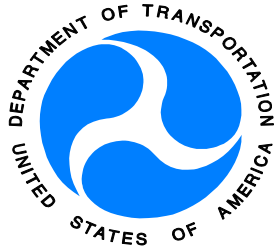


GPS POLICY AND PLANNING

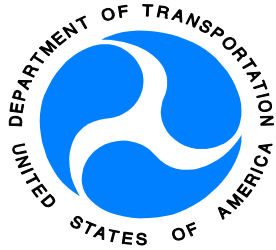
Mr. Joe Canny
Deputy Asst. Secretary
for Navigation Systems Policy
US Department of Transportation

***Presented at the IISC Meeting
November 30, 2000***



Overview

- Overall GPS Management
- GPS Modernization
- International Cooperation
- WAAS and LAAS
- Maritime DGPS
- Nationwide DGPS
- Spectrum Issues



Overall GPS Management

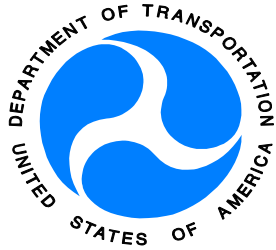
The Interagency GPS Executive Board

➤ Co-Chairs

- *Department of Transportation*
- *Department of Defense*

➤ Participants

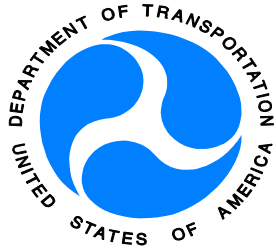
- *Department of State*
- *Department of Commerce*
- *Department of Agriculture*
- *Joint Chiefs of Staff*
- *Department of Interior*
- *Department of Justice*
- *NASA*



INTERAGENCY GPS EXECUTIVE BOARD

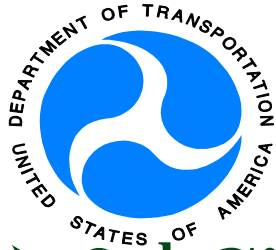
- Board last met on April 7th, 2000 to discuss:
 - **GPS Modernization**
 - **International Consultations**
 - **Establishment of Senior Steering Group**
 - **Assist IGEB in formulating major decision regarding the management of GPS and its U.S. government augmentations**

- No major system management issues currently identified that require IGEB action



Civil GPS Modernization

- **President discontinued Selective Availability May 2nd**
 - Accuracy improved from 100m to better than 20m
 - Enables more uses for the GPS basic service than before
- **GPS SPS Signal Specification**
 - Updating to reflect improved constellation performance and the discontinuance of SA
 - Early 2001 publication date anticipated
- **Adding new signals to improve accuracy, availability, and signal redundancy**
 - 2nd civil signal beginning in 2003
 - 3rd Civil Signal for aviation and other Safety-of-Life uses beginning in 2005



Civil GPS Modernization

➤ **3rd Civil Signal (L5) Implementation**

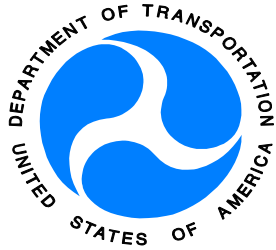
– **Draft L5 Signal Specification Complete**

- **Approved by RTCA SC159 Plenary, 6/16/00**
- **U.S. Government concurrence underway**
- **End of Dec 2000 publication anticipated for Signal Specification.**
- **Recommended to DoD to provide 1st version of ICD by 2003 and 2nd version of ICD in 2007.**

– **Advanced Features**

- **6 dB higher power relative to L1 (-154 dBW)**
- **20 MHz (minimum) broadcast bandwidth**
- **Longer codes**
- **Higher chipping rate**

– **Developing prototype receivers**

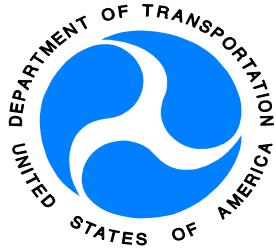


Funding for Civil GPS Modernization

➤ **President's FY01 Budget Submission**

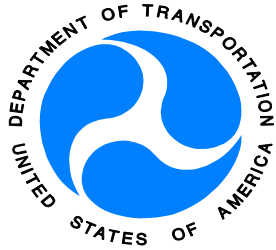
– Added funds to DoD FY01 budget and beyond for Civil GPS Modernization

- Funds deployment/acceleration of Civil GPS signals
- Funds appropriated as requested



DOT/DoD MOA on Implementing Unique Civil Requirements

- **DOT and DoD directed to develop MOA on implementing unique civil requirements**
 - Signed August 12, 2000
- **MOA Provides:**
 - Description of currently agreed to civil signals
 - Mechanism for validating and implementing new unique civil requirements
 - Mechanism for prioritizing elements should appropriations be insufficient
 - IGEB members will participate in development of new unique civil requirements
 - Agencies can sponsor outreach to their constituencies



GPS Modernization

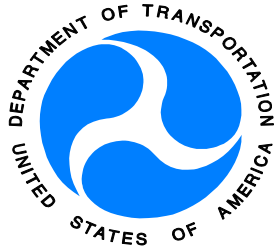
➤ GPS III

– GPS III Architecture Study

- **Contracts awarded to Boeing and Lockheed Martin (12 Month effort)**
- **Kickoff meetings held early November at JPO**
- **Civil Participation**

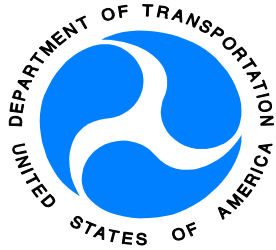
– **Public Forums will be held through AFSPACECOM
(*Hank Skalski*) to solicit civil input**

– Flexibility for technology upgrades



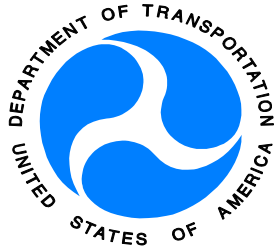
International Cooperation

- **U.S. continuing cooperative efforts to ensure interoperability with GPS and other Space-based Navigation systems**
- **Developed Memorandum of Agreement with EU regarding GPS and Galileo**
 - **Provided to EU in mid-October**
 - **Key Elements**
 - **Awaiting EU response**
- **Talking to Russia, Japan, and others**



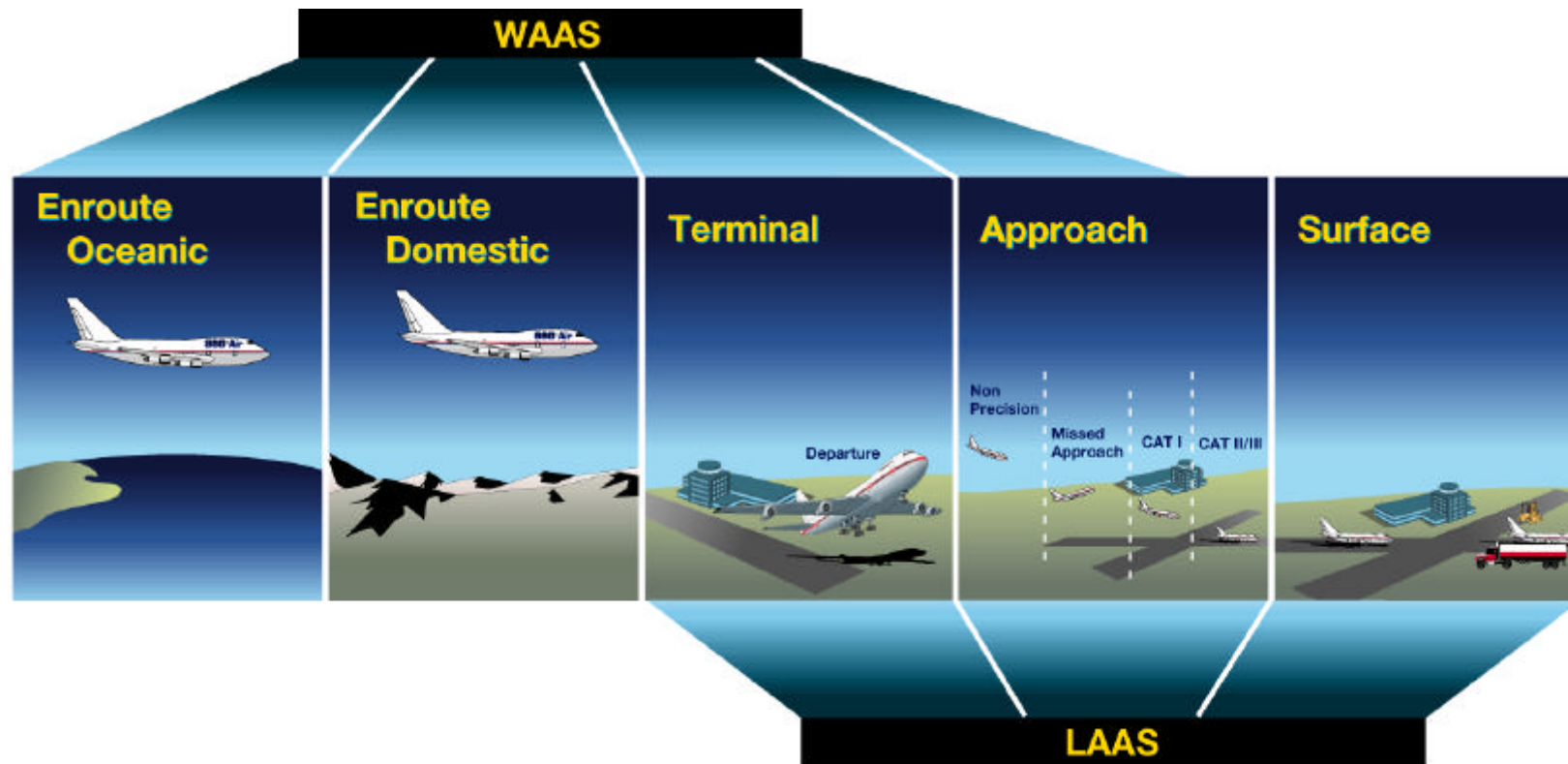
Principles for Cooperation

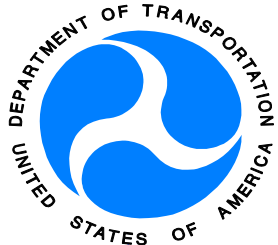
- **No direct user fees for civil and public safety services**
- **Ensure open market for GNSS user equipment**
- **Open signal structure for all civil services**
- **Protection of spectrum from disruption and interference**
- **Use of GPS time, geodesy, and signal structure standards**
- **Seamless, global interoperability**
- **Recognition of national and international security issues and protecting against misuse**



WAAS/LAAS

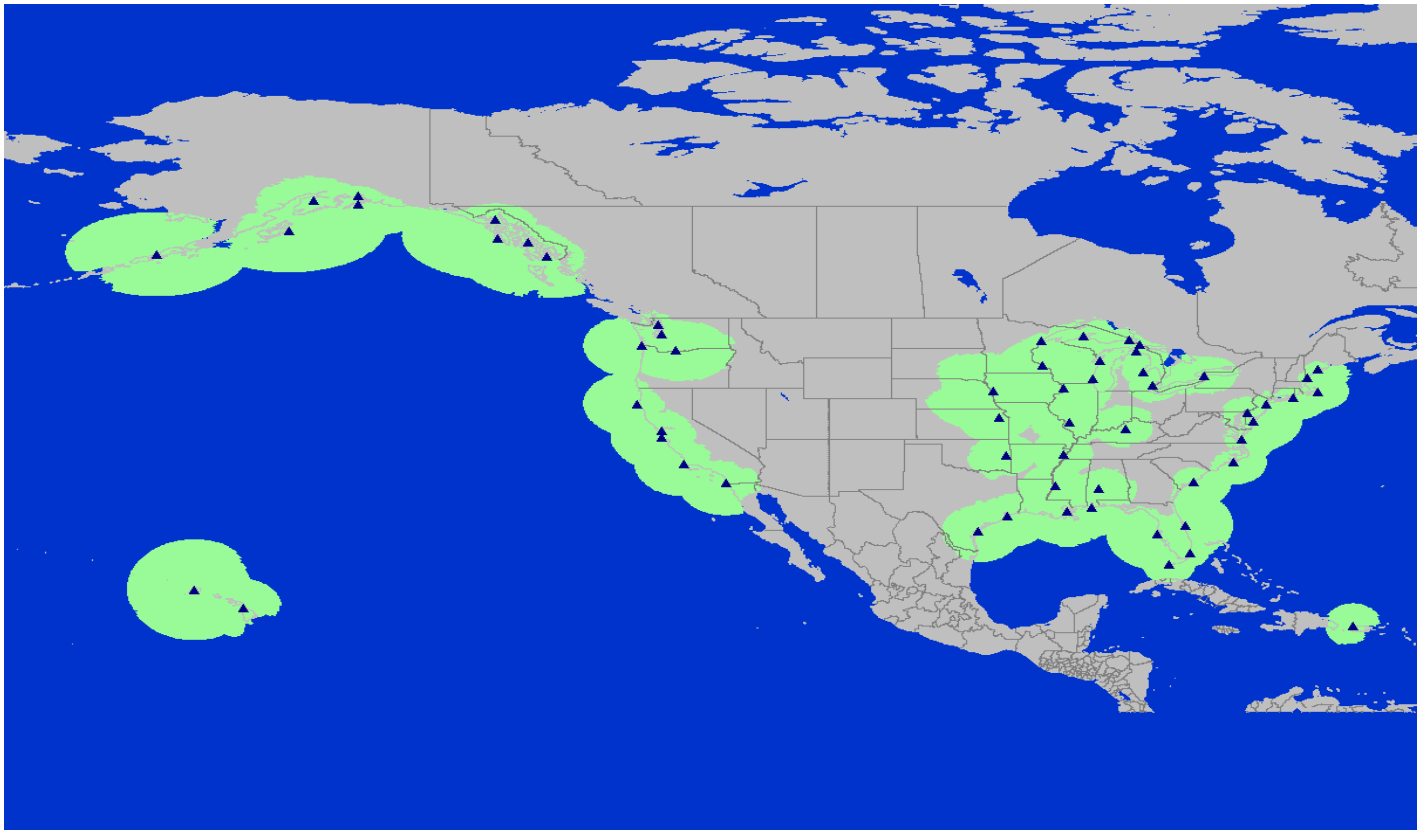
- **WAAS: LNAV/VNAV Initial Capability in 2002/2003**
- **LAAS/CAT II/III: Date to begin service uncertain**

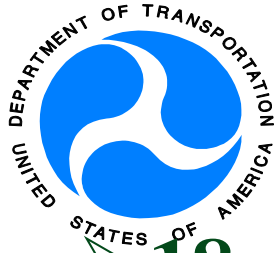




Coast Guard Maritime DGPS

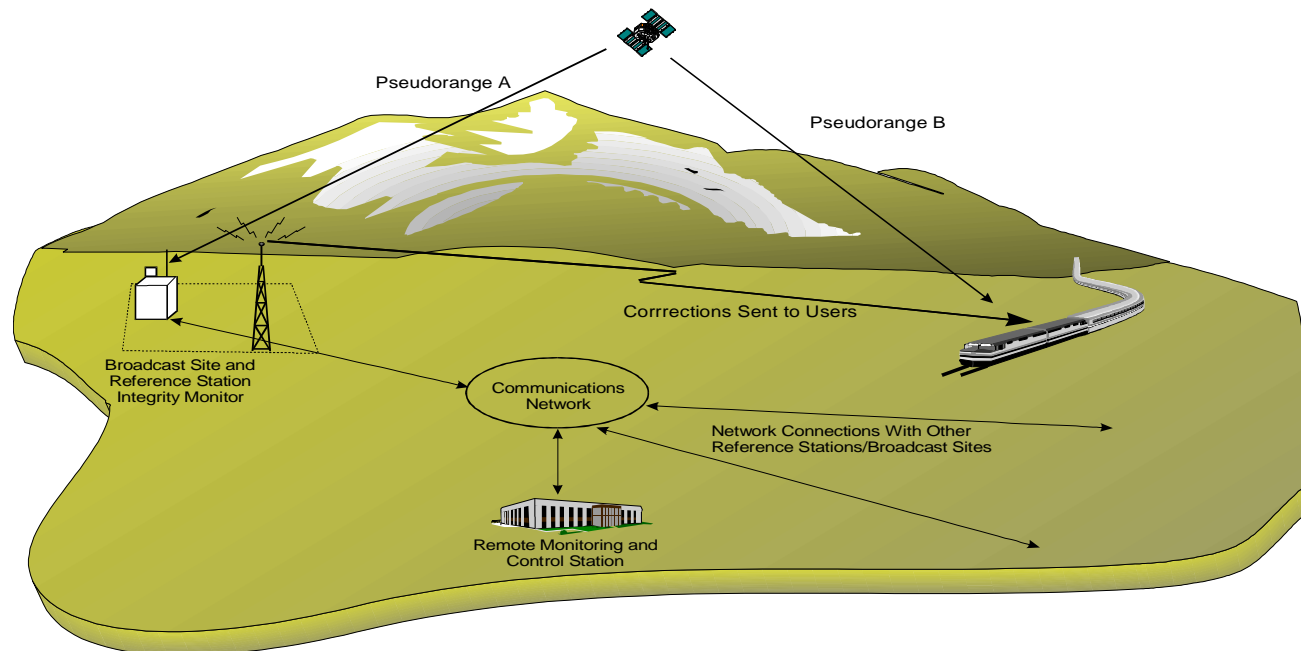
- Became fully operational on March 15, 1999
- System conforms to ITU standard and been duplicate in 35 other countries



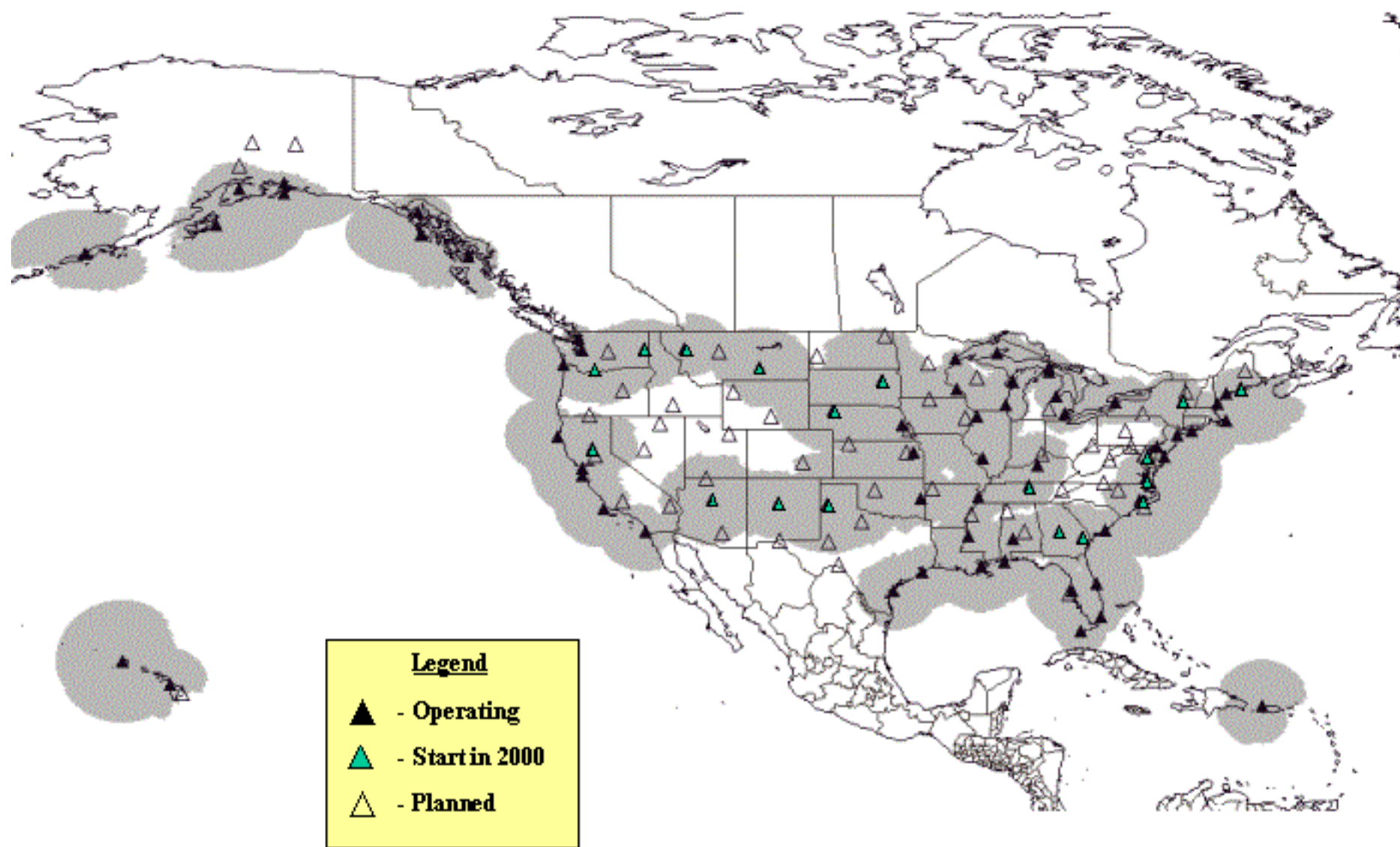


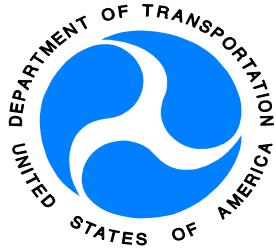
Nationwide NDGPS

- **18 stations operating by end of 2000**
- **Single coverage by end of 2002**
 - **May slip to mid-2003**
- **Dual coverage by end of 2003**
 - **Likely to slip to end of 2004**



Predicted Coverage at end of December 2000

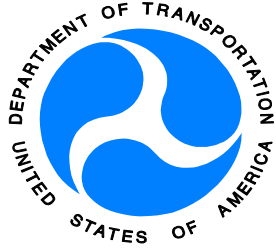




Spectrum

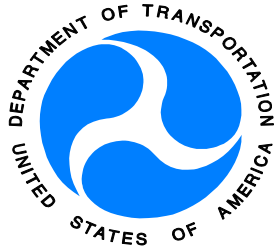
- **WRC 2000 June, 2000 in Istanbul, Turkey**
 - **Highly Successful effort for both U.S. GPS & EU Galileo**
 - **GPS issues were to:**
 - **Protect against encroachment from other systems**
 - **Obtain Allocation for 3rd Civil GPS Signal**
 - **Space-to-space allocation – *important to NASA and other space agencies***

- **Need to begin preparing for WRC 2003**
 - **Follow on activities required**
 - **Proposal for power flux density (PDF) for L2**
 - **Study impact of proposed L2 power increase on long range radars**
 - **Complete studies to assure protection for DME/ARNS from Galileo**
 - **GNSS spectrum still vulnerable to attacks**
 - **Maintain international cooperation**



Spectrum

- **Ultra Wide Band (UWB) is new technology**
 - Low power signal spread over wide area of spectrum
 - Effort to maximize use of limited spectrum
- **UWB Technology may pose threat to use of GPS and other systems used for safety of navigation**
- **Need testing to make determination**
- **Working with NTIA/Stanford to conduct tests**
 - NTIA requested extension until end of Feb 2001 for currently identified testing
- **Need broad participation by GPS User Community**



SUMMARY

- **U.S. continues to manage GPS as a joint civil/military system**
 - Management structure assures stable, predictable policies that the world user community can rely on
 - Committed to continue to provide GPS to the world community for peaceful, civil uses
 - *Essential element of the navigation and communications infrastructure*
 - **No user fees for GPS Services**
- **U.S. remains committed to GPS Modernization**
 - Additional Civil Freqs being added
 - GPS III Architectural Study underway
- **International Cooperation continues**
- **WAAS/LAAS and NDGPS Implementation continues**
- **WRC 2000 Successful for both U.S. GPS and EU Galileo**
- **Need to protect GPS from UWB interference**