

# WINGS

July/August 2010

Wings on safety: A Winning Formula

## Innovation and modernization add layers of safety

Written by [Rudy Kellar](#)

As the country's civil air navigation service provider, NAV CANADA is committed to supporting the aviation industry by making today's ANS more efficient and cost effective. As the country's civil air navigation service provider, NAV CANADA is committed to supporting the aviation industry by making today's ANS more efficient and cost effective. Since the Company's inception in 1996, the focus has been on innovation and modernization. The results have been significant, with our customers realizing efficiency gains of more than \$1-billion in fuel-cost savings, along with a

corresponding reduction in Greenhouse Gas (GHG) emissions of 4.3 million metric tons.



Controller at Montreal Tower, Pierre Elliot Trudeau International Airport.

But that's only part of the story. Equally critical are the safety benefits that accrue from these initiatives. A more efficient system is a safer system and we've seen corresponding reductions in our rate of IFR-to-IFR losses of separation, the industry

benchmark for ANS safety.

### **Using ATM technology**

Recently NAV CANADA completed the cross-country installation of its Canadian Automated Air Traffic System (CAATS), with only the northern airspace sectors of the Edmonton Flight Information Region left to make the transition.

CAATS simplifies the entire flight management process allowing controllers to focus on handling traffic more efficiently, bringing significant benefits.

Several new functionalities such as Missed Approach Handling are adding layers of safety and improved situational awareness. Next will be the implementation of conflict prediction and detection into non-radar airspace.

In the airspace above the Atlantic Ocean, the Gander Automated Air Traffic Control System (GAATS)

automates flight data processing, enabling controllers to manage both random and track based traffic.

Automatic Dependent Surveillance-Contract (ADS-C) position reports and Controller-Pilot Data Link Communication (CPDLC) are integrated into GAATS, resulting in faster responses to customer requests. A conflict probe is used to validate all proposed clearances, essential for safety and efficiency in a busy oceanic environment.

### **Procedural safety**

Key changes to Air Traffic Management procedures have produced important benefits for NAV CANADA customers. For example, Area Navigation (RNAV) enables equipped aircraft to fly on any desired flight path within the coverage of ground- or GPS-based navigational aids. Required Navigation Performance (RNP) adds onboard performance monitoring and alerting to RNAV, bringing additional safety and efficiency benefits.

RNAV and RNP certified aircraft have better access to point-to-point operations, and, thus, do not have to navigate between ground-based navigation aids, and to straight-in instrument approach procedures with vertical guidance. This provides for more direct routing and constant descent rates.

### **Future surveillance**

NAV CANADA continues to extend air traffic surveillance coverage and communication beyond traditional ground-based systems by using Automatic Dependent Surveillance-Broadcast (ADS-B), which combines satellite links, onboard equipment, ground stations, and communication links to provide radar-like information at a much lower cost than radar. This gives controllers a positive indication of the location of ADS-B equipped aircraft and allows for reduced separation, opening up more fuel efficient routes, more safely.

ADS-B stations are now in operation around Hudson Bay, with expansion proceeding in the Eastern Arctic and Southern Greenland. This will extend surveillance not only over Hudson Bay, but also to parts of North Atlantic airspace, permitting reduced separation, earlier climbs and more direct routings.

Multilateration is another leading-edge surveillance technology that is yielding safety and efficiency gains. In July 2009, NAV CANADA received an exemption from Transport Canada allowing the use of MLAT for all secondary surveillance (SSR) applications.

NAV CANADA has installed MLAT systems in Fort St. John, and at Vancouver Harbour. Controllers now have the opportunity for improved situational awareness, with the promise of an extra layer of safety in areas of difficult terrain or a complex flow of commercial and recreational aircraft, often at low altitudes. The Company has also initiated a project to use MLAT for surface detection, as a complement to ASDE (airport surface detection equipment) at Pierre Elliott Trudeau Airport.

### **Continuous improvement**

By working together with airports, airlines and other industry stakeholders, we are moving air traffic more efficiently and cost-effectively, while making consistent improvements in our safety record. It's a winning formula, and one that will continue to reap benefits now and in the future.

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*This information is intended to increase overall safety awareness and is not a substitute for compliance with regulatory guidelines. We welcome your submissions at [akwasnik@annexweb.com](mailto:akwasnik@annexweb.com).*