REQUIREMENTS:

✓ PMDG 737 NGXu
✓ FS2Crew PMDG 737 NGXu Edition. Available at: https://www.fs2crew.com/
✓ This tutorial uses VOICE CONTROL with SOP SET 2

INTRODUCTION:

SOP Set 2 is based on the same procedures used by a real-world airline. Their procedures are quite like stock Boeing procedures but there are some significant differences as every airline likes to do things "their own way" to a degree.

For a full list of voice commands and explanations, please consult the **MAIN OPS MANUAL**.

If you have any questions or problems, please consult the FS2Crew Support Forum at Avsim.com. This is complex software and we're trying to do things as realistically as possible, so don't be afraid to ask questions!

For the Flight Route, we'll leave that up to you. Pick your favorite airport and fly there!

DISCLAIMER: This tutorial is made for flight simulation purposes only and does not necessary reflect real world procedures to their fullest. FS2Crew 737 NGXu is an entertainment product. It is not meant for real-world flying or training. It is not affiliated or associated with any specific airline or company.

LET'S BEGIN:

- If you haven't already trained your voice and set your speech recognizer to **ENGLISH – US**, please do so now. Please consult the MAIN OPS MANUAL for detailed info.
- Load the PMDG 737 NGX from the Free Flight screen. The PMDG 737 should never be the default aircraft that loads or you WILL have problems. Do not used saved situation files!
- At this point, you should be sitting in the 2D cockpit and the engines should be running. If the engines are not running, you are probably using a default panel state file, and we generally don't recommend using those as they can sometimes cause the aircraft to initialize improperly.
- We need to shut off the built in **F/O CALLOUTS** or you will get double call outs via the **PMDG – OPTIONS - SIMULATION** menu as shown below:
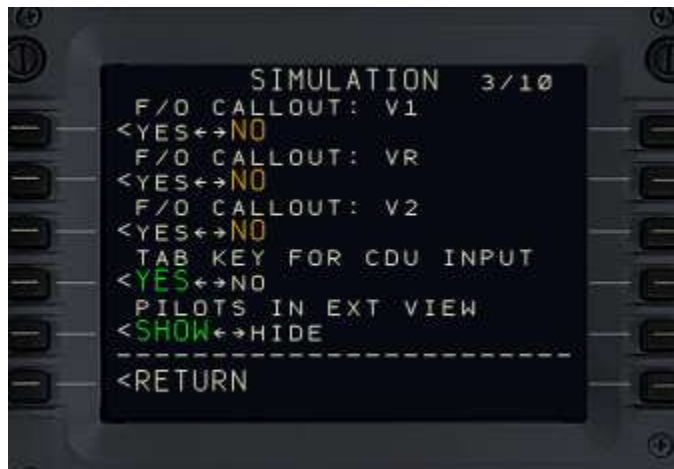
- We recommend that the F/O's altimeter and Standby altimeter syncs to the Captain's altimeter as shown below.
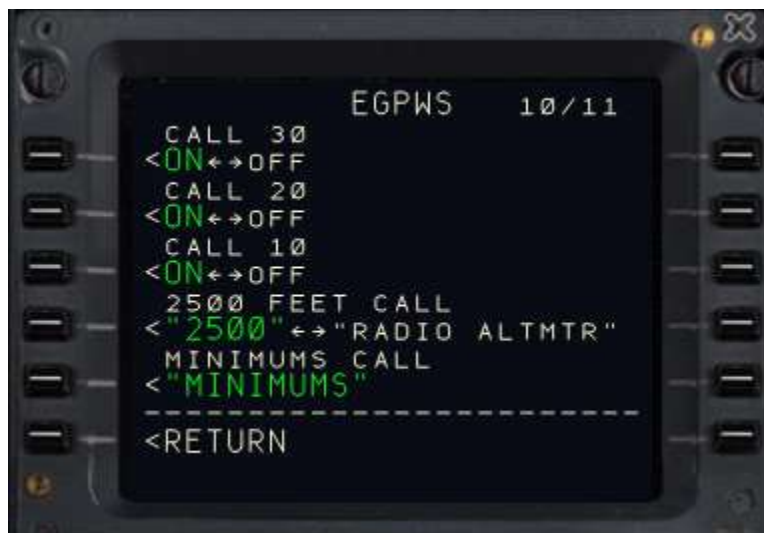
  SYNC CAPT AND F/O EFIS TO: BARO AND MINIMUMS.
  SYNC CAPT AND STBY BARO TO 'YES'.

Note: The other options, such as Service-Based failures, can be set at your discretion.

- This airline uses EGPWS auto-callouts for the "**MINIMUMS**" and "**PLUS HUNDRED**" calls during approach. It also uses "**2500**" for the 2500 Feet call. Please ensure your PMDG Options are set accordingly as shown below:

- For added realism to make your flight specific to this airline, you may also use the following equipment options in the PMDG menu:

 **STANDBY INSTRUMENTS** to **ISFD**

  SHORT FIELD PACKAGE to **YES**

  TERRAIN PEAKS MODE to **YES**

  SATCOM ANTENNA to **YES**

  AUTOLAND to **FAIL OP**

- Open the PMDG's FMC and select the stock **PMDG LONG** or **SHORT PANEL STATE** file. It's your choice. You don't need to do this for every flight. In fact, you can start with the engines running. But for the sake of this tutorial we're going to start with the engines off. These two panel states are generally the most realistic panel state files to use since airline pilots rarely receive the aircraft cold and dark and most major airports supply ground power and air.
- Now we need to open the MAIN PANEL. There is no click spot! Press the button you assigned to open the FS2Crew MAIN PANEL (namely the one linked to **AUTOFEATHER ARM/OFF**.) If you haven't already assigned a button to this event, do it now, or you won't be able to open the MAIN PANEL.
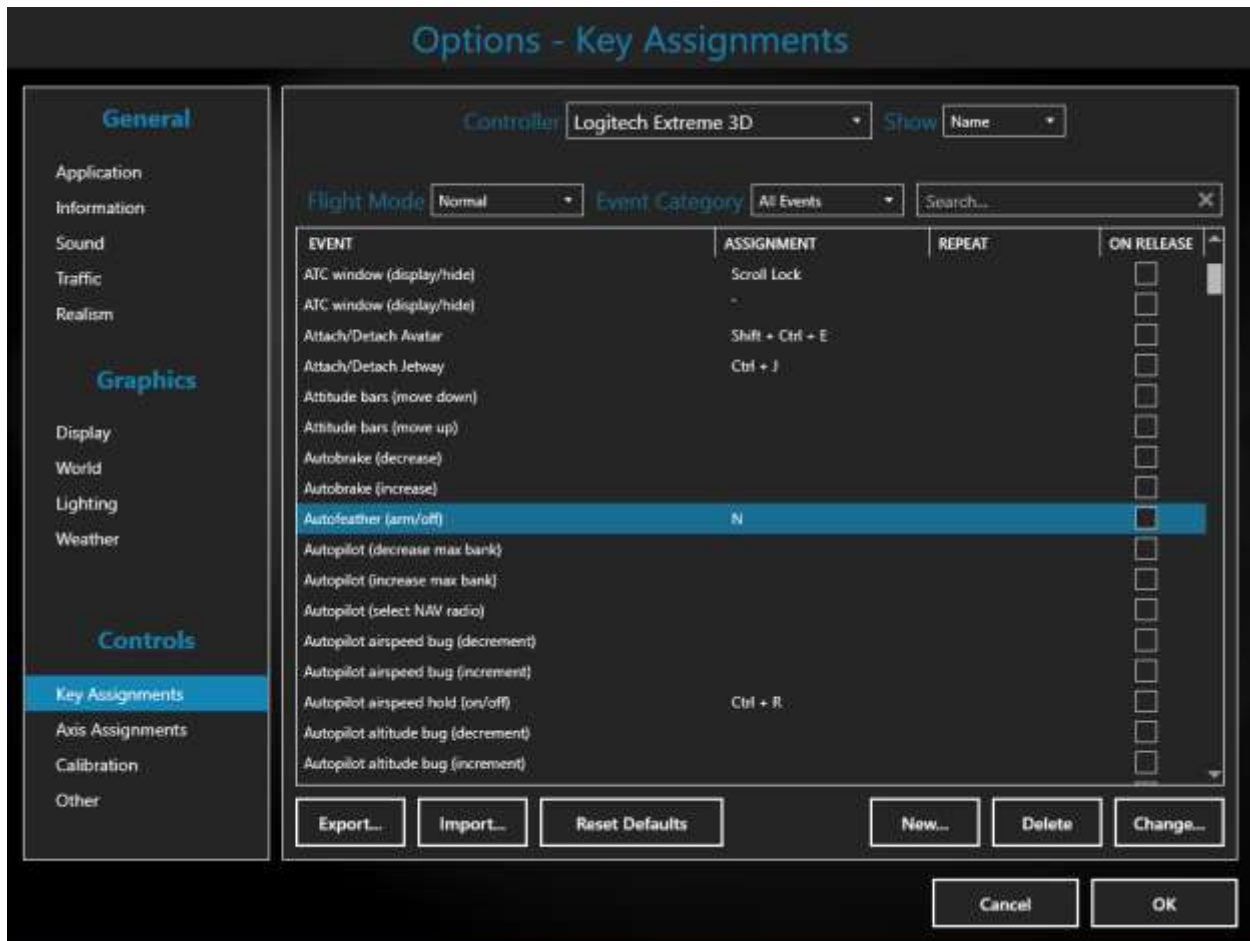
- The FS2Crew MAIN PANEL should open. It looks like this:

- If the Main Panel does not open, double check your keyboard assignment that you assigned to **AUTOFEATHER (ARM/OFF).** I personally use the "N" key on the keyboard. If the MAIN PANEL still doesn't appear, try assigning a different key. Also open the PMDG 737's panel.cfg file with Notepad. Make sure there are FS2Crew entries on it. If not, you forgot to Enable FS2Crew via the FS2Crew Configurator or you have a write permission issue.

  The PMDG 737 NGX's panel.cfg file is located here:

  Your Flightsim Folder\SimObjects\Airplanes\PMDG 737-800NGX\panel\panel.cfg

- Press the **SEC** button on the MAIN PANEL. A new panel should open that looks like an FMC. This panel is called the SECONDARY PANEL.
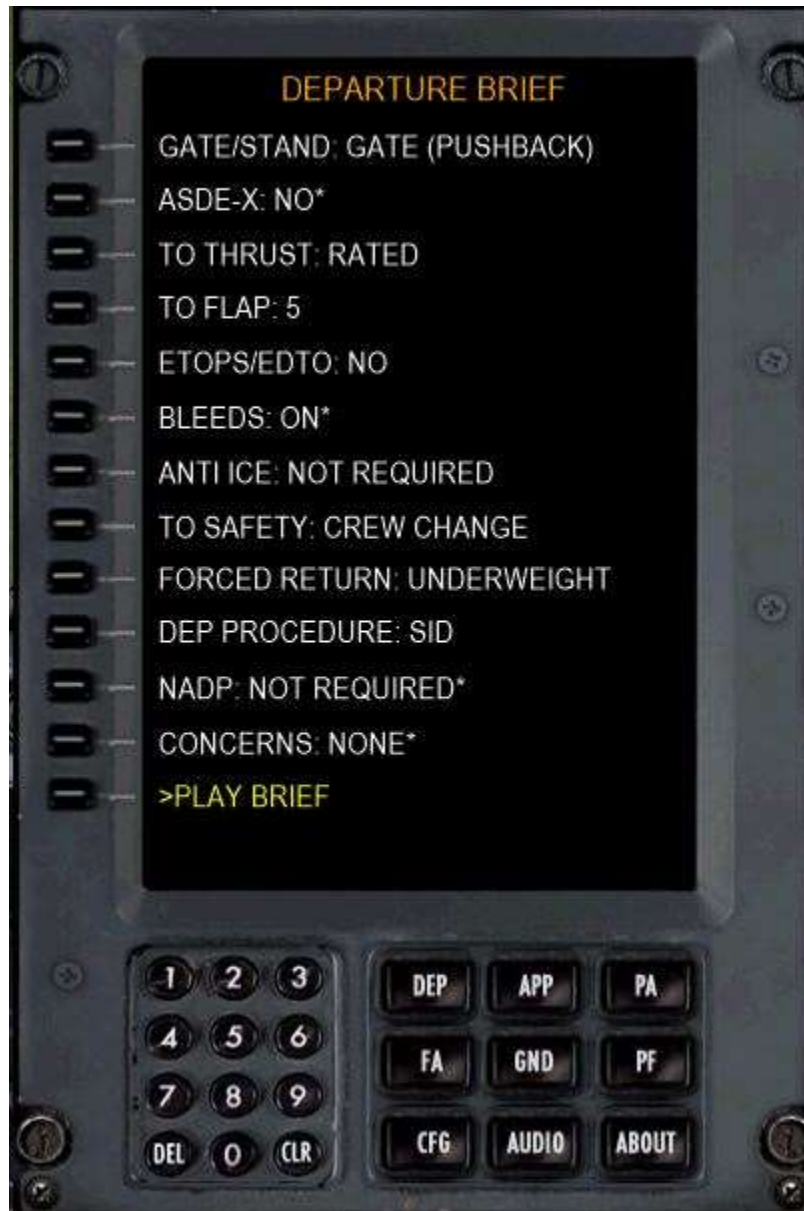
- Press the **CFG** button on the FMC to open the CONFIG menu.
- Press LSK 1 (Left Line Select Button) to open the **SETUP** page.
- By default, FS2Crew is running in BUTTON CONTROL mode. We need to change that to **VOICE CONTROL**.
- Press LSK 4 to change the **SOPS** to **SET 2** if it's not already there.

- The text "**CONFIRM SOP OVERWRITE**" will appear on the same page.

- Press LSK 14 to confirm the overwrite. The various CALLOUTS CFG options will then be updated to match SET 2's SOPs.
- Press the **AUDIO** button on the SECONDARY PANEL.
- Select your **CREW REGION** by pressing LSK 1. This setting controls the regional accent of the crew.
- If you are using a headset, select the audio device associated with your headset by pressing LSK 4 (HEADSET AUDIO DEVICE).
- Press LSK 7 to play the audio test. From your main speakers, you should hear "*Left speaker test…. Right speaker test… Audio test complete*".
- Note the button that says **RESET AUDIO SYSTEM**. Only press that if you seem to lose FS2Crew audio; that can happen if your audio device momentarily disconnects from the system.
- Now we need to run the Pre-Flight events. Running the Pre-Flight events is OPTIONAL, but we'll run it anyway for the sake of the tutorial.
- Press the **PF** button on the SECONDARY PANEL to open the PRE FLIGHT EVENTS page.
- Press LSK 4 to run the Preflight Events (your engines must be shutdown first).
- To close the SECONDARY PANEL, press the SEC button on the FS2Crew Main Panel, or click the right screw in the top right hand corner of the SECONDARY PANEL or press the button you assigned to toggle the SECONDARY PANEL.

SOME SIMPLE RULES AND ADVICE:

- In FS2Crew, you are the Captain and the Pilot Flying (PF). The computer is the FO and the Pilot Monitoring (PM).
- If the Autopilot is ON, the MCP (autopilot panel) falls within your area of responsibility. The FO/PM should generally never touch the MCP if the autopilot is on.
- It's highly recommended that you leave the Green Bar on so you can see what the speech recognition system is detecting.

PRE-FLIGHT EVENTS:

The Pre-Flight events are short and intense. These day quick turn arounds are the norm as airlines try to save money.   Don't doddle or you will be behind the curve!

This tutorial only covers the key points. For specific details, please consult the FCOMs provided with the NGX. Furthermore, this tutorial assumes it's the first flight of the day for the crew.

Special Note: To **FAST FORWARD** the **PRE FLIGHT EVENTS TIME**, RIGHT CLICK the DOWN ARROW on the FS2Crew Main Panel.

NOTE: All times listed below are approximate.

+25 Minutes: Pre-Flight Events start. Jetway connects if available. Cabin and cargo doors open.

+24 Minutes: ONLY if using the **COLD AND DARK** panel state (the aircraft has no electrical power) the FO starts the **ELECTRICAL POWER UP SUPPLEMENTRY PROCEDURE** unless you've selected otherwise in the FS2Crew Options menu. Note that in real life, pilots rarely receive the aircraft cold and dark.

ELECTRICAL POWER UP SUPPLEMENATRY PROCEDURE
-CAPTAIN OR FO.   TUTORIAL ASSUMES FO WILL PERFORM THIS PROCEDURE BASED ON DEFAULT CONFIG OPTION.

- *BATTERY ON*
- *GROUND POWER SWITCH ON (IF GROUND POWER AVAILABLE)*
- *FIRE TESTS (FAULT/INOP, OVHT FIRE, EXTINGUISHER).*
- *START APU IF GROUND POWER NOT AVAILABLE*
- *CONFIGURE FUEL PUMPS*
- *WHEEL WELL FIRE TEST*

+23 Minutes: You as the Captain should perform the **PRELIMINARY PREFLIGHT PROCEDURE**. By convention, the Captain will usually perform this procedure if the FO is doing the walk around. If you want the FO to perform this procedure instead of you, select the associated FS2Crew CFG option.

PRELIMINARY PREFLIGHT PROCEDURE
 -CAPTAIN OR FO. TUTORIAL ASSUMES CAPTAIN WILL DO IT BASED ON DEFAULT CONFIG OPTION.

- IRSs OFF, WAIT APPROX 30 SECONDS, THEN ON
- FLIGHT RECORDER TEST
- VOICE RECORDER SWITCH NORMAL
- SERVICE INTERPHONE SWITCH OFF
- ENGINE PANEL SET
- MACH OVERSPEED TEST
- STALL WARNING TEST (*NOTE: REQUIRES AC TRANSFER BUSSES ARE POWERED FOR UP TO 4 MINUTES. YOU MAY WISH TO DELAY RUNNING THE FS2CREW PRE-FLIGHT EVENTS BY 4 MINUTES TO ACCOUNT FOR THIS CONDITION.*)
- SET PARKING BRAKE (*IF BRAKE WEAR INDICATORS WILL BE CHECKED DURING THE EXTERIOR INSPECTION*)
- ATIS COPY (*NOT SIMULATED*)

+ 22 Minutes: FO starts walk around if he/she hasn't already left. If it's night, the FO will turn on the wheel well light. Captain performs the CDU pre-flight using the estimated ZFW.

+19 Minutes: FA asks if she can start the boarding. Respond: "YES PLEASE/ GO FOR IT/ OKAY". Actual boarding will commence approximately two minute later.

+18 Minutes: FO returns from walk around and starts his **PREFLIGHT** and **CDU PREFLIGHT PROCEDURE.** Capt starts his **PREFLIGHT PROCEDURE**.

PREFLIGHT PROCEDURE

-CAPTAIN

- MASTER LIGHTS TEST AND DIM SWITCH TEST
- EFIS CONTROL PANEL SET *(MINIMUMS REF SELECTOR BARO, MINIMUMS SELECTOR EFFRA, FLIGHT PATH VECTOR SWITCH AS NEEDED, BAROMETRIC REFERENCE SELECTOR IN OR HPA, BAROMETIC SELECTOR SET LOCAL ALTIMETER SETTING, VOR/ADF SWITCHES AS NEEDED, MODE SELECTOR MAP, WEATHER RADAR OFF)*
- MODE CONTROL PANEL SET *(COURSES SET , FLIGHT DIRECTORS ON, IAS TO V2, BANK ANGLE SELECTOR AS NEEDED, ALT SELECTOR TO 4900 FEET UNTIL AIRWAYS CLEARANCE RECEIVED)*
- OXYGEN TEST AND SET
- DISENGAGE LIGHTS TEST
- FLIGHT AND STANDBY INSTRUMENTS CHECK
- PARKING BRAKE SET
- RADIO TUNING PANEL SET
- TRIMS CHECK AND SET
- VERIFY FLIGHT PLAN

PREFLIGHT PROCEDURE

-FIRST OFFICER. TUTORIAL ASSUMES FO WILL DO IT BASED ON DEFAULT CONFIG OPTION.

NOTE: The various tests (CVR, WX RADAR, TCAS, GPWS) are not part of the normal Preflight Procedure, and are not usually run in during everyday operations. They are 'Supplementary Procedures'. However, if you want the FO to run the Supplementary Procedures during his Preflight flow, select the "PREFLIGHT SUP PROC to "YES" in the FS2Crew Config Options.

- *YAW DAMPER ON*
- *NAVIGATION AND DISPLAYS PANEL SET*
- *FUEL PANEL SET*
- *ELECTRICAL PANEL SET*
- *FIRE DETECTION TESTS IF NOT COMPLETED DURING ELECTRICAL POWER UP*
- *EMERGENCY EXIT LIGHTS ARMED*
- *WINDOWS HEAT ON*
- *PROBE HEAT OFF (ON IF COLD WX OPS)*
- *HYDRAULIC PANEL SET*
- *AIR CONDITIONING PANEL SET*
- *CABIN PRESSURIZATION PANEL SET*
- *IGNITION SWITCH RIGHT*
- *LIGHTING PANEL SET*
- *OXYGEN TEST AND SET*
- *DISENGAGE LIGHTS TEST*
- *FLIGHT INSTRUMENTS CHECK*
- *AUTOBRAKE RTO*
- *CARGO FIRE TEST*
- *RADIO TUNING PANEL SET*
- *WEATHER RADAR CONTROL PANEL SET*
- *TRANSPONDER CONTROL PANEL SET*

If "**FUEL UPLOADED REQUIRED**" selected to "YES" on the FS2CREW SETUP page, the ground crew will hand the FO the fuel receipt. The FO will write the numbers down in the book and then state: "**FUEL CHECKS WITHIN 3 PERCENT**". It takes about one minute for the FO to write the numbers in the book.

+11 Minutes or later: Run the Pre Flight Checklist. Speak: "PRE FLIGHT CHECKLIST (PLEASE)".

Checklist Notes:

B = Responded by both flight crew members.
F = Responded by the FO only.
C = Responded by the Captain only.

Items in RED TEXT are to be spoken by you, the Captain.
The FO will respond to many of his own challenges if the item falls within his area of responsibility.

If you ever get stuck on a checklist item due to a speech recognition issue, speak "SET AND CHECKED".

PREFLIGHT CHECKLIST (PLEASE)

OXYGEN (B)	TESTED, 100%
NAV TRANSFER & DISPLAY SWITCHES (F)	NORMAL, AUTO
WINDOW HEAT (F)	ON
PRESSURIZATION MODE SELECTOR (F)	AUTO
FLIGHT INSTRUMENTS (B)	HEADING ____, ALTIMETER ___*
PARKING BRAKE (C)	SET
ENGINE START LEVERS (C)	CUTOFF

- Trigger key phrase is "ALTIMETER XXXX". Example: "ALTIMETER TWO NINE NINE TWO". Ensure this phrase is said clearly and distinctly from the previously spoken Heading value.

- "HEADING" refers to the aircraft heading shown on the PFD, not the heading value dialed in the MCP.

+10 Minutes: Obtain your airways clearance if using ATC. (In FS2Crew, this is done by the Captain, but in real-life it's usually done by the FO). Once you've received the clearance, enter your cleared Altitude in the MCP Altitude Window and set the transponder code.

Next, run the Departure Brief after receiving the airways clearance. There are two options: You can open the FS2Crew SECONDARY PANEL and press DEP to and play the Departure Brief there. Or you can speak: "ARE YOU READY FOR THE DEPARTURE BRIEF?"   Close the brief by asking: "ANY QUESTIONS?"

+7 Minutes: Load sheet arrives. If load sheet arrives in person and not via ACARS (as defined in the Config Options), respond: "THANK YOU/ OKAY THANKS/ THANKS".

+6 Minutes: The Capt and FO will start the BEFORE START PROCEDURE:

BEFORE START PROCEDURE
-FIRST OFFICER

- *CDU PREFLIGHT PROCEDURE COMPLETE (UPDATE ZFW AND ENTER CG)*
- *STAB TRIM SET (NOTE: THIS IS AN APPROXIMATION. FS2CREW CANNOT READ THE ACTUAL TAKEOFF TRIM VALUE FROM THE FMC. YOU MAY NEED TO SLIGHTLY RE-TRIM).*
- *PERFORMANCE DATA CHECK*
- *CDU DISPLAY (SELECT LEGS PAGE)*
- *FLIGHT DECK WINDOW LOCKED*

When the FO updates the ZFW, he will say: "**VERIFY TAKEOFF SPEEDS**". Respond: "VERIFIED" or "CHECKED" or "CONFIRMED". The FO will then clear the scratch pad. Note: You only have 45 seconds to respond.

BEFORE START PROCEDURE
-CAPTAIN

TAKEOFF LANDING DATA CARD COMPLETE
PERFORMANCE DATA CHECK
CDU DISPLAY (SELECT TAKEOFF REF PAGE)
MCP SET (*ARM AUTO THROTTLE, IAS VERIFY V2 SELECTED, ARM LNAV/VNAV AS NEEDED, INITIAL HEADING AND ALTITUDE SET***)**
FLIGHT DECK WINDOWS CLOSED AND LOCKED

When the procedure is complete, speak: "BEFORE START CHECKLIST TO THE LINE".

BEFORE START CHECKLIST TO THE LINE (PLEASE)

FUEL (F)	___ KGS/LBS PUMPS ON
PASSENGER SIGNS (F)	ON
WINDOWS (B)	LOCKED (LOCKED ON THE LEFT)
MCP (B)	V2____, HEADING____, ALTITUDE___*
TAKEOFF SPEEDS (B)	V1____, VR____, V2___*
CDU PREFLIGHT (B)	COMPLETED
RUDDER AND AILERON TRIM (C)	FREE AND ZERO
TAXI AND TAKEOFF BRIEFING (C)	COMPLETED

- Trigger key phrase is "ALTITUDE". Example: "ALTITUDE SEVEN THOUSAND / ALTITUDE FLIGHT LEVEL NINE ZERO". Ensure this phrase is said clearly and distinctly from the previously spoken heading value.

- Trigger key phrase is "VEE TWO". Example: "VEE TWO IS ONE FOUR SIX". Ensure this phrase is said clearly and distinctly from the previously spoken VR value.

At the end of the Before Start Checklist, the FO will ask you if you want to start the APU <u>if</u> the Air Start Cart is not connected and the APU is off. Note that the PMDG LONG PANEL STATE uses the Air Start Cart. Reply "YES PLEASE / GO FOR IT/ OKAY / NO". Note: You have a 10 second window to reply.

+3 Minutes: Cargo and rear doors close.

+1 Minute: Boarding is complete. The FA will ask if she is clear to close the cabin door. Respond: "THANKS IT WILL BE A SHORT TAXI / THANKS/ THANK YOU / THANKS IT WILL BE A LONG TAXI / CLEARED TO CLOSE SHORT TAXI / CLEARED TO CLOSE LONG TAXI". If the Air Start Cart is not connected and the APU is on the busses, the wheel chocks will be automatically removed. The Air Conditioning Cart will also be removed if it is connected.

+1 Minute: If the Air Start Cart is not connected and the APU is running and on the busses, the wheel chocks will be automatically removed. The Air Conditioning Cart will also be removed if it is connected.

+ 0 Minutes: After the FA closes the cockpit door, and after being cleared for engine start/pushback, speak: "BEFORE START CHECKLIST BELOW THE LINE" or simply "BELOW THE LINE". The FO will turn on the Anti Collision light at the same time. Note: If a cabin or cargo door is open, the FO will not run the checklist.

BEFORE START CHECKLIST BELOW THE LINE (PLEASE) / BELOW THE LINE

FLIGHT DECK DOOR (F)	CLOSED AND LOCKED
ANTI COLLISION LIGHT (F)	ON

+ 0 Minutes: Pushback and Engine Start.

PUSHBACK AND ENGINE START:

- For pushback, use the built in PMDG pushback until Ultimate Ground Crew X is released.
- Speak "START SEQUENCE IS TWO THEN ONE". The FO will set the lower display to Engine.
- Use one of the following voice commands to start engine two:

    o START NUMBER TWO ENGINE
    o START ENGINE TWO
    o START RIGHT ENGINE
    o TURN NUMBER TWO

- At around 25 percent N2, manually move the right fuel control lever to IDLE CUTOFF.
- The FO will call "**STARTER CUTOUT**" when the START VALVE LIGHT extinguishes.

Special Note: If you experience that the FO calls "Starter Cutout" before he should, ensure you have no hardware or other controls assigned to the stock FS "<u>Mixture</u>" control event.

- If it's a hot day and you delayed the APU start (if using the APU at all), command the FO to isolate a pack after engine two stabilizes. This will help get cool air to the passengers since the engines can cool the plane faster than APU bleed air. Speak: "ISOLATE A PACK".
- Start Engine 1 using the same procedure.
- Note: If doing a cross bleed start, the start sequence would be one then two.

CROSS BLEED ENGINE START

- Cross bleed starts are usually only done if the APU is inop.
- If required, speak: "START SEQUENCE IS ONE THEN TWO".
- If engine 1 is not running, speak: "START ENGINE ONE".
- After engine 1 has started, advance the throttle on engine 1 until the bleed duct pressure is about 30 PSI.
- Speak: "START ENGINE TWO CROSS BLEED START".

BEFORE TAXI PROCEDURE:

- The FO will automatically start his BEFORE TAXI PROCEDURE after you have called for the Takeoff Flaps. To ask for the Takeoff Flaps, speak, for example, "FLAPS FIVE" or whatever takeoff flap you desire to use.
-

BEFORE TAXI PROCEDURE
-CAPTAIN

- *COMMAND THE FO TO SET THE TAKEOFF FLAP AFTER THE FO SETS THE ENGINE START SWITCHES TO CONTINUOUS*
- *FLIGHT CONTROLS CHECK PERFORM (AFTER GROUND CREW CLEARED TO DISCONNECT)*

BEFORE TAXI PROCEDURE
-FIRST OFFICER

- *BLANK LOWER SCREEN. NOTE: THIS AIRLINE DOES NOT HAVE THE 'FLIGHT CONTROLS' PAGE OPTION, SO IT WILL NOT BE DISPLAYED.*
- *EAI/WAI ON IMMEDIATELY AFTER ENGINE START IF REQUIRED*
- *ENGINE GENERATORS ON*
- *PROBE HEAT ON*
- *PACKS AUTO*
- *APU OFF*
- *ENGINE START SWITCHES CONTINOUS*
- *TRANSPONDER AS REQUIRED*
- *RECALL*

- After disconnecting the ground crew, run the flight controls check.
- Speak: "CONTROLS CHECK" or "FLIGHT CONTROLS CHECK."
- Move the control column fully left and speak "FULL LEFT… CENTER".
- Move the control column fully right and speak "FULL RIGHT… CENTER"
- The FO will respond "**CHECKED**".
- Perform the same check with the elevators: "FULL UP… FULL DOWN… CENTER."
- Then rudders: "FULL LEFT… CENTER… FULL RIGHT… CENTER".
- When the controls check is complete, speak: "DISPATCH CLEARANCE". The FO will respond "**CONFIRMED**".
- Now it's time to run the Before Taxi Checklist. Speak: "BEFORE TAXI CHECKLIST (PLEASE)".
- If it's night, the FO will turn off the Dome Light at the end of the checklist.

BEFORE TAXI CHECKLIST (PLEASE)

GENERATORS (F)	ON
PROBE HEAT (F)	ON
ANTI-ICE (F)	_____
ISOLATION VALVE (F)	AUTO
ENGINE START SWITCHES (F)	CONT
RECALL (F)	CHECKED
AUTOBRAKE (F)	RTO
ENGINE START LEVERS (C)	IDLE DETENT
FLIGHT CONTROLS (C)	CHECKED
DISPATCH CLEARANCE (B)	CHECKED

COLD WEATHER PROCEDURES

- During the Before Taxi procedure, instead of calling for the Takeoff Flaps, speak: "LEAVE THE FLAPS UP FOR TAXI".
- When near the runway, call for the desired takeoff flap PRIOR to calling for the BEFORE TAKEOFF CHECKLIST. Example: "FLAPS 5".

TAXI:

- Look out the left window and speak "CLEAR LEFT / CLEAR ON THE LEFT" after receiving your taxi clearance.
- Turn on the Taxi and Runway Turnoff lights as desired.
- Taxi to runway.
- As an option, speak "ARE YOU READY FOR THE DEPARTURE REVIEW?" If you wish to do that, just mention the takeoff flaps setting, confirm the runway to be used along with the entry point, confirm that the V speeds are set on the PFD and state the limiting or cleared altitude/flight level. Example:

"FLAP 5, RUNWAY 33, ALPHA 3, V SPEEDS SET, CLIMBING TO 7000". You may wish to engage **HARD MUTE** while you do this to avoid undesired voice commands from being detected by the system. Close the brief by speaking "ANY QUESTIONS?"

APPROACHING RUNWAY:

- Run the BEFORE TAKEOFF CHECKLIST. Speak: "BEFORE TAKEOFF CHECKLIST (PLEASE)".
- The FA will notify the cockpit that the cabin is secure. You will hear two chime sounds. The FO will then announce "**CABIN SECURE**". Note: You cannot takeoff until the cabin is secure. You may line-up and wait on the runway while waiting for the cabin secure call.

BEFORE TAKE OFF CHECKLIST (PLEASE)

FLAPS (C)	FLAPS 5 GREEN LIGHT
STABILIZER TRIM (C)	5 POINT 4 UNITS

Note: The Stabilizer trim will only accept a trim setting to one decimal place. So 5.0 Units will work, but not 5.58 units. You are supposed to be looking at the trim handle, not the CDU for the trim setting.

Note: You could also say, for example "FLAPS FIVE FIVE FIVE GREEN LIGHT". First checking and pointing to the Takeoff Data Card, second the CDU and the third one the actual flap setting.

RUNWAY ENTRY PROCEDURE AND TAKEOFF:

- Speak: "RUNWAY ENTRY PROCEDURE / BEFORE TAKEOFF PROCEDURE/ CLEAR TO BACK TRACK /LINE UP ONLY"
- Speak: "CLEAR LEFT / CLEAR ON THE LEFT" when crossing or entering the runway.

BEFORE TAKEOFF PROCEDURE

-PILOT FLYING

- *LDG LIGHTS ON (FIXED ON. RETRACTS ON WHEN T/O CLEARANCE RECEIVED)*
- *TAXI LIGHT OFF*
- *WXR ON (EFIS)*

BEFORE TAKEOFF PROCEDURE

-PILOT MONITORING

- *CYCLE FASTEN BELT SIGNS*
- *STROBES ON*
- *SELECT TERRAIN IF REQUIRED*

- When cleared for takeoff by ATC, set the FIXED and RETRACTABLE LANDING LIGHTS to ON. Set the TAXI LIGHT to OFF if it's still on.
- Advance the thrust levers to 40%, wait for the engines to stabilize, then press TOGA.
- Speak: "SET TAKEOFF THRUST".
- PM will call "**THRUST SET**" and "**80 KNOTS**".
- When the PM calls 80 Knots, speak "CHECKED" to confirm you are not incapacitated and that the ASI's agree.
- The PM will call "**V1**" if V1 is not selected an aircraft auto-callout.
- When the PM calls "**ROTATE**", pitch the nose up.
- After the PM calls "**POSITIVE RATE**", speak: "GEAR UP".
- Note: The PM will not announce "GEAR UP" because it's Boeing practice not to say anything between V1 and 400 feet except for "ROTATE" and "POSITIVE RATE", even if you have a failure. At 400 feet, announce FMA roll mode and subsequent FMA changes.

REJECTED TAKEOFFS

- If Speak: "REJECT REJECT".
- If you want to return to the runway, speak: "LETS TAXI BACK TO THE RUNWAY". Ensure you don't stow the speed brake while the mode displays 'Okay to Clean Up' or you may trigger the FO's After Landing procedure.
- If desired, you make the following voice commands should an evacuation be required: "THIS IS THE CAPTAIN EVACUATE EVACUATE EVACUATE" or simply "EVACUATE EVACUATE EVACUATE".

- You may also wish to make PAs from the **PA - QRH** screen in the SECONDARY PANEL depending on the context.

VOICE CONTROL REMINDERS!

If you ever get stuck on a checklist item, speak: "SET AND CHECKED" to advance to the next item.

If an autopilot value don't stop when it should, speak "CANCEL LAST COMMAND".

CLIMB:

- If LNAV was not armed on the ground, engage a lateral mode at 400 feet. If the autopilot is on, press LNAV yourself since the MCP is the Pilot Flying's area of responsibility with the autopilot on. If the autopilot is off, speak: "ENGAGE LNAV / SELECT LNAV / ENAGE HEADING SELECT / SELECT HEADING SELECT". Note that this airline uses the command "**Engage**" instead of 'Select'.
- If not using VNAV and the autopilot is off, speak: "BUG UP" passing the acceleration altitude. The PM will then set the Flaps Up Speed in the airspeed window. However, if the autopilot is on, then you control the autopilot panel and you would set the Flaps Up Speed manually.
- Retract the flaps on schedule using the following commands (assuming takeoff was done at Flaps 5): "FLAPS 1", "FLAPS UP / FLAPS ZERO".
- The PM will start his AFTER TAKEOFF PROCEDURE automatically when the flaps are up and the aircraft is <u>above the clean speed</u>.

AFTER TAKEOFF PROCEDURE
-PILOT MONITORING
- *ENGINE START SWITCHES OFF (UNLESS ANTI ICE IS ON)*
- *AUTOBRAKE OFF*
- *GEAR OFF*

- Speak "AFTER TAKEOFF CHECKLIST (PLEASE)"
- The PM will perform entire checklist on his own, but you should monitor the checklist to ensure everything is set correctly.
- Shortly after completing the After Takeoff Checklist, the PM will ask you if you want to release the Cabin Crew so they can start their service. Speak: "YES/ OKAY/ GO FOR IT/ NO".
- In real-life, the Pilot Flying (that's you!) would usually turn on the autopilot himself, but if you want the PM to turn on the autopilot you may use this voice command: "SELECT AUTOPILOT ON (PLEASE) / SELECT COMMAND A (PLEASE)".
- If VNAV was not armed on the ground, engage VNAV when desired. If the autopilot is on, press VNAV on the MCP panel. If the autopilot is off, speak: "ENGAGE VNAV/ SELECT VNAV".
- At 10,000 feet, the PM will turn off the fixed landing and runway turnoff lights unless otherwise selected in the FS2Crew CFG Options. (Some airlines, for example, only turn off the landing lights at the Transition Altitude).
- The PM will ask you if you want to release the cabin (the passengers) after passing 10,000 feet above the departure airport elevation. Speak: "YES/ OKAY/ GO FOR IT/ NO".
- Above 10,000 feet, speak: "DETUNE THE NAVS". The PM will set 108.0 in NAV 1 and 2.
- When you reach your cruising altitude above FL300, set the bank angle selector to 10 degrees.

WORKING WITH THE FMC:

If making a change in the FMC, prior to pressing the EXEC button, speak: "CONFIRM EXECUTE". The PM will reply "CONFIRM". You can then press the EXEC button.

CREW COORDINATION TIPS:

With the autopilot on, only you as the PF should touch the autopilot panel. However, if you change an autopilot value, you should inform the PM as part of good Crew Resource Management. If, for example, you manually set Speed 250 in the Speed window, you can speak: "SPEED 250". The PM will respond: "CHECKED".

TRANSITION ALTITUDE:

- Passing the Transition Altitude (as defined in the PMDG FMC), the FO will call TRANSITION.
- Speak: "SET STANDARD".
- The PM will respond "**STANDARD SET, PASSING XXXX ALTITUDE….. NOW**!"
- Speak: "CHECKED".
- The PM should de-select Terrain on his display at 10,000 feet or the Transition Altitude, whichever is higher.

CRUISE:

- When reaching cruise level, speak: "MAINTAINING FLIGHT LEVEL XXX ON STANDARD".
- If you wish to communicate with the FA, press the **CALL ATTD** button on the overhead panel or open the **FA PAGE** in the **SECONDARY PANEL**. If you press the CALL ATTD button, you will hear a chime a few seconds later when the Cabin contacts you. Speak: "HELLO FLIGHT DECK" to answer the FA. Use the available responses from the MAIN OPS Manual to reply.
- In cruise, there is not much to do other than monitor the instruments.

DESCENT PROCEDURE

- Approximately 150 miles back of the Top of Descent, speak "YOU HAVE CONTROL".
- The First Officer is now the Pilot Flying and you are the Pilot Monitoring, and you now are responsible for all areas in the aircraft that fall under the Pilot Monitoring's area of responsibility.
- Start setting up the aircraft for the descent.

     DESCENT PROCEDURE
     -PILOT MONITORING (THAT'S YOU NOW!)
- *VERIFY PRESSURIZATION SET TO LANDING ALTITUDE*
- *ENTER VREF ON APPROACH REF PAGE*
- *SET RADIO/BARO MINS*
- *SET OR VERIFY NAVIGATION RADIOS AND COURPSE FOR THE APPROACH*
- *CHECK LANDING PERFORMANCE*
- *SET THE AUTOBRAKE*
- *PERFORM APPROACH BRIEF*
- *PRESS RECALL*

Note: VREF doesn't account for a change in landing weight, so adjust the landing weight to below the current weight listed on the APP REF page. For example, if the current fuel is 4.2 and the landing fuel is 3.2, adjust the landing weight to 1.0 tons below the current weight. This is very important to do at max landing weight.

Note: FS2Crew cannot setup the PM's EFIS panel. You will need to do it manually if desired.

Note: VERY IMPORTANT: YOU MUST MANUALLY ENTER THE TRANS LEVEL IN THE DESCENT FORECAST PAGE. FS2CREW NEEDS THAT VALUE TO COMPUTE THE TRANSITION CALL IN THE DESCENT.

- After you have pressed RECALL and completed the PM's descent flow, speak: "I HAVE CONTROL".
- You are now back to being the Pilot Flying.
- The Descent checklist should be completed prior to leaving the cruise altitude.
- Speak: "DESCENT CHECKLIST (PLEASE)".

DESCENT CHECKLIST (PLEASE)

PRESSURIZATION (PM)	LAND ALT___
RECALL (PM)	CHECKED
AUTOBRAKE (PM)	___
LANDING DATA (B)	VREF__, MINIMUMS__FEET*
APPROACH BRIEFING (PF)	COMPLETED

---

*NOTE: For '**Landing Data'**, XXXX FEET is the trigger. Ensure that is said clearly and distinctly. Speak "SET AND CHECKED" if stuck.

- At the TOD, set the bank angle selector to 25.
- Passing 20,000 feet, the PM will make a PA: "**CABIN CREW PREPARE FOR LANDING".**
- Passing 10,000 feet or the TL, whichever is higher, the PM will turn on the fixed landing lights, the logo lights as required and set the seatbelts signs to on. The PM will also select Terrain on his side. The PF should always have radar on during the descent unless required by specific approach procedures. If AUTOLAND was selected in the APPROACH BRIEF for the APPROACH TYPE, the PM will turn on the APU for electrical redundancy.

PASSING THE TRANSITION LEVEL:

- Ensure that you entered a TRANSITION LEVEL value on the PMDG 737's FMC's DESCENT FORECAST PAGE. That value is used to trigger the PM's transition level call.
- PM: "**TRANSITION**".
- PF: "SET QNH (PLEASE) / SET ALTIMETERS (PLEASE)".
- PM: "**___ SET, PASSING___, NOW**".
- PF: CHECKED.
- During this procedure, set QNH on your PFD and standby altimeter/ IFSD.
- Special note: During descent, even if above the TL, QNH must be set before crossing the IAF, vectors to final or base to final as a part of the Approach Procedure and prior to the Approach Checklist. This can sometimes pose a problem in Asia or Europe where the Transition Levels can be as low as FL35. If you need the Pilot Monitoring to set QNH prior to crossing the TL, speak "SET TRANSITION / SET QNH/ SET ALTIMETERS".
- For an ILS/LOC approach, select the ILS frequency if it is standby and identify.

APPROACH:

- After passing the Transition Level, Speak: "APPROACH CHECKLIST (PLEASE)".

APPROACH CHECKLIST (PLEASE)
ALTIMETERS (B)   ____ SET

Example response. 2992 SET. 1013 SET.   You must say "__SET__" at the end or the FS2Crew Mode will not change to the next mode.

- At 5000 AFE, the PM will call: "**FIVE THOUSAND**" and cycle the fasten belts switch twice to alert the cabin crew that landing. Respond: "CHECKED".
- Note: The cabin crew does not phone the flight deck to inform the crew that the cabin is secure, but you will hear a double chime to advise the flight cabin is secure.

SHOOTING THE APPROACH:

- Use HDG SEL or LNAV to intercept the final approach course. If using LNAV, ensure the localizer is captured as it might parallel the approach course.
- Arm APP Mode. If dual channel approach desired, arm second autopilot.
- At approx. 14nm, speak: "FLAPS 1"   (Special Tip: If the autopilot off, speak: "FLAPS 1 MATCH SPEED". The PM will set Flaps 1 speed for you. You can use this same syntax for the subsequent flap calls as well.
- At approx. 12nm, speak: "FLAPS 5".

> **TRANSITITIONING TO A VISUAL APPROACH:**
>
> If you can see the runway and you wish to continue visually, speak: "VISUAL". That will change the Approach Type to Visual. Then speak: "CANCEL THE BAROS/ RESET THE BAROS". You should then press the RST button on your MINS selector. The PM will stop making callouts relevant to the instrument approach. Note: On a Visual approach, you should call "CYCLE FLIGHT DIRECTORS" or "RECYCLE THE FLIGHT DIRECTORS" after the autopilot is disengaged.

- The PM will call "**LOCALIZER ALIVE**" and "**GLIDESLOPE ALIVE**". Speak "CHECKED". Note: Your heading bug and ILS course bug must be within 90 degrees of each other for this call to be triggered.
- At approx. 2000 feet, speak: "GEAR DOWN FLAPS 15". Arm the speed brake.
- The FO will warn you if the speed brakes are still up with Flaps 15 set.
- When the Radar Altimeter comes alive, the PM will make a PA: "**CABIN CREW TAKE YOUR SEATS**."
- At approx. 1500 feet, speak: "FLAPS 30/40".
- Assuming the autopilot is on, manually set the Missed Approach Altitude in the MCP at Glideslope Capture. If the autopilot is off, command the PM to set the Missed Approach Altitude. Speak: "SET MISSED APPROACH ALTITUDE".
- If autopilot not engaged, speak: "SET VREF PLUS ___"
- If autopilot engaged, manually set VREF plus additive.
- Passing the Outer Marker or FAF/FAP, the PM will call "**OUTER MARKER / FINAL APPROACH FIX, HEIGHT CHECKED, MISSED APPROACH ALTITUDE SET**". Speak: "CHECKED".
- After the final landing flap has been selected, speak: "LANDING CHECKLIST".

LANDING CHECKLIST (PLEASE)

ENGINE START SWITCHES (PF)	CONTINUOUS
SPEEDBRAKE (PF)	ARMED
LANDING GEAR (PF)	DOWN
FLAPS (PF)	FLAPS 15/30/40 GREEN LIGHT

- When passing 100 feet, the PM will call "**STABLE**" or "**NOT STABLE**".
- If autopilot not engaged, speak: "BUG VREF PLUS ___"
- If autopilot engaged, manually set VREF plus additive.
- If the weather is bad, the PM will call "**RUNWAY/ APPROACH LIGHTS**" when the runway comes into view.
- Speak: "CLEARED" when cleared to land by ATC. Turn the Retractable landing lights on.
- Speak: "CHECKED" to acknowledge the PLUS HUNDRED callout.
- At minimums, speak: "LANDING" if the required visual reference is established.
- If you need to go around, speak: "GO AROUND FLAPS 15" and check the GO AROUND SECTION below.

GO AROUND PROCEDURES

- Push the TO/GA switch
- Speak: "GO AROUND / GO AROUND FLAPS 15".
- After the PM announces "**POSITIVE RATE**", speak: "GEAR UP CHECK THRUST".
- The PM will set the landing gear up, very thrust set and call "**THRUST SET**".
- At or above 400', select or call for a lateral roll mode.
- At the acceleration altitude, speak: "BUG UP" if VNAV and autopilot are not engaged.
- Retract the flaps on schedule and call for the "AFTER TAKEOFF CHECKLIST".

ROLLOUT

- The PM will announce the status of the speed brakes and reverses. "**SPEED BRAKE UP/ NOT UP/ REVERSES NORMAL**".
- If doing an autoland, the PM will call "**100**" and "**80 KNOTS**".
- The PM will call "**60 KNOTS**". Speak: "CHECKED".
- The PM will call auto brakes disarmed. Speak: "CHECKED".

AFTER LANDING

To trigger the FO's after landing flow, position the speed brake down or speak "OKAY TO CLEAN UP".

AFTER LANDING PROCEDURE
-CAPTAIN
- *SPEED BRAKE DOWN*
- *LANDING LIGHTS OFF*
- *TAXI LIGHT ON*
- *RUNWAY TURN OFF LIGHTS AS REQUIRED*
- *WX RADAR (EFIS PANEL) OFF*

AFTER LANDING PROCEDURE
-FIRST OFFICER

- *PROBE HEAT SWITCHES OFF*
- *STROBE LIGHT OFF*
- *ENGINE START SWITCHES OFF (UNLESS ANTI ICE REQUIRED)*
- *WEATHER RADAR (FO'S EFIS PANEL) OFF*
- *AUTOBRAKE OFF*
- *FLAPS UP (FLAPS 15 IF CONTAMINATED)*
- *START TIMING FOR 3 MINUTE ENGINE COOL DOWN*
- *APU AS REQURED (FO ACTION BASED ON APPROACH BRIEF SELECTION)*

Note: If, in the APPROACH BRIEF, you selected **POWER/AIR: APU (DELAYED START)**, the FO will NOT start the APU on his own. You will need to tell him when to start the APU. Speak: "START THE APU".

If, in the APPROACH BRIEF, you selected **POWER/AIR: APU (A.LDG PROC)**, the FO will start the APU on his own during his After Landing flow.

Note: When the FO turns off the probe heat, he will announce "**MASTER CAUTION ANTI-ICE**". Respond: "CHECK".

- If you need to cross any runways, speak: "CLEAR LEFT / CLEAR ON THE LEFT" prior to crossing the runway.

TAXI IN

- If you require APU power, and if you did not select the FO to automatically turn on the APU during the AFTER LANDING PROCEDURE in the APPROACH BRIEF, speak "TURN ON THE APU / START THE APU" when desired. Turn it on as late as possible to save fuel.
- If desired, shut down engine number two to save fuel. See the Engine Shutdown procedure described after the TAXI section in this tutorial.
- Just prior to turning into the gate or stand, speak: "LIGHTS AND DOORS". The FO will turn off the taxi and runway turnoff lights and make the following PA: "**CABIN CREW DISARM DOORS AND CROSSCHECK**."
- If the APU is running, he will put the generators on the APU and state: "**DOORS DISARMED, APU ON THE BUS**".   If the APU is not running, he will state: "**DOORS DISARMED, NO APU**."

SINGLE ENGINE TAXI:

- If you wish to shut down an engine during taxi to save fuel, follow this procedure.
- Wait three minutes for engine cool down prior to shutting down the number two engine. The FO will announce when three minutes are up.
- Note that the area of responsibility for the engine fuel lever depends on if the aircraft is moving or stationary.
- You may experience a ground friction problem that can make single engine taxiing very difficult. You may wish to use this solution.

  - ✓ Install FSUIPC if you do not already have it (www.schiratti.com)
  - ✓ Go to this folder in your FS directory: **/Modules/FSUIPC Documents/Example LUA Plugins.zip**
  - ✓ Copy "DynamicFriction.lua" from that zip file and put it in your **FS/Modules folder**.
  - ✓ Open your **FSUIPC4.ini** file with Notepad.
  - ✓ Add these lines:
    - **[Auto]**
    - **1 = LUA DynamicFriction**

IF AIRCRAFT MOVING:

- Speak: "SHUTDOWN RIGHT ENGINE / SHUTDOWN NUMBER TWO ENGINE"
- The FO will place his virtual hand on the engine two start lever.
- The FO will speak: "**ENGINE START LEVER NUMBER TWO CONFIRM**".
- Speak: "CONFIRMED".
- The FO will then set the FUEL LEVER to CUTOFF for engine two.

IF AIRCRAFT STATIONARY:

- Put your mouse on the number two start lever and speak: "ENGINE START LEVER NUMBER TWO CONFIRM".
- The FO will respond "**CONFIRMED**".
- Manually set FUEL LEVER #2 to CUTOFF.

GATE/STAND ARRIVAL

- When you park at the gate or stand, set the parking brake and ensure the **taxi light is off**.
- THE TAXI LIGHT MUST BE OFF as it is a necessary condition for the FO's shutdown flow to initiate.
- If the three minute engine cool down time has been reached, the FO will announce: "**THREE MINUTES**", otherwise he'll announce that three minutes have not been reached. If the APU is not on the busses or no Ground Power is available, the FO will announce that no power is available.

GATE/STAND ARRIVAL SHUTDOWN

SHUTDOWN PROCEDURE
-CAPTAIN

- *PARKING BRAKE SET*
- *ENGINE START LEVERS CUTOFF (ENSURE POWER SOURCE AVAILABLE FIRST AND THREE MINUTE COOL DOWN TIME REACHED!)*
- *NOTE: IF TAXIING IN WITH GND PWR AND NO APU, CUTOFF NUMBER 2 ENGINE, WAIT FOR THE GROUND POWER TO BE APPLED, THEN CUTOFF NUMBER 1 ENGINE.*
- *FLIGHT DIRECTOR OFF*

SHUTDOWN PROCEDURE
-FIRST OFFICER

- *APU OR GPU ON THE BUSSES*
- *SEATBELTS OFF*
- *ANTI COLLISION LIGHT OFF*
- *FUEL PUMPS OFF (UNLESS APU RUNNING)*
- *ENGINE START SWITCHES OFF*
- *ANTI ICE OFF*
- *ELEC HYDRAULIC PUMPS OFF*
- *PACKS AUTO*
- *ISOLATION VALVE OPEN*
- *APU BLEED ON (IF USING APU)*
- *FLIGHT DIRECTOR OFF*
- *STAB TRIM 4 UNITS*
- *MCP ALT 4900*
- *MCP IAS 100*
- *XPONDER 3000*
- *TRANSPONDER STANDBY*
- *RESET TIMER*

When the shutdown procedure is complete, call for the SHUTDOWN CHECKLIST.

SHUTDOWN CHECKLIST (PLEASE)

FUEL PUMPS (F)	OFF
PROBE HEAT (F)	OFF/AUTO
HYDRAULIC PANEL (F)	SET
FLAPS (F)	UP
PARKING BRAKE (C)	SET /RELEASED
ENGINE START LEVERS (C)	CUTOFF
WEATHER RADAR (B)	OFF

If you want to make a second flight, you do NOT need to reload the aircraft. Instead, press the down arrow button on the FS2Crew Main Panel, skip over the SECURE CHECKLIST. You will be returned to the PRE-FLIGHT CHECKLIST.

Note: If you unlock the cockpit door via the knob on the center console, you can hear the passengers deplaning.

SECURING THE AIRCRAFT

If you wish to secure the aircraft, use the following procedure:

- Speak: "SECURE THE AIRCRAFT PLEASE".
- After the FO completes his flow, speak: "SECURE CHECKLIST".

SECURE PROCEDURE
-FIRST OFFICER
- *IRS'S OFF*
- *EMERGENCY EXIT LIGHTS OFF*
- *WINDOW HEAT OFF*
- *PACKS OFF*

SECURE CHECKLIST (PLEASE)

IRSs (F)	OFF
EMERGENCY EXIT LIGHTS (F)	OFF
WINDOW HEAT (F)	OFF
PACKS (F)	OFF

-TUTORIAL END-