



Civil GNSS Performance Monitoring

8th Meeting of the ICG

November 2013

Dubai, UAE



Benefits of Civil GNSS Signal/Service Monitoring



ICG Principle of Transparency

“Every GNSS provider should publish documentation that describes the signal and system information, the policies of provision and the minimum levels of performance offered for its open services”

Civil GNSS Signal/Service Monitoring provides:

1. The ability to verify commitments to GNSS performance
2. Improve situational awareness for the GNSS operators
 - Verify objectives and thresholds are being met
 - Identify potential for future improvements
3. Provide assurance that civil service failures are detected and resolved promptly



Rationale for Development of the GPS Civil Monitoring Performance Specification (CMPS)



- Identify civil requirements for monitoring of the GPS signals/service
- Identify metrics that address performance measures
 - Reference authoritative documents whenever possible
 - Described in USG policy statements, and
 - Derived from GPS interface specifications (IS)
- Address current capabilities and those in development
 - L1 C/A, L2C, L5, L1C
- Addresses both Standard Positioning Service (SPS) and Signal-in-Space (SIS)



Structure of the CMPS

- Monitoring Requirements; three categories
 1. System performance monitoring (35 requirements)
 - Derived from SPS PS and Federal Radionavigation Plan
 - Verification availability, reliability, and accuracy
 2. Signal monitoring (136 requirements)
 - Primarily derived from the ICDs and ISs
 3. Non-broadcast data (4 requirements)
- Infrastructure Requirements; reporting & archiving (18 requirements)
- Traceability; all requirements captured in the CMPS
 - Simplifies updates as the source documents change



CMPS Development Process and Status



- First release of CMPS; December 1, 2005
 - Referenced in -800 series specifications
- Updated to incorporate latest SPS Performance Standard (September 2008)
 - Reorganized to maintain structure parallel with SPS PS
- Updated version of CMPS publicly released on April 30, 2009
 - Available at <http://www.gps.gov>
- Implementation taking place in phases
 - DOT and USAF coordinating to implement in the Next Generation Operational Control System (OCX)
 - SPS PS being assessed by FAA through Performance Analysis (PAN) reports



Summary



- Many benefits of GNSS Signal/Service Monitoring to the service provider and user
- Supports ICG Principle of Transparency
 - Allows service provider to verify documented performance commitments
- CMPS can be used as a model for documentation of civil requirements for monitoring of the GNSS signals/service