Edition 18 **March 2006**

PART I: SYSTEMS, EQUIPMENT AND FACILITIES

GFDPS (Gander Flight Data Processing Systems)

- **GAATS (Gander Automated Air Traffic System)**

Description: The Gander Automated Air Traffic System (GAATS) and the Situation Display (GSIT) are used to assist in the control of aircraft over the North Atlantic. Flight plans are stored in GAATS, strips produced on a timely basis, and conflict detection performed based on a current weather model. GAATS automatically sends initial oceanic clearances via ARINC to pilots and exchanges flight data with other North Atlantic States via ground/ground data link. GSiT provides Oceanic controllers with a graphical depiction of the traffic, and advanced functions, like Automatic Dependent Surveillance (ADS) and Controller Pilot Data Link Communications (CPDLC), for traffic management. Current GAATS Software: GAATS 22.4A

Customer Benefits: With GAATS controllers are able to provide the most efficient routes across the North Atlantic saving fuel costs for each flight. Aircraft with the capability to provide ADS position reports reduce the load on the HF communications network. As a result they receive a reduction in their HF voice communications charges.

- **GAMES (Gander-AFTN Message Extractor System)**

Description: GAMES is a PC based system which interfaces between GAATS and AFTN. GAMES is used by the support staff (ATOS), and performs the following functionality:

  - o Extraction of data from an FPL message received on AFTN and automatic entry into GAATS.
  - o Automatic processing of estimates from Moncton ACC via AFTN. This functionality will be disabled when Gander CAATS is operational.
  - o Processing of all messages received on the AFTN circuit with appropriate alerting and printing capabilities.
  - o GAMES is the main system used by Gander ACC to transmit messages on AFTN.

Current GAMES Software: GAMES 6.5

Customer Benefits: Provides controllers with timely flight data enabling the efficient management of air traffic.

- **GEM (GAATS Error Monitor)**

Description: GEM is a PC based system developed in-house by Nav Canada and was successfully implemented in November, 2005. Its main role is to improve the error monitoring and corrective action process performed by the ATOS group. GEM is connected to GAATS through a number of ports. Using a system of queues, visual and audible alarms, the ATOS are better able to monitor and action errors in a timely manner. Site adaptation allows Gander to determine queue contents, sorting, and priority alerting criteria. Current GEM Software: GEM 1.1

Customer Benefits: Provides better monitoring of system errors and problems enabling quicker intervention and increasing the availability of systems critical for efficient management of air traffic.

Contacts, Ed Warren, Flight Data Processing Specialist, ATS, (613) 248-7107, or Paul Samson, Flight Data Processing Specialist, ATS, (613) 248-7268

SASS (Scheduling and Sequencing System)

Description: SASS is a computer-based system used to maximise airport efficiency and deal with traffic surges through automation of sequencing and scheduling of arrival traffic. It assists air traffic management specialists in allocating available airport landing slots and minimising delays. It also provides the capability to apportion potential delays from enroute fixes to the landing runway at times when demand exceeds capacity.

Customer Benefits: SASS will improve domestic air traffic management by maximizing airport efficiency, minimizing customer delays and reducing the airlines annual operating expenses.
Implementation:
Toronto ACC – 6 May 2006
Vancouver ACC – 2nd Quarter, 2006

Contact, Larry Everett, Flight Data Processing Specialist, (613) 248-6875

FIMS (FSS Information Management System)

Description: The FSS Information Management System (FIMS) is designed to provide flight planning, alerting, weather briefing, and aeronautical information to Flight Service Specialists located at Flight Service Stations and Flight Information Centres. FIMS will replace the Multi-Purpose Information Display System (MIDS) and FSS Weather Graphics System (FWGS) with an integrated and scalable system that includes additional functionality such as electronic flight data strips, an interface to NCAMS and an advanced sectorization capability. To mitigate risks associated with fielding the complete FIMS system, the initial FIMS will be delivered in three milestones;

Milestone 1: components required for the provision of Aviation Briefing Service
Milestone 2: components required to support flight planning and alerting service
Milestone 3: electronic flight strips and advanced connectivity with CAATS

Customer Benefits: Improved service delivery through more advanced briefing and flight planning tools. Continuity of service and reduction in system support costs by replacing aging computer equipment.

Implementation:

M1 North Bay FIC – Fall, 2006
M2 North Bay FIC – Winter 2006/07
M3 North Bay FSS – Spring 2007
National rollout commence - 2008

Contact, John Moir, Implementation, OSR, (613) 248-7503

ASDE (Airport Surface Detection Equipment)

Description: The new Park Air X Band Airport Surface Detection Equipment (ASDE) is installed at nine sites across Canada. It provides Tower controllers with a RADAR picture of the manoeuvring areas of the airport in all weather conditions. Integrated with the ASDE is a Runway Incursion Monitoring and Conflict Alert System (RIMCAS) which can be adapted to provide different levels of warning for various operational scenarios, such as:

Runway incursions from taxiways

Arrival runway alerts
Departure runway alerts
Arrival/Departure alerts
Taxiway conflict alerts
Restricted area alerts

The RIMCAS depends on the ASDE to track primary targets. It does this without the use of any type of co-operative sensor, i.e. a transponder. This reduces the functionality to a degree but this can be enhanced with the use of Multilateration Display Systems (MDS/MLAT) and/or a Vehicle Tracking System (VTS). Other limitations of the ASDE primary RADAR system can also be alleviated with the use of these systems, such as false or "multipath" returns and clutter produced by natural objects and various weather phenomenon. These cooperative systems are in place in many other airports worldwide and are being tested for NAV CANADA installations.

Customer Benefits: These systems greatly enhance safety and provide all weather guidance and control for aircraft and vehicles on the airport manoeuvring areas. They can also provide assistance to ramp management controllers when the airport authority coordinates for the display of this information at their ramp management facilities.

Implementation: The new Park Air ASDE program is complete in Toronto, Calgary, and Vancouver and undergoing acceptance testing in St. John's, Halifax, Quebec City, Montreal, Ottawa, and Winnipeg.

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

MDS/MLAT (Multi-lateration Display System)

Description: An MDS/MLAT system is a high performance and cost-effective source of position and identification data on transponder equipped aircraft and vehicles on an airport. It can also be used to provide enroute and terminal control in areas where it is difficult to site conventional RADAR. The system detects and tracks aircraft and vehicles equipped with Mode S, ATCRBS and Automatic Dependent Surveillance – Broadcast (ADS-B) transponders. It is being considered as an augmentation system for our new park Air ASDE's. Currently NAVCANADA uses prime radar as the sole sensor for our ASDE systems, which has limitations due to the technology in use, i.e. we have trouble in snow conditions, and along edges of manoeuvring areas due to ground clutter and reflections. NAVCANADA is presently testing an MDS/MLAT system in Calgary for enhanced airport control and terminal control in the Springbank area. We have tested a MDS/MLAT in Toronto with excellent results.

Customer Benefits: These systems will provide accurate positional information for all vehicles and aircraft equipped with a cooperative transponder. This will provide even higher levels of safety and greatly enhances the information which can be provided to ATC and the users, where coordination and agreements are in place.

Implementation: Enroute systems are being sourced for the northern airspace not covered by conventional RADAR. Advanced studies are progressing for other uses such as Calgary/Springbank and the Vancouver Harbour area. NAVCANADA is also looking at proposals at the four major airports for fusion MDS/MLAT with the existing ASDE systems.

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

SLI (Secondary Link Interface)

Description: NAV CANADA is adding a layer of telecommunications redundancy to selected remote radio transmitter/receiver sites, thereby helping to ensure users continue to receive preferred routes and altitudes, even if we experience commercial telecommunications outages. There are currently a number of remote radio sites throughout the country, called PALs for Peripheral Audio Links, which have limited or no telecommunications circuit diversity. These PALs allow a controller in the Winnipeg Area Control Centre, for example, to have direct communications with an aircraft operating in the area of Churchill. Normally, the last link to a PAL is serviced by a single source commercial landline or microwave facility and therefore, diversity is not available from the last central telecommunications office (CO) to the remote site. Other sites have only one landline link for a certain distance because the telecommunications service provider cannot provide a commercially viable second line. The sites affected tend to be remote and as such, response time for service/repair is slow and usually delayed. The results of a breakdown or failure of the single link are possible delays and reductions in preferred routes and altitudes. Without direct communications aircraft need to be restricted to specific routes/tracks, and they may not get a requested altitude change.

The following sites are currently equipped with this technology:

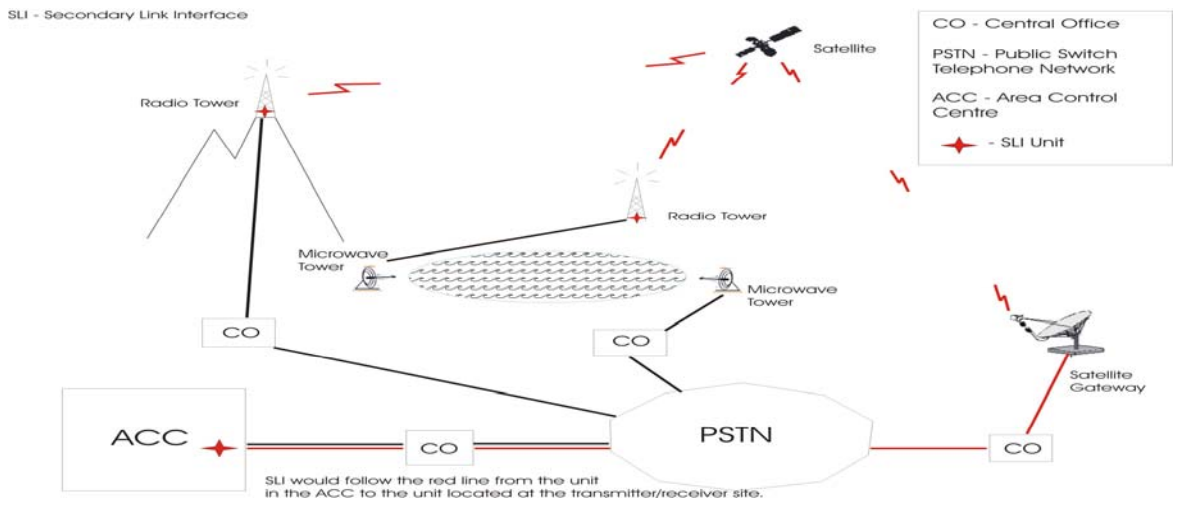
VR ACC, Sandspit, B.C. - 133.4	WG ACC, Ogoki Post, ON - 135.47
EG ACC, Lynn Lake, MB - 133.0	WG ACC, Marathon, ON - 134.07
EG ACC, Thompson, MB - 134.5	QX ACC, Stephenville, NL - 132.3
EG ACC, Churchill, MB - 123.9	QX ACC, St. Anthony, NL - 134.3
EG ACC, Trout Lake, ON - 133.6	QX ACC, Goose Bay, NL - 133.425
EG ACC, Ogoki Post, ON - 132.6	QX ACC, Trepassey, NL – 134.7
EG ACC, Peawanuk, ON - 124.3	QX ACC, Hopedale, NL - 128.325
EG ACC, Island Lake, MB - 134.35	YZ ACC, Bellevue, ON - 134.425
WG ACC, Swift Current, SK - 132.8	YZ ACC, Barrie, ON - 124.675
WG ACC, Lynn Lake, MB - 135.05	UL ACC, Mont Laurier, QC - 126.575
WG ACC, Island Lake, MB - 132.82	UL ACC, Puvirnituk, QC - 134.725

Customer Benefit: The SLI, which has been developed by NAV CANADA, provides an emergency link to a PAL via either a public switched telephone network

(PSTN) or a satellite dialup network (SDN). The system enables air traffic controllers to continue to communicate with pilots over the functioning PAL in the event of main communications link failure.

Implementation: The following installations are planned over the next two fiscal years:

VR ACC, Bruce Peak, BC - 133.85 VR ACC, Kamloops, BC - 134.4 VR ACC, Mt Wallensteen, BC - 133.5 VR ACC, Mt Wallensteen, BC - 135.5 VR ACC, Port Hardy, BC - 132.2 VR ACC, Prince Rupert, BC - 128.0 VR ACC, Bruce Peak, BC - 133.95 VR ACC - Castlegar, BC, 134.2 MHz VR ACC - Burns Lake, BC, 128.8 MHz VR ACC - Bruce Peak 125.95 MHz VR ACC - Kamloops - 132.35 MHz VR ACC, Prince George, BC - 133.8 EG ACC, Coral Harbour, NT - 133.7 EG ACC, Baker Lake, NT - 133.4 EG ACC, Lupin, NWT - 134.2 EG ACC, Stony Rapids, SK - 133.075 EG ACC - Mayo, YT, 124.15 MHz EG ACC, Whitehorse, YT- 132.1	EG ACC - Rankin Inlet - 134.0 MHz EG ACC - Cambridge Bay – New PAL installation EG ACC, Watt Mt., AB - 132.15 WG ACC - Thunder Bay - 133.25 MHz WG ACC, Lloydminster, AB - 132.375 WG ACC - Swift Current - 134.975 MHz WG ACC, Thompson, MB - 133.15 YZ ACC, North Bay, ON - 121.225 YZ ACC, Sudbury, ON - 135.5 YZ ACC, London, ON - 135.3 YZ ACC, Timmins, ON - 128.3 YZ ACC, Sault Ste. Marie - 132.65 UL ACC, Puvirnituq, PQ - 134.725 UL ACC, Kuujuaq, PQ - 132.45 QX ACC, Allen's Island, NL - 124.05 QX ACC, Stephenville, NL – 132.3 QX ACC, Wabush, NL - 134.0



Contact, Barry Winch, Acting Manager, Communications & Facilities, (613) 248-6979

AWWS (Aviation Weather Web Site)

Description: The Aviation Weather Web Site is a reliable online service which is provided at no direct cost to aviation clients. The web site provides pilots and dispatchers with flight planning information (Weather, NOTAM, some publications, and a flight plan filing capability). The system also allows users to receive this information via e-mail on their own schedule. Today, there are 22,000 registered users of which 2,800 are also registered to file flight plans online.

Customer benefits: The Aviation Weather Web Site is a convenient, time-saving service which meets the basic flight planning needs of aviation users, thereby reducing demand for routine updates and briefings from FIC's.

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

- Add the ability to navigate back without using the browser "back" button;
- Add colour satellite imagery;
- Add a looping capability for radar imagery ;
- Add a "print friendly" option;
- Design a "mouse-over" capability for the GFA, where location names, METAR/SPECI and TAF will appear when a user's mouse cursor touches a reference point;
- Add new graphic products such as the West coast VFR forecast; and
- Add weather camera imagery as new sites are installed across the country.

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

FIC (Flight Information Centre Project)

Description and Customer Benefit: The Flight Information Centre Project (FIC) is seeing flight information services such as pre-flight weather briefings, flight planning and en-route radio communications centralized across Canada into nine facilities.

Implementation: In order to ensure consistent service delivery at all times, the FICs are being implemented progressively in three phases. The first two phases saw Flight Information Centres established at Halifax, Quebec, London, Winnipeg, Edmonton and Kamloops. The third phase, involving transferring the flight information services to the northern Flight Information Centres, is progressing slowly with an anticipated August 2006 timeframe completion of North Bay FIC, with the others to follow. The work involved for the final northern FICs is primarily the installation of new systems and equipment in order to be brought up to current FIC standards.

Contact, Carol Adams, GM Airport Operations – FIC, (613) 248-4080.

PART II: PROCEDURES

Area Navigation (RNAV) Standard Departure/Arrival Routes (SIDS & STARS)

Description: RNAV procedures allow aircraft to transition between an airport and the enroute structure on pre-determined routes which are programmed into the aircraft Flight Management System. The FMS provides information and guides the aircraft under the control of the pilot. These procedures are called SID and STAR RNAV procedures.

Customer Benefits: RNAV procedures offer a multitude of benefits for all. It is a win-win operation. There is a greater pilot awareness, less voice communication between pilots and controllers, better fuel efficiencies as well as a reduction in noise exposure and fuel emissions.

Current Situation: There are forty published RNAV STAR procedures in Canada located at ten of our major airports including three in Hamilton which are connected to RNAV approaches. The Hamilton procedure represents the first time that aircraft flying an RNAV STAR can transition to an approach system without the need for ground-based navigation aids. It is NAV CANADA's intent to introduce RNAV STAR procedures at more domestic airports.

RNAV SID trials are on-going at the Pierre Elliott Trudeau Airport in Montreal. These trials started in the summer of 2004 and American Airlines is currently the main participant. The YUL SID trial is being expanded to include aircraft that have DME/DME/IRU equipment with automatic runway updating. Three other carriers have shown an interest and may participate in the trial.

RNAV SID procedures are being developed for the Lester B. Pearson International Airport in Toronto. Already established to meet this goal is a Greater Toronto Airport Authority RNAV SID Working Group. Members of this working group include staff from GTAA, TC, Air Canada and NAV CANADA. This group will focus on the development and implementation of RNAV SIDs at Toronto's LBPIA.

NAV CANADA is also co-coordinating directly with WestJet on the development of RNAV(RNP) procedures that will eliminate non-precision approaches at airports used by Westjet. A trial is also being considered which will look at a shortened approach procedure from the downwind leg to the runway.

Contact, Doug Buchanan, Manager, ATS RNAV Operations, (613) 563-5986.

ANS PLAN 2005

NAV CANADA's revenue comes from our customers, who operate aircraft in Canada and in specific international airspace where we provide service. Our goal is to find the best ways to provide services that support our customers' requirements to operate safely and efficiently.

The ANS Plan reflects NAV CANADA's stated Vision, Mission and Values and the broader directions defined in the Corporate Business Plan. The document describes NAV CANADA's near-term projects aimed at meeting customers' requirements, taking account of expected corporate budget allocations. It also provides an outlook for the longer term to generate discussion among customers, staff and other stakeholders, with the goal of choosing the most beneficial path to the ANS of the future.

The ANS Plan 2005 is published on the NAV CANADA Website at www.navcanada.ca under Publications (go to Corporate Publications, then Additional Publications, then ANS Plan 2005) and can be accessed by clicking on the link below:

ANS Plan 2005