely to be assigned
- ◆ approach plates for the destination airport
- ◆ the destination **airport diagram**
- ◆ Have a pencil/pen and paper to write ATC clearances/instructions as issued

### Setting up your Flight Simulator:

- ◆ start your flight program, select the CRJ model, set the date/time, departure airport and choose a spot adjacent to the terminal building, BUT not an active runway.
- ◆ start weather generation software (if req'd)
- ◆ conduct a fuel/weight and balance check
- ◆ start the squawkbox software (tutorials on installing and running SB are available at the CVA academy site) . DO NOT CONNECT TO THE NETWORK.
- ◆ open the flight plan window and fill in appropriate fields
  - CRJs normally file in the 425-435 TAS range
  - CRJs normally file altitudes in the FL200 to FL350 range and are able to climb as high as FL410 but the fuel burn to reach those altitudes is not economically beneficial
  - CVA CRJs are TCAS2 equipped so file the ICAO standard T/ as the equipment prefix
  - CVA CRJs are Reduced Vertical Separation Minima (RVSM) certified so file the ICAO standard /W as equipment suffix
- ◆ squawk standby in SB
- ◆ connect to the VATSIM network, and immediately PING server and resend flightplan
- ◆ enter FMS waypoints for your route (Wilco)
- ◆ at major airports you may request your IFR clearance prior to engine start

**“Halifax Clearance – good afternoon CanadianXXX gate15 ready to start engines, we’d like to put our IFR clearance to Boston on request.”**

- ◆ at smaller airports where no delay may be anticipated for departure, you may start engines and request taxi and IFR clearances simultaneously

**“CanadianXXX is cleared to Logan via CYHZ3 departure, HIDIG, climb and maintain 5000’, expect FL320 10 minutes after departure. Departure Runway 06. Push and start pilot discretion, call Halifax Ground when ready for taxi”**

- ◆ It is important to copy the clearance as issued by ATC on your notepad to ensure a correct readback. Make note of any changes in the assigned clearance from the flightplan you submitted, and query ATC if unsure. Always have a pen or pencil ready.
- ◆ set transponder to assigned code
- ◆ set your altitude limiter for the SID altitude
- ◆ adjust NAV waypoints for any changes to route or for SID departure

You should be now ready to commence pre-start checks. Captains will normally call for engine start after receiving their clearance from ATC. ATC will usually authorize pushback and start on receipt of a correct flight clearance readback. After a successful start and pushback, you will be required to contact ATC for taxi clearance to the departure runway.

## 3. Start and Taxi

For detailed information on the start procedure for the Wilco/Feel There or Posky CRJ, please refer to the operating guidelines in the documentation with the aircraft.

- ◆ conduct engine start IAW with appropriate flightsim model direction. It is optional to start the #2 starboard engine only as the CRJ is capable of taxiing on 1 engine.
- ◆ you should have both your aircraft position light and red rotating beacon on when starting/idling
- ◆ ensure you have a clear warning panel before proceeding with your flight. The only warning light that should be illuminated post start is the parking brake indication.
- ◆ set your NAV and COMM radio frequencies as required for departure
- ◆ ensure your altimeter is set to station pressure
- ◆ contact online ATC (if available) and request taxi clearance

**“Halifax Ground, good morning, CanadianXXX ready for taxi to runway 06 for departure”**

**“CanadianXXX, taxi to and hold short Rwy 06”**

- ◆ readback the taxi clearance
- ◆ review assigned taxi clearance on airport diagram
- ◆ if other aircraft are present and online ATC is not available make a general broadcast on UNICOM freq 122.800 stating your intentions:

**“Halifax traffic, CanadianXXX, Bombardier type CRJ taxiing Rwy 06 for departure to the south”**

- ◆ turn on taxi light
- ◆ release brakes (make note of time for PIREP)
- ◆ advance throttles and start a slow forward roll
- ◆ test braking to ensure systems are operating normally
- ◆ taxi to the active runway, do not exceed 20 knots speed while taxiing

#### 4. Take off and Climb

Upon reaching the hold short line or once you are in position for the departure runway as directed by ATC:

**“Halifax Tower, CanadianXXX, holding short Rwy 06”**

- ◆ if taxiing on one engine – start #1 port
- ◆ Air Conditioning bleeds & fan switches OFF
- ◆ turn off taxi lights, turn on flare/approach lights
- ◆ select strobes ON
- ◆ turn on weather radar (if fitted)
- ◆ select mode C on Squawkbox and/or aircraft transponder
- ◆ set flaps to takeoff (2 notches 20°)
- ◆ when ready – advance throttles 40% N1 and ensure fans are synchronized
- ◆ smoothly advance throttles to 92% N1
- ◆ monitor engine gauges closely during takeoff roll
- ◆ rotate smoothly at predetermined Vr speed from weight/balance calculations (Appendix 1: Take Off Speeds)
- ◆ maintain an initial attitude of +8 -10 degrees once you have verified a positive rate of climb select gear up
- ◆ retract flaps to 1 notch - 8° at 160kias
- ◆ retract flaps up at 180kias
- ◆ select Air Conditioning bleeds and fan switches ON
- ◆ establish 250kias/290kias climb profile
  - NOTE: in US airspace all aircraft are restricted to 250kts below 10,000 feet. In Canadian airspace this restriction does not apply to climbing aircraft
- ◆ through 1000 AGL contact ATC as directed

**“Halifax Departure, CanadianXXX with you through 1000’ for 5000’, runway heading”**

**“CanadianXXX, Halifax Departure, radar identified through 1200’, turn left heading 330, climb and maintain 8000”**

- ◆ engage autopilot no earlier than 1000’ AGL
  - set ALT SEL mode (reset altitude when cleared by ATC)
  - set HDG or NAV mode as required to follow SID/ flightplanned route
- ◆ fly assigned SID profile
- ◆ through 10,000 ASL select flare/approach lights OFF
- ◆ through 10,000 ASL select passenger lights OFF
- ◆ through 10,000 ASL set IAS (290) as required for climb
- ◆ through FL180 set altimeter to standard pressure 29.92 inches
- ◆ normal climb profile is 290kias until reaching M.70 – m.70 until reaching F/P altitude
- ◆ accelerate to m.74 and set N1 to appropriate cruise setting
- ◆ once clear of the terminal area, Departure will hand you off to

**“Halifax Centre, CanadianXXX is level FL320”**

#### 5. Enroute

- ◆ monitor aircraft systems to ensure ops normal
- ◆ monitor fuel consumption
- ◆ monitor weather at destination and alternate aerodromes
- ◆ plan approach procedure based on prevailing winds at the destination, standard procedures for destination airport and/or consultation with ATC
- ◆ program any variations deviations in STAR into aircraft FMS
- ◆ provide enroute ICING/TURBULENCE PIREPS to ATC as required
- ◆ monitor TCAS closely, especially in uncontrolled airspace
- ◆ monitor SB online ATC and verify whether you enter controlled airspace while enroute
- ◆ contact ATC 10-20 miles before penetrating his airspace
- ◆ private msg (.msg CVAXXX) your friends or other CVA pilots to say hello. If no ATC online, maintain a listening watch on [rw.avsims.net/cva](http://rw.avsims.net/cva) for company traffic.

## 6. Descent

- ◆ determine top-of-descent (TOD) point
- ◆ prior to TOD point request descent from ATC (if available)
- ◆ if no online ATC, and Servinfo/SB TCAS indicate traffic in the area, make a general broadcast on UNICOM 122.800

**“CanadianXXX, Boston Center, at pilot’s discretion you are cleared to descend to cross SCUPP at 11000’ speed 250 knots, expect the ILS Rwy 27, Logan altimeter 30.11”**

If no online ATC, and Servinfo/SB TCAS indicate traffic in the area, make a general broadcast on UNICOM, 122.800:

**“Boston area traffic, CanadianXXX, type Bombardier CRJ, leaving FL320 on the SCUPP arrival, planning ILS Rwy 27”**

The basic calculation for rate of descent is 3 times your altitude +10 ie: at FL200 (20 X 3 = 60) +10 = 70 start a 1500fpm descent at 70 miles from destination

- ◆ descend at m.74 until ias is 290kias
- ◆ descend at 290kias until 10,000 feet
- ◆ descend at 250kias below 10,000 feet
- ◆ monitor descent rate to level at your initial approach fix (IAF) altitude approximately 20 miles from destination
- ◆ comply with ATC/STAR routing restrictions as appropriate
- ◆ below FL180 ensure altimeter set to local station pressure
- ◆ on reaching 10,000 ASL, ensure speed is 250kts IAS or less, set flaps as called for in descent schedule
- ◆ below 10,000 ASL select passenger switches ON
- ◆ below 10,000 ASL select flare/approach lights ON
- ◆ nav radios set for approach
- ◆ study approach chart and review missed approach procedures.

## 7. Approach

Proper planning and preparation is the key to a successful (and uneventful) approach. Aircrew workload increases with proximity to the runway. Approach and landing information should be checked and validated prior to 10,000 ASL

- ◆ plan to be level at the initial approach fix (IAF) altitude and established clean 200kias (gear/flaps up) approximately 10 miles from the IAF
- ◆ in areas of moderate or above turbulence/chop reduce to a max of 180kias
- ◆ ATC may request a higher speed due to traffic

### ◆ Gear/Flap speeds

- flaps 8° 215
- flaps 20° 215
- flaps 30° 185
- flaps 45° 170
- gear Vle 250 (max extension speed)
- gear Vlo 200 (max operating speed)

- ◆ upon activation the glideslope slow to 155kias extend gear and flaps *ie – the glideslope needle begins descending from it’s pegged pos’n*
- ◆ upon passing final approach fix (FAF) reduce to appropriate final approach speed. Consult Appendix 1 (Landing Speeds)
- ◆ if flying a LOC - LOC(BC), ILS if either localizer or glideslope needle reaches full deflection in either direction immediately carry out a missed approach
- ◆ avoid any “drastic’ manoeuvres while in this full “dirty’ configuration

If using the autopilot to track the approach, disconnect autopilot when:

- airport environment in sight
- 500.AGL
- carrying out a MAP (missed approach) procedure.
  
- ◆ smoothly flare and land your CRJ in a manner that would make ACA pilots envious
- ◆ engage braking and reverse thrust as required
- ◆ ensure reverse thrust is disengaged prior to slowing below 60 knots
- ◆ exit the runway in a timely manner
- ◆ when clear of the runway
  - squawk standby (SB and a/c systems)
  - deselect strobes
  - weather radar to STBY
  - deselect approach/flare lights
  - select taxi lights
- ◆ Remember to readback any and all instructions from ATC
- ◆ complete **After Landing Check**
- ◆ taxi to the CVA assigned parking area (if available)
- ◆ at the gate engage parking brake & make note of time for filing PIREPS
  - engage external power
  - shut down
  - have a cold one (preferably Alexander Keith’s IPA)
- ◆ go to CVA website, file your PIREP

## Appendix 1

### Take Off Speeds

ATOW(Kg)	ATOW(lbs)	8° FLAPS			20° Flaps			VFTO
		V1	VR	V2	V1	VR	V2	
24000	53760	149	150	158	138	140	146	188
23500	52640	148	148	157	137	139	145	186
23133	51818	146	147	155	135	138	144	185
23000	51520	145	146	155	134	137	143	184
22500	50400	143	144	154	132	135	142	182
22000	49280	141	142	152	130	133	140	180
21500	48160	139	140	150	128	131	138	178
21319	47555	138	139	149	127	130	138	178
21000	47040	137	137	148	125	129	136	176
20500	45920	135	135	147	123	127	135	174
20000	44800	132	133	145	121	125	133	172
19500	43680	130	131	143	118	123	132	170
19000	42560	127	128	141	116	121	130	168
18500	41440	125	126	139	113	118	128	166
18000	40320	122	124	137	111	116	126	163
17500	39200	119	121	135	108	114	125	161
17000	38080	117	119	133	106	112	123	158
16500	36960	114	116	131	103	109	121	156
16000	35840	111	114	129	101	107	119	154
15400	36960	108	111	127	97	104	117	151

### Landing Speeds

ATOW(Kg)	ATOW(lbs)	Landing Vref				
		0°	8°	20°	30°	45°
24000	53760	181	169	163	159	151
23500	52640	179	167	161	157	149
23133	51818	178	166	160	156	148
23000	51520	177	165	159	155	147
22500	50400	176	164	158	154	146
22000	49280	174	162	156	152	144
21500	48160	172	160	154	150	142
21319	47555	171	159	153	149	141
21000	47040	170	158	152	148	140
20500	45920	169	157	151	147	139
20000	44800	167	155	149	145	137
19500	43680	165	153	147	143	135
19000	42560	163	151	145	141	133
18500	41440	162	150	145	140	132
18000	40320	160	148	143	138	130
17500	39200	158	146	141	136	128
17000	38080	156	144	138	134	126
16500	36960	154	142	136	132	124
16000	35840	152	140	134	130	122
15400	36960	150	138	132	128	120

## Appendix 2

### CRJ Checklist

Not to be used for real-world navigation.

#### BEFORE ENGINE START

PARKING BRAKE ..... SET  
ENSURE BRAKES ARE SET

FUEL QUANTITY/BALANCE ..... CHECKED  
CHECK THAT FUEL MEETS AMOUNT REQUIRED FOR FLIGHT AND IS  
BALANCED PROPERLY

CABIN SIGNS ..... SET

SEATBELT / NO SMOKING SIGNS ..... ON

FLIGHT INSTRUMENTS/BUGS ..... SET  
CHECK FOR PROPER ALTIMETER SETTING, NO FAILURE FLAGS AND  
AIRSPEED BUGGED FOR PROPER TAKEOFF V-SPEEDS. ALTITUDE  
ALERT SET FOR DEPARTURE CLEARANCE

NAV RADIOS/FMS ..... SET  
RADIOS ARE SET UP FOR DEPARTURE ROUTE AND PROPER FLIGHT  
PLAN/DEPARTURE ENTERED INTO FMS

BLEEDS/AIRCONDITIONING ..... SET  
ENGINE/APU BLEEDS OPEN AND AIR COND. PACKS SHUT OFF FOR  
ENGINE START

EXTERIOR LIGHTS ..... SET  
NAV LIGHTS ON, BEACON LIGHTS ON

#### AFTER START

PITOT HEAT ..... ON

WINDOW HEAT ..... ON

ANTI-ICE ..... AS REQD  
SELECT ENGINE ON IF ICING CONDITIONS EXIST

BLEEDS/AIRCONDITIONING ..... SET  
ENGINE BLEEDS OPEN, APU BLEED CLOSE AIRCONDITIONING PACKS  
ON AND ON ENGINE BLEEDS

ELECTICAL PANEL ..... SET  
ELECTRICAL PANEL SET TO GENERATORS

APU ..... OFF  
AFTER 2 MINUTE COOL DOWN PERIOD SELECT APU OFF

#### TAXI

BRAKES ..... CHECKED  
SOFTLY TEST BRAKES

FLAPS/SLATS ..... SET  
ENSURE FLAPS AND SLATS ARE SET AT PROPER TAKEOFF SETTING

FLIGHT CONTROLS ..... CHECKED  
COMPLETE FULL LEFT/RIGHT AILERON CHECK, FULL TRAVEL  
ELEVATOR CHECK AND FULL LEFT/RIGHT RUDDER DEFLECTION

TAKEOFF BRIEFING ..... COMPLETE

**BRIEF ON FOLLOWING ITEMS:**  
TAKEOFF TYPE - ROLLING OR STATIC, TAKEOFF RUNWAY & ABORT  
CONSIDERATIONS, AIRBORNE EMERGENCY CONSIDERATIONS &  
RETURN TO FIELD CONSIDERATIONS, V-SPEEDS, DEPARTURE  
PROCEDURE/ROUTE, NAV RADIOS AND TRANSPONDER CODE,  
ALTITUDE LIMIT, ANTI-ICE AND WEATHER FACTORS

#### BEFORE TAKEOFF

CABIN CREW ..... NOTIFIED  
ON CYCLE OF NO SMOKING SIGN (2 CHIMES)

TRANSPONDER ..... ON  
ENSURE TRANSPONDER IS ON AND PROPER CODE IS SET

BLEEDS/AIRCONDITIONING ..... SET  
SELECT AIR CONDITIONING PACKS TO PROPER SETTING BASED ON  
TAKEOFF PERFORMANCE

EXTERIOR LIGHTS ..... ON  
LANDING LIGHTS AND STROBE LIGHTS ON

PARKING BRAKE ..... OFF

#### AFTER TAKEOFF

LANDING GEAR ..... UP/LTS OUT  
ENSURE LANDING GEAR IS RETRACTED AND IN TRANSIT LIGHTS  
ARE OUT

CLIMB POWER ..... SET

FLAPS SLATS ..... UP  
AFTER MINIMUM SPEEDS, FLAPS & SLATS ARE RETRACTED

BLEEDS/AIRCONDITIONING ..... SET  
ENSURE AIRCONDITIONING PACKS ARE ON

ANTI-ICE ..... AS REQD  
ENSURE ENGINE AND WING ANTI-ICE ON IF ICING PRESENT

**ABOVE 10,000FT**

STERILE COCKPIT ..... CHIME  
ONE CHIME OF NO SMOKING SIGN

LANDING LIGHTS ..... OFF

**ABOVE 18,000FT**

ALTIMETERS ..... RESET  
RESET ALTIMETERS TO 29.92

**CRUISE**

CRUISE POWER ..... SET  
SET POWER TO CRUISE SETTING

CABIN SIGNS ..... AS REQD  
SEATBELT SIGN AT CAPTAINS DISCRETION

**BELOW 18,000FT**

ALTIMETERS ..... RESET  
RESET ALTIMETERS TO LANDING FIELD ALTIMETER

**DESCENT**

CABIN SIGNS ..... ON  
SEATBELT AND NO SMOKING SIGNS ON

ANTI-ICE ..... AS REQD  
SELECT ENGINE AND WING ANTI-ICE ON IF ICING CONDITIONS  
ARE PRESENT OR WILL BE ENCOUNTERED

FLIGHT INSTRUMENTS/BUGS ..... SET  
SET AIRSPEED BUG TO LANDING VREF CHECK ALTIMETERS ARE SET  
TO LANDING ATIMETER SETTING

NAV RADIOS/FMS ..... SET  
SET RADIOS FOR LANDING RUNWAY OR APPROACH. SET ARRIVAL  
PROCEDURE AND APPROACH IN FMS

APPROACH BRIEFING.....COMPLETE

**APPROACH BRIEFING SHOULD INCLUDE:**  
APPROACH TYPE AND LANDING RUNWAY, FREQUENCIES, FINAL  
APPROACH COURSE, MINIMUM ALTITUDES, VREF SPEEDS, MISSED  
APPROACH PROCEDURES, ANY SPECIAL CONSIDERATIONS-ICE/WET  
RUNWAY ETC...

**BELOW 10,000FT**

STERILE COCKPIT ..... CHIME  
ONE CHIME OF NO SMOKING SIGN

**BEFORE LANDING:**

CABIN CREW ..... NOTIFY  
ONE CYCLE OF NO SMOKING SIGN (2 CHIMES)

LANDING GEAR ..... DOWN/GREEN  
CHECK LANDING GEAR IS EXTENDED AND ALL GREEN LIGHTS ARE  
ILLUMINATED WITH NO RED/UNSAFE LIGHTS SHOWING

FLAPS/SLATS ..... SET  
CHECK LANDING FLAPS ARE SET IN FINAL LANDING CONFIGURA-  
TION

SPEEDBRAKES ..... ARM  
ENSURE SPEEDBRAKES ARE ARMED FOR AUTODEPLOY

AUTOBRAKES ..... SET  
IF NEEDED, SET AUTOBRAKES TO PROPER SETTING FOR RUNWAY  
CONDITION/LENGTH

**AFTER LANDING**

EXTERIOR LIGHTS ..... SET  
LANDING LIGHTS, WING AND STROBE  
LIGHTS OFF

PITOT HEAT ..... OFF

WINDOW HEAT ..... OFF

ANTI-ICE ..... AS REQD  
WING HEAT OFF, ENGINE ANTI-ICE ON IF ICING CONDITIONS ARE  
PRESENT

FLAPS ..... UP  
RETRACT FLAPS/SLATS

SPEEDBRAKES ..... RETRACTED  
RETRACT AND STOW SPEEDBRAKES

TRANSPONDER ..... STBY  
PLACE TRANSPONDER TO STANDBY

APU ..... START  
START APU FOR GROUND USE

BLEEDS/AIRCONDITIONING ..... SET  
BLEEDS AND PACKS CONFIGURED FOR GROUND USE