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CAR/SAM REGIONAL PLANNING IMPLEMENTATION GROUP (GREPECAS)
Fifth Meeting of the CNS Committee of the GREPECAS ATM/CNS Subgroup (CNS/COMM/5)
Lima, Peru, 13 to 17 November 2006

Agenda Item 3: Surveillance systems developments
3.2 Study of the regional ADS systems implementation.

FEDERAL AVIATION ADMINISTRATION (FAA) AUTOMATIC DEPENDENT SURVEILLANCE – BROADCAST (ADS-B) PROGRAM OFFICE ROADMAP

(Presented by the United States)

SUMMARY

This information paper is intended to communicate the United States Federal Aviation Administration (FAA) Program Plan for the deployment of Automatic Dependent Surveillance – Broadcast (ADS-B) technology across the U. S. National Airspace System (NAS). It provides information on recent ADS-B program activities, including the decision by the Joint Resources Council (JRC) of the FAA to establish the Surveillance and Broadcast Services Program Office and the issuance of the subsequent decision memoranda. This paper will discuss the structure of the program office, its interrelation with the Joint Planning and Development Office (JPDO) and alignment with the Next Generation Air Transportation System (NGATS) vision established under Vision 100 by the U.S. Secretary of Transportation.

1. Introduction

1.1 The National Airspace System (NAS) of the United States is under stress from increasing demand for air transportation that threatens to outpace the capacity of existing surveillance infrastructure.

1.2 In order to address this problem and design a viable platform for future air transport needs, the FAA, in conjunction with the Departments of Commerce, Defense, Homeland Security and National Aeronautics and Space Administration (NASA), launched an effort to align their resources to develop the Next Generation Air Transportation System, or NGATS.

1.3 The effort to realize the vision of NGATS is overseen by the Joint Planning and Development Office (JPDO). The JPDO was established by the Century of Aviation Reauthorization Act, Vision 100, passed by the Congress of the United States and is overseen by the U.S. Secretary of Transportation.

1.4 An essential component of the NGATS integrated plan is a surveillance system which can increase safety, capacity and efficiency of air travel. Automatic Dependent Surveillance – Broadcast (ADS-B) technology has been identified as the surveillance solution that can meet these needs by providing critical flight information simultaneously to pilots and air traffic controllers. ADS-B transmits air traffic and flight information to aircraft, vehicles and ground stations to improve situational awareness and provide unprecedented levels of service inside the cockpit and to air traffic control facilities.

1.5 The cost effectiveness and superior surveillance performance of the ADS-B system allows the FAA to meet demands for a responsive air traffic system. The ability of the ADS-B system to support a range of applications that improve shared situational awareness between controllers and pilots opens up new possibilities for safety and efficiency procedures that will radically change how air traffic is managed.

2. Automatic Dependent Surveillance – Broadcast (ADS-B) Program

2.1 In order to further the goals of the NGATS plan, the FAA transitioned the development work of ADS-B technology into an execution phase. On September 9, 2005 the Joint Resource Council (JRC) approved the initial investment decision for future surveillance capability and directed the team to seek a final investment decision from the JRC by July 2006.

2.2 The JRC also approved transitioning the ADS-B program to the Surveillance and Broadcast Services Program Office within the FAA Air Traffic Organization's En Route and Oceanic Services Unit (ATO-E). This Program Office is responsible for coordinating and obtaining funding to support the agency-wide resources required to develop, implement, and manage the ADS-B future surveillance services and systems, including Traffic Information Service-Broadcast (TIS-B) and Flight Information Service –Broadcast (FIS-B).

2.3 The Surveillance and Broadcast Services Program Office is an evolving organization that seeks to employ and build upon the ADS-B research and development activities in the FAA Safe Flight 21 Program, ATO System Engineering Directorates, and the Alaska Capstone Program. The Surveillance and Broadcast Services Program Office was chartered to seek a final investment decision in 2006, and pending that approval, to coordinate and obtain funding to support the agency wide resources required to develop, implement, and manage the ADS-B national implementation.

2.4 On June 7, 2006 the Surveillance and Broadcast Services Program Office met with the JRC for a final investment decision for Segment One activities of the program. The JRC approved Fiscal Year 2007 (FY07) and FY08 Segment One costs only. The program will return to the JRC in February 2007 to obtain funding for the balance of the program. Later in the July 2007 timeframe, the program will return to the JRC for a final investment decision prior to awarding a contract.

3. ADS-B Implementation

3.1 The Surveillance and Broadcast Services Program Office has divided the ADS-B implementation program into four Segments that span the next 15-20 years. As referenced in 2.4 above, the FAA has approved partial funding for Segment One of the program, which will establish the following initial services and applications:

Services

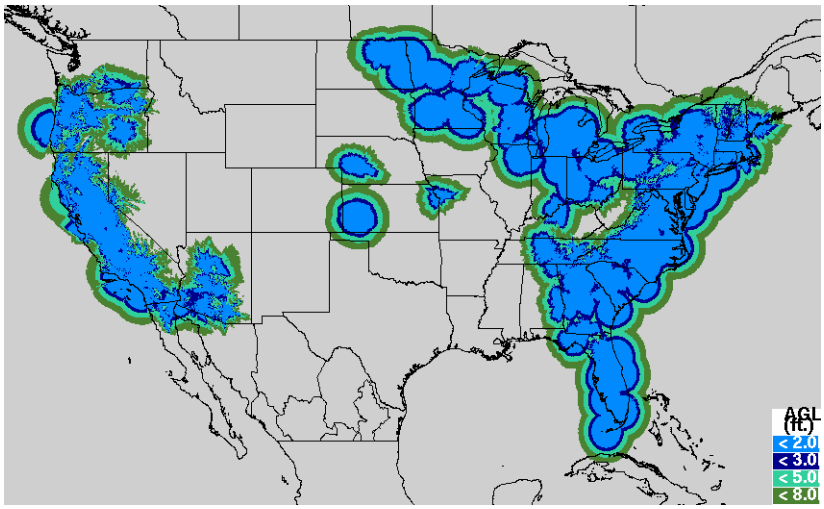
- Surveillance Broadcast Services (En Route, Terminal, Surface)
- Traffic / Flight Information Broadcast Services

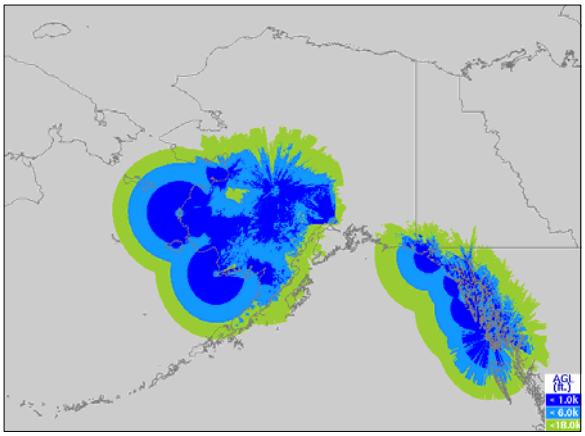
Applications

- Enhanced Visual Acquisition
- Enhance Visual Approaches
- Final Approach and Runway Occupancy Awareness
- Airport Surface Situational Awareness
- Conflict Detection

3.2 Initial ADS-B service volume coverage planned in Segment One includes service in South East Alaska, the Gulf of Mexico, Louisville (Kentucky), Kansas City (Missouri), Garden City (Kansas), North Platte (Nebraska), Philadelphia (Pennsylvania), and Ontario (California). Segment One also includes an expansion of TIS-B and FIS-B services, whereby the existing "east coast deployment" will be expanded westward into the Great Lakes Region, and the Phoenix/Prescott, Arizona coverage will spread westward to Central and Southern California.

3.3 The following map portrays the Segment One ADS-B expected coverage area:





3.4 To date, there have been five public announcements released to Industry with regards to the FAA's acquisition of the ADS-B program.

- The first announcement was released on April 6, 2006 and advised Industry that the FAA intends to transition the research and development (R&D) surveillance and broadcast services consisting of ADS-B, TIS-B, and FIS-B from the FAA Air Traffic Organization's Technology Development Directorate to the newly established Surveillance and Broadcast Services Program Office.

- The second public announcement was released on May 16, 2006 and requested patent information.

- The third public announcement was released to invite Industry to the first Industry Day from June 19-22, 2006.

- The fourth public announcement was released to invite Industry to the second Industry Day on August 28, 2006.

- The fifth public announcement was released with the official Request for Information (RFI) and announcing the third Industry Day for October 27, 2006.

3.5 Presently, there are several areas under investigation, including the dual track service acquisition and rulemaking strategy, the surveillance and navigation back-up plans, and the effects of 1090 MHz uplink saturation in high density airspace. The program office is implementing a dual track service acquisition and rulemaking strategy, which uses the development and approval of separation standards as a critical bridge between the ground infrastructure and avionics development efforts, ensuring that an end-to-end, holistic view of the system is taken throughout the lifecycle. Significant resources are being put into rulemaking activities in an effort to ensure that aircraft equipage keeps pace with ground infrastructure deployment to ensure timely accrual of benefits. The program office is confident that the studies being conducted and the workgroups that have been formed will result in viable solutions.

3.6 Segment 2-4 activities are still being defined based on expected budgets and other factors, but the following lists some of the significant milestones upcoming within Segment 1:

Milestone	Projected Completion Date
Segment 1 JRC	June 2006
Screening Information Request (SIR) Issued	November 2006
Segment 2 JRC	February 2007
Request for Offer Released	March 2007
Contract Award	July 2007
NPRM Issued	September 2007
Preliminary Design Review (PDR)	October 2007
Critical Design Review (CDR)	January 2008
Key Site Initial Operating Capability (IOC) of Broadcast Services	July 2008
In-Service Decision (ISD) of Broadcast Services	November 2008
Terminal Separation Standards Approval at Louisville	June 2009
En Route Separation Standards Approval for Gulf of Mexico	July 2009
Terminal Separation Standards Approval at Philadelphia	September 2009
En Route Separation Standards Approval at Juneau	September 2009
Gulf of Mexico Comm. and Weather IOC	September 2009
Louisville IOC of Surveillance and Broadcast Services	October 2009
Final Rule Published	November 2009
Gulf of Mexico IOC of Surveillance and Broadcast Services	December 2009
Philadelphia IOC of Surveillance and Broadcast Services	February 2010
Juneau IOC of Surveillance and Broadcast Services	April 2010
Surveillance and Broadcast Services ISD for ADS-B	September 2010

4. Conclusion

4.1 The FAA has recognized the need for an advanced surveillance solution for the future needs of the United States National Airspace System and has identified ADS-B as the cornerstone technology of the NGATS plan.

4.2 The Surveillance and Broadcast Services Program Office is responsible for coordination, development and implementation of ADS-B in a manner consistent with the NGATS plan and existing international deployment of ADS-B. The Surveillance and Broadcast Services Program Office is sensitive to the needs of the international community and is working in conjunction with a wide range of national and international organizations to ensure the concerns of the aviation community are recognized and addressed.

4.3 The meeting is invited to note the foregoing information and consider it for purposes of coordinating future international ADS-B efforts.

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