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**
    a. BEFORE DESCEND
11. RECALL .... **Check for EICAS messages**
12. CHKL .... **Check for Notes**
13. DEST Weather .... **Check**
14. QNH .... **Preselect DEST QNH**
15. Arrival .... **Enter / Verify**

CRUISE - CONTINUED

16. Descend Wind Forecast .... **Request**
    a. FMC COMM > DES Forecast > Forecast Request
    b. TRL .... **Crosscheck**
    c. LOAD forecast uplink
17. NAV AIDS .... **Enter / Confirm**
18. Active Flight Plan .... **Copy to Secondary**
    a. RTE > PREV PAGE > RTE COPY
19. Draw Markers for Arrival .... **As Required**
20. Landing Weight .... **Calculate**
    a. PROG page, GW - (current fuel - predicted fuel at destination)
21. Landing Speeds .... **Obtain**
    a. enter calculated landing weight (GW) at INIT REF page
    b. VREF add: half steady headwind + full gust
22. Landing Performance .... **Calculate**
23. AUTOBREAK .... **Set accordingly**
24. Approach Minima .... **Get from Chart**
    a. B777-300ER is category D
25. Approach Briefing .... **Perform**
26. DESCEND CHECKLIST .... **Completed**
27. 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. MCP Speed .... **Open and manual speed select**
2. Vicinity of Airport .... **Identify NAV AIDS**
3. 12 NM prior to RWY with 3000 ft, 200 kt
   --- ON INTERCEPTING GS ---
4. Flaps **5**
   --- AT 2500 FT ABOVE RWY THRESHOLD ---
5. LANDING GEAR .... **DOWN**
6. Flaps **20**
7. Speed Brake .... **Arm**
8. LANDING CHECKLIST .... **Completed**
   --- CLEARED FOR APPROACH ---
9. APP mode .... **Activate**
10. On GS capture .... **Set Missed Approach Altitude**

RNAV APPROACH (using VNAV)

1. Database and Charts .... **Compare**
2. QNH .... **Verify Local**
3. Minimums .... **Verify**
4. APPROACH Mode .... **Activate**
   a. via Flaps 1
   b. When activated, MCP Speed Open will keep VNAV PATH mode active
   --- AT 2 NM BEFORE FAF ---
5. MCP ALT .... **Set to Minimums**
   --- ONCE 300 FT BELOW MISSED APPROACH ALTITUDE ---
6. MCP ALT .... **Set Missed Approach Altitude**
   a. A/C will continue to descend
   --- ONCE RWY IN SIGHT ---
7. A/P .... **OFF**
   --- IF NO RW POINT IN FMC ---
   a. FD .... **OFF**

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**