COMPLEX SOLUTION OF FLIGHT PLANNING USING A FLIGHT PLANNING SOFTWARE

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This work is focused on using the planning software for planning the flights. The introductory part is focused on the planning software, the principles of its work and there are also mentioned some instances which are used in practice. The second part pursues a specific example of work with planning software; particularly with software PPS (Preflight planning system) during the planning the route with all functions which are needed for that work. In the conclusion there are mentioned advantages and disadvantages of software and also the proposal for which type of airline would be the given software benefit and which would only slow down the work and moreover would be rather limitation than benefit.

Key words: Planning, software, PPS, WEB BASED, COMPUTER BASED, route, flight plan, ETOPS

1 INTRODUCTION

It is know that the function of a planning is to find all available information connected with the flight and also to know how to use them in a right way. For most of us the term "planning" produces an idea of pilot surrounded by some maps, calculators, instruments for distance measuring, pens and highlighters. In some sense the planning is more than only a way how to find the best route and meet the conditions connected with fuel and flight level. Except of this even the planning of short flights include the control of weather forecast and NOTAMs. Due to today´s technological inventions it is possible to avoid these manual procedures. There exist software applications which are able to generate all needed data with incredible accuracy. This article is going to introduce you that kind of software.

2 PLANNING SOFTWARE

As it was already mentioned the flight planning is pretty intensive and extensive activity. In the past it was needed to do all planning manually. The searching for information, looking for the optimal route, finding all the restrictions was time consuming. Today´s software do this work instead of people. There exist many of them but basically we can divide them into two groups: web based and computer based programs.

Web based ones are based on a connection to a remote server where whole counting of planning is being progressed. Therefore the work with these software is depended on internet connection. Closely associated with it is the speed of planning the flight.

Computer based programs are based on installation the application into the computer. It is clear that all counting process in our computer. The information and data are updated from the internet. The speed of this planning is depended on the processor of the given personal computer.

2.1 SKYDEMON

It is computer based software which is used for VFR flights planning. The concrete route planning is performed by simple clicking on way-point or writing in to the field. As it is computer based it works like many of them – it need the internet connection only for updating the information. For calculating it uses processor of the computer.

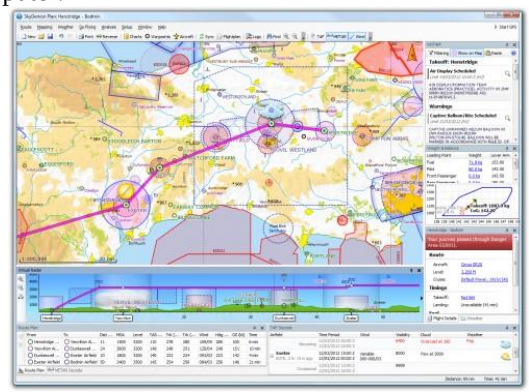

Figure 1Working area of SKYDEMON [7]

2.2 IFR Flight plan

This software is used for flight planning in the airspace over the Europe. It involves the airways form Greenland to Luxor. This software allows us to generate flight plan via flight trades with using DCT and also with changing flight levels where it is needed because of respecting RAD restrictions. If you have an internet connection we can do all that activity in real time via CFMU. It can all be performed in 60 seconds.

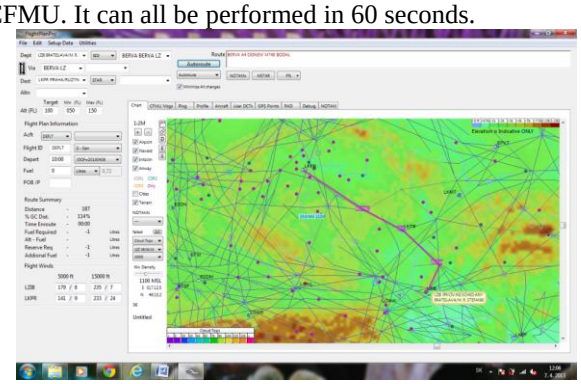

Figure 2 Working area of IFR Flight Plan PRO [2]

2.3 FLITESTAR

One of the most favourite computer based software is FLITESTAR from Jeppesen Company. It offers 3 programs versions:

- VFR – designed for simple VFR plans and routes
- IFR – it provide more complicated functions for flight planning IFR
- CORPORATE – advanced airplanes models for more precise planning

Figure 3 Working area of FLITESTAR [4]

2.4 FLIGHT PLANNER

Quality software for flight planning is software form company COMMMAND called FLIGHT PLANNER. This programme is focused on flight planning for general aviation and also for planning for area of Australia. It is very quality and popular programme due to his perfect functions for route calculating, distance and wind measuring, measuring of fuel consumption and other.

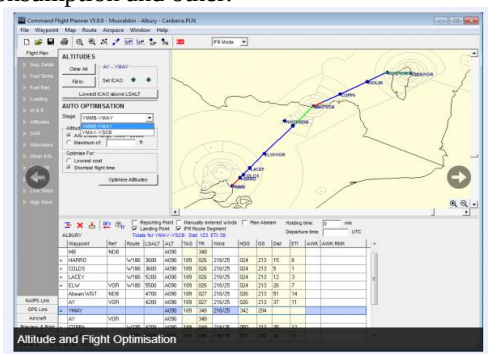

Figure 4 Working area of Flight planner [8]

2. 5 NAVTECH

It is web based software which offers flight planning wherever where an internet access is. It offers advanced instruments for route planning, warnings in real time, expandable map with real-time layering, automatic choose of ETOPS points.

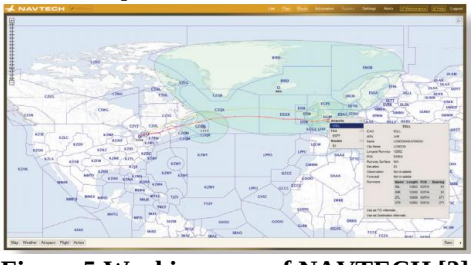

Figure 5 Working area of NAVTECH [3]

2. 6 NAVPLAN

Next web based software is NAVPLAN form company FLIGHT Prep. This software offers to display on the map weather with temperature and satellite images for better vision about conditions on route.

Figure 6 Working area of NAVPLAN [5]

2.7 Golden eagle

It is software form the same company as NAVPLAN. There are two version of that software – computer based and also web based.

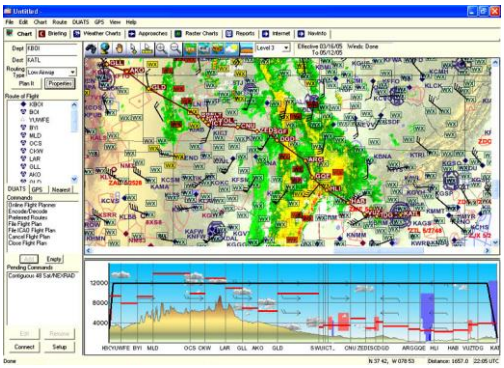

Figure 7 Working area of Golden Eagle [6]

3 PPS PREFLIGHT PLANNING SOFTWARE

The program was developed by a company AIR SUPPORT A/S which is located in Denmark. The core of this system was made even 20 years ago and it is still improving. The work screen of software PPS is based on system MS DOS what allows simple control by arrows keys. The work with this system is simple and fast because of the fact that MS DOS does not need powerful PC. The information about planned flight is inserted into the boxes manually or there is a possibility to choose from the database. The searching for the airports is available through the ICAO code or name of the given airport.

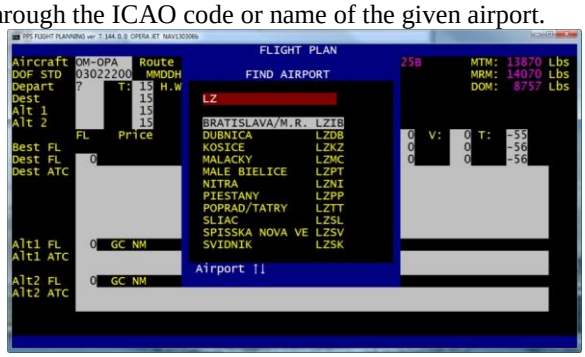

Figure 8 Working area of PPS and airport options [1]

The system offers information about chosen airports as for instance general information, runways, NOTAM, information about weather. This information is updated by software automatically in regular periods. If the planning is beyond the offered valid information as for instance Grid wind, there is a possibility to insert data manually or from the history which is in memory of software.

There are three options: PRICE, TIME, and FUEL when you are choosing the flight level. The software warns us when we choose the flight level which is not allowed for given area in which the flight plan would not be accepted.

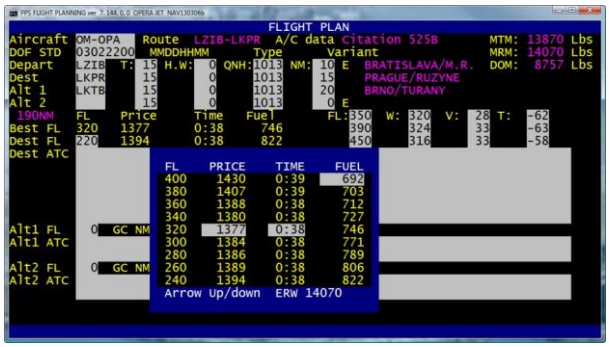

Figure 9 Options of FL [1]

When a route is being made the software has several options. In option **Fastrouting – Graphical route creation** - the window **Fastrouting** is being opened where we can make our own route.

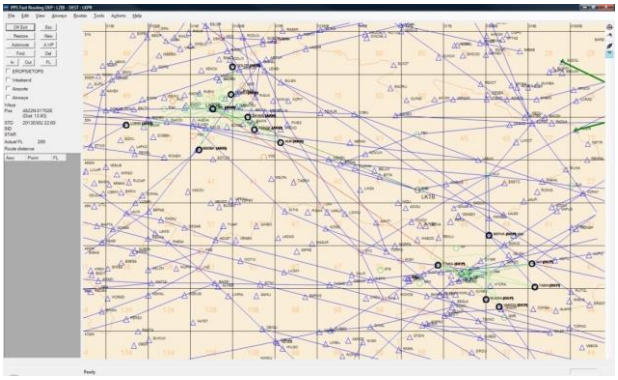

Figure 10 Route planning [1]

We can make a route due to manually inserted waypoints into a map or due to CFMU Route Assistance. This option allows connecting with server CFMU in a system Eurocontrol. That alternative gives us an option find more routes by CFMU catalog. It shows us only routes within IFPS airspace. Routes besides this airspace are not supported.

Option **Recently filed route** show us the last used route filed by AMEXSY from others users of PPS. PPS shows us the latest used route. That route works best and validation will be without any problem.

Company route is the database of our routes what we used for planning between two cities. For one pair of cities can be more than one route. In option **Filed routes** PPS show us routes used by other users. This option is similar to **Recently filed route** but actually there is a difference, here is more than one route to choose.

Standard routes is option what gives us an offer with more routes from different sources like a UK NATS, EAG…

Option **Other** is for case when we plan a flight in IFPS airspace or USA airspace. In CFMU can be save route, which will be showed here. More than 5 routes can be saved and showed.

Final route has to go through the validation by EUROCONTROL system.

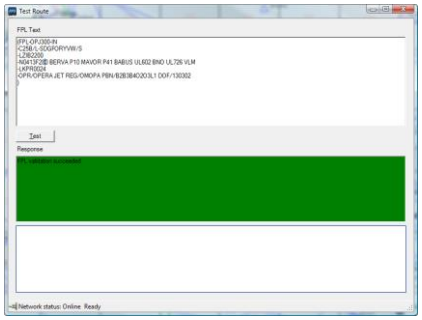

Figure 11 Route validation [1]

PPS system offers option layout the baggage, choose how much fuel has to be fill up and this determine a total weight and placement of center of gravity.

Figure 12 Weight and balance

All information about flight and flight plan are uploaded on internet site crewbriefing.com. From that site all crew member can easily download those information. That possibility makes work with planning flight much faster and dispatcher doesn't send all information separately to every crew member.

If distance of our flight is at the border of flight range of the plane, PPS has function **RCF Reduce Contingency fuel**. With this function we can reduce fuel reserve from 5% to 3% by planning enroute alternate airport. System shows us suitable airports on the final part of flight because in this part the pilot decides if he flies to the destination or to the alternate airport according to how much of the fuel left in the tank. On the route we have to

define **POD Point Of Decision** and the amount of fuel at this point what we need for flight to the destination. In this way we reduce reserve of the fuel at 3% and system allows us to finish the planning. All information about RCF is uploaded to the crewbriefing.com for all crew members.

3 CONCLUSIONS

This software work on MS DOS base so it is fast, because of this is choice number one for airlines what make VIP flights, business flight and non-scheduled service.

Advantages of PPS:

- Fast work
- Fast calculation of route and recalculation
- Simple moving in application

Disadvantages of PPS:

- Low graphic design
- Design of LOADSHEET

We can say COMPUTER BASED software is better for business airlines, where is fast planning priority. WEB BASED software can be used by airline which has a planning department. They have a much more time for planning and considering which route is the best and if all waypoints are good for flying that route.

Advantages of WEB BASED software:

- Actual information
- Good graphic design
- Low PC performance requirements

Disadvantages:

- Depend on the internet
- Low speed of work with software

BIBLIOGRAPHY

[1] PPS MANUAL AIR SUPPORT A/S Denmark

[2] FLIGHT PLAN PRO [online]. [cit.2013-04-10] http://www.flightplanpro.eu/Download.html

[3] NAVTECH [online]. [cit.2013-04-10] http://www.navtech.aero/uploaded/tiny_mce/File/PDFs/Product%20Sheets/Letter%20Product%20Sheets/NFP%20Letter.pdf

[4] FLITESTAR – Jeppesen [online]. [cit.2013-04-10] http://ww1.jeppesen.com/personal-solutions/aviation/flitestar-computer-based-flight-planning.jsp

[5] NAVPLAN – FlightPrep [online]. [cit.2013-04-10] http://www.navplan.com/index.php

[6] Golden Eagle – FlightPrep [online]. [cit.2013-04-10] http://www.flightprep.com/rootpage.php?page=infogoldeneagle

[7] SKYDEMON [online]. [cit. 2013-04-10] http://www.skydemon.aero/plan/

[8] Flight Planner - COMMAND software [online]. [cit. 2013-04-10] http://www.commandsoftware.com.au/aviation-software/flight-planner

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