



## FLYING AS THE PILOT MONITORING (FROM TAKEOFF TO ROLLOUT)

FS2Crew allows users to assume the role of **Pilot Monitoring (PM)**.

Currently, users can be the PM from the start of the takeoff roll to just after the 70 knots callout during the landing rollout.

*(Sidebar: This is not an unrealistic limit. If the FO is the Pilot Flying, a lot of airlines don't allow the FO to taxi anyway so the pilots exchange controls right before takeoff and during the landing roll. In future updates if we can figure out how to make the plane taxi by itself, we may be able to allow users to be the PM for the entire flight.)*

Important limitations to know when flying as the Pilot Monitoring:

1. The Pilot Flying (which is now essentially your computer) is more or less **blind**. He cannot react to ATC, and his ability to "see" his environment is very restricted. Therefore, to truly fly hands-off as the PM, you must fly a route from takeoff to touchdown with no route discontinuities and no ATC vectoring or altitude assignments. Basically, you need an uninterrupted, fully managed route using maximum automation that can be flown hands off. If you want to fly with on-line or a 3<sup>rd</sup> party ATC program, be prepared to step in and help the PF with altitude and heading selections.
2. The computer PF is only capable of landing using autoland off an ILS approach. Selected-Selected Non-Precision Approaches are obviously not possible! Note: Even if you're landing on a runway not certified for autolands, you can still do it. Airbus says it's legal to do so long as you keep a very close eye on things!
3. Due to technical limits, FS2Crew cannot directly read the FMA. However, FS2Crew can "guess" what a lot of the FMA callouts will be and generate them accordingly for the PF -but don't expect 100 percent perfection! That said, if the PF fails to announce the FMA, feel free to step in for him. According to Airbus, it's okay for the PM to announce the FMA if the PF misses a callout. Based on Airbus philosophy, unless specified differently, all armed modes with the associated color should be called out (i.e., "Glideslope Blue"), and all active modes without the associated color (i.e., "NAV") should be announced.

4. During takeoff, the computer PF cannot hold the centerline. Therefore, be prepared to step in with the rudder to help the PF hold the centerline, especially on a windy day. The computer PF, however, will rotate when you announce Rotate. The computer will aim for a rotation rate of 3 degree per second to 15 degrees, but again, don't expect perfection. You may need to step in. When the PF commands you to engage the autopilot, do not delay!
5. It's important that the Departure and Approach Brief Pages (FS2Crew Secondary Panel) be filled out in full. A lot of data FS2Crew needs comes directly from there, since much of that data cannot be read directly out of the aircraft due to interface limits.
6. In the instructions below, spoken phrases to be issued by the user are highlighted in **RED**. Phrases to be issues by the simulated Pilot Flying are marked in **PURPLE**.
7. If using VOICE CONTROL, it's recommended that you keep the Green Bar visible at all times so you can confirm that the speech recognition system is detecting the intended phrase. It's also a good idea to check the FS2Crew Main Panel to confirm you're in the REQUIRED FS2CREW MODE.
8. The tutorial does not currently work in BUTTON CONTROL.

EVENT	PILOT MONITORING	PILOT FLYING	REQUIRED FS2CREW MODE	DEVELOPER NOTES
CONTROL HANDOVER	I HAVE CONTROL	YOU HAVE CONTROL	TAKEOFF	

**EXTRA NOTES:**

As the Pilot Flying, line up on the runway. Ensure the Before Takeoff Checklist is completed "**Below the Line**" and all flow actions are complete. If desired, set the parking brake. When everything is 100 percent setup, pass control to the other pilot by speaking: **YOU HAVE CONTROL**.

At that point, your role has now changed: You are now the Pilot Monitoring and the computer is the Pilot Flying.

**IMPORTANT:**

Be prepared to help the PF hold centerline with the rudder. The simulated Pilot Flying cannot track the centerline by himself.

The PF will rotate when you call **ROTATE**. He'll aim for 15 degrees nose up at 3 degrees per second. Again, it may not be perfect, and your joystick calibration may cause problems, so be prepared to step in.

The PF will call for the Autopilot On shortly after takeoff.

Whether the PF calls for Autopilot 1 or 2 depends on your Crew Member Seat selection.

<b>READY TO START TAKEOFF</b>	<p>-PRESS CHRONO AFTER FLEX/TOGA SELECTED</p> <p>-IF USER IS CM1 (THE CAPTAIN), KEEP HAND ON THRUST LEVER UNTIL V1</p> <p>*FMA: <b>CHECKED</b></p>	<p><b>TAKEOFF</b></p> <p>-SET THRUST TO 50% THEN FLEX/TOGA BASED ON APPROACH BRIEF SELECTION</p> <p>-PRESS CHRONO</p> <p>-ANNOUNCE FMA</p> <p>-SIDESTICK FORWARD UNTIL 100 KTS</p>	TAKEOFF	
<b>TAKEOFF ROLL</b>	<p><b>THRUST SET 100 KNOTS V1 ROTATE</b></p>	<b>CHECKED</b>	TAKEOFF ROLL	
<b>INITIAL CLIMB</b>	<p><b>POSITIVE CLIMB GEAR UP</b></p>	<b>GEAR UP</b>	INIT CLIMB	ANNOUNCE GEAR UP WHEN YOU SEE RED UNLK LIGHTS ON THE GEAR PANEL ILLUMINATE. THE PHYSICAL POSITION OF THE GEAR HANDLE IS NOT SUFFICIENT.
<b>CLIMB</b>	ENGAGE COMMANDED AUTOPILOT AS	<b>AUTOPILOT 1(2) ON</b>	AFTER TAKEOFF CLIMB CHECKLIST	

	DIRECTED BY THE PF	FMA CALLOUTS AND LEVER CLIMB AT THE THRUST REDUCTION ALTITUDE		
<b>CLEAN UP</b>	<p><b>SPEED CHECKED, FLAPS XX</b></p> <p>AFTER FLAPS UP:          -DISARM GROUND SPOILERS          -TAXI AND RUNWAY TURN OFF LIGHTS OFF          -APU BLEED/MASTER AS REQD          -ENG MODE SELECTOR AS REQUIRED          -TCAS TARA          -ANTI ICE AS REQD</p>	FLAPS XX	AFTER TAKEOFF CLIMB CHECKLIST	WHEN RAISING THE FLAPS AS COMMANDED, ANNOUNCE THE FLAP POSITION AFTER CONFIRMING FLAP MOVEMENT ON THE UPPER ECAM. THE PHYSICAL POSITION OF THE FLAP HANDLE IS INSUFFICIENT PROOF THAT THE FLAPS ARE ACTUALLY MOVING!
<b>PASSING GREEN DOT SPEED</b>	<p><b>LANDING GEAR FLAPS PACKS DOWN TO THE LINE</b></p>	<p>AFTER TAKEOFF CLIMB CHECKLIST</p> <p>UP RETRACTED ON</p>	AFTER TAKEOFF CLIMB CHECKLIST	DO NOT FORGET TO SPEAK <b>“DOWN TO THE LINE”</b> . THAT’S THE TRIGGER FOR THE NEXT MODE CHANGE.
<b>PASSING TRANSITION ALTITUDE</b>	<p><b>STANDARD CROSSCHECKED. PASSING FLIGHT LEVEL XX...</b></p> <p><b>NOW</b></p>	<p>SET STANDARD</p> <p>CHECKED</p>	CRUISE	

	<p>BARO REF STANDARD SET</p> <p>AFTER TAKEOFF CLIMB CHECKLIST COMPLETE</p>	<p>BELOW THE LINE</p> <p>STANDARD SET</p>		
<p><b>10,000 FEET</b></p>	<p>FLOW:</p> <ul style="list-style-type: none"> <li>-LANDING LIGHTS RETRACT</li> <li>-SEAT BELT SWITCH. SPEAK: <b>CONFIRM SEAT BELTS OFF</b></li> </ul> <p>THEN SET THE SEAT BELT SELECTOR TO OFF.</p> <ul style="list-style-type: none"> <li>-EFIS: AS REQD (USUALLY SELECT AIRPORT)</li> <li>-NAVAIDS: <b>CONFIRM CLEAR RAD NAV</b></li> </ul> <p>CLEAR ANY HARD TUNED NAVAIDS ON THE RADIO PAGE IN THE MCDU</p> <ul style="list-style-type: none"> <li>-SEC FLIGHT PLAN PAGE ON MCDU <b>CONFIRM COPY ACTIVE TO SECONDARY</b></li> <li>-OPT/MAX ALT ON MCDU PROGRESS PAGE</li> </ul>	<ul style="list-style-type: none"> <li>-EFIS: AS REQD (USUALLY LEAVE IT ON CONSTRAINT)</li> <li><b>CONFIRM</b></li> <li><b>CONFIRM</b></li> <li><b>CONFIRM</b></li> </ul>	<p>CRUISE</p>	<p>WHEN SPEAKING <b>"CONFIRM SEAT BELTS OFF"</b>, THE PF WILL ALWAYS RESPOND <b>CONFIRM</b> REGARDLESS OF THE WEATHER OR TURBULENCE SITUATION BECAUSE WE CAN'T DETECT TURBULENCE. OVERRIDE HIM IF DESIRED.</p>

	<p>CRUISE FLIGHT LEVEL IS XXX</p> <p>OPTIMUM FLIGHT LEVEL IS XXX</p> <p>RECOMMENDED MAX FLIGHT LEVEL IS XXX</p> <p>ARE YOU HAPPY WITH FLIGHT LEVEL XXX?</p>	AFFIRMATIVE		
1000 FEET BEFORE CLEARED ALTITUDE	<p>1000 TO GO</p> <p>-TCAS BELOW</p>	CHECKED	CRUISE	
CRUISE (ALTIMETER/RVSM CHECK)	<p>CRUISING FLIGHT LEVEL XXX</p>	<p>CHECKED</p> <p>-ECAM MEMO/SD PAGE REVIEW</p> <p>-FLIGHT PROGRESS CHECK</p> <p>-FUEL MONITOR</p> <p>-NAV ACCURACY MONITOR</p> <p>-RADAR ADJUST AS REQD</p>	CRUISE	<p>THE CRUISING FLIGHT LEVEL XX ALTIMETER/RVSM CHECK IS AIRLINE SPECIFIC. IT'S NOT REQUIRED TO MAKE IT.</p>

## SETTING UP FOR ARRIVAL

Prior to the Top of Descent point, the crew members swap controls (Pilot Flying becomes Pilot Monitoring). This allows the original Pilot Flying to setup the aircraft for the approach without being distracted by flying duties.

FS2Crew does not have the ability to setup the MCDU by itself for the approach by itself due to technical limits, so you must do this task for the other pilot on his behalf.

If you're not sure how to program the MCDU, please consult the manuals that came with your aircraft. FS2Crew assumes you generally know how to fly the plane and program the MCDU.

To setup the aircraft for the approach, follow the **PABBA** acronym.

**P:** Plan Mode on EFIS

**A:** ATIS

**B:** Build "the Mexican Hat". Setup the MCDU in this order:

1<sup>st</sup> – FLIGHT PLAN PAGE

2<sup>nd</sup> – RAD NAV PAGE

3<sup>rd</sup> – PROGRESS PAGE

4<sup>th</sup> – PERFORMANCE PAGE

5<sup>th</sup> – FUEL PREDICTION PAGE

6<sup>th</sup> – SECONDARY FLIGHT PLAN PAGE



**B:** Brief approach.

The Pilot Flying Briefs approach (but FS2Crew can't do that), so you just have to pretend for this part.

**A:** Approach Checklist (Usually deferred until setting local QNH).

When complete, perform the following tasks:

- Autobrake as required
- GPWS Landing Flap 3 as required on overhead

We'll assume at this point you've resumed your normal "Pilot Monitoring" duties.

Now, obtain the descent clearance from ATC, and inform the Pilot Flying that you've been cleared to descend by speaking "**CLEARED TO DESCEND**".

EVENT	PILOT MONITORING	PILOT FLYING	REQUIRED FS2CREW MODE	DEVELOPER NOTES
<b>TOP OF DESCENT AFTER ATC DESCENT CLEARANCE HAS BEEN OBTAINED</b>	<b>CLEARED TO DESCEND</b>	<p><b>CHECKED</b></p> <p>-ATTEMPTS TO SET THE ALTITUDE OF THE FINAL APPROACH FIX IN THE ALTITUDE WINDOW IN THE FCU. (NOTE: IT MAY NOT BE ACCURATE. YOU MAY NEED TO INTERVENE. HE CAN ONLY SET IT IN INCREMENTS OF 1000 FEET).</p> <p>-PUSHES ALT BUTTON ON THE FCU FOR A MANAGED DESCENT DOWN TO THE ILS.</p>	CRUISE	<p>THIS COMMAND PUTS FS2CREW INTO "DESCENT MODE", WHICH IS REQUIRED FOR MANY APPROACH ACTIONS TO HAPPEN.</p> <p>WHEN "DESCENT MODE" ACTIVE, THE CURRENTLY SELECTED APPROACH TYPE (AS SELECTED ON THE FS2CREW APPROACH BRIEFING PANEL) WILL FLASH IN THE TOP RIGHT HAND CORNER OF FS2CREW MAIN PANEL DISPLAY.</p>



<b>20,000 FEET</b>	CABIN CREW PREPARE FOR ARRIVAL		APPROACH CHECKLIST	OPTIONAL CABIN PA. AIRLINE SPECIFIC.
<b>1000 FEET ABOVE TRANSITION LEVEL</b>	QNH XXXX CROSS- CHECKED. PASSING XXXX FEET...  NOW	QNH XXXX SET   CHECKED	APPROACH CHECKLIST	"NOW" IS THE TRIGGER WORD.
	BRIEFING ECAM STATUS SEAT BELTS BARO REF MINIMUM ENGINE MODE SELECTOR APPROACH CHECKLIST COMPLETE	APPROACH CHECKLIST  CONFIRMED CHECKED ON ___ SET (BOTH) ___ SET (BOTH) AS RQRD	APPROACH CHECKLIST	THE PF WILL CALL FOR THE APPROACH CHECKLIST AFTER THE "NOW" CALL. IF YOU ARE STILL ABOVE 10,000 FEET, TURN THE SEAT BELTS ON AND SET THE ENGINE MODE SELECTOR AS REQUIRED IMMEDIATELY AFTER THE PF CALLS FOR THE CHECKLIST.  DO NOT FORGET TO SAY "APPROACH CHECKLIST COMPLETE". IT'S THE TRIGGER TO CHANGE TO LANDING MODE.
<b>10,000 FEET</b>	-LDG LIGHTS ON -SEATBELTS ON -EFIS: CSTR AND LS -RADIO NAV -ENG MODE SELECTOR AS RQRD	-EFIS: CSTR AND LS	LANDING CHECKLIST	"DESCENT MODE" MUST BE ACTIVE FOR THIS FLOW TO TRIGGER.

<b>CLEARED FOR THE APPROACH BY ATC</b>	<b>CLEARED FOR THE APPROACH</b>	<b>CHECKED</b>  -ENGAGES 2 <sup>ND</sup> AUTOPILOT -ARMS APPROACH MODE	LANDING CHECKLIST	DO NOT FORGET TO MAKE THIS CALL! IT'S IMPORTANT AND IT'S REQUIRED FOR THE PF TO MAKE SEVERAL FMA CALLOUTS ASSOCIATED WITH THE APPROACH.
<b>2500 FEET</b>	<b>RADIO ALTIMETER ALIVE</b>	<b>CHECKED</b>	LANDING CHECKLIST	
<b>GREEN DOT</b>	<b>SPEED CHECKED, FLAPS 1</b>	<b>FLAPS 1</b>	LANDING CHECKLIST	REMEMBER: WHEN SETTING THE FLAPS, CONFIRM THE SPEED IS LOWER THAN VFE, THEN ANNOUNCE FLAPS 1 AFTER CONFIRMING FLAP MOVEMENT ON THE UPPER ECAM.
<b>APPROX 2000 FEET RA IF DESCENDING ON THE GLIDESLOPE, OR 1 DOT BELOW THE GLIDESLOPE IF INTERCEPTING THE GLIDESLOPE FROM BELOW IN LEVEL FLIGHT</b>	<b>SPEED CHECKED, FLAPS 2</b>	<b>FLAPS 2</b>	LANDING CHECKLIST	AT GLIDESLOPE STAR, THE PF WILL ASK THE PM TO SET THE MISSED APPROACH ALTITUDE EVEN THOUGH THE AUTOPILOT IS ON. THIS IS ACCEPTABLE ACCORDING TO AIRBUS.
<b>AT FLAPS 2</b>	<b>GEAR DOWN</b>	<b>GEAR DOWN</b>	LANDING CHECKLIST	ANNOUNCE "GEAR DOWN" WHEN YOU SEE

	-SPOILERS ARM -RWY TURN OFF LIGHTS ON -NOSE WHEEL LIGHT TO TAXI			THE UNLK LIGHTS ON THE GEAR PANEL. THE PHYSICAL GEAR HANDLE POSITION IS INSUFFICIENT EVIDENCE OF GEAR MOVEMENT.
<b>AT GEAR DOWN</b>	<b>SPEED CHECKED, FLAPS 3</b>	FLAPS 3	LANDING CHECKLIST	
<b>AT FLAPS 3</b>	<b>SPEED CHECKED, FLAPS FULL</b>  -WING ANTI ICE AS REQD -SLIDING TABLE & EFB STOW -CABIN PA: <b>CABIN CREW BE SEATED FOR LANDING</b>	FLAPS FULL	LANDING CHECKLIST	
<b>AFTER FLAPS FULL</b>	<b>CABIN CREW AUTO THRUST AUTOBRAKE ECAM MEMO LANDING CHECKLIST COMPLETE</b>	LANDING CHECKLIST  ADVISED SPEED LOW LANDING NO BLUE		DO NOT FORGET TO SAY “ <b>LANDING CHECKLIST COMPLETE</b> ”. THAT IS THE TRIGGER FOR FS2CREW TO ADVANCE TO FINAL MODE.
<b>FINAL</b>	ANNOUNCE DEVIATIONS:  *1000 fpm *7 Degree bank *-2.5 / + 10 pitch *-5 / + 10 speed *LOC/GS half dot		FINAL CHECKLIST	

<b>1000 FEET RA (COMPUTER GENERATED CALLOUT)</b>		CHECKED	FINAL CHECKLIST	
<b>100 ABOVE MINIMUM (COMPUTER GENERATED CALLOUT)</b>		CHECKED	FINAL CHECKLIST	
<b>MINIMUM -CAT I, II AND III WITH DH. (COMPUTER GENERATED CALLOUT)</b>		CONTINUE	FINAL CHECKLIST	THE VIRTUAL PILOT MONITORING CAN'T "SEE" OUTSIDE THE WAY YOU CAN DUE TO TECHNICAL LIMITS, SO IT'S ASSUMED YOU ALWAYS MEET THE REQUIREMENTS TO LAND. HE WILL NEVER CALL FOR A GO-AROUND.
<b>100 FEET RA -CAT III WITH NO DH</b>		CONTINUE	FINAL CHECKLIST	
<b>30 FEET RA</b>		-THRUST IDLE	FINAL CHECKLIST	
<b>LANDING</b>	SPOILERS REVERSE GREEN DECEL	-REVERSE IDLE OR REVERSE MAX	ROLLOUT	REVERSE IDLE OR MAX BASED ON USER SELECTION ON THE FS2CREW APPROACH BRIEFING PANEL.
<b>70 KNOTS</b>	70 KNOTS	-SELECTS REVERSE IDLE IF REVERSERS WHERE AT MAX		ANNOUNCING 70 KNOTS IS THE TRIGGER FOR THE REVERSERS.
<b>BELOW 70 KNOTS</b>	I HAVE CONTROL			WHEN BELOW 70 KNOTS, RE-TAKE

		YOU HAVE CONTROL		CONTROL OF THE AIRCRAFT BY SPEAKING: I HAVE CONTROL. SELECT FORWARD IDLE WHEN AT TAXI SPEED. THE REST OF THE SIMULATION CONTINUES NORMALLY WITH THE USER NOW ACTING AS THE PILOT FLYING.  SEE THE PILOT FLYING TUTORIAL FOR MORE INFORMATION.
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-TUTORIAL END-