

**WAAS Technical Report**  
**William J. Hughes Technical Center**  
**Pomona, New Jersey**  
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***DR#37: C&V failure at ZDC and ZLA.***  
***GPS Week/Day: Week 1380 Day 6 (6/24/2006)***

**Discussion:**

On week 1380 day 6 all WAAS sites experienced an LPV service outage around GPS time 580000 (17:06:14 GMT) where the horizontal protection level went above 40 meters and vertical protection level just below 50 meters. The loss of LPV service for a large portion of the service volume at this time is shown in Figure 2.

Figure 1 shows the HPL calculated at the Salt Lake City reference station. The HPL is calculated based on the WAAS correction message with traces from both ZDC and ZLA.

The outage lasted for about 1600 seconds. The ZDC C&V was the selected source for the entire day. During the outages, some of the satellite's UDRE were increased. For example the UDRE of PRN's 9, 15, 18, and 22 jumped from 7.5 meters to 15 meters, as shown in Table 1. Although ZLA C&V was not the selected source, the WAAS messages from ZLA C&V were available on the WEI and can be used for post-processing. Post-processing with WAAS ZLA C&V as the selected source showed that at that period of time there were no outages and the UDRE were normal for all satellites.

Figure1

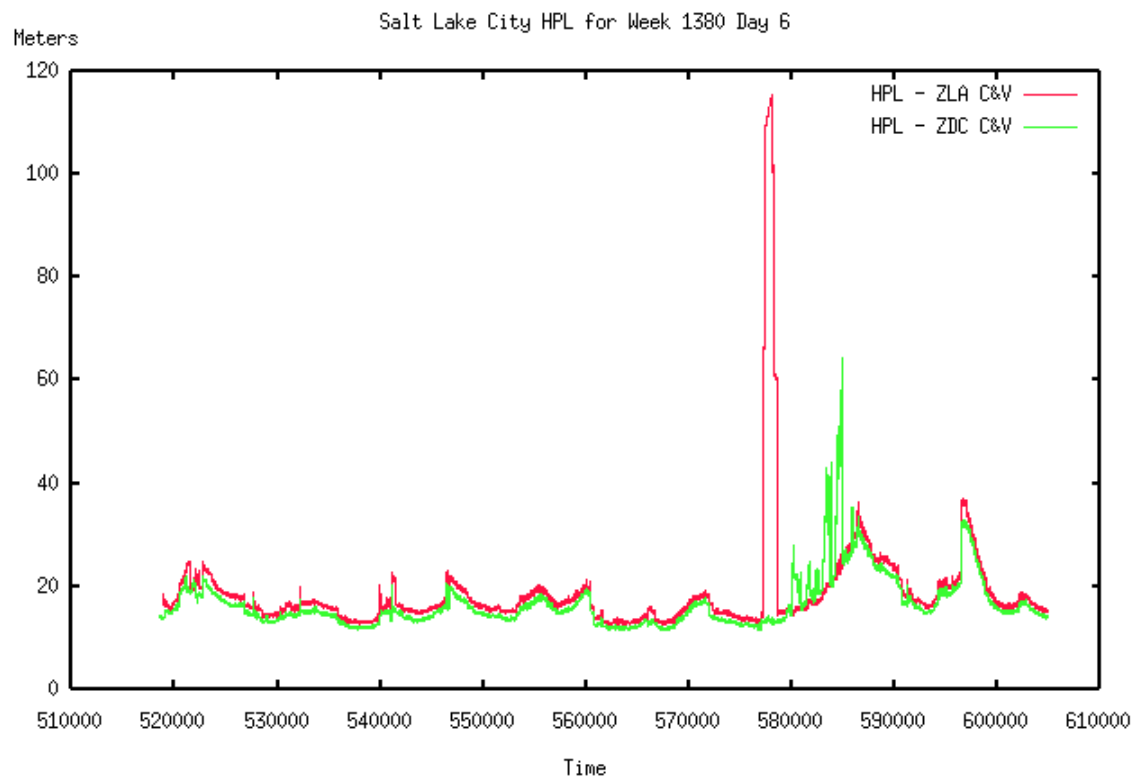


Figure 2 Instantaneous LPV WAAS Coverage from ZDC C&V

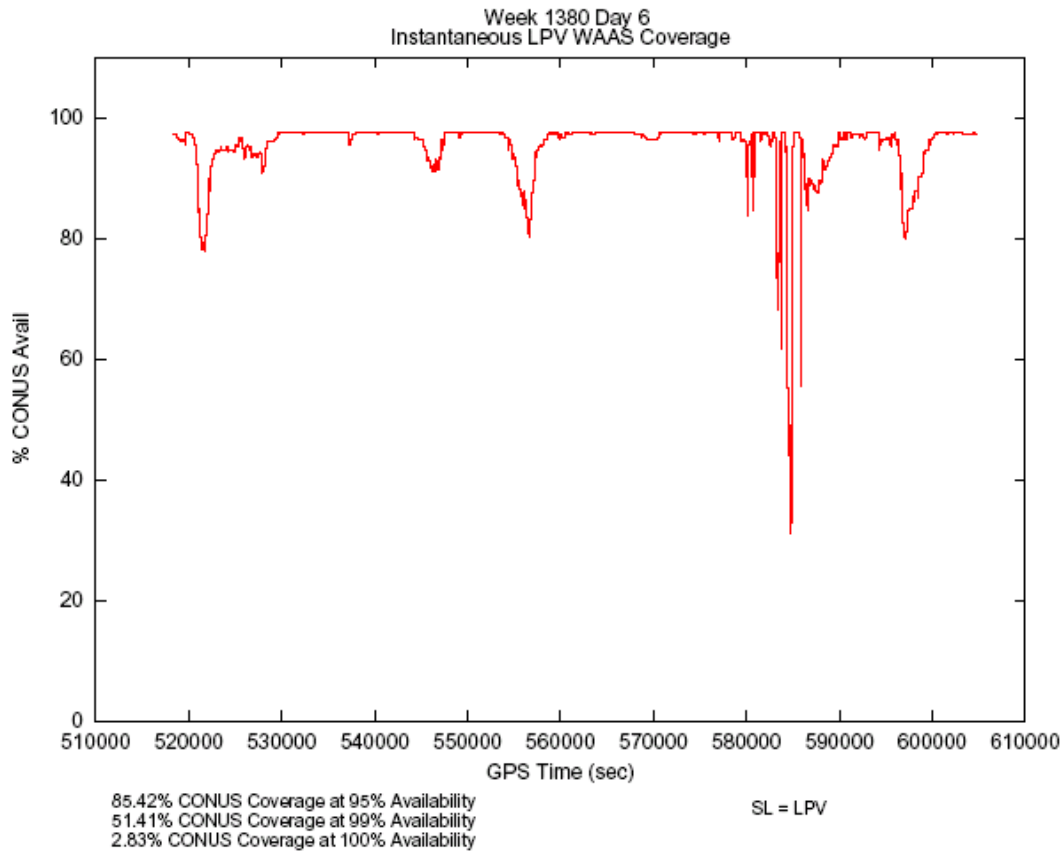


Table 1: UDRE Changes

PRN	Before (meters)	After (meters)
9	7.5	15
15	7.5	15
18	7.5	15
22	7.5	15

However, the post-processed data showed another problem when ZLA C&V was used as the selected source. The use of ZLA C&V as the selected source was for our own analysis purpose and it was not the selected source for SIS at anytime during the day. Around GPS time 577115 (16:18:36 GMT) the protection level for both horizontal and vertical protection level jumped to over 100 meters. The source of the protection level jump came from the increase of GIVE values to 45. During that period of high GIVE value, the system also recorded a UPM and RDM monitor trip at ZLA C&V.

### **Conclusion**

Separate anomalies occurred at ZDC and ZLA C&V at two different times. In both cases the protection level jumped with the increase of UDRE in one case and GIVE in the other. ZDC was the selected source for the entire day with no monitor trip while ZLA was on backup mode.