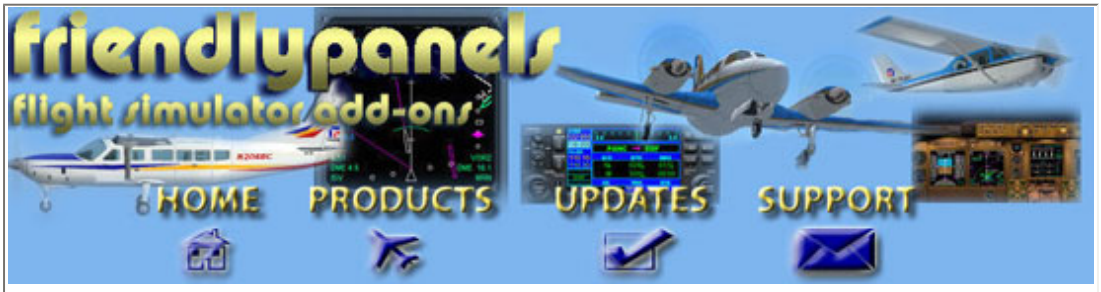
AVSIM Commercial Panel Review

Bombardier CRJ 700 Panel for FSX



Product Information		
Publishers: Friendly Panels		
Description: Add-on cockpit panels for FSX CRJ 700 passenger jet.		
Download Size: 3 MB	**Format:** Download	**Simulation Type:** FSX
Reviewed by: Jeff Shyluk AVSIM Senior Staff Reviewer - January 4, 2009		

FOREWORD: Cockpit Renovations

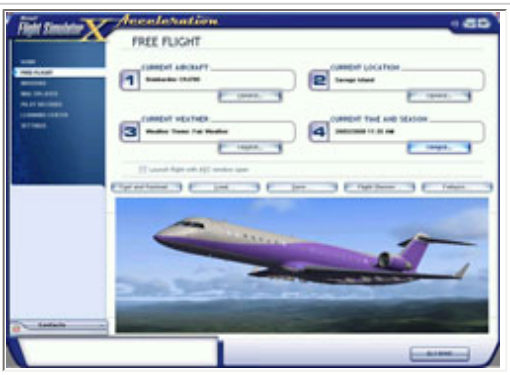
The Bombardier CRJ 700 Panel by Friendly Panels for FSX adds realistic cockpit instruments to the default CRJ 700 jetliner that comes packaged with Flight Simulator. It creates an updated 2D cockpit environment and it replaces some of the gauges in the VC.

Customizing a cockpit model requires a lot of work to develop, and currently FSX supports two types of cockpits. The first is the default two-dimensional model (the so-called “2D cockpit”) because it features a representation of the cockpit that is essentially painted onto a flat surface. The advantage of the 2D cockpit is that it tends to be easier on frame rates, and it allows for a large number of controls to be compressed into one view. The disadvantage is that it limits the view around the cockpit to set viewpoints.

The second type of cockpit is a three-dimensional model, called either a “3D cockpit” or a “VC”, which stands for “Virtual Cockpit”. VC's tend to be laid out like a real cockpit. You get a view as if you were sitting in a real pilot's chair. The disadvantage to the VC is that it can eat up frame rates, and the controls can be harder to manage in complicated aircraft. It can help to use head-motion tracking hardware like a TrackIR to see the VC as a whole.

INTRODUCTION: FMC in a CRJ

The letters CRJ stand for “Canadair Regional Jet”. The Bombardier CRJ 700 is a 70-seat jetliner designed to operate from small airports and to serve remote regions



A Bombardier CRJ enhanced by Friendly Panels is prepped and ready to go in FSX.

economically. A version of the CRJ 700 is included with FSX. Friendly Panels is a third-party developer that has added some features to both the 2D and 3D cockpits of this popular aircraft.

The add-on consists mostly of new gauges for the cockpit as well as documentation on how to use the new equipment. The CRJ features an advanced “glass cockpit” that replaces several small analogue dials with a digital Multi-Function Display (MFD), which is a type of computer screen that condenses flight information into easy-to-read icons. Although the FSX version has detailed MFD's, the Friendly Panels version adds even more features into the cockpit.

The largest new feature from Friendly Panels is the inclusion of an FMC or “Flight Management Computer”. Pilots use an FMC to pre-program flight waypoints, speeds and altitudes. This helps the jet to navigate automatically from departure to cruise to final approach. As well, an FMC can save fuel by calculating the most efficient climb and descent profile.

INSTALLATION & DOCUMENTATION: Very Friendly Panels

The Friendly Panels CRJ add-on comes with its own self-installer. Each step of the installation is explained in detail as you run the program. Afterwards, you are left with some “new” CRJ's in your FSX hangar and a couple of .PDF documents.

Friendly Panels makes copies of the default CRJ. Copies with the Friendly Panels cockpit are titled with "FP".

The installation system is nicely done. Rather than replace your old default CRJ's, Friendly Panels makes copies of each CRJ and puts the new gauges in the copies. That way if you want to, you may fly either the default aircraft or the ones with the new gauges. Note that the basic default aircraft visuals, sounds, and flight profile are not changed, only the cockpit gauges.

The .PDF manuals cover two topics respectively. The first deals with the instrumentation in the new cockpit, while the second manual shows how to use the FMC. Both manuals run to around 20 pages each and are easy to read. They are well illustrated without being too technical.

2D PANEL: Good News Scenario

After looking at the Friendly Panels CRJ set-up, I conclude that this add-on is something of a good news/bad news product. Maybe that's overstating things a little. I don't think that the Friendly Panels CRJ add-on is all that bad. However, it does have a good side and a not-so-good side.

If you prefer using a 2D panel for your sim flying, then I think you would get good usage of the Friendly Panels CRJ cockpit. It seems that this product is designed primarily with the 2D cockpit user in mind, and that the VC has fewer usable features.

FSX and Friendly Panels daytime 2D Cockpits side-by-side: FSX on the left, Friendly Panels on the right. There are a few cosmetic differences, but the big differences are in the MFD's and the inclusion of a FMC.

The majority of the basic 2D cockpit layout has been lifted from the default FSX Bombardier CRJ model. At first glance, the biggest difference is that the Friendly Panels cockpit puts more controls, including the throttle quadrant, into the visible area. Friendly Panels also eliminates the big central windscreen pylon and enlarges the view of the roof switches. All of this has the effect of taking away visibility out of the front of the aircraft. The forward windscreen area becomes rather small.

FSX and Friendly Panels night-time 2D Cockpits side-by-side: FSX on the left, Friendly Panels on the right.

To see the biggest changes, you have to look into the MFD's: the central computerized displays. The most important addition is a functional FMC (Flight Management Computer). Now that the MFD's are fed flight information from the FMC, the pilot has a wider range of flight data to monitor. Welcome additions like Vref speeds (which are used to calculate take-off velocity, and are variable mostly due to aircraft weight) are calculated automatically and displayed on-screen. In addition, since the FMC can handle basic navigational chores for the pilot, waypoint information is displayed discretely in the FMC. There's no more fumbling around with the FSX Garmin GPS.

While there is more detail to be seen in the MFD's, their displays can be small and hard-to-read unless you have a large monitor. Fortunately, all of the displays have the wonderful click-to-enlarge capability. All you have to do is to click on the display, and it will magnify to a readable size.

Mostly, the system works out quite well. My biggest gripe is with the radio stack, which relies on a very fiddly twist-button system to set the numbers. You really have to hit precise mouse-click hot-spots to make the numbers move the right way. If you miss the hot-spot, the numbers might go the wrong way, or you might cause the wrong number to move.

VC: Bad News Scenario

Perhaps there are sim pilots who like the Friendly Panels CRJ Virtual Cockpit (VC), but I am not one of them. Again, the Friendly Panels version is retro-fitted on top of the existing FSX model, which is decent enough. The biggest difference, again, is the inclusion of more realistic MFD's, with little else that is changed.

I've opened up some of the pop-up sub-panels: a MFD, the roof panel, the throttle quadrant, and the FMC. Note that the multi-function FSX buttons are at the very bottom of the screen. If you use Windows XP and you fly in Windowed Mode, the XP Menu pop-up may block these buttons from use, which can be frustrating.

I do like the new MFD's, and these displays also have the superior click-to-enlarge capability that, in my opinion, only the very best cockpit gauges will have. And, as with the 2D cockpit, the MFD's depend on data from the FMC. The trouble is, you can't directly call up the FMC in the 3D cockpit. Either you go back into the 2D cockpit, or else you go through the Views Menu to find the FMC as a viewable instrument. That's not a major gripe, but it does test a sim pilot on final who is depending on FMC data, when you have to navigate through menus to get to see the FMC.

FSX and Friendly Panels daytime 3D Cockpits side-by-side: FSX on the left, Friendly Panels on the right. The only differences are in the MFD displays.

FSX and Friendly Panels night-time 3D Cockpits side-by-side: FSX on the left, Friendly Panels on the right. Note that the autopilot and radio controls are off to the side of the pilot, yet the displays are in the MFD's in front. This can make operating the knobs and reading the changes a true challenge. This is more to do with the nature of the FSX model, rather than the Friendly Panels add-on.

My biggest issue with the Friendly Panels CRJ cockpit is with the layout of the controls. To be fair, this isn't so much the fault of Friendly Panels, as it is with the original Bombardier design in FSX. What I mean is that the original FSX CRJ cockpit is a reasonably faithful reproduction of the real thing. The front office of a CRJ is not a large place, in fact, for heavy-set flight crew, I can imagine it's quite cramped. The pilot and the co-pilot share a central set of autopilot, radio, and navigation controls. This is unlike, say, the Boeing 737, where the pilot and co-pilot have separate autopilot controls.

For the FSX sim-pilot, this means that he or she must look away to the right to see the control knobs. Unlike a real pilot, most sim-pilots have to see the knobs to be able to click on them with a mouse. A real pilot can just glance at the knobs, or even operate them by touch. The pilot can keep their eyes on the gauges as they make adjustments. However, for the FSX CRJ, this is really difficult to do. Either you look at the buttons, at which point you cannot see the gauges, or you look at the gauges,

in which case you cannot reach the buttons. Or you can zoom out far enough to see both the gauges and the buttons at the same time, but unless you are running FSX on a movie screen, the MFD's will be too small to be legible, and in any case the button hot-spots will be terribly difficult to hit with the mouse.

Again, the radio is the worst offender. In the VC, you may experience some movement in your visual viewpoint when FSX simulates inertial forces. This made my efforts to operate the radio approach a level of futility that far outstripped my patience. A TrackIR headset helped a little, but at the end of my test flights, I had enough of trying to balance the operation of the controls versus monitoring the instruments.

FLIGHT MANAGEMENT COMPUTER: Your Friendly Neighbourhood FMC:

The FMC's in the VC model are dead and unclickable. To bring up the FMC, you need to program a key command, or sort through the View menu.

For realistic flight operations of just about any passenger jet, a sim-pilot needs a Flight Management Computer (FMC). Real FMC's are programmed in advance with precise flight information, such as the exact location of the aircraft, its load weight, the predicted waypoints of the route (including standardized departures and arrivals: SID's and STAR's), and even how efficiently the engines are expected to burn their fuel. The FMC is a valuable pilot aid that ensures that the aircraft is on course and operating at optimum efficiency.

Real FMC's can be complicated to program, so once a route is established, it is carefully saved for future use. It would not be unusual to spend hours, if not a day to faithfully program routes into some FMC's. How much time do you want to spend programming a FMC for Flight Simulator? Personally, although I appreciate adding some realistic procedures into my pre-flight checks, I don't often have the time or patience to sit and program a FMC while FSX has me parked at the same gate for an hour or two.

Perhaps a good compromise is to automate some of the functions of the FMC, or to eliminate some of the more esoteric functions. This is what Friendly Panels has done with their FMC for the CRJ. The result is something that operates much like an FMC, but it's easier to program and operate. On the other hand, users looking for ultimate realism will find that some features have been simplified, rendered in the abstract, or eliminated altogether.

The Friendly Panels FMC uses FSX-style flight plans as the basis for a pre-programmed flight. All you need to do is load an IFR (Instrument Flight Rules) flight plan into FSX, and it will automatically be accepted by the FMC. You do not have to create the flight plan in FSX, as you can use any utility you like for that, as long as it creates the flight plan in the FSX format. This allows you to use SID's and STARs if you want to.

Be aware that the Friendly Panels FMC only uses waypoint and airport data native to FSX. It cannot use AIRAC (Aeronautical Information Regulation And Control) data that you may want to download to update your FMC. For most casual sim-pilots, this should present no problem. However, seasoned sim-pilots or those sharing flights in multiplayer, may find this issue to be a liability.

Here are some of the displays that the Friendly Panels FMC supports:

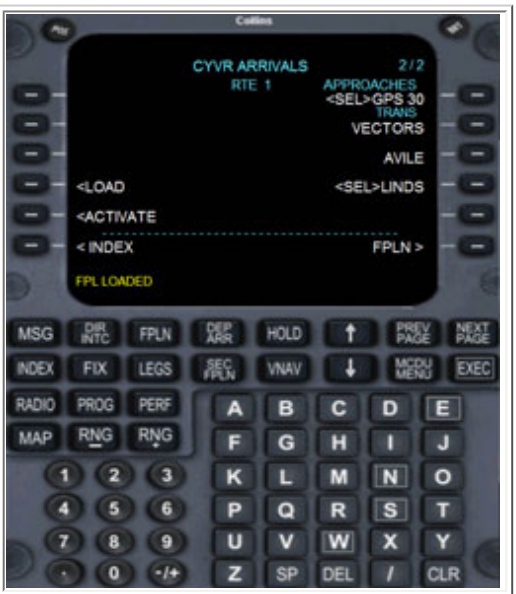
PERF Page: This is where you set the initial parameters of your flight. The FMC will load most of this automatically, based on your aircraft and your FSX flight plan. You can set your own cruise altitude. This is important, because this FMC will allow you to use VNAV (Vertical NAVigation). NAV or HNAV (Horizontal NAVigation) follows co-ordinates and waypoints on a map, and allows you to fly from place to place by autopilot. VNAV will automatically assign logical altitudes for each leg of your journey. With VNAV enabled, the pilot does not have to control climb and descent, as the autopilot will handle those functions. Along with a Cost Index, this gives the autopilot fine-tuned control over climb and descent profiles as well as the use of the throttle. This computer control ensures the most cost-efficient flight possible.

Cost Index is not adjustable, so climb and descent profiles seem to be generic, although you can tweak them to a certain extent manually by entering your own numbers for each waypoint.

The PERF page. I am setting the cruise altitude to 31,000 feet.

ROUTE Page: This shows the list of your waypoints, with the active one coloured magenta.

DEP/ARR Page: This page allows you to set departures and arrivals based on the airports you are visiting. You may chose to follow various instrument approaches and departures that exist in the FSX database. It looks to me that if you have custom-built airport add-ons, the Friendly Panels FMC is capable of including their data as well, although I haven't done extensive testing to prove this.



The DEP/ARR page can be used to find standard approaches and departures.

RADIO Page: This displays some of the useful radio frequencies you may require for navigation.

The RADIO page can be used to send frequencies directly to the radio stack, pictured to the right. Without the FMC, you'd have to try to operate the radio by hand, which I found to be difficult.

LEGS Page: Here you can see the waypoint information from the PERF page combined with the ROUTE page. While enroute, this page allows you to alter VNAV data.

FIX Page: You can use this as a “Direct-To” function, similar to the Garmin GPS in FSX. It will calculate the course direct to any waypoint of your choosing, replacing your current flight plan.

HOLD Page: This will allow you to proceed to any waypoint in your current flight plan, bypassing the previous ones. Then, you can continue to fly the remainder of your waypoints, if any.

PROG Page: The Progress page shows a sampling of basic real-time flight data.

INDEX Page: INDEX is the top menu page for the FMC. It includes sub-pages for IDENT (identifies your aircraft), POS (shows your aircraft position in real time), DATA BASE (which shows handy information like nearest airport, nearest navigation aid, and so on. The DATA BASE has a sub-page for specific airport data, such as ILS frequencies. You can use the FMC to send these frequencies directly to the radio stack, which for me absolutely trumps trying to use the radio control knobs.), and other pages for identifying navaids.

MAP Page: If you feeling symptoms of “moving map withdrawal”, you can call up a GPS-style map to pinpoint your position visually.

The MAP page gives you some visual aids for navigation.

SAMPLE FLIGHT: What The “R” Stands For in “CRJ”

I tried out the Friendly Panels CRJ cockpit in several types of flights. I took screenshots of a flight that I set up to test the FMC's ability to auto-navigate. I wanted to use the ATC add-on VoxATC, which uses a different air traffic control system than default FSX, to see how the FMC would handle SID's and STARs from a tower controller. You don't need VoxATC to enjoy the Friendly Panels product, but I wanted to try it out. I used Flight Sim Commander 8 to build a route with a realistic departure and arrival. Again, Flight Sim Commander is not needed to go along with Friendly Panels, this was merely my choice.

My big idea was to fly into an airport whose procedures I know reasonably well. I chose CYYC, Calgary, Alberta, Canada. I chose the Canadian national capitol Ottawa (CYOW) as my departure airport. I picked Ottawa for cultural reasons, which was in retrospect a bad decision, but that's another part of the story.

Preflight:

VoxATC requests that I contact Ground Control. I need the MFD enlarged to see that I am setting the autopilot correctly. I have the radio enlarged in an effort to try to make it easier to use. If I pop up many more windows, I won't be able to see out!

I “kick the tires and light the fires”. VoxATC performs radio checks as I set the autopilot. The best way to see what I am doing with the autopilot is to use the handy click-to-enlarge function to make the screens readable. Even so, tuning the radio is a headache-inducing chore. In retrospect, I should have used the radio function in the FMC to accomplish this, although that would mean creating a new popup window. Dialing in the autopilot required that I kept the knobs on the far right in view so I could click them with the mouse, while I had my eyes on the left side of the screen to read the MFD. It's not at all easy in the VC; things would be better of I used the 2D panel.

Climb:

VoxATC stands by as I climb. I have the Flight Sim Commander window engaged (upper left), which is not part of either VoxATC or FriendlyPanels. Please ignore that window!

Climb is uneventful. The MFD displays Vref speeds, so I know exactly when to rotate on take-off: in this case 180 knots. Then, it's time to retract the gear and flaps, automate the flight, and let “George” do it. (George is a common nickname for an autopilot.) The FMC is locked in, so there's not much else to do but monitor the flight, and maybe see if there are snacks in the galley. The ATC seems to agree with the VNAV climb rate, so I am not getting a lot of messages from the radio to watch my altitude. I do experiment with the autopilot a bit, but I decide it's better to allow the CRJ to fly its intended course.

Cruise:

Sudden terror in the skies! I have enlarged the EICAS screen, which I should have looked at more closely a long time ago. Orange lettering highlights a serious issue.

The confidence I have in my pilot abilities shatters explosively. I have made a terrible error! The cruise is a long one, over flat Canadian prairie in the chill of October. I sail past Gimli, Manitoba, the landing site of one of Canada's most disastrous flights. Have you ever heard of the “Gimli Glider”? In 1983, a new Air Canada Boeing 767 ran out of fuel while flying from Montreal to Edmonton, and was forced to make an unpowered landing at Gimli Industrial Park (CYGM). Nobody was killed, and the injuries sustained were mild, thanks to the quick thoughtful action of the brave flight crew. (Editor's Note: The aircraft was filled in Litres instead of filling in Gallons, 1 Litre= 1/4 Gal)

As I cruised, I even looked up the Gimli Glider incident on a new window on the Internet. Fascinating reading. When I was finished, it was time to begin descent. I turned on the seatbelt warning sign and checked the FMC data pages so that I could see how far I was from the destination.

Only... what was that orange bit of text on the EICAS (Engine Indication and Crew Alerting System)?

I hadn't looked at this EICAS very much before, mostly to me it was like pretty pictures of the aircraft systems. Even for a rookie pilot, one should see that green is good while orange is, well, not as good. L FUEL QTY LOW. R FUEL QTY LOW. What the blazes?! I looked at the gauges: 40 lbs of fuel remaining in either tank! I just finished reading about the Gimli Glider, and here I was about to do it for myself!

Well, I panicked. I don't practice emergency situations in FSX all that often, and even then, it's usually in the default FSX Cessna 172 or the Piper Cub. I do try to do goofy things to push the software to its limits, to see what breaks and what holds together for my reviews. But I don't often make silly errors like forgetting that the distance from Ottawa to Calgary is just beyond the operational range of a CRJ. The “R” in CRJ stands for “Regional”, and I was taking my jet way out of the region.

I lost all my fuel over Medicine Hat. At 30,000 feet, I suppose it's debatable that I could have made it to Calgary on glider power alone. However, I don't know what the most efficient glide speed for a CRJ is. I didn't want to crash my jet into some Calgary suburb. I had no desire to wrestle with the crazy radio controls or to find a direct waypoint to the nearest safe airport in the FMC.

No, I chickened out, jumped to the Realism menu, and turned on the Unlimited Fuel option.

Descent:

The busier I get in the cockpit, the more windows I need to pop up.

Chastened by my failure to manage my fuel, I allowed the VNAV to bring the aircraft to the ground. I feel that the ascent and descent are too steep, but I could easily be wrong. Again, for casual sim-pilots, the Friendly Panels FMC system works decently and is simple enough to use. But for the more rigorous veteran sim-pilots, the FMC might not be realistic enough.

Regardless, the FMC brought my aircraft within range of Calgary International Airport. There, I was able to follow the VUCAN8 approach to Runway 34.

Landing:

CYYC is in view, north of the mighty Bow River. The ILS is tuned, and I am glad to lower flaps and gear!

The FMC helped me get close to CYYC, but I needed the ILS to guide me properly over the landing threshold. Approach ATC gave me clearance to land. I picked up the ILS beacon, found the glideslope, and coasted in closer to the numbers than I had any right to be, given my goof with the fuel. Any landing you can walk away from, even if you had to “cheat” by fudging the realism settings, is a good one.

CONCLUSION: Executive Summary

Friendly Panels has created an add-on that enhances the cockpit of the default FSX CRJ passenger jet. This add-on replaces the default 2D and 3D cockpits, although the changes are mostly limited to enhanced cockpit computer displays called MFD's, and the addition of a user-friendly Flight Management Computer (FMC).

Test System

Intel Core 2 CPU 6600 @2.40GHz x2
2 GB RAM
NVIDIA geForce 8800GT Superclocked Edition
RealTek AC'97 Audio
Win XP SP2, FSX + Acceleration
Thrustmaster Top Gun Afterburner II
Logitech MX Revolution Laser Mouse
MS Digital Media Pro Keyboard
Saitek Pro Flight Rudder Pedals
TrackIR4:PRO
TrackClip PRO
VoxATC 2
Flight Sim Commander 8

Flying Time:
12 hours

The 2D cockpit seems to me to work a lot better than the 3D cockpit. Both cockpits allow the user to click on the MFD's to enlarge them, which is always a welcome feature. Both cockpits feature some dials and buttons that are hard to click on with the mouse. The 2D cockpit has its function buttons right at the bottom of the screen, which can be a problem if you fly in Windowed mode, and the XP menu pops up to cover them. The 3D cockpit has the autopilot controls in a hard-to-reach place, making it difficult to operate the knobs and see the displays at the same time. In both cockpits, the controls for the radio stack are very fiddly and difficult to use.

The central feature is the new FMC. This device allows for more realistic flight procedures, and is capable of LNAV and VNAV autopilot operations. Flight plans must be created in the default FSX .flt format, and are loaded automatically when you file the flight plan in the simulator. The FMC depends on default FSX data, so you should not download fresh AIRAC information to update it. The FMC is not as fully-featured as those provided in more detailed simulators, but on the other hand, the Friendly Panels package is less expensive.

The new cockpits don't seem to have any major bugs that I could find, nor do they seem to have any additional effect on frame rates. The refresh rate seems smooth, so I never had any problems with stuttering of the gauge read-outs.

For what it does, the Friendly Panels system seems to improve the functions of the gauges in the CRJ cockpit. However, it does not improve the layout and usability of the virtual cockpit, which was disappointing for me. If you fly with the 2D panel, though, this product seems to perform decently.

What I Like About The CRJ 700 Panel For FSX

- Adds more detailed gauges to the default FSX CRJ!
- Adds a functional Flight Management Computer that is user-friendly
- Easy to install, does not over-write default aircraft files
- 2D panel is highly functional
- Manuals are detailed and easy to read
- Major displays can be clicked and enlarged

What I Don't Like About The CRJ 700 Panel For FSX

- VC is hard to use (due to the nature of the default FSX model)!
- Radio is incredibly finicky to operate
- 2D cockpit multifunction buttons can be accidentally covered by Windows XP menu in Windowed flight mode
- FMC may not be detailed enough for veteran sim-pilots
- VC does not have "built-in" working FMC screens

Printing

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Friendly Panels CRJ700 Panel

(adobe acrobat required)

Comments?

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