

**WAAS Technical Report**  
**William J. Hughes Technical Center**  
**Pomona, New Jersey**  
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*Author(s): David A. Nelthropp*

***DR#134: GPS satellite PRN25 ephemeris broadcast reused IODE (equal to 98) within 30 minutes of the previous transmission of the same IODE value after an ephemeris cutover occurred on 10/15/16.***

***GPS Week/Day: Week 1918 Day 6 (10/15/16)***

**Discussion:**

The GPS satellite PRN 25 ephemeris broadcast was updated from IODE = 98 and TOE = 568800 to IODE = 84 and TOE = 568768 on 15 October 2016 at 13:32 GMT (567112 GPS TOW). The subsequent GPS satellite PRN 25 ephemeris broadcast at 14:00 GMT reused IODE = 98 with TOE = 575968, which is in violation of the GPS requirement stating the same IODE value shall not be used within a 6-hour time period.

The WAAS detected the PRN 25 ephemeris anomaly; however, the system did not produce fast-long corrections for the 14:00 GMT ephemeris broadcast with IODE = 98, but rather the system continued to provide fast-long corrections for the previous IODE = 84 transmitted ephemeris until receiving a new ephemeris transmission at 16:00 GMT. The satellite ephemeris was updated at 16:00 GMT with IODE = 101 and TOE = 583200, where normal WAAS operation produced fast-long corrections to match the current ephemeris transmissions.

**Conclusion:**

The GPS satellite PRN 25 ephemeris broadcast reused the same IODE value within 30 minutes on 15 October 2016 at 14:00 GMT, which resulted in the WAAS rejecting the IODE = 98 transmitted ephemeris for the next 2 hours in conjunction with continued satellite corrections for the previous IODE = 84 transmitted ephemeris.

PRN 25 was out of view during the IODE = 84 ephemeris broadcast; therefore, not all WAAS users received the transmission, which resulted in removal from the WAAS navigation solution between 14:00 – 16:00 GMT for users that did not track the satellite before 14:00 GMT. The WAAS LPV200 service outages occurred in the southern WAAS service volume—from Los Angeles to Miami—due to the loss of PRN 25 for navigation.