J3.6 DELIVERY OF AVIATION WEATHER SERVICES IN CANADA

Richard E. Jones*
Environment Canada, Dorval, Québec, Canada

1.0 Introduction

Since Nov 1 1996, NAV CANADA (see: www.navcanada.ca) has provided Air Navigation Services (ANS) in Canada. NAV CANADA is a private non-share organization that was carved out of the Canadian Federal Government Department of Transport. NAV CANADA staff observe weather at major airports across Canada which may be part of a Flight Service Stations (FSS) which provides limited briefings to pilots. In the last few years aviation weather briefings services have been consolidated into Flight Information Centres (FIC's) across Canada. General aviation (GA) users may view aviation weather data on the Aviation Weather Web Site (AWWS) (www.flightplanning.navcanada.ca) and then ask for a consultation from the FIC which has access to the same data through AWWS or through Aviation Weather Distribution System (AWDS).

Environment Canada (EC) is under contract to NAV CANADA for the collection and distribution of aviation weather data and forecast production. EC collects automated weather observations and those form contract weather offices (CWO) and from Community Aerodrome Radio Stations (CARS) mostly in the far north. In addition EC produces TAFS (over 170), graphical area forecasts (GFA) and many other products in two centres – the CMAC–E (Canadian Meteorological Aviation Centre) located in Montreal and the CMAC–W located in Edmonton. Aviation weather data is distributed through the communication facilities of the Canadian Meteorological a Centre (CMC) located in Dorval. The CMC broadcasts to over 80 NAV CANADA offices through the AWDS and through another satellite broadcast service AMIS (Anik Meteorological Information System). The AWWS has been developed and is maintained at the CMC. In addition weather data is sent over the GTS (global telecommunications link) to the US National Weather Service's data gateway for further distribution. The CMC is also EC's Numerical weather prediction (NWP) centre.

2.0 The FIC's and the general aviation user

The large Canadian airlines such as Westjet or Air Canada have their own data collection centres and use private third party aviation data distributors. Smaller airlines, air freight companies, medical evacuations and the private pilots use NAV CANADA data services.

*Corresponding author address: Rick Jones , Canadian Meteorological Center, 2121 route transcanadienne, Dorval, Québec. H9P 1J3; email: rick.jones@ec.gc.ca

The general aviation (GA) users are expected to call through toll free numbers to obtain weather briefings and NOTAM information through the FIC's and file flight plans. - see Figure 1 for the location of the FIC' s – 6 main southern FIC's and 3 covering the northerner regions. Pilots may also obtain weather information through an automated phone service called PATWAS – see Figure 1.

Figure 2 shows how GA user may access aviation weather data. The GA may phone the FIC through the toll free number or access weather data through internet on the AWWS. The GA may then file a flight plan over the Internet on the IFS (Internet Flightplanning Service) or through the FIC. The GA has the same access to AWWS and the toll free number through a Pilot Information Kiosk at over 80 airports across Canada. The FIC briefing staff has a direct access to AWWS through the NAV CANADA network. In addition most of the same weather data is available on the FIC's workstations through the AWDS.

3.0 AWWS and ASEP

Automated Supplementary Enroute Predictions (ASEP) has been operationally available on AWWS since May 2005, and on a staging server since late 2004. These are products based on the regional NWP model of the CMC and were described by Turcotte 2004.

ASEP products have been integrated in the **Route** data folder which allows the user to obtain departure, waypoints and destination data as well as data within a 50 NM corridor of their route. The entered route coordinates may be an aerodrome identifier or a latitude/longtiude. In addition the departure time flight level and the duration of the flight is entered. With these parameters an ASEP server is interrogated and the requested ASEP graphical products are constructed from the ASEP gridpoint DB and returned to the user.

Products returned to the user include Alphanumeric data include METARs, TAFS, AIRMETs, SIGMETs and PIREPS, NOTAM and upper winds (FD's). Graphical products include Graphical area forecasts (GFA's)the aforementioned ASEP products, turbulence products radar and satellite products and WAFS (World Aviation Forecast System) products and many others.

Graphical (other than ASEP) and alphanumeric data are available though other access methods on AWWS. These are: **Local area** – data within 50 NM of an aerodrome are found; **Regional** - the requested data for a GFA region is retrieved and **Forecast and Obs** – free form access to the weather data and NOTAM.

Registered users may save a predefined route or local data or regional data in a flight folder in **My Weather Data**. The user then may recall the folder with updated information at any time.

Since January, 2005, users have been able to have their flight folders to their email account through the **Weather mail** feature. The user can define at which time the email is to be sent. Alphanumeric data is included in the email, whereas the graphical products are included as links in the email and are current when the links are invoked.

Since September, 2004 a popular feature has been Weather Cams – real time still images from remote video cameras located at selected airports. The user may view current conditions at the site and estimate the prevailing visibility through visibility markers on a reference photo.

4. AWWS systems

The AWWS application (see Figure 2) is housed on redundant servers within the CMC. The servers have been reliably providing data without stop since August, 2001. Since 2004 there are staging servers available that allow the display of new versions of AWWS. A user interrogating ASEP data through the ASEP interface in Route will do so on redundant ASEP servers that create the images on the fly upon request. Similarly the user requesting NOTAM will do so through the various interfaces on AWWS will have the NOTAM request filled through a network connection by the IFS server within NAV CANADA's facilities in Ottawa.

5. References

Turcotte, Marie-France: 2004: The Aviation Weather Web Site (AWWS). Preprints of the 11th Conf. On Aviation Range and Aerospace Met.. **3.7.**

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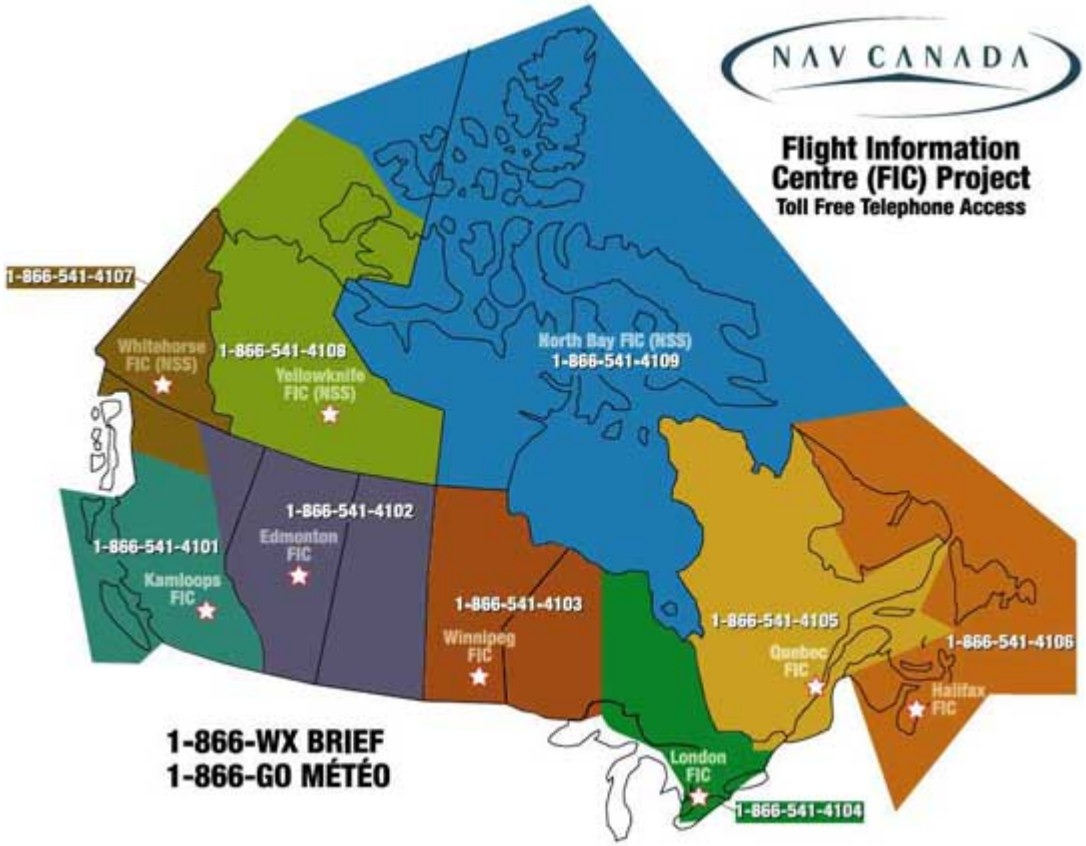
Figure 1. NAV CANADA ‘s Flight Information Centres (FIC’s)



Halifax: 1-866-541-4106	Winnipeg: 1-866-541-4103	North Bay: 1-866-541-4109
Québec: 1-866-541-4105	Edmonton: 1-866-541-4102	Yellowknife: 1-866-541-4108
London: 1-866-541-4104	Kamloops: 1-866-541-4101	Whitehorse: 1-866-541-4107

Phone Menu

Pilots calling a FIC will be able to access the following services by use of a touch tone phone. Those callers using a rotary telephone will be placed in the queue for Weather Briefing and Flight Planning:

1. Emergency: These crucial calls will be immediately identified to Flight Service Specialists and will receive a higher priority than regular customer requests. **Callers should only use this option when assistance is required for obtaining flight planning and weather information for an immediate Medevac (medical evacuation) departure, or when reporting an accident or other emergency.**

2. Weather Briefing or Filing a Flight Plan: Callers will be routed to the appropriate Specialist within the FIC.

3. Pilot’s Automated Weather Answering Service (PATWAS): The pilot can choose to go directly to PATWAS, an automatically-generated, continuous voice recording of selected aviation weather information based on routes, areas or individual weather reporting stations. Through PATWAS, pilots can access the following weather data: AIRMETs, METAR and SPECI, Aerodrome forecasts (TAF) and Winds and Temperature Aloft Forecasts. Future enhancements to the system will include a fax-back capability, and a voice recognition system that will supplement touch pad access.

Figure 2- Simplified FIC System Diagram

The General Aviation (GA) user at the top right may view the aviation weather data and NOTAM through the AWWS. The GA may then further consult with briefing offices across Canada and then file a flight plan. Alternatively the GA may file a flight plan online on the IFS (Internet Flightplanning Services). The AWWS is also available at Pilot Information Kiosks (PIK's) at over 80 airports across Canada with a direct phone line to the appropriate FIC.

Data is distributed to the FIC's through the satellite based Aviation Weather Distribution System (AWDS) r(top left). The FIC briefer may view the weather through their workstations.