

REVIEW

PMDG's British Aerospace Jetstream 4100

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BY DR JOHN LATTANZIO

"Cleared for take-off"

OK – here we go. Advance power levers slowly. Watch the EGT though, because if you exceed the maximum (e.g. on hot days) you will set fire to the engines. Watch the Torque too, because if that exceeds 100% (e.g. on cold days) then we are well on the way to new engines. So with one eye on the EGT, one eye on the torque and the other eye (!) on the runway centerline, we are poised for takeoff. Stop advancing the power levers when either EGT or torque reach their maximum, or they are fully forward, whichever is first.

"V1...rotate"

"Huh? Are you talking to me? Oh yeah...I was just...er...watching these gauges. But you are right. Rotate!" Now, adjust pitch (about 12 degrees) to keep the speed at 125-135 knots. Keep an eye on EGT as you climb, raising gear by 400 feet AGL. Flaps are set at 9 degrees but when we retract them the plane will pitch down a lot, so be ready to correct. Allow speed to increase to 170 knots. Autopilot ON, select HEADING and ALTSEL and IAS which will adjust the pitch to maintain our current speed. No auto-throttle here. And keep an eye on that EGT.



“Jetstream 41 turn to heading 215”

OK. OK. Hang on a second. I should be adjusting the Condition Levers but ATC gets priority. Adjust heading bug. Next, we have to get the RPM down from 100% to 98%. A small change but these engines are demanding. First we reduce the torque slightly, until the EGT is down to the first white mark on the dial. Then very slightly pull back on the condition levers until they show 98% RPM. Then watch the EGT rise again to the second white mark on the dial, which is the most efficient setting for the engines.

Oh...10,000 feet... lights off, etc.

If you think the new PMDG J41 will keep you busy during take-off and climb-out, you are 100% correct! And it's just as bad/good during landings. Don't kid yourself – you have to fly this plane. You have to know what you are doing and do it right. Hats off to PMDG (again) for producing a wonderful addition to the FSX world – a highly detailed turboprop that is demanding, challenging, fun to fly and oh so rewarding to master.

So where do we start? The J4100 is a turboprop regional passenger aircraft seating 30 people. It's manufactured by British Aerospace and is in use all over the world. PMDG have dedicated their model to the memory of Atlantic Coast Airlines which, at its peak, was the world's largest operator of J41s (that distinction is currently held by Eastern Airways in the USA). Capt Robert Randazzo, founder of PMDG, used to fly for ACA and I think his love for the J41 comes through in the whole package, from the manuals to the details in the simulation.

PMDG are (justly) famous for their highly detailed simulations of heavy metal, like the 737NG, the 747-400 and the recently released MD-11. They have now produced a very detailed turboprop, with the same attention to detail as the larger aircraft. It's a curious beast – clearly it is not as complicated as the 744 or MD-11, but it is very demanding to fly. There is no auto-throttle and only a basic autopilot (but a very nice FMS). The result is that you have to fly this plane, rather than what you do in the heavies, which is manage aircraft systems.



QANTAS LINK LIVERY ON THE J41





SOUTH AFRICAN AIR LINK LIVERY



BRITISH AIRWAYS OPERATES J41s ALSO



BEIGE PANEL OPTION, ON APPROACH TO KAI TAK

Download and installation are straightforward. You will find that you have a configuration manager and four PDF files – one is a checklist and is just a couple of pages. One is the Pilot Introduction, weighing in at 93 pages. You ought to read this one first, of course. Next is the tutorial, which is a hefty 98 pages. Finally, the Aircraft Operating Manual is 543 pages, so I doubt you will be printing that out in a hurry. However, the PMDG folk have been kind to us – the fonts are a little larger than normal, or at least it appears so to me. I was able to print four pages on a single side of a sheet of paper. If you can print double-sided (that means 8 pages per printed page) that is very good value indeed. My eyes are falling apart at a rapid rate, but I can easily read the resulting printed documentation. So printing the Intro and the Tutorial is no hardship at all. I am also printing the AOM one chapter at a time, as I dip further into the aircraft systems.

The configuration manager doesn't do very much except set up some graphics options and allow you to change the color of the cockpit – beige, anyone? I prefer the grey. Most of the functions you would expect a configuration manager to perform are in fact handled by an interactive load sheet. Here we choose the number of passengers and their seating, the number of carryon items, the cargo loads, and fuel loads etc. Actual loading of fuel is done using the FSX interface.

Note that there is no 2D panel in the J41. This is a VC-only aircraft. Well, after a fashion. It has one of the most beautiful VCs seen in any FSX aircraft, for sure. But the PMDG team are very clever and they have pre-defined a number of views in the cockpit category. Sure, they are all views of the VC but by jumping from one to the other you can get to most of the important stuff very easily without buying a TrackIR. In addition, there are five pop-up 2D panels that cover the cases where it is hard to have the required instruments easily viewable in the VC. So we can pop-up the autopilot interface, the FMS, the radio panel and even the GPS for those who feel nervous without one. The other 2D panel is the Ramp Manager – of which more below. I treated myself to a TrackIR recently and yet I was curious to see how I would go flying this aircraft without it. So I did not use it at all – I just used the VC and the existing views. I adjusted a couple to my liking, and I can report that I had no difficulty at all in finding my way around the cockpit. So even if you never use the VC, don't let that stop you getting this plane. You can treat it as a bunch of 2D panels if you want and it works just great!

Having said that the VC is beautiful, there is one flaw. There is no operating weather radar. We are told that it is "in development" and maybe it's just around the corner, maybe its years away. It's a pity as this results in one blank instrument on the VC. Of course, the forums are full of advice on how to get add-on WX radars to work, such as those available from RealityXP or Captain Sim.

Normally I would not worry about the WX radar much, but you do need it in the J41. With a ceiling of about 26,000 feet and a typical cruise altitude closer to 16,000, the J41 flies through lots of weather. You are going to have to be aware of what is coming. Add to this the fact that PMDG have included rain animations on the VC windscreen, working wipers, and even an icing model (and lights to illuminate the wings so you can see the build up of ice) and you realize that this plane is built for flying through the weather. It certainly adds another dimension. I flew through some very nasty icing, but you cannot just turn on the anti-ice and de-ice system. No, that would just take air from the engines and divert it to the ice system, with the result that the engines overheat. Remember – always keep an eye on the EGT in this aircraft! So instead we have to reduce the power and then send the bleed-air to the anti-ice systems. Now, try doing that while you are supposed to be climbing to your cruise level. The manuals do warn you about “anemic climb rates” under such circumstances and they are absolutely correct. Pity you cannot communicate this to the FSX ATC...

Another advantage of the J41 is that it is a short-hop plane, with a range under 800 miles and a maximum speed of 295 knots. So your flights will be typically an hour or two, which from a practical point of view makes it much easier to schedule a flight in your busy day! This may sound like a small point, but I am sure busy people will appreciate it. It’s just another reason why this is a very attractive aircraft package.

The aircraft has the usual PMDG quality, and it looks great both inside and out. The night lighting in the cockpit is beautiful, and even includes working map lights. Saving a flight also saves the panel state and hence the current state of every button and switch. Curiously, it does not save the current settings in the FMS! This might sound serious but it’s not really. One can quickly reload everything – it’s not so complicated that it takes very long. In practice, I did not find this to be a problem.

What is a problem, however, is the power plant on the J4100! Oh, not a problem in the sense you are thinking, but rather a complicated little problem the pilot has to master if he/she is to fly the plane properly. Let me quote from the Pilot Introduction here:

Most of you have simulation experience with PT-6 type, free-turbine engines such as those found on the FSX King Air. The Garret TPE331-14 engines simulated on the PMDG BAe JetStream 4100 are geared, direct-drive engines. This means that the propeller is directly geared to the core of the engine through a series of reduction gears, providing for a completely different operating process than your average PT-6. One of many benefits to using a directly geared engine is that pushing forward on the power levers results in nearly instantaneous power.



A PRIVATE LIVERY FROM THE DOWNLOAD SECTION AT PMDG



ORIGIN PACIFIC CLIMBING OUT OF HONOLULU

BRINDABELLA AIRLINES PASSING COFFS HARBOUR





The TPE331 engines have a well earned reputation for robust power and dependability, however, if you attempt to operate them like you would any other engine, you are going to suffer catastrophic engine failures. This section of the tutorial will help to prevent that!

Geared engines work on the principle that the engine RPM remains constant and the blade angle of the propellers is manipulated to produce thrust. As a result there are two pairs of engine control levers on the center pedestal. The left pair is known as power levers and the right pair condition levers.

This means you have to know what you are doing. And starting the engines is the first thing – they should not be started in the feathered position. That would produce maximum drag as the props spin and would be very nasty. Indeed, there are safety buttons that need to be pushed before you can get the props into the feathered position.

Another complication is that we never ever want the air to drive the props. Imagine engines in flight idle and you are in descent. The airflow might increase the speed of the props. Here that would mean driving the engine because of the direct coupling. That would be bad, Bad, BAD. To avoid this, the engineers have set the engines to a minimum torque of 22% even at flight idle. Keep that in mind when trying to descend. You cannot get less than 20-22% torque from these engines!

This produces another constraint. You will find it very hard to slow down during a descent. Hence "SLOW DOWN then GO DOWN". You will have to manage the engines carefully to descend properly and not be too fast on approach. So how do you do it? At our cruise level we adjust power to get the cruise speed we want. Then to descend we use the autopilot. We select the desired altitude and then select either IAS or V/S to determine how we descend, then we reduce power. Consider IAS first – here the autopilot will adjust the pitch to keep the aircraft at the desired indicated airspeed. So you must reduce your power below the cruise value if you want to descend at the speed you were previously cruising. As you reach denser air you will need to pull back on the power even further. Then on reaching your desired cruise level, add power or you will likely stall (remember – there is no auto-throttle). Alternatively, if you use the V/S method you will specify the required vertical speed for the descent and the autopilot will adjust the pitch to keep the descent rate as specified. Of course, you can easily find yourself going too fast in this case so again you must ride the power levers all the way down. As I said, you really fly this plane.

While on the subject of the avionics, there is a fun FMS that will handle the lateral navigation for you, but the vertical profile is handled by yourself. If you enter a vertical profile into the FMS it will give you advice about your current descent rate, the required descent rate (to meet your entered constraints) etc. This is very handy when you are riding the power levers to try to maintain a smooth descent rate.

One curious thing – you cannot use the FSX flight planner for the J41. However, it does recognize plans prepared by FSBuild and FSCommander. But it's so easy to use, I do not consider this a major problem. You will not be going too far in the J41 anyway – it simply does not have the range.

There is a Ramp Manager to help you service the aircraft when on the ground. Here you can control the baggage cart, open and close all the doors and cargo hold, add/remove wheel chocks etc. When inside the aircraft you can access the speed cards by clicking on the book in the center console pocket. This places the book on the console and opens it. You flick through the pages to the one you want, get your speeds, then click on the book to put it back in the pocket in the console. This is a very nice way to have everything available and at your fingertips. And at night, you need to turn on the overhead panel map lights to illuminate the book!

I also mentioned, in the introduction, that care has to be taken between flaps 0 and flaps 9. The latter setting provides a lot of lift and if you extend flaps at or near the maximum allowed speed (200 knots) you will balloon up in to the air and lose many points with your passengers. Similarly, when retracting, you lose a lot of lift and the nose pitches down. You must be aware of these effects to maintain a smooth ride. For deploying flaps 9 (from zero) its wise to slow down to about 170 first. But slowing down is non-trivial as discussed above. You have to keep all of these things in mind when flying this plane.

The J41 forum says that some people have had a problem with the ATR-72 after installing the J41. I have not tried this but I do mention it since fans of one of these aircraft are likely to be fans of the other. They are two highly detailed and intricate simulations of two lovely turboprops. I have them both.

The only problem I had was a minor graphics glitch - known on the Forums as the "switch bezel problem". I noticed that there seems to be about a pixel of space around some of the switches in the VC and one can occasionally see flickering from outside objects through this opening. The Forum advises some changes to video card settings and although it did not remove my problem, it reduced it to a negligible

level. I did not experiment further and it's likely I could remove the effect entirely if I persevered. But the improvement was so good I just left it at that point.

So, again, I come to the summary of an aircraft I loved! Lest some of you think I love everything, I guess there is a selection effect operating. I try to get to review the things I expect I will like. So I will not be reviewing combat aircraft, for example, as I don't care for them so much. But I do love detailed simulations of complex aircraft, and this is certainly an excellent example of that. It is not as complicated as the heavy metal but it has its own quirks and is very demanding. It is very satisfying to take this plane from start to finish, shutting down the engines and locking the props (another special procedure that I do not have time to go through here). If you want an unusual aircraft that you have to fly, rather than manage, then you cannot do better than this. It has the usual PMDG quality and enough quirks to entertain and challenge.

The PMDG JS4100 is compatible with FSX and is available in boxed version from popular sim retailers for US\$49.95. →

