

WIDE AREA AUGMENTATION SYSTEM PERFORMANCE ANALYSIS REPORT

Report #63

Reporting Period: October 01 to December 31, 2017

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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 #63 provides WAAS performance data from the October 1 through December 31, 2017 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/Maximum	CONUS Site/Minimum	Alaska Site/Maximum	Alaska Site/Minimum
95% Horizontal Accuracy (HPL <= 40 meters)	Atlantic City 1.477 meters	Oakland 0.662 meters	Goose Bay 0.862 meters	Bethel 0.593 meters
95% Vertical Accuracy (VPL <= 50 meters)	Miami 1.655 meters	Denver 0.824 meters	Barrow 1.342 meters	Goose Bay 0.991 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 99.3%	Anchorage 99.99%	Barrow 98.11%
99% HPL	Cleveland 17.176 meters	Oklahoma City 10.904 meters	Cold Bay 20.794 meters	Juneau 13.138 meters
99% VPL	Oakland 32.828 meters	Kansas City 18.433 meters	Barrow 35.304 meters	Juneau 22.925 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), PRN 138 (CRE), and PRN 133 (AMR). CRE and CRW GEOs provide a precision approach (PA) ranging capability that supports all levels of WAAS service. As of January 18, 2015, the AMR GEO indefinitely discontinued non-precision approach (NPA) ranging service.

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
NTSB:		
Arcata	87	7518364
Atlantic City	91	7872409
Oklahoma City	89	7654860
WAAS:		
Albuquerque	92	7938319
Anchorage	92	7935439
Atlanta	92	7933547
Barrow	92	7927446
Bethel	92	7928595
Billings	92	7938015
Boston	92	7935148
Chicago	92	7936453
Cleveland	91	7903586
Cold Bay	92	7931662
Dallas	91	7847305
Denver	92	7922390
Fairbanks	92	7923916
Gander	88	7581460
Goose Bay	92	7936166
Houston	92	7937121
Iqaluit	92	7931552
Jacksonville	92	7934087
Juneau	92	7929104
Kansas City	92	7938011
Kotzebue	92	7928589
Los Angeles	91	7844559
Memphis	92	7937183
Merida	92	7930754
Mexico City	92	7928608
Miami	92	7933818
Minneapolis	92	7938240
New York	92	7937896
Oakland	92	7932293
Puerto Vallarta	92	7930546
Salt Lake City	73	6302608
San Jose Del Cabo	92	7925183
Seattle	92	7926058
Washington DC	92	7933399
Winnipeg	92	7938347

Table 1-3 NPA Evaluation Site

Location	Number of Days Evaluated	Number of Samples
Albuquerque	92	7939630
Anchorage	92	7939717
Atlanta	92	7939754
Barrow	92	7939547
Bethel	92	7936395
Billings	92	7939741
Boston	92	7939728
Cleveland	92	7939735
Cold Bay	92	7938179
Fairbanks	92	7931966
Gander	89	7680939
Honolulu	92	7935997
Houston	92	7939751
Iqaluit	92	7939187
Juneau	92	7938154
Kansas City	92	7939654
Kotzebue	92	7937772
Los Angeles	91	7850080
Merida	92	7926901
Miami	84	7245447
Minneapolis	92	7936768
Oakland	92	7939751
Salt Lake City	73	6327535
San Jose Del Cabo	92	7939073
San Juan	88	7569641
Seattle	92	7930990
Tapachula	35	3014159
Washington DC	92	7935656

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
1/27/2017	12/31/2017	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV), PRN24	LPV200_Alaska	GPS Flex Power tests caused a UDREi increase to 12 on PRN24 twice during the day. The first elevated UDREi spike (currently occurring between 05:00 GMT and 07:00 GMT) causes minor degradation of LPV200 service coverage in Alaska. See DR135.
1/28/2017	12/31/2017	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV), PRN24	LPV200_CONUS	GPS Flex Power tests caused a UDREi increase to 12 on PRN24 twice during the day. The second elevated UDREi spike (currently occurring between 16:00 GMT to 18:00 GMT) causes minor degradation of LPV200 service coverage in CONUS (California) at 16:39 GMT. See DR135.

Start Date	End Date	Location/Satellite	Service Affected	Event Description
9/21/2017	10/4/2017	San Juan (ZSU1), San Juan (ZSU2), San Juan (ZSU3)	LPV200_CONUS	The ZSU WRS experienced an outage due to damage from Hurricane Maria. The outage lasted from 03:55:16 GMT on 9/21 to 20:24:45 GMT on 10/4. This caused minor degradation of LPV200 service coverage in the southern tip of the Florida panhandle. Please see plot(s): LPV200_9/22/2017
10/3/2017	10/3/2017	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Alaska	Geomagnetic activity (Kp = 3) disturbed the ionosphere causing elevated GIVE values. The elevated GIVE values resulted in minor degradation of LPV200 service coverage in Alaska from 18:39 GMT to 18:44 GMT.
10/4/2017	10/4/2017	PRN1	LPV200_Canada	The reduction in LPV200 service Canada was due to a GPS NANU on PRN1 (see NANU2017110) which was unusable from 09:37:00 GMT to 12:56:00 GMT. The NANU caused moderate degradation of LPV200 service coverage in Canada from 09:46 GMT to 10:00 GMT and from 10:53 GMT to 12:04 GMT. Please see plot(s): LPV200_10/4/2017 Cov vs Time Canada 10/4/2017
10/10/2017	10/11/2017	Bethel (BET1), Bethel (BET2), Bethel (BET3)	LPV200_Alaska	SSM-48: This system support modification (SSM) upgrades the software at the BET WRS. This upgrade supports the cutover to WAAS CY 17. During this upgrade, at least two threads were in verification mode from 17:27 GMT to 18:37 GMT. This caused a ~4200-second outage at BET. The outage caused moderate degradation of LPV200 service coverage in Alaska from 17:52 GMT to 18:29 GMT. Please see plot(s): LPV200_10/11/2017 Cov vs Time Alaska 10/11/2017
10/12/2017	10/13/2017	San Juan (ZSU1), San Juan (ZSU2), San Juan (ZSU3)	LPV200_CONUS	All threads at the ZSU WRS experienced an outage from 15:22:06 GMT on 10/12 to 00:00:27 on 10/13. This outage (along with the MTP WRE outage) caused minor degradation of LPV200 service coverage in CONUS (Southern tip of Florida Panhandle) from 17:29 GMT to 17:49 GMT on 10/12. Please see plot(s): LPV200_10/12/2017

Start Date	End Date	Location/Satellite	Service Affected	Event Description
10/12/2017	10/12/2017	PRN29	LPV_Canada, LPV200_Alaska, LPV200_Canada	The reduction in LPV200 service Alaska and Canada was due to a GPS NANU on PRN29 (see NANU2017113) which was unusable from 14:21:00 GMT to 17:28:00 GMT. The NANU caused moderate degradation of: (1) LPV200 service coverage in Alaska from 16:23 GMT to 17:25 GMT; and (2) LPV200 service coverage in Canada from 16:31 GMT to 17:27 GMT. The NANU also caused minor degradation of LPV service coverage in Canada from 16:31 GMT to 17:07 GMT. Please see plot(s): LPV 10/12/2017 LPV200 10/12/2017 Cov vs Time Alaska 10/12/2017 Cov vs Time Canada 10/12/2017
10/13/2017	10/13/2017	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Alaska, LPV200_Canada	Geomagnetic activity (Kp = 6) disturbed the ionosphere causing elevated GIVE values. The elevated GIVE values resulted in moderate degradation of: (1) LPV200 service coverage in Alaska from 10:37 GMT to 10:58 GMT; and (2) LPV200 service coverage in Canada from 22:35 GMT to 23:13 GMT. Please see plot(s): LPV200 10/13/2017
10/14/2017	10/14/2017	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Alaska, LPV200_Canada	Geomagnetic activity (Kp = 5) disturbed the ionosphere causing elevated GIVE values. The elevated GIVE values resulted in minor degradation of: (1) LPV200 service coverage in Alaska from 10:35 GMT to 10:42 GMT; and (2) LPV200 service coverage in Canada from 01:34 GMT to 01:51 GMT. Please see plot(s): LPV200 10/14/2017
10/19/2017	10/20/2017	PRN26	LPV200_Alaska, LPV200_Canada	The reduction in LPV200 service Alaska and Canada was due to a GPS NANU on PRN26 (see NANU2017115) which was unusable from 16:46:00 GMT on 10/19 to 00:39:00 GMT on 10/20. The NANU caused moderate degradation of LPV200 service coverage in Alaska from 17:34 GMT to 17:47 GMT on 10/19. The NANU also caused minor degradation of LPV200 service coverage in Canada from 17:22 GMT to 17:41 GMT on 10/19. Please see plot(s): LPV200 10/19/2017

Start Date	End Date	Location/Satellite	Service Affected	Event Description
10/23/2017	10/23/2017	GEO135,Napa (APC)	LPV200_CONUS, LPV200_Alaska	The uplink for the CRW GEO, PRN135 switched from the Napa uplink site to the Littleton uplink site at 08:00:14 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 moderate degradation of LPV200 service coverage in CONUS from 12:31 GMT to 12:52 GMT. The elevated UDRE for GEO 135 also caused minor degradation of LPV200 service coverage in Alaska from 09:59 GMT to 10:06 GMT and from 14:41 GMT to 14:58 GMT. TOW 115231-115236 Please see plot(s): LPV200_10/23/2017
10/24/2017	10/24/2017	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Canada	Several IGP's at latitude 45 to 75 and longitudes -90 to -45 were set to Not-Monitored from 15:52 GMT to 16:06 GMT. The WAAS performance monitor reported at the time IGP's were set to Not-Monitored state that the Iqaluit WRS experience sub-frame reasonability warning and YFB PID Down fault which removed Iqaluit WRS from the WAAS correction processing. This type of event has occurred on 9/28/16, 10/27/16, and 06/26/17. On these occasions, all GEOs set these IGP GIVES to Not-Monitored. In this instance, only GEO 135 set the GIVES to Not-Monitored. The GIVES affected also reached lower latitudes than similar events. See DR 133.
10/24/2017	10/24/2017	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_CONUS, LPV200_Canada	Geomagnetic activity (Kp = 5) disturbed the ionosphere causing elevated GIVE values. The elevated GIVE values resulted in moderate degradation of LPV200 service coverage in Canada from 15:40 GMT to 15:59 GMT. The elevated GIVE values also resulted in minor degradation of LPV200 service coverage in CONUS from 12:34 GMT to 12:40 GMT. Please see plot(s): LPV200_10/24/2017
10/25/2017	10/25/2017	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_CONUS, LPV200_Canada	Geomagnetic activity (Kp = 5) disturbed the ionosphere causing elevated GIVE values. The elevated GIVE values resulted in moderate degradation of LPV200 service coverage in Canada from 04:08 GMT to 04:25 GMT and from 21:48 GMT to 21:58 GMT. The elevated GIVE values also resulted in moderate degradation of LPV200 service coverage in CONUS from 12:31 GMT to 12:37 GMT. Please see plot(s): LPV200_10/25/2017

Start Date	End Date	Location/Satellite	Service Affected	Event Description
10/27/2017	10/27/2017	PRN31	LPV200_Canada	The reduction in LPV200 service Alaska and Canada was due to a GPS NANU on PRN31 (see NANU2017118) which was unusable from 01:01:00 GMT to 06:47:00 GMT. The NANU caused moderate degradation of LPV200 service coverage in Canada from 01:35 GMT to 03:05 GMT, from 03:27 GMT to 04:18 GMT, and 05:17 GMT to 05:36 GMT. Please see plot(s): LPV200_10/27/2017
11/1/2017	11/1/2017	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_CONUS	Geomagnetic activity (Kp = 1) disturbed the ionosphere causing elevated GIVE values. The elevated GIVE values resulted in minor degradation of LPV200 service coverage in CONUS from 11:55 GMT to 12:13 GMT.
11/2/2017	11/2/2017	PRN29	LPV200_Alaska, LPV200_Canada	The reduction in LPV200 service Alaska and Canada was due to a GPS NANU on PRN29 (see NANU2017119) which was unusable from 13:41:00 GMT to 18:57:00 GMT. The NANU caused moderate degradation of: (1) LPV200 service coverage in Alaska from 15:02 GMT to 15:56 GMT and from 16:15 GMT to 16:24 GMT; and (2) LPV200 service coverage in Canada from 15:12 GMT to 16:03 GMT. Please see plot(s): LPV200_11/2/2017 Cov vs Time Alaska 11/2/2017 Cov vs Time Canada 11/2/2017
11/2/2017	11/2/2017	GEO138, Woodbine (QWE)	LPV200_CONUS, LPV200_Canada	The uplink for the CRE GEO, PRN138 switched from the Woodbine uplink site to the Brewster-B uplink site at 08:00:03 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 CONUS from 11:48 GMT to 12:09 GMT; and (2) LPV200 service coverage in Canada from 08:00 GMT to 08:11 GMT, from 09:48 GMT to 09:53 GMT, from 13:18 GMT to 13:25 GMT, and from 14:18 GMT to 14:23 GMT. TOW 374420-374425
11/7/2017	12/24/2017	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV), PRN6	LPV200_Canada	GPS Flex Power tests caused a UDREi increase to 12 on PRN6 during the day. The elevated UDREi spike caused minor degradation of LPV200 service coverage (most recently at 09:46 GMT on 12/24) in Canada. See DR135 .

Start Date	End Date	Location/Satellite	Service Affected	Event Description
11/7/2017	11/7/2017	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_CONUS, LPV200_Alaska, LPV200_Canada	Geomagnetic activity (Kp = 6) disturbed the ionosphere causing elevated GIVE values. The elevated GIVE values resulted in moderate degradation of: (1) LPV200 service coverage in CONUS from 11:24 GMT to 11:49 GMT; (2) LPV200 service coverage in Alaska from 10:11 GMT to 10:20 GMT; and (3) LPV200 service coverage in Canada from 09:12 GMT to 09:25 GMT and from 10:11 GMT to 10:15 GMT. Please see plot(s): LPV200_11/7/2017_Cov vs Time Alaska 11/7/2017 LPV200_11/7/2017_Cov vs Time Canada 11/7/2017
11/8/2017	11/8/2017	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_CONUS, LPV200_Canada	Geomagnetic activity (Kp = 6) disturbed the ionosphere causing elevated GIVE values. The elevated GIVE values resulted in moderate degradation of LPV200 service coverage from 00:00 GMT to 00:10 GMT, from 01:35 GMT to 01:43 GMT, from 02:43 GMT to 03:23 GMT, and from 04:24 GMT to 04:54 GMT. The elevated GIVE values also resulted in minor degradation of LPV200 service coverage from 11:26 GMT to 11:40 GMT. Please see plot(s): LPV200_11/8/2017
11/10/2017	11/10/2017	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Alaska, LPV200_Canada	Geomagnetic activity (Kp = 4) disturbed the ionosphere causing elevated GIVE values. The elevated GIVE values resulted in minor degradation of: (1) LPV200 service coverage in Alaska from 08:42 GMT to 09:14 GMT; and (2) LPV200 service coverage in Canada from 03:01 GMT to 03:18 GMT.
11/14/2017	11/14/2017	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV), PRN6	LPV200_CONUS	GPS Flex Power tests caused a UDREi increase to 12 on PRN6 during the day. The elevated UDREi spike caused minor degradation of LPV200 service coverage in CONUS (California, Oregon, and Arizona) at 11:17 GMT. See DR135 .
11/16/2017	11/16/2017	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Canada	Geomagnetic activity (Kp = 4) disturbed the ionosphere causing elevated GIVE values. The elevated GIVE values resulted in minor degradation of LPV200 service coverage in Canada from 02:44 GMT to 02:48 GMT and from 05:32 GMT to 05:46 GMT.
11/17/2017	11/17/2017	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_CONUS	Geomagnetic activity (Kp = 3) disturbed the ionosphere causing elevated GIVE values. The elevated GIVE values resulted in minor degradation of LPV200 service coverage in CONUS from 10:43 GMT to 11:08 GMT.

Start Date	End Date	Location/Satellite	Service Affected	Event Description
11/19/2017	11/19/2017	GEO138,Brewster-B (BRE-B)	LPV_Canada, LPV200_Canada	The uplink for the CRE GEO, PRN138 switched from the Brewster-B uplink site to the Woodbine uplink site at 23:39:18 GMT. This caused a 15-second outage of the GEO 138 broadcast and also caused the WAAS carrier smoothing algorithm to reinitialize for PRN138. The absence of a second GEO broadcast caused a 30-second outage of WAAS service in Northeastern Canada. TOW 85175-85191. Please see plot(s): LPV200_11/19/2017 Cov vs Time Canada 11/19/2017
11/20/2017	11/20/2017	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Canada	IGPs at Latitude 70 and Longitudes -70 to -50 were set to Not-Monitored from 15:49 GMT to 15:59 GMT. The WAAS performance monitor reported at the time IGPs were set to Not-Monitored state that the Iqaluit WRS experienced subframe reasonability warnings and YFB PID Down faults which removed Iqaluit WRS from the WAAS correction processing. The elevated GIVE values caused minor degradation of LPV200 service coverage in Canada from 15:49 GMT to 16:00 GMT. This type of event has occurred on 9/28/16, 10/27/16, 06/26/17, and 10/24/17. See DR 133.
11/21/2017	11/21/2017	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Alaska	Geomagnetic activity (Kp = 5) disturbed the ionosphere causing elevated GIVE values. The elevated GIVE values resulted in minor degradation of LPV200 service coverage in Alaska from 08:24 GMT to 08:29 GMT.
11/22/2017	11/22/2017	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Canada	Geomagnetic activity (Kp = 3) disturbed the ionosphere causing elevated GIVE values. The elevated GIVE values resulted in minor degradation of LPV200 service coverage in Canada from 02:16 GMT to 02:23 GMT, from 04:00 GMT to 04:09 GMT and from 08:48 GMT to 08:52 GMT.
11/28/2017	11/29/2017	Los Angeles (ZLA1), Los Angeles (ZLA2), Los Angeles (ZLA3)	LPV200_CONUS	ZLA WRS was taken offline for equipment relocation from 00:36 GMT on 11/28 to 04:30 GMT on 11/29. The WRS outage caused moderate degradation of LPV200 service coverage in CONUS (California) from 10:01 GMT to 10:24 GMT. Please see plot(s): LPV200_11/28/2017
11/29/2017	11/29/2017	GEO138,Woodbine (QWE)	LPV200_Canada	The uplink for the CRE GEO, PRN138 switched from the Woodbine uplink site to the Brewster-B uplink site at 08:05:32 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 LPV200 service coverage in Canada from 08:30 GMT to 08:37 GMT and from 11:32 GMT to 11:41 GMT. TOW 288349-288354

Start Date	End Date	Location/Satellite	Service Affected	Event Description
12/5/2017	12/5/2017	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Canada	Geomagnetic activity (Kp = 5) disturbed the ionosphere causing elevated GIVE values. This resulted in minor degradation of LPV200 service coverage in Canada from 02:23 GMT to 02:57 GMT.
12/6/2017	12/6/2017	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 minor degradation of LPV200 service coverage in Canada from 01:53 GMT to 02:48 GMT.
12/14/2017	12/14/2017	PRN21	LPV200_Alaska, LPV200_Canada	The reduction in LPV200 service Alaska and Canada was due to a GPS NANU on PRN21 (see NANU2017125) which was unusable from 13:15:00 GMT to 19:14:00 GMT. The NANU caused minor degradation of: (1) LPV200 service coverage in Alaska from 15:35 GMT to 15:45 GMT; and (2) LPV200 service coverage in Canada from 14:17 GMT to 14:23 GMT and from 16:13 GMT to 16:18 GMT.
12/17/2017	12/17/2017	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Alaska, LPV200_Canada	Geomagnetic activity (Kp = 5) disturbed the ionosphere causing elevated GIVE values. This resulted in minor degradation of (1) LPV200 service coverage in Alaska from 06:13 GMT to 06:32 GMT; and (2) LPV200 service coverage in Canada from 06:31 GMT to 07:07 GMT.
12/18/2017	12/18/2017	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 minor degradation of LPV200 service coverage in Canada from 02:05 GMT to 02:20 GMT.
12/19/2017	12/19/2017	PRN6	LPV200_CONUS, LPV200_Canada	The reduction in LPV200 service CONUS and Canada was due to a GPS NANU on PRN6 (see NANU2017126) which was unusable from 09:24:00 GMT to 14:27:00 GMT. The NANU caused significant degradation of LPV200 service coverage in CONUS from 12:28 GMT to 13:08 GMT. The NANU also caused moderate degradation of LPV200 service coverage in Canada from 10:41 GMT to 11:11 GMT. Please see plot(s): LPV200_12/19/2017_Cov vs Time Conus_12/19/2017
12/26/2017	12/26/2017	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_CONUS	Geomagnetic activity (Kp = 4) disturbed the ionosphere causing elevated GIVE values. This resulted in minor degradation of LPV200 service coverage in CONUS (California) from 08:02 GMT to 08:29 GMT.

Table 1-6 WAAS Upgrades

Start Date	End Date	Location	Event Description
10/02/2017	10/03/2017	Seattle (ZSE1), Seattle (ZSE2), Seattle (ZSE3)	SSM-48: This system support modification (SSM) upgrades the software at the ZSE WRS. This upgrade supports the cutover to WAAS CY 17.

Start Date	End Date	Location	Event Description
10/03/2017	10/04/2017	Minneapolis (ZMP1), Minneapolis (ZMP2), Minneapolis (ZMP3)	SSM-48: This system support modification (SSM) upgrades the software at the ZMP WRS. This upgrade supports the cutover to WAAS CY 17.
10/04/2017	10/16/2017	Miami (ZMA1), Miami (ZMA2), Miami (ZMA3)	SSM-48: This system support modification (SSM) upgrades the software at the ZMA WRS. This upgrade supports the cutover to WAAS CY 17. ZMA-C was upgraded on 10/4, ZMA-B was upgraded on 10/11, and ZMA-A was upgraded on 10/16.
10/05/2017	10/06/2017	Honolulu (HNL1), Honolulu (HNL2)	SSM-48: This system support modification (SSM) upgrades the software at the HNL WRS. This upgrade supports the cutover to WAAS CY 17.
10/05/2017	10/06/2017	Chicago (ZAU1), Chicago (ZAU2), Chicago (ZAU3)	SSM-48: This system support modification (SSM) upgrades the software at the ZAU WRS. This upgrade supports the cutover to WAAS CY 17.
10/10/2017	10/11/2017	Juneau (JNU1), Juneau (JNU2), Juneau (JNU3)	SSM-48: This system support modification (SSM) upgrades the software at the JNU WRS. This upgrade supports the cutover to WAAS CY 17.
10/10/2017	10/11/2017	Bethel (BET1), Bethel (BET2), Bethel (BET3)	SSM-48: This system support modification (SSM) upgrades the software at the BET WRS. This upgrade supports the cutover to WAAS CY 17. During this upgrade, at least two threads were in verification mode from 17:27 GMT to 18:37 GMT. This caused a ~4200-second outage at BET. The outage caused moderate degradation of LPV200 service coverage in Alaska from 17:52 GMT to 18:29 GMT.
10/12/2017	10/13/2017	Fairbanks (FAI1), Fairbanks (FAI2), Fairbanks (FAI3)	SSM-48: This system support modification (SSM) upgrades the software at the FAI WRS. This upgrade supports the cutover to WAAS CY 17.
10/16/2017	10/23/2017	San Juan (ZSU1), San Juan (ZSU2), San Juan (ZSU3)	SSM-48: This system support modification (SSM) upgrades the software at the ZSU WRS. This upgrade supports the cutover to WAAS CY 17. ZSU-C and ZSU-B were upgraded on 10/16. ZSU-A was upgraded on 10/23.
10/19/2017	10/19/2017	Salt Lake City (ZLC1), Salt Lake City (ZLC2), Salt Lake City (ZLC3)	SSM-48: This system support modification (SSM) upgrades the software at the ZLC WRS. This upgrade supports the cutover to WAAS CY 17.
10/21/2017	10/22/2017	Cold Bay (CDB1), Cold Bay (CDB2), Cold Bay (CDB3)	SSM-48: This system support modification (SSM) upgrades the software at the CDB WRS. This upgrade supports the cutover to WAAS CY 17.

Start Date	End Date	Location	Event Description
11/01/2017	11/01/2017	GEO133, Paumalu (HDH)	SSM-48: This system support modification (SSM) removed Paumalu (HDH) from WAAS service. This is in preparation to decommission AMR GEO-133.
11/09/2017	11/09/2017	GEO133, Santa Paula (SZP)	SSM-48: This system support modification (SSM) removed Santa Paula (SZP) from WAAS service. This is in preparation to decommission AMR GEO-133.
11/09/2017	11/09/2017	GEO133	SSM-48: This system support modification (SSM) removed AMR GEO 133 from the PRN Mask. The GEO is decommissioned from WAAS service.

Table 1-7 GUS Switchovers

Start Date	End Date	GUS Switch	Location/Satellite	Service Affected	Event Description
10/23/2017	10/23/2017	Manual	GEO135,Napa (APC)	LPV200_CONUS, LPV200_Alaska	The uplink for the CRW GEO, PRN135 switched from the Napa uplink site to the Littleton uplink site at 08:00:14 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 moderate degradation of LPV200 service coverage in CONUS from 12:31 GMT to 12:52 GMT. The elevated UDRE for GEO 135 also caused minor degradation of LPV200 service coverage in Alaska from 09:59 GMT to 10:06 GMT and from 14:41 GMT to 14:58 GMT. TOW 115231-115236 Please see plot(s): LPV200_10/23/2017
10/26/2017	10/26/2017	Faulted	GEO133,Paumalu (HDH)	None	The uplink for the AMR GEO, GEO 133, switched from the Paumalu uplink site to the Santa Paula uplink site at 16:01:39 GMT. This caused an 18-second outage of the GEO 133 broadcast and also caused the WAAS carrier smoothing algorithm to reinitialize for PRN133. This also caused the UDRE for GEO 133 to be elevated. TOW 403316-403335
11/1/2017	11/1/2017	GUS	GEO133, Paumalu (HDH)	None	SSM-48: This system support modification (SSM) removed Paumalu (HDH) from WAAS service. This is in preparation to decommission AMR GEO-133.

Start Date	End Date	GUS Switch	Location/Satellite	Service Affected	Event Description
11/2/2017	11/2/2017	Manual	GEO138,Woodbine (QWE)	LPV200_CONUS, LPV200_Canada	The uplink for the CRE GEO, PRN138 switched from the Woodbine uplink site to the Brewster-B uplink site at 08:00:03 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 CONUS from 11:48 GMT to 12:09 GMT; and (2) LPV200 service coverage in Canada from 08:00 GMT to 08:11 GMT, from 09:48 GMT to 09:53 GMT, from 13:18 GMT to 13:25 GMT, and from 14:18 GMT to 14:23 GMT. TOW 374420-374425
11/4/2017	11/4/2017	Missed Navigation Message	GEO138,Brewster-B (BRE-B),Washington DC (CnV)	None	Brewster-B had CnV Source Select from Washington DC to Atlanta following a fault and the replacement of the corrections processor. TOW 539796-539798
11/9/2017	11/9/2017	GUS	GEO133, Santa Paula (SZP)	None	SSM-48: This system support modification (SSM) removed Santa Paula (SZP) from WAAS service. This is in preparation to decommission AMR GEO-133.
11/19/2017	11/19/2017	Faulted	GEO138,Brewster-B (BRE-B)	LPV_Canada, LPV200_Canada	The uplink for the CRE GEO, PRN138 switched from the Brewster-B uplink site to the Woodbine uplink site at 23:39:18 GMT. This caused a 15-second outage of the GEO 138 broadcast and also caused the WAAS carrier smoothing algorithm to reinitialize for PRN138. The absence of a second GEO broadcast caused a 30-second outage of WAAS service in Northeastern Canada. TOW 85175-85191 Please see plot(s): LPV200 11/19/2017 Cov vs Time Canada 11/19/2017
11/29/2017	11/29/2017	Manual	GEO138,Woodbine (QWE)	LPV200_Canada	The uplink for the CRE GEO, PRN138 switched from the Woodbine uplink site to the Brewster-B uplink site at 08:05:32 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 LPV200 service coverage in Canada from 08:30 GMT to 08:37 GMT and from 11:32 GMT to 11:41 GMT. TOW 288349-288354

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, CRW, and AMR.

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 1.447 meters observed at Atlantic City.
- The maximum 95% CONUS vertical LPV error was 1.655 meters observed at Miami.
- The minimum 95% CONUS horizontal LPV errors was 0.662 meters observed at Oakland.
- The minimum 95% CONUS vertical LPV error was 0.824 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	1.261	1.261	1.198	100	.	*
Atlantic City	1.477	1.477	1.423	100	*	*
Oklahoma City	.78	.78	1.183	100	*	*
Albuquerque	.697	.697	.943	100	1.610	3.666
Anchorage	.675	.675	1.304	100	*	*
Atlanta	.839	.839	1.331	100	1.865	3.644
Barrow	.659	.659	1.342	100	*	*
Bethel	.593	.593	1.033	100	1.389	4.068
Billings	.741	.741	.892	100	1.762	3.504
Boston	.951	.951	1.017	100	2.052	3.235
Chicago	.982	.982	.953	100	*	*
Cleveland	.816	.816	.957	100	2.056	3.527
Cold Bay	.631	.631	1.097	100	*	*
Dallas	.729	.729	1.381	100	*	*
Denver	.675	.675	.824	100	*	*
Fairbanks	.684	.684	1.205	100	1.392	4.135
Gander	1	1	1.042	99.999	*	*
Goose Bay	.862	.862	.991	99.999	*	*
Houston	.784	.784	1.514	100	*	*
Iqaluit	.979	.979	1.261	99.999	*	*
Jacksonville	.854	.854	1.445	100	*	*
Juneau	.65	.65	1.171	100	*	*
Kansas City	.683	.683	.95	100	1.887	3.610
Kotzebue	.661	.661	1.236	100	1.364	4.236
Los Angeles	.905	.905	1.276	100	1.704	4.116
Memphis	.75	.75	1.12	100	*	*
Merida	.701	.701	1.847	100	*	*
Mexico City	.614	.614	2.48	100	*	*
Miami	.88	.88	1.655	100	1.593	3.763
Minneapolis	.821	.821	.918	100	1.905	3.541
New York	.981	.981	.996	100	*	*
Oakland	.662	.662	1.282	100	1.685	4.242
Puerto Vallarta	.698	.698	1.583	100	*	*
Salt Lake City	.786	.786	.883	100	1.756	3.521
San Jose Del Cabo	.785	.785	1.766	100	*	*
Seattle	.718	.718	.827	100	1.731	3.671
Washington DC	.967	.967	1.204	100	*	*
Winnipeg	.712	.712	.997	100	2.082	3.461

* 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 2.766 meters observed at Honolulu.
- The maximum 99.999% horizontal error was 6.238 meters observed at Honolulu.
- The minimum 95% horizontal error was 0.897 meters observed at Barrow.
- The minimum 99.999% horizontal error was 2.067 meters observed at Bethel.

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	1.106	2.383	100	2.552
Anchorage	1.051	2.351	100	3.887
Atlanta	1.398	2.633	100	2.801
Barrow	.897	2.751	100	9.613
Bethel	1.021	2.067	100	2.366
Billings	1.456	2.357	100	2.792
Boston	1.77	3.001	100	3.127
Cleveland	1.536	2.575	100	2.74
Cold Bay	1.162	2.159	100	3.531
Fairbanks	.998	2.248	100	4.685
Gander	1.63	3.801	99.999	4.094
Honolulu	2.766	6.238	100	6.638
Houston	1.404	2.552	100	2.806
Iqaluit	1.157	3.679	99.999	3.823
Juneau	.993	2.219	100	2.747
Kansas City	1.277	2.934	100	3.247
Kotzebue	.909	2.376	100	4.257
Los Angeles	1.473	3.032	100	6.043
Merida	1.111	3.334	100	3.825
Miami	1.315	2.285	100	2.426
Minneapolis	1.502	2.916	100	3.076
Oakland	1.128	2.423	100	2.63
Salt Lake City	1.476	2.553	100	2.722
San Jose Del Cabo	1.053	3.352	100	3.712
San Juan	1.234	4.26	100	4.485
Seattle	1.257	2.663	100	2.909
Tapachula	1.256	4.797	100	4.899
Washington DC	1.785	3.195	100	3.535

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 3.457 meters occurred at Barrow and maximum vertical LPV error was 7.343 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	2.714	0.237	0.238	3.327	0.110	0.166
Atlantic City-a	2.742	0.252	0.252	3.544	0.200	0.200
Oklahoma City	1.717	0.187	0.187	2.549	0.153	0.190
Albuquerque	1.875	0.123	0.148	2.253	0.142	0.159
Anchorage	3.021	0.176	0.206	3.930	0.134	0.169

Location	Horizontal Error (m)	Horizontal Error HPL	Horizontal Maximum Ratio	Vertical Error (m)	Vertical Error VPL	Vertical Maximum Ratio
Atlanta	1.601	0.170	0.170	2.551	0.103	0.173
Barrow	3.457	0.141	0.167	7.343	0.234	0.234
Bethel	2.402	0.135	0.139	2.857	0.098	0.123
Billings	1.624	0.135	0.158	2.475	0.132	0.133
Boston	1.819	0.148	0.162	2.843	0.131	0.153
Chicago	1.637	0.165	0.186	2.592	0.141	0.149
Cleveland	1.610	0.142	0.169	2.697	0.112	0.151
Cold Bay	1.733	0.109	0.109	2.636	0.104	0.104
Dallas	1.524	0.140	0.151	2.551	0.181	0.198
Denver	1.701	0.171	0.176	2.389	0.118	0.142
Fairbanks	2.628	0.146	0.218	4.937	0.185	0.200
Gander	2.387	0.121	0.121	2.894	0.091	0.104
Goose Bay	2.102	0.087	0.119	3.064	0.114	0.119
Houston	1.765	0.149	0.153	2.764	0.178	0.215
Iqaluit	2.464	0.127	0.191	4.286	0.091	0.154
Jacksonville	1.572	0.152	0.165	2.593	0.120	0.168
Juneau	1.729	0.145	0.145	2.666	0.143	0.159
Kansas City	1.381	0.158	0.170	2.290	0.152	0.152
Kotzebue	2.715	0.122	0.154	4.217	0.109	0.169
Los Angeles	1.777	0.108	0.155	2.865	0.143	0.157
Memphis	1.597	0.176	0.176	2.400	0.165	0.165
Merida	1.961	0.083	0.122	3.715	0.092	0.175
Mexico City	1.633	0.066	0.101	4.648	0.114	0.179
Miami	1.785	0.109	0.157	3.387	0.156	0.174
Minneapolis	1.668	0.149	0.167	2.571	0.120	0.155
New York	2.076	0.146	0.168	2.409	0.119	0.129
Oakland	1.610	0.123	0.128	2.549	0.151	0.157
Puerto Vallarta	1.899	0.075	0.078	3.064	0.061	0.123
Salt Lake City	1.917	0.153	0.161	2.822	0.137	0.140
San Jose Del Cabo	1.909	0.098	0.115	3.966	0.101	0.151
Seattle	2.031	0.196	0.196	2.290	0.110	0.141
Washington DC	2.100	0.127	0.170	2.802	0.151	0.164

Location	Horizontal Error (m)	Horizontal Error HPL	Horizontal Maximum Ratio	Vertical Error (m)	Vertical Error VPL	Vertical Maximum Ratio
Winnipeg	1.607	0.148	0.148	2.476	0.126	0.151

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.

- October, 11, 2017—Position errors in Canada, and Mexico were elevated. The maximum 95% horizontal and vertical LPV errors were 0.784 meters and 2.651 meters at Goose Bay and Mexico City, respectively. The Kp index was 5.
- November 7-8, 2017—Position errors in CONUS, Alaska, Canada, and Mexico were elevated. The maximum 95% horizontal and vertical LPV errors were 1.839 meters and 2.241 meters at Atlantic City and San Jose Del Cabo, respectively. The Kp index was 6.
- November 21, 2017—Position errors in CONUS and Alaska were elevated. The maximum 95% horizontal and vertical LPV errors were 1.379 meters and 1.700 meters at Atlantic City and Fairbanks, respectively. The Kp index was 5.
- August 23, 2017—Position errors in CONUS and Alaska were elevated. The maximum 95% horizontal and vertical LPV errors were 1.780 meters and 1.578 meters at Arcata and Fairbanks, respectively. The Kp index was 5.
- December 12, 2017—Position errors in Canada and Mexico were elevated. The maximum 95% horizontal and vertical LPV errors were 1.168 meters and 2.167 meters at Gander and Merida, respectively. The Kp index range was 4.
- December 17, 2017—Position errors in Canada were elevated. The maximum 95% horizontal and vertical LPV errors were 1.315 meters and 1.804 meters at Iqaluit and Gander, respectively. The Kp index was 5.

Figure 2-1 LPV 95% Horizontal Accuracy

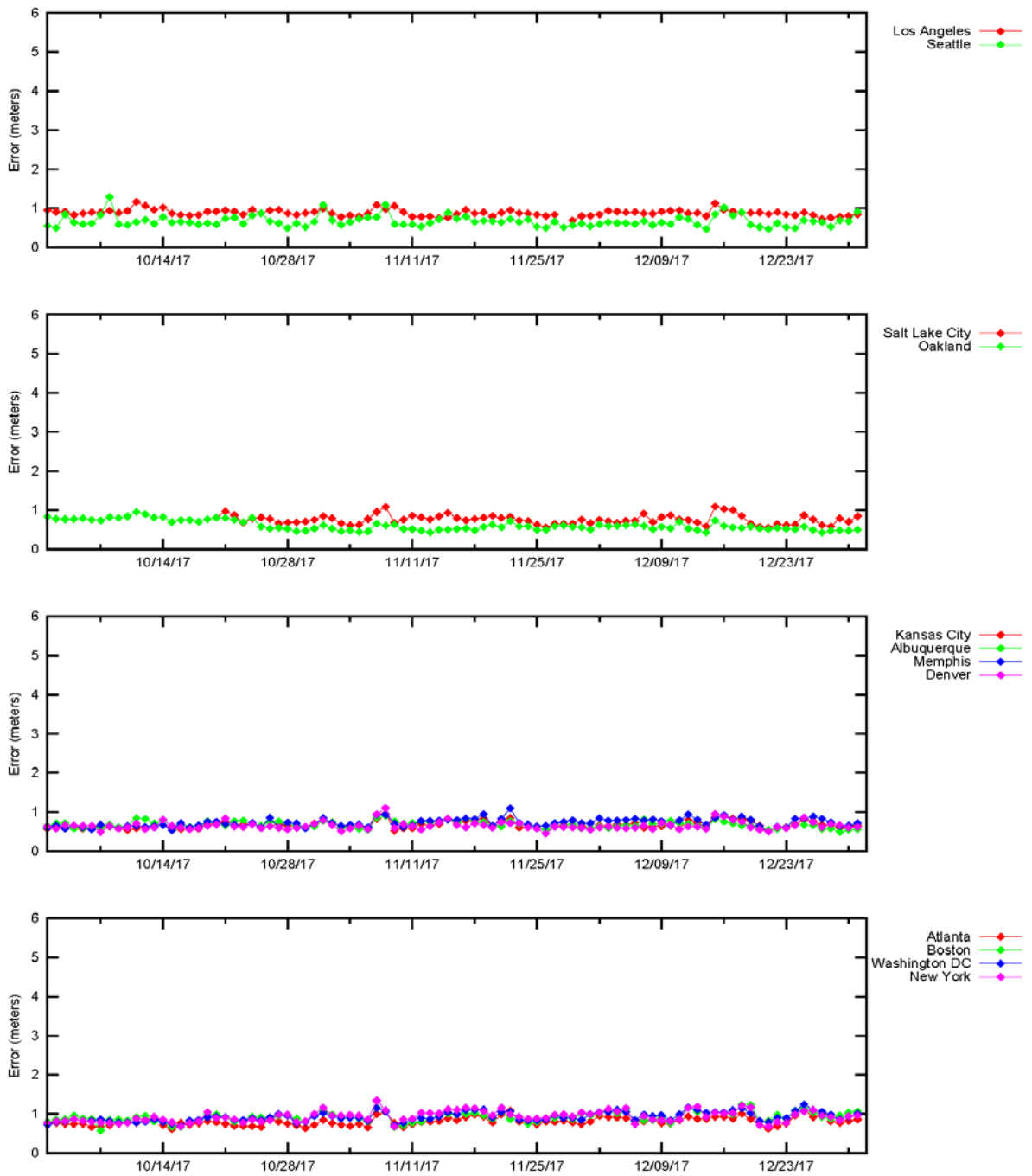


Figure 2-2 LPV 95% Horizontal Accuracy

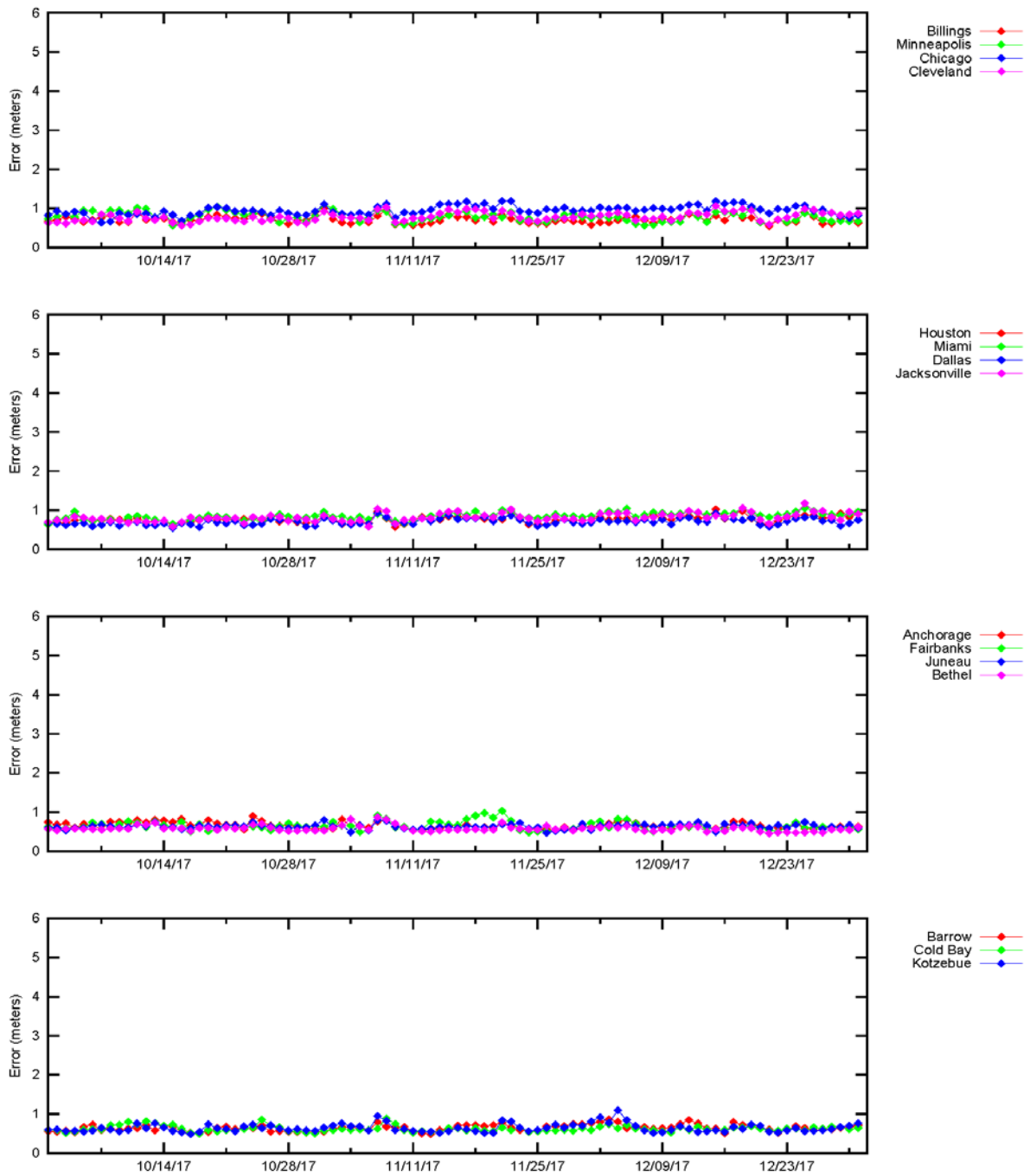


Figure 2-3 LPV 95% Horizontal Accuracy

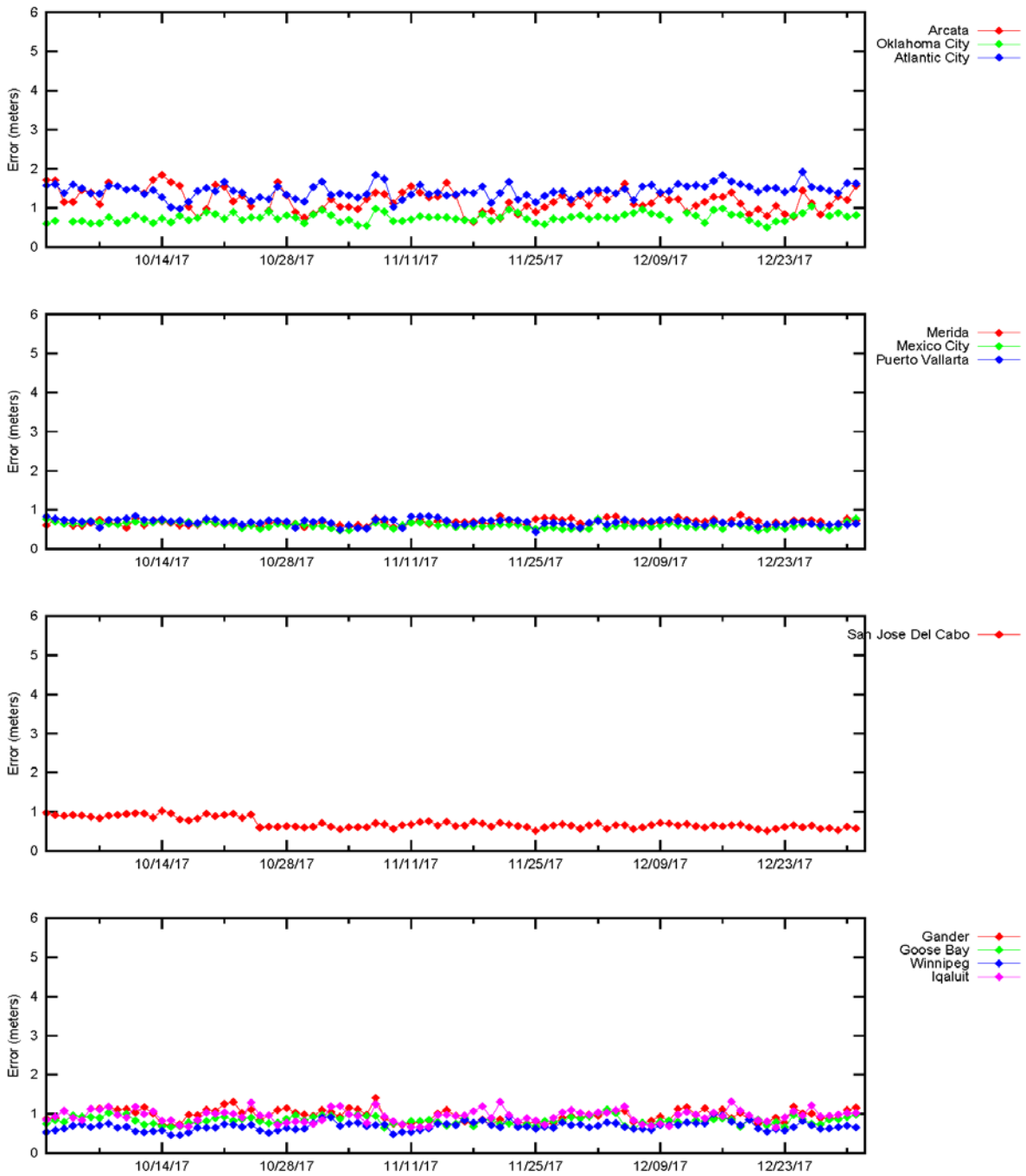


Figure 2-4 LPV 95% Vertical Accuracy

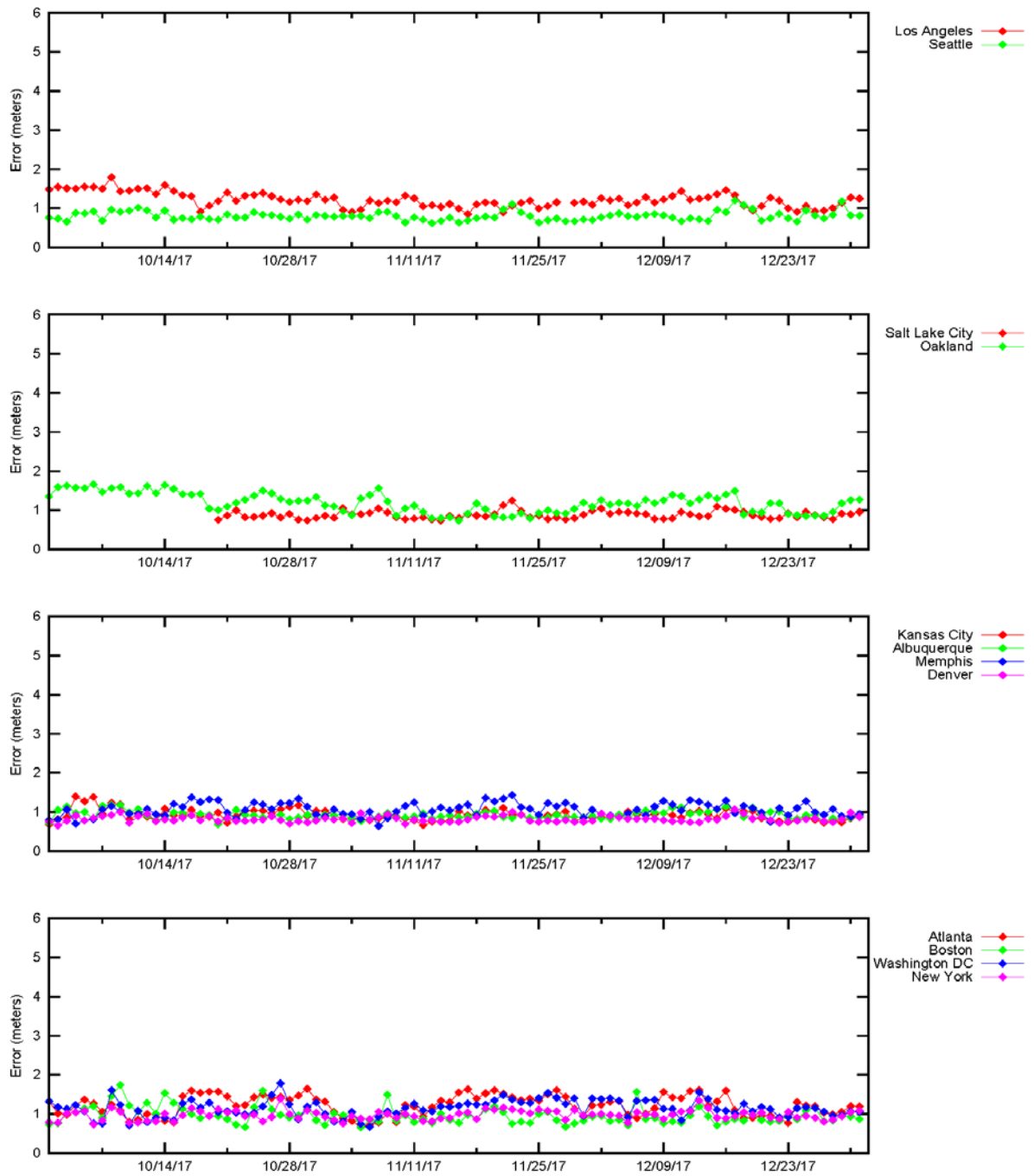


Figure 2-5 LPV 95% Vertical Accuracy

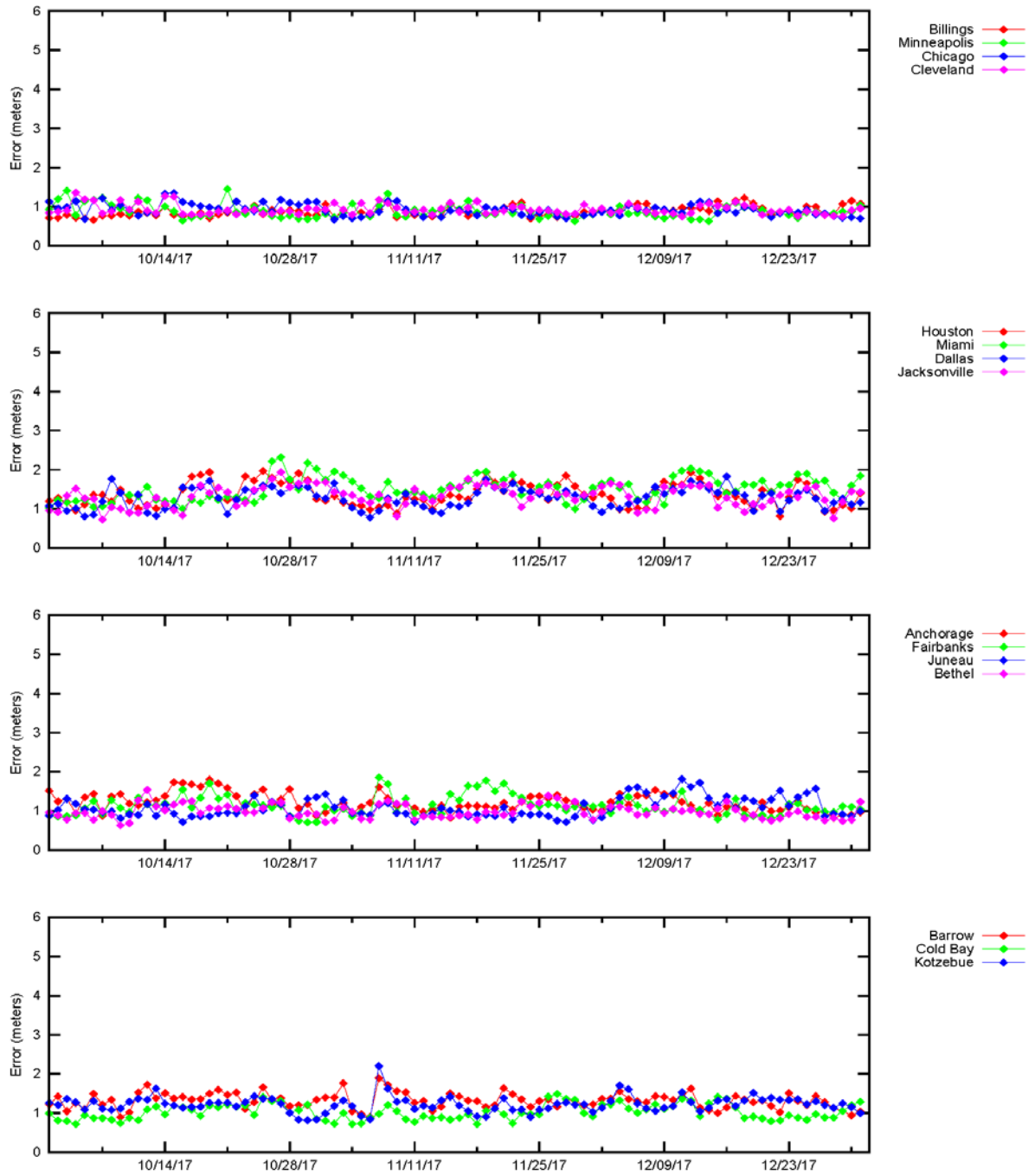


Figure 2-6 LPV 95% Vertical Accuracy

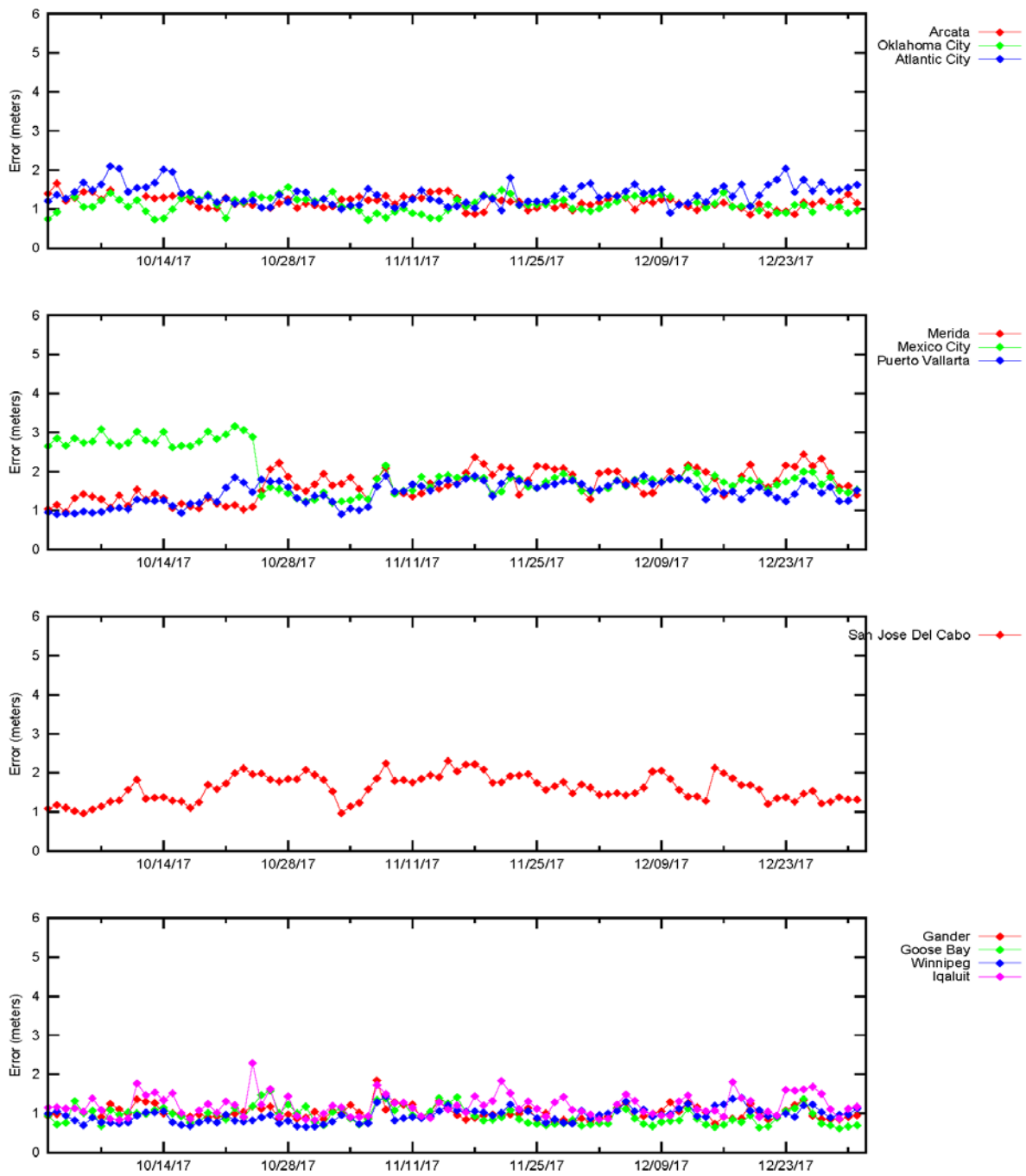


Figure 2-7 and Figure 2-8 show the daily NPA 95% horizontal accuracy at the NPA evaluation sites for the reporting period. The increases in 95% NPA position errors due to geomagnetic activity occurred on October 11 and November 7-8, 2017.

Figure 2-7 NPA 95% Horizontal Accuracy

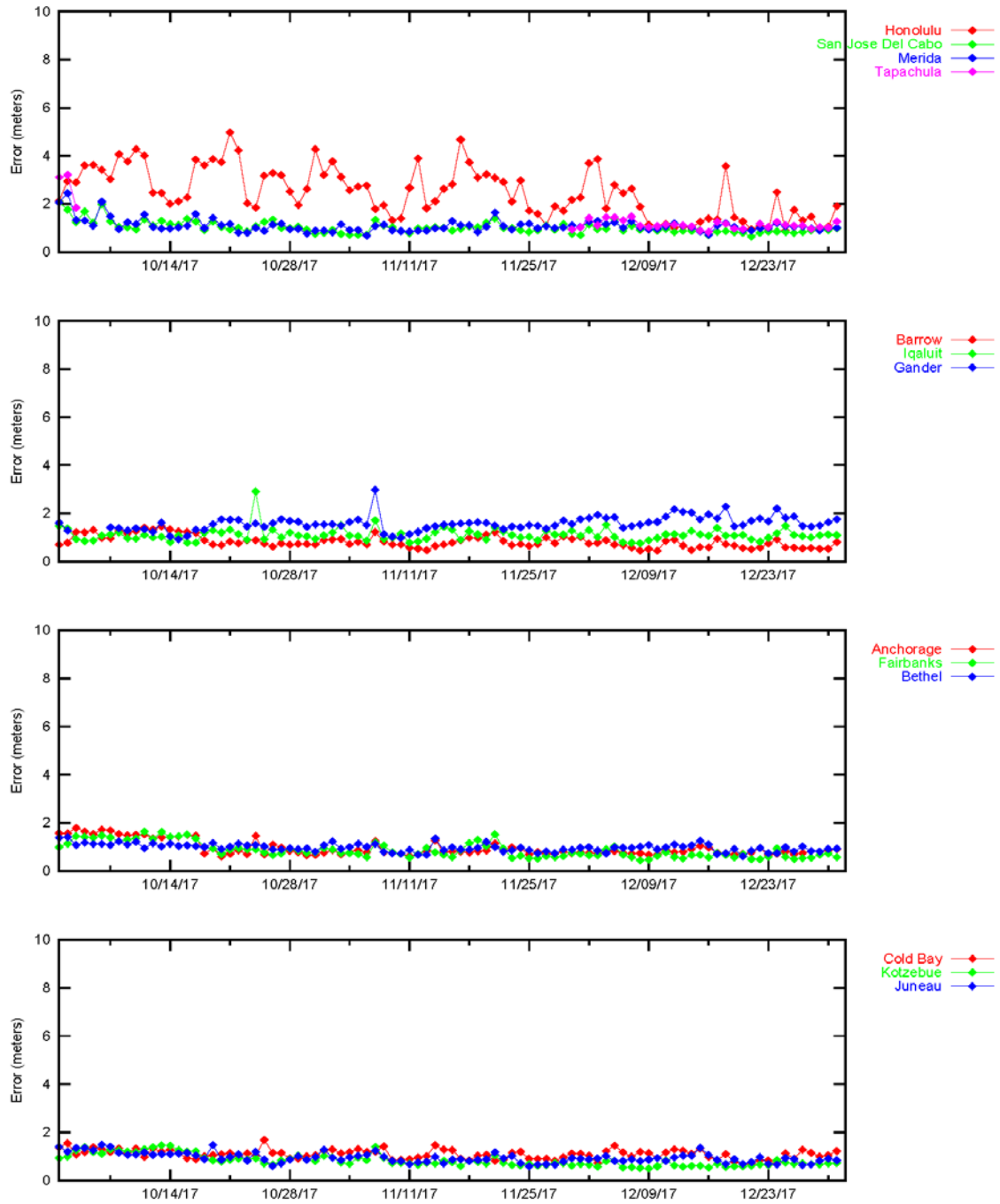


Figure 2-8 NPA 95% Horizontal Accuracy

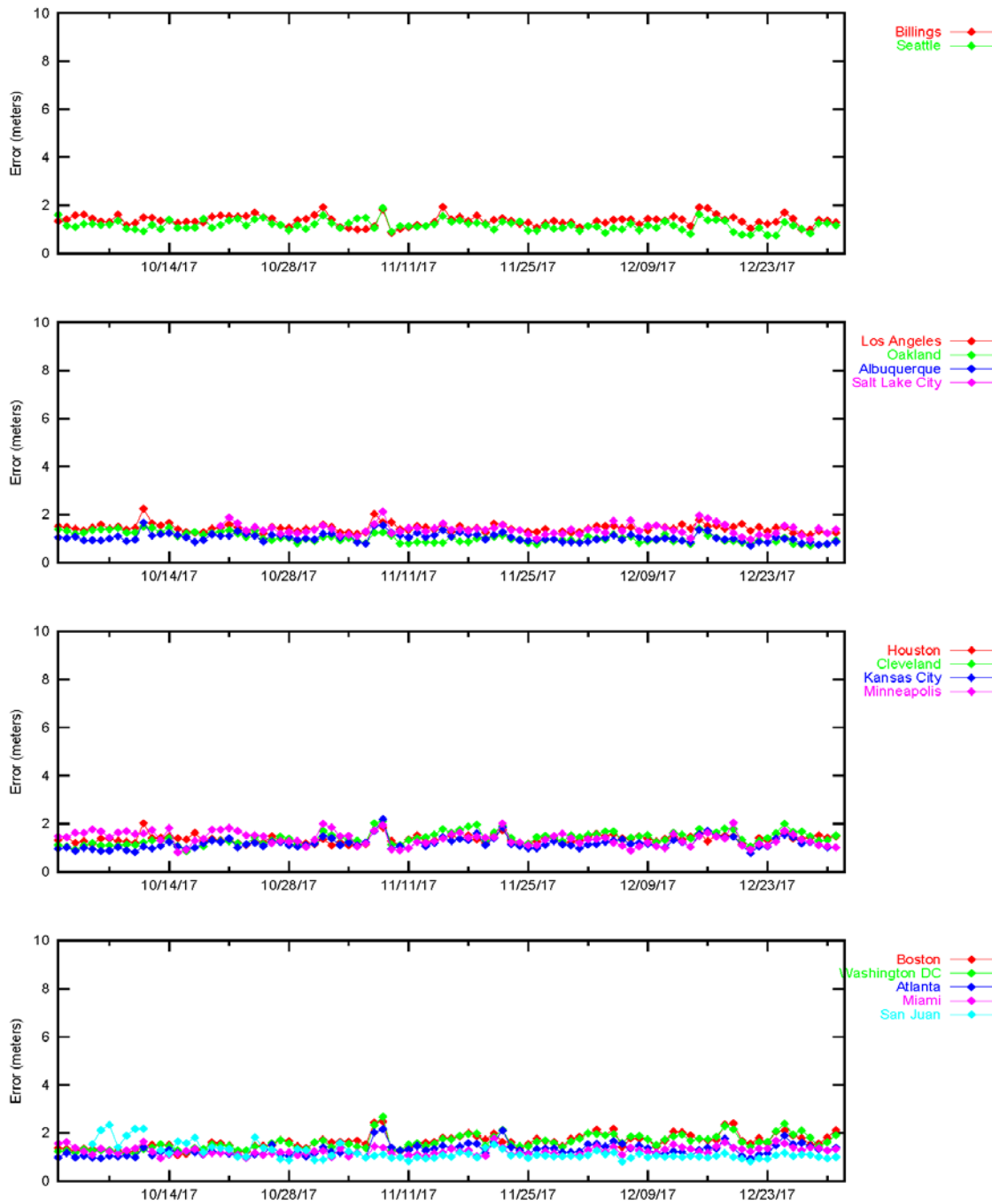


Figure 2-9 through Figure 2-12 show the distributions of the vertical and horizontal errors at all 38 WAAS receiver for the quarter. Figure 2-9 and Figure 2-10 show the triangular distributions of vertical position error (VPE) versus VPL and horizontal position error (HPE) versus HPL: (1) the horizontal 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

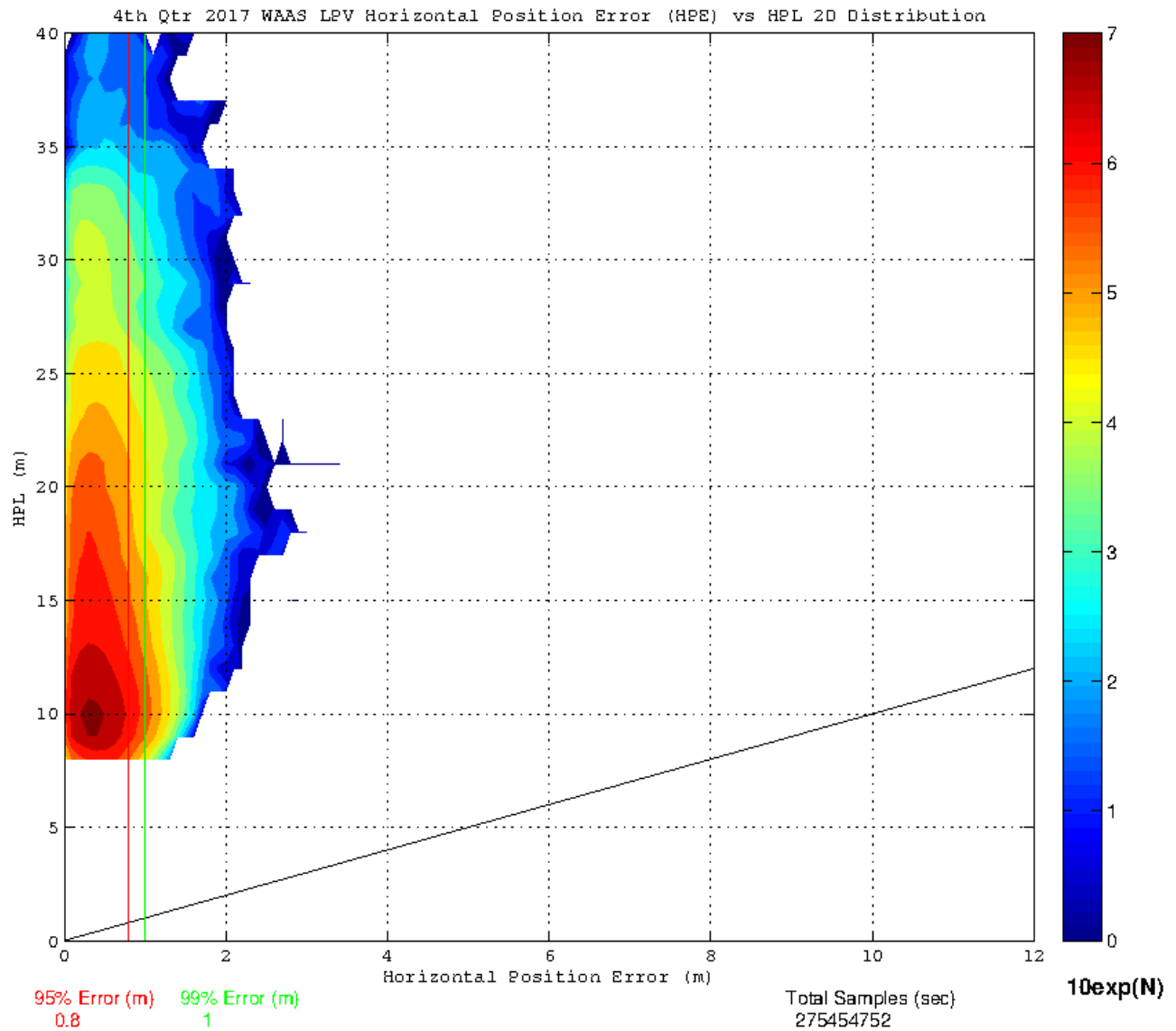


Figure 2-10 LPV Vertical Error Bounding Triangle Chart

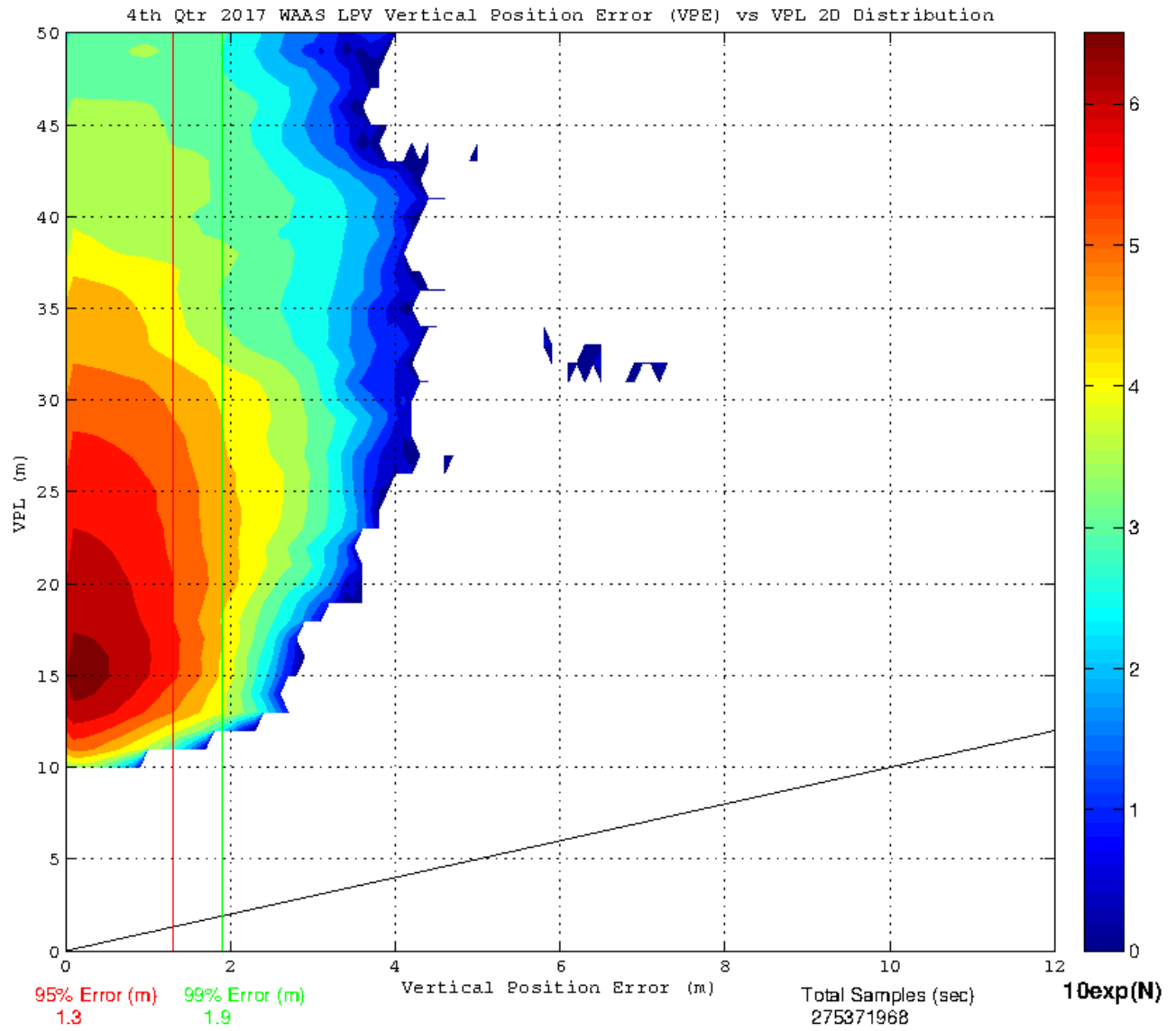


Figure 2-11 LPV 2-D Horizontal Error Distribution Histogram

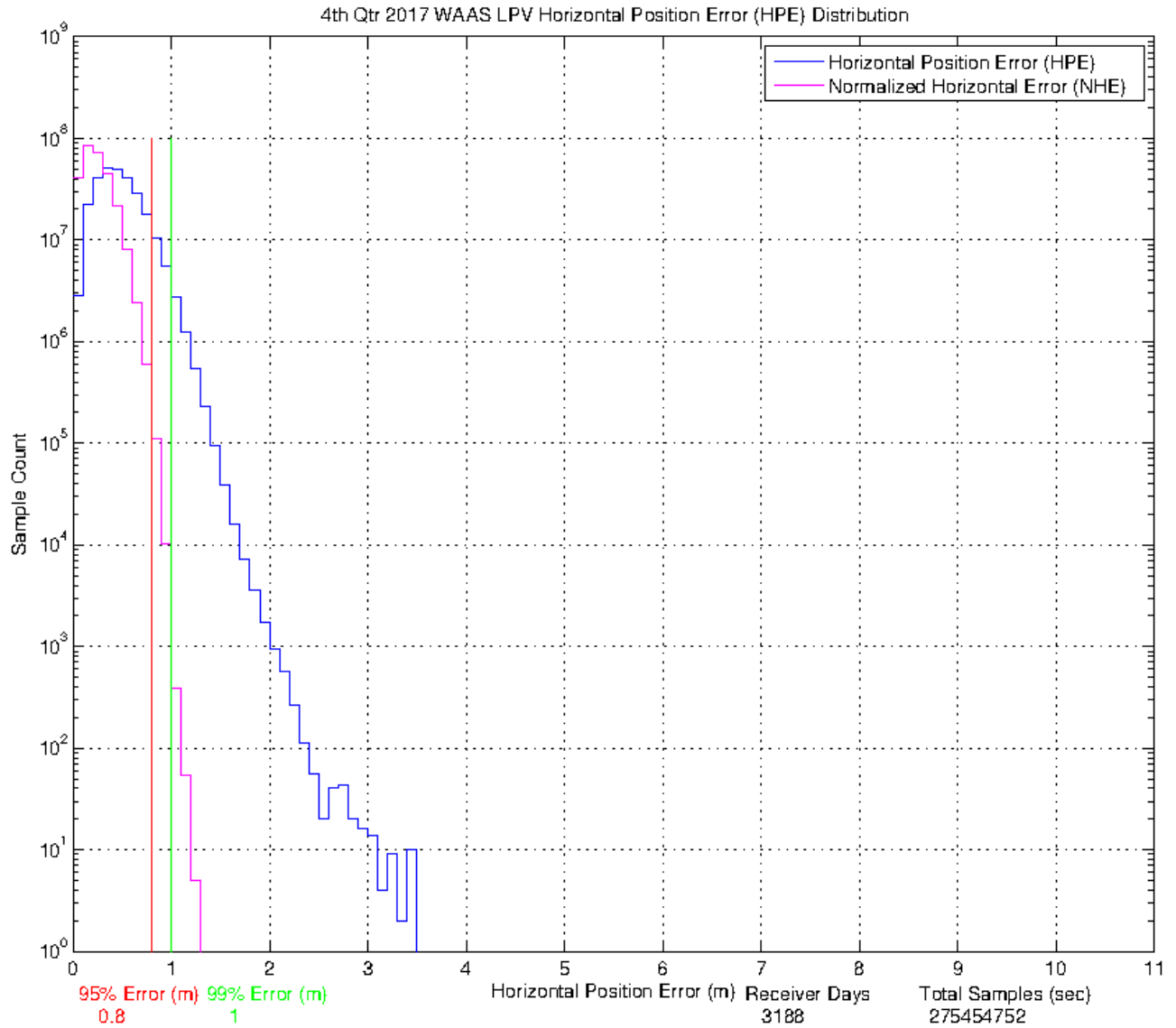
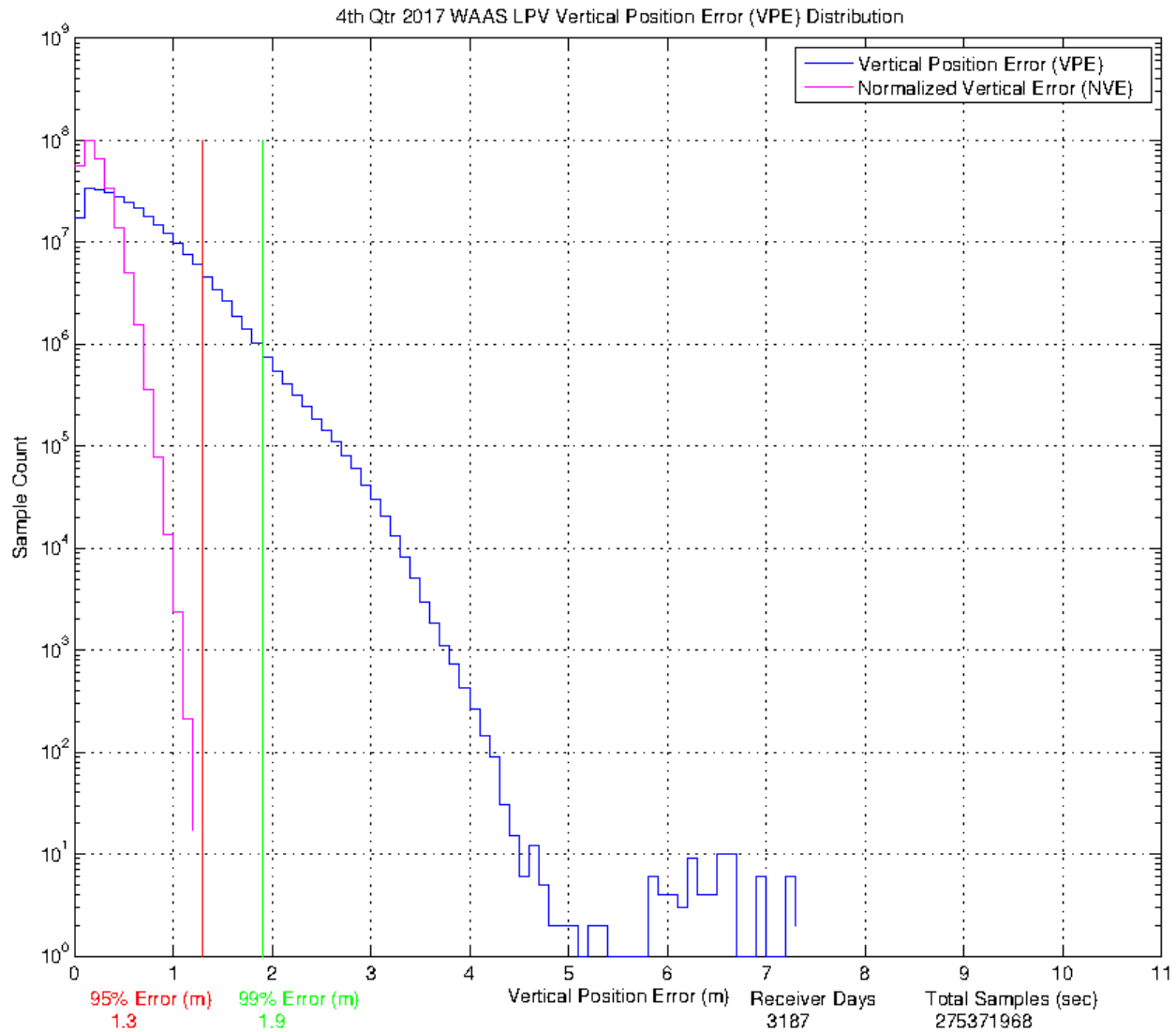


Figure 2-12 LPV 2-D Vertical Error Distribution Histogram



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 17.176 meters observed at Cleveland
- The maximum 99% CONUS VPL was 32.828 meters observed at Oakland
- The minimum 99% CONUS HPL was 10.904 meters observed at Oklahoma City
- The minimum 99% CONUS VPL was 18.433 meters observed at Kansas City
- The maximum 99% Alaska HPL was 20.794 meters observed at Cold Bay
- The maximum 99% Alaska VPL was 35.304 meters observed at Barrow
- The minimum 99% Alaska HPL was 13.138 meters observed at Juneau
- The minimum 99% Alaska VPL was 22.925 meters observed at Juneau

Table 3-1 99% Protection Level

Location	99% HPL (Meters)	99% VPL (Meters)	Percentage in PA mode
Arcata	13.504	30.172	100
Atlantic City	14.252	21.735	100
Oklahoma City	10.904	18.924	100
Albuquerque	11.091	20.989	100
Anchorage	13.819	23.597	100
Atlanta	12.872	22.031	100
Barrow	16.283	35.304	100
Bethel	15.969	28.085	100
Billings	12.283	19.222	100
Boston	14.841	21.78	100
Chicago	12.263	20.471	100
Cleveland	17.176	23.274	100
Cold Bay	20.794	31.252	100
Dallas	11.181	19.044	100
Denver	11.369	19.84	100
Fairbanks	13.41	24.665	100
Gander	31.263	42.42	99.999
Goose Bay	26.16	30.08	99.999
Houston	11.613	21.548	100
Iqaluit	27.008	38.294	99.999
Jacksonville	12.477	25.089	100
Juneau	13.138	22.925	100
Kansas City	11.448	18.433	100
Kotzebue	15.389	31.072	100
Los Angeles	15.037	26.819	100
Memphis	11.471	19.279	100
Merida	21.964	35.859	100
Mexico City	24.626	42.45	100
Miami	13.766	27.731	100
Minneapolis	12.883	20.762	100
New York	14.077	21.289	100
Oakland	14.522	32.828	100
Puerto Vallarta	24.921	48.69	100
Salt Lake City	11.963	20.554	100
San Jose Del Cabo	21.712	45.225	100
Seattle	13.176	21.599	100
Washington DC	15.902	23.702	100
Winnipeg	13.782	19.874	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	99.90
Atlantic City-a	100	100	100
Oklahoma City	100	100	100
Albuquerque	100	100	100
Anchorage	100	100	99.99
Atlanta	100	100	100
Barrow	100	99.99	98.11
Bethel	100	100	99.96
Billings	100	100	100
Boston	100	100	100
Chicago	100	100	100
Cleveland	100	100	99.99
Cold Bay	100	100	99.89
Dallas	100	100	100
Denver	100	100	100
Fairbanks	100	100	99.97
Gander	99.98	99.98	90.56
Goose Bay	100	100	99.88
Houston	100	100	100
Iqaluit	99.99	99.97	97.56
Jacksonville	100	100	99.99
Juneau	100	100	99.97
Kansas City	100	100	100
Kotzebue	100	100	99.83
Los Angeles	100	100	100
Memphis	100	100	100
Merida	100	100	98.47
Mexico City	100	99.32	94.79
Miami	100	100	99.96
Minneapolis	100	100	100
New York	100	100	100

Location	LP WAAS With 15 minute window	LPV WAAS With 15 minute window	LPV200 WAAS With 15 minute window
Oakland	100	100	99.30
Puerto Vallarta	100	99.08	93.89
Salt Lake City	100	100	100
San Jose Del Cabo	100	99.93	94.97
Seattle	100	100	100
Washington DC	100	100	99.99
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	0	0	44	0.000879
Atlantic City-a	0	0	0	0	0	0
Oklahoma City	0	0	0	0	0	0
Albuquerque	0	0	0	0	0	0
Anchorage	0	0	0	0	2	0.000038
Atlanta	0	0	0	0	0	0
Barrow	0	0	7	0.000132	208	0.004012
Bethel	0	0	0	0	2	0.000038
Billings	0	0	0	0	0	0
Boston	0	0	0	0	1	0.000019
Chicago	0	0	0	0	0	0
Cleveland	0	0	0	0	1	0.000019
Cold Bay	0	0	0	0	51	0.000966
Dallas	0	0	0	0	0	0
Denver	0	0	0	0	0	0
Fairbanks	0	0	1	0.000019	11	0.000208
Gander	3	0.000059	4	0.000079	701	0.015316
Goose Bay	3	0.000057	3	0.000057	23	0.000435
Houston	0	0	0	0	1	0.000019
Iqaluit	8	0.000151	19	0.000359	332	0.006436
Jacksonville	0	0	0	0	1	0.000019

Location	LP Outages	LP Outage Rates	LPV Outages	LPV Outage Rates	LPV200 Outages	LPV200 Outage Rates
Juneau	0	0	0	0	3	0.000057
Kansas City	0	0	0	0	0	0
Kotzebue	1	0.000019	1	0.000019	83	0.001573
Los Angeles	0	0	0	0	10	0.000191
Memphis	0	0	0	0	0	0
Merida	0	0	0	0	215	0.004130
Mexico City	0	0	137	0.002610	545	0.010878
Miami	0	0	0	0	4	0.000076
Minneapolis	0	0	0	0	0	0
New York	0	0	0	0	0	0
Oakland	0	0	0	0	102	0.001942
Puerto Vallarta	0	0	126	0.002405	358	0.007212
Salt Lake City	0	0	0	0	0	0
San Jose Del Cabo	0	0	58	0.001099	228	0.004544
Seattle	0	0	0	0	0	0
Washington DC	0	0	0	0	1	0.000019
Winnipeg	0	0	0	0	0	0

Figure 3-1 LPV Instantaneous Availability

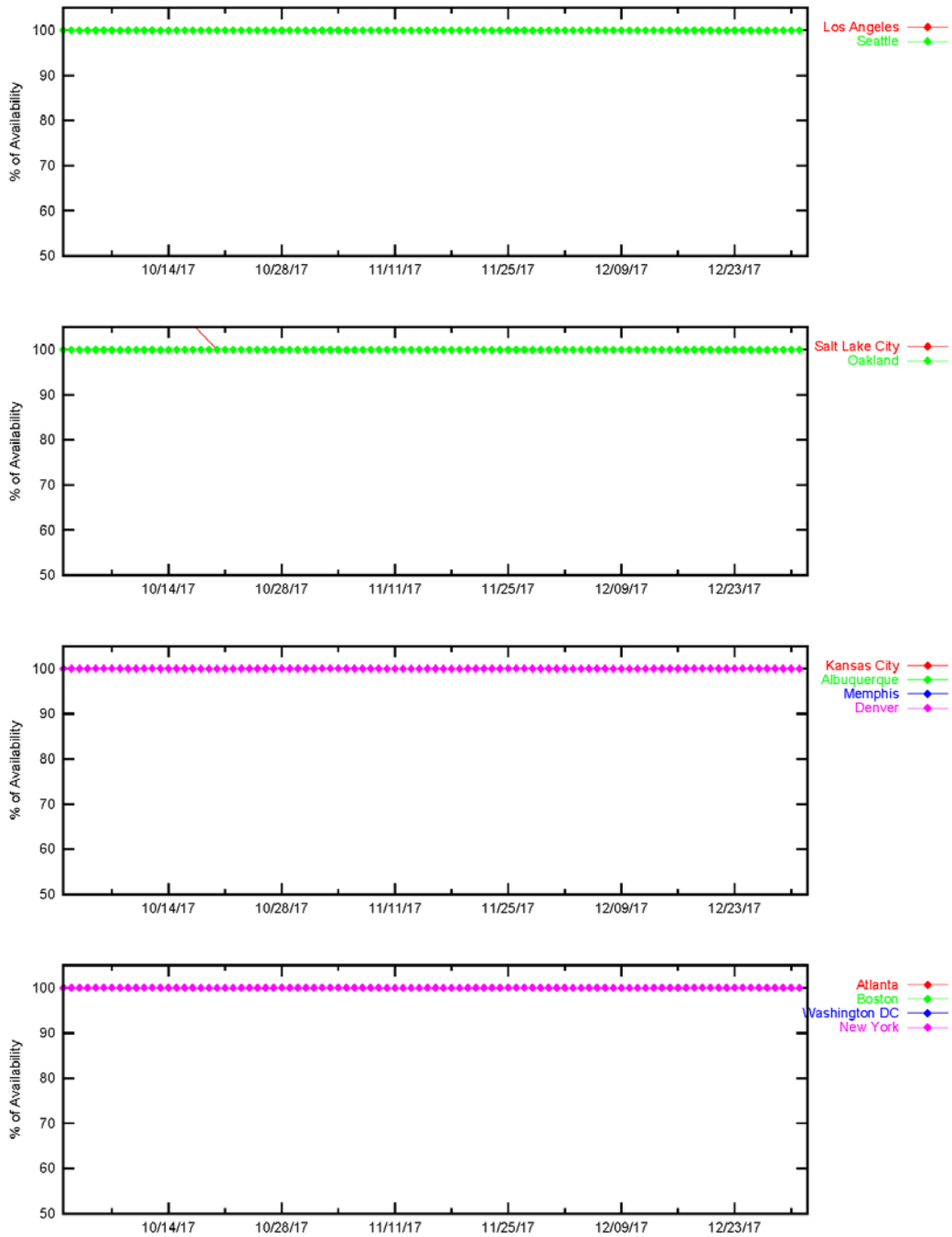


Figure 3-2 LPV Instantaneous Availability

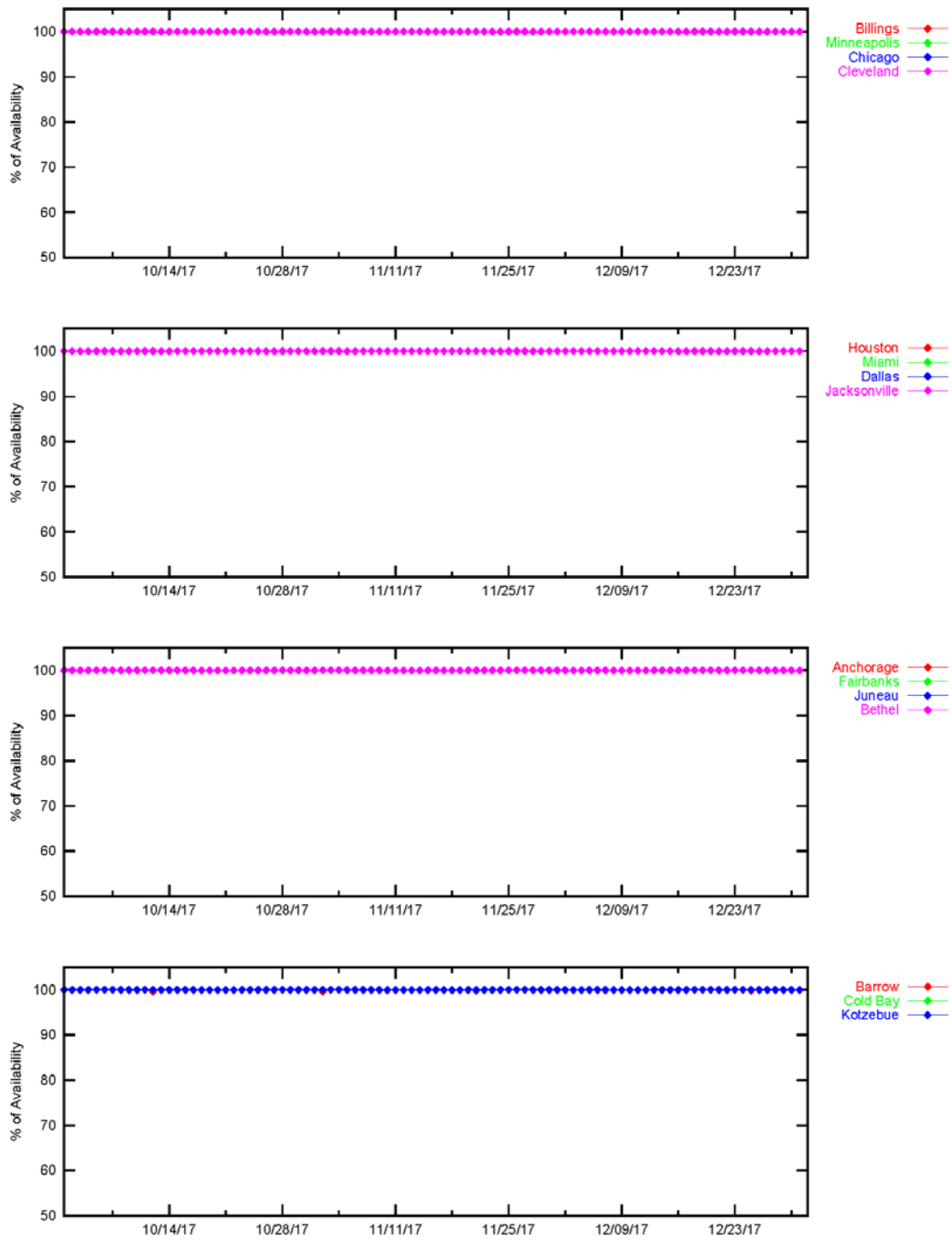


Figure 3-3 LPV Instantaneous Availability

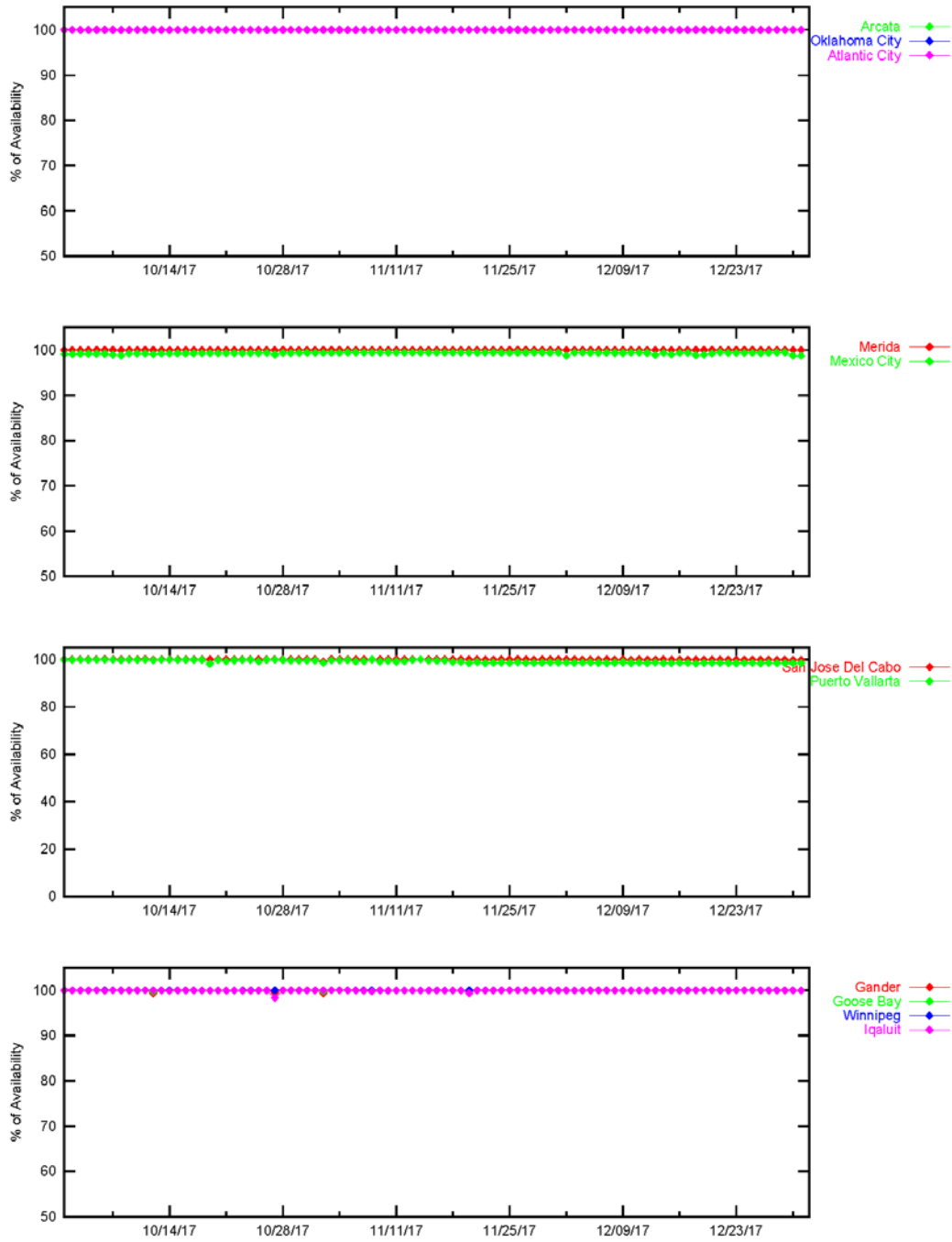


Figure 3-4 LPV200 Instantaneous Availability

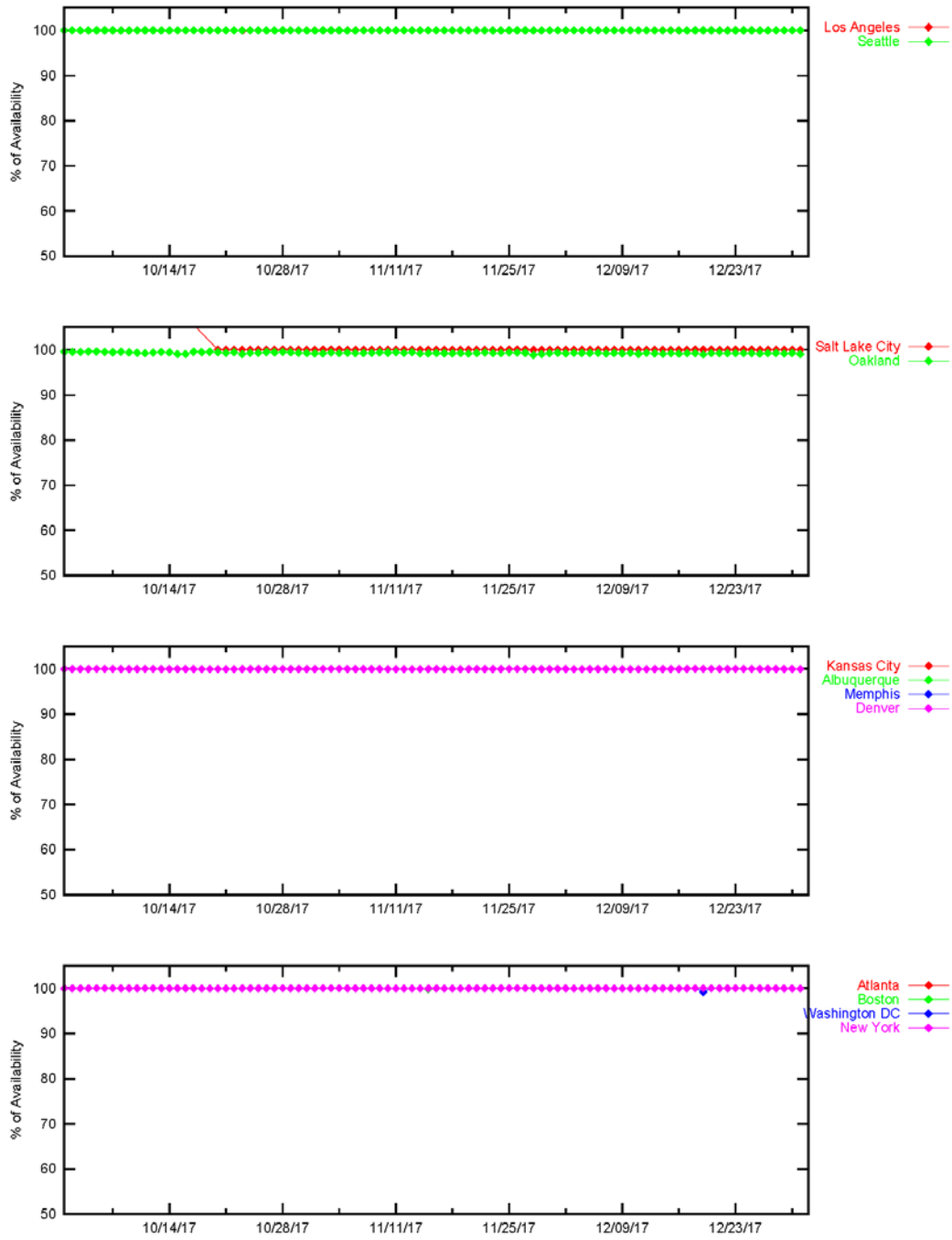


Figure 3-5 LPV200 Instantaneous Availability

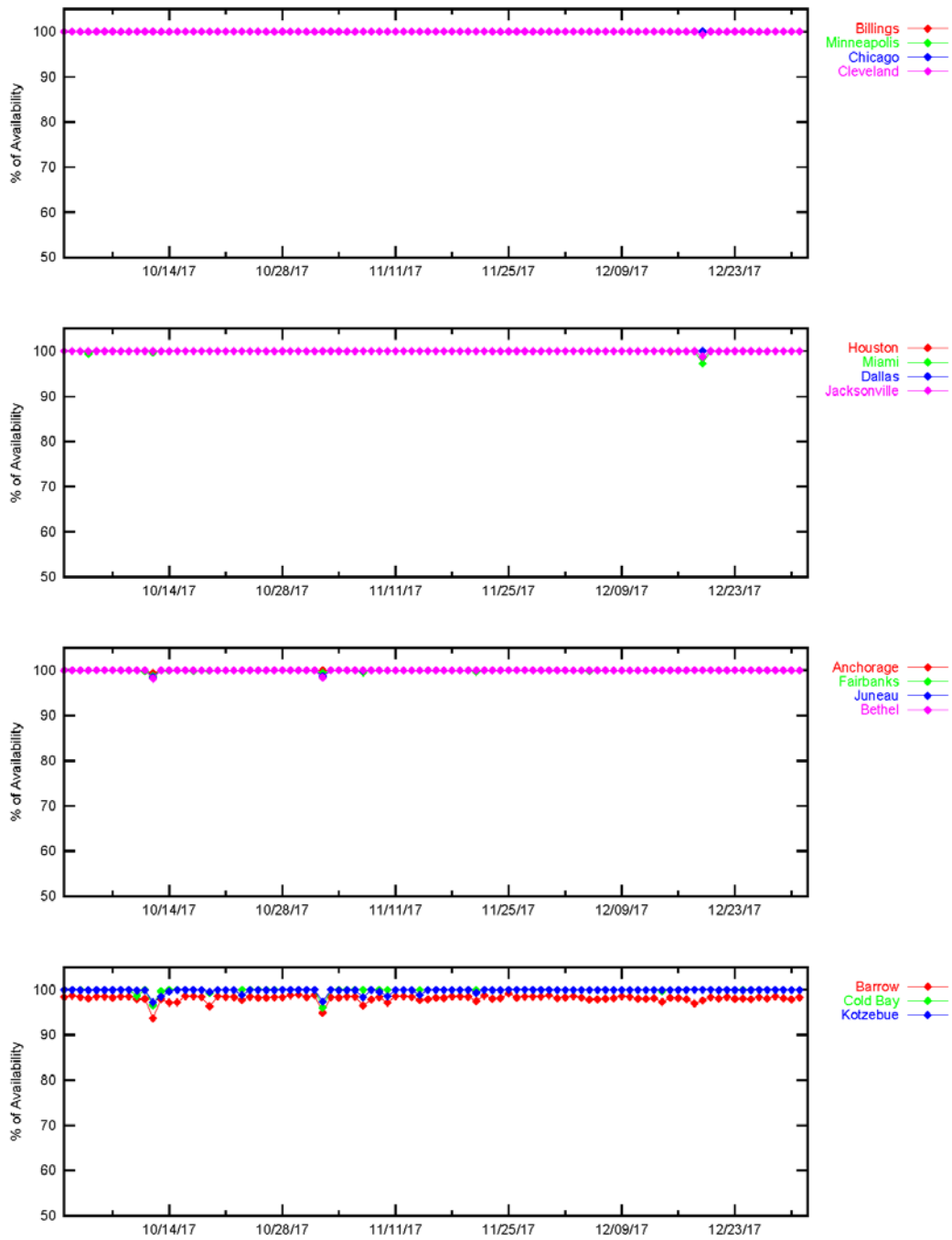


Figure 3-6 LPV200 Instantaneous Availability

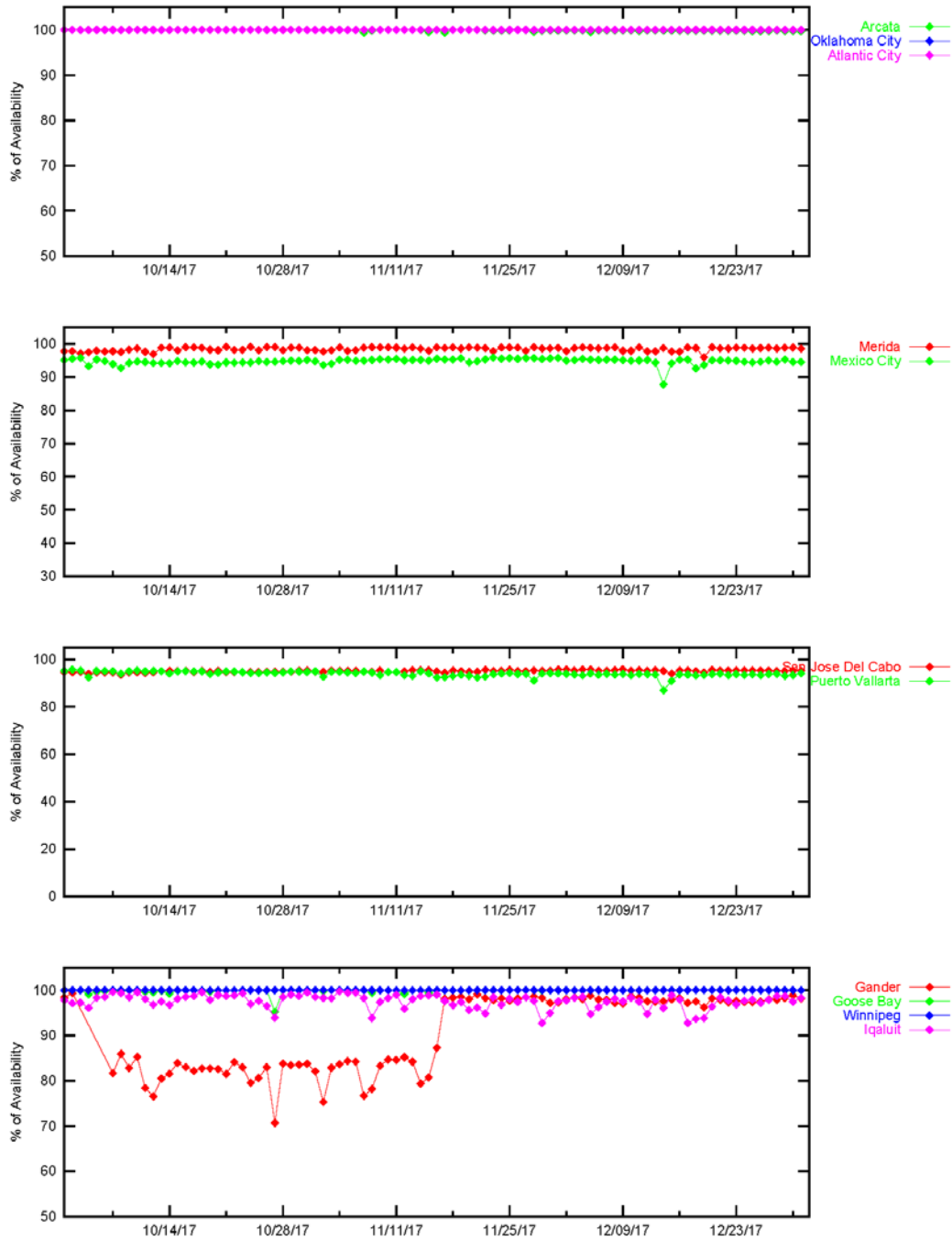


Figure 3-7 LPV Outages

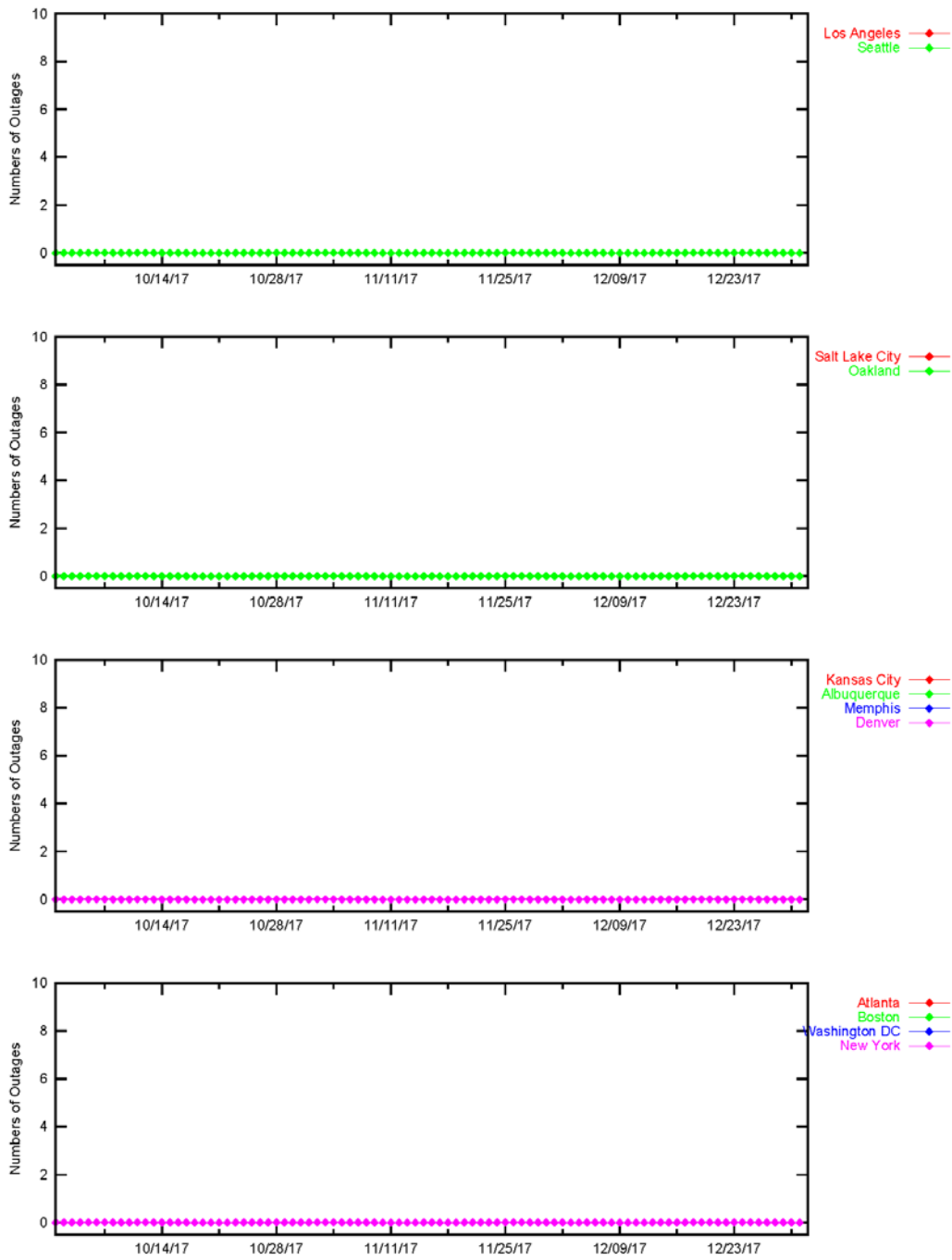


Figure 3-8 LPV Outages

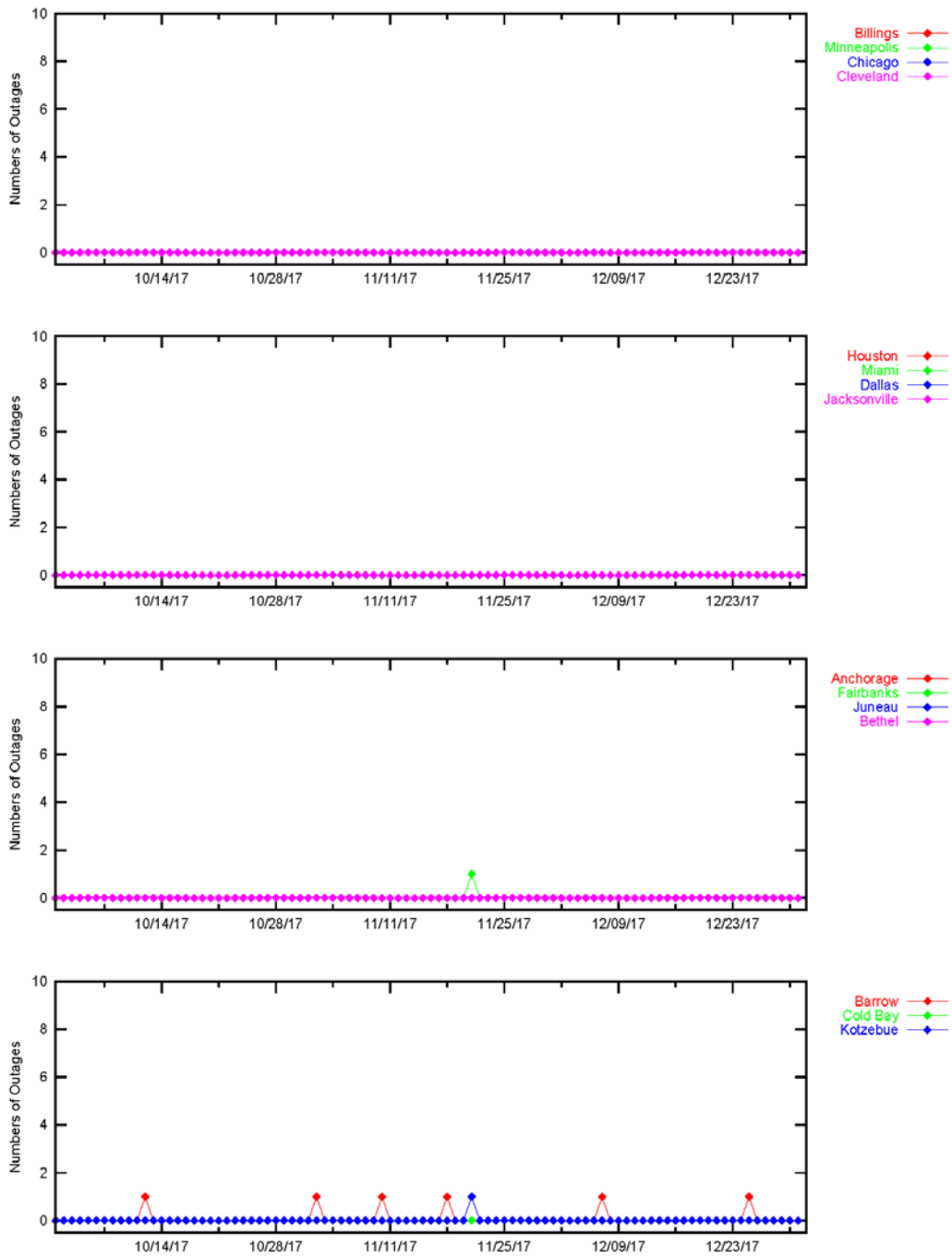


Figure 3-9 LPV Outages

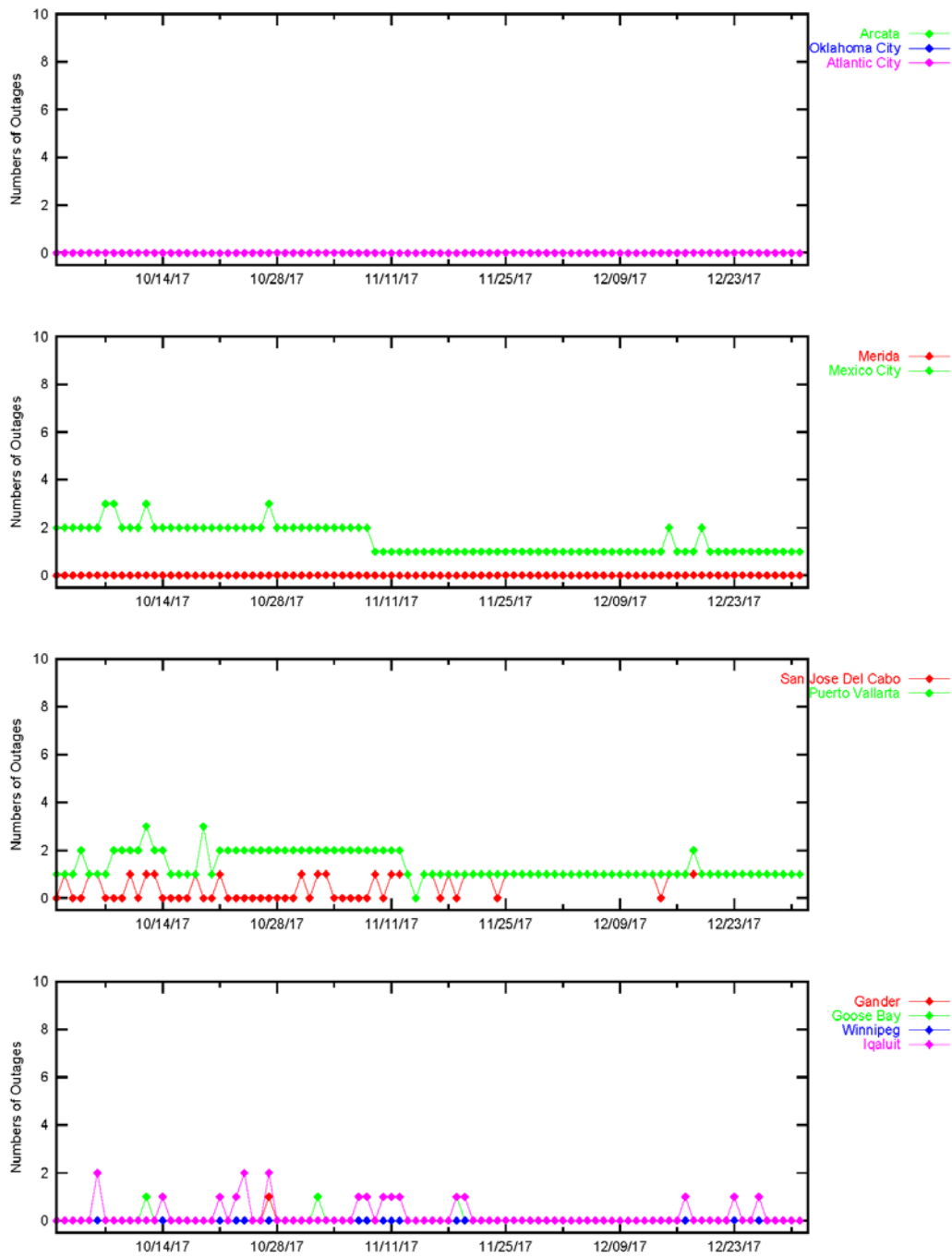


Figure 3-10 LPV200 Outages

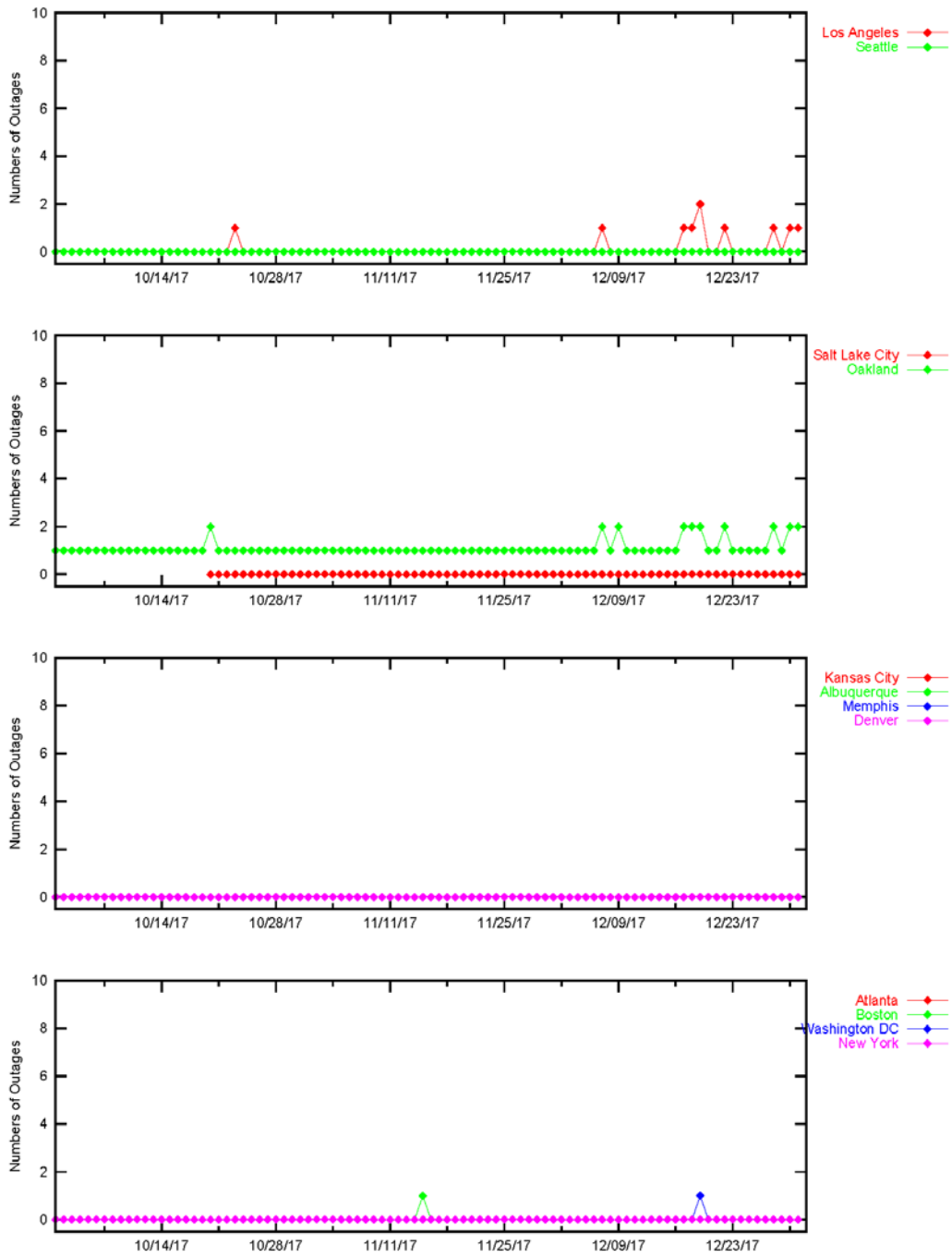


Figure 3-11 LPV200 Outages

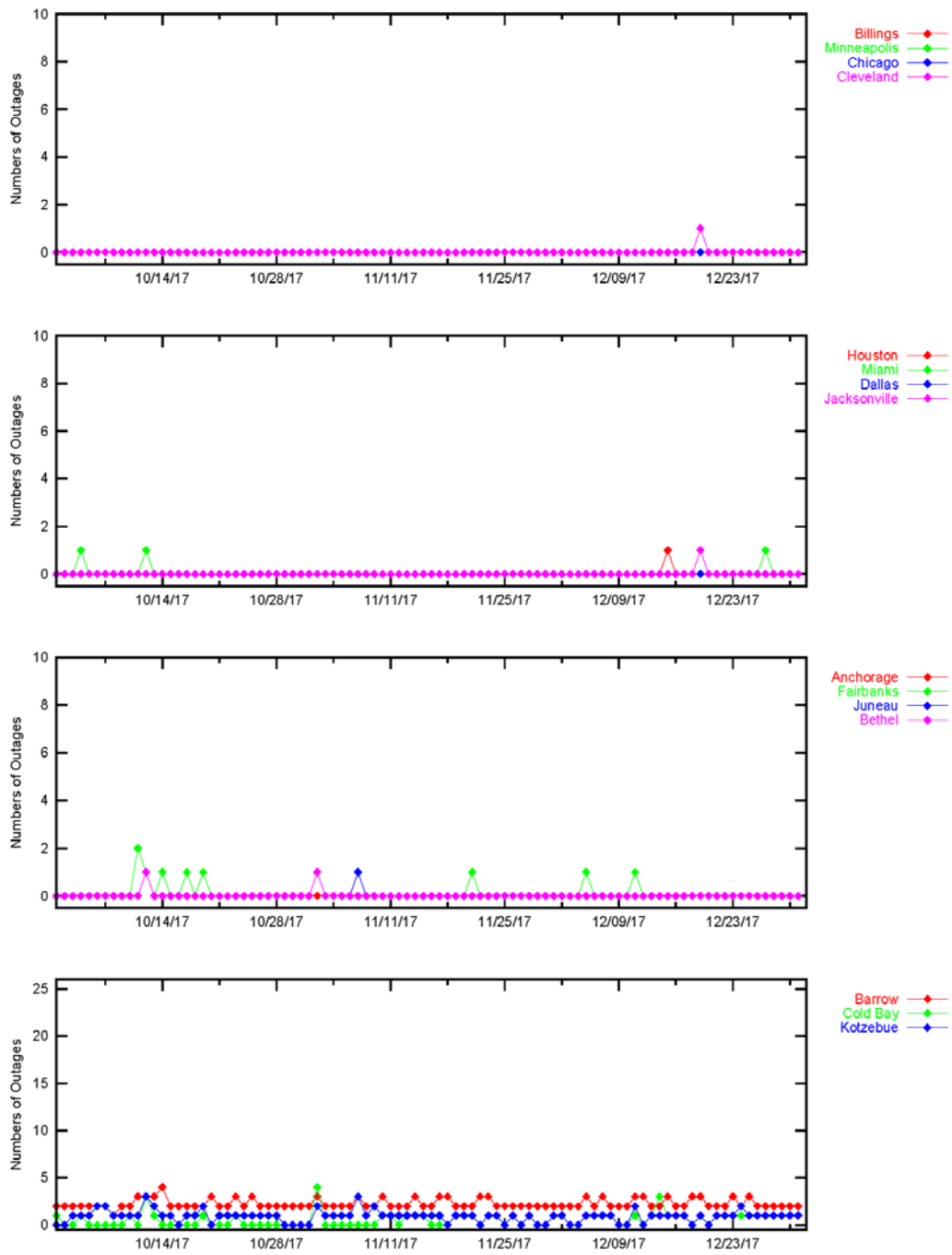
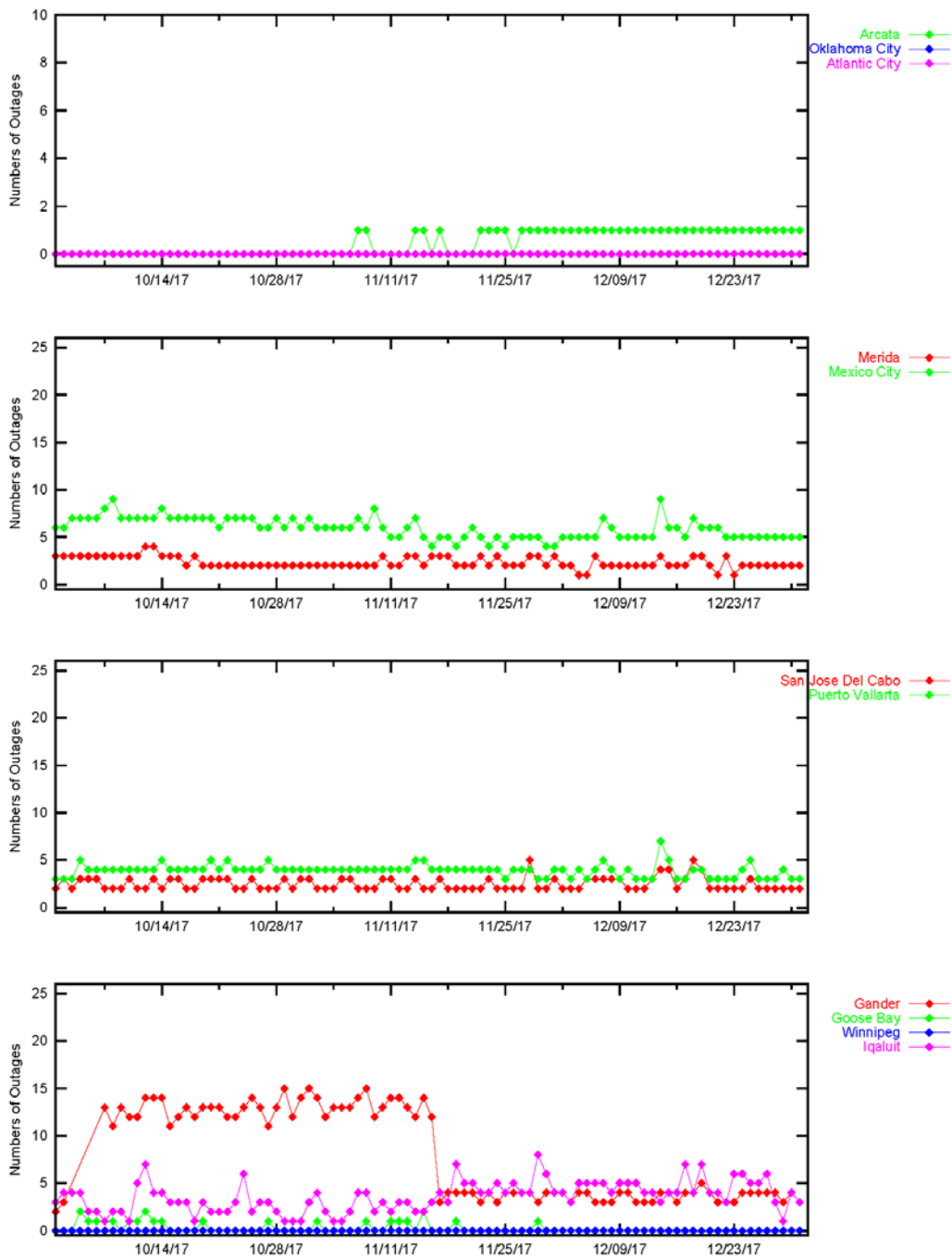


Figure 3-12 LPV200 Outages



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) (%)
Albuquerque	100
Anchorage	100
Atlanta	100
Barrow	100
Bethel	100
Billings	100
Boston	100
Cleveland	100
Cold Bay	100
Fairbanks	100
Gander	99.9999
Honolulu	100
Houston	100
Iqaluit	99.9999
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	1	0.000020
Honolulu	0	0
Houston	0	0
Iqaluit	2	0.000038
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:

- Jan 27 to Dec 31 – GPS Flex Power tests elevated UDREs on PRN-24 and reduced LPV200 availability in Alaska. [See DR135.](#)
- Jan 28 to Dec 31 – GPS Flex Power tests elevated UDREs on PRN-6 and reduced LPV200 availability in CONUS. [See DR 135.](#)
- Sept 21 to Oct 4 – A WRS outage at ZSU reduced LPV200 availability in CONUS (Florida panhandle).
- Oct 3 – Geomagnetic activity elevated GIVE values which reduced LPV200 availability in Alaska.
- Oct 4 – Satellite maintenance elevated UDREs on PRN-1 and reduced LPV200 availability in Canada.
- Oct 10 to 11 – A WRS outage at BET reduced LPV200 availability in Alaska.
- Oct 12 to 13 – A WRS outage at ZSU reduced LPV200 availability in CONUS (Florida panhandle).
- Oct 12 – Satellite maintenance elevated UDREs on PRN-29 and reduced LPV200 availability in Alaska and Canada.
- Oct 13 – Geomagnetic activity elevated GIVE values which reduced LPV200 availability in Alaska and Canada.
- Oct 14 – Geomagnetic activity elevated GIVE values which reduced LPV200 availability in Alaska and Canada
- Oct 17 - Local RFI at FAI caused a reduction and eventual loss of space vehicle (SV) tracking. The outage occurred from 20:24 GMT to 20:26 GMT.
- Oct 19 to 20 – Satellite maintenance elevated UDREs on PRN-26 and reduced LPV200 availability in Alaska and Canada.
- Oct 23 – A GUS switchover on CRW caused a reduction in LPV200 availability in Alaska and Canada.
- Oct 24 – A sub-frame reasonability warning and YFB PID Down fault removed Iqaluit WRS from WAAS correction processing and reduced LPV200 availability in Canada. [See DR 133.](#)
- Oct 25 – Geomagnetic activity elevated GIVE values which reduced LPV200 availability in CONUS and Canada.
- Oct 27 – Satellite maintenance elevated UDREs on PRN-31 and reduced LPV200 availability in Canada.
- Nov 1 – Geomagnetic activity elevated GIVE values which reduced LPV200 availability in CONUS.
- Nov 2 – Satellite maintenance elevated UDREs on PRN-29 and reduced LPV200 availability in Alaska and Canada.
- Nov 2 – A GUS switchover on CRW caused a reduction in LPV200 availability in CONUS and Canada.
- Nov 7 to 24 – GPS Flex Power tests elevated UDREs on PRN-6 and reduced LPV200 availability in Canada. [See DR 135.](#)
- Nov 7 – Geomagnetic activity elevated GIVE values which reduced LPV200 availability in CONUS, Alaska, and Canada.
- Nov 8 – Geomagnetic activity elevated GIVE values which reduced LPV200 availability in CONUS and Canada.
- Nov 10 – Geomagnetic activity elevated GIVE values which reduced LPV200 availability in Alaska and Canada. [See DR 135.](#)
- Nov 14 – GPS Flex Power tests elevated UDREs on PRN-6 and reduced LPV200 availability in CONUS.
- Nov 16 – Geomagnetic activity elevated GIVE values which reduced LPV200 availability in Canada.
- Nov 17 – Geomagnetic activity elevated GIVE values which reduced LPV200 availability in CONUS.
- Nov 19 – A GUS switchover on CRE caused a reduction in LPV200 availability in Canada.
- Nov 20 - A sub-frame reasonability warning and YFB PID Down fault removed Iqaluit WRS from WAAS correction processing and reduced LPV200 availability in Canada. [See DR 133.](#)
- Nov 21 – Geomagnetic activity elevated GIVE values which reduced LPV200 availability in Alaska.
- Nov 22 – Geomagnetic activity elevated GIVE values which reduced LPV200 availability in Canada.
- Nov 28 to 29 – A WRS outage at ZLA reduced LPV200 availability in CONUS.
- Nov 29 – A GUS switchover on CRE caused a reduction in LPV200 availability in CONUS.
- Dec 5 – Geomagnetic activity elevated GIVE values which reduced LPV200 availability in Canada.
- Dec 6 – Geomagnetic activity elevated GIVE values which reduced LPV200 availability in Canada.

- Dec 14 – Satellite maintenance elevated UDREs on PRN-21 and reduced LPV200 availability in Alaska and Canada.
- Dec 17 – Geomagnetic activity elevated GIVE values which reduced LPV200 availability in Alaska and Canada.
- Dec 18 – Geomagnetic activity elevated GIVE values which reduced LPV200 availability in Canada.
- Dec 19 – Satellite maintenance elevated UDREs on PRN-6 and reduced LPV200 availability in CONUS and Canada.
- Dec 26 – Geomagnetic activity elevated GIVE values which reduced LPV200 availability in CONUS.

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: Additional Coverage Plots 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

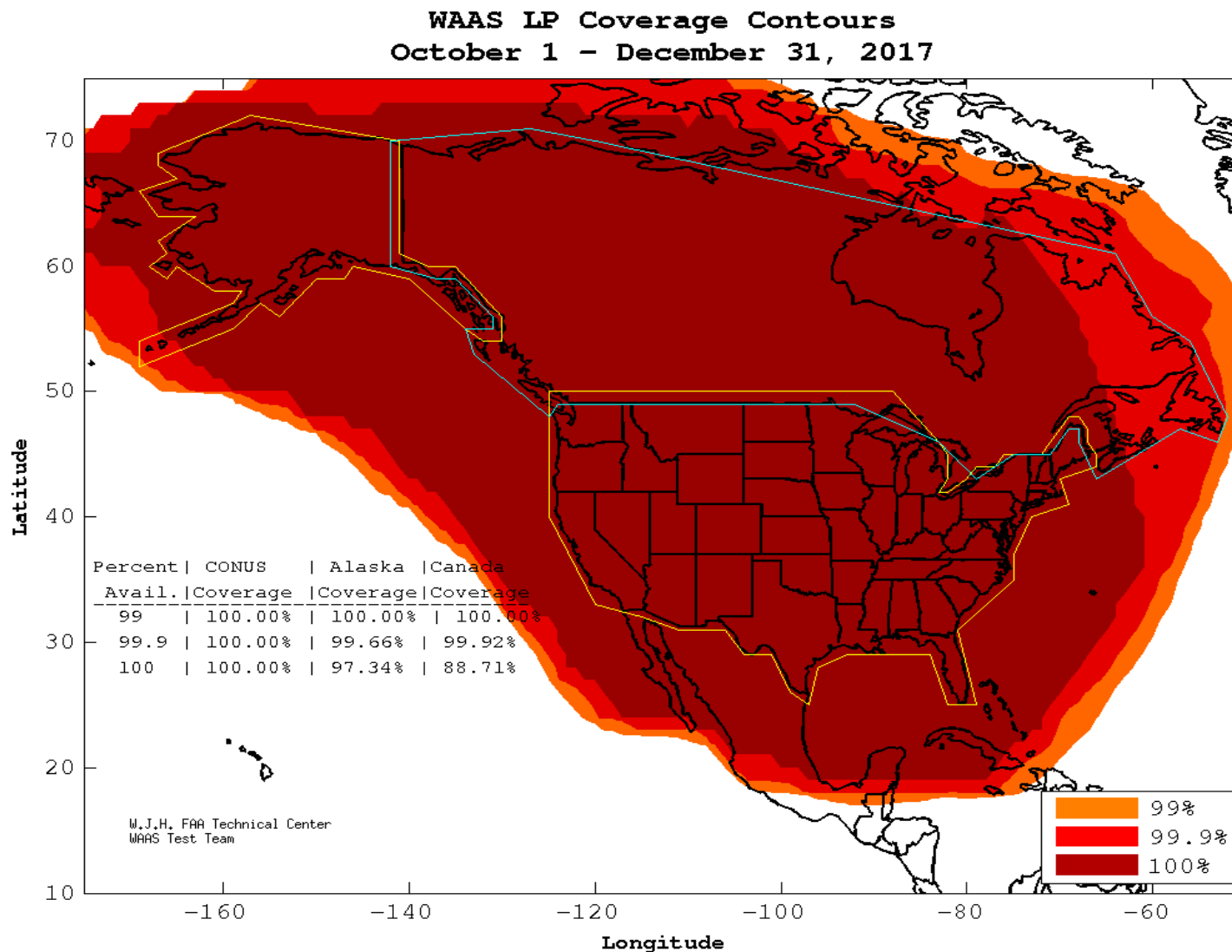


Figure 4-2 LPV North America Coverage for the Quarter

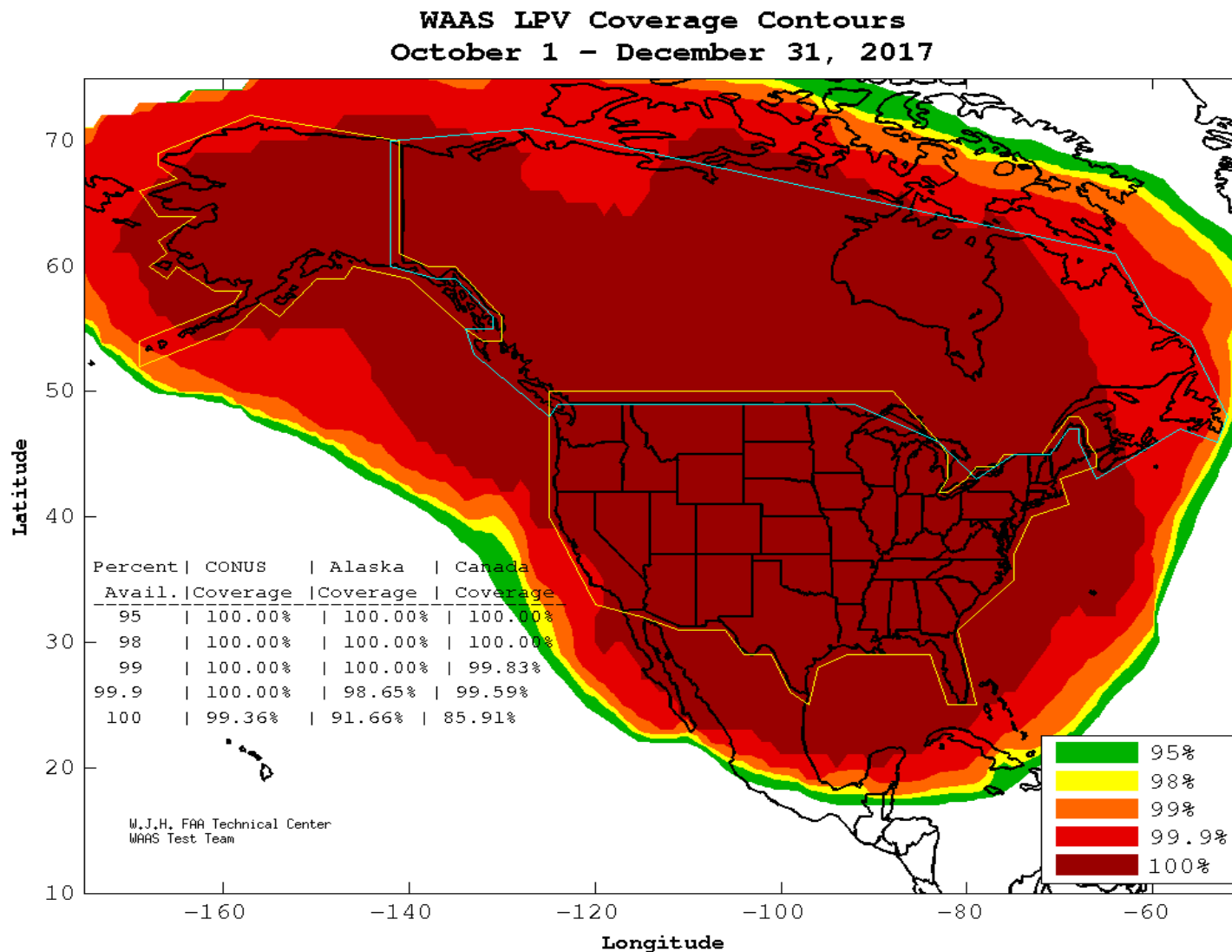


Figure 4-3 LPV200 North America Coverage for the Quarter

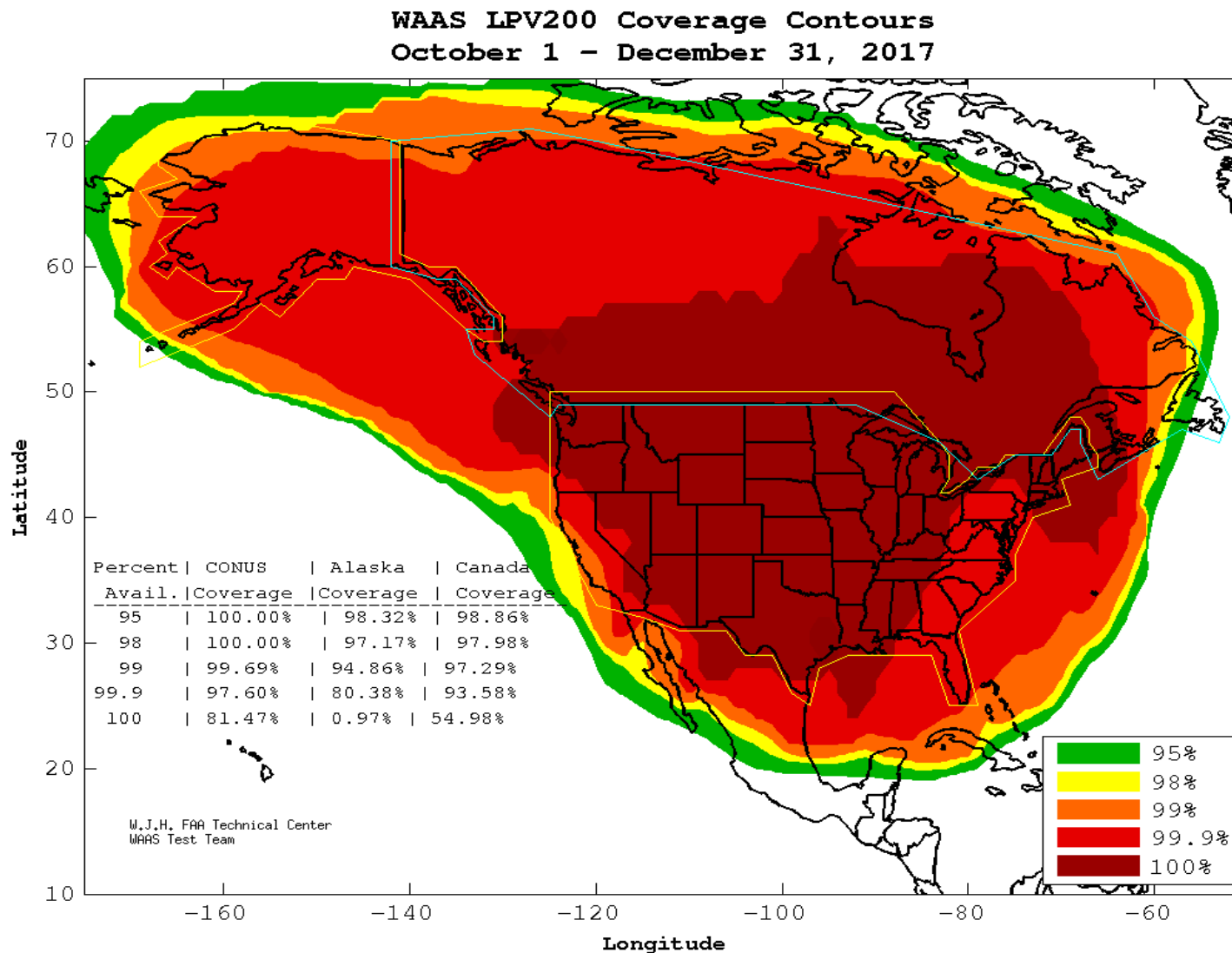


Figure 4-4 Daily LPV and LPV200 CONUS Coverage

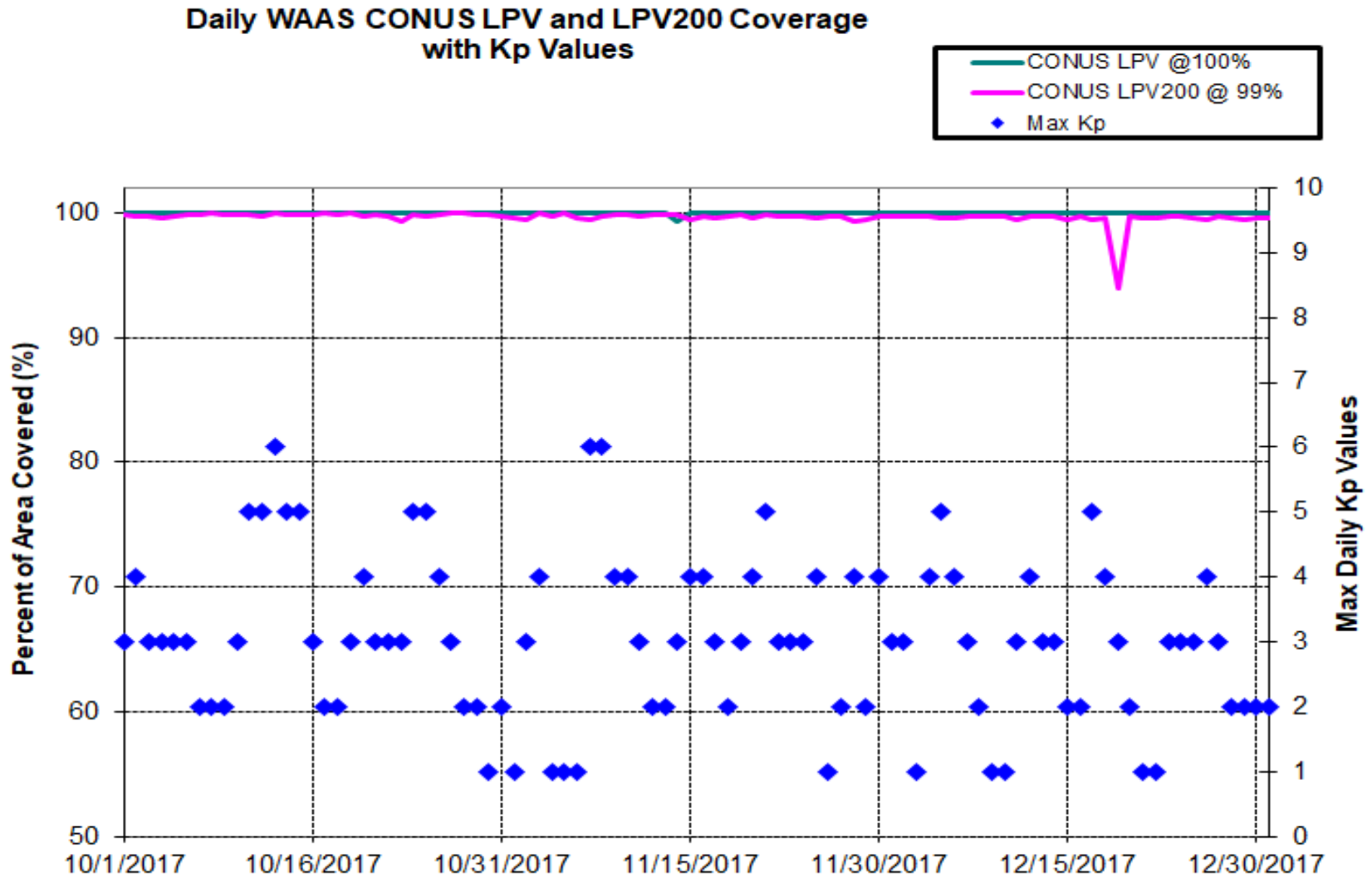


Figure 4-5 Daily LPV and LPV200 Alaska Coverage

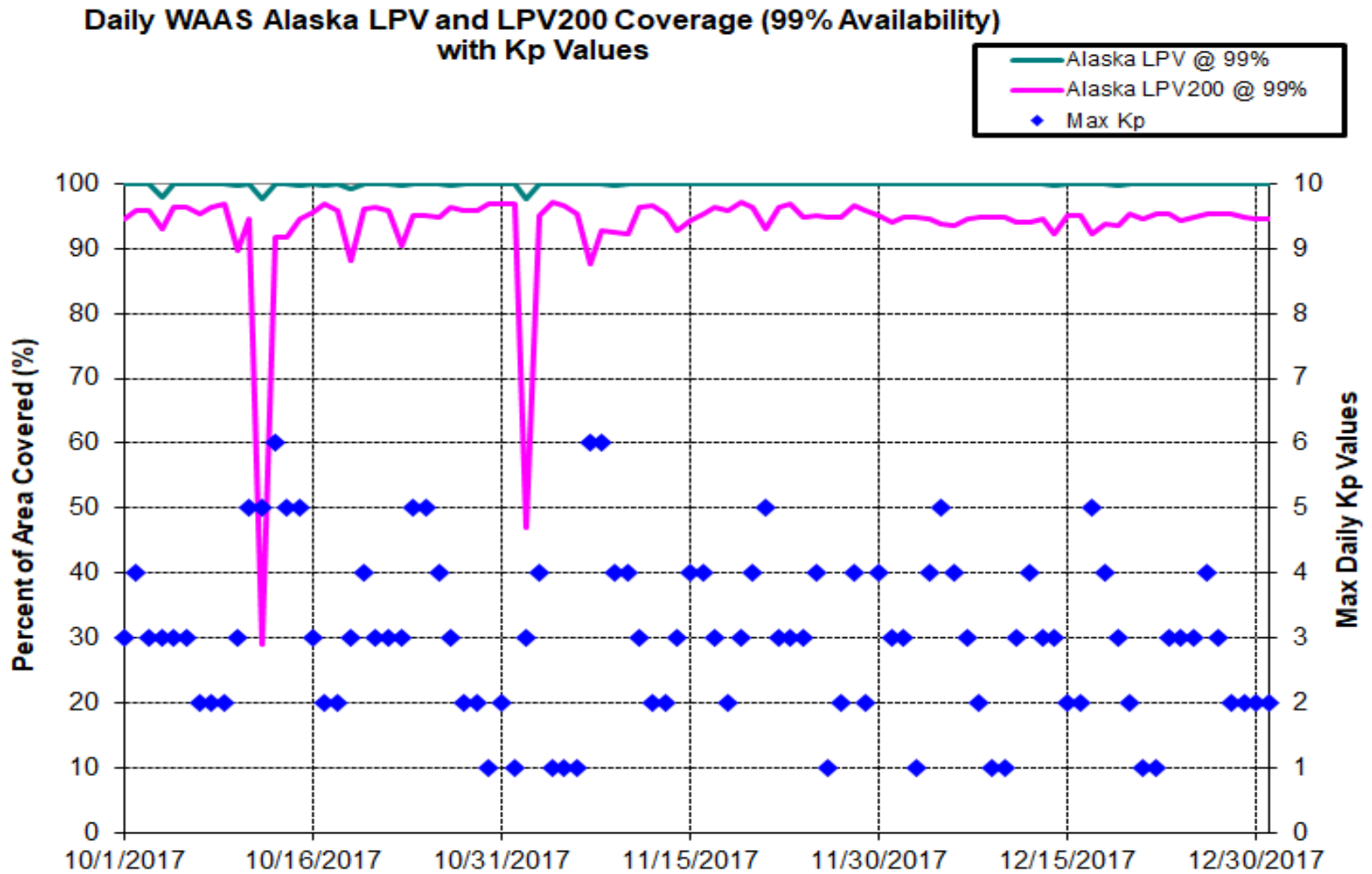
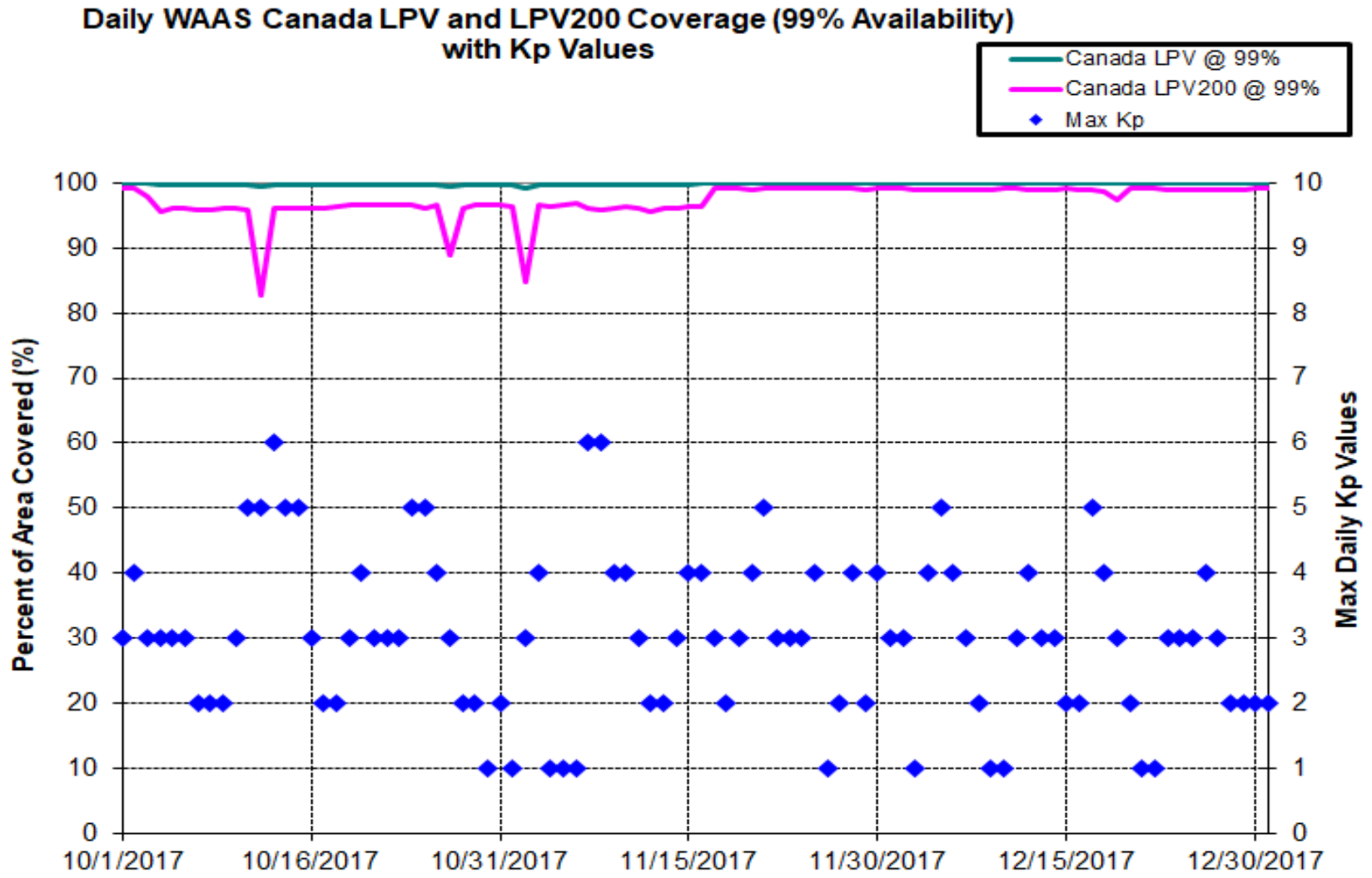


Figure 4-6 Daily LPV and LPV200 Canada Coverage



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

WAAS RNP 0.1 Coverage Contours
October 1 – December 31, 2017

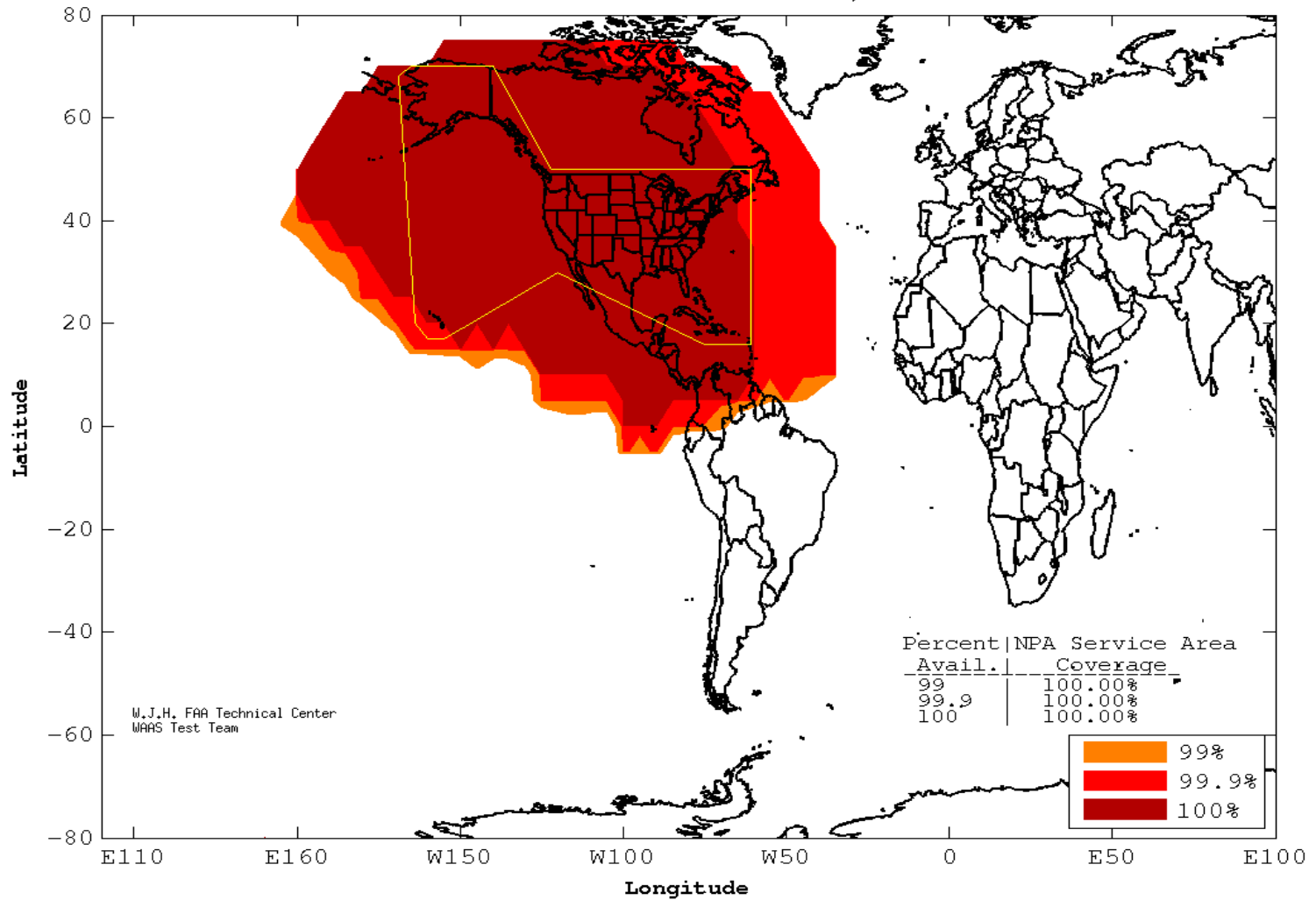


Figure 4-8 RNP 0.3 Coverage for the Quarter

WAAS RNP 0.3 Coverage Contours
October 1 – December 31, 2017

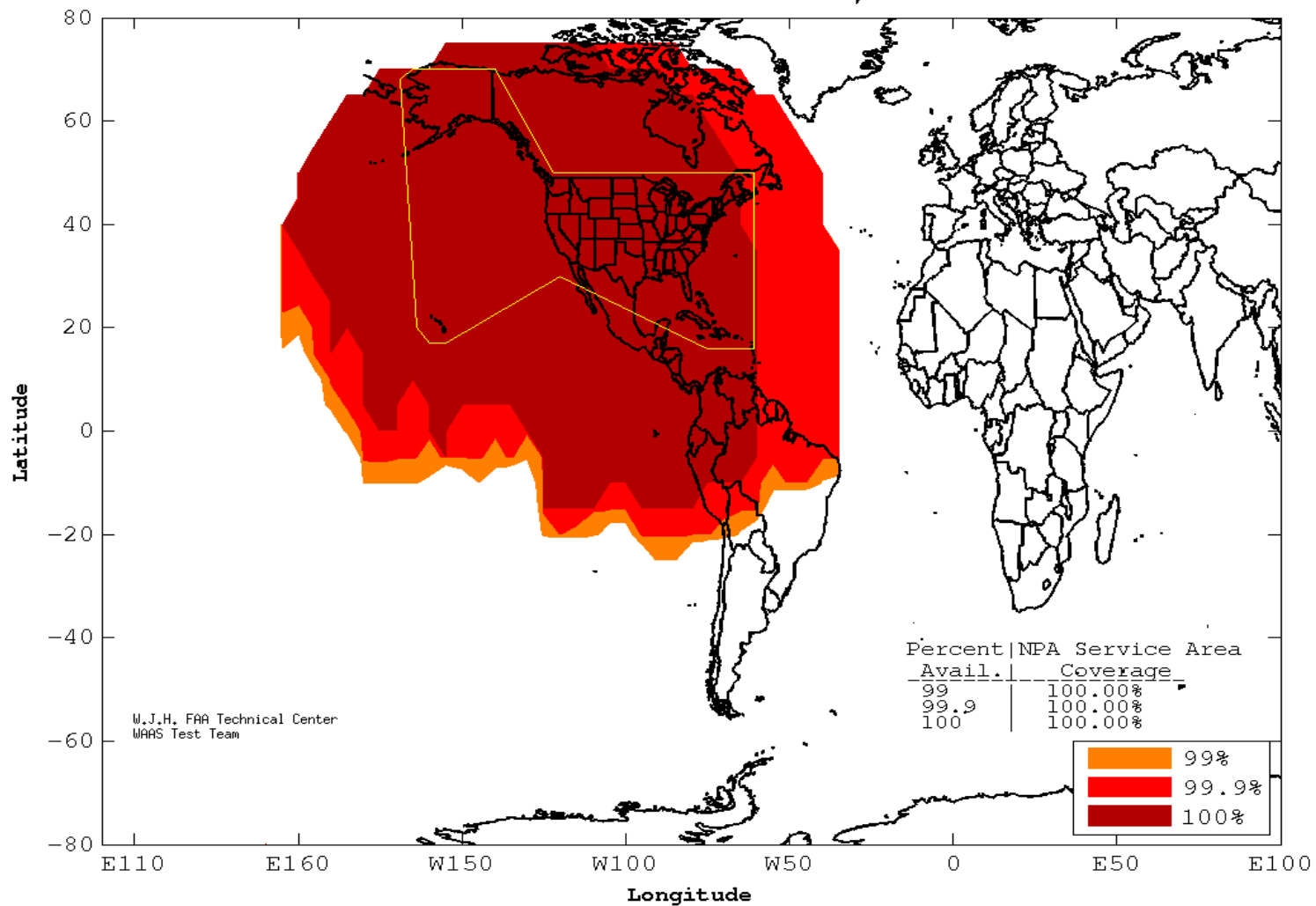
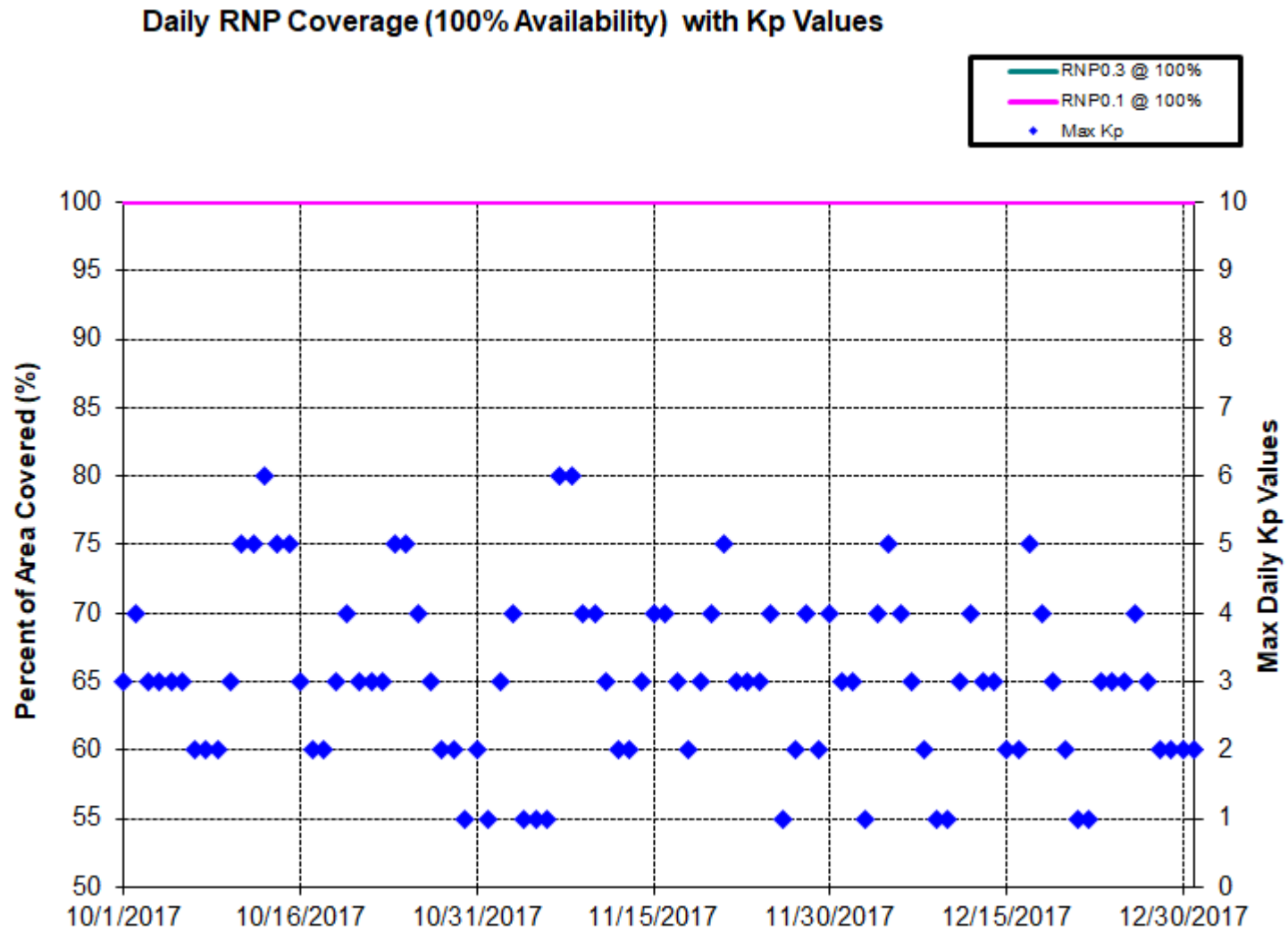


Figure 4-9. Daily RNP Coverage



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:

- Jan 27 to Dec 31 – GPS Flex Power tests elevated UDREs on PRN-24 and reduced LPV200 coverage in Alaska. [See DR135.](#)
- Jan 28 to Dec 31 – GPS Flex Power tests elevated UDREs on PRN-6 and reduced LPV200 coverage in CONUS. [See DR135.](#)
- Sept 21 to Oct 4 – A WRS outage at ZSU reduced LPV200 coverage in CONUS (Florida panhandle).
- Oct 3 – Geomagnetic activity elevated GIVE values which reduced LPV200 coverage in Alaska.
- Oct 4 – Satellite maintenance elevated UDREs on PRN-1 and reduced LPV200 coverage in Canada.
- Oct 10 to 11 – A WRS outage at BET reduced LPV200 coverage in Alaska.
- Oct 12 to 13 – A WRS outage at ZSU reduced LPV200 coverage in CONUS (Florida panhandle).
- Oct 12 – Satellite maintenance elevated UDREs on PRN-29 and reduced LPV200 coverage in Alaska and Canada.
- Oct 13 – Geomagnetic activity elevated GIVE values which reduced LPV200 coverage in Alaska and Canada.
- Oct 14 – Geomagnetic activity elevated GIVE values which reduced LPV200 coverage in Alaska and Canada.
- Oct 19 to 20 – Satellite maintenance elevated UDREs on PRN-26 and reduced LPV200 coverage in Alaska and Canada.
- Oct 23 – A GUS switchover on CRW caused a reduction in LPV200 coverage in Alaska and Canada.
- Oct 24 – A sub-frame reasonability warning and YFB PID Down fault removed Iqaluit WRS from WAAS correction processing and reduced LPV200 availability in Canada. [See DR 133.](#)
- Oct 25 – Geomagnetic activity elevated GIVE values which reduced LPV200 coverage in CONUS and Canada.
- Oct 27 – Satellite maintenance elevated UDREs on PRN-31 and reduced LPV200 coverage in Canada.
- Nov 1 – Geomagnetic activity elevated GIVE values which reduced LPV200 coverage in CONUS.
- Nov 2 – Satellite maintenance elevated UDREs on PRN-29 and reduced LPV200 coverage in Alaska and Canada.
- Nov 2 – A GUS switchover on CRW caused a reduction in LPV200 coverage in CONUS and Canada.
- Nov 7 to 24 – GPS Flex Power tests elevated UDREs on PRN-6 and reduced LPV200 coverage in Canada. [See DR135.](#)
- Nov 7 – Geomagnetic activity elevated GIVE values which reduced LPV200 coverage in CONUS, Alaska, and Canada.
- Nov 8 – Geomagnetic activity elevated GIVE values which reduced LPV200 coverage in CONUS and Canada.
- Nov 10 – Geomagnetic activity elevated GIVE values which reduced LPV200 coverage in Alaska and Canada.
- Nov 14 – GPS Flex Power tests elevated UDREs on PRN-6 and reduced LPV200 coverage in CONUS. [See DR135.](#)
- Nov 16 – Geomagnetic activity elevated GIVE values which reduced LPV200 coverage in Canada.
- Nov 17 – Geomagnetic activity elevated GIVE values which reduced LPV200 coverage in CONUS.
- Nov 19 – A GUS switchover on CRE caused a reduction in LPV200 coverage in Canada.
- Nov 20 - A sub-frame reasonability warning and YFB PID Down fault removed Iqaluit WRS from WAAS correction processing and reduced LPV200 availability in Canada. [See DR 133.](#)
- Nov 21 – Geomagnetic activity elevated GIVE values which reduced LPV200 coverage in Alaska.
- Nov 22 – Geomagnetic activity elevated GIVE values which reduced LPV200 coverage in Canada.
- Nov 28 to 29 – A WRS outage at ZLA reduced LPV200 coverage in CONUS.
- Nov 29 – A GUS switchover on CRE caused a reduction in LPV200 coverage in CONUS.
- Dec 5 – Geomagnetic activity elevated GIVE values which reduced LPV200 coverage in Canada.
- Dec 6 – Geomagnetic activity elevated GIVE values which reduced LPV200 coverage in Canada.
- Dec 14 – Satellite maintenance elevated UDREs on PRN-21 and reduced LPV200 coverage in Alaska and Canada.

- Dec 17 – Geomagnetic activity elevated GIVE values which reduced LPV200 coverage in Alaska and Canada.
- Dec 18 – Geomagnetic activity elevated GIVE values which reduced LPV200 coverage in Canada.
- Dec 19 – Satellite maintenance elevated UDREs on PRN-6 and reduced LPV200 coverage in CONUS and Canada.
- Dec 26 – Geomagnetic activity elevated GIVE values which reduced LPV200 coverage in CONUS.

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 3.968 at Atlantic City, 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	4.211	9.098	0
Atlantic City	3.968	4.994	0
Oklahoma City	5.345	6.555	0
Albuquerque	8.135	7.022	0
Anchorage	5.694	7.449	0
Atlanta	5.884	9.713	0
Barrow	7.070	4.271	0
Bethel	7.392	10.182	0
Billings	7.428	7.599	0
Boston	6.744	7.630	0
Chicago	6.055	7.093	0
Cleveland	7.033	8.943	0
Cold Bay	9.159	9.615	0
Dallas	7.152	5.520	0
Denver	5.858	8.462	0
Fairbanks	6.853	5.400	0
Gander	8.253	11.036	0
Goose Bay	11.479	8.771	0
Houston	6.732	5.624	0
Iqaluit	7.898	10.986	0
Jacksonville	6.566	8.325	0
Juneau	6.896	6.981	0
Kansas City	6.310	6.573	0
Kotzebue	8.169	9.160	0
Los Angeles	9.262	7.012	0
Memphis	5.685	6.076	0
Merida	12.088	10.907	0
Mexico City	15.180	8.797	0
Miami	9.211	6.405	0
Minneapolis	6.691	8.356	0
New York	6.869	8.369	0
Oakland	8.141	6.629	0
Puerto Vallarta	13.330	16.312	0
Salt Lake City	6.543	7.278	0
San Jose Del Cabo	10.224	9.949	0
Seattle	5.108	9.131	0
Washington DC	7.872	6.620	0
Winnipeg	6.775	7.908	0

5.2 Broadcast Alerts

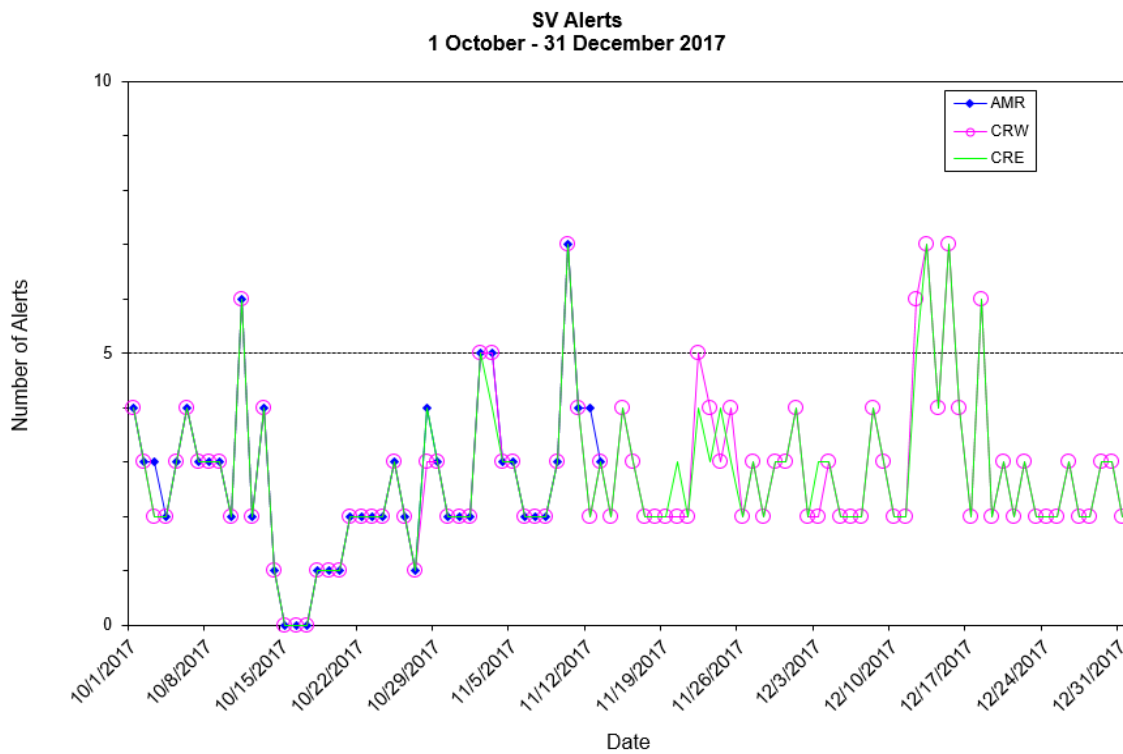
The WAAS transmits alert messages for user protection when the active WAAS corrections are no longer bound by the UDREs. Alerts increase the UDRE for one or more PRNs, which can reduce the weighting of the satellite or exclude the satellite from the navigation solution. An increase in UDREs after an 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

Message Type	Number of Alerts			Average Number of Alerts Per Day		
	AMR	CRW	CRE	AMR	CRW	CRE
2	97	213	213	2.155	2.315	2.315
3	3	14	14	0.066	0.152	0.152
4	94	96	95	2.088	1.043	1.032
5	0	0	0	0	0	0
6	0	0	0	0	0	0
24	0	0	0	0	0	0
26	0	0	0	0	0	0
Total SV Alerts	194	323	322	4.311	3.510	3.5
Days in Service	45	92	92			

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, CRW, and AMR)

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

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

Message Type	On Time	Late	Max Late Length (seconds)
1	45332	4	16656
2	563652	81	16518
3	563323	118	16524
4	563709	32	16524
7	42417	5	16596
9	39611	6	16642
10	42401	7	16667
17	13458	3	16650

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

SV	On Time	Late	Max Late Length (seconds)
1	20140	0	0
2	20400	0	0
3	20855	0	0
5	20370	1	162
6	20537	1	168
7	19649	0	0
8	20498	0	0
9	20450	1	166
10	19090	0	0
11	20542	0	0
12	20208	0	0
13	20283	0	0
14	19975	0	0
15	20347	2	180
16	20248	0	0
17	20504	0	0
18	19561	0	0
19	20027	0	0
20	19854	1	162
21	20061	1	168
22	20801	0	0
23	20313	0	0
24	20385	0	0
25	20628	1	166
26	20293	0	0
27	20164	0	0
28	20012	0	0
29	19700	0	0
30	20065	0	0
31	20313	0	0
32	19482	0	0

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

SV	On Time	Late	Max Late Length (seconds)
1	16572	0	0
2	16756	0	0
3	17146	0	0
5	16708	1	206
6	16852	2	6864
7	16120	0	0
8	16830	1	30162
9	16788	0	0
10	15703	0	0
11	16884	0	0
12	16588	0	0
13	16667	0	0
14	16409	0	0
15	16698	1	206
16	16628	1	206
17	16865	0	0
18	16045	1	16656
19	16450	0	0
20	16285	0	0
21	16500	1	30102
22	17083	0	0
23	16698	0	0
24	16751	0	0
25	16931	0	0
26	16658	2	6494
27	16575	0	0
28	16430	0	0
29	16175	0	0
30	16472	0	0
31	16663	0	0
32	15998	0	0
135	32483	2	16632
138	32482	2	16632

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

Band	Block	On Time	Late	Max Late Length (seconds)
0	0	11724	5	16704
0	1	11738	7	16704
0	2	11723	9	16704
1	0	11725	4	16704
1	1	11728	5	16704
1	2	11726	7	16704
1	3	11731	9	16711
1	4	11723	13	16715
2	0	11723	8	23616
2	1	11731	3	39457
2	2	11730	4	45810
2	3	11729	1	45805
2	4	11733	1	45810
3	0	11740	2	45827
3	1	11724	3	45829
3	2	11730	4	39215
9	0	11736	3	39211
9	1	11729	3	32273
9	2	11723	5	32269
9	3	11736	4	32261
9	4	11736	5	16705
9	5	11725	4	16715
9	6	11753	4	16704

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

Band	On Time	Late	Max Late Length (seconds)
0	15347	4	16668
1	15341	3	16807
2	15344	4	16693
3	15313	3	23617
9	15336	7	32450

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

Type	On Time	Late	Max Late Length (seconds)
1	100997	1	131
2	1325300	89	10
3	1324649	133	13
4	1325001	55	10
7	94540	9	126
9	93144	1	174
10	94649	5	131
17	31184	2	335

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

SV	On Time	Late	Max Late Length (seconds)
1	48254	0	0
2	47844	0	0
3	48780	0	0
5	47830	0	0
6	47859	1	166
7	46743	0	0
8	48479	0	0
9	47812	0	0
10	46360	0	0
11	48535	0	0
12	47485	0	0
13	48399	0	0
14	47191	0	0
15	48055	1	179
16	47913	0	0
17	47715	0	0
18	46808	0	0
19	46627	0	0
20	46914	0	0
21	47417	1	166
22	48858	0	0
23	47566	0	0
24	48792	0	0
25	48915	0	0
26	48330	0	0
27	48484	0	0
28	47345	0	0
29	47120	0	0
30	47078	0	0
31	48144	0	0
32	46342	0	0

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

SV	On Time	Late	Max Late Length (seconds)
1	39679	0	0
2	39294	0	0
3	40124	2	150
5	39230	0	0
6	39250	0	0
7	38354	1	168
8	39803	2	144
9	39195	1	167
10	38060	7	210
11	39888	2	168
12	38980	1	130
13	39770	0	0
14	38758	1	209
15	39423	0	0
16	39350	0	0
17	39232	0	0
18	38408	0	0
19	38263	1	168
20	38499	0	0
21	38996	0	0
22	40142	0	0
23	39083	1	167
24	40077	1	136
25	40162	0	0
26	39686	0	0
27	39868	0	0
28	38895	0	0
29	38722	0	0
30	38636	0	0
31	39480	0	0
32	38058	0	0
135	76455	1	4339
138	76385	2	4335

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

Band	Block	On Time	Late	Max Late Length (seconds)
0	0	27595	1	301
0	1	27606	2	302
0	2	27590	6	306
1	0	27596	3	528
1	1	27592	3	551
1	2	27606	2	304
1	3	27589	2	450
1	4	27609	2	495
2	0	27593	2	480
2	1	27592	3	489
2	2	27591	1	510
2	3	27606	2	496
2	4	27598	2	496
3	0	27587	2	301
3	1	27599	2	306
3	2	27596	1	306
9	0	27597	4	305
9	1	27605	3	304
9	2	27593	3	302
9	3	27601	3	304
9	4	27597	3	306
9	5	27604	0	0
9	6	27597	3	302

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

Band	On Time	Late	Max Late Length (seconds)
0	35368	2	400
1	35376	0	0
2	35365	0	0
3	35362	2	389
9	35428	1	348

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

Type	On Time	Late	Max Late Length (seconds)
1	104967	0	0
2	1325294	88	25
3	1324648	130	28
4	1324995	57	22
7	98264	4	142
9	93144	1	174
10	98343	4	126
17	31545	1	339

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

PRN	On Time	Late	Max Late Length (seconds)
1	48240	0	0
2	47842	0	0
3	48785	0	0
5	47827	0	0
6	47863	0	0
7	46742	0	0
8	48479	0	0
9	47807	1	163
10	46353	0	0
11	48532	0	0
12	47485	0	0
13	48400	0	0
14	47199	0	0
15	48049	1	179
16	47910	0	0
17	47718	0	0
18	46795	0	0
19	46606	1	165
20	46908	0	0
21	47419	0	0
22	48852	0	0
23	47560	0	0
24	48784	0	0
25	48930	0	0
26	48333	0	0
27	48482	0	0
28	47347	0	0
29	47129	0	0
30	47080	0	0
31	48152	0	0
32	46367	0	0

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

PRN	On Time	Late	Max Late Length (seconds)
1	39668	1	128
2	39306	0	0
3	40143	0	0
5	39239	0	0
6	39246	0	0
7	38361	0	0
8	39804	2	135
9	39219	0	0
10	38088	0	0
11	39877	1	133
12	38974	0	0
13	39767	0	0
14	38766	2	209
15	39424	0	0
16	39350	0	0
17	39222	0	0
18	38411	0	0
19	38282	0	0
20	38503	1	176
21	39013	2	149
22	40145	0	0
23	39081	1	209
24	40077	0	0
25	40157	0	0
26	39679	1	134
27	39832	0	0
28	38901	0	0
29	38739	0	0
30	38622	0	0
31	39469	0	0
32	38074	1	135
135	76443	2	184
138	76344	2	184

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

Band	Block	On Time	Late	Max Late Length (seconds)
0	0	27593	2	305
0	1	27611	3	315
0	2	27586	4	305
1	0	27594	8	304
1	1	27584	6	306
1	2	27606	4	306
1	3	27587	3	304
1	4	27591	3	305
2	0	27605	5	305
2	1	27587	3	304
2	2	27598	0	0
2	3	27593	1	305
2	4	27601	5	305
3	0	27592	2	305
3	1	27610	0	0
3	2	27593	4	579
9	0	27588	3	576
9	1	27583	4	305
9	2	27592	7	301
9	3	27610	5	306
9	4	27589	2	305
9	5	27590	5	304
9	6	27587	7	579

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

Band	On Time	Late	Max Late Length (seconds)
0	35915	0	0
1	35840	0	0
2	35900	2	345
3	35909	1	426
9	35882	1	461

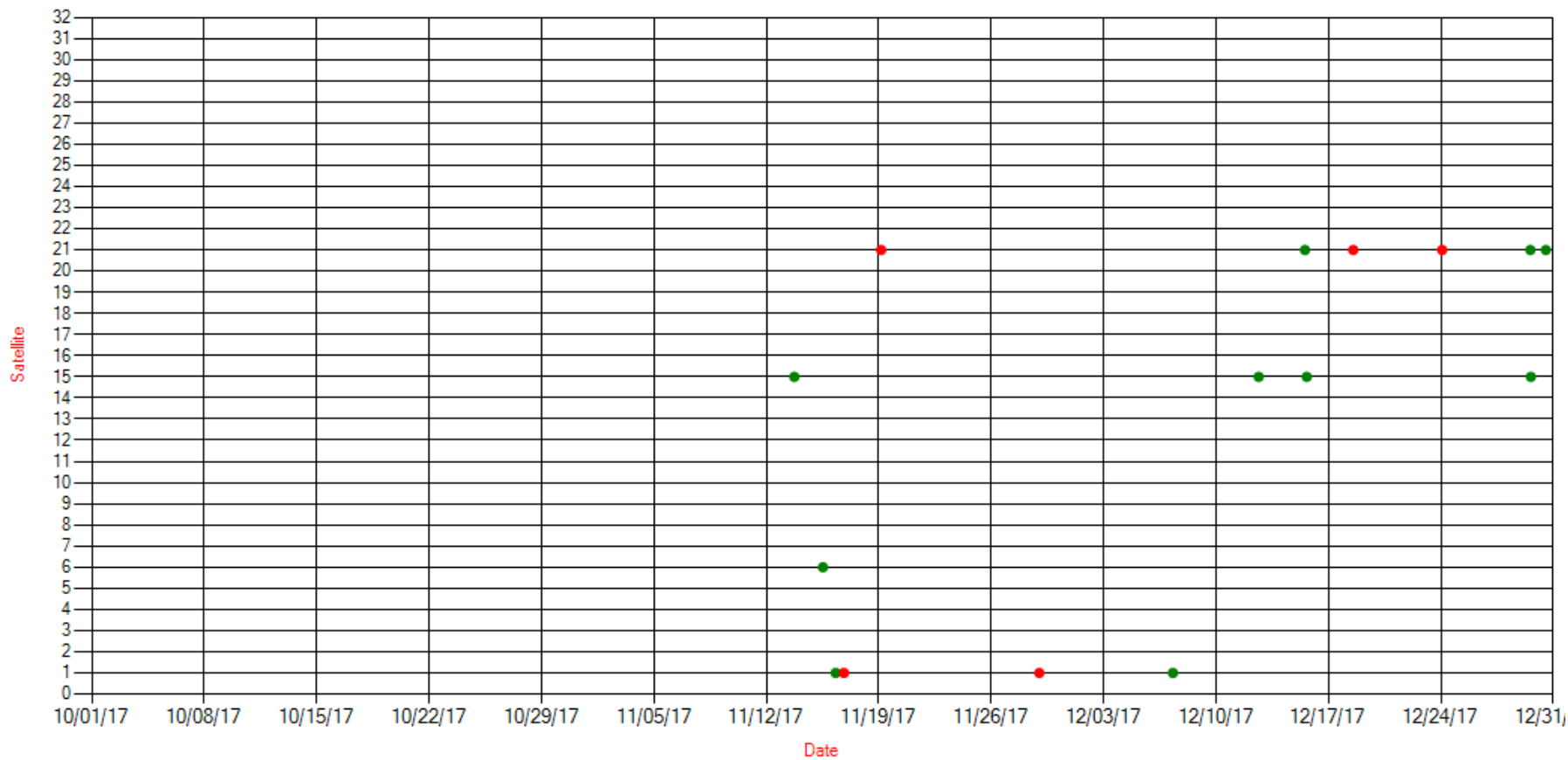
5.4 Satellite Glitches

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

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



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 PRN ↓	Minneapolis		Chicago		Boston		Juneau		Honolulu		Salt Lake City	
	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*	0.857	100	1.167	100	1.085	100	0.952	100	1.303	100	0.996	100
2	0.941	100	1.116	100	1.093	100	1.031	100	1.600	100	1.109	100
3*	0.787	100	2.071	100	1.175	100	0.866	100	1.947	100	1.326	100
4	-	-	-	-	-	-	-	-	-	-	-	-
5	1.025	100	1.146	100	1.252	100	1.365	100	1.070	100	0.763	100
6*	0.869	100	1.019	100	1.091	100	0.959	100	1.526	100	1.218	100
7	0.934	100	1.157	100	0.877	100	1.346	100	1.662	100	0.899	100
8*	1.073	100	1.326	100	1.060	100	1.301	100	1.076	100	0.962	100
9*	1.066	100	1.149	100	1.035	100	1.061	100	1.413	100	0.678	100
10	1.169	100	1.246	100	1.043	100	1.387	100	1.022	100	1.006	100
11	1.079	100	1.273	100	1.452	100	1.115	100	1.304	100	1.282	100
12	2.188	100	1.828	100	2.105	100	1.566	100	1.408	100	1.242	100
13	1.537	100	1.174	100	1.454	100	1.314	100	1.091	100	1.062	100
14	1.057	100	1.267	100	1.135	100	1.114	100	1.131	100	1.195	100
15	1.444	100	1.100	100	1.453	100	1.101	100	1.417	100	0.811	100
16	0.857	100	1.009	100	1.050	100	0.986	100	1.385	100	0.860	100
17	0.980	100	1.651	100	0.833	100	1.127	100	1.750	100	1.267	100
18	1.056	100	0.955	100	1.360	100	1.367	100	1.299	100	0.889	100
19	0.958	100	1.454	100	0.906	100	1.359	100	1.160	100	1.312	100
20	1.007	100	1.121	100	1.008	100	1.485	100	1.892	100	0.952	100
21	0.750	100	1.103	100	1.206	100	1.166	100	1.138	100	0.802	100
22	0.974	100	1.050	100	1.154	100	1.318	100	1.779	100	0.809	100
23	1.077	100	1.413	100	1.193	100	1.186	100	1.967	100	0.855	100
24*	0.996	100	0.995	100	1.360	100	1.773	100	1.224	100	1.484	100
25*	1.220	100	1.250	100	1.029	100	1.555	100	1.346	100	1.372	100
26*	1.202	100	1.243	100	1.434	100	1.094	100	1.261	100	0.939	100
27*	2.070	100	0.978	100	1.213	100	0.796	100	1.107	100	0.957	100
28	0.984	100	1.755	100	1.019	100	1.666	100	1.483	100	1.016	100
29	1.469	100	1.060	100	1.133	100	1.732	100	1.160	100	1.526	100
30*	1.224	100	1.157	100	0.987	100	1.029	100	1.401	100	0.920	100
31	0.766	100	0.973	100	1.214	100	1.304	100	1.419	100	1.222	100
32	1.016	100	1.062	100	1.304	100	1.355	100	1.228	100	1.114	100
135	2.912	100	2.865	100	2.589	100	1.521	100	2.509	100	2.121	100
138	1.855	100	1.528	100	1.739	100	1.791	100	1.545	100	1.254	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 PRN ↓	Billings		Miami		Albuquerque		Kansas City		Los Angeles		Atlanta	
	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	1.433	100	1.050	100	1.558	100	1.710	100	1.448	100
2	2.530	100	1.590	100	1.184	100	1.198	100	1.330	100	1.067	100
3*	0.915	100	1.823	100	1.373	100	1.591	100	1.400	100	1.575	100
4	-	-	-	-	-	-	-	-	-	-	-	-
5	0.962	100	1.156	100	1.198	100	2.254	100	1.250	100	1.177	100
6*	1.562	100	1.579	100	1.340	100	1.726	100	1.788	100	1.327	100
7	0.647	100	1.979	100	1.012	100	1.166	100	1.285	100	0.909	100
8*	0.945	100	1.508	100	1.149	100	1.217	100	1.607	100	1.162	100
9*	0.998	100	1.173	100	0.851	100	1.510	100	1.306	100	1.117	100
10	1.838	100	1.426	100	1.024	100	1.052	100	0.938	100	1.080	100
11	1.063	100	1.482	100	1.012	100	1.671	100	1.483	100	1.272	100
12	1.233	100	1.478	100	1.030	100	1.206	100	1.218	100	1.101	100
13	1.257	100	1.556	100	1.398	100	1.140	100	1.019	100	0.994	100
14	0.842	100	1.548	100	1.066	100	1.445	100	1.024	100	1.264	100
15	1.035	100	1.372	100	0.963	100	1.086	100	1.265	100	1.351	100
16	1.185	100	1.257	100	1.526	100	1.621	100	1.473	100	1.257	100
17	1.855	100	1.407	100	0.797	100	0.981	100	1.108	100	1.017	100
18	0.856	100	1.682	100	1.160	100	1.602	100	1.139	100	1.298	100
19	1.183	100	1.787	100	1.063	100	1.235	100	1.258	100	1.052	100
20	1.416	100	1.493	100	1.019	100	1.425	100	1.115	100	1.048	100
21	0.810	100	1.493	100	0.857	100	1.147	100	1.004	100	1.120	100
22	1.005	100	1.526	100	1.142	100	1.102	100	1.174	100	1.301	100
23	0.805	100	1.596	100	0.910	100	0.937	100	1.425	100	0.976	100
24*	0.923	100	1.159	100	1.350	100	1.412	100	1.066	100	0.995	100
25*	1.497	100	1.405	100	1.051	100	1.362	100	1.219	100	1.403	100
26*	1.588	100	1.605	100	1.206	100	1.924	100	1.794	100	1.304	100
27*	1.154	100	1.351	100	1.197	100	0.935	100	1.954	100	0.861	100
28	1.231	100	1.236	100	0.977	100	1.229	100	1.469	100	0.918	100
29	1.119	100	1.335	100	0.983	100	1.234	100	1.138	100	1.144	100
30*	1.018	100	1.303	100	0.956	100	1.031	100	1.229	100	0.973	100
31	1.674	100	2.405	100	1.208	100	1.689	100	1.349	100	1.417	100
32	1.129	100	1.463	100	1.051	100	1.013	100	1.002	100	1.023	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.

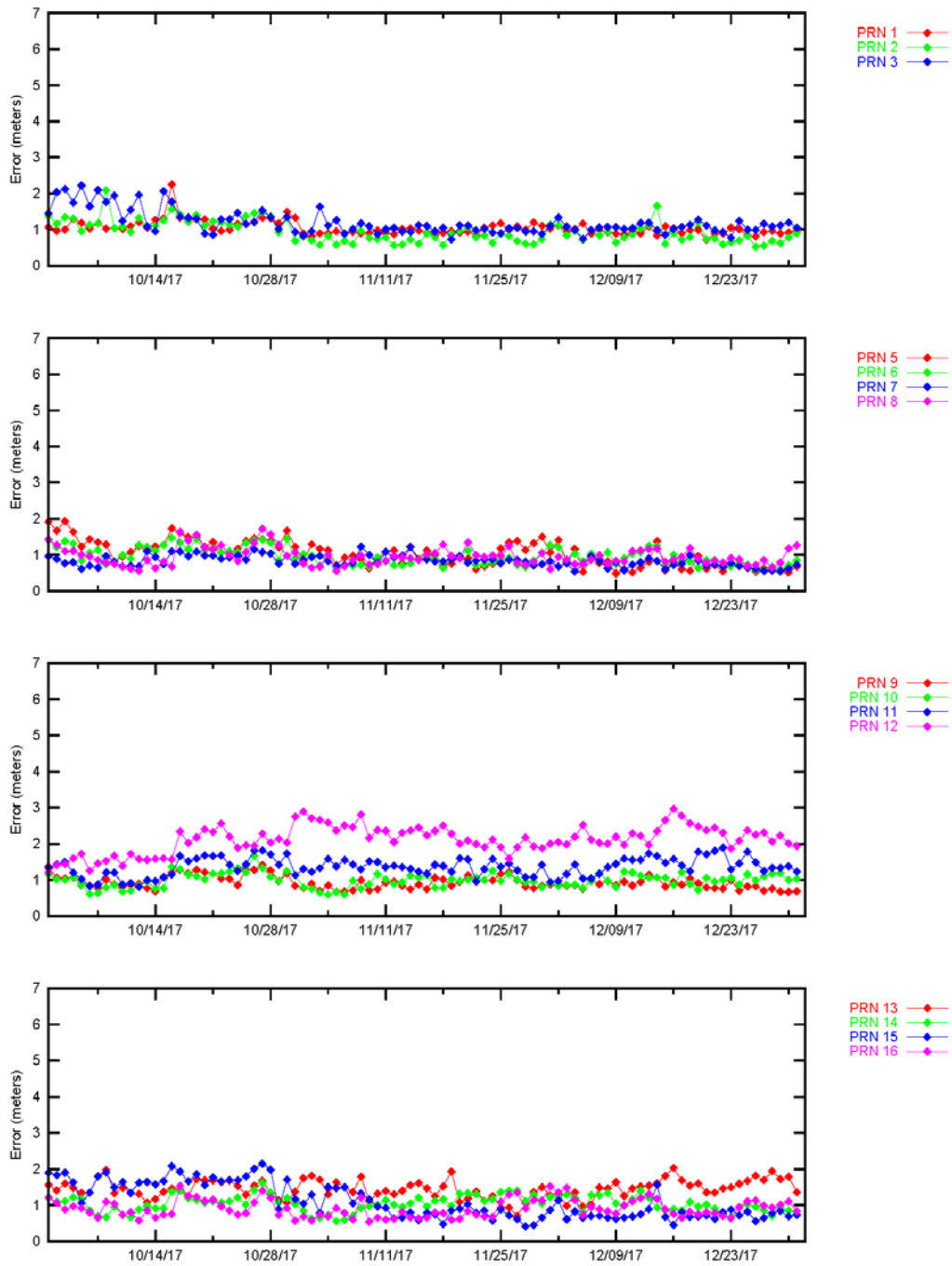
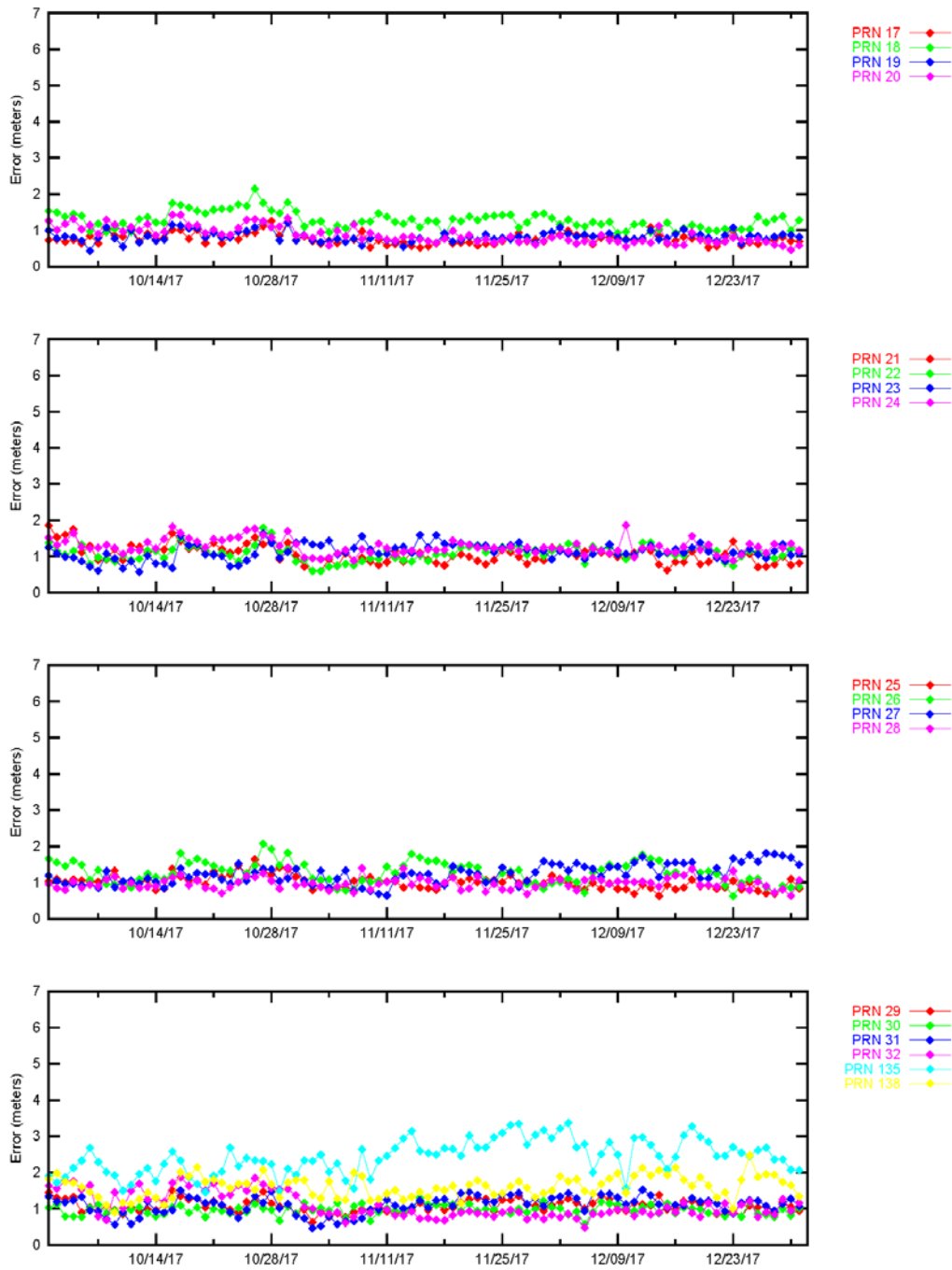


Figure 6-2 Range Error (PRN-17 – PRN-32) – Washington D.C.



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 PRN ↓	Minneapolis		Chicago		Boston		Juneau		Honolulu		Salt Lake City	
	0.95 Iono Error (Meters)	3.29 Sigma Boundin g (%)	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	0.308	100	0.589	100	0.483	100	0.563	100	0.524	100	0.385	100
2	0.422	100	0.509	100	0.415	100	0.388	100	0.716	100	0.600	100
3	0.402	100	1.033	100	0.414	100	0.308	100	0.641	100	0.477	100
4	-	-	-	-	-	-	-	-	-	-	-	-
5	0.369	100	0.604	100	0.477	100	0.509	100	0.532	100	0.448	100
6	0.419	100	0.341	100	0.590	100	0.375	100	0.760	100	0.603	100
7	0.428	100	0.541	100	0.515	100	0.520	100	0.800	100	0.432	100
8	0.450	100	0.677	100	0.463	100	0.447	100	0.562	100	0.290	100
9	0.478	100	0.529	100	0.458	100	0.462	100	0.569	100	0.437	100
10	0.831	100	0.682	100	0.646	100	0.743	100	0.548	100	0.550	100
11	0.413	100	0.474	100	0.364	100	0.429	100	0.483	100	0.336	100
12	0.666	100	0.694	100	0.649	100	0.532	100	0.570	100	0.469	100
13	0.610	100	0.561	100	0.476	100	0.492	100	0.421	100	0.409	100
14	0.643	100	0.839	100	0.445	100	0.520	100	0.625	100	0.876	100
15	0.455	100	0.306	100	0.520	100	0.378	100	0.464	100	0.297	100
16	0.370	100	0.447	100	0.375	100	0.429	100	0.608	100	0.296	100
17	0.450	100	0.904	100	0.410	100	0.476	100	0.574	100	0.664	100
18	0.430	100	0.442	100	0.467	100	0.504	100	0.531	100	0.490	100
19	0.566	100	0.845	100	0.538	100	0.563	100	0.656	100	0.781	100
20	0.433	100	0.473	100	0.326	100	0.553	100	0.977	100	0.427	100
21	0.406	100	0.469	100	0.633	100	0.465	100	0.478	100	0.431	100
22	0.329	100	0.339	100	0.344	100	0.690	100	0.656	100	0.550	100
23	0.446	100	0.637	100	0.583	100	0.570	100	0.898	100	0.524	100
24	0.386	100	0.480	100	0.468	100	0.532	100	0.365	100	0.520	100
25	0.416	100	0.446	100	0.325	100	0.422	100	0.435	100	0.742	100
26	0.495	100	0.505	100	0.482	100	0.360	100	0.715	100	0.363	100
27	0.722	100	0.369	100	0.511	100	0.455	100	0.423	100	0.268	100
28	0.409	100	0.535	100	0.533	100	0.582	100	0.593	100	0.403	100
29	0.549	100	0.492	100	0.465	100	0.545	100	0.560	100	0.633	100
30	0.484	100	0.581	100	0.597	100	0.368	100	0.521	100	0.414	100
31	0.317	100	0.267	100	0.347	100	0.400	100	0.648	100	0.435	100
32	0.600	100	0.646	100	0.665	100	0.656	100	0.601	100	0.587	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	0.472	100	0.638	100	0.446	100	0.641	100	0.800	100	0.773	100
2	1.449	100	0.783	100	0.634	100	0.577	100	0.518	100	0.518	100
3	0.382	100	0.757	100	0.740	100	0.645	100	0.842	100	0.392	100
4	-	-	-	-	-	-	-	-	-	-	-	-
5	0.562	100	0.586	100	0.569	100	1.278	100	0.555	100	0.706	100
6	0.769	100	0.868	100	0.616	100	0.905	100	0.790	100	0.712	100
7	0.447	100	1.116	100	0.646	100	0.608	100	0.553	100	0.429	100
8	0.397	100	0.620	100	0.530	100	0.610	100	0.479	100	0.733	100
9	0.606	100	0.643	100	0.592	100	0.695	100	0.610	100	0.459	100
10	0.891	100	0.556	100	0.536	100	0.540	100	0.433	100	0.480	100
11	0.230	100	0.390	100	0.418	100	0.482	100	0.533	100	0.590	100
12	0.518	100	0.612	100	0.500	100	0.469	100	0.567	100	0.413	100
13	0.413	100	0.741	100	0.533	100	0.395	100	0.545	100	0.550	100
14	0.469	100	0.538	100	0.482	100	0.481	100	0.409	100	0.639	100
15	0.445	100	0.428	100	0.481	100	0.547	100	0.517	100	0.513	100
16	0.412	100	0.575	100	0.575	100	0.519	100	0.496	100	0.476	100
17	1.128	100	0.539	100	0.468	100	0.396	100	0.412	100	0.494	100
18	0.463	100	0.578	100	0.563	100	0.403	100	0.578	100	0.472	100
19	0.830	100	0.829	100	0.524	100	0.483	100	0.424	100	0.475	100
20	0.747	100	0.668	100	0.510	100	0.583	100	0.439	100	0.496	100
21	0.391	100	0.746	100	0.536	100	0.471	100	0.555	100	0.410	100
22	0.456	100	0.602	100	0.461	100	0.319	100	0.582	100	0.411	100
23	0.371	100	0.799	100	0.573	100	0.476	100	0.522	100	0.521	100
24	0.370	100	0.563	100	0.559	100	0.471	100	0.514	100	0.491	100
25	0.509	100	0.392	100	0.453	100	0.427	100	0.693	100	0.395	100
26	0.460	100	0.543	100	0.461	100	0.734	100	0.463	100	0.712	100
27	0.336	100	0.455	100	0.540	100	0.384	100	0.441	100	0.610	100
28	0.464	100	0.568	100	0.439	100	0.432	100	0.487	100	0.610	100
29	0.486	100	0.583	100	0.477	100	0.419	100	0.572	100	0.533	100
30	0.444	100	0.613	100	0.652	100	0.457	100	0.620	100	0.346	100
31	1.022	100	0.966	100	0.523	100	0.722	100	0.555	100	0.519	100
32	0.685	100	0.616	100	0.595	100	0.391	100	0.322	100	0.554	100

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

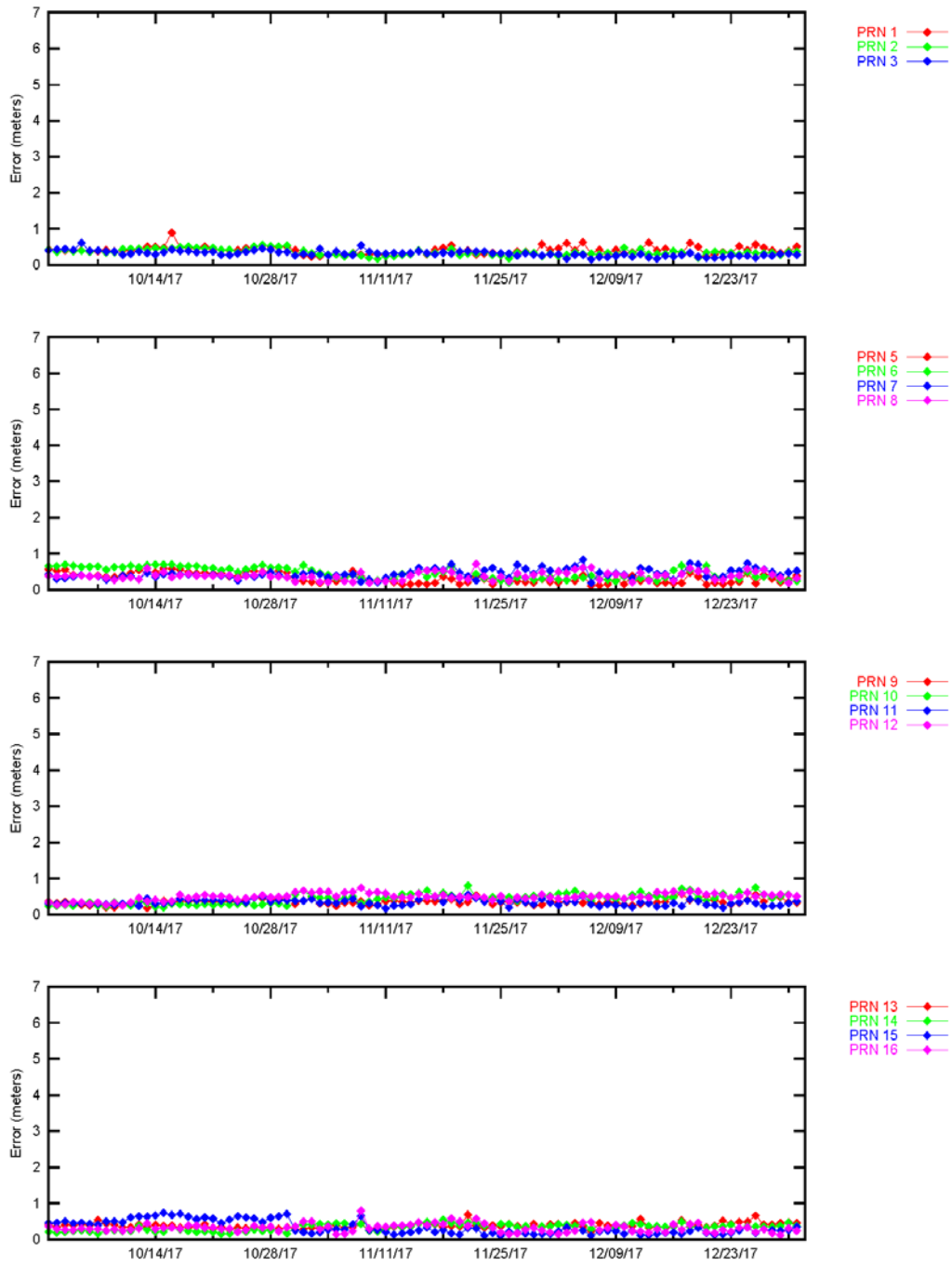
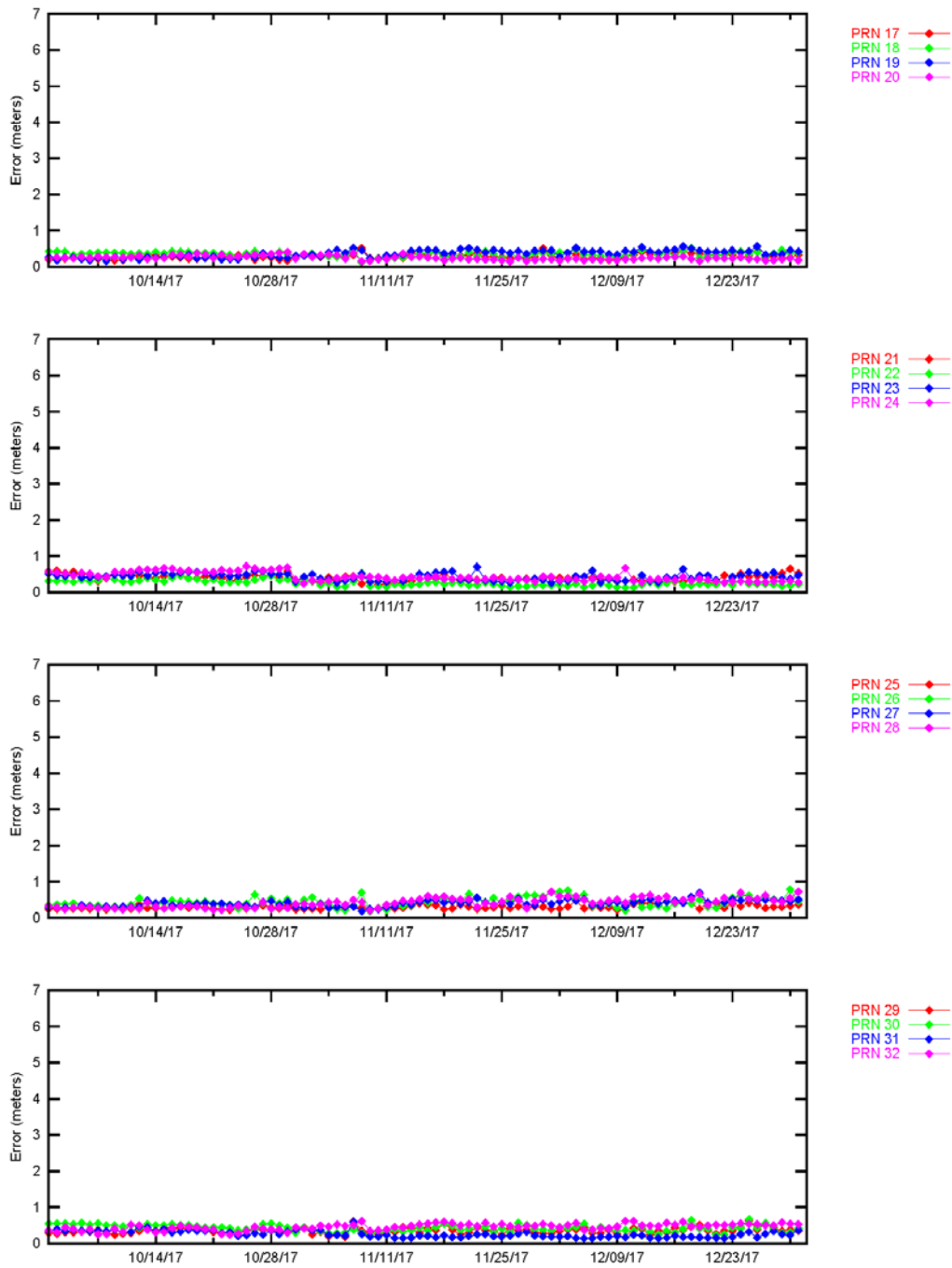


Figure 6-4 Ionospheric Error (PRN-17–PRN-32)–Washington D.C.



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.” 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. Note that percentage values in Table 7-1 do not represent a full quarter of in-service reporting for AMR because AMR was taken out of service on 11/10/2017.

Table 7-1 GEO Ranging Availability

GEO Source	GEO	PA (%)	NPA (%)	Not Monitored (%)	Do Not Use (%)
CRW 135	CRW	99.94%	0.01%	0.05%	0.00%
CRW 135	CRE	99.78%	0.03%	0.16%	0.03%
CRW 135	AMR	0.00%	0.00%	96.14%	3.86%
CRE 138	CRW	99.94%	0.01%	0.05%	0.00%
CRE 138	CRE	99.78%	0.03%	0.16%	0.03%
CRE 138	AMR	0.00%	0.00%	96.14%	3.86%
AMR 133	CRW	99.84%	0.03%	0.13%	0.00%
AMR 133	CRE	99.77%	0.03%	0.14%	0.06%
AMR 133	AMR	0.00%	0.00%	96.56%	3.44%

Figure 7-1 Daily PA CRW GEO Ranging Availability Trend

**CRW PA-Ranging Performance reported by AMR, CRW, and CRE
1 October - 31 December 2017**

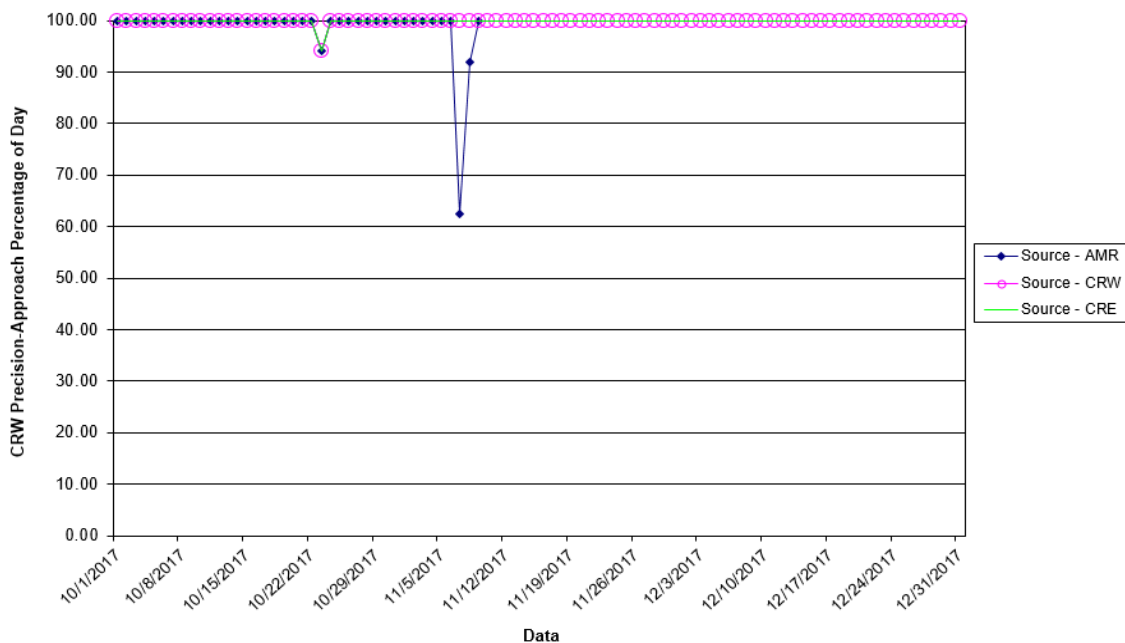
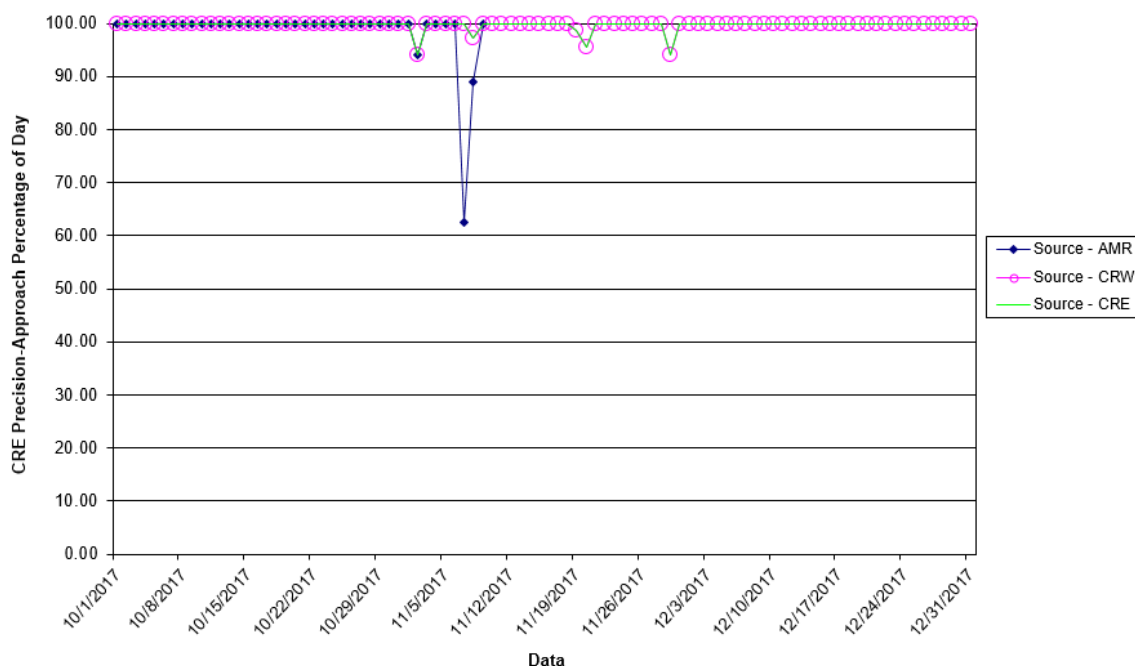


Figure 7-2 Daily PA CRE GEO Ranging Availability Trend

**CRE PA-Ranging Performance reported by AMR, CRW, and CRE
1 October - 31 December 2017**



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	AirportName	State/ Provence	Service	LP Outages	LP Avail (%)	LP Outages	LP 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	3	99.9634
6A8	ALLAKAKET	AK	LP	0	100	0	100	2	99.9691
7KA	TATITLEK	AK	LP	0	100	0	100	1	99.9947
9A3	CHUATHBALUK	AK	LPV	0	100	0	100	2	99.9694
AFM	AMBLER	AK	LPV	0	100	0	100	3	99.954
AKN	KING SALMON	AK	LPV	0	100	0	100	2	99.9781
AKW	KLAWOCK	AK	LP	0	100	0	100	1	99.9985
ANC	TED STEVENS ANCHORAGE INTL	AK	LPV200	0	100	0	100	1	99.9951
ANI	ANIAK	AK	LPV	0	100	0	100	2	99.9679
AQH	QUINHAGAK	AK	LPV	0	100	0	100	2	99.9657
AQT	NUIQSUT	AK	LPV	0	100	0	100	104	99.7675
BET	BETHEL	AK	LPV200	0	100	0	100	2	99.9634
BRW	WILEY POST-WILL ROGERS MEMORIA	AK	LPV	0	100	2	99.9925	190	98.3311
CDB	COLD BAY	AK	LPV200	0	100	0	100	26	99.889
CDV	MERLE K (MUDHOLE) SMITH	AK	LPV	0	100	0	100	1	99.9951
CEM	CENTRAL	AK	LP	0	100	0	100	3	99.9758
CLP	CLARKS POINT	AK	LPV	0	100	0	100	2	99.9732
CXF	COLDFOOT	AK	LP	0	100	0	100	2	99.9672
D76	ROBERT/BOB/CURTIS MEMORIAL	AK	LPV	0	100	0	100	42	99.8943
DEE	DEERING	AK	LPV	0	100	0	100	40	99.8909
DLG	DILLINGHAM	AK	LPV	0	100	0	100	2	99.9732
ELI	ELIM	AK	LPV	0	100	0	100	3	99.9524
ENA	KENAI MUNICIPAL	AK	LPV200	0	100	0	100	1	99.9955
ENM	EMMONAK	AK	LPV	0	100	0	100	3	99.9596
FAI	FAIRBANKS INTL	AK	LPV200	0	100	0	100	3	99.98
FYU	FORT YUKON	AK	LPV	0	100	0	100	4	99.9691
GAL	EDWARD G PITKA SR	AK	LPV	0	100	0	100	2	99.9717
GAM	GAMBELL	AK	LPV	0	100	2	99.9981	212	98.3073
GKN	GULKANA	AK	LPV	0	100	0	100	2	99.9921
GST	GUSTAVUS	AK	LP	0	100	0	100	2	99.9709

Airport	AirportName	State/ Provence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
HLA	HUSLIA	AK	LPV	0	100	0	100	2	99.9702
HOM	HOMER	AK	LPV	0	100	0	100	1	99.9962
HPB	HOOPER BAY	AK	LP	0	100	0	100	2	99.9543
HRR	HEALY RIVER	AK	LP	0	100	0	100	3	99.986
ILI	ILIAMNA	AK	LPV	0	100	0	100	2	99.9887
IYS	WASILLA	AK	LPV	0	100	0	100	1	99.9943
KAL	KALTAG	AK	LPV	0	100	0	100	2	99.9702
KSM	ST MARY'S	AK	LPV200	0	100	0	100	2	99.9611
KTN	KETCHIKAN INTL	AK	LPV	0	100	0	100	1	99.9996
KTS	BREVIG MISSION	AK	LPV	0	100	0	100	46	99.8343
KWT	KWETHLUK	AK	LPV	0	100	0	100	2	99.9641
KYU	KOYUKUK	AK	LPV	0	100	0	100	2	99.9702
MCG	MC GRATH	AK	LP	0	100	0	100	2	99.98
MDM	MARSHALL DON HUNTER SR	AK	LP	0	100	0	100	2	99.9626
MDO	MIDDLETON ISLAND	AK	LP	0	100	0	100	2	99.9894
OME	NOME	AK	LPV	0	100	0	100	41	99.8955
OOK	TOKSOOK BAY	AK	LP	0	100	0	100	3	99.957
ORT	NORTHWAY	AK	LP	0	100	0	100	3	99.9909
OTZ	RALPH WIEN MEMORIAL	AK	LPV	0	100	0	100	43	99.8804
PAQ	PALMER MUNICIPAL	AK	LP	0	100	0	100	1	99.9943
PHO	POINT HOPE	AK	LPV	0	100	1	99.9985	180	98.8002
RBY	RUBY	AK	LPV	0	100	0	100	2	99.9747
SCC	DEADHORSE	AK	LPV	0	100	0	100	127	99.6203
SCM	SCAMMON BAY	AK	LP	0	100	0	100	2	99.957
SHG	SHUNGNAK	AK	LP	0	100	0	100	2	99.9558
SHX	SHAGELUK	AK	LPV	0	100	0	100	2	99.9687
SIT	SITKA ROCKY GUTIERREZ	AK	LP	0	100	0	100	2	99.9751
SMK	ST MICHAEL	AK	LPV	0	100	0	100	3	99.9634
SXQ	SOLDOTNA	AK	LP	0	100	0	100	1	99.9958
UNK	UNALAKLEET	AK	LP	0	100	0	100	3	99.9653
WLK	SELAWIK	AK	LPV	0	100	0	100	3	99.9506
WMO	WHITE MOUNTAIN	AK	LP	0	100	0	100	3	99.949
WNA	NAPAKIAK	AK	LPV	0	100	0	100	2	99.9634
WSN	SOUTH NAKNEK NR 2	AK	LPV	0	100	0	100	2	99.9762
YAK	YAKUTAT	AK	LPV200	0	100	0	100	3	99.9841
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	AirportName	State/ Provence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
0J6	HEADLAND MUNICIPAL	AL	LPV	0	100	0	100	1	99.9974
0R1	ATMORE MUNICIPAL	AL	LP	0	100	0	100	0	100
11A	CLAYTON MUNICIPAL	AL	LPV	0	100	0	100	1	99.9996
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	1	99.9985
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	1	99.9981
79J	SOUTH ALABAMA RGNL AT BILL BEN	AL	LPV	0	100	0	100	1	99.9996
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	1	99.9977
DYA	DEMOPOLIS RGNL	AL	LPV	0	100	0	100	0	100
EDN	ENTERPRISE MUNICIPAL	AL	LPV	0	100	0	100	1	99.9989
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	1	99.9989
GAD	NORTHEAST ALABAMA RGNL	AL	LPV200	0	100	0	100	0	100

Airport	AirportName	State/ Providence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
GZH	MIDDLETON FIELD	AL	LP	0	100	0	100	0	100
HAB	MARION COUNTY-RANKIN FITE	AL	LPV	0	100	0	100	0	100
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

Airport	AirportName	State/ Provence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
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
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	0	100
DVT	PHOENIX DEER VALLEY	AZ	LPV	0	100	0	100	0	100
FFZ	FALCON FLD	AZ	LP	0	100	0	100	0	100

Airport	AirportName	State/ Providence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
FHU	SIERRA VISTA MUNICIPAL- LIBBY AAF	AZ	LPV200	0	100	0	100	0	100
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	0	100
GYR	PHOENIX GOODYEAR	AZ	LP	0	100	0	100	0	100
HII	LAKE HAVASU CITY	AZ	LPV	0	100	0	100	0	100
IFP	LAUGHLIN/BULLHEAD INTL	AZ	LPV	0	100	0	100	0	100
IGM	KINGMAN	AZ	LPV	0	100	0	100	0	100
IWA	PHOENIX-MESA GATEWAY	AZ	LPV200	0	100	0	100	0	100
JTC	SPRINGVILLE MUNICIPAL	AZ	LP	0	100	0	100	0	100
P20	AVI SUQUILLA	AZ	LPV	0	100	0	100	0	100
P33	COCHISE COUNTY	AZ	LPV	0	100	0	100	0	100
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	0	100
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	1	99.9996
ACV	ARCATA	CA	LPV	0	100	0	100	45	99.9241
APC	NAPA COUNTY	CA	LPV	0	100	0	100	93	99.2788
APV	APPLE VALLEY	CA	LPV	0	100	0	100	0	100
AUN	AUBURN MUNICIPAL	CA	LPV	0	100	0	100	2	99.9992
BFL	MEADOWS FIELD	CA	LPV200	0	100	0	100	59	99.917
BLH	BLYTHE	CA	LP	0	100	0	100	0	100
BUR	BOB HOPE	CA	LP	0	100	0	100	41	99.9743
C83	BYRON	CA	LPV	0	100	0	100	93	99.472
CCB	CABLE	CA	LP	0	100	0	100	5	99.9981

Airport	AirportName	State/ Provence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
CCR	BUCHANAN FIELD	CA	LPV	0	100	0	100	93	99.3131
CEC	JACK MC NAMARA FIELD	CA	LPV	0	100	0	100	42	99.9136
CIC	CHICO MUNICIPAL	CA	LPV	0	100	0	100	2	99.9992
CMA	CAMARILLO	CA	LPV	0	100	1	99.9996	98	99.8237
CNO	CHINO	CA	LPV	0	100	0	100	6	99.9977
CRQ	MC CLELLAN-PALOMAR	CA	LPV	0	100	0	100	9	99.9966
CVH	HOLLISTER MUNICIPAL	CA	LPV	0	100	0	100	97	99.3403
DAG	BARSTOW-DAGGETT	CA	LPV	0	100	0	100	0	100
DWA	YOLO COUNTY	CA	LPV	0	100	0	100	32	99.9211
F70	FRENCH VALLEY	CA	LPV	0	100	0	100	5	99.9981
FAT	FRESNO YOSEMITE INTL	CA	LPV200	0	100	0	100	55	99.9268
GOO	NEVADA COUNTY AIR PARK	CA	LPV	0	100	0	100	2	99.9992
HAF	HALF MOON BAY	CA	LPV	0	100	0	100	98	99.0342
HHR	JACK NORTHROP FIELD/HAWTHORNE	CA	LPV	0	100	0	100	46	99.9732
HWD	HAYWARD EXECUTIVE	CA	LPV	0	100	0	100	95	99.2097
L35	BIG BEAR CITY	CA	LP	0	100	0	100	0	100
LAX	LOS ANGELES INTL	CA	LPV200	0	100	0	100	49	99.9675
LGB	LONG BEACH /DAUGHERTY FIELD/	CA	LPV	0	100	0	100	28	99.9857
LHM	LINCOLN RGNL/KARL HARDER FIELD	CA	LPV200	0	100	0	100	3	99.9989
LLR	LITTLE RIVER	CA	LP	0	100	0	100	89	99.1931
LSN	LOS BANOS MUNICIPAL	CA	LPV	0	100	0	100	93	99.5705
LVK	LIVERMORE MUNICIPAL	CA	LPV200	0	100	0	100	93	99.3342
MAE	MADERA MUNICIPAL	CA	LPV	0	100	0	100	65	99.8566
MCE	MERCED RGNL/MACREADY FIELD	CA	LPV	0	100	0	100	82	99.7751
MER	CASTLE	CA	LPV200	0	100	0	100	76	99.7826
MHR	SACRAMENTO MATHER	CA	LPV200	0	100	0	100	6	99.9875
MIT	SHAFTER-MINTER FIELD	CA	LPV	0	100	0	100	67	99.8898
MOD	MODESTO CITY-CO-HARRY SHAM FLD	CA	LPV	0	100	0	100	82	99.7132
MRY	MONTEREY RGNL	CA	LPV	0	100	1	99.9996	101	99.1406
MYF	MONTGOMERY-GIBBS EXECUTIVE	CA	LPV200	0	100	0	100	9	99.9966
MYV	YUBA COUNTY	CA	LPV200	0	100	0	100	3	99.9989
O02	NERVINO	CA	LPV	0	100	0	100	2	99.9992

Airport	AirportName	State/ Provence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
O27	OAKDALE	CA	LPV	0	100	0	100	60	99.8321
O69	PETALUMA MUNICIPAL	CA	LPV	0	100	0	100	93	99.1369
O88	RIO VISTA MUNICIPAL	CA	LP	0	100	0	100	79	99.6335
OAK	METROPOLITAN OAKLAND INTL	CA	LPV200	0	100	0	100	95	99.1821
ONT	ONTARIO INTL	CA	LPV200	0	100	0	100	5	99.9981
OVE	OROVILLE MUNICIPAL	CA	LPV	0	100	0	100	2	99.9992
OXR	OXNARD	CA	LPV	0	100	1	99.9996	101	99.7879
PMD	PALMDALE USAF PLANT 42	CA	LPV200	0	100	0	100	8	99.9962
POC	BRACKETT FIELD	CA	LPV	0	100	0	100	6	99.9977
PRB	PASO ROBLES MUNICIPAL	CA	LPV	0	100	1	99.9996	101	99.4312
PVF	PLACERVILLE	CA	LPV	0	100	0	100	2	99.9992
RAL	RIVERSIDE MUNICIPAL	CA	LPV	0	100	0	100	5	99.9981
RBL	RED BLUFF MUNICIPAL	CA	LPV	0	100	0	100	4	99.9977
RDD	REDDING MUNICIPAL	CA	LPV	0	100	0	100	3	99.9977
RHV	REID-HILLVIEW OF SANTA CLARA C	CA	LPV	0	100	0	100	97	99.2693
SAC	SACRAMENTO EXECUTIVE	CA	LPV	0	100	0	100	11	99.9691
SAN	SAN DIEGO INTL	CA	LPV	0	100	0	100	9	99.9966
SBA	SANTA BARBARA MUNICIPAL	CA	LPV	0	100	1	99.9996	101	99.5686
SBP	SAN LUIS COUNTY RGNL	CA	LPV200	0	100	1	99.9996	101	99.3693
SCK	STOCKTON METROPOLITAN	CA	LPV200	0	100	0	100	80	99.7075
SDM	BROWN FIELD MUNICIPAL	CA	LPV200	0	100	0	100	9	99.9966
SEE	GILLESPIE FIELD	CA	LP	0	100	0	100	9	99.9966
SFO	SAN FRANCISCO INTL	CA	LPV200	0	100	0	100	97	99.1029
SJC	NORMAN Y MINETA SAN JOSE INTL	CA	LPV200	0	100	0	100	97	99.2282
SMF	SACRAMENTO INTL	CA	LPV200	0	100	0	100	7	99.9815
SMO	SANTA MONICA MUNICIPAL	CA	LPV	0	100	0	100	50	99.9634
SMX	SANTA MARIA PUB/CAPT G ALLAN H	CA	LPV200	0	100	1	99.9996	101	99.3954
SNA	JOHN WAYNE AIRPORT-ORANGE COUN	CA	LPV200	0	100	0	100	12	99.9955
SNS	SALINAS MUNICIPAL	CA	LPV200	0	100	1	99.9996	100	99.2384
STS	CHARLES M SCHULZ - SONOMA COUN	CA	LPV200	0	100	0	100	93	99.1346
TCY	TRACY MUNICIPAL	CA	LPV	0	100	0	100	93	99.5041
TNP	TWENTYNINE PALMS	CA	LP	0	100	0	100	0	100
TOA	ZAMPERINI FIELD	CA	LPV	0	100	0	100	51	99.9709

Airport	AirportName	State/ Providence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
TRK	TRUCKEE-TAHOE	CA	LP	0	100	0	100	2	99.9992
VCV	SOUTHERN CALIFORNIA LOGISTICS	CA	LPV	0	100	0	100	0	100
VIS	VISALIA MUNICIPAL	CA	LPV200	0	100	0	100	52	99.9275
WJF	GENERAL WM J FOX AIRFIELD	CA	LPV	0	100	0	100	13	99.9936
WLW	WILLOWS-GLENN COUNTY	CA	LPV	0	100	0	100	4	99.9981
WVI	WATSONVILLE MUNICIPAL	CA	LPV	0	100	0	100	98	99.2165
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
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

Airport	AirportName	State/ Providence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
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	1	99.9902
HEF	MANASSAS RGNL/HARRY P DAVIS FI	DC	LPV	0	100	0	100	1	99.9902
IAD	WASHINGTON DULLES INTL	DC	LPV200	0	100	0	100	1	99.9913
33N	DELAWARE AIRPARK	DE	LP	0	100	0	100	1	99.9906
EVY	SUMMIT	DE	LPV	0	100	0	100	1	99.9913
GED	DELAWARE COASTAL	DE	LPV	0	100	0	100	1	99.9887
ILG	NEW CASTLE	DE	LPV	0	100	0	100	1	99.9921
1J0	TRI-COUNTY	FL	LP	0	100	0	100	1	99.9974
24J	SUWANNEE COUNTY	FL	LPV	0	100	0	100	1	99.9891
28J	PALATKA MUNICIPAL - LT KAY LARKIN F	FL	LPV	0	100	0	100	1	99.983
40J	PERRY-FOLEY	FL	LPV	0	100	0	100	1	99.9898
54J	DEFUNIAK SPRINGS	FL	LP	0	100	0	100	1	99.9985
AAF	APALACHICOLA RGNL-CLEVE RANDOL	FL	LPV	0	100	0	100	1	99.9932
APF	NAPLES MUNICIPAL	FL	LPV	0	100	0	100	1	99.9751
AVO	AVON PARK EXECUTIVE	FL	LPV	0	100	0	100	1	99.9774
BCT	BOCA RATON	FL	LPV	0	100	0	100	2	99.9679
BKV	BROOKSVILLE-TAMPA BAY RGNL	FL	LPV	0	100	0	100	1	99.983
BOW	BARTOW MUNICIPAL	FL	LPV	0	100	0	100	1	99.98
CEW	BOB SIKES	FL	LPV	0	100	0	100	1	99.9996
CGC	CRYSTAL RIVER-CAPTAIN TOM DAVI	FL	LP	0	100	0	100	1	99.9838
CHN	WAUCHULA MUNICIPAL	FL	LP	0	100	0	100	1	99.9781

Airport	AirportName	State/ Providence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
COI	MERRITT ISLAND	FL	LPV	0	100	0	100	1	99.9774
CRG	JACKSONVILLE EXECUTIVE AT CRAI	FL	LPV200	0	100	0	100	1	99.9845
CTY	CROSS CITY	FL	LPV	0	100	0	100	1	99.9875
DAB	DAYTONA BEACH INTL	FL	LPV200	0	100	0	100	1	99.9804
DED	DELAND MUNICIPAL-SIDNEY H TAYLOR FI	FL	LPV	0	100	0	100	1	99.9808
DTS	DESTIN EXECUTIVE	FL	LPV	0	100	0	100	1	99.9989
ECP	NORTHWEST FLORIDA BEACHES INTL	FL	LPV200	0	100	0	100	1	99.9966
EVB	NEW SMYRNA BEACH MUNICIPAL	FL	LPV	0	100	0	100	1	99.9796
EYW	KEY WEST INTL	FL	LPV	0	100	0	100	6	99.9139
F45	NORTH PALM BEACH COUNTY GENERA	FL	LPV	0	100	0	100	1	99.9721
FHB	FERNANDINA BEACH MUNICIPAL	FL	LPV	0	100	0	100	1	99.9849
FIN	FLAGLER EXECUTIVE	FL	LPV	0	100	0	100	1	99.9811
FLL	FORT LAUDERDALE/HOLLYWOOD INTL	FL	LPV200	0	100	0	100	3	99.9596
FMY	PAGE FIELD	FL	LPV	0	100	0	100	1	99.9762
FPR	TREASURE COAST INTL	FL	LPV	0	100	0	100	1	99.974
FXE	FORT LAUDERDALE EXECUTIVE	FL	LPV200	0	100	0	100	2	99.9657
GIF	WINTER HAVEN'S GILBERT	FL	LPV	0	100	0	100	1	99.98
GNV	GAINESVILLE RGNL	FL	LPV	0	100	0	100	1	99.9857
HEG	HERLONG RECREATIONAL	FL	LPV	0	100	0	100	1	99.9853
IMM	IMMOKALEE RGNL	FL	LPV	0	100	0	100	1	99.9743
ISM	KISSIMMEE GATEWAY	FL	LPV200	0	100	0	100	1	99.9796
JAX	JACKSONVILLE INTL	FL	LPV200	0	100	0	100	1	99.9853
LAL	LAKELAND LINDER RGNL	FL	LPV200	0	100	0	100	1	99.9804
LCQ	LAKE CITY GATEWAY	FL	LPV	0	100	0	100	1	99.9872
LEE	LEESBURG INTL	FL	LPV	0	100	0	100	1	99.9819
LNA	PALM BEACH COUNTY PARK	FL	LP	0	100	0	100	1	99.9713
MAI	MARIANNA MUNICIPAL	FL	LPV	0	100	0	100	1	99.9962
MCO	ORLANDO INTL	FL	LPV200	0	100	0	100	1	99.9792
MIA	MIAMI INTL	FL	LPV200	0	100	0	100	3	99.9551
MKY	MARCO ISLAND	FL	LPV	0	100	0	100	1	99.974

Airport	AirportName	State/ Providence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
MLB	MELBOURNE INTL	FL	LPV200	0	100	0	100	1	99.9758
MTH	THE FLORIDA KEYS MARATHON INTL	FL	LPV	0	100	0	100	6	99.9143
OBE	OKEECHOBEE COUNTY	FL	LPV	0	100	0	100	1	99.9747
OCF	OCALA INTL-JIM TAYLOR FIELD	FL	LPV200	0	100	0	100	1	99.9838
OMN	ORMOND BEACH MUNICIPAL	FL	LPV	0	100	0	100	1	99.9808
OPF	OPA-LOCKA EXECUTIVE	FL	LPV200	0	100	0	100	3	99.9574
ORL	EXECUTIVE	FL	LPV200	0	100	0	100	1	99.98
PBI	PALM BEACH INTL	FL	LPV200	0	100	0	100	1	99.9713
PCM	PLANT CITY	FL	LPV	0	100	0	100	1	99.9811
PGD	PUNTA GORDA	FL	LPV200	0	100	0	100	1	99.9774
PHK	PALM BEACH CO GLADES	FL	LPV	0	100	0	100	1	99.9732
PIE	ST PETE-CLEARWATER INTL	FL	LPV200	0	100	0	100	1	99.9823
PMP	POMPANO BEACH AIRPARK	FL	LPV	0	100	0	100	2	99.9653
PNS	PENSACOLA INTL	FL	LPV200	0	100	0	100	0	100
RSW	SOUTHWEST FLORIDA INTL	FL	LPV	0	100	0	100	1	99.9755
SEF	SEBRING RGNL	FL	LPV	0	100	0	100	1	99.9766
SFB	ORLANDO SANFORD INTL	FL	LPV200	0	100	0	100	1	99.98
SGJ	NORTHEAST FLORIDA RGNL	FL	LPV	0	100	0	100	1	99.9826
SRQ	SARASOTA/BRADENTON INTL	FL	LPV200	0	100	0	100	1	99.9808
SUA	WITHAM FIELD	FL	LPV	0	100	0	100	1	99.9728
TIX	SPACE COAST RGNL	FL	LPV200	0	100	0	100	1	99.9781
TLH	TALLAHASSEE INTL	FL	LPV200	0	100	0	100	1	99.9925
TMB	MIAMI EXECUTIVE	FL	LPV200	0	100	0	100	4	99.9543
TNT	DADE-COLLIER TRAINING AND TRAN	FL	LPV200	0	100	0	100	2	99.9679
TPA	TAMPA INTL	FL	LPV200	0	100	0	100	1	99.9823
TPF	PETER O KNIGHT	FL	LP	0	100	0	100	1	99.9819
TTS	NASA SHUTTLE LANDING FACILITY	FL	LPV200	0	100	0	100	1	99.9781
VDF	TAMPA EXECUTIVE	FL	LPV	0	100	0	100	1	99.9819
VNC	VENICE MUNICIPAL	FL	LP	0	100	0	100	1	99.9789
VQQ	CECIL	FL	LPV200	0	100	0	100	1	99.9853
VRB	VERO BEACH MUNICIPAL	FL	LPV200	0	100	0	100	1	99.9743
X07	LAKE WALES MUNICIPAL	FL	LP	0	100	0	100	1	99.9792
X14	LA BELLE MUNICIPAL	FL	LPV	0	100	0	100	1	99.9755
X23	UMATILLA MUNICIPAL	FL	LP	0	100	0	100	1	99.9815
X26	SEBASTIAN MUNICIPAL	FL	LP	0	100	0	100	1	99.9751

Airport	AirportName	State/ Provence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
X35	MARION COUNTY	FL	LP	0	100	0	100	1	99.9838
X50	MASSEY RANCH AIRPARK	FL	LP	0	100	0	100	1	99.9796
X51	MIAMI HOMESTEAD GENERAL AVIATI	FL	LPV	0	100	0	100	4	99.9536
ZPH	ZEPHYRHILLS MUNICIPAL	FL	LPV	0	100	0	100	1	99.9815
09J	JEKYLL ISLAND	GA	LPV200	0	100	0	100	1	99.9857
15J	COOK COUNTY	GA	LPV	0	100	0	100	1	99.9917
17J	DONALSONVILLE MUNICIPAL	GA	LPV	0	100	0	100	1	99.9955
18A	FRANKLIN COUNTY	GA	LPV	0	100	0	100	1	99.9981
19A	JACKSON COUNTY	GA	LPV	0	100	0	100	1	99.9989
2J5	MILLEN	GA	LPV	0	100	0	100	1	99.9909
3J7	GREENE COUNTY RGNL	GA	LPV	0	100	0	100	1	99.9966
48A	COCHRAN	GA	LPV	0	100	0	100	1	99.9936
4A4	POLK COUNTY AIRPORT- CORNELIUS	GA	LPV	0	100	0	100	0	100
4J1	BRANTLEY COUNTY	GA	LPV	0	100	0	100	1	99.9875
4J2	BERRIEN CO	GA	LPV	0	100	0	100	1	99.9913
4J5	QUITMAN BROOKS COUNTY	GA	LP	0	100	0	100	1	99.9913
52A	MADISON MUNICIPAL	GA	LP	0	100	0	100	1	99.9977
6A1	BUTLER MUNICIPAL	GA	LPV	0	100	0	100	1	99.9977
6A2	GRIFFIN-SPALDING COUNTY	GA	LPV	0	100	0	100	1	99.9989
70J	CAIRO-GRADY COUNTY	GA	LPV	0	100	0	100	1	99.9928
9A5	BARWICK LAFAYETTE	GA	LP	0	100	0	100	0	100
ABY	SOUTHWEST GEORGIA RGNL	GA	LPV200	0	100	0	100	1	99.9947
ACJ	JIMMY CARTER RGNL	GA	LPV	0	100	0	100	1	99.9955
AGS	AUGUSTA RGNL AT BUSH FIELD	GA	LPV200	0	100	0	100	1	99.9917
AHN	ATHENS/BEN EPPS	GA	LPV200	0	100	0	100	1	99.9977
AJR	HABERSHAM COUNTY	GA	LPV	0	100	0	100	1	99.9996
AMG	BACON COUNTY	GA	LPV	0	100	0	100	1	99.9898
ATL	HARTSFIELD - JACKSON ATLANTA I	GA	LPV200	0	100	0	100	1	99.9996
AYS	WAYCROSS-WARE COUNTY	GA	LPV200	0	100	0	100	1	99.9891
BGE	DECATUR COUNTY INDUSTRIAL AIR	GA	LPV200	0	100	0	100	1	99.9951
BHC	BAXLEY MUNICIPAL	GA	LPV	0	100	0	100	1	99.9898
BIJ	EARLY COUNTY	GA	LPV	0	100	0	100	1	99.9966
BQK	BRUNSWICK GOLDEN ISLES	GA	LPV200	0	100	0	100	1	99.9864
CCO	NEWNAN COWETA COUNTY	GA	LPV	0	100	0	100	0	100

Airport	AirportName	State/ Provence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
CKF	CRISP COUNTY-CORDELE	GA	LPV	0	100	0	100	1	99.9943
CNI	CHEROKEE COUNTY	GA	LPV	0	100	0	100	0	100
CSG	COLUMBUS	GA	LPV	0	100	0	100	1	99.9992
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	1	99.9985
CWV	CLAXTON-EVANS COUNTY	GA	LPV	0	100	0	100	1	99.9894
CXU	CAMILLA-MITCHELL COUNTY	GA	LPV	0	100	0	100	1	99.9943
CZL	TOM B DAVID FLD	GA	LPV	0	100	0	100	0	100
D73	MONROE-WALTON COUNTY	GA	LP	0	100	0	100	1	99.9981
DBN	W H 'BUD' BARRON	GA	LPV200	0	100	0	100	1	99.9932
DNN	DALTON MUNICIPAL	GA	LPV	0	100	0	100	0	100
DQH	DOUGLAS MUNICIPAL	GA	LPV200	0	100	0	100	1	99.9906
EBA	ELBERT COUNTY-PATZ FIELD	GA	LP	0	100	0	100	1	99.9966
EZM	HEART OF GEORGIA RGNL	GA	LPV200	0	100	0	100	1	99.9932
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	1	99.9925
GVL	LEE GILMER MEMORIAL	GA	LPV	0	100	0	100	0	100
HOE	HOMERVILLE	GA	LPV	0	100	0	100	1	99.9894
HQU	THOMSON-MCDUFFIE COUNTY	GA	LPV	0	100	0	100	1	99.9947
IYY	WASHINGTON-WILKES COUNTY	GA	LPV	0	100	0	100	1	99.9958
JCA	JACKSON COUNTY	GA	LPV	0	100	0	100	1	99.9989
JES	JESUP-WAYNE COUNTY	GA	LPV	0	100	0	100	1	99.9879
JYL	PLANTATION ARPK	GA	LPV	0	100	0	100	1	99.9894
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	1	99.9992
MAC	MACON DOWNTOWN	GA	LPV	0	100	0	100	1	99.9958
MCN	MIDDLE GEORGIA RGNL	GA	LPV200	0	100	0	100	1	99.9958
MGR	MOULTRIE MUNICIPAL	GA	LPV200	0	100	0	100	1	99.9925
MHP	METTER MUNICIPAL	GA	LPV	0	100	0	100	1	99.9902
MLJ	BALDWIN COUNTY	GA	LPV	0	100	0	100	1	99.9958
MQW	TELFAIR-WHEELER	GA	LPV	0	100	0	100	1	99.9921
OKZ	KAOLIN FIELD	GA	LPV	0	100	0	100	1	99.9943
OPN	THOMASTON-UPSON COUNTY	GA	LPV200	0	100	0	100	1	99.9989

Airport	AirportName	State/ Providence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
PIM	HARRIS COUNTY	GA	LPV	0	100	0	100	1	99.9996
PUJ	PAULDING NORTHWEST ATLANTA	GA	LPV200	0	100	0	100	0	100
PXE	PERRY-HOUSTON COUNTY	GA	LPV	0	100	0	100	1	99.9962
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	1	99.9898
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	1	99.9872
SBO	EAST GEORGIA REGIONAL	GA	LPV	0	100	0	100	1	99.9913
TBR	STATESBORO-BULLOCH COUNTY	GA	LPV	0	100	0	100	1	99.9894
TMA	HENRY TIFT MYERS	GA	LPV	0	100	0	100	1	99.9925
TOC	TOCCOA RG LETOURNEAU FIELD	GA	LPV	0	100	0	100	1	99.9996
TVI	THOMASVILLE RGNL	GA	LPV	0	100	0	100	1	99.9925
VDI	VIDALIA RGNL	GA	LPV200	0	100	0	100	1	99.9909
VLD	VALDOSTA RGNL	GA	LPV	0	100	0	100	1	99.9906
VPC	CARTERSVILLE	GA	LPV	0	100	0	100	0	100
WDR	BARROW COUNTY	GA	LPV	0	100	0	100	1	99.9989
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
DBQ	DUBUQUE RGNL	IA	LPV200	0	100	0	100	0	100

Airport	AirportName	State/ Providence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
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
SDA	SHENANDOAH MUNICIPAL	IA	LPV	0	100	0	100	0	100
SHL	SHELDON RGNL	IA	LPV	0	100	0	100	0	100

Airport	AirportName	State/ Providence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
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

Airport	AirportName	State/ Provence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
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
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

Airport	AirportName	State/ Providence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
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
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

Airport	AirportName	State/ Providence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
FWA	FORT WAYNE INTL	IN	LPV200	0	100	0	100	0	100
GEZ	SHELBYVILLE MUNICIPAL	IN	LPV	0	100	0	100	0	100
GGP	LOGANSPOUT/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
GYG	GARY/CHICAGO INTL	IN	LPV200	0	100	0	100	0	100
HFY	GREENWOOD MUNICIPAL	IN	LPV	0	100	0	100	0	100
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

Airport	AirportName	State/ Provence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
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
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

Airport	AirportName	State/ Provence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
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
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

Airport	AirportName	State/ Providence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
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
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-DAVISS 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

Airport	AirportName	State/ Provence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
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
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	NATCHITOCHEES 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

Airport	AirportName	State/ Providence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
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
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

Airport	AirportName	State/ Provence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
TAN	TAUNTON MUNICIPAL - KING FIELD	MA	LPV	0	100	0	100	0	100
2G4	GARRETT COUNTY	MD	LPV	0	100	0	100	1	99.9947
2W5	MARYLAND	MD	LP	0	100	0	100	1	99.9898
2W6	ST MARY'S COUNTY RGNL	MD	LPV	0	100	0	100	1	99.9887
BWI	BALTIMORE/WASHINGTON INTL THUR	MD	LPV200	0	100	0	100	1	99.9913
CBE	GREATER CUMBERLAND RGNL	MD	LPV	0	100	0	100	1	99.9943
CGE	CAMBRIDGE-DORCHESTER RGNL	MD	LPV	0	100	0	100	1	99.9891
DMW	CARROLL COUNTY RGNL/JACK B POA	MD	LPV200	0	100	0	100	1	99.9925
ESN	EASTON/NEWNAM FIELD	MD	LPV200	0	100	0	100	1	99.9898
FDK	FREDERICK MUNICIPAL	MD	LPV	0	100	0	100	1	99.9925
GAI	MONTGOMERY COUNTY AIRPARK	MD	LPV	0	100	0	100	1	99.9917
HGR	HAGERSTOWN RGNL-RICHARD A HENS	MD	LPV200	0	100	0	100	1	99.9936
MTN	MARTIN STATE	MD	LPV	0	100	0	100	1	99.9917
OXB	OCEAN CITY MUNICIPAL	MD	LPV	0	100	0	100	1	99.9875
SBY	SALISBURY-OCEAN CITY WICOMICO	MD	LPV200	0	100	0	100	1	99.9879
W29	BAY BRIDGE	MD	LPV	0	100	0	100	1	99.9902
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
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

Airport	AirportName	State/ Provence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
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
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

Airport	AirportName	State/ Providence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
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	AirportName	State/ Provence	Service	LP Outages	LP Avail (%)	LP Outages	LP 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	AirportName	State/ Provence	Service	LP Outages	LP Avail (%)	LP Outages	LP 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

Airport	AirportName	State/ Providence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
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
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

Airport	AirportName	State/ Providence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
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
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

Airport	AirportName	State/ Providence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
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
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

Airport	AirportName	State/ Provence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
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
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

Airport	AirportName	State/ Provence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
MEI	KEY FIELD	MS	LPV200	0	100	0	100	0	100
MJD	PICAYUNE MUNICIPAL	MS	LPV	0	100	0	100	0	100
MMS	SELS	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
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

Airport	AirportName	State/ Provence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
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	1	99.9894
ACZ	HENDERSON FIELD	NC	LPV	0	100	0	100	1	99.983
AFP	ANSON COUNTY - JEFF CLOUD FIEL	NC	LPV	0	100	0	100	1	99.9894
AKH	GASTONIA MUNICIPAL	NC	LPV	0	100	0	100	1	99.994
ASJ	TRI-COUNTY	NC	LPV	0	100	0	100	1	99.9834
AVL	ASHEVILLE RGNL	NC	LPV200	0	100	0	100	1	99.9989
BUY	BURLINGTON-ALAMANCE RGNL	NC	LPV	0	100	0	100	1	99.9906
CLT	CHARLOTTE/DOUGLAS INTL	NC	LPV200	0	100	0	100	1	99.9936
CPC	COLUMBUS COUNTY MUNICIPAL	NC	LPV	0	100	0	100	1	99.9845
CTZ	CLINTON-SAMPSON COUNTY	NC	LPV200	0	100	0	100	1	99.9845
DPL	DUPLIN CO	NC	LPV200	0	100	0	100	1	99.9838
ECG	ELIZABETH CITY CG AIR STATION/	NC	LPV	0	100	0	100	1	99.9823
EDE	NORTHEASTERN RGNL	NC	LPV200	0	100	0	100	1	99.9815
EHO	SHELBY-CLEVELAND COUNTY RGNL	NC	LPV	0	100	0	100	1	99.9951
EQY	CHARLOTTE-MONROE EXECUTIVE	NC	LPV200	0	100	0	100	1	99.9921
EWN	COASTAL CAROLINA REGIONAL	NC	LPV	0	100	0	100	1	99.9811
EXX	DAVIDSON COUNTY	NC	LPV	0	100	0	100	1	99.9928
EYF	CURTIS L BROWN JR FIELD	NC	LPV200	0	100	0	100	1	99.9845
FAY	FAYETTEVILLE RGNL/GRANNIS FIEL	NC	LPV200	0	100	0	100	1	99.9864
FFA	FIRST FLIGHT	NC	LP	0	100	0	100	1	99.9811
FQD	RUTHERFORD CO - MARCHMAN FIELD	NC	LPV	0	100	0	100	1	99.9966
GEV	ASHE COUNTY	NC	LP	0	100	0	100	1	99.9966
GSO	PIEDMONT TRIAD INTL	NC	LPV200	0	100	0	100	1	99.9925
GWW	WAYNE EXECUTIVE JETPORT	NC	LPV200	0	100	0	100	1	99.9841
HBI	ASHEBORO RGNL	NC	LPV	0	100	0	100	1	99.9913

Airport	AirportName	State/ Providence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
HKY	HICKORY RGNL	NC	LPV200	0	100	0	100	1	99.9951
HNZ	HENDERSON-OXFORD	NC	LPV	0	100	0	100	1	99.9872
HRJ	HARNETT RGNL JETPORT	NC	LPV	0	100	0	100	1	99.9864
ILM	WILMINGTON INTL	NC	LPV200	0	100	0	100	1	99.9819
INT	SMITH REYNOLDS	NC	LPV200	0	100	0	100	1	99.9928
IPJ	LINCOLN-TON-LINCOLN COUNTY RGNL	NC	LPV	0	100	0	100	1	99.9943
ISO	KINSTON RGNL JETPORT AT STALLI	NC	LPV200	0	100	0	100	1	99.983
IXA	HALIFAX-NORTHAMPTON RGNL	NC	LPV200	0	100	0	100	1	99.9849
JNX	JOHNSTON REGIONAL	NC	LPV	0	100	0	100	1	99.986
JQF	CONCORD RGNL	NC	LPV	0	100	0	100	1	99.9932
LBT	LUMBERTON RGNL	NC	LPV	0	100	0	100	1	99.9864
LHZ	TRIANGLE NORTH EXECUTIVE	NC	LPV200	0	100	0	100	1	99.9864
MCZ	MARTIN COUNTY	NC	LPV	0	100	0	100	1	99.9826
MEB	LAURINBURG-MAXTON	NC	LPV200	0	100	0	100	1	99.9872
MQI	DARE COUNTY RGNL	NC	LPV	0	100	0	100	1	99.9804
MRH	MICHAEL J SMITH FIELD	NC	LPV	0	100	0	100	1	99.9796
MRN	FOOTHILLS REGIONAL	NC	LPV	0	100	0	100	1	99.9962
MWK	MOUNT AIRY/SURRY COUNTY	NC	LPV	0	100	0	100	1	99.9943
OAJ	ALBERT J ELLIS	NC	LPV200	0	100	0	100	1	99.9823
OCW	WASHINGTON-WARREN	NC	LPV	0	100	0	100	1	99.9819
ONX	CURRITUCK COUNTY RGNL	NC	LPV	0	100	0	100	1	99.9823
PGV	PITT-GREENVILLE	NC	LPV	0	100	0	100	1	99.9826
PMZ	PLYMOUTH MUNICIPAL	NC	LP	0	100	0	100	1	99.9815
RCZ	RICHMOND COUNTY	NC	LPV	0	100	0	100	1	99.9887
RDU	RALEIGH-DURHAM INTL	NC	LPV200	0	100	0	100	1	99.9872
RHP	WESTERN CAROLINA RGNL	NC	LP	0	100	0	100	0	100
RUQ	ROWAN COUNTY	NC	LPV200	0	100	0	100	1	99.9928
RWI	ROCKY MOUNT-WILSON RGNL	NC	LPV	0	100	0	100	1	99.9845
SCR	SILER CITY MUNICIPAL	NC	LPV	0	100	0	100	1	99.9891
SOP	MOORE COUNTY	NC	LPV200	0	100	0	100	1	99.9883
SUT	CAPE FEAR RGNL JETPORT/HOWIE F	NC	LPV	0	100	0	100	1	99.9819
SVH	STATESVILLE RGNL	NC	LPV200	0	100	0	100	1	99.9943
TDF	PERSON COUNTY	NC	LPV200	0	100	0	100	1	99.9887
TTA	RALEIGH EXEC JETPORT AT SANFOR	NC	LPV200	0	100	0	100	1	99.9875

Airport	AirportName	State/ Provence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
VUJ	STANLY COUNTY	NC	LPV200	0	100	0	100	1	99.9917
W40	MOUNT OLIVE MUNICIPAL	NC	LPV	0	100	0	100	1	99.9841
ZEF	ELKIN MUNICIPAL	NC	LP	0	100	0	100	1	99.9943
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
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

Airport	AirportName	State/ Provence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
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
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

Airport	AirportName	State/ Provence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
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
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

Airport	AirportName	State/ Provence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
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	1	99.9943
4N1	GREENWOOD LAKE	NJ	LP	0	100	0	100	1	99.9985
ACY	ATLANTIC CITY INTL	NJ	LPV200	0	100	0	100	1	99.9906
CDW	ESSEX COUNTY	NJ	LPV	0	100	0	100	1	99.9977
EWR	NEWARK LIBERTY INTL	NJ	LPV200	0	100	0	100	1	99.9974
MIV	MILLVILLE MUNICIPAL	NJ	LPV200	0	100	0	100	1	99.9906
MJX	OCEAN COUNTY	NJ	LPV	0	100	0	100	1	99.9932
MMU	MORRISTOWN MUNICIPAL	NJ	LPV200	0	100	0	100	1	99.9966
N12	LAKWOOD	NJ	LP	0	100	0	100	1	99.9943
N14	FLYING W	NJ	LPV	0	100	0	100	1	99.9921
N40	SKY MANOR	NJ	LP	0	100	0	100	1	99.9943
TEB	TETERBORO	NJ	LPV	0	100	0	100	1	99.9985
TTN	TRENTON MERCER	NJ	LPV	0	100	0	100	1	99.9932
VAY	SOUTH JERSEY RGNL	NJ	LP	0	100	0	100	1	99.9921
WWD	CAPE MAY COUNTY	NJ	LPV	0	100	0	100	1	99.9894
CYDF	DEER LAKE	NL	LPV	1	99.9996	1	99.9996	168	97.9435
0	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

Airport	AirportName	State/ Providence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
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	0	100
CYEV	INUVIK	NT	LPV	0	100	0	100	69	99.903
05U	EUREKA	NV	LP	0	100	0	100	0	100
CXP	CARSON	NV	LP	0	100	0	100	1	99.9996
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	1	99.9996
WMC	WINNEMUCCA MUNICIPAL	NV	LPV	0	100	0	100	0	100
06N	RANDALL	NY	LP	0	100	0	100	1	99.9996
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
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	1	99.9992
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	1	99.9996

Airport	AirportName	State/ Provence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
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	1	99.9992
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	1	99.9996
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	1	99.9989
N23	SIDNEY MUNICIPAL	NY	LP	0	100	0	100	1	99.9992
N66	ONEONTA MUNICIPAL	NY	LPV	0	100	0	100	0	100
NY0	FULTON COUNTY	NY	LPV	0	100	0	100	0	100
OGS	OGDENSBURG INTL	NY	LPV	0	100	0	100	0	100
OIC	LT WARREN EATON	NY	LP	0	100	0	100	1	99.9996
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

Airport	AirportName	State/ Providence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
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	1	99.9996
4G5	MONROE COUNTY	OH	LP	0	100	0	100	1	99.9996
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
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

Airport	AirportName	State/ Provence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
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
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

Airport	AirportName	State/ Provence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
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
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

Airport	AirportName	State/ Provence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
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
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

Airport	AirportName	State/ Provence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
ONP	NEWPORT MUNICIPAL	OR	LPV	0	100	0	100	0	100
OTH	SOUTHWEST OREGON RGNL	OR	LPV	0	100	0	100	6	99.9943
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	1	99.9955
29D	GROVE CITY	PA	LP	0	100	0	100	1	99.9996
2G9	SOMERSET COUNTY	PA	LPV	0	100	0	100	1	99.9955
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	1	99.9962
9D4	DECK	PA	LPV	0	100	0	100	1	99.9943
ABE	LEHIGH VALLEY INTL	PA	LPV200	0	100	0	100	1	99.9947
AFJ	WASHINGTON COUNTY	PA	LPV200	0	100	0	100	1	99.9977
AGC	ALLEGHENY COUNTY	PA	LPV200	0	100	0	100	1	99.9974
AOO	ALTOONA-BLAIR COUNTY	PA	LPV	0	100	0	100	1	99.9955
AVP	WILKES-BARRE/SCRANTON INTL	PA	LPV200	0	100	0	100	1	99.9966
AXQ	CLARION COUNTY	PA	LPV	0	100	0	100	1	99.9992
BFD	BRADFORD RGNL	PA	LPV	0	100	0	100	1	99.9996
BTP	BUTLER COUNTY/K W SCHOLTER FIE	PA	LPV	0	100	0	100	1	99.9985
BVI	BEAVER COUNTY	PA	LPV	0	100	0	100	1	99.9985
CXY	CAPITAL CITY	PA	LPV	0	100	0	100	1	99.9943
DUJ	DUBOIS RGNL	PA	LPV200	0	100	0	100	1	99.9985
ERI	ERIE INTL/TOM RIDGE FIELD	PA	LPV	0	100	0	100	0	100
FIG	CLEARFIELD-LAWRENCE	PA	LPV	0	100	0	100	1	99.9981
FKL	VENANGO RGNL	PA	LPV	0	100	0	100	1	99.9996
FWQ	ROSTRAVER	PA	LPV	0	100	0	100	1	99.997
GKJ	PORT MEADVILLE	PA	LP	0	100	0	100	0	100
HMZ	BEDFORD COUNTY	PA	LPV	0	100	0	100	1	99.9955
HZL	HAZLETON RGNL	PA	LPV	0	100	0	100	1	99.9958

Airport	AirportName	State/ Provence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
IDI	INDIANA COUNTY/JIMMY STEWART F	PA	LPV	0	100	0	100	1	99.9974
IPT	WILLIAMSPORT RGNL	PA	LPV	0	100	0	100	1	99.9974
JST	JOHN MURTHA JOHNSTOWN-CAMBRIA	PA	LPV200	0	100	0	100	1	99.9962
LBE	ARNOLD PALMER RGNL	PA	LPV200	0	100	0	100	1	99.9962
LNS	LANCASTER	PA	LPV200	0	100	0	100	1	99.9936
LOM	WINGS FIELD	PA	LPV	0	100	0	100	1	99.9932
MDT	HARRISBURG INTL	PA	LPV	0	100	0	100	1	99.9943
MPO	POCONO MOUNTAINS MUNICIPAL	PA	LPV	0	100	0	100	1	99.9958
MQS	CHESTER COUNTY G O CARLSON	PA	LPV	0	100	0	100	1	99.9928
N38	WELLSBORO JOHNSTON	PA	LP	0	100	0	100	1	99.9992
N79	NORTHUMBERLAND COUNTY	PA	LPV	0	100	0	100	1	99.9962
N96	BELLEFONTE	PA	LPV	0	100	0	100	1	99.997
OQN	BRANDYWINE	PA	LP	0	100	0	100	1	99.9928
OYM	ST MARYS MUNICIPAL	PA	LPV	0	100	0	100	1	99.9992
PHL	PHILADELPHIA INTL	PA	LPV200	0	100	0	100	1	99.9921
PIT	PITTSBURGH INTL	PA	LPV200	0	100	0	100	1	99.9981
PNE	NORTHEAST PHILADELPHIA	PA	LPV	0	100	0	100	1	99.9928
PSB	MID-STATE	PA	LPV	0	100	0	100	1	99.9974
PTW	HERITAGE FIELD	PA	LPV	0	100	0	100	1	99.9932
RDG	READING RGNL/CARL A SPAATZ FIE	PA	LPV	0	100	0	100	1	99.9943
RVL	MIFFLIN COUNTY	PA	LPV	0	100	0	100	1	99.9962
THV	YORK	PA	LP	0	100	0	100	1	99.9936
UCP	NEW CASTLE MUNICIPAL	PA	LPV	0	100	0	100	1	99.9996
UKT	QUAKERTOWN	PA	LP	0	100	0	100	1	99.994
UNV	UNIVERSITY PARK	PA	LPV200	0	100	0	100	1	99.997
VVS	JOSEPH A HARDY CONNELLSVILLE	PA	LPV	0	100	0	100	1	99.9962
WAY	GREENE COUNTY	PA	LPV	0	100	0	100	1	99.9974
WBW	WILKES-BARRE WYOMING VALLEY	PA	LPV	0	100	0	100	1	99.997
XLL	ALLENTOWN QUEEN CITY MUNICIPAL	PA	LP	0	100	0	100	1	99.9943
ZER	SCHUYLKILL COUNTY /JOE ZERBEY/	PA	LPV200	0	100	0	100	1	99.9955

Airport	AirportName	State/ Providence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
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	6	99.9577
CYFY	AMOS	QC	LPV	0	100	0	100	0	100
CYHU	MONTREAL / STHUBERT	QC	LPV	0	100	0	100	0	100
CYIF	STAUGUSTIN	QC	LPV	1	99.9996	1	99.9996	55	99.3157
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	1	99.9996	1	99.9996	6	99.9585
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	1	99.9943
6J0	LEXINGTON COUNTY AT PELION	SC	LPV	0	100	0	100	1	99.9906
AIK	AIKEN MUNICIPAL	SC	LPV200	0	100	0	100	1	99.9913
AND	ANDERSON RGNL	SC	LPV200	0	100	0	100	1	99.9966
AQX	ALLENDALE COUNTY	SC	LPV	0	100	0	100	1	99.9891
ARW	BEAUFORT COUNTY	SC	LPV200	0	100	0	100	1	99.9864
BBP	MARLBORO COUNTY JETPORT - H E	SC	LPV	0	100	0	100	1	99.9875
BNL	BARNWELL RGNL	SC	LPV	0	100	0	100	1	99.9902
CAE	COLUMBIA METROPOLITAN	SC	LPV200	0	100	0	100	1	99.9906
CDN	WOODWARD FIELD	SC	LPV	0	100	0	100	1	99.9898
CEU	OCONEE COUNTY RGNL	SC	LPV200	0	100	0	100	1	99.9977
CHS	CHARLESTON AFB/INTL	SC	LPV200	0	100	0	100	1	99.9857
CQW	CHERAW MUNICIPAL/LYNCH BELLINGER FI	SC	LPV	0	100	0	100	1	99.9891
CRE	GRAND STRAND	SC	LPV200	0	100	0	100	1	99.9834
DCM	CHESTER CATAWBA RGNL	SC	LPV	0	100	0	100	1	99.9936
DYB	SUMMERVILLE	SC	LPV200	0	100	0	100	1	99.9868
FDW	FAIRFIELD COUNTY	SC	LPV	0	100	0	100	1	99.9921

Airport	AirportName	State/ Provence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
FLO	FLORENCE RGNL	SC	LPV	0	100	0	100	1	99.9872
GGE	GEORGETOWN COUNTY	SC	LPV	0	100	0	100	1	99.9841
GMU	GREENVILLE DOWNTOWN	SC	LPV200	0	100	0	100	1	99.9966
GRD	GREENWOOD COUNTY	SC	LPV	0	100	0	100	1	99.9951
GSP	GREENVILLE SPARTANBURG INTL	SC	LPV200	0	100	0	100	1	99.9962
GYH	DONALDSON FIELD	SC	LPV	0	100	0	100	1	99.9962
HYW	CONWAY-HORRY COUNTY	SC	LPV	0	100	0	100	1	99.9849
JZI	CHARLESTON EXECUTIVE	SC	LPV200	0	100	0	100	1	99.9853
LKR	LANCASTER COUNTY-MC WHIRTER FI	SC	LPV200	0	100	0	100	1	99.9925
LQK	PICKENS COUNTY	SC	LPV	0	100	0	100	1	99.9974
LRO	MT PLEASANT RGNL-FAISON FIELD	SC	LPV	0	100	0	100	1	99.9849
LUX	LAURENS COUNTY	SC	LPV	0	100	0	100	1	99.9951
MAO	MARION COUNTY	SC	LPV	0	100	0	100	1	99.9864
MKS	BERKELEY COUNTY	SC	LPV	0	100	0	100	1	99.9864
MYR	MYRTLE BEACH INTL	SC	LPV200	0	100	0	100	1	99.9838
OGB	ORANGEBURG MUNICIPAL	SC	LPV200	0	100	0	100	1	99.9891
PYG	PAGELAND	SC	LPV	0	100	0	100	1	99.9898
RBW	LOWCOUNTRY RGNL	SC	LPV200	0	100	0	100	1	99.9872
SMS	SUMTER	SC	LPV200	0	100	0	100	1	99.9887
SPA	SPARTANBURG DOWNTOWN MEMORIAL	SC	LPV200	0	100	0	100	1	99.9955
UDG	DARLINGTON COUNTY	SC	LPV	0	100	0	100	1	99.9883
UZA	ROCK HILL/YORK CO/BRYANT FIELD	SC	LPV200	0	100	0	100	1	99.9936
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

Airport	AirportName	State/ Providence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
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
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 TAZEWEEL 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

Airport	AirportName	State/ Providence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
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
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

Airport	AirportName	State/ Providence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
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	1	99.9996
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	1	99.9996
2F5	LAMESA MUNICIPAL	TX	LPV	0	100	0	100	0	100
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	1	99.9996
6R3	CLEVELAND MUNICIPAL	TX	LPV	0	100	0	100	1	99.9996
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	1	99.9996
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

Airport	AirportName	State/ Provence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
BRO	BROWNSVILLE/SOUTH PADRE ISLAND	TX	LPV200	0	100	0	100	1	99.9996
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	1	99.9996
CLL	EASTERWOOD FIELD	TX	LPV200	0	100	0	100	1	99.9996
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
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	1	99.9996
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	1	99.9996
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	1	99.9996
EDC	AUSTIN EXECUTIVE	TX	LPV200	0	100	0	100	0	100
EFD	ELLINGTON	TX	LPV200	0	100	0	100	1	99.9996
ELA	EAGLE LAKE	TX	LP	0	100	0	100	0	100
ELP	EL PASO INTL	TX	LP	0	100	0	100	0	100

Airport	AirportName	State/ Provence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
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
GLS	SCHOLES INTL AT GALVESTON	TX	LPV200	0	100	0	100	1	99.9996
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	1	99.9996
HQZ	MESQUITE METRO	TX	LPV	0	100	0	100	0	100
HRL	VALLEY INTL	TX	LPV200	0	100	0	100	2	99.9992
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	1	99.9996
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	1	99.9996
JAS	JASPER COUNTY-BELL FIELD	TX	LPV	0	100	0	100	0	100

Airport	AirportName	State/ Provence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
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	1	99.9996
LFK	ANGELINA COUNTY	TX	LPV	0	100	0	100	0	100
LHB	HEARNE MUNICIPAL	TX	LPV200	0	100	0	100	1	99.9996
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	1	99.9996
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
MDD	MIDLAND AIRPARK	TX	LPV	0	100	0	100	0	100
MFE	MC ALLEN MILLER INTL	TX	LPV200	0	100	0	100	2	99.9992
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	1	99.9996
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

Airport	AirportName	State/ Providence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
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	1	99.9996
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	1	99.9996
T65	MID VALLEY	TX	LPV	0	100	0	100	2	99.9992
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
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	1	99.9996
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	1	99.9996
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

Airport	AirportName	State/ Provence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
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	1	99.9913
0VG	LEE COUNTY	VA	LPV	0	100	0	100	0	100
AVC	MECKLENBURG-BRUNSWICK RGNL	VA	LPV	0	100	0	100	1	99.9864
BCB	VIRGINIA TECH/MONTGOMERY EXECU	VA	LPV	0	100	0	100	1	99.9951
BKT	ALLEN C PERKINSON BLACKSTONE A	VA	LPV	0	100	0	100	1	99.9868
CHO	CHARLOTTESVILLE-ALBEMARLE	VA	LPV200	0	100	0	100	1	99.9906
CJR	CULPEPER RGNL	VA	LPV	0	100	0	100	1	99.9906
CPK	CHESAPEAKE RGNL	VA	LPV200	0	100	0	100	1	99.9834
DAN	DANVILLE RGNL	VA	LPV200	0	100	0	100	1	99.9913
EMV	EMPORIA-GREENSVILLE RGNL	VA	LPV	0	100	0	100	1	99.9853
FCI	RICHMOND EXECUTIVE- CHESTERFIEL	VA	LPV	0	100	0	100	1	99.9868
FKN	FRANKLIN MUNICIPAL-JOHN BEVERLY ROS	VA	LPV	0	100	0	100	1	99.9841
FVX	FARMVILLE RGNL	VA	LPV	0	100	0	100	1	99.9887
FYJ	MIDDLE PENINSULA RGNL	VA	LPV	0	100	0	100	1	99.986
HLX	TWIN COUNTY	VA	LPV	0	100	0	100	1	99.9955
HSP	INGALLS FIELD	VA	LPV	0	100	0	100	1	99.9943
HWY	WARRENTON-FAUQUIER	VA	LPV200	0	100	0	100	1	99.9902
JFZ	TAZEWELL COUNTY	VA	LPV	0	100	0	100	1	99.9989

Airport	AirportName	State/ Provence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
JYO	LEESBURG EXECUTIVE	VA	LPV	0	100	0	100	1	99.9917
LKU	LOUISA COUNTY/FREEMAN FIELD	VA	LPV	0	100	0	100	1	99.9891
LNP	LONESOME PINE	VA	LPV	0	100	0	100	0	100
LUA	LURAY CAVERNS	VA	LP	0	100	0	100	1	99.9921
LYH	LYNCHBURG RGNL/PRESTON GLENN F	VA	LPV	0	100	0	100	1	99.9921
MFV	ACCOMACK COUNTY	VA	LPV	0	100	0	100	1	99.986
MKJ	MOUNTAIN EMPIRE	VA	LPV	0	100	0	100	1	99.9974
MTV	BLUE RIDGE	VA	LPV	0	100	0	100	1	99.9928
OPF	HANOVER COUNTY MUNICIPAL	VA	LPV	0	100	0	100	1	99.9872
OKV	WINCHESTER RGNL	VA	LPV200	0	100	0	100	1	99.9925
ORF	NORFOLK INTL	VA	LPV200	0	100	0	100	1	99.9841
PHF	NEWPORT NEWS/WILLIAMSBURG INTL	VA	LPV200	0	100	0	100	1	99.9849
PSK	NEW RIVER VALLEY	VA	LPV200	0	100	0	100	1	99.9955
PTB	DINWIDDIE COUNTY	VA	LPV	0	100	0	100	1	99.986
PVG	HAMPTON ROADS EXECUTIVE	VA	LPV200	0	100	0	100	1	99.9841
RIC	RICHMOND INTL	VA	LPV200	0	100	0	100	1	99.9868
RMN	STAFFORD RGNL	VA	LPV	0	100	0	100	1	99.9894
ROA	ROANOKE-BLACKSBURG RGNL/WOODRU	VA	LPV	0	100	0	100	1	99.994
SFQ	SUFFOLK EXECUTIVE	VA	LPV	0	100	0	100	1	99.9838
SHD	SHENANDOAH VALLEY RGNL	VA	LPV200	0	100	0	100	1	99.9925
VJI	VIRGINIA HIGHLANDS	VA	LPV	0	100	0	100	1	99.9989
W78	WILLIAM M TUCK	VA	LPV	0	100	0	100	1	99.9891
W96	NEW KENT COUNTY	VA	LP	0	100	0	100	1	99.9864
WAL	WALLOPS FLIGHT FACILITY	VA	LPV	0	100	0	100	1	99.9864
XSA	TAPPAHANNOCK-ESSEX COUNTY	VA	LPV	0	100	0	100	1	99.9875
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

Airport	AirportName	State/ Provence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
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
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

Airport	AirportName	State/ Provence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
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
MTW	MANITOWOC COUNTY	WI	LPV200	0	100	0	100	0	100
MWC	LAWRENCE J TIMMERMAN	WI	LPV	0	100	0	100	0	100

Airport	AirportName	State/ Provence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
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	1	99.9996
BKW	RALEIGH COUNTY MEMORIAL	WV	LPV200	0	100	0	100	1	99.9981
BLF	MERCER COUNTY	WV	LPV	0	100	0	100	1	99.9974
CKB	NORTH CENTRAL WEST VIRGINIA	WV	LPV200	0	100	0	100	1	99.997
CRW	YEAGER	WV	LPV200	0	100	0	100	1	99.9996
HLG	WHEELING OHIO CO	WV	LPV200	0	100	0	100	1	99.9992
HTS	TRI-STATE/MILTON J FERGUSON FI	WV	LPV200	0	100	0	100	0	100

Airport	AirportName	State/ Provence	Service	LP Outages	LP Avail (%)	LP Outages	LP 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	1	99.9958
MGW	MORGANTOWN MUNICIPAL- WALTER L BILL	WV	LPV200	0	100	0	100	1	99.9966
MRB	EASTERN WV RGNL/SHEPHERD FLD	WV	LPV	0	100	0	100	1	99.9928
PKB	MID-OHIO VALLEY RGNL	WV	LPV	0	100	0	100	0	100
SXL	SUMMERSVILLE	WV	LP	0	100	0	100	1	99.9981
USW	BOGGS FIELD	WV	LPV	0	100	0	100	1	99.9996
W22	UPSHUR COUNTY RGNL	WV	LPV	0	100	0	100	1	99.997
W35	POTOMAC AIRPARK	WV	LP	0	100	0	100	1	99.994
W99	GRANT COUNTY	WV	LPV	0	100	0	100	1	99.9936
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

Airport	AirportName	State/ Provence	Service	LP Outages	LP Avail (%)	LP Outages	LP Avail (%)	LPV200 Outages	LPV200 Avail (%)
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
CYQH	WATSON LAKE	YT	LPV	0	100	0	100	2	99.9777
CYXY	WHITEHORSE / ERIK NIELSEN INTL	YT	LPV	0	100	0	100	2	99.9841

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

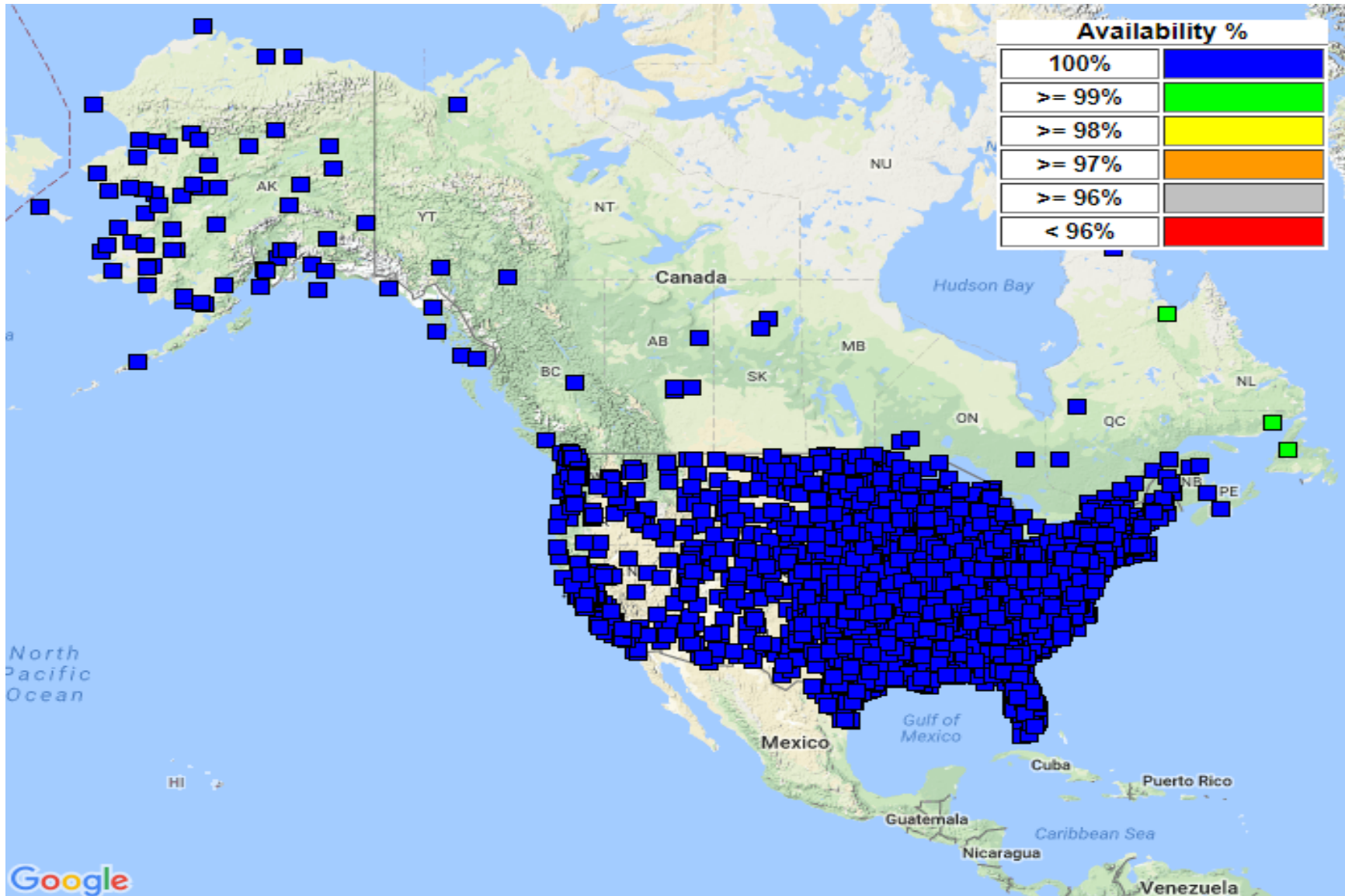


Figure 8-2 WAAS LP Outages at Airports in the US and Canada with GPS RNAV IAPs

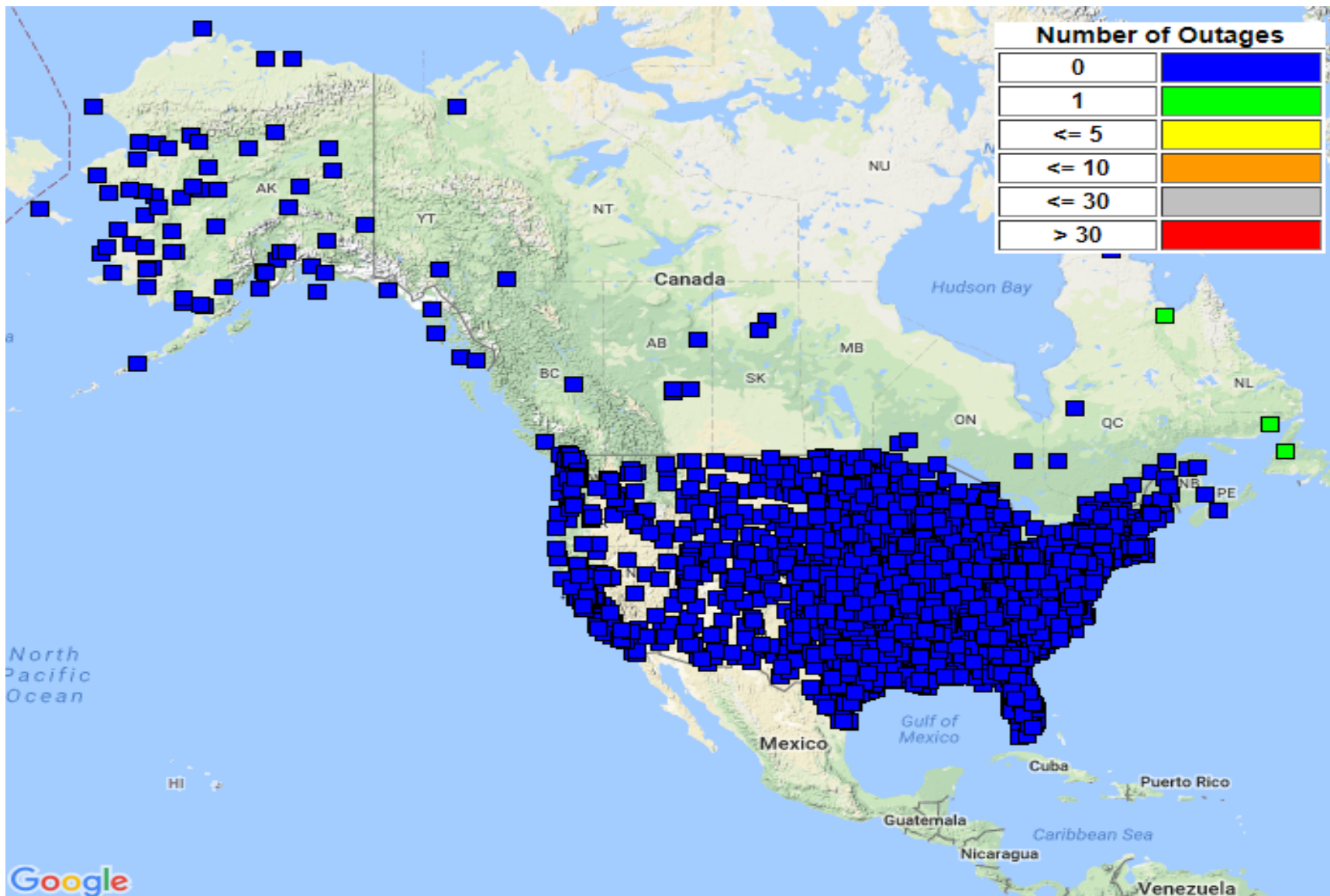


Figure 8-3 WAAS LPV Availability Airports in the US and Canada with GPS RNAV IAPs

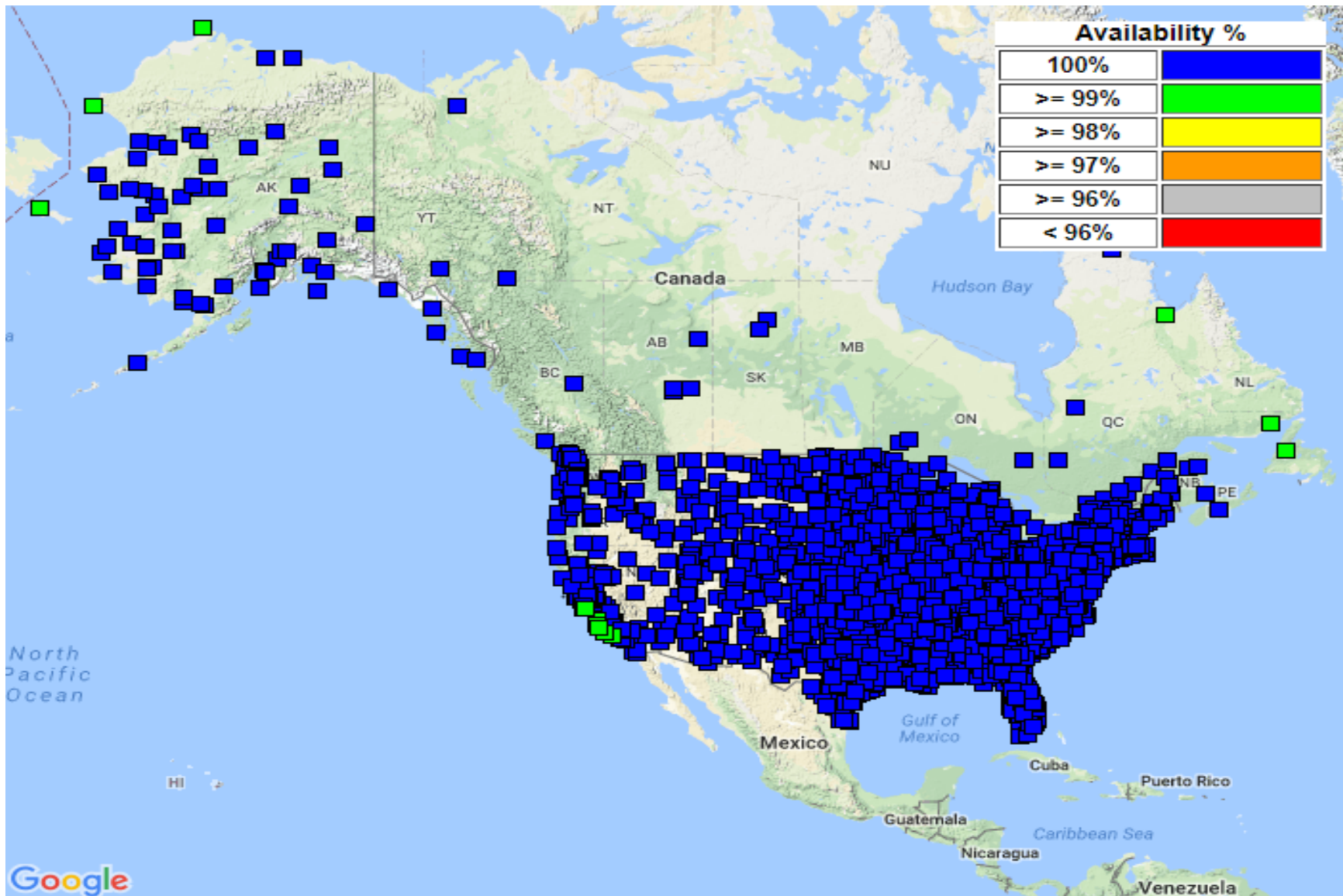


Figure 8-4 WAAS LPV Outages at Airports in the US and Canada with GPS RNAV IAPs

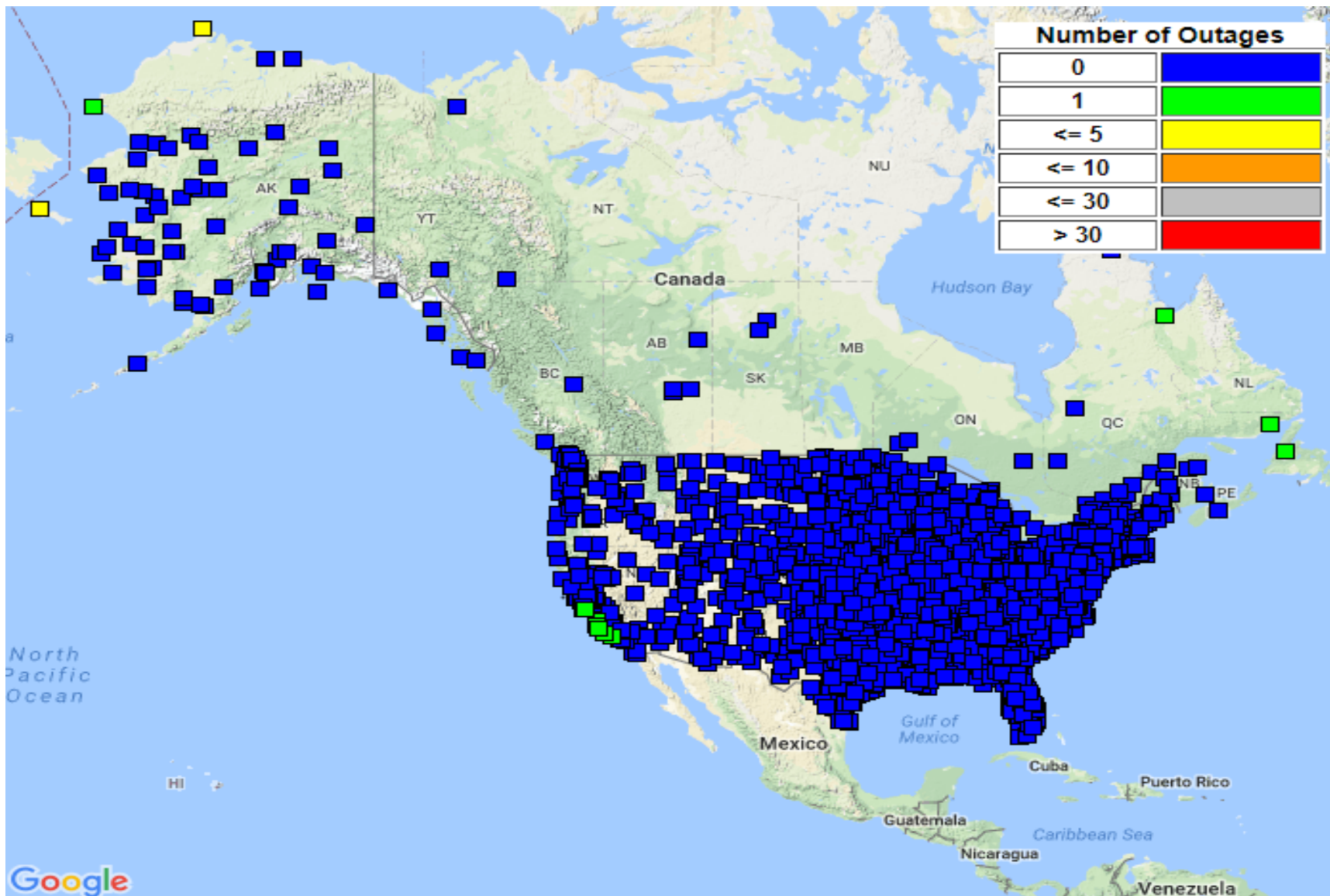


Figure 8-5 WAAS LPV200 Availability at Airports in the US and Canada with GPS RNAV IAPs

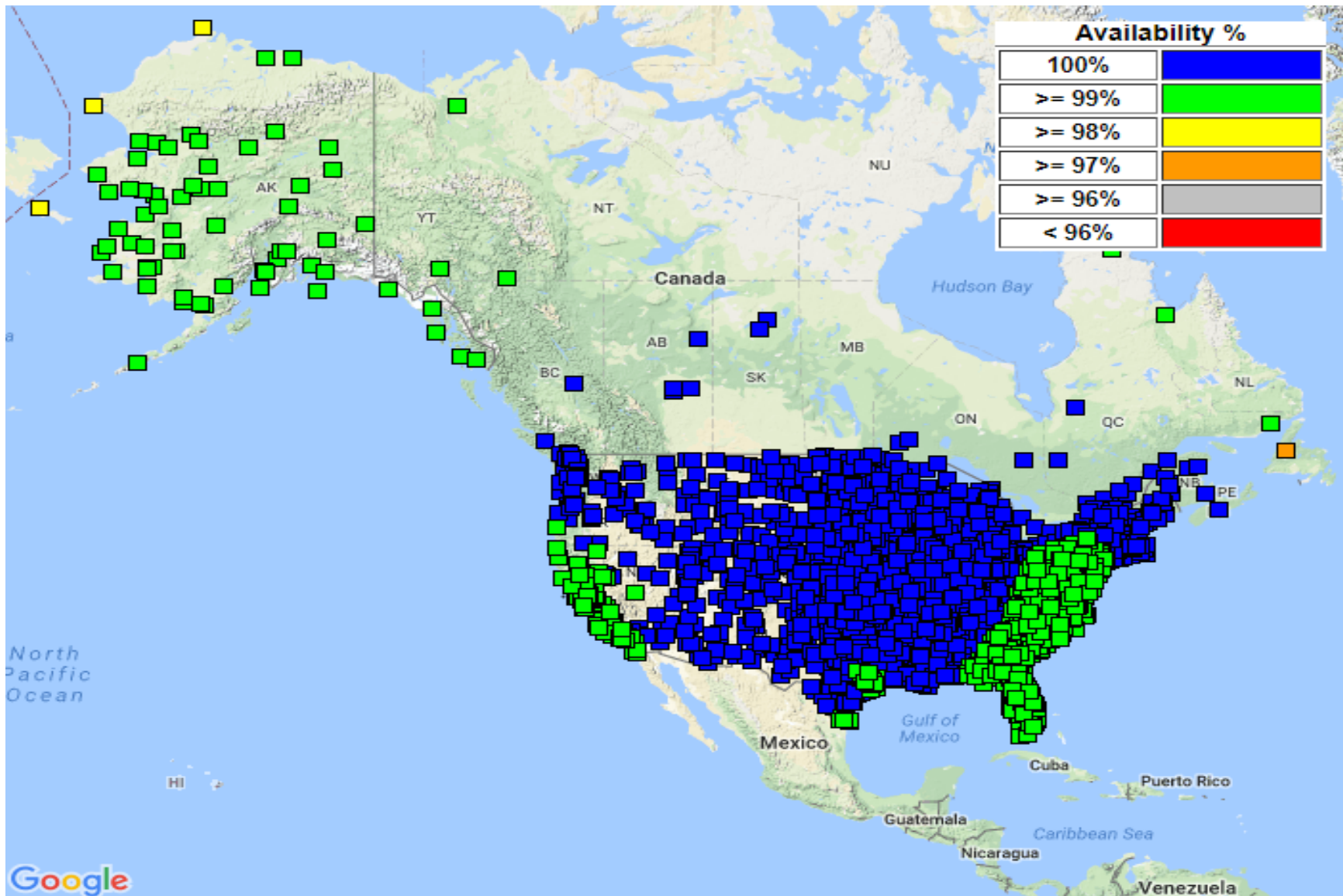
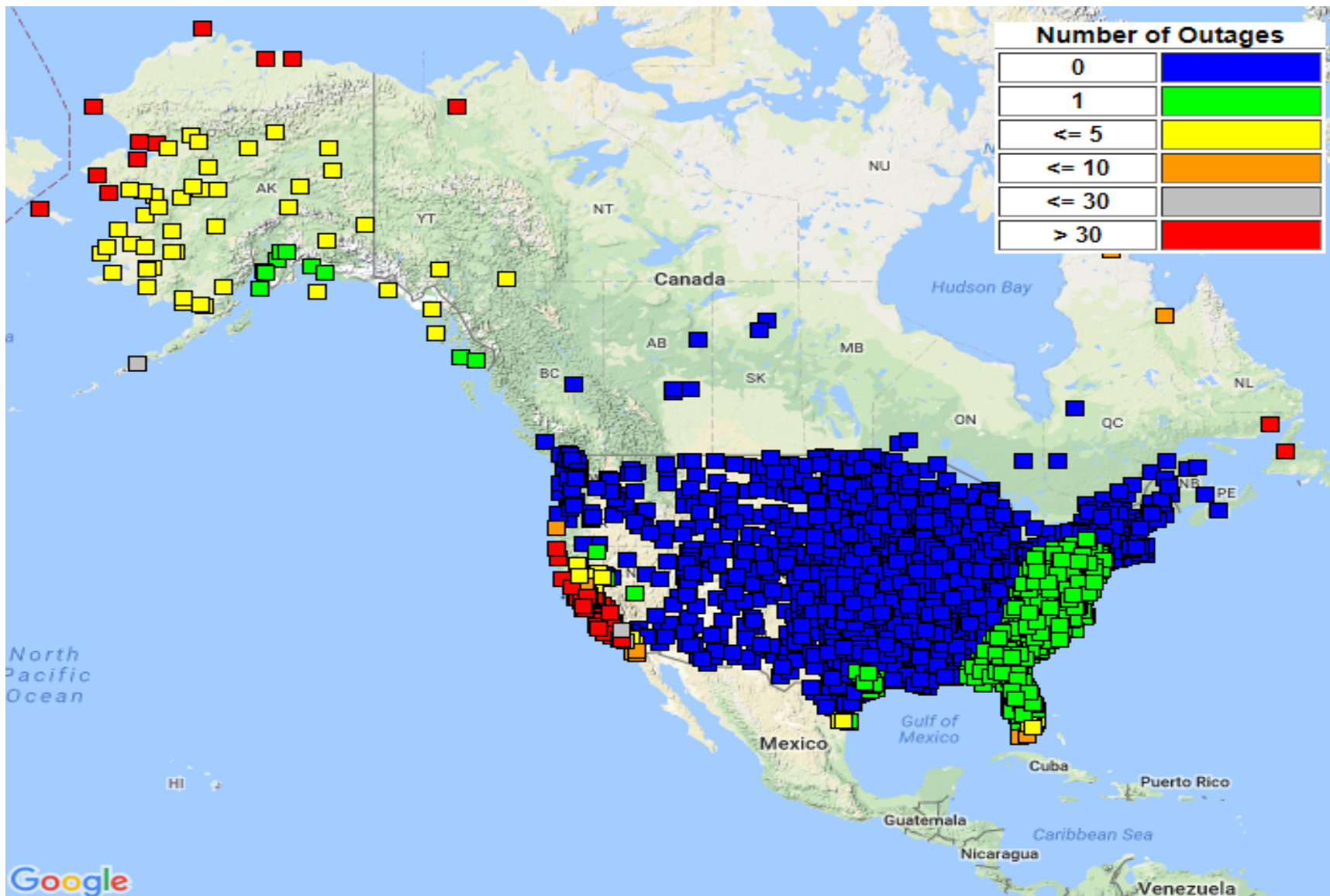


Figure 8-6 WAAS LPV200 Outages at Airports in the US and Canada with GPS RNAV IAPs



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	Jan 17	Feb 17	Mar 17	Apr 17	May 17	Jun 17	Jul 17	Aug 17	Sep 17	Oct 17	Nov 17	Dec 17
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	Jan 17	Feb 17	Mar 17	Apr 17	May 17	Jun 17	Jul 17	Aug 17	Sep 17	Oct 17	Nov 17	Dec 17
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 - 3.29c bounded 100%
- Good - 4c bounded 100%
- Fair - 4c 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 with the exception of ZLC and ZSU using 24 hour sets on 01/01/18. 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 2.1 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 8.6 mm. The maximum of difference was 3.99 cm for Kotzebue Thread B (OTZ2).

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 6.25 cm. The maximum difference was 6.25 cm at Jacksonville Thread B (ZJX2).

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 01/01/2018

WRE	X(m)	Y(m)	Z(m)	Latitude	Longitude	H(m)
BET1	-2965385.119	-972576.624	5543892.842	60.78791468	-161.8417254	52.168
BET2	-2965385.889	-972580.346	5543891.788	60.78789524	-161.8416648	52.172
BET3	-2965388.455	-972577.478	5543890.92	60.78787934	-161.8417295	52.168
BIL1	-1416445.944	-4223577.009	4550862.104	45.80370646	-108.5397239	1112.218
BIL2	-1416450.025	-4223574.867	4550862.83	45.80371575	-108.5397824	1112.227
BIL3	-1416441.644	-4223574.265	4550865.963	45.80375626	-108.5396827	1112.218
BRW1	-1886759.007	-809058.657	6018494.455	71.28276423	-156.7899259	15.575
BRW2	-1886756.422	-809055.917	6018495.633	71.28279695	-156.7899677	15.582
BRW3	-1886755.329	-809059.696	6018495.455	71.28279232	-156.7898587	15.569
CDB1	-3484099.146	-1084748.772	5213678.576	55.19237323	-162.7064053	49.702
CDB2	-3484105.783	-1084741.578	5213675.63	55.19232716	-162.7065441	49.68
CDB3	-3484112.065	-1084734.802	5213672.88	55.19228368	-162.706675	49.696
FAI1	-2304741.905	-1448715.306	5748843.701	64.80962931	-147.8473415	149.99
FAI2	-2304741.445	-1448706.497	5748846.091	64.80967964	-147.8474933	149.991
FAI3	-2304732.923	-1448707.43	5748849.246	64.80974621	-147.8473812	149.987
HNL1	-5508637.159	-2234492.973	2303722.367	21.31299198	-157.9208307	24.666
HNL2	-5508656.317	-2234483.294	2303687.131	21.31264917	-157.9209866	25.008
HNL3	-5508647.733	-2234497.219	2303694.226	21.3127178	-157.9208311	25.053
JNU1	-2354255.011	-2388549.676	5407043.14	58.36257396	-134.5857082	16.176
JNU2	-2354252.916	-2388565.784	5407036.984	58.36246852	-134.5854895	16.181
JNU3	-2354239.696	-2388568.633	5407041.442	58.36254494	-134.5852945	16.173
MMD1	35070.385	-5959686.675	2264365.775	20.93190931	-89.66284102	29.129
MMD2	35065.455	-5959687.049	2264364.996	20.93190162	-89.66288844	29.173
MMD3	35065.119	-5959685.252	2264369.649	20.93194668	-89.66289157	29.155
MMX1	-948700.911	-5943934.143	2109212.223	19.43165385	-99.06839008	2234.044
MMX2	-948696.468	-5943933.969	2109214.663	19.43167725	-99.06834858	2234.034
MMX3	-948705.341	-5943934.331	2109209.8	19.43163056	-99.06843144	2234.072
MPR1	-1570142.25	-5759530.58	2238184.746	20.67900329	-105.2492035	10.96
MPR2	-1570139.428	-5759530.096	2238188.794	20.67904135	-105.2491786	11.258
MPR3	-1570143.53	-5759527.971	2238190.566	20.67905943	-105.249222	10.975
MSD1	-1979519.975	-5523222.892	2493106.916	23.16044818	-109.7176509	104.274
MSD2	-1979521.546	-5523225.232	2493100.509	23.16038528	-109.7176577	104.266
MSD3	-1979525.989	-5523221.951	2493104.178	23.16042139	-109.7177093	104.248
MTP1	-254854.396	-6162909.135	1617805.094	14.79136631	-92.36799959	54.921
MTP2	-254850.772	-6162910.182	1617801.662	14.79133425	-92.36796555	54.911
MTP3	-254855.545	-6162910.28	1617800.135	14.79132023	-92.36800981	54.807
OTZ1	-2396056.098	-750356.175	5843502.477	66.88733139	-162.6113731	10.881

WRE	X(m)	Y(m)	Z(m)	Latitude	Longitude	H(m)
OTZ2	-2396052.925	-750354.344	5843503.997	66.88736622	-162.6113914	10.875
OTZ3	-2396052.906	-750358.283	5843503.508	66.88735494	-162.6113055	10.88
YFB1	1035381.35	-2634289.653	5696539.568	63.73149083	-68.54318535	10.042
YFB2	1035372.144	-2634296.066	5696538.202	63.73146448	-68.54340628	9.968
YFB3	1035366.068	-2634306.827	5696534.43	63.73138682	-68.54360043	10.034
YQX1	2430424.576	-3419640.425	4788223.888	48.96649038	-54.59763307	146.916
YQX2	2430432.516	-3419639.073	4788220.829	48.9664486	-54.59753398	146.905
YQX3	2430440.42	-3419637.718	4788217.837	48.96640737	-54.59743528	146.929
YWG1	-520164.475	-4083475.965	4855843.02	49.90057397	-97.25939894	222.109
YWG2	-520150.61	-4083468.903	4855850.416	49.90067702	-97.25921993	222.126
YWG3	-520152.482	-4083478.021	4855842.597	49.90056792	-97.25922974	222.123
YYR1	1885341.343	-3321428.367	5091171.691	53.30864754	-60.41946941	37.854
YYR2	1885344.305	-3321419.901	5091176.124	53.30871385	-60.41936807	37.884
YYR3	1885340.025	-3321413.075	5091182.114	53.30880401	-60.41937336	37.877
ZAB1	-1488636.904	-5003946.534	3654557.69	35.1735752	-106.5673504	1620.125
ZAB2	-1488631.568	-5003948.215	3654557.664	35.17357454	-106.5672891	1620.183
ZAB3	-1488632.349	-5003950.802	3654553.814	35.17353215	-106.5672892	1620.174
ZAN1	-2659536.739	-1549114.75	5567750.747	61.2292012	-149.7802521	80.719
ZAN2	-2659548.494	-1549110.796	5567746.263	61.22911759	-149.7804258	80.72
ZAN3	-2659541.433	-1549106.674	5567750.71	61.22920111	-149.780426	80.683
ZAU1	138704.044	-4761244.141	4227763.927	41.78265804	-88.33133755	195.883
ZAU2	138704.306	-4761248.756	4227758.767	41.78259568	-88.33133602	195.89
ZAU3	138711.008	-4761248.493	4227758.847	41.78259662	-88.33125534	195.893
ZBW1	1490299.153	-4448983.185	4306010.516	42.73572068	-71.48042669	39.122
ZBW2	1490304.268	-4448981.177	4306010.863	42.73572468	-71.48035968	39.152
ZBW3	1490305.976	-4448984.801	4306006.547	42.73567184	-71.48035396	39.146
ZDC1	1069125.692	-4839598.985	4001126.515	39.10159605	-77.54274733	80.055
ZDC2	1069128.085	-4839603.611	4001120.312	39.1015241	-77.54273185	80.049
ZDV1	-1273628.672	-4711375.563	4094890.083	40.18730305	-105.1272251	1541.341
ZDV2	-1273622.973	-4711377.083	4094890.101	40.18730329	-105.1271558	1541.338
ZDV3	-1273624.985	-4711380.279	4094885.812	40.18725281	-105.1271688	1541.328
ZFW1	-659983.243	-5324060.767	3438276.453	32.83064961	-97.06647227	155.605
ZFW2	-659988.514	-5324063.317	3438271.456	32.83059621	-97.06652479	155.567
ZFW3	-659983.54	-5324063.842	3438271.663	32.83059822	-97.06647138	155.603
ZHU1	-513864.52	-5506451.67	3166720.454	29.96189634	-95.33142681	10.813
ZHU2	-513867.164	-5506455.068	3166714.293	29.96183184	-95.33145081	10.88
ZHU3	-513873.447	-5506457.709	3166708.695	29.96177361	-95.33151308	10.869
ZJX1	772646.389	-5434462.182	3237231.749	30.69885977	-81.90818567	2.127
ZJX2	772649.713	-5434463.725	3237228.345	30.69882418	-81.90815358	2.105

WRE	X(m)	Y(m)	Z(m)	Latitude	Longitude	H(m)
ZJX3	772645.651	-5434466.159	3237225.242	30.69879165	-81.90819914	2.101
ZKC1	-415247.579	-4954556.389	3982161.105	38.8801593	-94.79083455	305.895
ZKC2	-415231.188	-4954557.714	3982161.161	38.88015997	-94.79064504	305.892
ZKC3	-415237.306	-4954561.06	3982155.968	38.88010182	-94.79071208	305.626
ZLA1	-2474410.044	-4637294.571	3602183.566	34.60351863	-118.0838968	763.515
ZLA2	-2474404.765	-4637297.37	3602183.568	34.60351873	-118.0838317	763.503
ZLA3	-2474411.367	-4637297.051	3602179.592	34.60347476	-118.0838968	763.572
ZLC1	-1808273.286	-4486410.793	4145302.994	40.78604312	-111.9521785	1287.415
ZLC2	-1808274.673	-4486414.419	4145298.5	40.78598966	-111.9521777	1287.419
ZLC3	-1808270.469	-4486416.132	4145298.501	40.78598957	-111.9521239	1287.432
ZMA1	966042.254	-5662999.813	2761581.503	25.8246123	-80.31919023	-7.602
ZMA2	966029.276	-5662999.105	2761585.991	25.82466009	-80.31931664	-8.239
ZMA3	966037.357	-5662997.95	2761586.342	25.82466207	-80.31923525	-7.888
ZME1	4070.833	-5226189.294	3644028.422	35.06739412	-89.95537064	68.6
ZME2	4070.862	-5226186.744	3644032.534	35.06743766	-89.9553703	68.875
ZME3	4064.67	-5226186.617	3644032.689	35.06743949	-89.95543818	68.856
ZMP1	-249978.458	-4539297.5	4458955.046	44.6374632	-93.15208645	262.653
ZMP2	-249972.655	-4539297.844	4458955.05	44.63746307	-93.15201318	262.673
ZMP3	-249973.752	-4539302.121	4458950.573	44.63740702	-93.15202402	262.61
ZNY1	1406144.56	-4627343.988	4144322.065	40.78432874	-73.09716655	6.441
ZNY2	1406146.357	-4627347.019	4144317.285	40.78427602	-73.09715662	5.91
ZNY3	1406140.8	-4627348.678	4144317.325	40.78427646	-73.09722533	5.915
ZOA1	-2684436.972	-4293337.305	3865351.909	37.54305438	-122.0159494	-3.499
ZOA2	-2684433.965	-4293341.383	3865349.48	37.5430268	-122.015896	-3.501
ZOA3	-2684438.331	-4293342.252	3865345.623	37.54298249	-122.0159327	-3.432
ZOB1	650770.117	-4754715.67	4187420.751	41.29715452	-82.20644552	223.673
ZOB2	650777.796	-4754714.845	4187422.774	41.29716688	-82.20635335	225.177
ZOB3	650776.124	-4754719.671	4187414.98	41.29708709	-82.20638094	223.455
ZSE1	-2308930.312	-3668169.671	4663526.451	47.28699298	-122.1883733	82.092
ZSE2	-2308934.707	-3668175.221	4663520.048	47.2869074	-122.1883834	82.162
ZSE3	-2308935.766	-3668179.496	4663516.106	47.28685571	-122.1883652	82.102
ZSU1	2462589.462	-5529372.081	2003724.524	18.43133627	-65.99347641	-28.108
ZSU2	2462587.532	-5529377.461	2003712.236	18.43121915	-65.99351382	-28.075
ZSU3	2462594.162	-5529375.197	2003710.155	18.43119952	-65.99344777	-28.136
ZTL1	529840.345	-5305248.817	3489342.859	33.37968865	-84.29672664	261.141
ZTL2	529846.718	-5305247.973	3489343.143	33.37969182	-84.29665759	261.125
ZTL3	529847.402	-5305251.412	3489337.911	33.37963511	-84.29665395	261.16

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

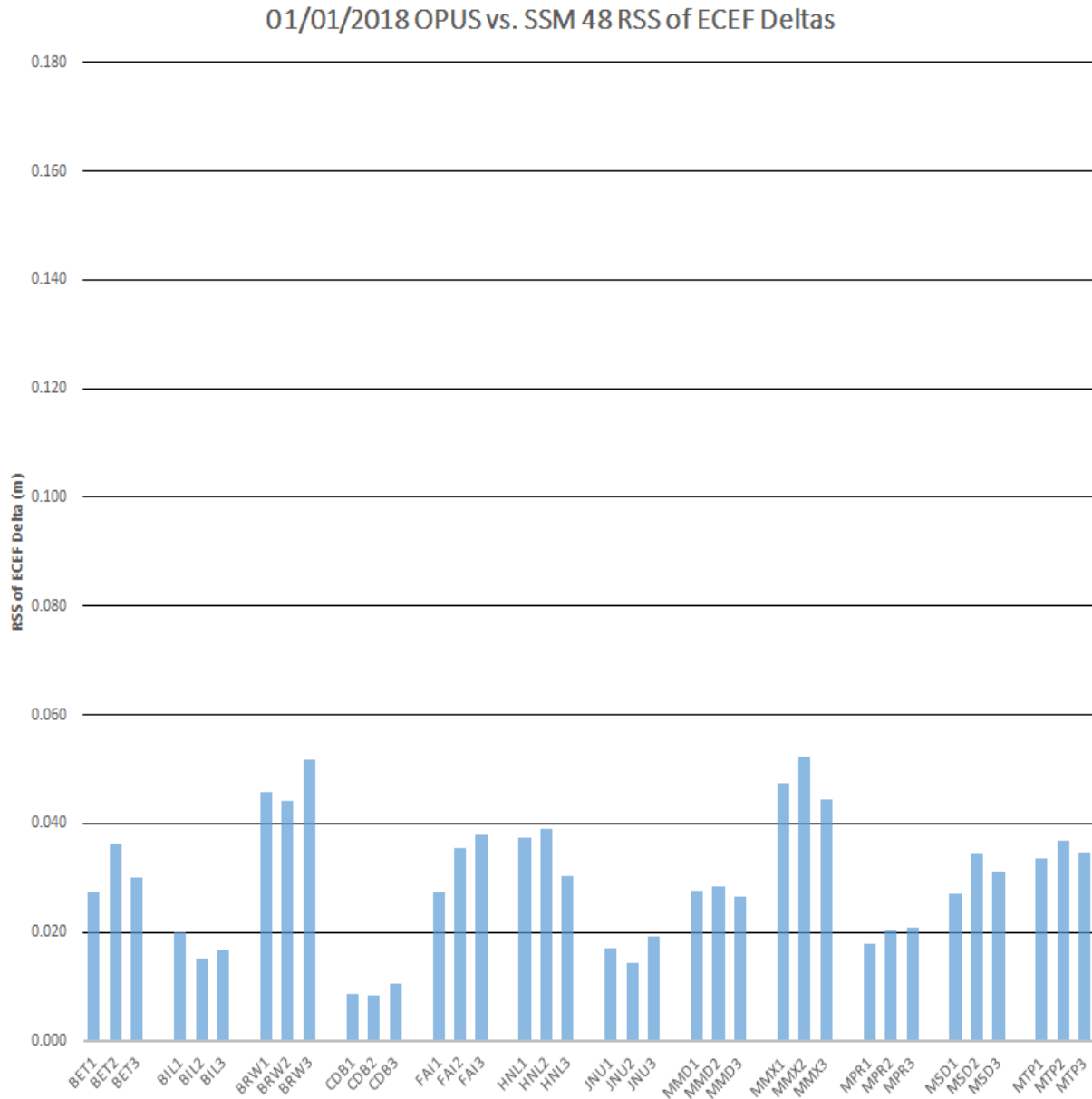


Figure 10-2 Build WE7.164c Antenna Positions Deltas OPUS Survey

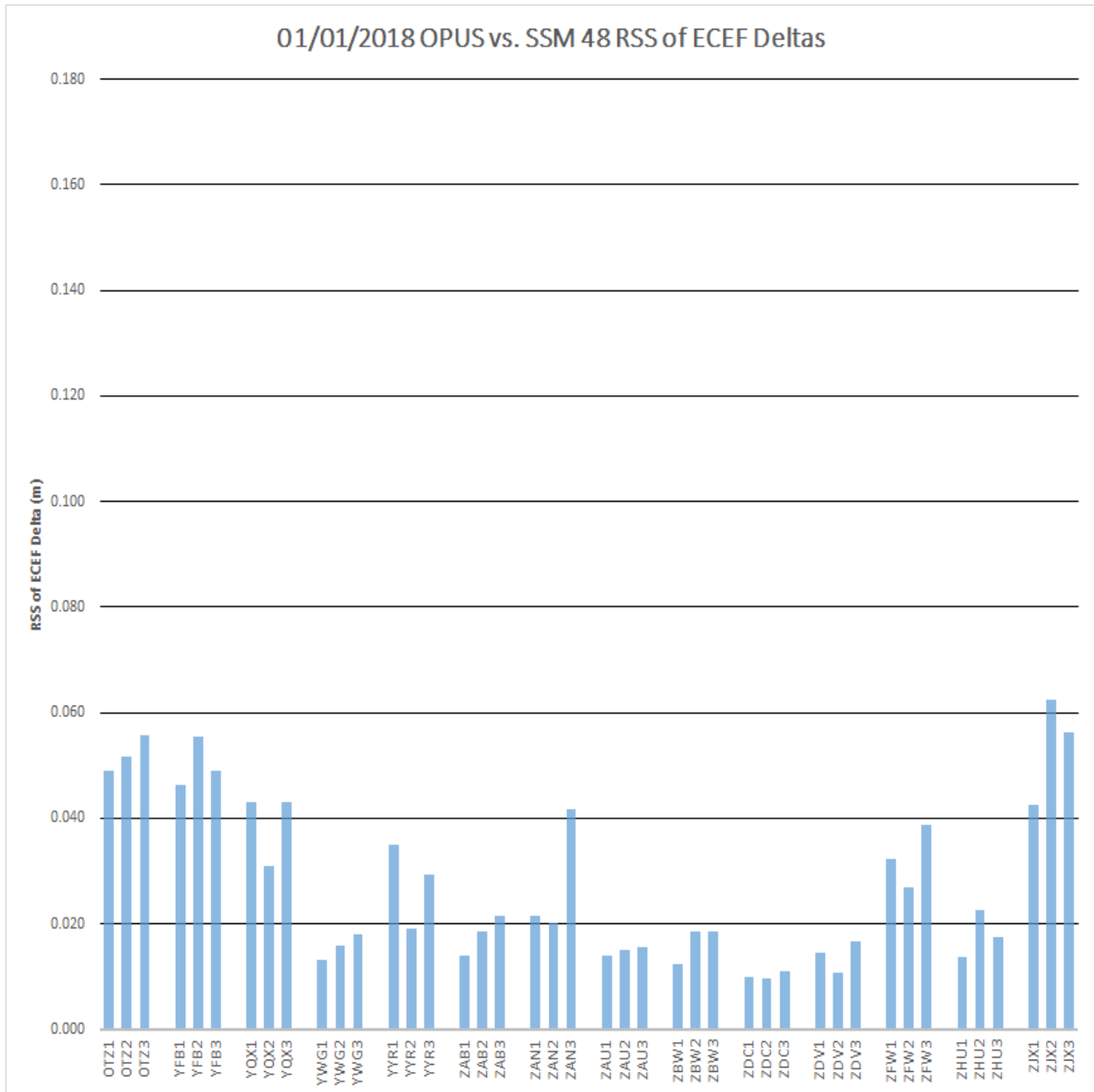


Figure 10-3 Build WE7.164c Antenna Positions Deltas OPUS Survey

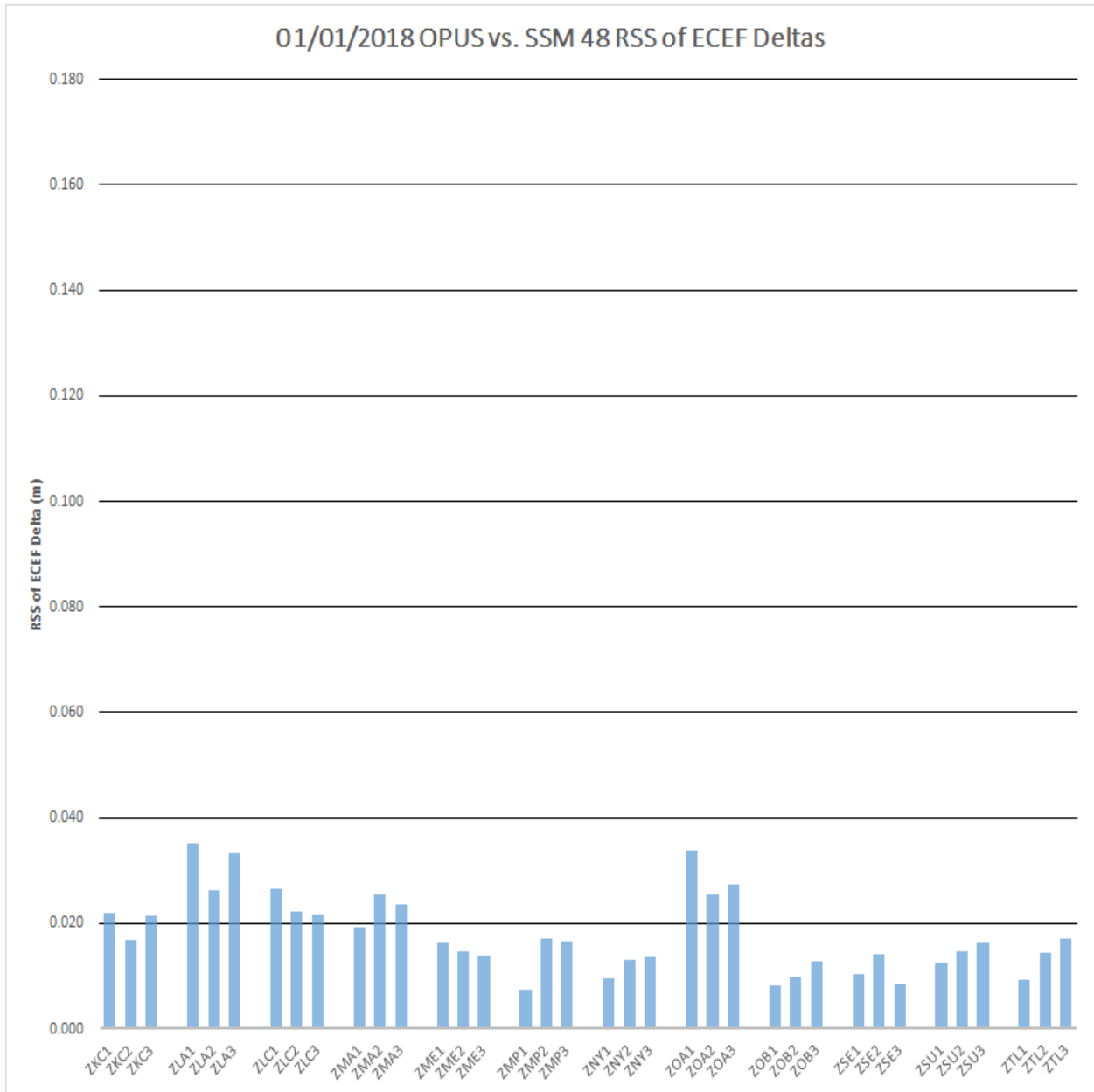


Figure 10-4 OPUS Survey Overall RMS Qualities

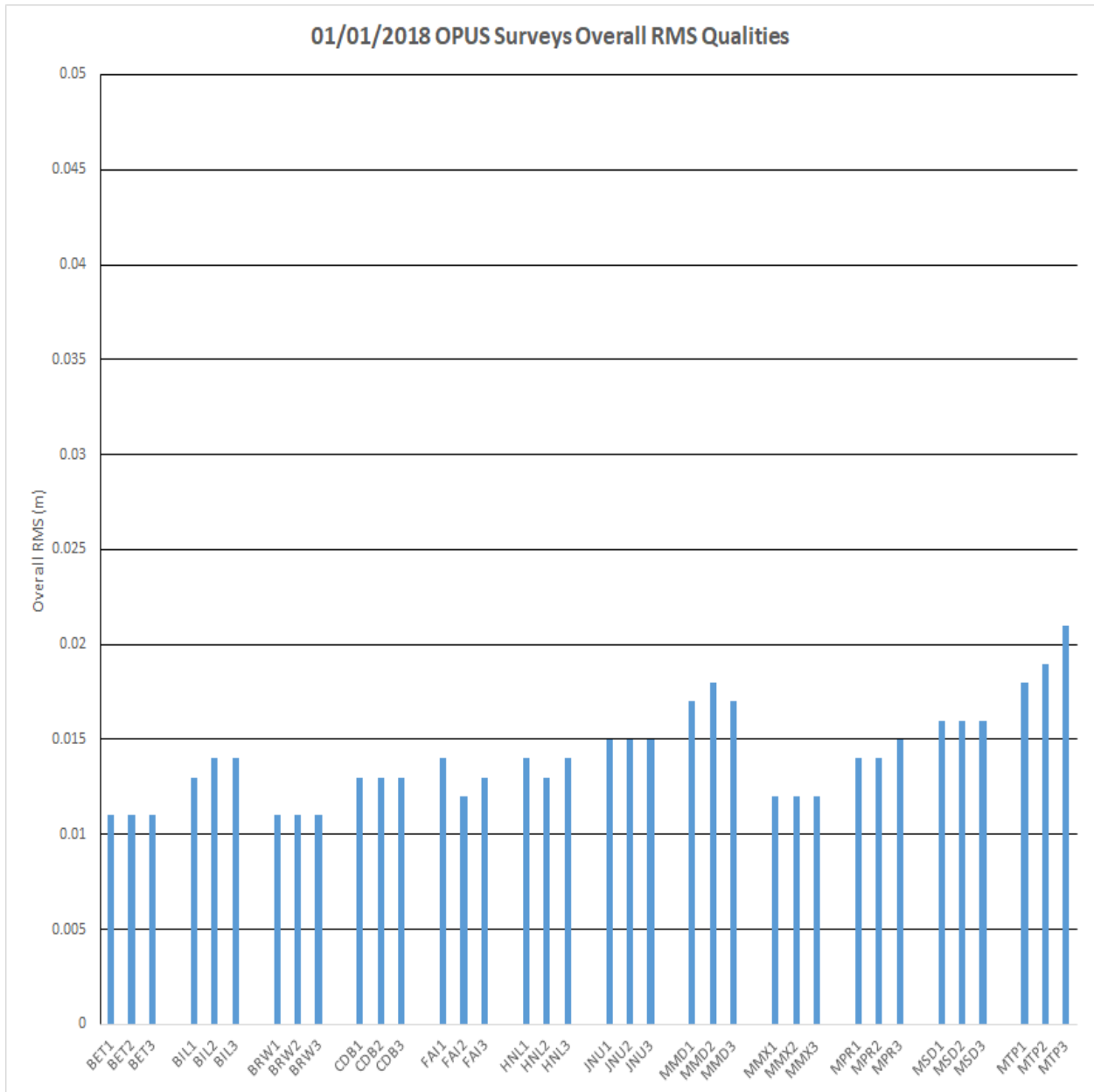


Figure 10-5 OPUS Survey Overall RMS Qualities

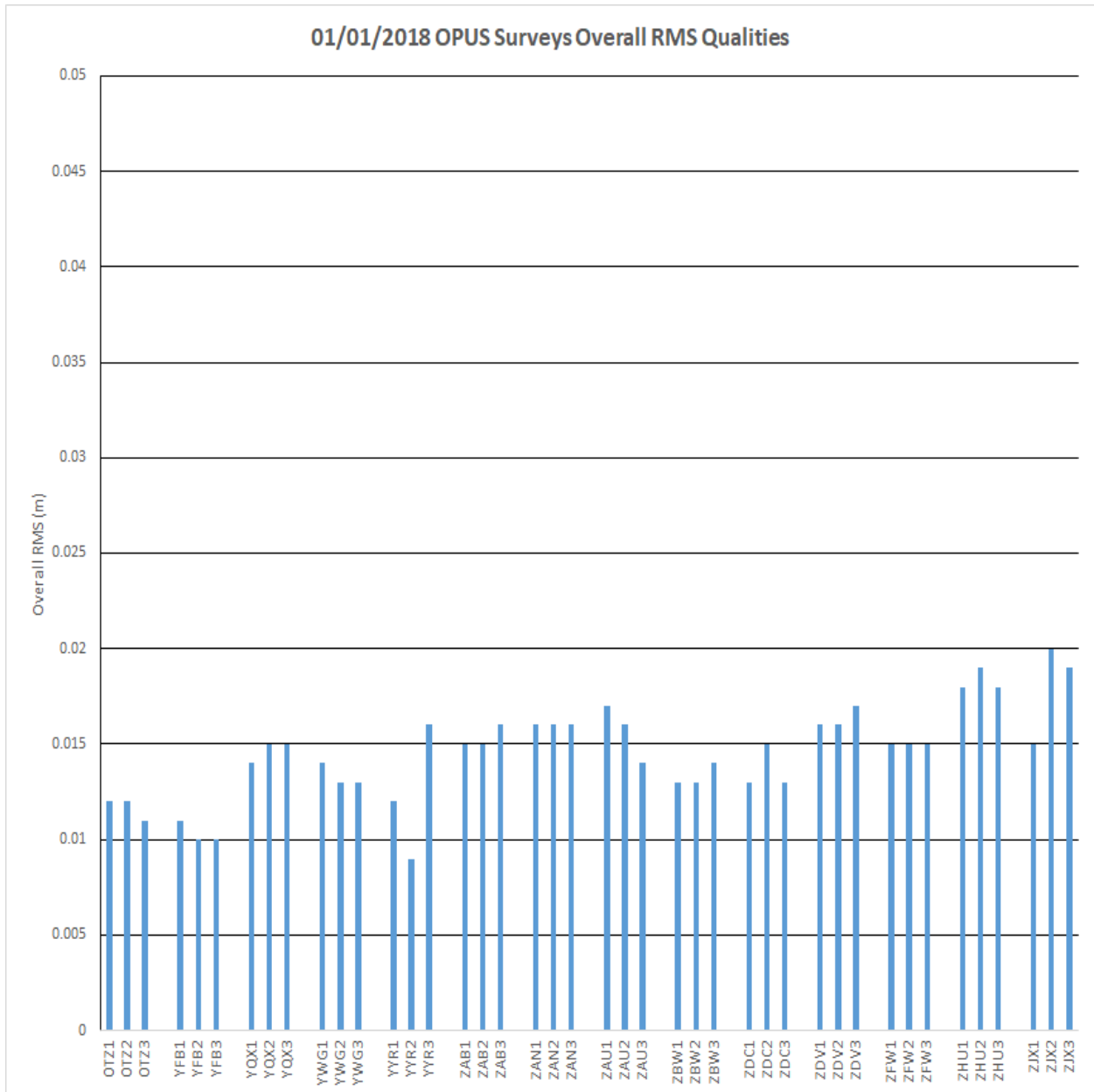
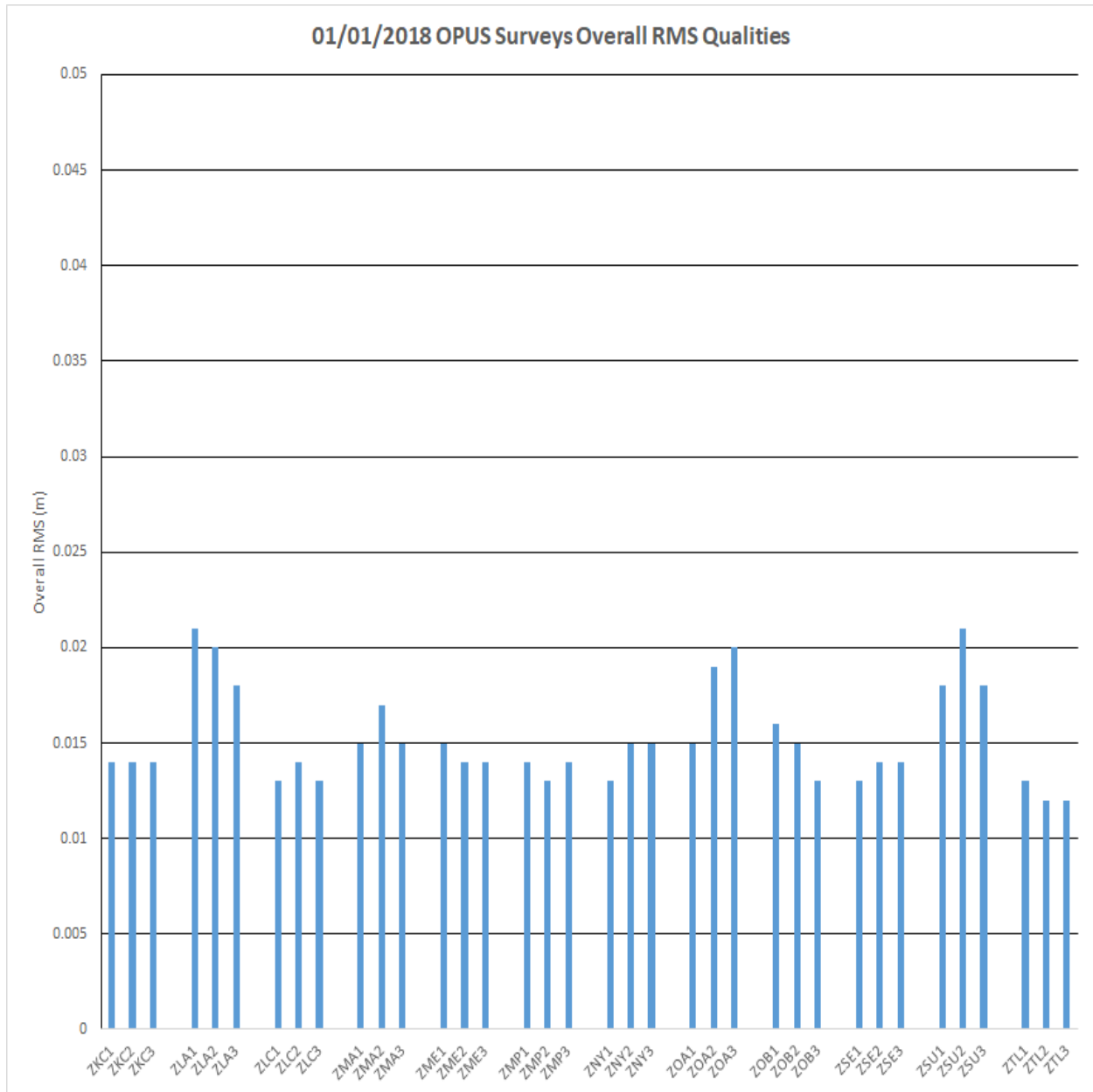


Figure 10-6 OPUS Survey Overall RMS Qualities



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

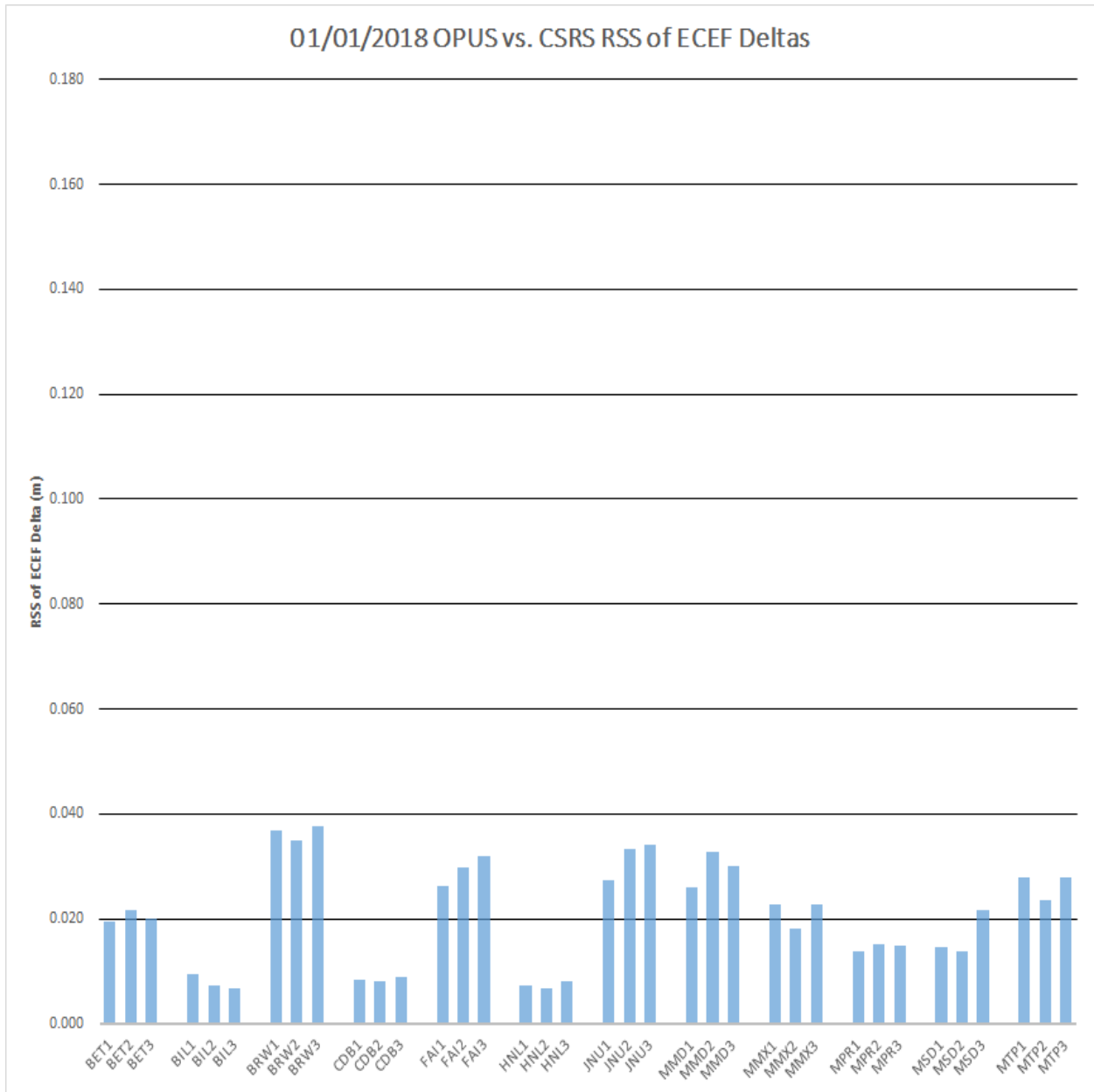


Figure 10-8 OPUS vs. CSRS RSS ECEF Deltas

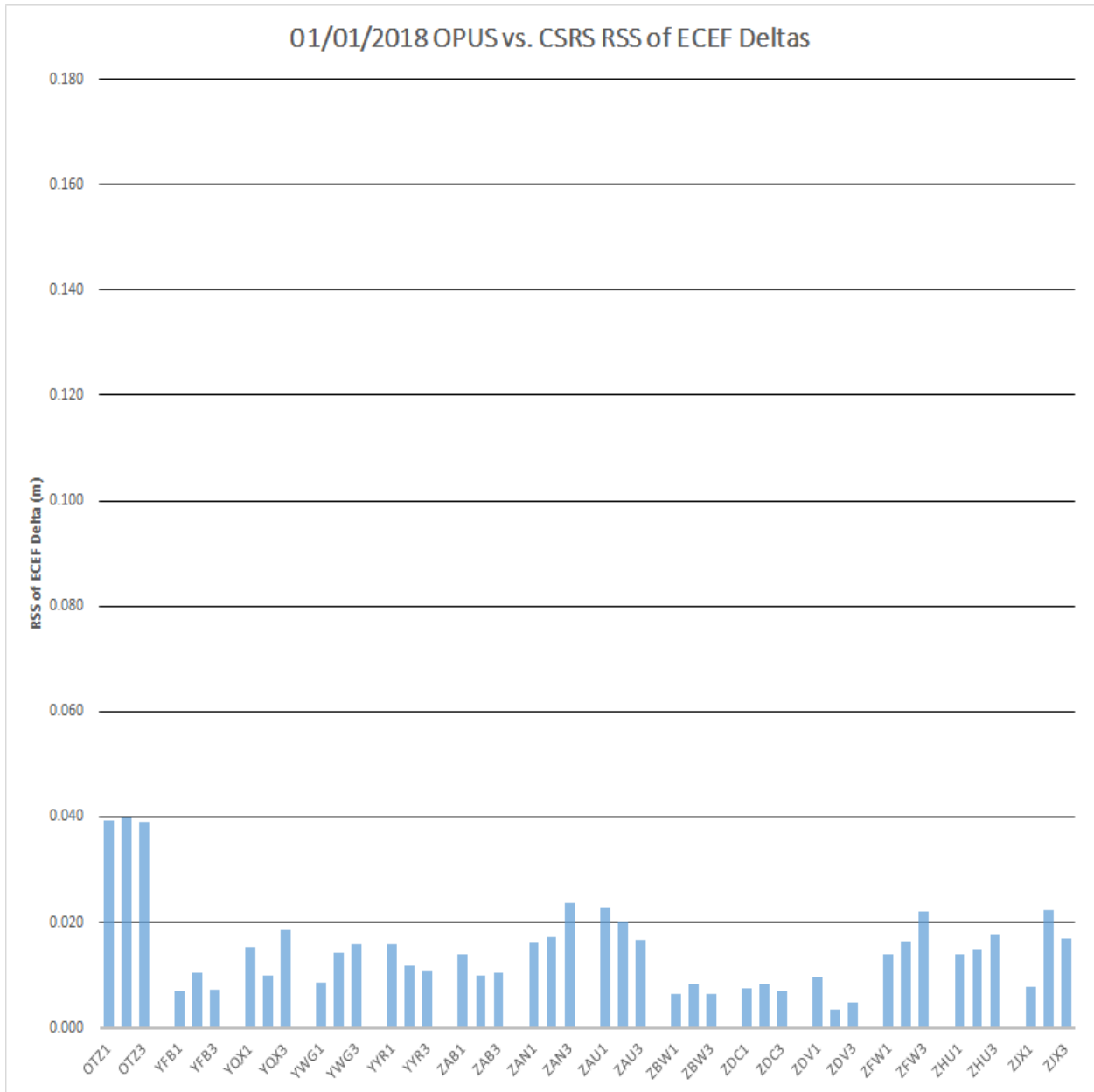


Figure 10-9 OPUS vs. CSRS RSS ECEF Deltas

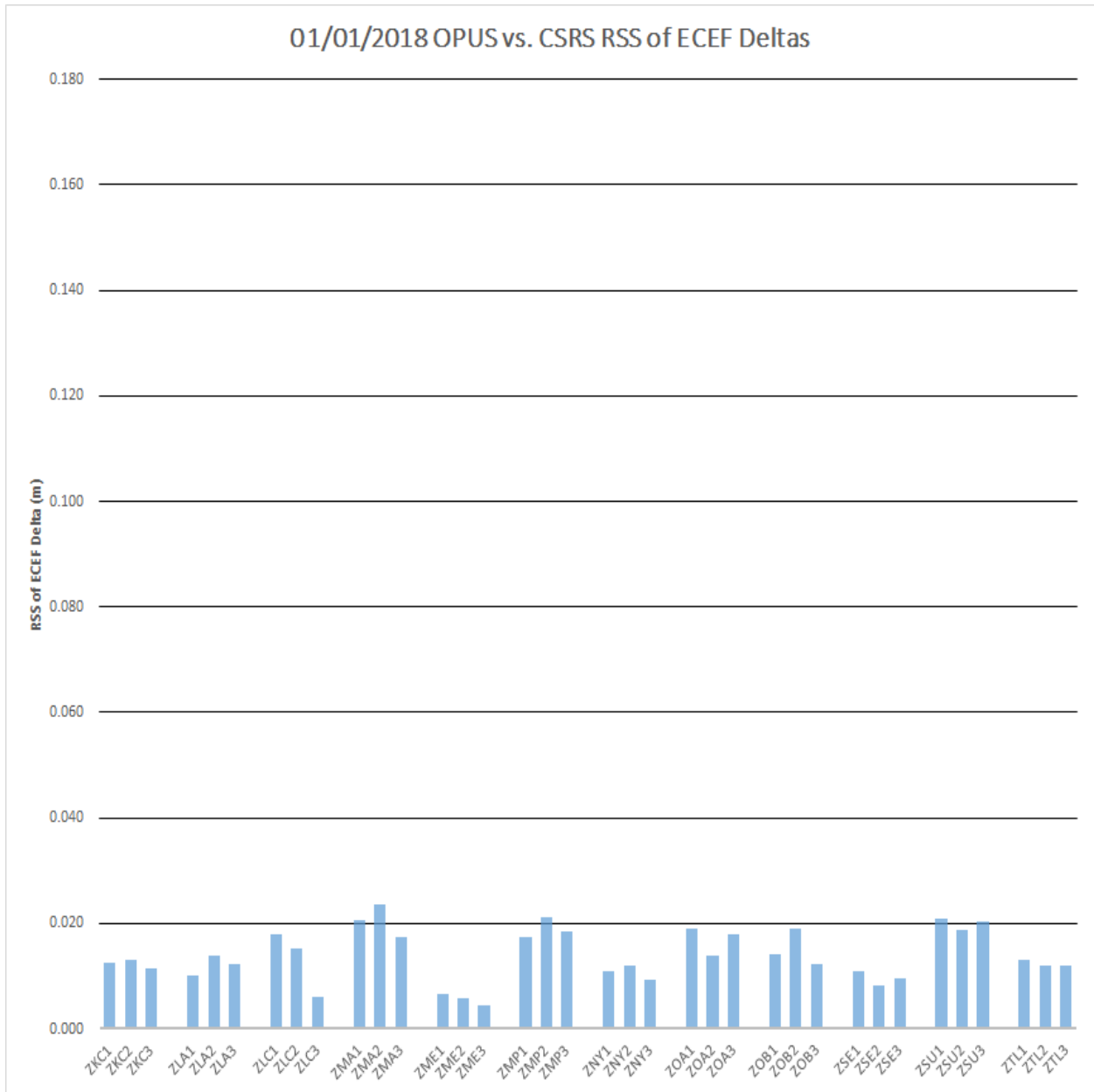


Figure 10-10 through Figure 10-12 show the RSS of the ECEF sigma's survey qualities reported by CSRS.

Figure 10-10 CSRS Survey Qualities

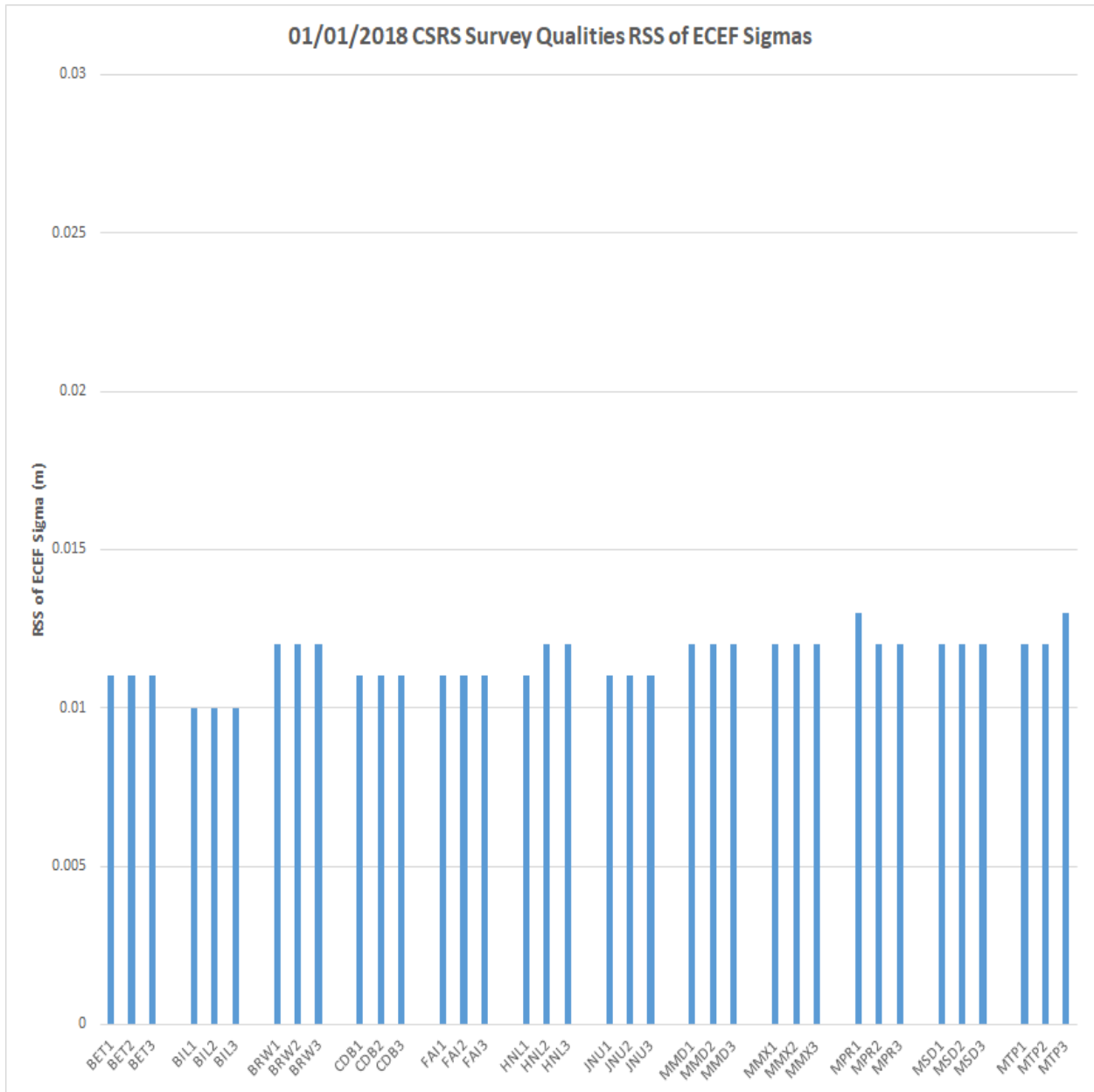


Figure 10-11 CSRS Survey Qualities

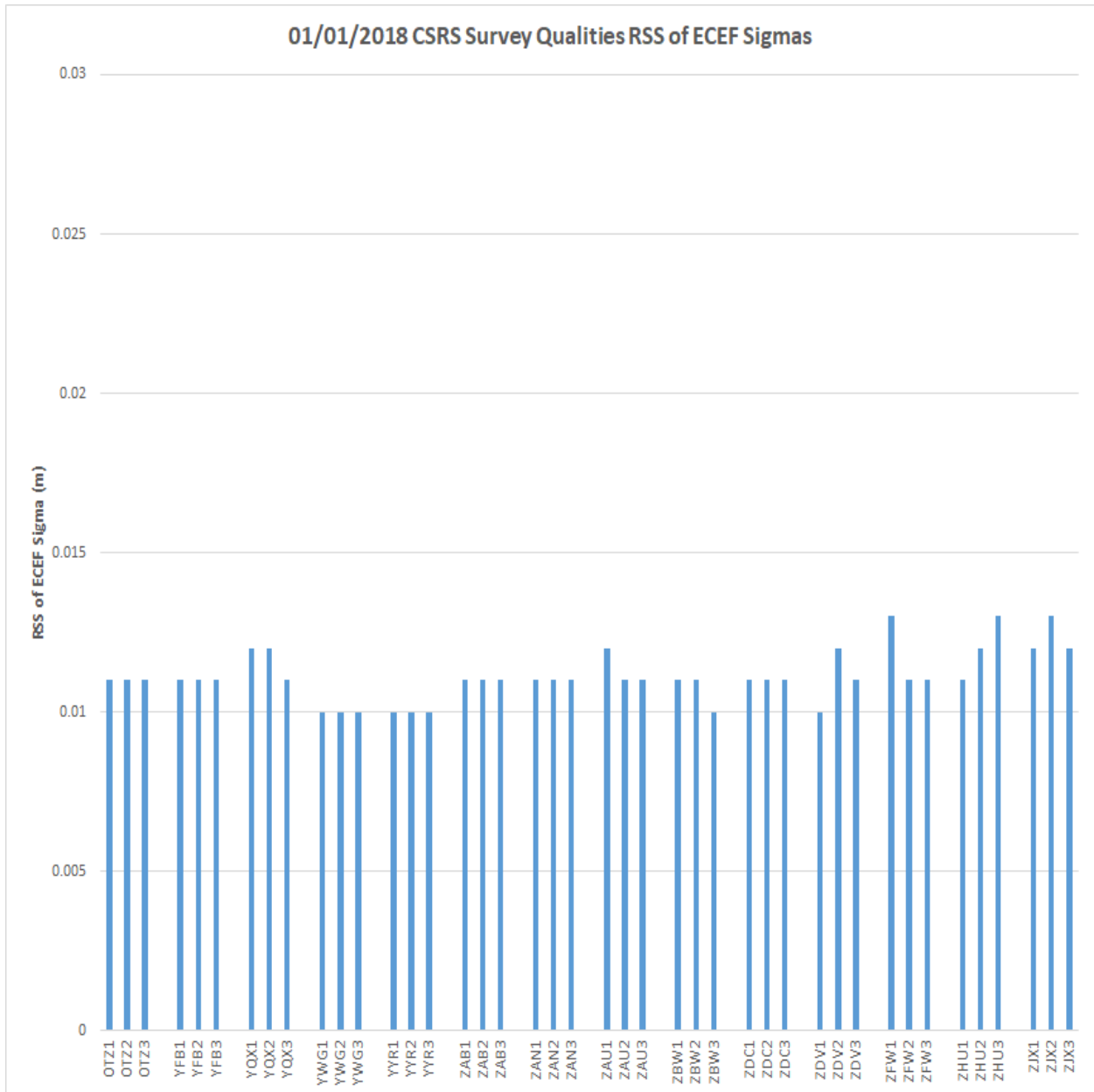
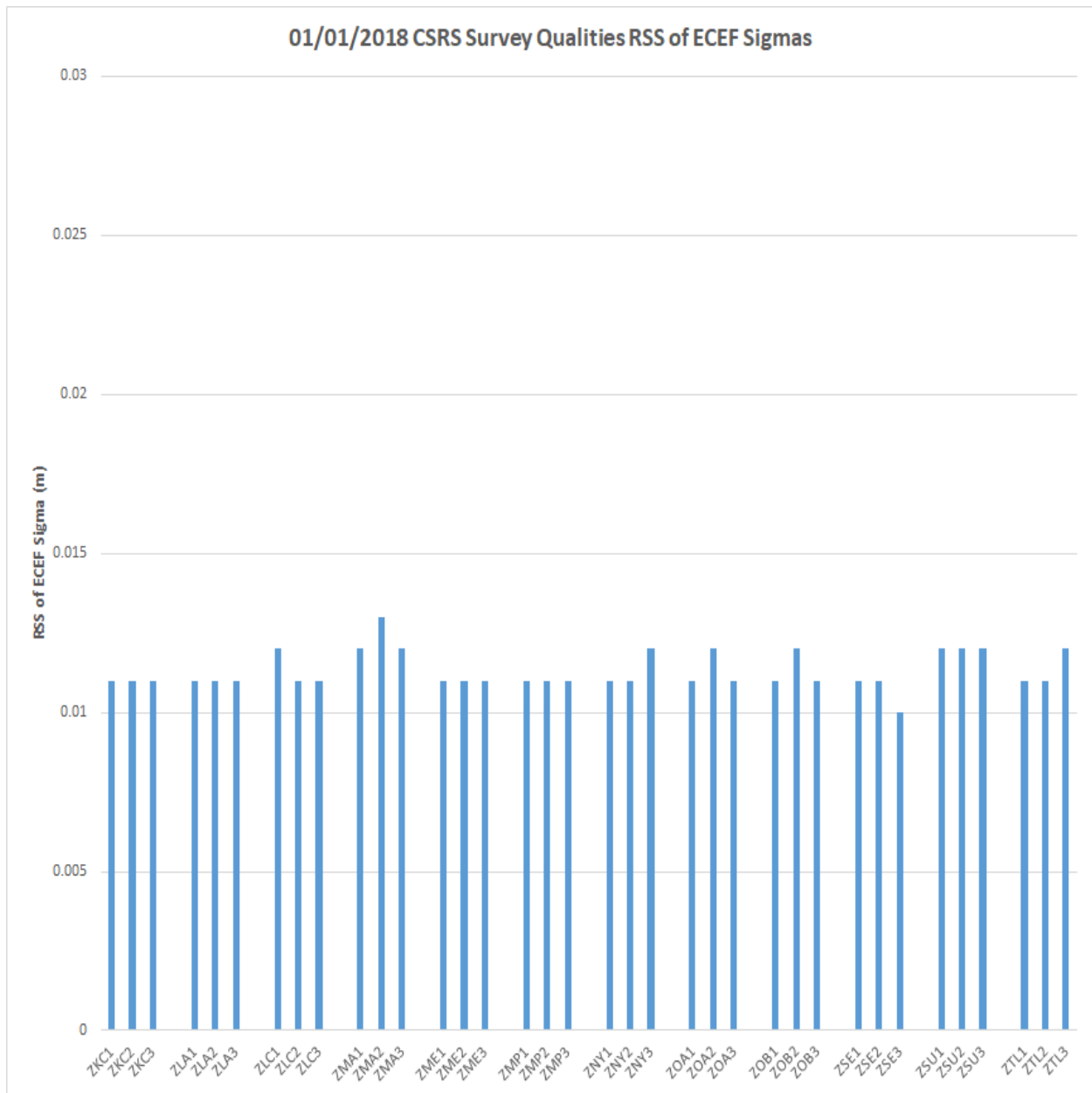


Figure 10-12 CSRS Survey Qualities



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.

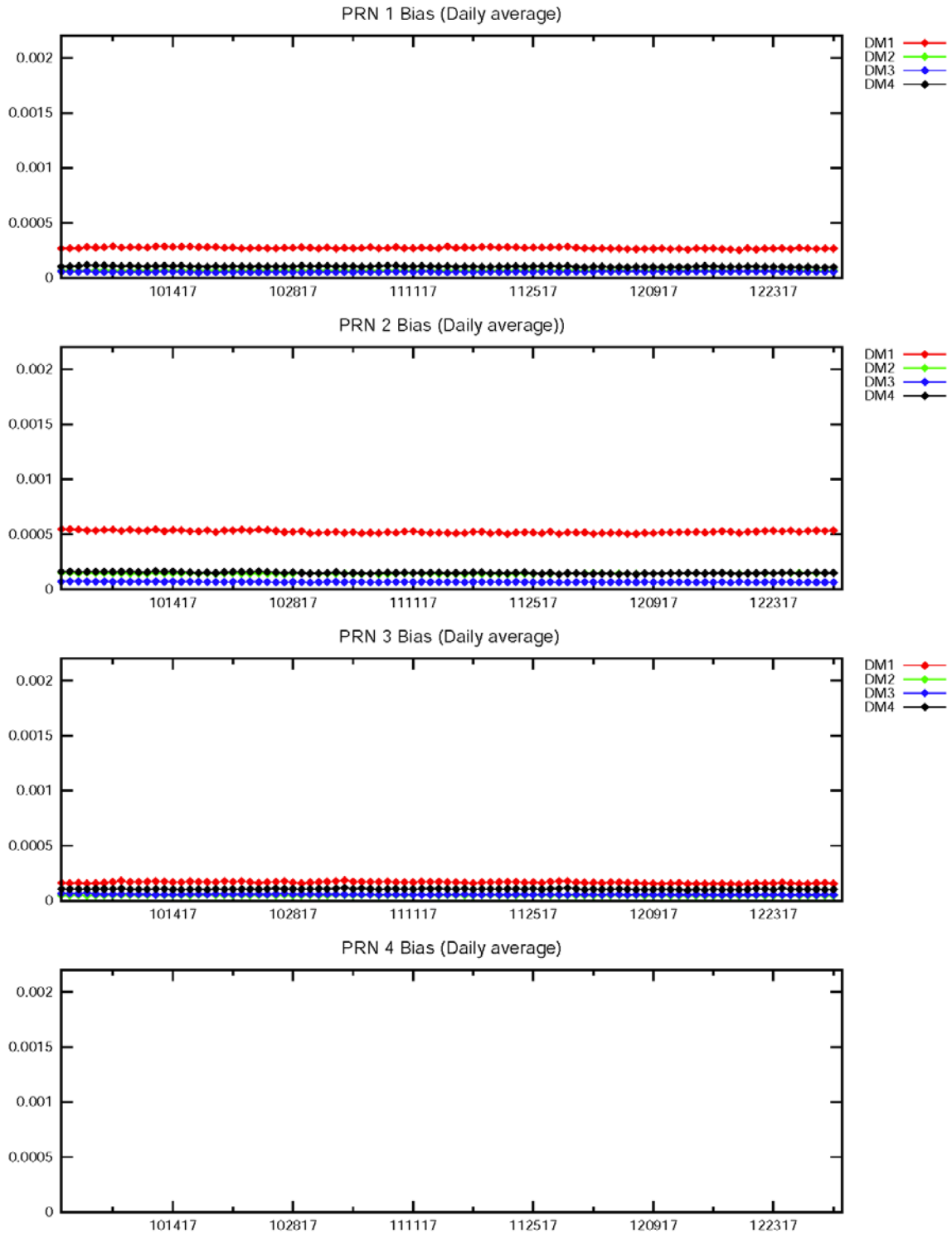
Table 11-2 Type Bias Average for the Quarter

Detection Metric	Type 0	Type 1	Type 2
DM 1	1.317170	1.319720	1.321410
DM 2	0.243281	0.246452	0.249506
DM 3	0.972736	0.973219	0.973774
DM 4	-0.188402	-0.189866	-0.191851

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

Detection Metric	Type 0	Type 1	Type 2
DM 1	1.320120	1.322240	1.32394
DM 2	0.241325	0.244555	0.247712
DM 3	0.973094	0.973611	0.974176
DM 4	-0.186687	-0.188422	-0.190454

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 followed: (1) the maximum average for DM1 is 0.0011319 observed on PRN-11, (2) the maximum average for DM2 is 0.0001931 observed on PRN-27, (3) the maximum average for DM3 is 0.0001967 observed on PRN-29, (4) the maximum average for DM4 is 0.0004777 observed on PRN-23.

Table 11-4 PRN Bias Average for the Quarter

PRN	DM 1	DM 2	DM 3	DM 4
1	0.0002727	0.0000666	0.0000554	0.0001046
2	0.0005240	0.0001455	0.0000669	0.0001508
3	0.0001667	0.0000492	0.0000569	0.0001057
4	offline	offline	offline	offline
5	0.0002013	0.0000586	0.0001307	0.0001221
6	0.0005440	0.0001047	0.0000845	0.0001049
7	0.0001615	0.0000979	0.0000581	0.0000916
8	0.0004465	0.0001260	0.0000935	0.0001432
9	0.0001941	0.0000516	0.0001374	0.0002232
10	0.0001755	0.0000498	0.0000790	0.0001667
11	0.0011319	0.0001819	0.0001053	0.0002650
12	0.0001564	0.0000469	0.0000851	0.0000964
13	0.0004857	0.0000391	0.0000539	0.0002477
14	0.0007493	0.0001339	0.0000456	0.0001691
15	0.0002368	0.0000699	0.0000450	0.0000956
16	0.0001510	0.0000603	0.0001191	0.0002306
17	0.0002059	0.0000521	0.0000459	0.0000893
18	0.0007004	0.0001385	0.0001054	0.0002970
19	0.0005803	0.0001882	0.0000973	0.0001078
20	0.0001620	0.0000382	0.0000501	0.0001337
21	0.0003429	0.0000591	0.0000881	0.0004450
22	0.0001585	0.0000401	0.0000939	0.0002662
23	0.0010543	0.0001908	0.0001194	0.0004777
24	0.0002298	0.0000644	0.0001530	0.0002503
25	0.0005884	0.0001089	0.0000448	0.0002124
26	0.0002486	0.0001085	0.0000561	0.0001366
27	0.0004664	0.0001931	0.0001333	0.0002672
28	0.0002936	0.0000376	0.0000740	0.0001346
29	0.0002404	0.0000786	0.0001967	0.0003349
30	0.0002203	0.0000713	0.0000723	0.0000958
31	0.0003335	0.0001227	0.0000499	0.0001639
32	0.0001866	0.0000529	0.0000860	0.0001067

Figure 11-2 PRN Bias Average for the Quarter

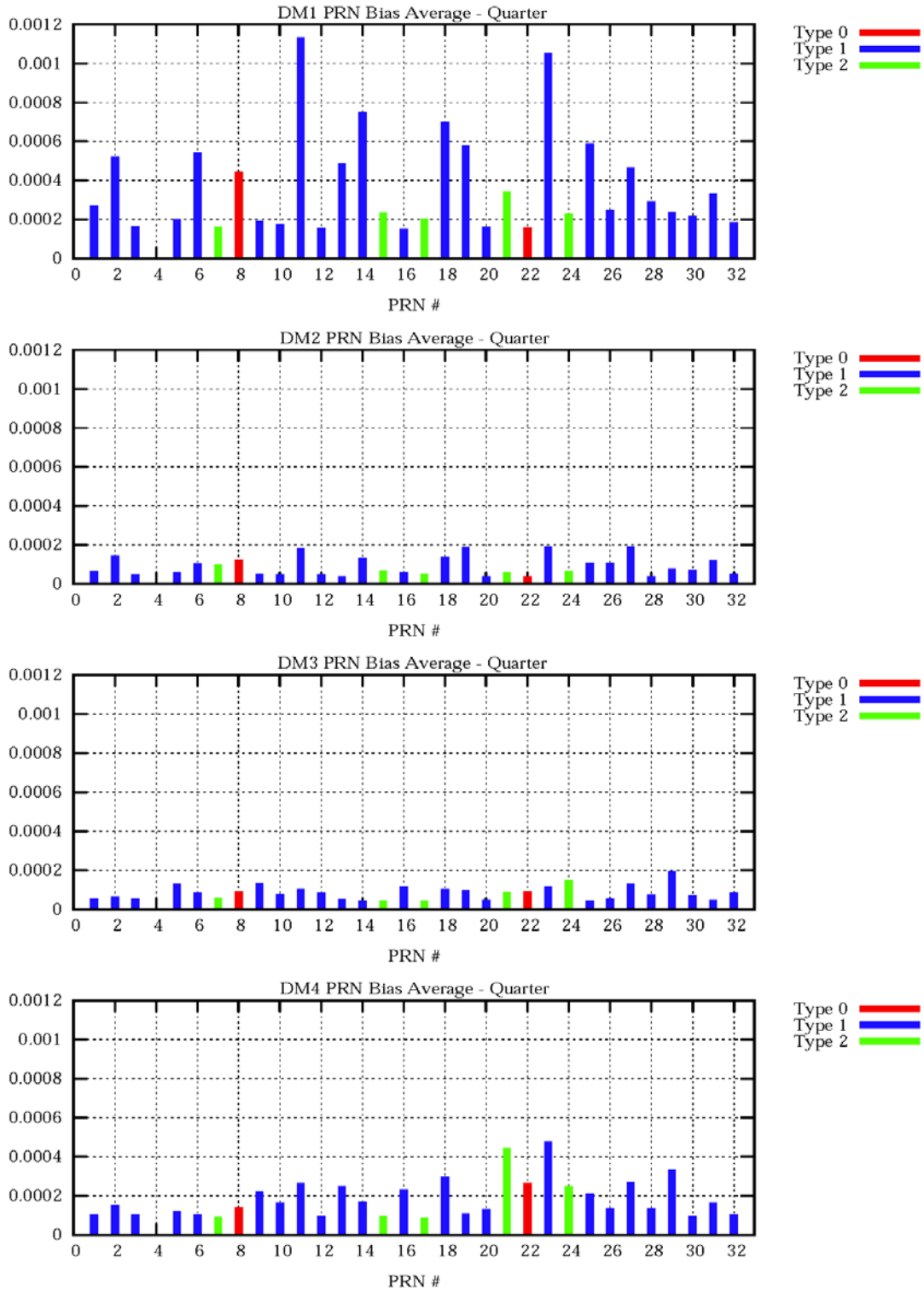


Figure 11-3 through Figure 11-10 show the daily PRN bias for each PRN for four detection metrics. Small bumps were due to NANU's.

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

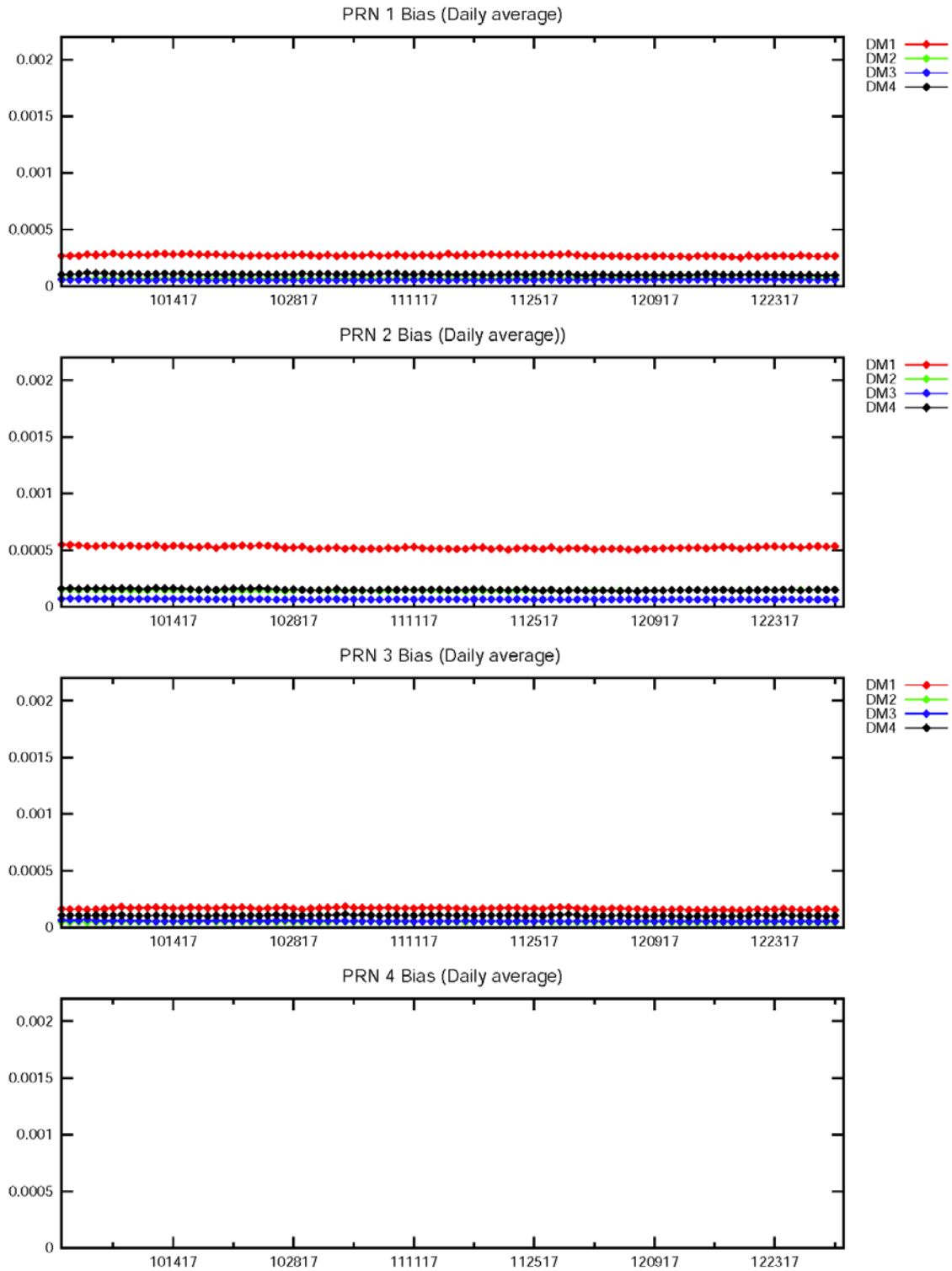


Figure 11-4 PRN Bias Average Trend (PRN-5 – PRN-8)

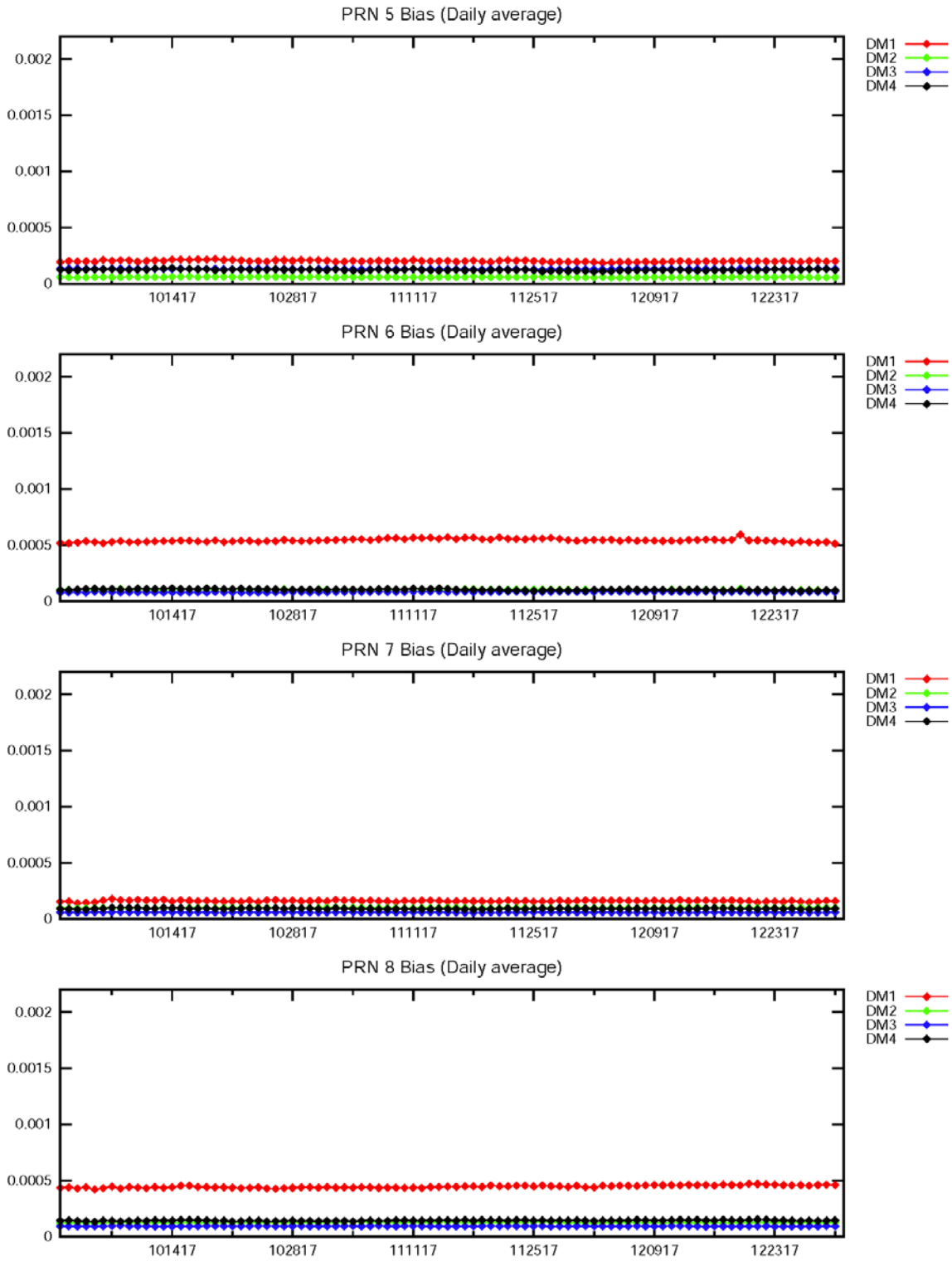


Figure 11-5 PRN Bias Average Trend (PRN-9 – PRN-12)

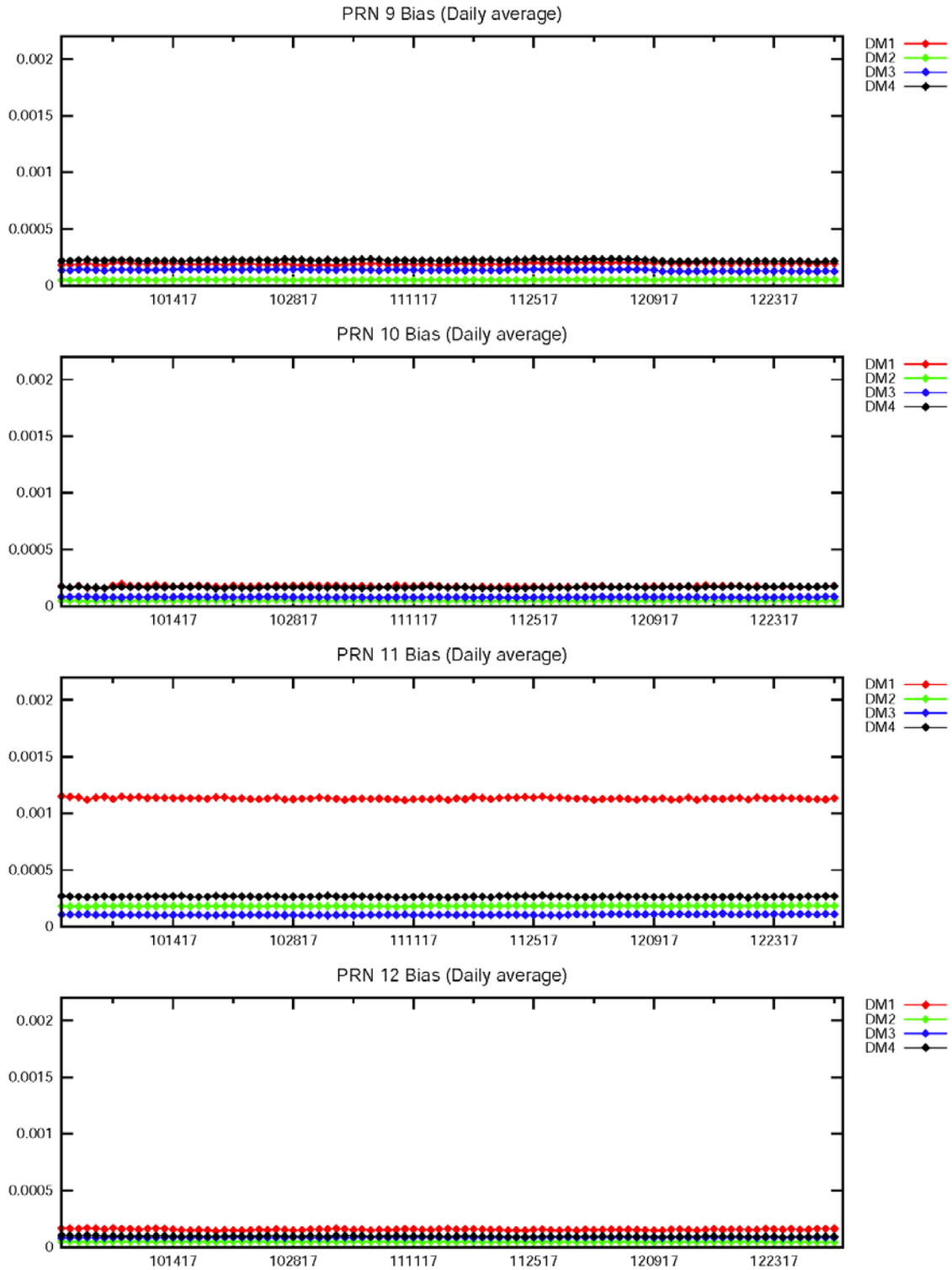


Figure 11-6 PRN Bias Average Trend (PRN-13 – PRN-16)

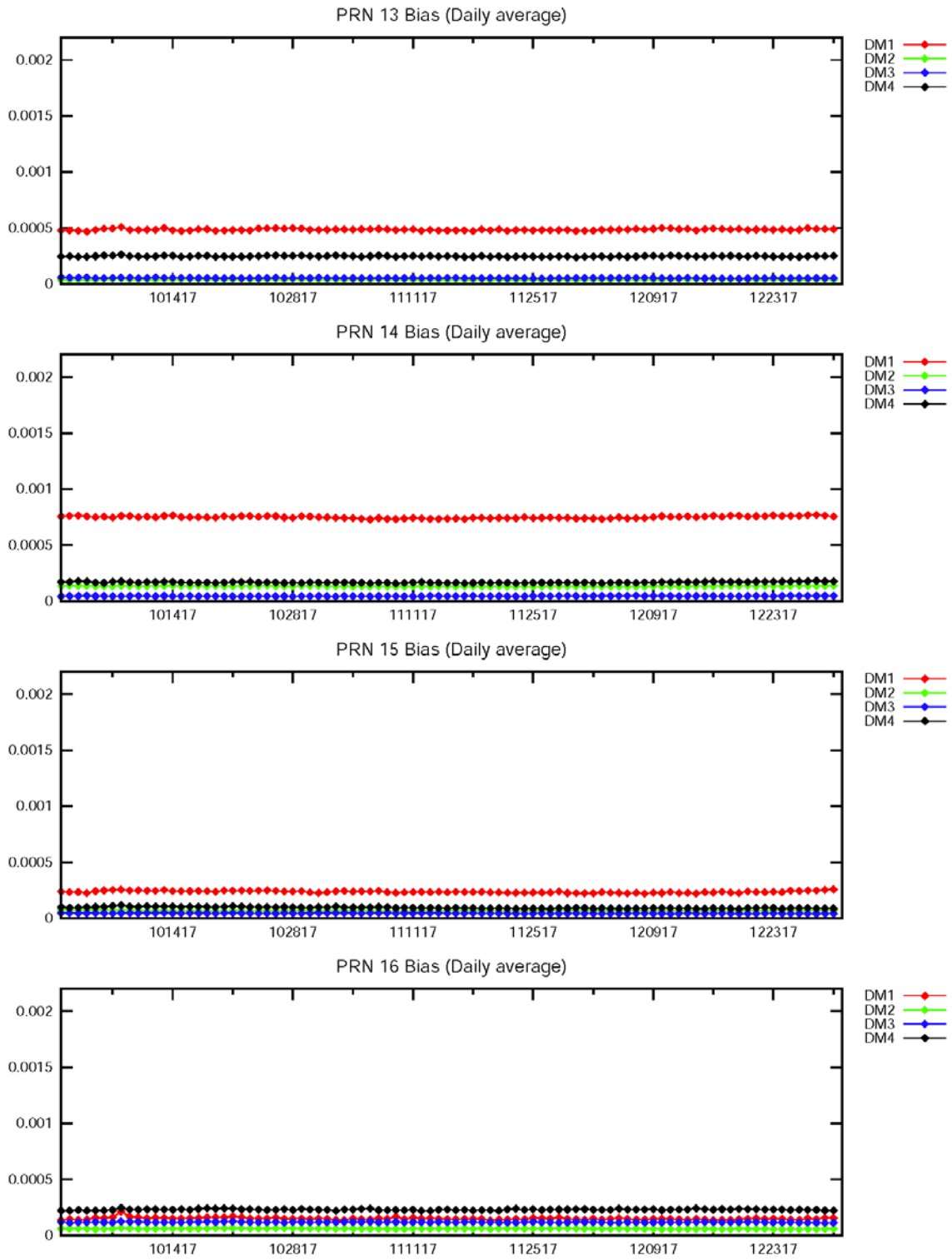


Figure 11-7 PRN Bias Average Trend (PRN-17 – PRN-20)

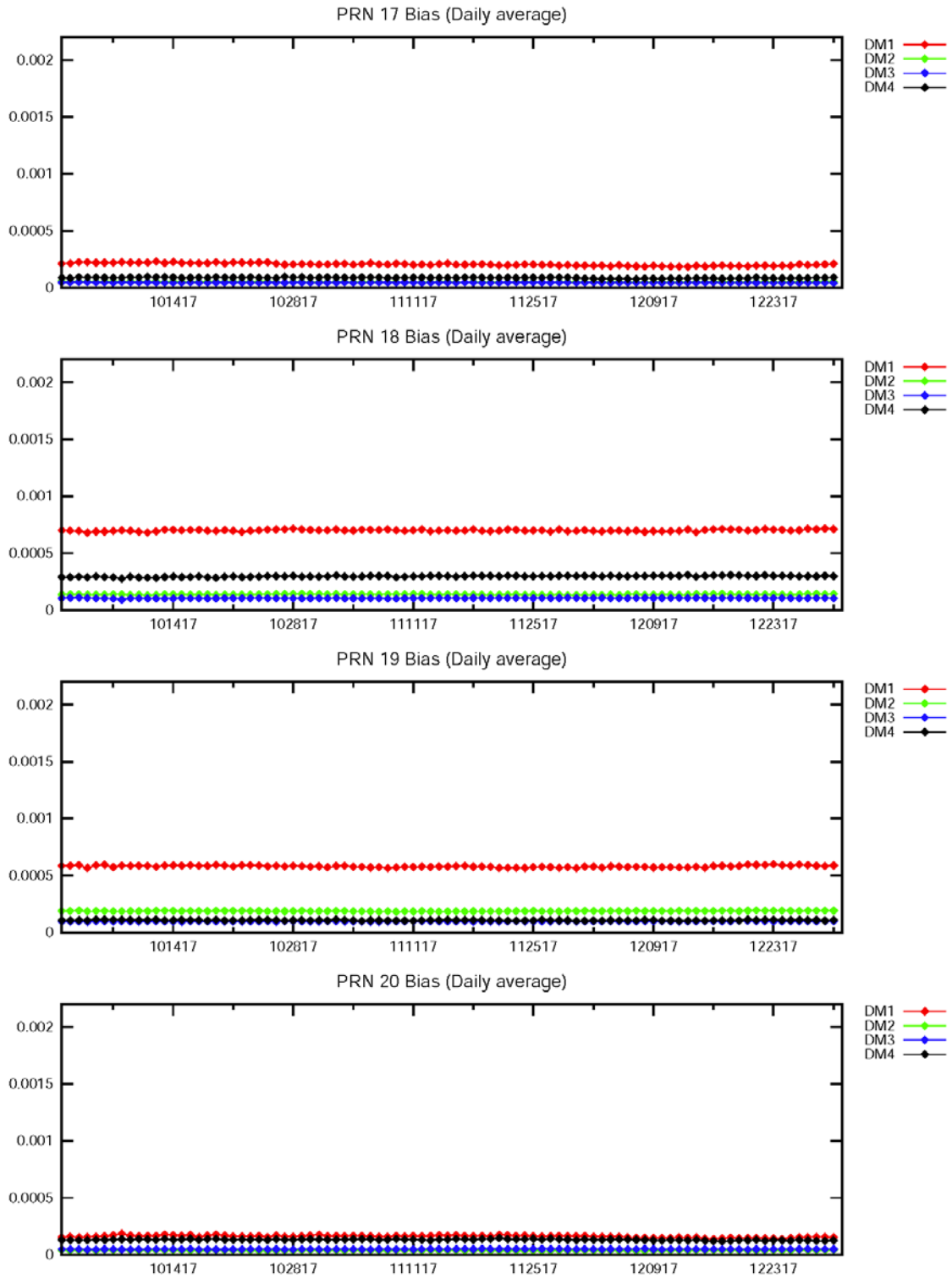


Figure 11-8 PRN Bias Average Trend (PRN-21 – PRN-24)

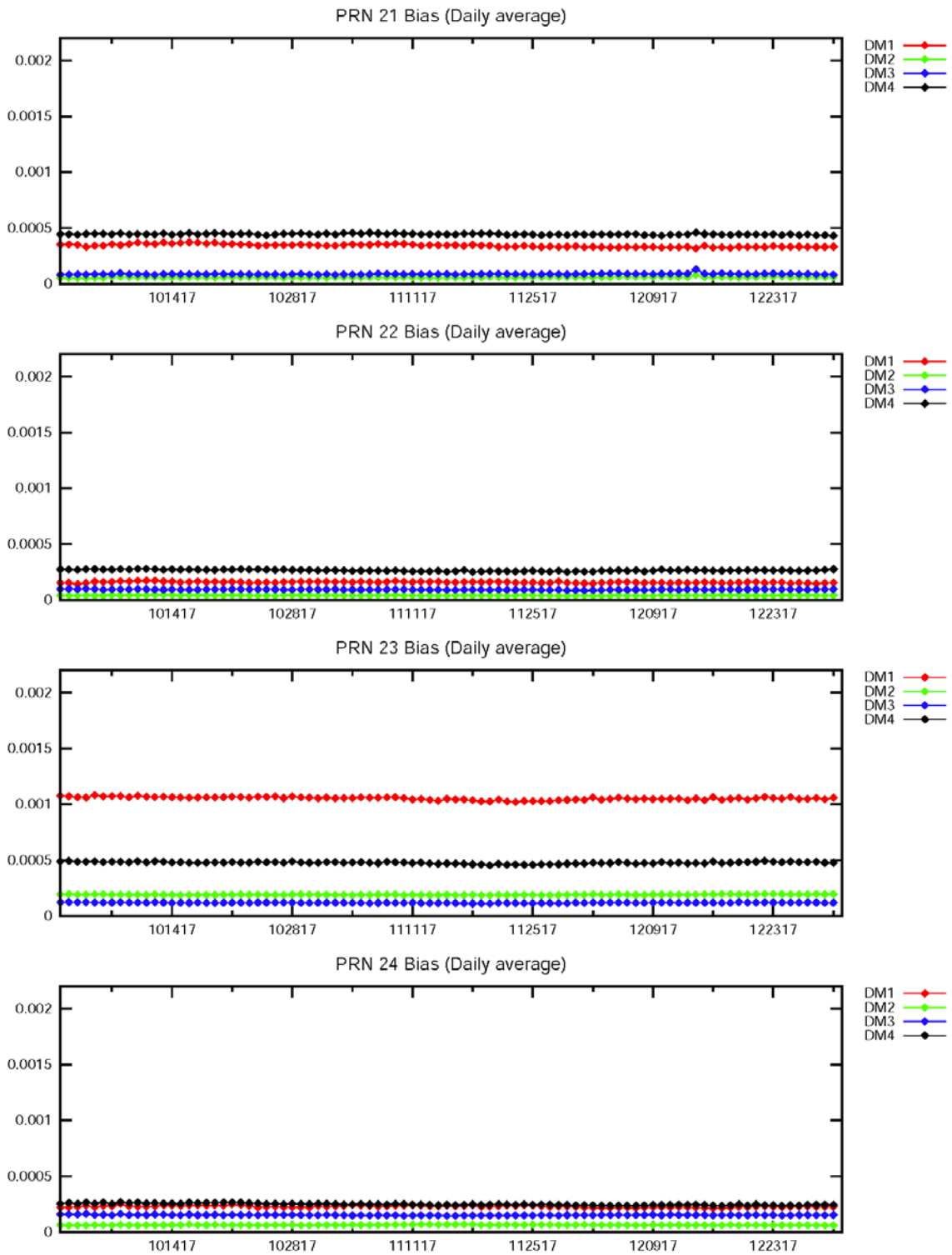


Figure 11-9 PRN Bias Average Trend (PRN-25 – PRN-28)

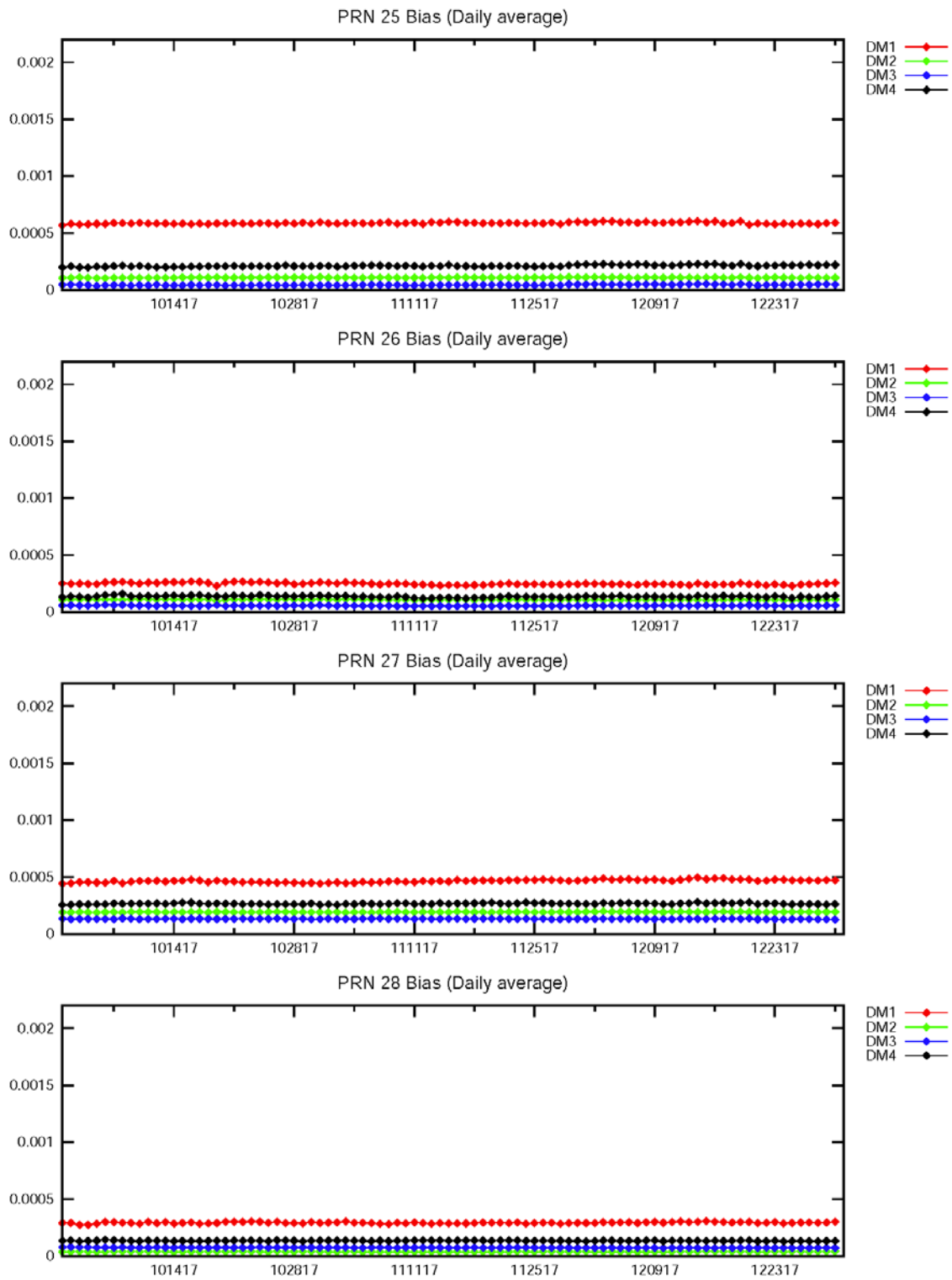
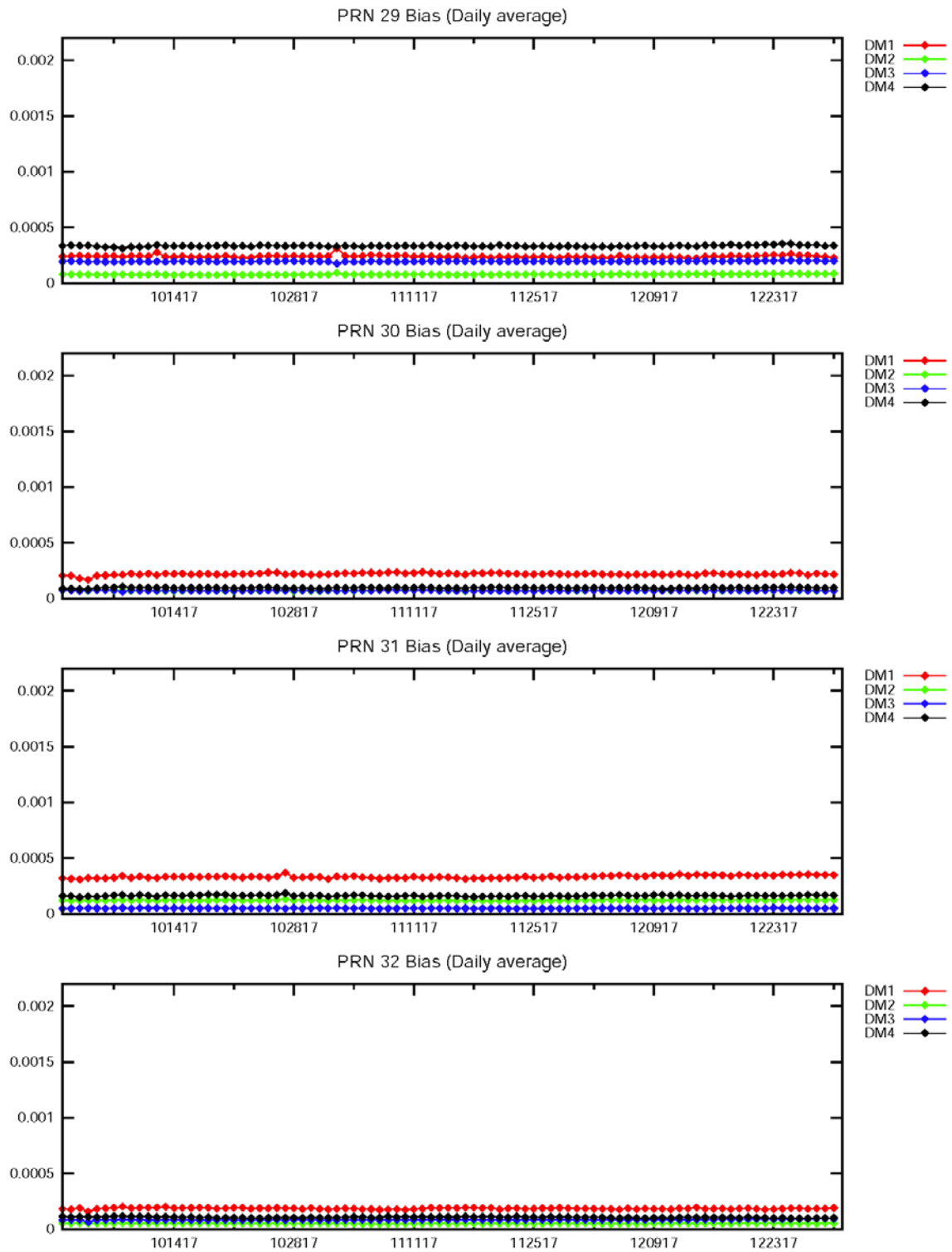


Figure 11-10 PRN Bias Average Trend (PRN-29 – PRN-32)



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.

AMR. GEO PRN-133

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 $1-10^{-7}$ 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. Ionospheric 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 $1-10^{-7}$ 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

WAAS 98% LP Coverage Contours
October 1 - December 31, 2017

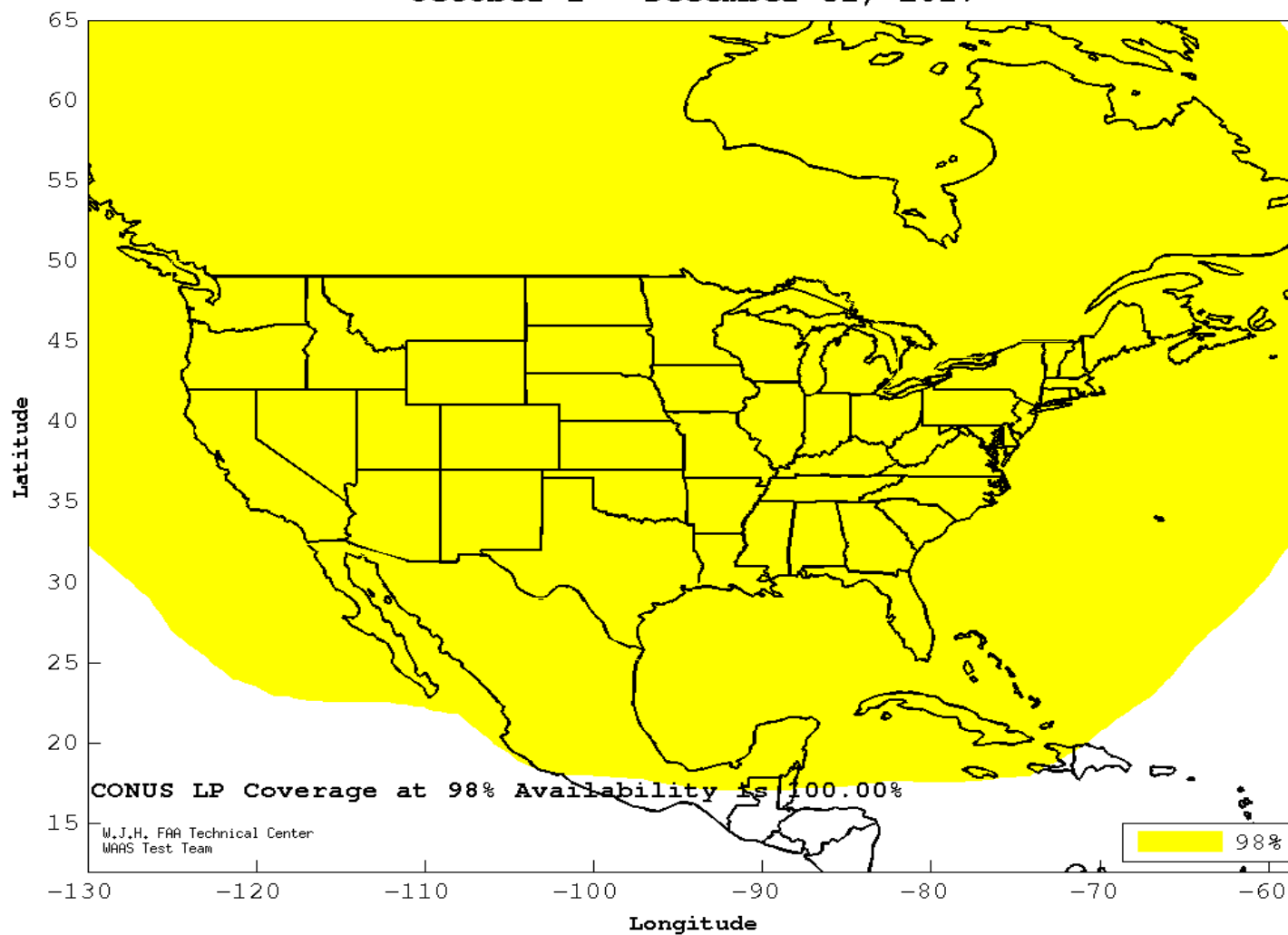


Figure B-2 98% Alaska LP Availability Contour

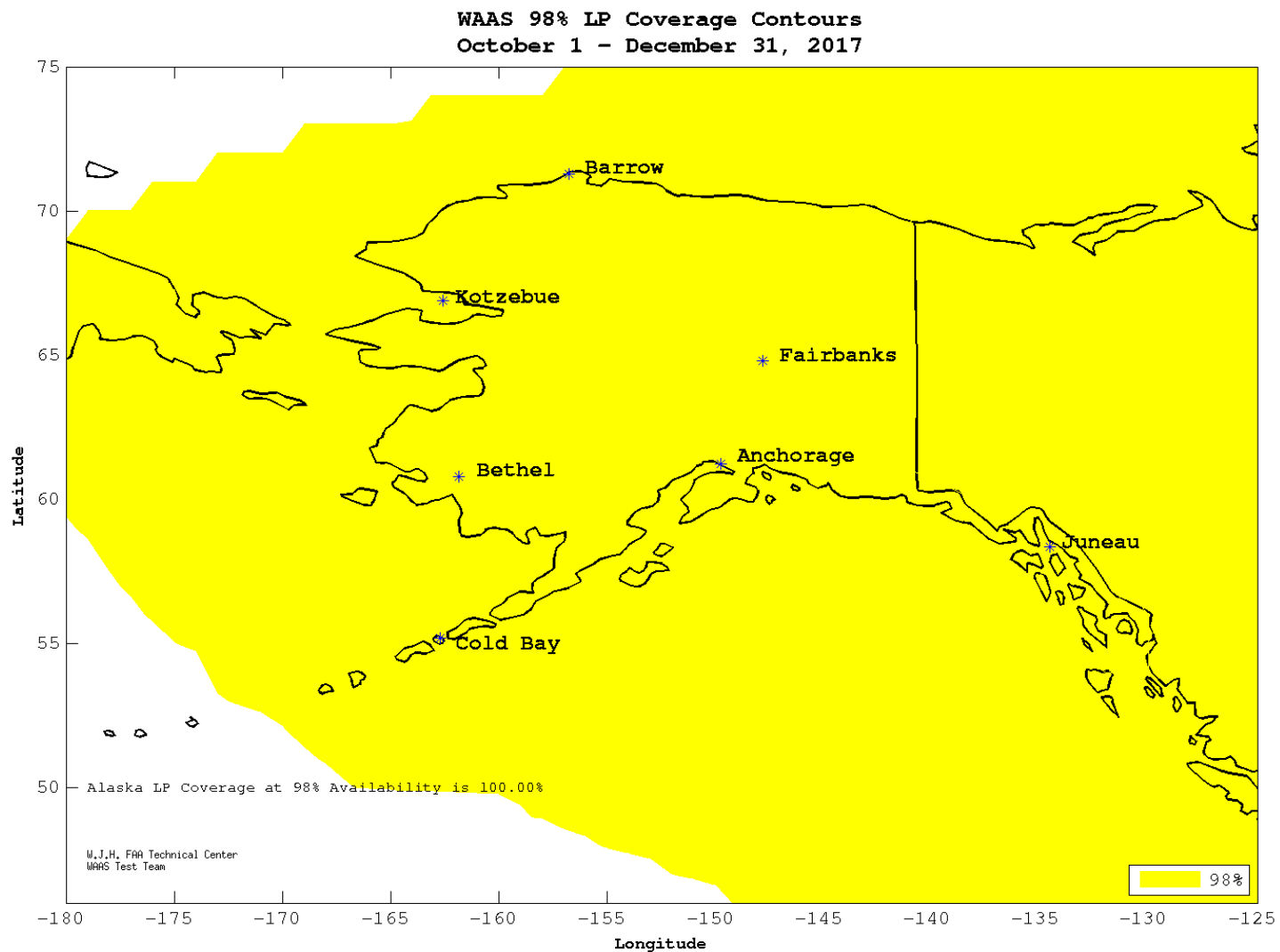


Figure B-3 98% CONUS LPV Availability Contour

**WAAS 98% LPV Coverage Contours
October 1 - December 31, 2017**

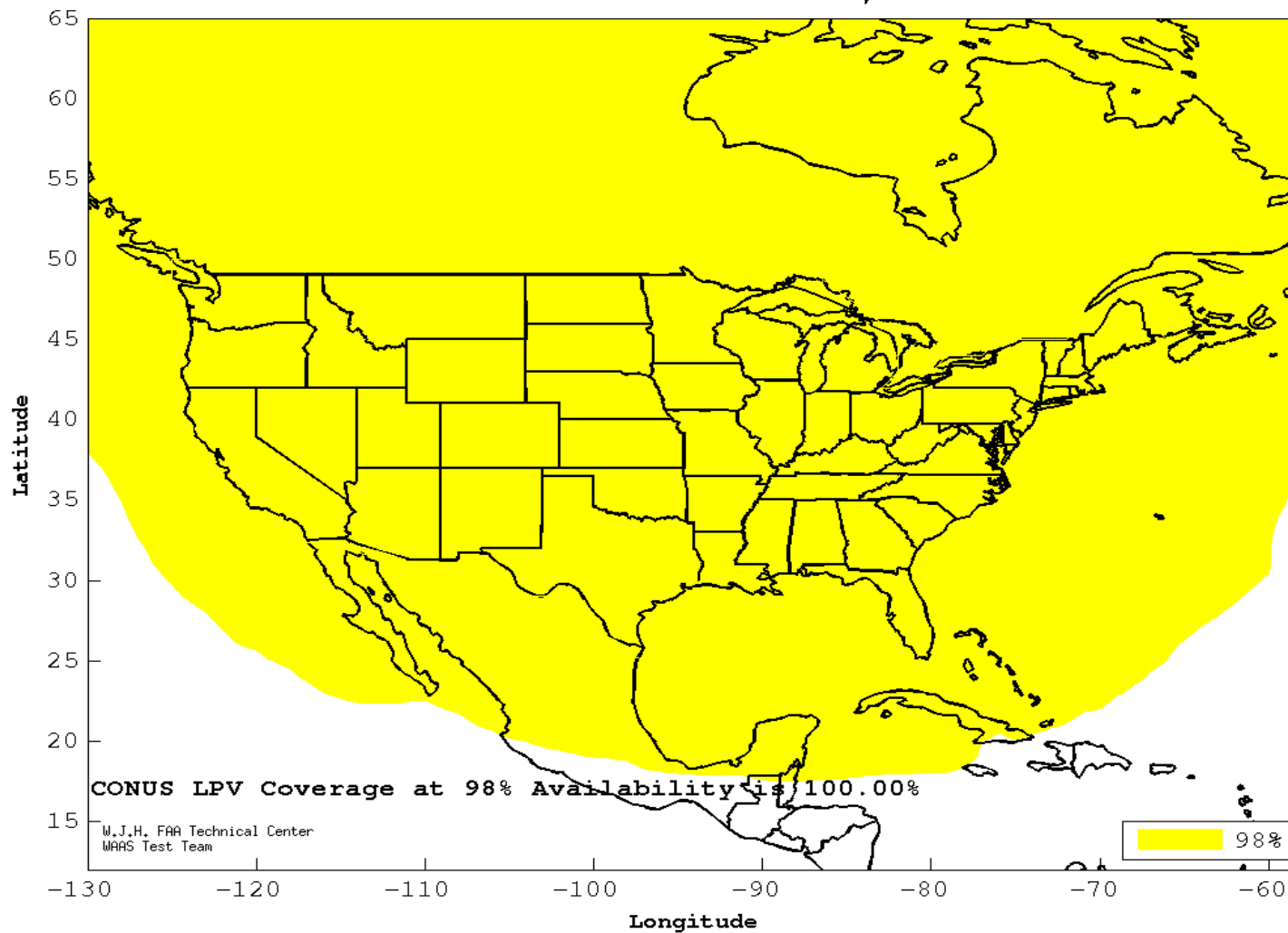


Figure B-4 98% Alaska LPV Availability Contour

**WAAS 98% LPV Coverage Contours
October 1 - December 31, 2017**

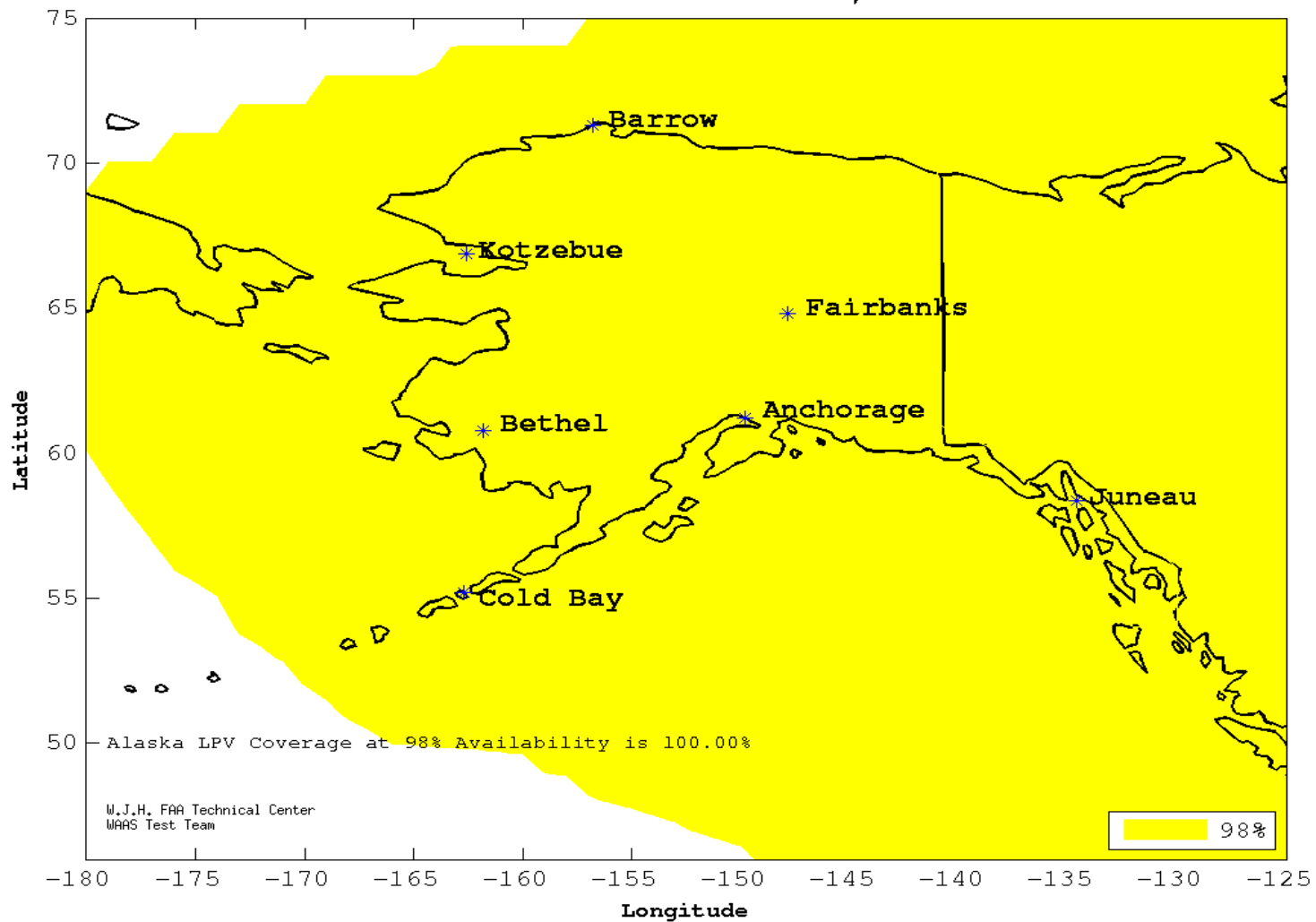


Figure B-5 98% CONUS LPV200 Availability Contour

WAAS 99% LPV200 Coverage Contours
October 1 - December 31, 2017

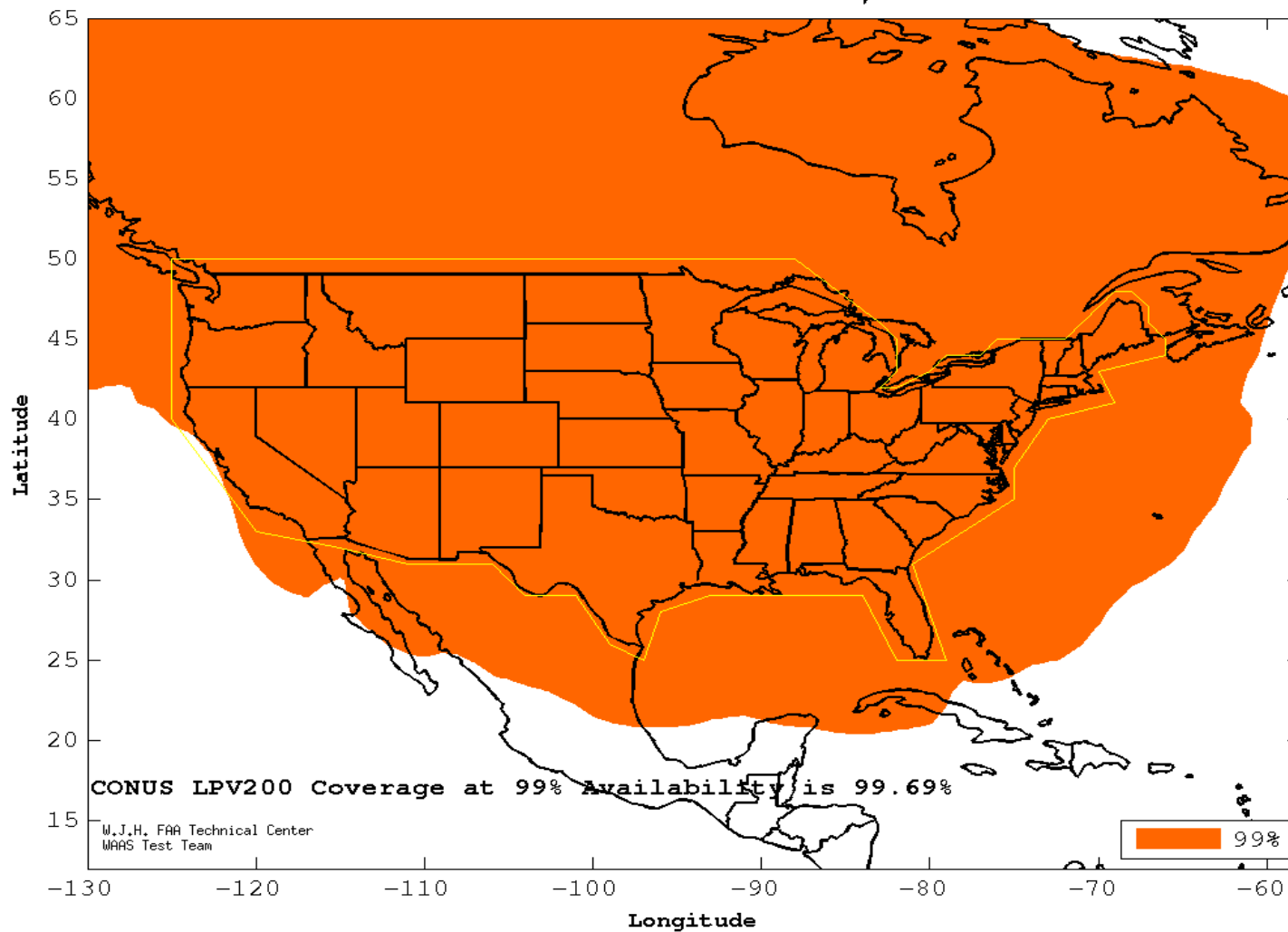


Figure B-6 98% Alaska LPV200 Availability Contour

WAAS 99% LPV200 Coverage Contours
October 1 - December 31, 2017

