NAV CANADA

TECHWATCH BULLETIN
SUMMER 2002
Issue No. 7

SYSTEMS, EQUIPMENT AND FACILITIES

UPDATE- ***GAATS (Gander Automated Air Traffic System)***
Contact: Harold Martin, Manager Flight Data Processing, (613) 248-7509

A new era has commenced in Gander with the delivery of the latest version of software. This software, delivered in late February, adds a graphical situation display (GSIT), an assortment of graphical tools and basic CPDLC functionality. Controller training has been completed and minor corrections made to the software so that the Gander oceanic controllers are now controlling oceanic traffic using the new situation display interface.

Planning to conduct trials for CPDLC use in the North Atlantic airspace is progressing well. Guidance Material has been approved and Canada and the UK are developing the required software to enable this functionality. Phase one of these trials is currently scheduled for late October, 2002.

UPDATE - ***FANS 1/A – ADS WAY POINT POSITION REPORTING***
Contact: Harold Martin, Manager, Flight Data Processing, (613) 248-7509

The FANS 1/A ADS Waypoint Position reporting became operational on January 29, 2001. About 230 flights per day, belonging to some 18 operators, use the capability. That is about 30% of the total daily oceanic traffic. Plans are now proceeding to implement waypoint position reporting using other avionics packages (other than FANS 1/A) with pre-operational trials planned for Fall, 2002. These could potentially add an additional 100 (approximately) flights per day reporting positions automatically.

UPDATE - ***OCEANIC CLEARANCE PROCESSOR (OCP II)***
Contact: Harold Martin, Manager, Flight Data Processing, (613) 248-7509

An upgrade to the current Oceanic Clearance Processor (OCP) was implemented on May 13, 2002. With this upgrade Gander can now send initial oceanic clearances to all aircraft equipped with avionics conforming to ARINC Specification 623 while continuing to serve the current ARINC Specification 620 avionics aircraft.

UPDATE ***AIRCRAFT COMMUNICATIONS ADDRESSING & REPORTING SYSTEM (ACARS) WAYPOINT POSITION REPORTING***
Contact: Harold Martin, Manager, Flight Data Processing, (613) 248-7509

Now that the FANS 1/A ADS Waypoint Position Reporting is operational, a trial of the ACARS Waypoint Position Reporting is being planned by the North Atlantic FANS Implementation Group (FIG). After some required software changes, it is anticipated that this trial will commence in Fall 2002.

UPDATE - ***NEW RADARS IN THE NORTH***
Contact: Christine Guérin, Manager, Surveillance, (613) 248-6833

The first two of the new Northern Radars, Kuujjuaq and Yellowknife, are now in operation. The new radar installation at Iqaluit is scheduled for operational flight check at the end of July 2002 and is expected to be commissioned shortly thereafter. A similar radar at La Ronge is also planned for operation in late 2002. NAV CANADA's Board of Directors have also approved radars for Chisasibi in May/June 2003, Stony Rapids in December 2003 and a replacement for Brisay in July/August 2003.

UPDATE- ***FLIGHT INFORMATION CENTRE PROJECT***
Contact: William Estrada, Project Manager, Pilot Information Kiosks, (613) 248-6872

The Flight Information Centre Project (FIC) involves the centralization of the provision of flight information services such as preflight weather briefings, flight planning and en-route radio communications into nine facilities: Halifax, Quebec City, London, Winnipeg, Edmonton, Kamloops, Whitehorse, Yellowknife and North Bay. The project focus has been on establishing FICs at three sites: Halifax, Quebec and Edmonton with staff and service transitions commencing in September 2001 for Halifax, November 2001 in Edmonton and in March 2002 for Quebec City. The other FICs will be established and ready for staff/service transitions in September 2002.

Related projects include:

- ***UPDATE*- Pilot Information Kiosks**

The Pilot Information Kiosk is designed to give pilots quick and accurate weather and aeronautical information through a variety of media (Internet, Phone, and Fax) in support of the interpretive briefings provided by flight services specialists at FICs. Prototype versions of the kiosks are available in Charlottetown and Ottawa.

Production and fielding of national operational units is in progress. Two operational units have been delivered to TSC and NCTI respectively (December 2001) for Evaluation and Training Material development. In addition, 22 sites across the country now have kiosks and more sites will be added this summer and fall. The operational units will be rolled out to designated sites that meet the operational and technical criteria to receive a kiosk**.**

UPDATE- ***AVIATION WEATHER WEB SITE (AWWS)***
Contact: John Foottit, Manager Aviation Weather Services (613) 563-5603

The new version of the Aviation Weather Web Site was released on the 30th of August after a 30 day beta test period that was undertaken with the help of the Canadian Owners and Pilots Association (COPA). The web site has improved redundancies to ensure reliable 24 hour-a-day accessibility, and improved functionality, such as the user capability to define and save their own routes for subsequent recall. Since the initiation of the new weather web site in August, the number of site visits have increased from 2100 per day to over 18,000 per day. Future plans include adding access to NOTAM information (late-2002) and filing a flight plan on-line (mid 2003), as well as gradually adding the following features:

- add the ability for registered users to select a series of forecast products and observations, and save them as a package for subsequent recall.
- add the ability to navigate back from displayed graphics such as the GFA or FD charts without using the browser “back” button.
- add colour satellite imagery such as are found on the Environment Canada public site
- add looping capability for radar and satellite imagery.
- design a “mouse-over” capability for the GFA, where location names will appear when a users’ mouse cursor touches a reference point.
- add Gander Oceanic SIGMETs.
- develop the capability to download upper wind and temperature information in a format that can be ingested by flight planning software such as Destination Direct or Jeppessen Flight Star.
- design a method to allow bookmarking of dynamic web pages
- design a method to download information to a personal data assistant (PDA).

- provide airport ATIS broadcasts via the web.

The Internet accessible Automated Supplementary Enroute weather Prediction system (ASEP) is also expected to become operational in late 2003. Through the Aviation Weather Web Site, this system will allow users to select weather predictions that are derived from Environment Canada's super computer model of the atmosphere. The predictions will be specific to the user's route, date/time of the flight (up to 40 hours into the future), and preferred cruising altitude. The ASEP predictions are presented to the user as colour profile (cross section) and plan view (bird's eye) graphics which are very easy to interpret. Pilot and flight dispatcher users will have access to the ASEP predictions, as will our Flight Information Centre (FIC) weather briefers.

UPDATE *FSS WEATHER GRAPHICS SYSTEMS*
Contact: Harold Martin, Manager, Flight Data Processing, (613) 248-7509

The FSS Weather Graphics System (FWGS) project is being delivered in co-ordination with the Aviation Weather Distribution System (AWDS) and the NAV CANADA Meteorological System (NCMETSYS) projects to deliver alpha-numeric and graphic weather products to support pilot briefings and ATS operations. There are currently 45 FSS and 4 ACC's that have FWGS and AWDS installed, and there are also 3 support facilities (non-operational units). Five more FSS will be completed this fiscal year. The remaining 26 FSS sites are planned for Phase 3 of the FWGS and AWDS projects, however the start date for this Phase has yet to be determined. ATS facilities that currently do not have these systems have GFAs and other graphic products faxed to them.

UPDATE- *PATWAS*
Contact: Joe Clapp, Manager, Communications & Facilities, (613) 248-7240

The Pilot's Automatic Telephone Weather Answering Service (PATWAS) is being expanded and enhanced again. From its humble beginnings as a prototype system in Ontario, to its earlier introduction in the west, PATWAS will soon become a truly national system offering bilingual, improved weather product handling and more responsive menu navigation for users. The target site and revised date for the national launch of PATWAS is Quebec City, February, 2003.

UPDATE - *D-ATIS/TVGS*
Contact: Joe Clapp, Manager, Communications & Facilities, (613) 248-7240

Similarly, our D-ATIS/TVGS (Data Link – Automated Terminal Information Service and Text to Voice Generation System) is being deployed to cut down waiting times for routine information by first automatically converting text ATIS messages to voice and broadcasting them on the appropriate VHF frequency. At predetermined towers a copy of the text message is also relayed to third party distributors for data link dissemination on demand. The TVGS is working well and we are expanding the available vocabulary to improve processing of PIREP, AIRMET and SIGMET. D-ATIS has now been commissioned at the following towers :

DATA LINK tower:

- Saskatoon;
- Thunder Bay;
- Regina;
- Vancouver;
- Calgary;
- Toronto (Pearson);
- Ottawa;
- Halifax;
- Winnipeg;
- Hamilton;

- Quebec City;
- Gander;
- St. John's;
- Dorval;
- Edmonton International;
- Moncton;
- Victoria;
- Mirabel;
- Abbotsford (planned for July 2002).

Non DATA LINK tower (VHF ATIS only):

- Sault St. Marie;
- St-Hubert;
- Sudbury, (planned for end of June 2002);
- Waterloo (planned for en of June 2002);
- Buttonville (planned for September 2002);
- Toronto City Centre (planned for December 2002);
- London (planned for end of June 2002);

UPDATE *-PRE-DEPARTURE CLEARANCE (PDC)*
Contact: Christine Guérin, Manager, Surveillance, (613) 248-6833

A new Pre-Departure Clearance (PDC) system at Toronto and Vancouver is leading to faster taxi and take-off routines by reducing voice communication requirements and frequency congestion. PDC has also been installed and is now in operation at Calgary, Edmonton, Winnipeg, and Halifax Airports.

UPDATE - *ASDE*
Contact: Christine Guérin, Manager, Surveillance, (613) 248-6833

Airport Surface Detection Equipment (ASDE) systems are becoming increasingly sophisticated and increasingly important as a method of reducing runway incursions. In assessing the feasibility of an ASDE system for Halifax, the company has determined that, in addition to enhancing safety, ASDE could produce half a million dollars in annual savings for aircraft operators by providing smoother control over movements on the ground. The Board of Directors has authorized procurement of an ASDE system for Halifax. The contract for the new ASDE system has been awarded and the plan is to have an operational ASDE system in Halifax in the 1st quarter of 2003. Recent developments at Halifax have included the installation of the ASDE antenna on top of the tower cab and successful completion of the System Acceptance Test. In addition, a new ASDE system has now been approved for Vancouver. While Vancouver currently has an ASDE system in place, the new system being installed by the end of 2003 will provide enhanced monitoring and runway incursion warning capabilities.

***UPDATE*- CONVERGING RUNWAY DISPLAY AID (CRDA)**
Contact: Bob Armstrong, Manager, ATS System Effectiveness, (613) 248-3921

CRDA was initially, as the name says, a converging runways utilisation optimisation tool. Since the first implementation in Calgary, CRDA has been proven to be a very useful tool to optimise the use of converging runways. It has also proven to be useful in enroute operations as an In Trail Spacing Aid (ITSA) in Vancouver since June 2001.

CRDA is now being implemented in Halifax. All TCU and Tower Controllers have completed their training. Phase 1 of the implementation has started. During this phase control staff will exercise / observe the s/w to confirm the functionality. An updated Inter-unit Agreement has been drafted with a planned effective date of July 1, 2002.

Several enhancements have been made to the CRDA functionality. The 'Smart Ghosting' feature has been improved to account for the weight category of the following aircraft and a new 'Enroute CRDA' configuration has been added. As well, it will be possible to group several different CRDA configuration under one 'parent' configuration, which will make activation of complex, linked configurations easier. These new enhancements will be released with the 1.10.2 version of RSiT. This release is planned for the fall of 2002.

PROCEDURES

UPDATE - ***FLIGHT MANAGEMENT SYSTEMS (FMS) & AREA NAVIGATION (RNAV) STANDARD ARRIVAL/DEPARTURE ROUTES (STARS & SIDS)***

Contact: Doug Buchanan, Manager, Airport & Terminal Operational Procedures, (613) 563-5554

The Toronto public procedures published last November are working extremely well. Both controller and pilot groups are using them with ease. The RNAV STAR procedures serve 8 airports across Canada. The RNAV STAR trials ongoing in Vancouver since last fall with Air Canada as the lead carrier have been streamlined and should be available for the general public (CAP) by late summer. Other airports are slated for these procedures on an as required basis and coordination for development is through the responsible area control center (ACC) and the local aeronautical information services (AIS) field office. The published procedures are continuously being reviewed and modified to meet the needs of both the user and the air traffic controller.

RNAV SID procedure development is ongoing for Montreal, Calgary and Toronto airports. RNAV SID trials at Ottawa are being refined and new revisions should be implemented by mid summer. Standards will be developed from the data captured from the trial and these standards will be used in the further development of RNAV SID procedures at other Canadian airport locations.

UPDATE ***REDUCED VERTICAL SEPARATION MINIMA (RVSM)***

Contact: Don MacKeigan, RVSM Project Manager, (613) 563 5678

On June 25, 2002 NAV CANADA announced that it will implement Reduced Vertical Separation Minimum (RVSM), flight level 290 to flight level 410 inclusive, in southern Canadian Domestic airspace. This expansion of RVSM , will occur in conjunction with the implementation of RVSM in U.S. Domestic airspace, currently proposed for December 2004. The concurrent implementation by both NAV CANADA and the FAA will result in a transparent interface at the Canadian-U.S. airspace boundaries.

RVSM will add capacity in southern Domestic airspace through the addition of six flight levels, reduce en-route traffic conflicts, provide more flexibility for air traffic control and afford more operator preferred profiles, with associated fuel savings for our customers.

This expansion of RVSM ,in conjunction with RVSM in the U.S. domestic airspace, will result in RVSM, FLs 290-410 inclusive, throughout Canadian Domestic airspace and RVSM Transition airspace will no longer be required. In a similar process to that used to support RVSM in northern airspace, NAV CANADA will be carrying out extensive safety assessments and airspace analysis, in southern Domestic airspace, in accordance with the ICAO Guidance Material Operators intending to operate within RVSM airspace are required to be equipped with altimetry and height-keeping systems which meet RVSM Minimum Aircraft System performance Specifications (MASPS) . Each aircraft must have State airworthiness approval and operators must be approved for RVSM operations.

NAV CANADA will put a communications and consultation process in place to ensure that information on the implementation of RVSM is communicated to customers, stakeholders and interest groups. As the southern Domestic RVSM Project develops, we will keep the aviation community informed on its status and related

activities. In addition to Aviation Notices , briefings and other communications vehicles, RVSM information will be posted on the RVSM site on the NAV CANADA internet site at www.navcanada.ca under Service Projects.

UPDATE - *SatNav – PROOF OF PERFORMANCE*
Contact: Ross Bowie, SatNav Program Manager, (613) 563-5648 or bowier@navcanada.ca

SatNav technology has developed steadily over the past decade, but that doesn't automatically mean benefits for aircraft operators. Obtaining any benefit requires regulatory approval from Transport Canada and standards for SatNav-based procedures. This in turn requires proof of performance, and in some cases this means collecting in-flight data.

NAV CANADA (and before 1996, Transport Canada) has made valuable contributions to the data collection process. In June, a company flight inspection Challenger aircraft completed 30 Local Area Augmentation System (LAAS) approaches at the US FAA's test facility in Atlantic City to support the development of LAAS approach design standards. In August, NAV CANADA's SatNav Program Office (SNPO) will be using a Citation aircraft to fly 130 LAAS approaches at Atlantic City to help meet the same goal. The data collection equipment used for these flights was developed by the SNPO with financial support from Transport Canada's Transportation Development Centre (TDC).

Another excellent way to collect data is on revenue flights. The SNPO, with financial support from TDC, recently worked with Air NorTerra to install a data collection package on one of their Boeing 737 Combi aircraft. This aircraft is equipped with a flight management system that uses GPS sensors; it serves remote Arctic communities out of Edmonton. This project will deliver large volumes of en route, terminal area and approach data that will be used to refine procedure design and to support the develop of standards that will increase operational efficiency and make better use of the airspace. The SNPO is working with numerous partners on this project, including CMC Electronics, Transport Canada and the US FAA. We expect this project to expand to other operators and to address LAAS, WAAS and RNP RNAV as the technology develops.

NEW: CONFLICT ALERT (CA)
Contact: Barbara Wright, Director, Operational System Requirements-ATS; 613-248-7200

Conflict Alert (CA) is functionality within RDPS that is designed to provide the controller with sufficient advance warning to avoid a potential mid-air collision. As the CA system provides critical safety alerting, exhaustive testing has taken place both at the TSC and in the field to ensure that the system functions as required while nuisance alarms are minimized. Over the past year, the software has been modified to incorporate design changes indicated by operational trials in Moncton and Toronto as well as to implement alerting capability in RVSM airspace.

Conflict Alert functionality is now operational in high-level airspace controlled by Moncton, Winnipeg and Edmonton ACCs. Gander is scheduled to go on-line on July 22nd. The software is performing per specification. We are well under way in implementing Conflict Alert in other ACCs and expect that the CA functionality will be operational in all remaining high-level airspace by the end of the year. Operational trial of CA in low-level airspace is under way in the Edmonton Enroute Specialty and excludes only the airspace from the surface to 9000' ASL around major airports.