Miltech Simulations U-2

Preflight and Power-Up

From a cold and dark cockpit to a powered aircraft with the INS aligning. Run the three console checklists while the INS aligns.

COCKPIT PREFLIGHT

Cold and dark on a parking spot (canopy open, every switch OFF), before any power is on.

Note
Note: Short of time? EFB Aircraft tab, Set up aircraft, Ready to start does everything up to the ENGINE START checklist for you: ground power, avionics, INS aligned, switches set (parked, up to 3 minutes, engine off, canopy open). Ready for takeoff also starts the engine. → Electronic Flight Bag (EFB)

EFB

1 AVIONICS STARTUP TIME - FAST OR REALISTIC EFB Settings tab. Fast (default): AVP 7 s, SFD 10 s, EW self-test 30 s. Realistic: 2 min, 3 min, 5 min → Electronic Flight Bag (EFB)

2 INS ALIGNMENT TIME - FULL, SHORT OR INSTANT EFB Settings tab. Full 22 min, Short 3 min, Instant 5 s; you still start and accept the alignment → Inertial Navigation System (INS)

3 SERVICING - CHECK Fuel in the MSFS Fuel and Payload window, at least 70 gal in the sump tank (the engine feeds only from it); LOX on the EFB Ground tab: with the engine stopped, Connect and fill brings the oxygen cart and fills both converters, about 3 minutes from empty to full → Fuel System

4 MISSION EQUIPMENT - SET EFB Aircraft tab - nose, Q-bay, superpods, SPAN, external sensors. ASARS-2 nose = RDR page; SYERS-2A nose, or Standard nose with the Q-bay OBC = CAM page

5 CHARTS AND SUNSHADE - SET EFB Charts tab, or drag the sunshade along the canopy arch

COCKPIT

6 PARKING BRAKE - SET In Parking brake handle mode, pull the T-handle at the lower right of the main panel until the tooltip reads SET. In Stall strip handle mode, secure the aircraft with wheel chocks on the EFB Ground tab or in the walkaround.

7 COMM SELECT PANEL - SET Lower left of the main panel: TRANSMITTER SELECT COMM 1 (HF, D/L and SSR transmit nothing), HOT MIC / CALL RCD OFF, COMM CONTROL NORMAL, MASTER VOLUME off the stop → Up-Front Control Display (UFCD)

Caution
Caution: MASTER VOLUME at the bottom stop mutes all headset audio, the warning and caution tones included.

8 UFCD/SFD LIGHTS, INSTRUMENTS LIGHTS, PANEL LIGHTS - SET Three knobs in the centre of the main panel. The panel lights need essential AC (ground power or a generator), the instrument lights emergency AC and the UFCD / SFD lights emergency DC.

9 FUEL BOOST PUMP PRIMARY AND SECONDARY - OFF Fuel panel, right of centre on the main panel → Fuel System

10 INBD AND OUTBD SUMP TANK - OFF

11 INBD AND OUTBD XFER - OFF Cross-transfer switches (their tooltips say XFMR)

12 LEFT AND RIGHT INBD / OUTBD DUMP - CLOSED

13 EW CONT - OFF Top right of the main panel, beside the SFD

14 UFCD, AVP, SFD, BCDU, INS, IFF - OFF Right console power switches (IFF behind them)

15 AFCS POWER - OFF AFCS panel, right console

16 PITOT HEAT - OFF Right console, aft

POWER-UP AND ALIGNMENT

After the cockpit preflight. Start the slow units first, then do the console checks while the INS aligns.

ELECTRICAL

1 BATTERY - EXT PWR Electrical panel, right end of the main panel. EXT PWR / OFF / NORM → Electrical and Avionics Power

2 MAIN DC GENERATOR AND TRANSFORMER RECTIFIER - OFF Their cold-and-dark position; they go to NORM after engine start

3 EXTERNAL POWER - ON One switch for external AC and DC. Connect the cart first: EFB Ground tab, Servicing, Ground power - Connect, and wait for Connected (parked off the runway, parking brake set; Connect brings the ground power unit out if it is hidden). MSFS ground-service power is not used.

Note
Note: With BATTERY in EXT PWR nothing comes on until EXTERNAL POWER is ON; the DC buses then run from the ground cart and the battery rests.

4 WARNING PANEL - CHECK DC GEN and MAIN AC come on with the power; with the engine stopped HYD, OIL, AMAD, SEC and OXY are normal too → Warnings and Alerts

5 MAIN AC GENERATOR - OFF-RESET It cannot connect while external power is on

6 STANDBY GENERATOR AND EMERGENCY INVERTER - OFF Cold-and-dark position; TEST, then NORM after engine start

Note
Note: No ground power: BATTERY NORM instead. Every display, the INS, BCDU and IFF then run on the battery, but AFCS POWER and EW CONT have no AC, the MON DC bus stays dead (MON DC after 15 s, no exterior lights, no SEAT ADJ) and the battery drains.

AVIONICS - RIGHT CONSOLE

7 BCDU - ON 5 s display test, then INITIALIZING 9 ... 1 (about 15 s). While the AVP is off it shows its menu pages (backup control) → Backup Control Display Unit (BCDU)

8 INS - LOAD, THEN ON Three positions ON / OFF / LOAD. LOAD springs back to OFF after loading present position and date - then select ON. MFD NAV > INIT later shows INS MODE STBY → Inertial Navigation System (INS)

9 INS ALIGNMENT - START BCDU NAV-1 > L1 NAV INIT > R5 STBY MODE< (ALN MODE) > ENT, while the AVP is still off. Otherwise start it on the MFD below

Caution
Caution: Do not move the aircraft: above 3 kt the INS alignment starts again (ACFT MOVED), and any

movement restarts the SFD initialization.

10 SFD - ON About 6 s POWER ON BIT, then ATTITUDE INITIALIZING 10 s (Realistic 3 min); speed, altitude and heading show at once → Standby Flight Display (SFD)

11 AVP - ON Up after 7 s (Realistic 2 min). Until then the MFDs show DISPLAY BUS OR AVP FAILURE and the UFCD NO COM → Multi-Function Displays (MFDs)

12 UFCD - ON 9 s self-test, then NO COM until the AVP is up → Up-Front Control Display (UFCD)

13 IFF - ON Comes up in STBY. OFF / ON / HOLD (HOLD springs back to ON); squawk NORM later on the UFCD IFF page

14 AFCS POWER - ON Needs AC (ground power or generator) → AFCS System (Autopilot)

Note
Note: The AUTOPILOT lamp stays on while the PITCH, ROLL and YAW axis switches are OFF (as left by cold and dark); they go ON in the AUTOPILOT GROUND CHECK.

15 MFD OFF / NIGHT / DAY KNOBS - D (OR N) Small knob top right of each bezel, all three. Each MFD runs a 9 s POWER ON BIT (raster, colour bars, grid, characters, BIT list, BIT COMPLETE), then DISPLAY BUS OR AVP FAILURE until the AVP is up → Multi-Function Displays (MFDs)

Note
Note: When the AVP is up the PFD shows RESET BARO and a red ALT box until the altimeter setting is changed - set the baro in MFD PAGES (at 29.92 move it off and back).

16 EW CONT - REC (AS REQUIRED) Needs ESS AC and DC ESS. Startup self-test first: 30 s (Realistic 5 min), tooltip REC - SBIT, EW page EWS STARTUP BIT m:ss. The threat tone also needs MISSION RECORDER (MSN RCD) ON

ALIGNMENT

17 INS ALIGNMENT - MONITOR MFD NAV > INIT (T6): INS MODE, AQ counting down from 300. Not started yet: R1 ALN, R2 YES. ALIGN MISMATCH = entered position more than 1 NM out → Inertial Navigation System (INS)

Note
Note: Full alignment: attitude 30 s after ALN, LIM NAV READY 5 min, FULL NAV READY 22 min (Short: about 40 s / 3 min). Accept with R1 ACPT, R2 YES before taxi (MFD PAGES, NAV); GPS updating then keeps the position.

18 AUDIO CONTROL PANEL - SET Volume panel, left console: COMM 1, COMM 2, TACAN, ILS, AOA and THREAT off the stop (volume = knob x MASTER VOLUME)

Note
Note: At the stop TACAN and ILS switch off (TACAN FAULT advisory) and AOA silences the approach tones (the stall tone stays). HF has no function.

Note
Note: The MFD status and route pages (STAT VERS / LOAD / HIST / FAULT, NAV DPS) are checked in MFD PAGES, once the AVP is up.

LEFT CONSOLE

While the INS aligns, aft to forward.

1 NAV LIGHTS - FLASH FLASH / OFF / STEADY; needs MON DC power

2 ANTI-COLLISION LIGHTS - OFF

3 CONTINUOUS IGNITION - OFF

4 SEAT ADJ - AS REQUIRED Hold left click UP, right click DOWN; moves your eye point. Needs MON DC power

5 LANDING LIGHT - OFF Works only with the gear down

6 FOOD HEATER - OFF OFF / ON / START (START heats a Dragon Food tube in about 5 min)

7 SPOILER SWITCH - ARM OFF / ARM / EMER → Speedbrakes and Lift Spoilers

8 LANDING SPOILERS - LANDING LANDING / LET DN

9 ARC-210 BACKUP RADIO - SET Sim COM 3. Left knob TR+G or TR (OFF = radio dark), right knob MAN or PRST. It takes over COM 1 / COM 2 only with COMM CONTROL BACKUP → Up-Front Control Display (UFCD)

10 COCKPIT FAN - AS REQUIRED HIGH / OFF / LOW (up / center / down)

11 CANOPY SEAL - OFF T-handle, tooltip Unlocked; ON after engine start, OFF before the canopy opens → Cabin, Oxygen and Hypoxia

12 OXYGEN SYSTEM 1 AND 2 - ON The OXY lamp goes out after about 5 s → Cabin, Oxygen and Hypoxia

13 OXYGEN PRESSURE - CHECK 50 TO 100 PSI About 80 psi with the switch ON. Read it on MFD SYS > CAL (T6, ground only) or the EFB Ground tab

14 GUST CONTROL - FAIRED UP takes the flaps 6.25 deg up to the gust position (PFD flap symbol -7) and the flap lever no longer works.

15 ENGINE MODE - PRI

16 EMERGENCY START SYS - OFF, COVER CLOSED EMERGENCY START COVER

17 ENGINE FUEL SHUTOFF - ON, COVER CLOSED ON, not FUEL OFF; FUEL SHUTOFF COVER → Engine Start and Cockpit Controls

18 FLAPS - FAIRED (0 DEG) Lever tooltip TARGET 0 deg; flap indicator on the PFD

19 THROTTLE - OFF Right-click the throttle below 10 % (or Increase Cowl Flap 4) toggles OFF / IDLE → Engine Start and Cockpit Controls

20 THROTTLE FRICTION - AS REQUIRED

21 SPEED BRAKE SWITCH - OFF, SPEED BRAKES IN Spring-loaded to OFF; hold OUT / IN moves the brakes only with hydraulic pressure → Speedbrakes and Lift Spoilers

INSTRUMENT PANEL

While the INS aligns, left to right.

1 LOX QUANTITY - CHECK Two-needle LIQUID OXYGEN gauge (tank 1 / tank 2, 0-10 L) beside the gear handle; also SYS > PERF LOX 1 / LOX 2. Fresh: 8-10 L each → Cabin, Oxygen and Hypoxia

2 GEAR HANDLE AND INDICATORS - DOWN

3 RAM AIR - OFF, RAM AIR COVER CLOSED

4 REFRIG BYPASS - NORMAL Cold and dark leaves it in CLOSE (full cold), or where your last flight in this sim session left it → Cabin, Oxygen and Hypoxia

5 TURBINE BYPASS - NORM OR NORM/9TH Cold and dark leaves it in CLOSE, or where your last flight in this sim session left it

6 CABIN HEAT - HOLD Outer knob HOT / HOLD / COLD; the inner knob selects AUTO and the temperature after engine start

7 SFD NAV BUTTON - PRESS THREE TIMES Front course (red LOC and G/S flags with no ILS tuned), back course (red LOC flag), then normal → Standby Flight Display (SFD)

8 SFD BARO KNOB - CHECK, THEN AS REQUIRED Turn: 0.01 inHg per click and the SFD altitude follows (about 10 ft per click); 1 hPa per click while the PFDs show hPa; push: STD (29.92)

9 MANUAL TRIM POWER - ON Slide switch on the yoke (click the yoke base if the yoke is hidden)

Note
Note: The stabilizer trim also needs DC ESS and hydraulic pressure, so it does not move before engine start.

RIGHT CONSOLE

While the INS aligns, forward to aft.

1 MASTER LIGHT TEST - HOLD, CHECK Every warning panel lamp, FIRE and OVERHEAT lights, MASTER CAUTION, AOA indexer, AFCS mode lights, EW REC / RPT and LANDING GEAR NOT DN, and the red gear handle light; both LOX quantity needles run down towards zero. → Warnings and Alerts

2 AOA SELF-TEST - KEEP MASTER LIGHT TEST HELD OVER 3 S The indexer stays lit and the six AOA tone bands play in turn, 1.5 s each → Angle of Attack (AOA)

Note
Note: Held 7 s or more the test also raises AIL GUST MISMATCH and FLAP GUST MISMATCH; they go when you let go.

3 MASTER CAUTION - RESET Press the MASTER CAUTION lamp

4 FIRE/OHEAT TEST - FIRE TEST, OHEAT TEST, THEN OFF FIRE TEST: FIRE light, FIRE/OVERHEAT and BLEED, FIRE and BLEED AIR LEAK. OHEAT TEST: OVERHEAT light, FIRE/OVERHEAT, OVERHEAT. The switch does not spring back - return it to the centre

5 PITCH TRIM MODE - AUTO Cold and dark leaves it in MANUAL → AFCS System (Autopilot)

6 PITCH RATE, ROLL RATE, MACH ALT, YAW BAL - 5 (MID) AFCS sensitivity knobs, 0-10

7 FACE HEAT - OFF Two positions only, OFF / ON-HIGH

8 WINDSHIELD ANTI-FOG - OFF ON before taxi

9 HATCH HEATER - HTR & BLO, CHECK, THEN OFF HATCH HEATER HOT shows in HTR & BLO unless the OBC is in the Q-bay (only it has a photo hatch to heat); then OFF (centre)

10 PITOT HEAT - CHECK, THEN OFF ON for 15-20 s: SYS > PERF FAT climbs. Left on while standing still, the temperature probe overheats in about a minute (APCU FAULT, FAT dashes) and clears as it cools. ON before takeoff as required.

Related pages: Quick Start Guide · Electrical and Avionics Power · Inertial Navigation System (INS) · Ground Checks

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