

PROPOSED INTERFACE REVISION NOTICE (PIRN)

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Affected ICD/IS:
IS-GPS-200H

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PIRN-IS-200H-002

Authority:
RFC-266

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DECLASSIFY ON:

Document Title:

Navstar GPS Space Segment/Navigation User Interfaces

Reason For Change (Driver): The current Signal-in-Space Coordinated Universal Offset Time Offset Error (UTC OE) values are inconsistent across the Signal-in-Space documents and have not been updated to reflect either GPS III specifications or current as-built capabilities. The 90ns (1 sigma) UTC OE in IS-GPS-200 falls well below actual system performance and contradicts current technical documents such as system performance standards and current legacy and modernized military user equipment specifications. The current UTC OE spec may cause receivers to operate outside of their current requirements.

Description of Change:

Proposed changes to the UTC OE from 90ns (one sigma) to 20ns (one sigma) to be consistent with the Public SiS documents 705 and 800.

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IS-GPS-200H Section 3.3.4 :

WAS :

The NAV data contains the requisite data for relating GPS time to UTC. The accuracy of this data during the transmission interval shall be such that it relates GPS time (maintained by the MCS of the CS) to UTC (USNO) within 90 nanoseconds (one sigma). This data is generated by the CS; therefore, the accuracy of this relationship may degrade if for some reason the CS is unable to upload data to a SV. At this point, it is assumed that alternate sources of UTC are no longer available, and the relative accuracy of the GPS/UTC relationship will be sufficient for users. Range error components (e.g. SV clock and position) contribute to the GPS time transfer error, and under normal operating circumstances (two frequency time transfers from SV(s) whose navigation message indicates a URA of eight meters or less), this corresponds to a 97 nanosecond (one sigma) apparent uncertainty at the SV. Propagation delay errors and receiver equipment biases unique to the user add to this time transfer uncertainty.

IS :

The NAV data contains the requisite data for relating GPS time to UTC. The accuracy of this data during the transmission interval shall be such that it relates GPS time (maintained by the MCS of the CS) to UTC (USNO) within 20 nanoseconds (one sigma). This data is generated by the CS; therefore, the accuracy of this relationship may degrade if for some reason the CS is unable to upload data to a SV. At this point, it is assumed that alternate sources of UTC are no longer available, and the relative accuracy of the GPS/UTC relationship will be sufficient for users. Range error components (e.g. SV clock and position) contribute to the GPS time transfer error, and under normal operating circumstances (two frequency time transfers from SV(s) whose navigation message indicates a URA of eight meters or less), this corresponds to a 28 nanosecond (one sigma) apparent uncertainty at the SV. Propagation delay errors and receiver equipment biases unique to the user add to this time transfer uncertainty.
