

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

**Report #46
(Revised on 4/30/2014)**

Reporting Period: July 1 to September 30, 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, #46, covers WAAS performance during the period from July 1, 2013 to September 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, Atlantic City, 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 1.237 meters	Salt Lake City 0.568 meters	Kotzebue 0.676 meters	Bethel 0.599 meters
95% Vertical Accuracy (VPL <= 50 meters)	Atlantic City 1.629 meters	Salt Lake City 0.855 meters	Barrow 1.35 meters	Bethel 0.946 meters
LP Availability (HPL <= 40 meters)	Multiple Sites 100%	Multiple Sites 100%	Multiple Sites 100%	Barrow 99.99%
LPV Availability (HPL <= 40 meters & VPL <= 50 meters)	Multiple Sites 100%	Boston 99.99%	Multiple Sites 100%	Barrow 99.97%
LPV 200 Availability (HPL <= 40 meters & VPL <= 35 meters)	Multiple Sites 100%	Oakland 99.32%	Multiple Sites 100%	Cold Bay 95.15%
99% HPL	Miami 17.72 meters	Memphis 11.478 meters	Cold Bay 28.357 meters	Fairbanks 14.236 meters
99% VPL	Arcata 32.754 meters	Memphis 19.287 meters	Cold Bay 37.885 meters	Anchorage 23.083 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	68	5906665
Atlantic City	92	7939292
Grand Forks	84	7288184
Oklahoma City	76	6544939
WAAS:		
Albuquerque	92	7947767
Anchorage	92	7920686
Atlanta	92	7942819
Barrow	92	7946844
Bethel	92	7947449
Billings	92	7947640
Boston	92	7944061
Chicago	92	7947934
Cleveland	92	7938016
Cold Bay	92	7946979
Dallas	92	7945547
Denver	92	7943312
Fairbanks	92	7938514
Gander	92	7947872
Goose Bay	92	7947955
Houston	92	7938390
Iqaluit	92	7946077
Jacksonville	92	7948069
Juneau	91	7854022
Kansas City	92	7947936
Kotzebue	92	7947354
Los Angeles	92	7941429
Memphis	92	7947851
Merida	92	7944541
Mexico City	92	7947388
Miami	92	7948074
Minneapolis	92	7946749
New York	92	7948077
Oakland	92	7947855
Puerto Vallarta	91	7853341
Salt Lake City	92	7947045
San Jose Del Cabo	92	7940790
Seattle	92	7946770
Washington DC	92	7942233
Winnipeg	92	7947953

Table 1-3 NPA Evaluation Sites

Location	Number of Days Evaluated	Number of Samples
Albuquerque	92	7943195
Anchorage	92	7944320
Atlanta	92	7938472
Barrow	92	7942703
Bethel	89	7728604
Billings	92	7944289
Boston	92	7935754
Cleveland	92	7938484
Cold Bay	92	7942572
Fairbanks	92	7933205
Gander	92	7942861
Honolulu	92	7941923
Houston	92	7944331
Iqaluit	92	7944175
Juneau	92	7913882
Kansas City	92	7944311
Kotzebue	92	7943563
Los Angeles	92	7938753
Merida	92	7941584
Miami	92	7940783
Minneapolis	92	7942031
Oakland	92	7944210
Salt Lake City	92	7944156
San Jose Del Cabo	92	7942476
San Juan	92	7943380
Seattle	92	7937937
Tapachula	91	7871202
Washington DC	92	7936818

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
7/6/2013	7/6/2013	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Alaska, LPV200_Canada	Elevated geomagnetic activity (Kp = 4) resulted in elevated GIVE values which caused minor degradation of LPV200 availability in northern Alaska and northwestern Canada. Please see plot(s): LPV_7/6/2013 LPV200_7/6/2013
7/10/2013	7/10/2013	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Alaska, LPV200_Canada	Elevated geomagnetic activity (Kp = 5) resulted in increased GIVE values. The increased GIVE values resulted in minor degradation to the LPV200 service availability in northern Alaska and northern Canada. Please see plot(s): LPV200_7/10/2013
7/14/2013	7/14/2013	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Canada	Elevated geomagnetic activity (Kp = 5) resulted in increased GIVE values. The increased GIVE values resulted in significant degradation to the LPV200 service availability in central and northern Canada. Please see plot(s): LPV200_7/14/2013
7/14/2013	7/14/2013	Washington D.C.	None	Range Domain Monitor (RDM) bumping on PRN-7

Start Date	End Date	Location/ Satellite	Service Affected	Event Description
		(CnV), Los Angeles (CnV), Atlanta (CnV), PRN7		for Fairbanks caused the broadcast UDREi to jump from 5 (3 m) to 12 (15 m) for approximately 15 minutes from 18:30 to 18:45. Scintillation associated with aura activity is suspect (Kp = 4). Did not impact WAAS availability. Please see plot: UDRE Plot 07/14/2013
7/17/2013	7/22/2013	Oklahoma City (OKC1)	None	Maintenance performed on OKC NSTB antenna (not part of WAAS). Receiver unusable for reporting purposes.
7/20/2013	7/20/2013	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_Canada	Elevated geomagnetic activity (Kp = 3) resulted in increased GIVE values. The increased GIVE values resulted in minor degradation to the LPV and LPV200 service availabilities in northern Canada. Please see plot(s): LPV 7/20/2013 LPV200 7/20/2013
7/21/2013	7/21/2013	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Mexico	PRN-26 signal instability caused all WAAS receivers tracking PRN-26 to temporarily lose tracking at 18:46:51 (GMT). Tracking was restored at 18:52:13. This resulted in PRN-26 being alarmed to "Not Monitored", UDREi = 14. Normal UDRE levels were regained by approximately 19:10. The elevated UDREi on PRN-26 resulted in a minor degradation of the LPV200 service in southern Mexico, which included a 154 second outage at Mexico City (MMX). Please see plot(s): LPV200 7/21/2013
7/24/2013	7/25/2013	PRN12	LPV_Alaska, LPV_Canada, LPV200_CONUS, LPV200_Alaska, LPV200_Canada, RNP1_All	Planned maintenance, Delta V maneuver, on PRN-12 (see NANU 3013042) resulted in temporary loss of service for PRN-12. WAAS only RNP-0.1 service was slightly degraded (less than 15 minute unavailability) in the vicinity of Hawaii, RNP-0.3 service was not impacted. RAIM only RNP-0.1 service was also impacted, but RAIM only RNP-0.3 service was not impacted. Please see plot(s): RNP1 7/24/2013 RNP3 7/24/2013 RAIM_RNP1 7/24/2013 RAIM_RNP1 7/24/2013
7/26/2013	7/26/2013	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Canada	Elevated geomagnetic activity (Kp = 4) resulted in increased GIVE values. The increased GIVE values resulted in minor degradation to the LPV200 service availability in north central Canada. Please see plot(s): LPV200 7/26/2013
8/2/2013	8/3/2013	GEO135, NAPA (APC)	LPV_Alaska, LPV_Canada, LPV200_CONUS, LPV200_Alaska, LPV200_Canada	CRW GEO PRN-135. Manual switchover from the Napa CA uplink site to the Littleton CO uplink site due to a Phase Noise Enhancer (PNE) out of alignment alert to the WAAS operators. TOW 510855-510860. This resulted in a very short (~5 seconds) interruption to all WAAS service in portions of northern Alaska and north western Canada where CRW is the only GEO visible.
8/4/2013	8/5/2013	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Alaska, LPV_Canada, LPV200_Alaska, LPV200_Canada	Elevated geomagnetic activity (Kp = 5) resulted in increased GIVE values on 4 August and 5 August. The increased GIVE values resulted in minor degradation to the LPV200 service availability in northern Canada on 4 August, a minor degradation of LPV service in

Start Date	End Date	Location/ Satellite	Service Affected	Event Description
				north central Canada on 5 August, and a moderate degradation to the LPV200 in north and central Canada on 5 August. Please see plot(s): LPV200_8/4/2013 LPV_8/5/2013 LPV200_8/5/2013
8/6/2013	8/6/2013	Barrow (BRW1), Barrow (BRW2), Barrow (BRW3)	LPV_Alaska, LPV200_Alaska	A 30 second loss of communications to the Barrow AK WRS caused a brief loss of availability to the LPV and LPV200 services in northern Alaska. Ring 2 of the WAAS network connectivity to Barrow was out of service the entire day. Please see plot(s): LPV_8/6/2013 LPV200_8/6/2013
8/7/2013	8/7/2013	GEO138, Brewster (BRE-B)	LPV_Canada, LPV200_Canada	CRE GEO, PRN-138. Manual switchover from the Brewster WA uplink site to the Woodbine MD uplink site. TOW 288055-288060. The temporary interruption in the signal causes WAAS code noise and multipath processing to reinitialize. This resulted in an elevated UDRE for CRE ranging which caused a minor degradation to the LPV and LPV200 service availability for the northern fringe of Canada. Please see plot(s): LPV_8/7/2013 LPV200_8/7/2013
8/8/2013	8/8/2013	Woodbine (QWE)	None	CRE GEO, PRN-138. Greater than 6 dB carrier to noise (C/No) degradation observed from multiple sites. Cause was very heavy rain at the Woodbine MD uplink site. Degradation was not enough to trigger the automatic uplink power increase or to cause a uplink switch to the Brewster WA uplink site.
8/13/2013	8/13/2013	Boston (ZBW1), Boston (ZBW2), Boston (ZBW3)	Local	A local RFI event caused a brief (51 sec) loss of LPV200 service availability for 2 of the 3 WAAS receivers at the Boston WRS (ZBW). Note ZBW is in Nashua, New Hampshire.
8/13/2013	8/13/2013	PRN9	LPV200_Canada	Planned maintenance (delta V maneuver) for PRN 9. TOW 218254 (~12:37) See NANUs 2013043 and 2013045. Minor impact to LPV200 availability in Canada. Availability impact is not visible in plots due to greater impact from other events on this day
8/13/2013	8/13/2013	PRN6	LPV200_Canada	Planned maintenance was scheduled for PRN 6. See NANU 2013044 and 2013046. This planned maintenance overlapped with planned maintenance on PRN 9. There was a minor degradation in LPV200 service availability, but that degradation is not visible in the plots due to the greater impact from other events on this day. Event started at TOW 221854 (~13:37).
8/13/2013	8/13/2013	PRN12	LPV200_Alaska	PRN-12 was bumped to "Not Monitored" for 30 seconds starting at 21:20:28 (GPS). This resulted in brief outage of LPV200 service in Alaska. The UDRE bumping was caused by a residual over threshold trip on the internal UDRE monitor for Tapachula (MTP). This was a false alarm caused by local multipath at MTP (recurring issue). Please see plot(s): LPV200_8/13/2013 Cov vs Time Alaska 8/13/2013
8/13/2013	8/13/2013	GEO135, Los Angeles (CnV)	LPV_Alaska, LPV200_Alaska,	The WAAS ZLA (Palmdale CA) Corrections and Verification (C&V) Subsystem faulted due to a failure

Start Date	End Date	Location/ Satellite	Service Affected	Event Description
			LPV200_Canada, RNP3_All, RNP1_All	of the Zyfer GPS clock. Control of the CRW GEO automatically transitioned from the ZLA C&V to the ZTL (Atlanta, GA) C&V. However due to the timing of the failure, the last ZLA uplink message to be broadcast by CRW did not reach ZTL. This resulted in ZTL broadcasting a "Zero Filled Type Zero" alarm upon its assumption of the control of the CRW uplink. This alarm caused users to reinitialize their data for the CRW GEO. That initialization caused a brief loss of all WAAS services (< 300 sec) for those users located where the CRW GEO is the only visible WAAS GEO in northern Alaska and north western Canada. Please see plot(s): LPV 8/13/2013 LPV200 8/13/2013 RNP1 8/13/2013 RNP3 8/13/2013
8/14/2013	8/15/2013	GEO138, Woodbine (QWE)	LPV_Canada, LPV200_CONUS, LPV200_Alaska, LPV200_Canada	CRE GEO, PRN-138. Automatic switchover from the Brewster WA uplink site to the Woodbine MD uplink because the Brewster signal generation subsystem (SGS) faulted. TOW 289143. The subsequent elevated UDRE for the CRE ranging signal had a minor impact to the availability of LPV service in Canada and LPV200 service in Alaska, Canada, and CONUS. Please see plot(s): LPV 8/15/2013 LPV200 8/15/2013
8/14/2013	8/14/2013	GEO135, Littleton (APA)	LPV_Alaska, LPV_Canada, LPV200_CONUS, LPV200_Alaska, LPV200_Canada	CRW GEO, PRN-135. Manual switchover from the Littleton CO uplink site to the Napa CA uplink site. TOW 299827. The switchover was to support a software upgrade at Littleton. There was a several second outage of all WAAS service where CRW is the only GEO visible (northern Alaska and north western tip of Canada). The switchover caused elevated UDRE for the CRW ranging signal for about 36 hours. The elevated CRW UDRE caused brief: LPV outages in Alaska and Canada on the 14th, LPV200 outages in Alaska, Canada, and CONUS on the 14th, and degradation of the LPV200 service in Canada on the 15th. Please see plot(s): LPV 8/14/2013 LPV200 8/14/2013
8/16/2013	8/16/2013	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_Canada	Elevated geomagnetic activity ($K_p = 5$) resulted in increased GIVE values. The increased GIVE values resulted in minor degradation to the LPV200 service availability in northern Canada. Please see plot(s): LPV200 8/16/2013
8/17/2013	8/17/2013	PRN9	LPV200_Alaska	Carrier phase instability on PRN-9 caused the Code Noise and Multipath processing to reinitialize resulting in PRN-9 being alarmed to "Not Monitored" (UDREi = 14) at 13:51:38 (GMT). The subsequent temporary elevation in the PRN-9 UDRE resulted in a minor degradation of LPV200 service availability on the south western fringe of Alaska. Cold Bay experienced a 287 second LPV200 outage, but LPV service was not impacted.
8/20/2013	8/20/2013	PRN15	LPV200_Alaska, LPV200_Canada	Planned maintenance on PRN-15 (delta V maneuver). See NANUs 2013047 and 2013048. The unavailability

Start Date	End Date	Location/ Satellite	Service Affected	Event Description
				of PRN-15 resulted in minor impact to the LPV200 service availability in Alaska and Canada. Please see plot(s): LPV200 8/20/2013
8/21/2013	8/21/2013	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_Canada	Elevated geomagnetic activity ($K_p = 5$) resulted in increased GIVE values. Measurement degradation due to scintillation associated with the geomagnetic activity caused the Iqaluit CA WRS data to be rejected which contributed to the elevated GIVE values. The increased GIVE values resulted in minor degradation to the LPV and LPV200 service availability in northern Canada. Please see plot(s): LPV 8/21/2013 LPV200 8/21/2013
8/26/2013	8/27/2013	GEO135, NAPA (APC)	LPV200_CONUS, LPV200_Alaska, LPV200_Canada	CRW GEO, PRN-135. Manual switchover from the Napa CA uplink site to the Littleton CO uplink site. The switchover caused a several second outage of all WAAS service in areas where CRW is the only GEO visible. The subsequent elevated UDRE for the CRW ranging signal caused minor impacts to the availability to the LPV200 service in Alaska, Canada, and CONUS. Please see plot(s): LPV200 8/26/2013
8/26/2013	8/28/2013	Boston (ZBW1), Boston (ZBW2), Boston (ZBW3)	Local	Multiple brief RFI events were observed at the ZBW reference station between 26 August and 28 August. The events caused local outages of the LPV and LPV200 service to be observed on the 3 threads of receivers. The severity of the impact varied by receiver and event.
8/27/2013	8/27/2013	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Alaska	Elevated geomagnetic activity ($K_p = 5$) resulted in increased GIVE values. The increased GIVE values resulted in minor degradation to the LPV200 service availability in northern Alaska. Please see plot(s): LPV200 8/27/2013
8/28/2013	8/28/2013	Barrow (BRW1), Barrow (BRW2), Barrow (BRW3), Bethel (BET1), Bethel (BET2), Bethel (BET3), Fairbanks (FAI1), Fairbanks (FAI2), Fairbanks (FAI3), Kotzebue (OTZ1), Kotzebue (OTZ2), Kotzebue (OTZ3)	LPV_Alaska, LPV200_Alaska	Satcom (ANICS) data outages (200 to 250 seconds) to the Bethel, Fairbanks, Kotzebue, and Barrow Alaskan reference stations caused brief outages of the LPV and LPV200 services in northern Alaska. Please see plot(s): LPV 8/28/2013 LPV200 8/28/2013
8/29/2013	8/29/2013	GEO138, Brewster (BRE-B)	LPV200_Canada	CRE GEO, PRN-138. Automatic switchover from the Brewster WA uplink site to the Woodbine MD uplink site due to a failure at Brewster. TOW 420140-420153. The subsequent elevated UDRE for the CRE GEO ranging signal caused minor impacts to the LPV200 service in Canada. (not discernable on the plots due to the greater impact from the PRN-14 maintenance).
8/29/2013	8/29/2013	PRN14	LPV200_CONUS,	Planned maintenance on PRN-14 (delta-V maneuver).

Start Date	End Date	Location/ Satellite	Service Affected	Event Description
			LPV200_Alaska, LPV200_Canada	The unavailability of PRN-14 during the maintenance resulted in degraded availability of the LPV200 service in Alaska, Canada, and CONUS. A communications outage to Barrow was observed at approximately 16:39 (GMT), however that outage did not impact service. Please see plot(s): LPV200_8/20/2913
8/30/2013	8/31/2013	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_CONUS, LPV200_Canada	Elevated geomagnetic activity (Kp = 4) resulted in increased GIVE values. The increased GIVE values resulted in degradation to LPV and LPV200 service availability on 30 and 31 August. The LPV200 degradation in Canada was significant on the 31st. Alaska and CONUS LPV200 service availability was also impacted on the 31st, but not as bad as in Canada. The LPV service availability impact was minor and limited to northern Canada. Please see plot(s): LPV_8/30/2013 LPV200_8/30/2013 LPV_8/30/2013 LPV200_8/30/2013
9/1/2013	9/1/2013	 	LPV_Alaska, LPV200_Alaska	Satcom data outages (ANICS) resulted in minor degradation of the LPV and LPV200 service availabilities in northern Alaska. The simultaneous outages were to the Kotzebue and Barrow for about 20 seconds. Please see plot(s): LPV_9/1/2013 LPV200_9/1/2013
9/3/2013	9/3/2013	Boston (ZBW1), Boston (ZBW2), Boston (ZBW3)	Local	Brief local RFI at ZBW (23 sec) resulted in observed LPV and LPV200 outages of 61 seconds for 2 of the 3 receivers at ZBW.
9/3/2013	9/4/2013	PRN4	CONUS, Canada, Mexico, RNP3_All, RNP1_All	Planned maintenance on PRN-4 (forecast maintenance), see NANU 2013053. The temporary loss of the services of PRN-4 during the maintenance period resulted in a significant degradation of LPV200 service availability in CONUS on 3 Sept and a minor degradation of LPV service availability along the northern California and Oregon coasts. RAIM only RNP-0.1 and RNP-0.3 availability was also impacted. Please see plot(s): LPV_9/3/2013 LPV200_9/3/2013
9/12/2013	9/12/2013	Littleton (APA), Atlanta (CnV)	LPV200_CONUS	Selected source for the CRW GEO, PRN-135 was changed from the Los Angeles C&V to the Atlanta C&V. The message schedulers among the C&Vs are not synchronized for fault tolerance and independence reasons. The schedules were sufficiently different between ZLA and ZTL that update rate for two IGP messages for data in Band 1 resulted in those messages timing out. There was a 60 second LPV200 service outage in Oregon and northern California for those users only using PRN-135. Please see plot(s): LPV200_9/12/2013
9/14/2013	9/14/2013	Los Angeles (ZLA1), Los Angeles (ZLA2), Los Angeles (ZLA3)	Local	Localized brief RFI event caused a 41 second observed LPV200 service outage for the ZLA receiver used to provide data for this report. LPV service was not impacted for that receiver, but it was for the other receivers at that locations.
9/15/2013	9/15/2013	Iqaluit (YFB1),	LPV_Canada,	RFI event caused loss of tracking on all three receivers

Start Date	End Date	Location/Satellite	Service Affected	Event Description
		Iqaluit (YFB2), Iqaluit (YFB3)	LPV200_Canada	at Iqaluit (YFB) Canada. The loss of measurements from YFB resulted in GIVE values for IGP in the north east of Canada being set to the "Not Monitored" state. The elevated GIVE values resulted in degraded availability for the LPV and LPV200 services in north eastern Canada. Please see plot(s): LPV 9/15/2013 LPV200_9/15/2013
9/16/2013	9/18/2013	Juneau (JNU1), Juneau (JNU2), Juneau (JNU3)	LPV200_Canada	Sporadic communications outages to the Juneau WRS occurred over the 3 day period as a result of local equipment problems. The outages were sufficiently bad to cause degradation to the LPV200 service availability in north central Canada on the Sept. 17. Please see plot(s): LPV200_9/17/2013
9/20/2013	9/20/2013	Boston (ZBW1), Boston (ZBW2), Boston (ZBW3)	Local	Brief, localized RFI degraded receiver tracking at the ZBW WRS causing all 3 of the receivers to lose tracking of some GPS satellites. The receiver used for this report had an observed 77 second LPV200 service outage. Observed LPV performance was not impacted.
9/22/2013	9/22/2013	PRN4	LPV200_Mexico	Temporary carrier phase instability on PRN-4 resulted in the WAAS code noise and multipath algorithm reinitializing. This resulted in WAAS alarming the UDRE for PRN-4 to the "Not Monitored" state. This resulted in the degradation in the availability of the LPV200 service in southern Mexico. Mexico City had one more than expected outage of 223 seconds for the LPV200 service. Please see plot(s): LPV200_9/22/2013
9/28/2013	9/28/2013	PRN4	LPV200_CONUS	Temporary carrier phase instability on PRN-4 resulted in the WAAS code noise and multipath algorithm reinitializing. This resulted in WAAS alarming the UDRE for PRN-4 to the "Not Monitored" state. This resulted in the degradation in the availability of the LPV200 service in northern California and Oregon. Please see plot(s): LPV200_9/28/2013
9/29/2013	9/29/2013	PRN10	LPV200_CONUS, LPV200_Canada	Unplanned maintenance on PRN-10, see NANUs 2013055 and 2013056. Temporary loss of the services of PRN-10 resulted in minor degradations to the LPV200 service availability in central and California. Please see plot(s): LPV200_9/29/2013

Table 1-6 WAAS Upgrades

START DATE	END DATE	LOCATION	EVENT DESCRIPTION
07/24/2013	07/24/2013	Atlanta (CnV)	CnV processors and spare successfully re-baselined and upgraded to build W7.006.

START DATE	END DATE	LOCATION	EVENT DESCRIPTION
07/24/2013	07/24/2013	Atlanta (ZTL1), Atlanta (ZTL2), Atlanta (ZTL3)	WRS processors and spare successfully re-baselined and upgraded to build W7.006.
07/25/2013	07/25/2013	Washington DC (ZDC1), Washington DC (ZDC2), Washington DC (ZDC3)	WRS processors and spare successfully re-baselined and upgraded to build W7.006.
07/25/2013	07/25/2013	Washington D.C. (CnV)	CnV processors and spare successfully re-baselined and upgraded to build W7.006.
07/31/2013	07/31/2013	Los Angeles (CnV)	CnV processors and spare successfully re-baselined and upgraded to build W7.006.
07/31/2013	07/31/2013	Los Angeles (ZLA1), Los Angeles (ZLA2), Los Angeles (ZLA3)	WRS processors and spare successfully re-baselined and upgraded to build W7.006.
08/01/2013	08/02/2013		POCC O&M processors and spare successfully re-baselined and upgraded to build W7.006.
08/06/2013	08/07/2013		NOCC O&M processors and spare successfully re-baselined and upgraded to build W7.006.
08/08/2013	08/09/2013	Brewster (BRE-B)	GUS processors and spare successfully re-baselined and upgraded to build W7.006. GUS GII upgraded to firmware version .104
08/12/2013	08/14/2013	Paumalu (HDH)	GUS processors and spare successfully re-baselined and upgraded to build W7.006. GUS GII upgraded firmware to version .104.
08/15/2013	08/16/2013	Littleton (APA)	GUS processors and spare successfully re-baselined and upgraded to build W7.006. GUS GII upgraded firmware to version .104.
08/20/2013	08/21/2013	Woodbine (QWE)	GUS processors and spare successfully re-baselined and upgraded to build W7.006. GUS GII upgraded firmware to version .104.
08/22/2013	08/23/2013	Santa Paula (SZP)	GUS processors and spare successfully re-baselined and upgraded to build W7.006. GUS GII upgraded firmware to version .104.
08/27/2013	08/28/2013	NAPA (APC)	GUS processors and spare successfully re-baselined and upgraded to build W7.006. GUS GII upgraded firmware to version .104.
09/03/2013	09/03/2013	Barrow (BRW1), Barrow (BRW2), Barrow (BRW3)	WRS routers successfully re-baselined and upgraded to build W7.006 per SSM-WAAS-34.
09/04/2013	09/05/2013	Mexico City (MMX1), Mexico City (MMX2), Mexico City (MMX3)	WRS routers successfully re-baselined and upgraded to build W7.006 per SSM-WAAS-34.
09/05/2013	09/05/2013	Iqaluit (YFB1), Iqaluit (YFB2), Iqaluit (YFB3)	WRS routers successfully re-baselined and upgraded to build W7.006 per SSM-WAAS-34.
09/13/2013	09/13/2013	Bethel (BET1), Bethel (BET2), Bethel (BET3)	WRS routers successfully re-baselined and upgraded to build W7.006 per SSM-WAAS-34.
09/15/2013	09/15/2013	Billings (BIL1), Billings (BIL2), Billings (BIL3)	WRS routers successfully re-baselined and upgraded to build W7.006 per SSM-WAAS-34.

START DATE	END DATE	LOCATION	EVENT DESCRIPTION
09/15/2013	09/16/2013	Merida (MMD1), Merida (MMD2), Merida (MMD3)	WRS routers successfully re-baselined and upgraded to build W7.006 per SSM-WAAS-34.
09/15/2013	09/16/2013	Gander (YQX1), Gander (YQX2), Gander (YQX3)	WRS routers successfully re-baselined and upgraded to build W7.006 per SSM-WAAS-34.
09/16/2013	09/17/2013	San Jose Del Cabo (MSD1), San Jose Del Cabo (MSD2), San Jose Del Cabo (MSD3)	WRS routers successfully re-baselined and upgraded to build W7.006 per SSM-WAAS-34.
09/17/2013	09/17/2013	Winnipeg (YWG1), Winnipeg (YWG2), Winnipeg (YWG3)	WRS routers successfully re-baselined and upgraded to build W7.006 per SSM-WAAS-34.
09/18/2013	09/18/2013	Goose Bay (YYR1), Goose Bay (YYR2), Goose Bay (YYR3)	WRS routers successfully re-baselined and upgraded to build W7.006 per SSM-WAAS-34.
09/19/2013	09/21/2013	Tapachula (MTP1), Tapachula (MTP2), Tapachula (MTP3)	WRS routers successfully re-baselined and upgraded to build W7.006 per SSM-WAAS-34.
09/21/2013	09/22/2013	Kotzebue (OTZ1), Kotzebue (OTZ2), Kotzebue (OTZ3)	WRS routers successfully re-baselined and upgraded to build W7.006 per SSM-WAAS-34.
09/22/2013	09/26/2013	Puerto Vallarta (MPR1), Puerto Vallarta (MPR2), Puerto Vallarta (MPR3)	WRS routers successfully re-baselined and upgraded to build W7.006 per SSM-WAAS-34.
09/23/2013	09/25/2013	Fairbanks (FAI1), Fairbanks (FAI2), Fairbanks (FAI3)	WRS routers, processors, and spare successfully re-baselined and upgraded to build W7.006.

Table 1-7 GUS Switchovers

Start Date	End Date	GUS Switch	Location Satellite	Service Affected	Event Description
07/06/13	07/06/13	Manual	GEO133,Paumalu (HDH)	None	GEO 133, manual switchover from Paumalu to Santa Paula. TOW 520378-520385.
08/02/13	08/03/13	Manual	GEO135, NAPA (APC)	LPV_Alaska, LPV_Canada, LPV200_CONUS, LPV200_Alaska, LPV200_Canada	GEO 135, manual switchover from Napa to Littleton. PNE out of alignment. TOW 510855-510860.
08/07/13	08/07/13	Manual	GEO138, Brewster (BRE-B)	LPV_Canada, LPV200_Alaska, LPV200_Canada	GEO 138, manual switchover from Brewster-B to Woodbine. TOW 288055-288060.

Start Date	End Date	GUS Switch	Location Satellite	Service Affected	Event Description
08/08/13	08/08/13	Signal Anomaly	Woodbine (QWE)	None	CRE CN0 drop recorded at several locations. Heavy rain at Primary GUS site, Woodbine, at time of event. The degradation wasn't severe enough or long enough to cause the WBN SGS to command an uplink power increase, but likely close to that threshold.
08/14/13	08/14/13	Manual	GEO135, Littleton (APA)	LPV_Alaska, LPV_Canada, LPV200_CONUS, LPV200_Alaska, LPV200_Canada	GEO 135, manual switchover from Littleton to Napa. TOW 299827. There was software upgrade at Littleton on this day. LPV service was affected in Canada on August 15th from continued high UDRE.
08/14/13	08/15/13	Faulted	GEO138, Woodbine (QWE)	LPV_Canada, LPV200_CONUS, LPV200_Alaska, LPV200_Canada	GEO 138 switched to Brewster-B; Woodbine faulted. TOW 289143. LPV service was affected in Canada on August 15th from continued high UDREi.
08/17/13	08/17/13	Faulted	GEO133, Santa Paula (SZP)	None	GEO 133 switched to Paumalu; Santa Paula faulted. TOW 540849-540860.
08/25/13	08/25/13	Faulted	GEO133,Paumalu (HDH)	None	GEO 133 switched to Santa Paula; Paumalu faulted. TOW 18880-18893.
08/25/13	08/25/13	Faulted	GEO133, Santa Paula (SZP)	None	GEO 133 switched to Paumalu; Santa Paula faulted. TOW 16333-16346.
08/25/13	08/25/13	Manual	GEO133,Paumalu (HDH)	None	GEO 133 switched to Paumalu; Santa Paula faulted. TOW 16333-16346
08/25/13	08/25/13	Manual	GEO133, Santa Paula (SZP)	None	GEO 133, manual switchover from Santa Paula to Paumalu. TOW 37085-37090.
08/26/13	08/27/13	Manual	GEO135, NAPA (APC)	LPV_Alaska, LPV200_CONUS, LPV200_Alaska, LPV200_Canada	GEO 135, manual switchover from Napa to Littleton. High UDRE continued into August 27th causing service outages. TOW 109018-109025.
08/29/13	08/29/13	Faulted	GEO138, Brewster (BRE-B)	LPV200_Canada	GEO 138 switched to Woodbine; Brewster-B faulted. TOW 420140-420153.

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 1.237 meters and 1.629 meters, both at Atlantic City. The minimum 95% CONUS horizontal and vertical LPV errors are 0.568 meters and 0.855 meters, both at Salt Lake City. The maximum 95% and 99.999% NPA horizontal errors are 4.266 meters at Honolulu and 12.341 meters at Tapachula, respectively. The minimum 95% and 99.999% horizontal errors are 1.094 meters and 2.63 meters, both at Kansas City.

The increases in 95% position errors on 7/06/2013, 7/15/2013, 8/05/2013, 8/27/2013, 9/13/2013, and 9/24/2013 in Figures 2.1 to 2.8 are due to geomagnetic activity. The increase in 95% NPA position errors on 7/26/2013, 8/05/2013, and 8/27/2013 in Figures 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	1.172	1.172	1.528	100	*	*
Atlantic City	1.237	1.237	1.629	100	*	*
Grand Forks	1.077	1.077	1.552	100	*	*
Oklahoma City	0.798	0.798	1.091	100	*	*
Albuquerque	0.653	0.653	0.888	100	2.434	4.228
Anchorage	0.654	0.654	1.218	100	*	*
Atlanta	0.616	0.616	1.003	100	2.434	4.228
Barrow	0.612	0.612	1.350	99.99706	*	*
Bethel	0.599	0.599	0.946	100	2.041	3.738
Billings	0.738	0.738	0.970	100	2.003	3.848
Boston	0.715	0.715	1.232	100	2.049	3.659
Chicago	0.838	0.838	0.986	100	*	*
Cleveland	0.671	0.671	1.135	100	2.102	3.807
Cold Bay	0.614	0.614	1.076	100	*	*
Dallas	0.647	0.647	1.213	100	*	*
Denver	0.571	0.571	0.898	100	*	*
Fairbanks	0.676	0.676	1.349	100	2.221	3.705
Gander	0.785	0.785	1.175	100	*	*
Goose Bay	0.790	0.790	1.052	100	*	*
Houston	0.871	0.871	1.243	100	2.968	4.366
Iqaluit	0.787	0.787	1.356	100	*	*
Jacksonville	0.675	0.675	1.047	100	*	*
Juneau	0.656	0.656	1.093	100	*	*
Kansas City	0.598	0.598	1.056	100	2.123	3.931
Kotzebue	0.676	0.676	1.296	99.99707	2.261	3.893
Los Angeles	0.679	0.679	1.322	100	2.641	4.228
Memphis	0.636	0.636	1.061	100	*	*
Merida	0.803	0.803	1.426	100	*	*
Mexico City	0.834	0.834	2.009	100	*	*
Miami	0.841	0.841	1.094	100	3.296	4.924
Minneapolis	0.733	0.733	1.002	100	1.966	3.638
New York	0.740	0.740	1.086	100	*	*
Oakland	0.730	0.730	1.518	100	2.390	4.003
Puerto Vallarta	0.884	0.884	1.409	100	*	*
Salt Lake City	0.568	0.568	0.855	100	2.042	3.792
San Jose Del Cabo	0.917	0.917	1.541	100	*	*
Seattle	0.703	0.703	0.869	100	1.948	3.624
Washington DC	0.710	0.710	1.179	100	2.145	3.832
Winnipeg	0.719	0.719	1.064	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	1.347	3.339	100	3.484
Anchorage	2.024	3.853	100	4.028
Atlanta	1.564	3.799	100	3.958
Barrow	1.763	3.318	99.999	3.488
Bethel	1.789	3.272	100	3.426
Billings	1.692	2.977	100	5.164
Boston	1.509	6.998	100	7.279
Cleveland	1.242	3.446	100	3.639
Cold Bay	1.475	3.384	100	3.597
Fairbanks	2.305	4.113	100	4.285
Gander	1.593	5.250	100	5.361
Honolulu	4.266	9.109	100	9.398
Houston	2.316	4.475	100	4.606
Iqaluit	1.533	3.778	100	4.181
Juneau	1.732	3.232	100	3.395
Kansas City	1.094	2.630	100	2.715
Kotzebue	1.959	3.662	99.999	3.796
Los Angeles	1.898	4.122	100	4.401
Merida	2.887	6.993	100	7.314
Miami	2.502	4.596	100	4.676
Minneapolis	1.444	3.477	100	3.637
Oakland	1.637	4.150	100	4.284
Salt Lake City	1.210	2.745	100	3.645
San Jose Del Cabo	3.122	9.741	100	10.216
San Juan	2.663	9.081	100	9.321
Seattle	1.373	2.856	100	3.054
Tapachula	3.214	12.341	100	12.468
Washington DC	1.498	4.763	100	4.952

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	3.463	0.209	0.220	4.605	0.129	0.165
Atlantic City	2.442	0.193	0.232	3.918	0.188	0.204
Grand Forks	2.971	0.223	0.223	4.739	0.153	0.290
Oklahoma City	3.289	0.385	0.385	5.763	0.416	0.416
Albuquerque	1.729	0.177	0.177	3.771	0.105	0.164
Anchorage	2.196	0.131	0.176	3.646	0.165	0.203
Atlanta	1.459	0.119	0.145	2.510	0.130	0.156
Barrow	2.557	0.128	0.151	5.172	0.124	0.162
Bethel	1.822	0.094	0.134	3.162	0.116	0.143
Billings	1.703	0.133	0.181	3.322	0.122	0.164
Boston	2.149	0.163	0.174	2.662	0.158	0.166
Chicago	1.685	0.160	0.182	3.448	0.148	0.161
Cleveland	1.796	0.155	0.167	3.396	0.147	0.189
Cold Bay	2.088	0.084	0.105	3.538	0.118	0.135
Dallas	1.603	0.176	0.176	3.249	0.214	0.232
Denver	1.553	0.167	0.170	3.872	0.169	0.169
Fairbanks	2.340	0.238	0.238	4.360	0.143	0.178
Gander	3.130	0.130	0.130	2.978	0.100	0.138
Goose Bay	3.411	0.152	0.180	3.505	0.155	0.155
Houston	1.747	0.157	0.192	2.901	0.122	0.192
Iqaluit	2.856	0.102	0.147	4.468	0.137	0.159
Jacksonville	1.619	0.099	0.134	2.454	0.148	0.149
Juneau	2.034	0.110	0.147	6.355	0.236	0.245
Kansas City	1.338	0.137	0.150	3.380	0.131	0.164
Kotzebue	2.022	0.111	0.145	6.503	0.179	0.179
Los Angeles	1.500	0.112	0.130	3.141	0.139	0.187
Memphis	1.431	0.139	0.154	3.122	0.186	0.219
Merida	1.908	0.159	0.160	4.164	0.111	0.151
Mexico City	2.380	0.087	0.147	4.210	0.128	0.166
Miami	1.685	0.092	0.148	2.853	0.133	0.165
Minneapolis	2.379	0.217	0.218	3.507	0.144	0.177
New York	1.949	0.139	0.159	2.382	0.133	0.165
Oakland	1.668	0.140	0.140	3.172	0.161	0.182
Puerto Vallarta	2.576	0.078	0.141	3.608	0.129	0.137
Salt Lake City	1.510	0.159	0.160	2.897	0.160	0.160
San Jose Del Cabo	2.014	0.075	0.139	5.484	0.144	0.165
Seattle	1.753	0.118	0.159	3.009	0.162	0.169
Washington DC	1.529	0.135	0.149	2.976	0.137	0.175
Winnipeg	2.967	0.172	0.183	5.076	0.153	0.211

Figure 2-1 LPV 95% Horizontal Accuracy

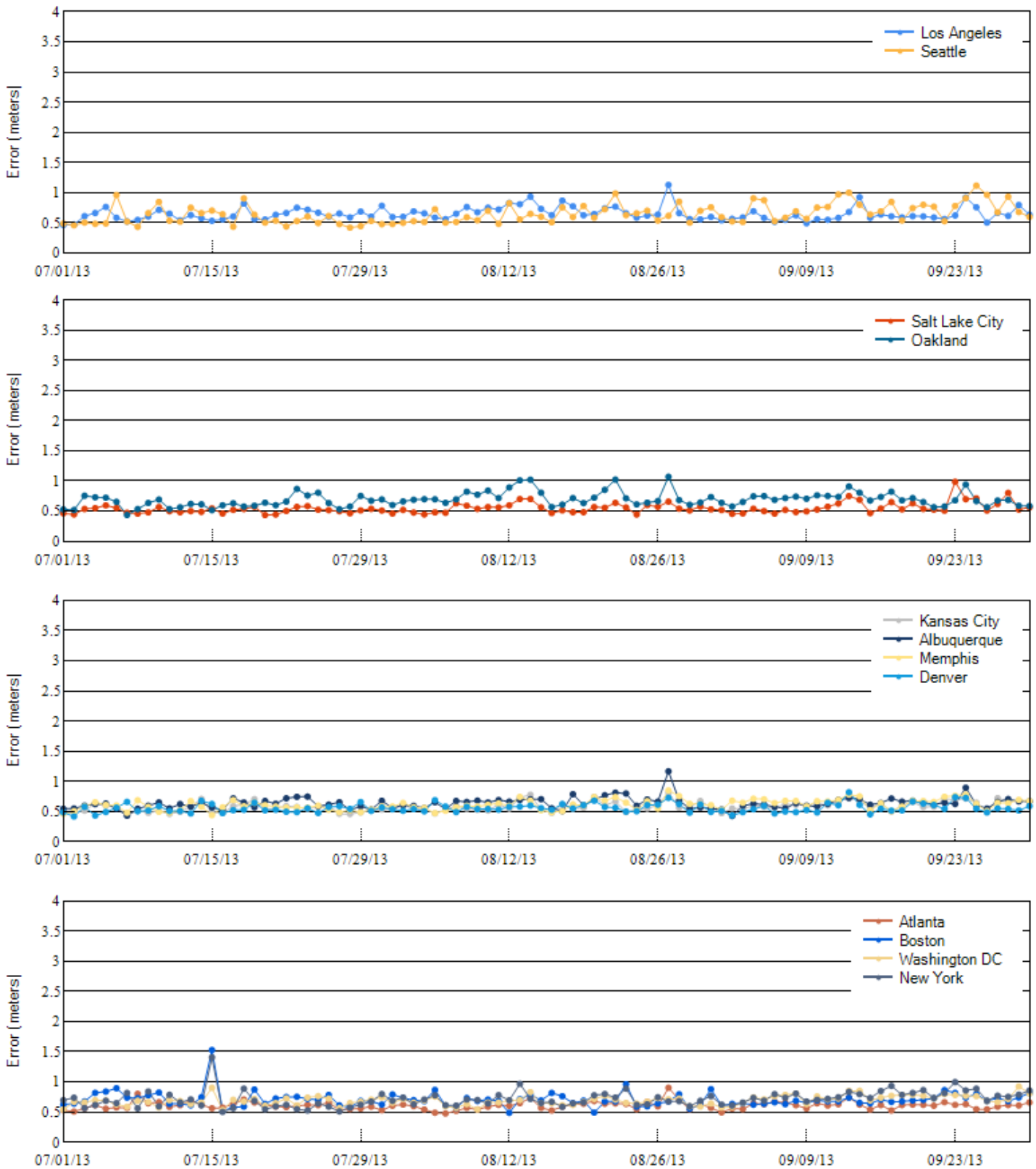


Figure 2-2 LPV 95% Horizontal Accuracy

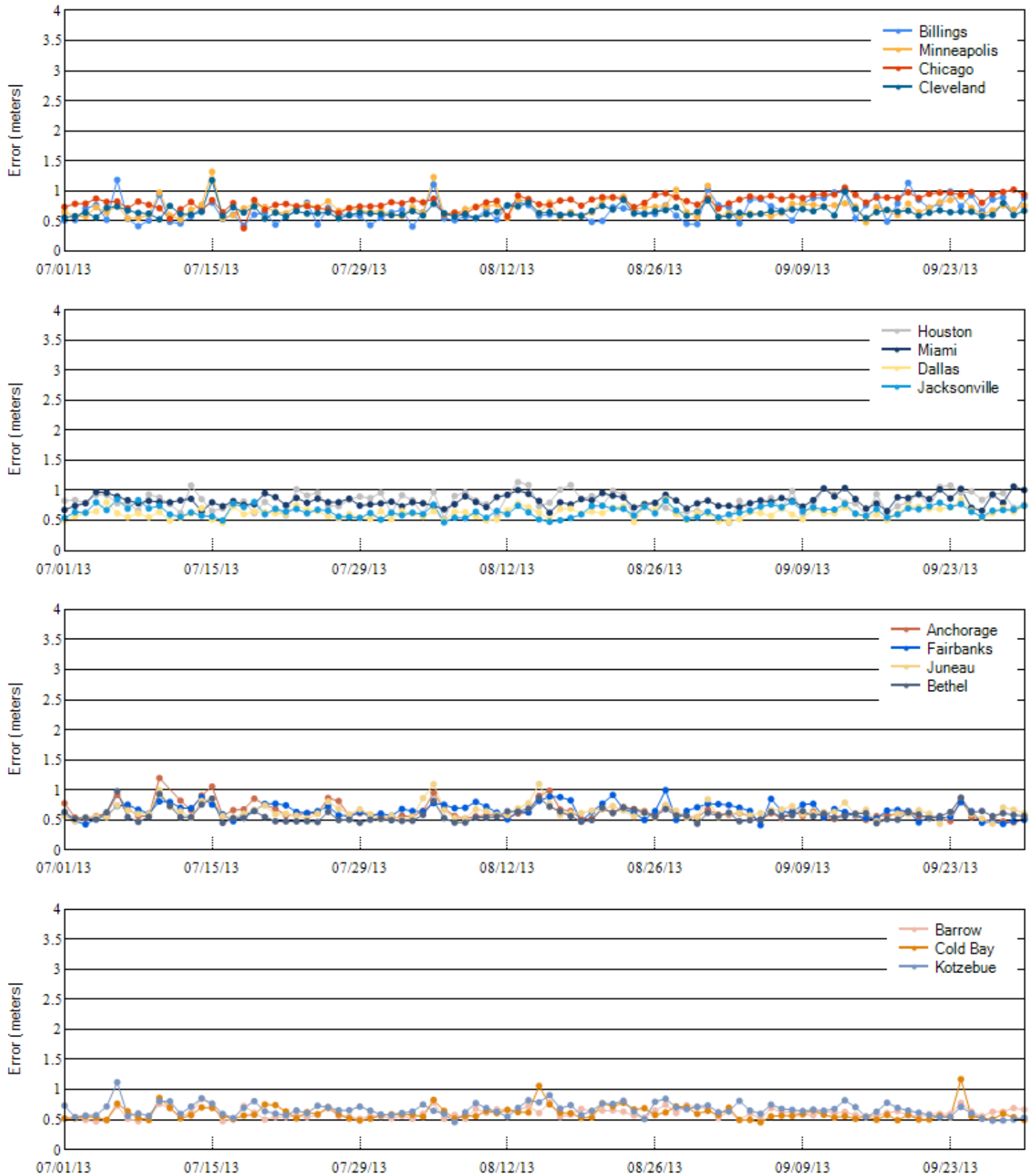


Figure 2-3 LPV 95% Horizontal Accuracy

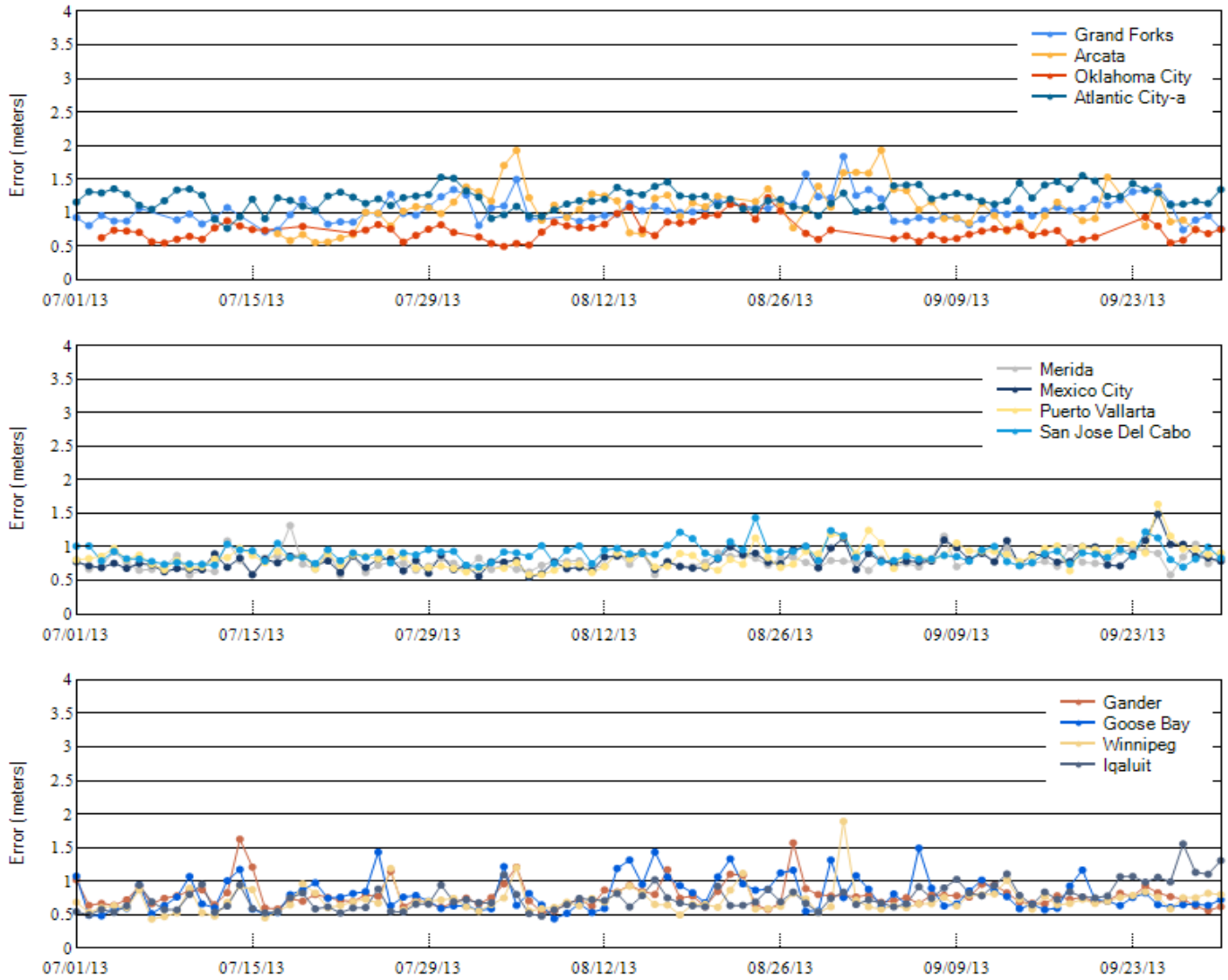


Figure 2-4 LPV 95% Vertical Accuracy

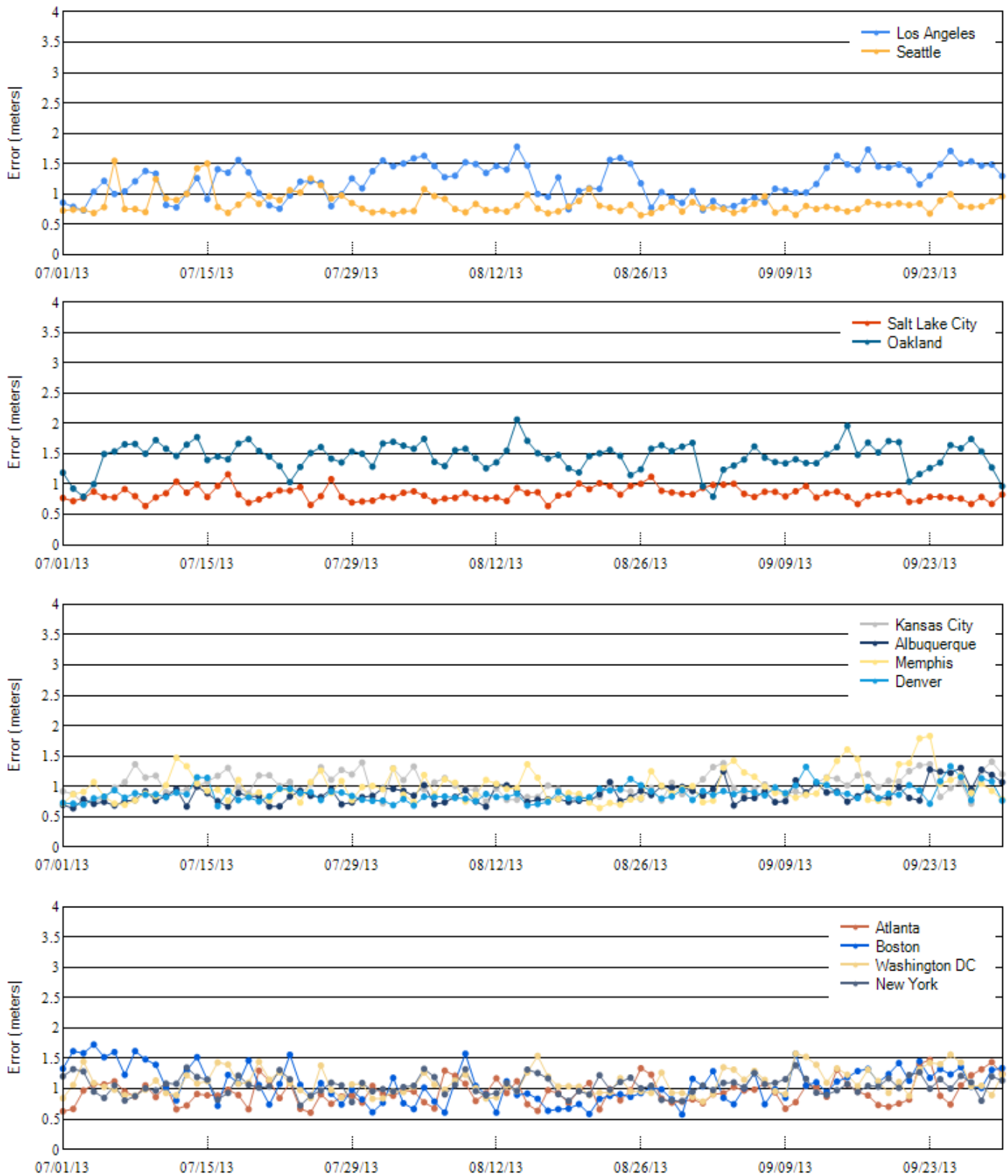


Figure 2-5 LPV 95% Vertical Accuracy

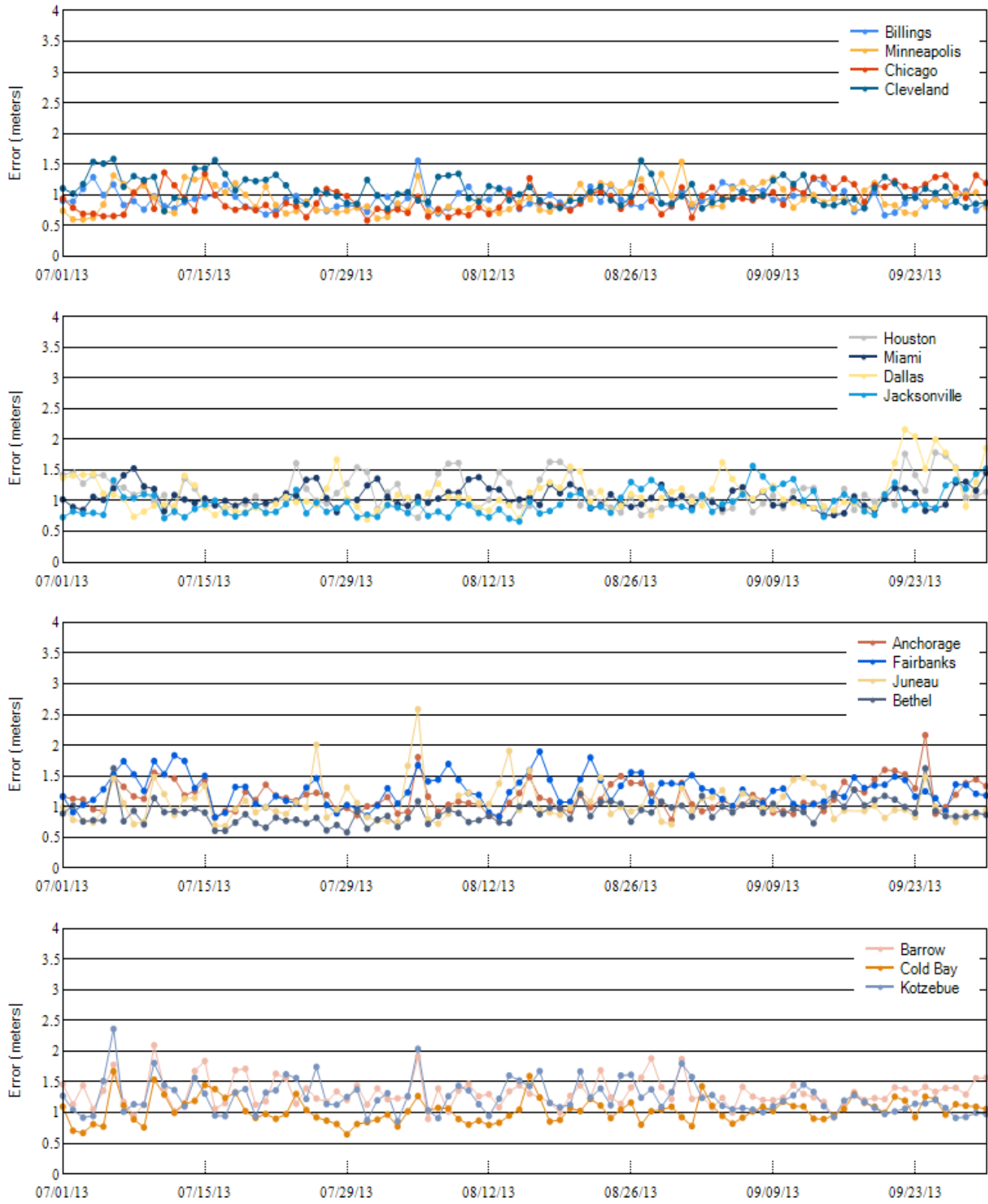


Figure 2-6 LPV 95% Vertical Accuracy

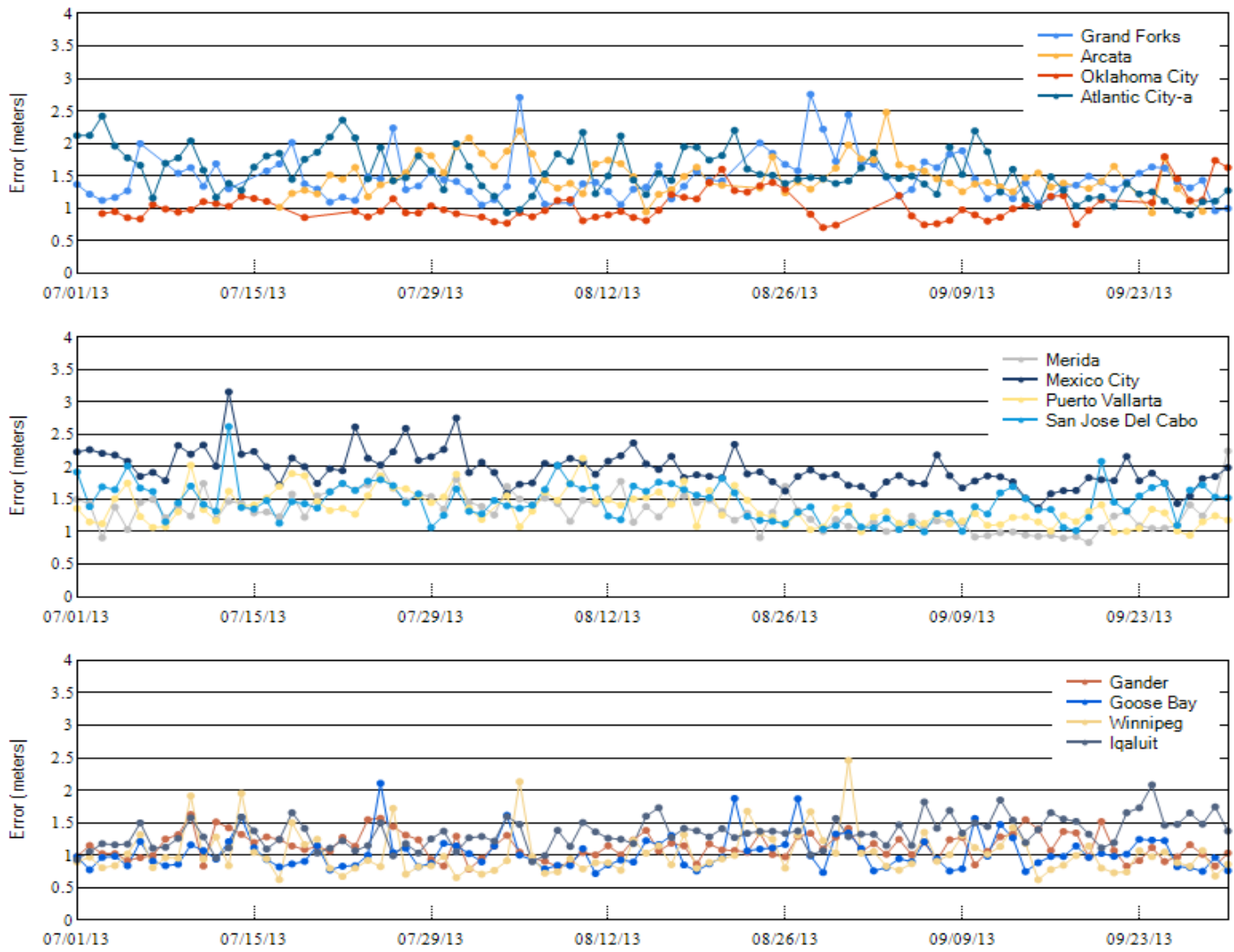


Figure 2-7 NPA 95% Horizontal Accuracy

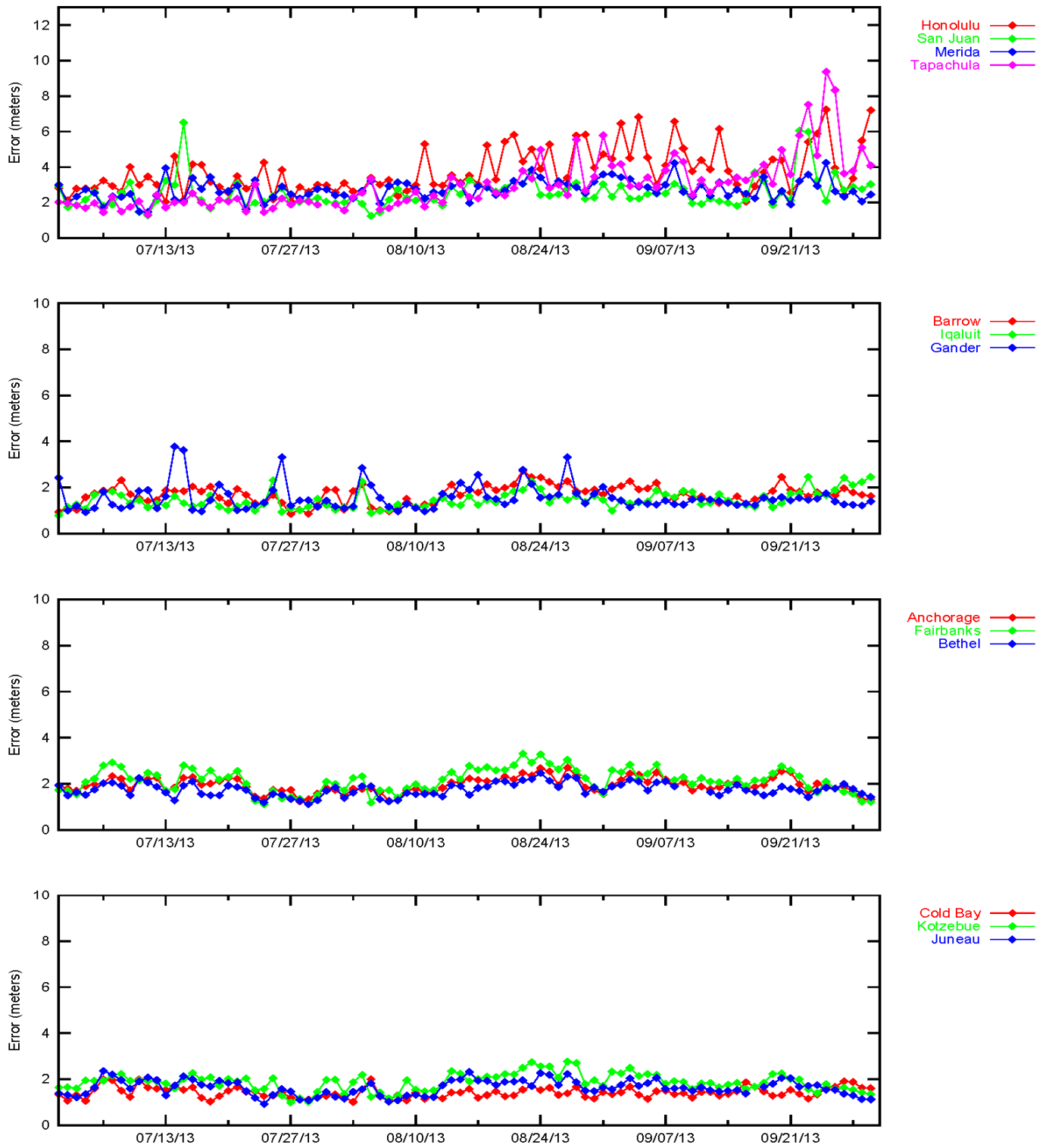


Figure 2-8 NPA 95% Horizontal Accuracy

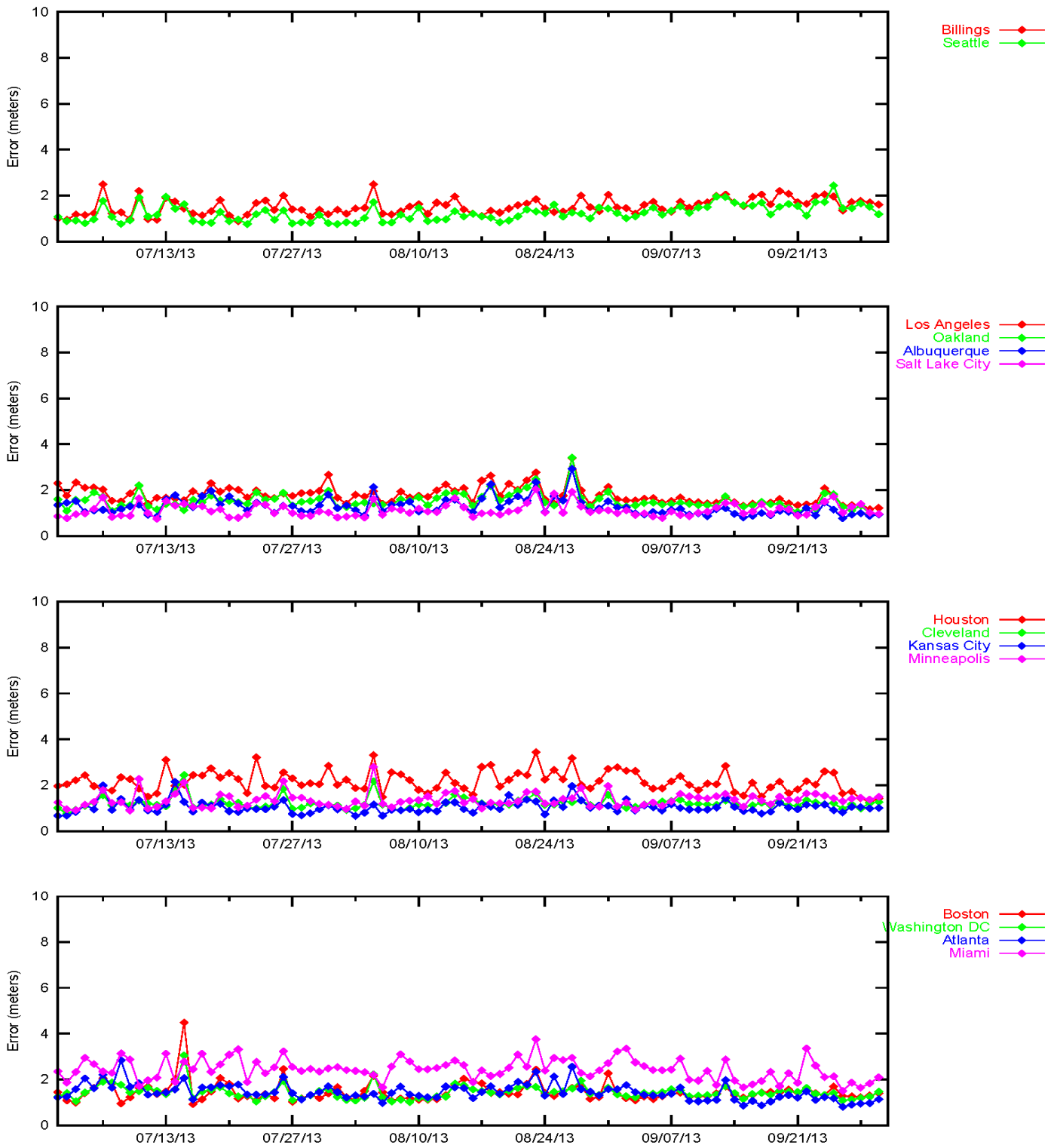


Figure 2-9 LPV Horizontal Error Bounding Triangle Chart

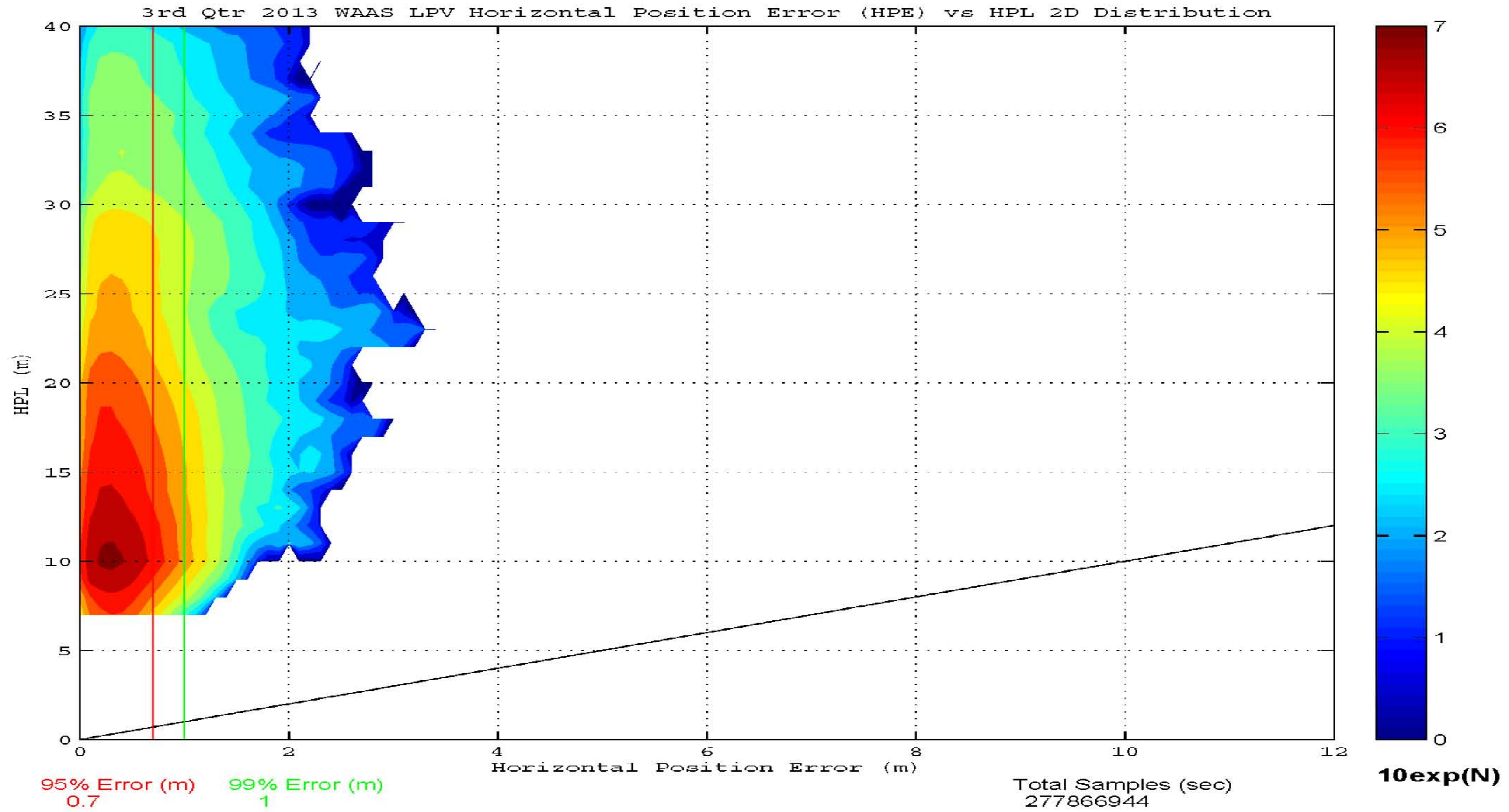


Figure 2-10 LPV Vertical Error Bounding Triangle Chart

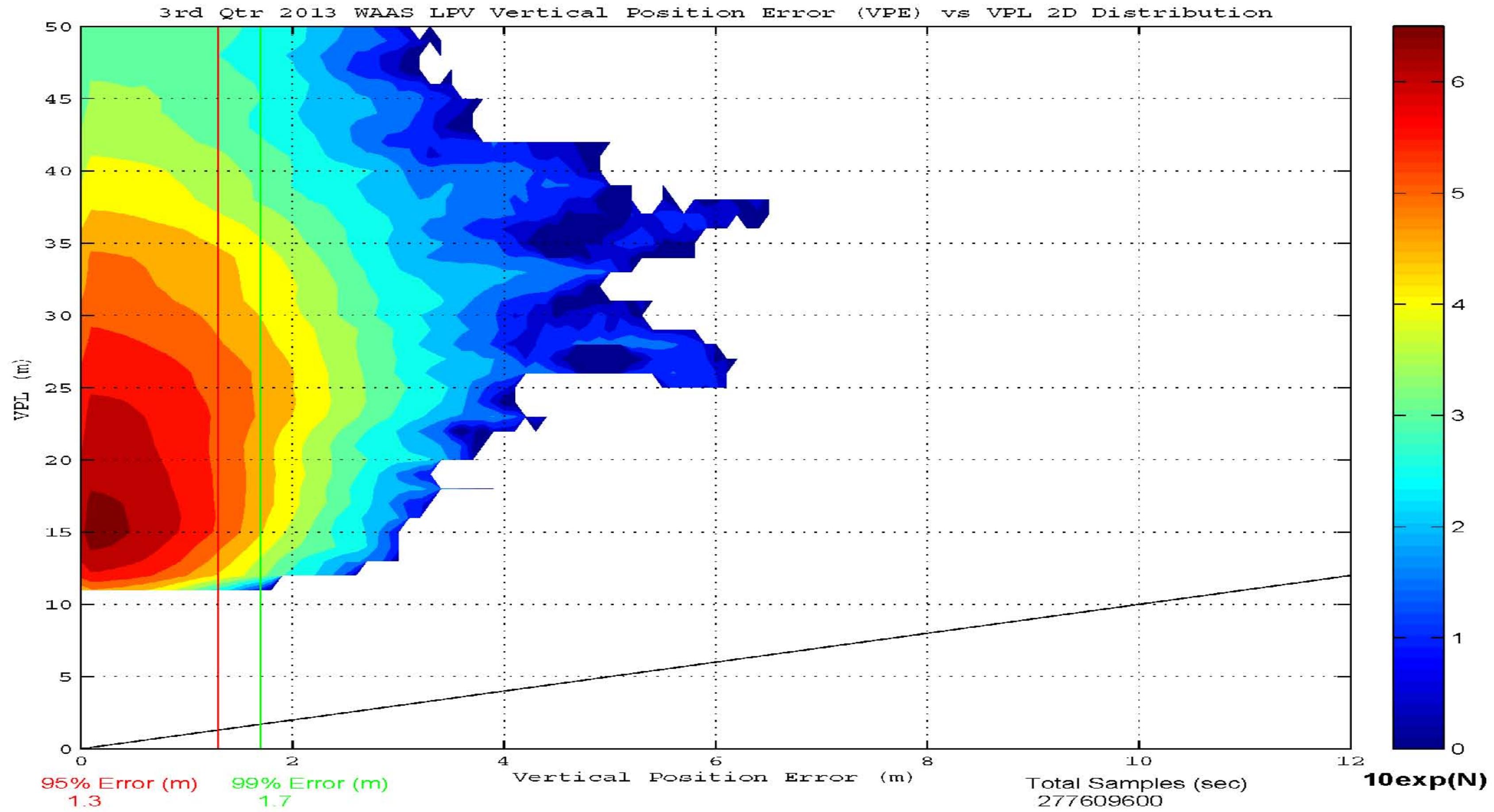


Figure 2-11 LPV 2-D Horizontal Error Distribution Histogram

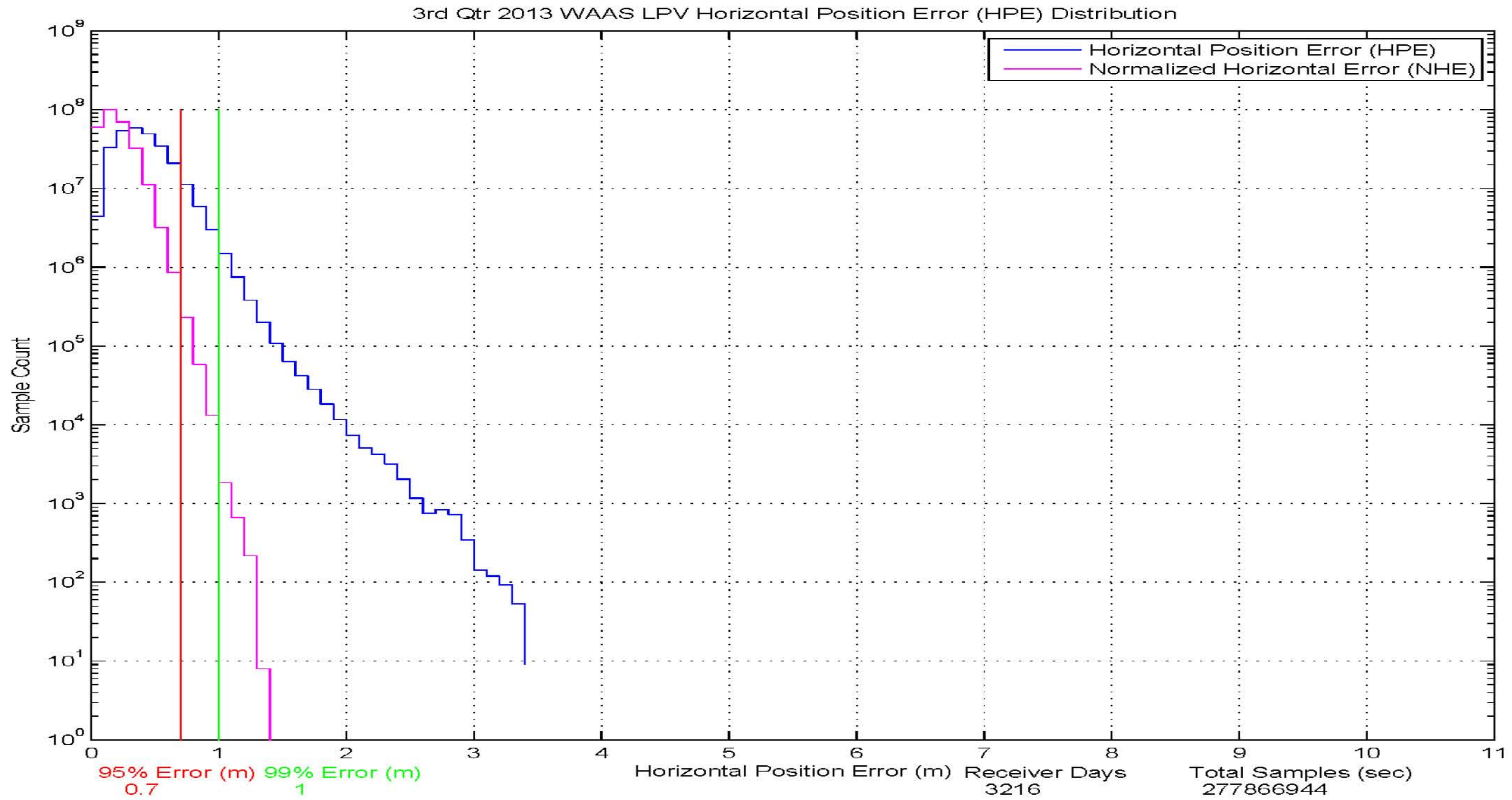
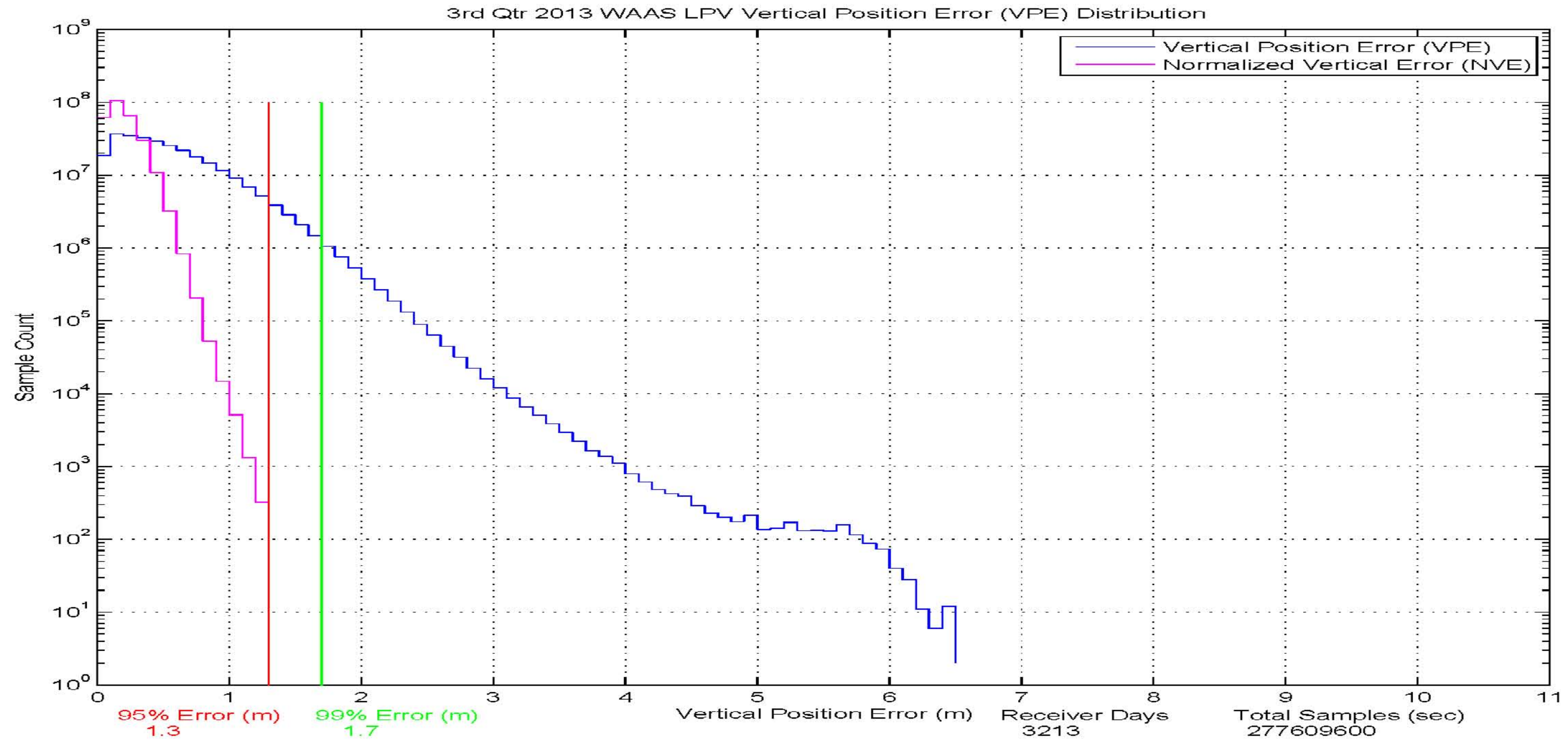


Figure 2-12 LPV 2-D Vertical Error Distribution Histogram



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 17.722 meters at Miami and 32.754 meters, at Arcata, respectively. The minimum 99% CONUS HPL and VPL are 11.478 meters and 19.297 meters, both at Memphis. The maximum 99% Alaska HPL and VPL are 28.357 meters and 37.89 meters, both at Cold Bay. The minimum 99% Alaska HPL and VPL are 14.236 meters at Fairbanks and 23.08 meters at Anchorage, 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 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.

Manual GUS switchover on CRW GEO (PRN-135) on August 2 and August 14 elevated UDRE values and slightly reduced availability in CONUS, Alaska, and Canada. PA and NPA service outages at Barrow and Kotzebue are due to CRW GUS switchover on August 14. Manual GUS switchover on CRW GEO (PRN-135) on August 26 caused minor availability drop in Alaska. Manual GUS switchover on CRE GEO (PRN-138) on August 14 elevated UDRE values and reduced availability in CONUS, Alaska and Canada. GUS switchover on CRE GEO (PRN-138) on August 29 had a minor affect on availability in Canada.

Brief carrier phase anomalies on PRN-12 on August 13 and on PRN-9 on August 17 caused WAAS to issue SV alerts, setting PRN-12 and PRN-9 respectively to "Not Monitored", resulting in a minor reduction in LPV-200 Alaska availability. A brief carrier phase anomaly on PRN-4 on September 28 caused WAAS to issue a SV alert setting PRN-4 to "Not Monitored" resulting in a minor reduction in LPV-200 CONUS availability.

Planned maintenance on PRN-12 on July 24 affected CONUS, Alaska and Canada availability. Planned maintenance on PRN-15 on August 20 caused minor availability reduction in CONUS, Alaska and Canada. Planned maintenance on PRN-14 on August 29 slightly reduced availability in Canada. Planned maintenance on PRN-14 on

September 3 cause availability drop in CONUS, Canada and Mexico. Unplanned maintenance on PRN-10 on September 29 resulted in a minor reduction in LPV-200 CONUS and Canada availability.

Geomagnetic activity on July 6, July 10, and August 30-31 elevated GIVE values and caused minor availability drop in Alaska and Canada. Geomagnetic activity on July 14, July 25, and August 16 elevated GIVE values and reduced availability in Canada. Geomagnetic activity on August 4-5 elevated GIVE values and affected availability in Alaska and Canada. Geomagnetic activity on August 27 elevated GIVE values and slightly reduced availability in Alaska.

Communication outages at Barrow on August 6 increased GIVE values and caused slight availability reduction in Alaska.

Localized scintillation at Iqaluit on August 21 caused GPS satellite ephemeris subframe bit errors and minor loss of availability in Canada.

Radio frequency interference (RFI) caused localized loss of LPV/LPV200 availability at Boston on August 13, August 26-28, September 3, and September 20, and at Los Angeles on September 14, but had no effect on WAAS service. Radio frequency interference (RFI) at Iqaluit on September 15 caused GIVE values set to "Not Monitored" and loss of availability in Canada.

Table 3-1 99% Protection Level

Location	99% HPL (meters)	99% VPL (meters)	Percentage in PA mode
Arcata	17.124	32.754	100
Atlantic City	14.000	22.235	100
Grand Forks	15.846	27.824	100
Oklahoma City	12.350	23.616	100
Albuquerque	12.337	26.277	100
Anchorage	15.050	23.083	100
Atlanta	12.133	19.499	100
Barrow	18.156	35.185	99.997060
Bethel	17.989	28.691	100
Billings	14.477	23.073	100
Boston	15.645	22.392	100
Chicago	12.051	20.422	100
Cleveland	14.189	21.902	100
Cold Bay	28.357	37.885	100
Dallas	13.274	23.334	100
Denver	12.742	26.416	100
Fairbanks	14.236	24.181	100
Gander	27.583	39.987	100
Goose Bay	22.894	29.704	100
Houston	11.834	22.577	100
Iqaluit	30.180	43.861	100
Jacksonville	13.768	20.782	100
Juneau	15.392	24.110	100
Kansas City	11.957	20.829	100
Kotzebue	17.074	32.136	99.997070
Los Angeles	15.378	28.591	100
Memphis	11.478	19.297	100
Merida	19.002	33.095	100
Mexico City	31.864	41.806	100
Miami	17.722	24.892	100
Minneapolis	12.798	21.865	100
New York	14.679	22.280	100
Oakland	17.675	32.099	100
Puerto Vallarta	35.580	57.469	100
Salt Lake City	13.860	21.811	100
San Jose Del Cabo	28.158	39.393	100
Seattle	14.598	23.871	100
Washington DC	13.235	21.204	100
Winnipeg	16.266	26.428	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	0.993433
Atlantic City	1	1	1
Grand Forks	1	1	0.999921
Oklahoma City	1	1	1
Albuquerque	1	1	0.999816
Anchorage	1	1	0.999813
Atlanta	1	1	1
Barrow	0.999935	0.999734	0.986225
Bethel	1	1	0.999738
Billings	1	1	1
Boston	1	0.999984	0.999960
Chicago	1	1	1
Cleveland	1	1	1
Cold Bay	1	0.999765	0.951500
Dallas	1	1	1
Denver	1	1	0.999899
Fairbanks	1	1	0.999771
Gander	1	0.999878	0.923069
Goose Bay	1	1	0.998927
Houston	1	1	1
Iqaluit	0.999527	0.998579	0.943314
Jacksonville	1	1	1
Juneau	1	1	0.999839
Kansas City	1	1	1
Kotzebue	0.999971	0.999871	0.997612
Los Angeles	1	1	0.999608
Memphis	1	1	1
Merida	1	0.994692	0.992888
Mexico City	0.998195	0.997012	0.941660
Miami	1	1	0.999921
Minneapolis	1	1	1
New York	1	1	1
Oakland	1	1	0.993253
Puerto Vallarta	0.999657	0.977242	0.924022
Salt Lake City	1	1	1
San Jose Del Cabo	1	0.995223	0.948461
Seattle	1	1	1
Washington DC	1	1	1
Winnipeg	1	1	0.999852

Table 3-3 NPA Availability

Location	NPA Availability (Excluding RAIM/FDE)
Albuquerque	1
Anchorage	1
Atlanta	1
Barrow	0.99999
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	0.99999
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	0	0	0	0	74	0.001892
Atlantic City	0	0	0	0	0	0
Grand Forks	0	0	0	0	1	0.000021
Oklahoma City	0	0	0	0	0	0
Albuquerque	0	0	0	0	1	0.000019
Anchorage	0	0	0	0	2	0.000038
Atlanta	0	0	0	0	0	0
Barrow	3	0.000057	7	0.000132	189	0.003617
Bethel	0	0	0	0	2	0.000038
Billings	0	0	0	0	0	0
Boston	0	0	2	0.000038	5	0.000094
Chicago	0	0	0	0	0	0
Cleveland	0	0	0	0	0	0
Cold Bay	0	0	2	0.000038	365	0.007241
Dallas	0	0	0	0	0	0
Denver	0	0	0	0	1	0.000019
Fairbanks	0	0	0	0	5	0.000094
Gander	0	0	3	0.000057	481	0.009834
Goose Bay	0	0	0	0	9	0.000170
Houston	0	0	0	0	0	0
Iqaluit	6	0.000113	23	0.000435	711	0.014228
Jacksonville	0	0	0	0	0	0
Juneau	0	0	0	0	1	0.000019
Kansas City	0	0	0	0	0	0
Kotzebue	2	0.000038	4	0.000076	33	0.000624
Los Angeles	0	0	0	0	4	0.000076
Memphis	0	0	0	0	0	0
Merida	0	0	90	0.001708	106	0.002016
Mexico City	82	0.001550	95	0.001798	460	0.009220
Miami	0	0	0	0	3	0.000057
Minneapolis	0	0	0	0	0	0
New York	0	0	0	0	0	0
Oakland	0	0	0	0	92	0.001748
Puerto Vallarta	6	0.000115	105	0.002052	462	0.009550
Salt Lake City	0	0	0	0	0	0
San Jose Del Cabo	0	0	125	0.002373	430	0.008564
Seattle	0	0	0	0	0	0
Washington DC	0	0	0	0	0	0
Winnipeg	0	0	0	0	2	0.000038

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	1	0.000019
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	1	0.000019
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

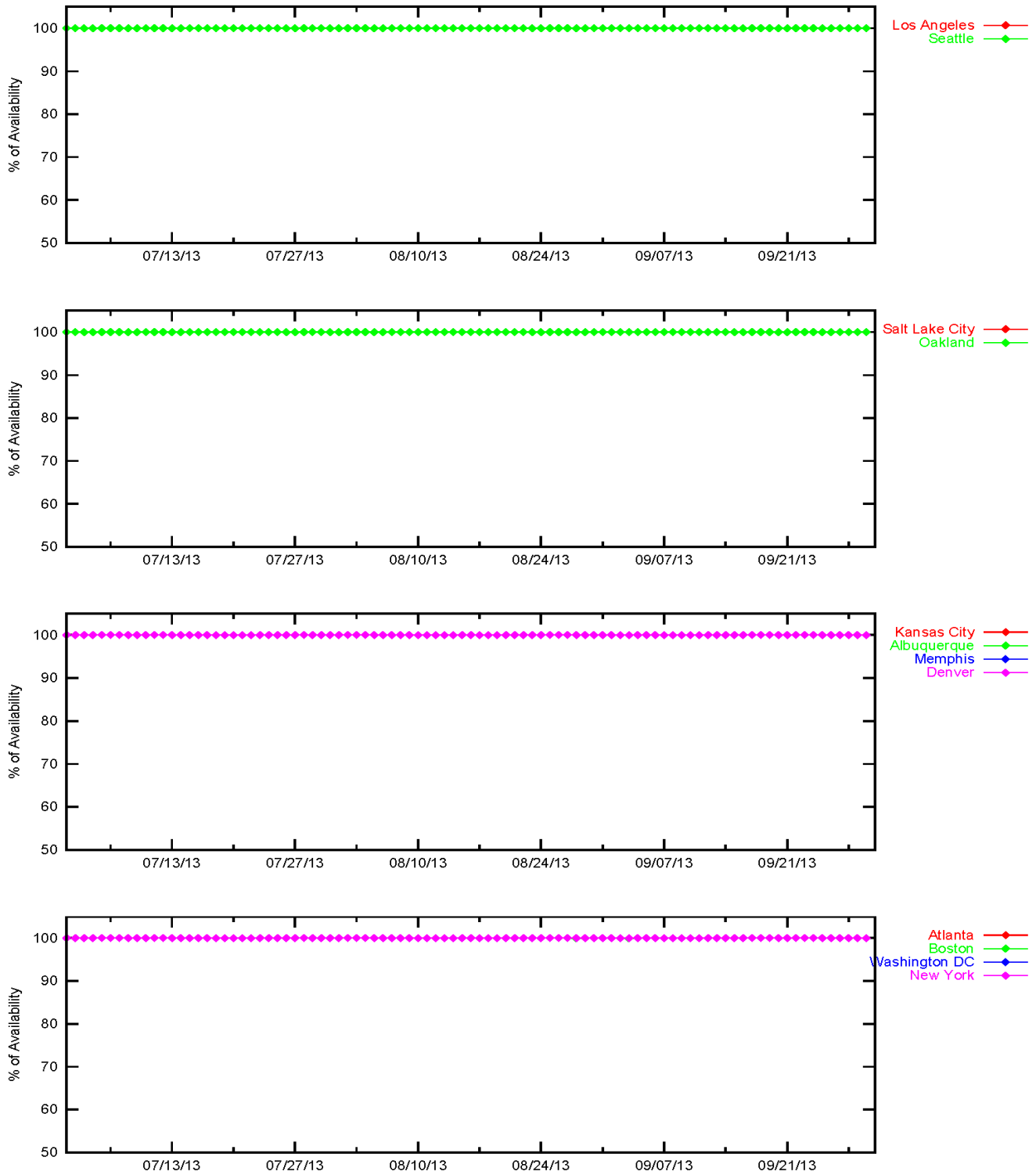


Figure 3-2 LPV Instantaneous Availability

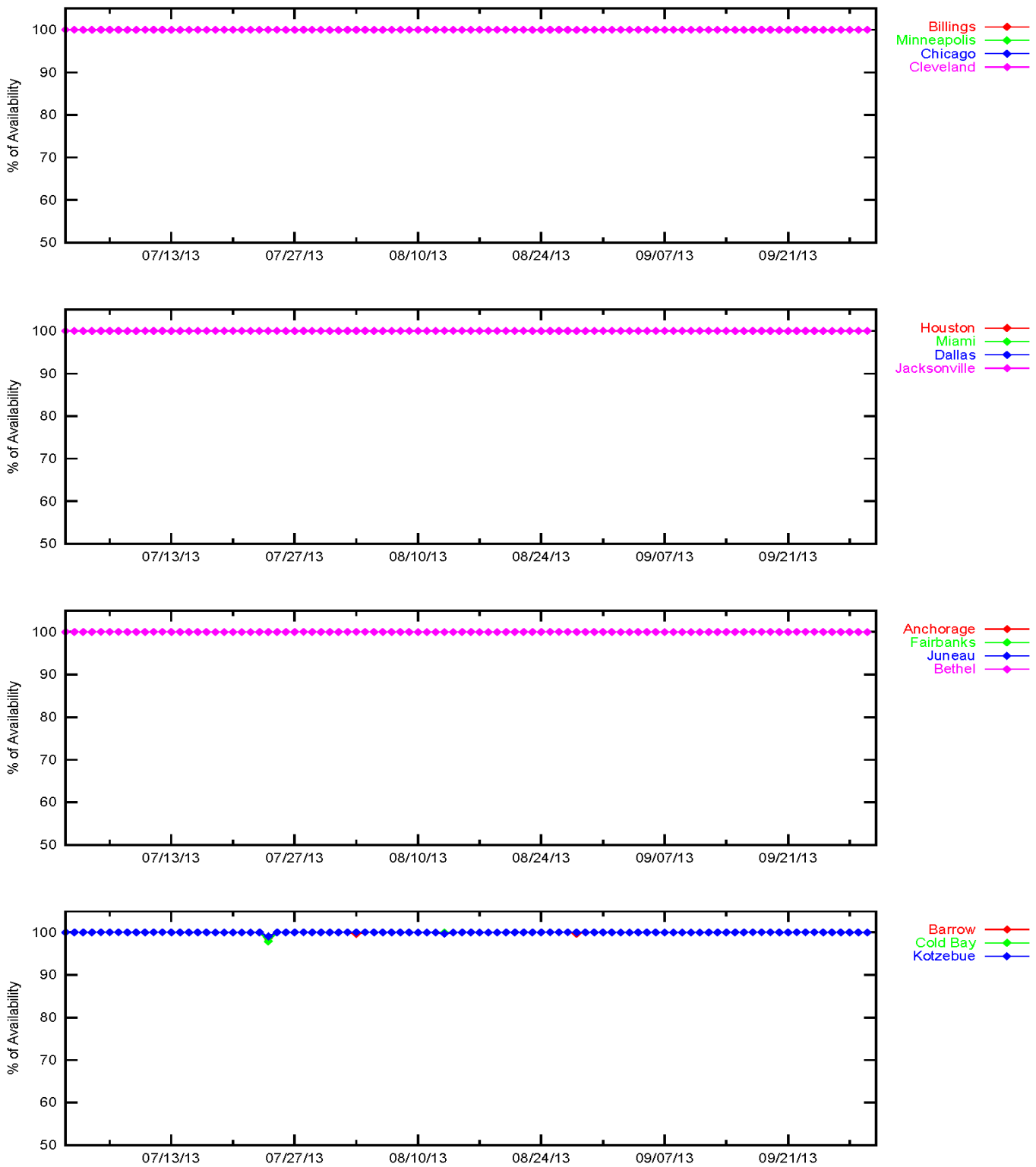


Figure 3-3 LPV Instantaneous Availability

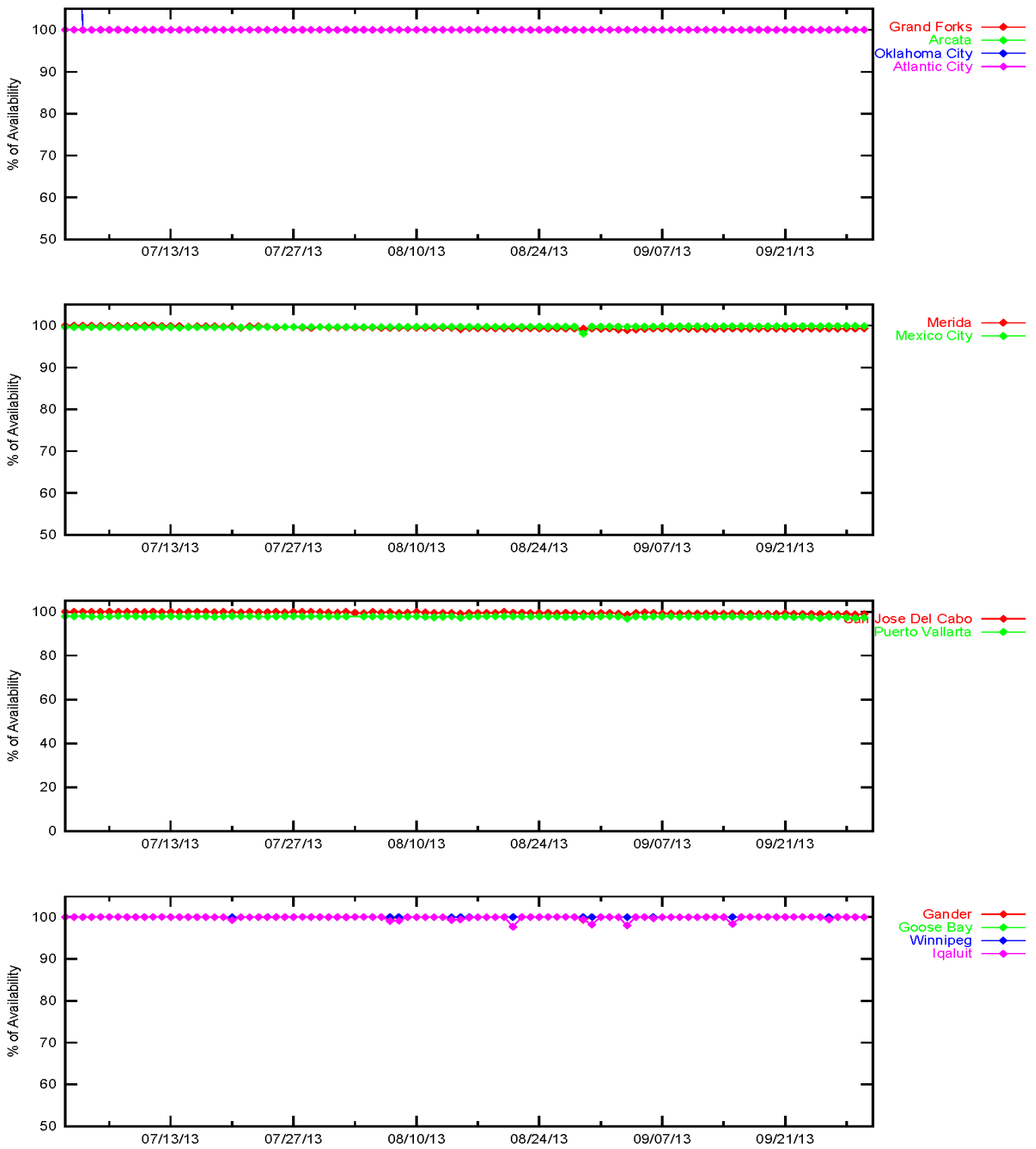


Figure 3-4 LPV 200 Instantaneous Availability

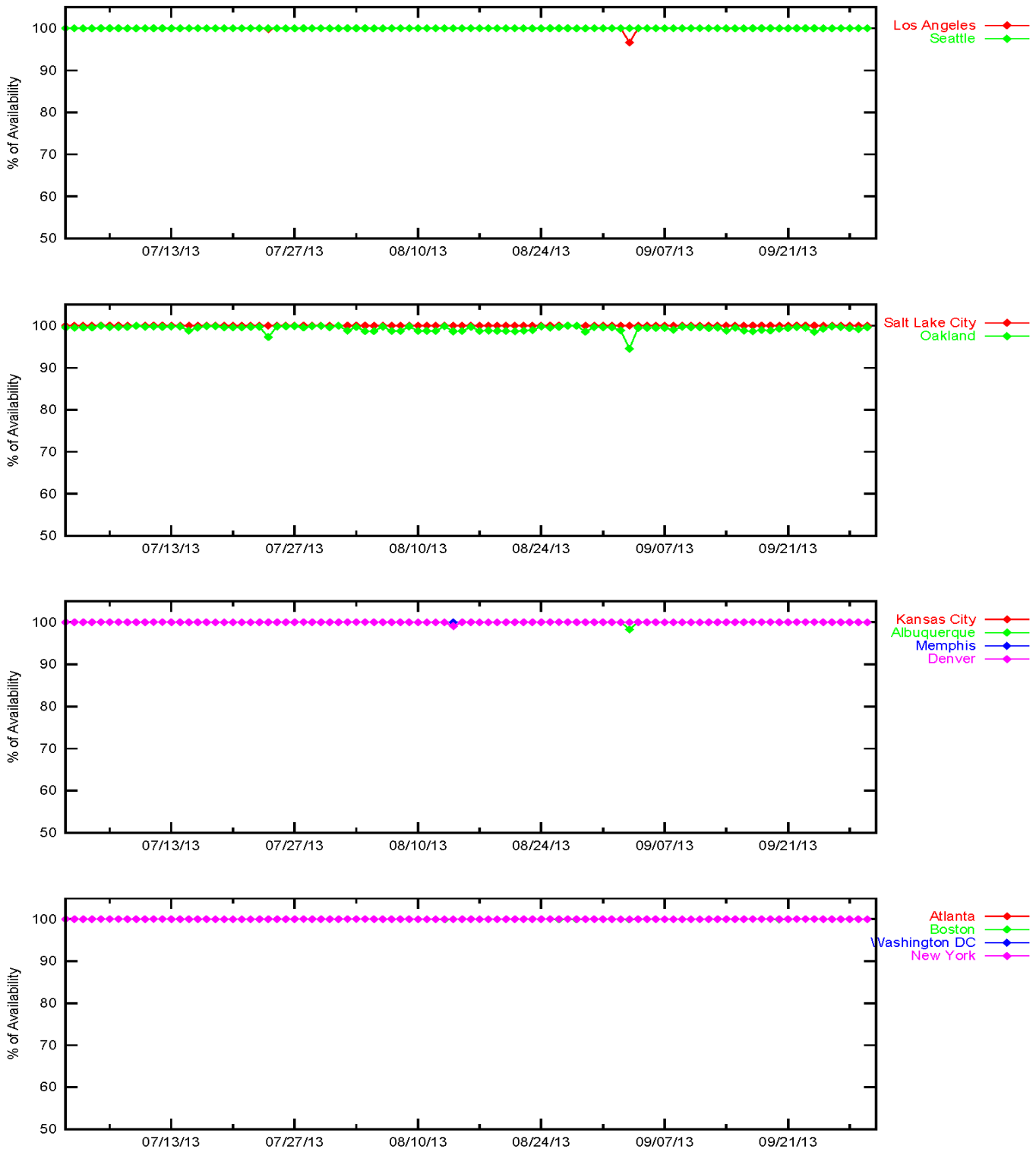


Figure 3-5 LPV 200 Instantaneous Availability\

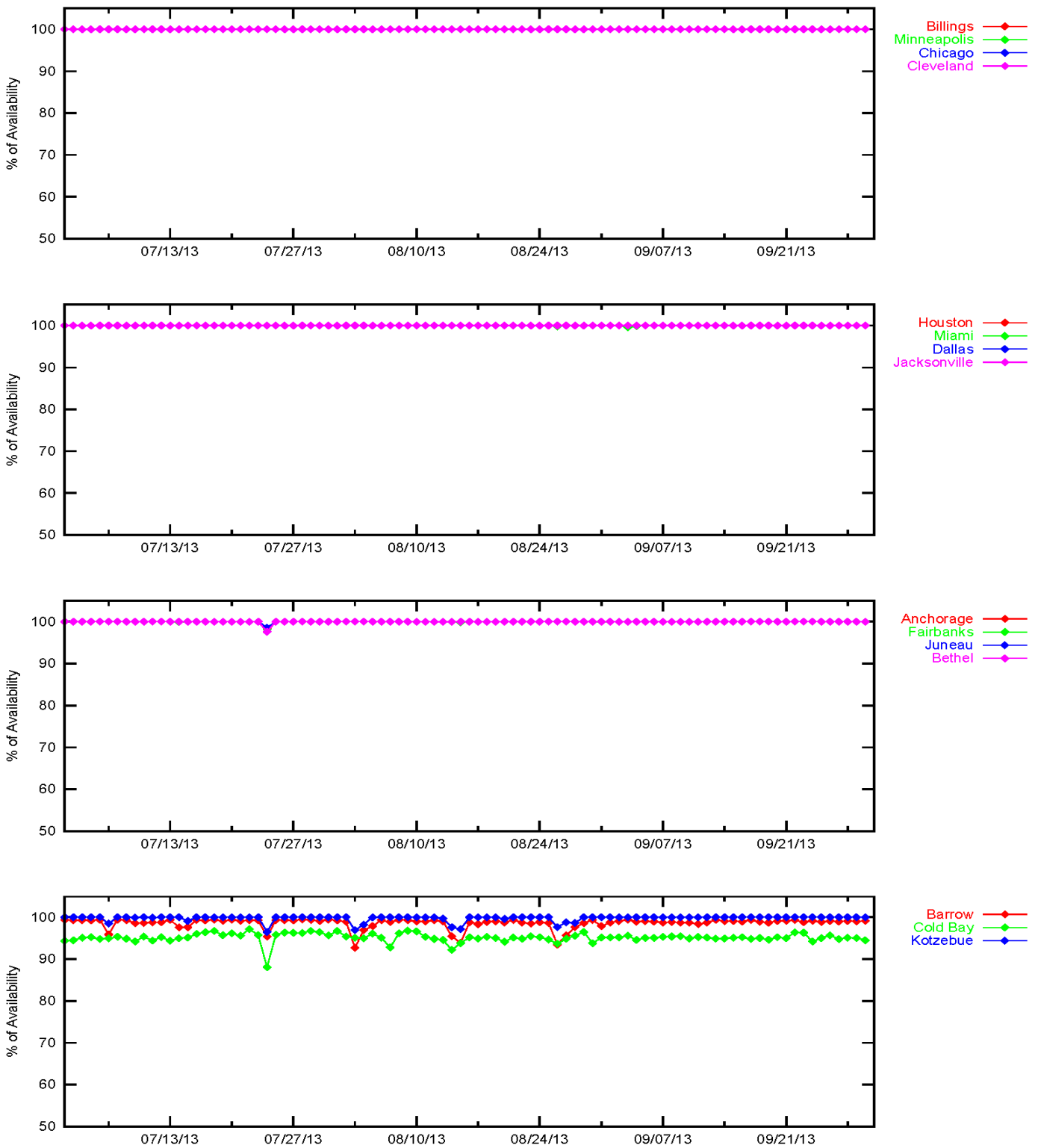


Figure 3-6 LPV 200 Instantaneous Availability

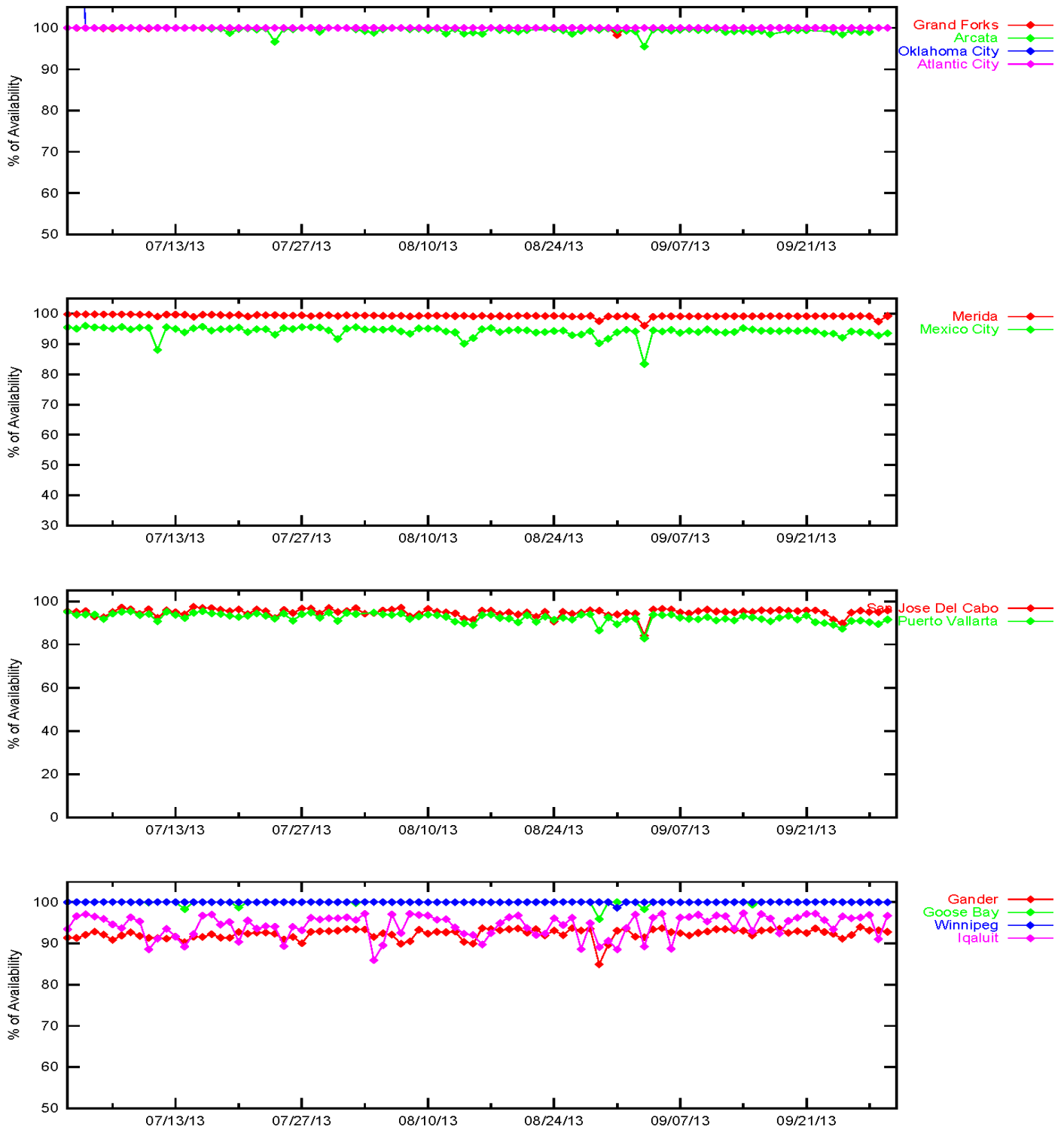


Figure 3-7 LPV Outages

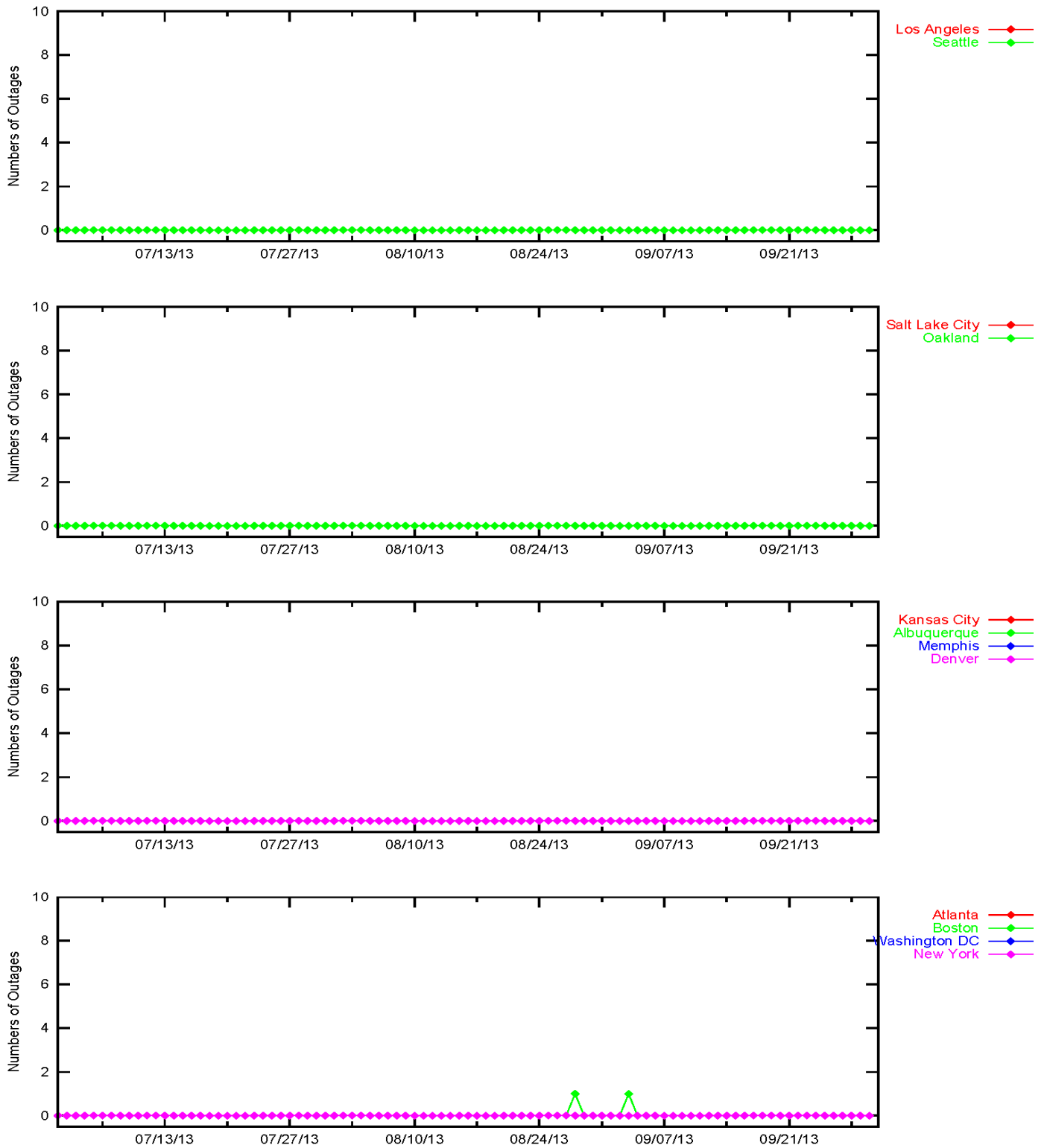


Figure 3-8 LPV Outages

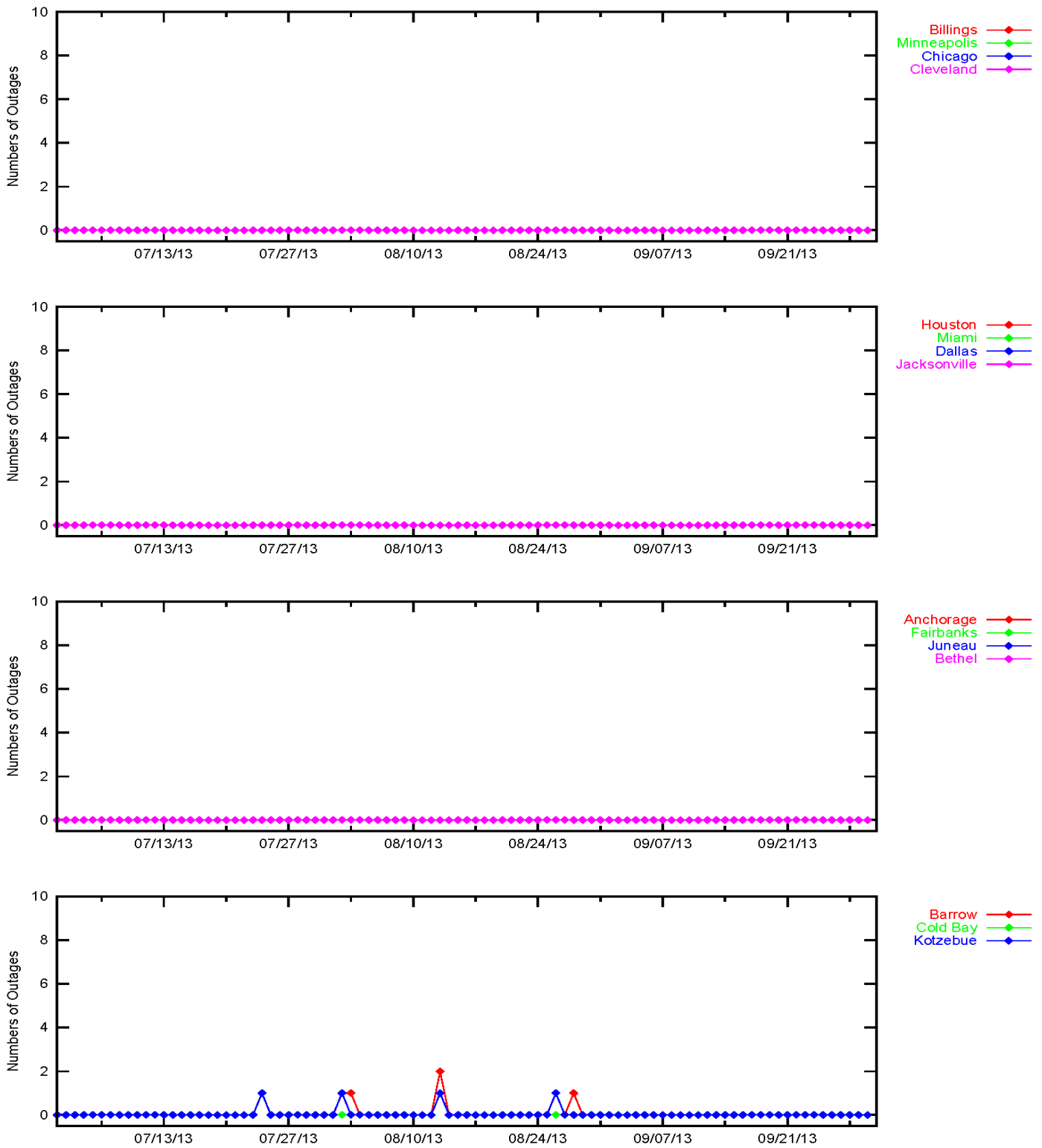


Figure 3-9 LPV Outages

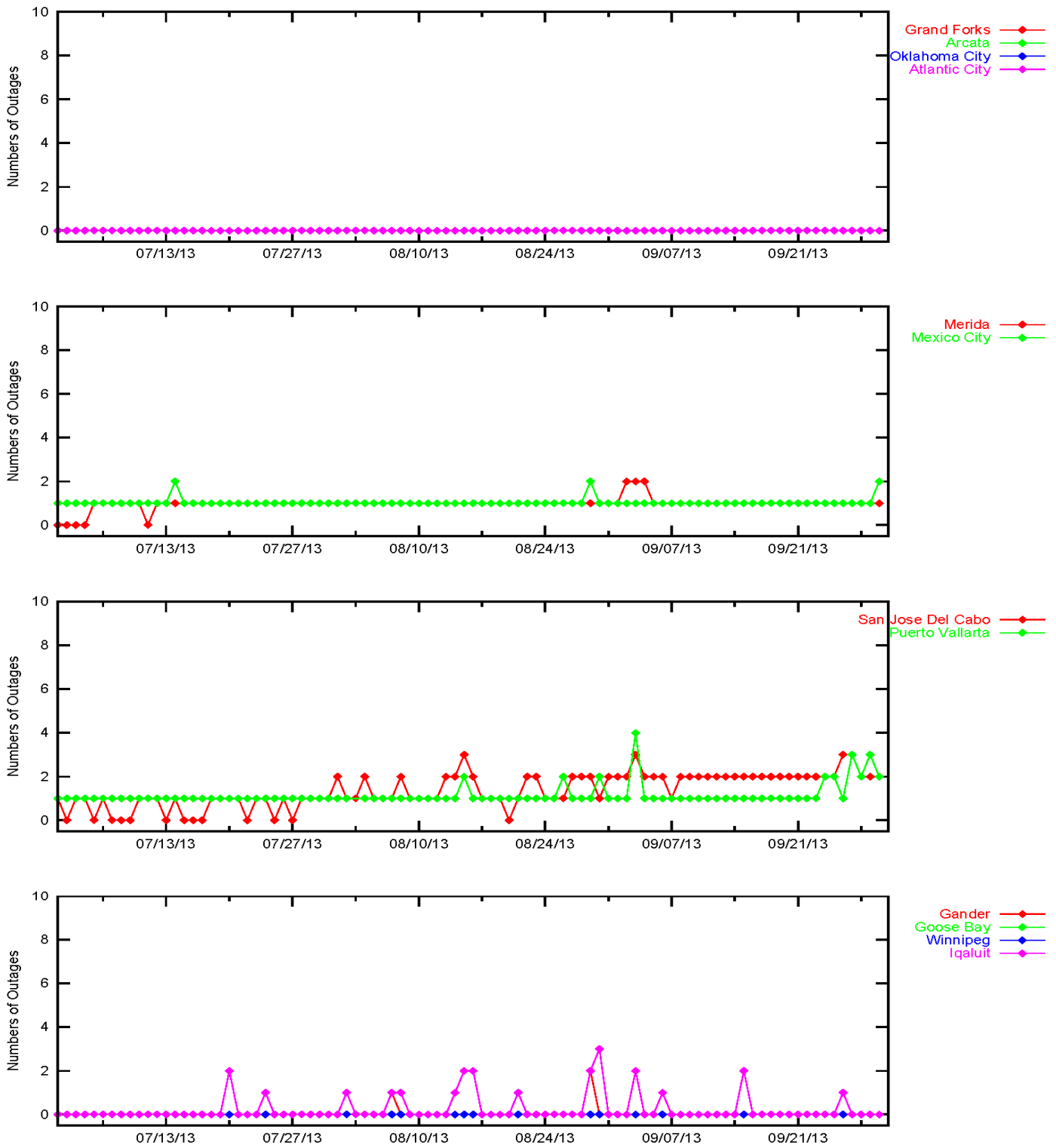


Figure 3-10 LPV 200 Outages

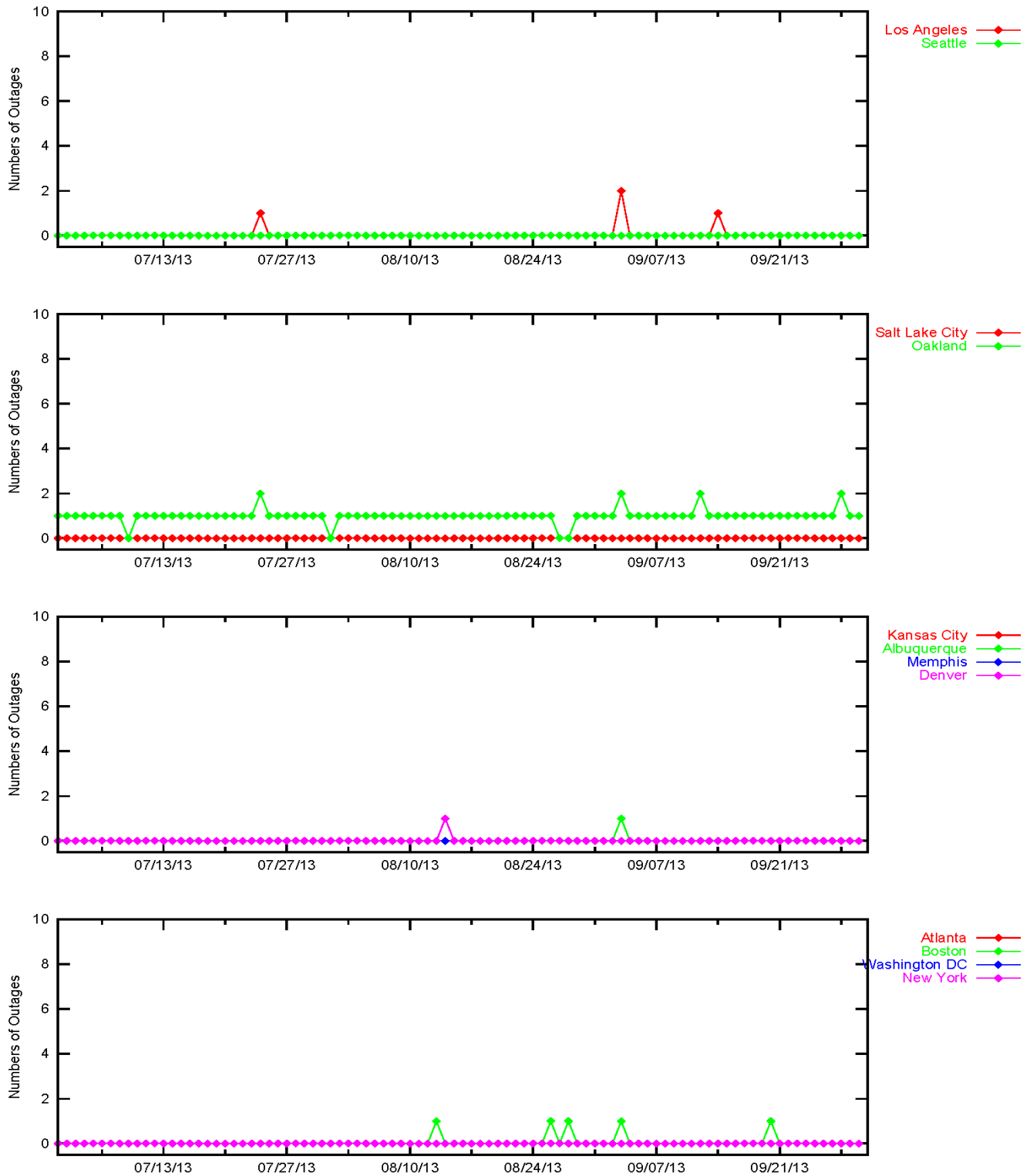


Figure 3-11 LPV 200 Outages

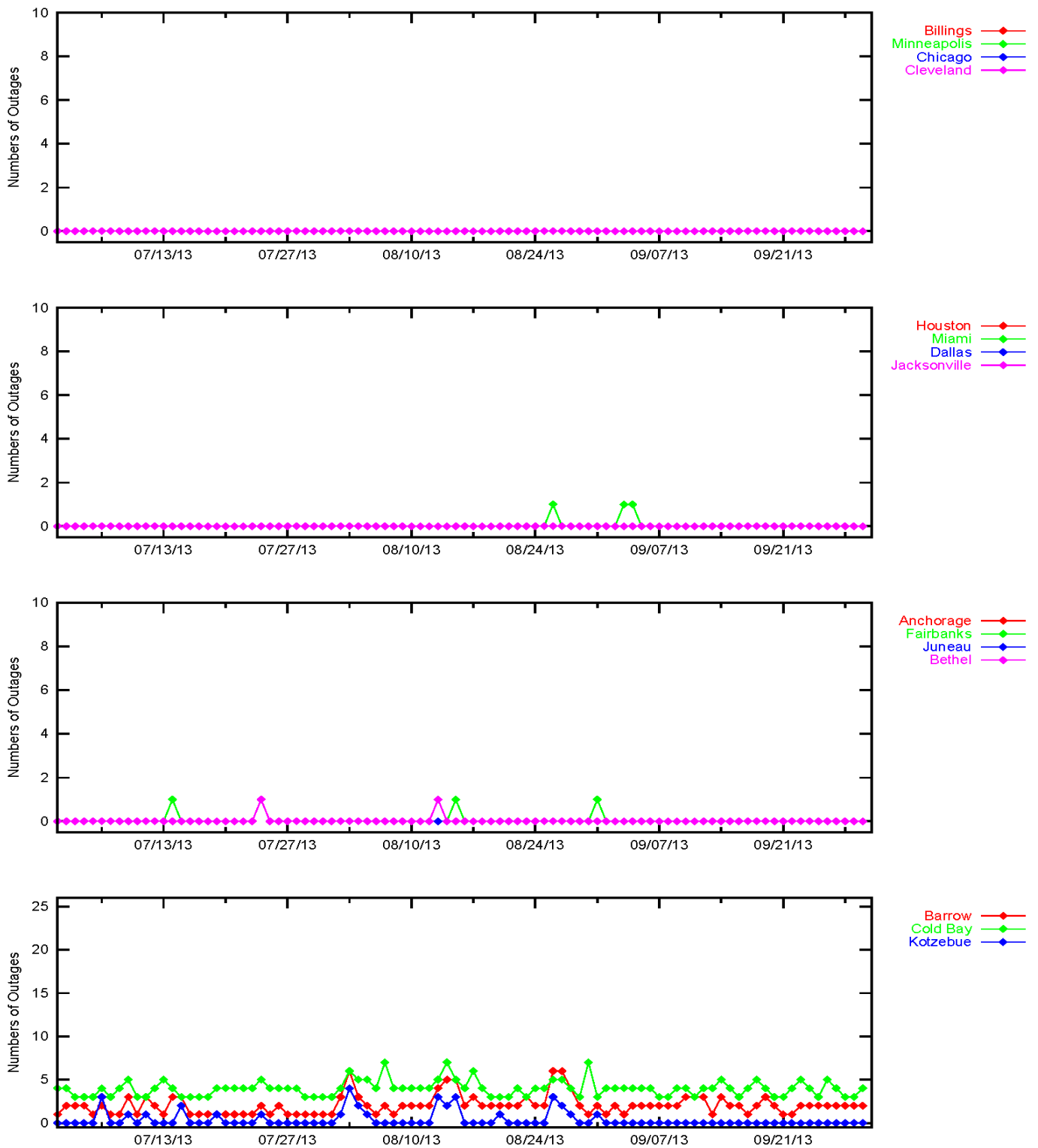
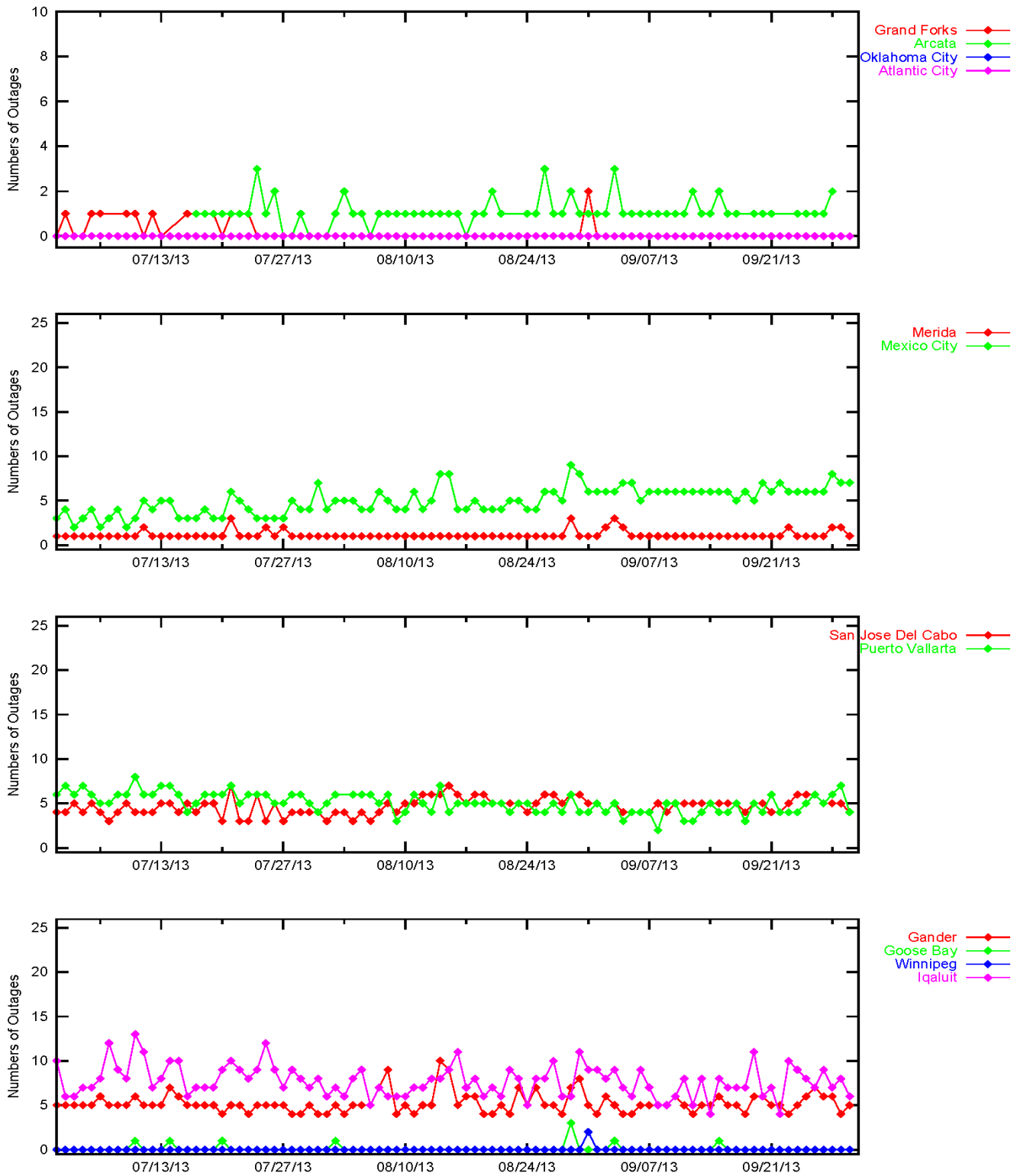


Figure 3-12 LPV 200 Outages



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.

Manual GUS switchover on CRE GEO (PRN-135) on August 2 and August 14 elevated UDRE values and slightly reduced coverage in CONUS, Alaska and Canada. Manual GUS switchover on CRE GEO (PRN-135) on August 26 caused minor coverage drop in Alaska. Manual GUS switchover on CRE GEO (PRN-138) on August 14 elevated UDRE values and reduced coverage in CONUS, Alaska and Canada. GUS switchover on CRE GEO (PRN-138) on August 29 had a minor effect on coverage in Canada.

Brief carrier phase anomalies on PRN-12 on August 13 and on PRN-9 on August 17 caused WAAS to issue SV alerts setting PRN-12 and PRN-9 respectively to "Not Monitored", resulting in a minor reduction in LPV-200 Alaska coverage. A brief carrier phase anomaly on PRN-4 on September 28 caused WAAS to issue a SV alert setting PRN-4 to "Not Monitored" resulting in a minor reduction in LPV-200 CONUS coverage.

Planned maintenance on PRN-12 on July 24 significantly reduced Alaska coverage and slightly reduced CONUS, Canada, and RNP 0.1 coverage. Planned maintenance on PRN-15 on August 20 caused minor coverage reduction in CONUS, Alaska and Canada. Planned maintenance on PRN-14 on August 29 slightly reduced coverage in Canada. Planned maintenance on PRN-14 on September 3 caused coverage drop in CONUS, Canada and Mexico. Unplanned maintenance on PRN-10 on September 29 resulted in a minor reduction in LPV-200 CONUS and Canada coverage.

Geomagnetic activity on July 6, July 10, and August 30-31 elevated GIVE values and caused minor coverage drop in Alaska and Canada. Geomagnetic activity on July 14, July 25, and August 16 elevated GIVE values and reduced coverage in Canada. Geomagnetic activity on August 4-5 elevated GIVE values and affected coverage in Alaska and

Canada. Geomagnetic activity on August 27 elevated GIVE values and slightly reduced coverage in Alaska.

Communication outages at Barrow on August 6 increased GIVE values and caused slight coverage reduction in Alaska.

Localized scintillation at Iqaluit on August 21 caused GPS satellite ephemeris subframe bit errors and minor loss of coverage in Canada.

Radio frequency interference (RFI) caused localized loss of LPV/LPV200 coverage at Boston on August 13, August 26-28, September 3, and September 20, and at Los Angeles on September 14, but had no effect on WAAS service. Radio frequency interference (RFI) at Iqaluit on September 15 caused GIVE values set to “Not Monitored” and loss of coverage in Canada.

Figure 4-1 LP North America Coverage for the Quarter

**WAAS LP Coverage Contours
July 1 – September 30, 2013**

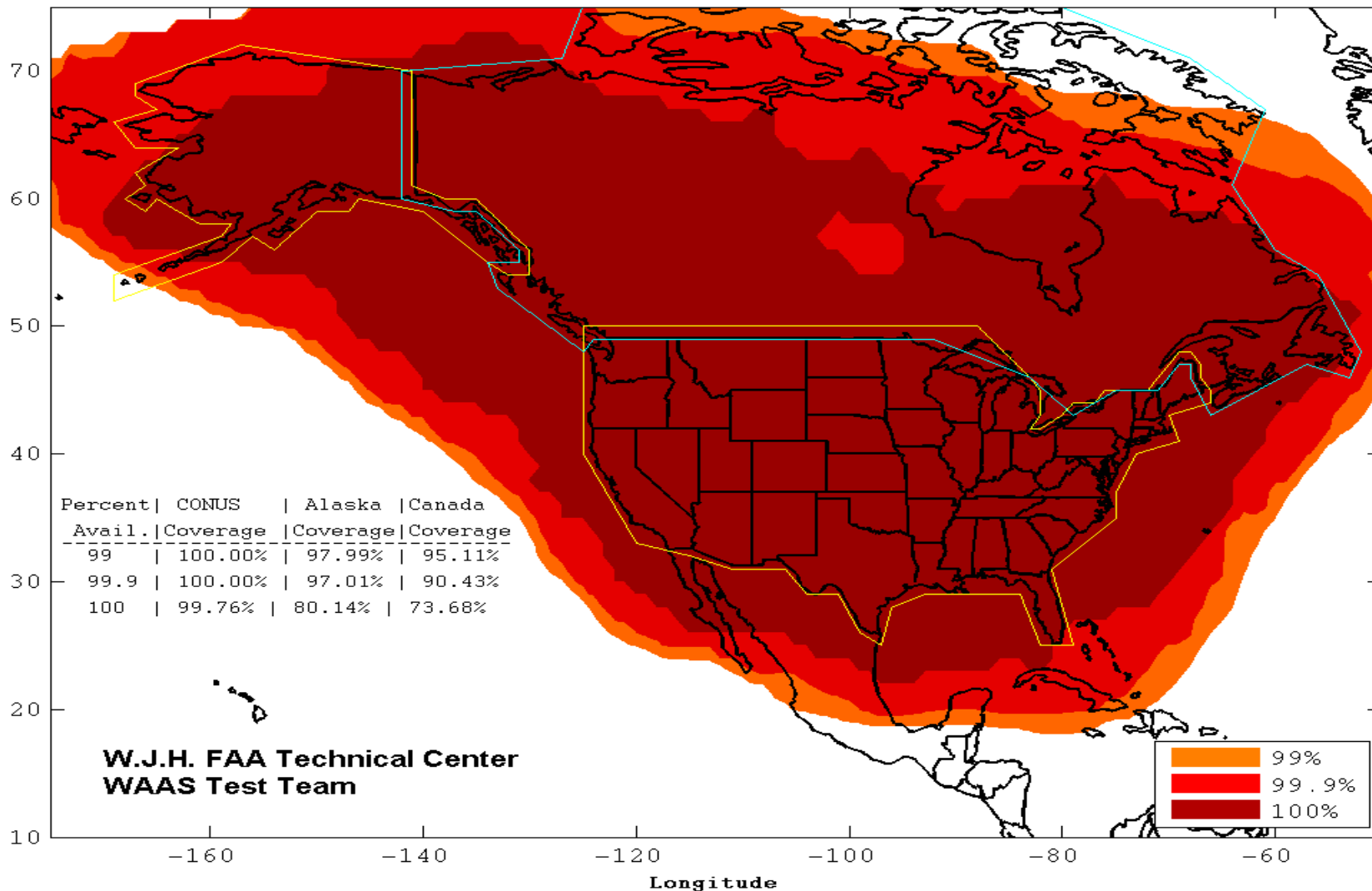


Figure 4-2 LPV North America Coverage for the Quarter

**WAAS LPV Coverage Contours
July 1 – September 30, 2013**

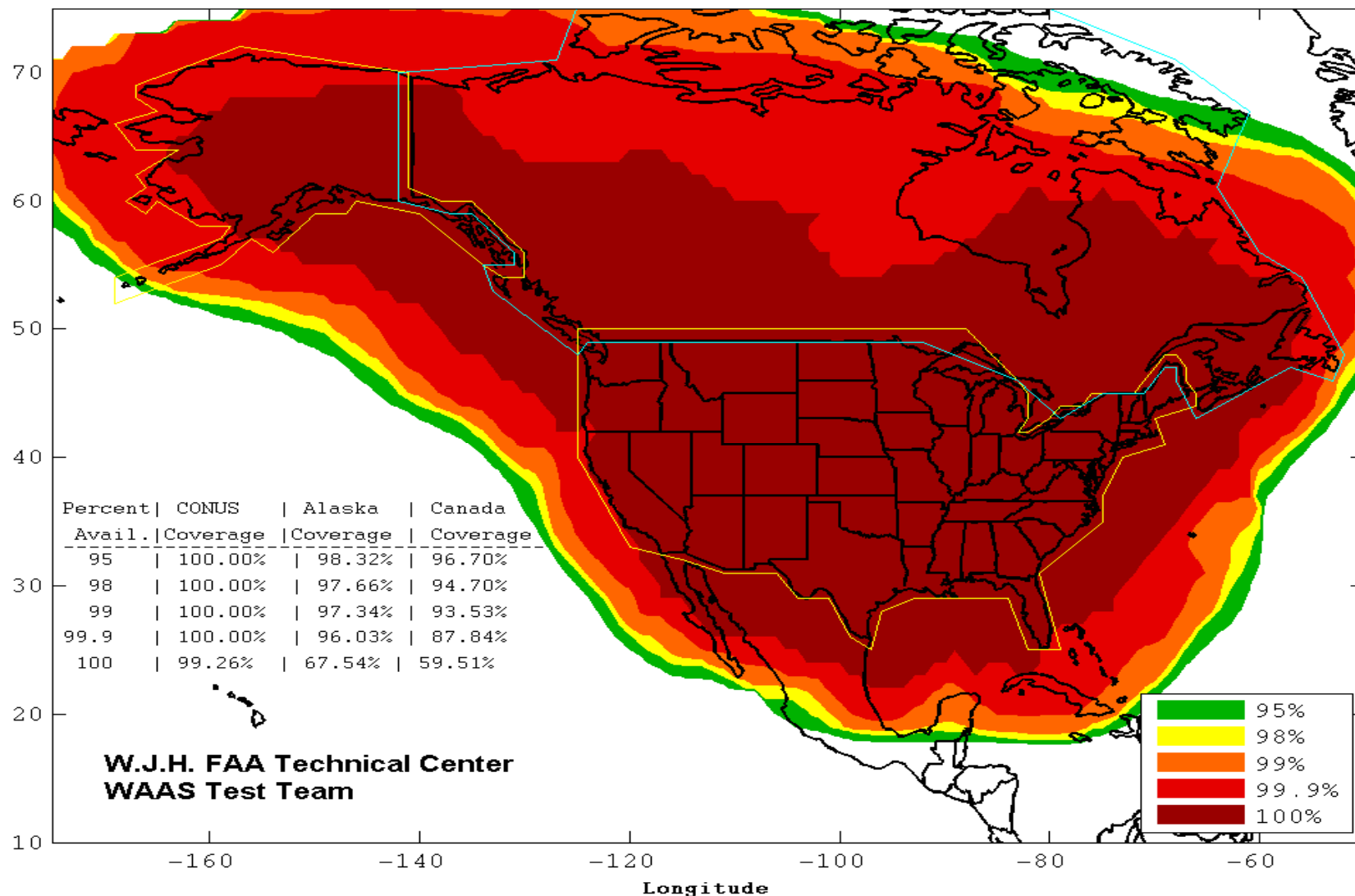


Figure 4-3 LPV 200 North America Coverage for the Quarter

**WAAS LPV200 Coverage Contours
July 1 – September 30, 2013**

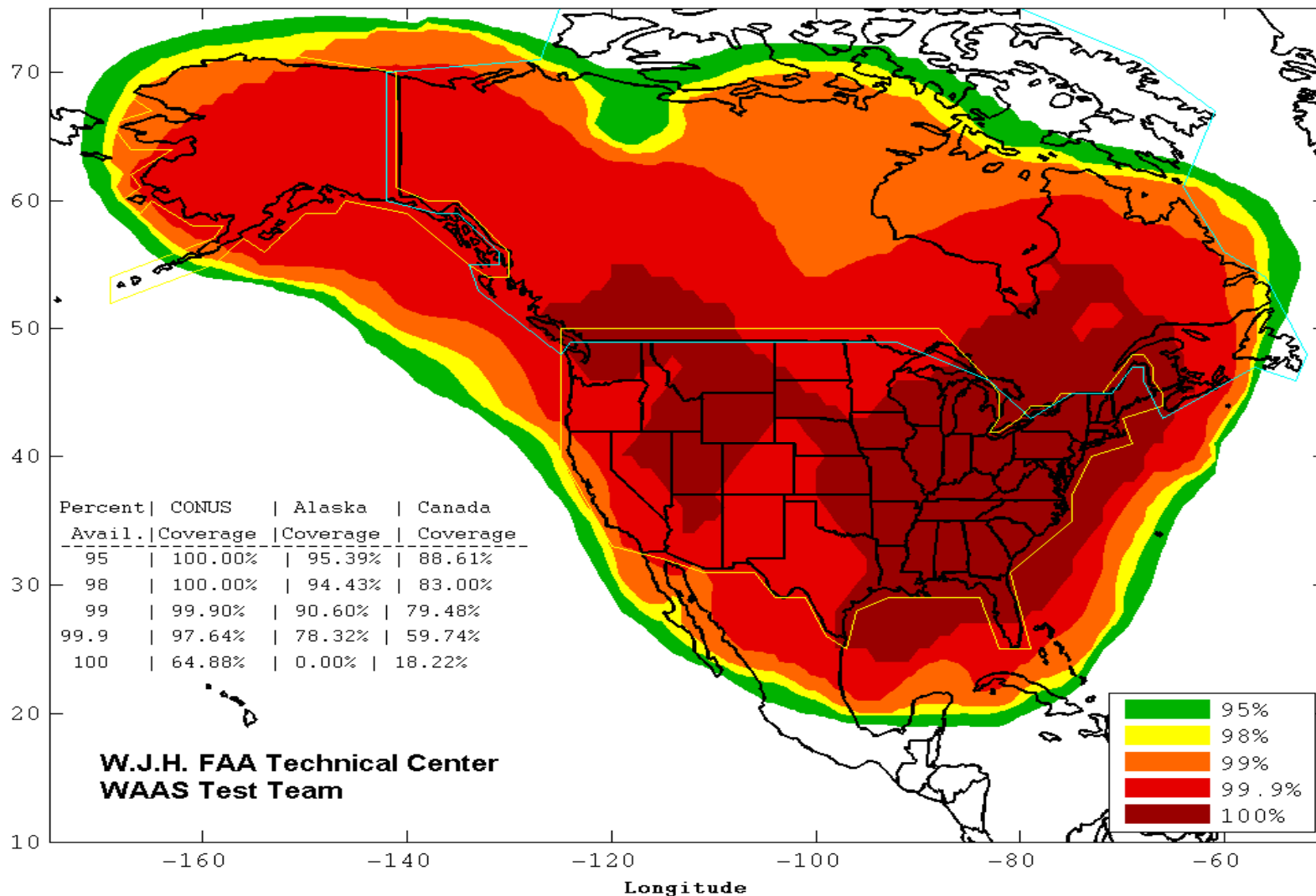


Figure 4-4 RNP 0.1 Coverage for the Quarter

WAAS RNP 0.1 Coverage Contours
July 1 – September 30, 2013

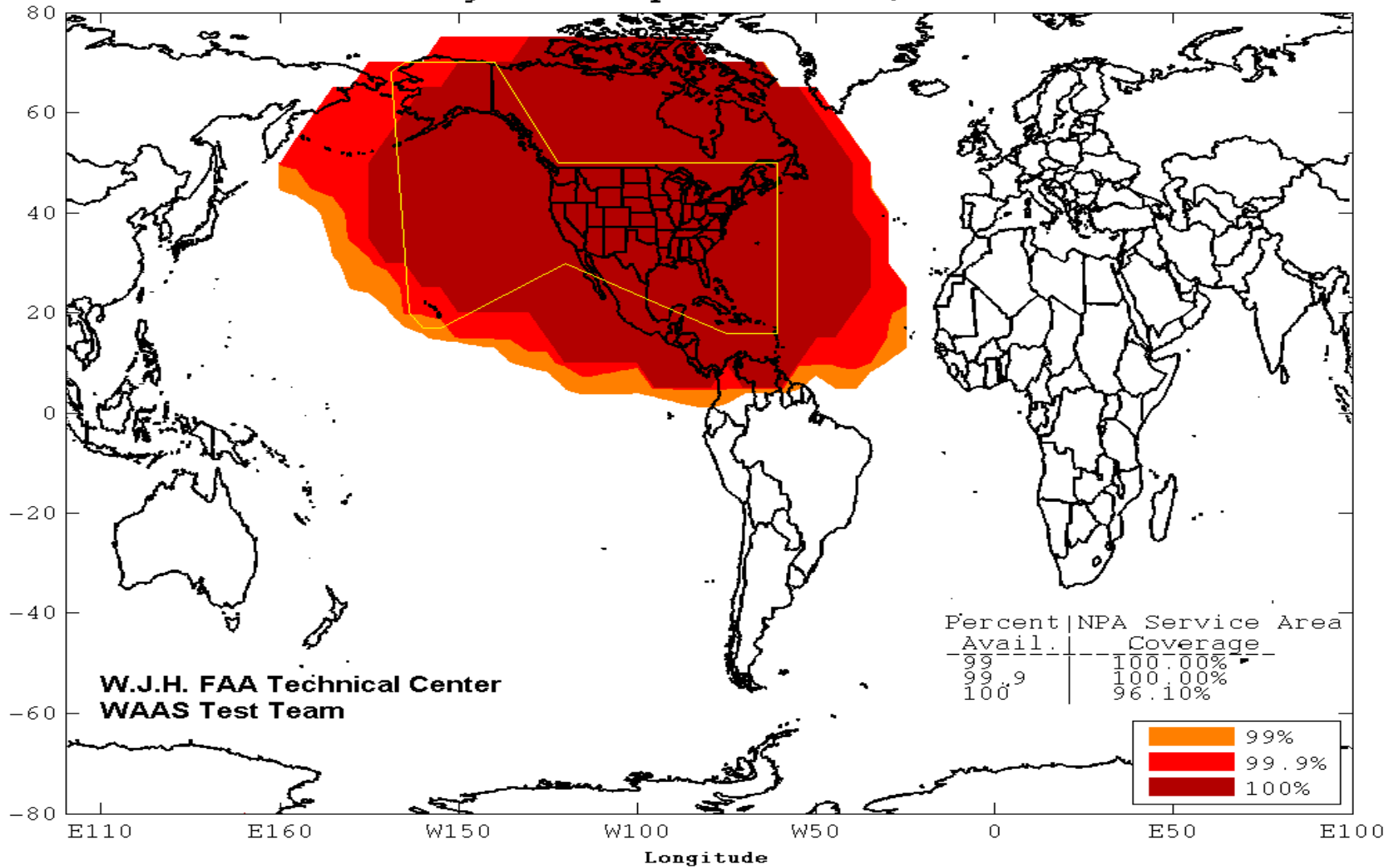


Figure 4-5 RNP 0.3 Coverage for the Quarter

**WAAS RNP 0.3 Coverage Contours
July 1 – September 30, 2013**

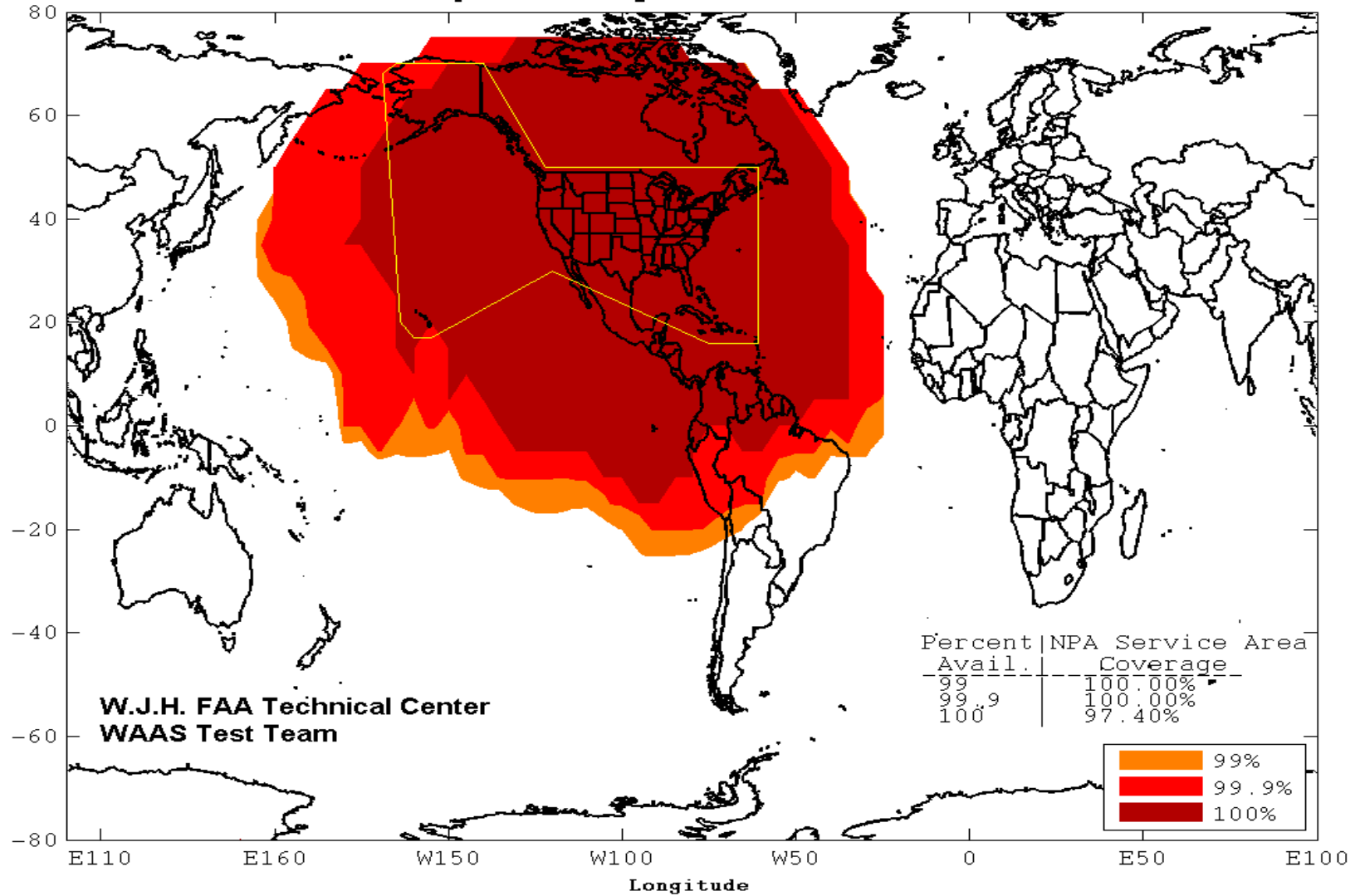


Figure 4-6 Daily LPV and LPV 200 CONUS Coverage

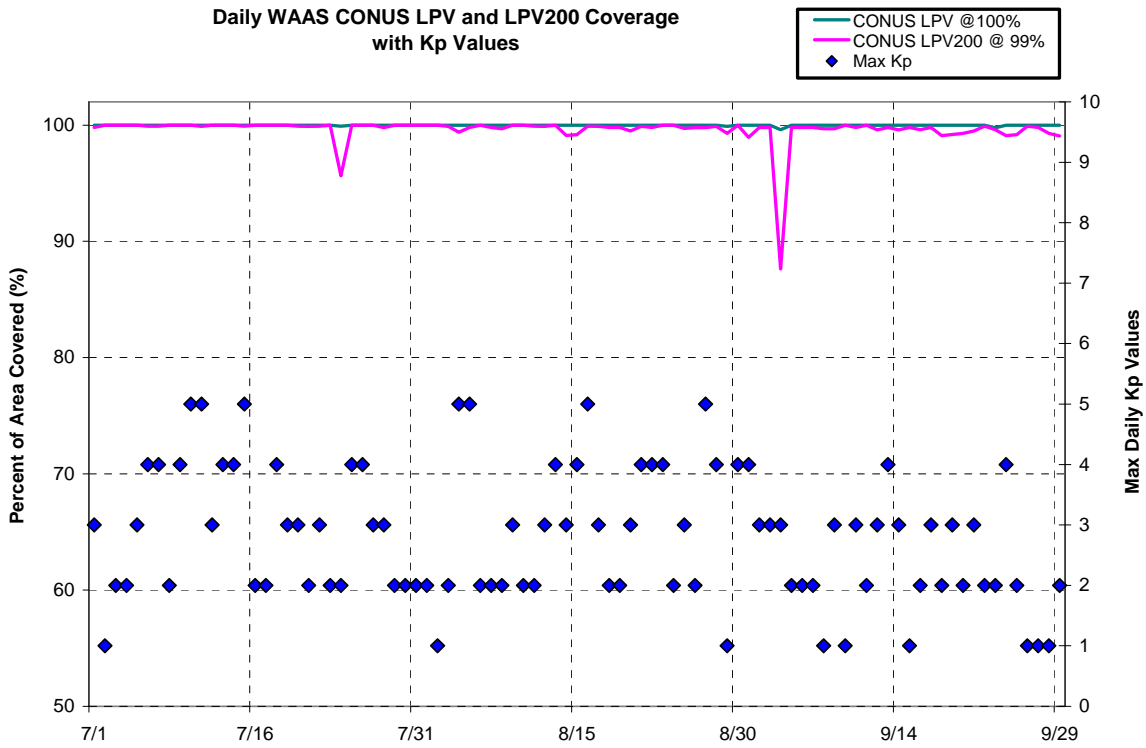


Figure 4-7 Daily LPV and LPV 200 Alaska Coverage

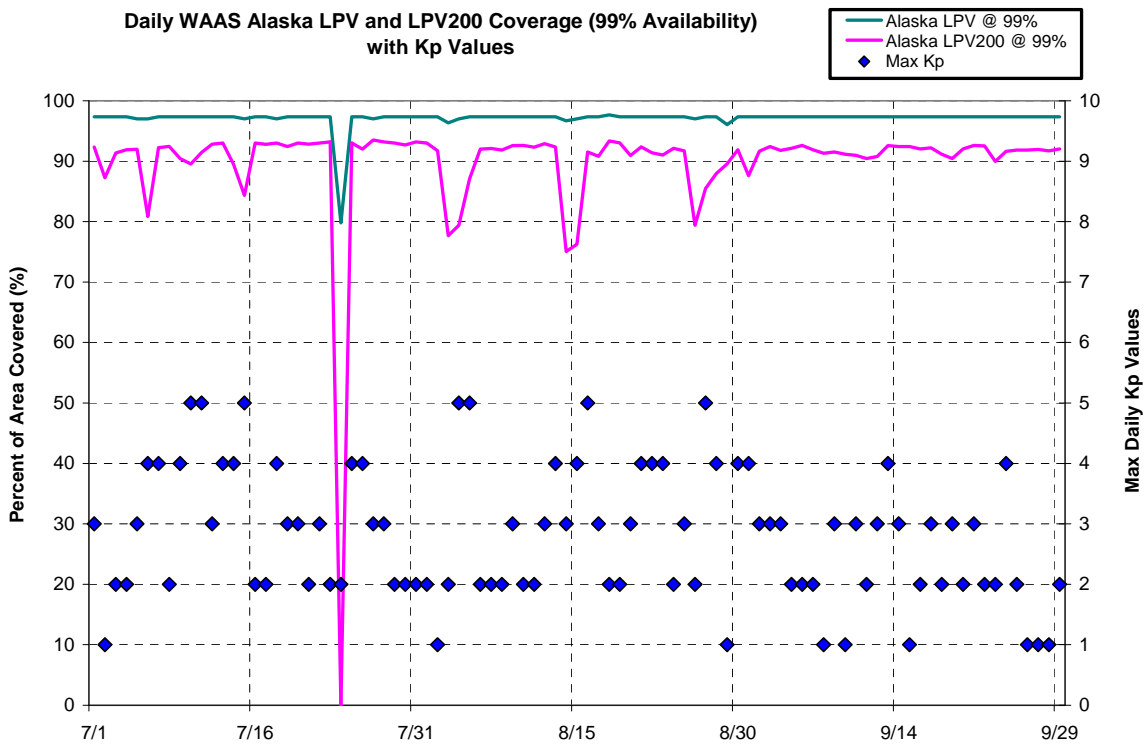


Figure 4-8 Daily LPV and LPV 200 Canada Coverage

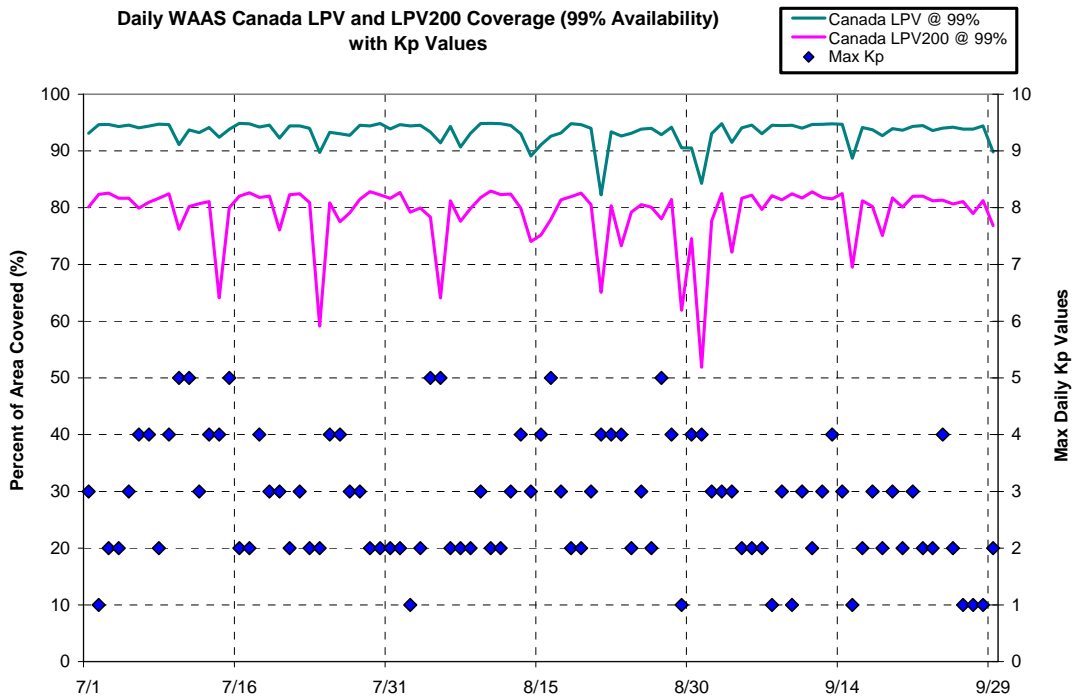
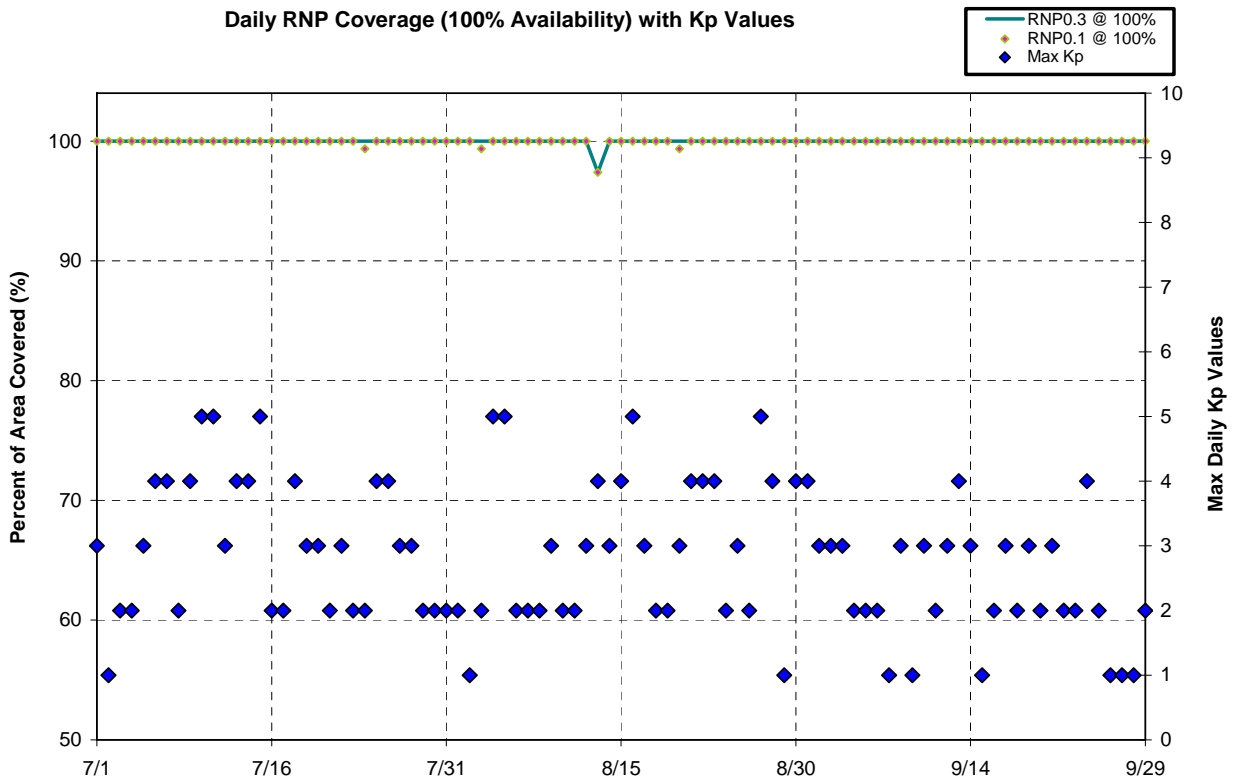


Figure 4-9 Daily RNP Coverage



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 2.4 at Oklahoma City. 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	4.78	7.75	0
Atlantic City	5.17	5.32	0
Grand Forks	4.49	6.53	0
Oklahoma City	2.60	2.40	0
Albuquerque	5.65	9.56	0
Anchorage	7.62	6.05	0
Atlanta	8.39	7.69	0
Barrow	7.81	8.06	0
Bethel	10.69	8.64	0
Billings	7.53	8.23	0
Boston	6.15	6.34	0
Chicago	6.23	6.76	0
Cleveland	6.47	6.80	0
Cold Bay	11.93	8.48	0
Dallas	5.70	5.15	0
Denver	6.00	5.90	0
Fairbanks	4.20	7.00	0
Gander	7.71	10.00	0
Goose Bay	6.59	6.43	0
Houston	6.35	8.18	0
Iqaluit	9.83	7.29	0
Jacksonville	10.10	6.74	0
Juneau	9.09	4.23	0
Kansas City	7.31	7.64	0
Kotzebue	8.99	5.58	0
Los Angeles	8.91	7.22	0
Memphis	7.21	5.39	0
Merida	6.31	8.99	0
Mexico City	11.49	7.80	0
Miami	10.90	7.50	0
Minneapolis	4.60	6.93	0
New York	7.22	7.49	0
Oakland	7.15	6.22	0
Puerto Vallarta	12.77	7.78	0
Salt Lake City	6.27	6.26	0
San Jose Del Cabo	13.42	6.94	0
Seattle	8.50	6.16	0
Washington DC	7.40	7.30	0
Winnipeg	5.82	6.54	0

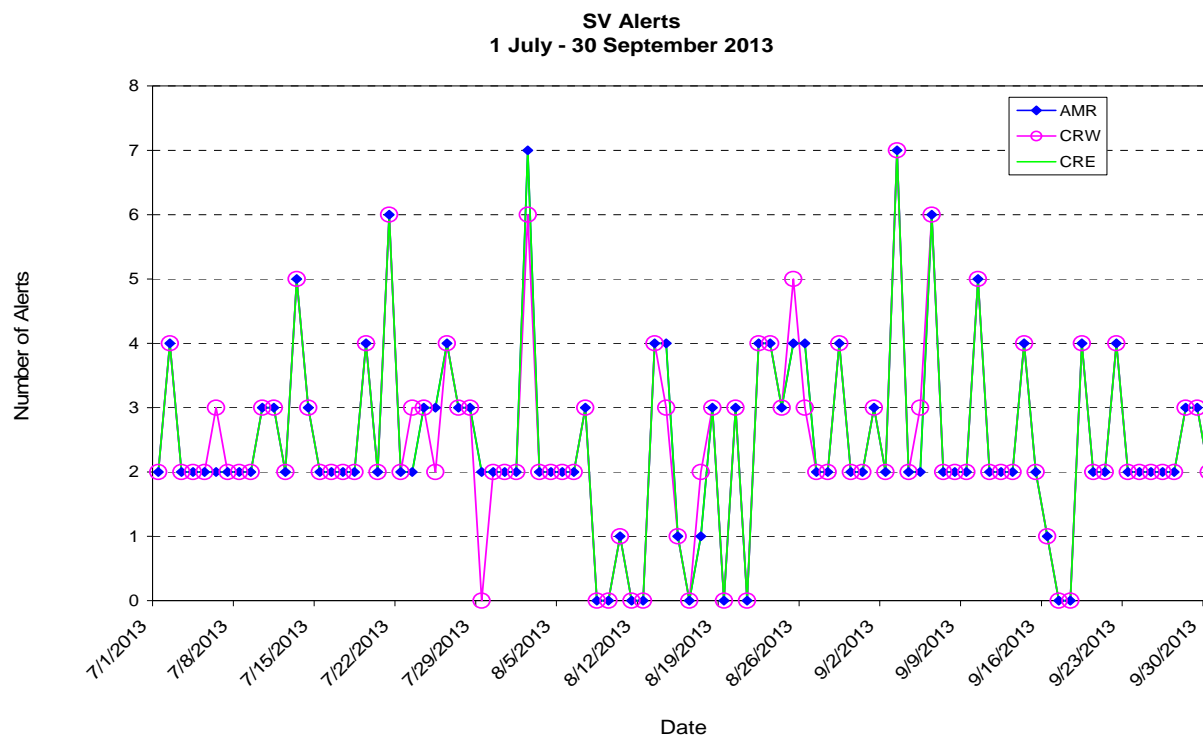
5.2 Broadcast Alerts

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	34	34	34	0.3696	0.3696	0.3696
3	20	20	20	0.2174	0.2174	0.2174
4	172	171	173	1.8696	1.8587	1.8804
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	226	225	227	2.4565	2.4457	2.4674
Days in Service	92	92	92			

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	108425	5	3925
2	1324124	66	3901
3	1324073	71	3901
4	1324557	52	3901
7	100636	34	3974
9	93073	2	4021
10	100710	32	3972
17	31744	3	4103

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

SV	On Time	Late	Max Late Length (seconds)
1	49061	1	186
2	47591	1	179
3	48575	1	156
4	47326	0	0
5	48255	0	0
6	49752	0	0
7	47337	0	0
8	47471	0	0
9	46616	0	0
10	48648	0	0
11	49748	0	0
12	47451	1	169
13	47297	1	176
14	46884	1	3900
15	47531	0	0
16	48355	0	0
17	47175	1	179
18	46764	1	156
19	48887	0	0
20	49082	0	0
21	47693	0	0
22	46234	1	175
23	47417	1	163
24	49240	0	0
25	49299	0	0
26	48197	0	0
27	49456	2	169
28	47015	1	165
29	47595	0	0
31	48282	0	0
32	47401	0	0

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

SV	On Time	Late	Max Late Length (seconds)
1	40293	0	0
2	39042	0	0
3	39865	0	0
4	38865	1	186
5	39540	0	0
6	40902	0	0
7	38853	0	0
8	38995	0	0
9	38288	0	0
10	39913	2	208
11	40910	2	4057
12	38979	0	0
13	38879	0	0
14	38490	2	176
15	38978	0	0
16	39720	0	0
17	38739	1	168
18	38388	2	206
19	40125	0	0
20	40259	1	168
21	39131	0	0
22	37971	1	206
23	38949	0	0
24	40490	0	0
25	40523	1	208
26	39601	1	136
27	40689	0	0
28	38597	1	210
29	39134	1	131
31	39565	0	0
32	38941	1	136
133	75985	2	9937
135	76252	2	209
138	76299	2	209

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

Band	Block	On Time	Late	Max Late Length (seconds)
0	0	27543	14	4034
0	1	27529	20	4032
0	2	27539	17	4032
1	0	27534	22	4033
1	1	27540	20	4034
1	2	27547	17	4032
1	3	27540	12	4033
1	4	27531	15	4328
2	0	27536	14	4326
2	1	27532	14	4321
2	2	27539	24	4321
2	3	27534	21	4326
2	4	27534	19	4320
3	0	27527	22	4320
3	1	27537	17	4326
3	2	27548	20	4325
9	0	27540	17	4320
9	1	27525	28	4320
9	2	27527	19	4320
9	3	27537	19	4038
9	4	27536	23	4033
9	5	27526	22	4033
9	6	27533	23	4032

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

Band	On Time	Late	Max Late Length (seconds)
0	36181	1	4238
1	36190	1	4020
2	36245	3	4193
3	36194	2	4190
9	36212	2	4110

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

Message Type	On Time	Late	Max Late Length (seconds)
0	3	0	0
1	107225	4	126
2	1310488	66	13
3	1310438	69	13
4	1310923	49	14
7	99590	29	151
9	92116	1	175
10	99443	43	137

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

SV	On Time	Late	Max Late Length (seconds)
1	48580	1	164
2	47078	0	0
3	48049	0	0
4	46834	0	0
5	47734	0	0
6	49214	0	0
7	46825	0	0
8	46959	0	0
9	46105	0	0
10	48118	1	181
11	49253	0	0
12	46995	0	0
13	46793	0	0
14	46417	0	0
15	47014	0	0
16	47848	0	0
17	46715	0	0
18	46297	0	0
19	48362	0	0
20	48606	0	0
21	47181	0	0
22	45775	0	0
23	46955	0	0
24	48741	0	0
25	48814	0	0
26	47672	0	0
27	48923	0	0
28	46505	0	0
29	47089	0	0
31	47828	0	0
32	46933	1	164

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

SV	On Time	Late	Max Late Length (seconds)
1	39888	2	161
2	38621	1	208
3	39425	1	205
4	38470	1	192
5	39119	0	0
6	40458	0	0
7	38433	2	144
8	38580	1	127
9	37872	0	0
10	39489	0	0
11	40511	3	203
12	38592	1	184
13	38461	0	0
14	38113	1	176
15	38555	0	0
16	39297	0	0
17	38364	0	0
18	37990	1	128
19	39692	1	136
20	39866	1	128
21	38697	0	0
22	37594	0	0
23	38562	1	122
24	40076	1	161
25	40131	1	192
26	39166	1	139
27	40232	3	205
28	38187	1	203
29	38733	0	0
31	39171	2	202
32	38557	1	136
133	75183	1	163
135	75479	1	128
138	75517	0	0

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

Band	Block	On Time	Late	Max Late Length (seconds)
0	0	27281	7	356
0	1	27254	14	359
0	2	27251	16	585
1	0	27248	18	564
1	1	27255	23	558
1	2	27260	15	355
1	3	27252	19	360
1	4	27246	25	368
2	0	27248	15	367
2	1	27256	15	386
2	2	27256	11	368
2	3	27260	16	516
2	4	27248	20	521
3	0	27241	23	515
3	1	27262	17	511
3	2	27250	20	498
9	0	27247	19	496
9	1	27255	13	458
9	2	27256	12	452
9	3	27266	14	469
9	4	27256	15	469
9	5	27249	18	458
9	6	27258	14	439

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

Band	On Time	Late	Max Late Length (seconds)
0	35820	4	395
1	35867	2	362
2	35787	2	478
3	35818	1	363
9	35809	3	405

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

Message Type	On Time	Late	Max Late Length (seconds)
1	107919	6	126
2	1324774	67	20
3	1324716	75	26
4	1325218	49	23
7	100220	34	138
9	93124	0	0
10	100327	28	134
17	31713	4	521

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

SV	On Time	Late	Max Late Length (seconds)
1	49117	0	0
2	47581	0	0
3	48576	0	0
4	47357	0	0
5	48254	0	0
6	49753	0	0
7	47333	0	0
8	47479	0	0
9	46617	0	0
10	48654	0	0
11	49790	0	0
12	47510	0	0
13	47303	0	0
14	46924	1	149
15	47530	0	0
16	48361	0	0
17	47229	0	0
18	46799	1	181
19	48894	0	0
20	49140	0	0
21	47698	0	0
22	46287	1	164
23	47465	1	182
24	49264	1	182
25	49356	0	0
26	48189	0	0
27	49464	0	0
28	47012	0	0
29	47604	0	0
31	48336	0	0
32	47450	1	180

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

SV	On Time	Late	Max Late Length (seconds)
1	40335	0	0
2	39057	1	182
3	39864	1	205
4	38870	1	122
5	39551	2	210
6	40912	1	144
7	38853	0	0
8	38996	1	161
9	38290	1	144
10	39937	1	182
11	40936	3	209
12	39030	0	0
13	38879	0	0
14	38535	2	152
15	38978	0	0
16	39728	0	0
17	38789	1	152
18	38420	1	128
19	40128	0	0
20	40288	1	152
21	39134	0	0
22	38009	0	0
23	39012	2	160
24	40518	0	0
25	40564	0	0
26	39601	0	0
27	40682	0	0
28	38571	1	210
29	39150	0	0
31	39599	1	130
32	38981	1	123
133	75958	1	168
135	76337	2	168
138	76387	0	0

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

Band	Block	On Time	Late	Max Late Length (seconds)
0	0	27555	17	311
0	1	27546	17	478
0	2	27552	15	583
1	0	27544	14	577
1	1	27570	12	463
1	2	27554	15	462
1	3	27554	20	462
1	4	27558	12	464
2	0	27534	20	461
2	1	27553	21	450
2	2	27564	19	416
2	3	27565	14	416
2	4	27547	19	397
3	0	27561	9	385
3	1	27550	16	404
3	2	27546	20	415
9	0	27563	12	338
9	1	27565	14	326
9	2	27542	23	583
9	3	27543	23	549
9	4	27556	14	529
9	5	27558	13	338
9	6	27557	18	319

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

Band	On Time	Late	Max Late Length (seconds)
0	36180	0	0
1	36145	2	411
2	36150	1	477
3	36165	1	393
9	36165	1	393

5.4 Satellite Glitches

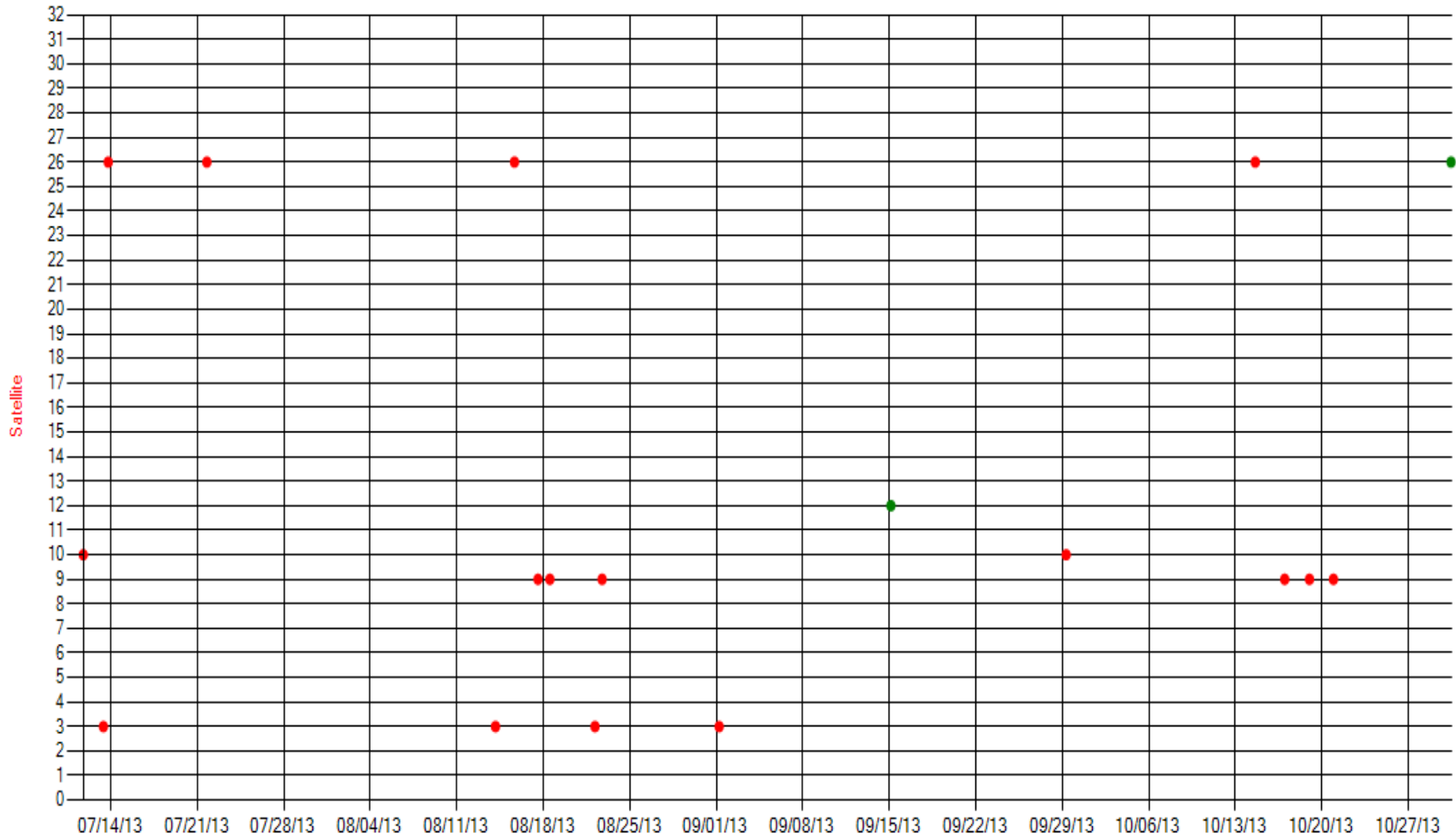
The GPS satellites occasionally have periods of signal carrier stability ‘glitches’ of varying magnitude. These are short degradations in the signal that in severe cases cause WAAS to lose track or cycle slip for some or all of the WAAS receivers. The more severe glitches will cause the WAAS reported 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. Note, the tool that performs this Satellite Glitch Analysis reports times when more than 14 GPS satellites are in view for some of the WAAS reference stations. The NovAtel WAAS G2 receiver is only capable of tracking 14 GPS satellites at a given time. GPS users may also experience this condition.

Please note beginning 6/21/2013 when PRN-27 (SVN-66) went online, the receivers have been experiencing periods of tracking limitation. With the addition of PRN-27 to the GPS constellation, there have been periods daily where more than 14 GPS satellites are visible; however, due to the limitation of 14 channels dedicated to GPS satellites, receivers can track no more than 14 GPS satellites at any given time, though more satellites are available.

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 except for PRN 24. The unbounded range errors on PRN-24 were due to geomagnetic activity.

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	2.470	100	3.177	100	2.793	100	2.101	100	2.592	100	2.256	100
2	1.655	100	1.780	100	1.831	100	1.922	100	2.215	100	2.197	100
3	1.473	100	1.197	100	1.216	100	1.249	100	1.246	100	1.248	100
4	2.391	100	1.445	100	1.645	100	1.040	100	1.294	100	1.664	100
5	1.396	100	1.925	100	1.799	100	1.179	100	1.106	100	1.472	100
6	1.589	100	1.225	100	1.469	100	1.098	100	1.213	100	1.300	100
7	1.179	100	1.196	100	1.303	100	1.209	100	0.980	100	1.242	100
8	0.782	100	0.991	100	1.347	100	1.013	100	1.218	100	1.537	100
9	1.754	100	1.494	100	1.361	100	1.511	100	1.085	100	1.384	100
10	1.014	100	1.103	100	1.334	100	1.436	100	1.962	100	1.266	100
11	0.995	100	0.701	100	0.979	100	1.014	100	2.171	100	0.906	100
12	1.436	100	1.050	100	1.631	100	1.115	100	1.072	100	1.366	100
13	1.371	100	1.543	100	1.181	100	1.376	100	1.438	100	1.319	100
14	2.056	100	0.731	100	1.662	100	1.080	100	1.371	100	1.364	100
15	1.382	100	1.559	100	1.882	100	1.153	100	1.450	100	1.499	100
16	1.578	100	0.933	100	1.2	100	1.069	100	1.836	100	1.427	100
17	2.546	100	1.177	100	1.601	100	0.812	100	0.914	100	1.068	100
18	1.115	100	1.061	100	1.301	100	1.521	100	1.742	100	1.278	100
19	3.069	100	1.822	100	2.756	100	2.679	100	3.079	100	2.606	100
20	1.011	100	1.037	100	1.387	100	1.248	100	1.942	100	1.284	100
21	1.466	100	1.113	100	1.514	100	1.848	100	1.772	100	2.161	100
22	2.051	100	2.154	100	2.292	100	2.483	100	2.592	100	1.992	100
23	1.533	100	1.702	100	2.21	100	1.693	100	2.888	100	1.429	100
24	2.795	100	3.012	100	3.108	99.9910	2.533	100	3.075	100	2.772	100
25	2.572	100	2.467	100	2.604	100	2.209	100	2.254	100	2.317	100
26	1.263	100	1.174	100	1.774	100	1.032	100	1.343	100	1.350	100
27	2.254	100	2.057	100	2.238	100	1.988	100	2.047	100	2.227	100
28	1.593	100	0.897	100	1.327	100	1.440	100	1.554	100	0.986	100
29	1.598	100	1.571	100	1.522	100	1.467	100	1.025	100	1.712	100
30	-	-	-	-	-	-	-	-	-	-	-	-
31	1.444	100	0.803	100	1.028	100	0.867	100	1.054	100	1.376	100
32	1.115	100	0.947	100	1.002	100	0.946	100	1.382	100	1.254	100
135	2.068	100	2.242	100	3.159	100	1.885	100	2.126	100	1.244	100
138	1.459	100	1.232	100	1.167	100	1.609	100	1.588	100	1.678	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	1.921	100	2.655	100	2.294	100	2.859	100	2.233	100	2.662	100
2	1.843	100	1.527	100	2.023	100	1.606	100	1.660	100	1.177	100
3	2.183	100	1.082	100	1.211	100	1.395	100	1.001	100	1.748	100
4	1.477	100	2.043	100	1.873	100	1.406	100	1.180	100	1.963	100
5	1.162	100	1.537	100	1.312	100	2.083	100	1.328	100	1.847	100
6	0.898	100	1.684	100	1.025	100	1.056	100	1.117	100	1.656	100
7	1.218	100	1.234	100	1.449	100	1.469	100	1.187	100	1.893	100
8	0.814	100	0.930	100	0.853	100	1.134	100	0.807	100	1.423	100
9	1.106	100	1.832	100	1.421	100	1.196	100	1.022	100	1.764	100
10	1.110	100	0.812	100	1.178	100	0.857	100	1.072	100	0.912	100
11	1.343	100	1.132	100	2.202	100	1.151	100	1.164	100	1.051	100
12	0.939	100	1.078	100	1.240	100	1.259	100	0.970	100	1.384	100
13	1.072	100	1.729	100	1.062	100	1.073	100	0.819	100	1.458	100
14	1.334	100	0.953	100	1.305	100	0.744	100	1.055	100	0.989	100
15	1.158	100	1.446	100	1.017	100	1.554	100	0.986	100	1.757	100
16	1.575	100	1.170	100	1.027	100	1.088	100	1.209	100	0.923	100
17	0.825	100	2.138	100	1.729	100	0.961	100	0.781	100	1.588	100
18	1.538	100	1.633	100	1.536	100	1.039	100	1.454	100	1.074	100
19	2.524	100	2.263	100	2.028	100	1.896	100	2.461	100	2.603	100
20	1.729	100	0.997	100	1.244	100	1.096	100	1.180	100	0.867	100
21	1.559	100	1.163	100	2.267	100	1.127	100	1.386	100	0.911	100
22	2.488	100	2.070	100	2.935	100	2.052	100	2.320	100	1.887	100
23	2.517	100	1.647	100	1.798	100	1.476	100	1.678	100	1.265	100
24	2.528	100	3.696	99.7434	2.486	100	2.642	100	2.606	100	3.268	100
25	2.035	100	2.100	100	2.105	100	2.302	100	2.135	100	2.620	100
26	1.843	100	1.290	100	1.026	100	1.261	100	1.043	100	1.553	100
27	2.208	100	2.057	100	2.198	100	2.360	100	2.172	100	2.435	100
28	1.211	100	0.904	100	2.437	100	0.942	100	1.095	100	0.946	100
29	1.047	100	2.065	100	1.535	100	1.618	100	1.094	100	1.768	100
30	-	-	-	-	-	-	-	-	-	-	-	-
31	0.868	100	0.967	100	1.467	100	1.128	100	0.831	100	1.214	100
32	1.093	100	1.248	100	1.114	100	1.155	100	0.904	100	1.245	100
135	1.860	100	1.534	100	1.455	100	1.723	100	2.093	100	1.551	100
138	2.647	100	1.682	100	1.836	100	1.459	100	1.439	100	1.413	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	1.534	100	1.753	100	1.603	100	1.308	100	1.539	100	1.479	100
2	1.199	100	0.952	100	0.857	100	0.912	100	1.229	100	1.164	100
3	0.506	100	0.619	100	0.383	100	0.386	100	0.645	100	0.537	100
4	1.592	100	1.079	100	0.950	100	1.043	100	1.193	100	1.069	100
5	1.033	100	1.129	100	0.746	100	0.670	100	1.071	100	0.956	100
6	0.729	100	0.691	100	0.562	100	0.351	100	0.638	100	0.547	100
7	0.571	100	0.703	100	0.549	100	0.561	100	0.642	100	0.673	100
8	0.258	100	0.465	100	0.448	100	0.390	100	0.494	100	0.685	100
9	0.596	100	0.671	100	0.544	100	0.567	100	0.523	100	0.550	100
10	0.427	100	0.394	100	0.395	100	0.450	100	0.914	100	0.479	100
11	0.520	100	0.374	100	0.398	100	0.443	100	1.002	100	0.385	100
12	0.621	100	0.631	100	0.693	100	0.480	100	0.533	100	0.538	100
13	0.532	100	0.856	100	0.473	100	0.475	100	0.792	100	0.520	100
14	1.249	100	0.467	100	0.715	100	0.399	100	0.672	100	0.629	100
15	0.747	100	0.977	100	0.905	100	0.607	100	1.229	100	0.799	100
16	0.852	100	0.470	100	0.537	100	0.533	100	0.921	100	0.706	100
17	1.868	100	0.919	100	1.071	100	0.443	100	0.762	100	0.453	100
18	0.717	100	0.528	100	0.651	100	0.840	100	0.876	100	0.584	100
19	1.652	100	1.292	100	1.682	100	1.695	100	2.004	100	1.685	100
20	0.856	100	0.409	100	0.641	100	0.561	100	0.953	100	0.666	100
21	0.890	100	0.788	100	0.861	100	1.012	100	1.199	100	1.234	100
22	1.810	100	1.419	100	1.735	100	1.809	100	1.805	100	1.521	100
23	1.320	100	1.233	100	1.545	100	1.247	100	2.010	100	1.135	100
24	1.782	100	1.910	100	1.811	100	1.562	100	1.825	100	1.625	100
25	1.463	100	1.640	100	1.445	100	1.207	100	1.179	100	1.290	100
26	0.647	100	0.695	100	0.702	100	0.538	100	0.623	100	0.622	100
27	1.252	100	1.333	100	1.250	100	1.099	100	1.246	100	1.251	100
28	1.031	100	0.457	100	0.623	100	0.577	100	0.768	100	0.494	100
29	0.729	100	0.955	100	0.839	100	0.822	100	0.756	100	0.872	100
30	-	-	-	-	-	-	-	-	-	-	-	-
31	0.670	100	0.599	100	0.638	100	0.428	100	0.822	100	1.079	100
32	0.519	100	0.539	100	0.395	100	0.359	100	0.504	100	0.516	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	1.355	100	1.684	100	1.453	100	1.767	100	1.360	100	1.711	100
2	1.065	100	0.852	100	1.164	100	0.870	100	1.082	100	0.792	100
3	0.897	100	0.522	100	0.540	100	0.592	100	0.329	100	0.862	100
4	0.984	100	1.254	100	1.216	100	1.019	100	0.743	100	1.184	100
5	0.826	100	1.062	100	1.180	100	1.065	100	0.843	100	1.163	100
6	0.482	100	0.780	100	0.373	100	0.442	100	0.411	100	0.866	100
7	0.820	100	0.600	100	0.749	100	0.663	100	0.468	100	0.877	100
8	0.377	100	0.463	100	0.530	100	0.476	100	0.455	100	0.662	100
9	0.630	100	0.841	100	0.727	100	0.508	100	0.372	100	0.814	100
10	0.379	100	0.441	100	0.476	100	0.411	100	0.557	100	0.385	100
11	0.638	100	0.400	100	0.821	100	0.561	100	0.705	100	0.398	100
12	0.559	100	0.583	100	0.652	100	0.606	100	0.436	100	0.805	100
13	0.427	100	0.696	100	0.657	100	0.586	100	0.434	100	0.697	100
14	0.482	100	0.460	100	0.639	100	0.418	100	0.553	100	0.469	100
15	0.690	100	0.787	100	0.705	100	0.876	100	0.476	100	0.970	100
16	0.655	100	0.552	100	0.566	100	0.542	100	0.689	100	0.455	100
17	0.500	100	1.289	100	0.730	100	0.477	100	0.411	100	0.996	100
18	0.653	100	1.060	100	0.901	100	0.626	100	1.028	100	0.804	100
19	1.432	100	1.433	100	1.473	100	1.401	100	1.774	100	1.568	100
20	0.569	100	0.516	100	0.715	100	0.694	100	0.660	100	0.487	100
21	0.751	100	0.702	100	1.468	100	0.736	100	1.041	100	0.641	100
22	1.552	100	1.552	100	2.121	100	1.668	100	1.885	100	1.466	100
23	1.498	100	1.279	100	1.390	100	1.180	100	1.360	100	1.124	100
24	1.842	100	2.166	100	1.708	100	1.750	100	1.634	100	2.146	100
25	1.433	100	1.467	100	1.367	100	1.446	100	1.169	100	1.724	100
26	0.771	100	0.663	100	0.547	100	0.655	100	0.465	100	0.818	100
27	1.324	100	1.281	100	1.202	100	1.417	100	1.148	100	1.495	100
28	0.495	100	0.474	100	1.409	100	0.456	100	0.817	100	0.491	100
29	0.791	100	0.974	100	0.973	100	0.859	100	0.558	100	1.024	100
30	-	-	-	-	-	-	-	-	-	-	-	-
31	0.593	100	0.535	100	0.945	100	0.634	100	0.335	100	0.652	100
32	0.425	100	0.579	100	0.530	100	0.506	100	0.463	100	0.563	100

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

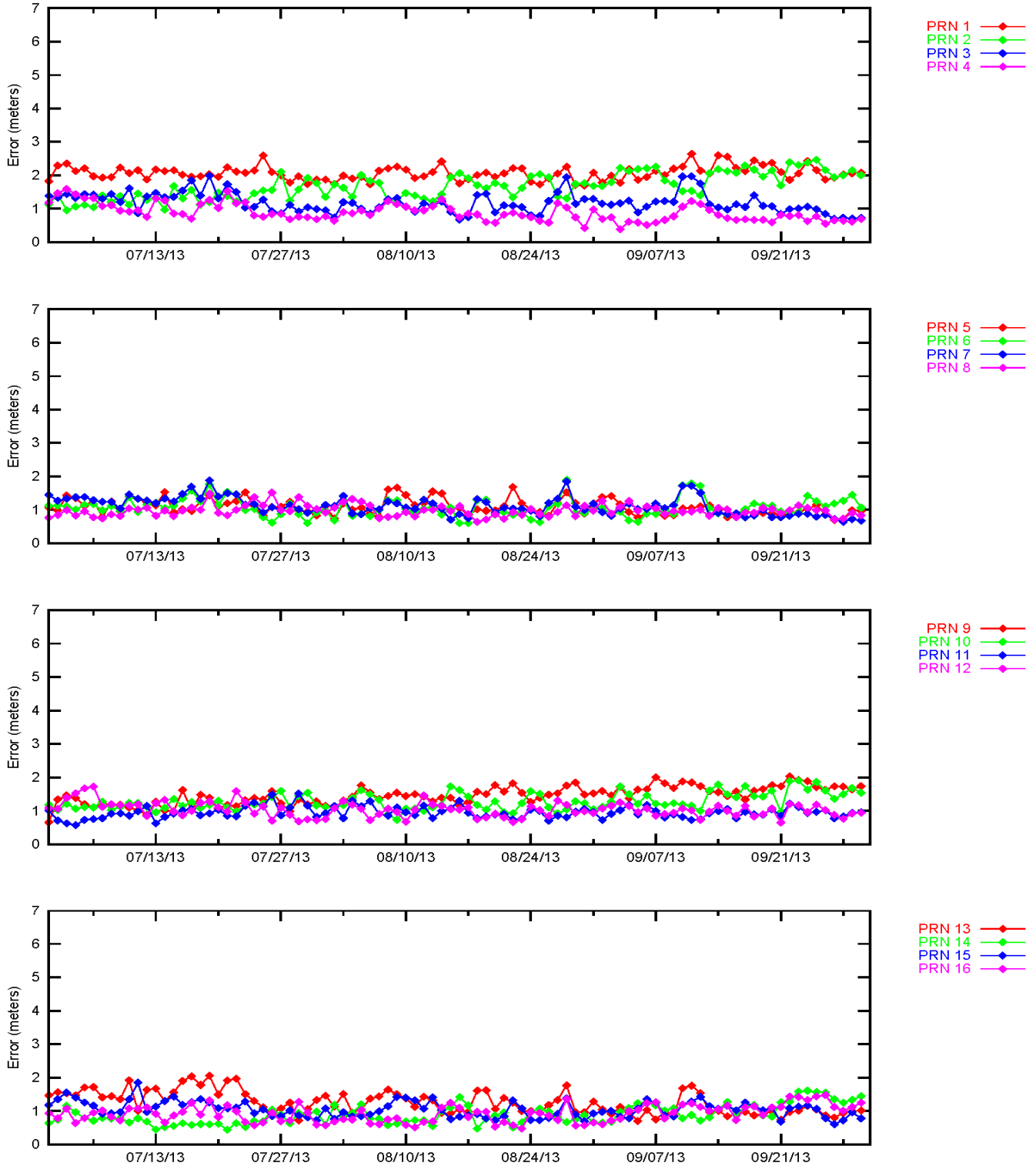


Figure 6-2 95% Range Error (PRN 17 – PRN 32) – Washington DC

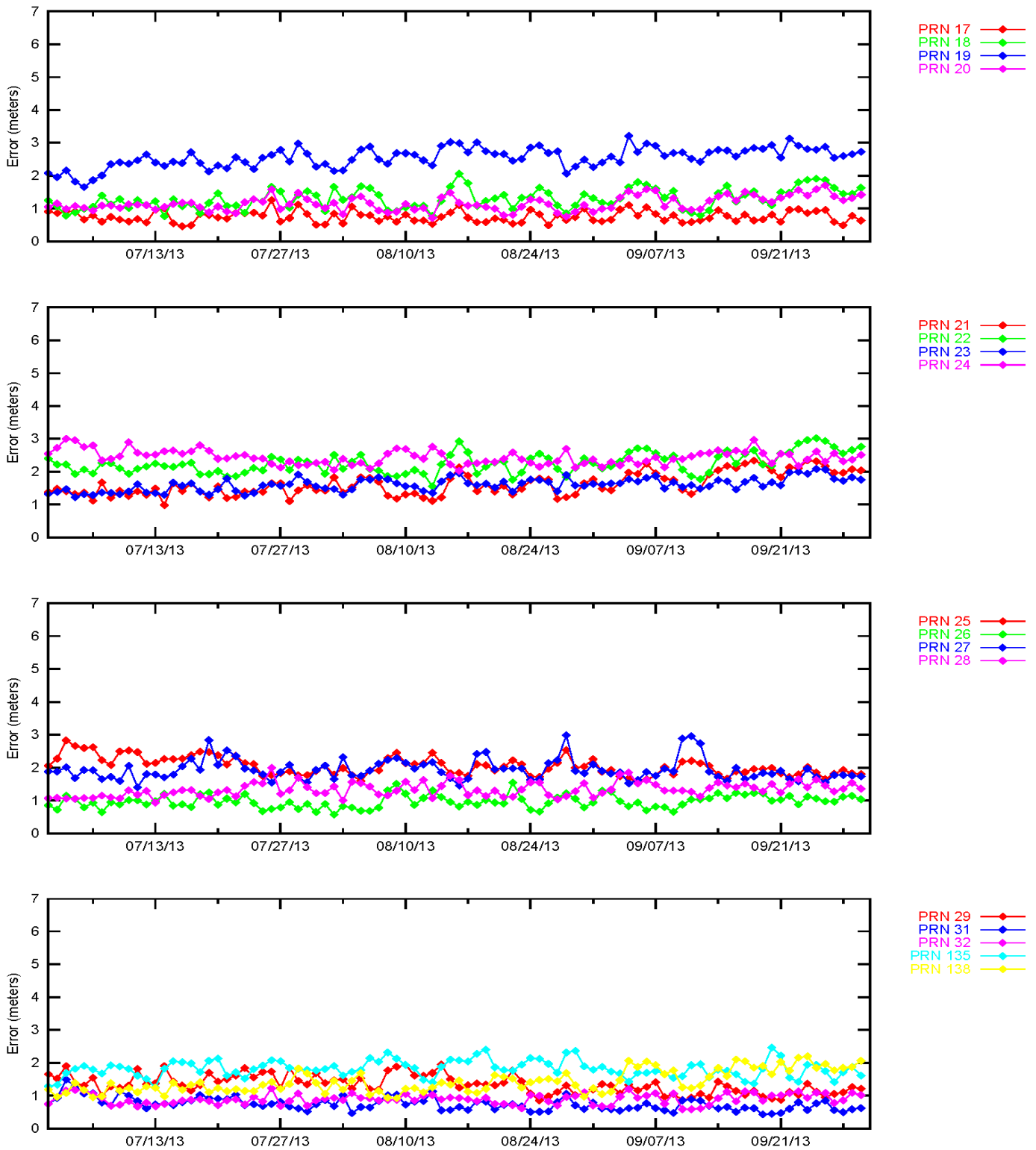


Figure 6-3 95% Ionospheric Error (PRN 1 – PRN 16) – Washington DC

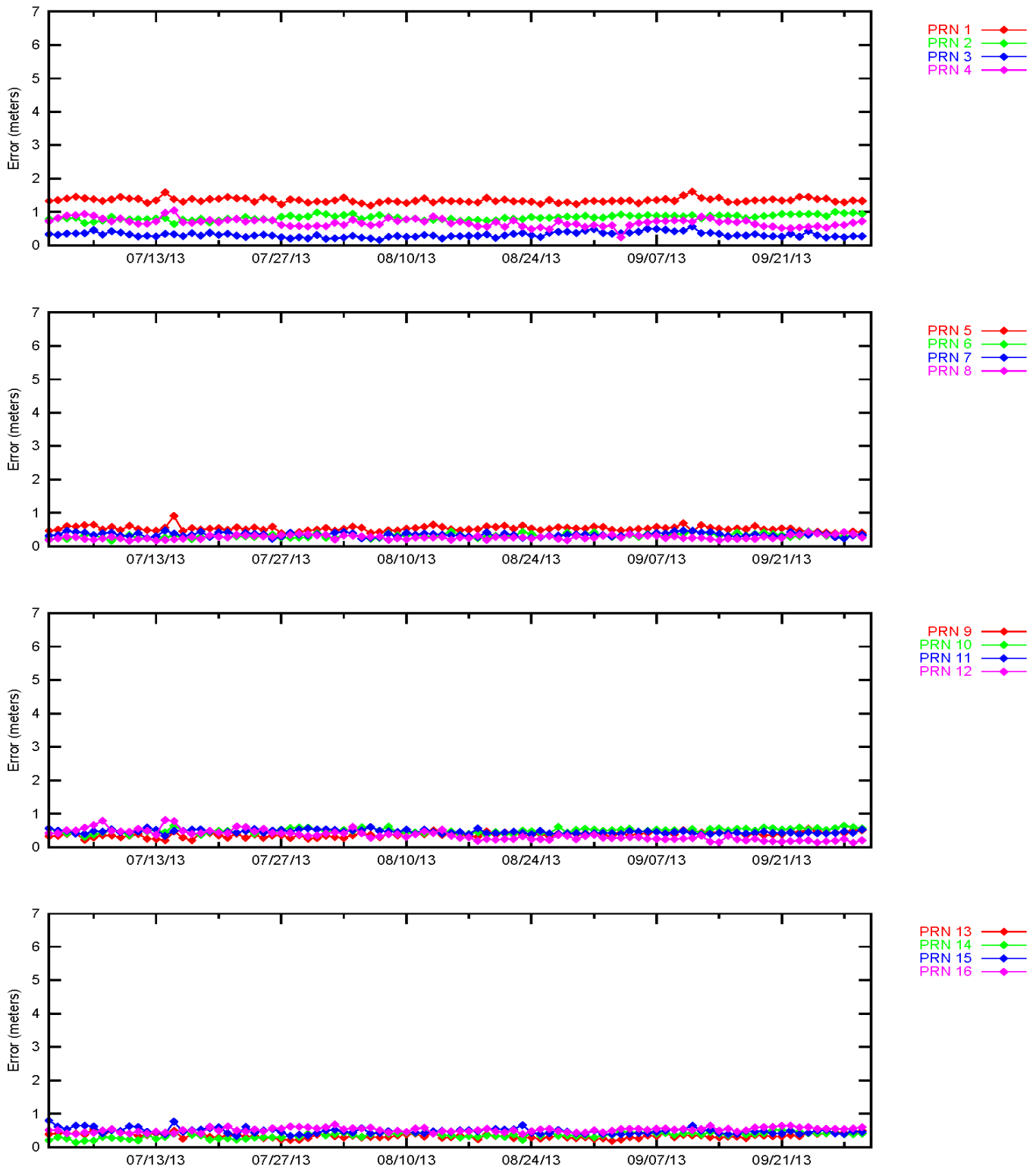
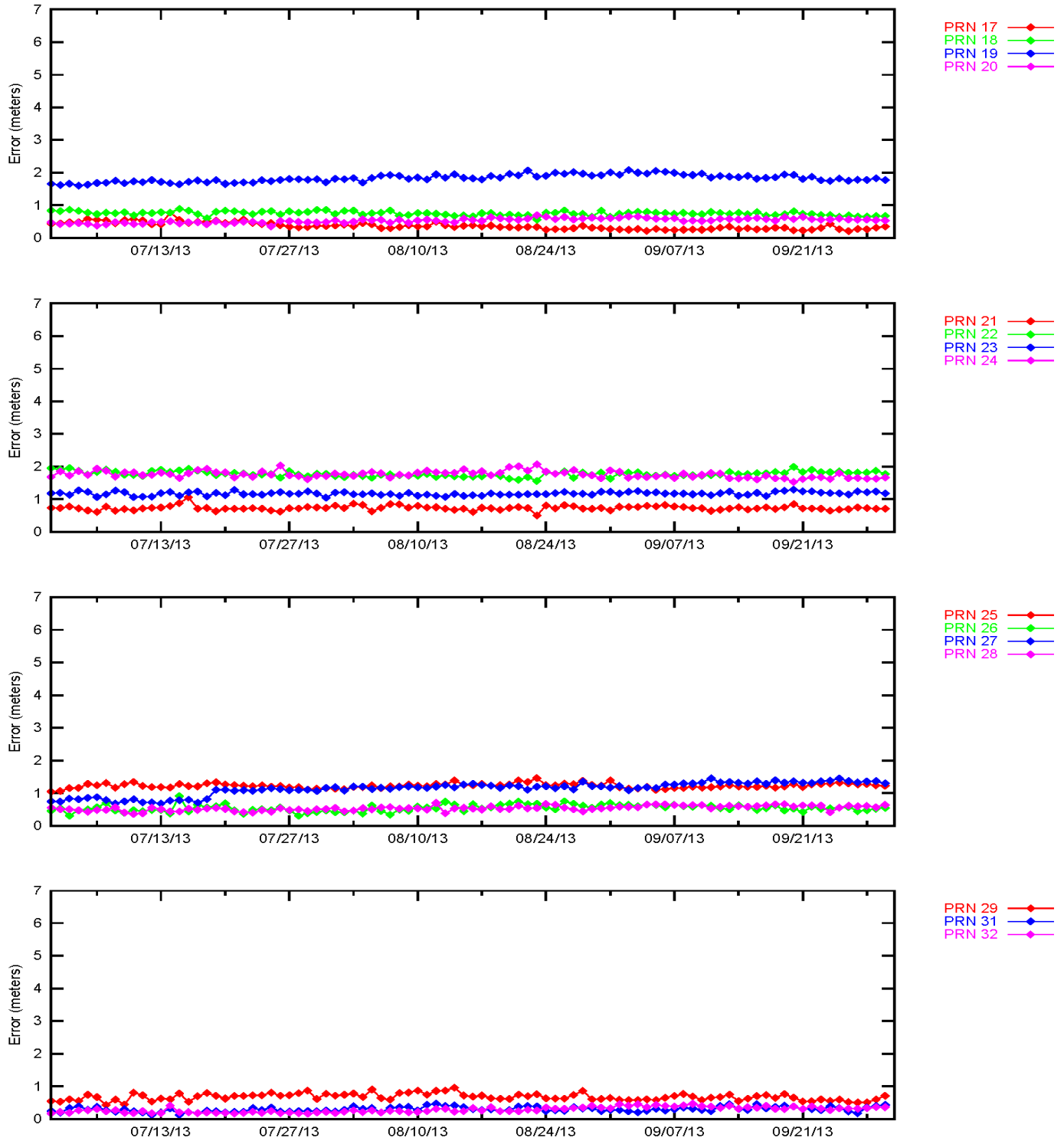


Figure 6-4 95% Ionospheric Error (PRN 17 - PRN 32) – Washington DC



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	99.10	0.68	0.16	0.00
AMR 133	CRE	99.19	0.58	0.16	0.00
AMR 133	AMR	0.00	99.35	0.44	0.15
CRW 135	CRW	99.14	0.68	0.16	0.00
CRW 135	CRE	99.23	0.59	0.16	0.00
CRW 135	AMR	0.00	99.34	0.49	0.15
CRE 138	CRW	99.15	0.68	0.16	0.00
CRE 138	CRE	99.25	0.58	0.16	0.00
CRE 138	AMR	0.00	99.35	0.49	0.15

Figure 7-1 Daily PA CRW GEO Ranging Availability Trend

**CRW PA-Ranging Performance reported by AMR, CRW, and CRE
1 July - 30 September 2013**

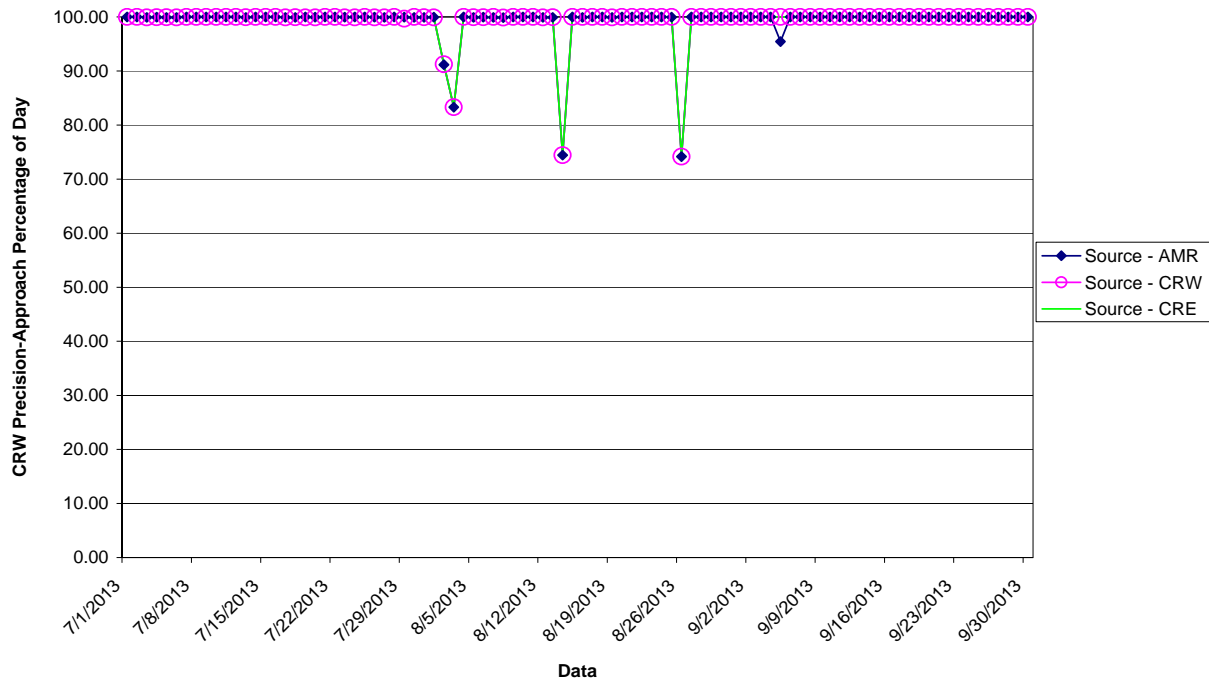


Figure 7-2 Daily PA CRE GEO Ranging Availability Trend

**CRE PA-Ranging Performance reported by AMR, CRW, and CRE
1 July - 30 September 2013**

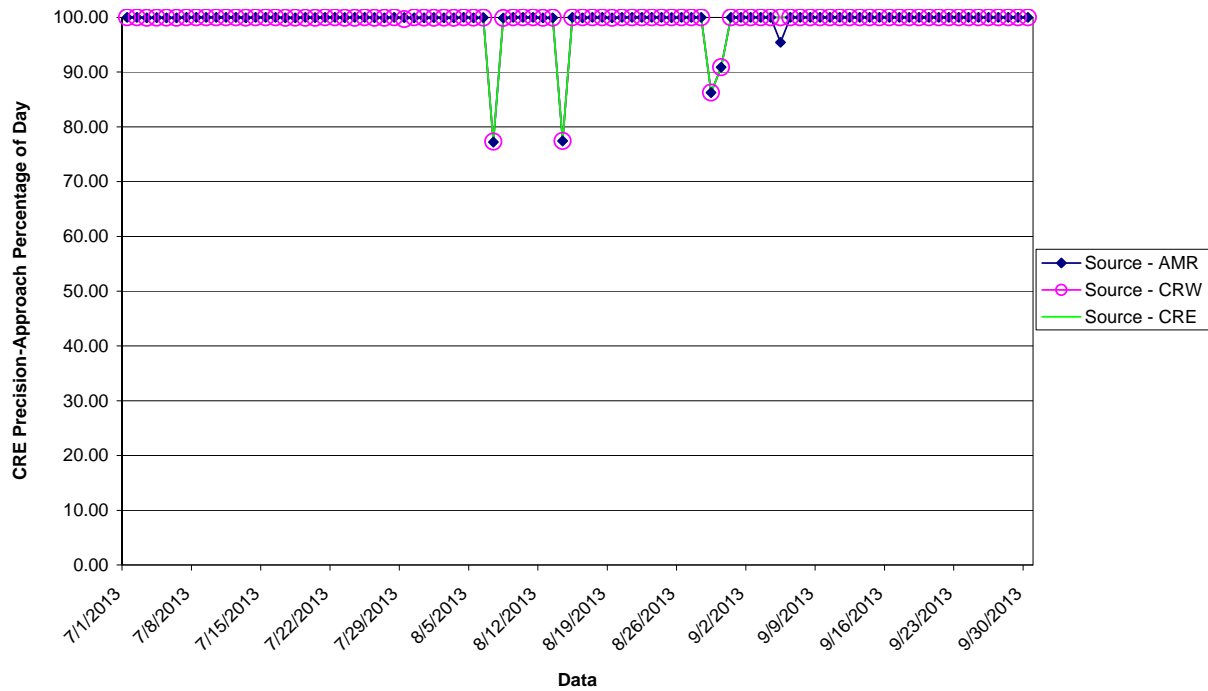
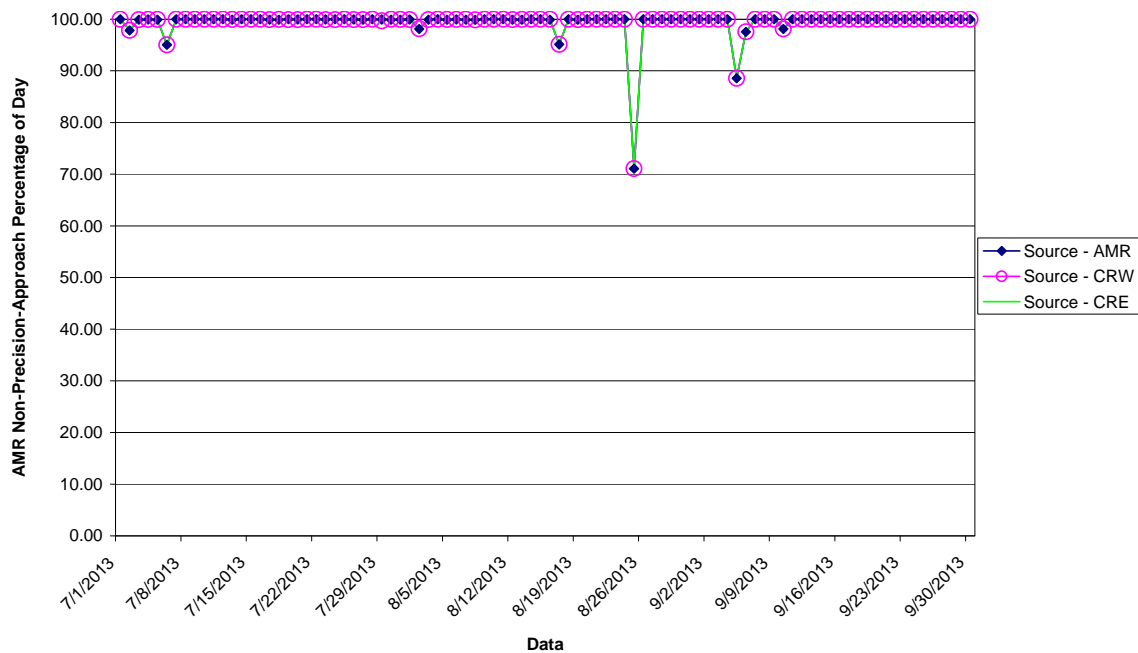


Figure 7-3 Daily NPA AMR GEO Ranging Availability Trend

**AMR NPA-Ranging Performance reported by AMR, CRW, and CRE
1 July - 30 September 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	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
CEV3	VEGREVILLE	AB	LPV	0	1	0	1	1	0.999992
CYXD	EDMONTON CITY CTR	AB	LPV	0	1	0	1	0	1
CYEG	EDMONTON / JOSEPHBURG	AB	LPV	0	1	0	1	0	1
CAL4	FORT MACKAY / ALBIAN AERODROME	AB	LPV	0	1	0	1	2	0.999853
D76	ROBERT/BOB/ CURTIS MEMORIAL	AK	LPV	1	0.999974	2	0.999879	22	0.998464
ENM	EMMONAK	AK	LPV	0	1	0	1	3	0.999668
MCG	MCGRATH	AK	LP	0	1	0	1	2	0.999789
WLK	SELAWIK	AK	LPV	0	1	0	1	4	0.999728
WNA	NAPAKIAK	AK	LPV	0	1	1	0.999947	2	0.99974
KWT	KWETHLUK	AK	LPV	0	1	1	0.999996	2	0.999743
ORT	NORTHWAY	AK	LP	0	1	0	1	2	0.999819
SHG	SHUNGNAK	AK	LP	0	1	0	1	4	0.999717
AKN	KING SALMON	AK	LPV	0	1	0	1	2	0.999758
AQT	NUIQSUT	AK	LPV	1	0.999996	2	0.999977	11	0.999068
ENA	KENAI MUNI	AK	LPV200	0	1	0	1	2	0.999804
GAL	EDWARD G. PITKA	AK	LPV	0	1	0	1	2	0.999766
KAL	KALTAG	AK	LPV	0	1	0	1	2	0.999777

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
KTN	KETCHIKAN INTL	AK	LPV	0	1	0	1	1	0.99986
AQH	QUINHAGAK	AK	LPV	0	1	1	0.999936	4	0.999724
CDV	MERLE K (MUDHOLE) SMITH	AK	LPV	0	1	0	1	2	0.999826
HLA	HUSLIA	AK	LPV	0	1	0	1	3	0.999758
MDO	MIDDLETON ISLAND	AK	LP	0	1	0	1	2	0.999823
SMK	ST MICHAEL	AK	LPV	0	1	0	1	2	0.999751
7KA	TATITLEK	AK	LP	0	1	0	1	2	0.999826
CDB	COLD BAY	AK	LPV200	0	1	2	0.99977	326	0.953299
ELI	ELIM	AK	LPV	0	1	0	1	2	0.999751
GKN	GULKANA	AK	LPV	0	1	0	1	2	0.999819
MDM	MARSHALL DON HUNTER SR	AK	LP	0	1	0	1	2	0.999747
RBY	RUBY	AK	LPV	0	1	0	1	2	0.999777
SCM	SCAMMON BAY	AK	LP	0	1	1	0.99994	9	0.99954
9A3	CHUATHBALUK	AK	LPV	0	1	0	1	2	0.99977
2C7	SHAKTOOLIK	AK	LPV	0	1	0	1	2	0.999758
BET	BETHEL	AK	LPV200	0	1	1	0.999947	2	0.99974
CXF	COLDFOOT	AK	LP	0	1	0	1	4	0.99966
DLG	DILLINGHAM	AK	LPV	0	1	0	1	3	0.999755
FAI	FAIRBANKS INTL	AK	LPV200	0	1	0	1	3	0.999789
ILI	ILIAMNA	AK	LPV	0	1	0	1	2	0.999762
KSM	ST MARY'S	AK	LPV200	0	1	0	1	2	0.999732
OTZ	RALPH WIEN MEMORIAL	AK	LPV200	1	0.999974	2	0.999872	26	0.998147
PAQ	PALMER MUNI	AK	LP	0	1	0	1	2	0.999819
SHX	SHAGELUK	AK	LPV	0	1	0	1	2	0.999774
YAK	YAKUTAT	AK	LPV200	0	1	0	1	1	0.999823
6A8	ALLAKAKET	AK	LP	0	1	0	1	4	0.999706
BRW	WILEY POST- WILL ROGERS MEMORIAL	AK	LPV	4	0.999879	7	0.999694	175	0.987455
CLP	CLARKS POINT	AK	LPV	0	1	0	1	3	0.999747
HOM	HOMER	AK	LPV	0	1	0	1	2	0.999796
KYU	KOYUKUK	AK	LPV	0	1	0	1	2	0.99977
OOK	TOKSOOK BAY	AK	LP	0	1	1	0.999928	9	0.999298
SCC	DEADHORSE	AK	LPV	0	1	1	0.999955	12	0.999041
UNK	UNALAKLEET	AK	LP	0	1	0	1	2	0.999766
ANC	TED STEVENS ANCHORAGE INTL	AK	LPV200	0	1	0	1	2	0.999815
HPB	HOOPER BAY	AK	LP	0	1	1	0.999928	11	0.999215
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
JKA	JACK EDWARDS	AL	LPV200	0	1	0	1	0	1

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
SEM	CRAIG FIELD	AL	LPV	0	1	0	1	0	1
BFM	MOBILE DOWNTOWN	AL	LPV200	0	1	0	1	0	1
BHM	BIRMINGHAM INTL	AL	LPV200	0	1	0	1	0	1
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
1R8	BAY MINETTE MUNI	AL	LPV	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
9A4	LAWRENCE COUNTY	AL	LPV200	0	1	0	1	0	1
ANB	ANNISTON METROPOLITAN	AL	LPV	0	1	0	1	0	1
CQF	H L SONNY CALLAHAN	AL	LPV200	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
MOB	MOBILE RGNL	AL	LPV200	0	1	0	1	0	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
1M4	POSEY FIELD	AL	LPV	0	1	0	1	0	1
2R5	ST ELMO	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
ORK	NORTH LITTLE ROCK MUNI	AR	LPV	0	1	0	1	0	1
RUE	RUSSELLVILLE RGNL	AR	LPV	0	1	0	1	0	1
AWM	WEST MEMPHIS MUNI	AR	LPV200	0	1	0	1	0	1
ELD	SOUTH ARKANSAS RGNL AT GOODWIN FIELD	AR	LPV	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

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
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	0	1
M77	HOWARD COUNTY	AR	LP	0	1	0	1	0	1
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
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
7M1	MC GEHEE MUNI	AR	LP	0	1	0	1	0	1
BYH	ARKANSAS INTERNATIONAL	AR	LPV200	0	1	0	1	0	1
FFZ	FALCON FLD	AZ	LP	0	1	0	1	1	0.999981
IFP	LAUGHLIN/BULLHEAD INTL	AZ	LPV	0	1	0	1	1	0.999928
FLG	FLAGSTAFF PULLIAM	AZ	LPV	0	1	0	1	0	1
SJN	ST JOHNS INDUSTRIAL AIR PARK	AZ	LP	0	1	0	1	1	0.999917
PRC	ERNEST A. LOVE FIELD	AZ	LPV	0	1	0	1	0	1
D68	SPRINGVILLE MUNI	AZ	LP	0	1	0	1	1	0.999834
IGM	KINGMAN	AZ	LPV	0	1	0	1	1	0.999947
RQE	WINDOW ROCK	AZ	LP	0	1	0	1	0	1
AVQ	MARANA RGNL	AZ	LP	0	1	0	1	2	0.999823
PGA	PAGE MUNI	AZ	LPV	0	1	0	1	0	1
PHX	PHOENIX SKY HARBOR INTL	AZ	LPV	0	1	0	1	1	0.999996
SAD	SAFFORD RGNL	AZ	LPV	0	1	0	1	1	0.999819
DVT	PHOENIX DEER VALLEY	AZ	LPV	0	1	0	1	0	1
FHU	SIERRA VISTA MUNI-LIBBY AAF	AZ	LPV200	0	1	0	1	4	0.999777
IWA	PHOENIX-MESA GATEWAY	AZ	LPV200	0	1	0	1	1	0.999966
P33	COCHISE COUNTY	AZ	LPV	0	1	0	1	1	0.999804
SOW	SHOW LOW RGNL	AZ	LPV	0	1	0	1	1	0.999943
TUS	TUCSON INTL	AZ	LPV	0	1	0	1	4	0.999777
GEU	GLENDALE MUNI	AZ	LPV	0	1	0	1	0	1
HII	LAKE HAVASU CITY	AZ	LPV	0	1	0	1	1	0.999909
CYVR	VANCOUVER INTL	BC	LPV	0	1	0	1	0	1
CYXS	PRINCE GEORGE	BC	LPV	0	1	0	1	1	0.999985
CYYJ	VICTORIA INTL	BC	LPV	0	1	0	1	0	1
CYBL	CAMPBELL RIVER	BC	LPV	0	1	0	1	0	1
CZBB	VANCOUVER / BOUNDARY BAY	BC	LPV	0	1	0	1	0	1
CYCD	NANAIMO	BC	LPV	0	1	0	1	0	1

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
SEE	GILLESPIE FIELD	CA	LP	0	1	0	1	3	0.999457
SJC	NORMAN Y. MINETA SAN JOSE INTERNATIONAL	CA	LPV	0	1	0	1	95	0.992252
FAT	FRESNO YOSEMITE INTL	CA	LPV	0	1	0	1	11	0.999219
MHR	SACRAMENTO MATHER	CA	LPV200	0	1	0	1	59	0.998271
SMF	SACRAMENTO INTL	CA	LPV200	0	1	0	1	69	0.997788
VCB	NUT TREE	CA	LPV	0	1	0	1	88	0.995728
CCR	BUCHANAN FIELD	CA	LPV	0	1	0	1	94	0.994448
DWA	YOLO COUNTY-DAVIS/WOODLAND/WINTERS	CA	LPV	0	1	0	1	76	0.996818
HWD	HAYWARD EXECUTIVE	CA	LPV	0	1	0	1	95	0.992108
LVK	LIVERMORE MUNI	CA	LPV	0	1	0	1	92	0.994678
MCE	MERCED RGNL/MACREADY FIELD	CA	LPV	0	1	0	1	39	0.998724
O88	RIO VISTA MUNI	CA	LP	0	1	0	1	81	0.996324
PMD	PALMDALE USAF PLANT 42	CA	LPV200	0	1	0	1	2	0.99946
SNA	JOHN WAYNE-ORANGE COUNTY	CA	LPV	0	1	0	1	2	0.999487
TOA	ZAMPERINI FIELD	CA	LPV200	0	1	0	1	4	0.999457
ACV	ARCATA	CA	LPV200	0	1	0	1	79	0.99575
CMA	CAMARILLO	CA	LPV	0	1	0	1	15	0.999275
CNO	CHINO	CA	LPV	0	1	0	1	2	0.999487
DAG	BARSTOW-DAGGETT	CA	LPV	0	1	0	1	2	0.999679
O27	OAKDALE	CA	LPV	0	1	0	1	52	0.998539
OVE	OROVILLE MUNI	CA	LPV	0	1	0	1	31	0.99903
OXR	OXNARD	CA	LPV	0	1	0	1	28	0.999189
PVF	PLACERVILLE	CA	LPV	0	1	0	1	22	0.999173
SBA	SANTA BARBARA MUNI	CA	LPV	0	1	0	1	96	0.997196
SBP	SAN LUIS COUNTY RGNL	CA	LPV200	0	1	0	1	92	0.99566
TCY	TRACY MUNI	CA	LPV	0	1	0	1	79	0.996471
CIC	CHICO MUNI	CA	LPV	0	1	0	1	28	0.999007
MIT	SHAFTER-MINTER FIELD	CA	LPV	0	1	0	1	4	0.99929
RAL	RIVERSIDE MUNI	CA	LPV	0	1	0	1	3	0.999619
RDD	REDDING MUNI	CA	LPV	0	1	0	1	21	0.999087
RHV	REID-HILLVIEW OF SANTA CLARA	CA	LPV	0	1	0	1	93	0.993048
SCK	STOCKTON METROPOLITAN	CA	LPV	0	1	0	1	70	0.997558
SMX	SANTA MARIA PUBLIC/CAPT G ALLAN HANCOCK FIELD	CA	LPV200	0	1	0	1	99	0.994475
SNS	SALINAS MUNI	CA	LPV200	0	1	0	1	97	0.992712
STS	CHARLES M. SCHULZ-SONOMA COUNTY	CA	LPV	0	1	0	1	98	0.992538
WJF	GENERAL WM J FOX AIRFIELD	CA	LPV	0	1	0	1	2	0.999445
AAT	ALTURAS MUNI	CA	LPV	0	1	0	1	4	0.999826
PRB	PASO ROBLES MUNICIPAL	CA	LPV200	0	1	0	1	63	0.997656
VCV	SOUTHERN CALIFORNIA LOGISTICS	CA	LPV	0	1	0	1	2	0.999657
APC	NAPA COUNTY	CA	LPV	0	1	0	1	94	0.994026
BLH	BLYTHE	CA	LP	0	1	0	1	1	0.999857

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
HHR	HAWTHORNE JACK NORTHROP FIELD	CA	LPV	0	1	0	1	3	0.999457
LAX	LOS ANGELES INTL	CA	LPV	0	1	0	1	3	0.99946
LGB	LONG BEACH/ DAUGHERTY FIELD	CA	LPV	0	1	0	1	2	0.999468
MRY	MONTEREY PENINSULA	CA	LPV	0	1	0	1	101	0.990648
ONT	ONTARIO INTL	CA	LPV	0	1	0	1	3	0.999619
SFO	SAN FRANCISCO INTL	CA	LPV	0	1	0	1	99	0.990119
WLW	WILLOWS-GLENN COUNTY	CA	LPV	0	1	0	1	62	0.998026
APV	APPLE VALLEY	CA	LPV	0	1	0	1	2	0.999657
AUN	AUBURN MUNI	CA	LPV	0	1	0	1	27	0.999056
BFL	MEADOWS FIELD	CA	LPV200	0	1	0	1	3	0.999306
CEC	JACK MC NAMARA FIELD	CA	LPV200	0	1	1	0.999981	42	0.998875
CRQ	MC CLELLAN-PALOMAR	CA	LPV200	0	1	0	1	2	0.999464
LHM	LINCOLN RGNL/ KARL HARDER FIELD	CA	LPV200	0	1	0	1	45	0.998713
LLR	LITTLE RIVER	CA	LP	0	1	0	1	104	0.991278
MAE	MADERA MUNI	CA	LPV	0	1	0	1	23	0.999
MOD	MODESTO CITY-CO-HARRY SHAM FLD	CA	LPV	0	1	0	1	62	0.998136
MYV	YUBA COUNTY	CA	LPV200	0	1	0	1	51	0.998649
O02	NERVINO	CA	LPV	0	1	0	1	5	0.999706
RBL	RED BLUFF MUNI	CA	LPV	0	1	0	1	38	0.998864
SAC	SACRAMENTO EXECUTIVE	CA	LPV200	0	1	0	1	69	0.997641
VIS	VISALIA MUNI	CA	LPV200	0	1	0	1	5	0.999275
C83	BYRON	CA	LPV	0	1	0	1	82	0.996154
CVH	HOLLISTER MUNI	CA	LPV	0	1	0	1	90	0.994501
HAF	HALF MOON BAY	CA	LPV	0	1	0	1	102	0.989164
LSN	LOS BANOS MUNI	CA	LPV	0	1	0	1	62	0.997705
MER	CASTLE	CA	LPV200	0	1	0	1	41	0.998717
MYF	MONTGOMERY FIELD	CA	LPV200	0	1	0	1	3	0.999441
O69	PETALUMA MUNI	CA	LPV	0	1	0	1	98	0.992467
OAK	METROPOLITAN OAKLAND INTL	CA	LPV	0	1	0	1	95	0.991878
POC	BRACKETT FIELD	CA	LPV	0	1	0	1	2	0.999487
SAN	SAN DIEGO INTL	CA	LP	0	1	0	1	4	0.999423
FMM	FORT MORGAN MUNI	CO	LP	0	1	0	1	3	0.999762
RIL	GARFIELD COUNTY RGNL	CO	LPV	0	1	0	1	0	1
PUB	PUEBLO MEMORIAL	CO	LPV200	0	1	0	1	4	0.999815
ALS	SAN LUIS VALLEY RGNL/ BERGMAN FIELD	CO	LPV200	0	1	0	1	1	0.999872
CEZ	CORTEZ MUNI	CO	LPV	0	1	0	1	1	0.999996
MTJ	MONTROSE RGNL	CO	LPV	0	1	0	1	1	0.999977
LAA	LAMAR MUNI	CO	LPV	0	1	0	1	4	0.999906
TEX	TELLURIDE RGNL	CO	LP	0	1	0	1	1	0.999974
APA	CENTENNIAL	CO	LPV200	0	1	0	1	3	0.999834
GJT	GRAND JUNCTION RGNL	CO	LPV200	0	1	0	1	0	1
STK	STERLING MUNI	CO	LPV	0	1	0	1	3	0.999747
FTG	FRONT RANGE	CO	LPV200	0	1	0	1	3	0.999815
DEN	DENVER INTL	CO	LPV200	0	1	0	1	3	0.999815
LHX	LA JUNTA MUNI	CO	LPV	0	1	0	1	4	0.999875

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
DRO	DURANGO-LA PLATA COUNTY	CO	LPV200	0	1	0	1	2	0.999992
HDN	YAMPA VALLEY	CO	LPV	0	1	0	1	0	1
COS	CITY OF COLORADO SPRINGS MUNI	CO	LPV200	0	1	0	1	4	0.999868
GXY	GREELEY-WELD COUNTY	CO	LPV	0	1	0	1	3	0.99977
BJC	ROCKY MOUNTAIN METROPOLITAN	CO	LPV200	0	1	0	1	3	0.99983
FNL	FORT COLLINS-LOVELAND MUNI	CO	LPV200	0	1	0	1	3	0.999815
ITR	KIT CARSON COUNTY	CO	LPV	0	1	0	1	4	0.999857
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
HVN	TWEED-NEW HAVEN	CT	LPV	0	1	0	1	0	1
BDL	BRADLEY INTL	CT	LPV200	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
FPR	ST LUCIE COUNTY INTL	FL	LPV	0	1	0	1	0	1
LAL	LAKELAND LINDER RGNL	FL	LPV200	0	1	0	1	0	1
MKY	MARCO ISLAND	FL	LPV	0	1	0	1	2	0.999985
OCF	OCALA INTL-JIM TAYLOR FLD	FL	LPV200	0	1	0	1	0	1
PGD	PUNTA GORDA	FL	LPV200	0	1	0	1	0	1
RSW	SOUTHWEST FLORIDA INTL	FL	LPV	0	1	0	1	1	0.999996
TPA	TAMPA INTL	FL	LPV200	0	1	0	1	0	1
VNC	VENICE MUNI	FL	LP	0	1	0	1	0	1
X14	LA BELLE MUNI	FL	LPV	0	1	0	1	0	1
X35	MARION CO & PARK OF COMMERCE	FL	LP	0	1	0	1	0	1
CHN	WAUCHULA MUNI	FL	LP	0	1	0	1	0	1
CTY	CROSS CITY	FL	LPV	0	1	0	1	0	1
DAB	DAYTONA BEACH INTL	FL	LPV200	0	1	0	1	0	1
ECP	NORTHWEST FLORIDA BEACHES INTL	FL	LPV200	0	1	0	1	0	1
FXE	FT LAUDERDALE EXECUTIVE	FL	LPV200	0	1	0	1	2	0.999947
OBE	OKEECHOBEE COUNTY	FL	LPV	0	1	0	1	0	1
PHK	PALM BEACH COUNTY GLADES	FL	LPV	0	1	0	1	0	1
VDF	TAMPA EXECUTIVE	FL	LPV	0	1	0	1	0	1
ZPH	ZEPHYRHILLS MUNI	FL	LPV	0	1	0	1	0	1
54J	DEFUNIAK SPRINGS	FL	LP	0	1	0	1	0	1
APF	NAPLES MUNI	FL	LPV	0	1	0	1	2	0.999989

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
BCT	BOCA RATON	FL	LPV	0	1	0	1	2	0.999962
GNV	GAINESVILLE RGNL	FL	LPV	0	1	0	1	0	1
MTH	THE FLORIDA KEYS MARATHON	FL	LPV	0	1	0	1	6	0.999872
ORL	EXECUTIVE	FL	LPV200	0	1	0	1	0	1
SUA	WITHAM FIELD	FL	LPV	0	1	0	1	0	1
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
F45	NORTH PALM BEACH COUNTY GENERAL AVIATION	FL	LPV	0	1	0	1	0	1
GIF	WINTER HAVEN'S GILBERT	FL	LPV	0	1	0	1	0	1
JAX	JACKSONVILLE INTL	FL	LPV200	0	1	0	1	0	1
LCQ	LAKE CITY MUNI	FL	LPV	0	1	0	1	0	1
OPF	OPA LOCKA EXECUTIVE	FL	LPV200	0	1	0	1	3	0.999932
PMP	POMPANO BEACH AIRPARK	FL	LPV	0	1	0	1	2	0.999958
SEF	SEBRING RGNL	FL	LPV	0	1	0	1	0	1
TMB	KENDALL-TAMIAMI EXECUTIVE	FL	LPV200	0	1	0	1	5	0.999906
TPF	PETER O KNIGHT	FL	LP	0	1	0	1	0	1
VRB	VERO BEACH MUNI	FL	LPV200	0	1	0	1	0	1
X26	SEBASTIAN MUNI	FL	LP	0	1	0	1	0	1
BOW	BARTOW MUNI	FL	LPV	0	1	0	1	0	1
HEG	HERLONG RECREATIONAL	FL	LP	0	1	0	1	0	1
IMM	IMMOKALEE RGNL	FL	LPV	0	1	0	1	2	0.999992
ISM	KISSIMMEE GATEWAY	FL	LPV200	0	1	0	1	0	1
LEE	LEESBURG INTL	FL	LPV	0	1	0	1	0	1
PIE	ST PETERSBURG-CLEARWATER INTL	FL	LPV200	0	1	0	1	0	1
SRQ	SARASOTA/BRADENTON INTL	FL	LPV200	0	1	0	1	0	1
VQQ	CECIL FIELD	FL	LPV	0	1	0	1	0	1
X07	LAKE WALES MUNI	FL	LP	0	1	0	1	0	1
XFL	FLAGLER COUNTY	FL	LPV	0	1	0	1	0	1
28J	PALATKA MUNICIPAL ARPT	FL	LPV	0	1	0	1	0	1
PBI	PALM BEACH INTL	FL	LPV200	0	1	0	1	1	0.999981
PCM	PLANT CITY MUNI	FL	LPV	0	1	0	1	0	1
X51	HOMESTEAD GENERAL AVIATION	FL	LPV	0	1	0	1	5	0.999902
AAF	APALACHICOLA MUNI	FL	LPV	0	1	0	1	0	1
AVO	AVON PARK EXECUTIVE	FL	LPV	0	1	0	1	0	1
DED	DELAND MUNI-SIDNEY H TAYLOR FLD	FL	LPV	0	1	0	1	0	1
MIA	MIAMI INTL	FL	LPV	0	1	0	1	4	0.999921
MLB	MELBOURNE INTL	FL	LPV200	0	1	0	1	0	1
PNS	PENSACOLA RGNL	FL	LPV200	0	1	0	1	0	1
SFB	ORLANDO SANFORD INTL	FL	LPV200	0	1	0	1	0	1
1J0	TRI-COUNTY	FL	LP	0	1	0	1	0	1
COI	MERRITT ISLAND	FL	LPV	0	1	0	1	0	1

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
FMY	PAGE FIELD	FL	LPV	0	1	0	1	1	0.999996
MCO	ORLANDO INTL	FL	LPV200	0	1	0	1	0	1
SGJ	ST AUGUSTINE	FL	LPV	0	1	0	1	0	1
TIX	SPACE COAST RGNL	FL	LPV200	0	1	0	1	0	1
40J	PERRY-FOLEY	FL	LPV	0	1	0	1	0	1
BKV	HERNANDO COUNTY	FL	LPV	0	1	0	1	0	1
CEW	BOB SIKES	FL	LPV	0	1	0	1	0	1
EVB	NEW SMYRNA BEACH MUNI	FL	LPV	0	1	0	1	0	1
EYW	KEY WEST INTL	FL	LPV	0	1	0	1	3	0.999925
FHB	FERNANDINA BEACH MUNI	FL	LPV	0	1	0	1	0	1
FLL	FORT LAUDERDALE/ HOLLYWOOD INTL	FL	LPV	0	1	0	1	2	0.99994
15J	COOK COUNTY	GA	LPV	0	1	0	1	0	1
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
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
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

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
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
IYY	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
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
HOE	HOMERVILLE	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	NEWANAN 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
VLD	VALDOSTA RGNL	GA	LPV	0	1	0	1	0	1
DNS	DENISON MUNI	IA	LPV	0	1	0	1	0	1

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
IKV	ANKENY RGNL	IA	LPV	0	1	0	1	0	1
CSQ	CRESTON MUNI	IA	LPV	0	1	0	1	0	1
CKP	CHEROKEE COUNTY RGNL	IA	LPV	0	1	0	1	0	1
CIN	ARTHUR N NEU	IA	LPV	0	1	0	1	0	1
VTI	VINTON VETERANS MEML ARPK	IA	LPV	0	1	0	1	0	1
SUX	SIOUX GATEWAY/ COL BUD DAY FIELD	IA	LPV200	0	1	0	1	0	1
POH	POCAHONTAS MUNI	IA	LPV	0	1	0	1	0	1
OXV	KNOXVILLE MUNI	IA	LPV	0	1	0	1	0	1
GGI	GRINNELL RGNL	IA	LPV	0	1	0	1	0	1
FFL	FAIRFIELD MUNI	IA	LPV	0	1	0	1	0	1
EOK	KEOKUK MUNI	IA	LPV	0	1	0	1	0	1
CBF	COUNCIL BLUFFS MUNI	IA	LPV200	0	1	0	1	0	1
MXO	MONTICELLO RGNL	IA	LP	0	1	0	1	0	1
DVN	DAVENPORT MUNI	IA	LPV200	0	1	0	1	0	1
EFW	JEFFERSON MUNI	IA	LPV	0	1	0	1	0	1
LRJ	LE MARS MUNI	IA	LPV	0	1	0	1	0	1
OOA	OSKALOOSA MUNI	IA	LPV	0	1	0	1	0	1
SDA	SHENANDOAH MUNI	IA	LPV	0	1	0	1	0	1
TVK	CENTERVILLE MUNI	IA	LPV	0	1	0	1	0	1
DEH	DECORAH MUNI	IA	LPV	0	1	0	1	0	1
TZT	BELLE PLAINE MUNI	IA	LPV	0	1	0	1	0	1
AIO	ATLANTIC MUNI	IA	LPV	0	1	0	1	0	1
ALO	WATERLOO RGNL	IA	LPV	0	1	0	1	0	1
AWG	WASHINGTON MUNI	IA	LPV200	0	1	0	1	0	1
CWI	CLINTON MUNI	IA	LPV200	0	1	0	1	0	1
DBQ	DUBUQUE RGNL	IA	LPV200	0	1	0	1	0	1
FXY	FOREST CITY MUNI	IA	LPV	0	1	0	1	0	1
PEA	PELLA MUNI	IA	LPV	0	1	0	1	0	1
SLB	STORM LAKE MUNI	IA	LPV	0	1	0	1	0	1
CID	THE EASTERN IOWA	IA	LPV200	0	1	0	1	0	1
DSM	DES MOINES INTL	IA	LPV	0	1	0	1	0	1
EST	ESTHERVILLE MUNI	IA	LPV	0	1	0	1	0	1
I75	OSCEOLA MUNI	IA	LPV	0	1	0	1	0	1
ICL	SCHENCK FIELD	IA	LPV	0	1	0	1	0	1
IIB	INDEPENDENCE MUNI	IA	LP	0	1	0	1	0	1
OTM	OTTUMWA RGNL	IA	LPV	0	1	0	1	0	1
PRO	PERRY MUNI	IA	LPV200	0	1	0	1	0	1
RDK	RED OAK MUNI	IA	LPV	0	1	0	1	0	1
SHL	SHELDON MUNI	IA	LPV	0	1	0	1	0	1
SPW	SPENCER MUNI	IA	LPV200	0	1	0	1	0	1
TNU	NEWTON MUNI	IA	LPV	0	1	0	1	0	1
BRL	SOUTHEAST IOWA RGNL	IA	LPV200	0	1	0	1	0	1
MPZ	MOUNT PLEASANT MUNI	IA	LPV	0	1	0	1	0	1
SKI	SAC CITY MUNI	IA	LPV	0	1	0	1	0	1
AMW	AMES MUNI	IA	LPV	0	1	0	1	0	1
EBS	WEBSTER CITY MUNI	IA	LPV	0	1	0	1	0	1
FOD	FORT DODGE RGNL	IA	LPV200	0	1	0	1	0	1
IOW	IOWA CITY MUNI	IA	LPV	0	1	0	1	0	1
MCW	MASON CITY MUNI	IA	LPV200	0	1	0	1	0	1

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
MUT	MUSCATINE MUNI	IA	LPV	0	1	0	1	0	1
LWS	LEWISTON-NEZ PERCE COUNTY	ID	LPV200	0	1	0	1	0	1
BOI	BOISE AIR TERMINAL/ GOWEN FLD	ID	LPV	0	1	0	1	0	1
TWF	JOSLIN FIELD-MAGIC VALLEY RGNL	ID	LPV200	0	1	0	1	0	1
GNG	GOODING MUNI	ID	LPV	0	1	0	1	0	1
EUL	CALDWELL INDUSTRIAL	ID	LPV	0	1	0	1	0	1
JER	JEROME COUNTY	ID	LPV	0	1	0	1	0	1
DIJ	DRIGGS-REED MEMORIAL	ID	LP	0	1	0	1	0	1
MAN	NAMPA MUNI	ID	LPV	0	1	0	1	0	1
COE	PAPPY BOYINGTON FIELD	ID	LPV200	0	1	0	1	0	1
IDA	IDAHO FALLS RGNL	ID	LPV200	0	1	0	1	0	1
U76	MOUNTAIN HOME MUNI	ID	LPV	0	1	0	1	0	1
PIH	POCATELLO RGNL	ID	LPV200	0	1	0	1	0	1
MYL	MC CALL MUNICIPAL	ID	LPV	0	1	0	1	1	0.999989
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
MLI	QUAD CITY INTL	IL	LPV200	0	1	0	1	0	1
MTO	COLES COUNTY MEMORIAL	IL	LPV	0	1	0	1	0	1
ORD	CHICAGO-O'HARE INTL	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
ARR	AURORA MUNI	IL	LPV200	0	1	0	1	0	1
DPA	DUPAGE	IL	LPV200	0	1	0	1	0	1
RPJ	ROCHELLE MUNI-KORITZ FIELD	IL	LPV200	0	1	0	1	0	1
RSV	ROBINSON MUNI	IL	LPV	0	1	0	1	0	1
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
LWV	LAWRENCEVILLE-VINCENNES INTL	IL	LPV200	0	1	0	1	0	1
MWA	WILLIAMSON COUNTY RGNL	IL	LPV200	0	1	0	1	0	1
PWK	CHICAGO EXECUTIVE	IL	LPV	0	1	0	1	0	1
3LF	LITCHFIELD MUNI	IL	LPV	0	1	0	1	0	1
ALN	ST LOUIS RGNL	IL	LPV200	0	1	0	1	0	1
GBG	GALESBURG MUNI	IL	LPV200	0	1	0	1	0	1
HSB	HARRISBURG-RALEIGH	IL	LPV	0	1	0	1	0	1
MDW	CHICAGO MIDWAY INTL	IL	LPV	0	1	0	1	0	1
SFY	TRI-TOWNSHIP	IL	LP	0	1	0	1	0	1

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
SPI	ABRAHAM LINCOLN CAPITAL	IL	LPV	0	1	0	1	0	1
UGN	WAUKEGAN RGNL	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
LOT	LEWIS UNIVERSITY	IL	LPV200	0	1	0	1	0	1
C73	DIXON MUNI- CHARLES R. WALGREEN FLD	IL	LPV	0	1	0	1	0	1
CUL	CARMI MUNI	IL	LP	0	1	0	1	0	1
DKB	DE KALB TAYLOR MUNI	IL	LPV	0	1	0	1	0	1
PNT	PONTIAC MUNI	IL	LPV	0	1	0	1	0	1
RFD	CHICAGO/ROCKFORD INTL	IL	LPV200	0	1	0	1	0	1
AJG	MOUNT CARMEL MUNI	IL	LPV	0	1	0	1	0	1
FEP	ALBERTUS	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
SQI	WHITESIDE COUNTY- JOS J BITTORF FLD	IL	LPV	0	1	0	1	0	1
BLV	SCOTT AFB/MIDAMERICA	IL	LPV200	0	1	0	1	0	1
GSH	GOSHEN MUNI	IN	LPV	0	1	0	1	0	1
BFR	VIRGIL I GRISSOM MUNI	IN	LP	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
GYY	GARY/CHICAGO INTL	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
4I7	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
AID	ANDERSON MUNI- DARLINGTON FIELD	IN	LPV	0	1	0	1	0	1

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
CEV	METTEL FIELD	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 INTL-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
LAF	PURDUE UNIVERSITY	IN	LPV	0	1	0	1	0	1
EGT	WELLINGTON MUNI	KS	LPV	0	1	0	1	0	1
SLN	SALINA MUNI	KS	LPV	0	1	0	1	0	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
TQK	SCOTT CITY MUNI	KS	LPV	0	1	0	1	0	1
ADT	ATWOOD-RAWLINS COUNTY CITY-COUNTY	KS	LPV	0	1	0	1	5	0.999902
ANY	ANTHONY MUNI	KS	LP	0	1	0	1	0	1
LWC	LAWRENCE MUNI	KS	LPV200	0	1	0	1	0	1
NRN	NORTON MUNI	KS	LPV	0	1	0	1	2	0.999992
EMP	EMPORIA MUNI	KS	LPV	0	1	0	1	0	1
FOE	FORBES FIELD	KS	LPV	0	1	0	1	0	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
DDC	DODGE CITY RGNL	KS	LPV	0	1	0	1	0	1
OEL	OAKLEY MUNI	KS	LPV	0	1	0	1	3	0.999981
PTT	PRATT INDUSTRIAL	KS	LPV	0	1	0	1	0	1
RPB	BELLEVILLE MUNI	KS	LPV	0	1	0	1	0	1
EHA	ELKHART-MORTON COUNTY	KS	LPV	0	1	0	1	1	0.99994
FSK	FORT SCOTT MUNI	KS	LPV	0	1	0	1	0	1
HQG	HUGOTON MUNI	KS	LPV	0	1	0	1	1	0.999955
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
LQR	LARNED PAWNEE CO	KS	LPV	0	1	0	1	0	1
TOP	PHILIP BILLARD MUNI	KS	LPV200	0	1	0	1	0	1
GLD	RENNER FLD/ GOODLAND MUNI	KS	LPV200	0	1	0	1	5	0.999906
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

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
AAO	COLONEL JAMES JABARA	KS	LPV	0	1	0	1	0	1
GBD	GREAT BEND MUNI	KS	LPV200	0	1	0	1	0	1
GCK	GARDEN CITY RGNL	KS	LPV	0	1	0	1	1	0.999985
HYS	HAYS RGNL	KS	LPV200	0	1	0	1	0	1
LBL	LIBERAL MID-AMERICA RGNL	KS	LPV	0	1	0	1	1	0.999962
OJC	JOHNSON COUNTY EXECUTIVE	KS	LPV	0	1	0	1	0	1
OWI	OTTAWA MUNI	KS	LP	0	1	0	1	0	1
ULS	ULYSSES	KS	LPV	0	1	0	1	1	0.999958
3K3	SYRACUSE-HAMILTON COUNTY MUNICIPAL	KS	LPV	0	1	0	1	2	0.999951
CBK	SHALZ FIELD	KS	LPV	0	1	0	1	5	0.999943
CNK	BLOSSER MUNI	KS	LP	0	1	0	1	0	1
EWK	NEWTON-CITY-COUNTY	KS	LPV	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-DAVISS COUNTY	KY	LPV200	0	1	0	1	0	1
PAH	BARKLEY RGNL	KY	LPV	0	1	0	1	0	1
TZV	TOMPKINSVILLE-MONROE COUNTY	KY	LPV	0	1	0	1	0	1
BWG	BOWLING GREEN-WARREN CTY RGNL	KY	LPV	0	1	0	1	0	1
HVC	HOPKINSVILLE-CHRISTIAN 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
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

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
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
2I0	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
1L0	ST JOHN THE BAPTIST PARISH	LA	LPV	0	1	0	1	0	1
L39	LEESVILLE	LA	LPV	0	1	0	1	0	1
BTR	BATON ROUGE METRO	LA	LPV200	0	1	0	1	0	1
DTN	SHREVEPORT DOWNTOWN	LA	LPV	0	1	0	1	0	1
HDC	HAMMOND NORTHSORE RGNL	LA	LPV200	0	1	0	1	0	1
LFT	LAFAYETTE RGNL	LA	LPV	0	1	0	1	0	1
MLU	MONROE RGNL	LA	LPV200	0	1	0	1	0	1
OPL	ST LANDRY PARISH- AHART FIELD	LA	LPV	0	1	0	1	0	1
SHV	SHREVEPORT RGNL	LA	LPV200	0	1	0	1	0	1
HZR	FALSE RIVER RGNL	LA	LPV	0	1	0	1	0	1
ARA	ACADIANA RGNL	LA	LPV	0	1	0	1	0	1
BQP	MOREHOUSE MEMORIAL	LA	LPV	0	1	0	1	0	1
ESF	ESLER RGNL	LA	LPV200	0	1	0	1	0	1
M79	JOHN H HOOKS JR MEM	LA	LPV	0	1	0	1	0	1
MSY	LOUIS ARMSTRONG NEW ORLEANS INTL	LA	LPV200	0	1	0	1	0	1
NEW	LAKEFRONT	LA	LPV	0	1	0	1	0	1
L38	LOUISIANA RGNL	LA	LPV	0	1	0	1	0	1
SPH	SPRINGHILL	LA	LPV	0	1	0	1	0	1
TVR	VICKSBURG TALLULAH RGNL	LA	LPV	0	1	0	1	0	1
AEX	ALEXANDRIA INTL	LA	LPV200	0	1	0	1	0	1
CWF	CHENNAULT INTL	LA	LPV200	0	1	0	1	0	1
IER	NATCHITOCHE RGNL	LA	LPV	0	1	0	1	0	1
IYA	ABBEVILLE CHRIS CRUSTA MEML	LA	LPV	0	1	0	1	0	1
UXL	SOUTHLAND FIELD	LA	LPV	0	1	0	1	0	1
3R4	HART	LA	LPV	0	1	0	1	0	1
ACP	ALLEN PARISH	LA	LPV	0	1	0	1	0	1
BXA	GEORGE R CARR MEMORIAL AIR FIELD	LA	LPV	0	1	0	1	0	1
LCH	LAKE CHARLES RGNL	LA	LPV200	0	1	0	1	0	1
RSN	RUSTON RGNL AIRPORT	LA	LPV	0	1	0	1	0	1
F88	JONESBORO	LA	LP	0	1	0	1	0	1
GAO	SOUTH LAFOURCHE LEONARD MILLER JR	LA	LPV	0	1	0	1	0	1
HUM	HOUMA-TERREBONNE	LA	LPV200	0	1	0	1	0	1
PTN	HARRY P WILLIAMS MEMORIAL	LA	LPV200	0	1	0	1	0	1
OWD	NORWOOD MEMORIAL	MA	LPV	0	1	0	1	0	1

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
BOS	GEN EDWARD LAWRENCE LOGAN INTL	MA	LPV200	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
BAF	BARNES MUNI	MA	LPV	0	1	0	1	0	1
GBR	WALTER J KOLADZA	MA	LP	0	1	0	1	0	1
ORE	ORANGE 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
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
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
2W6	ST. MARY'S COUNTY RGNL	MD	LPV	0	1	0	1	0	1
HGR	HAGERSTOWN RGNL-RICHARD A HENSON FIELD	MD	LPV200	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
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
FDK	FREDERICK MUNI	MD	LPV	0	1	0	1	0	1
GAI	MONTGOMERY COUNTY AIRPARK	MD	LPV	0	1	0	1	0	1
2G4	GARRETT COUNTY	MD	LPV	0	1	0	1	0	1
1B0	DEXTER RGNL	ME	LP	0	1	0	1	0	1
FVE	NORTHERN AROOSTOOK RGNL	ME	LPV	0	1	0	1	0	1
RKD	KNOX COUNTY RGNL	ME	LPV	0	1	0	1	0	1
WVL	WATERVILLE ROBERT LAFLEUR	ME	LPV200	0	1	0	1	0	1
LEW	AUBURN/LEWISTON MUNI	ME	LPV200	0	1	0	1	0	1
PQI	NORTHERN MAINE RGNL ARPT AT PRESQUE IS	ME	LPV200	0	1	0	1	0	1
BXM	BRUNSWICK EXECUTIVE	ME	LPV	0	1	0	1	0	1
HUL	HOULTON INTL	ME	LP	0	1	0	1	0	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
PWM	PORTLAND INTL JETPORT	ME	LPV200	0	1	0	1	0	1
MLT	MILLINOCKET MUNI	ME	LPV	0	1	0	1	0	1

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
BGR	BANGOR INTL	ME	LPV	0	1	0	1	0	1
BHB	HANCOCK COUNTY-BAR HARBOR	ME	LPV200	0	1	0	1	0	1
PLN	PELLSTON RGNL AIRPORT OF EMMET COUNTY	MI	LPV200	0	1	0	1	0	1
N98	BOYNE CITY MUNI	MI	LP	0	1	0	1	0	1
AMN	GRATIOT COMMUNITY	MI	LPV	0	1	0	1	0	1
CMX	HOUGHTON COUNTY MEM	MI	LPV	0	1	0	1	1	0.999996
FFX	FREMONT MUNI	MI	LPV	0	1	0	1	0	1
FNT	BISHOP INTL	MI	LPV200	0	1	0	1	0	1
IMT	FORD	MI	LPV	0	1	0	1	0	1
LWA	SOUTH HAVEN AREA RGNL	MI	LP	0	1	0	1	0	1
MCD	MACKINAC ISLAND	MI	LPV	0	1	0	1	0	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
ESC	DELTA COUNTY	MI	LPV200	0	1	0	1	0	1
IRS	KIRSCH MUNI	MI	LPV	0	1	0	1	0	1
ISQ	SCHOOLCRAFT COUNTY	MI	LP	0	1	0	1	0	1
LAN	CAPITAL REGION INTL	MI	LPV200	0	1	0	1	0	1
RNP	OWOSSO COMMUNITY	MI	LPV	0	1	0	1	0	1
JXN	JACKSON COUNTY-REYNOLDS FIELD	MI	LPV200	0	1	0	1	0	1
SAW	SAWYER INTL	MI	LPV200	0	1	0	1	0	1
ARB	ANN ARBOR MUNI	MI	LPV	0	1	0	1	0	1
ERY	LUCE COUNTY	MI	LPV	0	1	0	1	0	1
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 MEM	MI	LPV	0	1	0	1	0	1
9D9	HASTINGS	MI	LP	0	1	0	1	0	1
ACB	ANTRIM COUNTY	MI	LPV	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
CVX	CHARLEVOIX MUNI	MI	LPV	0	1	0	1	0	1
SLH	CHEBOYGAN COUNTY	MI	LPV	0	1	0	1	0	1
TVC	CHERRY CAPITAL	MI	LPV	0	1	0	1	0	1
ADG	LENAWEE COUNTY	MI	LPV	0	1	0	1	0	1
BEH	SOUTHWEST MICHIGAN RGNL	MI	LPV200	0	1	0	1	0	1
CAD	WEXFORD COUNTY	MI	LPV200	0	1	0	1	0	1
DET	COLEMAN A YOUNG MUNI	MI	LPV	0	1	0	1	0	1
IWD	GOGEBIC-IRON COUNTY	MI	LPV200	0	1	0	1	1	0.999996
LDM	MASON COUNTY	MI	LPV	0	1	0	1	0	1
TTF	CUSTER	MI	LPV	0	1	0	1	0	1
ANJ	SAULT STE MARIE MUNI - SANDERSON FIELD	MI	LPV	0	1	0	1	0	1
AZO	KALAMAZOO/BATTLE CREEK INTL	MI	LPV	0	1	0	1	0	1

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
CIU	CHIPPEWA COUNTY INTL	MI	LPV	0	1	0	1	0	1
DTW	DETROIT METROPOLITAN WAYNE COUNTY	MI	LPV200	0	1	0	1	0	1
HYX	SAGINAW COUNTY H.W. BROWNE	MI	LPV	0	1	0	1	0	1
MNM	MENOMINEE-MARINETTE TWIN COUNTY	MI	LPV200	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
GDW	GLADWIN ZETTEL MEM	MI	LP	0	1	0	1	0	1
MBS	MBS INTL	MI	LPV200	0	1	0	1	0	1
MKG	MUSKEGON COUNTY	MI	LPV200	0	1	0	1	0	1
YIP	WILLOW RUN	MI	LPV	0	1	0	1	0	1
AXN	CHANDLER FIELD	MN	LPV	0	1	0	1	1	0.999966
BJI	BEMIDJI RGNL	MN	LPV200	0	1	0	1	3	0.999872
COQ	CLOQUET CARLTON COUNTY	MN	LPV	0	1	0	1	2	0.999977
CQM	COOK MUNI	MN	LP	0	1	0	1	3	0.99994
FOZ	BIGFORK MUNICIPAL	MN	LP	0	1	0	1	3	0.99986
JKJ	MOORHEAD MUNI	MN	LPV	0	1	0	1	1	0.99994
OTG	WORTHINGTON MUNI	MN	LPV200	0	1	0	1	1	0.999996
STC	ST CLOUD RGNL	MN	LPV200	0	1	0	1	1	0.999985
GPZ	GRAND RAPIDS/ITASCA CO-GORDON NEWSTROM	MN	LPV	0	1	0	1	3	0.999955
LVN	AIRLAKE	MN	LPV200	0	1	0	1	0	1
MZH	MOOSE LAKE CARLTON COUNTY	MN	LPV	0	1	0	1	2	0.999981
RRT	WARROAD INTL MEMORIAL	MN	LPV	0	1	0	1	1	0.999932
SAZ	STAPLES MUNI	MN	LPV	0	1	0	1	2	0.999962
VVV	ORTONVILLE MUNI-MARTINSON FIELD	MN	LP	0	1	0	1	1	0.99997
ANE	ANOKA COUNTY-BLAINE ARPT (JANES FIELD)	MN	LPV	0	1	0	1	0	1
AUM	AUSTIN MUNI	MN	LPV200	0	1	0	1	0	1
CBG	CAMBRIDGE MUNI	MN	LPV	0	1	0	1	1	0.999996
DXX	LAC QUI PARLE COUNTY	MN	LPV200	0	1	0	1	1	0.999974
HIB	RANGE RGNL	MN	LPV200	0	1	0	1	2	0.999966
MKT	MANKATO RGNL	MN	LPV200	0	1	0	1	0	1
ONA	WINONA MUNI-MAX CONRAD FLD	MN	LPV	0	1	0	1	0	1
ORB	ORR RGNL	MN	LP	0	1	0	1	3	0.999928
PKD	PARK RAPIDS MUNI-KONSHOK FIELD	MN	LPV200	0	1	0	1	1	0.999958
RST	ROCHESTER INTL	MN	LPV200	0	1	0	1	0	1
CKC	GRAND MARAIS/COOK COUNTY	MN	LPV	0	1	0	1	2	0.999977
DTL	DETROIT LAKES-WETHING FIELD	MN	LPV	0	1	0	1	1	0.999947
ELO	ELY MUNI	MN	LPV200	0	1	0	1	3	0.999958

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
HCD	HUTCHINSON MUNI-BUTLER FIELD	MN	LPV	0	1	0	1	1	0.999989
LJF	LITCHFIELD MUNI	MN	LPV	0	1	0	1	1	0.999985
ROS	RUSH CITY RGNL	MN	LPV	0	1	0	1	1	0.999996
TVF	THIEF RIVER FALLS	MN	LPV	0	1	0	1	1	0.99997
AEL	ALBERT LEA MUNI	MN	LPV	0	1	0	1	0	1
BDE	BAUDETTE INTL	MN	LPV	0	1	0	1	3	0.999909
BRD	BRAINERD LAKES RGNL	MN	LPV200	0	1	0	1	1	0.999974
CNB	MYERS FIELD	MN	LPV	0	1	0	1	1	0.999977
FKA	FILLMORE COUNTY	MN	LPV	0	1	0	1	0	1
MGG	MAPLE LAKE MUNI	MN	LP	0	1	0	1	1	0.999989
RGK	RED WING RGNL	MN	LPV200	0	1	0	1	0	1
ROX	ROSEAU MUNI/RUDY BILLBERG FIELD	MN	LPV	0	1	0	1	1	0.999928
CKN	CROOKSTON MUNI/KIRKWOOD FLD	MN	LPV	0	1	0	1	1	0.999962
FSE	FOSSTON MUNI	MN	LP	0	1	0	1	3	0.999883
LXL	LITTLE FALLS/MORRISON CO-LINDBERGH FLD	MN	LPV	0	1	0	1	1	0.999977
MSP	MINNEAPOLIS-ST PAUL INTL/WOLD-CHAMBERLAIN	MN	LPV200	0	1	0	1	0	1
STP	ST PAUL DOWNTOWN HOLMAN FLD	MN	LPV	0	1	0	1	0	1
FCM	FLYING CLOUD	MN	LPV200	0	1	0	1	0	1
FFM	FERGUS FALLS MUNI-EINAR MICKELSON FLD	MN	LPV200	0	1	0	1	2	0.999943
FRM	FAIRMONT MUNI	MN	LPV	0	1	0	1	0	1
INL	FALLS INTL	MN	LPV	0	1	0	1	4	0.999898
MML	SOUTHWEST MINNESOTA RGNL MARSHALL/RYAN FIELD	MN	LPV200	0	1	0	1	1	0.999985
RWF	REDWOOD FALLS MUNI	MN	LPV	0	1	0	1	1	0.999992
TWM	RICHARD B HELGESON	MN	LPV	0	1	0	1	2	0.999985
BBB	BENSON MUNI	MN	LPV	0	1	0	1	1	0.999974
BDH	WILLMAR MUNI-JOHN L RICE FIELD	MN	LPV	0	1	0	1	1	0.999985
D39	SAUK CENTRE MUNI	MN	LP	0	1	0	1	1	0.999974
DLH	DULUTH INTL	MN	LPV200	0	1	0	1	2	0.999981
ETH	WHEATON MUNI	MN	LP	0	1	0	1	1	0.999958
LYV	QUENTIN AANENSON FIELD	MN	LPV200	0	1	0	1	1	0.999996
OWA	OWATONNA DEGNER RNGL	MN	LPV200	0	1	0	1	0	1
VER	JESSE VIERTTEL MEMORIAL	MO	LPV	0	1	0	1	0	1
MHL	MARSHALL MEML MUNI	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 MEM	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

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
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
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
STL	LAMBERT-ST LOUIS INTL	MO	LPV200	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
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
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

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
2H2	JERRY SUMNERS SR AURORA MUNICIPAL	MO	LP	0	1	0	1	0	1
CHT	CHILICOTHE 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
6M6	LEWIS COUNTY RGNL	MO	LPV	0	1	0	1	0	1
JAN	JACKSON-EVERS INTL	MS	LPV200	0	1	0	1	0	1
MJD	PICAYUNE MUNI	MS	LPV	0	1	0	1	0	1
RNV	CLEVELAND MUNI	MS	LPV	0	1	0	1	0	1
UOX	UNIVERSITY-OXFORD	MS	LPV	0	1	0	1	0	1
GPT	GULFPORT-BILOXI INTL	MS	LPV200	0	1	0	1	0	1
HSA	STENNIS INTL	MS	LPV200	0	1	0	1	0	1
JVW	JOHN BELL WILLIAMS	MS	LPV200	0	1	0	1	0	1
MCB	MC COMB-PIKE COUNTY-JOHN E LEWIS FIELD	MS	LPV	0	1	0	1	0	1
MEI	KEY FIELD	MS	LPV200	0	1	0	1	0	1
STF	GEORGE M BRYAN	MS	LPV200	0	1	0	1	0	1
MPE	PHILADELPHIA MUNI	MS	LPV	0	1	0	1	0	1
PIB	HATTIESBURG-LAUREL RGNL	MS	LPV200	0	1	0	1	0	1
UTA	TUNICA MUNI	MS	LPV200	0	1	0	1	0	1
HKS	HAWKINS FIELD	MS	LPV200	0	1	0	1	0	1
M40	MONROE COUNTY	MS	LPV	0	1	0	1	0	1
CRX	ROSCOE TURNER	MS	LPV200	0	1	0	1	0	1
GNF	GRENADA MUNI	MS	LPV	0	1	0	1	0	1
GTR	GOLDEN TRIANGLE RGNL	MS	LPV200	0	1	0	1	0	1
GWO	GREENWOOD-LEFLORE	MS	LPV	0	1	0	1	0	1
M43	PRENTISS-JEFFERSON DAVIS COUNTY	MS	LPV	0	1	0	1	0	1
CKM	FLETCHER FIELD	MS	LPV	0	1	0	1	0	1
GLH	MID DELTA RGNL	MS	LPV200	0	1	0	1	0	1
HBG	HATTIESBURG BOBBY L. CHAIN MUNI	MS	LPV200	0	1	0	1	0	1
HEZ	HARDY-ANDERS FLD NATCHEZ-ADAMS COUNTY	MS	LPV	0	1	0	1	0	1
IDL	INDIANOLA MUNI	MS	LPV	0	1	0	1	0	1
OLV	OLIVE BRANCH	MS	LPV	0	1	0	1	0	1
PQL	TRENT LOTT INTL	MS	LPV200	0	1	0	1	0	1
TUP	TUPELO RGNL	MS	LPV200	0	1	0	1	0	1
87I	YAZOO COUNTY	MS	LPV	0	1	0	1	0	1
LUL	HESLER-NOBLE FIELD	MS	LPV	0	1	0	1	0	1
SBX	SHELBY	MT	LP	0	1	0	1	0	1
6S8	LAUREL MUNICIPAL	MT	LPV	0	1	0	1	0	1
M75	MALTA	MT	LP	0	1	0	1	0	1
BZN	GALLATIN FIELD	MT	LPV	0	1	0	1	0	1
SDY	SIDNEY-RICHLAND MUNI	MT	LPV	0	1	0	1	0	1
WYS	YELLOWSTONE	MT	LPV200	0	1	0	1	0	1
RPX	ROUNDUP	MT	LPV	0	1	0	1	0	1

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
4U6	CIRCLE TOWN COUNTY	MT	LPV	0	1	0	1	0	1
7S0	RONAN	MT	LPV	0	1	0	1	0	1
GPI	GLACIER PARK INTL	MT	LPV	0	1	0	1	0	1
HVR	HAVRE CITY-COUNTY	MT	LPV	0	1	0	1	0	1
GTF	GREAT FALLS INTL	MT	LPV200	0	1	0	1	0	1
BTM	BERT MOONEY	MT	LPV	0	1	0	1	0	1
GGW	WOKAL FIELD/ GLASGOW INTL	MT	LPV200	0	1	0	1	0	1
HLN	HELENA RGNL	MT	LPV	0	1	0	1	0	1
PWD	SHER-WOOD	MT	LPV200	0	1	0	1	1	0.999898
1S3	TILLITT FIELD	MT	LPV	0	1	0	1	0	1
BIL	BILLINGS LOGAN INTL	MT	LPV200	0	1	0	1	0	1
LVM	MISSION FIELD	MT	LP	0	1	0	1	0	1
LWT	LEWISTOWN MUNI	MT	LPV200	0	1	0	1	0	1
MLS	FRANK WILEY FIELD	MT	LPV	0	1	0	1	0	1
MSO	MISSOULA INTERNATIONAL	MT	LPV	0	1	0	1	1	0.999992
GDV	DAWSON COMMUNITY	MT	LPV	0	1	0	1	0	1
OLF	L M CLAYTON	MT	LPV200	0	1	0	1	0	1
CYQM	MONCTON INTL	NB	LPV	0	1	0	1	0	1
CYCL	CHARLO	NB	LPV	0	1	0	1	0	1
AKH	GASTONIA MUNI	NC	LPV	0	1	0	1	0	1
AVL	ASHEVILLE 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
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
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

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
IPJ	LINCOLN- 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
RWI	ROCKY MOUNT- WILSON RGNL	NC	LPV	0	1	0	1	0	1
CLT	CHARLOTTE/DOUGLAS INTL	NC	LPV200	0	1	0	1	0	1
GWR	GWINNER- ROGER MELROE FIELD	ND	LPV200	0	1	0	1	2	0.999947
BIS	BISMARCK MUNI	ND	LPV200	0	1	0	1	1	0.999966
D55	ROBERTSON FIELD	ND	LPV	0	1	0	1	2	0.999853
GAF	HUTSON FIELD	ND	LPV	0	1	0	1	1	0.999962
RUG	RUGBY MUNI	ND	LP	0	1	0	1	2	0.999853
S25	WATFORD CITY MUNI	ND	LPV	0	1	0	1	0	1
5N8	CASSELTON ROBERT MILLER RGNL	ND	LPV	0	1	0	1	2	0.999989
HZE	MERCER COUNTY RGNL	ND	LPV	0	1	0	1	1	0.999974
2C8	CAVALIER MUNI	ND	LPV	0	1	0	1	1	0.999879
BAC	BARNES COUNTY MUNI	ND	LPV	0	1	0	1	1	0.999996
D60	TIOGA MUNI	ND	LPV	0	1	0	1	2	0.999883
DVL	DEVILS LAKE RGNL	ND	LPV	0	1	0	1	2	0.999887
BWP	HARRY STERN	ND	LPV	0	1	0	1	2	0.999951
FAR	HECTOR INTL	ND	LPV200	0	1	0	1	2	0.999955
JMS	JAMESTOWN RGNL	ND	LPV200	0	1	0	1	0	1

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
DIK	DICKINSON-THEODORE ROOSEVELT RGNL	ND	LPV200	0	1	0	1	0	1
GFK	GRAND FORKS INTL	ND	LPV	0	1	0	1	1	0.999958
ISN	SLOULIN FLD INTL	ND	LPV200	0	1	0	1	1	0.999925
MOT	MINOT INTL	ND	LPV	0	1	0	1	2	0.999853
D09	BOTTINEAU MUNI	ND	LPV	0	1	0	1	2	0.999808
0V3	PIONEER VILLAGE FIELD	NE	LPV	0	1	0	1	0	1
9V5	MODISETT	NE	LPV	0	1	0	1	0	1
AIA	ALLIANCE MUNI	NE	LPV200	0	1	0	1	3	0.999777
ANW	AINSWORTH MUNI	NE	LPV200	0	1	0	1	0	1
CZD	COZAD MUNI	NE	LPV	0	1	0	1	0	1
LNK	LINCOLN	NE	LPV	0	1	0	1	0	1
OGA	SEARLE FIELD	NE	LPV	0	1	0	1	4	0.999774
ONL	THE O'NEILL MUNI- JOHN L BAKER FIELD	NE	LPV	0	1	0	1	0	1
8V2	STUART-ATKINSON MUNI	NE	LPV	0	1	0	1	0	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	0	1
OKS	GARDEN COUNTY	NE	LPV	0	1	0	1	3	0.999724
SNY	SIDNEY MUNI/ LLOYD W. CARR FIELD	NE	LPV	0	1	0	1	3	0.999736
0C4	PENDER MUNI	NE	LPV	0	1	0	1	0	1
AFK	NEBRASKA CITY MUNI	NE	LPV	0	1	0	1	0	1
BVN	ALBION MUNI	NE	LPV	0	1	0	1	0	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
MLE	MILLARD	NE	LPV	0	1	0	1	0	1
OMA	EPPLEY AIRFIELD	NE	LPV	0	1	0	1	0	1
RBE	ROCK COUNTY	NE	LPV	0	1	0	1	0	1
FET	FREMONT MUNI	NE	LPV	0	1	0	1	0	1
GGF	GRANT MUNI	NE	LPV	0	1	0	1	4	0.999796
VTN	MILLER FIELD	NE	LPV	0	1	0	1	0	1
0B4	HARTINGTON MUNI	NE	LPV	0	1	0	1	0	1
93Y	DAVID CITY MUNI	NE	LPV	0	1	0	1	0	1
EAR	KEARNEY RGNL	NE	LPV200	0	1	0	1	0	1
TIF	THOMAS COUNTY	NE	LPV	0	1	0	1	0	1
BFF	WESTERN NEB. RGNL/ WILLIAM B. HEILIG FIELD	NE	LPV	0	1	0	1	3	0.999736
CDR	CHADRON MUNI	NE	LPV200	0	1	0	1	1	0.999989
CEK	CRETE MUNICIPAL	NE	LPV	0	1	0	1	0	1
FBY	FAIRBURY MUNI	NE	LPV	0	1	0	1	0	1
GRN	GORDON MUNI	NE	LPV	0	1	0	1	0	1
JYR	YORK MUNICIPAL	NE	LPV	0	1	0	1	0	1
ODX	EVELYN SHARP FIELD	NE	LPV	0	1	0	1	0	1
6K3	CREIGHTON MUNI	NE	LPV	0	1	0	1	0	1
7V7	RED CLOUD MUNI	NE	LPV	0	1	0	1	0	1
AHQ	WAHOO MUNI	NE	LPV	0	1	0	1	0	1
BIE	BEATRICE MUNI	NE	LPV200	0	1	0	1	0	1
FNB	BRENNER FIELD	NE	LPV	0	1	0	1	0	1

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
IML	IMPERIAL MUNI	NE	LPV	0	1	0	1	4	0.999826
PMV	PLATTSMOUTH MUNI	NE	LPV	0	1	0	1	0	1
4V9	ANTELOPE COUNTY	NE	LPV	0	1	0	1	0	1
FMZ	FAIRMONT STATE AIRFIELD	NE	LPV	0	1	0	1	0	1
IBM	KIMBALL MUNI/ ROBERT E ARRAJ FI	NE	LPV	0	1	0	1	3	0.999743
LBF	NORTH PLATTE RGNL AIRPORT LEE BIRD FIELD	NE	LPV	0	1	0	1	0	1
LCG	WAYNE MUNI	NE	LPV	0	1	0	1	0	1
LXN	JIM KELLY FIELD	NE	LPV	0	1	0	1	0	1
MCK	MCCOOK RGNL	NE	LPV	0	1	0	1	5	0.999883
OFK	KARL STEFAN MEMORIAL	NE	LPV	0	1	0	1	0	1
OLU	COLUMBUS MUNI	NE	LPV	0	1	0	1	0	1
SWT	SEWARD MUNICIPAL	NE	LPV	0	1	0	1	0	1
07K	CENTRAL CITY MUNI-LARRY REINEKE FIELD	NE	LPV	0	1	0	1	0	1
12K	SUPERIOR MUNI	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
DAW	SKYHAVEN	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
HIE	MOUNT WASHINGTON RGNL	NH	LPV	0	1	0	1	0	1
CON	CONCORD MUNI	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
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	0	1	0	1	137	0.992788
ABQ	ALBUQUERQUE INTL SUNPORT	NM	LPV	0	1	0	1	1	0.999808
FMN	FOUR CORNERS RGNL	NM	LPV200	0	1	0	1	2	0.999992
HOB	LEA COUNTY RGNL	NM	LPV200	0	1	0	1	1	0.999857
ONM	SOCORRO MUNI	NM	LP	0	1	0	1	1	0.999796
SVC	GRANT COUNTY	NM	LPV	0	1	0	1	1	0.999815
CNM	CAVERN CITY AIR TRML	NM	LP	0	1	0	1	1	0.999841
SRR	SIERRA BLANCA RGNL	NM	LPV200	0	1	0	1	1	0.9998

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
CVN	CLOVIS MUNI	NM	LPV	0	1	0	1	1	0.999853
DMN	DEMING MUNI	NM	LPV	0	1	0	1	1	0.999811
ROW	ROSWELL INTERNATIONAL AIR CENTER	NM	LPV	0	1	0	1	1	0.999823
LAM	LOS ALAMOS	NM	LP	0	1	0	1	1	0.99983
CYHZ	HALIFAX / STANFIELD INTL	NS	LPV	0	1	0	1	0	1
CYEV	INUVIK	NT	LPV	0	1	1	0.999917	7	0.999317
WMC	WINNEMUCCA MUNI	NV	LPV	0	1	0	1	0	1
LAS	MC CARRAN INTL	NV	LPV	0	1	0	1	1	0.999909
TPH	TONOPAH	NV	LP	0	1	0	1	1	0.999936
ELY	ELY ARPT-YELLAND FLD	NV	LPV	0	1	0	1	0	1
RTS	RENO/STEAD	NV	LPV	0	1	0	1	4	0.999804
RNO	RENO/TAHOE INTL	NV	LPV	0	1	0	1	3	0.9998
SDC	WILLIAMSON-SODUS	NY	LPV	0	1	0	1	0	1
NY0	FULTON COUNTY	NY	LPV	0	1	0	1	0	1
BGM	GREATER BINGHAMTON/ EDWIN A LINK FIELD	NY	LPV200	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
OGS	OGDENSBURG INTL	NY	LPV	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
ELZ	WELLSVILLE MUNI ARPT	NY	LPV	0	1	0	1	0	1
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

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
ALB	ALBANY INTL	NY	LPV200	0	1	0	1	0	1
HTF	HORNELL MUNI	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
9G0	BUFFALO AIRFIELD	NY	LP	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
4I3	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
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

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
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
TUL	TULSA INTL	OK	LPV200	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
TQH	TAHLEQUAH MUNI	OK	LPV	0	1	0	1	0	1
WWR	WEST WOODWARD	OK	LPV	0	1	0	1	0	1
AXS	ALTUS/QUARTZ MOUNTAIN RGNL	OK	LPV	0	1	0	1	1	0.999966
BVO	BARTLESVILLE MUNI	OK	LPV	0	1	0	1	0	1
F22	PERRY MUNI	OK	LPV	0	1	0	1	0	1
FDR	FREDERICK RGNL	OK	LPV200	0	1	0	1	1	0.999947
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
ELK	ELK CITY RGNL BUSINESS	OK	LPV	0	1	0	1	1	0.999974
HBR	HOBART MUNI	OK	LPV	0	1	0	1	1	0.999974
MKO	DAVIS FIELD	OK	LPV	0	1	0	1	0	1
PVJ	PAULS VALLEY MUNI	OK	LPV200	0	1	0	1	0	1

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
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
GUY	GUYMON MUNI	OK	LPV	0	1	0	1	1	0.99994
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
CSM	CLINTON-SHERMAN	OK	LPV200	0	1	0	1	1	0.999989
DUC	HALLIBURTON FIELD	OK	LPV	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
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
CYHD	DRYDEN REGIONAL	ON	LPV	0	1	0	1	4	0.999925
CYTS	TIMMINS / VICTOR M POWER	ON	LPV	0	1	0	1	0	1
CYQT	THUNDER BAY	ON	LPV	0	1	0	1	2	0.999951
CYOW	OTTAWA / MACDONALDCARTIER INTL	ON	LPV	0	1	0	1	0	1
CNS7	KINCARDINE	ON	LPV	0	1	0	1	0	1
CYKF	KITCHENER / WATERLOO	ON	LPV	0	1	0	1	0	1
CYXL	SIOUX LOOKOUT	ON	LPV	0	1	0	1	5	0.9998
AST	ASTORIA RGNL	OR	LPV	0	1	0	1	3	0.999906
SPB	SCAPPOOSE INDUSTRIAL AIRPARK	OR	LPV	0	1	0	1	1	0.999966
EUG	MAHLON SWEET FIELD	OR	LPV200	0	1	0	1	5	0.999841
GCD	GRANT CO RGNL/ OGILVIE FIELD	OR	LPV	0	1	0	1	2	0.999947
PDT	EASTERN OREGON RGNL AT PENDLETON	OR	LPV200	0	1	0	1	0	1
RDM	ROBERTS FIELD	OR	LPV200	0	1	0	1	4	0.999925
HIO	PORTLAND-HILLSBORO	OR	LPV200	0	1	0	1	2	0.999943
SLE	MCNARY FLD	OR	LPV200	0	1	0	1	2	0.999913
LGD	LA GRANDE/UNION COUNTY	OR	LPV	0	1	0	1	1	0.999951
ONO	ONTARIO MUNI	OR	LPV	0	1	0	1	1	0.999981
UAO	AURORA STATE	OR	LPV	0	1	0	1	1	0.999943
LMT	KLAMATH FALLS	OR	LPV	0	1	0	1	5	0.999743
S33	MADRAS MUNICIPAL	OR	LPV	0	1	0	1	3	0.999985
BDN	BEND MUNI	OR	LPV	0	1	0	1	4	0.999902
MMV	MCMINNVILLE MUNI	OR	LPV	0	1	0	1	2	0.999845
PDX	PORTLAND INTL	OR	LPV200	0	1	0	1	1	0.999966
CVO	CORVALLIS MUNI	OR	LPV200	0	1	0	1	2	0.999872
AOO	ALTOONA-BLAIR COUNTY	PA	LPV	0	1	0	1	0	1

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
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
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

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
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	0	1
CSR3	VICTORIAVILLE	QC	LPV	0	1	0	1	0	1
CYIF	STAUGUSTIN	QC	LPV	0	1	0	1	87	0.99629
CYVP	KUUJUAQ	QC	LPV	0	1	1	0.999996	7	0.999041
CPN8	OPINACA	QC	LPV	0	1	0	1	0	1
CYMX	MONTREAL (MIRABEL INTL)	QC	LPV	0	1	0	1	0	1
CYYY	MONTJOLI	QC	LPV	0	1	0	1	0	1
CYQB	QUEBEC / JEAN LESAGE INTL	QC	LPV	0	1	0	1	0	1
CYVB	BONAVENTURE	QC	LPV	0	1	0	1	0	1
CTP9	KATTINIQ / DONALDSON	QC	LPV	1	0.999977	2	0.99994	64	0.996343
CYHU	MONTREAL / STHUBERT	QC	LPV	0	1	0	1	0	1
CYRI	RIVIEREDULOUP	QC	LPV	0	1	0	1	0	1
CYRQ	TROISRIVIERES	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
UDG	DARLINGTON COUNTY JETPORT	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
FLO	FLORENCE RGNL	SC	LPV	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	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
SMS	SUMTER	SC	LPV200	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
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
RAP	RAPID CITY RGNL	SD	LPV200	0	1	0	1	0	1
MHE	MITCHELL MUNI	SD	LPV	0	1	0	1	0	1
ICR	WINNER RGNL	SD	LPV	0	1	0	1	0	1
ABR	ABERDEEN RGNL	SD	LPV200	0	1	0	1	1	0.999985
ATY	WATERTOWN RGNL	SD	LPV200	0	1	0	1	1	0.999966
BKX	BROOKINGS RGNL	SD	LPV	0	1	0	1	1	0.999985
9D1	GREGORY MUNI – FLYNN FIELD	SD	LPV	0	1	0	1	0	1
0D8	GETTYSBURG MUNI	SD	LPV200	0	1	0	1	0	1
SPF	BLACK HILLS-CLYDE ICE FIELD	SD	LPV	0	1	0	1	0	1
MKA	MILLER MUNI	SD	LPV200	0	1	0	1	0	1
PIR	PIERRE RGNL	SD	LPV	0	1	0	1	0	1
FSD	JOE FOSS FIELD	SD	LPV200	0	1	0	1	0	1
49B	STURGIS MUNI	SD	LPV	0	1	0	1	0	1
MDS	MADISON MUNI	SD	LPV	0	1	0	1	1	0.999992
HSR	HOT SPRINGS MUNI	SD	LP	0	1	0	1	0	1
YKN	CHAN GURNEY MUNI	SD	LPV200	0	1	0	1	0	1
VMR	HAROLD DAVIDSON FIELD	SD	LPV	0	1	0	1	0	1
MBG	MOBRIDGE MUNI	SD	LPV	0	1	0	1	1	0.999996
HON	HURON RGNL	SD	LPV200	0	1	0	1	1	0.999996
EFC	BELLE FOURCHE MUNI	SD	LPV	0	1	0	1	0	1
CYKJ	KEY LAKE	SK	LPV	0	1	0	1	8	0.998962
CKQ8	MCARTHUR RIVER	SK	LPV	0	1	0	1	8	0.998804
HZD	CARROLL COUNTY	TN	LPV	0	1	0	1	0	1
M54	LEBANON MUNI	TN	LPV	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
SNH	SAVANNAH-HARDIN COUNTY	TN	LPV	0	1	0	1	0	1

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
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
BNA	NASHVILLE INTL	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
FYM	FAYETTEVILLE MUNI	TN	LPV	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
MEM	MEMPHIS INTL	TN	LPV200	0	1	0	1	0	1
GDJ	GRANBURY RGNL	TX	LPV	0	1	0	1	1	0.999958
GYI	NORTH TEXAS RGNL/ PERRIN FIELD	TX	LPV200	0	1	0	1	0	1
HRL	VALLEY INTL	TX	LPV200	0	1	0	1	0	1
INJ	HILLSBORO MUNI	TX	LPV	0	1	0	1	1	0.99997
LLN	LEVELLAND MUNI	TX	LPV	0	1	0	1	1	0.999864
ORG	ORANGE COUNTY	TX	LPV	0	1	0	1	0	1
T41	LA PORTE MUNI	TX	LPV	0	1	0	1	0	1
TFP	T P MC CAMPBELL	TX	LPV	0	1	0	1	0	1
TKI	COLLIN COUNTY RGNL AT MC KINNEY	TX	LPV200	0	1	0	1	0	1

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
TYR	TYLER POUNDS RGNL	TX	LPV200	0	1	0	1	0	1
UTS	HUNTSVILLE MUNI	TX	LPV	0	1	0	1	0	1
XBP	BRIDGEPORT MUNI	TX	LPV	0	1	0	1	1	0.999962
2R9	KARNES COUNTY	TX	LP	0	1	0	1	0	1
ASL	HARRISON COUNTY	TX	LPV	0	1	0	1	0	1
BBD	CURTIS FIELD	TX	LPV	0	1	0	1	1	0.999947
BKD	STEPHENS COUNTY	TX	LP	0	1	0	1	1	0.99994
BPG	BIG SPRING MC MAHON-WRINKLE	TX	LPV	0	1	0	1	1	0.999894
CLL	EASTERWOOD FIELD	TX	LPV200	0	1	0	1	0	1
CRP	CORPUS CHRISTI INTL	TX	LPV200	0	1	0	1	0	1
DAL	DALLAS LOVE FIELD	TX	LPV200	0	1	0	1	0	1
EBG	EDINBURG INTL	TX	LPV	0	1	0	1	0	1
F05	WILBARGER COUNTY	TX	LPV	0	1	0	1	1	0.999936
GLE	GAINESVILLE MUNI	TX	LPV	0	1	0	1	0	1
HDO	HONDO MUNI	TX	LPV	0	1	0	1	1	0.999974
IKG	KLEBERG COUNTY	TX	LPV	0	1	0	1	0	1
JWY	MID-WAY RGNL	TX	LPV200	0	1	0	1	1	0.999996
LHB	HEARNE MUNI	TX	LPV200	0	1	0	1	1	0.999992
LRD	LAREDO INTL	TX	LPV200	0	1	0	1	1	0.999981
OCH	A L MANGHAM JR RGNL	TX	LPV200	0	1	0	1	0	1
PEQ	PECOS MUNI	TX	LPV200	0	1	0	1	1	0.999872
PVW	HALE COUNTY	TX	LPV	0	1	0	1	1	0.999868
T78	LIBERTY MUNI	TX	LP	0	1	0	1	0	1
T82	GILLESPIE COUNTY	TX	LPV	0	1	0	1	1	0.999966
TME	HOUSTON EXECUTIVE	TX	LPV	0	1	0	1	0	1
T59	WHEELER MUNI	TX	LP	0	1	0	1	1	0.999955
TPL	DRAUGHON-MILLER CENTRAL TEXAS RGNL	TX	LPV200	0	1	0	1	1	0.999977
TRL	TERRELL MUNI	TX	LPV	0	1	0	1	0	1
2F5	LAMESA MUNI	TX	LP	0	1	0	1	1	0.999883
AUS	AUSTIN-BERGSTROM INTL	TX	LPV200	0	1	0	1	1	0.999985
GGG	EAST TEXAS RGNL	TX	LPV	0	1	0	1	0	1
LBB	LUBBOCK PRESTON SMITH INTL	TX	LPV200	0	1	0	1	1	0.999872
LFK	ANGELINA COUNTY	TX	LPV	0	1	0	1	0	1
SAT	SAN ANTONIO INTL	TX	LPV200	0	1	0	1	1	0.999985
SLR	SULPHUR SPRINGS MUNI	TX	LPV200	0	1	0	1	0	1
6R3	CLEVELAND MUNI	TX	LPV	0	1	0	1	0	1
ACT	WACO RGNL	TX	LPV200	0	1	0	1	1	0.999974
DRT	DEL RIO INTL	TX	LPV	0	1	0	1	1	0.999943
E01	ROY HURD MEMORIAL	TX	LP	0	1	0	1	1	0.999879
E30	BRUCE FIELD	TX	LPV	0	1	0	1	1	0.999932
ELA	EAGLE LAKE	TX	LP	0	1	0	1	0	1
GLS	SCHOLES INTL AT GALVESTON	TX	LPV200	0	1	0	1	0	1
HOU	WILLIAM P HOBBY	TX	LPV200	0	1	0	1	0	1
HQZ	MESQUITE METRO	TX	LPV	0	1	0	1	0	1
IAH	GEORGE BUSH INTERCONTINENTAL/ HOUSTON	TX	LPV200	0	1	0	1	0	1

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
JAS	JASPER COUNTY-BELL FIELD	TX	LPV	0	1	0	1	0	1
MDD	MIDLAND AIRPARK	TX	LPV	0	1	0	1	1	0.999887
RYW	LAGO VISTA TX – RUSTY ALLEN	TX	LP	0	1	0	1	1	0.999977
SWW	AVENGER FIELD	TX	LPV	0	1	0	1	1	0.999913
VCT	VICTORIA RGNL	TX	LPV200	0	1	0	1	0	1
3T5	FAYETTE RGNL AIR CENTER	TX	LPV	0	1	0	1	0	1
45R	HAWTHORNE FIELD	TX	LP	0	1	0	1	0	1
5C1	BOERNE STAGE FIELD	TX	LP	0	1	0	1	1	0.999977
AMA	RICK HUSBAND AMARILLO INTL	TX	LPV200	0	1	0	1	1	0.999902
ARM	WHARTON RGNL	TX	LPV	0	1	0	1	0	1
BWD	BROWNWOOD RGNL	TX	LPV	0	1	0	1	1	0.999943
COM	COLEMAN MUNI	TX	LPV	0	1	0	1	1	0.99994
CXO	LONE STAR EXECUTIVE	TX	LPV200	0	1	0	1	0	1
EFD	ELLINGTON FIELD	TX	LPV200	0	1	0	1	0	1
JSO	CHEROKEE COUNTY	TX	LPV200	0	1	0	1	0	1
LUD	DECATUR MUNI	TX	LPV	0	1	0	1	1	0.999962
MAF	MIDLAND INTL	TX	LPV200	0	1	0	1	1	0.999891
PPA	PERRY LEFORS FIELD	TX	LPV	0	1	0	1	1	0.999921
PSX	PALACIOS MUNI	TX	LPV	0	1	0	1	0	1
50R	LOCKHART MUNI	TX	LPV	0	1	0	1	1	0.999989
5T9	MAVERICK COUNTY MEMORIAL INTL	TX	LPV	0	1	0	1	1	0.999966
ADS	ADDISON	TX	LPV	0	1	0	1	0	1
ALI	ALICE INTERNATIONAL	TX	LPV	0	1	0	1	0	1
DKR	HOUSTON COUNTY	TX	LP	0	1	0	1	0	1
DUX	MOORE COUNTY	TX	LPV200	0	1	0	1	1	0.999902
E19	GRUVER MUNI	TX	LP	0	1	0	1	1	0.999921
77F	WINTERS MUNI	TX	LP	0	1	0	1	1	0.999928
8F3	CROSBYTON MUNICIPAL	TX	LP	0	1	0	1	1	0.999883
BYY	BAY CITY MUNI	TX	LPV	0	1	0	1	0	1
CNW	TSTC WACO	TX	LPV200	0	1	0	1	1	0.999974
DFW	DALLAS-FT WORTH INTL	TX	LPV200	0	1	0	1	1	0.999996
ELP	EL PASO INTL	TX	LP	0	1	0	1	1	0.999804
ERV	KERRVILLE MUNI/ LOUIS SCHREINER FLD	TX	LPV	0	1	0	1	1	0.99997
FWS	FORT WORTH SPINKS	TX	LPV200	0	1	0	1	1	0.999974
LXY	MEXIA-LIMESTONE CO	TX	LP	0	1	0	1	1	0.999981
MFE	MC ALLEN MILLER INTL	TX	LPV	0	1	0	1	0	1
RAS	MUSTANG BEACH	TX	LPV	0	1	0	1	0	1
RBD	DALLAS EXECUTIVE	TX	LPV	0	1	0	1	1	0.999996
RKP	ARANSAS COUNTY	TX	LPV	0	1	0	1	0	1
SGR	SUGAR LAND RGNL	TX	LPV200	0	1	0	1	0	1
AFW	FORT WORTH ALLIANCE	TX	LPV200	0	1	0	1	1	0.999974
AXH	HOUSTON-SOUTHWEST	TX	LPV	0	1	0	1	0	1
CFD	COULTER FIELD	TX	LPV	0	1	0	1	1	0.999996
DTO	DENTON MUNI	TX	LPV	0	1	0	1	1	0.999996
EDC	AUSTIN EXECUTIVE	TX	LPV200	0	1	0	1	1	0.999985
ETN	EASTLAND MUNI	TX	LP	0	1	0	1	1	0.99994

Airport Id	Airport Name	State	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	1	0.99997
GRK	ROBERT GRAY AAF	TX	LPV200	0	1	0	1	1	0.999977
HBV	JIM HOGG COUNTY	TX	LPV	0	1	0	1	1	0.999996
HRX	HEREFORD MUNI	TX	LPV200	0	1	0	1	1	0.999872
IWS	WEST HOUSTON	TX	LP	0	1	0	1	0	1
LBX	BRAZORIA COUNTY	TX	LPV	0	1	0	1	0	1
ONY	OLNEY MUNI	TX	LPV	0	1	0	1	1	0.999943
PRX	COX FIELD	TX	LPV	0	1	0	1	0	1
11R	BRENHAM MUNI	TX	LPV	0	1	0	1	0	1
ABI	ABILENE RGNL	TX	LPV200	0	1	0	1	1	0.999928
BAZ	NEW BRAUNFELS MUNI	TX	LPV	0	1	0	1	1	0.999989
BPT	SOUTHEAST TEXAS RGNL	TX	LPV200	0	1	0	1	0	1
BRO	BROWNSVILLE/ SOUTH PADRE ISLAND INTL	TX	LP	0	1	0	1	0	1
DWH	DAVID WAYNE HOOKS MEM	TX	LPV	0	1	0	1	0	1
E11	ANDREWS COUNTY	TX	LPV	0	1	0	1	1	0.999875
E38	ALPINE-CASPARIS MUNICIPAL	TX	LP	0	1	0	1	1	0.999879
F00	JONES FIELD	TX	LPV	0	1	0	1	0	1
FST	FT. STOCKTON- PECOS COUNTY	TX	LPV	0	1	0	1	1	0.999891
GKY	ARLINGTON MUNI	TX	LPV200	0	1	0	1	1	0.999977
GNC	GAINES COUNTY	TX	LPV	0	1	0	1	1	0.999868
GVT	MAJORS	TX	LPV	0	1	0	1	0	1
LNC	LANCASTER	TX	LPV200	0	1	0	1	1	0.999996
LVJ	PEARLAND RGNL	TX	LPV	0	1	0	1	0	1
MNZ	HAMILTON MUNI	TX	LPV	0	1	0	1	1	0.999958
ODO	ODESSA- SCHLEMEYER FIELD	TX	LPV200	0	1	0	1	1	0.999887
PIL	PORT ISABEL- CAMERON COUNTY	TX	LPV	0	1	0	1	0	1
RBO	NUECES COUNTY	TX	LP	0	1	0	1	0	1
SJT	SAN ANGELO RGNL/ MATHIS FLD	TX	LPV	0	1	0	1	1	0.999925
SNK	WINSTON FIELD	TX	LPV200	0	1	0	1	1	0.999902
ENV	WENDOVER	UT	LPV	0	1	0	1	0	1
SLC	SALT LAKE CITY INTL	UT	LP	0	1	0	1	0	1
LGU	LOGAN-CACHE	UT	LPV	0	1	0	1	0	1
PUC	CARBON COUNTY RGNL/ BUCK DAVIS FIELD	UT	LP	0	1	0	1	0	1
U55	PANGUITCH MUNI	UT	LPV200	0	1	0	1	0	1
FOM	FILLMORE MUNI	UT	LPV	0	1	0	1	0	1
VEL	VERNAL	UT	LP	0	1	0	1	0	1
BMC	BRIGHAM CITY	UT	LP	0	1	0	1	0	1
OGD	OGDEN-HINCKLEY	UT	LPV	0	1	0	1	0	1
U14	NEPHI MUNI	UT	LPV	0	1	0	1	0	1
BCE	BRYCE CANYON	UT	LPV	0	1	0	1	0	1
DTA	DELTA MUNI	UT	LP	0	1	0	1	0	1
PVU	PROVO MUNI	UT	LPV200	0	1	0	1	0	1
SGU	ST GEORGE MUNI	UT	LPV	0	1	0	1	0	1

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
BDG	BLANDING MUNI	UT	LPV	0	1	0	1	0	1
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
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
OPF	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

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
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
BLI	BELLINGHAM INTL	WA	LPV200	0	1	0	1	0	1
TIW	TACOMA NARROWS	WA	LPV	0	1	0	1	0	1
OLM	OLYMPIA RGNL	WA	LPV	0	1	0	1	0	1
YKM	YAKIMA AIR TERMINAL/ MCALLISTER FIELD	WA	LPV200	0	1	0	1	0	1
FHR	FRIDAY HARBOR	WA	LPV	0	1	0	1	0	1
PWT	BREMERTON NATIONAL	WA	LPV	0	1	0	1	0	1
AWO	ARLINGTON MUNI	WA	LPV200	0	1	0	1	0	1
BVS	SKAGIT RGNL	WA	LPV	0	1	0	1	0	1
HQM	BOWERMAN	WA	LPV200	0	1	0	1	2	0.99958
OTH	SOUTHWEST OREGON RGNL	WA	LPV	0	1	0	1	7	0.999528
SEA	SEATTLE-TACOMA INTL	WA	LPV200	0	1	0	1	0	1
EPH	EPHRATA MUNI	WA	LPV	0	1	0	1	0	1
GEG	SPOKANE INTL	WA	LPV200	0	1	0	1	0	1
PSC	TRI-CITIES	WA	LPV200	0	1	0	1	0	1
MWH	GRANT CO INTL	WA	LPV200	0	1	0	1	0	1
PAE	SNOHOMISH COUNTY (PAINE FLD)	WA	LPV200	0	1	0	1	0	1
RLD	RICHLAND	WA	LPV	0	1	0	1	0	1
DEW	DEER PARK	WA	LPV	0	1	0	1	0	1
RNT	RENTON MUNI	WA	LPV	0	1	0	1	0	1
TDO	ED CARLSON MEMORIAL - SOUTH LEWIS CO	WA	LPV	0	1	0	1	1	0.999996
ALW	WALLA WALLA RGNL	WA	LPV	0	1	0	1	0	1
CLS	CHEHALIS-CENTRALIA	WA	LPV	0	1	0	1	1	0.999996
CLM	WILLIAM R FAIRCHILD INTL	WA	LPV	0	1	0	1	0	1
57C	EAST TROY MUNI	WI	LPV	0	1	0	1	0	1
C29	MIDDLETON MUNI- MOREY FIELD	WI	LPV	0	1	0	1	0	1
EAU	CHIPPEWA VALLEY RGNL	WI	LPV200	0	1	0	1	0	1
GRB	AUSTIN STRAUBEL INTL	WI	LPV200	0	1	0	1	0	1
MDZ	TAYLOR COUNTY	WI	LPV	0	1	0	1	0	1
PBH	PRICE COUNTY	WI	LPV	0	1	0	1	0	1
RAC	JOHN H. BATTEN	WI	LPV	0	1	0	1	0	1
STE	STEVENS POINT MUNI	WI	LPV200	0	1	0	1	0	1
EGV	EAGLE RIVER UNION	WI	LPV	0	1	0	1	0	1
JVL	SOUTHERN WISCONSIN RGNL	WI	LPV200	0	1	0	1	0	1
RPD	RICE LAKE RGNL -- CARL'S FIELD	WI	LPV	0	1	0	1	0	1
UES	WAUKESHA COUNTY	WI	LPV200	0	1	0	1	0	1
CLI	CLINTONVILLE MUNI	WI	LPV	0	1	0	1	0	1
CWA	CENTRAL WISCONSIN	WI	LPV200	0	1	0	1	0	1
EZS	SHAWANO MUNI	WI	LPV	0	1	0	1	0	1

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
MWC	LAWRENCE J TIMMERMAN	WI	LPV	0	1	0	1	0	1
OVS	BOSCOBEL	WI	LPV	0	1	0	1	0	1
RNH	NEW RICHMOND RGNL	WI	LPV	0	1	0	1	0	1
RRL	MERRILL MUNI	WI	LPV	0	1	0	1	0	1
MKE	GENERAL MITCHELL INTL	WI	LPV200	0	1	0	1	0	1
MSN	DANE COUNTY RGNL-TRUAX FIELD	WI	LPV200	0	1	0	1	0	1
UNU	DODGE COUNTY	WI	LPV	0	1	0	1	0	1
82C	MAUSTON-NEW LISBON UNION	WI	LP	0	1	0	1	0	1
DLL	BARABOO WISCONSIN DELLS	WI	LPV	0	1	0	1	0	1
ETB	WEST BEND MUNI	WI	LPV	0	1	0	1	0	1
FLD	FOND DU LAC COUNTY	WI	LPV	0	1	0	1	0	1
HXF	HARTFORD MUNI	WI	LPV	0	1	0	1	0	1
HYR	SAWYER COUNTY	WI	LPV	0	1	0	1	0	1
LNR	TRI-COUNTY RGNL	WI	LPV	0	1	0	1	0	1
LUM	MENOMONIE MUNICIPAL-SCORE FIELD	WI	LPV	0	1	0	1	0	1
OCQ	J DOUGLAS BAKE MEML	WI	LP	0	1	0	1	0	1
SUE	DOOR COUNTY CHERRYLAND	WI	LPV	0	1	0	1	0	1
SUW	RICHARD I BONG	WI	LP	0	1	0	1	2	0.999981
Y50	WAUTOMA MUNI	WI	LP	0	1	0	1	0	1
ATW	OUTAGAMIE COUNTY RGNL	WI	LPV200	0	1	0	1	0	1
LSE	LA CROSSE MUNI	WI	LPV	0	1	0	1	0	1
MFI	MARSHFIELD MUNI	WI	LPV	0	1	0	1	0	1
MRJ	IOWA COUNTY	WI	LPV200	0	1	0	1	0	1
PCZ	WAUPACA MUNI	WI	LPV	0	1	0	1	0	1
PVB	PLATTEVILLE MUNICIPAL	WI	LPV	0	1	0	1	0	1
RCX	RUSK COUNTY	WI	LPV	0	1	0	1	0	1
ASX	JOHN F. KENNEDY MEMORIAL	WI	LPV	0	1	0	1	1	0.999996
C35	REEDSBURG MUNI	WI	LP	0	1	0	1	0	1
MTW	MANITOWOC COUNTY	WI	LPV200	0	1	0	1	0	1
TKV	TOMAHAWK RGNL	WI	LP	0	1	0	1	0	1
8D1	NEW HOLSTEIN MUNI	WI	LPV	0	1	0	1	0	1
ARV	LAKELAND/NOBLE F. LEE MEMORIAL FIELD	WI	LPV	0	1	0	1	0	1
AUW	WAUSAU DOWNTOWN	WI	LPV200	0	1	0	1	0	1
BCK	BLACK RIVER FALLS AREA	WI	LPV	0	1	0	1	0	1
CMY	SPARTA/FORT MC COY	WI	LPV	0	1	0	1	0	1
ENW	KENOSHA RGNL	WI	LPV200	0	1	0	1	0	1
OSH	WITTMAN RGNL	WI	LPV	0	1	0	1	0	1
RHI	RHINELANDER-ONEIDA COUNTY	WI	LPV200	0	1	0	1	0	1
SBM	SHEBOYGAN COUNTY MEMORIAL	WI	LPV200	0	1	0	1	0	1
VIQ	NEILLSVILLE MUNI	WI	LPV	0	1	0	1	0	1
HLG	WHEELING OHIO CO	WV	LPV200	0	1	0	1	0	1
SXL	SUMMERSVILLE	WV	LP	0	1	0	1	0	1

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
PKB	MID-OHIO VALLEY RGNL	WV	LPV	0	1	0	1	0	1
CKB	NORTH CENTRAL WEST VIRGINIA	WV	LPV	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
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
USW	BOGGS FIELD	WV	LP	0	1	0	1	0	1
I18	JACKSON COUNTY	WV	LPV200	0	1	0	1	0	1
BLF	MERCER COUNTY	WV	LPV	0	1	0	1	0	1
HTS	TRI-STATE/MILTON J. FERGUSON FIELD	WV	LPV200	0	1	0	1	0	1
CRW	YEAGER	WV	LPV200	0	1	0	1	0	1
DGW	CONVERSE COUNTY	WY	LPV200	0	1	0	1	0	1
RKS	ROCK SPRINGS-SWEETWATER COUNTY	WY	LPV200	0	1	0	1	0	1
LAR	LARAMIE RGNL	WY	LPV	0	1	0	1	0	1
JAC	JACKSON HOLE	WY	LPV	0	1	0	1	0	1
EVW	EVANSTON-UINTA COUNTY BURNS FIELD	WY	LPV	0	1	0	1	0	1
WRL	WORLAND MUNI	WY	LPV	0	1	0	1	0	1
GCC	GILLETTE-CAMPBELL COUNTY	WY	LPV	0	1	0	1	0	1
PNA	RALPH WENZ FIELD	WY	LPV	0	1	0	1	0	1
7V6	CAMP GUERNSEY	WY	LP	0	1	0	1	0	1
SHR	SHERIDAN COUNTY	WY	LPV	0	1	0	1	0	1
SAA	SHIVELY FIELD	WY	LPV	0	1	0	1	0	1
CYS	CHEYENNE RGNL/JERRY OLSON FIELD	WY	LPV	0	1	0	1	3	0.999774
CPR	NATRONA COUNTY INTL	WY	LPV	0	1	0	1	0	1
COD	YELLOWSTONE RGNL	WY	LPV	0	1	0	1	0	1
RIW	RIVERTON RGNL	WY	LPV200	0	1	0	1	0	1
ECS	MONDELL FIELD	WY	LPV	0	1	0	1	0	1
RWL	RAWLINS MUNI/HARVEY FIELD	WY	LPV	0	1	0	1	0	1
CYXY	WHITEHORSE / ERIK NIELSEN INTL	YT	LPV	0	1	0	1	2	0.999808
CYQH	WATSON LAKE	YT	LPV	0	1	0	1	2	0.999823

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

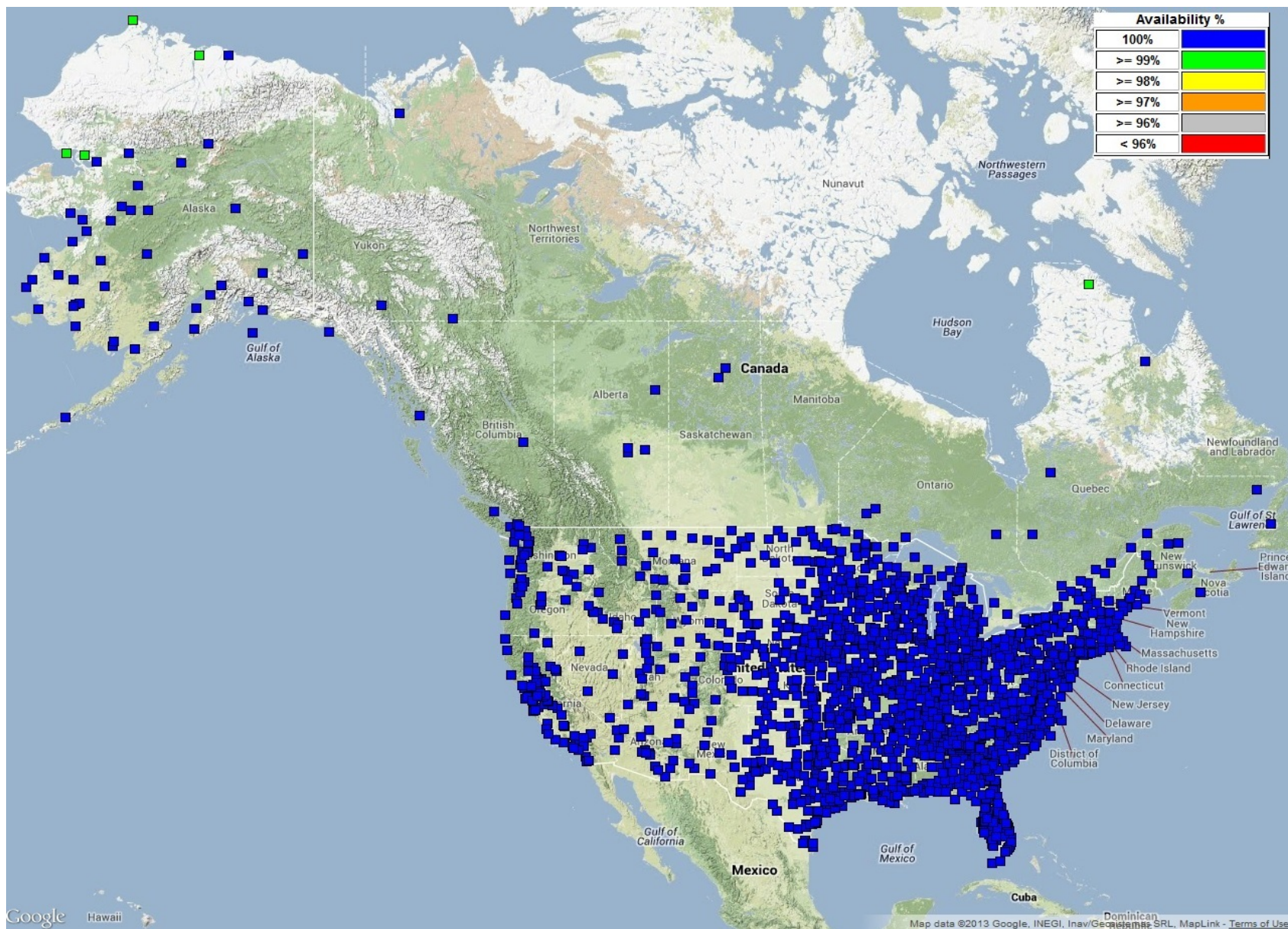


Figure 8-2 WAAS LP Outages at Airports in the US and Canada with GPS RNAV Instrument Approach Procedures

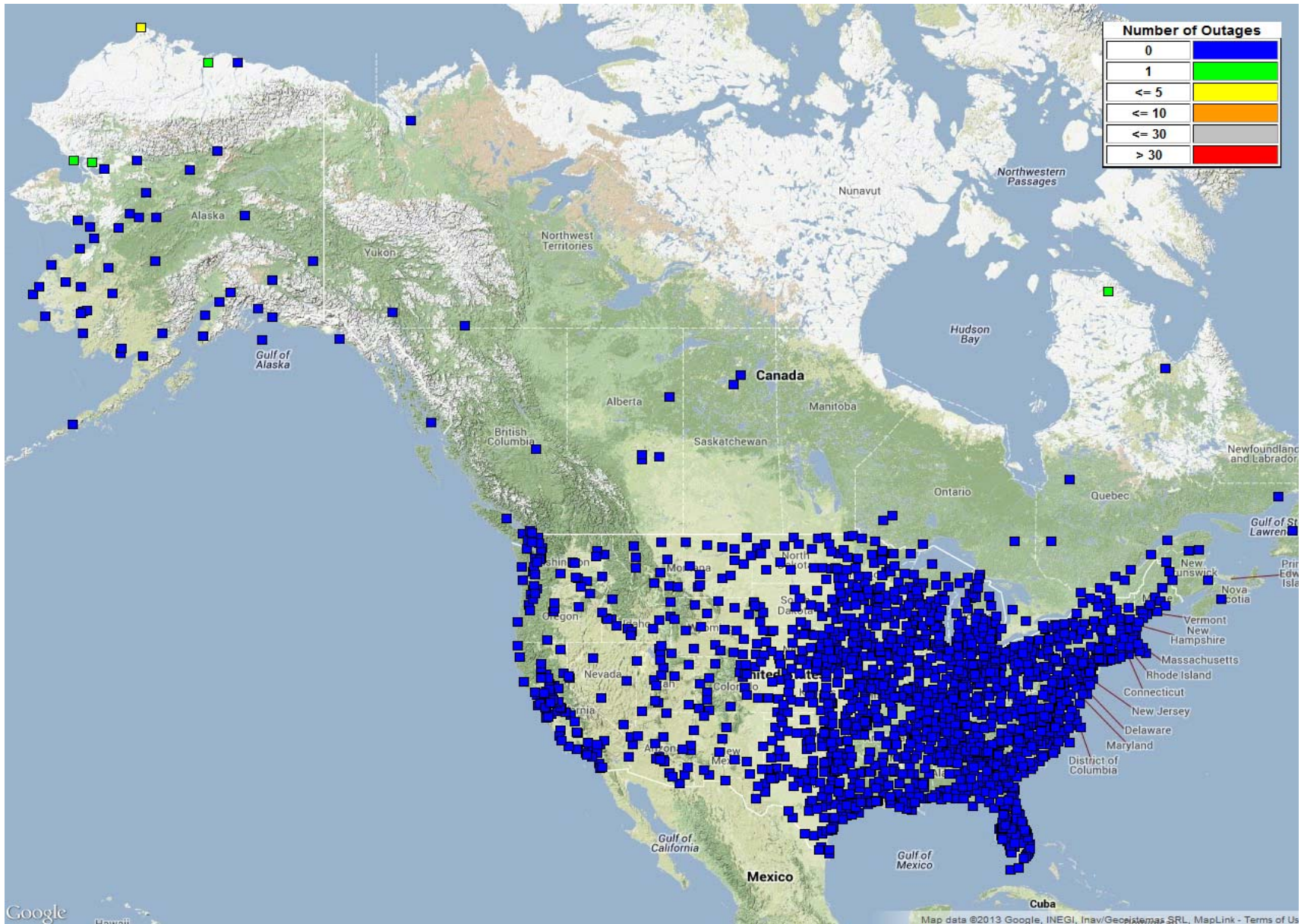


Figure 8-3 WAAS LPV Availability Airports in the US and Canada with GPS RNAV Instrument Approach Procedures

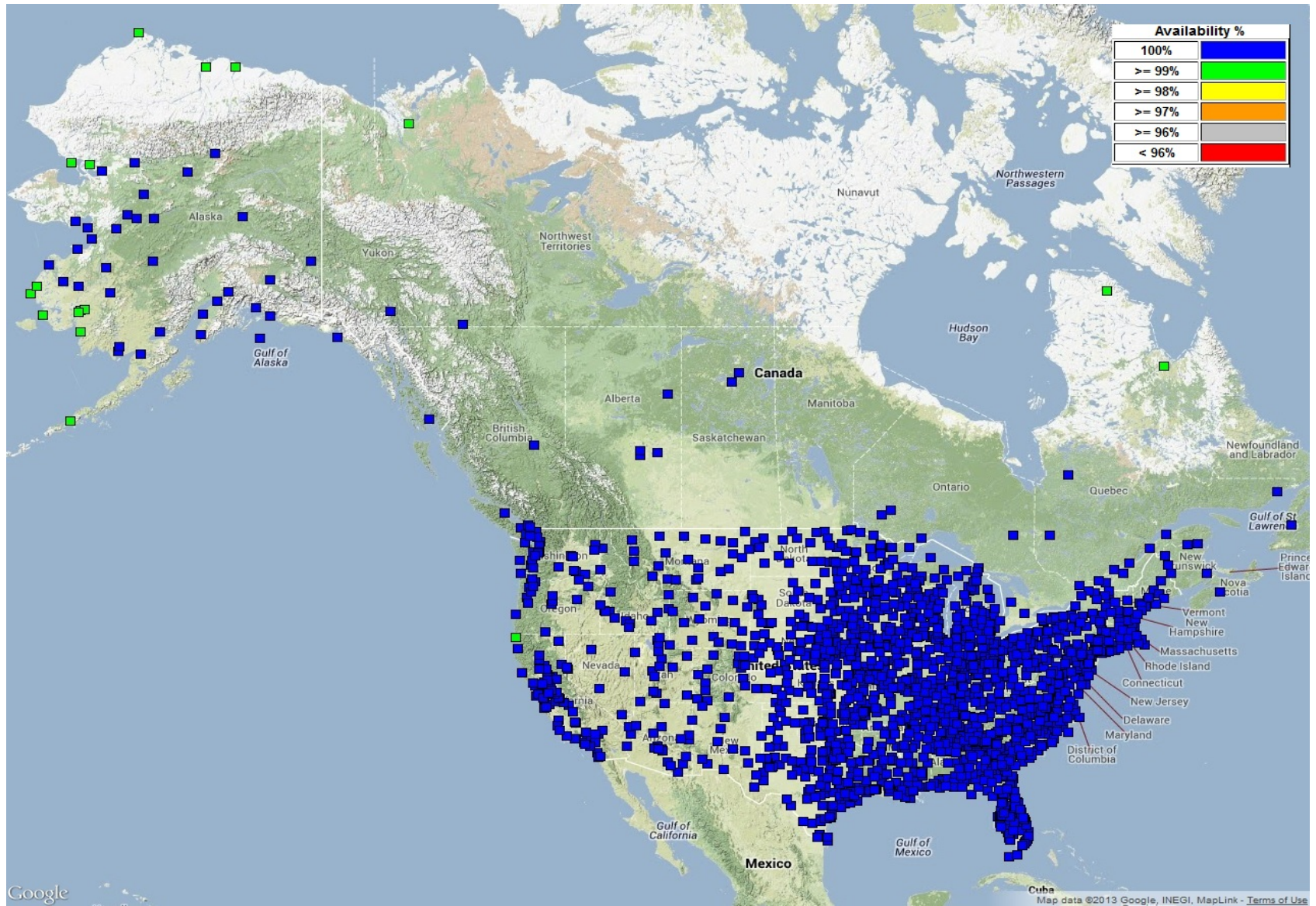


Figure 8-4 WAAS LPV Outages at Airports in the US and Canada with GPS RNAV Instrument Approach Procedures

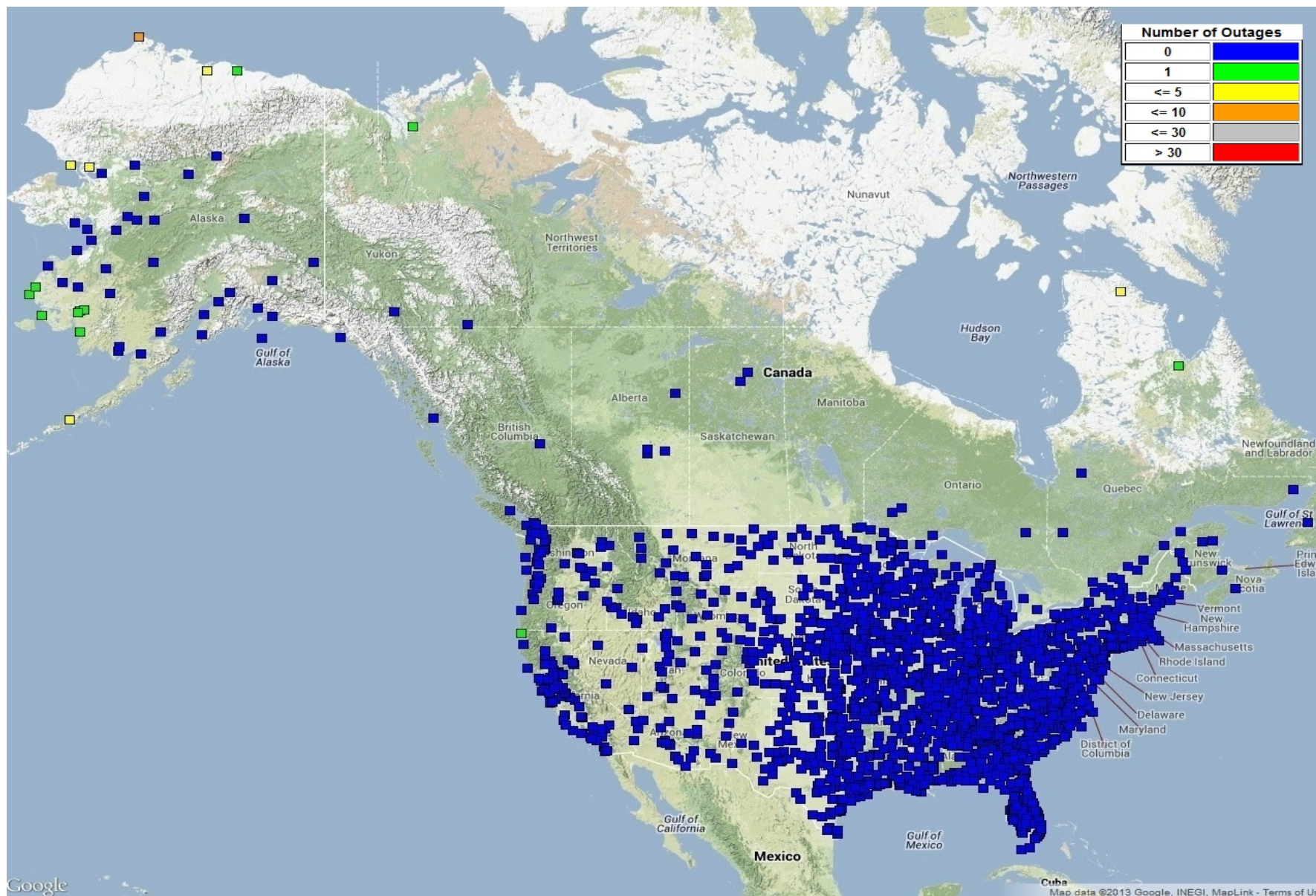


Figure 8-5 WAAS LPV 200 Availability at Airports in the US and Canada with GPS RNAV Instrument Approach Procedures

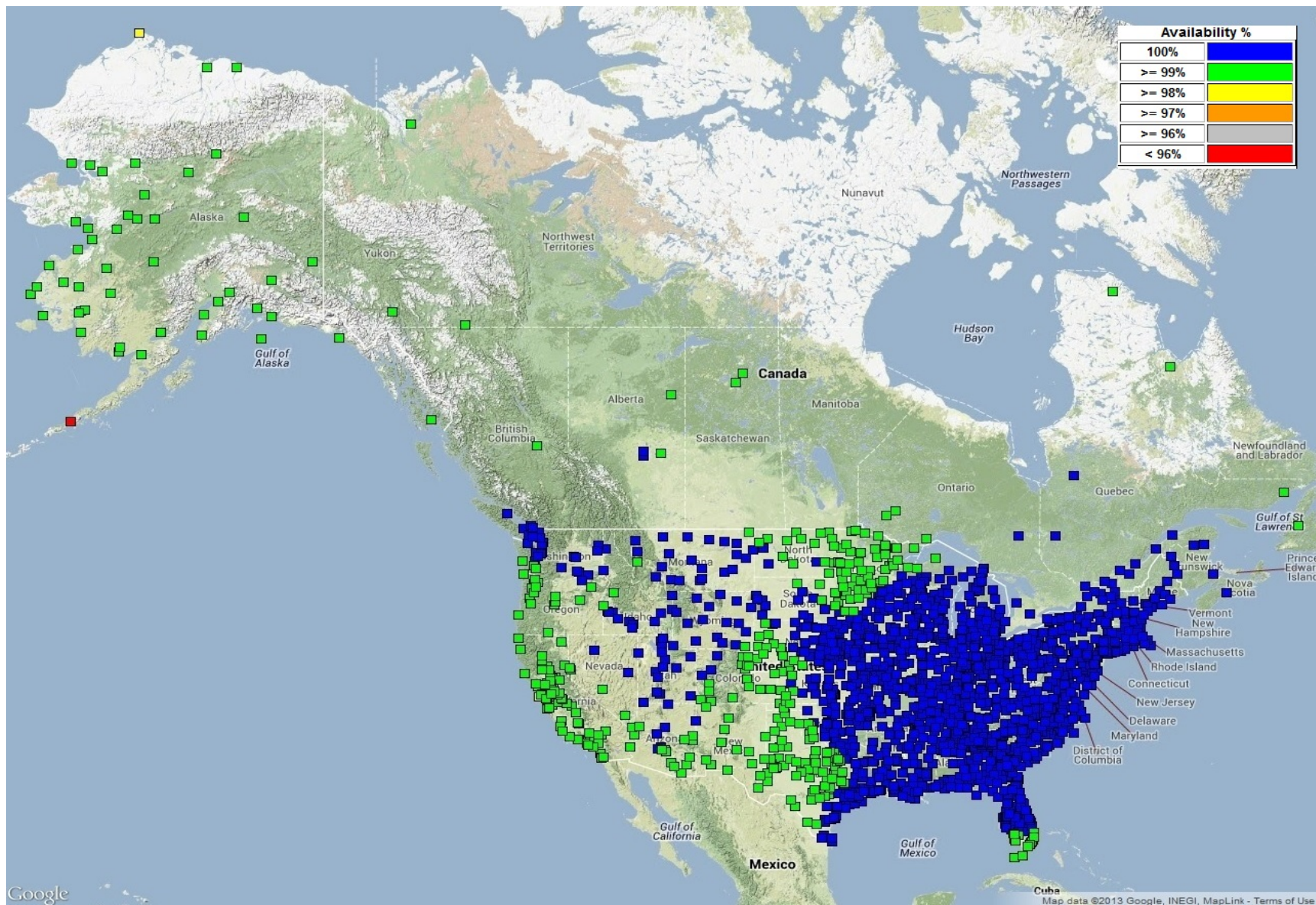
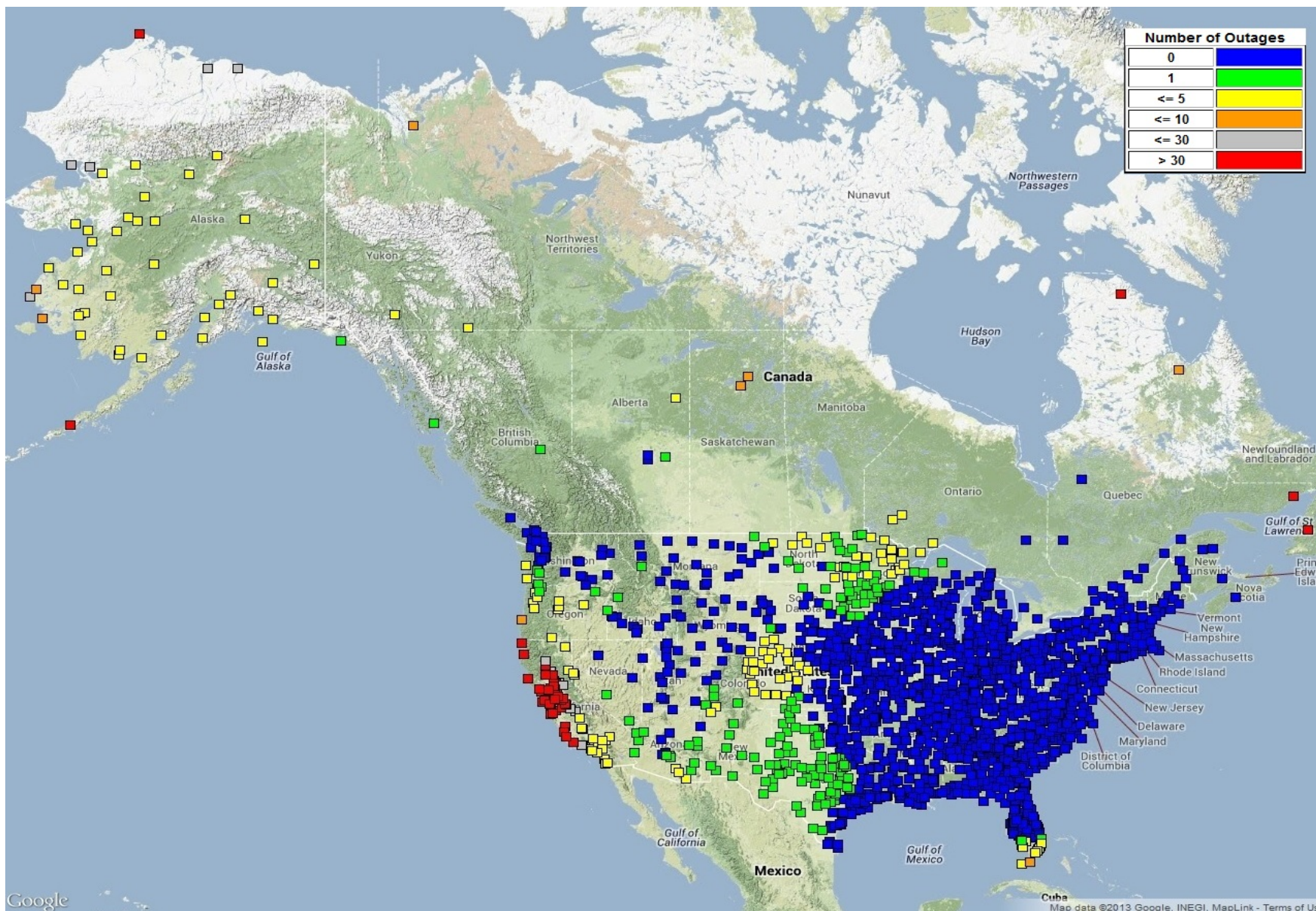


Figure 8-6 WAAS LPV 200 Outages at Airports in the US and Canada with GPS RNAV Instrument Approach Procedures



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	Oct 12	Nov 12	Dec 12	Jan 13	Feb 13	Mar 13	Apr 13	May 13	Jun 13	Jul 13	Aug 13	Sep 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	●	●	●	●	●	●	●	●	●	●	●	●

- 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

WAAS Site	WRE	Oct 12	Nov 12	Dec 12	Jan 13	Feb 13	Mar 13	Apr 13	May 13	Jun 13	Jul 13	Aug 13	Sep 13
Juneau	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
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 9/30/13 to 23:59:30 on 10/1/13.

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 10/1/13 data set were all ≤ 10 mm. The OPUS and CSRS surveys for the 10/1/13 data set agreed to an average of 1.5 cm, with a standard deviation of 6 mm. The maximum of difference was 3.5 cm. for Houston threads A and C (ZHU1 and ZHU3).

The OPUS positions were compared to the positions in WAAS software Release 4.0 (Build W7.006) which was recently fielded. The OPUS surveys agree with the 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 allowance is required because of the rapid subsidence in Mexico City (approximately 28 to 30 cm / year).

Table 11-1 lists the WAAS antenna L1 phase center positions as of 10/1/13.

Figures 11-1 to 11-3 show the RSS of the ECEF differences between the 10/1/13 OPUS survey antenna phase center locations and the locations in the WAAS Releases 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 shows 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	-2965385.051	-972576.615	5543892.897	60.7879154444444	-161.8417251222220	52.183
BET2	-2965385.822	-972580.339	5543891.842	60.7878959944444	-161.8416645694440	52.187
BET3	-2965388.388	-972577.470	5543890.972	60.7878800888889	-161.8417293000000	52.181
BIL1	-1416445.878	-4223577.008	4550862.161	45.8037069638889	-108.5397230805560	1112.243
BIL2	-1416449.943	-4223574.874	4550862.877	45.8037161638889	-108.5397813777780	1112.247
BIL3	-1416441.571	-4223574.267	4550866.006	45.8037566666667	-108.5396817694440	1112.234
BRW1	-1886758.923	-809058.662	6018494.465	71.2827648944444	-156.7899247972220	15.561
BRW2	-1886756.336	-809055.917	6018495.644	71.2827976500000	-156.7899667527780	15.567
BRW3	-1886755.244	-809059.702	6018495.468	71.2827930000000	-156.7898576555560	15.557
CDB1	-3484099.055	-1084748.789	5213678.628	55.1923741027778	-162.7064046000000	49.698
CDB2	-3484105.692	-1084741.588	5213675.681	55.1923280416667	-162.7065435333330	49.674
CDB3	-3484111.965	-1084734.820	5213672.931	55.1922846055556	-162.7066742777780	49.687
FAI1	-2304741.820	-1448715.281	5748843.688	64.8096299500000	-147.8473409388890	149.942
FAI2	-2304741.343	-1448706.471	5748846.077	64.8096804000000	-147.8474925833330	149.936
FAI3	-2304732.815	-1448707.407	5748849.224	64.8097469722222	-147.8473803833330	149.923
HNL1	-5508637.109	-2234493.235	2303722.245	21.3129907805556	-157.9208282138890	24.670
HNL2	-5508656.266	-2234483.554	2303686.992	21.3126478333333	-157.9209840833330	25.005
HNL3	-5508647.685	-2234497.495	2303694.091	21.3127164638889	-157.9208284833330	25.059
JNU1	-2354254.901	-2388549.650	5407043.109	58.3625745444444	-134.5857071250000	16.099
JNU2	-2354252.811	-2388565.760	5407036.946	58.3624690333333	-134.5854884944440	16.101
JNU3	-2354239.592	-2388568.613	5407041.404	58.3625454250000	-134.5852934416670	16.095
MMD1	35070.422	-5959686.656	2264365.767	20.9319093000000	-89.6628406666667	29.109
MMD2	35065.490	-5959687.021	2264364.981	20.9319015861111	-89.6628881027778	29.142
MMD3	35065.161	-5959685.247	2264369.641	20.9319466277778	-89.6628911638889	29.148
MMX1	-948701.045	-5943935.246	2109212.594	19.4316536722222	-99.0683896861111	2235.215
MMX2	-948696.612	-5943935.065	2109215.013	19.4316769083333	-99.0683482861111	2235.192
MMX3	-948705.481	-5943935.442	2109210.172	19.4316303638889	-99.0684310888889	2235.251
MPR1	-1570142.215	-5759530.601	2238184.759	20.6790033638889	-105.2492031666670	10.975
MPR2	-1570139.404	-5759530.128	2238188.807	20.6790413861111	-105.2491783305560	11.286
MPR3	-1570143.512	-5759528.001	2238190.571	20.6790593916667	-105.2492217388890	11.000
MSD1	-1979519.784	-5523222.993	2493106.821	23.1604472805556	-109.7176488361110	104.265
MSD2	-1979521.352	-5523225.328	2493100.418	23.1603844388889	-109.7176555833330	104.254
MSD3	-1979525.800	-5523222.058	2493104.091	23.1604205333333	-109.7177072222220	104.248
MTP1	-254854.355	-6162909.168	1617805.071	14.7913660388889	-92.3679991972222	54.945
MTP2	-254850.740	-6162910.204	1617801.637	14.7913339888889	-92.3679652472222	54.925
MTP3	-254855.510	-6162910.303	1617800.110	14.7913199611111	-92.3680094805555	54.821
OTZ1	-2396056.023	-750356.162	5843502.513	66.8873321361111	-162.6113729166670	10.884
OTZ2	-2396052.854	-750354.333	5843504.039	66.8873669555556	-162.6113911333330	10.886
OTZ3	-2396052.833	-750358.273	5843503.549	66.8873556861111	-162.6113051888890	10.890
YFB1	1035381.436	-2634289.651	5696539.543	63.7314904888889	-68.5431837166667	10.032
YFB2	1035372.227	-2634296.055	5696538.182	63.7314642388889	-68.5434046305556	9.959
YFB3	1035366.151	-2634306.811	5696534.405	63.7313865944444	-68.5435987444444	10.019

WRE	X(m)	Y(m)	Z(m)	Latitude	Longitude	H(m)
YQX1	2430424.627	-3419640.400	4788223.841	48.9664900444444	-54.5976323000000	146.887
YQX2	2430432.579	-3419639.050	4788220.778	48.9664481805556	-54.5975331000000	146.878
YQX3	2430440.489	-3419637.679	4788217.776	48.9664069555556	-54.5974342000000	146.888
YWG1	-520164.372	-4083475.934	4855843.060	49.9005745027778	-97.2593975777778	222.112
YWG2	-520150.499	-4083468.871	4855850.450	49.9006775333333	-97.2592184527778	222.122
YWG3	-520152.371	-4083477.994	4855842.628	49.9005683750000	-97.2592282555556	222.121
YYR1	1885341.419	-3321428.362	5091171.663	53.3086471500000	-60.4194683805556	37.852
YYR2	1885344.377	-3321419.880	5091176.075	53.3087134638889	-60.4193669722222	37.855
YYR3	1885340.094	-3321413.061	5091182.078	53.3088036555556	-60.4193723527778	37.862
ZAB1	-1488636.840	-5003946.529	3654557.702	35.1735754055556	-106.5673497805560	1620.113
ZAB2	-1488631.509	-5003948.221	3654557.683	35.1735747361111	-106.5672884083330	1620.185
ZAB3	-1488632.282	-5003950.803	3654553.826	35.1735323361111	-106.5672884583330	1620.166
ZAN1	-2659536.647	-1549114.774	5567750.758	61.2292017805556	-149.7802508444440	80.697
ZAN2	-2659548.404	-1549110.821	5567746.267	61.2291181222222	-149.7804245888890	80.692
ZAN3	-2659541.352	-1549106.695	5567750.738	61.2292017000000	-149.7804248861110	80.679
ZAU1	138704.109	-4761244.141	4227763.930	41.7826580472222	-88.3313367694444	195.886
ZAU2	138704.373	-4761248.762	4227758.774	41.7825956777778	-88.3313352138889	195.901
ZAU3	138711.079	-4761248.497	4227758.853	41.7825966250000	-88.3312544916667	195.902
ZBW1	1490299.219	-4448983.170	4306010.497	42.7357205138889	-71.4804258722222	39.114
ZBW2	1490304.328	-4448981.158	4306010.839	42.7357245166667	-71.4803589111111	39.137
ZBW3	1490306.035	-4448984.781	4306006.529	42.7356717194444	-71.4803531972222	39.134
ZDC1	1069125.759	-4839598.988	4001126.511	39.1015959250000	-77.5427465777778	80.066
ZDC2	1069128.163	-4839603.626	4001120.307	39.1015238833333	-77.5427310083333	80.070
ZDC3	1069124.054	-4839602.719	4001122.505	39.1015493138889	-77.5427751277778	80.081
ZDV1	-1273628.606	-4711375.568	4094890.107	40.1873032888889	-105.1272243083330	1541.347
ZDV2	-1273622.910	-4711377.082	4094890.124	40.1873035500000	-105.1271551166670	1541.339
ZDV3	-1273624.917	-4711380.281	4094885.839	40.1872530916667	-105.1271680611110	1541.333
ZFW1	-659983.195	-5324060.772	3438276.473	32.8306497638889	-97.0664717555556	155.615
ZFW2	-659988.468	-5324063.337	3438271.479	32.8305963111111	-97.0665242722222	155.592
ZFW3	-659983.487	-5324063.852	3438271.682	32.8305983472222	-97.0664708027778	155.616
ZHU1	-513864.473	-5506451.736	3166720.488	29.9618963333333	-95.3314262611111	10.884
ZHU2	-513867.122	-5506455.124	3166714.318	29.9618318055556	-95.3314503250000	10.938
ZHU3	-513873.403	-5506457.774	3166708.725	29.9617735750000	-95.3315125638889	10.936
ZJX1	772646.450	-5434462.209	3237231.753	30.6988596388889	-81.9081850750000	2.159
ZJX2	772649.775	-5434463.753	3237228.353	30.6988240750000	-81.9081529833333	2.140
ZJX3	772645.710	-5434466.183	3237225.241	30.6987914944444	-81.9081985611111	2.128
ZKC1	-415247.517	-4954556.393	3982161.122	38.8801594305556	-94.7908338305556	305.905
ZKC2	-415231.127	-4954557.716	3982161.177	38.8801601000000	-94.7906443416667	305.900
ZKC3	-415237.251	-4954561.064	3982155.981	38.8801019111111	-94.7907114444444	305.634
ZLA1	-2474409.933	-4637294.629	3602183.522	34.6035183138889	-118.0838954500000	763.489
ZLA2	-2474404.669	-4637297.445	3602183.545	34.6035184527778	-118.0838303750000	763.508
ZLA3	-2474411.273	-4637297.116	3602179.560	34.6034744611111	-118.0838955750000	763.564
ZLC1	-1808273.221	-4486410.810	4145303.015	40.7860433166667	-111.9521776861110	1287.423
ZLC2	-1808274.619	-4486414.419	4145298.522	40.7859899305556	-111.9521770638890	1287.418

WRE	X(m)	Y(m)	Z(m)	Latitude	Longitude	H(m)
ZLC3	-1808270.414	-4486416.135	4145298.517	40.7859897805556	-111.9521232694440	1287.429
ZMA1	966042.301	-5662999.820	2761581.505	25.8246122555556	-80.3191897833333	-7.588
ZMA2	966029.326	-5662999.121	2761585.991	25.8246599916667	-80.3193161750000	-8.218
ZMA3	966037.403	-5662997.958	2761586.347	25.8246620527778	-80.3192348138889	-7.872
ZME1	4070.892	-5226189.295	3644028.429	35.0673941666667	-89.9553699888889	68.605
ZME2	4070.923	-5226186.745	3644032.535	35.0674376638889	-89.9553696277778	68.877
ZME3	4064.725	-5226186.619	3644032.698	35.0674395444444	-89.9554375777778	68.863
ZMP1	-249978.388	-4539297.504	4458955.057	44.6374632694444	-93.1520855638889	262.661
ZMP2	-249972.583	-4539297.844	4458955.060	44.6374631611111	-93.1520122777778	262.678
ZMP3	-249973.678	-4539302.119	4458950.580	44.6374071055556	-93.1520230944444	262.610
ZNY1	1406144.631	-4627343.987	4144322.055	40.7843285583333	-73.0971657444444	6.450
ZNY2	1406146.431	-4627347.020	4144317.274	40.7842758111111	-73.0971557861111	5.920
ZNY3	1406140.869	-4627348.672	4144317.311	40.7842762777778	-73.0972245250000	5.917
ZOA1	-2684436.869	-4293337.399	3865351.863	37.5430539166667	-122.0159478000000	-3.507
ZOA2	-2684433.854	-4293341.475	3865349.431	37.5430263416667	-122.0158944222220	-3.516
ZOA3	-2684438.236	-4293342.359	3865345.581	37.5429819694444	-122.0159311611110	-3.426
ZOB1	650770.182	-4754715.672	4187420.754	41.2971544777778	-82.2064447527778	223.684
ZOB2	650777.860	-4754714.848	4187422.774	41.2971668055556	-82.2063525972222	225.186
ZOB3	650776.192	-4754719.666	4187414.979	41.2970870555556	-82.2063801277778	223.458
ZSE1	-2308930.267	-3668169.675	4663526.474	47.2869932583333	-122.1883727972220	82.095
ZSE2	-2308934.659	-3668175.218	4663520.071	47.2869077277778	-122.1883829000000	82.159
ZSE3	-2308935.720	-3668179.495	4663516.128	47.2868560138889	-122.1883646500000	82.101
ZSU1	2462589.443	-5529372.123	2003724.471	18.4313357305556	-65.9934767361111	-28.095
ZSU2	2462587.517	-5529377.500	2003712.186	18.4312186388889	-65.9935140972222	-28.063
ZSU3	2462594.139	-5529375.239	2003710.108	18.4311990333333	-65.9934481305556	-28.123
ZTL1	529840.405	-5305248.807	3489342.851	33.3796886138889	-84.2967259861111	261.133
ZTL2	529846.781	-5305247.962	3489343.137	33.3796917944444	-84.2966569027778	261.117
ZTL3	529847.468	-5305251.406	3489337.904	33.3796350583333	-84.2966532361111	261.157

Figure 10-1 WAAS Release 4 Antenna Positions Deltas from 10/1/13 OPUS Survey

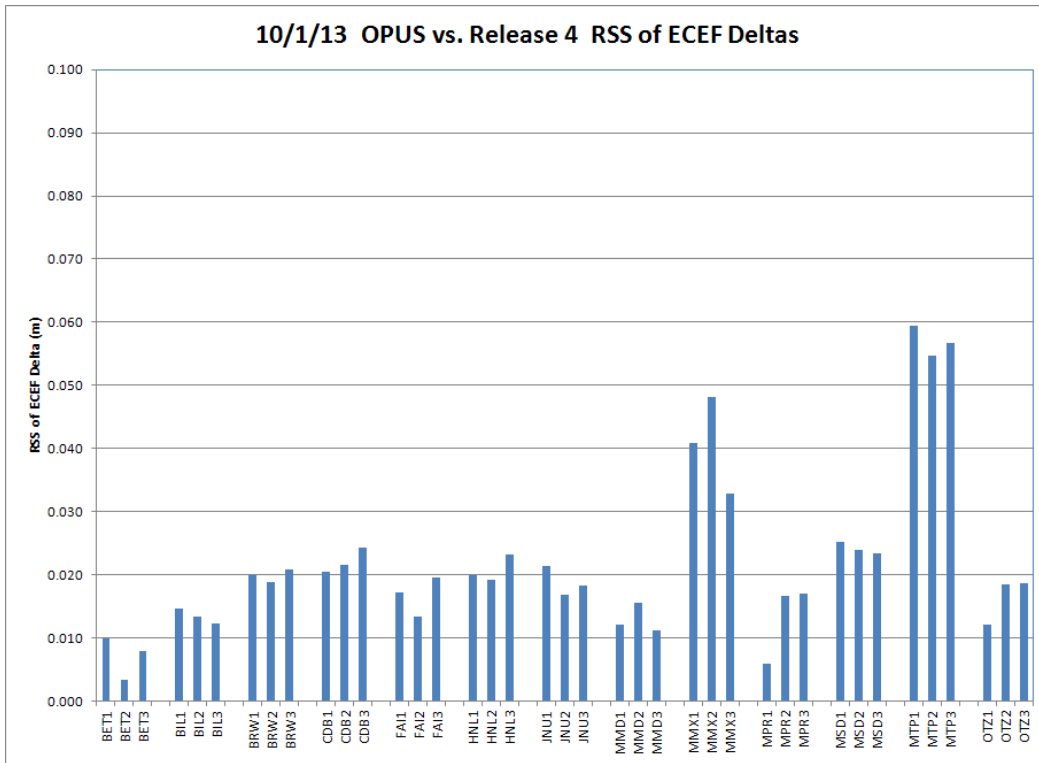


Figure 10-2 WAAS Releases 3B1 & 4 Antenna Positions Deltas from 10/1/13 OPUS Survey

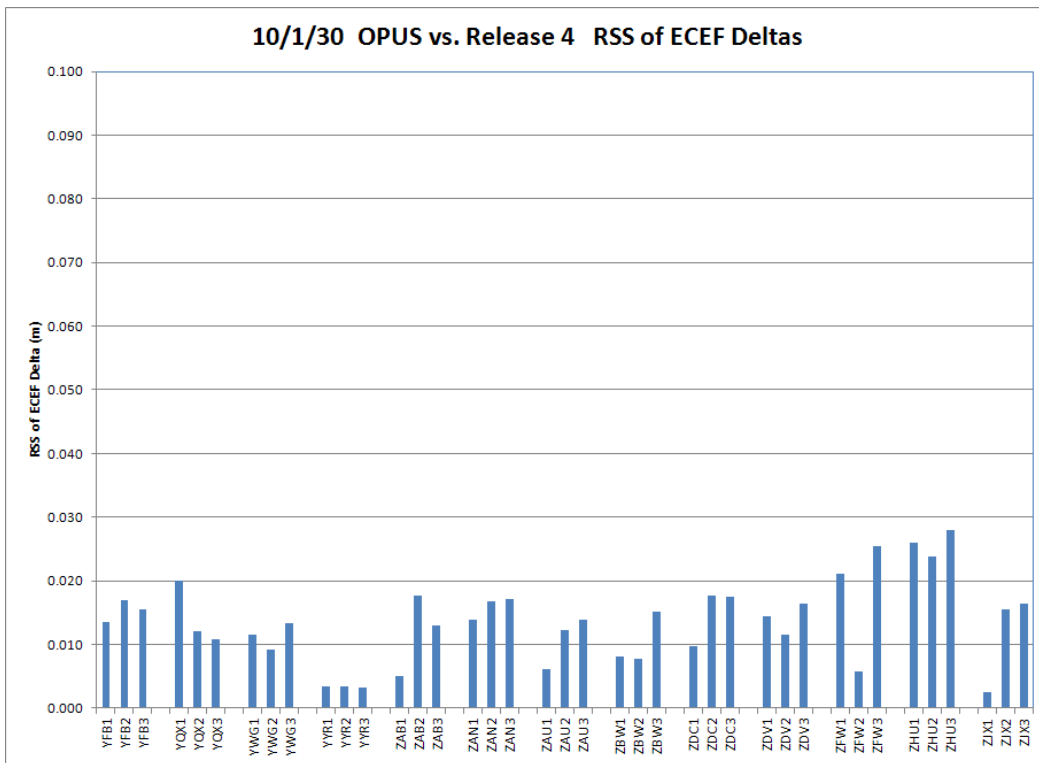


Figure 10-3 WAAS Release 4 Antenna Positions Deltas from 10/1/13 OPUS Survey

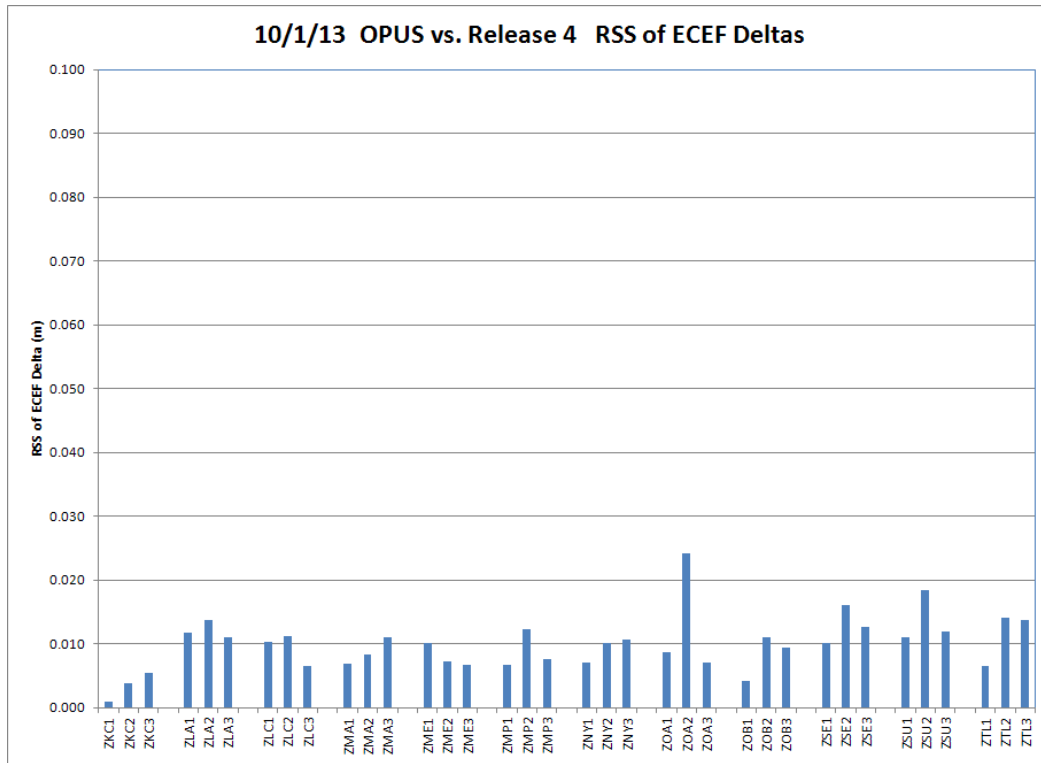


Figure 10-4 10/1/13 OPUS Survey Overall RMS Qualities

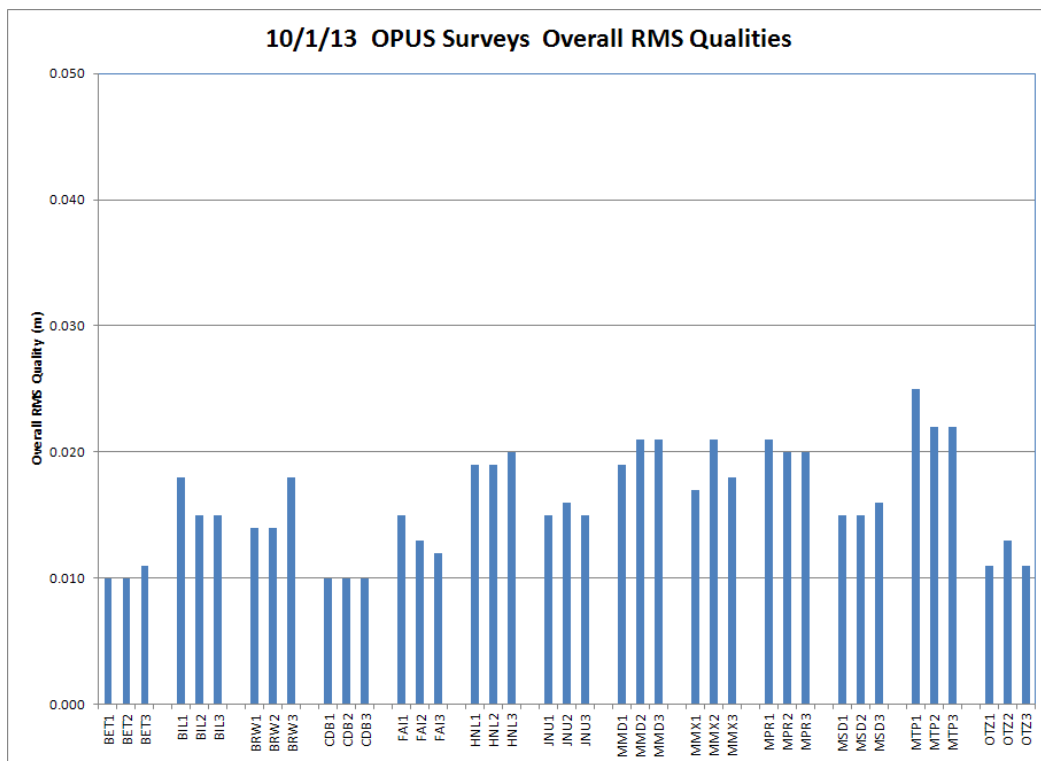


Figure 10-5 10/1/13 OPUS Survey Overall RMS Qualities

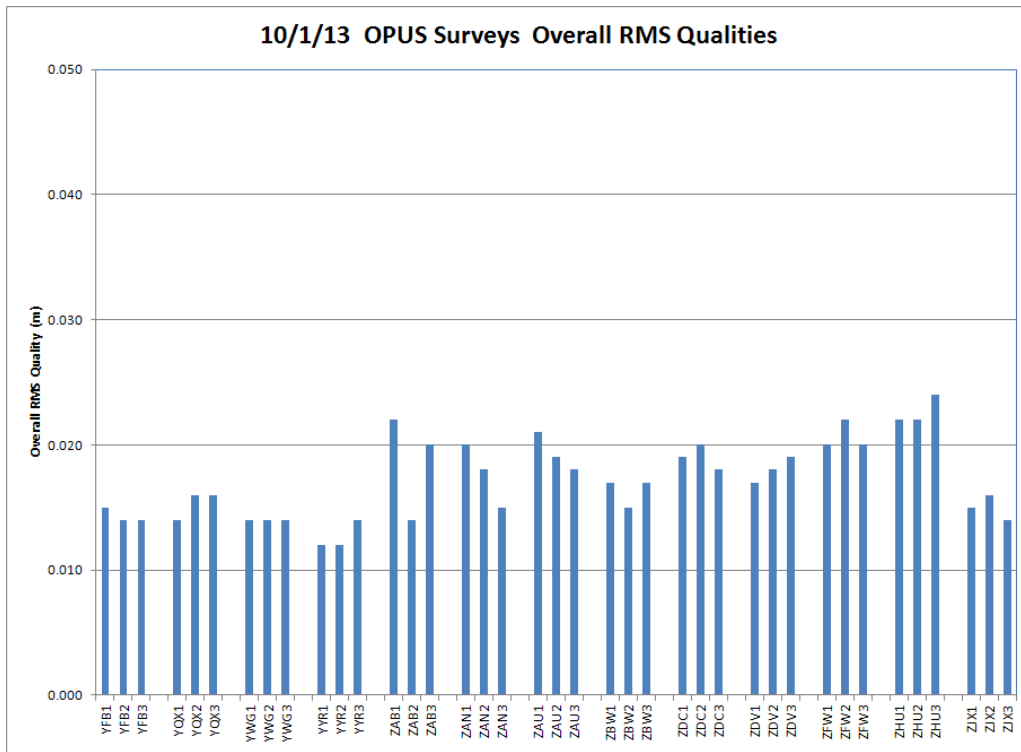


Figure 10-6 10/1/13 OPUS Survey Overall RMS Qualities

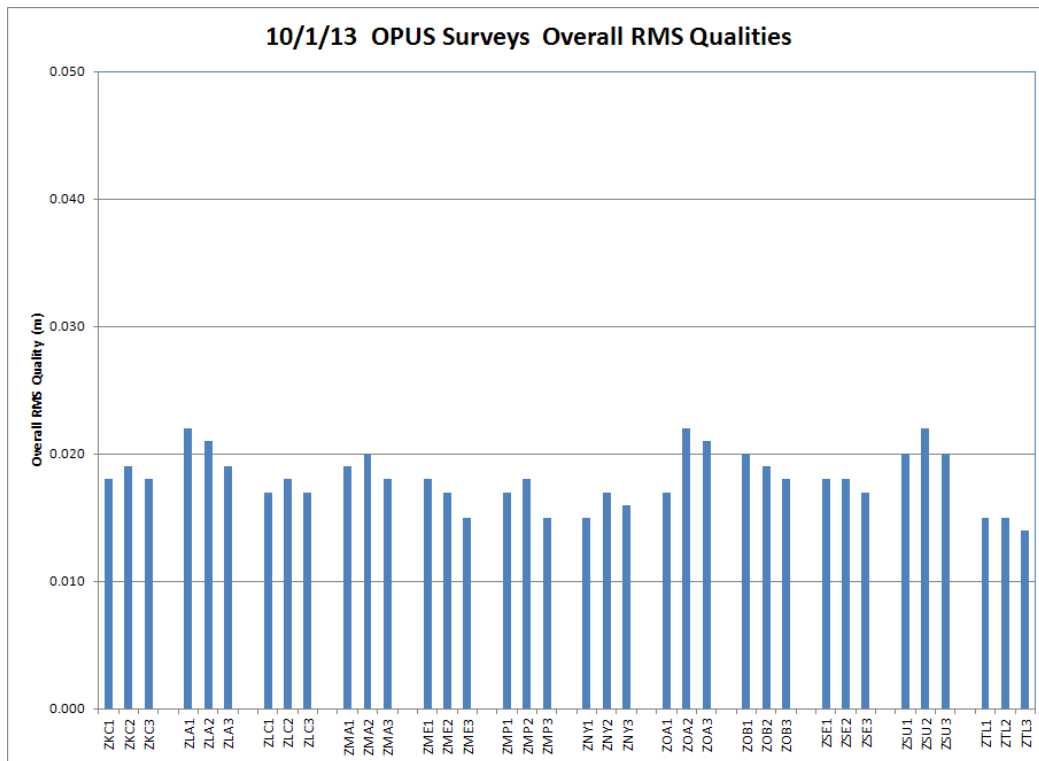


Figure 10-7 10/1/13 OPUS vs. CSRS RSS ECEF Deltas

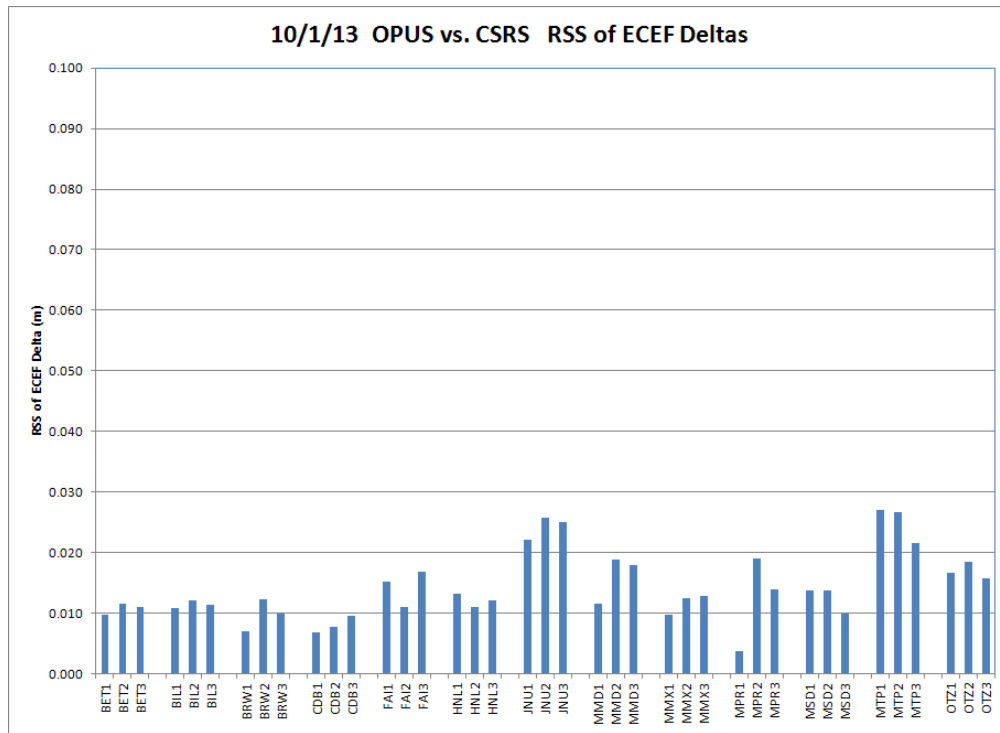


Figure 10-8 10/1/13 OPUS vs. CSRS RSS ECEF Deltas

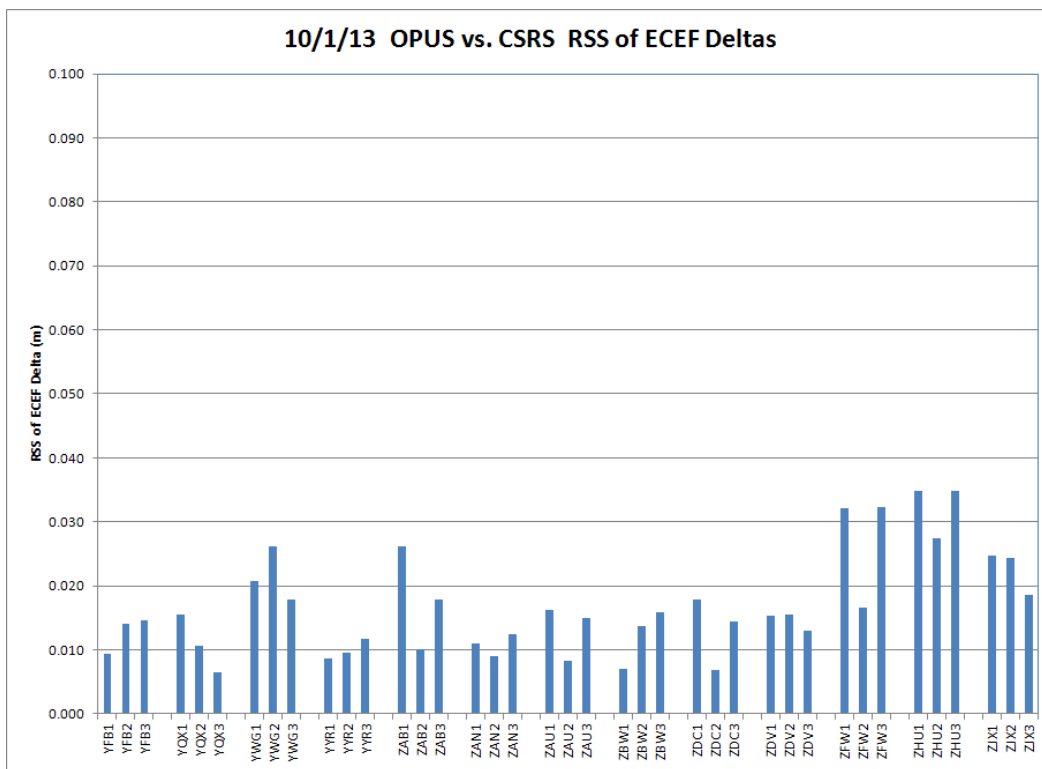


Figure 10-9 10/1/13 OPUS vs. CSRS RSS ECEF Deltas

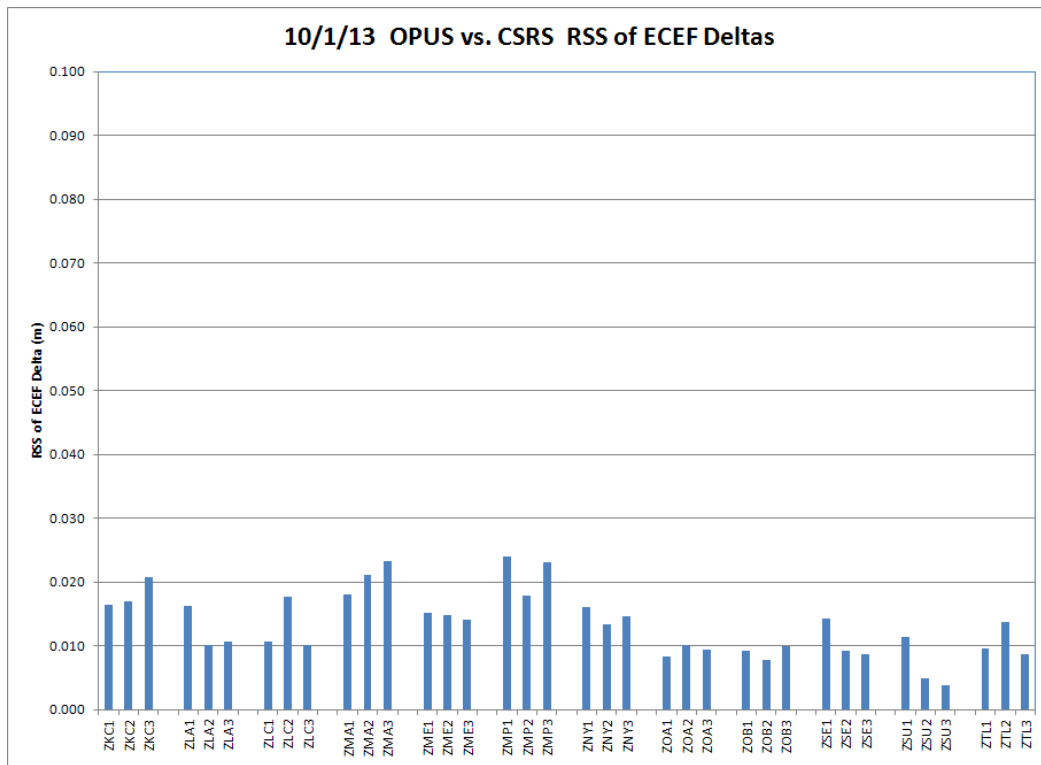


Figure 10-10 10/1/13 CSRS Survey Qualities

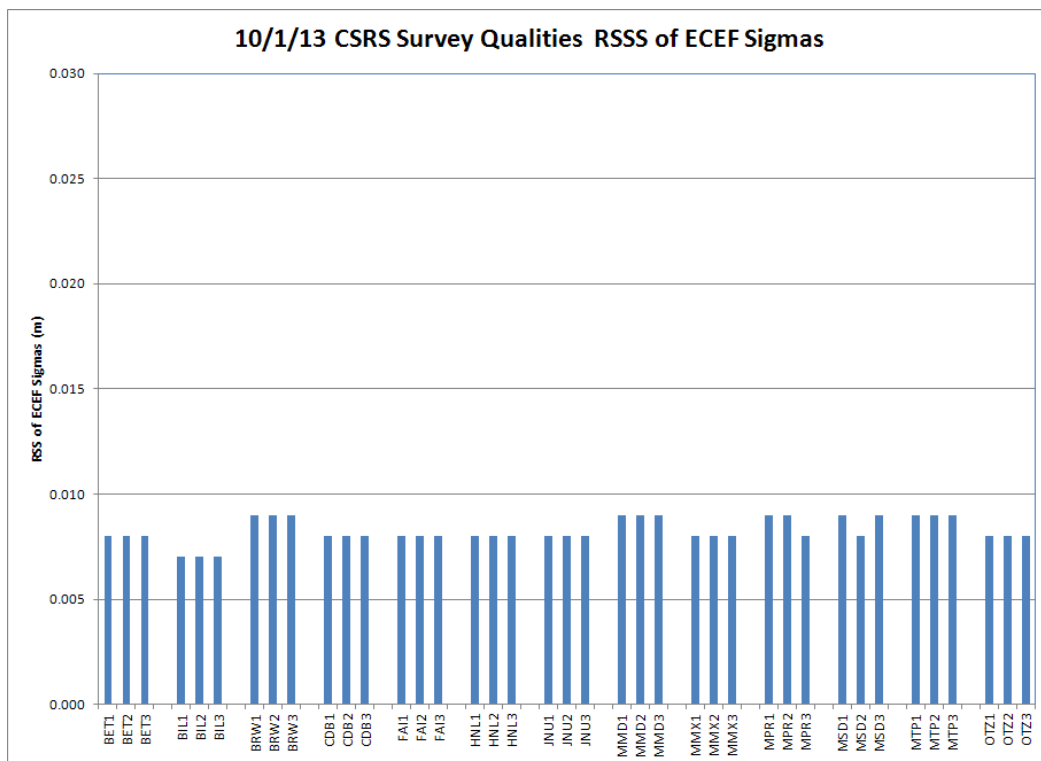


Figure 10-11 10/1/13 CSRS Survey Qualities

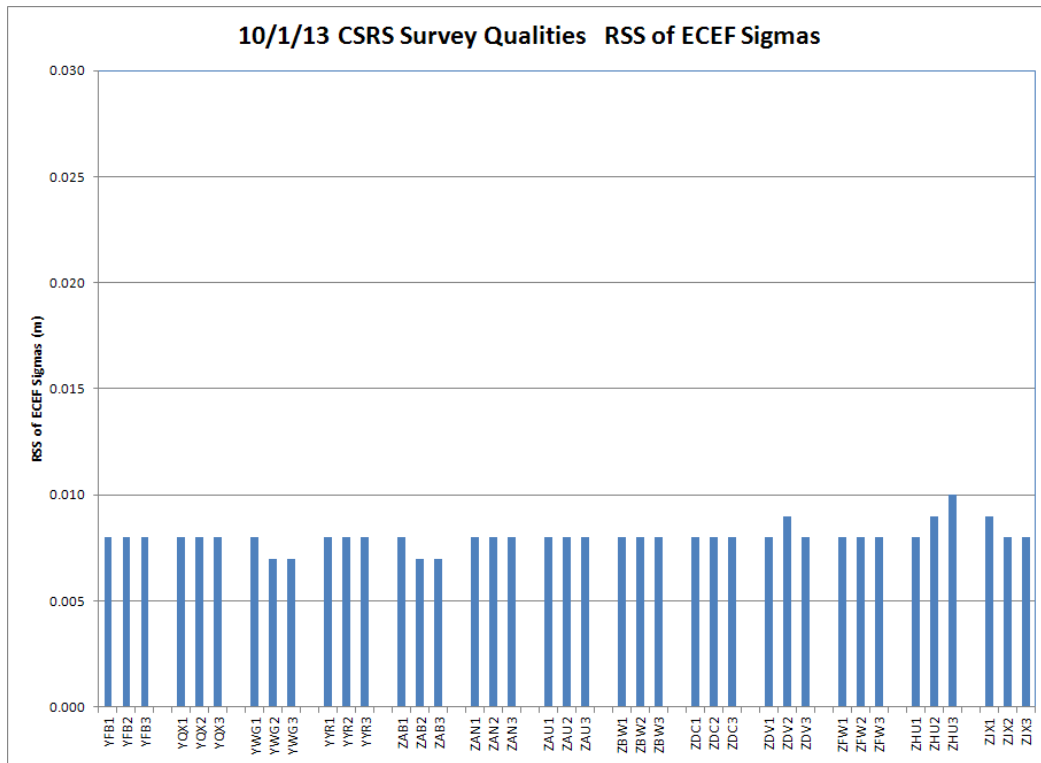
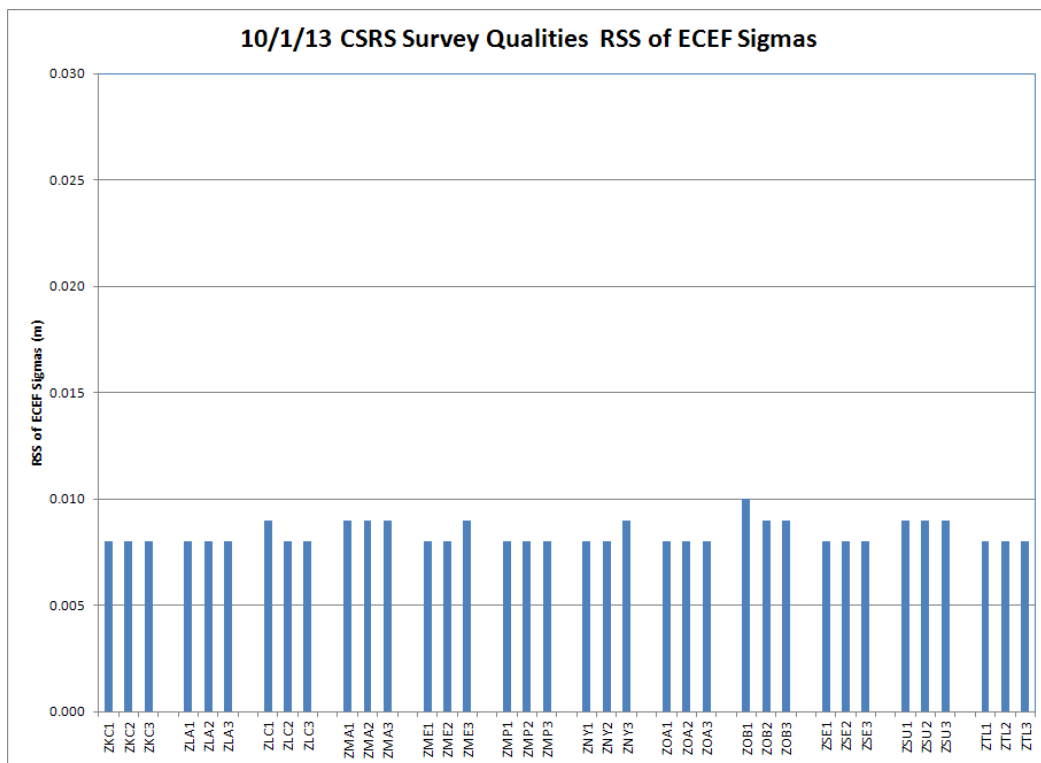


Figure 10-12 10/1/13 CSRS Survey Qualities



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.

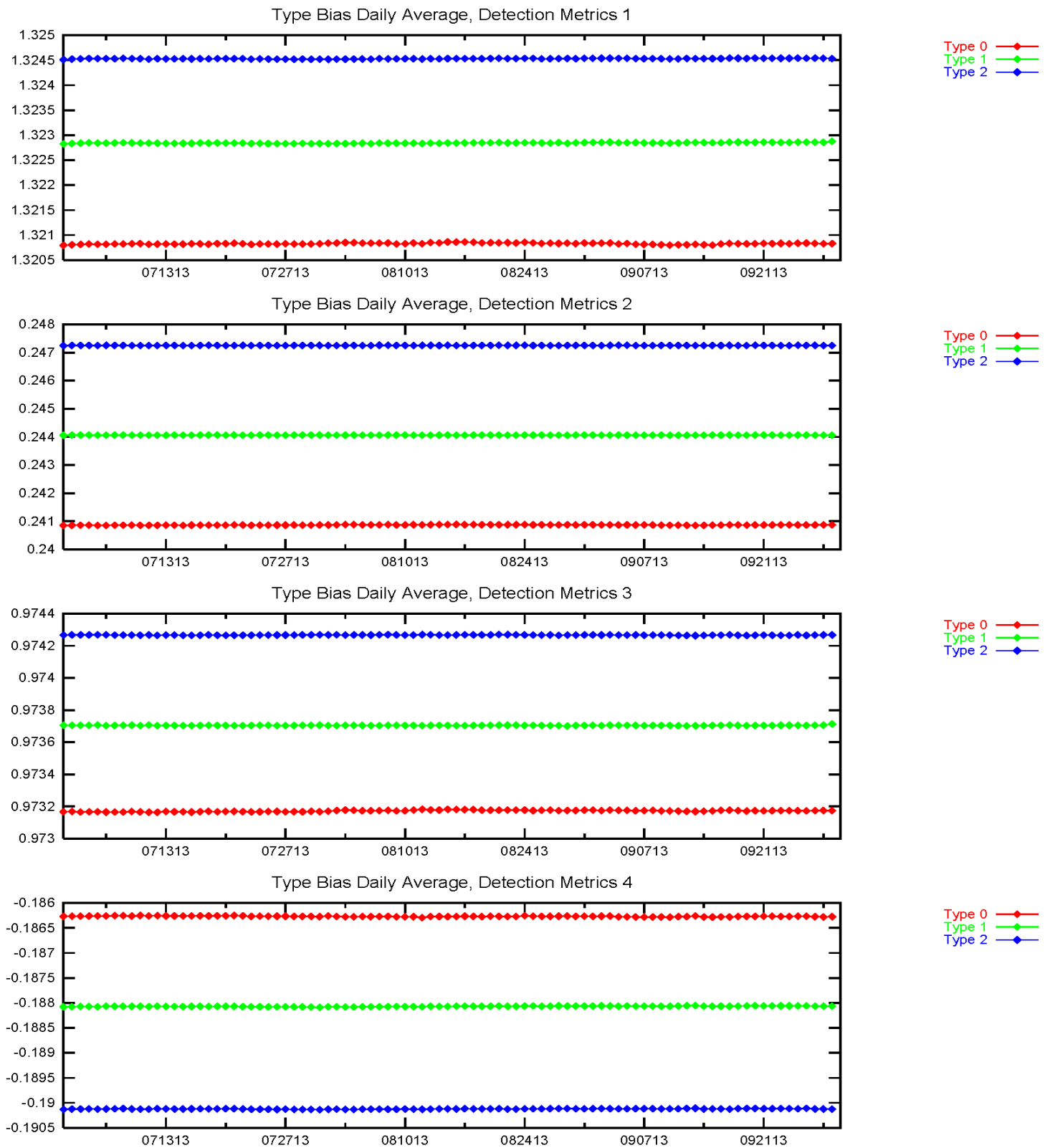
Table 11-2 Type Bias Average for the Quarter

Detection Metric	Type 0	Type 1	Type 2
DM 1	1.3208300	1.3228400	1.3245300
DM 2	0.2408680	0.2440630	0.2472530
DM 3	0.9731730	0.9737040	0.9742670
DM 4	-0.1862690	-0.1880690	-0.1901210

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	0.2408480	0.2440930	0.2472750
DM 3	0.9731740	0.9737090	0.9742760
DM 4	-0.1862110	-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 0.001001. The maximum average for DM2 is PRN 11 at 0.0002033. The maximum average for DM3 is PRN 10 at 0.0002646 and the maximum average for DM4 is PRN 23 at 0.0004332.

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.

Table 11-4 PRN Bias Average for the Quarter

PRN	SVN	DM1	DM2	DM3	DM4
1	63	0.0002311	0.0001306	0.0000846	0.0001007
2	61	0.0002239	0.0000458	0.0000252	0.0000945
3	33	0.0001774	0.0000768	0.0001079	0.0003351
4	34	0.0001873	0.0000438	0.0000634	0.0001276
5	50	0.0001221	0.0001155	0.0000587	0.0001127
6	36	0.0001810	0.0000701	0.0000613	0.0001181
7	34	0.0001288	0.0000746	0.0000361	0.0001397
8	38	0.0001574	0.0001582	0.0000408	0.0001116
9	39	0.0001570	0.0000487	0.0000606	0.0000942
10	40	0.0006777	0.0000473	0.0002646	0.0001013
11	46	0.0009488	0.0002033	0.0000566	0.0002654
12	58	0.0001542	0.0000729	0.0000966	0.0000759
13	43	0.0005748	0.0000521	0.0000786	0.0001673
14	41	0.0006832	0.0001282	0.0001122	0.0001345
15	55	0.0001342	0.0000616	0.0000268	0.0001594
16	56	0.0001295	0.0000652	0.0001265	0.0003195
17	53	0.0001508	0.0000711	0.0000365	0.0001320
18	54	0.0006893	0.0001260	0.0000440	0.0002436
19	59	0.0004604	0.0001670	0.0000483	0.0000930
20	51	0.0001330	0.0000539	0.0000348	0.0001610
21	45	0.0003621	0.0001192	0.0001631	0.0001177
22	47	0.0003417	0.0000591	0.0000859	0.0003095
23	60	0.0010011	0.0001616	0.0000346	0.0004332
24	65	0.0002175	0.0000543	0.0000418	0.0001028
25	62	0.0003253	0.0001881	0.0000870	0.0001150
26	26	0.0002226	0.0000688	0.0001373	0.0000968
27	66	0.0006257	0.0001776	0.0000702	0.0003022
28	44	0.0002914	0.0000478	0.0000322	0.0000966
29	57	0.0002731	0.0000586	0.0000985	0.0003028
30	30				
31	52	0.0003966	0.0001460	0.0000385	0.0002383
32	23	0.0001957	0.0000638	0.0001042	0.0000888

Figure 11-2 PRN Bias Average for the Quarter

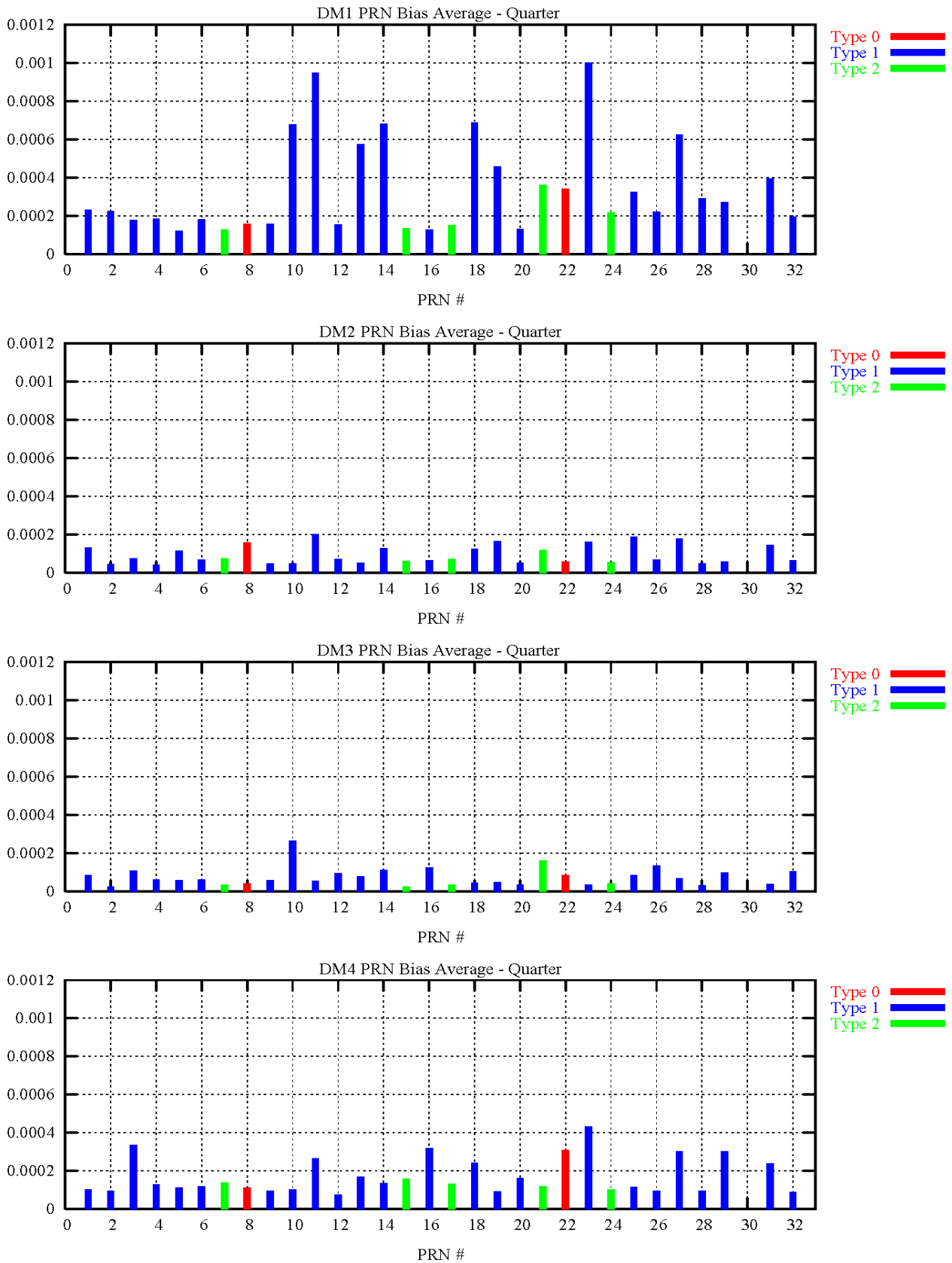


Figure 11-3 PRN Bias Average Trend (PRN 1 – PRN 4)

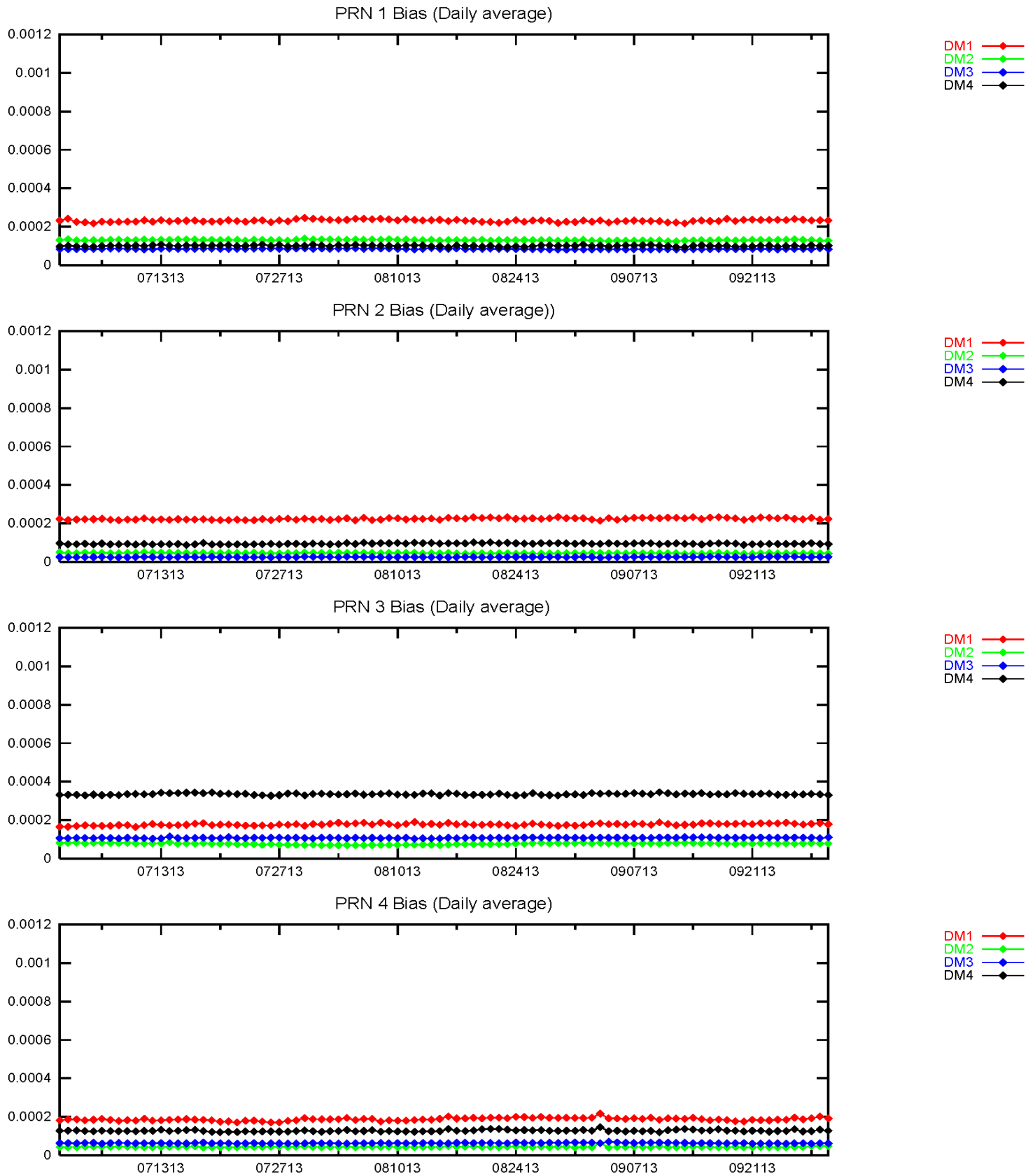


Figure 11-4 PRN Bias Average Trend (PRN 5 – PRN 8)

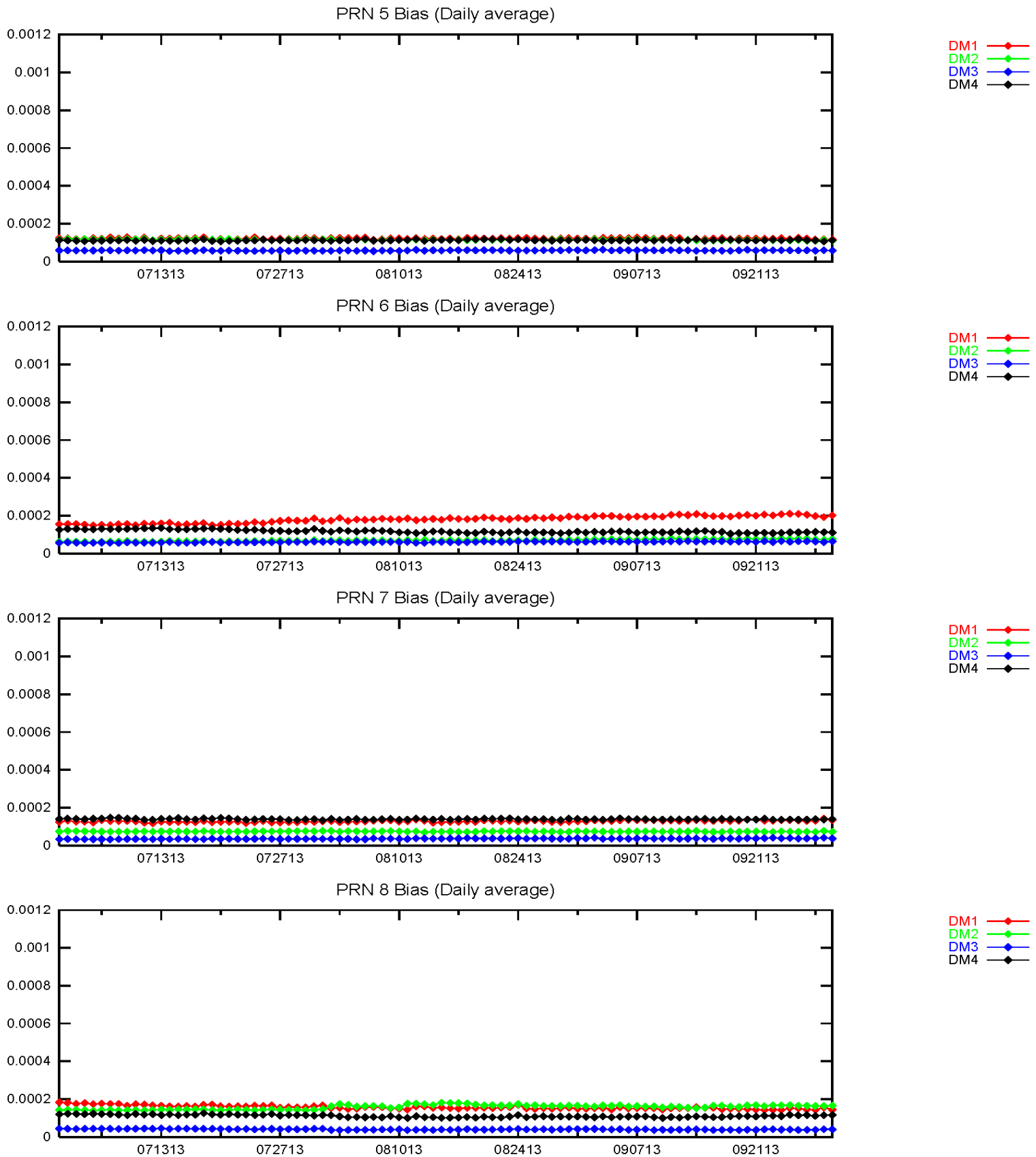


Figure 11-5 PRN Bias Average Trend (PRN 9 – PRN 12)

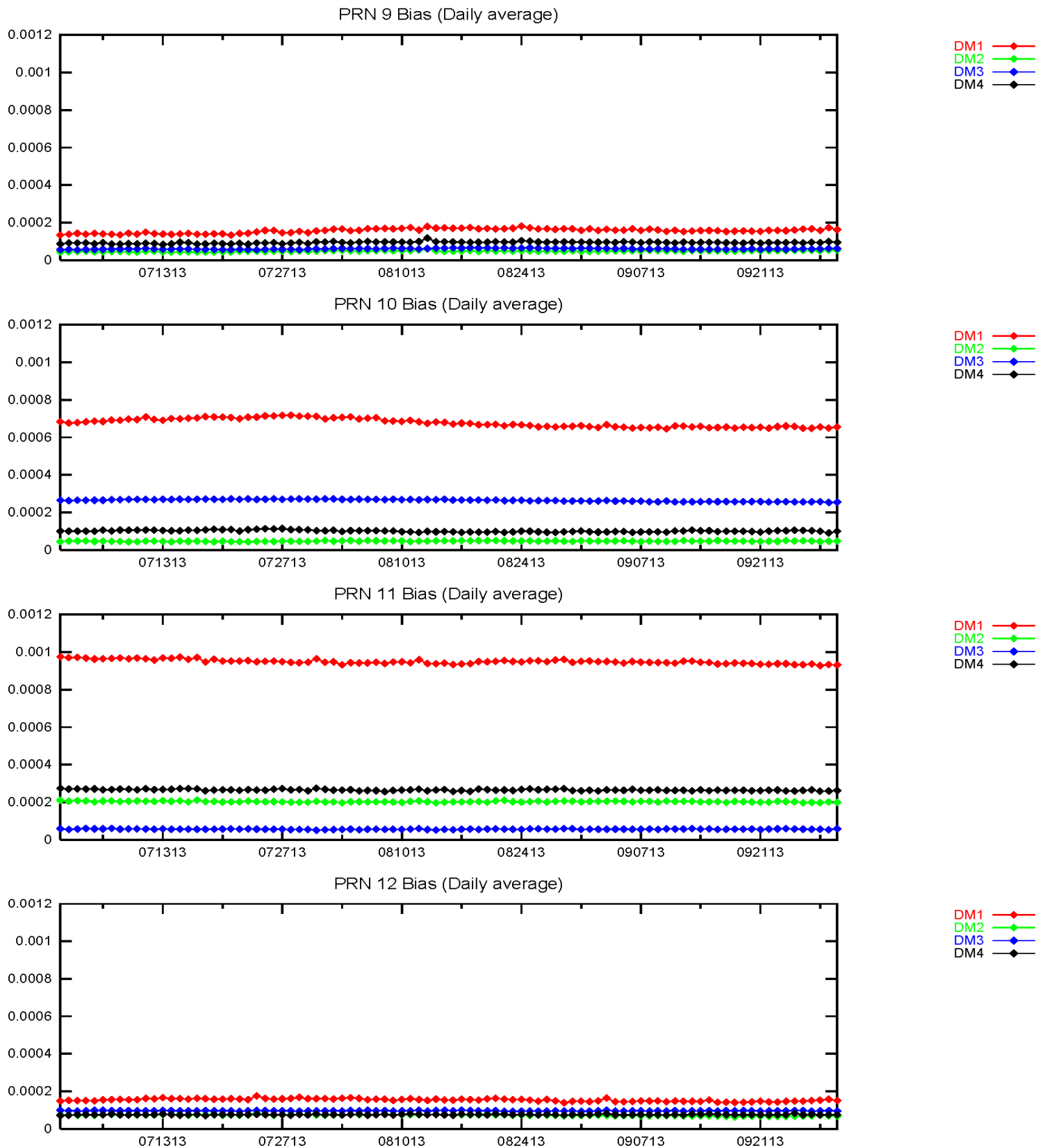


Figure 11-6 PRN Bias Average Trend (PRN 13 – PRN 16)

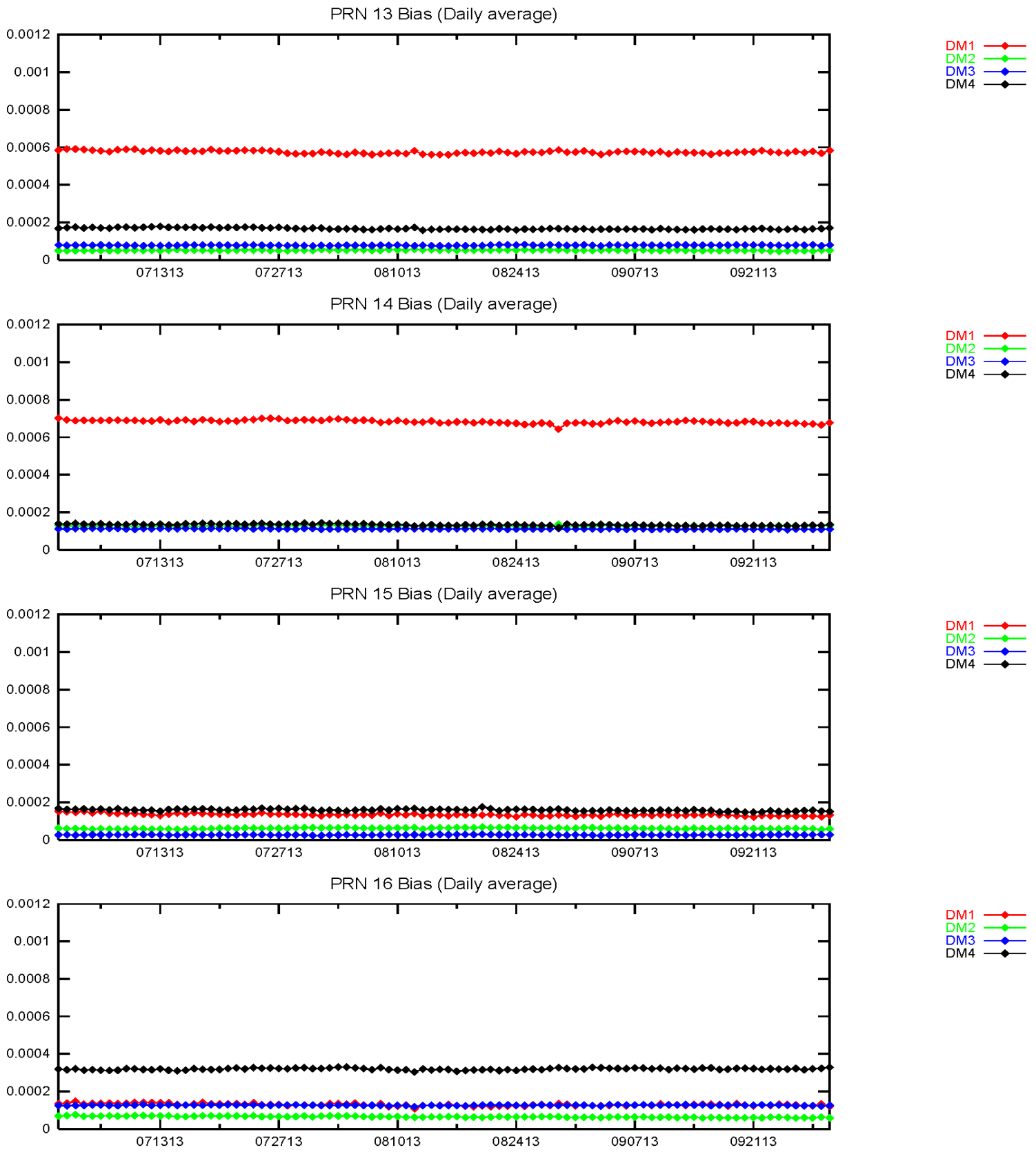


Figure 11-7 PRN Bias Average Trend (PRN 17 – PRN 20)

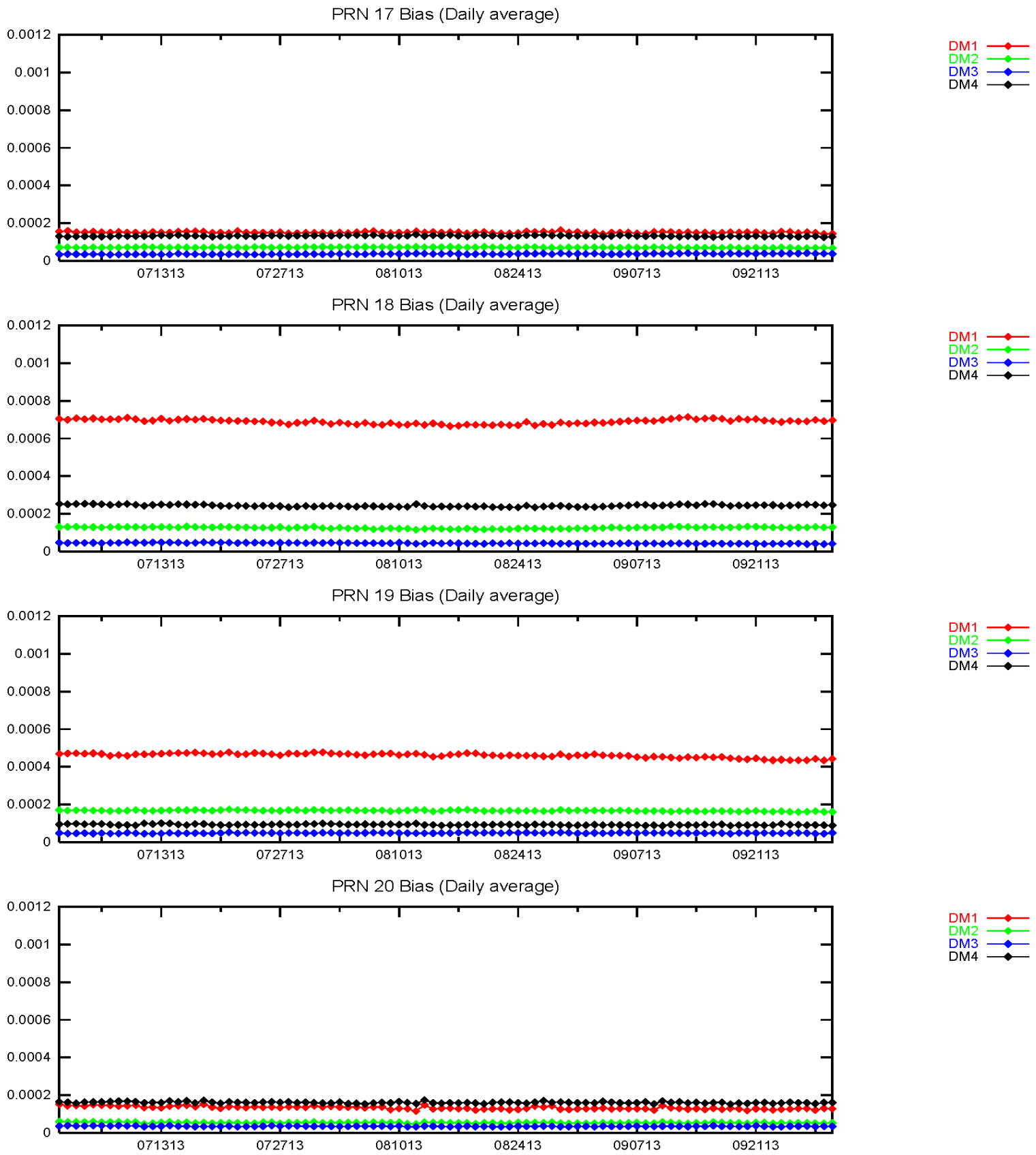


Figure 11-8 PRN Bias Average Trend (PRN 21 – PRN 24)

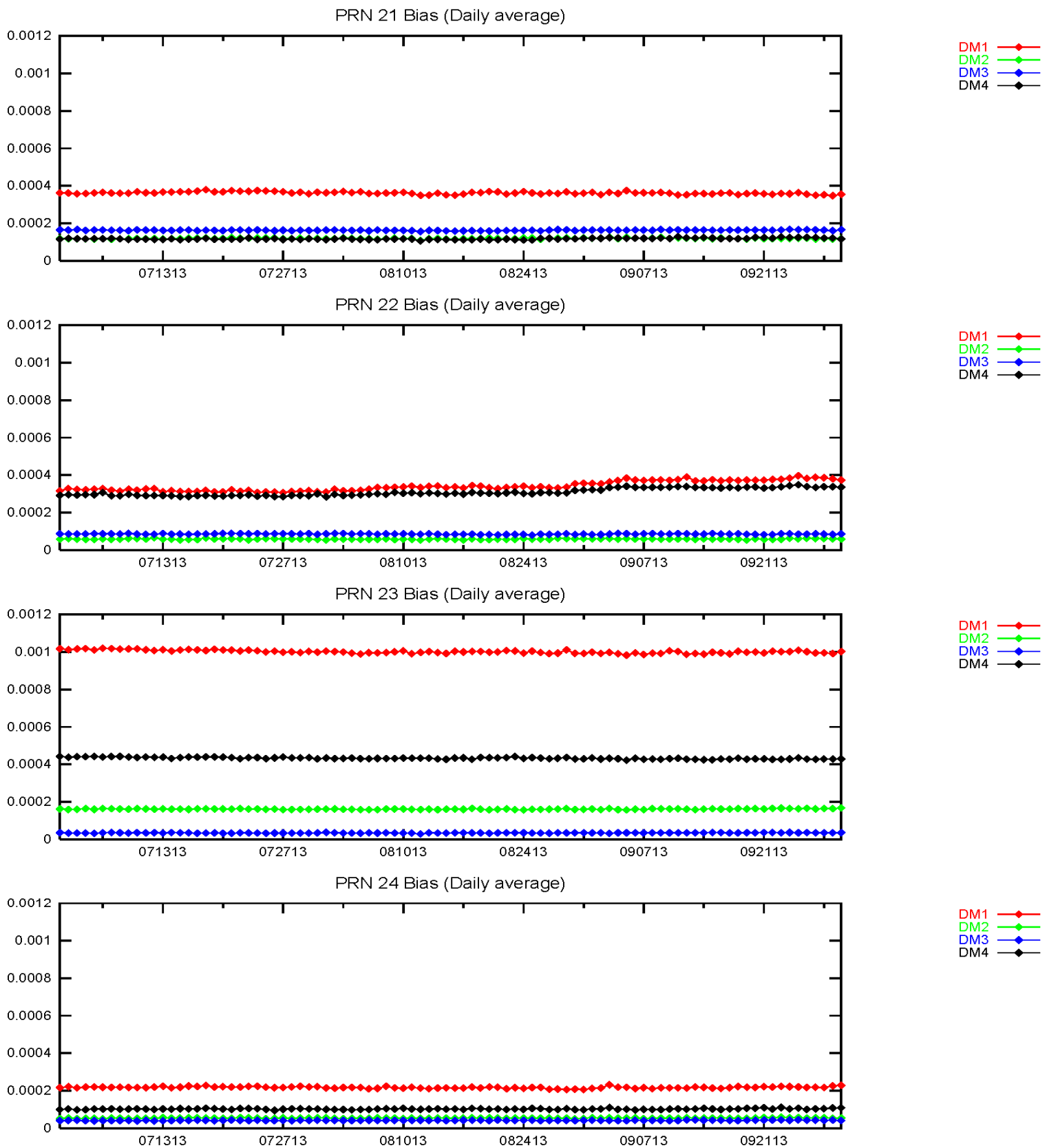


Figure 11-9 PRN Bias Average Trend (PRN 25 – PRN 28)

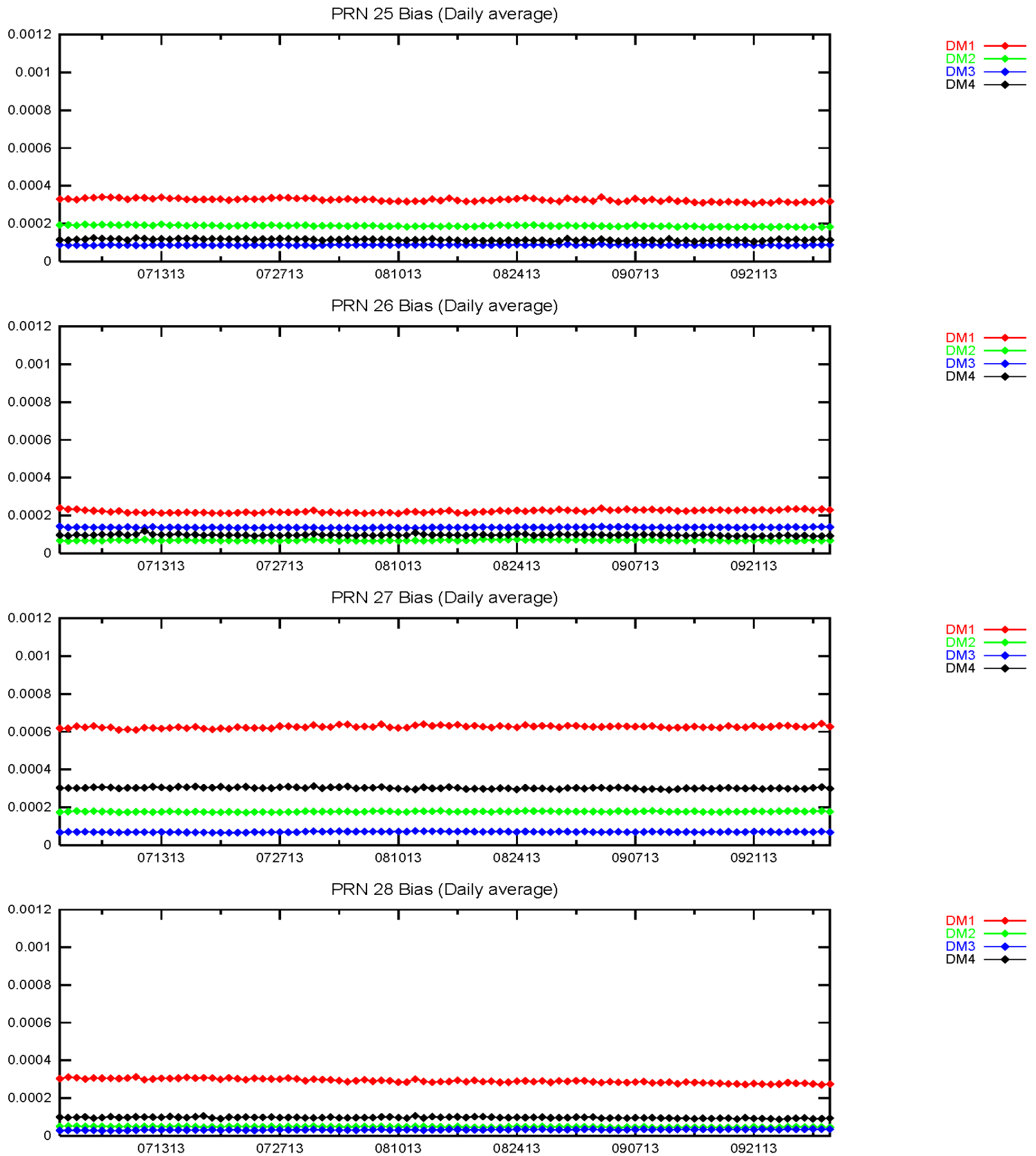
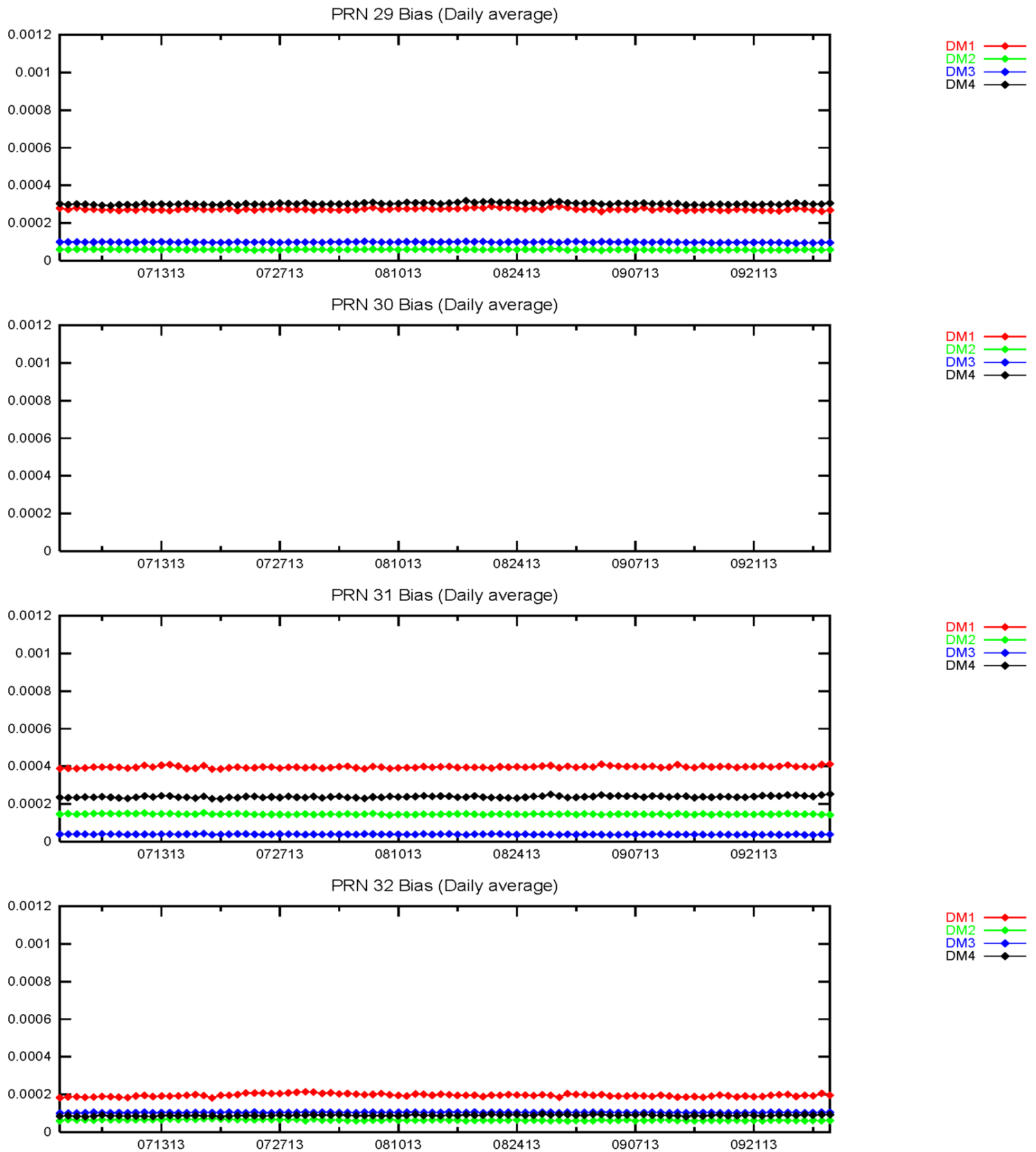


Figure 11-10 PRN Bias Average Trend (PRN 29 – PRN 32)



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
July 1 - September 30, 2013

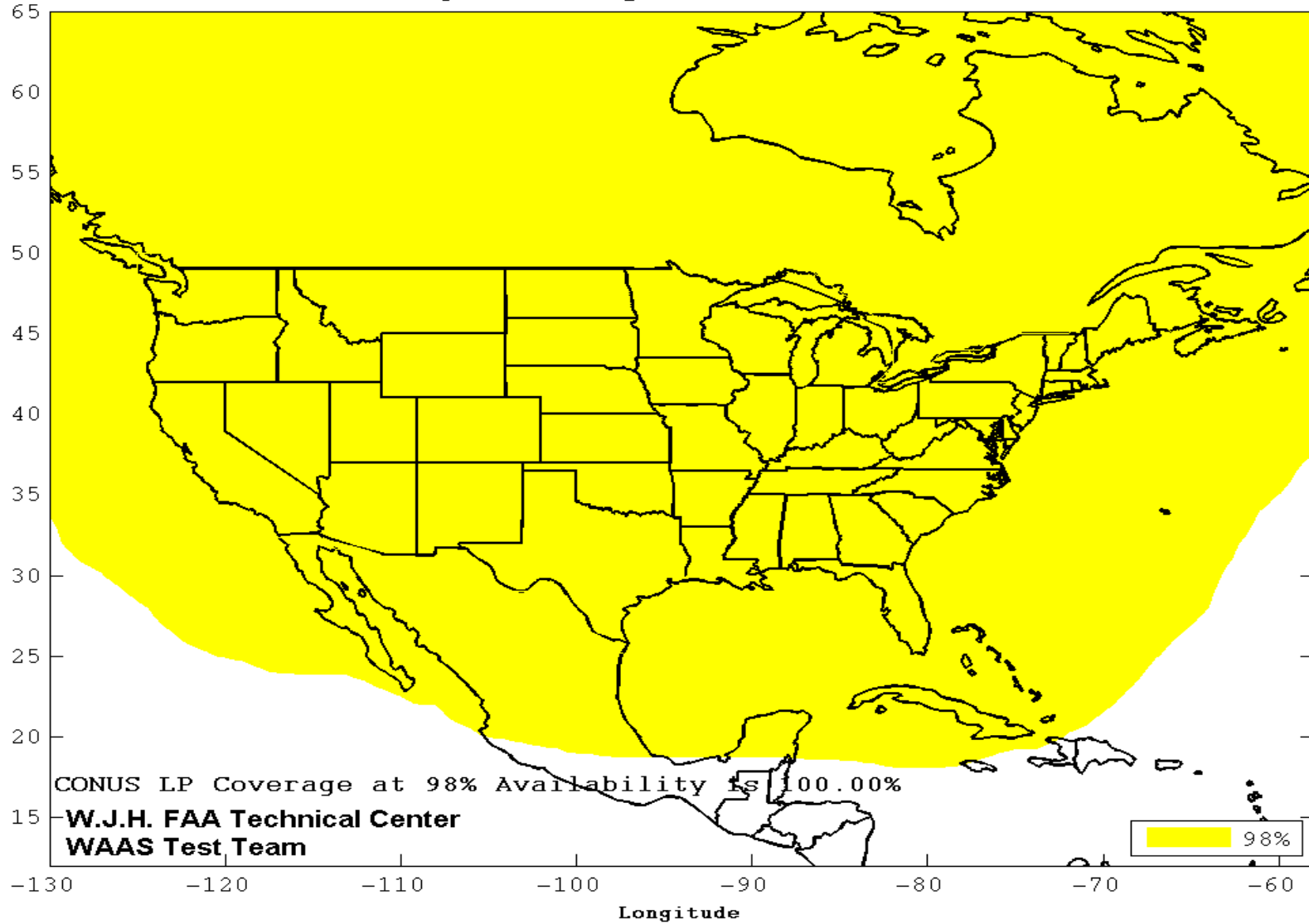


Figure B-2 98% Alaska LP Availability Contour
WAAS 98% LP Coverage Contours
July 1 - September 30, 2013

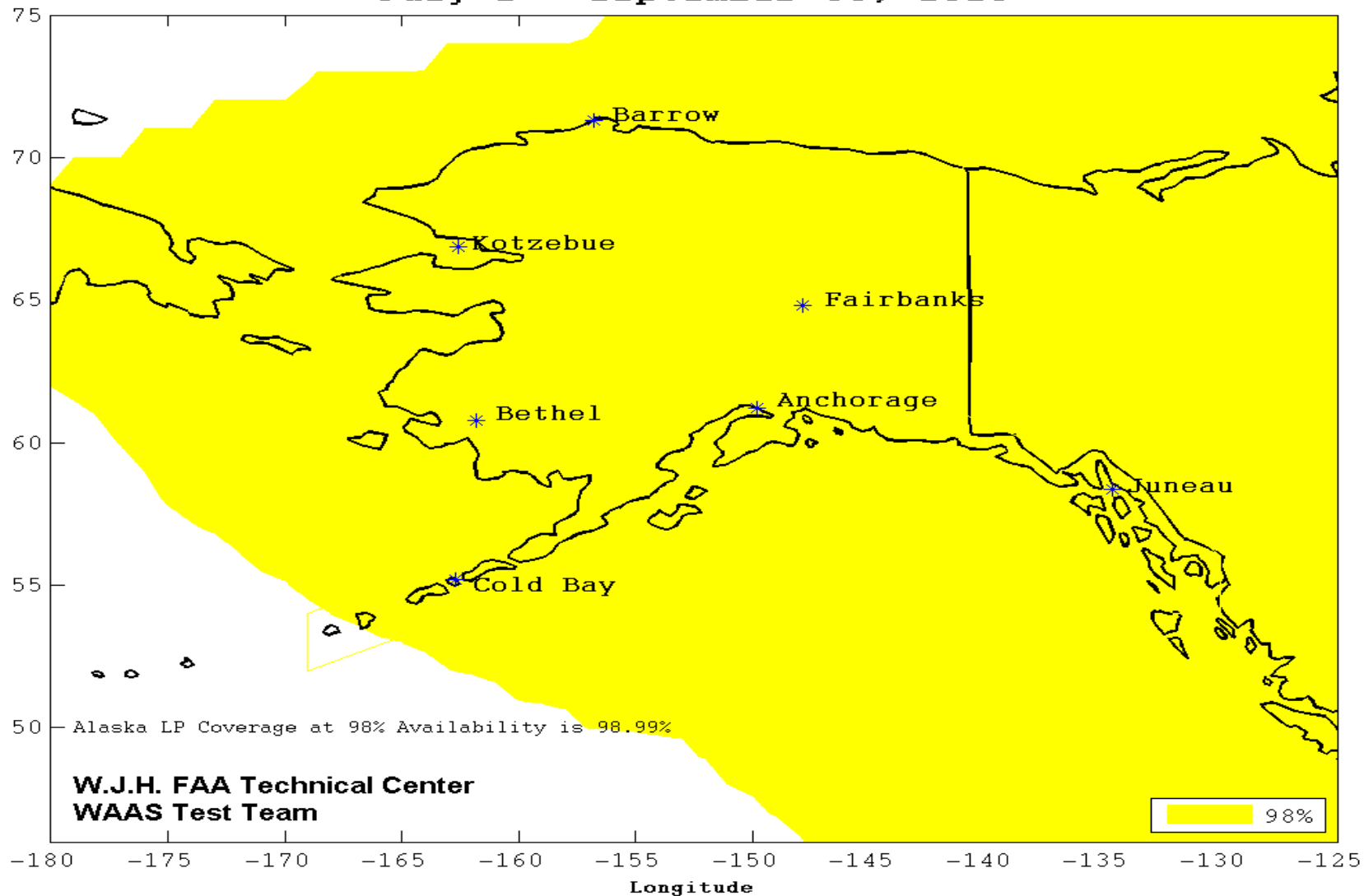


Figure B-3 98% CONUS LPV Availability Contour
WAAS 98% LPV Coverage Contours
July 1 - September 30, 2013

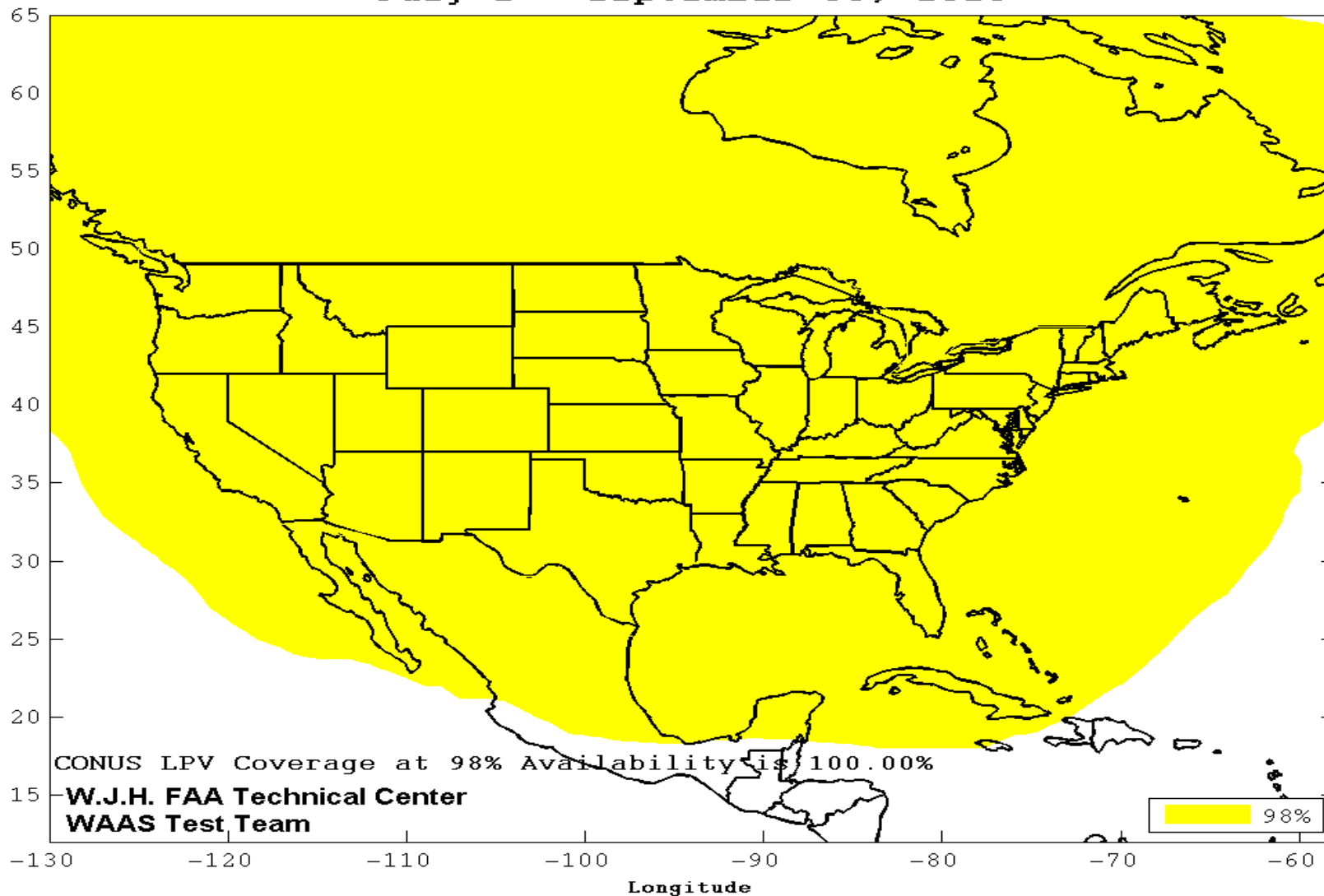


Figure B-4 98% Alaska LPV Availability Contour
WAAS 98% LPV Coverage Contours
July 1 - September 30, 2013

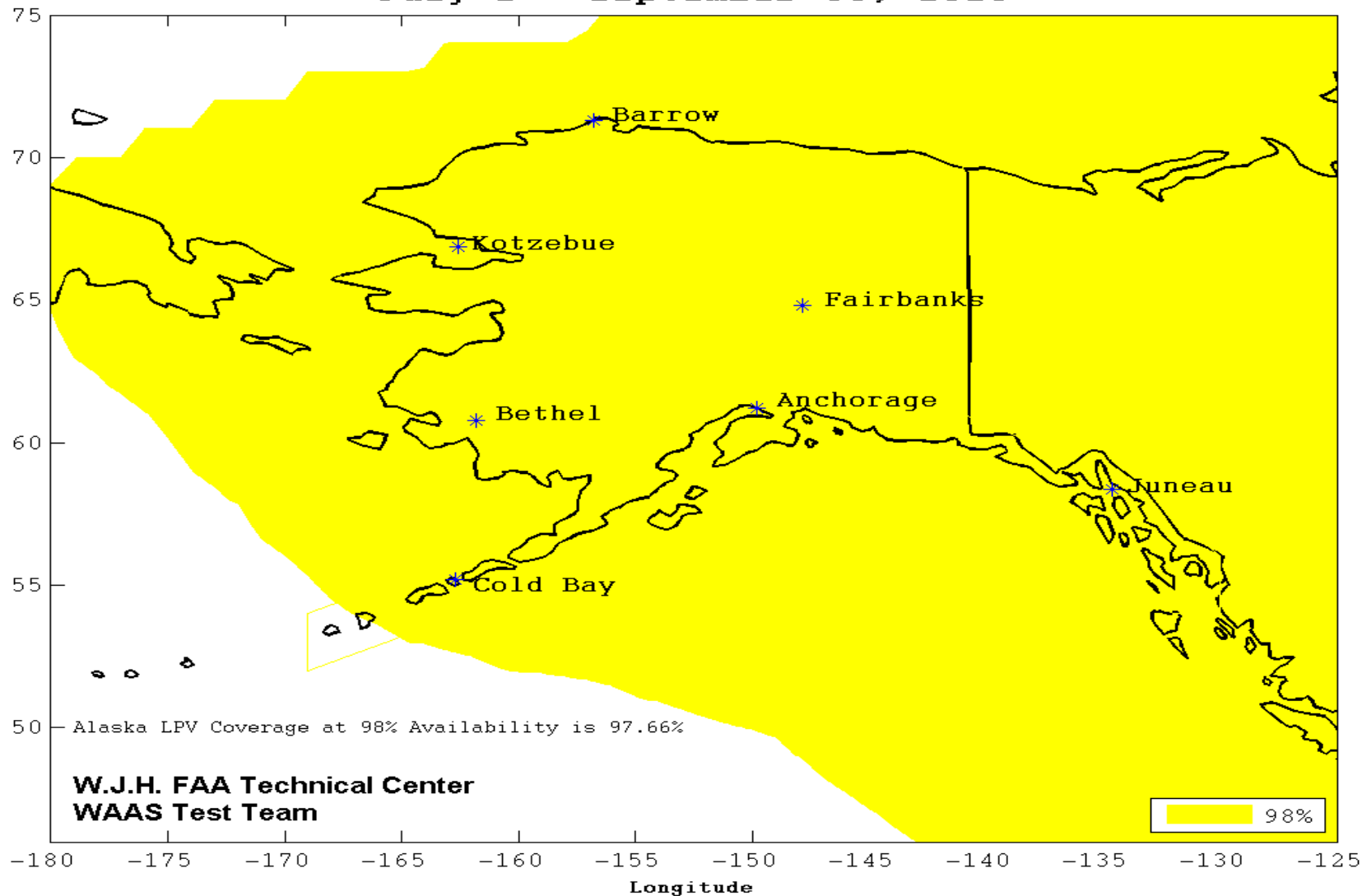


Figure B-5 99% CONUS LPV 200 Availability Contour

WAAS 99% LPV200 Coverage Contours
July 1 - September 30, 2013

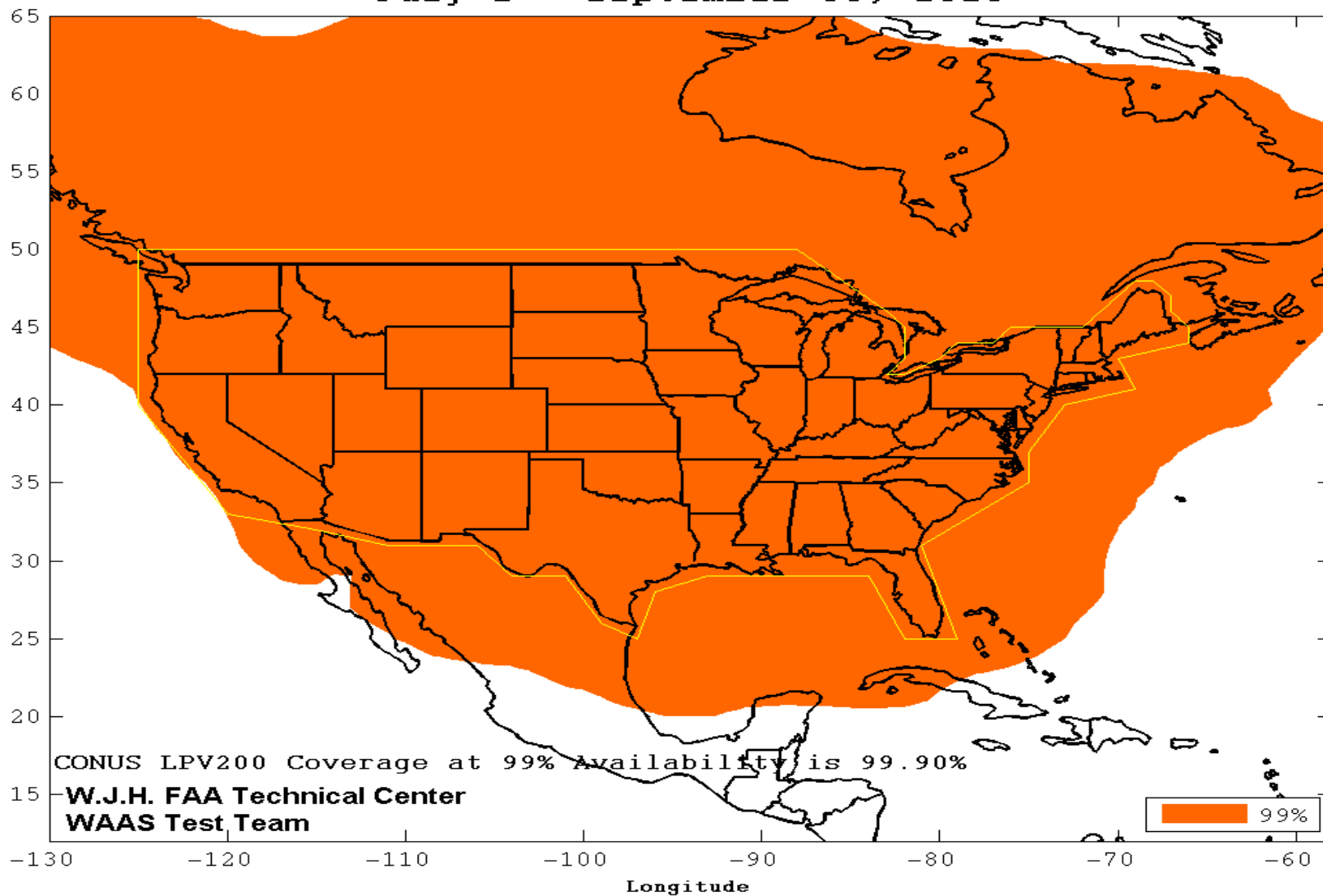


Figure B-6 99% Alaska LPV 200 Availability Contour
WAAS 99% LPV200 Coverage Contours
April 1 – June 30, 2013

