



PART I: SYSTEMS, EQUIPMENT AND FACILITIES

GAATS (GANDER AUTOMATED AIR TRAFFIC SYSTEM) - UPDATE

CONTACT: HAROLD MARTIN, MANAGER FLIGHT DATA PROCESSING, (613) 248-7509

Phases 1 & 2 of the North Atlantic (NAT) CPDLC Trials are in operational mode in the Canadian and United Kingdom oceanic airspace over the North Atlantic. More than a dozen of the major airlines are participating with others signing on as their pilot training is completed. Preparation for an expansion of the message set (Phase 3) will be discussed at the next Fans Implementation Group meeting in March 2003.

Now that the situation display (GSIT) is operational in Gander, an operational concept is being developed to provide software enhancement tools to reduce the controller's reliance on the current paper strip with the ultimate goal of eliminating paper strips totally.

FANS 1/A – ADS WAY POINT POSITION REPORTING - UPDATE

CONTACT: HAROLD MARTIN, MANAGER, FLIGHT DATA PROCESSING, (613) 248-7509

The FANS 1/A ADS Waypoint Position Reporting system (CADS) has been very successful and well received by our customers. However, it provides only a small portion of the full FANS 1/A ADS capability. It does not allow demand reports nor event reports. CADS also does not provide end-to-end connections between the aircraft and the ATS ground system (GAATS). The connection is between the aircraft and a processor at the communications service provider's location in Annapolis, Maryland. The connection from Annapolis to the ground system is via AFTN. A project to add the full ADS functionality to GAATS is progressing and software delivery is expected in late Spring, 2003. Implementation is tentatively planned for Fall, 2003.

OCEANIC CLEARANCE PROCESSOR (OCP II) - UPDATE

CONTACT: HAROLD MARTIN, MANAGER, FLIGHT DATA PROCESSING, (613) 248-7509

The current Oceanic Clearance Processor (OCP II) was implemented on May 13, 2002. It sends 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. However, unlike the equivalent UK system, it does not allow the pilot to send a clearance request to the controller and it does not provide the capability to send a "Clearance Confirmed" message to the pilot. Without this last item the pilot must still contact Clearance Delivery by voice to confirm the clearance. With it the process becomes voiceless. An upgrade (OCP III) to implement these two features has been defined and will be implemented over the next six months.

FLIGHT MANAGEMENT SYSTEM (FMC) WAY POINT POSITION REPORTING - UPDATE

CONTACT: HAROLD MARTIN, MANAGER, FLIGHT DATA PROCESSING, (613) 248-7509

Plans are now proceeding to implement waypoint position reporting using other (not FANS 1/A) aircraft avionics packages, e.g. Pegasus, Honeywell Product Improvement Package (PIP), etc. Pre-operational trials are planned for the second quarter, 2003. This would increase automatic position reporting by an additional 100 flights (approximately) per day.



NORTH ATLANTIC GROUND/GROUND DATA LINK - NEW

CONTACT: HAROLD MARTIN, MANAGER, FLIGHT DATA PROCESSING, (613) 248-7509

The Gander flight data processing system (GAATS) has had the North Atlantic Common Co-ordination Interface Control Document functionality for ground-to-ground data link communications since 1996. However, other States have only recently implemented this capability. Testing with New York and with Reykjavik is being scheduled and implementation in 2003 is a possibility depending on priorities. Once implemented, the current telephone controller to controller co-ordination will be reduced or eliminated.

NEW RADARS IN THE NORTH - UPDATE

CONTACT: LANNY BEISCHER, MANAGER, SURVEILLANCE SYSTEMS, (613) 248-7227

The first three of the new Northern Radars, Iqaluit, Kuujjuaq and Yellowknife, are now in operation. The construction phase of the facility for the new LaRonge radar has been completed. This facility is scheduled to become operational by January/February 2003. 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.

FLIGHT INFORMATION CENTER PROJECT - UPDATE

CONTACT: CAROL ADAMS, GENERAL MANAGER AIRPORT OPERATIONS - FLIGHT INFORMATION CENTRES, (613) 248-4080

The Flight Information Center Project (FIC) will see flight information services such as preflight weather briefings, flight planning and en-route radio communications centralized across Canada into nine facilities: Halifax, Quebec City, London, Winnipeg, Edmonton, Kamloops, Whitehorse, Yellowknife and North Bay.

In order to ensure consistent service delivery at all times, the FICs will be implemented progressively in three phases. The initial rollout saw FICs established at Halifax, Quebec and Edmonton, with staff and service transitions commencing in September 2001, November 2001 and April 2002, respectively. Phase II saw FICs commencing transitions at London in September 2002, Kamloops in December 2002 and Winnipeg transition scheduled to commence in May 2003. The three northern FICs locations were identified during an earlier Northern Service Review, but still require new systems and equipment implementations in order to be brought up to current FIC standards. These implementations are scheduled for 2004.

PILOT INFORMATION KIOSKS - UPDATE

CONTACT: WILLIAM ESTRADA, MANAGER FSS INFORMATION SYSTEMS, (613) 248-6872

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. A prototype version of the kiosk is available in Ottawa.

Production and fielding of national operational units is in progress. Forty-three (43) sites across the country now have kiosks, nine (9) sites are currently being installed and more sites will be added in spring 2003. Kuujjuaq will be a northern test site for commercial satellite ISP. The operational units will be rolled out to designated sites that meet the operational and technical criteria to receive a kiosk.

AVIATION WEATHER WEB SITE (AWWS) - UPDATE

CONTACT: JOHN FOOTIT, MANAGER AVIATION WEATHER SERVICES (613) 563-5603

Since the initiation of the new weather web site in August 2001, the number of daily site visits has increased from approximately 2,100 to over 20,000. Future plans include adding access to NOTAM

information (23 January 2003) and filing a flight plan on-line (mid 2003), as well as gradually adding the following features over the next 1 to 5 years:

- add a "push" capability that will allow clients to receive weather information via scheduled e-mails or faxes.
- improve the VFR/IFR "dot plot" displays by developing a "mouse over" display of TAFs or METARs.
- add atmospheric vertical sounding data (tephigrams) for the use of glider pilots.
- add colour imagery from Remote Video Acquisition System (RVAS) weather cameras.
- add the ability for registered users to select a series of forecast products and observations, and save them as 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 color satellite imagery such as are found on the Environment Canada public site
- add looping capability for radar and satellite imagery.
- add a "printer friendly" capability that will correctly orient weather charts and fit them to a single page.
- add some Pacific Coast weather charts produced by the Department of National Defence.
- 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 and AIREPs.
- 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 Jeppesen Flight Star.
- design a method to allow book-marking 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 color 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 Center (FIC) weather briefers.

FSS WEATHER GRAPHICS SYSTEMS - UPDATE

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). Two 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.

FLIGHT INFORMATION MANAGEMENT SYSTEM (FIMS)- NEW

CONTACT: HAROLD MARTIN, MANAGER, FLIGHT DATA PROCESSING, (613) 248-7509

FIMS will replace the MIDS and FWGS with an integrated and scalable system that includes additional functionality such as electronic flight data strips, paperless forms and advanced sectorization capability to support FICs.



The system is comprised of 2 parts; Flight Data and METLAB. The METLAB portion is undergoing performance improvements. Training is being enhanced to include new functionality. A full FIMS installation will occur this Spring in Kingston.

PATWAS - UPDATE

CONTACT: JOE CLAPP, MANAGER, COMMUNICATIONS & FACILITIES, (613) 248-7240

The Pilot's Automatic Telephone Weather Answering Service (PATWAS) is being expanded and enhanced. 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 in Quebec City is March 2003.

D-ATIS/TVGS - UPDATE

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	Quebec City
Thunder Bay	Gander
Regina	St. John's
Vancouver	Dorval
Calgary;	Edmonton Int.
Toronto (Pearson)	Moncton
Ottawa	Victoria
Halifax	Mirabel
Winnipeg	Kelowna
Hamilton	Abbotsford

Non DATA LINK tower (VHF ATIS only)
Sault St. Marie
St-Hubert
Sudbury
Waterloo
Buttonville (Date TBD)
Toronto City Center (Date TBD)
Prince George (Date TBD)
London (planned for end of June 2003)

PRE-DEPARTURE CLEARANCE (PDC) - UPDATE

CONTACT: LANNY BEISCHER, MANAGER, SURVEILLANCE SYSTEMS, (613) 248-7227

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.

ASDE - UPDATE

CONTACT: LANNY BEISCHER, MANAGER, SURVEILLANCE SYSTEMS, (613) 248-7227

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 contract for new ASDE systems for Halifax, St John's, Quebec City, Montreal Dorval, Ottawa, Winnipeg, Calgary and Vancouver has been awarded and the plan is to have the systems installed over the next three years.



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. System Acceptance Testing was carried out in July, with only minor changes needed in the display. Work is continuing to resolve vibration problems caused by wind loading on the antenna. A Company from St John, NB, specializing in vibration problems, visited the tower to investigate the problem. Their report, with recommendations, was submitted in December. Strengthening the tower structure was one of the options presented.

The Vancouver ASDE will be replaced in two phases to minimize downtime. The Radar Data Processor will be replaced first and will operate with the existing antennae and transmitter/receiver. Then the antennae and transmitter/receiver will be replaced. System acceptance testing of the RDP is scheduled in Feb 03.

CONVERGING RUNWAY DISPLAY AID (CRDA) - UPDATE

CONTACT: BOB ARMSTRONG, MANAGER, ATS SYSTEM EFFECTIVENESS, (613) 248-3921

CRDA has proven to be a very useful tool to optimize the use of converging runways. It has now been implemented in Calgary and Halifax (TCU/Tower). CRDA is also being used in enroute operations as an In Trail Spacing Aid (ITSA) in Vancouver.

Several enhancements have been made to the CRDA functionality. The 'Smart Ghosting' feature is being improved to account for the weight category of the following aircraft and a new 'Enroute CRDA' configuration is being 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 1.10.3 version of RSiT. This release is planned for March 2003.

SASS (SCHEDULING & SEQUENCING SYSTEM) - UPDATE

CONTACT: LARRY EVERETT, FLIGHT DATA PROCESSING SPECIALIST - ATS, (613) 248-6875

The Scheduling and Sequencing System (SASS) is a computer-based system used to assist Air Traffic Management Unit (TMU) controllers in allocating available landing slots. It will provide the capability to apportion potential delays (into designated major airports) when demand exceeds capacity. SASS installations are planned for Toronto, Vancouver and Calgary operations. SASS will provide the ability to maximize airport efficiency and deal with traffic surges.

SASS capabilities in Phase 1 of the project will provide:

- Blocked slots and intervals
- Capability to set flight and blocked slot priorities (routine, exempt, priority)
- Manual time assignment (drag & drop on timeline)
- Manual meter fix assignment (drag & drop to another timeline)
- Pre-departure schedule (Airport, Airline/Operator, Aircraft)
- Specify airport and runway arrival rates dynamically in the future
- Set bedpost priorities on a times basis
- Set an aircraft in suspend status
- Handle stream classes
- Statistics logging

SASS Schedule:

Site	Install	Commission
Toronto	March 2003	May 2003
Vancouver	November 2003 <i>Richmond</i>	March 2004 <i>Surrey</i>
Calgary	2004	2004



PART II: PROCEDURES

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

CONTACT: DOUG BUCHANAN, MANAGER, AIRPORT & TERMINAL OPERATIONAL PROCEDURES, (613) 563-5554

The Hamilton procedures published last November in the Canada Air Pilot have proven very successful based on input from Westjet and Toronto ATC. This increases the number of published procedures in Canada to thirty-three. Toronto has on trial four RNAV STAR procedures developed for the "quiet hour" time frame. The RNAV STAR trials ongoing in Vancouver with Air Canada as the lead carrier have been streamlined, are on test and should also be published by mid spring this year. Other airports are slated for the RNAV STAR procedures 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 shortly. Standards will be developed from the data captured during the trial and these standards will be used in the further development of RNAV SID procedures at other Canadian airport locations.

THE EXPANSION OF RVSM TO SOUTHERN DOMESTIC AIRSPACE (SDRVSM) - NEW

CONTACT: DON MACKEIGAN, SDRVSM PROJECT MANAGER, (613) 563 5678

SDRVSM FL 290 to FL 410, inclusive, has a planned implementation date of December 2004 and will occur concurrently with the implementation of RVSM in US Domestic airspace (DRVSM). The SDRVSM Operational Concept is posted under service projects "RVSM" on NAV Canada's web site at www.navcanada.ca. An Aeronautical Information Circular, 9/02, was issued October 3, 2002 and posted the NAV CANADA web site. An operator/fleet survey is currently underway and briefings were scheduled for the ATAC Flight Operations Committee on November 18 & 19, 2002 and CBA on November 21, 2002.

SATNAV – SIGNAL VULNERABILITY - NEW

CONTACT: ROSS BOWIE, SATNAV PROGRAM MANAGER, (613) 563-5648 OR BOWIER@NAVCANADA.CA

One of the key issues facing air navigation service providers as they plan for the future (2010 and beyond) is how much to rely on satellite navigation. The problem is that satellite signals, which are broadcast from about 20,000 km above the Earth, are quite weak when they reach receivers. This makes them vulnerable to interference. The signals are in a protected band of the electromagnetic spectrum, so the first line of defence is regulation to ensure that no other service accidentally interferes with the signals. NAV CANADA works with Transport Canada and Industry Canada to this end, and it is felt that continued attention to this threat will make it very unlikely.

The remaining concern is intentional jamming of satellite signals, which is relatively easy from a technical perspective. It is possible to jam traditional ground aids, but the effect of jamming satellite signals could be more widespread, so the issue deserves special attention. It should be noted that SatNav is not unique regarding the need to plan for losses of service. There are procedures in place today to mitigate the effects of radar, communications and ground navigation aid failures, not to mention the effects of aircraft system failures.



NAV CANADA is participating in an International Civil Aviation Organisation (ICAO) working group that is drafting a paper on SatNav vulnerability and mitigation strategies. The paper will advise States to complete a threat analysis by area (e.g. the threat would be different in Toronto versus Iqaluit). It will recommend employing a suitable combination of procedures, on board systems (inertial) and ground aids to mitigate the effects of interference. NAV CANADA intends to work closely with its customers, Transport Canada and other governmental and industry bodies to find the most effective strategy for Canada. A welcome side effect of an effective mitigation strategy is that it will make it less likely that anyone will attempt to interfere with the signals.

Despite the vulnerability issue, SatNav is and will be used to enhance the efficiency and safety of flight operations by supporting user-preferred trajectories and by supporting better approaches to more runways.

CONFLICT ALERT (CA) - UPDATE

CONTACT: LANNY BEISCHER, MANAGER, SURVEILLANCE SYSTEMS, (613) 248-7227

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 Gander, Moncton, Winnipeg and Edmonton ACCs. 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 spring of 2003.