

# Surveillance and Broadcast Services

Juneau Airport Board meeting

By: Jimmy Wright, Senior Systems Engineer

January 12, 2011



Federal Aviation  
Administration



# Program Background

- The Capstone Project was a joint industry and FAA research and development effort to improve aviation safety and efficiency in Alaska. Under Capstone, the FAA provided avionics equipment for aircraft and the supporting ground infrastructure.
- The Capstone Project operated from 1999 to 2006, and its success in Alaska laid the groundwork for the nationwide deployment of **Automatic Dependent Surveillance - Broadcast (ADS-B)**.

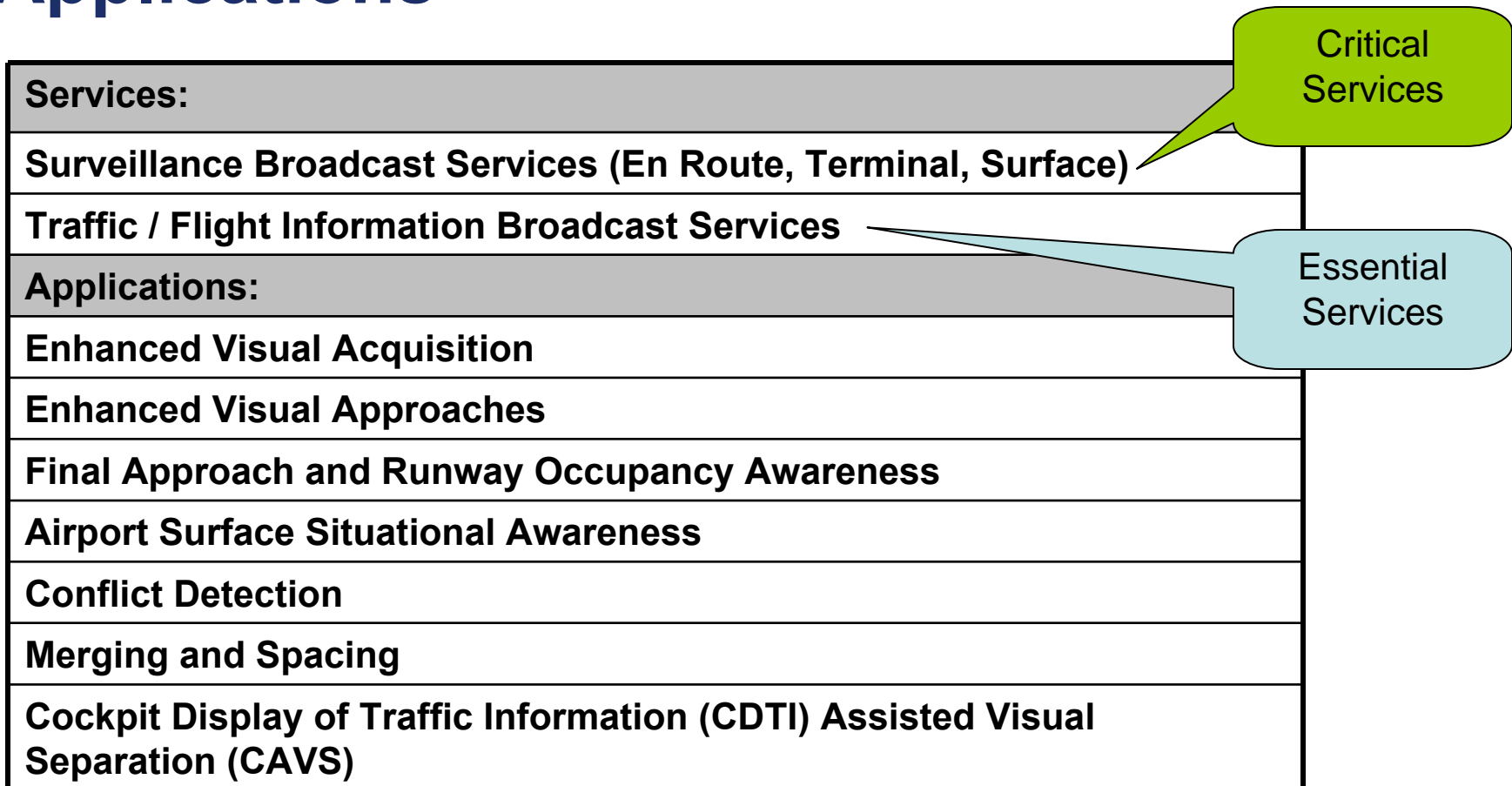


# Background: Automatic Dependent Surveillance - Broadcast (ADS-B)

- **Automatic**
  - Periodically transmits information without pilot or operator input
- **Dependent**
  - Position and velocity vector are derived from the Global Positioning System (GPS)
- **Surveillance -**
  - A method of determining position of aircraft, vehicles, or other asset
- **Broadcast**
  - Transmitted information available to anyone with the appropriate receiving equipment



# Overview: Initial ADS-B Services and Applications

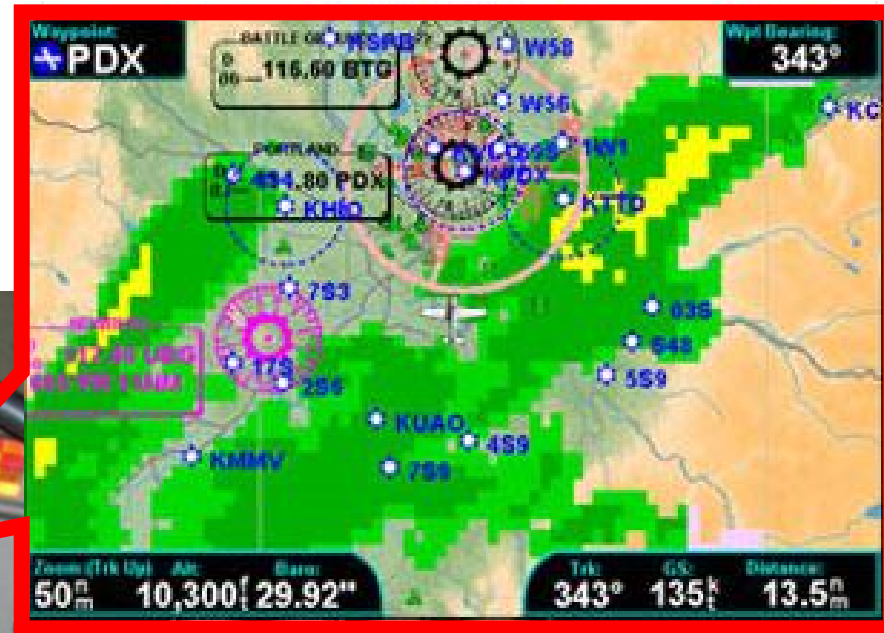


# Essential Services: Traffic Information Service - Broadcast

TIS-B is a service which provides ADS-B equipped aircraft with position reports from secondary surveillance radar on non-ADS-B equipped aircraft.

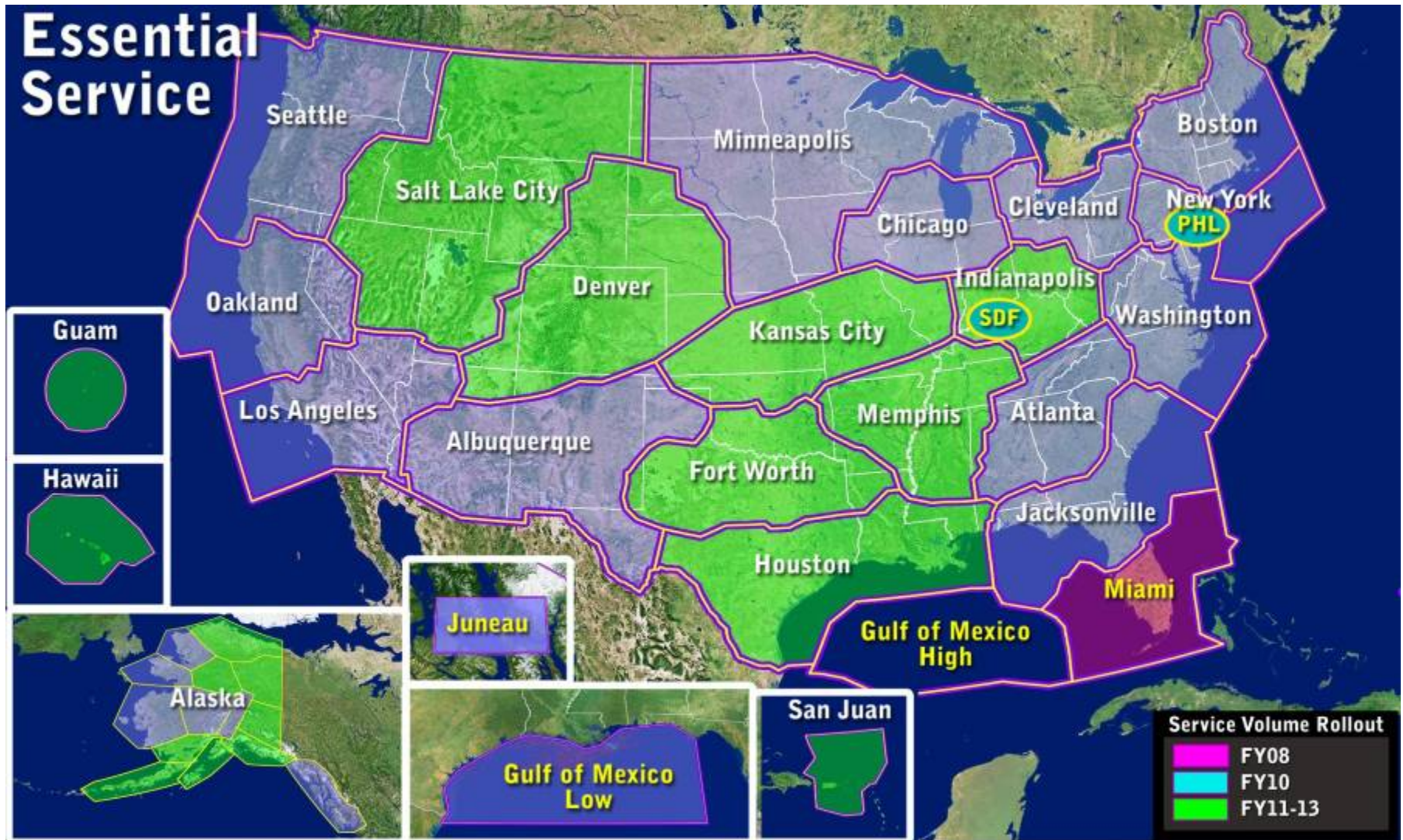


# Essential Services: Flight Information Service - Broadcast

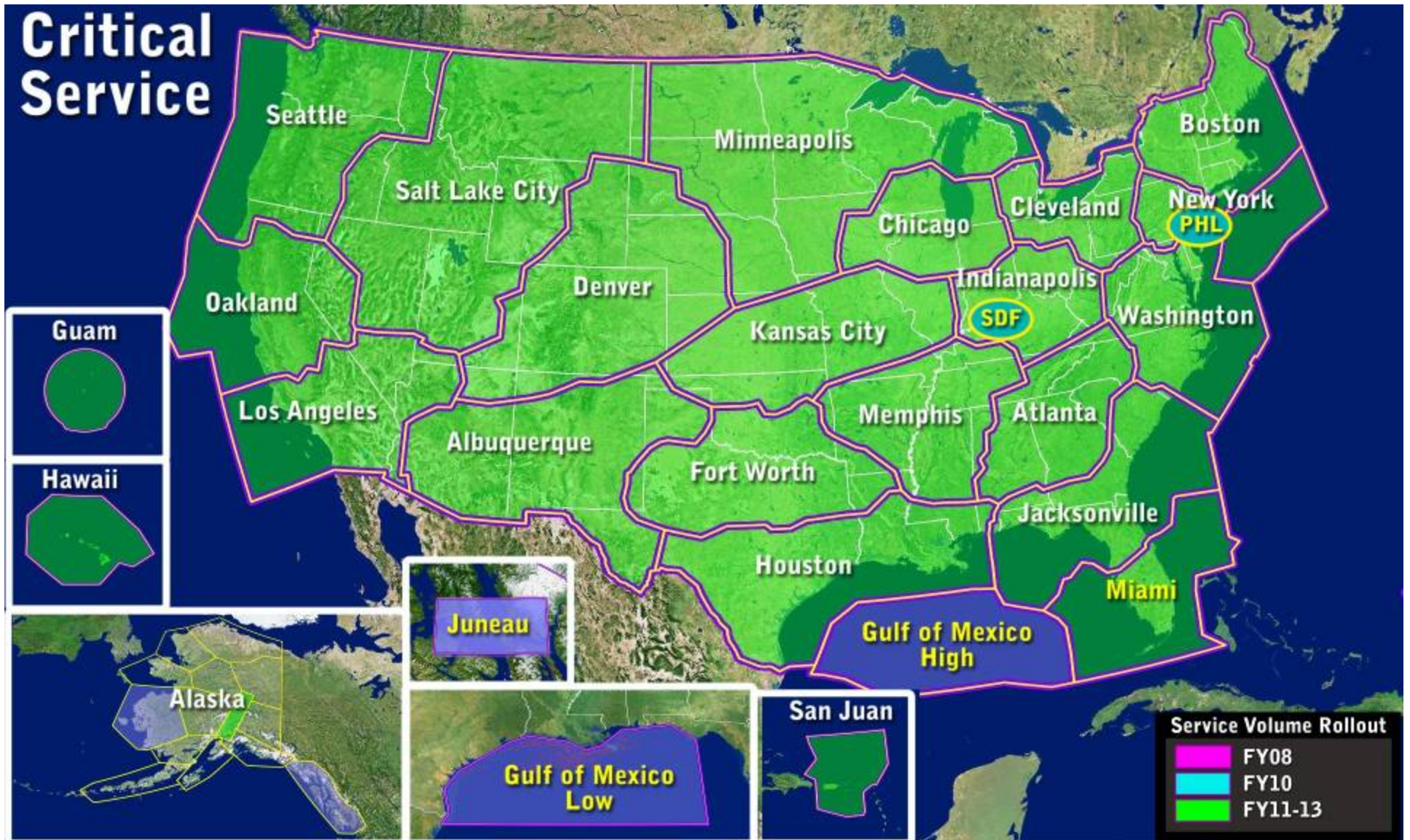


**FIS-B transmits graphical National Weather Service products, temporary flight restrictions (TFRs), and special use airspace.**

# Essential Services Roll-Out



# Critical Services Rollout



Surveillance and Broadcast Services



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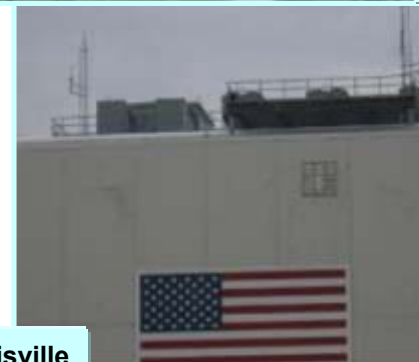
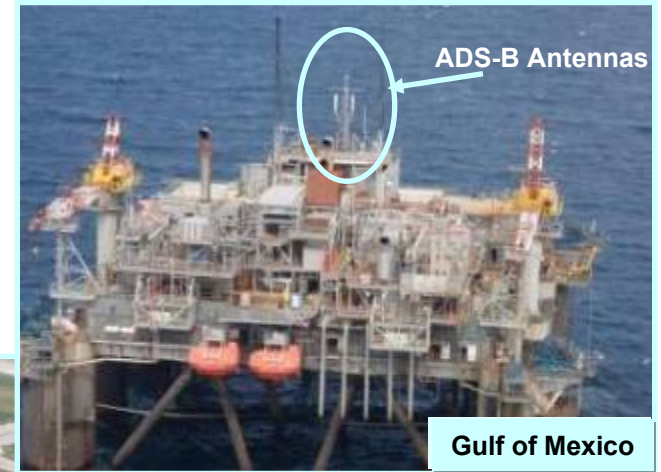
# Key Site Status

- **Essential Services**

- Miami Area In Service Decision – November 2008 ✓

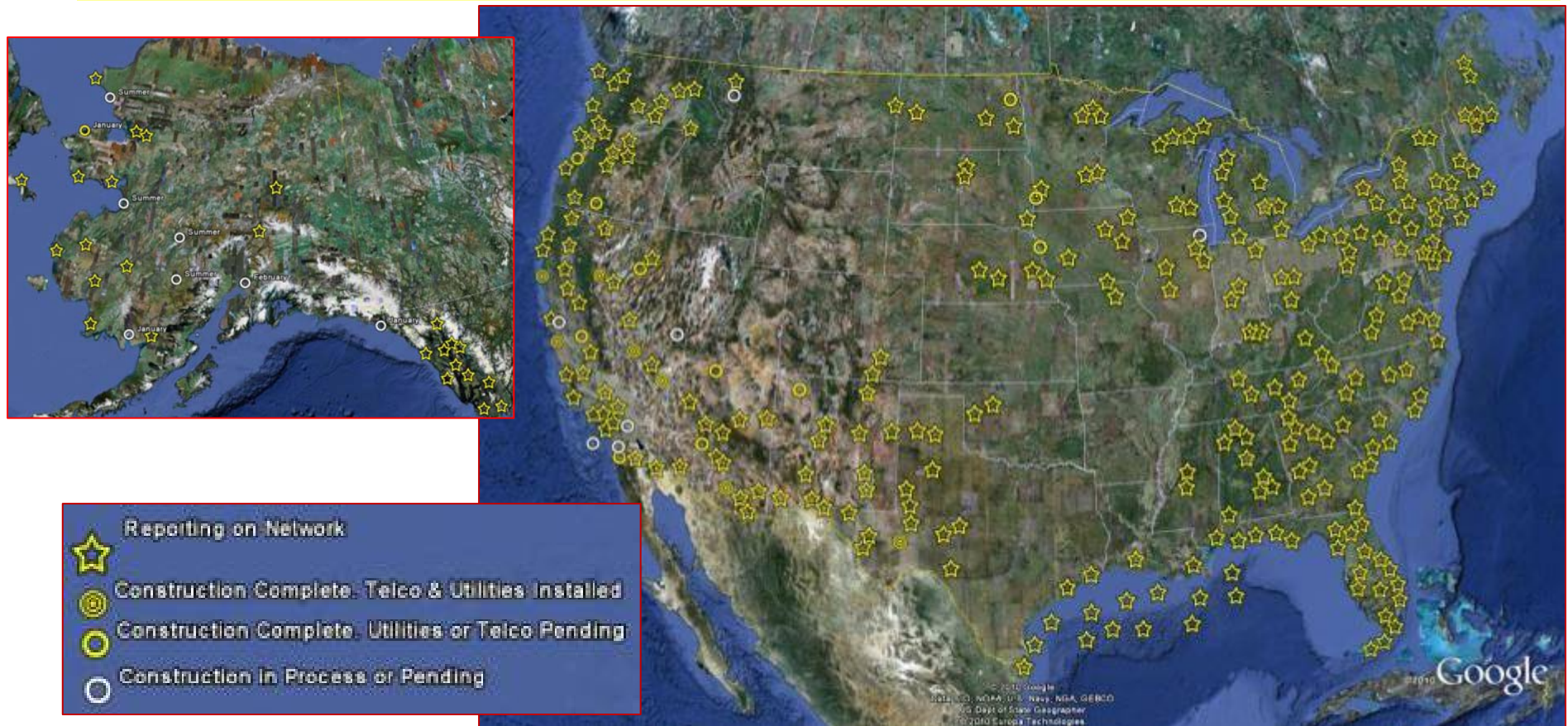
- **Critical Services**

- Louisville Initial Operating Capability (IOC) – November 2009 ✓
- Gulf of Mexico IOC – December 2009 ✓
- Philadelphia IOC – March 2010 ✓
- Juneau IOC – April 2010 ✓
- In Service Decision – September 2010 ✓



# ADS-B Implementation Status: Jan 2011

- 315 radio sites planned this year (4 western Alaska sites and 1 Rocky Mountain site must wait until Spring)
- 306 radio sites constructed (281 in CONUS; 25 in AK)
- 295 radio sites reporting on ITT's network (270 in CONUS; 25 in AK)
- ≈ 224 IOC radio sites (ZMA, Gulf, SDF, PHL, JNU, ZBW, ZNY, ZJX, ZOB, ZTL, ZDC, ZAU, ZSE and ZAB, ZMP, Southeast AK, Anchorage - Fairbanks)



# ADS-B Airspace Rule

- **Class A, B, C**
  - 1090ES required in Class A
- **Within 30NM of Appendix D airports**
  - 40 Busiest
- **Class E above 10,000' MSL**
  - Except below 2,500' AGL
- **In the GoMex above 3,000' MSL beyond the shoreline to 12NM**
- **Matches transponder required airspace**
  - With addition of GoMex airspace

Final Rule Published on May 27



# TSO Overview

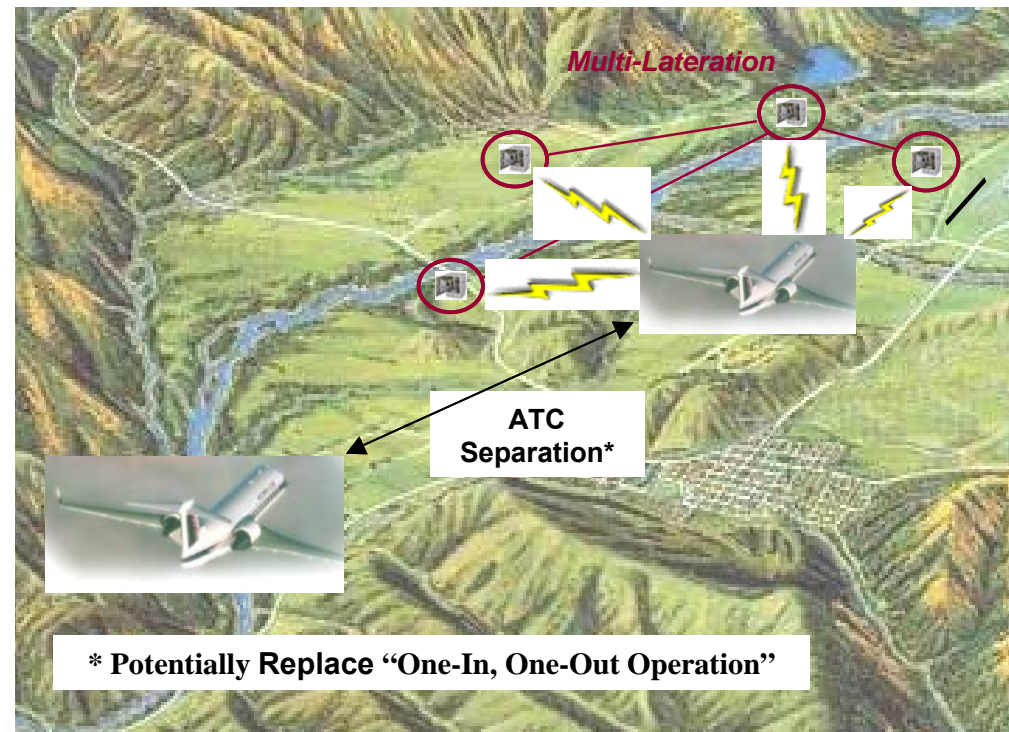
- **On December 2, 2009, the FAA issued two new Technical Service Orders (TSOs) as guidance for avionics manufacturers**
  - TSO-C166b: Extended Squitter ADS-B and TIS-B Equipment Operating on the Radio Frequency of 1090 Megahertz (MHz)
  - TSO-C154c: UAT ADS-B Equipment Operating on the 978MHz frequency



# Wide Area Multilateration (WAM)

- Multilateration is a surveillance technology that works by employing multiple remote sensors throughout an area to compensate for terrain obstructions.
- The data from multilateration sensors is used to determine aircraft position and identification. This data is processed for Air Traffic Control use and provides En Route separation services

Typical Mountain Approach (Single Runway/mountain airport)

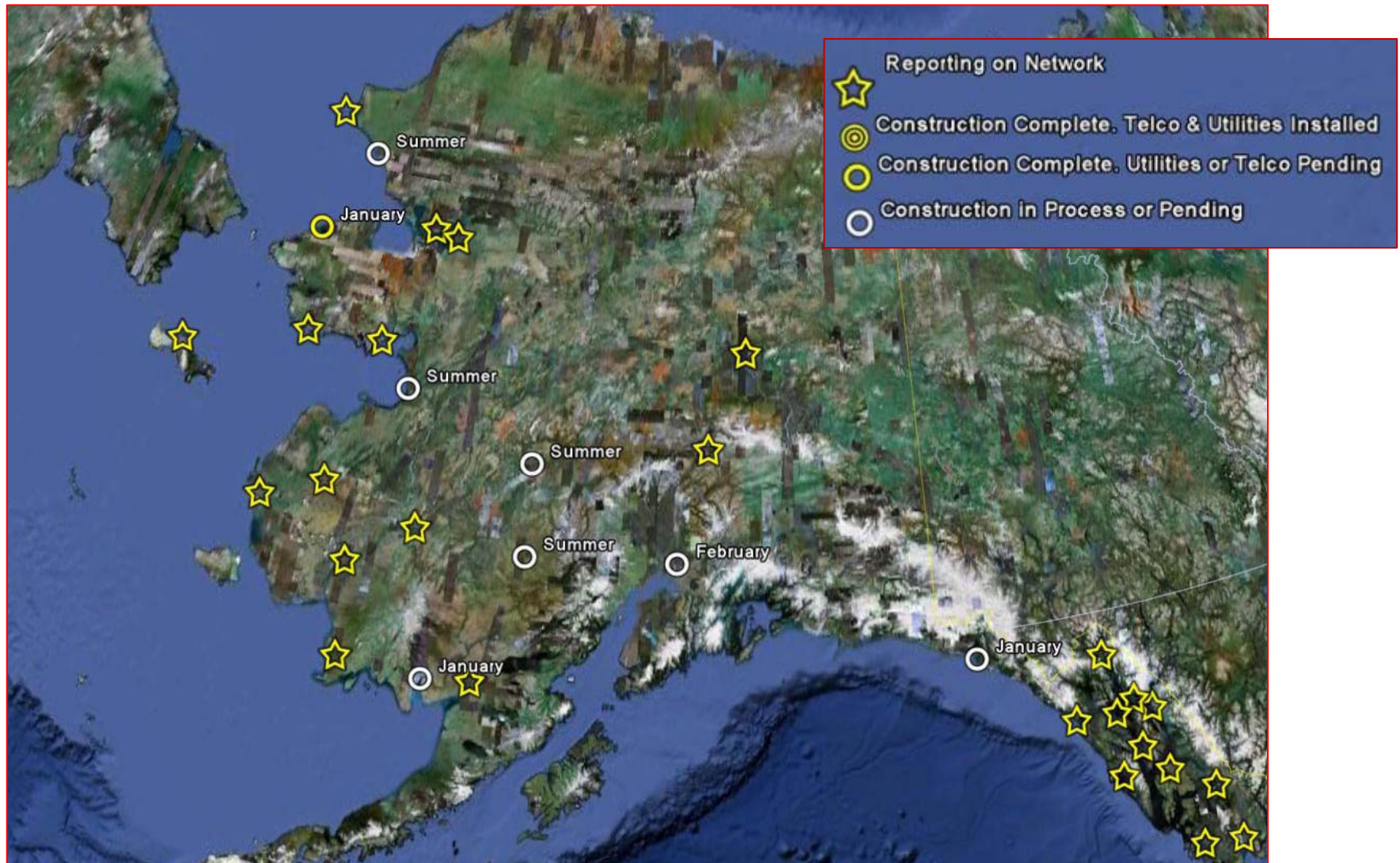


- Juneau, Alaska and Yampa Valley, Craig-Moffat, Steamboat Springs, Garfield County Regional in Colorado are the first U.S. sites to receive multilateration systems (used for 5nm separation services).

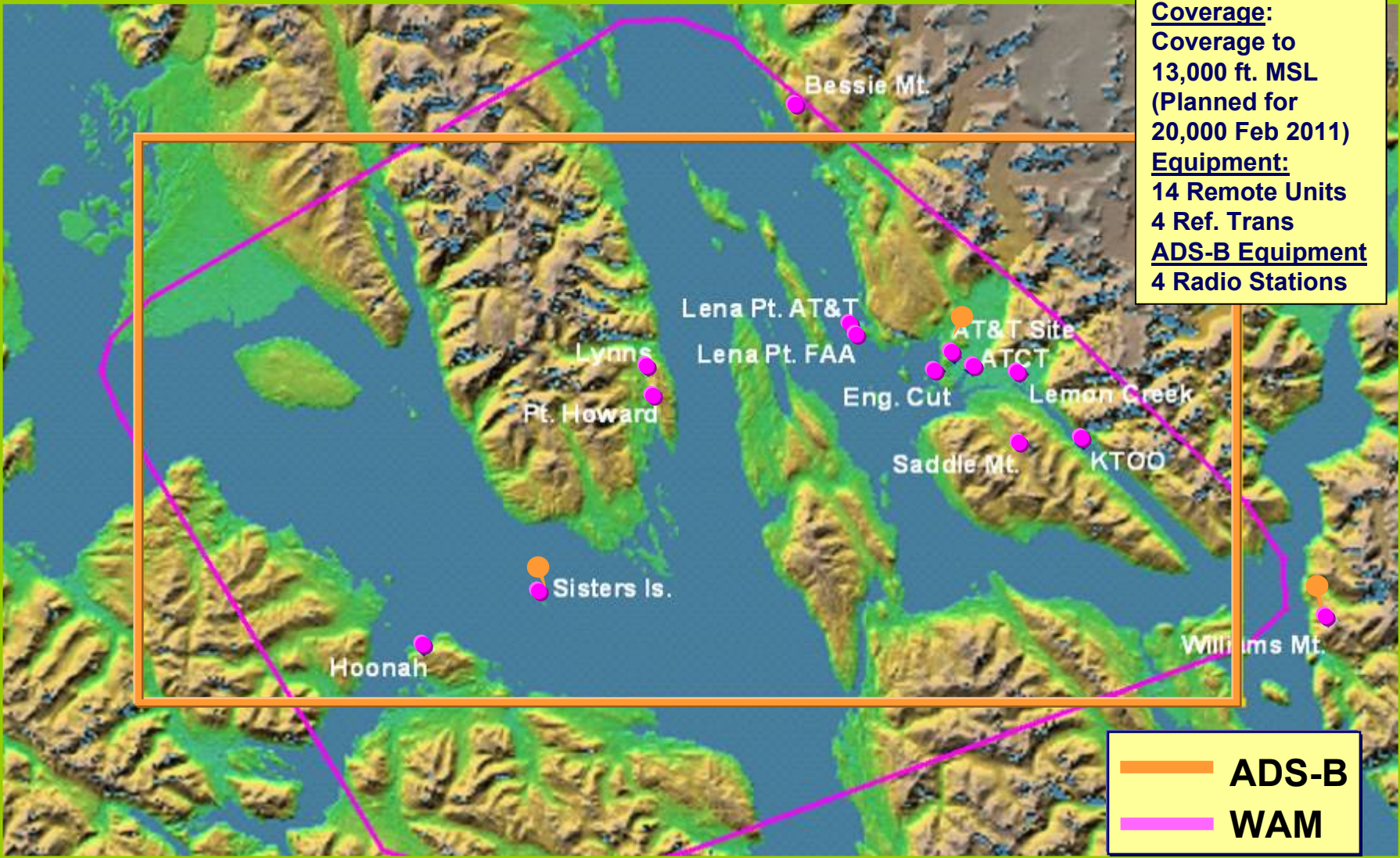
# Alaska



# ITT ADS-B Deployment Status – Alaska



# Juneau ADS-B and WAM Coverage







Surveillance & Broadcast Services,  
WSA

**(W) 907-271-5780** – Program  
office

**Jimmy Wright**

(907) 790-7316

Jim.ctr.Wright@faa.gov

[www.adsb.gov](http://www.adsb.gov)