

Civil Interface Observations

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Purpose

- Provide non-attribution forum to
 - Inform the users community of recent past issues
 - Ensure correct balance btwn transparency & OPSEC
 - Seek feedback regarding clarification of IS-GPS-200
- Prevent future GPS receiver problems





Scenario 1: Af0 value indicates satellite clock instability

- Issue - User thought zero value for Af0 Subframe 4-5 could be used to indicate satellite clock instability and excluded satellite from solution regardless of satellite's actual health setting.
- Affected Data - Bits 271–278 & 290–292 of satellite-specific pages.
- Resolution – Zero value does not indicate instability in satellite clock and should not be used to determine satellite integrity.
 - There are a variety of constellation maintenance activities that could result in a zero value for a satellite that is still set HEALTHY and meeting all specification requirements.
 - IS-GPS-200E, “..occasional CS actions to manage clock offsets may also inhibit the ability to provide specified almanac time parameter accuracies.”





Scenario 2: Using almanac data from unhealthy satellites

- Issue - User attempted to use subframe 4-5 “almanac” data from satellites set to UNHEALTHY.
- Affected Data – All broadcast navigation data.
- Resolution –
 - Sections 20.3.3.3.1.4 and 20.3.3.5.1.3 of IS-GPS-200E define the health indicators broadcast by the constellation.
 - These indicators are used to warn users when *"some or all NAV data are bad"* for a specific satellite due to an on-orbit anomaly or maintenance activity.
 - Use of **any** portion of the navigation and timing signal from a satellite set to any status other than "HEALTHY" is at the user's own risk.





Scenario 3: Restricting possible WNa/toa combinations

- Issue – User reasoned that there would not be more than two WNa/toa combinations seen at any one time (previous day and current day).
- Affected Data – Bits 69-84 of Subframe 5 Page 25 and Bits 91-98 in satellite specific pages of Subframes 4 and 5.
- Resolution –
 - There are no restrictions in IS-GPS-200E that limit the CS to only two combinations. Section 20.3.3.5.2.2 states: “Within each upload, the CS shall ensure that all toa values in subframes 4 and 5 shall be the same for a given almanac data set and shall differ for successive data sets which contain changes in almanac parameters or SV health.”
 - Opportunity to clarify the standard?





IS-GPS-200 Clarification & Feedback

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<http://www.navcen.uscg.gov/>

CONTACT INFORMATION

Business hours at the Navigation Center are 8:00AM to 4:30PM EST, although we do maintain a 24-7 operational watch. The table below contains email and telephone information as well as other means of obtaining navigation information. You may also contact us via regular mail using the address below. Directions to the Navigation Center or Navigation Center Detachment are also available on this site.

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You may contact the Navigation Center's **Navigation Information Service** by completing and submitting the form below.

The toll free phone number to submit an LRIT incident or inquiry is 1-866-944-LRIT (5748); alternatively, you may submit a report online.

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