

**WIDE-AREA AUGMENTATION SYSTEM
PERFORMANCE ANALYSIS REPORT**

Report #45

(Revised on 4/30/2014)

Reporting Period: April 1 to June 30, 2013

July 2013

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Changes:

Changes are made to figures 2.9 to 2.12. The plots in those figures were misplaced in the previous report. The plots are now moved to the correction locations.

- The plot in Figure 2.9 is moved to its correct location, Figure 2.11.
- The plot in Figure 2.10 is moved to its correct location, Figure 2.12
- The plot in Figure 2.11 is moved to its correct location, Figure 2.9.
- The plot in Figure 2.12 is moved to its correct location, Figure 2.10

Executive Summary

Since 1999 the WAAS Test Team at the William J. Hughes Technical Center has reported GPS performance as measured against the GPS Standard Positioning Service (SPS) Signal Specification. These quarterly reports are known as the PAN (Performance Analysis Network) Report. In addition to that report, the WAAS Test Team reports on the performance of the Wide-Area Augmentation System (WAAS). This report, #45, covers WAAS performance during the period from April 1, 2013 to June 30, 2013.

The following table shows observations for accuracy and availability made during the reporting period for CONUS and Alaska sites. The international sites are excluded from this table, but are included in the body of the report. See the body of the report for additional results in accuracy, availability, safety index, range accuracy, WAAS broadcast message rates, and GEO ranging availability. LP service is available when the calculated Horizontal Protection Level (HPL) is less than 40 meters. LPV service is available when the calculated HPL is less than 40 meters and the Vertical Protection Level (VPL) is less than 50 meters. LPV 200 service is available when the calculated HPL is less than 40 meters and the VPL is less than 35 meters. The NSTB sites, Grand Forks and Arcata, are outliers due to receiver quality issues, not the WAAS signal in space quality.

Parameter	CONUS Site/Maximum	CONUS Site/Minimum	Alaska Site/Maximum	Alaska Site/Minimum
95% Horizontal Accuracy (HPL <= 40 meters)	Atlantic City 1.415 meters	Kansas City 0.601 meters	Juneau 0.738 meters	Barrow 0.636 meters
95% Vertical Accuracy (VPL <= 50 meters)	Atlantic City 1.657 meters	Salt Lake City 0.85 meters	Barrow 1.455 meters	Cold Bay 1.078 meters
LP Availability (HPL <= 40 meters)	Multiple Sites 100%	Grand Forks. 99.936%	Barrow 99.99%	Cold Bay 99.89%
LPV Availability (HPL <= 40 meters & VPL <= 50 meters)	Multiple Sites100%	Grand Forks 99.90%	Barrow 99.92%	Cold Bay 99.81%
LPV 200 Availability (HPL <= 40 meters & VPL <=35 meters)	Multiple Sites 100%	Oakland 99.18%	Fairbanks 99.87%	Cold Bay 93.19%
99% HPL	Miami 17.545 meters	Memphis 11.52 meters	Cold Bay 28.78 meters	Fairbanks 15.11 meters
99% VPL	Arcata 33.29 meters	Memphis 19.08 meters	Cold Bay 40.10 meters	Juneau 24.38 meters

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1.0 INTRODUCTION

The FAA monitors WAAS and GPS SPS performance in order to ensure the safe and effective use of the satellite navigation system in the National Airspace System (NAS). The Wide Area Augmentation System (WAAS) adds more timely integrity monitoring of GPS and improves position accuracy and availability of GPS within the WAAS coverage area.

Objectives of this report are:

- a. To evaluate and monitor the ability of WAAS to augment GPS by characterizing important performance parameters.
- b. To analyze the effects of GPS satellite operation and maintenance, and ionospheric activity on the WAAS performance.
- c. To investigate any GPS and WAAS anomalies and determine their impact on potential users.
- d. To archive performance of GPS and WAAS for future evaluations.

The WAAS data transmitted from Geostationary satellites (GEO) PRN#135 (CRW), PRN#138 (CRE) and PRN#133 (AMR) are used in the evaluation. CRE and CRW GEOs provide a precision approach (PA) ranging capability that supports all levels of WAAS service. AMR GEO provides only non-precision approach (NPA) ranging service.

The terms "PA" and "NPA" are used in this report to refer to the two modes of user equipment operation. PA and NPA are terms used in the original WAAS specification, FAA-E-2892. See Table 1-1 for a mapping of these terms to the user service levels.

Receivers in PA mode are required to: use all WAAS corrections, use only corrected satellites, not mix corrections from multiple GEOs, only use the designated Space Based Augmentation System (SBAS) for the published approach procedure, and not use ranging from a GPS or GEO satellite having a User Differential Range Error (UDRE) status of greater than 15 meters. Receiver in NPA mode may: mix corrected and uncorrected satellites, mix corrections from different GEOs or SBASs, use either the WAAS ionosphere corrections or the GPS Klobachar model for ionosphere corrections, and use ranging from a GPS or GEO satellite that have a UDRE status of greater than 15 meters. NPA mode receivers may also operate using Fault Detection / Fault Detection Exclusion (FD/FDE) in the absence of a SBAS. The data presented in this report does not take credit for the additional NPA mode availability and continuity provided by the use of FD/FDE, whether full FD/FDE or partial FD/FDE used to allow the mixing of corrected and uncorrected satellites. The NPA accuracy data presented in this report uses Klobachar ionosphere corrections in order to be conservative.

The results in this report are based on the application of the WAAS corrections to receiver data from the WAAS receiver network and receivers of the FAA's National Satellite Test Bed (NSTB) network and from analysis based on the correction data broadcast by WAAS. Table 1-2 lists the receivers used in the PA analyses. Table 1-3 lists the receivers used in the NPA analyses.

Table 1-1 WAAS Service Levels

User Service	NPA or PA	WAAS Protection Levels
RNP 0.3	NPA	HPL <= 0.3 nmi
RNP 0.1	NPA	HPL <= 0.1 nmi
LNAV	NPA	HPL <= 556 m
LNAV/VNAV	PA	HPL <= 556 m VPL <= 50 m
LP	PA	HPL <= 40 m
LPV	PA	HPL <= 40 m VPL <= 50 m
LPV200	PA	HPL <= 40 m VPL <= 35 m

Table 1-2 PA Evaluation Sites

	Number of Days Evaluated	Number of Samples
NSTB:		
Arcata	78	6696999
Atlantic City	91	7822464
Grand Forks	82	7051026
Oklahoma City	84	7224776
WAAS:		
Albuquerque	91	7862294
Anchorage	91	7862279
Atlanta	91	7862396
Barrow	91	7861800
Bethel	91	7861648
Billings	91	7862302
Boston	91	7862375
Chicago	91	7862398
Cleveland	91	7851551
Cold Bay	91	7855540
Dallas	91	7860593
Denver	91	7852541
Fairbanks	91	7856244
Gander	91	7862046
Goose Bay	91	7855999
Houston	91	7855269
Iqaluit	91	7859581
Jacksonville	91	7862400
Juneau	91	7859615
Kansas City	91	7862085
Kotzebue	91	7862055
Los Angeles	91	7862311
Memphis	91	7862392
Merida	91	7858868
Mexico City	90	7757144
Miami	91	7861056
Minneapolis	91	7861276
New York	91	7859739
Oakland	91	7862212
Puerto Vallarta	91	7851377
Salt Lake City	91	7862378
San Jose Del Cabo	91	7846019
Seattle	91	7861052
Washington DC	91	7862136
Winnipeg	91	7862329

**San Juan offline for roof reconstruction

Table 1-3 NPA Evaluation Sites

Location	Number of Days Evaluated	Number of Samples
Albuquerque	91	7861549
Anchorage	91	7859162
Atlanta	91	7861542
Barrow	91	7861208
Bethel	91	7860653
Billings	91	7861462
Boston	91	7861446
Cleveland	91	7859682
Cold Bay	91	7846329
Fairbanks	91	7858393
Gander	91	7861549
Honolulu	91	7861532
Houston	91	7861550
Iqaluit	91	7857397
Juneau	91	7858362
Kansas City	91	7860135
Kotzebue	91	7861232
Los Angeles	91	7861518
Merida	91	7857996
Miami	91	7860165
Minneapolis	91	7861553
Oakland	91	7859724
Salt Lake City	91	7858461
San Jose Del Cabo	91	7859119
San Juan	91	7861538
Seattle	91	7860181
Tapachula	91	7858261
Washington DC	91	7861554

The report is divided in the performance categories listed below.

1. WAAS Position Accuracy
2. WAAS Operational Service Availability
3. Coverage
4. Integrity
5. WAAS Range Domain Accuracy
6. GEO Ranging Performance
7. WAAS Airport Availability
8. WAAS CNMP Analysis
9. WAAS Antenna Survey Validation
10. SQM Analysis

Table 1-4 lists the performance parameters evaluated for the WAAS in this report. Please note that these are the performance parameters associated with the WAAS system. These requirements are extracted from the FAA Specification FAA-E-2892C and FAA Specification FAA-E-2976, as applicable.

Table 1-4 WAAS Performance Parameters

Performance Parameter	Expected WAAS Performance
LPV Accuracy Horizontal	≤ 1.5m error 95% of the time
LPV Accuracy Vertical	≤ 2m error 95% of the time
LNAV Accuracy Horizontal	≤ 36m error 95% of the time
Availability LPV CONUS	99% availability of 100% of CONUS
Availability LPV Alaska	95% availability of 75% of Alaska
Availability LNAV CONUS	99.99% availability with HPL < 556m
Availability LNAV Alaska	99.9% availability with HPL < 556m
Availability En route OCONUS	99.9% availability with HPL < 2nmi
Probability of Hazardously Misleading Information (HMI)	< 10e-7 per approach

1.1 Event Summary

Table 1-5 lists events that affected WAAS performance or the ability to determine the WAAS performance during the reporting period. These events include GPS or WAAS anomalies, relevant receiver malfunctions, and receiver maintenance conducted. Detailed analyses of particular events are documented in the Discrepancy Reports (DR). The DRs are posted on the website <http://www.nstb.tc.faa.gov> under ‘WAAS Technical Reports’ and can also be accessed via hyperlink from Table 1-5 below. Please note “TOW” is the time of GPS week, which is the cumulative number of seconds since 00:00:00 Sunday (GMT without leap seconds).

Table 1-6 lists events related to WAAS upgrades that happened this quarter. Table 1-7 lists events related to GUS switchovers. A GUS switchover is the transition from one uplink site to the other uplink site for a GEO.

Table 1-5 Events

Start Date	End Date	Location/ Satellite	Service Affected	Event Description
04/02/13	04/02/13	Boston (ZBW1), Boston (ZBW2), Boston (ZBW3)	Local	RFI caused a brief (57 sec) local outage of the LPV and LPV-200 levels of service at the Boston reference station.
04/04/13	04/04/13	PRN18	LPV_Canada	Unavailability of GPS PRN-18 due to planned maintenance (see NANU 2013024) resulted in minor LPV service outages in southern California / North Western Mexico and extreme Eastern Canada. The maintenance also caused significant LPV-200 service outages for Western CONUS / Mexico, Eastern Canada, and Northern Alaska. See the following plots for LPV and LPV-200 service impacts: LPV coverage 040413 LPV200 coverage 040413

Start Date	End Date	Location/Satellite	Service Affected	Event Description
				See the following plots for the duration of service outage: CONUS_outage_040413
04/11/13	04/12/13	PRN8	LPV200_CONUS, LPV200_Mexico	Planned maintenance for PRN-8 (delta V maneuver, NANU 2013026) resulted in a moderate outage of the LPV-200 level of service in south central CONUS and northern Mexico. See the following plot for the impacted locations: LPV200_coverage_041113 See the following plot for the duration (02:00 to 03:00 event): CONUS_outage_041113
04/12/13	04/12/13	GEO138, Brewster (BRE-B)	LPV200_Alaska LPV200_Canada	Geomagnetic activity ($K_p = 3$) caused minor degradation in LPV-200 service coverage in far northern Alaska and north eastern Canada starting at approximately at 8:00 GMT due to elevated GIVE values.
04/13/13	04/13/13	Salt Lake City (ZLC1, ZLC2, ZLC3)	Local	RFI caused a brief (66 sec) local outage of the LPV and LPV200 levels of service at the Salt Lake City (ZLC) reference station location.
04/24/13	04/24/13	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_All	Geomagnetic activity ($K_p = 4$) disturbed the ionosphere resulting in elevated GIVE values which resulted in short LPV-200 service outages for; northern Alaska, northern Canada, southern Mexico, the Gulf of Mexico and the southern tip of Florida. See the following plot for the locations of the outages: LPV200_coverage_042413
04/25/13	04/26/13	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Alaska, LPV200_Canada	Geomagnetic activity ($K_p = 3$ on 4/25 and $K_p = 5$ on 4/26) caused slightly elevated GIVE values which resulted in a minor degradation of LPV-200 service availability in northern Alaska and northern Canada. See the following plots for impacts for the two days: LPV200_coverage_042513 LPV200_coverage_042613
05/01/13	05/01/13	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_Alaska, LPV200_Canada	Geomagnetic activity ($K_p = 4$) caused the mild disturbances to the ionosphere in the polar region. The disturbed ionosphere resulted in WAAS broadcasting elevated GIVE values for the northern Ionosphere Grid Points (IGPs). This resulted in shrinkage of the WAAS LPV and LPV-200 service area coverage along the northern edge of the Canada service area, a brief LPV-200 service outage between Hudson Bay and the Great Lakes, and a minor degradation of LPV-200 service in northern Alaska. For the LPV service impact to northern Canada see:

Start Date	End Date	Location/ Satellite	Service Affected	Event Description
				<p>LPV coverage 050113</p> <p>For the LPV-200 service impacts see : LPV200 coverage 050113</p>
05/04/13	05/04/13	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Alaska, LPV200_Canada	<p>Slightly elevated GIVE values resulted in degradation of the LPV-200 service coverage in northern Alaska and northern Canada.</p> <p>See the following for the LPV-200 service impacts: LPV200 coverage 050413</p>
05/07/13	05/07/13	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Alaska, LPV200_Canada	<p>Elevated GIVEs associated with mild geomagnetic activity ($K_p = 3$) resulted in degradation to the LPV-200 service coverage in northern Alaska and northern Canada.</p> <p>See the following for the LPV-200 service impacts: LPV200 coverage 050713</p>
05/10/13	05/10/13	PRN25	LPV_Alaska, LPV200_CONUS, LPV200_Alaska, LPV200_Canada	<p>Planned maintenance on PRN-25 (Delta V maneuver, NANU 2013030) resulted in degradation of the LPV-200 service to the west coast of CONUS, Mexico, and Alaska. It also caused degradation of the LPV service to the south west tips of mainland Alaska and the Aleutian peninsula.</p> <p>See the following for the LPV and LPV-200 impacts: LPV coverage 051013 LPV200 coverage 051013:</p>
05/10/13	05/11/13	Iqaluit (YFB1), Iqaluit (YFB2), Iqaluit (YFB3)	LPV_Canada, LPV200_Canada	<p>Intermittent communication outages to the Iqaluit Canada reference station (YFB) resulted in temporary losses of service for that reference station. Loss of the service of the YFB reference station resulted in significant degradation of the LPV and LPV-200 service for Canada on May 10th and 11th.</p> <p>See the following for the service impacts: LPV coverage 051013 LPV coverage 051113 LPV200 coverage 051013 LPV200 coverage 051113</p>
05/13/13	05/13/13	Los Angeles (ZLA1), Los Angeles (ZLA2), Los Angeles (ZLA3)	Local	<p>Brief RFI on the L2 frequency at the Los Angeles (Palmdale) reference station (ZLA) caused an outlier in the position accuracy analyses for the maximum vertical error (processing uses dual frequency smoothing to mitigate ground based multipath on the L1 signal). Source of L2 RFI was not identified.</p>
05/15/13	05/15/13	GEO138, Woodbine (QWE)	LPV_All, LPV200_All	<p>GUS hardware failure of PNE caused missed navigation messages: 5 missed messages at 268354 (2:32), 4 missed messages at 328200 (19:09), 2 missed messages at 328208, and 2 missed messages at 328716.</p>

Start Date	End Date	Location/ Satellite	Service Affected	Event Description
				See DR 114 “LPV Service Outage Due to Consecutive SV Alerts on PRN 138” for a more detailed description.
05/16/13	05/19/13	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Alaska, LPV200_Alaska, LPV200_Canada	High KP all 4 days (KP = 3, 4, 5). Loss of LPV200 coverage in Canada and Alaska. On May 19th, LPV coverage was also affected in Alaska.
05/23/13	05/23/13	Miami (ZMA1), Miami (ZMA2), Miami (ZMA3)	Local	RFI event at Miami caused LPV/LPV200 service outages at all three threads on receiver. Threads A and C were put into maintenance due to alerts on the CnVs, although this is not normally the procedure. All CVs report SE-709 PID Alert for WRE-A/C. WMS: ZTL/ZLA/ZDC SE 721 WRS Down/Out of Service. Performed software Shutdown and Cntrl Pwr. at 1426Z
05/24/13	05/24/13	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Alaska, LPV200_Canada, LPV200_Mexico	Geomagnetic activity (Kp = 5) caused the ionosphere to be disturbed which resulted in WAAS broadcasting elevated GIVE values. This resulted in minor degradations of the LPV-200 service coverage along the northern edge of coverage for Alaska and Canada and along the southern edge of coverage for Mexico. See the following for the service impacts: LPV200_coverage_052413
05/25/13	05/25/13	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_All	Geomagnetic activity (Kp = 5) caused the ionosphere to be disturbed which resulted in WAAS broadcasting elevated GIVE values. This resulted in minor degradations of the LPV-200 service coverage along the northern edge of coverage for Alaska and along the southern edge of coverage for Mexico and the Florida Keys. There was moderate degradation to the LPV-200 service for Canada. See the following for the LPV-200 service impacts: LPV200_coverage_052513
05/26/13	05/26/13	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_CONUS, LPV200_Alaska, LPV200_Canada, LPV200_Mexico	Geomagnetic activity (Kp = 4) caused mild disturbances to the ionosphere which resulted in WAAS broadcasting elevated GIVE values. The elevated GIVE values caused degradation to the LPV-200 service coverage in north eastern Alaska, north western Canada, and along the southern edge of coverage for Mexico. There was also a minor increase in the size of the daily LPV-200 outage that occurs along the coast of northern California. See the following for the LPV-200 service impacts: LPV200_coverage_052613
05/27/13	05/27/13	Washington D.C. (CnV), Los Angeles (CnV),	LPV200_Alaska, LPV200_Canada, LPV200_Mexico	Geomagnetic activity (Kp = 4) caused mild disturbances to the ionosphere which resulted in WAAS broadcasting elevated GIVE values. The elevated GIVE values

Start Date	End Date	Location/ Satellite	Service Affected	Event Description
		Atlanta (CnV)		<p>caused minor degradation to the LPV-200 service coverage along the edges of coverage for Alaska, Mexico, California, and Canada. Canada also experienced slightly worse LPV-200 service coverage degradation with additional minor outages in central Canada and central north Canada.</p> <p>See the following for the LPV-200 service impacts: LPV200_coverage_052713</p>
05/30/13	05/30/13	GEO138, Woodbine (QWE)	LPV200_Canada	Manually initiated switchover of the uplink sites for the AMR GEO, PRN-138, from the Woodbine ,MD uplink site to the Brewster-B, WA uplink site. TOW 374487-374492
05/30/13	05/30/13	PRN21	LPV200_CONUS	<p>Carrier phase instability on PRN-21 resulted in WAAS alerting PRN-21 to "Not Monitored" twice, once at 10:12:58 UTC and another at 10:13:34 UTC. The temporary loss of service from PRN-21 resulted in an approximately 500 second LPV-200 service outage for most of Florida and a small area of southern Georgia.</p> <p>See the following for the LPV-200 service impacts: LPV200_coverage_053013</p>
06/01/13	06/01/13	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_All, LPV200_All	<p>Strong geomagnetic activity (Kp = 6) caused significant disturbance to the ionosphere which resulted in WAAS setting the GIVE values for a large number of IGPs to 45 meters (ionosphere storm condition) for a prolonged period of time. This resulted in significant LP, LPV, and LPV-200 outages for CONUS, Alaska, Canada, and Mexico.</p> <p>See DR 115 "Effect on WAAS from Iono Activity on 01June2013" for a more detailed description.</p> <p>See the following for the coverage vs. time impacts: CONUS_outage_060113 Alaska_outage_060113 Canada_outage_060113</p> <p>See the following for the locations of the service impacts: LPV_coverage_060113 LPV200_coverage_060113</p>
06/02/13	06/03/13	GEO135, NAPA (APC)	LPV200_CONUS, LPV200_Alaska, LPV200_Canada	<p>Manually initiated switchover of the uplink site for the CRW GEO, PRN-135, from Napa CA to Littleton CO. TOW 41732-41737</p> <p>Uplink switchovers interrupt the data link for several seconds and restart the carrier smoothing algorithms. Restarting the carrier smoothing results in high UDRE values for about 6 hours and full ranging performance is not achieved until about 36 hours. The elevated UDRE</p>

Start Date	End Date	Location/ Satellite	Service Affected	Event Description
				<p>value for PRN-135 resulted in brief, isolated LPV-200 outages in central CONUS and the Great Lakes region of CONUS / Canada. The elevated UDRE also contributed to LPV-200 service coverage degradation in northern Alaska, but the locations in Alaska are not discernible on the plot because those locations overlap with the larger outage event from geomagnetic activity that occurred on the same day (Event 10348).</p> <p>See the following for the CONUS and Canada LPV-200 service impacts: LPV200_coverage_060213</p>
06/02/13	06/02/13	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Alaska	<p>Geomagnetic activity ($K_p = 5$) caused mild a disturbance to the ionosphere which caused WAAS to broadcast elevated GIVE values for several IGPs. The elevated GIVES resulted in a brief degradation of the LPV-200 service in north western Alaska (CONUS and Canada outages on plot are from the CRW GUS switch, Event 10345).</p> <p>See the following for the LPV-200 service impacts: LPV200_coverage_060213</p>
06/03/13	06/03/13	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV), PRN135	RNP1_All	<p>Elevated UDREs on CRW GEO PRN-135 (see Event 10345) caused a two minute RNP 0.1 coverage outage to be observed at sample location, Latitude = N20 degrees, Longitude = W160 degrees.</p> <p>See the following for the RNP 0.1 service impact: RNP0.1_coverage_060313</p>
06/05/13	06/05/13	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Alaska	<p>Elevated GIVES caused a degradation of the LPV-200 service coverage in north western Alaska.</p> <p>See the following for the location and duration of the LPV-200 service impact: LPV200_coverage_060513 Alaska_outage_060513</p>
06/07/13	06/07/13	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Canada	<p>Moderate geomagnetic activity ($K_p = 6$) caused a mild disturbance to the ionosphere which caused WAAS to broadcast elevated GIVE values for several northern IGPs. The elevated GIVES resulted in degraded coverage for the LPV-200 service. Elevated vertical errors were also observed for the Billings (BIL) and Denver (ZDV) reference station locations.</p> <p>See the following for the LPV-200 service impacts: LPV200_coverage_060713</p>
06/08/13	06/08/13	PRN21	LPV200_CONUS, LPV200_Mexico	<p>Carrier phase instability on PRN-21 resulted in WAAS alerting PRN-21 to "Not Monitored" at 5:45:52. The temporary loss of service from PRN-21 resulted in brief LPV-200 service outage for Mexico and south west CONUS. (19 minutes at Mexico City)</p>

Start Date	End Date	Location/ Satellite	Service Affected	Event Description
				See the following for the LPV-200 service impacts: LPV200_coverage_060813 CONUS_outage_060813
06/10/13	06/10/13	Boston (ZBW1), Boston (ZBW2), Boston (ZBW3)	Local	RFI observed at the Boston reference station (ZBW) caused a short (55 second) loss of LPV-200 service for all three receivers. Thread B also lost LPV service and thread C temporarily stopped tracking all the satellites.
06/12/13	06/13/13	GEO135, Littleton (APA)	LPV_Alaska, LPV200_CONUS, LPV200_Alaska, LPV200_Canada	<p>Switchover of the uplink site for the CRW GEO, PRN-135, from Littleton CO to Napa CA due to a failure at Littleton. TOW 316329-316342</p> <p>Uplink switchovers interrupt the data link for several seconds and restart the carrier smoothing algorithms. Restarting the carrier smoothing results in high UDRE values for about 6 hours and full ranging performance is not achieved until about 36 hours.</p> <p>The elevated UDRE value for PRN-135 overlapped with the PRN-4 maintenance on 6/12/13, causing the LPV-200 service coverage degradation for CONUS, Canada, and north west Alaska and LPV service coverage degradation for northwestern Alaska. On the following day, 6/13/13, the PRN-135 GEO UDRE was still elevated and resulted in brief LPV-200 service coverage degradation for isolated areas in central CONUS, Canada, and north west Alaska.</p> <p>For 6/12/13 see the following for the LPV and LPV-200 service impacts: LPV_coverage_061213 LPV200_coverage_061213</p> <p>For 6/13/12 see the following for the LPV-200 service impacts: LPV200_coverage_061313</p>
06/13/13	06/14/13	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV), PRN135	RNP1_All	<p>Elevated UDREs on CRW GEO PRN-135 caused a 90 second 0.1 coverage outage to be observed at sample location, Latitude = N20 degrees, Longitude = W160 degrees.</p> <p>See the following for the RNP 0.1 service impact: RNP0.1_coverage_061313</p>
06/14/13	06/15/13	Bethel (BET1), Bethel (BET2), Bethel (BET3), Cold Bay (CDB1), Cold Bay (CDB2), Cold Bay (CDB3), Juneau	LPV_Alaska, LPV200_Alaska	<p>Elevated GIVEs caused degradation of the LPV and LPV-200 service coverage for south west Alaska and the eastern Aleutian peninsula. There were communication outages to the Juneau AK and Cold Bay AK reference stations that may have been the cause of the elevated GIVEs.</p> <p>See the following for the LPV and LPV-200 service</p>

Start Date	End Date	Location/ Satellite	Service Affected	Event Description
		(JNU1), Juneau (JNU2), Juneau (JNU3)		impacts: LPV coverage_061413 LPV200 coverage_061413
06/21/13	06/21/13	Boston (ZBW1), Boston (ZBW2), Boston (ZBW3)	Local	RFI observed at the Boston reference station (ZBW) caused a brief (58 second) local outage of the LPV-200 service.
06/21/13	06/21/13	PRN27	None	GPS IIF-4 SVN-66 PRN-27 which had been launched May 15, 2013 was set to healthy for the first time for slot C2.
06/23/13	06/23/13	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Alaska	Mild geomagnetic activity (Kp = 4) caused a minor disturbance of the ionosphere which resulted in WAAS broadcasting elevated GIVE values for a couple northern IGP's. This resulted in a small degradation of the LPV-200 service coverage in northern Alaska and north western Canada. See the following for the LPV-200 service impacts: LPV200 coverage_062313
06/24/13	06/24/13	PRN32	LPV200_Alaska, LPV200_Canada	A carrier phase glitch on PRN-32 resulted in 103 of the 109 receivers tracking PRN-32 to lose track and need to reacquire PRN-32. This resulted in WAAS alarming PRN-32 to the Not Monitored condition at 12:28:55. The temporary loss of PRN-32's service resulted in degradation to the LPV-200 service coverage for northern Alaska, along the northern edge of coverage for Canada and at a spot in central Canada. See the following for the LPV-200 impacts: LPV200 coverage_062413
06/28/13	06/29/13	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_CONUS, LPV_Alaska, LPV_Canada, LPV200_CONUS, LPV200_Alaska, LPV200_Canada	Strong geomagnetic activity on 6/29/13 Kp =5, and 6/29/13 Kp = 7, caused WAAS to set the numerous IGP's to the 45 meter ionosphere storm value for prolonged periods. This resulted in large degradations to the LP, LPV, and LPV-200 service coverage areas for CONUS, Alaska, and Canada. See the following for the 6/28/13 impacts: LP coverage_062813 LPV coverage_062813 LPV200 coverage_062813 See the following for the 6/29/13 impacts: LP coverage_062913 LPV coverage_062913 LPV200 coverage_062913

Table 1-6 WAAS Upgrades

There are no WAAS upgrades for this quarter.

Table 1-7 GUS Switchovers

Start Date	End Date	GUS Switch	Location/Satellite	Service Affected	Event Description
04/12/13	04/12/13	Manual	GEO138, Brewster (BRE-B)	Canada	CRE GEO, PRN-138, manual switchover of the uplink location from the Brewster-B uplink site to Woodbine resulted in a short loss of WAAS service (<18 seconds) to the locations in north eastern Canada where only one WAAS GEO is visible; coverage in Alaska was not affected. TOW 448233-448238 See the following plot for the service impacts: LPV_coverage_041213
05/01/13	05/01/13	Manual	GEO133,Pamalu (HDH)	None	AMR GEO, PRN-133, manual switchover of the uplink from the Pamalu, HI uplink site to the Santa Paula, CA uplink site had no impact. TOW 288027-288035
05/16/13	05/16/13	Manual	GEO138,Woodbine (QWE)	None	GEO 138, manual switchover of the uplink site from Woodbine to Brewster-B had no impact. TOW 407407-407412
05/26/13	05/26/13	Faulted	GEO138, Brewster (BRE-B)	None	Uplink site for CRE GEO, PRN-138, switched from the Brewster-B WA uplink site to the Woodbine, MD uplink site due to a hardware failure (C5 up-converter) at the Brewster location had no impact. TOW 6053-6065
05/30/13	05/30/13	Manual	GEO138,Woodbine (QWE)	LPV200_Canada	Manually initiated switchover of the uplink sites for the AMR GEO, PRN-138, from the Woodbine, MD uplink site to the Brewster-B WA uplink site. TOW 374487-374492 See the following plot for the service impacts: LPV200_coverage_053013
06/02/13	06/03/13	Manual	GEO135, NAPA (APC)	LPV200_CONUS, LPV200_Alaska, LPV200_Canada	Manually initiated switchover of the uplink site for the CRW GEO, PRN-135, from Napa, CA to Littleton, CO. TOW 41732-41737 Uplink switchovers interrupt the data link for several seconds and restart the carrier smoothing algorithms. Restarting the carrier smoothing results in high UDRE values for about 6 hours and full ranging performance is not achieved until about 36 hours. The elevated UDRE value for PRN-135 resulted in brief, isolated LPV-200

Start Date	End Date	GUS Switch	Location/ Satellite	Service Affected	Event Description
					<p>outages in central CONUS and the Great Lakes region of CONUS / Canada. The elevated UDRE also contributed to LPV-200 service coverage degradation in northern Alaska, but the locations in Alaska are not discernible on the plot because those locations overlap with the larger outage event from geomagnetic activity that occurred on the same day (Event 10348).</p> <p>See the following for the CONUS and Canada LPV-200 service impacts: LPV200 coverage 060213</p>
06/12/13	06/13/13	Faulted	GEO135, Littleton (APA)	LPV_Alaska, LPV200_CONUS, LPV200_Alaska, LPV200_Canada	<p>Switchover of the uplink site for the CRW GEO, PRN-135, from Littleton CO to Napa CA due to a failure at Littleton. TOW 316329-316342</p> <p>Uplink switchovers interrupt the data link for several seconds and restart the carrier smoothing algorithms. Restarting the carrier smoothing results in high UDRE values for about 6 hours and full ranging performance is not achieved until about 36 hours.</p> <p>The elevated UDRE value for PRN-135 overlapped with the PRN-4 maintenance on 6/12/13, causing the LPV-200 service coverage degradation for CONUS, Canada, and north west Alaska and LPV service coverage degradation for northwestern Alaska. On the following day, 6/13/13, the PRN-135 GEO UDRE was still elevated and resulted in brief LPV-200 service coverage degradation for isolated areas in central CONUS, Canada, and north west Alaska.</p> <p>For 6/12/13 see the following for the LPV and LPV-200 service impacts: LPV coverage 061213 LPV200 coverage 061213</p> <p>For 6/13/12 see the following for the LPV-200 service impacts: LPV200 coverage 061313</p>
06/17/13	06/17/13	Manual	GEO133, Santa Paula (SZP)	None	<p>Manual switch of the uplink site for the AMR GEO, PRN-133, from the Santa Paula, CA uplink site to the Pinalu, HI uplink site had no impact. TOW 92346-92351</p>

1.2 Report Overview

Section 2 documents the LPV and NPA performance observed for the indicated receiver locations (see Tables 1-2 and 1-3). The 95% accuracy index and the maximum inaccuracy for the reporting period are tabulated. The daily 95% accuracy index is plotted for each receiver. Histograms of the vertical and horizontal error distribution using the data from all the evaluated receivers are provided.

Section 3 summarizes the WAAS instantaneous availability performance, at each receiver, for three operational service levels during the reporting period. Daily availability is also plotted for each receiver evaluated. The number of outages and outage rate for each site is reported.

Section 4 provides geographic plots of the availability of the WAAS services rolled up for the quarter. Plots of the percent of the CONUS and Alaska service areas covered by various levels of service availability are provided.

Section 5 summarizes the number of HMI events detected during the reporting period and presents a safety margin index for each receiver. The safety margin index reflects the amount of over bounding of position error by WAAS protection levels. This section also includes update rates of WAAS messages transmitted from CRE, CRW, and AMR.

Section 6 provides the UDRE and GIVE bounding percentage and the 95% index of the range and ionospheric accuracy for each satellite tracked by the WAAS receiver at 12 locations.

Section 7 provides the GEO ranging performance for CRE and CRW.

Section 8 provides WAAS LPV availability and outages at selected airports.

Section 9 provides the assessment of WAAS CNMP bounding for the 114 WAAS receivers.

Section 10 provides the surveyed positions of all WREs and the difference between the WRE survey positions in the current operational software and the survey positions in this report.

Section 11 provides the daily and quarterly average of SQM PRN type biases and PRN biases.

2.0 WAAS POSITION ACCURACY

Navigation error data, collected from WAAS and NSTB reference stations, was processed to determine position accuracy at each location. This was accomplished by utilizing the GPS/WAAS position solution tool to compute a RTCA DO-229D weighted least squares user navigation solution, and WAAS horizontal and vertical protection levels (HPL & VPL), once every second. The user position calculated for each receiver was compared to the surveyed position of the antenna to assess position error associated with the WAAS SIS over time. The position errors were analyzed and statistics were generated for the operational service levels shown in Table 1-1.

Table 2-1 shows PA horizontal and vertical position accuracy maintained for 95% of the time at LP, LPV and LNAV/VNAV operational service levels for the quarter. The table also includes 95% SPS accuracy for certain locations. Figures 2-1 to 2-6 show the daily horizontal and vertical 95% accuracy for LPV operational service level for the period. Note that WAAS accuracy statistics presented are compiled only when all WAAS corrections (fast, long term, and ionospheric) for at least 4 satellites are available. This is referred to as PA navigation mode. The percentage of time that PA navigation mode was supported by WAAS at each receiver is also shown in Table 2-1. A user is considered to be in NPA navigation mode if only WAAS fast and long term corrections are available to a user (i.e. no ionospheric corrections). Table 2-2 shows NPA horizontal position accuracy for 95% and 99.999% of the time. This table also shows the maximum NPA horizontal position error for the quarter. Figures 2-7 to 2-8 show the daily horizontal 95% accuracy for NPA.

Table 2-3 shows the maximum LPV error statistics. The column marked 'Horizontal Error' shows the maximum position errors while the calculated HPL meets the LPV service level defined in Table 1-1. The column marked 'Vertical Error' shows the maximum position errors while the calculated VPL meets the LPV service level. The columns marked 'Horizontal Error/HPL' and 'Vertical Error/VPL' show the ratio of position error to protection level at the time the maximum error occurred. The columns marked 'Horizontal Maximum Ratio' and 'Vertical Maximum Ratio' show the maximum position error to protection level ratio for the quarter.

During this reporting period, the maximum 95% CONUS horizontal and vertical LPV errors are 1.415 meters and 1.657 meters, both at Atlantic City. The minimum 95% CONUS horizontal and vertical LPV errors are 0.601 meters at Kansas City and 0.85 meters at Salt Lake City, respectively. The maximum 95% and 99.999% NPA horizontal errors are 5.594 meters and 10.89, both at Honolulu. The minimum 95% and 99.999% horizontal errors are 1.29 meters at Kansas City and 3.882 meters at Albuquerque, respectively.

The increases in 95% position errors on 4/24/2013, 6/1/2013, 6/7/2013, 6/28/2013, and 6/29/2013 in Figure 2.1 to 2.8 are due to geomagnetic activity. The increase in 95% NPA position errors on 6/1/2013, 6/7/2013, and 6/29/2013 in Figure 2.7-2.8 are also due to geomagnetic activity. The increase in 95% NPA position errors in CONUS on 5/24/2013 and 6/7/2013 in Figure 2.7-2.8 are due to geomagnetic activity as well.

Figures 2-9 to 2-12 show the distributions of the vertical and horizontal errors at all 38 WAAS receiver locations combined in triangle charts and 2-D histogram plots for the quarter. The triangle charts in Figures 2-9 and 2-10 show the distributions of vertical position errors (VPE) versus vertical protection levels (VPL) and horizontal position errors (HPE) versus horizontal protection levels (HPL). The horizontal axis is the position error and the vertical axis is the WAAS protection levels. Lower protection levels equate to better availability. The diagonal line shows the point where error equals protection level. Above and to the left of the diagonal line in the chart, errors are bounded (WAAS is providing integrity in the position domain); below and to the right, errors are not bounded (HMI could be present). The 2-D histogram plots in Figures 2-11 to 2-12 show the distributions of vertical and horizontal position errors and normalized position errors. The blue trace shows the distributions of the actual vertical and horizontal errors. The horizontal axis is the position errors and the vertical axis is the total count of data samples (log scale) in each 0.1-meter bin. The magenta trace show the distributions of the actual vertical and horizontal errors normalized by one-sigma value of the protection level; vertical - (VPL/5.33) and horizontal - (HPL/6.0). The horizontal axis is the standard units and vertical axis is the observed distribution of normalized errors data samples in each 0.1-sigma bin. Narrowness of the normalized error distributions shows very good observed safety performance.

Table 2-1 PA 95% Horizontal and Vertical Accuracy

Location	Horizontal (HAL=40m) (Meters)	Horizontal (HAL=556m) (Meters)	Vertical (VAL=50m) (Meters)	Percentage in PA mode (%)	SPS Accuracy	
					95% Horizontal (Meters)	95% Vertical (Meters)
Arcata	1.241	1.241	1.574	100	*	*
Atlantic City	1.415	1.415	1.657	100	*	*
Grand Forks	1.096	1.098	1.418	100	*	*
Oklahoma City	0.925	0.925	1.290	100	*	*
Albuquerque	0.662	0.662	1.191	100	2.703	4.215
Anchorage	0.732	0.734	1.436	100	*	*
Atlanta	0.657	0.657	1.171	100	2.703	4.215
Barrow	0.636	0.636	1.455	99.999910	*	*
Bethel	0.669	0.671	1.090	100	2.970	3.651
Billings	0.840	0.840	0.930	99.999980	2.067	3.778
Boston	0.760	0.760	1.125	100	2.494	3.860
Chicago	0.885	0.885	0.901	100	*	*
Cleveland	0.689	0.689	1.027	100	2.359	3.867
Cold Bay	0.676	0.678	1.078	100	*	*
Dallas	0.701	0.701	1.337	100	*	*
Denver	0.626	0.626	0.912	100	*	*
Fairbanks	0.723	0.723	1.549	100	3.025	3.665
Gander	0.839	0.839	1.261	100	*	*
Goose Bay	0.836	0.837	1.101	100	*	*
Houston	0.940	0.940	1.606	100	3.399	4.661
Iqaluit	0.767	0.768	1.457	100	*	*
Jacksonville	0.746	0.746	1.359	100	*	*
Juneau	0.738	0.739	1.242	100	*	*
Kansas City	0.601	0.601	0.981	100	2.252	3.975
Kotzebue	0.726	0.726	1.451	99.999910	3.148	3.778
Los Angeles	0.687	0.687	1.410	99.999980	3.116	4.423
Memphis	0.708	0.708	1.040	100	*	*
Merida	0.885	0.885	1.787	100	*	*
Mexico City	0.859	0.861	2.479	99.999970	*	*
Miami	0.977	0.977	1.560	100	3.876	5.099
Minneapolis	0.765	0.766	0.953	100	2.126	3.734
New York	0.799	0.799	1.062	100	*	*
Oakland	0.723	0.723	1.432	99.999980	2.788	4.431
Puerto Vallarta	0.929	0.935	2.355	100	*	*
Salt Lake City	0.681	0.681	0.850	99.999980	2.212	3.921
San Jose Del Cabo	0.981	0.986	2.535	100	*	*
Seattle	0.747	0.747	0.866	99.999980	2.091	3.824
Washington DC	0.775	0.775	1.076	100	2.513	3.962
Winnipeg	0.788	0.790	1.075	100	*	*

* = SPS Data not processed.

Table 2-2 NPA 95% and 99.999% Horizontal Accuracy

Location	95% Horizontal (meters)	99.999% Horizontal (meters)	Percentage in NPA mode (%)	Maximum Horizontal Error
Albuquerque	1.596	3.882	100.000	4.163
Anchorage	2.747	4.918	100.000	5.061
Atlanta	1.895	5.623	100.000	5.782
Barrow	2.360	5.040	100.000	5.397
Bethel	2.444	5.509	100.000	5.815
Billings	1.774	4.744	100.000	5.063
Boston	1.789	7.701	100.000	7.886
Cleveland	1.490	6.702	100.000	6.899
Cold Bay	1.750	6.823	100.000	7.097
Fairbanks	2.928	5.228	100.000	5.477
Gander	2.020	6.397	100.000	6.591
Honolulu	5.594	10.890	100.000	11.202
Houston	2.713	6.356	100.000	6.707
Iqaluit	2.102	4.705	100.000	4.909
Juneau	2.425	4.794	100.000	5.237
Kansas City	1.290	4.517	100.000	4.736
Kotzebue	2.716	5.393	100.000	5.510
Los Angeles	2.342	4.898	100.000	5.100
Merida	3.294	7.119	100.000	7.377
Miami	3.041	6.286	100.000	6.472
Minneapolis	1.631	4.711	100.000	4.976
Oakland	1.822	5.783	100.000	6.036
Salt Lake City	1.368	4.531	100.000	4.789
San Jose Del Cabo	3.474	8.826	100.000	8.978
San Juan	2.765	6.761	100.000	7.019
Seattle	1.424	5.608	100.000	6.101
Tapachula	3.360	9.754	100.000	9.901
Washington DC	1.785	9.289	100.000	9.578

Table 2-3 Maximum LPV Error Statistics

Location	Horizontal Error (m)	Horizontal Error/HPL	Horizontal Maximum Ratio	Vertical Error (m)	Vertical Error/VPL	Vertical Maximum Ratio
Arcata	3.045	0.214	0.214	4.442	0.129	0.175
Atlantic City	3.729	0.207	0.245	3.952	0.173	0.222
Grand Forks	2.824	0.170	0.226	5.381	0.161	0.207
Oklahoma City	2.021	0.209	0.216	4.544	0.182	0.209
Albuquerque	2.375	0.084	0.184	3.922	0.128	0.177
Anchorage	2.920	0.113	0.198	5.326	0.154	0.262
Atlanta	1.516	0.148	0.148	2.466	0.164	0.167
Barrow	2.874	0.183	0.183	5.790	0.196	0.196
Bethel	3.279	0.120	0.154	6.870	0.164	0.164
Billings	3.188	0.231	0.242	4.656	0.197	0.197
Boston	2.881	0.188	0.196	3.580	0.155	0.182
Chicago	3.491	0.137	0.266	4.100	0.111	0.178
Cleveland	2.450	0.147	0.203	3.236	0.209	0.209
Cold Bay	3.372	0.104	0.111	5.153	0.104	0.134
Dallas	2.136	0.130	0.203	3.474	0.126	0.226
Denver	2.216	0.145	0.172	4.359	0.158	0.172
Fairbanks	3.042	0.241	0.241	5.384	0.240	0.240
Gander	3.743	0.119	0.168	5.135	0.129	0.147
Goose Bay	3.411	0.095	0.166	6.627	0.189	0.189
Houston	2.251	0.202	0.234	4.418	0.157	0.232
Iqaluit	2.380	0.114	0.146	5.192	0.107	0.164
Jacksonville	1.786	0.127	0.169	3.778	0.239	0.239
Juneau	2.669	0.085	0.165	4.867	0.211	0.211
Kansas City	2.154	0.188	0.190	2.965	0.175	0.185
Kotzebue	2.969	0.096	0.195	6.974	0.147	0.181
Los Angeles	2.457	0.093	0.164	4.703	0.131	0.192
Memphis	1.700	0.165	0.172	2.923	0.224	0.224
Merida	2.739	0.106	0.163	4.005	0.162	0.168
Mexico City	3.447	0.198	0.198	8.279	0.207	0.209
Miami	2.129	0.144	0.188	3.419	0.109	0.183
Minneapolis	3.981	0.102	0.212	3.572	0.085	0.169
New York	2.863	0.169	0.202	3.572	0.184	0.184
Oakland	3.138	0.205	0.205	4.260	0.126	0.162
Puerto Vallarta	3.355	0.112	0.182	7.433	0.155	0.230
Salt Lake City	2.483	0.137	0.194	3.476	0.129	0.157
San Jose Del Cabo	2.097	0.125	0.148	6.955	0.199	0.261
San Juan	3.179	0.085	0.097	5.962	0.129	0.129
Seattle	2.860	0.127	0.176	6.796	0.269	0.269
Washington DC	2.830	0.167	0.188	2.930	0.176	0.187
Winnipeg	3.048	0.173	0.178	5.594	0.197	0.197

Figure 2-1 LPV 95% Horizontal Accuracy

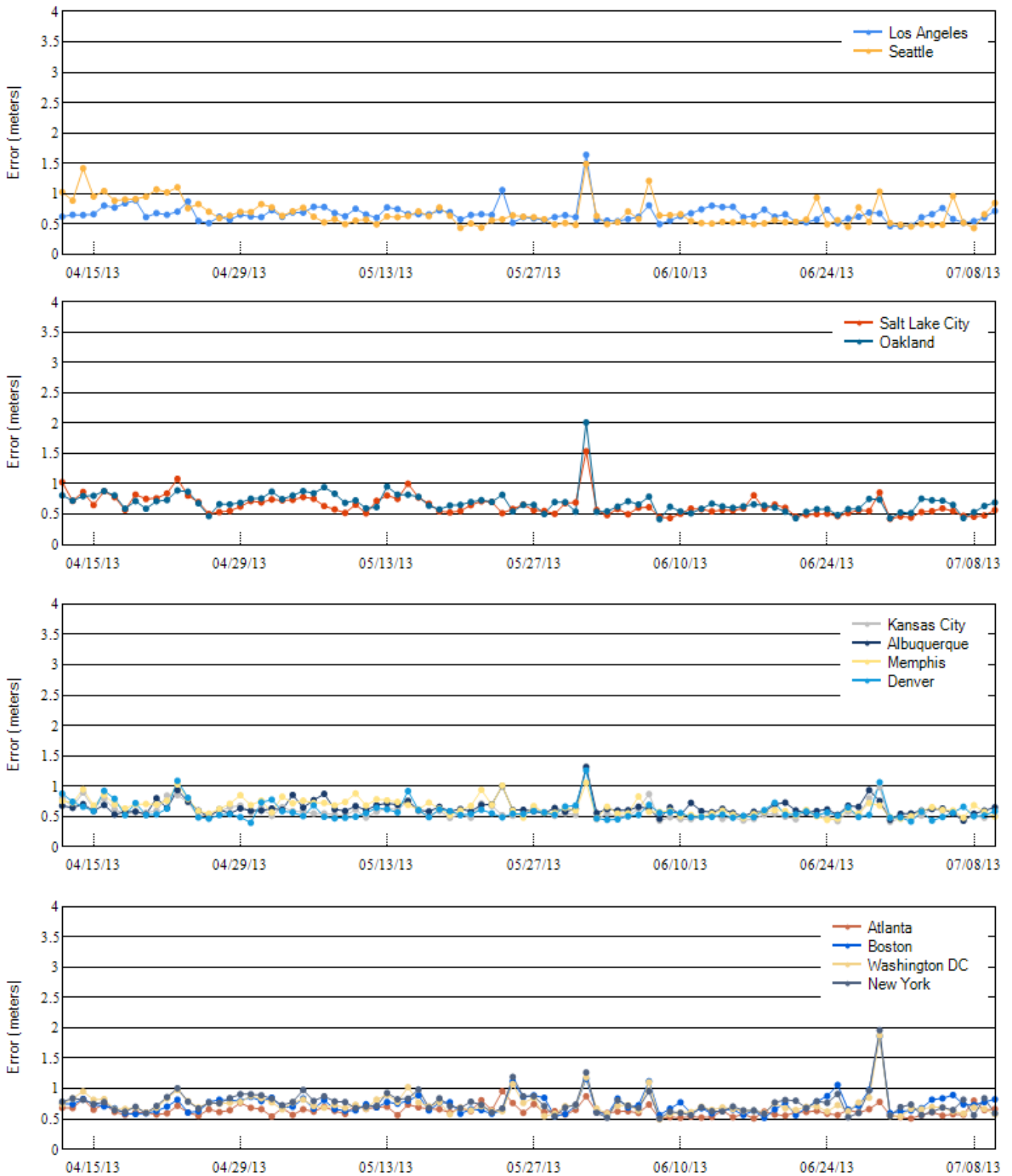


Figure 2-2 LPV 95% Horizontal Accuracy

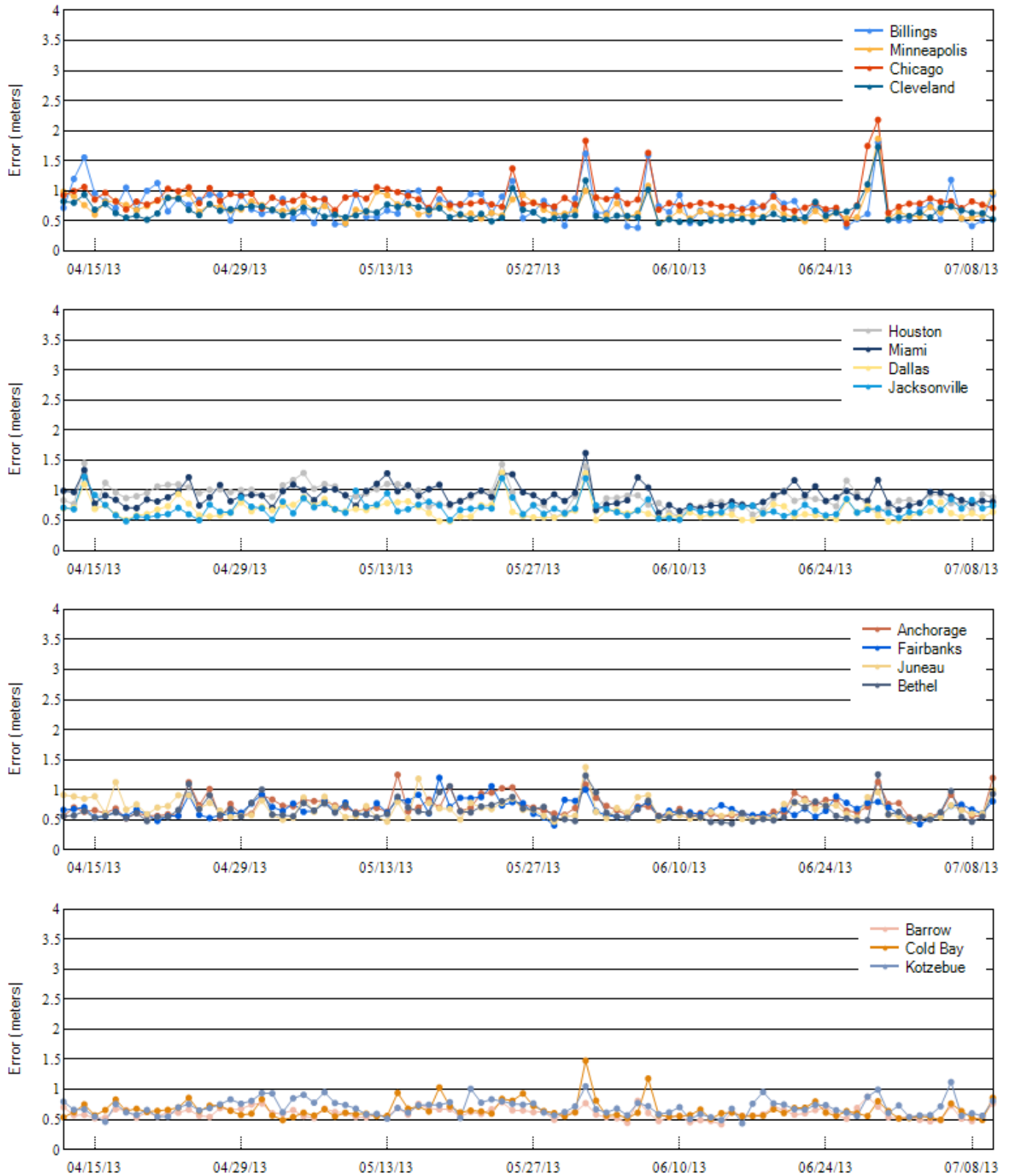


Figure 2-3 LPV 95% Horizontal Accuracy

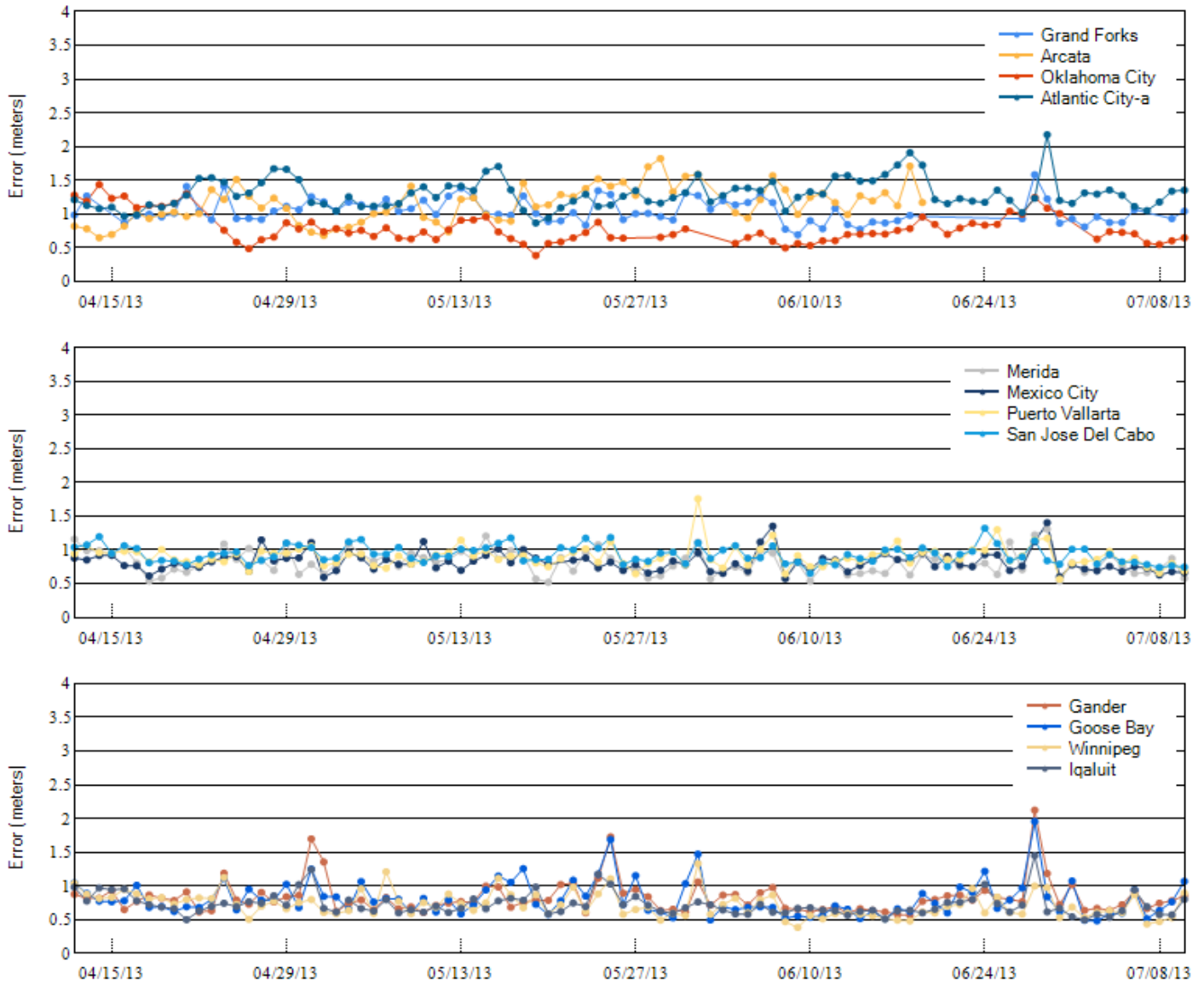


Figure 2-4 LPV 95% Vertical Accuracy

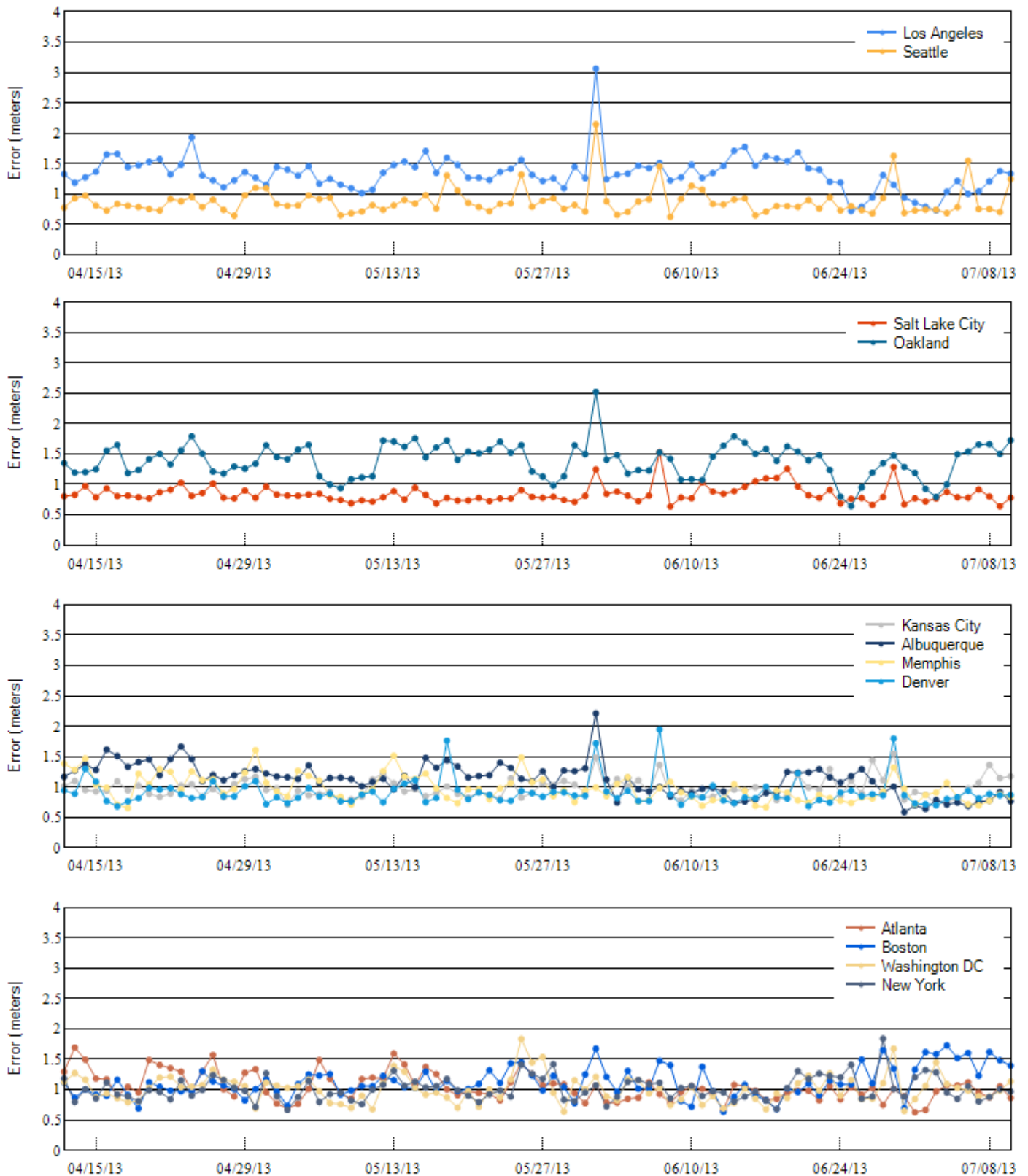


Figure 2-5 LPV 95% Vertical Accuracy

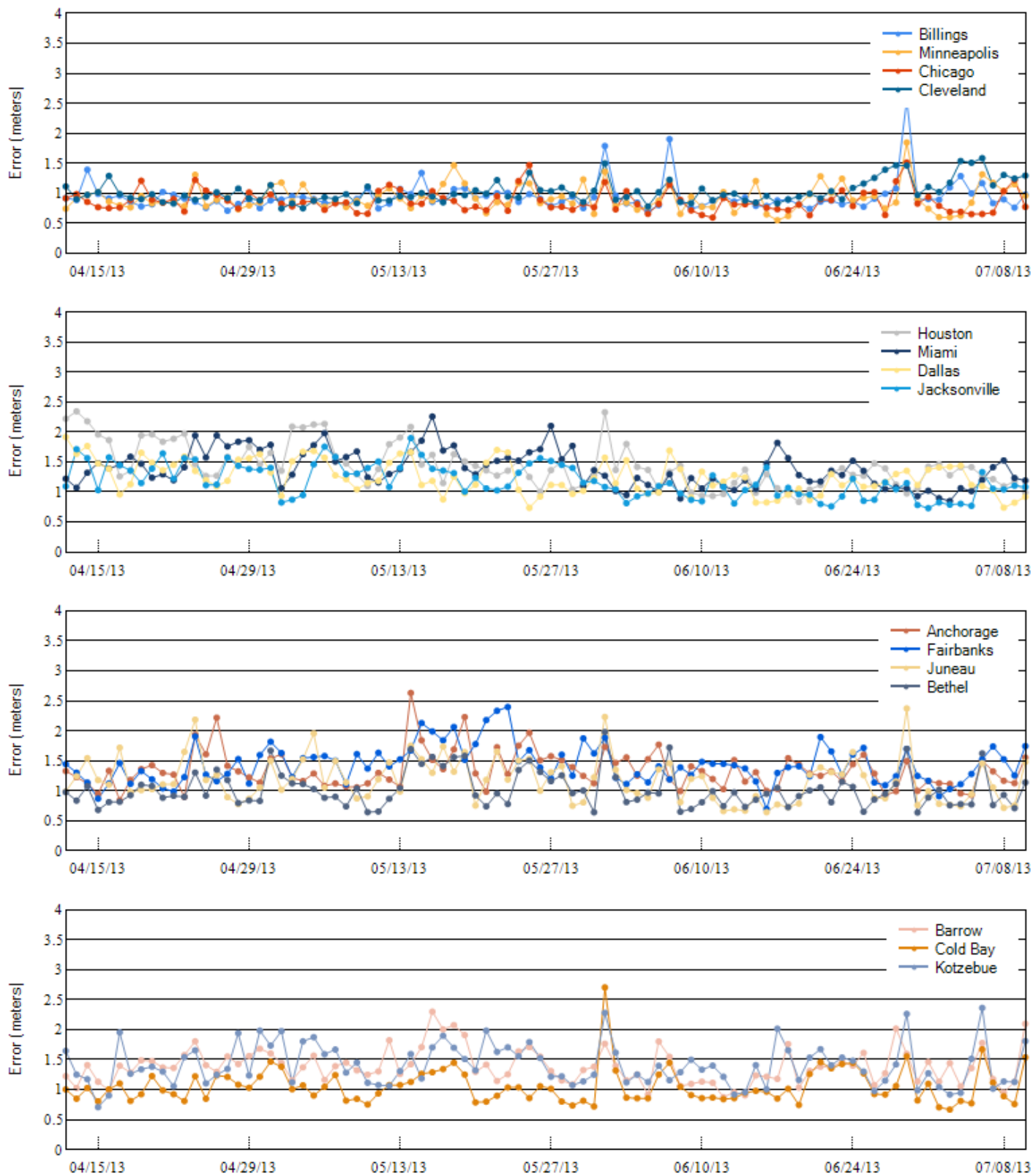


Figure 2-6 LPV 95% Vertical Accuracy

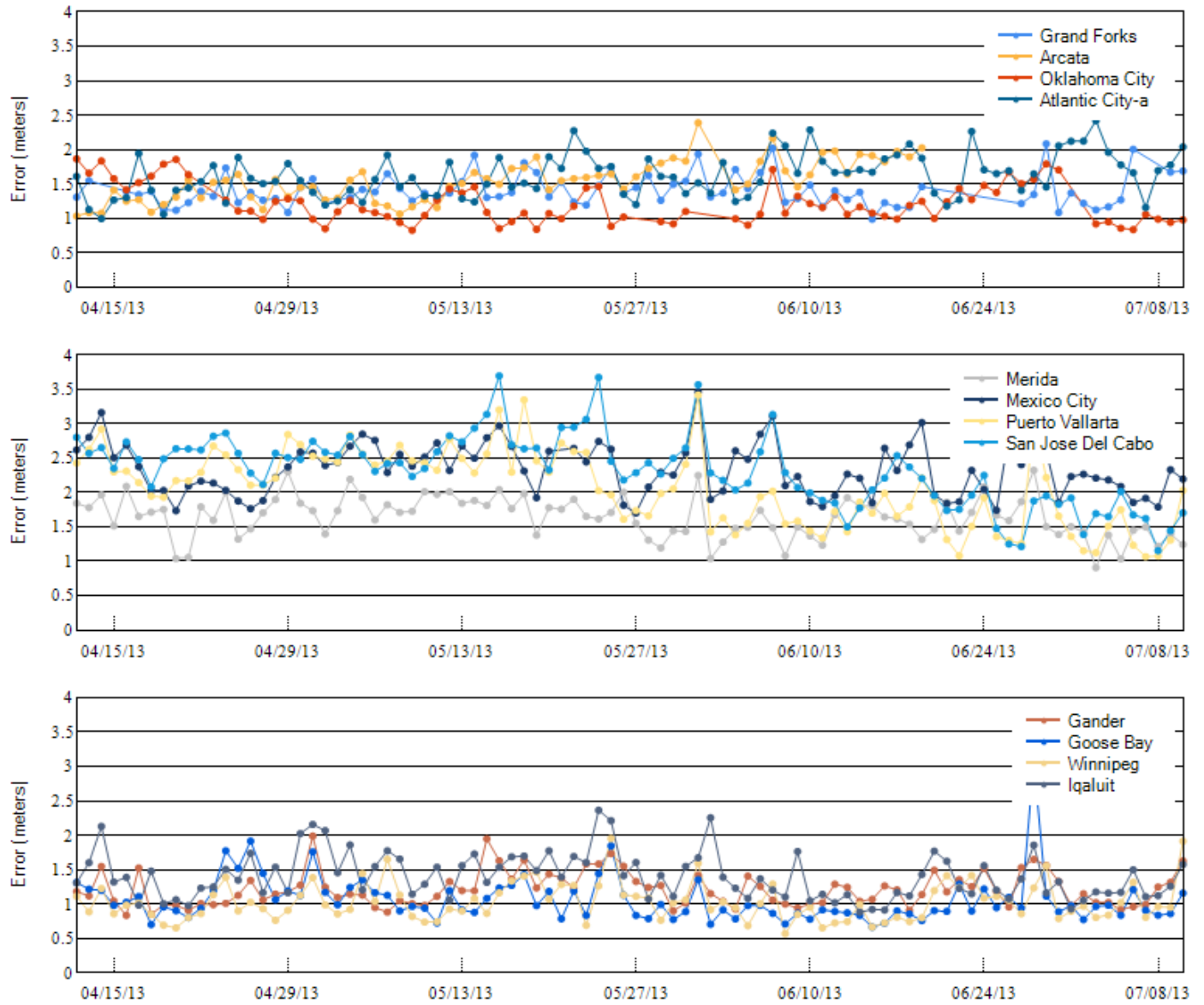


Figure 2-7 NPA 95% Horizontal Accuracy

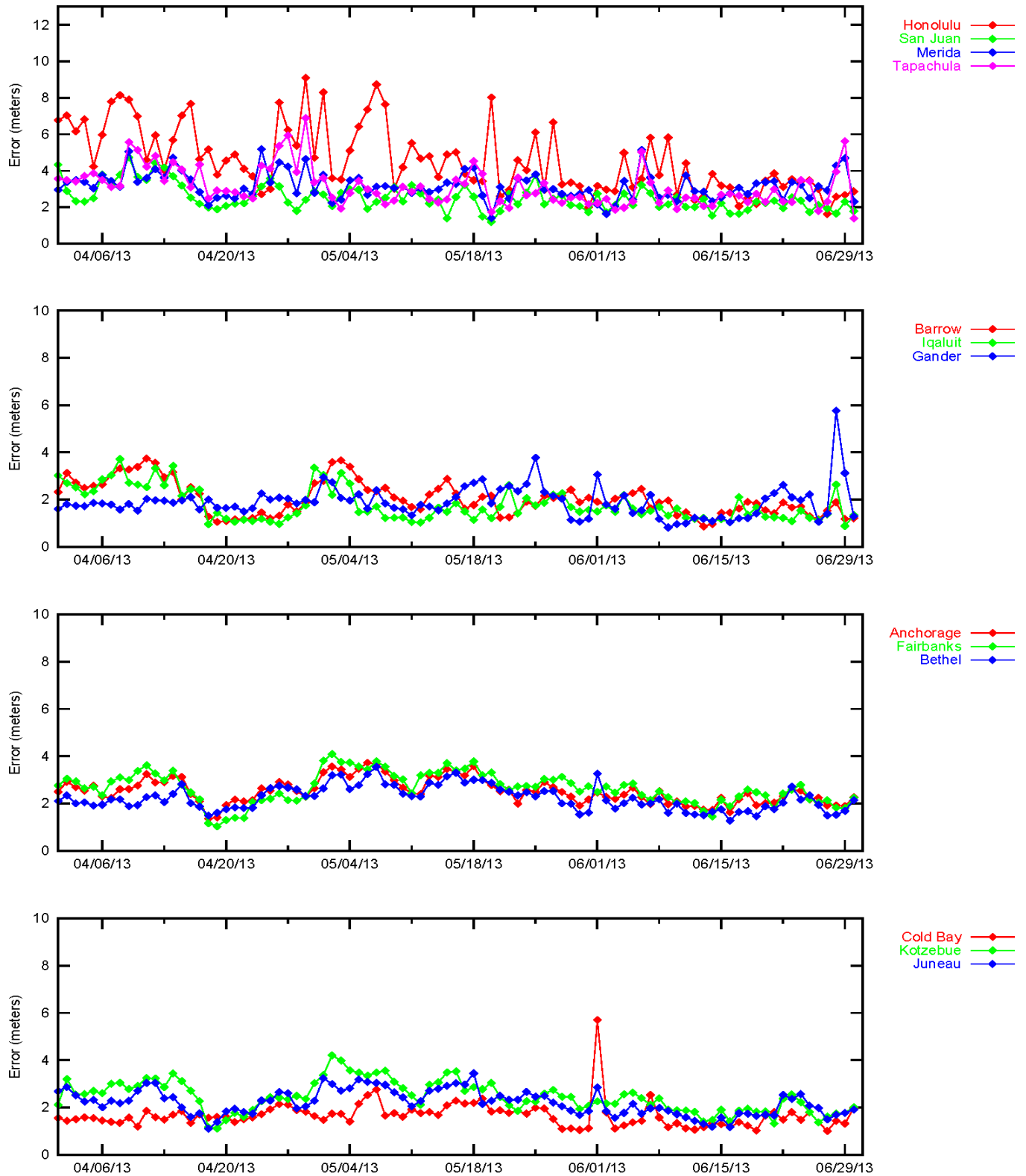


Figure 2-8 NPA 95% Horizontal Accuracy

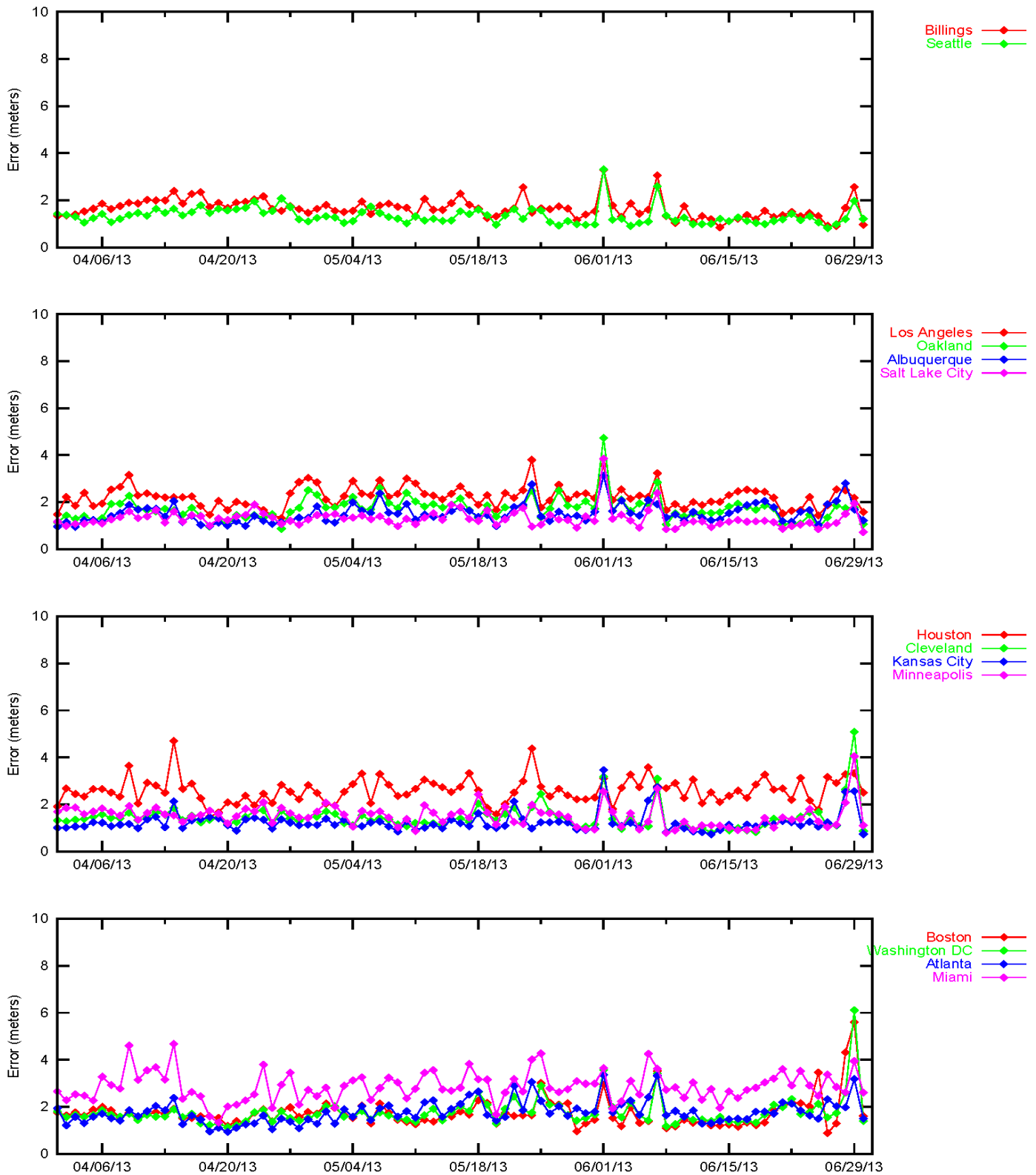


Figure 2-9 LPV Horizontal Error Bounding Triangle Chart

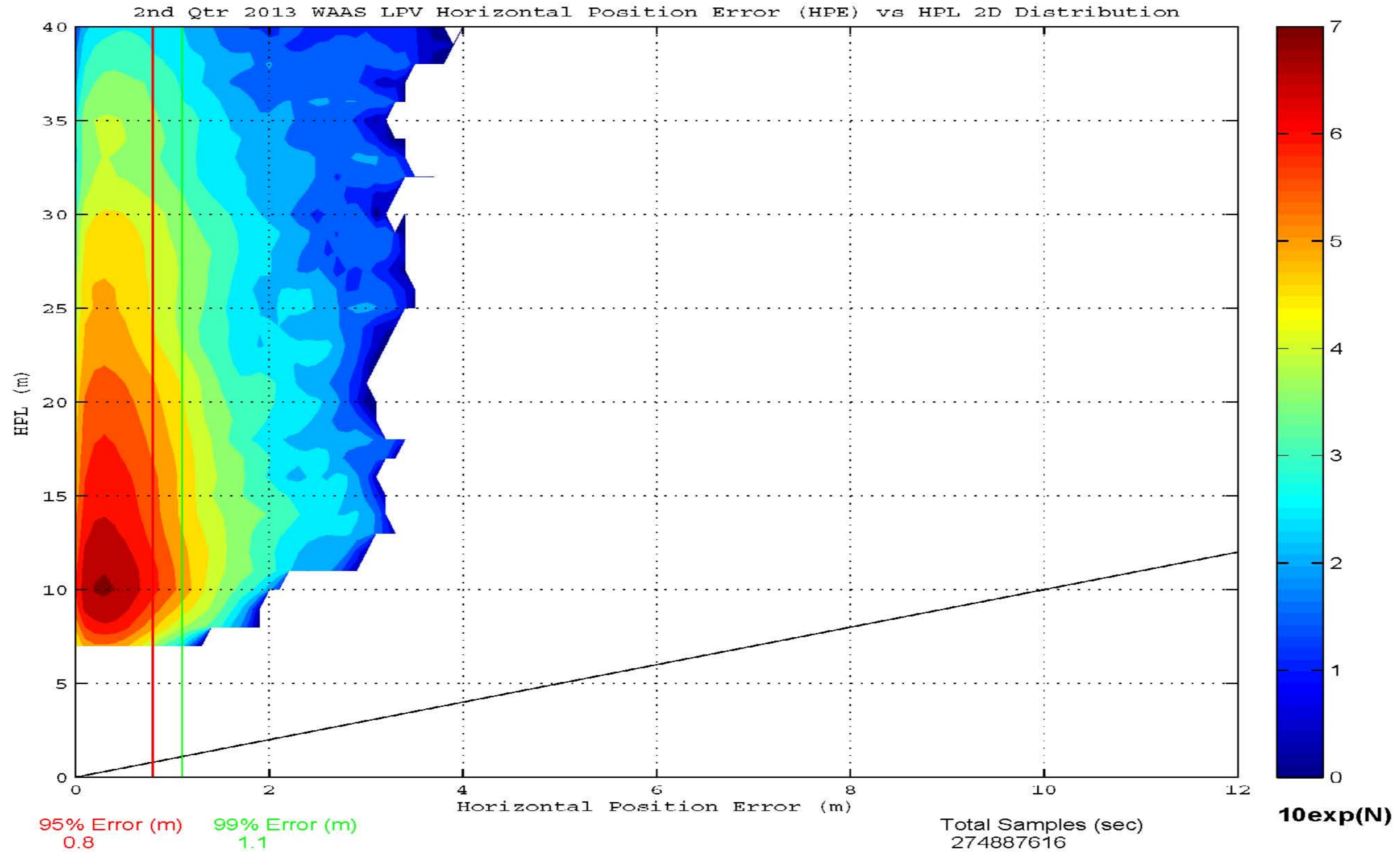


Figure 2-10 LPV Vertical Error Bounding Triangle Chart

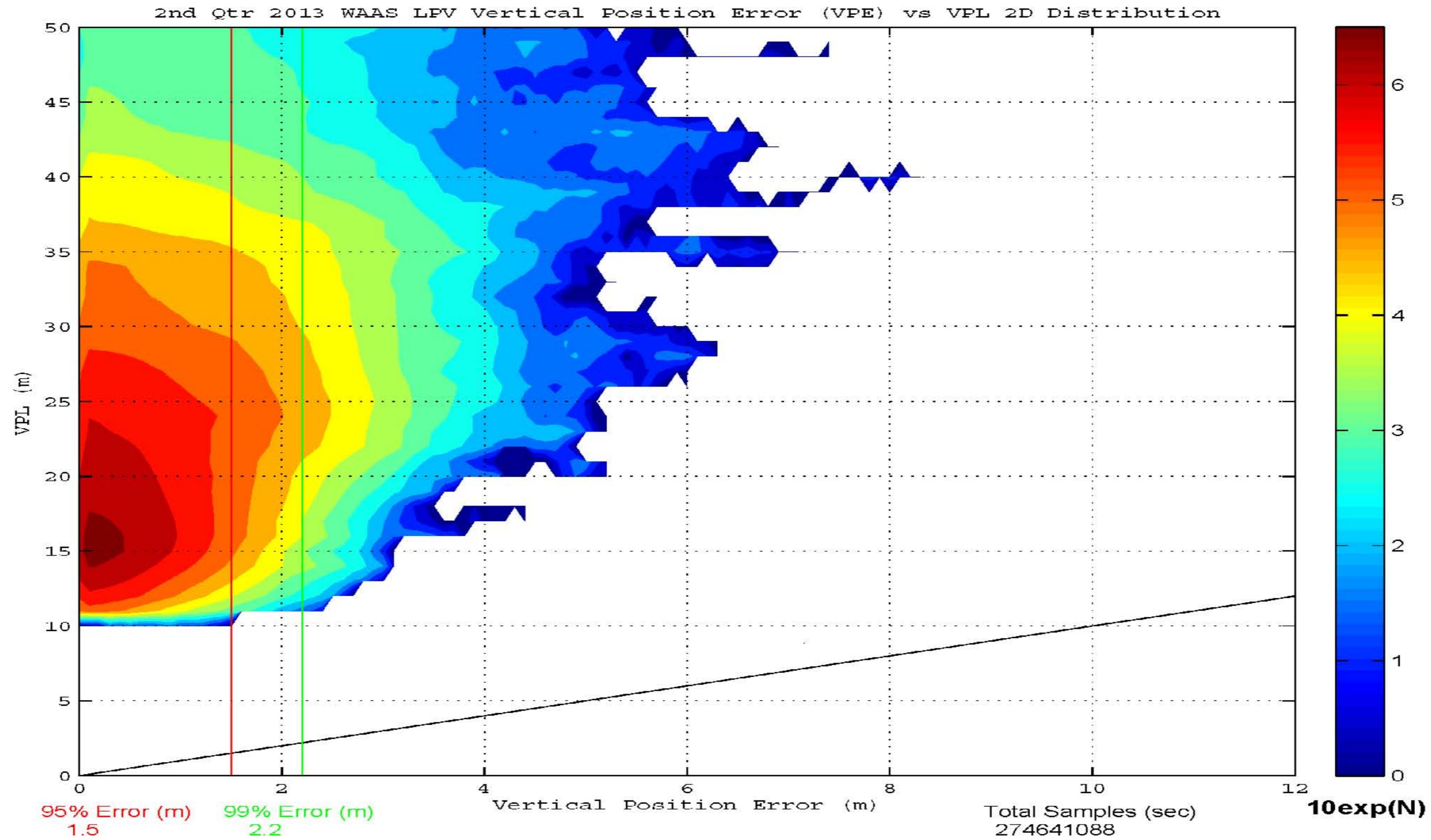


Figure 2-11 LPV 2-D Horizontal Error Distribution Histogram

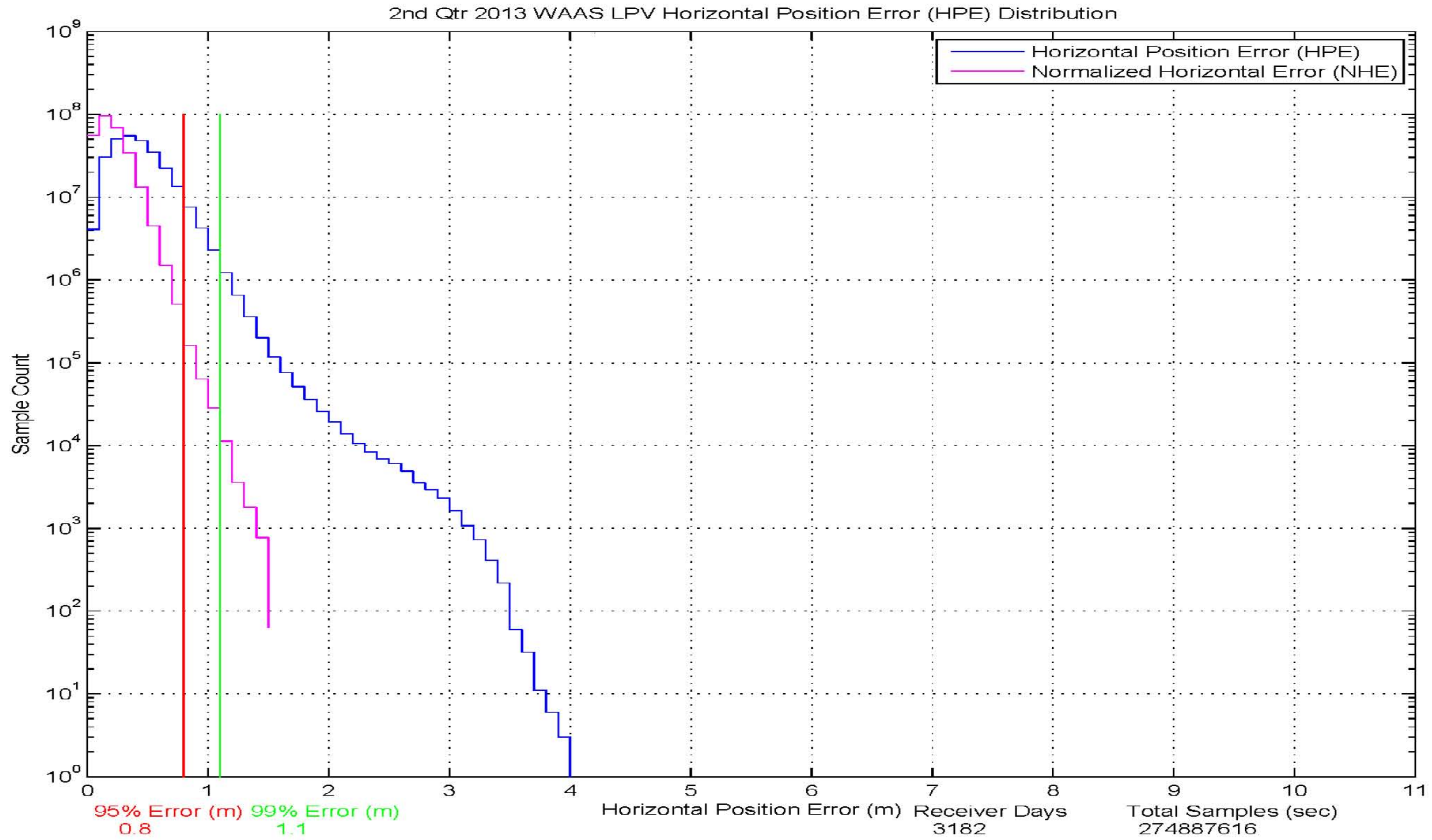
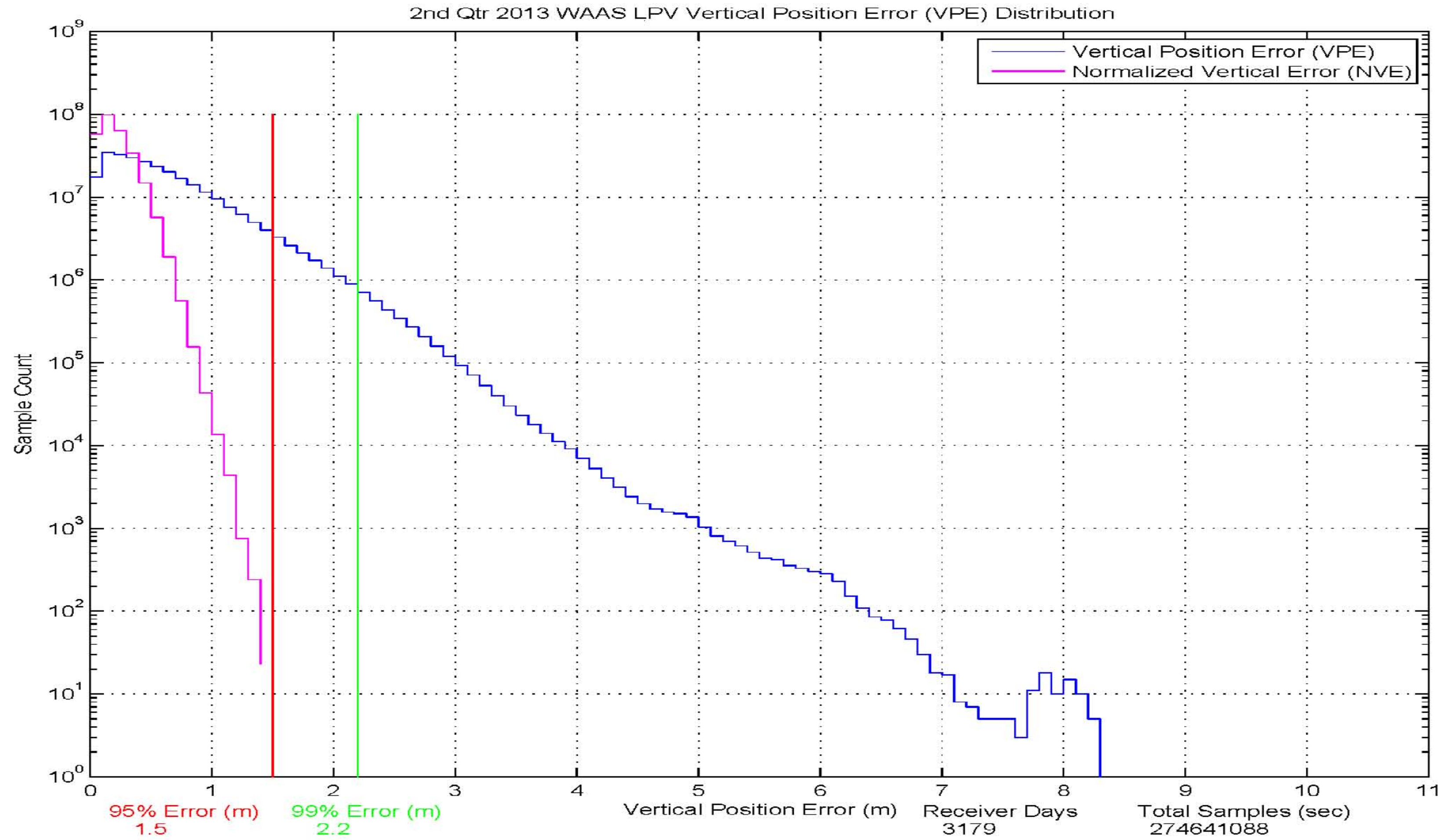


Figure 2-12 LPV 2-D Vertical Error Distribution Histogram



3.0 AVAILABILITY

The WAAS availability evaluation documents the percentage of time that the WAAS provided service for the operational service levels defined in Table 1-1. RTCA DO-229D Vertical and Horizontal Protection Levels were computed for each receiver being evaluated. Table 3-1 shows the protection levels that were maintained for 99% of the time for each receiver location for the quarter. The table also included the percentage in PA mode as described in section 2.0.

For this reporting period, the maximum 99% CONUS HPL and VPL are 19.663 meters at Miami and 35.743 meters, at Arcata, respectively. The minimum 99% CONUS HPL and VPL are 10.766 meters at Memphis and 17.976 meters at Chicago, respectively. The maximum 99% Alaska HPL and VPL are 28.434 meters and 37.722 meters, both at Cold Bay, respectively. The minimum 99% Alaska HPL and VPL are 13.577 meters at Fairbanks and 22.413 meters at Juneau, respectively.

Availability of LP, LPV and LPV 200 service are evaluated by monitoring the WAAS protection levels at receiver locations throughout the test period. If both the vertical and horizontal protection levels are not greater than their respective alert limits (VAL and HAL) then the service is available. If either of the protection levels exceeds the required alert limit then the operational service at that location is considered unavailable and an outage in service is recorded with its duration. The operational service is not considered available again until the protection levels are both within the alert limits for at least 15 minutes. Although this will reduce operational service availability minimally, it substantially reduces the number of service outages and prevents excessive switching in and out of service availability. The percent of time that LP, LPV, and LPV 200 service is available using the fifteen-minute window criteria is presented in Table 3-2. The LP, LPV, and LPV 200 service outages and associated outage rate for the reporting period is presented in Table 3-4. The outage rate is the percent of approaches that theoretically would be interrupted by a loss of operational service once the approach had started. Figures 3-1 to 3-6 show the daily availability of LPV and LPV 200 service levels. Figures 3-7 to 3-12 show the daily interruptions of LPV and LPV 200 service levels for the evaluation period.

Availability of NPA service is evaluated by monitoring the WAAS horizontal protection level at receiver locations throughout the test period. If the horizontal protection level is not greater than the horizontal alert limit (HAL = 556m) then the service is available. If the horizontal protection level exceeds the required alert level or if WAAS navigation message is not received then the NPA service at that location is considered unavailable and an outage in service is recorded with its duration. The NPA service is not considered available again until the horizontal protection level is within the alert limit for at least 15 minutes. The percent of time that NPA service is available using the fifteen-minute window criteria is presented in Table 3-3. The NPA service outages and associated outage rate for this period is presented in Table 3-5. The outage rate is the percent of NPA approaches that theoretically would be interrupted by a loss of operational service once the approach had started.

Low PA and NPA availability for this reporting period are mostly due to GPS satellite outages, carrier phase anomalies, GUS switchovers, geomagnetic activity, and elevated GIVE and UDRE values. Please refer to Table 1-5 for all the events that affected availability.

Increase in WAAS availability was observed after June 22nd when PRN-27 was added to GPS satellite constellation.

Manual GUS switchover on CRE GEO (PRN-138) on April 12th and May 30th elevated UDRE values and caused minor reduction in Canada availability. Manual GUS switchover on CRW GEO (PRN-135) on June 2nd elevated UDRE values and reduced availability in CONUS, Alaska and Canada. Faulted GUS switchover on CRW GEO (PRN-135) on Jun 12th elevated UDRE values and reduced availability in CONUS, Alaska and Canada. GUS hardware failure of PNE CRE GEO (PRN-138) on May 15th caused missed navigation messages and two seconds service outage in CONUS, Alaska and Canada. [See DR 114 “LPV Service Outage Due to Consecutive SV Alerts on PRN 138”](#) for a more detailed description.

A brief carrier phase anomaly on PRN-21 on May 30th and June 8th caused WAAS to issue a SV alert setting PRN-21 to “Not Monitored” resulted in a minor reduction in LPV-200 CONUS availability; the carrier phase anomaly on June 8th also reduced Mexico availability. A brief carrier phase anomaly on PRN-32 on June 24th caused WAAS to issue a SV alert setting PRN-32 to “Not Monitored” resulted in a minor reduction in LPV-200 Alaska and Canada

availability.

Geomagnetic activity on April 24th elevated GIVE values and slightly reduced CONUS, Alaska, Canada and Mexico availability. Geomagnetic activity on May 1st and May 16-19th caused minor availability drop at Alaska and Canada. Geomagnetic activity on June 1st significantly reduced CONUS, Alaska, Canada, and Mexico availability. [See DR 115 “Effect on WAAS from Iono Activity on 01June2013”](#) for a more detailed description

Planned maintenance on PRN-18 on April 4th affected CONUS, Alaska and Canada availability. Planned maintenance on PRN-8 on April 11th reduced CONUS and Mexico availability. Planned maintenance on PRN-25 on May 10-11th affected CONUS, Alaska and Canada availability.

Intermittent communication outages at Iqaluit on May 10th increased GIVE values at northern latitudes due to the loss of data from Iqaluit reference stations and resulted in minor availability reduction in Northern Canada. Communication outages at Cold Bay, Bethel and Juneau on June 14th increased GIVE values and caused slight availability reduction in Alaska.

Radio frequency interference (RFI) caused localized loss of LPV/LPV200 availability at Boston on April 2nd, June 10th, and June 21st, at Salt Lake City on April 13th, at Los Angeles on May 13th, and at Miami on May 23rd, but had no effect on WAAS service.

Table 3-1 99% Protection Level

Location	99% HPL (meters)	99% VPL (meters)	Percentage in PA mode
Arcata	16.031	33.293	100
Atlantic City	14.154	22.657	100
Grand Forks	15.120	28.441	100
Oklahoma City	12.822	23.815	100
Albuquerque	12.854	26.336	100
Anchorage	15.446	25.424	100
Atlanta	12.096	19.445	100
Barrow	19.180	37.658	99.999910
Bethel	18.467	31.064	100
Billings	14.058	23.408	99.999980
Boston	15.810	23.423	100
Chicago	12.400	20.641	100
Cleveland	14.360	21.867	100
Cold Bay	28.785	40.103	100
Dallas	13.495	22.906	100
Denver	12.626	29.209	100
Fairbanks	15.111	26.372	100
Gander	27.799	40.786	100
Goose Bay	22.688	30.734	100
Houston	12.454	23.547	100
Iqaluit	29.712	44.727	100
Jacksonville	13.795	21.252	100
Juneau	15.977	24.387	100
Kansas City	12.000	19.600	100
Kotzebue	17.371	34.838	99.999910
Los Angeles	15.699	28.374	99.999980
Memphis	11.521	19.086	100
Merida	19.403	33.045	100
Mexico City	32.302	40.552	99.999970
Miami	17.545	25.091	100
Minneapolis	12.559	21.443	100
New York	14.857	23.054	100
Oakland	17.497	32.207	99.999980
Puerto Vallarta	35.155	53.200	100
Salt Lake City	13.659	21.914	99.999980
San Jose Del Cabo	28.562	39.735	100
Seattle	14.323	23.817	99.999980
Washington DC	13.419	21.166	100
Winnipeg	16.121	26.388	100

Table 3-2 Quarterly Availability Statistics

Location	LP WAAS With 15 minute window	LPV WAAS With 15 minute window	LPV 200 WAAS With 15 minute window
Arcata	1	1	0.991884
Atlantic City	0.999814	0.999814	0.999083
Grand Forks	0.999359	0.999068	0.998476
Oklahoma City	1	1	0.999994
Albuquerque	1	1	0.999551
Anchorage	0.999363	0.999181	0.998394
Atlanta	1	1	1
Barrow	0.999912	0.999272	0.972899
Bethel	0.999249	0.998821	0.997343
Billings	1	0.999363	0.998613
Boston	0.999993	0.999993	0.999963
Chicago	1	1	0.999845
Cleveland	1	1	1
Cold Bay	0.998964	0.998145	0.931923
Dallas	1	1	1
Denver	1	1	0.99978
Fairbanks	0.999901	0.999232	0.998702
Gander	0.999759	0.999064	0.90275
Goose Bay	0.999589	0.99955	0.998524
Honolulu	0	0	0
Houston	1	1	0.999665
Iqaluit	0.998864	0.996072	0.912316
Jacksonville	1	1	1
Juneau	0.999589	0.99896	0.998172
Kansas City	1	1	1
Kotzebue	0.999391	0.998873	0.988315
Los Angeles	1	1	0.999046
Memphis	1	1	1
Merida	0.999175	0.996489	0.993623
Mexico City	0.998035	0.995052	0.935867
Miami	0.999999	0.999991	0.999711
Minneapolis	0.999566	0.999351	0.999176
New York	1	1	1
Oakland	1	1	0.991813
Puerto Vallarta	0.997388	0.978178	0.898652
Salt Lake City	0.999992	0.999992	0.99997
San Jose Del Cabo	0.997871	0.9947	0.929756
Seattle	1	0.99987	0.998533
Washington DC	1	1	1
Winnipeg	0.999429	0.999155	0.998652

Table 3-3 NPA Availability

Location	NPA Availability (Excluding RAIM/FDE)
Albuquerque	1
Anchorage	1
Atlanta	1
Barrow	1
Bethel	1
Billings	1
Boston	1
Cleveland	1
Cold Bay	1
Fairbanks	1
Gander	1
Honolulu	1
Houston	1
Iqaluit	1
Juneau	1
Kansas City	1
Kotzebue	1
Los Angeles	1
Merida	1
Miami	1
Minneapolis	1
Oakland	1
Salt Lake City	1
San Jose Del Cabo	1
San Juan	1
Seattle	1
Tapachula	1
Washington DC	1

Table 3-4 LPV and LPV 200 Outage Rate (Per 150 sec approach)

Location	LP Outages	LP Outage Rates	LPV Outages	LPV Outage Rates	LPV 200 Outages	LPV 200 Outage Rates
Arcata	1	0.000023	1	0.000023	97	0.002248
Atlantic City	22	0.000148	22	0.000148	48	0.000323
Grand Forks	2	0.000044	2	0.000044	11	0.000240
Oklahoma City	0	0	0	0	1	0.000021
Albuquerque	1	0.000020	1	0.000020	3	0.000059
Anchorage	2	0.000039	3	0.000059	3	0.000059
Atlanta	0	0	0	0	0	0
Barrow	6	0.000117	12	0.000234	222	0.004452
Bethel	2	0.000039	3	0.000059	15	0.000293
Billings	1	0.000020	3	0.000059	6	0.000117
Boston	1	0.000020	1	0.000020	5	0.000098
Chicago	0	0	0	0	1	0.000020
Cleveland	0	0	0	0	0	0
Cold Bay	2	0.000039	6	0.000117	519	0.010873
Dallas	0	0	0	0	0	0
Denver	0	0	0	0	2	0.000039
Fairbanks	3	0.000059	4	0.000078	7	0.000137
Gander	4	0.000078	10	0.000195	551	0.011907
Goose Bay	3	0.000059	3	0.000059	8	0.000156
Houston	0	0	0	0	3	0.000059
Iqaluit	6	0.000117	29	0.000568	748	0.015999
Jacksonville	0	0	0	0	0	0
Juneau	2	0.000039	4	0.000078	4	0.000078
Kansas City	0	0	0	0	0	0
Kotzebue	5	0.000098	6	0.000117	128	0.002527
Los Angeles	1	0.000020	1	0.000020	9	0.000176
Memphis	0	0	0	0	0	0
Merida	1	0.000020	59	0.001155	88	0.001728
Mexico City	14	0.000277	73	0.001451	395	0.008347
Miami	1	0.000020	1	0.000020	10	0.000195
Minneapolis	1	0.000020	1	0.000020	2	0.000039
New York	0	0	0	0	0	0
Oakland	1	0.000020	1	0.000020	96	0.001888
Puerto Vallarta	15	0.000294	111	0.002217	651	0.014151
Salt Lake City	2	0.000039	2	0.000039	3	0.000059
San Jose Del Cabo	5	0.000098	77	0.001513	464	0.009755
Seattle	1	0.000020	3	0.000059	3	0.000059
Washington DC	0	0	0	0	0	0
Winnipeg	2	0.000039	2	0.000039	6	0.000117

Table 3-5 NPA Outage Rates (Excluding FD/FDE)

Location	NPA Outages	NPA Outage Rate
Albuquerque	0	0
Anchorage	0	0
Atlanta	0	0
Barrow	0	0
Bethel	0	0
Billings	0	0
Boston	0	0
Cleveland	0	0
Cold Bay	0	0
Fairbanks	0	0
Gander	0	0
Honolulu	0	0
Houston	0	0
Iqaluit	0	0
Juneau	0	0
Kansas City	0	0
Kotzebue	0	0
Los Angeles	0	0
Merida	0	0
Miami	0	0
Minneapolis	0	0
Oakland	0	0
Salt Lake City	0	0
San Jose Del Cabo	0	0
San Juan	0	0
Seattle	0	0
Tapachula	0	0
Washington DC	0	0

Figure 3-1 LPV Instantaneous Availability

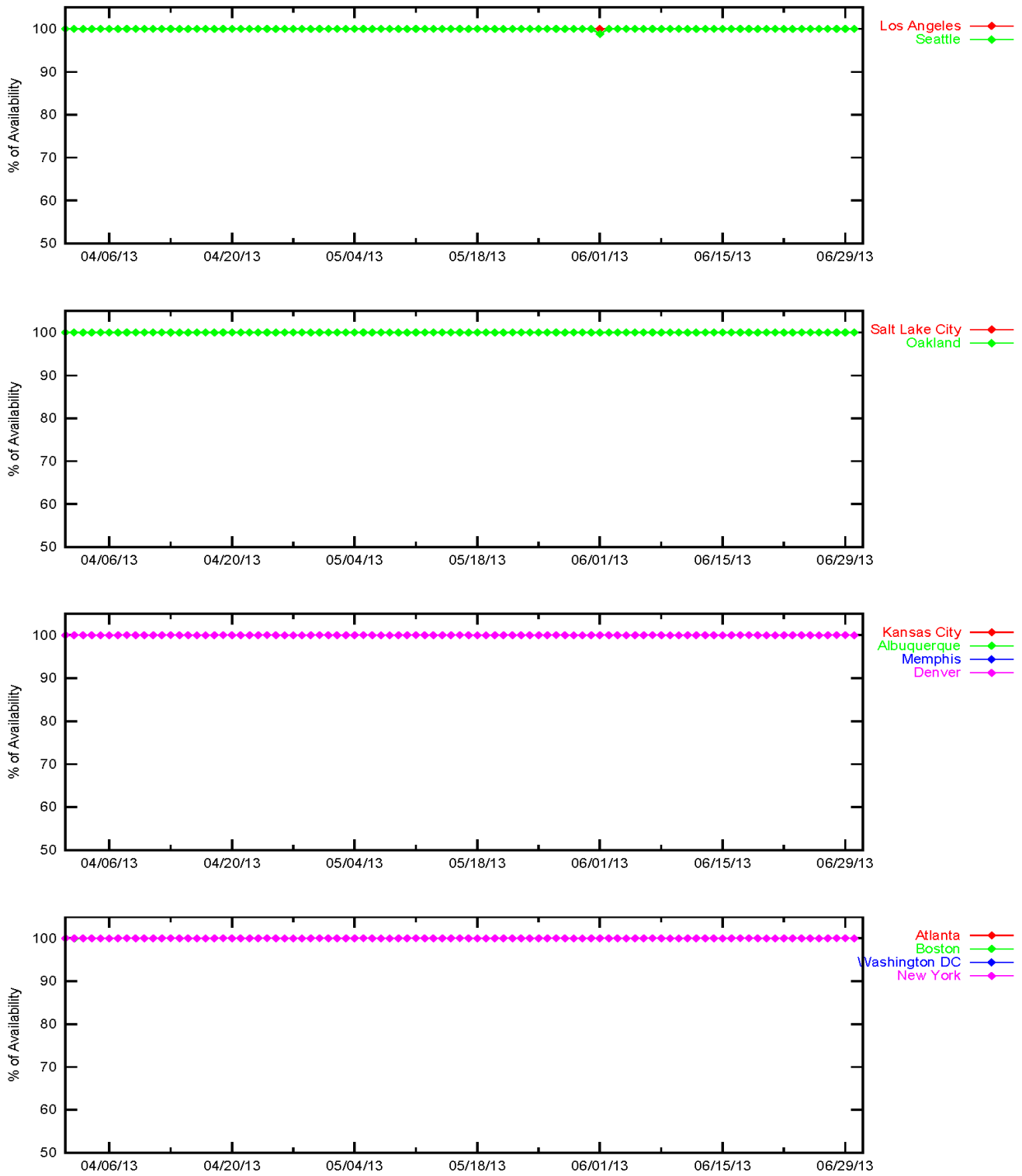


Figure 3-2 LPV Instantaneous Availability

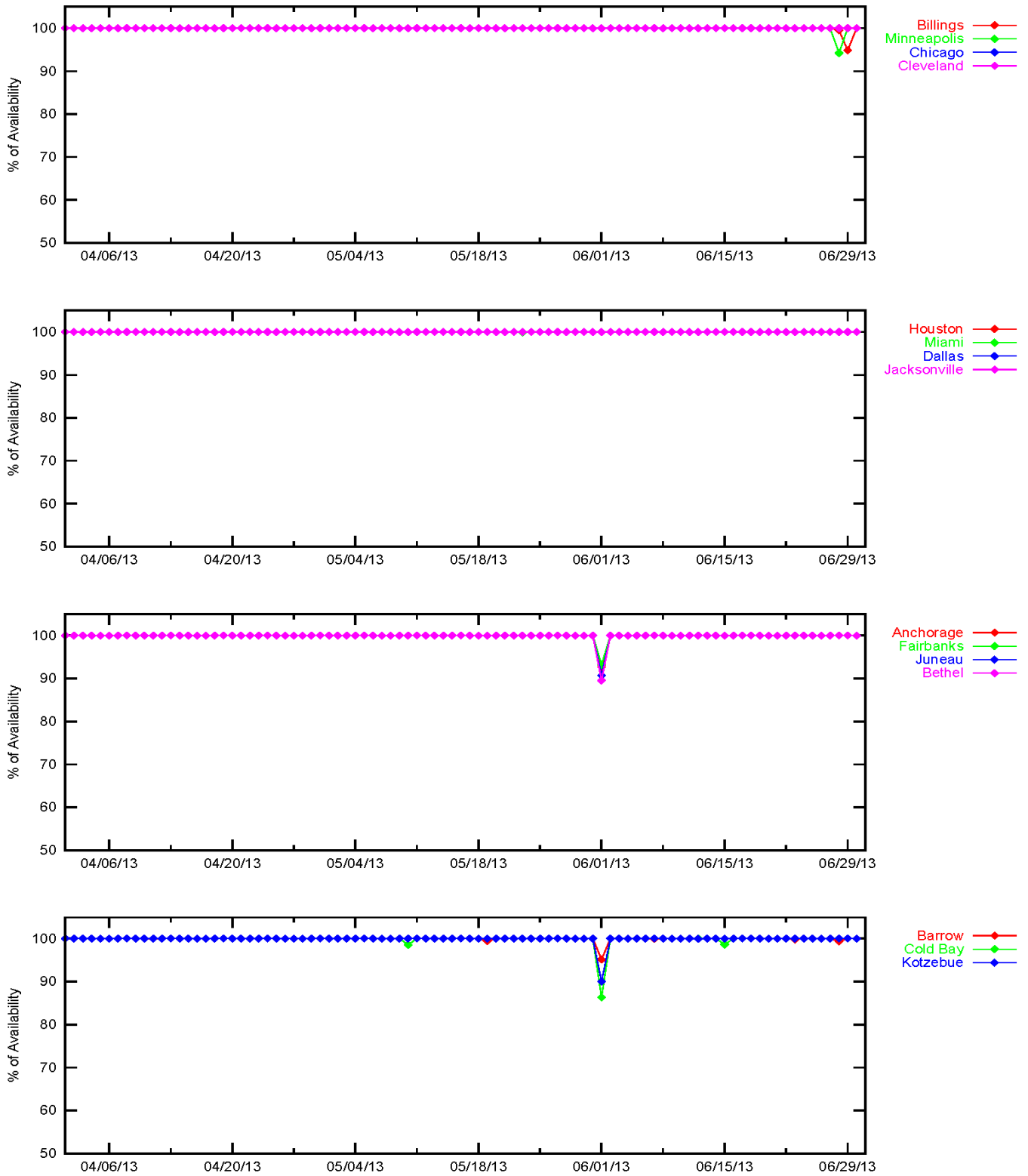


Figure 3-3 LPV Instantaneous Availability

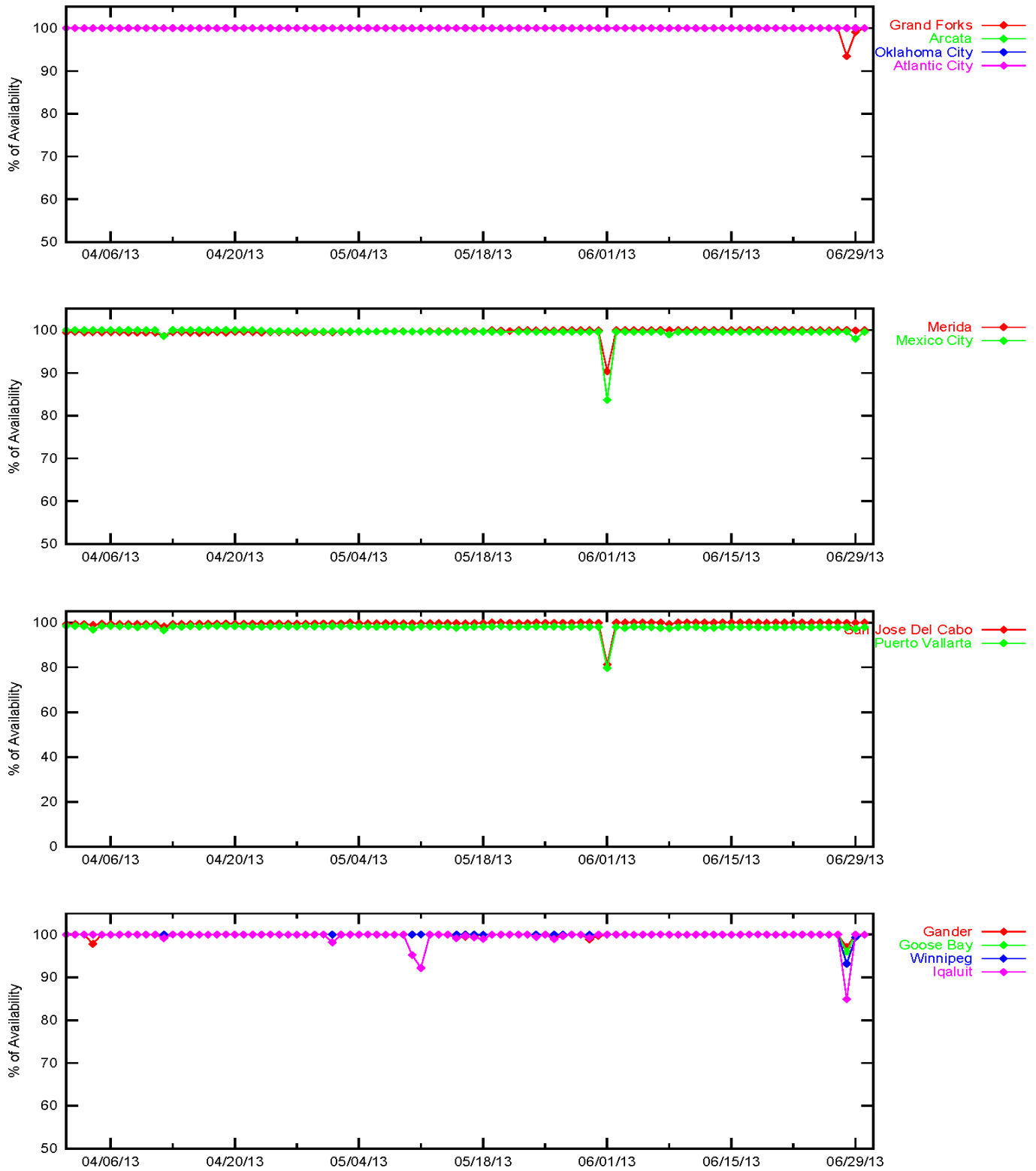


Figure 3-4 LPV 200 Instantaneous Availability

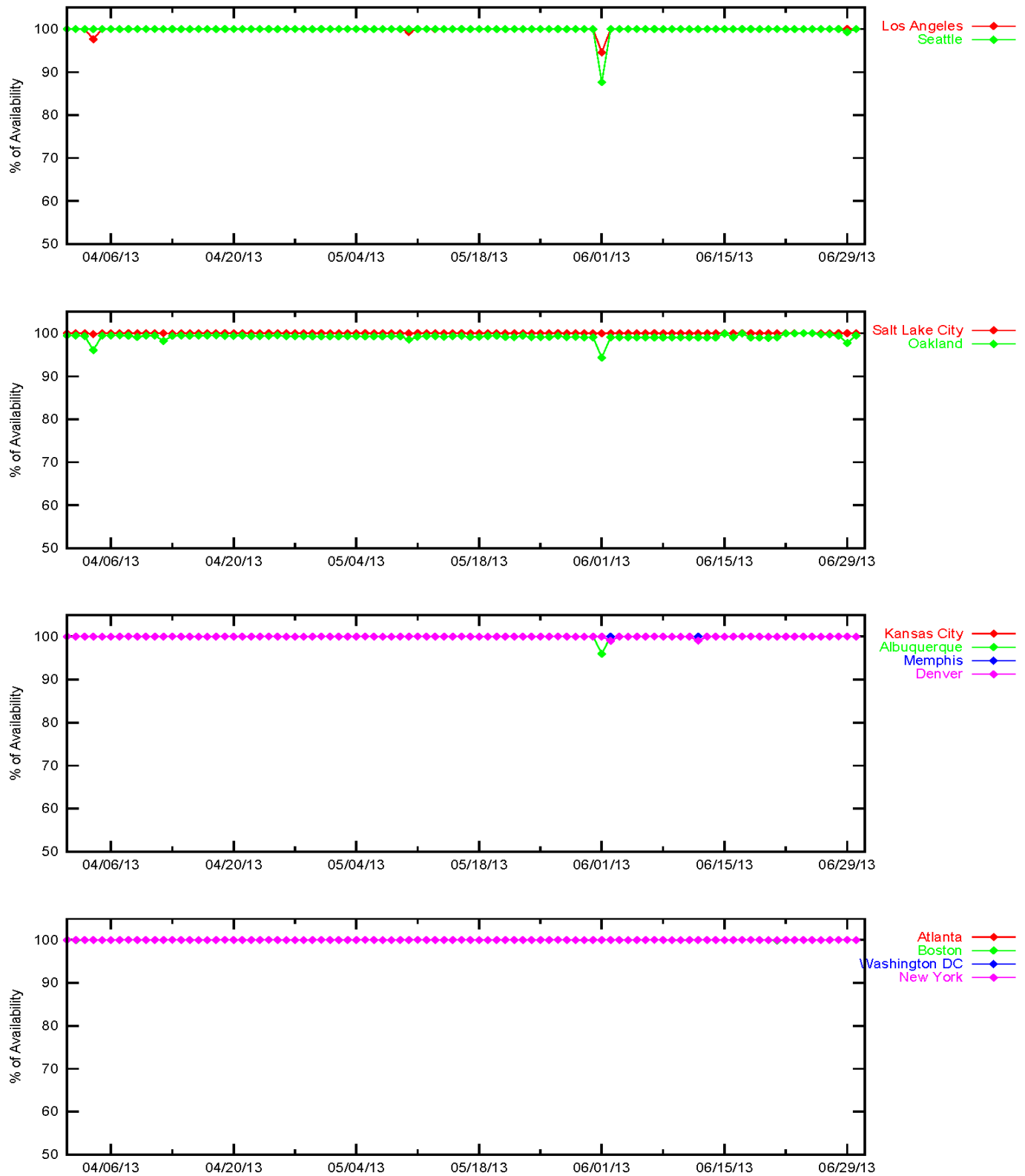


Figure 3-5 LPV 200 Instantaneous Availability\

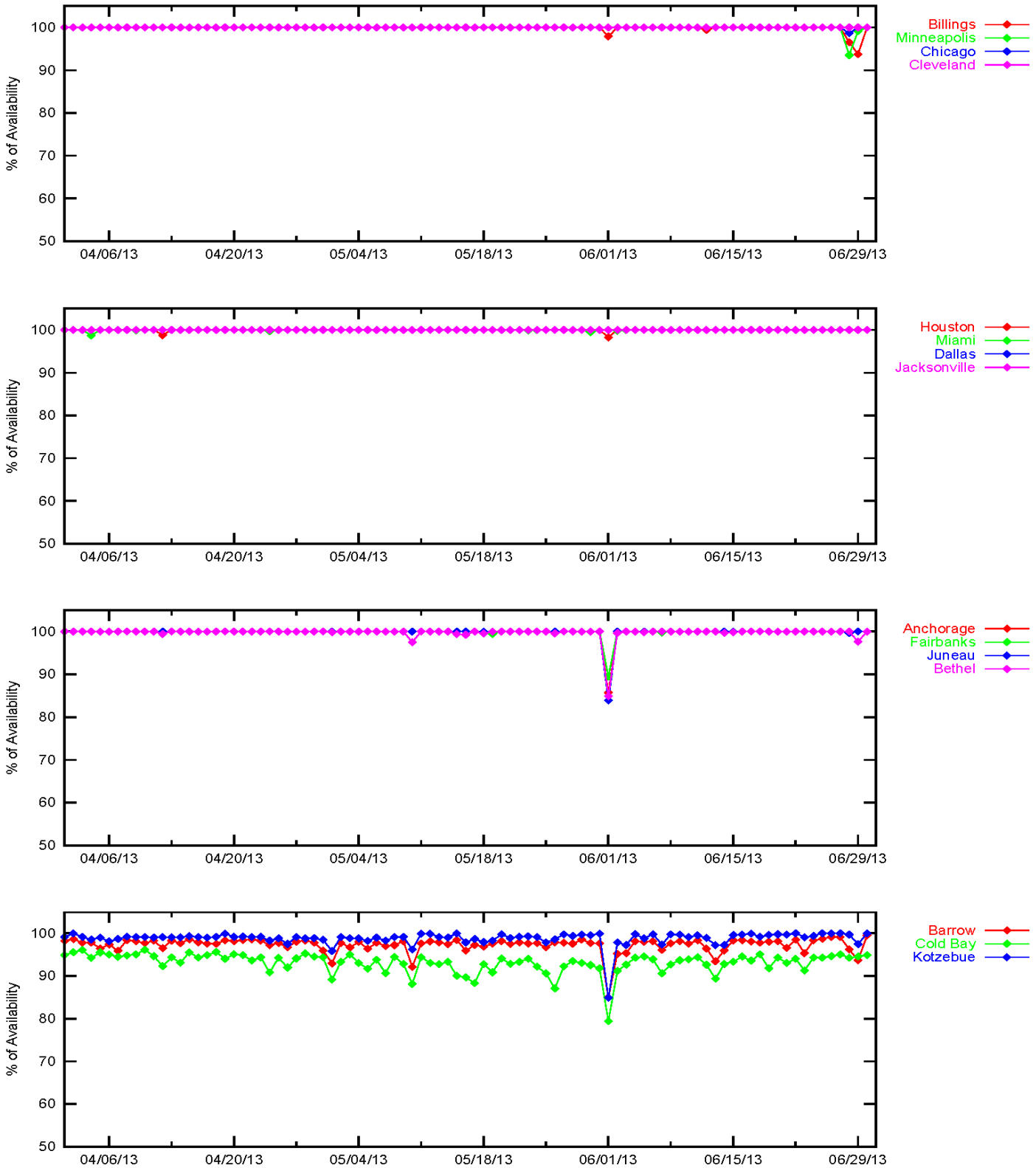


Figure 3-6 LPV 200 Instantaneous Availability

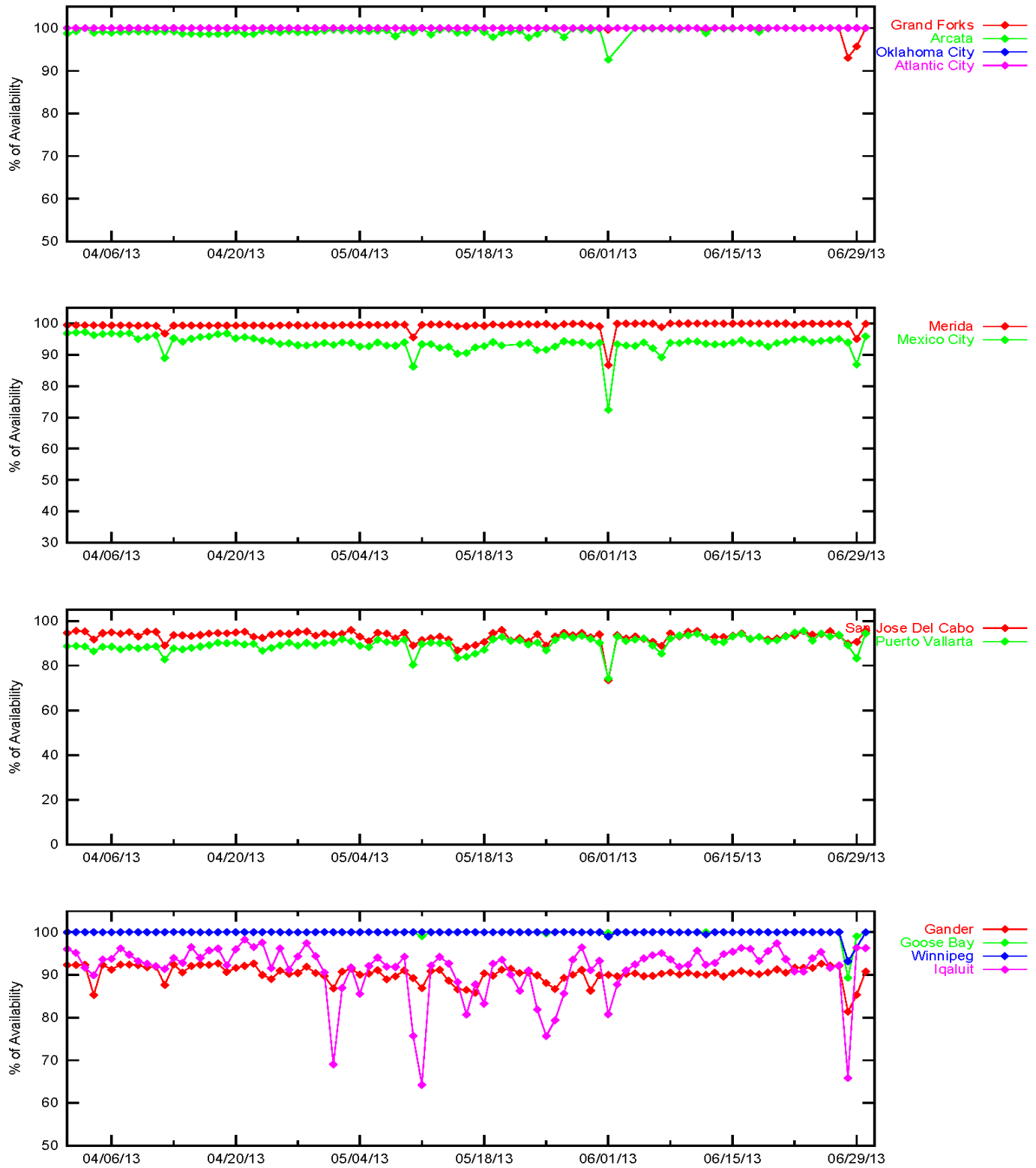


Figure 3-7 LPV Outages

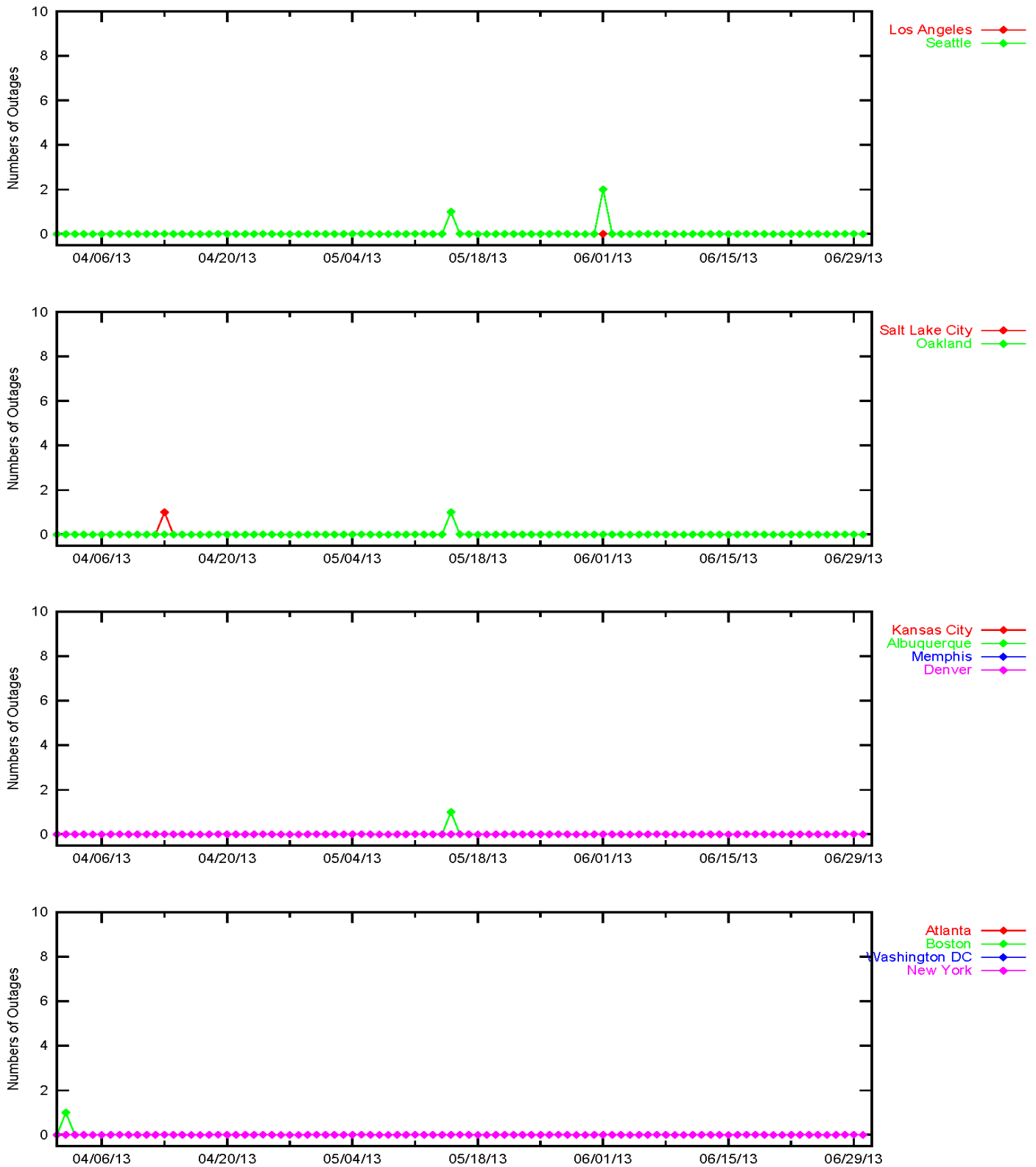


Figure 3-8 LPV Outages

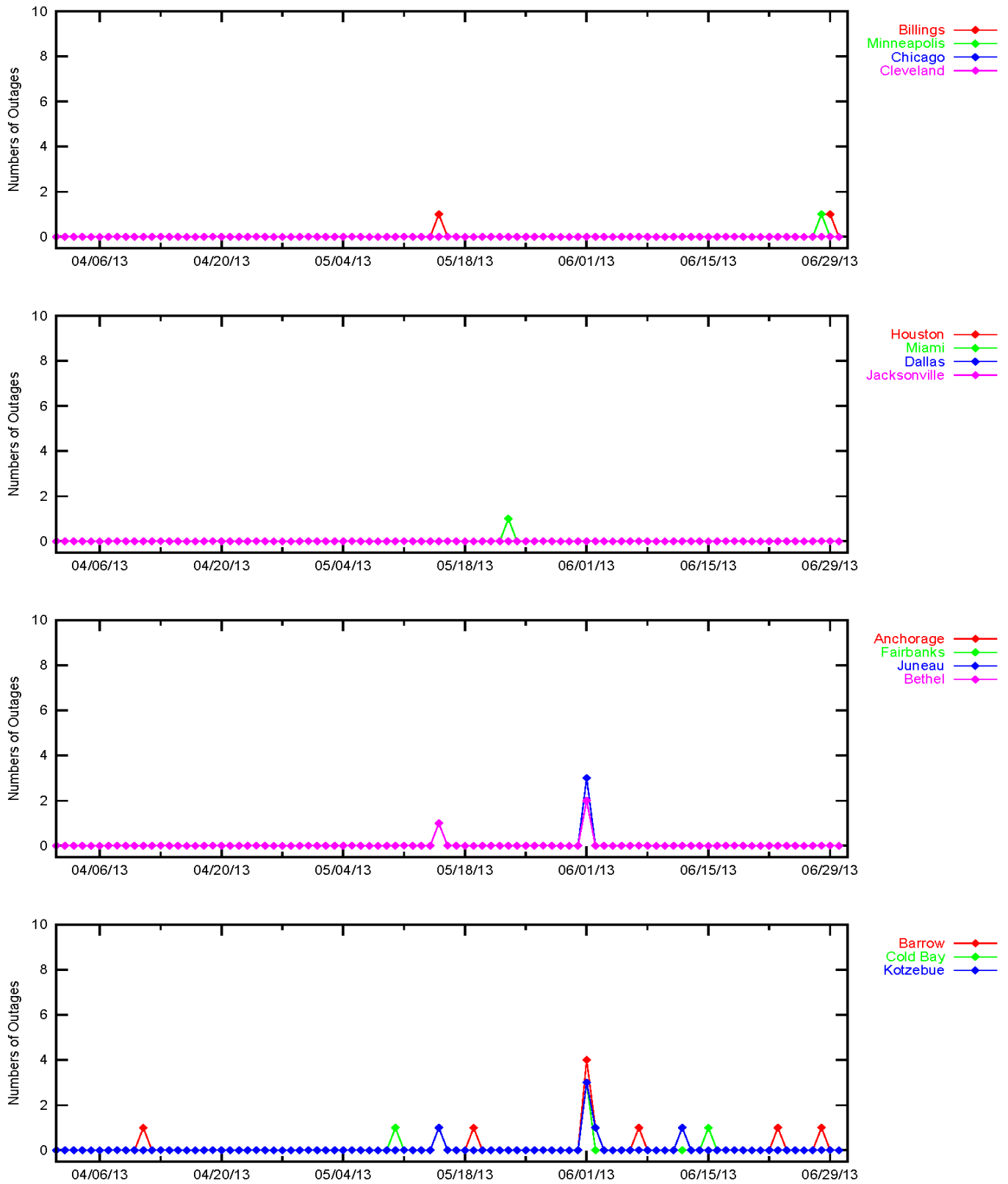


Figure 3-9 LPV Outages

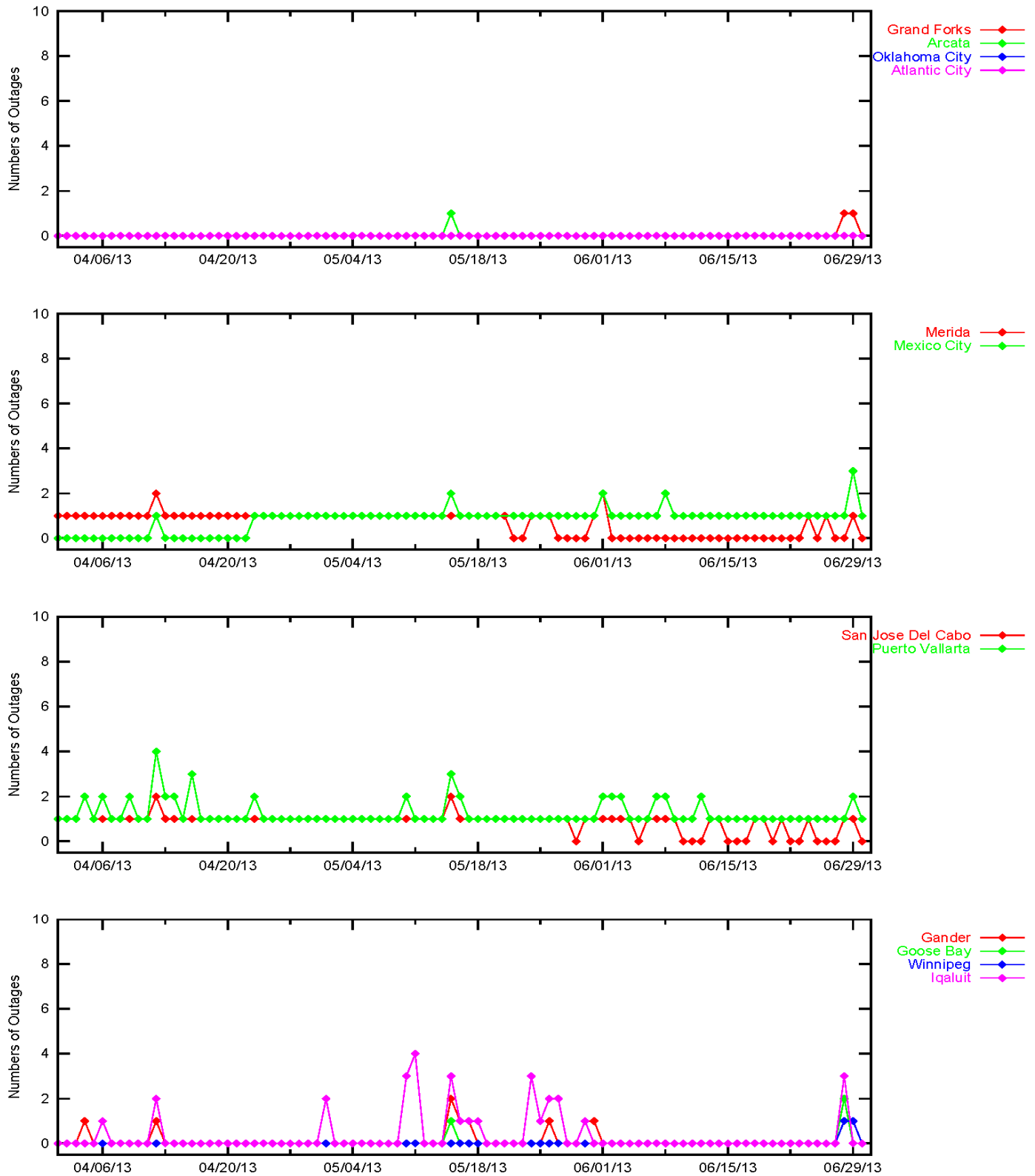


Figure 3-10 LPV 200 Outages

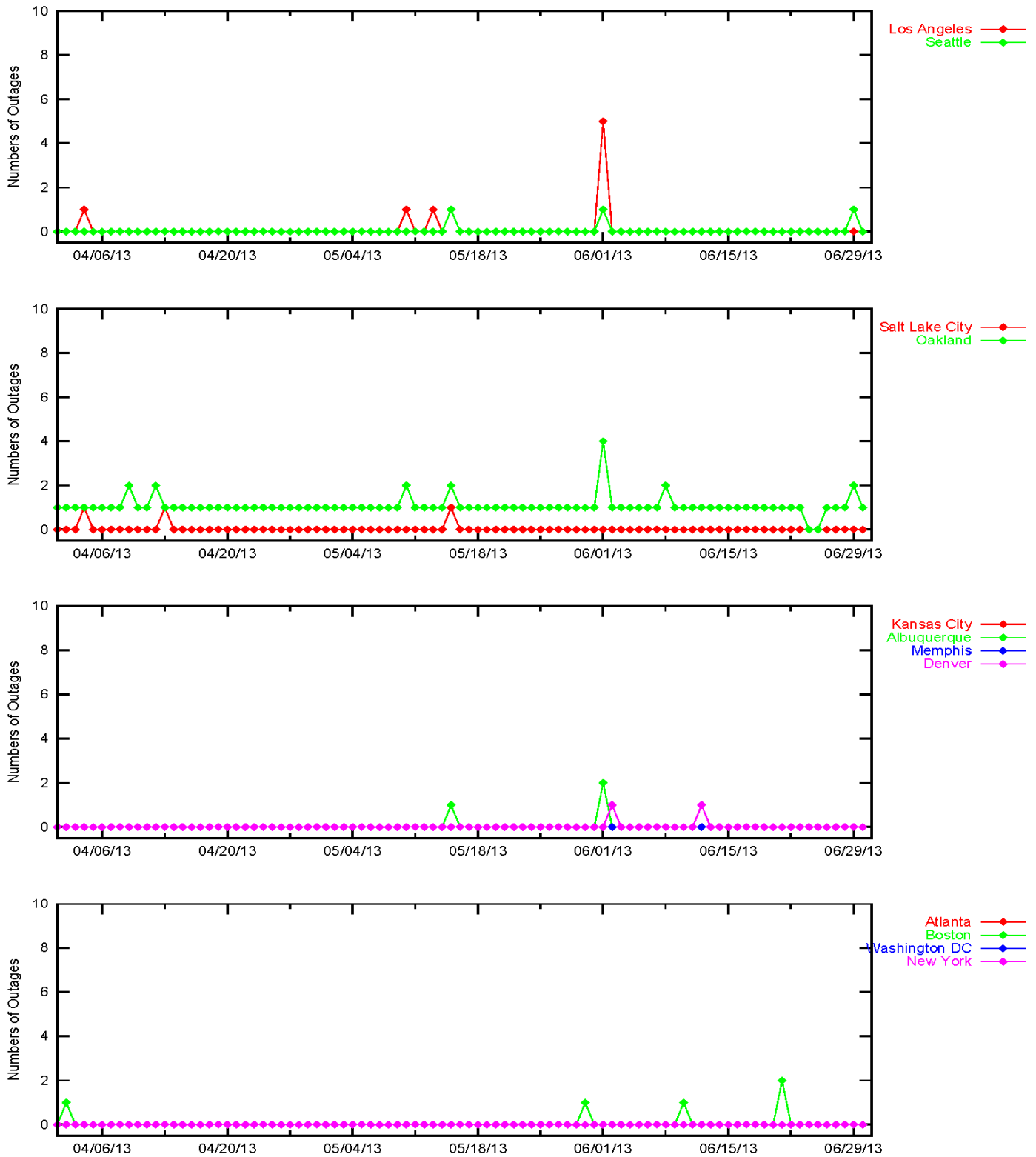


Figure 3-11 LPV 200 Outages

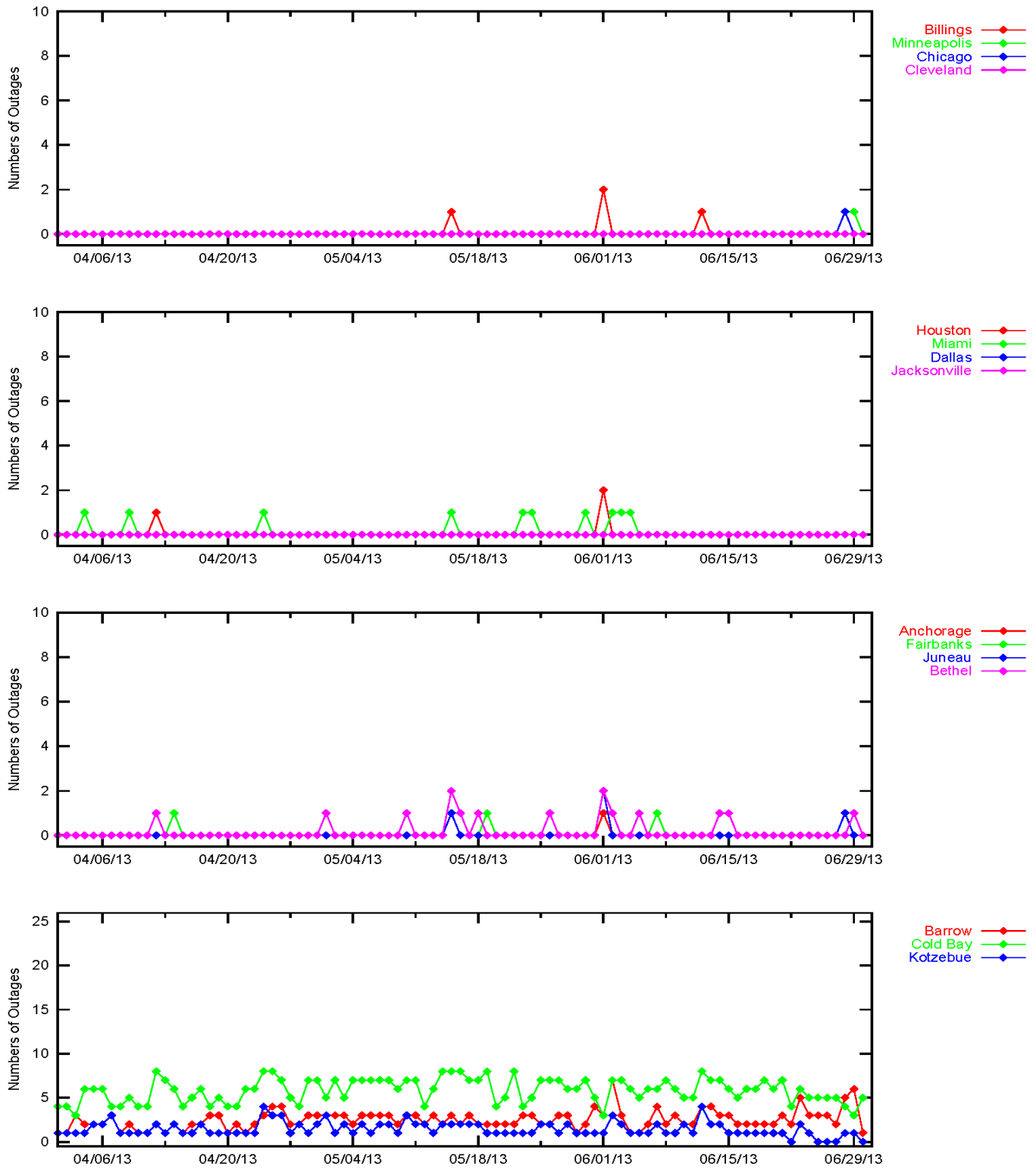
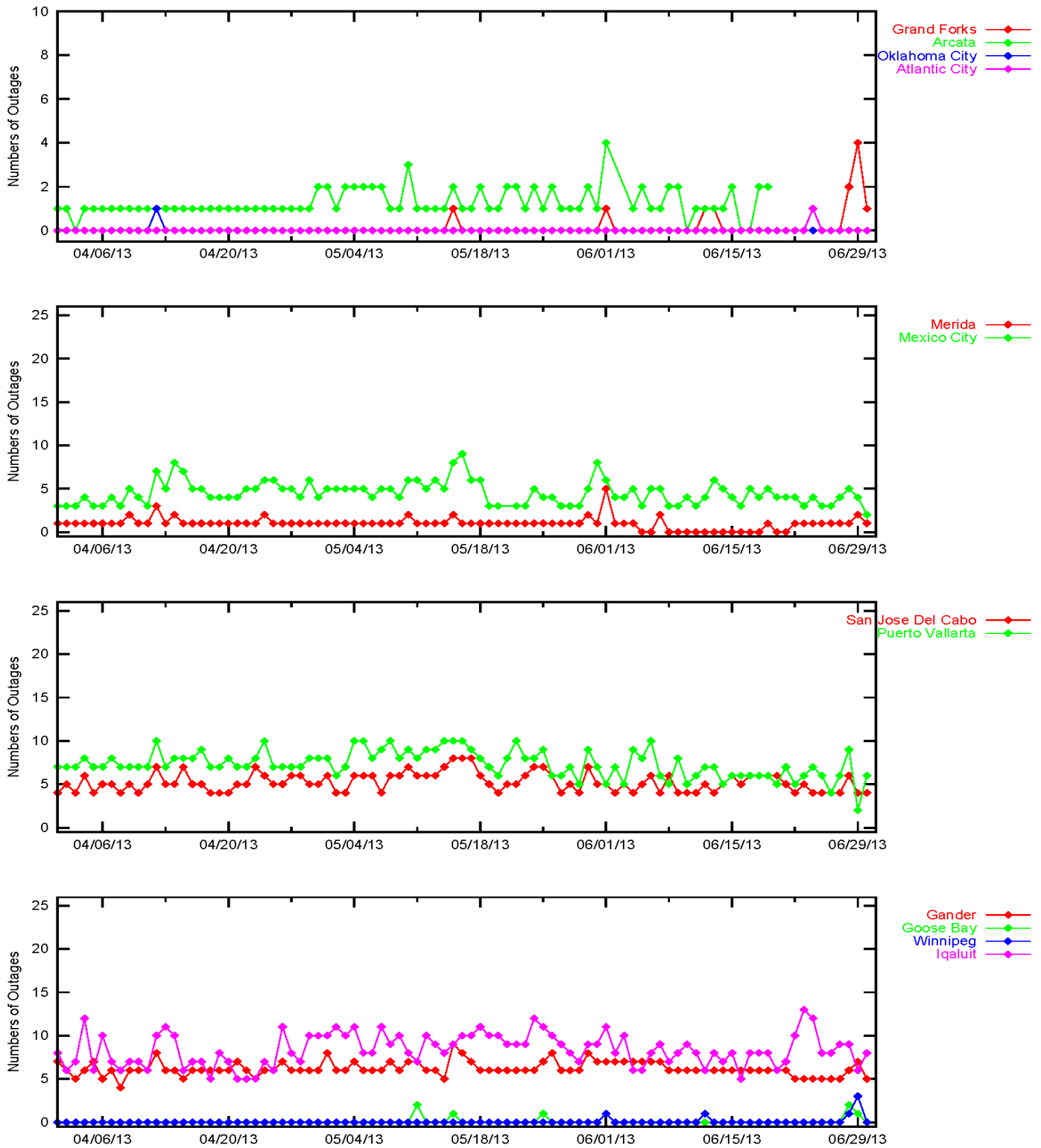


Figure 3-12 LPV 200 Outages



4.0 COVERAGE

The WAAS coverage area evaluation estimates the percent of service volume where WAAS provided service for the operational service levels defined in Table 1-1. The WAAS message and the GPS/GEO satellite status are used to determine WAAS availability across North America. For PA coverage, protection levels were calculated at 30-sec intervals at one degree spacing over the PA service volume, while NPA coverage were calculated at 30-sec intervals at five degree spacing over the NPA service volume.

Daily analysis for PA was conducted for LP, LPV and LPV 200 service levels. The coverage plots provide 100, 99.9, 99, 98 and 95% availability contours. Figure 4-1 shows the rollup LP North America coverage. Figure 4-2 shows the rollup LPV North America coverage. Figure 4-3 shows the rollup LPV 200 North America coverage. Figure 4-6 shows the daily LPV and LPV 200 CONUS coverage, and Figure 4-7 shows the daily LPV Alaska coverage at 99% availability and ionosphere Kp index values for this quarter. Figure 4-8 shows the daily LPV and LPV 200 Canada coverage at 99% availability and ionosphere Kp index values for this quarter. Please see Appendix B for coverage plots of 98% LP and LPV availability contour, and 99% LPV 200 availability contour. Kp quantifies the disturbance in the earth's magnetic field and is an indicator of solar storms causing geomagnetic disturbances that can cause the ionosphere to become unpredictable. WAAS increases GIVE values making PA service unavailable when WAAS detects that the ionosphere is disturbed.

Daily analysis for NPA was conducted for RNP 0.1 and RNP 0.3 service levels based on a 100% availability requirement. RNP 0.1 service is asserted to be available when HPL is less than 185 meters and RNP 0.3 service is asserted to be available when HPL is less than 556 meters. The NPA coverage plots provide 100, 99.9 and 99% availability contours. Figure 4-4 shows the rollup RNP 0.1 coverage and Figure 4-5 shows the rollup RNP 0.3 coverage for the quarter. Figure 4-9 shows the daily RNP coverage at 100% availability and ionosphere Kp index values for this quarter.

The coverage decreases for this quarter are mostly due to GUS switchovers, satellite outages, carrier phase anomalies, geomagnetic activity, and elevated UDRE and GIVE values. Please refer to Table 1-5 for all the events that affected coverage.

Increase in WAAS coverage was observed after June 22nd when PRN-27 was added to GPS satellite constellation.

Manual GUS switchover on CRE GEO (PRN-138) on April 12th and May 30th elevated UDRE values and caused minor reduction in Canada coverage. Manual GUS switchover on CRW GEO (PRN-135) on June 2nd elevated UDRE values and reduced coverage in CONUS, Alaska and Canada. Faulted GUS switchover on CRW GEO (PRN-135) on Jun 12th elevated UDRE values and reduced coverage in CONUS, Alaska and Canada. GUS hardware failure of PNE CRE GEO (PRN-138) on May 15th caused missed navigation messages and two seconds service outage in CONUS, Alaska and Canada. [See DR 114 "LPV Service Outage Due to Consecutive SV Alerts on PRN 138"](#) for a more detailed description.

A brief carrier phase anomaly on PRN-21 on May 30th and June 8th caused WAAS to issue a SV alert setting PRN-21 to "Not Monitored" resulted in a minor reduction in LPV-200 CONUS coverage; the carrier phase anomaly on June 8th also reduced Mexico coverage. A brief carrier phase anomaly on PRN-32 on June 24th caused WAAS to issue a SV alert setting PRN-32 to "Not Monitored" resulted in a minor reduction in LPV-200 Alaska and Canada coverage.

Geomagnetic activity on April 24th elevated GIVE values and slightly reduced CONUS, Alaska, Canada and Mexico coverage. Geomagnetic activity on May 1st and May 16-19th caused minor coverage drop at Alaska and Canada. Geomagnetic activity on June 1st significantly reduced CONUS, Alaska, Canada, and Mexico coverage. [See DR 115 "Effect on WAAS from Iono Activity on 01June2013"](#) for a more detailed description. Geomagnetic activity on June 28-29th elevated GIVE values and significantly affected CONUS, Alaska and Canada coverage.

Planned maintenance on PRN-18 on April 4th affected CONUS, Alaska and Canada coverage. Planned maintenance on PRN-8 on April 11th reduced CONUS and Mexico coverage. Planned maintenance on PRN-25 on May 10-11th affected CONUS, Alaska and Canada coverage.

Intermittent communication outages at Iqaluit on May 10th increased GIVE values at northern latitudes due to the loss of data from Iqaluit reference stations and resulted in minor coverage reduction in Northern Canada. Communication outages at Cold Bay, Bethel and Juneau on June 14th increased GIVE values and caused slight coverage reduction in Alaska.

Radio frequency interference (RFI) caused localized loss of LPV/LPV200 coverage at Boston on April 2nd, June 10th, and June 21st, at Salt Lake City on April 13th, at Los Angeles on May 13th, and at Miami on May 23rd, but had no effect on WAAS service.

Figure 4-1 LP North America Coverage for the Quarter

WAAS LP Coverage Contours
April 1 - June 30, 2013

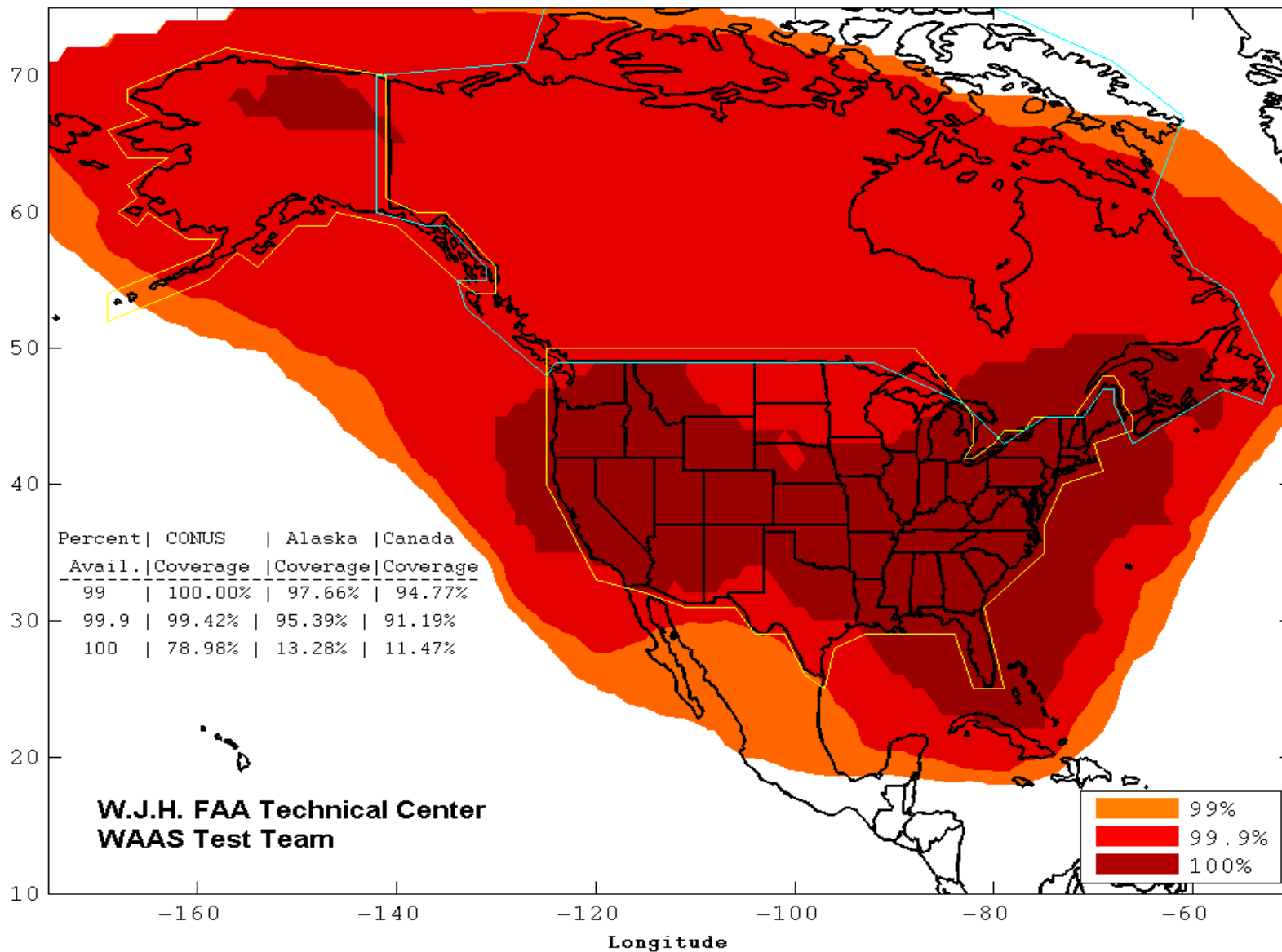


Figure 4-2 LPV North America Coverage for the Quarter

WAAS LPV Coverage Contours
April 1 - June 30, 2013

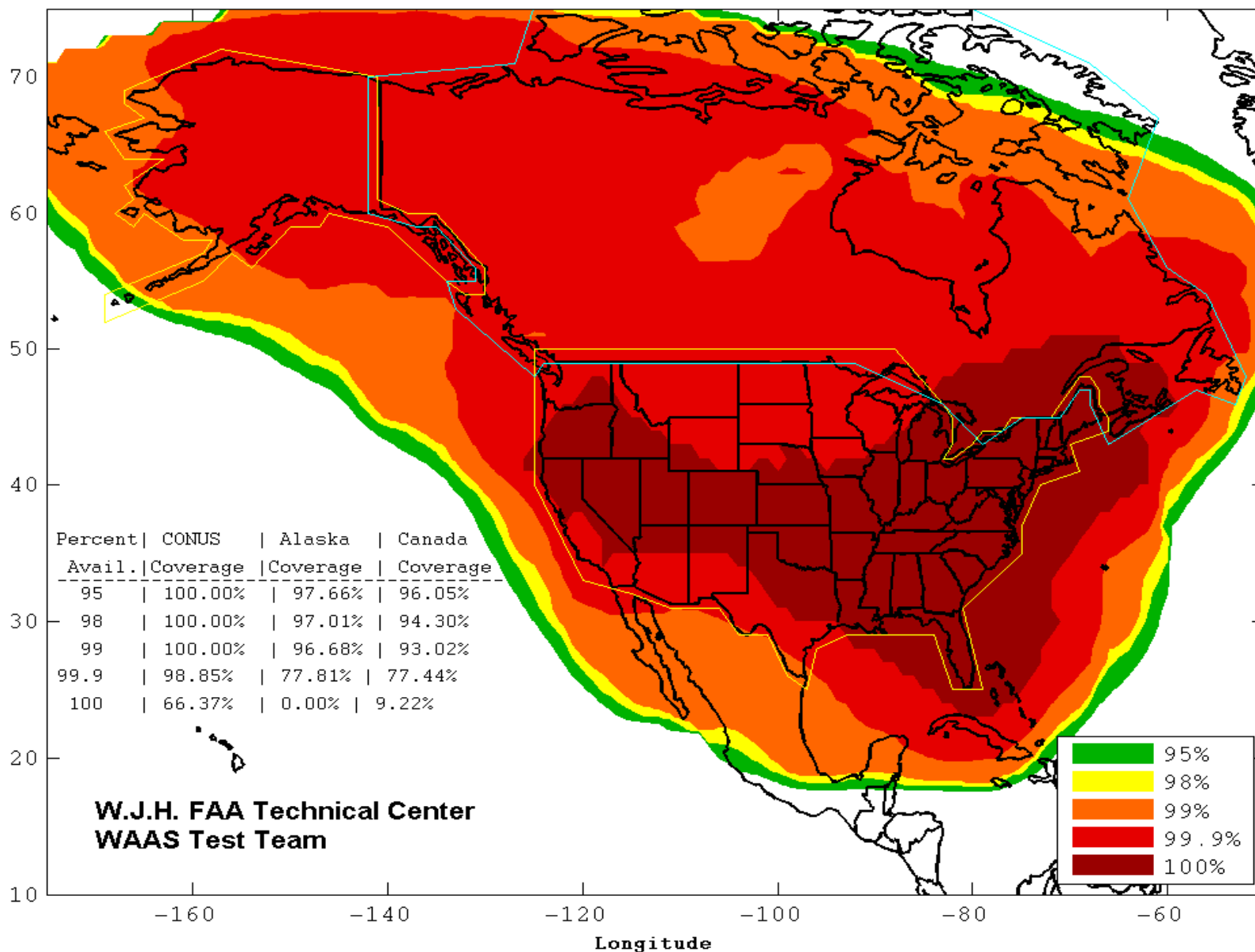


Figure 4-3 LPV 200 North America Coverage for the Quarter

WAAS LPV200 Coverage Contours
April 1 – June 30, 2013

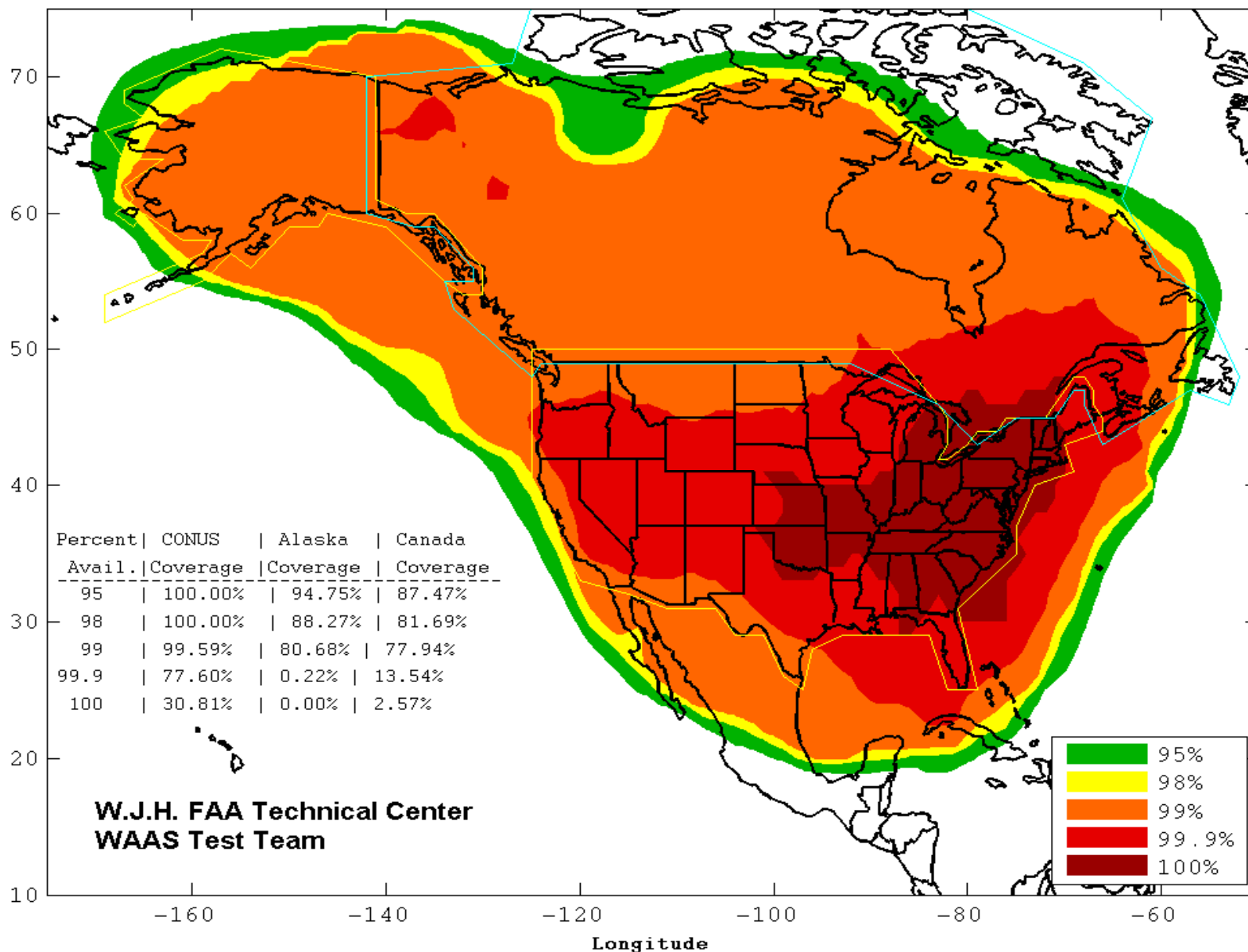


Figure 4-4 RNP 0.1 Coverage for the Quarter

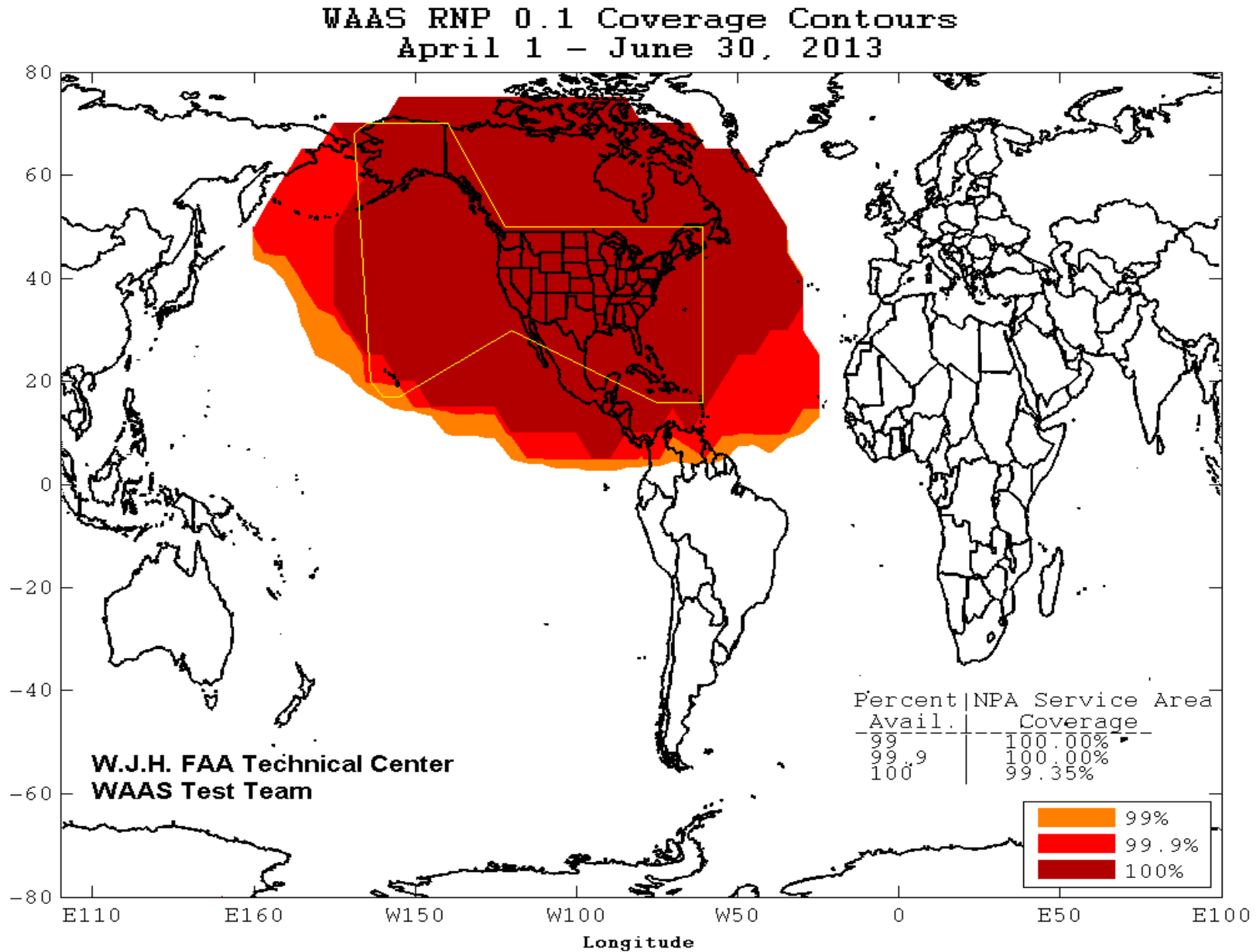


Figure 4-5 RNP 0.3 Coverage for the Quarter

WAAS RNP 0.3 Coverage Contours April 1 – June 30, 2013

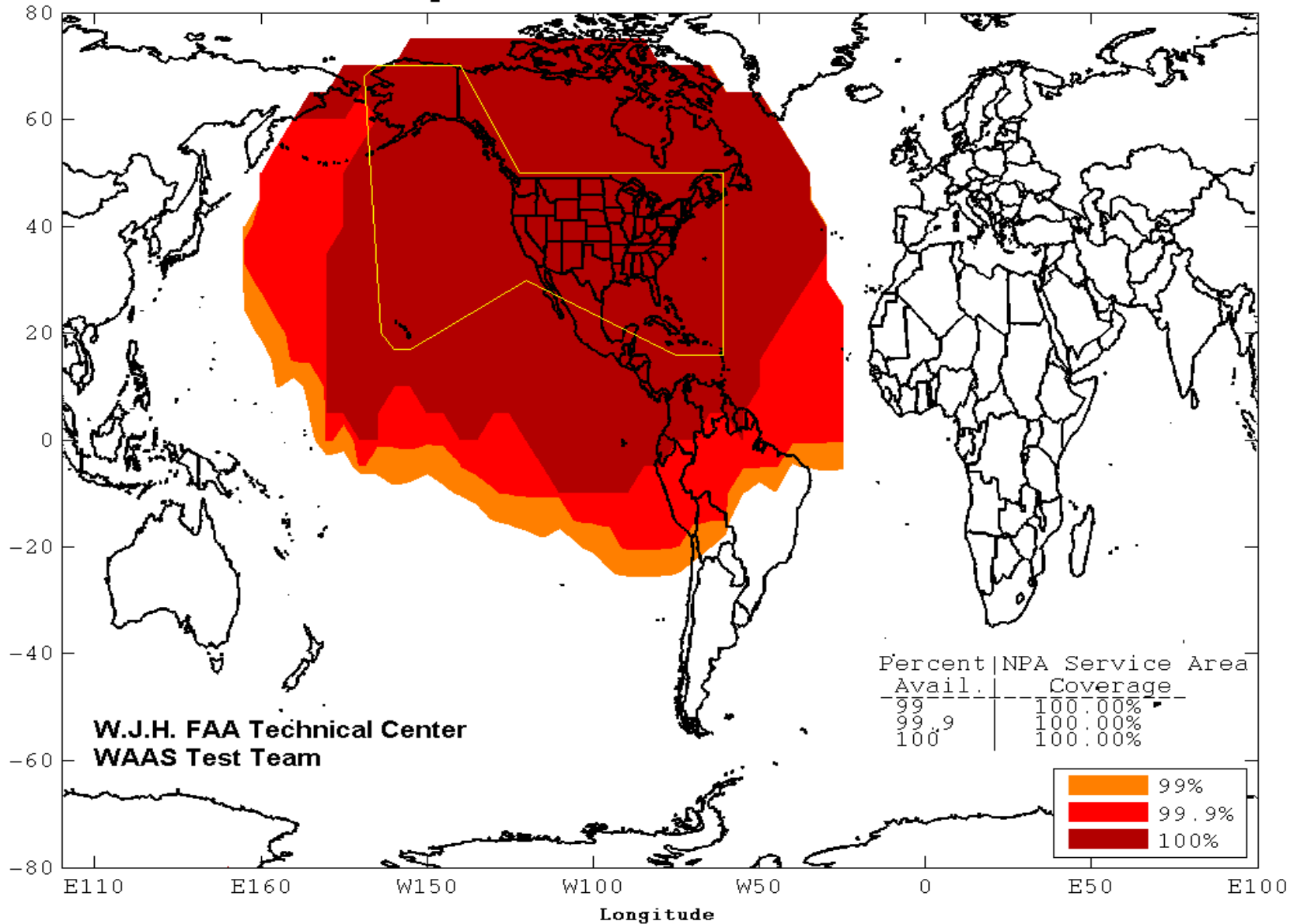


Figure 4-6 Daily LPV and LPV 200 CONUS Coverage

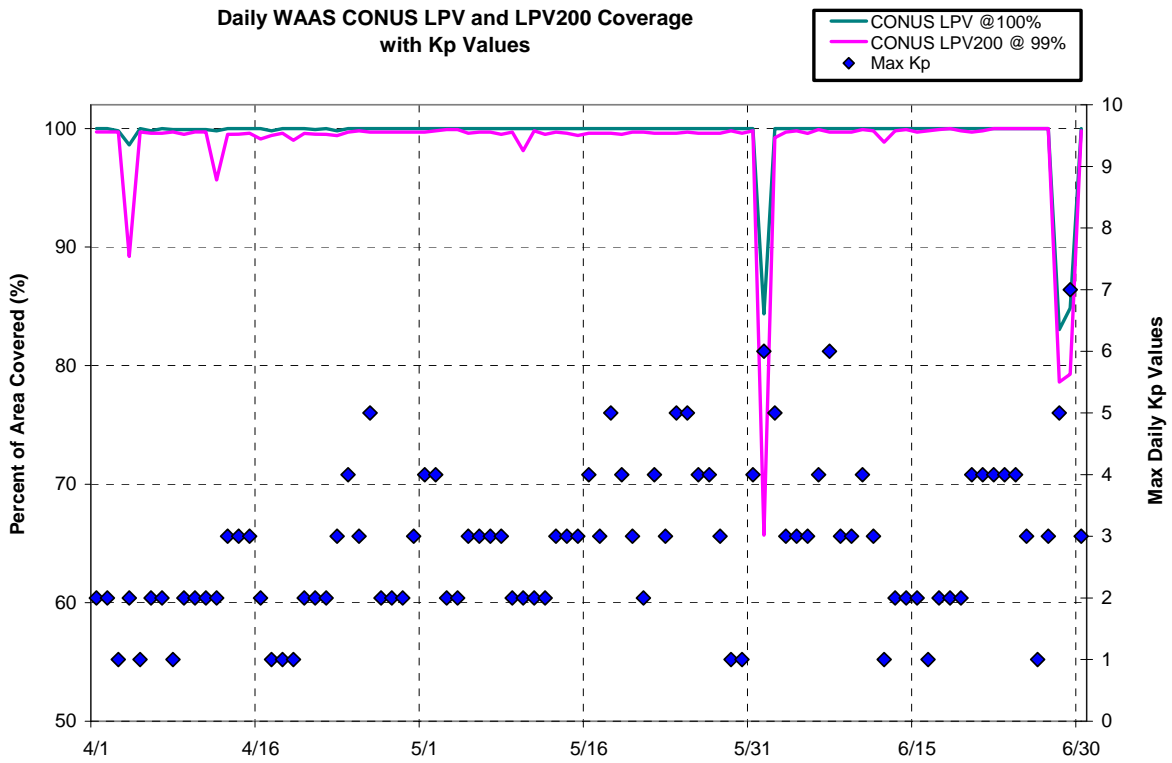


Figure 4-7 Daily LPV and LPV 200 Alaska Coverage

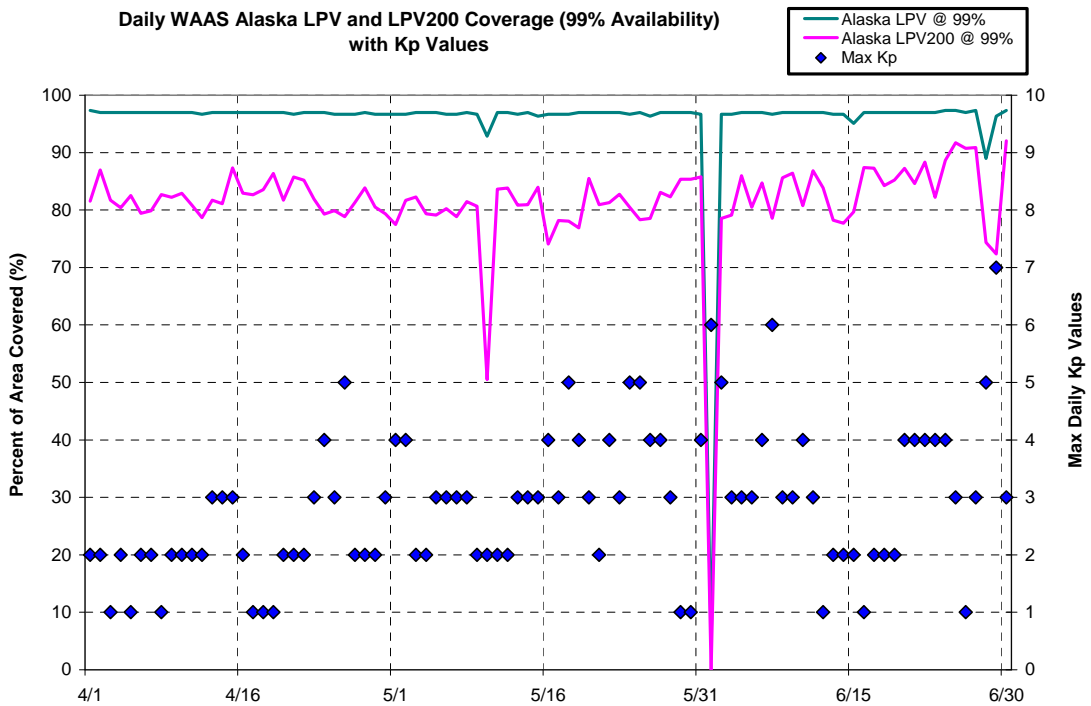


Figure 4-8 Daily LPV and LPV 200 Canada Coverage

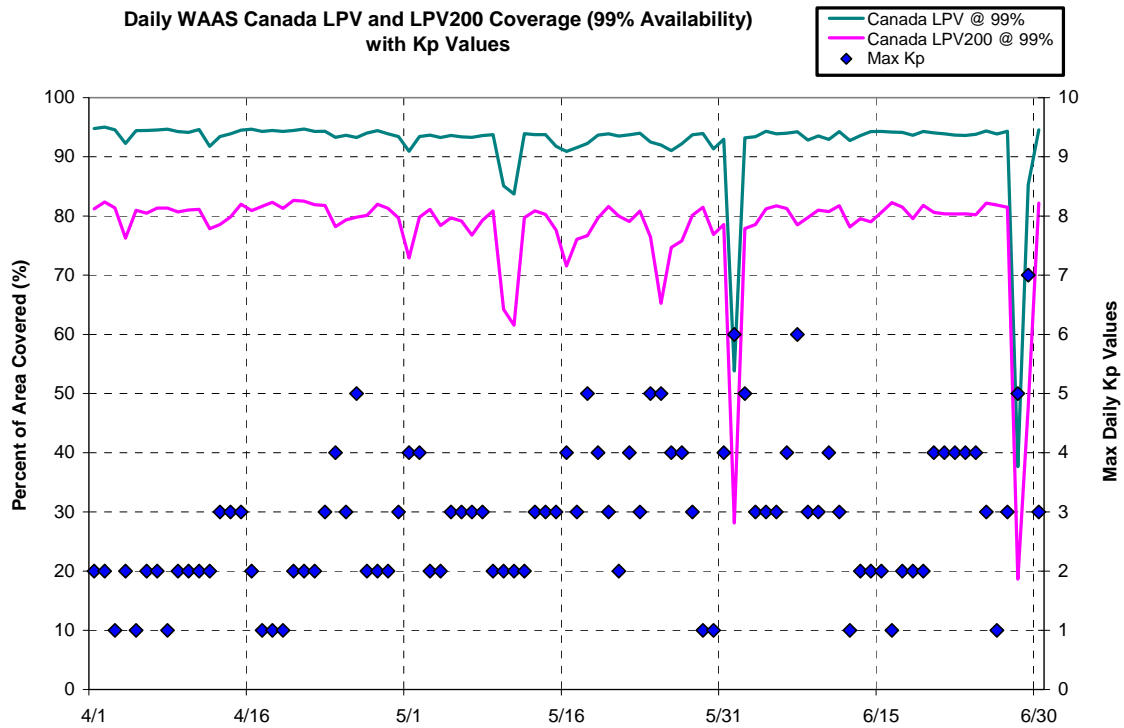
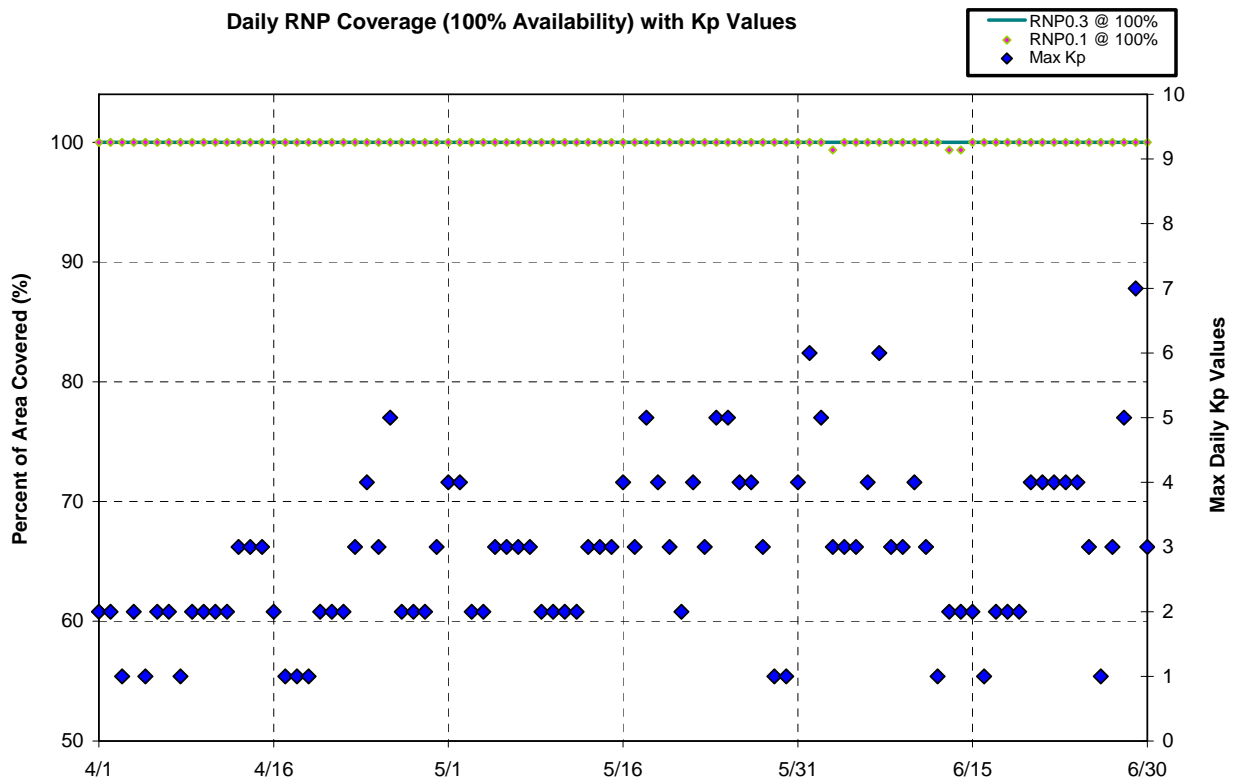


Figure 4-9 Daily RNP Coverage



5.0 INTEGRITY

5.1 HMI Analysis

Analysis of integrity includes the identification and evaluation of HMI (hazardously misleading information), as well as the generation of a safety index to illustrate the margin of safety that WAAS protection levels are providing. The safety index is a metric that shows how well the protection levels are bounding the maximum observed error when LPV service is available. The process for determining this index involves dividing the protection limit observed by the maximum observed error. An observed safety index of greater than one indicates safe bounding of the greatest observed error, less than one indicates that the maximum error was not bounded, and a result equal to one means that the error was equal to the protection level. An HMI occurs if the position error exceeds the protection level in the vertical or horizontal dimensions at any time and 6.2 seconds or more passes before this event is corrected by WAAS.

Table 5-1 lists the safety index and the number of HMI events. For this evaluation period, the lowest safety margin index is 3.72 at Seattle. There was no HMI event. Since WAAS was made available to the public in August 2000 there has not been an HMI event. WAAS was commissioned by the FAA for safety of life services in July 2003.

Table 5-1 Safety Margin Index and HMI Statistics

Location	Safety Index		Number of HMIs
	Horizontal	Vertical	
Arcata	4.68	7.74	0
Atlantic City	4.83	5.79	0
Grand Forks	5.89	6.22	0
Oklahoma City	4.77	5.49	0
Albuquerque	11.86	7.82	0
Anchorage	8.87	6.51	0
Atlanta	6.77	6.10	0
Barrow	5.46	5.10	0
Bethel	8.30	6.11	0
Billings	4.33	5.08	0
Boston	5.32	6.45	0
Chicago	7.29	9.02	0
Cleveland	6.82	4.78	0
Cold Bay	9.58	9.65	0
Dallas	7.71	7.94	0
Denver	6.91	6.31	0
Fairbanks	4.14	4.17	0
Gander	8.41	7.75	0
Goose Bay	10.56	5.29	0
Houston	4.95	6.37	0
Iqaluit	8.79	9.37	0
Jacksonville	7.88	4.19	0
Juneau	11.77	4.74	0
Kansas City	5.33	5.72	0
Kotzebue	10.37	6.79	0
Los Angeles	10.75	7.63	0
Memphis	6.06	4.47	0
Merida	9.45	6.19	0
Mexico City	5.04	4.83	0
Miami	6.96	9.18	0
Minneapolis	9.80	11.74	0
New York	5.92	5.44	0
Oakland	4.89	7.92	0
Puerto Vallarta	8.93	6.45	0
Salt Lake City	7.28	7.73	0
San Jose Del Cabo	8.01	5.03	0
Seattle	7.85	3.72	0
Washington DC	5.98	5.69	0
Winnipeg	5.77	5.06	0

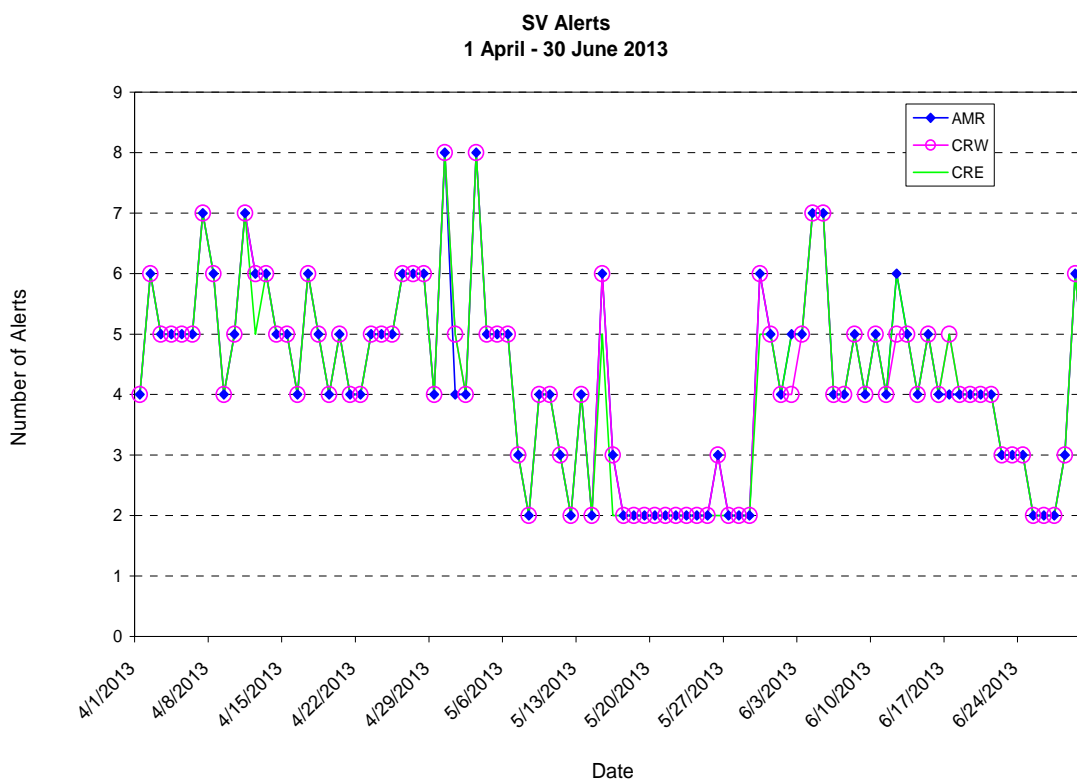
5.2 Broadcast Alerts

The WAAS transmits alert messages to protect the users if the active WAAS corrections are no longer bound by the UDREs. Alerts increase the User Differential Range Error (UDRE) for one or more PRNs, which can reduce the weighting of the satellite in the navigation solution, or completely exclude the satellite from the navigation solution. An increase in UDRE's after an alert effectively increases the user protection levels (HPL and VPL), which affects the availability. Additionally, if an alert message sequence lasts for more than 12 seconds, WAAS fast corrections can time out, causing a loss of continuity. Table 5-2 shows the total number of alerts and the average number of alerts per day. Figure 5-1 shows the number of SV alerts that occurred daily during the reporting period. Often the number of alerts on one GEO is the same as the number of alerts on the other GEO. Therefore, lines tend to overlap in most points on this plot.

Table 5-2 WAAS SV Alert

Message Type	Number of Alerts			Average Alerts Per Day		
	AMR	CRW	CRE	AMR	CRW	CRE
2	25	25	25	0.2747	0.2747	0.2747
3	14	14	14	0.1538	0.1538	0.1538
4	347	347	344	3.8132	3.8132	3.7802
5	0	0	0	0.0000	0.0000	0.0000
6	0	0	0	0.0000	0.0000	0.0000
24	0	0	0	0.0000	0.0000	0.0000
26	0	0	0	0.0000	0.0000	0.0000
Total Alerts	386	386	383	4.2418	4.2418	4.2088
Days in Service	91	91	91			

Figure 5-1 SV Daily Alert Trend



5.3 Availability of WAAS Messages (CRE, CRW, and AMR)

For an accurate and current user position to be calculated, the content of the WAAS message must be broadcast and received within precise time specifications. This aspect of the WAAS is critical to maintaining continuity requirements. Each message type in the WAAS SIS has a specific timeout interval and an expected worst case broadcast interval. Table 5-3 lists the maximum intervals at which each message must broadcast to meet system requirements.

GUS switchovers or broadcast WAAS alerts can interrupt the normal broadcast message stream. If these events occur at a time when the maximum interval of a specific message is approaching, that message may be delayed, resulting in its late transmittal.

Late messages statistics reported during the quarter were mainly caused by GEO SIS outages, GUS switchovers and SV alerts except message type 7 and 10. Occasionally, message type 7 and 10 were late and they were not caused by GEO SIS outages, GUS switchovers or SV alerts. The lateness of type 7 and type 10 messages has little or no impact on user performance and safety.

Tables 5-4 to 5-8 show fast correction, long correction, ephemeris covariance, ionosphere correction, and ionospheric mask message rates statistics broadcasted on AMR GEO. Table 5-9 to 5-13 show message rates statistics broadcasted on CRW GEO. Table 5-14 to 5-18 show message rates statistics on CRE GEO.

Table 5-3 Update Rates for WAAS Messages

Data	Associated Message Types	Maximum Update Interval (seconds)	En Route, Terminal, NPA Timeout (seconds)	Precision Approach Timeout (seconds)
WAAS in Test Mode	0	6	N/A	N/A
PRN Mask	1	60	None	None
UDREI	2-6, 24	6	18	12
Fast Corrections	2-5, 24	See Table A-8 in RTCA DO-229C	See Table A-8 in RTCA DO-229C	See Table A-8 in RTCA DO-229C
Long Term Corrections	24, 25	120	360	240
GEO Nav. Data	9	120	360	240
Fast Correction Degradation	7	120	360	240
Weighting Factors	8	120	240	240
Degradation Parameters	10	120	360	240
Ionospheric Grid Mask	18	300	None	None
Ionospheric Corrections	26	300	600	600
UTC Timing Data	12	300	None	None
Almanac Data	17	300	None	None

Table 5-4 WAAS Fast Correction and Degradation Message Rates – AMR

Message Type	On Time	Late	Max Late Length (seconds)
1	105977	1	154
2	1310386	59	14
3	1310337	72	12
4	1311385	35	11
7	99006	15	133
9	92138	0	0
10	98912	10	133
17	31371	0	0

Table 5-5 WAAS Long Correction Message Rates (Type 24 and 25) - AMR

SV	On Time	Late	Max Late Length (seconds)
1	49130	0	0
2	46889	0	0
3	48140	0	0
4	46952	0	0
5	47575	0	0
6	49476	0	0
7	46924	0	0
8	47021	0	0
9	46609	0	0
10	48401	0	0
11	49785	0	0
12	47226	0	0
13	46829	0	0
14	46777	0	0
15	47999	0	0
16	47578	0	0
17	46747	0	0
18	46318	0	0
19	48580	0	0
20	48529	0	0
21	47135	0	0
22	46704	0	0
23	46853	0	0
24	48768	0	0
25	48298	0	0
26	48166	0	0
27	4834	0	0
28	47754	0	0
29	46745	0	0
31	47623	0	0
32	47028	0	0

Table 5-6 WAAS Ephemeris Covariance Message Rates (Type 28) – AMR

SV	On Time	Late	Max Late Length (seconds)
1	40348	0	0
2	38475	0	0
3	39528	0	0
4	38539	0	0
5	39059	0	0
6	40658	0	0
7	38529	0	0
8	38634	0	0
9	38255	0	0
10	39720	0	0
11	40937	3	211
12	38791	0	0
13	38513	0	0
14	38403	0	0
15	39368	0	0
16	39109	0	0
17	38412	0	0
18	38014	0	0
19	39903	0	0
20	39878	0	0
21	38669	0	0
22	38409	0	0
23	38462	0	0
24	40128	0	0
25	39672	0	0
26	39544	0	0
27	3972	0	0
28	39224	0	0
29	38405	0	0
31	39074	0	0
32	38620	0	0
133	75528	0	0
135	75547	0	0
138	75515	0	0

Table 5-7 WAAS Ionospheric Correction Message Rates (Type 26) – AMR

Band	Block	On Time	Late	Max Late Length (seconds)
0	0	27295	10	307
0	1	27295	10	305
0	2	27301	4	307
1	0	27291	10	306
1	1	27288	9	307
1	2	27298	7	306
1	3	27284	5	306
1	4	27294	7	301
2	0	27298	7	306
2	1	27291	14	306
2	2	27283	10	307
2	3	27307	6	306
2	4	27287	10	307
3	0	27287	14	308
3	1	27278	15	306
3	2	27277	12	310
9	0	27298	10	579
9	1	27291	14	307
9	2	27287	14	307
9	3	27295	6	307
9	4	27297	8	306
9	5	27282	7	305
9	6	27295	6	306

Table 5-8 WAAS Ionospheric Mask Message Rates (Type 18) – AMR

Band	On Time	Late	Max Late Length (seconds)
0	35738	0	0
1	35751	0	0
2	35766	0	0
3	35730	0	0
9	35754	0	0

Table 5-9 WAAS Fast Correction and Degradation Message Rates – CRW

Message Type	On Time	Late	Max Late Length (seconds)
1	105997	2	127
2	1310386	58	19
3	1310335	72	18
4	1311385	34	17
7	99054	15	133
9	92138	0	0
10	99129	16	132
17	31338	0	0

Table 5-10 WAAS Long Correction Message Rates (Type 24 and 25) - CRW

SV	On Time	Late	Max Late Length (seconds)
1	49132	0	0
2	46890	0	0
3	48137	0	0
4	46945	0	0
5	47577	0	0
6	49471	1	164
7	46929	0	0
8	47021	0	0
9	46608	0	0
10	48400	0	0
11	49795	0	0
12	47228	0	0
13	46832	0	0
14	46778	1	186
15	47997	0	0
16	47583	0	0
17	46750	0	0
18	46308	0	0
19	48589	0	0
20	48514	0	0
21	47131	1	164
22	46704	0	0
23	46859	1	166
24	48765	0	0
25	48300	0	0
26	48181	0	0
27	4835	0	0
28	47743	0	0
29	46741	1	186
31	47624	0	0
32	47044	0	0

Table 5-11 WAAS Ephemeris Covariance Message Rates (Type 28) – CRW

SV	On Time	Late	Max Late Length (seconds)
1	40348	0	0
2	38475	0	0
3	39528	0	0
4	38539	0	0
5	39059	0	0
6	40656	1	210
7	38529	0	0
8	38634	0	0
9	38255	0	0
10	39720	0	0
11	40935	4	211
12	38791	0	0
13	38513	0	0
14	38403	0	0
15	39368	0	0
16	39109	0	0
17	38412	0	0
18	38014	0	0
19	39903	0	0
20	39878	0	0
21	38669	0	0
22	38409	0	0
23	38462	0	0
24	40128	0	0
25	39672	0	0
26	39544	0	0
27	3972	0	0
28	39224	0	0
29	38405	0	0
31	39074	0	0
32	38618	1	210
133	75528	0	0
135	75547	0	0
138	75513	1	210

Table 5-12 WAAS Ionospheric Correction Message Rates (Type 26) – CRW

Band	Block	On Time	Late	Max Late Length (seconds)
0	0	27283	13	306
0	1	27287	13	307
0	2	27276	12	306
1	0	27292	12	306
1	1	27297	11	307
1	2	27291	9	307
1	3	27291	9	307
1	4	27293	11	311
2	0	27293	7	307
2	1	27295	10	307
2	2	27289	8	306
2	3	27297	8	306
2	4	27288	9	306
3	0	27287	10	312
3	1	27282	15	305
3	2	27295	6	307
9	0	27285	16	307
9	1	27283	14	306
9	2	27293	11	306
9	3	27282	10	306
9	4	27290	14	307
9	5	27287	13	306
9	6	27293	11	306

Table 5-13 WAAS Ionospheric Mask Message Rates (Type 18) - CRW

Band	On Time	Late	Max Late Length (seconds)
0	35784	0	0
1	35735	0	0
2	35727	0	0
3	35727	0	0
9	35743	0	0

Table 5-14 WAAS Fast Correction and Degradation Message Rates – CRE

Message Type	On Time	Late	Max Late Length (seconds)
1	105257	1	127
2	1310386	58	16
3	1310334	72	18
4	1311375	37	17
7	98330	21	148
9	92136	1	170
10	98387	19	137
17	31302	2	304

Table 5-15 WAAS Long Correction Message Rates (Type 24 and 25) – CRE

SV	On Time	Late	Max Late Length (seconds)
1	49136	0	0
2	46884	0	0
3	48138	0	0
4	46948	0	0
5	47558	0	0
6	49471	0	0
7	46918	0	0
8	47019	0	0
9	46605	0	0
10	48409	0	0
11	49795	0	0
12	47228	1	167
13	46832	0	0
14	46780	0	0
15	48003	0	0
16	47577	1	172
17	46750	0	0
18	46315	0	0
19	48587	0	0
20	48524	0	0
21	47129	0	0
22	46706	0	0
23	46849	0	0
24	48767	0	0
25	48302	0	0
26	48192	0	0
27	4833	0	0
28	47758	1	167
29	46744	0	0
31	47630	0	0
32	47032	0	0

Table 5-16 WAAS Ephemeris Covariance Message Rates (Type 28) – CRE

SV	On Time	Late	Max Late Length (seconds)
1	40370	0	0
2	38476	0	0
3	39529	0	0
4	38547	1	177
5	39049	0	0
6	40637	0	0
7	38519	0	0
8	38644	0	0
9	38262	0	0
10	39725	0	0
11	40948	1	151
12	38772	0	0
13	38485	0	0
14	38394	0	0
15	39380	0	0
16	39101	0	0
17	38425	1	210
18	38024	0	0
19	39912	0	0
20	39868	0	0
21	38667	0	0
22	38415	0	0
23	38480	0	0
24	40136	0	0
25	39651	1	210
26	39516	0	0
27	3976	0	0
28	39190	0	0
29	38415	0	0
31	39074	0	0
32	38600	0	0
133	75568	1	209
135	75565	0	0
138	75499	0	0

Table 5-17 WAAS Ionospheric Correction Message Rates (Type 26) – CRE

Band	Block	On Time	Late	Max Late Length (seconds)
0	0	27286	14	308
0	1	27282	13	306
0	2	27294	9	306
1	0	27291	8	306
1	1	27298	10	306
1	2	27283	9	302
1	3	27297	11	306
1	4	27287	9	305
2	0	27287	17	306
2	1	27279	13	306
2	2	27288	8	305
2	3	27288	16	306
2	4	27292	12	305
3	0	27286	14	306
3	1	27282	10	307
3	2	27280	11	576
9	0	27303	9	306
9	1	27279	12	579
9	2	27286	10	306
9	3	27299	9	310
9	4	27283	13	307
9	5	27292	12	306
9	6	27284	12	306

Table 5-18 WAAS Ionospheric Mask Message Rates (Type 18) – CRE

Band	On Time	Late	Max Late Length (seconds)
0	35683	0	0
1	35637	0	0
2	35654	0	0
3	35626	0	0
9	35669	0	0

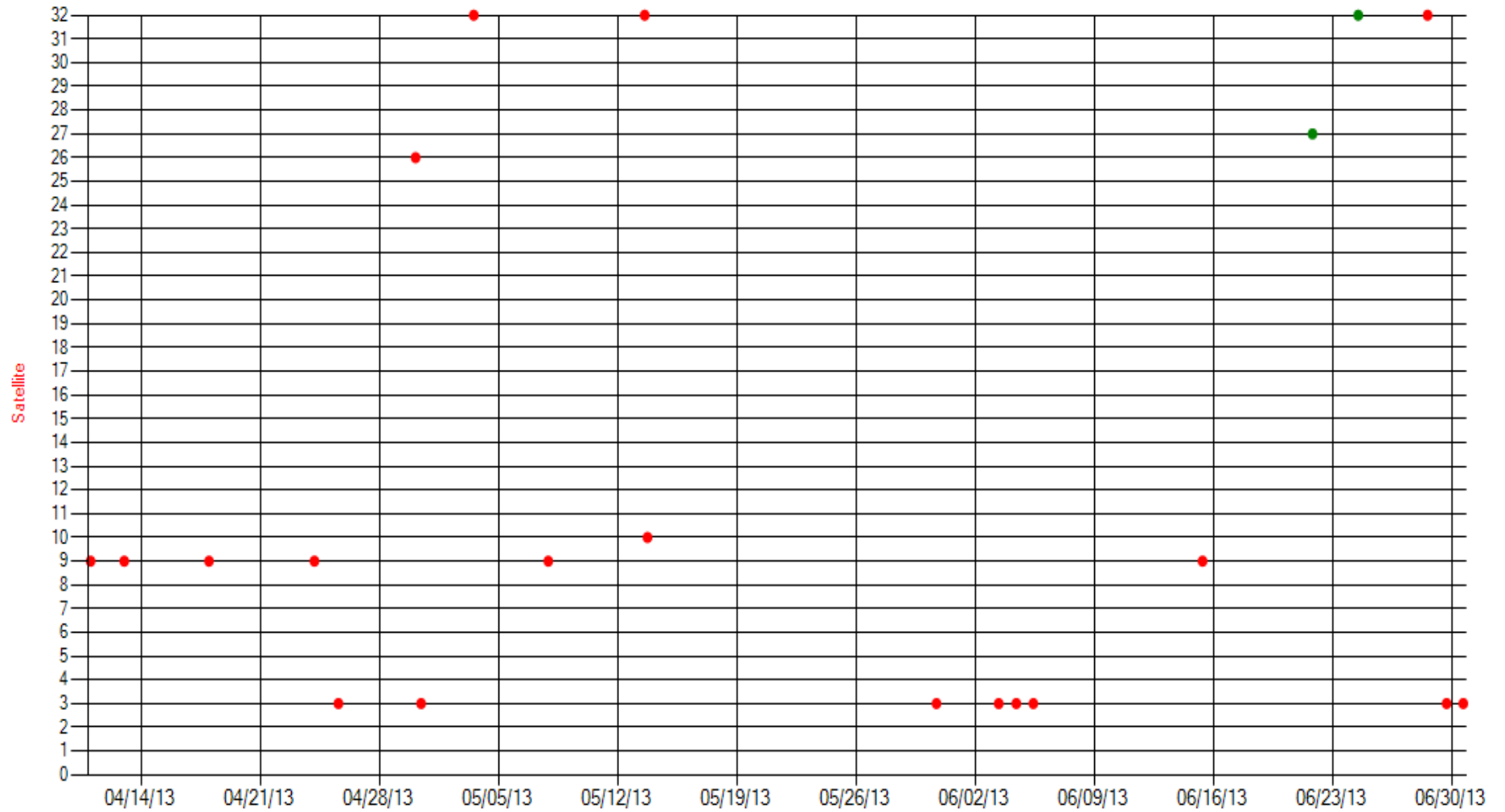
5.4 Satellite Glitches

The GPS satellites occasionally have periods of signal carrier stability ‘glitches’ of varying magnitude. These are short degradations in the signal that in severe cases cause WAAS to lose track or cycle slip for some or all of the WAAS receivers. The more severe glitches will cause the WAAS reported UDRE spike to ‘Not Monitor’ and result in an alert.

Figure 5-2 shows the satellite glitches visible to WAAS for the quarter. Glitches are categorized into three severity levels. Severity one glitches cause a significant number of the receivers to simultaneously have bad subframe parity, but not all receivers. Severity two glitches cause all of the receivers to report bad subframe parity data and some receivers to also have cycle slips and or lose tracking of L2 and or L1. Severity three glitches cause all of the receivers to lose track of both L1 and L2 data.

Figure 5-2 SV Glitch Trend

Satellite Glitch Events
Severity: Green = 1; Blue = 2; Red = 3



6.0 SV RANGE ACCURACY

Range accuracy evaluation computes the probability that the WAAS User Differential Range Error (UDRE) and Grid Ionospheric Vertical Error (GIVE) statistically bound 99.9% of the range residuals for each satellite tracked by the receiver. A UDRE is broadcast by the WAAS for each satellite that is monitored by the system and the 99.9% bound (3.29 sigma) of the residual error on a pseudorange after application of fast and long-term corrections is checked. The pseudorange residual error is determined by taking the difference between the raw pseudorange and a calculated reference range. The reference range is equal to the true range between the corrected satellite position and surveyed user antenna plus all corrections (WAAS Fast Clock, WAAS Long-Term Clock, WAAS Ionospheric delay, Tropospheric delay, Receiver Clock Bias, and Multipath). Since the true ionospheric delay and multipath error are not precisely known, the estimated variance in these error sources are added to the UDRE before the comparing it to the residual error.

GPS satellite range residual errors were calculated for twelve WAAS receivers during the quarter. Table 6-1 and 6-2 show the range error 95% index and 99.9% (3.29 sigma) bounding statistics for each SV at the selected locations. Figures 6-1 to 6-2 show the range error for each SV as measured by the WAAS receivers at the Washington DC reference station.

A GIVE is broadcast by the WAAS for each IGP that is monitored by the system and the 99.9% (3.29 sigma) bound of the ionospheric error is checked. The WAAS broadcasts the ionospheric model using IGP's at predefined geographic locations. Each IGP contains the vertical ionospheric delay and the error in that delay in the form of the GIVE. The ionospheric error is determined by taking the difference between the WAAS vertical ionospheric delay interpolated from the IGP's and GPS dual frequency measurement at that GPS satellite.

GPS satellite ionospheric errors were calculated for twelve WAAS receivers during the quarter. Table 6-3 and 6-4 show the ionospheric error 95% index and 99.9% (3.29 sigma) bounding statistics for each SV at the selected locations. Figures 6-3 to 6-4 show the ionospheric error for each SV as measured by the WAAS receiver at the Washington DC reference station.

For this reporting period, most satellites range errors were bounded 99.9% of the time by UDRE. The unbounded range errors on PRN-19, PRN-20, PRN-23, and PRN-25 were due to geomagnetic activity. All other unbounded errors were due to noise and multipath.

Table 6-1 Range Error 95% index and 3.29 Sigma Bounding

Site → SV ↓	Billings		Albuquerque		Boston		Washington DC		Houston		Kansas City	
	95% Range Error	3.29 Sigma Bounding(%)	95% Range Error	3.29 Sigma Bounding(%)	95% Range Error	3.29 Sigma Bounding(%)	95% Range Error	3.29 Sigma Bounding(%)	95% Range Error	3.29 Sigma Bounding(%)	95% Range Error	3.29 Sigma Bounding(%)
1	2.905	100	2.905	100	2.689	100	2.011	100	2.288	100	2.232	100
2	1.836	100	1.836	100	1.066	100	1.490	100	2.800	100	1.697	100
3	1.167	100	1.167	100	1.437	100	1.459	100	1.291	100	0.927	100
4	0.976	100	0.976	100	1.627	100	1.181	100	1.247	100	1.420	100
5	1.576	100	1.576	100	1.832	100	1.296	100	0.954	100	1.625	100
6	1.224	100	1.224	100	1.674	100	1.185	100	1.158	100	1.155	100
7	0.931	100	0.931	100	1.649	100	1.031	100	1.098	100	1.032	100
8	0.859	100	0.859	100	1.577	100	1.206	100	1.335	100	1.328	100
9	1.183	100	1.183	100	1.442	100	1.212	100	1.638	100	1.220	100
10	1.216	100	1.216	100	1.208	100	1.343	100	1.937	100	1.430	100
11	1.049	100	1.049	100	0.963	100	1.329	100	2.038	100	0.896	100
12	1.069	100	1.069	100	1.602	100	1.028	100	1.197	100	1.468	100
13	1.528	100	1.528	100	1.325	100	1.063	100	1.057	100	1.332	100
14	0.698	100	0.698	100	1.578	100	1.032	100	1.419	100	1.504	100
15	1.221	100	1.221	100	1.874	100	1.212	100	1.510	100	1.459	100
16	0.925	100	0.925	100	1.219	100	1.160	100	1.709	100	1.283	100
17	0.733	100	0.733	100	1.676	100	0.805	100	1.652	100	1.456	100
18	1.099	100	1.099	100	0.940	100	1.267	100	1.630	100	1.226	100
19	1.986	100	1.986	100	2.452	100	2.779	100	2.704	100	2.385	100
20	1.838	100	1.838	100	1.251	100	1.529	100	1.653	100	1.149	100
21	1.382	100	1.382	100	1.254	100	1.689	100	1.887	100	1.664	100
22	2.034	100	2.034	100	2.268	100	2.489	100	2.480	100	1.959	100
23	1.699	100	1.699	100	2.518	100	1.865	100	2.739	100	1.783	100
24	2.870	100	2.870	100	3.062	100	2.627	100	3.247	99.9998	2.984	100
25	2.124	100	2.124	100	2.394	100	2.235	100	2.680	100	2.421	100
26	1.114	100	1.114	100	1.917	100	1.108	100	1.009	100	1.338	100
27	1.626	100	1.626	100	2.373	100	1.636	100	1.623	100	1.790	100
28	1.267	100	1.267	100	1.071	100	1.389	100	2.105	100	1.145	100
29	1.780	100	1.780	100	1.545	100	1.438	100	1.182	100	1.402	100
30	-	-	-	-	-	-	-	-	-	-	-	-
31	1.058	100	1.058	100	0.813	100	0.734	100	1.251	100	2.257	100
32	0.990	100	0.990	100	1.044	100	0.898	100	1.217	100	1.211	100
135	1.993	100	1.993	100	3.388	100	1.651	100	1.961	100	1.338	100
138	1.325	100	1.325	100	1.321	100	1.587	100	1.841	100	1.820	100

Table 6-2 Range Error 95% index and 3.29 Sigma Bounding

Site → SV ↓	Los Angeles		Salt Lake City		Miami		Minneapolis		Atlanta		Juneau	
	95% Range Error	3.29 Sigma Bounding(%)	95% Range Error	3.29 Sigma Bounding(%)	95% Range Error	3.29 Sigma Bounding(%)	95% Range Error	3.29 Sigma Bounding(%)	95% Range Error	3.29 Sigma Bounding(%)	95% Range Error	3.29 Sigma Bounding(%)
1	2.090	100	2.775	100	2.236	100	3.416	100	2.096	100	2.575	100
2	1.994	100	1.511	100	2.202	100	1.440	100	1.633	100	2.290	100
3	1.782	100	1.120	100	0.970	100	1.261	100	0.892	100	1.589	100
4	1.632	100	1.847	100	1.653	100	1.394	100	1.139	100	1.734	100
5	1.210	100	1.522	100	1.343	100	1.730	100	1.223	100	1.845	100
6	0.942	100	1.752	100	0.997	100	1.317	100	1.166	100	1.931	100
7	1.003	100	1.146	100	1.708	100	1.258	100	0.922	100	1.817	100
8	0.835	100	0.989	100	0.950	100	1.174	100	0.866	100	1.839	100
9	1.070	100	1.493	100	1.125	100	1.213	100	1.024	100	1.782	100
10	1.123	100	0.882	100	1.562	100	0.801	100	1.122	100	1.741	100
11	1.336	100	1.226	100	1.976	100	1.011	100	1.423	100	2.034	100
12	0.878	100	1.213	100	1.250	100	1.594	100	1.004	100	1.589	100
13	0.903	100	1.889	100	1.189	100	1.381	100	0.875	100	1.597	100
14	1.382	100	1.127	100	1.207	100	0.726	100	0.875	100	1.789	100
15	1.154	100	1.394	100	1.342	100	1.715	100	1.113	100	1.763	100
16	1.401	100	1.078	100	1.376	100	1.053	100	1.334	100	1.968	100
17	0.868	100	1.116	100	1.293	100	0.984	100	0.862	100	1.505	100
18	1.519	100	1.646	100	1.194	100	1.053	100	1.392	100	2.083	100
19	2.212	100	2.060	100	2.361	100	1.853	100	2.745	100	3.010	99.8286
20	1.400	100	1.282	100	1.528	100	1.345	100	1.378	100	2.304	99.9587
21	1.581	100	1.030	100	2.196	100	1.052	100	1.345	100	2.004	100
22	2.472	100	2.014	100	2.574	100	2.010	100	2.317	100	3.113	99.9531
23	2.162	100	1.646	100	2.104	100	1.476	100	2.035	100	2.633	99.9691
24	2.392	100	3.465	99.6142	2.688	100	2.758	100	2.642	100	3.150	100
25	2.210	100	2.242	100	2.351	100	2.486	99.9958	2.106	100	2.691	99.9960
26	1.331	100	1.305	100	1.144	100	1.575	100	1.054	100	1.745	100
27	1.823	100	1.902	100	1.657	100	2.065	100	1.770	100	2.232	100
28	1.428	100	1.352	100	2.277	100	1.103	99.9662	1.426	100	2.260	100
29	0.963	100	1.944	100	1.747	100	1.585	100	1.168	100	1.897	100
30	-	-	-	-	-	-	-	-	-	-	-	-
31	1.009	100	1.095	100	1.764	100	0.839	100	0.688	100	1.733	100
32	0.908	100	1.375	100	1.252	100	0.900	100	0.770	100	1.651	100
135	1.898	100	1.813	100	1.387	100	1.962	100	1.777	100	1.581	100
138	2.627	100	1.558	100	2.046	100	1.839	100	1.245	100	1.489	100

Table 6-3 Ionospheric Error 95% index and 3.29 Sigma Bounding

Site → SV ↓	Billings		Albuquerque		Boston		Washington DC		Houston		Kansas City	
	95% Iono Error	3.29 Sigma Bounding(%)	95% Iono Error	3.29 Sigma Bounding(%)	95% Iono Error	3.29 Sigma Bounding(%)	95% Iono Error	3.29 Sigma Bounding(%)	95% Iono Error	3.29 Sigma Bounding(%)	95% Iono Error	3.29 Sigma Bounding(%)
1	1.555	100	1.842	100	1.809	100	1.399	100	1.440	100	1.475	100
2	1.139	100	0.827	100	0.736	100	0.837	100	1.423	100	0.966	100
3	0.447	100	0.755	100	0.715	100	0.664	100	0.838	100	0.452	100
4	1.837	100	1.114	100	1.039	100	1.038	100	1.397	100	0.957	100
5	1.382	100	1.111	100	1.212	100	0.672	100	1.096	100	1.158	100
6	0.745	100	0.794	100	0.856	100	0.457	100	0.714	100	0.613	100
7	0.668	100	0.701	100	0.769	100	0.669	100	0.667	100	0.691	100
8	0.489	100	0.578	100	0.769	100	0.534	100	0.532	100	0.766	100
9	0.679	100	0.697	100	0.693	100	0.553	100	0.540	100	0.595	100
10	0.509	100	0.415	100	0.546	100	0.484	100	1.102	100	0.553	100
11	0.584	100	0.391	100	0.433	100	0.416	100	0.934	100	0.340	100
12	0.730	100	0.789	100	0.847	100	0.648	100	0.578	100	0.671	100
13	0.511	100	0.895	100	0.674	100	0.594	100	0.710	100	0.574	100
14	0.830	100	0.534	100	0.804	100	0.432	100	0.802	100	0.728	100
15	0.595	100	0.859	100	0.914	100	0.792	100	1.150	100	0.791	100
16	0.816	100	0.491	100	0.462	100	0.516	100	0.810	100	0.844	100
17	1.654	100	0.918	100	1.263	100	0.584	100	0.628	100	0.656	100
18	0.783	100	0.513	100	0.566	100	0.814	100	0.782	100	0.585	100
19	1.481	100	1.287	100	1.277	100	1.447	100	1.799	100	1.467	100
20	0.614	100	0.741	100	0.558	100	0.608	100	0.776	100	0.584	100
21	0.797	100	0.729	100	0.965	100	1.098	100	1.136	100	0.940	100
22	1.918	100	1.428	100	1.824	100	1.924	100	1.866	100	1.619	100
23	1.212	100	1.276	100	1.550	100	1.246	100	2.058	100	1.260	100
24	1.946	100	2.085	100	1.920	100	1.703	100	1.952	100	1.777	100
25	1.455	100	1.645	100	1.501	100	1.374	100	1.400	100	1.391	100
26	0.730	100	0.808	100	0.903	100	0.579	100	0.580	100	0.666	100
27	1.015	100	1.126	100	0.975	100	0.736	100	0.908	100	0.883	100
28	0.695	100	0.556	100	0.583	100	0.625	100	0.762	100	0.449	100
29	0.977	100	1.189	100	0.912	100	0.801	100	0.740	100	0.878	100
30	-	-	-	-	-	-	-	-	-	-	-	-
31	0.621	100	0.767	100	0.477	100	0.413	100	0.748	100	1.230	100
32	0.513	100	0.614	100	0.541	100	0.429	100	0.455	100	0.497	100

Table 6-4 Ionospheric Error 95% index and 3.29 Sigma Bounding

Site → SV ↓	Los Angeles		Salt Lake City		Miami		Minneapolis		Atlanta		Juneau	
	95% Iono Error	3.29 Sigma Bounding(%)	95% Iono Error	3.29 Sigma Bounding(%)	95% Iono Error	3.29 Sigma Bounding(%)	95% Iono Error	3.29 Sigma Bounding(%)	95% Iono Error	3.29 Sigma Bounding(%)	95% Iono Error	3.29 Sigma Bounding(%)
1	1.418	100	1.709	100	1.471	100	1.924	100	1.404	100	1.692	100
2	0.957	100	0.822	100	1.156	100	0.857	100	0.992	100	1.683	100
3	0.693	100	0.540	100	0.662	100	0.694	100	0.419	100	0.886	100
4	1.159	100	1.275	100	0.948	100	0.982	100	0.848	100	1.193	100
5	0.849	100	1.050	100	0.996	100	1.019	100	0.730	100	1.134	100
6	0.542	100	0.820	100	0.595	100	0.716	100	0.590	100	0.946	100
7	0.761	100	0.680	100	1.049	100	0.665	100	0.458	100	1.002	100
8	0.510	100	0.598	100	0.683	100	0.577	100	0.383	100	1.035	100
9	0.582	100	0.721	100	0.652	100	0.607	100	0.464	100	0.856	100
10	0.454	100	0.432	100	0.418	100	0.401	100	0.617	100	1.078	100
11	0.586	100	0.383	100	0.740	100	0.460	100	0.617	100	1.031	100
12	0.609	100	0.726	100	0.764	100	0.854	100	0.551	100	0.937	100
13	0.488	100	0.909	100	0.751	100	0.667	100	0.412	100	0.993	100
14	0.491	100	0.513	100	0.663	100	0.390	100	0.528	100	1.099	100
15	0.734	100	0.795	100	0.772	100	0.973	100	0.645	100	1.053	100
16	0.574	100	0.458	100	0.642	100	0.481	100	0.738	100	1.153	100
17	0.899	100	0.926	100	0.726	100	0.714	100	0.477	100	1.072	100
18	0.607	100	0.833	100	0.654	100	0.772	100	0.983	100	1.526	100
19	1.275	100	1.386	100	1.355	100	1.255	100	1.663	100	1.801	100
20	0.483	100	0.532	100	0.842	100	0.683	100	0.750	100	1.273	100
21	0.708	100	0.624	100	1.386	100	0.813	100	0.947	100	1.555	99.9880
22	1.532	100	1.451	100	1.895	100	1.669	100	1.918	100	2.337	99.6132
23	1.410	100	1.256	100	1.592	100	1.135	100	1.494	100	1.836	99.7704
24	1.932	100	2.355	100	1.880	100	1.930	100	1.729	100	2.166	100
25	1.672	100	1.602	100	1.551	100	1.652	100	1.284	100	1.717	100
26	0.729	100	0.824	100	0.629	100	0.900	100	0.564	100	0.908	100
27	1.090	100	1.092	100	0.853	100	1.208	100	0.757	100	1.296	100
28	0.558	100	0.758	100	1.363	100	0.490	100	0.838	100	1.340	100
29	0.797	100	0.953	100	1.004	100	0.847	100	0.713	100	1.071	100
30	-	-	-	-	-	-	-	-	-	-	-	-
31	0.542	100	0.629	100	0.696	100	0.456	100	0.352	100	0.932	100
32	0.491	100	0.730	100	0.602	100	0.447	100	0.408	100	0.898	100

Figure 6-1 95% Range Error (PRN 1 – PRN 16) – Washington DC

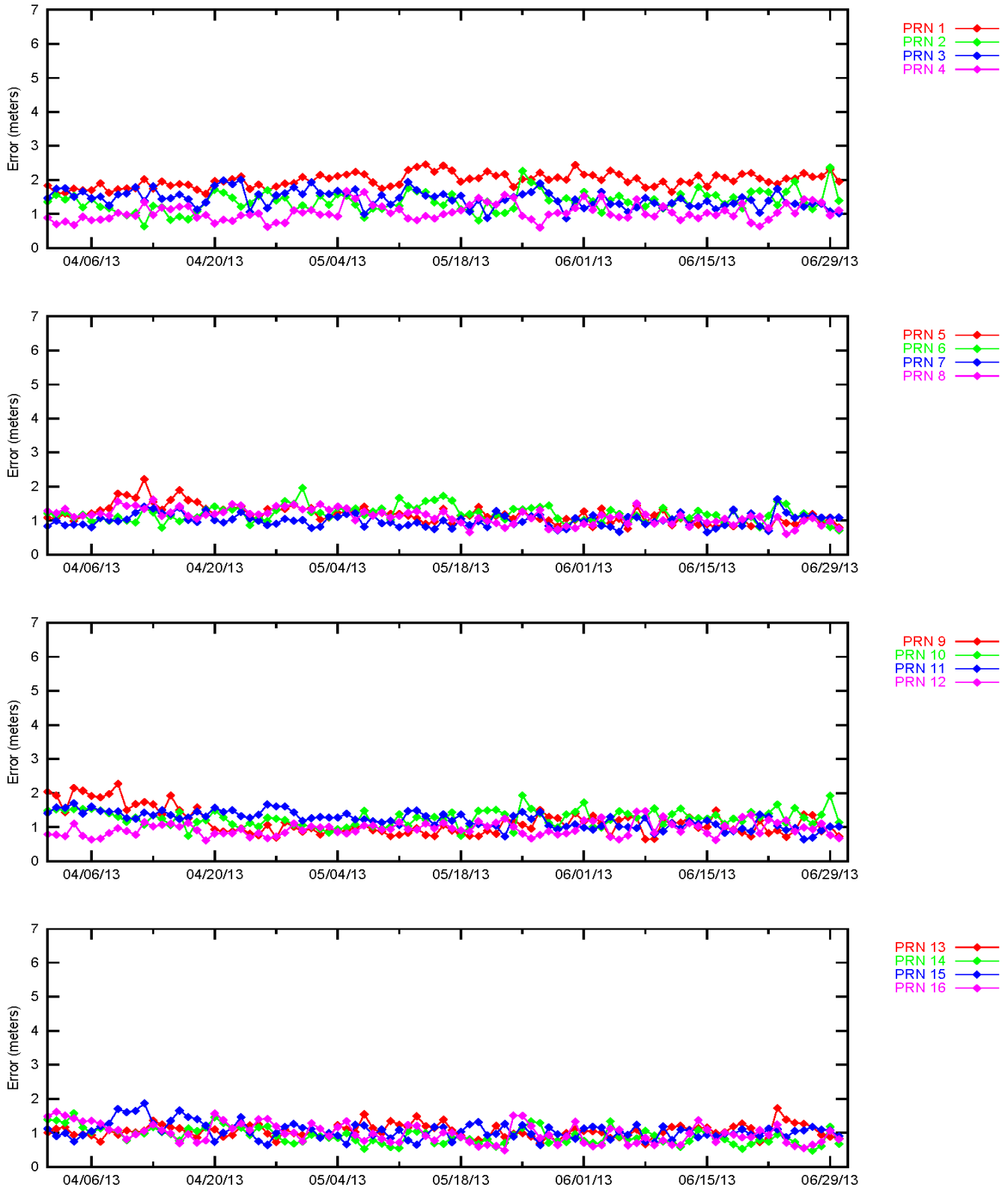


Figure 6-2 95% Range Error (PRN 17 – PRN 32) – Washington DC

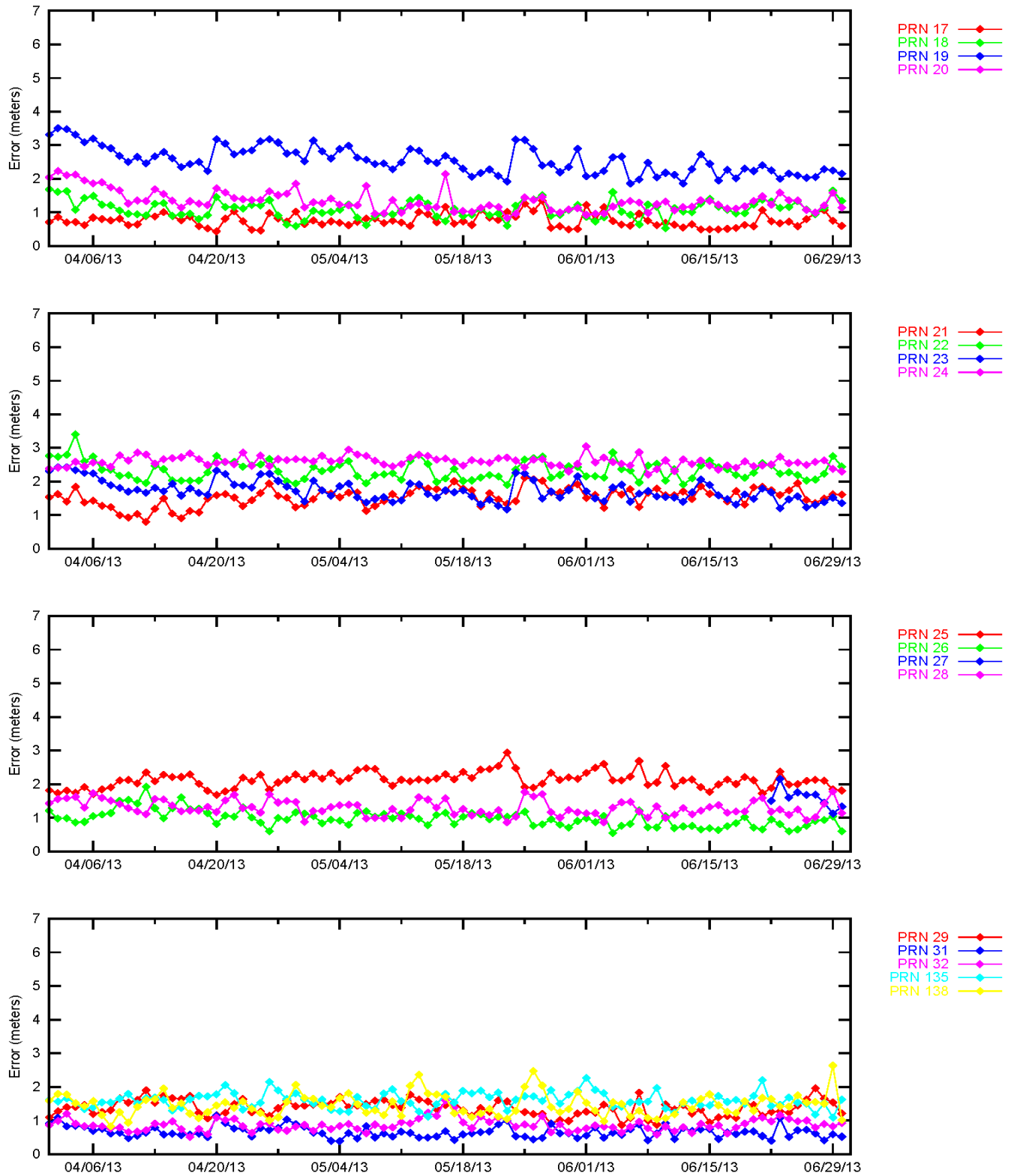


Figure 6-3 95% Ionospheric Error (PRN 1 – PRN 16) – Washington DC

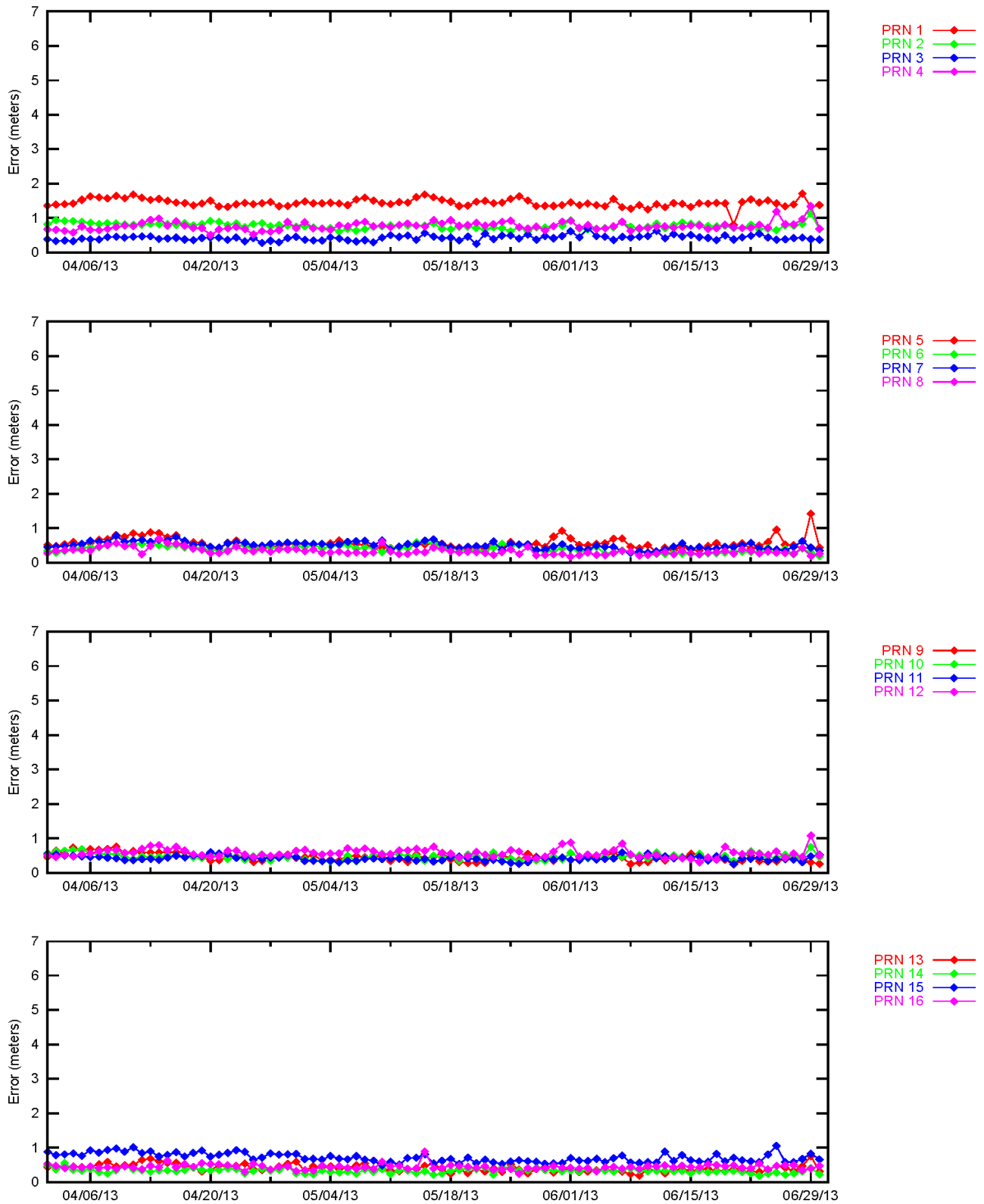
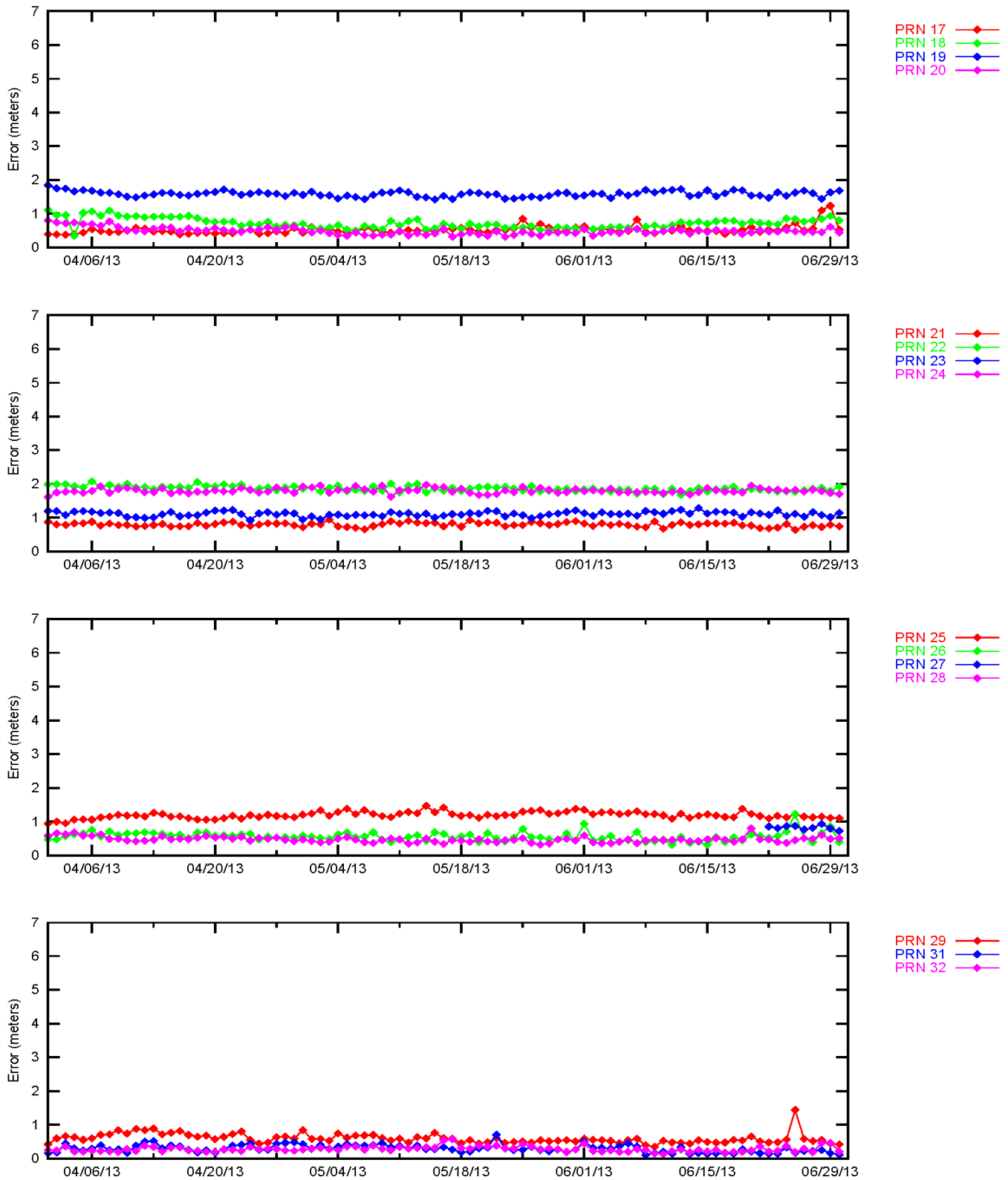


Figure 6-4 95% Ionospheric Error (PRN 17 - PRN 32) – Washington DC



7.0 GEO RANGING PERFORMANCE

The WAAS GEO navigation messages provide corrections and UDRE values for each satellite. The GEO ranging availability from each GEO navigation message source was evaluated separately to determine the quality of service provided.

Table 7-1 shows the GEO-Ranging performance. Figure 7-1 shows the trend of CRW GEO PA Ranging Availability. Figure 7-2 shows the trend of CRE GEO PA Ranging Availability. Figure 7-3 shows the trend of AMR GEO NPA Ranging Availability.

Table 7-1 GEO Ranging Availability

GEO Source	GEO	PA (%)	NPA (%)	Not Monitored (%)	Do Not Use (%)
AMR 133	CRW	99.41	0.48	0.11	0.00
AMR 133	CRE	98.58	1.16	0.25	0.00
AMR 133	AMR	0.00	99.86	0.14	0.00
CRW 135	CRW	99.41	0.48	0.11	0.00
CRW 135	CRE	98.58	1.16	0.25	0.00
CRW 135	AMR	0.00	99.86	0.14	0.00
CRE 138	CRW	99.19	0.47	0.11	0.21
CRE 138	CRE	98.82	0.90	0.16	0.11
CRE 138	AMR	0.00	99.83	0.16	0.00

Figure 7-1 Daily PA CRW GEO Ranging Availability Trend

CRW PA-Ranging Performance reported by AMR, CRW, and CRE
1 April - 30 June 2013

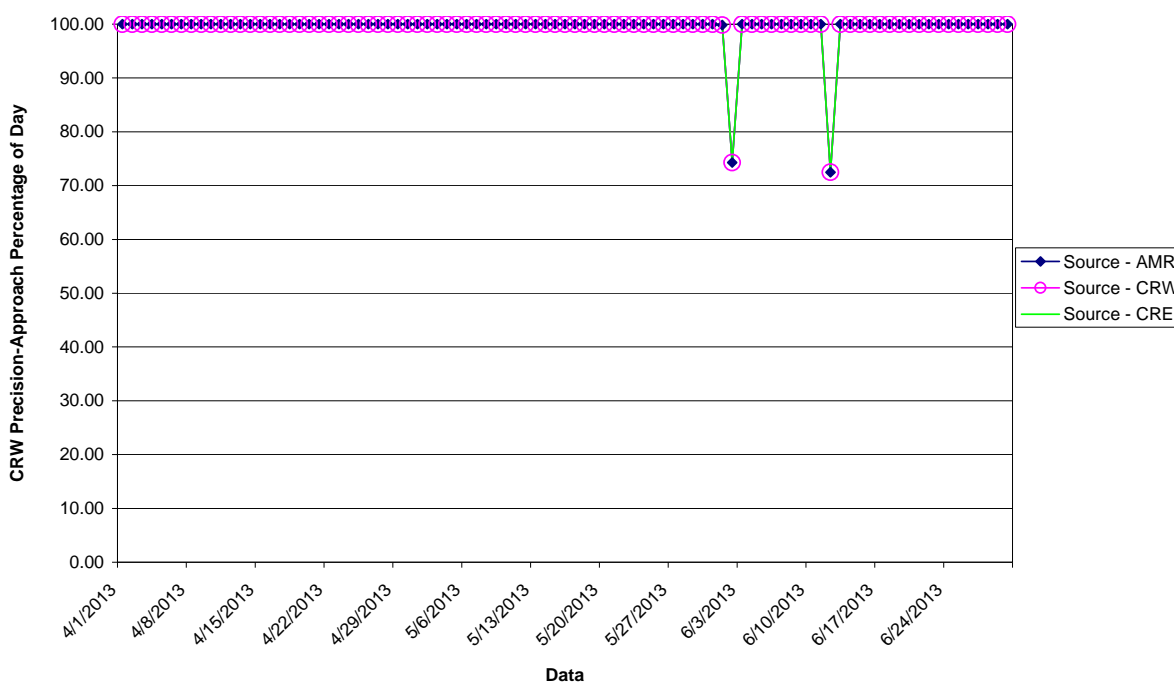


Figure 7-2 Daily PA CRE GEO Ranging Availability Trend

**CRE PA-Ranging Performance reported by AMR, CRW, and CRE
1 April - 30 June 2013**

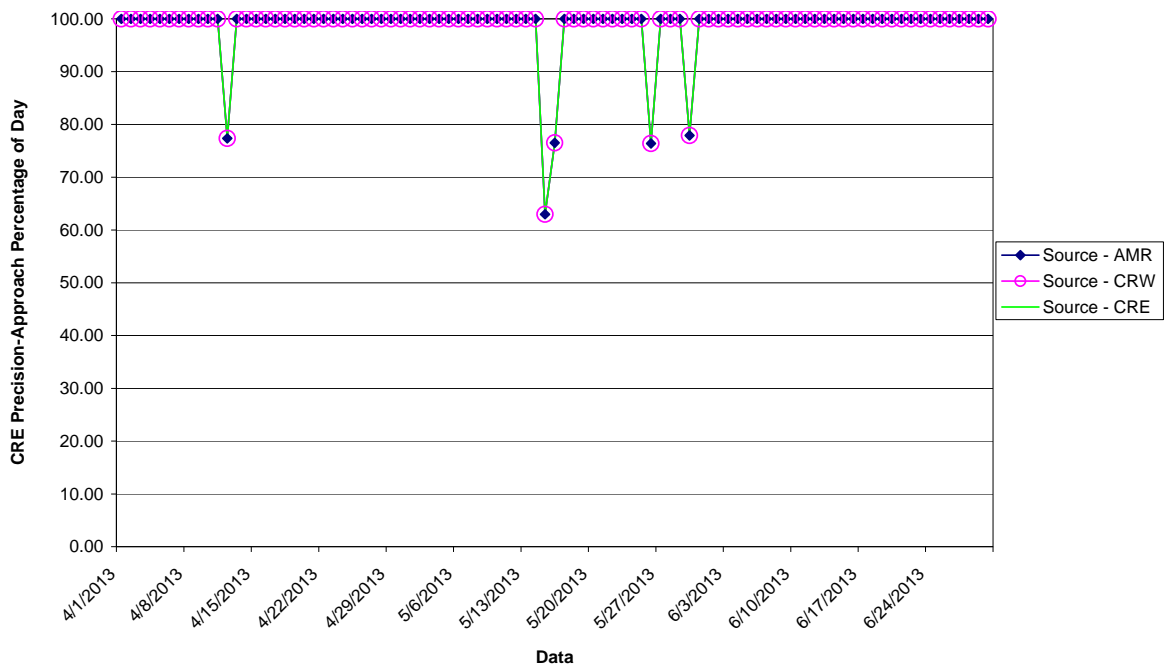
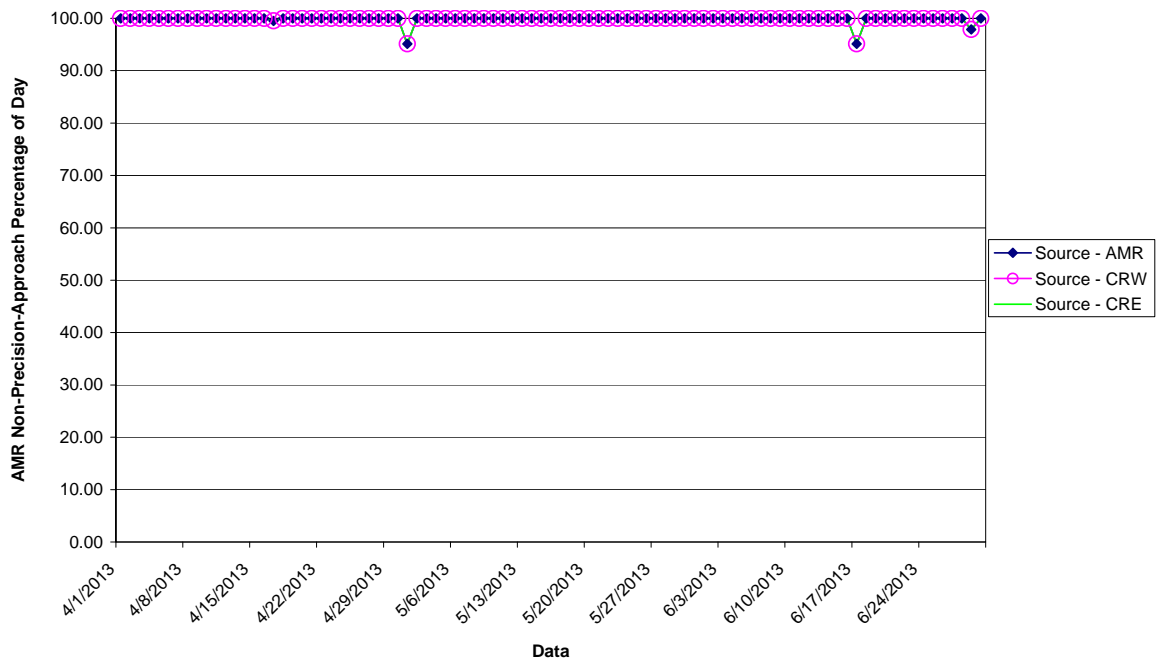


Figure 7-3 Daily NPA AMR GEO Ranging Availability Trend

**AMR NPA-Ranging Performance reported by AMR, CRW, and CRE
1 April - 30 June 2013**



8.0 WAAS AIRPORT AVAILABILITY

The WAAS airport availability evaluation determines the number and length LPV service outages at selected airports from the transmitted WAAS navigation message. The navigation messages transmitted from all GEO satellites are processed simultaneously, and WAAS protection levels (VPL and HPL) are computed at each airport once every 30 second in accordance with the RTCA DO-229D. Once the protection levels have been produced at each airport an LPV service evaluation is conducted to identify outages in service (i.e. when protection levels exceed alert limits). WAAS LPV service is available for a user when the vertical protection level (VPL) is less than or equal to vertical alert limit (VAL) of 50 meters and the horizontal protection level (HPL) is less than or equal to horizontal alert limit (HAL) of 40 meters. If both conditions are met at a specified airport location then WAAS LPV service is available at that airport. If either one of the conditions are not met at a specified airport location then WAAS LPV service at that airport is unavailable and an outage in LPV service is recorded with its duration. When the LPV service becomes unavailable it is not considered available again until protection levels are below or equal to alert limits for at least 15 minutes. Although this will reduce LPV service availability minimally, it substantially reduces the number of service outages and prevents excessive switching in and out of service availability. Similar service analysis is completed for LP and LPV 200 services in accordance with HAL and VAL shown in Table 1-1. The number of WAAS LPV service outages and the availability at selected airports in the US and Canada for this evaluation period of WAAS operation is presented in Table 8-1. Figures 8-1 to 8-6 provide the graphical representation of the LP, LPV and LPV 200 availability and outage counts at all airports, including many that do not have published approaches. These results are depicted geographically on an interactive web page at <http://www.nstb.tc.faa.gov/AirportOutages/>.

The interactive web page can be accessed by entering the web address into an Internet browser and selecting the current quarter from the drop-down menu on the upper left corner and clicking “Submit Request”. The WAAS LPV airport layer will appear providing color coded availability results as shown in Figures 8-1 to 8-2. Rolling over any airport with the cursor displays the LPV availability and number of LPV outages for the reporting period. The “WAAS Layer” menu in the upper right of the display allows the user to select WAAS LP or LPV 200 availability and the number of outage results as shown in Figures 8-3 to 8-6. The user can review WAAS availability performance for US airports with GPS RNAV instrument approach procedures by selecting “Show all Airports”, or limit airports displayed to those with approved LPV approaches as provided in Table 8-1.

Table 8-1 WAAS LP, LPV, and LPV200 Outages and Availability

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
CAL4	Fort Mackay / Albian Aerodrome	AB	LPV	3	0.9997	5	0.9993	5	0.9973
CYXD	Edmonton City Ctr	AB	LPV	3	0.9997	4	0.9995	6	0.9979
CYEG	Edmonton / Josephburg	AB	LPV	3	0.9997	4	0.9995	6	0.9979
CEV3	Vegreville	AB	LPV	1	0.9997	5	0.9994	5	0.9977
BET	BETHEL	AK	LPV200	1	0.9993	2	0.9989	14	0.9974
KTN	KETCHIKAN INTL	AK	LPV	2	0.9995	2	0.9993	1	0.9982
ELI	ELIM	AK	LPV	1	0.9994	3	0.9990	8	0.9981
MDM	MARSHALL DON HUNTER SR	AK	LP	1	0.9994	3	0.9990	9	0.9978
SCC	DEADHORSE	AK	LPV	0	1	2	0.9997	20	0.9977
SCM	SCAMMON BAY	AK	LP	2	0.9993	3	0.9988	42	0.9958
AQH	QUINHAGAK	AK	LPV	1	0.9994	2	0.9988	38	0.9967
CXF	COLDFOOT	AK	LP	0	1	4	0.9995	5	0.9985
DLG	DILLINGHAM	AK	LPV	1	0.9994	2	0.9988	8	0.9979
FAI	FAIRBANKS INTL	AK	LPV200	1	0.9999	3	0.9993	4	0.9988
SMK	ST MICHAEL	AK	LPV	1	0.9994	4	0.9991	5	0.9981
UNK	UNALAKLEET	AK	LP	1	0.9994	3	0.9991	5	0.9981
WNA	NAPAKIAK	AK	LPV	1	0.9994	2	0.9989	15	0.9973
6A8	ALLAKAKET	AK	LP	0	1	2	0.9992	7	0.9987
ENA	KENAI MUNI	AK	LPV200	1	0.9994	3	0.9991	2	0.9984

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
ENM	EMMONAK	AK	LPV	2	0.9994	3	0.9989	18	0.9974
GKN	GULKANA	AK	LPV	1	0.9997	2	0.9992	3	0.9988
MCG	MCGRATH	AK	LP	1	0.9994	3	0.9992	1	0.9984
ORT	NORTHWAY	AK	LP	1	0.9998	2	0.9995	2	0.9987
OTZ	RALPH WIEN MEMORIAL	AK	LPV200	3	0.9994	4	0.9989	134	0.9890
PAQ	PALMER MUNI	AK	LP	2	0.9996	2	0.9992	1	0.9984
SHX	SHAGELUK	AK	LPV	1	0.9994	3	0.9991	4	0.9982
YAK	YAKUTAT	AK	LPV200	1	0.9995	3	0.9993	2	0.9983
2C7	SHAKTOOLIK	AK	LPV	1	0.9994	3	0.9990	5	0.9981
7KA	TATITLEK	AK	LP	1	0.9994	2	0.9992	2	0.9986
AQT	NUIQSUT	AK	LPV	0	1.0000	3	0.9996	19	0.9977
BRW	WILEY POST-WILL ROGERS MEM	AK	LPV	3	0.9999	6	0.9996	221	0.9747
KWT	KWETHLUK	AK	LPV	1	0.9994	2	0.9989	14	0.9975
WLK	SELAWIK	AK	LPV	3	0.9997	2	0.9991	8	0.9980
ANC	TED STEVENS ANCHORAGE INTL	AK	LPV200	1	0.9994	2	0.9992	2	0.9984
CLP	CLARKS POINT	AK	LPV	1	0.9994	2	0.9988	11	0.9978
KYU	KOYUKUK	AK	LPV	1	0.9994	2	0.9991	4	0.9983
SHG	SHUNGNAK	AK	LP	1	0.9997	2	0.9990	8	0.9983
GAL	EDWARD G. PITKA	AK	LPV	1	0.9994	2	0.9991	5	0.9984
HOM	HOMER	AK	LPV	1	0.9994	3	0.9991	2	0.9983
HPB	HOOPER BAY	AK	LP	3	0.9993	2	0.9987	65	0.9938
9A3	CHUATHBALUK	AK	LPV	1	0.9994	3	0.9991	3	0.9982
AKN	KING SALMON	AK	LPV	1	0.9994	2	0.9989	7	0.9981
CDB	COLD BAY	AK	LPV200	1	0.9990	5	0.9984	463	0.9356
CDV	MERLE K (MUDHOLE) SMITH	AK	LPV	1	0.9995	2	0.9992	2	0.9986
KAL	KALTAG	AK	LPV	1	0.9994	2	0.9991	5	0.9982
KSM	ST MARY'S	AK	LPV200	1	0.9993	3	0.9990	14	0.9974
MDO	MIDDLETON ISLAND	AK	LP	1	0.9994	1	0.9992	2	0.9984
OOK	TOKSOOK BAY	AK	LP	2	0.9993	2	0.9988	84	0.9912
RBY	RUBY	AK	LPV	1	0.9994	2	0.9991	6	0.9985
HLA	HUSLIA	AK	LPV	2	0.9996	2	0.9991	6	0.9984
ILI	ILIAMNA	AK	LPV	1	0.9994	3	0.9991	2	0.9982
D76	ROBERT/BOB/CURTIS MEMORIAL	AK	LPV	4	0.9996	4	0.9989	92	0.9914
ASN	TALLADEGA MUNI	AL	LPV200	0	1	0	1	0	1
DHN	DOTHAN RGNL	AL	LPV200	0	1	0	1	0	1
HAB	MARION COUNTY-RANKIN FITE	AL	LPV	0	1	0	1	0	1
MSL	NORTHWEST ALABAMA RGNL	AL	LPV200	0	1	0	1	0	1
TOI	TROY MUNI	AL	LPV	0	1	0	1	0	1
8A0	ALBERTVILLE MUNI-T. J. BRUMLIK FIELD	AL	LPV	0	1	0	1	0	1
HSV	HUNTSVILLE INTL-CARL T JONES FLD	AL	LPV200	0	1	0	1	0	1
TCL	TUSCALOOSA RGNL	AL	LPV	0	1	0	1	0	1
AUO	AUBURN UNIVERSITY RGNL	AL	LPV200	0	1	0	1	0	1
CQF	H L SONNY CALLAHAN	AL	LPV200	0	1	0	1	1	1
JKA	JACK EDWARDS	AL	LPV200	0	1	0	1	0	1
SEM	CRAIG FIELD	AL	LPV	0	1	0	1	0	1
BHM	BIRMINGHAM INTL	AL	LPV200	0	1	0	1	0	1

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
EDN	ENTERPRISE MUNI	AL	LPV	0	1	0	1	0	1
EET	SHELBY COUNTY	AL	LPV	0	1	0	1	0	1
JFX	WALKER COUNTY-BEVILL FIELD	AL	LPV	0	1	0	1	0	1
PLR	ST CLAIR COUNTY	AL	LPV	0	1	0	1	0	1
SCD	MERKEL FIELD SYLACAUGA MUNI	AL	LPV	0	1	0	1	0	1
06A	MOTON FIELD MUNI	AL	LPV	0	1	0	1	0	1
0R1	ATMORE MUNI	AL	LP	0	1	0	1	0	1
3A1	FOLSOM FIELD	AL	LPV	0	1	0	1	0	1
79J	SOUTH ALABAMA RGNL AT BILL BENTON FIELD	AL	LPV	0	1	0	1	0	1
0J6	HEADLAND MUNI	AL	LPV	0	1	0	1	0	1
2R5	ST ELMO	AL	LPV	0	1	0	1	1	1
9A4	LAWRENCE COUNTY	AL	LPV200	0	1	0	1	0	1
ANB	ANNISTON METROPOLITAN	AL	LPV	0	1	0	1	0	1
DCU	PRYOR FIELD RGNL	AL	LPV200	0	1	0	1	0	1
MDQ	MADISON COUNTY EXECUTIVE/TOM SHARP JR FLD	AL	LPV	0	1	0	1	0	1
12J	BREWTON MUNI	AL	LPV	0	1	0	1	0	1
1R8	BAY MINETTE MUNI	AL	LPV	0	1	0	1	1	1
BFM	MOBILE DOWNTOWN	AL	LPV200	0	1	0	1	1	1
PYP	CENTRE-PIEDMONT CHEROKEE COUNTY RGNL	AL	LPV	0	1	0	1	0	1
3M8	NORTH PICKENS	AL	LP	0	1	0	1	0	1
4A9	ISBELL FIELD	AL	LPV	0	1	0	1	0	1
EUF	WEEDON FIELD	AL	LPV	0	1	0	1	0	1
GAD	NORTHEAST ALABAMA RGNL	AL	LPV200	0	1	0	1	0	1
M95	RICHARD ARTHUR FIELD	AL	LPV	0	1	0	1	0	1
MGM	MONTGOMERY RGNL (DANNELLY FIELD)	AL	LPV200	0	1	0	1	0	1
MOB	MOBILE RGNL	AL	LPV200	0	1	0	1	1	1
1M4	POSEY FIELD	AL	LPV	0	1	0	1	0	1
5R4	FOLEY MUNI	AL	LPV	0	1	0	1	0	1
EKY	BESSEMER	AL	LPV	0	1	0	1	0	1
ASG	SPRINGDALE MUNI	AR	LPV	0	1	0	1	0	1
RUE	RUSSELLVILLE RGNL	AR	LPV	0	1	0	1	0	1
7M1	MC GEHEE MUNI	AR	LP	0	1	0	1	1	1
AWM	WEST MEMPHIS MUNI	AR	LPV200	0	1	0	1	0	1
FYV	DRAKE FIELD	AR	LPV	0	1	0	1	0	1
M19	NEWPORT MUNI	AR	LPV	0	1	0	1	0	1
SUZ	SALINE COUNTY RGNL	AR	LPV	0	1	0	1	0	1
TXK	TEXARKANA RGNL-WEBB FIELD	AR	LPV	0	1	0	1	0	1
FSM	FORT SMITH RGNL	AR	LPV200	0	1	0	1	0	1
HRO	BOONE COUNTY	AR	LPV	0	1	0	1	0	1
PBF	GRIDER FIELD	AR	LPV	0	1	0	1	0	1
4M3	CARLISLE MUNI	AR	LPV	0	1	0	1	0	1
CDH	HARRELL FIELD	AR	LPV	0	1	0	1	1	1
M77	HOWARD COUNTY	AR	LP	0	1	0	1	0	1

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
ROG	ROGERS MUNI-CARTER FIELD	AR	LPV	0	1	0	1	0	1
SLG	SMITH FIELD	AR	LPV	0	1	0	1	0	1
VBT	BENTONVILLE MUNI/LOUISE M THADEN FIELD	AR	LPV	0	1	0	1	0	1
ARG	WALNUT RIDGE RGNL	AR	LPV200	0	1	0	1	0	1
ELD	SOUTH ARKANSAS RGNL AT GOODWIN FIELD	AR	LPV	0	1	0	1	1	1
SGT	STUTTGART MUNI	AR	LPV	0	1	0	1	0	1
BVX	BATESVILLE RGNL	AR	LPV	0	1	0	1	0	1
JBR	JONESBORO MUNI	AR	LPV	0	1	0	1	0	1
LIT	ADAMS FIELD	AR	LPV200	0	1	0	1	0	1
BPK	OZARK RGNL	AR	LPV	0	1	0	1	0	1
SRC	SEARCY MUNI	AR	LPV	0	1	0	1	0	1
XNA	NORTHWEST ARKANSAS RGNL	AR	LPV200	0	1	0	1	0	1
BYH	ARKANSAS INTERNATIONAL	AR	LPV200	0	1	0	1	0	1
ORK	NORTH LITTLE ROCK MUNI	AR	LPV	0	1	0	1	0	1
IWA	PHOENIX-MESA GATEWAY	AZ	LPV200	0	1	3	0.9999	3	0.9986
PGA	PAGE MUNI	AZ	LPV	0	1	0	1	3	0.9999
HII	LAKE HAVASU CITY	AZ	LPV	0	1	1	1	6	0.9995
RQE	WINDOW ROCK	AZ	LP	0	1	0	1	2	0.9998
FLG	FLAGSTAFF PULLIAM	AZ	LPV	0	1	0	1	4	0.9998
IFP	LAUGHLIN/BULLHEAD INTL	AZ	LPV	0	1	0	1	4	0.9997
FHU	SIERRA VISTA MUNI-LIBBY AAF	AZ	LPV200	0	1	2	0.9989	7	0.9983
P33	COCHISE COUNTY	AZ	LPV	0	1	3	0.9994	2	0.9983
D68	SPRINGERVILLE MUNI	AZ	LP	0	1	2	1	2	0.9989
DVT	PHOENIX DEER VALLEY	AZ	LPV	0	1	2	0.9999	3	0.9988
SOW	SHOW LOW RGNL	AZ	LPV	0	1	2	1	2	0.9989
FFZ	FALCON FLD	AZ	LP	0	1	2	0.9999	3	0.9987
GEU	GLENDALE MUNI	AZ	LPV	0	1	2	0.9999	4	0.9986
IGM	KINGMAN	AZ	LPV	0	1	0	1	4	0.9998
PHX	PHOENIX SKY HARBOR INTL	AZ	LPV	0	1	2	0.9999	3	0.9985
SAD	SAFFORD RGNL	AZ	LPV	0	1	3	0.9997	2	0.9986
SJN	ST JOHNS INDUSTRIAL AIR PARK	AZ	LP	0	1	0	1	5	0.9994
PRC	ERNEST A. LOVE FIELD	AZ	LPV	0	1	0	1	5	0.9997
AVQ	MARANA RGNL	AZ	LP	0	1	3	0.9996	8	0.9984
TUS	TUCSON INTL	AZ	LPV	0	1	4	0.9993	7	0.9983
CYYJ	Victoria Intl	BC	LPV	1	0.9999	2	0.9992	5	0.9983
CYCD	Nanaimo	BC	LPV	2	0.9998	2	0.9991	5	0.9983
CYBL	Campbell River	BC	LPV	1	0.9997	2	0.9990	3	0.9985
CYXS	Prince George	BC	LPV	3	0.9995	3	0.9991	3	0.9985
CYVR	Vancouver Intl	BC	LPV	1	0.9997	2	0.9991	5	0.9983
CZBB	Vancouver / Boundary Bay	BC	LPV	2	0.9999	2	0.9992	5	0.9983
VCB	NUT TREE	CA	LPV	0	1	0	1	89	0.9955
BLH	BLYTHE	CA	LP	0	1	1	0.9999	6	0.9988
DWA	YOLO COUNTY-DAVIS/WOODLAND/WINTERS	CA	LPV	0	1	0	1	79	0.9966
LHM	LINCOLN RGNL/KARL HARDER FIELD	CA	LPV200	0	1	0	1	63	0.9988
MOD	MODESTO CITY-CO-HARRY SHAM FLD	CA	LPV	0	1	0	1	70	0.9985

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
SNA	JOHN WAYNE-ORANGE COUNTY	CA	LPV	0	1	2	0.9999	6	0.9983
WLW	WILLOWS-GLENN COUNTY	CA	LPV	0	1	0	1	70	0.9972
HHR	HAWTHORNE JACK NORTHROP FIELD	CA	LPV	0	1	1	1	6	0.9984
LSN	LOS BANOS MUNI	CA	LPV	0	1	1	1	77	0.9981
LVK	LIVERMORE MUNI	CA	LPV	0	1	0	1	95	0.9938
MYV	YUBA COUNTY	CA	LPV200	0	1	0	1	67	0.9985
SBP	SAN LUIS COUNTY RGNL	CA	LPV200	0	1	2	0.9999	89	0.9963
TCY	TRACY MUNI	CA	LPV	0	1	0	1	92	0.9965
CIC	CHICO MUNI	CA	LPV	0	1	0	1	53	0.9986
CRQ	MC CLELLAN-PALOMAR	CA	LPV200	0	1	2	0.9998	6	0.9982
DAG	BARSTOW-DAGGETT	CA	LPV	0	1	0	1	8	0.9994
HWD	HAYWARD EXECUTIVE	CA	LPV	0	1	0	1	98	0.9914
MAE	MADERA MUNI	CA	LPV	0	1	1	1	8	0.9993
ONT	ONTARIO INTL	CA	LPV	0	1	1	1	7	0.9987
POC	BRACKETT FIELD	CA	LPV	0	1	0	1	7	0.9987
PRB	PASO ROBLES MUNICIPAL	CA	LPV200	0	1	2	0.9999	80	0.9972
RHV	REID-HILLVIEW OF SANTA CLARA	CA	LPV	0	1	0	1	97	0.9926
SMX	SANTA MARIA PUBLIC/CAPT G ALLAN HANCOCK FIELD	CA	LPV200	0	1	2	0.9999	87	0.9966
APV	APPLE VALLEY	CA	LPV	0	1	0	1	8	0.9991
CVH	HOLLISTER MUNI	CA	LPV	0	1	1	1	97	0.9942
LLR	LITTLE RIVER	CA	LP	0	1	0	1	100	0.9891
O27	OAKDALE	CA	LPV	0	1	0	1	46	0.9989
PVF	PLACERVILLE	CA	LPV	0	1	0	1	17	0.9995
RBL	RED BLUFF MUNI	CA	LPV	0	1	0	1	41	0.9984
RDD	REDDING MUNI	CA	LPV	0	1	0	1	32	0.9988
SBA	SANTA BARBARA MUNI	CA	LPV	0	1	2	0.9999	26	0.9982
SCK	STOCKTON METROPOLITAN	CA	LPV	0	1	0	1	84	0.9978
SJC	NORMAN Y. MINETA SAN JOSE INTERNATIONAL	CA	LPV	0	1	0	1	97	0.9920
VIS	VISALIA MUNI	CA	LPV200	0	1	1	1	6	0.9994
WJF	GENERAL WM J FOX AIRFIELD	CA	LPV	0	1	0	1	8	0.9992
CNO	CHINO	CA	LPV	0	1	1	1	7	0.9987
MHR	SACRAMENTO MATHER	CA	LPV200	0	1	0	1	68	0.9985
MIT	SHAFTER-MINTER FIELD	CA	LPV	0	1	1	1	6	0.9993
O02	NERVINO	CA	LPV	0	1	0	1	4	0.9997
O69	PETALUMA MUNI	CA	LPV	0	1	0	1	100	0.9909
OVE	OROVILLE MUNI	CA	LPV	0	1	0	1	53	0.9987
SAC	SACRAMENTO EXECUTIVE	CA	LPV200	0	1	0	1	74	0.9978
VCV	SOUTHERN CALIFORNIA LOGISTICS	CA	LPV	0	1	0	1	8	0.9991
ACV	ARCATA	CA	LPV200	0	1	0	1	78	0.9938
APC	NAPA COUNTY	CA	LPV	0	1	0	1	95	0.9927
CEC	JACK MC NAMARA FIELD	CA	LPV200	0	1	0	1	56	0.9969
FAT	FRESNO YOSEMITE INTL	CA	LPV	0	1	1	1	6	0.9994
OXR	OXNARD	CA	LPV	0	1	1	1	6	0.9983
RAL	RIVERSIDE MUNI	CA	LPV	0	1	1	1	7	0.9988
SAN	SAN DIEGO INTL	CA	LP	1	1	3	0.9998	6	0.9981

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
SMF	SACRAMENTO INTL	CA	LPV200	0	1	0	1	72	0.9978
BFL	MEADOWS FIELD	CA	LPV200	0	1	1	1	6	0.9993
C83	BYRON	CA	LPV	0	1	0	1	92	0.9959
CCR	BUCHANAN FIELD	CA	LPV	0	1	0	1	93	0.9935
CMA	CAMARILLO	CA	LPV	0	1	1	1	7	0.9985
HAF	HALF MOON BAY	CA	LPV	0	1	0	1	100	0.9891
LAX	LOS ANGELES INTL	CA	LPV	0	1	1	1	6	0.9983
LGB	LONG BEACH/DAUGHERTY FIELD	CA	LPV	0	1	1	1	6	0.9984
MCE	MERCED RGNL/MACREADY FIELD	CA	LPV	0	1	0	1	34	0.9991
MYF	MONTGOMERY FIELD	CA	LPV200	0	1	2	0.9998	6	0.9981
PMD	PALMDALE USAF PLANT 42	CA	LPV200	0	1	0	1	7	0.9990
TOA	ZAMPERINI FIELD	CA	LPV200	0	1	2	1	6	0.9983
AAT	ALTURAS MUNI	CA	LPV	0	1	0	1	3	0.9997
AUN	AUBURN MUNI	CA	LPV	0	1	0	1	35	0.9993
MER	CASTLE	CA	LPV200	0	1	0	1	37	0.9991
MRY	MONTEREY PENINSULA	CA	LPV	0	1	2	1	102	0.9913
O88	RIO VISTA MUNI	CA	LP	0	1	0	1	88	0.9965
OAK	METROPOLITAN OAKLAND INTL	CA	LPV	0	1	0	1	98	0.9909
SEE	GILLESPIE FIELD	CA	LP	0	1	2	0.9998	6	0.9982
SFO	SAN FRANCISCO INTERNATIONAL	CA	LPV	0	1	0	1	100	0.9900
SNS	SALINAS MUNI	CA	LPV200	0	1	2	1	100	0.9928
STS	CHARLES M. SCHULZ-SONOMA COUNTY	CA	LPV	0	1	0	1	99	0.9908
ITR	KIT CARSON COUNTY	CO	LPV	0	1	0	1	4	0.9998
LAA	LAMAR MUNI	CO	LPV	0	1	0	1	4	0.9999
COS	CITY OF COLORADO SPRINGS MUNI	CO	LPV200	0	1	0	1	4	0.9999
DEN	DENVER INTL	CO	LPV200	0	1	0	1	4	0.9998
DRO	DURANGO-LA PLATA COUNTY	CO	LPV200	0	1	0	1	4	0.9999
FTG	FRONT RANGE	CO	LPV200	0	1	0	1	4	0.9998
GJT	GRAND JUNCTION RGNL	CO	LPV200	0	1	0	1	2	0.9999
LHX	LA JUNTA MUNI	CO	LPV	0	1	0	1	4	0.9999
CEZ	CORTEZ MUNI	CO	LPV	0	1	0	1	3	0.9999
FNL	FORT COLLINS-LOVELAND MUNI	CO	LPV200	0	1	0	1	4	0.9998
HDN	YAMPA VALLEY	CO	LPV	0	1	0	1	2	0.9998
MTJ	MONTROSE RGNL	CO	LPV	0	1	0	1	2	0.9999
RIL	GARFIELD COUNTY RGNL	CO	LPV	0	1	0	1	2	0.9999
FMM	FORT MORGAN MUNI	CO	LP	0	1	0	1	4	0.9997
TEX	TELLURIDE RGNL	CO	LP	0	1	0	1	2	0.9999
ALS	SAN LUIS VALLEY RGNL/BERGMAN FIELD	CO	LPV200	0	1	0	1	1	1
BJC	ROCKY MOUNTAIN METROPOLITAN	CO	LPV200	0	1	0	1	4	0.9998
GXY	GREELEY-WELD COUNTY	CO	LPV	0	1	0	1	4	0.9997
PUB	PUEBLO MEMORIAL	CO	LPV200	0	1	0	1	4	0.9999
STK	STERLING MUNI	CO	LPV	0	1	0	1	4	0.9997

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
APA	CENTENNIAL	CO	LPV200	0	1	0	1	4	0.9998
BDL	BRADLEY INTL	CT	LPV200	0	1	0	1	0	1
HVN	TWEED-NEW HAVEN	CT	LPV	0	1	0	1	0	1
OXC	WATERBURY-OXFORD	CT	LPV	0	1	0	1	0	1
GON	GROTON-NEW LONDON	CT	LPV	0	1	0	1	0	1
IJD	WINDHAM	CT	LP	0	1	0	1	0	1
DCA	RONALD REAGAN WASHINGTON NATL	DC	LPV	0	1	0	1	0	1
HEF	MANASSAS RGNL/HARRY P. DAVIS FIELD	DC	LPV	0	1	0	1	0	1
IAD	WASHINGTON DULLES INTL	DC	LPV200	0	1	0	1	0	1
ILG	NEW CASTLE	DE	LPV	0	1	0	1	0	1
EVY	SUMMIT	DE	LPV	0	1	0	1	0	1
GED	SUSSEX COUNTY	DE	LPV	0	1	0	1	0	1
33N	DELAWARE AIRPARK	DE	LP	0	1	0	1	0	1
XFL	FLAGLER COUNTY	FL	LPV	0	1	0	1	1	1
CEW	BOB SIKES	FL	LPV	0	1	0	1	0	1
CTY	CROSS CITY	FL	LPV	0	1	0	1	1	1
F45	NORTH PALM BEACH COUNTY GENERAL AVIATION	FL	LPV	0	1	0	1	3	0.9999
FHB	FERNANDINA BEACH MUNI	FL	LPV	0	1	0	1	0	1
FPR	ST LUCIE COUNTY INTL	FL	LPV	0	1	0	1	2	0.9999
LEE	LEESBURG INTL	FL	LPV	0	1	0	1	1	1.0000
ORL	EXECUTIVE	FL	LPV200	0	1	0	1	1	1
PBI	PALM BEACH INTL	FL	LPV200	0	1	0	1	4	0.9998
TIX	SPACE COAST RGNL	FL	LPV200	0	1	0	1	1	1
APF	NAPLES MUNI	FL	LPV	0	1	0	1	2	0.9999
BKV	HERNANDO COUNTY	FL	LPV	0	1	0	1	1	1
BOW	BARTOW MUNI	FL	LPV	0	1	0	1	1	1
COI	MERRITT ISLAND	FL	LPV	0	1	0	1	1	1
ECP	NORTHWEST FLORIDA BEACHES INTL	FL	LPV200	0	1	0	1	0	1
EYW	KEY WEST INTL	FL	LPV	0	1	0	1	3	0.9997
FMY	PAGE FIELD	FL	LPV	0	1	0	1	2	0.9999
IMM	IMMOKALEE RGNL	FL	LPV	0	1	0	1	2	0.9999
MKY	MARCO ISLAND	FL	LPV	0	1	0	1	2	0.9998
PHK	PALM BEACH COUNTY GLADES	FL	LPV	0	1	0	1	2	0.9999
SEF	SEBRING RGNL	FL	LPV	0	1	0	1	2	1
TMB	KENDALL-TAMIAMI EXECUTIVE	FL	LPV200	0	1	0	1	8	0.9997
54J	DEFUNIAK SPRINGS	FL	LP	0	1	0	1	0	1
EVB	NEW SMYRNA BEACH MUNI	FL	LPV	0	1	0	1	1	1
FXE	FT LAUDERDALE EXECUTIVE	FL	LPV200	0	1	0	1	5	0.9998
HEG	HERLONG RECREATIONAL	FL	LP	0	1	0	1	1	1
LCQ	LAKE CITY MUNI	FL	LPV	0	1	0	1	1	1
PMP	POMPANO BEACH AIRPARK	FL	LPV	0	1	0	1	5	0.9998
TLH	TALLAHASSEE RGNL	FL	LPV200	0	1	0	1	0	1
CRG	CRAIG MUNI	FL	LPV200	0	1	0	1	0	1
DTS	DESTIN-FORT WALTON BEACH	FL	LP	0	1	0	1	0	1
JAX	JACKSONVILLE INTL	FL	LPV200	0	1	0	1	0	1
MLB	MELBOURNE INTL	FL	LPV200	0	1	0	1	1	1
OBE	OKEECHOBEE COUNTY	FL	LPV	0	1	0	1	2	0.9999

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
RSW	SOUTHWEST FLORIDA INTL	FL	LPV	0	1	0	1	2	0.9999
SGJ	ST AUGUSTINE	FL	LPV	0	1	0	1	1	1
CHN	WAUCHULA MUNI	FL	LP	0	1	0	1	1	1
DAB	DAYTONA BEACH INTL	FL	LPV200	0	1	0	1	1	1
MCO	ORLANDO INTL	FL	LPV200	0	1	0	1	1	1
PIE	ST PETERSBURG-CLEARWATER INTL	FL	LPV200	0	1	0	1	1	1
SFB	ORLANDO SANFORD INTL	FL	LPV200	0	1	0	1	1	1
SRQ	SARASOTA/BRADENTON INTL	FL	LPV200	0	1	0	1	1	1
TPA	TAMPA INTL	FL	LPV200	0	1	0	1	1	1
VQQ	CECIL FIELD	FL	LPV	0	1	0	1	1	1
28J	PALATKA MUNICIPAL ARPT	FL	LPV	0	1	0	1	1	1
FLL	FORT LAUDERDALE/HOLLYWOOD INTL	FL	LPV	0	1	0	1	5	0.9998
LAL	LAKELAND LINDER RGNL	FL	LPV200	0	1	0	1	1	1
MIA	MIAMI INTL	FL	LPV	0	1	0	1	7	0.9997
OPF	OPA LOCKA EXECUTIVE	FL	LPV200	0	1	0	1	6	0.9998
VDF	TAMPA EXECUTIVE	FL	LPV	0	1	0	1	1	1
VRB	VERO BEACH MUNI	FL	LPV200	0	1	0	1	2	0.9999
X51	HOMESTEAD GENERAL AVIATION	FL	LPV	0	1	0	1	8	0.9997
40J	PERRY-FOLEY	FL	LPV	0	1	0	1	1	1
AAF	APALACHICOLA MUNI	FL	LPV	0	1	0	1	0	1
AVO	AVON PARK EXECUTIVE	FL	LPV	0	1	0	1	1	1
GNV	GAINESVILLE RGNL	FL	LPV	0	1	0	1	1	1
ISM	KISSIMMEE GATEWAY	FL	LPV200	0	1	0	1	1	1
OCF	OCALA INTL-JIM TAYLOR FLD	FL	LPV200	0	1	0	1	1	1
PGD	PUNTA GORDA	FL	LPV200	0	1	0	1	2	0.9999
PNS	PENSACOLA RGNL	FL	LPV200	0	1	0	1	0	1
TPF	PETER O KNIGHT	FL	LP	0	1	0	1	1	1
X07	LAKE WALES MUNI	FL	LP	0	1	0	1	1	1
X14	LA BELLE MUNI	FL	LPV	0	1	0	1	2	0.9999
X35	MARION CO & PARK OF COMMERCE	FL	LP	0	1	0	1	1	1
ZPH	ZEPHYRHILLS MUNI	FL	LPV	0	1	0	1	1	1
1J0	TRI-COUNTY	FL	LP	0	1	0	1	0	1
BCT	BOCA RATON	FL	LPV	0	1	0	1	5	0.9998
DED	DELAND MUNI-SIDNEY H TAYLOR FLD	FL	LPV	0	1	0	1	1	1
GIF	WINTER HAVEN'S GILBERT	FL	LPV	0	1	0	1	1	1
MTH	THE FLORIDA KEYS MARATHON	FL	LPV	0	1	0	1	8	0.9997
PCM	PLANT CITY MUNI	FL	LPV	0	1	0	1	1	1
SUA	WITHAM FIELD	FL	LPV	0	1	0	1	2	0.9999
VNC	VENICE MUNI	FL	LP	0	1	0	1	1	1
X26	SEBASTIAN MUNI	FL	LP	0	1	0	1	2	0.9999
ABY	SOUTHWEST GEORGIA RGNL	GA	LPV200	0	1	0	1	0	1
DNN	DALTON MUNI	GA	LPV	0	1	0	1	0	1
FFC	ATLANTA RGNL FALCON FIELD	GA	LPV200	0	1	0	1	0	1
HOE	HOMERVILLE	GA	LPV	0	1	0	1	1	1

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
MAC	MACON DOWNTOWN	GA	LP	0	1	0	1	0	1
SBO	EAST GEORGIA REGIONAL	GA	LPV	0	1	0	1	0	1
WDR	WINDER-BARROW	GA	LPV	0	1	0	1	0	1
6A2	GRIFFIN-SPALDING COUNTY	GA	LPV	0	1	0	1	0	1
BHC	BAXLEY MUNI	GA	LPV	0	1	0	1	0	1
GVL	LEE GILMER MEMORIAL	GA	LPV	0	1	0	1	0	1
HQU	THOMSON-MCDUFFIE COUNTY	GA	LPV	0	1	0	1	0	1
OPN	THOMASTON-UPSON COUNTY	GA	LPV200	0	1	0	1	0	1
RYY	COBB COUNTY-MC COLLUM FIELD	GA	LPV200	0	1	0	1	0	1
48A	COCHRAN	GA	LPV	0	1	0	1	0	1
4J6	ST MARYS	GA	LPV	0	1	0	1	0	1
52A	MADISON MUNI	GA	LP	0	1	0	1	0	1
70J	CAIRO-GRADY COUNTY	GA	LPV	0	1	0	1	0	1
ATL	HARTSFIELD - JACKSON ATLANTA INTL	GA	LPV200	0	1	0	1	0	1
BGE	DECATUR COUNTY INDUSTRIAL AIR PARK	GA	LPV200	0	1	0	1	0	1
BIJ	EARLY COUNTY	GA	LPV	0	1	0	1	0	1
CNI	CHEROKEE COUNTY	GA	LPV	0	1	0	1	0	1
FTY	FULTON COUNTY AIRPORT-BROWN FIELD	GA	LPV	0	1	0	1	0	1
TMA	HENRY TIFTON MYERS	GA	LPV	0	1	0	1	0	1
VLD	VALDOSTA RGNL	GA	LPV	0	1	0	1	1	1
09J	JEKYLL ISLAND	GA	LPV200	0	1	0	1	0	1
2J5	MILLEN	GA	LPV	0	1	0	1	0	1
4A4	POLK COUNTY AIRPORT CORNELIUS MOORE FIELD	GA	LPV	0	1	0	1	0	1
ACJ	JIMMY CARTER RGNL	GA	LPV	0	1	0	1	0	1
CTJ	WEST GEORGIA RGNL-O V GRAY FIELD	GA	LPV	0	1	0	1	0	1
D73	MONROE-WALTON COUNTY	GA	LP	0	1	0	1	0	1
EZM	HEART OF GEORGIA RGNL	GA	LPV	0	1	0	1	0	1
FZG	FITZGERALD MUNI	GA	LPV	0	1	0	1	0	1
MCN	MIDDLE GEORGIA RGNL	GA	LPV200	0	1	0	1	0	1
MLJ	BALDWIN COUNTY	GA	LPV	0	1	0	1	0	1
PIM	HARRIS COUNTY	GA	LPV	0	1	0	1	0	1
PUJ	PAULDING NORTHWEST ATLANTA	GA	LPV200	0	1	0	1	0	1
RMG	RICHARD B RUSSELL	GA	LPV	0	1	0	1	0	1
TOC	TOCCOA RG LETOURNEAU FIELD	GA	LPV	0	1	0	1	0	1
VPC	CARTERSVILLE	GA	LPV	0	1	0	1	0	1
19A	JACKSON COUNTY	GA	LPV	0	1	0	1	0	1
BQK	BRUNSWICK GOLDEN ISLES	GA	LPV200	0	1	0	1	0	1
DQH	DOUGLAS MUNI	GA	LPV200	0	1	0	1	0	1
IY	WASHINGTON-WILKES COUNTY	GA	LPV	0	1	0	1	0	1
LGC	LAGRANGE-CALLAWAY	GA	LPV200	0	1	0	1	0	1
MQW	TELFAIR-WHEELER	GA	LPV	0	1	0	1	0	1
PXE	PERRY-HOUSTON COUNTY	GA	LPV	0	1	0	1	0	1

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
3J7	GREENE COUNTY RGNL	GA	LPV	0	1	0	1	0	1
AGS	AUGUSTA RGNL AT BUSH FIELD	GA	LPV200	0	1	0	1	0	1
AJR	HABERSHAM COUNTY	GA	LPV	0	1	0	1	0	1
CSG	COLUMBUS METROPOLITAN	GA	LPV	0	1	0	1	0	1
SAV	SAVANNAH/HILTON HEAD INTL	GA	LPV200	0	1	0	1	0	1
18A	FRANKLIN COUNTY	GA	LPV	0	1	0	1	0	1
CKF	CRISP COUNTY-CORDELE	GA	LPV	0	1	0	1	0	1
CWV	CLAXTON-EVANS COUNTY	GA	LPV	0	1	0	1	0	1
JZP	PICKENS COUNTY	GA	LPV	0	1	0	1	0	1
TVI	THOMASVILLE RGNL	GA	LPV	0	1	0	1	0	1
VDI	VIDALIA RGNL	GA	LPV	0	1	0	1	0	1
17J	DONALSONVILLE MUNI	GA	LPV	0	1	0	1	0	1
4J1	BRANTLEY COUNTY	GA	LPV	0	1	0	1	0	1
AHN	ATHENS/BEN EPPS	GA	LPV	0	1	0	1	0	1
AYS	WAYCROSS-WARE COUNTY	GA	LPV200	0	1	0	1	0	1
CCO	NEWMAN COWETA COUNTY	GA	LPV	0	1	0	1	0	1
CVC	COVINGTON MUNI	GA	LPV	0	1	0	1	0	1
JES	JESUP-WAYNE COUNTY	GA	LPV	0	1	0	1	0	1
JYL	PLANTATION ARPK	GA	LPV	0	1	0	1	0	1
LZU	GWINNETT COUNTY-BRISCOE FIELD	GA	LPV200	0	1	0	1	0	1
MGR	MOULTRIE MUNI	GA	LPV200	0	1	0	1	0	1
OKZ	KAOLIN FIELD	GA	LPV	0	1	0	1	0	1
RVJ	SWINTON SMITH FLD AT REIDSVILLE MUNI	GA	LP	0	1	0	1	0	1
TBR	STATESBORO-BULLOCH COUNTY	GA	LPV	0	1	0	1	0	1
15J	COOK COUNTY	GA	LPV	0	1	0	1	0	1
CIN	ARTHUR N NEU	IA	LPV	0	1	1	1	2	0.9998
LRJ	LE MARS MUNI	IA	LPV	0	1	1	0.9999	2	0.9995
POH	POCAHONTAS MUNI	IA	LPV	0	1	1	0.9999	2	0.9995
PEA	PELLA MUNI	IA	LPV	0	1	0	1	1	0.9999
ALO	WATERLOO RGNL	IA	LPV	0	1	1	0.9999	2	0.9995
SDA	SHENANDOAH MUNI	IA	LPV	0	1	0	1	1	1
BRL	SOUTHEAST IOWA RGNL	IA	LPV200	0	1	0	1	1	0.9999
SHL	SHELDON MUNI	IA	LPV	0	1	1	0.9999	1	0.9993
RDK	RED OAK MUNI	IA	LPV	0	1	0	1	1	0.9999
OOA	OSKALOOSA MUNI	IA	LPV	0	1	0	1	1	0.9999
OXV	KNOXVILLE MUNI	IA	LPV	0	1	0	1	1	0.9999
FOD	FORT DODGE RGNL	IA	LPV200	0	1	1	0.9999	2	0.9995
CWI	CLINTON MUNI	IA	LPV200	0	1	0	1	1	0.9998
DSM	DES MOINES INTL	IA	LPV	0	1	0	1	1	0.9999
IIB	INDEPENDENCE MUNI	IA	LP	0	1	1	1	2	0.9997
IKV	ANKENY RGNL	IA	LPV	0	1	0	1	2	0.9999
IOW	IOWA CITY MUNI	IA	LPV	0	1	0	1	1	0.9998
MPZ	MOUNT PLEASANT MUNICIPAL	IA	LPV	0	1	0	1	1	0.9999
MXO	MONTICELLO RGNL	IA	LP	0	1	0	1	1	0.9998
AMW	AMES MUNI	IA	LPV	0	1	0	1	2	0.9998
SKI	SAC CITY MUNI	IA	LPV	0	1	1	0.9999	2	0.9996

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
VTI	VINTON VETERANS MEML ARPK	IA	LPV	0	1	0	1	1	0.9998
AIO	ATLANTIC MUNI	IA	LPV	0	1	0	1	1	0.9999
CID	THE EASTERN IOWA	IA	LPV200	0	1	0	1	1	0.9998
CKP	CHEROKEE COUNTY RGNL	IA	LPV	0	1	1	0.9999	2	0.9995
CSQ	CRESTON MUNI	IA	LPV	0	1	0	1	1	0.9999
DEH	DECORAH MUNI	IA	LPV	0	1	1	0.9999	1	0.9994
MCW	MASON CITY MUNI	IA	LPV200	0	1	1	0.9999	1	0.9993
FFL	FAIRFIELD MUNI	IA	LPV	0	1	0	1	1	0.9999
TZT	BELLE PLAINE MUNI	IA	LPV	0	1	0	1	1	0.9998
SPW	SPENCER MUNI	IA	LPV200	0	1	1	0.9999	1	0.9993
MUT	MUSCATINE MUNI	IA	LPV	0	1	0	1	1	0.9998
EFW	JEFFERSON MUNI	IA	LPV	0	1	1	1	2	0.9998
OTM	OTTUMWA RGNL	IA	LPV	0	1	0	1	1	0.9999
PRO	PERRY MUNI	IA	LPV200	0	1	0	1	2	0.9998
TNU	NEWTON MUNI	IA	LPV	0	1	0	1	1	0.9999
CBF	COUNCIL BLUFFS MUNI	IA	LPV200	0	1	0	1	1	0.9999
EBS	WEBSTER CITY MUNI	IA	LPV	0	1	1	0.9999	2	0.9996
DVN	DAVENPORT MUNI	IA	LPV200	0	1	0	1	1	0.9998
I75	OSCEOLA MUNI	IA	LPV	0	1	0	1	1	0.9999
ICL	SCHENCK FIELD	IA	LPV	0	1	0	1	1	0.9999
SLB	STORM LAKE MUNI	IA	LPV	0	1	1	0.9999	2	0.9996
TVK	CENTERVILLE MUNI	IA	LPV	0	1	0	1	1	0.9999
AWG	WASHINGTON MUNI	IA	LPV200	0	1	0	1	1	0.9998
EST	ESTHERVILLE MUNI	IA	LPV	0	1	1	0.9999	1	0.9992
DBQ	DUBUQUE RGNL	IA	LPV200	0	1	0	1	2	0.9998
DNS	DENISON MUNI	IA	LPV	0	1	1	1	2	0.9998
EOK	KEOKUK MUNI	IA	LPV	0	1	0	1	0	1
FXY	FOREST CITY MUNI	IA	LPV	0	1	1	0.9999	1	0.9993
GGI	GRINNELL RGNL	IA	LPV	0	1	0	1	1	0.9999
SUX	SIOUX GATEWAY/COL BUD DAY FIELD	IA	LPV200	0	1	1	1	2	0.9996
TWF	JOSLIN FIELD-MAGIC VALLEY RGNL	ID	LPV200	0	1	0	1	1	0.9999
LWS	LEWISTON-NEZ PERCE COUNTY	ID	LPV200	0	1	0	1	7	0.9989
GNG	GOODING MUNI	ID	LPV	0	1	0	1	1	0.9999
MYL	MC CALL MUNICIPAL	ID	LPV	0	1	0	1	7	0.9993
MAN	NAMPA MUNI	ID	LPV	0	1	0	1	2	0.9998
BOI	BOISE AIR TERMINAL/GOWEN FLD	ID	LPV	0	1	0	1	2	0.9998
DIJ	DRIGGS-REED MEMORIAL	ID	LP	0	1	0	1	4	0.9996
JER	JEROME COUNTY	ID	LPV	0	1	0	1	1	0.9999
IDA	IDAHO FALLS RGNL	ID	LPV200	0	1	0	1	4	0.9998
EUL	CALDWELL INDUSTRIAL	ID	LPV	0	1	0	1	2	0.9998
PIH	POCATELLO RGNL	ID	LPV200	0	1	0	1	1	1
U76	MOUNTAIN HOME MUNI	ID	LPV	0	1	0	1	1	0.9999
COE	PAPPY BOYINGTON FIELD	ID	LPV200	0	1	2	1	7	0.9986
RPJ	ROCHELLE MUNI-KORITZ FIELD	IL	LPV200	0	1	0	1	1	0.9998
UGN	WAUKEGAN RGNL	IL	LPV	0	1	0	1	1	0.9998
3LF	LITCHFIELD MUNI	IL	LPV	0	1	0	1	0	1

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
DNV	VERMILION COUNTY	IL	LPV	0	1	0	1	0	1
ENL	CENTRALIA MUNI	IL	LPV	0	1	0	1	0	1
FOA	FLORA MUNI	IL	LPV	0	1	0	1	0	1
MTO	COLES COUNTY MEMORIAL	IL	LPV	0	1	0	1	0	1
PWK	CHICAGO EXECUTIVE	IL	LPV	0	1	0	1	1	0.9998
RFD	CHICAGO/ROCKFORD INTL	IL	LPV200	0	1	0	1	1	0.9998
SQI	WHITESIDE COUNTY-JOS J BITTORF FLD	IL	LPV	0	1	0	1	1	0.9998
BLV	SCOTT AFB/MIDAMERICA	IL	LPV200	0	1	0	1	0	1
BMI	CENTRAL IL REGL ARPT AT BLOOMINGTON-NORMAL	IL	LPV	0	1	0	1	0	1
C15	PEKIN MUNI	IL	LPV	0	1	0	1	0	1
IGQ	LANSING MUNI	IL	LPV	0	1	0	1	0	1
SAR	SPARTA COMMUNITY-HUNTER FIELD	IL	LPV	0	1	0	1	0	1
UIN	QUINCY RGNL-BALDWIN FIELD	IL	LPV200	0	1	0	1	0	1
DPA	DUPAGE	IL	LPV200	0	1	0	1	1	0.9998
RSV	ROBINSON MUNI	IL	LPV	0	1	0	1	0	1
C73	DIXON MUNI-CHARLES R. WALGREEN FLD	IL	LPV	0	1	0	1	1	0.9998
CMI	UNIVERSITY OF ILLINOIS-WILLARD	IL	LPV200	0	1	0	1	0	1
CPS	ST LOUIS DOWNTOWN	IL	LPV200	0	1	0	1	0	1
DEC	DECATUR	IL	LPV200	0	1	0	1	0	1
DKB	DE KALB TAYLOR MUNI	IL	LPV	0	1	0	1	1	0.9998
LWV	LAWRENCEVILLE-VINCENNES INTL	IL	LPV200	0	1	0	1	0	1
MWA	WILLIAMSON COUNTY RGNL	IL	LPV200	0	1	0	1	0	1
ORD	CHICAGO-O'HARE INTL	IL	LPV200	0	1	0	1	1	0.9999
ALN	ST LOUIS RGNL	IL	LPV200	0	1	0	1	0	1
FEP	ALBERTUS	IL	LPV	0	1	0	1	1	0.9998
HSB	HARRISBURG-RALEIGH	IL	LPV	0	1	0	1	0	1
LOT	LEWIS UNIVERSITY	IL	LPV200	0	1	0	1	1	1
MDW	CHICAGO MIDWAY INTL	IL	LPV	0	1	0	1	0	1
SFY	TRI-TOWNSHIP	IL	LP	0	1	0	1	1	0.9998
SPI	ABRAHAM LINCOLN CAPITAL	IL	LPV	0	1	0	1	0	1
3MY	MOUNT HAWLEY AUXILIARY	IL	LPV	0	1	0	1	0	1
I63	MOUNT STERLING MUNI	IL	LPV	0	1	0	1	0	1
IKK	GREATER KANKAKEE	IL	LPV	0	1	0	1	0	1
MLI	QUAD CITY INTL	IL	LPV200	0	1	0	1	1	0.9998
ARR	AURORA MUNI	IL	LPV200	0	1	0	1	1	0.9998
CUL	CARMI MUNI	IL	LP	0	1	0	1	0	1
GBG	GALESBURG MUNI	IL	LPV200	0	1	0	1	1	0.9999
PNT	PONTIAC MUNI	IL	LPV	0	1	0	1	0	1
AJG	MOUNT CARMEL MUNI	IL	LPV	0	1	0	1	0	1
MVN	MOUNT VERNON	IL	LPV	0	1	0	1	0	1
PIA	GREATER PEORIA RGNL	IL	LPV	0	1	0	1	0	1
AID	ANDERSON MUNI-DARLINGTON FIELD	IN	LPV	0	1	0	1	0	1
BFR	VIRGIL I GRISSOM MUNI	IN	LP	0	1	0	1	0	1
GSH	GOSHEN MUNI	IN	LPV	0	1	0	1	0	1

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
LAF	PURDUE UNIVERSITY	IN	LPV	0	1	0	1	0	1
OXI	STARKE COUNTY	IN	LPV	0	1	0	1	0	1
RCR	FULTON COUNTY	IN	LPV	0	1	0	1	0	1
RZL	JASPER COUNTY	IN	LPV	0	1	0	1	0	1
GWB	DE KALB COUNTY	IN	LPV	0	1	0	1	0	1
GYG	GARY/CHICAGO INTERNATIONAL	IN	LPV200	0	1	0	1	0	1
HFY	GREENWOOD MUNI	IN	LPV	0	1	0	1	0	1
HNB	HUNTINGBURG	IN	LPV	0	1	0	1	0	1
I22	RANDOLPH COUNTY	IN	LPV	0	1	0	1	0	1
IND	INDIANAPOLIS INTL	IN	LPV	0	1	0	1	0	1
MIE	DELAWARE COUNTY-JOHNSON FIELD	IN	LPV	0	1	0	1	0	1
SBN	SOUTH BEND RGNL	IN	LPV	0	1	0	1	0	1
TEL	PERRY COUNTY MUNI	IN	LP	0	1	0	1	0	1
TYQ	INDIANAPOLIS EXECUTIVE	IN	LPV	0	1	0	1	0	1
VPZ	PORTER COUNTY MUNI	IN	LPV	0	1	0	1	0	1
BAK	COLUMBUS MUNI	IN	LPV	0	1	0	1	0	1
GGP	LOGANSPOUT/CASS COUNTY	IN	LPV200	0	1	0	1	0	1
IMS	MADISON MUNI	IN	LPV	0	1	0	1	0	1
OVO	NORTH VERNON	IN	LPV	0	1	0	1	0	1
SMD	SMITH FIELD	IN	LPV	0	1	0	1	0	1
417	PUTNAM COUNTY	IN	LPV	0	1	0	1	0	1
BMG	MONROE COUNTY	IN	LPV200	0	1	0	1	0	1
EYE	EAGLE CREEK AIRPARK	IN	LPV	0	1	0	1	0	1
FRH	FRENCH LICK MUNI	IN	LPV	0	1	0	1	0	1
MZZ	MARION MUNI	IN	LPV	0	1	0	1	0	1
ASW	WARSAW MUNICIPAL	IN	LPV	0	1	0	1	0	1
JVY	CLARK RGNL	IN	LPV200	0	1	0	1	0	1
PLD	PORTLAND MUNI	IN	LPV	0	1	0	1	0	1
GEZ	SHELBYVILLE MUNI	IN	LPV	0	1	0	1	0	1
SER	FREEMAN MUNI	IN	LPV	0	1	0	1	0	1
EKM	ELKHART MUNI	IN	LPV	0	1	0	1	0	1
OKK	KOKOMO MUNI	IN	LPV200	0	1	0	1	0	1
RID	RICHMOND MUNI	IN	LPV200	0	1	0	1	0	1
EVV	EVANSVILLE RGNL	IN	LPV200	0	1	0	1	0	1
FWA	FORT WAYNE INTERNATIONAL	IN	LPV200	0	1	0	1	0	1
HUF	TERRE HAUTE INTERNATIONAL-HULMAN FIELD	IN	LPV200	0	1	0	1	0	1
MCX	WHITE COUNTY	IN	LP	0	1	0	1	0	1
MQJ	MOUNT COMFORT	IN	LPV	0	1	0	1	0	1
CEV	METTEL FIELD	IN	LPV	0	1	0	1	0	1
ANY	ANTHONY MUNI	KS	LP	0	1	0	1	0	1
LWC	LAWRENCE MUNI	KS	LPV200	0	1	0	1	0	1
OEL	OAKLEY MUNI	KS	LPV	0	1	0	1	4	0.9998
ADT	ATWOOD-RAWLINS COUNTY CITY-COUNTY	KS	LPV	0	1	0	1	4	0.9998
CBK	SHALZ FIELD	KS	LPV	0	1	0	1	4	0.9998
EMP	EMPORIA MUNI	KS	LPV	0	1	0	1	0	1
FOE	FORBES FIELD	KS	LPV	0	1	0	1	0	1

Airport Id	Airport Name	State/Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
GCK	GARDEN CITY RGNL	KS	LPV	0	1	0	1	4	1
HUT	HUTCHINSON MUNI	KS	LPV	0	1	0	1	0	1
MHK	MANHATTAN RGNL	KS	LPV200	0	1	0	1	0	1
MPR	MCPHERSON	KS	LPV	0	1	0	1	0	1
UKL	COFFEY COUNTY	KS	LPV	0	1	0	1	0	1
LBL	LIBERAL MID-AMERICA RGNL	KS	LPV	0	1	0	1	0	1
LQR	LARNED PAWNEE CO	KS	LPV	0	1	0	1	2	1
PTT	PRATT INDUSTRIAL	KS	LPV	0	1	0	1	0	1
RPB	BELLEVILLE MUNI	KS	LPV	0	1	0	1	0	1
FSK	FORT SCOTT MUNI	KS	LPV	0	1	0	1	0	1
HYS	HAYS RGNL	KS	LPV200	0	1	0	1	4	0.9999
IDP	INDEPENDENCE MUNI	KS	LPV	0	1	0	1	0	1
IXD	NEW CENTURY AIRCENTER	KS	LPV	0	1	0	1	0	1
K88	ALLEN COUNTY	KS	LPV	0	1	0	1	0	1
TOP	PHILIP BILLARD MUNI	KS	LPV200	0	1	0	1	0	1
DDC	DODGE CITY RGNL	KS	LPV	0	1	0	1	2	1
HQG	HUGOTON MUNI	KS	LPV	0	1	0	1	0	1
ICT	WICHITA MID-CONTINENT	KS	LPV200	0	1	0	1	0	1
RSL	RUSSELL MUNI	KS	LPV	0	1	0	1	0	1
3AU	AUGUSTA MUNI	KS	LP	0	1	0	1	0	1
AAO	COLONEL JAMES JABARA	KS	LPV	0	1	0	1	0	1
EHA	ELKHART-MORTON COUNTY	KS	LPV	0	1	0	1	0	1
NRN	NORTON MUNI	KS	LPV	0	1	0	1	0	1
OJC	JOHNSON COUNTY EXECUTIVE	KS	LPV	0	1	0	1	0	1
OWI	OTTAWA MUNI	KS	LP	0	1	0	1	0	1
TQK	SCOTT CITY MUNI	KS	LPV	0	1	0	1	4	0.9999
ULS	ULYSSES	KS	LPV	0	1	0	1	4	1
3K3	SYRACUSE-HAMILTON COUNTY MUNICIPAL	KS	LPV	0	1	0	1	4	0.9999
CNK	BLOSSER MUNI	KS	LP	0	1	0	1	0	1
GLD	RENNER FLD/GOODLAND MUNI/	KS	LPV200	0	1	0	1	4	0.9998
SLN	SALINA MUNI	KS	LPV	0	1	0	1	0	1
EGT	WELLINGTON MUNI	KS	LPV	0	1	0	1	0	1
EWK	NEWTON-CITY-COUNTY	KS	LPV	0	1	0	1	0	1
GBD	GREAT BEND MUNI	KS	LPV200	0	1	0	1	2	1
MYZ	MARYSVILLE MUNI	KS	LPV	0	1	0	1	0	1
PPF	TRI-CITY	KS	LPV	0	1	0	1	0	1
PTS	ATKINSON MUNI	KS	LPV	0	1	0	1	0	1
BWG	BOWLING GREEN-WARREN CTY RGNL	KY	LPV	0	1	0	1	0	1
TZV	TOMPKINSVILLE-MONROE COUNTY	KY	LPV	0	1	0	1	0	1
LOU	BOWMAN FIELD	KY	LPV	0	1	0	1	0	1
M21	MUHLENBERG COUNTY	KY	LP	0	1	0	1	0	1
TWT	STURGIS MUNI	KY	LPV	0	1	0	1	0	1
BYL	WILLIAMSBURG-WHITLEY COUNTY	KY	LPV	0	1	0	1	0	1
LEX	BLUE GRASS	KY	LPV	0	1	0	1	0	1
LOZ	LONDON-CORBIN ARPT-MAGEE FLD	KY	LPV	0	1	0	1	0	1

Airport Id	Airport Name	State/Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
CEY	KYLE-OAKLEY FIELD	KY	LPV	0	1	0	1	0	1
CPF	WENDELL H FORD	KY	LPV200	0	1	0	1	0	1
DVK	STUART POWELL FIELD	KY	LPV	0	1	0	1	0	1
K22	BIG SANDY RGNL	KY	LPV	0	1	0	1	0	1
SME	LAKE CUMBERLAND RGNL	KY	LPV	0	1	0	1	0	1
BRY	SAMUELS FIELD	KY	LPV	0	1	0	1	0	1
EHR	HENDERSON CITY-COUNTY	KY	LPV	0	1	0	1	0	1
GLW	GLASGOW MUNI	KY	LPV	0	1	0	1	0	1
AAS	TAYLOR COUNTY	KY	LP	0	1	0	1	0	1
SDF	LOUISVILLE INTL-STANDIFORD FLD	KY	LPV200	0	1	0	1	0	1
6I2	LEBANON-SPRINGFIELD	KY	LP	0	1	0	1	0	1
7K4	OHIO COUNTY	KY	LPV	0	1	0	1	0	1
FGX	FLEMING-MASON	KY	LPV	0	1	0	1	0	1
I39	MADISON	KY	LPV200	0	1	0	1	0	1
KY8	HANCOCK CO-RON LEWIS FIELD	KY	LPV	0	1	0	1	0	1
210	MADISONVILLE MUNI	KY	LPV	0	1	0	1	0	1
EKX	ADDINGTON FIELD	KY	LPV	0	1	0	1	0	1
27K	GEORGETOWN SCOTT CO-MARSHALL FLD	KY	LPV200	0	1	0	1	0	1
CVG	CINCINNATI/NORTHERN KENTUCKY INTL	KY	LPV200	0	1	0	1	0	1
DWU	ASHLAND RGNL	KY	LP	0	1	0	1	0	1
M97	MOREHEAD-ROWAN COUNTY CLYDE A THOMAS RGNL	KY	LPV	0	1	0	1	0	1
OWB	OWENSBORO-DAVIESS COUNTY	KY	LPV200	0	1	0	1	0	1
PAH	BARKLEY RGNL	KY	LPV	0	1	0	1	0	1
HVC	HOPKINSVILLE-CHRISTIAN COUNTY	KY	LPV	0	1	0	1	0	1
BQP	MOREHOUSE MEMORIAL	LA	LPV	0	1	0	1	1	1
M79	JOHN H HOOKS JR MEMORIAL	LA	LPV	0	1	0	1	1	1
AEX	ALEXANDRIA INTL	LA	LPV200	0	1	0	1	1	0.9999
ESF	ESLER RGNL	LA	LPV200	0	1	0	1	1	0.9999
HUM	HOUMA-TERREBONNE	LA	LPV200	0	1	0	1	1	0.9999
IYA	ABBEVILLE CHRIS CRUSTA MEML	LA	LPV	0	1	0	1	1	0.9999
MLU	MONROE RGNL	LA	LPV200	0	1	0	1	1	1
MSY	LOUIS ARMSTRONG NEW ORLEANS INTL	LA	LPV200	0	1	0	1	1	0.9999
TVR	VICKSBURG TALLULAH RGNL	LA	LPV	0	1	0	1	1	1
3R4	HART	LA	LPV	0	1	0	1	1	0.9999
CWF	CHENNAULT INTL	LA	LPV200	0	1	0	1	1	0.9999
F88	JONESBORO	LA	LP	0	1	0	1	1	1
IER	NATCHITOCHEES RGNL	LA	LPV	0	1	0	1	1	0.9999
LFT	LAFAYETTE RGNL	LA	LPV	0	1	0	1	1	0.9999
GAO	SOUTH LAFOURCHE LEONARD MILLER JR	LA	LPV	0	1	0	1	1	0.9999
PTN	HARRY P WILLIAMS MEMORIAL	LA	LPV200	0	1	0	1	1	0.9999
ACP	ALLEN PARISH	LA	LPV	0	1	0	1	1	0.9999

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
HZR	FALSE RIVER RGNL	LA	LPV	0	1	0	1	1	0.9999
SHV	SHREVEPORT RGNL	LA	LPV200	0	1	0	1	1	0.9999
ARA	ACADIANA RGNL	LA	LPV	0	1	0	1	1	0.9999
BXA	GEORGE R CARR MEMORIAL AIR FIELD	LA	LPV	0	1	0	1	1	0.9999
BTR	BATON ROUGE METRO	LA	LPV200	0	1	0	1	1	0.9999
L39	LEESVILLE	LA	LPV	0	1	0	1	1	0.9999
LCH	LAKE CHARLES RGNL	LA	LPV200	0	1	0	1	2	0.9999
NEW	LAKEFRONT	LA	LPV	0	1	0	1	1	0.9999
OPL	ST LANDRY PARISH-AHART FIELD	LA	LPV	0	1	0	1	1	0.9999
RSN	RUSTON RGNL AIRPORT	LA	LPV	0	1	0	1	1	1
UXL	SOUTHLAND FIELD	LA	LPV	0	1	0	1	2	0.9999
1L0	ST JOHN THE BAPTIST PARISH	LA	LPV	0	1	0	1	1	0.9999
DTN	SHREVEPORT DOWNTOWN	LA	LPV	0	1	0	1	1	0.9999
HDC	HAMMOND NORTHSORE RGNL	LA	LPV200	0	1	0	1	1	0.9999
L38	LOUISIANA RGNL	LA	LPV	0	1	0	1	1	0.9999
SPH	SPRINGHILL	LA	LPV	0	1	0	1	1	1
OWD	NORWOOD MEMORIAL	MA	LPV	0	1	0	1	0	1
ORE	ORANGE MUNI	MA	LPV	0	1	0	1	0	1
EWB	NEW BEDFORD RGNL	MA	LP	0	1	0	1	0	1
3B0	SOUTHBRIDGE MUNI	MA	LPV	0	1	0	1	0	1
LWM	LAWRENCE MUNI	MA	LPV200	0	1	0	1	0	1
ACK	NANTUCKET MEMORIAL	MA	LPV200	0	1	0	1	0	1
HYA	BARNSTABLE MUNI-BOARDMAN/POLANDO FIELD	MA	LPV200	0	1	0	1	0	1
MVY	MARTHAS VINEYARD	MA	LPV200	0	1	0	1	0	1
ORH	WORCESTER RGNL	MA	LPV200	0	1	0	1	0	1
BVY	BEVERLY MUNI	MA	LPV	0	1	0	1	0	1
PYM	PLYMOUTH MUNI	MA	LPV200	0	1	0	1	0	1
BED	LAURENCE G HANSCOM FLD	MA	LPV200	0	1	0	1	0	1
BAF	BARNES MUNI	MA	LPV	0	1	0	1	0	1
GBR	WALTER J KOLADZA	MA	LP	0	1	0	1	0	1
BOS	GEN EDWARD LAWRENCE LOGAN INTL	MA	LPV200	0	1	0	1	0	1
CBE	GREATER CUMBERLAND RGNL	MD	LP	0	1	0	1	0	1
ESN	EASTON/NEWNAM FIELD	MD	LPV	0	1	0	1	0	1
MTN	MARTIN STATE	MD	LPV	0	1	0	1	0	1
OXB	OCEAN CITY MUNI	MD	LPV	0	1	0	1	0	1
DMW	CARROLL COUNTY REGNL/JACK B POAGE FIELD	MD	LPV200	0	1	0	1	0	1
2G4	GARRETT COUNTY	MD	LPV	0	1	0	1	0	1
GAI	MONTGOMERY COUNTY AIRPARK	MD	LPV	0	1	0	1	0	1
SBY	SALISBURY-OCEAN CITY WICOMICO RGNL	MD	LPV200	0	1	0	1	0	1
BWI	BALTIMORE/WASHINGTON INTL THURGOOD MARSHALL	MD	LPV200	0	1	0	1	0	1
2W6	ST. MARY'S COUNTY RGNL	MD	LPV	0	1	0	1	0	1

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
HGR	HAGERSTOWN RGNL-RICHARD A HENSON FIELD	MD	LPV200	0	1	0	1	0	1
FDK	FREDERICK MUNI	MD	LPV	0	1	0	1	0	1
BGR	BANGOR INTL	ME	LPV	0	1	0	1	1	1
BXM	BRUNSWICK EXECUTIVE	ME	LPV	0	1	0	1	0	1
WVL	WATERVILLE ROBERT LAFLEUR	ME	LPV200	0	1	0	1	1	1
LEW	AUBURN/LEWISTON MUNI	ME	LPV200	0	1	0	1	0	1
BHB	HANCOCK COUNTY-BAR HARBOR	ME	LPV200	0	1	0	1	1	1
FVE	NORTHERN AROOSTOOK RGNL	ME	LPV	0	1	0	1	1	1
HUL	HOULTON INTL	ME	LP	0	1	0	1	1	1
SFM	SANFORD RGNL	ME	LPV200	0	1	0	1	0	1
81B	OXFORD COUNTY RGNL	ME	LP	0	1	0	1	0	1
AUG	AUGUSTA STATE	ME	LPV200	0	1	0	1	0	1
MLT	MILLINOCKET MUNI	ME	LPV	0	1	0	1	1	1
PWM	PORTLAND INTL JETPORT	ME	LPV200	0	1	0	1	0	1
RKD	KNOX COUNTY RGNL	ME	LPV	0	1	0	1	1	1
1B0	DEXTER RGNL	ME	LP	0	1	0	1	1	1
PQI	NORTHERN MAINE RGNL ARPT AT PRESQUE IS	ME	LPV200	0	1	0	1	1	1
MNM	MENOMINEE-MARINETTE TWIN COUNTY	MI	LPV200	0	1	2	0.9998	1	0.9994
PLN	PELLSTON RGNL AIRPORT OF EMMET COUNTY	MI	LPV200	0	1	0	1	1	1
GDW	GLADWIN ZETTEL MEMORIAL	MI	LP	0	1	0	1	0	1
MBS	MBS INTL	MI	LPV200	0	1	0	1	0	1
MCD	MACKINAC ISLAND	MI	LPV	0	1	0	1	1	1
MKG	MUSKEGON COUNTY	MI	LPV200	0	1	0	1	0	1
YIP	WILLOW RUN	MI	LPV	0	1	0	1	0	1
AMN	GRATIOT COMMUNITY	MI	LPV	0	1	0	1	0	1
FFX	FREMONT MUNI	MI	LPV	0	1	0	1	0	1
FNT	BISHOP INTL	MI	LPV200	0	1	0	1	0	1
LWA	SOUTH HAVEN AREA RGNL	MI	LP	0	1	0	1	0	1
N98	BOYNE CITY MUNI	MI	LP	0	1	0	1	1	1
OSC	OSCODA-WURTSMITH	MI	LPV200	0	1	0	1	0	1
PHN	SAINT CLAIR COUNTY INTL	MI	LPV200	0	1	0	1	0	1
77G	MARLETTE	MI	LPV	0	1	0	1	0	1
BAX	HURON COUNTY MEMORIAL	MI	LPV	0	1	0	1	0	1
BIV	TULIP CITY	MI	LPV	0	1	0	1	0	1
CVX	CHARLEVOIX MUNI	MI	LPV	0	1	0	1	1	1
IRS	KIRSCH MUNI	MI	LPV	0	1	0	1	0	1
ISQ	SCHOOLCRAFT COUNTY	MI	LP	1	1	1	1	3	0.9998
LAN	CAPITAL REGION INTL	MI	LPV200	0	1	0	1	0	1
LDM	MASON COUNTY	MI	LPV	0	1	0	1	1	1
SLH	CHEBOYGAN COUNTY	MI	LPV	0	1	0	1	1	1
TTF	CUSTER	MI	LPV	0	1	0	1	0	1
AZO	KALAMAZOO/BATTLE CREEK INTERNATIONAL	MI	LPV	0	1	0	1	0	1

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
DTW	DETROIT METROPOLITAN WAYNE COUNTY	MI	LPV200	0	1	0	1	0	1
ESC	DELTA COUNTY	MI	LPV200	2	1	3	0.9999	1	0.9993
HYX	SAGINAW COUNTY H.W. BROWNE	MI	LPV	0	1	0	1	0	1
MOP	MOUNT PLEASANT MUNI	MI	LPV	0	1	0	1	0	1
OZW	LIVINGSTON COUNTY SPENCER J. HARDY	MI	LPV200	0	1	0	1	0	1
PTK	OAKLAND COUNTY INTL	MI	LPV200	0	1	0	1	0	1
SAW	SAWYER INTL	MI	LPV200	1	0.9996	2	0.9996	1	0.9993
TVC	CHERRY CAPITAL	MI	LPV	0	1	0	1	1	1
9D9	HASTINGS	MI	LP	0	1	0	1	0	1
APN	ALPENA COUNTY RGNL	MI	LPV	0	1	0	1	0	1
BTL	W K KELLOGG	MI	LPV200	0	1	0	1	0	1
ERY	LUCE COUNTY	MI	LPV	1	1	1	1	2	0.9999
ADG	LENAWEE COUNTY	MI	LPV	0	1	0	1	0	1
ANJ	SAULT STE MARIE MUNI - SANDERSON FIELD	MI	LPV	0	1	0	1	1	1
BEH	SOUTHWEST MICHIGAN RGNL	MI	LPV200	0	1	0	1	0	1
CAD	WEXFORD COUNTY	MI	LPV200	0	1	0	1	0	1
CIU	CHIPPEWA COUNTY INTL	MI	LPV	0	1	0	1	1	1
DET	COLEMAN A YOUNG MUNI	MI	LPV	0	1	0	1	0	1
IMT	FORD	MI	LPV	2	0.9996	2	0.9995	1	0.9993
IWD	GOGEBIC-IRON COUNTY	MI	LPV200	1	0.9994	1	0.9993	2	0.9993
JXN	JACKSON COUNTY-REYNOLDS FIELD	MI	LPV200	0	1	0	1	0	1
ACB	ANTRIM COUNTY	MI	LPV	0	1	0	1	1	0.999981
ARB	ANN ARBOR MUNI	MI	LPV	0	1	0	1	0	1
CMX	HOUGHTON COUNTY MEMORIAL	MI	LPV	1	0.9993	1	0.9993	3	0.9993
GLR	GAYLORD RGNL	MI	LPV	0	1	0	1	0	1
GRR	GERALD R. FORD INTL	MI	LPV200	0	1	0	1	0	1
IKW	JACK BARSTOW	MI	LPV	0	1	0	1	0	1
OEB	BRANCH COUNTY MEMORIAL	MI	LPV	0	1	0	1	0	1
RNP	OWOSSO COMMUNITY	MI	LPV	0	1	0	1	0	1
MGG	MAPLE LAKE MUNI	MN	LP	1	0.9995	1	0.9992	2	0.9992
MSP	MINNEAPOLIS-ST PAUL INTL/WOLD-CHAMBERLAIN	MN	LPV200	1	0.9995	1	0.9994	2	0.9992
RGK	RED WING RGNL	MN	LPV200	2	0.9997	1	0.9994	1	0.9992
RST	ROCHESTER INTL	MN	LPV200	1	1	2	0.9995	1	0.9992
ORB	ORR RGNL	MN	LP	1	0.9994	1	0.9992	5	0.9990
STP	ST PAUL DOWNTOWN HOLMAN FLD	MN	LPV	1	0.9995	1	0.9993	2	0.9992
TVF	THIEF RIVER FALLS	MN	LPV	1	0.9994	1	0.9992	4	0.9988
VVV	ORTONVILLE MUNI-MARTINSON FIELD	MN	LP	1	0.9995	1	0.9993	4	0.9990
CBG	CAMBRIDGE MUNI	MN	LPV	1	0.9994	1	0.9993	2	0.9992
CKN	CROOKSTON MUNI/KIRKWOOD FLD	MN	LPV	1	0.9994	1	0.9992	4	0.9987
CNB	MYERS FIELD	MN	LPV	1	0.9996	1	0.9993	3	0.9991

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
DTL	DETROIT LAKES-WETHING FIELD	MN	LPV	1	0.9994	1	0.9992	4	0.9990
FSE	FOSSTON MUNI	MN	LP	1	0.9994	1	0.9992	5	0.9990
BDE	BAUDETTE INTL	MN	LPV	1	0.9994	1	0.9992	4	0.9989
BRD	BRAINERD LAKES RGNL	MN	LPV200	1	0.9995	1	0.9992	3	0.9991
LJF	LITCHFIELD MUNI	MN	LPV	1	0.9996	1	0.9993	2	0.9992
LVN	AIRLAKE	MN	LPV200	1	0.9996	1	0.9994	2	0.9992
OTG	WORTHINGTON MUNI	MN	LPV200	1	1	2	0.9997	1	0.9992
AXN	CHANDLER FIELD	MN	LPV	1	0.9995	1	0.9992	4	0.9991
BDH	WILLMAR MUNI-JOHN L RICE FIELD	MN	LPV	1	0.9996	1	0.9993	3	0.9991
CKC	GRAND MARAIS/COOK COUNTY	MN	LPV	1	0.9993	1	0.9993	3	0.9992
FCM	FLYING CLOUD	MN	LPV200	1	0.9995	1	0.9994	2	0.9992
FRM	FAIRMONT MUNI	MN	LPV	0	1	2	0.9996	1	0.9992
GPZ	GRAND RAPIDS/ITASCA CO-GORDON NEWSTROM	MN	LPV	1	0.9994	1	0.9992	4	0.9990
ONA	WINONA MUNI-MAX CONRAD FLD	MN	LPV	2	0.9999	1	0.9995	1	0.9993
OWA	OWATONNA DEGNER RNGL	MN	LPV200	2	0.9997	1	0.9994	1	0.9992
ROX	ROSEAU MUNI/RUDY BILLBERG FIELD	MN	LPV	1	0.9994	1	0.9992	3	0.9988
RRT	WARROAD INTL MEMORIAL	MN	LPV	1	0.9994	1	0.9992	3	0.9988
STC	ST CLOUD RGNL	MN	LPV200	1	0.9995	1	0.9992	3	0.9991
BBB	BENSON MUNI	MN	LPV	1	0.9995	1	0.9993	4	0.9990
D39	SAUK CENTRE MUNI	MN	LP	1	0.9995	1	0.9992	3	0.9991
ELO	ELY MUNI	MN	LPV200	1	0.9993	1	0.9993	4	0.9991
BJI	BEMIDJI RGNL	MN	LPV200	1	0.9994	1	0.9992	6	0.9990
FFM	FERGUS FALLS MUNI-EINAR MICKELSON FLD	MN	LPV200	1	0.9995	1	0.9992	4	0.9990
MKT	MANKATO RGNL	MN	LPV200	1	0.9996	1	0.9994	1	0.9992
RWF	REDWOOD FALLS MUNI	MN	LPV	1	0.9996	1	0.9993	2	0.9992
AUM	AUSTIN MUNI	MN	LPV200	0	1	2	0.9996	1	0.9992
COQ	CLOQUET CARLTON COUNTY	MN	LPV	1	0.9994	1	0.9993	3	0.9991
HCD	HUTCHINSON MUNI-BUTLER FIELD	MN	LPV	1	0.9996	1	0.9993	2	0.9992
INL	FALLS INTL	MN	LPV	1	0.9994	1	0.9992	4	0.9990
JKJ	MOORHEAD MUNI	MN	LPV	1	0.9994	1	0.9992	4	0.9990
AEL	ALBERT LEA MUNI	MN	LPV	0	1	2	0.9996	1	0.9992
DXX	LAC QUI PARLE COUNTY	MN	LPV200	1	0.9996	1	0.9993	4	0.9991
FOZ	BIGFORK MUNICIPAL	MN	LP	1	0.9994	1	0.9992	5	0.9990
HIB	RANGE RGNL	MN	LPV200	1	0.9994	1	0.9992	4	0.9990
LYV	QUENTIN AANENSON FIELD	MN	LPV200	0	1	2	0.9997	2	0.9992
MML	SOUTHWEST MINNESOTA RGNL MARSHALL/RYAN FIELD	MN	LPV200	1	0.9997	1	0.9993	3	0.9991
PKD	PARK RAPIDS MUNI-KONSHOK FIELD	MN	LPV200	1	0.9994	1	0.9992	5	0.9990
ROS	RUSH CITY RGNL	MN	LPV	1	0.9994	1	0.9993	2	0.9992
SAZ	STAPLES MUNI	MN	LPV	1	0.9995	1	0.9992	4	0.9991
TWM	RICHARD B HELGESON	MN	LPV	1	0.9994	1	0.9993	3	0.9992

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
ANE	ANOKA COUNTY-BLAINE ARPT (JANES FIELD)	MN	LPV	1	0.9995	1	0.9993	2	0.9992
CQM	COOK MUNI	MN	LP	1	0.9994	1	0.9992	5	0.9990
DLH	DULUTH INTL	MN	LPV200	1	0.9994	1	0.9993	4	0.9991
ETH	WHEATON MUNI	MN	LP	1	0.9995	1	0.9993	4	0.9990
FKA	FILLMORE COUNTY	MN	LPV	0	1	3	0.9997	1	0.9992
LXL	LITTLE FALLS/MORRISON CO-LINDBERGH FLD	MN	LPV	1	0.9995	1	0.9992	3	0.9991
MZH	MOOSE LAKE CARLTON COUNTY	MN	LPV	1	0.9994	1	0.9993	3	0.9991
STL	LAMBERT-ST LOUIS INTL	MO	LPV200	0	1	0	1	0	1
M05	CARUTHERSVILLE MEM	MO	LPV	0	1	0	1	0	1
PLK	M. GRAHAM CLARK DOWNTOWN	MO	LPV200	0	1	0	1	0	1
RCM	SKYHAVEN	MO	LPV	0	1	0	1	0	1
SGF	SPRINGFIELD-BRANSON NATIONAL	MO	LPV	0	1	0	1	0	1
UBX	CUBA MUNI	MO	LPV	0	1	0	1	0	1
BUM	BUTLER MEMORIAL	MO	LPV	0	1	0	1	0	1
DMO	SEDALIA MEMORIAL	MO	LPV	0	1	0	1	0	1
EVU	NORTHWEST MISSOURI RGNL	MO	LPV	0	1	0	1	0	1
K02	PERRYVILLE MUNI	MO	LPV	0	1	0	1	0	1
K57	GOULD PETERSON MUNI	MO	LPV	0	1	0	1	0	1
LXT	LEE'S SUMMIT MUNI	MO	LPV	0	1	0	1	0	1
MHL	MARSHALL MEML MUNI	MO	LPV	0	1	0	1	0	1
VER	JESSE VIERTEL MEMORIAL	MO	LPV	0	1	0	1	0	1
6M6	LEWIS COUNTY RGNL	MO	LPV	0	1	0	1	0	1
GPH	MIDWEST NATIONAL AIR CENTER	MO	LPV	0	1	0	1	0	1
HIG	HIGGINSVILLE INDUSTRIAL MUNI	MO	LPV	0	1	0	1	0	1
LRV	LAWRENCE SMITH MEMORIAL	MO	LPV	0	1	0	1	0	1
MCI	KANSAS CITY INTL	MO	LPV	0	1	0	1	0	1
MO8	NORTH CENTRAL MISSOURI RGNL	MO	LPV	0	1	0	1	0	1
UNO	WEST PLAINS MUNI	MO	LPV	0	1	0	1	0	1
8WC	WASHINGTON COUNTY AIRPORT	MO	LPV	0	1	0	1	0	1
AIZ	LEE C FINE MEMORIAL	MO	LPV	0	1	0	1	0	1
CGI	CAPE GIRARDEAU RGNL	MO	LPV	0	1	0	1	0	1
EIW	COUNTY MEMORIAL	MO	LPV	0	1	0	1	0	1
FTT	ELTON HENSLEY MEMORIAL	MO	LPV	0	1	0	1	0	1
POF	POPLAR BLUFF MUNI	MO	LPV	0	1	0	1	0	1
SIK	SIKESTON MEML MUNI	MO	LPV	0	1	0	1	0	1
STJ	ROSECRANS MEMORIAL	MO	LPV200	0	1	0	1	0	1
SUS	SPIRIT OF ST LOUIS	MO	LPV200	0	1	0	1	0	1
TRX	TRENTON MUNI	MO	LPV	0	1	0	1	0	1
1H0	CREVE COEUR	MO	LPV	0	1	0	1	0	1
H79	ELDON MODEL AIRPARK	MO	LP	0	1	0	1	0	1
M17	BOLIVAR MUNI	MO	LPV	0	1	0	1	0	1
MYJ	MEXICO MEMORIAL	MO	LPV	0	1	0	1	0	1

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
TBN	WAYNESVILLE-ST ROBERT RGNL/FORNEY AAF	MO	LPV	0	1	0	1	0	1
UUV	SULLIVAN RGNL	MO	LPV	0	1	0	1	0	1
2H2	JERRY SUMNERS SR AURORA MUNICIPAL	MO	LP	0	1	0	1	0	1
CHT	CHILLICOTHE MUNI	MO	LPV	0	1	0	1	0	1
COU	COLUMBIA RGNL	MO	LPV	0	1	0	1	0	1
DXE	DEXTER MUNI	MO	LPV	0	1	0	1	0	1
HAE	HANNIBAL RGNL	MO	LPV	0	1	0	1	0	1
IRK	KIRKSVILLE RGNL	MO	LPV200	0	1	0	1	0	1
JEF	JEFFERSON CITY MEMORIAL	MO	LPV	0	1	0	1	0	1
BBG	BRANSON	MO	LPV200	0	1	0	1	0	1
FWB	BRANSON WEST MUNI-EMERSON FIELD	MO	LPV200	0	1	0	1	0	1
HFJ	MONETT MUNI	MO	LPV	0	1	0	1	0	1
MAW	MALDEN MUNI	MO	LPV	0	1	0	1	0	1
NVD	NEVADA MUNI	MO	LPV200	0	1	0	1	0	1
VIH	ROLLA NATIONAL	MO	LPV200	0	1	0	1	0	1
EOS	NEOSHO HUGH ROBINSON	MO	LPV	0	1	0	1	0	1
EZZ	CAMERON MEMORIAL	MO	LPV	0	1	0	1	0	1
FAM	FARMINGTON RGNL	MO	LPV	0	1	0	1	0	1
FYG	WASHINGTON RGNL	MO	LPV	0	1	0	1	0	1
H21	CAMDENTON MEMORIAL	MO	LPV	0	1	0	1	0	1
JLN	JOPLIN RGNL	MO	LPV	0	1	0	1	0	1
M48	HOUSTON MEMORIAL	MO	LPV	0	1	0	1	0	1
MBY	OMAR N BRADLEY	MO	LPV	0	1	0	1	0	1
MKC	CHARLES B. WHEELER DOWNTOWN	MO	LPV200	0	1	0	1	0	1
MJD	PICAYUNE MUNI	MS	LPV	0	1	0	1	1	0.9999
IDL	INDIANOLA MUNI	MS	LPV	0	1	0	1	1	1
HSA	STENNIS INTL	MS	LPV200	0	1	0	1	1	0.9999
GWO	GREENWOOD-LEFLORE	MS	LPV	0	1	0	1	0	1
GTR	GOLDEN TRIANGLE RGNL	MS	LPV200	0	1	0	1	0	1
GNF	GRENADA MUNI	MS	LPV	0	1	0	1	0	1
CRX	ROSCOE TURNER	MS	LPV200	0	1	0	1	0	1
M40	MONROE COUNTY	MS	LPV	0	1	0	1	0	1
GPT	GULFPORT-BILOXI INTL	MS	LPV200	0	1	0	1	1	1
87I	YAZOO COUNTY	MS	LPV	0	1	0	1	1	1
JVW	JOHN BELL WILLIAMS	MS	LPV200	0	1	0	1	1	1
HKS	HAWKINS FIELD	MS	LPV200	0	1	0	1	1	1
TUP	TUPELO RGNL	MS	LPV200	0	1	0	1	0	1
OLV	OLIVE BRANCH	MS	LPV	0	1	0	1	0	1
MCB	MC COMB-PIKE COUNTY-JOHN E LEWIS FIELD	MS	LPV	0	1	0	1	1	0.9999
M43	PRENTISS-JEFFERSON DAVIS COUNTY	MS	LPV	0	1	0	1	1	1
JAN	JACKSON-EVERS INTL	MS	LPV200	0	1	0	1	1	1
CKM	FLETCHER FIELD	MS	LPV	0	1	0	1	0	1
RNV	CLEVELAND MUNI	MS	LPV	0	1	0	1	1	1
PQL	TRENT LOTT INTL	MS	LPV200	0	1	0	1	1	1
MPE	PHILADELPHIA MUNI	MS	LPV	0	1	0	1	1	1

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
HBG	HATTIESBURG BOBBY L. CHAIN MUNI	MS	LPV200	0	1	0	1	1	1
GLH	MID DELTA RGNL	MS	LPV200	0	1	0	1	1	1
MEI	KEY FIELD	MS	LPV200	0	1	0	1	1	1
UTA	TUNICA MUNI	MS	LPV200	0	1	0	1	0	1
UOX	UNIVERSITY-OXFORD	MS	LPV	0	1	0	1	0	1
HEZ	HARDY-ANDERS FLD NATCHEZ-ADAMS COUNTY	MS	LPV	0	1	0	1	1	1
PIB	HATTIESBURG-LAUREL RGNL	MS	LPV200	0	1	0	1	1	1
STF	GEORGE M BRYAN	MS	LPV200	0	1	0	1	0	1
LUL	HESLER-NOBLE FIELD	MS	LPV	0	1	0	1	1	1
MSO	MISSOULA INTERNATIONAL	MT	LPV	0	1	2	1	6	0.9984
M75	MALTA	MT	LP	1	0.9997	2	0.9991	5	0.9983
7S0	RONAN	MT	LPV	0	1	0	1	6	0.9982
WYS	YELLOWSTONE	MT	LPV200	0	1	2	0.9999	6	0.9993
MLS	FRANK WILEY FIELD	MT	LPV	2	0.9999	2	0.9992	3	0.9985
HVR	HAVRE CITY-COUNTY	MT	LPV	1	0.9999	4	0.9996	5	0.9983
LWT	LEWISTOWN MUNI	MT	LPV200	0	1	2	0.9995	4	0.9986
GPI	GLACIER PARK INTL	MT	LPV	0	1	2	1.0000	5	0.9980
GTF	GREAT FALLS INTL	MT	LPV200	0	1	2	0.9997	7	0.9984
SBX	SHELBY	MT	LP	0	1	4	0.9998	6	0.9983
6S8	LAUREL MUNICIPAL	MT	LPV	0	1	2	0.9995	5	0.9986
GDV	DAWSON COMMUNITY	MT	LPV	1	0.9997	1	0.9991	3	0.9985
GGW	WOKAL FIELD/GLASGOW INTL	MT	LPV200	1	0.9996	1	0.9990	4	0.9984
BTM	BERT MOONEY	MT	LPV	0	1	2	0.9999	7	0.9987
4U6	CIRCLE TOWN COUNTY	MT	LPV	1	0.9997	1	0.9991	3	0.9985
1S3	TILLITT FIELD	MT	LPV	1	1.0000	1	0.9992	3	0.9985
PWD	SHER-WOOD	MT	LPV200	1	0.9995	1	0.9990	3	0.9982
SDY	SIDNEY-RICHLAND MUNI	MT	LPV	1	0.9996	1	0.9990	4	0.9986
OLF	L M CLAYTON	MT	LPV200	1	0.9996	1	0.9990	5	0.9985
HLN	HELENA RGNL	MT	LPV	0	1	1	0.9999	6	0.9984
BZN	GALLATIN FIELD	MT	LPV	0	1	2	0.9999	7	0.9985
RPX	ROUNDUP	MT	LPV	0	1	1	0.9993	4	0.9986
LVM	MISSION FIELD	MT	LP	0	1	1	0.9998	6	0.9985
BIL	BILLINGS LOGAN INTL	MT	LPV200	0	1	1	0.9993	4	0.9986
CYQM	Moncton Intl	NB	LPV	0	1	0	1	1	0.9999
CYCL	Charlo	NB	LPV	0	1	0	1	1	1
AKH	GASTONIA MUNI	NC	LPV	0	1	0	1	0	1
RWI	ROCKY MOUNT-WILSON RGNL	NC	LPV	0	1	0	1	0	1
INT	SMITH REYNOLDS	NC	LPV200	0	1	0	1	0	1
ONX	CURRITUCK COUNTY RGNL	NC	LPV	0	1	0	1	0	1
SOP	MOORE COUNTY	NC	LPV	0	1	0	1	0	1
TDF	PERSON COUNTY	NC	LPV200	0	1	0	1	0	1
RDU	RALEIGH-DURHAM INTL	NC	LPV200	0	1	0	1	0	1
AFP	ANSON COUNTY-JEFF CLOUD FLD	NC	LPV	0	1	0	1	0	1
EWN	COASTAL CAROLINA RGNL	NC	LPV	0	1	0	1	0	1
EXX	DAVIDSON COUNTY	NC	LPV	0	1	0	1	0	1
MWK	MOUNT AIRY/SURRY COUNTY	NC	LPV	0	1	0	1	0	1
SVH	STATESVILLE RGNL	NC	LPV	0	1	0	1	0	1

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
TTA	RALEIGH EXEC AT SANFORD-LEE COUNTY	NC	LPV200	0	1	0	1	0	1
BUY	BURLINGTON-ALAMANCE RGNL	NC	LPV200	0	1	0	1	0	1
CTZ	CLINTON-SAMPSON COUNTY	NC	LPV200	0	1	0	1	0	1
EYF	CURTIS L BROWN JR FIELD	NC	LPV200	0	1	0	1	0	1
JQF	CONCORD RGNL	NC	LPV	0	1	0	1	0	1
MEB	LAURINBURG-MAXTON	NC	LPV200	0	1	0	1	0	1
PGV	PITT-GREENVILLE	NC	LPV	0	1	0	1	0	1
AVL	ASHEVILLE RGNL	NC	LPV	0	1	0	1	0	1
ECG	ELIZABETH CITY CG AIR STATION/RGNL	NC	LPV	0	1	0	1	0	1
HKY	HICKORY RGNL	NC	LPV200	0	1	0	1	0	1
ILM	WILMINGTON INTL	NC	LPV200	0	1	0	1	0	1
OAJ	ALBERT J ELLIS	NC	LPV200	0	1	0	1	0	1
OCW	WARREN FIELD	NC	LPV	0	1	0	1	0	1
RUQ	ROWAN COUNTY	NC	LPV200	0	1	0	1	0	1
HNZ	HENDERSON-OXFORD	NC	LPV	0	1	0	1	0	1
IPJ	LINCOLN-TON-LINCOLN COUNTY RGNL	NC	LPV	0	1	0	1	0	1
EHO	SHELBY-CLEVELAND COUNTY RGNL	NC	LPV	0	1	0	1	0	1
EQY	MONROE RGNL	NC	LPV	0	1	0	1	0	1
FAY	FAYETTEVILLE RGNL/GRANNIS FIELD	NC	LPV200	0	1	0	1	0	1
ISO	KINSTON REGL JETPORT AT STALLINGS FLD	NC	LPV	0	1	0	1	0	1
LBT	LUMBERTON MUNI	NC	LPV	0	1	0	1	0	1
LHZ	TRIANGLE NORTH EXECUTIVE	NC	LPV200	0	1	0	1	0	1
MQI	DARE COUNTY RGNL	NC	LPV	0	1	0	1	0	1
GSO	PIEDMONT TRIAD INTL	NC	LPV200	0	1	0	1	0	1
SUT	CAPE FEAR RGNL JETPORT/HOWIE FRANKLIN FLD	NC	LPV	0	1	0	1	0	1
VUJ	STANLY COUNTY	NC	LPV200	0	1	0	1	0	1
DPL	DUPLIN COUNTY	NC	LPV200	0	1	0	1	0	1
EDE	NORTHEASTERN RGNL	NC	LPV200	0	1	0	1	0	1
FQD	RUTHERFORD CO/MARCHMAN FIELD	NC	LPV	0	1	0	1	0	1
GWW	WAYNE EXECUTIVE JETPORT	NC	LPV200	0	1	0	1	0	1
HRJ	HARNETT COUNTY	NC	LPV	0	1	0	1	0	1
IXA	HALIFAX-NORTHAMPTON RGNL	NC	LPV200	0	1	0	1	0	1
JNX	JOHNSTON COUNTY	NC	LPV200	0	1	0	1	0	1
MRH	MICHAEL J. SMITH FIELD	NC	LPV	0	1	0	1	0	1
MRN	FOOTHILLS RGNL	NC	LPV200	0	1	0	1	0	1
PMZ	PLYMOUTH MUNI	NC	LP	0	1	0	1	0	1
RCZ	RICHMOND COUNTY	NC	LPV	0	1	0	1	0	1
CLT	CHARLOTTE/DOUGLAS INTL	NC	LPV200	0	1	0	1	0	1
BAC	BARNES COUNTY MUNI	ND	LPV	1	0.9995	1	0.9993	3	0.9988
MOT	MINOT INTL	ND	LPV	1	0.9995	3	0.9994	4	0.9984

Airport Id	Airport Name	State/Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
D60	TIOGA MUNI	ND	LPV	1	0.9995	1	0.9990	4	0.9983
JMS	JAMESTOWN RGNL	ND	LPV200	1	0.9995	2	0.9994	3	0.9989
RUG	RUGBY MUNI	ND	LP	1	0.9995	2	0.9995	6	0.9987
D55	ROBERTSON FIELD	ND	LPV	1	0.9995	1	0.9992	5	0.9987
FAR	HECTOR INTL	ND	LPV200	1	0.9994	1	0.9992	4	0.9990
5N8	CASSELTON ROBERT MILLER RGNL	ND	LPV	1	0.9995	1	0.9993	4	0.9989
D09	BOTTINEAU MUNI	ND	LPV	1	0.9995	2	0.9993	5	0.9985
DIK	DICKINSON-THEODORE ROOSEVELT RGNL	ND	LPV200	2	0.9996	1	0.9991	4	0.9987
GFK	GRAND FORKS INTL	ND	LPV	1	0.9995	1	0.9992	4	0.9987
S25	WATFORD CITY MUNI	ND	LPV	1	0.9995	1	0.9990	4	0.9984
DVL	DEVILS LAKE RGNL	ND	LPV	1	0.9995	1	0.9993	5	0.9988
ISN	SLOULIN FLD INTL	ND	LPV200	1	0.9995	1	0.9990	4	0.9984
2C8	CAVALIER MUNI	ND	LPV	1	0.9995	1	0.9992	5	0.9987
BIS	BISMARCK MUNI	ND	LPV200	2	0.9995	2	0.9994	4	0.9988
GAF	HUTSON FIELD	ND	LPV	1	0.9995	1	0.9992	4	0.9987
GWR	GWINNER-ROGER MELROE FIELD	ND	LPV200	1	0.9995	1	0.9993	3	0.9989
HZE	MERCER COUNTY RGNL	ND	LPV	1	0.9995	1	0.9990	4	0.9986
BWP	HARRY STERN	ND	LPV	1	0.9995	1	0.9993	4	0.9990
6K3	CREIGHTON MUNI	NE	LPV	0	1	0	1	3	0.9994
8V2	STUART-ATKINSON MUNI	NE	LPV	0	1	0	1	3	0.9994
CDR	CHADRON MUNI	NE	LPV200	0	1	3	0.9997	1	0.9991
CZD	COZAD MUNI	NE	LPV	0	1	0	1	0	1
ODX	EVELYN SHARP FIELD	NE	LPV	0	1	0	1	1	1
OLU	COLUMBUS MUNI	NE	LPV	0	1	0	1	1	1
ONL	THE O'NEILL MUNI-JOHN L BAKER FIELD	NE	LPV	0	1	0	1	3	0.9994
RBE	ROCK COUNTY	NE	LPV	1	1	1	1	2	0.9994
SWT	SEWARD MUNICIPAL	NE	LPV	0	1	0	1	1	1
TIF	THOMAS COUNTY	NE	LPV	1	1	1	1	3	0.9996
93Y	DAVID CITY MUNI	NE	LPV	0	1	0	1	1	1
AUH	AURORA MUNICIPAL - AL POTTER FIELD	NE	LPV	0	1	0	1	0	1
BBW	BROKEN BOW MUNI	NE	LPV	0	1	0	1	1	1
GRN	GORDON MUNI	NE	LPV	0	1	2	0.9997	1	0.9992
MCK	MCCOOK RGNL	NE	LPV	0	1	0	1	2	1
OGA	SEARLE FIELD	NE	LPV	0	1	0	1	5	0.9998
FET	FREMONT MUNI	NE	LPV	0	1	0	1	1	1
GRI	CENTRAL NEBRASKA RGNL	NE	LPV	0	1	0	1	0	1
HDE	BREWSTER FIELD	NE	LPV	0	1	0	1	0	1
HSI	HASTINGS MUNI	NE	LPV	0	1	0	1	0	1
OMA	EPPLEY AIRFIELD	NE	LPV	0	1	0	1	1	0.9999
VTN	MILLER FIELD	NE	LPV	1	1	1	1	2	0.9992
0B4	HARTINGTON MUNI	NE	LPV	0	1	1	1	3	1
0V3	PIONEER VILLAGE FIELD	NE	LPV	0	1	0	1	0	1
12K	SUPERIOR MUNI	NE	LPV	0	1	0	1	0	1
4V9	ANTELOPE COUNTY	NE	LPV	0	1	0	1	1	0.9999
LCG	WAYNE MUNI	NE	LPV	0	1	0	1	2	0.9997
0C4	PENDER MUNI	NE	LPV	0	1	0	1	2	0.9998

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
ANW	AINSWORTH MUNI	NE	LPV200	1	1	1	1	2	0.9994
EAR	KEARNEY RGNL	NE	LPV200	0	1	0	1	0	1
PMV	PLATTSMOUTH MUNI	NE	LPV	0	1	0	1	1	1
SNY	SIDNEY MUNI/LLOYD W. CARR FIELD	NE	LPV	0	1	0	1	5	0.9995
BFF	WESTERN NEB. RGNL/WILLIAM B. HEILIG FIELD	NE	LPV	0	1	1	1	6	0.9991
BVN	ALBION MUNI	NE	LPV	0	1	0	1	1	0.9999
CEK	CRETE MUNICIPAL	NE	LPV	0	1	0	1	0	1
FBY	FAIRBURY MUNI	NE	LPV	0	1	0	1	0	1
JYR	YORK MUNICIPAL	NE	LPV	0	1	0	1	0	1
LNK	LINCOLN	NE	LPV	0	1	0	1	1	1
7V7	RED CLOUD MUNI	NE	LPV	0	1	0	1	0	1
9V5	MODISETT	NE	LPV	0	1	2	0.9997	1	0.9992
BIE	BEATRICE MUNI	NE	LPV200	0	1	0	1	0	1
FNB	BRENNER FIELD	NE	LPV	0	1	0	1	0	1
IML	IMPERIAL MUNI	NE	LPV	0	1	0	1	5	0.9997
MLE	MILLARD	NE	LPV	0	1	0	1	1	1
AFK	NEBRASKA CITY MUNI	NE	LPV	0	1	0	1	1	1
AHQ	WAHOO MUNI	NE	LPV	0	1	0	1	1	1
AIA	ALLIANCE MUNI	NE	LPV200	0	1	1	1	5	0.9994
FMZ	FAIRMONT STATE AIRFIELD	NE	LPV	0	1	0	1	0	1
GGF	GRANT MUNI	NE	LPV	0	1	0	1	5	0.9998
IBM	KIMBALL MUNI/ROBERT E ARRAJ FI	NE	LPV	0	1	0	1	5	0.9995
LBF	NORTH PLATTE RGNL AIRPORT LEE BIRD FIELD	NE	LPV	0	1	0	1	1	1
LXN	JIM KELLY FIELD	NE	LPV	0	1	0	1	0	1
OFK	KARL STEFAN MEMORIAL	NE	LPV	0	1	0	1	2	0.9999
OKS	GARDEN COUNTY	NE	LPV	0	1	0	1	7	0.9996
07K	CENTRAL CITY MUNI-LARRY REINEKE FIELD	NE	LPV	0	1	0	1	0	1
ASH	BOIRE FLD	NH	LPV	0	1	0	1	0	1
PSM	PORTSMOUTH INTL AT PEASE	NH	LPV200	0	1	0	1	0	1
LCI	LACONIA MUNI	NH	LPV	0	1	0	1	0	1
CON	CONCORD MUNI	NH	LPV	0	1	0	1	0	1
HIE	MOUNT WASHINGTON RGNL	NH	LPV	0	1	0	1	0	1
MHT	MANCHESTER	NH	LPV200	0	1	0	1	0	1
LEB	LEBANON MUNI	NH	LPV	0	1	0	1	0	1
EEN	DILLANT-HOPKINS	NH	LPV	0	1	0	1	0	1
CNH	CLAREMONT MUNI	NH	LP	0	1	0	1	0	1
DAW	SKYHAVEN	NH	LPV	0	1	0	1	0	1
47N	CENTRAL JERSEY RGNL	NJ	LP	0	1	0	1	0	1
ACY	ATLANTIC CITY INTL	NJ	LPV200	0	1	0	1	0	1
WWD	CAPE MAY COUNTY	NJ	LPV	0	1	0	1	0	1
MMU	MORRISTOWN MUNI	NJ	LPV200	0	1	0	1	0	1
N14	FLYING W	NJ	LPV	0	1	0	1	0	1
N40	SKY MANOR	NJ	LP	0	1	0	1	0	1
4N1	GREENWOOD LAKE	NJ	LP	0	1	0	1	0	1
39N	PRINCETON	NJ	LPV	0	1	0	1	0	1
EWR	NEWARK LIBERTY INTL	NJ	LPV	0	1	0	1	0	1

Airport Id	Airport Name	State/Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
MIV	MILLVILLE MUNI	NJ	LPV200	0	1	0	1	0	1
TEB	TETERBORO	NJ	LPV	0	1	0	1	0	1
VAY	SOUTH JERSEY RGNL	NJ	LP	0	1	0	1	0	1
CDW	ESSEX COUNTY	NJ	LPV	0	1	0	1	0	1
TTN	TRENTON MERCER	NJ	LPV200	0	1	0	1	0	1
CYDF	Deer Lake	NL	LPV	1	0.9999	2	0.9997	185	0.9885
LAM	LOS ALAMOS	NM	LP	0	1	0	1	3	0.9997
ONM	SOCORRO MUNI	NM	LP	0	1	1	0.9999	4	0.9993
ABQ	ALBUQUERQUE INTL SUNPORT	NM	LPV	0	1	0	1	2	0.9996
SRR	SIERRA BLANCA RGNL	NM	LPV200	0	1	1	0.9999	1	0.9991
FMN	FOUR CORNERS RGNL	NM	LPV200	0	1	0	1	4	0.9999
DMN	DEMING MUNI	NM	LPV	0	1	2	0.9993	1	0.9984
SVC	GRANT COUNTY	NM	LPV	0	1	3	0.9997	2	0.9986
HOB	LEA COUNTY RGNL	NM	LPV200	2	0.9999	2	0.9999	2	0.9991
CNM	CAVERN CITY AIR TRML	NM	LP	1	0.9995	2	0.9995	1	0.9987
CVN	CLOVIS MUNI	NM	LPV	0	1	0	1	3	0.9997
ROW	ROSWELL INTERNATIONAL AIR CENTER	NM	LPV	2	0.9999	2	0.9999	2	0.9993
CYHZ	Halifax / Stanfield Intl	NS	LPV	0	1	0	1	2	0.9998
CYEV	Inuvik	NT	LPV	2	0.9999	2	0.9998	8	0.9989
RTS	RENO/STEAD	NV	LPV	0	1	0	1	3	0.9997
TPH	TONOPAH	NV	LP	0	1	0	1	4	0.9997
RNO	RENO/TAHOE INTL	NV	LPV	0	1	0	1	4	0.9997
WMC	WINNEMUCCA MUNI	NV	LPV	0	1	0	1	3	0.9998
LAS	MC CARRAN INTL	NV	LPV	0	1	0	1	4	0.9997
ELY	ELY ARPT-YELLAND FLD	NV	LPV	0	1	0	1	2	0.9998
9G0	BUFFALO AIRFIELD	NY	LP	0	1	0	1	0	1
NY0	FULTON COUNTY	NY	LPV	0	1	0	1	0	1
HPN	WESTCHESTER COUNTY	NY	LPV	0	1	0	1	0	1
PEO	PENN YAN	NY	LPV	0	1	0	1	0	1
SLK	ADIRONDACK RGNL	NY	LPV200	0	1	0	1	0	1
OLE	CATTARAUGUS COUNTY-OLEAN	NY	LPV	0	1	0	1	0	1
POU	DUTCHESS COUNTY	NY	LPV	0	1	0	1	0	1
SWF	STEWART INTL	NY	LPV200	0	1	0	1	0	1
VGC	HAMILTON MUNI	NY	LPV	0	1	0	1	0	1
44N	SKY ACRES	NY	LPV	0	1	0	1	0	1
D38	CANANDAIGUA	NY	LP	0	1	0	1	0	1
FOK	FRANCIS S. GABRESKI	NY	LPV200	0	1	0	1	0	1
ISP	LONG ISLAND MAC ARTHUR	NY	LPV200	0	1	0	1	0	1
PBG	PLATTSBURGH INTL	NY	LPV	0	1	0	1	0	1
06N	RANDALL	NY	LP	0	1	0	1	0	1
1B1	COLUMBIA COUNTY	NY	LPV	0	1	0	1	0	1
ART	WATERTOWN INTL	NY	LPV200	0	1	0	1	0	1
BUF	BUFFALO NIAGARA INTL	NY	LPV200	0	1	0	1	0	1
ELM	ELMIRA/CORNING RGNL	NY	LPV200	0	1	0	1	0	1
FZY	OSWEGO COUNTY	NY	LPV	0	1	0	1	0	1
K09	PISECO	NY	LP	0	1	0	1	0	1
SCH	SCHENECTADY COUNTY	NY	LPV200	0	1	0	1	0	1
SDC	WILLIAMSON-SODUS	NY	LPV	0	1	0	1	0	1
ELZ	WELLSVILLE MUNI ARPT	NY	LPV	0	1	0	1	0	1

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
JHW	CHAUTAUQUA COUNTY/JAMESTOWN	NY	LPV200	0	1	0	1	0	1
MSV	SULLIVAN COUNTY INTL	NY	LPV	0	1	0	1	0	1
N66	ONEONTA MUNI	NY	LPV	0	1	0	1	0	1
ROC	GREATER ROCHESTER INTL	NY	LPV200	0	1	0	1	0	1
4B6	TICONDEROGA MUNI	NY	LPV	0	1	0	1	0	1
GVQ	BATAVIA	NY	LPV200	0	1	0	1	0	1
HWV	BROOKHAVEN	NY	LPV	0	1	0	1	0	1
IAG	NIAGARA FALLS INTL	NY	LPV	0	1	0	1	0	1
RME	GRIFFISS INTL	NY	LPV200	0	1	0	1	0	1
SYR	SYRACUSE HANCOCK INTL	NY	LPV200	0	1	0	1	0	1
ALB	ALBANY INTL	NY	LPV200	0	1	0	1	0	1
HTF	HORNELL MUNI	NY	LPV	0	1	0	1	0	1
OGS	OGDENSBURG INTL	NY	LPV	0	1	0	1	0	1
FRG	REPUBLIC	NY	LPV200	0	1	0	1	0	1
GFL	FLOYD BENNETT MEMORIAL	NY	LPV	0	1	0	1	0	1
HTO	EAST HAMPTON	NY	LPV	0	1	0	1	0	1
ITH	ITHACA TOMPKINS RGNL	NY	LPV	0	1	0	1	0	1
JFK	JOHN F KENNEDY INTL	NY	LPV	0	1	0	1	0	1
LGA	LA GUARDIA	NY	LPV200	0	1	0	1	0	1
5B2	SARATOGA COUNTY	NY	LPV	0	1	0	1	0	1
5G0	LE ROY	NY	LP	0	1	0	1	0	1
7G0	LEDGEDALE AIRPARK	NY	LPV	0	1	0	1	0	1
MAL	MALONE-DUFORT	NY	LPV	0	1	0	1	0	1
MGJ	ORANGE COUNTY	NY	LPV	0	1	0	1	0	1
MSS	MASSENA INTL-RICHARDS FIELD	NY	LPV	0	1	0	1	0	1
BGM	GREATER BINGHAMTON /EDWIN A LINK FIELD	NY	LPV200	0	1	0	1	0	1
TDZ	TOLEDO EXECUTIVE	OH	LP	0	1	0	1	0	1
MGY	DAYTON-WRIGHT BROTHERS	OH	LPV	0	1	0	1	0	1
CLE	CLEVELAND-HOPKINS INTL	OH	LPV200	0	1	0	1	0	1
LHQ	FAIRFIELD COUNTY	OH	LPV200	0	1	0	1	0	1
LNN	WILLOUGHBY	OH	LPV	0	1	0	1	0	1
MWO	MIDDLETOWN REGIONAL/HOOK FIELD	OH	LPV	0	1	0	1	0	1
TSO	CARROLL COUNTY-TOLSON	OH	LP	0	1	0	1	0	1
UYF	MADISON COUNTY	OH	LPV	0	1	0	1	0	1
413	KNOX COUNTY	OH	LPV200	0	1	0	1	0	1
DLZ	DELAWARE MUNI	OH	LPV	0	1	0	1	0	1
PMH	GREATER PORTSMOUTH RGNL	OH	LPV	0	1	0	1	0	1
RZT	ROSS COUNTY	OH	LPV	0	1	0	1	0	1
TOL	TOLEDO EXPRESS	OH	LPV200	0	1	0	1	0	1
TZR	BOLTON FIELD	OH	LPV200	0	1	0	1	0	1
0G6	WILLIAMS COUNTY	OH	LPV	0	1	0	1	0	1
CMH	PORT COLUMBUS INTL	OH	LPV200	0	1	0	1	0	1
HAO	BUTLER CO RGNL	OH	LPV	0	1	0	1	0	1
LCK	RICKENBACKER INTL	OH	LPV200	0	1	0	1	0	1
LPR	LORAIN COUNTY RGNL	OH	LPV200	0	1	0	1	0	1
MNN	MARION MUNI	OH	LPV	0	1	0	1	0	1
MRT	UNION COUNTY	OH	LP	0	1	0	1	0	1

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
OWX	PUTNAM COUNTY	OH	LPV	0	1	0	1	0	1
UNI	OHIO UNIVERSITY SNYDER FIELD	OH	LPV200	0	1	0	1	0	1
1G0	WOOD COUNTY	OH	LPV	0	1	0	1	0	1
1G3	KENT STATE UNIV	OH	LPV	0	1	0	1	0	1
BKL	BROOKHAVEN	OH	LPV	0	1	0	1	0	1
I68	LEBANON-WARREN COUNTY	OH	LPV	0	1	0	1	0	1
I69	CLERMONT COUNTY	OH	LP	0	1	0	1	0	1
16G	SENECA COUNTY	OH	LPV	0	1	0	1	0	1
CQA	LAKEFIELD	OH	LPV	0	1	0	1	0	1
EDJ	BELLEFONTAINE RGNL	OH	LPV	0	1	0	1	0	1
FDY	FINDLAY	OH	LPV	0	1	0	1	0	1
S24	SANDUSKY COUNTY RGNL	OH	LPV	0	1	0	1	0	1
SGH	SPRINGFIELD-BECKLEY MUNI	OH	LPV200	0	1	0	1	0	1
USE	FULTON COUNTY	OH	LPV	0	1	0	1	0	1
CAK	AKRON-CANTON RGNL	OH	LPV200	0	1	0	1	0	1
FZI	FOSTORIA METROPOLITAN	OH	LPV	0	1	0	1	0	1
HZY	ASHTABULA COUNTY	OH	LPV	0	1	0	1	0	1
I66	CLINTON FIELD	OH	LPV	0	1	0	1	0	1
ILN	AIRBORNE AIRPARK	OH	LPV200	0	1	0	1	0	1
OSU	OHIO STATE UNIVERSITY	OH	LPV200	0	1	0	1	0	1
OXD	MIAMI UNIVERSITY	OH	LPV	0	1	0	1	0	1
PHD	HARRY CLEVER FIELD	OH	LP	0	1	0	1	0	1
6G5	BARNESVILLE-BRADFIELD	OH	LP	0	1	0	1	0	1
AOH	LIMA ALLEN COUNTY	OH	LPV200	0	1	0	1	0	1
AXV	NEIL ARMSTRONG	OH	LPV	0	1	0	1	0	1
CGF	CUYAHOGA COUNTY	OH	LPV	0	1	0	1	0	1
CXY	CAPITAL CITY	OH	LPV	0	1	0	1	0	1
GQQ	GALION MUNI	OH	LP	0	1	0	1	0	1
I19	GREENE COUNTY-LEWIS A JACKSON RGNL	OH	LPV	0	1	0	1	0	1
MFD	MANSFIELD LAHM RGNL	OH	LPV200	0	1	0	1	0	1
PCW	CARL R KELLER FIELD	OH	LPV	0	1	0	1	0	1
BJJ	WAYNE COUNTY	OH	LPV	0	1	0	1	0	1
DAY	JAMES M COX DAYTON INTL	OH	LPV200	0	1	0	1	0	1
I74	GRIMES FIELD	OH	LPV	0	1	0	1	0	1
LUK	CINCINNATI MUNI AIRPORT-LUNKEN FIELD	OH	LPV	0	1	0	1	0	1
YNG	YOUNGSTOWN/WARREN RGNL	OH	LPV	0	1	0	1	0	1
OWP	WILLIAM R. POGUE MUNI	OK	LPV	0	1	0	1	0	1
PNC	PONCA CITY RGNL	OK	LPV	0	1	0	1	0	1
RCE	CLARENCE E. PAGE MUNI	OK	LPV	0	1	0	1	0	1
TUL	TULSA INTL	OK	LPV200	0	1	0	1	0	1
AXS	ALTUS/QUARTZ MOUNTAIN RGNL	OK	LPV	0	1	0	1	0	1
CSM	CLINTON-SHERMAN	OK	LPV200	0	1	0	1	0	1
GUY	GUYMON MUNI	OK	LPV	0	1	0	1	0	1
HSD	SUNDANCE AIRPARK	OK	LPV	0	1	0	1	0	1
WDG	ENID WOODRING RGNL	OK	LPV200	0	1	0	1	0	1
ADH	ADA MUNI	OK	LPV	0	1	0	1	0	1
CLK	CLINTON RGNL	OK	LPV200	0	1	0	1	0	1

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
TQH	TAHLEQUAH MUNI	OK	LPV	0	1	0	1	0	1
WWR	WEST WOODWARD	OK	LPV	0	1	0	1	0	1
BVO	BARTLESVILLE MUNI	OK	LPV	0	1	0	1	0	1
F22	PERRY MUNI	OK	LPV	0	1	0	1	0	1
HBR	HOBART MUNI	OK	LPV	0	1	0	1	0	1
OUN	UNIVERSITY OF OKLAHOMA WESTHEIMER	OK	LPV200	0	1	0	1	0	1
GCM	CLAREMORE RGNL	OK	LPV	0	1	0	1	0	1
BKN	BLACKWELL-TONKAWA MUNI	OK	LPV	0	1	0	1	0	1
MKO	DAVIS FIELD	OK	LPV	0	1	0	1	0	1
PVJ	PAULS VALLEY MUNI	OK	LPV200	0	1	0	1	0	1
RVS	RICHARD LLOYD JONES JR	OK	LPV	0	1	0	1	0	1
SWO	STILLWATER RGNL	OK	LPV	0	1	0	1	0	1
1F0	ARDMORE DOWNTOWN EXECUTIVE	OK	LP	0	1	0	1	0	1
ADM	ARDMORE MUNI	OK	LPV200	0	1	0	1	0	1
OKC	WILL ROGERS WORLD	OK	LPV200	0	1	0	1	0	1
SNL	SHAWNEE RGNL	OK	LPV200	0	1	0	1	0	1
DUA	EAKER FIELD	OK	LPV	0	1	0	1	0	1
MLC	MC ALESTER RGNL	OK	LPV	0	1	0	1	0	1
PWA	WILEY POST	OK	LPV200	0	1	0	1	0	1
80F	ANTLERS MUNI	OK	LPV	0	1	0	1	0	1
CHK	CHICKASHA MUNI	OK	LPV200	0	1	0	1	0	1
DUC	HALLIBURTON FIELD	OK	LPV	0	1	0	1	0	1
ELK	ELK CITY RGNL BUSINESS	OK	LPV	0	1	0	1	0	1
FDR	FREDERICK RGNL	OK	LPV200	0	1	0	1	0	1
GMJ	GROVE MUNI	OK	LPV	0	1	0	1	0	1
GOK	GUTHRIE-EDMOND RGNL	OK	LPV	0	1	0	1	0	1
GZL	STIGLER RGNL	OK	LPV	0	1	0	1	0	1
OKM	OKMULGEE RGNL	OK	LPV	0	1	0	1	0	1
CYXL	Sioux Lookout	ON	LPV	1	0.9993	1	0.9992	6	0.9988
CYHD	Dryden Regional	ON	LPV	1	0.9993	1	0.9992	5	0.9987
CNS7	Kincardine	ON	LPV	0	1	0	1	0	1
CYKF	Kitchener / Waterloo	ON	LPV	0	1	0	1	0	1
CYOW	Ottawa / MacdonaldCartier Intl	ON	LPV	0	1	0	1	0	1
CYTS	Timmins / Victor M Power	ON	LPV	0	1	0	1	4	0.9996
CYQT	Thunder Bay	ON	LPV	1	0.9993	1	0.9993	3	0.9992
HIO	PORTLAND-HILLSBORO	OR	LPV200	0	1	1	1	4	0.9989
LGD	LA GRANDE/UNION COUNTY	OR	LPV	0	1	0	1	7	0.9990
AST	ASTORIA RGNL	OR	LPV	0	1	2	0.9998	2	0.9990
ONO	ONTARIO MUNI	OR	LPV	0	1	0	1	5	0.9997
UAO	AURORA STATE	OR	LPV	0	1	0	1	3	0.9991
LMT	KLAMATH FALLS	OR	LPV	0	1	0	1	3	0.9995
MMV	MCMINNVILLE MUNI	OR	LPV	0	1	0	1	3	0.9990
S33	MADRAS MUNICIPAL	OR	LPV	0	1	0	1	4	0.9991
SPB	SCAPPOOSE INDUSTRIAL AIRPARK	OR	LPV	0	1	1	1	3	0.9989
GCD	GRANT CO RGNL/OGILVIE FIELD	OR	LPV	0	1	0	1	7	0.9993
BDN	BEND MUNI	OR	LPV	0	1	0	1	4	0.9991
EUG	MAHLON SWEET FIELD	OR	LPV200	0	1	0	1	4	0.9991

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
CVO	CORVALLIS MUNI	OR	LPV200	0	1	0	1	4	0.9991
SLE	MCNARY FLD	OR	LPV200	0	1	0	1	3	0.9991
RDM	ROBERTS FIELD	OR	LPV200	0	1	0	1	4	0.9991
PDT	EASTERN OREGON RGNL AT PENDLETON	OR	LPV200	0	1	0	1	7	0.9990
PDX	PORTLAND INTL	OR	LPV200	0	1	0	1	4	0.9989
AOO	ALTOONA-BLAIR COUNTY	PA	LPV	0	1	0	1	0	1
VVS	JOSEPH A. HARDY CONNELLSVILLE	PA	LPV200	0	1	0	1	0	1
FKL	VENANGO RGNL	PA	LPV	0	1	0	1	0	1
LNS	LANCASTER	PA	LPV	0	1	0	1	0	1
LOM	WINGS FIELD	PA	LPV	0	1	0	1	0	1
MDT	HARRISBURG INTL	PA	LPV	0	1	0	1	0	1
OYM	ST MARYS MUNI	PA	LPV	0	1	0	1	0	1
PIT	PITTSBURGH INTL	PA	LPV200	0	1	0	1	0	1
PSB	MID STATE	PA	LPV	0	1	0	1	0	1
THV	YORK	PA	LP	0	1	0	1	0	1
ABE	LEHIGH VALLEY INTL	PA	LPV	0	1	0	1	0	1
BTP	BUTLER COUNTY/K W SCHOLTER FLD	PA	LPV	0	1	0	1	0	1
HMZ	BEDFORD COUNTY	PA	LPV	0	1	0	1	0	1
IPT	WILLIAMSPORT RGNL	PA	LPV	0	1	0	1	0	1
LBE	ARNOLD PALMER RGNL	PA	LPV	0	1	0	1	0	1
N79	NORTHUMBERLAND COUNTY	PA	LPV	0	1	0	1	0	1
PNE	NORTHEAST PHILADELPHIA	PA	LPV	0	1	0	1	0	1
WBW	WILKES-BARRE WYOMING VALLEY	PA	LPV	0	1	0	1	0	1
AXQ	CLARION COUNTY	PA	LPV	0	1	0	1	0	1
UCP	NEW CASTLE MUNI	PA	LPV	0	1	0	1	0	1
UKT	QUAKERTOWN	PA	LP	0	1	0	1	0	1
8G2	CORRY-LAWRENCE	PA	LPV	0	1	0	1	0	1
JST	JOHN MURTHA JOHNSTOWN-CAMBRIA COUNTY	PA	LPV200	0	1	0	1	0	1
PHL	PHILADELPHIA INTL	PA	LPV	0	1	0	1	0	1
RDG	READING RGNL/CARL A SPAATZ FLD	PA	LPV	0	1	0	1	0	1
RVL	MIFFLIN COUNTY	PA	LPV	0	1	0	1	0	1
WAY	GREENE COUNTY	PA	LPV	0	1	0	1	0	1
ZER	SCHUYLKILL COUNTY/JOE ZERBEY	PA	LPV200	0	1	0	1	0	1
AFJ	WASHINGTON COUNTY	PA	LPV200	0	1	0	1	0	1
AGC	ALLEGHENY COUNTY	PA	LPV200	0	1	0	1	0	1
AVP	WILKES-BARRE/SCRANTON INTL	PA	LPV	0	1	0	1	0	1
FWQ	ROSTRAVER	PA	LPV	0	1	0	1	0	1
22N	JAKE ARNER MEMORIAL	PA	LP	0	1	0	1	0	1
2G9	SOMERSET COUNTY	PA	LPV	0	1	0	1	0	1
BVI	BEAVER FALLS MUNI	PA	LPV	0	1	0	1	0	1
MQS	CHESTER COUNTY G O CARLSON	PA	LPV	0	1	0	1	0	1
UNV	UNIVERSITY PARK	PA	LPV200	0	1	0	1	0	1

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
XLL	ALLENTOWN-QUEEN CITY MUNI	PA	LP	0	1	0	1	0	1
8N8	DANVILLE	PA	LP	0	1	0	1	0	1
9D4	DECK	PA	LPV	0	1	0	1	0	1
DUJ	DUBOIS RGNL	PA	LPV200	0	1	0	1	0	1
FIG	CLEARFIELD-LAWRENCE	PA	LPV	0	1	0	1	0	1
GKJ	PORT MEADVILLE	PA	LP	0	1	0	1	0	1
MPO	POCONO MOUNTAINS MUNI	PA	LPV	0	1	0	1	0	1
BFD	BRADFORD RGNL	PA	LPV200	0	1	0	1	0	1
HZL	HAZLETON MUNI	PA	LPV	0	1	0	1	0	1
N38	WELLSBORO JOHNSTON	PA	LP	0	1	0	1	0	1
ERI	ERIE INTL/TOM RIDGE FIELD	PA	LPV	0	1	0	1	0	1
CYFY	Amos	QC	LPV	0	1	0	1	3	0.9997
CSR3	Victoriaville	QC	LPV	0	1	0	1	0	1
CYIF	StAugustin	QC	LPV	2	0.9999	2	0.9996	107	0.9945
CYMX	Montreal (Mirabel Intl)	QC	LPV	0	1	0	1	0	1
CYRQ	TroisRivieres	QC	LPV	0	1	0	1	0	1
CYQB	Quebec / Jean Lesage Intl	QC	LPV	0	1	0	1	0	1
CYYY	MontJoli	QC	LPV	0	1	0	1	0	1
CYVB	Bonaventure	QC	LPV	0	1	0	1	2	0.9999
CPN8	Opinaca	QC	LPV	2	0.9998	2	0.9996	4	0.9989
CTP9	Kattiniq / Donaldson	QC	LPV	2	0.9994	4	0.9989	79	0.9936
CYRI	RiviereduLoup	QC	LPV	0	1	0	1	0	1
CYVP	Kuujuuaq	QC	LPV	4	0.9993	3	0.9988	28	0.9965
CYHU	Montreal / StHubert	QC	LPV	0	1	0	1	0	1
BID	BLOCK ISLAND STATE	RI	LPV	0	1	0	1	0	1
OQU	QUONSET STATE	RI	LPV	0	1	0	1	0	1
PVD	THEODORE FRANCIS GREEN STATE	RI	LPV200	0	1	0	1	0	1
ARW	BEAUFORT COUNTY	SC	LPV200	0	1	0	1	0	1
SMS	SUMTER	SC	LPV200	0	1	0	1	0	1
JZI	CHARLESTON EXECUTIVE	SC	LPV200	0	1	0	1	0	1
GGE	GEORGETOWN COUNTY	SC	LPV200	0	1	0	1	0	1
DYB	SUMMERVILLE	SC	LPV200	0	1	0	1	0	1
CRE	GRAND STRAND	SC	LPV200	0	1	0	1	0	1
CDN	WOODWARD FIELD	SC	LPV	0	1	0	1	0	1
BNL	BARNWELL RGNL	SC	LPV	0	1	0	1	0	1
UZA	ROCK HILL/YORK CO/BRYANT FIELD	SC	LPV200	0	1	0	1	0	1
HYW	CONWAY-HORRY COUNTY	SC	LPV	0	1	0	1	0	1
FDW	FAIRFIELD COUNTY	SC	LPV	0	1	0	1	0	1
CHS	CHARLESTON AFB/INTL	SC	LPV200	0	1	0	1	0	1
GSP	GREENVILLE-SPARTANBURG INTL - ROGER MILLIKEN	SC	LPV200	0	1	0	1	0	1
GMU	GREENVILLE DOWNTOWN	SC	LPV200	0	1	0	1	0	1
DCM	CHESTER CATAWBA RGNL	SC	LPV	0	1	0	1	0	1
OGB	ORANGEBURG MUNI	SC	LPV200	0	1	0	1	0	1
GYH	DONALDSON CENTER	SC	LPV	0	1	0	1	0	1
AIK	AIKEN MUNI	SC	LPV200	0	1	0	1	0	1
SPA	SPARTANBURG DOWNTOWN MEMORIAL	SC	LPV200	0	1	0	1	0	1

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
UDG	DARLINGTON COUNTY JETPORT	SC	LPV	0	1	0	1	0	1
RBW	LOWCOUNTRY RGNL	SC	LPV200	0	1	0	1	0	1
MYR	MYRTLE BEACH INTL	SC	LPV200	0	1	0	1	0	1
MKS	BERKELEY COUNTY	SC	LPV	0	1	0	1	0	1
FLO	FLORENCE RGNL	SC	LPV	0	1	0	1	0	1
LQK	PICKENS COUNTY	SC	LPV	0	1	0	1	0	1
LRO	MT PLEASANT RGNL-FAISON FIELD	SC	LPV	0	1	0	1	0	1
BBP	MARLBORO COUNTY JETPORT-H E AVENT FIELD	SC	LPV	0	1	0	1	0	1
6J0	LEXINGTON COUNTY AT PELION	SC	LPV	0	1	0	1	0	1
AND	ANDERSON RGNL	SC	LPV200	0	1	0	1	0	1
CEU	OCONEE COUNTY RGNL	SC	LPV200	0	1	0	1	0	1
LKR	LANCASTER COUNTY-MC WHIRTER FIELD	SC	LPV200	0	1	0	1	0	1
CAE	COLUMBIA METROPOLITAN	SC	LPV200	0	1	0	1	0	1
BKX	BROOKINGS RGNL	SD	LPV	1	0.9999	2	0.9995	2	0.9989
FSD	JOE FOSS FIELD	SD	LPV200	0	1	2	0.9997	2	0.9991
PIR	PIERRE RGNL	SD	LPV	2	0.9998	1	0.9994	1	0.9990
ATY	WATERTOWN RGNL	SD	LPV200	1	0.9997	1	0.9994	3	0.9990
49B	STURGIS MUNI	SD	LPV	1	1	2	0.9993	1	0.9991
MDS	MADISON MUNI	SD	LPV	1	0.9999	2	0.9995	2	0.9990
YKN	CHAN GURNEY MUNI	SD	LPV200	0	1	1	1	3	0.9993
SPF	BLACK HILLS-CLYDE ICE FIELD	SD	LPV	0	1	2	0.9993	2	0.9991
ABR	ABERDEEN RGNL	SD	LPV200	1	0.9995	1	0.9992	3	0.9989
MBG	MOBRIDGE MUNI	SD	LPV	1	0.9993	2	0.9993	1	0.9989
HON	HURON RGNL	SD	LPV200	1	0.9999	2	0.9996	2	0.9991
EFC	BELLE FOURCHE MUNI	SD	LPV	1	1	2	0.9993	2	0.9991
VMR	HAROLD DAVIDSON FIELD	SD	LPV	0	1	1	1	3	0.9995
9D1	GREGORY MUNI - FLYNN FIELD	SD	LPV	0	1	0	1	2	0.9992
0D8	GETTYSBURG MUNI	SD	LPV200	1	0.9994	1	0.9994	1	0.9990
MHE	MITCHELL MUNI	SD	LPV	1	1	2	0.9996	2	0.9991
MKA	MILLER MUNI	SD	LPV200	1	0.9997	2	0.9994	2	0.9991
RAP	RAPID CITY RGNL	SD	LPV200	0	1	3	0.9994	1	0.9991
ICR	WINNER RGNL	SD	LPV	0	1	1	0.9999	2	0.9992
HSR	HOT SPRINGS MUNI	SD	LP	0	1	2	0.9996	1	0.9991
CKQ8	McArthur River	SK	LPV	2	0.9993	3	0.9986	7	0.9972
CYKJ	Key Lake	SK	LPV	3	0.9993	3	0.9988	9	0.9972
FYM	FAYETTEVILLE MUNI	TN	LPV	0	1	0	1	0	1
BNA	NASHVILLE INTL	TN	LPV200	0	1	0	1	0	1
MEM	MEMPHIS INTL	TN	LPV200	0	1	0	1	0	1
RKW	ROCKWOOD MUNI	TN	LPV	0	1	0	1	0	1
FYE	FAYETTE CO	TN	LPV	0	1	0	1	0	1
GKT	GATLINBURG-PIGEON FORGE	TN	LPV	0	1	0	1	0	1
M91	SPRINGFIELD ROBERTSON COUNTY	TN	LPV	0	1	0	1	0	1
MKL	MC KELLAR-SIPES RGNL	TN	LPV200	0	1	0	1	0	1
MOR	MOORE-MURRELL	TN	LPV	0	1	0	1	0	1
PHT	HENRY COUNTY	TN	LPV200	0	1	0	1	0	1

Airport Id	Airport Name	State/Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
SNH	SAVANNAH-HARDIN COUNTY	TN	LPV	0	1	0	1	0	1
SYI	BOMAR FIELD-SHELBYVILLE MUNI	TN	LPV	0	1	0	1	0	1
TRI	TRI-CITIES RGNL TN/VA	TN	LPV200	0	1	0	1	0	1
UCY	EVERETT-STEWART RGNL	TN	LPV200	0	1	0	1	0	1
CKV	OUTLAW FIELD	TN	LPV	0	1	0	1	0	1
MQY	SMYRNA	TN	LPV	0	1	0	1	0	1
MRC	MAURY COUNTY	TN	LPV	0	1	0	1	0	1
NQA	MILLINGTON RGNL JETPORT	TN	LPV	0	1	0	1	0	1
PVE	BEECH RIVER RGNL	TN	LPV	0	1	0	1	0	1
BGF	WINCHESTER MUNI	TN	LPV	0	1	0	1	0	1
CSV	CROSSVILLE MEMORIAL-WHITSON FIELD	TN	LPV200	0	1	0	1	0	1
DKX	KNOXVILLE DOWNTOWN ISLAND	TN	LPV	0	1	0	1	0	1
SRB	UPPER CUMBERLAND RGNL	TN	LPV200	0	1	0	1	0	1
SZY	ROBERT SIBLEY	TN	LPV	0	1	0	1	0	1
GZS	ABERNATHY FIELD	TN	LPV	0	1	0	1	0	1
M01	GENERAL DEWITT SPAIN	TN	LPV	0	1	0	1	0	1
MBT	MURFREESBORO MUNI	TN	LPV	0	1	0	1	0	1
TYS	MCGHEE-TYSON	TN	LPV	0	1	0	1	0	1
0A3	SMITHVILLE MUNI	TN	LP	0	1	0	1	0	1
1A3	MARTIN CAMPBELL FIELD	TN	LP	0	1	0	1	0	1
0M3	JOHN A BAKER	TN	LP	0	1	0	1	0	1
CHA	LOVELL FIELD	TN	LPV200	0	1	0	1	0	1
LUG	ELLINGTON	TN	LPV	0	1	0	1	0	1
M33	SUMNER COUNTY RGNL	TN	LP	0	1	0	1	0	1
0M4	BENTON COUNTY	TN	LPV	0	1	0	1	0	1
1M5	PORTLAND MUNI	TN	LPV	0	1	0	1	0	1
2A0	MARK ANTON	TN	LPV	0	1	0	1	0	1
2M8	CHARLES W. BAKER	TN	LPV	0	1	0	1	0	1
DYR	DYERSBURG RGNL	TN	LPV	0	1	0	1	0	1
JWN	JOHN C. TUNE	TN	LPV	0	1	0	1	0	1
MMI	MCMINN COUNTY	TN	LPV	0	1	0	1	0	1
THA	TULLAHOMA RGNL/WM NORTHERN FLD	TN	LPV	0	1	0	1	0	1
0M5	HUMPHREYS COUNTY	TN	LP	0	1	0	1	0	1
3M7	LAFAYETTE MUNI	TN	LPV	0	1	0	1	0	1
M54	LEBANON MUNI	TN	LPV	0	1	0	1	0	1
HZD	CARROLL COUNTY	TN	LPV	0	1	0	1	0	1
ADS	ADDISON	TX	LPV	0	1	0	1	0	1
AFW	FORT WORTH ALLIANCE	TX	LPV200	0	1	0	1	0	1
ALI	ALICE INTERNATIONAL	TX	LPV	1	0.9994	4	0.9992	4	0.9983
ARM	WHARTON RGNL	TX	LPV	1	0.9998	1	0.9998	4	0.9994
ASL	HARRISON COUNTY	TX	LPV	0	1	0	1	1	1
BAZ	NEW BRAUNFELS MUNI	TX	LPV	1	0.9997	1	0.9997	5	0.9993
DRT	DEL RIO INTL	TX	LPV	2	0.9992	3	0.9990	5	0.9986
DWH	DAVID WAYNE HOOKS MEMORIAL	TX	LPV	0	1	0	1	3	0.9997
E01	ROY HURD MEMORIAL	TX	LP	1	0.9995	2	0.9994	2	0.9988
EDC	AUSTIN EXECUTIVE	TX	LPV200	0	1	0	1	5	0.9995

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
ELA	EAGLE LAKE	TX	LP	0	1	0	1	4	0.9995
GYI	NORTH TEXAS RGNL/PERRIN FIELD	TX	LPV200	0	1	0	1	0	1
HDO	HONDO MUNI	TX	LPV	1	0.9996	4	0.9995	4	0.9989
LBB	LUBBOCK PRESTON SMITH INTL	TX	LPV200	0	1	0	1	2	0.9997
LFK	ANGELINA COUNTY	TX	LPV	0	1	0	1	1	0.9999
MAF	MIDLAND INTL	TX	LPV200	2	0.9999	2	0.9999	2	0.9990
MNZ	HAMILTON MUNI	TX	LPV	0	1	0	1	5	0.9998
PIL	PORT ISABEL-CAMERON COUNTY	TX	LPV	1	0.9990	2	0.9987	4	0.9981
SJT	SAN ANGELO RGNL/MATHIS FLD	TX	LPV	0	1	0	1	4	0.9994
T41	LA PORTE MUNI	TX	LPV	0	1	0	1	3	0.9996
TKI	COLLIN COUNTY RGNL AT MC KINNEY	TX	LPV200	0	1	0	1	0	1
TYR	TYLER POUNDS RGNL	TX	LPV200	0	1	0	1	1	1
2F5	LAMESA MUNI	TX	LP	0	1	0	1	4	0.9995
50R	LOCKHART MUNI	TX	LPV	1	1	1	1	5	0.9994
5C1	BOERNE STAGE FIELD	TX	LP	1	0.9996	2	0.9996	5	0.9992
DAL	DALLAS LOVE FIELD	TX	LPV200	0	1	0	1	0	1
DKR	HOUSTON COUNTY	TX	LP	0	1	0	1	1	0.9999
GLE	GAINESVILLE MUNI	TX	LPV	0	1	0	1	0	1
JAS	JASPER COUNTY-BELL FIELD	TX	LPV	0	1	0	1	1	0.9999
JWY	MID-WAY RGNL	TX	LPV200	0	1	0	1	1	1
RAS	MUSTANG BEACH	TX	LPV	1	0.9995	2	0.9995	3	0.9984
RKP	ARANSAS COUNTY	TX	LPV	1	0.9995	2	0.9995	3	0.9984
UTS	HUNTSVILLE MUNI	TX	LPV	0	1	0	1	3	0.9999
BPT	SOUTHEAST TEXAS RGNL	TX	LPV200	0	1	0	1	2	0.9998
BRO	BROWNSVILLE/SOUTH PADRE ISLAND INTL	TX	LP	1	0.9990	2	0.9986	4	0.9981
CLL	EASTERWOOD FIELD	TX	LPV200	0	1	0	1	4	0.9997
DUX	MOORE COUNTY	TX	LPV200	0	1	0	1	1	1
FST	FT. STOCKTON-PECOS COUNTY	TX	LPV	1	0.9995	2	0.9992	3	0.9987
LLN	LEVELLAND MUNI	TX	LPV	0	1	0	1	3	0.9996
SAT	SAN ANTONIO INTL	TX	LPV200	1	0.9996	2	0.9996	5	0.9992
SLR	SULPHUR SPRINGS MUNI	TX	LPV200	0	1	0	1	0	1
T59	WHEELER MUNI	TX	LP	0	1	0	1	0	1
TRL	TERRELL MUNI	TX	LPV	0	1	0	1	1	1
11R	BRENHAM MUNI	TX	LPV	0	1	0	1	3	0.9997
3T5	FAYETTE RGNL AIR CENTER	TX	LPV	0	1	0	1	4	0.9994
45R	HAWTHORNE FIELD	TX	LP	0	1	0	1	2	0.9999
AXH	HOUSTON-SOUTHWEST	TX	LPV	0	1	0	1	3	0.9995
BKD	STEPHENS COUNTY	TX	LP	0	1	0	1	0	1
CFD	COULTER FIELD	TX	LPV	0	1	0	1	4	0.9997
CXO	LONE STAR EXECUTIVE	TX	LPV200	0	1	0	1	3	0.9997
ELP	EL PASO INTL	TX	LP	2	0.9997	2	0.9993	2	0.9984
ERV	KERRVILLE MUNI/LOUIS SCHREINER FLD	TX	LPV	1	0.9996	2	0.9996	5	0.9992
ETN	EASTLAND MUNI	TX	LP	0	1	0	1	2	1

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
FTW	FORT WORTH MEACHAM INTL	TX	LPV200	0	1	0	1	0	1
GGG	EAST TEXAS RGNL	TX	LPV	0	1	0	1	1	1
GKY	ARLINGTON MUNI	TX	LPV200	0	1	0	1	0	1
HQZ	MESQUITE METRO	TX	LPV	0	1	0	1	0	1
LHB	HEARNE MUNI	TX	LPV200	0	1	0	1	4	0.9998
PEQ	PECOS MUNI	TX	LPV200	1	0.9995	2	0.9994	2	0.9988
PPA	PERRY LEFORS FIELD	TX	LPV	0	1	0	1	1	1
PVW	HALE COUNTY	TX	LPV	0	1	0	1	1	0.9998
VCT	VICTORIA RGNL	TX	LPV200	1	0.9996	2	0.9996	4	0.9992
ABI	ABILENE RGNL	TX	LPV200	0	1	0	1	3	0.9998
CRP	CORPUS CHRISTI INTL	TX	LPV200	1	0.9995	3	0.9993	4	0.9983
E11	ANDREWS COUNTY	TX	LPV	2	1	2	1.0000	2	0.9991
E30	BRUCE FIELD	TX	LPV	0	1	0	1	5	0.9996
EBG	EDINBURG INTL	TX	LPV	2	0.9990	2	0.9987	4	0.9981
F05	WILBARGER COUNTY	TX	LPV	0	1	0	1	0	1
GRK	ROBERT GRAY AAF	TX	LPV200	0	1	0	1	6	0.9997
HBV	JIM HOGG COUNTY	TX	LPV	2	0.9992	2	0.9986	4	0.9982
HOU	WILLIAM P HOBBY	TX	LPV200	0	1	0	1	3	0.9996
INJ	HILLSBORO MUNI	TX	LPV	0	1	0	1	2	1
LXY	MEXIA-LIMESTONE CO	TX	LP	0	1	0	1	2	0.9999
MFE	MC ALLEN MILLER INTL	TX	LPV	2	0.9989	2	0.9986	4	0.9980
PSX	PALACIOS MUNI	TX	LPV	1	0.9996	1	0.9996	3	0.9993
RBO	NUECES COUNTY	TX	LP	1	0.9994	3	0.9993	4	0.9983
SWW	AVENGER FIELD	TX	LPV	0	1	0	1	4	0.9997
T82	GILLESPIE COUNTY	TX	LPV	2	1	2	1	5	0.9993
XBP	BRIDGEPORT MUNI	TX	LPV	0	1	0	1	0	1
5T9	MAVERICK COUNTY MEMORIAL INTL	TX	LPV	2	0.9992	3	0.9990	5	0.9985
ACT	WACO RGNL	TX	LPV200	0	1	0	1	4	0.9999
6R3	CLEVELAND MUNI	TX	LPV	0	1	0	1	3	0.9998
BYY	BAY CITY MUNI	TX	LPV	1	0.9997	1	0.9997	3	0.9993
CNW	TSTC WACO	TX	LPV200	0	1	0	1	3	0.9999
COM	COLEMAN MUNI	TX	LPV	0	1	0	1	5	0.9997
FWS	FORT WORTH SPINKS	TX	LPV200	0	1	0	1	0	1
GDJ	GRANBURY RGNL	TX	LPV	0	1	0	1	0	1
GNC	GAINES COUNTY	TX	LPV	1	1	1	1	3	0.9993
HRL	VALLEY INTL	TX	LPV200	2	0.9990	2	0.9987	4	0.9981
JSO	CHEROKEE COUNTY	TX	LPV200	0	1	0	1	1	0.9999
LRD	LAREDO INTL	TX	LPV200	3	0.9992	2	0.9986	4	0.9982
MDD	MIDLAND AIRPARK	TX	LPV	2	0.9999	2	0.9999	3	0.9992
OCH	A L MANGHAM JR RGNL	TX	LPV200	0	1	0	1	1	0.9999
RBD	DALLAS EXECUTIVE	TX	LPV	0	1	0	1	0	1
RYW	LAGO VISTA TX - RUSTY ALLEN	TX	LP	0	1	0	1	5	0.9994
T78	LIBERTY MUNI	TX	LP	0	1	0	1	3	0.9997
TME	HOUSTON EXECUTIVE	TX	LPV	0	1	0	1	3	0.9996
TPL	DRAUGHON-MILLER CENTRAL TEXAS RGNL	TX	LPV200	0	1	0	1	4	0.9997
AMA	RICK HUSBAND AMARILLO INTL	TX	LPV200	0	1	0	1	1	0.9998
BWD	BROWNWOOD RGNL	TX	LPV	0	1	0	1	4	0.9998
DFW	DALLAS-FT WORTH INTL	TX	LPV200	0	1	0	1	0	1

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
E38	ALPINE-CASPARIS MUNICIPAL	TX	LP	2	0.9993	2	0.9992	5	0.9985
EFD	ELLINGTON FIELD	TX	LPV200	0	1	0	1	3	0.9996
HRX	HEREFORD MUNI	TX	LPV200	0	1	0	1	2	0.9998
IAH	GEORGE BUSH INTERCONTINENTAL/HOUSTON	TX	LPV200	0	1	0	1	3	0.9997
LBX	BRAZORIA COUNTY	TX	LPV	1	0.9999	1	0.9999	3	0.9995
LUD	DECATUR MUNI	TX	LPV	0	1	0	1	0	1
PRX	COX FIELD	TX	LPV	0	1	0	1	0	1
SGR	SUGAR LAND RGNL	TX	LPV200	0	1	0	1	3	0.9996
TFP	T P MC CAMPBELL	TX	LPV	1	0.9995	3	0.9995	3	0.9984
77F	WINTERS MUNI	TX	LP	0	1	0	1	4	0.9997
AUS	AUSTIN-BERGSTROM INTL	TX	LPV200	0	1	0	1	5	0.9994
BPG	BIG SPRING MC MAHON-WRINKLE	TX	LPV	0	1	0	1	3	0.9995
DTO	DENTON MUNI	TX	LPV	0	1	0	1	0	1
E19	GRUVER MUNI	TX	LP	0	1	0	1	1	1
F00	JONES FIELD	TX	LPV	0	1	0	1	0	1
GLS	SCHOLES INTL AT GALVESTON	TX	LPV200	1	1	1	1	3	0.9995
GVT	MAJORS	TX	LPV	0	1	0	1	0	1
IKG	KLEBERG COUNTY	TX	LPV	1	0.9994	3	0.9990	4	0.9982
IWS	WEST HOUSTON	TX	LP	0	1	0	1	3	0.9996
LNC	LANCASTER	TX	LPV200	0	1	0	1	1	1
LVJ	PEARLAND RGNL	TX	LPV	0	1	0	1	3	0.9996
ODO	ODESSA-SCHLEMEYER FIELD	TX	LPV200	2	0.9998	2	0.9998	3	0.9990
ONY	OLNEY MUNI	TX	LPV	0	1	0	1	0	1
ORG	ORANGE COUNTY	TX	LPV	0	1	0	1	2	0.9998
SNK	WINSTON FIELD	TX	LPV200	0	1	0	1	3	0.9996
2R9	KARNES COUNTY	TX	LP	1	0.9996	2	0.9995	5	0.9990
8F3	CROSBYTON MUNICIPAL	TX	LP	0	1	0	1	2	0.9997
BBD	CURTIS FIELD	TX	LPV	0	1	0	1	5	0.9994
FOM	FILLMORE MUNI	UT	LPV	0	1	0	1	1	0.9999
SGU	ST GEORGE MUNI	UT	LPV	0	1	0	1	3	0.9998
U55	PANGUITCH MUNI	UT	LPV200	0	1	0	1	3	0.9998
VEL	VERNAL	UT	LP	0	1	0	1	1	1
BCE	BRYCE CANYON	UT	LPV	0	1	0	1	3	0.9998
PVU	PROVO MUNI	UT	LPV200	0	1	0	1	1	1
LGU	LOGAN-CACHE	UT	LPV	0	1	0	1	1	1
OGD	OGDEN-HINCKLEY	UT	LPV	0	1	0	1	1	1
SLC	SALT LAKE CITY INTL	UT	LP	0	1	0	1	1	1
U14	NEPHI MUNI	UT	LPV	0	1	0	1	1	1
BDG	BLANDING MUNI	UT	LPV	0	1	0	1	3	1
ENV	WENDOVER	UT	LPV	0	1	0	1	1	0.9999
BMC	BRIGHAM CITY	UT	LP	0	1	0	1	1	1
PUC	CARBON COUNTY RGNL/BUCK DAVIS FIELD	UT	LP	0	1	0	1	1	1
DTA	DELTA MUNI	UT	LP	0	1	0	1	1	0.9999
FCI	CHESTERFIELD COUNTY	VA	LPV	0	1	0	1	0	1
PTB	DINWIDDIE COUNTY	VA	LPV	0	1	0	1	0	1
HLX	TWIN COUNTY	VA	LPV	0	1	0	1	0	1
OKV	WINCHESTER RGNL	VA	LPV200	0	1	0	1	0	1
RIC	RICHMOND INTL	VA	LPV200	0	1	0	1	0	1

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
ROA	ROANOKE RGNL/WOODRUM FIELD	VA	LPV	0	1	0	1	0	1
VJI	VIRGINIA HIGHLANDS	VA	LPV	0	1	0	1	0	1
W63	MARKS MUNI	VA	LP	0	1	0	1	0	1
HSP	INGALLS FIELD	VA	LPV	0	1	0	1	0	1
ORF	NORFOLK INTL	VA	LPV200	0	1	0	1	0	1
8W2	NEW MARKET	VA	LP	0	1	0	1	0	1
CHO	CHARLOTTESVILLE-ALBEMARLE	VA	LPV	0	1	0	1	0	1
LYH	LYNCHBURG RGNL/PRESTON GLENN FLD	VA	LPV	0	1	0	1	0	1
MFV	ACCOMACK COUNTY	VA	LPV	0	1	0	1	0	1
PSK	NEW RIVER VALLEY	VA	LPV200	0	1	0	1	0	1
RMN	STAFFORD RGNL	VA	LPV	0	1	0	1	0	1
SFQ	SUFFOLK EXECUTIVE	VA	LP	0	1	0	1	0	1
DAN	DANVILLE RGNL	VA	LPV200	0	1	0	1	0	1
EMV	EMPORIA-GREENSVILLE RGNL	VA	LPV200	0	1	0	1	0	1
JYO	LEESBURG EXECUTIVE	VA	LPV	0	1	0	1	0	1
OFF	HANOVER COUNTY MUNI	VA	LPV	0	1	0	1	0	1
PHF	NEWPORT NEWS/WILLIAMSBURG INTL	VA	LPV200	0	1	0	1	0	1
FKN	FRANKLIN MUN-JOHN BEVERLY ROSE	VA	LPV	0	1	0	1	0	1
LNP	LONESOME PINE	VA	LPV	0	1	0	1	0	1
AVC	MECKLENBURG-BRUNSWICK RGNL	VA	LPV	0	1	0	1	0	1
SHD	SHENANDOAH VALLEY RGNL	VA	LPV200	0	1	0	1	0	1
CPK	CHESAPEAKE RGNL	VA	LPV200	0	1	0	1	0	1
FVX	FARMVILLE RGNL	VA	LPV	0	1	0	1	0	1
HWY	WARRENTON-FAUQUIER	VA	LPV200	0	1	0	1	0	1
MKJ	MOUNTAIN EMPIRE	VA	LPV	0	1	0	1	0	1
W78	WILLIAM M TUCK	VA	LPV	0	1	0	1	0	1
XSA	TAPPAHANNOCK-ESSEX COUNTY	VA	LPV	0	1	0	1	0	1
0VG	LEE COUNTY	VA	LPV	0	1	0	1	0	1
BCB	VIRGINIA TECH /MONTGOMERY EXECUTIVE	VA	LPV	0	1	0	1	0	1
JFZ	TAZEWELL COUNTY	VA	LPV	0	1	0	1	0	1
LUA	LURAY CAVERNS	VA	LP	0	1	0	1	0	1
MTV	BLUE RIDGE	VA	LPV	0	1	0	1	0	1
CJR	CULPEPER RGNL	VA	LPV	0	1	0	1	0	1
FYJ	MIDDLE PENINSULA RGNL	VA	LPV	0	1	0	1	0	1
LKU	LOUISA COUNTY/FREEMAN FIELD	VA	LPV	0	1	0	1	0	1
FSO	FRANKLIN COUNTY STATE	VT	LPV	0	1	0	1	0	1
MPV	EDWARD F KNAPP STATE	VT	LPV	0	1	0	1	0	1
BTV	BURLINGTON INTL	VT	LPV200	0	1	0	1	0	1
RUT	RUTLAND-SOUTHERN VERMONT RGNL	VT	LPV	0	1	0	1	0	1
PWT	BREMERTON NATIONAL	WA	LPV	0	1	2	0.9994	3	0.9987
OTH	SOUTHWEST OREGON RGNL	WA	LPV	0	1	0	1	14	0.9991

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
FHR	FRIDAY HARBOR	WA	LPV	1	0.9999	2	0.9992	5	0.9983
GEG	SPOKANE INTL	WA	LPV200	0	1	0	1	5	0.9985
MWH	GRANT CO INTL	WA	LPV200	0	1	0	1	5	0.9986
PAE	SNOHOMISH COUNTY (PAINE FLD)	WA	LPV200	0	1	2	0.9995	5	0.9985
SEA	SEATTLE-TACOMA INTL	WA	LPV200	0	1	2	0.9996	3	0.9986
ALW	WALLA WALLA RGNL	WA	LPV	0	1	0	1	6	0.9987
TIW	TACOMA NARROWS	WA	LPV	0	1	3	0.9998	2	0.9986
CLM	WILLIAM R FAIRCHILD INTL	WA	LPV	1	0.9999	2	0.9992	4	0.9985
CLS	CHEHALIS-CENTRALIA	WA	LPV	0	1	2	0.9999	3	0.9988
PSC	TRI-CITIES	WA	LPV200	0	1	0	1	6	0.9988
RLD	RICHLAND	WA	LPV	0	1	0	1	6	0.9988
TDO	ED CARLSON MEMORIAL - SOUTH LEWIS CO	WA	LPV	0	1	2	0.9999	3	0.9989
YKM	YAKIMA AIR TERMINAL /MCALLISTER FIELD	WA	LPV200	0	1	0	1	5	0.9987
EPH	EPHRATA MUNI	WA	LPV	0	1	0	1	5	0.9986
HQM	BOWERMAN	WA	LPV200	0	1	3	0.9995	2	0.9987
OLM	OLYMPIA RGNL	WA	LPV	0	1	3	0.9998	2	0.9987
RNT	RENTON MUNI	WA	LPV	0	1	2	0.9996	3	0.9985
DEW	DEER PARK	WA	LPV	0	1	0	1	6	0.9985
BLI	BELLINGHAM INTL	WA	LPV200	1	0.9999	2	0.9992	5	0.9983
BVS	SKAGIT RGNL	WA	LPV	1	0.9999	2	0.9994	4	0.9983
AWO	ARLINGTON MUNI	WA	LPV200	0	1	2	0.9995	4	0.9983
PVB	PLATTEVILLE MUNICIPAL	WI	LPV	0	1	0	1	2	0.9996
HYR	SAWYER COUNTY	WI	LPV	1	0.9994	1	0.9993	2	0.9993
PBH	PRICE COUNTY	WI	LPV	1	0.9994	1	0.9993	2	0.9993
RCX	RUSK COUNTY	WI	LPV	1	0.9994	1	0.9993	2	0.9993
SUW	RICHARD I BONG	WI	LP	1	0.9994	1	0.9993	3	0.9992
C29	MIDDLETON MUNI-MOREY FIELD	WI	LPV	0	1	0	1	2	0.9995
CWA	CENTRAL WISCONSIN	WI	LPV200	2	0.9999	1	0.9994	1	0.9993
EGV	EAGLE RIVER UNION	WI	LPV	1	0.9993	1	0.9993	1	0.9993
MRJ	IOWA COUNTY	WI	LPV200	0	1	0	1	2	0.9995
OSH	WITTMAN RGNL	WI	LPV	0	1	1	0.9999	1	0.9993
PCZ	WAUPACA MUNI	WI	LPV	1	1.0000	1	0.9994	1	0.9993
RPD	RICE LAKE RGNL - CARL'S FIELD	WI	LPV	1	0.9994	1	0.9993	2	0.9993
RRL	MERRILL MUNI	WI	LPV	2	0.9998	1	0.9994	1	0.9993
SUE	DOOR COUNTY CHERRYLAND	WI	LPV	0	1	1	1	1	0.9994
VIQ	NEILLSVILLE MUNI	WI	LPV	2	0.9999	1	0.9994	1	0.9993
8D1	NEW HOLSTEIN MUNI	WI	LPV	0	1	0	1	1	0.9994
ASX	JOHN F. KENNEDY MEMORIAL	WI	LPV	1	0.9994	1	0.9993	2	0.9993
ENW	KENOSHA RGNL	WI	LPV200	0	1	0	1	1	0.9998
ETB	WEST BEND MUNI	WI	LPV	0	1	0	1	1	0.9994
LNR	TRI-COUNTY RGNL	WI	LPV	0	1	0	1	1	0.9994
MKE	GENERAL MITCHELL INTL	WI	LPV200	0	1	0	1	2	0.9998
MTW	MANITOWOC COUNTY	WI	LPV200	0	1	0	1	1	0.9994
SBM	SHEBOYGAN COUNTY MEMORIAL	WI	LPV200	0	1	0	1	1	0.9994
TKV	TOMAHAWK RGNL	WI	LP	2	0.9996	1	0.9994	1	0.9993

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
ATW	OUTAGAMIE COUNTY RGNL	WI	LPV200	0	1	1	0.9998	1	0.9993
RNH	NEW RICHMOND RGNL	WI	LPV	1	0.9994	1	0.9993	2	0.9992
ARV	LAKELAND/NOBLE F. LEE MEMORIAL FIELD	WI	LPV	1	0.9993	1	0.9993	1	0.9993
FLD	FOND DU LAC COUNTY	WI	LPV	0	1	0	1	1	0.9993
LUM	MENOMONIE MUNICIPAL-SCORE FIELD	WI	LPV	2	0.9997	1	0.9994	2	0.9993
UNU	DODGE COUNTY	WI	LPV	0	1	0	1	1	0.9993
57C	EAST TROY MUNI	WI	LPV	0	1	0	1	2	0.9997
DLL	BARABOO WISCONSIN DELLS	WI	LPV	0	1	1	1.0000	1	0.9993
EZS	SHAWANO MUNI	WI	LPV	2	0.9999	1	0.9994	1	0.9993
GRB	AUSTIN STRAUBEL INTL	WI	LPV200	0	1	1	0.9998	1	0.9993
MDZ	TAYLOR COUNTY	WI	LPV	2	0.9998	1	0.9994	1	0.9993
RAC	JOHN H. BATTEN	WI	LPV	0	1	0	1	1	0.9998
STE	STEVENS POINT MUNI	WI	LPV200	2	0.9999	1	0.9994	1	0.9993
AUW	WAUSAU DOWNTOWN	WI	LPV200	2	0.9998	1	0.9994	1	0.9993
C35	REEDSBURG MUNI	WI	LP	0	1	1	0.9999	1	0.9993
HXF	HARTFORD MUNI	WI	LPV	0	1	0	1	1	0.9994
JVL	SOUTHERN WISCONSIN RGNL	WI	LPV200	0	1	0	1	2	0.9997
MFI	MARSHFIELD MUNI	WI	LPV	2	0.9999	1	0.9994	1	0.9993
OCQ	J DOUGLAS BAKE MEML	WI	LP	1	1	2	0.9997	1	0.9993
RHI	RHINELANDER-ONEIDA COUNTY	WI	LPV200	2	0.9996	1	0.9994	1	0.9993
UES	WAUKESHA COUNTY	WI	LPV200	0	1	0	1	2	0.9996
Y50	WAUTOMA MUNI	WI	LP	0	1	2	0.9996	1	0.9993
82C	MAUSTON-NEW LISBON UNION	WI	LP	0	1	2	0.9996	1	0.9993
BCK	BLACK RIVER FALLS AREA	WI	LPV	2	0.9999	1	0.9994	1	0.9993
CLI	CLINTONVILLE MUNI	WI	LPV	2	1	1	0.9994	1	0.9993
CMY	SPARTA/FORT MC COY	WI	LPV	1	1	1	0.9994	1	0.9993
EAU	CHIPPEWA VALLEY RGNL	WI	LPV200	2	0.9997	1	0.9994	1	0.9993
LSE	LA CROSSE MUNI	WI	LPV	1	1	1	0.9994	1	0.9993
MSN	DANE COUNTY RGNL-TRUAX FIELD	WI	LPV200	0	1	0	1	2	0.9995
MWC	LAWRENCE J TIMMERMAN	WI	LPV	0	1	0	1	2	0.9997
OVS	BOSCOBEL	WI	LPV	0	1	1	0.9999	1	0.9994
I18	JACKSON COUNTY	WV	LPV200	0	1	0	1	0	1
CRW	YEAGER	WV	LPV200	0	1	0	1	0	1
BKW	RALEIGH COUNTY MEMORIAL	WV	LPV200	0	1	0	1	0	1
3I2	MASON COUNTY	WV	LPV	0	1	0	1	0	1
W22	UPSHUR COUNTY RGNL	WV	LPV	0	1	0	1	0	1
HTS	TRI-STATE/MILTON J. FERGUSON FIELD	WV	LPV200	0	1	0	1	0	1
MRB	EASTERN WV RGNL/SHEPHERD	WV	LPV	0	1	0	1	0	1
MGW	MORGANTOWN MUNI-WALTER L. BILL HART FIELD	WV	LPV200	0	1	0	1	0	1
LWB	GREENBRIER VALLEY	WV	LPV	0	1	0	1	0	1
CKB	NORTH CENTRAL WEST VIRGINIA	WV	LPV	0	1	0	1	0	1
HLG	WHEELING OHIO CO	WV	LPV200	0	1	0	1	0	1
BLF	MERCER COUNTY	WV	LPV	0	1	0	1	0	1

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
SXL	SUMMERSVILLE	WV	LP	0	1	0	1	0	1
USW	BOGGS FIELD	WV	LP	0	1	0	1	0	1
PKB	MID-OHIO VALLEY RGNL	WV	LPV	0	1	0	1	0	1
CYS	CHEYENNE RGNL/JERRY OLSON FIELD	WY	LPV	0	1	0	1	5	0.9996
SAA	SHIVELY FIELD	WY	LPV	0	1	0	1	3	0.9997
EVW	EVANSTON-UINTA COUNTY BURNS FIELD	WY	LPV	0	1	0	1	0	1
DGW	CONVERSE COUNTY	WY	LPV200	0	1	2	0.9998	3	0.9992
SHR	SHERIDAN COUNTY	WY	LPV	0	1	1	0.9994	4	0.9991
CPR	NATRONA COUNTY INTL	WY	LPV	0	1	2	0.9998	3	0.9992
COD	YELLOWSTONE RGNL	WY	LPV	0	1	2	0.9997	5	0.9990
RKS	ROCK SPRINGS-SWEETWATER COUNTY	WY	LPV200	0	1	0	1	2	0.9998
RIW	RIVERTON RGNL	WY	LPV200	0	1	2	1	3	0.9993
LAR	LARAMIE RGNL	WY	LPV	0	1	0	1	6	0.9996
WRL	WORLAND MUNI	WY	LPV	0	1	2	0.9997	5	0.9991
JAC	JACKSON HOLE	WY	LPV	0	1	0	1	3	0.9996
ECS	MONDELL FIELD	WY	LPV	0	1	1	0.9994	2	0.9991
7V6	CAMP GUERNSEY	WY	LP	0	1	2	0.9998	6	0.9992
GCC	GILLETTE-CAMPBELL COUNTY	WY	LPV	0	1	2	0.9995	4	0.9992
PNA	RALPH WENZ FIELD	WY	LPV	0	1	0	1	3	0.9995
RWL	RAWLINS MUNI/HARVEY FIELD	WY	LPV	0	1	0	1	3	0.9996
CYQH	Watson Lake	YT	LPV	1	0.9999	1	0.9999	4	0.9985
CYXY	Whitehorse / Erik Nielsen Intl	YT	LPV	1	0.9998	2	0.9997	3	0.9986

Figure 8-1 WAAS LP Availability at Airports in the US and Canada with GPS RNAV Instrument Approach Procedures

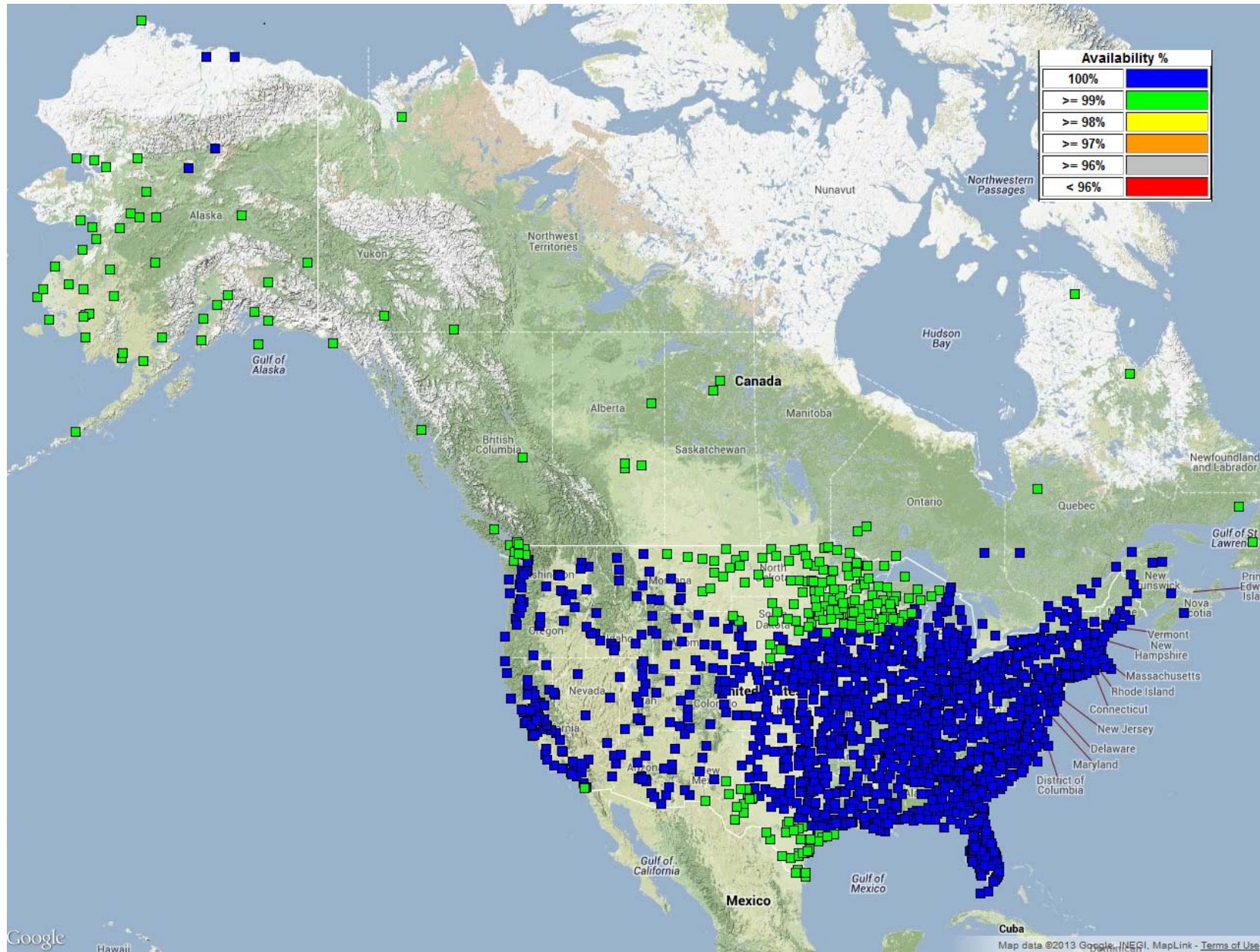


Figure 8-2 WAAS LP Outages at Airports in the US and Canada with GPS RNAV Instrument Approach Procedures

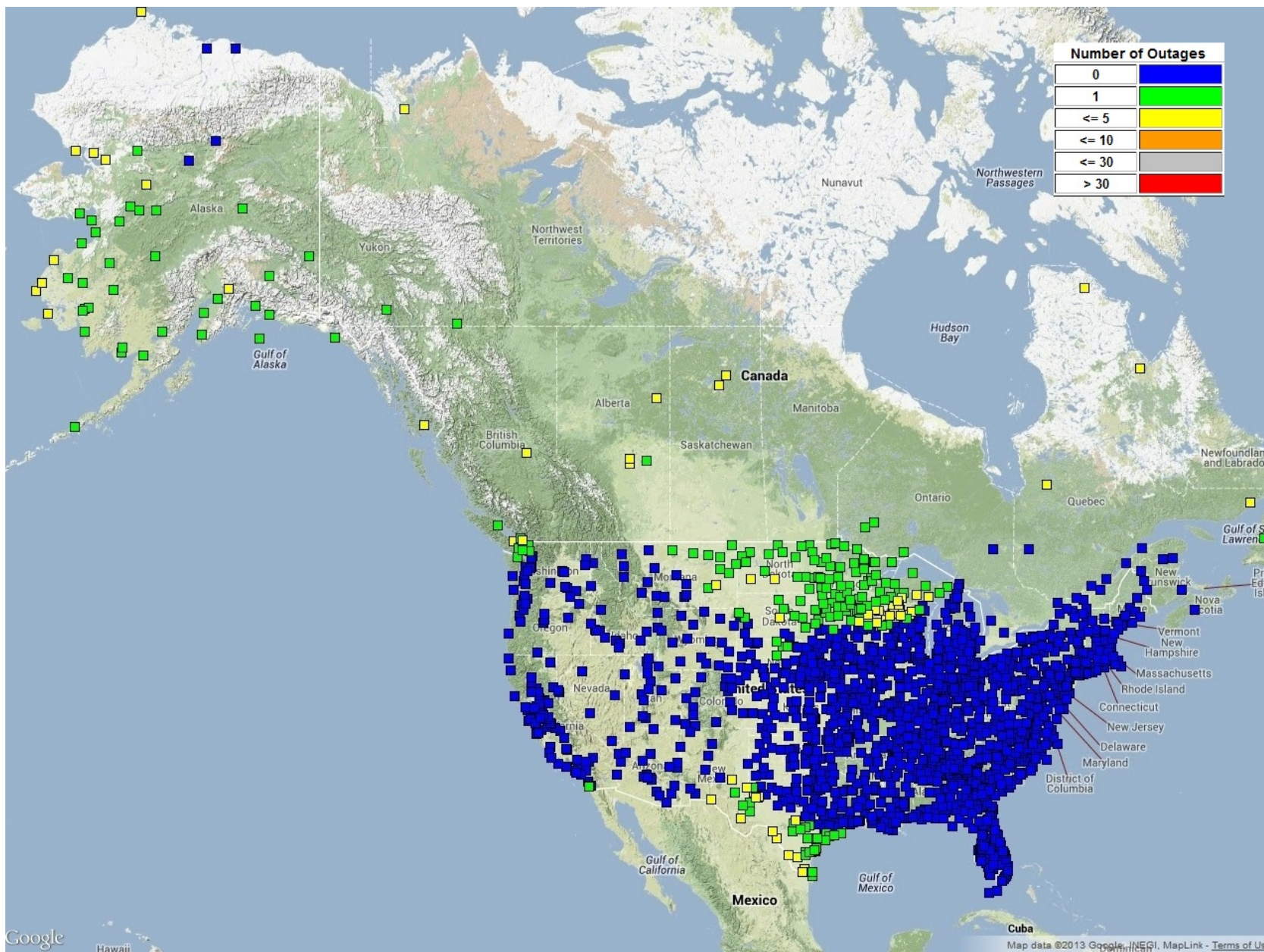


Figure 8-3 WAAS LPV Availability Airports in the US and Canada with GPS RNAV Instrument Approach Procedures

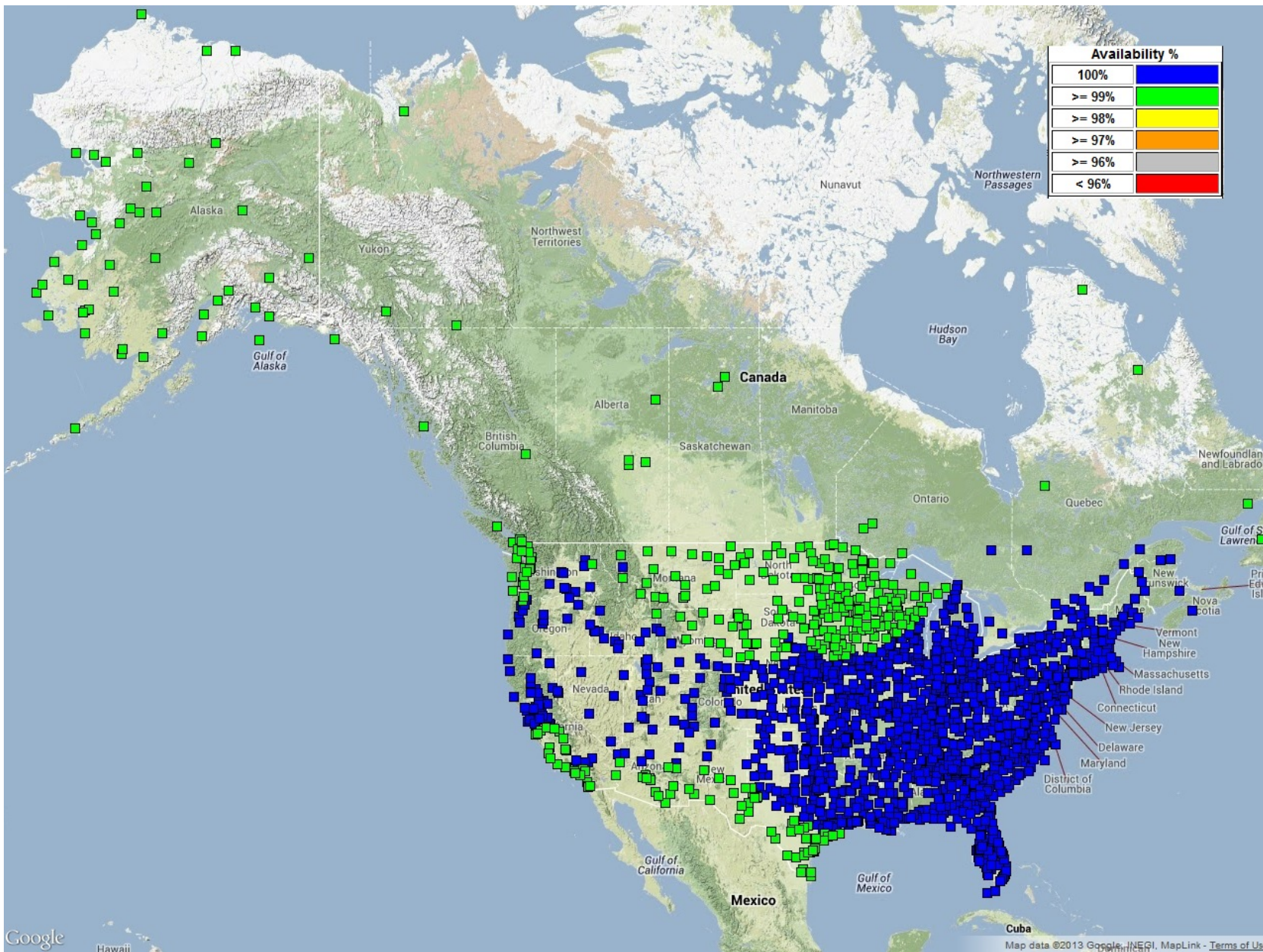


Figure 8-4 WAAS LPV Outages at Airports in the US and Canada with GPS RNAV Instrument Approach Procedures

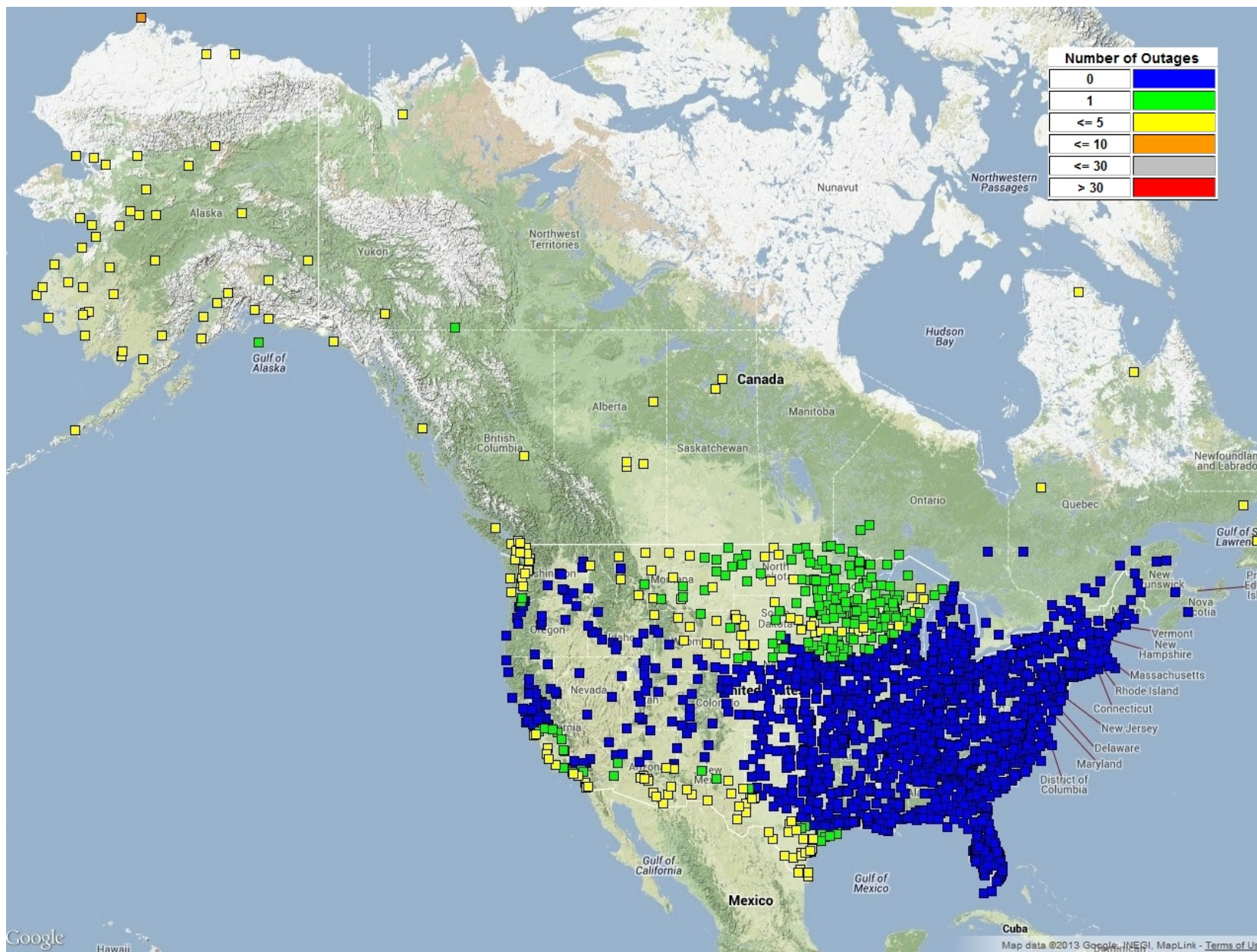


Figure 8-5 WAAS LPV 200 Availability at Airports in the US and Canada with GPS RNAV Instrument Approach Procedures

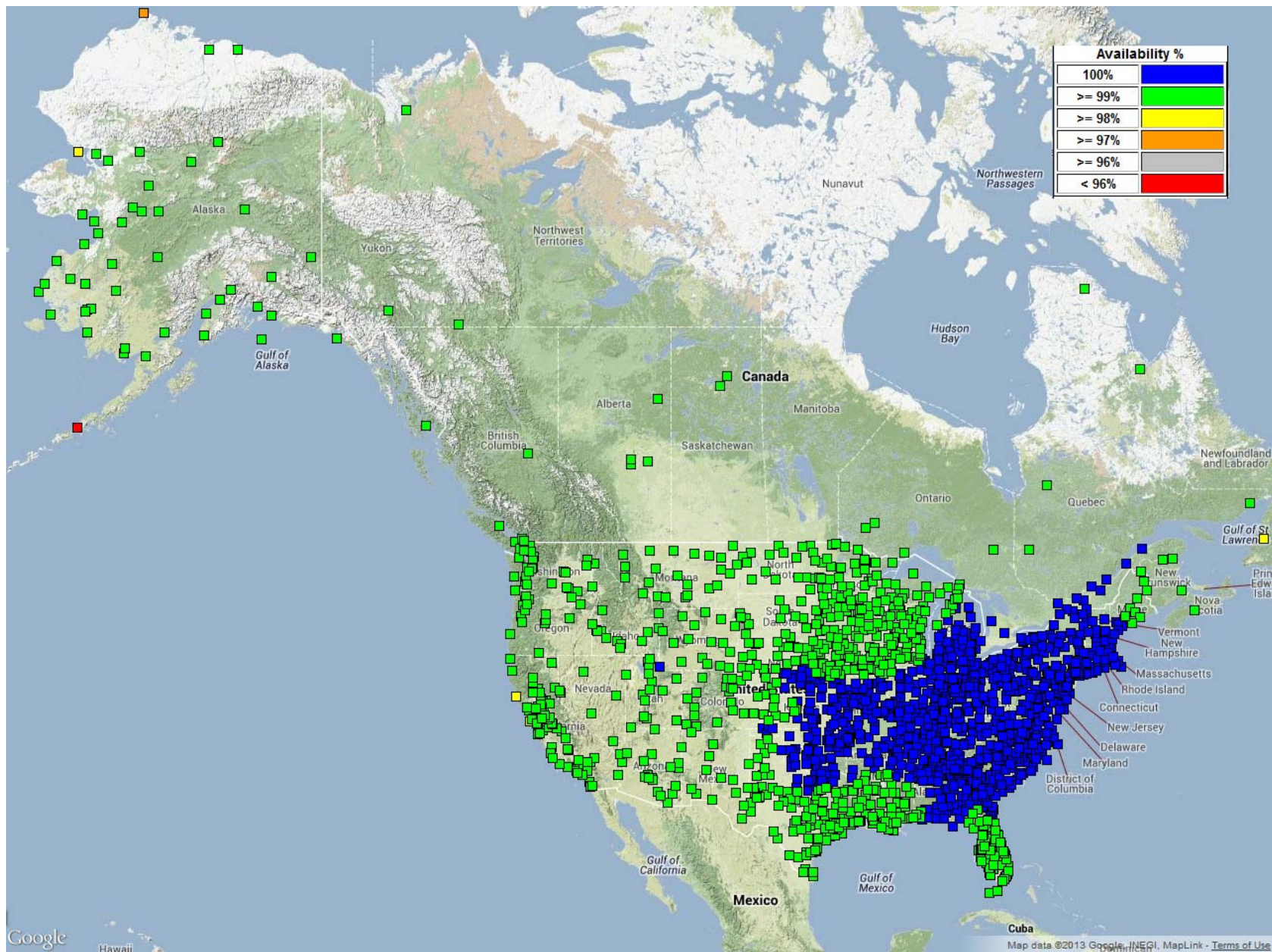
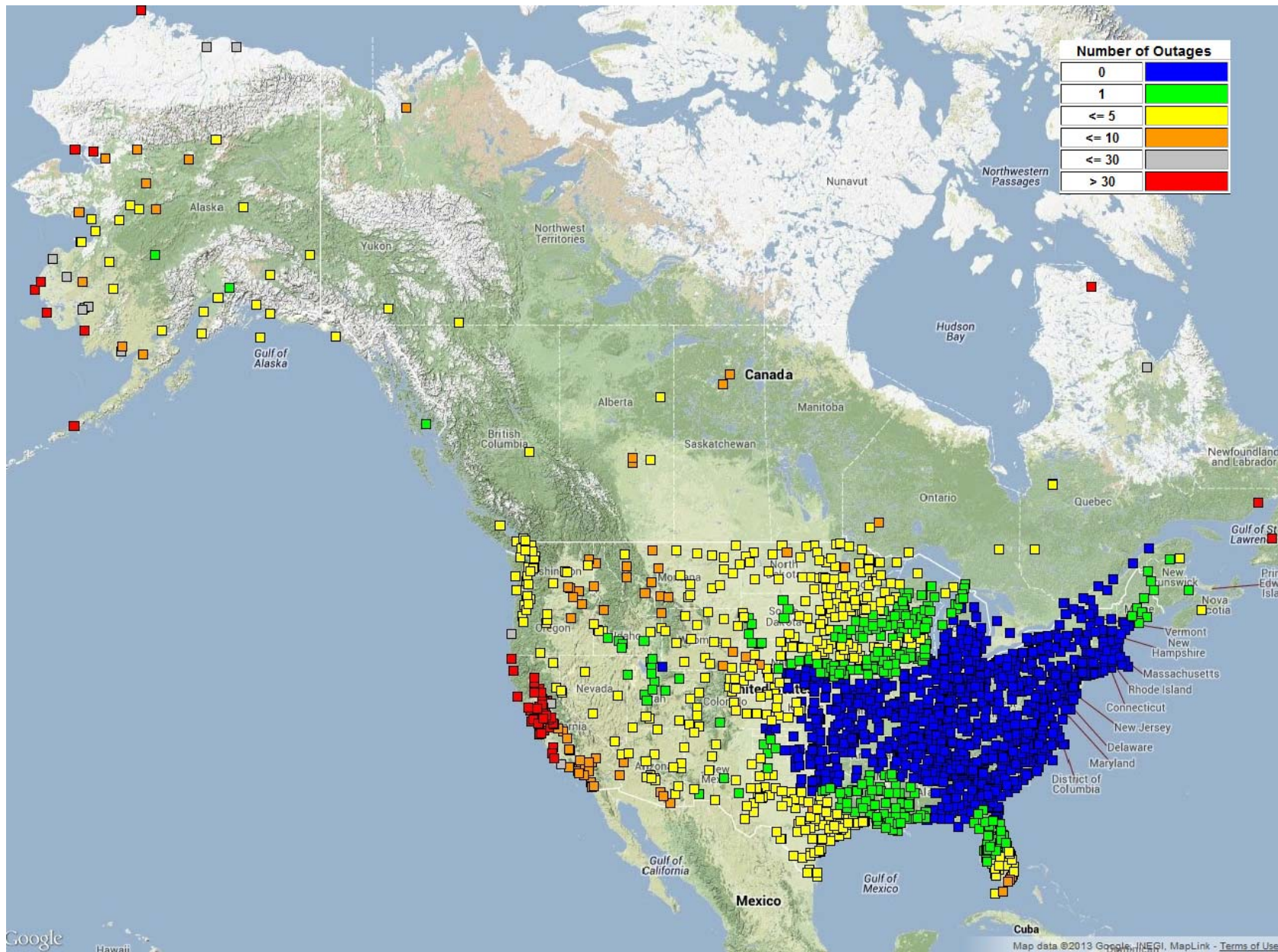


Figure 8-6 WAAS LPV 200 Outages at Airports in the US and Canada with GPS RNAV Instrument Approach Procedures



9.0 WAAS DETERMINISTIC CODE NOISE AND MULTIPATH (CNMP) BOUNDING ANALYSIS

WAAS utilizes a deterministic model to estimate the residual CNMP noise after the application of standard dual frequency carrier smoothing techniques to minimize the effects of multipath and code noise. This analysis performs an assessment of how well that deterministic model bounds the actual errors. This analysis is periodically performed as part of the WAAS Test Team's off-line monitoring to ensure that there are no drastic detrimental changes to the multipath environment at the WAAS Reference Stations (WRSs). This analysis also ensures that WAAS system is not indefinitely exposed to conspiring receiver failure symptoms that would invalidate the CNMP bounding estimate in a manner that would exceed the assumption that no more than one reference station is conspiring to deceive the WAAS monitors at any time by underestimating the residual measurement noise the safety monitors. Although some failures mechanisms that cause CNMP bounding issues are occasionally seen, no "conspiring" errors have ever been detected. That is, data has caused the safety monitors to trip unnecessarily versus missing a necessary trip.

The analysis post processes measurement data to estimate the pseudorange code to carrier ambiguity for each entire arc of measurements for each satellite pass. The ambiguity estimate is then used to level the carrier measurement. The leveled carrier is then used as a multipath free truth estimate. The WAAS real time deterministic CNMP smoothing algorithm is then applied to the original measurements. The difference between the smoothed measurements and the leveled truth measurements is compared to the deterministic noise estimates. Only arcs with continuous carrier phase greater in length than 7200 seconds are utilized for this analysis to minimize the impacts of non-zero mean multipath biasing the truth estimates. The WAAS dual frequency cycle slip detector algorithm is used to detect any discontinuities in the carrier phase.

Statistics are calculated on how well the 0.1 multiples of the deterministically estimated standard deviation bounds the difference between the leveled truth and the real time smoothed measurements. Those statistics are then compared to a theoretical Gaussian distribution and an extensive set of plots are generated and manually reviewed. Table 9-1 recaps the results of that manual analysis.

Table 9-1 CNMP Bounding Statistics

WAAS Site	WRE	Jul 12	Aug 12	Sep 12	Oct 12	Nov 12	Dec 12	Jan 13	Feb 13	Mar 13	Apr 13	May 13	Jun 13
Albuquerque	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Anchorage	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Atlanta	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Barrow	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Bethel	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Billings	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Boston	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Chicago	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Cleveland	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Cold Bay	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Dallas	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Denver	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Fairbanks	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Gander	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Goose Bay	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Honolulu	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Houston	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Iqaluit	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Jacksonville	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Juneau	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•

WAAS Site	WRE	Jul 12	Aug 12	Sep 12	Oct 12	Nov 12	Dec 12	Jan 13	Feb 13	Mar 13	Apr 13	May 13	Jun 13
Kansas City	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Kotzebue	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Los Angeles	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Memphis	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Merida	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Mexico City	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	—	●	●	●	—	—	—
	C	●	●	●	●	●	●	●	●	●	●	●	●
Miami	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Minneapolis	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
New York	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Oakland	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Puerto Vallarta	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Salt Lake City	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
San Jose Del Cabo	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
San Juan	A	—	—	—	—	●	●	●	●	●	●	●	●
	B	—	—	—	—	●	●	●	●	●	●	●	●
	C	—	—	—	—	●	●	●	●	●	●	●	●
Seattle	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Tapachula	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Washington, DC	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Winnipeg	A	—	●	●	●	●	●	●	●	●	●	●	●
	B	—	●	●	—	●	●	●	●	●	●	●	●
	C	—	●	●	●	●	●	●	●	●	●	●	●

- Excellent - 3.29σ bounded 100%
- Good - 4σ bounded 100%
- Fair - 4σ bounded 100% with one worst satellite excluded (Requires manual review if symptoms repeat from month to month)
- Poor - Requires manual review
- No data available

10.0 WAAS REFERENCE STATION SURVEY VALIDATION

Antenna L1 phase center position surveys were performed for all the WAAS Reference Station antennas using 25 hour sets of data from 23:00 on 6/28/13 to 23:59:30 on 6/29/13 with the exception of Mexico City thread B (MMX2). MMX2 has been off line since 3/17/12. The 6/29/13 location for MMX2 was estimated by adjusting the 3/16/13 MMX height by the amount of subsidence that was observed between 3/16/13 and 6/29/13 on the MMX1 and MMX3 antennas (-0.072 m) and then recalculating the ECEF coordinates from the geographic coordinates.

Duplicate surveys were performed using both the National Geodetic Survey (NGS) Online Positioning User Service (OPUS) and the Canadian Spatial Reference System (CSRS) Precise Point Positioning (PPP) service. The IGS08 reference frame is used for the OPUS solutions. The value of -0.4445 meters was used for the antenna reference point (ARP) to antenna phase center (APC) offset for the MicroPulse MPL-WAAS-2225W WAAS antennas in the processing.

The overall RMS quality metrics reported by OPUS were all ≤ 2.5 cm. The CSRS surveys' RSSs of the reported ECEF sigmas for the 6/29/13 data set were all ≤ 10 mm. The OPUS and CSRS surveys for the 6/29/13 data set agreed to an average of 1.4 cm., with a standard deviation of 5 mm. The maximum of difference was 2.6 cm. for San Juan Puerto Rico thread A (ZSU1).

The OPUS positions were compared to the positions in WAAS software Release 3B1 (Build W6.016) which was installed during March 2013. The next release of WAAS software is Release 4.0 (Build W7.006) which is to be fielded later this year. The antenna positions in Release 3B1 were checked against the positions in Release 4.0 and were verified to be identical. The OPUS surveys agree with the Release 3B1 / Release 4 positions to better or equal than 5.9 cm. The maximum was MTP1, Tapachula Mexico thread A.

The "take action" threshold established by the WAAS Integrity Performance Panel (WIPP) is 25 cm. for Mexico City and 10 cm. for the remaining sites. The large MMX difference is caused by subsidence.

Table 11-1 lists the WAAS antenna L1 phase center positions as of 6/29/13. The positions are the OPUS estimated positions in IGS08. MMX2 is the 3/16/13 position adjusted for subsidence.

Figures 11-1 to 11-3 show the RSS of the ECEF differences between the 6/29/13 OPUS survey antenna phase center locations and the locations in the WAAS Releases 3B1 & 4 software. Each reference station has three independent strings of WAAS receiving equipment (WRE). A surveyed antenna phase center location is required for each WRE. All three strings of a reference station are shown in the three figures. For example, BET1 identifies the RSS of the ECEF deltas for the Bethel WRE string 1(A). The next two bars in the chart are Bethel string 2(B) and Bethel string 3(C). Figure 11-4 to 11-6 show the OPUS surveys overall RMS quality indications.

Figures 11-7 to 11-9 show the RSS of the ECEF difference between the positions obtained from OPUS and the positions obtained from CSRS. Note that that OPUS positions are in IGS08 and the CSRS positions are in ITRF-2008. Figures 11-10 to 11-12 show the RSS of the ECEF sigma's survey qualities reported by CSRS.

Table 10-1 WAAS Antenna Positions (OPUS IGS08) as of 9/29/12

WRE	X(m)	Y(m)	Z(m)	Latitude	Longitude	H(m)
BET1	-2965385.038	-972576.620	5543892.894	60.7879155166667	-161.8417249694440	52.1755
BET2	-2965385.807	-972580.343	5543891.836	60.7878960694444	-161.8416644194440	52.1745
BET3	-2965388.374	-972577.474	5543890.967	60.7878801611111	-161.8417291583330	52.1705
BIL1	-1416445.875	-4223577.023	4550862.161	45.8037068777778	-108.5397229777780	1112.2525
BIL2	-1416449.941	-4223574.886	4550862.878	45.8037161027778	-108.5397813000000	1112.2555
BIL3	-1416441.567	-4223574.285	4550866.014	45.8037566138889	-108.5396816416670	1112.2505
BRW1	-1886758.917	-809058.660	6018494.476	71.2827649777778	-156.7899247777780	15.5695
BRW2	-1886756.331	-809055.918	6018495.653	71.2827977083333	-156.7899666694440	15.5745
BRW3	-1886755.236	-809059.698	6018495.459	71.2827930500000	-156.7898576638890	15.5455
CDB1	-3484099.050	-1084748.787	5213678.633	55.1923741638889	-162.7064046027780	49.6995
CDB2	-3484105.690	-1084741.587	5213675.688	55.1923280972222	-162.7065435305560	49.6785
CDB3	-3484111.968	-1084734.816	5213672.939	55.1922846333333	-162.7066743472220	49.6945
FAI1	-2304741.811	-1448715.278	5748843.683	64.8096300083333	-147.8473409000000	149.9335
FAI2	-2304741.329	-1448706.466	5748846.072	64.8096805000000	-147.8474925250000	149.9255
FAI3	-2304732.799	-1448707.403	5748849.218	64.8097470777778	-147.8473802833330	149.9105
HNL1	-5508637.117	-2234493.256	2303722.235	21.3129906416667	-157.9208280611110	24.6805
HNL2	-5508656.282	-2234483.577	2303686.987	21.3126477194444	-157.9209839388890	25.0245
HNL3	-5508647.685	-2234497.507	2303694.076	21.3127163277778	-157.9208283694440	25.0575
JNU1	-2354254.895	-2388549.650	5407043.118	58.3625746222222	-134.5857070472220	16.1045
JNU2	-2354252.804	-2388565.758	5407036.941	58.3624690638889	-134.5854884305560	16.0935
JNU3	-2354239.585	-2388568.608	5407041.403	58.3625454888889	-134.5852934111110	16.0895
MMD1	35070.416	-5959686.670	2264365.772	20.9319092972222	-89.6628407305556	29.1235
MMD2	35065.494	-5959687.030	2264364.986	20.9319015972222	-89.6628880694444	29.1525
MMD3	35065.157	-5959685.238	2264369.640	20.9319466472222	-89.6628912000000	29.1395
MMX1	-948701.057	-5943935.311	2109212.618	19.4316536750000	-99.0683897000000	2235.2855
MMX2*	-948696.628	-5943935.142	2109215.039	19.4316768972222	-99.0683483222222	2235.275
MMX3	-948705.488	-5943935.493	2109210.193	19.4316303888889	-99.0684310777778	2235.3065
MPR1	-1570142.212	-5759530.592	2238184.761	20.6790034138889	-105.2492031666670	10.9665
MPR2	-1570139.395	-5759530.101	2238188.813	20.6790415250000	-105.2491783194440	11.2615
MPR3	-1570143.505	-5759527.989	2238190.581	20.6790595166667	-105.2492217083330	10.9905
MSD1	-1979519.772	-5523223.006	2493106.814	23.1604471888889	-109.7176486805560	104.2695
MSD2	-1979521.336	-5523225.336	2493100.409	23.1603843555556	-109.7176553833330	104.2515
MSD3	-1979525.784	-5523222.079	2493104.082	23.1604204083333	-109.7177070055560	104.2575
MTP1	-254854.356	-6162909.170	1617805.074	14.7913660638889	-92.3679992027778	54.9485
MTP2	-254850.736	-6162910.200	1617801.641	14.7913340305556	-92.3679652111111	54.9215
MTP3	-254855.509	-6162910.303	1617800.114	14.7913200000000	-92.3680094694444	54.8225
OTZ1	-2396056.018	-750356.160	5843502.514	66.8873321833333	-162.6113729250000	10.8835
OTZ2	-2396052.845	-750354.329	5843504.036	66.8873670305556	-162.6113911527780	10.8795
OTZ3	-2396052.828	-750358.270	5843503.547	66.8873557222222	-162.6113052222220	10.8855
YFB1	1035381.437	-2634289.653	5696539.534	63.7314904361111	-68.5431837138889	10.0255
YFB2	1035372.228	-2634296.056	5696538.180	63.7314642166667	-68.5434046222222	9.9575
YFB3	1035366.158	-2634306.812	5696534.407	63.7313865722222	-68.5435986222222	10.0215
YQX1	2430424.626	-3419640.391	4788223.836	48.9664900638889	-54.5976322388889	146.8775
YQX2	2430432.587	-3419639.050	4788220.783	48.9664481805556	-54.5975330083333	146.8845

WRE	X(m)	Y(m)	Z(m)	Latitude	Longitude	H(m)
YQX3	2430440.488	-3419637.676	4788217.763	48.9664069027778	-54.5974341861111	146.8765
YWG1	-520164.365	-4083475.937	4855843.060	49.9005744888889	-97.2593974777778	222.1135
YWG2	-520150.486	-4083468.875	4855850.454	49.9006775416667	-97.2592182694444	222.1275
YWG3	-520152.360	-4083477.994	4855842.628	49.9005683861111	-97.2592281055556	222.1195
YYR1	1885341.417	-3321428.358	5091171.661	53.3086471750000	-60.4194683750000	37.8475
YYR2	1885344.378	-3321419.876	5091176.074	53.3087134833333	-60.4193669277778	37.8525
YYR3	1885340.091	-3321413.059	5091182.074	53.3088036527778	-60.4193723750000	37.8565
ZAB1	-1488636.840	-5003946.540	3654557.711	35.1735754166667	-106.5673497416670	1620.1265
ZAB2	-1488631.505	-5003948.220	3654557.685	35.1735747666667	-106.5672883666670	1620.1845
ZAB3	-1488632.286	-5003950.803	3654553.831	35.1735323666667	-106.5672885055560	1620.1705
ZAN1	-2659536.641	-1549114.779	5567750.748	61.2292017611111	-149.7802507111110	80.6865
ZAN2	-2659548.398	-1549110.827	5567746.254	61.2291180833333	-149.7804244416670	80.6795
ZAN3	-2659541.352	-1549106.702	5567750.737	61.2292016722222	-149.7804247777780	80.6795
ZAU1	138704.120	-4761244.141	4227763.936	41.7826580833333	-88.3313366416667	195.8905
ZAU2	138704.375	-4761248.749	4227758.767	41.7825957055556	-88.3313351916667	195.8865
ZAU3	138711.083	-4761248.488	4227758.850	41.7825966583333	-88.3312544444444	195.8935
ZBW1	1490299.222	-4448983.174	4306010.502	42.7357205194444	-71.4804258583333	39.1215
ZBW2	1490304.335	-4448981.158	4306010.842	42.7357245277778	-71.4803588305556	39.1405
ZBW3	1490306.046	-4448984.793	4306006.543	42.7356717222222	-71.4803531194444	39.1535
ZDC1	1069125.773	-4839598.994	4001126.515	39.1015959055556	-77.5427464305556	80.0755
ZDC2	1069128.159	-4839603.627	4001120.310	39.1015239055556	-77.5427310500000	80.0725
ZDC3	1069124.047	-4839602.705	4001122.499	39.1015493555556	-77.5427751777778	80.0655
ZDV1	-1273628.607	-4711375.572	4094890.118	40.1873033416667	-105.1272243027780	1541.3575
ZDV2	-1273622.901	-4711377.088	4094890.125	40.1873035361111	-105.1271549916670	1541.3425
ZDV3	-1273624.915	-4711380.278	4094885.838	40.1872531055556	-105.1271680444440	1541.3295
ZFW1	-659983.194	-5324060.790	3438276.481	32.8306497361111	-97.0664717194444	155.6345
ZFW2	-659988.458	-5324063.338	3438271.481	32.8305963250000	-97.0665241638889	155.5925
ZFW3	-659983.491	-5324063.864	3438271.686	32.8305983194444	-97.0664708305556	155.6285
ZHU1	-513864.465	-5506451.718	3166720.481	29.9618963638889	-95.3314261944444	10.8635
ZHU2	-513867.118	-5506455.100	3166714.315	29.9618318888889	-95.3314503027778	10.9155
ZHU3	-513873.391	-5506457.754	3166708.720	29.9617736305556	-95.3315124555556	10.9155
ZJX1	772646.448	-5434462.196	3237231.750	30.6988596750000	-81.9081850805556	2.1465
ZJX2	772649.773	-5434463.744	3237228.345	30.6988240527778	-81.9081529944445	2.1285
ZJX3	772645.715	-5434466.177	3237225.239	30.6987915055556	-81.9081985027778	2.1225
ZKC1	-415247.514	-4954556.380	3982161.114	38.8801594500000	-94.7908338083333	305.8895
ZKC2	-415231.116	-4954557.710	3982161.175	38.8801601277778	-94.7906442194444	305.8935
ZKC3	-415237.242	-4954561.063	3982155.985	38.8801019500000	-94.7907113416667	305.6345
ZLA1	-2474409.931	-4637294.634	3602183.522	34.6035182944444	-118.0838954027780	763.4925
ZLA2	-2474404.660	-4637297.447	3602183.538	34.6035184083333	-118.0838302805560	763.5015
ZLA3	-2474411.264	-4637297.126	3602179.556	34.6034744055556	-118.0838954361110	763.5665
ZLC1	-1808273.208	-4486410.824	4145303.029	40.7860433666667	-111.9521774805560	1287.4385
ZLC2	-1808274.611	-4486414.424	4145298.529	40.7859899694444	-111.9521769527780	1287.4235
ZLC3	-1808270.399	-4486416.131	4145298.515	40.7859898222222	-111.9521231194440	1287.4215

WRE	X(m)	Y(m)	Z(m)	Latitude	Longitude	H(m)
ZMA1	966042.299	-5662999.819	2761581.503	25.8246122388889	-80.3191898000000	-7.5895
ZMA2	966029.326	-5662999.123	2761585.988	25.8246599583333	-80.3193161722222	-8.2175
ZMA3	966037.405	-5662997.960	2761586.346	25.8246620333333	-80.3192347944444	-7.8705
ZME1	4070.897	-5226189.294	3644028.423	35.0673941305556	-89.9553699305556	68.6005
ZME2	4070.927	-5226186.748	3644032.543	35.0674377055556	-89.9553695805556	68.8835
ZME3	4064.733	-5226186.628	3644032.701	35.0674395222222	-89.9554374861111	68.8725
ZMP1	-249978.380	-4539297.503	4458955.057	44.6374632750000	-93.1520854666667	262.6605
ZMP2	-249972.577	-4539297.846	4458955.064	44.6374631777778	-93.1520122055556	262.6815
ZMP3	-249973.674	-4539302.123	4458950.584	44.6374071111111	-93.1520230472222	262.6155
ZNY1	1406144.635	-4627343.988	4144322.057	40.7843285611111	-73.0971657027778	6.4525
ZNY2	1406146.429	-4627347.021	4144317.276	40.7842758194444	-73.0971558138889	5.9215
ZNY3	1406140.880	-4627348.677	4144317.321	40.7842763027778	-73.0972244194444	5.9295
ZOA1	-2684436.868	-4293337.412	3865351.868	37.5430538944444	-122.0159477111110	-3.4955
ZOA2	-2684433.845	-4293341.475	3865349.422	37.5430263055556	-122.0158943333330	-3.5255
ZOA3	-2684438.227	-4293342.353	3865345.568	37.5429819305556	-122.0159311111110	-3.4415
ZOB1	650770.181	-4754715.671	4187420.751	41.2971544611111	-82.2064447583333	223.6805
ZOB2	650777.870	-4754714.855	4187422.777	41.2971667805556	-82.2063524861111	225.1935
ZOB3	650776.193	-4754719.668	4187414.978	41.2970870388889	-82.2063801166667	223.4585
ZSE1	-2308930.263	-3668169.674	4663526.481	47.2869933222222	-122.1883727638890	82.0985
ZSE2	-2308934.654	-3668175.216	4663520.067	47.2869077361111	-122.1883828527780	82.1535
ZSE3	-2308935.711	-3668179.488	4663516.119	47.2868560305556	-122.1883646055560	82.0875
ZSU1	2462589.434	-5529372.122	2003724.458	18.4313356333333	-65.9934768055556	-28.1035
ZSU2	2462587.499	-5529377.485	2003712.177	18.4312186250000	-65.9935141916667	-28.0855
ZSU3	2462594.134	-5529375.229	2003710.099	18.4311989861111	-65.9934481361111	-28.1375
ZTL1	529840.423	-5305248.813	3489342.848	33.3796885527778	-84.2967258000000	261.1375
ZTL2	529846.789	-5305247.955	3489343.131	33.3796917805556	-84.2966568111111	261.1085
ZTL3	529847.473	-5305251.398	3489337.899	33.3796350611111	-84.2966531750000	261.1485

Figure 10-1 WAAS Releases 3B1 & 4 Antenna Positions Deltas from 6/29/13 OPUS Survey

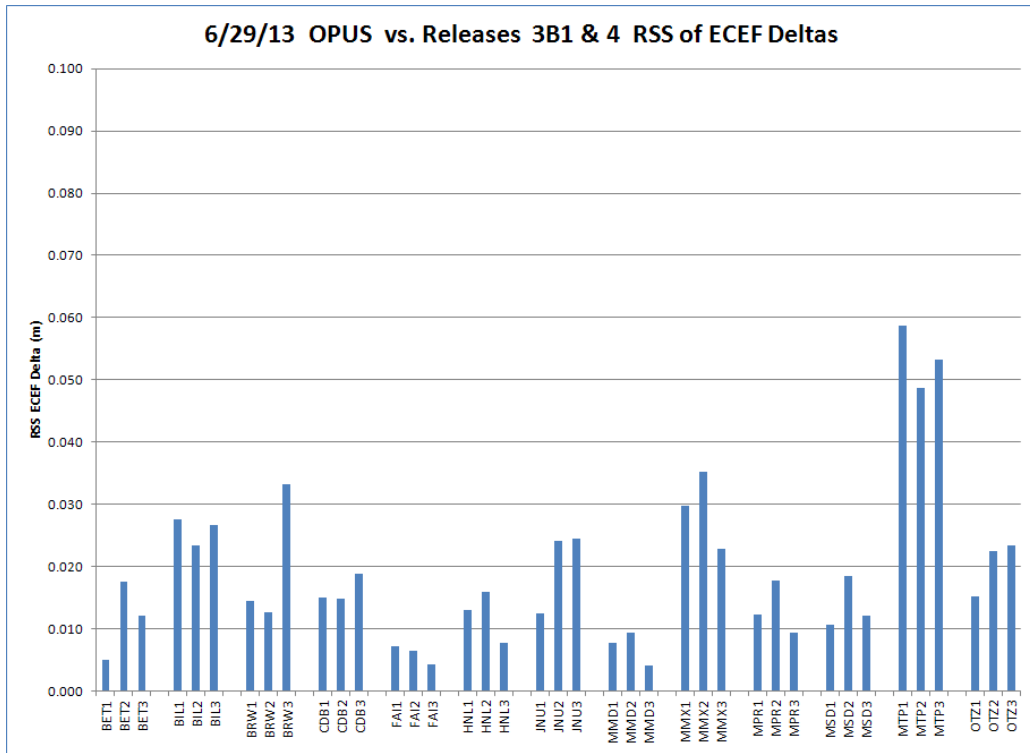


Figure 10-2 WAAS Releases 3B1 & 4 Antenna Positions Deltas from 6/29/13 OPUS Survey

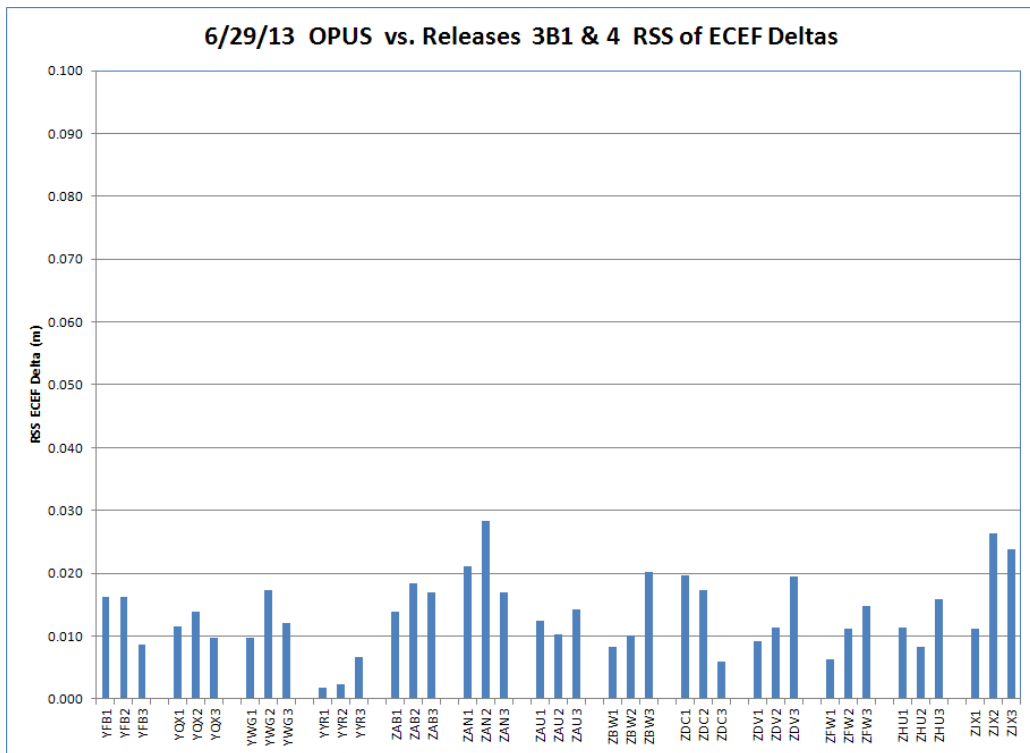


Figure 10-3 WAAS Releases 3B1 & 4 Antenna Positions Deltas from 6/29/13 OPUS Survey

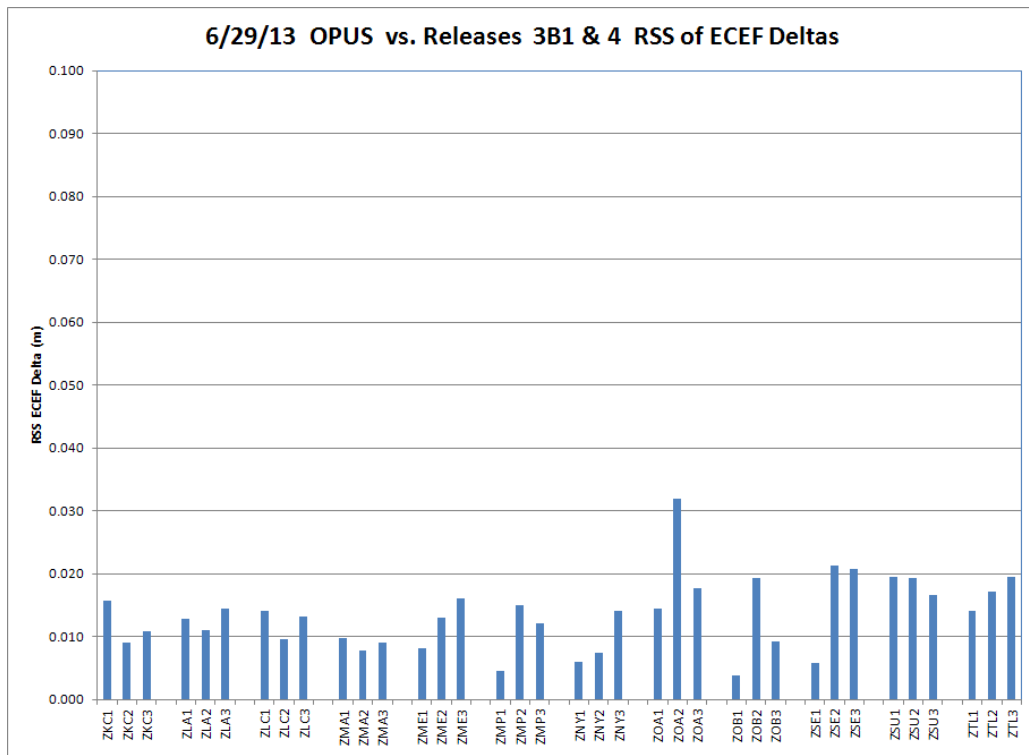


Figure 10-4 6/29/13 OPUS Survey Overall RMS Qualities

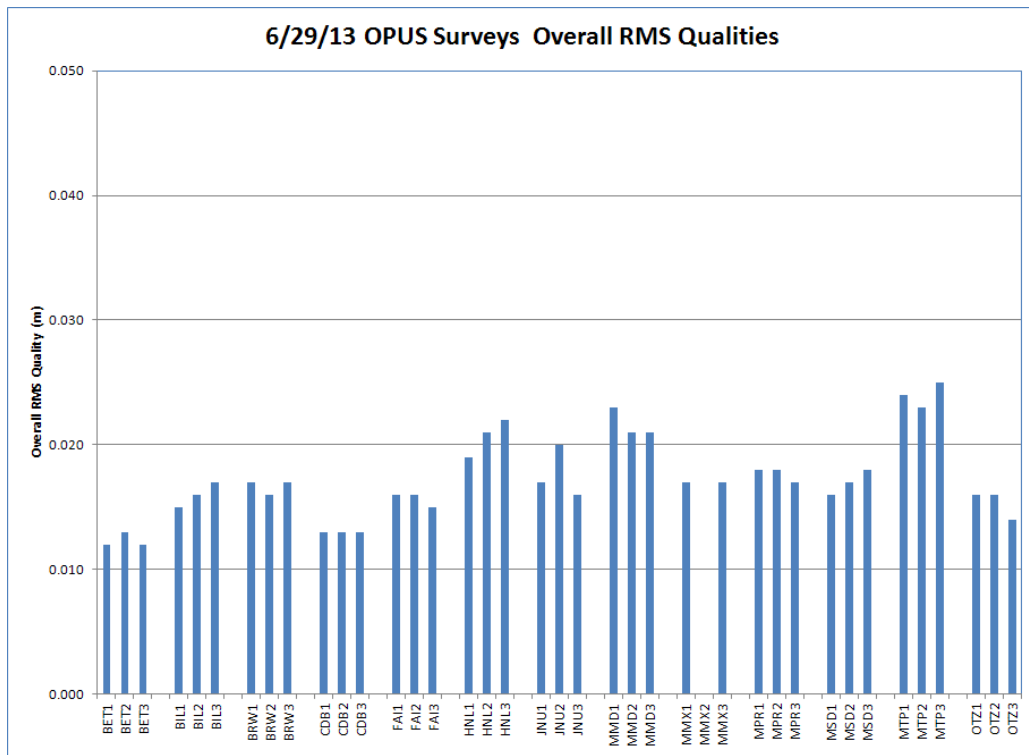


Figure 10-5 6/29/13 OPUS Survey Overall RMS Qualities

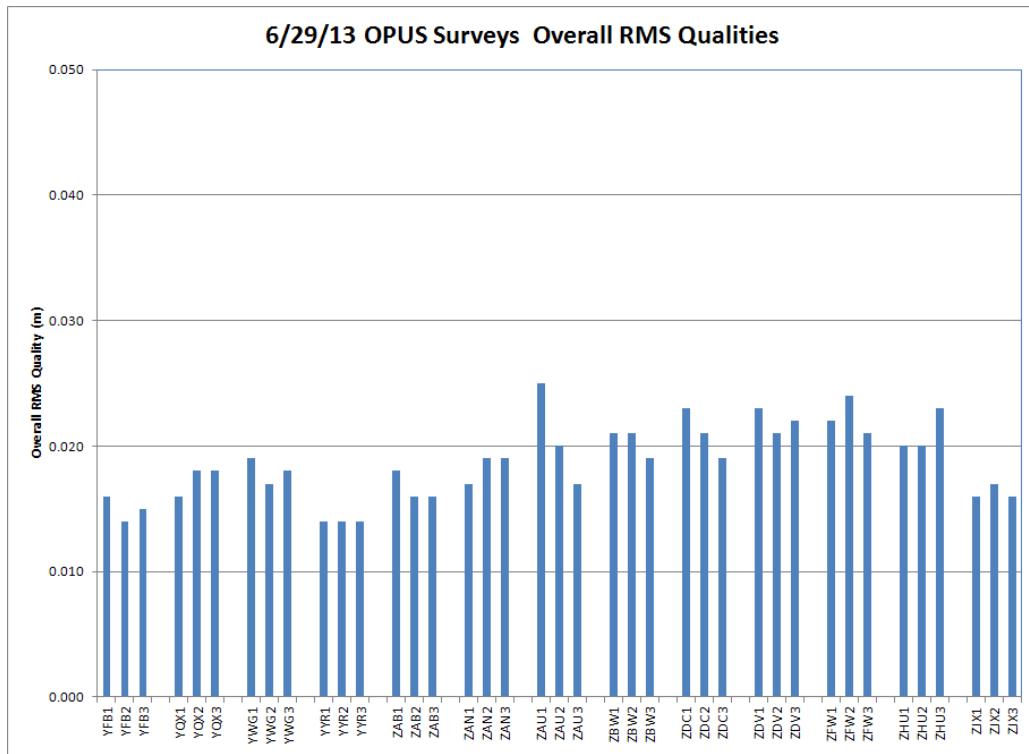


Figure 10-6 6/29/13 OPUS Survey Overall RMS Qualities

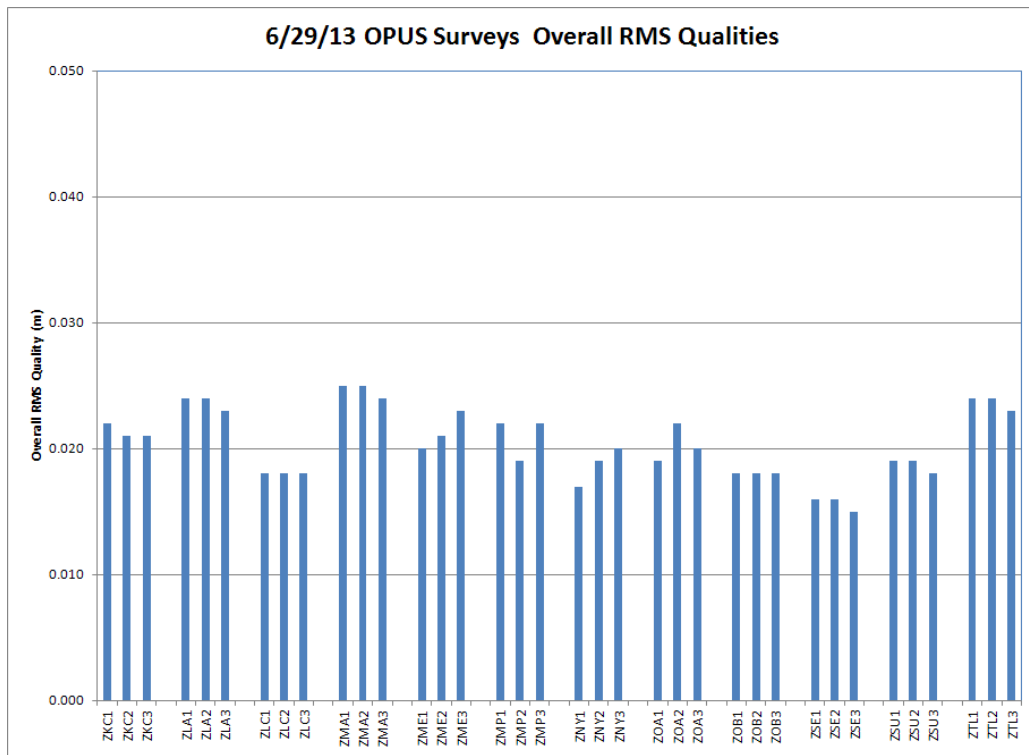


Figure 10-7 6/29/13 OPUS vs. CSRS RSS ECEF Deltas

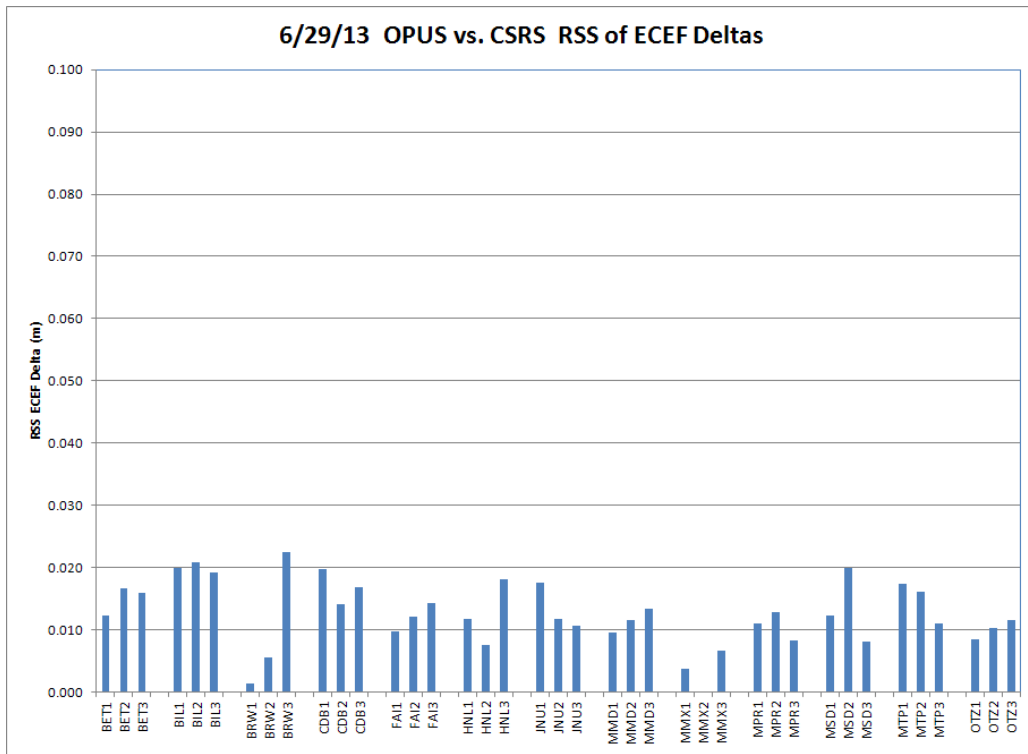


Figure 10-8 6/29/13 OPUS vs. CSRS RSS ECEF Deltas

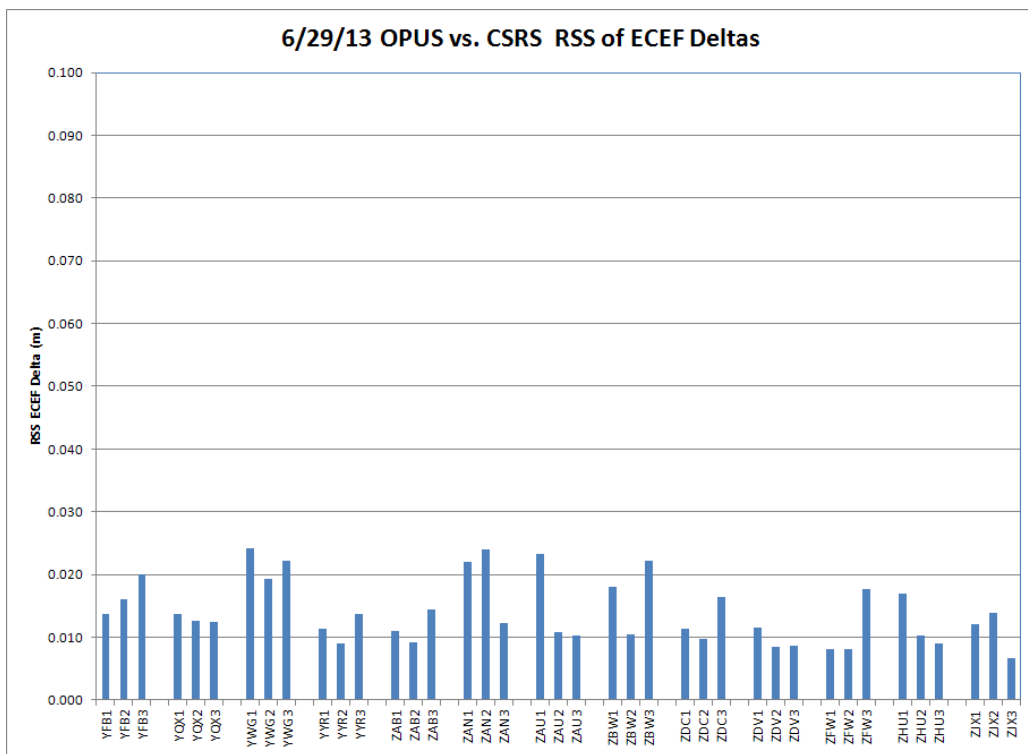


Figure 10-9 6/29/13 OPUS vs. CSRS RSS ECEF Deltas

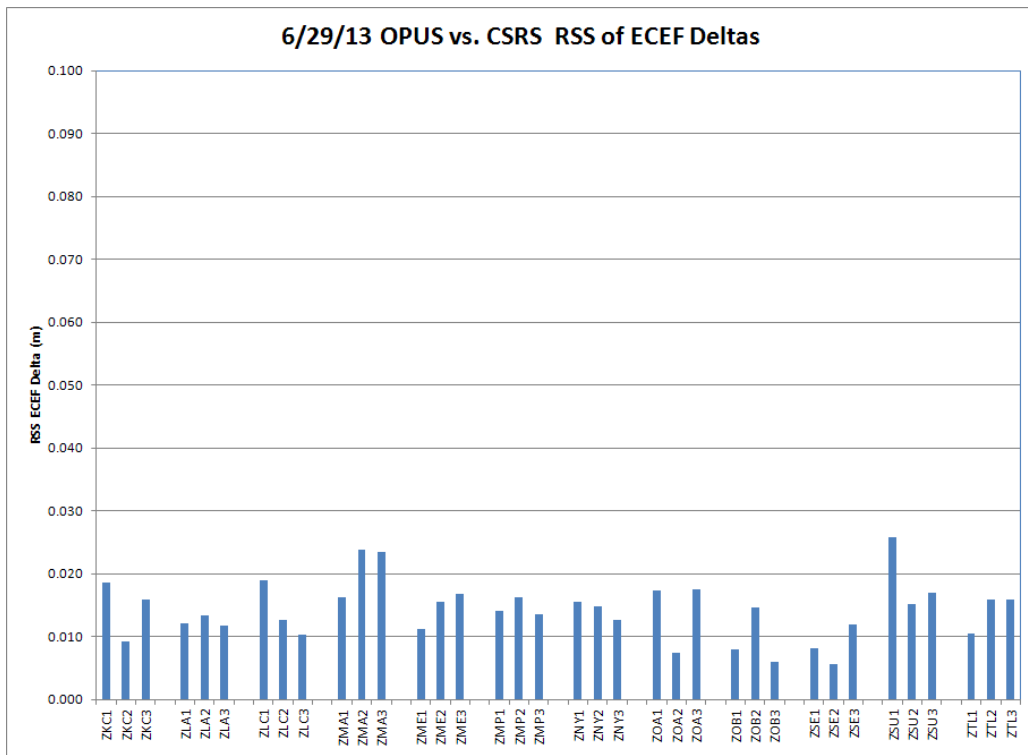


Figure 10-10 6/29/13 CSRS Survey Qualities

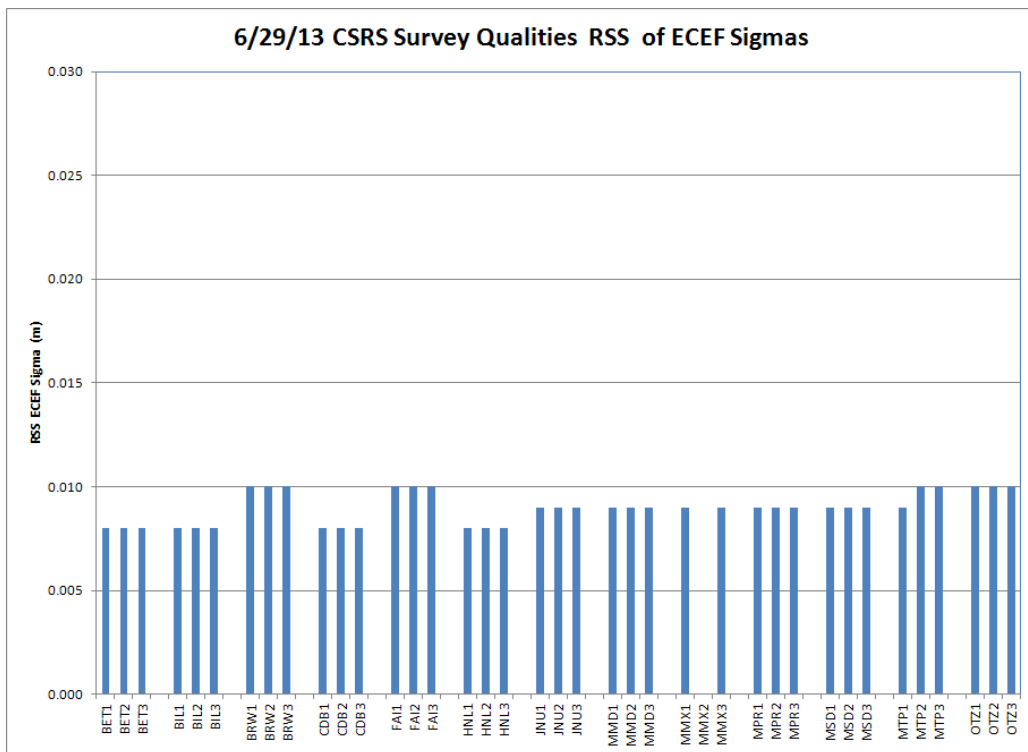


Figure 10-11 6/29/13 CSRS Survey Qualities

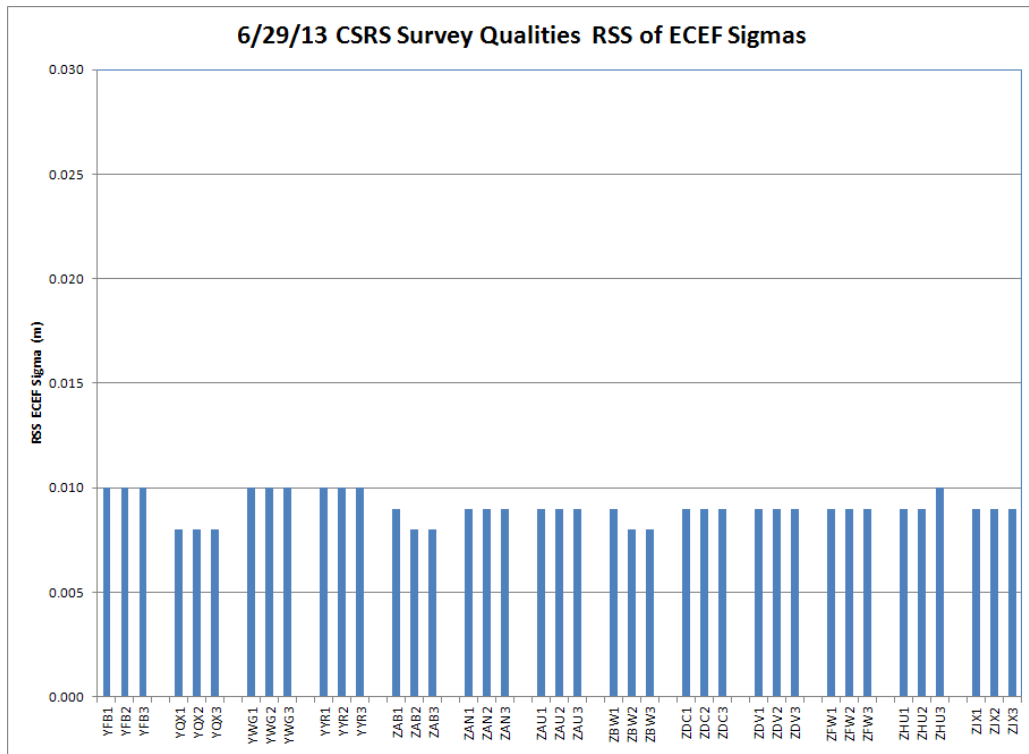
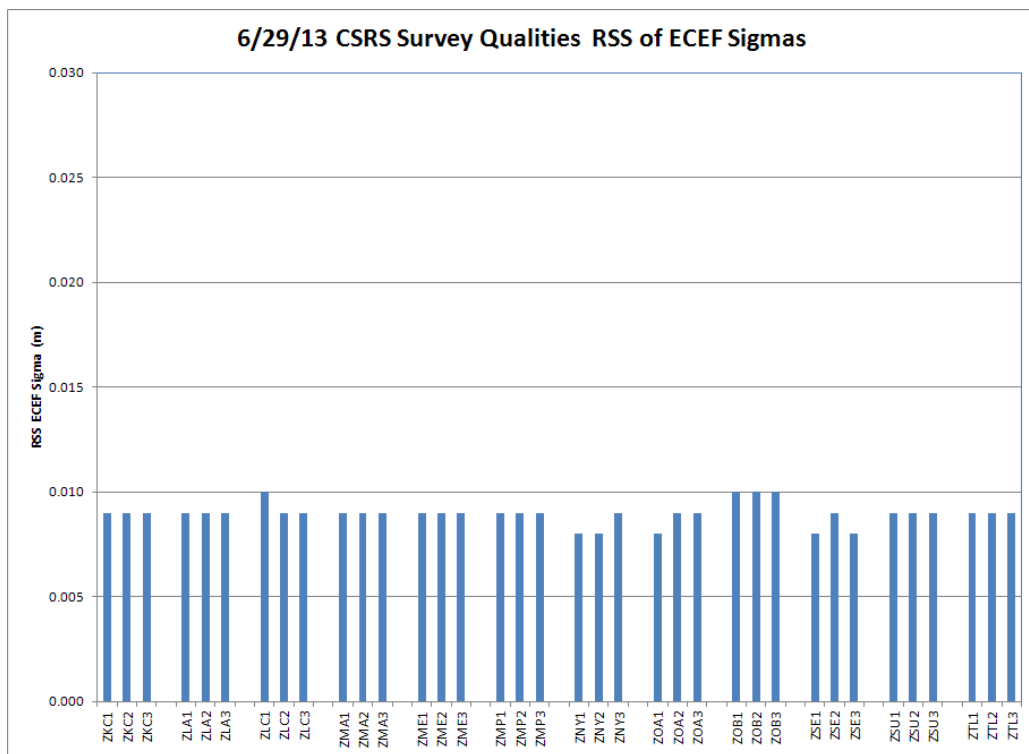


Figure 10-12 6/29/13 CSRS Survey Qualities



11.0 SIGNAL QUALITY MONITOR (SQM)

The Signal Quality Monitor (SQM) is designed to detect signal deformations that originate in the GPS or GEO satellites and ensures that the UDRE values are sufficiently inflated to protect given the monitor’s current observations. SQM processes various correlator spacing measurements produced by the reference station receivers to form four detection metrics for each receiver and calculates statistics based on the observed performance against “ideal” signal correlation peaks. This results in an estimate of the overall deformation per satellite. The deformation level calculated is then compared against threshold values, which includes the acceptable error levels per UDRE value. If the estimated deformation exceeds threshold, the monitor trips for the given satellite and the UDRE value is set to ‘Don’t Use’. The monitor depends on the entire ground network in order to ensure that the satellite is the source of any problem detected rather than a localized affect. Currently all 114 receivers are being used in the SQM computations.

WAAS SQM offline monitoring effort includes the monitoring of the PRN type biases, trips, and the estimated deformation for each satellite that will be referred to as PRN bias in this report.

11.1 Alpha Metrics

The alpha metrics values are pre-determined by offline integrity analysis and are defined as constants in the SQM algorithm. These values remained unchanged for this reporting period and are listed in Table 11-1. Currently there are 4 sets of alpha metrics in the WAAS SQM algorithm that form four detection metrics for each receiver channel. For this report, the four detection metrics will be referred to as: DM1, DM2, DM3, and DM4.

Table 11-1 Alpha Metrics

Correlator Spacing	DM1	DM2	DM3	DM4
-0.1	0	0.43407318	0	-0.36110353
-0.075	0	0.48570652	-0.0058771682	-0.74860302
-0.05	-0.4071265	-0.69931105	-0.011382325	0.23726003
-0.025	1	-0.010099034	0.00037033029	-0.0076011735
0	0	0	0	0
0.025	-0.25	0.13317879	0.99991788	-0.062414070
0.05	1.008525	-0.22851782	0	0.25177272
0.075	0	0.10209042	0	0.42875623
0.1	0	0.078436452	0	0.41602138

11.2 Type Bias

PRN Type biases are evaluated as part of the WAAS SQM offline monitoring effort. Depending on the PRN number of any given satellite, it can be classified into three categories of correlation function shapes: skinny (Type 0), nominal (Type 1), and broad (Type 2). Wideband geostationary satellites are considered a different type (Type 3). PRN-type estimates are computed at each epoch and daily averages are computed for each type, for four detection metrics.

For this reporting period, geostationary satellites type biases are not evaluated. Table11-3 shows the rollup average for the quarter. Table 11-4 shows the rollup average since January 1, 2008. Figure 11-1 shows the daily average for the four detection metrics for the quarter.

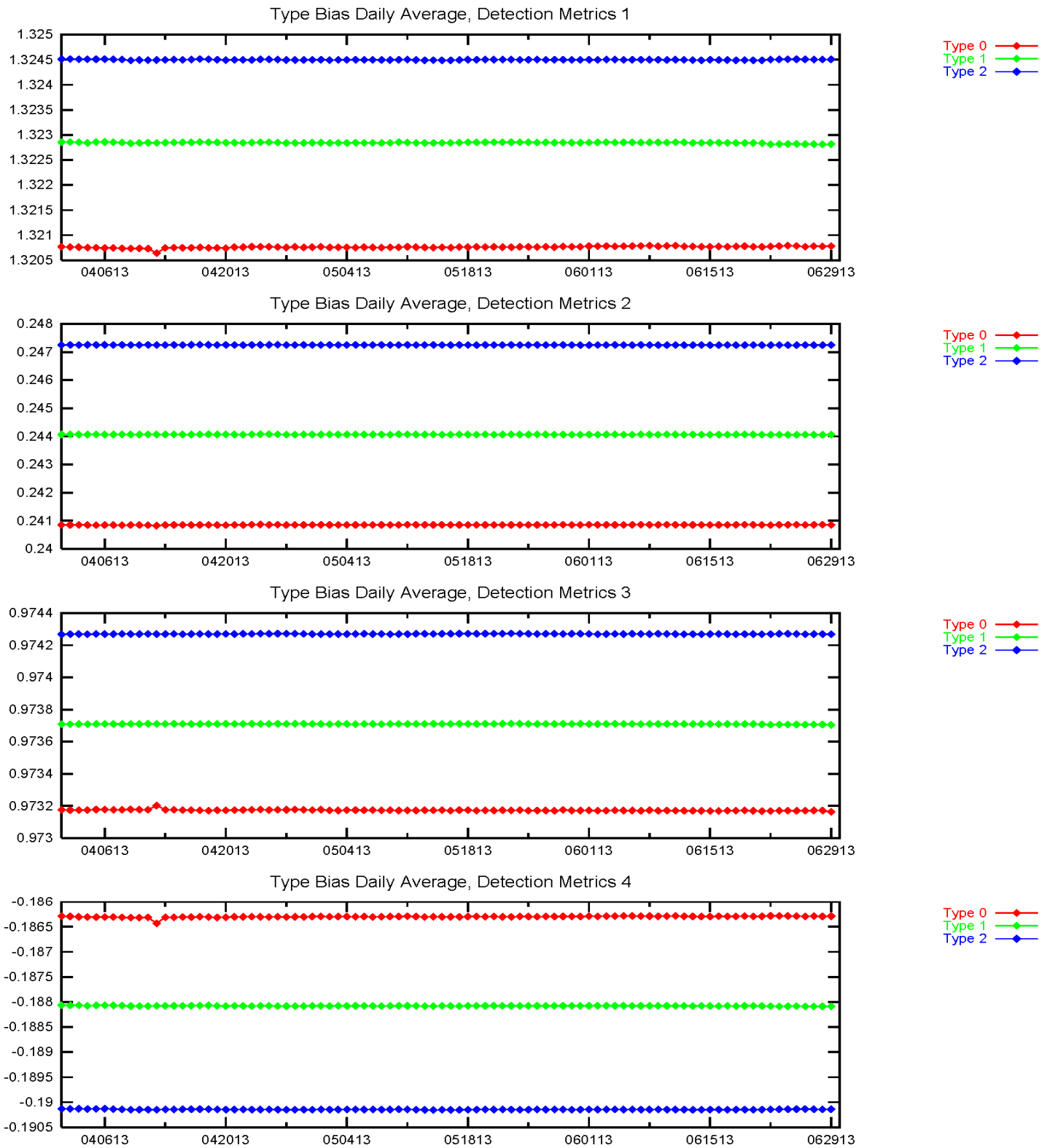
Table 11-2 Type Bias Average for the Quarter

Detection Metric	Type 0	Type 1	Type 2
DM 1	1.3207600	1.3228400	1.3245000
DM 2	0.2408520	0.2440660	0.2472500
DM 3	0.9731730	0.9737100	0.9742700
DM 4	-0.1863000	-0.1880780	-0.1901430

Table 11-3 Type Bias Average Since January 1, 2008

Detection Metric	Type 0	Type 1	Type 2
DM 1	1.3209200	1.3228800	1.3245900
DM 2	0.2408470	0.2440950	0.2472760
DM 3	0.9731740	0.9737090	0.9742760
DM 4	-0.1862080	-0.1880650	-0.1901000

Figure 11-1 Type Bias Average Trend



11.3 PRN Bias

PRN biases are evaluated as part of the WAAS SQM offline monitoring effort. PRN bias is the overall estimated deformation per satellite across receivers. Detection metrics are adjusted for inter-receiver bias, corrected for PRN type bias, and combined across receivers for each satellite. Relying on the assertion that the majority of the SV signals are healthy and normal, detection metrics are normalized over all the satellites on orbit resulting in an overall PRN bias for each satellite. PRN biases are collected at each epoch and daily averages are computed for each satellite, for four detection metrics.

Table 11-4 and Figure 11-2 show the rollup PRN bias average for the quarter. Figures 11-3 to 11-10 show the PRN bias average trend for each SV. The maximum average for DM1 for this quarter is PRN 23 at 0.0010331. The maximum average for DM2 is PRN 25 at 0.0002325. The maximum average for DM3 is PRN 10 at 0.0002736 and the maximum average for DM4 is PRN 23 at 0.0004486.

For this reporting period, geostationary satellite biases are not evaluated. Please refer to Table 1-5 for events that may have an impact on PRN bias statistics. The small spikes in PRN bias daily average are due to satellite outages. On the days of satellite maintenance, partial data resulted in a slightly varied PRN bias daily average compared to full day data average. A new satellite, SVN-66, was launched on 6/21/13 and has been online as PRN 27.

Table 11-4 PRN Bias Average for the Quarter

PRN	SVN	DM1	DM2	DM3	DM4
1	63	0.0002414	0.0001318	0.0000867	0.0001027
2	61	0.0002183	0.0000476	0.0000245	0.0000930
3	33	0.0001842	0.0000735	0.0001022	0.0003452
4	34	0.0001861	0.0000426	0.0000655	0.0001299
5	50	0.0001123	0.0001171	0.0000607	0.0001037
6	36	0.0001501	0.0000593	0.0000530	0.0001311
7	34	0.0001219	0.0000757	0.0000347	0.0001363
8	38	0.0001767	0.0001345	0.0000438	0.0001081
9	39	0.0001446	0.0000404	0.0000601	0.0000937
10	40	0.0006642	0.0000480	0.0002612	0.0000986
11	46	0.0009408	0.0002016	0.0000559	0.0002623
12	58	0.0001541	0.0000734	0.0000983	0.0000751
13	43	0.0005756	0.0000517	0.0000750	0.0001697
14	41	0.0006726	0.0001224	0.0001136	0.0001343
15	55	0.0001306	0.0000607	0.0000283	0.0001503
16	56	0.0001408	0.0000683	0.0001189	0.0003357
17	53	0.0001394	0.0000706	0.0000341	0.0001259
18	54	0.0006815	0.0001221	0.0000486	0.0002423
19	59	0.0004299	0.0001545	0.0000393	0.0000910
20	51	0.0001521	0.0000564	0.0000388	0.0001666
21	45	0.0003466	0.0001109	0.0001615	0.0001171
22	47	0.0003538	0.0000547	0.0000866	0.0003108
23	60	0.0010089	0.0001606	0.0000353	0.0004325
24	65	0.0002229	0.0000532	0.0000410	0.0001054
25	62	0.0003303	0.0001893	0.0000844	0.0001221
26	26	0.0002291	0.0000683	0.0001390	0.0000954
27	66	0.0006349	0.0001817	0.0000725	0.0003083
28	44	0.0002800	0.0000475	0.0000299	0.0000921
29	57	0.0002676	0.0000580	0.0001011	0.0002935
30	30				
31	52	0.0004095	0.0001509	0.0000392	0.0002426
32	23	0.0001936	0.0000576	0.0001001	0.0000899

Figure 11-2 PRN Bias Average for the Quarter

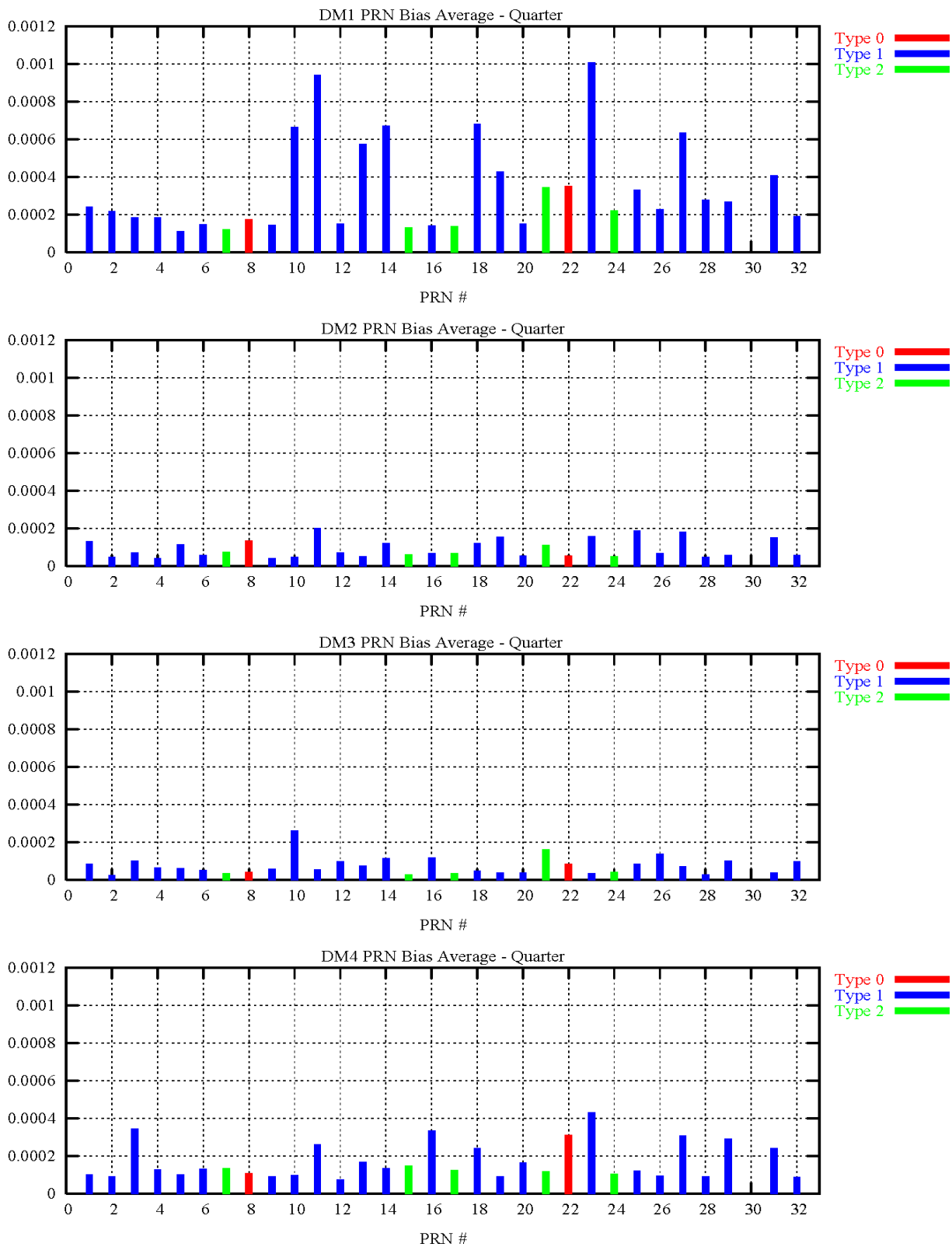


Figure 11-3 PRN Bias Average Trend (PRN 1 – PRN 4)

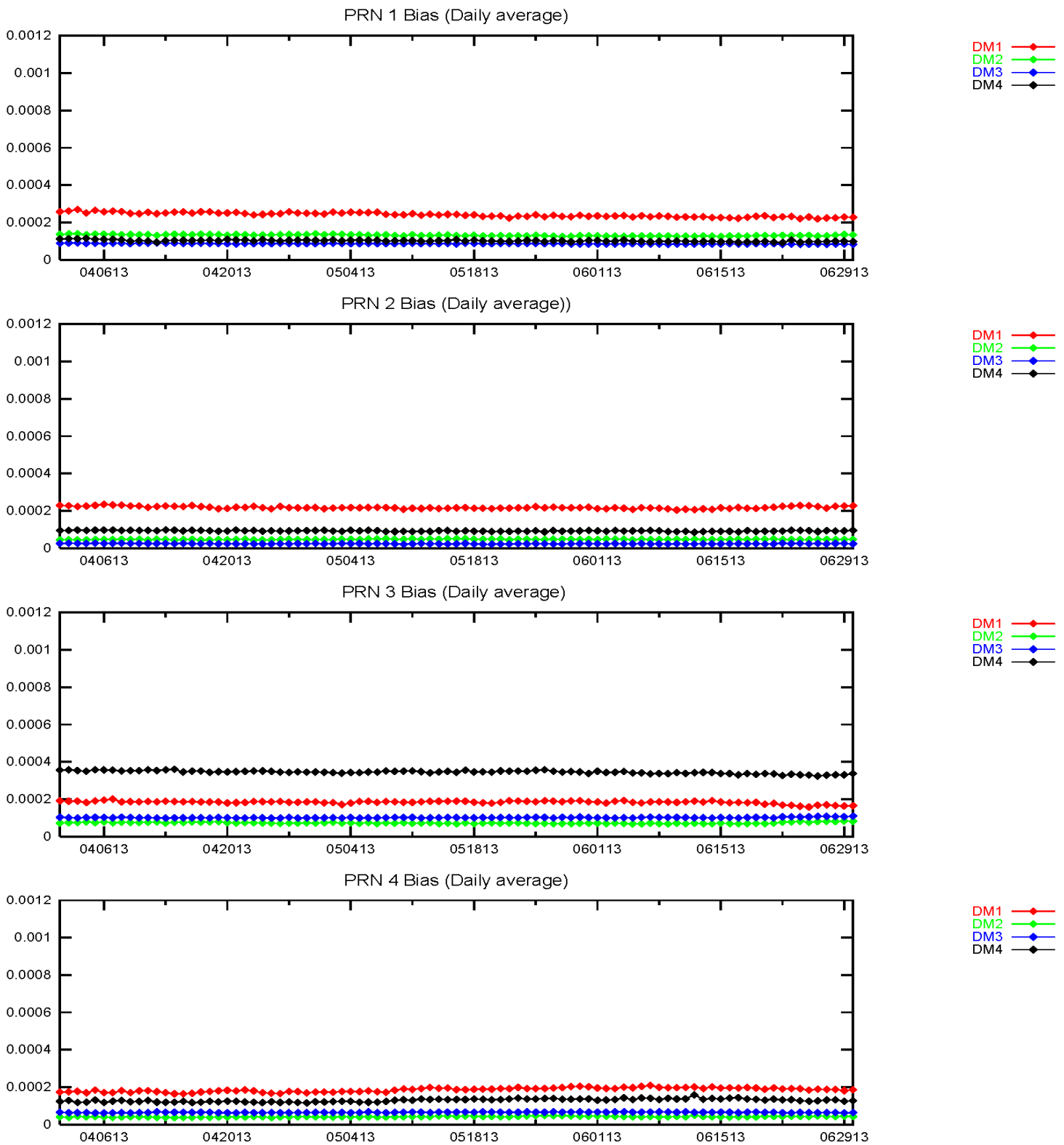


Figure 11-4 PRN Bias Average Trend (PRN 5 – PRN 8)

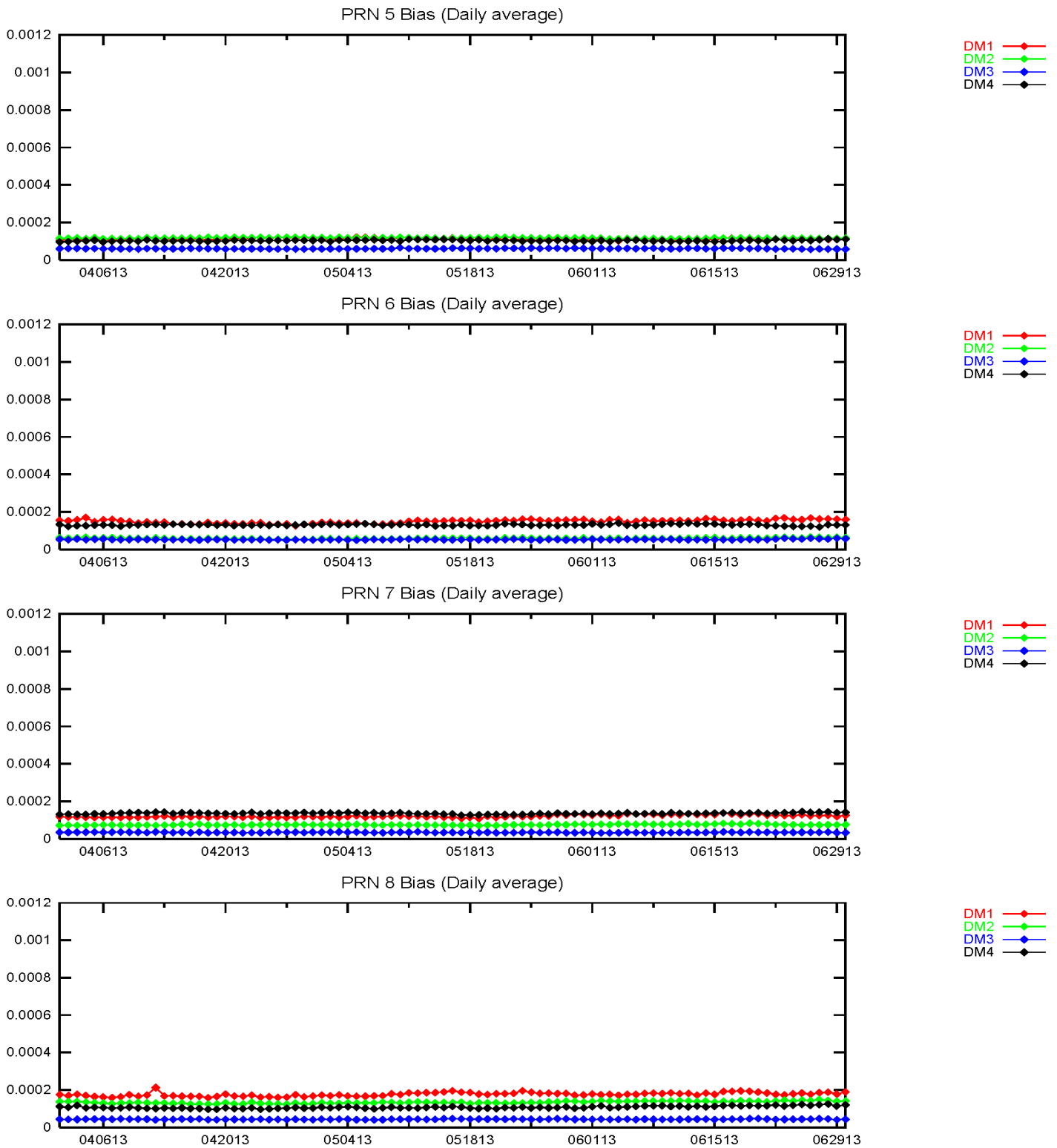


Figure 11-5 PRN Bias Average Trend (PRN 9 – PRN 12)

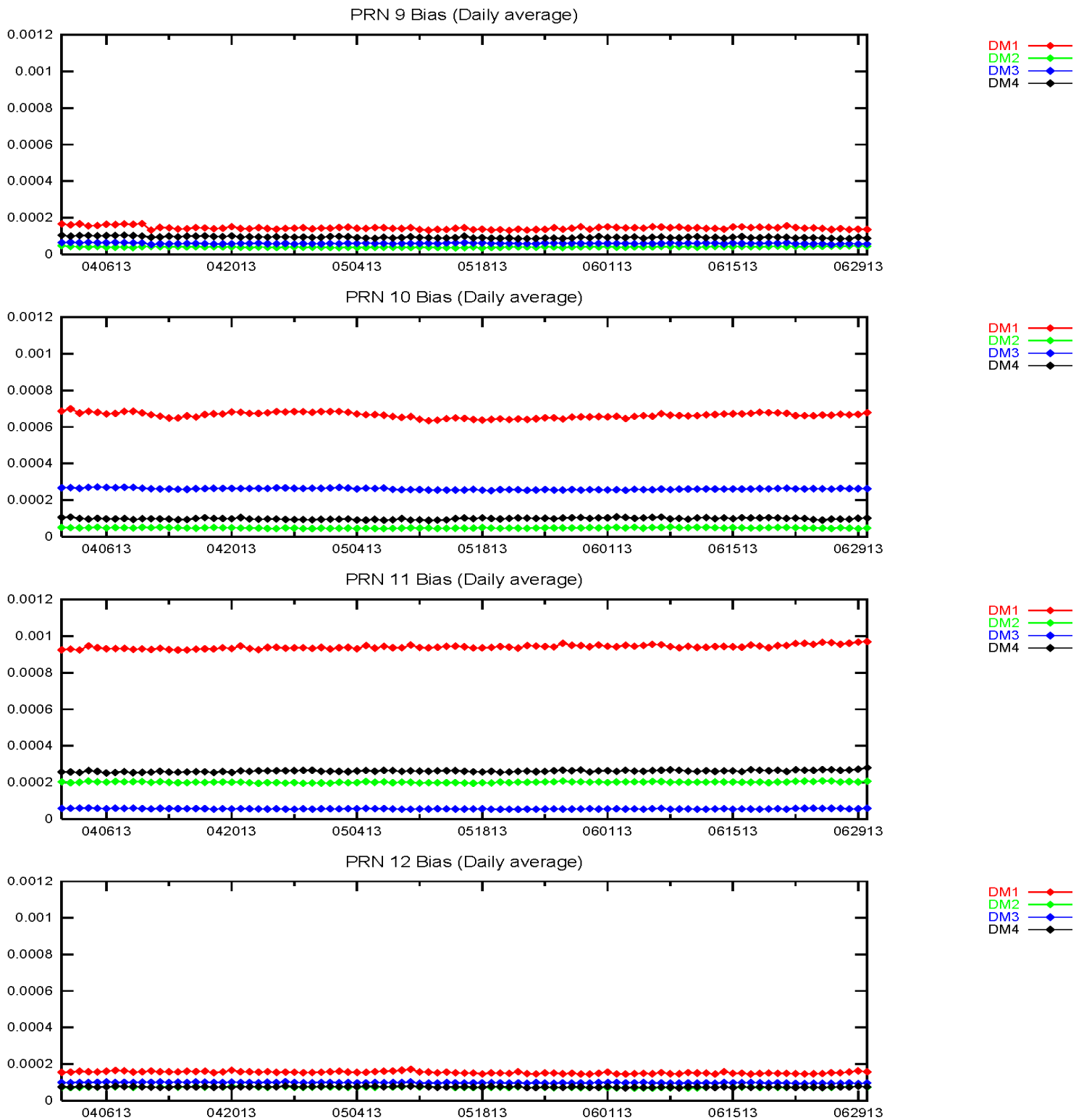


Figure 11-6 PRN Bias Average Trend (PRN 13 – PRN 16)

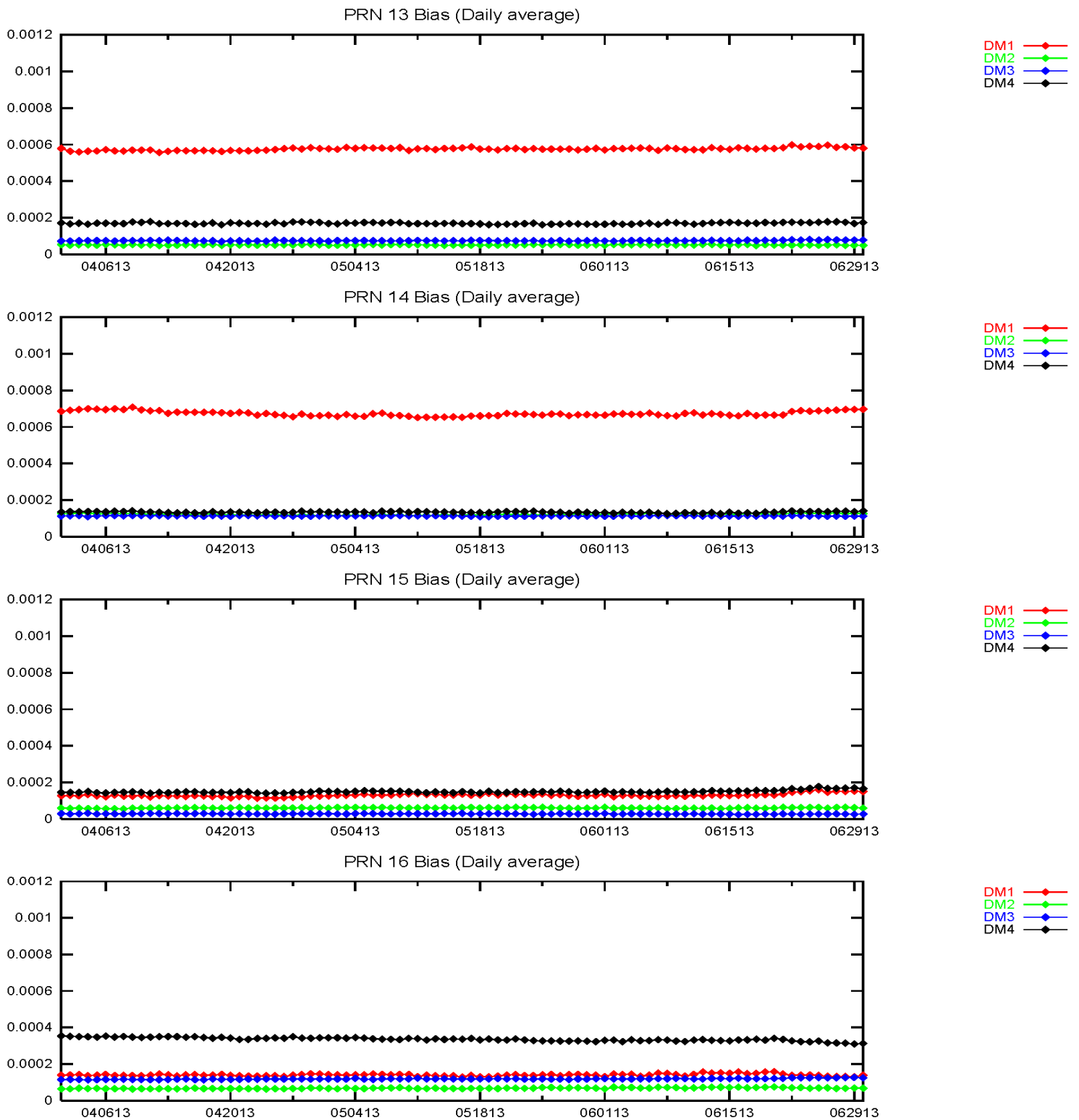


Figure 11-7 PRN Bias Average Trend (PRN 17 – PRN 20)

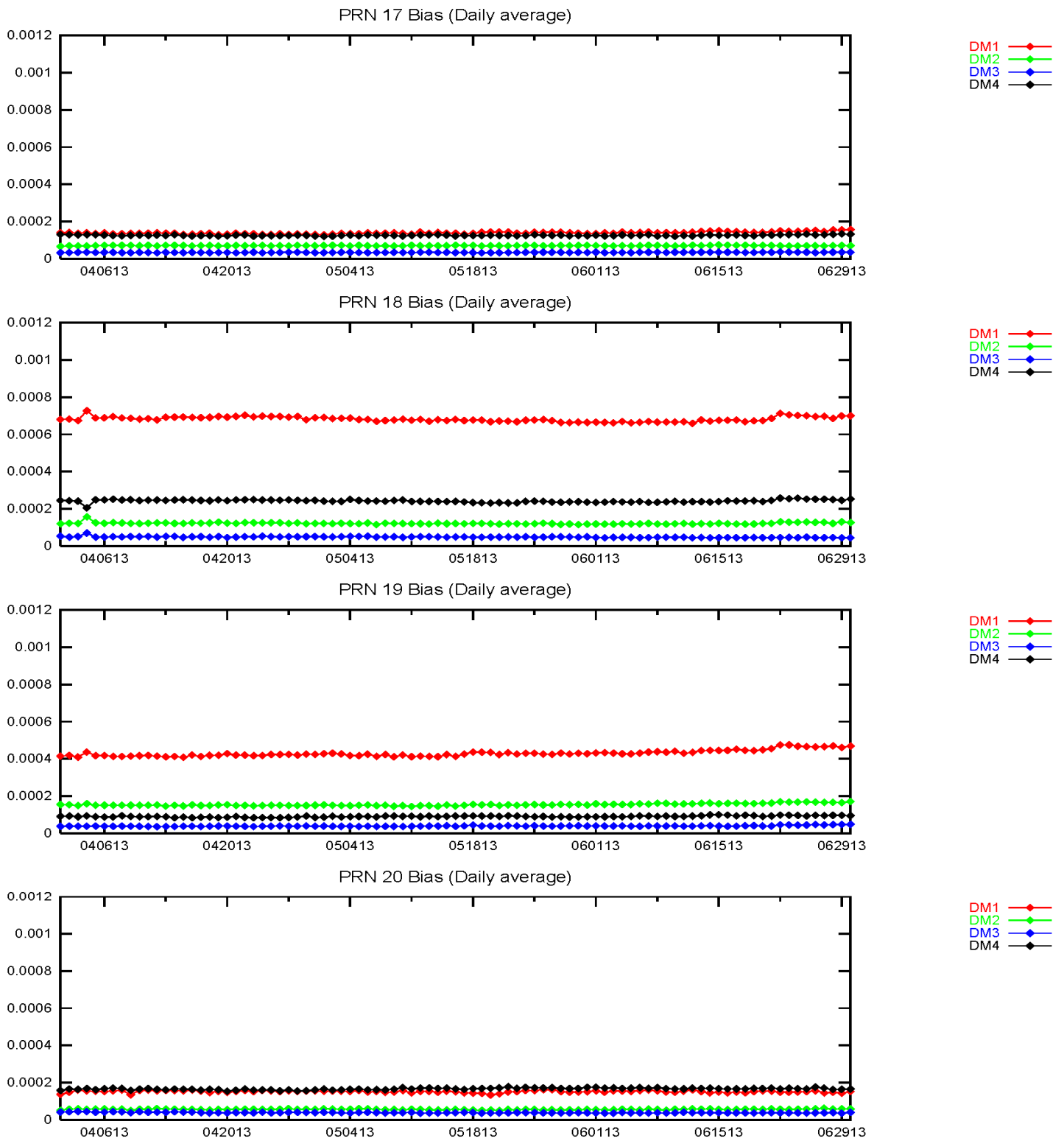


Figure 11-8 PRN Bias Average Trend (PRN 21 – PRN 24)

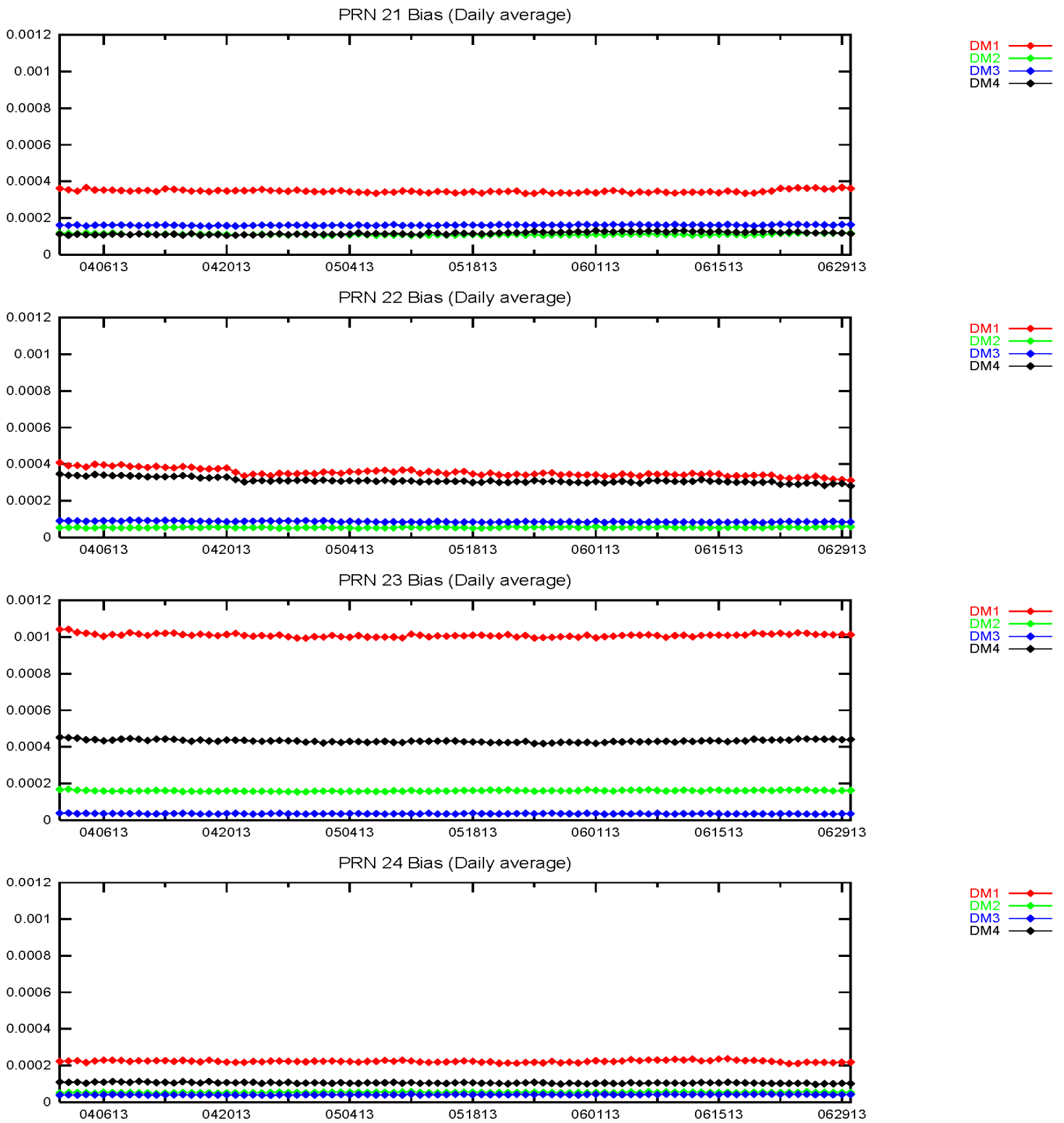


Figure 11-9 PRN Bias Average Trend (PRN 25 – PRN 28)

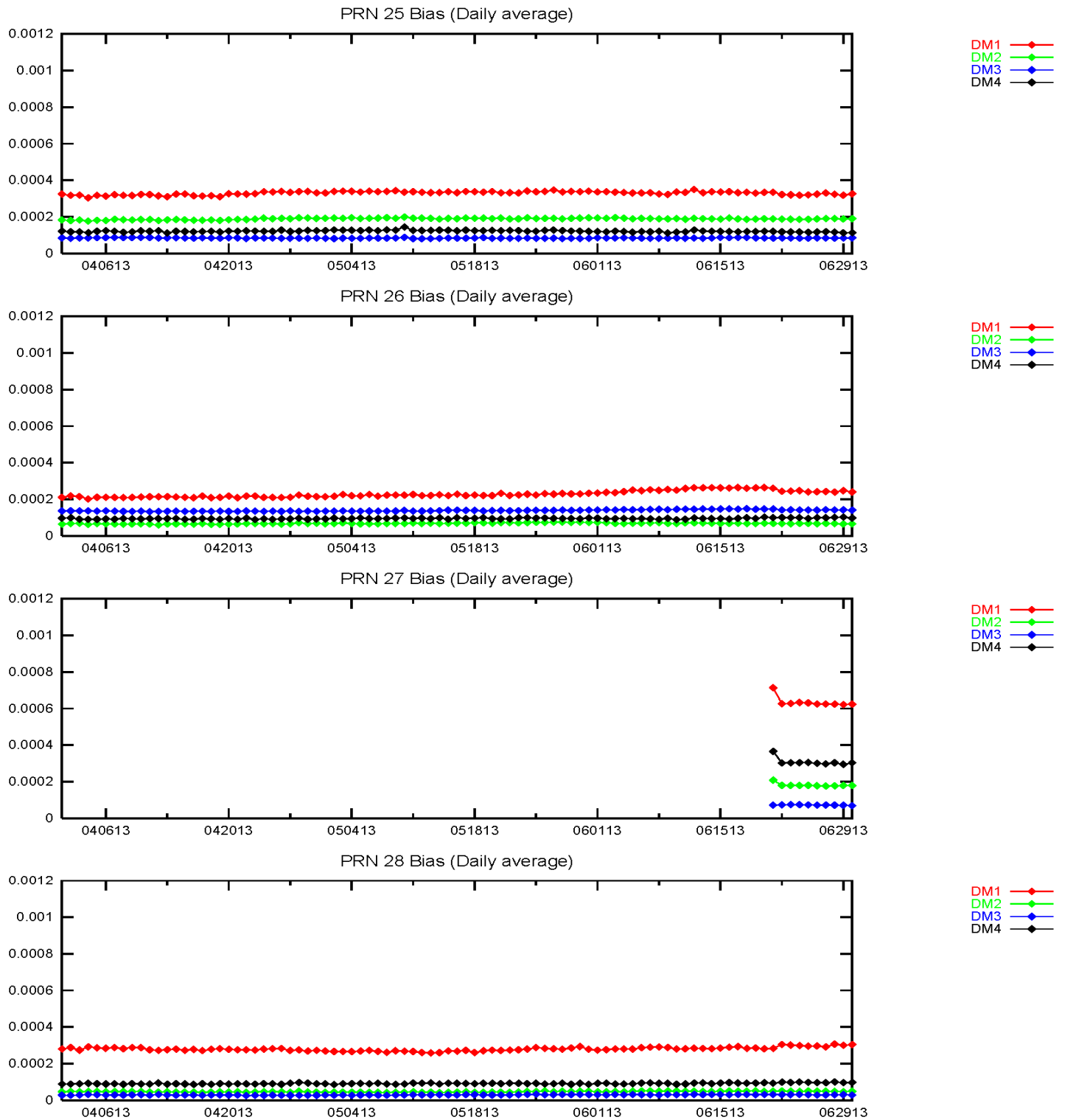
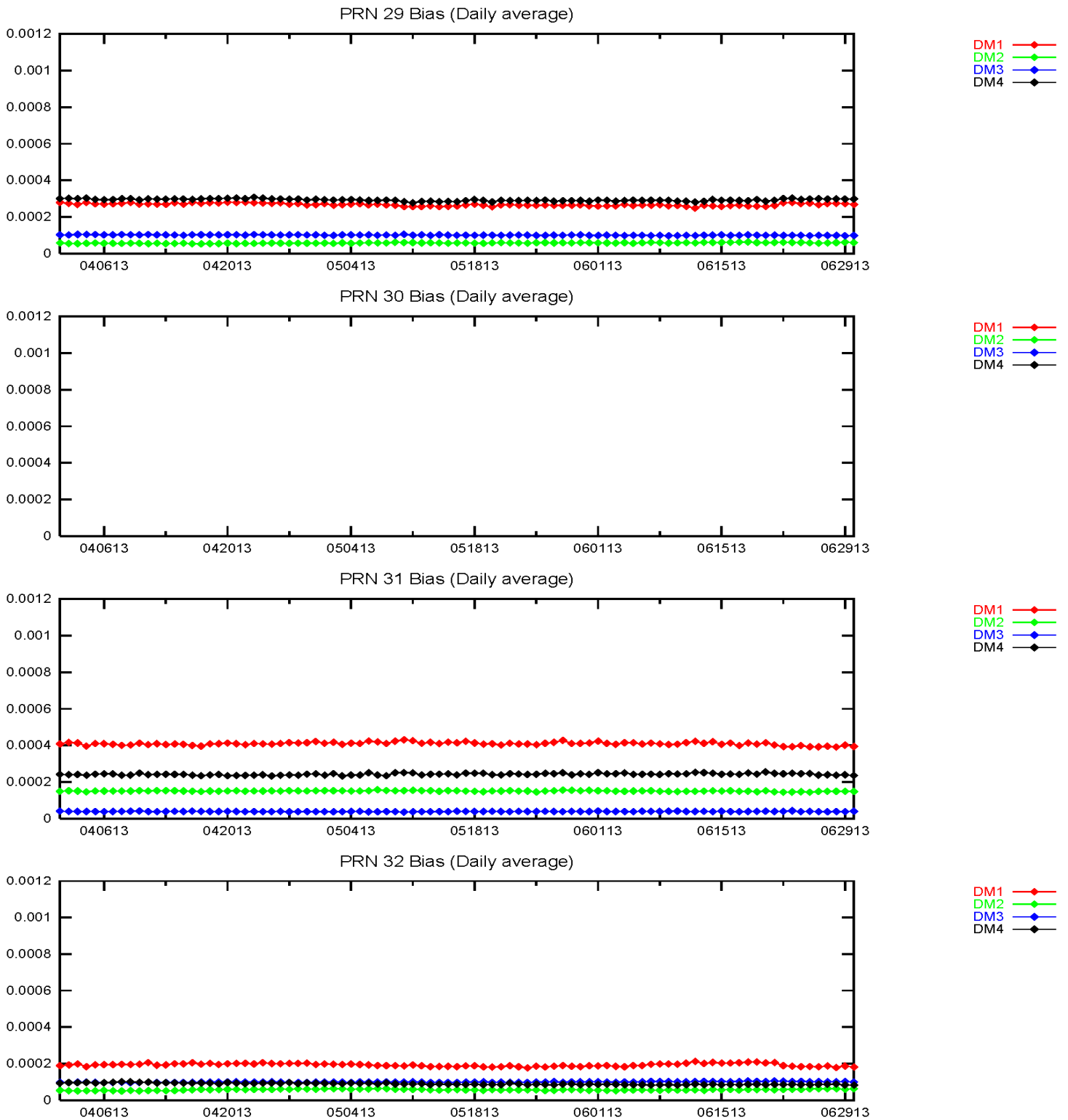


Figure 11-10 PRN Bias Average Trend (PRN 29 – PRN 32)



11.4 SQM Trips

SQM trip occurs when the estimated deformation exceeds threshold. There were no SQM trips for this quarter.

Appendix A: Glossary

General Terms and Definitions

Alert. An alert is an indication provided by the GPS/WAAS equipment to inform the user when the positioning performance achieved by the equipment does not meet the integrity requirements.

Availability. The availability of a navigation system is the ability of the system to provide the required function and performance at the initiation of the intended operation. Availability is an indication of the ability of the system to provide usable service within the specified coverage area.

C&V. The Correction and Verification Subsystem.

CONUS. Continental United States.

Continuity. The continuity of a system is the ability of the total system (comprising all elements necessary to maintain aircraft position within the defined airspace) to perform its function without interruption during the intended operation. More specifically, continuity is the probability that the specified system performance will be maintained for the duration of a phase of operation, presuming that the system was available at the beginning of that phase of operation.

Coverage. The coverage provided by a radio navigation system is that surface area or space volume in which the signals are adequate to permit the user to determine position to a specified level of accuracy. Coverage is influenced by system geometry, signal power levels, receiver sensitivity, atmospheric noise conditions, and other factors that affect signal availability.

Dilution of Precision (DOP). The magnifying effect on GPS position error induced by mapping GPS ranging errors into position through the position solution. The DOP may be represented in any user local coordinate desired. Examples are HDOP for local horizontal, VDOP for local vertical, PDOP for all three coordinates, and TDOP for time.

DR. Discrepancy Report

Fault Detection and Exclusion (FDE). Fault detection and exclusion is a receiver processing scheme that autonomously provides integrity monitoring for the position solution, using redundant range measurements. The FDE consists of two distinct parts: fault detection and fault exclusion. The fault detection part detects the presence of an unacceptably large position error for a given mode of flight. Upon the detection, fault exclusion follows and excludes the source of the unacceptably large position error, thereby allowing navigation to return to normal performance without an interruption in service.

GEO. Geostationary Satellite.

Global Positioning System (GPS). A space-based positioning, velocity, and time system composed of space, control, and user segments. The space segment, when fully operational, will be composed of 24 satellites in six orbital planes. The control segment consists of five monitor stations, three ground antennas, and a master control station. The user segment consists of antennas and receiver-processors that provide positioning, velocity, and precise timing to the user.

Grid Ionospheric Vertical Error (GIVE). GIVES indicate the accuracy of ionospheric vertical delay correction at a geographically defined ionospheric grid point (IGP). WAAS transmits one GIVE for each IGP in the mask.

Hazardous Misleading Information (HMI). Hazardous misleading information is any position data, that is output, that has an error larger than the current protection level (HPL/VPL), without any indication of the error (e.g., alert message sequence).

Horizontal Alert Limit (HAL). The Horizontal Alert Limit (HAL) is the radius of a circle in the horizontal plane (the local plane tangent to the WGS-84 ellipsoid), with its center being at the true position, which describes the region that is

required to contain the indicated horizontal position with a probability of $1-10^{-7}$ per flight hour, for a particular navigation mode, assuming the probability of a GPS satellite integrity failure being included in the position solution is less than or equal to 10^{-4} per hour.

Horizontal Protection Level (HPL). The Horizontal Protection Level is the radius of a circle in the horizontal plane (the plane tangent to the WGS-84 ellipsoid), with its center being at the true position, which describes the region that is assured to contain the indicated horizontal position. It is based upon the error estimates provided by WAAS.

IGS. International GPS Service.

Ionospheric Grid Point (IGP). IGP is a geographically defined point for which the WAAS provides the vertical ionospheric delay.

LNAV. Lateral Navigation.

LP. Localizer Performance. LP is a WAAS operational service level with a HAL equal to 40 meters.

LPV. Localizer Performance with Vertical Guidance. LPV is a WAAS operational service level with a HAL equal to 40 meters and a VAL equal to 50 meters.

LPV 200. Localizer Performance with Vertical Guidance to 200 ft decision height. LPV 200 is a WAAS operational service level with a HAL equal to 40 meters and a VAL equal to 35 meters.

MOPS. Minimum Operational Performance Standards.

NANU. Notice Advisory to Navstar Users. NANU is an advisory message to inform users of a change in the GPS constellation. These messages inform users in advance of planned maintenance and also notify users of unscheduled outages.

Navigation Message. Message structure designed to carry navigation data.

Non-Precision Approach (NPA) Navigation Mode. The Non-Precision Approach navigation mode refers to the navigation solution operating with a minimum of four satellites with fast and long term WAAS corrections (no WAAS ionospheric corrections) available.

Position Solution. The use of ranging signal measurements and navigation data from at least four satellites to solve for three position coordinates and a time offset.

Precision Approach (PA) Navigation Mode. The Precision Approach navigation mode refers to the navigation solution operating with a minimum of four satellites with all WAAS corrections (fast, long term, and ionospheric) available.

RFI. Radio Frequency Interference.

Selective Availability. Protection technique employed by the DOD to deny full system accuracy to unauthorized users.

Signal Quality Monitor (SQM). SQM monitors correlator measurements to detect signal deformations that originate in the GPS or GEO satellites and ensures that the UDREs are sufficiently inflated to protect given the monitor's current observations.

Standard Positioning Service (SPS). Three-dimensional position and time determination capability provided to a user equipped with a minimum capability GPS SPS receiver in accordance with GPS national policy and the performance specifications.

SV. Space Vehicle.

User Differential Range Error (UDRE). UDRE's indicate the accuracy of combined fast and slow error corrections. WAAS transmits one UDRE for each satellite in the mask.

Vertical Alert Limit (VAL). The Vertical Alert Limit is half the length of a segment on the vertical axis (perpendicular to the horizontal plane of WGS-84 ellipsoid), with its center being at the true position, which describes the region that is required to contain the indicated vertical position with a probability of $1-10^{-7}$ per flight hour, for a particular navigation mode, assuming the probability of a GPS satellite integrity failure being included in the position solution is less than or equal to 10^{-4} per hour.

Vertical Protection Level (VPL). The Vertical Protection Level is half the length of a segment on the vertical axis (perpendicular to the horizontal plane of WGS-84 ellipsoid), with its center being at the true position, which describes the region that is assured to contain the indicated vertical position. It is based upon the error estimates provided by WAAS.

VNAV. Vertical Navigation.

Wide Area Augmentation System (WAAS). The WAAS is made up of an integrity reference monitoring network, processing facilities, geostationary satellites, and control facilities. Wide area reference stations and integrity monitors are widely dispersed data collection sites that contain GPS/WAAS ranging receivers that monitor all signals from the GPS, as well as the WAAS geostationary satellites. The reference stations collect measurements from the GPS and WAAS satellites so that differential corrections, ionospheric delay information, GPS/WAAS accuracy, WAAS network time, GPS time, and UTC can be determined. The wide area reference station and integrity monitor data are forwarded to the central data processing sites. These sites process the data in order to determine differential corrections, ionospheric delay information, and GPS/WAAS accuracy, as well as verify residual error bounds for each monitored satellite. The central data processing sites also generate navigation messages for the geostationary satellites and WAAS messages. This information is modulated on the GPS-like signal and broadcast to the users from geostationary satellites.

Appendix B: Additional Coverage Plots

This section includes coverage plots with 99% LPV 200 availability contour, 98% LPV availability contours, and 98% LP availability contours for the quarter. Figure B.1 shows CONUS coverage with 98% LP availability contour. Figure B.2 shows Alaska coverage with 98% LP availability contour. Figure B.3 shows CONUS coverage with 98% LPV availability contour. Figure B.4 shows Alaska coverage with 98% LPV availability contour. Figure B.5 shows CONUS coverage with 99% LPV 200 availability contour. Figure B.6 shows Alaska coverage with 99% LPV 200 availability contour.

Figure B-1 98% CONUS LP Availability Contour

**WAAS 98% LP Coverage Contours
April 1 – June 30, 2013**

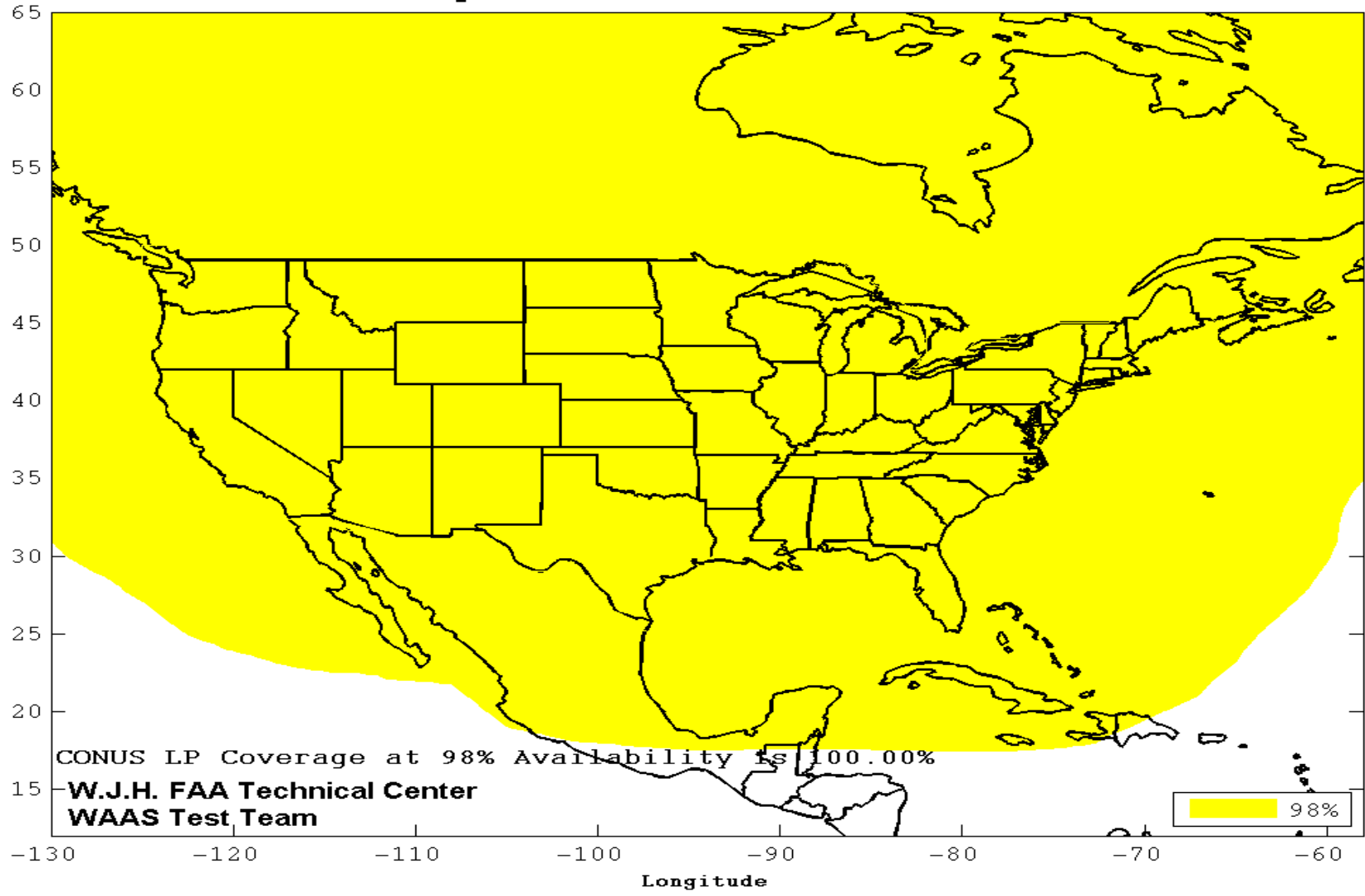


Figure B-2 98% Alaska LP Availability Contour

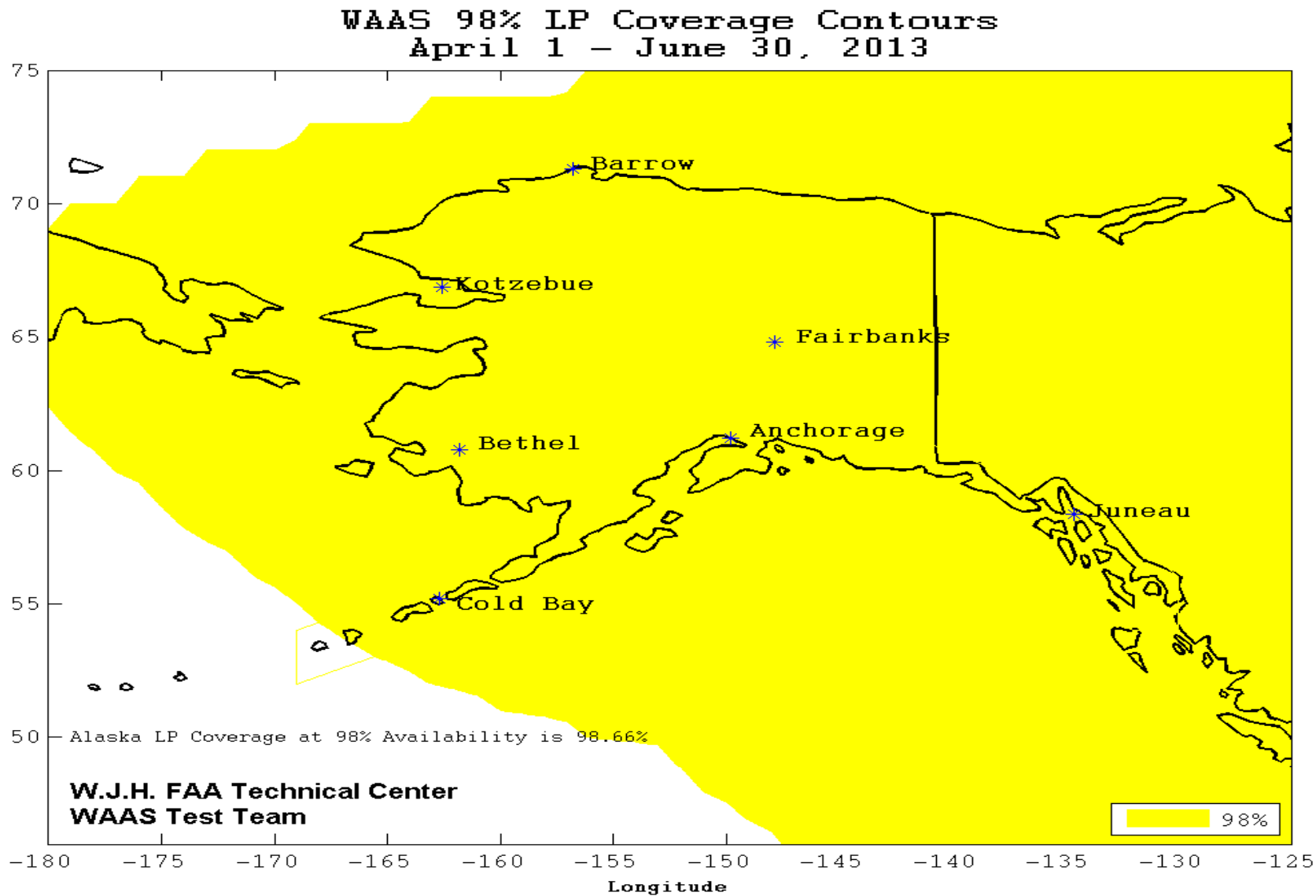


Figure B-3 98% CONUS LPV Availability Contour

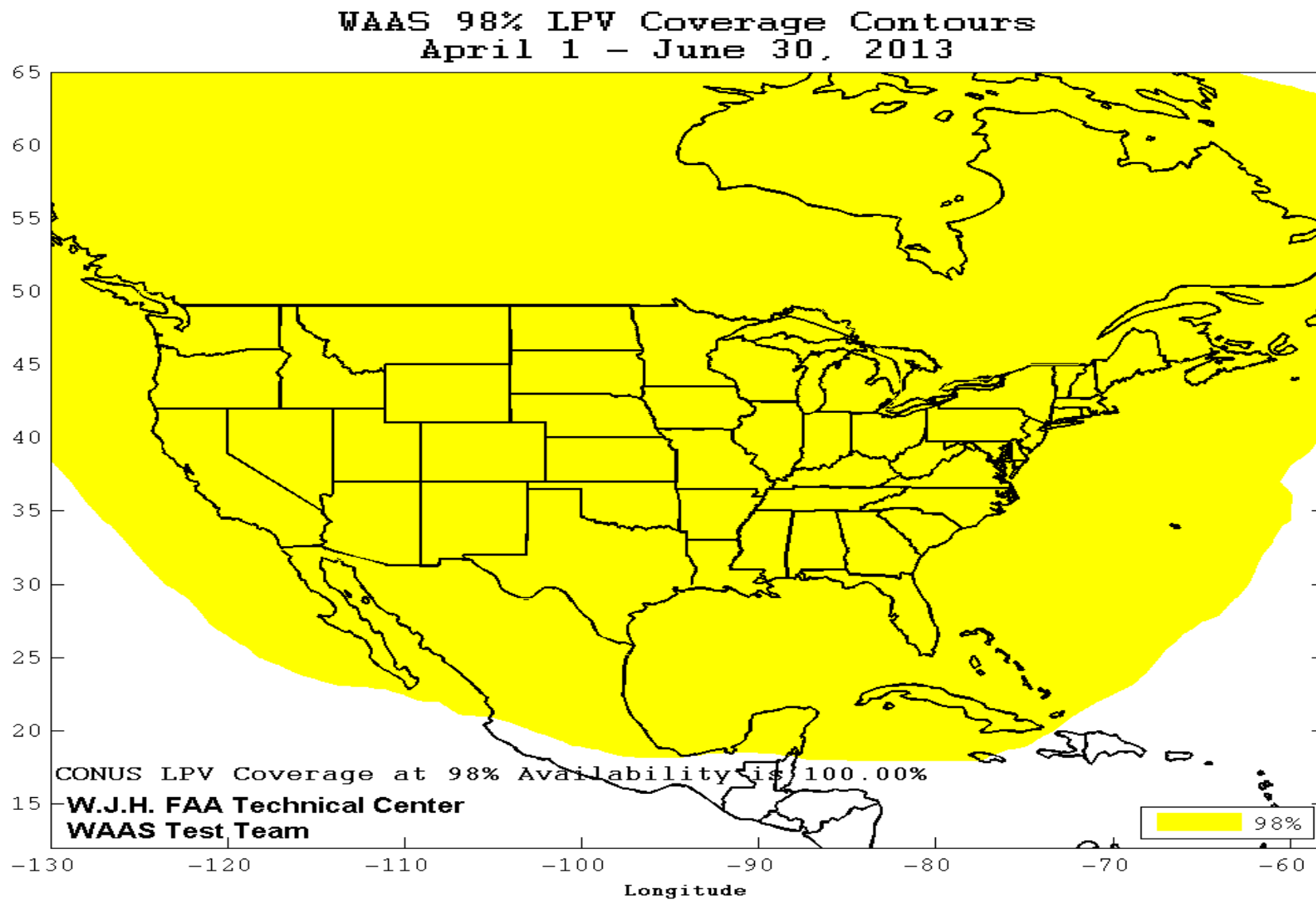


Figure B-4 98% Alaska LPV Availability Contour

**WAAS 98% LPV Coverage Contours
April 1 – June 30, 2013**

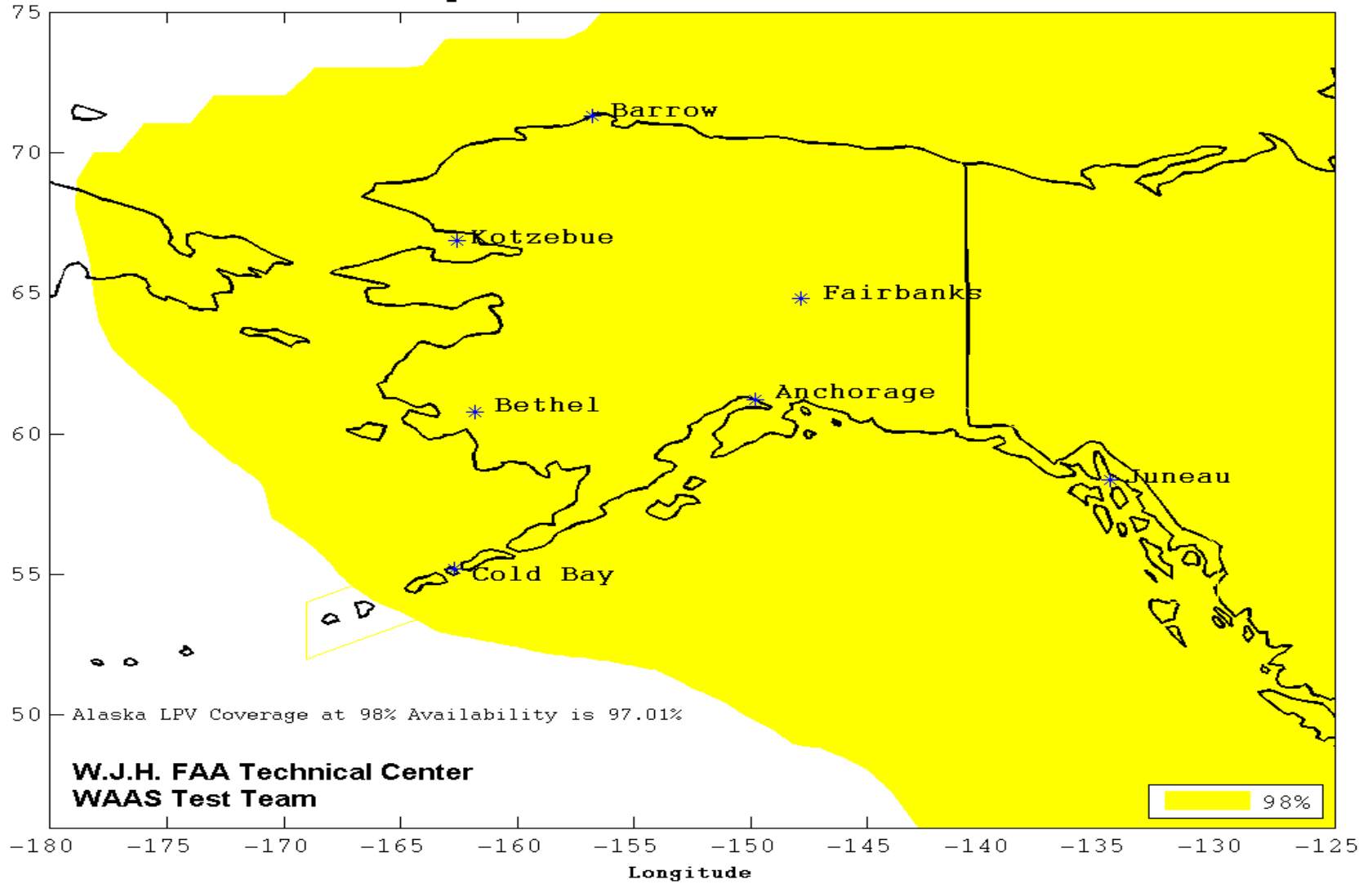


Figure B-5 99% CONUS LPV 200 Availability Contour

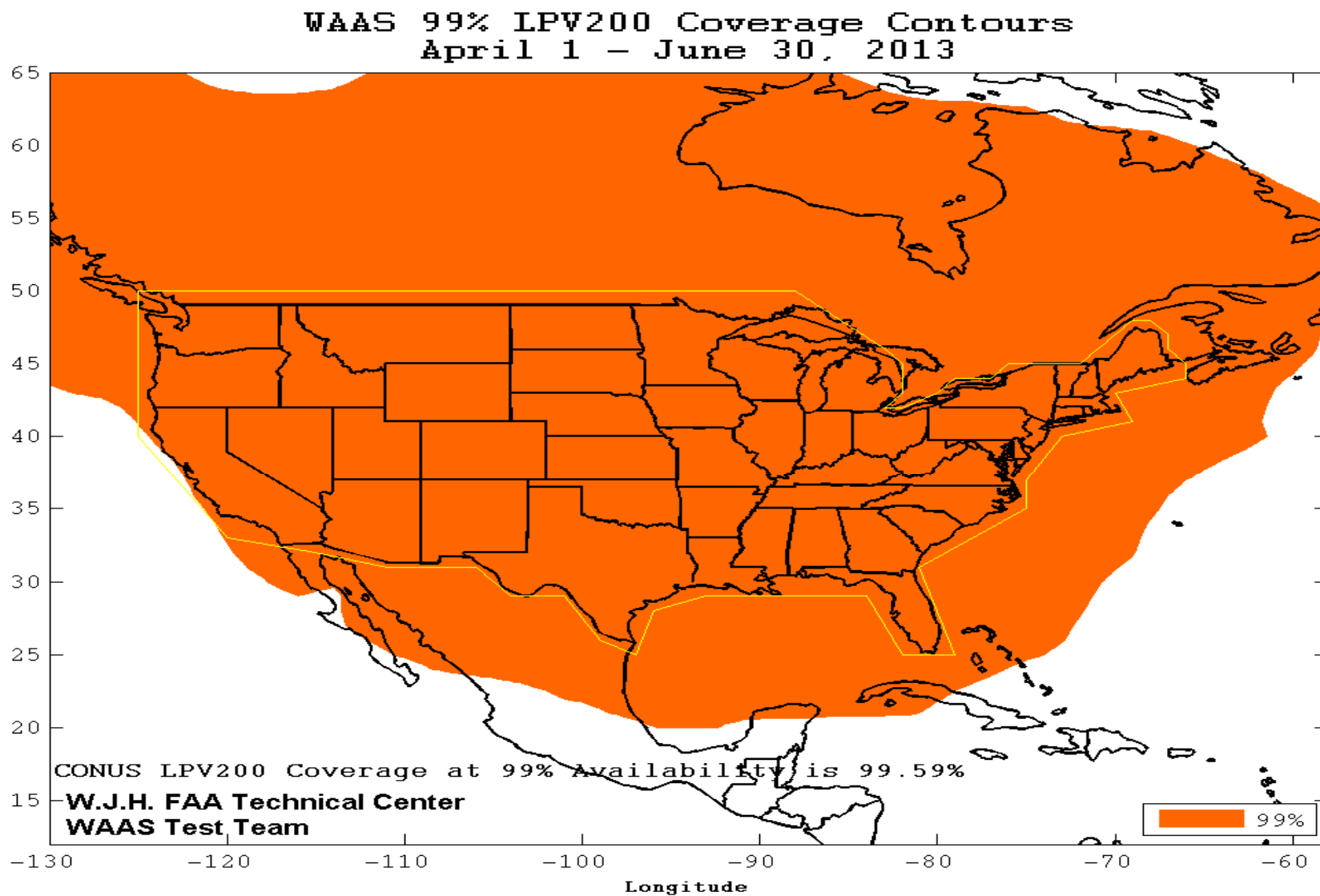


Figure B-6 99% Alaska LPV 200 Availability Contour

**WAAS 99% LPV200 Coverage Contours
April 1 – June 30, 2013**

