



Civil GNSS Signal/Service Monitoring

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Benefits of Civil GNSS Signal/Service Monitoring



Proposed ICG Principle

“Every GNSS provider should establish documented civil performance commitments to inform users about minimum levels of service”

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)**
- **Identify and allocate monitoring requirements between “core” system monitoring and other monitoring capabilities**



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 (31 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 all requirements traceability
 - Traceability to several new standards incorporated
- **Updated version of CMPS publicly released on April 30, 2009**
 - Available at <http://www.pnt.gov>



Summary



- Many benefits of GNSS Signal/Service Monitoring to the service provider and user
- Supports proposed ICG principle to establish documented civil GNSS performance commitments to inform users about minimum levels of service
 - Allows service provider to verify performance commitments
- CMPS can be used as a model for documentation of civil requirements for monitoring of the GNSS signals/service
- Allows for identification of the allocation of monitoring requirements between “core” system monitoring and other monitoring capabilities (e.g., augmentation systems)