WIDE AREA AUGMENTATION SYSTEM PERFORMANCE ANALYSIS REPORT

Report #64

Reporting Period: January 01 to March 31, 2018

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Executive Summary

Since 1999, the Wide Area Augmentation System (WAAS) Test Team at the FAA William J. Hughes Technical Center has reported GPS performance as measured against the GPS Standard Positioning Service (SPS) Signal Specification in quarterly GPS Performance Analysis Network (PAN) Reports. In addition to the GPS PAN reports, the WAAS Test Team has provided quarterly reports on WAAS performance. The current WAAS PAN Report #64 provides WAAS performance data from the January 1 through March 31, 2018 reporting period.

This report provides the following results: accuracy, availability, coverage, safety index, range accuracy, WAAS broadcast message rates, geostationary satellite ranging availability, WAAS airport availability, WAAS Code Noise and Multipath analysis, WAAS reference station survey validation, and WAAS Signal Quality Monitoring.

The following table shows observations for accuracy and availability made during the reporting period for Continental United States (CONUS) and Alaska sites (the international sites are presented in the body of this report). Localizer Performance (LP) service is available when the calculated horizontal protection level (HPL) is less than 40 meters. Localizer Performance with Vertical Guidance (LPV) service is available when the calculated HPL is less than 40 meters and the Vertical Protection Level (VPL) is less than 50 meters. Localizer Performance with Vertical Guidance to 200-foot decision height (LPV200) service is available when the calculated HPL is less than 40 meters and the VPL is less than 35 meters. The FAA's National Satellite Test Bed sites—Grand Forks, North Dakota, Atlantic City, New Jersey, and Arcata, California—are outliers due to receiver quality issues, and not because of the WAAS signal in space quality.

Parameter	CONUS Site/Maximu	CONUS Site/Minimum	Alaska Site/Maximum	Alaska Site/Minimum
95% Horizontal Accuracy (HPL <= 40 meters)	Atlantic City 1.43 meters	Oakland 0.514 meters	Cold Bay 0.756 meters	Bethel 0.594 meters
95% Vertical Accuracy (VPL <= 50 meters)	Miami 1.609 meters	Denver 0.743 meters	Barrow 1.323 meters	Bethel 0.979 meters
LP Availability (HPL <= 40 meters)	All Sites 100%	All Sites 100%	All Sites 100%	All Sites 100%
LPV Availability (HPL <= 40 meters & VPL <= 50 meters)	All Sites 100%	All Sites 100%	Multiple Sites 100%	Barrow 99.99%
LPV200 Availability (HPL <= 40 meters & VPL <= 35 meters)	Multiple Sites 100%	Oakland 98.98%	Multiple Sites 100%	Barrow 97.16%
99% HPL	Cleveland 16.358 meters	Denver 10.965 meters	Cold Bay 23.025 meters	Juneau 13.511 meters
99% VPL	Oakland 34.744 meters	Kansas City 19.006 meters	Barrow 38.574 meters	Juneau 24.168 meters

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1.0 INTRODUCTION

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

The objectives of this report are:

1. To evaluate and monitor the WAAS ability to augment GPS by characterizing important performance parameters.
2. To analyze the effects of GPS satellite operation and maintenance as well as ionospheric activity on WAAS performance.
3. To investigate GPS and WAAS anomalies and determine potential user impact.
4. To archive GPS and WAAS performance for future evaluations.

The evaluation uses the WAAS data transmitted from geostationary satellites (GEOs) pseudo-random noise (PRN) 135 (CRW) and PRN 138 (CRE). CRE and CRW GEOs provide a precision approach (PA) ranging capability that supports all levels of WAAS service. Note that the AMR GEO 133, which was reported on in previous reports, was decommissioned from WAAS service on November 9, 2017.

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

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

The receivers in PA mode are required to: (1) use all WAAS corrections, (2) use only corrected satellites, (3) never mix corrections from multiple GEOs, (4) exclusively use the designated Space Based Augmentation System (SBAS) for the published approach procedure, and (5) never use ranging from a GPS or GEO satellite with a User Differential Range Error (UDRE) status of greater than 15 meters. The receivers in NPA mode are allowed to: (1) mix corrected and uncorrected satellites, (2) mix corrections from different GEOs or SBASs, (3) use either the WAAS ionosphere corrections or the GPS Klobuchar model for ionosphere corrections, and (4) use ranging from a GPS or GEO satellite with a UDRE status of greater than 15 meters. The receivers in NPA mode can also operate using Fault Detection/Fault Detection Exclusion (FD/FDE) in the absence of an SBAS. The data presented in this report does not take credit for the additional NPA mode availability and continuity through use of either full or partial FD/FDE, which allowed the mixing of corrected and uncorrected satellites. To remain conservative, the NPA accuracy data presented in this report uses Klobuchar ionosphere corrections.

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

Table 1-2 PA Evaluation Sites

Location	Number of Days Evaluated	Number of Samples
NSTB:		
Arcata	89	7680996
Atlantic City	88	7622149
Oklahoma City	81	7039439
WAAS:		
Albuquerque	90	7766452
Anchorage	90	7768190
Atlanta	90	7769757
Barrow	90	7763610
Bethel	90	7765759
Billings	90	7766707
Boston	90	7766006
Chicago	90	7765436
Cleveland	90	7751792
Cold Bay	90	7758148
Dallas	90	7764034
Denver	90	7768464
Fairbanks	90	7766805
Gander	90	7767123
Goose Bay	90	7767875
Houston	90	7759651
Iqaluit	90	7764765
Jacksonville	90	7769072
Juneau	90	7764312
Kansas City	90	7765572
Kotzebue	90	7748806
Los Angeles	90	7768606
Memphis	90	7769415
Merida	90	7762929
Mexico City	90	7760023
Miami	90	7767170
Minneapolis	90	7769744
New York	90	7769217
Oakland	90	7764648
Puerto Vallarta	90	7751468
Salt Lake City	90	7764488
San Jose Del Cabo	90	7754764
Seattle	90	7758759
Washington DC	90	7769886
Winnipeg	90	7770000

Table 1-3 NPA Evaluation Site

Location	Number of Days Evaluated	Number of Samples
Albuquerque	90	7763765
Anchorage	90	7763764
Atlanta	90	7763094
Barrow	90	7761503
Bethel	90	7762682
Billings	90	7763733
Boston	90	7763766
Cleveland	90	7763113
Cold Bay	90	7756451
Fairbanks	90	7762292
Gander	90	7759966
Honolulu	90	7763764
Houston	90	7763769
Iqaluit	90	7762808
Juneau	90	7763052
Kansas City	90	7763767
Kotzebue	87	7553011
Los Angeles	90	7763769
Merida	90	7758417
Miami	90	7761270
Minneapolis	82	7114333
Oakland	90	7763084
Salt Lake City	90	7763741
San Jose Del Cabo	90	7751914
San Juan	90	7763156
Seattle	90	7763135
Tapachula	89	7722294
Washington DC	90	7763767

The report is divided by the performance category:

1. WAAS Position Accuracy
2. WAAS Operational Service Availability
3. WAAS Coverage
4. WAAS Integrity
5. WAAS Range Domain Accuracy
6. WAAS GEO Ranging Performance
7. WAAS Airport Availability
8. WAAS Code Noise and Multipath (CNMP) Analysis
9. WAAS Antenna Survey Validation
10. WAAS Signal Quality Monitor (SQM) Analysis

Table 1-4 lists the evaluated WAAS performance parameters for this report. Note that these are the performance parameters associated with the WAAS system, and that these requirements are extracted from FAA Specifications FAA-E-2892C and 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 Hazardous Misleading Information	<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. The events include GPS or WAAS anomalies, relevant receiver malfunctions, receiver maintenance, and ionospheric activity. The reporting of ionospheric activity includes reference to the planetary index (Kp) for the event time period. The Kp index quantifies the disturbance in the Earth's magnetic field and is an indicator of solar storms causing geomagnetic disturbances resulting in an unpredictable ionosphere. The detection of an ionospheric disturbance causes the WAAS to increase Grid Ionospheric Vertical Error (GIVE) values, making PA service unavailable.

Analyses of events that merit more detailed investigations are documented in the Discrepancy Reports (DRs). The DRs are available at http://www.nstb.tc.faa.gov under “WAAS Technical Reports” and also accessible via hyperlink in Table 1-5. Note that “TOW” is the time of GPS week, which is the cumulative number of seconds beginning 00:00:00 Sunday (GMT without leap seconds). Table 1-6 lists events related to WAAS upgrades during this reporting period, and Table 1-7 lists events related to ground uplink station (GUS) switchovers, which are transitions from one GEO uplink site to another GEO uplink site.

Table 1-5 Events

Start Date	End Date	Location/Satellite	Service Affected	Event Description
11/14/2017	2/18/2018		None	The WJHTC began noticing an increase in Satellite Vehicle (SV) glitches around November 14, 2017. This was due to receivers falsely tracking SVs when they are not in view. The default G3 receiver behavior is to allocate a channel to look for each SV listed in the almanac regardless of health status. In addition, when a receiver is reset, it will look for any SV it can detect since it does not yet have an almanac. In addition to the default configuration, 12 of the G3s have a different configuration for their C threads. The WJHTC noticed these threads reported duplicate ephemeris of out of view SVs which were flagged as SV Glitches. The WJHTC created a tool to detect when a duplicate ephemeris is broadcasted. See DR 142.
1/25/2017	3/31/ 2018		LPV200_CONUS, LPV200_Alaska	GPS Flex Power tests begin. The FAA Tech Center, as part of daily GPS and WAAS performance monitoring, observed several events linked to the increased power test on GPS L1. On 1/28, there was a WAAS Signal Quality Monitor(SQM) trip for PRN27. There were also UDRE Spikes observed on several GPS satellites for the duration of this testing. See DR 135.
1/20/2018	1/20/2018	GEO138,Brewster-B (BRE-B)	LPV200_Alaska, LPV200_Canada	The uplink for the CRE GEO, PRN138 switched from the Brewster-B uplink site to the Woodbine uplink site at 08:00:31 GMT. This caused a 4-second outage of the GEO 138 broadcast and also caused the WAAS carrier smoothing algorithm to reinitialize for PRN138. The elevated UDRE for GEO 138 caused minor degradation of: (1) LPV200 service coverage in Alaska from 11:04 GMT to 11:14 GMT; and (2) LPV200 service coverage in Canada from 08:01 GMT to 08:11 GMT, 09:53 GMT to 10:01 GMT, 11:08 GMT to 11:19 GMT, 11:54 GMT to 12:06 GMT, 13:11 GMT to 13:20 GMT, and from 13:39 GMT to 13:54 GMT. TOW 547248-547253.

Start Date	End Date	Location/Satellite	Service Affected	Event Description
1/23/2018	2/20/2018	PRN18	LPV_Canada, LPV200_Alaska, LPV200_Canada, RNP1_Alaska, RNP1_Canada	The reduction in LPV and LPV200 service Alaska and Canada is due to a GPS NANU on PRN18 (see NANU2018001) which is unusable until further notice. SV-54 will no longer be used and has been designated "nav-dead". The lack of PRN18 in the solution causes minor degradation of LPV service coverage in Canada from 15:40 GMT to 16:04 GMT. The NANU also caused moderate degradation of: (1)LPV200 service coverage in Alaska from 03:33 GMT to 03:51 GMT; and (2) LPV200 service coverage in Canada from 03:52 GMT to 03:59 GMT; 13:22 GMT to 13:37 GMT; 14:23 GMT to 14:42 GMT; and 15:34 GMT to 16:13 GMT. The NANU also causes degradation of: (1) RNP0.1 service in Alaska from 02:10 GMT to 02:11 GMT; 11:02 GMT to 11:17 GMT; and 13:52 GMT to 13:53 GMT; and (2) RNP0.1 service in Canada from 14:23 GMT to 14:32 GMT; and 15:45 GMT to 15:53 GMT. See DR 141.
2/6/2018	2/6/2018	PRN21	LPV200_CONUS	There was an SV glitch on PRN 21 for 121-seconds from 11:23:46 GMT to 11:25:47 GMT. During this glitch, the UDREi of PRN21 spiked from 5 to 14. The elevated UDREs caused minor degradation of CONUS at 11:26 GMT.
2/9/2018	2/9/2018	GEO138,Woodbine (QWE)	LPV200_CONUS, LPV200_Alaska, LPV200_Canada	The uplink for the CRE GEO, PRN138 switched from the Woodbine uplink site to the Brewster-B uplink site at 04:12:55 GMT. This caused a 4-second outage of the GEO 138 broadcast and also caused the WAAS carrier smoothing algorithm to reinitialize for PRN138. The elevated UDRE for GEO 138 caused moderate degradation of LPV200 service coverage in CONUS from 05:01 GMT to 05:28 GMT. The elevated UDRE for GEO 138 also caused minor degradation of: (1) LPV200 service coverage in Alaska from 09:46 GMT to 09:55 GMT; and (2) LPV200 service coverage in Canada from 06:36 GMT to 06:50 GMT; and from 09:52 GMT to 09:57 GMT. TOW 447192-447197.

Start Date	End Date	Location/Satellite	Service Affected	Event Description
2/13/2018	2/14/2018	PRN30	LPV200_Alaska, LPV200_Canada	The reduction in LPV200 service Alaska and Canada was due to a GPS NANU on PRN30 (see NANU2018005) which was unusable from 19:33 GMT on 2/13 to 01:50:00 GMT on 2/14. The NANU caused minor degradation of: (1) LPV200 service coverage in Alaska from 23:23 GMT to 23:41 GMT on 2/13; and (2) LPV200 service coverage in Canada from 21:45 GMT to 23:48 GMT on 2/13 and from 00:41 GMT to 01:10 GMT on 2/14.
2/19/2018	2/19/2018	PRN6	LPV200_Canada	There was an SV Alert on PRN 6 to not monitored from 06:00 GMT to 06:52 GMT. The elevated UDREs caused minor degradation of LPV200 service coverage in Canada from 06:30 GMT to 06:51 GMT.
3/8/2018	2/9/2018	PRN20	LPV200_CONUS	The reduction in LPV200 service Alaska and Canada was due to a GPS NANU on PRN20 (see NANU2018012) which was unusable from 23:21 GMT on 3/8 to 06:15 GMT on 3/9. The NANU caused minor degradation of LPV200 service coverage in CONUS (California and So. Arizona) from 06:04 GMT to 06:26 GMT on 3/9.
3/10/2018	3/10/2018	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Canada	Geomagnetic activity (Kp = 4) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of LPV200 service coverage in Canada from 00:44 GMT to 01:12 GMT
3/15/2018	3/15/2018	PRN3	LPV200_Alaska	The reduction in LPV200 service Alaska and Canada was due to a GPS NANU on PRN3 (see NANU2018013) which was unusable from 13:55 GMT to 19:31 GMT. The NANU caused minor degradation of LPV200 service coverage in Alaska from 15:38 GMT to 15:48 GMT.
3/20/2018	3/20/2018	PRN18	None	GPS satellite IIA SVN-34 (PRN18) was usable as of March 20th 2018 beginning 22:24 GMT. See DR 141.

Start Date	End Date	Location/Satellite	Service Affected	Event Description
3/20/2018	3/20/2018	GEO135,Littleton (APA)	LPV200_Alaska, LPV200_Canada	The uplink for the CRW GEO, PRN135 switched from the Littleton uplink site to the Napa uplink site at 08:01:16 GMT. This caused a 4-second outage of the GEO 135 broadcast and also caused the WAAS carrier smoothing algorithm to reinitialize for PRN135. The elevated UDRE for GEO 135 caused minor degradation of: (1) LPV200 service coverage in Alaska from 10:14 GMT to 10:29 GMT; and (2) LPV200 service coverage in Canada from 09:57 GMT to 10:30 GMT. TOW 201693-201698.
3/28/2018	3/28/2018	GEO138,Brewster-B (BRE-B)	LPV200_Canada	The uplink for the CRE GEO, PRN138 switched from the Brewster-B uplink site to the Woodbine uplink site at 13:24:16 GMT. This caused a 19-second outage of the GEO 138 broadcast and also caused the WAAS carrier smoothing algorithm to reinitialize for PRN138. The elevated UDRE for GEO 138 caused minor degradation of LPV200 service coverage in Canada from 14:16 GMT to 14:33 GMT. TOW 307472-307489.
03/28/2018	03/28/2018	GEO131	LPV200_Alaska, LPV_Alaska	On March 28, 2018 at 23:59:58 GMT, GEO 131 went operational. WJHTC began processing GEO navigation messages from GEO 131. The addition of GEO131 as a ranging source improved LPV coverage in Alaska.

Table 1-6 WAAS Upgrades

Start Date	End Date	Location Satellite	Event Description
03/16/2018	03/16/2018	Atlanta (CnV)	SSM-49: This system support modification (SSM) upgrades the ZTL CnV to support the new Geo Uplink stations for GEO 131 in Southbury, CT and Santa Paula, CA. This upgrade supports the cut-over to SM9.
03/17/2018	03/17/2018	Los Angeles (CnV)	SSM-49: This system support modification (SSM) upgrades the ZLA CnV to support the new Geo Uplink stations for GEO 131 in Southbury, CT and Santa Paula, CA. This upgrade supports the cut-over to SM9.
03/17/2018	03/17/2018		SSM-49: This system support modification (SSM) upgrades the NOCC and POCC to support the new Geo Uplink stations for GEO 131 in Southbury CT and Santa Paula, CA. This upgrade supports the cut-over to SM9.

Start Date	End Date	Location Satellite	Event Description
03/18/2018	03/18/2018	Washington D.C. (CnV)	SSM-49: This system support modification (SSM) upgrades the ZDC CnV to support the new Geo Uplink stations for GEO 131 in Southbury, CT and Santa Paula, CA. This upgrade supports the cut-over to SM9.
03/28/2018	03/28/2018	GEO131	On March 28, 2018 at 23:59:58 GMT, GEO 131 went operational. WJHTC began processing GEO navigation messages from GEO 131. The addition of GEO131 as a ranging source improved LPV coverage in Alaska.

Table 1-7 GUS Switchovers

Start Date	End Date	GUS Switch	Location/Satellite	Service Affected	Event Description
1/20/2018	1/20/2018	Manual	GEO138,Brewster-B (BRE-B)	LPV200_Alaska, LPV200_Canada	The uplink for the CRE GEO, PRN138 switched from the Brewster-B uplink site to the Woodbine uplink site at 08:00:31 GMT. This caused a 4-second outage of the GEO 138 broadcast and also caused the WAAS carrier smoothing algorithm to reinitialize for PRN138. The elevated UDRE for GEO 138 caused minor degradation of: (1) LPV200 service coverage in Alaska from 11:04 GMT to 11:14 GMT; and (2) LPV200 service coverage in Canada from 08:01 GMT to 08:11 GMT, 09:53 GMT to 10:01 GMT, 11:08 GMT to 11:19 GMT, 11:54 GMT to 12:06 GMT, 13:11 GMT to 13:20 GMT, and from 13:39 GMT to 13:54 GMT. TOW 547248-547253.

Start Date	End Date	GUS Switch	Location/Satellite	Service Affected	Event Description
2/9/2018	2/9/2018	Manual	GEO138,Woodbine (QWE)	LPV200_CONUS, LPV200_Alaska, LPV200_Canada	The uplink for the CRE GEO, PRN138 switched from the Woodbine uplink site to the Brewster-B uplink site at 04:12:55 GMT. This caused a 4-second outage of the GEO 138 broadcast and also caused the WAAS carrier smoothing algorithm to reinitialize for PRN138. The elevated UDRE for GEO 138 caused moderate degradation of LPV200 service coverage in CONUS from 05:01 GMT to 05:28 GMT. The elevated UDRE for GEO 138 also caused minor degradation of: (1) LPV200 service coverage in Alaska from 09:46 GMT to 09:55 GMT; and (2) LPV200 service coverage in Canada from 06:36 GMT to 06:50 GMT; and from 09:52 GMT to 09:57 GMT. TOW 447192-447197.
3/20/2018	3/20/2018	Manual	GEO135,Littleton (APA)	LPV200_Alaska, LPV200_Canada	The uplink for the CRW GEO, PRN135 switched from the Littleton uplink site to the Napa uplink site at 08:01:16 GMT. This caused a 4-second outage of the GEO 135 broadcast and also caused the WAAS carrier smoothing algorithm to reinitialize for PRN135. The elevated UDRE for GEO 135 caused minor degradation of: (1) LPV200 service coverage in Alaska from 10:14 GMT to 10:29 GMT; and (2) LPV200 service coverage in Canada from 09:57 GMT to 10:30 GMT. TOW 201693-201698.

Start Date	End Date	GUS Switch	Location/Satellite	Service Affected	Event Description
3/28/2018	3/28/2018	Faulted	GEO138,Brewster-B (BRE-B)	LPV200_Canada	The uplink for the CRE GEO, PRN138 switched from the Brewster-B uplink site to the Woodbine uplink site at 13:24:16 GMT. This caused a 19-second outage of the GEO 138 broadcast and also caused the WAAS carrier smoothing algorithm to reinitialize for PRN138. The elevated UDRE for GEO 138 caused minor degradation of LPV200 service coverage in Canada from 14:16 GMT to 14:33 GMT. TOW 307472-307489.

1.2 Report Overview

Section 2.0 provides the observed Localizer Performance with Vertical Guidance (LPV) and NPA performance for the evaluated receiver locations (see Table 1-2 and Table 1-3). This section also shows tabulated data for the 95% accuracy and the maximum inaccuracy. In addition, the daily 95% accuracy for each receiver and the histograms of vertical and horizontal error are shown.

Section 3.0 provides the summary of the WAAS instantaneous availability performance at each receiver for three operational service levels. In addition, the daily availability, number of outages, and outage rate for each evaluated receiver are also reported.

Section 4.0 provides geographic plots of the WAAS service availability. Also shown in this section are plots of the percentage of the Continental United States (CONUS) and Alaska service areas covered by various levels of service availability.

Section 5.0 provides the summary of the Hazardous Misleading Information (HMI) analysis as well as a safety margin index for each receiver. This section also shows update rates of WAAS messages transmitted from CRE and CRW.

Section 6.0 provides the UDRE and GIVE bounding percentages and the 95% index of the range and ionospheric accuracy for each satellite tracked by the WAAS receiver at 12 locations.

Section 7.0 provides the GEO ranging performance for CRE and CRW.

Section 8.0 provides the WAAS LPV availability and outages at selected airports.

Section 9.0 provides the assessment of WAAS CNMP bounding for 114 WAAS receivers.

Section 10.0 provides surveyed positions of all Wide-Area Reference Equipment (WRE) and the difference between the WRE survey positions and the survey positions using both the National Geodetic Survey (NGS) Online Positioning Use Server (OPUS) and the Canadian Spatial Reference System (CSRS) Precise Point Positioning (PPP) service.

Section 11.0 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 using the GPS/WAAS position solution tool to compute a RTCA DO-229D-weighted least squares user navigation solution and WAAS horizontal protection level (HPL) and vertical

protection level (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 signal in space (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 lateral navigation (LNAV)/vertical navigation (VNAV) operational service levels as well as 95% SPS accuracy for certain locations. Note that WAAS accuracy statistics presented are compiled only when all WAAS corrections (i.e., fast, long term, and ionospheric corrections) for at least four satellites are available; this is referred to as PA navigation mode. Table 2-1 also shows the percentage of time PA navigation mode was supported by WAAS at each receiver. The maximum and minimum LPV errors for this reporting period are:

- The maximum 95% CONUS horizontal LPV error was 1.430 meters observed at Atlantic City.
- The maximum 95% CONUS vertical LPV error was 1.609 meters observed at Miami.
- The minimum 95% CONUS horizontal LPV errors was 0.514 meters observed at Oakland.
- The minimum 95% CONUS vertical LPV error was 0.743 meters observed at Denver.

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	1.269	1.269	1.255	100	*	*
Atlantic City	1.430	1.430	1.553	100	*	*
Oklahoma City	0.767	0.767	1.054	100	*	*
Albuquerque	0.631	0.631	0.902	100	1.570	4.110
Anchorage	0.686	0.686	1.258	100	*	*
Atlanta	0.803	0.803	1.192	100	1.839	4.012
Barrow	0.670	0.670	1.323	100	*	*
Bethel	0.594	0.594	0.979	100	1.511	4.123
Billings	0.704	0.705	0.918	100	1.736	3.989
Boston	0.911	0.911	1.002	100	2.167	3.714
Chicago	0.856	0.856	0.912	100	*	*
Cleveland	0.816	0.816	0.947	100	2.121	3.897
Cold Bay	0.756	0.756	1.009	100	*	*
Dallas	0.706	0.706	1.264	100	*	*
Denver	0.682	0.682	0.743	100	*	*
Fairbanks	0.629	0.629	1.113	100	1.486	4.023
Gander	0.932	0.932	1.174	100	*	*
Goose Bay	0.864	0.864	0.997	100	*	*
Houston	0.779	0.779	1.319	100	*	*
Iqaluit	0.922	0.923	1.286	100	*	*
Jacksonville	0.803	0.803	1.360	100	*	*
Juneau	0.642	0.642	1.184	100	*	*
Kansas City	0.635	0.635	0.854	100	1.845	4.047
Kotzebue	0.645	0.645	1.103	100	1.527	4.092
Los Angeles	0.851	0.851	1.092	100	1.664	4.390
Memphis	0.682	0.682	1.015	100	*	*
Merida	0.677	0.677	1.673	100	*	*
Mexico City	0.586	0.586	1.637	100	*	*
Miami	0.846	0.846	1.609	100	1.675	4.169
Minneapolis	0.711	0.711	0.855	100	1.964	3.899
New York	0.882	0.882	0.993	100	*	*
Oakland	0.514	0.514	1.055	100	1.556	4.506
Puerto Vallarta	0.668	0.668	1.837	100	*	*
Salt Lake City	0.699	0.699	0.815	100	1.664	4.001
San Jose Del Cabo	0.670	0.670	1.813	100	*	*
Seattle	0.686	0.686	0.901	100	1.591	4.028
Washington DC	0.952	0.952	1.027	100	2.076	3.942
Winnipeg	0.647	0.647	1.050	100	*	*

* SPS data not available

NPA navigation mode is when only WAAS fast and long term corrections are available to a user (i.e., no ionospheric corrections). Table 2-2 shows the 95%, 99.999%, and maximum NPA horizontal position accuracy. The maximum and minimum NPA errors for this reporting period are as below:

- The maximum 95% horizontal error was 2.797 meters observed at Honolulu.
- The maximum 99.999% horizontal error was 8.249 meters observed at Honolulu.
- The minimum 95% horizontal error was 0.872 meters observed at Oakland.
- The minimum 99.999% horizontal error was 1.649 meters observed at Oakland.

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 (Meters)
Albuquerque	0.945	1.669	100	1.806
Anchorage	1.530	3.113	100	3.274
Atlanta	1.179	2.313	100	2.400
Barrow	1.214	2.449	100	2.814
Bethel	1.160	2.199	100	2.444
Billings	1.398	2.386	100	2.601
Boston	1.760	3.161	100	3.289
Cleveland	1.538	2.755	100	2.892
Cold Bay	1.184	2.603	100	2.772
Fairbanks	1.459	3.211	100	3.413
Gander	1.607	2.687	100	2.849
Honolulu	2.797	8.249	100	8.558
Houston	1.379	2.967	100	5.144
Iqaluit	0.967	2.337	100	2.969
Juneau	1.130	2.220	100	2.477
Kansas City	1.074	1.691	100	1.998
Kotzebue	1.273	2.576	100	3.322
Los Angeles	1.307	2.340	100	2.524
Merida	1.231	3.039	100	3.172
Miami	1.284	3.391	100	3.513
Minneapolis	1.306	2.164	100	2.562
Oakland	0.872	1.649	100	1.835
Salt Lake City	1.328	2.278	100	2.606
San Jose Del Cabo	1.049	2.465	100	2.705
San Juan	1.336	5.386	100	5.636
Seattle	1.172	3.139	100	3.729
Tapachula	1.688	5.188	100	5.363
Washington DC	1.780	3.003	100	3.142

Table 2-3 shows the quarterly maximum LPV error statistics: (1) the column Horizontal Error column shows the maximum position errors while the calculated HPL meets the LPV service level defined in Table 1-1, (2) the Vertical Error column shows the maximum position errors while the calculated VPL meets the LPV service level, (3) the Horizontal Error/HPL column and the Vertical Error/VPL column show the ratio of position error to protection level at the time the maximum error occurred, (4) the Horizontal Maximum Ratio column and the Vertical Maximum Ratio column show the maximum position error to protection level ratio for the quarter. During this reporting period, the maximum LPV horizontal error was 2.994 meters occurred at Barrow and maximum vertical LPV error was 6.254 meters occurred at Barrow.

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	2.384	0.183	0.226	3.628	0.097	0.178
Atlantic City-a	2.743	0.191	0.261	3.707	0.205	0.212
Grand Forks	0.000		0.000	0.000		0.000
Oklahoma City	1.832	0.162	0.186	2.498	0.129	0.170
Albuquerque	1.331	0.146	0.146	2.387	0.068	0.164
Anchorage	1.503	0.109	0.132	2.958	0.120	0.152
Atlanta	1.812	0.130	0.188	2.404	0.125	0.164
Barrow	2.994	0.186	0.185	6.254	0.265	0.265
Bethel	1.458	0.094	0.100	2.279	0.093	0.122
Billings	1.559	0.137	0.139	2.520	0.206	0.206
Boston	1.723	0.151	0.151	2.581	0.150	0.150
Chicago	1.825	0.204	0.204	2.276	0.175	0.175
Cleveland	1.633	0.172	0.176	2.664	0.132	0.163
Cold Bay	2.123	0.100	0.101	2.386	0.062	0.115
Dallas	1.593	0.163	0.163	2.645	0.208	0.208
Denver	1.453	0.144	0.145	1.990	0.103	0.135
Fairbanks	1.926	0.094	0.153	4.105	0.131	0.165
Gander	2.184	0.080	0.113	3.055	0.068	0.120
Goose Bay	1.775	0.109	0.127	2.849	0.107	0.107
Houston	1.642	0.169	0.180	2.607	0.198	0.198
Iqaluit	2.679	0.095	0.167	5.817	0.175	0.195
Jacksonville	1.717	0.153	0.160	2.761	0.155	0.170
Juneau	1.526	0.120	0.122	3.178	0.130	0.149
Kansas City	1.291	0.128	0.142	2.166	0.100	0.152
Kotzebue	1.903	0.087	0.166	5.209	0.115	0.131
Los Angeles	1.828	0.109	0.143	2.408	0.106	0.131
Memphis	1.323	0.130	0.157	2.427	0.114	0.165
Merida	1.646	0.125	0.126	4.018	0.148	0.177
Mexico City	1.525	0.060	0.094	3.459	0.079	0.122
Miami	1.788	0.098	0.147	3.000	0.154	0.161
Minneapolis	1.438	0.109	0.150	2.243	0.096	0.146
New York	1.759	0.139	0.163	2.751	0.126	0.126
Oakland	1.393	0.114	0.117	2.340	0.067	0.130
Puerto Vallarta	1.315	0.092	0.092	3.497	0.115	0.156
Salt Lake City	1.724	0.137	0.170	2.839	0.132	0.134
San Jose Del Cabo	1.685	0.110	0.117	4.503	0.092	0.186
Seattle	1.666	0.157	0.161	2.322	0.104	0.140
Washington DC	1.763	0.142	0.173	2.864	0.139	0.139
Winnipeg	1.377	0.126	0.126	2.792	0.112	0.169

Figure 2-1 through Figure 2-3 show the daily LPV 95% horizontal accuracy at the PA evaluation sites, and Figure 2-4 through Figure 2-6 show the daily LPV 95% vertical accuracy. Noteworthy increases in the 95% PA position errors over multiple evaluation sites due to geomagnetic activity in Figure 2-1 through Figure 2-6 are listed below.

- January 9, 2018—Position errors in CONUS, Canada, and Mexico were elevated. The maximum 95% horizontal and vertical LPV errors were 1.896 meters and 2.543 meters at Atlantic City and Merida, respectively. The Kp index was 4.
- January 14, 2018—Position errors in CONUS, Alaska, and Canada were elevated. The maximum 95% horizontal and vertical LPV errors were 2.022 meters and 1.883 meters at Atlantic City and Iqaluit, respectively. The Kp index was 5.

- March 18–19, 2017—Position errors in CONUS, Alaska, and Canada were elevated. The maximum 95% horizontal and vertical LPV errors were 1.814 meters and 2.153 meters at Arcata. The Kp index was 5 and 6, respectively.

Figure 2-1 LPV 95% Horizontal Accuracy

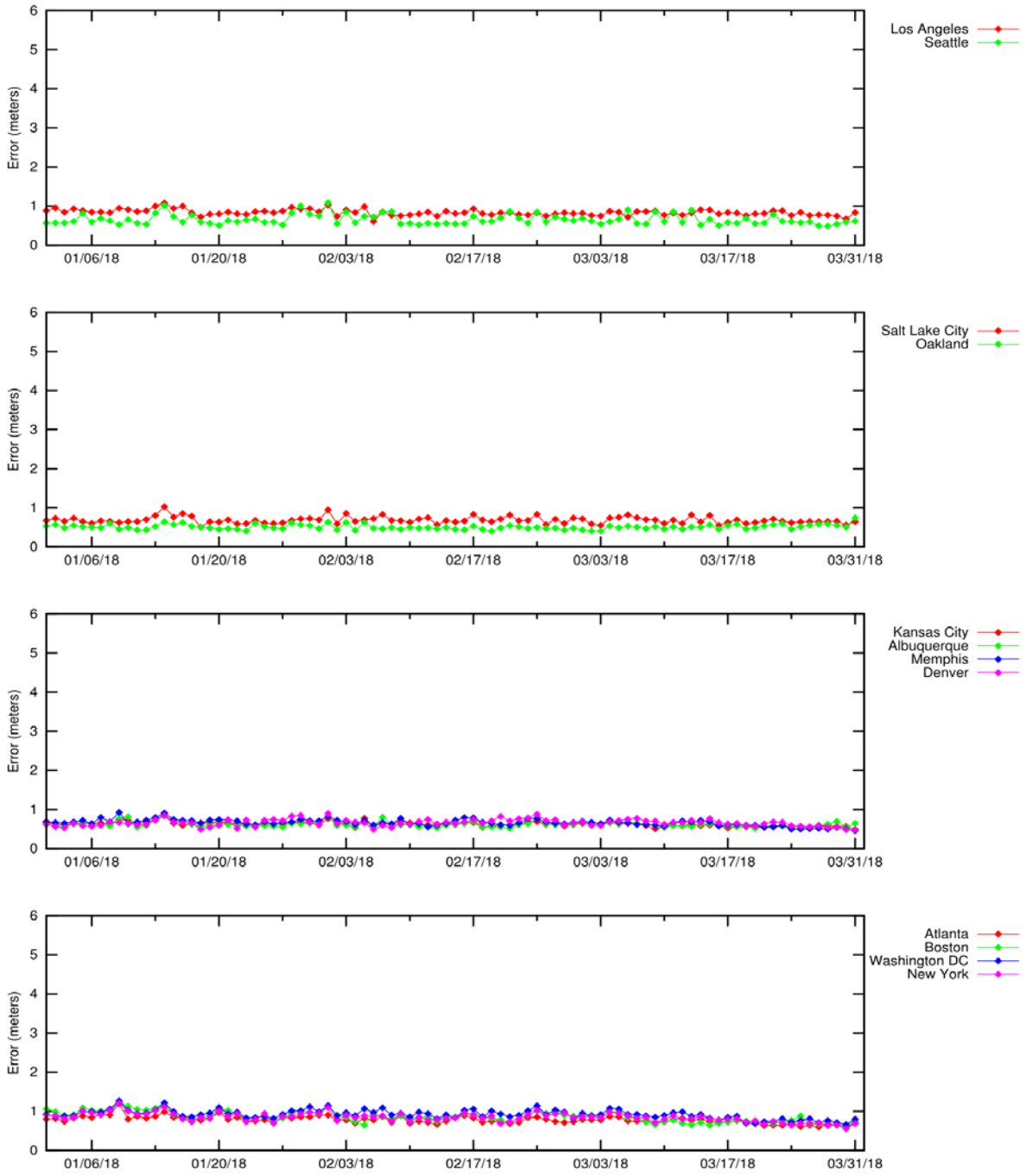


Figure 2-2 LPV 95% Horizontal Accuracy

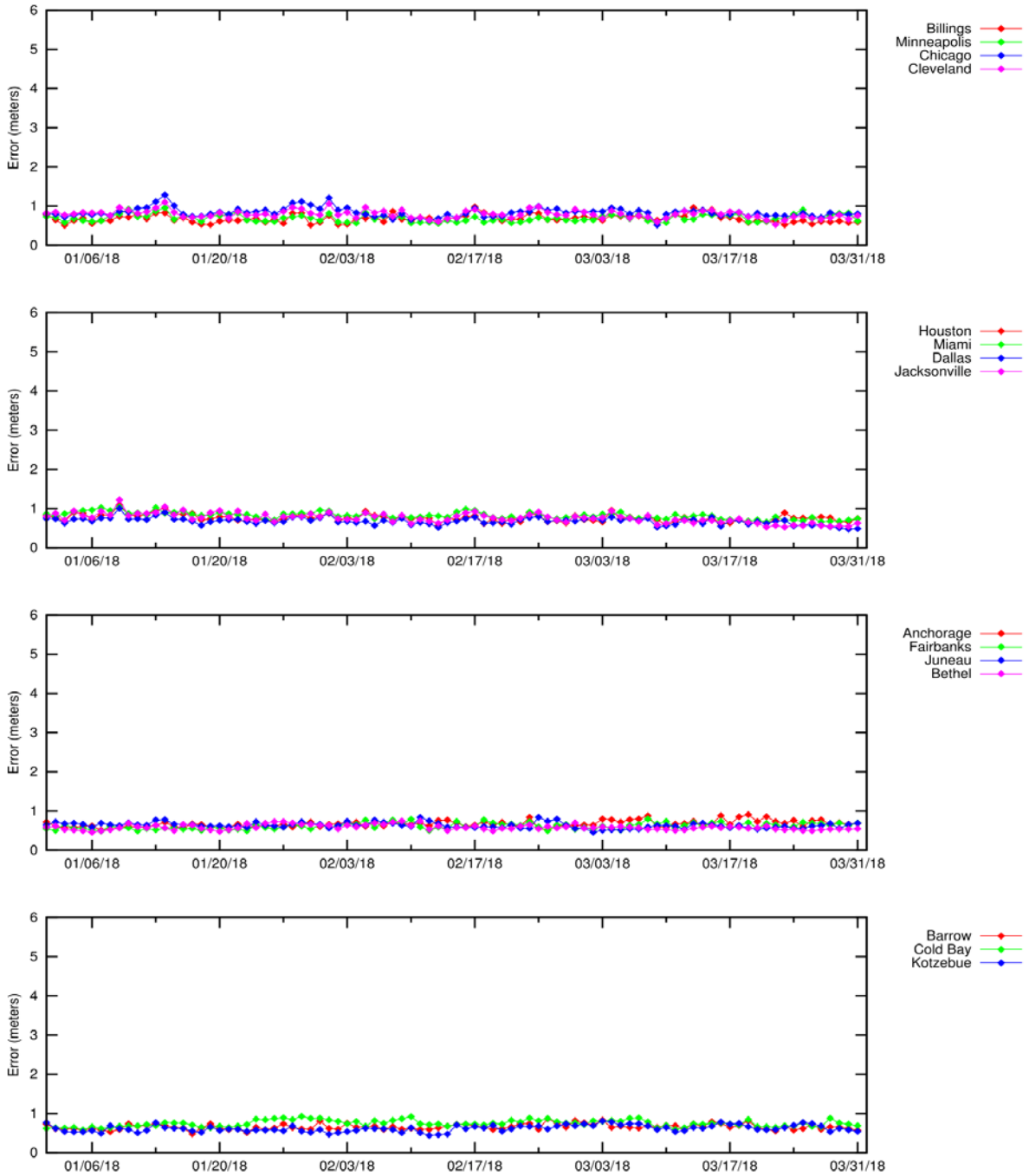


Figure 2-3 LPV 95% Horizontal Accuracy

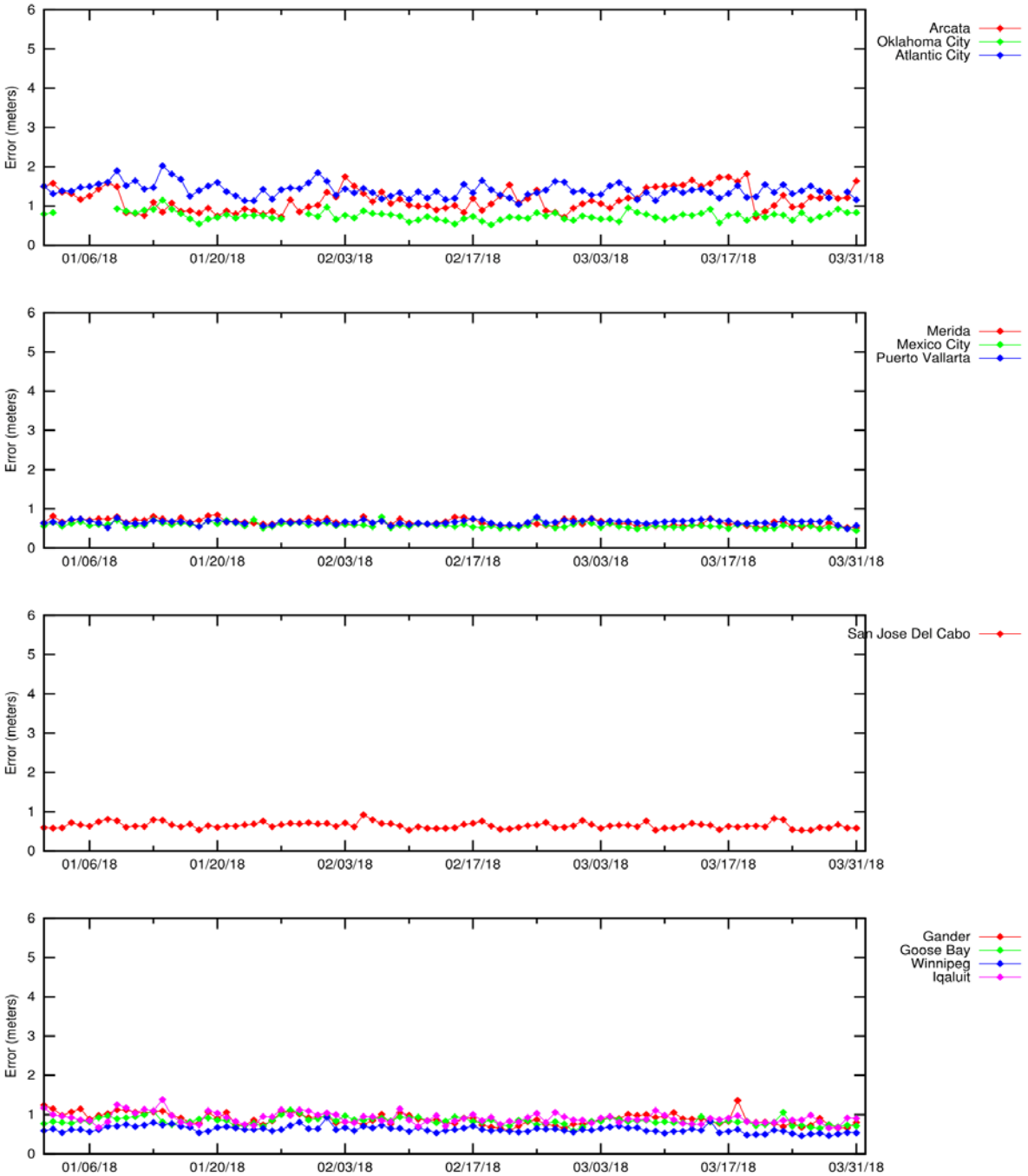


Figure 2-4 LPV 95% Vertical Accuracy

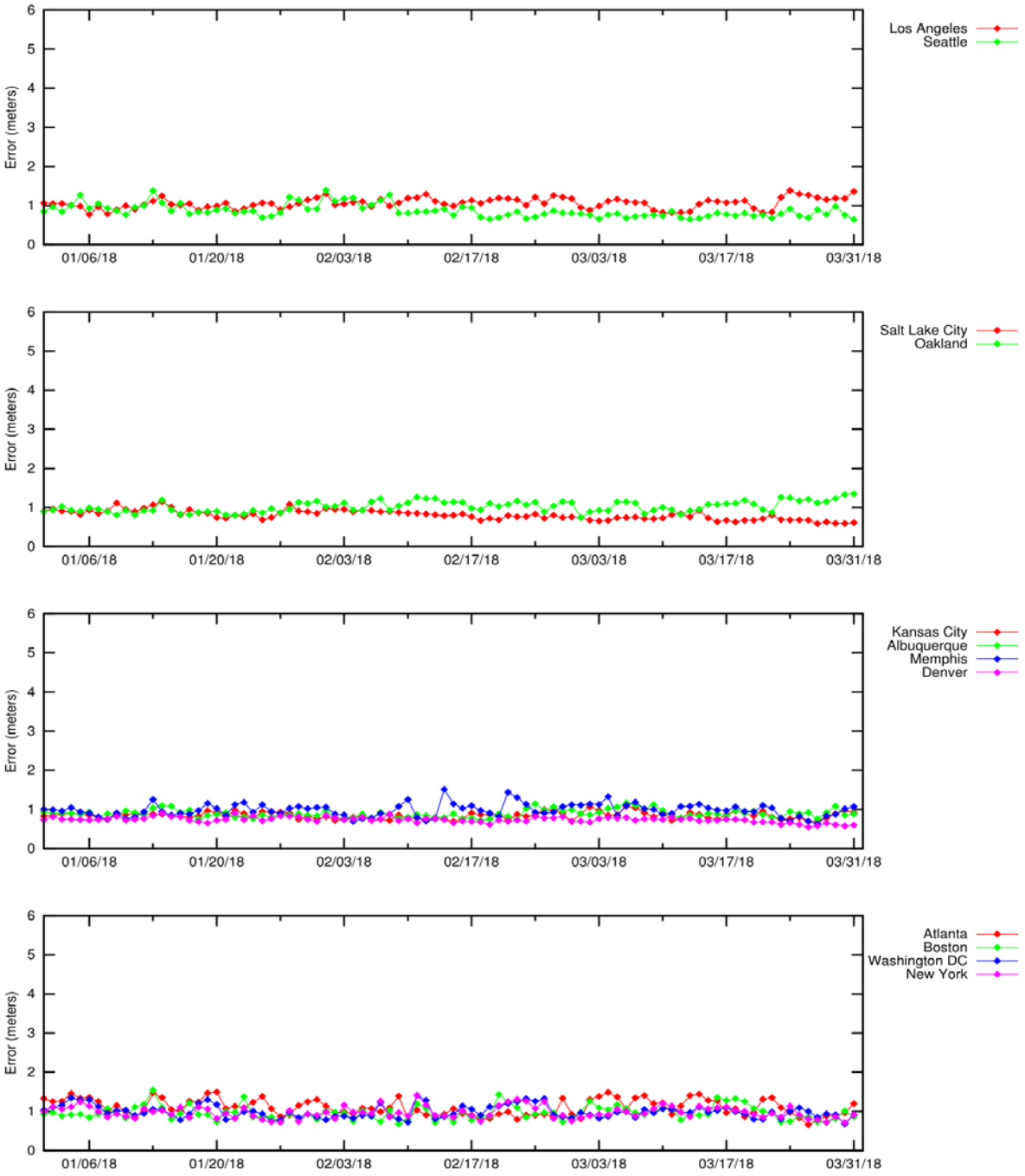


Figure 2-5 LPV 95% Vertical Accuracy

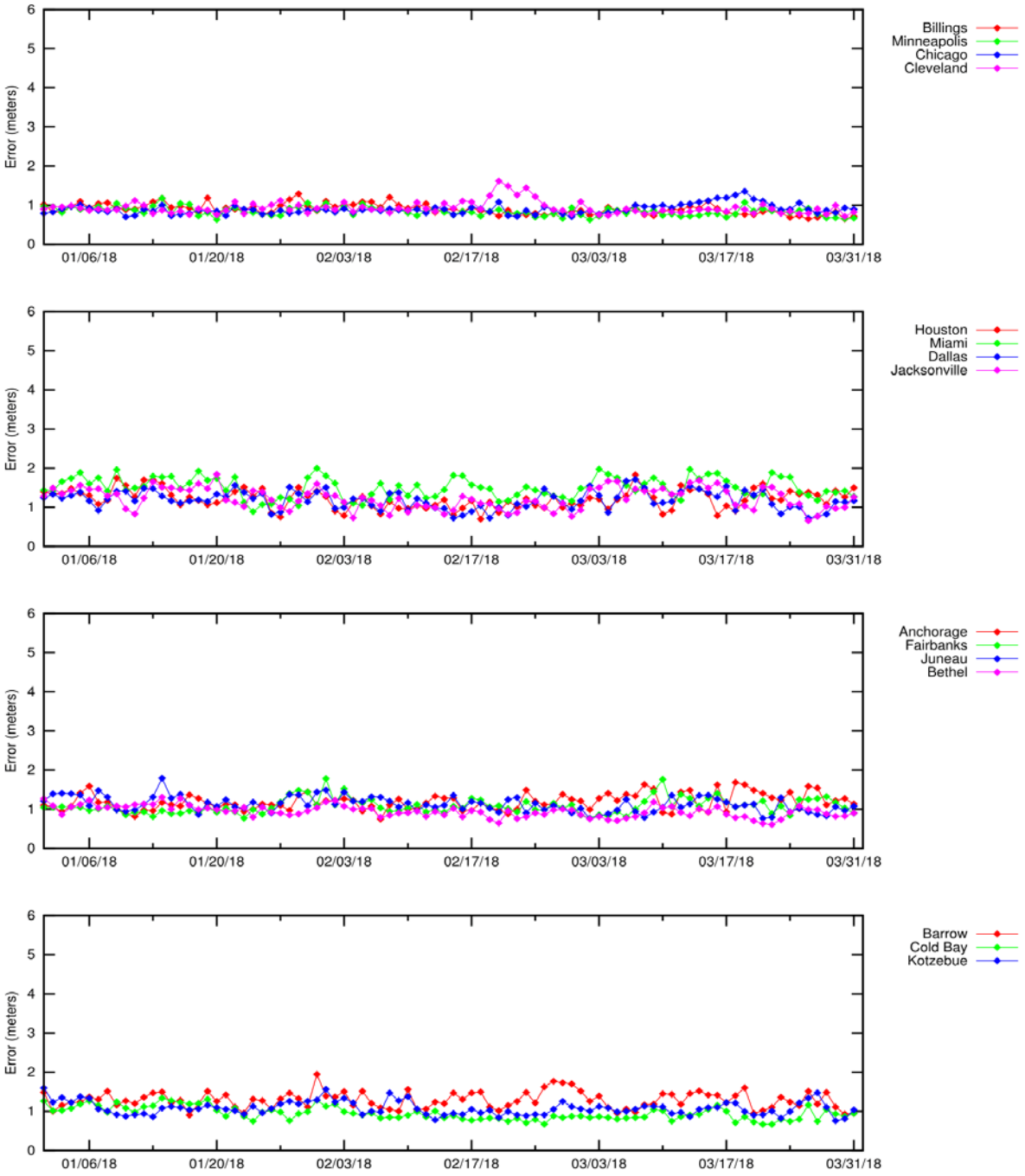


Figure 2-6 LPV 95% Vertical Accuracy

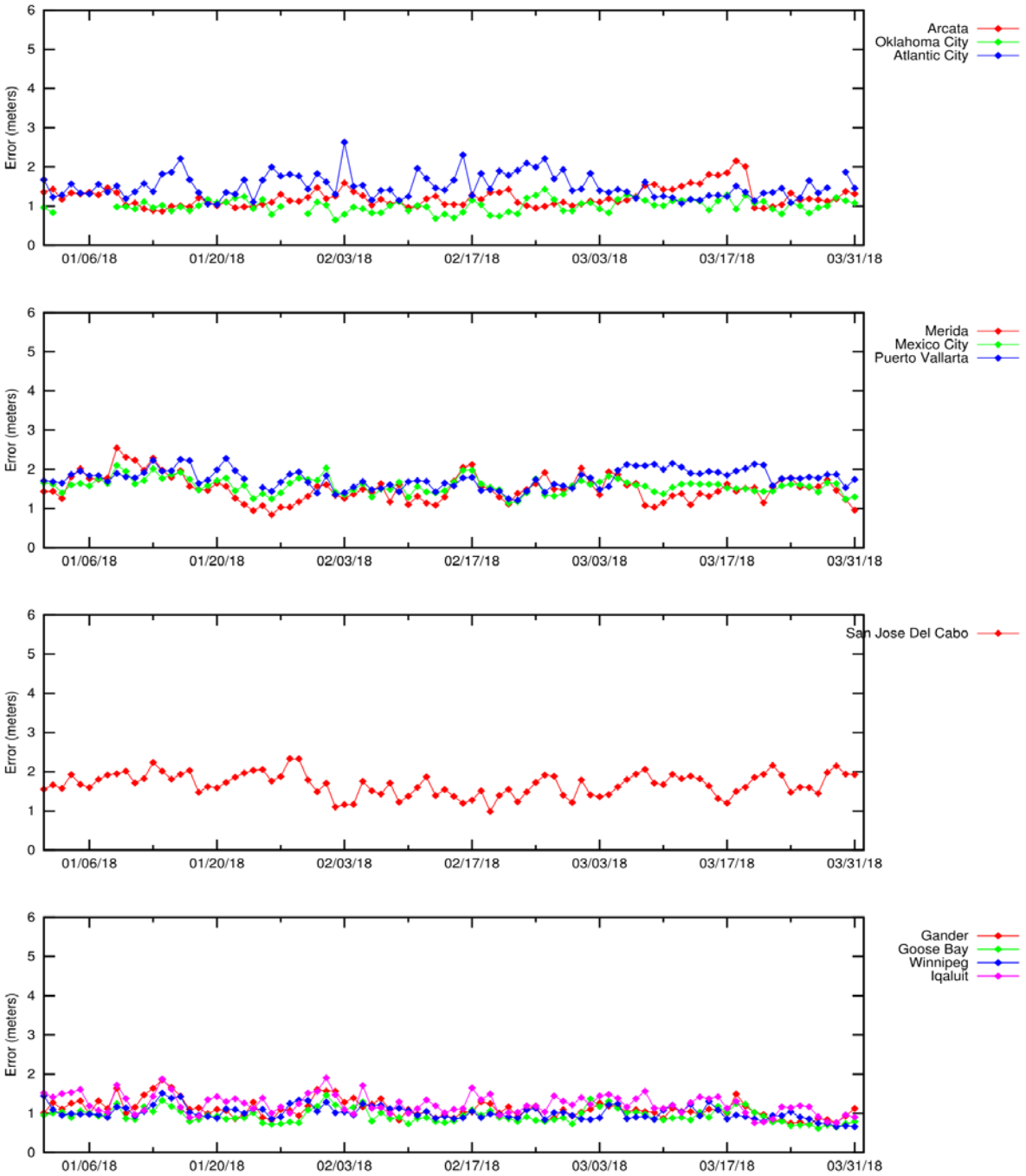


Figure 2-7 and Figure 2-8 show the daily NPA 95% horizontal accuracy at the NPA evaluation sites for the reporting period. The increases in 95% NPA position errors due to geomagnetic activity occurred on January 9, January 18, and March 18, 2017.

Figure 2-7 NPA 95% Horizontal Accuracy

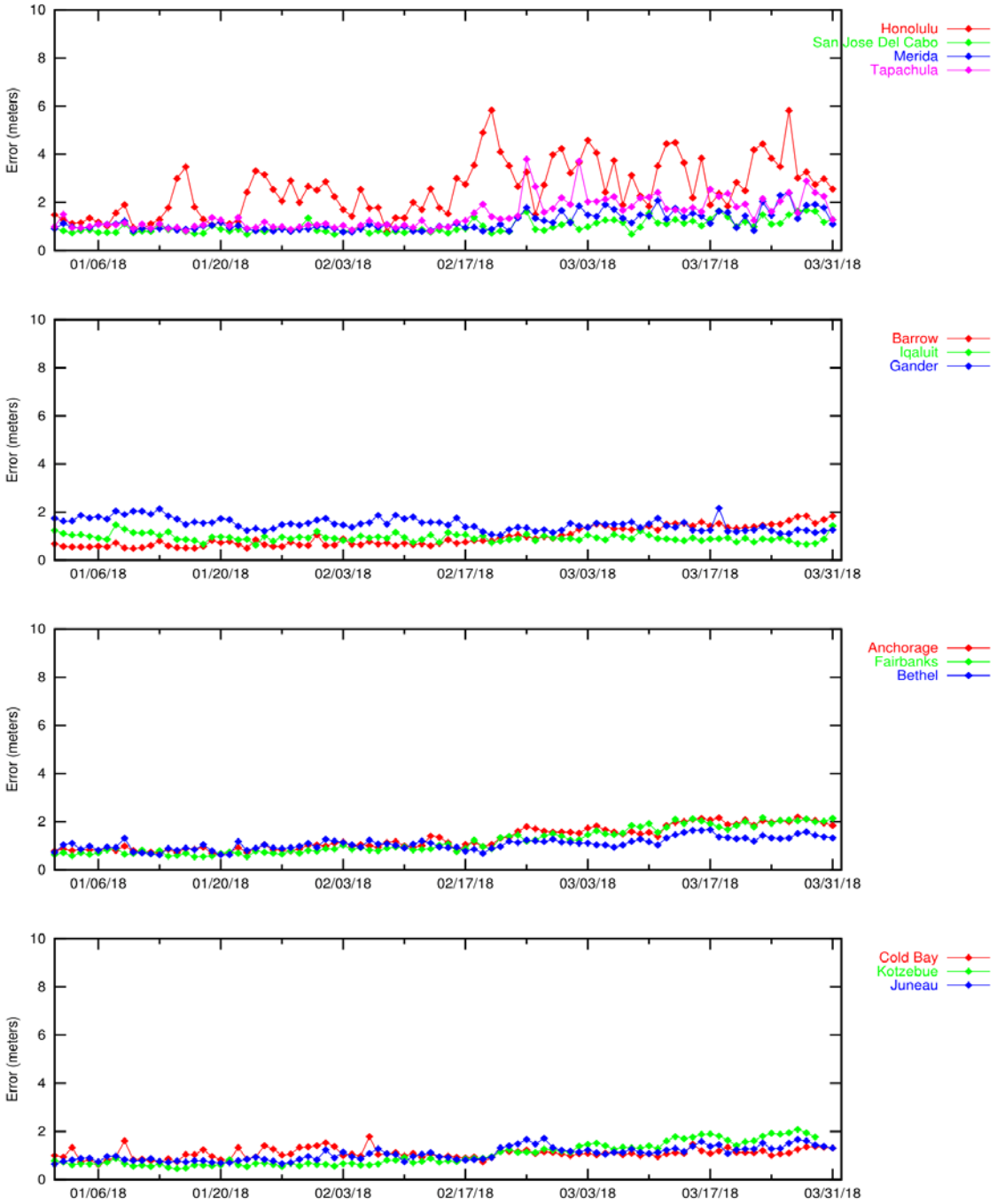


Figure 2-8 NPA 95% Horizontal Accuracy

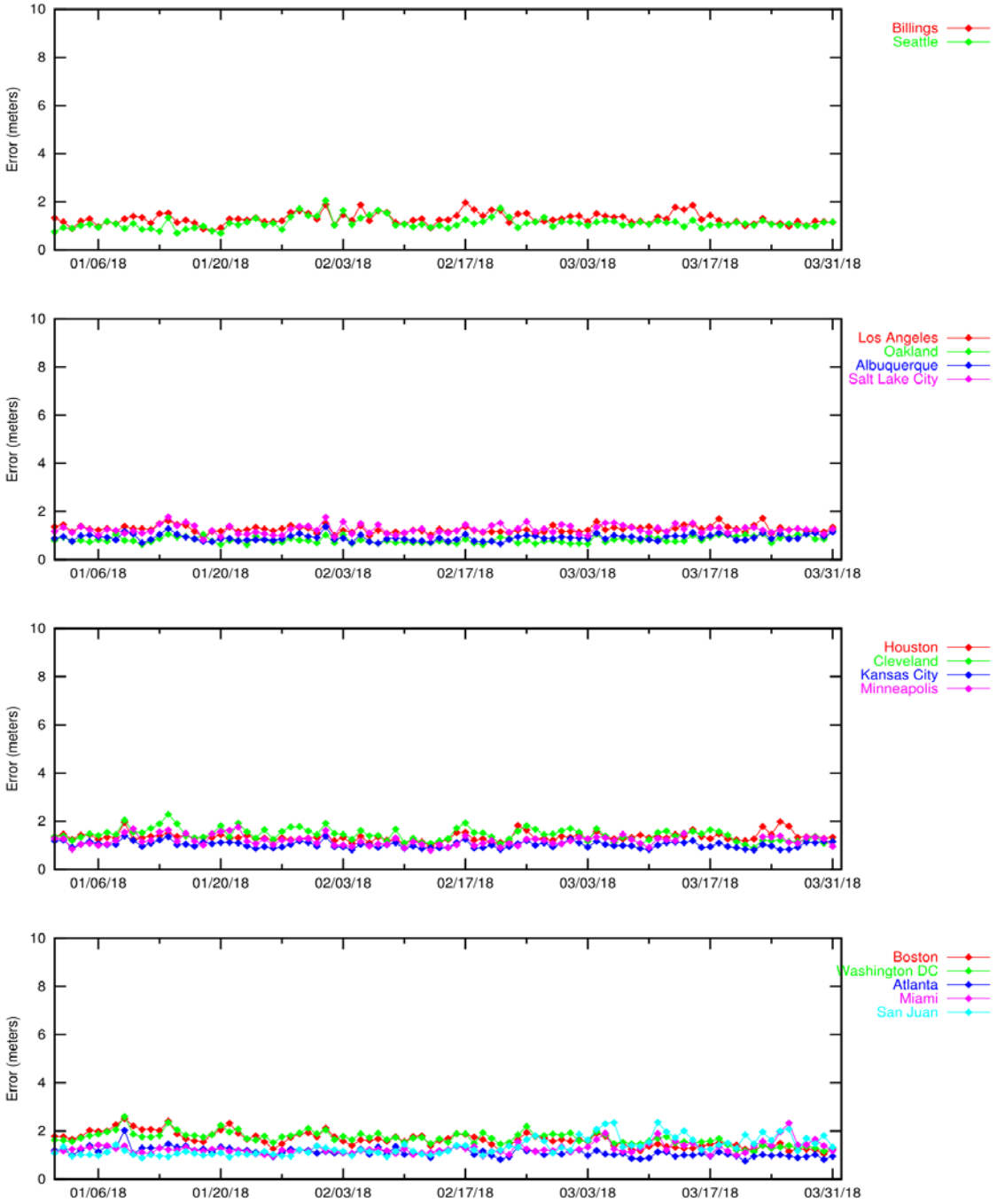


Figure 2-9 through Figure 2-12 show the distributions of the vertical and horizontal errors at all 38 WAAS receiver for the quarter. Figure 2-9 and Figure 2-10 show the triangular distributions of vertical position error (VPE) versus VPL and horizontal position error (HPE) versus HPL: (1) the horizontal axis is the position error, (2) the vertical axis is the WAAS protection level where lower protection levels equate to better availability, (3) the diagonal line shows the point where error equals protection level, (4) above and to the left of the diagonal line show where errors are bounded (WAAS is providing integrity in the position domain), and (5) below and to the right show where errors are not bounded (HMI could be present). Figure 2-11 and Figure 2-12 show the 2-D histograms of HPE, VPE, and normalized position errors: (1) the blue trace shows the distributions of the actual HPE and VPE; (2) 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; (3)

the magenta trace shows the distributions of the actual horizontal and vertical errors normalized by one-sigma value of the protection level: horizontal protection level (HPL/6.0) and vertical protection level (VPL/5.33); (4) 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. The narrowness of the normalized error distributions indicates good safety performance.

Figure 2-9 LPV Horizontal Error Bounding Triangle Chart

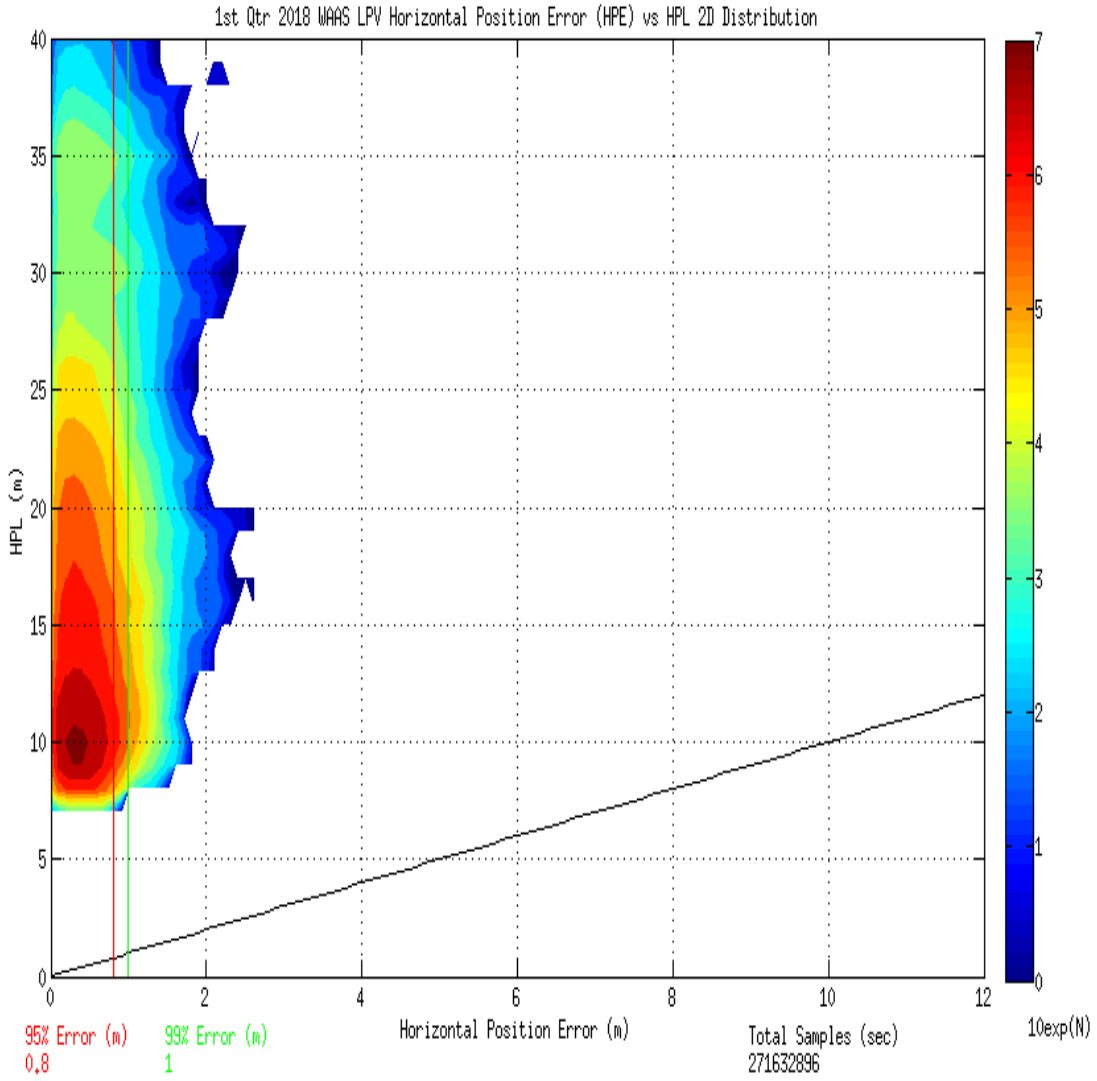


Figure 2-10 LPV Vertical Error Bounding Triangle Chart

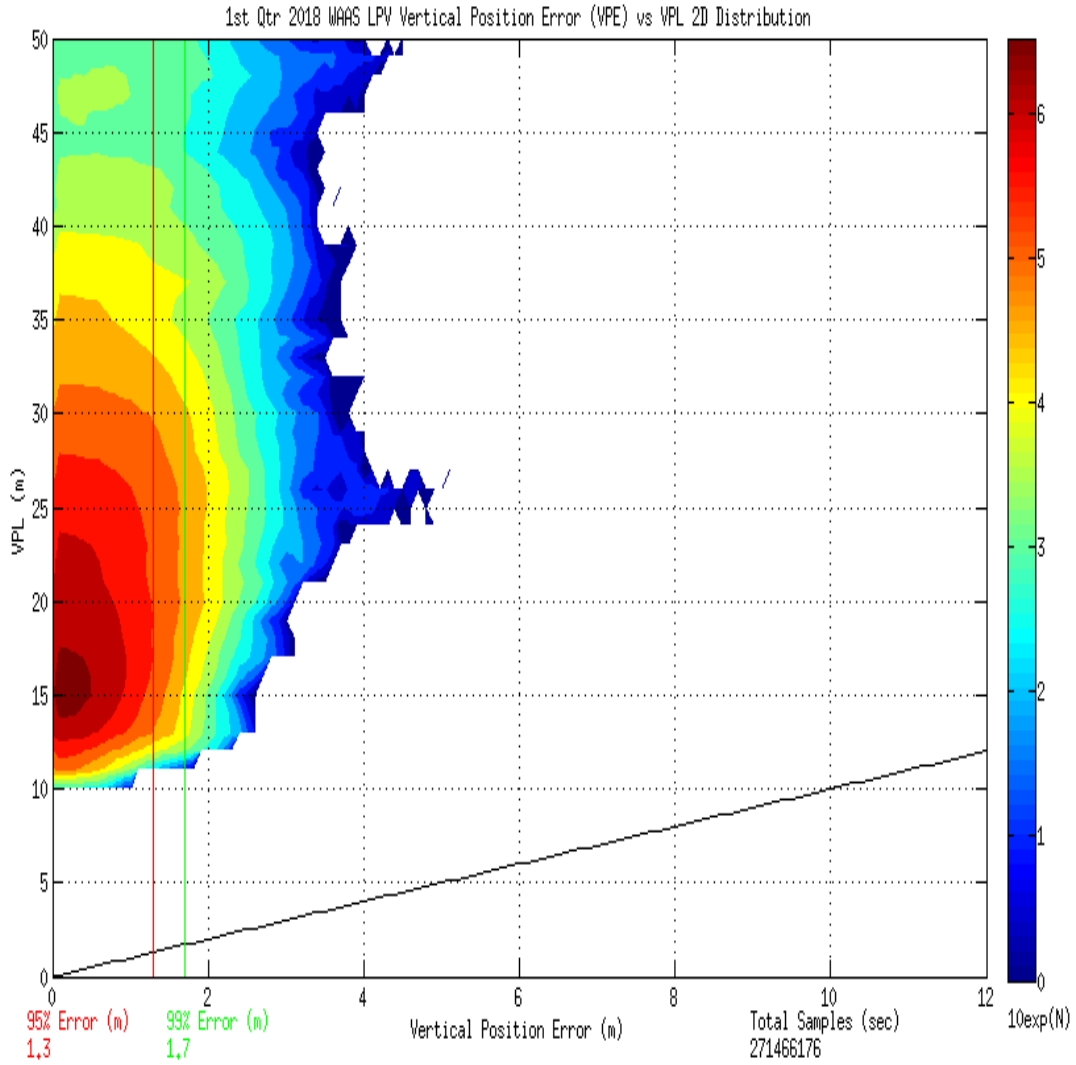


Figure 2-11 LPV 2-D Horizontal Error Distribution Histogram

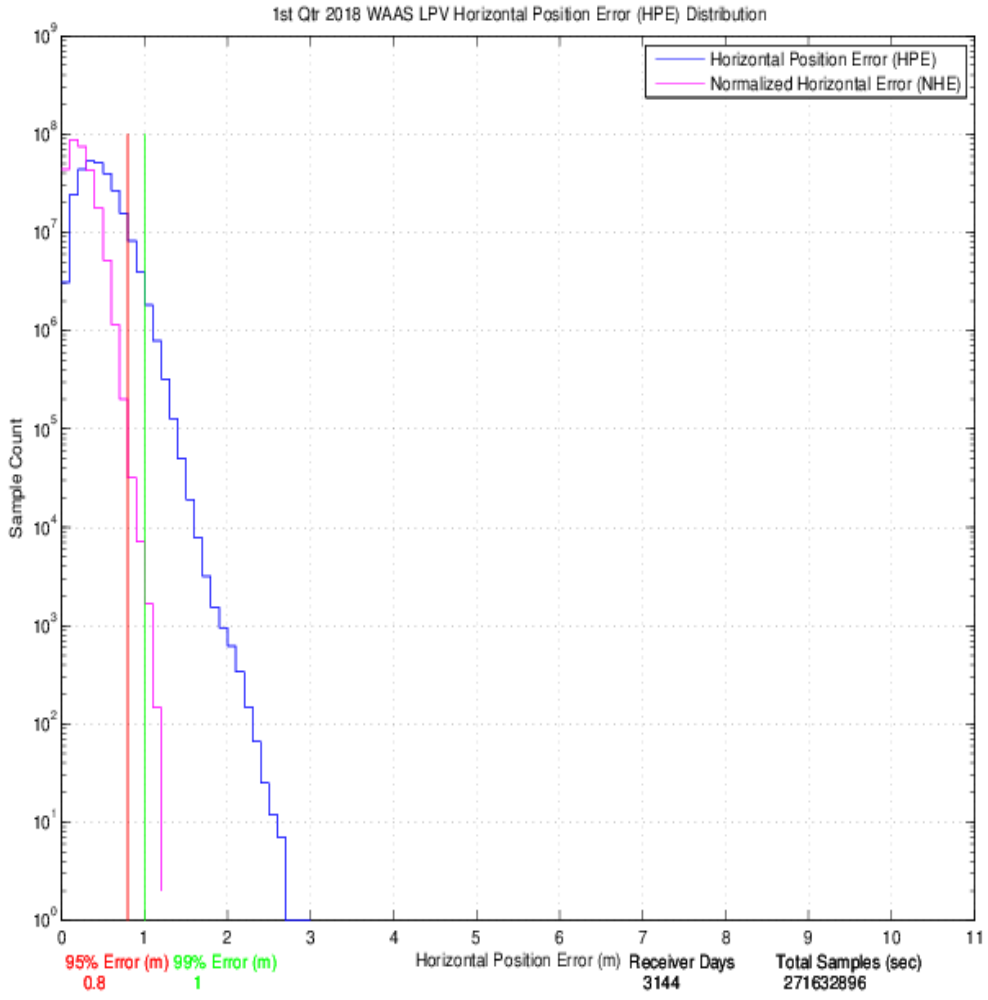
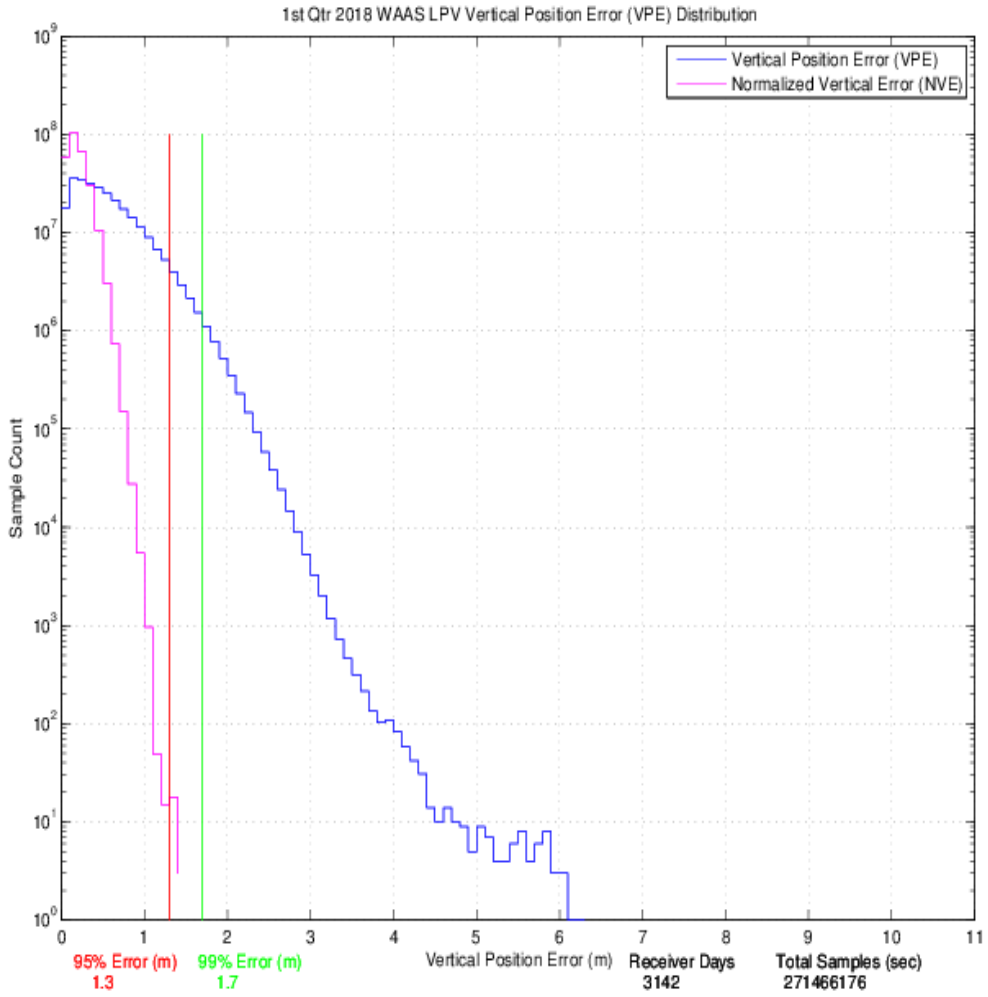


Figure 2-12 LPV 2-D Vertical Error Distribution Histogram



3.0 AVAILABILITY

The WAAS availability evaluation documents the percentage of time the WAAS provided service for the operational service levels defined in Table 1-1. The RTCA DO-229D VPL and HPL were computed for each evaluated receiver. Table 3-1 shows the evaluated receivers, the 99% maintained protection levels, and the percentage in PA mode (described in Section 2.0). The maximum and minimum VPL and HPL for this reporting period are listed as:

- The maximum 99% CONUS HPL was 16.358 meters observed at Cleveland
- The maximum 99% CONUS VPL was 34.744 meters observed at Oakland
- The minimum 99% CONUS HPL was 10.965 meters observed at Denver
- The minimum 99% CONUS VPL was 19.006 meters observed at Kansas City
- The maximum 99% Alaska HPL was 23.025 meters observed at Cold Bay
- The maximum 99% Alaska VPL was 38.574 meters observed at Barrow
- The minimum 99% Alaska HPL was 13.511 meters observed at Juneau
- The minimum 99% Alaska VPL was 24.168 meters observed at Juneau

Table 3-1 99% Protection Level

Location	99% HPL (Meters)	99% VPL (Meters)	Percentage in PA mode
Arcata	13.512	31.802	100
Atlantic City	16.293	24.282	100
Oklahoma City	11.130	19.914	100
Albuquerque	11.028	20.493	100
Anchorage	15.013	26.285	100
Atlanta	13.103	24.211	100
Barrow	17.505	38.574	100
Bethel	17.312	31.074	100
Billings	12.074	19.551	100
Boston	16.205	23.948	100
Chicago	12.058	20.356	100
Cleveland	16.358	23.579	100
Cold Bay	23.025	34.547	100
Dallas	11.017	20.412	100
Denver	10.965	19.612	100
Fairbanks	14.687	27.917	100
Gander	33.224	46.523	100
Goose Bay	26.599	32.543	100
Houston	11.598	22.369	100
Iqaluit	31.337	38.970	100
Jacksonville	13.720	25.736	100
Juneau	13.511	24.168	100
Kansas City	11.182	19.006	100
Kotzebue	17.134	33.978	100
Los Angeles	15.059	26.491	100
Memphis	12.587	20.737	100
Merida	20.377	34.273	100
Mexico City	24.762	44.059	100
Miami	16.251	28.186	100
Minneapolis	12.982	20.082	100
New York	15.522	23.884	100
Oakland	14.705	34.744	100
Puerto Vallarta	24.494	51.227	100
Salt Lake City	12.036	21.064	100
San Jose Del Cabo	22.637	47.432	100
Seattle	13.990	21.939	100
Washington DC	15.327	24.173	100
Winnipeg	13.615	21.256	100

Availability of LP, LPV, and LPV200 services are evaluated by monitoring the WAAS protection levels at receiver locations. Service is available when the VPL is less than the vertical alert limit (VAL) and the HPL is less than the horizontal alert limit (HAL). When the protection level exceeds the alert limit, the service is unavailable and an outage in service is recorded along with its duration. The operational service is not available again until both protection levels are within the alert limits for at least 15 minutes. Although this will cause minimal reduction in operational service availability, it will substantially reduce the number of service outages and prevent excessive switching in/out of service availability.

Table 3-2 shows the percentage of time LP, LPV, and LPV200 service is available using the 15-minute window criteria. Table 3-3 shows LP, LPV, and LPV200 service outages and associated outage rates. The outage rate is the percentage of theoretically interrupted approaches through a loss of operational service once the approach had started. Figure 3-1 through Figure 3-6 show the daily availability of LPV and LPV200 service levels. Figure 3-7 through Figure 3-12 show the daily interruptions of LPV and LPV200 service levels.

Table 3-2 PA Availability (15-minute window)

Location	LP WAAS With 15 Minute Window	LPV WAAS With 15 Minute Window	LPV200 WAAS With 15 Minute Window
Arcata	100	100	99.65
Atlantic City-a	100	100	100
Oklahoma City	100	100	100
Albuquerque	100	100	100
Anchorage	100	100	100
Atlanta	100	100	100
Barrow	100	99.99	97.16
Bethel	100	100	99.63
Billings	100	100	100
Boston	100	100	100
Chicago	100	100	100
Cleveland	100	100	100
Cold Bay	100	100	98.95
Dallas	100	100	100
Denver	100	100	100
Fairbanks	100	100	99.98
Gander	99.99	99.41	93.93
Goose Bay	100	100	99.25
Houston	100	100	100
Iqaluit	99.62	99.62	95.12
Jacksonville	100	100	100
Juneau	100	100	100
Kansas City	100	100	100
Kotzebue	100	100	98.95
Los Angeles	100	100	99.92
Memphis	100	100	100
Merida	100	99.85	98.92
Mexico City	100	99.79	94.76
Miami	100	100	99.99
Minneapolis	100	100	100
New York	100	100	100
Oakland	100	100	98.98
Puerto Vallarta	100	98.4	94.26
Salt Lake City	100	100	100
San Jose Del Cabo	100	99.36	94.49
Seattle	100	100	100
Washington DC	100	100	100
Winnipeg	100	100	100

Table 3-3 LPV and LPV200 Outage Rate (Per 150 sec approach)

Location	LP Outages	LP Outage Rates	LPV Outages	LPV Outage Rates	LPV200 Outages	LPV200 Outage Rates
Arcata	0	0.000000	0	0.000000	91	0.001783
Atlantic City	0	0.000000	0	0.000000	0	0.000000
Oklahoma City	0	0.000000	0	0.000000	0	0.000000
Albuquerque	0	0.000000	0	0.000000	1	0.000019
Anchorage	0	0.000000	0	0.000000	0	0.000000
Atlanta	0	0.000000	0	0.000000	0	0.000000
Barrow	0	0.000000	3	0.000058	305	0.006065
Bethel	0	0.000000	0	0.000000	56	0.001086
Billings	0	0.000000	0	0.000000	0	0.000000
Boston	0	0.000000	0	0.000000	0	0.000000
Chicago	0	0.000000	0	0.000000	0	0.000000
Cleveland	0	0.000000	0	0.000000	0	0.000000
Cold Bay	0	0.000000	0	0.000000	153	0.002990
Dallas	0	0.000000	0	0.000000	0	0.000000
Denver	0	0.000000	0	0.000000	0	0.000000
Fairbanks	0	0.000000	0	0.000000	5	0.000097
Gander	9	0.000174	90	0.001748	296	0.006086
Goose Bay	1	0.000019	1	0.000019	57	0.001109
Houston	0	0.000000	0	0.000000	0	0.000000
Iqaluit	77	0.001493	77	0.001493	409	0.008306
Jacksonville	0	0.000000	0	0.000000	0	0.000000
Juneau	0	0.000000	0	0.000000	0	0.000000
Kansas City	0	0.000000	0	0.000000	0	0.000000
Kotzebue	0	0.000000	0	0.000000	150	0.002934
Los Angeles	0	0.000000	0	0.000000	68	0.001314
Memphis	0	0.000000	0	0.000000	0	0.000000
Merida	0	0.000000	22	0.000426	182	0.003555
Mexico City	0	0.000000	81	0.001569	444	0.009058
Miami	0	0.000000	0	0.000000	32	0.000618
Minneapolis	0	0.000000	0	0.000000	0	0.000000
New York	0	0.000000	0	0.000000	0	0.000000
Oakland	0	0.000000	0	0.000000	97	0.001893
Puerto Vallarta	0	0.000000	99	0.001947	455	0.009341
Salt Lake City	0	0.000000	0	0.000000	0	0.000000
San Jose Del Cabo	0	0.000000	99	0.001927	336	0.006878
Seattle	0	0.000000	0	0.000000	0	0.000000
Washington DC	0	0.000000	0	0.000000	0	0.000000
Winnipeg	0	0.000000	0	0.000000	0	0.000000

Figure 3-1 LPV Instantaneous Availability

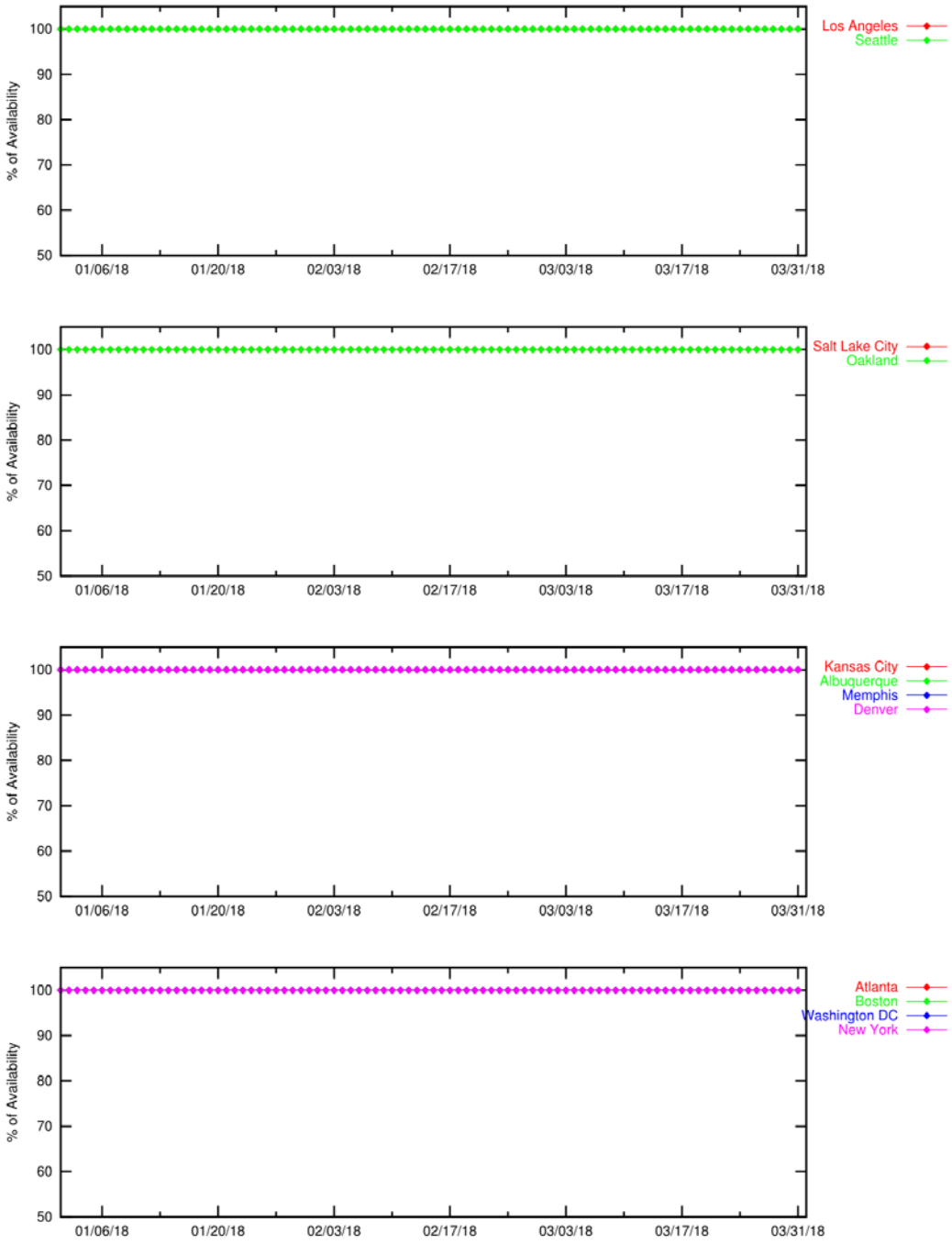


Figure 3-2 LPV Instantaneous Availability

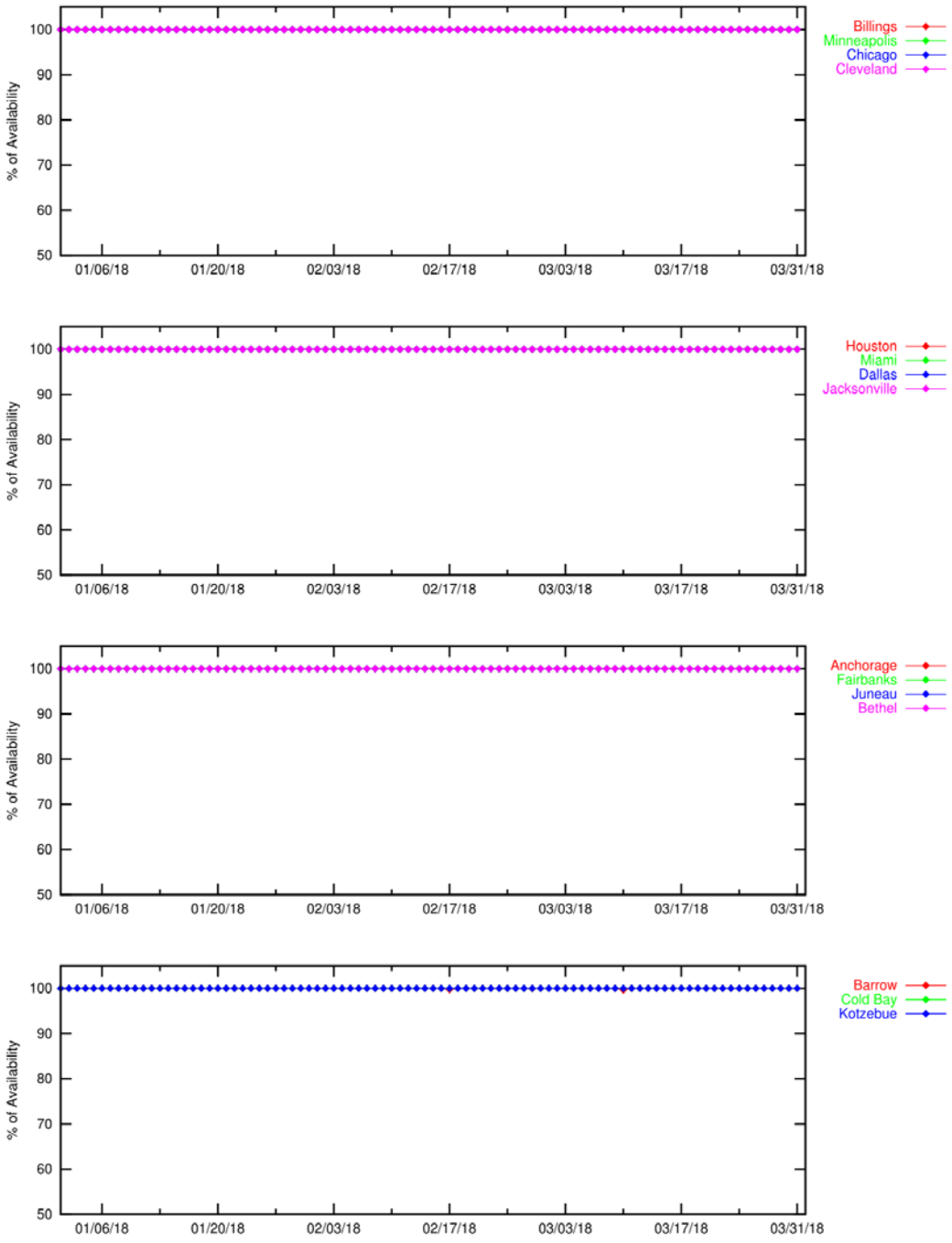


Figure 3-3 LPV Instantaneous Availability

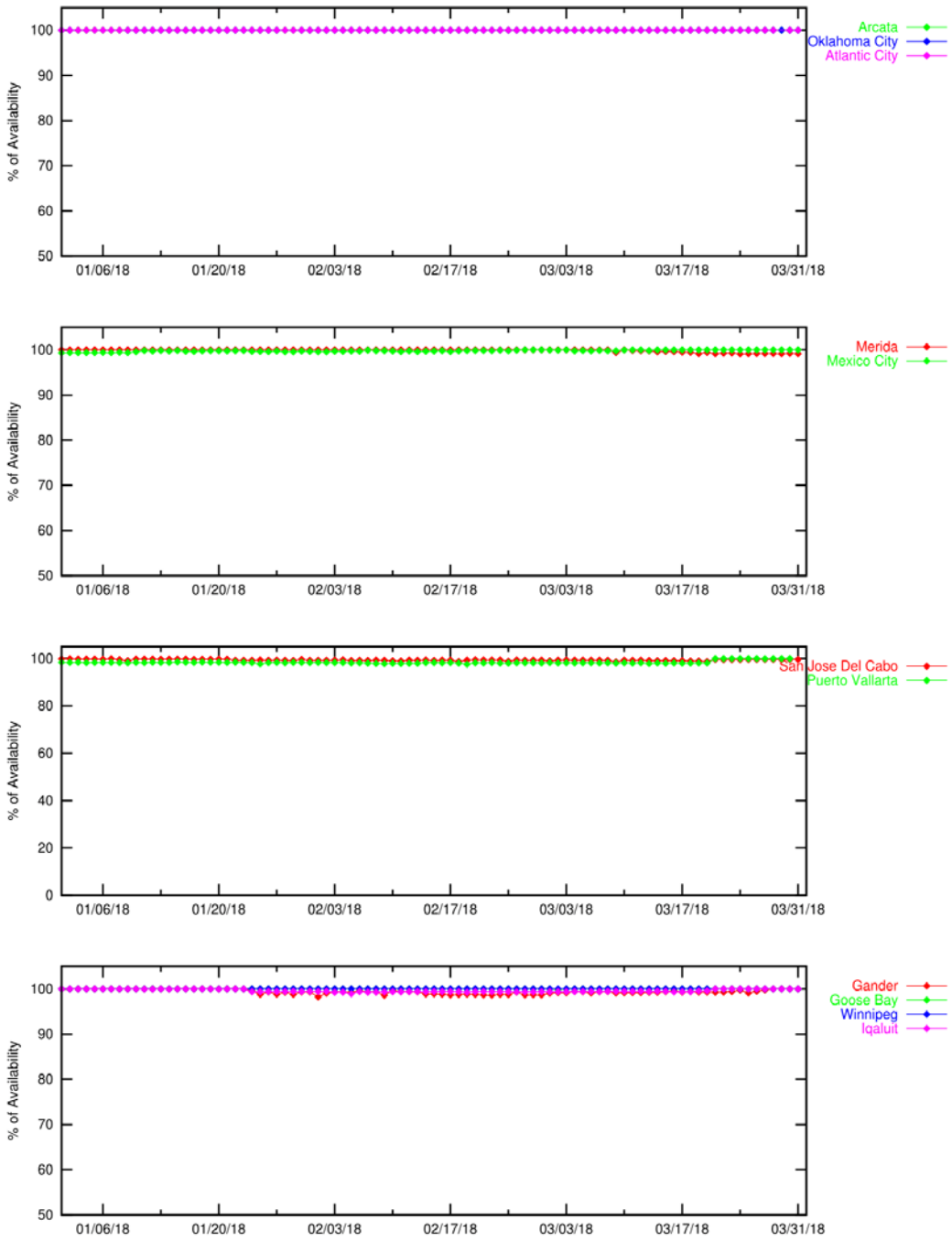


Figure 3-4 LPV200 Instantaneous Availability

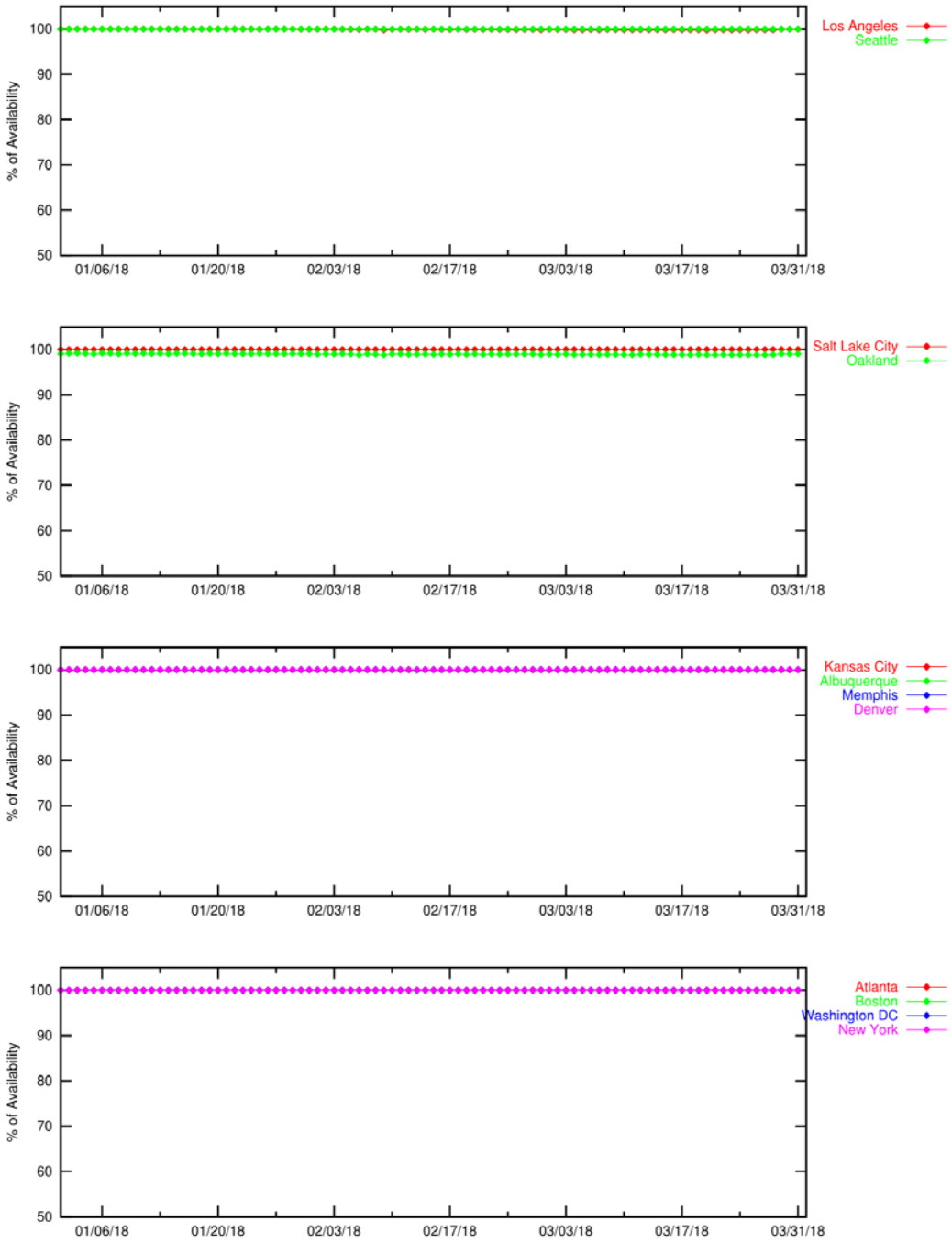


Figure 3-5 LPV200 Instantaneous Availability

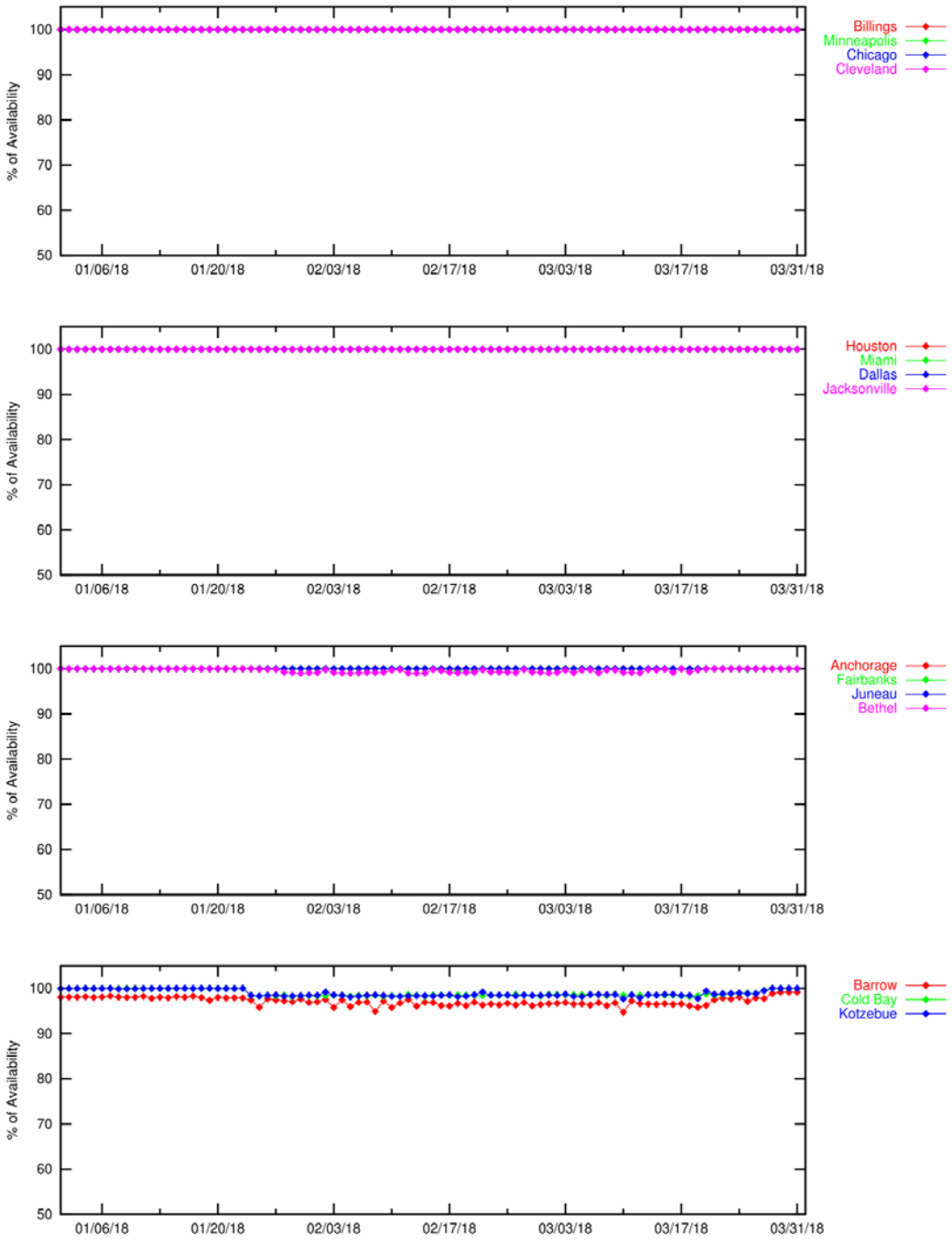


Figure 3-6 LPV200 Instantaneous Availability

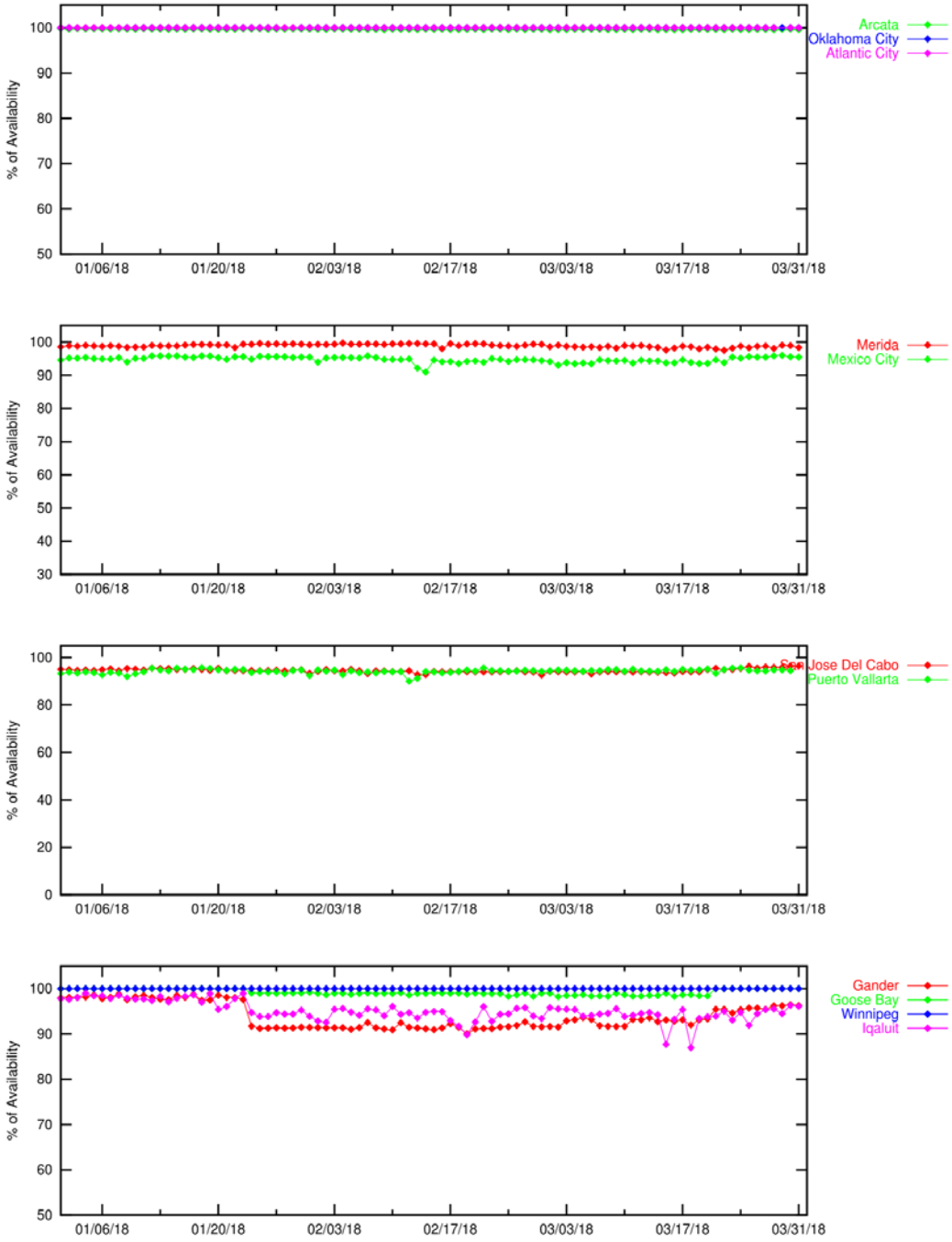


Figure 3-7 LPV Outages

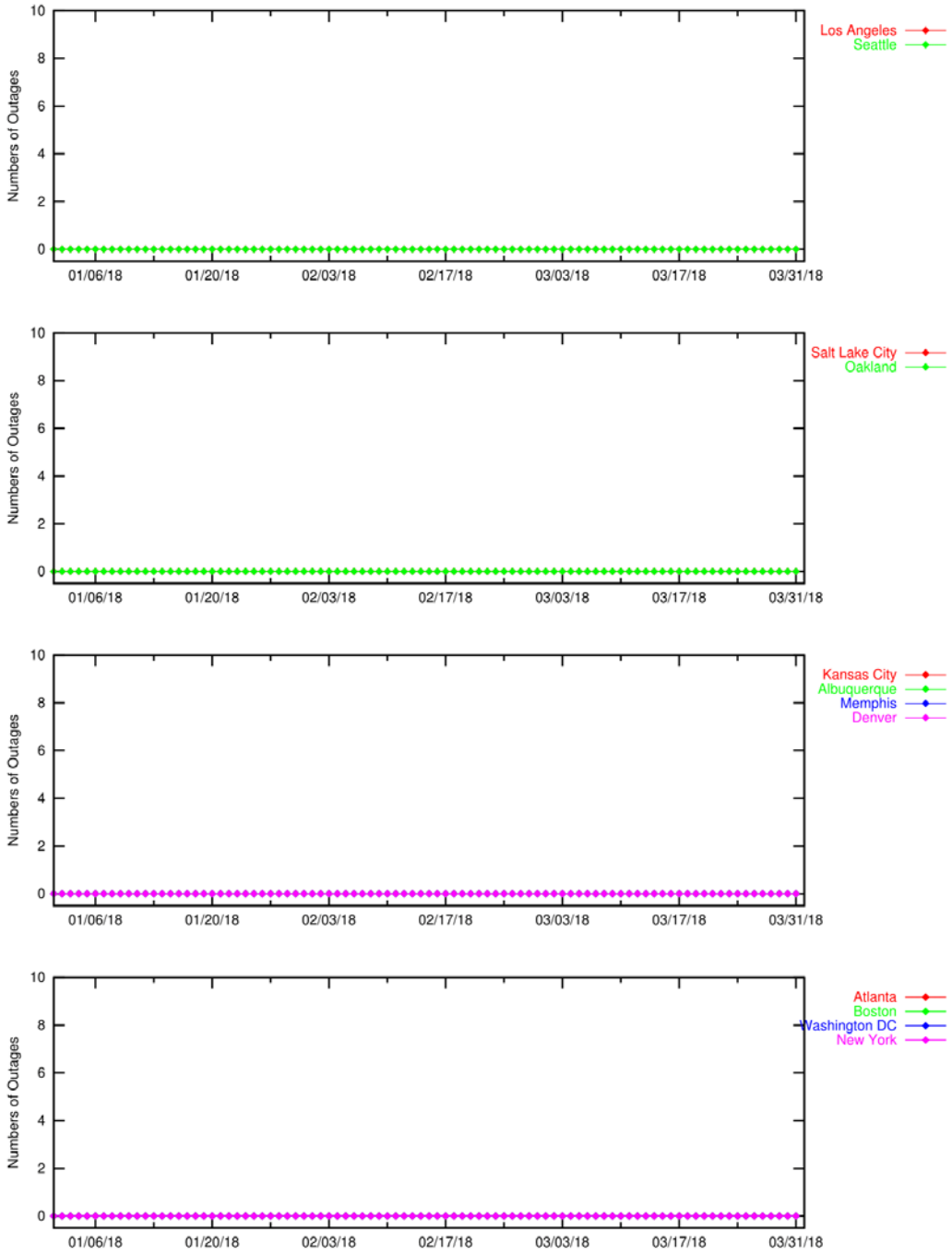


Figure 3-8 LPV Outages

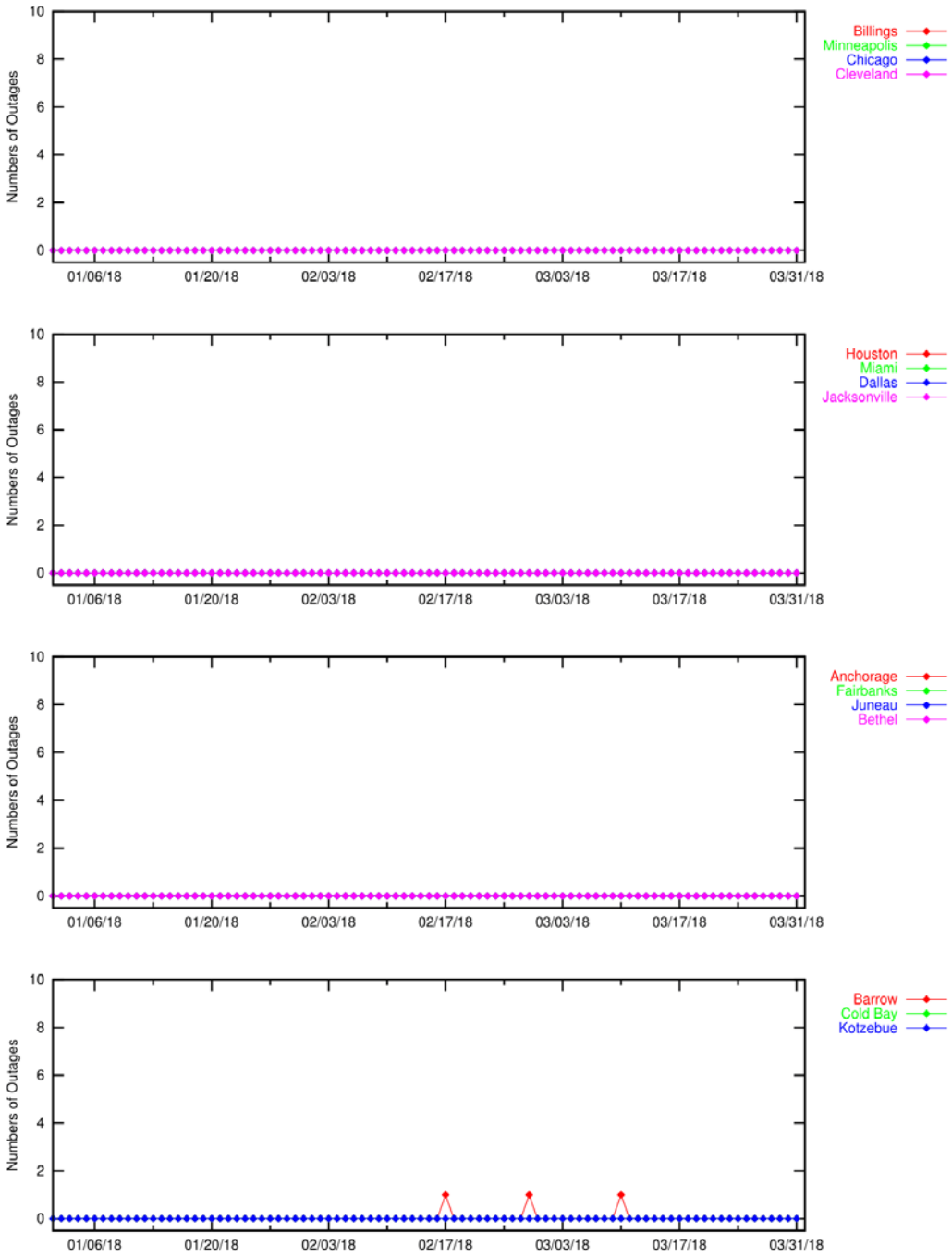


Figure 3-9 LPV Outages

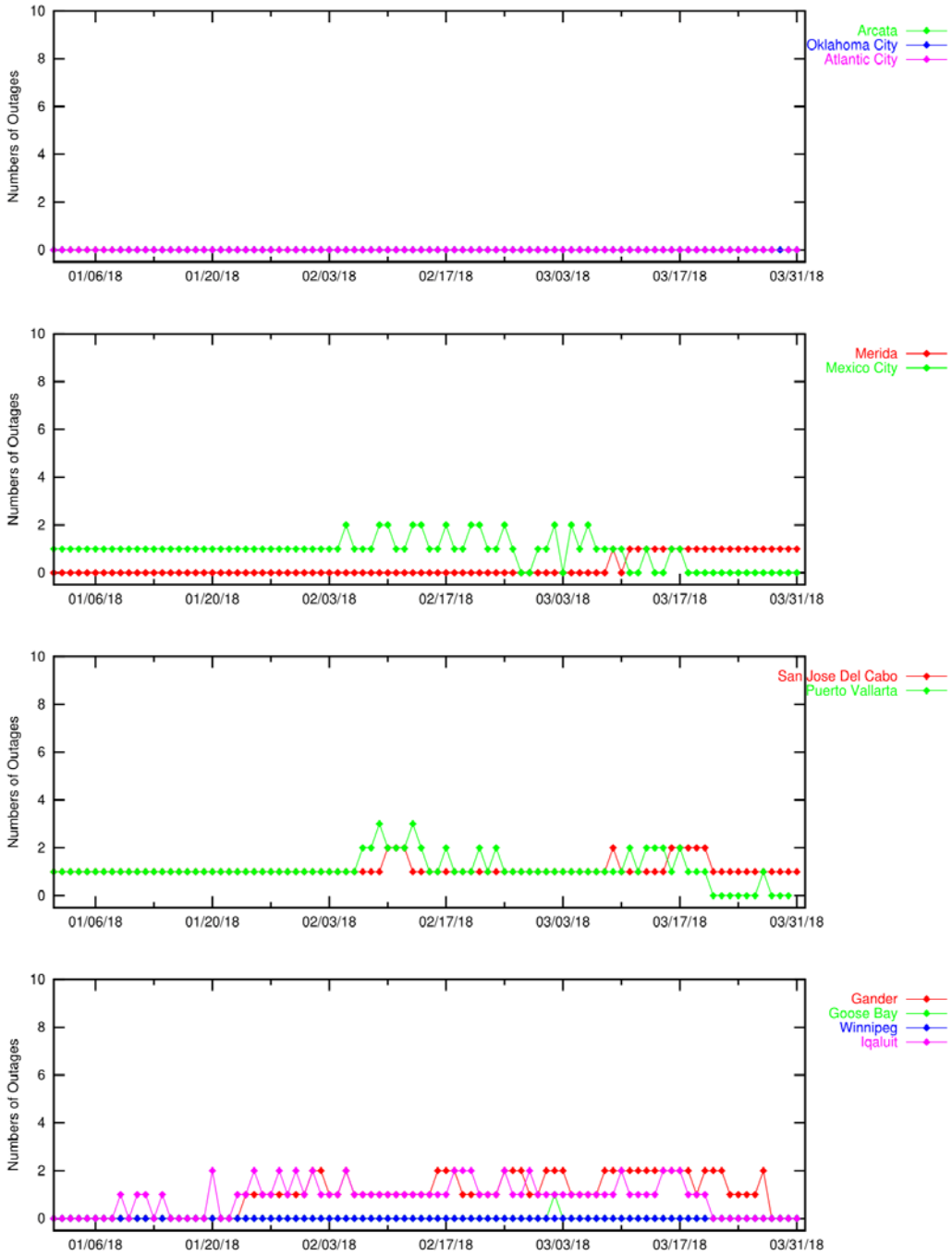


Figure 3-10 LPV200 Outages

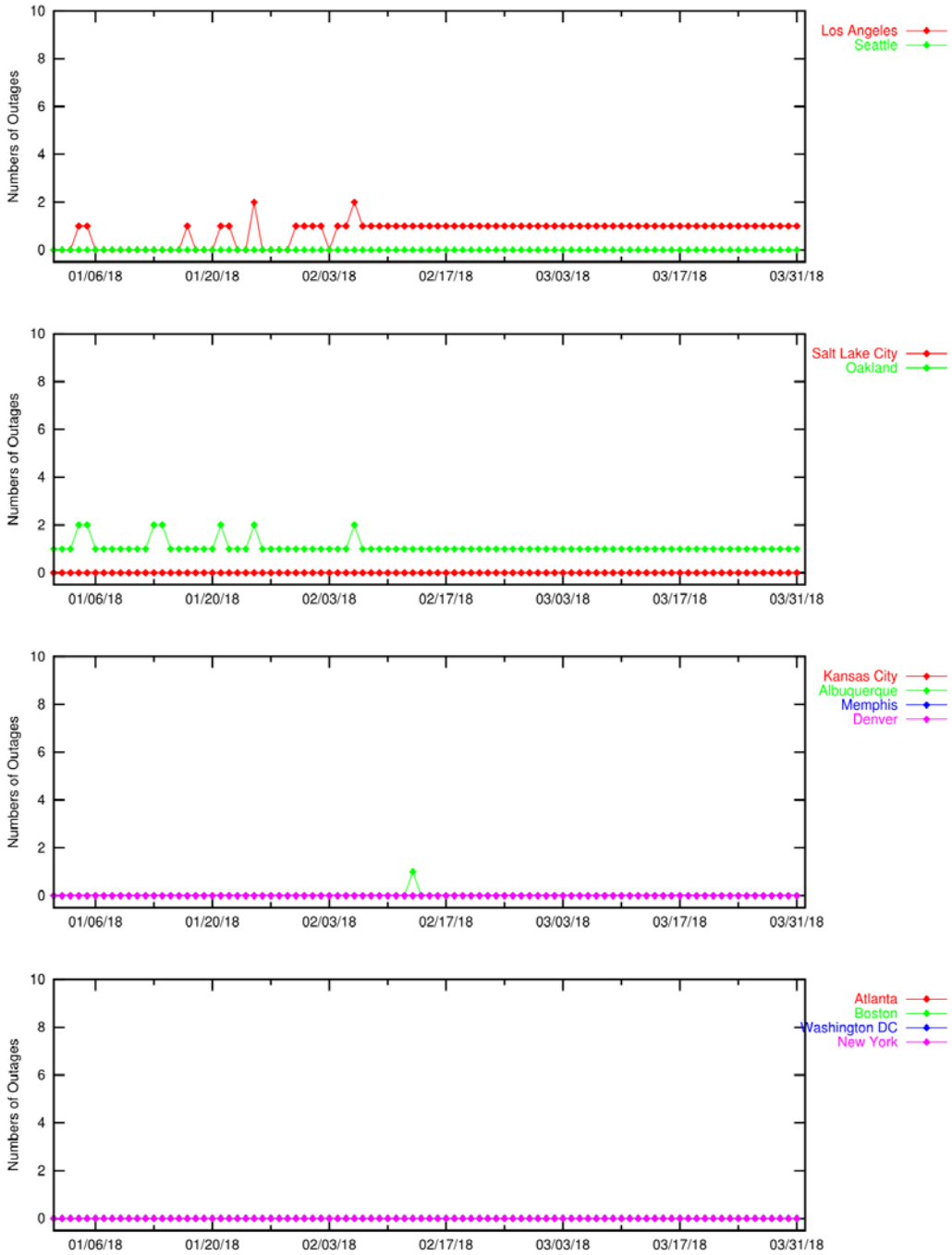


Figure 3-11 LPV200 Outages

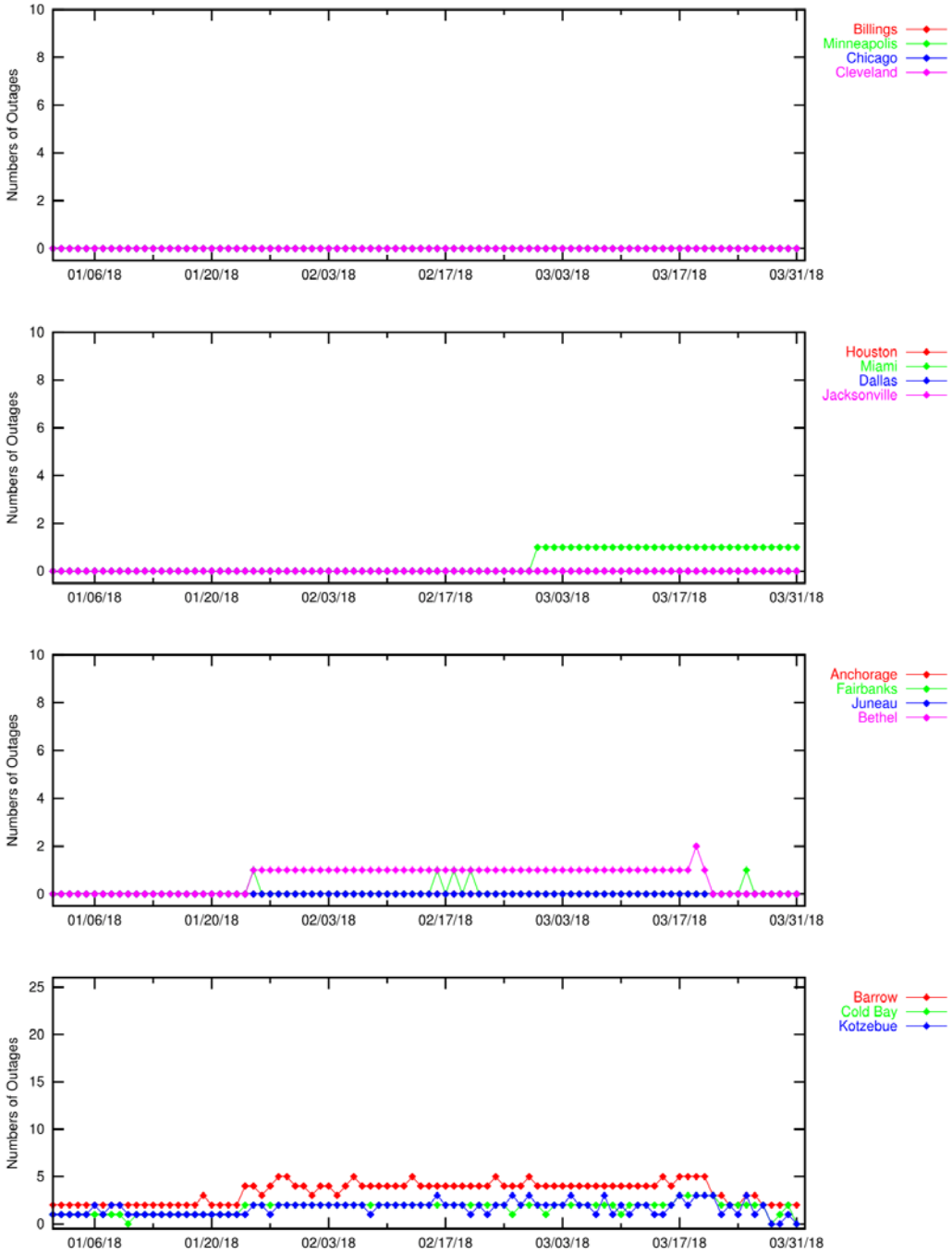
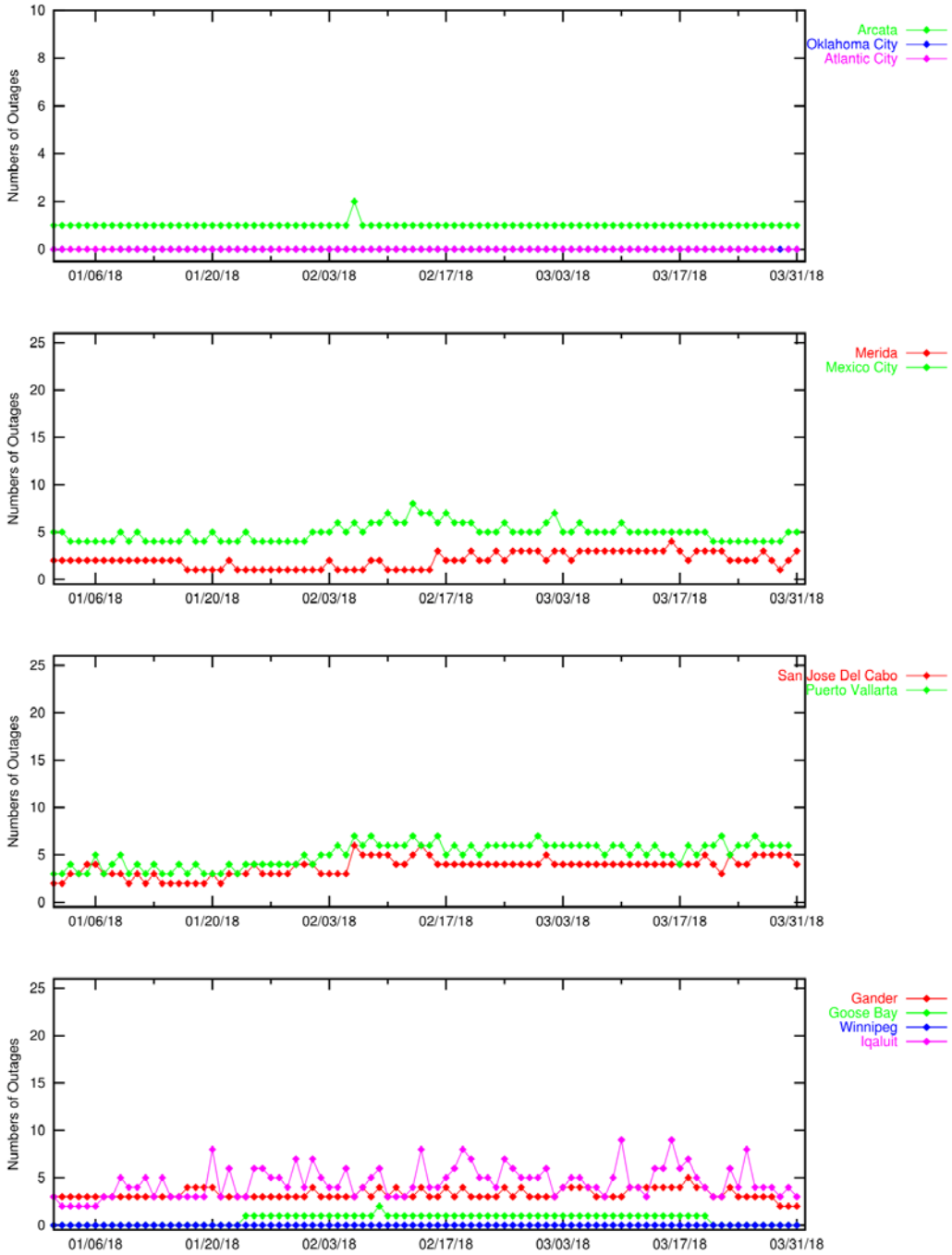


Figure 3-12 LPV200 Outages



Availability of NPA service is evaluated by monitoring the WAAS HPL at receiver locations. Service is available when the HPL is less than a HAL of 556 meters. The service is unavailable when HPL exceeds the HAL or when a WAAS navigation message is not received, and the service outage and its duration are recorded. NPA service is not available again until the HPL is within the HAL for at least 15 minutes. Table 3-4 shows the percentage of time that NPA service is available using the 15-minute window criteria. Table 3-5 shows the NPA service outages and associated outage rates. The outage rate is the percentage of theoretically interrupted NPA approaches through a loss of operational service once the approach had started.

Table 3-4 NPA Availability (15-minute window)

Location	NPA Availability (Excluding RAIM/FDE) (%)
Arcata	100
Oklahoma City	100
Albuquerque	100
Anchorage	100
Atlanta	100
Barrow	100
Bethel	100
Billings	100
Boston	100
Cleveland	100
Cold Bay	100
Fairbanks	100
Gander	100
Honolulu	100
Houston	100
Iqaluit	100
Juneau	100
Kansas City	100
Kotzebue	100
Los Angeles	100
Merida	100
Miami	100
Minneapolis	100
Oakland	100
Salt Lake City	100
San Jose Del Cabo	100
San Juan	100
Seattle	100
Tapachula	100
Washington DC	100

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

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

The availability decreases for this quarter were due to satellite outages, geomagnetic activity, communication outages, radio frequency interference (RFI), and elevated UDRE and GIVE values. Noteworthy events that affected availability are:

- November 14, 2017–February 18, 2018–The WJHTC began noticing an increase in Satellite Vehicle (SV) glitches around November 14, 2017. This was due to receivers falsely tracking SVs when they are not in view. The default G3 receiver behavior is to allocate a channel to look for each SV listed in the almanac regardless of health status. In addition, when a receiver is reset, it will look for any SV it can detect since it does not yet have an almanac. In addition to the default configuration, 12 of the G3s have a different configuration for their C threads. The WJHTC noticed these threads reported duplicate ephemeris of out of view SVs which were flagged as SV Glitches. The WJHTC created a tool to detect when a duplicate ephemeris is broadcasted. See DR 142.
- January 27, 2017–March 31, 2018–GPS Flex Power tests elevated UDREs on PRN24 and reduced LPV200 availability in Alaska. See DR135.
- January 20–A GUS switchover on CRW caused a reduction in LPV200 availability in Alaska and Canada.
- January 23–March 22–PRN18 (SVN 54) was removed from the satellite constellation and later replaced with SVN34. This reduced availability in Alaska and Canada. See DR 141.
- February 6–An SV alert on PRN21 elevated UDREs and reduced LPV200 availability in CONUS.
- February 9–A GUS switchover on CRW caused a reduction in LPV200 availability in CONUS, Alaska, and Canada.
- February 13–February 14–Satellite maintenance elevated UDREs on PRN30 and reduced LPV200 availability in Alaska and Canada.

- February 13–Local RFI at ZAB caused a reduction and eventual loss of space vehicle (SV) tracking. The outage occurred from 23:08:14 GMT to 23:09:33 GMT.
- February 19–An SV alert on PRN6 elevated UDREs and reduced LPV200 availability in Canada.
- March 8–March 9–Satellite maintenance elevated UDREs on PRN20 and reduced LPV200 availability in CONUS.
- March 10–Geomagnetic activity elevated GIVE values which reduced LPV200 availability in Canada.
- March 15–Satellite maintenance elevated UDREs on PRN-3 and reduced LPV200 availability in Alaska.
- March 20–GPS satellite IIA SVN-34 (PRN-18) was set usable as of March 20, 2018 beginning 22:24 GMT. See DR 141.
- March 20–A GUS switchover on CRE caused a reduction in LPV200 availability in Alaska and Canada.
- March 28–A GUS switchover on CRW caused a reduction in LPV200 availability in Canada.
- March 28–GEO 131 went operational. The Tech center began processing GEO navigation messages from GEO 131. The addition of GEO 131 as a ranging source improved LPV and LPV200 availability in Alaska.

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 GPS/GEO satellite status are used to determine WAAS availability across North America. For PA coverage, protection levels were calculated at 30-second intervals at 1-degree spacing over the PA service volume, whereas for NPA coverage, the protection levels were calculated at 30-second intervals at 5-degree spacing over the NPA service volume.

Daily PA analysis was conducted for LP, LPV, and LPV200 service levels. The PA 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 LPV200 North America coverage, Figure 4-4 shows the daily LPV and LPV200 CONUS coverage, Figure 4-5 shows the daily LPV Alaska coverage at 99% availability and ionosphere Kp index values, and Figure 4-6 shows the daily LPV and LPV200 Canada coverage at 99% availability and ionosphere Kp index values. See Appendix B for coverage plots of 98% LP and LPV availability contour and 99% LPV200 availability contour. Kp quantifies the disturbance in the Earth's magnetic field and is an indicator of solar storms causing geomagnetic disturbances, which can cause an unpredictable ionosphere. When the WAAS detects a disturbed ionosphere, it increases GIVE values that may result in unavailable PA service.

Figure 4-1 LP North America Coverage for the Quarter

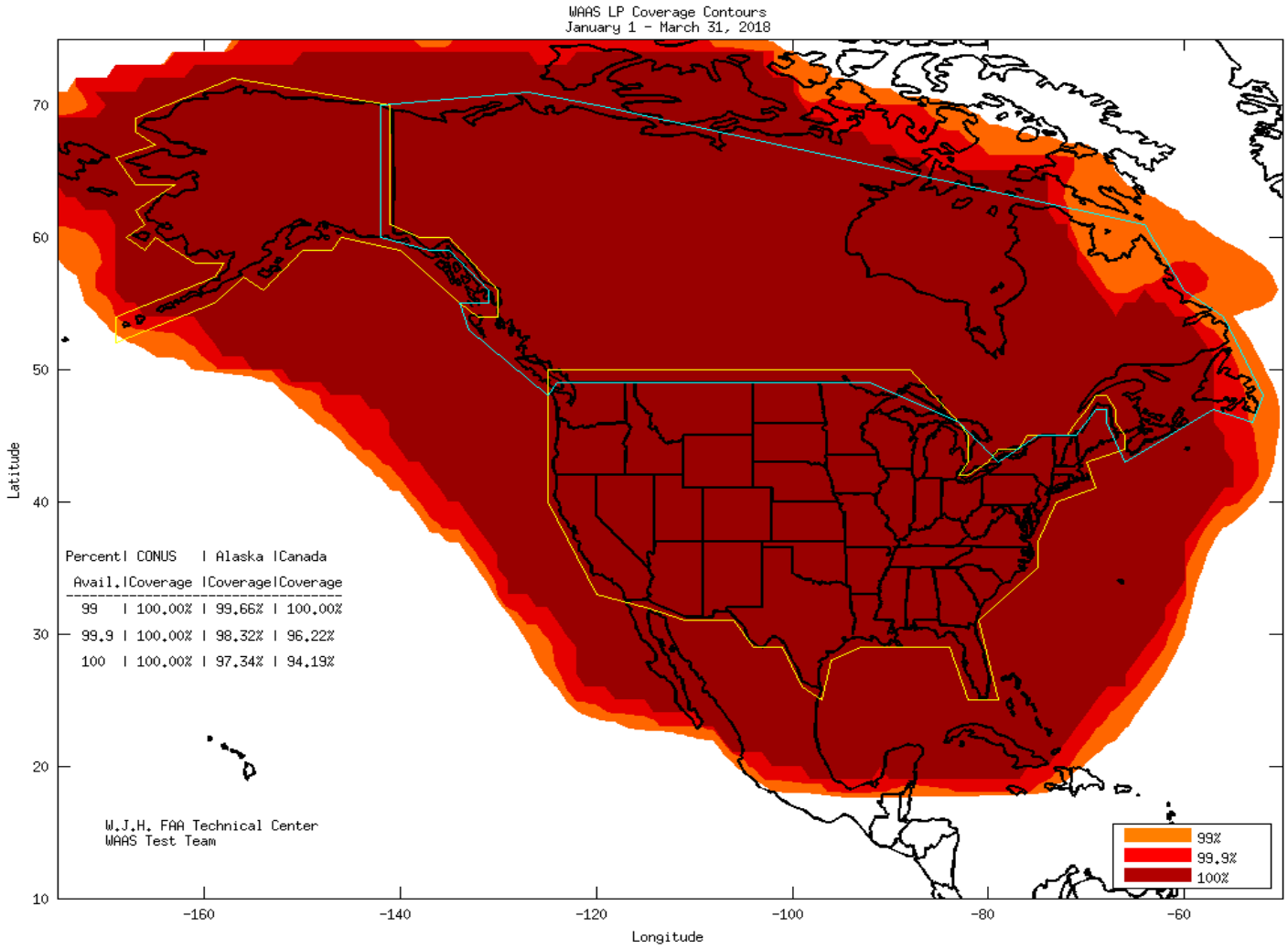


Figure 4-2 LPV North America Coverage for the Quarter

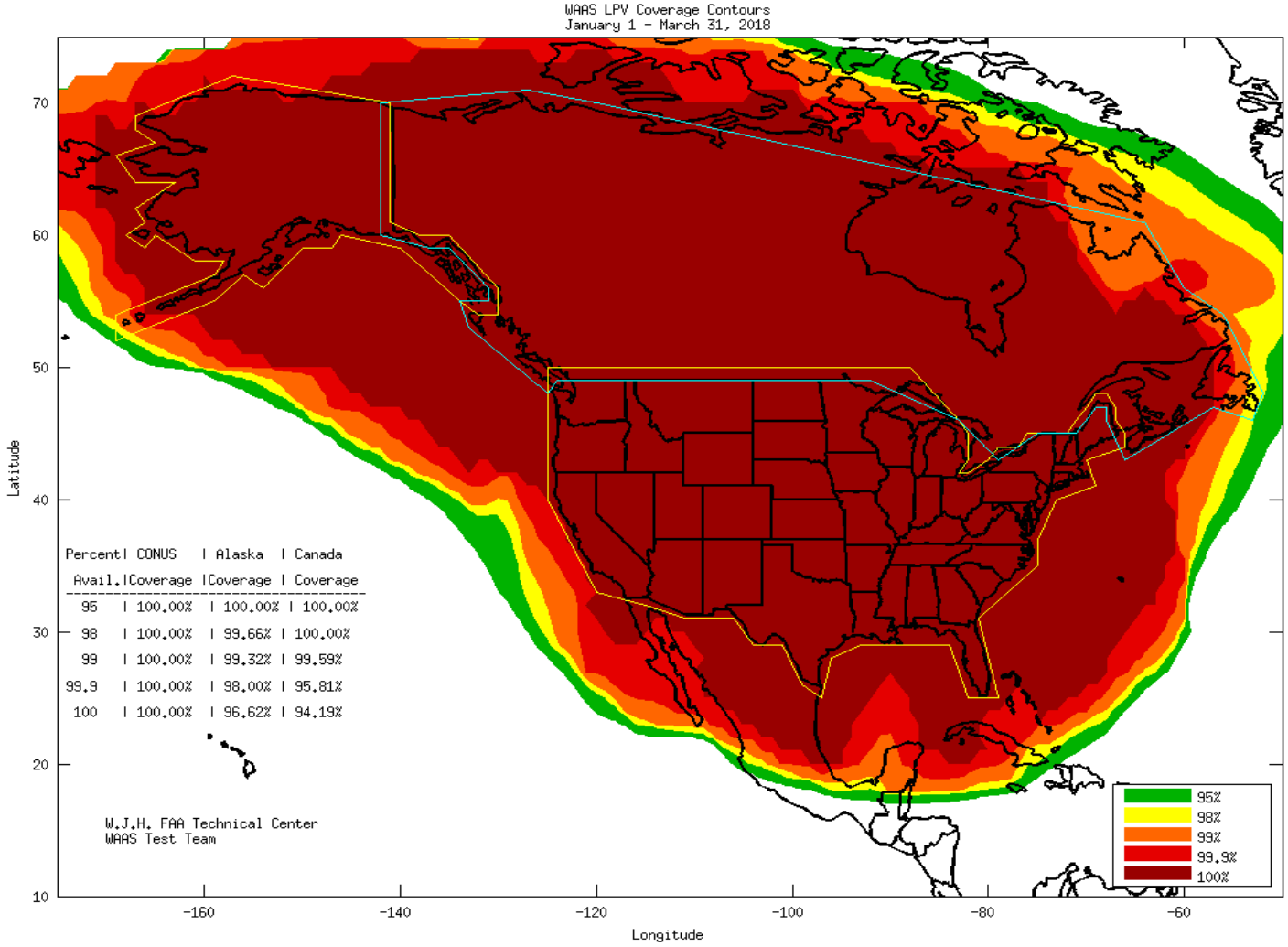


Figure 4-3 LPV200 North America Coverage for the Quarter

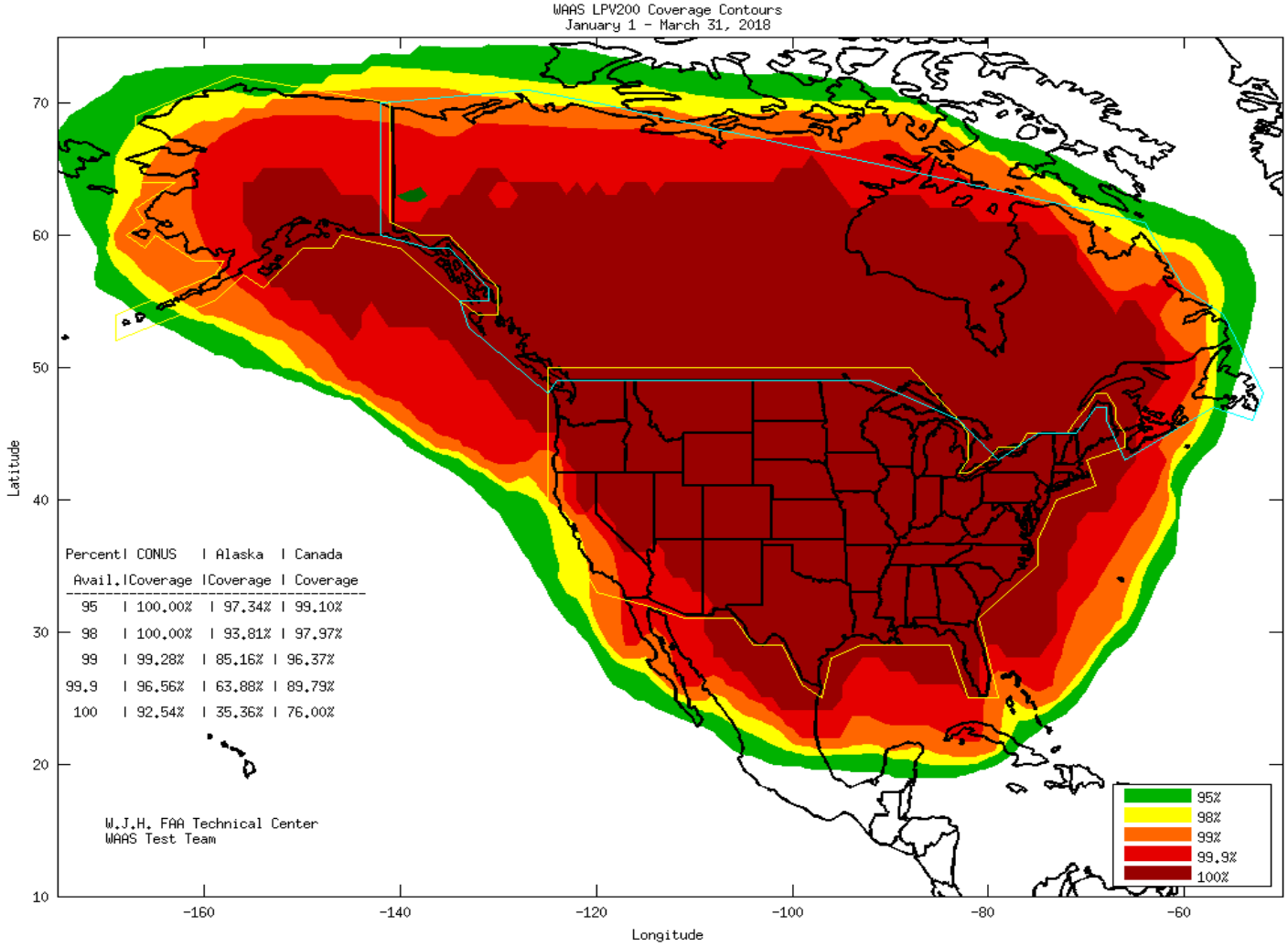


Figure 4-4 Daily LPV and LPV200 CONUS Coverage

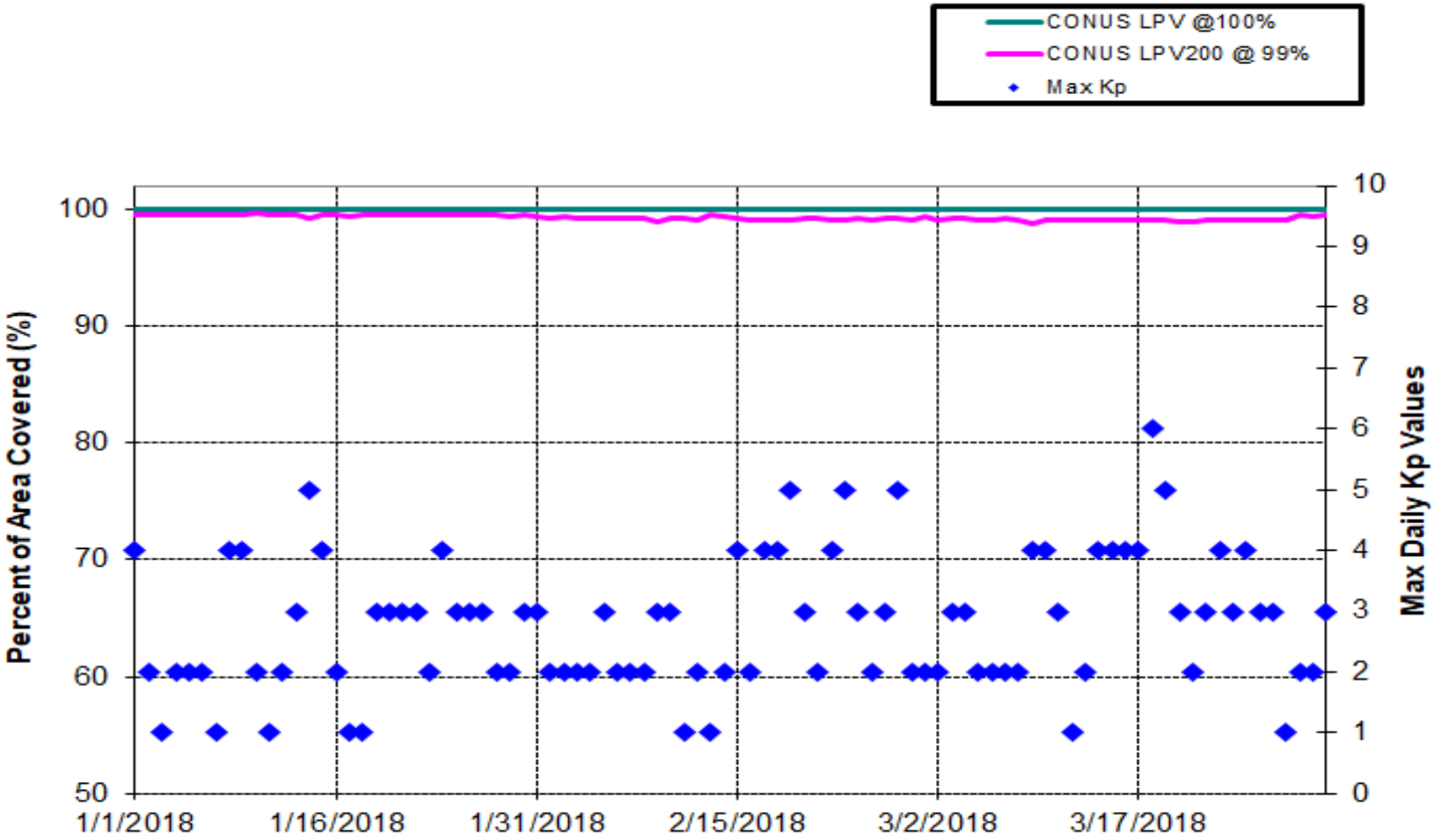


Figure 4-5 Daily LPV and LPV200 Alaska Coverage

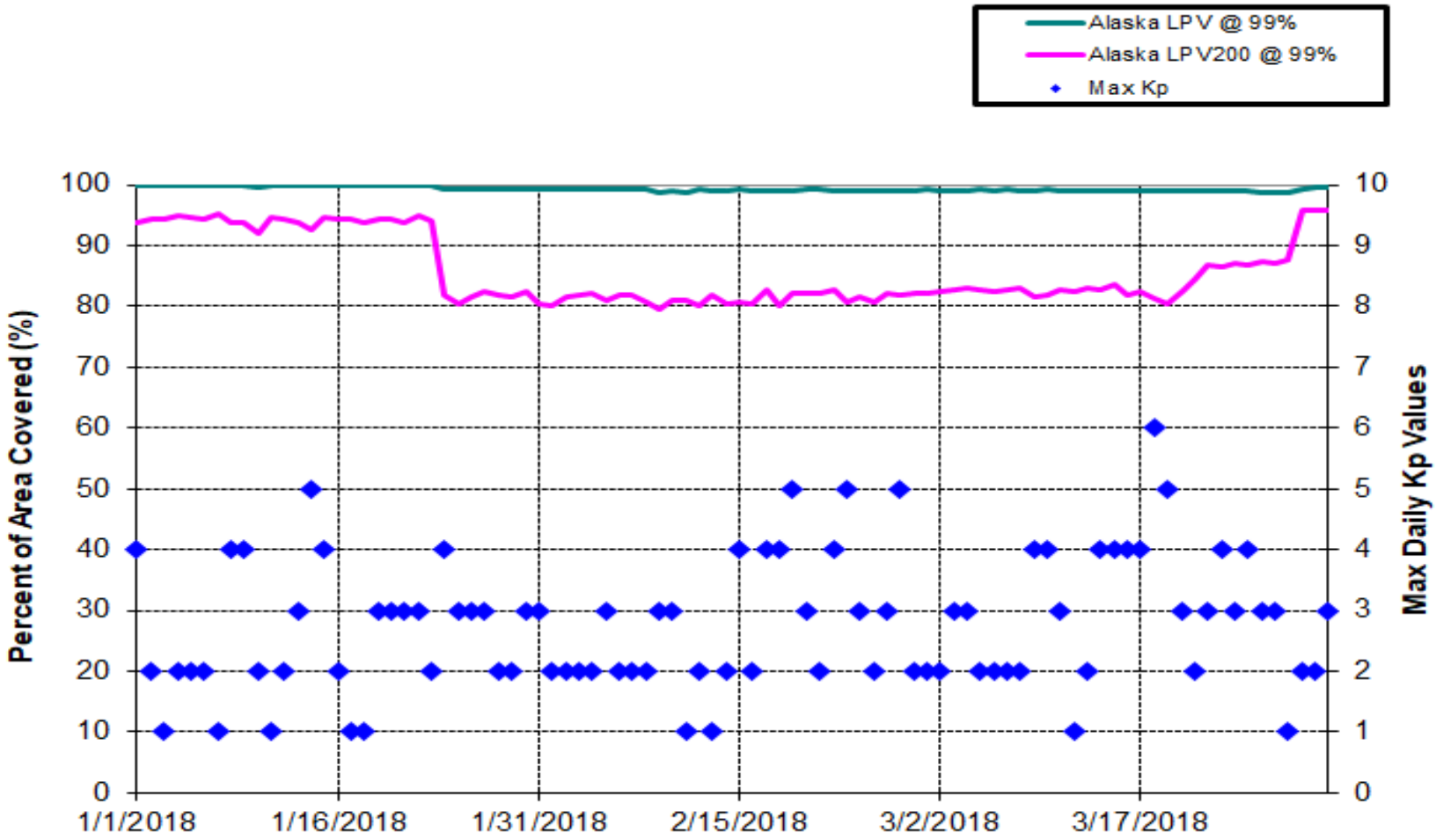
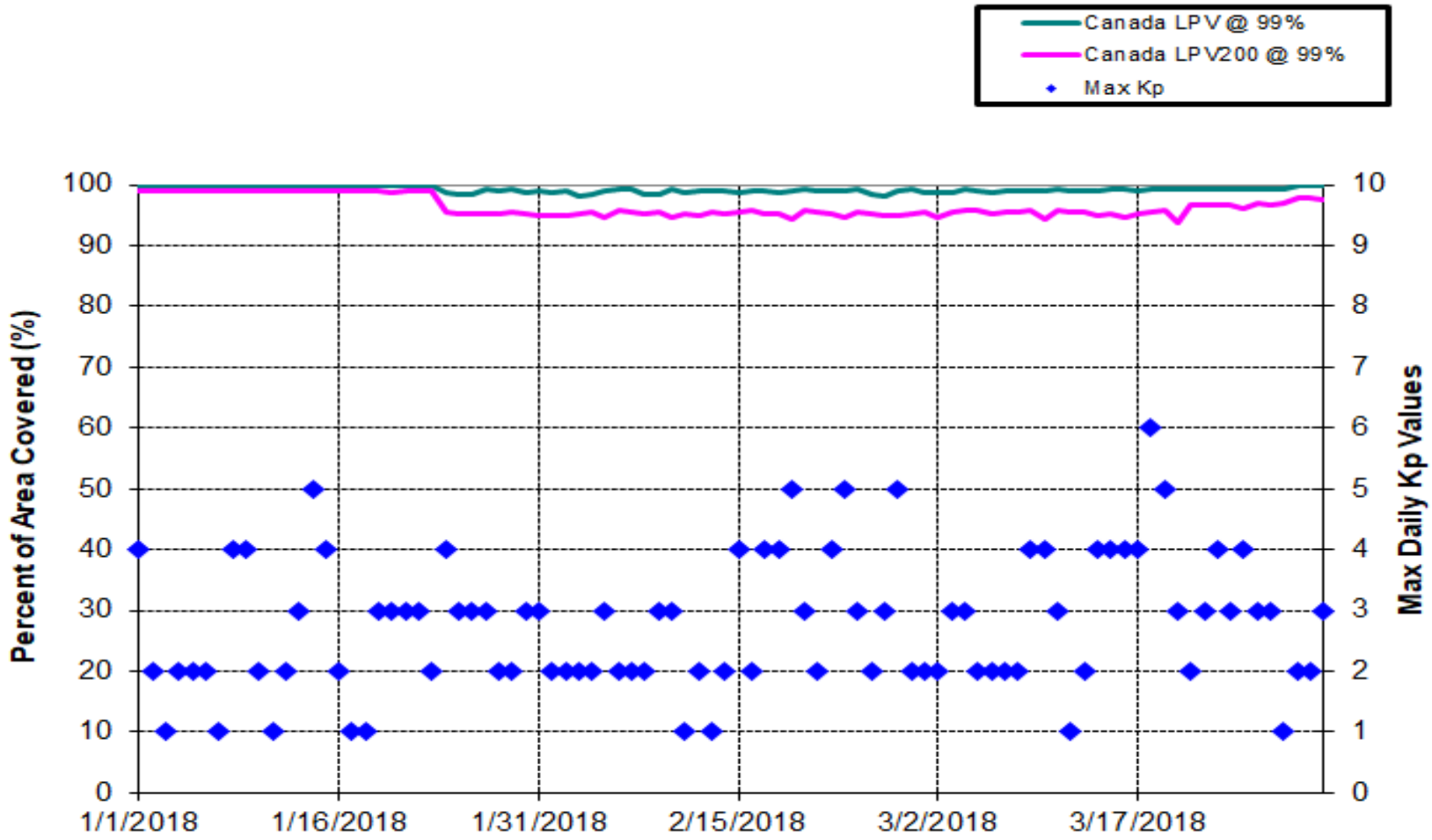


Figure 4-6 Daily LPV and LPV200 Canada Coverage



Daily analysis for NPA was conducted for the Required Navigation Performance (RNP) 0.1 and RNP 0.3 service levels based on a 100% availability requirement. The NPA coverage plots provide 100%, 99.9%, and 99% availability contours. Figure 4-7 shows the rollup RNP 0.1 coverage and Figure 4-8 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.

Figure 4-7 RNP 0.1 Coverage for the Quarter

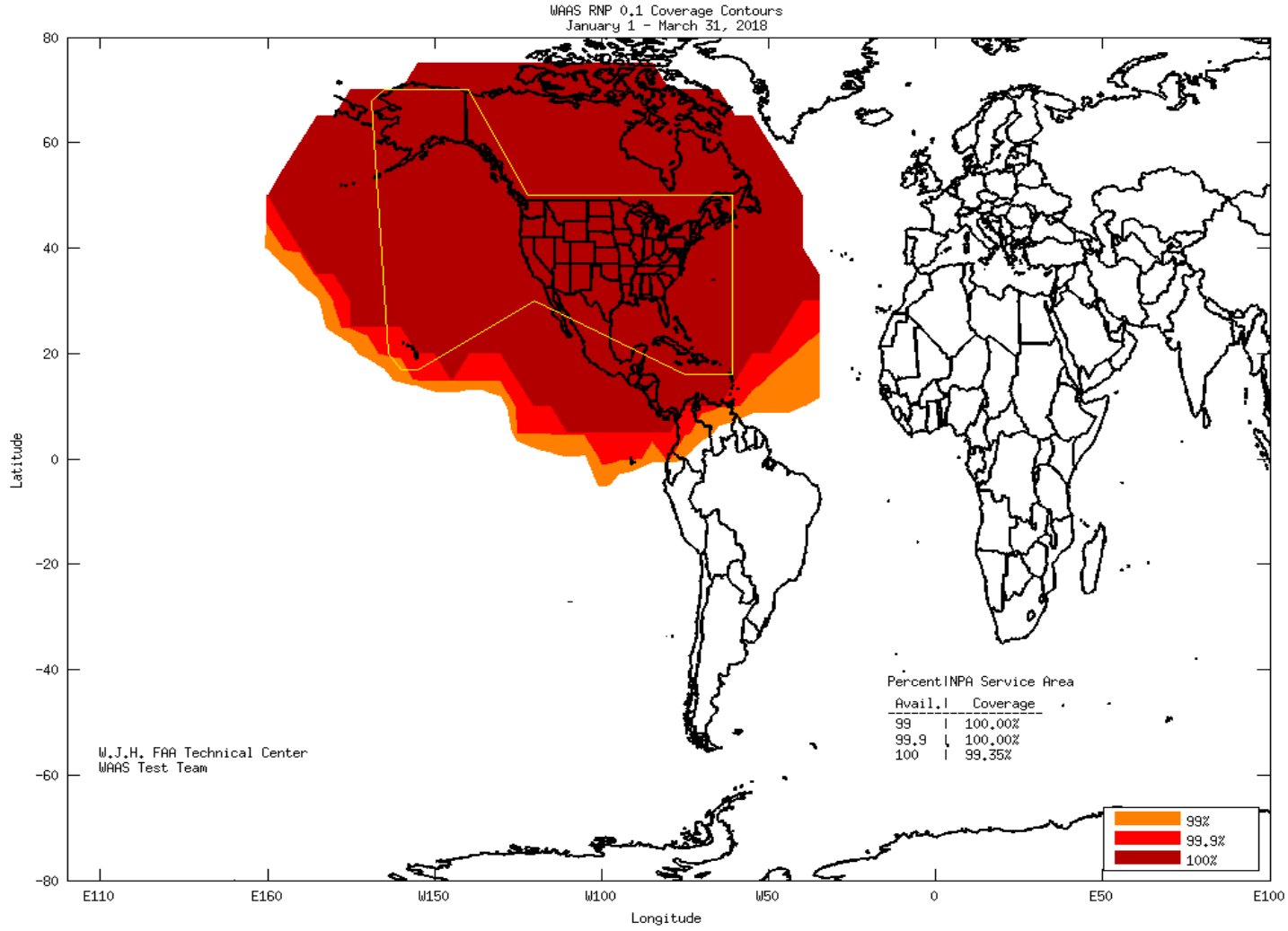


Figure 4-8 RNP 0.3 Coverage for the Quarter

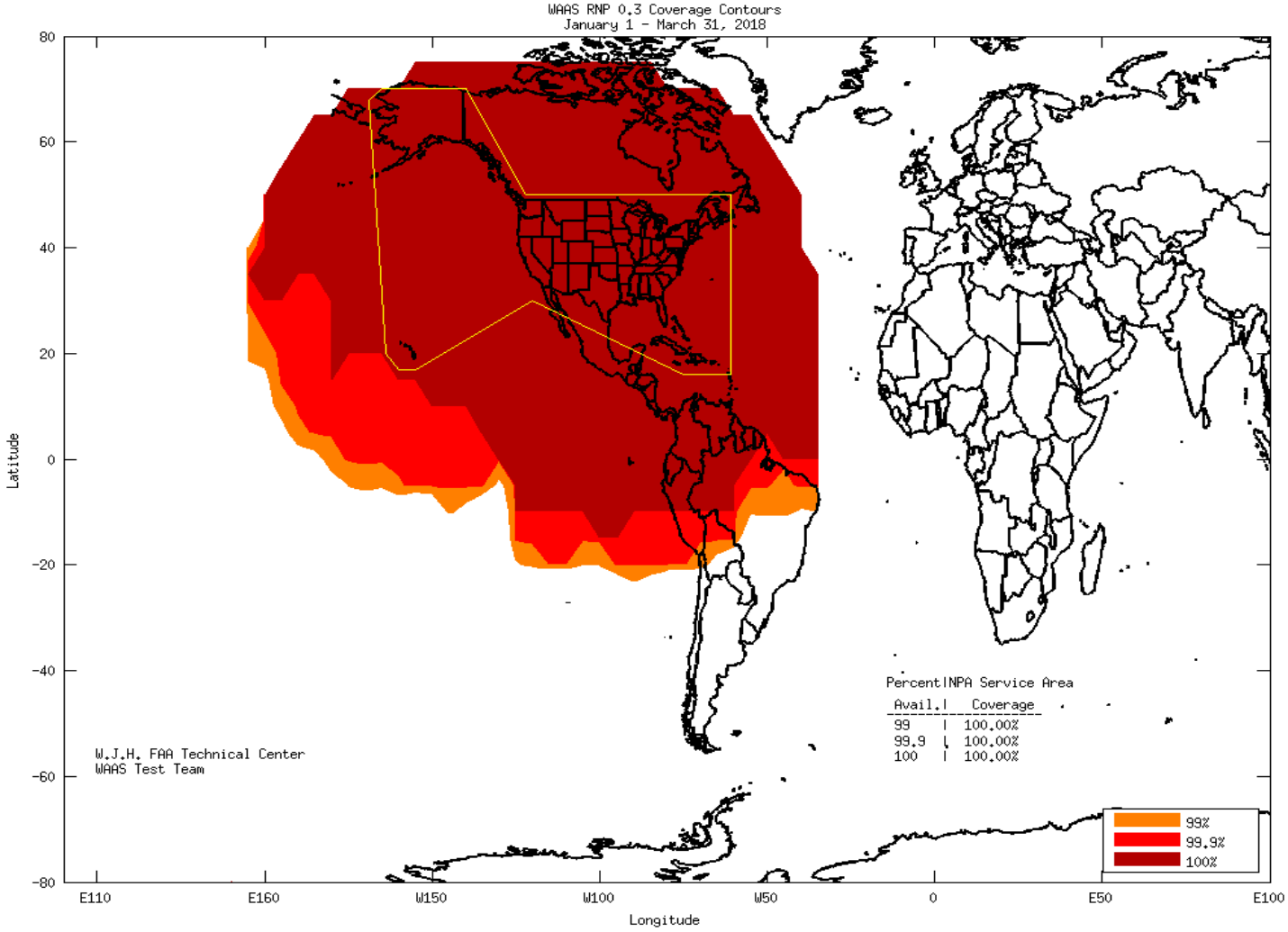
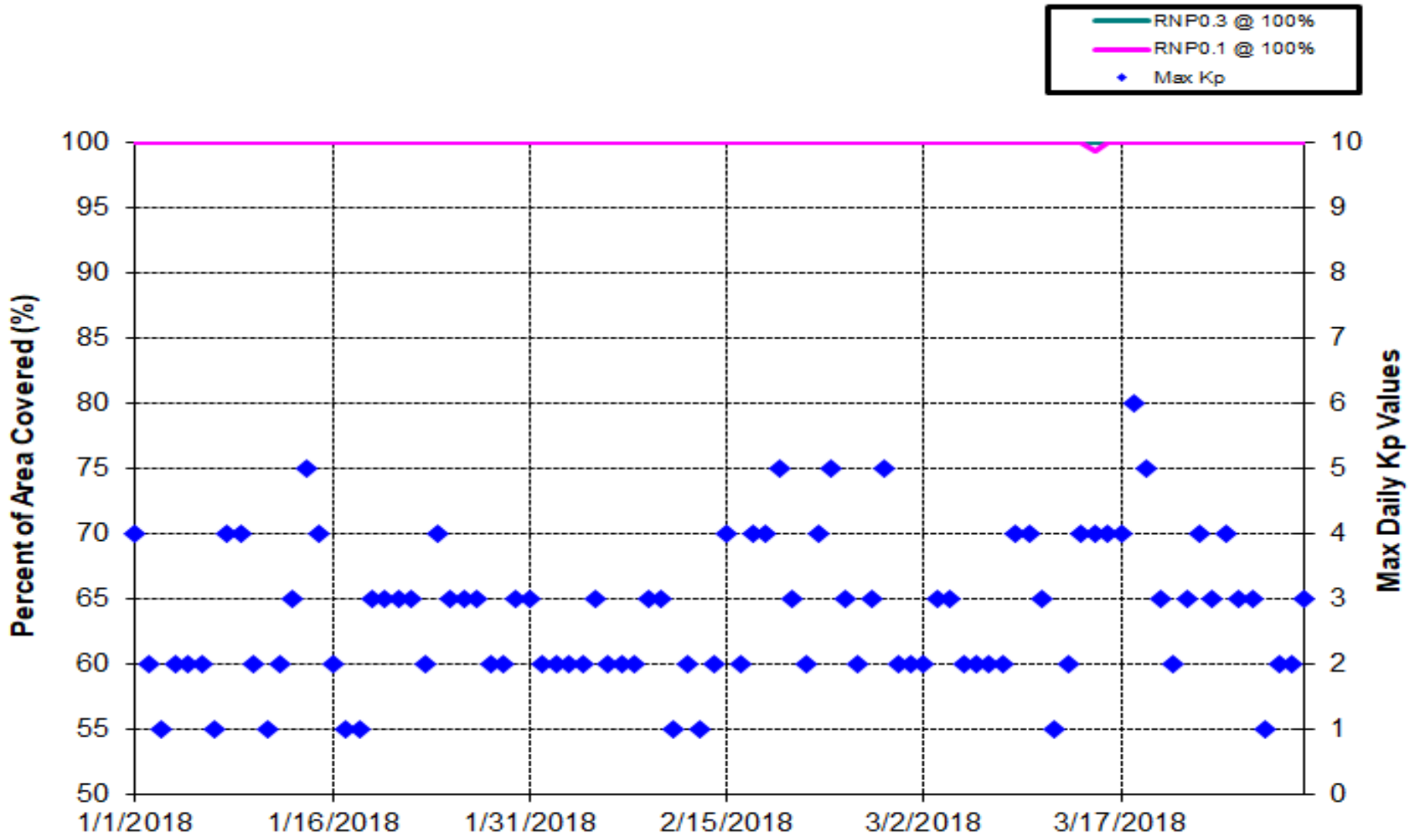


Figure 4-9 Daily RNP Coverage



The coverage decreases for this quarter were due to satellite outages, geomagnetic activity, communication outages, and elevated UDRE and GIVE values. Noteworthy events that affected coverage are:

- November 14, 2017–February 18, 2018–The WJHTC began noticing an increase in Satellite Vehicle (SV) glitches around November 14, 2017. This was due to receivers falsely tracking SVs when they are not in view. The default G3 receiver behavior is to allocate a channel to look for each SV listed in the almanac regardless of health status. In addition, when a receiver is reset, it will look for any SV it can detect since it does not yet have an almanac. In addition to the default configuration, 12 of the G3s have a different configuration for their C threads. The WJHTC noticed these threads reported duplicate ephemeris of out of view SVs which were flagged as SV Glitches. The WJHTC created a tool to detect when a duplicate ephemeris is broadcasted. See DR 142.
- January 27, 2017–March 31, 2018–GPS Flex Power tests elevated UDREs on PRN-24 and reduced LPV200 coverage in Alaska. See DR135.
- January 20–A GUS switchover on CRW caused a reduction in LPV200 coverage in Alaska and Canada.
- January 23–March 22–PRN18 (SVN 54) was removed from the satellite constellation and later replaced with SVN34. This reduced coverage in Alaska and Canada. See DR 141.
- February 6–An SV alert on PRN-21 elevated UDREs and reduced LPV200 coverage in CONUS.
- February 9–A GUS switchover on CRW caused a reduction in LPV200 coverage in CONUS, Alaska, and Canada.
- February 13–February 14–Satellite maintenance elevated UDREs on PRN-30 and reduced LPV200 coverage in Alaska and Canada.
- February 19–An SV alert on PRN-6 elevated UDREs and reduced LPV200 coverage in Canada.
- March 8–March 9–Satellite maintenance elevated UDREs on PRN-20 and reduced LPV200 coverage in CONUS.
- March 10–Geomagnetic activity elevated GIVE values which reduced LPV200 coverage in Canada.
- March 15–Satellite maintenance elevated UDREs on PRN-3 and reduced LPV200 coverage in Alaska.
- March 20–GPS satellite IIA SVN-34 (PRN-18) was set usable as of March 20, 2018 beginning 22:24 GMT. See DR 141.
- March 20–A GUS switchover on CRE caused a reduction in LPV200 coverage in Alaska and Canada.
- March 28–A GUS switchover on CRW caused a reduction in LPV200 coverage in Canada.
- March 28–GEO 131 went operational. The Tech center began processing GEO navigation messages from GEO 131. The addition of GEO 131 as a ranging source improved LPV and LPV200 coverage in Alaska.

5.0 INTEGRITY

5.1 HMI Analysis

Integrity analysis includes the identification and evaluation of HMI as well as the generation of the safety index to illustrate the safety margin provided by WAAS protection levels. 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 horizontal and vertical safety margin index is the ratio of HPL/HPE and VPL/VPE, respectively, at the time the maximum position error occurred. Section 2.0 provides a detailed description of the methodology for computing HPL, VPL, and position errors.

A computed safety margin 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 maximum position error was equal to the protection level. An HMI event occurs if the position error exceeds the protection level in the vertical or horizontal dimensions at any time and coupled with the passage of 6.2 seconds before this event is corrected by WAAS.

Table 5-1 lists the safety margin index and the number of HMI events. For this reporting period, the lowest safety margin index is 3.778 at Barrow and there were no HMI events. There has not been an HMI event since WAAS was made available to the public in August 2000. In July 2003, WAAS was commissioned by the FAA for safety of life services.

Table 5-1 Minimum Safety Margin Index and HMI Statistics

Location	Horizontal Safety Index (meters)	Vertical Safety Index (meters)	Number of HMIs
Arcata	5.468	10.298	0
Atlantic City	5.224	4.888	0
Oklahoma City	6.155	7.753	0
Albuquerque	6.839	14.635	0
Anchorage	9.147	8.334	0
Atlanta	7.676	7.985	0
Barrow	5.390	3.778	0
Bethel	10.674	10.730	0
Billings	7.302	4.862	0
Boston	6.635	6.681	0
Chicago	4.897	5.722	0
Cleveland	5.799	7.588	0
Cold Bay	10.036	16.048	0
Dallas	6.136	4.815	0
Denver	6.942	9.669	0
Fairbanks	10.656	7.646	0
Gander	12.540	14.645	0
Goose Bay	9.188	9.320	0
Houston	5.933	5.043	0
Iqaluit	10.555	5.703	0
Jacksonville	6.557	6.437	0
Juneau	8.318	7.669	0
Kansas City	7.839	9.994	0
Kotzebue	11.511	8.718	0
Los Angeles	9.135	9.397	0
Memphis	7.702	8.735	0
Merida	7.977	6.741	0
Mexico City	16.735	12.693	0
Miami	10.212	6.503	0
Minneapolis	9.169	10.412	0
New York	7.190	7.931	0
Oakland	8.801	15.016	0
Puerto Vallarta	10.854	8.708	0
Salt Lake City	7.308	7.576	0
San Jose Del Cabo	9.117	10.874	0
Seattle	6.385	9.576	0
Washington DC	7.049	7.212	0
Winnipeg	7.968	8.960	0

5.2 Broadcast Alerts

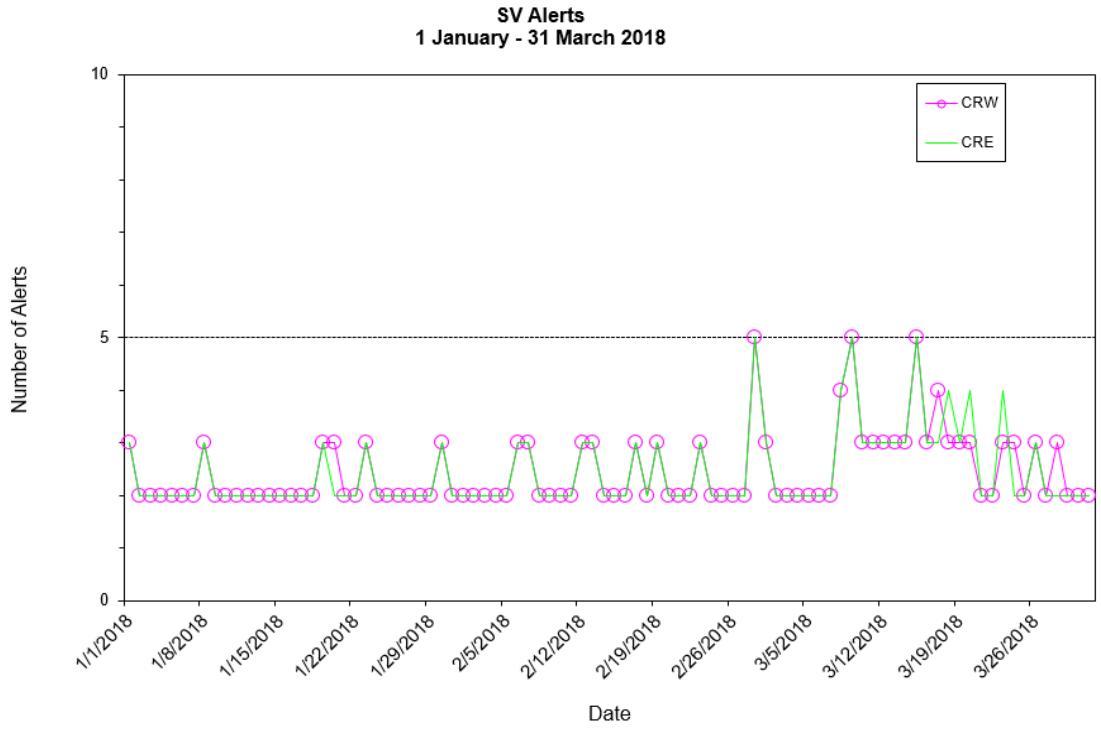
The WAAS transmits alert messages for user protection when the active WAAS corrections are no longer bound by the UDREs. Alerts increase the UDRE for one or more PRNs, which can reduce the weighting of the satellite or exclude the satellite from the navigation solution. An increase in UDREs after an 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, the WAAS fast corrections can time out and cause a loss of continuity. Table 5-2 shows the total number of alerts and the average number of alerts per day.

Table 5-2 WAAS SV Alert

	Number of Alerts		Average Number of Alerts Per Day	
Message Type	**CRW**	**CRE**	**CRW**	**CRE**
T2	174	174	1.9333	1.9333
T3	16	16	0.1778	0.1778
T4	6	5	0.0667	0.0556
T5	0	0	0	0
T6	0	0	0	0
T24	0	0	0	0
T26	0	0	0	0
Total SV Alerts	196	195	2.1778	2.1667
Days in Service	90	90		

Figure 5-1 provides the daily SV alerts. The number of alerts on one GEO is often the same as the number of alerts on the other GEO, therefore, lines tend to overlap in most points on this plot.

Figure 5-1 SV Daily Alert Trend



5.3 Availability of WAAS Messages (CRE and CRW)

Accurate and current calculations of user position are dependent on the broadcast and receipt of the WAAS message 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 expected worst-case broadcast interval. Table 5-3 lists the maximum intervals at which each message must broadcast to meet system requirements.

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

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

For this quarter, statistics reported for late messages were mainly caused by GEO SIS outages, GUS switchovers, and SV alerts; excluding message type 7 and 10. Furthermore, the delay of message types 7 and 10 had little or no impact on user performance and safety, and were not caused by GEO SIS outages, GUS switchovers, or SV alerts. Table 5-4 through Table 5-8 show statistics for message rates broadcasted on CRW GEO. Table 5-9 through Table 5-13 show statistics for message rates broadcasted on CRE GEO. Note that AMR GEO 133, which was reported on in previous reports, was decommissioned from WAAS service on November 9, 2017.

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

Message Type	**On Time (number received)**	**Late (number received)**	**Max Late Length (seconds)**
1	95354	2	178
2	1195682	22	21
3	1195203	29	21
4	1195165	32	30
7	89488	5	138
9	84031	2	171
10	89462	4	170
17	28523	0	0

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

PRN	On Time (number received)	Late (number received)	Max Late Length (seconds)
1	44515	0	0
2	43110	0	0
3	43685	0	0
5	43342	0	0
6	43236	0	0
7	42889	1	179
8	44021	1	162
9	42972	0	0
10	42681	0	0
11	44102	0	0
12	42752	0	0
13	44556	1	177
14	42371	0	0
15	43503	1	179
16	43422	0	0
17	42996	0	0
18	17738	0	0
19	41951	0	0
20	42286	0	0
21	43446	0	0
22	43954	0	0
23	42959	1	162
24	44857	0	0
25	44144	0	0
26	43716	0	0
27	44567	0	0
28	43589	0	0
29	42809	1	177
30	42519	1	179
31	43350	1	175
32	41845	1	175

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

PRN	On Time (number received)	Late (number received)	Max Late Length (seconds)
1	36554	1	184
2	35425	0	0
3	35883	0	0
5	35589	0	0
6	35454	0	0
7	35197	0	0
8	36151	0	0
9	35219	1	167
10	35022	1	217
11	36236	1	144
12	35095	0	0
13	36617	2	150
14	34789	0	0
15	35700	0	0
16	35639	1	128
17	35335	0	0
18	14543	0	0
19	34442	0	0
20	34727	0	0
21	35720	0	0
22	36113	2	130
23	35319	0	0
24	36867	0	0
25	36236	1	121
26	35921	0	0
27	36609	0	0
28	35775	3	211
29	35148	1	217
30	34917	0	0
31	35563	1	128
32	34366	0	0
131	4382	0	0
135	68917	0	0
138	68866	0	0

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

Band	Block	On Time (number received)	Late (number received)	Max Late Length (seconds)
0	0	24905	3	307
0	1	24897	3	305
0	2	24895	6	305
1	0	24900	5	305
1	1	24905	4	304
1	2	24887	6	306
1	3	24906	3	306
1	4	24903	2	306
2	0	24903	2	303
2	1	24905	4	304
2	2	24890	6	435
2	3	24897	3	436
2	4	24896	4	440
3	0	24896	4	434
3	1	24889	3	428
3	2	24902	5	399
9	0	24900	3	428
9	1	24913	3	421
9	2	24890	6	400
9	3	24903	5	394
9	4	24893	2	397
9	5	24899	4	411
9	6	24892	3	403

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

Band	On Time (number received)	Late (number received)	Max Late Length (seconds)
0	31917	0	0
1	31896	0	0
2	31896	1	316
3	31911	0	0
9	31884	0	0

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

Message Type	On Time (number received)	Late (number received)	Max Late Length (seconds)
1	95354	2	178
2	1195682	22	21
3	1195203	29	21
4	1195165	32	30
7	89488	5	138
9	84031	2	171
10	89462	4	170
17	28523	0	0

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

PRN	On Time (number received)	Late (number received)	Max Late Length (seconds)
1	44513	0	0
2	43115	0	0
3	43683	0	0
5	43338	0	0
6	43241	0	0
7	42891	1	179
8	44026	0	0
9	42966	0	0
10	42665	1	159
11	44108	0	0
12	42746	0	0
13	44554	0	0
14	42375	1	173
15	43504	1	168
16	43428	0	0
17	42992	0	0
18	17734	0	0
19	41947	0	0
20	42282	0	0
21	43445	0	0
22	43955	0	0
23	42966	0	0
24	44868	1	180
25	44143	1	159
26	43723	0	0
27	44567	0	0
28	43587	0	0
29	42810	0	0
30	42517	1	168
31	43358	0	0
32	41841	0	0

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

PRN	On Time (number received)	Late (number received)	Max Late Length (seconds)
1	36550	0	0
2	35419	0	0
3	35881	1	152
5	35574	0	0
6	35457	0	0
7	35201	0	0
8	36135	0	0
9	35212	0	0
10	35035	0	0
11	36225	0	0
12	35102	0	0
13	36615	0	0
14	34775	0	0
15	35700	1	152
16	35634	0	0
17	35322	0	0
18	14543	0	0
19	34431	0	0
20	34725	0	0
21	35704	0	0
22	36091	2	210
23	35318	0	0
24	36856	0	0
25	36236	0	0
26	35930	0	0
27	36612	0	0
28	35789	1	147
29	35156	0	0
30	34932	2	193
31	35560	3	210
32	34351	0	0
131	4376	0	0
135	68962	1	208
138	68914	0	0

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

Band	Block	On Time (number received)	Late (number received)	Max Late Length (seconds)
0	0	24893	3	427
0	1	24887	2	426
0	2	24903	5	431
1	0	24903	4	427
1	1	24890	8	576
1	2	24898	6	385
1	3	24903	5	358
1	4	24894	5	380
2	0	24901	6	364
2	1	24897	5	356
2	2	24893	5	361
2	3	24894	4	393
2	4	24893	5	403
3	0	24890	4	421
3	1	24901	5	418
3	2	24893	8	578
9	0	24896	7	433
9	1	24885	6	448
9	2	24896	7	438
9	3	24891	8	467
9	4	24897	2	432
9	5	24898	5	431
9	6	24911	4	428

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

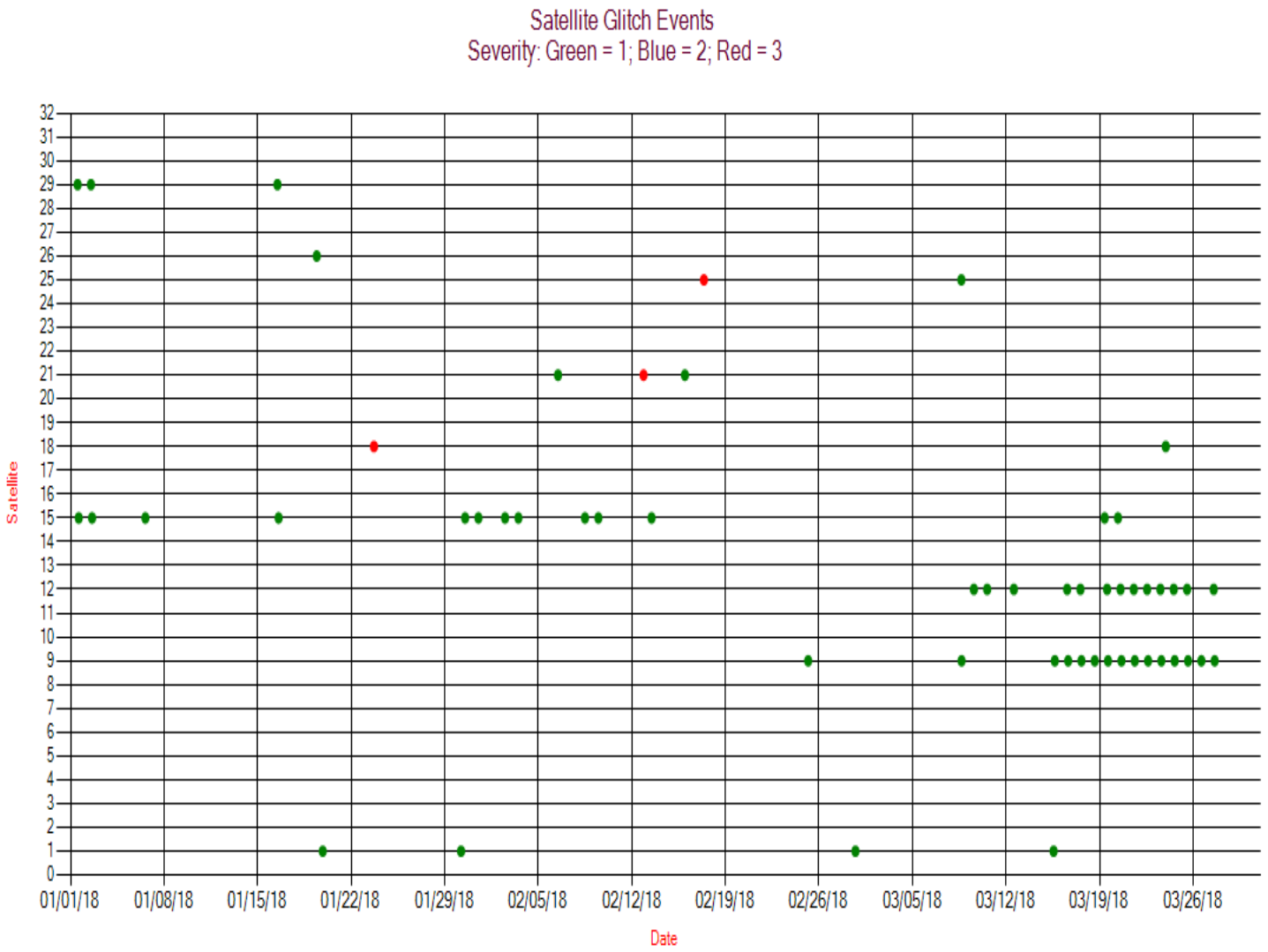
Band	On Time (number received)	Late (number received)	Max Late Length (seconds)
0	32457	0	0
1	32499	0	0
2	32462	1	304
3	32497	0	0
9	32507	1	304

5.4 Satellite Glitches

The GPS satellites will occasionally experience periods of signal carrier stability glitches of varying magnitude. These glitches are short degradations in the signal, which in severe cases may 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 to increase to "Not Monitor" and result in an alert.

Figure 5-2 shows the satellite glitches visible to WAAS during the quarter. Glitches are categorized into three severity levels: (1) Severity One glitches cause a significant number of the receivers to simultaneously report bad subframe parity, (2) 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, and (3) Severity Three glitches cause all of the receivers to lose track of both L1 and L2 data. Note, the tool used to perform this Satellite Glitch Analysis also reports times when more than 14 GPS satellites are in view for some of the WAAS reference stations. The NovAtel WAAS G3 receiver is only capable of tracking 14 GPS satellites at a given time, and GPS users may also experience this condition.

Figure 5-2 SV Glitch Trend



6.0 SV RANGE ACCURACY

Range accuracy evaluation computes the probability that the WAAS UDRE and GIVE statistically bound 99.9% of the range residuals for each satellite tracked by the receiver. A UDRE is broadcasted by the WAAS for each monitored satellite and the 99.9% bound (3.29 sigma) of the pseudorange residual error 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 (i.e., WAAS fast clock, WAAS long-term clock, WAAS ionospheric delay, tropospheric delay, receiver clock bias, and multipath). Because the true ionospheric delay and multipath error are not precisely known, the estimated variance in these error sources are added to the UDRE before comparing it to the residual error.

The GPS satellite range residual errors were calculated for 12 WAAS receivers during the quarter. Table 6-1 and Table 6-2 show the range error 95% index and 99.9% bounding statistics for each SV at the selected locations. Figure 6-1 and Figure 6-2 show the 95% range error for each SV measured by the WAAS receivers at the Chicago reference station.

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

Site	Minneapolis		Chicago		Boston		Juneau		Honolulu		Salt Lake City	
PRN ↓	0.95 Range Error (Meters)	3.29 Sigma Bounding (%)	0.95 Range Error (Meters)	3.29 Sigma Bounding (%)	0.95 Range Error (Meters)	3.29 Sigma Bounding (%)	0.95 Range Error (Meters)	3.29 Sigma Bounding (%)	0.95 Range Error (Meters)	3.29 Sigma Bounding (%)	0.95 Range Error (Meters)	3.29 Sigma Bounding (%)
1*	1.200	100	1.109	100	0.946	100	0.857	100	1.196	100	1.140	100
2	0.816	100	0.918	100	0.848	100	0.981	100	1.920	100	1.119	100
3*	0.893	100	1.142	100	1.009	100	0.880	100	1.637	100	1.779	100
4	-	-	-	-	-	-	-	-	-	-	-	-
5	1.100	100	0.995	100	0.987	100	1.028	100	1.116	100	0.773	100
6*	0.909	100	0.912	100	1.007	100	0.834	100	1.488	100	1.167	100
7	1.012	100	1.136	100	0.749	100	0.978	100	1.513	100	0.777	100
8*	1.106	100	1.225	100	0.937	100	1.227	100	1.158	100	1.017	100
9*	1.074	100	1.092	100	0.906	100	0.928	100	1.518	100	0.824	100
10	1.406	100	1.555	100	1.244	100	1.595	100	1.024	100	1.100	100
11	1.284	100	1.394	100	1.398	100	0.969	100	1.218	100	1.283	100
12	2.248	100	1.806	100	2.071	100	1.395	100	1.372	100	1.086	100
13	1.398	100	1.091	100	1.262	100	1.202	100	1.067	100	0.808	100
14	1.091	100	1.742	100	0.968	100	1.203	100	1.499	100	1.116	100
15	1.120	100	1.052	100	1.142	100	1.041	100	1.439	100	0.762	100
16	0.978	100	0.909	100	0.934	100	1.256	100	1.192	100	0.766	100
17	1.117	100	1.738	100	0.787	100	0.996	100	1.877	100	1.314	100
18	3.201	100	2.659	100	2.608	100	2.612	100	1.526	100	2.255	100
19	1.136	100	1.208	100	0.900	100	1.205	100	1.049	100	1.250	100
20	1.079	100	1.209	100	0.955	100	1.123	100	1.938	100	1.081	100
21	1.123	100	1.146	100	1.098	100	1.386	100	1.315	100	0.868	100
22	1.137	100	0.921	100	1.016	100	1.207	100	1.699	100	0.885	100
23	1.017	100	1.605	100	1.079	100	0.961	100	1.792	100	0.759	100
24*	1.050	100	1.098	100	0.987	100	1.346	100	1.360	100	1.196	100
25*	1.157	100	1.306	100	0.964	100	1.500	100	1.483	100	1.524	100
26*	1.427	100	1.186	100	0.992	100	1.266	100	1.267	100	0.817	100
27*	2.157	100	0.961	100	1.325	100	1.201	100	1.033	100	0.786	100
28	1.147	100	1.540	100	1.022	100	1.402	100	1.386	100	0.926	100
29	1.381	100	0.915	100	0.991	100	1.668	100	1.547	100	1.641	100
30*	1.042	100	1.131	100	0.860	100	0.935	100	1.242	100	0.879	100
31	0.861	100	0.959	100	0.925	100	1.232	100	1.310	100	0.984	100
32	1.380	100	1.036	100	1.145	100	1.259	100	1.338	100	1.384	100
135	2.397	100	2.464	100	2.024	100	1.698	100	2.110	100	1.791	100
138	1.816	100	1.479	100	1.994	100	1.488	100	1.533	100	1.255	100

*Note: Reduced ranging bounding on Block IIF space vehicles is due to the difference between L1 C/A and L1P satellite signal delays.

Table 6-2 Range Error 95% Index and 99.9% Bounding

Site	Billings		Miami		Albuquerque		Kansas City		Los Angeles		Atlanta	
PRN ↓	0.95 Range Error (Meters)	3.29 Sigma Bounding (%)	0.95 Range Error (Meters)	3.29 Sigma Bounding (%)	0.95 Range Error (Meters)	3.29 Sigma Bounding (%)	0.95 Range Error (Meters)	3.29 Sigma Bounding (%)	0.95 Range Error (Meters)	3.29 Sigma Bounding (%)	0.95 Range Error (Meters)	3.29 Sigma Bounding (%)
1*	0.824	100	1.382	100	0.855	100	1.423	100	1.034	100	0.971	100
2	1.483	100	1.209	100	1.001	100	0.951	100	0.863	100	0.861	100
3*	0.877	100	1.643	100	1.082	100	1.681	100	1.049	100	1.010	100
4	-	-	-	-	-	-	-	-	-	-	-	-
5	1.035	100	1.163	100	0.988	100	1.173	100	0.988	100	0.877	100
6*	1.119	100	1.667	100	1.344	100	1.792	100	1.360	100	1.185	100
7	0.755	100	2.664	100	0.866	100	1.070	100	0.848	100	0.833	100
8*	1.039	100	1.777	100	0.799	100	1.268	100	1.247	100	0.935	100
9*	0.950	100	1.520	100	0.704	100	1.077	100	0.930	100	1.022	100
10	2.148	100	1.095	100	0.734	100	0.949	100	0.782	100	0.987	100
11	1.437	100	1.448	100	1.097	100	1.082	100	0.965	100	1.167	100
12	1.447	100	1.983	100	0.840	100	1.032	100	0.963	100	0.945	100
13	1.248	100	1.541	100	1.120	100	1.030	100	0.914	100	0.863	100
14	0.992	100	1.092	100	1.046	100	1.139	100	0.833	100	0.816	100
15	0.864	100	1.455	100	0.882	100	1.054	100	1.150	100	1.095	100
16	1.355	100	1.434	100	1.096	100	1.218	100	0.921	100	0.991	100
17	1.588	100	1.884	100	0.704	100	1.671	100	0.766	100	0.867	100
18	2.452	100	2.027	100	2.445	100	2.596	100	2.385	100	2.208	100
19	1.170	100	1.421	100	0.980	100	1.108	100	0.839	100	0.939	100
20	1.971	100	1.543	100	0.868	100	1.351	100	0.872	100	0.788	100
21	1.033	100	0.979	100	0.796	100	1.067	100	1.076	100	0.868	100
22	1.382	100	1.693	100	1.642	100	0.966	100	0.939	100	0.965	100
23	0.811	100	1.468	100	0.934	100	1.088	100	1.044	100	1.016	100
24*	0.911	100	1.168	100	1.235	100	1.197	100	1.035	100	0.976	100
25*	1.349	100	1.074	100	0.847	100	1.024	100	1.006	100	1.455	100
26*	0.835	100	1.599	100	0.919	100	1.037	100	1.772	100	0.945	100
27*	1.110	100	1.219	100	0.934	100	0.995	100	1.414	100	0.938	100
28	1.302	100	1.293	100	0.785	100	1.181	100	1.498	100	0.841	100
29	1.120	100	1.005	100	0.916	100	1.149	100	0.799	100	0.878	100
30*	0.840	100	1.338	100	0.784	100	1.172	100	1.051	100	0.830	100
31	1.074	100	1.366	100	0.967	100	2.711	100	1.095	100	0.977	100
32	1.620	100	1.007	100	1.185	100	0.895	100	1.097	100	1.067	100

*Note: Reduced ranging bounding on Block IIF space vehicles is due to the difference between L1 C/A and L1P satellite signal delays.

Figure 6-1 Range Error (PRN-1 – PRN-16) – Washington D.C.

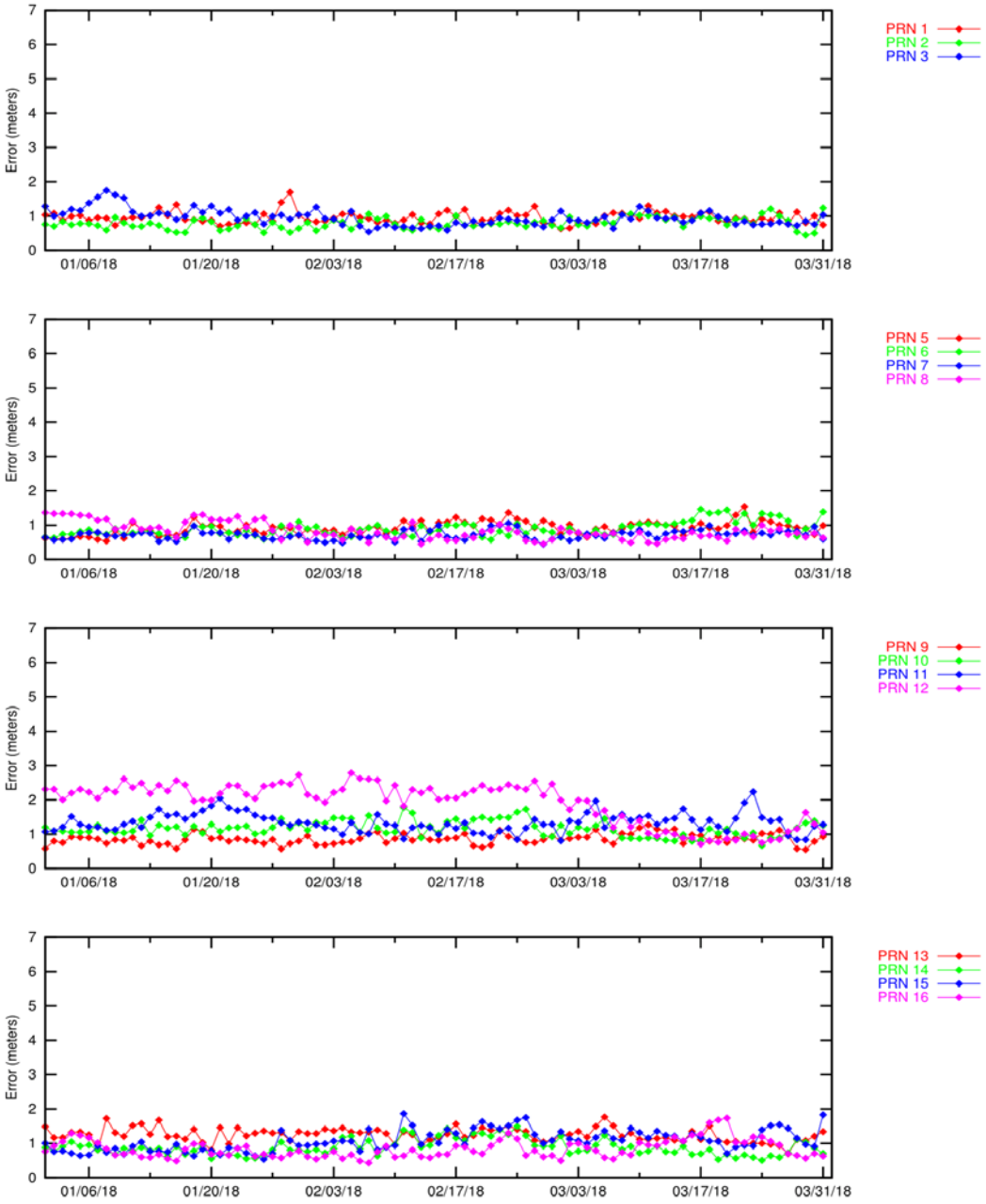
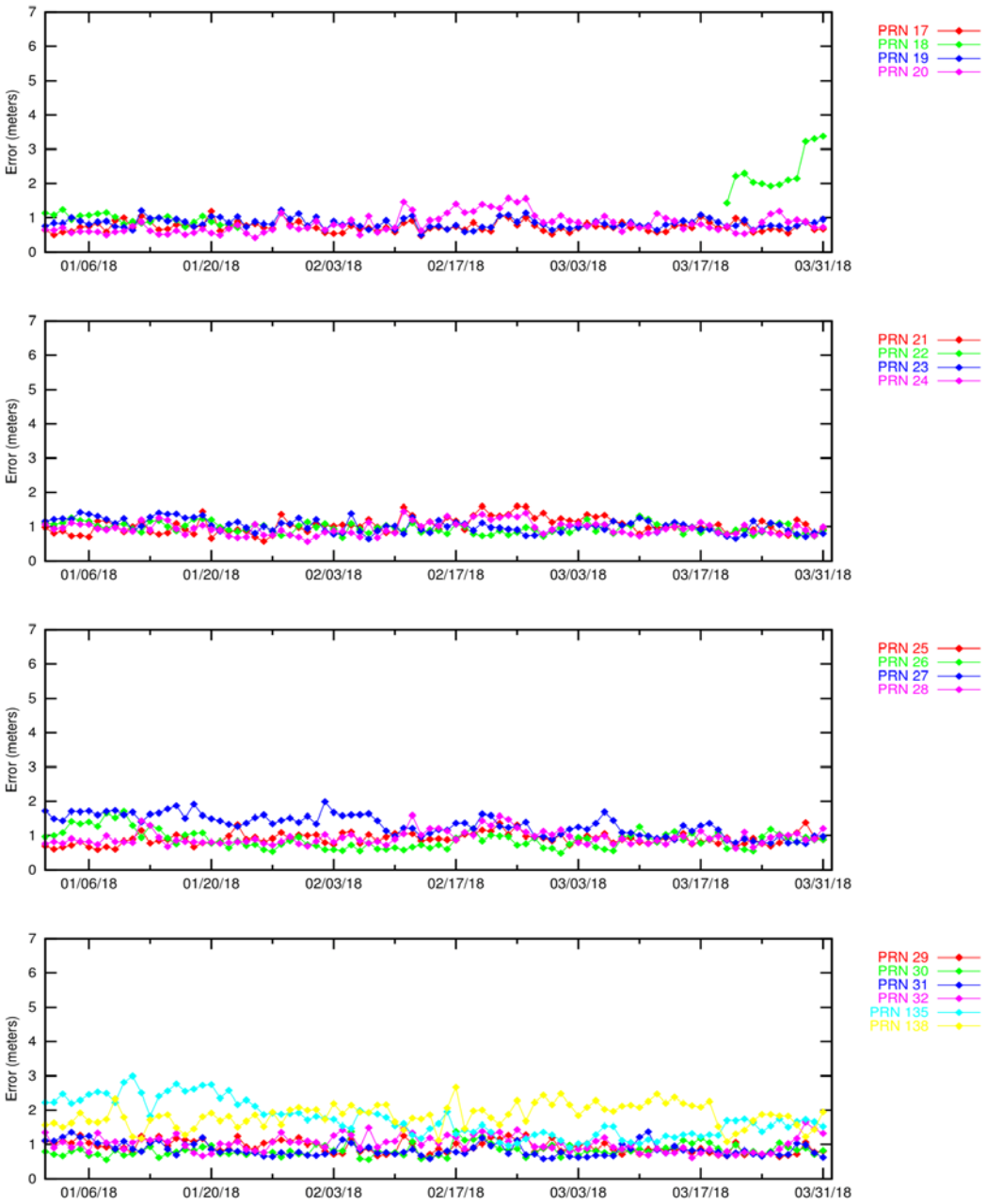


Figure 6-2 Range Error (PRN-17 – PRN-32) – Washington D.C.



A GIVE is broadcasted by the WAAS for each monitored ionospheric grid point (IGP) and the 99.9% bound of the ionospheric error is checked. The WAAS broadcasts the ionospheric model using IGPs at predefined geographic locations. Each IGP contains the vertical ionospheric delay and the delay error 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 and GPS dual frequency measurement at that GPS satellite.

The GPS satellite ionospheric errors were calculated for 12 WAAS receivers during the quarter. Table 6-3 and Table 6-4 show the ionospheric error 95% index and 99.9% bounding statistics for each SV at the selected locations. Figure 6-3 and Figure 6-4 show the 95% ionospheric error for each SV measured by the WAAS receiver at the Chicago reference station.

Table 6-3 Ionospheric Error 95% Index and 99.9% Sigma Bounding

Site	Minneapolis		Chicago		Boston		Juneau		Honolulu		Salt Lake City	
PRN ↓	0.95 Iono Error (Meters)	3.29 Sigma Bounding (%)	0.95 Iono error (Meters)	3.29 Sigma Bounding (%)	0.95 Iono Error (Meters)	3.29 Sigma Bounding (%)	0.95 Iono Error (Meters)	3.29 Sigma Bounding (%)	0.95 Iono Error (Meters)	3.29 Sigma Bounding (%)	0.95 Iono Error (Meters)	3.29 Sigma Bounding (%)
1	0.409	100	0.594	100	0.368	100	0.485	100	0.457	100	0.337	100
2	0.401	100	0.290	100	0.318	100	0.420	100	0.765	100	0.452	100
3	0.445	100	0.409	100	0.318	100	0.310	100	0.616	100	0.566	100
4	-	-	-	-	-	-	-	-	-	-	-	-
5	0.523	100	0.576	100	0.272	100	0.413	100	0.671	100	0.375	100
6	0.423	100	0.374	100	0.434	100	0.366	100	0.749	100	0.574	100
7	0.576	100	0.561	100	0.416	100	0.455	100	0.766	100	0.350	100
8	0.535	100	0.462	100	0.340	100	0.408	100	0.565	100	0.318	100
9	0.459	100	0.425	100	0.420	100	0.435	100	0.669	100	0.359	100
10	0.928	100	0.669	100	0.690	100	0.639	100	0.491	100	0.589	100
11	0.542	100	0.453	100	0.379	100	0.370	100	0.424	100	0.297	100
12	0.806	100	0.699	100	0.693	100	0.608	100	0.555	100	0.523	100
13	0.598	100	0.449	100	0.434	100	0.460	100	0.370	100	0.293	100
14	0.713	100	1.246	100	0.530	100	0.609	100	0.795	100	0.727	100
15	0.450	100	0.296	100	0.281	100	0.312	100	0.672	100	0.340	100
16	0.455	100	0.367	100	0.291	100	0.427	100	0.560	100	0.292	100
17	0.597	100	0.938	100	0.376	100	0.428	100	0.811	100	0.588	100
18	2.297	100	1.904	100	1.682	100	1.715	100	1.129	100	1.708	100
19	0.722	100	0.729	100	0.535	100	0.594	100	0.589	100	0.629	100
20	0.529	100	0.510	100	0.374	100	0.384	100	0.902	100	0.498	100
21	0.579	100	0.470	100	0.530	100	0.491	100	0.513	100	0.468	100
22	0.517	100	0.331	100	0.310	100	0.499	100	0.658	100	0.521	100
23	0.620	100	0.621	100	0.533	100	0.463	100	0.821	100	0.377	100
24	0.414	100	0.511	100	0.392	100	0.439	100	0.412	100	0.336	100
25	0.480	100	0.485	100	0.377	100	0.448	100	0.528	100	0.745	100
26	0.529	100	0.341	100	0.361	100	0.373	100	0.428	100	0.356	100
27	0.860	100	0.380	100	0.466	100	0.447	100	0.343	100	0.294	100
28	0.661	100	0.587	100	0.579	100	0.518	100	0.681	100	0.391	100
29	0.665	100	0.524	100	0.482	100	0.560	100	0.789	100	0.634	100
30	0.537	100	0.540	100	0.485	100	0.482	100	0.483	100	0.346	100
31	0.509	100	0.281	100	0.367	100	0.415	100	0.616	100	0.392	100
32	0.941	100	0.706	100	0.705	100	0.679	100	0.842	100	0.730	100

Table 6-4 Ionospheric Error 95% Index and 99.9% Sigma Bounding

Site	Billings		Miami		Albuquerque		Kansas City		Atlanta		Los Angeles	
PRN ↓	0.95 Iono Error (Meters)	3.29 Sigma Bounding (%)	0.95 Iono Error (Meters)	3.29 Sigma Bounding (%)	0.95 Iono Error (Meters)	3.29 Sigma Bounding (%)	0.95 Iono Error (Meters)	3.29 Sigma Bounding (%)	0.95 Iono Error (Meters)	3.29 Sigma Bounding (%)	0.95 Iono Error (Meters)	3.29 Sigma Bounding (%)
1	0.489	0.489	0.474	0.474	0.322	0.322	0.533	0.533	0.519	0.519	0.451	0.451
2	0.870	0.870	0.383	0.383	0.451	0.451	0.485	0.485	0.401	0.401	0.610	0.610
3	0.395	0.395	0.608	0.608	0.546	0.546	0.678	0.678	0.513	0.513	0.231	0.231
4	-	-	-	-	-	-	-	-	-	-	-	-
5	0.551	0.551	0.433	0.433	0.523	0.523	0.542	0.542	0.397	0.397	0.605	0.605
6	0.585	0.585	0.715	0.715	0.469	0.469	1.019	1.019	0.570	0.570	0.496	0.496
7	0.407	0.407	1.445	1.445	0.424	0.424	0.462	0.462	0.416	0.416	0.323	0.323
8	0.324	0.324	0.399	0.399	0.400	0.400	0.443	0.443	0.327	0.327	0.534	0.534
9	0.656	0.656	0.667	0.667	0.406	0.406	0.350	0.350	0.402	0.402	0.260	0.260
10	1.139	1.139	0.426	0.426	0.468	0.468	0.579	0.579	0.453	0.453	0.594	0.594
11	0.331	0.331	0.403	0.403	0.492	0.492	0.340	0.340	0.378	0.378	0.382	0.382
12	0.584	0.584	0.912	0.912	0.535	0.535	0.418	0.418	0.461	0.461	0.451	0.451
13	0.383	0.383	0.731	0.731	0.360	0.360	0.317	0.317	0.495	0.495	0.507	0.507
14	0.508	0.508	0.443	0.443	0.614	0.614	0.540	0.540	0.327	0.327	0.601	0.601
15	0.330	0.330	0.349	0.349	0.393	0.393	0.467	0.467	0.361	0.361	0.642	0.642
16	0.491	0.491	0.390	0.390	0.458	0.458	0.524	0.524	0.308	0.308	0.490	0.490
17	0.905	0.905	0.722	0.722	0.403	0.403	0.606	0.606	0.350	0.350	0.455	0.455
18	1.725	1.725	1.593	1.593	1.673	1.673	1.973	1.973	1.311	1.311	1.860	1.860
19	0.797	0.797	0.557	0.557	0.632	0.632	0.379	0.379	0.336	0.336	0.520	0.520
20	0.843	0.843	0.635	0.635	0.426	0.426	0.561	0.561	0.285	0.285	0.432	0.432
21	0.448	0.448	0.541	0.541	0.458	0.458	0.396	0.396	0.332	0.332	0.555	0.555
22	0.582	0.582	0.650	0.650	0.713	0.713	0.371	0.371	0.395	0.395	0.313	0.313
23	0.408	0.408	0.627	0.627	0.459	0.459	0.387	0.387	0.489	0.489	0.343	0.343
24	0.315	0.315	0.651	0.651	0.600	0.600	0.393	0.393	0.432	0.432	0.447	0.447
25	0.474	0.474	0.466	0.466	0.398	0.398	0.384	0.384	0.802	0.802	0.481	0.481
26	0.287	0.287	0.442	0.442	0.301	0.301	0.370	0.370	0.320	0.320	0.852	0.852
27	0.379	0.379	0.367	0.367	0.343	0.343	0.311	0.311	0.403	0.403	0.571	0.571
28	0.455	0.455	0.542	0.542	0.351	0.351	0.337	0.337	0.429	0.429	0.709	0.709
29	0.537	0.537	0.529	0.529	0.555	0.555	0.372	0.372	0.477	0.477	0.524	0.524
30	0.441	0.441	0.576	0.576	0.370	0.370	0.447	0.447	0.413	0.413	0.288	0.288
31	0.435	0.435	0.615	0.615	0.380	0.380	1.332	1.332	0.367	0.367	0.526	0.526
32	1.005	1.005	0.548	0.548	0.761	0.761	0.591	0.591	0.546	0.546	0.864	0.864

Figure 6-3 Ionospheric Error (PRN-1 – PRN-16) – Washington D.C.

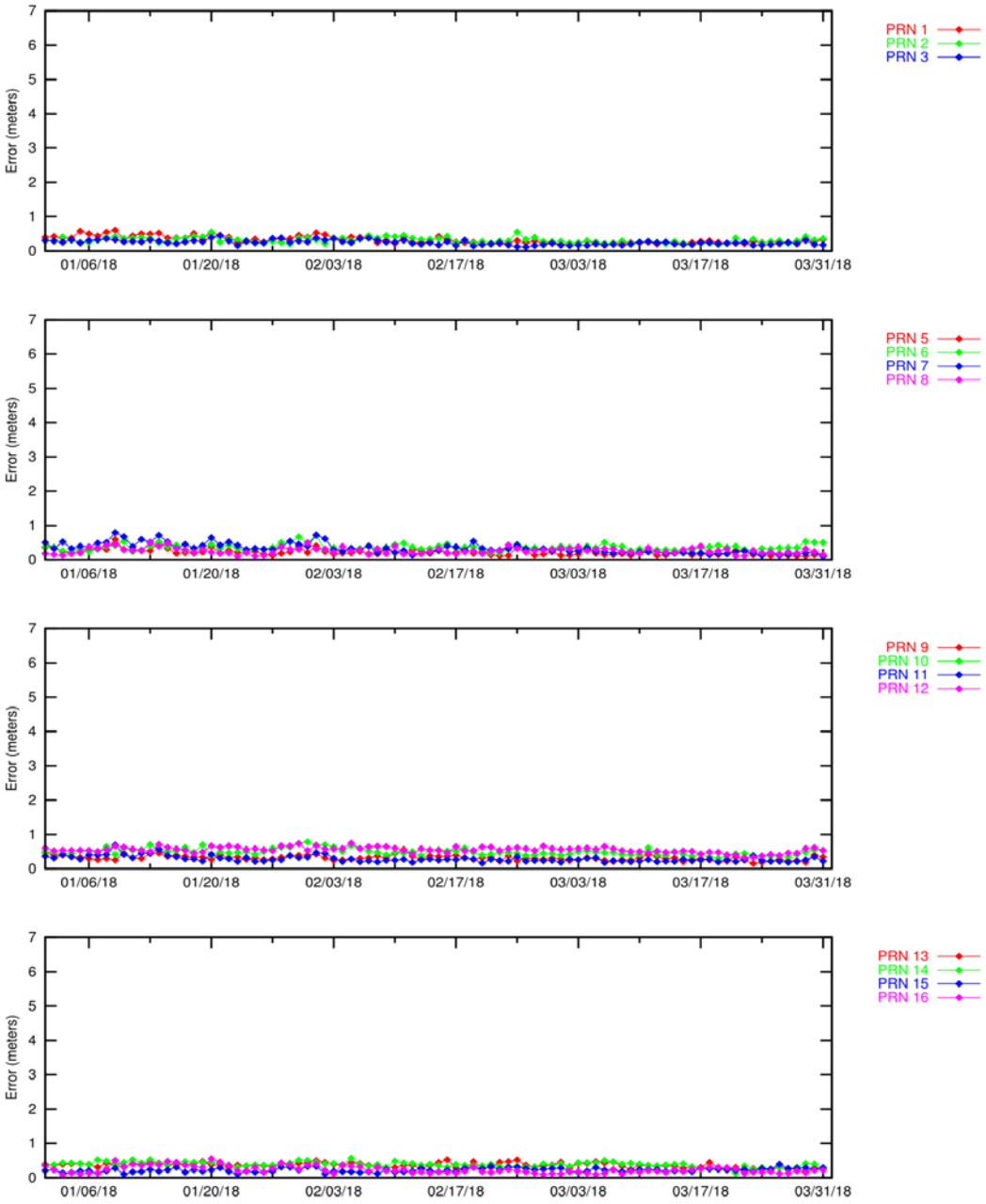
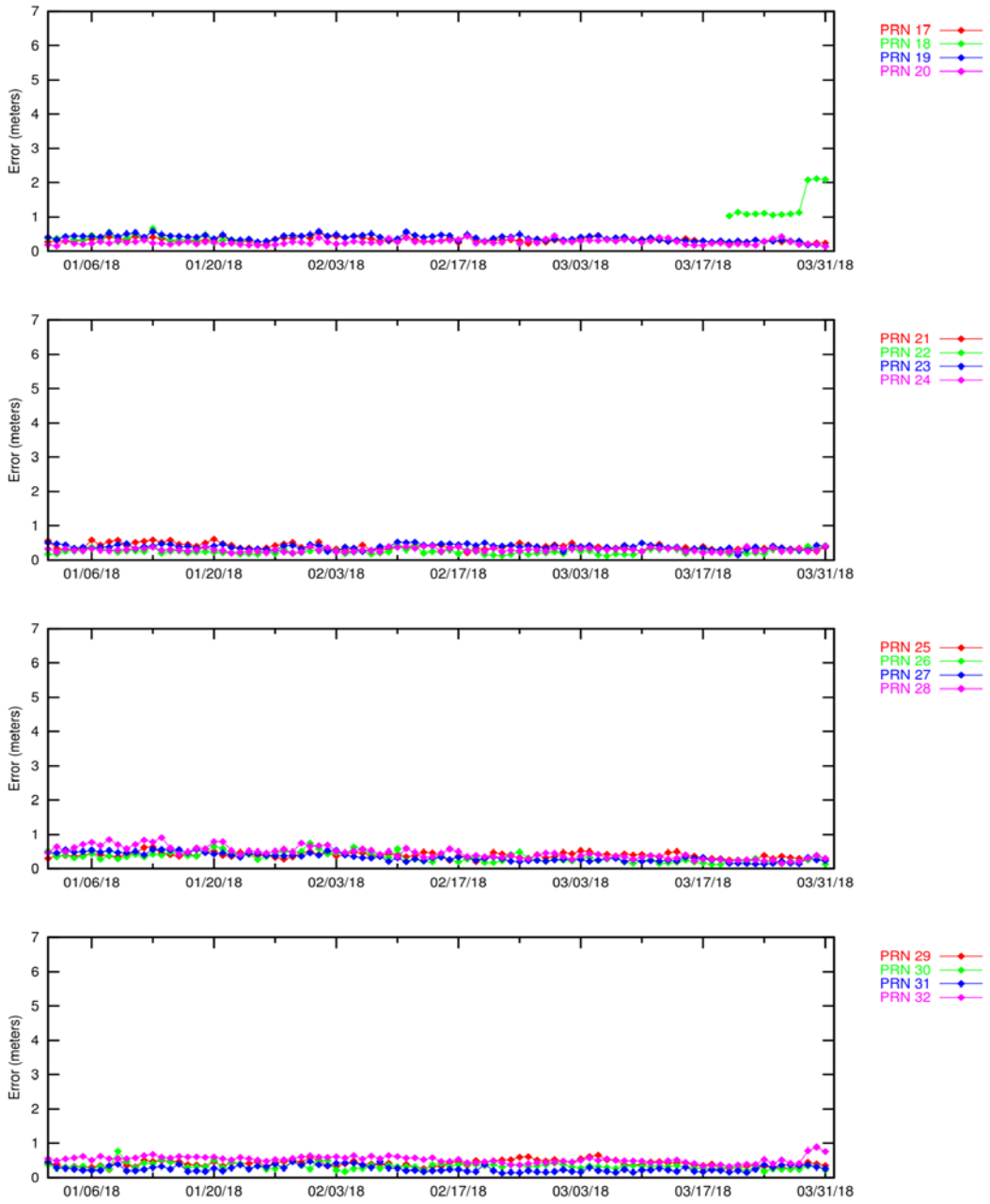


Figure 6-4 Ionospheric Error (PRN-17 – PRN-32) – Washington D.C.



For this reporting period, most satellite range errors were bounded at least 99.9% of the time by UDRE. Other unbounded errors (i.e., errors bounded less than 100% of the time) were due to geomagnetic activity, noise, and/or multipath. PRN-4 was unavailable for the quarter.

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 PA and NPA ranging availability as well as the percentage of time the GEO UDRE was set to "Not Monitored" and "Do Not Use." Note that AMR GEO 133, which was reported on in previous reports, was decommissioned from WAAS service on November 9, 2017. Figure 7-1 and Figure 7-2 show the trend of CRW GEO PA and CRE GEO PA ranging availability, respectively.

The reductions in CRW GEO PA and CRE GEO PA ranging availability were due to GUS switchovers (see Figure 7-1 and Figure 7-2). Refer to Table 1-7 for detailed information on the GUS switchovers for this reporting period.

Table 7-1 GEO Ranging Availability

GEO Source	GEO	PA (%)	NPA (%)	Not Monitored (%)	Do Not Use (%)
CRW 135	CRW	99.9	0.01	0.06	0
CRW 135	CRE	99.79	0.03	0.18	0.03
CRE 138	CRW	99.9	0.01	0.06	0.03
CRE 138	CRE	99.79	0.03	0.18	0

Figure 7-1 Daily PA CRW GEO Ranging Availability Trend

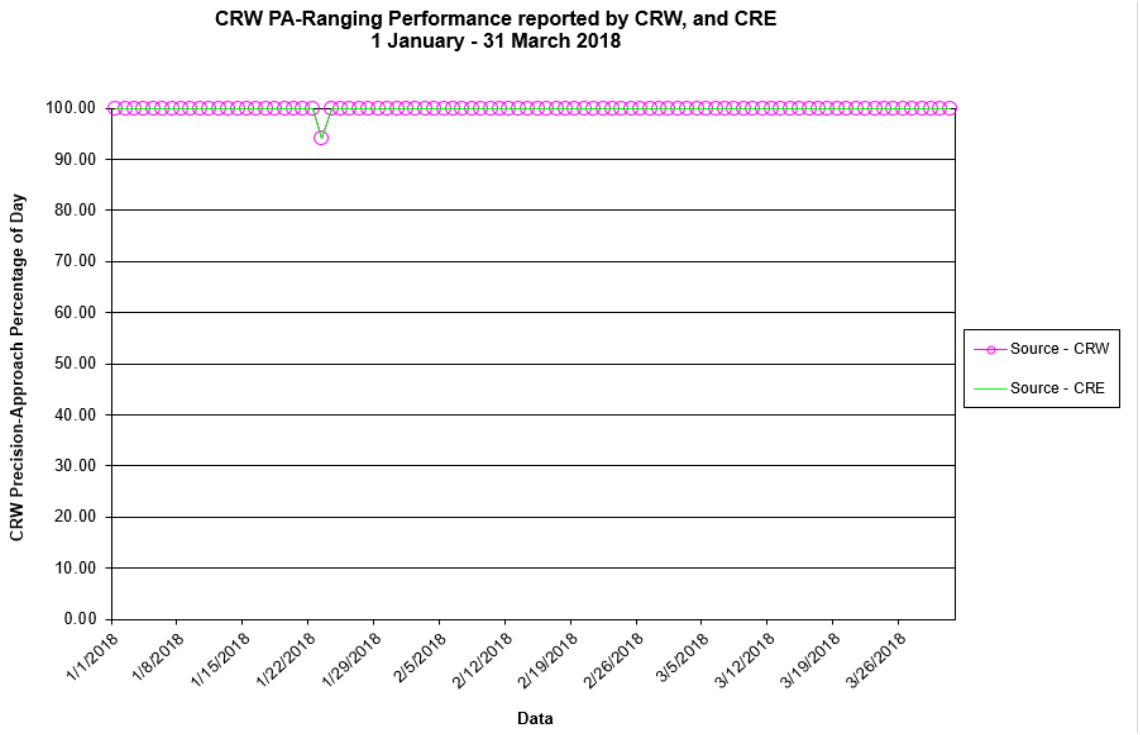
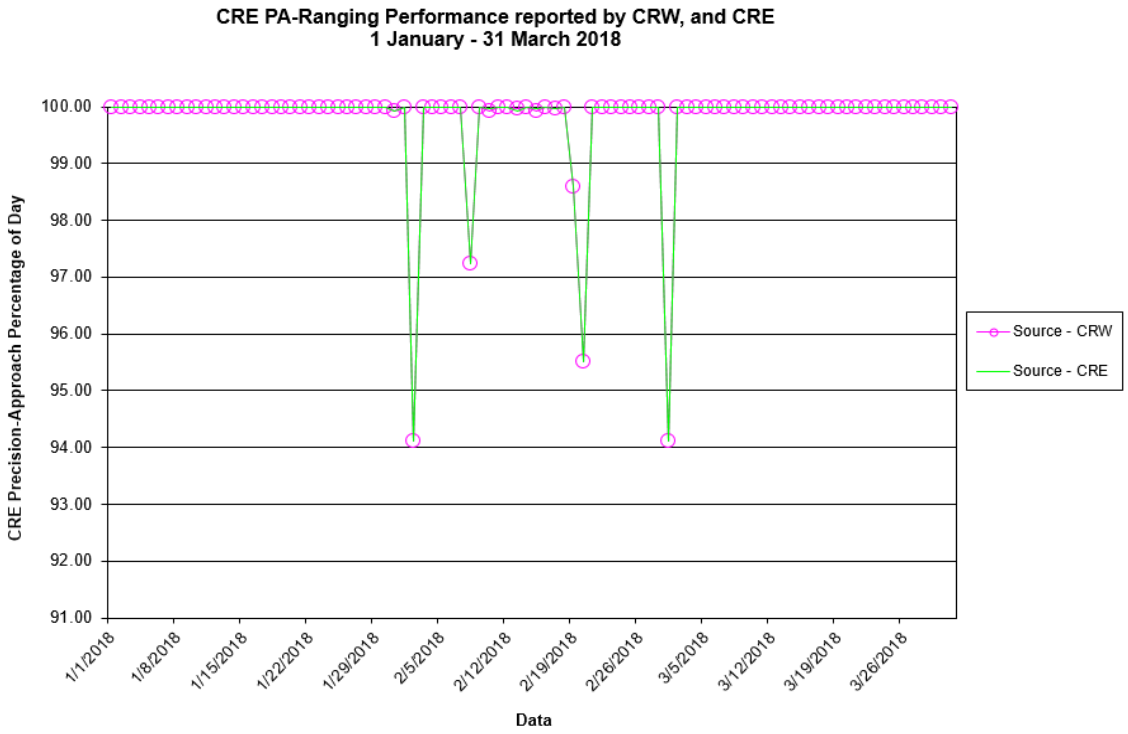


Figure 7-2 Daily PA CRE GEO Ranging Availability Trend



8.0 WAAS AIRPORT AVAILABILITY

The WAAS airport availability evaluation determines the number and length of LPV service outages at selected airports using 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 seconds in accordance with the RTCA DO-229D. The WAAS LPV service is available for a user when the VPL is less than or equal to the VAL of 50 meters and the HPL is less than or equal to the HAL of 40 meters. If both conditions are met, WAAS LPV service is available at that airport. Consequently, if either one of the conditions are not met, the WAAS LPV service outage and its duration is recorded.

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 minimally reduce LPV service availability, it substantially reduces the number of service outages and prevents excessive switching in and out of service availability. Similar service analyses are computed for the LP and LPV200 services in accordance with HAL and VAL shown in Table 1-1. Table 8-1 shows the WAAS LPV service availability and outages at selected airports in the US and Canada. Figure 8-1 through Figure 8-6 provide graphical representation of the LP, LPV, and LPV200 availability and outage counts at airports in the US and Canada that have published GPS area navigation (RNAV) Instrument Approach Procedures (IAPs). These results are geographically depicted on an interactive web page and are accessible at http://www.nstb.tc.faa.gov/AirportOutages/.

To use the interactive web page, select the current quarter from the dropdown menu in the upper left corner, and click “Submit Request”. The WAAS LPV airport layer will appear providing color-coded availability results, as shown in Figure 8-1 and Figure 8-2. Rolling the cursor over any airport will display the LPV availability and outages for the reporting period. The “WAAS Layer” menu in the upper right of the display allows the user to select WAAS LP or LPV200 availability and outage results, as shown in Figure 8-3 through Figure 8-6. Selecting “Show All Airports” displays WAAS availability for US airports with GPS RNAV IAPs; not selecting “Show All Airports” displays only airports with approved LPV approaches, as shown in Table 8-1.

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

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
CAL4	FORT MACKAY / ALBIAN AERODROME	AB	LPV	0	100	0	100	0	100
CEV3	VEGREVILLE	AB	LPV	0	100	0	100	0	100
CYEG	EDMONTON / JOSEPHBURG	AB	LPV	0	100	0	100	0	100
CYXD	EDMONTON CITY CTR	AB	LPV	0	100	0	100	0	100
2C7	SHAKTOOLIK	AK	LPV	0	100	0	100	53	99.892
6A8	ALLAKAKET	AK	LP	0	100	0	100	2	99.996
7KA	TATITLEK	AK	LP	0	100	0	100	0	100
9A3	CHUATHBALUK	AK	LPV	0	100	0	100	24	99.981
AFM	AMBLER	AK	LPV	0	100	0	100	52	99.928
AKN	KING SALMON	AK	LPV	0	100	0	100	9	99.996
AKW	KLAWOCK	AK	LP	0	100	0	100	0	100
ANC	TED STEVENS ANCHORAGE INTL	AK	LPV200	0	100	0	100	0	100
ANI	ANIAK	AK	LPV	0	100	0	100	33	99.973
AQH	QUINHAGAK	AK	LPV	0	100	0	100	57	99.589
AQT	NUIQSUT	AK	LPV	0	100	0	100	147	99.302
BET	BETHEL	AK	LPV200	0	100	0	100	56	99.651
BRW	WILEY POST-WILL ROGERS MEMORIA	AK	LPV	0	100	0	100	265	97.475
CDB	COLD BAY	AK	LPV200	0	100	0	100	140	98.961
CDV	MERLE K (MUDHOLE) SMITH	AK	LPV	0	100	0	100	0	100
CEM	CENTRAL	AK	LP	0	100	0	100	32	99.982
CLP	CLARKS POINT	AK	LPV	0	100	0	100	45	99.857
CXF	COLDFOOT	AK	LP	0	100	0	100	31	99.979
D76	ROBERT/BOB/CURTIS MEMORIAL	AK	LPV	0	100	0	100	91	99.212
DEE	DEERING	AK	LPV	0	100	0	100	87	99.168
DLG	DILLINGHAM	AK	LPV	0	100	0	100	45	99.866
ELI	ELIM	AK	LPV	0	100	0	100	56	99.824
ENA	KENAI MUNICIPAL	AK	LPV200	0	100	0	100	0	100
ENM	EMMONAK	AK	LPV	0	100	0	100	60	99.714
FAI	FAIRBANKS INTL	AK	LPV200	0	100	0	100	0	100
FYU	FORT YUKON	AK	LPV	0	100	0	100	36	99.976
GAL	EDWARD G PITKA SR	AK	LPV	0	100	0	100	2	99.999
GAM	GAMBELL	AK	LPV	0	100	6	99.997	250	97.034
GKN	GULKANA	AK	LPV	0	100	0	100	0	100
GST	GUSTAVUS	AK	LP	0	100	0	100	0	100
HLA	HUSLIA	AK	LPV	0	100	0	100	3	99.998

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
HOM	HOMER	AK	LPV	0	100	0	100	0	100
HPB	HOOPER BAY	AK	LP	0	100	0	100	65	99.417
HRR	HEALY RIVER	AK	LP	0	100	0	100	0	100
ILI	ILIAMNA	AK	LPV	0	100	0	100	0	100
IYS	WASILLA	AK	LPV	0	100	0	100	0	100
KAL	KALTAG	AK	LPV	0	100	0	100	16	99.991
KSM	ST MARY'S	AK	LPV200	0	100	0	100	58	99.764
KTN	KETCHIKAN INTL	AK	LPV	0	100	0	100	0	100
KTS	BREVIG MISSION	AK	LPV	0	100	0	100	146	98.456
KWT	KWETHLUK	AK	LPV	0	100	0	100	56	99.695
KYU	KOYUKUK	AK	LPV	0	100	0	100	4	99.998
MCG	MC GRATH	AK	LP	0	100	0	100	0	100
MDM	MARSHALL DON HUNTER SR	AK	LP	0	100	0	100	56	99.840
MDO	MIDDLETON ISLAND	AK	LP	0	100	0	100	0	100
OME	NOME	AK	LPV	0	100	0	100	134	98.912
OOK	TOKSOOK BAY	AK	LP	0	100	0	100	65	99.438
ORT	NORTHWAY	AK	LP	0	100	0	100	45	99.982
OTZ	RALPH WIEN MEMORIAL	AK	LPV	0	100	0	100	115	99.052
PAQ	PALMER MUNICIPAL	AK	LP	0	100	0	100	0	100
PHO	POINT HOPE	AK	LPV	0	100	0	100	184	97.829
RBY	RUBY	AK	LPV	0	100	0	100	1	99.999
SCC	DEADHORSE	AK	LPV	0	100	0	100	156	99.207
SCM	SCAMMON BAY	AK	LP	0	100	0	100	64	99.473
SHG	SHUNGNAK	AK	LP	0	100	0	100	38	99.976
SHX	SHAGELUK	AK	LPV	0	100	0	100	30	99.975
SIT	SITKA ROCKY GUTIERREZ	AK	LP	0	100	0	100	0	100
SMK	ST MICHAEL	AK	LPV	0	100	0	100	56	99.837
SXQ	SOLDOTNA	AK	LP	0	100	0	100	0	100
UNK	UNALAKLEET	AK	LP	0	100	0	100	50	99.924
WLK	SELAWIK	AK	LPV	0	100	0	100	53	99.880
WMO	WHITE MOUNTAIN	AK	LP	0	100	0	100	59	99.753
WNA	NAPAKIAK	AK	LPV	0	100	0	100	56	99.623
WSN	SOUTH NAKNEK NR 2	AK	LPV	0	100	0	100	15	99.994
YAK	YAKUTAT	AK	LPV200	0	100	0	100	0	100
02A	CHILTON COUNTY	AL	LP	0	100	0	100	0	100
06A	MOTON FIELD MUNICIPAL	AL	LPV	0	100	0	100	0	100
09A	BUTLER-CHOCTAW COUNTY	AL	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
0J6	HEADLAND MUNICIPAL	AL	LPV	0	100	0	100	0	100
0R1	ATMORE MUNICIPAL	AL	LP	0	100	0	100	0	100
11A	CLAYTON MUNICIPAL	AL	LPV	0	100	0	100	0	100
12J	BREWTON MUNICIPAL	AL	LPV	0	100	0	100	0	100
1M4	POSEY FIELD	AL	LPV	0	100	0	100	0	100
1R8	BAY MINETTE MUNICIPAL	AL	LPV	0	100	0	100	0	100
2R5	ST ELMO	AL	LPV	0	100	0	100	0	100
33J	GENEVA MUNICIPAL	AL	LP	0	100	0	100	0	100
3M8	NORTH PICKENS	AL	LP	0	100	0	100	0	100
4A9	ISBELL FIELD	AL	LPV	0	100	0	100	0	100
5R1	ROY WILCOX	AL	LP	0	100	0	100	0	100
5R4	FOLEY MUNICIPAL	AL	LPV	0	100	0	100	0	100
71J	BLACKWELL FIELD	AL	LPV	0	100	0	100	0	100
79J	SOUTH ALABAMA RGNL AT BILL BEN	AL	LPV	0	100	0	100	0	100
8A0	ALBERTVILLE RGNL-THOMAS J BRUM	AL	LPV	0	100	0	100	0	100
8A1	GUNTERSVILLE MUNICIPAL - JOE STARNE	AL	LPV	0	100	0	100	0	100
9A4	COURTLAND	AL	LPV200	0	100	0	100	0	100
A08	VAIDEN FIELD	AL	LPV	0	100	0	100	0	100
ALX	THOMAS C RUSSELL FLD	AL	LPV	0	100	0	100	0	100
ANB	ANNISTON RGNL	AL	LPV	0	100	0	100	0	100
ASN	TALLADEGA MUNICIPAL	AL	LPV200	0	100	0	100	0	100
AUO	AUBURN UNIVERSITY RGNL	AL	LPV200	0	100	0	100	0	100
BFM	MOBILE DOWNTOWN	AL	LPV200	0	100	0	100	0	100
BHM	BIRMINGHAM-SHUTTLESWORTH INTL	AL	LPV200	0	100	0	100	0	100
CMD	CULLMAN RGNL-FOLSOM FIELD	AL	LPV	0	100	0	100	0	100
CQF	H L SONNY CALLAHAN	AL	LPV200	0	100	0	100	0	100
DCU	PRYOR FIELD RGNL	AL	LPV200	0	100	0	100	0	100
DHN	DOTHAN RGNL	AL	LPV200	0	100	0	100	0	100
DYA	DEMOPOLIS RGNL	AL	LPV	0	100	0	100	0	100
EDN	ENTERPRISE MUNICIPAL	AL	LPV	0	100	0	100	0	100
EET	SHELBY COUNTY	AL	LPV	0	100	0	100	0	100
EKY	BESSEMER	AL	LPV	0	100	0	100	0	100
EUF	WEEDON FIELD	AL	LPV	0	100	0	100	0	100
GAD	NORTHEAST ALABAMA RGNL	AL	LPV200	0	100	0	100	0	100
GZH	MIDDLETON FIELD	AL	LP	0	100	0	100	0	100
HAB	MARION COUNTY-RANKIN FITE	AL	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
HSV	HUNTSVILLE INTL-CARL T JONES F	AL	LPV200	0	100	0	100	0	100
JFX	WALKER COUNTY-BEVILL FIELD	AL	LPV	0	100	0	100	0	100
JKA	JACK EDWARDS	AL	LPV200	0	100	0	100	0	100
M95	RICHARD ARTHUR FIELD	AL	LPV	0	100	0	100	0	100
MDQ	HUNTSVILLE EXECUTIVE AIRPORT T	AL	LPV200	0	100	0	100	0	100
MGM	MONTGOMERY RGNL (DANNELLY FIEL	AL	LPV200	0	100	0	100	0	100
MOB	MOBILE RGNL	AL	LPV200	0	100	0	100	0	100
MSL	NORTHWEST ALABAMA RGNL	AL	LPV200	0	100	0	100	0	100
PLR	ST CLAIR COUNTY	AL	LPV	0	100	0	100	0	100
PYP	CENTRE-PIEDMONT-CHEROKEE COUNT	AL	LPV	0	100	0	100	0	100
SCD	MERKEL FIELD SYLACAUGA MUNICIPAL	AL	LPV	0	100	0	100	0	100
SEM	CRAIG FIELD	AL	LPV200	0	100	0	100	0	100
TCL	TUSCALOOSA RGNL	AL	LPV	0	100	0	100	0	100
TOI	TROY MUNICIPAL AIRPORT AT N KENNETH	AL	LPV	0	100	0	100	0	100
0M0	BILLY FREE MUNICIPAL	AR	LPV	0	100	0	100	0	100
42A	MELBOURNE MUNICIPAL - JOHN E MILLER	AR	LP	0	100	0	100	0	100
4A5	SEARCY COUNTY	AR	LPV	0	100	0	100	0	100
4M3	CARLISLE MUNICIPAL	AR	LPV	0	100	0	100	0	100
6M7	MARIANNA/LEE COUNTY-STEVE EDWA	AR	LPV	0	100	0	100	0	100
7M1	MC GEHEE MUNICIPAL	AR	LP	0	100	0	100	0	100
9M8	SHERIDAN MUNICIPAL	AR	LPV	0	100	0	100	0	100
ADF	DEXTER B FLORENCE MEMORIAL FIE	AR	LPV	0	100	0	100	0	100
ARG	WALNUT RIDGE RGNL	AR	LPV200	0	100	0	100	0	100
ASG	SPRINGDALE MUNICIPAL	AR	LPV	0	100	0	100	0	100
AWM	WEST MEMPHIS MUNICIPAL	AR	LPV200	0	100	0	100	0	100
BPK	BAXTER COUNTY	AR	LPV	0	100	0	100	0	100
BVX	BATESVILLE RGNL	AR	LPV	0	100	0	100	0	100
BYH	ARKANSAS INTL	AR	LPV200	0	100	0	100	0	100
CDH	HARRELL FIELD	AR	LPV	0	100	0	100	0	100
CXW	CANTRELL FLD	AR	LPV	0	100	0	100	0	100
DRP	DELTA RGNL	AR	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
ELD	SOUTH ARKANSAS RGNL AT GOODWIN	AR	LPV	0	100	0	100	0	100
FLP	MARION COUNTY RGNL	AR	LPV	0	100	0	100	0	100
FSM	FORT SMITH RGNL	AR	LPV200	0	100	0	100	0	100
FYV	DRAKE FIELD	AR	LPV	0	100	0	100	0	100
H34	HUNTSVILLE MUNICIPAL	AR	LPV	0	100	0	100	0	100
HRO	BOONE COUNTY	AR	LPV	0	100	0	100	0	100
JBR	JONESBORO MUNICIPAL	AR	LPV200	0	100	0	100	0	100
LIT	BILL AND HILLARY CLINTON NATIO	AR	LPV200	0	100	0	100	0	100
M18	HOPE MUNICIPAL	AR	LP	0	100	0	100	0	100
M19	NEWPORT MUNICIPAL	AR	LPV	0	100	0	100	0	100
M32	LAKE VILLAGE MUNICIPAL	AR	LP	0	100	0	100	0	100
M77	HOWARD COUNTY	AR	LP	0	100	0	100	0	100
MXA	MANILA MUNICIPAL	AR	LPV	0	100	0	100	0	100
ORK	NORTH LITTLE ROCK MUNICIPAL	AR	LPV	0	100	0	100	0	100
PBF	GRIDER FIELD	AR	LPV	0	100	0	100	0	100
ROG	ROGERS EXECUTIVE - CARTER FIEL	AR	LPV	0	100	0	100	0	100
RUE	RUSSELLVILLE RGNL	AR	LPV	0	100	0	100	0	100
SGT	STUTTGART MUNICIPAL CARL HUMPHREY F	AR	LPV	0	100	0	100	0	100
SLG	SMITH FIELD	AR	LPV	0	100	0	100	0	100
SRC	SEARCY MUNICIPAL	AR	LPV	0	100	0	100	0	100
SUZ	SALINE COUNTY RGNL	AR	LPV	0	100	0	100	0	100
TXK	TEXARKANA RGNL-WEBB FIELD	AR	LPV	0	100	0	100	0	100
VBT	BENTONVILLE MUNICIPAL/LOUISE M THAD	AR	LPV	0	100	0	100	0	100
XNA	NORTHWEST ARKANSAS RGNL	AR	LPV200	0	100	0	100	0	100
AVQ	MARANA RGNL	AZ	LP	0	100	0	100	1	99.995
DVT	PHOENIX DEER VALLEY	AZ	LPV	0	100	0	100	0	100
FFZ	FALCON FLD	AZ	LP	0	100	0	100	0	100
FHU	SIERRA VISTA MUNICIPAL-LIBBY AAF	AZ	LPV200	0	100	0	100	1	99.995
FLG	FLAGSTAFF PULLIAM	AZ	LPV	0	100	0	100	0	100
GCN	GRAND CANYON NATIONAL PARK	AZ	LPV	0	100	0	100	0	100
GEU	GLENDALE MUNICIPAL	AZ	LPV	0	100	0	100	1	99.999
GYR	PHOENIX GOODYEAR	AZ	LP	0	100	0	100	1	99.999
HII	LAKE HAVASU CITY	AZ	LPV	0	100	0	100	1	99.999
IFP	LAUGHLIN/BULLHEAD INTL	AZ	LPV	0	100	0	100	1	99.999

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
IGM	KINGMAN	AZ	LPV	0	100	0	100	1	99.999
IWA	PHOENIX-MESA GATEWAY	AZ	LPV200	0	100	0	100	0	100
JTC	SPRINGERVILLE MUNICIPAL	AZ	LP	0	100	0	100	0	100
P20	AVI SUQUILLA	AZ	LPV	0	100	0	100	1	99.999
P33	COCHISE COUNTY	AZ	LPV	0	100	0	100	1	99.997
PGA	PAGE MUNICIPAL	AZ	LPV	0	100	0	100	0	100
PHX	PHOENIX SKY HARBOR INTL	AZ	LPV	0	100	0	100	0	100
PRC	ERNEST A LOVE FIELD	AZ	LPV200	0	100	0	100	0	100
RQE	WINDOW ROCK	AZ	LP	0	100	0	100	0	100
SAD	SAFFORD RGNL	AZ	LPV	0	100	0	100	0	100
SJN	ST JOHNS INDUSTRIAL AIR PARK	AZ	LP	0	100	0	100	0	100
SOW	SHOW LOW RGNL	AZ	LPV	0	100	0	100	0	100
TUS	TUCSON INTL	AZ	LPV	0	100	0	100	1	99.994
CYBL	CAMPBELL RIVER	BC	LPV	0	100	0	100	0	100
CYCD	NANAIMO	BC	LPV	0	100	0	100	0	100
CYVR	VANCOUVER INTL	BC	LPV	0	100	0	100	0	100
CYXS	PRINCE GEORGE	BC	LPV	0	100	0	100	0	100
CYYJ	VICTORIA INTL	BC	LPV	0	100	0	100	0	100
CZBB	VANCOUVER / BOUNDARY BAY	BC	LPV	0	100	0	100	0	100
AAT	ALTURAS MUNICIPAL	CA	LPV	0	100	0	100	0	100
ACV	ARCATA	CA	LPV	0	100	0	100	91	99.706
APC	NAPA COUNTY	CA	LPV	0	100	0	100	91	98.939
APV	APPLE VALLEY	CA	LPV	0	100	0	100	7	99.997
AUN	AUBURN MUNICIPAL	CA	LPV	0	100	0	100	0	100
BFL	MEADOWS FIELD	CA	LPV200	0	100	0	100	93	99.627
BLH	BLYTHE	CA	LP	0	100	0	100	1	99.999
BUR	BOB HOPE	CA	LP	0	100	0	100	95	99.767
C83	BYRON	CA	LPV	0	100	0	100	91	99.116
CCB	CABLE	CA	LP	0	100	0	100	60	99.942
CCR	BUCHANAN FIELD	CA	LPV	0	100	0	100	91	98.980
CEC	JACK MC NAMARA FIELD	CA	LPV	0	100	0	100	90	99.687
CIC	CHICO MUNICIPAL	CA	LPV	0	100	0	100	0	100
CMA	CAMARILLO	CA	LPV	0	100	0	100	95	99.536
CNO	CHINO	CA	LPV	0	100	0	100	62	99.947
CRQ	MC CLELLAN-PALOMAR	CA	LPV	0	100	0	100	33	99.986
CVH	HOLLISTER MUNICIPAL	CA	LPV	0	100	0	100	93	99.035
DAG	BARSTOW-DAGGETT	CA	LPV	0	100	0	100	1	99.999

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
DWA	YOLO COUNTY	CA	LPV	0	100	0	100	85	99.474
F70	FRENCH VALLEY	CA	LPV	0	100	0	100	16	99.993
FAT	FRESNO YOSEMITE INTL	CA	LPV200	0	100	0	100	91	99.606
GOO	NEVADA COUNTY AIR PARK	CA	LPV	0	100	0	100	0	100
HAF	HALF MOON BAY	CA	LPV	0	100	0	100	94	98.740
HHR	JACK NORTHROP FIELD/HAWTHORNE	CA	LPV	0	100	0	100	95	99.758
HWD	HAYWARD EXECUTIVE	CA	LPV	0	100	0	100	92	98.895
L35	BIG BEAR CITY	CA	LP	0	100	0	100	1	99.999
LAX	LOS ANGELES INTL	CA	LPV200	0	100	0	100	95	99.739
LGB	LONG BEACH /DAUGHERTY FIELD/	CA	LPV	0	100	0	100	95	99.811
LHM	LINCOLN RGNL/KARL HARDER FIELD	CA	LPV200	0	100	0	100	0	100
LLR	LITTLE RIVER	CA	LP	0	100	0	100	91	98.740
LSN	LOS BANOS MUNICIPAL	CA	LPV	0	100	0	100	91	99.244
LVK	LIVERMORE MUNICIPAL	CA	LPV200	0	100	0	100	92	99.011
MAE	MADERA MUNICIPAL	CA	LPV	0	100	0	100	91	99.506
MCE	MERCED RGNL/MACREADY FIELD	CA	LPV	0	100	0	100	91	99.419
MER	CASTLE	CA	LPV200	0	100	0	100	91	99.422
MHR	SACRAMENTO MATHER	CA	LPV200	0	100	0	100	17	99.951
MIT	SHAFTER-MINTER FIELD	CA	LPV	0	100	0	100	93	99.594
MOD	MODESTO CITY-CO-HARRY SHAM FLD	CA	LPV	0	100	0	100	91	99.337
MRY	MONTEREY RGNL	CA	LPV	0	100	0	100	96	98.861
MYF	MONTGOMERY-GIBBS EXECUTIVE	CA	LPV200	0	100	0	100	19	99.990
MYV	YUBA COUNTY	CA	LPV200	0	100	0	100	0	100
O02	NERVINO	CA	LPV	0	100	0	100	0	100
O27	OAKDALE	CA	LPV	0	100	0	100	91	99.444
O69	PETALUMA MUNICIPAL	CA	LPV	0	100	0	100	92	98.827
O88	RIO VISTA MUNICIPAL	CA	LP	0	100	0	100	91	99.186
OAK	METROPOLITAN OAKLAND INTL	CA	LPV200	0	100	0	100	92	98.869
ONT	ONTARIO INTL	CA	LPV200	0	100	0	100	53	99.957
OVE	OROVILLE MUNICIPAL	CA	LPV	0	100	0	100	0	100
OXR	OXNARD	CA	LPV	0	100	0	100	95	99.501
PMD	PALMDALE USAF PLANT 42	CA	LPV200	0	100	0	100	83	99.868
POC	BRACKETT FIELD	CA	LPV	0	100	0	100	75	99.924
PRB	PASO ROBLES MUNICIPAL	CA	LPV	0	100	0	100	97	99.147
PVF	PLACERVILLE	CA	LPV	0	100	0	100	0	100
RAL	RIVERSIDE MUNICIPAL	CA	LPV	0	100	0	100	39	99.974
RBL	RED BLUFF MUNICIPAL	CA	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
RDD	REDDING MUNICIPAL	CA	LPV	0	100	0	100	0	100
RHV	REID-HILLVIEW OF SANTA CLARA C	CA	LPV	0	100	0	100	92	98.951
SAC	SACRAMENTO EXECUTIVE	CA	LPV	0	100	0	100	57	99.728
SAN	SAN DIEGO INTL	CA	LPV	0	100	0	100	25	99.985
SBA	SANTA BARBARA MUNICIPAL	CA	LPV	0	100	0	100	96	99.300
SBP	SAN LUIS COUNTY RGNL	CA	LPV200	0	100	0	100	97	99.104
SCK	STOCKTON METROPOLITAN	CA	LPV200	0	100	0	100	91	99.291
SDM	BROWN FIELD MUNICIPAL	CA	LPV200	0	100	0	100	6	99.993
SEE	GILLESPIE FIELD	CA	LP	0	100	0	100	6	99.997
SFO	SAN FRANCISCO INTL	CA	LPV200	0	100	0	100	94	98.797
SJC	NORMAN Y MINETA SAN JOSE INTL	CA	LPV200	0	100	0	100	93	98.916
SMF	SACRAMENTO INTL	CA	LPV200	0	100	0	100	15	99.945
SMO	SANTA MONICA MUNICIPAL	CA	LPV	0	100	0	100	87	99.753
SMX	SANTA MARIA PUB/CAPT G ALLAN H	CA	LPV200	0	100	0	100	97	99.138
SNA	JOHN WAYNE AIRPORT-ORANGE COUN	CA	LPV200	0	100	0	100	85	99.889
SNS	SALINAS MUNICIPAL	CA	LPV200	0	100	0	100	96	98.946
STS	CHARLES M SCHULZ - SONOMA COUN	CA	LPV200	0	100	0	100	91	98.805
TCY	TRACY MUNICIPAL	CA	LPV	0	100	0	100	91	99.158
TNP	TWENTYNINE PALMS	CA	LP	0	100	0	100	1	99.999
TOA	ZAMPERINI FIELD	CA	LPV	0	100	0	100	95	99.756
TRK	TRUCKEE-TAHOE	CA	LP	0	100	0	100	0	100
VCV	SOUTHERN CALIFORNIA LOGISTICS	CA	LPV	0	100	0	100	23	99.989
VIS	VISALIA MUNICIPAL	CA	LPV200	0	100	0	100	91	99.635
WJF	GENERAL WM J FOX AIRFIELD	CA	LPV	0	100	0	100	89	99.838
WLW	WILLOWS-GLENN COUNTY	CA	LPV	0	100	0	100	0	100
WVI	WATSONVILLE MUNICIPAL	CA	LPV	0	100	0	100	95	98.919
1V6	FREMONT COUNTY	CO	LPV	0	100	0	100	0	100
20V	MC ELROY AIRFIELD	CO	LPV	0	100	0	100	0	100
4V1	SPANISH PEAKS AIRFIELD	CO	LPV	0	100	0	100	0	100
AEJ	CENTRAL COLORADO RGNL	CO	LP	0	100	0	100	0	100
AJZ	BLAKE FIELD	CO	LPV	0	100	0	100	0	100
AKO	COLORADO PLAINS RGNL	CO	LPV	0	100	0	100	0	100
ALS	SAN LUIS VALLEY RGNL/BERGMAN F	CO	LPV200	0	100	0	100	0	100
APA	CENTENNIAL	CO	LPV200	0	100	0	100	0	100
BJC	ROCKY MOUNTAIN METROPOLITAN	CO	LPV200	0	100	0	100	0	100
CEZ	CORTEZ MUNICIPAL	CO	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
COS	CITY OF COLORADO SPRINGS MUNICIPAL	CO	LPV200	0	100	0	100	0	100
DEN	DENVER INTL	CO	LPV200	0	100	0	100	0	100
DRO	DURANGO-LA PLATA COUNTY	CO	LPV200	0	100	0	100	0	100
FMM	FORT MORGAN MUNICIPAL	CO	LPV	0	100	0	100	0	100
FNL	FORT COLLINS-LOVELAND MUNICIPAL	CO	LPV200	0	100	0	100	0	100
FTG	FRONT RANGE	CO	LPV200	0	100	0	100	0	100
GJT	GRAND JUNCTION REGIONAL	CO	LPV200	0	100	0	100	0	100
GXY	GREELEY-WELD COUNTY	CO	LPV200	0	100	0	100	0	100
HDN	YAMPA VALLEY	CO	LPV200	0	100	0	100	0	100
ITR	KIT CARSON COUNTY	CO	LPV	0	100	0	100	0	100
LAA	LAMAR MUNICIPAL	CO	LPV	0	100	0	100	0	100
LHX	LA JUNTA MUNICIPAL	CO	LPV	0	100	0	100	0	100
LMO	VANCE BRAND	CO	LPV	0	100	0	100	0	100
MTJ	MONTROSE RGNL	CO	LPV	0	100	0	100	0	100
PSO	STEVENS FIELD	CO	LP	0	100	0	100	0	100
PUB	PUEBLO MEMORIAL	CO	LPV200	0	100	0	100	0	100
RIL	GARFIELD COUNTY RGNL	CO	LPV	0	100	0	100	0	100
STK	STERLING MUNICIPAL	CO	LPV	0	100	0	100	0	100
TEX	TELLURIDE RGNL	CO	LP	0	100	0	100	0	100
4B8	ROBERTSON FIELD	CT	LP	0	100	0	100	0	100
BDL	BRADLEY INTL	CT	LPV200	0	100	0	100	0	100
BDR	IGOR I SIKORSKY MEMORIAL	CT	LPV	0	100	0	100	0	100
GON	GROTON-NEW LONDON	CT	LPV	0	100	0	100	0	100
HVN	TWEED-NEW HAVEN	CT	LPV	0	100	0	100	0	100
IJD	WINDHAM	CT	LP	0	100	0	100	0	100
MMK	MERIDEN MARKHAM MUNICIPAL	CT	LP	0	100	0	100	0	100
OXC	WATERBURY-OXFORD	CT	LPV	0	100	0	100	0	100
DCA	RONALD REAGAN WASHINGTON NATIO	DC	LPV	0	100	0	100	0	100
HEF	MANASSAS RGNL/HARRY P DAVIS FI	DC	LPV	0	100	0	100	0	100
IAD	WASHINGTON DULLES INTL	DC	LPV200	0	100	0	100	0	100
33N	DELAWARE AIRPARK	DE	LP	0	100	0	100	0	100
EVY	SUMMIT	DE	LPV	0	100	0	100	0	100
GED	DELAWARE COASTAL	DE	LPV	0	100	0	100	0	100
ILG	NEW CASTLE	DE	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
1J0	TRI-COUNTY	FL	LP	0	100	0	100	0	100
24J	SUWANNEE COUNTY	FL	LPV	0	100	0	100	0	100
28J	PALATKA MUNICIPAL - LT KAY LARKIN F	FL	LPV	0	100	0	100	0	100
40J	PERRY-FOLEY	FL	LPV	0	100	0	100	0	100
54J	DEFUNIAK SPRINGS	FL	LP	0	100	0	100	0	100
AAF	APALACHICOLA RGNL-CLEVE RANDOL	FL	LPV	0	100	0	100	0	100
APF	NAPLES MUNICIPAL	FL	LPV	0	100	0	100	0	100
AVO	AVON PARK EXECUTIVE	FL	LPV	0	100	0	100	0	100
BCT	BOCA RATON	FL	LPV	0	100	0	100	67	99.966
BKV	BROOKSVILLE-TAMPA BAY RGNL	FL	LPV	0	100	0	100	0	100
BOW	BARTOW MUNICIPAL	FL	LPV	0	100	0	100	0	100
CEW	BOB SIKES	FL	LPV	0	100	0	100	0	100
CGC	CRYSTAL RIVER-CAPTAIN TOM DAVI	FL	LP	0	100	0	100	0	100
CHN	WAUCHULA MUNICIPAL	FL	LP	0	100	0	100	0	100
COI	MERRITT ISLAND	FL	LPV	0	100	0	100	0	100
CRG	JACKSONVILLE EXECUTIVE AT CRAI	FL	LPV200	0	100	0	100	0	100
CTY	CROSS CITY	FL	LPV	0	100	0	100	0	100
DAB	DAYTONA BEACH INTL	FL	LPV200	0	100	0	100	0	100
DED	DELAND MUNICIPAL-SIDNEY H TAYLOR FI	FL	LPV	0	100	0	100	0	100
DTS	DESTIN EXECUTIVE	FL	LPV	0	100	0	100	0	100
ECP	NORTHWEST FLORIDA BEACHES INTL	FL	LPV200	0	100	0	100	0	100
EVB	NEW SMYRNA BEACH MUNICIPAL	FL	LPV	0	100	0	100	0	100
EYW	KEY WEST INTL	FL	LPV	0	100	0	100	1	99.999
F45	NORTH PALM BEACH COUNTY GENERA	FL	LPV	0	100	0	100	16	99.993
FHB	FERNANDINA BEACH MUNICIPAL	FL	LPV	0	100	0	100	0	100
FIN	FLAGLER EXECUTIVE	FL	LPV	0	100	0	100	0	100
FLL	FORT LAUDERDALE/HOLLYWOOD INTL	FL	LPV200	0	100	0	100	65	99.969
FMY	PAGE FIELD	FL	LPV	0	100	0	100	0	100
FPR	TREASURE COAST INTL	FL	LPV	0	100	0	100	0	100
FXE	FORT LAUDERDALE EXECUTIVE	FL	LPV200	0	100	0	100	58	99.976
GIF	WINTER HAVEN'S GILBERT	FL	LPV	0	100	0	100	0	100
GNV	GAINESVILLE RGNL	FL	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
HEG	HERLONG RECREATIONAL	FL	LPV	0	100	0	100	0	100
IMM	IMMOKALEE RGNL	FL	LPV	0	100	0	100	0	100
ISM	KISSIMMEE GATEWAY	FL	LPV200	0	100	0	100	0	100
JAX	JACKSONVILLE INTL	FL	LPV200	0	100	0	100	0	100
LAL	LAKELAND LINDER RGNL	FL	LPV200	0	100	0	100	0	100
LCQ	LAKE CITY GATEWAY	FL	LPV	0	100	0	100	0	100
LEE	LEESBURG INTL	FL	LPV	0	100	0	100	0	100
LNA	PALM BEACH COUNTY PARK	FL	LP	0	100	0	100	67	99.965
MAI	MARIANNA MUNICIPAL	FL	LPV	0	100	0	100	0	100
MCO	ORLANDO INTL	FL	LPV200	0	100	0	100	0	100
MIA	MIAMI INTL	FL	LPV200	0	100	0	100	31	99.988
MKY	MARCO ISLAND	FL	LPV	0	100	0	100	0	100
MLB	MELBOURNE INTL	FL	LPV200	0	100	0	100	0	100
MTH	THE FLORIDA KEYS MARATHON INTL	FL	LPV	0	100	0	100	1	99.999
OBE	OKEECHOBEE COUNTY	FL	LPV	0	100	0	100	0	100
OCF	OCALA INTL-JIM TAYLOR FIELD	FL	LPV200	0	100	0	100	0	100
OMN	ORMOND BEACH MUNICIPAL	FL	LPV	0	100	0	100	0	100
OPF	OPA-LOCKA EXECUTIVE	FL	LPV200	0	100	0	100	32	99.987
ORL	EXECUTIVE	FL	LPV200	0	100	0	100	0	100
PBI	PALM BEACH INTL	FL	LPV200	0	100	0	100	62	99.971
PCM	PLANT CITY	FL	LPV	0	100	0	100	0	100
PGD	PUNTA GORDA	FL	LPV200	0	100	0	100	0	100
PHK	PALM BEACH CO GLADES	FL	LPV	0	100	0	100	0	100
PIE	ST PETE-CLEARWATER INTL	FL	LPV200	0	100	0	100	0	100
PMP	POMPANO BEACH AIRPARK	FL	LPV	0	100	0	100	70	99.961
PNS	PENSACOLA INTL	FL	LPV200	0	100	0	100	0	100
RSW	SOUTHWEST FLORIDA INTL	FL	LPV	0	100	0	100	0	100
SEF	SEBRING RGNL	FL	LPV	0	100	0	100	0	100
SFB	ORLANDO SANFORD INTL	FL	LPV200	0	100	0	100	0	100
SGJ	NORTHEAST FLORIDA RGNL	FL	LPV	0	100	0	100	0	100
SRQ	SARASOTA/BRADENTON INTL	FL	LPV200	0	100	0	100	0	100
SUA	WITHAM FIELD	FL	LPV	0	100	0	100	2	99.999
TIX	SPACE COAST RGNL	FL	LPV200	0	100	0	100	0	100
TLH	TALLAHASSEE INTL	FL	LPV200	0	100	0	100	0	100
TMB	MIAMI EXECUTIVE	FL	LPV200	0	100	0	100	0	100
TNT	DADE-COLLIER TRAINING AND TRAN	FL	LPV200	0	100	0	100	0	100
TPA	TAMPA INTL	FL	LPV200	0	100	0	100	0	100

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
TPF	PETER O KNIGHT	FL	LP	0	100	0	100	0	100
TTS	NASA SHUTTLE LANDING FACILITY	FL	LPV200	0	100	0	100	0	100
VDF	TAMPA EXECUTIVE	FL	LPV	0	100	0	100	0	100
VNC	VENICE MUNICIPAL	FL	LP	0	100	0	100	0	100
VQQ	CECIL	FL	LPV200	0	100	0	100	0	100
VRB	VERO BEACH MUNICIPAL	FL	LPV200	0	100	0	100	0	100
X07	LAKE WALES MUNICIPAL	FL	LP	0	100	0	100	0	100
X14	LA BELLE MUNICIPAL	FL	LPV	0	100	0	100	0	100
X23	UMATILLA MUNICIPAL	FL	LP	0	100	0	100	0	100
X26	SEBASTIAN MUNICIPAL	FL	LP	0	100	0	100	0	100
X35	MARION COUNTY	FL	LP	0	100	0	100	0	100
X50	MASSEY RANCH AIRPARK	FL	LP	0	100	0	100	0	100
X51	MIAMI HOMESTEAD GENERAL AVIATI	FL	LPV	0	100	0	100	0	100
ZPH	ZEPHYRHILLS MUNICIPAL	FL	LPV	0	100	0	100	0	100
09J	JEKYLL ISLAND	GA	LPV200	0	100	0	100	0	100
15J	COOK COUNTY	GA	LPV	0	100	0	100	0	100
17J	DONALSONVILLE MUNICIPAL	GA	LPV	0	100	0	100	0	100
18A	FRANKLIN COUNTY	GA	LPV	0	100	0	100	0	100
19A	JACKSON COUNTY	GA	LPV	0	100	0	100	0	100
2J5	MILLEN	GA	LPV	0	100	0	100	0	100
3J7	GREENE COUNTY RGNL	GA	LPV	0	100	0	100	0	100
48A	COCHRAN	GA	LPV	0	100	0	100	0	100
4A4	POLK COUNTY AIRPORT- CORNELIUS	GA	LPV	0	100	0	100	0	100
4J1	BRANTLEY COUNTY	GA	LPV	0	100	0	100	0	100
4J2	BERRIEN CO	GA	LPV	0	100	0	100	0	100
4J5	QUITMAN BROOKS COUNTY	GA	LP	0	100	0	100	0	100
52A	MADISON MUNICIPAL	GA	LP	0	100	0	100	0	100
6A1	BUTLER MUNICIPAL	GA	LPV	0	100	0	100	0	100
6A2	GRIFFIN-SPALDING COUNTY	GA	LPV	0	100	0	100	0	100
70J	CAIRO-GRADY COUNTY	GA	LPV	0	100	0	100	0	100
9A5	BARWICK LAFAYETTE	GA	LP	0	100	0	100	0	100
ABY	SOUTHWEST GEORGIA RGNL	GA	LPV200	0	100	0	100	0	100
ACJ	JIMMY CARTER RGNL	GA	LPV	0	100	0	100	0	100
AGS	AUGUSTA RGNL AT BUSH FIELD	GA	LPV200	0	100	0	100	0	100
AHN	ATHENS/BEN EPPS	GA	LPV200	0	100	0	100	0	100
AJR	HABERSHAM COUNTY	GA	LPV	0	100	0	100	0	100
AMG	BACON COUNTY	GA	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
ATL	HARTSFIELD - JACKSON ATLANTA I	GA	LPV200	0	100	0	100	0	100
AYS	WAYCROSS-WARE COUNTY	GA	LPV200	0	100	0	100	0	100
BGE	DECATUR COUNTY INDUSTRIAL AIR	GA	LPV200	0	100	0	100	0	100
BHC	BAXLEY MUNICIPAL	GA	LPV	0	100	0	100	0	100
BIJ	EARLY COUNTY	GA	LPV	0	100	0	100	0	100
BQK	BRUNSWICK GOLDEN ISLES	GA	LPV200	0	100	0	100	0	100
CCO	NEWNAN COWETA COUNTY	GA	LPV	0	100	0	100	0	100
CKF	CRISP COUNTY-CORDELE	GA	LPV	0	100	0	100	0	100
CNI	CHEROKEE COUNTY	GA	LPV	0	100	0	100	0	100
CSG	COLUMBUS	GA	LPV	0	100	0	100	0	100
CTJ	WEST GEORGIA RGNL - O V GRAY F	GA	LPV	0	100	0	100	0	100
CVC	COVINGTON MUNICIPAL	GA	LPV	0	100	0	100	0	100
CWV	CLAXTON-EVANS COUNTY	GA	LPV	0	100	0	100	0	100
CXU	CAMILLA-MITCHELL COUNTY	GA	LPV	0	100	0	100	0	100
CZL	TOM B DAVID FLD	GA	LPV	0	100	0	100	0	100
D73	MONROE-WALTON COUNTY	GA	LP	0	100	0	100	0	100
DBN	W H 'BUD' BARRON	GA	LPV200	0	100	0	100	0	100
DNN	DALTON MUNICIPAL	GA	LPV	0	100	0	100	0	100
DQH	DOUGLAS MUNICIPAL	GA	LPV200	0	100	0	100	0	100
EBA	ELBERT COUNTY-PATZ FIELD	GA	LP	0	100	0	100	0	100
EZM	HEART OF GEORGIA RGNL	GA	LPV200	0	100	0	100	0	100
FFC	ATLANTA RGNL FALCON FIELD	GA	LPV200	0	100	0	100	0	100
FTY	FULTON COUNTY AIRPORT-BROWN FI	GA	LPV	0	100	0	100	0	100
FZG	FITZGERALD MUNICIPAL	GA	LPV	0	100	0	100	0	100
GVL	LEE GILMER MEMORIAL	GA	LPV	0	100	0	100	0	100
HOE	HOMERVILLE	GA	LPV	0	100	0	100	0	100
HQU	THOMSON-MCDUFFIE COUNTY	GA	LPV	0	100	0	100	0	100
IIY	WASHINGTON-WILKES COUNTY	GA	LPV	0	100	0	100	0	100
JCA	JACKSON COUNTY	GA	LPV	0	100	0	100	0	100
JES	JESUP-WAYNE COUNTY	GA	LPV	0	100	0	100	0	100
JYL	PLANTATION ARPK	GA	LPV	0	100	0	100	0	100
JZP	PICKENS COUNTY	GA	LPV	0	100	0	100	0	100
LGC	LAGRANGE-CALLAWAY	GA	LPV200	0	100	0	100	0	100
LZU	GWINNETT COUNTY - BRISCOE FIEL	GA	LPV200	0	100	0	100	0	100
MAC	MACON DOWNTOWN	GA	LPV	0	100	0	100	0	100
MCN	MIDDLE GEORGIA RGNL	GA	LPV200	0	100	0	100	0	100
MGR	MOULTRIE MUNICIPAL	GA	LPV200	0	100	0	100	0	100

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
MHP	METTER MUNICIPAL	GA	LPV	0	100	0	100	0	100
MLJ	BALDWIN COUNTY	GA	LPV	0	100	0	100	0	100
MQW	TELFAIR-WHEELER	GA	LPV	0	100	0	100	0	100
OKZ	KAOLIN FIELD	GA	LPV	0	100	0	100	0	100
OPN	THOMASTON-UPSON COUNTY	GA	LPV200	0	100	0	100	0	100
PIM	HARRIS COUNTY	GA	LPV	0	100	0	100	0	100
PUJ	PAULDING NORTHWEST ATLANTA	GA	LPV200	0	100	0	100	0	100
PXE	PERRY-HOUSTON COUNTY	GA	LPV	0	100	0	100	0	100
RMG	RICHARD B RUSSELL REGIONAL - J	GA	LPV	0	100	0	100	0	100
RVJ	SWINTON SMITH FLD AT REIDSVILL	GA	LP	0	100	0	100	0	100
RYY	COBB COUNTY INTL-MCCOLLUM FIEL	GA	LPV200	0	100	0	100	0	100
SAV	SAVANNAH/HILTON HEAD INTL	GA	LPV200	0	100	0	100	0	100
SBO	EAST GEORGIA REGIONAL	GA	LPV	0	100	0	100	0	100
TBR	STATESBORO-BULLOCH COUNTY	GA	LPV	0	100	0	100	0	100
TMA	HENRY TIFT MYERS	GA	LPV	0	100	0	100	0	100
TOC	TOCCOA RG LETOURNEAU FIELD	GA	LPV	0	100	0	100	0	100
TVI	THOMASVILLE RGNL	GA	LPV	0	100	0	100	0	100
VDI	VIDALIA RGNL	GA	LPV200	0	100	0	100	0	100
VLD	VALDOSTA RGNL	GA	LPV	0	100	0	100	0	100
VPC	CARTERSVILLE	GA	LPV	0	100	0	100	0	100
WDR	BARROW COUNTY	GA	LPV	0	100	0	100	0	100
3Y2	GEORGE L SCOTT MUNICIPAL	IA	LPV	0	100	0	100	0	100
4C8	ALBIA MUNICIPAL	IA	LPV	0	100	0	100	0	100
AIO	ATLANTIC MUNICIPAL	IA	LPV	0	100	0	100	0	100
ALO	WATERLOO RGNL	IA	LPV	0	100	0	100	0	100
AMW	AMES MUNICIPAL	IA	LPV	0	100	0	100	0	100
AWG	WASHINGTON MUNICIPAL	IA	LPV200	0	100	0	100	0	100
BNW	BOONE MUNICIPAL	IA	LPV	0	100	0	100	0	100
BRL	SOUTHEAST IOWA RGNL	IA	LPV200	0	100	0	100	0	100
CAV	CLARION MUNICIPAL	IA	LPV	0	100	0	100	0	100
CBF	COUNCIL BLUFFS MUNICIPAL	IA	LPV200	0	100	0	100	0	100
CCY	NORTHEAST IOWA RGNL	IA	LPV	0	100	0	100	0	100
CID	THE EASTERN IOWA	IA	LPV200	0	100	0	100	0	100
CIN	ARTHUR N NEU	IA	LPV	0	100	0	100	0	100
CKP	CHEROKEE COUNTY RGNL	IA	LPV	0	100	0	100	0	100
CSQ	CRESTON MUNICIPAL	IA	LPV	0	100	0	100	0	100
CWI	CLINTON MUNICIPAL	IA	LPV200	0	100	0	100	0	100

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
DBQ	DUBUQUE RGNL	IA	LPV200	0	100	0	100	0	100
DEH	DECORAH MUNICIPAL	IA	LPV	0	100	0	100	0	100
DNS	DENISON MUNICIPAL	IA	LPV	0	100	0	100	0	100
DSM	DES MOINES INTL	IA	LPV	0	100	0	100	0	100
DVN	DAVENPORT MUNICIPAL	IA	LPV200	0	100	0	100	0	100
EAG	EAGLE GROVE MUNICIPAL	IA	LPV	0	100	0	100	0	100
EBS	WEBSTER CITY MUNICIPAL	IA	LPV	0	100	0	100	0	100
EFW	JEFFERSON MUNICIPAL	IA	LPV	0	100	0	100	0	100
EOK	KEOKUK MUNICIPAL	IA	LPV	0	100	0	100	0	100
EST	ESTHERVILLE MUNICIPAL	IA	LPV	0	100	0	100	0	100
FFL	FAIRFIELD MUNICIPAL	IA	LPV	0	100	0	100	0	100
FOD	FORT DODGE RGNL	IA	LPV200	0	100	0	100	0	100
FXY	FOREST CITY MUNICIPAL	IA	LPV	0	100	0	100	0	100
GCT	GUTHRIE COUNTY RGNL	IA	LPV	0	100	0	100	0	100
GGI	GRINNELL RGNL	IA	LPV	0	100	0	100	0	100
HPT	HAMPTON MUNICIPAL	IA	LPV	0	100	0	100	0	100
I75	OSCEOLA MUNICIPAL	IA	LPV	0	100	0	100	0	100
ICL	SCHENCK FIELD	IA	LPV	0	100	0	100	0	100
IFA	IOWA FALLS MUNICIPAL	IA	LPV	0	100	0	100	0	100
IIB	INDEPENDENCE MUNICIPAL	IA	LP	0	100	0	100	0	100
IKV	ANKENY RGNL	IA	LPV200	0	100	0	100	0	100
IOW	IOWA CITY MUNICIPAL	IA	LPV	0	100	0	100	0	100
LRJ	LE MARS MUNICIPAL	IA	LPV	0	100	0	100	0	100
MCW	MASON CITY MUNICIPAL	IA	LPV200	0	100	0	100	0	100
MIW	MARSHALLTOWN MUNICIPAL	IA	LPV	0	100	0	100	0	100
MPZ	MOUNT PLEASANT MUNICIPAL	IA	LPV	0	100	0	100	0	100
MUT	MUSCATINE MUNICIPAL	IA	LPV200	0	100	0	100	0	100
MXO	MONTICELLO RGNL	IA	LP	0	100	0	100	0	100
OOA	OSKALOOSA MUNICIPAL	IA	LPV	0	100	0	100	0	100
OQW	MAQUOKETA MUNICIPAL	IA	LPV	0	100	0	100	0	100
ORC	ORANGE CITY MUNICIPAL	IA	LPV	0	100	0	100	0	100
OTM	OTTUMWA RGNL	IA	LPV	0	100	0	100	0	100
OXV	KNOXVILLE MUNICIPAL	IA	LPV	0	100	0	100	0	100
PEA	PELLA MUNICIPAL	IA	LPV	0	100	0	100	0	100
POH	POCAHONTAS MUNICIPAL	IA	LPV	0	100	0	100	0	100
PRO	PERRY MUNICIPAL	IA	LPV200	0	100	0	100	0	100
RDK	RED OAK MUNICIPAL	IA	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
SDA	SHENANDOAH MUNICIPAL	IA	LPV	0	100	0	100	0	100
SHL	SHELDON RGNL	IA	LPV	0	100	0	100	0	100
SKI	SAC CITY MUNICIPAL	IA	LPV	0	100	0	100	0	100
SLB	STORM LAKE MUNICIPAL	IA	LPV	0	100	0	100	0	100
SPW	SPENCER MUNICIPAL	IA	LPV200	0	100	0	100	0	100
SUX	SIOUX GATEWAY/COL BUD DAY FIEL	IA	LPV200	0	100	0	100	0	100
TNU	NEWTON MUNICIPAL-EARL JOHNSON FIELD	IA	LPV	0	100	0	100	0	100
TVK	CENTERVILLE MUNICIPAL	IA	LPV	0	100	0	100	0	100
TZT	BELLE PLAINE MUNICIPAL	IA	LPV	0	100	0	100	0	100
VTI	VINTON VETERANS MEMORIAL ARPK	IA	LPV	0	100	0	100	0	100
BOI	BOISE AIR TERMINAL/GOWEN FLD	ID	LPV200	0	100	0	100	0	100
COE	COEUR D'ALENE - PAPPY BOYINGTO	ID	LPV200	0	100	0	100	0	100
DIJ	DRIGGS-REED MEMORIAL	ID	LP	0	100	0	100	0	100
EUL	CALDWELL INDUSTRIAL	ID	LPV	0	100	0	100	0	100
GNG	GOODING MUNICIPAL	ID	LPV	0	100	0	100	0	100
IDA	IDAHO FALLS RGNL	ID	LPV200	0	100	0	100	0	100
JER	JEROME COUNTY	ID	LPV	0	100	0	100	0	100
LWS	LEWISTON-NEZ PERCE COUNTY	ID	LPV200	0	100	0	100	0	100
MAN	NAMPA MUNICIPAL	ID	LPV	0	100	0	100	0	100
MYL	MC CALL MUNICIPAL	ID	LPV	0	100	0	100	0	100
PIH	POCATELLO RGNL	ID	LPV200	0	100	0	100	0	100
SUN	FRIEDMAN MEMORIAL	ID	LP	0	100	0	100	0	100
TWF	JOSLIN FIELD - MAGIC VALLEY RG	ID	LPV200	0	100	0	100	0	100
U76	MOUNTAIN HOME MUNICIPAL	ID	LPV	0	100	0	100	0	100
1H2	EFFINGHAM COUNTY MEMORIAL	IL	LPV	0	100	0	100	0	100
3LF	LITCHFIELD MUNICIPAL	IL	LPV	0	100	0	100	0	100
3MY	MOUNT HAWLEY AUXILIARY	IL	LP	0	100	0	100	0	100
AJG	MOUNT CARMEL MUNICIPAL	IL	LPV	0	100	0	100	0	100
ALN	ST LOUIS RGNL	IL	LPV200	0	100	0	100	0	100
ARR	AURORA MUNICIPAL	IL	LPV200	0	100	0	100	0	100
BLV	SCOTT AFB/MIDAMERICA	IL	LPV200	0	100	0	100	0	100
BMI	CENTRAL IL RGNL ARPT AT BLOOMI	IL	LPV	0	100	0	100	0	100
C15	PEKIN MUNICIPAL	IL	LPV	0	100	0	100	0	100
C73	DIXON MUNICIPAL-CHARLES R WALGREEN	IL	LPV	0	100	0	100	0	100
C75	MARSHALL COUNTY	IL	LP	0	100	0	100	0	100

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
CIR	CAIRO RGNL	IL	LP	0	100	0	100	0	100
CMI	UNIVERSITY OF ILLINOIS-WILLARD	IL	LPV200	0	100	0	100	0	100
CPS	ST LOUIS DOWNTOWN	IL	LPV200	0	100	0	100	0	100
CTK	INGERSOLL	IL	LPV	0	100	0	100	0	100
CUL	CARMI MUNICIPAL	IL	LP	0	100	0	100	0	100
DEC	DECATUR	IL	LPV200	0	100	0	100	0	100
DKB	DE KALB TAYLOR MUNICIPAL	IL	LPV	0	100	0	100	0	100
DNV	VERMILION REGIONAL	IL	LPV	0	100	0	100	0	100
DPA	DUPAGE	IL	LPV200	0	100	0	100	0	100
ENL	CENTRALIA MUNICIPAL	IL	LPV	0	100	0	100	0	100
EZI	KEWANEE MUNICIPAL	IL	LPV	0	100	0	100	0	100
FEP	ALBERTUS	IL	LPV	0	100	0	100	0	100
FOA	FLORA MUNICIPAL	IL	LPV	0	100	0	100	0	100
GBG	GALESBURG MUNICIPAL	IL	LPV200	0	100	0	100	0	100
GRE	GREENVILLE	IL	LPV	0	100	0	100	0	100
HSB	HARRISBURG-RALEIGH	IL	LPV	0	100	0	100	0	100
I63	MOUNT STERLING MUNICIPAL	IL	LPV	0	100	0	100	0	100
IGQ	LANSING MUNICIPAL	IL	LPV	0	100	0	100	0	100
IKK	GREATER KANKAKEE	IL	LPV200	0	100	0	100	0	100
LOT	LEWIS UNIVERSITY	IL	LPV200	0	100	0	100	0	100
LWV	LAWRENCEVILLE-VINCENNES INTL	IL	LPV200	0	100	0	100	0	100
MDW	CHICAGO MIDWAY INTL	IL	LPV	0	100	0	100	0	100
MLI	QUAD CITY INTL	IL	LPV200	0	100	0	100	0	100
MQB	MACOMB MUNICIPAL	IL	LPV200	0	100	0	100	0	100
MTO	COLES COUNTY MEMORIAL	IL	LPV200	0	100	0	100	0	100
MVN	MOUNT VERNON	IL	LPV	0	100	0	100	0	100
MWA	WILLIAMSON COUNTY RGNL	IL	LPV200	0	100	0	100	0	100
OLY	OLNEY-NOBLE	IL	LPV	0	100	0	100	0	100
ORD	CHICAGO O'HARE INTL	IL	LPV200	0	100	0	100	0	100
PIA	GENERAL DOWNING - PEORIA INTL	IL	LPV	0	100	0	100	0	100
PJY	PINCKNEYVILLE-DU QUOIN	IL	LPV	0	100	0	100	0	100
PNT	PONTIAC MUNICIPAL	IL	LPV	0	100	0	100	0	100
PRG	EDGAR COUNTY	IL	LPV	0	100	0	100	0	100
PWK	CHICAGO EXECUTIVE	IL	LPV	0	100	0	100	0	100
RFD	CHICAGO/ROCKFORD INTL	IL	LPV200	0	100	0	100	0	100
RPJ	ROCHELLE MUNICIPAL AIRPORT-KORITZ F	IL	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
RSV	CRAWFORD CO	IL	LPV	0	100	0	100	0	100
SAR	SPARTA COMMUNICIPALTY-HUNTER FIELD	IL	LPV	0	100	0	100	0	100
SFY	TRI-TOWNSHIP	IL	LP	0	100	0	100	0	100
SLO	SALEM-LECKRONE	IL	LPV200	0	100	0	100	0	100
SPI	ABRAHAM LINCOLN CAPITAL	IL	LPV	0	100	0	100	0	100
SQI	WHITESIDE CO ARPT-JOS H BITTOR	IL	LPV	0	100	0	100	0	100
TIP	RANTOUL NATL AVN CNTR-FRANK EL	IL	LPV	0	100	0	100	0	100
UGN	WAUKEGAN RGNL	IL	LPV	0	100	0	100	0	100
UIN	QUINCY RGNL-BALDWIN FIELD	IL	LPV200	0	100	0	100	0	100
VYS	ILLINOIS VALLEY RGNL-WALTER A	IL	LPV	0	100	0	100	0	100
2R2	HENDRICKS COUNTY-GORDON GRAHAM	IN	LPV	0	100	0	100	0	100
AID	ANDERSON MUNICIPAL-DARLINGTON FIELD	IN	LPV	0	100	0	100	0	100
ASW	WARSAW MUNICIPAL	IN	LPV	0	100	0	100	0	100
BAK	COLUMBUS MUNICIPAL	IN	LPV	0	100	0	100	0	100
BFR	VIRGIL I GRISSOM MUNICIPAL	IN	LP	0	100	0	100	0	100
BMG	MONROE COUNTY	IN	LPV200	0	100	0	100	0	100
C62	KENDALLVILLE MUNICIPAL	IN	LPV	0	100	0	100	0	100
C65	PLYMOUTH MUNICIPAL	IN	LPV	0	100	0	100	0	100
CEV	METTEL FIELD	IN	LPV	0	100	0	100	0	100
CFJ	CRAWFORDSVILLE MUNICIPAL	IN	LPV	0	100	0	100	0	100
DCY	DAVIESS COUNTY	IN	LPV	0	100	0	100	0	100
EKM	ELKHART MUNICIPAL	IN	LPV	0	100	0	100	0	100
EVV	EVANSVILLE RGNL	IN	LPV200	0	100	0	100	0	100
EYE	EAGLE CREEK AIRPARK	IN	LPV	0	100	0	100	0	100
FKR	FRANKFORT MUNICIPAL	IN	LPV	0	100	0	100	0	100
FRH	FRENCH LICK MUNICIPAL	IN	LPV	0	100	0	100	0	100
FWA	FORT WAYNE INTL	IN	LPV200	0	100	0	100	0	100
GEZ	SHELBYVILLE MUNICIPAL	IN	LPV	0	100	0	100	0	100
GGP	LOGANSPORT/CASS COUNTY	IN	LPV200	0	100	0	100	0	100
GPC	PUTNAM COUNTY RGNL	IN	LPV	0	100	0	100	0	100
GSH	GOSHEN MUNICIPAL	IN	LPV	0	100	0	100	0	100
GWB	DE KALB COUNTY	IN	LPV	0	100	0	100	0	100
GYY	GARY/CHICAGO INTL	IN	LPV200	0	100	0	100	0	100
HFY	GREENWOOD MUNICIPAL	IN	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
HNB	HUNTINGBURG	IN	LPV	0	100	0	100	0	100
HUF	TERRE HAUTE INTL-HULMAN FIELD	IN	LPV200	0	100	0	100	0	100
I22	RANDOLPH COUNTY	IN	LPV	0	100	0	100	0	100
I76	PERU MUNICIPAL	IN	LPV	0	100	0	100	0	100
IMS	MADISON MUNICIPAL	IN	LPV	0	100	0	100	0	100
IND	INDIANAPOLIS INTL	IN	LPV200	0	100	0	100	0	100
JVY	CLARK RGNL	IN	LPV200	0	100	0	100	0	100
LAF	PURDUE UNIVERSITY	IN	LPV	0	100	0	100	0	100
MCX	WHITE COUNTY	IN	LP	0	100	0	100	0	100
MIE	DELAWARE COUNTY RGNL	IN	LPV	0	100	0	100	0	100
MQJ	INDIANAPOLIS RGNL	IN	LPV200	0	100	0	100	0	100
MZZ	MARION MUNICIPAL	IN	LPV	0	100	0	100	0	100
OKK	KOKOMO MUNICIPAL	IN	LPV200	0	100	0	100	0	100
OVO	NORTH VERNON	IN	LPV	0	100	0	100	0	100
OXI	STARKE COUNTY	IN	LPV	0	100	0	100	0	100
PLD	PORTLAND MUNICIPAL	IN	LPV	0	100	0	100	0	100
PPO	LA PORTE MUNICIPAL	IN	LPV	0	100	0	100	0	100
RCR	FULTON COUNTY	IN	LPV	0	100	0	100	0	100
RID	RICHMOND MUNICIPAL	IN	LPV200	0	100	0	100	0	100
RWN	ARENS FIELD	IN	LPV	0	100	0	100	0	100
RZL	JASPER COUNTY	IN	LPV	0	100	0	100	0	100
SBN	SOUTH BEND INTL	IN	LPV	0	100	0	100	0	100
SER	FREEMAN MUNICIPAL	IN	LPV	0	100	0	100	0	100
SIV	SULLIVAN COUNTY	IN	LPV	0	100	0	100	0	100
SMD	SMITH FIELD	IN	LPV	0	100	0	100	0	100
TEL	PERRY COUNTY MUNICIPAL	IN	LP	0	100	0	100	0	100
TYQ	INDIANAPOLIS EXECUTIVE	IN	LPV	0	100	0	100	0	100
UWL	NEW CASTLE-HENRY CO MUNICIPAL	IN	LPV	0	100	0	100	0	100
VPZ	PORTER COUNTY RGNL	IN	LPV	0	100	0	100	0	100
3AU	AUGUSTA MUNICIPAL	KS	LP	0	100	0	100	0	100
3K3	SYRACUSE-HAMILTON COUNTY MUNICIPAL	KS	LPV	0	100	0	100	0	100
3K8	COMANCHE COUNTY	KS	LPV	0	100	0	100	0	100
5K2	TRIBUNE MUNICIPAL	KS	LPV	0	100	0	100	0	100
AAO	COLONEL JAMES JABARA	KS	LPV	0	100	0	100	0	100
ADT	ATWOOD-RAWLINS COUNTY CITY-COU	KS	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
ANY	ANTHONY MUNICIPAL	KS	LPV	0	100	0	100	0	100
BEC	BEECH FACTORY	KS	LPV	0	100	0	100	0	100
CBK	SHALZ FIELD	KS	LPV	0	100	0	100	0	100
CNK	BLOSSER MUNICIPAL	KS	LP	0	100	0	100	0	100
DDC	DODGE CITY RGNL	KS	LPV200	0	100	0	100	0	100
EGT	WELLINGTON MUNICIPAL	KS	LPV	0	100	0	100	0	100
EHA	ELKHART-MORTON COUNTY	KS	LPV	0	100	0	100	0	100
EMP	EMPORIA MUNICIPAL	KS	LPV	0	100	0	100	0	100
EQA	EL DORADO/CAPTAIN JACK THOMAS	KS	LPV200	0	100	0	100	0	100
EWK	NEWTON-CITY-COUNTY	KS	LPV	0	100	0	100	0	100
FOE	TOPEKA RGNL	KS	LPV	0	100	0	100	0	100
FSK	FORT SCOTT MUNICIPAL	KS	LPV	0	100	0	100	0	100
GBD	GREAT BEND MUNICIPAL	KS	LPV200	0	100	0	100	0	100
GCK	GARDEN CITY RGNL	KS	LPV	0	100	0	100	0	100
GLD	RENNER FLD /GOODLAND MUNICIPAL/	KS	LPV200	0	100	0	100	0	100
HLC	HILL CITY MUNICIPAL	KS	LPV	0	100	0	100	0	100
HQG	HUGOTON MUNICIPAL	KS	LPV	0	100	0	100	0	100
HRU	HERINGTON RGNL	KS	LPV	0	100	0	100	0	100
HUT	HUTCHINSON RGNL	KS	LPV	0	100	0	100	0	100
HYS	HAYS RGNL	KS	LPV200	0	100	0	100	0	100
ICT	WICHITA DWIGHT D EISENHOWER NA	KS	LPV200	0	100	0	100	0	100
IDP	INDEPENDENCE MUNICIPAL	KS	LPV	0	100	0	100	0	100
IXD	NEW CENTURY AIRCENTER	KS	LPV	0	100	0	100	0	100
K38	WASHINGTON COUNTY VETERAN'S ME	KS	LPV	0	100	0	100	0	100
K78	ABILENE MUNICIPAL	KS	LPV	0	100	0	100	0	100
K79	JETMORE MUNICIPAL	KS	LPV	0	100	0	100	0	100
K81	MIAMI COUNTY	KS	LPV	0	100	0	100	0	100
K82	SMITH CENTER MUNICIPAL	KS	LPV200	0	100	0	100	0	100
K88	ALLEN COUNTY	KS	LPV	0	100	0	100	0	100
LBL	LIBERAL MID-AMERICA RGNL	KS	LPV200	0	100	0	100	0	100
LQR	LARNED-PAWNEE COUNTY	KS	LPV	0	100	0	100	0	100
LWC	LAWRENCE MUNICIPAL	KS	LPV200	0	100	0	100	0	100
LYO	LYONS-RICE COUNTY MUNICIPAL	KS	LPV	0	100	0	100	0	100
MHK	MANHATTAN RGNL	KS	LPV200	0	100	0	100	0	100
MPR	MC PHERSON	KS	LPV	0	100	0	100	0	100
MYZ	MARYSVILLE MUNICIPAL	KS	LPV	0	100	0	100	0	100
NRN	NORTON MUNICIPAL	KS	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
OEL	OAKLEY MUNICIPAL	KS	LPV	0	100	0	100	0	100
OIN	OBERLIN MUNICIPAL	KS	LPV	0	100	0	100	0	100
OJC	JOHNSON COUNTY EXECUTIVE	KS	LPV	0	100	0	100	0	100
OWI	OTTAWA MUNICIPAL	KS	LPV	0	100	0	100	0	100
PHG	PHILLIPSBURG MUNICIPAL	KS	LPV	0	100	0	100	0	100
PPF	TRI-CITY	KS	LPV	0	100	0	100	0	100
PTS	ATKINSON MUNICIPAL	KS	LPV	0	100	0	100	0	100
PTT	PRATT RGNL	KS	LPV	0	100	0	100	0	100
RCP	ROOKS COUNTY RGNL	KS	LPV	0	100	0	100	0	100
RPB	BELLEVILLE MUNICIPAL	KS	LPV	0	100	0	100	0	100
RSL	RUSSELL MUNICIPAL	KS	LPV	0	100	0	100	0	100
SLN	SALINA RGNL	KS	LPV	0	100	0	100	0	100
SYF	CHEYENNE COUNTY MUNICIPAL	KS	LPV	0	100	0	100	0	100
TOP	PHILIP BILLARD MUNICIPAL	KS	LPV200	0	100	0	100	0	100
TQK	SCOTT CITY MUNICIPAL	KS	LPV	0	100	0	100	0	100
UKL	COFFEY COUNTY	KS	LPV	0	100	0	100	0	100
ULS	ULYSSES	KS	LPV	0	100	0	100	0	100
WLD	STROTHER FIELD	KS	LPV	0	100	0	100	0	100
0I8	CYNTHIANA-HARRISON COUNTY	KY	LP	0	100	0	100	0	100
18I	MC CREARY COUNTY	KY	LP	0	100	0	100	0	100
27K	GEORGETOWN SCOTT COUNTY - MARS	KY	LPV200	0	100	0	100	0	100
2I0	MADISONVILLE RGNL	KY	LPV	0	100	0	100	0	100
2M0	PRINCETON-CALDWELL COUNTY	KY	LPV	0	100	0	100	0	100
4M7	RUSSELLVILLE-LOGAN COUNTY	KY	LPV	0	100	0	100	0	100
5M9	MARION-CRITTENDEN COUNTY	KY	LPV	0	100	0	100	0	100
6I2	LEBANON SPRINGFIELD-GEORGE HOE	KY	LPV	0	100	0	100	0	100
AAS	TAYLOR COUNTY	KY	LPV	0	100	0	100	0	100
BRY	SAMUELS FIELD	KY	LPV	0	100	0	100	0	100
BWG	BOWLING GREEN-WARREN COUNTY RG	KY	LPV200	0	100	0	100	0	100
BYL	WILLIAMSBURG-WHITLEY COUNTY	KY	LPV	0	100	0	100	0	100
CEY	KYLE-OAKLEY FIELD	KY	LPV	0	100	0	100	0	100
CPF	WENDELL H FORD	KY	LPV200	0	100	0	100	0	100
CVG	CINCINNATI/NORTHERN KENTUCKY I	KY	LPV200	0	100	0	100	0	100
DVK	STUART POWELL FIELD	KY	LPV	0	100	0	100	0	100
DWU	ASHLAND RGNL	KY	LP	0	100	0	100	0	100
EHR	HENDERSON CITY-COUNTY	KY	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
EKQ	WAYNE COUNTY	KY	LPV	0	100	0	100	0	100
EKX	ADDINGTON FIELD	KY	LPV	0	100	0	100	0	100
FFT	CAPITAL CITY	KY	LPV	0	100	0	100	0	100
FGX	FLEMING-MASON	KY	LPV	0	100	0	100	0	100
GLW	GLASGOW MUNICIPAL	KY	LPV	0	100	0	100	0	100
HVC	HOPKINSVILLE-CHRISTIAN COUNTY	KY	LPV	0	100	0	100	0	100
IOB	MOUNT STERLING-MONTGOMERY COUN	KY	LPV	0	100	0	100	0	100
JQD	OHIO COUNTY	KY	LPV	0	100	0	100	0	100
K24	RUSSELL COUNTY	KY	LPV	0	100	0	100	0	100
K62	GENE SNYDER	KY	LP	0	100	0	100	0	100
KY8	HANCOCK CO-RON LEWIS FIELD	KY	LPV	0	100	0	100	0	100
LEX	BLUE GRASS	KY	LPV	0	100	0	100	0	100
LOU	BOWMAN FIELD	KY	LPV	0	100	0	100	0	100
LOZ	LONDON-CORBIN ARPT-MAGEE FIELD	KY	LPV	0	100	0	100	0	100
M21	MUHLENBERG COUNTY	KY	LP	0	100	0	100	0	100
M25	MAYFIELD GRAVES COUNTY	KY	LPV	0	100	0	100	0	100
OWB	OWENSBORO-DAVIESS COUNTY	KY	LPV200	0	100	0	100	0	100
PAH	BARKLEY RGNL	KY	LPV	0	100	0	100	0	100
RGA	CENTRAL KENTUCKY RGNL	KY	LPV	0	100	0	100	0	100
SDF	LOUISVILLE INTL-STANDIFORD FIE	KY	LPV200	0	100	0	100	0	100
SJS	BIG SANDY RGNL	KY	LPV	0	100	0	100	0	100
SME	LAKE CUMBERLAND RGNL	KY	LPV	0	100	0	100	0	100
SYM	MOREHEAD-ROWAN COUNTY CLYDE A	KY	LPV200	0	100	0	100	0	100
TWT	STURGIS MUNICIPAL	KY	LPV	0	100	0	100	0	100
TZV	TOMPKINSVILLE-MONROE COUNTY	KY	LPV	0	100	0	100	0	100
0R4	CONCORDIA PARISH	LA	LPV	0	100	0	100	0	100
3R4	HART	LA	LPV	0	100	0	100	0	100
3R7	JENNINGS	LA	LPV	0	100	0	100	0	100
5R8	DE QUINCY INDUSTRIAL AIRPARK	LA	LPV	0	100	0	100	0	100
ACP	ALLEN PARISH	LA	LPV	0	100	0	100	0	100
AEX	ALEXANDRIA INTL	LA	LPV200	0	100	0	100	0	100
APS	PORT OF SOUTH LOUISIANA EXECUT	LA	LPV	0	100	0	100	0	100
ARA	ACADIANA RGNL	LA	LPV200	0	100	0	100	0	100
BQP	MOREHOUSE MEMORIAL	LA	LPV	0	100	0	100	0	100
BTR	BATON ROUGE METROPOLITAN` RYAN	LA	LPV200	0	100	0	100	0	100

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
BXA	GEORGE R CARR MEMORIAL AIR FLD	LA	LPV	0	100	0	100	0	100
CWF	CHENNAULT INTL	LA	LPV200	0	100	0	100	0	100
DTN	SHREVEPORT DOWNTOWN	LA	LPV	0	100	0	100	0	100
ESF	ESLER RGNL	LA	LPV200	0	100	0	100	0	100
F88	JONESBORO	LA	LP	0	100	0	100	0	100
GAO	SOUTH LAFOURCHE LEONARD MILLER	LA	LPV200	0	100	0	100	0	100
HDC	HAMMOND NORTHSHORE RGNL	LA	LPV200	0	100	0	100	0	100
HUM	HOUMA-TERREBONNE	LA	LPV200	0	100	0	100	0	100
HZR	FALSE RIVER RGNL	LA	LPV	0	100	0	100	0	100
IER	NATCHITOCHES RGNL	LA	LPV	0	100	0	100	0	100
IYA	ABBEVILLE CHRIS CRUSTA MEMORIA	LA	LPV	0	100	0	100	0	100
L39	LEESVILLE	LA	LPV	0	100	0	100	0	100
LCH	LAKE CHARLES RGNL	LA	LPV200	0	100	0	100	0	100
LFT	LAFAYETTE RGNL/PAUL FOURNET FI	LA	LPV	0	100	0	100	0	100
M79	JOHN H HOOKS JR MEMORIAL	LA	LPV	0	100	0	100	0	100
MLU	MONROE RGNL	LA	LPV200	0	100	0	100	0	100
MSY	LOUIS ARMSTRONG NEW ORLEANS IN	LA	LPV200	0	100	0	100	0	100
NEW	LAKEFRONT	LA	LPV	0	100	0	100	0	100
OPL	ST LANDRY PARISH-AHART FIELD	LA	LPV	0	100	0	100	0	100
PTN	HARRY P WILLIAMS MEMORIAL	LA	LPV200	0	100	0	100	0	100
REG	LOUISIANA RGNL	LA	LPV	0	100	0	100	0	100
RSN	RUSTON RGNL	LA	LPV	0	100	0	100	0	100
SHV	SHREVEPORT RGNL	LA	LPV200	0	100	0	100	0	100
SPH	SPRINGHILL	LA	LPV	0	100	0	100	0	100
TVR	VICKSBURG TALLULAH RGNL	LA	LPV200	0	100	0	100	0	100
UXL	SOUTHLAND FIELD	LA	LPV	0	100	0	100	0	100
3B0	SOUTHBRIDGE MUNICIPAL	MA	LPV	0	100	0	100	0	100
ACK	NANTUCKET MEMORIAL	MA	LPV200	0	100	0	100	0	100
BAF	WESTFIELD-BARNES RGNL	MA	LPV	0	100	0	100	0	100
BED	LAURENCE G HANSCOM FLD	MA	LPV200	0	100	0	100	0	100
BOS	GENERAL EDWARD LAWRENCE LOGAN	MA	LPV200	0	100	0	100	0	100
BVY	BEVERLY RGNL	MA	LPV	0	100	0	100	0	100
EWB	NEW BEDFORD RGNL	MA	LPV200	0	100	0	100	0	100
GBR	WALTER J KOLADZA	MA	LP	0	100	0	100	0	100
GHG	MARSHFIELD MUNICIPAL - GEORGE HARLO	MA	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
HYA	BARNSTABLE MUNICIPAL-BOARDMAN/POLAN	MA	LPV200	0	100	0	100	0	100
LWM	LAWRENCE MUNICIPAL	MA	LPV200	0	100	0	100	0	100
MVY	MARTHA'S VINEYARD	MA	LPV200	0	100	0	100	0	100
ORE	ORANGE MUNICIPAL	MA	LPV	0	100	0	100	0	100
ORH	WORCESTER RGNL	MA	LPV200	0	100	0	100	0	100
OWD	NORWOOD MEMORIAL	MA	LPV	0	100	0	100	0	100
PSF	PITTSFIELD MUNICIPAL	MA	LPV	0	100	0	100	0	100
PVC	PROVINCETOWN MUNICIPAL	MA	LPV200	0	100	0	100	0	100
PYM	PLYMOUTH MUNICIPAL	MA	LPV200	0	100	0	100	0	100
TAN	TAUNTON MUNICIPAL - KING FIELD	MA	LPV	0	100	0	100	0	100
2G4	GARRETT COUNTY	MD	LPV	0	100	0	100	0	100
2W5	MARYLAND	MD	LP	0	100	0	100	0	100
2W6	ST MARY'S COUNTY RGNL	MD	LPV	0	100	0	100	0	100
BWI	BALTIMORE/WASHINGTON INTL THUR	MD	LPV200	0	100	0	100	0	100
CBE	GREATER CUMBERLAND RGNL	MD	LPV	0	100	0	100	0	100
CGE	CAMBRIDGE-DORCHESTER RGNL	MD	LPV	0	100	0	100	0	100
DMW	CARROLL COUNTY RGNL/JACK B POA	MD	LPV200	0	100	0	100	0	100
ESN	EASTON/NEWNAM FIELD	MD	LPV200	0	100	0	100	0	100
FDK	FREDERICK MUNICIPAL	MD	LPV	0	100	0	100	0	100
GAI	MONTGOMERY COUNTY AIRPARK	MD	LPV	0	100	0	100	0	100
HGR	HAGERSTOWN RGNL-RICHARD A HENS	MD	LPV200	0	100	0	100	0	100
MTN	MARTIN STATE	MD	LPV	0	100	0	100	0	100
OXB	OCEAN CITY MUNICIPAL	MD	LPV	0	100	0	100	0	100
SBY	SALISBURY-OCEAN CITY WICOMICO	MD	LPV200	0	100	0	100	0	100
W29	BAY BRIDGE	MD	LPV	0	100	0	100	0	100
1B0	DEXTER RGNL	ME	LP	0	100	0	100	0	100
3B1	GREENVILLE MUNICIPAL	ME	LPV	0	100	0	100	0	100
81B	OXFORD COUNTY RGNL	ME	LP	0	100	0	100	0	100
AUG	AUGUSTA STATE	ME	LPV200	0	100	0	100	0	100
BGR	BANGOR INTL	ME	LPV200	0	100	0	100	0	100
BHB	HANCOCK COUNTY-BAR HARBOR	ME	LPV200	0	100	0	100	0	100
BST	BELFAST MUNICIPAL	ME	LPV	0	100	0	100	0	100
BXM	BRUNSWICK EXECUTIVE	ME	LPV200	0	100	0	100	0	100
CAR	CARIBOU MUNICIPAL	ME	LPV	0	100	0	100	0	100
FVE	NORTHERN AROOSTOOK RGNL	ME	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
HUL	HOULTON INTL	ME	LP	0	100	0	100	0	100
IZG	EASTERN SLOPES RGNL	ME	LPV	0	100	0	100	0	100
LEW	AUBURN/LEWISTON MUNICIPAL	ME	LPV200	0	100	0	100	0	100
LRG	LINCOLN RGNL	ME	LP	0	100	0	100	0	100
MLT	MILLINOCKET MUNICIPAL	ME	LPV	0	100	0	100	0	100
OWK	CENTRAL MAINE ARPT OF NORRIDGE	ME	LPV	0	100	0	100	0	100
PQI	NORTHERN MAINE RGNL ARPT AT PR	ME	LPV200	0	100	0	100	0	100
PWM	PORTLAND INTL JETPORT	ME	LPV200	0	100	0	100	0	100
RKD	KNOX COUNTY RGNL	ME	LPV200	0	100	0	100	0	100
SFM	SANFORD SEACOAST RGNL	ME	LPV200	0	100	0	100	0	100
WVL	WATERVILLE ROBERT LAFLEUR	ME	LPV200	0	100	0	100	0	100
48D	CLARE MUNICIPAL	MI	LP	0	100	0	100	0	100
4D0	ABRAMS MUNICIPAL	MI	LP	0	100	0	100	0	100
6Y1	BOIS BLANC ISLAND	MI	LP	0	100	0	100	0	100
77G	MARLETTE	MI	LPV	0	100	0	100	0	100
9D9	HASTINGS	MI	LPV	0	100	0	100	0	100
ACB	ANTRIM COUNTY	MI	LPV	0	100	0	100	0	100
ADG	LENAWEE COUNTY	MI	LPV	0	100	0	100	0	100
AMN	GRATIOT COMMUNICIPALTY	MI	LPV	0	100	0	100	0	100
ANJ	SAULT STE MARIE MUNICIPAL/SANDERSON	MI	LPV	0	100	0	100	0	100
APN	ALPENA COUNTY RGNL	MI	LPV	0	100	0	100	0	100
ARB	ANN ARBOR MUNICIPAL	MI	LPV	0	100	0	100	0	100
AZO	KALAMAZOO/BATTLE CREEK INTL	MI	LPV	0	100	0	100	0	100
BAX	HURON COUNTY MEMORIAL	MI	LPV	0	100	0	100	0	100
BEH	SOUTHWEST MICHIGAN RGNL	MI	LPV200	0	100	0	100	0	100
BIV	WEST MICHIGAN RGNL	MI	LPV	0	100	0	100	0	100
BTL	W K KELLOGG	MI	LPV200	0	100	0	100	0	100
C04	OCEANA COUNTY	MI	LPV	0	100	0	100	0	100
CAD	WEXFORD COUNTY	MI	LPV200	0	100	0	100	0	100
CIU	CHIPPEWA COUNTY INTL	MI	LPV	0	100	0	100	0	100
CMX	HOUGHTON COUNTY MEMORIAL	MI	LPV	0	100	0	100	0	100
CVX	CHARLEVOIX MUNICIPAL	MI	LPV	0	100	0	100	0	100
D95	DUPONT-LAPEER	MI	LP	0	100	0	100	0	100
DET	COLEMAN A YOUNG MUNICIPAL	MI	LPV	0	100	0	100	0	100
DTW	DETROIT METROPOLITAN WAYNE COU	MI	LPV200	0	100	0	100	0	100

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
ERY	LUCE COUNTY	MI	LPV	0	100	0	100	0	100
ESC	DELTA COUNTY	MI	LPV200	0	100	0	100	0	100
FFX	FREMONT MUNICIPAL	MI	LPV	0	100	0	100	0	100
FNT	BISHOP INTL	MI	LPV200	0	100	0	100	0	100
GDW	GLADWIN ZETTEL MEMORIAL	MI	LP	0	100	0	100	0	100
GLR	GAYLORD RGNL	MI	LPV	0	100	0	100	0	100
GRR	GERALD R FORD INTL	MI	LPV200	0	100	0	100	0	100
HTL	ROSCOMMON COUNTY - BLODGETT ME	MI	LP	0	100	0	100	0	100
HYX	SAGINAW COUNTY H W BROWNE	MI	LPV	0	100	0	100	0	100
IKW	JACK BARSTOW	MI	LPV	0	100	0	100	0	100
IMT	FORD	MI	LPV	0	100	0	100	0	100
IRS	KIRSCH MUNICIPAL	MI	LPV	0	100	0	100	0	100
ISQ	SCHOOLCRAFT COUNTY	MI	LP	0	100	0	100	0	100
IWD	GOGEBIC-IRON COUNTY	MI	LPV200	0	100	0	100	0	100
JXN	JACKSON COUNTY-REYNOLDS FIELD	MI	LPV200	0	100	0	100	0	100
JYM	HILLSDALE MUNICIPAL	MI	LPV	0	100	0	100	0	100
LAN	CAPITAL REGION INTL	MI	LPV200	0	100	0	100	0	100
LDM	MASON COUNTY	MI	LPV	0	100	0	100	0	100
MBL	MANISTEE CO-BLACKER	MI	LPV200	0	100	0	100	0	100
MBS	MBS INTL	MI	LPV200	0	100	0	100	0	100
MCD	MACKINAC ISLAND	MI	LPV	0	100	0	100	0	100
MKG	MUSKEGON COUNTY	MI	LPV200	0	100	0	100	0	100
MNM	MENOMINEE-MARINETTE TWIN COUNT	MI	LPV200	0	100	0	100	0	100
MOP	MOUNT PLEASANT MUNICIPAL	MI	LPV	0	100	0	100	0	100
N98	BOYNE CITY MUNICIPAL	MI	LP	0	100	0	100	0	100
OEB	BRANCH COUNTY MEMORIAL	MI	LPV	0	100	0	100	0	100
OSC	OSCODA-WURTSMITH	MI	LPV200	0	100	0	100	0	100
OZW	LIVINGSTON COUNTY SPENCER J HA	MI	LPV200	0	100	0	100	0	100
PHN	ST CLAIR COUNTY INTL	MI	LPV200	0	100	0	100	0	100
PLN	PELLSTON RGNL AIRPORT OF EMMET	MI	LPV200	0	100	0	100	0	100
PTK	OAKLAND COUNTY INTL	MI	LPV200	0	100	0	100	0	100
RMY	BROOKS FIELD	MI	LP	0	100	0	100	0	100
RNP	OWOSSO COMMUNICIPALTY	MI	LPV	0	100	0	100	0	100
RQB	ROBEN-HOOD	MI	LPV200	0	100	0	100	0	100
SAW	SAWYER INTL	MI	LPV200	0	100	0	100	0	100

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
SLH	CHEBOYGAN COUNTY	MI	LPV	0	100	0	100	0	100
TEW	MASON JEWETT FIELD	MI	LP	0	100	0	100	0	100
TTF	CUSTER	MI	LPV	0	100	0	100	0	100
TVC	CHERRY CAPITAL	MI	LPV200	0	100	0	100	0	100
YIP	WILLOW RUN	MI	LPV	0	100	0	100	0	100
16D	PERHAM MUNICIPAL	MN	LPV	0	100	0	100	0	100
3N8	MAHNOMEN COUNTY	MN	LPV	0	100	0	100	0	100
ACQ	WASECA MUNICIPAL	MN	LPV	0	100	0	100	0	100
ADC	WADENA MUNICIPAL	MN	LPV	0	100	0	100	0	100
AEL	ALBERT LEA MUNICIPAL	MN	LPV	0	100	0	100	0	100
AIT	AITKIN MUNICIPAL-STEVE KURTZ FIELD	MN	LPV	0	100	0	100	0	100
ANE	ANOKA COUNTY-BLAINE ARPT (JANE	MN	LPV	0	100	0	100	0	100
AUM	AUSTIN MUNICIPAL	MN	LPV200	0	100	0	100	0	100
AXN	CHANDLER FIELD	MN	LPV	0	100	0	100	0	100
BBB	BENSON MUNICIPAL	MN	LPV	0	100	0	100	0	100
BDE	BAUDETTE INTL	MN	LPV	0	100	0	100	0	100
BDH	WILLMAR MUNICIPAL-JOHN L RICE FIELD	MN	LPV200	0	100	0	100	0	100
BJI	BEMIDJI RGNL	MN	LPV200	0	100	0	100	0	100
BRD	BRAINERD LAKES RGNL	MN	LPV200	0	100	0	100	0	100
CBG	CAMBRIDGE MUNICIPAL	MN	LPV	0	100	0	100	0	100
CFE	BUFFALO MUNICIPAL	MN	LPV	0	100	0	100	0	100
CKC	GRAND MARAIS/COOK COUNTY	MN	LPV	0	100	0	100	0	100
CKN	CROOKSTON MUNICIPAL KIRKWOOD FLD	MN	LPV	0	100	0	100	0	100
CNB	MYERS FIELD	MN	LPV	0	100	0	100	0	100
COQ	CLOQUET CARLTON COUNTY	MN	LPV	0	100	0	100	0	100
CQM	COOK MUNICIPAL	MN	LP	0	100	0	100	0	100
D39	SAUK CENTRE MUNICIPAL	MN	LPV	0	100	0	100	0	100
D42	SPRINGFIELD MUNICIPAL	MN	LP	0	100	0	100	0	100
DLH	DULUTH INTL	MN	LPV200	0	100	0	100	0	100
DTL	DETROIT LAKES-WETHING FIELD	MN	LPV	0	100	0	100	0	100
DVP	SLAYTON MUNICIPAL	MN	LP	0	100	0	100	0	100
DXX	LAC QUI PARLE COUNTY	MN	LPV200	0	100	0	100	0	100
ELO	ELY MUNICIPAL	MN	LPV200	0	100	0	100	0	100
ETH	WHEATON MUNICIPAL	MN	LP	0	100	0	100	0	100

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
EVM	EVELETH-VIRGINIA MUNICIPAL	MN	LPV	0	100	0	100	0	100
FBL	FARIBAULT MUNICIPAL	MN	LPV	0	100	0	100	0	100
FCM	FLYING CLOUD	MN	LPV200	0	100	0	100	0	100
FFM	FERGUS FALLS MUNICIPAL-EINAR MICKEL	MN	LPV200	0	100	0	100	0	100
FKA	FILLMORE COUNTY	MN	LPV	0	100	0	100	0	100
FOZ	BIGFORK MUNICIPAL	MN	LP	0	100	0	100	0	100
FRM	FAIRMONT MUNICIPAL	MN	LPV	0	100	0	100	0	100
FSE	FOSSTON MUNICIPAL	MN	LP	0	100	0	100	0	100
GHW	GLENWOOD MUNICIPAL	MN	LPV	0	100	0	100	0	100
GPZ	GRAND RAPIDS/ITASCA CO-GORDON	MN	LPV	0	100	0	100	0	100
GYL	GLENCOE MUNICIPAL	MN	LPV	0	100	0	100	0	100
HCD	HUTCHINSON MUNICIPAL-BUTLER FIELD	MN	LPV	0	100	0	100	0	100
HCO	HALLOCK MUNICIPAL	MN	LPV	0	100	0	100	0	100
HIB	RANGE RGNL	MN	LPV200	0	100	0	100	0	100
INL	FALLS INTL-EINARSON FIELD	MN	LPV	0	100	0	100	0	100
JKJ	MOORHEAD MUNICIPAL	MN	LPV	0	100	0	100	0	100
JMR	MORA MUNICIPAL	MN	LPV	0	100	0	100	0	100
JYG	ST JAMES MUNICIPAL	MN	LPV	0	100	0	100	0	100
LJF	LITCHFIELD MUNICIPAL	MN	LPV	0	100	0	100	0	100
LVN	AIRLAKE	MN	LPV200	0	100	0	100	0	100
LXL	LITTLE FALLS/MORRISON COUNTY-L	MN	LPV	0	100	0	100	0	100
LYV	QUENTIN AANENSON FIELD	MN	LPV200	0	100	0	100	0	100
MGG	MAPLE LAKE MUNICIPAL-BILL MAVENCAMP	MN	LP	0	100	0	100	0	100
MJQ	JACKSON MUNICIPAL	MN	LPV	0	100	0	100	0	100
MKT	MANKATO RGNL	MN	LPV200	0	100	0	100	0	100
MML	SOUTHWEST MINNESOTA RGNL MARSH	MN	LPV200	0	100	0	100	0	100
MOX	MORRIS MUNICIPAL - CHARLIE SCHMIDT	MN	LPV	0	100	0	100	0	100
MSP	MINNEAPOLIS-ST PAUL INTL/WOLD-	MN	LPV200	0	100	0	100	0	100
MVE	MONTEVIDEO-CHIPPEWA COUNTY	MN	LPV	0	100	0	100	0	100
MZH	MOOSE LAKE CARLTON COUNTY	MN	LPV	0	100	0	100	0	100
ONA	WINONA MUNICIPAL-MAX CONRAD FLD	MN	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
ORB	ORR RGNL	MN	LP	0	100	0	100	0	100
OTG	WORTHINGTON MUNICIPAL	MN	LPV200	0	100	0	100	0	100
OWA	OWATONNA DEGNER RGNL	MN	LPV200	0	100	0	100	0	100
PEX	PAYNESVILLE MUNICIPAL	MN	LPV200	0	100	0	100	0	100
PKD	PARK RAPIDS MUNICIPAL-KONSHOK FIELD	MN	LPV200	0	100	0	100	0	100
PQN	PIPESTONE MUNICIPAL	MN	LPV200	0	100	0	100	0	100
RGK	RED WING RGNL	MN	LPV200	0	100	0	100	0	100
ROS	RUSH CITY RGNL	MN	LPV	0	100	0	100	0	100
ROX	ROSEAU MUNICIPAL/RUDY BILLBERG FIEL	MN	LPV	0	100	0	100	0	100
RRT	WARROAD INTL MEMORIAL	MN	LPV200	0	100	0	100	0	100
RST	ROCHESTER INTL	MN	LPV200	0	100	0	100	0	100
RWF	REDWOOD FALLS MUNICIPAL	MN	LPV	0	100	0	100	0	100
SAZ	STAPLES MUNICIPAL	MN	LPV	0	100	0	100	0	100
SBU	BLUE EARTH MUNICIPAL	MN	LPV	0	100	0	100	0	100
SGS	SOUTH ST PAUL MUNICIPAL-RICHARD E F	MN	LP	0	100	0	100	0	100
STC	ST CLOUD RGNL	MN	LPV200	0	100	0	100	0	100
STP	ST PAUL DOWNTOWN HOLMAN FLD	MN	LPV	0	100	0	100	0	100
TOB	DODGE CENTER	MN	LPV	0	100	0	100	0	100
TVF	THIEF RIVER FALLS RGNL	MN	LPV	0	100	0	100	0	100
TWM	RICHARD B HELGESON	MN	LPV	0	100	0	100	0	100
ULM	NEW ULM MUNICIPAL	MN	LPV200	0	100	0	100	0	100
VVV	ORTONVILLE MUNICIPAL-MARTINSON FIEL	MN	LP	0	100	0	100	0	100
Y49	WALKER MUNICIPAL	MN	LP	0	100	0	100	0	100
Y63	ELBOW LAKE MUNICIPAL - PRIDE OF THE	MN	LPV	0	100	0	100	0	100
03D	MEMPHIS MEMORIAL	MO	LPV	0	100	0	100	0	100
1H0	CREVE COEUR	MO	LPV	0	100	0	100	0	100
1MO	MOUNTAIN GROVE MEMORIAL	MO	LP	0	100	0	100	0	100
2H2	JERRY SUMNERS SR AURORA MUNICIPAL	MO	LP	0	100	0	100	0	100
6M6	LEWIS COUNTY RGNL	MO	LPV	0	100	0	100	0	100
8WC	WASHINGTON COUNTY	MO	LPV	0	100	0	100	0	100
94K	CASSVILLE MUNICIPAL	MO	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
AIZ	LEE C FINE MEMORIAL	MO	LPV	0	100	0	100	0	100
BBG	BRANSON	MO	LPV200	0	100	0	100	0	100
BUM	BUTLER MEMORIAL	MO	LPV	0	100	0	100	0	100
CGI	CAPE GIRARDEAU RGNL	MO	LPV200	0	100	0	100	0	100
CHT	CHILLICOTHE MUNICIPAL	MO	LPV	0	100	0	100	0	100
COU	COLUMBIA RGNL	MO	LPV	0	100	0	100	0	100
DMO	SEDALIA RGNL	MO	LPV	0	100	0	100	0	100
DXE	DEXTER MUNICIPAL	MO	LPV	0	100	0	100	0	100
EIW	COUNTY MEMORIAL	MO	LPV	0	100	0	100	0	100
EOS	NEOSHO HUGH ROBINSON	MO	LPV	0	100	0	100	0	100
EVU	NORTHWEST MISSOURI RGNL	MO	LPV	0	100	0	100	0	100
EZZ	CAMERON MEMORIAL	MO	LPV	0	100	0	100	0	100
FAM	FARMINGTON RGNL	MO	LPV	0	100	0	100	0	100
FTT	ELTON HENSLEY MEMORIAL	MO	LPV	0	100	0	100	0	100
FWB	BRANSON WEST MUNICIPAL - EMERSON FI	MO	LPV200	0	100	0	100	0	100
FYG	WASHINGTON RGNL	MO	LPV	0	100	0	100	0	100
GLY	CLINTON RGNL	MO	LPV	0	100	0	100	0	100
GPH	MIDWEST NATIONAL AIR CENTER	MO	LPV	0	100	0	100	0	100
H79	ELDON MODEL AIRPARK	MO	LP	0	100	0	100	0	100
H88	A PAUL VANCE FREDERICKTOWN RGN	MO	LPV	0	100	0	100	0	100
HAE	HANNIBAL RGNL	MO	LPV	0	100	0	100	0	100
HFJ	MONETT RGNL	MO	LPV	0	100	0	100	0	100
HIG	HIGGINSVILLE INDUSTRIAL MUNICIPAL	MO	LPV	0	100	0	100	0	100
IRK	KIRKSVILLE RGNL	MO	LPV200	0	100	0	100	0	100
JEF	JEFFERSON CITY MEMORIAL	MO	LPV	0	100	0	100	0	100
JLN	JOPLIN RGNL	MO	LPV	0	100	0	100	0	100
K15	GRAND GLAIZE-OSAGE BEACH	MO	LP	0	100	0	100	0	100
K57	GOULD PETERSON MUNICIPAL	MO	LPV	0	100	0	100	0	100
K89	MACON-FOWER MEMORIAL	MO	LPV	0	100	0	100	0	100
LLU	LAMAR MUNICIPAL	MO	LPV	0	100	0	100	0	100
LRY	LAWRENCE SMITH MEMORIAL	MO	LPV	0	100	0	100	0	100
LXT	LEE'S SUMMIT MUNICIPAL	MO	LPV	0	100	0	100	0	100
M05	CARUTHERSVILLE MEMORIAL	MO	LPV	0	100	0	100	0	100
M12	STEELE MUNICIPAL	MO	LPV	0	100	0	100	0	100
M17	BOLIVAR MUNICIPAL	MO	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
M48	HOUSTON MEMORIAL	MO	LPV	0	100	0	100	0	100
MAW	MALDEN RGNL	MO	LPV	0	100	0	100	0	100
MBY	OMAR N BRADLEY	MO	LPV	0	100	0	100	0	100
MCI	KANSAS CITY INTL	MO	LPV200	0	100	0	100	0	100
MHL	MARSHALL MEMORIAL MUNICIPAL	MO	LPV	0	100	0	100	0	100
MKC	CHARLES B WHEELER DOWNTOWN	MO	LPV200	0	100	0	100	0	100
MNF	MOUNTAIN VIEW	MO	LP	0	100	0	100	0	100
MO3	STOCKTON MUNICIPAL	MO	LP	0	100	0	100	0	100
MO8	NORTH CENTRAL MISSOURI RGNL	MO	LPV	0	100	0	100	0	100
MYJ	MEXICO MEMORIAL	MO	LPV	0	100	0	100	0	100
NVD	NEVADA MUNICIPAL	MO	LPV200	0	100	0	100	0	100
OZS	CAMDENTON MEMORIAL-LAKE RGNL	MO	LPV	0	100	0	100	0	100
PCD	PERRYVILLE RGNL	MO	LPV	0	100	0	100	0	100
PLK	M GRAHAM CLARK DOWNTOWN	MO	LPV200	0	100	0	100	0	100
POF	POPLAR BLUFF MUNICIPAL	MO	LPV	0	100	0	100	0	100
RAW	WARSAW MUNICIPAL	MO	LPV200	0	100	0	100	0	100
RCM	SKYHAVEN	MO	LPV	0	100	0	100	0	100
SGF	SPRINGFIELD-BRANSON NATIONAL	MO	LPV	0	100	0	100	0	100
SIK	SIKESTON MEMORIAL MUNICIPAL	MO	LPV	0	100	0	100	0	100
STJ	ROSECRANS MEMORIAL	MO	LPV200	0	100	0	100	0	100
STL	LAMBERT-ST LOUIS INTL	MO	LPV200	0	100	0	100	0	100
SUS	SPIRIT OF ST LOUIS	MO	LPV200	0	100	0	100	0	100
TBN	WAYNESVILLE-ST ROBERT RGNL FOR	MO	LPV	0	100	0	100	0	100
TKX	KENNETT MEMORIAL	MO	LPV	0	100	0	100	0	100
TRX	TRENTON MUNICIPAL	MO	LPV	0	100	0	100	0	100
UBX	CUBA MUNICIPAL	MO	LPV	0	100	0	100	0	100
UNO	WEST PLAINS RGNL	MO	LPV	0	100	0	100	0	100
UUV	SULLIVAN RGNL	MO	LPV	0	100	0	100	0	100
VER	JESSE VIERTEL MEMORIAL	MO	LPV	0	100	0	100	0	100
VIH	ROLLA NATIONAL	MO	LPV200	0	100	0	100	0	100
0R0	COLUMBIA-MARION COUNTY	MS	LPV	0	100	0	100	0	100
17M	MAGEE MUNICIPAL	MS	LP	0	100	0	100	0	100
5A4	OKOLONA MUNICIPAL-RICHARD STOVALL F	MS	LPV	0	100	0	100	0	100
5A6	WINONA-MONTGOMERY COUNTY	MS	LP	0	100	0	100	0	100
87I	YAZOO COUNTY	MS	LPV	0	100	0	100	0	100
8M1	BOONEVILLE/BALDWYN	MS	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
CKM	FLETCHER FIELD	MS	LPV	0	100	0	100	0	100
CRX	ROSCOE TURNER	MS	LPV200	0	100	0	100	0	100
GLH	GREENVILLE MID-DELTA	MS	LPV200	0	100	0	100	0	100
GNF	GRENADA MUNICIPAL	MS	LPV200	0	100	0	100	0	100
GPT	GULFPORT-BILOXI INTL	MS	LPV200	0	100	0	100	0	100
GTR	GOLDEN TRIANGLE RGNL	MS	LPV200	0	100	0	100	0	100
GWO	GREENWOOD-LEFLORE	MS	LPV	0	100	0	100	0	100
HBG	HATTIESBURG BOBBY L CHAIN MUNICIPAL	MS	LPV200	0	100	0	100	0	100
HEZ	HARDY-ANDERS FIELD NATCHEZ-ADA	MS	LPV200	0	100	0	100	0	100
HKS	HAWKINS FIELD	MS	LPV	0	100	0	100	0	100
HSA	STENNIS INTL	MS	LPV200	0	100	0	100	0	100
IDL	INDIANOLA MUNICIPAL	MS	LPV	0	100	0	100	0	100
JAN	JACKSON-MEDGAR WILEY EVERS INT	MS	LPV200	0	100	0	100	0	100
JVW	JOHN BELL WILLIAMS	MS	LPV200	0	100	0	100	0	100
LMS	LOUISVILLE WINSTON COUNTY	MS	LPV	0	100	0	100	0	100
LUL	HESLER-NOBLE FIELD	MS	LPV	0	100	0	100	0	100
M40	MONROE COUNTY	MS	LPV	0	100	0	100	0	100
M41	HOLLY SPRINGS-MARSHALL COUNTY	MS	LPV	0	100	0	100	0	100
M43	PRENTISS-JEFFERSON DAVIS COUNT	MS	LPV	0	100	0	100	0	100
MBO	BRUCE CAMPBELL FIELD	MS	LP	0	100	0	100	0	100
MCB	MC COMB/PIKE COUNTY/JOHN E LEW	MS	LPV	0	100	0	100	0	100
MEI	KEY FIELD	MS	LPV200	0	100	0	100	0	100
MJD	PICAYUNE MUNICIPAL	MS	LPV	0	100	0	100	0	100
MMS	SELFS	MS	LPV	0	100	0	100	0	100
MPE	PHILADELPHIA MUNICIPAL	MS	LPV	0	100	0	100	0	100
OLV	OLIVE BRANCH	MS	LPV200	0	100	0	100	0	100
PIB	HATTIESBURG-LAUREL RGNL	MS	LPV200	0	100	0	100	0	100
PMU	PANOLA COUNTY	MS	LPV	0	100	0	100	0	100
PQL	TRENT LOTT INTL	MS	LPV200	0	100	0	100	0	100
RNV	CLEVELAND MUNICIPAL	MS	LPV	0	100	0	100	0	100
STF	GEORGE M BRYAN	MS	LPV200	0	100	0	100	0	100
TUP	TUPELO RGNL	MS	LPV200	0	100	0	100	0	100
UOX	UNIVERSITY-OXFORD	MS	LPV	0	100	0	100	0	100
UTA	TUNICA MUNICIPAL	MS	LPV200	0	100	0	100	0	100
VKS	VICKSBURG MUNICIPAL	MS	LP	0	100	0	100	0	100
1S3	TILLITT FIELD	MT	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
4U6	CIRCLE TOWN COUNTY	MT	LPV	0	100	0	100	0	100
6S8	LAUREL MUNICIPAL	MT	LPV	0	100	0	100	0	100
7S0	RONAN	MT	LPV	0	100	0	100	0	100
BHK	BAKER MUNICIPAL	MT	LPV	0	100	0	100	0	100
BIL	BILLINGS LOGAN INTL	MT	LPV200	0	100	0	100	0	100
BTM	BERT MOONEY	MT	LPV	0	100	0	100	0	100
BZN	BOZEMAN YELLOWSTONE INTL	MT	LPV	0	100	0	100	0	100
CTB	CUT BANK INTL	MT	LPV200	0	100	0	100	0	100
DLN	DILLON	MT	LPV	0	100	0	100	0	100
EKS	ENNIS - BIG SKY	MT	LPV	0	100	0	100	0	100
GDV	DAWSON COMMUNICIPALTY	MT	LPV	0	100	0	100	0	100
GGW	WOKAL FIELD/GLASGOW INTL	MT	LPV200	0	100	0	100	0	100
GPI	GLACIER PARK INTL	MT	LPV	0	100	0	100	0	100
GTF	GREAT FALLS INTL	MT	LPV200	0	100	0	100	0	100
HLN	HELENA RGNL	MT	LPV	0	100	0	100	0	100
HVR	HAVRE CITY-COUNTY	MT	LPV	0	100	0	100	0	100
LVM	MISSION FIELD	MT	LP	0	100	0	100	0	100
LWT	LEWISTOWN MUNICIPAL	MT	LPV200	0	100	0	100	0	100
M75	MALTA	MT	LP	0	100	0	100	0	100
MLS	FRANK WILEY FIELD	MT	LPV	0	100	0	100	0	100
MSO	MISSOULA INTL	MT	LPV	0	100	0	100	0	100
OLF	L M CLAYTON	MT	LPV200	0	100	0	100	0	100
PO1	POPLAR MUNICIPAL	MT	LPV200	0	100	0	100	0	100
PWD	SHER-WOOD	MT	LPV200	0	100	0	100	0	100
RPX	ROUNDUP	MT	LPV	0	100	0	100	0	100
SBX	SHELBY	MT	LPV	0	100	0	100	0	100
SDY	SIDNEY-RICHLAND MUNICIPAL	MT	LPV	0	100	0	100	0	100
WYS	YELLOWSTONE	MT	LPV200	0	100	0	100	0	100
CYCL	CHARLO	NB	LPV	0	100	0	100	0	100
CYQM	MONCTON INTL	NB	LPV	0	100	0	100	0	100
43A	MONTGOMERY COUNTY	NC	LP	0	100	0	100	0	100
ACZ	HENDERSON FIELD	NC	LPV	0	100	0	100	0	100
AFP	ANSON COUNTY - JEFF CLOUD FIEL	NC	LPV	0	100	0	100	0	100
AKH	GASTONIA MUNICIPAL	NC	LPV	0	100	0	100	0	100
ASJ	TRI-COUNTY	NC	LPV	0	100	0	100	0	100
AVL	ASHEVILLE RGNL	NC	LPV200	0	100	0	100	0	100
BUY	BURLINGTON-ALAMANCE RGNL	NC	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
CLT	CHARLOTTE/DOUGLAS INTL	NC	LPV200	0	100	0	100	0	100
CPC	COLUMBUS COUNTY MUNICIPAL	NC	LPV	0	100	0	100	0	100
CTZ	CLINTON-SAMPSON COUNTY	NC	LPV200	0	100	0	100	0	100
DPL	DUPLIN CO	NC	LPV200	0	100	0	100	0	100
ECG	ELIZABETH CITY CG AIR STATION/	NC	LPV	0	100	0	100	0	100
EDE	NORTHEASTERN RGNL	NC	LPV200	0	100	0	100	0	100
EHO	SHELBY-CLEVELAND COUNTY RGNL	NC	LPV	0	100	0	100	0	100
EQY	CHARLOTTE-MONROE EXECUTIVE	NC	LPV200	0	100	0	100	0	100
EWN	COASTAL CAROLINA REGIONAL	NC	LPV	0	100	0	100	0	100
EXX	DAVIDSON COUNTY	NC	LPV	0	100	0	100	0	100
EYF	CURTIS L BROWN JR FIELD	NC	LPV200	0	100	0	100	0	100
FAY	FAYETTEVILLE RGNL/GRANNIS FIEL	NC	LPV200	0	100	0	100	0	100
FFA	FIRST FLIGHT	NC	LP	0	100	0	100	0	100
FQD	RUTHERFORD CO - MARCHMAN FIELD	NC	LPV	0	100	0	100	0	100
GEV	ASHE COUNTY	NC	LP	0	100	0	100	0	100
GSO	PIEDMONT TRIAD INTL	NC	LPV200	0	100	0	100	0	100
GWW	WAYNE EXECUTIVE JETPORT	NC	LPV200	0	100	0	100	0	100
HBI	ASHEBORO RGNL	NC	LPV	0	100	0	100	0	100
HKY	HICKORY RGNL	NC	LPV200	0	100	0	100	0	100
HNZ	HENDERSON-OXFORD	NC	LPV	0	100	0	100	0	100
HRJ	HARNETT RGNL JETPORT	NC	LPV	0	100	0	100	0	100
ILM	WILMINGTON INTL	NC	LPV200	0	100	0	100	0	100
INT	SMITH REYNOLDS	NC	LPV200	0	100	0	100	0	100
IPJ	LINCOLNTON-LINCOLN COUNTY RGNL	NC	LPV	0	100	0	100	0	100
ISO	KINSTON RGNL JETPORT AT STALLI	NC	LPV200	0	100	0	100	0	100
IXA	HALIFAX-NORTHAMPTON RGNL	NC	LPV200	0	100	0	100	0	100
JNX	JOHNSTON REGIONAL	NC	LPV	0	100	0	100	0	100
JQF	CONCORD RGNL	NC	LPV	0	100	0	100	0	100
LBT	LUMBERTON RGNL	NC	LPV	0	100	0	100	0	100
LHZ	TRIANGLE NORTH EXECUTIVE	NC	LPV200	0	100	0	100	0	100
MCZ	MARTIN COUNTY	NC	LPV	0	100	0	100	0	100
MEB	LAURINBURG-MAXTON	NC	LPV200	0	100	0	100	0	100
MQI	DARE COUNTY RGNL	NC	LPV	0	100	0	100	0	100
MRH	MICHAEL J SMITH FIELD	NC	LPV	0	100	0	100	0	100
MRN	FOOTHILLS REGIONAL	NC	LPV	0	100	0	100	0	100
MWK	MOUNT AIRY/SURRY COUNTY	NC	LPV	0	100	0	100	0	100
OAJ	ALBERT J ELLIS	NC	LPV200	0	100	0	100	0	100

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
OCW	WASHINGTON-WARREN	NC	LPV	0	100	0	100	0	100
ONX	CURRITUCK COUNTY RGNL	NC	LPV	0	100	0	100	0	100
PGV	PITT-GREENVILLE	NC	LPV	0	100	0	100	0	100
PMZ	PLYMOUTH MUNICIPAL	NC	LP	0	100	0	100	0	100
RCZ	RICHMOND COUNTY	NC	LPV	0	100	0	100	0	100
RDU	RALEIGH-DURHAM INTL	NC	LPV200	0	100	0	100	0	100
RHP	WESTERN CAROLINA RGNL	NC	LP	0	100	0	100	0	100
RUQ	ROWAN COUNTY	NC	LPV200	0	100	0	100	0	100
RWI	ROCKY MOUNT-WILSON RGNL	NC	LPV	0	100	0	100	0	100
SCR	SILER CITY MUNICIPAL	NC	LPV	0	100	0	100	0	100
SOP	MOORE COUNTY	NC	LPV200	0	100	0	100	0	100
SUT	CAPE FEAR RGNL JETPORT/HOWIE F	NC	LPV	0	100	0	100	0	100
SVH	STATESVILLE RGNL	NC	LPV200	0	100	0	100	0	100
TDF	PERSON COUNTY	NC	LPV200	0	100	0	100	0	100
TTA	RALEIGH EXEC JETPORT AT SANFOR	NC	LPV200	0	100	0	100	0	100
VUJ	STANLY COUNTY	NC	LPV200	0	100	0	100	0	100
W40	MOUNT OLIVE MUNICIPAL	NC	LPV	0	100	0	100	0	100
ZEF	ELKIN MUNICIPAL	NC	LP	0	100	0	100	0	100
06D	ROLLA MUNICIPAL	ND	LPV	0	100	0	100	0	100
20U	BEACH	ND	LPV	0	100	0	100	0	100
2C8	CAVALIER MUNICIPAL	ND	LPV	0	100	0	100	0	100
3H4	HILLSBORO MUNICIPAL	ND	LPV	0	100	0	100	0	100
46D	CARRINGTON MUNICIPAL	ND	LPV	0	100	0	100	0	100
51D	EDGELEY MUNICIPAL	ND	LPV	0	100	0	100	0	100
5L0	LAKOTA MUNICIPAL	ND	LPV	0	100	0	100	0	100
5N8	CASSELTON ROBERT MILLER RGNL	ND	LPV	0	100	0	100	0	100
6L3	LISBON MUNICIPAL	ND	LPV	0	100	0	100	0	100
7L2	LINTON MUNICIPAL	ND	LPV	0	100	0	100	0	100
9D7	CANDO MUNICIPAL	ND	LPV	0	100	0	100	0	100
BAC	BARNES COUNTY MUNICIPAL	ND	LPV	0	100	0	100	0	100
BIS	BISMARCK MUNICIPAL	ND	LPV200	0	100	0	100	0	100
BWP	HARRY STERN	ND	LPV	0	100	0	100	0	100
BWW	BOWMAN RGNL	ND	LPV	0	100	0	100	0	100
D09	BOTTINEAU MUNICIPAL	ND	LPV	0	100	0	100	0	100
D55	ROBERTSON FIELD	ND	LPV	0	100	0	100	0	100
D60	TIOGA MUNICIPAL	ND	LPV	0	100	0	100	0	100
DIK	DICKINSON - THEODORE ROOSEVELT	ND	LPV200	0	100	0	100	0	100

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
DVL	DEVILS LAKE RGNL	ND	LPV200	0	100	0	100	0	100
FAR	HECTOR INTL	ND	LPV200	0	100	0	100	0	100
GAF	HUTSON FIELD	ND	LPV	0	100	0	100	0	100
GFK	GRAND FORKS INTL	ND	LPV	0	100	0	100	0	100
GWR	GWINNER-ROGER MELROE FIELD	ND	LPV200	0	100	0	100	0	100
HEI	HETTINGER MUNICIPAL	ND	LPV	0	100	0	100	0	100
HZE	MERCER COUNTY RGNL	ND	LPV	0	100	0	100	0	100
ISN	SLOULIN FLD INTL	ND	LPV200	0	100	0	100	0	100
JMS	JAMESTOWN RGNL	ND	LPV200	0	100	0	100	0	100
K74	ROBERT ODEGAARD FIELD	ND	LP	0	100	0	100	0	100
MOT	MINOT INTL	ND	LPV	0	100	0	100	0	100
RUG	RUGBY MUNICIPAL	ND	LP	0	100	0	100	0	100
S25	WATFORD CITY MUNICIPAL	ND	LPV	0	100	0	100	0	100
Y19	MANDAN MUNICIPAL	ND	LPV	0	100	0	100	0	100
07K	CENTRAL CITY MUNICIPAL - LARRY REIN	NE	LPV	0	100	0	100	0	100
08K	HARVARD STATE	NE	LPV	0	100	0	100	0	100
0B4	HARTINGTON MUNICIPAL/ BUD BECKER FL	NE	LPV	0	100	0	100	0	100
0C4	PENDER MUNICIPAL	NE	LPV	0	100	0	100	0	100
0F4	LOUP CITY MUNICIPAL	NE	LPV	0	100	0	100	0	100
0G3	TECUMSEH MUNICIPAL	NE	LPV	0	100	0	100	0	100
0V3	PIONEER VILLAGE FIELD	NE	LPV	0	100	0	100	0	100
12K	SUPERIOR MUNICIPAL	NE	LPV	0	100	0	100	0	100
47V	CURTIS MUNICIPAL	NE	LPV	0	100	0	100	0	100
4D9	ALMA MUNICIPAL	NE	LPV	0	100	0	100	0	100
4V9	ANTELOPE COUNTY	NE	LPV	0	100	0	100	0	100
6K3	CREIGHTON MUNICIPAL	NE	LPV	0	100	0	100	0	100
7V7	RED CLOUD MUNICIPAL	NE	LPV	0	100	0	100	0	100
8V2	STUART-ATKINSON MUNICIPAL	NE	LPV	0	100	0	100	0	100
93Y	DAVID CITY MUNICIPAL	NE	LPV	0	100	0	100	0	100
9V5	MODISETT	NE	LPV	0	100	0	100	0	100
AFK	NEBRASKA CITY MUNICIPAL	NE	LPV	0	100	0	100	0	100
AHQ	WAHOO MUNICIPAL	NE	LPV	0	100	0	100	0	100
AIA	ALLIANCE MUNICIPAL	NE	LPV200	0	100	0	100	0	100
ANW	AINSWORTH RGNL	NE	LPV200	0	100	0	100	0	100

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
AUH	AURORA MUNICIPAL - AL POTTER FIELD	NE	LPV	0	100	0	100	0	100
BBW	BROKEN BOW MUNICIPAL/KEITH GLAZE FL	NE	LPV	0	100	0	100	0	100
BFF	WESTERN NEBRASKA RGNL/WILLIAM	NE	LPV	0	100	0	100	0	100
BIE	BEATRICE MUNICIPAL	NE	LPV200	0	100	0	100	0	100
BTA	BLAIR MUNICIPAL	NE	LPV	0	100	0	100	0	100
BUB	CRAM FIELD	NE	LPV	0	100	0	100	0	100
BVN	ALBION MUNICIPAL	NE	LPV	0	100	0	100	0	100
CDR	CHADRON MUNICIPAL	NE	LPV200	0	100	0	100	0	100
CEK	CRETE MUNICIPAL	NE	LPV	0	100	0	100	0	100
CSB	CAMBRIDGE MUNICIPAL	NE	LPV	0	100	0	100	0	100
CZD	COZAD MUNICIPAL	NE	LPV	0	100	0	100	0	100
EAR	KEARNEY RGNL	NE	LPV200	0	100	0	100	0	100
FBY	FAIRBURY MUNICIPAL	NE	LPV	0	100	0	100	0	100
FET	FREMONT MUNICIPAL	NE	LPV	0	100	0	100	0	100
FMZ	FAIRMONT STATE AIRFIELD	NE	LPV	0	100	0	100	0	100
FNB	BRENNER FIELD	NE	LPV	0	100	0	100	0	100
GGF	GRANT MUNICIPAL	NE	LPV	0	100	0	100	0	100
GRI	CENTRAL NEBRASKA RGNL	NE	LPV	0	100	0	100	0	100
GRN	GORDON MUNICIPAL	NE	LPV	0	100	0	100	0	100
HDE	BREWSTER FIELD	NE	LPV	0	100	0	100	0	100
HSI	HASTINGS MUNICIPAL	NE	LPV	0	100	0	100	0	100
IBM	KIMBALL MUNICIPAL/ROBERT E ARRAJ FI	NE	LPV	0	100	0	100	0	100
IML	IMPERIAL MUNICIPAL	NE	LPV	0	100	0	100	0	100
JYR	YORK MUNICIPAL	NE	LPV	0	100	0	100	0	100
LBF	NORTH PLATTE RGNL AIRPORT LEE	NE	LPV200	0	100	0	100	0	100
LCG	WAYNE MUNICIPAL/ STAN MORRIS FLD	NE	LPV	0	100	0	100	0	100
LNK	LINCOLN	NE	LPV200	0	100	0	100	0	100
LXN	JIM KELLY FIELD	NE	LPV	0	100	0	100	0	100
MCK	MC COOK BEN NELSON RGNL	NE	LPV	0	100	0	100	0	100
MLE	MILLARD	NE	LPV	0	100	0	100	0	100
ODX	EVELYN SHARP FIELD	NE	LPV	0	100	0	100	0	100
OFK	NORFOLK RGNL/KARL STEFAN MEMOR	NE	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
OGA	SEARLE FIELD	NE	LPV	0	100	0	100	0	100
OKS	GARDEN COUNTY	NE	LPV	0	100	0	100	0	100
OLU	COLUMBUS MUNICIPAL	NE	LPV	0	100	0	100	0	100
OMA	EPPLEY AIRFIELD	NE	LPV200	0	100	0	100	0	100
ONL	THE O'NEILL MUNICIPAL-JOHN L BAKER	NE	LPV	0	100	0	100	0	100
PMV	PLATTSMOUTH MUNICIPAL	NE	LPV	0	100	0	100	0	100
RBE	ROCK COUNTY	NE	LPV	0	100	0	100	0	100
SCB	SCRIBNER STATE	NE	LPV	0	100	0	100	0	100
SNY	SIDNEY MUNICIPAL/LLOYD W CARR FIELD	NE	LPV	0	100	0	100	0	100
SWT	SEWARD MUNICIPAL	NE	LPV	0	100	0	100	0	100
TIF	THOMAS COUNTY	NE	LPV	0	100	0	100	0	100
TQE	TEKAMAH MUNICIPAL	NE	LPV	0	100	0	100	0	100
VTN	MILLER FIELD	NE	LPV	0	100	0	100	0	100
ASH	BOIRE FIELD	NH	LPV200	0	100	0	100	0	100
CON	CONCORD MUNICIPAL	NH	LPV	0	100	0	100	0	100
DAW	SKYHAVEN	NH	LPV	0	100	0	100	0	100
EEN	DILLANT-HOPKINS	NH	LPV	0	100	0	100	0	100
HIE	MOUNT WASHINGTON RGNL	NH	LPV	0	100	0	100	0	100
LCI	LACONIA MUNICIPAL	NH	LPV	0	100	0	100	0	100
LEB	LEBANON MUNICIPAL	NH	LPV	0	100	0	100	0	100
MHT	MANCHESTER	NH	LPV200	0	100	0	100	0	100
PSM	PORTSMOUTH INTL AT PEASE	NH	LPV200	0	100	0	100	0	100
47N	CENTRAL JERSEY RGNL	NJ	LP	0	100	0	100	0	100
4N1	GREENWOOD LAKE	NJ	LP	0	100	0	100	0	100
ACY	ATLANTIC CITY INTL	NJ	LPV200	0	100	0	100	0	100
CDW	ESSEX COUNTY	NJ	LPV	0	100	0	100	0	100
EWR	NEWARK LIBERTY INTL	NJ	LPV200	0	100	0	100	0	100
MIV	MILLVILLE MUNICIPAL	NJ	LPV200	0	100	0	100	0	100
MJX	OCEAN COUNTY	NJ	LPV	0	100	0	100	0	100
MMU	MORRISTOWN MUNICIPAL	NJ	LPV200	0	100	0	100	0	100
N12	LAKEWOOD	NJ	LP	0	100	0	100	0	100
N14	FLYING W	NJ	LPV	0	100	0	100	0	100
N40	SKY MANOR	NJ	LP	0	100	0	100	0	100
TEB	TETERBORO	NJ	LPV	0	100	0	100	0	100
TTN	TRENTON MERCER	NJ	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
VAY	SOUTH JERSEY RGNL	NJ	LP	0	100	0	100	0	100
WWD	CAPE MAY COUNTY	NJ	LPV	0	100	0	100	0	100
CYDF	DEER LAKE	NL	LPV	0	100	0	100	191	98.365
0E0	MORIARTY	NM	LPV	0	100	0	100	0	100
ABQ	ALBUQUERQUE INTL SUNPORT	NM	LPV200	0	100	0	100	0	100
AEG	DOUBLE EAGLE II	NM	LPV200	0	100	0	100	0	100
ALM	ALAMOGORDO-WHITE SANDS RGNL	NM	LPV	0	100	0	100	0	100
ATS	ARTESIA MUNICIPAL	NM	LPV	0	100	0	100	0	100
CAO	CLAYTON MUNICIPAL ARPK	NM	LPV	0	100	0	100	0	100
CNM	CAVERN CITY AIR TRML	NM	LPV200	0	100	0	100	0	100
CVN	CLOVIS MUNICIPAL	NM	LPV200	0	100	0	100	0	100
DMN	DEMING MUNICIPAL	NM	LPV	0	100	0	100	0	100
E06	LEA COUNTY-ZIP FRANKLIN MEMORI	NM	LPV	0	100	0	100	0	100
FMN	FOUR CORNERS RGNL	NM	LPV200	0	100	0	100	0	100
HOB	LEA COUNTY RGNL	NM	LPV	0	100	0	100	0	100
LAM	LOS ALAMOS	NM	LP	0	100	0	100	0	100
LRU	LAS CRUCES INTL	NM	LPV200	0	100	0	100	0	100
ONM	SOCORRO MUNICIPAL	NM	LP	0	100	0	100	0	100
ROW	ROSWELL INTL AIR CENTER	NM	LPV	0	100	0	100	0	100
SAF	SANTA FE MUNICIPAL	NM	LPV200	0	100	0	100	0	100
SRR	SIERRA BLANCA RGNL	NM	LPV200	0	100	0	100	0	100
SVC	GRANT COUNTY	NM	LPV	0	100	0	100	0	100
CYHZ	HALIFAX / STANFIELD INTL	NS	LPV	0	100	0	100	4	99.998
CYEV	INUVIK	NT	LPV	0	100	0	100	141	99.844
05U	EUREKA	NV	LP	0	100	0	100	0	100
CXP	CARSON	NV	LP	0	100	0	100	0	100
ELY	ELY ARPT /YELLAND FLD/	NV	LPV	0	100	0	100	0	100
LAS	MC CARRAN INTL	NV	LPV	0	100	0	100	0	100
RNO	RENO/TAHOE INTL	NV	LPV	0	100	0	100	0	100
RTS	RENO/STEAD	NV	LPV	0	100	0	100	0	100
SPZ	SILVER SPRINGS	NV	LPV	0	100	0	100	0	100
TPH	TONOPAH	NV	LP	0	100	0	100	0	100
WMC	WINNEMUCCA MUNICIPAL	NV	LPV	0	100	0	100	0	100
06N	RANDALL	NY	LP	0	100	0	100	0	100
0G7	FINGER LAKES RGNL	NY	LPV	0	100	0	100	0	100
1B1	COLUMBIA COUNTY	NY	LPV	0	100	0	100	0	100
20N	KINGSTON-ULSTER	NY	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
44N	SKY ACRES	NY	LPV	0	100	0	100	0	100
4B6	TICONDEROGA MUNICIPAL	NY	LPV	0	100	0	100	0	100
5B2	SARATOGA COUNTY	NY	LPV	0	100	0	100	0	100
5G0	LE ROY	NY	LP	0	100	0	100	0	100
9G0	BUFFALO AIRFIELD	NY	LP	0	100	0	100	0	100
9G3	AKRON	NY	LP	0	100	0	100	0	100
ALB	ALBANY INTL	NY	LPV200	0	100	0	100	0	100
ART	WATERTOWN INTL	NY	LPV200	0	100	0	100	0	100
BGM	GREATER BINGHAMTON/EDWIN A LIN	NY	LPV200	0	100	0	100	0	100
BUF	BUFFALO NIAGARA INTL	NY	LPV200	0	100	0	100	0	100
D38	CANANDAIGUA	NY	LPV	0	100	0	100	0	100
ELM	ELMIRA/CORNING RGNL	NY	LPV200	0	100	0	100	0	100
ELZ	WELLSVILLE MUNICIPAL ARPT`TARANTINE	NY	LPV	0	100	0	100	0	100
FOK	FRANCIS S GABRESKI	NY	LPV200	0	100	0	100	0	100
FRG	REPUBLIC	NY	LPV200	0	100	0	100	0	100
FZY	OSWEGO COUNTY	NY	LPV	0	100	0	100	0	100
GFL	FLOYD BENNETT MEMORIAL	NY	LPV200	0	100	0	100	0	100
GVQ	GENESEE COUNTY	NY	LPV200	0	100	0	100	0	100
HPN	WESTCHESTER COUNTY	NY	LPV	0	100	0	100	0	100
HTF	HORNELL MUNICIPAL	NY	LPV	0	100	0	100	0	100
HTO	EAST HAMPTON	NY	LPV	0	100	0	100	0	100
HWV	BROOKHAVEN	NY	LPV	0	100	0	100	0	100
IAG	NIAGARA FALLS INTL	NY	LPV	0	100	0	100	0	100
ISP	LONG ISLAND MAC ARTHUR	NY	LPV200	0	100	0	100	0	100
ITH	ITHACA TOMPKINS RGNL	NY	LPV	0	100	0	100	0	100
JFK	JOHN F KENNEDY INTL	NY	LPV200	0	100	0	100	0	100
JHW	CHAUTAUQUA COUNTY/JAMESTOWN	NY	LPV200	0	100	0	100	0	100
K09	PISECO	NY	LP	0	100	0	100	0	100
LGA	LAGUARDIA	NY	LPV	0	100	0	100	0	100
MAL	MALONE-DUFORT	NY	LPV	0	100	0	100	0	100
MGJ	ORANGE COUNTY	NY	LPV	0	100	0	100	0	100
MSS	MASSENA INTL-RICHARDS FIELD	NY	LPV	0	100	0	100	0	100
MSV	SULLIVAN COUNTY INTL	NY	LPV	0	100	0	100	0	100
N23	SIDNEY MUNICIPAL	NY	LP	0	100	0	100	0	100
N66	ONEONTA MUNICIPAL	NY	LPV	0	100	0	100	0	100
NY0	FULTON COUNTY	NY	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
OGS	OGDENSBURG INTL	NY	LPV	0	100	0	100	0	100
OIC	LT WARREN EATON	NY	LP	0	100	0	100	0	100
OLE	CATTARAUGUS COUNTY-OLEAN	NY	LPV	0	100	0	100	0	100
PBG	PLATTSBURGH INTL	NY	LPV	0	100	0	100	0	100
PEO	PENN YAN	NY	LPV	0	100	0	100	0	100
POU	HUDSON VALLEY RGNL	NY	LPV	0	100	0	100	0	100
RME	GRIFFISS INTL	NY	LPV200	0	100	0	100	0	100
ROC	GREATER ROCHESTER INTL	NY	LPV200	0	100	0	100	0	100
SCH	SCHENECTADY COUNTY	NY	LPV200	0	100	0	100	0	100
SDC	WILLIAMSON-SODUS	NY	LPV	0	100	0	100	0	100
SLK	ADIRONDACK RGNL	NY	LPV200	0	100	0	100	0	100
SWF	STEWART INTL	NY	LPV200	0	100	0	100	0	100
SYR	SYRACUSE HANCOCK INTL	NY	LPV200	0	100	0	100	0	100
VGC	HAMILTON MUNICIPAL	NY	LPV	0	100	0	100	0	100
0G6	WILLIAMS COUNTY	OH	LPV	0	100	0	100	0	100
10G	HOLMES COUNTY	OH	LP	0	100	0	100	0	100
16G	SENECA COUNTY	OH	LPV	0	100	0	100	0	100
17G	PORT BUCYRUS-CRAWFORD COUNTY	OH	LP	0	100	0	100	0	100
1G0	WOOD COUNTY	OH	LPV	0	100	0	100	0	100
1G3	KENT STATE UNIV	OH	LPV	0	100	0	100	0	100
2G2	JEFFERSON COUNTY AIRPARK	OH	LPV	0	100	0	100	0	100
4G5	MONROE COUNTY	OH	LP	0	100	0	100	0	100
4I3	KNOX COUNTY	OH	LPV200	0	100	0	100	0	100
5A1	NORWALK-HURON COUNTY	OH	LP	0	100	0	100	0	100
6G5	BARNESVILLE-BRADFIELD	OH	LP	0	100	0	100	0	100
7G8	GEAUGA COUNTY	OH	LP	0	100	0	100	0	100
AKR	AKRON FULTON INTL	OH	LP	0	100	0	100	0	100
AOH	LIMA ALLEN COUNTY	OH	LPV200	0	100	0	100	0	100
AXV	NEIL ARMSTRONG	OH	LPV	0	100	0	100	0	100
BJJ	WAYNE COUNTY	OH	LPV	0	100	0	100	0	100
BKL	BURKE LAKEFRONT	OH	LPV	0	100	0	100	0	100
CAK	AKRON-CANTON RGNL	OH	LPV200	0	100	0	100	0	100
CDI	CAMBRIDGE MUNICIPAL	OH	LP	0	100	0	100	0	100
CGF	CUYAHOGA COUNTY	OH	LPV	0	100	0	100	0	100
CLE	CLEVELAND-HOPKINS INTL	OH	LPV200	0	100	0	100	0	100
CMH	JOHN GLENN COLUMBUS INTL	OH	LPV200	0	100	0	100	0	100
CQA	LAKEFIELD	OH	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
CYO	PICKAWAY COUNTY MEMORIAL	OH	LPV	0	100	0	100	0	100
DAY	JAMES M COX DAYTON INTL	OH	LPV200	0	100	0	100	0	100
DLZ	DELAWARE MUNICIPAL - JIM MOORE FIEL	OH	LPV	0	100	0	100	0	100
EDJ	BELLEFONTAINE RGNL	OH	LPV	0	100	0	100	0	100
EOP	PIKE COUNTY	OH	LP	0	100	0	100	0	100
FDY	FINDLAY	OH	LPV	0	100	0	100	0	100
FZI	FOSTORIA METROPOLITAN	OH	LPV	0	100	0	100	0	100
GQQ	GALION MUNICIPAL	OH	LP	0	100	0	100	0	100
HAO	BUTLER CO RGNL-HOGAN FIELD	OH	LPV	0	100	0	100	0	100
HOC	HIGHLAND COUNTY	OH	LP	0	100	0	100	0	100
HZY	NORTHEAST OHIO RGNL	OH	LPV	0	100	0	100	0	100
I19	GREENE COUNTY-LEWIS A JACKSON	OH	LPV	0	100	0	100	0	100
I40	RICHARD DOWNING	OH	LPV	0	100	0	100	0	100
I66	CLINTON FIELD	OH	LPV	0	100	0	100	0	100
I68	WARREN COUNTY/JOHN LANE FIELD	OH	LPV	0	100	0	100	0	100
I69	CLERMONT COUNTY	OH	LP	0	100	0	100	0	100
I74	GRIMES FIELD	OH	LPV	0	100	0	100	0	100
ILN	WILMINGTON AIR PARK	OH	LPV200	0	100	0	100	0	100
LCK	RICKENBACKER INTL	OH	LPV200	0	100	0	100	0	100
LHQ	FAIRFIELD COUNTY	OH	LPV200	0	100	0	100	0	100
LNN	WILLOUGHBY LOST NATION MUNICIPAL	OH	LPV	0	100	0	100	0	100
LPR	LORAIN COUNTY RGNL	OH	LPV200	0	100	0	100	0	100
LUK	CINCINNATI MUNICIPAL AIRPORT LUNKEN	OH	LPV	0	100	0	100	0	100
MFD	MANSFIELD LAHM RGNL	OH	LPV200	0	100	0	100	0	100
MGY	DAYTON-WRIGHT BROTHERS	OH	LPV	0	100	0	100	0	100
MNN	MARION MUNICIPAL	OH	LPV	0	100	0	100	0	100
MRT	UNION COUNTY	OH	LP	0	100	0	100	0	100
MWO	MIDDLETOWN REGIONAL/HOOK FIELD	OH	LPV	0	100	0	100	0	100
OSU	OHIO STATE UNIVERSITY	OH	LPV200	0	100	0	100	0	100
OWX	PUTNAM COUNTY	OH	LPV	0	100	0	100	0	100
OXD	MIAMI UNIVERSITY	OH	LPV	0	100	0	100	0	100
PCW	ERIE-OTTAWA INTL	OH	LPV	0	100	0	100	0	100
PHD	HARRY CLEVER FIELD	OH	LP	0	100	0	100	0	100
PMH	GREATER PORTSMOUTH RGNL	OH	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
POV	PORTAGE COUNTY	OH	LPV	0	100	0	100	0	100
RZT	ROSS COUNTY	OH	LPV	0	100	0	100	0	100
S24	SANDUSKY COUNTY RGNL	OH	LPV	0	100	0	100	0	100
SCA	SIDNEY MUNICIPAL	OH	LPV	0	100	0	100	0	100
SGH	SPRINGFIELD-BECKLEY MUNICIPAL	OH	LPV200	0	100	0	100	0	100
TDZ	TOLEDO EXECUTIVE	OH	LPV	0	100	0	100	0	100
TOL	TOLEDO EXPRESS	OH	LPV200	0	100	0	100	0	100
TSO	CARROLL COUNTY-TOLSON	OH	LP	0	100	0	100	0	100
TZR	BOLTON FIELD	OH	LPV200	0	100	0	100	0	100
UNI	OHIO UNIVERSITY	OH	LPV200	0	100	0	100	0	100
USE	FULTON COUNTY	OH	LPV	0	100	0	100	0	100
UYF	MADISON COUNTY	OH	LPV	0	100	0	100	0	100
VTA	NEWARK-HEATH	OH	LP	0	100	0	100	0	100
YNG	YOUNGSTOWN-WARREN RGNL	OH	LPV	0	100	0	100	0	100
ZZV	ZANESVILLE MUNICIPAL	OH	LPV200	0	100	0	100	0	100
1F0	ARDMORE DOWNTOWN EXECUTIVE	OK	LP	0	100	0	100	0	100
1K8	SOUTH GRAND LAKE RGNL	OK	LPV	0	100	0	100	0	100
1O4	THOMAS MUNICIPAL	OK	LPV	0	100	0	100	0	100
2K4	SCOTT FIELD	OK	LPV	0	100	0	100	0	100
80F	ANTLERS MUNICIPAL	OK	LPV	0	100	0	100	0	100
ADH	ADA MUNICIPAL	OK	LPV	0	100	0	100	0	100
ADM	ARDMORE MUNICIPAL	OK	LPV200	0	100	0	100	0	100
AVK	ALVA RGNL	OK	LPV	0	100	0	100	0	100
AXS	ALTUS/QUARTZ MOUNTAIN RGNL	OK	LPV	0	100	0	100	0	100
BKN	BLACKWELL-TONKAWA MUNICIPAL	OK	LPV	0	100	0	100	0	100
BVO	BARTLESVILLE MUNICIPAL	OK	LPV	0	100	0	100	0	100
CHK	CHICKASHA MUNICIPAL	OK	LPV200	0	100	0	100	0	100
CLK	CLINTON RGNL	OK	LPV	0	100	0	100	0	100
CSM	CLINTON-SHERMAN	OK	LPV200	0	100	0	100	0	100
DUA	DURANT RGNL - EAKER FIELD	OK	LPV	0	100	0	100	0	100
DUC	HALLIBURTON FIELD	OK	LPV	0	100	0	100	0	100
ELK	ELK CITY RGNL BUSINESS	OK	LPV	0	100	0	100	0	100
F22	PERRY MUNICIPAL	OK	LPV	0	100	0	100	0	100
FDR	FREDERICK RGNL	OK	LPV200	0	100	0	100	0	100
GCM	CLAREMORE RGNL	OK	LPV	0	100	0	100	0	100
GMJ	GROVE MUNICIPAL	OK	LPV	0	100	0	100	0	100
GOK	GUTHRIE-EDMOND RGNL	OK	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
GUY	GUYMON MUNICIPAL	OK	LPV	0	100	0	100	0	100
GZL	STIGLER RGNL	OK	LPV	0	100	0	100	0	100
H71	MID-AMERICA INDUSTRIAL	OK	LPV	0	100	0	100	0	100
HBR	HOBART RGNL	OK	LPV	0	100	0	100	0	100
HHW	STAN STAMPER MUNICIPAL	OK	LPV	0	100	0	100	0	100
HSD	SUNDANCE	OK	LPV	0	100	0	100	0	100
MKO	DAVIS FIELD	OK	LPV	0	100	0	100	0	100
MLC	MC ALESTER RGNL	OK	LPV	0	100	0	100	0	100
OJA	THOMAS P STAFFORD	OK	LPV	0	100	0	100	0	100
OKC	WILL ROGERS WORLD	OK	LPV200	0	100	0	100	0	100
OKM	OKMULGEE RGNL	OK	LPV	0	100	0	100	0	100
OUN	UNIVERSITY OF OKLAHOMA WESTHEI	OK	LPV200	0	100	0	100	0	100
OWP	WILLIAM R POGUE MUNICIPAL	OK	LPV	0	100	0	100	0	100
PNC	PONCA CITY RGNL	OK	LPV	0	100	0	100	0	100
PVJ	PAULS VALLEY MUNICIPAL	OK	LPV200	0	100	0	100	0	100
PWA	WILEY POST	OK	LPV200	0	100	0	100	0	100
RCE	CLARENCE E PAGE MUNICIPAL	OK	LPV	0	100	0	100	0	100
RVS	RICHARD LLOYD JONES JR	OK	LPV200	0	100	0	100	0	100
SNL	SHAWNEE RGNL	OK	LPV200	0	100	0	100	0	100
SWO	STILLWATER RGNL	OK	LPV200	0	100	0	100	0	100
TQH	TAHLEQUAH MUNICIPAL	OK	LPV	0	100	0	100	0	100
TUL	TULSA INTL	OK	LPV200	0	100	0	100	0	100
WDG	ENID WOODRING RGNL	OK	LPV200	0	100	0	100	0	100
WWR	WEST WOODWARD	OK	LPV	0	100	0	100	0	100
CNS7	KINCARDINE	ON	LPV	0	100	0	100	0	100
CYHD	DRYDEN REGIONAL	ON	LPV	0	100	0	100	0	100
CYKF	KITCHENER / WATERLOO	ON	LPV	0	100	0	100	0	100
CYOW	OTTAWA / MACDONALDCARTIER INTL	ON	LPV	0	100	0	100	0	100
CYQT	THUNDER BAY	ON	LPV	0	100	0	100	0	100
CYTS	TIMMINS / VICTOR M POWER	ON	LPV	0	100	0	100	0	100
CYXL	SIOUX LOOKOUT	ON	LPV	0	100	0	100	0	100
AST	ASTORIA RGNL	OR	LPV	0	100	0	100	0	100
BDN	BEND MUNICIPAL	OR	LPV	0	100	0	100	0	100
BKE	BAKER CITY MUNICIPAL	OR	LPV	0	100	0	100	0	100
CVO	CORVALLIS MUNICIPAL	OR	LPV200	0	100	0	100	0	100
EUG	MAHLON SWEET FIELD	OR	LPV200	0	100	0	100	0	100
GCD	GRANT CO RGNL/OGILVIE FIELD	OR	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
HIO	PORTLAND-HILLSBORO	OR	LPV200	0	100	0	100	0	100
LGD	LA GRANDE/UNION COUNTY	OR	LPV	0	100	0	100	0	100
LKV	LAKE COUNTY	OR	LPV	0	100	0	100	0	100
LMT	CRATER LAKE-KLAMATH RGNL	OR	LPV	0	100	0	100	0	100
MMV	MC MINNVILLE MUNICIPAL	OR	LPV	0	100	0	100	0	100
ONO	ONTARIO MUNICIPAL	OR	LPV	0	100	0	100	0	100
ONP	NEWPORT MUNICIPAL	OR	LPV	0	100	0	100	0	100
OTH	SOUTHWEST OREGON RGNL	OR	LPV	0	100	0	100	89	99.806
PDT	EASTERN OREGON RGNL AT PENDLET	OR	LPV200	0	100	0	100	0	100
PDX	PORTLAND INTL	OR	LPV200	0	100	0	100	0	100
RDM	ROBERTS FIELD	OR	LPV200	0	100	0	100	0	100
S33	MADRAS MUNICIPALCIPAL	OR	LPV	0	100	0	100	0	100
S39	PRINEVILLE	OR	LP	0	100	0	100	0	100
SLE	MCNARY FLD	OR	LPV200	0	100	0	100	0	100
SPB	SCAPPOOSE INDUSTRIAL AIRPARK	OR	LPV	0	100	0	100	0	100
UAO	AURORA STATE	OR	LPV	0	100	0	100	0	100
22N	JAKE ARNER MEMORIAL	PA	LP	0	100	0	100	0	100
29D	GROVE CITY	PA	LP	0	100	0	100	0	100
2G9	SOMERSET COUNTY	PA	LPV	0	100	0	100	0	100
6G1	TITUSVILLE	PA	LPV	0	100	0	100	0	100
8G2	CORRY-LAWRENCE	PA	LPV	0	100	0	100	0	100
8N8	DANVILLE	PA	LP	0	100	0	100	0	100
9D4	DECK	PA	LPV	0	100	0	100	0	100
ABE	LEHIGH VALLEY INTL	PA	LPV200	0	100	0	100	0	100
AFJ	WASHINGTON COUNTY	PA	LPV200	0	100	0	100	0	100
AGC	ALLEGHENY COUNTY	PA	LPV200	0	100	0	100	0	100
AOO	ALTOONA-BLAIR COUNTY	PA	LPV	0	100	0	100	0	100
AVP	WILKES-BARRE/SCRANTON INTL	PA	LPV200	0	100	0	100	0	100
AXQ	CLARION COUNTY	PA	LPV	0	100	0	100	0	100
BFD	BRADFORD RGNL	PA	LPV	0	100	0	100	0	100
BTP	BUTLER COUNTY/K W SCHOLTER FIE	PA	LPV	0	100	0	100	0	100
BVI	BEAVER COUNTY	PA	LPV	0	100	0	100	0	100
CXY	CAPITAL CITY	PA	LPV	0	100	0	100	0	100
DUJ	DUBOIS RGNL	PA	LPV200	0	100	0	100	0	100
ERI	ERIE INTL/TOM RIDGE FIELD	PA	LPV	0	100	0	100	0	100
FIG	CLEARFIELD-LAWRENCE	PA	LPV	0	100	0	100	0	100
FKL	VENANGO RGNL	PA	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
FWQ	ROSTRAVER	PA	LPV	0	100	0	100	0	100
GKJ	PORT MEADVILLE	PA	LP	0	100	0	100	0	100
HMZ	BEDFORD COUNTY	PA	LPV	0	100	0	100	0	100
HZL	HAZLETON RGNL	PA	LPV	0	100	0	100	0	100
IDI	INDIANA COUNTY/JIMMY STEWART F	PA	LPV	0	100	0	100	0	100
IPT	WILLIAMSPORT RGNL	PA	LPV	0	100	0	100	0	100
JST	JOHN MURTHA JOHNSTOWN-CAMBRIA	PA	LPV200	0	100	0	100	0	100
LBE	ARNOLD PALMER RGNL	PA	LPV200	0	100	0	100	0	100
LNS	LANCASTER	PA	LPV200	0	100	0	100	0	100
LOM	WINGS FIELD	PA	LPV	0	100	0	100	0	100
MDT	HARRISBURG INTL	PA	LPV	0	100	0	100	0	100
MPO	POCONO MOUNTAINS MUNICIPAL	PA	LPV	0	100	0	100	0	100
MQS	CHESTER COUNTY G O CARLSON	PA	LPV	0	100	0	100	0	100
N38	WELLSBORO JOHNSTON	PA	LP	0	100	0	100	0	100
N79	NORTHUMBERLAND COUNTY	PA	LPV	0	100	0	100	0	100
N96	BELLEFONTE	PA	LPV	0	100	0	100	0	100
OQN	BRANDYWINE	PA	LP	0	100	0	100	0	100
OYM	ST MARYS MUNICIPAL	PA	LPV	0	100	0	100	0	100
PHL	PHILADELPHIA INTL	PA	LPV200	0	100	0	100	0	100
PIT	PITTSBURGH INTL	PA	LPV200	0	100	0	100	0	100
PNE	NORTHEAST PHILADELPHIA	PA	LPV	0	100	0	100	0	100
PSB	MID-STATE	PA	LPV	0	100	0	100	0	100
PTW	HERITAGE FIELD	PA	LPV	0	100	0	100	0	100
RDG	READING RGNL/CARL A SPAATZ FIE	PA	LPV	0	100	0	100	0	100
RVL	MIFFLIN COUNTY	PA	LPV	0	100	0	100	0	100
THV	YORK	PA	LP	0	100	0	100	0	100
UCP	NEW CASTLE MUNICIPAL	PA	LPV	0	100	0	100	0	100
UKT	QUAKERTOWN	PA	LP	0	100	0	100	0	100
UNV	UNIVERSITY PARK	PA	LPV200	0	100	0	100	0	100
VVS	JOSEPH A HARDY CONNELLSVILLE	PA	LPV	0	100	0	100	0	100
WAY	GREENE COUNTY	PA	LPV	0	100	0	100	0	100
WBW	WILKES-BARRE WYOMING VALLEY	PA	LPV	0	100	0	100	0	100
XLL	ALLENTOWN QUEEN CITY MUNICIPAL	PA	LP	0	100	0	100	0	100
ZER	SCHUYLKILL COUNTY /JOE ZERBEY/	PA	LPV200	0	100	0	100	0	100
CPN8	OPINACA	QC	LPV	0	100	0	100	0	100
CSR3	VICTORIAVILLE	QC	LPV	0	100	0	100	0	100
CTP9	KATTINIQ / DONALDSON	QC	LPV	0	100	0	100	5	99.994

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
CYEY	AMOS	QC	LPV	0	100	0	100	0	100
CYHU	MONTREAL / STHUBERT	QC	LPV	0	100	0	100	0	100
CYIF	STAUGUSTIN	QC	LPV	0	100	0	100	54	99.497
CYMX	MONTREAL (MIRABEL INTL)	QC	LPV	0	100	0	100	0	100
CYQB	QUEBEC / JEAN LESAGE INTL	QC	LPV	0	100	0	100	0	100
CYRI	RIVIEREDULOUP	QC	LPV	0	100	0	100	0	100
CYRQ	TROISRIVIERES	QC	LPV	0	100	0	100	0	100
CYVB	BONAVENTURE	QC	LPV	0	100	0	100	0	100
CYVP	KUUJJUAQ	QC	LPV	52	99.679	52	99.679	52	99.679
CYYY	MONTJOLI	QC	LPV	0	100	0	100	0	100
BID	BLOCK ISLAND STATE	RI	LPV	0	100	0	100	0	100
OQU	QUONSET STATE	RI	LPV	0	100	0	100	0	100
PVD	THEODORE FRANCIS GREEN STATE	RI	LPV200	0	100	0	100	0	100
SFZ	NORTH CENTRAL STATE	RI	LPV	0	100	0	100	0	100
35A	UNION COUNTY` TROY SHELTON FIE	SC	LP	0	100	0	100	0	100
6J0	LEXINGTON COUNTY AT PELION	SC	LPV	0	100	0	100	0	100
AIK	AIKEN MUNICIPAL	SC	LPV200	0	100	0	100	0	100
AND	ANDERSON RGNL	SC	LPV200	0	100	0	100	0	100
AQX	ALLENDALE COUNTY	SC	LPV	0	100	0	100	0	100
ARW	BEAUFORT COUNTY	SC	LPV200	0	100	0	100	0	100
BBP	MARLBORO COUNTY JETPORT - H E	SC	LPV	0	100	0	100	0	100
BNL	BARNWELL RGNL	SC	LPV	0	100	0	100	0	100
CAE	COLUMBIA METROPOLITAN	SC	LPV200	0	100	0	100	0	100
CDN	WOODWARD FIELD	SC	LPV	0	100	0	100	0	100
CEU	OCONEE COUNTY RGNL	SC	LPV200	0	100	0	100	0	100
CHS	CHARLESTON AFB/INTL	SC	LPV200	0	100	0	100	0	100
CQW	CHERAW MUNICIPAL/LYNCH BELLINGER FI	SC	LPV	0	100	0	100	0	100
CRE	GRAND STRAND	SC	LPV200	0	100	0	100	0	100
DCM	CHESTER CATAWBA RGNL	SC	LPV	0	100	0	100	0	100
DYB	SUMMERVILLE	SC	LPV200	0	100	0	100	0	100
FDW	FAIRFIELD COUNTY	SC	LPV	0	100	0	100	0	100
FLO	FLORENCE RGNL	SC	LPV	0	100	0	100	0	100
GGE	GEORGETOWN COUNTY	SC	LPV	0	100	0	100	0	100
GMU	GREENVILLE DOWNTOWN	SC	LPV200	0	100	0	100	0	100
GRD	GREENWOOD COUNTY	SC	LPV	0	100	0	100	0	100
GSP	GREENVILLE SPARTANBURG INTL	SC	LPV200	0	100	0	100	0	100

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
GYH	DONALDSON FIELD	SC	LPV	0	100	0	100	0	100
HYW	CONWAY-HORRY COUNTY	SC	LPV	0	100	0	100	0	100
JZI	CHARLESTON EXECUTIVE	SC	LPV200	0	100	0	100	0	100
LKR	LANCASTER COUNTY-MC WHIRTER FI	SC	LPV200	0	100	0	100	0	100
LQK	PICKENS COUNTY	SC	LPV	0	100	0	100	0	100
LRO	MT PLEASANT RGNL-FAISON FIELD	SC	LPV	0	100	0	100	0	100
LUX	LAURENS COUNTY	SC	LPV	0	100	0	100	0	100
MAO	MARION COUNTY	SC	LPV	0	100	0	100	0	100
MKS	BERKELEY COUNTY	SC	LPV	0	100	0	100	0	100
MYR	MYRTLE BEACH INTL	SC	LPV200	0	100	0	100	0	100
OGB	ORANGEBURG MUNICIPAL	SC	LPV200	0	100	0	100	0	100
PYG	PAGELAND	SC	LPV	0	100	0	100	0	100
RBW	LOWCOUNTRY RGNL	SC	LPV200	0	100	0	100	0	100
SMS	SUMTER	SC	LPV200	0	100	0	100	0	100
SPA	SPARTANBURG DOWNTOWN MEMORIAL	SC	LPV200	0	100	0	100	0	100
UDG	DARLINGTON COUNTY	SC	LPV	0	100	0	100	0	100
UZA	ROCK HILL/YORK CO/BRYANT FIELD	SC	LPV200	0	100	0	100	0	100
0D8	GETTYSBURG MUNICIPAL	SD	LP	0	100	0	100	0	100
49B	STURGIS MUNICIPAL	SD	LPV	0	100	0	100	0	100
8D3	SISSETON MUNICIPAL	SD	LPV	0	100	0	100	0	100
8V3	PARKSTON MUNICIPAL	SD	LPV	0	100	0	100	0	100
9D0	HIGHMORE MUNICIPAL	SD	LPV	0	100	0	100	0	100
9D1	GREGORY MUNICIPAL - FLYNN FLD	SD	LPV	0	100	0	100	0	100
9V6	MARTIN MUNICIPAL	SD	LPV	0	100	0	100	0	100
ABR	ABERDEEN RGNL	SD	LPV200	0	100	0	100	0	100
AGZ	WAGNER MUNICIPAL	SD	LPV	0	100	0	100	0	100
ATY	WATERTOWN RGNL	SD	LPV200	0	100	0	100	0	100
BKX	BROOKINGS RGNL	SD	LPV200	0	100	0	100	0	100
EFC	BELLE FOURCHE MUNICIPAL	SD	LPV	0	100	0	100	0	100
FSD	JOE FOSS FIELD	SD	LPV200	0	100	0	100	0	100
HON	HURON RGNL	SD	LPV200	0	100	0	100	0	100
HSR	HOT SPRINGS MUNICIPAL	SD	LP	0	100	0	100	0	100
ICR	WINNER RGNL	SD	LPV	0	100	0	100	0	100
LEM	LEMMON MUNICIPAL	SD	LPV	0	100	0	100	0	100
MBG	MOBRIDGE MUNICIPAL	SD	LPV	0	100	0	100	0	100
MDS	MADISON MUNICIPAL	SD	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
MHE	MITCHELL MUNICIPAL	SD	LPV	0	100	0	100	0	100
MKA	MILLER MUNICIPAL	SD	LPV	0	100	0	100	0	100
PHP	PHILIP	SD	LPV	0	100	0	100	0	100
PIR	PIERRE RGNL	SD	LPV	0	100	0	100	0	100
RAP	RAPID CITY RGNL	SD	LPV200	0	100	0	100	0	100
SPF	BLACK HILLS-CLYDE ICE FIELD	SD	LPV	0	100	0	100	0	100
VMR	HAROLD DAVIDSON FIELD	SD	LPV	0	100	0	100	0	100
YKN	CHAN GURNEY MUNICIPAL	SD	LPV200	0	100	0	100	0	100
CKQ8	MCARTHUR RIVER	SK	LPV	0	100	0	100	0	100
CYKJ	KEY LAKE	SK	LPV	0	100	0	100	0	100
0A3	SMITHVILLE MUNICIPAL	TN	LPV	0	100	0	100	0	100
0M3	JOHN A BAKER FLD	TN	LP	0	100	0	100	0	100
0M4	BENTON COUNTY	TN	LPV	0	100	0	100	0	100
0M5	HUMPHREYS COUNTY	TN	LP	0	100	0	100	0	100
1A3	MARTIN CAMPBELL FIELD	TN	LP	0	100	0	100	0	100
1M5	PORTLAND MUNICIPAL	TN	LPV	0	100	0	100	0	100
2A0	MARK ANTON	TN	LPV	0	100	0	100	0	100
2M2	LAWRENCEBURG-LAWRENCE COUNTY	TN	LPV	0	100	0	100	0	100
2M8	CHARLES W BAKER	TN	LPV	0	100	0	100	0	100
3A2	NEW TAZEWELL MUNICIPAL	TN	LP	0	100	0	100	0	100
3M7	LAFAYETTE MUNICIPAL	TN	LPV	0	100	0	100	0	100
8A3	LIVINGSTON MUNICIPAL	TN	LP	0	100	0	100	0	100
BGF	WINCHESTER MUNICIPAL	TN	LPV	0	100	0	100	0	100
BNA	NASHVILLE INTL	TN	LPV200	0	100	0	100	0	100
CHA	LOVELL FIELD	TN	LPV200	0	100	0	100	0	100
CKV	OUTLAW FIELD	TN	LPV	0	100	0	100	0	100
CSV	CROSSVILLE MEMORIAL-WHITSON FI	TN	LPV200	0	100	0	100	0	100
DYR	DYERSBURG RGNL	TN	LPV	0	100	0	100	0	100
FYE	FAYETTE COUNTY	TN	LPV	0	100	0	100	0	100
FYM	FAYETTEVILLE MUNICIPAL	TN	LPV	0	100	0	100	0	100
GCY	GREENEVILLE-GREENE COUNTY MUNICIPAL	TN	LPV	0	100	0	100	0	100
GHM	CENTERVILLE MUNICIPAL	TN	LP	0	100	0	100	0	100
GKT	GATLINBURG-PIGEON FORGE	TN	LPV	0	100	0	100	0	100
GZS	ABERNATHY FIELD	TN	LPV	0	100	0	100	0	100
HZD	CARROLL COUNTY	TN	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
JAU	CAMPBELL COUNTY	TN	LP	0	100	0	100	0	100
JWN	JOHN C TUNE	TN	LPV	0	100	0	100	0	100
LUG	ELLINGTON	TN	LPV	0	100	0	100	0	100
M01	GENERAL DEWITT SPAIN	TN	LPV	0	100	0	100	0	100
M08	WILLIAM L WHITEHURST FIELD	TN	LP	0	100	0	100	0	100
M33	SUMNER COUNTY RGNL	TN	LPV	0	100	0	100	0	100
M53	HUMBOLDT MUNICIPAL	TN	LPV	0	100	0	100	0	100
M54	LEBANON MUNICIPAL	TN	LPV	0	100	0	100	0	100
M91	SPRINGFIELD ROBERTSON COUNTY	TN	LPV	0	100	0	100	0	100
MBT	MURFREESBORO MUNICIPAL	TN	LPV	0	100	0	100	0	100
MEM	MEMPHIS INTL	TN	LPV200	0	100	0	100	0	100
MKL	MC KELLAR-SIPES RGNL	TN	LPV200	0	100	0	100	0	100
MMI	MCMINN COUNTY	TN	LPV	0	100	0	100	0	100
MNV	MONROE COUNTY	TN	LPV	0	100	0	100	0	100
MOR	MOORE-MURRELL	TN	LPV	0	100	0	100	0	100
MQY	SMYRNA	TN	LPV200	0	100	0	100	0	100
MRC	MAURY COUNTY	TN	LPV	0	100	0	100	0	100
NQA	MILLINGTON RGNL JETPORT	TN	LPV200	0	100	0	100	0	100
PHT	HENRY COUNTY	TN	LPV200	0	100	0	100	0	100
PVE	BEECH RIVER RGNL	TN	LPV	0	100	0	100	0	100
RKW	ROCKWOOD MUNICIPAL	TN	LPV	0	100	0	100	0	100
RNC	WARREN COUNTY MEMORIAL	TN	LPV	0	100	0	100	0	100
RZR	CLEVELAND RGNL JETPORT	TN	LPV200	0	100	0	100	0	100
SCX	SCOTT MUNICIPAL	TN	LPV	0	100	0	100	0	100
SNH	SAVANNAH-HARDIN COUNTY	TN	LPV	0	100	0	100	0	100
SRB	UPPER CUMBERLAND RGNL	TN	LPV	0	100	0	100	0	100
SYI	BOMAR FIELD-SHELBYVILLE MUNICIPAL	TN	LPV	0	100	0	100	0	100
SZY	ROBERT SIBLEY	TN	LPV	0	100	0	100	0	100
TGC	GIBSON COUNTY	TN	LP	0	100	0	100	0	100
THA	TULLAHOMA RGNL ARPT/WM NORTHER	TN	LPV	0	100	0	100	0	100
TRI	TRI-CITIES RGNL TN/VA	TN	LPV200	0	100	0	100	0	100
TYS	MC GHEE TYSON	TN	LPV200	0	100	0	100	0	100
UCY	EVERETT-STEWART RGNL	TN	LPV200	0	100	0	100	0	100
11R	BRENHAM MUNICIPAL	TX	LPV	0	100	0	100	0	100
2F5	LAMESA MUNICIPAL	TX	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
2R9	KARNES COUNTY	TX	LP	0	100	0	100	0	100
3R9	LAKEWAY AIRPARK	TX	LP	0	100	0	100	0	100
3T5	FAYETTE RGNL AIR CENTER	TX	LPV	0	100	0	100	0	100
45R	HAWTHORNE FIELD	TX	LP	0	100	0	100	0	100
4T2	KENNETH COPELAND	TX	LPV	0	100	0	100	0	100
50R	LOCKHART MUNICIPAL	TX	LPV	0	100	0	100	0	100
5C1	BOERNE STAGE FIELD	TX	LP	0	100	0	100	0	100
5T9	MAVERICK COUNTY MEMORIAL INTL	TX	LPV	0	100	0	100	0	100
60R	NAVASOTA MUNICIPAL	TX	LPV	0	100	0	100	0	100
6R3	CLEVELAND MUNICIPAL	TX	LPV	0	100	0	100	0	100
77F	WINTERS MUNICIPAL	TX	LP	0	100	0	100	0	100
8F3	CROSBYTON MUNICIPAL	TX	LP	0	100	0	100	0	100
ABI	ABILENE RGNL	TX	LPV200	0	100	0	100	0	100
ACT	WACO RGNL	TX	LPV200	0	100	0	100	0	100
ADS	ADDISON	TX	LPV	0	100	0	100	0	100
AFW	FORT WORTH ALLIANCE	TX	LPV200	0	100	0	100	0	100
ALI	ALICE INTL	TX	LPV	0	100	0	100	0	100
AMA	RICK HUSBAND AMARILLO INTL	TX	LPV200	0	100	0	100	0	100
ARM	WHARTON RGNL	TX	LPV	0	100	0	100	0	100
ASL	HARRISON COUNTY	TX	LPV	0	100	0	100	0	100
AUS	AUSTIN-BERGSTROM INTL	TX	LPV200	0	100	0	100	0	100
AXH	HOUSTON-SOUTHWEST	TX	LPV	0	100	0	100	0	100
BAZ	NEW BRAUNFELS RGNL	TX	LPV	0	100	0	100	0	100
BBD	CURTIS FIELD	TX	LPV	0	100	0	100	0	100
BKD	STEPHENS COUNTY	TX	LP	0	100	0	100	0	100
BPG	BIG SPRING MC MAHON-WRINKLE	TX	LPV200	0	100	0	100	0	100
BPT	JACK BROOKS RGNL	TX	LPV200	0	100	0	100	0	100
BRO	BROWNSVILLE/SOUTH PADRE ISLAND	TX	LPV200	0	100	0	100	0	100
BWD	BROWNWOOD RGNL	TX	LPV	0	100	0	100	0	100
BYY	BAY CITY RGNL	TX	LPV	0	100	0	100	0	100
CDS	CHILDRESS MUNICIPAL	TX	LPV200	0	100	0	100	0	100
CFD	COULTER FIELD	TX	LPV	0	100	0	100	0	100
CLL	EASTERWOOD FIELD	TX	LPV200	0	100	0	100	0	100
CNW	TSTC WACO	TX	LPV200	0	100	0	100	0	100
COM	COLEMAN MUNICIPAL	TX	LPV	0	100	0	100	0	100
COT	COTULLA-LA SALLE COUNTY	TX	LPV	0	100	0	100	0	100
CPT	CLEBURNE RGNL	TX	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
CRP	CORPUS CHRISTI INTL	TX	LPV200	0	100	0	100	0	100
CVB	CASTROVILLE MUNICIPAL	TX	LPV	0	100	0	100	0	100
CWC	KICKAPOO DOWNTOWN	TX	LPV	0	100	0	100	0	100
CXO	CONROE-NORTH HOUSTON RGNL	TX	LPV200	0	100	0	100	0	100
CZT	DIMMIT COUNTY	TX	LPV	0	100	0	100	0	100
DAL	DALLAS LOVE FIELD	TX	LPV200	0	100	0	100	0	100
DFW	DALLAS-FORT WORTH INTL	TX	LPV200	0	100	0	100	0	100
DHT	DALHART MUNICIPAL	TX	LPV	0	100	0	100	0	100
DKR	HOUSTON COUNTY	TX	LP	0	100	0	100	0	100
DRT	DEL RIO INTL	TX	LPV	0	100	0	100	0	100
DTO	DENTON ENTERPRISE	TX	LPV200	0	100	0	100	0	100
DUX	MOORE COUNTY	TX	LPV200	0	100	0	100	0	100
DWH	DAVID WAYNE HOOKS MEMORIAL	TX	LPV	0	100	0	100	0	100
E01	ROY HURD MEMORIAL	TX	LP	0	100	0	100	0	100
E11	ANDREWS COUNTY	TX	LPV	0	100	0	100	0	100
E19	GRUVER MUNICIPAL	TX	LP	0	100	0	100	0	100
E30	BRUCE FIELD	TX	LPV	0	100	0	100	0	100
E38	ALPINE-CASPARIS MUNICIPAL	TX	LP	0	100	0	100	0	100
EBG	SOUTH TEXAS INTL AT EDINBURG	TX	LPV	0	100	0	100	0	100
EDC	AUSTIN EXECUTIVE	TX	LPV200	0	100	0	100	0	100
EFD	ELLINGTON	TX	LPV200	0	100	0	100	0	100
ELA	EAGLE LAKE	TX	LP	0	100	0	100	0	100
ELP	EL PASO INTL	TX	LP	0	100	0	100	0	100
ERV	KERRVILLE MUNICIPAL/LOUIS SCHREINER	TX	LPV	0	100	0	100	0	100
ETN	EASTLAND MUNICIPAL	TX	LP	0	100	0	100	0	100
F00	JONES FIELD	TX	LPV	0	100	0	100	0	100
F05	WILBARGER COUNTY	TX	LPV	0	100	0	100	0	100
F49	SLATON MUNICIPAL	TX	LPV	0	100	0	100	0	100
F98	YOAKUM COUNTY	TX	LPV	0	100	0	100	0	100
FST	FORT STOCKTON-PECOS COUNTY	TX	LPV	0	100	0	100	0	100
FTW	FORT WORTH MEACHAM INTL	TX	LPV200	0	100	0	100	0	100
FWS	FORT WORTH SPINKS	TX	LPV200	0	100	0	100	0	100
GDJ	GRANBURY RGNL	TX	LPV	0	100	0	100	0	100
GGG	EAST TEXAS RGNL	TX	LPV	0	100	0	100	0	100
GKY	ARLINGTON MUNICIPAL	TX	LPV200	0	100	0	100	0	100
GLE	GAINESVILLE MUNICIPAL	TX	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
GLS	SCHOLES INTL AT GALVESTON	TX	LPV200	0	100	0	100	0	100
GNC	GAINES COUNTY	TX	LPV	0	100	0	100	0	100
GRK	ROBERT GRAY AAF	TX	LPV200	0	100	0	100	0	100
GTU	GEORGETOWN MUNICIPAL	TX	LPV	0	100	0	100	0	100
GVT	MAJORS	TX	LPV200	0	100	0	100	0	100
GYI	NORTH TEXAS RGNL/PERRIN FIELD	TX	LPV200	0	100	0	100	0	100
HBV	JIM HOGG COUNTY	TX	LPV	0	100	0	100	0	100
HDO	SOUTH TEXAS RGNL AT HONDO	TX	LPV	0	100	0	100	0	100
HHF	HEMPHILL COUNTY	TX	LPV	0	100	0	100	0	100
HOU	WILLIAM P HOBBY	TX	LPV200	0	100	0	100	0	100
HQZ	MESQUITE METRO	TX	LPV	0	100	0	100	0	100
HRL	VALLEY INTL	TX	LPV200	0	100	0	100	0	100
HRX	HEREFORD MUNICIPAL	TX	LPV200	0	100	0	100	0	100
HYI	SAN MARCOS REGIONAL	TX	LPV200	0	100	0	100	0	100
IAH	GEORGE BUSH INTERCONTINENTAL/H	TX	LPV200	0	100	0	100	0	100
IKG	KLEBERG COUNTY	TX	LPV	0	100	0	100	0	100
ILE	SKYLARK FIELD	TX	LPV200	0	100	0	100	0	100
INJ	HILLSBORO MUNICIPAL	TX	LPV	0	100	0	100	0	100
INK	WINKLER COUNTY	TX	LPV200	0	100	0	100	0	100
IWS	WEST HOUSTON	TX	LP	0	100	0	100	0	100
JAS	JASPER COUNTY-BELL FIELD	TX	LPV	0	100	0	100	0	100
JSO	CHEROKEE COUNTY	TX	LPV200	0	100	0	100	0	100
JWY	MID-WAY RGNL	TX	LPV200	0	100	0	100	0	100
JXI	FOX STEPHENS FIELD - GILMER MU	TX	LP	0	100	0	100	0	100
LBB	LUBBOCK PRESTON SMITH INTL	TX	LPV200	0	100	0	100	0	100
LBX	TEXAS GULF COAST RGNL	TX	LPV	0	100	0	100	0	100
LFK	ANGELINA COUNTY	TX	LPV	0	100	0	100	0	100
LHB	HEARNE MUNICIPAL	TX	LPV200	0	100	0	100	0	100
LIU	LITTLEFIELD TAYLOR BROWN MUNICIPAL	TX	LPV	0	100	0	100	0	100
LLN	LEVELLAND MUNICIPAL	TX	LPV	0	100	0	100	0	100
LNC	LANCASTER RGNL	TX	LPV200	0	100	0	100	0	100
LRD	LAREDO INTL	TX	LPV200	0	100	0	100	0	100
LUD	DECATUR MUNICIPAL	TX	LPV	0	100	0	100	0	100
LVJ	PEARLAND RGNL	TX	LPV	0	100	0	100	0	100
LXY	MEXIA-LIMESTONE CO	TX	LP	0	100	0	100	0	100
MAF	MIDLAND INTL AIR AND SPACE POR	TX	LPV200	0	100	0	100	0	100

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
MDD	MIDLAND AIRPARK	TX	LPV	0	100	0	100	0	100
MFE	MC ALLEN MILLER INTL	TX	LPV200	0	100	0	100	0	100
MKN	COMANCHE COUNTY-CITY	TX	LPV	0	100	0	100	0	100
MNZ	HAMILTON MUNICIPAL	TX	LPV	0	100	0	100	0	100
MWL	MINERAL WELLS	TX	LPV200	0	100	0	100	0	100
OCH	NACOGDOCHES A L MANGHAM JR RGN	TX	LPV200	0	100	0	100	0	100
ODO	ODESSA-SCHLEMEYER FIELD	TX	LPV200	0	100	0	100	0	100
ONY	OLNEY MUNICIPAL	TX	LPV	0	100	0	100	0	100
ORG	ORANGE COUNTY	TX	LPV	0	100	0	100	0	100
PEQ	PECOS MUNICIPAL	TX	LPV200	0	100	0	100	0	100
PIL	PORT ISABEL-CAMERON COUNTY	TX	LPV	0	100	0	100	0	100
PKV	CALHOUN COUNTY	TX	LPV	0	100	0	100	0	100
PPA	PERRY LEFORS FIELD	TX	LPV	0	100	0	100	0	100
PRX	COX FIELD	TX	LPV	0	100	0	100	0	100
PSX	PALACIOS MUNICIPAL	TX	LPV	0	100	0	100	0	100
PVW	HALE COUNTY	TX	LPV	0	100	0	100	0	100
PWG	MC GREGOR EXECUTIVE	TX	LPV	0	100	0	100	0	100
PYX	PERRYTON OCHILTREE COUNTY	TX	LPV	0	100	0	100	0	100
RAS	MUSTANG BEACH	TX	LPV	0	100	0	100	0	100
RBD	DALLAS EXECUTIVE	TX	LPV	0	100	0	100	0	100
RBO	NUECES COUNTY	TX	LPV	0	100	0	100	0	100
RKP	ARANSAS CO	TX	LPV	0	100	0	100	0	100
RYW	LAGO VISTA TX - RUSTY ALLEN	TX	LPV	0	100	0	100	0	100
SAT	SAN ANTONIO INTL	TX	LPV200	0	100	0	100	0	100
SGR	SUGAR LAND RGNL	TX	LPV200	0	100	0	100	0	100
SJT	SAN ANGELO RGNL/MATHIS FIELD	TX	LPV	0	100	0	100	0	100
SLR	SULPHUR SPRINGS MUNICIPAL	TX	LPV200	0	100	0	100	0	100
SNK	WINSTON FIELD	TX	LPV200	0	100	0	100	0	100
SWI	SHERMAN MUNICIPAL	TX	LP	0	100	0	100	0	100
SWW	AVENGER FIELD	TX	LPV	0	100	0	100	0	100
T23	ALBANY MUNICIPAL	TX	LPV	0	100	0	100	0	100
T41	LA PORTE MUNICIPAL	TX	LPV	0	100	0	100	0	100
T65	MID VALLEY	TX	LPV	0	100	0	100	0	100
T74	TAYLOR MUNICIPAL	TX	LPV	0	100	0	100	0	100
T78	LIBERTY MUNICIPAL	TX	LP	0	100	0	100	0	100
T82	GILLESPIE COUNTY	TX	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
TDW	TRADEWIND	TX	LPV	0	100	0	100	0	100
TFP	MCCAMPBELL-PORTER	TX	LPV	0	100	0	100	0	100
TKI	MCKINNEY NATIONAL	TX	LPV200	0	100	0	100	0	100
TME	HOUSTON EXECUTIVE	TX	LPV	0	100	0	100	0	100
TPL	DRAUGHON-MILLER CENTRAL TEXAS	TX	LPV200	0	100	0	100	0	100
TRL	TERRELL MUNICIPAL	TX	LPV	0	100	0	100	0	100
TYR	TYLER POUNDS RGNL	TX	LPV200	0	100	0	100	0	100
UTS	HUNTSVILLE MUNICIPAL	TX	LPV	0	100	0	100	0	100
VCT	VICTORIA RGNL	TX	LPV200	0	100	0	100	0	100
XBP	BRIDGEPORT MUNICIPAL	TX	LPV	0	100	0	100	0	100
41U	MANTI-EPHRAIM	UT	LPV	0	100	0	100	0	100
74V	ROOSEVELT MUNICIPAL	UT	LPV	0	100	0	100	0	100
BCE	BRYCE CANYON	UT	LPV	0	100	0	100	0	100
BDG	BLANDING MUNICIPAL	UT	LPV	0	100	0	100	0	100
BMC	BRIGHAM CITY	UT	LP	0	100	0	100	0	100
CDC	CEDAR CITY RGNL	UT	LPV	0	100	0	100	0	100
DTA	DELTA MUNICIPAL	UT	LP	0	100	0	100	0	100
ENV	WENDOVER	UT	LPV	0	100	0	100	0	100
FOM	FILLMORE MUNICIPAL	UT	LPV	0	100	0	100	0	100
LGU	LOGAN-CACHE	UT	LPV	0	100	0	100	0	100
OGD	OGDEN-HINCKLEY	UT	LPV	0	100	0	100	0	100
PUC	CARBON COUNTY RGNL/BUCK DAVIS	UT	LP	0	100	0	100	0	100
PVU	PROVO MUNICIPAL	UT	LPV200	0	100	0	100	0	100
RIF	RICHFIELD MUNICIPAL	UT	LP	0	100	0	100	0	100
SGU	ST GEORGE RGNL	UT	LPV	0	100	0	100	0	100
SLC	SALT LAKE CITY INTL	UT	LPV200	0	100	0	100	0	100
TVY	BOLINDER FIELD-TOOELE VALLEY	UT	LPV200	0	100	0	100	0	100
U14	NEPHI MUNICIPAL	UT	LPV	0	100	0	100	0	100
U55	PANGUITCH MUNICIPAL	UT	LPV200	0	100	0	100	0	100
VEL	VERNAL RGNL	UT	LP	0	100	0	100	0	100
0V4	BROOKNEAL/CAMPBELL COUNTY	VA	LPV	0	100	0	100	0	100
0VG	LEE COUNTY	VA	LPV	0	100	0	100	0	100
AVC	MECKLENBURG-BRUNSWICK RGNL	VA	LPV	0	100	0	100	0	100
BCB	VIRGINIA TECH/MONTGOMERY EXECU	VA	LPV	0	100	0	100	0	100
BKT	ALLEN C PERKINSON BLACKSTONE A	VA	LPV	0	100	0	100	0	100
CHO	CHARLOTTESVILLE-ALBEMARLE	VA	LPV200	0	100	0	100	0	100
CJR	CULPEPER RGNL	VA	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
CPK	CHESAPEAKE RGNL	VA	LPV200	0	100	0	100	0	100
DAN	DANVILLE RGNL	VA	LPV200	0	100	0	100	0	100
EMV	EMPORIA-GREENSVILLE RGNL	VA	LPV	0	100	0	100	0	100
FCI	RICHMOND EXECUTIVE-CHESTERFIEL	VA	LPV	0	100	0	100	0	100
FKN	FRANKLIN MUNICIPAL-JOHN BEVERLY ROS	VA	LPV	0	100	0	100	0	100
FVX	FARMVILLE RGNL	VA	LPV	0	100	0	100	0	100
FYJ	MIDDLE PENINSULA RGNL	VA	LPV	0	100	0	100	0	100
HLX	TWIN COUNTY	VA	LPV	0	100	0	100	0	100
HSP	INGALLS FIELD	VA	LPV	0	100	0	100	0	100
HWY	WARRENTON-FAUQUIER	VA	LPV200	0	100	0	100	0	100
JFZ	TAZEWELL COUNTY	VA	LPV	0	100	0	100	0	100
JYO	LEESBURG EXECUTIVE	VA	LPV	0	100	0	100	0	100
LKU	LOUISA COUNTY/FREEMAN FIELD	VA	LPV	0	100	0	100	0	100
LNP	LONESOME PINE	VA	LPV	0	100	0	100	0	100
LUA	LURAY CAVERNS	VA	LP	0	100	0	100	0	100
LYH	LYNCHBURG RGNL/PRESTON GLENN F	VA	LPV	0	100	0	100	0	100
MFV	ACCOMACK COUNTY	VA	LPV	0	100	0	100	0	100
MKJ	MOUNTAIN EMPIRE	VA	LPV	0	100	0	100	0	100
MTV	BLUE RIDGE	VA	LPV	0	100	0	100	0	100
OFP	HANOVER COUNTY MUNICIPAL	VA	LPV	0	100	0	100	0	100
OKV	WINCHESTER RGNL	VA	LPV200	0	100	0	100	0	100
ORF	NORFOLK INTL	VA	LPV200	0	100	0	100	0	100
PHF	NEWPORT NEWS/WILLIAMSBURG INTL	VA	LPV200	0	100	0	100	0	100
PSK	NEW RIVER VALLEY	VA	LPV200	0	100	0	100	0	100
PTB	DINWIDDIE COUNTY	VA	LPV	0	100	0	100	0	100
PVG	HAMPTON ROADS EXECUTIVE	VA	LPV200	0	100	0	100	0	100
RIC	RICHMOND INTL	VA	LPV200	0	100	0	100	0	100
RMN	STAFFORD RGNL	VA	LPV	0	100	0	100	0	100
ROA	ROANOKE-BLACKSBURG RGNL/WOODRU	VA	LPV	0	100	0	100	0	100
SFQ	SUFFOLK EXECUTIVE	VA	LPV	0	100	0	100	0	100
SHD	SHENANDOAH VALLEY RGNL	VA	LPV200	0	100	0	100	0	100
VJI	VIRGINIA HIGHLANDS	VA	LPV	0	100	0	100	0	100
W78	WILLIAM M TUCK	VA	LPV	0	100	0	100	0	100
W96	NEW KENT COUNTY	VA	LP	0	100	0	100	0	100
WAL	WALLOPS FLIGHT FACILITY	VA	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
XSA	TAPPAHANNOCK-ESSEX COUNTY	VA	LPV	0	100	0	100	0	100
BTV	BURLINGTON INTL	VT	LPV200	0	100	0	100	0	100
EFK	NEWPORT STATE	VT	LP	0	100	0	100	0	100
FSO	FRANKLIN COUNTY STATE	VT	LPV	0	100	0	100	0	100
MPV	EDWARD F KNAPP STATE	VT	LPV	0	100	0	100	0	100
MVL	MORRISVILLE-STOWE STATE	VT	LPV	0	100	0	100	0	100
RUT	RUTLAND - SOUTHERN VERMONT RGN	VT	LPV	0	100	0	100	0	100
ALW	WALLA WALLA RGNL	WA	LPV200	0	100	0	100	0	100
AWO	ARLINGTON MUNICIPAL	WA	LPV200	0	100	0	100	0	100
BLI	BELLINGHAM INTL	WA	LPV200	0	100	0	100	0	100
BVS	SKAGIT RGNL	WA	LPV	0	100	0	100	0	100
CLM	WILLIAM R FAIRCHILD INTL	WA	LPV	0	100	0	100	0	100
CLS	CHEHALIS-CENTRALIA	WA	LPV	0	100	0	100	0	100
DEW	DEER PARK	WA	LPV	0	100	0	100	0	100
EPH	EPHRATA MUNICIPAL	WA	LPV	0	100	0	100	0	100
FHR	FRIDAY HARBOR	WA	LPV	0	100	0	100	0	100
GEG	SPOKANE INTL	WA	LPV200	0	100	0	100	0	100
HQM	BOWERMAN	WA	LPV200	0	100	0	100	0	100
MWH	GRANT CO INTL	WA	LPV200	0	100	0	100	0	100
OLM	OLYMPIA RGNL	WA	LPV	0	100	0	100	0	100
ORS	ORCAS ISLAND	WA	LP	0	100	0	100	0	100
PAE	SNOHOMISH COUNTY (PAINE FLD)	WA	LPV200	0	100	0	100	0	100
PLU	PIERCE COUNTY - THUN FIELD	WA	LPV	0	100	0	100	0	100
PSC	TRI-CITIES	WA	LPV200	0	100	0	100	0	100
PWT	BREMERTON NATIONAL	WA	LPV200	0	100	0	100	0	100
RLD	RICHLAND	WA	LPV	0	100	0	100	0	100
RNT	RENTON MUNICIPAL	WA	LPV	0	100	0	100	0	100
SEA	SEATTLE-TACOMA INTL	WA	LPV200	0	100	0	100	0	100
SFF	FELTS FIELD	WA	LPV	0	100	0	100	0	100
SHN	SANDERSON FIELD	WA	LPV	0	100	0	100	0	100
TDO	ED CARLSON MEMORIAL FIELD - SO	WA	LPV	0	100	0	100	0	100
TIW	TACOMA NARROWS	WA	LPV	0	100	0	100	0	100
YKM	YAKIMA AIR TERMINAL/MCALLISTER	WA	LPV200	0	100	0	100	0	100
3T3	BOYCEVILLE MUNICIPAL	WI	LPV	0	100	0	100	0	100
57C	EAST TROY MUNICIPAL	WI	LPV	0	100	0	100	0	100
82C	MAUSTON-NEW LISBON UNION	WI	LP	0	100	0	100	0	100
8D1	NEW HOLSTEIN MUNICIPAL	WI	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
AHH	AMERY MUNICIPAL	WI	LP	0	100	0	100	0	100
AIG	LANGLADE COUNTY	WI	LPV	0	100	0	100	0	100
ARV	LAKELAND/NOBLE F LEE MEMORIAL	WI	LPV	0	100	0	100	0	100
ASX	JOHN F KENNEDY MEMORIAL	WI	LPV	0	100	0	100	0	100
ATW	APPLETON INTL	WI	LPV200	0	100	0	100	0	100
AUW	WAUSAU DOWNTOWN	WI	LPV200	0	100	0	100	0	100
BCK	BLACK RIVER FALLS AREA	WI	LPV	0	100	0	100	0	100
BUU	BURLINGTON MUNICIPAL	WI	LP	0	100	0	100	0	100
C29	MIDDLETON MUNICIPAL - MOREY FIELD	WI	LPV	0	100	0	100	0	100
C35	REEDSBURG MUNICIPAL	WI	LP	0	100	0	100	0	100
C47	PORTAGE MUNICIPAL	WI	LP	0	100	0	100	0	100
CLI	CLINTONVILLE MUNICIPAL	WI	LPV	0	100	0	100	0	100
CMY	SPARTA/FORT MC COY	WI	LPV	0	100	0	100	0	100
CWA	CENTRAL WISCONSIN	WI	LPV200	0	100	0	100	0	100
DLL	BARABOO WISCONSIN DELLS	WI	LPV	0	100	0	100	0	100
EAU	CHIPPEWA VALLEY RGNL	WI	LPV200	0	100	0	100	0	100
EGV	EAGLE RIVER UNION	WI	LPV	0	100	0	100	0	100
ENW	KENOSHA RGNL	WI	LPV200	0	100	0	100	0	100
ETB	WEST BEND MUNICIPAL	WI	LPV	0	100	0	100	0	100
EZS	SHAWANO MUNICIPAL	WI	LPV	0	100	0	100	0	100
FLD	FOND DU LAC COUNTY	WI	LPV	0	100	0	100	0	100
GRB	GREEN BAY-AUSTIN STRAUBEL INTL	WI	LPV200	0	100	0	100	0	100
GTG	GRANTSBURG MUNICIPAL	WI	LP	0	100	0	100	0	100
HXF	HARTFORD MUNICIPAL	WI	LPV	0	100	0	100	0	100
HYR	SAWYER COUNTY	WI	LPV	0	100	0	100	0	100
ISW	ALEXANDER FIELD SOUTH WOOD COU	WI	LPV	0	100	0	100	0	100
JVL	SOUTHERN WISCONSIN RGNL	WI	LPV200	0	100	0	100	0	100
LNR	TRI-COUNTY RGNL	WI	LPV	0	100	0	100	0	100
LSE	LA CROSSE RGNL	WI	LPV	0	100	0	100	0	100
LUM	MENOMONIE MUNICIPAL-SCORE FIELD	WI	LPV	0	100	0	100	0	100
MDZ	TAYLOR COUNTY	WI	LPV	0	100	0	100	0	100
MFI	MARSHFIELD MUNICIPAL	WI	LPV	0	100	0	100	0	100
MKE	GENERAL MITCHELL INTL	WI	LPV200	0	100	0	100	0	100
MRJ	IOWA COUNTY	WI	LPV200	0	100	0	100	0	100
MSN	DANE COUNTY RGNL-TRUAX FIELD	WI	LPV200	0	100	0	100	0	100

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
MTW	MANITOWOC COUNTY	WI	LPV200	0	100	0	100	0	100
MWC	LAWRENCE J TIMMERMAN	WI	LPV	0	100	0	100	0	100
OCQ	OCONTO-J DOUGLAS BAKE MUNICIPAL	WI	LP	0	100	0	100	0	100
OEO	L O SIMENSTAD MUNICIPAL	WI	LPV200	0	100	0	100	0	100
OSH	WITTMAN RGNL	WI	LPV200	0	100	0	100	0	100
OVS	BOSCOBEL	WI	LPV	0	100	0	100	0	100
PBH	PRICE COUNTY	WI	LPV	0	100	0	100	0	100
PCZ	WAUPACA MUNICIPAL	WI	LPV	0	100	0	100	0	100
PVB	PLATTEVILLE MUNICIPAL	WI	LPV	0	100	0	100	0	100
RAC	BATTEN INTL	WI	LPV	0	100	0	100	0	100
RCX	RUSK COUNTY	WI	LPV	0	100	0	100	0	100
RHI	RHINELANDER-ONEIDA COUNTY	WI	LPV200	0	100	0	100	0	100
RNH	NEW RICHMOND RGNL	WI	LPV	0	100	0	100	0	100
RPD	RICE LAKE RGNL - CARL'S FIELD	WI	LPV	0	100	0	100	0	100
RRL	MERRILL MUNICIPAL	WI	LPV	0	100	0	100	0	100
SBM	SHEBOYGAN COUNTY MEMORIAL	WI	LPV200	0	100	0	100	0	100
STE	STEVENS POINT MUNICIPAL	WI	LPV	0	100	0	100	0	100
SUE	DOOR COUNTY CHERRYLAND	WI	LPV	0	100	0	100	0	100
SUW	RICHARD I BONG	WI	LP	0	100	0	100	0	100
TKV	TOMAHAWK RGNL	WI	LP	0	100	0	100	0	100
UBE	CUMBERLAND MUNICIPAL	WI	LPV	0	100	0	100	0	100
UES	WAUKESHA COUNTY	WI	LPV200	0	100	0	100	0	100
UNU	DODGE COUNTY	WI	LPV	0	100	0	100	0	100
VIQ	NEILLSVILLE MUNICIPAL	WI	LPV	0	100	0	100	0	100
Y50	WAUTOMA MUNICIPAL	WI	LP	0	100	0	100	0	100
Y55	CRANDON/STEVE CONWAY MUNICIPAL	WI	LPV	0	100	0	100	0	100
Y72	BLOYER FIELD	WI	LP	0	100	0	100	0	100
3I2	MASON COUNTY	WV	LPV	0	100	0	100	0	100
6L4	LOGAN COUNTY	WV	LPV	0	100	0	100	0	100
BKW	RALEIGH COUNTY MEMORIAL	WV	LPV200	0	100	0	100	0	100
BLF	MERCER COUNTY	WV	LPV	0	100	0	100	0	100
CKB	NORTH CENTRAL WEST VIRGINIA	WV	LPV200	0	100	0	100	0	100
CRW	YEAGER	WV	LPV200	0	100	0	100	0	100
HLG	WHEELING OHIO CO	WV	LPV200	0	100	0	100	0	100
HTS	TRI-STATE/MILTON J FERGUSON FI	WV	LPV200	0	100	0	100	0	100

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
I18	JACKSON COUNTY	WV	LPV200	0	100	0	100	0	100
LWB	GREENBRIER VALLEY	WV	LPV	0	100	0	100	0	100
MGW	MORGANTOWN MUNICIPAL-WALTER L BILL	WV	LPV200	0	100	0	100	0	100
MRB	EASTERN WV RGNL/SHEPHERD FLD	WV	LPV	0	100	0	100	0	100
PKB	MID-OHIO VALLEY RGNL	WV	LPV	0	100	0	100	0	100
SXL	SUMMERSVILLE	WV	LP	0	100	0	100	0	100
USW	BOGGS FIELD	WV	LPV	0	100	0	100	0	100
W22	UPSHUR COUNTY RGNL	WV	LPV	0	100	0	100	0	100
W35	POTOMAC AIRPARK	WV	LP	0	100	0	100	0	100
W99	GRANT COUNTY	WV	LPV	0	100	0	100	0	100
BYG	JOHNSON COUNTY	WY	LPV	0	100	0	100	0	100
COD	YELLOWSTONE RGNL	WY	LPV	0	100	0	100	0	100
CPR	CASPER/NATRONA COUNTY INTL	WY	LPV	0	100	0	100	0	100
CYS	CHEYENNE RGNL/JERRY OLSON FIEL	WY	LPV	0	100	0	100	0	100
DGW	CONVERSE COUNTY	WY	LPV200	0	100	0	100	0	100
ECS	MONDELL FIELD	WY	LPV	0	100	0	100	0	100
EMM	KEMMERER MUNICIPAL	WY	LPV	0	100	0	100	0	100
EVW	EVANSTON-UINTA COUNTY BURNS FI	WY	LPV	0	100	0	100	0	100
FBR	FORT BRIDGER	WY	LP	0	100	0	100	0	100
GCC	GILLETTE-CAMPBELL COUNTY	WY	LPV	0	100	0	100	0	100
GEY	SOUTH BIG HORN COUNTY	WY	LP	0	100	0	100	0	100
GUR	CAMP GUERNSEY	WY	LP	0	100	0	100	0	100
HSG	HOT SPRINGS COUNTY	WY	LPV	0	100	0	100	0	100
JAC	JACKSON HOLE	WY	LPV200	0	100	0	100	0	100
LAR	LARAMIE RGNL	WY	LPV	0	100	0	100	0	100
PNA	RALPH WENZ FIELD	WY	LPV	0	100	0	100	0	100
POY	POWELL MUNICIPAL	WY	LPV	0	100	0	100	0	100
RIW	RIVERTON RGNL	WY	LPV200	0	100	0	100	0	100
RKS	ROCK SPRINGS-SWEETWATER COUNTY	WY	LPV200	0	100	0	100	0	100
RWL	RAWLINS MUNICIPAL/HARVEY FIELD	WY	LPV	0	100	0	100	0	100
SAA	SHIVELY FIELD	WY	LPV	0	100	0	100	0	100
SHR	SHERIDAN COUNTY	WY	LPV	0	100	0	100	0	100
U68	NORTH BIG HORN COUNTY	WY	LPV	0	100	0	100	0	100
W43	HULETT MUNICIPAL	WY	LPV	0	100	0	100	0	100
WRL	WORLAND MUNICIPAL	WY	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Provence	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
CYQH	WATSON LAKE	YT	LPV	0	100	0	100	0	100
CYXY	WHITEHORSE / ERIK NIELSEN INTL	YT	LPV	0	100	0	100	0	100

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

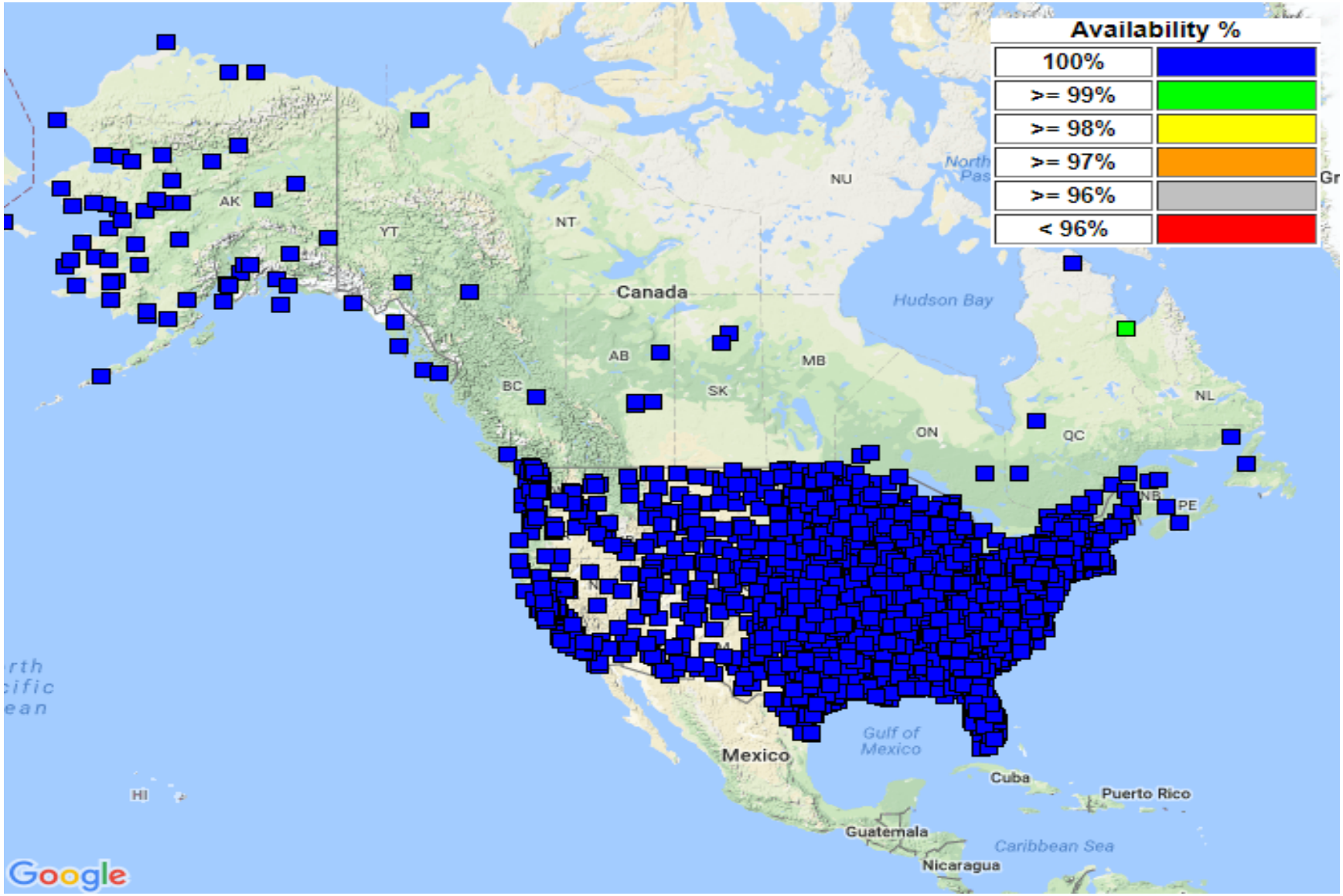


Figure 8-2 WAAS LP Outages at Airports in the US and Canada with GPS RNAV IAPs

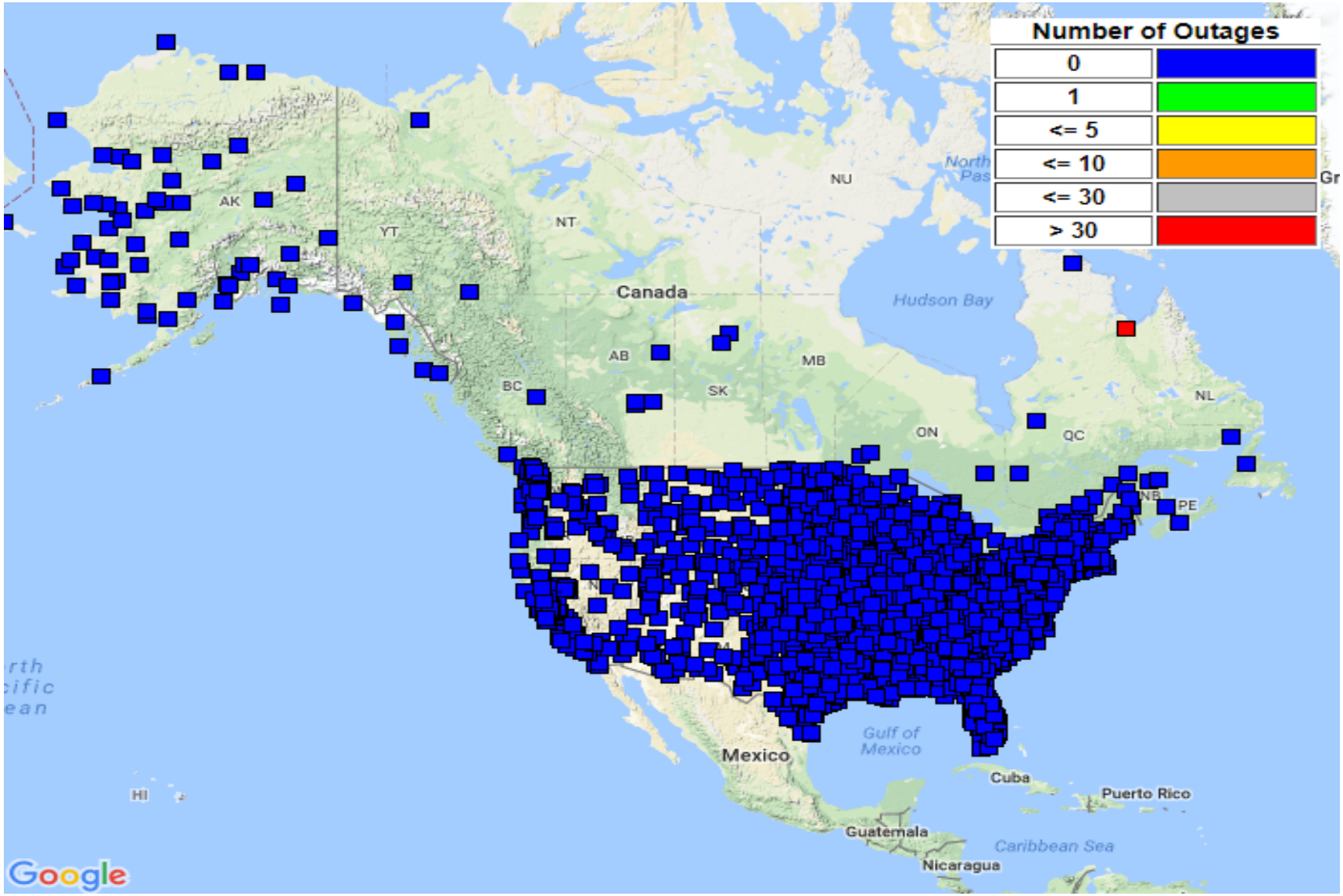


Figure 8-3 WAAS LPV Availability Airports in the US and Canada with GPS RNAV IAPs

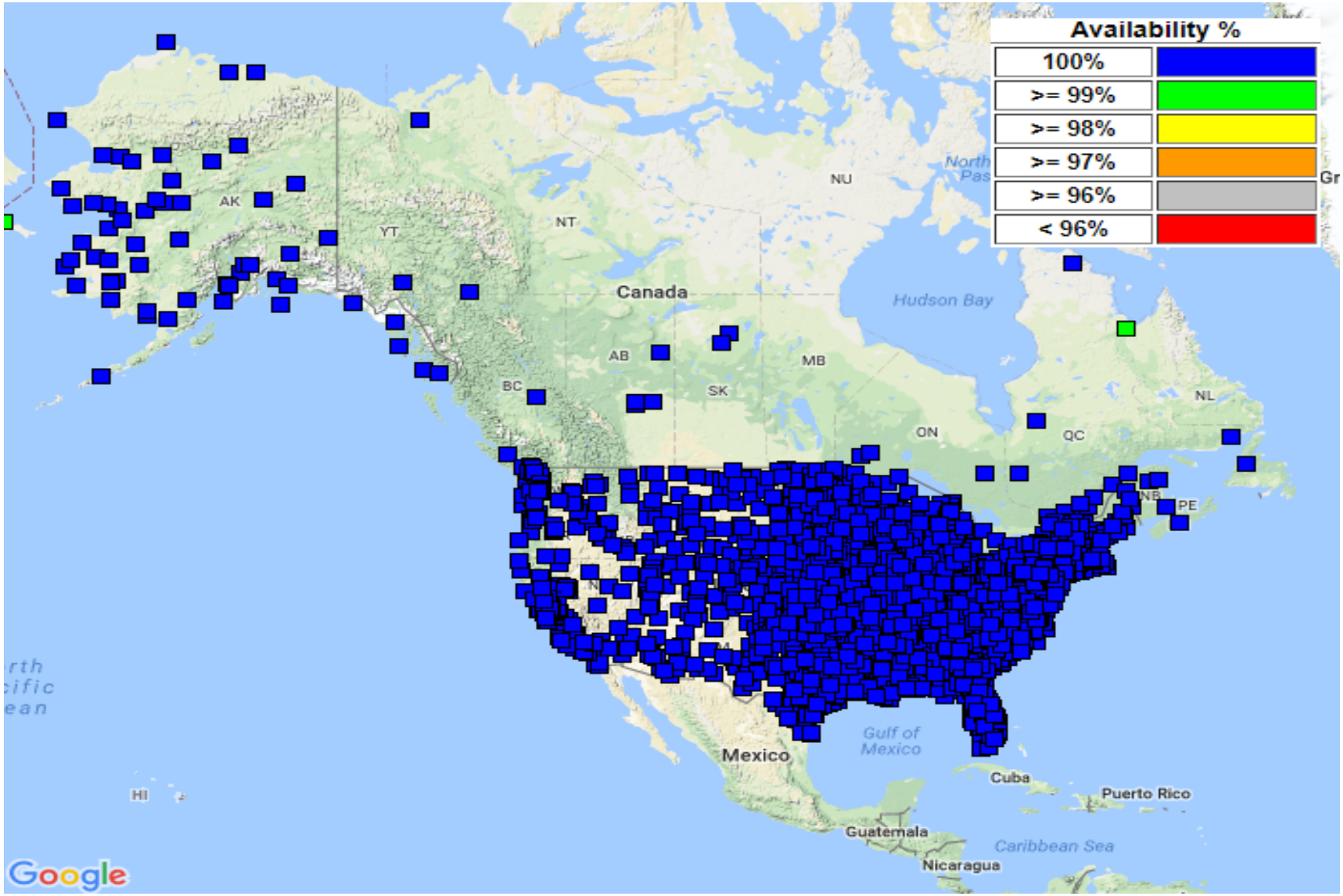


Figure 8-4 WAAS LPV Outages at Airports in the US and Canada with GPS RNAV IAPs

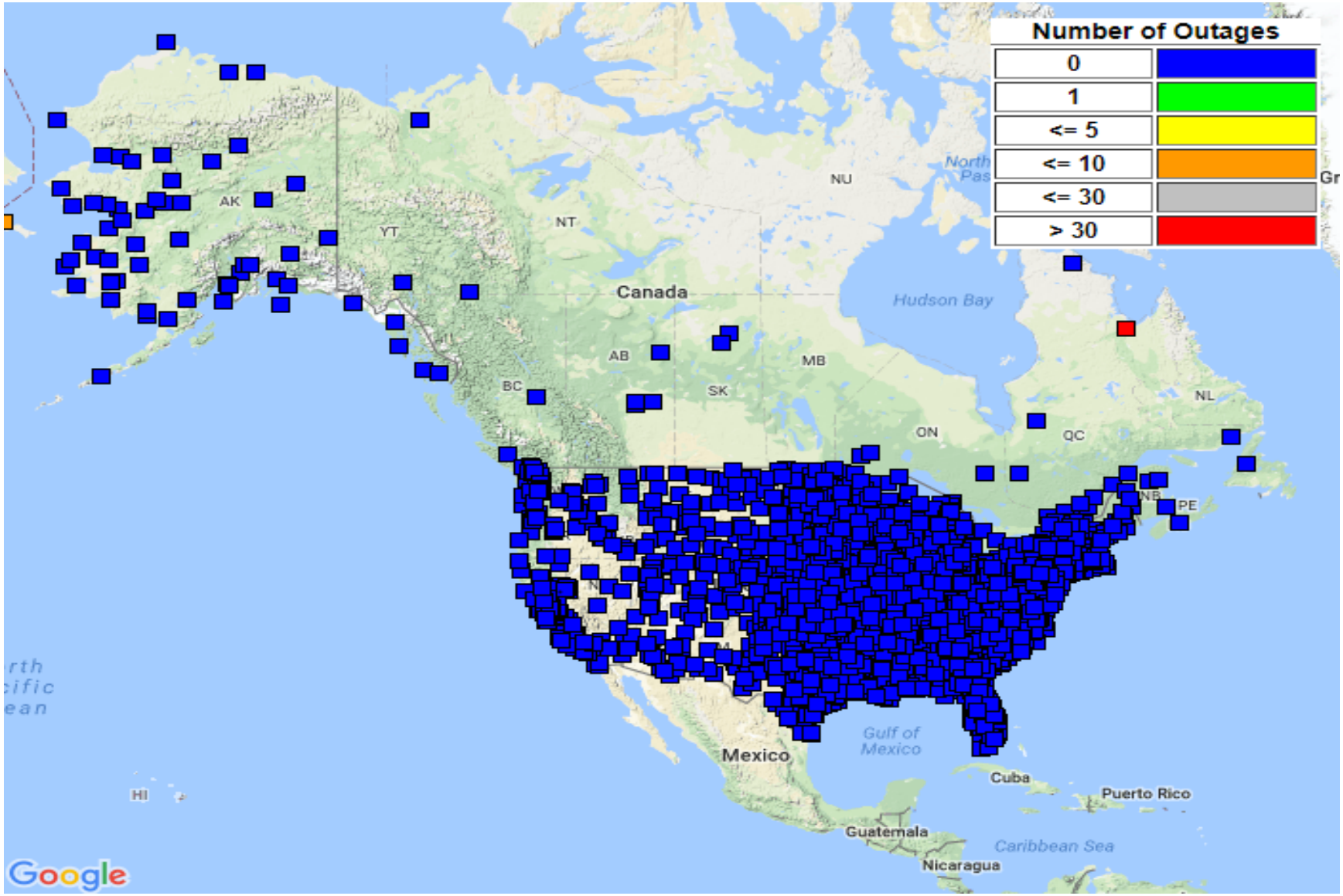


Figure 8-5 WAAS LPV200 Availability at Airports in the US and Canada with GPS RNAV IAPs

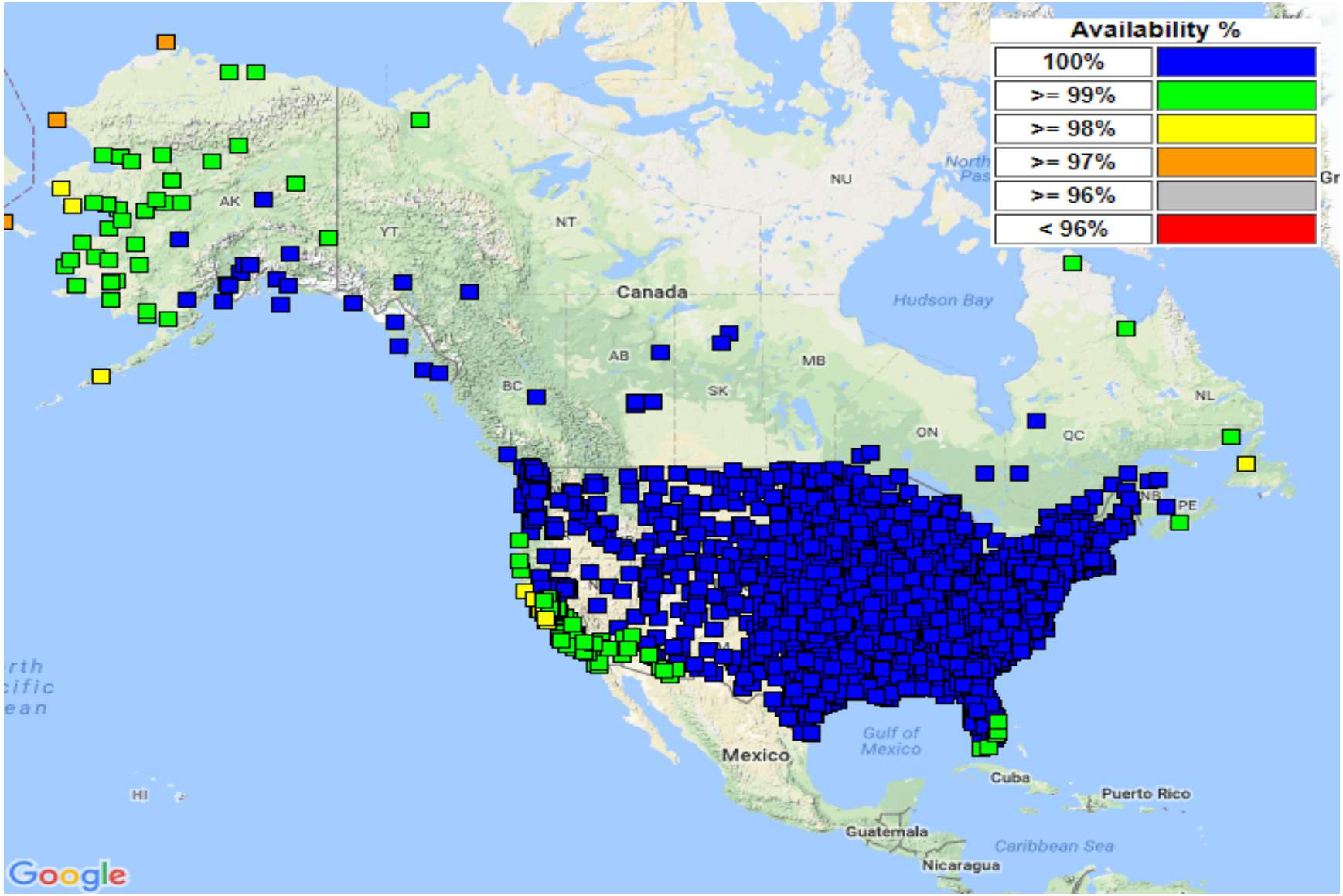
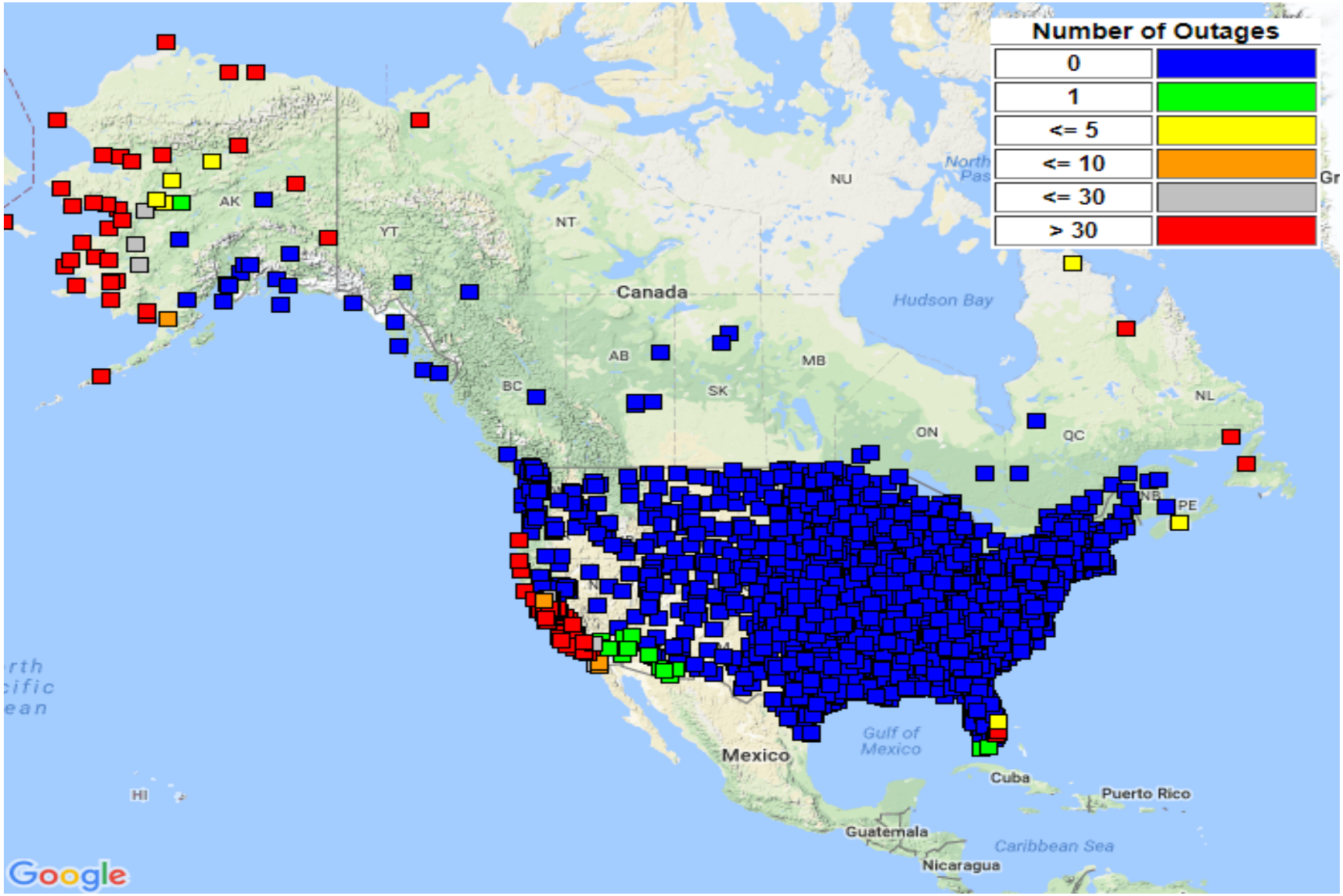


Figure 8-6 WAAS LPV200 Outages at Airports in the US and Canada with GPS RNAV IAPs



9.0 WAAS CNMP BOUNDING ANALYSIS

The purpose of the WAAS CNMP Bounding Analysis is to evaluate the performance of the CNMP algorithm and identify any undetected anomalous events to limit exposure to faulted receivers and persistent large multipath errors. The identification of undetected anomalous events ensures that the probability of more than one WAAS reference station (WRS)-producing persistent unbounded measurement errors is negligible. This offline analysis is critical to ensure that CNMP bounding is not invalidated by changes in WRE environmental conditions.

The operational CNMP functionality resides in the WAAS safety processor. The CNMP algorithm estimates, and corrects for, observed code noise and multipath and provides confidence estimates for residual error in multipath-corrected pseudorange measurements. These confidence terms provide a conservative Gaussian overbound of the true error distribution, which integrity monitors use in the weighting of the measurements.

The measurement data from the offline analysis is post-processed to estimate the carrier phase ambiguity of each entire arc of measurements for each satellite pass. The ambiguity estimate is used to level the carrier measurement, which is then used as a multipath-free truth estimate. The WAAS real-time CNMP smoothing algorithm is then applied to the original measurements, and the difference between the smoothed measurements and the multipath-free truth estimates is the observed residual error. To minimize the impacts of non-zero mean multipath biasing the truth estimates, only arcs with a continuous carrier phase greater than 7200 seconds are used for this analysis. The WAAS dual frequency cycle slip detector algorithm is used to detect any discontinuities in the carrier phase.

Statistics are calculated based on how well Gaussian distributions with 0.1 multiples of the CNMP standard deviation bound the observed residual error. Subsequently, these statistics are compared to a theoretical Gaussian distribution and an extensive set of plots are generated and manually reviewed. Figure 9-1 shows the analysis results for the previous 12 months for all three threads of WRE at each WAAS reference station. The color coding represents four levels of performance based on the magnitude and probability distribution of the residual error and the bounding performance of the CNMP algorithm.

Figure 9-1 CNMP Bounding Statistics

WAAS Site	WRE	Apr 17	May 17	Jun 17	Jul 17	Aug 17	Sep 17	Oct 17	Nov 17	Dec 17	Jan 18	Feb 18	Mar 18
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												

WAAS Site	WRE	Apr 17	May 17	Jun 17	Jul 17	Aug 17	Sep 17	Oct 17	Nov 17	Dec 17	Jan 18	Feb 18	Mar 18
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
- **N/A** - No data available

10.0 WRS ANTENNA SURVEY VALIDATION

Antenna L1 phase center position surveys were performed for all the WAAS Reference Station antennas using 24 hour sets on 04/01/18. Each WAAS WRS has three independent threads of WRE: (1) Thread A is also referred to as Thread 1, (2) Thread B is also referred to as Thread 2, and (3) Thread C is referred to as Thread 3.

Duplicate surveys were performed using both the NGS OPUS and the CSRS PPP services. The International GPS Service (IGS) 08 reference frame is used for the OPUS solutions. A 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 of the data.

The OPUS-reported RMS quality metrics were 2.2 cm or less. The CSRS surveys' RSSs of the reported ECEF sigmas were 13 mm or less. The OPUS and CSRS surveys agreed to an average of 1.6 cm with a standard deviation of 9.3 mm. The maximum of difference was 4.28 cm for Barrow Thread A (BRW1).

The OPUS positions were compared to the WAAS SSM 48 Field Coordinates which were surveyed in October 2017. The OPUS surveys agree with the WAAS SSM 48 Field Coordinates to better or equal to 6.08 cm. The maximum difference was 6.08 cm at Anchorage Thread A (ZAN1).

Table 10-1 lists the WAAS antenna L1 phase center positions using the OPUS data.

Table 10-1 WAAS Antenna Positions (OPUS IGS08) as of 04/02/2017

WRE	X(m)	Y(m)	Z(m)	Latitude	Longitude	H(m)
BET1	-2965385.131	-972576.63	5543892.836	60.78791455	-161.8417253	52.17
BET2	-2965385.901	-972580.353	5543891.779	60.7878951	-161.8416648	52.17
BET3	-2965388.467	-972577.484	5543890.912	60.7878792	-161.8417295	52.167
BIL1	-1416445.952	-4223577.014	4550862.113	45.80370647	-108.539724	1112.229
BIL2	-1416450.033	-4223574.876	4550862.838	45.80371572	-108.5397825	1112.241
BIL3	-1416441.649	-4223574.273	4550865.968	45.80375623	-108.5396827	1112.228
BRW1	-1886759.013	-809058.658	6018494.456	71.28276418	-156.7899259	15.578
BRW2	-1886756.428	-809055.917	6018495.632	71.2827969	-156.7899678	15.583
BRW3	-1886755.34	-809059.707	6018495.449	71.28279218	-156.7898586	15.568
CDB1	-3484099.148	-1084748.766	5213678.57	55.1923732	-162.7064054	49.698
CDB2	-3484105.781	-1084741.571	5213675.619	55.19232713	-162.7065442	49.669
CDB3	-3484112.064	-1084734.797	5213672.872	55.19228366	-162.7066751	49.688
FAI1	-2304741.914	-1448715.312	5748843.711	64.80962926	-147.8473414	150.003
FAI2	-2304741.457	-1448706.503	5748846.103	64.80967958	-147.8474933	150.008
FAI3	-2304732.936	-1448707.442	5748849.261	64.80974613	-147.8473811	150.008
HNL1	-5508637.156	-2234492.96	2303722.375	21.31299207	-157.9208308	24.661
HNL2	-5508656.324	-2234483.28	2303687.141	21.31264925	-157.9209867	25.013
HNL3	-5508647.738	-2234497.216	2303694.233	21.31271784	-157.9208312	25.059
JNU1	-2354255.011	-2388549.672	5407043.13	58.36257393	-134.5857082	16.166
JNU2	-2354252.926	-2388565.786	5407036.962	58.36246835	-134.5854896	16.167
JNU3	-2354239.707	-2388568.639	5407041.424	58.36254476	-134.5852945	16.164
MMD1	35070.381	-5959686.668	2264365.78	20.93190937	-89.66284106	29.125
MMD2	35065.454	-5959687.04	2264364.996	20.93190165	-89.66288845	29.165
MMD3	35065.104	-5959685.224	2264369.638	20.93194668	-89.66289171	29.125
MMX1	-948700.9	-5943934.071	2109212.207	19.43165393	-99.06839009	2233.97
MMX2	-948696.468	-5943933.898	2109214.623	19.43167712	-99.06834868	2233.954
MMX3	-948705.331	-5943934.258	2109209.776	19.43163058	-99.06843146	2233.994
MPR1	-1570142.258	-5759530.575	2238184.751	20.67900334	-105.2492036	10.959
MPR2	-1570139.434	-5759530.09	2238188.798	20.6790414	-105.2491787	11.256
MPR3	-1570143.541	-5759527.97	2238190.566	20.67905942	-105.2492221	10.977
MSD1	-1979519.994	-5523222.886	2493106.919	23.1604482	-109.7176511	104.276
MSD2	-1979521.561	-5523225.23	2493100.518	23.16038535	-109.7176578	104.273

WRE	X(m)	Y(m)	Z(m)	Latitude	Longitude	H(m)
MSD3	-1979526	-5523221.956	2493104.188	23.16042144	-109.7177094	104.26
MTP1	-254854.388	-6162909.157	1617805.08	14.79136614	-92.36799951	54.938
MTP2	-254850.756	-6162910.19	1617801.673	14.79133433	-92.3679654	54.921
MTP3	-254855.55	-6162910.295	1617800.128	14.79132013	-92.36800986	54.82
OTZ1	-2396056.108	-750356.168	5843502.47	66.8873313	-162.6113734	10.877
OTZ2	-2396052.939	-750354.339	5843503.991	66.8873661	-162.6113916	10.874
OTZ3	-2396052.918	-750358.279	5843503.5	66.88735483	-162.6113056	10.877
YFB1	1035381.344	-2634289.658	5696539.568	63.73149081	-68.5431855	10.043
YFB2	1035372.139	-2634296.073	5696538.202	63.73146444	-68.54340642	9.97
YFB3	1035366.063	-2634306.831	5696534.428	63.73138679	-68.54360055	10.033
YQX1	2430424.567	-3419640.423	4788223.881	48.96649039	-54.59763315	146.906
YQX2	2430432.51	-3419639.072	4788220.821	48.96644858	-54.59753404	146.896
YQX3	2430440.412	-3419637.713	4788217.823	48.96640735	-54.59743533	146.913
YWG1	-520164.481	-4083475.964	4855843.019	49.90057397	-97.25939903	222.108
YWG2	-520150.61	-4083468.9	4855850.417	49.90067705	-97.25921993	222.125
YWG3	-520152.483	-4083478.02	4855842.596	49.90056792	-97.25922976	222.122
YYR1	1885341.331	-3321428.372	5091171.698	53.30864759	-60.4194696	37.859
YYR2	1885344.293	-3321419.89	5091176.113	53.30871391	-60.41936814	37.866
YYR3	1885340.011	-3321413.075	5091182.114	53.30880406	-60.41937354	37.873
ZAB1	-1488636.907	-5003946.541	3654557.691	35.17357517	-106.5673505	1620.132
ZAB2	-1488631.571	-5003948.218	3654557.661	35.1735745	-106.5672891	1620.185
ZAB3	-1488632.353	-5003950.805	3654553.81	35.1735321	-106.5672892	1620.175
ZAN1	-2659536.712	-1549114.739	5567750.718	61.22920131	-149.780252	80.68
ZAN2	-2659548.47	-1549110.786	5567746.236	61.22911768	-149.7804258	80.684
ZAN3	-2659541.418	-1549106.66	5567750.702	61.22920124	-149.7804261	80.666
ZAU1	138704.039	-4761244.142	4227763.93	41.78265805	-88.33133761	195.886
ZAU2	138704.304	-4761248.762	4227758.772	41.78259568	-88.33133604	195.898
ZAU3	138711.008	-4761248.497	4227758.852	41.78259663	-88.33125535	195.899
ZBW1	1490299.141	-4448983.173	4306010.51	42.73572073	-71.48042679	39.107
ZBW2	1490304.255	-4448981.164	4306010.856	42.73572473	-71.48035978	39.136
ZBW3	1490305.965	-4448984.792	4306006.547	42.73567191	-71.48035405	39.137
ZDC1	1069125.69	-4839598.985	4001126.517	39.10159607	-77.54274735	80.056
ZDC2	1069128.088	-4839603.615	4001120.313	39.10152408	-77.54273183	80.053
ZDV1	-1273628.681	-4711375.57	4094890.09	40.18730305	-105.1272252	1541.353
ZDV2	-1273622.98	-4711377.084	4094890.102	40.18730328	-105.1271559	1541.34
ZDV3	-1273624.989	-4711380.283	4094885.815	40.18725281	-105.1271689	1541.334
ZFW1	-659983.255	-5324060.763	3438276.456	32.83064964	-97.0664724	155.605
ZFW2	-659988.528	-5324063.317	3438271.46	32.83059623	-97.06652493	155.571
ZFW3	-659983.553	-5324063.845	3438271.668	32.83059824	-97.06647151	155.61
ZHU1	-513864.524	-5506451.672	3166720.459	29.96189637	-95.33142685	10.818
ZHU2	-513867.171	-5506455.068	3166714.296	29.96183186	-95.33145088	10.882
ZHU3	-513873.45	-5506457.709	3166708.697	29.96177363	-95.33151311	10.87
ZJX1	772646.385	-5434462.176	3237231.744	30.69885976	-81.9081857	2.119
ZJX2	772649.716	-5434463.737	3237228.353	30.69882419	-81.90815357	2.12
ZJX3	772645.65	-5434466.164	3237225.237	30.69879159	-81.90819915	2.103
ZKC1	-415247.583	-4954556.389	3982161.106	38.88015931	-94.79083459	305.896
ZKC2	-415231.191	-4954557.709	3982161.16	38.88015999	-94.79064508	305.888
ZKC3	-415237.31	-4954561.059	3982155.968	38.88010182	-94.79071213	305.626
ZLA1	-2474410.052	-4637294.567	3602183.563	34.60351861	-118.0838969	763.514
ZLA2	-2474404.772	-4637297.365	3602183.575	34.60351879	-118.0838318	763.506
ZLA3	-2474411.366	-4637297.053	3602179.589	34.60347474	-118.0838968	763.571
ZLC1	-1808273.294	-4486410.809	4145303.006	40.7860431	-111.9521785	1287.437
ZLC2	-1808274.682	-4486414.439	4145298.511	40.78598961	-111.9521777	1287.443
ZLC3	-1808270.477	-4486416.14	4145298.511	40.78598957	-111.9521239	1287.447
ZMA1	966042.247	-5662999.801	2761581.503	25.82461235	-80.31919028	-7.613

WRE	X(m)	Y(m)	Z(m)	Latitude	Longitude	H(m)
ZMA2	966029.277	-5662999.115	2761585.99	25.82466004	-80.31931665	-8.231
ZMA3	966037.35	-5662997.937	2761586.341	25.82466212	-80.3192353	-7.901
ZME1	4070.829	-5226189.286	3644028.428	35.06739421	-89.95537068	68.597
ZME2	4070.858	-5226186.734	3644032.543	35.06743778	-89.95537034	68.872
ZME3	4064.663	-5226186.615	3644032.689	35.0674395	-89.95543826	68.855
ZMP1	-249978.459	-4539297.502	4458955.049	44.63746321	-93.15208646	262.657
ZMP2	-249972.658	-4539297.842	4458955.049	44.63746308	-93.15201322	262.671
ZMP3	-249973.756	-4539302.123	4458950.574	44.63740701	-93.15202407	262.612
ZNY1	1406144.557	-4627343.992	4144322.067	40.78432874	-73.0971666	6.445
ZNY2	1406146.353	-4627347.023	4144317.296	40.78427608	-73.09715668	5.92
ZNY3	1406140.795	-4627348.681	4144317.325	40.78427645	-73.09722539	5.916
ZOA1	-2684436.975	-4293337.293	3865351.911	37.54305444	-122.0159495	-3.504
ZOA2	-2684433.965	-4293341.378	3865349.486	37.54302686	-122.0158961	-3.501
ZOA3	-2684438.339	-4293342.253	3865345.628	37.5429825	-122.0159328	-3.425
ZOB1	650770.114	-4754715.672	4187420.756	41.29715455	-82.20644556	223.678
ZOB2	650777.794	-4754714.849	4187422.775	41.29716686	-82.20635338	225.18
ZOB3	650776.123	-4754719.674	4187414.984	41.2970871	-82.20638096	223.46
ZSE1	-2308930.316	-3668169.67	4663526.452	47.28699298	-122.1883734	82.094
ZSE2	-2308934.708	-3668175.222	4663520.048	47.28690739	-122.1883834	82.163
ZSE3	-2308935.772	-3668179.496	4663516.107	47.2868557	-122.1883652	82.105
ZSU1	2462589.472	-5529372.077	2003724.523	18.43133626	-65.99347631	-28.108
ZSU2	2462587.538	-5529377.449	2003712.241	18.43121922	-65.99351372	-28.082
ZSU3	2462594.165	-5529375.187	2003710.16	18.43119958	-65.9934477	-28.142
ZTL1	529840.343	-5305248.811	3489342.859	33.37968868	-84.29672665	261.136
ZTL2	529846.714	-5305247.968	3489343.145	33.37969186	-84.29665763	261.121
ZTL3	529847.398	-5305251.408	3489337.918	33.37963519	-84.29665399	261.161

Figure 10-1 through Figure 10-3 show the RSS of the ECEF differences between the OPUS survey antenna phase center locations and the locations in the Build WE7.164c software. Figure 10-4 through Figure 10-6 shows the OPUS surveys overall RMS quality indications.

Figure 10-1 Build WE7164c Antenna Positions Deltas OPUS Survey

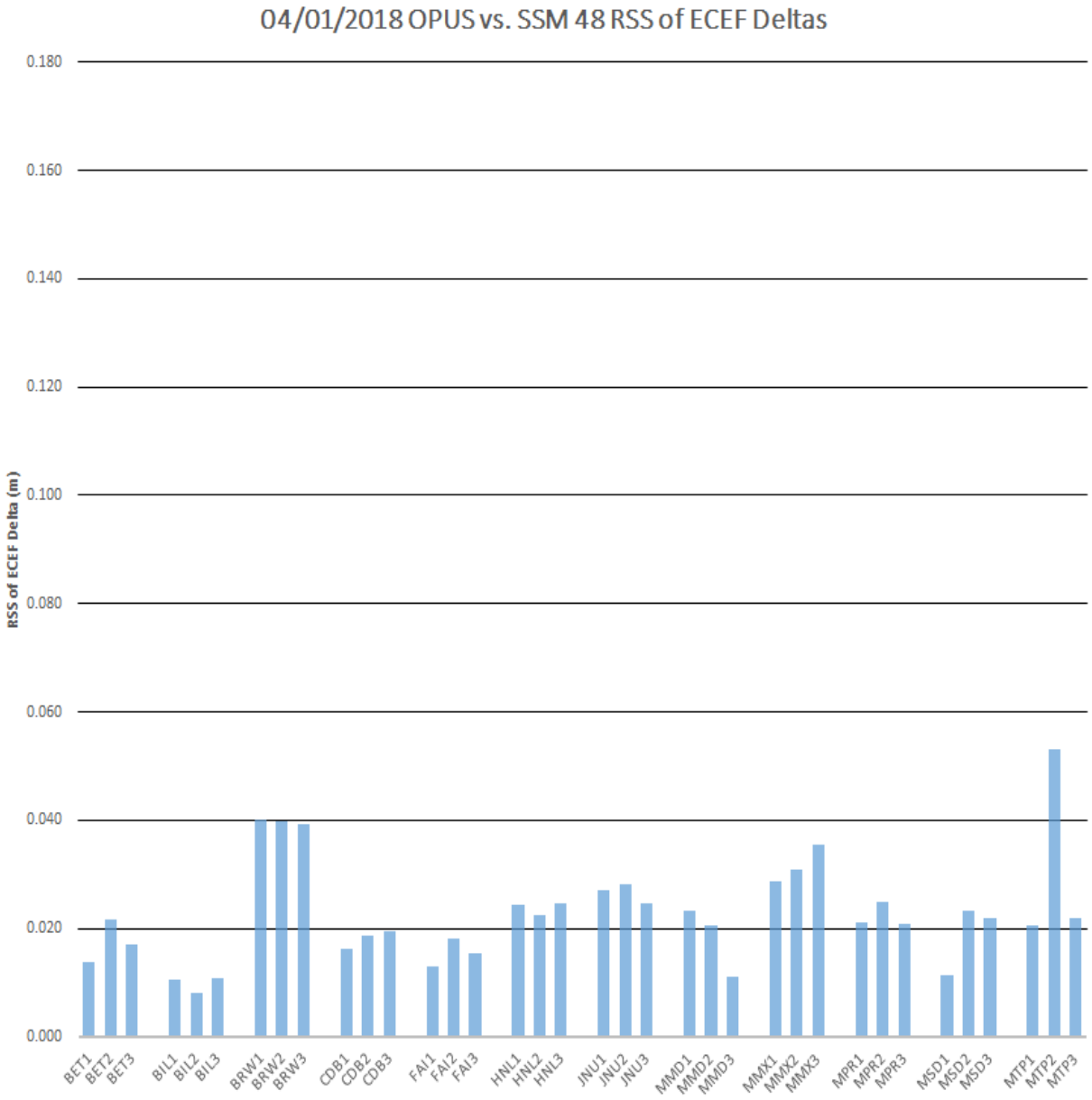


Figure 10-2 Build WE7.164c Antenna Positions Deltas OPUS Survey

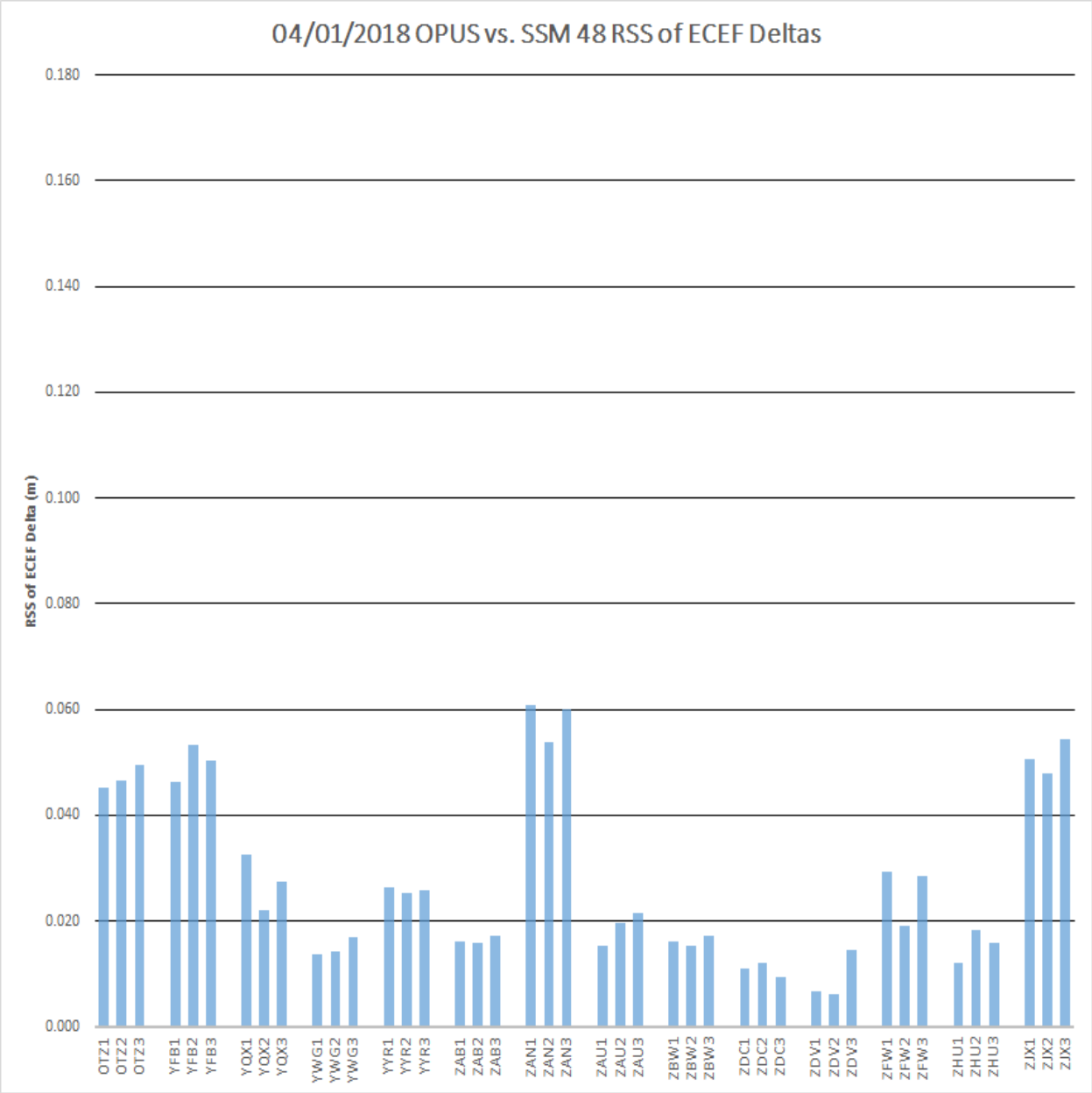


Figure 10-3 Build WE7.164c Antenna Positions Deltas OPUS Survey

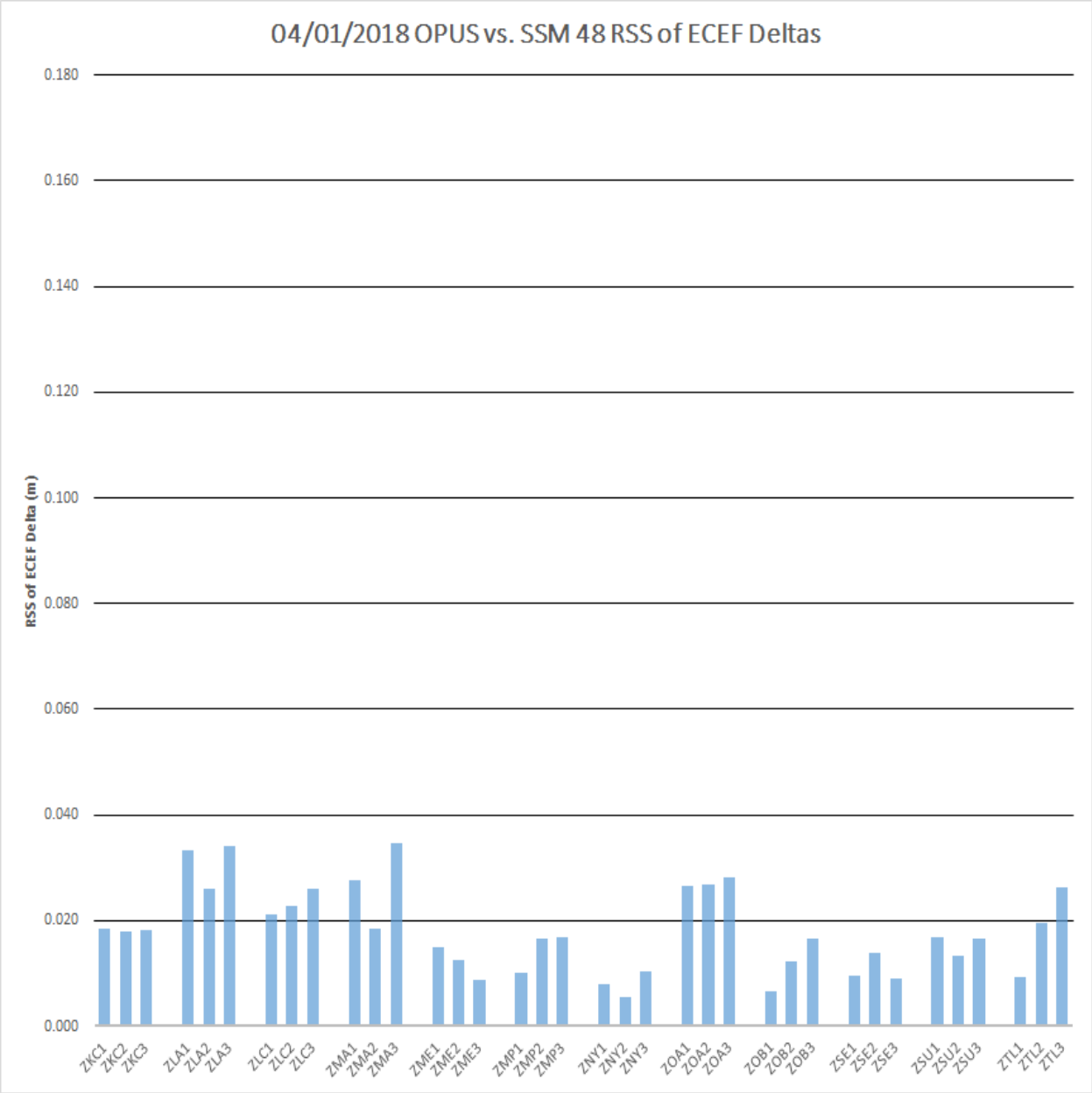


Figure 10-4 OPUS Survey Overall RMS Qualities

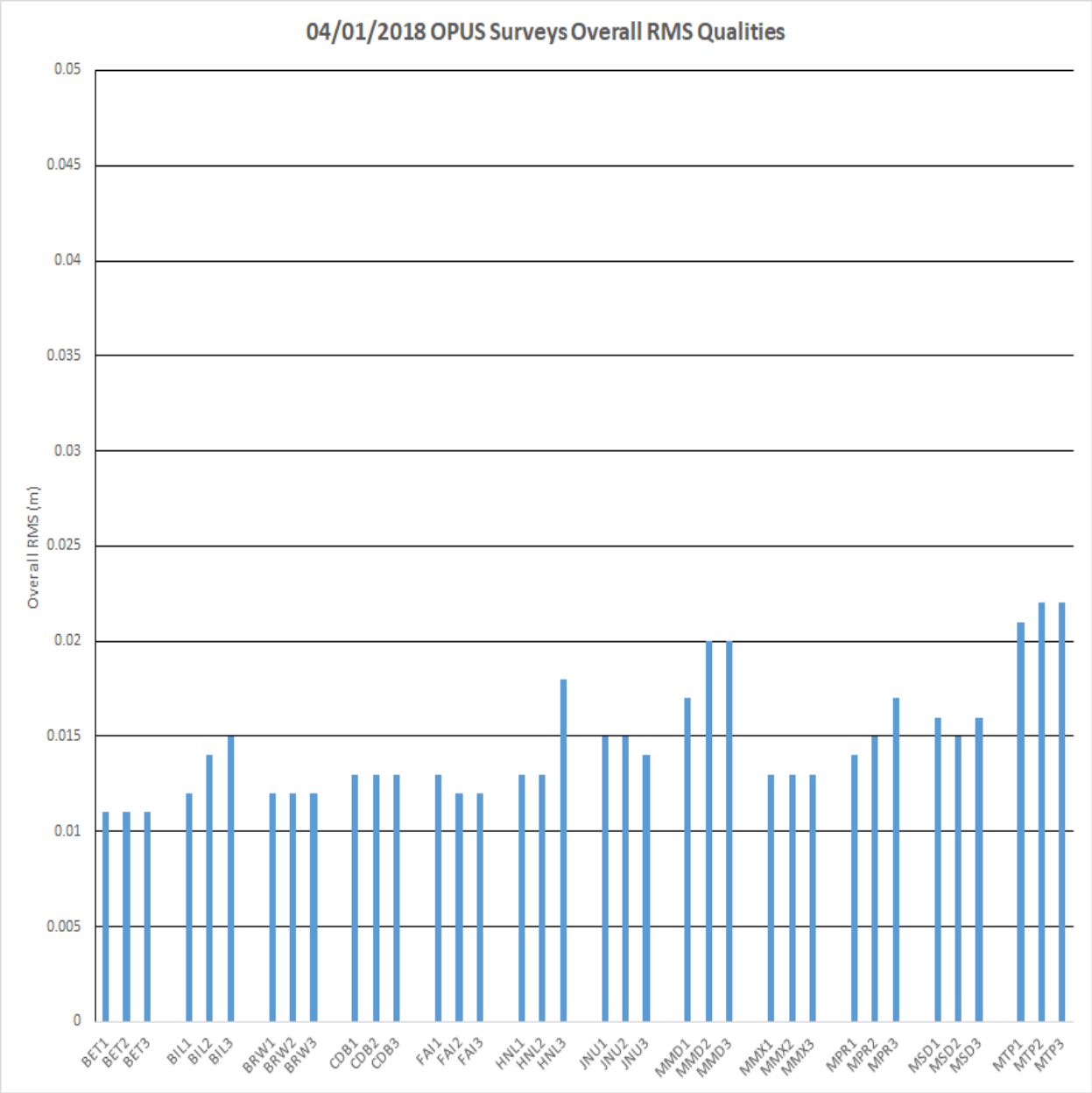


Figure 10-5 OPUS Survey Overall RMS Qualities

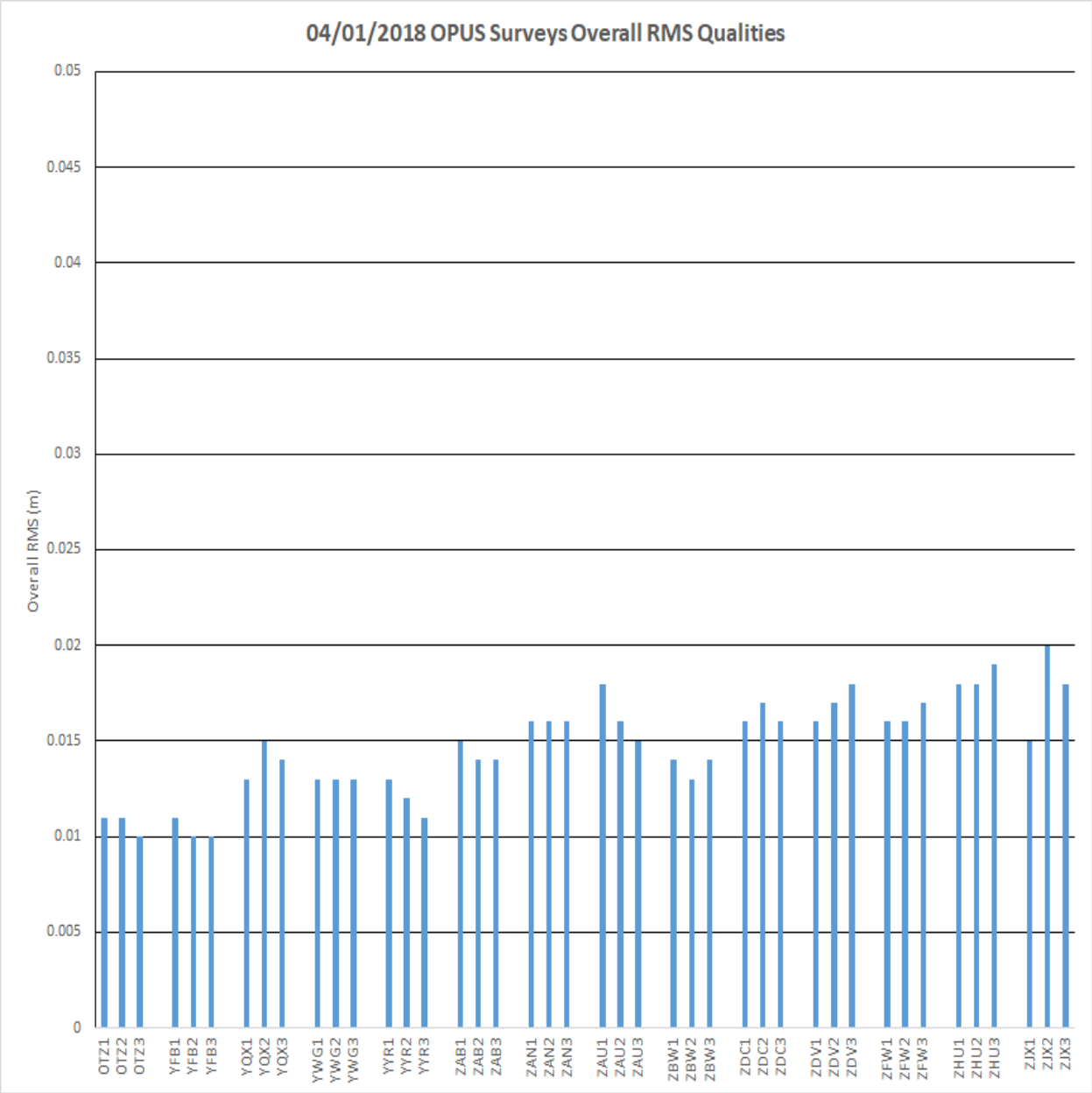
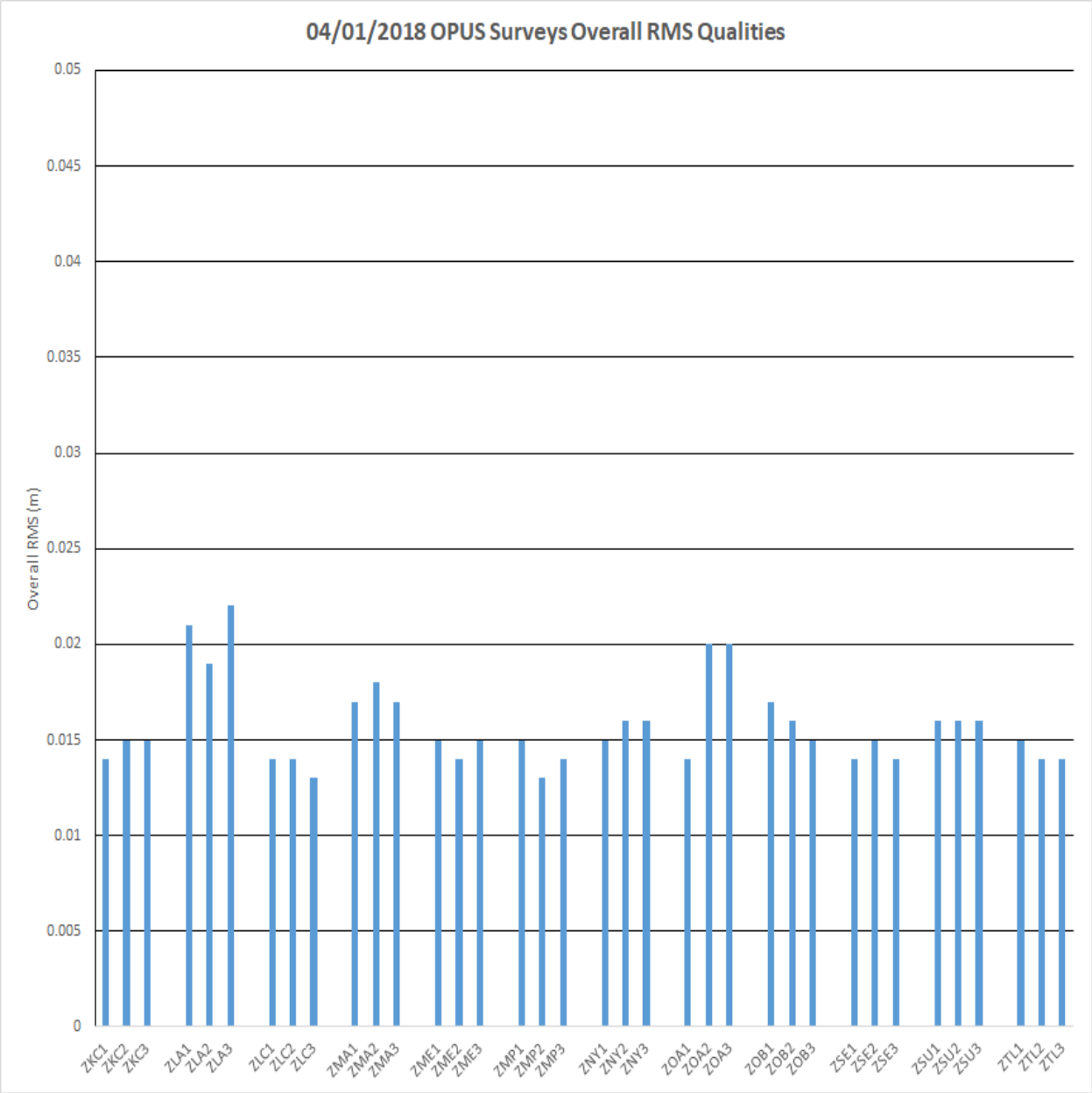


Figure 10-6 OPUS Survey Overall RMS Qualities



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).

Figure 10-7 through Figure 10-9 show the RSS of the ECEF difference between the OPUS positions and the CSRS positions. Note that the OPUS positions are in IGS08 and the CSRS positions are in ITRF-2008.

Figure 10-7 OPUS vs. CSRS RSS ECEF Deltas

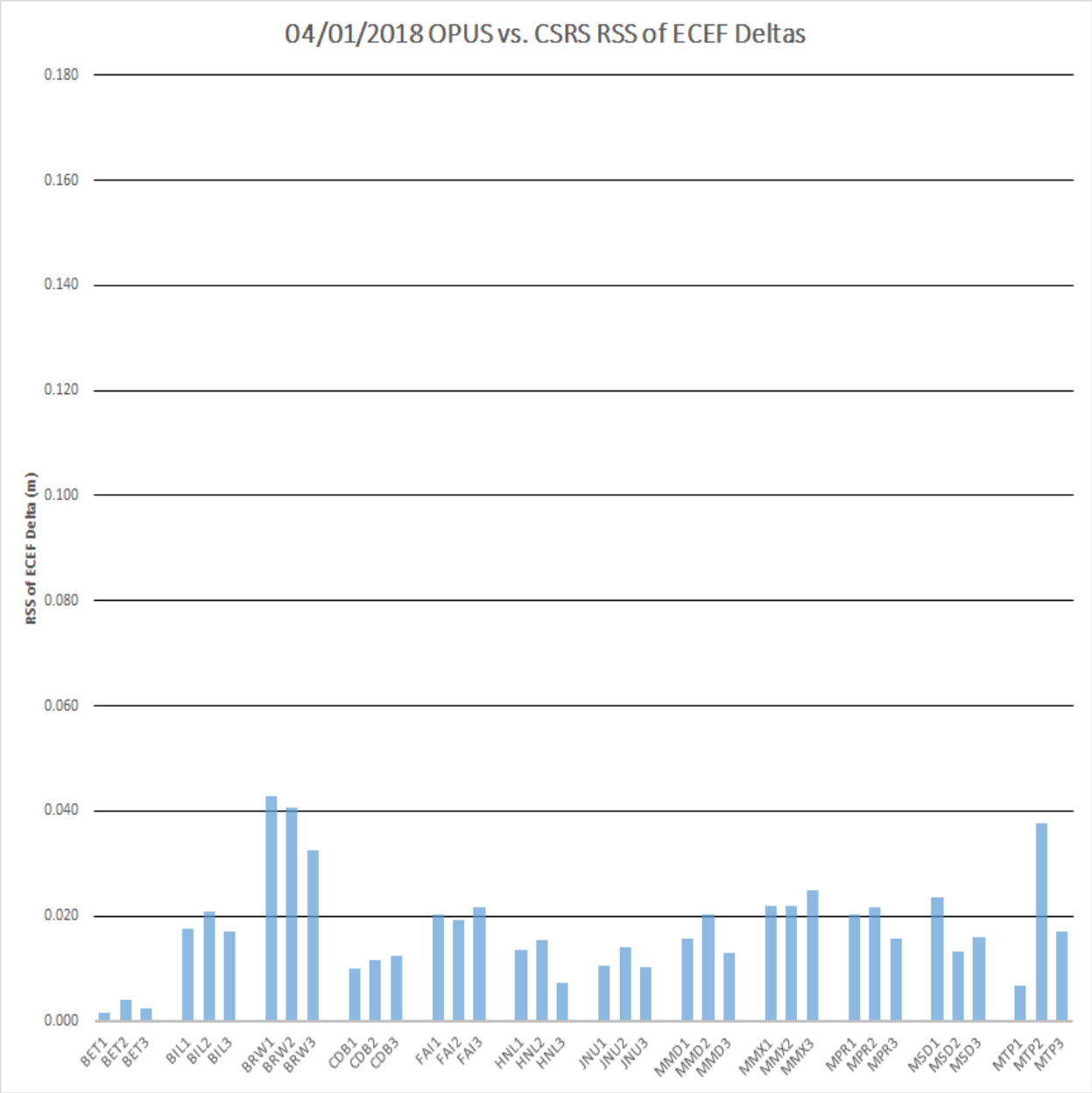


Figure 10-8 OPUS vs. CSRS RSS ECEF Deltas

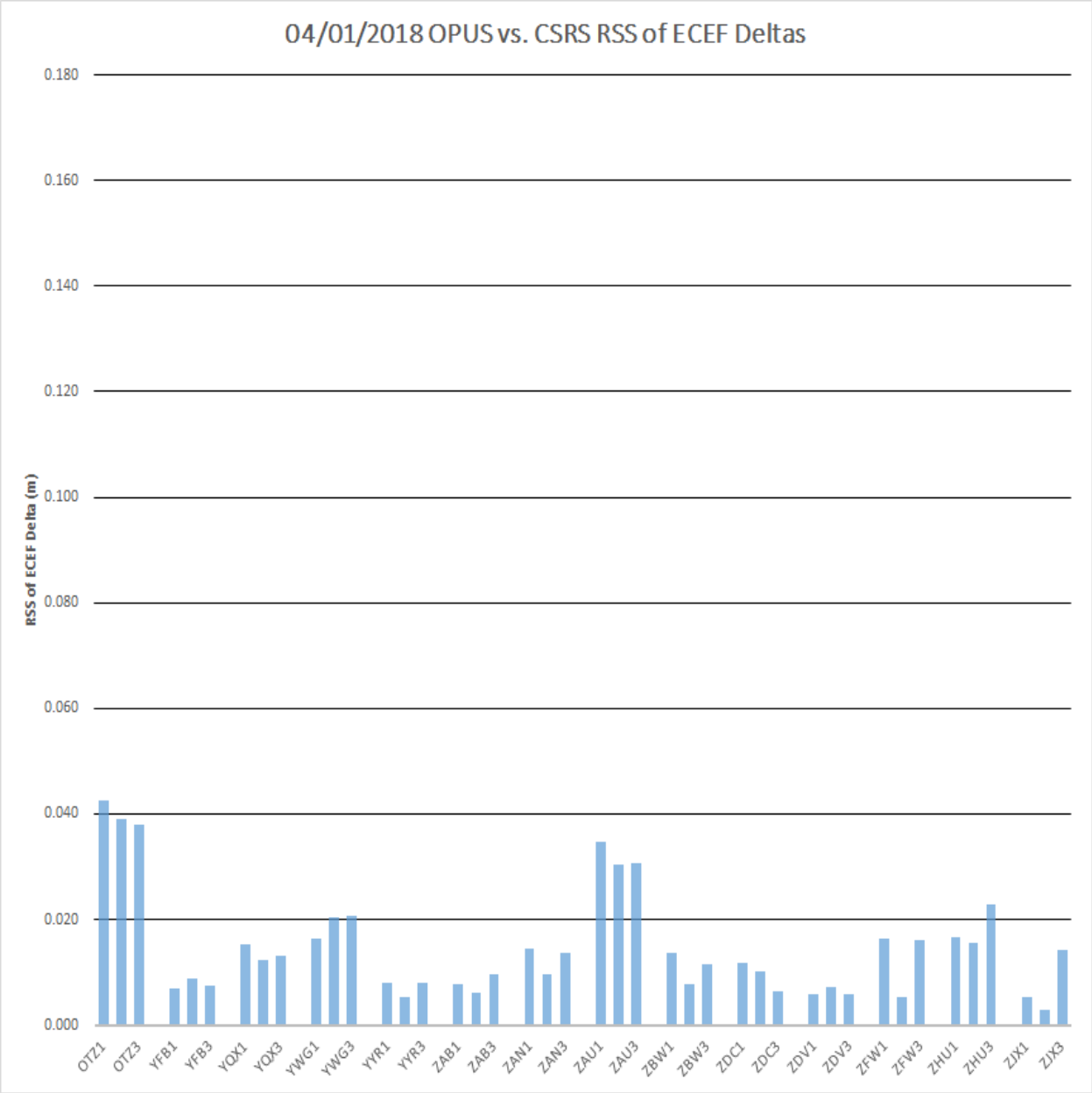


Figure 10-9 OPUS vs. CSRS RSS ECEF Deltas

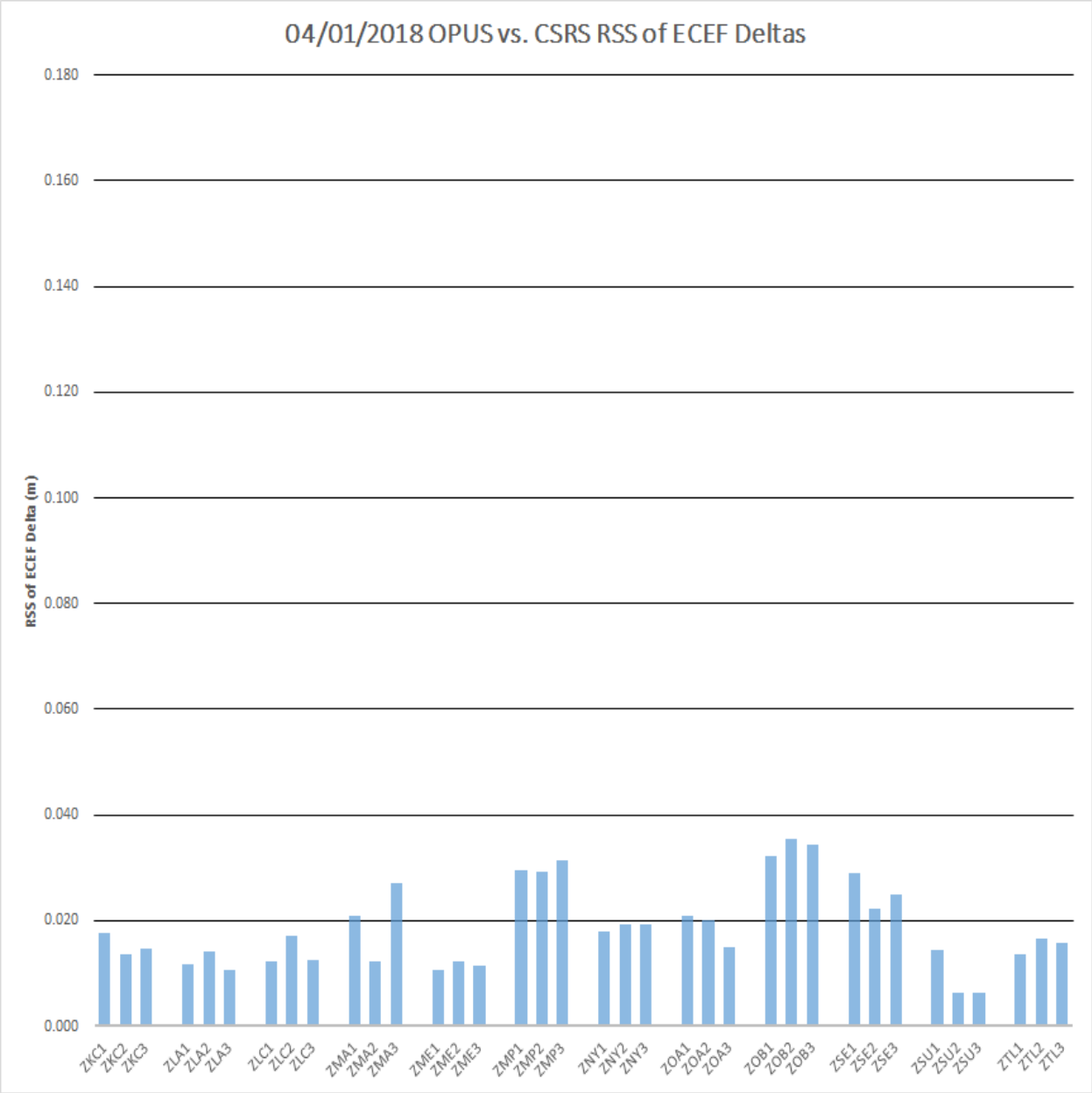


Figure 10-10 through Figure 10-12 show the RSS of the ECEF sigma's survey qualities reported by CSRS.

Figure 10-10 CSRS Survey Qualities

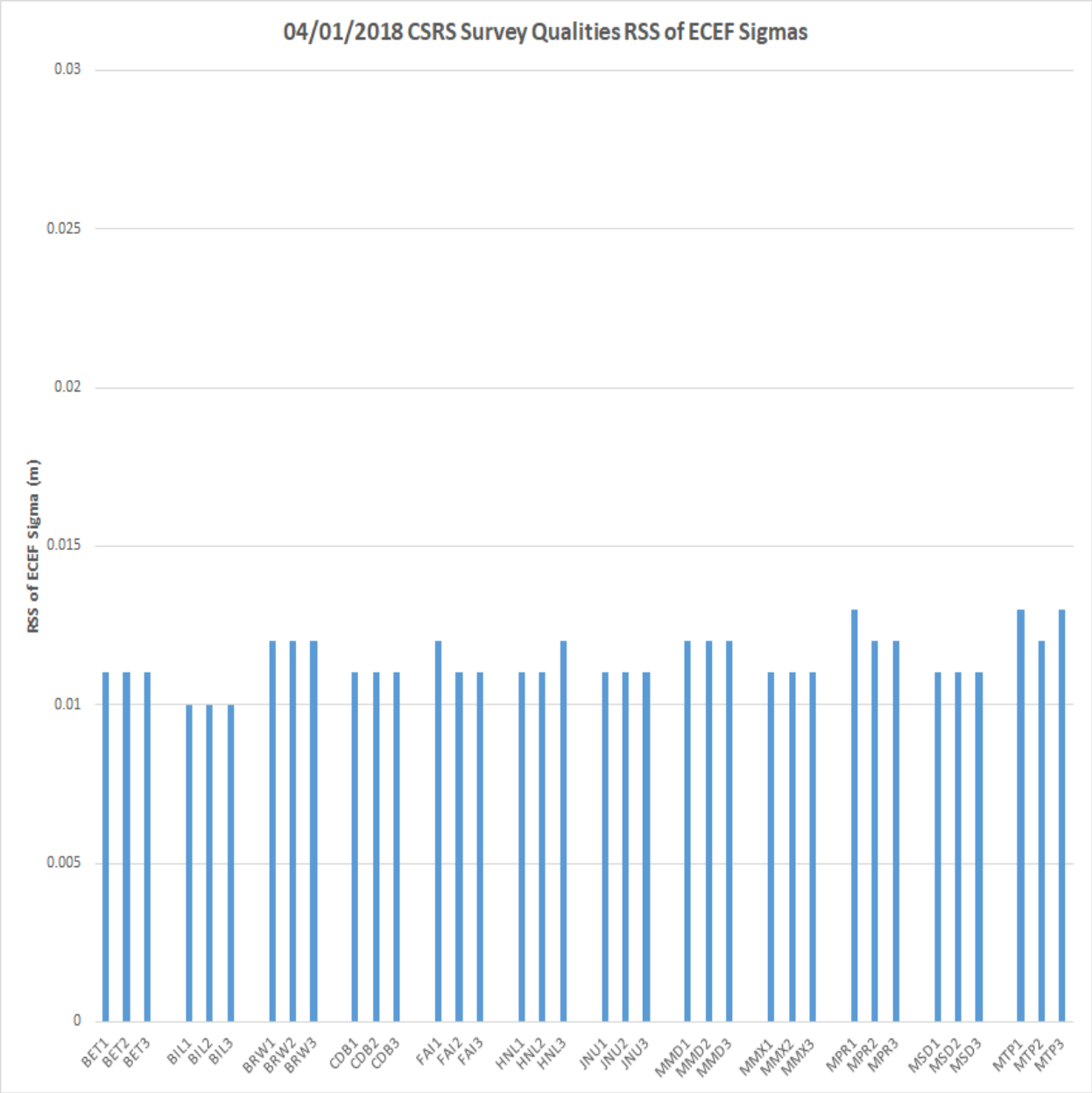


Figure 10-11 CSRS Survey Qualities

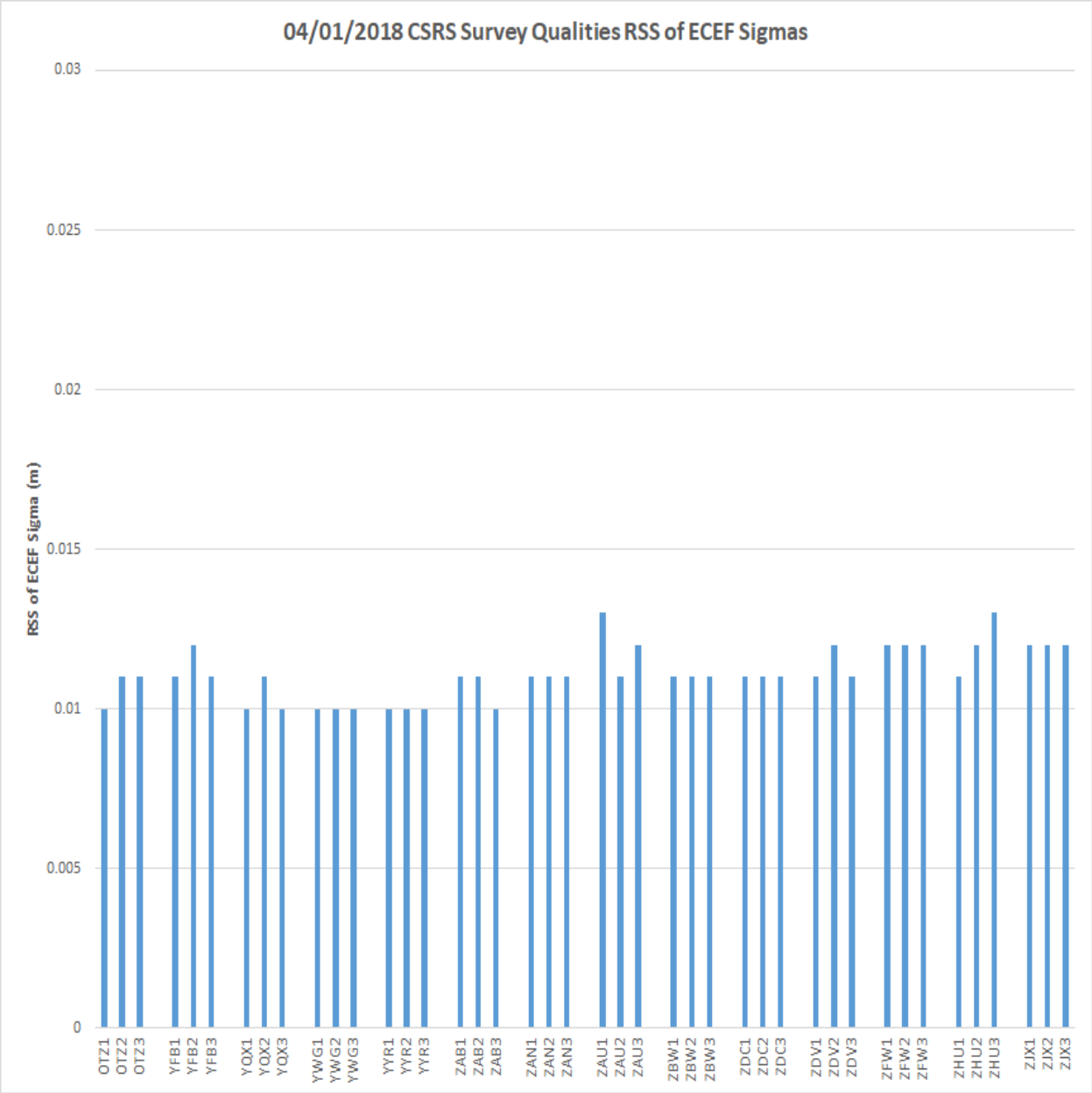
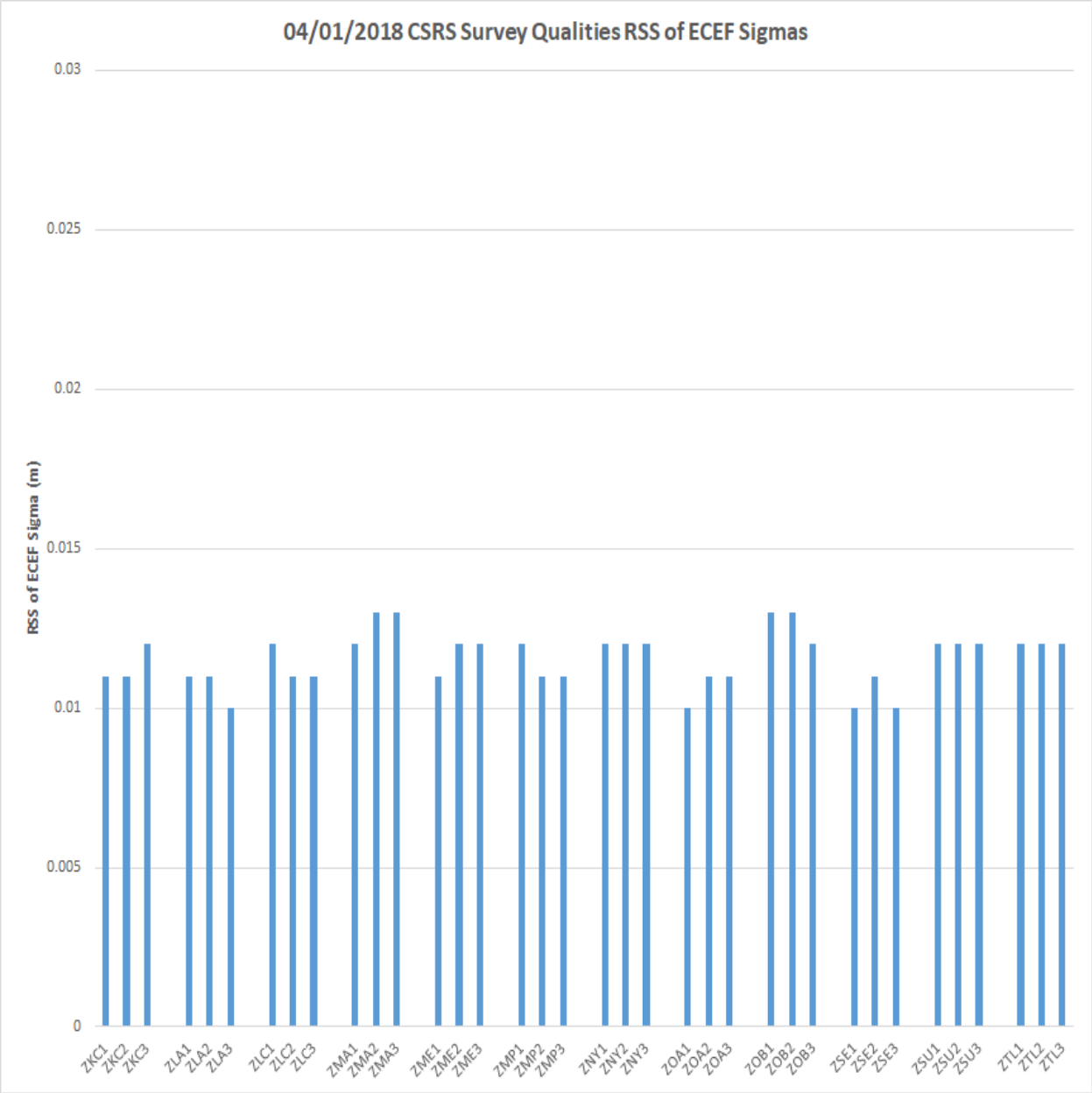


Figure 10-12 CSRS Survey Qualities



11.0 SQM

The SQM is designed to detect signal deformations originating from the GPS or GEO satellites and to ensure that the UDRE values are sufficiently inflated given the monitor's current observations. The SQM processes various correlator spacing measurements produced by the reference station receivers. These measurements are used to form four detection metrics for each receiver, and statistics are calculated based on the observed performance against "ideal" signal correlation peaks, resulting in an overall estimated deformation per satellite. The estimated deformation is compared against threshold values, which includes the acceptable error levels per UDRE value. If the estimated deformation exceeds threshold, the SQM trips for the given satellite and the UDRE value is set to "Don't Use". Currently, all 114 WAAS WREs are being used in the SQM computations because SQM depends on the entire ground network to ensure the satellite is the source of any detected problem rather than a localized affect.

The WAAS SQM offline monitoring effort includes the monitoring of the PRN type biases, trips, and the estimated deformation for each satellite (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 four 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 (DM) 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

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

For this reporting period, the GEO-type biases were not evaluated. Table 11-2 shows the rollup averages for the quarter. Table 11-3 shows the rollup averages since January 1, 2008. Figure 11-1 shows the daily averages of the four detection metrics for the quarter.

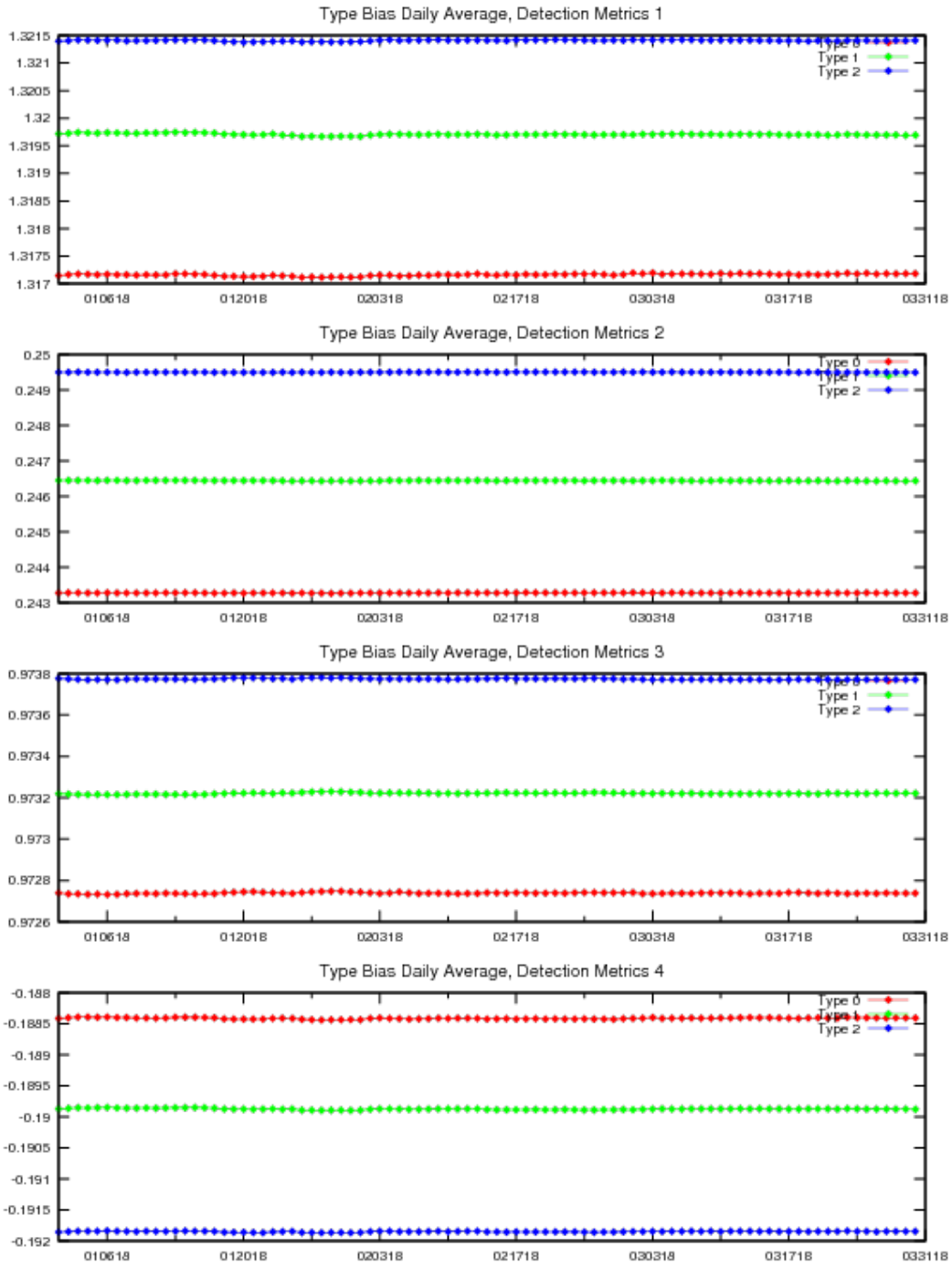
Table 11-2 Type Bias Average for the Quarter

Detection Metric	Type 0	Type 1	Type 2
DM 1	1.31716	1.31971	1.32141
DM 2	0.243277	0.246445	0.249505
DM 3	0.972739	0.973221	0.973774
DM 4	-0.188413	-0.189874	-0.19185

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

Detection Metric	Type 0	Type 1	Type 2
DM 1	1.32004	1.32218	1.32387
DM 2	0.241371	0.244601	0.247755
DM 3	0.973086	0.973602	0.974167
DM 4	-0.186729	-0.188457	-0.190487

Figure 11-1 Type Bias Average Trend



11.3 PRN Bias

The PRN biases are evaluated as part of the WAAS SQM offline monitoring effort. A 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 orbiting satellites, which results 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 averages for the quarter with the maximum values for each detection metrics as follows: (1) the maximum average for DM1 is 0.00113498 observed on PRN-11, (2) the maximum average for DM2 is 0.000196 observed on PRN23, (3) the maximum average for DM3 is 0.000203 observed on PRN29, (4) the maximum average for DM4 is 0.000485 observed on PRN23.

Table 11-4 PRN Bias Average for the Quarter

PRN	DM 1	DM 2	DM 3	DM 4
1	0.000250674	6.49596e-05	5.83674e-05	0.000102131
2	0.000538553	0.000150602	6.75236e-05	0.000152731
3	0.000159717	4.79169e-05	5.38483e-05	0.000103178
4	Offline	Offline	Offline	Offline
5	0.000188233	5.35854e-05	0.000133202	0.00012819
6	0.000535819	0.000103137	8.50034e-05	0.000104635
7	0.000159871	0.00010173	5.91506e-05	8.89674e-05
8	0.000430297	0.000122716	9.21213e-05	0.00013709
9	0.000196073	5.11e-05	0.000129554	0.000212842
10	0.000166934	4.42056e-05	8.71989e-05	0.000191233
11	0.00113498	0.000185298	0.000102946	0.000267571
12	0.000156839	4.39787e-05	8.7082e-05	9.60753e-05
13	0.000514308	3.88258e-05	5.4373e-05	0.000258569
14	0.00076144	0.000136984	4.62022e-05	0.00018272
15	0.000257969	7.31933e-05	4.7436e-05	9.80517e-05
16	0.000150364	5.61809e-05	0.00011668	0.000220872
17	0.000206548	5.51719e-05	4.54067e-05	8.48966e-05
18*	0.000714259	0.000140095	0.000104591	0.00030315
18**	0.00017639	8.319e-05	6.689e-05	0.00010629
19	0.000595879	0.000193606	0.000101152	0.000107271
20	0.000154625	4.20697e-05	5.17034e-05	0.000121563
21	0.000323485	6.40236e-05	8.41494e-05	0.000425491
22	0.000152381	3.98742e-05	9.68888e-05	0.00027362
23	0.00106623	0.000196219	0.000123669	0.000485656
24	0.00022452	6.4809e-05	0.000151515	0.000236861
25	0.00059582	0.000111406	4.89899e-05	0.000223092
26	0.00025549	0.000108897	5.77461e-05	0.00013648
27	0.000440442	0.000187391	0.000126572	0.000253266
28	0.00031422	3.97483e-05	7.51236e-05	0.000136107
29	0.000256299	8.40483e-05	0.000203412	0.000342552
30	0.000222062	7.25517e-05	7.20281e-05	9.81022e-05
31	0.000340156	0.000123092	5.24225e-05	0.000159653
32	0.000174807	5.00427e-05	8.51494e-05	0.000114145

*PRN18 (SVN 54) went offline on January 23, 2018.
**PRN18 (SVN 34) went online on March 20, 2018.

Figure 11-2 PRN Bias Average for the Quarter

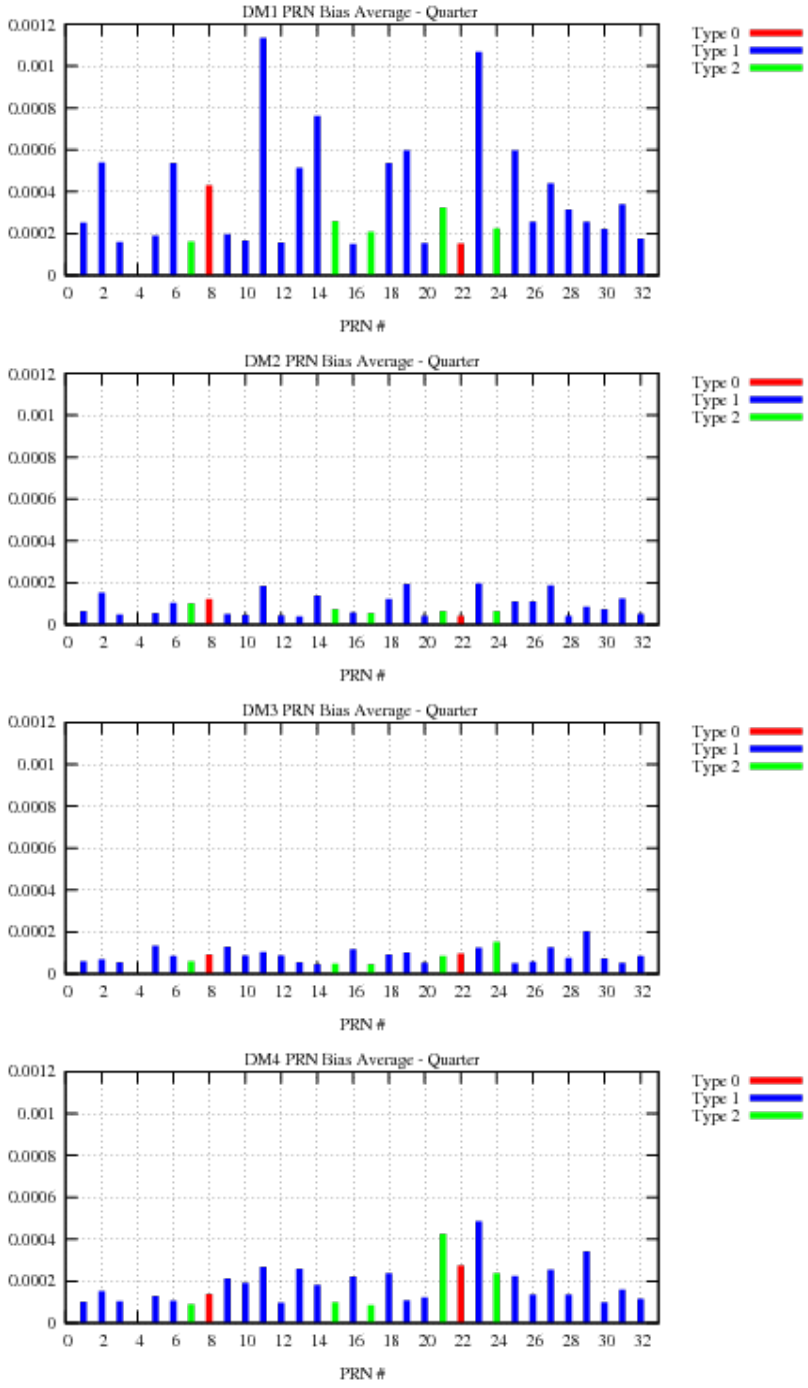


Figure 11-3 through Figure 11-10 show the daily PRN bias for each PRN for four detection metrics. Small bumps were due to NANU's. PRN18 (SVN-54) went offline on January 23, 2018. PRN18 (SVN-34) came back online on March 20, 2018.

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

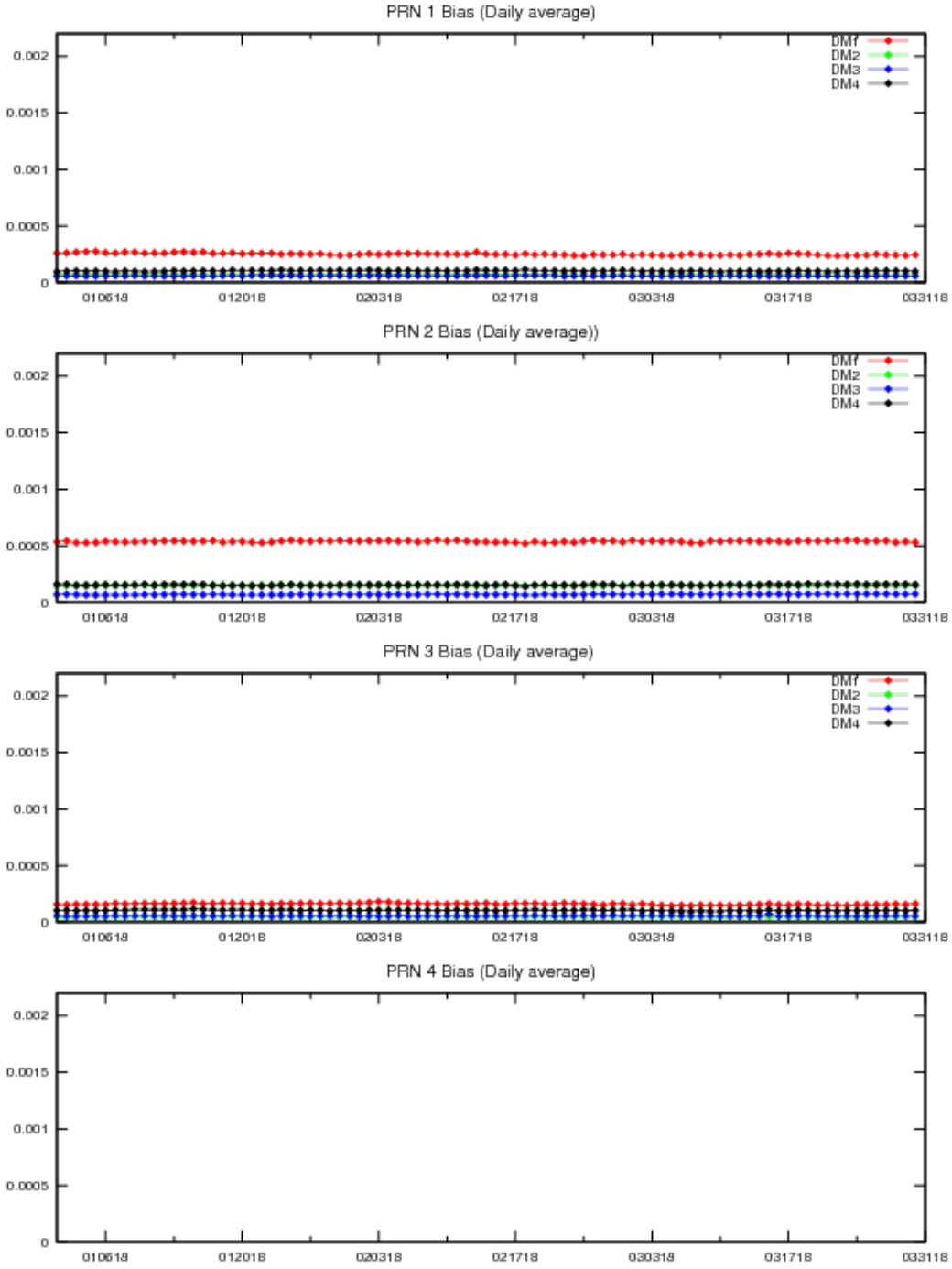


Figure 11-4 PRN Bias Average Trend (PRN-5 – PRN-8)

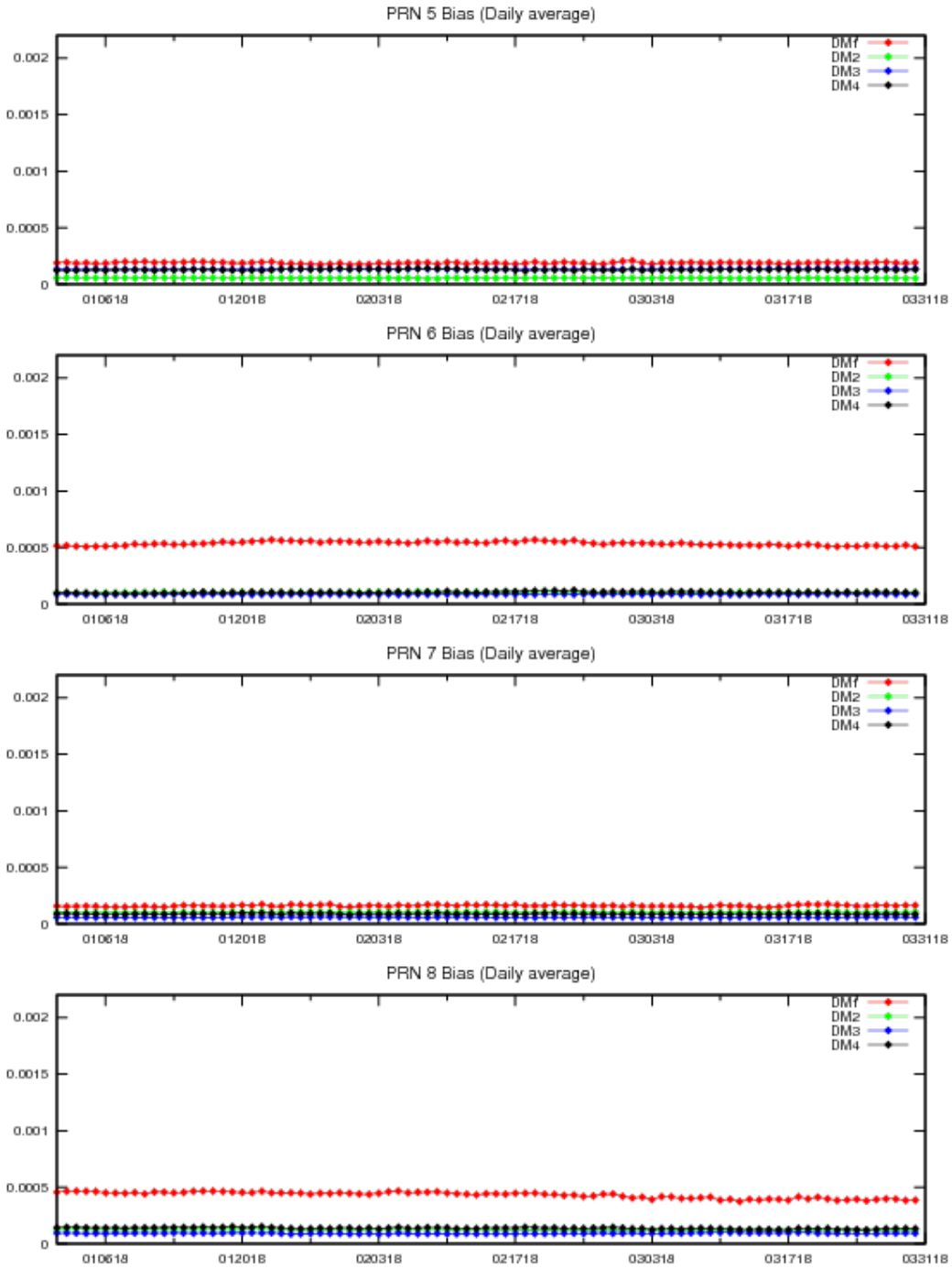


Figure 11-5 PRN Bias Average Trend (PRN-9 – PRN-12)

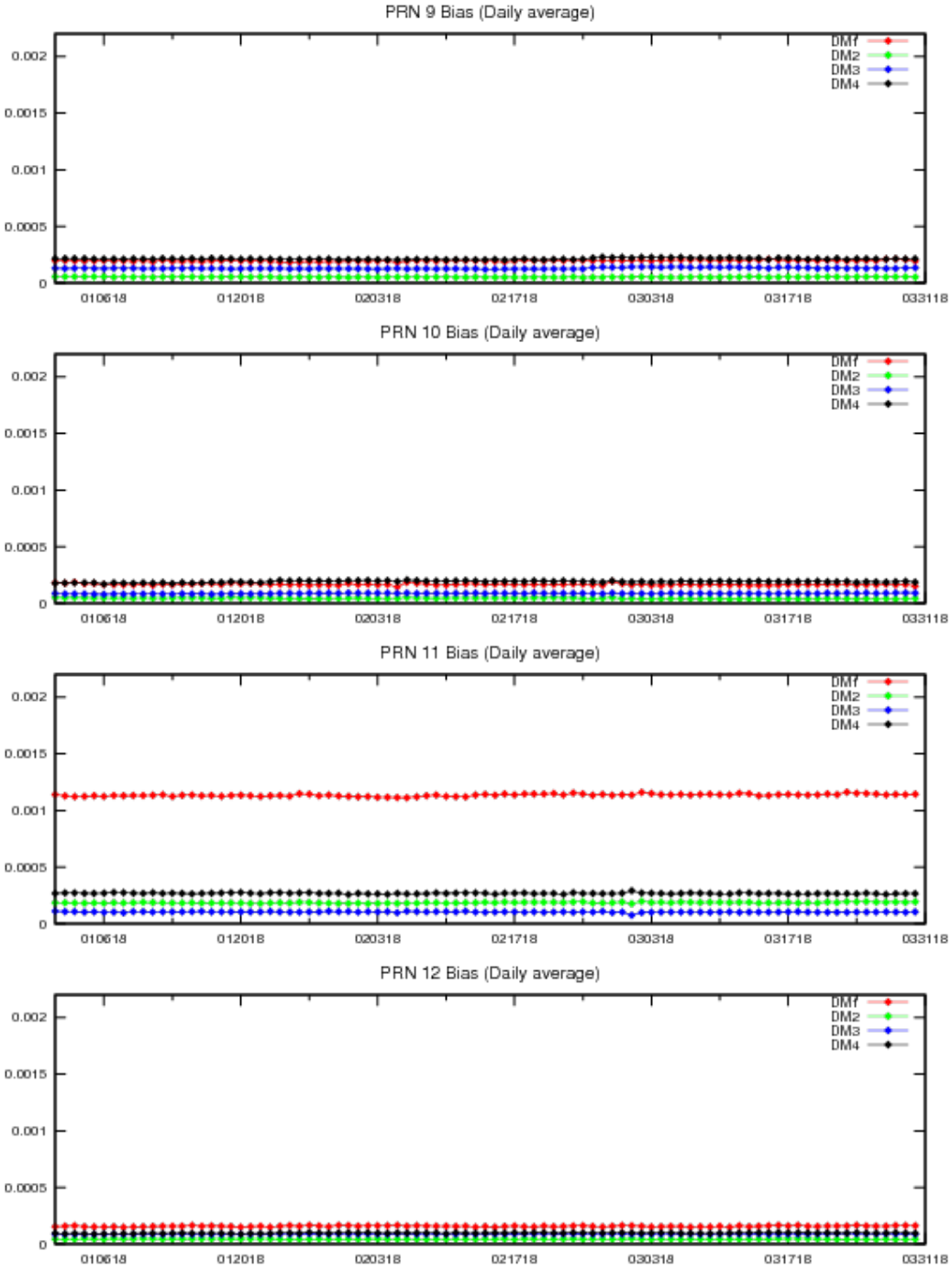


Figure 11-6 PRN Bias Average Trend (PRN-13 – PRN-16)

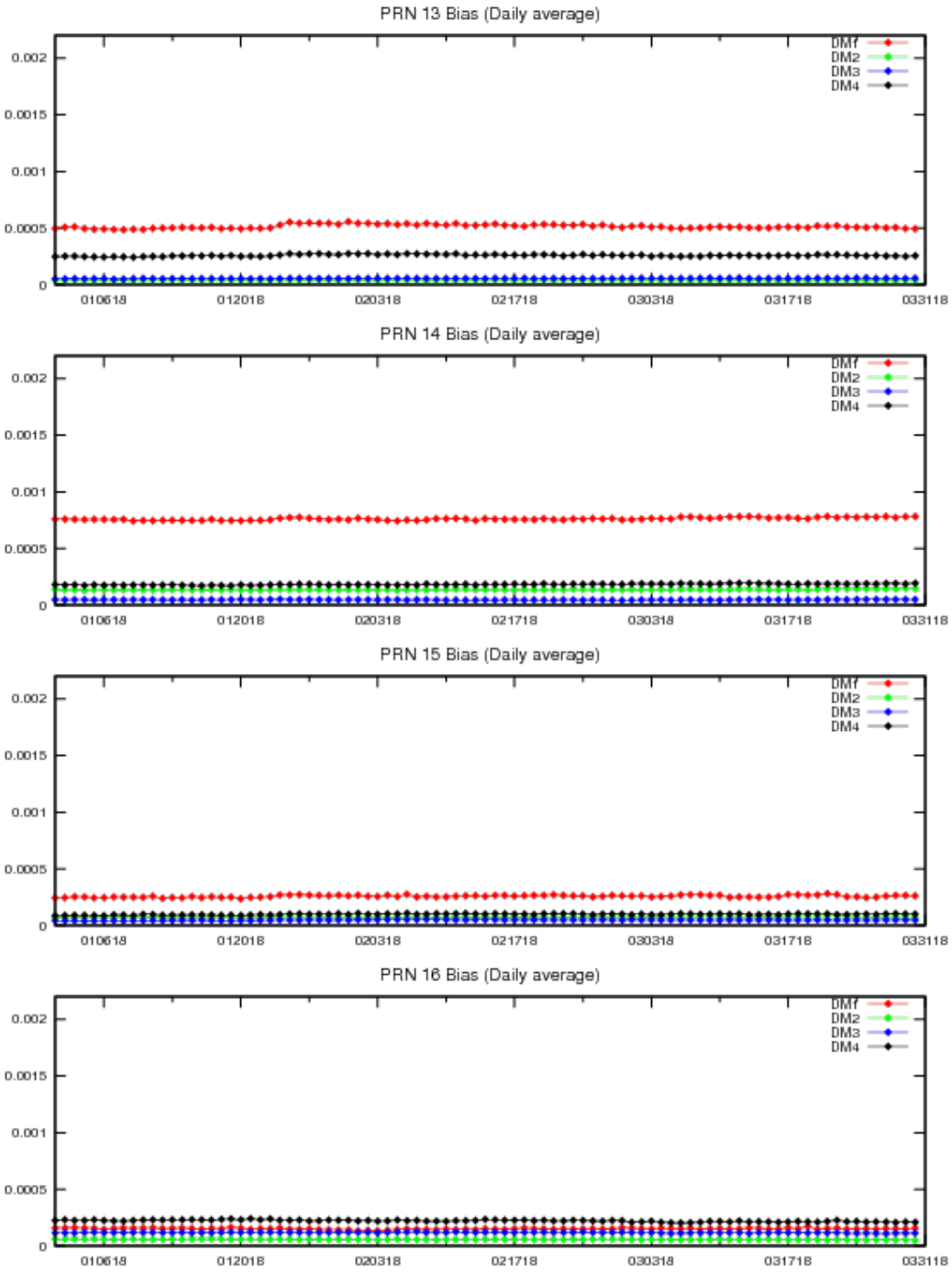


Figure 11-7 PRN Bias Average Trend (PRN-17 – PRN-20)

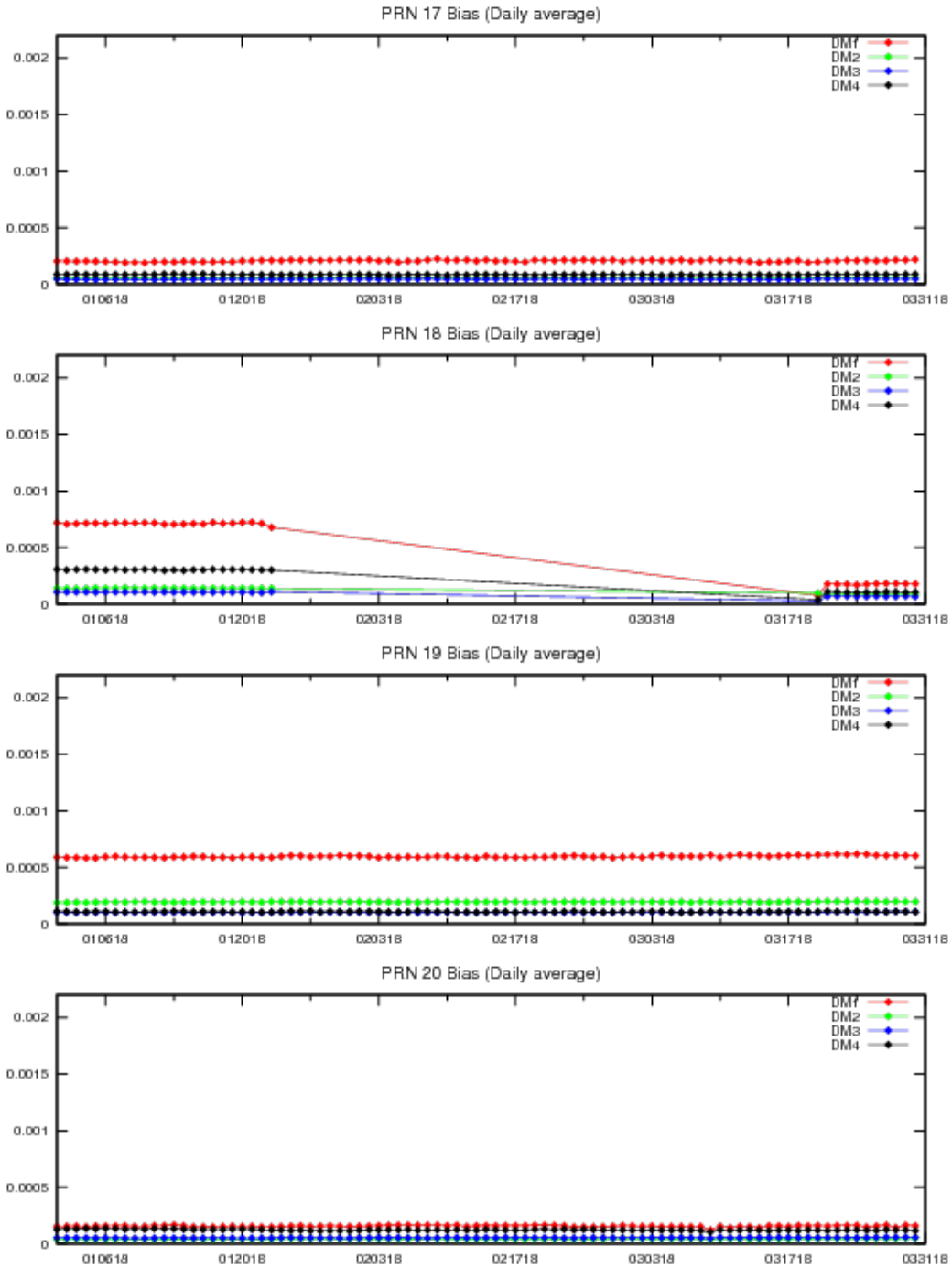


Figure 11-8 PRN Bias Average Trend (PRN-21 – PRN-24)

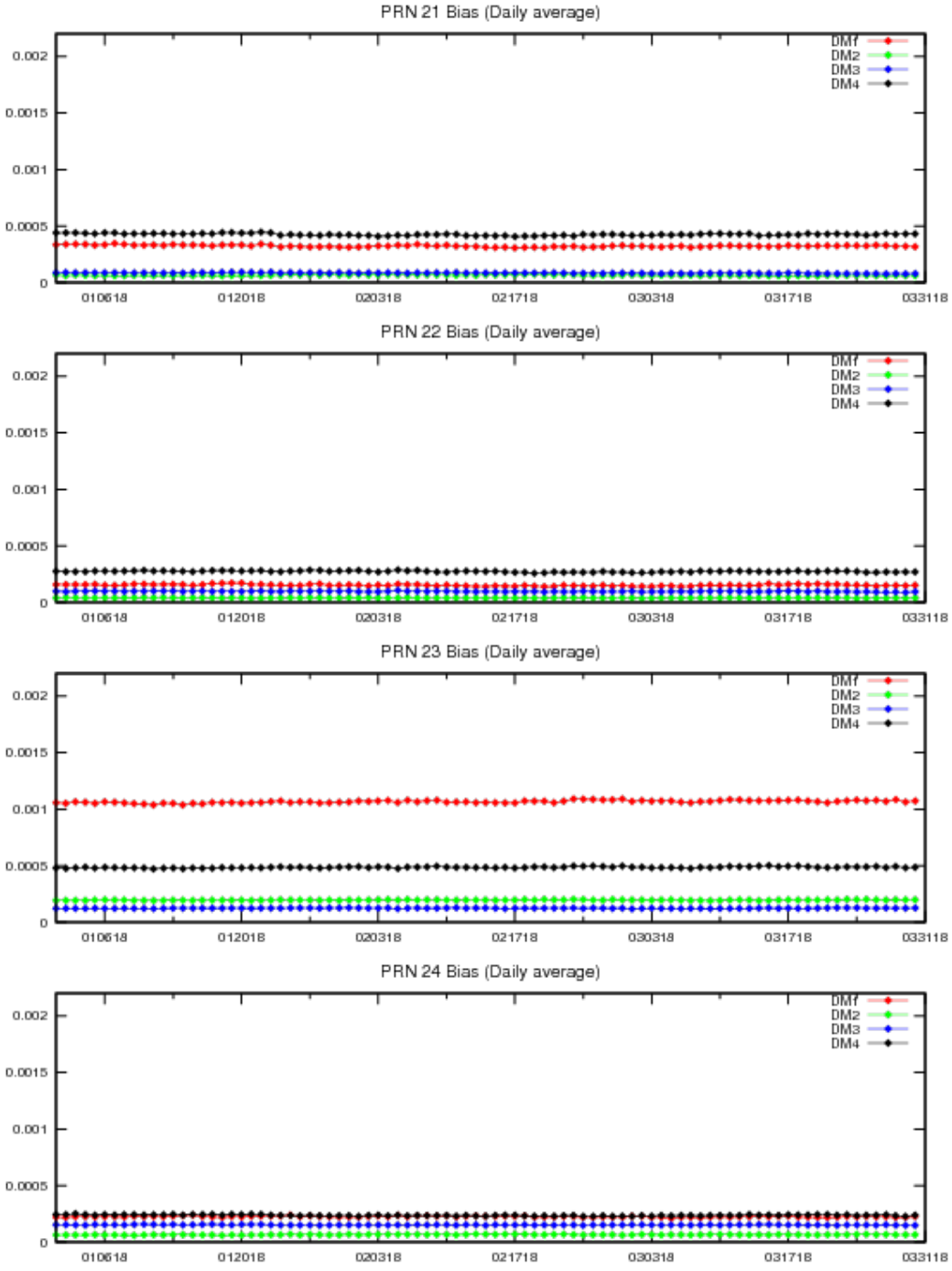


Figure 11-9 PRN Bias Average Trend (PRN-25 – PRN-28)

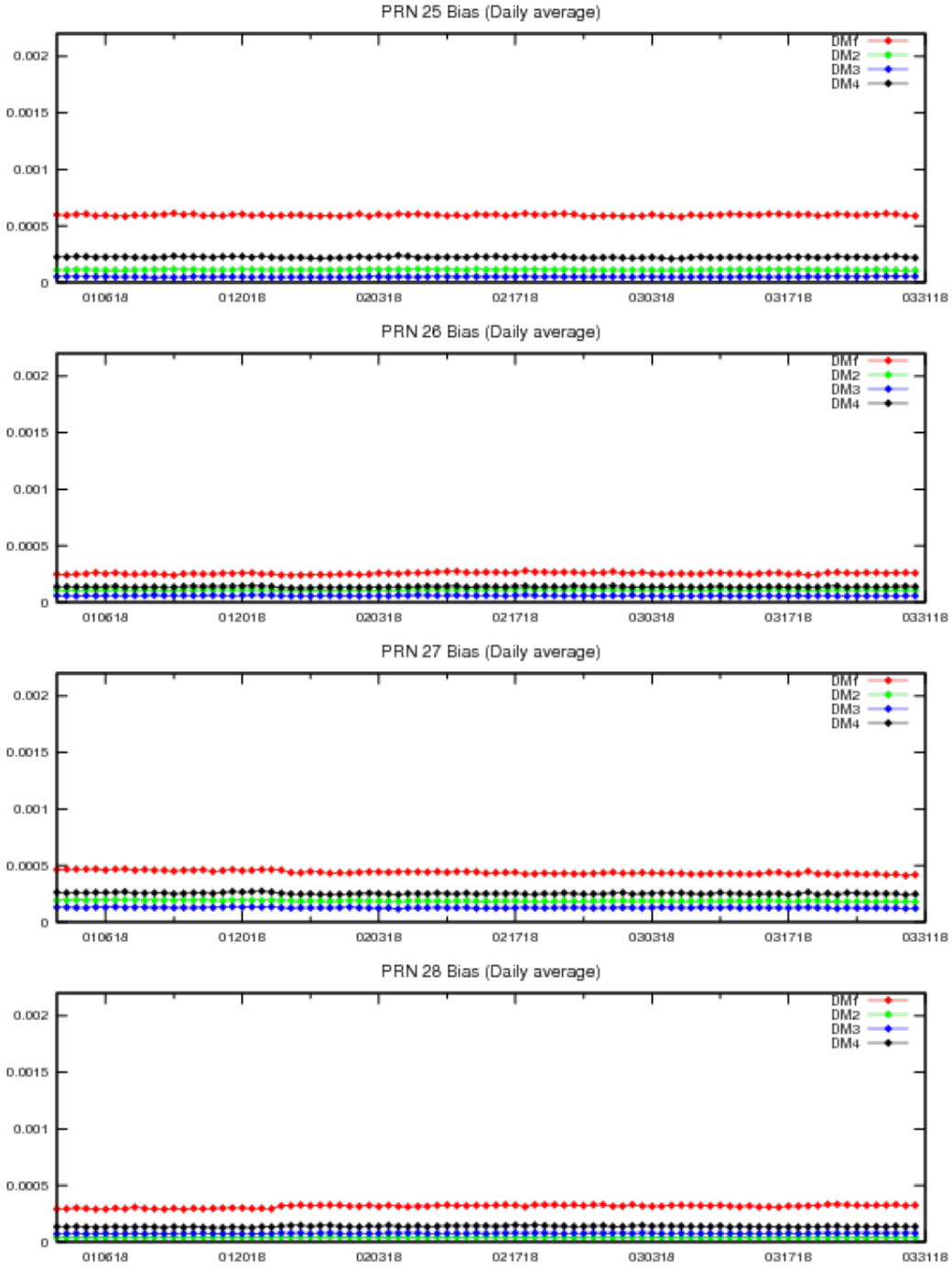
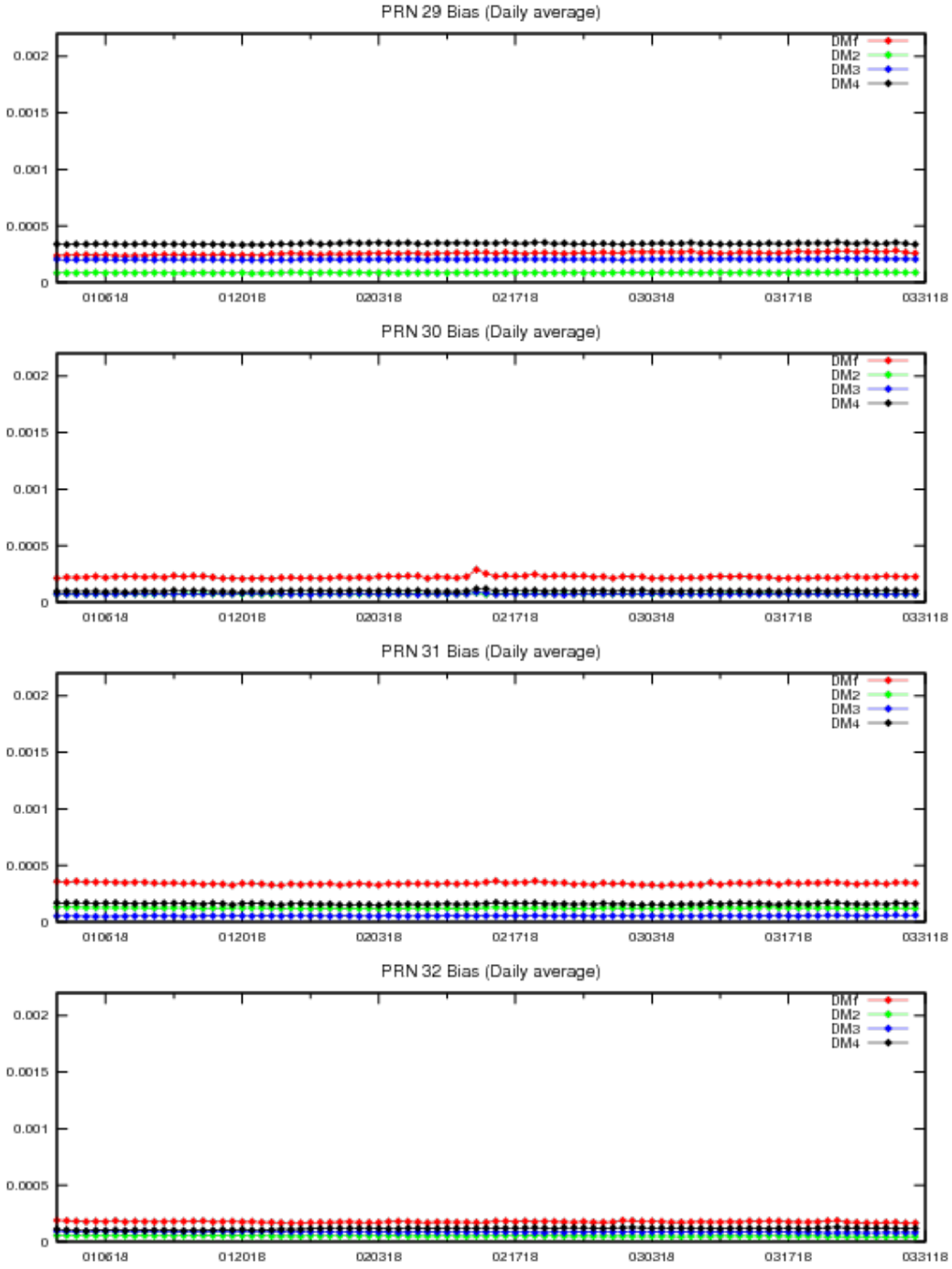


Figure 11-10 PRN Bias Average Trend (PRN-29 – PRN-32)



11.4 SQM Trips

A SQM trip occurs when the estimated deformation exceeds threshold. For this reporting quarter, there were no trips reported.

Appendix A: Glossary and Acronyms

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.

APC. Antenna phase center

ARP. Antenna reference point

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

CNMP. Code noise and multipath

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 the 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.

CRE. GEO PRN-138

CRW. GEO PRN-135

CSRS. Canadian Spatial Reference System

DM. Detection metrics

DR. Discrepancy Report.

ECEF. Earth-centered, Earth-fixed.

FAA. Federal Aviation Administration

FD. Fault Detection

FDE. Fault Detection and Exclusion. 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

GMT. Greenwich Mean Time

GPS. Global Positioning System. 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.

GIVE. Grid Ionospheric Vertical Error. Indicate the accuracy of ionospheric vertical delay correction at a geographically defined IGP. WAAS transmits one GIVE for each IGP in the mask.

GUS. Ground uplink station

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

HAL. Horizontal alert limit. 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 $1\text{-}10^{-7}$ 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.

HPE. Horizontal position error

HPL. Horizontal protection level. 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 on the error estimates provided by WAAS.

IAP. Instrument Approach Procedures

IGS. International GPS Service.

IGP. Ionsopheric grid point. A geographically defined point for which the WAAS provides the vertical ionospheric delay.

Kp. Planetary index

LNAV. Lateral navigation

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

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

LPV200. Localizer Performance with Vertical Guidance to 200 ft decision height. A WAAS operational service level with a HAL equal to 40 meters and a VAL equal to 35 meters.

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.

NAS. National Airspace System

Navigation Message. Message structure designed to carry navigation data.

NGS. National Geodetic Survey

NPA Navigation Mode. 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.

NTSB. National Satellite Test Bed

OCONUS. Outside Contiguous United States

OPUS. Online Positioning Use Server

PAN. Performance Analysis Network

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.

PPP. Precise Point Positioning.

PA Navigation Mode. 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.

PRN. Pseudo-random noise

RAIM. Receiver autonomous integrity monitoring

RFI. Radio frequency interference

RNAV. Area navigation

RNP. Required Navigation Performance

RSS. Residual sum of squares.

SBAS. Space Based Augmentation System

SIS. Signal in space

SQM. Signal quality monitor. 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.

SSM. System support modification

SPS. Standard positioning service. 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.

SVN. Space Vehicle Number.

TOW. Time of GPS week

UDRE. User differential range error. Indicates the accuracy of combined fast and slow error corrections. WAAS transmits one UDRE for each satellite in the mask.

VAL. Vertical alert limit. 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 $1\text{-}10^{-7}$ 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.

VPE. Vertical position error

VPL. Vertical protection level. 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

WAAS. Wide Area Augmentation System. 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 and 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 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.

WIPP. WAAS Integrity Performance Panel

WJHTC. William J. Hughes Technical Center

WRE. Wide-Area Reference Equipment

WRS. WAAS reference station

Appendix B: Additional Coverage Plots

Appendix B includes the coverage plots with 99% LPV200 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% LPV200 availability contour. Figure B-6 shows Alaska coverage with 99% LPV200 availability contour.

Figure B-1 98% CONUS LP Availability Contour

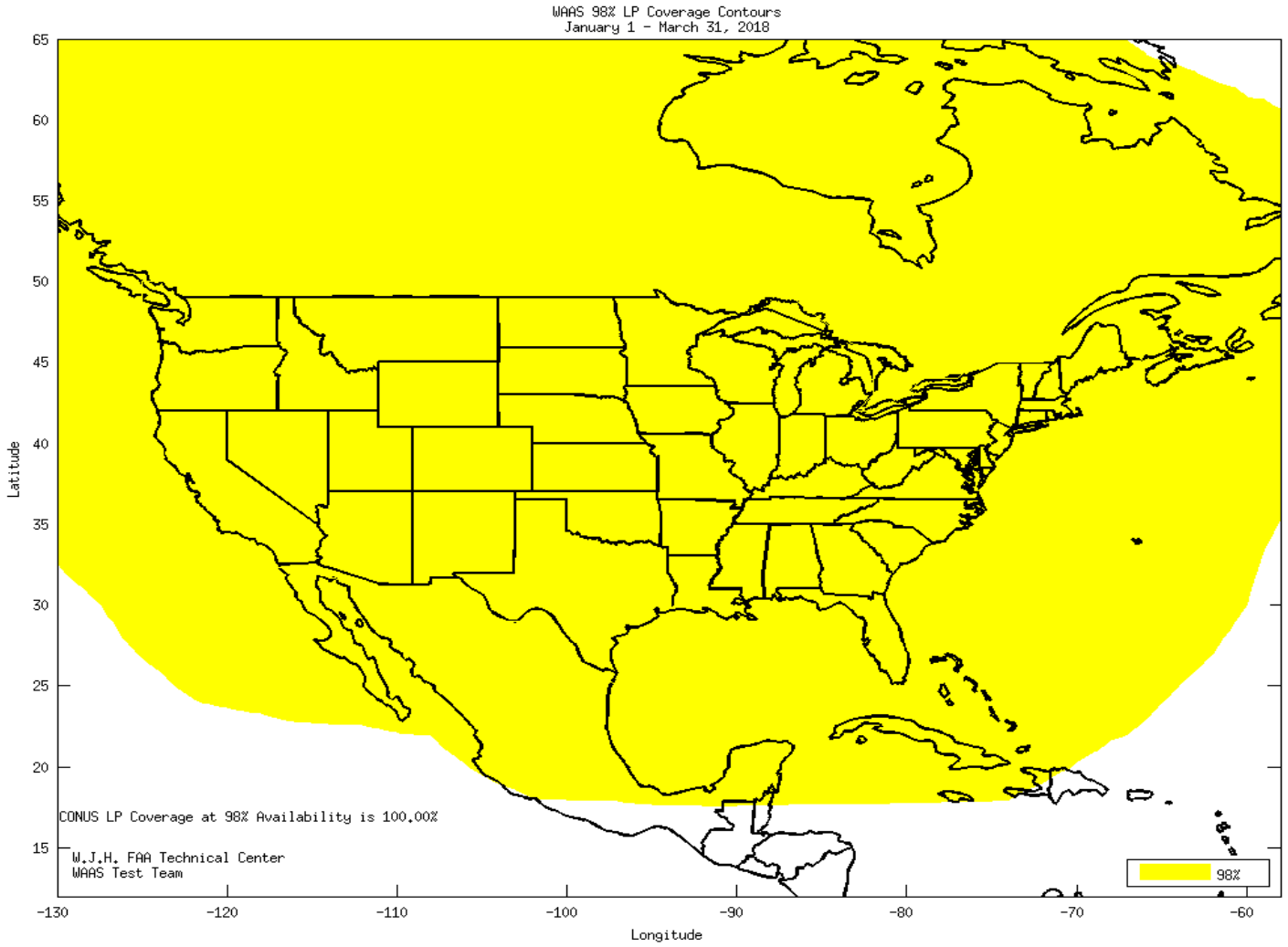


Figure B-2 98% Alaska LP Availability Contour

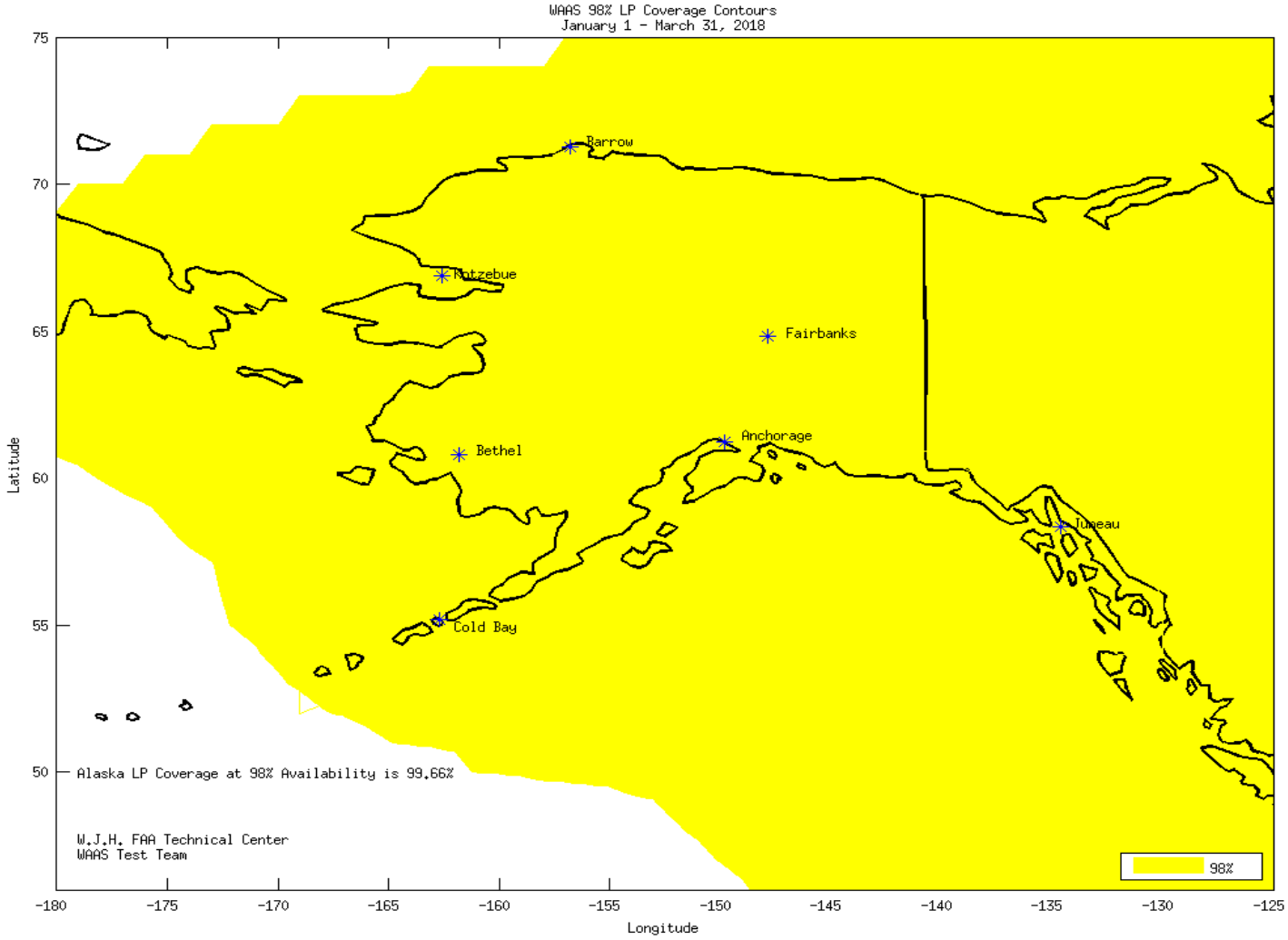


Figure B-3 98% CONUS LPV Availability Contour

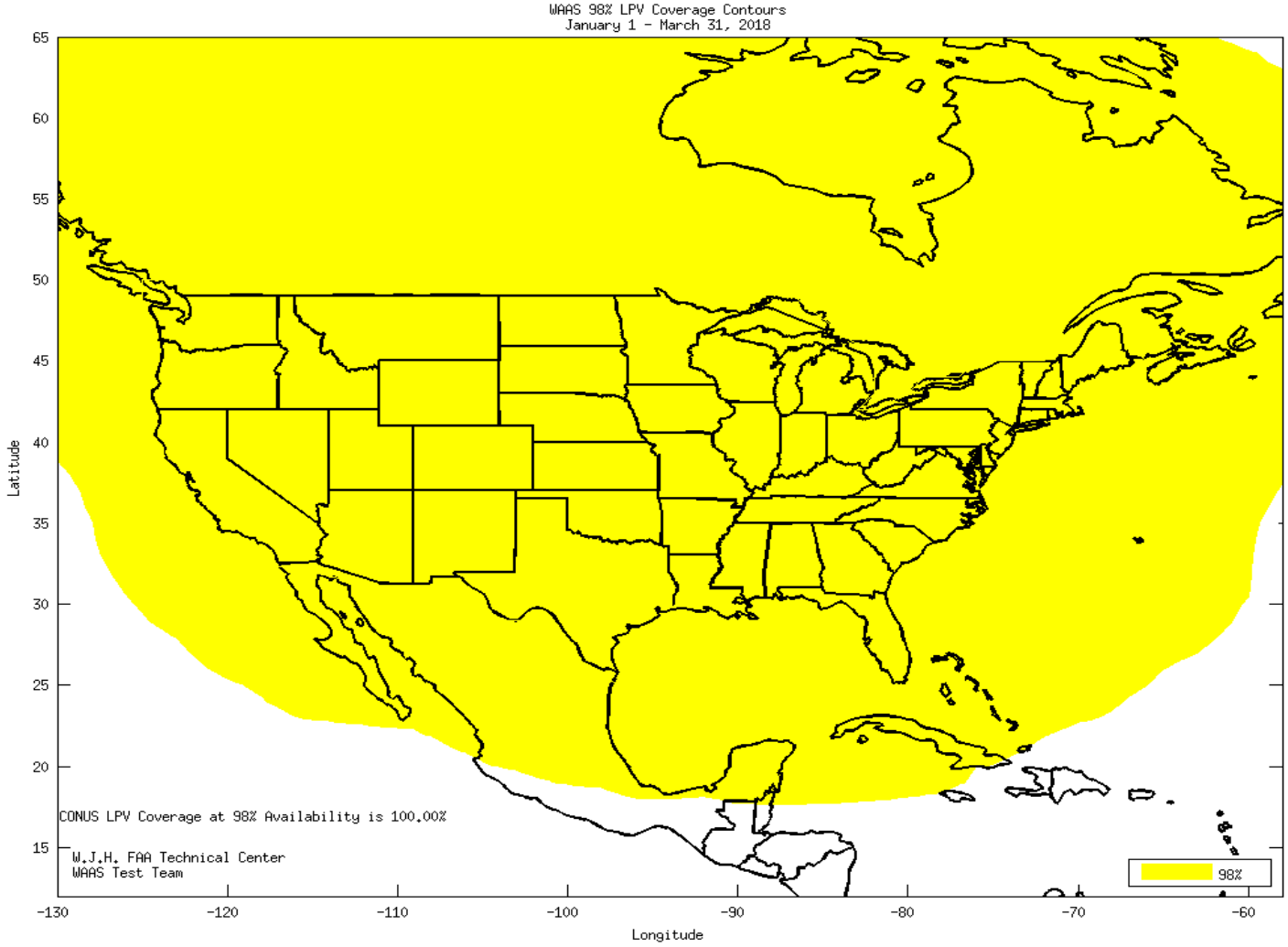


Figure B-4 98% Alaska LPV Availability Contour

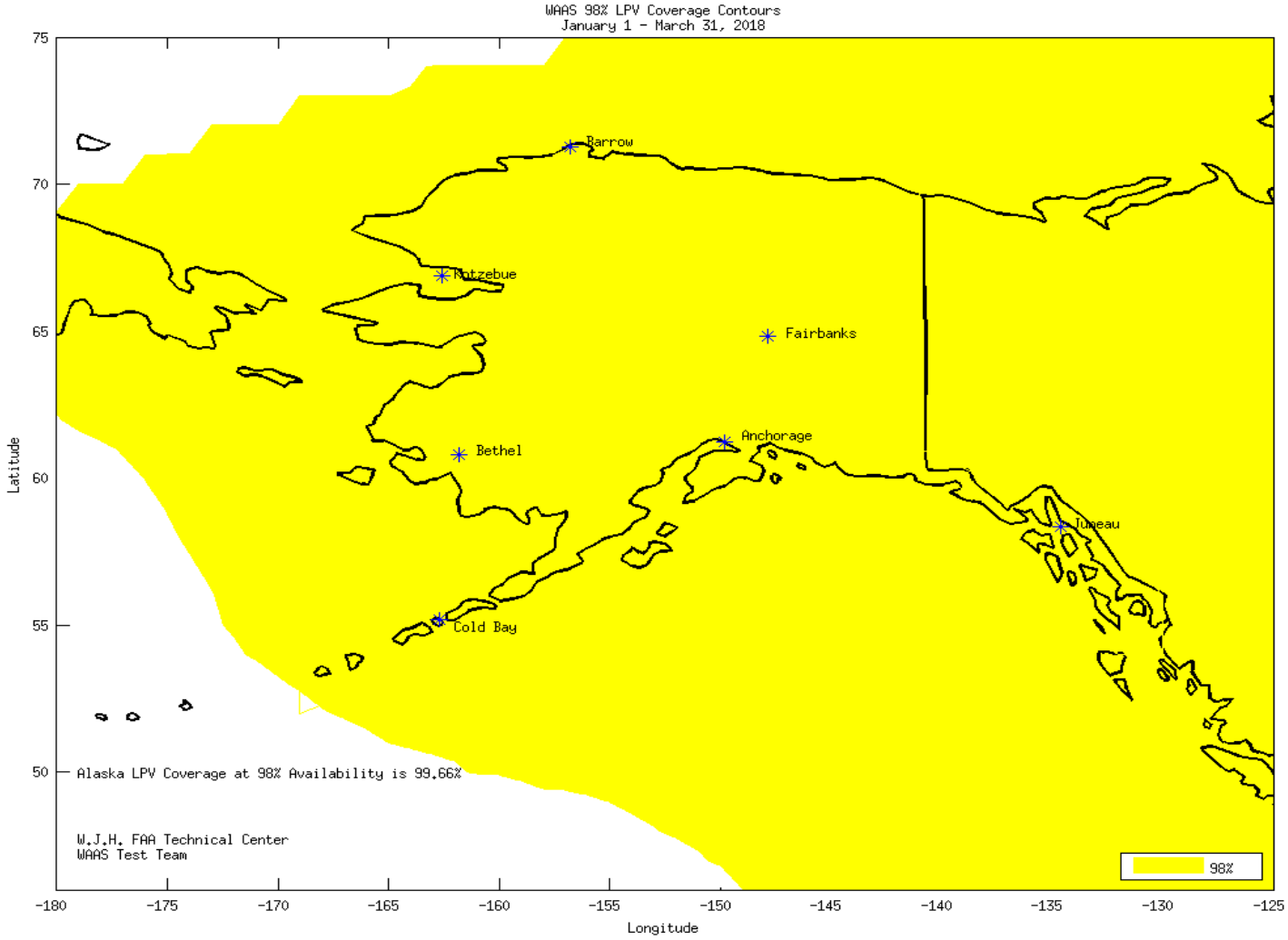


Figure B-5 98% CONUS LPV200 Availability Contour

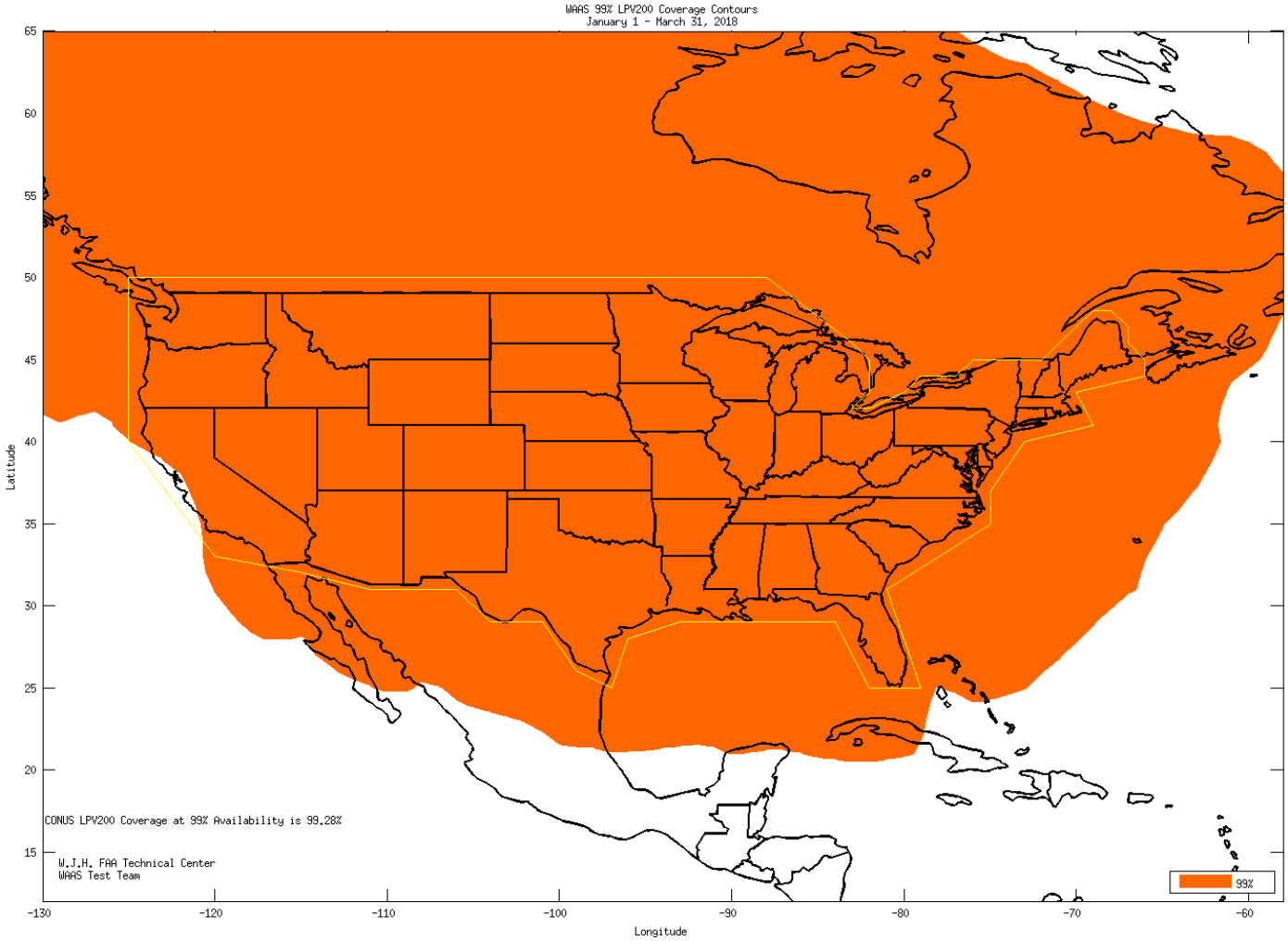


Figure B-6 98% Alaska LPV200 Availability Contour