iGoDispatch JRollon CRJ-200

Flight Planning and Management System

MANUAL

Table of Contents

FOREWORD

I have a special affection for the JRollon's CRJ-200 plane. Months ago, I was debating with myself whether I should switch from FSX to X-Plane after having invested hundreds of dollars in the former. Having had some experience with the previous versions of X-Plane, my main concern was a lack of comparatively good airplanes. It was then when I first read about this plane and how good it was. And after having read lots of reviews and comments, the decision I made was to move from FSX to X-Plane and to get the CRJ-200. Never have I regretted since!

One of the challenges I faced dealing with this plane was a lack of the automatic FMC that does everything for you: calculate your pitch trim, V_1 speed, Vr speed, Vref speed, etc. The manual explained exceptionally well how to do it, but it might easily take 15 and 30 minutes to do all proper calculations. It is fine when one has no time constraints. But when you fly on Vatsim, for example, the situation is quite different: you try to select the ATC who will still be on-line by the time you are going to land, otherwise you will be landing by yourself, and what is the point of flying with the live Air Traffic Controller then? So, this made me think about making a tool that would quickly calculate all the necessary values, so that I will still have a chance to catch a controller while he (or she) is still available (a pretty tough job, by the way!).

I created my first program in early 2013. It was a simple Java application with similar functionalities as this application, i.e. it did some basic flight planning. Since then, I have gained a little bit more experience in programming and decided to update the application by adding a few more features to it. Consider this as my C++ graduation project.

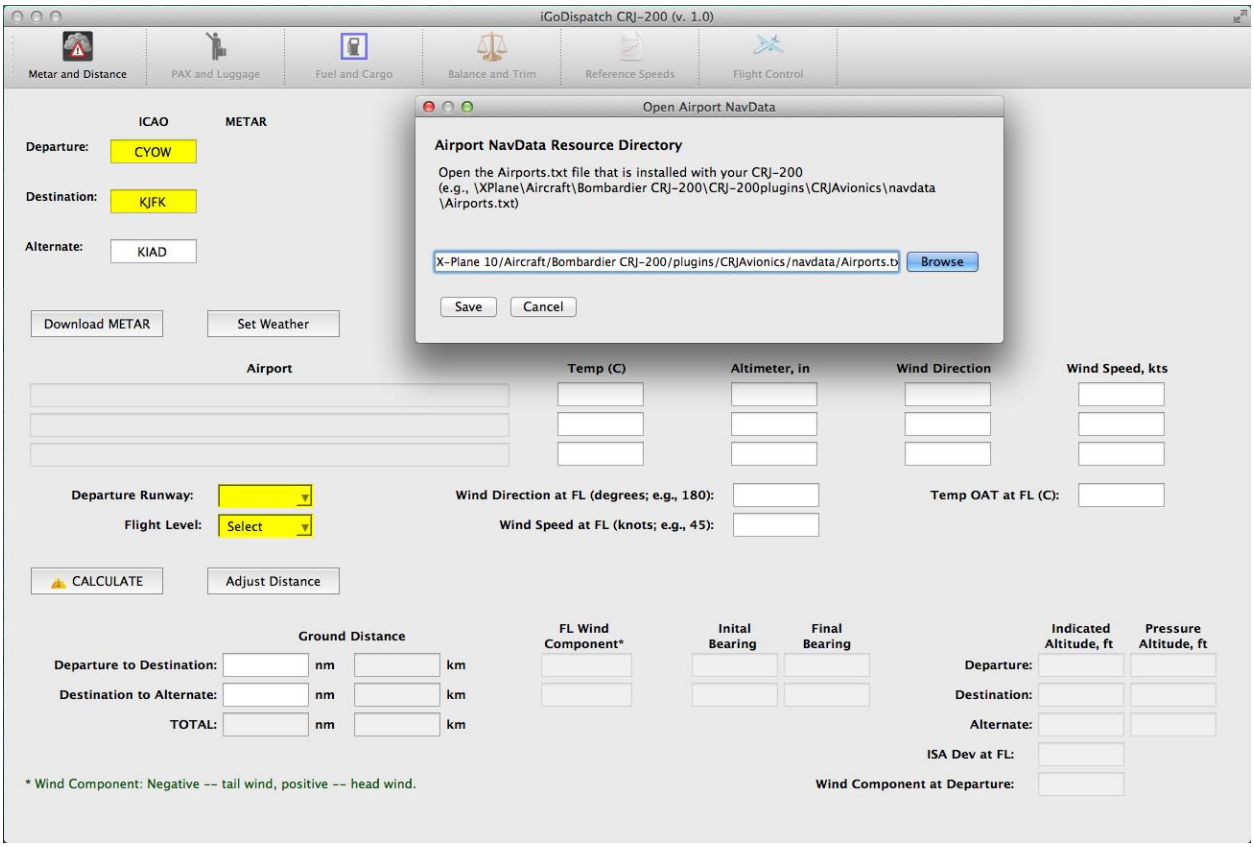
THIS APPLICATION WAS DESIGNED FOR THE X-PLANE SIMULATION ONLY. IT IS NOT APPROPRIATE AND MUST NOT BE USED FOR THE REAL FLIGHT PLANNING, NAVIGATION OR AVIATION PURPOSES. I will continue working on making it more precise and useful for the X-Plane pilots.

INSTALLATION

Unzip the folder *iGoDispatch_crj200* to your computer. Before you can use the application, it must be linked to the airports navigation database. This file is called **Airport.txt** and it is located in the following subdirectory of the airplane's folder: **\plugins\CRJAvionics\navdata**.

In order to link the application to the database, go to **Application** in the menu and open **Select Navdata directory**. In the dialog box, select the **Airports.txt** file and save the location. You are good to go!

> The navigation data file must be saved on the same computer as the application. It was reported that a networked computer is not linked properly. If you have the application on a different computer than your X-Plane, copy the Airport.txt file to this computer and link thereto.

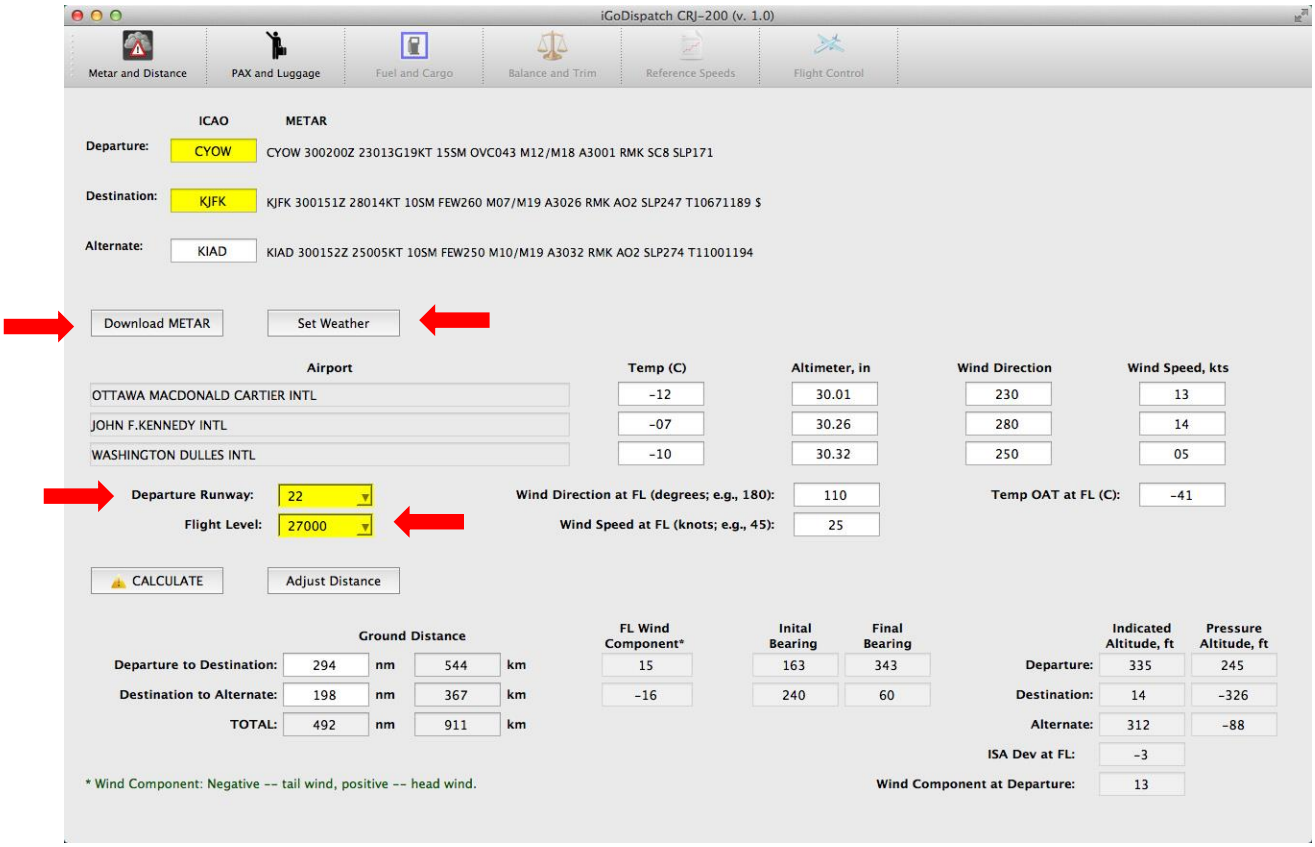


Note that the application will create a subfolder in your Documents folder called iGoDispatch/cfg/. The configuration file with the path to the Airport.txt file will be save there.

In this tutorial, we will plan a trip from the Ottawa MacDonald Cartier International airport to the JFK airport in New York, an alternate airport being the Washington Dulles International airport. Open the exe file and click on the "I Acknowledge" button if you accept the terms and conditions of the application.

WEATHER AND DISTANCE PANEL

We need to enter the ICAO codes for the airports in our flight plan. In our case, we type "CYOW" in the Departure textbox, "KJFK" in the Destination box, and "KIAD" in the Alternate box (without quotes). If you do not want to specify an alternative airport, leave this field blank. These fields are not case sensitive. Note that the fields highlighted in yellow are either mandatory or preferable for making more precise calculations.



After we have entered the airport codes, we can either download the current METAR report (click on the **Download METAR** button) or enter the weather information manually (click on the **Set Weather** button). The current Metar information will be downloaded from the site of the National Oceanic and Atmospheric Administration (NOAA). You need to click on either of these two buttons to proceed. If we enter the weather information manually, we need to remember that the temperature must be in Celsius, altimeter in inches of mercury, wind direction in degrees, and wind speed in knots. If we downloaded the actual Metar report but still want to change any of the weather components, we can type them in the relevant fields and click on the **Set Weather** button.

To ensure that the fuel and time calculations are done properly, select the Departure Runway and flight level (flight level is mandatory), enter the wind direction and speed at the flight level, as well as the temperature at the flight level in Celsius. If you do not know these values, you may leave them blank and they will not be taken into account when making the calculations.

After the weather information has been set, we click on the **CALCULATE** button. Since we do not fly directly from our departure to destination but most likely use waypoints between them, our actual distance may be longer than that estimated by the application. We may need to adjust the distance based on our flight plan. In this case, we enter the adjusted distance (in nautical miles) and click on the **Adjust Distance** button.

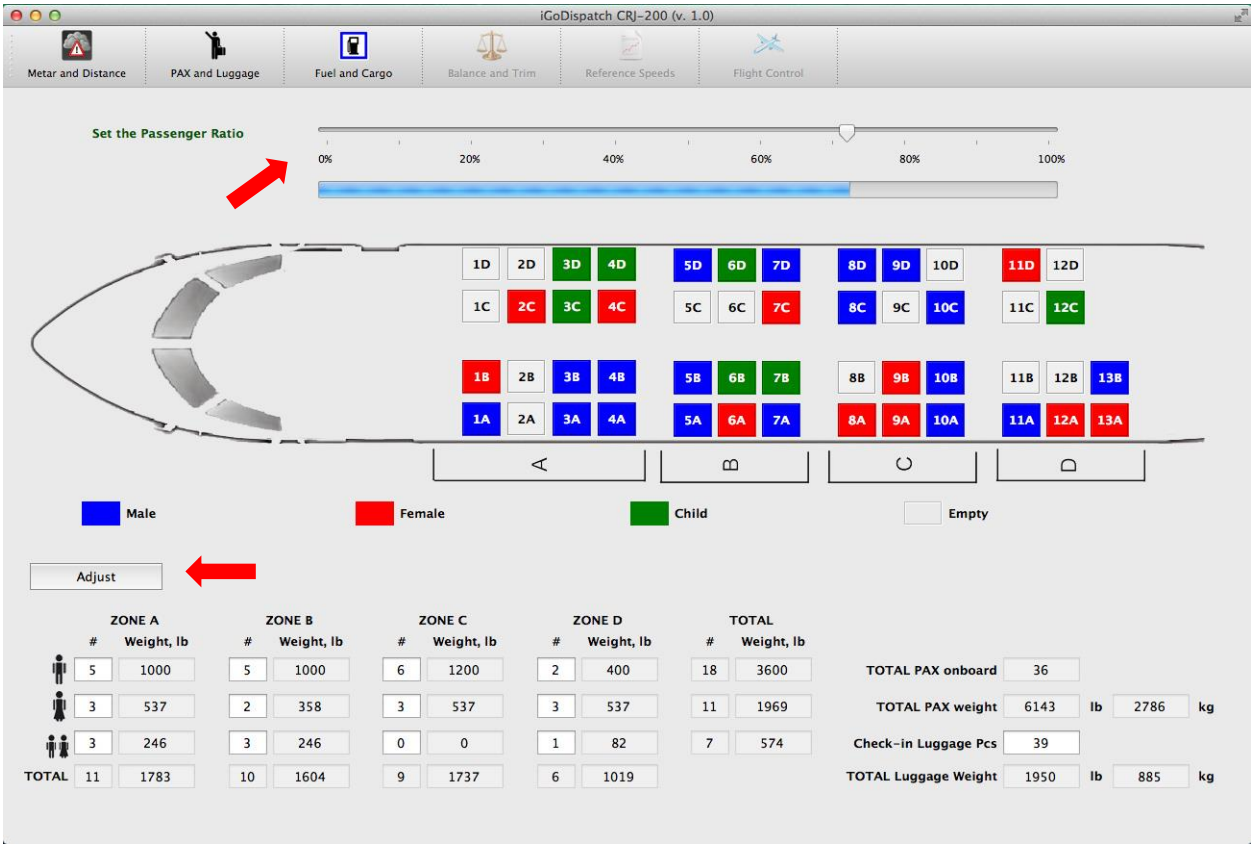
This is it. We are ready to load the plane.

PASSENGERS AND LUGGAGE PANEL

To go to this panel, we can either click the **PAX and Luggage** button in the menu bar or go to Panels in the menu. There are two ways to load the plane with passengers and their luggage. We can either use the slider on top of the panel or enter the number of passengers in the relevant textboxes. If we do the latter, we must click on the **Adjust** button to finish loading. The changes will not take effect unless the button is clicked on. If the number of passengers that we type exceeds the maximum passenger capacity for this zone, we will see a warning message and the number of passengers for this zone will be reset to 0.

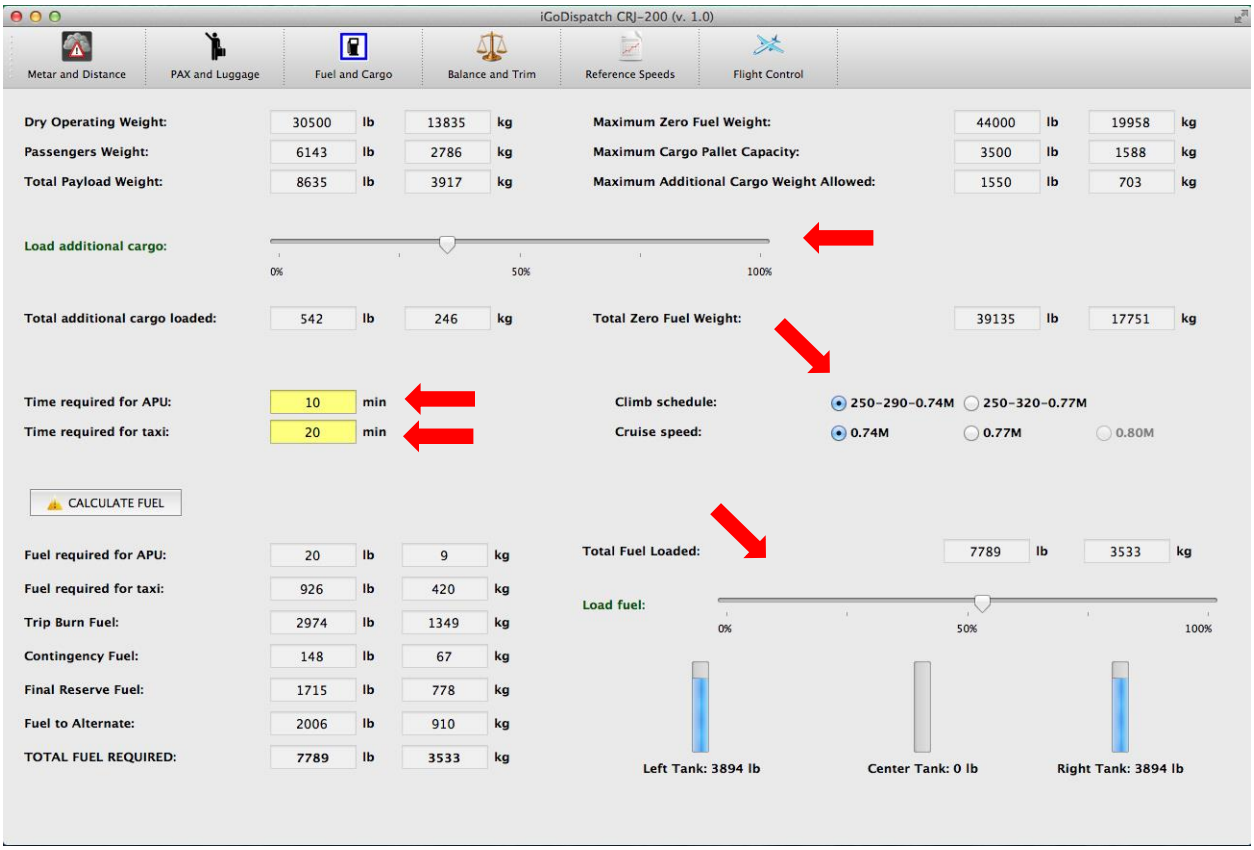
When we use the slider, the number of checked-in luggage pieces is randomly preselected by the application. If we want to change this number, we can type whatever amount of luggage pieces we want and click on the **Adjust** button. The application will warn us if the amount of luggage that we want to load exceeds the cargo capacity of the airplane.

We want to load the airplane with passengers at 72% of its capacity. We move the **Set the Passenger Ratio** slider to load our plane. The panel shows us the seating by age and gender. The panel also displays the passengers' weight by zone (both in pounds and kilograms).



FUEL AND CARGO PANEL

Once the plane is loaded with people and their luggage, we can proceed with loading the additional cargo and fuel. We go to the **Fuel and Cargo** panel. The application will show us how much additional cargo we may load. It is restrained by two parameters: additional cargo cannot exceed the capacity of the cargo pallets; and it cannot exceed the Maximum Zero Fuel Weight of the airplane. We should note that the passengers' check-in luggage has already been loaded in the pallets.



We load additional 542 pounds of cargo, which is approximately 35% of the available room in the pallets.

Once we know our total Zero Fuel Weight, we can calculate how much fuel we need to fly to the destination and alternate airports. First, we enter how many minutes we expect to spend on APU and taxi. We also select the climb schedule and cruise speed for our flight. (Cruise speed of 0.80M is only available with the climb schedule of 250-320-077M.)

After all necessary information has been entered, we click on the **CALCULATE FUEL** button. The total required amount of fuel is automatically loaded on the plane and displayed in the bottom right corner. The application will first load the left and right tanks followed by the center tank.

The application has estimated that we need 7,789 pounds of fuel for our trip. That includes fuel necessary for APU, taxi, as well as the contingency fuel, final reserve fuel, and fuel from the destination airport to the alternate airport.

We may load slightly more fuel than estimated by the application. This is what I usually do. We can change the amount of fuel onboard by moving the **Load Fuel** slider. The application will show you how much fuel has been loaded in each of the three tanks.

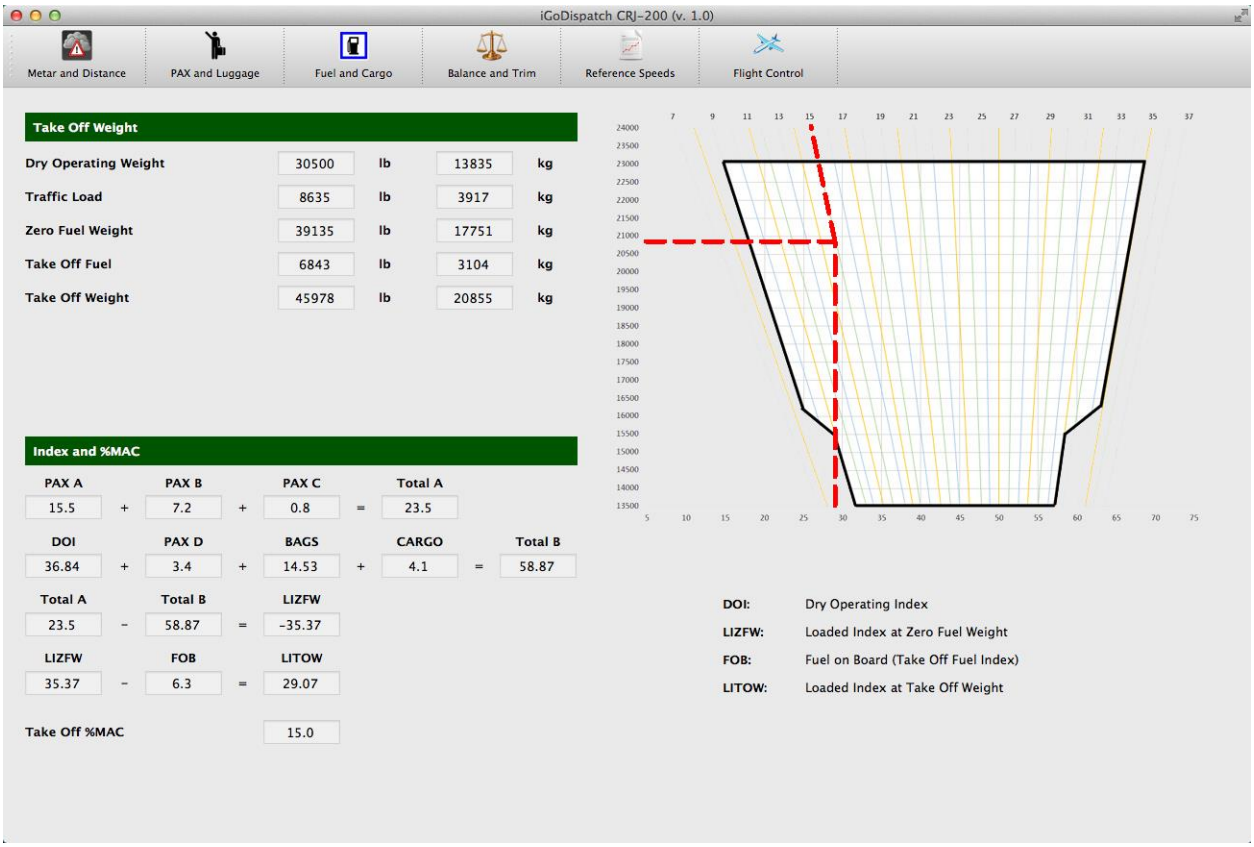
If we go back to the previous panels and change any settings there, (for example, the distance or the passenger load) we must recalculate the fuel by clicking on the **CALCULATE FUEL** button. All other values that are dependent on the amount of loaded fuel, like the reference speeds, will then be recalculated.

BALANCE AND TRIM PANEL

Now we need to check whether our plane has been loaded correctly, that is whether its Center of Gravity is within the allowed limits. We can do it by going to the Balance and Trim panel.

The application will calculate the Loaded Index at Take-off Weight (LITOW) and the Center of Gravity (as % of MAC) based on our load of passengers, cargo and take-off fuel. We will need this information to set up the CG offset (i.e. by how much the Center of Gravity has been moved from the dry operating position –the position when the airplane is ready for flight but has no passengers, cargo or fuel) and the pitch trim.

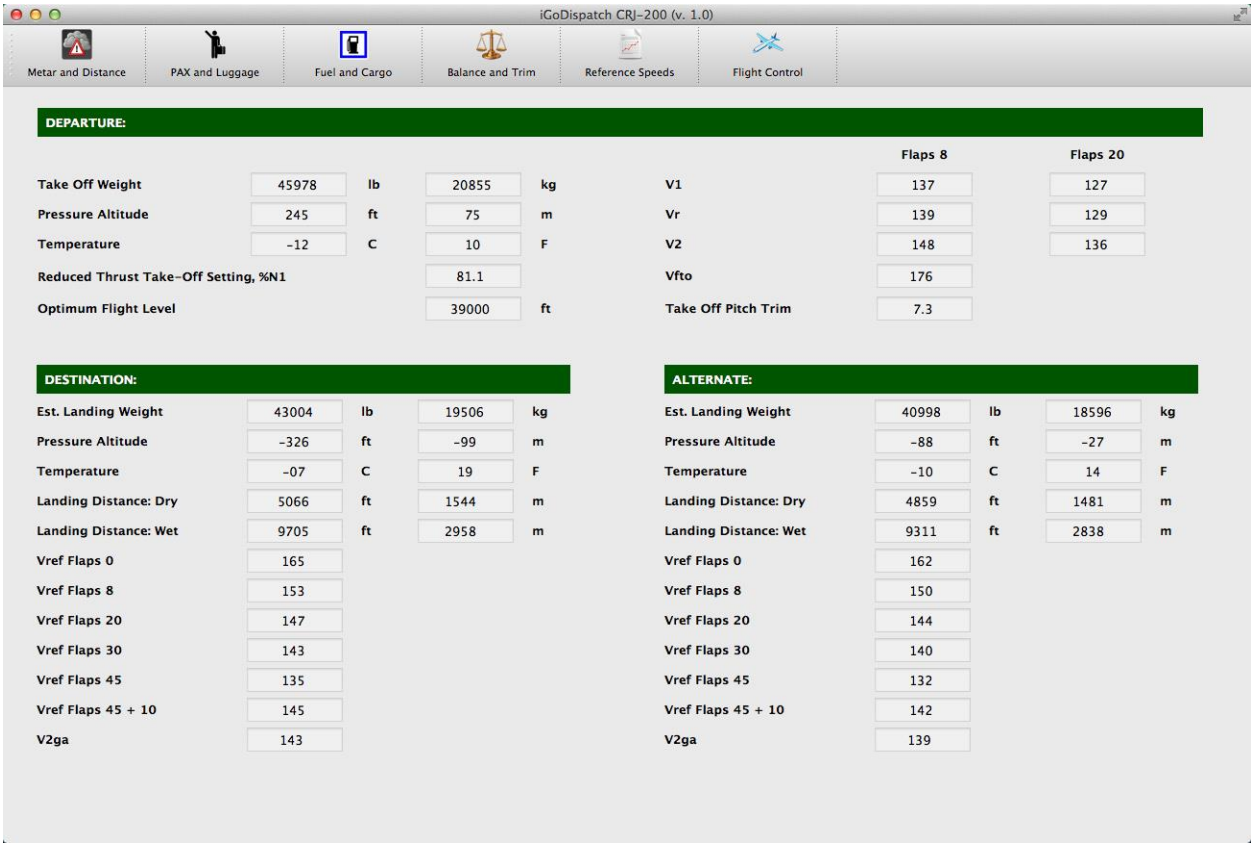
Our CG is at 15.0% of MAC which is quite good (it cannot be lower than 9% and higher than 35%). Our weight is below the Maximum Take-off Weight allowed. We are good to go!



REFERENCE SPEEDS PANEL

The Reference Speeds panel displays the information required for the take-off and landing preparations: V1, Vr, V2, and Vfto speeds, as well as landing speeds at Destination and Alternate airports at different flaps settings. Note that the landing speeds are estimates only based on the estimated landing weight of the plane. The actual landing weight may be slightly different from the estimate, and therefore the landing speeds may also slightly differ from what is displayed on the panel.

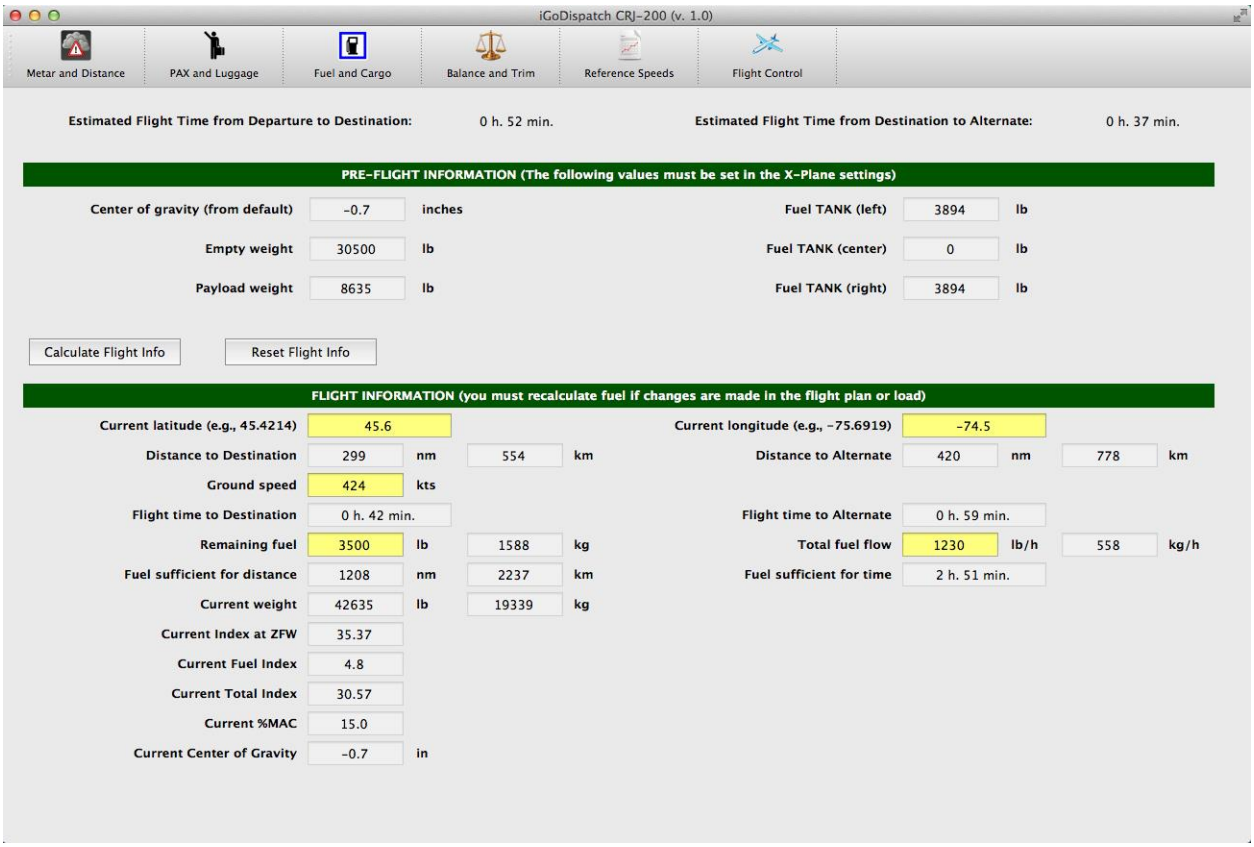
The panel also shows the reduced thrust take-off setting and the take-off pitch trim. We should set the reference speeds, thrust setting, and the pitch trim in the plane during the preparation for take-off. (Refer to the plane manual how to do it if you do not know yet.)



FLIGHT CONTROL PANEL

The panel displays the estimated flight time from departure to destination, as well as from destination to the alternate airport.

It also shows a few settings that we need to set in X-Plane prior to take-off: the CG offset, the payload weight, and the fuel weight. In our case, the center of gravity is shifted by 0.7 inches to the front (-0.7 inches). Our ramp fuel totals 7,789 lbs., i.e. 3,894 lbs in each of the side tanks (the discrepancy between these two numbers is due to rounding). These settings can be adjusted in the Weights and Balance menu of X-Plane.



Last thing we need to do before we take-off is to print the flight dispatch report in which we can refer to all the important calculations that we have made so far.

In the menu, we go to **Application** and then select **Print Dispatch Report**. The report opens as a pdf file. Note that the application will create a subfolder in your Documents folder called iGoDispatch/reports/. All dispatch reports will be stored there.

Once we take off and are airborne, we may estimate the direct distance to the destination and alternate, flight time to these points, whether we have sufficient fuel, as well as the current center of gravity. In order to estimate these values, we just need enter the following: the current latitude and longitude, ground speed, total remaining fuel, and current total fuel flow (for both engines).

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                              DISPATCH REPORT
FLIGHTPLAN: CYOW - KJFK        CRJ-200      DATE: JAN292014   TIME: 213857
--------------------------------------------------------------------------------
DEP:  CYOW      RWY: 22        PRESS. ALT: 245 FT        ALTIMETER: 30.01 INHG
DEST: KJFK                     PRESS. ALT: -326 FT       ALTIMETER: 30.26 INHG
ALT:  KIAD                     PRESS. ALT: -88 FT        ALTIMETER: 30.32 INHG
METAR REPORTS
DEP:  CYOW 300200Z 23013G19KT 15SM OVC043 M12/M18 A3001 RMK SC8 SLP171

DEST: KJFK 300151Z 28014KT 10SM FEW260 M07/M19 A3026 RMK AO2 SLP247 T10671189
      $
ALT:  KIAD 300152Z 25005KT 10SM FEW250 M10/M19 A3032 RMK AO2 SLP274 T11001194

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GROUND DISTANCE                      AIR DISTANCE
DEP TO DEST: 294 NM  544 KM          DEP TO DEST: 304 NM  563 KM
DEST TO ALT: 198 NM  367 KM          DEST TO ALT: 191 NM  354 KM
--------------------------------------------------------------------------------
BURN FUEL:       2974 LB    1349 KG       ALTERNATE FUEL:  2006 LB    910 KG
CONTING FUEL:    148 LB     67 KG         FINAL RES FUEL:  1715 LB    778 KG
TAXI FUEL:       926 LB     420 KG        APU FUEL:        20 LB      9 KG
ESTIMATED FUEL:  7789 LB    3533 KG       LOADED FUEL:     7789 LB    3533 KG
--------------------------------------------------------------------------------
WEIGHT
DOW              30500 LB   13835 KG      PAX              6143 LB    2786 KG
LUGGAGE          1950 LB    885 KG        CARGO            542 LB     246 KG
ZFW              39135 LB   17751 KG      TAKE-OFF         45978 LB   20855 KG
--------------------------------------------------------------------------------
TAKE-OFF %MAC: 14.96        PITCH TRIM: 7.3        TAKE-OFF CG OFFSET: -0.7 IN
--------------------------------------------------------------------------------
DEPARTURE SPEEDS FLAPS 8             DEPARTURE SPEEDS FLAPS 20
V1: 137                              V1: 127
VR: 139                              VR: 129
V2: 148                              V2: 136
VFTO: 176                            VFTO: 176
ESTIMATED LANDING SPEEDS AT DEST     ESTIMATED LANDING SPEEDS AT ALT
VREF FLAPS 0: 165                    VREF FLAPS 0: 162
VREF FLAPS 8: 153                    VREF FLAPS 8: 150
VREF FLAPS 20: 147                   VREF FLAPS 20: 144
VREF FLAPS 30: 143                   VREF FLAPS 30: 140
VREF FLAPS 45: 135                   VREF FLAPS 45: 132
VREF FLAPS 45+10: 145                VREF FLAPS 45+10: 142
VREF V2GA: 143                       VREF V2GA: 139
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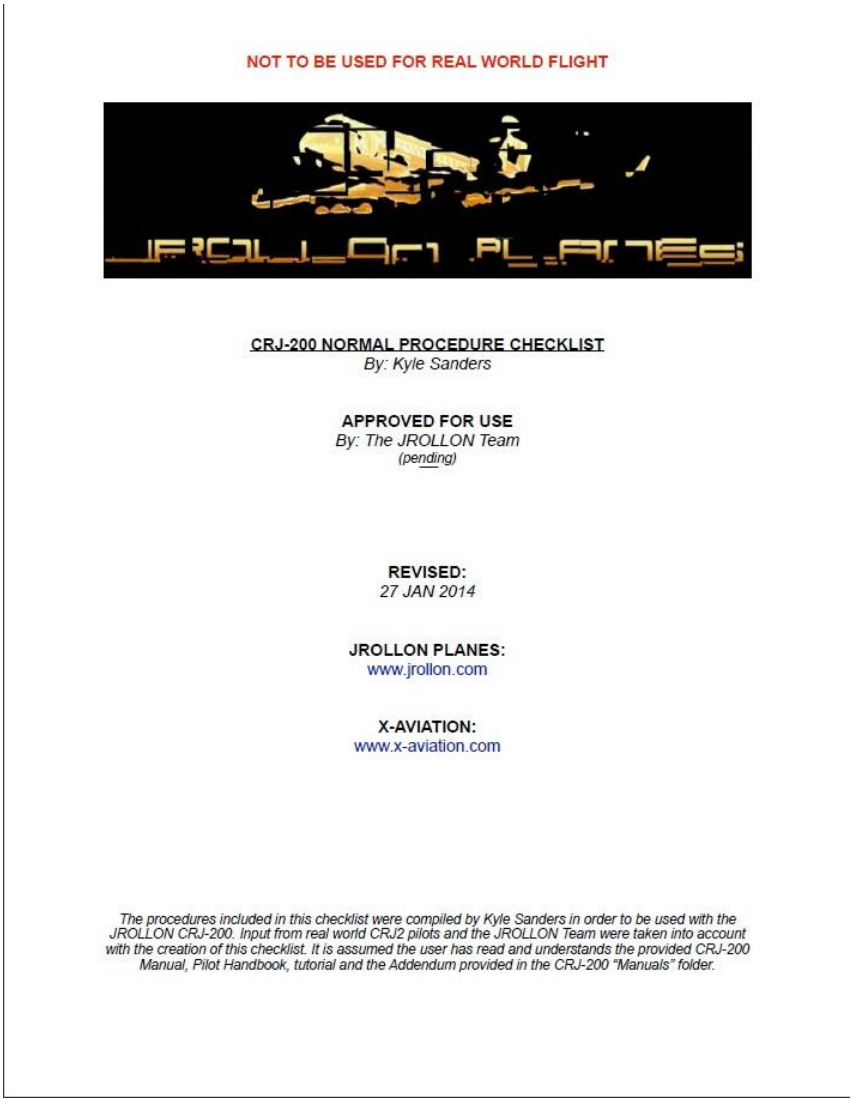
The application also includes a CRJ-200 Normal Procedure Checklist. The checklist was created by Kyle Sanders of http://www.xp-aviators.com. Go to **Application** in the menu and select **Open Checklist**. The Checklist will open as a pdf document. Thank you, Kyle!



NOT TO BE USED FOR REAL WORLD FLIGHT

CRJ-200 NORMAL PROCEDURE CHECKLIST
By: Kyle Sanders

APPROVED FOR USE
By: The JROLLON Team
(pending)

REVISED:
27 JAN 2014

JROLLON PLANES:
www.jrollon.com

X-AVIATION:
www.x-aviation.com

The procedures included in this checklist were compiled by Kyle Sanders in order to be used with the JROLLON CRJ-200. Input from real world CRJ2 pilots and the JROLLON Team were taken into account with the creation of this checklist. It is assumed the user has read and understands the provided CRJ-200 Manual, Pilot Handbook, tutorial and the Addendum provided in the CRJ-200 "Manuals" folder.

Finally, you may open this Manual by going to **Application** in the menu and selecting **Open Manual**. Note that once you have opened the application for the first time, both the Checklist and the Manual will be saved in your Documents folder in the subfolder iGoDispatch/docs/.

This is it. Have a safe flight!

If you have any comments or questions, please feel free to drop me a line at: software@igorland.com.

Thank you for using the application!