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. Battery ..... **On**
2. C1 & C2 ELEC Hydraulic Pumps ..... **Verify OFF**
3. Hydraulic Demand Pumps ..... **Verify OFF**
4. Wipers ..... **OFF**
5. LDG Gear ..... **DOWN & Synchronized**
6. ALTN Flaps ..... **OFF**

--- Establish Electrical Power ---

7. 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**

8. 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. RTE ..... **RTE COPY**
8. 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
9. LEGS > RTE DATA (ND not PLAN mode) .... **WIND DATA LOAD, then EXEC**
10. FMC COMM > UPLINK DES FORECAST ..... **LOAD**
11. PROG ..... **Compare shown ground distance to planned distance**
12. RTE page > NEXT PAGE ..... **Compare Uplinked route to flight plan**
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. BROADBAND SYSTEM SWITCH ..... **Guarded**
2. ADIRU Switch ..... **ON**
3. THRUST ASYM COMP ..... **AUTO**
4. PRIMARY FLIGHT COMPUTERS ..... **Guarded & OFF light extinguished**
5. BATTERY ..... **ON**
6. IFE/PASS Switches ..... **ON**
7. APU GEN ..... **ON**
8. APU Switch ..... **ON & OFF light extinguished**
9. L & R BUS TIE ..... **AUTO**
10. EXT PWR ..... **As Needed**
11. GEN ..... **ALL ON**
    a. DRIVE DISC Switches ..... **Guarded & up**
12. VOICE RECORDER ..... **ON**
13. EMER LIGHTS ..... **Armed & Guarded**
14. SERV ITPH ..... **OFF**
15. WINDOW HEAT ..... **ON**
16. RAM AUR Turbine SW ..... **Guarded**
17. HYD ENG PUMPS L & R ..... **ON**
    a. Remaining Pumps ..... **OFF**
18. NO SMOKING / NO ELECTRONICS ..... **AUTO**

-- AFTER REFUELING COMPLETED ---

19. SEAT BELTS ..... **ON**
20. Flight Deck lights ..... **As Needed**
21. LANDING Lights ..... **OFF**
22. CARGO FIRE SW ..... **Not Armed**
    a. DISC SW ..... **Guarded**
23. ENGINE EEC MODE ..... **Norm & Guarded**
24. START PANEL ..... **Norm for both engines**
    a. AUTOSTART SW ..... **ON**
25. FUEL JETTISON NOZZLES ..... **OFF & Guarded**
    a. FUEL TO REMAIN ..... **Pushed In**
    b. ARM SW ..... **Disarm**

COCKPIT PREPARATION - CONTINUED

26. Fuel Pumps ..... **OFF**
    a. CROSSFEED ..... **OFF**
    b. L FWD pump feeds APU
27. ANTI-ICE ..... **AUTO**
28. OUTSIDE Lights
    --- DAYLIGHT ---
    a. NAV ..... **ON**
    b. IND LTS ..... **BRT**
    --- NIGHT ---
    c. NAV & LOGO ..... **ON**
    d. IND LTS ..... **DIM**
29. Other EXT lights ..... **OFF**
30. EQUIP COOLING ..... **AUTO**
31. GASPER ..... **ON**
32. RECIRC FANS ..... **ON**
33. FLT deck temp ..... **As Desired**
34. CABIN TEMP ..... **12 o'clock position**
35. L & R PACK SW ..... **AUTO**
36. TRIM AIR ..... **ON**
37. BLEED AIR ISOL VALVES ..... **AUTO**
38. L & R ENG BLEED ..... **ON**
39. APU BLEED ..... **AUTO**
40. PRESS OUTFLOW VALVES ..... **AUTO**
41. LANDING ALT SELECTOR ..... **Pushed In**
42. QNH ..... **Set Local**
43. ND ..... **10 NM**
44. TFC ..... **Press**
45. VOR / ADF ..... **Displayed as needed**
46. ARPT ..... **Press**
47. F/D ..... **Both ON**
48. A/T ARM ..... **Both UP**

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

49. BANK ANGLE SEL ..... **AUTO**

COCKPIT PREPARATION - CONTINUED

50. A/P DISENGAGE Bar ..... **Up**
51. ALT SELECTOR ..... **AUTO**
52. Display ..... **CAPT DOORS, F/O CAMS (inop)**
53. FWD PANEL BRIGHTNESS ..... **all AUTO**
54. SOURCE SELECT PANELS ..... **all OFF**
55. INBOARD DSPL ..... **MFD**
56. HDG REF ..... **NORM**
57. STBY Instrument ..... **Set QNH**
58. GND PROX ..... **OFF & Guarded**
59. ALT GEAR EXT ..... **Guarded**
60. GEAR LVR ..... **DN**
61. AUTOBRAKE ..... **RTO**
62. FMC Selector ..... **AUTO**
63. F/O INBOARD DSPL ..... **MFD**
64. DSPL CTRL SW ..... **OFF**
65. PARKING BREAK ..... **Set**
66. SPEED BRAKE ..... **DOWN Detent**
67. ALTN PITCH TRIM SW ..... **Middle Position**
68. STAB CUTOUT SW ..... **Guarded**
69. L & R FUEL CONTROL ..... **CUTOFF**
70. FLAP Selector ..... **Matches FLAP Position**
71. ALTN FLAPS ..... **OFF & Guarded**
72. Frequencies ..... **As Required**
    a. L & R VHF ..... **Turn On**
    b. L VHF ..... **MIC**
    c. GAIN SW ..... **12 o'clock position**
73. Center Radio ..... **Verify DATA active**
74. ENG FIRE DISC SW ..... **Both Pushed In**
75. Center CDU ..... **MENU > CAB INT or MENU > FS ACTIONS**
76. AILERON & RUDDER Trim ..... **Neutral**

COCKPIT PREPARATION - CONTINUED

77. Transponder ..... **ABV on both sides**
    a. Source Selector ..... **NORM**
    b. XPNDR Selector ..... **L**
    c. Squawk ..... **Set**
    d. XPNDR Mode ..... **STBY**
78. EVAC COMMAND ..... **Guarded**
    a. HORN SHUTOFF ..... **Pushed In**

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 precendence)**
    b. GR WT ..... **Crosscheck**
    c. NEXT PAGE ..... **Verify ACCEL HT**
7. CAPT TAKEOFF page, F/O LEGS page

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**
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
    a. RTE > OFFSET > R1 (not more than 2 miles)
9. DIRECT TO on given course
    a. ENTER WP as DIRECT > bottom right INTC CRS TO > enter course
10. TOD ..... **Monitor**

BEFORE DESCEND (30 NM 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

--- ON PASSING FL 250 ---

2. SEATBELT Signs ..... **ON**

--- ON PASSING FL 100 ---

3. Speed Brakes ..... **Use to Decelerate to 250 kt**
4. LANDING, RUNWAY TURNOFF, TAXI Lights ..... **ON**

--- ON PASSING TRL ---

5. QNH ..... **Set Local**
6. APPROACH CHECKLIST ..... **Completed**

ILS APPROACH

1. FMC Approach ..... **Compare to Charts**

IN VICINITY OF AIRPORT

2. NAV Aids ..... **Identify**

12 NM PRIOR TO RWY

a. Altitude ..... **3000 ft**

b. Speed ..... **200 kt**

BEFORE INTERCEPTING GS

3. Flaps **5**
4. MCP Speed ..... **Flaps 5 Speed**

CLEARED FOR APPROACH

5. APP mode ..... **Activate**

ON GS CAPTURE

6. MCP ALT ..... **Set Missed Approach Altitude**

AT 2500 FT ABOVE RWY ELEVATION

7. LANDING GEAR ..... **DOWN**
8. Flaps **20**
9. MCP SPEED ..... **Flaps 20 Speed**
10. Speed Brake ..... **Arm**
11. LANDING CHECKLIST ..... **Open**

ONCE FLAPS 20

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 ..... **Perform GA**
   a. TOGA SW ..... **Push (Once - THR) (Twice - THR REF)**
   b. Speed Increase ..... **Verify**
   c. Flaps **20**

ON POSITIVE CLIMB

2. Landing Gear ..... **UP**
3. FD ..... **ON**

AT 400 FT AGL

4. Roll Mode ..... **Verify LNAV or HDG / TRK**
5. Missed Approach Route ..... **Verify Tracked**
6. Missed Approach Altitude ..... **Verify Set**

AT ACCELERATION ALTITUDE

7. MCP Speed ..... **Manually Set Target Speed**
8. Flaps ..... **Up According to Speed**

ONCE FLAPS IN TARGET POSITION

9. Vertical Guidance ..... **Activate FLCH (or VNAV)**
10. Thrust Mode ..... **Push CLB/CON**

ONCE TARGET ALTITUDE CAPTURED

11. AFTER TAKEOFF CHECKLIST ..... **Completed**

LANDING

1. Stable approach at 1000 ft AGL
   a. Speed ..... **(VRef - 10, VRef + 10)**
   b. LOC ..... **Within 1 dot of deviation**
   c. GS ..... **Within 1 dot of deviation**
   d. THRUST ..... **At reasonable level**
   e. Aircraft ..... **In landing config**

--- AT 30 FT ---

2. Flare up 2-3 deg

AFTER LANDING

1. Speed Brake ..... **Retracted**
2. APU ..... **Start**
3. Anti-ICE ..... **As Needed**
4. LANDING & Strobe Lights ..... **OFF**
5. WXR & TERR ..... **OFF**
6. Autobreak ..... **OFF**
7. Flaps ..... **UP**
8. Transponder ..... **XPNDR**
9. Single Engine Taxi:
   a. 3 min after landing passed and 36% N1 or less
   b. Shutdown one engine

--- ON ENTERING GATE AREA ---

10. TAXI and RUNWAY TURNOFF Lights ..... **OFF**
11. PARKING BRAKE ..... **Set**

SHUTDOWN

1. PARKING BRAKE ..... **Verify Set**
2. FUEL CONTROLS ..... **CUTOFF**
3. SEATBELT Signs ..... **OFF**
4. HYDRAULIC System ..... **OFF**
   a. Shut down RIGHT side LAST
5. Fuel Pumps ..... **OFF**

--- ONCE ENGINES BELOW 20% N2 ---

6. BEACON Light ..... **OFF**
7. FD ..... **OFF**
8. Transponder ..... **STBY**
9. SHUTDOWN CHECKLIST ..... **Completed**
10. EICAS messages that do not disappear after 3 minutes ..... **Note**
11. EFB Ground Operations ..... **Deboard**
    a. Doors ..... **Disarm All, then Open**