

## AIRCRAFT AND SIMULATOR SETUP

1. Time / Weather / A/C Position ..... **As Chosen**  
     **--- IF FLYING ON IVAO ---**
  - a. A/C Position ..... **Free of other traffic**
  - b. IVAO Pilot Client ..... **Connect**
2. EFB > Home > Flight Details ..... **Import Simbrief Flight Plan**
3. EFB > Ground Operations ..... **Initiate Boarding**
4. Sidestick, Throttle, Rudders, External Monitor ..... **Connected**
5. MSFS Pop-Out Panel Manager ..... **As Desired, Start Pop-Out**

## ELECTRICAL POWER UP

1. XPNDR Mode ..... **STBY**
  2. Battery ..... **On**
  3. C1 & C2 ELEC Hydraulic Pumps ..... **Verify OFF**
  4. Hydraulic Demand Pumps ..... **Verify OFF**
  5. Wipers ..... **OFF**
  6. LDG Gear ..... **DOWN & Synchronized**
  7. ALTN Flaps ..... **OFF**
- 
- Establish Electrical Power**
- 
8. L & R BUS TIE ..... **AUTO**  
     **--- IF EXT PWR AVAIL ---**
    - a. PRIMARY & SECONDARY EXT PWR ..... **ON**
    - b. APU ..... **ON****--- IF NO EXT PWR AVAIL ---**
    - c. APU ..... **ON, then START**
  9. PARKING BRAKE ..... **SET**

## OUTSIDE INSPECTION

1. Tires ..... **Check Condition**
2. Brake Pins ..... **Check not flush with boundary**
- IF MAINTANANCE REQUIRED ---**
- a. EFB > Ground Operations > Ground Maintenance ..... **Perform**

## PRELIMINARY PREFLIGHT PROCEDURE

1. Electrical Power Up ..... **Completed**
2. ADIRU ..... **ON**
3. EMER LIGHTS ..... **Guard Closed**
4. LOWER EICAS Display ..... **STAT page**
  - a. Hydraulic Quantities ..... **Verify Sufficient (no RF)**
  - b. APU Oil QTY ..... **Verify Sufficient (no RF)**
  - c. Messages ..... **Only Expected**
5. LOWER EICAS Display ..... **ENG page**
  - a. Oil QTY ..... **Verify Sufficient**
  - b. Flight < 6h: >= 17
  - c. Flight > 6h: >= 20
6. UPPER EICAS ..... **Only expected messages**
7. Oxygen ..... **Test**
8. PREFLIGHT CHECKLIST ..... **Completed**

## FMC Setup

1. Menu > FMC > IDENT ..... **Check Information Correct**
  - a. A/C Type
  - b. Engine Type
  - c. NAV DATA Cycle
2. POS INIT ..... **Copy GPS Pos into Inertial Pos**
3. ROUTE > Route Request ..... **Select desired route**
  - a. SET PAYLOAD
  - b. SET FUEL
4. SELECT RTE ..... **Wait for Uplink**
  - a. ROUTE UPLINK ..... **Load (Takes some time)**
  - b. ACTIVATE > EXEC
5. FS Actions ..... **Set Desired PAX and CARGO**
6. DEP ARR ..... **Enter Departure and Arrival**
  - a. Trans ..... **LEGS > PREV PAGE until DISCONTINUITY, Last WP of route**
7. LEGS ..... **Verify DEP, Route, and ARR correct**
  - a. SPEED CSTR without ALT CSTR will be missing from procedures
  - b. XYZ180/25 = From Waypoint XYZ on Radial 180 for 25 NM
8. RTE page > NEXT PAGE ..... **Compare Uplinked route to flight plan**
9. PROG ..... **Compare shown ground distance to planned distance**
10. RTE ..... **RTE COPY**
11. LEGS > RTE DATA (ND not PLAN mode) .... **WIND DATA LOAD, then EXEC**
12. FMC COMM > UPLINK DES FORECAST ..... **LOAD**
13. NAV RAD ..... **Frequencies as desired**
14. FIX ..... **Draw visual helpers**
  - a. MSA around aerodrome
  - b. Others according to procedures
15. VNAV ..... **Check TA**
16. INIT REF > PERF INIT > PERF INIT DATA ..... **ACCEPT**
  - a. Uplinks Reserves, Cruise Level, and Cost Index
  - b. Min Fuel Temp ..... **Verify (JetA1 -44 C, JetA -37 C)**
  - c. CRZ CG can be left at 7.5% or set to 30%

## COCKPIT PREPARATION

1. ADIRU Switch .....	ON
2. BATTERY .....	ON
3. IFE/PASS Switches .....	ON
4. APU GEN .....	ON
5. APU Switch .....	ON & OFF light extinguished
6. L & R BUS TIE .....	AUTO
7. EXT PWR .....	As Needed
8. GEN .....	ALL ON
a. DRIVE DISC Switches .....	Guarded & up
9. VOICE RECORDER .....	ON
10. EMER LIGHTS .....	Armed & Guarded
11. WINDOW HEAT .....	ON
12. RAM AUR Turbine SW .....	Guarded
13. HYD ENG PUMPS L & R .....	ON
a. Remaining Pumps .....	OFF
14. NO SMOKING / NO ELECTRONICS .....	AUTO

### AFTER REFUELING COMPLETED

15. SEAT BELTS .....	ON
16. Flight Deck lights .....	As Needed
17. LANDING Lights .....	OFF
18. CARGO FIRE SW .....	Not Armed
a. DISC SW .....	Guarded
19. ENGINE EEC MODE .....	Norm & Guarded
20. START PANEL .....	Norm for both engines
a. AUTOSTART SW .....	ON
21. FUEL JETTISON NOZZLES .....	OFF & Guarded
a. FUEL TO REMAIN .....	Pushed In
b. ARM SW .....	Disarm
22. Fuel Pumps .....	OFF
a. CROSSFEED .....	OFF
b. L FWD pump feeds APU .....	
23. ANTI-ICE .....	AUTO

## COCKPIT PREPARATION - CONTINUED

### 24. OUTSIDE Lights

#### --- DAYLIGHT ---

- a. NAV ..... ON  
b. IND LTS ..... BRT

#### --- NIGHT ---

- c. NAV & LOGO ..... ON  
d. IND LTS ..... DIM

25. Other EXT lights ..... OFF

26. L & R PACK SW ..... AUTO

27. TRIM AIR ..... ON

28. BLEED AIR ISOL VALVES ..... AUTO

29. L & R ENG BLEED ..... ON

30. APU BLEED ..... AUTO

31. PRESS OUTFLOW VALVES ..... AUTO

32. LANDING ALT SELECTOR ..... Pushed In

33. QNH ..... Set Local

34. ND ..... 10 NM

35. TFC ..... Press

36. VOR / ADF ..... Displayed as needed

37. ARPT ..... Press

38. F/D ..... Both ON

39. A/T ARM ..... Both UP

**DO NOT YET SET SPD, HDG, ALT**

40. BANK ANGLE SEL ..... AUTO

41. A/P DISENGAGE Bar ..... Up

42. ALT SELECTOR ..... AUTO

43. SOURCE SELECT PANELS ..... all OFF

44. INBOARD DSPL ..... MFD

45. HDG REF ..... NORM

46. STBY Instrument ..... Set QNH

47. GND PROX ..... OFF & Guarded

48. ALT GEAR EXT ..... Guarded

49. GEAR LVR ..... DN

**COCKPIT PREPARATION - CONTINUED**

50. AUTOBRAKE .....	<b>RTO</b>
51. FMC Selector .....	<b>AUTO</b>
52. F/O INBOARD DSPL .....	<b>MFD</b>
53. DSPL CTRL SW .....	<b>OFF</b>
54. PARKING BREAK .....	<b>Set</b>
55. SPEED BRAKE .....	<b>DOWN Detent</b>
56. ALTN PITCH TRIM SW .....	<b>Middle Position</b>
57. STAB CUTOFF SW .....	<b>Guarded</b>
58. L & R FUEL CONTROL .....	<b>CUTOFF</b>
59. FLAP Selector .....	<b>Matches FLAP Position</b>
60. ALTN FLAPS .....	<b>OFF &amp; Guarded</b>
61. Frequencies .....	<b>As Required</b>
a. L & R VHF .....	<b>Turn On</b>
b. L VHF .....	<b>MIC</b>
c. GAIN SW .....	<b>12 o'clock position</b>
62. Center Radio .....	<b>Verify DATA active</b>
63. ENG FIRE DISC SW .....	<b>Both Pushed In</b>
64. AILERON & RUDDER Trim .....	<b>Neutral</b>
65. Transponder .....	<b>ABV on both sides</b>
a. Source Selector .....	<b>NORM</b>
b. XPNDR Selector .....	<b>L</b>
c. Squawk .....	<b>Set</b>
d. XPNDR Mode .....	<b>STBY</b>

## TAKEOFF PERFORMANCE CALCULATION

1. Weather Information ..... **Up To Date**
  - a. LOWER EICAS > COMM > Flight Information > TWIP Request
2. ZFW & TO CG ..... **Up To Date**
  - a. MENU > FS ACTIONS > PAYLOAD
3. TO Performance ..... **Calculate**
  - a. EFB > Performance Tool > Take Off
  - b. RWY Length ..... **Verify Correct**
4. FMC > THRUST LIM ..... **Set**
  - a. RTG (Take Off Rating) ..... **Select**
  - b. Sel Temp ..... **Enter**
  - c. D-TO N1 ..... **Check close to %N1 from Perf. Calc.**
  - d. CLB Rating will match N1 (keep default selection)
  - e. (CLB 1 = 10% reduction -> for 90% or more)
5. PERF ..... **Enter GR WT and ZFW**
6. TAKEOFF ..... **Enter Flaps & TO CG**
  - a. V Speeds ..... **Verify and Enter (EFB has precedence)**
  - b. GR WT ..... **Crosscheck**
  - c. NEXT PAGE ..... **Verify ACCEL HT**

## BEFORE START

1. APU ..... **Verify Running**
2. EXT PWR ..... **Disconnect & Remove**
3. PARKING BRAKE ..... **Verify Set**
4. Chocks ..... **Removed**
5. GND Equipment & Vehicles ..... **Released**
6. Doors ..... **Closed & Armed**
7. MCP ..... **Enter V2, RWY HDG, INIT CLIMB**

**--- IF ROUTING CAN BE FLOWN COMPLETELY VIA FMC ---**

- a. LNAV & VNAV ..... **Activate**
8. GND Crew clear of aircraft ..... **Pressurize Aircraft**
- a. R ELEC Demand Pump ..... **AUTO**

**ONCE FAULT LIGHT EXTINGUISHED**

- b. Remaining Demand Pumps ..... **ON**
- c. C1 & C2 ELEC Pumps ..... **On**
9. FUEL PUMPS ..... **ON**
- a. CENTER PUMPS only if EICAS message "FUEL in CTR"
10. TRIM ..... **Set**
11. Transponder ..... **XPNDR**
12. BEFORE START CHECKLIST ..... **Completed until Beacon**
13. Push and Start Clearance ..... **As Required / Obtained**
14. Beacon ..... **ON**
15. Off-Block Time ..... **Noted**

## PUSHBACK AND ENGINE START

1. Pushback ..... **Follow Instructions**
2. LOWER EICAS ..... **ENG page**
3. Engine L & R ..... **Start**
- a. ENG START Selector ..... **START**
- b. FUEL CUTOFF SW ..... **RUN**
- c. Start Completed Once Red EGT Line Disappears



**BEFORE TAXI**

1. APU .....	OFF
2. ENG ANTI-ICE .....	As Required / ON
3. Flaps .....	TO
4. Flight Controls .....	Checked
5. BEFORE TAXI CHECKLIST .....	Completed
6. TAXI Lights .....	ON
7. RUNWAY TURNOFF Lights .....	ON
8. Taxi Clearance .....	As Required / Obtained
9. Brakes .....	Checked

**AT HOLDING POINT**

10. STROBE Light .....	ON
11. WXR & TERR .....	CAP & F/O
12. Transponder .....	TCAS TA/RA

**--- IF FYLING ON IVAO ---**

a. IVAO Pilot Client TCAS .....	ON & ALL
b. IVAO Pilot Client XPDR .....	Verify ALT & Squawk Correct
13. BEFORE TAKEOFF CHECKLIST .....	Completed
14. TAXI & TURNOFF Lights .....	OFF
15. Landing Lights .....	ON

**CLEARED FOR TAKEOFF**

16. Start Time .....	Noted
17. Chronometer .....	ON

## TAKEOFF

1. N1 ..... 55% (extension of EGT gauge)
- 
- ONCE ENGINES STABILIZED**
- 
2. TOGA ..... Push
  3. Forward column pressure until 80 kts
  4. Rotate at around 2 - 2.5 degr (one stripe) per second until 15 degr pitch
  5. Autopilot at 200ft AGL
    - a. 80 kts ..... HOLD
    - b. 50 ft ..... LNAV
    - c. 400 ft ..... VNAV
  6. LANDING GEAR (at positive rate of climb) ..... UP

## AFTER TAKEOFF

1. Flaps ..... Up according to speed
2. ENG & WING Anti-Ice ..... AUTO
3. AFTER TAKEOFF CHECKLIST ..... Completed
4. Once TO Thrust Over ..... CHRONO Off

## CLIMB

1. VNAV page ..... Open
  2. HDG Bug ..... Synchronize
- 
- ON PASSING TA**
- 
3. QNH ..... STD
- 
- AT FL 100**
- 
4. LANDING, RUNWAY TURNOFF, TAXI Lights ..... OFF
  5. SEATBELT Signs ..... AUTO
  6. 3000 ft to Climb ..... VS < 3000 ft/min
    - a. 2000 ft < 2000 ft/min
    - b. 1000 ft < 1000 ft/min

## CRUISE

1. TCAS ..... **BLW**
2. Fuel Checks (at least every 60 min) ..... **Perform**
  - a. current time inflight / fuel / fuel used (PROG page)
  - b. compare to nav log
  - c. compare totalizer & calculated at PROG page 2
3. Alternate Airports ..... **Plan**
  - a. ALTN in FIX page results in special marking
4. STEP Climbs ..... **Monitor / Perform**
  - a. VNAV page has step climb altitude and distance
  - b. keep distance of 700 - 1000 ft from MAX FL
  - c. OPT & MAX FL increase by 100 ft every 10-13 min
  - d. step climb based on RCMD FL
  - e. forecasted fuel might be inaccurate
  - f. step climb constrained: e.g. 370S will make fuel pred accurate again
5. Draw time marker on ND
  - a. FIX > ETA-ALT > TimeZ
6. Get time to WP
  - a. PROG > enter WP into DEST
7. Required Time At (RTA)
  - a. PROG > NEXT PAGE > NEXT PAGE > Enter WP > Enter RTA
8. SLOP
9. DIRECT TO on given course
  - a. ENTER WP as DIRECT > bottom right INTC CRS TO > enter course
10. TOD ..... **Monitor**

**BEFORE DESCEND (10-20 MIN PRIOR TO T/D)**

1. RECALL ..... Check for EICAS messages
2. CHKL ..... Check for Notes
3. DEST Weather ..... Check
4. QNH ..... Preselect DEST QNH
5. Arrival ..... Enter / Verify
6. Descend Wind Forecast ..... Request
  - a. FMC COMM > DES Forecast > Forecast Request
  - b. TRL ..... Crosscheck
  - c. LOAD forecast uplink
7. NAV AIDS ..... Enter / Confirm
8. Active Flight Plan ..... Copy to Secondary
  - a. RTE > PREV PAGE > RTE COPY
9. Draw Markers for Arrival ..... As Required
10. Landing Weight ..... Calculate
  - a. PROG page, GW - (current fuel - predicted fuel at destination)
11. Landing Speeds ..... Obtain
  - a. enter calculated landing weight (GW) at INIT REF page
  - b. VREF add: half steady headwind + full gust
12. Landing Performance ..... Calculate
13. AUTOBREAK ..... Set accordingly
14. Approach Minima ..... Get from Chart
  - a. B777-300ER is category D
15. Approach Briefing ..... Perform
16. DESCEND CHECKLIST ..... Completed
17. MCP ALT ..... Set to descend target

## DESCEND

1. VNAV Mode ..... **Confirm VNAV PATH / as required**
  - a. VNAV page provides required descend rate
  - b. VNAV > OFFPATH descend blue idle PWR to RWY, white with S/B
2. SEATBELT Signs ..... **ON PASSING FL 250** **ON**
3. Speed Brakes ..... **Use to Decelerate to 250 kt**
4. LANDING, RUNWAY TURNOFF, TAXI Lights ..... **ON PASSING FL 100** **ON**
5. QNH ..... **ON PASSING TRL** **Set Local**
6. APPROACH CHECKLIST ..... **Completed**

## ILS APPROACH

1. FMC Approach .....	Compare to Charts
<b>IN VICINITY OF AIRPORT</b>	
2. NAV Aids .....	Identify
<b>12 NM PRIOR TO RWY</b>	
a. Altitude .....	3000 ft
b. Speed .....	200 kt
<b>BEFORE INTERCEPTING GS</b>	
3. Flaps .....	5
4. MCP Speed .....	Flaps 5 Speed
<b>CLEARED FOR APPROACH</b>	
5. APP mode .....	Activate
<b>ON GS CAPTURE</b>	
6. MCP ALT .....	Set Missed Approach Altitude
<b>AT 2500 FT ABOVE RWY ELEVATION</b>	
7. LANDING GEAR .....	DOWN
8. Flaps .....	20
9. MCP SPEED .....	Flaps 20 Speed
10. Speed Brake .....	Arm
11. LANDING CHECKLIST .....	Open
<b>ONCE FLAPS 20</b>	
12. Flaps .....	Set Landing Configuration
13. MCP Speed .....	Set Approach Speed (VRef + HW/Gust)

**NON-PRECISION APPROACH W/ VERTICAL GUIDANCE**

1. Database and Charts ..... Compare
2. QNH ..... Verify Local
3. Minimums ..... Verify / Set
4. Lateral Navigation ..... LNAV or LOC (depending on approach)
5. APPROACH Mode ..... Activate
  - a. Flight Mode ..... Descent
  - b. Flaps ..... 1
  - c. When activated, MCP Speed Open will keep VNAV PATH mode active
6. PROG > RNP PROGRESS (4/4) > VERT RNP ..... Set 125
  - a. Amber bar as soon as vertical deviation is more than 75 ft
7. MCP HDG ..... Set RWY Heading
 

AT 2 NM PRIOR TO FAF
8. MCP ALT ..... Set to Minimums
9. VNAV ..... Verify VNAV PTH Active
10. MCP Speed ..... Set Appropriate
  - a. Follow standard decelerated approach profile
  - b. Intercept using Flaps 5

AT 2500 FT AGL

  - c. Gear ..... Down
  - d. Flaps ..... 20
  - e. Speed Brake ..... Armed
  - f. MCP SPEED ..... Flaps 20 Speed
  - g. LANDING CHECKLIST ..... Open

ONCE 300 FT BELOW MISSED APPROACH ALTITUDE
11. MCP ALT ..... Set Missed Approach Altitude
  - a. A/C will continue to descend

ONCE RWY IN SIGHT
12. A/P ..... OFF
 

--- IF NO RW POINT IN FMC ---

  - a. FD ..... OFF
  - b. Pilot Monitoring FD ..... ON

## NON-PRECISION APPROACH W/O VERT. GUIDANCE

1. FMC ..... **Verify Setup**
    - a. Approach Fixes & Constraints ..... **Verify Correct**
  - IF INTERMEDIATE WAYPOINTS BETWEEN FAF AND RUNWAY ---
  - b. Distance to Altitude ..... **Convert from RWY distance to WP distance**
  2. QNH ..... **Verify Local**
  3. Lateral Navigation ..... **LOC or LNAV (depending on approach type)**
  4. Flaps ..... **5**
  5. MCP Speed ..... **Flaps 5 Speed**
- 
- 2 NM prior to FAF**
- 
6. Gear ..... **Down**
  7. Flaps ..... **20**
  8. MCP Speed ..... **Flaps 20 Speed**
  9. MCP ALT ..... **MDA**
  10. FPA Mode ..... **Preselect**
  11. Speed Brake ..... **Arm**
- 
- 0.5 NM prior to FAF**
- 
12. Flaps ..... **Landing Config**
  13. FPA Mode ..... **Engage and Set GP**
  14. Landing Checklist ..... **Completed**
  15. Distance to Altitude ..... **Monitor**
- 
- 300 ft prior to MDA (but below 300ft from Missed Approach Altitude)**
- 
16. MCP ALT ..... **Set Missed Approach Altitude**



## GO AROUND

1. Aircraft not stable at 1000 ft .....	<b>Perform GA</b>
a. TOGA SW .....	<b>Push (Once - THR) (Twice - THR REF)</b>
b. Speed Increase .....	<b>Verify</b>
c. Flaps .....	<b>20</b>
<b>ON POSITIVE CLIMB</b>	
2. Landing Gear .....	<b>UP</b>
3. FD .....	<b>ON</b>
<b>AT 400 FT AGL</b>	
4. Roll Mode .....	<b>Verify LNAV or HDG / TRK</b>
5. Missed Approach Route .....	<b>Verify Tracked</b>
6. Missed Approach Altitude .....	<b>Verify Set</b>
<b>AT ACCELERATION ALTITUDE</b>	
7. MCP Speed .....	<b>Manually Set Target Speed</b>
8. Flaps .....	<b>Up According to Speed</b>
<b>ONCE FLAPS IN TARGET POSITION</b>	
9. Vertical Guidance .....	<b>Activate FLCH (or VNAV)</b>
10. Thrust Mode .....	<b>Push CLB/CON</b>
<b>ONCE TARGET ALTITUDE CAPTURED</b>	
11. AFTER TAKEOFF CHECKLIST .....	<b>Completed</b>

## LANDING

1. LANDING CHECKLIST ..... **Completed**
  2. Stabilized approach at 1000 ft AGL
    - a. Speed ..... ( $V_{App} - 5$ ,  $V_{App} + 10$ ), not below  $V_{Ref}$
    - b. Lateral ..... Within 1 dot of LOC dev, half RNP value
    - c. Vertical ..... Within 1 dot of GS dev,  $\pm 75$  ft RNP
    - d. THRUST ..... At reasonable level
    - e. Aircraft ..... In landing config
- 
- 1 - 2 NM PRIOR TO / 300 FT - 600 FT ABOVE TO RWY THRESHOLD
- 
3. A/P ..... Off
- 
- AT 30 FT
- 
4. Flare up 2-3 deg
- 
- AFTER TOUCHDOWN
- 
5. Reversers ..... As Needed / Activate

## AFTER LANDING

1. Speed Brake ..... **Retracted**
  2. Flaps ..... **UP**
  3. Autobreak ..... **OFF**
  4. Landing Time ..... **Noted**
  5. APU ..... **Start**
  6. Anti-ICE ..... **As Needed**
  7. LANDING & Strobe Lights ..... **OFF**
  8. WXR & TERR ..... **OFF**
  9. Transponder ..... **XPNDR**
- IF FLYING ON IVAO --**
- a. IVAO Pilot Client TCAS ..... **STBY**
10. Single Engine Taxi:
    - a. 3 min after landing & 36% N1 or less ..... **Shutdown one engine**
- 
- ON ENTERING GATE AREA
- 
11. TAXI and RUNWAY TURNOFF Lights ..... **OFF**
  12. PARKING BRAKE ..... **Set**

## SHUTDOWN

1. PARKING BRAKE .....	Verify Set
2. On Block Time .....	Noted
3. APU .....	Verify Running
4. XPNDR .....	STBY
5. FUEL CONTROLS .....	CUTOFF
6. SEATBELT Signs .....	OFF
7. HYDRAULIC System .....	OFF
a. Shut down RIGHT side LAST	
8. Fuel Pumps .....	OFF
<b>ONCE ENGINES BELOW 20% N2</b>	
9. BEACON Light .....	OFF
10. FD .....	OFF
11. Transponder .....	STBY
12. SHUTDOWN CHECKLIST .....	Completed
13. EICAS messages that do not disappear after 3 minutes .....	Note
14. EFB Ground Operations .....	Deboard
a. Doors .....	Disarm All, then Open
15. WINDOW HEAT .....	OFF
16. EMER LIGHTS .....	OFF
<b>--- IF EXT POWER AVAILABLE ---</b>	
a. PRIMARY & SECONDARY EXT PWR .....	ON
b. APU .....	OFF
17. IFE/PASS .....	OFF
18. ADIRU .....	OFF
<b>ONCE DEBOARDING COMPLETED</b>	
19. EXT PWR .....	OFF
20. BATTERY .....	OFF
<b>--- IF FLYING ON IVAO ---</b>	
a. IVAO Pilot Client .....	Disconnect