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

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**

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
   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 (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

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. LANDING CHECKLIST ..... **Completed**
2. Stabilized approach at 1000 ft AGL
   a. Speed ..... **(VApp - 5, VApp + 10), not below VRef**
   b. Lateral ..... **Within 1 dot of LOC dev, half RNP value**
   c. Vertical ..... **Within 1 dot of GS dev, +- 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**

ONCE ENGINES BELOW 20% N2

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**

--- IF EXT POWER AVAILABLE ---

a. PRIMARY & SECONDARY EXT PWR ..... **ON**
b. APU ..... **OFF**

17. IFE/PASS ..... **OFF**
18. ADIRU ..... **OFF**

ONCE DEBOARDING COMPLETED

19. EXT PWR ..... **OFF**
20. BATTERY ..... **OFF**

--- IF FLYING ON IVAO ---

a. IVAO Pilot Client ..... **Disconnect**