

**Sixteenth Meeting of the Cross Polar Trans East Air Traffic Management Providers' Work Group
(CPWG/16)**

(Ottawa, Canada 3-6 December 2013)

**Agenda Item 8: Communications, Navigation, Surveillance (CNS) and Air Traffic Management
(ATM) issues**

SPACE-BASED ADS-B UPDATE

(Presented by NAV CANADA)

SUMMARY

This paper presents an update regarding NAV CANADA's plans to implement ADS-B capability via Low Earth Orbit Satellites (LEOS).

1 Introduction

1.1. The 15th meeting of the CPWG was advised of the formation of the Aireon LLC joint venture between NAV CANADA and Iridium Communications, Incorporated, with support from United States' Federal Aviation Administration (FAA) and suppliers Harris Corporation and ITT Exelis. Aireon will finance, develop, deploy and operate a global solution for tracking and monitoring aircraft anywhere in the world using space-based Automatic Dependent Surveillance-Broadcast (ADS-B) receivers.

1.2. One of NAV CANADA's goals from this joint venture is to reduce aircraft separation minima between aircraft operating within portions of the ICAO North Atlantic Region.

2 Discussion

2.1. The Iridium NEXT satellites will launch between 2015 and 2017; the full constellation will be in place by 2018. The constellation will be composed of 66 satellites in low earth orbits, plus 6 spares; 9 additional satellites will be available on the ground.

2.2. Aireon has formed a nine member Space-Based ADS-B Advisory Committee (SAAC) consisting of representatives from IATA and airline representatives from the IATA Operations Committee, Air Canada, Delta Air Lines and Lufthansa and 3 ANSP representatives from the FAA, UK NATS and NAV CANADA. This structure will ensure that the needs of airlines and ANSPs are considered during deployment and long-term operations of the service. Along with providing transparency to Aireon customers, the SAAC will provide periodic briefings on program status, operational implementation, benefits analyses, pricing structures, global deployment and regulatory status. The inaugural meeting of the SAAC took place on 14 October 2013.

2.3. Information on the space-based ADS-B concept and the above-mentioned implementation plans was provided to the ICAO Twelfth Air Navigation Conference (AN-Conf/12) which was held in Montreal, Canada 19-30 November 2012. As a result, the following recommendation was formulated and as follow up action, the Air Navigation Commission agreed to include bullets a), b) and c) in the Air Navigation work programme.

Recommendation 1/9 – Space-based automatic dependent surveillance - broadcast

That ICAO:

- a) Support the inclusion in the Global Air Navigation Plan, development and adoption of space-based automatic dependent surveillance - broadcast surveillance as a surveillance enabler;
- b) Develop Standards and Recommended Practices and guidance material to support space-based automatic dependent surveillance - broadcast as appropriate; and
- c) Facilitate needed interactions among stakeholders, if necessary, to support this technology.

2.4. The space-based ADS-B concept was also discussed at ICAO's 38th Assembly (24 September to 1 October 2013) where it received broad support.

2.5. Coordination is ongoing within the International Telecommunication Union (ITU) working structure to secure frequency protection for the aircraft to satellite ADS-B signal. These efforts are being supplemented by work within the ICAO frequency spectrum specialist groups and coordination with other stakeholders. The goal is that the ITU Radio Regulation will be appropriately amended at the next World Radiocommunication Conference in 2015. The necessity for this protection was also acknowledged at ICAO's 38th Assembly.

2.6. NAV CANADA has produced a high level Concept of Operations (CONOPS) to use Space-Based ADS-B to expand the geographic area where it provides ATS surveillance services. This CONOPS has been developed in accordance with the guidance provided in ICAO's *Manual on Airspace Planning Methodology for the Determination of Separation Minima* (Doc 9689), and is provided as Attachment A.

2.7. The purpose of the CONOPS is to facilitate the necessary coordination with stakeholders, including airspace users, ICAO, the North Atlantic Systems Planning Group (NAT SPG), industry, our regulator, Transport Canada and the ITU.

3 Recommendation

3.1. The Meeting is invited to note the information provided in this paper and provide comments as deemed appropriate.

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