Global Positioning System (GPS) Status

CGSIC States and Local Government Subcommittee
Baltimore, MD
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GPS Constellation Status

- 31 Operational Satellites
  - 6 Block IIA
  - 12 Block IIR
  - 7 Block IIR-M
  - 6 Block IIF (IIF-6 launched on 16 May)
    - 6 more IIF satellites in the pipeline
  - Additional residuals on-orbit
  - Continuously assessing constellation health to determine launch need

Constellation is Robust
Global GPS service performance commitment met continuously since December 1993
GPS Modernization

Legacy GPS IIA/IIR
- Single Frequency (L1)
- Coarse acquisition (C/A) code
- Y-Code (L1Y & L2Y)

GPS IIR-M
- 2nd Civil Signal (L2C)
- M-Code (L1M & L2M)

GPS IIF
- 3rd civil signal (L5)
- 2 Rb + 1 Cs Clocks
- 12 year design life

GPS III
- 4th civil signal (L1C)
- 4x better User Range Error than IIF
- Increased availability
- Increased integrity
- 15 year design life

Legacy OCS
- Mainframe system
- Command & Control
- Signal monitoring

AEP
- Distributed architecture
- Increased signal monitoring
- Security
- Accuracy
- Launch and disposal ops

OCX
- Fly legacy constellation
- Launch, checkout, and fly GPS III
- Control & monitor modernized signals
- Upgraded information assurance
- Capability on-ramps

Increasing system capabilities – Increasing user Benefit
Full-time broadcast of Civil Navigation (CNAV) message-populated L2C & L5 signals on IIR-M & IIF satellites since Apr 14
- Provide signal diversity and robustness for dual-frequency users
- Facilitate development of compatible user equipment

Phased execution
- Apr 2014: Initial broadcast; uploads ~2x/week
- Dec 2014: Daily uploads; comparable accuracy with legacy signals
- Pre-operational status until OCX Block I
  - L5 signal set 'unhealthy'; may be set healthy based upon greater experience with the broadcast and implementation of signal monitoring
  - Both L2C & L5 “should be employed at the users' own risk; not used for safety-of-life or other critical purposes”

Pre-Operational CNAV Broadcast since Apr 2014

Integrity - Service - Excellence
Summary

- Constellation is robust, but aging; Next IIF launch planned for Aug 2014
- System performance commitments continuously met since 1993; Accuracy exceeds published standards
- GPS modernization for military and civil users underway