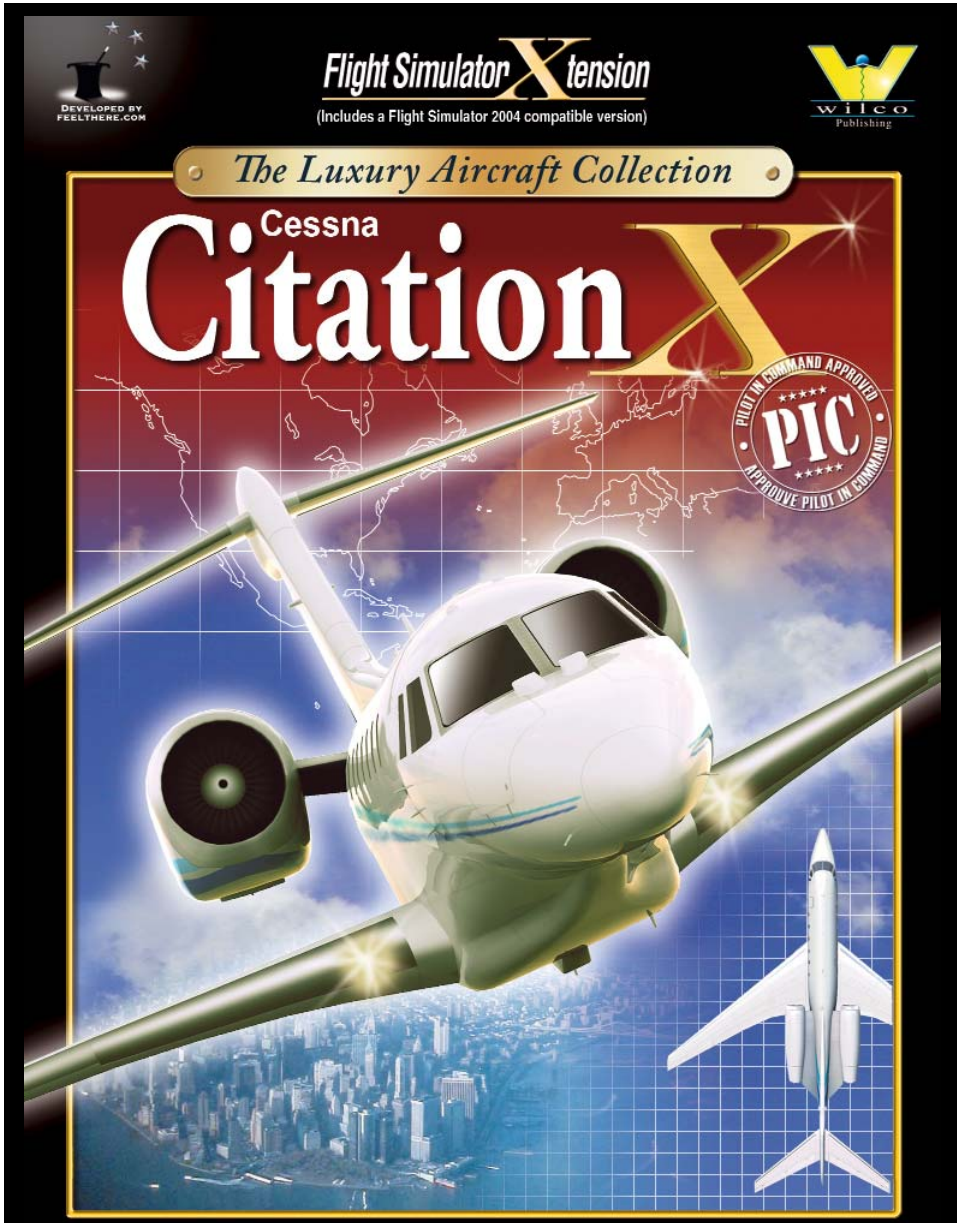

Pilot’s Guide - Guide du Pilote

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TABLE OF CONTENTS

IMPORTANT NOTES

Navigational Database

If you have manually updated any previous feelThere database, before the Citation X installation, please make sure to backup your navigational database (fs9/feelthere/nd/nd.mdb or fsx/feelthere/nd/nd.mdb) as the installer will install the 0610 Airac cycle.

Windows Vista Users

If Windows Vista crashes to desktop when you select the aircraft, please follow the procedure below.
Select the directory where your FS is (default : Program files\microsoft games\ ), right-click and select the SECURITY tab. Click on your username (not on Administrator) and then on Edit. Allow full rights and click OK to exit.

QUALITY FIRST !
By not making illegal copies and purchasing only original WILCO PUBLISHING products, you will allow us to continue developing and improving the quality of our software.

THANK YOU.

WELCOME ABOARD !

Installation

Installation is automatic. Insert the CD (or double-click on the downloaded file) and Autorun will take you to the start-up screen. If Autorun is disabled on your system, open Windows Explorer or My Computer, browse to your CD Rom drive and double click "WSetup.exe".

Once setup is running, follow the on-screen prompts and ensure that the installation points directly to the Microsoft Flight Simulator
folder (usually C:\Program Files\Microsoft Games\FlightSimulator...).

CHECK OUT
WILCO PUBLISHING WEBSITE :

http://www.wilcopub.com

YOU WILL FIND INFORMATION, NEWS, AND FREQUENTLY ASKED QUESTIONS.

Extra (for CD-Rom version only)
We have included a full set of files and videos on your CD-Rom. Use your Windows Explorer to locate them into the EXTRA WILCO directory.

To fully enjoy the 3D Virtual Cockpit, the Track IR lets you control your field of view in flight simulators by simply looking around by few degrees.
Track IR is available from Wilco Publishing http://www.wilcopub.com.

Quick Start

1. To Pilot the Citation X

1. Start Flight Simulator
2. From the menus, select AIRCRAFT
3. Choose Cessna - feelThere/Wilco
4. Select the Aircraft Model of your choice.
5. Select the livery of your choice

2. Engines Start Up
Use CTRL+E to start the engines.

To start up engines from a 'Cold & Dark Cockpit', please refer to the next pages for complete procedures.

2D & 3D Cockpits

2D Panel Views
The following 2D panel views are available using the following key combinations :

SHIFT+1 = Main Panel
SHIFT+2 = Systems Panel
SHIFT+3 = FMC
SHIFT+4 = Pedestal
SHIFT+5 = PFD1
SHIFT+6 = MFD1
SHIFT+7 = Eicas

3D Virtual Cockpit Views
Display the different Cockpit views using the normal Flight Simulator keystroke, "S" under FS 2004 and "A" under FS X. All controls found on the main 2D panels are functional within the virtual cockpit. Mouse clicking on the FMC opens the 2D FMC in a separate window.

Mouse clicking on some specific screens open a 2D window : FMS, EADI...

Cabin & Doors

The Cabin
Under Flight Simulator 2004, to move and walk inside the cabin, we have included a utility on the CD-Rom (directory : EXTRA / F1View), also available from our website. This utility is kindly offered by Flight 1.
This module requires a wheel-mouse (a center wheel that also acts as a center mouse button).
Note that this utility is not needed under Flight Simulator X as you can access cabin view through a right-click sub-menu option.

Virtual Cockpit

- Wheel forward moves you forward and wheel backward moves you back.
- CTRL+forward moves right and CTRL + backward moves left.
- SHIFT+forward moves up and SHIFT + backward moves down.
- CTRL+SHIFT+forward zooms out and CTRL+SHIFT+backward zooms in.

While in **Pan Mode** (mouse wheel pressed and held down) inside the Virtual Cockpit :

- Moving the mouse to the left rotates the view to the left.
- Moving the mouse to the right rotates the view to the right.
- Moving the mouse forward, away from the user, rotates the view up.
- Moving the mouse backward, towards the user, rotates the view down.

Please refer to the manual for other features. Under Flight Simulator X, press SPACE to switch to pan mode. Wheel mouse serve as zoom in/out while in pan mode.

The Doors
To open the external doors :
SHIFT + E for the passengers door.
SHIFT + E + 2 for the cargo door
(from external view).

Your Flight Attendant

Wilco Publishing's Cessna Citation X, exactly as the Legacy from the same collection, offers a charming stewardess who welcomes you. In flight, she takes care of her various duties :
1. Door opened, parking brakes ON, your flight attendant welcomes you.
2. Door closed and airspeed below 20 knots, she works in the kitchen area.
3. Closed door, taxiing and take-off, your flight attendant is seated just as in actual operation. She stays seated when your are below 10000 ft and airspeed higher than 20 Knots.
4. Above 10.000 feet, your flight attendant takes care of her day-to-day duties.

Parking Position

While parked (parking brakes ON and engines OFF), engine covers, safety cones and gear chokes are added around the aircraft and pitot covers are placed where they normaly are.

Citation X Setup Utility

The Citation X setup utility is located into your Windows Start menu. To access it, press START button of your Windows -> All programs -> Wilco Publishing Citation X.

Any change in the aircraft configuration has to be done outside of Microsoft Flight Simulator. If you change the configuration while the aircraft is being used in Flight Simulator, you need to unload the Citation X in FS (by loading another aircraft) and reload it to have the changes taken into account.

Weather Radar

The latest FSUIPC (free or payware version) must be installed prior to use the Weather Radar. Link :
http://www.schiratti.com/dowson.html.

The weather radar included is based on the real Collins WXR2100. The most important is to locate hazardous weather areas, and avoid them. This system is able to show the pilot where dense precipitation is located and turbulence is expected.
In an aviation based weather radar, only water and wet hail produces reflections.
Only the clouds located at the aircraft level can be displayed.

Colors code :

Green	=> Light precipitations
Yellow	=> Moderate precipitations
Red	=> Severe precipitations

The INTENSITY OF TURBULENCE within clouds can also be displayed. The turbulence is calculated out of the velocity changes for the reflections. This turbulence can only be measured within clouds that generate normal reflections.
So only precipitation based turbulence can be displayed, gusty winds and other air turbulence cannot.

Colors code :
dark magenta => Moderate turbulences
intense magenta => Severe turbulences

The turbulence image is an overlay to the normal weather radar image so if no turbulence is
measured, the normal RGB Weather Radar image is drawn. The turbulence detection is limited to a Range of 40NM.

A special high sensitivity mode makes it possible to detect WINDSHEAR out of water particles. Windshear is always present at low altitudes just above ground. Additional due to the high sensitivity, other particles than water may produce enough reflection energy to be detected and displayed as windshear. Windshear is only working below 2500ft AGL and in ranges up to 5 NM. This mode is only intended for take off and final approach phase. Windshear areas are marked by red rings.

IMPORTANT NOTES :
1. The Weather Radar technology requires a lot of PC resources and therefore may result in a huge impact on the frame rate.
2. When switching ON the Weather Radar, the radar pulse generators need to warm up, which can take up to 40 seconds.
3. There is no option to tilt the radar. We have simulated the radar's Auto mode.

'VIP Welcome'

Wilco's Cessna Citation X offers, for these airports, a V.I.P. welcoming service which can be requested by the pilot.
This welcoming service is available on frequency NAV 2 117.50 MHz at the following airports:
- Paris Le Bourget (France - LFPB)
- Frankfurt (Germany - EDDF)
- New York Kennedy Airport (USA - KJFK)
- London Heathrow (United Kingdom - EGLL)
- Hollywood Santa Monica (USA - KSMO)

V.I.P. welcoming request procedure:
o Park the aircraft at right place (specific spot illustrated at the end of this manual), so that the front left door opens facing red carpet.
o Display frequency NAV2 117.50 MHz to trigger the animation and have vehicle come close to the plane.
o Display another frequency to request vehicles to leave the tarmac.

Notes:
Before parking your plane at one of the specific animation spot, please ensure that NAV 2 is NOT yet set to 117.50 MHz. It is suggested to do this check right after landing (NAV 2 frequency is normally not used after landing).
A short delay may occur between the moment you select NAV 2 and arrival of V.I.P. welcoming agents/vehicles.

The animated welcome option installed by the Cessna Citation X is then available with all other aircraft as far as you park at the same place and follow the same procedure to trigger the animation.

Author's Note

What This Manual Is
This manual is written for the average Flight Sim pilot, who perhaps is taking first steps into the realm of "serious" simmer. This Citation X is not a default craft by any means. She is a complex simulation that will take some effort to master. I've tried to provide the reader with the tools necessary to accomplish a flight from cold and dark to shutdown, without going into the esoterica that may be found in other manuals. While that information may be good to know, and provides the user with a more complete and "real world" background on the X, it is superfluous to the fundamental pilotage of the sim. My effort is geared towards getting as many of you up and flying as soon as possible, while keeping the effort required doing so at a level commensurate with that which most of you are willing to make.

What This Manual Is Not
This manual is not a treatise of the Citation X and her systems. We are not delving into fuel/hydraulic pressures, voltages and the like. This information is available to those who are interested in "getting greasy" with this bird from a variety of sources. I'll leave it up to your ingenuity to ferret out this information.

What I Am Not
I am not any kind of pilot. I am not a teacher. I hold no aviation license whatsoever.

What I Am
I am, basically, you. I'm a sim pilot. I love this hobby. As I've been working at it for a while, I've acquired a basic set of skills that through practice I am able to apply to most simulated birds and situations. It is the challenge of acquiring new birds and mastering them that I find attractive. It is also picking up old favorites, perhaps ones that have been over my head in years past, and coming to realize they were not so difficult after all. Again, this is my draw to our hobby. Yours may be different.

Either way, I've written this manual for those who wish to progress in their development and enjoyment of our hobby. This manual is far from perfect. I am certain there are errors or mis-statements. I am also sure that I'll hear about every one of them. That's fine, as it is through such criticism that we grow and hone our skills.

I hope you are able to get something from this manual, at the very least a bit of self-satisfaction at having mastered (perhaps "mastered" is too strong. How about "been able to take off, navigate and land without bodily injury or damage to the bird?) your Citation X. After all, this is supposed to be fun.

Three Green!

Chip Barber

Introduction

Greetings Pilot, and congratulations on your selection to fly the Citation X! Your entrance into this select group of flyers marks you as an aviation professional of exceptional prowess. Now, before you take the flight deck, let's go over a few things you'll need to know, without which you'll be back to flying the 152's before you can say "Where's the choke?"

Being the rookie on the team, you've inherited the first flight of the day. Not only are you getting up with the worms, you're presented with a cold and dark flight deck. At least you're not rock bottom in the pecking order; your First Officer is outside in the rain doing the preflight walk around.

Flying Your Bird

Let's take it from the top. On the side panel, (SHIFT 2) find the DC POWER panel.

Click on BATT 1 & 2 (1) and then the EICAS switch (3) located under AVIONICS. Sort of livens up the panel. Of course, this light show comes at a price, and if you don't give your bird an alternate power source, it won't be too long until you're looking for those jumper cables.

Just to the right of the BATT 2 switch, you'll find the EXT PWR button (2). If it is lit with "AVAIL", push it. The green "ON" will light, and you're attached to the GPU and have ample time to complete your preflight.

Leave BATT 1 & 2 on. If External Power is unavailable, put down the magazine and get busy. It's time to start the APU.

Let's take a look, and see where the switches are:

1. Master Switch
2. Test
3. Start (click upwards twice)
4. Generator Enable
5. APU Bleed Air
6. APU Disengage

The Auxiliary Power Unit is a small gas powered turbine engine in the rear of your bird, responsible for providing you with bleed air for engine start, initial air conditioning and cabin pressurization. With the upper panel still open, look to the right side to the APU SYSTEM panel. Flip up the MASTER switch (1), and press the TEST button (2). You should hear the warning tone, the APU FIRE PUSH, APU RELAY ENGAGED and APU FAIL lights on the panel will glow, and you should see APU FIRE (red) and FIRE BOTTLE LOW APU on the EICAS. All things that are good to know when your APU decides to go south while you're going north.

Cessna Citation X - The Luxury Aircraft Collection

Our test done, ensure the APU DISENGAGE (6) switch is in the NORMAL position, and click the APU START (3) switch upwards twice. Nothing like the sound of a turbine spooling up and igniting. On the center EICAS, push the RTN button, and then the ECAS SYSTEM button. Finally, press the APU button, and monitor the startup of your APU. Confirm the numbers (Max RPM and EGT, listed on the face of the panel, and %RPM and EGT on the EICAS), and DC Volts. Once the unit has settled in (by the book, you should wait at least one minute before engaging the bleed air. This prevents jet exhaust from entering the cabin, ruining the day of all aboard), the READY TO LOAD light on top of the panel will light, and you're ready to make your bird self-sustaining. To do this, click upwards the BLEED AIR MAX COOL (5). The BLEED VAL OPEN light ignites. Now, enable the GPU generator by moving the GENERATOR (4) upwards to the ON position. Under the DC POWER panel, press the EXT PWR button. The ON light will extinguish, and you're on your own. The APU AMPS should show just under 100.

Our umbilical cut, we're now going to fire our engines. Be certain you've enabled the APU Bleed switch (5), otherwise unless you're facing into a very stiff wind, you've got nothing to turn your turbine blades for startup. Follow the Before and Pre Start Checklist. Note your duct pressure is about 30 psi. As you see, the APU is providing air and power for the start:

Ensure the PAC Isolation Valve (2) is closed.

Engage the RH Ignition switch (4), then press the RH Engine Start button (5). The start button will light, and the sequence proceeds automatically.

You can follow the progress on the right EICAS.

Note the ENG is highlighted, your engine bleeds are closed and you're start pressure is more than adequate at 37. Repeat the process for the left engine.

On the DC Panel, note the LH and RH GEN (7) remain in the "ON" position, and now your two main engines are powering your bird. You could shut down the APU at this time, but it is recommended you keep it running, with the bleed open, to facilitate an emergency start after takeoff, if necessary.

Open the engine bleeds (1) to HP/LP, and we're ready to enter our flight and numbers into the FMC.

You did remember to turn on the Beacon before starting your engines, right?

Now, let's talk a little bit about the FMC. Sure, you can hand fly the X. As a matter of fact, she's a kitten under your hands. She purrs, handles playfully and has some claws and teeth when necessary. But, let's face it. You can hand fly the 172, and use the GPS to find your way. Heck, you can do that with the X. But honestly, did you pick up this bird just to have a thoroughbred to fly around just like its little brother 172? I think not.

No, this bird is a pro's bird. Like a commercial liner, you've got all you'll need right at hand to navigate all over the globe. The FMC is the heart of this aircraft. With it you'll set origin/destination, waypoints, runways, temperature, weight, fuel load… All important information that allows your X to figure out optimum settings for your trip. It will permit you to enter crossing restrictions of altitude and/or speed, will tell you more than you'd care to know about your TOC and TOD (Top Of Climb/Top Of Descent), and a host of other information that, while not critical to the Sim Pilot, certainly adds to our immersion in the sim, and general appreciation of the "Real World" flyboys/gals who make a living in the X.

Sounds intimidating and complicated, doesn't it? Well, it isn't. Ok, it is. A little bit. But stick with me, and we'll get you up to speed and to the point where you'll be doing your preflight data entry without much thought. And really, the point behind these "SuperSims" is learning to take your SimPilot experience beyond the default birds.

We'll take a quick peek at the ATIS for our weather update and likely departure runway, perhaps ensure we've gotten the SID charts

close to hand, and address our navigation. Today we're doing a relocation flight, so it'll be just you and your (soggy) copilot. We'll be flying from Long Island's Islip-McArthur airport (KISP) to Albany International (KALB). It is a short hop of about 130 miles. I've used the default flight planner, and

augmented it with a few manually entered waypoints. Our plan looks like this: KISP FR CMK PWL PFH DELMY KALB. Nothing fancy, no SID or STAR. Our anticipated cruise will be at FL190. I happen to like the default "Building Storms" weather, but the choice is yours.

Now, before we do anything else, we'd best tell the FMC where we happen to be sitting. Getting from point A to point D, while hitting all the intervening letters along the way, is difficult enough as it is. It is magnitudes more challenging when one isn't quite certain where Point A is. So, let's align the IRS and give the FMC a starting point, or this will be a very quick circle to land.

Shift 4 opens the pedestal, and second group from the bottom you will find the IRS instruments. Click them both to ALIGN, and after a short time, the display will announce NAV READY. Now, move the switch to NAV, and we've told the FMC where we are.

Open the FMC (SHIFT 3). I will assume a certain level of familiarity with this gauge. But, let's review some basics.

The 4 keys on the left side of the FMC we'll call 1L, 2L, 3L and 4L. On the right side, we'll call them 1R, 2R, 3R, and 4R. The scratchpad is the area at the bottom of the FMC information window, and is where we'll use the keypads to enter information. As we click on letters/numbers, we'll see them appear there. If, like me, you occasionally enter the wrong number/letter, use the CLR key. A whole line may be removed by pressing and holding CLR. The DEL key is used for deleting entries with the L/R keys.

Using 4R, press POS INIT. Load your current position with 2R, KISP. You are presented with FLT PLAN, so press 4R again, and open the

ACTIVE FLT PLAN page. Press 2L for LOAD FS FPL. Your ACTIVE FLT PLAN page will now reflect 3 pages of flight plan, with each being reached by pressing on the NEXT button on the FMC. It should match your FS flight plan. You'll note you have the capability of assigning your altitude and speed restrictions, as well as crossing restrictions. For example, if you wish to cross CMK at 3000 feet at 230 knots, you'd enter 240/3000 into the scratchpad, and then click 3R. Your entry is transferred and becomes part of your flightplan. Of course, ATC may have other ideas, so it's best to see if you happen to be given any restrictions. The default ATC will not provide this, but there are programs that will give you this level of direction.

For you purists, you may certainly enter your route manually. As we are addressing our fellow sim pilots who wish to fly this bird correctly but expeditiously, we'll leave that description alone. You manual-enter types know how to do this already.

Flight plan is in; now let's continue by pressing 4R for PERF INIT. You'll see 5 pages, reachable with the NEXT button. Each page has entries that are variable. For our purpose, we'll just deal with pages 4 and 5. Note on page 4, there is an entry at L4 entitles INIT CRZ ALT. The default entry is OPTIMUM. In our case, we'll change that to our flight plan level of 19,000. In the event that ATC messes with our plan and assigns us an alternate flight level, replace FL190 with the new assigned FL.

On page 5 we'll enter our fuel with LSK 2. Using the FS FUEL AND PAYLOAD screen, I have placed 50% in each wing and center tank, and according to the FMC, my gauge is reading 6500. Good enough for me, and I enter it with the number pad on the FMC, and press 2L. I figure 55 lbs. of cargo, and 2 passengers @ 245 lbs. I did this by entering 2/245 (standard is a weight of 170, but for yours truly, 245 is much closer to reality!) and pressing 1R. 4R now brings the PERF DATA pages. There is nothing to alter here for our basic flight. I get the message CHECK RESERVE FUEL, which I ignore, and note the left MFD where MSG is flashing in yellow, drawing attention to the FMC scratchpad. A press of R4 now brings up the 4 PERF DATA screens.

We'll bypass these, and press R4 to access the DEPARTURE page. Here we have 2 pages of all available departure runways for KISP. Today, we'll be assigned runway 06 (I've flown from here before), and I press L2 to enter it. You are now presented with the ability to ACTIVATE your flight plan, with R4.

The ACTIVE FLT PLAN page now opens automatically, and as you see, RW06 is entered, along with speed and altitude entries. The speed/altitude values are automatically calculated for you.

With our flight and performance entries now loaded, we'll close the FMC, set our V speeds and get our ATC clearances.

At the time of the writing of this manual, our V speeds are not calculated for us, and we'll have to consult our chart for the proper values. Use the chart below.

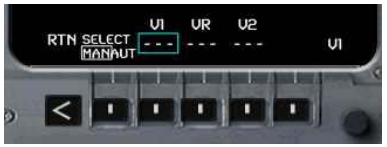
*For use in an emergency landing. Maximum design landing weight is 31,800 lbs. Landing at weights above 30,000 lbs may exceed Landing Brake Energy limits, and ruin an otherwise lovely flight.

V1: Decision speed. If you're going to abort takeoff, do it before this speed.
VR: Rotation speed. The copilot will alert you of this speed, at which time you'll begin to pull back on the stick.
V2: Minimum single engine climb out speed.
VREF: Touchdown speed.
VAPP: Approach speed.

Know your numbers before you are assigned a departure runway. The last thing you want to do is run out of concrete before you're airborne.

SPEEDS IN KIAS

Weight Range/Pounds	23,000-27,000	27,001-30,000	30,001-33,000	33,001 - 35,700
V1	114	116	125	133
VR	116	119	128	134
V2	127	129	132	137
RWY Length (Feet min)	4500	5000	6000	7500
VREF (Full Flaps)	118	126	*136	*142
VAPP	124	131	*142	*147

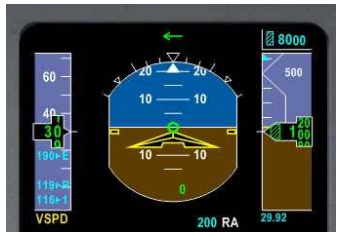


Using the center MFD, we'll enter our V speeds. According to FS9, my TOW (Take Off Weight) is 28,850. According to the chart, my speeds will be 116, 119 & 129. Be certain the MFD is displaying MAIN 1/2. The last button on the right is V SPEED. Pressing it presents you with takeoff and landing speeds. Press T/O SPEEDS, and with MAN selected by virtue of the box around it (I'll assume we'll ultimately be able to press the button below to change to AUT), press the button below V1. Note above the knob on the right side of the bottom of the MFD, V1 is displayed. Clicking on either side of the knob will increase/decrease the value of the selected V speed. Enter the speeds in each. We'll select LNDG SPEEDS. Using our chart, we'll enter the values in the same was as we did the V speeds, once we establish what our landing weight will be. Runway 06 is almost 7000 feet, so we're good to go.

So, we've entered our V speeds. Did I mention a left mouse click increases the value of your entry by single digits. A right mouse click increases the value by 10 per click. The mouse wheel, should you be fortunate to have one, will also manipulate the numbers up or down. Go ahead and get your clearances.

For this flight, we've been cleared to an initial altitude of 8,000 feet. Let's enter this into the autopilot. First, open the pedestal. The next instrument bay below the throttles you'll find the knobs used to enter CRS, HDG and ALT SEL. Placing the cursor on either side of these knobs enables you to change the values, up or down. Again, the Right mouse click increases the values in larger degrees than the left. You'll also see the PUSH SYNC and PUSH DIR on the center of the Course and Heading knobs. This is a nifty little feature that will set the course or heading to your current orientation. It makes it quite easy to set your runway heading once you're ready to take off by just pressing the center of the Heading knob.

Now, check the MFD. The top of the altitude speed tape shows 000. This is the altitude currently entered into the autopilot. As you increase the value with the ALT SEL knob, here is where you'll see your entry. As our initial clearance is 8,000 feet, we'll put the mouse cursor over the right side of the ALT SEL knob (you should see the little + sign), and click the Right mouse button 8 times.



For future reference, you'll also note below the altitude tape is our altimeter reading, and to the left of that is our decision height value, also known as Minimums. This number is adjustable by the knob on the lower left of the pilot's MFD, and oddly enough is entitled "Minimums". Go figure. Minimums refer to

the altitude at which the pilot must be able to see the runway and continue with the landing or go around if he cannot. Unless of course his bird is outfitted with CAT II or III Autoland which, unfortunately, we are not.

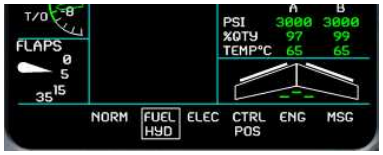
With our altitude entered, we'll taxi to runway 6, going through our checklists as we go.

In the event that you have managed to set your aircraft on a wing during taxi because you had no idea you were doing 60 kts or so, take a look at the lower left of the middle MFD. Here you will find not only the outside temp, but your Total Air Speed and .... Wait for it... Groundspeed! Ignore the speed tape for now, and rely on this little fellow.

Once there and we are cleared, we'll enter the active, align with the centerline, and apply our parking brakes. Now we'll use the HDG SYNC to align our autopilot heading with the runway heading, and turn on the TCAS. The management at any airport will take issue with your turning on your TCAS radar and frying anyone in front of your aircraft with the radar energy emitted from your bird. The same thing applies to weather radar, too. Seriously poor form, so do refrain until you're ready to go.

All lined up? Let's just check to ensure we're really ready to cut our X loose. Be certain you've adjusted the trim, and that you're at flaps 5.

Trim set to 7.1.



Flaps indicate 5, and the display on the right indicate the slats are deployed.

Be sure your navigation input is set to FMS 1 & 2, and that you've clicked the FMS button so that your autopilot source is the Flight Management Computer. Note the rather charming purplish color on your display panels, indicating you are receiving navigation input from the FMS rather than NAV.

On the autopilot panel, I've pre-selected the heading (HDG), so that when I press the autopilot button which I've cleverly enabled on the yoke, we'll fly our runway heading.

Now, for those who use alternate ATC

programs, you may be directed to fly a SID or some other departure procedure. You'll likely be better off hand flying the tricky departures.

Here's a shot of our pedestal, while aligned and gathering the nerve to take off. A couple of things are worth mentioning here. Starting from the top:

- TCAS is enabled by clicking the L4 button on the RMU (Radio Management Unit) twice. The first click will place a yellow box around the STANDBY in the ATC/TACS box. The second will change it to 1 TA/RA, and your TCAS is enabled. L5 will change the TCAS range, and L6 will change the focus from Above to Normal to Below.
- The Slat/Flap designator indicates Flap 5.
- We'll need to turn off the Taxi Light.
- Our IRS systems both indicate ALIGN, and have been moved to NAV.
- The weather radar (WX) is active.
- The throttles are at idle.

Now, before we take off, let's spend a moment on the throttles. In your X, the throttles are something of a hybrid between Boeing and Airbus. The first thing you'll notice on close inspection, should you be so inclined, is that like Airbus, there are detents: CRU, CLB, TO/MC, and MAX. Like Boeing, below CRU, there is an area of free play. Here you will manipulate the throttles to obtain your taxi speed, and your climb, cruise and descent speeds. Cool, huh?

For our take off roll, we'll push those babies to the firewall. The engine FADEC's will monitor the engine performance, and adjust automatically to prevent damage.

As we accelerate down the runway, recall your V speeds, and ease back the yoke. The idea here is to keep your climb angle below 15 degrees or so, so that your airspeed continues to increase. Once you have a positive rate of climb, retract your landing gear. At 1,500 feet, bring in the flaps/slats. Now follow the bars on your MFD, as they will keep you on an appropriate angle for acceleration. There is nothing worse than stalling with not a lot of space between you and terra firma, so stay alert to a decrease of airspeed during your climb out.

Above 2,500, you will also now reduce your thrust from the firewall (MAX) to climb (CLB). If you look at the EICAS, you'll notice on takeoff, the little green T/O. This will change to CLB when you back off the throttle to the next detent. For the real pilot, this is actually a "stop" in the throttle, and it sort of clicks in.

I'm given instructions to turn left to 280 and resume own navigation. No problem. On the pedestal, I left click and watch on the MFD as the heading bug goes to the left. I'll stop it on heading 280. As the autopilot is engaged and heading is enabled, the bird follows my command and turns left and will straighten out to the heading of 280. I've also got the altitude (ALT) enabled (the little light glows next to the title of the button - can't miss it), so we'll level off at 8,000. Keep an eye on your airspeed and your rate of climb.

Here our rate of climb is 4,400 feet/minute. Getting a little steep, and it won't be long until you hear retching from the cabin, so I'll put her nose down a little.

This I do by left clicking on the wheel on the autopilot panel, at the top (on the wheel) where it says NOSE DN. Be careful! Too much and you'll not only turn your climb into a descent, but the smaller your rate of climb, the faster you'll find yourself going, and before you know it, you've busted your speed restriction of 250, and there'll be some decidedly not nice guys in suits and briefcases who will want a piece of your time once you land. They will not leave you smiling. So, it is a balancing act between your climb angle and airspeed, to say nothing of having to replace the barf bags in the back.

Now here's another cool trick. Open the FMC. See the DIR button? Press it.

Now, look at your flightplan on your MFD. Go ahead and press "Pause". Nobody is looking.

See how your next waypoint is CMK? Also note how CMK appears on the DIR screen of your FMC. As ATC has instructed us to turn to 280 and "resume own navigation" (which basically means turn to heading 280, then proceed on your flight plan as filed), we'll perform a "Direct To" with our FMC. Once we level out on our assigned heading (they may have told us to fly this heading for traffic. Unfortunately, the limitations of the default ATC does not permit them to tell us this), here's what to do:

Press L3, next to CMK. It will be entered into the scratchpad. When ready, press L1.

Now, CMK is your next waypoint. Press NAV on your autopilot panel, and you will fly directly to CMK. Sweet!

Perhaps a better way to achieve your assigned altitude (your choice) is to enable FLC on the autopilot panel. This places my bird in a sedate climb of 1,400 feet/min, and makes it a whole lot easier to control her speed. Using that wheel thingy on the autopilot panel, you dial up or down your desired speed, and it will appear on the pilot's MFD in the upper left above the speed tape. Neat, huh?

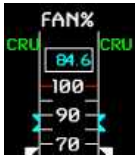
As if you didn't already have enough on your plate, now would be a good time to consider shutting down your APU. See why this is a two pilot bird? Of course, having shut the silly thing down, you'll just have to start it again once on final, so that you'll have air and power while your passengers are "deplaning".

Ok, we've been instructed to climb to 17,000 feet. We dial in the altitude on the pedestal, and click on the FLC (flight level change) on the autopilot panel. As before, keep one eye on the air speed, one on the climb rate, and one on the throttles. Our balancing act continues as, now that we've crossed 10,000 feet, we are free to increase our speed. Staying within the CLB detent (there is plenty of "play" in each detent), bring up your speed. Oh yes, keep your other eye on the ATC window, as once you've gotten your balance, they are sure to issue you further instructions and screw you up entirely.

Have you noticed the little line that extends from your current speed on the speed tape?

This is your trend indicator, and can be very helpful while trying to adjust your speed. Your speed trend follows the line. In this case, we're at 247, and if left alone, we'll continue to accelerate. If I were to be shooting for 250 Kts, I'd fiddle with the throttles until the tape was on 250, and the line was not visible.

As it seems for this flight, ATC has determined that our cruise altitude will be 17,000, and as we've now established our bird at that level, we'll pull back the throttles until we see CRU on our EICAS. Pay attention to the speed tape!



Cessna Citation X - The Luxury Aircraft Collection

Now that we're set for the moment, now is a good time to check all our gauges. Pay particular attention for any disparity between the engine numbers. This is where you may find early indications of malfunctions.

Let's have a peek at the way my panel looks, now that we're established in cruise, shall we?

As you see, we are just a hair above our assigned altitude, and the aircraft is compensating with a slow descent. Our speed is close to what we've dialed in. Your X is a slippery little girl, and needs to be watched closely as she does love her speed! The Middle MFD shows us just before LL01, and we're about to turn to our next waypoint. The pilot's MFD indicates LNAV (Lateral NAVigation), so we know the turn will be done for us. The autopilot panel is set just how we want it. The throttles are in the CRU detent.

With our numbers looking good, let's go back to the FMC, and open the Landing page. You'll find it by pressing FPL and then L4, ARRIVAL. It won't be long until ATC tells you how far you are from your destination, and assign you your arrival runway. Once you have it, enter it by typing it into the scratchpad, and pressing L4. This will take you to a page which includes APPROACH and RUNWAY. APPROACH and RUNWAY (at least at KALB, a smaller airport) gives you the arrival runways and options (such as ILS) for each where available. Finally, when you've got your runway and have entered it, click on R4, ACTIVATE. Now, the FMC knows where you wish to go, and will adjust your speed/altitude numbers accordingly.

Here we've entered the ILS Approach to Runway 01, with no STAR, and we're ready to tell the FMC that we really, really mean it by hitting R4 to ACTIVATE.

As ATC has just informed me to turn right to heading 250, using the Heading knob on the pedestal I've turned the heading bug on the Pilot's MFD to 250, and on the autopilot panel, hit HDG. I can't wait to see why they've turned me away from my destination and doing donuts in the air, but that's why we carry extra gas in the tanks. Note the NAV light extinguishes and your bird dutifully turns to heading 250. You will often find that ATC, particularly the default ATC, has an annoying habit of tossing your flightplan in favor of their vectors to final. These are often whimsical directions that are seemingly designed for you to burn as much avgas as possible. I've been thinking someone's got a ton of stock holdings in that business. Don't panic, just do what they tell you to do, otherwise they'll cancel your IFR flight and you'll have to change your squawk and find your own way to your destination.

During our little jaunt around the sky, I took the opportunity to walk into the cabin for a look around. Sure do wish it wasn't so hazy!

Sorry, just couldn't resist this one.

Now would also be a good time to go back to the RMU, and click on L6 until you see NORMAL in the yellow box. Now your TCAS is scanning for bogies more or less on your level, rather than ABOVE or BELOW. Once we start down, we'll change that to BELOW.

A quick peek at the pilot's MFD indicates your navigation is now in the Heading mode, the arrow to the left is telling you the pilot is in command of the autopilot, and the AutoPilot and Yaw Damper are engaged.

Well, I don't know about you, but I just took advantage of our cruise time and got myself a sandwich and a diet root beer. Got back just in time, as we've been directed to turn to heading 045 and to descend to 7,000. Easy enough to do. I dialed down the speed with the wheel on the AP panel, clicking on the NOSE DN side. I then used the funky looking altitude button on the pedestal, and using the Right mouse button to delay my inevitable case of carpal tunnel syndrome, I dropped our AP altitude to 7,000. Now, the trick is to monitor our airspeed, as you know this girl likes to run!

Knowing as I do that the ILS frequency for Runway 01 at KALB is 109.50, and on a heading of 012. I access the RMU on the pedestal and click R2 twice to put the little yellow box thingy over the secondary Nav frequency. With it highlighted, we may now change it to 109.50 using the tuner knob at the bottom of the RMU. Also note that I've used L6 to change the TCAS to look below us for traffic.

We then click R1 in order to transfer the frequency to the active channel.
The throttles are set back to 49.9 N1% in order to maintain my speed of about 245 kts.

Now, this is really important! Change your navigation source from FMS to NAV! If you fail to do this, you'll be waving to the nice folks at KALB as you fly by, wondering why your navigation failed to pick up the localizer and glide slope. I've also changed the knobs to VOR 1 & 2.

Ok, we're below 10,000 feet. A couple of things to recall. We need to turn on the landing lights (having remembered to turn them off when climbing above 10K. I often forget.), and we must ensure our speed remains below 250.

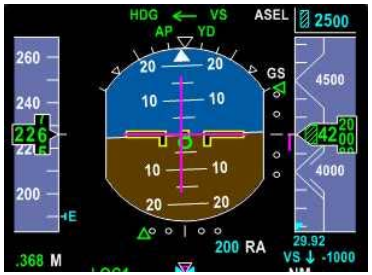
You know you're getting close when ATC directs you to contact Approach! Normally, Approach will turn you onto your base leg of the approach, and then downwind. When they have you turn to downwind, they'll give you the altitude at which you'll be able to intercept the glide slope (from below, but you already knew that). You will eventually see your pilot MFD localizer and glide slope appear.

Cessna OMS, you are 22 miles south. Turn right heading 345, Descend and maintain 2,500 Cleared ILS runway 1 approach. Maintain 2,500 until established on the localizer. Contact Albany Tower on 119.5.

This is your typical ATC instruction for turning on final. At this point, you should be quite comfortable adjusting your heading (knob on pedestal, right?) and altitude as per request by ATC.

I can't stress this point enough. Watch your speed! Once you've dialed in your new altitude (2,500), click on the VS button on your AP panel, then click on the NOSE DN portion of the AP panel wheel. I find about 1000 feet/minute works. But, now with your nose down, your X will begin to accelerate. Do not try to play catch up with your airspeed! Stay on top, use small adjustments to your throttle, and maintain your airspeed.

ATC turned me to final about 21 miles out. Once established on the assigned downwind heading, the localizer and glide slope indicators come alive on your MFD.



Glide slope (GS) is to the left of the altitude tape, and the localizer is just above the 200 decision height indicator. Green arrows. These will move in relation to your orientation to the centerline of the runway (localizer) and your approach (from below) to the glide slope. You can watch as your bird flies towards the arrows.

Once your localizer arrow begins to move (comes "alive"), press the APP (approach) button on the autopilot panel.

The triangle is beginning to creep towards center, indicating our approach to the centerline of the runway. Time to press APP.

You should now swing onto the centerline heading. Now would be a good time to begin backing off on the throttles. Follow the speed settings for deployment of the flaps.

Flaps Position

WEIGHT (LBS)	FULL	15°	5°	UP
36,100	109	114	120	123
34,000	106	111	116	120
32,000	101	105	112	115
30,000	96	101	107	110
28,000	92	97	103	106
26,000	88	93	99	102
24,000	84	89	94	97
22,000	80	85	90	93

For maneuvering prior to approach, minimum airspeed should be maintained to provide an adequate safety margin above stall:

Clean	VREF + 30
Flaps 15°	VREF + 20
Full	VREF + 10

Once your glide slope arrow begins to move down, it's time to drop your landing gear.

Flaps/gear have a funny effect on your bird. It's called drag, and as usual, you've got to monitor your speed closely. You can easily find yourself digging a hole short of the runway, or flying right through the glide slope and find yourself calling a missed approach. The idea hear is to cross the threshold of the runway at just about your landing speed.

Once your wheels touch down, pull the throttles to idle, and deploy your reversers. I've used the registered version of FSUIPC to assign a button on my yoke. Pressed, it deploys the reversers. Released, it stows them. Nothing like being a child with toys, I always say.

Once below 60 kts, disable the reversers and use your brakes to slow down enough for you to turn off the runway. You will be directed by ATC to contact Ground. It is always a good idea, at this point, to turn off your landing lights and strobes. Nothing worse than a bunch of ground personnel temporarily blinded by your landing lights! Makes them cranky and very unlikely to service your bird at top speed and efficiency.

Ok, you're at the gate. We made it! Now it's a simple matter of following the shutdown checklist, and go grab something cold and wet.

Systems

Auxiliary Power Unit (APU)

In order to fire up the Citation X, you've got a couple of options. Ground power may be applied, or you may engage the APU (push starting is not recommended). The X uses a tail mounted Garrett APU which provides bleed air and 28.5 voltage for ground starts and in flight use. Restricted to 31,000 feet, the APU will burn somewhere between 120 to 150 pound of fuel per hour of operation.

In addition to its engine start responsibilities, the APU will also provide environmental control, including pressurization and air conditioning. The pressurization system is capable of holding the cabin altitude to 8,000 feet while flying at FL 510. Sea level cabin pressure altitude can be maintained up to approximately FL 250. The air conditioning system directs the flow of heated, cooled and/or fresh air to the cabin and flight deck.

The most important part that you've got to remember is, if you haven't got the GPU powering the bird, without the APU, you'll be sitting on the flight deck with the starter engaged wondering why it's so quiet!

Just a couple of things to recall about the APU. It will abort the start or shutdown for the following reasons:

- Overspeed - Above 108% rpm
- Overtemperature - Above 718 degrees C
- Overcurrent - Above 400 Amps
- Low oil pressure - Below 31 psi
- High oil temperature - Above 163 degree C
- No acceleration.
- After start sequence initiated
- No EGT
- Loss of EGT indication
- Loss of turbine indication
- APU fire

An APU fire detection system will illuminate the APU fire annunciator switch and shut down the APU. If the EICAS is on, the APU FIRE red CAS message and Master Warning lights will illuminate. Pressing the APU fire switch will discharge the APU fire extinguisher and, if not already shut down, will shut down the APU.

Here's an important safety tip: The fire extinguisher will not discharge automatically.

Propulsion

Two Rolls-Royce AE3007C/AE3007C1 are mounted on either side of the fuselage, and are controlled by individual FADEC (two per engine). The engines are rated at 6,442/6,764 lbs of thrust at sea level up to +30 C. Bleed air is extracted from the 8th and 14th stage to provide air conditioning, pressurization and bleed-air requirements.

Fuel

The fuel system is fed from three main tanks: two wind and one center. Fuel to the center tank may come from the right wing via a gravity flow system in the event of pump failure. Additionally, there are two hopper tanks (engine feed bays) that contain electric and motive flow pumps providing positive fuel pressure to the engine driven fuel pump and metering unit. Total fuel capacity is 13,000 lbs. A crossfeed system allows each hopper to feed both engines.

Electrical

Each engine has three electrical generation units connected to its accessory gearbox. These include a DC generator, an AC alternator and a permanent magnet alternator (PMA).

A separate DC generator is attached to the APU. All aircraft systems and avionics use DC power except for windshield anti-ice (powered by the engine driven alternator) and FADEC/ignition systems (powered by the engine driven PMA). The FADECs may also be powered by main or emergency DC power. The ignition is only powered by the PMA.

Two 44 amp/hour NiCad or lead acid batteries provide limited power to the aircraft for both normal and emergency operation. A small 28 volt lead acid battery pack is in the nose compartment, as a backup power source to standby instruments. Two additional NiCad battery packs provide power for the emergency exit lights.

Hydraulics

Hydraulic power is produced by two engine driven hydraulic pumps. Each is independent,

and do not share fluid. Each system is, though, linked for energy transfer purposes through a power transfer unit. This system allows the "A" system to be powered by the "B" system should the "A" system fails. An additional standby electric pump will power the "A" system should the PTU system fail. If the "B" system goes south, a rudder standby system will provide power to the lower rudder. Certain systems are powered solely by either the "A" or "B" system. Some components are powered by both, which permits operation should either one fail. The landing gear and brakes are normally powered by the "A" system, but may be operated using high-pressure nitrogen, also known as emergency pneumatic operation. Don't you feel safer already?

Flight Controls

Not to belittle the flight control system, but for crying out loud, stop reading and go fly the aircraft!

The ailerons, elevator, lower rudder and roll spoilers are all hydraulically powered. Your knowledge of this is critical for using your new X. Were it not, I imagine you'd be well on your way to FL390. Power Control Units (PCU) are small, self contained hydraulic variable position actuators, which have been known, in certain Southern regions, to suddenly deplane and go skinny dipping. Inputs from the flight controls causes a pitifully small valve within the PCU to move, which then directs hydraulic fluid to an even smaller actuator within the PCU which moves the control surface. Isn't that neat? The PCU's are mounted in pairs on the ailerons, elevators and lower rudder while a single PCU (the lonely one) is mounted to each of the speedbrakes and roll spoilers. Go fly!

Rudders

Pedal inputs are transmitted to both the upper and lower rudder systems. The upper rudder will only respond to the rudder pedal inputs if the flaps are extended. The lower rudder is hydraulically controlled by two PCU's (remember them?). If one PCU should fail, the rudder will still operate normally. If both should fail, the rudder standby system will provide power to the "B" system PCU using trapped "B" system fluid (Note: I have no idea what that means, so I just copied it...). The upper rudder is electric and receives input from the yaw stability augmentation system. The lower rudder receives input from the Flight Guidance System.

Environmental

Two pressurization air conditioning units (PACs) are to be found, should one be sufficiently motivated to search for them, hiding within the tail cone. They route hot and cold air into the cabin and flight deck to ensure a constant source of air pressure and temperature control needs. There are three methods for controlling pressurization: NORM, ALT SEL and MANUAL.

Pressurization and environmental control bleed air is engine-supplied low pressure (LP), high pressure4 (HP), or onboard APU bleed air (or external ground cart air on the ground - the little guy who runs the thing draws the line at becoming airborne while performing his tasks). All three onboard sources or any combination may be used on the ground or in flight (except for that little guy we talked about). APU maximum altitude is FL310. Bleed air and environmental system control is provided in the environmental control panel on the right tilt panel.

The L-R ENG BLD AIR switches control engine bleed-air firewall shutoff valves. In the OFF position, both valves are energized closed and no bleed air is supplied from that engine to pressurization/environmental or anti-ice systems. In the LP position, only the LP valve is open and HP bleed air will not be supplied. In the normal HP/LP position, both valves are open and LP and HP air are supplied as

required. There is a terribly cool graphic of this which, regretfully, copyright laws prevent me from showing to you.

Air Conditioning

The air distribution system directs the flow of heated, cooled and/or fresh air to the cabin and flight deck for environmental comfort. Permitting your passengers to asphyxiate is considered very poor form, and is to be avoided whenever possible. Outlets are located overhead, in the armrests and at the floor level, including foot warmers in the cockpit (they think of everything!), and are positioned to assist in windshield defogging. Wiping a small circle in your windshield so that you may see as you run your approach tends to upset the customers. The CKPT PAC and CAB PAC switches control the environmental control system air cycle machines. The OFF position closes the bilevel flow control valve, shutting off engine bleed and normal APU bleed flow to that PAC. The ON position supplies normal airflow rate. The HIGH position supplies an increased flow rate for improved heating or cooling, and should you happen to be shuttling around members of various rock bands or certain elected officials.

Ice and Rain Protection

The anti-ice systems are designed to prevent ice formation on the pitot tubes, static ports, angle-of-attack probes, ram air temperature probes, engines, wings (almost done), wing roots, horizontal stabilizer leading edges, windshields, landing lights and overboard water drain lines. The vertical stabilizer does not require anti-icing. The various anti-ice systems use either electrical heating elements or hot engine bleed air, and are activated by switches on the copilot instrument panel.

Ice accumulations will significantly alter the shape of the airfoils of any aerodynamic surface, and seriously ruin what was otherwise a perfectly lovely flight. The resulting change in shape of the airfoil, and to a lesser extent the added weight of the ice, will increase the stall speed and possibly change the normal handling characteristics and performance of the plane. During periods of high angle-of-attack (low airspeed) flight conditions, an increase in drag (unless you're a guy named Priscilla) may be experienced due to a buildup of ice on the undersurface of the wing aft of those areas which are protected by the leading edge anti-ice system. To keep the angle-of-attack low, the minimum airspeed for sustained flight in icing conditions (except approach and landing) is 200 KIAS.

Fire Extinguishing

This system consists of itty bitty fire trucks. Actually, it consists of two extinguishing agent (noncorrosive Brom Tri-floroMethane) bottles, deployment tubes/nozzles for each engine, firewall fuel and hydraulic shutoff valves for each engine, ENG FIRE PUSH switchlights for each engine and a white BOTTLE ARM switchlight for each fire bottle.

In the event of an engine fire, the applicable ENG FIRE PUSH switchlight would illuminate along with the applicable CAS message. After first bringing the naughty engine to idle for 15 seconds (if the engine is still running or attached)(can you imagine counting to 15 with the alarms going off?) to eliminate the possibility of a bleed-air leak, the illuminated ENG FIRE PUSH switchlight cover is lifted and the switch is pushed. This powers the fuel and hydraulic firewall shutoff valves closed, commands the FADEC to shut down the engine, the associated generator goes off line, the selected thrust reverser is disabled, and both fire extinguishing bottles are armed and directed toward the selected engine. As the fire bottles are armed, the two light switches illuminate. Either BOTTLE ARMED light switch may be pressed to discharge the applicable fire bottle. If the fire indication is still present after 30 seconds, the other

BOTTLE ARMED light switch should be pressed, discharging the remaining bottle. If that doesn't do it, well ….

Secondary Flight Controls

Flaps

The flaps are powered electrically by a flap motor, flexible shaft drive units and gear boxes. When the slap/flap position lever is moved to a detent, a signal is sent to the flap controller. One flex-shaft drive train is provided for the left wing flap actuators and another flex-shaft drive train is provided for the right actuators. Each flap on each wing is moved up or down by two actuators.

Slats

Slat movement is electrically controlled and hydraulically operated using the slat-flap handle. Four slat actuators are mounted on each wing leading edge. Two actuators on each wing are powered by the A-system and two are powered by the B0system. If either A or B system pressure is lost, the slats may be operated normally using the hydraulic power form the remaining system. The slat actuators are kept pressurized, whether the slats are up or down, to hold the slats in the commanded position.

Auto Slats

Slat position inputs are provided to each of the angle-of-attach (AOA) computers. If either of the AOA systems detect the normalized angle of attack exceeds .83 AOA, the computer will issue an autoslat extend command. The slats will automatically restow when the AOA is reduced.

Speed Brakes

There are three speed-brake panels on each wing. You really must stop reading this stuff and take your bird for a spin. The outboard panel on each wing is powered by the A0hydraulic system. The two inboard panels on each wing are powered by the B-hydraulic system. Each speed-brake panel is hydraulically actuated by a single PCU. The middle left and outboard right panels are monitored for speed-brake position. When both panels indicate deployment, a white message is displayed on EICAS. The message changes to an amber message if radio altitude is less than 500 feet. If both A and B hydraulic system pressures are lost, the speed brakes will not operate. Of course, at that point, you've got problems that far exceed your concern about the speed brakes.

Thrust Reverser

One thrust reverser (TR) lever is mounted piggyback on each throttle lever. To deploy reversers, the levers are pulled up and aft ("back" for you neophytes). To stow the reversers, the levers are pushed forward and down. Each thrust reverser is equipped with two hydraulically-powered primary actuators. These act on push rods to drive the TR open or closed. Two hood actuators, one on each side of the reverser, hydraulically unlatch the reverser locking hooks in preparation for deployment. I highly suggest assigning a button push to this function in Flight Simulator, perhaps using the ubiquitous FSUIPC (registered version, sorry) to assign the release of said button with the stowing of the reversers. Man that is tres cool!

Checklists

Cockpit Preparation

1. Preflight Inspection - COMPLETE
2. Cockpit Switches - VERIFY SET
   a.EMERG LT Switch - ARM
   b.DAY/NITE DIM Switch - AS REQUIRED
   c.LH and RH GEN Switches - GEN
   d.LH/RH FUEL BOOST Switches - NORM
   e.LH/RH FADEC Switches - NORM
   f.LH/RH IGNITION Switches - NORM
   g.STBY Gyro - CAGED
   h.STBY PWR Switch - ON
   i.Exterior Lights - AS REQUIRED
   j.Pressurization Control Switches - AS REQUIRED
   k.Bleed/Environmental Control Knob - SET
   l.All Other Switches - AS REQUIRED
3. BATT 1 2 Switches - ON
4. DC Power BUS 1 & 2 Switches - ON
5. DC Power XTIE Switch - VERIFY CLOSED
6. Avionics Switch - ON
7. Parking Brake - SET
8. APU - START or GPU - CONNECTED
9. DC Battery Ammeters (if APU generator ON or external pwer ON) - VERIFY BOTH ARE CHARGING
10. IRS - ALIGN/NAV
11. FMS - INSERT PRESENT POSITION
12. Fuel Transfer/Crossfeed - CHECK/OFF
13. FLT CONTROL SHUTOFF Switch Annunciators - ALL EXTINGUISHED
14. Warning Systems - CHECK/OFF
15. Cockpit Voice Recorder - TEST
16. Aileron and Rudder Trim - CHECK/SET FOR TAKEOFF
17. Flight Guidance Computer/Stabilizer Trim/Yaw Dampers - CHECK/SET

Before Start

1. Parking Brake - VERIFY SET
2. Wheel Chocks - REMOVED
3. Cabin Door - CLOSE/LOCK
4. Passenger Briefing - COMPLETED
5. Seats/Belts/Harnesses/Pedals - ADJUST/SECURE
6. Cockpit Side Windows - CLOSED/LATCHED
7. External Lights - AS REQUIRED
8. EICAS - CHECK
9. ATIS/Clearance/FMS - AS REQUIRED
10. Flight Instruments/Avionics - CHECK/SET
11. Fuel Quantity/Balance - CHECK
12. CTR WING XFER Switches - NORM/AS REQUIRED
13. V-Speeds - SET

Engine Start

1. APU (or Ground Air Service) BLEED AIR Switch - ON (check start duct pressure - 30 psi)
2. PAC ISOL VALVE Knob - CLOSED
3. Right Engine - START

NOTES

• The throttle lever may be moved out of cut-off after engine N2 rotation begins. Start sequence will begin at 10% N2.

• The FADEC will turn on ignition at approximately 14% N2 RPM and initiate start fuel at 33% N2 RPM or 10 seconds after ignition is turned on.

a.ENGINE START BUTTON - PRESS (confirm START button and DISENGAGE button illuminate)
b.Throttle - IDLE (by 10% N2 RPM)
c.N1 Rotation - CONFIRM
d.Oil Pressure - CHECK
e.ITT - MONITOR
f.Start Termination - CONFIRM BY 57% N2 (START and DISENGAGE lights extinguished)

4. Hydraulic Pressure - VERIFY
5. Left Engine - START (same as Right)
6. Hydraulic Pressure - VERIFY
7. Generators - CHECK DC AMPS/VOLTS
8. DC Power XTIE Switch - VERIFY OPEN
9. Ground Air Service/GPU (if used) - DISCONNECT
10. APU Bleed Air Switch - OFF (check bleed sources)

b.Select EICAS SYS, ENG on the MFD (duct pressure is from right engine)
c.R ENG BLD AIR Knob - OFF (pressure should be zero)
d.PAC ISOL VALVE Knob - OPEN (pressure from left engine)
e.L ENG BLD AIR Knob - OFF (pressure should be zero)
f.L ENG BLD AIR Knob - HP/LP (check pressure)
g.PAC ISOL VALVE Knob - CLOSED (pressure

should be zero)
h.R ENG BLD AIR Knob - HP/LP (check pressure)

11. APU BLEED AIR SWITCH - AS DESIRED

NOTE
If the APU is operational, it is recommended that it remain operating through initial climb, with bleed on, to provide emergency restart and generator capability.

Before Taxi

1. Flight Controls - FREE/CORRECT EICAS INDICATIONS
2. Flaps/Slats Lever - UP
3. Flaps/Slats - SET FOR TAKEOFF/CHECK EICAS INDICATION
4. Speed Brakes - CHECK/STOWED/EICAS INDICATION
5. AHRS or IRS - ALIGNED/NO FLAGS
6. EICAS - CHECK (all messages normal or resolved)
7. Anti-Ice Systems - AS REQUIRED
8. Pressurization - SET (to takeoff or landing field elevation)
9. Passenger Advisory Lights - PASS SAFETY

Taxi

1. Exterior Lights - AS REQUIRED
2. Brakes - APPLY and HOLD
3. Parking Brake - RELEASE
4. Brakes - CHECK
5. Nose Wheel Steering - CHECK
6. Thrust Reversers - CHECK/STOWED (the following thrust reverser check must be successfully completed)

a.Thrust Reversers - DEPLOY (idle)
b.ARM, UNLOCK, DEPLOY Lights - ILLUMINATED
c.STOW Switches - EMER.
i.Thrust Reversers - STOW
ii.UNLOCK and DEPLOY Lights - OUT
iii.ARM Light - REMAINS ILLUMINATED
d.Thrust Reversers - STOW
e.STOW Switches - NORM
i.Thrust Reversers - REMAIN STOWED
ii.All Thrust Reverser Lights - OUT

Before Takeoff

1. Anti-Ice Systems (if required) - CHECK
2. Seats/Seat Belts/Shoulder Harnesses/Aft Divider Sliding Doors - CHECK/SECURE/LATCHED OPEN
3. Flaps/Slats - SET FOR TAKEOFF
4. Speed Brakes - RETRACTED (0%)
5. Trims (3) - SET FOR TAKEOFF
6. Yaw Damper and Mach Trim - CHECK ON
7. Crew Briefing - COMPLETE

****
CLEARED FOR TAKEOFF
****

8. Radar - AS REQUIRED
9. Transponder - TA/RA
10. LH and RH PITOT STATIC Anti-Ice Switches BOTH ON
11. Anti-Ice Systems - AS REQUIRED
12. Exterior Lights - AS REQUIRED
13. Engine Instruments - CHECKED
14. EICAS - CHECK

TAKEOFF

1. Throttles - TO/MC DETENT (FADEC mode indicator - green T/O)
2. Brakes - RELEASE
3. EICAS - CHECK NORMAL INDICATIONS
4. Elevator Control - ROTATE AT V1 TO ACHIEVE 13 DEGREE PITCH

NOTES
• The brakes may be released prior to setting TO thrust on rolling takeoffs. The runway length required will be longer than the published distance.
• Use of the flight director TO command is recommended for initial attitude reference.

AFTER TAKEOFF/CLIMB

1. Landing Gear - UP.

NOTE
When taking off in conditions of weather related runway contamination, it is suggested to delay retracting the gear in order to clear the crud from the brakes and wheel assemblies.

2. Flaps/Slats - UP (airspeed above 170 KIAS).
3. Throttles - CLIMB DETENT.

NOTES
• Takeoff Thrust (TO/MC detent) with ITT in the amber range is limited to 5 minutes).
• Thrust must be reduced to the Climb (CLB) detent within 5 minutes after takeoff.
• Use of Climb Thrust (CLB Detent) during normal operations beyond 5 minutes after reaching cruise altitude will significantly decrease engine life and increase operator costs, and seriously annoy your boss.

4. Anti-Ice Systems - AS REQUIRED.

NOTE
Windshield anti-ice may be on continuously during most ground and flight operations to aid in flight deck heating.

5. ENG SYNC Knob - AS DESIRED.
6. Pressurization - CHECK.
7. Passenger Advisory Lights - AS REQUIRED.
8. Altimeters (transition level) - SET.
9. Exterior Lights (FL180) - AS DESIRED.
10. APU (prior to climb above FL310) - OFF .

CRUISE

1. Throttles - CRU detent or AS REQUIRED.

NOTE
It is recommended that throttles be reduced to the CRU detent or below within 10 minutes after reaching desired altitude.

2. Pressurization - CHECK.
3. Oxygen Mask (when required) - DON/NORM.
4. Fuel Transfer - VERIFY.

NOTES
• The center-to-wing transfer system, CTR WING XFER switches in NORM, will automatically start center tank to wing transfer at approximately 3250 to 3500 pounds of fuel in each wing and maintain approximately that level in the wings until the center tank is empty. Exact wing fuel level will vary with pitch attitude.
• EICAS control position page may not show the surface positions at "zero" due to variations in the aerodynamic loads. This is considered normal.

DESCENT

1. LH and RH WINDSHIELD ANTI-ICE Switches BOTH ON.
2. Side Window Vent Knobs - CLOSED.
3. Pressurization - CHECK/SET LANDING ELEVATION.
4. ANTI-ICE Switches - AS REQUIRED.

NOTES
• Cabin pressure may not be maintained at high altitude while at idle with all anti-ice on. Adjust throttles as required to maintain cabin pressure.
• Minimum airspeed for sustained flight in icing conditions (except approach and landing) is 200 KIAS, with slats retracted.

5. APU - AS DESIRED.
a.Altitude below FL310 Airspeed </= 300 KIAS.
b.Altitude below FL200 Airspeed <= 350 KIAS.
6. Exterior Lights (FL 180) - AS REQUIRED.
7. Altimeters (transition level) - SET.

APPROACH

1. Landing Data - CONFIRM.
   a.Airspeed - VAPP/VREF.
   b.Landing Distance.

FLAPS FULL LANDING

Weight Range - Pounds

	23	24	26	28	30	31,8
VREF	108	110	115	121	126	132
VAPP	113	116	121	126	131	136

Runway Length: 4500 feet or longer.
Pounds = x1000
V (KIAS)

NOTE
The above criteria apply only to landings with full flaps, at or below 2000 feet MSL, and temperatures at or below 45 degrees C.

2. Crew Briefing - COMPLETE.
3. Avionics/Flight Instruments - CHECK/SET.
4. Minimums - SET (RA/BARO).
5. FUEL CROSSFEED Switch - OFF.
6. Exterior Lights - AS REQUIRED.
7. Flaps/Slats - AS REQUIRED (VFE 5/250 KIAS; 15/210 KIAS) VFE = Maximum Flap Extension Speed.
8. Passengers - BRIEF.
9. Seats/Seat Belts/Shoulder Harnesses/Aft Divider Sliding Doors - CHECK /SECURE/LATCHED OPEN.
10. Passenger Advisory Lights - PASS SAFETY.
11. LH and RH IGNITION Switches - NORM.
12. Pressurization - ZERO DIFFERENTIAL at touchdown.
13. ENG SYNC Knob - OFF.

BEFORE LANDING

1. Landing Gear - DOWN and LOCKED (3 green lights); VLO VLE 210 Knots.
   VLO = Max. Landing Gear Operating Speed;
   VLE = Maximum Landing Gear Extended Speed.
2. Flaps - AS REQUIRED (VFE 15/210 KIAS; VFE FULL/180 KIAS) VFE = Maximum Flap Extension Speed.
3. Speed Brakes - RETRACTED (0%).
4. EICAS - CHECK.
5. Airspeed - VREF.
6. Autopilot - OFF above minimum use height.

LANDING

1. Throttles - IDLE.
2. Speed Brakes - EXTEND at touchdown (100%).
3. Elevator Control - FORWARD PRESSURE at touchdown.
4. Brakes - APPLY after nose wheel ground contact.
5. Thrust Reversers - DEPLOY after nose wheel ground contact.
6. Thrust Reversers - IDLE BY 65 KIAS.

ALL ENGINE GO AROUND

1. Go-Around Button - PRESS.
2. Throttles - TO/MCT.
3. Airplane Pitch Attitude - POSITIVE ROTATION TO + 10 degrees (go around pitch command) or AS REQUIRED.
4. Flaps - 15 (or 5 if 15 flap landing).
5. Landing Gear (Positive Climb and Flaps </+ 15) - UP.

NOTE
IF the landing gear are retracted before the flaps reach 15, the landing gear warning will sound briefly.

6. Flaps - AS REQUIRED.
7. Climb Speed - AS REQUIRED.
8. Throttles - AS REQUIRED.

AFTER LANDING

1. Thrust Reverser - STOW.
2. Speed Brakes - RETRACTED (0%).
3. Flaps/Slats - UP/AS REQUIRED.

NOTE
When landing/taxiing in slush/ice, leave flaps at 15 until post flight inspection of slats, flaps and wing trailing edge.

4. Radar - OFF.
5. Transponder - STANDBY.
6. PITOT/STATIC Anti-Ice Switches - OFF.
7. Anti-Ice Systems - ENGINE - AS REQUIRED; SLAT and STABILIZER - OFF.
8. Exterior Lights - AS REQUIRED.
9. APU - AS DESIRED.

SHUTDOWN

1. Parking Brakes - SET.
2. Anti-Ice Systems - OFF.
3. Throttles - CUTOFF.

NOTE
The ENGINE FAIL and GEN FAIL red CAS message may be momentarily displayed during normal engine shutdown if both engines are shut down in rapid succession.

4. IRS Mode Control Knobs (if installed) - OFF.
5. Passenger Advisory Lights - OFF.
6. Standby Gyro - CAGED.
7. STBY PWR - OFF.
8. Avionics Switch - OFF.
9. EMRG LT Switch - OFF.
10. GRVTY XFLOW Switch - OFF.
11. APU - OFF.
12. BATT 1 and BATT 2 Switches - OFF.

General Stuff To Know

Your X is a pressurized, swept-wing Transport Category aircraft approved for day/night, IFR/VFR and for flight into icing conditions (provided you've thought ahead and asked for the dealer installed anti-ice systems). It is approved for over water operations, with the appropriate equipment installed.

All flights require two pilots. The maximum number of passenger seats permitted is twelve. Suffice it to say you will not be shuttling most, if not all, professional sports teams at one time. You might be able, however, to manage the support staff for some of the more popular professional athletes.

The wings are swept at 40 degrees. They have a bunch of stuff installed, including speed brakes, roll spoiler panels, slats, ailerons, fuel tanks and flaps. Anti-ice is provided by hot engine bleed air for the fixed leading edge and slate, and electrical current to the wing root.

The engines are twin Rolls-Royce AE3007C/AE3007C1 planted on either side of the fuselage, and are rated at 6,442/6,764 lbs of thrust at sea level. Bleed air is extracted from the 8th and 14th stage to meet environmental and bleed air requirements. The fuel system is comprised of three main fuel tanks, two wing and one center tank. Fuel to the center tank may come from the right wing via a gravity flow system. There are also two hopper tanks (also called engine feed bays) that contain electric and motive flow pumps providing positive fuel pressure. Total fuel capacity is 13,000 lbs. A crossfeed system allows each individual hopper tank to feed both engines. Each wing tank holds a maximum of 3,500 lbs, the center 6,000 lbs.

Each engine has three electrical generation units, including a DC generator, an AC alternator and a permanent magnet alternator. A separate DC generator is attached to the APU. Hydraulic power is produced by two engine-driven pumps. Each is an independent system that does not share fluid, and each is linked for energy transfer purposes through a power transfer unit.

There are two pressurization air conditioning units (PAC's) located in the tail cone. These route hot and cold air into the cabin and

flight deck to ensure a constant source of air for pressurization and temperature control. There are three methods for controlling pressurization: NORM, ALT SEL and MANUAL.

Crew Alerting System

The EICAS screen contains a section which will alert the crew of situations that may require particular attention. The CAS messages fall into one of four levels:

- Level 0 - Status messages appearing in white
- Level 1 - Advisory messages appearing in cyan
- Level 2 - Caution messages appearing in amber
- Level 3 - Warning messages appearing in red.

Up to twelve messages of various levels may be displayed at one time. A scroll knob in the lower right corner of the display unit is used to scroll through the messages on and off the screen. Should there be messages not appearing on the screen, the crew will be alerted to their presence, and they may be viewed by rotating the scroll knob. The messages are self explanatory. Suffice it to say, the more red messages there are, the deeper in it you will be, and is a pretty strong indication to begin looking for alternate landing locations.

Weight Restrictions

Maximum Ramp Weight	36,000 lbs
Maximum Takeoff Weight	35,700 lbs
Maximum Landing Weight	31,800 lbs
Maximum Zero Fuel Weight	24,400 lbs

Speed and Altitude Limitations

Maximum Operation < 8,000 feet	270 KIAS
Maximum 8,000 to 24,000	350 KIAS
Maximum 24,000 to 35,000	275 KIAS
Maximum 35,000 to 41,000	240 KIAS
Maximum 41,000 to 51,000	190 KIAS

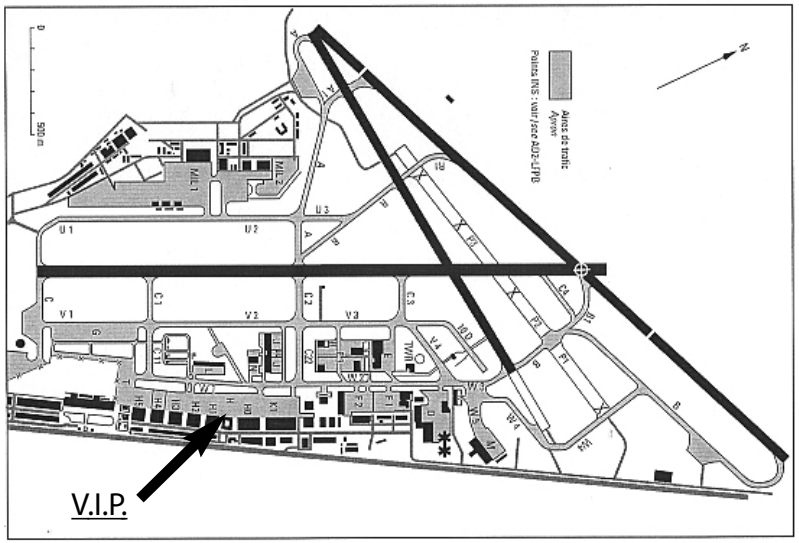
Maximum Flap Extended Speed

Flaps 5	250 KIAS
Flaps 15	210 KIAS
Flaps FULL	180 KIAS

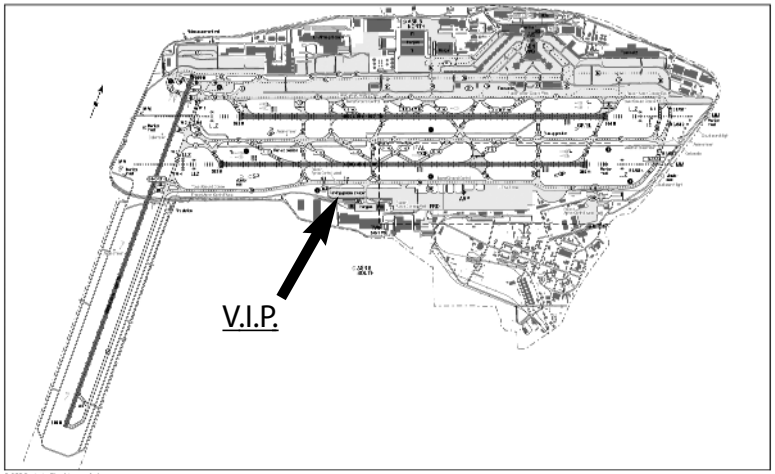
Max.Altitude for Flaps/Gear	18,000 feet
Max.Operational Altitude	51,000 feet

V.I.P. WELCOME

Paris Le Bourget (France) - LFPB



Frankfurt Main (Deutschland) - EDDF



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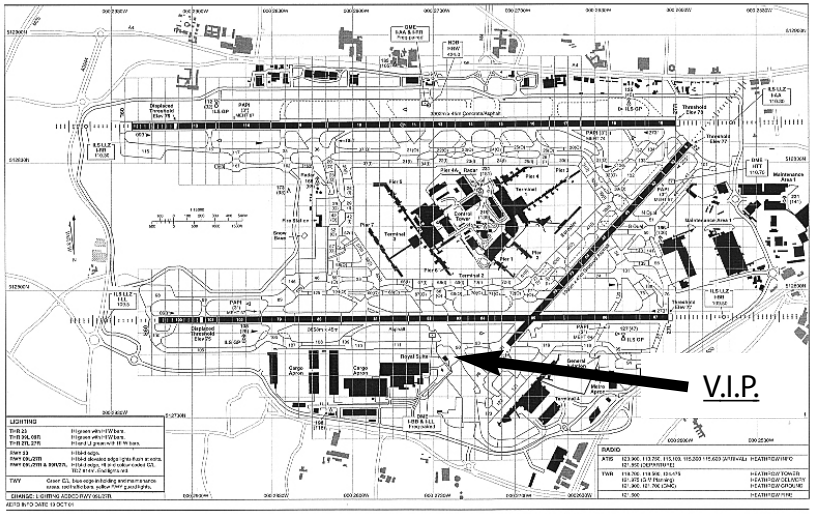
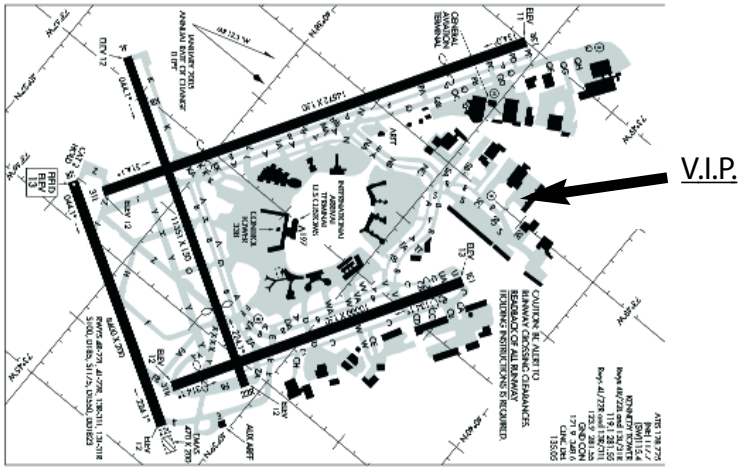
London Heathrow (United Kingdom) - EGLL



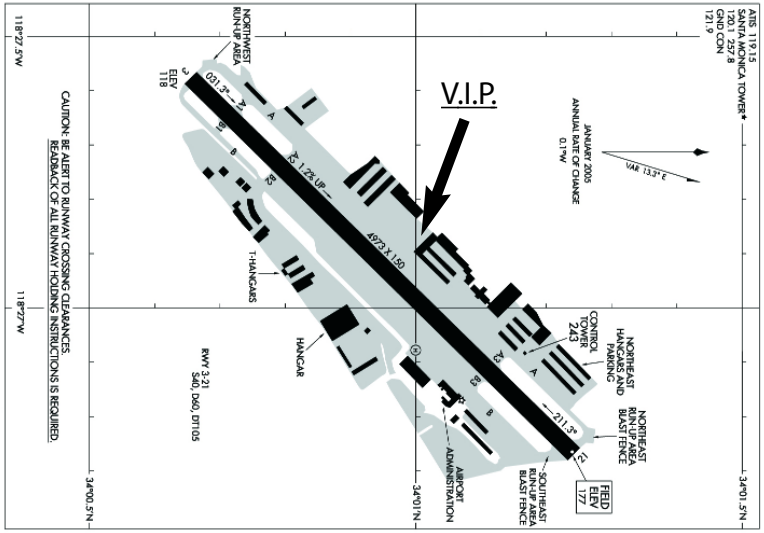
J.F. Kennedy Airport (USA) - KJFK



Cessna Citation X - The Luxury Aircraft Collection

V.I.P. WELCOME

Los Angeles Santa Monica Airport (USA) - KSMO



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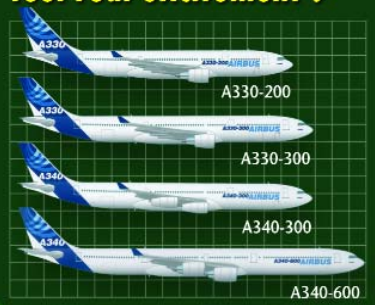

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