

# Surveillance and Broadcast Services

## Alaska Industry Council

By: FAA, WSA

Date: September 10, 2008



Federal Aviation  
Administration



# AGENDA

- Opening Remarks – Jere Hayslett
- FIS-B, NEXRAD Graphical Weather Products – Site Summit coverage map – Carl Gleason/John Ament
- Technical Update/Implementation – Wes Mooty
- Operational update – Jim Hill
- Navigation Services Update – JoAnn Ford
- AIC Update –
- Round Table

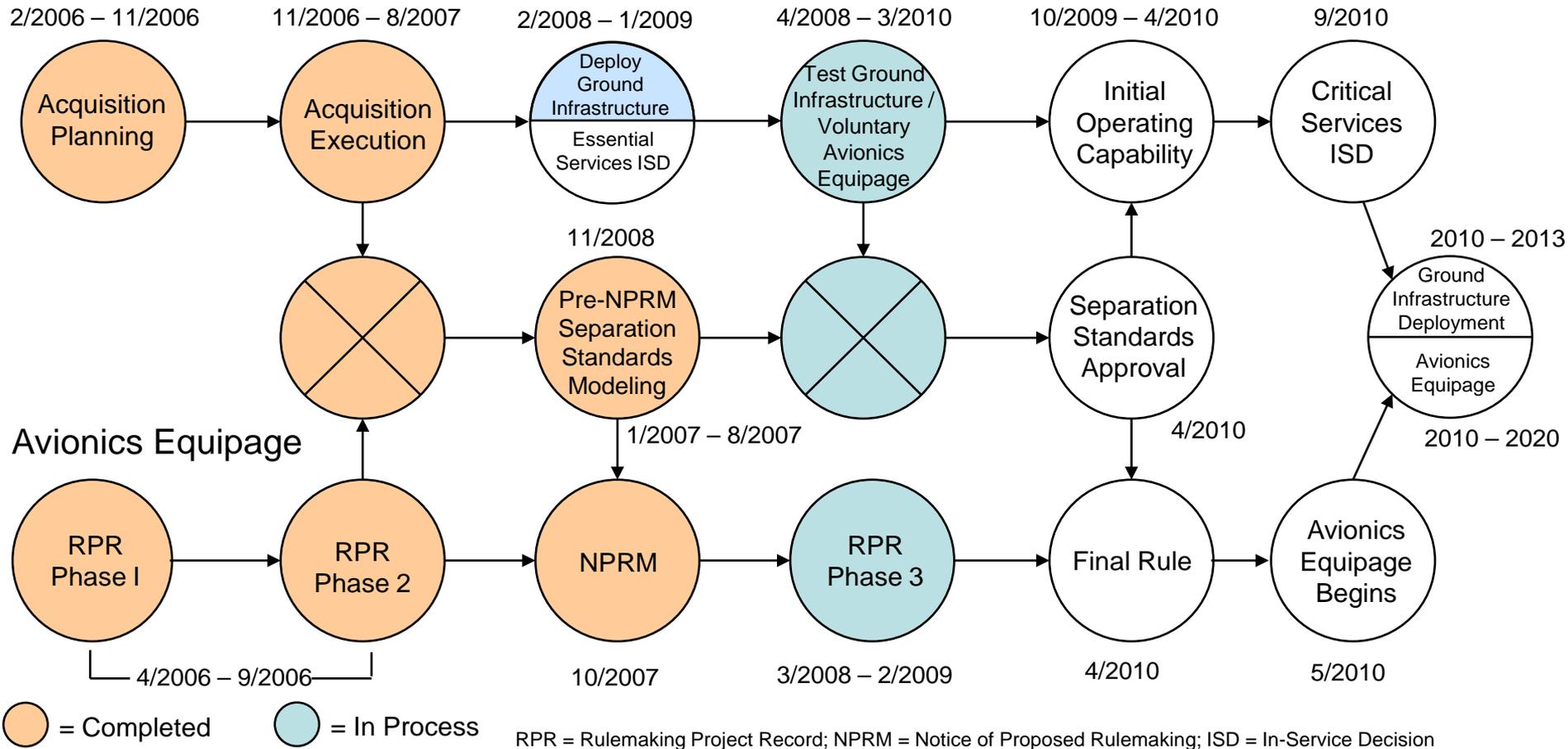


# Opening Remarks

- **NPRM**
  - ARC to send out report later this month of recommendations for industry to review and make comments to, in advance of release of NPRM for Final Rule
- **Milestones achieved**
  - Miami Key Site Initial Operating Capability (IOC) **for the uplink services (TIS-B and FIS-B)**
- **National Contract Provider, ITT**
  - ITT met with FAA at ZAN on September 9<sup>th</sup> to go over Pre-site survey plans for Juneau Key Site
    - Site visits tentatively scheduled for week of September 22<sup>nd</sup>.

# Dual Track Strategy

## Ground Infrastructure



# Notice of Proposed Rulemaking (NPRM)

## Status

- **The Aviation Rulemaking Committee (ARC) Was Chartered in July 2007**
  - As an initial tasking before the publication of the NPRM, the ARC would serve as a platform for the development of a report on how operational benefits of ADS-B could be optimized before compliance with a nationwide ADS-B mandate. This report was delivered to the FAA in October 2007.
  - Once the NPRM has been published and reviewed by the ARC, the ARC would make specific recommendations to the FAA about any changes that should be made to the proposed language in the NPRM. The ARC is scheduled to provide NPRM recommendations to the FAA in September 2008.
- **The NPRM comment period closed on March 3, 2008**
- **The FAA has categorized the comments that were received**
  - Number of Submittals (excluding FAA / DOT) = 172
    - Excludes duplicates, Department of Transportation and requests for extension
  - Number of Comments = 1,372 (101 positive, 1,271 non-positive)
  - Number of Issues = 85



# ARC Member Organizations

Organization	Organization
Air Transport Association (ATA)	International Air Transport Association (IATA)
Aircraft Owners and Pilots Association (AOPA)	Massachusetts Institute of Technology (MIT)
Airbus	MITRE / CAASD
Air Line Pilots Association (ALPA)	National Air Traffic Controllers Association (NATCA)
Alaska Airlines	National Business Aviation Association (NBAA)
Aviation Communication and Surveillance Systems, LLC (ACSS)	Regional Airline Association (RAA)
The Boeing Company	Rockwell Collins
Cessna Aircraft Company	Southwest Airlines
Department of Defense (DoD)	United Airlines
Joint Planning and Development Office (JPDO)	UPS
Federal Express	
Garmin	
General Aviation Manufacturers Association (GAMA)	



# Summary of ARC Working Groups

Working Group	Key Issues
A: Link Implementation Strategy	- ADS-R, Strategies, Link
B: Programmatic Issues	- Taking advantage of existing equipment domestically and internationally, Cost/Benefits, ARC recommendations
C: Performance Requirements	- WAAS, Antenna Diversity, DO-260, Power
D: Avionics Transition	- Retaining transponder and ELT equipment, Retrofit and forward fit implementation, relationship to positioning for navigation

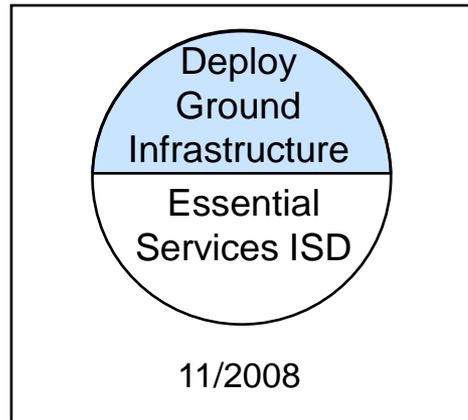


# ARC Schedule

Milestone	Planned Date of Completion / Status
ARC Meeting	August 20, 2008 / Complete
Release of Consolidated Draft Report for Review	August 22, 2008 / Complete
Report Integration Team Meetings	August 26 – 27, 2008 / Ongoing
Initial Draft Report to ARC	August 29, 2008
ARC Meeting	September 11, 2008
ARC Meeting	September 17, 2008
ARC Meeting	September 23, 2008
ARC Report Submitted to FAA	September 26, 2008

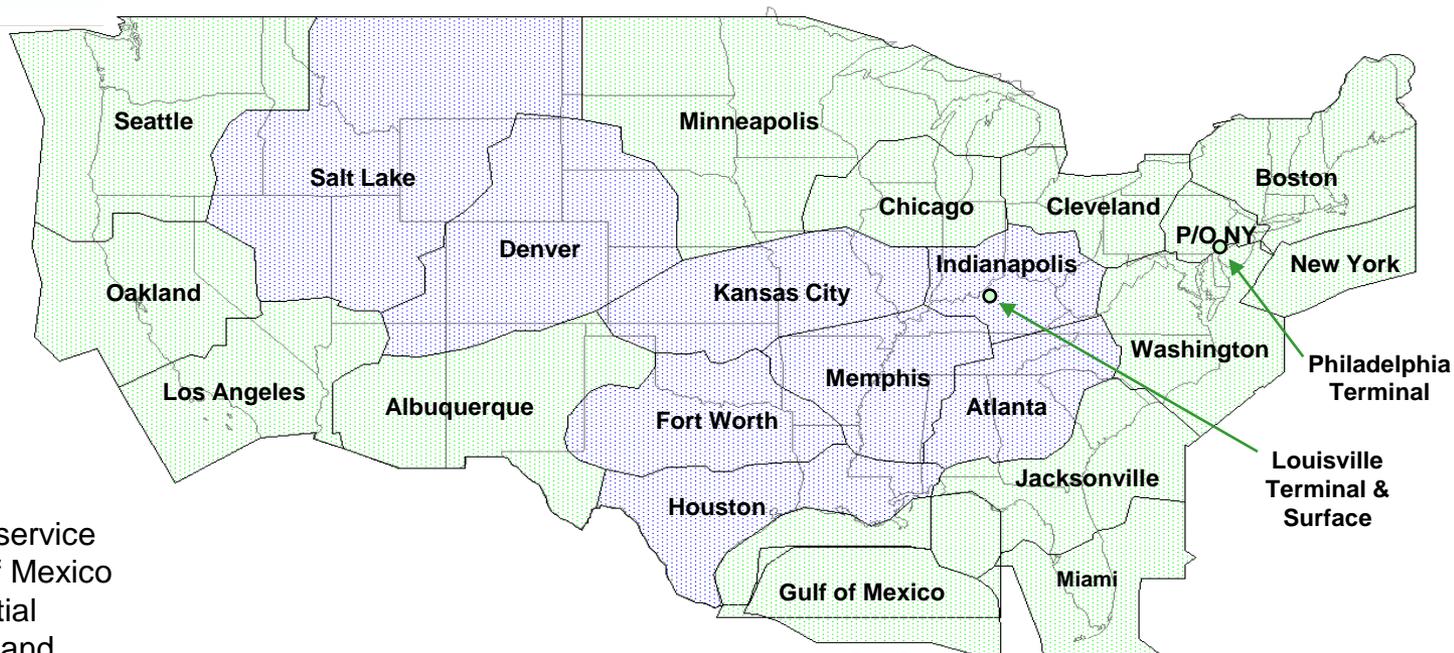


# Essential Services: Plan for In Service Decision



Milestone:	Proposed Dates	Status
Service Acceptance Test (SAT)	June 30, 2008	Complete
Conduct End to End System Test	July 14 – August 27, 2008	Complete
Conduct Operational Test (OT)	July 14 – August 27, 2008	Complete
Initial Operating Capability (IOC)	August 29, 2008	Complete
Conduct Independent Operational Test and Evaluation (IOT&E)	September 8 – October 3, 2008	
IOT&E Final Report	November 7, 2008	
In Service Decision (ISD)	November 24, 2008	

# National ADS-B Coverage



Segment 1

Segment 2

Segment 1 (2007-2010)

Segment 2 (2009-2014)

**Note:** Segment 1 en route service volumes, except the Gulf of Mexico and Juneau, receive essential services during Segment 1 and critical services during Segment 2.

# FIS-B Products Agenda

- Aviation Routine Weather Reports (METARs)
- Terminal Area Forecasts (TAFs)
- AIR/SIGMETs
- Winds Aloft Forecast
- NEXRAD Graphical Weather Products



# Aviation Routine Weather Reports (METAR's)

- METAR (aviation routine weather report) is a format for reporting weather information. A METAR weather report is predominantly used by pilots in fulfillment of a part of a pre-flight weather briefing, and by meteorologists, who use aggregated METAR information to assist in weather forecasting.



# Output produced by METARs form (2257 UTC 22 August 2008)

Pilot observes on Display

- **METAR text:** PANC 222253Z 34005KT 10SM FEW014 SCT075 BKN200 15/11 A2960 RMK AO2 SLP024 T01500106

Translation

- **Conditions at:** PANC (ANCHORAGE INTL, AK, US) observed 2253 UTC 22 August 2008
- **Temperature:** 15.0°C (59°F)
- **Dewpoint:** 10.6°C (51°F) [RH = 75%]
- **Pressure (altimeter):** 29.60 inches Hg (1002.5 mb) [Sea-level pressure: 1002.4 mb]
- **Winds:** from the NNW (340 degrees) at 6 MPH (5 knots; 2.6 m/s)
- **Visibility:** 10 or more miles (16+ km)
- **Ceiling:** 20000 feet AGL
- **Clouds:** few clouds at 1400 feet AGL scattered clouds at 7500 feet AGL broken clouds at 20000 feet AGL
- **Weather:** no significant weather observed at this time

# Terminal Area Forecasts (TAFs)

- **A Terminal Area Forecast (TAF) is a weather forecast that applies to an area within 5 nm of an aerodrome.**
  - The TAF consists of the following information:
    - Message identification (ie TAF)
    - Location identifier
    - Time of origin (UTC)
    - Validity period
    - Forecast surface wind
    - Forecast visibility
    - Forecast significant weather
    - Forecast cloud amount and height
    - Forecast significant changes and variations
    - Possibility of poor visibility
    - Statement of turbulence
    - Forecast temperatures and QNH

# TAFs for: BETHEL, AK, US

Pilot observes on Display

- **Text:** PABE 222331Z 230024 34007KT P6SM SCT050 BKN090

Translation

- **Forecast period:** 0000 to 1200 UTC 23 August 2008
- **Forecast type:** FROM: standard forecast or significant change
- **Winds:** from the NNW (340 degrees) at 8 MPH (7 knots; 3.6 m/s)
- **Visibility:** 6 or more miles (10+ km)
- **Ceiling:** 9000 feet AGL
- **Clouds:** scattered clouds at 5000 feet AGL broken clouds at 9000 feet AGL
- **Weather:** no significant weather forecast for this period

# AIR/SIGMETs

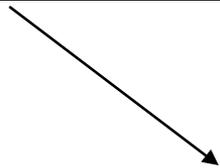
- AIRMETs – In-flight weather advisories issued only to amend the area forecast concerning weather phenomena which are of operational interest to all aircraft and potentially hazardous to aircraft having limited capability because of lack of equipment, instrumentation, or pilot qualifications.
  - **AIRMETs cover moderate icing, moderate turbulence, sustained winds of 30 knots or more at the surface, widespread areas of ceilings less than 1,000 feet and/or visibility less than 3 miles, and extensive mountain obscurement.**
- SIGMETs – Weather advisories issued concerning weather significant to the safety of all aircraft.
  - **SIGMET advisories cover severe and extreme turbulence, severe icing, and widespread dust or sand storms that reduce visibility to less than 3 miles.**



# Winds Aloft Forecast

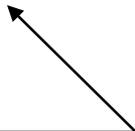
- Winds aloft are computer prepared and contain forecast wind direction and speed as well as forecast temperatures

Pilot observes on Display



**FT 3000 6000 9000 12000 18000 24000 30000 34000 39000**  
ADK 3217 3218+00 3118-05 3121-10 3046-20 3056-33 791039 793942 790948

Winds at various altitudes for Adak, AK

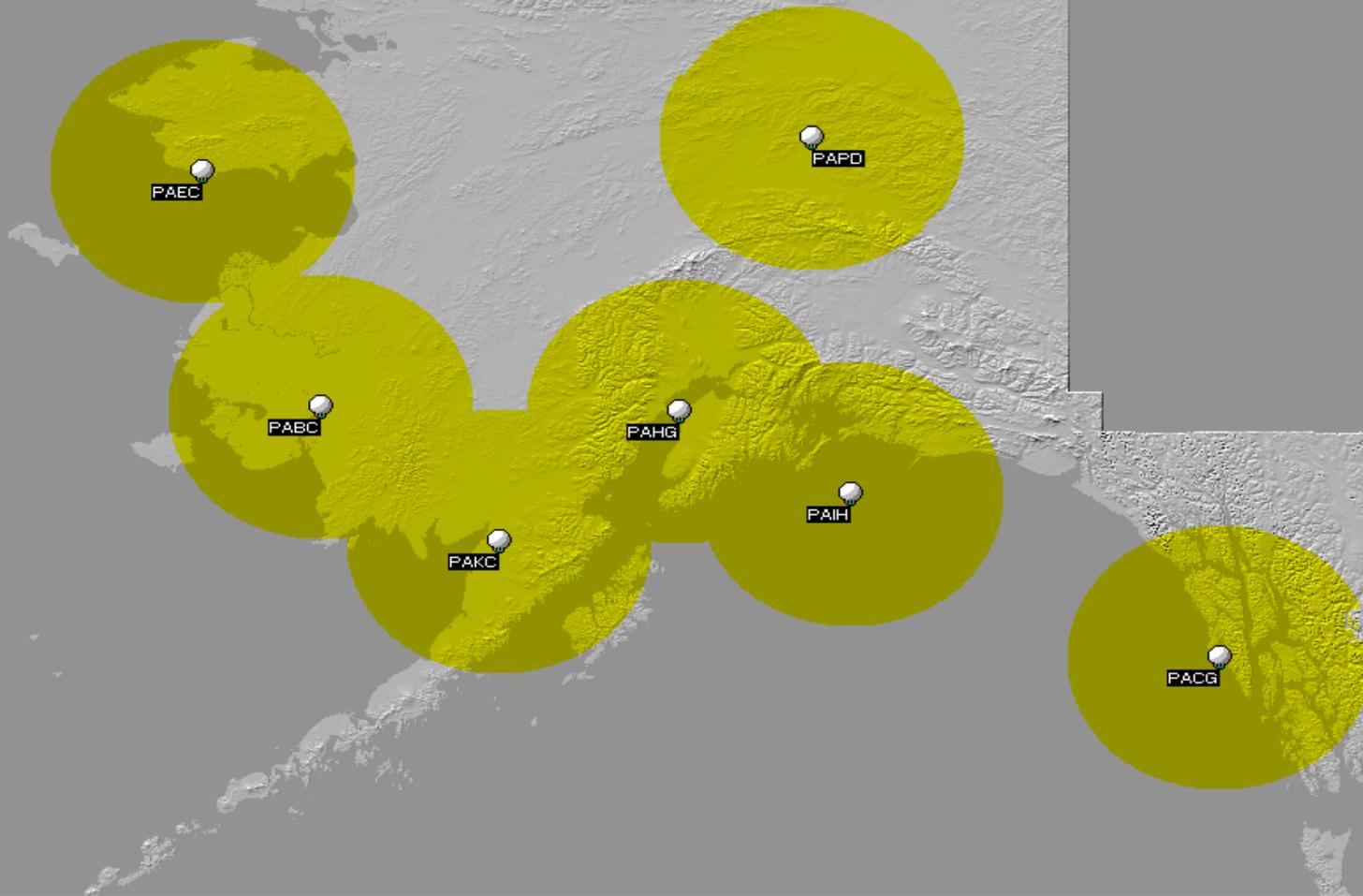


# NEXRAD Graphical Weather Products

Graphical National Weather Service products, temporary flight restrictions (TFRs), and special use airspace transmitted via FIS-B onto Multifunctional Display (MFD) in cockpit.

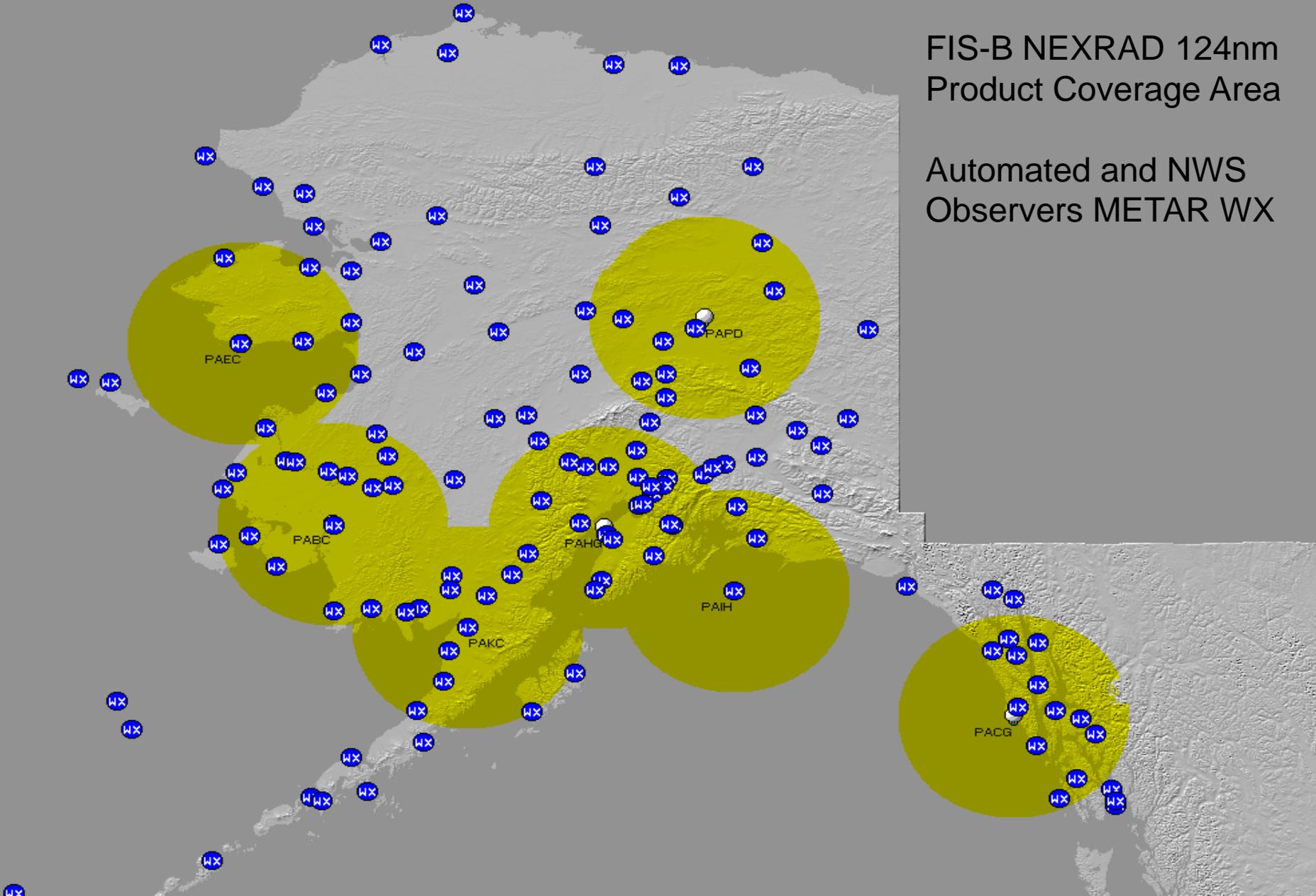


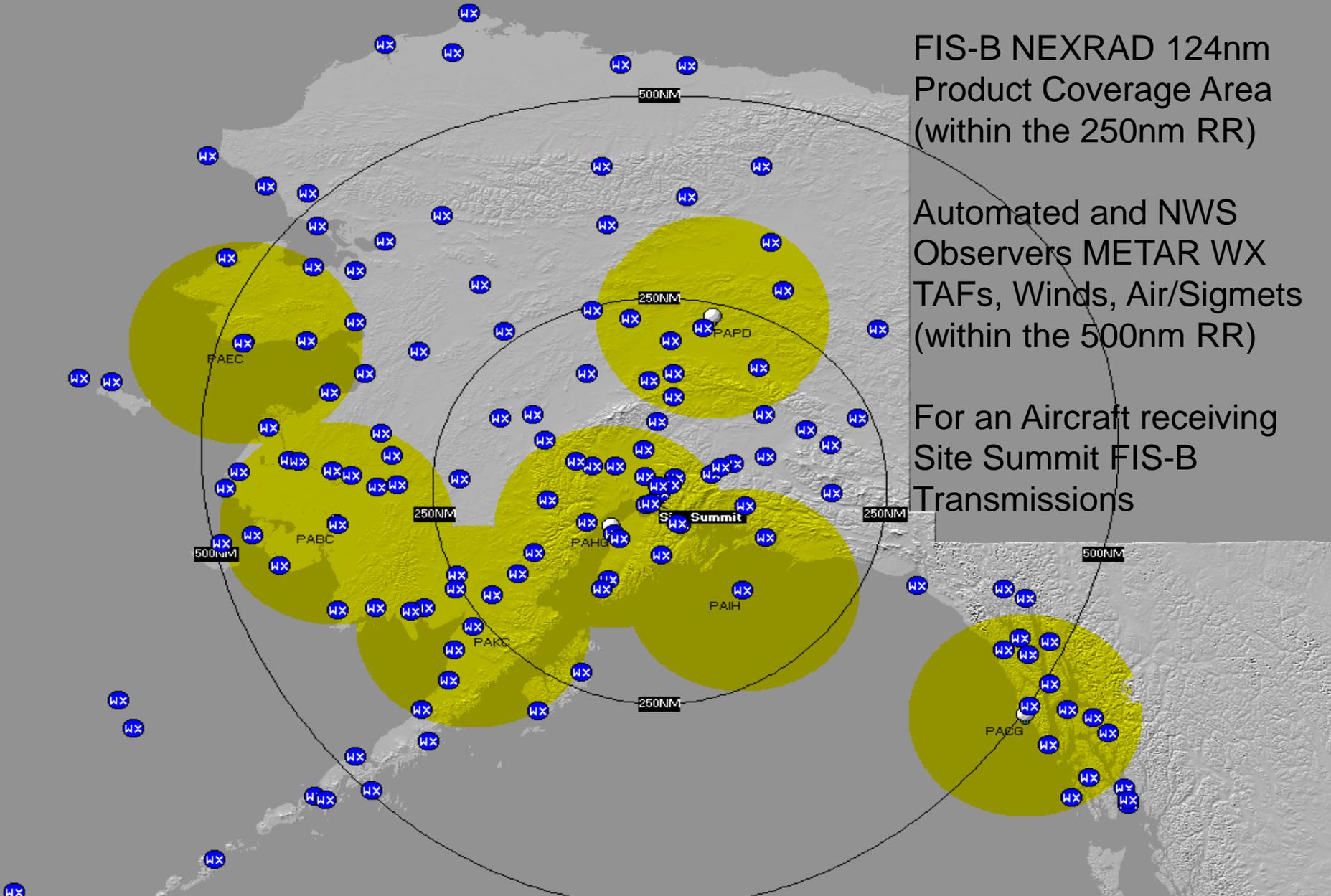
# FIS-B NEXRAD 124nm Product Coverage Area



# FIS-B NEXRAD 124nm Product Coverage Area

Automated and NWS  
Observers METAR WX





FIS-B NEXRAD 124nm  
Product Coverage Area  
(within the 250nm RR)

Automated and NWS  
Observers METAR WX  
TAFs, Winds, Air/Sigmets  
(within the 500nm RR)

For an Aircraft receiving  
Site Summit FIS-B  
Transmissions

# SBS Technical Update – GBT Sites

- GBT Service Delivery
  - FIS-B Availability
    - Site Summit – Available now
    - Murphy Dome – Available now
    - Kotzebue – Available now
    - Reindeer Hill – Available now
  - TIS-B Availability
    - Site Summit – Available now
    - Murphy Dome – Anticipate availability by EOM
    - Reindeer Hill – Anticipate availability by EOM

# Automated Weather Observation Systems (AWOS) Updates

- **Commissioning Activities**
  - Chevak – Commissioned 22 Aug
  - Teller – Commissioned 27 Aug
  - Walles – Commissioned 29 Aug
  - Galena – 16 Sep
  - Kiana – 19 Sep
  - Shungnak – 03 Oct
  - Barter Island – 10 Oct
  - False Pass – 17 Oct

# Juneau Wide Area Multilateration (WAM) Site Status

- **AT&T Sites (Bessie, Pt. Howard, Hoonah, Lena Pt, Mile 11):**
  - All leases in place
  - Site Prep/Install - 15 Sep to 26 Sep
  - Comm available upon install
- **FAA Sites (Sisters, Engineers Cut, RCAG, ATCT AFSS):**
  - Site Prep Completed
  - Install – 10 Sep to 30 Sep
  - Comm available - 25 Sep



# Juneau Wide Area Multilateration (WAM) Site Status (cont.)

- **Other Sites (Saddle Mtn, Lemon Creek PD):**
  - Lemon Creek prep completed
  - Saddle Mtn prep awaiting weather
  - Install – 10 Sep – 30 Sep
  - Comm available – 25
- **FY'09 Sites (Williams Mtn, Lynns Int, JNU Water Twr)**
  - Sites to be added next summer
  - Absence only affects redundancy

# SBS Operational Update

- Performance Based Navigation
  - Meeting September 3, 2008
    - MEARTS Modifications on-line September 21, 2008
    - Separation Standards
    - Environmental Review
    - Safety Risk Management Document (SRMD)
  - Q Route Filing/Use Summary
    - Time/Date Filed (June – August)
    - 62 Filed 34 Activated
    - Does not capture whether routes were flown
- ADS-B Surveillance Expansion
  - MEARTS Modification
  - MEMO for Expansion
    - In-house coordination
- VFR to IFR airport upgrades
  - 5 Airports FY08
  - 5 Airports FY09
  - 10 Airports FY10





**ato**

AIR TRAFFIC ORGANIZATION

# Capstone Industry Council Meeting - GNSS Update

JoAnn Y. Ford

Navigation Services Systems Engineering

September 10, 2008

# Navigation Services Update Profile: effective August 31, 2008

- NAS Published LPVs
  - Alaska LPVs
- Alaska WAAS Availability
  - April – June 2008
- Status of:
  - WAAS Equipage
  - Cold Bay WAAS Ground Reference Station Relocation
  - New DF's installation for Alaska
  - WAAS Predictive NOTAMs

# LPV Procedure Publication Progress to Date (Current and all prior years)

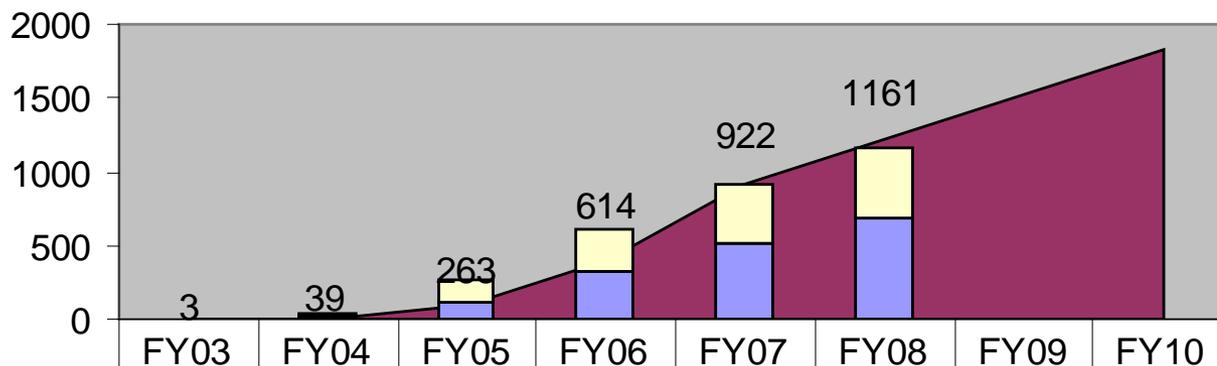
LPVs Published to non-ILS Runways	680
LPVs Published to ILS Runways	<u>481</u>
Cumulative LPVs Published to Date	1161

LPVs Published to <250' Decision Altitude 16

*Updated as of 31 Aug Procedure Publication Date  
Next Terminal Procedure Publication: Sept 25<sup>th</sup>*

# FY08 LPV Production Status

Cumulative Procedures



	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FY10
■ FLIGHT PLAN CUM GOAL	0	0	100	400	914	1222	1522	1822
■ NON-ILS RWY ENDS	1	10	106	328	516	680		
■ ILS RWY ENDS	2	29	157	286	406	481		

*61 add'l procedures needed to meet FY08 Flt Plan Goal (170+ projected for 25 Sep Publication date)*

## Annual Production Totals

	FY03	FY04	FY05	FY06	FY07	FY08	FY08 Goal
Non-ILS Runway Ends	1	9	95	222	188	<b>164</b>	
ILS Runway Ends	2	27	126	129	120	<b>75</b>	
Total LPV per year	3	36	221	351	308	<b>239</b>	300 (Flight Plan)

## Alaska LPV approaches

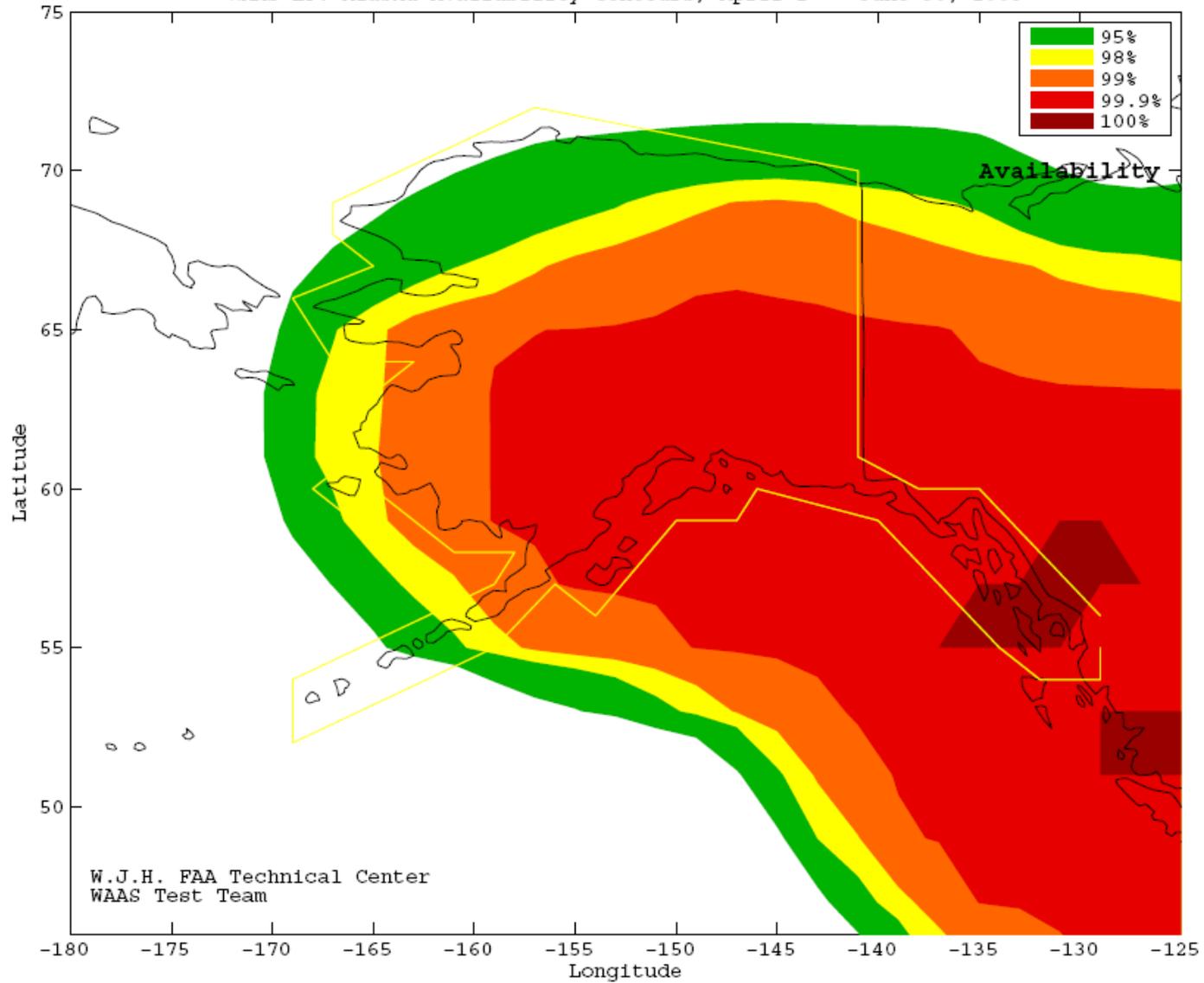
- Total 20 - Current LPV approaches (as of Aug 31st)
  - **Anchorage 3, Homer 2, Emmonak 2, St. Michaels 1, St. Mary's 2, Yakutat 1, Deadhorse 2 (NA UFN), Kenai 2, Selawik 1, Cold Bay 1, Gulkana 2, Ruby 1**
- “Planned” (Tentative) LPV approaches as of Aug 31<sup>st</sup> 2008
  - Sept 25, 2008
    - Galena
    - Huslia
    - King Salmon
    - Ketchikan
    - Prospect Creek

# “Planned” (Tentative) LPV approaches as of Aug 31, 2008

- November 2008
  - Bethel
  - Napakiak
  - Shageluk
- January 2009
  - Dillingham
  - Iliamna
  - Kwethluk
  - Quinhagak

# Alaska Coverage April – June 2008

WAAS LPV Alaska Availability Contours, April 1 - June 30, 2008



W.J.H. FAA Technical Center  
WAAS Test Team

Alaska Coverage at 95% Availability = 93.48%  
Alaska Coverage at 99% Availability = 68.48%  
Alaska Coverage at 100% Availability = 5.435%

SL = LPV

# WAAS Equipage (list not all-inclusive)

- GARMIN + Universal: Approx 36,207 (previous 35,247) WAAS-capable (TSO-145 or TSO-146) (number does not include SAAAR and/or ongoing R&D)
- Part 25:
  - Cessna 560XL, Cessna 650
  - Falcon-50 (F-50), Falcon-20 (F-20), Falcon 2000
  - Lear 35A, Lear 60 (LR-60)
  - ATR-72 (Canadian)
  - B727 (Canadian), B737-200
  - Challenger-601 (CL-601)
  - King Air (R-12)
- Part 29:
  - Sikorsky S-76++ (SK-76), Agusta 109 (A-109), Bell 412
- Alaska equipage – Alaska Airlines, Horizon, PennAir, Northern Air Cargo, ConocoPhillips

# Additional Alaska Updates

- Status of:
  - Cold Bay WAAS Ground Reference Station Relocation
  - WAAS Predictive NOTAMs
  - Status of DF Study
    - In the interim, ATO-W funding installation of refurbished DF's to Alaska 2009
  - Other

# AIC Update

- **Coordinate, State, Federal and FAA interests**
  - AIC working to define critical risks to SEIP and AIC program, so that FAA can address them in the OCT-NOV time frame
  - State will be invited to outreach meetings
  - AACAA writing marketing plan for State grant money awarded to AIC for outreach
    - once plan is submitted quarterly reporting will be required
  - Loan Applications and requirements available online, State of Alaska Division of Investments web site:  
<http://www.commerce.state.ak.us/investments/capstone.cfml>
- **Next Steps**
  - Outreach Committee to review final draft of avionics equipage informational package and conduct mailing to owners/operators
  - Continue to pursue Garmin discounts for users of the State loan

