

WAAS Technical Report
William J. Hughes Technical Center
Pomona, New Jersey
6/21/2005

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DR#: Loss of Availability due to Satellite Maintenance, NANU 2005083 (SV 6)
GPS Week/Day: Week 1322 Day 2

Discussion:

On GPS Week 1322 Day 2, a loss of WAAS availability was observed over the CONUS service volume. This was a direct result of satellite maintenance that was forecast by the Coast Guard.

NANU 2005079 was issued by the Coast Guard forecasting satellite maintenance on SV 6 to occur on May 10th, 2005, which scheduled a 12-hour outage. The contents of this forecast NANU are listed below.

2005079-----

NOTICE ADVISORY TO NAVSTAR USERS (NANU) 2005079
SUBJ: SVN36 (PRN06) FORECAST OUTAGE JDAY 130/1245 - JDAY 131/0045

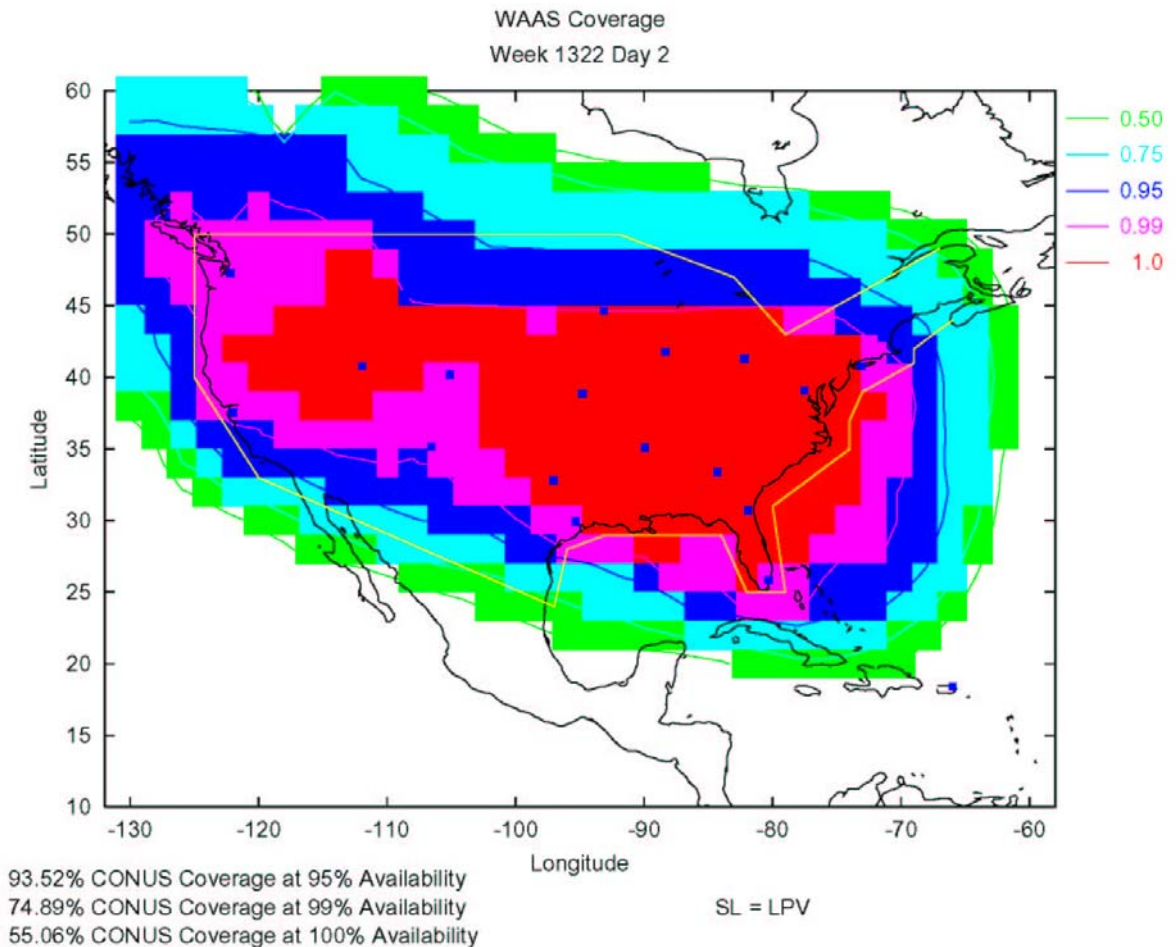
1. NANU TYPE: FCSTDV
 NANU NUMBER: 2005079
 NANU DTG: 042310Z MAY 2005
 REFERENCE NANU: N/A
 REF NANU DTG: N/A
 SVN: 36
 PRN: 6
 START JDAY: 130
 START TIME ZULU: 1245
 START CALENDAR DATE: 10 MAY 2005
 STOP JDAY: 131
 STOP TIME ZULU: 0045
 STOP CALENDAR DATE: 11 MAY 2005

2. CONDITION: GPS SATELLITE SVN36 (PRN06) WILL BE UNUSABLE ON JDAY 130
 (10 MAY 2005) BEGINNING 1245 ZULU UNTIL JDAY 131 (11 MAY 2005)
 ENDING 0045 ZULU.

3. POC: CIVILIAN - NAVCEN AT 703-313-5900, [HTTP://WWW.NAVCEN.USCG.GOV](http://WWW.NAVCEN.USCG.GOV)
 MILITARY - GPS Support Center at
 [HTTP://WWW.SCHRIEVER.AF.MIL/GPSSUPPORTCENTER](http://WWW.SCHRIEVER.AF.MIL/GPSSUPPORTCENTER), DSN 560-2541,
 COMM 719-567-2110, GPS@SCHRIEVER.AF.MIL,
 [HTTP://WWW.SCHRIEVER.AF.MIL/GPS](http://WWW.SCHRIEVER.AF.MIL/GPS)
 MILITARY ALTERNATE - 14 AF AIR & SPACE OPERATIONS CENTER, DSN 276-
 9994,
 COMM 805-606-9994, V3SPACEAF.AOC@VANDENBERG.AF.MIL

Figure 1 shows the loss of LPV service that was observed over areas of western CONUS on Week 1322 Day 2 as a result of this maintenance. Coverage at 99% availability was reduced to 74.89% of the CONUS service volume on this day, whereas it typically approaches 90%.

Figure 1 – LPV Coverage for May 10, 2005



A summary NANU was issued following this satellite maintenance action. The contents of this summary NANU are listed below. Forecast NANUs provide users with a prediction of how long satellite maintenance will last, however the actual outage time generally differs from this. Predictions in a forecast NANU often set aside 12 or 24 hour block for maintenance, although action rarely take that long. Although 12 hours were forecast for this outage, this outage only lasted ~7.5 hours. The specifics of the outage's duration can be found in the summary NANU.

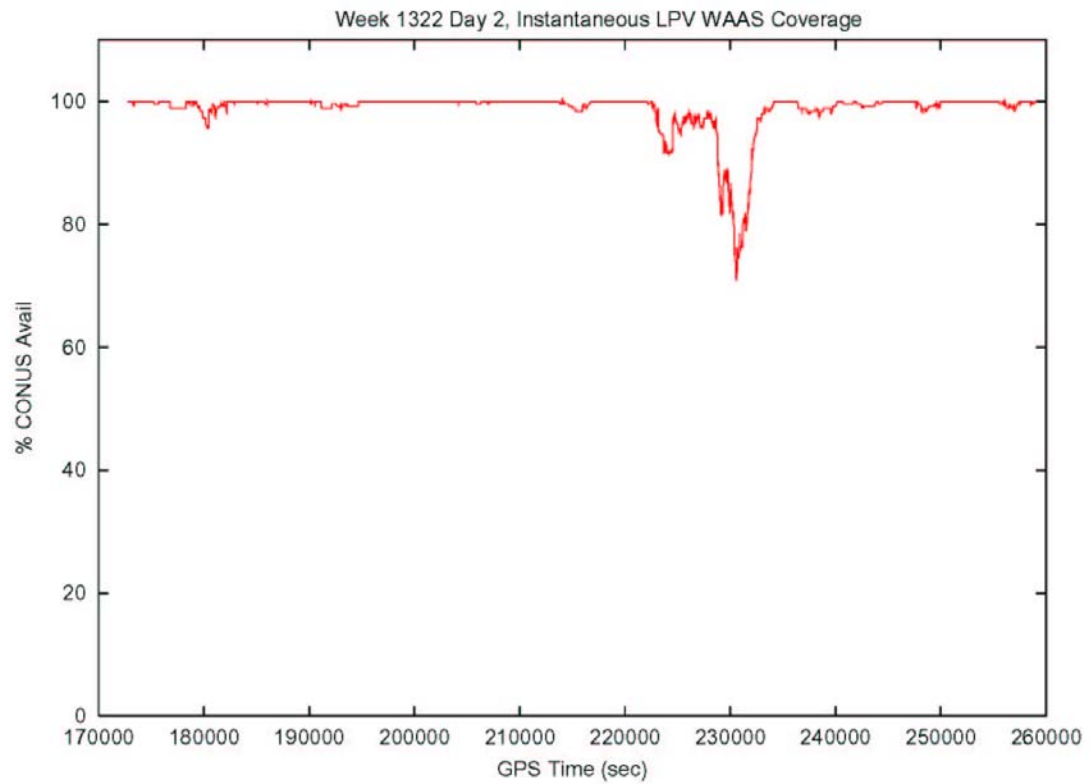
2005083-----

NOTICE ADVISORY TO NAVSTAR USERS (NANU) 2005083
SUBJ: SVN36 (PRN06) FORECAST OUTAGE SUMMARY JDAY 130/1258 - JDAY
130/2031

1. NANU TYPE: FCSTSUMM
 NANU NUMBER: 2005083
 NANU DTG: 102042Z MAY 2005
 REFERENCE NANU: 2005079
 REF NANU DTG: 042310Z MAY 2005
 SVN: 36
 PRN: 6
 START JDAY: 130
 START TIME ZULU: 1258
 START CALENDAR DATE: 10 MAY 2005
 STOP JDAY: 130
 STOP TIME ZULU: 2031
 STOP CALENDAR DATE: 10 MAY 2005
2. CONDITION: GPS SATELLITE SVN36 (PRN06) WAS UNUSABLE ON JDAY 130
 (10 MAY 2005) BEGINNING 1258 ZULU UNTIL JDAY 130 (10 MAY 2005)
 ENDING 2031 ZULU.
3. POC: CIVILIAN - NAVCEN AT 703-313-5900, [HTTP://WWW.NAVCEN.USCG.GOV](http://WWW.NAVCEN.USCG.GOV)
 MILITARY - GPS Support Center at
 [HTTP://WWW.SCHRIEVER.AF.MIL/GPSSUPPORTCENTER](http://WWW.SCHRIEVER.AF.MIL/GPSSUPPORTCENTER), DSN 560-2541,
 COMM 719-567-2110, GPS@SCHRIEVER.AF.MIL,
 [HTTP://WWW.SCHRIEVER.AF.MIL/GPS](http://WWW.SCHRIEVER.AF.MIL/GPS)
 MILITARY ALTERNATE - 14 AF AIR & SPACE OPERATIONS CENTER, DSN 276-
 9994,
 COMM 805-606-9994, V3SPACEAF.AOC@VANDENBERG.AF.MIL

Figure 2 shows a trend of instantaneous LPV coverage (30 second sampling) for Week 1322 Day 2. Note the correspondence between the time indicating when the satellite outage occurred listed in the summary NANU (12:58 – 20:31 Zulu/GMT corresponds to ~219600 – 246600 GPS Time) and the time during which the loss of coverage occurred. The percentage of the CONUS volume available for LPV service dropped below 90% from GPS Time 228900 – 232020 (15:35 – 16:27 GMT Time).

Figure 2 – Instantaneous LPV Coverage for May 10, 2005



Conclusion:

The loss of availability observed on May 10, 2005 was due directly to the absence of SV 6 as a PA ranging source.