WAAS Web Application Portal

Precision Approach (PA) Summary

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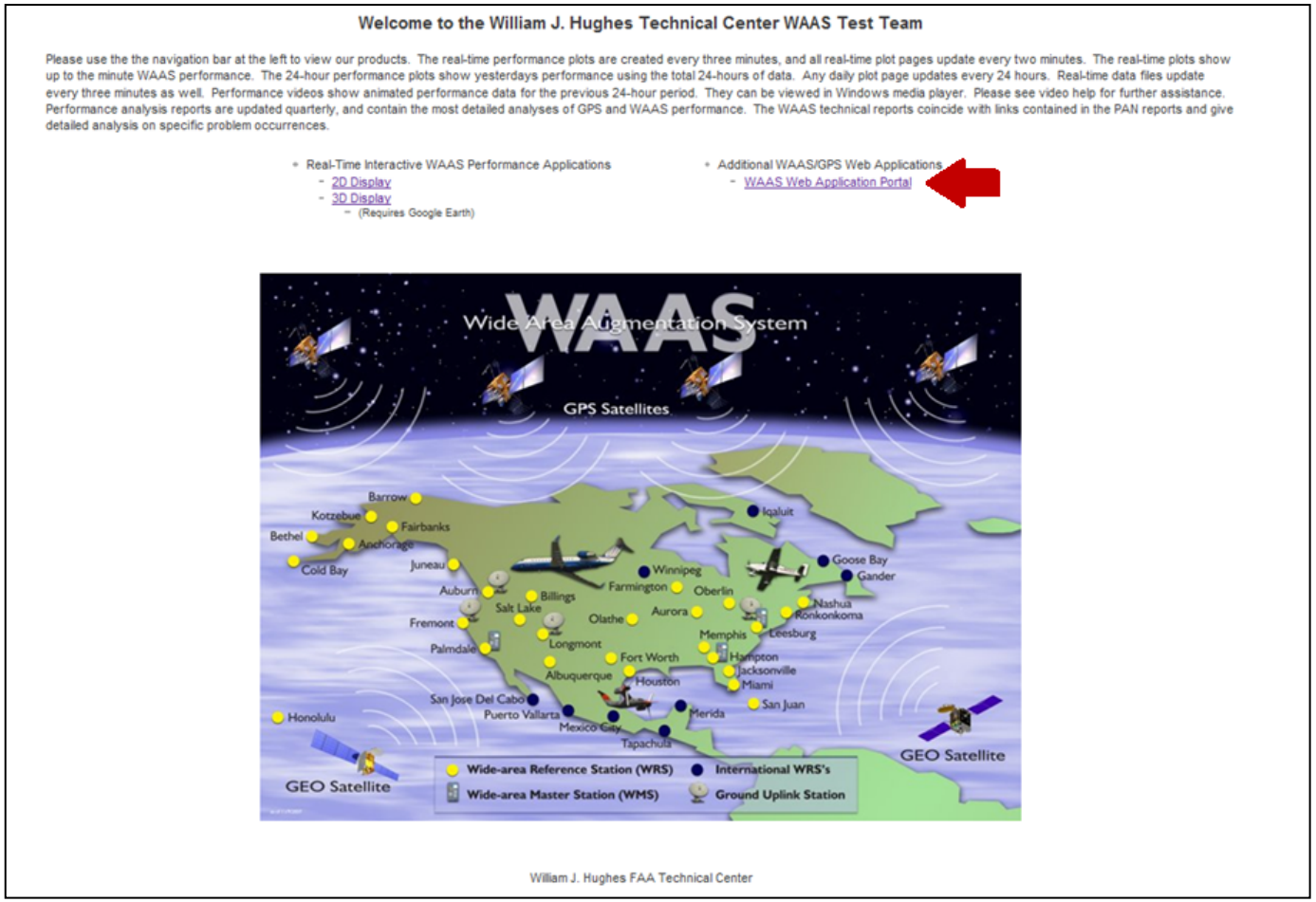
Overview of Precision Approach (PA) Summary

As part of the William J. Hughes Technical Center WAAS Test Team website (www.nstb.tc.faa.gov), the WAAS Web Application Portal allows you to view The Precision Approach (PA) Summary.

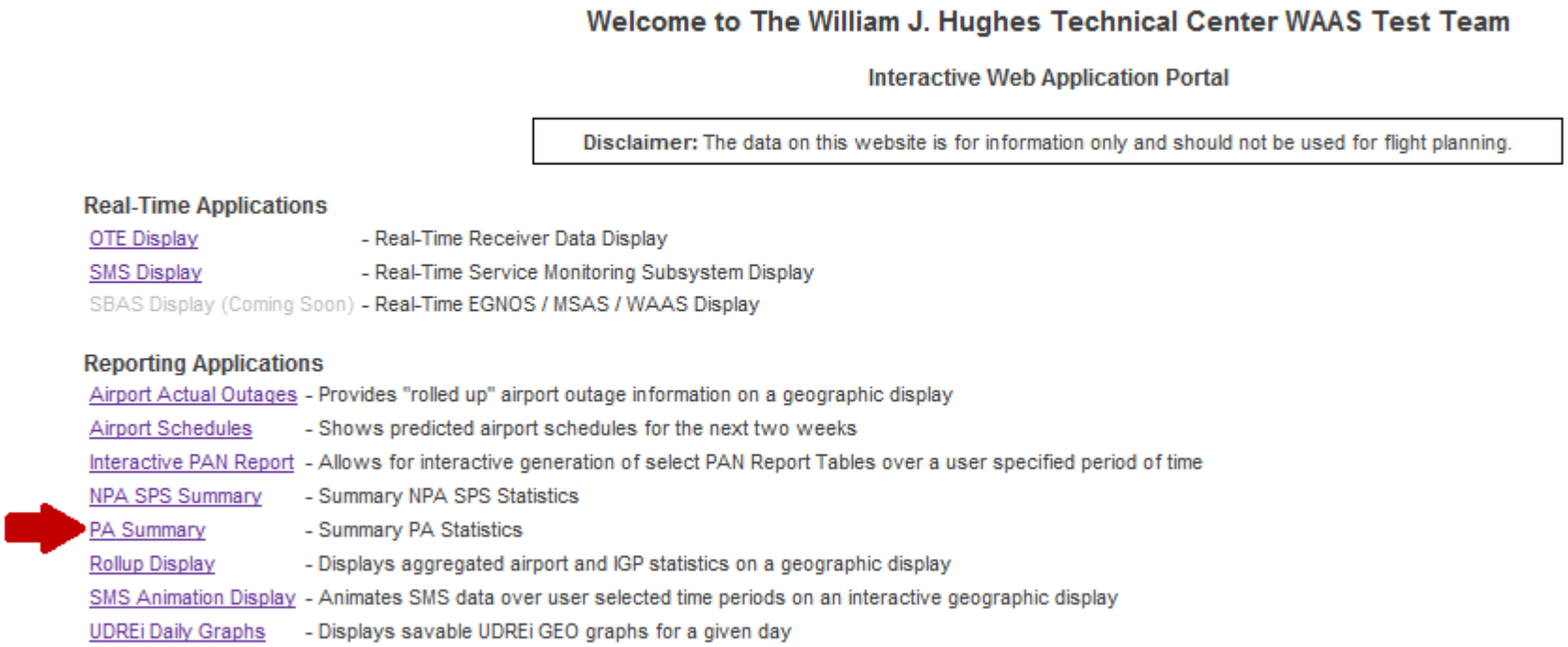
The PA Summary portion of this website allows you to:

- View all PA statistics for any dates you choose (up to 4 years in the past)
- View: position errors, LPV and LPV200, AvCon failures, missed Geo navigation messages, IGP alerts and GUS alerts, glitch events, SQM alert trips and jumps, satellite PA availability, ionospheric errors, data outages, the OEI network, PA position errors, UDREIs and the KP index

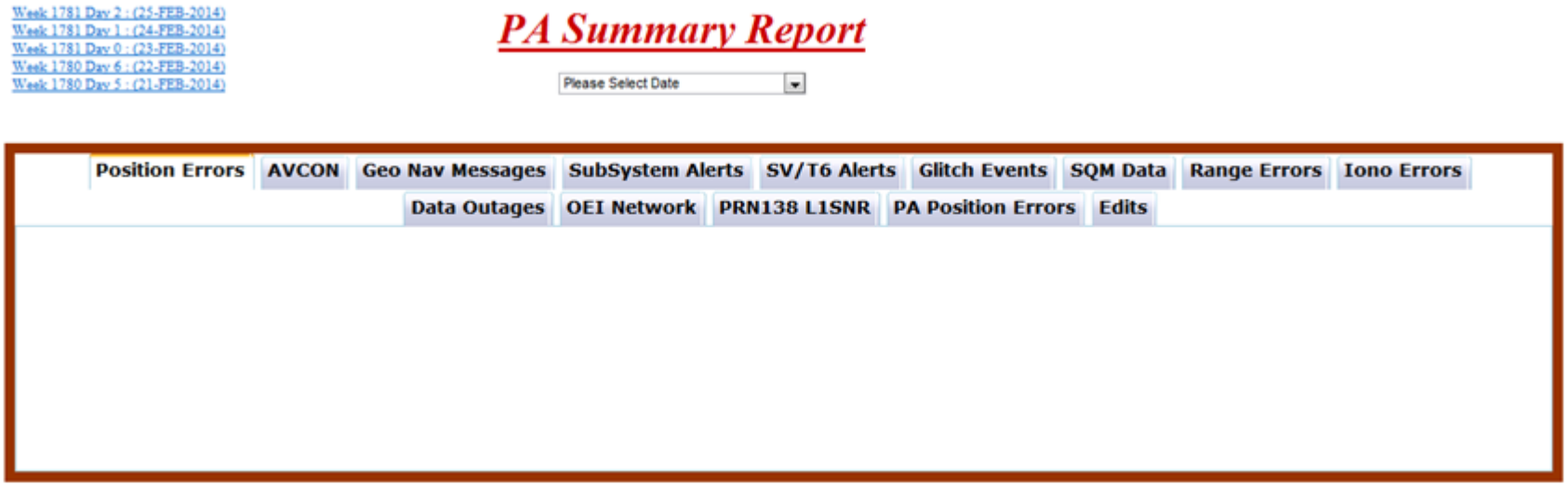
The following graphic shows you how to navigate the website. First, click on "WAAS Web Application Portal" (See red arrow below).



Once you click on “WAAS Web Application Portal”, you come to the screen below. To access the PA Summary, click on “PA Summary” (See red arrow below).

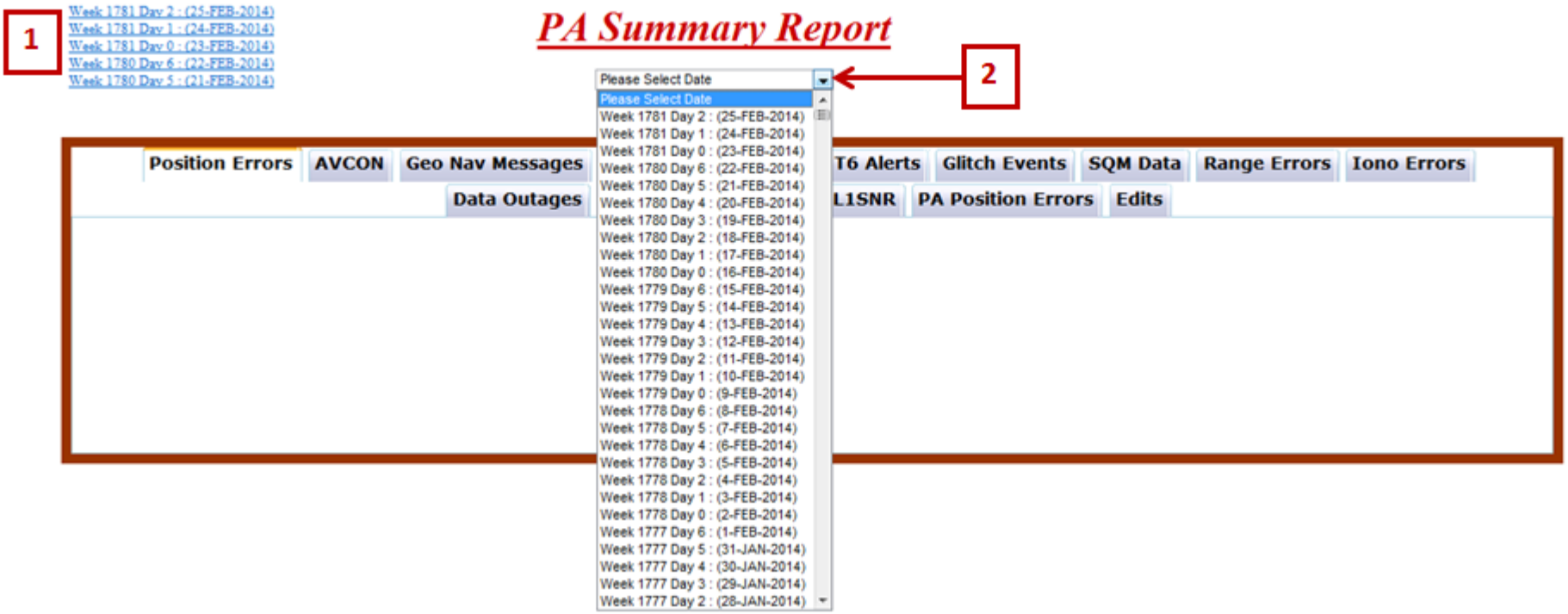


This is the view you see once you click on PA Summary within the WAAS Web Application Portal.

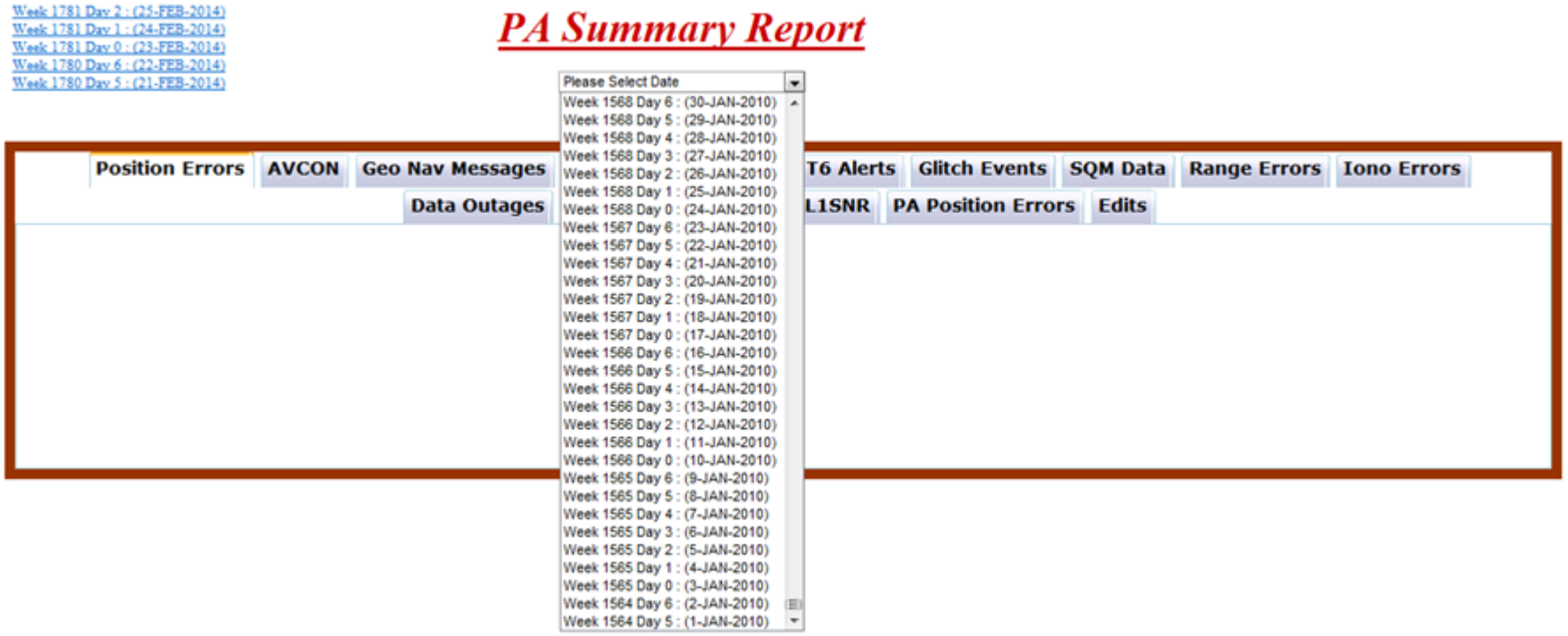


Dates

Notice we can view the last 5 days (See #1 below) or we can click on the down arrow next to “Please Select Date” to pick a different date (See #2 below). These dates show the number of weeks that have elapsed since the GSP epoch date of Sunday, January 6, 1980, which was week 0. Sunday is defined as the start of a week and is always day 0; Monday is day 1; Tuesday is 2 and so on.

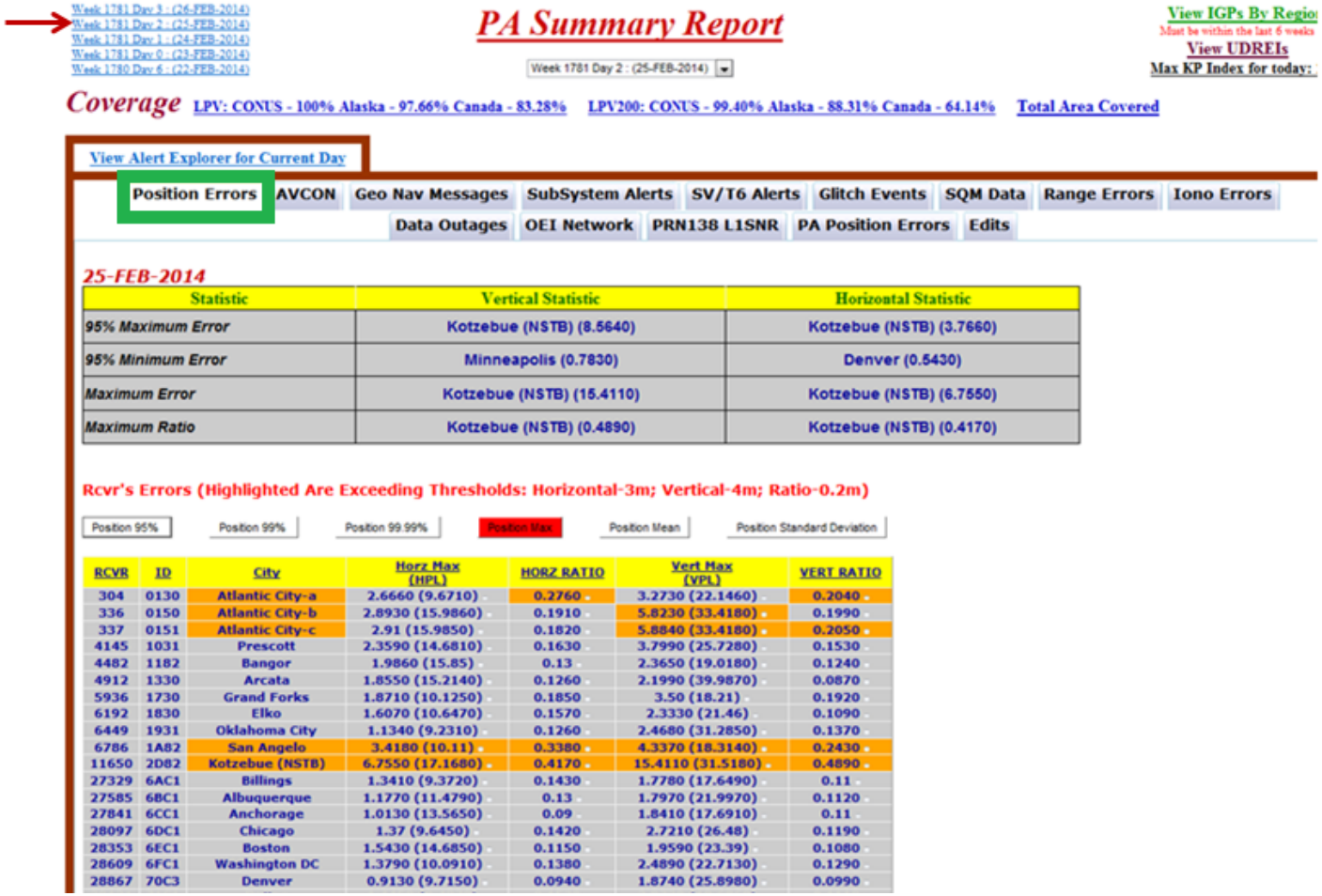


We are able to view the PA Summary Report as far back as Week 1564 Day 5 or January 1, 2010. This is set by the WAAS team and can be changed as needed. Please note: You must pick a date in order to populate the data fields.



Position Errors

Once you choose a date, the following screen will appear. In this case, we chose Week 1781 Day 2: (25-Feb-2014). This means it is from a Tuesday 1,781 weeks since the GPS epoch (See the red arrow below). Also, by default, we are in the Position Errors tab (See green box below). Position Errors show receiver specific errors. These are errors in with the position solution tool is in PA mode. PA mode is defined as all the corrections being processed regardless of protection level. The position solution tool is used to calculate the horizontal and vertical errors for each receiver location. National Satellite Test Bed (NSTB) and WAAS reference station receivers are included in the position errors tab. For the WAAS receivers, position errors are calculated for all three receivers at the site but only one of those receivers is shown.



Week 1781 Day 3 : (26-FEB-2014)
Week 1781 Day 2 : (25-FEB-2014)
Week 1781 Day 1 : (24-FEB-2014)
Week 1781 Day 0 : (23-FEB-2014)
Week 1780 Day 6 : (22-FEB-2014)

PA Summary Report

Week 1781 Day 2 : (25-FEB-2014)

View IGPs By Regio
Must be within the last 6 weeks
View UDREIs
Max KP Index for today:

Coverage LPV: CONUS - 100% Alaska - 97.66% Canada - 83.28% LPV200: CONUS - 99.40% Alaska - 88.31% Canada - 64.14% Total Area Covered

View Alert Explorer for Current Day

Position Errors | AVCON | Geo Nav Messages | SubSystem Alerts | SV/T6 Alerts | Glitch Events | SQM Data | Range Errors | Iono Errors
Data Outages | OEI Network | PRN138 L1SNR | PA Position Errors | Edits

25-FEB-2014

Statistic	Vertical Statistic	Horizontal Statistic
95% Maximum Error	Kotzebue (NSTB) (8.5640)	Kotzebue (NSTB) (3.7660)
95% Minimum Error	Minneapolis (0.7830)	Denver (0.5430)
Maximum Error	Kotzebue (NSTB) (15.4110)	Kotzebue (NSTB) (6.7550)
Maximum Ratio	Kotzebue (NSTB) (0.4890)	Kotzebue (NSTB) (0.4170)

Rcvr's Errors (Highlighted Are Exceeding Thresholds: Horizontal-3m; Vertical-4m; Ratio-0.2m)

Position 95% | Position 99% | Position 99.99% | Position Max | Position Mean | Position Standard Deviation

RCVR	ID	City	Horz Max (HPL)	HORZ RATIO	Vert Max (VPL)	VERT RATIO
304	0130	Atlantic City-a	2.6660 (9.6710)	0.2760	3.2730 (22.1460)	0.2040
336	0150	Atlantic City-b	2.8930 (15.9860)	0.1910	5.8230 (33.4180)	0.1990
337	0151	Atlantic City-c	2.91 (15.9850)	0.1820	5.8840 (33.4180)	0.2050
4145	1031	Prescott	2.3590 (14.6810)	0.1630	3.7990 (25.7280)	0.1530
4482	1182	Bangor	1.9860 (15.85)	0.13	2.3650 (19.0180)	0.1240
4912	1330	Arcata	1.8550 (15.2140)	0.1260	2.1990 (39.9870)	0.0870
5936	1730	Grand Forks	1.8710 (10.1250)	0.1850	3.50 (18.21)	0.1920
6192	1830	Elko	1.6070 (10.6470)	0.1570	2.3330 (21.46)	0.1090
6449	1931	Oklahoma City	1.1340 (9.2310)	0.1260	2.4680 (31.2850)	0.1370
6786	1A82	San Angelo	3.4180 (10.11)	0.3380	4.3370 (18.3140)	0.2430
11650	2D82	Kotzebue (NSTB)	6.7550 (17.1680)	0.4170	15.4110 (31.5180)	0.4890
27329	6AC1	Billings	1.3410 (9.3720)	0.1430	1.7780 (17.6490)	0.11
27585	6BC1	Albuquerque	1.1770 (11.4790)	0.13	1.7970 (21.9970)	0.1120
27841	6CC1	Anchorage	1.0130 (13.5650)	0.09	1.8410 (17.6910)	0.11
28097	6DC1	Chicago	1.37 (9.6450)	0.1420	2.7210 (26.48)	0.1190
28353	6EC1	Boston	1.5430 (14.6850)	0.1150	1.9590 (23.39)	0.1080
28609	6FC1	Washington DC	1.3790 (10.0910)	0.1380	2.4890 (22.7130)	0.1290
28867	70C3	Denver	0.9130 (9.7150)	0.0940	1.8740 (25.8980)	0.0990

Notice the chosen date shows up in three areas (See red boxes below).

As stated earlier, position errors show receiver specific errors. In the first box, we are seeing the Statistic followed by the Vertical and Horizontal Statistic. These errors are given in meters.

The Maximum Ratio row shows the largest ratio of the vertical or horizontal error to the vertical or horizontal protection level.

25-FEB-2014

Statistic	Vertical Statistic	Horizontal Statistic
95% Maximum Error	Kotzebue (NSTB) (8.5640)	Kotzebue (NSTB) (3.7660)
95% Minimum Error	Minneapolis (0.7830)	Denver (0.5430)
Maximum Error	Kotzebue (NSTB) (15.4110)	Kotzebue (NSTB) (6.7550)
Maximum Ratio	Kotzebue (NSTB) (0.4890)	Kotzebue (NSTB) (0.4170)

The second box in the Position Errors tab shows us all of the receivers including the receiver number, ID, Location, Horizontal Max (HPL), Horizontal Ratio (Horz Ratio), Vertical Max (VPL) and Vertical Ratio (Vert Ratio). The orange highlighted boxes are exceeding thresholds (See red arrow below).The receiver number (RCVR) is a number used to uniquely identify each receiver. The ID is the hex representation of the receiver number.

The Horz or Vert Max (HPL or VPL) column shows the horizontal or vertical position error and the HPL or VPL at that time in parentheses. The Horz or Vert Ratio column shows the ratio of the position error to the protection level. By default the maximum error and ratio for the day are shown. However, you can see the 95%, 99%, 99.99%, mean, or standard deviation by clicking the appropriate button.

Rcvr's Errors (Highlighted Are Exceeding Thresholds: Horizontal-3m; Vertical-4m; Ratio-0.2m)

Position 95% | Position 99% | Position 99.99% | Position Max | Position Mean | Position Standard Deviation

RCVR	ID	City	Horz Max (HPL)	HORZ RATIO	Vert Max (VPL)	VERT RATIO
304	0130	Atlantic City-a	2.6660 (9.6710)	0.2760	3.2730 (22.1460)	0.2040
336	0150	Atlantic City-b	2.8930 (15.9860)	0.1910	5.8230 (33.4180)	0.1990
337	0151	Atlantic City-c	2.91 (15.9850)	0.1820	5.8840 (33.4180)	0.2050
4145	1031	Prescott	2.3590 (14.6810)	0.1630	3.7990 (25.7280)	0.1530
4482	1182	Bangor	1.9860 (15.85)	0.13	2.3650 (19.0180)	0.1240
4912	1330	Arcata	1.8550 (15.2140)	0.1260	2.1990 (39.9870)	0.0870
5936	1730	Grand Forks	1.8710 (10.1250)	0.1850	3.50 (18.21)	0.1920
6192	1830	Elko	1.6070 (10.6470)	0.1570	2.3330 (21.46)	0.1090
6449	1931	Oklahoma City	1.1340 (9.2310)	0.1260	2.4680 (31.2850)	0.1370
6786	1A82	San Angelo	3.4180 (10.11)	0.3380	4.3370 (18.3140)	0.2430
11650	2D82	Kotzebue (NSTB)	6.7550 (17.1680)	0.4170	15.4110 (31.5180)	0.4890
27329	6AC1	Billings	1.3410 (9.3720)	0.1430	1.7780 (17.6490)	0.11
27585	6BC1	Albuquerque	1.1770 (11.4790)	0.13	1.7970 (21.9970)	0.1120
27841	6CC1	Anchorage	1.0130 (13.5650)	0.09	1.8410 (17.6910)	0.11
28097	6DC1	Chicago	1.37 (9.6450)	0.1420	2.7210 (26.48)	0.1190
28353	6EC1	Boston	1.5430 (14.6850)	0.1150	1.9590 (23.39)	0.1080
28609	6FC1	Washington DC	1.3790 (10.0910)	0.1380	2.4890 (22.7130)	0.1290
28867	70C3	Denver	0.9130 (9.7150)	0.0940	1.8740 (25.8980)	0.0990
29121	71C1	Dallas	1.4450 (9.4970)	0.1520	2.0720 (19.6060)	0.1110
29633	73C1	Houston	1.4810 (9.3220)	0.1680	3.0120 (20.2450)	0.1580
30147	75C3	Jacksonville	1.47 (12.9330)	0.14	2.0450 (17.7220)	0.1250
30401	76C1	Kansas City	1.2120 (9.4610)	0.13	1.78 (26.0410)	0.0960
30658	77C2	Los Angeles	0.9830 (14.1240)	0.0830	1.7790 (25.0260)	0.0770
30913	78C1	Salt Lake City	1.2480 (9.7150)	0.1280	2.0960 (18.4080)	0.1140
31169	79C1	Miami	1.7080 (16.0420)	0.1140	2.8060 (20.2430)	0.1390
31425	7AC1	Memphis	1.4990 (9.6390)	0.1550	2.0380 (24.14)	0.1140
31682	7BC2	Minneapolis	1.1690 (14.8180)	0.1160	2.6140 (15.9370)	0.1640
31938	7CC2	New York	1.5210 (10.0990)	0.1530	1.8440 (18.8930)	0.0980
32193	7DC1	Oakland	1.9120 (13.2290)	0.1450	2.2790 (39.2240)	0.1050
32449	7EC1	Cleveland	1.2930 (9.7290)	0.1330	2.9270 (25.0440)	0.1190
32705	7FC1	Seattle	1.5290 (12.0940)	0.13	2.6670 (22.8940)	0.1540
32963	80C3	San Juan	2.5540 (32.39)	0.0790	3.46 (37.8560)	0.0910
33217	81C1	Atlanta	1.2950 (9.8910)	0.1390	2.1420 (17.5590)	0.1660
33473	82C1	Juneau	1.6270 (11.4540)	0.1420	2.0760 (17.6970)	0.1170
33729	83C1	Cold Bay	1.3950 (20.4240)	0.0680	1.8120 (37.1730)	0.0670
33985	84C1	Fairbanks	1.1340 (11.4740)	0.0990	1.8370 (20.2040)	0.1140
34499	86C3	Kotzebue	1.1210 (12.9390)	0.0940	2.0650 (31.9190)	0.0920
34753	87C1	Barrow	1.3420 (13.1160)	0.1020	2.8170 (27.7140)	0.1180
35009	88C1	Merida	1.4430 (12.6740)	0.1140	2.71 (26.0020)	0.1280
35265	89C1	Mexico City	1.7820 (15.4290)	0.1160	3.3260 (46.0510)	0.1390
35521	8AC1	Puerto Vallarta	1.8470 (19.5890)	0.1020	3.5170 (46.1310)	0.1410
35777	8BC1	Gander	1.2940 (21.9470)	0.0870	2.2060 (35.3330)	0.0950
36033	8CC1	Goose Bay	1.2120 (19.3920)	0.0930	3.0390 (34.0530)	0.09
36289	8DC1	Winnipeg	1.2920 (14.1220)	0.1310	1.7660 (19.0870)	0.10
36545	8EC1	Tapachula	2.5420 (36.76)	0.0690	4.4080 (38.43)	0.13
36801	8FC1	San Jose Del Cabo	1.6270 (14.2750)	0.1140	3.5050 (38.8650)	0.1030
37057	90C1	Iqaluit	3.9850 (38.6890)	0.1050	6.0140 (49.0730)	0.1260

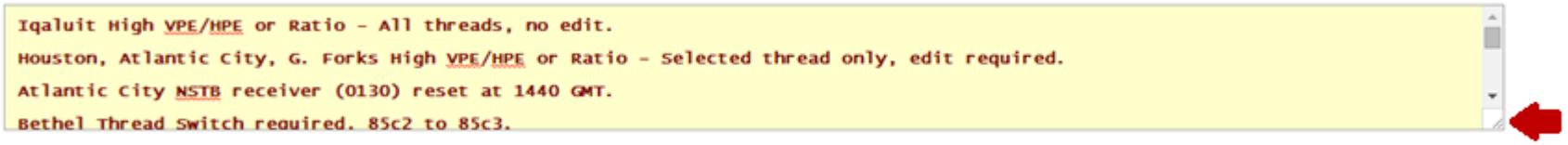
If you click on the “View High Error/Ratio Times” box at the bottom of the screen, the data for the Times of High Errors/Ratios (GPS TOW (GMT Time)) will appear as a blue box. You can also hide this box again by clicking on the “Hide High Error/Ratio Times” box. Notice the box changes back to the “View High Error/Ratio Times” box (See arrow below).

Times of High Errors/Ratios (GPS TOW (GMT Time))

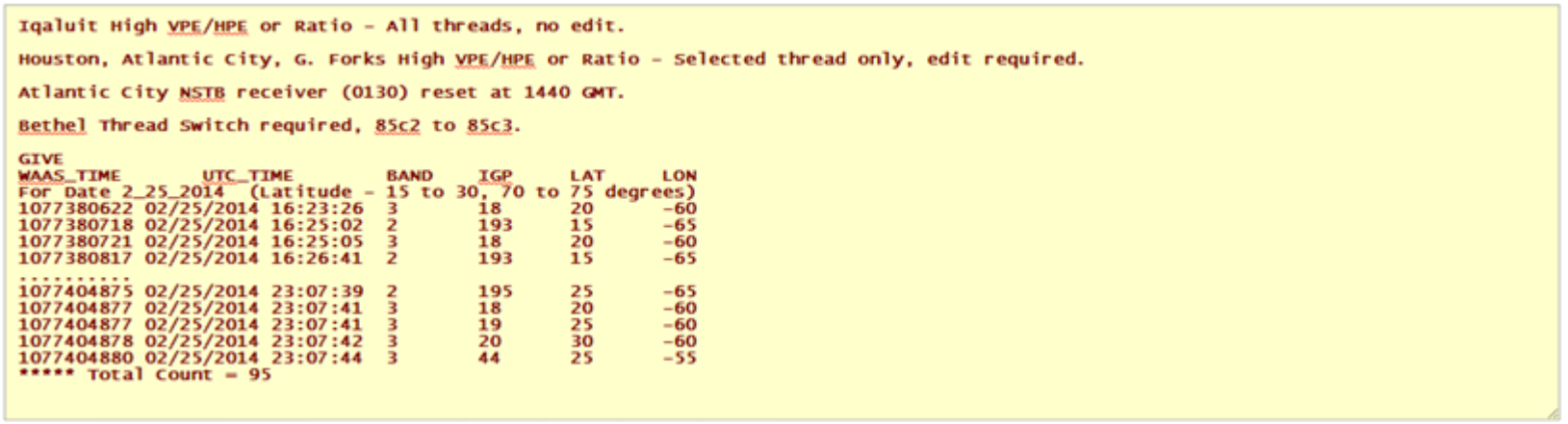
City	Start_Time	End_Time	Error/Ratio
Atlantic City-a	183671 (3:00:55)	186080 (3:41:04)	Ratio
Atlantic City-a	186692 (3:51:16)	187704 (4:08:08)	Ratio
Atlantic City-a	208219 (9:50:03)	208266 (9:50:50)	Ratio
Atlantic City-a	215392 (11:49:36)	216667 (12:10:51)	Ratio
Atlantic City-a	219042 (12:50:26)	219138 (12:52:02)	Ratio
Atlantic City-a	219857 (13:04:01)	219858 (13:04:02)	Ratio
Atlantic City-b	176526 (1:01:50)	176562 (1:02:26)	Vert
Atlantic City-b	177191 (1:12:55)	177250 (1:13:54)	Vert
Atlantic City-b	253008 (22:16:32)	253021 (22:16:45)	Vert
Atlantic City-c	175480 (0:44:24)	175482 (0:44:26)	Ratio
Atlantic City-c	177053 (1:10:37)	177528 (1:18:32)	Vert
Atlantic City-c	253009 (22:16:33)	253021 (22:16:45)	Vert
Kotzebue (NSTB)	173735 (0:15:19)	175020 (0:36:44)	Ratio
Kotzebue (NSTB)	175087 (0:37:51)	179592 (1:52:56)	Vert
Kotzebue (NSTB)	175087 (0:37:51)	179592 (1:52:56)	Ratio
Kotzebue (NSTB)	180537 (2:08:41)	182958 (2:49:02)	Vert
Kotzebue (NSTB)	180537 (2:08:41)	182958 (2:49:02)	Ratio
Kotzebue (NSTB)	183947 (3:05:31)	185346 (3:28:50)	Ratio
Kotzebue (NSTB)	187392 (4:02:56)	188408 (4:19:52)	Vert
Kotzebue (NSTB)	190547 (4:55:31)	193195 (5:39:39)	Vert
Kotzebue (NSTB)	200562 (7:42:26)	200692 (7:44:36)	Vert
Kotzebue (NSTB)	200562 (7:42:26)	200692 (7:44:36)	Ratio
Kotzebue (NSTB)	205348 (9:02:12)	211500 (10:44:44)	Ratio
Kotzebue (NSTB)	205348 (9:02:12)	211860 (10:50:44)	Vert
Kotzebue (NSTB)	218768 (12:45:52)	219238 (12:53:42)	Ratio
Kotzebue (NSTB)	218768 (12:45:52)	219238 (12:53:42)	Horz
Kotzebue (NSTB)	218768 (12:45:52)	219238 (12:53:42)	Vert
Kotzebue (NSTB)	227852 (15:17:16)	228889 (15:34:33)	Vert
Kotzebue (NSTB)	228947 (15:35:31)	233935 (16:58:39)	Vert
Kotzebue (NSTB)	228947 (15:35:31)	233724 (16:55:08)	Ratio
Kotzebue (NSTB)	237183 (17:52:47)	239144 (18:25:28)	Vert
Kotzebue (NSTB)	237183 (17:52:47)	239144 (18:25:28)	Ratio
Kotzebue (NSTB)	240492 (18:47:56)	242797 (19:26:21)	Ratio
Kotzebue (NSTB)	240492 (18:47:56)	242797 (19:26:21)	Vert
Kotzebue (NSTB)	240492 (18:47:56)	242797 (19:26:21)	Horz
San Angelo	176051 (0:53:55)	176365 (0:59:09)	Ratio
San Angelo	196445 (6:33:49)	197773 (6:55:57)	Ratio
San Angelo	199628 (7:26:52)	201499 (7:58:03)	Ratio
San Angelo	208628 (9:56:52)	209600 (10:13:04)	Horz
San Angelo	209761 (10:15:45)	210450 (10:27:14)	Ratio
San Angelo	209761 (10:15:45)	210261 (10:24:05)	Horz
San Angelo	218310 (12:38:14)	219236 (12:53:40)	Ratio
San Angelo	218310 (12:38:14)	219236 (12:53:40)	Vert
San Angelo	220417 (13:13:21)	220549 (13:15:33)	Ratio
San Angelo	229063 (15:37:27)	230552 (16:02:16)	Ratio
Iqaluit	172963 (0:02:27)	173899 (0:18:03)	Vert
Iqaluit	247606 (20:46:30)	250327 (21:31:51)	Horz
Tapachula	176047 (0:53:51)	176597 (1:03:01)	Vert
Tapachula	250505 (21:34:49)	251361 (21:49:05)	Vert

Notes regarding WAAS performance for each day are located in the yellow box at the bottom of the screen. To see all of this information, you must use the scroll bar to the right of the yellow box (if it is available) or click, hold and drag the lower right corner of the box to resize (See red arrow below).

This information box is shown in each tab of the PA Summary web page.

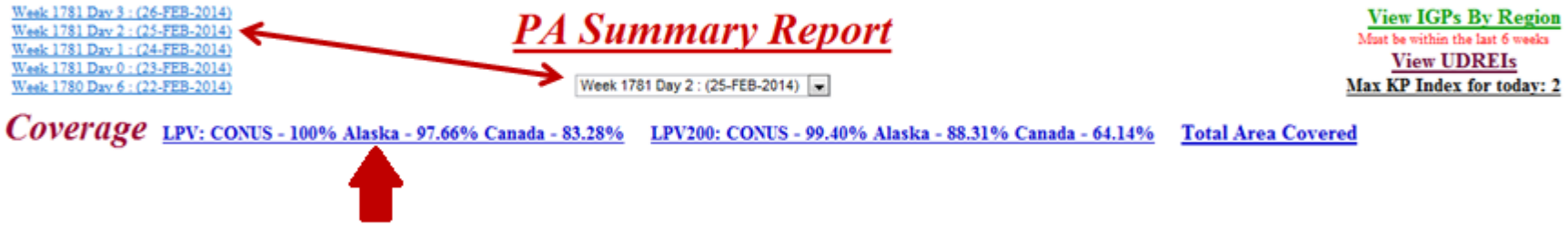


Below is the same box after we resized it using the click, hold and drag method. Notice, the scroll bar disappeared once all the information was visible.



LPV Coverage

Next, we will look at LPV coverage. To see the LPV coverage, click on the LPV link to view the actual map for this day (See thick, red arrow below).

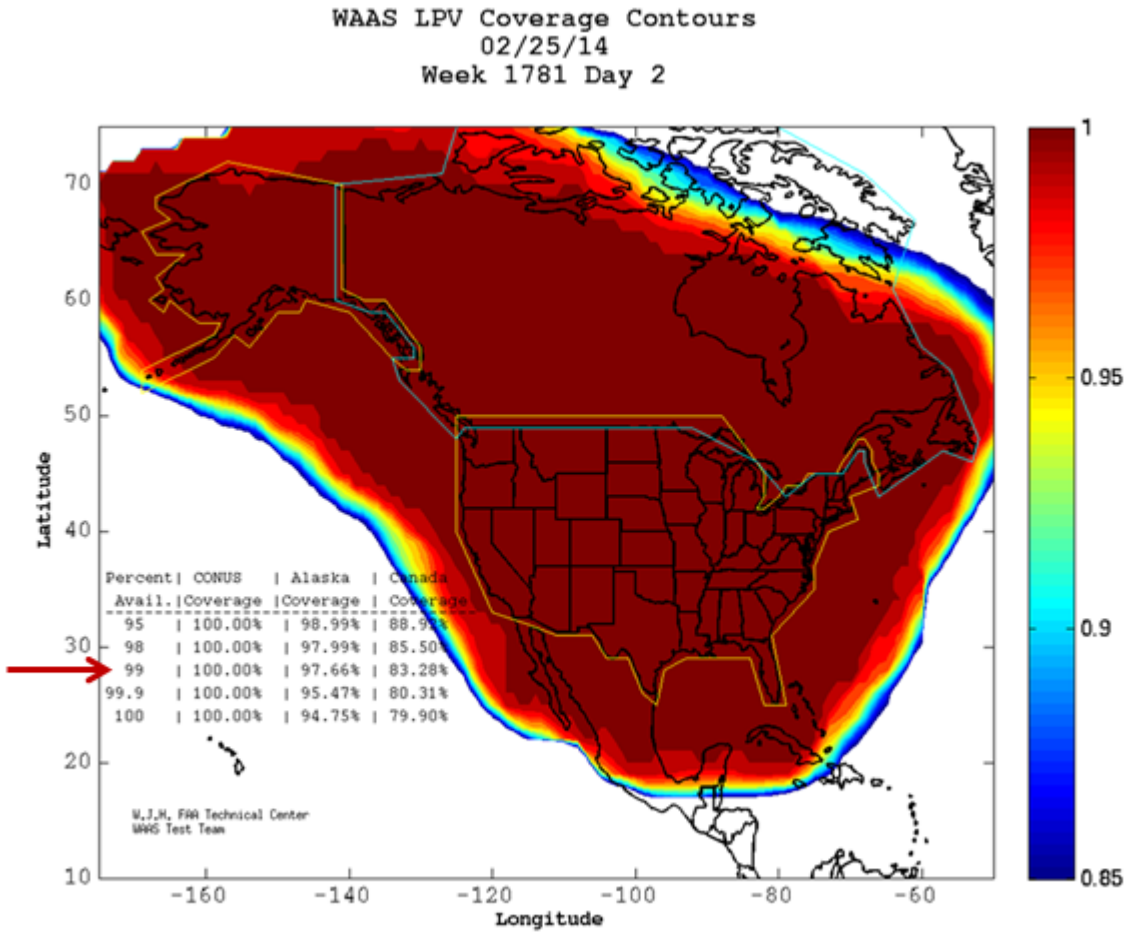


When you click on LPV link, the LPV map will look similar to this map below. LPV Coverage Areas are divided into the three regions:

- Alaska – outlined by the yellow line
- The Contiguous United States (CONUS) – also outlined in yellow
- Canada – outlined in blue

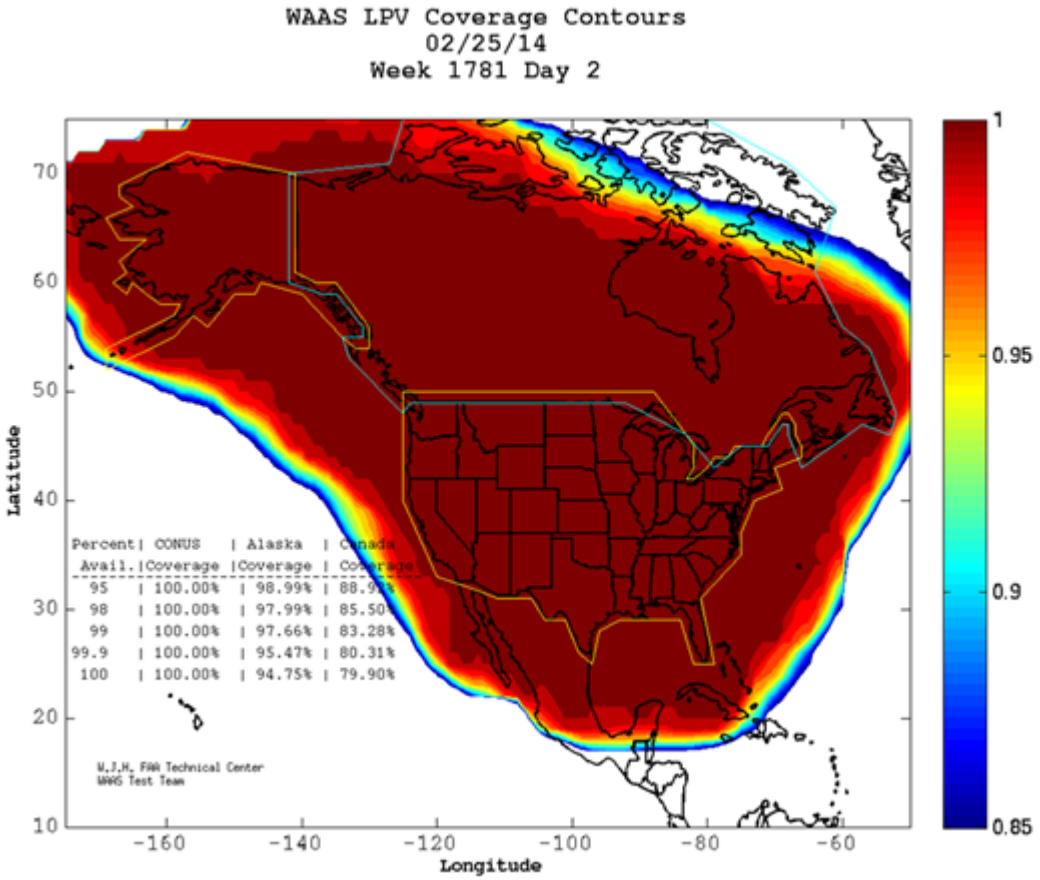
The LPV coverage for North America is divided into percentage by region. The HPL and VPL is calculated at a 1 degree grid spacing to determine if WAAS LPV service is available at each of these grid points. Adding up the availability of each grid point over a 24 hour period in a region determines the availability of WAAS LPV service in that region.

In the table within the diagram, notice the third line. This has the same information as the information in the link you clicked. WAAS LPV was available 99% of the time in 100% of the area covered in CONUS, in 97.66% of the area covered in Alaska, and in 83.28% of the area covered in Canada (See red arrow below).



The LPV Color Scale

The color scale shows the percent of WAAS LPV Coverage.



The brown end of the spectrum indicates high WAAS LPV Coverage, 1 = 100% Coverage

The blue color shows a much lower WAAS LPV coverage. The bottom of the scale is showing 0.85, or 85% Coverage The white area in the plot indicates WAAS LPV Coverage of <85%.

LPV 200 Coverage

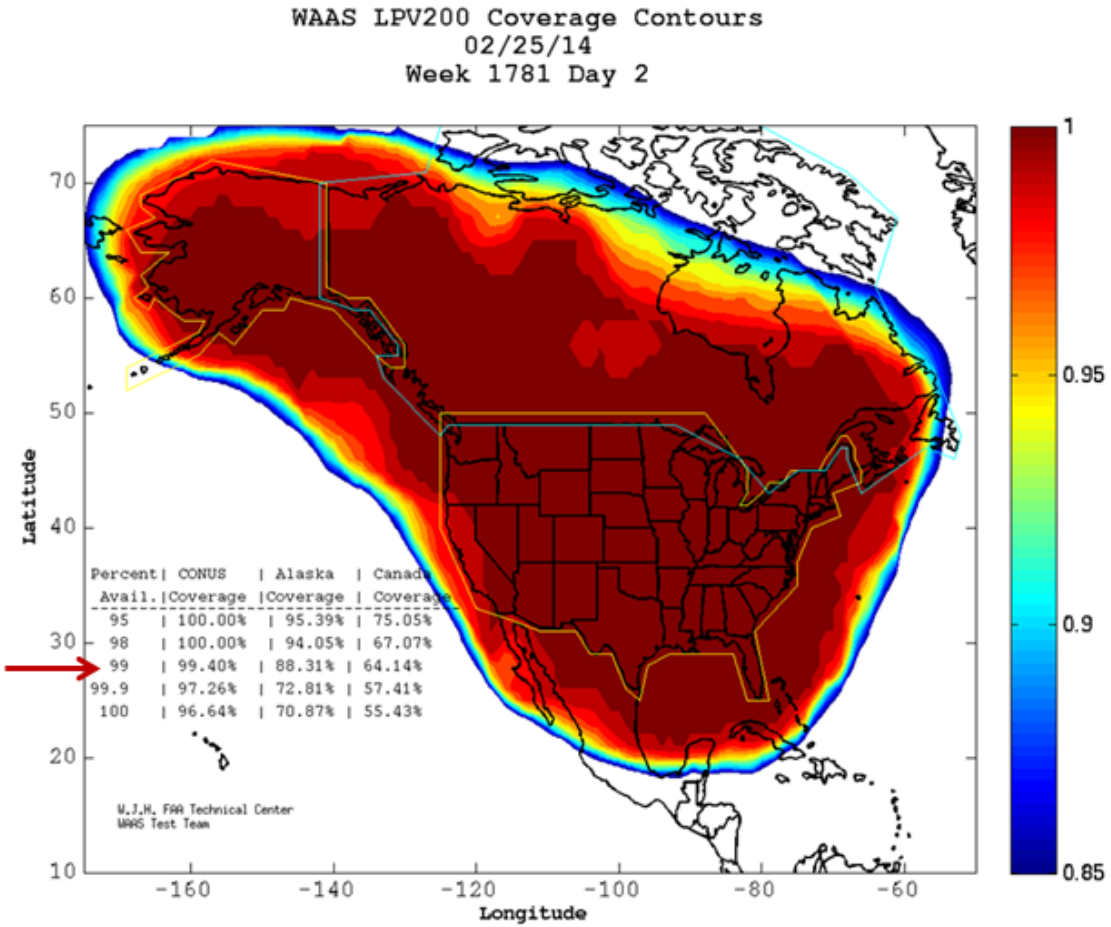
To see the LPV200 coverage, click on the link to view the map for this day (See thick red arrow below).

When you click on LPV200 link, the map LPV200 map will look similar to this map below. LPV 200 Coverage Areas are divided into three regions:

- Alaska – outlined by the yellow line
- The Contiguous United States (CONUS) – also outlined in yellow
- Canada – outlined in blue

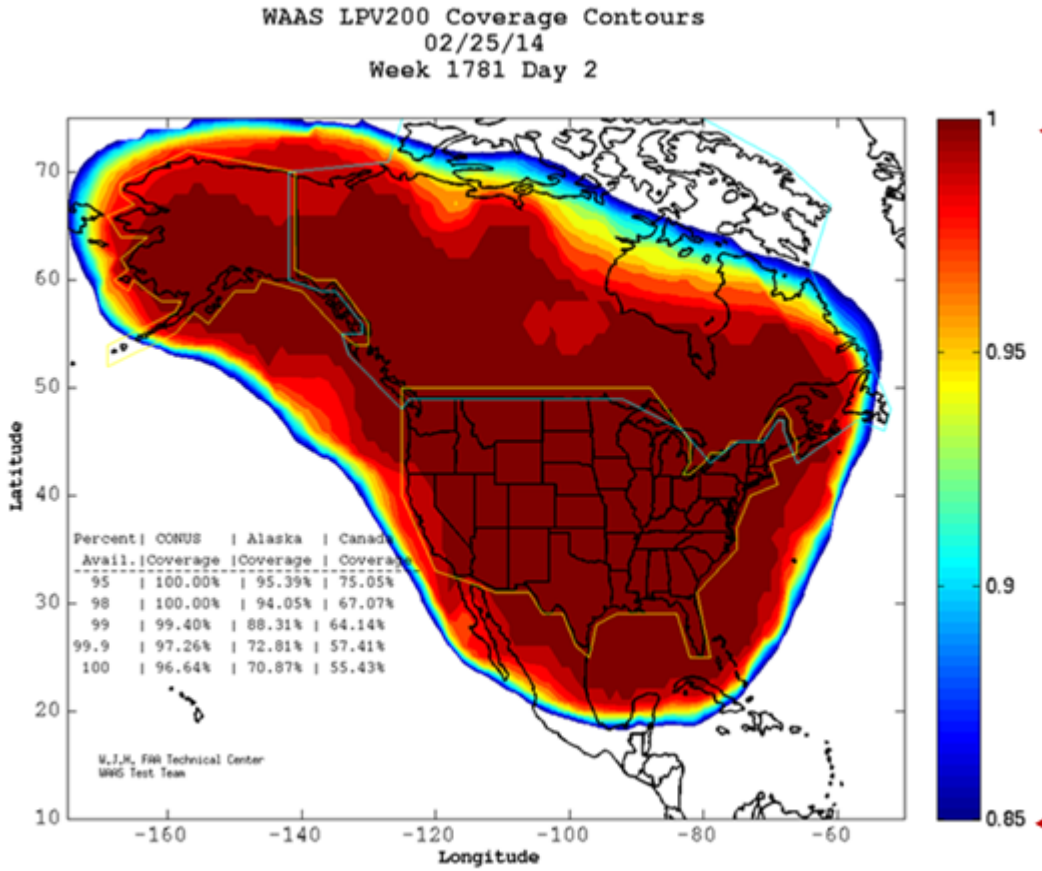
The LPV 200 coverage for North America is divided into percentage by region. The HPL and VPL is calculated at a 1 degree grid spacing to determine if WAAS LPV 200 service is available at each of these grid points. Adding up the availability of each grid point over a 24 hour period in a region determines the availability of WAAS LPV 200 service in that region.

In the table within the diagram, notice the third line. This has the same information as the information in the link you clicked. WAAS LPV was available 99% of the time in 99.40% of the area covered in CONUS, in 88.31% of the area covered in Alaska and in 64.14% of the area covered in Canada (See red arrow below).



The LPV200 Color Scale

The color scale shows the percent of WAAS LPV200 Coverage.

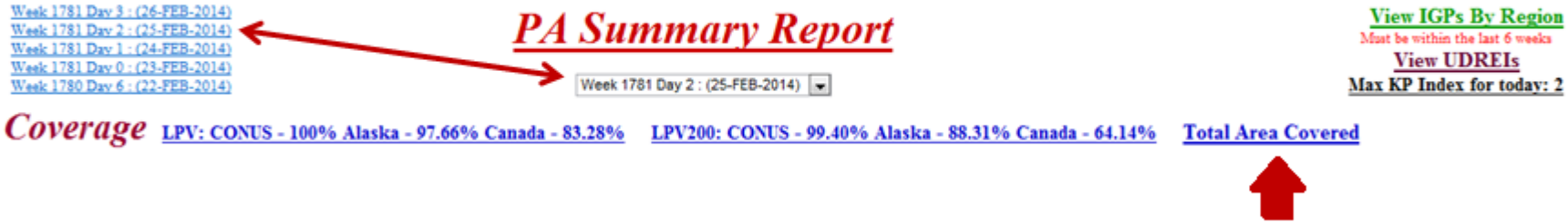


The brown end of the spectrum indicates high WAAS LPV200 Coverage, 1 = 100% Coverage

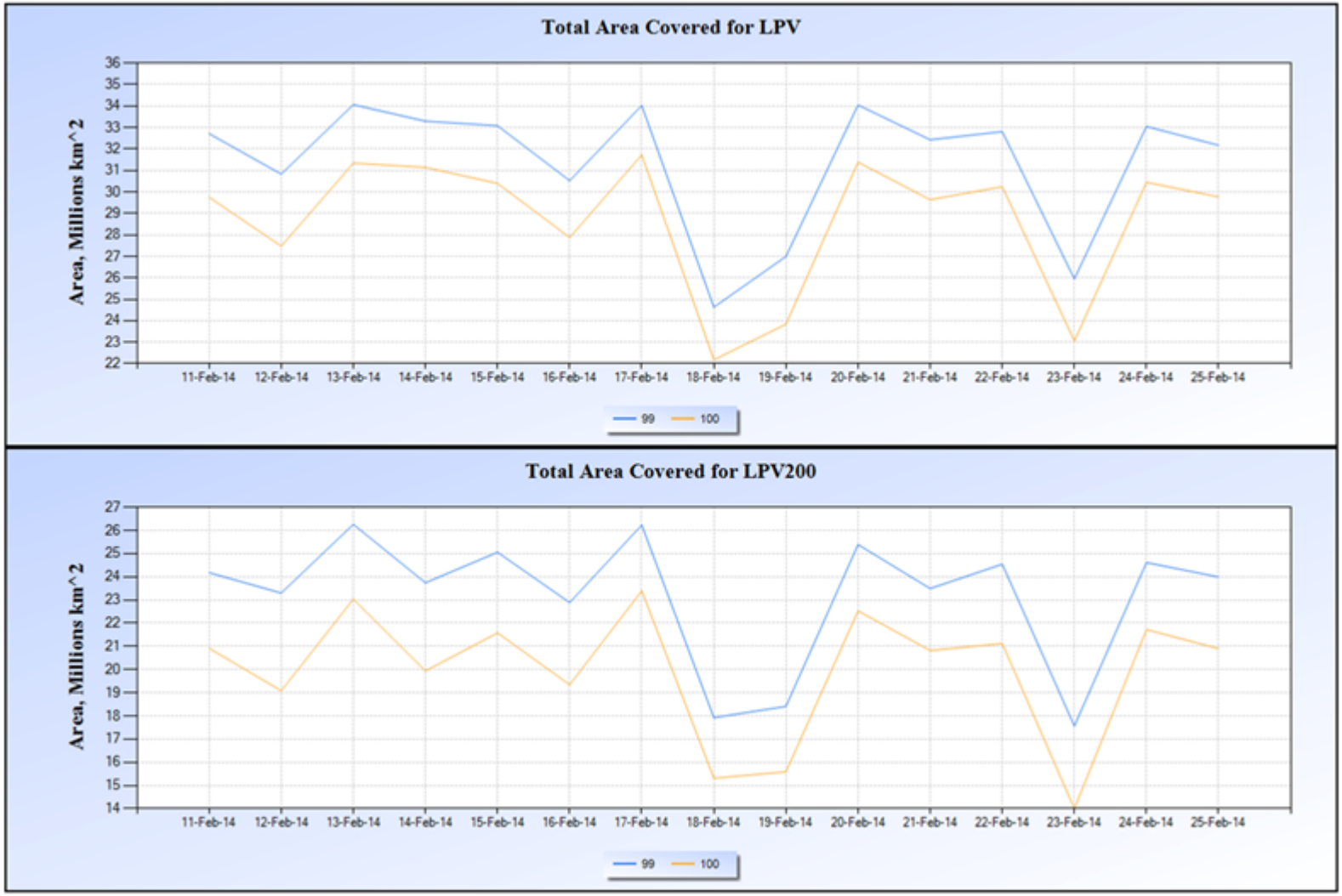
The blue color shows a much lower WAAS LPV200 coverage. The bottom of the scale is showing 0.85, or 85% Coverage The white area in the plot indicates WAAS LPV Coverage of <85%.

Total Area Covered

To see the Total Area Covered over a few days, click on Total Area Covered (See thick, red arrow below).

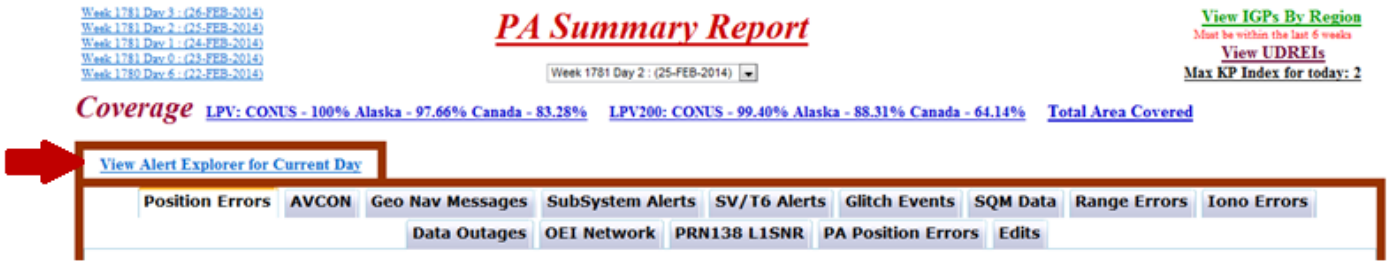


Total Area Covered shows the Total Area covered for LPV and LPV 200. The total area covered is shown in square kilometers and includes the CONUS, Alaska, and Canada regions. The blue line indicates the number of square kilometers covered with 99% availability and the yellow line shows the number of square kilometers covered with 100% availability.

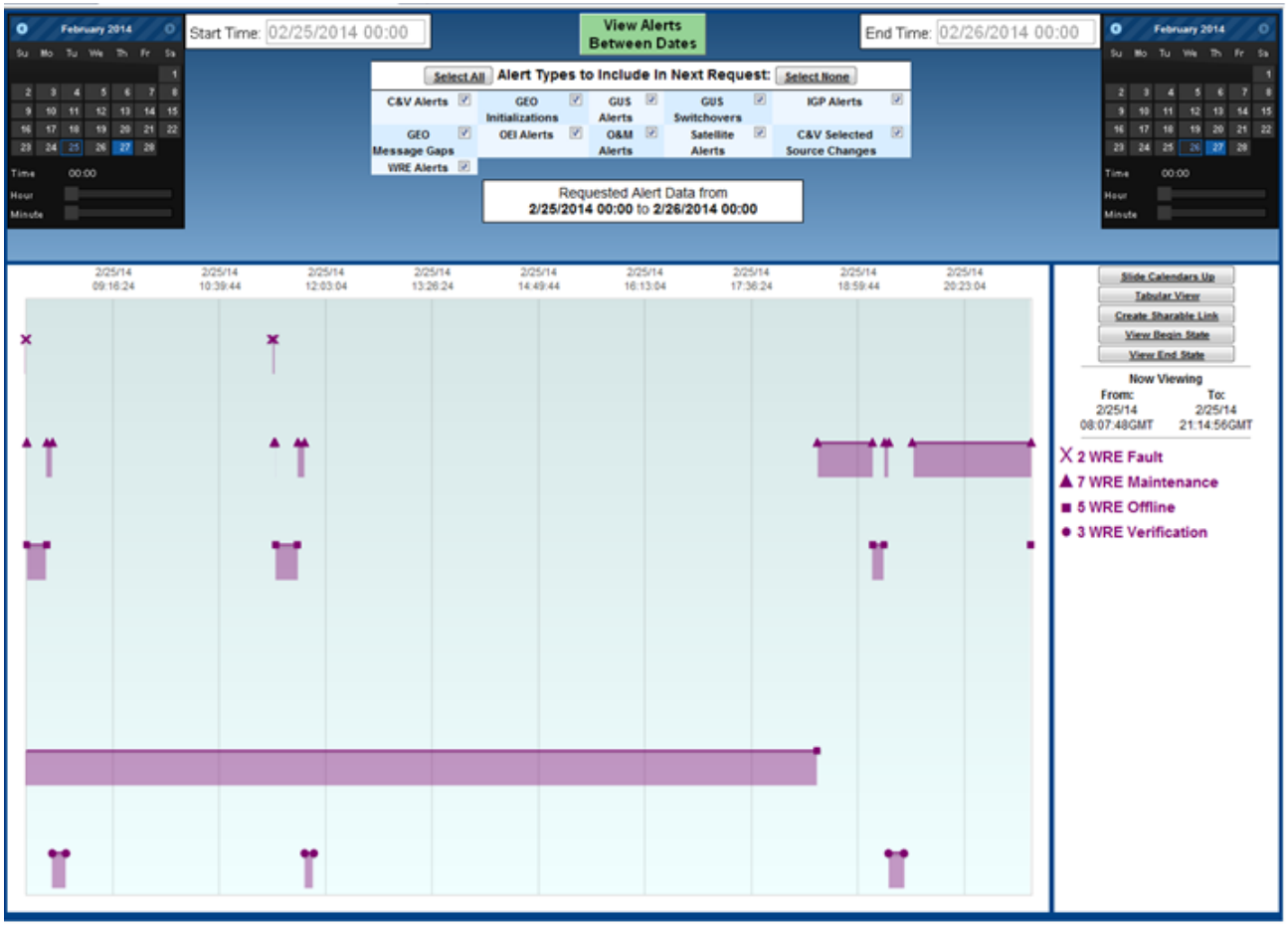


Alert Explorer

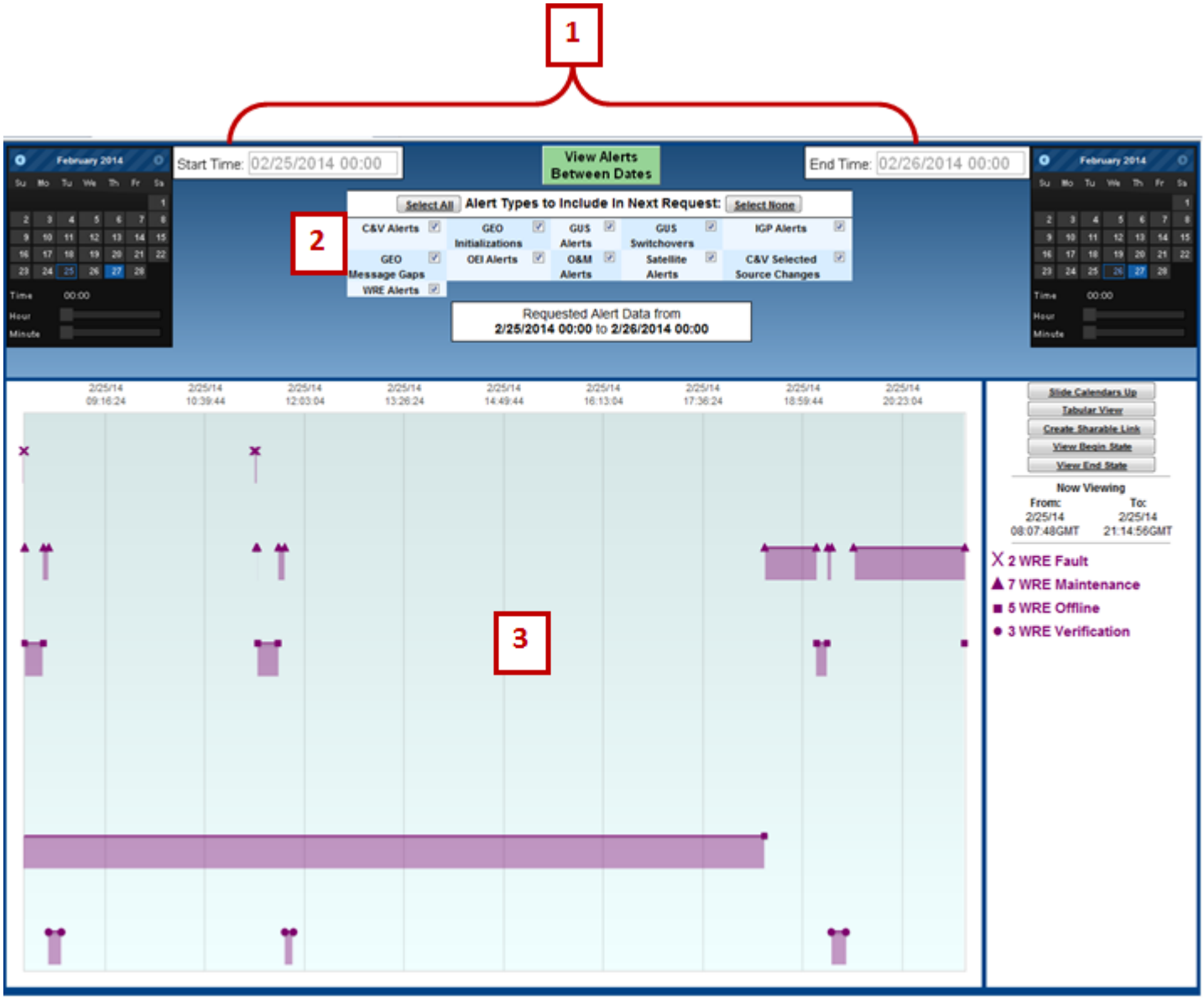
Click on View Alert Explorer for Current Day (See red arrow below).



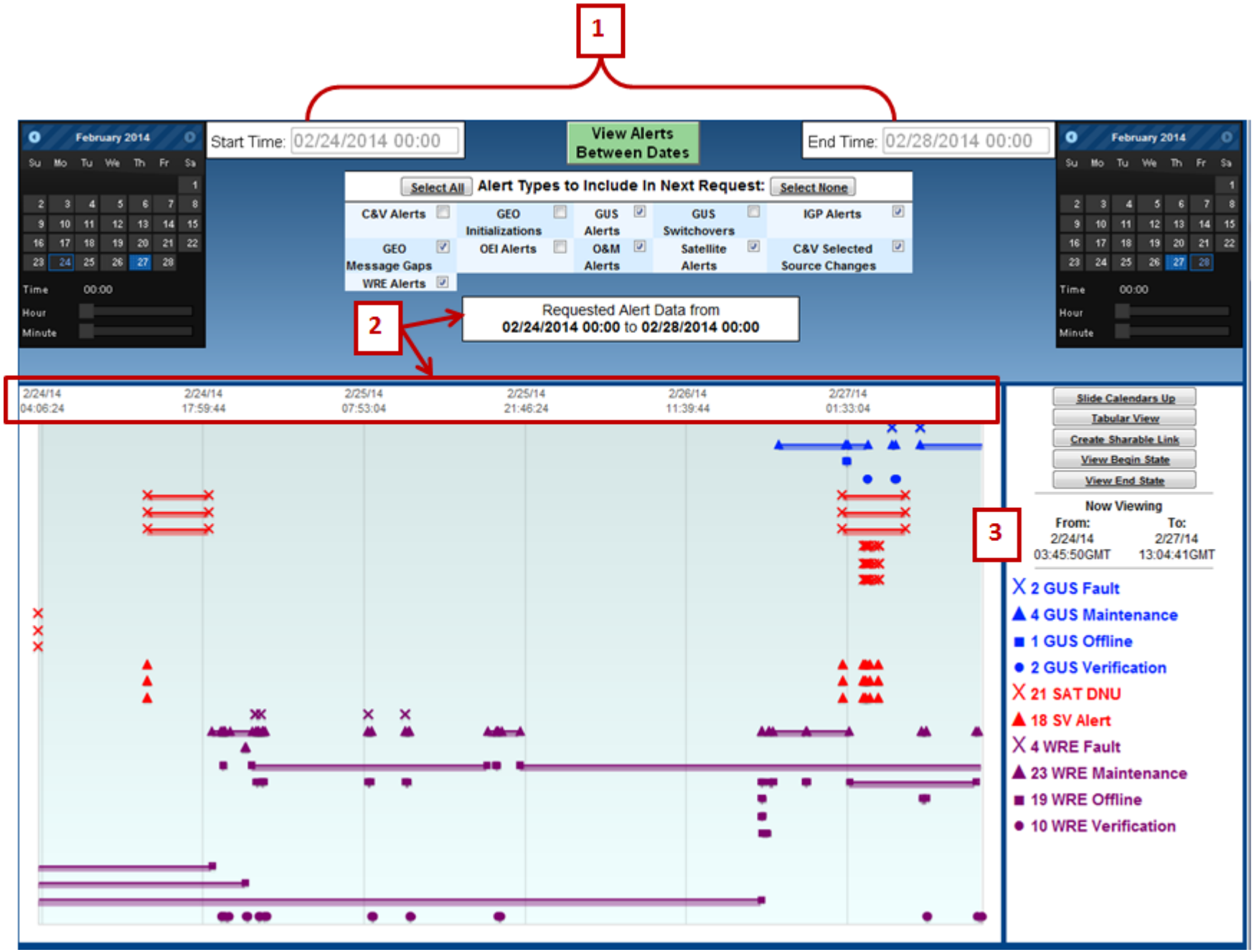
Once you click on View Alert Explorer for Current Day, you will see a screen similar to this one:



Here Alert Explorer is showing us default dates, which you can change using the calendars to either side of the Start and End Time (See #1 below). The Alert types are highlighted below (See #2 below). By default, all boxes are checked initially. To uncheck one or more, simply uncheck them and re-click the green "View Alerts Between Dates" Box. You can also zoom in closer within the Gantt chart (See #3 below). Simply left-click your mouse and drag and draw a box around the area you would like a closer look at and release. To go back to the original view, double-click anywhere inside the chart.

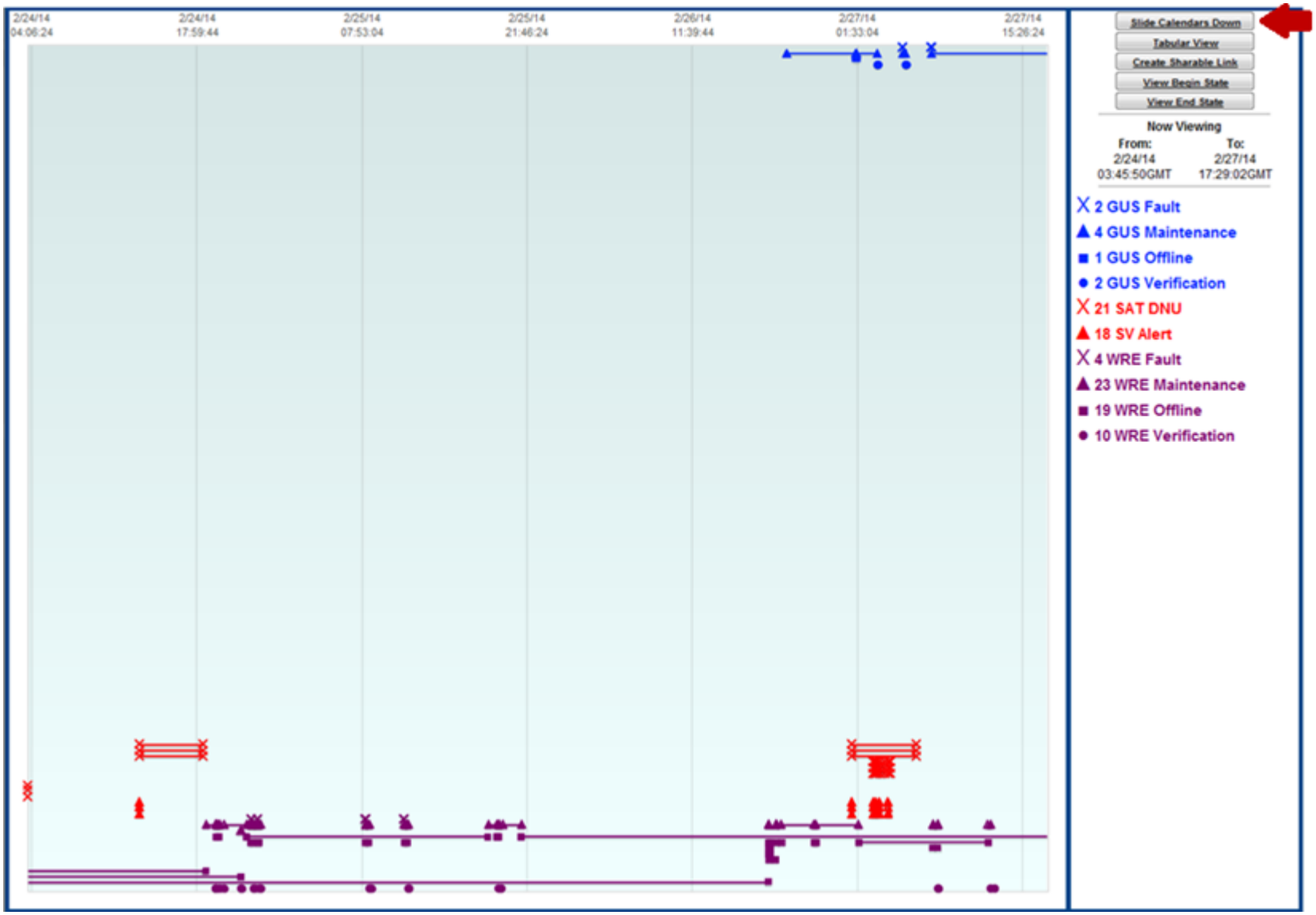


Here is the Alert Explorer using different dates. We are looking at 2/24/14 00:00 to 2/28/14 00:00. Both #1 and #2 below show the dates selected. #3 is showing us that there was more maintenance and more faults over this expanded period of time.

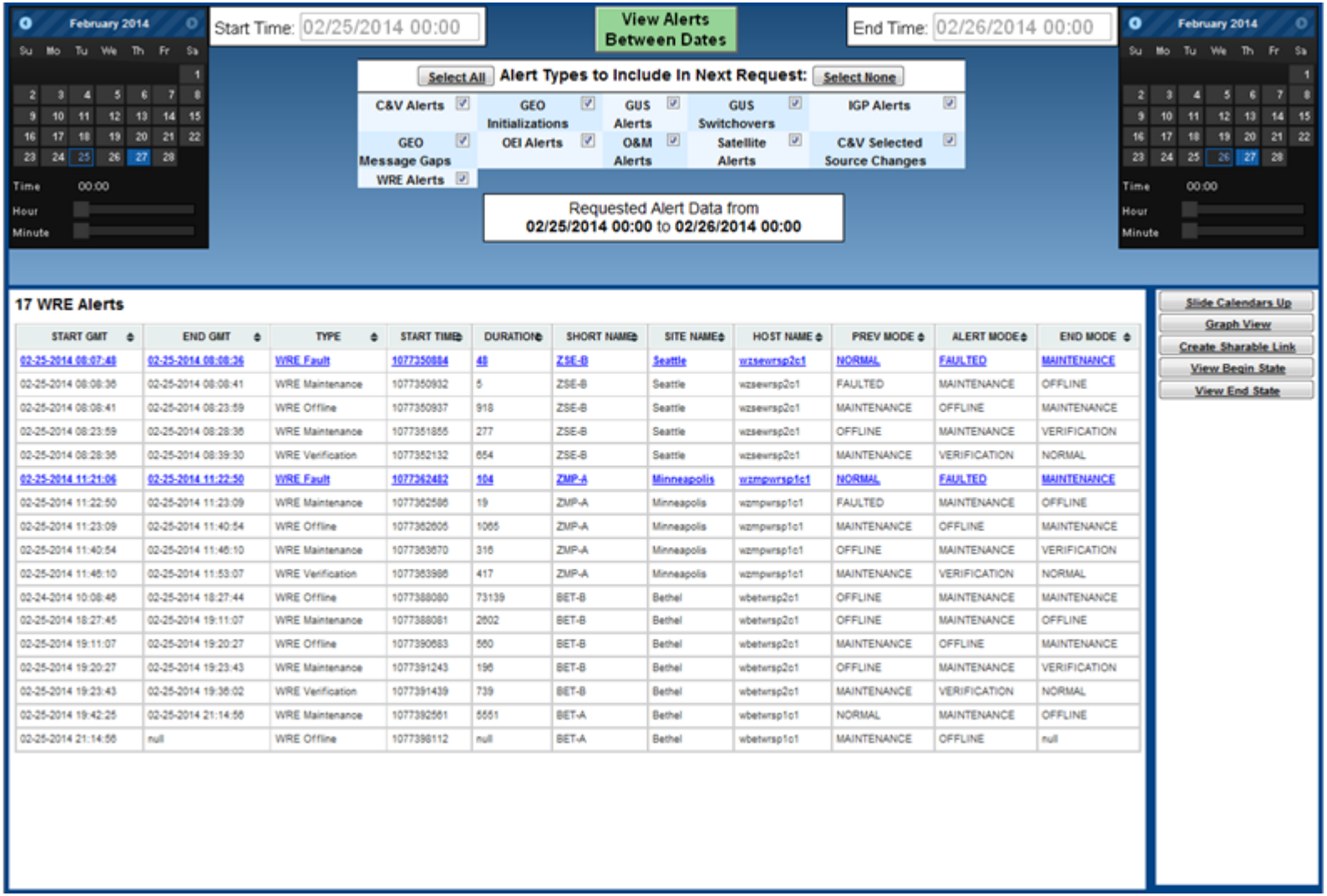


If you click on slide calendars up, you will see more of the Gantt graph.

After sliding the calendars up, the chart is more readable. (See below) To view the calendars once again, click on “slide Calendars down” (See red arrow below).



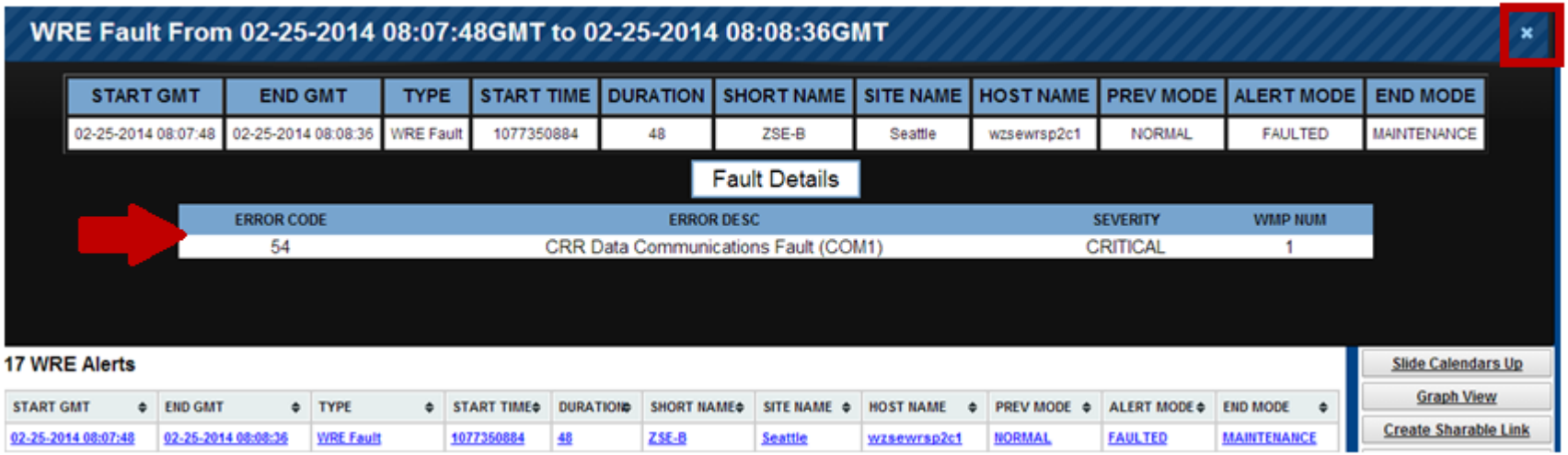
To view the same information in a table, click on “Tabular View” (See thick red arrow below). The table shows the Alerts including: the Start time of the alert, End time, Type, Start Time (in absolute time of week), Duration, Short Name (site abbreviation), Site Name, Host Name (a code for each WAAS reference station receiver), Prev Mode, Alert Mode and End Mode.



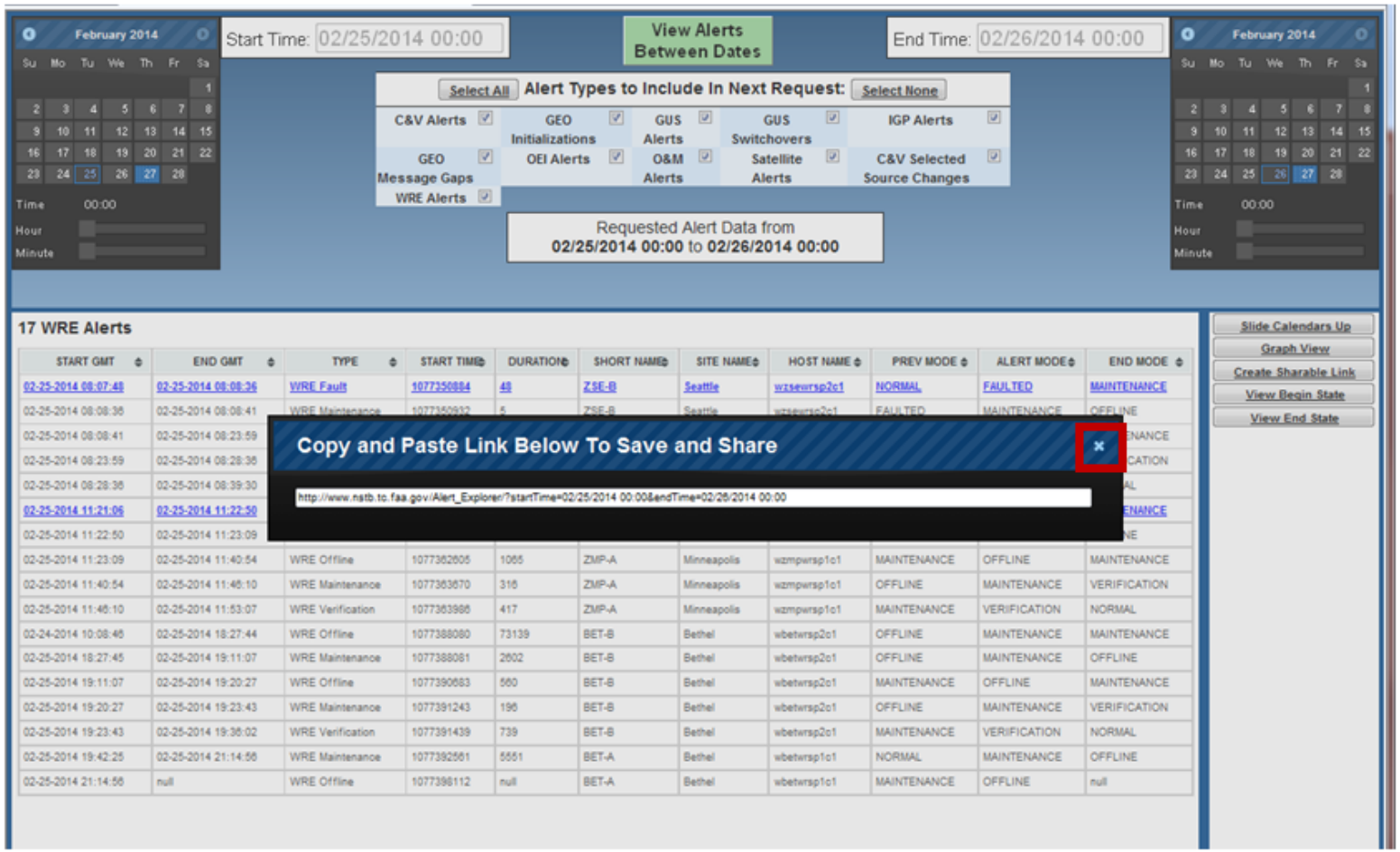
START GMT	END GMT	TYPE	START TIME	DURATION	SHORT NAME	SITE NAME	HOST NAME	PREV MODE	ALERT MODE	END MODE
02-25-2014 08:07:48	02-25-2014 08:08:36	WRE Fault	1077350884	48	ZSE-B	Seattle	wzsewrsp2c1	NORMAL	FAULTED	MAINTENANCE
02-25-2014 08:08:36	02-25-2014 08:08:41	WRE Maintenance	1077350932	5	ZSE-B	Seattle	wzsewrsp2c1	FAULTED	MAINTENANCE	OFFLINE
02-25-2014 08:08:41	02-25-2014 08:23:59	WRE Offline	1077350937	918	ZSE-B	Seattle	wzsewrsp2c1	MAINTENANCE	OFFLINE	MAINTENANCE
02-25-2014 08:23:59	02-25-2014 08:28:36	WRE Maintenance	1077351855	277	ZSE-B	Seattle	wzsewrsp2c1	OFFLINE	MAINTENANCE	VERIFICATION
02-25-2014 08:28:36	02-25-2014 08:39:30	WRE Verification	1077352132	654	ZSE-B	Seattle	wzsewrsp2c1	MAINTENANCE	VERIFICATION	NORMAL
02-25-2014 11:21:06	02-25-2014 11:22:50	WRE Fault	1077362482	104	ZMP-A	Minneapolis	wzmpwrsp1c1	NORMAL	FAULTED	MAINTENANCE
02-25-2014 11:22:50	02-25-2014 11:23:09	WRE Maintenance	1077362586	19	ZMP-A	Minneapolis	wzmpwrsp1c1	FAULTED	MAINTENANCE	OFFLINE
02-25-2014 11:23:09	02-25-2014 11:40:54	WRE Offline	1077362605	1065	ZMP-A	Minneapolis	wzmpwrsp1c1	MAINTENANCE	OFFLINE	MAINTENANCE
02-25-2014 11:40:54	02-25-2014 11:46:10	WRE Maintenance	1077363670	316	ZMP-A	Minneapolis	wzmpwrsp1c1	OFFLINE	MAINTENANCE	VERIFICATION
02-25-2014 11:46:10	02-25-2014 11:53:07	WRE Verification	1077363986	417	ZMP-A	Minneapolis	wzmpwrsp1c1	MAINTENANCE	VERIFICATION	NORMAL
02-24-2014 10:08:46	02-25-2014 18:27:44	WRE Offline	1077388080	73139	BET-B	Bethel	wbetwrsp2c1	OFFLINE	MAINTENANCE	MAINTENANCE
02-25-2014 18:27:45	02-25-2014 19:11:07	WRE Maintenance	1077388081	2602	BET-B	Bethel	wbetwrsp2c1	OFFLINE	MAINTENANCE	OFFLINE
02-25-2014 19:11:07	02-25-2014 19:20:27	WRE Offline	1077390683	560	BET-B	Bethel	wbetwrsp2c1	MAINTENANCE	OFFLINE	MAINTENANCE
02-25-2014 19:20:27	02-25-2014 19:23:43	WRE Maintenance	1077391243	196	BET-B	Bethel	wbetwrsp2c1	OFFLINE	MAINTENANCE	VERIFICATION
02-25-2014 19:23:43	02-25-2014 19:36:02	WRE Verification	1077391439	739	BET-B	Bethel	wbetwrsp2c1	MAINTENANCE	VERIFICATION	NORMAL
02-25-2014 19:42:25	02-25-2014 21:14:56	WRE Maintenance	1077392561	5551	BET-A	Bethel	wbetwrsp1c1	NORMAL	MAINTENANCE	OFFLINE
02-25-2014 21:14:56	null	WRE Offline	1077398112	null	BET-A	Bethel	wbetwrsp1c1	MAINTENANCE	OFFLINE	null

Clicking on any of the blue highlighted words in the table will open a box that further describes the fault details (See red arrow below).

To close this dialog box and return to Alert Explorer, click on the “x” in the top right corner of the box (See small red box).



Clicking on “Create Shareable Link” will bring up this screen. From here you can save and share the link to this particular page. To close this dialog box and return to Alert Explorer, click on the “x” in the top right corner of the box (See small red box below).



Here is a portion of the screen you would see if you clicked on “View Begin State.” The top box shows the GUS, or Geostationary Uplink Station information. Notice the table lists the mode, short name and long name for the GUS. The “Begin State” for each entry in the table is that site’s state at the beginning of the time period chosen. Also, the last time the state was changed for a particular site is shown in the second column of the table.

System Status at 02/25/2014 00:00 (Beginning)

GEO Information

GEO	LAST TIME CHANGED	GUS MODE	GUS SHORT NAME	GUS LONG NAME	C&V SHORT NAME	C&V SITE NAME
133	2/7/14 08:00:37 GMT	PRIMARY	SZP	Santa_Paula	ZTL	Atlanta
133	2/7/14 08:00:35 GMT	BACKUP	HDH	Paumalu	ZTL	Atlanta
135	11/19/13 00:41:36 GMT	PRIMARY	APC	Napa	ZLA	Los Angeles
135	2/19/14 19:17:44 GMT	BACKUP	APA	Littleton	ZLA	Los Angeles
138	2/16/14 00:42:33 GMT	PRIMARY	QWE	Woodbine	ZDC	Washington, DC
138	2/16/14 01:38:06 GMT	BACKUP	BRE-B	Brewster-B	ZDC	Washington, DC

Node State Information (128 Nodes)

SHORT NAME	LAST TIME CHANGED	NODE MODE	NODE TYPE	LONG NAME	SITE NAME	HOST NAME
APA	2/19/14 19:17:44 GMT	BACKUP	GUS	Littleton	Littleton	wltngusp1c1
APC	11/19/13 00:41:36 GMT	PRIMARY	GUS	Napa	Napa	wapcgusp1c1
BET-A	11/12/13 21:15:48 GMT	NORMAL	WRE	Bethel-A	Bethel	wbetwrsp1c1
BET-B	2/24/14 22:08:46 GMT	OFFLINE	WRE	Bethel-B	Bethel	wbetwrsp2c1
BET-C	2/24/14 20:14:44 GMT	NORMAL	WRE	Bethel-C	Bethel	wbetwrsp3c1
BIL-A	1/29/14 22:10:12 GMT	NORMAL	WRE	Billings-A	Billings	wbilwrsp1c1
BIL-B	2/11/14 21:36:34 GMT	NORMAL	WRE	Billings-B	Billings	wbilwrsp2c1
BIL-C	1/29/14 22:10:59 GMT	NORMAL	WRE	Billings-C	Billings	wbilwrsp3c1
BRE-B	2/16/14 01:38:06 GMT	BACKUP	GUS	Brewster-B	Brewster	wbregusp2c1
BRW-A	2/6/14 03:19:53 GMT	NORMAL	WRE	Barrow-A	Barrow	wbrwwrsp1c1
BRW-B	2/5/14 23:14:55 GMT	NORMAL	WRE	Barrow-B	Barrow	wbrwwrsp2c1
BRW-C	2/20/14 20:09:12 GMT	NORMAL	WRE	Barrow-C	Barrow	wbrwwrsp3c1
CDB-A	1/7/14 05:50:30 GMT	NORMAL	WRE	Cold_Bay-A	Cold Bay	wcdbwrsp1c1
CDB-B	1/7/14 05:50:30 GMT	NORMAL	WRE	Cold_Bay-B	Cold Bay	wcdbwrsp2c1
CDB-C	1/7/14 05:50:30 GMT	NORMAL	WRE	Cold_Bay-C	Cold Bay	wcdbwrsp3c1

Here is a portion of the screen you would see if you clicked on “View End State.” We are viewing the System Status at the end of our chosen dates.

System Status at 2/26/2014 00:00 (End)

GEO Information

GEO	LAST TIME CHANGED	GUS MODE	GUS SHORT NAME	GUS LONG NAME	C&V SHORT NAME	C&V SITE NAME
133	2/7/14 08:00:37 GMT	PRIMARY	SZP	Santa_Paula	ZTL	Atlanta
133	2/7/14 08:00:35 GMT	BACKUP	HDH	Paumalu	ZTL	Atlanta
135	11/19/13 00:41:36 GMT	PRIMARY	APC	Napa	ZLA	Los Angeles
135	2/19/14 19:17:44 GMT	BACKUP	APA	Littleton	ZLA	Los Angeles
138	2/16/14 00:42:33 GMT	PRIMARY	QWE	Woodbine	ZDC	Washington, DC
138	2/16/14 01:38:06 GMT	BACKUP	BRE-B	Brewster-B	ZDC	Washington, DC

Node State Information (128 Nodes)

SHORT NAME	LAST TIME CHANGED	NODE MODE	NODE TYPE	LONG NAME	SITE NAME	HOST NAME
APA	2/19/14 19:17:44 GMT	BACKUP	GUS	Littleton	Littleton	wltngusp1c1
APC	11/19/13 00:41:36 GMT	PRIMARY	GUS	Napa	Napa	wapcgusp1c1
BET-A	2/25/14 21:14:56 GMT	OFFLINE	WRE	Bethel-A	Bethel	wbetwrsp1c1
BET-B	2/25/14 19:36:02 GMT	NORMAL	WRE	Bethel-B	Bethel	wbetwrsp2c1
BET-C	2/24/14 20:14:44 GMT	NORMAL	WRE	Bethel-C	Bethel	wbetwrsp3c1
BIL-A	1/29/14 22:10:12 GMT	NORMAL	WRE	Billings-A	Billings	wbilwrsp1c1
BIL-B	2/11/14 21:36:34 GMT	NORMAL	WRE	Billings-B	Billings	wbilwrsp2c1
BIL-C	1/29/14 22:10:59 GMT	NORMAL	WRE	Billings-C	Billings	wbilwrsp3c1
BRE-B	2/16/14 01:38:06 GMT	BACKUP	GUS	Brewster-B	Brewster	wbregusp2c1
BRW-A	2/6/14 03:19:53 GMT	NORMAL	WRE	Barrow-A	Barrow	wbrwwrsp1c1
BRW-B	2/5/14 23:14:55 GMT	NORMAL	WRE	Barrow-B	Barrow	wbrwwrsp2c1
BRW-C	2/20/14 20:09:12 GMT	NORMAL	WRE	Barrow-C	Barrow	wbrwwrsp3c1

AVCON

Here we are looking at data for Week 1781 Day 6, or March 1, 2014 (See #1 below).

We clicked the Availability Continuity, or "AVCON", tab (See #2 below). AvCon is receiver availability taking into account the continuity of actual outages. This page shows tables for both LPV AvCon and LPV200 AvCon.

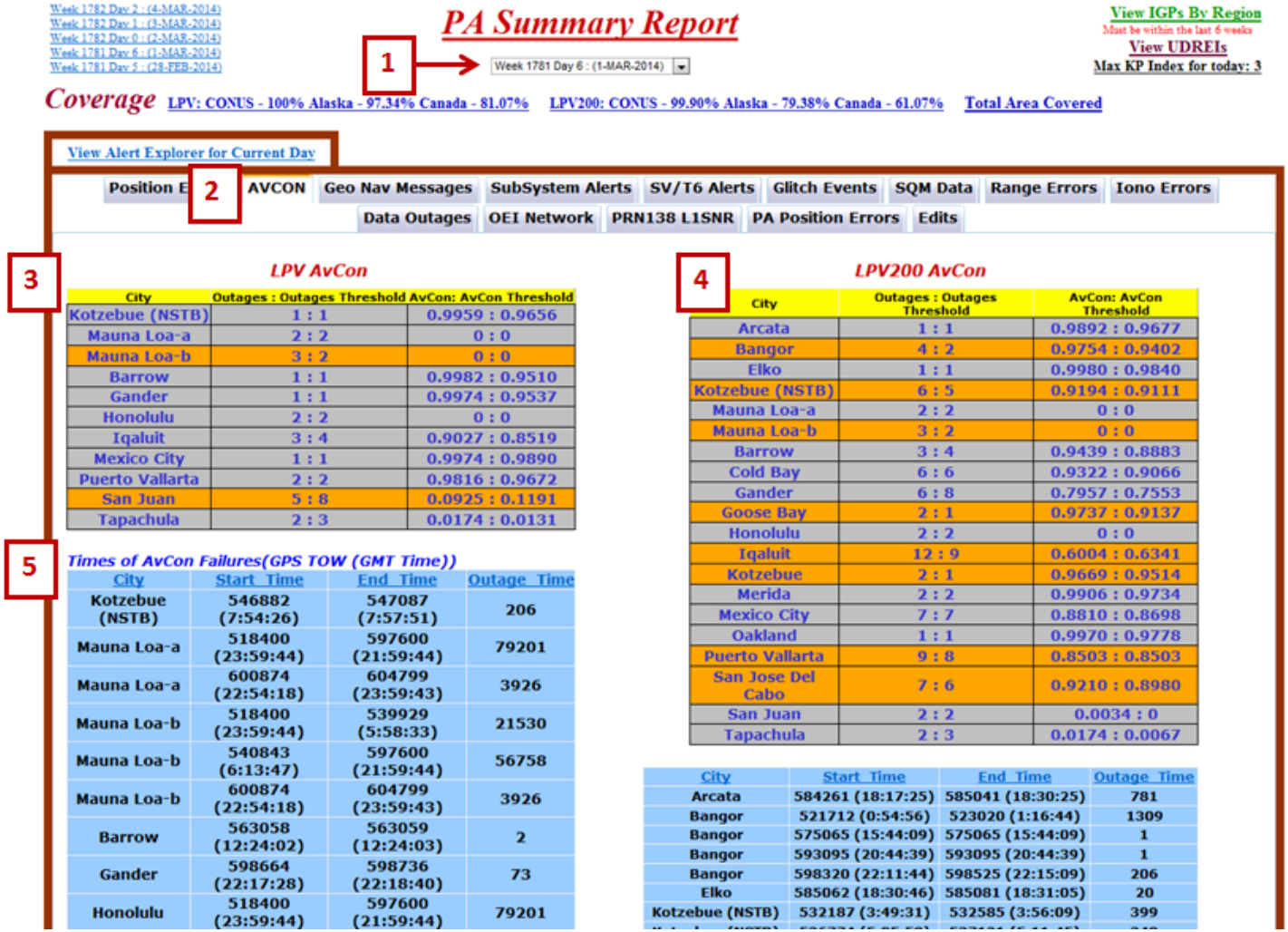
LPV must have a VPL <50 meters and the HPL <40 meters, while LPV200 must have the VPL <35 meters and the HPL <40 meters horizontal.

The boxes are highlighted in orange if the receiver does not meet its thresholds. If it exceeds the number of outages or drops below the expected AvCon, it will be highlighted. For example, in LPV AvCon (See #3 below), the Mauna Loa receiver's b-thread is highlighted due to the receiver exceeding the number of outages 3:2. San Juan did not exceed the number of outages at 5:8, but it did drop below the expected AvCon of 0.1191.

These thresholds are computed every 30 days to reflect dynamic variables for each receiver, such as GPS constellation changes or changes to the WAAS. When analyzing data for a particular day, the receiver will be compared to the threshold for the time period of the selected day only.

#4 shows the same data with regards to LPV200. The blue box beneath #4 shows the LPV200 data in GMT Time of Week (GPS TOW) and GMT Time in parenthesis, along with the outage duration in seconds.

The blue box (#5 below) shows both the start time and end time of LPV AvCon Failures in GMT Time of Week (GPS TOW) and GMT Time in parenthesis, along with the outage duration in seconds.



Week 1782 Day 2 : (4-MAR-2014)
Week 1782 Day 1 : (3-MAR-2014)
Week 1782 Day 0 : (2-MAR-2014)
Week 1781 Day 6 : (1-MAR-2014)
Week 1781 Day 5 : (28-FEB-2014)

PA Summary Report

1

Week 1781 Day 6 : (1-MAR-2014)

View IGPs By Region
Must be within the last 6 weeks
View UDREIs
Max KP Index for today: 3

Coverage

LPV: CONUS - 100% Alaska - 97.34% Canada - 81.07% LPV200: CONUS - 99.90% Alaska - 79.38% Canada - 61.07% Total Area Covered

View Alert Explorer for Current Day

Position E | 2 AVCON | Geo Nav Messages | SubSystem Alerts | SV/T6 Alerts | Glitch Events | SQM Data | Range Errors | Iono Errors
Data Outages | OEI Network | PRN138 L1SNR | PA Position Errors | Edits

3

LPV AvCon

City	Outages : Outages Threshold	AvCon: AvCon Threshold
Kotzebue (NSTB)	1 : 1	0.9959 : 0.9656
Mauna Loa-a	2 : 2	0 : 0
Mauna Loa-b	3 : 2	0 : 0
Barrow	1 : 1	0.9982 : 0.9510
Gander	1 : 1	0.9974 : 0.9537
Honolulu	2 : 2	0 : 0
Iqaluit	3 : 4	0.9027 : 0.8519
Mexico City	1 : 1	0.9974 : 0.9890
Puerto Vallarta	2 : 2	0.9816 : 0.9672
San Juan	5 : 8	0.0925 : 0.1191
Tapachula	2 : 3	0.0174 : 0.0131

5

Times of AvCon Failures(GPS TOW (GMT Time))

City	Start Time	End Time	Outage Time
Kotzebue (NSTB)	546882 (7:54:26)	547087 (7:57:51)	206
Mauna Loa-a	518400 (23:59:44)	597600 (21:59:44)	79201
Mauna Loa-a	600874 (22:54:18)	604799 (23:59:43)	3926
Mauna Loa-b	518400 (23:59:44)	539929 (5:58:33)	21530
Mauna Loa-b	540843 (6:13:47)	597600 (21:59:44)	56758
Mauna Loa-b	600874 (22:54:18)	604799 (23:59:43)	3926
Barrow	563058 (12:24:02)	563059 (12:24:03)	2
Gander	598664 (22:17:28)	598736 (22:18:40)	73
Honolulu	518400 (23:59:44)	597600 (21:59:44)	79201

4

LPV200 AvCon

City	Outages : Outages Threshold	AvCon: AvCon Threshold
Arcata	1 : 1	0.9892 : 0.9677
Bangor	4 : 2	0.9754 : 0.9402
Elko	1 : 1	0.9980 : 0.9840
Kotzebue (NSTB)	6 : 5	0.9194 : 0.9111
Mauna Loa-a	2 : 2	0 : 0
Mauna Loa-b	3 : 2	0 : 0
Barrow	3 : 4	0.9439 : 0.8883
Cold Bay	6 : 6	0.9322 : 0.9066
Gander	6 : 8	0.7957 : 0.7553
Goose Bay	2 : 1	0.9737 : 0.9137
Honolulu	2 : 2	0 : 0
Iqaluit	12 : 9	0.6004 : 0.6341
Kotzebue	2 : 1	0.9669 : 0.9514
Merida	2 : 2	0.9906 : 0.9734
Mexico City	7 : 7	0.8810 : 0.8698
Oakland	1 : 1	0.9970 : 0.9778
Puerto Vallarta	9 : 8	0.8503 : 0.8503
San Jose Del Cabo	7 : 6	0.9210 : 0.8980
San Juan	2 : 2	0.0034 : 0
Tapachula	2 : 3	0.0174 : 0.0067

City	Start Time	End Time	Outage Time
Arcata	584261 (18:17:25)	585041 (18:30:25)	781
Bangor	521712 (0:54:56)	523020 (1:16:44)	1309
Bangor	575065 (15:44:09)	575065 (15:44:09)	1
Bangor	593095 (20:44:39)	593095 (20:44:39)	1
Bangor	598320 (22:11:44)	598525 (22:15:09)	206
Elko	585062 (18:30:46)	585081 (18:31:05)	20
Kotzebue (NSTB)	532187 (3:49:31)	532585 (3:56:09)	399

This is a screen shot and continuation from the screen show above. Below, the red box highlights the LP AvCon along with outages and AvCon numbers. The blue boxes below this show the start and end time of all outages along with the outage duration for all affected receivers. LP must have the HPL < 40 meters. There is no vertical component to LP.

Tapachula	575601 (15:53:05)	604799 (23:59:43)	29199

LP AvCon

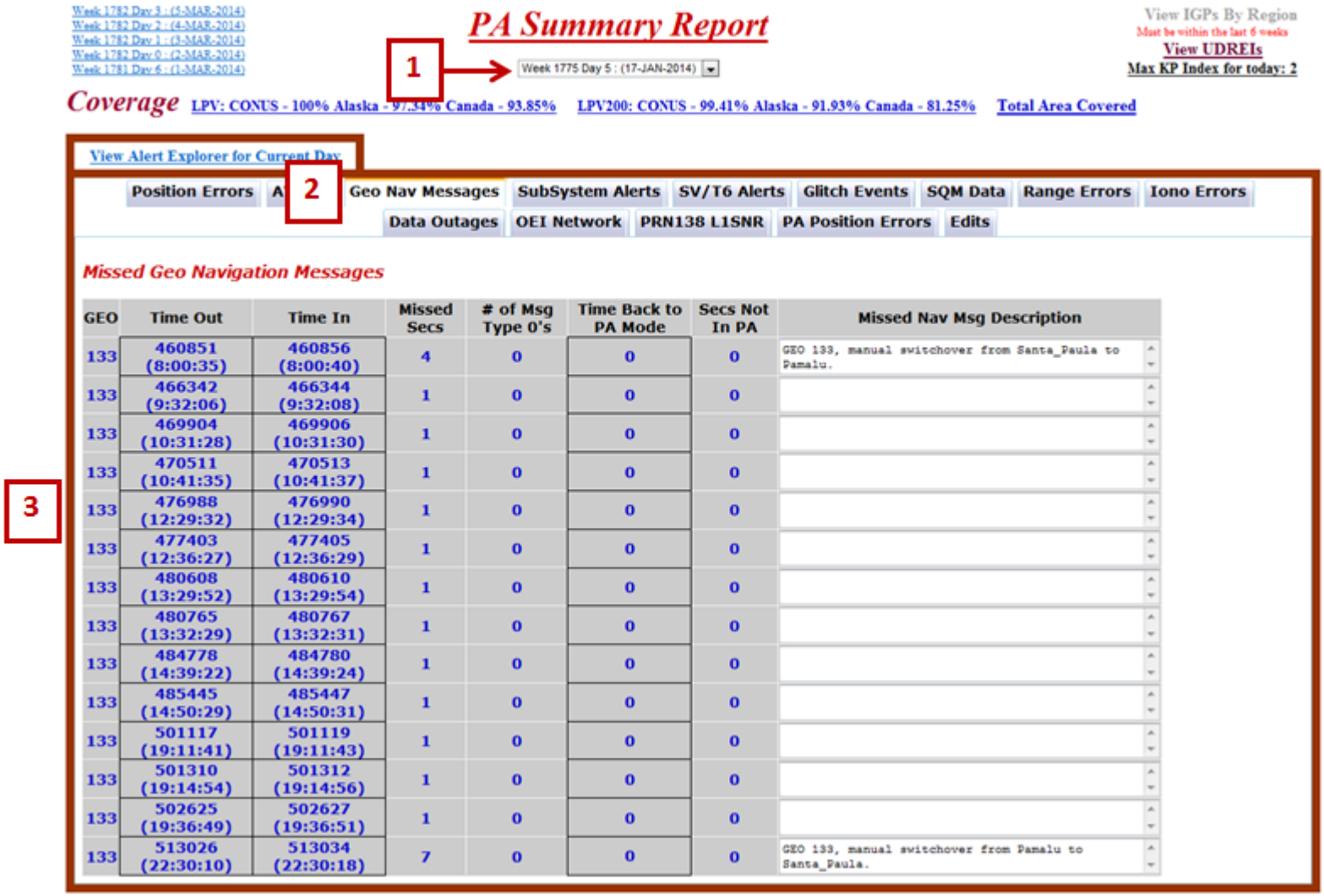
City	Outages	AvCon
Mauna Loa-a	2	0
Mauna Loa-b	3	0
Honolulu	2	0
Iqaluit	2	0.9894
Mexico City	1	0.9974
San Juan	13	0.3862
Tapachula	2	0.0174

City	Start Time	End Time	Outage Time
Mauna Loa-a	518400 (23:59:44)	597600 (21:59:44)	79201
Mauna Loa-a	600874 (22:54:18)	604799 (23:59:43)	3926
Mauna Loa-b	518400 (23:59:44)	539929 (5:58:33)	21530
Mauna Loa-b	540843 (6:13:47)	597600 (21:59:44)	56758
Mauna Loa-b	600874 (22:54:18)	604799 (23:59:43)	3926
Honolulu	518400 (23:59:44)	597600 (21:59:44)	79201
Honolulu	600874 (22:54:18)	604799 (23:59:43)	3926
Iqaluit	592915 (20:41:39)	593477 (20:51:01)	563
Iqaluit	595426 (21:23:30)	595481 (21:24:25)	56
Mexico City	598089 (22:07:53)	598159 (22:09:03)	71
San Juan	518400 (23:59:44)	525683 (2:01:07)	7284

Goose Bay	601394 (23:02:58)	601406 (23:03:10)	13
Honolulu	518400 (23:59:44)	597600 (21:59:44)	79201
Honolulu	600874 (22:54:18)	604799 (23:59:43)	3926
Iqaluit	518400 (23:59:44)	519068 (0:10:52)	669
Iqaluit	520085 (0:27:49)	524867 (1:47:31)	4783
Iqaluit	527503 (2:31:27)	527778 (2:36:02)	276
Iqaluit	535841 (4:50:25)	536045 (4:53:49)	205
Iqaluit	539462 (5:50:46)	540365 (6:05:49)	904
Iqaluit	541615 (6:26:39)	542190 (6:36:14)	576
Iqaluit	544908 (7:21:32)	545699 (7:34:43)	792
Iqaluit	548239 (8:17:03)	552270 (9:24:14)	4032
Iqaluit	557532 (10:51:56)	559250 (11:20:34)	1719
Iqaluit	564401 (12:46:25)	564737 (12:52:01)	337
Iqaluit	581682 (17:34:26)	581943 (17:38:47)	262
Iqaluit	586551 (18:55:35)	604722 (23:58:26)	18172
Kotzebue	536738 (5:05:22)	537098 (5:11:22)	361
Kotzebue	552793 (9:32:57)	554989 (10:09:33)	2197
Merida	583399 (18:03:03)	583413 (18:03:17)	15
Merida	597222 (21:53:26)	597714 (22:01:38)	493
Mexico City	548340 (8:18:44)	550784 (8:59:28)	2445
Mexico City	556985 (10:42:49)	557708 (10:54:52)	724
Mexico City	560162 (11:35:46)	561595 (11:59:39)	1434
Mexico City	568543 (13:55:27)	569079 (14:04:23)	537
Mexico City	571188 (14:39:32)	571642 (14:47:06)	455
Mexico City	596723 (21:45:07)	599307 (22:28:11)	2585
Mexico City	602670 (23:24:14)	603720 (23:41:44)	1051
Oakland	584945 (18:28:49)	585051 (18:30:35)	107
Puerto Vallarta	527677 (2:34:21)	527965 (2:39:09)	289
Puerto Vallarta	542515 (6:41:39)	544356 (7:12:20)	1842
Puerto Vallarta	550236 (8:50:20)	550511 (8:54:55)	276
Puerto Vallarta	555877 (10:24:21)	557678 (10:54:22)	1802
Puerto Vallarta	560378 (11:39:22)	561564 (11:59:08)	1187
Puerto Vallarta	566462 (13:20:46)	568910 (14:01:34)	2449
Puerto Vallarta	570799 (14:33:03)	570809 (14:33:13)	11
Puerto Vallarta	596334 (21:38:38)	599097 (22:24:41)	2764
Puerto Vallarta	601734 (23:08:38)	602696 (23:24:40)	963
San Jose Del Cabo	527071 (2:39:15)	528013 (2:39:57)	43

Geo Nav Messages

Here we are looking at January 17, 2014 (See #1 below). We clicked on the "Geo Nav Messages" tab (See #2 below). The table is a list of any missed messages from Geostationary satellites 133, 135 and 138. We receive messages from these receivers every second. The Time Out and Time In is given in GPS Time of Week (GPS TOW) and GMT Time in parenthesis. The number of missed seconds, number of transmitted message type 0's, the time back to PA Mode, seconds not in PA mode and a description is given for each missed message. PA Mode refers to a state in which a user would be able to conduct a Precision Approach. Note: Usually when 4 or 5 seconds are missed, it is due to a manual switchover. A number over 10 seconds normally means the GUS, or uplink station, faulted.



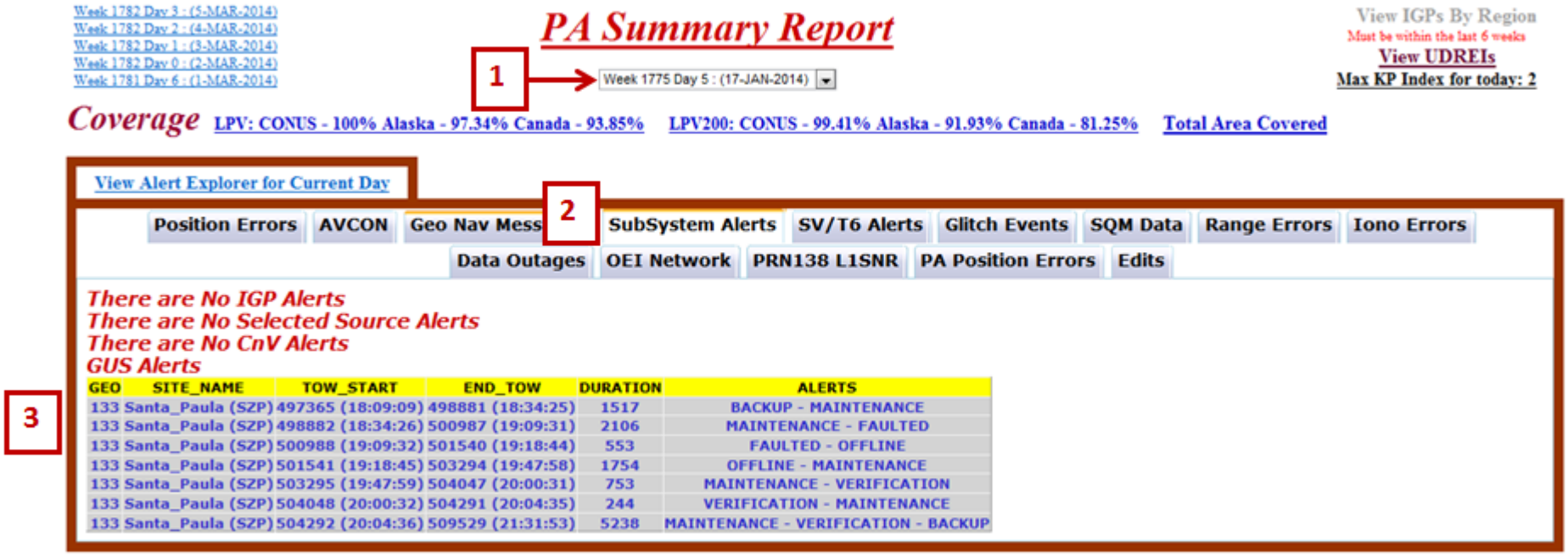
SubSystem Alerts

The date for this information is located beneath "PA Summary Report". Here we are looking at January 17, 2014 (See #1 below).

The SubSystem Alert tab is open (#2 below). This tab shows the same information as Alert Explorer. The GUS Alerts listed in the table show the Geostationary satellite number(s) and name; the time of week the alert started and ended along with the duration in seconds (#3 below).

A description of the alerts is also included:

- IGP alerts refer to when certain IGPs go to 45 meters. The IGPs chosen are those in the CONUS and Alaska regions.
- Selected Source alerts refer to when the C&V selected source of a GUS is changed.
- CnV alerts refer to when one of the C&Vs changes mode.
- IGP, Selected Source, and CnV alerts are rare.

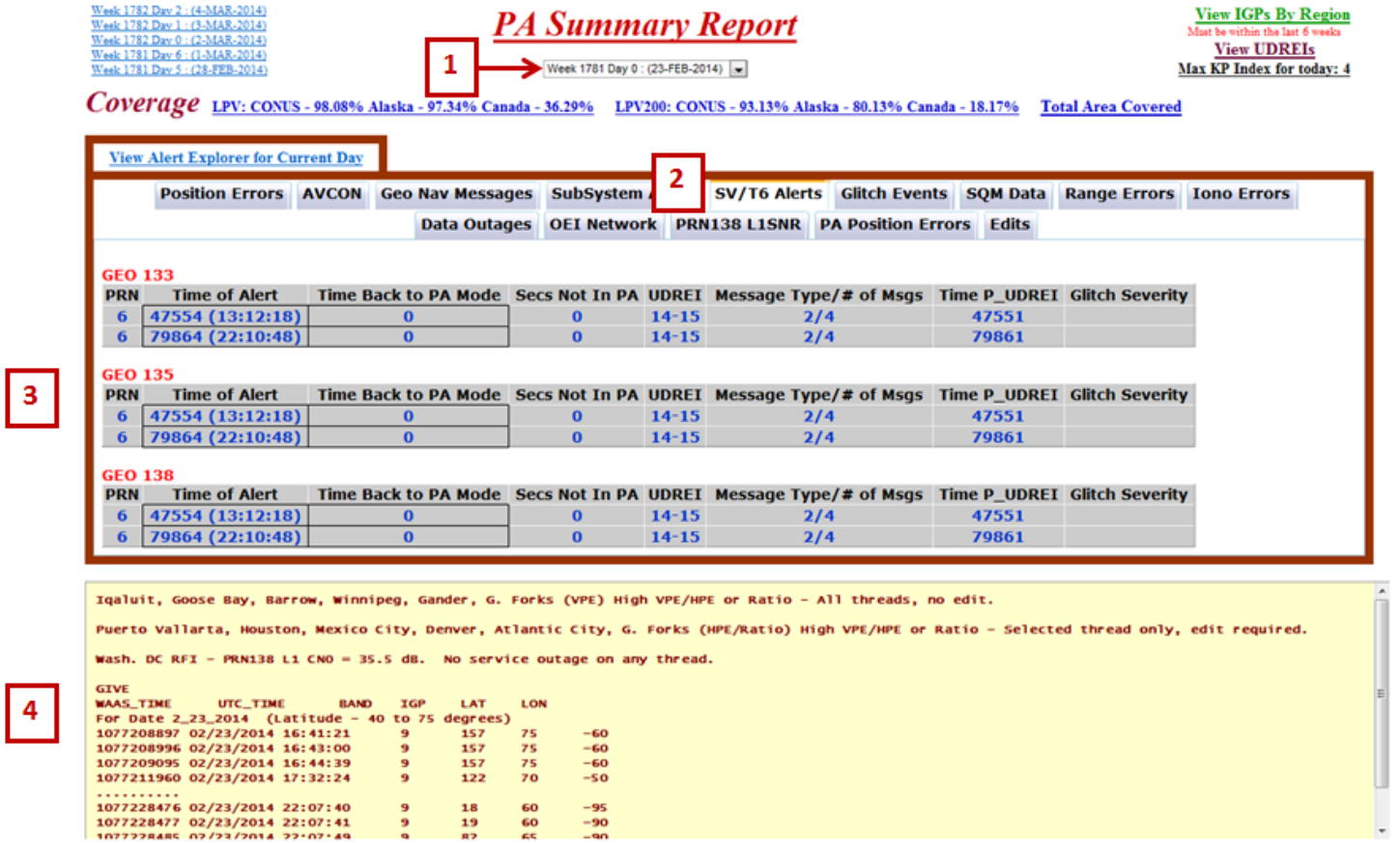


SV/T6 Alerts

The SV Alerts tab is open (#2 below) to February 23, 2014 (See #1 below). Originating from Geostationary satellites, SV alerts inform us when a satellite's User Differential Range Error (UDREI) is changing and WAAS transmits at least 4 consecutive messages to ensure a user received the alert. The Geostationary satellites 133, 135 and 138 are listed separately in the tables below (See #3 below).

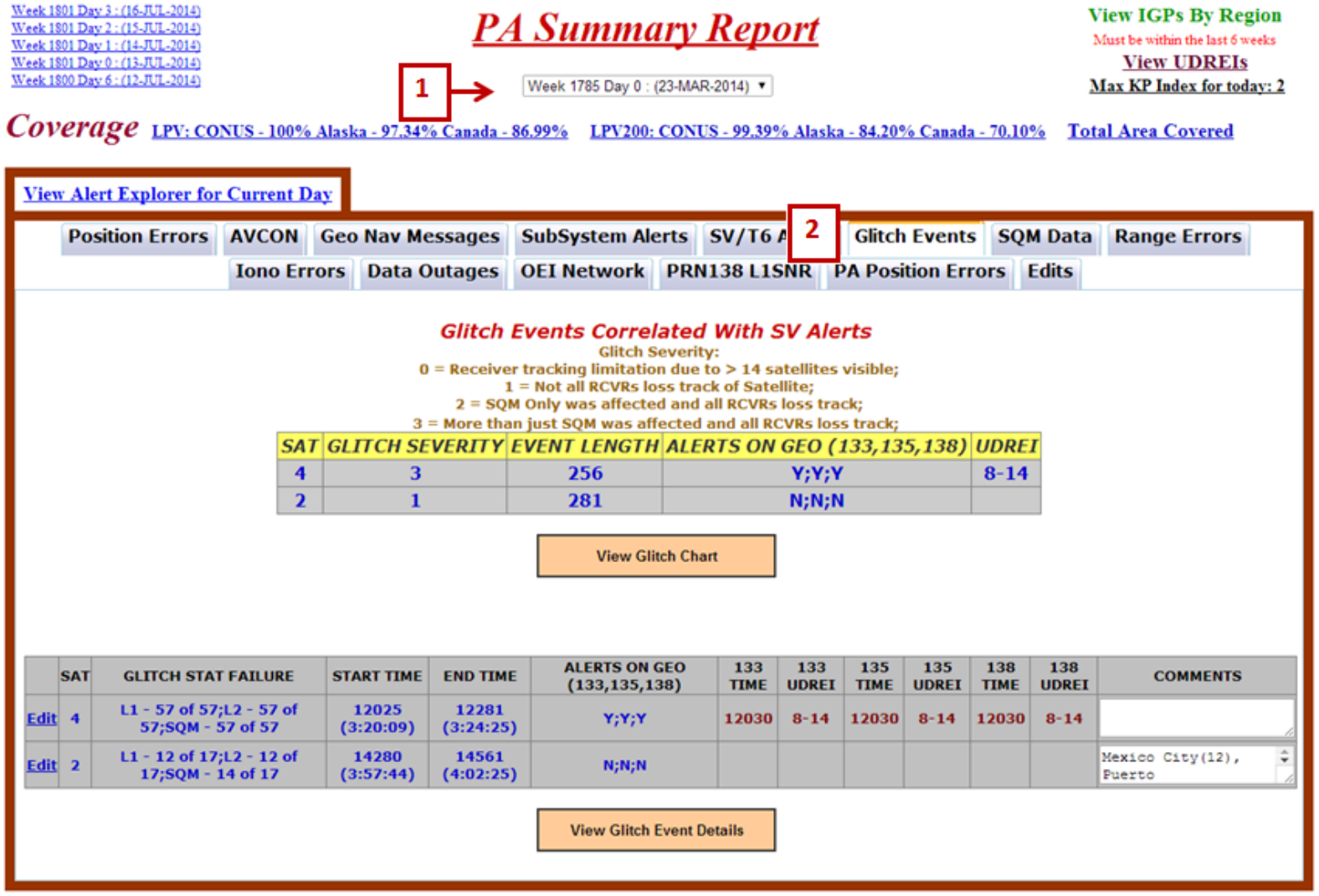
The columns include: the PRN number that shows which satellite the alert refers to; the time in GPS Time of Week (GPS TOW) and GMT Time in parenthesis; the number of seconds it took to get back into PA mode; the number of seconds not in PA mode; the UDREI change (previous-current); the message type and # of messages received in a row; the time the UDREi for the noted satellite was last in PA mode in GPS TOW, and the severity of the glitch. Glitches are defined in the Glitch Events tab.

In the UDREI column, if the number is 12 or 13, the satellite is in NPA mode only. If the UDREi is >13, satellite is in the Not Monitored or Do Not Use (DNU) state. A number <12 indicates a satellite is in PA mode.

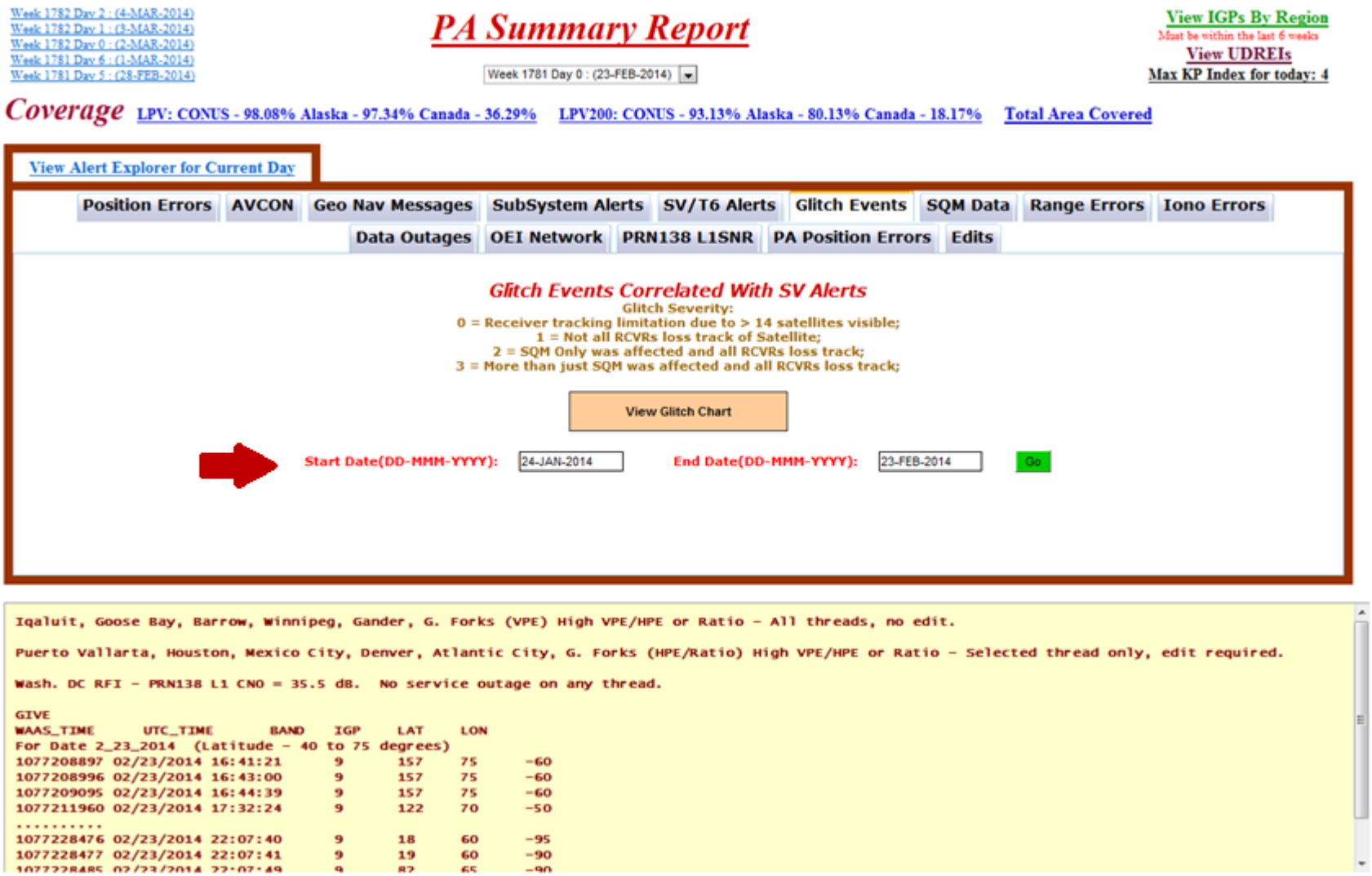


Glitch Events

The “Glitch Events” tab, open (#2 below) to March 23, 2014 (See #1 below), shows us specific satellites that exhibit abnormal operation, from the point of view of the WAAS reference station receivers. Below, both Satellite 4 and 2 had glitches. The Glitch Severity key indicates which events caused the glitch. Glitch Severity ranges from 0-3, with 0 showing receiver tracking was limited due to > 14 satellites visible and 3 indicating more than just SQM was affected and all receivers lost track of a satellite. The reference to SQM is for a receiver that is not outputting SQM data but is outputting L1 and L2 data. The Glitch Stat Failure column shows the number of receivers that are not providing L1, L2, or SQM data out of how many receivers should be transmitting this data. To see the information in a graph, click on the light orange “View Glitch Chart” box.

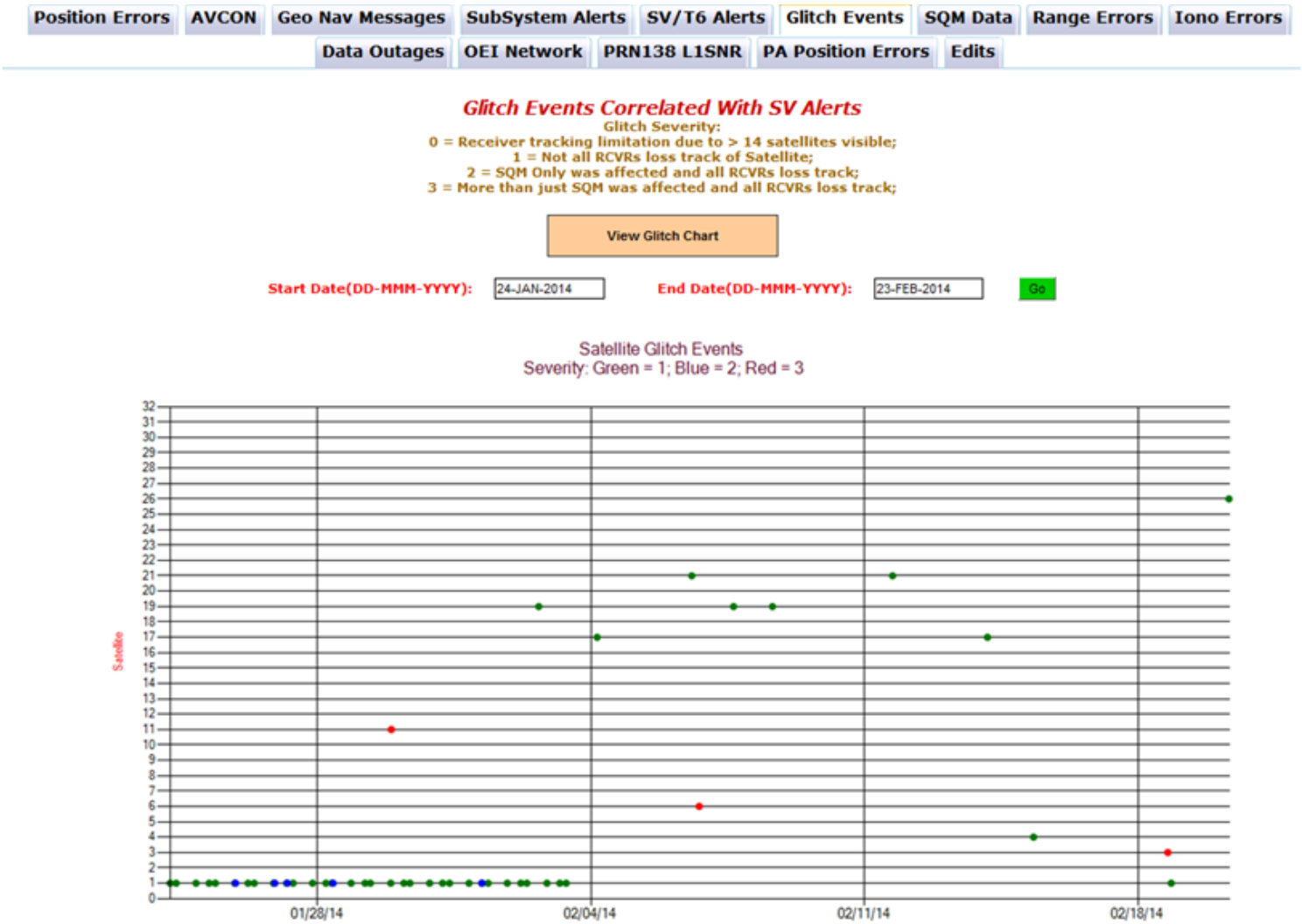


When we click on the “View Glitch Chart” button, the default dates are for one month prior to the date we are viewing. We can change these dates (See red arrow below). The newly input dates must be in the format indicated.



Below is the screen once we click on the green “Go” button. Here we have a graph of the varying magnitude of glitches that occurred. Glitches are degradations in the signal that can cause WAAS receivers to lose track of the GPS signal. The dots indicate the severity of the glitch events. As the key code says on the top of the chart:

- Severity 1 = Green dots that indicate that a significant number of receivers- *but not all receivers*- lost track of the satellite.
- Severity 2 = Blue dots indicate that *only* Signal Quality Monitoring (SQM) was affected and all receivers lost track.
- Severity 3 =Red dots indicate *more than just SQM was affected and all receivers* lost track.



View Glitch Event Details

When clicking on the “View Glitch Event Details” box, a new table shows the satellite, its type, the start and end time, along with the duration in seconds. Here is an example from March 23, 1014.

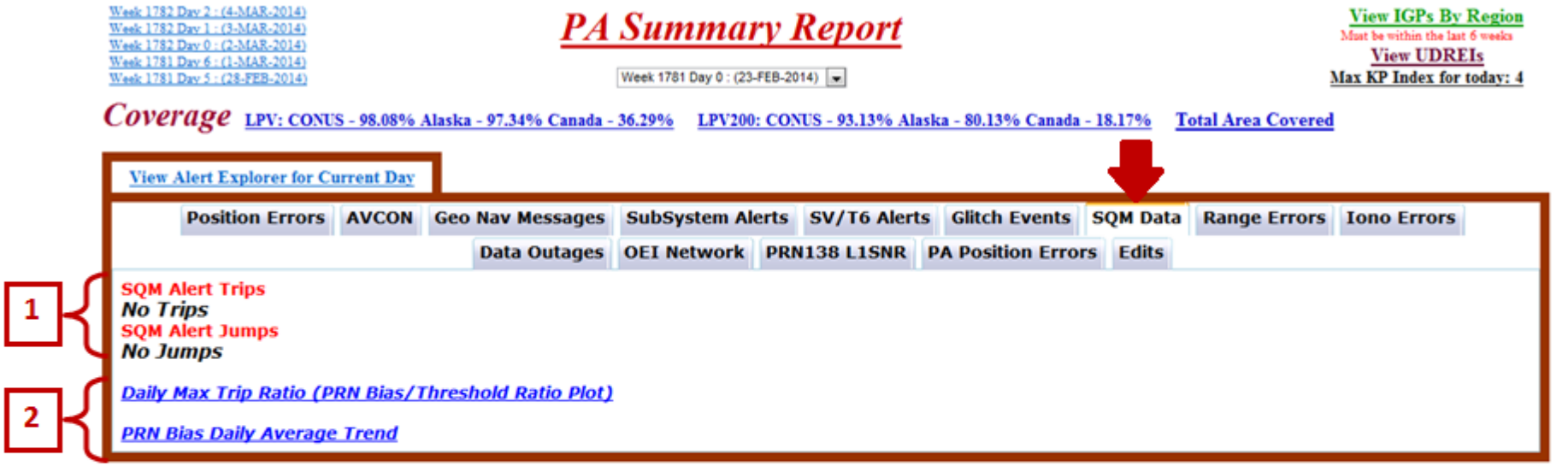
View Glitch Event Details

SAT	STAT_TYPE	START_T	END_T	LENGTH
4	SQM	12026	12035	9
4	L2	12027	12035	8
4	L1	12027	12063	36
4	L2	12044	12052	8
4	SQM	12044	12052	8
4	SQM	12092	12100	8
4	L1	12093	12111	18
4	L2	12093	12100	7
4	SQM	12182	12190	8
4	L2	12183	12190	7
4	L1	12183	12201	18
4	SQM	12248	12257	9
4	L1	12249	12267	18
4	L2	12249	12256	7

SQM Data

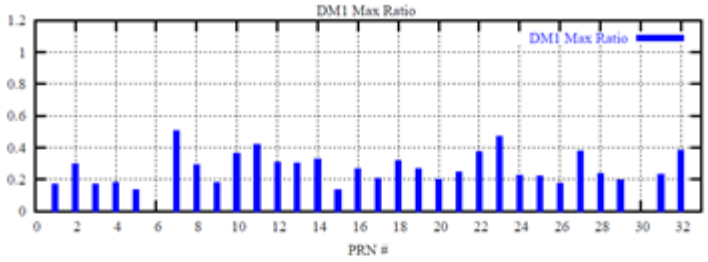
The next tab is the Signal Quality Monitoring (SQM) data tab (See red arrow below). SQM Alerts show any anomalies in the GPS satellite signal. An SQM Alert Trip shows any trips of the reported by the Technical Center SQM tool. This rarely happens. A SQM Alert Jump shows when SQM increases but it is not necessarily a trip (See #1 below).

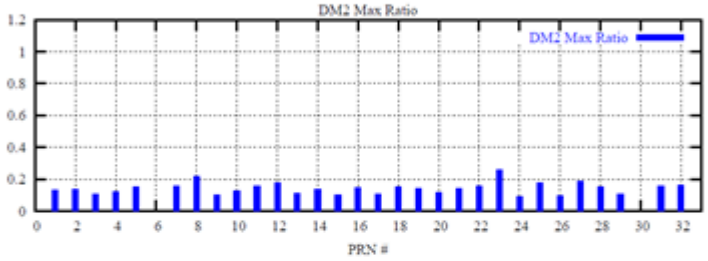
Daily Max Trip Ratio shows the max ratio per satellite over a 24 hour period. PRN Bias Daily Average Trend shows the four-month trend (#2 below). Both of those links show data from the Technical Center SQM tool, not the operational WAAS.

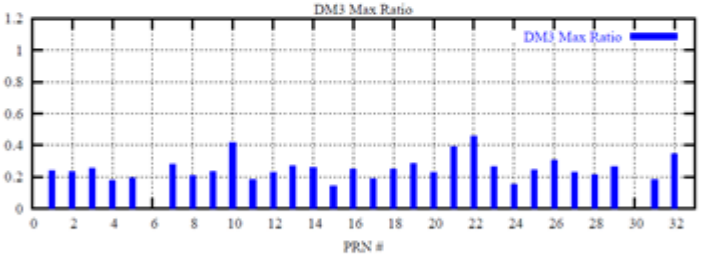


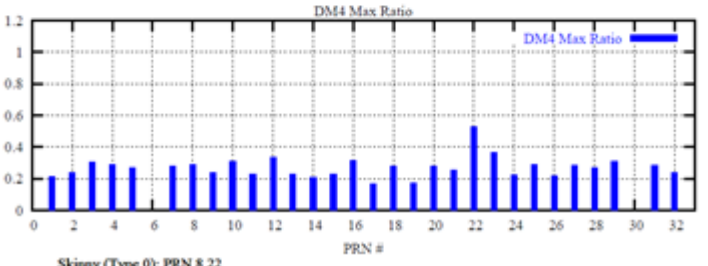

```
Iqaluit, Goose Bay, Barrow, Winnipeg, Gander, G. Forks (VPE) High VPE/HPE or Ratio - All threads, no edit.

Puerto Vallarta, Houston, Mexico City, Denver, Atlantic City, G. Forks (HPE/Ratio) High VPE/HPE or Ratio - Selected thread only, edit required.

Wash. DC RFI - PRN138 L1 CNO = 35.5 dB.  No service outage on any thread.

GIVE
WAAS_TIME      UTC_TIME       BAND    IGP     LAT     LON
For Date 2_23_2014  (Latitude - 40 to 75 degrees)
1077208897 02/23/2014 16:41:21      9       157     75      -60
1077208996 02/23/2014 16:43:00      9       157     75      -60
1077209095 02/23/2014 16:44:39      9       157     75      -60
1077211960 02/23/2014 17:32:24      9       122     70      -50
..........
1077228476 02/23/2014 22:07:40      9       18      60      -95
1077228477 02/23/2014 22:07:41      9       19      60      -90
1077228485 02/23/2014 22:07:49      9       82      65      -90
```

In SQM Alerts, when we press on ***Daily Max Trip Ratio (PRN Bias/Threshold Ratio Plot)***, we see the max ratio per satellite over a 24 hour period. PRN Bias is the overall estimated deformation per satellite across receivers. The Max Trip Ratio combines information from the satellite together and computes a threshold. The Ratio of PRN Bias ÷ the threshold should be <1. Below are the four detection matrix (DM) graphs that determine the SQM in all 4 metrics.







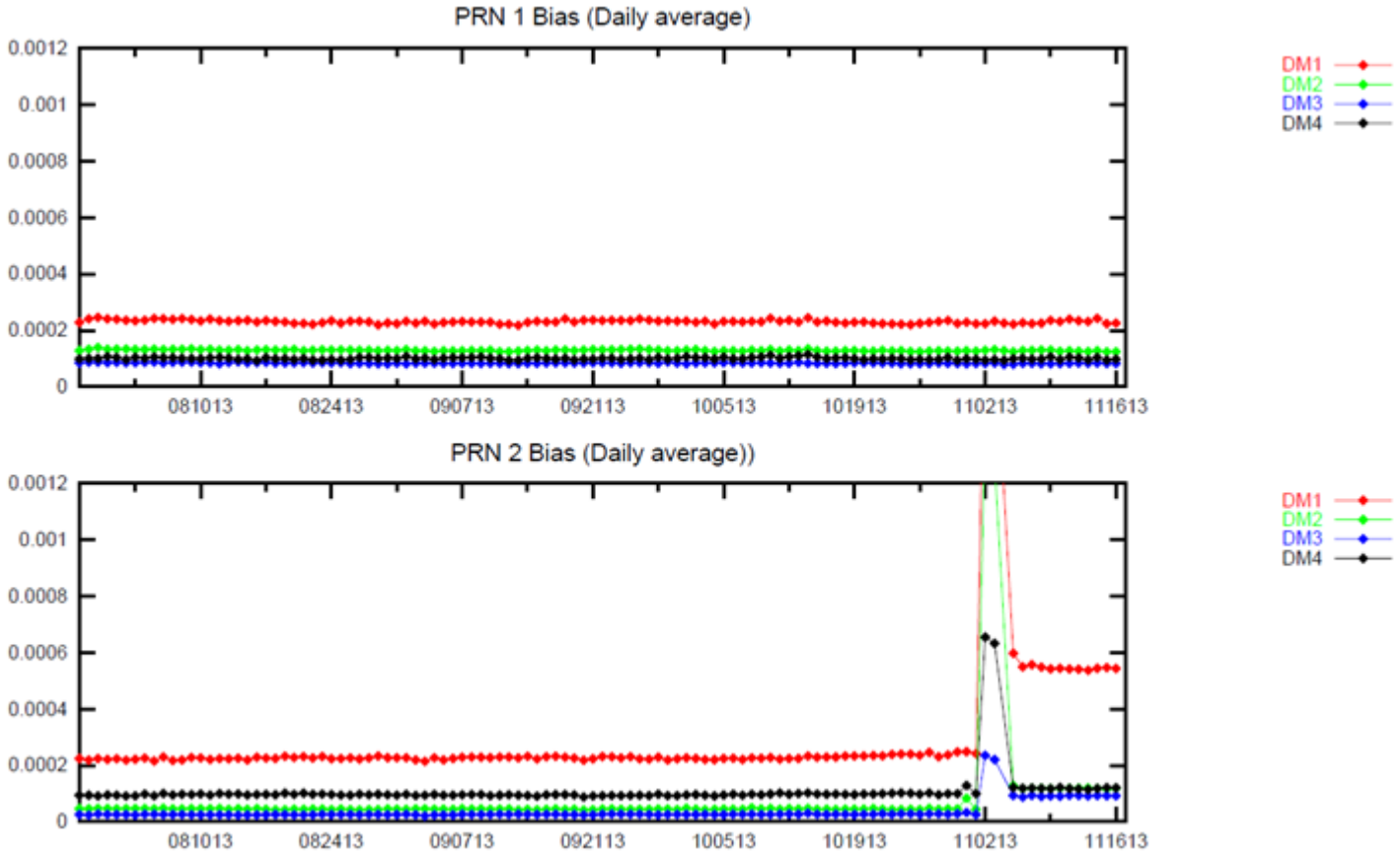


Skinny (Type 0): PRN 8 22
Broad (Type 2): PRN 7 15 17 21 24

In SQM Alerts, when we press on ***PRN Bias Daily Average Trend***, a PDF of PRN Bias opens showing a 4 month trend per satellite. While the diagrams below depict only information from PRN 1 and PRN 2, in actuality the pdf shows info for all 32 satellites in the WAAS system. The X axis indicates the date while the Y axis shows the daily average of the PRN Bias.

The 4 different Detection Matrices (DM) are shown using different colors:

- Red= DM1
- Green = DM2
- Blue = DM3
- Black =DM4



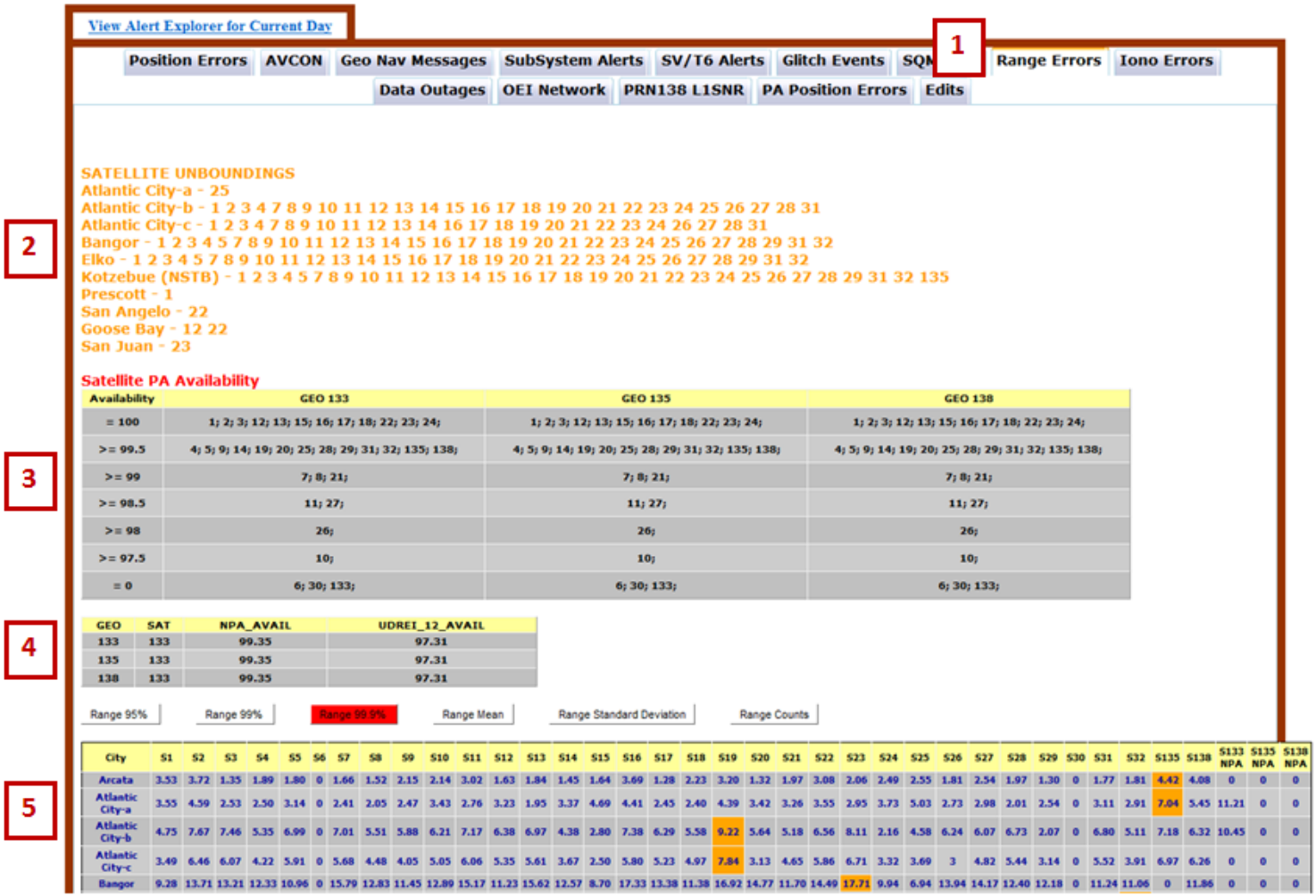
Range Errors

The Range Error tab (#1 below) shows satellite unboundings (See #2 below). These are specific per satellite per receiver. Range Errors include: clock, trophospheric or ionospheric errors. Unboundings occur when the UDRE does not bound the satellite range error.

#3 shows the Satellite PA availability. The percentage availability in the first column is based on the expected UDREi of the satellite.

#4 shows NPA availability of GEO 133. This GEO is never in PA mode so its UDREi never gets below 12. This shows the percent of the day that it was an NPA quality ranging GEO. UDREI_12_AVAIL shows the percent of the day it was in a UDREI of 12.

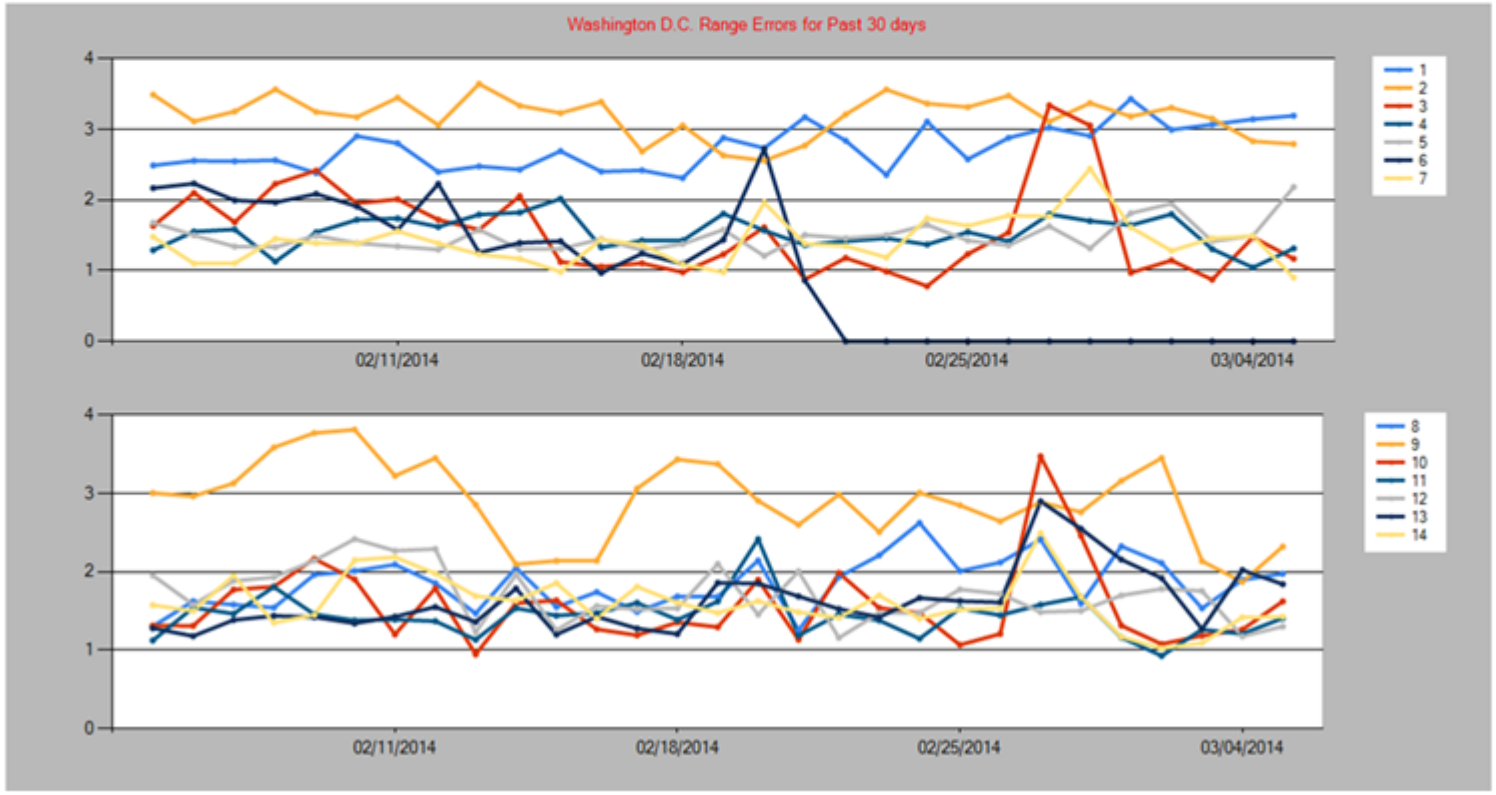
#5 shows the max range error for each satellite per receiver per satellite. The highlighted box shows the maximum range error for each receiver.



At the bottom of the Range Error tab, you can push the “Push to See Range Trends” button (See red arrow below) to open graphs similar to the one below. This is a screen shot of a portion of the page. Here we can see the Washington D.C. range errors (in meters) for satellites 1- 14. In actuality, the webpage will show satellites 1-32 along with Geostationary satellites, all indicated by their own colored line in the graphs.

Salt Lake City	3.99	2.22	3.89	1.84	1.59	0	1.74	1.12	3.52	1.82	1.82	1.39	2.92	1.04	1.61	1.36	2.98	1.34	2.45	2.43	1.72	2.07	1.77	4.42	2.33	1.73	2.70	1.35	2.86	0	2.24	1.72	1.86	1.86	6.52
San Jose Del Cabo	2.68	3.13	1.57	1.31	1.17	0	1.11	1.41	2.07	2.04	2.05	1.29	1.62	1.63	1.90	1.93	0.83	2.31	2.89	1.78	2.05	3.15	2.83	3.10	3.31	1.11	2.47	1.68	0.97	0	1.13	1.44	2.46	3.41	8.85
San Juan	2.40	4.92	6.05	2.71	1.21	0	5.46	3.44	3.84	3.54	6.33	4.06	6.13	0	0	6.64	3.30	0	7.95	3.79	0	0	7.83	0	0	0	5.04	4.26	0	0	2.35	2.07	3.57	3.72	7.24
Seattle	4.54	2.33	1.48	3.28	1.90	0	1.57	0.96	1.39	1	4.35	2.38	0.80	1.41	2.31	2.41	1.50	1.10	3.31	1.15	1.24	3.49	1.90	2.88	3.41	2.88	3.53	0.96	1.90	0	1.35	1.42	2.36	2.55	12.3
Tapachula	3.83	3.49	3.43	0.96	1.94	0	4.93	4.50	1.39	3.65	3.89	1.99	4.48	3.56	1.34	4.73	1.80	2.70	4.90	5.29	3.14	4.65	6.19	2.60	2.12	1.75	2.99	2.31	2.43	0	4.49	5.05	0	0	10.8
Washington DC	2.36	3.57	0.99	1.46	1.50	0	1.19	2.21	2.51	1.54	1.38	1.48	1.42	1.70	1.22	1.43	0.90	2.27	3.06	2.13	1.64	3.24	2.40	2.65	2.62	1.54	2.44	1.87	2.20	0	1.11	1.29	2.82	2.94	9.15
Winnipeg	4.18	1.96	1.87	2.60	2.24	0	1.88	2.14	1.40	2.25	1.84	2.96	2.08	1.75	1.64	3.67	1.52	1.43	2.39	3.01	1.18	2.46	3.53	4.19	3.68	1.98	2.46	1.23	2.82	0	2.32	1.98	2.33	2.53	6.28

Push to See Range Trends



Iono Errors

This is the ionospheric portion of the range error. The satellites are listed in the first column. The other columns are the ionospheric errors in meters for the noted receivers. The highest ionospheric error of each receiver is highlighted.

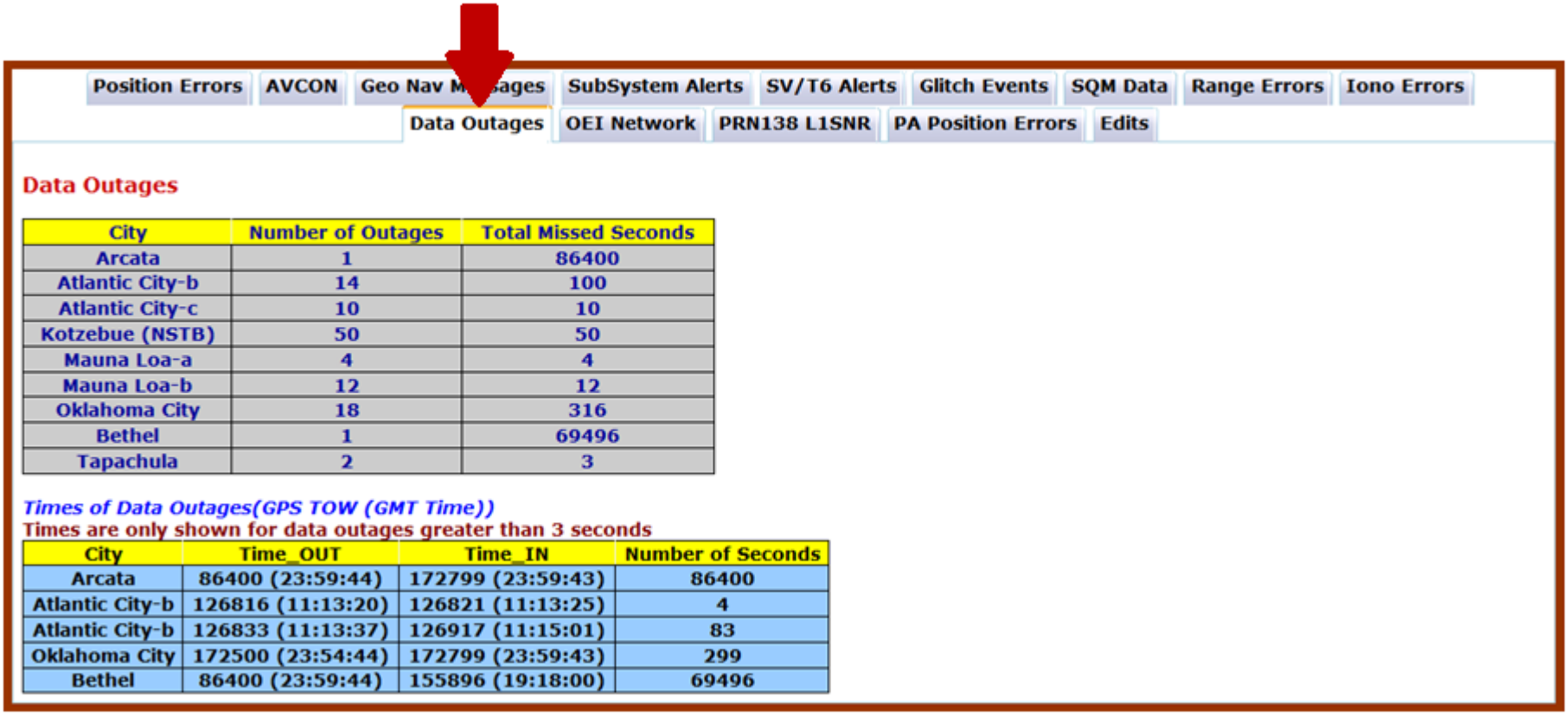
Iono 95% | Iono 99% | Iono 99.9% | Iono Mean | Iono Standard Deviation

SAT	BIL	ZAB	ZBW	ZDC	ZHU	ZKC	ZLA	ZLC	ZMA	ZMP	ZTL	JNU	BET	CDB	MMD	ZAU	ZFW	ZME	ZNY	ZOA	OTZ	MMX	MSD	YQX	YYR	MTP	YFB
1	1.44	1.59	2.34	1.98	1.84	1.33	1.80	1.96	2.36	1.73	1.78	1.62	2.36	2.43	2.19	1.54	1.79	1.31	2.09	2.12		1.73	1.65	1.66	1.54	1.82	1.58
2	1.93	1.57	1.72	1.67	1.68	1.86	1.47	1.54	1.32	1.75	1.90	1.75	1.44	1.04	1.41	1.96	1.61	2.19	1.77	1.33		1.17	1.25	1.98	2.41	1.42	2.98
3	0.73	0.69	0.93	0.67	0.67	0.42	0.69	0.68	1.08	0.46	0.61	0.68	0.54	0.58	0.98	0.74	0.62	0.41	0.65	0.53		0.75	1.59	0.68	0.80	0.35	1.37
4	1.12	0.97	1.13	0.65	1.40	1.29	0.90	1.02	0.93	0.70	0.60	1.29	0.95	0.86	1.53	0.62	0.92	0.49	0.89	0.98		1.47	1.67	0.57	0.31	1.33	0.78
5	0.70	0.93	1.03	0.68	1.10	1.04	0.99	0.86	1.02	0.63	0.71	1.05	0.68	1.01	1.07	0.64	1.14	0.51	0.90	0.81		1.16	1.10	0.59	0.38	0.78	1.38
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0
7	0.42	0.54	0.57	0.56	0.58	0.62	0.73	0.69	0.64	0.41	0.48	0.97	0.67	0.93	0.66	0.49	0.66	0.56	0.66	0.52		0.69	0.64	1.16	1.08	0.75	1.77
8	0.42	0.46	0.44	0.30	0.41	0.62	0.41	0.34	0.67	0.35	0.49	0.61	0.25	0.69	0.39	0.47	0.36	0.58	0.41	0.38		0.46	0.46	0.31	0.87	0.83	1.82
9	0.69	0.76	0.49	0.69	0.57	0.85	0.59	0.74	0.72	0.55	0.37	1.07	0.50	0.87	0.59	0.33	0.60	0.67	0.65	0.54		0.72	0.73	0.55	0.62	0.40	1.78
10	0.49	0.41	1.24	0.56	0.97	0.54	0.50	0.73	0.32	1.38	0.68	0.62	0.59	0.38	0.68	0.54	0.57	0.85	0.61	0.41		0.75	0.67	0.63	1.20	0.90	1.55
11	1.02	0.36	0.61	0.54	1.19	0.57	0.53	0.78	0.94	1.17	0.77	0.80	0.63	0.51	0.87	0.55	0.93	0.94	0.71	0.77		0.61	0.59	0.73	1.73	1.13	1.74
12	1.85	0.99	0.83	0.77	0.61	0.51	0.74	0.67	0.68	1.07	0.51	0.51	0.36	0.80	0.45	0.80	0.63	0.73	0.65	0.87		0.57	1	0.80	2.03	0.58	2.05
13	0.79	0.84	1.13	0.56	0.67	0.52	0.35	0.79	0.63	0.47	0.34	0.64	0.49	0.67	0.46	0.70	0.57	0.72	1.26	0.58		0.61	0.64	0.41	1.12	0.93	1.52
14	0.82	0.48	0.40	0.43	1.01	0.36	0.29	0.39	0.36	0.39	0.42	1.99	0.68	0.32	0.61	0.45	0.37	0.79	0.47	0.53		0.61	0.44	0.75	1.71	0.82	3.15
15	0.50	0.89	0.82	0.76	1.27	0.78	0.64	0.72	1	0.73	0.77	1.25	0.99	1.05	1.20	0.67	0.85	0.62	0.67	0.62		1.31	0.91	0.74	0.78	0.91	2.69
16	0.60	0.74	0.45	0.47	0.67	0.75	1.15	0.46	0.72	0.70	0.79	0.68	0.86	0.58	0.82	0.65	0.50	1.14	0.37	0.62		0.76	1.36	0.83	1.66	0.98	2.05
17	1.01	0.68	0.57	0.36	1.20	0.48	0.75	0.89	0.73	0.36	0.30	0.70	0.43	0.46	0.72	0.36	0.40	0.66	0.58	0.66		1.62	1.20	0.36	0.55	0.31	1.15
18	1.17	0.49	0.84	0.82	1.14	0.72	0.53	0.78	0.75	0.92	1.24	0.90	1.22	0.52	1.01	0.94	0.82	1.45	0.87	0.52		0.85	0.65	0.79	0.81	1.01	2.31
19	1.37	1.28	1.48	1.64	1.46	1.44	1.18	1.22	1.45	1.63	1.80	1.49	1.35	1.59	1.32	2.10	1.38	2.06	1.51	1.20		1.39	1.11	1.96	2.60	1.79	3.14
20	1.26	0.63	2.33	0.76	0.88	0.46	0.53	0.46	0.95	1.02	0.76	1.12	0.70	0.63	0.94	1.37	0.57	1.52	0.54	0.47		1.06	0.41	1.98	2.30	1.16	2.03
21	1.04	0.74	0.79	0.79	0.84	0.97	0.54	0.49	0.84	0.83	1.17	1.33	1.35	0.58	0.79	0.78	0.79	1.50	0.58	0.63		0.60	0.82	0.95	1.40	1.04	2.06
22	2	1.46	1.59	1.66	1.76	1.57	1.60	1.48	1.48	1.78	1.96	1.76	2.07	1.63	1.71	1.92	1.53	2.34	1.59	1.45		1.55	1.34	1.34	1.44	1.86	4.45
23	1.31	1.19	1.06	1.34	1.50	1.09	1.17	1.24	1.15	1.42	1.49	1.54	1.32	1.10	1.45	1.42	1.29	1.97	0.97	1.02		1.46	1.22	1.89	2.20	1.68	2.32
24	1.73	1.69	1.98	1.64	1.69	1.43	1.85	2.22	1.75	1.77	1.48	2.14	2.04	2.17	1.60	1.46	1.40	0.98	2.14	1.97		1.68	1.75	2.13	2.48	1.38	2.29
25	1.39	1.96	1.99	1.43	1.48	1.28	1.72	1.56	1.51	1.17	0.84	3.21	1.45	2.06	1.03	1.29	1.35	0.82	1.64	1.91		1.22	1.79	2.24	2.31	1.03	1.40
26	0.54	0.70	0.70	0.76	0.61	0.70	0.89	0.68	0.72	0.62	0.33	1.07	1.12	1.15	0.72	0.48	0.76	0.53	1.11	0.93		0.87	0.69	1.08	0.70	0.66	2.09
27	1.16	1.19	1.65	1.36	1.43	1.35	1.36	1.35	1.80	1.03	1.52	1.78	1.08	1.67	1.55	1.25	1.33	0.79	1.84	1.66		1.31	1.72	1.49	1.21	1.06	1.23
28	1.25	0.53	0.75	0.59	0.58	0.68	0.37	0.62	0.92	0.50	0.75	0.60	0.44	0.54	0.53	0.75	0.39	1.10	0.52	0.42		0.41	0.77	0.93	1.57	0.77	2.36
29	0.66	1.01	0.59	0.76	0.74	0.75	0.97	0.91	1.03	1.17	0.40	1.18	0.65	1.09	0.89	0.72	0.76	0.58	0.60	0.71		1.01	1.09	1.10	1.85	0.75	1.25
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0
31	1.70	0.88	0.79	0.46	0.98	0.56	0.79	1.06	1.10	0.65	0.55	1.37	0.39	0.78	1.06	0.46	0.87	0.53	0.58	0.73		1.23	1.29	1.75	2.55	0.85	1.75
32	0.80	0.55	0.71	0.41	0.61	0.46	0.48	0.72	0.58	1	0.53	0.60	0.39	0.60	0.70	0.82	0.49	0.78	0.52	0.56		0.50	0.66	1.90	2.38	1.14	1.86

Data Outages

The Data Outages tab shows us the number of seconds we did not receive data for a particular receiver. The top box shows the outage totals while the bottom box shows the times for each outage. Only outages >3 seconds are recorded in the bottom box. The bottom box also shows the Time Out and Time In in GPS Time of Week (GPS TOW) and GMT Time in parenthesis. Arcata in the bottom box is showing 86,400 seconds of continuous outage, which equals the entire day.

Please note: For the WAAS sites, one string from each WAAS reference station is chosen and shown in this tab. The NSTB sites have only one string unless noted with a suffix of –a, -b, etc.



Data Outages

City	Number of Outages	Total Missed Seconds
Arcata	1	86400
Atlantic City-b	14	100
Atlantic City-c	10	10
Kotzebue (NSTB)	50	50
Mauna Loa-a	4	4
Mauna Loa-b	12	12
Oklahoma City	18	316
Bethel	1	69496
Tapachula	2	3

Times of Data Outages(GPS TOW (GMT Time))

Times are only shown for data outages greater than 3 seconds

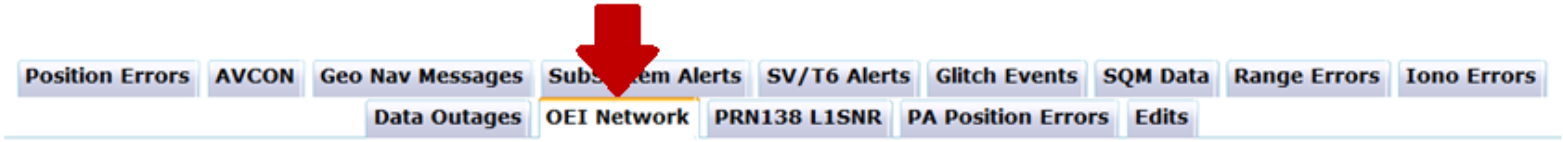
City	Time_OUT	Time_IN	Number of Seconds
Arcata	86400 (23:59:44)	172799 (23:59:43)	86400
Atlantic City-b	126816 (11:13:20)	126821 (11:13:25)	4
Atlantic City-b	126833 (11:13:37)	126917 (11:15:01)	83
Oklahoma City	172500 (23:54:44)	172799 (23:59:43)	299
Bethel	86400 (23:59:44)	155896 (19:18:00)	69496

OEI Network

The diagram below shows a portion of the Operational External Interface (OEI) Network Screen. These show outages from receivers for ***ALL*** threads. The OEI server obtains identical information from 2 rings of data for each receiver:

- NET_RING1 shows how many seconds were missing on the Ring 1 network.
- NET_RING2 shows how many seconds were missing on Ring 2 network.
- NET_MISSING is a merged file showing seconds that were missing from both Ring 1 and Ring 2 at the same time.
- DC_MISSING is the number of seconds that data is missing for data collection. Both NET_MISSING and DC_MISSING should match.

The orange highlights anything that is missing data from that particular receiver or if the last 2 columns do not match.



Group 1 Merged Data 114 Sites

SITE	NET_RING1	NET_RING2	NET_MISSING	DC_MISSING
wbetwrsp1	69476	69456	69456	69456
wbetwrsp2	19	0	0	0
wbetwrsp3	19	0	0	0
wbilwrsp1	0	0	0	0
wbilwrsp2	0	0	0	0
wbilwrsp3	0	0	0	0
wbrwwrsp1	2	0	0	0
wbrwwrsp2	3	0	0	0
wbrwwrsp3	2	1	0	0
wcdbwrsp1	15	17	0	0
wcdbwrsp2	11	13	0	0
wcdbwrsp3	15	18	0	0
wfaiwrsp1	0	0	0	0
wfaiwrsp2	0	0	0	0
wfaiwrsp3	0	0	0	0
wjnuwrsp1	18	13	0	0
wjnuwrsp2	16	17	0	0
wjnuwrsp3	12	9	0	0
wmmdwrsp1	0	2	0	0
wmmdwrsp2	0	4	0	0
wmmdwrsp3	0	3	0	0
wmmxwrsp1	1	1	0	0

PRN138 L1SNR

Here is a partial screen shot of PRN138 L1 Signal to Noise Ratio (L1SNR) in decibels, as reported by the WAAS receiver (See #1 below). This page is meant to determine if the signal power received at various reference stations from the WAAS GEO 138 differs from a normal level. A significant difference could be an indication of Radio Frequency Interference (RFI). The table lists receivers in the first column followed by the receiver's location, the signal to noise average, minimum and maximum columns.

The box labeled #2 is normally at the bottom of the PRN138 L1SNR screen. This box shows the drop in L1SNR. If the signal to noise drops >6 decibels, the signal was possibly interrupted by RFI. The orange highlighted boxes show the minimum L1SNR >9db subtracted from the average *or* the length of time exceeded 300 seconds. Note that when there is a GUS switchover for PRN 138 all the receivers that track that GEO will be listed in box #2. GUS switchovers are listed in the Alert Explorer.

1

RCVR	CITY	L1SNR_AVG	L1SNR_MIN	L1SNR_MAX
304	Atlantic City-a	52.0980	48.9740	53.0880
336	Atlantic City-b	46.9180	43.50	48.40
337	Atlantic City-c	46.2340	42.60	48.40
4145	Prescott	51.8830	39.2550	52.7330
4482	Bangor	44.0610	41.8840	45.3760
5936	Grand Forks	47.2540	45.6940	48.1420
6192	Elko	46.0950	44.8460	46.8020
6449	Oklahoma City	48.9380	47.8240	49.65
6786	San Angelo	50.0210	49.3890	50.5210
7248	Mauna Loa-b	43.1990	40.80	46.20
11650	Kotzebue (NSTB)	42.6930	38.9480	45.3460
27329	Billings	49.1230	47.70	50.60
27585	Albuquerque	51.0650	49.60	52
27841	Anchorage	42.13	40.70	43.60
28097	Chicago	50.6760	49.20	51.70
28353	Boston	47.2680	45.90	49.10
28609	Washington DC	49.1270	40.20	50.20
28865	Denver	50.1030	49	51.20
29121	Dallas	52.2640	51.20	53.20
29377	Honolulu	45.5290	42.90	46.50
29633	Houston	51.5540	50.10	52.70
30145	Jacksonville	50.9830	49.70	52
30401	Kansas City	49.0570	47.90	50.30
30657	Los Angeles	50.9750	49.70	51.90
30913	Salt Lake City	49.8410	33.50	50.90
31169	Miami	51.8690	43.60	52.90
31425	Memphis	50.92	49.70	52
31681	Minneapolis	49.2480	43.80	50.40
31937	New York	47.1070	45.10	48.20
32193	Oakland	49.5920	48.20	50.60
32449	Cleveland	49.2080	47.80	50.30
32705	Seattle	45.8810	44.50	47.80
32961	San Juan	48.2820	46.60	49.30
33218	Atlanta	50.4840	49	51.40
33473	Juneau	45.8980	44.50	47.10
33729	Cold Bay	39.9040	38.20	41.10
33985	Fairbanks	40.8680	38.80	42.30

2

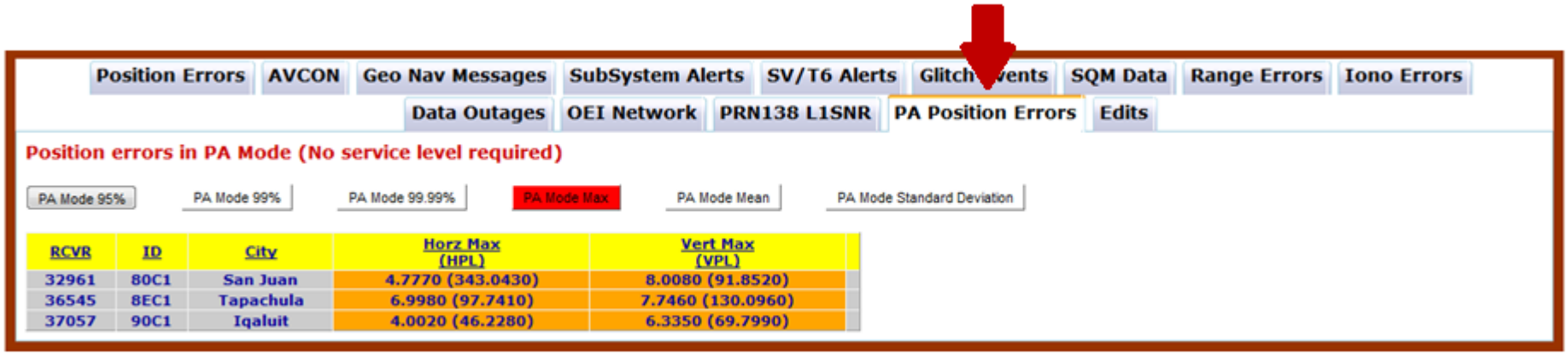
Drops in L1_SNR >=6 subtracted from average that lasted greater than 2 seconds. Times (GPS TOW(GMT Time))

Highlighted: Min L1SNR > 9db subtracted from average OR the length of time exceeded 300 seconds

RCVR	CITY	Start Time	Stop Time	Number of Seconds	Min L1SNR
4145	Prescott	140211 (14:56:35)	140266 (14:57:30)	55	39.2550
28609	Washington DC	141277 (15:14:21)	141280 (15:14:24)	3	40.20
30913	Salt Lake City	155672 (19:14:16)	155675 (19:14:19)	3	43.20
30913	Salt Lake City	155679 (19:14:23)	155686 (19:14:30)	7	42
30913	Salt Lake City	155695 (19:14:39)	155700 (19:14:44)	5	42.70
30913	Salt Lake City	155705 (19:14:49)	155739 (19:15:23)	34	35.10
30913	Salt Lake City	164735 (21:45:19)	164739 (21:45:23)	4	39.60
30913	Salt Lake City	164742 (21:45:26)	164758 (21:45:42)	16	33.50
30913	Salt Lake City	164761 (21:45:45)	164765 (21:45:49)	4	40.80
30913	Salt Lake City	164766 (21:45:50)	164772 (21:45:56)	6	38.90
30913	Salt Lake City	164779 (21:46:03)	164785 (21:46:09)	6	43
31169	Miami	135490 (13:37:54)	135493 (13:37:57)	3	44
31169	Miami	160017 (20:26:41)	160022 (20:26:46)	5	43.60
31169	Miami	163295 (21:21:19)	163299 (21:21:23)	4	43.80

PA Position Errors

Unlike the Position Error tab which shows position errors when LPV service is available, the PA Position Errors tab shows the position errors when the receivers are out of LPV service. The table below shows Position errors when the HPL is > 40 meters and/or the VPL is > 50 meters. Errors are listed when the tool is in PA mode. Also, the 95%, 99%, 99.99%, maximum, mean, and standard deviation can be displayed by choosing the appropriate button.

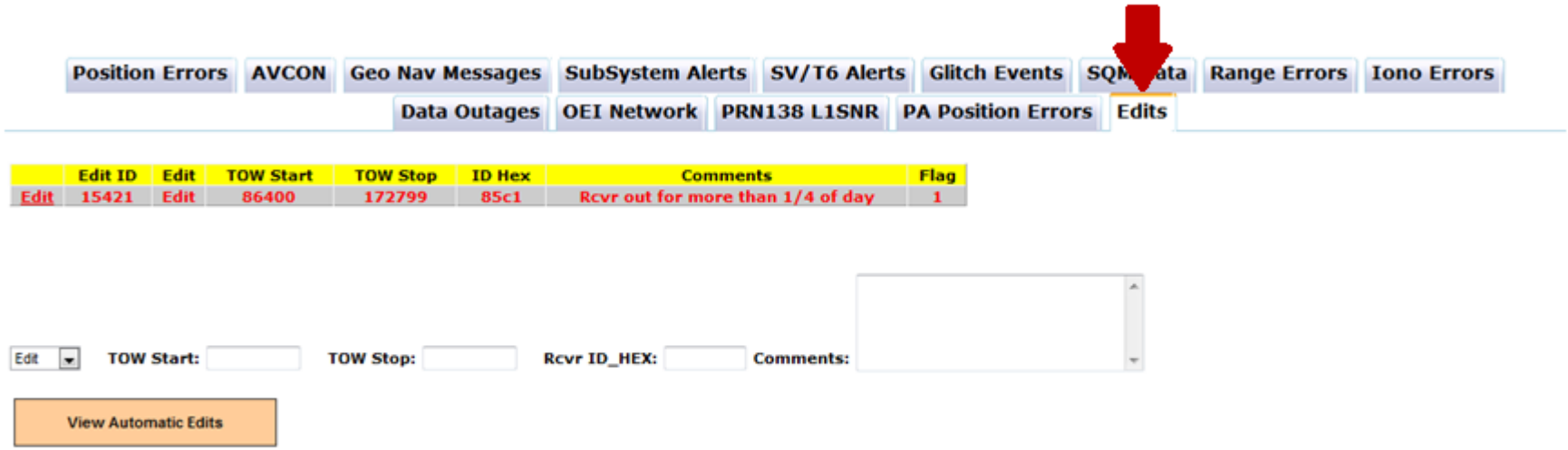


RCVR	ID	City	Horz Max (HPL)	Vert Max (VPL)
32961	80C1	San Juan	4.7770 (343.0430)	8.0080 (91.8520)
36545	8EC1	Tapachula	6.9980 (97.7410)	7.7460 (130.0960)
37057	90C1	Iqaluit	4.0020 (46.2280)	6.3350 (69.7990)

Edits

These edits are entered manually when a receiver malfunctions. Below, the edit ID, start and stop time of week and comments are listed in the table, followed by the flag. You can view automatic edits by pressing the orange “View Automatic Edits” button at the bottom of the screen. Thresholds have been established in the evaluation software to determine when automatic editing (i.e. removal) of data should occur. The purpose of this website is to measure the performance of WAAS. When one of the tools (i.e. receivers) that is used to measure performance malfunctions the date from that tool is removed from the results.

In the Flag column, a 0 means the edit was not done and 1 means the edit was completed. Any edits that are not done (i.e. have a flag of 0) will be done at a later time.



When you click on the “View Automatic Edits” button, you can view all the edits. Below is a partial table from the website.

Listed in this table are: the receiver, time of week (TOW), Nav mode, number of satellites that were valid, the HPL, VPL, Flag and Geostationary satellite number.

Here the number listed under Flag shows us how many satellites discarded from the solution. If VPL is > 50 or HPL is > 40, the data is automatically edited out of the statistics.

Does not include Hawaii Sites

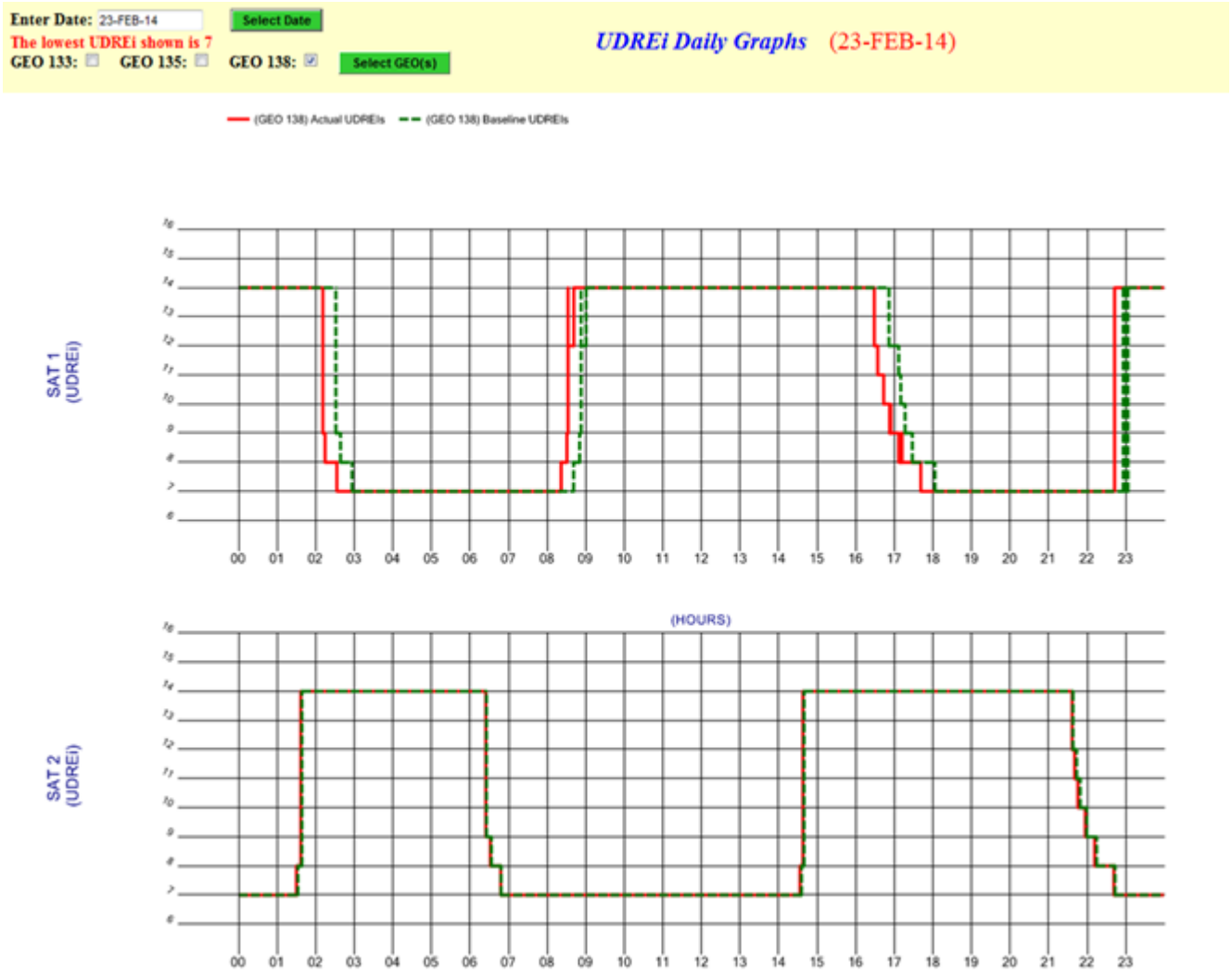
CITY	RCVR	TOW	NAV	SAT_VALID	HPL	VPL	FLAG	GEO
San Juan	32961	87247	3	9	65	69	2	138
San Juan	32961	87248	3	9	65	69	2	138
San Juan	32961	87249	3	9	64	69	2	138
San Juan	32961	87250	3	9	64	69	2	138
San Juan	32961	87251	3	9	64	69	2	138
San Juan	32961	87252	3	9	64	69	2	138
San Juan	32961	87253	3	9	65	69	2	138
San Juan	32961	87254	3	9	65	69	2	138
San Juan	32961	87255	3	9	64	69	2	138
San Juan	32961	87256	3	9	64	69	2	138
San Juan	32961	87257	3	9	64	69	2	138
San Juan	32961	87258	3	9	65	69	2	138
San Juan	32961	87259	3	9	65	69	2	138
San Juan	32961	87260	3	9	65	69	2	138
San Juan	32961	87261	3	9	64	69	2	138
San Juan	32961	87262	3	9	64	69	2	138
San Juan	32961	87263	3	9	64	69	2	138
San Juan	32961	87264	3	9	64	69	2	138
San Juan	32961	87265	3	9	65	69	2	138
San Juan	32961	87266	3	9	65	69	2	138
San Juan	32961	87267	3	9	64	69	2	138
San Juan	32961	87268	3	9	64	69	2	138
San Juan	32961	87269	3	9	64	69	2	138
San Juan	32961	87270	3	9	64	69	2	138
San Juan	32961	87271	3	9	64	69	2	138
San Juan	32961	87272	3	9	64	69	2	138
San Juan	32961	87273	3	9	64	69	2	138
San Juan	32961	87274	3	9	64	69	2	138
San Juan	32961	87275	3	9	64	69	2	138
San Juan	32961	87276	3	9	64	69	2	138
San Juan	32961	87277	3	9	64	69	2	138

View UDREIs

To view UDREIs for this day, click on “View URDEIs” in the top right corner of the PA Summary (See red arrow).

The User Differential Range Errors (UDREis) are shown per satellite per hour for a 24 hour period. The image below depicts only two satellites, PRN 1 and PRN 2. In actuality, satellites 1-32 along with all Geostationary satellites 133, 135 and 138 are shown. Notice the date is shown and default Geostationary satellite Geo 138 is checked. The GEO means that the UDREi corrections are shown for that GEO. The green line indicates the expected UDREIs and the red shows the actual UDREi's. Note too that the lowest UDREi shown is 7, even though the UDREi can get lower.

The UDREi transmitted from different GEO satellites can be viewed by checking the box next to the GEO PRN number. Also, different dates can be entered to look at the UDREi charts for different days. The entered date must be in the DD-MM-YYYY format. A calendar does pop up when the Enter Date box is clicked.



View IGPs By Region and Max KP Index

Both Ionospheric Grid Point Status (IGPs) and the K-index (Kp) relate to ionospheric effects on the GPS signals. The Kp Index is a calculation based on disturbances in the earth's magnetic field with regards to a geomagnetic storm with a range of 0-9. 1 is calm while 5 or more indicates high ionospheric activity. In this example the Kp index is at 4. To select a Kp plot, click on "Max KP Index for today: 4" (See red arrow below).

Next, select the year, plots, Kp file and appropriate gif file. In the example below, we chose "2014, "2014_plots," "Kp," and "20140717." The table for 07/17/2014 is displayed.

Please note: we can only go as far back as 1996 for Kp Index files.