

# Surveillance and Broadcast Services

## US FAA Program Status

Presented to: **Asia-Pacific ADS-B Study and Implementation Task Force**

By: Pat Zelechowski, FAA Flight Standards  
Date: 26 April 2011

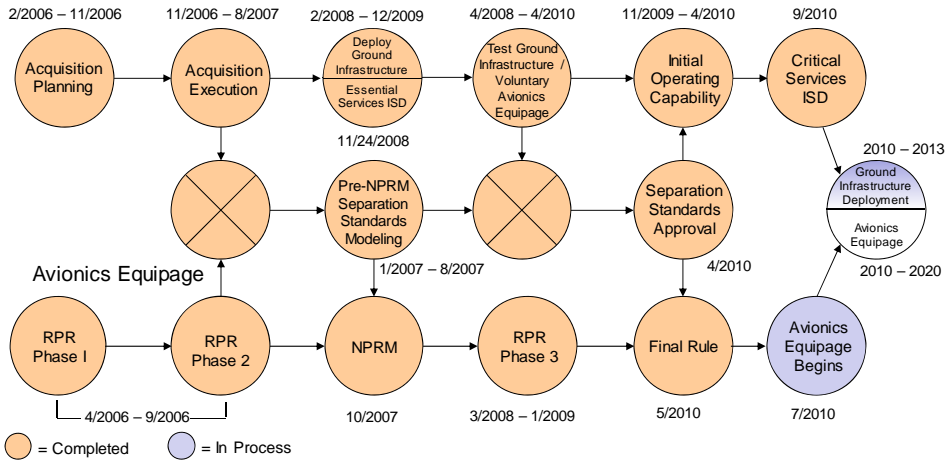
Federal Aviation Administration

## Agenda

- **SBS Program Strategy & Status**
  - Program Strategy – setting up for the future
  - Implementation Status and Plans
- **Aircraft-to-Aircraft Capabilities**
  - ADS-B-In ARC activities
  - Application Standards Development Projects

# SBS Program Strategy – Last Time

## Ground Infrastructure



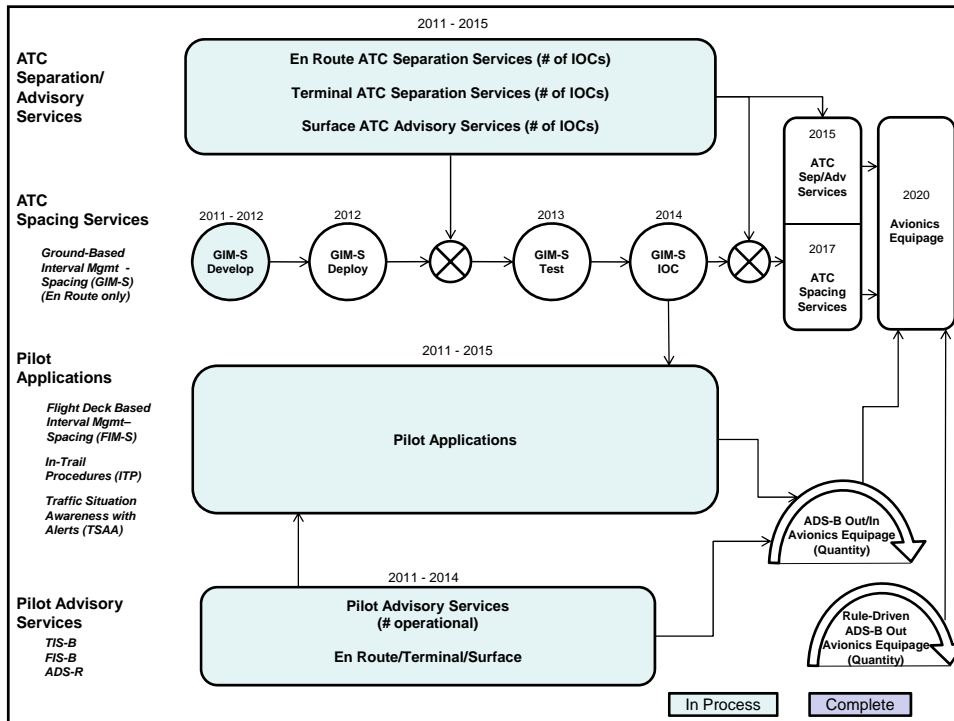
RPR = Rulemaking Project Record; NPRM = Notice of Proposed Rulemaking; ISD = In-Service Decision

US FAA Program Status  
26 April 2011



Federal Aviation  
Administration

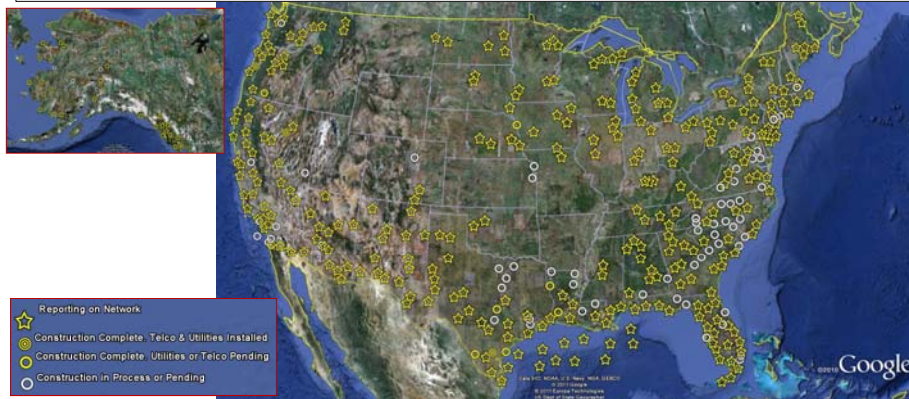
3 3



# Implementation Status

Year-End Plan for 2011 – 410 Radio Stations Reporting on the SBS Network (377 in CONUS; 33 AK)

- 81 Radio Stations Under Construction or in Final Design (77 in CONUS; 4 in AK)
- 342 Radio Stations Constructed (313 in CONUS; 29 in Alaska)
- 326 Radio Stations Reporting on the SBS Network (297 in CONUS; 29 in AK)
- 275 Operational Radio Stations (Gulf, SDF, PHL, JNU, ZMA, ZBW, ZNY, ZJX, ZOB, ZTL, ZDC, ZAU, ZSE, ZAB, ZMP, ZOA, ZLA, Southeast AK, Anchorage/Fairbanks en route, and 5 Greater NYC terminals)



Reporting on Network

- ★ Construction Complete - Telco & Utilities Installed
- Construction Complete - Utilities or Telco Pending
- Construction in Process or Pending

US FAA Program Status  
26 April 2011



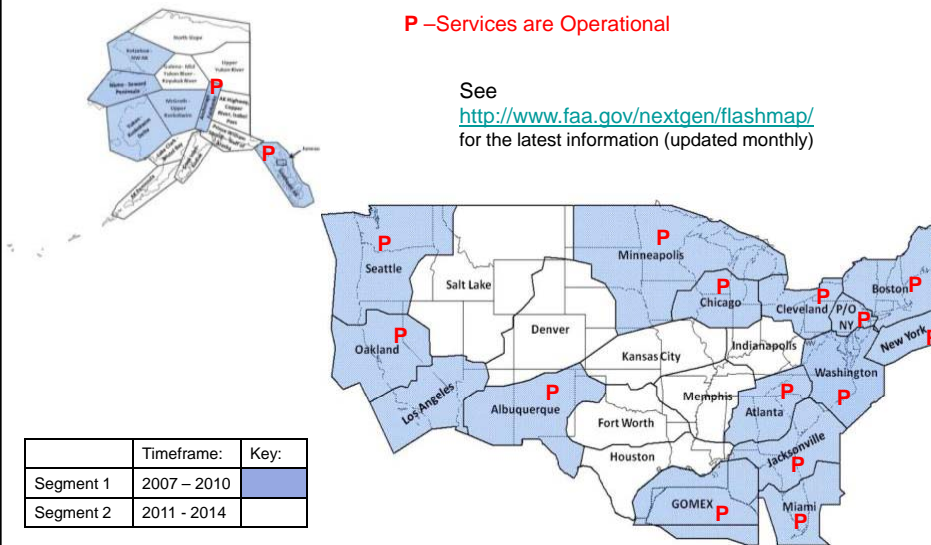
Federal Aviation  
Administration

5 5

# Pilot Advisory Service Status –

P – Services are Operational

See <http://www.faa.gov/nextgen/flashmap/> for the latest information (updated monthly)



	Timeframe:	Key:
Segment 1	2007 – 2010	Blue
Segment 2	2011 - 2014	White

US FAA Program Status  
26 April 2011



Federal Aviation  
Administration

6 6

## 2011 ATC Separation Services Sites

Houston Center (ZHU)	Houston TRACON (I90)	New York TRACON (N90)
Automation: ERAM R2*	Automation: STARS	Automation: CARTS
Separation Services (5NM)	Separation Services (3NM)	Separation Services (3NM)
Initial Operating Capability (IOC): Summer 2011	Initial Operating Capability (IOC): Summer 2011	Initial Operating Capability (IOC): Summer 2011
Supports:	Supports:	Supports:
<ul style="list-style-type: none"> <li>• Houston Center</li> <li>• Gulf of Mexico: Low Altitude</li> <li>• Gulf of Mexico: High Altitude</li> </ul>	<ul style="list-style-type: none"> <li>• Houston Intercontinental</li> <li>• Houston Hobby</li> <li>• Beaumont</li> </ul>	<ul style="list-style-type: none"> <li>• Kennedy</li> <li>• Newark</li> <li>• LaGuardia</li> <li>• Islip</li> <li>• Newburgh (Stewart)</li> </ul>
*ADS-B "virtual radar" implementation		

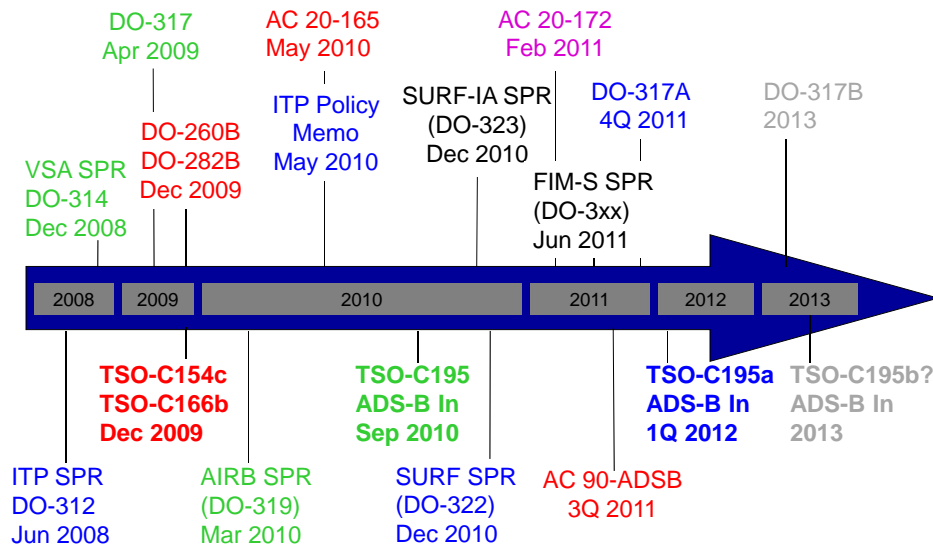
US FAA Program Status  
26 April 2011



Federal Aviation  
Administration

7 7

## ADS-B Standards



US FAA Program Status  
26 April 2011



Federal Aviation  
Administration

8 8

## ADS-B Guidance Documents Completed

- **The Technical Standard Orders (TSOs) for ADS-B avionics were approved in December 2009. The FAA final rule requires:**
  - Equipment designed for 1090ES (1090 MHz) must meet TSO-C166b or later versions of this order; and/or
  - Equipment designed for UAT (978 MHz) must meet TSO-C154c or later versions of this order
- **Advisory Circulars**
  - AC 20-165 provides certification and installation guidance for ADS-B Out systems
  - DRAFT AC 90-ADSB
    - provides guidance and information on ADS-B Out in accordance with 14 CFR 91.225 and 91.227. No OPS approval for rule airspace.

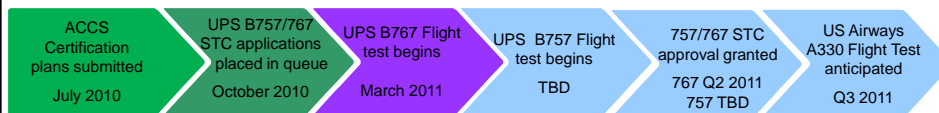


## UPS/USA Rule-compliant Avionics Upgrade

- Purpose:** To ensure avionics installed under previous SBS/ACSS partnership agreements undergo necessary upgrades to be compliant with the ADS-B Final Rule and AC 20-165.
- Goals:** To provide a robust group of air transport category aircraft with rule-compliant ADS-B Out avionics to be used for data collection and future NextGen technology demonstrations
- Objective:** To ensure a fleet of 260B compliant Air Transport Category aircraft are operating throughout the NAS on a daily basis.
- Partners:** UPS, US Airways, ACSS, ITT, LAACO, and AIR-130
- Key Activities:** UPS B757/767 STC applications placed in queue  
 ACSS received approval for ATDL TSO plan – April 5  
 767 flight tests in support of STC approval - completed March 06  
 767 STC submittal – planned for the end of April



- Complete
- In Progress
- Not Yet Started
- Unfunded



# ADS-B In Aviation Rulemaking Committee

## Member Affiliation



First meeting held July 1, 2010

### FAA-requested Deliverables:

- **Task 1:** Endorsement (or not) of continued work on 3 ADS-B-In application standards development projects -> by Oct 2010
- **Task 2:** Final ARC ADS-B-In Strategy Recommendations -> by Sep 2011
- **Task 3:** Delivery of products from any activities that follow up ADS-B-In Strategy Recommendations -> by Jun 2012

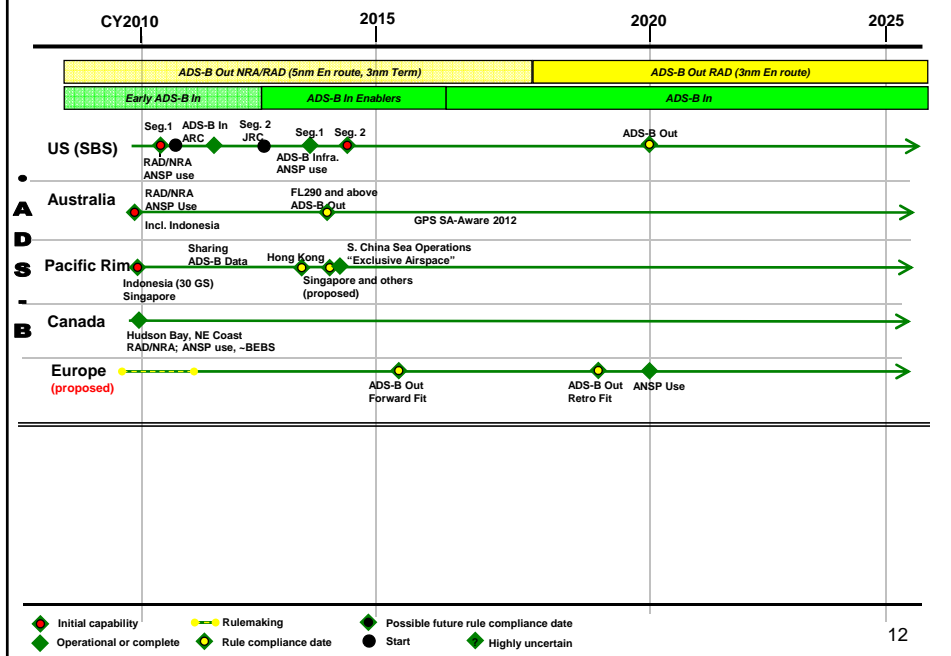
US FAA Program Status  
26 April 2011



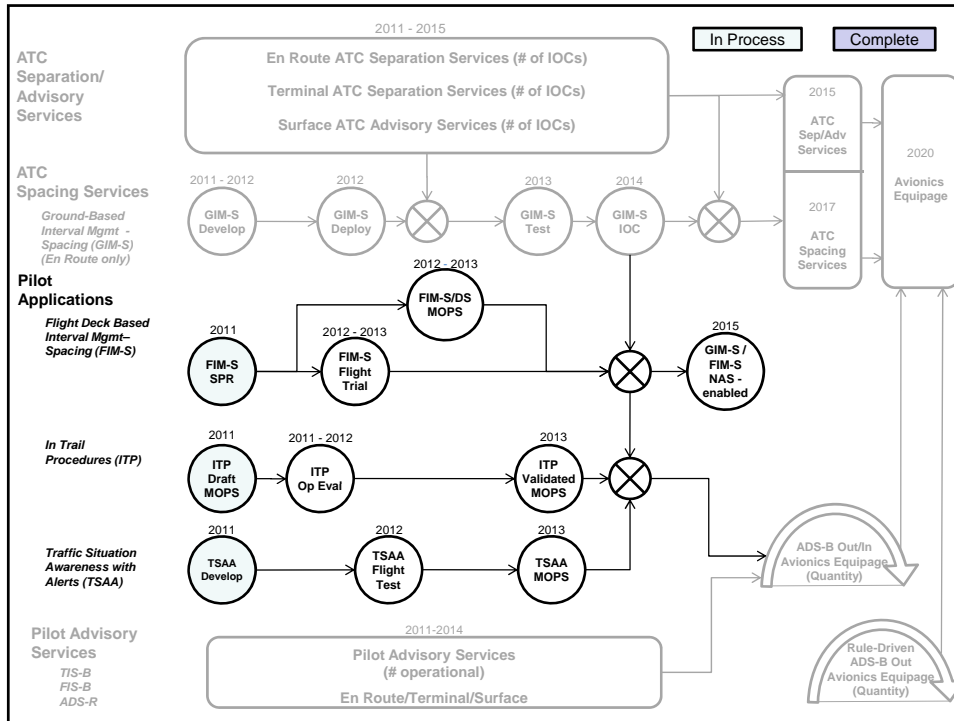
Federal Aviation  
Administration

11 11

## NextGen Technology Roadmap (2/2) [courtesy ADS-B-In ARC]



12



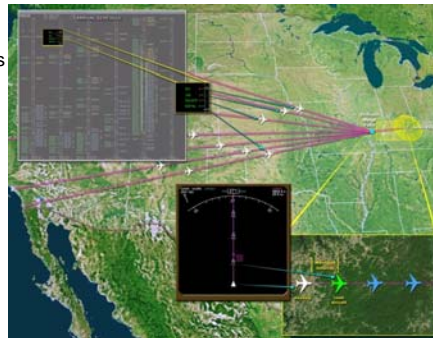
## Interval Management

**Purpose:** Produce operational benefits through precise management of intervals between aircraft whose trajectories are common or merging

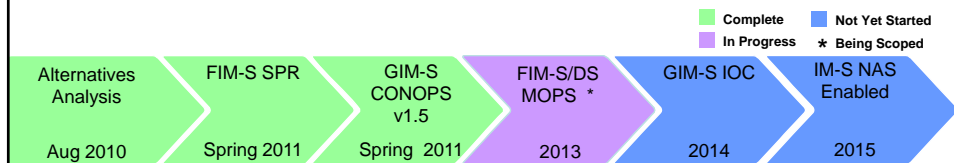
**Goal:** Create an operational environment that maximizes airspace throughput while enabling aircraft to minimize fuel burn and environmental impacts.

**Objectives:**

- Ensure NAS implementation of GIM-S functionality to begin benefits accrual (GIM-S IOC)
- Deliver a FIM-S SPR
- Develop a FIM-S/DS MOPS
- IM-S NAS Enabled in 2015
- Assist in certification of avionics and airline Ops approval with benefits accrual



**Partners:** ACSS, Jet Blue, UPS, US Airways

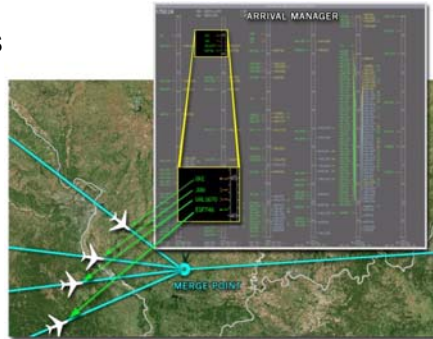


## Ground-Based Interval Management - Spacing

**Purpose:** Minimize vectoring during arrival sequence and maximize the opportunities for OPDs and FIM-S operations

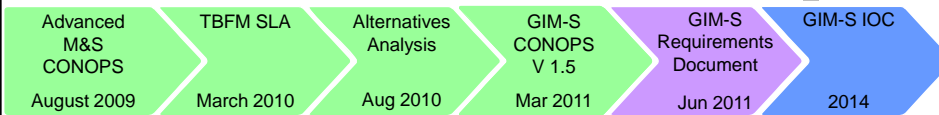
**Goal:** Achieve optimal spacing intervals between arriving aircraft using an ATC based spacing/metering tool

**Objective:** Ensure NAS implementation of GIM-S functionality to begin benefits accrual (GIM-S IOC)



**Partners:** TBFM, ERAM, STARS, CARTS, ATO-E/T SOS

Complete In Progress Not Yet Started Unfunded



US FAA Program Status  
26 April 2011



Federal Aviation  
Administration

15 15

## Flight Deck Based Interval Management

**Purpose:** Reduce fuel burn, noise and emissions, while maintaining high throughput and efficient flight operations throughout the NAS

**Goals:** Develop and validate flight deck technology to enable FIM-S Operations

**Objective:** Produce a FIM-S MOPS  
Assist in certification of avionics  
Assist one airline in obtaining Operational approval with benefits accrual



**Partners -** US Airways, ACSS, UPS



US FAA Program Status  
26 April 2011



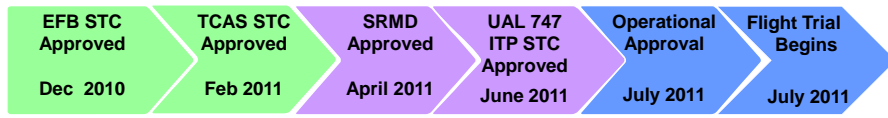
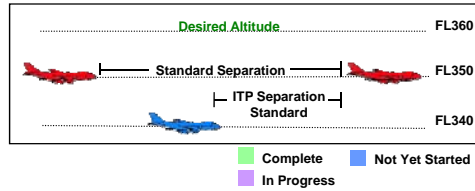
Federal Aviation  
Administration

16 16



# ITP Application Overview

- Purpose:** Provide operational benefits in non-surveillance airspace by enabling "in-trail" climbs/descents at reduced separation distances
- Goal:** Employ ITP in oceanic air carrier operations (revenue service) by 2011
- Objectives:** Validate operational performance and economic benefits of ITP  
Develop and validate ADS-B ITP MOPS material
- Partners:** United Airlines, Honeywell, Goodrich, Airservices Australia, Airways Corp NZ



US FAA Program Status  
26 April 2011

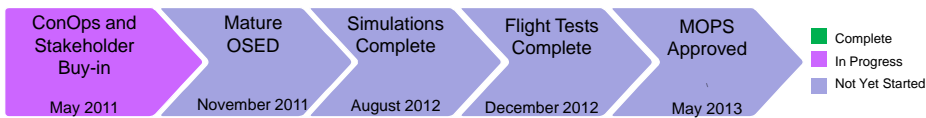
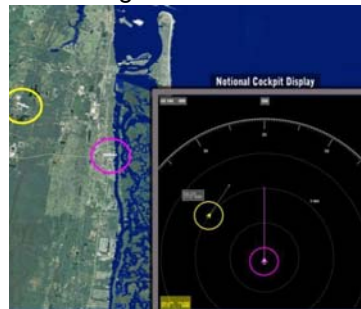


Federal Aviation Administration

17 17

# Traffic Situation Awareness with Alerts (TSAA)

- Purpose:** Enhance safety in the National Airspace System by providing alerts to General Aviation pilots of conflicting airborne traffic
- Goals:** Reduce the risk of airborne aircraft-to-aircraft encounters  
Expand ADS-B benefits for General Aviation
- Objective:** MOPS, TSO
- Partners:** MIT/Avidyne
- Stakeholders:** AOPA, GAMA, HAI, ALPA



US FAA Program Status  
26 April 2011



Federal Aviation Administration

18 18

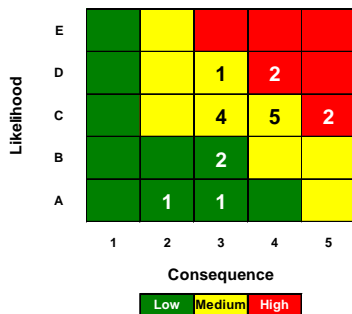
## End. Questions?



## Program Status: SBS Risks (as of 3/28/2011)

- 18 Rated Risks:
- 4 High, 10 Medium, 4 Low
- 1 Issue: 1 Low
- Next Risk Board: April 11

Risk Summary



Source: SBS  
Risk Database

### High Risks

**Risk 85:** Without proper control of the 1090 MHz spectrum, the air traffic growth and additional use of the 1090 frequency in the mitigated post 2020 environment may limit the performance of ADS-B, and in-turn, the use of future ADS-B enabled applications reducing potential benefits.(4D)

**Risk 97:** If Automation requirements are not implemented when originally planned, then the SBS Program may continually incur significant cost increases in addition to the current Automation cost overruns.(4D)

**Risk 104:** If version 1.0 of the Ground Based Interval Management – Spacing (GIM-S) requirements document is not delivered to ERAM by July 15, 2011, then the requirements for ERAM R4 may not be implemented in time to support the planned 2014 SBS GIM-S IOC. (5C)

