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PART I: SYSTEMS, EQUIPMENT AND FACILITIES

GAATS (Gander automated Air Traffic System) - Update

Phase 3 of the North Atlantic (NAT) CPDLC Trials began 16th December 2003 in Canadian and UK oceanic airspace. Speed and level clearances are now being

issued via CPDLC and the reaction from the pilot and controller community has been very positive.

Work is progressing on a project to add ADS functionality to GAATS. This will allow the controller to request on-demand position reports, periodic position reports, and to establish vertical or lateral deviation contracts, etc. The first phase of implementation will replace the centralized waypoint reporting (CADS) functionality currently provided by ARINC. The first phase is scheduled to be implemented in September and will result in significant financial savings for Nav Canada. Full ADS functionality is scheduled for implementation in fall 2004.

New separation algorithm software has been developed and demonstrated to Gander personnel. They are currently evaluating it and any problems or requested changes will be made after which this high priority item will be implemented.

Contact: Harold Martin, Manager Flight Data Processing, (613) 248-7509. ▲

Oceanic Clearance Processor (OCP II) – Update

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. OCP II will be upgraded by adding these capabilities. Implementation is scheduled for December 2004.

Contact: Harold Martin, Manager, Flight Data Processing, (613) 248-7509. ▲

North Atlantic Ground/Ground Data Link – Update

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. Once implemented, the current controller to controller telephone co-ordination will be reduced. Other states have recently implemented this capability and testing is ongoing with New York and Reykjavik, as higher priority initiatives permit. An operational trial between Reykjavik and Gander was completed in May. Several modifications are required before implementation is possible. However, higher priority items prevent making these modifications until late in the year (2004). Implementation is anticipate early in 2005.

Contact: Harold Martin, Manager, Flight Data Processing, (613) 248-7509. ▲

Flight Information Management System (FIMS)- New

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 two parts: Flight Data and METLAB. The METLAB portion is undergoing performance improvements. Training is being enhanced to include new functionality. A FIMS workstation has been installed in one control position in Kingston FSS for operational evaluation and feedback. Equipment has also been installed for training purposes in Halifax and training and evaluation is anticipated by fall/winter 2004. Recent upgrades include newer faster processors and porting to a linux operating system.

Contact: Harold Martin, Manager, Flight Data Processing, (613) 248-7509 . ▲

New Radars in the North – Update

The Northern Radar Project began in 1999 with the decision to acquire a radar facility for Yellowknife following a cost-benefits analysis. Since then, 5 additional sites have been added to increase the radar coverage in Canadian airspace, where the numbers justified such acquisitions. Kuujuaq, Iqaluit, La Ronge and Chisasibi are now fully operational. Stony Rapids (SK), the last site in this phase of radar acquisition, is in the final phase of testing. This facility should be in full operational use in August 04. In addition to these new sites, the Brisay radar facility has been upgraded to this new technology, Mode S. A complete training radar was also acquired as part of this project for NCTI, and a one-channel maintenance and testing facility was purchased for the Technical System Centre in Ottawa.

NAV CANADA is conducting a Business Case Analysis to examine and compare the benefits and costs of using either radar or ADS-B “out” to improve flight profiles for air traffic routinely traversing the Hudson Bay area. ADS-B “out” refers to the broadcast of Global Positioning System (GPS) derived position data from aircraft equipped with an enhanced Mode-S transponder, GPS and Extended Squitter. The benefits were determined in collaboration with the major customers operating in this airspace and with air traffic controllers with extensive experience controlling this traffic. Results of the analysis are expected in September 2004.

Contact: Lanny Beischer, Manager, Surveillance Systems, (613) 248-7227. ▲

Pre-Departure Clearance (PDC) – Update

Pre-Departure Clearance (PDC) combines EXCDS and datalink capabilities to provide initial IFR departure clearances to subscribing air carriers, reducing voice communications and frequency congestion. PDC is in operation at Vancouver, Calgary, Edmonton, Saskatoon, Winnipeg, Toronto and Halifax, and will be added to Montreal and Ottawa in the near future. Plans are underway to expand PDC service to SITA subscribers, and to upgrade to the 623 communications protocol.

Contact: Lanny Beischer, Manager, Surveillance Systems, (613) 248-7227. ▲

ASDE - Update

Airport Surface Detection Equipment (ASDE) systems are becoming increasingly sophisticated and important as a method of reducing runway incursions. The

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

The Vancouver ASDE was commissioned on 05 September 2003. The Calgary system has been successfully installed, with Systems Acceptance Testing (SAT) completed in October. Work continues on fine tuning the radar during snow conditions. The Dorval ASDE will be installed in two phases to minimize downtime. The Radar Data Processing (RDP) equipment has been installed and SAT completed in December. Phase 2, installation of antennae and tx/rx equipment was completed in May. Operational Readiness Demonstration is set to begin in early June. Ottawa will be the next system to be replaced following Dorval, with Phase 1 (RDP) completed in early July 2004, followed by antennae and tx/rx being replaced in late August/early September 2004. Following the Ottawa installation will be Quebec City, with the new system installed by early November.

Contact: Lanny Beischer, Manager, Surveillance Systems, (613) 248-7227. ▲

SASS (Scheduling & Sequencing System) – Update

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.

Some SASS capabilities in Phase 1 of the project will provide but are not limited to the following:

- 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 timed basis
- Set an aircraft in suspend status
- Handle stream classes
- Statistics logging

SASS Schedule:

Site	Install	Commission
Toronto	Aug 2004	Oct 2004
Vancouver Richmond – SASS will not be installed in Richmond due to workload and the planned move to Surrey.		
Vancouver Surrey	Jul 04	Richmond/Surrey Move Oct/Nov 2004
Edmonton (for Calgary)	May 2005	Nov 05

SASS Certification Testing is ongoing at the TSC

Contact: Larry Everett, Flight Data Processing Specialist - ATS, (613) 248-6875. ▲

Pilot Information Kiosks – Update

The Pilot Information Kiosk is designed to give pilots quick and accurate weather and aeronautical information through Internet and Phone, in support of the interpretive briefings provided by flight services specialists at FICs.

Seventy-seven (78) sites across the country now have kiosks.

A contract was awarded for the procurement of eighty-one (81) PIK units. The final installation that completes the project schedule is listed below.

Quesnel will be installed in August 2004.

Contact: William Estrada, Manager FSS Information Systems, (613) 248-6872. ▲

PATWAS – Update

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 is becoming a truly national system offering bilingual, improved weather product handling, more responsive menu navigation for users, voice recognition and faxback capability. The PATWAS systems installed at Quebec, London, Kamloops, Edmonton, Halifax and Winnipeg FICs are now operational. The launch date for the Northern FICs is 2005.

Contact: Joe Clapp, Manager, Communications & Facilities, (613) 248-7240. ▲

D-ATIS/TVGS - Update

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 REMARK, PIREP, AIRMET and SIGMET. D-ATIS has now been commissioned at the following towers:

DATA LINK Tower		Non DATA LINK tower (VHF ATIS only)
Saskatoon	Quebec City	Sault St. Marie
Thunder Bay	Gander	St-Hubert
Regina	St. John's	Sudbury

Vancouver	Dorval	Waterloo
Calgary	Edmonton Int.	Edmonton City Centre
Toronto	Moncton	Toronto City Centre
(Pearson)	Victoria	London
Ottawa	Mirabel	
Halifax	Kelowna	Buttonville (Deferred to FY 04/05)
Winnipeg	Abbotsford	
Hamilton		

Contact: Joe Clapp, Manager, Communications & Facilities, (613) 248-7240. ▲

Aviation Weather Web Site (AWWS) – Update

The ability to file a flight plan over the Internet was made available to the public on May 25, 2004. After the first two months, 1100 clients have registered, 600 have created user accounts and over 400 flight plans have been filed.

The Aviation Weather Web Site now averages 25,000 visits and 5500 NOTAM requests per day.

Other future plans include the gradual addition of the following features over the next one-to-five years:

- 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 (Fall 2004);
- 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, as is 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 user’s 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 expected to become operational in the Winter 2005. Through the Aviation Weather Web Site, this system will allow users to select weather predictions 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.

Another new service planned for release in spring of 2005, is Weather Mail (Wx Mail). It will allow registered users to automatically receive an email delivery of weather information from their "My Wx Data" folder, directly to their personal email account, on days and at times (up to 5 times per day), of their choosing.

Contact: John Foottit, Manager Aviation Weather Services (613) 563-5603. ▲

Converging Runway Display Aid (CRDA) - Update

CRDA has proven to be a very useful tool in optimizing the use of converging runways and in determining in-trail spacing for aircraft on approach or converging enroute. It has now been implemented in Calgary and Halifax, TCU and Tower and is being used in enroute operations as an In Trail Spacing Aid (ITSA) in Vancouver.

Several enhancements have been made to the CRDA functionality and are included in version 1.10.3 of RSiT. Certification has been completed and site testing began in Vancouver June 21/22. Pending successful completion of the site test, 1.10.3 will be distributed to Edmonton and Winnipeg. Montreal will receive 1.10.3 when French testing is completed, which should be in the near future. Toronto will receive the system when testing with the RDPS 163 cards is completed. Moncton and Gander will not receive RSiT Version 1.10.3, as they have CSiT.

This version of software incorporates a 'Super-Smart' CRDA In-Trail ghosting capability. The previous 'Smart In-Trail Ghosting' feature of CRDA used the wake turbulence classification of the leading aircraft only in order to determine the spacing to be used when projecting the In-Trail ghost images. This version considers the wake classes of both the leading and the trailing aircraft

A new CRDA enroute configuration had been introduced. The enroute configuration 'flattens' all ghosts on to the beta baseline, providing a much better representation of relative spacing between aircraft that are on widely divergent flight paths.

CRDA has also been modified to handle special weight category aircraft, such as the B757 (a special weight category aircraft is one whose wake turbulence characteristics are treated differently depending on whether it is the leading or trailing aircraft in a pair). This change was driven by the fact that there is an increasing number of aircraft that fall into the special weight category class.

Contact: Christine Guerin, Manager ATM Service Design, (613) 248-3921. ▲

Part II: Procedures

Conflict Alert (CA) – Update

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 all airspace above 14,000 feet controlled by Gander, Moncton, Winnipeg, Toronto, Montreal, Edmonton and Vancouver ACCs with the exception of the designated suppress areas.

Contact: Lanny Beischer, Manager, Surveillance Systems, (613) 248-7227. ▲

Flight Management Systems (FMS) & Area Navigation (RNAV) Standard Arrival/Departure Routes (STARS & SIDS) - Update

There are currently forty published RNAV STAR procedures in Canada at ten of our major airports. Three more have been published for Hamilton which are connected to RNAV approaches. This will be the first time that aircraft flying an RNAV STAR will be able to transition to an approach system that does not rely on ground-based navigational aids.

To ensure for a high quality assurance system, a RNAV Review Committee has been established which looks at any new RNAV procedures or revisions to a procedure. This committee, comprised of members from the Aeronautical Information Services (NAV CANADA), Transport Canada, Air Canada, air traffic controllers and Operations looks at the design criteria, legality, flyability and air traffic control procedures surrounding the change.

New SID trials commenced at the Pierre Elliott Trudeau Airport in Montreal on August 5 with American Airlines being the main participant. RNAV SID procedures are being developed for Halifax International Airport. Also established is a Greater Toronto Airports Authority RNAV SID Working Group. On the working group are members from GTAA, TC, Air Canada and NAV CANADA who are looking into the development and implementation of RNAV SID procedures for Toronto's LBPIA.

Contact: Doug Buchanan, Manager, ATS Operations and Development, (613) 563-5986. ▲

RVSM IN SOUTHERN DOMESTIC AIRSPACE (SDRVSM) – Update

The implementation of SDRVSM in Canada, DRVSM in the USA, MRVSM in Mexico and RVSM throughout the Caribbean and South America is scheduled for 09:01 UTC January 20, 2005.

The North American RVSM Implementation Group (NARIG), a tri-lateral Canadian, Mexican and USA Group met in Ottawa May 11- 13, 2004, and concluded that the SDRVSM, DRVSM and MDRVSM programs were on track to meet the January 20, 2005 implementation date. A formal SDRVSM GO/Delay decision is scheduled for September 14, 2004 with a wider tri-lateral GO/Delay decision to be taken September 22, 2004.

RVSM airspace (flight level 290 - 410 inclusive), is exclusionary and aircraft and operators that have not received RVSM approval from their responsible State authority, with limited exceptions, will not be permitted to operate within designated RVSM airspace.

Transport Canada's CBAAC 0226 (issued 2004. 03.19) outlines the process for obtaining RVSM Operations Specification approval, including height-keeping performance monitoring, and may be downloaded from the TC Web site at: tcinfo/civilaviation/commerce/circulars/menu.htm

Guidance Material on the Approval of Operators/Aircraft for RVSM Operations (91-RVSM) and other relevant documentation on SDRVSM are posted on the NAV CANADA web site www.navcanada.ca (click on ANS Programs, then click on RVSM)

Aircraft height keeping performance monitoring, can be accomplished by over-flight of a ground based monitoring system or use of a Global Positioning System (GPS) Monitoring Unit (GMU). If convenient, aircraft can overfly the Gander HMU (see AIP RAC 12.16.9). Two additional ground based systems, one in the vicinity of Ottawa, ON, the second in the vicinity of Lethbridge, AB, are scheduled to be operational in October/November 2004.

GMU aircraft height-keeping performance monitoring is available on a commercial basis from:

ARINC, Annapolis, MD.
Contact point:
RVSM Ops Center
Tel: 410 266 4707
Email rvsmops@arinc.com

CSSI Inc. Washington, DC.
Contact Point:
RVSM Monitoring
Tel: 202 863 2175
Email monitor@cssiinc.com

Operators intending to operate in RVSM airspace that do not have aircraft and operator approval, are urged to start the RVSM authorization process with Transport Canada as soon as possible.

SDRVSM current activities include:

Concluding an Agreement with the FAA with respect to procurement and operation of ground based height-keeping performance monitoring systems.

Site preparation work, at Ottawa and Lethbridge including access roads, pads, installation of shelters and towers to support the installation of ground based height-keeping performance monitoring systems;

Developing Unit specific RVSM Training Programs for controller and operations support staff at the ACCs and NOC;

Ongoing bi-lateral discussions with the FAA to address commonality in both ATC /Pilot procedures, and data transfer in support of a transparent interface at the common Canadian – US airspace boundary ;

Airspace operations analysis to support Pre-Implementation Safety Assessments, in accordance with the ICAO requirements for the implementation of RVSM

The following documents have been placed on the NAV CANADA RVSM web site, <www.navcanada.ca> (click on ANS programs, then click on RVSM):

SDRVSM Implementation Plan; SDRVSM Guidance Material; SDRVSM Impact Analysis, CBAAC 0226, Aircraft Monitoring Requirements, 91-RVSM-Change 2 (Guidance on aircraft/Operator RVSM Approvals), AIC 1/04, AIC 2/04 and an SDRVSM Contacts List.

SatNav – Wide Area Augmentation System (WAAS) in Canada

As described in previous TechWatch Bulletins, the U.S. Federal Aviation Administration (FAA) commissioned WAAS in July 2003. WAAS signals already cover much of Canada, with excellent coverage in the western provinces thanks to the FAA's network of stations in the lower 48 states and in Alaska.

NAV CANADA worked with the FAA through the winter to finalize the details of an agreement, signed in early May, to field four WAAS stations in Winnipeg, Goose Bay, Gander and Iqaluit. These stations will boost performance in the USA and in eastern Canada. The plan is to install the Goose Bay and Gander stations in mid 2005, followed by the Winnipeg and Iqaluit stations in mid 2006. NAV CANADA is working with the FAA this summer to complete detailed site installation plans to support site preparation work starting in Fall 2004.

NAV CANADA's goal is to start providing WAAS-based approaches in late 2005. These approaches will provide vertical guidance and from the pilot's point of view will look like an Instrument Landing System (ILS) approach. These LPV (Lateral Precision with Vertical guidance) approaches use ILS lateral design criteria and a vertical design that is only slightly less restrictive than ILS. The lowest decision altitude for an LPV procedure will be 250 feet above ground, versus 200 feet for ILS. LPV approaches will improve accessibility to many Canadian airports, and are

being welcomed by many aircraft operators because they provide stable vertical guidance.

NAV CANADA continues to work with Transport Canada on the regulatory aspects of WAAS operations.

Contact: Ross Bowie, Director, ANS Service Design, (613) 563-5648 or bowier@navcanada.ca. ▲