WAAS Technical Report
William J. Hughes Technical Center
Pomona, New Jersey
June 28, 2005

Author(s): Nathan Vary

DR#9: Type 6 alert (changed 15 satellite's UDREi to 14)
GPS Week/Day: Week 1328 Day2 (6/21/2005)

Discussion:

One type 6 alert was sent out by POR on week 1328 day 2 from time 253065-253068. The alert affected 15 satellites, changing their UDREI to 14 for POR. This resulted in a drop in 100% NPA service over the NPA service volume. Table 1 details the SV alerts at the time of the event. Figure 1 shows the drop in NPA service over the NPA service volume. ZLA was the selected source for both GEOs and therefore the type 6 message should have been received over both GEOs. AOR did not broadcast any T6 alerts and provided normal WAAS navigation messages throughout the POR event.

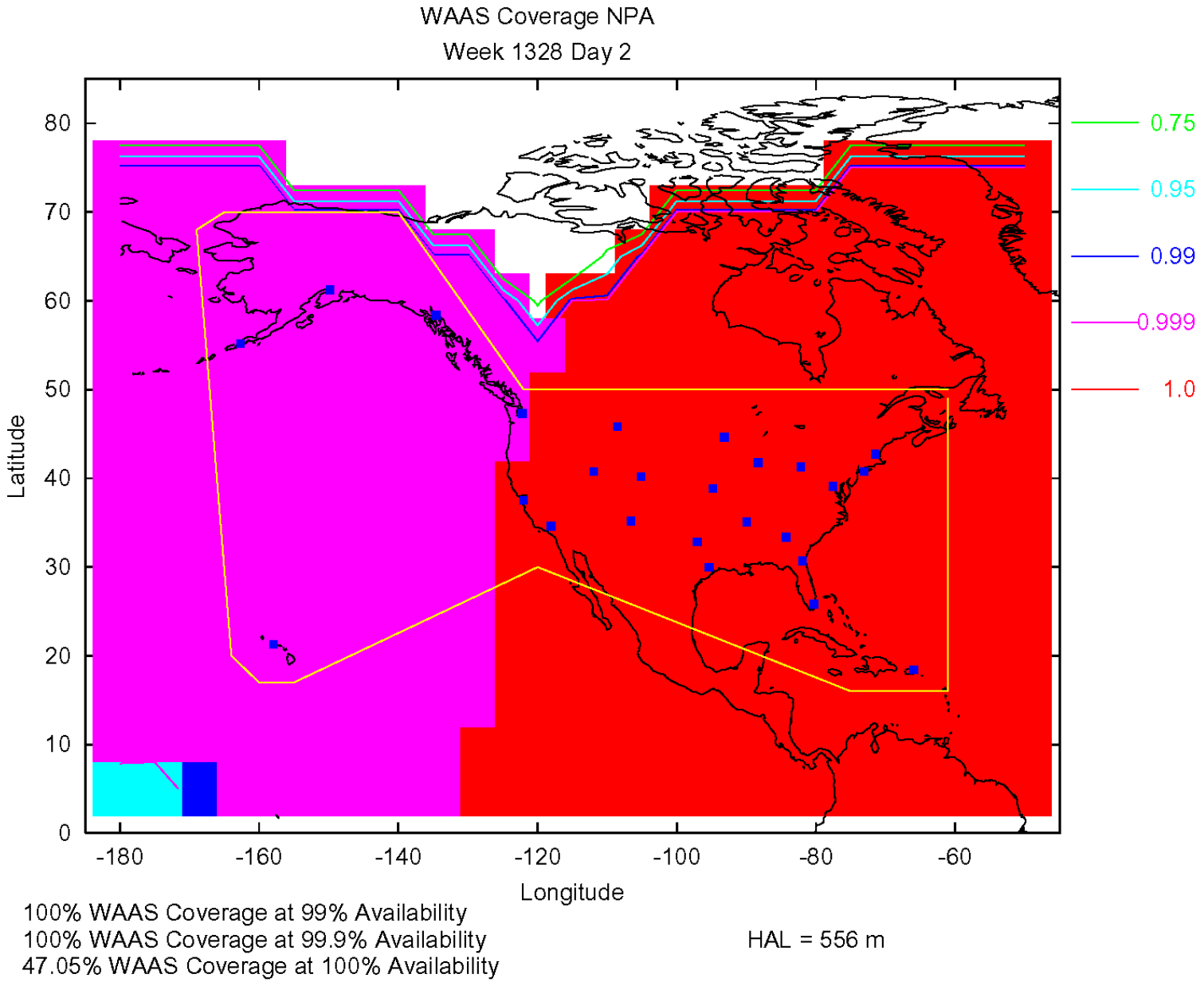
In Figure 1 the POR service area is shown to lose 100% NPA coverage. However, the AOR-W service area shows 100% NPA coverage. For this analysis, any location that is within the AOR-W service area will use the data stream from the AOR-W GEO. The rest of the service volume uses the POR data stream. Therefore, the AOR-W user did not experience the type 6 alarm and did not suffer a reduction in the NPA service.

At the time the type 6 alarm was issued there was a Time To Alarm (TTA) failure on the ZLA C&V for the POR satellite only. A type 62 message (TTA message) was transmitted at 253058, with the TTA failure condition occurring 6 seconds later. The next type 62 message was transmitted at 253072, and subsequently the TTA failure condition ended. A future release will remove the type 62 TTA processing which will stop this type of alarm sequence.

Table 1 POR T6 SV Alerts

PRN	Start Time	Stop Time	Previous UDRIE	Current UDREI	Alert	Message Type
1	**253065**	**253068**	**5**	**14**	**Yes**	**T6**
2	253065	253068	14	14	No	T6
3	253065	253068	14	14	No	T6
4	**253065**	**253068**	**11**	**14**	**Yes**	**T6**
5	253065	253068	14	14	No	T6
6	**253065**	**253068**	**9**	**14**	**Yes**	**T6**
7	**253065**	**253068**	**12**	**14**	**Yes**	**T6**
8	253065	253068	14	14	No	T6
9	253065	253068	14	14	No	T6
10	253065	253068	14	14	No	T6
11	**253065**	**253068**	**6**	**14**	**Yes**	**T6**
13	**253065**	**253068**	**11**	**14**	**Yes**	**T6**
14	**253065**	**253068**	**5**	**14**	**Yes**	**T6**
15	253065	253068	14	14	No	T6
16	**253065**	**253068**	**6**	**14**	**Yes**	**T6**
17	253065	253068	14	14	No	T6
18	253065	253068	14	14	No	T6
19	253065	253068	14	14	No	T6
20	**253065**	**253068**	**5**	**14**	**Yes**	**T6**
21	253065	253068	14	14	No	T6
22	**253065**	**253068**	**12**	**14**	**Yes**	**T6**
23	**253065**	**253068**	**6**	**14**	**Yes**	**T6**
24	**253065**	**253068**	**7**	**14**	**Yes**	**T6**
25	**253065**	**253068**	**5**	**14**	**Yes**	**T6**
26	253065	253068	14	14	No	T6
27	253065	253068	14	14	No	T6
28	253065	253068	14	14	No	T6
29	253065	253068	14	14	No	T6
30	**253065**	**253068**	**6**	**14**	**Yes**	**T6**
31	253065	253068	14	14	No	T6
122	**253065**	**253068**	**11**	**14**	**Yes**	**T6**
134	253065	253068	14	14	No	T6

Figure 1 NPA Coverage 6/21/2005



Conclusion:

As shown on the table above, the Type 6 alert changed all satellite's UDREi to 14 for POR due to a TTA failure. This alert resulted in the loss of 100% NPA service over the NPA service volume as shown in figure 1. All satellites returned to normal UDREI values within 18 seconds. 99% and 99.9% NPA service were unaffected over the NPA service volume.