Satellite Navigation Branch, ANG-E66
NSTB/WAAS T&E Team

WIDE AREA AUGMENTATION SYSTEM PERFORMANCE ANALYSIS REPORT

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FAA William J. Hughes Technical Center
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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 #91 provides WAAS performance data from the October 01 through December 31, 2024 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)	Arcata 1.353 meters	Memphis 0.679 meters	Juneau 1.233 meters	Bethel 0.828 meters
95% Vertical Accuracy (VPL <= 50 meters)	Miami 2.224 meters	Salt Lake City 0.981 meters	Barrow 2.199 meters	Juneau 1.392 meters
LP Availability (HPL <= 40 meters)	Memphis 99.18%	Grand Forks 98.63%	Cold Bay 98.68%	Barrow 95.98%
LPV Availability (HPL <= 40 meters & VPL <= 50 meters)	Memphis 99.17%	Grand Forks 98.56%	Cold Bay 98.57%	Barrow 95.62%
LPV200 Availability (HPL <= 40 meters & VPL <= 35 meters)	Memphis 99.16%	Seattle 98.38%	Cold Bay 97.99%	Barrow 94.13%
99% HPL	Bangor 96. 257 meters	Memphis 13.436 meters	Barrow 83.119 meters	Bethel 77.257 meters
99% VPL	Elko 133.218 meters	Washington, DC 24.509 meters	Barrow 151.327 meters	Cold Bay 117.197 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) 131 (SM9), 133 (S15), and 135 (G30). SM9, S15 and G30 GEOs provide a precision approach (PA) ranging capability that supports all levels of WAAS 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 <= 556 m
RNP 0.1	NPA	HPL <= 185 m
LNAV	NPA	HPL <= 556 m
LNAV/VNAV	PA	HPL <= 556 m VPL <= 50 m
LP	PA	HPL <= 40 m
LPV	PA	HPL <= 40 m VPL <= 50 m
LPV200	PA	HPL <= 40 m VPL <= 35 m

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

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

Table 1-2 PA Evaluation Sites

Location	Number of Days Evaluated	Number of Samples
NSTB:		
Arcata	75	6461619
Atlantic City	90	7797699
Bangor	71	6175540
Elko	66	5726866
Grand Forks	72	6221777
Oklahoma City	68	5860682
WAAS:		
Albuquerque	92	7942060
Anchorage	92	7944719
Atlanta	92	7946457
Barrow	92	7938164
Bethel	92	7943606
Billings	92	7945747
Boston	92	7946109
Chicago	92	7943230
Cleveland	92	7930456
Cold Bay	92	7942451
Dallas	92	7944009
Denver	92	7942564
Fairbanks	92	7945298
Gander	92	7940871
Goose Bay	92	7944183
Houston	92	7941506
Iqaluit	76	6596265
Jacksonville	92	7942820
Juneau	92	7936411
Kansas City	92	7943369
Kotzebue	92	7921503
Los Angeles	92	7942708
Memphis	92	7946012
Merida	90	7773933
Mexico City	90	7796779
Miami	92	7938769
Minneapolis	92	7946546
New York	92	7945450

Location	Number of Days Evaluated	Number of Samples
Oakland	92	7938303
Puerto Vallarta	85	7382848
Salt Lake City	92	7943779
San Jose Del Cabo	81	6994253
Seattle	92	7941813
Washington, DC	92	7945159
Winnipeg	92	7945926

Table 1-3 NPA Evaluation Site

Location	Number of Days Evaluated	Number of Samples
Albuquerque	92	7946661
Anchorage	92	7946932
Atlanta	92	7946892
Barrow	92	7944380
Bethel	92	7944871
Billings	92	7946393
Boston	92	7946893
Cleveland	92	7946881
Cold Bay	92	7942999
Fairbanks	92	7946550
Gander	92	7946508
Honolulu	92	7946753
Houston	92	7946896
Iqaluit	77	6657332
Juneau	92	7946905
Kansas City	87	7480807
Kotzebue	92	7923382
Los Angeles	92	7946937
Merida	79	6804620
Miami	92	7910486
Minneapolis	92	7946933
Oakland	92	7946933
Salt Lake City	92	7946930
San Jose Del Cabo	85	7304420
San Juan	92	7946262
Seattle	92	7946926

Tapachula	79	6794325
Washington, DC	92	7946930

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 Specification FAA-E-2892.

Table 1-4 WAAS Performance Parameters

Performance Parameter	Expected WAAS Performance
LPV Accuracy Horizontal	≤1.5 m error 95% of the time
LPV Accuracy Vertical	≤2 m error 95% of the time
LNAV Accuracy Horizontal	≤36 m 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 <556 m
Availability LNAV Alaska	99.9% availability with HPL <556 m
Availability En Route OCONUS	99.9% availability with HPL <2 nmi
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
10/1/2024	10/1/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_Alaska, LPV200_Canada	Geomagnetic activity (KP = 2.33) disturbed the ionoshere causing elevated GIVE values. This resulted in moderate degradation of: (1) LPV service coverage in Canada from 05:00 UTC to 07:00 UTC; (2) LPV200 service coverage in Canada from 05:00 UTC to 18:30 UTC on 10/1/24. The elevated GIVE values also caused minor degradation of LPV200 service coverage in Alaska from 05:00 UTC to 09:30 UTC. Please see plot(s): LPV_10/1/2024 LPV200_10/1/2024 Cov_vs_Time_Alaska_10/1/2024 Cov_vs_Time_Canada_10/1/2024
10/2/2024	10/2/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_CONUS, LPV_Canada, LPV200_CONUS, LPV200_Canada	Geomagnetic activity (KP = 2.67) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of LPV200 service coverage in Canada from 03:00 UTC to 03:15 UTC, 13:35 UTC to 13:50 UTC, 20:00 UTC to 20:20 UTC, and from 21:15 UTC to 22:30 UTC. The elevated GIVE values also caused moderate degradation of: (1) LPV service coverage in Canada from 00:10 UTC to 00:30 UTC; (2) LPV200 service coverage in CONUS (AZ, NM, TX, FL) from 00:10 UTC to 01:00 UTC. The elevated GIVE values also caused minor degradation of LPV service coverage in CONUS (AZ, NM, TX, FL) from 00:15 UTC to 00:50 UTC. Please see plot(s): LPV_10/2/2024 LPV200_10/2/2024 Cov_vs_Time_Canada_10/2/2024 Cov_vs_Time_Conus_10/2/2024
10/3/2024	10/3/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_Alaska, LPV200_Canada	Geomagnetic activity (KP = 3) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of LPV200 service coverage in Canada from 13:42 UTC to 15:14 UTC, from 15:51 UTC to 19:24 UTC and from 20:16 UTC to 22:53 UTC. The elevated GIVE values also resulted in moderate degradation of: (1) LPV service coverage in Canada from 14:05 UTC to 14:40 UTC and from 20:26 UTC to 22:30 UTC; and (2) LPV200 service coverage in Alaska from 13:50 UTC to 14:34 UTC. Please see plot(s): LPV_10/3/2024 LPV200_10/3/2024 Cov_vs_Time_Alaska_10/3/2024 Cov_vs_Time_Canada_10/3/2024

10/4/2024	10/4/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_CONUS, LPV_Canada, LPV200_All	Geomagnetic activity (KP = 3.33) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of: (1) LPV service coverage in Canada from 03:00 UTC on 10/4 to 01:10 UTC on 10/5; (2) LPV200 service coverage in Canada from 17:30 UTC on 10/4 to 01:30 UTC on 10/5. The GIVE values also resulted in moderate degradation of LPV200 service in CONUS from 00:00 UTC to 18:10 UTC on 10/4. The GIVE values also resulted in minor degradation of: (1) LPV service coverage in CONUS from 00:30 UTC to 01:20 UTC, and (2) LPV200 service coverage in Alaska from 18:10 UTC to 22:40 UTC on 10/4. Please see plot(s): LPV_10/4/2024 LPV200_10/4/2024 Cov_vs_Time_Alaska_10/4/2024 Cov_vs_Time_Canada_10/4/2024 Cov_vs_Time_Conus_10/4/2024
10/5/2024	10/5/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_Canada	Geomagnetic activity (KP = 3) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of: (1) LPV service coverage in Canada from 22:45 UTC on 10/5 to 00:00 UTC on 10/6; and (2) LPV200 service coverage in Canada from 18:40 UTC to 20:40 UTC on 10/5 and from 21:05 UTC on 10/5 to 00:20 UTC on 10/6. Please see plot(s): LPV_10/5/2024 LPV200_10/5/2024 Cov_vs_Time_Canada_10/5/2024
10/6/2024	10/7/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_CONUS, LPV_Alaska, LPV_Canada, LPV200_CONUS, LPV200_Alaska, LPV200_Canada	Geomagnetic activity (KP = 2.67) caused by a G3 geomagnetic storm disturbed the ionosphere causing elevated GIVE values. The resulted in significant degradation of: (1) LPV service coverage in CONUS from 23:05 UTC on 10/6 to 03:00 UTC on 10/7; (2) LPV service coverage in Alaska from 23:35 UTC on 10/6 to 04:20 UTC on 10/7; (3) LPV service coverage in Canada from 19:35 UTC on 10/6 to 04:15 UTC on 10/7; (4) LPV200 service coverage in CONUS from 21:30 UTC on 10/6 to 22:10 UTC on 10/6 and from 22:35 UTC on 10/6 to 03:15 UTC on 10/7; (5) LPV200 service coverage in Alaska from 21:25 UTC on 10/6 to 05:50 UTC on 10/7; (6) LPV200 service coverage in Canada from 16:30 UTC on 10/6 to 04:15 UTC on 10/7. (See DR 169) Please see plot(s): DR 169 Iono Activity October 6-8 2024.pdf LPV_10/6/2024 LPV200_10/6/2024 Cov_vs_Time_Alaska_10/6/2024

				Cov_vs_Time_Canada_10/6/2024 Cov_vs_Time_Conus_10/6/2024 LPV_10/7/2024 LPV200_10/7/2024 Cov_vs_Time_Alaska_10/7/2024 Cov_vs_Time_Canada_10/7/2024 Cov_vs_Time_Conus_10/7/2024
10/7/2024	10/7/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_CONUS, LPV_Alaska, LPV_Canada, LPV200_CONUS, LPV200_Alaska, LPV200_Canada	Geomagnetic activity (KP = 6.33) caused by a G4 IGP storm disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of (1) LPV service coverage in CONUS from 17:15 UTC to 22:30 UTC; (2) LPV service coverage in Alaska from 11:30 UTC to 14:40 UTC; (3) LPV service coverage in Canada from 13:10 to 22:50 UTC; (4) LPV200 service coverage in CONUS from 17:15 UTC to 22:30 UTC; (5) LPV200 service coverage in Alaska from 11:20 UTC to 11:35 UTC, from 13:00 UTC to 14:45 UTC and 21:00 UTC to 21:25 UTC; (6) LPV200 service coverage in Canada from 12:30 UTC on 10/07 to 03:30 UTC on 10/08. (See DR 169) Please see plot(s): DR 169 Iono Activity October 6-8 2024.pdf LPV_10/7/2024 LPV200_10/7/2024 Cov_vs_Time_Alaska_10/7/2024 Cov_vs_Time_Canada_10/7/2024 Cov_vs_Time_Conus_10/7/2024
10/8/2024	10/8/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_CONUS, LPV_Alaska, LPV_Canada, LPV200_CONUS, LPV200_Alaska, LPV200_Canada	Geomagnetic activity (Kp = 7.33) caused by an IGP Storm disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of: (1) LPV service coverage in CONUS from 01:15 UTC to 03:30 UTC and 14:35 UTC to 16:45 UTC; (2) LPV service coverage in Alaska from 02:40 UTC to 06:10 UTC and from 08:25 UTC to 09:15 UTC; (3) LPV service coverage in Canada from 01:05 UTC to 03:30 UTC, from 04:45 UTC to 05:40 UTC and from 08:30 UTC to 08:45 UTC; (4) LPV200 service coverage in CONUS from 01:10 UTC to 03:40 UTC and from 12:55 UTC to 17:00 UTC; (5) LPV200 service coverage in Alaska from 02:30 UTC to 08:10 UTC and from 08:25 UTC to 09:25 UTC; and (6) LPV200 service coverage in Canada from 04:00 UTC to 07:00 UTC and from 08:20 UTC to 09:15 UTC. (See DR 169) Please see plot(s): DR 169 Iono Activity October 6-8 2024.pdf LPV_10/8/2024 LPV200_10/8/2024 Cov_vs_Time_Alaska_10/8/2024

				Cov_vs_Time_Canada_10/8/2024 Cov_vs_Time_Conus_10/8/2024
10/9/2024	10/10/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_CONUS, LPV200_CONUS, LPV200_Canada	Geomagnetic activity (KP = 4.67) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of: (1) LPV service coverage in CONUS from 20:35 UTC on 10/9 to 21:10 UTC on 10/9 and from 23:40 UTC on 10/9 to 00:35 UTC on 10/10; (2) LPV200 service coverage in CONUS from 16:10 UTC on 10/9 to 16:30 UTC on 10/9, 20:30 UTC on 10/9 to 21:10 UTC on 10/9, and from 23:35 UTC on 10/9 to 00:55 UTC on 10/10; (3) LPV200 service coverage in Canada from 00:05 UTC on 10/9 to 02:00 UTC on 10/9, 02:25 UTC on 10/9 to 02:50 UTC on 10/9, 20:45 UTC on 10/9 to 21:20 UTC on 10/9, and from 21:40 UTC on 10/9 to the end of the day. Please see plot(s): LPV_10/9/2024 LPV200_10/9/2024 Cov_vs_Time_Canada_10/9/2024 Cov_vs_Time_Conus_10/9/2024 LPV_10/10/2024 LPV200_10/10/2024 Cov_vs_Time_Canada_10/10/2024 Cov_vs_Time_Conus_10/10/2024
10/10/2024	10/11/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_CONUS, LPV_Alaska, LPV_Canada, LPV200_CONUS, LPV200_Alaska, LPV200_Canada	Geomagnetic activity (KP = 8.67) caused by a G4 IGP storm disturbed the ionosphere causing elevated GIVE values and caused extreme storm detector trip at 20:10 UTC. This resulted in significant degradation of (1) LPV service coverage in CONUS from 17:30 UTC on 10/10 to 14:45 UTC on 10/11; (2) LPV service coverage in Alaska from 18:40 UTC to 19:50 UTC and 20:10 on 10/10 to 12:40 UTC on 10/11; (3) LPV service coverage in Canada from 16:35 UTC on 10/10 to 12:45 UTC on 10/11; (4) LPV200 service coverage in CONUS from 16:45 UTC on 10/10 to 14:45 UTC on 10/11; (5) LPV200 service coverage in Alaska from 16:50 UTC to 17:05 UTC; 18:00 UTC to 18:20 UTC, 18:35 UTC to 19:55 UTC, 20:10 UTC on 10/10 to 12:40 UTC on 10/11; (6) LPV200 service coverage in Canada from 16:30 UTC on 10/10 to 12:45 on 10/11. (See DR 170) Please see plot(s): DR 170 Iono Activity October 10-11 2024.pdf LPV_10/10/2024 LPV200_10/10/2024 Cov_vs_Time_Alaska_10/10/2024 Cov_vs_Time_Canada_10/10/2024 Cov_vs_Time_Conus_10/10/2024 LPV_10/11/2024 LPV200_10/11/2024 Cov_vs_Time_Alaska_10/11/2024

				Cov_vs_Time_Canada_10/11/2024 Cov_vs_Time_Conus_10/11/2024
10/12/2024	10/12/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_CONUS, LPV200_CONUS, LPV200_Canada	Geomagnetic activity (KP = 5) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of: (1) LPV service coverage in CONUS (TX, FL) from 00:00 UTC to 00:40 UTC and from 23:45 UTC to 23:59 UTC; (2) LPV200 service coverage in CONUS (TX, FL) from 00:00 UTC to 00:40 UTC; 03:00 UTC to 03:40 UTC; and (3) LPV200 service coverage in Canada from 11:35 UTC to 12:10 UTC, from 17:40 UTC to 17:50 UTC, from 20:45 UTC to 21:00 UTC; and from 21:35 UTC to 22:10 UTC. Please see plot(s): LPV_10/12/2024 LPV200_10/12/2024 Cov_vs_Time_Canada_10/12/2024 Cov_vs_Time_Conus_10/12/2024
10/13/2024	10/13/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_CONUS, LPV200_Canada	Geomagnetic activity (KP = 2) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of LPV200 service coverage in Canada from 02:10 UTC to 02:40 UTC, 10:50 UTC to 11:15 UTC, 20:55 UTC to 21:15 UTC, and from 22:35 UTC to 22:55 UTC. The elevated GIVE values also caused minor degradation of LPV200 service coverage in CONUS from 23:40 UTC to the end of the day. Please see plot(s): LPV200_10/13/2024 Cov_vs_Time_Canada_10/13/2024 Cov_vs_Time_Conus_10/13/2024
10/14/2024	10/15/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Alaska, LPV_Canada, LPV200_Alaska, LPV200_Canada	Geomagnetic activity (KP = 4) disturbed the ionosphere causing elevated GIVE values. This resulted in: (1) significant degradation of the LPV service coverage in Alaska from about 23:00 UTC on 10/14 to 9:00 UTC on 10/15, (2) significant degradation of the LPV service coverage in Canada from about 21:00 UTC on 10/14 to 4:00 UTC on 10/15, (3) significant degradation of the LPV200 service converage in Alaska from about 23:00 UTC on 10/14 to 9:00 UTC on 10/15, and (4) significant degradation of the LPV200 service coverage in Canada from about 20:00 UTC on 10/14 to 9:00 UTC on 10/15. Please see plot(s): LPV_10/14/2024 LPV200_10/14/2024 Cov_vs_Time_Alaska_10/14/2024 Cov_vs_Time_Canada_10/14/2024 LPV_10/15/2024 LPV200_10/15/2024 Cov_vs_Time_Alaska_10/15/2024 Cov_vs_Time_Canada_10/15/2024

10/14/2024	10/15/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Alaska, LPV_Canada, LPV200_Alaska, LPV200_Canada	Geomagnetic activity (KP = 3.67) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of (1) LPV service coverage in Alaska from 23:35 UTC on 10/14 to 03:50 UTC on 10/15 and from 08:00 UTC to 08:40 UTC on 10/15; (2) LPV service coverage in Canada from 23:00 UTC on 10/14 to 03:50 UTC on 10/15; (3) LPV200 service coverage in Alaska from 23:00 UTC on 10/14 to 03:50 UTC on 10/15 and from 07:55 UTC to 08:40 UTC on 10/15; (4) LPV200 service coverage in Canada from 20:50 UTC on 10/14 to 03:50 UTC on 10/15. Please see plot(s): LPV_10/14/2024 LPV200_10/14/2024 Cov_vs_Time_Alaska_10/14/2024 Cov_vs_Time_Canada_10/14/2024 LPV_10/15/2024 LPV200_10/15/2024 Cov_vs_Time_Alaska_10/15/2024 Cov_vs_Time_Canada_10/15/2024
10/15/2024	10/15/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Alaska, LPV_Canada, LPV200_Alaska, LPV200_Canada	Geomagnetic activity (KP = 4) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of: (1) LPV service coverage in Alaska from about 23:00 UTC on 10/14 to 9:00 UTC on 10/15; (2) LPV service coverage in Canada from about 21:00 UTC on 10/14 to 4:00 UTC on 10/15; (3) LPV200 service coverage in Alaska from about 23:00 UTC on 10/14 to 9:00 UTC on 10/15; and (4) LPV200 service coverage in Canada from about 20:00 UTC on 10/14 to 9:00 UTC on 10/15. Please see plot(s): LPV_10/15/2024 LPV200_10/15/2024 Cov_vs_Time_Alaska_10/15/2024 Cov_vs_Time_Canada_10/15/2024
10/16/2024	10/16/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_Canada	Geomagnetic activity (KP = 3.33) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of: (1) LPV service coverage in Canada from 16:15 UTC to 20:10 UTC and from 20:25 UTC to 23:30 UTC; (2) LPV200 service coverage in Canada from 00:40 UTC to 01:20 UTC, 01:55 UTC to 02:10 UTC, and from 15:15 UTC to 23:35 UTC. Please see plot(s): LPV_10/16/2024 LPV200_10/16/2024 Cov_vs_Time_Canada_10/16/2024
10/17/2024	10/17/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Canada	Geomagnetic activity (Kp = 3.33) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of the LPV200 service coverage in Canada from

				about 20:01 UTC to 23:30 UTC. Please see plot(s): LPV200_10/17/2024 Cov_vs_Time_Canada_10/17/2024
10/18/2024	10/18/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_CONUS, LPV200_Canada	Geomagnetic activity (KP = 4) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of: (1) LPV service coverage in Canada from about 16:20 UTC on 10/18 to 19:00 UTC on 10/18; and (2) LPV200 service coverage in Canada from about 15:20 UTC on 10/18 to 19:30 UTC on 10/18. The elevated GIVE values also resulted in minor degradation of the LPV200 service coverage in CONUS from about 09:00 UTC on 10/18 to 17:30 UTC on 10/18, Please see plot(s): LPV_10/18/2024 LPV200_10/18/2024 Cov_vs_Time_Canada_10/18/2024 Cov_vs_Time_Conus_10/18/2024
10/19/2024	10/20/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Alaska, LPV_Canada, LPV200_CONUS, LPV200_Alaska, LPV200_Canada	Geomagnetic activity (KP = 4.67) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of: (1) LPV service coverage in Canada from 19:00 UTC on 10/19 00:55 UTC on 10/20; (2) LPV200 service coverage in Alaska from 20:10 UTC on 10/19 to 00:40 UTC on 10/20. The elevated GIVE values also resulted in moderate degradation of: (1) LPV service coverage in Alaska from 20:15 UTC on 10/19 to 21:55 UTC on 10/19, 22:30 UTC on 10/19 to 23:35 UTC on 10/19, and from 23:40 UTC on 10/19 to 00:30 UTC on 10/20; and (2) LPV200 service coverage in CONUS from 20:15 UTC on 10/19 to 21:25 UTC on 10/19. Please see plot(s): LPV_10/19/2024 LPV200_10/19/2024 Cov_vs_Time_Alaska_10/19/2024 Cov_vs_Time_Canada_10/19/2024 Cov_vs_Time_Conus_10/19/2024 LPV_10/20/2024 LPV200_10/20/2024 Cov_vs_Time_Alaska_10/20/2024 Cov_vs_Time_Canada_10/20/2024 Cov_vs_Time_Conus_10/20/2024
10/20/2024	10/20/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_Canada	Geomagnetic activity (KP = 3) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of LPV200 service coverage in Canada from 19:35 UTC to 23:15 UTC. The elevated GIVE values also caused moderate degradation of LPV service coverage in Canada from 21:30 UTC to 21:35 UTC.

				Please see plot(s): LPV_10/20/2024 LPV200_10/20/2024 Cov_vs_Time_Canada_10/20/2024
10/21/2024	10/21/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_CONUS, LPV200_Canada	Geomagnetic activity (KP = 2) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of LPV200 service coverage in Canada from 20:15 UTC to 22:55 UTC. The elevated GIVE values also resulted in moderate degradation of LPV service coverage in Canada from 16:35 UTC to 18:15 UTC and from 20:35 UTC to 22:25 UTC. The elevated GIVE values also resulted in minor degradation of LPV200 service coverage in CONUS from 23:05 UTC to 23:35 UTC. Please see plot(s): LPV_10/21/2024 LPV200_10/21/2024 Cov_vs_Time_Canada_10/21/2024 Cov_vs_Time_Conus_10/21/2024
10/22/2024	10/22/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Alaska, LPV_Canada, LPV200_CONUS, LPV200_Alaska, LPV200_Canada	Geomagnetic activity (KP = 2.67) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of: (1) LPV service coverage in Canada from about 15:30 UTC on 10/22 to 21:30 UTC on 10/22; and (2) LPV200 service coverage in Canada from about 11:00 UTC on 10/22 to 23:15 UTC on 10/22. The elevated GIVE values also resulted moderate degradation of: (1) LPV service coverage in Alaska from about 16:30 UTC on 10/22 to 17:15 UTC on 10/22; and (2) LPV200 service coverage in Alaska from about 14:15 UTC on 10/22 to 18:15 UTC on 10/22. The elevated GIVE values also resulted in minor degradation of the LPV200 service coverage in CONUS from about 08:30 UTC to 09:00 UTC on 10/22. Please see plot(s): LPV_10/22/2024 LPV200_10/22/2024 Cov_vs_Time_Alaska_10/22/2024 Cov_vs_Time_Canada_10/22/2024 Cov_vs_Time_Conus_10/22/2024
10/23/2024	10/24/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_CONUS, LPV200_Canada	Geomagnetic activity (KP = 3) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of LPV200 service coverage in Canada from 18:30 UTC on 10/23 to 19:05 UTC on 10/23, 19:20 UTC on 10/23 to 21:30 UTC on 10/23, and from 21:40 UTC on 10/23 to 23:10 UTC on 10/23. The elevated GIVE values also caused moderate degradation of: (1) LPV service coverage in Canada from 20:05 UTC on 10/23 to 21:05 UTC on 10/23; (2) LPV200 service coverage in CONUS (FL) from 23:00 UTC on 10/23 to 00:15 UTC on 10/24. Please see plot(s): LPV_10/23/2024 LPV200_10/23/2024

				Cov_vs_Time_Canada_10/23/2024 Cov_vs_Time_Conus_10/23/2024 LPV_10/24/2024 LPV200_10/24/2024 Cov_vs_Time_Canada_10/24/2024 Cov_vs_Time_Conus_10/24/2024
10/24/2024	10/24/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_CONUS, LPV200_Canada	Geomagnetic activity (KP = 4.33) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of LPV200 service coverage in Canada from 02:15 UTC to 03:30 UTC, from 07:15 UTC to 08:05 UTC and 19:45 UTC to 22:20 UTC. The elevated GIVE values also resulted moderate degradation of (1) LPV service coverage in Canada from 20:05 UTC to 22:10 UTC; (2) LPV200 service coverage in CONUS from 20:25 UTC to 20:40 UTC and from 22:40 UTC to 23:15 UTC. Please see plot(s): LPV_10/24/2024 LPV200_10/24/2024 Cov_vs_Time_Canada_10/24/2024 Cov_vs_Time_Conus_10/24/2024
10/25/2024	10/25/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_Canada	Geomagnetic activity (KP = 1.67) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of: LPV service coverage in Canada from about 16:20 UTC on 10/18 to 19:00 UTC on 10/18; and (2) LPV200 service coverage in Canada from about 19:35 UTC on 10/18 to 23:25 UTC on 10/18. Please see plot(s): LPV_10/25/2024 LPV200_10/25/2024 Cov_vs_Time_Canada_10/25/2024
10/26/2024	10/27/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_CONUS, LPV_Alaska, LPV_Canada, LPV200_CONUS, LPV200_Alaska, LPV200_Canada	Geomagnetic activity (KP = 4.33) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of: (1) LPV service coverage in Alaska from 19:40 UTC on 10/26 to 04:05 UTC on 10/27; (2) LPV service coverage in Canada from 17:00 UTC on 10/26 to 03:40 UTC on 10/27; (3) LPV200 service coverage in Alaska from 13:40 UTC on 10/26 to 15:35 UTC on 10/26, from 16:30 UTC on 10/26 to 18:05 UTC on 10/26, and from 19:10 UTC on 10/26 to 06:00 on 10/27; and (4) LPV200 service coverage in Canada from 12:15 UTC on 10/26 to 13:15 UTC on 10/26, from 14:15 UTC on 10/26 to 15:15 UTC on 10/26, and from 16:25 UTC on 10/26 to 04:15 UTC on 10/27. The elevated GIVEs also resulted in moderate degradation of LPV200 service coverage in CONUS from 19:45 UTC on 10/26 to 23:30 UTC on 10/26. The elevated GIVEs also resulted in minor degradation of LPV service coverage in CONUS from

				20:00 UTC on 10/26 to 23:00 UTC on 10/26. Please see plot(s): LPV_10/26/2024 LPV200_10/26/2024 Cov_vs_Time_Alaska_10/26/2024 Cov_vs_Time_Canada_10/26/2024 Cov_vs_Time_Conus_10/26/2024 LPV_10/27/2024 LPV200_10/27/2024 Cov_vs_Time_Alaska_10/27/2024 Cov_vs_Time_Canada_10/27/2024 Cov_vs_Time_Conus_10/27/2024
10/27/2024	10/28/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Alaska, LPV_Canada, LPV200_CONUS, LPV200_Alaska, LPV200_Canada	Geomagnetic activity (KP = 3) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of: (1) LPV service coverage in Alaska from 15:30 UTC on 10/27 to 17:35 UTC on 10/27; (2) LPV service coverage in Canada from 14:30 UTC on 10/27 to 22:00 UTC on 10/27; (3) LPV200 service coverage in Alaska from 13:45 UTC on 10/27 to 18:15 UTC on 10/27, 19:50 UTC on 10/27 to 20:05 UTC on 10/27, and from 22:05 UTC on 10/27 to 22:25 UTC on 10/27; (4) LPV200 service coverage in Canada from 13:25 UTC on 10/27 to 03:35 UTC on 10/28. The elevated GIVE values also caused moderate degradation of LPV200 service coverage in CONUS (AZ, NM, TX, FL) from 00:30 UTC on 10/27 to 01:25 UTC on 10/27, 13:50 UTC on 10/27 to 14:15 UTC on 10/27, 17:55 UTC on 10/27 to 18:30 UTC on 10/27, and from 19:00 UTC on 10/27 to 20:30 UTC on 10/27. Please see plot(s): LPV_10/27/2024 LPV200_10/27/2024 Cov_vs_Time_Alaska_10/27/2024 Cov_vs_Time_Canada_10/27/2024 Cov_vs_Time_Conus_10/27/2024 LPV_10/28/2024 LPV200_10/28/2024 Cov_vs_Time_Alaska_10/28/2024 Cov_vs_Time_Canada_10/28/2024 Cov_vs_Time_Conus_10/28/2024
10/28/2024	10/28/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_Alaska, LPV200_Canada	Geomagnetic activity (KP = 4.67) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of (1) LPV service coverage in Canada from 01:05 UTC to 02:15 UTC and from 15:25 UTC to 22:10 UTC; (2) LPV200 service coverage in Canada from 00:15 to 02:15 UTC, from 10:00 to 10:30 UTC, from 14:55 to 23:55 UTC. The elevated GIVE values also resulted in moderate degradation of LPV200 service coverage in Alaska from 01:25 UTC to 01:45 UTC and from 09:50 UTC to 10:25 UTC. Please see plot(s): LPV_10/28/2024 LPV200_10/28/2024

				Cov_vs_Time_Alaska_10/28/2024 Cov_vs_Time_Canada_10/28/2024
10/29/2024	10/29/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Alaska, LPV_Canada, LPV200_CONUS, LPV200_Alaska, LPV200_Canada	Geomagnetic activity (KP = 3.67) caused by an Iono storm disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of: (1) LPV service coverage in Canada from about 01:30 UTC on 10/29 to 03:00 UTC on 10/29 in addition to 19:20 UTC on 10/29 to 03:10 UTC on 10/30; (2) LPV200 service coverage in Canada from about 00:00 UTC on 10/29 to 03:20 UTC on 10/29 in addition to 17:20 UTC on 10/29 to 3:40 UTC on 10/30. The elevated GIVE values also resulted in moderate degradation of: (1) LPV service coverage in Alaska from about 1:30 UTC on 10/29 to 2:30 UTC on 10/29 in addition to 20:20 UTC on 10/29 to 21:15 UTC on 10/29, (2) LPV200 service coverage in CONUS from about 20:00 UTC on 10/29 to 22:30 UTC on 10/29;, and (3) LPV200 service coverage in Alaska from about 1:30 UTC on 10/29 to 3:15 UTC on 10/29 in addition to 20:00 UTC on 10/29 to 22:15 UTC on 10/29. Please see plot(s): LPV_10/29/2024 Cov_vs_Time_Alaska_10/29/2024 Cov_vs_Time_Canada_10/29/2024 Cov_vs_Time_Conus_10/29/2024
10/30/2024	10/30/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_CONUS, LPV_Alaska, LPV200_CONUS, LPV200_Alaska, LPV200_Canada	Geomagnetic activity (KP = 4) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of: (1) LPV service coverage in Alaska from 00:25 UTC to 04:35 UTC; (2) LPV service coverage in Canada from 17:15 UTC to 23:30 UTC; (3) LPV200 service coverage in Alaska from 00:15 UTC to 05:40 UTC, 06:50 UTC to 07:50 UTC, and from 13:45 UTC to 15:05 UTC; (4) LPV200 service coverage in Canada from 09:15 UTC to 12:55 UTC, 14:15 UTC to 15:10 UTC, and from 15:55 UTC to 23:50 UTC. The elevated GIVE values also caused minor degradation of LPV200 service coverage in CONUS from 01:20 UTC to 02:00 UTC. Please see plot(s): LPV_10/30/2024 LPV200_10/30/2024 Cov_vs_Time_Alaska_10/30/2024 Cov_vs_Time_Canada_10/30/2024 Cov_vs_Time_Conus_10/30/2024
10/31/2024	11/1/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Alaska, LPV_Canada, LPV200_CONUS,	Geomagnetic activity (KP = 3.67) caused by an IGP storm disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of (1) LPV service coverage in

			LPV200_Alaska, LPV200_Canada	Alaska from 22:05 UTC on 10/31 to 04:05 UTC on 11/01; (2) LPV service coverage in Canada from 17:50 UTC to 18:30 UTC on 10/31 and from 19:45 UTC on 11/01 to 04:55 UTC on 11/01; (3) LPV200 service coverage in Alaska from 21:50 UTC on 10/31 to 05:00 UTC on 11/01; (4) LPV200 service coverage in Canada from 17:45 UTC on 10/31 to 04:45 UTC on 11/01. The elevated GIVE values also resulted in moderate degradation of LPV200 service coverage in CONUS from 00:55 UTC to 01:10 UTC and from 22:30 UTC to 22:45 UTC on 10/31. Please see plot(s): LPV_10/31/2024 LPV200_10/31/2024 Cov_vs_Time_Alaska_10/31/2024 Cov_vs_Time_Canada_10/31/2024 Cov_vs_Time_Conus_10/31/2024 LPV_11/1/2024 LPV200_11/1/2024 Cov_vs_Time_Alaska_11/1/2024 Cov_vs_Time_Canada_11/1/2024
11/1/2024	11/1/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Alaska, LPV_Canada, LPV200_CONUS, LPV200_Alaska, LPV200_Canada	Geomagnetic activity (KP = 3) caused by an IGP storm disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of: (1) LPV service coverage in Alaska from about 22:30 UTC on 10/31 to 4:30 UTC on 11/1; (2) LPV service coverage in Canada from about 17:50 UTC on 10/31 to 05:40 UTC on 11/1; (3) LPV200 service coverage in Alaska from about 22:15 UTC on 10/31 to 06:00 UTC on 11/1; and (4) significant degradation of the LPV200 service coverage in Canada from about 17:50 UTC on 10/31 to 05:40 UTC on 11/1. The elevated GIVE values also resulted in moderate degradation of: (5) LPV200 service coverage in CONUS from about 01:10 UTC on 11/1 to 02:40 UTC on 11/1. Please see plot(s): LPV_11/1/2024 LPV200_11/1/2024 Cov_vs_Time_Alaska_11/1/2024 Cov_vs_Time_Canada_11/1/2024 Cov_vs_Time_Conus_11/1/2024
11/2/2024	11/3/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_CONUS, LPV_Alaska, LPV_Canada, LPV200_CONUS, LPV200_Alaska, LPV200_Canada	Geomagnetic activity (KP = 4) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of: (1) LPV service coverage in CONUS from 11:50 UTC on 11/2 to 14:45 UTC on 11/2 and from 21:25 UTC on 11/2 to 22:30 UTC on 11/2 and from 23:35 UTC on 11/2 to 01:20 UTC on 11/3; (2) LPV service coverage in Alaska from 09:55 UTC on 11/2 to 17:20 UTC on 11/2 and from 20:10 UTC on 11/2 to 03:20 UTC on 11/3; (3) LPV service coverage in Canada from 09:40 UTC on 11/2 to 03:30 UTC on 11/3; (4) LPV200 service coverage in

				CONUS from 11:25 UTC on 11/2 to 14:50 UTC on 11/2 and from 19:20 UTC on 11/2 to 01:35 UTC on 11/3; (5) LPV200 service coverage in Alaska from 09:25 UTC on 11/2 to 18:00 UTC on 11/2 and from 19:00 UTC on 11/2 to 05:25 UTC on 11/3; and (6) LPV200 service coverage in Canada from 09:50 UTC on 11/2 to 04:50 UTC on 11/3. Please see plot(s): LPV_11/2/2024 LPV200_11/2/2024 Cov_vs_Time_Alaska_11/2/2024 Cov_vs_Time_Canada_11/2/2024 Cov_vs_Time_Conus_11/2/2024 LPV_11/3/2024 LPV200_11/3/2024 Cov_vs_Time_Alaska_11/3/2024 Cov_vs_Time_Canada_11/3/2024 Cov_vs_Time_Conus_11/3/2024
11/3/2024	11/4/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_CONUS, LPV_Alaska, LPV_Canada, LPV200_CONUS, LPV200_Alaska, LPV200_Canada	Geomagnetic activity (KP = 4) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of: (1) LPV service coverage in CONUS from 00:20 UTC on 11/3 to 01:20 UTC on 11/3, 21:50 UTC on 11/3 to 22:50 UTC on 11/3, and from 23:05 UTC on 11/3 to 23:15 UTC on 11/3; (2) LPV service coverage in Canada from 19:35 UTC on 11/3 to 04:25 UTC on 11/4; (3) LPV200 service coverage in CONUS from 21:45 UTC on 11/3 to 23:20 UTC on 11/3, and from 23:30 UTC on 11/3 to 00:05 UTC on 11/4; (4) LPV200 service coverage in Alaska from 03:45 UTC on 11/3 to 04:15 UTC on 11/3, 04:20 UTC on 11/3 to 05:20 UTC on 11/3, and from 20:35 UTC on 11/3 to 05:20 UTC on 11/4; (5) LPV200 service coverage in Canada from 03:50 UTC on 11/3 to 04:45 UTC on 11/3 and from 19:25 UTC to 04:45 UTC on 11/4. The elevated GIVE values also caused moderate degradation of LPV service coverage in Alaska from 20:40 UTC on 11/3 to 21:15 UTC on 11/3 and from 21:35 UTC on 11/3 to 05:10 UTC on 11/4; Please see plot(s): LPV_11/3/2024 LPV200_11/3/2024 Cov_vs_Time_Alaska_11/3/2024 Cov_vs_Time_Canada_11/3/2024 Cov_vs_Time_Conus_11/3/2024 LPV_11/4/2024 LPV200_11/4/2024 Cov_vs_Time_Alaska_11/4/2024 Cov_vs_Time_Canada_11/4/2024 Cov_vs_Time_Conus_11/4/2024
11/4/2024	11/4/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Alaska, LPV_Canada, LPV200_CONUS,	Geomagnetic activity (KP = 4.33) caused by an IGP storm disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of (1) LPV service coverage in

			LPV200_Alaska, LPV200_Canada	Alaska from 08:00 UTC to 08:35 UTC; (2) LPV service coverage in Canada from 21:25 UTC to 22:30 UTC and from 23:20 UTC to 23:55 UTC; (3) LPV200 service coverage in Alaska from 06:40 UTC to 07:25 UTC and from 07:55 UTC to 08:35 UTC; (4) LPV200 service coverage in Canada from 06:45 UTC to 07:05 UTC, from 07:55 UTC to 09:05 UTC, from 17:40 UTC to 22:35 UTC and from 23:20 UTC on 11/04 to 01:15 UTC on 11/05. The elevated GIVE values also resulted in moderate degradation of LPV200 service coverage in CONUS from 00:45 UTC to 01:30 UTC, from 13:35 UTC to 13:45 UTC, from 16:05 UTC to 16:20 UTC and from 22:15 UTC to 22:30 UTC. Please see plot(s): LPV_11/4/2024 LPV200_11/4/2024 Cov_vs_Time_Alaska_11/4/2024 Cov_vs_Time_Canada_11/4/2024 Cov_vs_Time_Conus_11/4/2024
11/5/2024	11/5/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Alaska, LPV_Canada, LPV200_CONUS, LPV200_Alaska, LPV200_Canada	Geomagnetic activity (KP = 3) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of: (1) LPV service coverage in Canada from about 16:45 UTC on 11/05 to 04:15 UTC on 11/06; and (2) LPV200 service coverage in Canada from about 15:30 UTC on 11/05 to 04:30 UTC on 11/06. The elevated GIVE values also resulted in moderate degradation of: (1) LPV service coverage in Alaska from about 22:30 UTC on 11/05 to 4:00 UTC on 11/06; (2) LPV200 service coverage in CONUS from about 21:30 UTC on 11/06 to 23:00 UTC on 11/06; and (3) LPV200 service coverage in Alaska from about 21:20 UTC on 11/05 to 05:00 UTC on 11/06. Please see plot(s): LPV_11/5/2024 LPV200_11/5/2024 Cov_vs_Time_Alaska_11/5/2024 Cov_vs_Time_Canada_11/5/2024 Cov_vs_Time_Conus_11/5/2024
11/6/2024	11/6/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Alaska, LPV_Canada, LPV200_Alaska, LPV200_Canada	Geomagnetic activity (KP = 3.33) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of: (1) LPV service coverage in Alaska from 03:50 UTC to 05:05 UTC; (2) LPV service coverage in Canada from 16:05 UTC to 19:40 UTC, 20:40 UTC to 21:10 UTC, and from 22:30 UTC to 23:15 UTC; (3) LPV200 service coverage in Alaska from 04:00 UTC to 05:10 UTC, 06:50 UC to 08:05 UTC; (4) LPV200 service coverage in Canada from 13:55 UTC on 11/6 to the end of the day. Please see plot(s): LPV_11/6/2024 LPV200_11/6/2024

				Cov_vs_Time_Alaska_11/6/2024 Cov_vs_Time_Canada_11/6/2024
11/7/2024	11/8/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Alaska, LPV_Canada, LPV200_Alaska, LPV200_Canada	Geomagnetic activity (KP = 3) caused by an IGP storm disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of (1) LPV service coverage in Canada from 19:35 UTC on 11/07 to 02:45 UTC on 11/08; (2) LPV200 service coverage in Alaska from 21:35 UTC on 11/07 to 03:00 UTC on 11/08; (3) LPV200 service coverage in Canada from 20:30 UTC to 20:50 UTC on 11/07 and from 21:35 UTC on 11/07 to 03:00 UTC on 11/08. The elevated GIVE values also resulted in moderate degradation of LPV service coverage in Alaska from 21:35 UTC on 11/07 to 02:25 UTC on 11/08. Please see plot(s): LPV_11/7/2024 LPV200_11/7/2024 Cov_vs_Time_Alaska_11/7/2024 Cov_vs_Time_Canada_11/7/2024 LPV_11/8/2024 LPV200_11/8/2024 Cov_vs_Time_Alaska_11/8/2024 Cov_vs_Time_Canada_11/8/2024
11/8/2024	11/8/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_CONUS, LPV_Alaska, LPV_Canada, LPV200_CONUS, LPV200_Alaska, LPV200_Canada	Geomagnetic activity (KP = 3) caused by an IGP storm disturbed the ionosphere causing elevated GIVE values. This resulted in significant of: (1) LPV service coverage in CONUS from about 20:00 UTC on 11/08 to 03:00 UTC on 11/09; (2) LPV service coverage in Alaska from about 19:45 UTC on 11/08 to 5:00 UTC on 11/09; (3) LPV service coverage in Canada from about 20:00 UTC on 11/08 to 04:50 UTC on 11/09; (4) LPV200 service coverage in CONUS from about 21:30 UTC on 11/08 to 03:10 UTC on 11/09; (5) LPV200 service coverage in Alaska from about 19:30 UTC on 11/08 to 05:10 UTC on 11/09; and (6) LPV200 service coverage in Canada from about 19:00 UTC on 11/08 to 05:30 UTC on 11/09. Please see plot(s): LPV_11/8/2024 LPV200_11/8/2024 Cov_vs_Time_Alaska_11/8/2024 Cov_vs_Time_Canada_11/8/2024 Cov_vs_Time_Conus_11/8/2024
11/9/2024	11/10/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_CONUS, LPV_Alaska, LPV_Canada, LPV200_CONUS, LPV200_Alaska, LPV200_Canada	Geomagnetic activity (KP = 5) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of: (1) LPV service coverage in CONUS from 18:05 UTC to 22:15 UTC on 11/9; (2) LPV service coverage in Canada from 17:00 UTC to 23:45 UTC on 11/9; (3) LPV200 service coverage in CONUS from 18:00 UTC to 22:10 UTC on 11/9; and (4)

				LPV200 service coverage in Canada from 16:00 UTC on 11/9 to 02:55 UTC on 11/10. The elevated GIVE values also resulted in moderate degradation of: (1) LPV service coverage in Alaska from 12:40 UTC to 13:05 UTC and from 19:25 UTC to 22:00 UTC on 11/9; and (2) LPV200 service coverage in Alaska from 06:35 UTC to 08:05 UTC on 11/9, 12:30 UTC to 14:15 UTC on 11/9, and 16:05 UTC to 22:05 UTC on 11/9. Please see plot(s): LPV_11/9/2024 LPV200_11/9/2024 Cov_vs_Time_Alaska_11/9/2024 Cov_vs_Time_Canada_11/9/2024 Cov_vs_Time_Conus_11/9/2024 LPV_11/10/2024 LPV200_11/10/2024 Cov_vs_Time_Alaska_11/10/2024 Cov_vs_Time_Canada_11/10/2024 Cov_vs_Time_Conus_11/10/2024
11/10/2024	11/11/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_CONUS, LPV_Alaska, LPV_Canada, LPV200_CONUS, LPV200_Alaska, LPV200_Canada	Geomagnetic activity (KP = 5.33) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of: (1) LPV service coverage in CONUS from 18:45 UTC to 20:35 UTC and from 21:20 UTC to 22:40 UTC; (2) LPV service coverage in Canada from 00:10 UTC on 11/10 to 00:25 UTC on 11/10, 01:40 UTC on 11/10 to 02:45 UTC on 11/10, 04:30 UTC on 11/10 to 04:55 UTC on 11/10, 13:35 UTC on 11/10 to 15:10 UTC on 11/10, and from 15:55 UTC on 11/10 to 01:10 UTC to 11/11; (3) LPV200 service coverage in CONUS from 18:15 UTC on 11/10 to 23:05 UTC on 11/10; (4) LPV200 service coverage in Alaska from 12:45 UTC on 11/10 to 15:10 UTC on 11/10, 15:40 UTC on 11/10 to 16:35 UTC on 11/10, 19:00 UTC on 11/10 to 19:30 UTC on 11/10, and from 21:25 UTC on 11/10 to 01:10 UTC on 11/11; (5) LPV200 service coverage in Canada from 03:25 UTC on 11/10 to 05:00 UTC on 11/10, and from 07:40 UTC on 11/10 to 02:50 UTC on 11/11. The elevated GIVE values also caused moderate degradation of LPV service coverage in Alaska from 13:15 UTC to 15:10 UTC and from 22:35 UTC on 11/10 to 01:10 UTC on 11/11; Please see plot(s): LPV_11/10/2024 LPV200_11/10/2024 Cov_vs_Time_Alaska_11/10/2024 Cov_vs_Time_Canada_11/10/2024 Cov_vs_Time_Conus_11/10/2024 LPV_11/11/2024 LPV200_11/11/2024 Cov_vs_Time_Alaska_11/11/2024 Cov_vs_Time_Canada_11/11/2024 Cov_vs_Time_Conus_11/11/2024

11/11/2024	11/11/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_Canada	Geomagnetic activity (KP = 3.67) caused by an IGP storm disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of LPV200 service coverage in Canada from 08:50 UTC to 09:35 UTC, 10:00 UTC to 10:35 UTC, 13:20 UTC to 23:45 UTC. The elevated GIVE values also resulted in moderate degradation of LPV service coverage in Canada from 14:35 UTC to 15:00 UTC, from 16:30 UTC to 16:40 UTC, from 17:30 UTC to 18:00 UTC, from 18:20 UTC to 19:00 UTC and from 21:30 UTC to 23:20 UTC. Please see plot(s): LPV_11/11/2024 LPV200_11/11/2024 Cov_vs_Time_Canada_11/11/2024
11/12/2024	11/12/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_CONUS, LPV200_Canada	Geomagnetic activity (KP = 2) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of: (1) LPV service coverage in Canada from about 22:15 UTC on 11/12 to 22:40 UTC on 11/12; and (2) LPV200 service coverage in Canada from about 22:15 UTC on 11/12 to 22:50 UTC on 11/12; The elevated GIVE values also resulted in minor degradation of the LPV200 service coverage in CONUS from about 07:30 UTC on 11/12 to 07:50 UTC on 11/12. Please see plot(s): LPV_11/12/2024 LPV200_11/12/2024 Cov_vs_Time_Canada_11/12/2024 Cov_vs_Time_Conus_11/12/2024
11/13/2024	11/13/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_CONUS, LPV200_Canada	Geomagnetic activity (KP = 3) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of LPV200 service coverage in Canada from 03:40 UTC to 04:35 UTC, 08:55 UTC to 09:05 UTC, 10:00 UTC to 10:25 UTC, 11:00 UTC to 11:45 UTC, and from 13:10 UTC to 22:50 UTC. The elevated GIVE values also caused moderate degradation of LPV service coverage in Canada from 01:50 UTC to 02:05 UTC, 07:55 UTC to 08:20 UTC, 13:40 UTC to 14:10 UTC, and from 17:05 UTC to 17:30 UTC. The elevated GIVE values also caused minor degradation in CONUS from 00:00 UTC to 00:15 UTC. Please see plot(s): LPV_11/13/2024 LPV200_11/13/2024 Cov_vs_Time_Canada_11/13/2024 Cov_vs_Time_Conus_11/13/2024
11/14/2024	11/14/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_Canada	Geomagnetic activity (KP = 3.67) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of: (1) LPV service coverage in Canada from 19:50 UTC to 23:25 UTC; and (2) LPV200 service coverage in Canada

				from 18:25 UTC to 19:20 UTC, from 19:50 UTC on 11/14 to 00:50 UTC on 11/15 and from 01:20 UTC on 11/15 to 01:50 UTC on 11/15. Please see plot(s): LPV_11/14/2024 LPV200_11/14/2024 Cov_vs_Time_Canada_11/14/2024
11/15/2024	11/15/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_CONUS, LPV200_Alaska, LPV200_Canada	Geomagnetic activity (KP = 3.67) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of: (1) LPV service coverage in Canada from about 16:30 UTC on 11/15 to 23:40 UTC on 11/15; and (2) LPV200 service coverage in Canada from about 15:20 UTC on 11/12 to 01:15 UTC on 11/13. The elevated give values also resulted in minor degradation of: (1) LPV200 service coverage in CONUS from about 13:30 UTC on 11/15 to 13:50 UTC on 11/15; and (2) minor degradation of the LPV200 service coverage in Alaska from about 04:30 UTC on 11/15 to 07:30 UTC on 11/15. Please see plot(s): LPV_11/15/2024 LPV200_11/15/2024 Cov_vs_Time_Alaska_11/15/2024 Cov_vs_Time_Canada_11/15/2024 Cov_vs_Time_Conus_11/15/2024
11/17/2024	11/17/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_Canada	Geomagnetic activity (KP = 3) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of LPV200 service coverage in Canada from 04:05 UTC to 04:20 UTC, 07:20 UTC to 08:00 UTC, 08:30 UTC to 08:55 UTC, 09:45 UTC to 10:10 UTC, 10:40 UTC to 11:30 UTC, 12:55 UTC to 17:15 UTC, and from 18:55 UTC to 22:50 UTC. The elevated GIVE values also caused moderate degradation of LPV service coverage in Canada from 07:40 UTC to 08:00 UTC, 13:15 UTC to 13:55 UTC, and from 16:45 UTC to 16:55 UTC. Please see plot(s): LPV_11/17/2024 LPV200_11/17/2024 Cov_vs_Time_Canada_11/17/2024
11/19/2024	11/19/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_CONUS, LPV200_Canada	Geomagnetic activity (KP = 3) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of LPV200 service coverage in Canada from about 13:00 UTC on 11/19 to 22:30 UTC on 11/19. The elevated GIVE values also resulted in moderate degradation of the LPV service coverage in Canada from about 16:15 UTC on 11/19 to 19:30 UTC on 11/19. The elevated GIVE values also resulted in minor degradation of the LPV200 service coverage in CONUS from about 07:10 UTC on 11/19 to 07:30 UTC on 11/19.

				Please see plot(s): LPV_11/19/2024 LPV200_11/19/2024 Cov_vs_Time_Canada_11/19/2024 Cov_vs_Time_Conus_11/19/2024
11/21/2024	11/21/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_Alaska, LPV200_Canada	Geomagnetic activity (KP = 3) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of LPV200 service coverage in Canada from 14:50 UTC to 19:00 UTC, from 19:55 UTC to 23:15 UTC and from 23:30 UTC to 23:55 UTC. The elevated GIVE values also resulted in moderate degradation of LPV service coverage in Canada from 20:20 UTC to 21:55 UTC. The elevated GIVE values also resulted in minor degradation of LPV200 service coverage in Alaska from 03:15 UTC to 04:00 UTC. Please see plot(s): LPV_11/21/2024 LPV200_11/21/2024 Cov_vs_Time_Alaska_11/21/2024 Cov_vs_Time_Canada_11/21/2024
11/22/2024	11/22/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_Canada	Geomagnetic activity (KP = 3.67) disturbed the ionosphere causing elevated GIVE values. This resulted in: (1) significant degradation of the LPV service coverage in Canada from about 17:30 UTC on 11/22 to 22:00 UTC on 11/22, and (2) significant degradation of the LPV200 service coverage in Canada from about 15:20 UTC on 11/22 to 01:00 UTC on 11/23. Please see plot(s): LPV_11/22/2024 LPV200_11/22/2024 Cov_vs_Time_Canada_11/22/2024
11/23/2024	11/23/2024	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 moderate degradation of LPV200 service coverage in Canada from 19:40 UTC to 23:35 UTC. Please see plot(s): LPV200_11/23/2024 Cov_vs_Time_Canada_11/23/2024
11/24/2024	11/24/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_Alaska, LPV200_Canada	Geomagnetic activity (KP = 3.67) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of: (1) LPV service coverage in Canada from 20:25 UTC on 11/24 to 20:50 UTC and from 22:55 UTC on 11/24 to 02:00 UTC on 11/25; (2) LPV200 service coverage in Canada from 19:55 UTC on 11/24 to 02:10 UTC on 11/25. The elevated GIVE values also caused minor degradation of LPV200 service coverage in Alaska from 22:45 UTC on 11/24 to 22:55 UTC on 11/24 and from 23:30 UTC to 02:30 UTC on 11/25. Please see plot(s): LPV_11/24/2024 LPV200_11/24/2024

				Cov_vs_Time_Alaska_11/24/2024 Cov_vs_Time_Canada_11/24/2024
11/25/2024	11/25/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_Canada	Geomagnetic activity (KP = 3.33) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of LPV200 service coverage in Canada from 05:15 UTC to 05:35 UTC, from 15:00 UTC to 15:30 UTC, from 16:05 UTC to 17:55 UTC, from 19:50 UTC to 20:50 UTC and from 21:30 UTC to 23:00 UTC. The elevated GIVE values also resulted in moderate degradation of LPV service coverage in Canada from 03:45 UTC to 04:40 UTC, from 16:05 UTC to 18:00 UTC, from 19:45 UTC to 20:50 UTC and from 22:15 UTC to 22:50 UTC. Please see plot(s): LPV_11/25/2024 LPV200_11/25/2024 Cov_vs_Time_Canada_11/25/2024
11/26/2024	11/26/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_Canada	Geomagnetic activity (KP = 3.33) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of: (1) LPV service coverage in Canada from about 19:45 UTC on 11/26 to 21:00 UTC on 11/26; and (2) LPV200 service coverage in Canada from about 19:20 UTC on 11/26 to 23:20 UTC on 11/26. Please see plot(s): LPV_11/26/2024 LPV200_11/26/2024 Cov_vs_Time_Canada_11/26/2024
11/26/2024	11/27/2024	PRN6	LPV200_CONUS	The reduction in LPV200 service in CONUS was due to a GPS NANU on PRN 6 (see NANU2024058) which was unusable from 16:58 UTC on 11/26 to 20:49 UTC on 11/27. The NANU resulted in moderate degradation of LPV200 service coverage in CONUS from 02:45 UTC to 03:20 UTC, 06:00 UTC to 06:20 UTC, 07:00 UTC to 07:45 UTC, 11:35 UTC to 12:05 UTC, and from 20:35 UTC to 20:45 UTC on 11/27. Please see plot(s): LPV_11/26/2024 LPV200_11/26/2024 Cov_vs_Time_Conus_11/26/2024 LP_11/27/2024 LPV_11/27/2024 Cov_vs_Time_Conus_11/27/2024
11/27/2024	11/27/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_CONUS, LPV200_Canada	Geomagnetic activity (KP = 2.33) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of: (1) LPV service coverage in Canada from 19:50 UTC on 11/27 to 22:10 UTC on 11/27, 22:40 UTC to 23:25 UTC on 11/27, and from 23:55 UTC on 11/27 to 00:05 UTC on 11/28; (2) LPV200 service coverage in Canada from 02:40 UTC on 11/27 to 03:05 UTC on 11/27, 18:10 UTC on 11/27 to 18:20

				UTC on 11/27, 18:45 UTC on 11/27 to 19:20 UTC on 11/27, and from 19:35 UTC to 00:30 UTC on 11/28. The elevated GIVE values also resulted in moderate degradation of LPV200 service coverage in CONUS from 02:45 UTC to 03:15 UTC, from 06:05 UTC to 06:15 UTC, from 07:10 UTC to 07:50 UTC, from 11:35 UTC to 12:05 UTC, and from 20:35 UTC to 20:45 UTC. Please see plot(s): LPV_11/27/2024 LPV200_11/27/2024 Cov_vs_Time_Canada_11/27/2024 Cov_vs_Time_Conus_11/27/2024
11/28/2024	11/28/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Canada	Geomagnetic activity (KP = 2) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of LPV200 service coverage in Canada from 18:55 UTC to 21:55 UTC, from 22:15 UTC to 22:35 UTC and from 23:15 UTC to 23:20 UTC. Please see plot(s): LPV200_11/28/2024 Cov_vs_Time_Canada_11/28/2024
11/29/2024	11/29/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Alaska, LPV_Canada, LPV200_Alaska, LPV200_Canada	Geomagnetic activity (KP = 2.67) caused by an IGP storm disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of: (1) LPV service coverage in Canada from about 19:30 UTC on 11/29 to 02:55 UTC on 11/30, (2) LPV200 service coverage in Canada from about 18:30 UTC on 11/29 to 03:10 UTC on 11/30. The elevated GIVE values also caused moderate degradation of the LPV200 service coverage in Alaska from about 11:50 UTC on 11/29 to 14:50 UTC on 11/29 in addition from 23:30 on 11/29 to 00:10 on 11/30. The elevated GIVE values also caused minor degradation of the LPV service coverage in Alaska from about 23:30 on 11/29 to 00:10 on 11/30. Please see plot(s): LPV_11/29/2024 LPV200_11/29/2024 Cov_vs_Time_Alaska_11/29/2024 Cov_vs_Time_Canada_11/29/2024
11/30/2024	11/30/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Alaska, LPV200_Alaska	Geomagnetic activity (KP = 4.67) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of: (1) LPV service coverage in Alaska from 00:45 UTC to 03:05 UTC; and (2) LPV200 service coverage in Alaska from 00:20 UTC to 03:35 UTC. Please see plot(s): LPV_11/30/2024 LPV200_11/30/2024 Cov_vs_Time_Alaska_11/30/2024

12/1/2024	12/1/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_Canada	Geomagnetic activity (KP = 3) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of: (1) LPV service coverage in Canada from 18:235 UTC to 21:25 UTC and from 22:35 UTC to 23:10 UTC; (2) LPV service coverage in Canada from 07:40 UTC to 07:55 UTC, 08:25 UTC to 08:50 UTC, 16:25 UTC to 16:35 UTC, 17:20 UTC to 23:10 UTC, and from 23:35 UTC to 23:50 UTC. Please see plot(s): LPV_12/1/2024 LPV200_12/1/2024 Cov_vs_Time_Canada_12/1/2024
12/2/2024	12/2/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Canada	Geomagnetic activity (KP = 2.33) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of LPV200 service coverage in Canada from 00:50 UTC to 01:40 UTC and from 02:30 UTC to 02:45 UTC. Please see plot(s): LPV_12/2/2024 LPV200_12/2/2024 Cov_vs_Time_Canada_12/2/2024
12/3/2024	12/3/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_CONUS, LPV200_Alaska, LPV200_Canada	Geomagnetic activity (KP = 3.67) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of: (1) LPV service coverage in Canada from about 17:40 UTC on 12/03 to 21:05 UTC on 12/03; and (2) LPV200 service coverage in Canada from about 00:30 UTC on 12/03 to 01:30 UTC on 12/03 in addition to 17:00 UTC on 12/03 to 23:10 UTC on 12/03. The elevated GIVE values also resulted in moderate degradation of the LPV200 service coverage in Alaska from about 00:30 UTC on 12/03 to 05:40 UTC on 12/03. The elevated GIVE values also resulted in minor degradation of LPV200 service coverage in CONUS from about 11:30 on 12/03 to 11:50 on 12/03. Please see plot(s): LPV_12/3/2024 LPV200_12/3/2024 Cov_vs_Time_Alaska_12/3/2024 Cov_vs_Time_Canada_12/3/2024 Cov_vs_Time_Conus_12/3/2024
12/4/2024	12/4/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_CONUS, LPV200_Canada	Geomagnetic activity (KP = 2.33) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of: (1) LPV service coverage in Canada from 17:00 UTC on 12/4 to 18:15 UTC on 12/4, 18:30 UTC on 12/4 to 21:00 UTC on 12/4, and from 21:35 UTC on 12/4 to 00:05 UTC on 12/5; (2) LPV200 service coverage in Canada from 15:45 UTC on 12/4 to 16:30 UTC on 12/4 and from 16:45 UTC on 12/4 to 01:00 UTC on 12/5. The elevated GIVE values also caused minor

				degradation of LPV200 service coverage in CONUS (Gulf of Mexico) from 11:10 UTC on 12/4 to 11:50 UTC on 12/5. Please see plot(s): LPV_12/4/2024 LPV200_12/4/2024 Cov_vs_Time_Canada_12/4/2024 Cov_vs_Time_Conus_12/4/2024
12/5/2024	12/5/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_CONUS, LPV200_Canada	Geomagnetic activity (KP = 2.33) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of LPV200 service coverage in Canada from 00:00 UTC to 00:55 UTC and from 20:35 UTC to 21:35 UTC. The elevated GIVE values also resulted in minor degradation of (1) LPV service coverage in Canada from 00:00 UTC to 00:10 UTC and from 21:10 UTC to 21:25 UTC; (2) LPV200 service coverage in CONUS from 05:40 UTC to 06:00 UTC and 11:10 UTC to 11:45 UTC. Please see plot(s): LPV_12/5/2024 LPV200_12/5/2024 Cov_vs_Time_Canada_12/5/2024 Cov_vs_Time_Conus_12/5/2024
12/6/2024	12/6/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_CONUS, LPV200_Canada	Geomagnetic activity (KP = 2.67) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of: (1) LPV service coverage in Canada from about 17:40 UTC on 12/06 to 22:45 UTC on 12/06, (2) LPV200 service coverage in CONUS from about 05:30 UTC on 12/06 to 05:55 UTC on 12/06 in addition to 11:30 UTC on 12/06 to 11:45 UTC on 12/06, and (3) LPV200 service coverage in Canada from about 17:30 UTC on 12/06 to 22:30 UTC on 12/06. Please see plot(s): LPV_12/6/2024 LPV200_12/6/2024 Cov_vs_Time_Canada_12/6/2024 Cov_vs_Time_Conus_12/6/2024
12/7/2024	12/7/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_Canada	Geomagnetic activity (KP = 2) caused by an IGP storm disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of LPV200 service coverage in Canada from 17:10 UTC to 21:25 UTC. The elevated GIVE values also resulted in moderate degradation of LPV service coverage in Canada from 19:40 UTC to 20:30 UTC. Please see plot(s): LPV_12/7/2024 LPV200_12/7/2024 Cov_vs_Time_Canada_12/7/2024
12/8/2024	12/8/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_CONUS, LPV200_Canada	Geomagnetic activity (KP = 2.67) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of LPV200 service coverage in Canada from 00:15

				UTC to 01:10 UTC, 15:40 UTC to 16:10 UTC, and from 16:50 UTC to 21:10 UTC. The elevated GIVE values also caused moderate degradation of: (1) LPV service coverage in Canada from 18:35 UTC to 20:05 UTC; (2) LPV200 service coverage in CONUS (Florida) from 01:35 UTC to 02:45 UTC. Please see plot(s): LPV_12/8/2024 LPV200_12/8/2024 Cov_vs_Time_Canada_12/8/2024 Cov_vs_Time_Conus_12/8/2024
12/9/2024	12/9/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_CONUS, LPV200_Canada	Geomagnetic activity (KP = 4) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of (1) LPV service coverage in Canada from 13:45 UTC to 19:00 UTC, from 19:30 UTC to 21:35 UTC and from 23:55 UTC to 00:40 UTC on 12/09; (2) LPV200 service coverage in Canada from 13:40 UTC to 00:35 UTC on 12/09. The elevated GIVE values also resulted in minor degradation of LPV200 service coverage in CONUS from 10:55 UTC to 11:20 UTC. Please see plot(s): LPV_12/9/2024 LPV200_12/9/2024 Cov_vs_Time_Canada_12/9/2024 Cov_vs_Time_Conus_12/9/2024
12/10/2024	12/10/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_CONUS, LPV200_Alaska, LPV200_Canada	Geomagnetic activity (KP = 3) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of LPV200 service coverage in Canada from about 18:40 UTC on 12/10 to 20:50 UTC on 12/10 The elevated GIVE values also caused minor degradation of: (1) LPV200 service coverage in CONUS from about 10:45 UTC on 12/10 to 11:15 UTC on 12/10; and (3) LPV200 service coverage in Alaska from about 02:00 UTC on 12/10 to 03:50 UTC on 12/10. Please see plot(s): LPV200_12/10/2024 Cov_vs_Time_Alaska_12/10/2024 Cov_vs_Time_Canada_12/10/2024 Cov_vs_Time_Conus_12/10/2024
12/11/2024	12/11/2024	NAPA (APC), Brewster (BRE-B)	None	There was a 9914 second outage on GEO135 from 08:26:21 to 11:11:36 UTC. The other two WAAS GEOs were transmitting at the time of the G30 SIS loss so there was no loss of WAAS service to aviation users. The GEO135 SIS outage coincided with a planned upgrade to the Brewster 2 GUS. This GUS is one of the two GUSs that uplink the WAAS user message to GEO135. The other GUS, Napa, had terrestrial communication issues that

				resulted in being taken offline. With both GUSs being offline the loss of SIS occurred.
12/11/2024	12/13/2024	PRN21	LPV200_CONUS	There was a GPS NANU on PRN 21 (see NANU 2024064) which was unusable from 11:01 UTC to 19:08 UTC. The NANU caused moderate degradation of LPV200 service coverage in CONUS (West Coast, AZ, TX) from 12:55 UTC to 13:50 UTC. Please see plot(s): LPV_12/12/2024 LPV200_12/12/2024 Cov_vs_Time_Conus_12/12/2024
12/12/2024	12/12/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_CONUS, LPV200_Canada	Geomagnetic activity (KP = 2.67) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of (1) LPV service coverage in Canada from 00:00 UTC to 00:50 UTC, from 12:30 UTC to 12:45 UTC, from 18:05 UTC to 18:25 UTC and from 20:55 UTC to 21:15 UTC; (2) LPV200 service coverage in CONUS from 05:15 UTC to 05:25 UTC and from 13:00 UTC to 13:50 UTC; (3) LPV200 service coverage in Canada from 00:10 UTC to 00:35 UTC and from 12:30 UTC to 12:40 UTC. Please see plot(s): LPV_12/12/2024 LPV200_12/12/2024 Cov_vs_Time_Canada_12/12/2024 Cov_vs_Time_Conus_12/12/2024
12/13/2024	12/13/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_CONUS, LPV200_Canada	Geomagnetic activity (KP = 1.67) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of: (1) LPV service coverage in Canada from about 19:15 UTC on 12/13 to 20:00 UTC on 12/13; (2) LPV200 service coverage in CONUS from about 13:15 UTC on 12/13 to 13:35 UTC on 12/13; and (3) LPV200 service coverage in Canada from about 17:00 UTC on 12/13 to 20:30 UTC on 12/13. Please see plot(s): LPV_12/13/2024 LPV200_12/13/2024 Cov_vs_Time_Canada_12/13/2024 Cov_vs_Time_Conus_12/13/2024
12/14/2024	12/14/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_Canada	Geomagnetic activity (KP = 3.33) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of: (1) LPV service coverage in Canada from 16:15 UTC to 20:50 UTC; and (2) LPV200 service coverage in Canada from 16:15 UTC to 20:50 UTC. Please see plot(s): LPV_12/14/2024 LPV200_12/14/2024
12/15/2024	12/15/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Canada	Geomagnetic activity (KP = 3.33) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of LPV200 service coverage in Canada from 16:15

				UTC to 17:10 UTC and from 18:55 UTC to 20:55 UTC. Please see plot(s): LPV200_12/15/2024 Cov_vs_Time_Canada_12/15/2024
12/16/2024	12/16/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_CONUS, LPV200_Canada	Geomagnetic activity (KP = 3.67) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of LPV200 service coverage in Canada from 16:20 UTC to 17:20 UTC, from 17:35 UTC to 20:45 UTC and 23:10 UTC to 00:55 UTC on 12/17. The elevated GIVE values also resulted in moderate degradation of LPV service coverage in Canada from 16:15 UTC to 17:10 UTC, from 17:35 UTC to 20:55 UTC, from 21:15 UTC to 22:00 UTC and from 23:00 UTC to 00:25 UTC on 12/17. The elevated GIVE values also resulted in minor degradation of LPV200 service coverage in CONUS from 05:00 UTC to 05:10 UTC and from 10:25 UTC to 10:55 UTC. Please see plot(s): LPV_12/16/2024 LPV200_12/16/2024 Cov_vs_Time_Canada_12/16/2024 Cov_vs_Time_Conus_12/16/2024
12/17/2024	12/17/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_CONUS, LPV200_Canada	Geomagnetic activity (KP = 5.33) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of the LPV200 service coverage in Canada from about 18:35 UTC on 12/17 to 20:30 UTC on 12/17. The elevated give values also resulted in minor degradation of the LPV200 service coverage in CONUS from about 13:15 UTC on 12/17 to 14:45 UTC on 12/17. Please see plot(s): LPV200_12/17/2024 Cov_vs_Time_Canada_12/17/2024 Cov_vs_Time_Conus_12/17/2024
12/18/2024	12/18/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_Canada	Geomagnetic activity (KP = 4) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of: (1) LPV service coverage in Canada from 17:55 UTC to 20:10 UTC; (2) LPV200 service coverage in Canada from 16:05 UTC to 22:20 UTC. Please see plot(s): LPV_12/18/2024 LPV200_12/18/2024 Cov_vs_Time_Canada_12/18/2024
12/19/2024	12/19/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_Alaska, LPV200_Canada	Geomagnetic activity (KP = 4) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of (1) LPV service coverage in Canada from 02:05 UTC to 02:40 UTC, from 20:15 UTC to 20:55 UTC and from 22:05 UTC to

				23:45 UTC; (2) LPV200 service coverage in Alaska from 01:20 UTC to 01:35 UTC and from 22:55 UTC to 23:30 UTC; (3) LPV200 service coverage in Canada from 01:30 UTC to 02:00 UTC, from 20:25 UTC to 21:00 UTC and from 21:35 UTC to 02:15 UTC on 12/20. Please see plot(s): LPV_12/19/2024 LPV200_12/19/2024 Cov_vs_Time_Alaska_12/19/2024 Cov_vs_Time_Canada_12/19/2024
12/20/2024	12/20/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_Canada	Geomagnetic activity (KP = 3.67) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of LPV200 service coverage in Canada from about 17:40 UTC on 12/20 to 23:50 UTC on 12/20. The elevated GIVE values also resulted in moderate degradation of LPV service coverage in Canada from about 18:30 UTC on 12/20 to 19:45 UTC on 12/20. Please see plot(s): LPV_12/20/2024 LPV200_12/20/2024 Cov_vs_Time_Canada_12/20/2024
12/22/2024	12/22/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_Canada	Geomagnetic activity (KP = 3.33) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of: (1) LPV service coverage in Canada from 16:15 UTC on 12/22 to 23:35 UTC on 12/22; (2) LPV200 service coverage in Canada from 14:45 UTC on 12/22 to 15:05 UTC on 12/22 and from 15:35 UTC on 12/22 to 00:50 on 12/23. Please see plot(s): LPV_12/22/2024 LPV200_12/22/2024 Cov_vs_Time_Canada_12/22/2024
12/23/2024	12/23/2024	PRN9	LPV200_CONUS	There was a GPS NANU on PRN 9 (see NANU 2024069) which was unusable from 15:34 UTC on 12/23 to 21:16 UTC on 12/24. The NANU along with the elevated GIVE values (see Event 27779) resulted in moderate degradation of LPV200 service coverage in CONUS (TX, LA, FL) from 18:40 UTC to 19:10 UTC. Please see plot(s): LPV200_12/23/2024 Cov_vs_Time_Conus_12/23/2024
12/23/2024	12/23/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_CONUS, LPV200_Alaska, LPV200_Canada	Geomagnetic activity (KP = 3.67) caused by an IGP storm disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of (1) LPV service coverage in Canada from 19:25 UTC to 23:59 UTC; (2) LPV200 service coverage in Canada from 16:50 UTC to 18:35 UTC and from 19:05 UTC to 00:15 UTC on 12/24. The elevated GIVE values

				along with NANU (see Event 27757) also resulted in moderate degradation of (1) LPV200 service coverage in CONUS (TX, LA, FL) from 18:40 UTC to 19:10 UTC; (2) LPV200 service coverage in Alaska from 00:05 UTC to 00:35 UTC, from 16:55 UTC to 17:25 UTC and from 22:05 UTC to 23:15 UTC. Please see plot(s): LPV_12/23/2024 LPV200_12/23/2024 Cov_vs_Time_Alaska_12/23/2024 Cov_vs_Time_Canada_12/23/2024 Cov_vs_Time_Conus_12/23/2024
12/24/2024	12/24/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_Canada	Geomagnetic activity (KP = 3.67) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of: (1) LPV service coverage in Canada from about 15:30 UTC on 12/24 to 22:10 UTC on 12/24, and (2) LPV200 service coverage in Canada from about 15:15 UTC on 12/24 to 23:45 UTC on 12/24. Please see plot(s): LPV_12/24/2024 LPV200_12/24/2024 Cov_vs_Time_Canada_12/24/2024
12/25/2024	12/25/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Canada	Geomagnetic activity (KP = 2.33) disturbed the ionosphere causing elevated GIVE values. This resulted in minor degradation of LPV200 service coverage in Canada from 00:45 UTC to 01:10 UTC, 18:55 UTC to 19:35 UTC, 20:00 UTC to 20:35 UTC, and from 20:50 UTC to 21:10 UTC. Please see plot(s): LPV200_12/25/2024 Cov_vs_Time_Canada_12/25/2024
12/26/2024	12/26/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Canada	Geomagnetic activity (KP = 0.67) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of LPV200 service coverage in Canada from 06:05 UTC to 06:15 UTC, from 21:15 UTC to 22:05 UTC and from 23:05 UTC to 23:25 UTC. Please see plot(s): LPV200_12/26/2024 Cov_vs_Time_Canada_12/26/2024
12/27/2024	12/27/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_Canada	Geomagnetic activity (KP = 1.33) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of: LPV service coverage in Canada from about 18:40 UTC on 12/27 to 21:30 UTC on 12/27; and (2) LPV200 service coverage in Canada from about 18:35 UTC on 12/27 to 21:40 UTC on 12/27. Please see plot(s): LPV_12/27/2024 LPV200_12/27/2024 Cov_vs_Time_Canada_12/27/2024

12/28/2024	12/28/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_CONUS, LPV200_Canada	Geomagnetic activity (KP = 1.67) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of: (1) LPV service coverage in Canada from 20:20 UTC to 21:40 UTC; (2) LPV200 service coverage in CONUS from 00:10 UTC to 01:15 UTC and from 02:15 UTC to 02:45 UTC; and (3) LPV200 service coverage in Canada from 18:30 UTC to 21:55 UTC. Please see plot(s): LPV_12/28/2024 LPV200_12/28/2024 Cov_vs_Time_Canada_12/28/2024 Cov_vs_Time_Conus_12/28/2024
12/28/2024	12/29/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_CONUS, LPV200_Canada	Geomagnetic activity (KP = 3.67) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of: (1) LPV service coverage in Canada from 18:20 UTC to 21:10 UTC on 12/28; and (2) LPV200 service coverage in Canada from 18:10 UTC on 12/28 to 00:10 UTC on 12/29. The elevated GIVE values also resulted in minor degradation of LPV200 service coverage in CONUS from 19:55 UTC to 20:10 UTC. Please see plot(s): LPV_12/28/2024 LPV200_12/28/2024 Cov_vs_Time_Canada_12/28/2024 Cov_vs_Time_Conus_12/28/2024 LPV_12/29/2024 LPV200_12/29/2024 Cov_vs_Time_Canada_12/29/2024 Cov_vs_Time_Conus_12/29/2024
12/29/2024	12/29/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_Canada	Geomagnetic activity (KP = 2) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of: (1) LPV service coverage in Canada from 22:25 UTC to 22:35 UTC; (2) LPV200 service coverage in Canada from 00:45 UTC to 01:00 UTC, 18:25 UTC to 19:30 UTC, 20:35 UTC to 21:30 UTC, and from 22:20 UTC to 23:05 UTC. Please see plot(s): LPV_12/29/2024 LPV200_12/29/2024 Cov_vs_Time_Canada_12/29/2024
12/30/2024	12/30/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_CONUS, LPV200_Canada	Geomagnetic activity (KP = 2.67) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of (1) LPV service coverage in Canada from 17:05 UTC to 22:40 UTC; (2) LPV200 service coverage in Canada from 06:45 UTC to 07:10 UTC, from 17:05 UTC to 19:30 UTC, from 19:55 UTC to 22:40 UTC and from 23:15 UTC to 00:20 UTC on 12/31. The elevated GIVE values also resulted in minor degradation of LPV200 service coverage in CONUS from 02:25

				UTC to 02:35 UTC and from 09:30 UTC to 10:00 UTC. Please see plot(s): LPV_12/30/2024 LPV200_12/30/2024 Cov_vs_Time_Canada_12/30/2024 Cov_vs_Time_Conus_12/30/2024
12/31/2024	12/31/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_CONUS, LPV_Alaska, LPV_Canada, LPV200_CONUS, LPV200_Alaska, LPV200_Canada	Geomagnetic activity (KP = 4) caused by an IGP storm disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of: (1) LPV service coverage in Alaska from about 21:30 UTC on 12/31/24 to 00:00 UTC on 1/1/25; (2) LPV service coverage in Canada from about 17:45 UTC on 12/31/24 to 00:00 UTC on 1/1/25; (3) LPV200 service coverage in CONUS from about 20:30 UTC on 12/31/24 to 00:00 UTC on 12/31/25; (4) LPV200 service coverage in Alaska from about 19:00 UTC on 12/31/24 to 00:00 UTC on 1/1/25; and (5) LPV200 service coverage in Canada from about 16:45 UTC on 12/31/24 to 00:00 UTC on 1/1/25. The elevated GIVE values also resulted in moderate degradation of the LPV service coverage in CONUS from about 21:45 UTC on 12/31/24 to 00:00 UTC on 1/1/25. (See DR 171) Please see plot(s): DR 171 Iono Activity December 31 2024 – January 2 2025.pdf LPV_12/31/2024 LPV200_12/31/2024 Cov_vs_Time_Alaska_12/31/2024 Cov_vs_Time_Canada_12/31/2024

Table 1-6 WAAS Upgrades

Start Date	End Date	Location Satellite	Event Description
12/03/2024	12/03/2024	NOCC	SSM-WAAS-064: This system support modification (SSM) upgrades the NOCC O&M software to W7.412L as an intermediate step before upgrading it to W7.425L. The upgrade started on 12/03/24 from 16:54 UTC to 16:34 UTC.
12/03/2024	12/06/2024	Brewster (BR1)	SSM-WAAS-064: This system support modification (SSM) replaces the GUST receivers with 2xG-III receivers and upgrades the Brewster (BR1) GUS to software build 7.425L. This started 17:42 UTC on 12/03/2024 and ended at 01:24 UTC on 12/06/2024. Following the completion of this upgrade, Brewster faulted at 05:45 UTC due to a failure of one of the G-III receivers. The GUS returned to backup mode at 21:25 UTC on 12/06/24. There was no impact on coverage.
12/03/2024	12/03/2024	POCC	SSM-WAAS-064: This system support modification (SSM) upgrades the POCC O&M software to W7.412L as an intermediate step before upgrading it to W7.425L. The upgrade started on 12/03/24 from 16:05 UTC to 16:51 UTC.

12/10/2024	12/11/2024	Brewster (BR2)	SSM-WAAS-064: This system support modification (SSM) replaces the GUST receivers with 2xG-III receivers and upgrades the Brewster (BR2) GUS to software build 7.425L. This started 16:50 UTC on 12/10/2024 and ended at 23:43 UTC on 12/11/2024.
12/17/2024	12/19/2024	NAPA (AP1)	SSM-WAAS-064: This system support modification (SSM) replaces the GUST receivers with 2xG-III receivers and upgrades the Napa (AP1) GUS to software build 7.425L. This started 16:57 UTC on 12/17/2024 and ended at 00:46 UTC on 12/19/2024.

Table 1-7 GUS Switchovers

Start Date	End Date	GUS Switch	Location Satellite	Service Affected	Event Description
10/08/2024	10/08/2024	Faulted	GEO135, Brewster (BR2)	None	The uplink for the 135 GEO, PRN 135 switched from the Brewster uplink site to the Napa uplink site at 08:39:21. This caused a 14-second outage of the 135 broadcast and also caused the WAAS carrier smoothing algorithm to re-initialize for PRN 135. This also caused the UDRE for 135 to be elevated. The elevated UDRE for GEO 135 affected LPV and LPV200 service outages in all regions. TOW 203979 - 203994
10/21/2024	10/21/2024	Manual	GEO131, Southbury (DX1)	None	The uplink for the SM9 GEO, PRN131 switched from the Southbury uplink site to the Santa_Paula uplink site at 07:09:06 UTC. This caused a 3-second outage of the GEO 131 broadcast and also caused the WAAS carrier smoothing algorithm to reinitialize for PRN131. There was no impact on coverage. TOW 113363-113367
10/31/2024	10/31/2024	Manual	GEO135, Napa (AP1)	None	The uplink for the G30 GEO, PRN135 switched from the Napa uplink site to the Brewster uplink site at 07:02:08 UTC. This caused a 3-second outage of the GEO 135 broadcast and also caused the WAAS carrier smoothing algorithm to reinitialize for PRN131. There was no impact on coverage. TOW 370945-370949
11/18/2024	11/18/2024	Manual	GEO135, Brewster (BR2)	None	The uplink for the G30 GEO, PRN135 switched from the Brewster uplink site to the Napa uplink site at 15:13:06 UTC. This caused a 3-second outage of the GEO 135 broadcast and also caused the WAAS carrier smoothing algorithm to reinitialize for PRN135. There was no impact on coverage. TOW 141203-141207
11/20/2024	11/20/2024	Manual	GEO131, Santa_Paula (SZ1)	None	The uplink for the SM9 GEO, PRN131 switched from the Santa_Paula uplink site to the Southbury uplink site at 07:04:27 UTC. This caused a 3-second outage of the GEO 131 broadcast and also caused the WAAS carrier smoothing algorithm to reinitialize for PRN131. There was no impact on coverage. TOW 284685-284689
12/02/2024	12/02/2024	Manual	GEO133, Brewster (BR1)	None	The uplink for the S15 GEO, PRN133 switched from the Brewster uplink site to the South Mountain uplink site at 08:00:11 UTC. This caused a 3-second outage of the GEO 133 broadcast and also caused the WAAS carrier

Start Date	End Date	GUS Switch	Location Satellite	Service Affected	Event Description
					smoothing algorithm to reinitialize for PRN133. There was no impact on coverage. TOW 115228-115232
12/11/2024	12/11/2024	Manual	GEO135, Napa (AP1)	None	The uplink for the G30 GEO, PRN135 switched from the Napa uplink site to the Brewster uplink site at 23:42:58 UTC. This caused a 3-second outage of the GEO 135 broadcast and also caused the WAAS carrier smoothing algorithm to reinitialize for PRN135. There was no impact on coverage. TOW 344596-344600
12/19/2024	12/19/2024	Manual	GEO135, Brewster (BR2)	None	The uplink for the G30 GEO, PRN135 switched from the Brewster uplink site to the Napa uplink site at 00:46:02 UTC. This caused a 3-second outage of the GEO 135 broadcast and also caused the WAAS carrier smoothing algorithm to reinitialize for PRN135. There was no impact on coverage. TOW 348379-348383
12/26/2024	12/26/2024	Faulted	GEO133, Brewster (BR1)	None	The uplink for the S15 GEO, PRN133 switched from the Brewster uplink site to the South Mountain uplink site at 05:10:55 UTC. Brewster faulted from Primary due to a comm line outage on Net-2. This caused a 16-second outage of the GEO 133 broadcast and also caused the WAAS carrier smoothing algorithm to reinitialize for PRN133. There was no impact on coverage. TOW 364272-364289
10/08/2024	10/08/2024	Faulted	GEO135, Brewster (BR2)	None	GEO 135 switched to Napa, Brewster faulted. TOW 203979-203994
12/19/2024	12/19/2024	Manual	GEO135, Brewster (BR2)	None	GEO 135, manual switchover from Brewster to Napa. TOW 348379-348383
11/12/2024	11/12/2024	Manual	GEO135, Napa (AP1)	None	GEO 135, manual switchover from Napa to Brewster. TOW 201647-201651
10/08/2024	10/08/2024	Faulted	GEO135, Brewster (BR2)	None	GEO 135 switched to Napa, Brewster faulted. TOW 203979-203997
12/06/2024	12/06/2024	Manual	GEO133, South Mountain (CM1)	None	GEO 133, manual switchover from South Mountain to Brewster. TOW 510699-510703
12/06/2024	12/06/2024	Manual	GEO133, Brewster (BR1)	None	GEO 133, manual switchover from Brewster to South Mountain. TOW 500487-500492
12/06/2024	12/06/2024	Manual	GEO133, South Mountain (CM1)	None	GEO 133, manual switchover from South Mountain to Brewster. TOW 497509-497513
12/06/2024	12/06/2024	Faulted	GEO133, Brewster (BR1)	None	GEO 133 switched to South Mountain, Brewster faulted. TOW 452769-452786

Start Date	End Date	GUS Switch	Location Satellite	Service Affected	Event Description
12/06/2024	12/06/2024	Manual	GEO133, South Mountain (CM1)	None	GEO 133, manual switchover from South Mountain to Brewster. TOW 438341-438345
10/08/2024	10/08/2024	Faulted	GEO135, Brewster (BR2)	None	GEO 135 switched to Napa, Brewster faulted. TOW 203979-203995
11/05/2024	11/05/2024	Manual	GEO135, Brewster (BR2)	None	GEO 135, manual switchover from Brewster to Napa. TOW 227226-227230

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 PA Evaluation Sites and NPA Evaluation Site). 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 SM9, S15, and G30.

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 SM9, S15, and G30.

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-229F-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. Asterisks denote that SPS accuracy is not computed for those receivers. 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 1.353 meters observed at Arcata.
- The maximum 95% CONUS vertical LPV error was 2.224 meters observed at Miami.
- The minimum 95% CONUS horizontal LPV errors was 0.679 meters observed at Memphis.
- The minimum 95% CONUS vertical LPV error was 0.981 meters observed at Salt Lake City.

Table 2-1 PA 95% Horizontal and Vertical Accuracy

Location	Horizontal (HAL=40 m) (m)	Horizontal (HAL=556 m) (m)	Vertical (VAL=50 m) (m)	Percentage in PA Mode (%)	SPS Accuracy	
					95% Horizontal (m)	95% Vertical (m)
Arcata	1.353	1.394	1.501	99.997	*	*
Atlantic City	1.196	1.211	1.761	99.999	*	*
Bangor	1.058	1.073	1.713	100	*	*
Elko	1.180	1.223	1.396	99.998	*	*
Grand Forks	1.260	1.290	1.726	99.999	*	*
Oklahoma City	0.906	0.928	1.404	99.997	*	*
Albuquerque	0.790	0.817	1.152	100	2.37	7.18
Anchorage	0.955	1.016	1.535	100	3.5	9.72
Atlanta	0.969	0.986	1.449	100	2.39	6.75
Barrow	1.047	1.163	2.199	100	4.24	10.89
Bethel	0.828	0.865	1.440	100	3.32	10.53
Billings	0.840	0.867	1.134	100	2.73	6.57
Boston	0.870	0.881	1.243	100	2.76	6.63
Chicago	0.891	0.904	1.134	100	*	*
Cleveland	0.785	0.797	1.178	100	2.42	6.3
Cold Bay	0.952	0.981	1.497	100	2.88	10.01
Dallas	0.705	0.727	1.493	100	*	*
Denver	0.754	0.775	0.990	100	*	*
Fairbanks	0.985	1.063	1.784	100	3.75	9.51
Gander	1.147	1.215	1.468	100	2.94	6.54
Goose Bay	1.200	1.376	1.781	100	*	*
Houston	0.779	0.809	1.575	100	2.5	6.59
Iqaluit	1.838	2.172	2.810	99.998	5.23	6.89
Jacksonville	0.763	0.782	1.720	100	*	*
Juneau	1.233	1.351	1.392	100	3.39	8.16
Kansas City	0.723	0.741	1.162	100	2.19	6.18
Kotzebue	0.937	1.004	1.863	99.998	3.71	10.64
Los Angeles	0.854	0.889	1.348	100	2.77	8.49
Memphis	0.679	0.700	1.292	100	*	*
Merida	1.253	1.287	2.417	99.991	5.48	6.78
Mexico City	1.505	1.561	2.237	100	*	*
Miami	1.046	1.065	2.224	100	3.49	6.62
Minneapolis	0.881	0.900	1.061	100	2.3	6.02
New York	0.917	0.927	1.261	100	*	*

Location	Horizontal (HAL=40 m) (m)	Horizontal (HAL=556 m) (m)	Vertical (VAL=50 m) (m)	Percentage in PA Mode (%)	SPS Accuracy	
					95% Horizontal (m)	95% Vertical (m)
Oakland	0.887	0.922	1.355	100	2.91	8.65
Puerto Vallarta	1.466	1.522	2.182	99.998	*	*
Salt Lake City	0.689	0.710	0.981	100	2.47	7.35
San Jose Del Cabo	1.218	1.267	2.254	99.995	5.86	7.89
Seattle	0.946	0.992	1.117	100	2.87	7.54
Washington, DC	0.831	0.841	1.203	100	2.53	6.56
Winnipeg	0.937	0.979	1.348	100	*	*

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 11.690 meters observed at Honolulu.
- The maximum 99.999% horizontal error was 34.896 meters observed at Honolulu.
- The minimum 95% horizontal error was 1.863 meters observed at Kansas City.
- The minimum 99.999% horizontal error was 6.922 meters observed at Cold Bay.

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

Location	95% Horizontal (m)	99.999% Horizontal (m)	Percentage in NPA Mode (%)	Maximum Horizontal Error (m)
Albuquerque	1.897	14.756	100	14.885
Anchorage	3.445	8.506	100	8.716
Atlanta	2.023	15.746	100	15.988
Barrow	4.188	10.704	100	10.933
Bethel	3.233	9.588	100	9.759
Billings	2.173	12.692	100	13.103
Boston	2.249	18.028	100	18.309
Cleveland	2.005	20.854	100	21.509
Cold Bay	2.636	6.922	100	7.014
Fairbanks	3.743	9.314	100	9.524
Gander	2.565	10.784	100	10.931
Honolulu	11.690	34.896	100	35.156
Houston	1.899	15.639	100	16.130
Iqaluit	5.177	12.562	100	12.738
Juneau	3.165	10.496	100	10.933
Kansas City	1.863	15.992	100	16.473
Kotzebue	3.697	8.882	100	9.028

Location	95% Horizontal (m)	99.999% Horizontal (m)	Percentage in NPA Mode (%)	Maximum Horizontal Error (m)
Los Angeles	2.084	13.996	100	14.549
Merida	3.194	13.496	100	13.960
Miami	2.497	13.888	100	14.392
Minneapolis	2.067	15.847	100	16.341
Oakland	2.260	13.792	100	13.973
Salt Lake City	1.957	16.000	100	16.161
San Jose Del Cabo	3.259	16.233	100	16.378
San Juan	8.252	29.707	99.985	31.227
Seattle	2.365	9.123	100	9.312
Tapachula	6.559	30.229	100	30.554
Washington, DC	2.078	19.037	100	19.290

Table 2-3 shows the quarterly maximum LPV error statistics: (1) the 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 5.719 meters occurred at Mexico City and maximum vertical LPV error was 8.642 meters occurred at Boston.

Table 2-3 Maximum LPV Error Statistics

Location	Horizontal Error (m)	Horizontal Error/ HPL	Horizontal Maximum Ratio	Vertical Error (m)	Vertical Error/ VPL	Vertical Maximum Ratio
Arcata	3.647	0.097	0.217	3.779	0.195	0.197
Atlantic City	2.666	0.191	0.216	6.915	0.234	0.285
Bangor	3.075	0.198	0.217	7.454	0.153	0.201
Elko GT	4.002	0.114	0.244	6.362	0.163	0.189
Grand Forks	3.889	0.192	0.230	5.769	0.223	0.270
Oklahoma City	2.264	0.140	0.214	4.290	0.152	0.210
Albuquerque	2.365	0.095	0.173	5.098	0.108	0.207
Anchorage	4.244	0.253	0.282	8.374	0.296	0.296
Atlanta	4.235	0.256	0.258	3.608	0.082	0.181
Barrow	3.267	0.222	0.239	6.574	0.166	0.229
Bethel	5.615	0.163	0.207	5.825	0.119	0.241
Billings	4.215	0.212	0.223	3.868	0.116	0.189
Boston	3.215	0.202	0.202	8.642	0.209	0.243
Chicago	3.065	0.251	0.282	6.572	0.149	0.246
Cleveland	2.673	0.153	0.217	5.393	0.205	0.210

Location	Horizontal Error (m)	Horizontal Error/ HPL	Horizontal Maximum Ratio	Vertical Error (m)	Vertical Error/ VPL	Vertical Maximum Ratio
Cold Bay	4.499	0.146	0.179	6.083	0.170	0.188
Dallas	2.407	0.060	0.175	3.835	0.174	0.199
Denver	3.628	0.186	0.268	4.664	0.097	0.245
Fairbanks	3.672	0.123	0.208	5.689	0.141	0.292
Gander	5.293	0.134	0.166	4.457	0.124	0.144
Goose Bay	4.926	0.129	0.239	6.666	0.135	0.195
Houston	2.525	0.208	0.216	4.539	0.097	0.240
Iqaluit	4.902	0.141	0.231	10.025	0.254	0.254
Jacksonville	3.593	0.110	0.206	3.852	0.182	0.192
Juneau	4.591	0.183	0.243	5.864	0.141	0.245
Kansas City	2.893	0.201	0.290	5.446	0.173	0.243
Kotzebue	3.465	0.092	0.183	6.866	0.151	0.213
Los Angeles	2.765	0.140	0.178	6.151	0.143	0.187
Memphis	2.629	0.230	0.240	3.648	0.172	0.206
Merida	5.437	0.262	0.264	4.785	0.167	0.189
Mexico City	5.719	0.242	0.340	5.704	0.117	0.186
Miami	2.574	0.197	0.197	5.807	0.149	0.208
Minneapolis	3.525	0.107	0.255	5.156	0.127	0.181
New York	2.573	0.148	0.215	6.063	0.184	0.254
Oakland	3.115	0.102	0.188	7.473	0.168	0.186
Puerto Vallarta	4.736	0.282	0.320	5.834	0.181	0.185
Salt Lake City	3.862	0.128	0.216	5.075	0.160	0.224
San Jose Del Cabo	4.099	0.241	0.241	5.668	0.126	0.198
Seattle	5.270	0.132	0.240	4.768	0.140	0.163
Washington, DC	2.495	0.190	0.238	5.043	0.190	0.230
Winnipeg	3.536	0.172	0.213	5.481	0.141	0.272

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 7-10, 2024—Position errors in CONUS, Alaska, and Canada were elevated. The maximum 95% horizontal and vertical LPV errors were 3.411 meters and 4.008 meters at Seattle and Oakland respectively. The Kp index was 6.3, 7.3, 4.7, and 8.7 respectively.
- October 11, 2024—Position errors in Mexico were elevated. The maximum 95% horizontal and vertical LPV errors were 4.648 meters and 3.960 meters at Mexico City and Puerto Vallarta respectively. The Kp index was 8.0.
- August 28, 2024—Position errors in CONUS and Canada were elevated. The maximum 95% horizontal and vertical LPV errors were 2.308 meters and 2.605 meters at Boston and Oakland respectively. The Kp index was 5.7.

- November 9, 2024—Position errors in CONUS and Alaska were elevated. The maximum 95% horizontal and vertical LPV errors were 2.930 meters and 2.832 meters at Denver and Barrow respectively. The Kp index was 5.0.

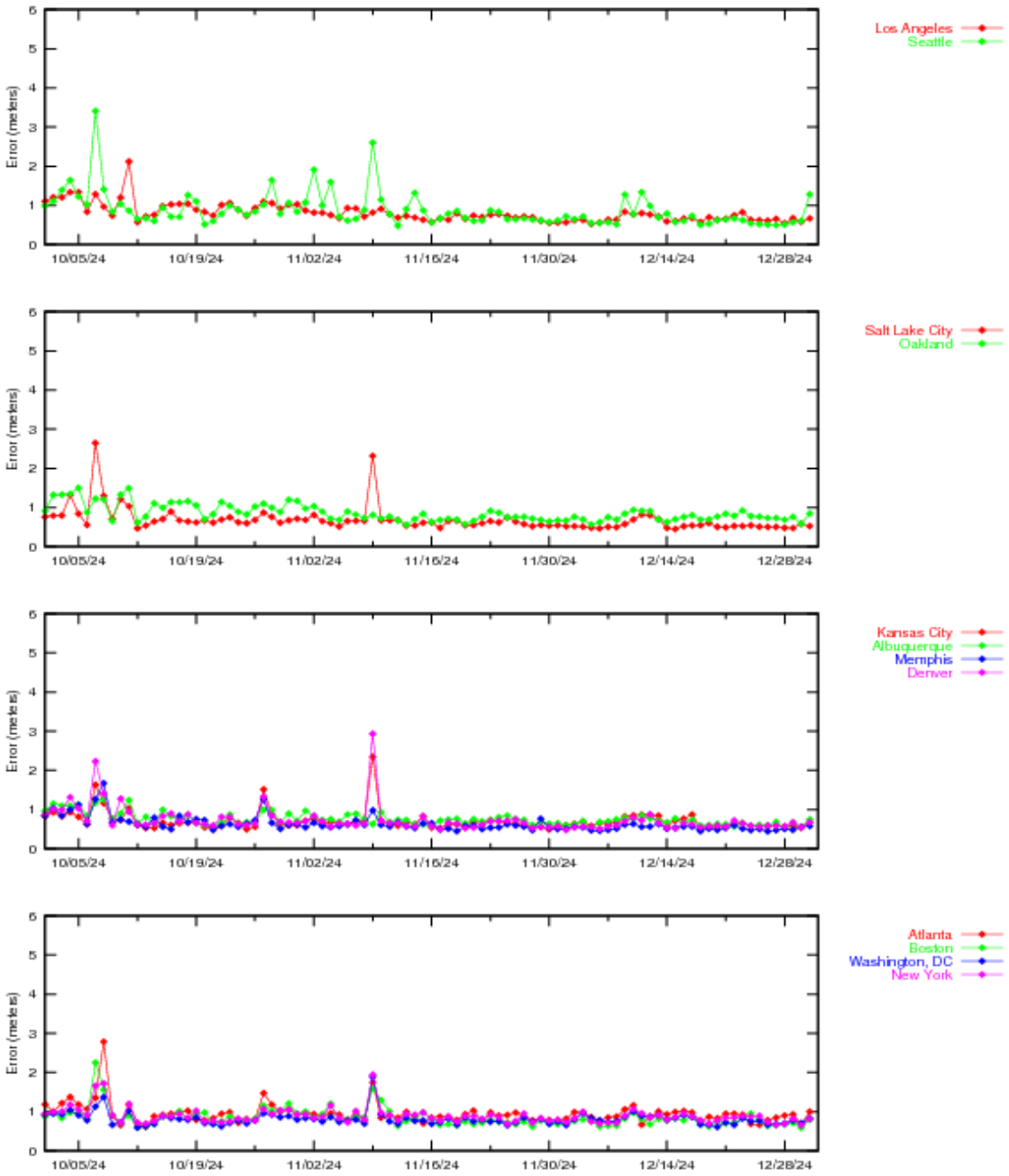

Figure 2-1 LPV 95% Horizontal Accuracy

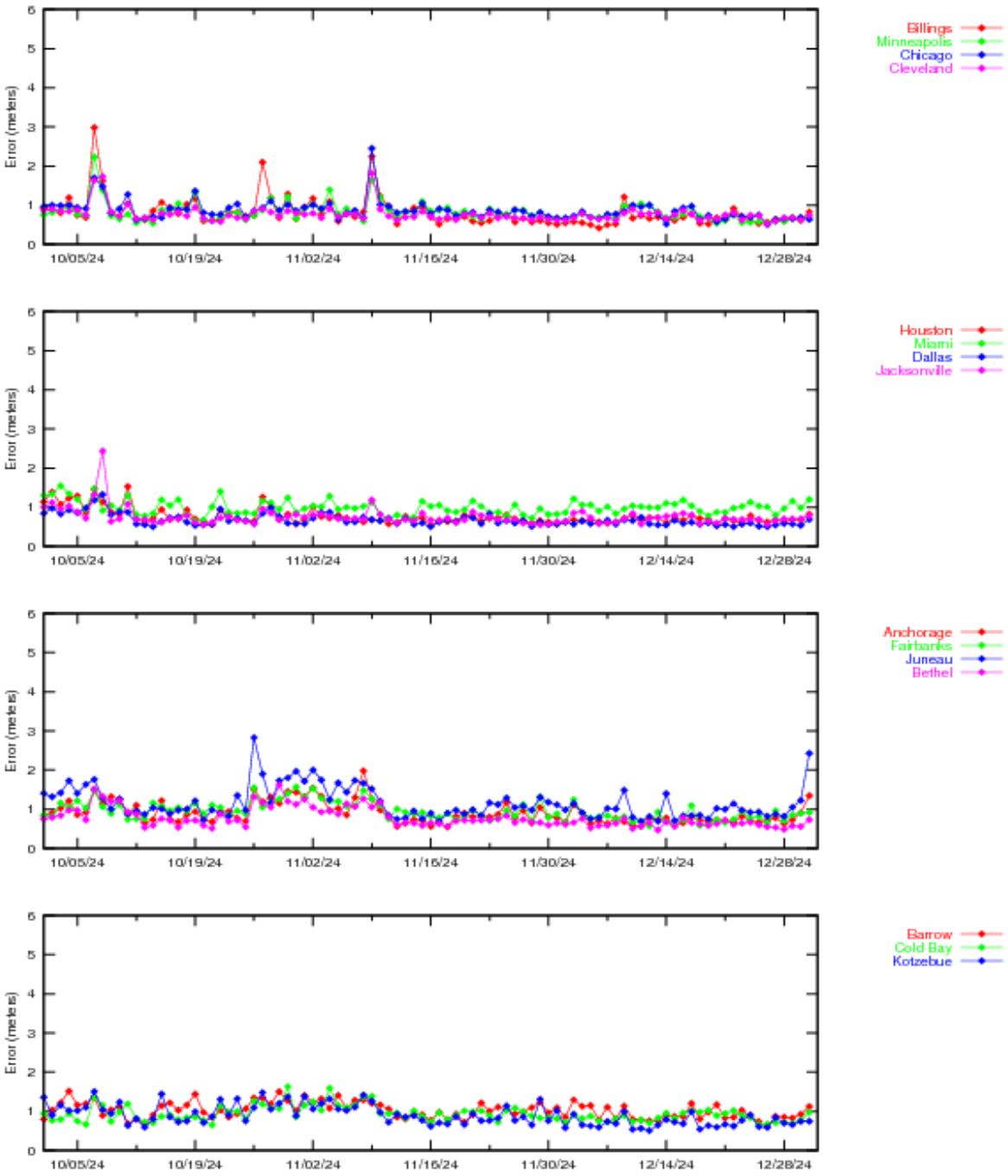

Figure 2-2 LPV 95% Horizontal Accuracy

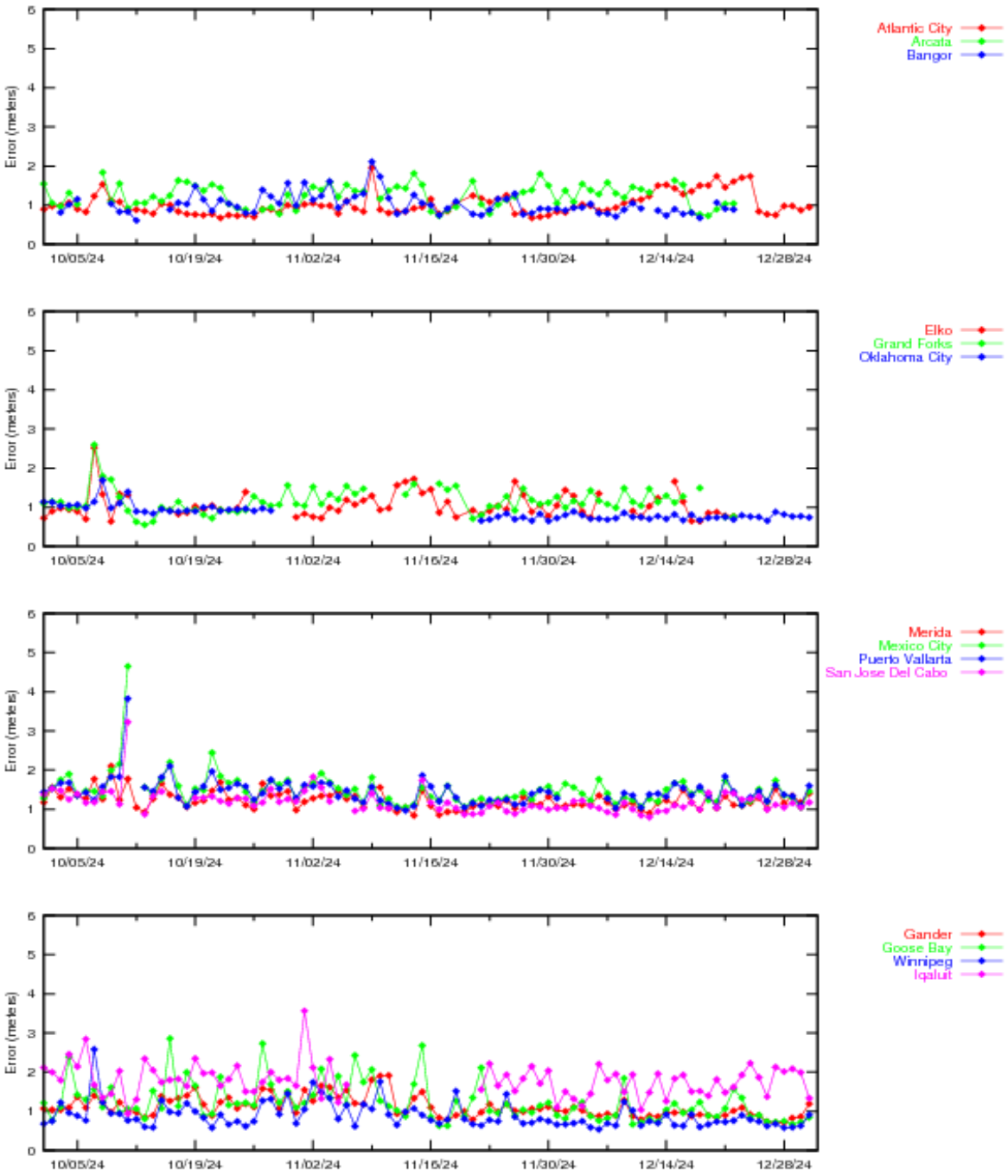

Figure 2-3 LPV 95% Horizontal Accuracy

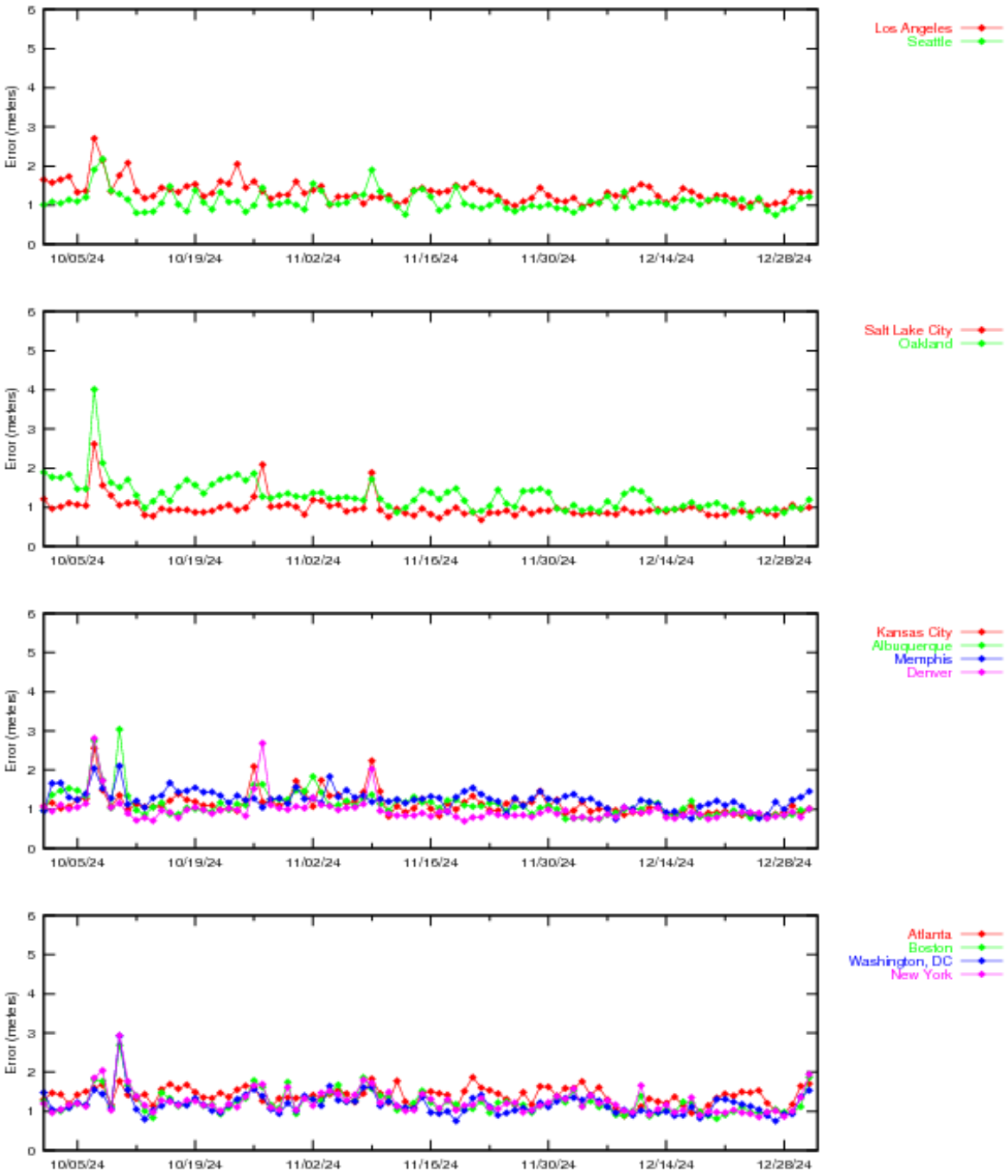

Figure 2-4 LPV 95% Vertical Accuracy

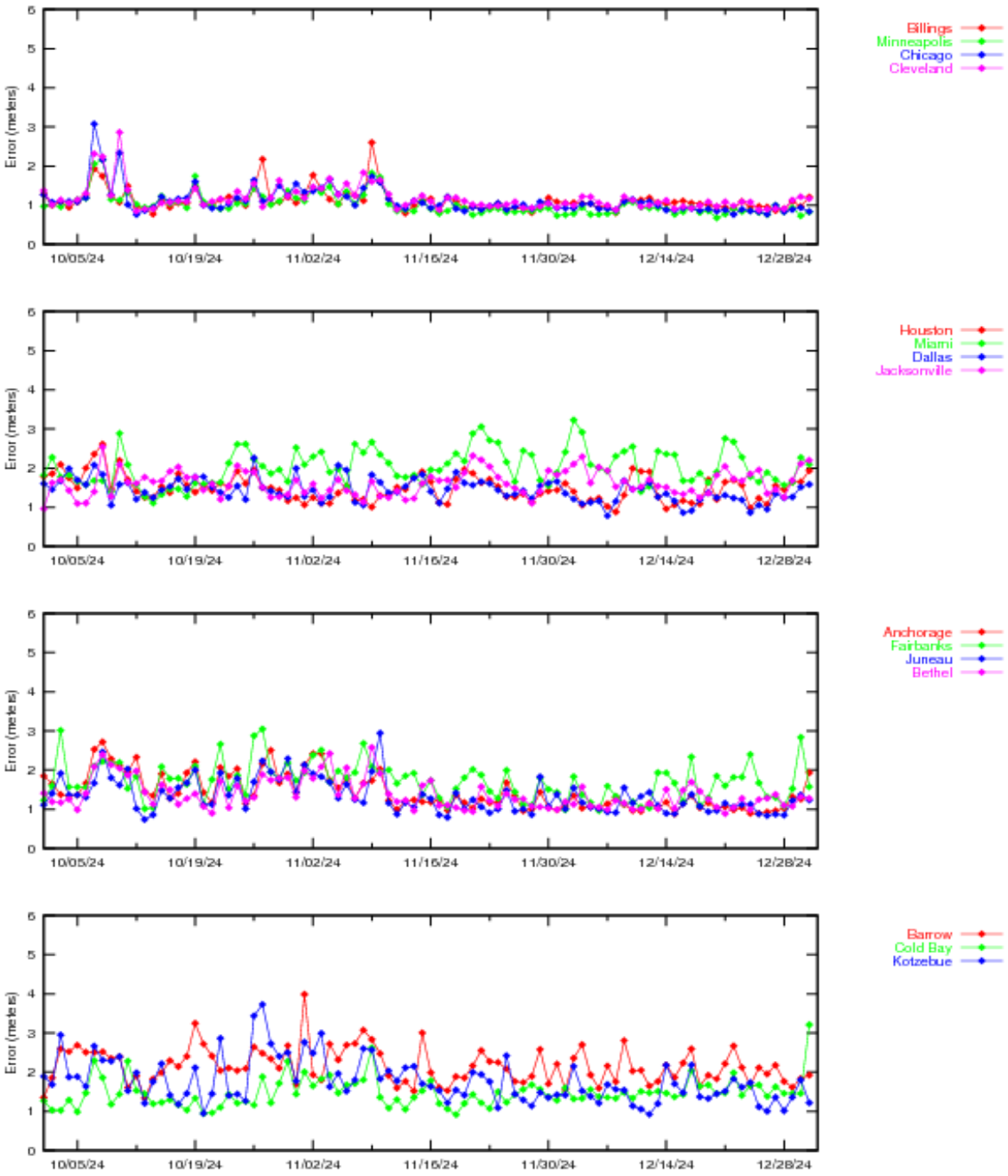

Figure 2-5 LPV 95% Vertical Accuracy

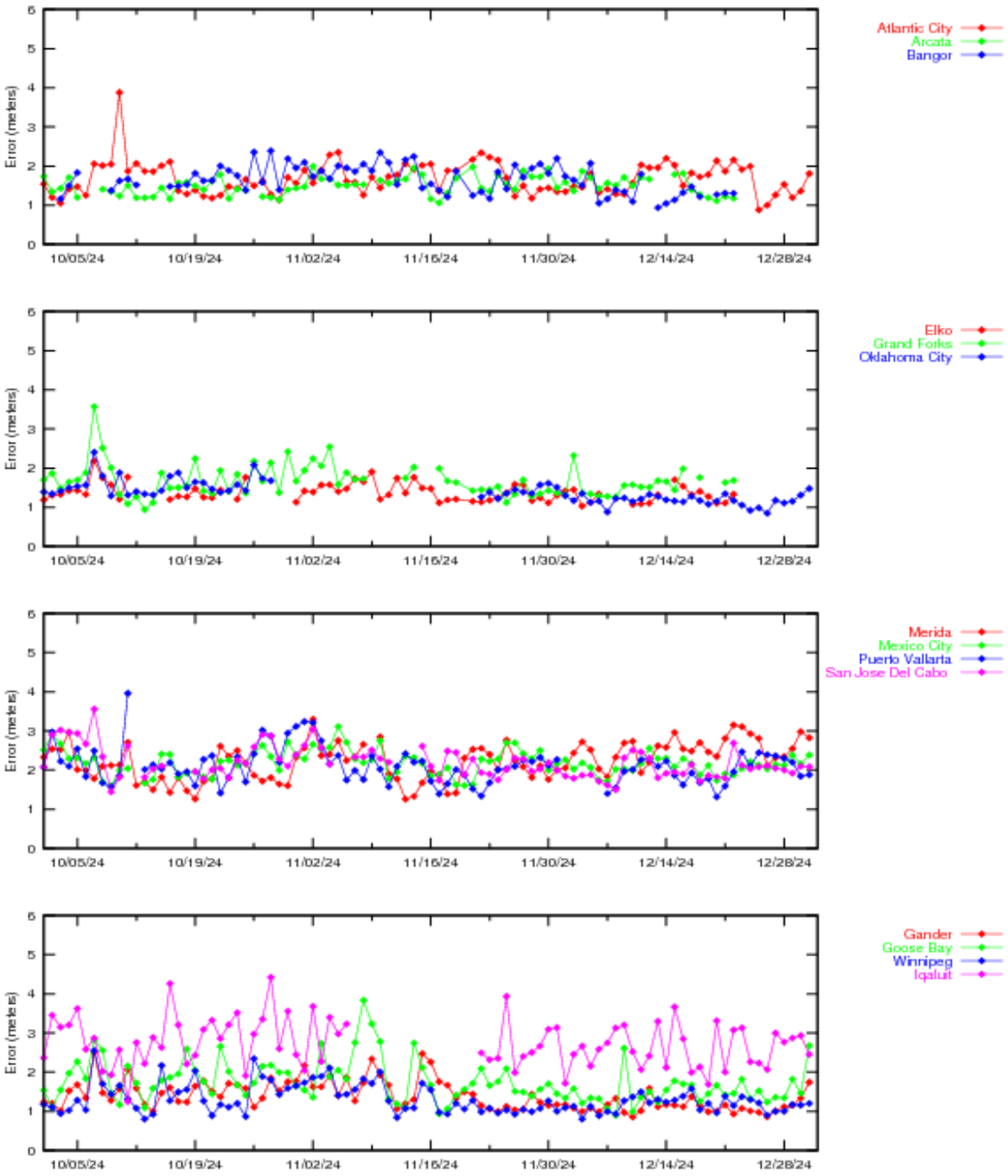

Figure 2-6 LPV 95% Vertical Accuracy

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 7-11 and November 9, 2024.

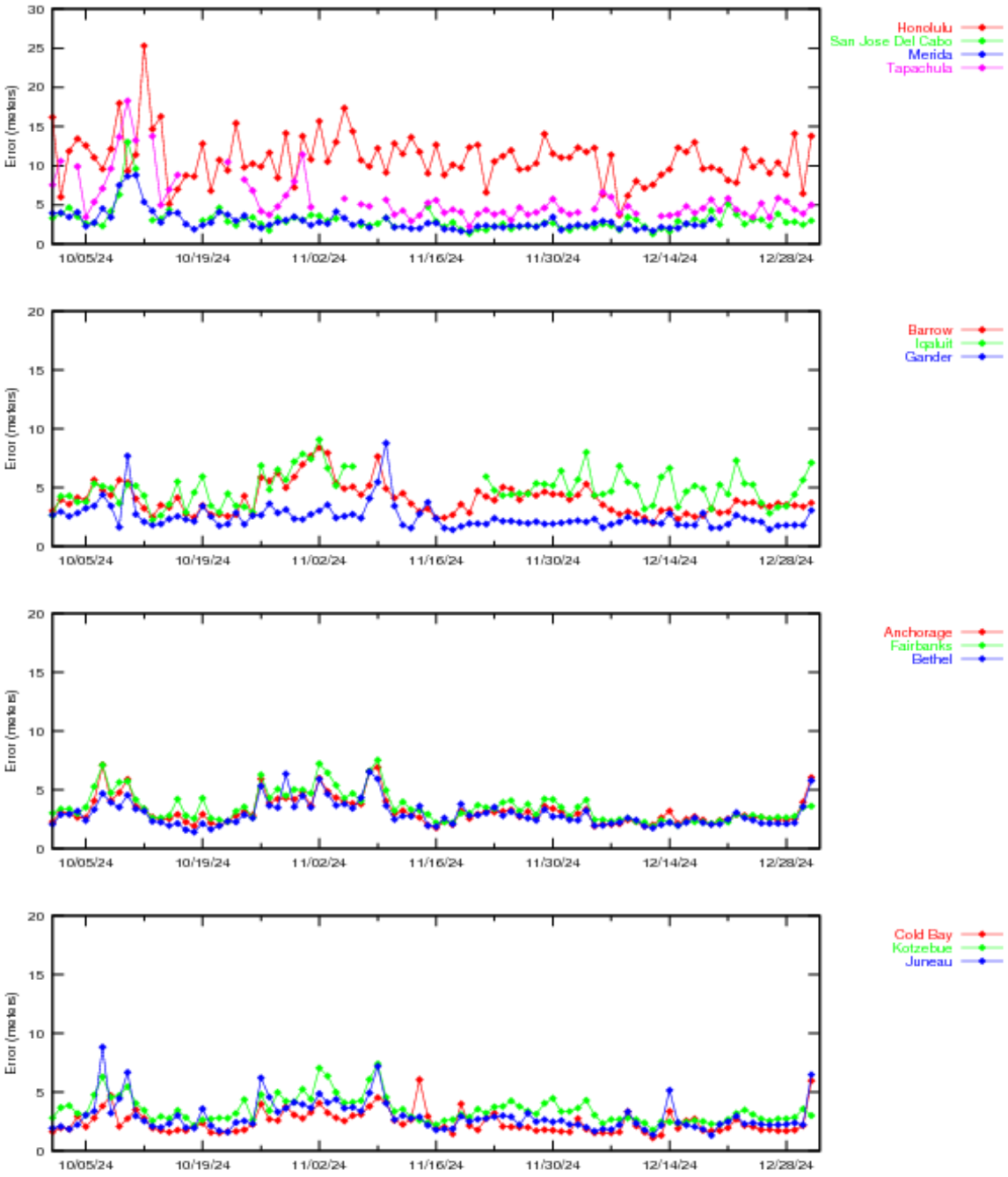

Figure 2-7 NPA 95% Horizontal Accuracy

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.

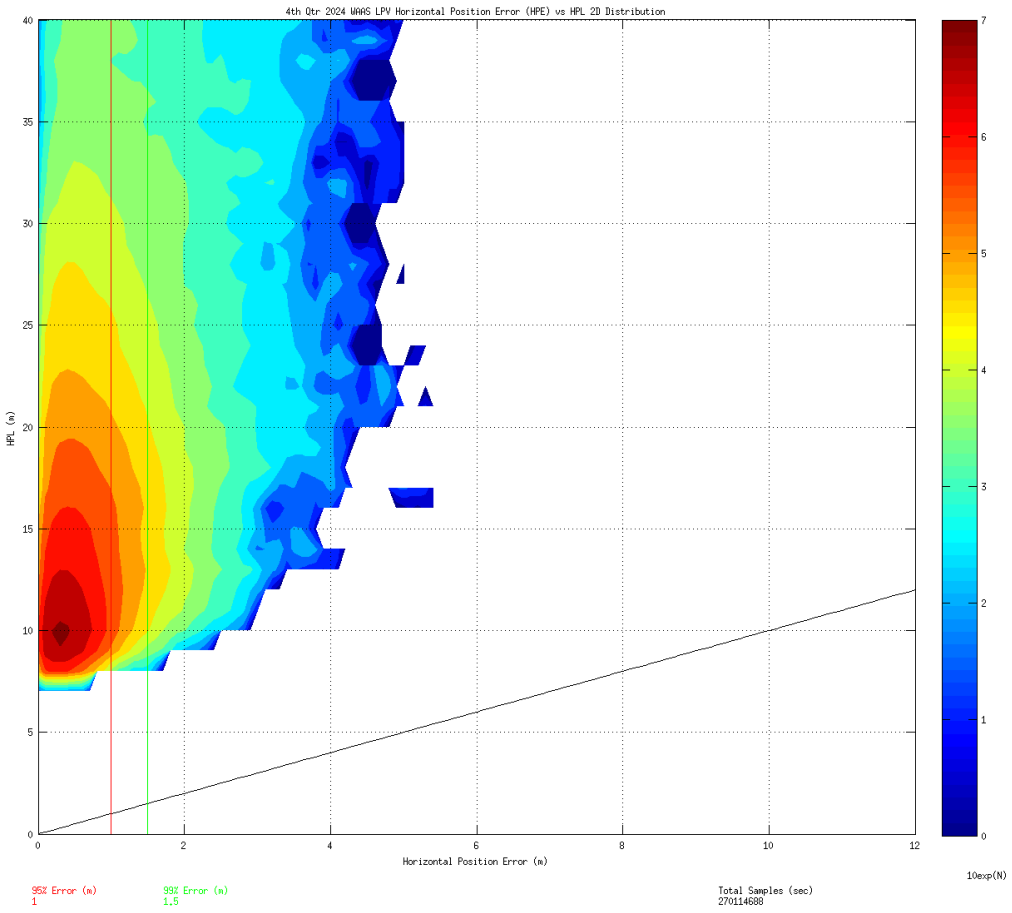

Figure 2-9 LPV Horizontal Error Bounding Triangle Chart

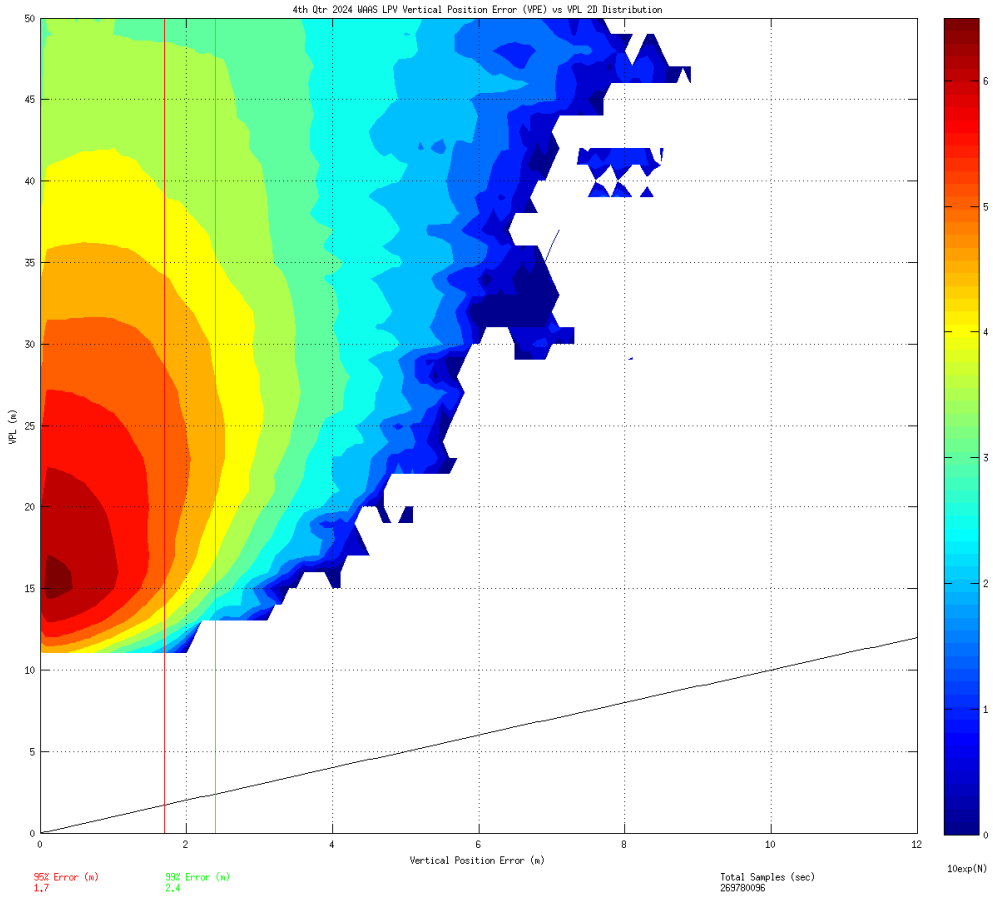

Figure 2-10 LPV Vertical Error Bounding Triangle Chart

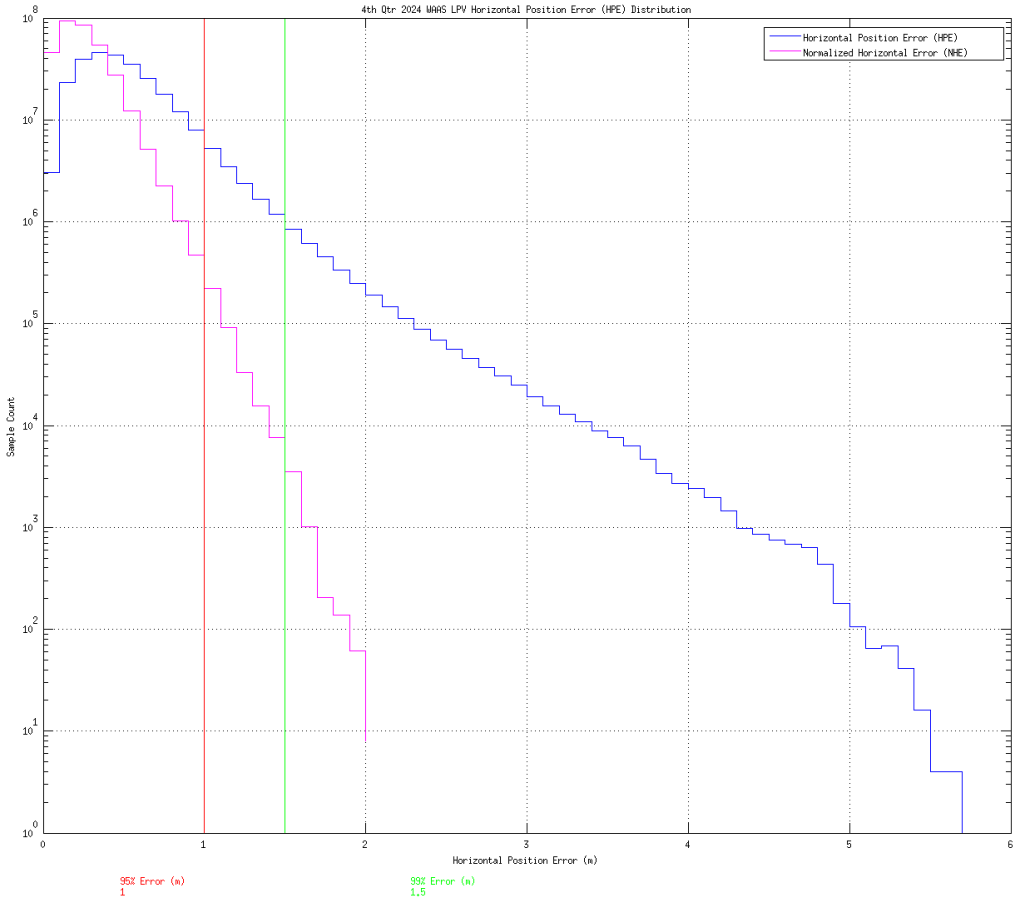

Figure 2-11 LPV 2-D Horizontal Error Distribution Histogram

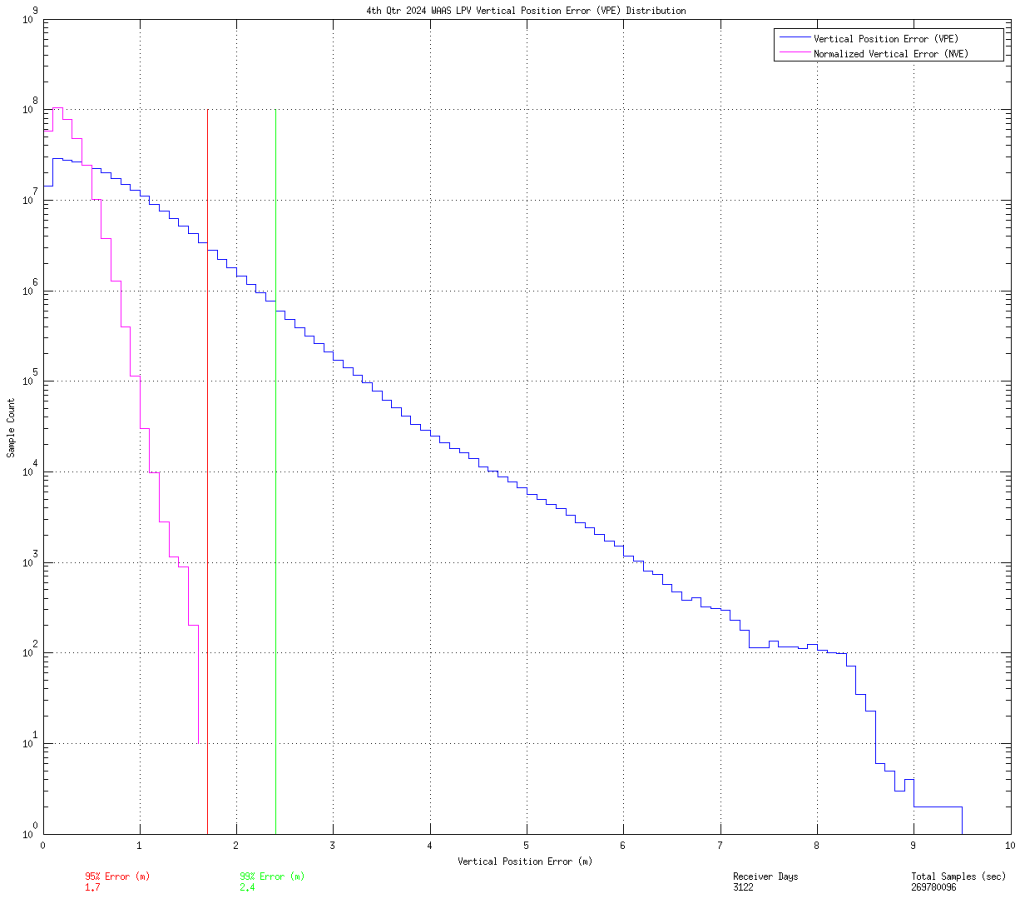

Figure 2-12 LPV 2-D Vertical Error Distribution Histogram

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-229F 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 96.257 meters observed at Bangor
- The maximum 99% CONUS VPL was 133.218 meters observed at Elko
- The minimum 99% CONUS HPL was 13.436 meters observed at Memphis
- The minimum 99% CONUS VPL was 24.509 meters observed at Washington, DC
- The maximum 99% Alaska HPL was 83.119 meters observed at Barrow
- The maximum 99% Alaska VPL was 151.327 meters observed at Barrow
- The minimum 99% Alaska HPL was 77.257 meters observed at Bethel
- The minimum 99% Alaska VPL was 117.197 meters observed at Cold Bay

Table 3-1 99% Protection Level

Location	99% HPL* (m)	99% VPL* (m)	Max HPL** (m)	Max VPL** (m)	PA mode (%)
Arcata	85.450	115.867	182.169	230.591	99.997
Atlantic City	16.945	27.941	156.742	247.771	99.999
Bangor	96.257	132.692	136.751	263.548	100
Elko	91.944	133.218	172.565	216.815	99.998
Grand Forks	82.486	129.801	160.975	257.112	99.999
Oklahoma City	86.173	138.918	177.325	359.307	99.997
Albuquerque	20.503	32.964	130.072	308.104	100
Anchorage	78.776	126.982	157.736	248.409	100
Atlanta	14.135	24.741	137.25	282.924	100
Barrow	83.119	151.327	135.77	301.874	100
Bethel	77.257	119.641	173.174	322.25	100
Billings	36.860	60.770	140.919	219.686	100
Boston	19.939	30.032	130.593	219.352	100
Chicago	19.164	32.430	132.489	316.081	100
Cleveland	16.798	26.696	149.316	274.33	100
Cold Bay	80.970	117.197	202.458	256.258	100
Dallas	17.632	27.537	169.394	288.498	100
Denver	22.796	29.735	149.191	321.01	100
Fairbanks	81.222	132.486	175.053	405.821	100
Gander	97.265	118.725	174.068	247.572	100
Goose Bay	99.088	123.352	141.953	225.181	100
Houston	21.265	30.867	183.55	295.814	100
Iqaluit	103.486	158.565	173.649	267.122	99.998
Jacksonville	17.062	27.542	152.941	241.101	100
Juneau	80.384	131.961	170.388	332.821	100
Kansas City	15.373	25.790	138.152	303.114	100
Kotzebue	81.459	137.326	221.02	317.431	99.998
Los Angeles	25.729	42.404	140.775	227.949	100
Memphis	13.436	24.811	150.416	324.672	100
Merida	69.280	100.991	227.065	281.625	99.991
Mexico City	86.594	156.493	425.2	532.94	100
Miami	31.539	41.770	173.588	238.731	100
Minneapolis	37.162	72.942	125.274	249.787	100
New York	17.254	27.332	143.079	252.936	100
Oakland	33.183	52.106	189.01	234.789	100
Puerto Vallarta	87.357	166.779	370.556	486.819	99.998
Salt Lake City	20.987	31.665	160.001	244.967	100

Location	99% HPL* (m)	99% VPL* (m)	Max HPL** (m)	Max VPL** (m)	PA mode (%)
San Jose Del Cabo	85.841	152.051	245.629	441.06	99.995
Seattle	49.111	80.341	158.556	209.397	100
Washington, DC	14.826	24.509	132.766	240.942	100
Winnipeg	69.655	115.551	139.753	248.149	100

* The high 99% HPLs/VPLs at some receivers are due to the increased protection levels from significant ionospheric events accounting for at least 1% of the data from that receiver. These receivers have a smaller amount of data due to communication outages.

** Maximum HPLs/VPLs for this quarter were included in this report to show the effects of ionospheric events across all receivers.

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	98.97	98.94	98.77
Atlantic City	99.14	99.14	99.12
Bangor	98.76	98.74	98.57
Elko GT	98.84	98.72	98.49
Grand Forks	98.63	98.56	98.46
Oklahoma City	98.85	98.84	98.79
Albuquerque	99.08	99.05	99.01
Anchorage	97.71	97.51	96.64
Atlanta	99.15	99.13	99.11
Barrow	95.98	95.62	94.13
Bethel	98.36	98.22	97.49
Billings	99.01	98.91	98.7
Boston	99.09	99.09	99.07
Chicago	99.15	99.11	99.01

Location	LP WAAS With 15-Minute Window (%)	LPV WAAS With 15-Minute Window (%)	LPV200 WAAS With 15-Minute Window (%)
Cleveland	99.15	99.15	99.1
Cold Bay	98.68	98.57	97.99
Dallas	99.15	99.15	99.1
Denver	99.16	99.12	99.07
Fairbanks	96.72	96.46	95.83
Gander	96.71	96.45	92.95
Goose Bay	94.86	94.73	92.76
Houston	99.09	99.07	99.04
Iqaluit	89.3	87.92	79.38
Jacksonville	99.13	99.1	99.08
Juneau	97.12	96.82	95.96
Kansas City	99.12	99.12	99.09
Kotzebue	96.71	96.39	95.59
Los Angeles	99.06	99	98.84
Memphis	99.18	99.17	99.16
Merida	98.55	97.65	92.99
Mexico City	98.6	96.96	84.4
Miami	99.05	98.99	98.46
Minneapolis	99	98.95	98.9
New York	99.11	99.11	99.1
Oakland	99.05	98.94	98.72
Puerto Vallarta	98.59	97.59	82.29
Salt Lake City	99.17	99.12	99.03
San Jose Del Cabo	98.59	97.96	89.89
Seattle	98.77	98.64	98.38
Washington, DC	99.15	99.15	99.15
Winnipeg	98.71	98.6	98.23

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

Location	LP Outages (Number)	LP Outage Rates	LPV Outages (Number)	LPV Outage Rates	LPV200 Outages (Number)	LPV200 Outage Rates
Arcata	3	0.000070	3	0.000070	10	0.000235
Atlantic City	2	0.000039	2	0.000039	2	0.000039
Bangor	3	0.000074	4	0.000098	7	0.000172
Elko GT	2	0.000053	8	0.000212	9	0.000239
Grand Forks	6	0.000147	9	0.000220	16	0.000392
Oklahoma City	2	0.000052	2	0.000052	3	0.000078

Location	LP Outages (Number)	LP Outage Rates	LPV Outages (Number)	LPV Outage Rates	LPV200 Outages (Number)	LPV200 Outage Rates
Albuquerque	3	0.000057	3	0.000057	5	0.000095
Anchorage	28	0.000541	37	0.000716	38	0.000742
Atlanta	3	0.000057	3	0.000057	3	0.000057
Barrow	42	0.000827	50	0.000988	147	0.002951
Bethel	20	0.000384	27	0.000519	37	0.000717
Billings	5	0.000095	7	0.000134	12	0.000230
Boston	3	0.000057	3	0.000057	5	0.000095
Chicago	3	0.000057	3	0.000057	4	0.000076
Cleveland	2	0.000038	2	0.000038	6	0.000115
Cold Bay	11	0.000211	11	0.000211	55	0.001060
Dallas	2	0.000038	2	0.000038	6	0.000114
Denver	3	0.000057	5	0.000095	4	0.000076
Fairbanks	34	0.000664	39	0.000763	63	0.001241
Gander	54	0.001055	62	0.001214	148	0.003008
Goose Bay	62	0.001234	65	0.001296	112	0.002280
Houston	3	0.000057	3	0.000057	5	0.000095
Iqaluit	115	0.002929	143	0.003699	319	0.009138
Jacksonville	3	0.000057	3	0.000057	4	0.000076
Juneau	33	0.000642	37	0.000722	63	0.001241
Kansas City	2	0.000038	3	0.000057	3	0.000057
Kotzebue	34	0.000666	39	0.000766	72	0.001426
Los Angeles	6	0.000114	6	0.000114	16	0.000306
Memphis	2	0.000038	2	0.000038	2	0.000038
Merida	20	0.000392	121	0.002391	307	0.006370
Mexico City	22	0.000429	186	0.003691	855	0.019489
Miami	6	0.000114	12	0.000229	60	0.001151
Minneapolis	5	0.000095	6	0.000114	9	0.000172
New York	3	0.000057	3	0.000057	3	0.000057
Oakland	7	0.000134	6	0.000115	16	0.000306
Puerto Vallarta	15	0.000309	225	0.004684	866	0.021381
Salt Lake City	2	0.000038	3	0.000057	6	0.000114
San Jose Del Cabo	10	0.000218	116	0.002540	473	0.011285
Seattle	9	0.000172	11	0.000211	19	0.000365
Washington, DC	2	0.000038	2	0.000038	2	0.000038
Winnipeg	13	0.000249	15	0.000287	25	0.000480

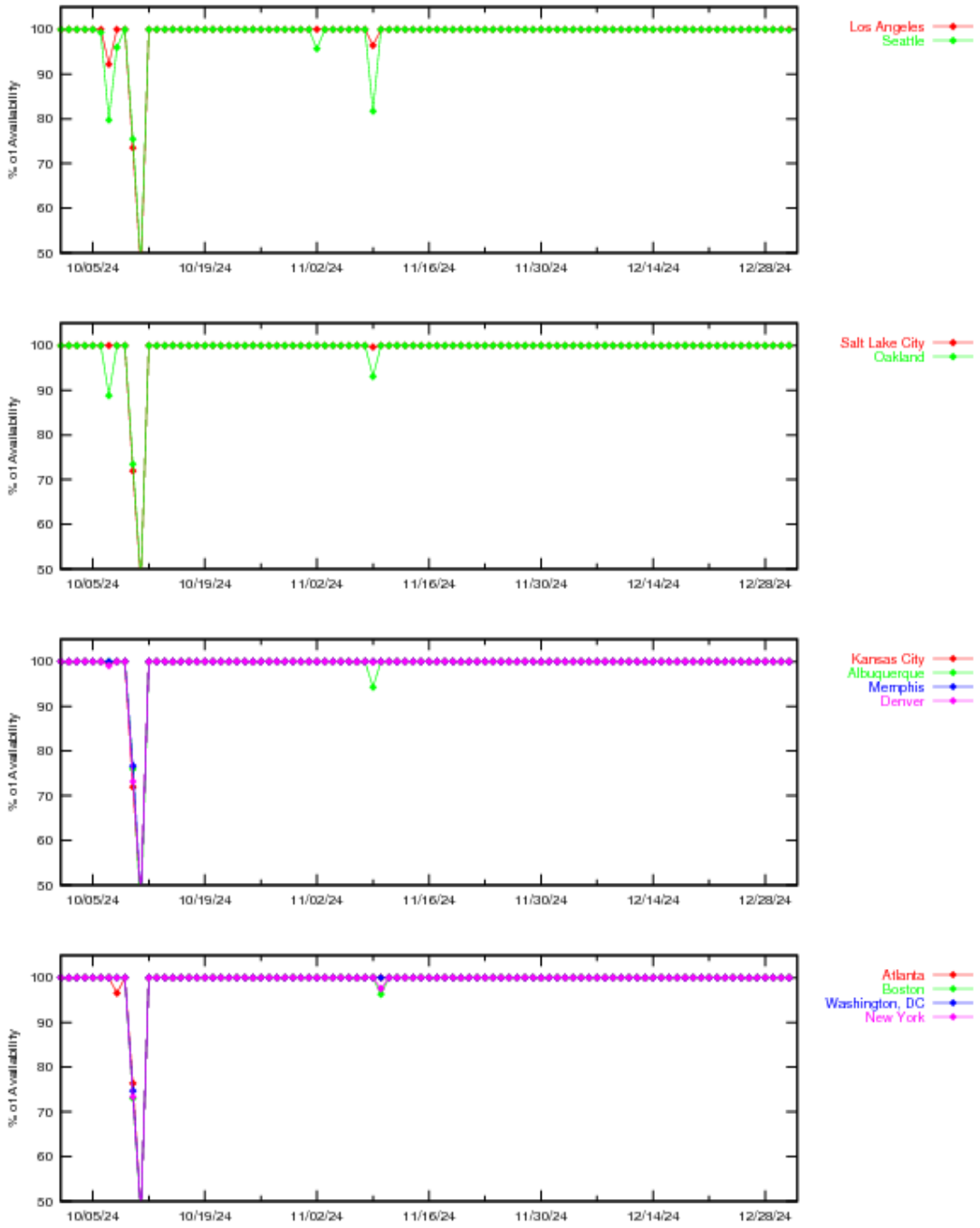

Figure 3-1 LPV Instantaneous Availability

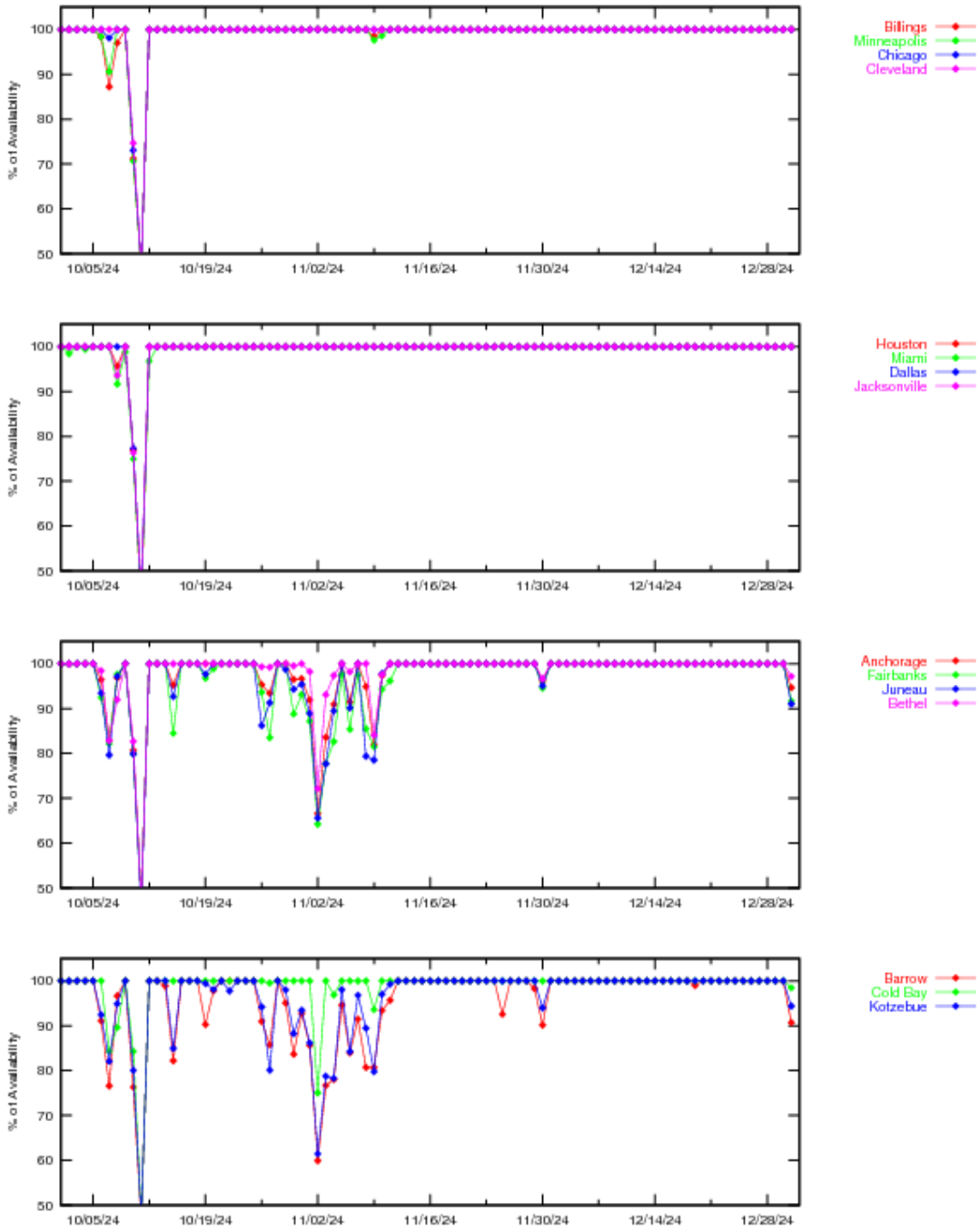

Figure 3-2 LPV Instantaneous Availability

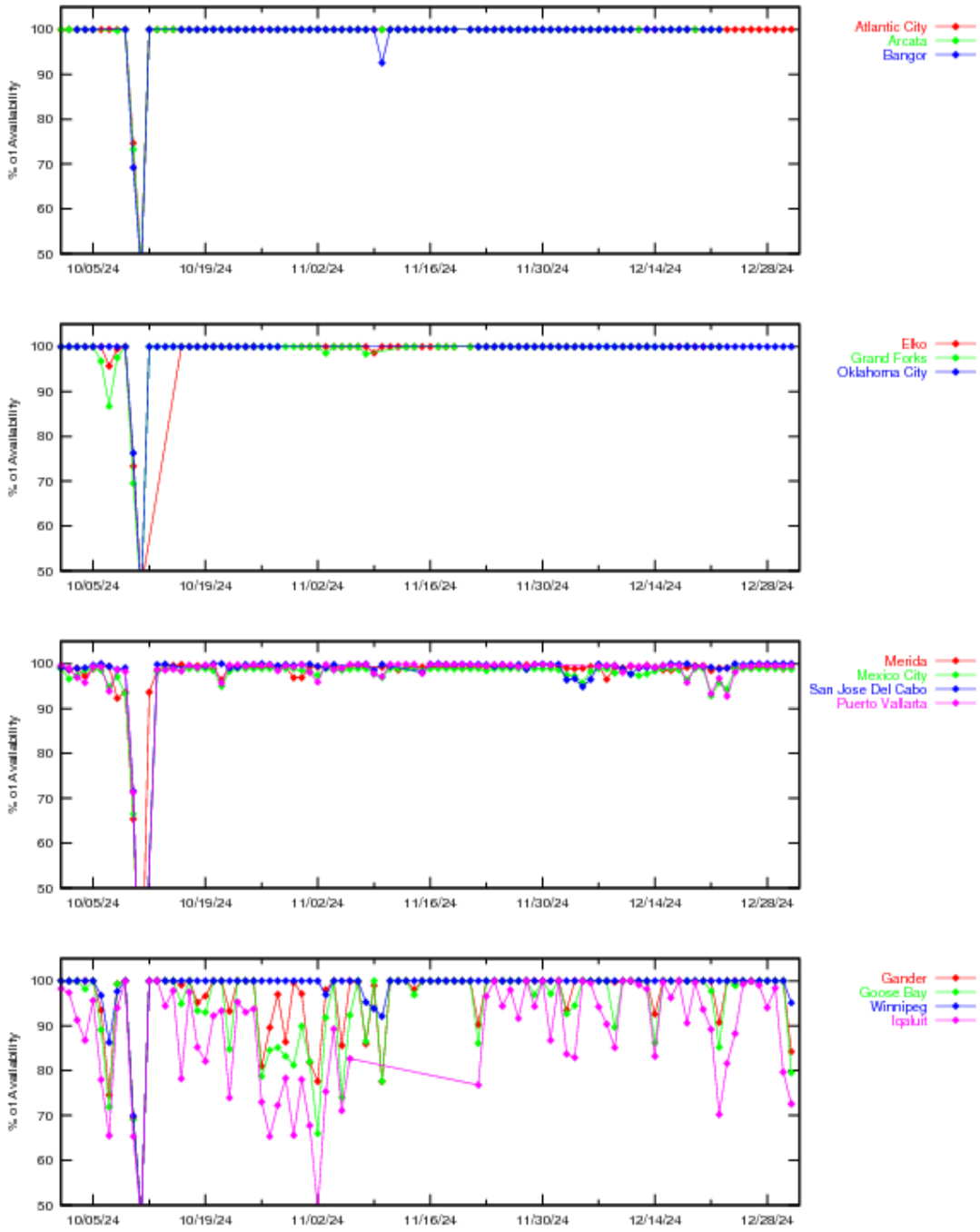

Figure 3-3 LPV Instantaneous Availability

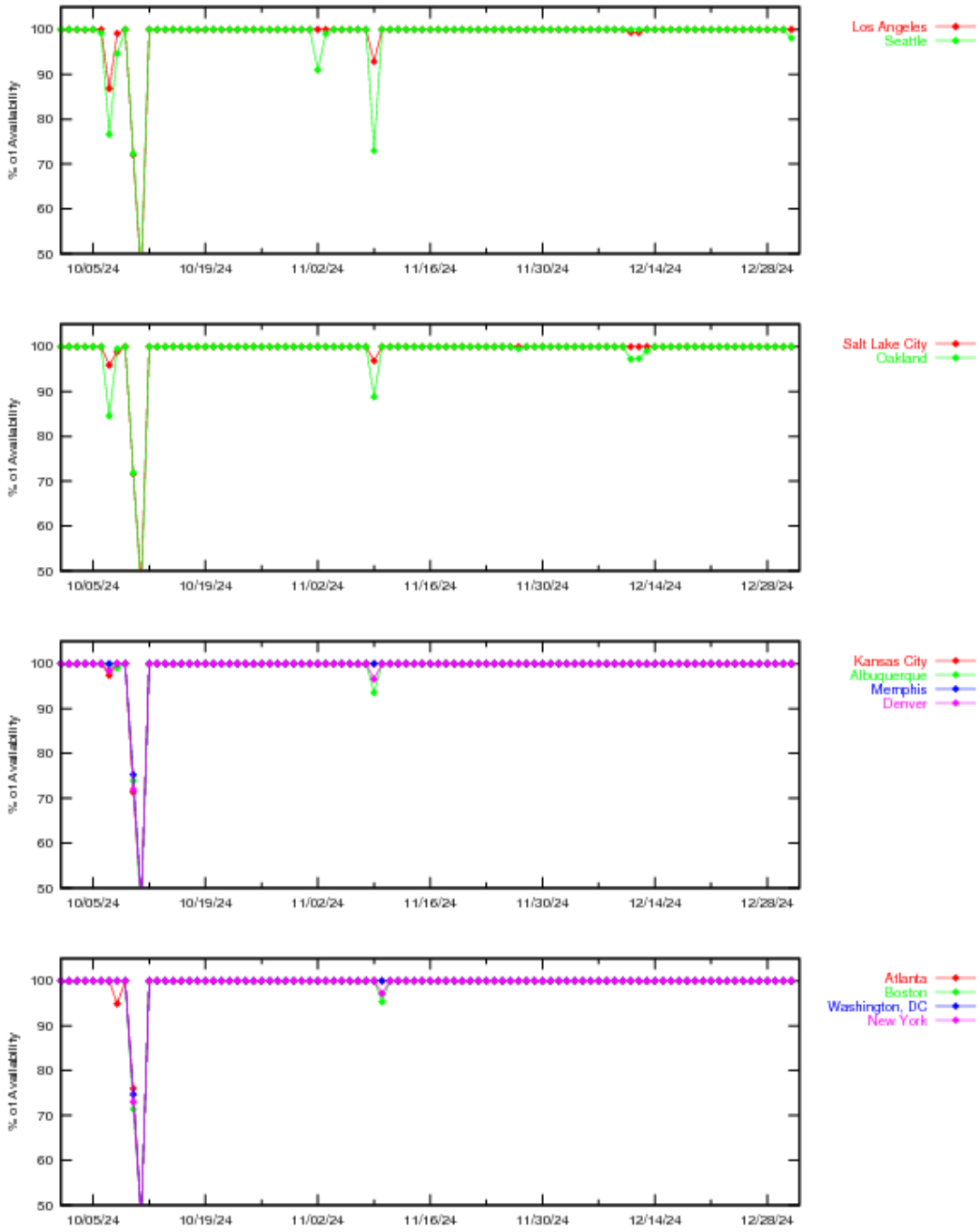

Figure 3-4 LPV200 Instantaneous Availability

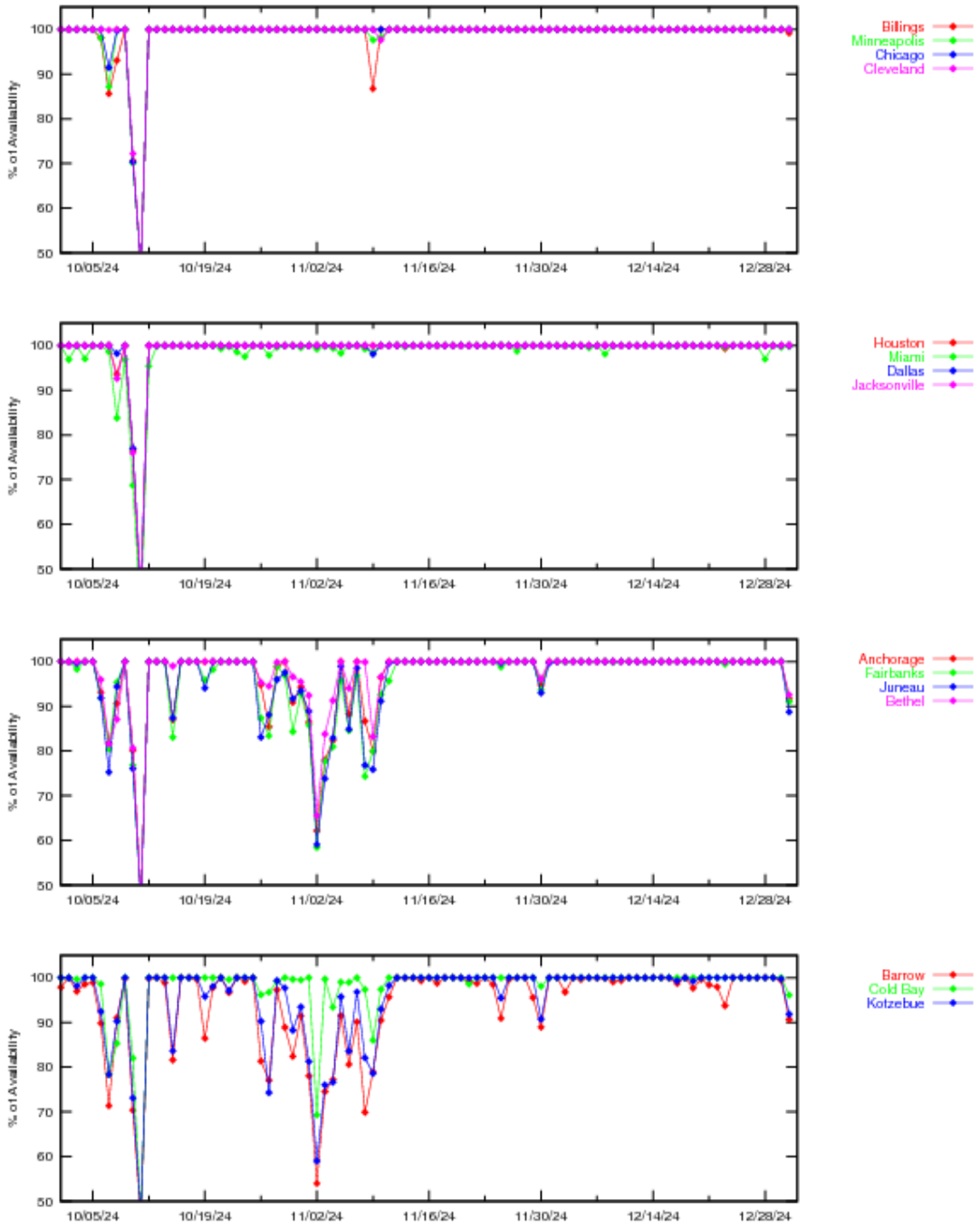

Figure 3-5 LPV200 Instantaneous Availability

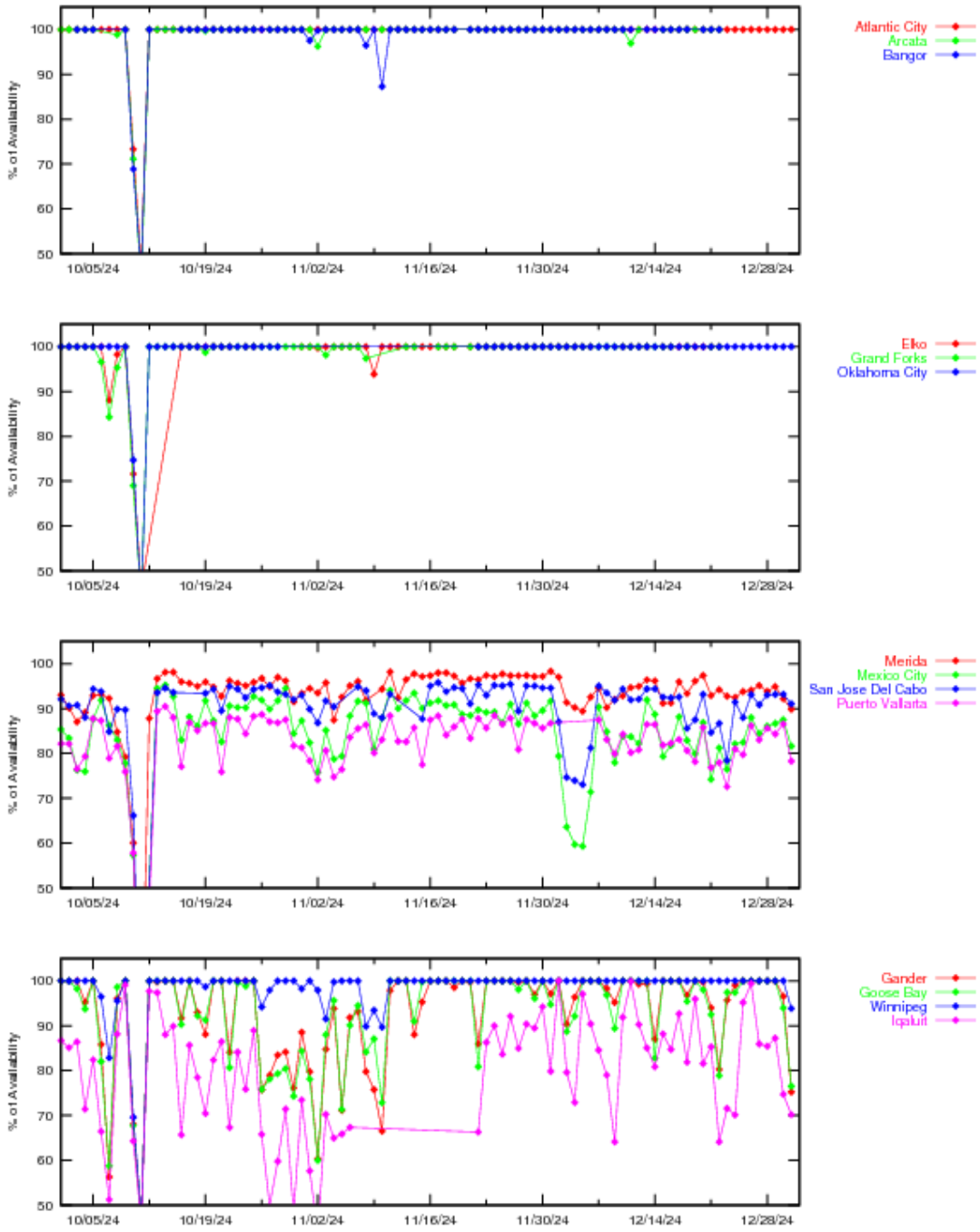

Figure 3-6 LPV200 Instantaneous Availability

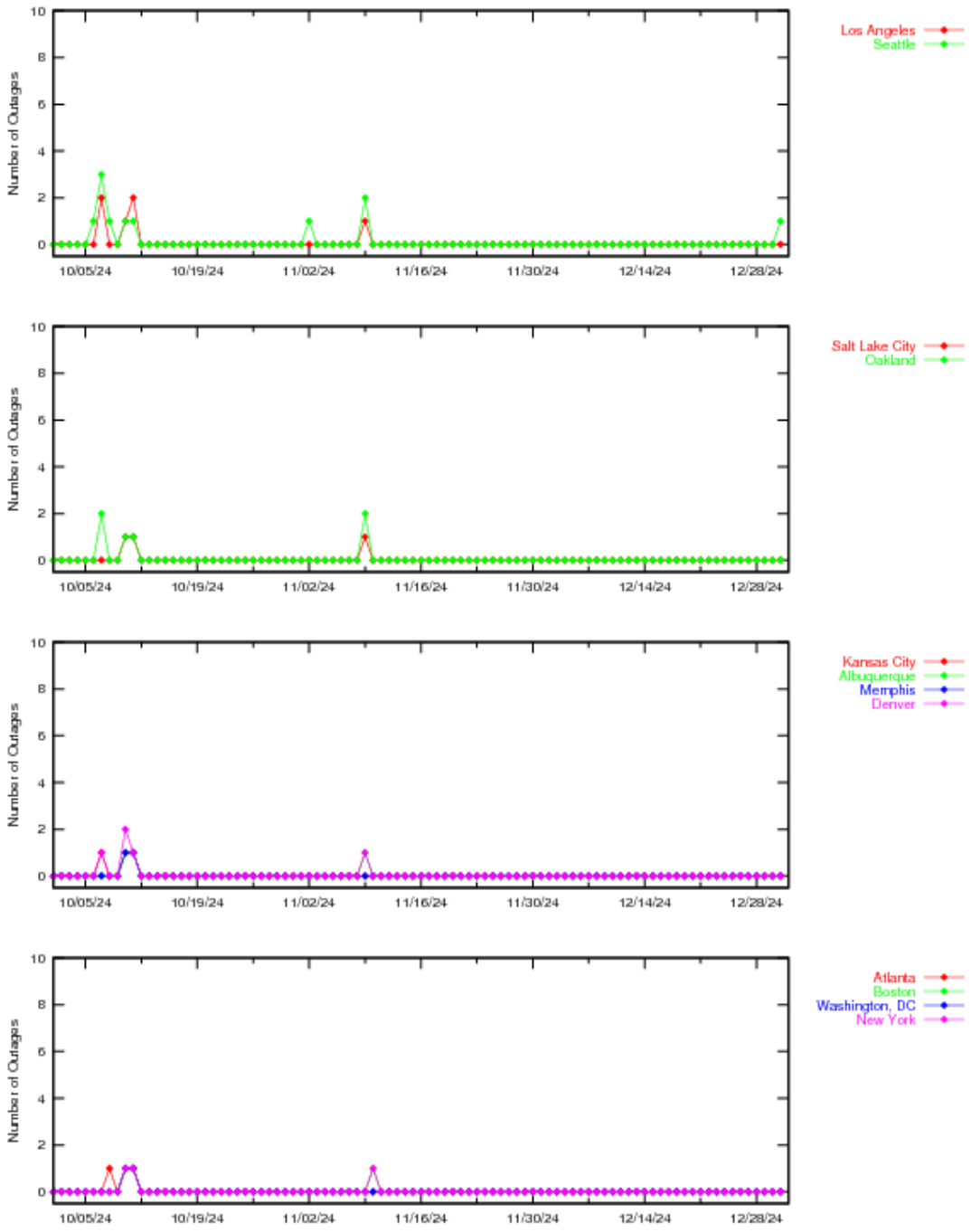

Figure 3-7 LPV Outages

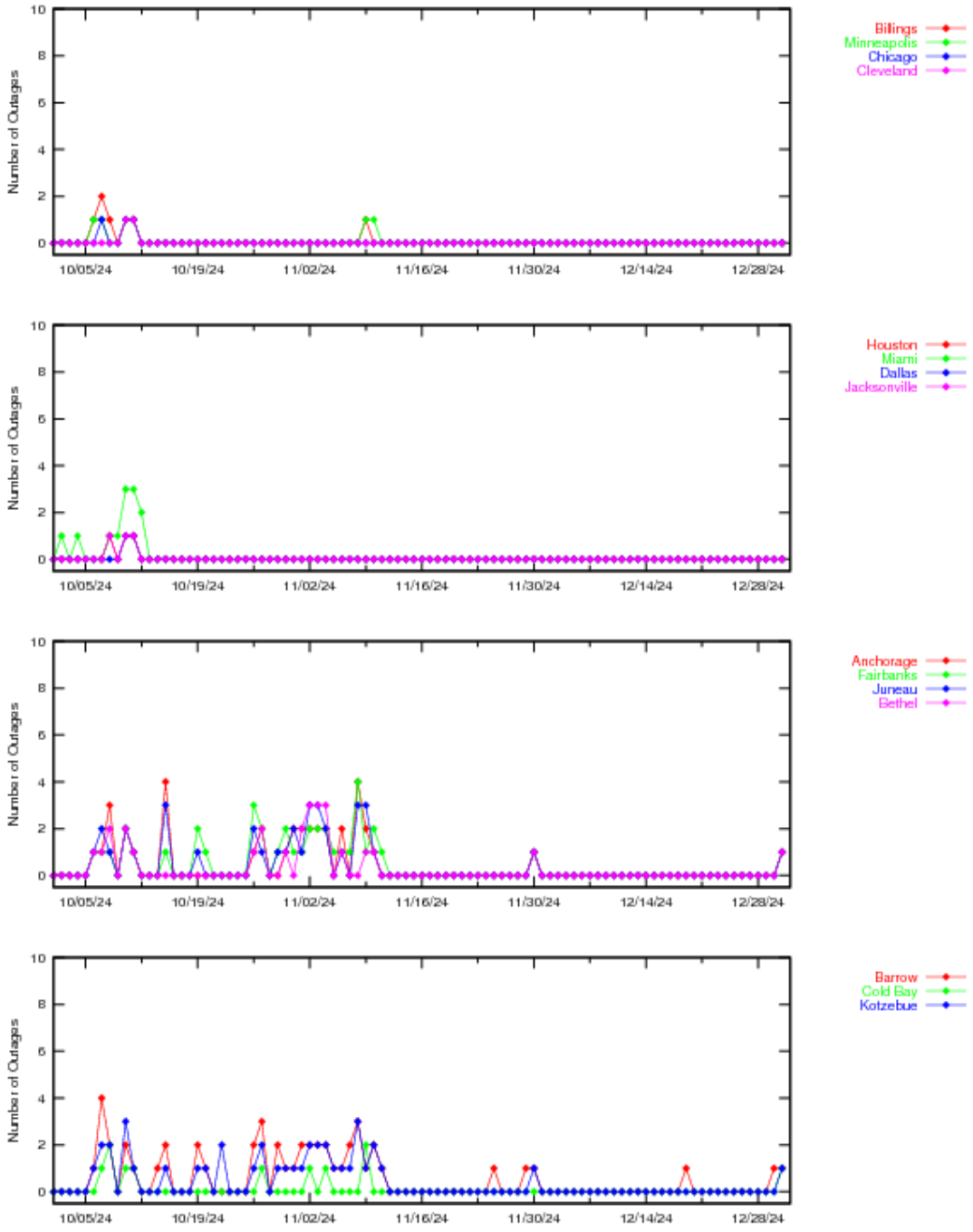

Figure 3-8 LPV Outages

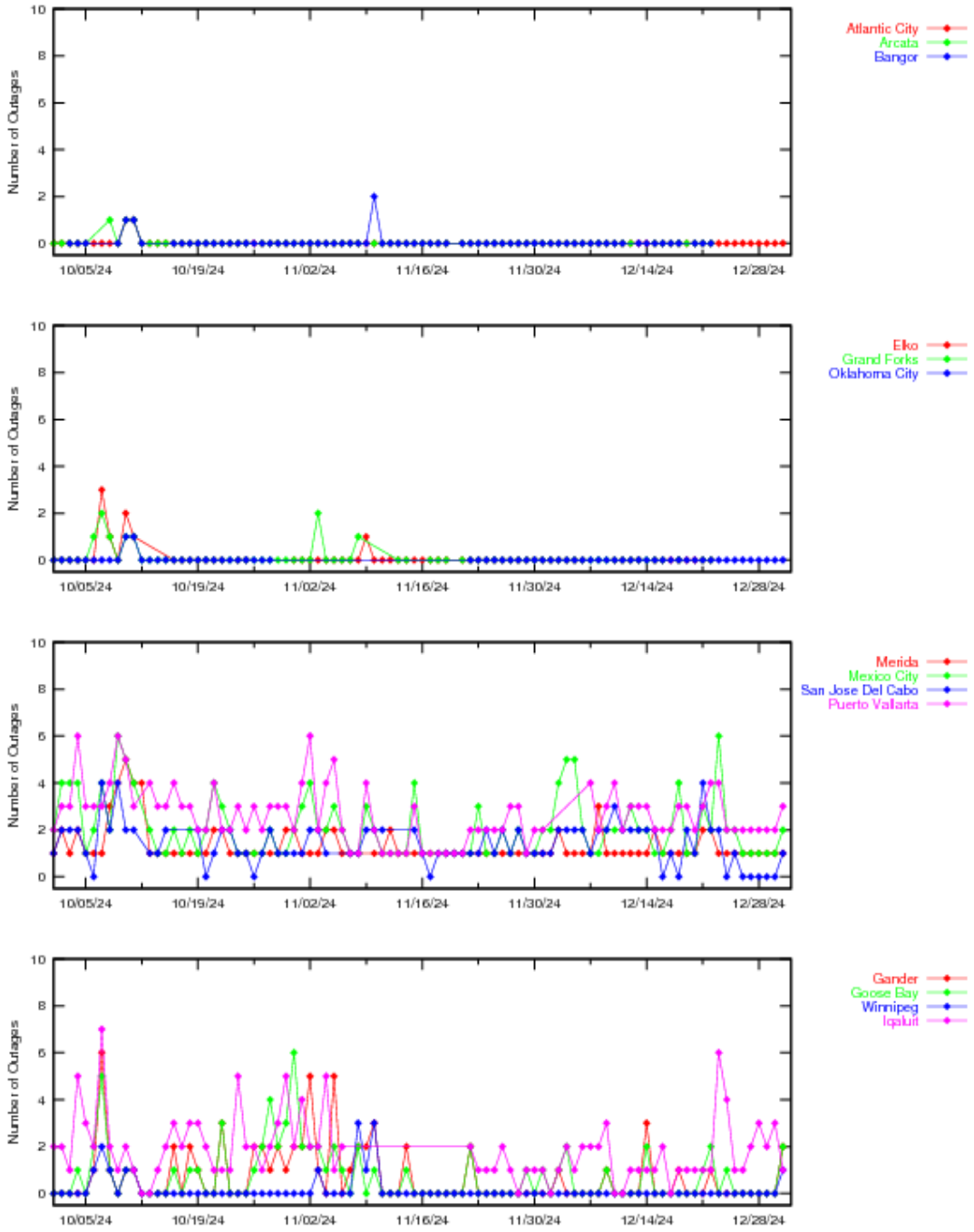

Figure 3-9 LPV Outages

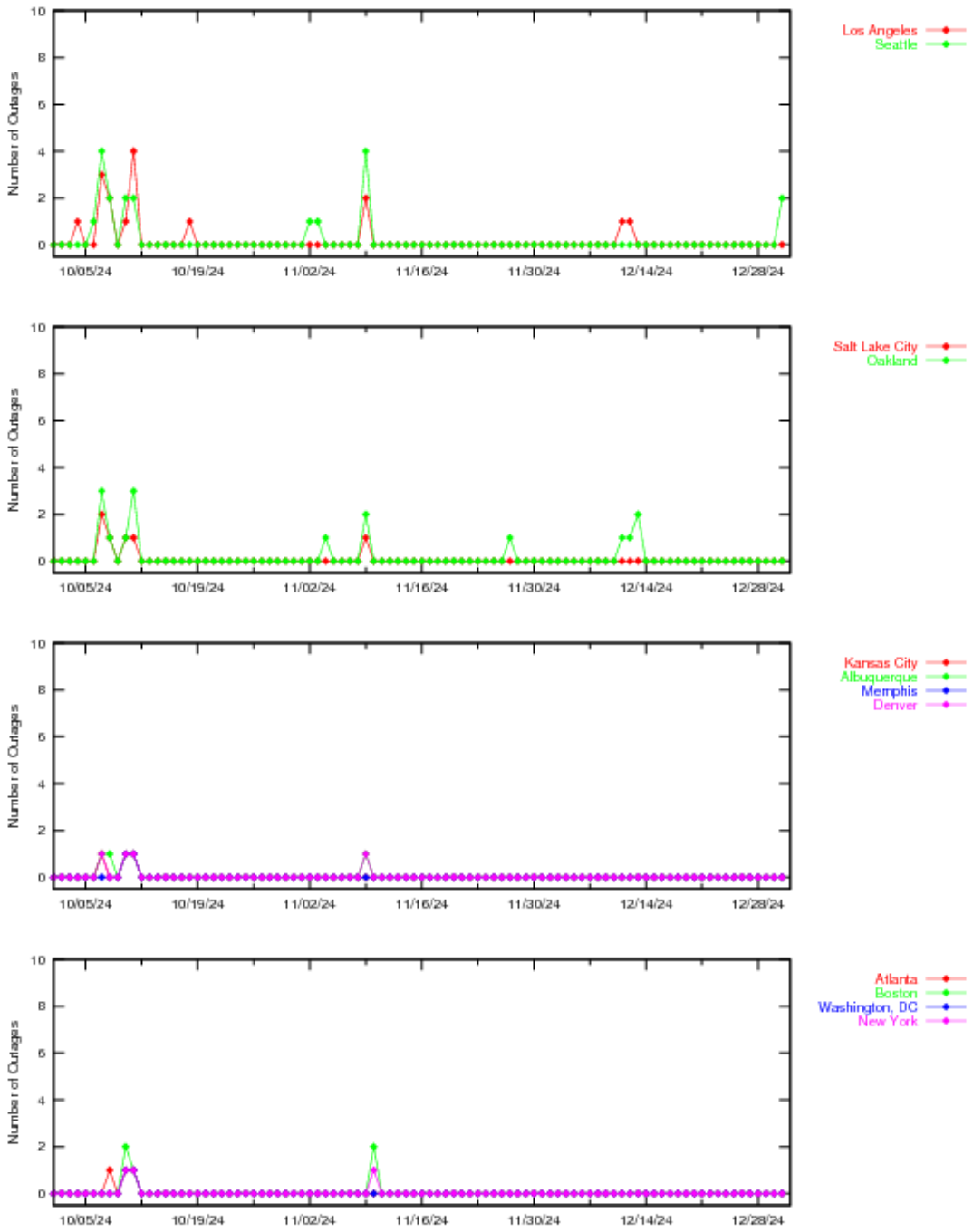

Figure 3-10 LPV200 Outages

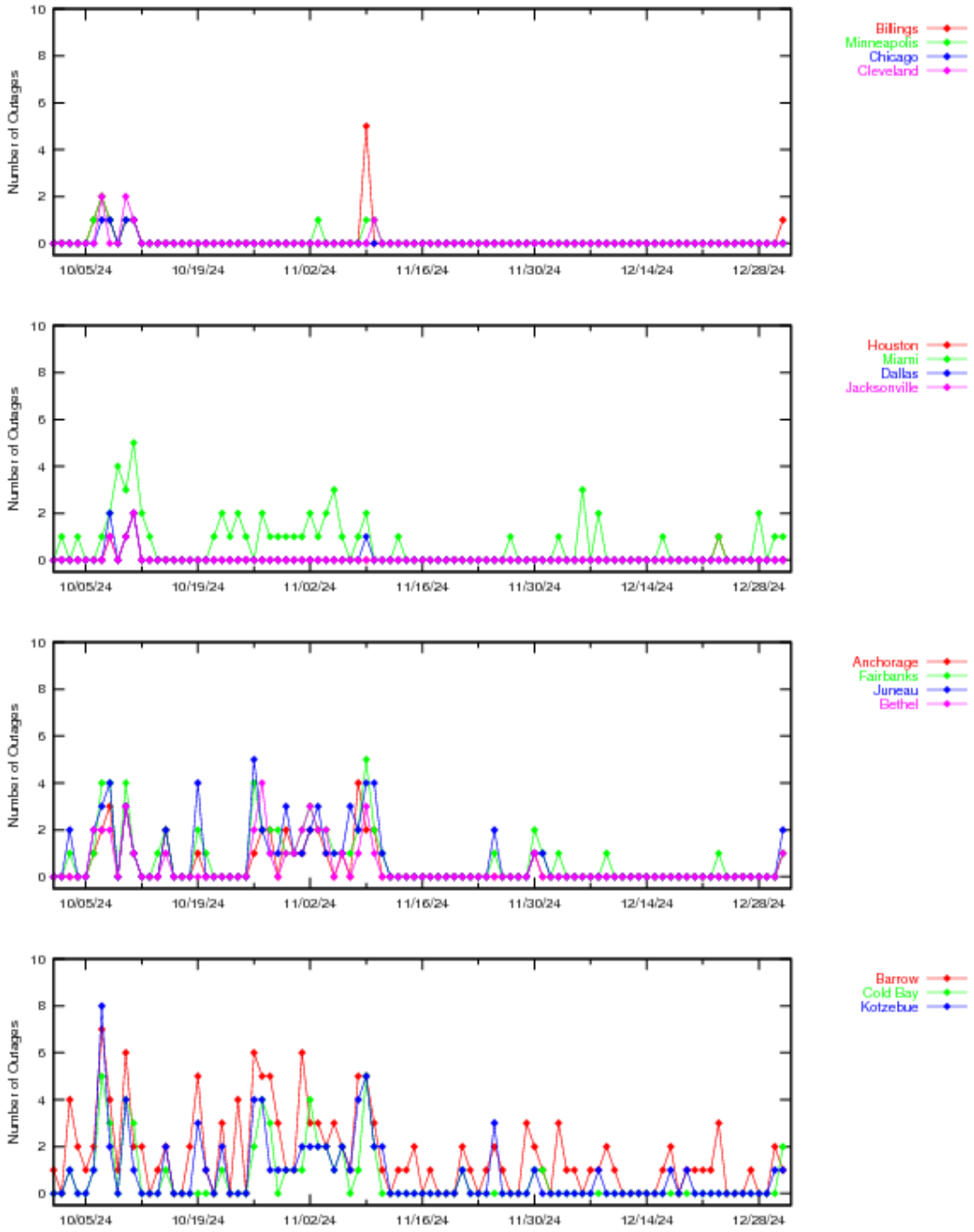

Figure 3-11 LPV200 Outages

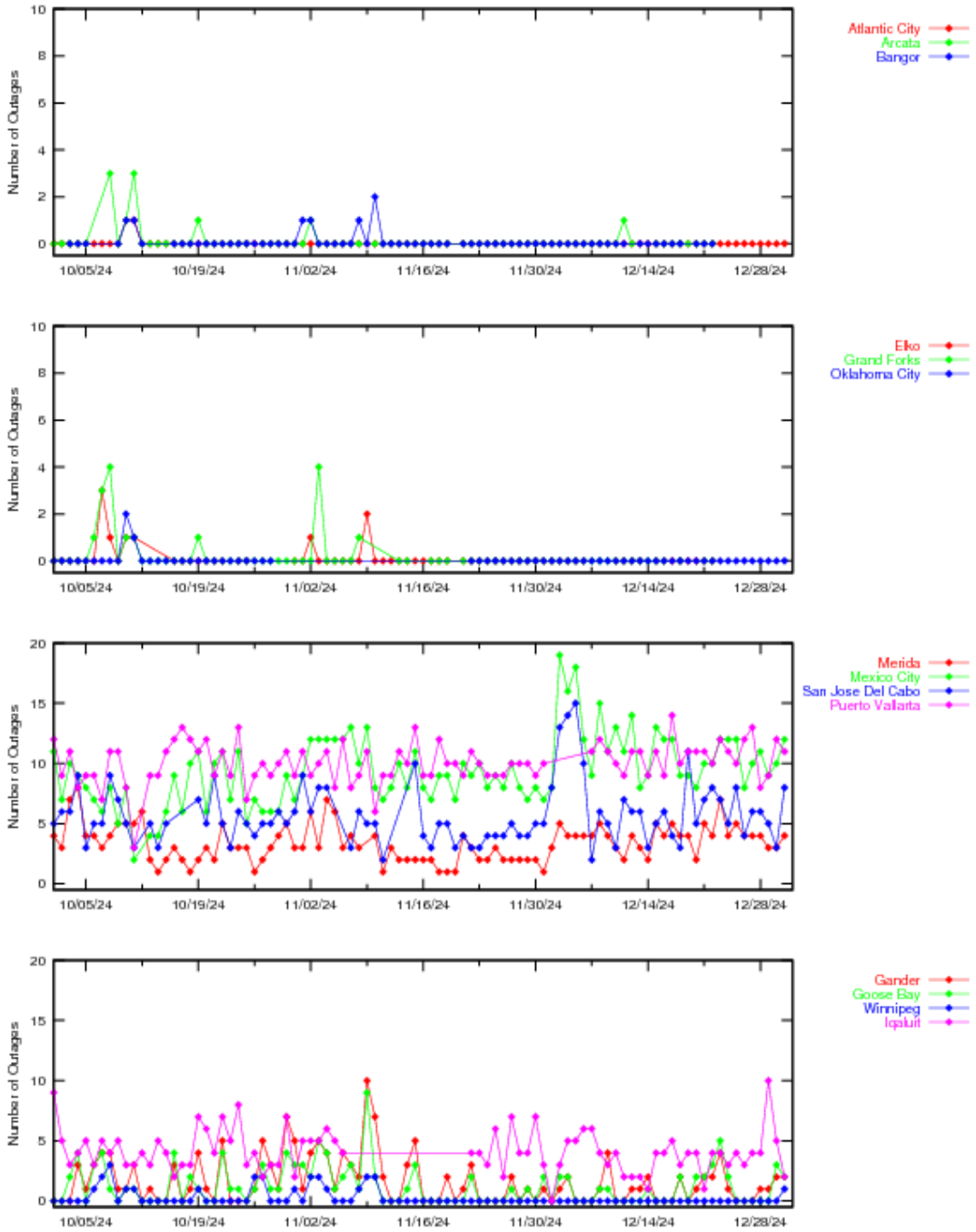

Figure 3-12 LPV200 Outages

Availability of NPA service is evaluated by monitoring the WAAS HPL at receiver locations. Service is available when the HPL is less than a HAL of 556 meters. The service is unavailable when HPL exceeds the HAL or when a WAAS navigation message is not received, and the service outage and its duration are recorded. NPA service is not available again until the HPL is within the HAL for at least 15 minutes. Table 3-4 shows the percentage of time that

NPA service is available using the 15-minute window criteria. Table 3-5 shows the NPA service outages and associated outage rates. The outage rate is the percentage of theoretically interrupted NPA approaches through a loss of operational service once the approach had started.

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

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

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

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

The availability decreases for this quarter were due to satellite maintenance, geomagnetic activity, and elevated UDRE values. Noteworthy events that affected availability are listed below.

- Oct 01 - Geomagnetic activity increased GIVEs and reduced LPV availability in Canada and LPV200 availability in Alaska and Canada.
- Oct 02 - Geomagnetic activity increased GIVEs and reduced LPV and LPV200 availability in CONUS and Canada.

- Oct 03 - Geomagnetic activity increased GIVEs and reduced LPV availability in Canada and LPV200 availability in Alaska and Canada.
- Oct 03 - Oct 04 - Satellite maintenance elevated UDREs on PRN-11 and reduced LPV and LPV200 availability in
- Oct 04 - Geomagnetic activity increased GIVEs and reduced LPV availability in CONUS and Canada and LPV200 availability in All.
- Oct 05 - Geomagnetic activity increased GIVEs and reduced LPV and LPV200 availability in Canada.
- Oct 06 - Oct 07 - Geomagnetic activity increased GIVEs and reduced LPV and LPV200 availability in CONUS, Alaska, and Canada.
- Oct 07 - Geomagnetic activity increased GIVEs and reduced LPV and LPV200 availability in CONUS, Alaska, and Canada.
- Oct 08 - Geomagnetic activity increased GIVEs and reduced LPV and LPV200 availability in CONUS, Alaska, and Canada.
- Oct 09 - Oct 10 - Geomagnetic activity increased GIVEs and reduced LPV availability in CONUS and LPV200 availability in CONUS and Canada.
- Oct 10 - Oct 11 - Geomagnetic activity increased GIVEs and reduced LPV and LPV200 availability in CONUS, Alaska, and Canada.
- Oct 12 - Geomagnetic activity increased GIVEs and reduced LPV availability in CONUS and LPV200 availability in CONUS and Canada.
- Oct 13 - Geomagnetic activity increased GIVEs and reduced LPV200 availability in CONUS and Canada.
- Oct 14 - Oct 15 - Geomagnetic activity increased GIVEs and reduced LPV and LPV200 availability in Alaska and Canada.
- Oct 14 - Oct 15 - Geomagnetic activity increased GIVEs and reduced LPV and LPV200 availability in Alaska and Canada.
- Oct 15 - Geomagnetic activity increased GIVEs and reduced LPV and LPV200 availability in Alaska and Canada.
- Oct 15 - Oct 16 - Satellite maintenance elevated UDREs on PRN-30 and reduced LPV and LPV200 availability in
- Oct 16 - Geomagnetic activity increased GIVEs and reduced LPV and LPV200 availability in Canada.
- Oct 17 - Geomagnetic activity increased GIVEs and reduced LPV200 availability in Canada.
- Oct 18 - Geomagnetic activity increased GIVEs and reduced LPV availability in Canada and LPV200 availability in CONUS and Canada.
- Oct 19 - Oct 20 - Geomagnetic activity increased GIVEs and reduced LPV availability in Alaska and Canada and LPV200 availability in CONUS, Alaska, and Canada.
- Oct 20 - Geomagnetic activity increased GIVEs and reduced LPV and LPV200 availability in Canada.
- Oct 21 - Geomagnetic activity increased GIVEs and reduced LPV availability in Canada and LPV200 availability in CONUS and Canada.
- Oct 22 - Geomagnetic activity increased GIVEs and reduced LPV availability in Alaska and Canada and LPV200 availability in CONUS, Alaska, and Canada.
- Oct 23 - Oct 24 - Geomagnetic activity increased GIVEs and reduced LPV availability in Canada and LPV200 availability in CONUS and Canada.
- Oct 24 - Geomagnetic activity increased GIVEs and reduced LPV availability in Canada and LPV200 availability in CONUS and Canada.
- Oct 25 - Geomagnetic activity increased GIVEs and reduced LPV and LPV200 availability in Canada.
- Oct 26 - Oct 27 - Geomagnetic activity increased GIVEs and reduced LPV and LPV200 availability in CONUS, Alaska, and Canada.
- Oct 27 - Oct 28 - Geomagnetic activity increased GIVEs and reduced LPV availability in Alaska and Canada and LPV200 availability in CONUS, Alaska, and Canada.
- Oct 28 - Geomagnetic activity increased GIVEs and reduced LPV availability in Canada and LPV200 availability in Alaska and Canada.

- Oct 29 - Geomagnetic activity increased GIVEs and reduced LPV availability in Alaska and Canada and LPV200 availability in CONUS, Alaska, and Canada.
- Oct 30 - Geomagnetic activity increased GIVEs and reduced LPV availability in CONUS and Alaska and LPV200 availability in CONUS, Alaska, and Canada.
- Oct 31 - Nov 01 - Geomagnetic activity increased GIVEs and reduced LPV availability in Alaska and Canada and LPV200 availability in CONUS, Alaska, and Canada.
- Nov 01 - Geomagnetic activity increased GIVEs and reduced LPV availability in Alaska and Canada and LPV200 availability in CONUS, Alaska, and Canada.
- Nov 02 - Nov 03 - Geomagnetic activity increased GIVEs and reduced LPV and LPV200 availability in CONUS, Alaska, and Canada.
- Nov 03 - Nov 04 - Geomagnetic activity increased GIVEs and reduced LPV and LPV200 availability in CONUS, Alaska, and Canada.
- Nov 04 - Geomagnetic activity increased GIVEs and reduced LPV availability in Alaska and Canada and LPV200 availability in CONUS, Alaska, and Canada.
- Nov 05 - Geomagnetic activity increased GIVEs and reduced LPV availability in Alaska and Canada and LPV200 availability in CONUS, Alaska, and Canada.
- Nov 06 - Geomagnetic activity increased GIVEs and reduced LPV and LPV200 availability in Alaska and Canada.
- Nov 07 - Nov 08 - Geomagnetic activity increased GIVEs and reduced LPV and LPV200 availability in Alaska and Canada.
- Nov 08 - Geomagnetic activity increased GIVEs and reduced LPV and LPV200 availability in CONUS, Alaska, and Canada.
- Nov 09 - Nov 10 - Geomagnetic activity increased GIVEs and reduced LPV and LPV200 availability in CONUS, Alaska, and Canada.
- Nov 10 - Nov 11 - Geomagnetic activity increased GIVEs and reduced LPV and LPV200 availability in CONUS, Alaska, and Canada.
- Nov 11 - Geomagnetic activity increased GIVEs and reduced LPV and LPV200 availability in Canada.
- Nov 12 - Geomagnetic activity increased GIVEs and reduced LPV availability in Canada and LPV200 availability in CONUS and Canada.
- Nov 13 - Geomagnetic activity increased GIVEs and reduced LPV availability in Canada and LPV200 availability in CONUS and Canada.
- Nov 14 - Geomagnetic activity increased GIVEs and reduced LPV and LPV200 availability in Canada.
- Nov 15 - Geomagnetic activity increased GIVEs and reduced LPV availability in Canada and LPV200 availability in CONUS, Alaska, and Canada.
- Nov 17 - Geomagnetic activity increased GIVEs and reduced LPV and LPV200 availability in Canada.
- Nov 19 - Geomagnetic activity increased GIVEs and reduced LPV availability in Canada and LPV200 availability in CONUS and Canada.
- Nov 21 - Geomagnetic activity increased GIVEs and reduced LPV availability in Canada and LPV200 availability in Alaska and Canada.
- Nov 22 - Geomagnetic activity increased GIVEs and reduced LPV and LPV200 availability in Canada.
- Nov 23 - Geomagnetic activity increased GIVEs and reduced LPV200 availability in Canada.
- Nov 24 - Geomagnetic activity increased GIVEs and reduced LPV availability in Canada and LPV200 availability in Alaska and Canada.
- Nov 25 - Geomagnetic activity increased GIVEs and reduced LPV and LPV200 availability in Canada.
- Nov 26 - Geomagnetic activity increased GIVEs and reduced LPV and LPV200 availability in Canada.
- Nov 26 - Nov 27 - Satellite maintenance elevated UDREs on PRN-6 and reduced LPV200 availability in CONUS.
- Nov 27 - Geomagnetic activity increased GIVEs and reduced LPV availability in Canada and LPV200 availability in CONUS and Canada.

- Nov 28 - Geomagnetic activity increased GIVEs and reduced LPV200 availability in Canada.
- Nov 29 - Geomagnetic activity increased GIVEs and reduced LPV and LPV200 availability in Alaska and Canada.
- Nov 30 - Geomagnetic activity increased GIVEs and reduced LPV and LPV200 availability in Alaska.
- Dec 01 - Geomagnetic activity increased GIVEs and reduced LPV and LPV200 availability in Canada.
- Dec 02 - Geomagnetic activity increased GIVEs and reduced LPV200 availability in Canada.
- Dec 03 - Geomagnetic activity increased GIVEs and reduced LPV availability in Canada and LPV200 availability in CONUS, Alaska, and Canada.
- Dec 04 - Geomagnetic activity increased GIVEs and reduced LPV availability in Canada and LPV200 availability in CONUS and Canada.
- Dec 05 - Geomagnetic activity increased GIVEs and reduced LPV availability in Canada and LPV200 availability in CONUS and Canada.
- Dec 06 - Geomagnetic activity increased GIVEs and reduced LPV availability in Canada and LPV200 availability in CONUS and Canada.
- Dec 06 - Satellite maintenance elevated UDREs on PRN-7 and reduced LPV and LPV200 availability in
- Dec 08 - Geomagnetic activity increased GIVEs and reduced LPV availability in Canada and LPV200 availability in CONUS and Canada.
- Dec 09 - Geomagnetic activity increased GIVEs and reduced LPV availability in Canada and LPV200 availability in CONUS and Canada.
- Dec 10 - Geomagnetic activity increased GIVEs and reduced LPV200 availability in CONUS, Alaska, and Canada.
- Dec 11 - Dec 13 - Satellite maintenance elevated UDREs on PRN-21 and reduced LPV200 availability in CONUS.
- Dec 12 - Geomagnetic activity increased GIVEs and reduced LPV availability in Canada and LPV200 availability in CONUS and Canada.
- Dec 13 - Geomagnetic activity increased GIVEs and reduced LPV availability in Canada and LPV200 availability in CONUS and Canada.
- Dec 15 - Geomagnetic activity increased GIVEs and reduced LPV200 availability in Canada.
- Dec 16 - Geomagnetic activity increased GIVEs and reduced LPV availability in Canada and LPV200 availability in CONUS and Canada.
- Dec 16 - Satellite maintenance elevated UDREs on PRN-22 and reduced LPV and LPV200 availability in
- Dec 17 - Geomagnetic activity increased GIVEs and reduced LPV200 availability in CONUS and Canada.
- Dec 18 - Geomagnetic activity increased GIVEs and reduced LPV and LPV200 availability in Canada.
- Dec 19 - Geomagnetic activity increased GIVEs and reduced LPV availability in Canada and LPV200 availability in Alaska and Canada.
- Dec 20 - Geomagnetic activity increased GIVEs and reduced LPV and LPV200 availability in Canada.
- Dec 22 - Geomagnetic activity increased GIVEs and reduced LPV and LPV200 availability in Canada.
- Dec 23 - Geomagnetic activity increased GIVEs and reduced LPV availability in Canada and LPV200 availability in CONUS, Alaska, and Canada.
- Dec 23 - Dec 23 - Satellite maintenance elevated UDREs on PRN-9 and reduced LPV200 availability in CONUS.
- Dec 24 - Geomagnetic activity increased GIVEs and reduced LPV and LPV200 availability in Canada.
- Dec 25 - Geomagnetic activity increased GIVEs and reduced LPV200 availability in Canada.
- Dec 26 - Geomagnetic activity increased GIVEs and reduced LPV200 availability in Canada.
- Dec 27 - Geomagnetic activity increased GIVEs and reduced LPV and LPV200 availability in Canada.
- Dec 28 - Geomagnetic activity increased GIVEs and reduced LPV availability in Canada and LPV200 availability in CONUS and Canada.
- Dec 28 - Dec 29 - Geomagnetic activity increased GIVEs and reduced LPV availability in Canada and LPV200 availability in CONUS and Canada.

- Dec 29 - Geomagnetic activity increased GIVEs and reduced LPV and LPV200 availability in Canada.
- Dec 30 - Geomagnetic activity increased GIVEs and reduced LPV availability in Canada and LPV200 availability in CONUS and Canada.
- Dec 31 - Geomagnetic activity increased GIVEs and reduced LPV and LPV200 availability in CONUS, Alaska, and Canada.

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.

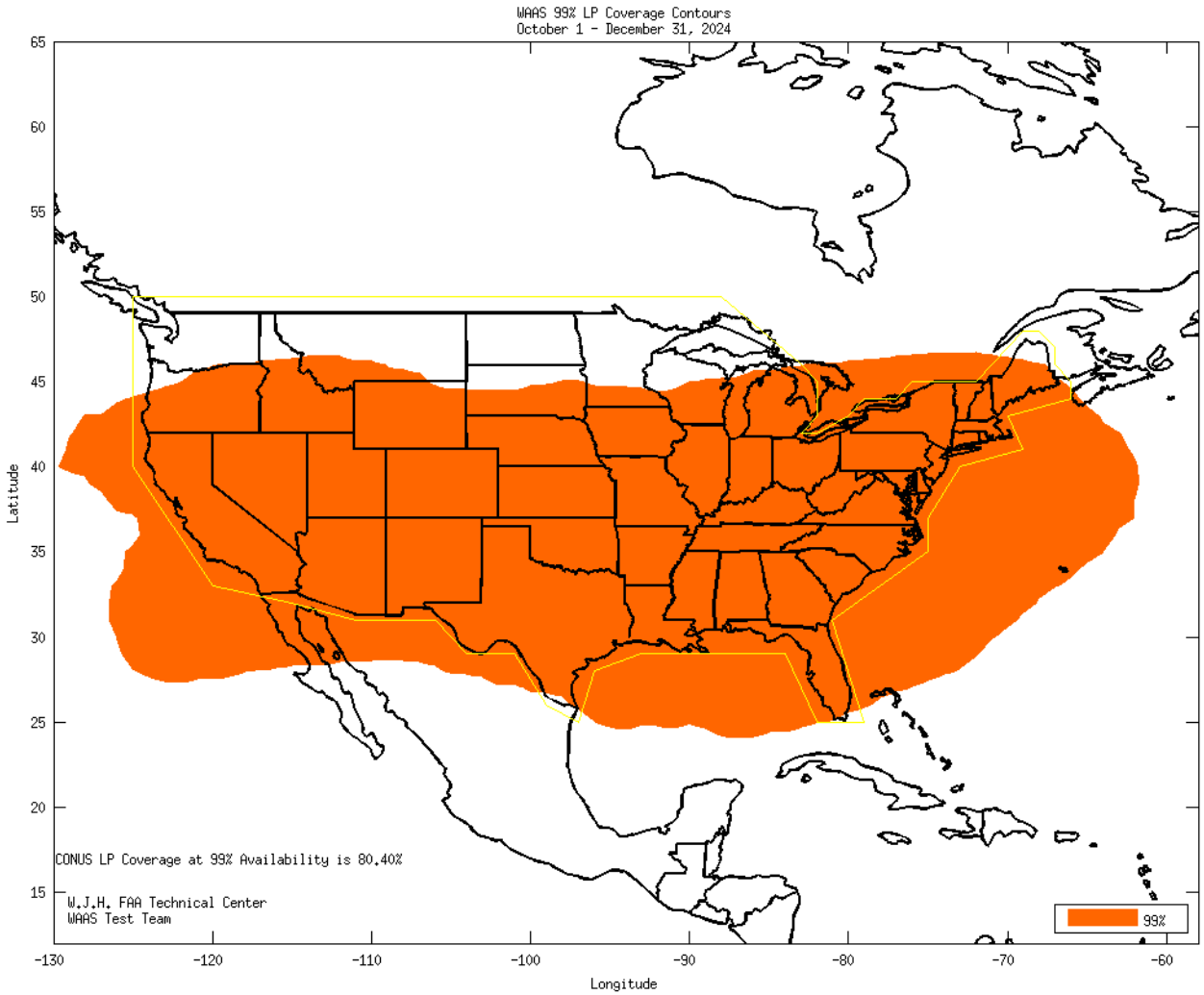

Figure 4-1 LP North America Coverage for the Quarter

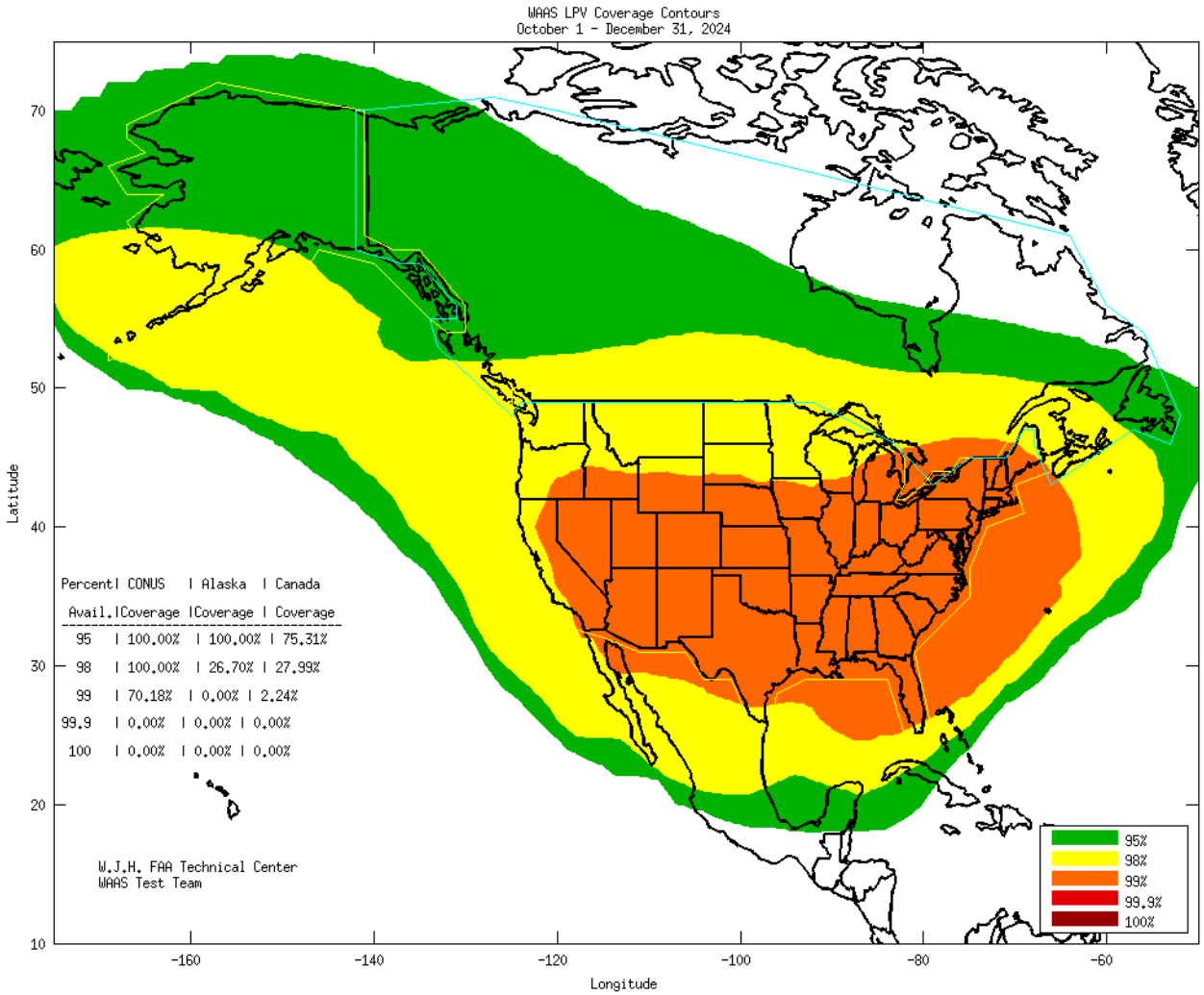

Figure 4-2 LPV North America Coverage for the Quarter

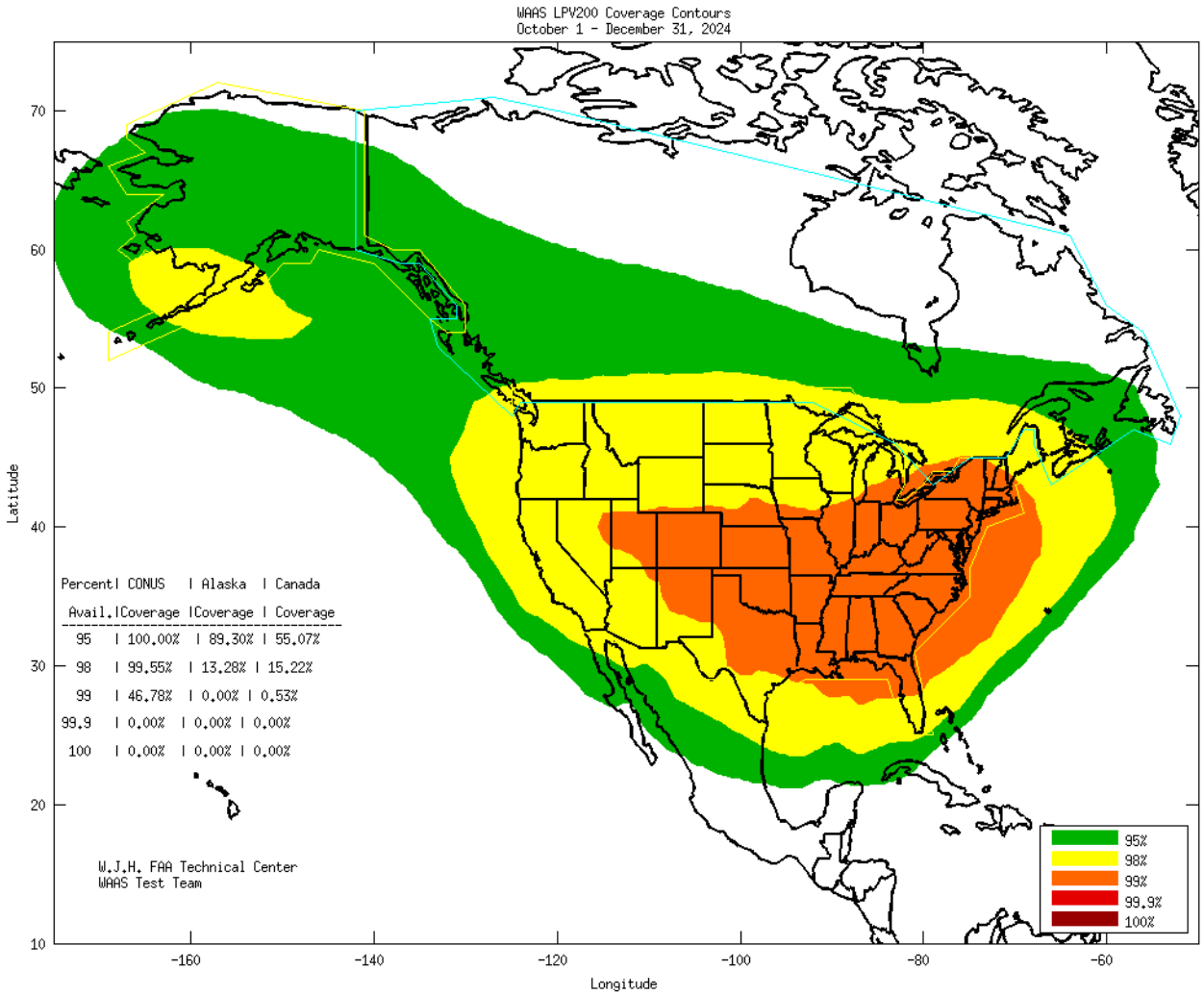

Figure 4-3 LPV200 North America Coverage for the Quarter

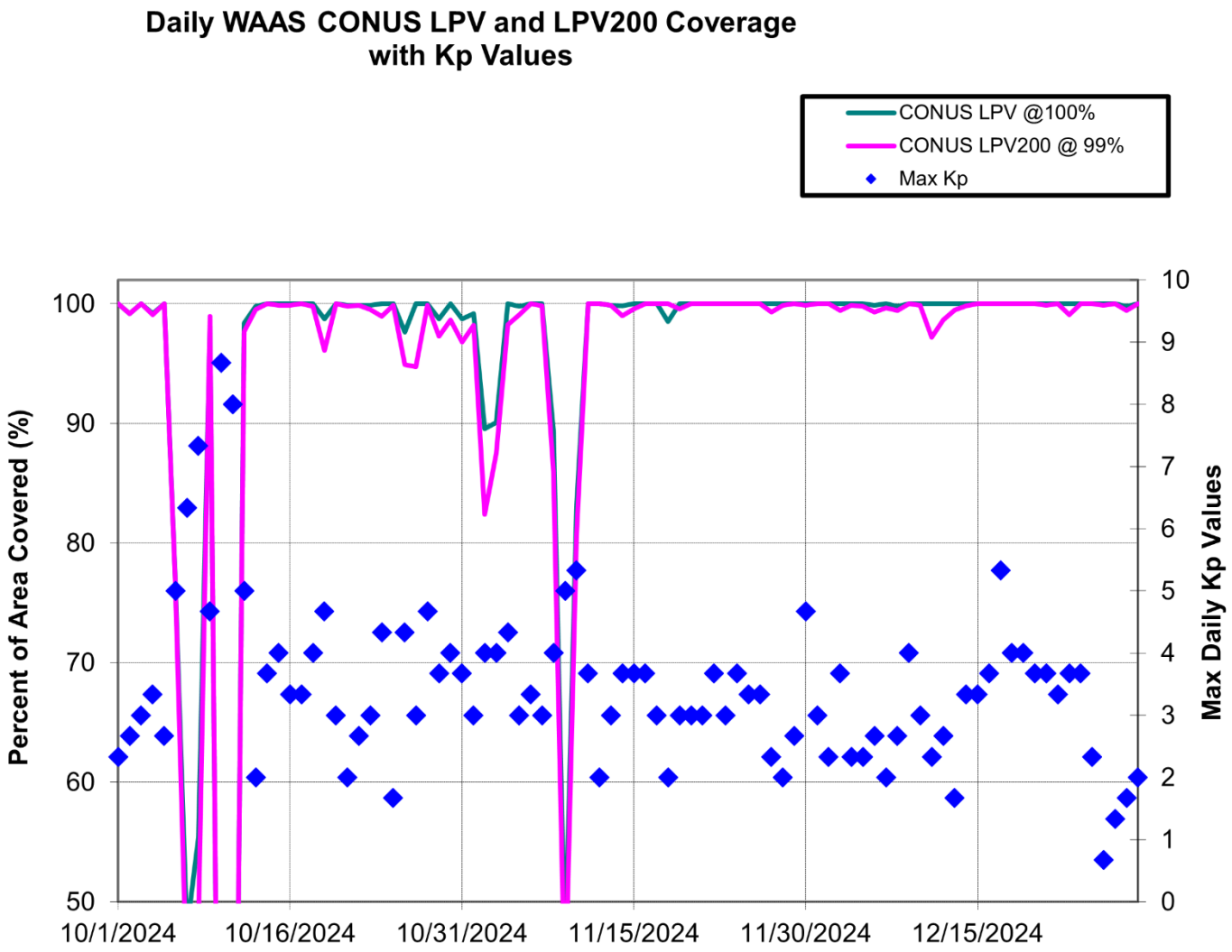

Figure 4-4 Daily LPV and LPV200 CONUS Coverage

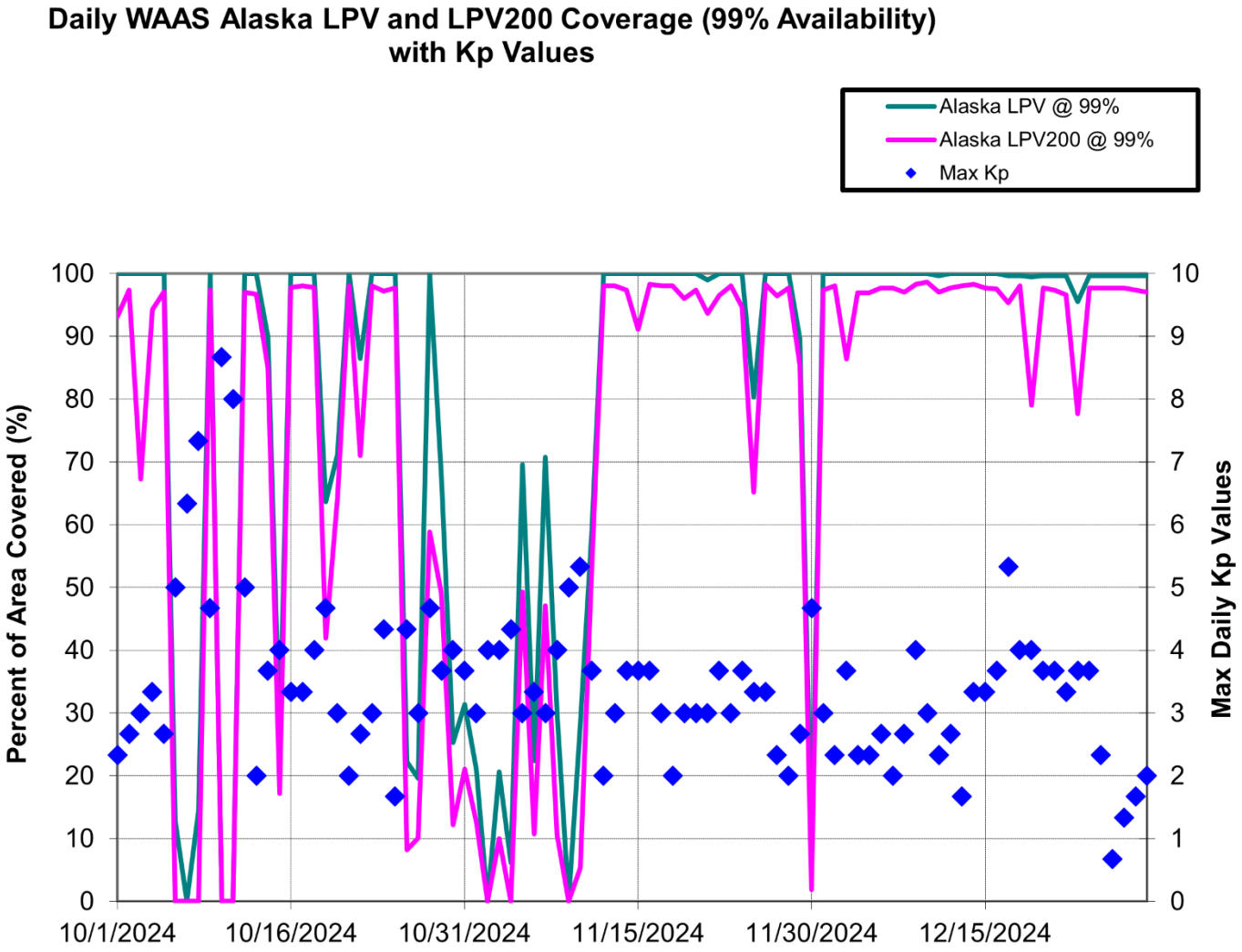

Figure 4-5 Daily LPV and LPV200 Alaska Coverage

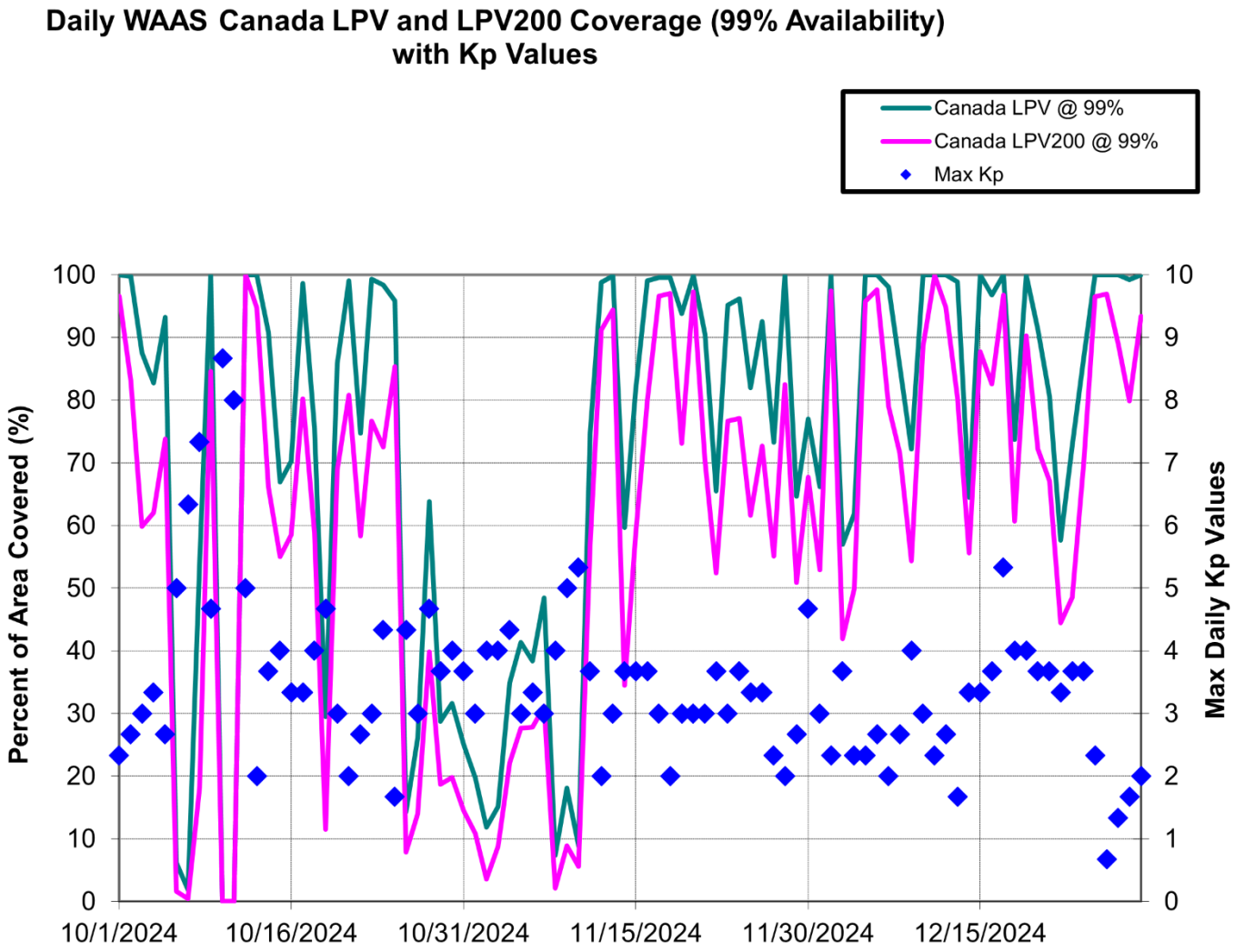

Figure 4-6 Daily LPV and LPV200 Canada Coverage

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.

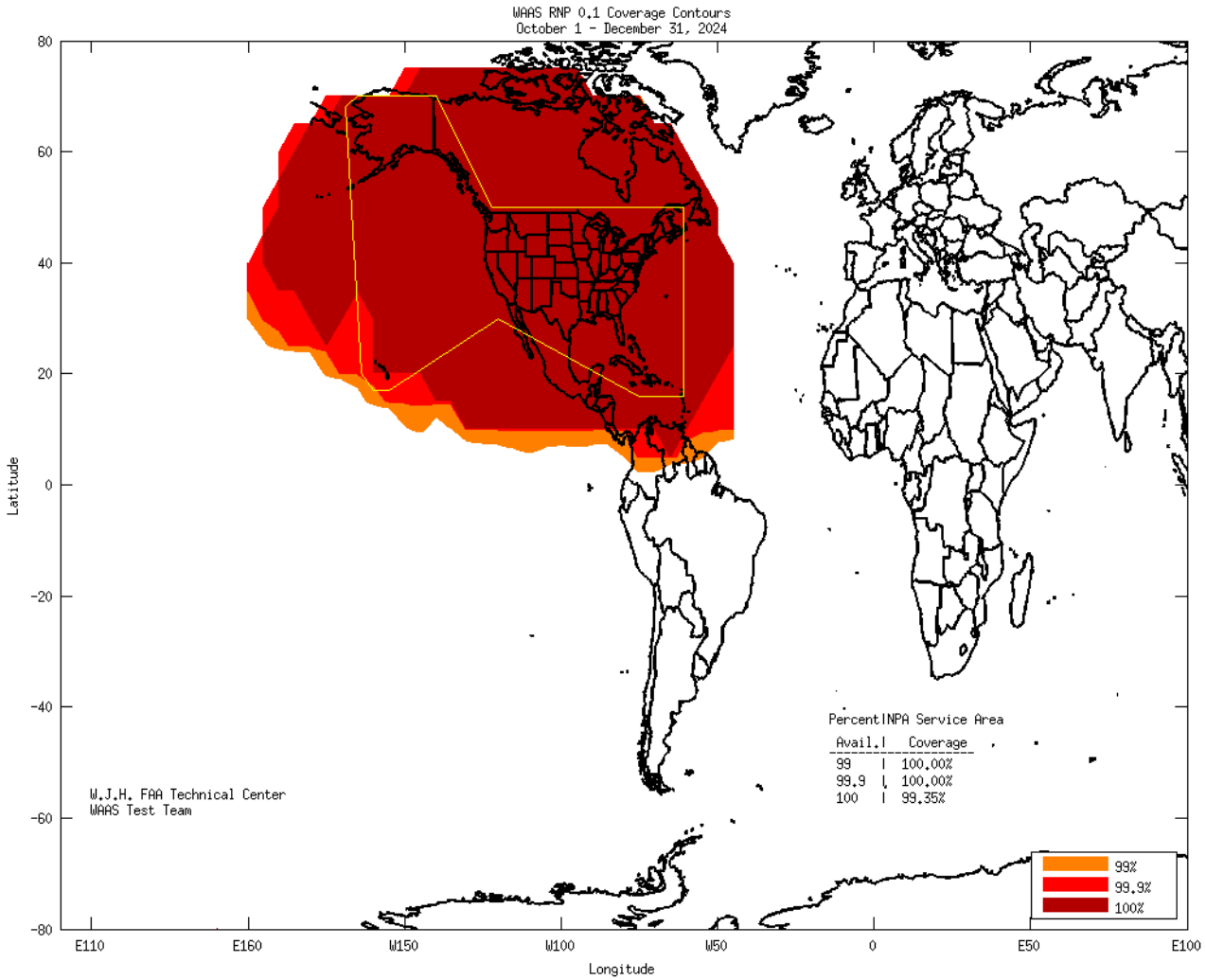

Figure 4-7 RNP 0.1 Coverage for the Quarter

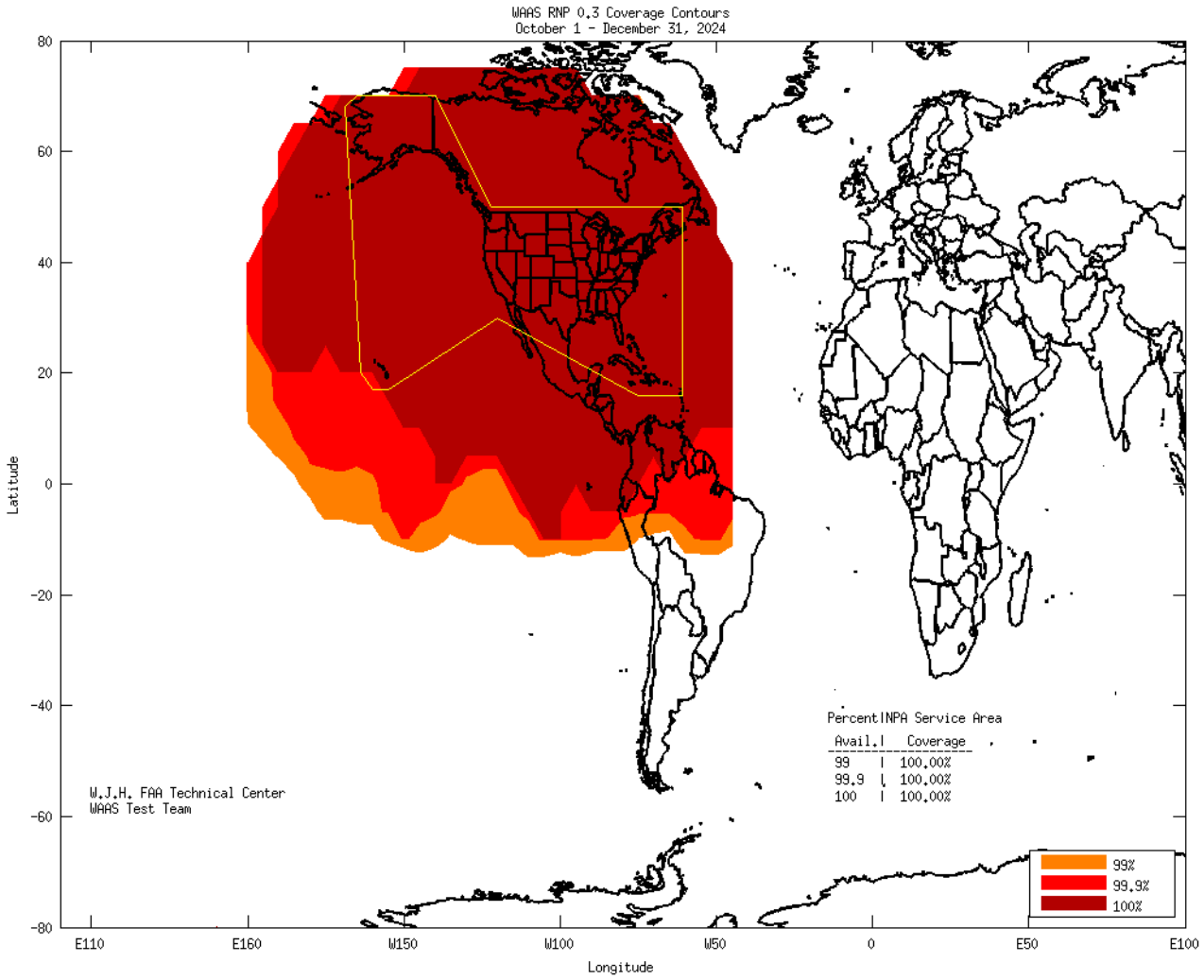

Figure 4-8 RNP 0.3 Coverage for the Quarter

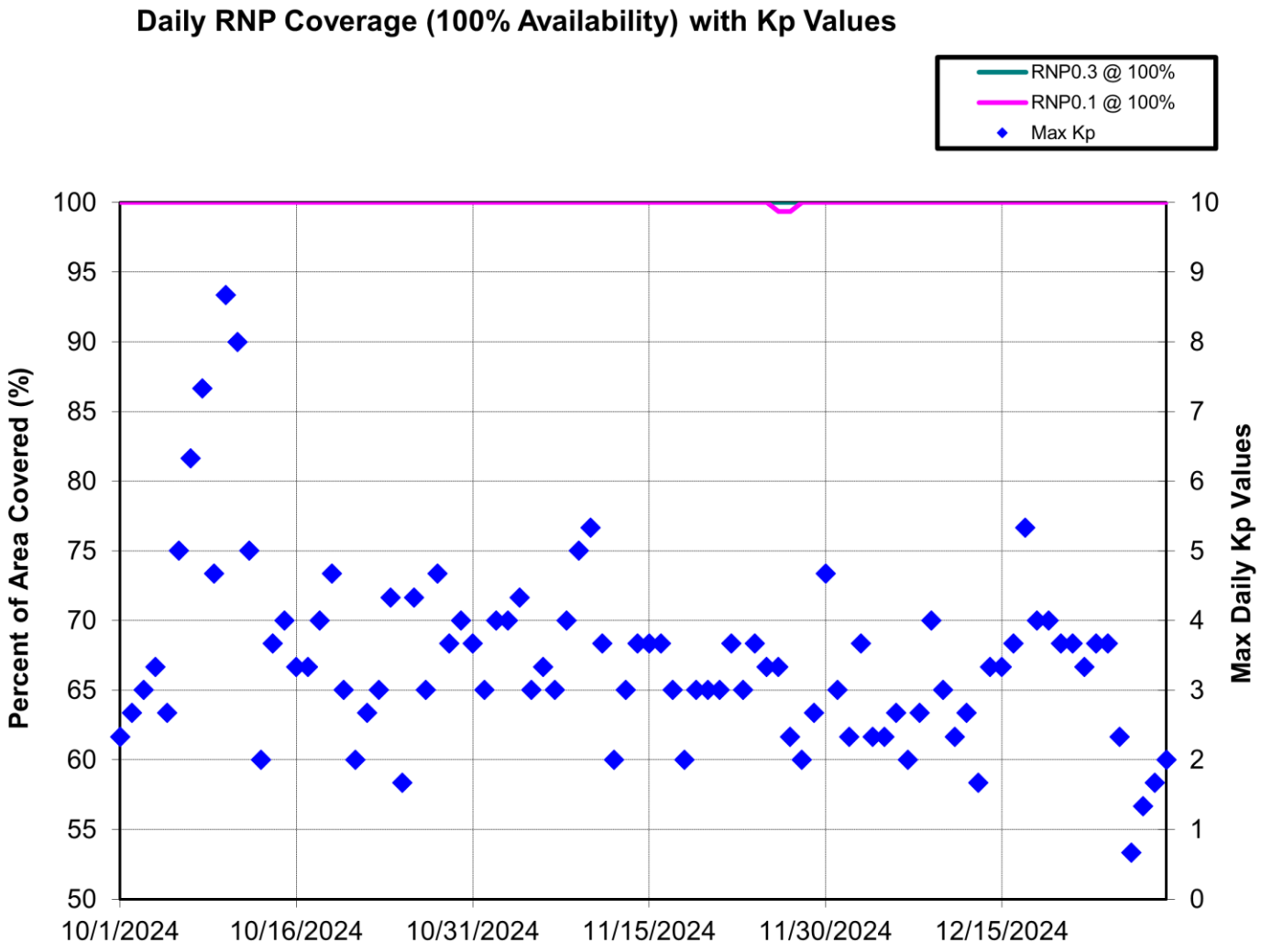

Figure 4-9 Daily RNP Coverage

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 3.380 at Anchorage 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 (m)	Vertical Safety Index (m)	Number of HMIs
Arcata	10.303	5.138	0
Atlantic City	5.234	4.275	0
Bangor	5.043	6.532	0
Elko	8.759	6.149	0
Grand Forks	5.213	4.493	0
Oklahoma City	7.161	6.584	0
Albuquerque	10.483	9.220	0
Anchorage	3.945	3.380	0
Atlanta	3.902	12.136	0
Barrow	4.512	6.034	0
Bethel	6.118	8.399	0
Billings	4.715	8.652	0
Boston	4.947	4.778	0
Chicago	3.982	6.714	0
Cleveland	6.538	4.873	0
Cold Bay	6.861	5.891	0
Dallas	16.581	5.746	0
Denver	5.388	10.338	0
Fairbanks	8.135	7.106	0
Gander	7.443	8.052	0

Location	Horizontal Safety Index (m)	Vertical Safety Index (m)	Number of HMIs
Goose Bay	7.762	7.400	0
Houston	4.814	10.308	0
Iqaluit	7.106	3.931	0
Jacksonville	9.067	5.497	0
Juneau	5.468	7.084	0
Kansas City	4.968	5.797	0
Kotzebue	10.849	6.622	0
Los Angeles	7.123	6.997	0
Memphis	4.351	5.811	0
Merida	3.816	6.001	0
Mexico City	4.135	8.519	0
Miami	5.064	6.715	0
Minneapolis	9.371	7.870	0
New York	6.770	5.436	0
Oakland	9.757	5.969	0
Puerto Vallarta	3.548	5.533	0
Salt Lake City	7.790	6.230	0
San Jose Del Cabo	4.142	7.912	0
Seattle	7.586	7.157	0
Washington, DC	5.276	5.268	0
Winnipeg	5.822	7.088	0

5.2 Broadcast Alerts

The WAAS transmits alert messages for user protection when the active WAAS corrections are no longer bound by the UDREs. Alerts increase the UDRE for one or more PRNs, which can reduce the weighting of the satellite or exclude the satellite from the navigation solution. An increase in UDREs after an alert effectively increases the user protection levels (HPL and VPL), which affects the availability. Additionally, if an alert message sequence lasts for more than 12 seconds, the WAAS fast corrections can time out and cause a loss of continuity. Table 5-2 shows the total number of alerts and the average number of alerts per day.

Table 5-2 WAAS SV Alert

	Number of Alerts			Average Alerts Per Day		
Message Type	**SM9**	**S15**	**G30**	**SM9**	**S15**	**G30**
T2	63	63	63	0.6848	0.6848	0.6848
T3	36	36	35	0.3913	0.3913	0.3804
T4	55	52	49	0.5978	0.5652	0.5326
T5	0	0	0	0	0	0
T6	0	0	0	0	0	0
T24	0	0	0	0	0	0
T26	0	0	0	0	0	0
Total SV Alerts	154	151	147	1.6739	1.6413	1.5978
Days in Service	92	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.

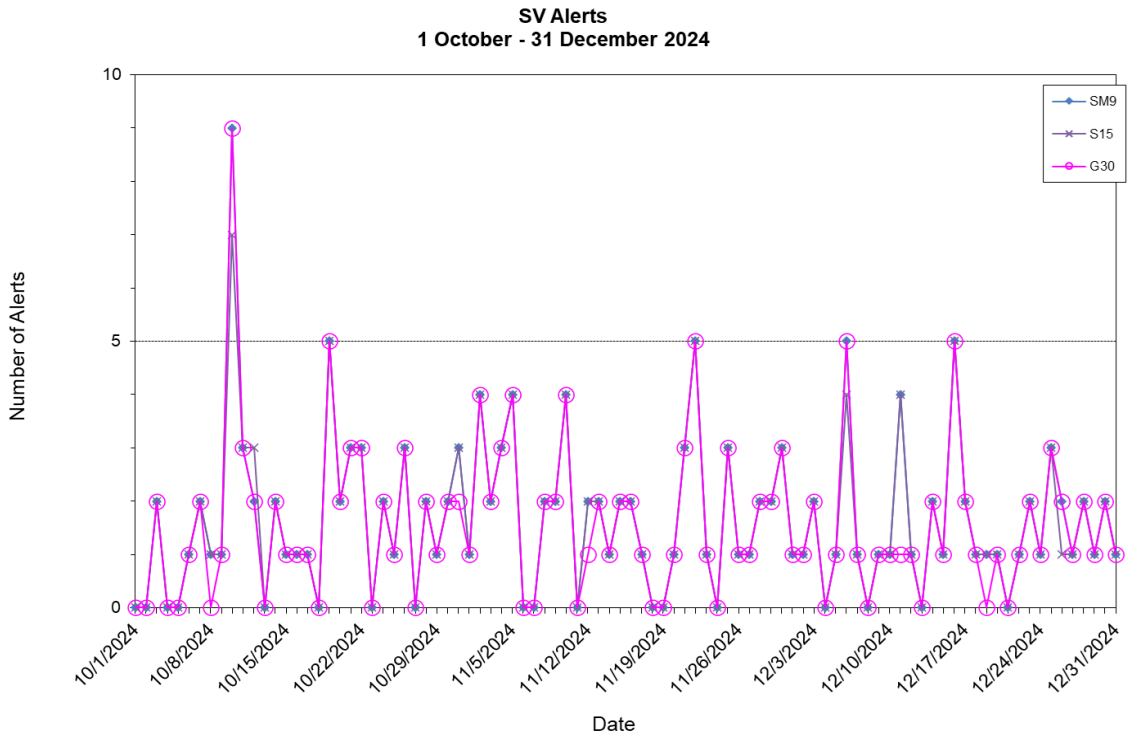

Figure 5-1 SV Daily Alert Trend

5.3 Availability of WAAS Messages (SM9, S15, and G30)

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-229F in APPENDIX C: RTCA TABLE DO-229F	See Table A-8 in RTCA DO-229F in APPENDIX C	See Table A-8 in RTCA DO-229F in APPENDIX C
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 SM9 GEO. Table 5-9 through Table 5-13 show statistics for message rates broadcasted on S15 GEO. Table 5-14 through Table 5-18 show statistics for message rates broadcasted on G30 GEO.

The high Max Late Length reported by SM9 GEO for S15 GEO Type 28 messages occurred after PRN133 switched from Brewster (faulted) to South Mountain on December 6, 2024 causing a 16-second message outage. The high Max Late Length reported by SM9 GEO for G30 GEO Type 28 messages occurred after PRN135 switched from Napa (manual) to Brewster on December 12, 2024 causing a 3-second message outage.

The high Max Late Length reported by S15 GEO for S15 GEO Type 28 messages occurred after PRN133 switched from Brewster (faulted) to South Mountain on December 6, 2024 causing a 16-second message outage. The high Max Late Length reported by S15 GEO for G30 GEO Type 28 messages occurred after PRN135 switched from Brewster (manual) to Napa on November 11, 2024 causing a 3-second message outage.

The high Max Late Length reported by G30 GEO for G30 GEO Type 28 messages occurred after PRN135 switched from Brewster (manual) to Napa on November 5, 2024 causing a 3-second message outage. The high Max Late Length reported by G30 GEO for SM9 and S15 GEO Type 1-4, 7, 9, 10, 17, 18, 26, and 28 messages occurred after PRN135 had a 9914-second signal in space (SIS) outage on December 11,2024.

Table 5-4 WAAS Fast Correction and Degradation Message Rates–SM9

Message Type	On Time (number received)	Late (number received)	Max Late Length (seconds)
1	101407	2	125
2	1324958	66	12
3	1324855	84	12
4	1324922	76	10
7	94464	15	132
9	93261	0	0
10	94418	18	141

Message Type	On Time (number received)	Late (number received)	Max Late Length (seconds)
17	31213	1	301

Table 5-5 WAAS Long Correction Message Rates (Type 24 and 25)–SM9

PRN	On Time (number received)	Late (number received)	Max Late Length (seconds)
1	1	0	0
2	49846	0	0
3	47500	0	0
4	47388	0	0
5	47577	0	0
6	47065	0	0
7	47477	0	0
8	48539	2	179
9	47076	0	0
10	47530	0	0
11	47366	0	0
12	46964	0	0
13	48917	0	0
14	46648	0	0
15	47662	0	0
16	47626	0	0
17	47977	0	0
18	46921	0	0
19	45904	0	0
20	48322	0	0
21	48878	0	0
22	39652	0	0
23	46944	2	179
24	48781	0	0
25	48744	0	0
26	47975	0	0
27	48873	0	0
28	47636	0	0
29	47116	0	0
30	47281	0	0
31	47236	0	0
32	46761	0	0

Table 5-6 WAAS Ephemeris Covariance Message Rates (Type 28)–SM9

PRN	On Time (number received)	Late (number received)	Max Late Length (seconds)
1			
2	40992	1	127
3	39076	0	0
4	38985	0	0
5	39109	0	0
6	38749	0	0
7	38912	0	0
8	39878	0	0
9	38670	1	216
10	39113	0	0
11	38994	0	0
12	38681	0	0
13	40238	0	0
14	38271	3	215
15	39122	0	0
16	39197	0	0
17	39395	1	209
18	38596	0	0
19	37790	1	209
20	39742	0	0
21	40158	2	128
22	32607	4	163
23	38584	1	132
24	40212	0	0
25	40210	1	137
26	39512	0	0
27	40197	4	180
28	39267	0	0
29	38855	0	0
30	38819	0	0
31	38868	0	0
32	38545	0	0
131	75969	0	0
133	75057	2	8428
135	73235	3	5522

Table 5-7 WAAS Ionospheric Correction Message Rates (Type 26)–SM9

Band	Block	On Time (number received)	Late (number received)	Max Late Length (seconds)
0	0	27654	6	306
0	1	27659	1	301
0	2	27656	3	304
1	0	27658	2	301
1	1	27658	2	304
1	2	27655	4	307
1	3	27656	3	304
1	4	27656	3	304
2	0	27655	5	305
2	1	27657	2	311
2	2	27660	1	301
2	3	27658	4	304
2	4	27658	3	304
3	0	27658	2	311
3	1	27654	5	305
3	2	27654	4	306
9	0	27652	7	304
9	1	27658	3	304
9	2	27653	5	303
9	3	27653	4	308
9	4	27651	5	306
9	5	27652	4	305
9	6	27652	5	305

Table 5-8 WAAS Ionospheric Mask Message Rates (Type 18)–SM9

Band	On Time (number received)	Late (number received)	Max Late Length (seconds)
0	35313	0	0
1	35335	0	0
2	35295	0	0
3	35288	0	0
9	35298	0	0

Table 5-9 WAAS Fast Correction and Degradation Message Rates–S15

Message Type	On Time (number received)	Late (number received)	Max Late Length (seconds)
1	101437	2	134
2	1324953	68	24
3	1324849	85	22
4	1324905	78	22
7	94355	13	127
9	93260	1	182
10	94383	10	179
17	31222	0	0

Table 5-10 WAAS Long Correction Message Rates (Type 24 and 25)–S15

Message Type	On Time (number received)	Late (number received)	Max Late Length (seconds)
1	1	0	0
2	49848	0	0
3	47495	0	0
4	47390	0	0
5	47586	1	170
6	47066	0	0
7	47465	0	0
8	48538	2	168
9	47073	0	0
10	47529	1	170
11	47349	1	170
12	46964	2	170
13	48916	1	161
14	46654	0	0
15	47668	0	0
16	47625	0	0

17	47980	0	0
18	46906	0	0
19	45901	0	0
20	48320	1	170
21	48874	0	0
22	39650	0	0
23	46939	2	168
24	48781	1	147
25	48733	2	173
26	47967	0	0
27	48868	0	0
28	47630	1	161
29	47118	0	0
30	47290	0	0
31	47234	0	0
32	46750	0	0

Table 5-11 WAAS Ephemeris Covariance Message Rates (Type 28)–S15

PRN	On Time (number received)	Late (number received)	Max Late Length (seconds)
1			
2	40953	0	0
3	39070	0	0
4	38989	2	209
5	39096	1	209
6	38763	0	0
7	38895	2	151
8	39847	0	0
9	38672	0	0
10	39107	4	168
11	38984	0	0
12	38689	0	0
13	40238	1	205
14	38255	1	205
15	39107	0	0
16	39195	0	0
17	39381	0	0
18	38569	0	0
19	37788	1	208
20	39716	0	0

PRN	On Time (number received)	Late (number received)	Max Late Length (seconds)
21	40127	1	210
22	32593	5	157
23	38583	1	208
24	40193	1	209
25	40193	0	0
26	39512	0	0
27	40223	0	0
28	39267	2	208
29	38836	2	209
30	38800	1	131
31	38868	1	209
32	38542	0	0
131	75993	0	0
133	74974	2	5567
135	73272	3	5296

Table 5-12 WAAS Ionospheric Correction Message Rates (Type 26)–S15

Band	Block	On Time (number received)	Late (number received)	Max Late Length (seconds)
0	0	27654	3	303
0	1	27655	4	579
0	2	27654	4	580
1	0	27655	4	580
1	1	27653	5	306
1	2	27648	7	305
1	3	27654	4	304
1	4	27654	3	306
2	0	27657	0	0
2	1	27658	1	305
2	2	27652	4	302
2	3	27652	4	304
2	4	27657	3	304
3	0	27657	4	304
3	1	27659	4	306
3	2	27658	2	306
9	0	27655	5	578
9	1	27652	6	307
9	2	27656	3	304
9	3	27656	6	306

Band	Block	On Time (number received)	Late (number received)	Max Late Length (seconds)
9	4	27651	7	307
9	5	27655	4	305
9	6	27653	4	306

Table 5-13 WAAS Ionospheric Mask Message Rates (Type 18)–S15

Band	On Time (number received)	Late (number received)	Max Late Length (seconds)
0	35291	1	422
1	35275	0	0
2	35286	1	480
3	35298	1	478
9	35299	0	0

Table 5-14 WAAS Fast Correction and Degradation Message Rates–G30

Message Type	On Time (number received)	Late (number received)	Max Late Length (seconds)
1	100759	4	10001
2	1323303	67	9920
3	1323196	84	9924
4	1323254	77	9919
7	93852	10	10023
9	93151	1	9984
10	93848	19	10081
17	31152	2	10099

Table 5-15 WAAS Long Correction Message Rates (Type 24 and 25)–G30

PRN	On Time (number received)	Late (number received)	Max Late Length (seconds)
1	1	0	0
2	49807	0	0
3	47502	0	0
4	47385	0	0
5	47487	0	0
6	47070	0	0
7	47401	0	0
8	48415	3	9984
9	47073	0	0
10	47401	1	161
11	47352	0	0

PRN	On Time (number received)	Late (number received)	Max Late Length (seconds)
12	46965	1	180
13	48798	0	0
14	46576	1	163
15	47546	1	164
16	47533	1	9924
17	47989	0	0
18	46789	0	0
19	45900	0	0
20	48214	0	0
21	48803	0	0
22	39601	0	0
23	46821	3	9984
24	48649	1	175
25	48744	1	161
26	47913	0	0
27	48749	0	0
28	47641	1	180
29	47022	0	0
30	47190	1	164
31	47237	0	0
32	46670	0	0

Table 5-16 WAAS Ephemeris Covariance Message Rates (Type 28)–G30

PRN	On Time (number received)	Late (number received)	Max Late Length (seconds)
1			
2	40926	2	173
3	39075	1	208
4	38983	1	209
5	39015	2	205
6	38752	2	209
7	38844	0	0
8	39759	0	0
9	38670	2	288
10	38994	6	9985
11	38983	2	211
12	38685	2	208
13	40170	3	210

PRN	On Time (number received)	Late (number received)	Max Late Length (seconds)
14	38195	4	208
15	39030	2	210
16	39104	1	211
17	39379	3	209
18	38480	1	187
19	37778	5	209
20	39630	2	208
21	40092	7	208
22	32559	6	210
23	38496	0	0
24	40089	3	208
25	40195	3	208
26	39469	1	209
27	40126	2	157
28	39255	1	209
29	38766	0	0
30	38744	1	208
31	38862	1	204
32	38478	1	208
131	75923	2	10087
133	74960	5	10062
135	73212	2	5297

Table 5-17 WAAS Ionospheric Correction Message Rates (Type 26)–G30

Band	Block	On Time (number received)	Late (number received)	Max Late Length (seconds)
0	0	27623	3	10369
0	1	27619	7	10085
0	2	27620	5	10081
1	0	27622	3	10098
1	1	27617	6	10088
1	2	27618	7	10083
1	3	27622	3	10081
1	4	27616	5	10087
2	0	27622	3	10081
2	1	27618	7	10081
2	2	27621	4	10081
2	3	27616	9	10098
2	4	27620	4	10088

Band	Block	On Time (number received)	Late (number received)	Max Late Length (seconds)
3	0	27619	4	10092
3	1	27623	1	10081
3	2	27623	5	10368
9	0	27618	7	10374
9	1	27616	6	10368
9	2	27620	3	10375
9	3	27622	5	10368
9	4	27620	4	10381
9	5	27620	6	10383
9	6	27616	8	10370

Table 5-18 WAAS Ionospheric Mask Message Rates (Type 18)–G30

Band	Block	On Time (number received)	Late (number received)
0	35180	1	10087
1	35192	1	10051
2	35182	3	10116
3	35200	1	10225
9	35205	1	10305

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 SV glitch trend for this quarter. Severity 0, displayed by blue dots, indicates fewer than 10 receivers lost track of the satellite. Severity 1, displayed by green dots, indicates a significant number of receivers, but not all receivers, lost track of the satellite. Severity 2, displayed by yellow dots, indicates only Signal Quality Monitoring (SQM) was affected, and all receivers lost track. Severity 3, displayed by red dots, indicates more than just SQM was affected, and all receivers lost track.

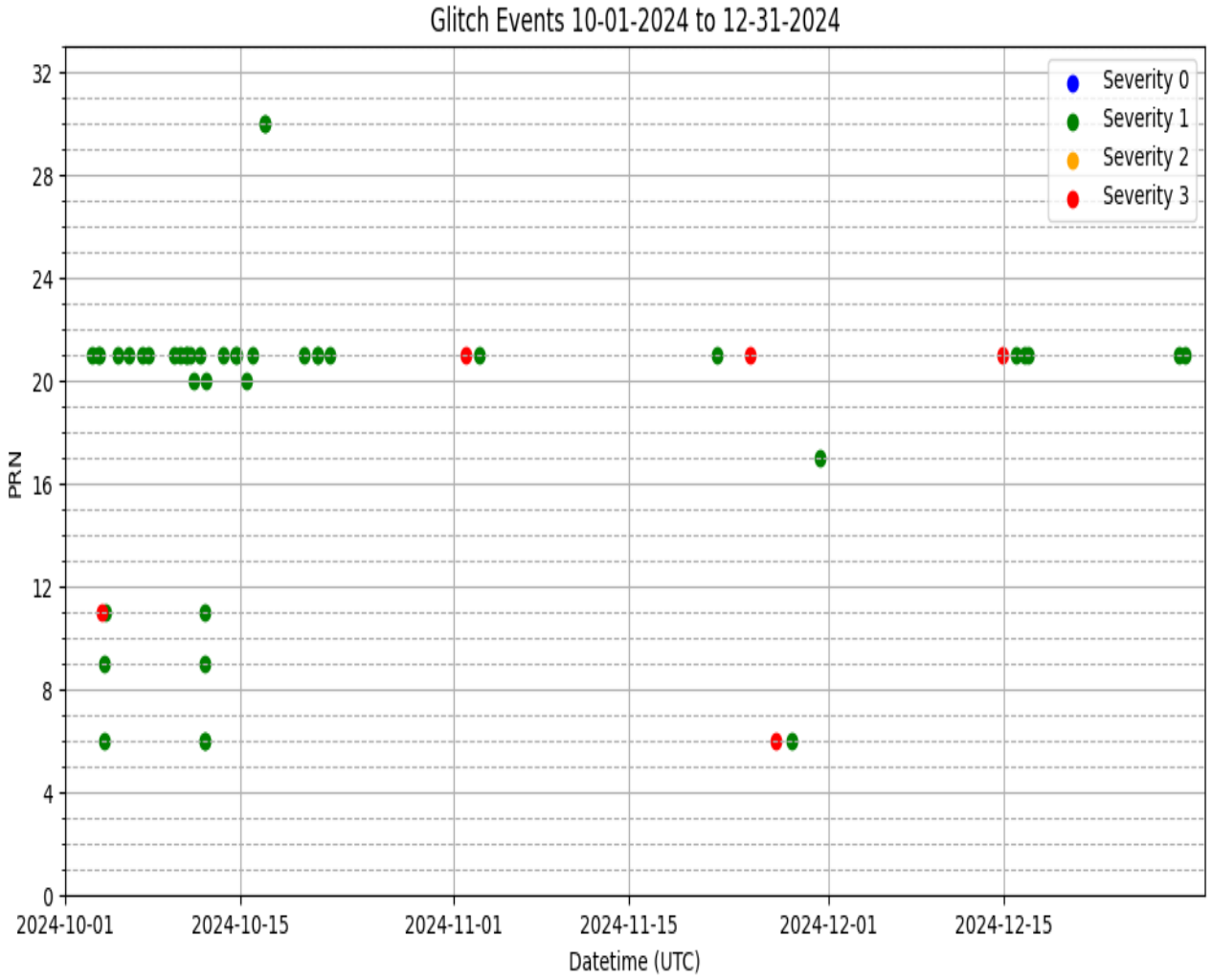

Figure 5-2 SV Glitch Trend

6.0 SV RANGE ACCURACY

WAAS transmits UDRE and GIVE values to support protection levels such that the position error is bounded 99.9999%. The position domain analysis in this report provides the information regarding how well the transmitted WAAS UDRE and GIVE values bound the position errors. A UDRE is broadcasted by the WAAS for each monitored satellite, and the 95% error bound and the maximum normalized value (divided by sigma_UDRE) 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 normalized 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, maximum range error, and maximum normalized value (divided by sigma_UDRE) at the time of the maximum range error. Figure 6-1 through Figure 6-3 show the 95% range error for each SV measured by the WAAS receivers at the Washington, DC reference station.

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

Site	Minneapolis			Chicago			Boston			Juneau			Honolulu			Salt Lake City		
PRN ↓	0.95 Range Error (m)	Max Range Error (m)	Max Range Error Sigma	0.95 Range Error (m)	Max Range Error (m)	Max Range Error Sigma	0.95 Range Error (m)	Max Range Error (m)	Max Range Error Sigma	0.95 Range Error (m)	Max Range Error (m)	Max Range Error Sigma	0.95 Range Error (m)	Max Range Error (m)	Max Range Error Sigma	0.95 Range Error (m)	Max Range Error (m)	Max Range Error Sigma
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	1.805	5.719	3.787	1.352	5.964	3.021	1.693	3.773	2.100	1.481	4.723	1.423	1.815	7.111	3.194	1.231	6.336	3.920
3	1.223	10.559	6.788	2.159	9.498	2.920	1.506	5.525	3.064	1.441	6.472	2.306	2.054	5.784	4.041	1.757	5.567	1.676
4	1.231	11.274	6.680	1.571	5.198	2.355	1.639	6.405	3.474	1.441	8.376	3.140	1.840	6.242	5.448	1.268	3.927	1.148
5	1.280	4.737	1.716	1.178	3.125	1.031	1.387	3.216	1.438	1.314	9.123	4.066	1.472	4.315	1.451	1.385	4.443	2.150
6	1.306	3.161	2.107	1.360	2.187	1.414	1.462	2.642	1.535	1.243	6.702	3.176	1.618	5.412	2.282	1.352	6.313	3.145
7	1.209	10.866	6.318	1.295	5.026	1.535	1.408	6.831	3.450	1.414	6.493	4.049	1.619	6.007	4.606	1.102	3.717	3.069
8	1.340	10.467	5.274	1.489	4.368	1.622	1.739	6.032	3.233	1.502	6.873	2.146	1.605	6.068	4.560	1.276	4.393	1.212
9	1.250	11.126	6.304	1.486	6.465	2.986	1.802	6.333	3.334	1.505	8.600	3.857	2.124	6.703	5.238	1.220	3.523	1.025
10	1.229	5.423	3.450	1.405	6.426	3.651	1.249	3.651	2.387	1.420	5.181	3.025	1.624	3.346	0.939	1.159	2.618	0.909
11	1.181	3.569	1.204	1.197	2.592	0.809	1.457	2.931	1.187	1.420	7.751	4.133	1.772	6.097	1.686	1.130	3.667	2.232
12	1.268	6.032	3.296	1.263	6.380	3.257	1.640	3.854	2.545	1.286	4.302	2.503	1.920	4.071	2.372	1.502	4.994	1.562
13	2.009	7.600	2.589	1.578	5.513	1.975	1.829	5.468	1.837	1.251	6.426	1.987	1.630	4.655	2.812	1.164	6.598	4.896
14	1.318	5.408	2.652	1.291	4.809	1.547	1.386	7.092	2.271	1.587	5.336	3.067	1.973	6.839	3.325	1.168	6.304	4.228
15	1.774	5.743	2.572	1.346	3.841	1.112	1.595	3.477	1.077	1.274	5.452	2.343	1.522	4.609	1.935	1.160	6.712	3.758
16	1.303	11.215	6.645	1.315	4.816	2.603	1.522	6.302	4.824	1.482	8.583	3.176	1.638	5.375	3.222	1.039	3.855	1.837
17	1.381	7.572	2.640	1.531	5.328	1.900	1.728	4.313	2.457	1.288	3.750	2.127	2.602	9.980	3.566	1.407	6.500	4.642
18	1.206	2.361	1.856	1.389	5.252	0.924	1.358	2.706	1.990	1.222	5.771	2.556	1.825	4.465	3.045	1.138	3.806	1.819
19	1.200	3.569	2.865	1.439	3.937	1.070	1.516	4.204	1.965	1.216	4.572	2.550	2.014	4.947	2.713	1.465	6.818	5.407
20	1.409	4.452	1.345	1.219	2.450	0.755	1.589	5.041	1.451	1.402	8.159	4.047	1.477	3.996	2.650	1.260	3.851	2.514
21	1.160	5.925	4.167	1.418	6.620	3.222	1.382	6.119	2.711	1.514	3.430	0.971	1.882	7.046	3.068	1.521	4.605	2.218
22	1.728	3.927	1.967	1.750	4.238	1.160	2.004	3.121	1.403	1.656	3.990	1.283	2.372	6.001	4.053	1.659	5.524	4.189
23	1.373	4.603	3.036	1.189	5.137	3.057	1.174	3.839	2.870	1.448	5.547	2.361	1.609	3.901	2.059	1.641	4.168	1.552
24	1.329	4.453	1.150	1.313	4.849	2.993	1.374	3.437	1.613	1.754	4.932	3.737	1.956	5.366	2.226	1.627	7.381	3.710
25	1.157	8.819	4.250	1.311	7.212	5.604	1.305	6.256	3.888	1.312	4.362	1.268	1.626	3.115	1.978	2.048	6.231	1.937
26	1.343	10.576	8.774	1.360	6.275	2.726	1.421	6.466	4.411	1.357	7.256	2.148	1.639	4.848	3.273	1.364	4.238	1.153
27	1.829	10.628	5.391	1.471	4.653	2.173	1.385	5.958	4.292	1.447	9.187	3.088	1.514	6.010	4.403	1.347	3.835	1.126
28	1.216	9.402	7.332	1.012	6.501	3.883	1.172	5.649	4.078	1.636	5.112	3.123	1.323	4.566	3.174	1.399	3.496	1.567
29	1.269	9.305	4.017	1.248	7.328	1.408	1.442	5.522	2.866	1.338	3.878	1.241	1.933	4.132	3.201	1.192	3.964	3.154
30	1.140	5.181	3.748	1.506	3.809	1.383	1.503	5.605	2.868	1.477	7.823	4.529	1.852	6.637	2.595	1.164	7.027	3.934
31	1.294	10.906	7.464	1.347	7.589	4.088	1.253	6.421	5.034	1.493	3.788	2.023	1.641	8.465	1.425	1.180	3.391	1.837
32	1.115	7.899	4.693	1.039	5.410	3.205	1.405	4.519	3.591	1.365	4.256	1.280	2.033	6.199	1.645	1.366	3.259	0.967
131	1.952	9.418	0.396	1.443	7.012	0.232	1.941	5.198	0.198	1.740	5.685	0.671	1.454	4.353	1.187	1.499	6.073	1.106

133	2.113	8.569	0.320	1.820	5.324	0.149	1.595	5.046	0.163	1.645	6.722	0.717	1.535	5.532	0.424	1.303	6.409	0.299
135	2.596	6.480	0.256	1.429	6.600	0.198	1.762	4.316	0.150	1.954	6.678	0.731	1.913	5.551	1.354	1.472	6.004	0.291

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

Site	Billings			Miami			Albuquerque			Kansas City			Los Angeles			Atlanta		
PRN ↓	0.95 Range Error (m)	Max Range Error (m)	Max Range Error Sigma	0.95 Range Error (m)	Max Range Error (m)	Max Range Error Sigma	0.95 Range Error (m)	Max Range Error (m)	Max Range Error Sigma	0.95 Range Error (m)	Max Range Error (m)	Max Range Error Sigma	0.95 Range Error (m)	Max Range Error (m)	Max Range Error Sigma	0.95 Range Error (m)	Max Range Error (m)	Max Range Error Sigma
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	1.154	5.883	4.451	2.586	8.430	3.068	1.335	4.776	1.497	1.613	5.434	1.863	1.387	6.033	3.307	1.438	5.032	1.850
3	1.026	12.829	8.852	2.582	4.747	2.299	1.334	6.568	2.768	1.586	13.862	11.216	1.166	3.336	1.015	1.491	5.350	3.324
4	1.353	12.380	10.356	2.486	8.833	5.690	1.106	5.510	3.826	1.407	13.234	9.079	1.209	6.864	4.079	1.558	5.370	2.966
5	1.178	3.984	1.855	2.336	5.692	1.860	1.272	5.234	2.057	3.353	5.501	2.228	1.460	6.885	2.034	1.588	4.637	1.359
6	1.043	12.791	6.558	3.093	10.052	1.913	1.279	4.981	3.644	3.236	6.373	2.671	1.458	7.407	4.374	1.591	3.703	1.481
7	1.393	12.284	6.625	3.423	9.788	4.475	1.018	5.361	4.317	1.277	12.269	3.806	1.315	6.355	4.557	1.585	4.931	2.758
8	1.119	10.593	3.382	2.543	10.138	4.799	1.297	5.836	4.103	1.365	7.000	2.170	1.351	7.221	3.984	1.575	4.959	3.491
9	1.240	12.864	9.024	2.692	8.760	4.984	1.179	5.589	4.664	1.544	13.631	6.186	1.366	7.177	5.078	1.672	5.098	3.070
10	1.557	5.815	3.501	1.719	4.683	2.648	1.147	2.913	2.007	1.116	3.641	3.171	1.128	2.605	1.482	1.226	3.576	3.088
11	1.224	5.808	1.844	2.306	4.635	1.705	1.251	5.406	2.421	1.448	6.156	2.042	1.356	6.901	4.916	1.389	2.891	2.424
12	1.224	2.977	1.401	2.133	6.656	2.164	1.166	4.606	1.441	1.420	6.655	2.578	1.438	7.314	5.063	1.813	2.920	1.412
13	1.033	5.093	2.335	2.131	6.775	2.130	1.235	4.375	2.503	1.264	4.342	1.480	1.417	4.344	2.912	1.517	5.782	1.814
14	1.087	3.615	2.754	2.840	10.208	5.799	1.162	5.347	3.093	1.339	6.524	3.423	1.336	6.984	2.772	1.434	4.026	2.824
15	1.204	4.741	1.758	1.844	4.230	2.060	1.368	3.128	0.555	1.726	4.894	1.476	1.684	5.637	2.320	1.370	3.137	1.871
16	1.708	13.239	8.402	2.657	8.637	5.644	1.697	6.133	2.341	2.058	13.588	10.664	1.074	6.458	3.157	1.301	5.651	3.908
17	1.386	4.334	1.828	2.480	8.909	3.617	1.442	4.926	3.183	1.464	4.491	1.326	1.440	7.320	3.794	1.596	3.844	2.393
18	1.288	2.362	0.800	2.897	6.125	1.937	1.063	3.367	1.530	1.273	2.815	2.004	1.143	3.736	0.734	1.318	2.742	2.341
19	2.536	5.795	2.536	2.338	6.964	1.896	1.269	4.861	3.605	1.179	4.203	3.531	1.624	7.852	4.488	1.416	4.290	2.145
20	1.159	3.812	1.628	2.255	3.855	1.343	1.552	4.712	1.558	2.868	6.951	1.793	1.754	7.761	3.682	1.407	2.707	1.986
21	1.394	5.698	4.322	2.738	9.883	4.602	1.613	6.809	2.103	1.224	7.782	2.350	1.449	5.527	2.961	1.661	4.113	2.846
22	1.369	3.880	1.762	2.607	10.248	4.471	1.685	6.020	2.393	1.791	4.184	1.263	1.984	8.366	4.793	2.168	3.351	2.099
23	1.338	3.029	1.042	1.780	4.763	3.681	1.108	3.078	1.688	1.233	4.112	3.051	1.134	2.375	0.773	1.280	3.207	1.078
24	1.310	3.624	2.596	1.897	3.908	1.436	1.300	4.531	2.697	1.324	4.317	2.647	1.491	6.717	5.892	1.302	2.997	0.793
25	1.596	4.247	2.167	1.930	4.866	2.759	1.415	3.630	2.038	1.579	6.170	1.901	1.600	6.625	3.010	1.551	3.858	2.985
26	1.935	13.314	8.633	2.625	7.092	2.343	1.370	4.420	2.300	2.565	14.128	12.268	1.544	3.759	1.497	1.309	5.513	4.236
27	1.017	13.041	4.590	2.160	8.607	5.228	1.217	5.539	3.838	1.517	14.428	4.519	1.980	6.888	2.093	1.289	4.822	3.797
28	1.265	7.897	2.692	2.961	8.159	1.532	1.237	3.859	2.056	2.856	13.331	9.689	1.561	3.989	1.744	1.286	5.068	3.975
29	1.538	2.884	0.959	2.212	5.032	1.627	1.397	3.296	2.251	1.250	13.557	6.217	1.988	8.789	3.194	1.767	5.706	2.770
30	1.858	9.149	2.757	1.965	10.588	3.593	0.913	5.439	3.867	1.131	6.421	4.110	1.212	6.002	3.467	1.400	4.524	2.415

31	1.380	12.736	7.657	2.557	8.506	4.615	1.129	3.799	2.421	1.737	13.472	11.345	1.047	3.094	1.744	1.253	5.492	4.051
32	1.299	5.551	3.766	2.328	6.768	1.782	1.175	2.894	1.885	1.144	7.565	3.581	1.495	3.395	2.025	1.343	3.595	2.204
131	1.833	4.448	0.320	1.746	7.698	0.355	1.855	5.839	0.543	1.359	5.276	1.417	1.797	5.433	0.460	1.804	6.473	0.363
133	1.646	6.242	0.424	1.722	7.129	0.287	2.064	4.764	0.231	2.589	5.039	1.230	1.824	6.295	0.317	1.519	7.007	0.285
135	1.647	5.393	0.377	1.696	6.650	0.274	1.533	4.977	0.652	1.907	5.882	1.489	1.733	5.803	0.304	1.351	5.850	0.269

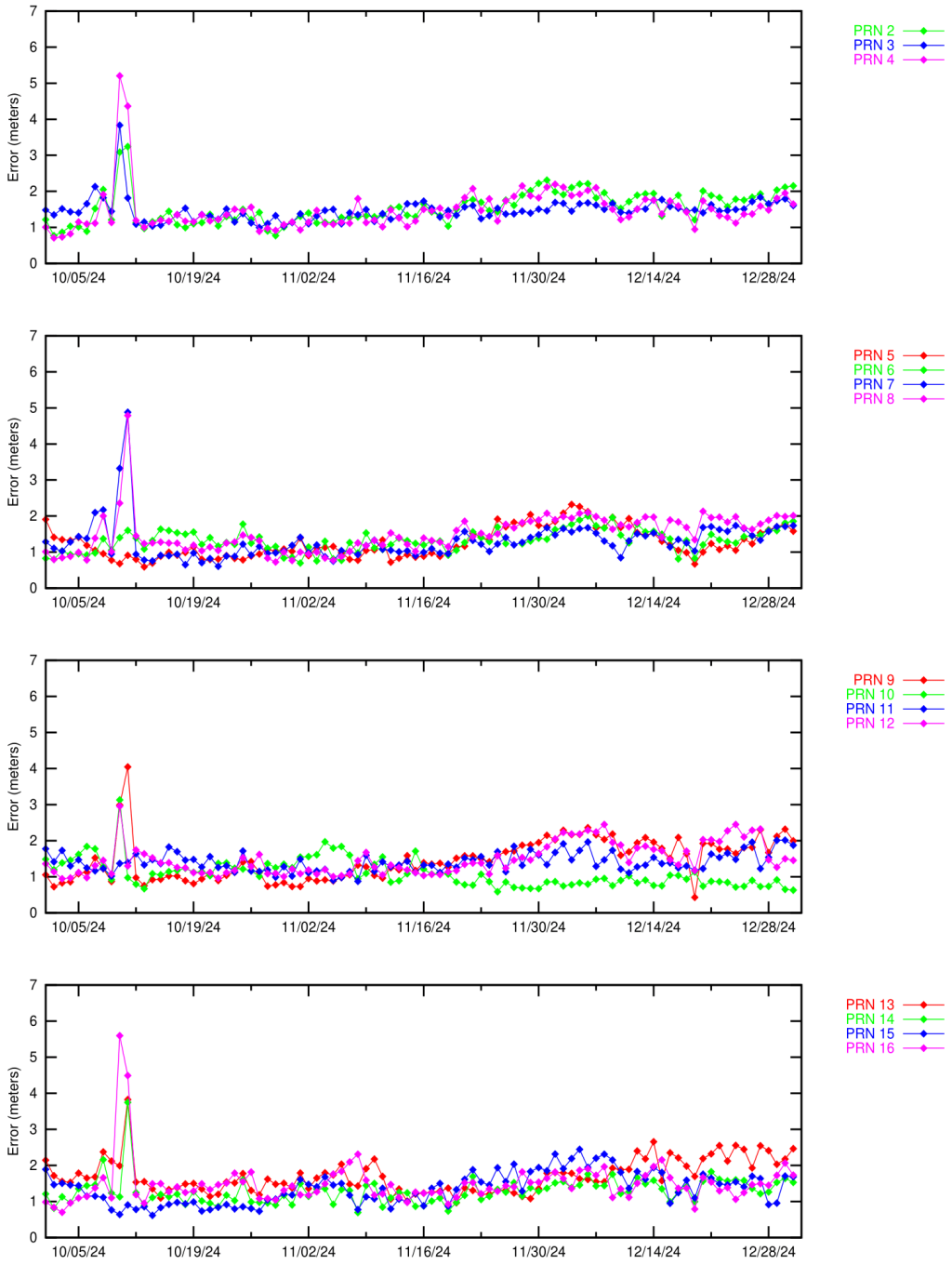

Figure 6-1 Range Error (PRN1 – PRN16) – Washington, DC

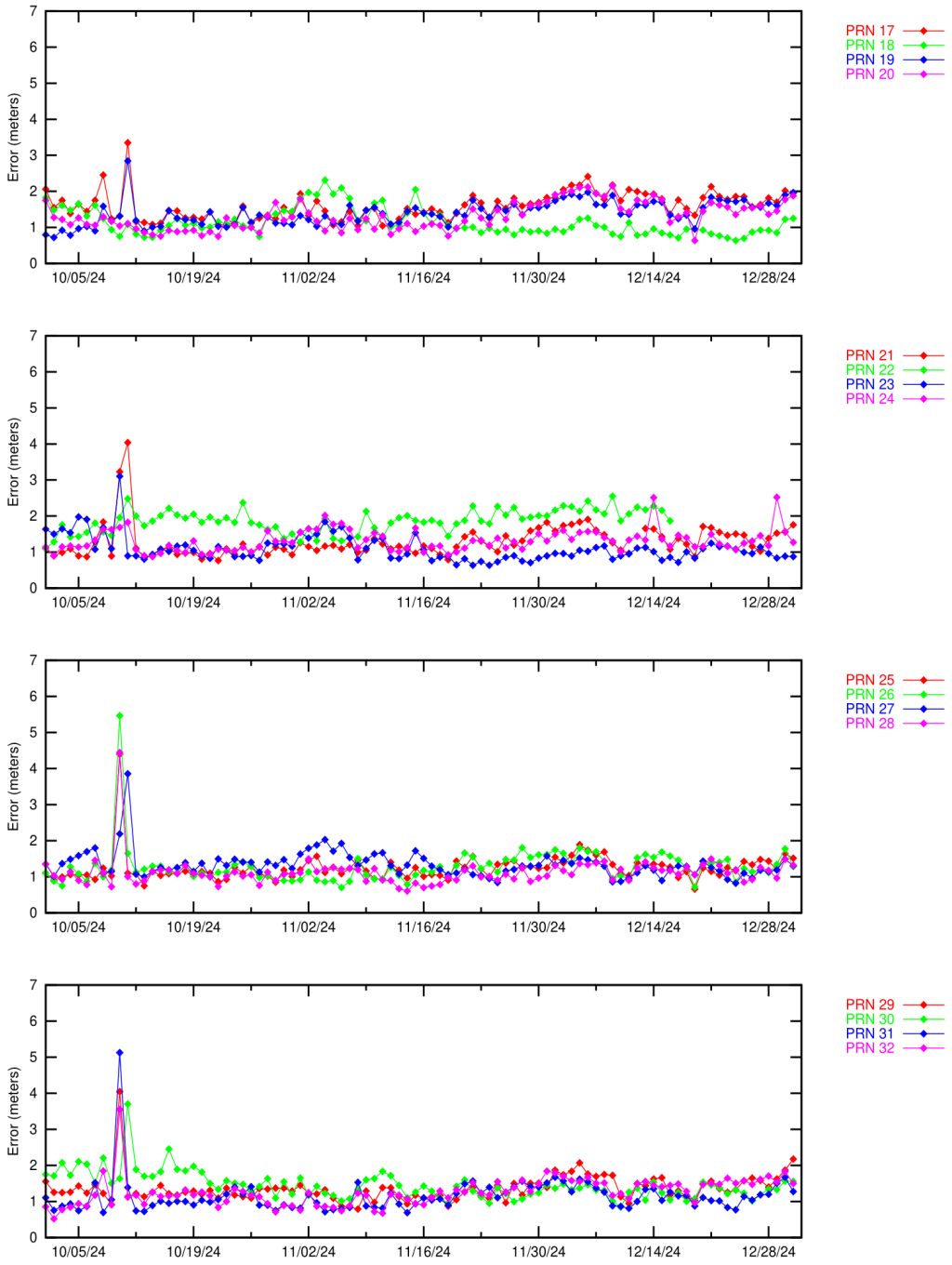

Figure 6-2 Range Error (PRN17 – PRN32) – Washington, DC

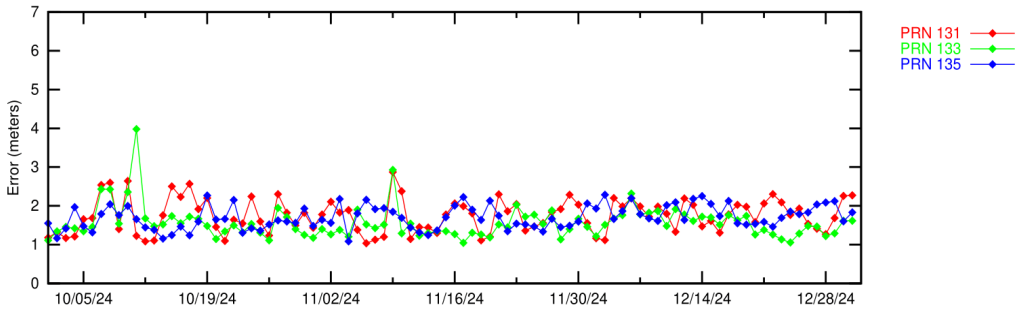

Figure 6-3 Range Error (PRN131, PRN133, and PRN138) – Washington, DC

A GIVE is broadcasted by the WAAS for each monitored IGP and the maximum normalized value (divided by sigma_UISE [User Ionospheric Slant Error]) of the ionospheric error after application of ionospheric corrections 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, maximum ionospheric error, and maximum normalized value (divided by sigma_UISE) for each SV at the selected locations. Figure 6-4 and Figure 6-5 show the 95% ionospheric error for each SV measured by the WAAS receiver at the Washington, DC reference station.

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

Site	Minneapolis			Chicago			Boston			Juneau			Honolulu			Salt Lake City		
PRN ↓	0.95 Iono Error (m)	Max Iono Error (m)	Max Iono Error Sigma	0.95 Iono Error (m)	Max Iono Error (m)	Max Iono Error Sigma	PRN ↓	0.95 Iono Error (m)	Max Iono Error (m)	Max Iono Error Sigma	0.95 Iono Error (m)	Max Iono Error (m)	Max Iono Error Sigma	PRN ↓	0.95 Iono Error (m)	Max Iono Error (m)	Max Iono Error Sigma	0.95 Iono Error (m)
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	0.659	9.319	0.378	0.799	6.848	0.198	0.524	4.715	0.391	0.950	6.462	0.220	0.668	4.169	0.282	0.469	6.502	0.266
3	0.628	3.014	0.189	0.973	7.639	0.527	0.644	4.714	0.197	0.837	2.582	0.657	0.874	3.536	0.243	0.811	2.758	0.630
4	0.697	6.052	0.308	0.969	11.086	0.428	1.023	9.788	0.345	0.838	3.770	0.734	0.880	9.047	0.295	0.730	3.230	0.134
5	0.605	4.530	0.724	0.509	2.410	0.731	0.693	3.704	0.093	0.952	6.298	0.202	0.919	4.469	0.299	0.658	6.916	0.212
6	0.738	8.814	0.274	0.548	1.810	0.537	0.664	5.192	0.144	0.787	3.226	0.152	0.971	7.152	0.457	0.705	6.663	0.300
7	0.686	12.969	0.332	0.893	3.675	0.221	0.708	12.370	0.341	0.916	4.329	1.025	0.733	3.805	0.329	0.636	6.202	0.279
8	0.673	4.375	0.455	0.735	8.433	0.339	0.745	5.390	0.276	0.906	5.703	0.235	1.012	7.788	0.776	0.699	4.878	0.348
9	0.788	4.324	0.407	0.860	4.507	0.299	0.985	5.055	0.418	0.694	5.319	0.391	0.945	6.518	0.194	0.817	5.869	0.310
10	0.688	2.850	0.863	0.646	3.082	0.168	0.681	2.771	0.847	1.037	4.980	0.256	0.720	4.176	0.116	0.584	3.083	0.104
11	0.489	4.492	0.343	0.611	3.927	1.054	0.612	7.037	0.197	0.971	4.619	0.143	0.960	7.028	0.334	0.518	9.059	0.317
12	0.688	7.282	0.268	0.586	3.877	0.251	0.765	5.663	0.212	0.623	3.740	0.821	0.948	3.316	0.144	0.887	6.739	0.213
13	0.856	5.810	0.164	0.798	5.946	0.157	0.822	2.680	0.131	0.785	3.505	0.122	0.590	4.226	0.284	0.499	4.307	0.304
14	0.690	8.383	0.273	0.679	5.111	0.147	0.678	2.624	0.120	0.878	5.288	0.150	0.981	3.335	0.092	0.776	6.726	0.356
15	0.806	8.357	0.367	0.574	3.686	1.018	0.709	3.116	0.854	0.670	3.621	0.136	0.852	9.683	0.285	0.641	2.918	0.172
16	0.600	4.240	0.367	0.661	6.833	0.361	0.681	6.123	0.456	1.004	12.274	0.415	1.034	5.802	0.666	0.654	3.062	0.142
17	0.618	4.287	0.201	0.737	7.668	0.210	0.809	11.743	0.352	0.792	3.544	0.371	1.518	7.298	0.194	0.857	6.410	0.366
18	0.648	2.478	0.925	0.766	11.728	0.323	0.675	2.516	0.728	1.081	8.047	0.237	0.970	2.836	0.106	0.541	4.395	0.150
19	0.623	6.634	0.260	0.566	3.464	1.007	0.669	9.916	0.314	0.810	3.184	0.089	0.771	5.172	0.326	0.778	6.523	0.354
20	0.685	6.078	0.369	0.749	2.218	0.971	0.785	3.836	0.127	0.872	6.372	1.590	0.829	3.359	0.790	0.626	6.474	0.296
21	0.526	9.427	0.319	0.669	5.799	0.169	0.550	8.064	0.290	0.889	6.700	0.259	0.797	3.129	0.227	0.724	4.699	0.237
22	1.069	8.189	0.222	0.985	2.555	0.627	1.137	2.721	0.131	1.190	3.887	0.103	1.450	4.450	0.192	1.115	5.174	0.288
23	0.694	2.132	0.921	0.558	2.559	0.797	0.600	3.426	1.267	0.996	5.165	0.174	0.594	3.001	0.170	1.202	3.583	1.214
24	0.548	3.956	0.213	0.680	6.155	0.218	0.655	2.826	0.114	0.704	2.942	0.245	0.572	3.557	0.155	0.596	3.316	0.200
25	0.545	5.586	0.383	0.590	6.178	0.273	0.585	6.608	0.251	0.659	4.463	0.411	0.587	2.402	0.228	1.165	6.072	1.120
26	0.640	6.215	0.215	0.796	5.833	0.508	0.692	4.184	0.357	0.922	6.613	0.264	0.968	4.368	0.233	0.685	2.891	0.168
27	0.825	12.402	0.522	0.708	7.328	0.336	0.684	3.734	0.174	1.087	7.162	0.237	0.737	6.380	1.311	0.552	3.046	0.339
28	0.539	8.553	0.492	0.590	5.074	0.474	0.696	4.897	0.132	0.714	4.989	0.152	0.987	6.717	0.219	0.627	9.795	0.438
29	0.828	9.688	0.262	0.718	4.475	0.204	0.894	2.728	0.171	0.963	7.234	0.194	0.935	2.380	1.095	0.496	3.593	0.087
30	0.645	5.248	0.136	0.785	5.557	0.484	0.729	2.551	0.073	0.766	3.090	0.546	0.957	5.785	0.341	0.740	8.064	0.383
31	0.550	4.693	0.295	0.734	5.435	0.511	0.628	3.177	0.127	0.855	11.711	0.382	0.916	8.576	0.256	0.558	11.058	0.283
32	0.597	1.917	0.281	0.658	4.164	0.136	0.799	3.053	0.112	0.860	6.476	1.032	0.906	7.066	0.202	0.802	3.747	0.914

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 (m)	Max Iono Error (m)	Max Iono Error Sigma	0.95 Iono Error (m)	Max Iono Error (m)	Max Iono Error Sigma	PRN ↓	0.95 Iono Error (m)	Max Iono Error (m)	Max Iono Error Sigma	0.95 Iono Error (m)	Max Iono Error (m)	Max Iono Error Sigma	PRN ↓	0.95 Iono Error (m)	Max Iono Error (m)	Max Iono Error Sigma	0.95 Iono Error (m)
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	0.558	4.678	0.243	0.794	9.029	0.357	0.511	3.191	0.317	0.724	9.454	0.432	0.708	3.778	0.177	0.561	3.962	0.255
3	0.702	3.074	1.049	0.952	3.518	0.140	0.730	2.392	0.369	0.749	4.995	0.254	0.733	2.357	0.063	0.585	4.553	0.159
4	0.610	3.425	0.177	0.808	7.552	0.207	0.774	2.747	0.087	0.603	7.532	0.202	0.782	6.577	0.176	0.571	3.211	0.148
5	0.784	3.689	0.092	0.782	5.670	0.164	0.579	4.279	0.264	1.822	5.079	1.315	0.784	3.888	0.530	0.798	6.614	0.201
6	0.678	7.389	0.264	1.141	7.889	0.321	0.613	6.736	0.477	1.482	8.345	0.325	0.786	3.139	0.215	0.598	4.420	0.141
7	0.728	9.094	0.512	1.829	5.737	0.162	0.701	3.090	0.090	0.802	7.534	0.375	0.831	7.661	0.270	0.639	3.778	0.137
8	0.618	3.900	0.356	0.980	6.145	0.557	0.558	2.357	0.356	0.680	2.824	0.146	0.781	4.504	0.293	0.586	5.317	0.202
9	0.819	7.544	0.238	1.168	4.705	0.176	0.767	5.284	0.139	0.859	7.744	0.321	0.978	2.770	0.225	0.555	4.220	0.139
10	0.785	3.376	0.116	0.667	4.858	0.173	0.650	2.957	0.087	0.630	3.969	0.119	0.551	7.163	0.217	0.602	3.322	0.127
11	0.662	7.290	0.296	0.794	5.695	0.202	0.568	3.970	0.334	0.553	12.273	0.396	0.602	8.325	0.255	0.677	4.151	0.911
12	0.726	2.168	0.573	0.838	6.406	0.375	0.644	2.700	0.679	0.758	5.755	0.149	0.952	4.214	0.158	0.504	2.189	0.500
13	0.602	3.618	0.247	0.971	5.529	0.229	0.556	4.772	0.242	0.627	3.457	0.216	0.746	5.813	0.261	0.624	5.430	0.152
14	0.851	5.971	0.249	1.661	5.899	0.155	0.579	4.182	0.111	0.614	5.992	0.229	0.758	6.890	0.281	0.673	4.512	0.151
15	0.645	2.085	0.209	0.729	2.873	0.153	0.725	2.552	0.183	0.852	6.363	0.183	0.760	3.096	0.705	0.893	4.962	0.263
16	0.742	4.085	0.268	0.978	4.113	0.809	0.735	3.329	0.290	1.099	5.435	0.329	0.757	5.679	0.174	0.863	10.274	0.325
17	0.722	6.311	0.280	0.883	14.893	2.145	0.768	4.441	0.323	0.847	8.699	0.368	0.678	9.957	0.426	0.707	4.613	0.376
18	0.673	4.682	0.169	1.430	3.324	1.136	0.593	3.681	0.094	0.660	2.411	0.260	0.703	1.974	0.089	0.491	4.108	0.274
19	1.199	10.213	0.343	0.991	5.373	0.132	0.633	5.504	0.354	0.559	8.316	0.360	0.663	7.279	0.299	0.829	5.070	0.324
20	0.682	8.811	0.238	0.753	3.275	0.164	0.800	2.950	0.182	1.108	2.926	0.816	0.777	4.068	0.876	0.564	4.826	0.240
21	0.597	4.257	0.188	1.002	3.874	0.137	0.581	3.264	1.342	0.524	8.903	0.378	0.780	4.830	0.245	0.557	7.501	0.274
22	1.016	6.389	0.233	1.326	5.440	0.147	1.105	6.739	0.166	1.215	4.417	0.182	1.334	8.241	0.263	0.913	4.301	0.106
23	0.603	2.201	0.834	0.714	4.121	0.124	0.624	4.723	0.119	0.663	2.039	0.654	0.613	5.060	0.146	0.724	2.772	0.976
24	0.479	3.040	0.117	0.955	2.307	0.485	0.543	3.618	0.253	0.587	2.061	1.214	0.632	2.624	0.098	0.567	4.586	0.200
25	0.701	7.027	0.215	0.828	9.957	0.305	0.701	3.254	0.110	0.761	7.508	0.252	0.835	4.373	0.242	0.525	4.201	0.112
26	0.724	2.843	1.302	1.075	5.196	0.294	0.586	5.031	0.287	1.040	6.264	0.285	0.748	5.491	0.200	0.701	7.831	0.278
27	0.602	4.462	0.381	0.878	5.028	0.885	0.453	4.332	0.323	0.595	3.153	0.142	0.726	3.813	0.200	0.724	7.633	0.315
28	0.691	6.357	0.254	1.225	6.079	0.471	0.578	3.048	0.698	1.218	13.207	0.350	0.647	2.721	0.711	0.736	5.406	0.169
29	0.926	3.003	0.087	0.977	4.385	0.310	0.644	3.420	0.172	0.549	20.398	0.498	0.926	10.645	0.275	0.743	3.742	0.197
30	1.056	11.191	0.281	0.792	8.035	0.237	0.682	5.396	0.222	0.770	5.566	0.154	0.710	7.419	0.186	0.673	4.018	0.101
31	0.917	7.433	0.300	0.887	5.498	0.153	0.678	2.573	0.701	0.771	8.239	0.293	0.623	2.722	0.128	0.680	2.725	0.109
32	0.838	3.331	0.160	0.914	8.190	0.229	0.672	5.870	0.284	0.644	3.307	0.099	0.655	3.183	0.099	0.605	2.740	0.652

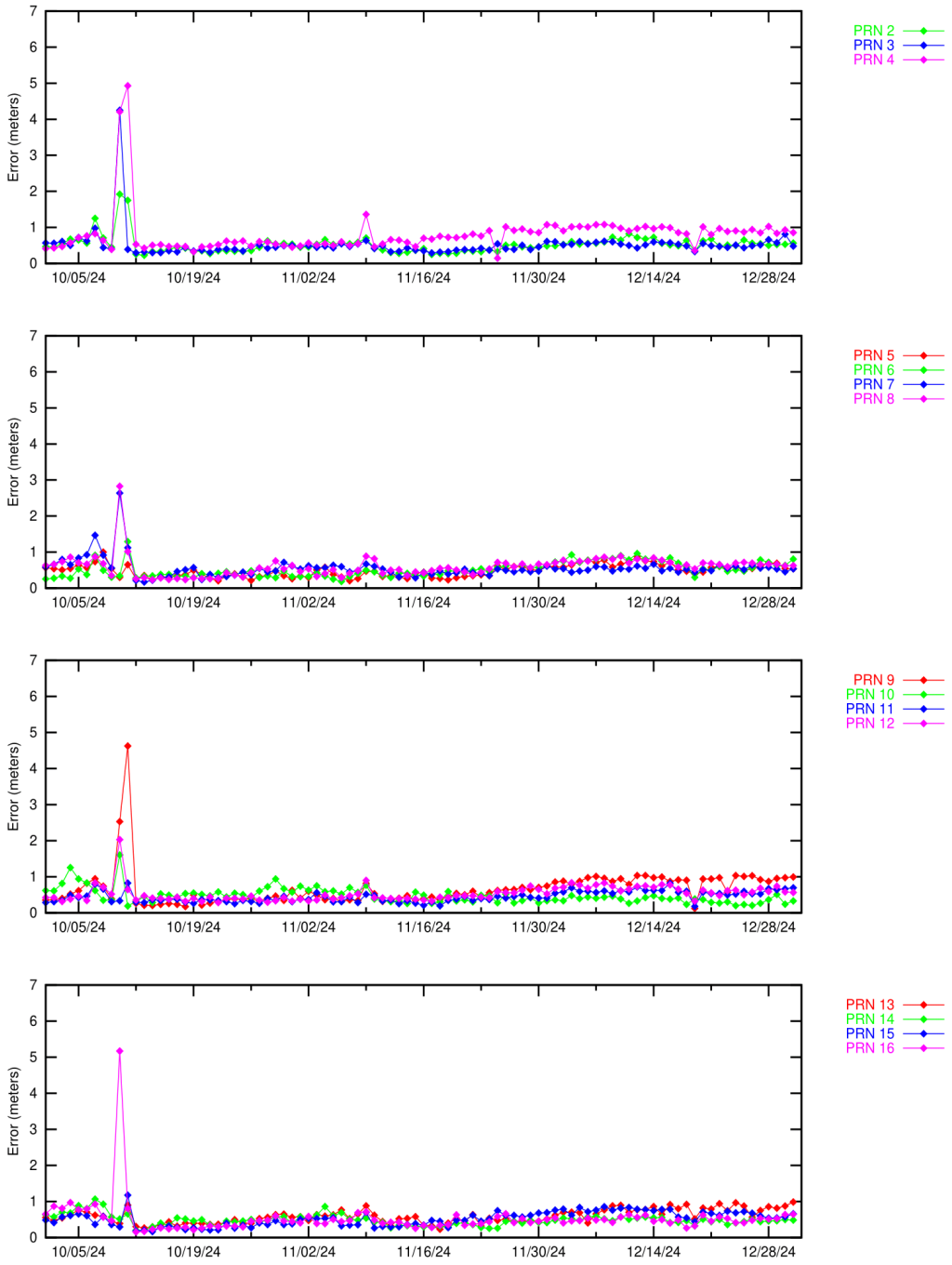

Figure 6-4 Ionospheric Error (PRN1 – PRN16) – Washington, DC

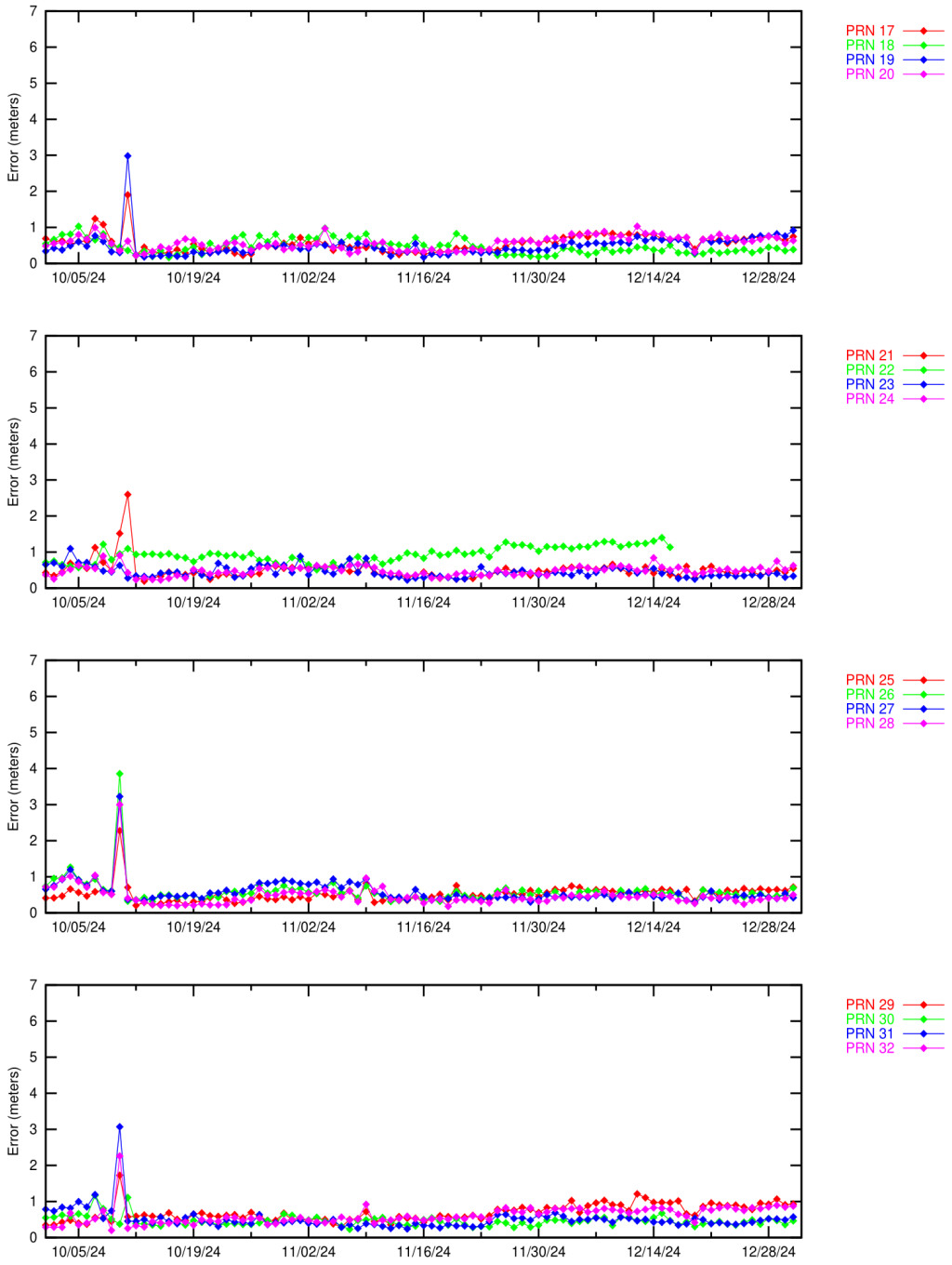

Figure 6-5 Ionospheric Error (PRN17 – PRN32) – Washington, DC

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. PRN1 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 to Figure 7-3 show the trend of SM9, S15, and G30 GEO PA ranging availability, respectively.

The reductions in SM9 GEO PA, S15 GEO PA, and G30 GEO PA ranging availability were due to GUS switchovers and a G30 SIS outage on December 11, 2024 (see Figure 7-1 to Figure 7-3). Refer to Table 1-7 for detailed information on the GUS switchovers for this reporting period.

Table 7-1 GEO Ranging Availability

GEO Source	GEO	PA (%)	NPA (%)	Not Monitored (%)	Do Not Use (%)
SM9 131	SM9	98.50	0.82	0.62	0.06
SM9 131	S15	97.12	0.99	1.67	0.22
SM9 131	G30	94.76	0.84	1.36	3.03
S15 133	SM9	98.48	0.83	0.64	0.06
S15 133	S15	96.91	1.12	1.76	0.22
S15 133	G30	94.80	0.89	1.32	2.99
G30 135	SM9	98.35	0.82	0.76	0.06
G30 135	S15	97.01	1.00	1.80	0.20
G30 135	G30	94.79	0.85	1.43	2.94

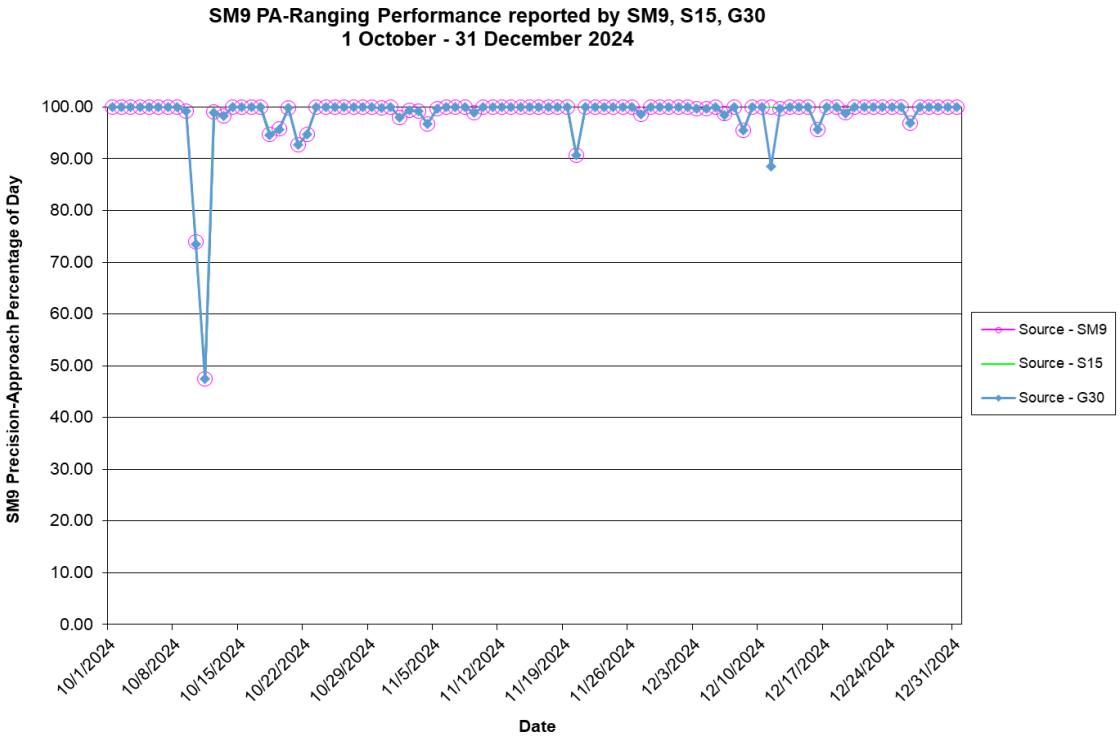

Figure 7-1 Daily PA SM9 GEO Ranging Availability Trend

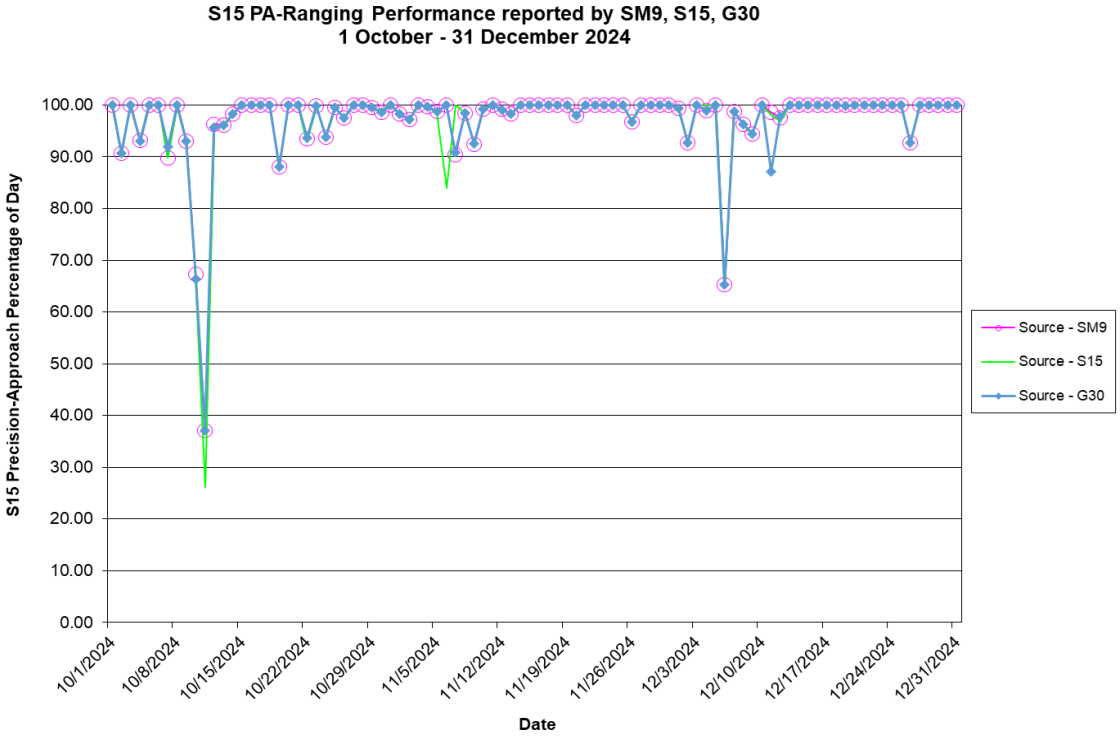

Figure 7-2 Daily PA S15 GEO Ranging Availability Trend

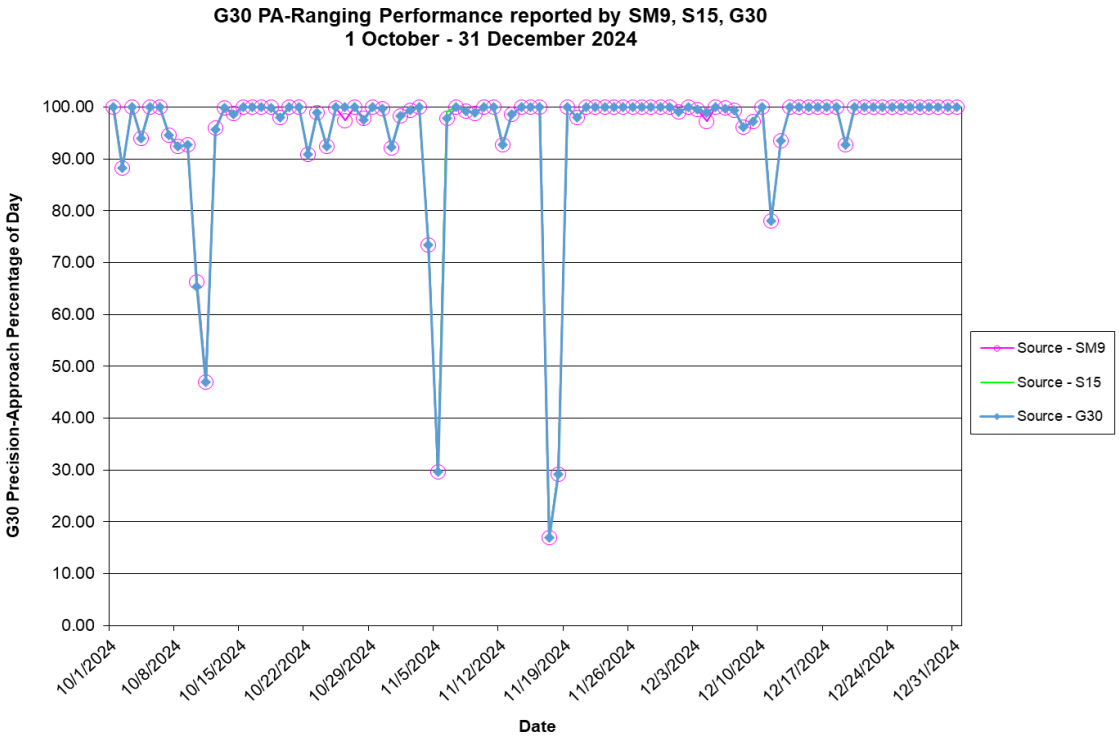

Figure 7-3 Daily PA G30 GEO Ranging Availability Trend

8.0 WAAS AIRPORT AVAILABILITY

The WAAS airport availability evaluation determines the number and length of LPV service outages at selected airports using the transmitted WAAS navigation message. The navigation messages transmitted from all GEO satellites are processed simultaneously, and WAAS protection levels (VPL and HPL) are computed at each airport once every 30 seconds in accordance with the RTCA DO-229F. 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 U.S. 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 U.S. and Canada that have published GPS area navigation (RNAV) Instrument Approach Procedures (IAPs). These results are geographically depicted on an interactive web page and are accessible at http://www.nstb.tc.faa.gov/AirportOutages/.

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

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

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
CAL4	ALBIAN	AB	LPV	35	97.163	40	96.828	49	95.595
CEA3	OLDS-DIDSBURY	AB	LPV	13	98.485	19	98.307	34	97.658
CEB5	FAIRVIEW	AB	LPV	28	97.510	40	97.135	54	96.285
CEC4	JASPER-HINTON	AB	LP	19	98.097	28	97.877	35	97.186
CEH3	PONOKA (LABRIE FIELD)	AB	LPV	20	98.251	26	98.057	34	97.401
CEH5	RED EARTH CREEK	AB	LP	33	97.420	43	97.116	51	96.021
CEH6	PROVOST	AB	LPV	23	98.473	25	98.225	34	97.497
CEN3	THREE HILLS	AB	LPV	13	98.597	19	98.424	33	97.750
CEN5	COLD LAKE REGIONAL	AB	LPV	27	98.071	30	97.840	45	96.977
CEQ3	CAMROSE	AB	LPV	18	98.246	23	98.030	39	97.391
CET2	CONKLIN (LEISMER)	AB	LPV	28	97.778	33	97.456	53	96.435
CEV3	VEGREVILLE	AB	LPV	27	98.207	32	97.914	41	97.150
CEW3	ST. PAUL	AB	LPV	27	98.185	29	97.876	44	97.116
CEX3	WETASKIWIN REGIONAL	AB	LPV	18	98.233	23	98.038	40	97.424
CEZ3	COOKING LAKE	AB	LPV	22	98.177	27	97.959	41	97.249
CFB6	JOSEPHBURG	AB	LPV	23	98.146	27	97.906	42	97.172
CFM4	DONNELLY	AB	LPV	26	97.639	34	97.368	49	96.394
CYBF	BONNYVILLE	AB	LPV	27	98.125	27	97.865	46	97.066
CYBW	SPRINGBANK	AB	LPV	11	98.628	15	98.453	34	97.850
CYEG	EDMONTON INTL	AB	LPV200	22	98.134	28	97.925	41	97.178
CYFI	FIREBAG	AB	LPV	33	97.217	37	96.836	46	95.675
CYLB	LAC LA BICHE	AB	LPV	28	98.030	31	97.787	53	96.883
CYLL	LLOYDMINSTER	AB	LPV	25	98.299	27	97.997	37	97.142
CYMM	FORT MCMURRAY	AB	LPV200	34	97.341	35	97.012	46	95.876
CYNR	HORIZON	AB	LPV	32	97.140	35	96.784	45	95.607
CYOD	GROUP CAPTAIN R.W. MCNAIR	AB	LP	30	98.068	31	97.807	46	96.924
CYOJ	HIGH LEVEL	AB	LPV	34	96.958	29	96.511	66	95.269
CYOP	RAINBOW LAKE	AB	LPV	30	96.919	31	96.533	63	95.451
CYPE	PEACE RIVER	AB	LPV	28	97.490	40	97.138	53	96.201
CYPY	FORT CHIPEWYAN	AB	LPV	32	96.852	40	96.457	66	94.835
CYQF	RED DEER REGIONAL	AB	LPV	22	98.378	25	98.161	34	97.512
CYQL	LETHBRIDGE	AB	LPV200	10	98.745	10	98.620	21	98.345
CYQU	GRANDE PRAIRIE	AB	LPV200	25	97.794	29	97.533	50	96.608
CYWM	ATHABASCA	AB	LPV	26	97.989	30	97.758	47	96.822

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
CYXH	MEDICINE HAT	AB	LPV	14	98.701	14	98.571	26	98.209
CYYC	YYC CALGARY INTL	AB	LPV200	12	98.643	15	98.460	33	97.854
CYZU	WHITECOURT	AB	LPV	22	97.958	28	97.753	45	97.061
CZPC	PINCHER CREEK	AB	LPV	8	98.763	10	98.615	21	98.385
CZVL	VILLENEUVE	AB	LPV	24	98.054	30	97.835	44	97.120
2C7	SHAKTOOLIK	AK	LPV	29	97.440	31	97.159	39	96.449
6A8	ALLAKAKET	AK	LP	26	96.656	28	96.360	50	95.663
7KA	TATITLEK	AK	LP	22	97.558	27	97.365	34	96.604
9A3	CHUATHBALUK	AK	LPV	23	98.049	30	97.836	33	97.160
ADQ	KODIAK	AK	LPV	10	98.543	16	98.398	21	98.023
AFM	AMBLER	AK	LPV	27	96.613	31	96.304	45	95.503
AKN	KING SALMON	AK	LPV	11	98.554	11	98.482	26	98.135
ANC	TED STEVENS ANCHORAGE INTL	AK	LPV200	23	97.729	29	97.530	30	96.709
ANI	ANIAK	AK	LPV	23	98.077	31	97.874	32	97.170
AQH	QUINHAGAK	AK	LPV	10	98.530	12	98.457	29	98.038
AQT	NUIQSUT	AK	LPV	32	96.070	39	95.733	78	94.686
ATK	ATQASUK EDWARD BURNELL SR MEML	AK	LPV	31	96.187	37	95.803	79	94.773
AWI	WAINWRIGHT	AK	LPV	30	96.197	38	95.857	89	94.638
BET	BETHEL	AK	LPV200	18	98.372	25	98.236	33	97.491
BRW	WILEY POST-WILL ROGERS MEML	AK	LPV	30	96.042	36	95.669	103	94.419
BVK	BUCKLAND	AK	LPV	27	96.924	31	96.692	42	95.902
CDB	COLD BAY	AK	LPV200	10	98.682	10	98.588	49	98.048
CDV	MERLE K (MUDHOLE) SMITH	AK	LPV	23	97.597	25	97.370	38	96.706
CEM	CENTRAL	AK	LP	25	96.514	30	96.259	50	95.653
CLP	CLARKS POINT	AK	LPV	12	98.576	13	98.484	25	98.166
CXF	COLDFOOT	AK	LP	25	96.470	31	96.077	52	95.315
D76	ROBERT/BOB/CURTIS MEML	AK	LPV	27	96.754	31	96.416	45	95.707
DEE	DEERING	AK	LPV	29	96.984	31	96.744	43	95.854
DLG	DILLINGHAM	AK	LPV	12	98.563	13	98.480	28	98.138
ELI	ELIM	AK	LPV	31	97.425	30	97.167	40	96.458
ENA	KENAI MUNICIPAL	AK	LPV200	23	98.136	30	97.974	31	97.248
ENM	EMMONAK	AK	LPV	23	97.801	24	97.556	38	96.918
FAI	FAIRBANKS INTL	AK	LPV200	25	96.726	29	96.467	46	95.884
FYU	FORT YUKON	AK	LPV	29	96.390	30	96.077	49	95.320
GAL	EDWARD G PITKA SR	AK	LPV	27	97.225	28	96.815	36	96.227
GAM	GAMBELL	AK	LPV	25	97.518	25	97.341	78	96.069

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
GKN	GULKANA	AK	LPV	23	97.189	24	96.856	39	96.096
GST	GUSTAVUS	AK	LP	29	97.273	32	96.905	52	96.271
HLA	HUSLIA	AK	LPV	27	96.928	30	96.691	46	96.063
HOM	HOMER	AK	LPV	23	98.364	26	98.186	34	97.650
HPB	HOOPER BAY	AK	LP	22	98.163	27	97.933	38	97.106
HRR	HEALY RIVER	AK	LP	24	97.023	22	96.676	43	96.104
IAN	BOB BAKER MEML	AK	LPV	25	96.677	32	96.367	46	95.616
IIK	KIPNUK	AK	LPV	8	98.604	10	98.550	30	98.135
ILI	ILIAMNA	AK	LPV	14	98.512	16	98.365	32	97.915
IWK	WALES	AK	LP	23	97.135	24	96.920	55	95.814
IYS	WASILLA	AK	LPV	26	97.554	31	97.307	33	96.570
KAL	KALTAG	AK	LPV	25	97.346	30	97.032	37	96.364
KGX	GRAYLING	AK	LP	22	97.747	28	97.462	35	96.993
KKA	KOYUK ALFRED ADAMS	AK	LP	28	97.246	30	96.987	42	96.299
KSM	ST MARY'S	AK	LPV200	22	97.984	26	97.801	35	97.075
KTN	KETCHIKAN INTL	AK	LPV	31	97.778	29	97.521	48	96.842
KTS	BREVIG MISSION	AK	LPV	25	97.209	28	97.013	47	96.099
KWT	KWETHLUK	AK	LPV	18	98.360	25	98.231	33	97.504
KYU	KOYUKUK	AK	LPV	26	97.145	29	96.801	36	96.227
MCG	MC GRATH	AK	LP	26	97.541	32	97.270	37	96.488
MDM	MARSHALL DON HUNTER SR	AK	LP	20	98.075	26	97.851	34	97.129
MDO	MIDDLETON ISLAND	AK	LP	22	98.009	27	97.801	43	97.152
MLY	MANLEY HOT SPRINGS	AK	LP	23	96.893	23	96.677	42	96.176
MOU	MOUNTAIN VILLAGE	AK	LPV200	23	97.973	27	97.815	35	97.050
MYU	MEKORYUK	AK	LPV	11	98.489	16	98.366	40	97.644
OME	NOME	AK	LPV	28	97.504	27	97.202	48	96.460
OOK	TOKSOOK BAY	AK	LP	13	98.474	20	98.319	37	97.592
ORT	NORTHWAY	AK	LP	24	96.854	29	96.405	46	95.934
OTZ	RALPH WIEN MEML	AK	LPV	26	96.743	29	96.421	46	95.667
PAQ	WARREN 'BUD' WOODS PALMER MUNICIPAL	AK	LP	25	97.509	29	97.253	35	96.553
PBV	ST GEORGE	AK	LPV	10	98.583	13	98.480	85	97.069
PHO	POINT HOPE	AK	LPV	27	96.536	30	96.165	73	95.090
PTU	PLATINUM	AK	LPV	11	98.568	12	98.494	25	98.164
RBY	RUBY	AK	LPV	25	97.145	25	96.784	37	96.242
RSH	RUSSIAN MISSION	AK	LP	21	98.084	29	97.882	33	97.128
SCC	DEADHORSE	AK	LPV200	28	95.937	38	95.686	85	94.513

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
SCM	SCAMMON BAY	AK	LP	23	98.117	27	97.845	35	97.037
SDP	SAND POINT	AK	LPV	9	98.696	8	98.608	33	98.217
SHG	SHUNGNAK	AK	LP	27	96.627	30	96.361	47	95.557
SHX	SHAGELUK	AK	LPV	25	97.746	31	97.435	39	96.912
SIT	SITKA ROCKY GUTIERREZ	AK	LP	28	97.637	35	97.225	45	96.481
SLQ	SLEETMUTE	AK	LP	19	98.028	26	97.825	31	97.156
SMK	ST MICHAEL	AK	LPV	27	97.629	28	97.269	37	96.722
SXQ	SOLDOTNA	AK	LP	23	98.142	30	97.988	34	97.330
TER	TELLER	AK	LPV200	27	97.236	26	97.014	48	96.151
TKA	TALKEETNA	AK	LPV	24	97.401	31	97.115	37	96.391
TOG	TOGIAK	AK	LP	10	98.538	13	98.465	25	98.179
WLK	SELAWIK	AK	LPV	27	96.772	34	96.491	46	95.712
WMO	WHITE MOUNTAIN	AK	LPV	30	97.413	29	97.149	44	96.439
WNA	NAPAKIAK	AK	LPV	19	98.416	26	98.284	35	97.590
WSN	SOUTH NAKNEK NR 2	AK	LPV	11	98.548	11	98.480	24	98.137
WTK	NOATAK	AK	LPV	22	96.665	28	96.335	51	95.580
YAK	YAKUTAT	AK	LPV200	26	97.344	27	97.121	43	96.444
02A	CHILTON COUNTY	AL	LP	2	99.155	3	99.148	3	99.100
06A	MOTON FLD MUNICIPAL	AL	LPV	2	99.153	3	99.151	3	99.080
09A	BUTLER/CHOCTAW COUNTY	AL	LPV	2	99.130	2	99.118	4	99.075
0J6	HEADLAND MUNICIPAL	AL	LPV	2	99.144	2	99.113	3	99.075
0R1	ATMORE MUNICIPAL	AL	LPV	2	99.124	3	99.106	2	99.065
11A	CLAYTON MUNICIPAL	AL	LPV	2	99.148	2	99.123	3	99.076
12J	BREWTON MUNICIPAL	AL	LPV	2	99.123	3	99.102	2	99.065
1A9	PRATTVILLE - GROUBY FLD	AL	LPV	2	99.158	2	99.123	2	99.062
1M4	POSEY FLD	AL	LPV	1	99.173	1	99.173	1	99.158
1R8	BAY MINETTE MUNICIPAL	AL	LPV	2	99.125	3	99.108	3	99.058
2R5	ST ELMO	AL	LPV	2	99.112	2	99.071	3	99.056
33J	GENEVA MUNICIPAL	AL	LP	2	99.133	2	99.102	2	99.065
3M8	NORTH PICKENS	AL	LP	2	99.164	2	99.131	2	99.125
4A9	ISBELL FLD	AL	LPV	2	99.173	2	99.173	2	99.166
5R1	ROY WILCOX	AL	LP	2	99.128	2	99.111	3	99.058
5R4	FOLEY MUNICIPAL	AL	LPV	2	99.110	2	99.071	3	99.058
71J	OZARK/BLACKWELL FLD	AL	LPV	2	99.145	2	99.115	3	99.074
79J	SOUTH ALABAMA RGNL AT BILL BEN	AL	LPV	2	99.123	2	99.088	2	99.065
8A0	ALBERTVILLE RGNL/THOMAS J BRUM	AL	LPV	2	99.167	2	99.167	2	99.159

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
8A1	GUNTERSVILLE MUNICIPAL/JOE STARNES	AL	LPV	2	99.170	2	99.170	2	99.162
9A4	COURTLAND	AL	LPV200	1	99.173	1	99.173	1	99.166
A08	VAIDEN FLD	AL	LPV	2	99.159	2	99.123	3	99.083
ALX	THOMAS C RUSSELL FLD	AL	LPV	2	99.155	2	99.155	4	99.115
ANB	ANNISTON RGNL	AL	LPV	2	99.158	2	99.157	2	99.151
ASN	TALLADEGA MUNICIPAL	AL	LPV200	2	99.157	2	99.157	2	99.153
AUO	AUBURN UNIVERSITY RGNL	AL	LPV200	2	99.153	3	99.151	3	99.082
BFM	MOBILE DOWNTOWN	AL	LPV200	2	99.111	2	99.071	3	99.057
BHM	BIRMINGHAM-SHUTTLESWORTH INTL	AL	LPV200	2	99.157	2	99.157	2	99.125
CMD	CULLMAN RGNL-FOLSOM FLD	AL	LPV	2	99.167	2	99.167	2	99.161
CQF	H L SONNY CALLAHAN	AL	LPV200	2	99.110	2	99.071	3	99.056
DCU	PRYOR FLD RGNL	AL	LPV200	1	99.173	1	99.173	1	99.166
DHN	DOTHAN RGNL	AL	LPV200	2	99.144	2	99.113	3	99.075
DYA	DEMOPOLIS RGNL	AL	LPV	3	99.144	2	99.123	3	99.090
EDN	ENTERPRISE MUNICIPAL	AL	LPV	2	99.134	2	99.105	2	99.065
EET	SHELBY COUNTY	AL	LPV	2	99.156	2	99.156	2	99.120
EKY	BESSEMER	AL	LPV200	2	99.156	2	99.156	2	99.124
EUF	WEEDON FLD	AL	LPV	2	99.148	2	99.123	3	99.079
GAD	NORTHEAST ALABAMA RGNL	AL	LPV200	2	99.160	2	99.159	2	99.153
GZH	EVERGREEN RGNL/MIDDLETON FLD	AL	LP	2	99.125	3	99.109	2	99.065
HAB	MARION COUNTY-RANKIN FITE	AL	LPV	2	99.170	2	99.170	2	99.148
HSV	HUNTSVILLE INTL-CARL T JONES F	AL	LPV200	1	99.173	1	99.173	1	99.166
JFX	WALKER COUNTY-BEVILL FLD	AL	LPV	2	99.161	2	99.161	2	99.136
JKA	GULF SHORES INTL/JACK EDWARDS	AL	LPV200	2	99.108	2	99.071	3	99.056
M95	RICHARD ARTHUR FLD	AL	LPV	2	99.159	2	99.159	2	99.127
MDQ	HUNTSVILLE EXEC TOM SHARP JR F	AL	LPV200	1	99.173	1	99.170	1	99.164
MGM	MONTGOMERY RGNL (DANNELLY FLD)	AL	LPV200	2	99.156	2	99.124	2	99.062
MOB	MOBILE RGNL	AL	LPV200	2	99.115	2	99.098	3	99.056
MSL	NORTHWEST ALABAMA RGNL	AL	LPV200	1	99.173	1	99.173	1	99.166
PLR	ST CLAIR COUNTY	AL	LPV	2	99.157	2	99.157	3	99.145
PYP	CENTRE-PIEDMONT-CHEROKEE COUNT	AL	LPV	2	99.167	2	99.166	2	99.159
SCD	MERKEL FLD SYLACAUGA MUNICIPAL	AL	LPV	2	99.155	2	99.155	2	99.119
SEM	CRAIG FLD	AL	LPV200	2	99.158	2	99.121	2	99.062
TCL	TUSCALOOSA NTL	AL	LPV	2	99.157	2	99.128	2	99.124
TOI	TROY MUNICIPAL AT N KENNETH CAMPBEL	AL	LPV	2	99.148	2	99.125	2	99.065
0M0	BILLY FREE MUNICIPAL	AR	LPV	1	99.153	1	99.153	1	99.147

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
42A	MELBOURNE MUNICIPAL - JOHN E MILLER	AR	LP	1	99.152	1	99.152	1	99.143
4A5	SEARCY COUNTY	AR	LPV	1	99.155	1	99.155	1	99.138
4M1	CARROLL COUNTY	AR	LP	1	99.155	1	99.155	3	99.139
4M3	CARLISLE MUNICIPAL	AR	LPV	1	99.181	1	99.176	1	99.148
6M7	MARIANNA/LEE COUNTY-STEVE EDWA	AR	LPV	1	99.181	1	99.180	1	99.163
7M1	MC GEHEE MUNICIPAL	AR	LP	1	99.153	1	99.153	2	99.145
9M8	SHERIDAN-GRANT COUNTY RGNL	AR	LPV	1	99.162	1	99.162	1	99.147
ADF	DEXTER B FLORENCE MEML FLD	AR	LPV	1	99.156	1	99.156	1	99.145
ARG	WALNUT RIDGE RGNL	AR	LPV200	1	99.152	1	99.152	1	99.148
ASG	SPRINGDALE MUNICIPAL	AR	LPV	1	99.155	1	99.155	3	99.139
AWM	WEST MEMPHIS MUNICIPAL	AR	LPV	1	99.181	1	99.173	1	99.158
BPK	BAXTER COUNTY	AR	LPV	1	99.155	1	99.155	1	99.138
BVX	BATESVILLE RGNL	AR	LPV	1	99.155	1	99.155	1	99.146
BYH	ARKANSAS INTL	AR	LPV200	1	99.152	1	99.152	1	99.152
CDH	HARRELL FLD	AR	LPV	1	99.155	1	99.154	1	99.147
CXW	CONWAY RGNL	AR	LPV	1	99.181	1	99.180	1	99.140
DRP	DELTA RGNL	AR	LPV	1	99.181	1	99.173	1	99.157
ELD	SOUTH ARKANSAS RGNL AT GOODWIN	AR	LPV	1	99.153	1	99.152	3	99.138
FLP	MARION COUNTY RGNL	AR	LPV	1	99.155	1	99.155	1	99.136
FSM	FORT SMITH RGNL	AR	LPV200	2	99.173	2	99.162	1	99.134
FYV	DRAKE FLD	AR	LPV	1	99.155	1	99.155	3	99.148
H34	HUNTSVILLE MUNICIPAL	AR	LPV	1	99.155	1	99.155	3	99.147
HEE	THOMPSON-ROBBINS	AR	LPV	1	99.181	1	99.180	1	99.159
HRO	BOONE COUNTY	AR	LPV	1	99.155	1	99.155	3	99.142
JBR	JONESBORO MUNICIPAL	AR	LPV200	1	99.152	1	99.152	1	99.152
LIT	BILL AND HILLARY CLINTON NTL/A	AR	LPV200	1	99.173	1	99.173	1	99.154
LLQ	MONTICELLO MUNICIPAL/ELLIS FLD	AR	LPV	1	99.153	1	99.153	1	99.146
M18	HOPE MUNICIPAL	AR	LP	1	99.153	1	99.152	1	99.145
M19	NEWPORT RGNL	AR	LPV	1	99.155	1	99.155	1	99.153
M32	LAKE VILLAGE MUNICIPAL	AR	LP	1	99.152	1	99.152	2	99.145
M70	POCAHONTAS MUNICIPAL	AR	LPV	1	99.152	1	99.152	1	99.148
M77	HOWARD COUNTY	AR	LP	1	99.157	1	99.156	1	99.148
MXA	MANILA MUNICIPAL	AR	LPV	1	99.152	1	99.152	1	99.152
ORK	NORTH LITTLE ROCK MUNICIPAL	AR	LPV	1	99.173	1	99.173	1	99.144
PBF	PINEBLUFF RGNL/GRIDER FLD	AR	LPV	1	99.155	1	99.155	1	99.145
ROG	ROGERS EXEC - CARTER FLD	AR	LPV	1	99.155	1	99.155	2	99.135

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
RUE	RUSSELLVILLE RGNL	AR	LPV	1	99.173	1	99.163	1	99.134
SGT	STUTTGART MUNICIPAL CARL HUMPHREY F	AR	LPV	1	99.181	1	99.173	1	99.155
SLG	SMITH FLD	AR	LPV	1	99.155	1	99.155	2	99.134
SRC	SEARCY MUNICIPAL	AR	LPV	1	99.181	1	99.170	1	99.145
SUZ	SALINE COUNTY RGNL	AR	LPV	1	99.173	1	99.172	1	99.151
TXK	TEXARKANA RGNL-WEBB FLD	AR	LPV	1	99.153	1	99.151	1	99.145
VBT	BENTONVILLE MUNICIPAL/LOUISE M THAD	AR	LPV	1	99.155	1	99.155	2	99.132
XNA	NORTHWEST ARKANSAS NTL	AR	LPV200	1	99.155	1	99.155	2	99.134
AVQ	MARANA RGNL	AZ	LP	3	99.055	3	98.985	7	98.869
AZC	COLORADO CITY MUNICIPAL	AZ	LPV	3	99.145	5	99.068	5	98.953
CGZ	CASA GRANDE MUNICIPAL	AZ	LPV	4	99.079	5	99.017	7	98.846
CHD	CHANDLER MUNICIPAL	AZ	LPV	4	99.091	5	99.027	9	98.881
DVT	PHOENIX DEER VALLEY	AZ	LPV	4	99.115	5	99.044	8	98.904
FFZ	FALCON FLD	AZ	LP	4	99.105	5	99.034	8	98.896
FHU	SIERRA VISTA MUNICIPAL-LIBBY AAF	AZ	LPV200	2	99.025	4	99.016	71	98.669
FLG	FLAGSTAFF PULLIAM	AZ	LPV	4	99.130	5	99.065	6	98.969
GCN	GRAND CANYON NTL PARK	AZ	LPV	4	99.138	5	99.062	6	98.966
GEU	GLENDALE MUNICIPAL	AZ	LPV	4	99.104	5	99.034	8	98.901
GYR	PHOENIX GOODYEAR	AZ	LP	6	99.098	5	99.022	8	98.893
HII	LAKE HAVASU CITY	AZ	LPV	5	99.084	5	99.044	8	98.950
IFP	LAUGHLIN/BULLHEAD INTL	AZ	LPV	5	99.084	5	99.043	6	98.962
IGM	KINGMAN	AZ	LPV	5	99.086	5	99.050	6	98.962
IWA	PHOENIX-MESA GATEWAY	AZ	LPV200	4	99.092	4	99.016	9	98.887
JTC	SPRINGERVILLE MUNICIPAL	AZ	LP	3	99.105	2	99.061	6	98.957
P08	COOLIDGE MUNICIPAL	AZ	LPV	4	99.076	6	99.016	7	98.856
P20	AVI SUQUILLA	AZ	LPV	5	99.082	5	99.040	10	98.945
P33	COCHISE COUNTY	AZ	LPV	2	99.025	2	99.011	59	98.760
PGA	PAGE MUNICIPAL	AZ	LPV	2	99.152	4	99.090	6	98.979
PHX	PHOENIX SKY HARBOR INTL	AZ	LPV	4	99.104	5	99.033	8	98.896
PRC	PRESCOTT RGNL - ERNEST A LOVE	AZ	LPV200	5	99.115	5	99.036	6	98.953
RQE	WINDOW ROCK	AZ	LP	4	99.132	3	99.091	6	98.974
RYN	RYAN FLD	AZ	LPV	3	99.041	3	98.988	6	98.879
SAD	SAFFORD RGNL	AZ	LPV	2	99.043	3	99.007	32	98.853
SJN	ST JOHNS INDUSTRIAL AIR PARK	AZ	LPV	3	99.104	3	99.079	7	98.957
SOW	SHOW LOW RGNL	AZ	LPV200	3	99.104	5	99.077	7	98.955
TUS	TUCSON INTL	AZ	LPV	3	99.041	4	99.006	12	98.877

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
TYL	TAYLOR	AZ	LPV	3	99.104	5	99.082	7	98.956
CAJ4	ANAHIM LAKE	BC	LPV	20	98.123	26	97.883	37	97.222
CAJ9	FORT WARE	BC	LP	31	97.070	32	96.707	43	96.088
CAU4	VANDERHOOF	BC	LPV	22	97.924	30	97.590	41	96.850
CBN9	TSAY KEH	BC	LP	34	97.219	37	96.883	41	96.163
CBW4	BOB QUINN LAKE	BC	LP	33	97.248	35	96.870	40	96.280
CYBL	CAMPBELL RIVER	BC	LPV	9	98.465	10	98.403	29	98.047
CYCD	NANAIMO	BC	LPV	10	98.606	12	98.478	21	98.206
CYCZ	FAIRMONT HOT SPRINGS	BC	LPV	9	98.677	9	98.547	28	98.196
CYDL	DEASE LAKE	BC	LP	28	97.026	31	96.646	52	95.988
CYDQ	DAWSON CREEK	BC	LPV	27	97.589	37	97.279	49	96.300
CYKA	KAMLOOPS	BC	LPV	8	98.551	14	98.468	30	98.017
CYLW	KELOWNA	BC	LPV	8	98.619	10	98.543	19	98.197
CYPK	PITT MEADOWS	BC	LPV	9	98.611	12	98.508	22	98.177
CYPR	PRINCE RUPERT	BC	LPV	22	97.932	23	97.587	44	97.126
CYQQ	COMOX	BC	LPV200	9	98.468	10	98.405	25	98.123
CYQZ	QUESNEL	BC	LPV	22	98.139	27	97.793	38	97.058
CYVR	VANCOUVER INTL	BC	LPV200	9	98.606	11	98.487	20	98.179
CYWL	WILLIAMS LAKE	BC	LPV	13	98.306	27	98.076	34	97.350
CYXJ	FORT ST. JOHN	BC	LPV200	33	97.435	37	97.059	50	96.203
CYXS	PRINCE GEORGE	BC	LPV200	21	97.939	30	97.623	38	96.865
CYXT	TERRACE	BC	LPV	21	97.888	25	97.590	46	96.973
CYXX	ABBOTSFORD	BC	LPV	12	98.640	14	98.536	23	98.212
CYYD	SMITHERS	BC	LPV	28	97.843	30	97.525	50	96.917
CYYE	FORT NELSON	BC	LPV200	32	96.850	36	96.525	66	95.452
CYYF	PENTICTON	BC	LPV	9	98.660	8	98.590	21	98.257
CYYJ	VICTORIA INTL	BC	LPV200	9	98.631	12	98.506	21	98.214
CYZP	SANDSPIT	BC	LPV	25	98.046	24	97.706	38	97.282
CYZT	PORT HARDY	BC	LPV	11	98.386	17	98.264	31	97.746
CZBB	BOUNDARY BAY	BC	LPV	9	98.616	12	98.502	21	98.198
AAT	ALTURAS MUNICIPAL	CA	LPV	3	99.144	6	99.045	9	98.775
ACV	CALIFORNIA REDWOOD COAST-HUMBO	CA	LPV	5	99.051	6	98.931	16	98.660
APC	NAPA COUNTY	CA	LPV200	5	99.070	7	98.970	14	98.765
APV	APPLE VALLEY	CA	LPV	5	99.063	5	99.015	12	98.898
AUN	AUBURN MUNICIPAL	CA	LPV	5	99.087	6	99.016	13	98.829
BFL	MEADOWS FLD	CA	LPV	5	99.064	5	99.010	13	98.845

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
BLH	BLYTHE	CA	LP	5	99.079	6	99.045	9	98.900
BUR	BOB HOPE	CA	LP	5	99.053	5	99.002	16	98.816
C83	BYRON	CA	LPV	6	99.053	8	98.990	15	98.779
CCB	CABLE	CA	LP	5	99.053	5	99.008	11	98.862
CCR	BUCHANAN FLD	CA	LPV	7	99.053	6	98.961	15	98.768
CEC	JACK MC NAMARA FLD	CA	LPV	5	99.042	7	98.921	12	98.648
CIC	CHICO MUNICIPAL	CA	LPV	5	99.075	6	99.013	16	98.768
CMA	CAMARILLO	CA	LPV	5	99.060	5	98.998	19	98.753
CNO	CHINO	CA	LPV	5	99.051	5	99.008	11	98.861
CPU	CALAVERAS COUNTY-MAURY RASMUSS	CA	LP	5	99.059	5	99.013	11	98.833
CRQ	MC CLELLAN-PALOMAR	CA	LPV	5	99.051	5	99.010	21	98.759
CVH	HOLLISTER MUNICIPAL	CA	LPV	6	99.043	6	98.959	16	98.747
DAG	BARSTOW-DAGGETT	CA	LPV	5	99.065	5	99.020	9	98.908
DWA	YOLO COUNTY	CA	LPV	5	99.084	6	98.980	13	98.785
F70	FRENCH VALLEY	CA	LPV	5	99.055	5	99.010	12	98.857
FAT	FRESNO YOSEMITE INTL	CA	LPV200	4	99.064	4	99.013	12	98.842
FCH	FRESNO CHANDLER EXEC	CA	LPV	4	99.063	4	99.013	13	98.830
GOO	NEVADA COUNTY	CA	LPV	4	99.079	5	99.003	13	98.821
HAF	HALF MOON BAY	CA	LPV	7	99.025	5	98.919	18	98.739
HHR	JACK NORTHROP FLD/HAWTHORNE MU	CA	LPV	5	99.050	5	99.001	18	98.807
HJO	HANFORD MUNICIPAL	CA	LPV	5	99.061	5	99.013	14	98.847
HWD	HAYWARD EXEC	CA	LPV	8	99.050	6	98.953	15	98.759
L35	BIG BEAR CITY	CA	LP	5	99.064	5	99.018	9	98.897
LAX	LOS ANGELES INTL	CA	LPV200	5	99.050	5	99.001	18	98.806
LGB	LONG BEACH (DAUGHERTY FLD)	CA	LPV	5	99.050	5	99.005	17	98.819
LHM	LINCOLN RGNL/KARL HARDER FLD	CA	LPV200	5	99.080	6	99.002	15	98.811
LLR	LITTLE RIVER	CA	LP	5	99.044	6	98.953	17	98.670
LSN	LOS BANOS MUNICIPAL	CA	LPV	5	99.042	5	98.984	13	98.780
LVK	LIVERMORE MUNICIPAL	CA	LPV200	6	99.053	6	98.956	15	98.773
MAE	MADERA MUNICIPAL	CA	LPV	4	99.056	4	99.009	13	98.827
MCE	MERCED RGNL/MACREADY FLD	CA	LPV200	5	99.060	5	99.006	13	98.804
MER	CASTLE	CA	LPV200	5	99.060	5	99.006	13	98.805
MHR	SACRAMENTO MATHER	CA	LPV200	6	99.072	6	99.008	12	98.817
MHV	MOJAVE AIR AND SPACE PORT	CA	LP	5	99.060	5	99.007	15	98.867
MIT	SHAFTER-MINTER FLD	CA	LPV	5	99.063	5	99.010	13	98.836
MOD	MODESTO CITY-COUNTY-HARRY SHAM	CA	LPV200	5	99.058	5	99.002	12	98.792

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
MRY	MONTEREY RGNL	CA	LPV	7	99.037	6	98.959	19	98.707
MYF	MONTGOMERY-GIBBS EXEC	CA	LPV200	5	99.055	5	99.013	28	98.707
MYV	YUBA COUNTY	CA	LPV200	5	99.080	6	99.002	15	98.785
NUQ	MOFFETT FEDERAL AIRFIELD	CA	LPV200	7	99.049	6	98.952	11	98.802
O02	NERVINO	CA	LPV	4	99.095	5	99.035	8	98.833
O08	COLUSA COUNTY	CA	LPV	5	99.071	6	98.982	15	98.772
O27	OAKDALE	CA	LPV	5	99.059	5	99.006	12	98.799
O32	REEDLEY MUNICIPAL	CA	LPV	4	99.065	4	99.013	8	98.869
O69	PETALUMA MUNICIPAL	CA	LPV	5	99.054	5	98.934	14	98.751
O88	RIO VISTA MUNICIPAL	CA	LP	6	99.054	7	98.980	14	98.781
OAK	METRO OAKLAND INTL	CA	LPV200	8	99.048	6	98.956	15	98.758
ONT	ONTARIO INTL	CA	LPV200	5	99.051	5	99.009	11	98.862
OVE	OROVILLE MUNICIPAL	CA	LPV	5	99.078	6	98.996	15	98.774
OXR	OXNARD	CA	LPV	5	99.060	5	98.998	21	98.746
PMD	PALMDALE USAF PLANT 42	CA	LPV200	5	99.059	5	99.006	16	98.858
POC	BRACKETT FLD	CA	LPV	5	99.051	5	99.008	11	98.862
PRB	PASO ROBLES MUNICIPAL	CA	LPV	6	99.057	6	98.994	18	98.729
PVF	PLACERVILLE	CA	LPV	5	99.082	5	99.018	10	98.833
RAL	RIVERSIDE MUNICIPAL	CA	LPV	5	99.052	5	99.011	11	98.863
RBL	RED BLUFF MUNICIPAL	CA	LPV	6	99.091	6	99.010	16	98.754
RDD	REDDING MUNICIPAL	CA	LPV	5	99.097	7	98.995	16	98.738
RHV	REID-HILLVIEW OF SANTA CLARA C	CA	LPV	6	99.051	6	98.952	16	98.760
RIV	MARCH ARB	CA	LPV200	5	99.052	5	99.007	10	98.869
SAC	SACRAMENTO EXEC	CA	LPV	6	99.072	6	98.988	14	98.807
SAN	SAN DIEGO INTL	CA	LPV	5	99.056	6	99.012	34	98.676
SBA	SANTA BARBARA MUNICIPAL	CA	LPV	5	99.059	5	98.992	22	98.709
SBD	SAN BERNARDINO INTL	CA	LPV	5	99.057	5	99.015	11	98.885
SBP	SAN LUIS COUNTY RGNL	CA	LPV200	6	99.052	6	98.987	19	98.706
SCK	STOCKTON METRO	CA	LPV200	6	99.053	6	98.998	13	98.799
SDM	BROWN FLD MUNICIPAL	CA	LPV200	5	99.058	6	99.013	37	98.679
SEE	GILLESPIE FLD	CA	LP	5	99.055	5	99.014	26	98.745
SFO	SAN FRANCISCO INTL	CA	LPV200	7	99.027	5	98.933	16	98.747
SJC	NORMAN Y MINETA SAN JOSE INTL	CA	LPV200	7	99.049	6	98.952	16	98.753
SMF	SACRAMENTO INTL	CA	LPV200	5	99.084	6	99.004	14	98.802
SMO	SANTA MONICA MUNICIPAL	CA	LPV	5	99.051	5	99.000	18	98.800
SMX	SANTA MARIA PUB/CAPT G ALLAN H	CA	LPV200	5	99.055	5	98.987	19	98.699

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
SNA	JOHN WAYNE/ORANGE COUNTY	CA	LPV200	5	99.051	5	98.997	17	98.829
SNS	SALINAS MUNICIPAL	CA	LPV200	6	99.044	6	98.960	19	98.725
STS	CHARLES M SCHULZ - SONOMA COUN	CA	LPV200	5	99.054	6	98.951	17	98.738
TCY	TRACY MUNICIPAL	CA	LPV	6	99.053	6	98.989	15	98.785
TNP	TWENTYNINE PALMS	CA	LP	5	99.064	5	99.034	9	98.904
TOA	ZAMPERINI FLD	CA	LPV	5	99.050	5	99.005	20	98.801
TRK	TRUCKEE-TAHOE	CA	LP	3	99.088	4	99.029	9	98.861
TRM	JACQUELINE COCHRAN RGNL	CA	LPV	5	99.059	6	99.030	8	98.877
TVL	LAKE TAHOE	CA	LP	5	99.083	5	99.028	8	98.865
VCB	NUT TREE	CA	LPV	7	99.076	6	98.980	10	98.816
VCV	SOUTHERN CALIFORNIA LOGISTICS	CA	LPV	5	99.060	5	99.014	12	98.879
VIS	VISALIA MUNICIPAL	CA	LPV	5	99.064	5	99.014	12	98.864
WJF	GENERAL WM J FOX AIRFIELD	CA	LPV	5	99.059	5	99.005	16	98.846
WLW	WILLOWS/GLENN COUNTY	CA	LPV	5	99.067	6	98.994	15	98.757
WVI	WATSONVILLE MUNICIPAL	CA	LPV	8	99.056	6	98.959	18	98.721
1V6	FREMONT COUNTY	CO	LPV	2	99.167	3	99.133	3	99.011
20V	MC ELROY AIRFIELD	CO	LPV	1	99.170	4	99.134	5	99.072
2V5	WRAY MUNICIPAL	CO	LPV200	3	99.144	2	99.108	3	99.064
2V6	YUMA MUNICIPAL	CO	LPV200	2	99.147	2	99.109	3	99.062
33V	WALDEN-JACKSON COUNTY	CO	LPV	2	99.163	4	99.122	6	99.047
4V0	RANGELY	CO	LPV	1	99.173	3	99.135	5	99.078
4V1	SPANISH PEAKS AIRFIELD	CO	LPV	2	99.169	3	99.100	3	99.013
AEJ	CENTRAL COLORADO RGNL	CO	LP	2	99.165	2	99.138	5	99.072
AJZ	BLAKE FLD	CO	LPV	2	99.162	2	99.134	4	99.053
AKO	COLORADO PLAINS RGNL	CO	LPV	2	99.147	2	99.110	3	99.062
ALS	SAN LUIS VALLEY RGNL/BERGMAN F	CO	LPV200	3	99.157	4	99.091	3	99.050
APA	CENTENNIAL	CO	LPV200	2	99.163	3	99.125	5	99.077
BJC	ROCKY MOUNTAIN METRO	CO	LPV200	2	99.163	4	99.136	4	99.075
CAG	CRAIG-MOFFAT	CO	LP	1	99.170	4	99.130	7	99.052
CEZ	CORTEZ MUNICIPAL	CO	LPV	2	99.154	3	99.102	3	99.038
CFO	COLORADO AIR AND SPACE PORT	CO	LPV200	2	99.155	2	99.118	5	99.065
COS	CITY OF COLORADO SPRINGS MUNICIPAL	CO	LPV200	2	99.167	4	99.133	4	99.058
DEN	DENVER INTL	CO	LPV200	2	99.156	2	99.118	5	99.065
DRO	DURANGO-LA PLATA COUNTY	CO	LPV200	3	99.155	4	99.100	3	99.023
FMM	FORT MORGAN MUNICIPAL	CO	LPV	3	99.144	2	99.112	4	99.066
FNL	NORTHERN COLORADO RGNL	CO	LPV200	2	99.148	3	99.113	4	99.066

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
FTG	FRONT RANGE	CO	LPV200	2	99.155	2	99.118	5	99.065
GJT	GRAND JUNCTION RGNL	CO	LPV200	2	99.163	3	99.131	4	99.079
GXY	GREELEY-WELD COUNTY	CO	LPV200	3	99.147	2	99.111	4	99.060
HDN	YAMPA VALLEY	CO	LPV200	1	99.170	4	99.130	7	99.058
ITR	KIT CARSON COUNTY	CO	LPV	2	99.152	2	99.110	3	99.066
LAA	SOUTHEAST COLORADO RGNL	CO	LPV	2	99.159	4	99.103	4	99.014
LHX	LA JUNTA MUNICIPAL	CO	LPV	2	99.162	4	99.103	3	98.999
LMO	VANCE BRAND	CO	LPV	2	99.161	4	99.130	4	99.068
MTJ	MONTROSE RGNL	CO	LPV200	2	99.164	2	99.135	4	99.036
MVI	MONTE VISTA MUNICIPAL	CO	LPV	2	99.157	3	99.091	3	99.050
PSO	STEVENS FLD	CO	LP	3	99.155	4	99.102	4	99.037
PUB	PUEBLO MEML	CO	LPV200	2	99.168	3	99.117	3	99.002
RCV	ASTRONAUT KENT ROMINGER	CO	LPV	2	99.156	3	99.108	4	99.047
RIL	RIFLE GARFIELD COUNTY	CO	LPV	1	99.173	3	99.141	4	99.082
STK	STERLING MUNICIPAL	CO	LPV	3	99.137	2	99.108	3	99.061
TEX	TELLURIDE RGNL	CO	LP	2	99.154	4	99.127	4	99.029
4B8	ROBERTSON FLD	CT	LP	2	99.102	2	99.102	4	99.083
BDL	BRADLEY INTL	CT	LPV200	2	99.101	2	99.099	4	99.077
BDR	IGOR I SIKORSKY MEML	CT	LPV	2	99.105	2	99.105	2	99.095
DXR	DANBURY MUNICIPAL	CT	LP	2	99.106	2	99.106	2	99.094
GON	GROTON-NEW LONDON	CT	LPV	2	99.101	2	99.101	3	99.085
HVN	TWEED/NEW HAVEN	CT	LPV	2	99.104	2	99.104	3	99.091
IJD	WINDHAM	CT	LP	2	99.101	2	99.099	4	99.077
MMK	MERIDEN MARKHAM MUNICIPAL	CT	LP	2	99.102	2	99.102	3	99.091
OXC	WATERBURY-OXFORD	CT	LPV	2	99.105	2	99.105	3	99.092
DCA	RONALD REAGAN WASHINGTON NTL	DC	LPV	1	99.152	1	99.152	1	99.152
HEF	MANASSAS RGNL/HARRY P DAVIS FL	DC	LPV	1	99.152	1	99.152	1	99.152
IAD	WASHINGTON DULLES INTL	DC	LPV200	1	99.152	1	99.152	1	99.152
33N	DELAWARE AIRPARK	DE	LP	1	99.152	1	99.152	1	99.137
DOV	DOVER AFB	DE	LPV200	1	99.152	1	99.152	1	99.137
EVY	SUMMIT	DE	LPV	1	99.152	1	99.152	1	99.137
GED	DELAWARE COASTAL	DE	LPV	1	99.152	1	99.152	1	99.137
ILG	NEW CASTLE	DE	LPV	1	99.152	1	99.152	2	99.134
1J0	TRI-COUNTY	FL	LP	2	99.140	2	99.100	2	99.058
24J	SUWANNEE COUNTY	FL	LPV	2	99.120	2	99.097	3	99.073
28J	PALATKA MUNICIPAL - LT KAY LARKIN F	FL	LPV	2	99.098	2	99.094	3	99.073

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
40J	PERRY-FOLEY	FL	LPV	2	99.122	2	99.097	3	99.071
54J	DEFUNIAK SPRINGS	FL	LP	2	99.112	2	99.072	2	99.060
AAF	APALACHICOLA RGNL-CLEVE RANDOL	FL	LPV	2	99.119	2	99.093	2	99.051
APF	NAPLES MUNICIPAL	FL	LPV	3	99.089	8	99.044	48	98.675
AVO	AVON PARK EXEC	FL	LPV	2	99.094	2	99.084	19	99.002
BCR	TRI-COUNTY	FL	LPV	1	99.173	1	99.173	1	99.138
BCT	BOCA RATON	FL	LPV	4	99.069	6	99.033	39	98.648
BKV	BROOKSVILLE-TAMPA BAY RGNL	FL	LPV	2	99.097	2	99.094	6	99.058
BOW	BARTOW EXEC	FL	LPV	2	99.095	2	99.089	14	99.032
CEW	BOB SIKES	FL	LPV	2	99.118	2	99.071	2	99.065
CGC	CRYSTAL RIVER-CAPT TOM DAVIS F	FL	LP	2	99.097	2	99.094	5	99.063
CHN	WAUCHULA MUNICIPAL	FL	LP	2	99.095	2	99.084	19	99.003
COI	MERRITT ISLAND	FL	LPV	2	99.097	2	99.088	6	99.034
CRG	JACKSONVILLE EXEC AT CRAIG	FL	LPV200	2	99.115	2	99.095	3	99.082
CTY	CROSS CITY	FL	LPV	2	99.098	2	99.094	3	99.070
DAB	DAYTONA BEACH INTL	FL	LPV200	2	99.097	2	99.094	5	99.064
DED	DELAND MUNICIPAL-SIDNEY H TAYLOR FL	FL	LPV	2	99.097	2	99.094	5	99.062
DTS	DESTIN EXEC	FL	LPV	2	99.102	2	99.071	2	99.059
ECP	NORTHWEST FLORIDA BEACHES INTL	FL	LPV200	2	99.107	2	99.077	2	99.051
EVB	NEW SMYRNA BEACH MUNICIPAL	FL	LPV	2	99.097	2	99.090	6	99.065
EYW	KEY WEST INTL	FL	LPV	10	98.958	14	98.922	91	98.007
F45	NORTH PALM BEACH COUNTY GENERA	FL	LPV	2	99.088	5	99.065	27	98.801
FHB	FERNANDINA BEACH MUNICIPAL	FL	LPV	2	99.127	2	99.100	3	99.086
FIN	FLAGLER EXEC	FL	LPV	2	99.097	2	99.094	5	99.067
FLL	FORT LAUDERDALE/HOLLYWOOD INTL	FL	LPV200	5	99.059	8	99.002	53	98.556
FMY	PAGE FLD	FL	LPV	2	99.093	5	99.071	35	98.802
FPR	TREASURE COAST INTL	FL	LPV	2	99.093	3	99.076	22	98.960
FPY	PERRY-FOLEY	FL	LPV	1	99.170	1	99.170	2	99.157
FXE	FORT LAUDERDALE EXEC	FL	LPV200	4	99.066	7	99.025	44	98.603
GIF	WINTER HAVEN RGNL	FL	LPV	2	99.096	2	99.089	11	99.041
GNV	GAINESVILLE RGNL	FL	LPV	2	99.098	2	99.094	3	99.073
HEG	HERLONG RECREATIONAL	FL	LPV	2	99.114	2	99.094	3	99.078
IMM	IMMOKALEE RGNL	FL	LPV	2	99.090	6	99.046	34	98.765
ISM	KISSIMMEE GATEWAY	FL	LPV200	2	99.097	2	99.089	8	99.042
JAX	JACKSONVILLE INTL	FL	LPV200	2	99.124	2	99.098	3	99.082
LAL	LAKELAND LINDER INTL	FL	LPV200	2	99.096	2	99.089	15	99.034

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
LCQ	LAKE CITY GATEWAY	FL	LPV	2	99.116	2	99.094	3	99.073
LEE	LEESBURG INTL	FL	LPV	2	99.097	2	99.093	6	99.058
LNA	PALM BEACH COUNTY PARK	FL	LP	3	99.083	5	99.046	32	98.720
MAI	MARIANNA MUNICIPAL	FL	LPV	2	99.139	2	99.100	2	99.051
MCO	ORLANDO INTL	FL	LPV200	2	99.097	2	99.089	7	99.047
MIA	MIAMI INTL	FL	LPV200	5	99.060	9	98.988	58	98.486
MKY	MARCO ISLAND EXEC	FL	LPV	4	99.080	7	99.025	50	98.622
MLB	MELBOURNE ORLANDO INTL	FL	LPV200	2	99.097	2	99.088	7	99.030
MTH	THE FLORIDA KEYS MARATHON INTL	FL	LPV	11	98.954	15	98.924	96	98.050
OBE	OKEECHOBEE COUNTY	FL	LPV	2	99.093	2	99.082	23	98.921
OCF	OCALA INTL-JIM TAYLOR FLD	FL	LPV200	2	99.097	2	99.094	4	99.068
OMN	ORMOND BEACH MUNICIPAL	FL	LPV	2	99.097	2	99.094	5	99.064
OPF	MIAMI-OPA LOCKA EXEC	FL	LPV200	5	99.060	9	98.994	57	98.506
ORL	EXEC	FL	LPV200	2	99.097	2	99.090	7	99.048
PBI	PALM BEACH INTL	FL	LPV200	2	99.088	4	99.048	30	98.748
PCM	PLANT CITY	FL	LPV	2	99.096	2	99.090	16	99.036
PGD	PUNTA GORDA	FL	LPV200	2	99.094	2	99.079	30	98.897
PHK	PALM BEACH COUNTY GLADES	FL	LPV	2	99.089	5	99.065	27	98.828
PIE	ST PETE-CLEARWATER INTL	FL	LPV200	2	99.096	2	99.090	18	99.021
PMP	POMPANO BEACH AIRPARK	FL	LPV	4	99.066	7	99.026	45	98.604
PNS	PENSACOLA INTL	FL	LPV200	2	99.109	2	99.071	2	99.063
RSW	SOUTHWEST FLORIDA INTL	FL	LPV	2	99.093	5	99.070	35	98.799
SEF	SEBRING RGNL	FL	LPV	2	99.094	2	99.084	20	98.984
SFB	ORLANDO SANFORD INTL	FL	LPV200	2	99.097	2	99.090	7	99.054
SGJ	NORTHEAST FLORIDA RGNL	FL	LPV	2	99.098	2	99.094	3	99.077
SRQ	SARASOTA/BRADENTON INTL	FL	LPV200	2	99.095	2	99.089	21	98.985
SUA	WITHAM FLD	FL	LPV	2	99.091	3	99.075	26	98.868
TIX	SPACE COAST RGNL	FL	LPV200	2	99.097	2	99.089	6	99.039
TLH	TALLAHASSEE INTL	FL	LPV200	2	99.127	2	99.097	3	99.067
TMB	MIAMI EXEC	FL	LPV200	6	99.060	9	98.988	58	98.453
TNT	DADE-COLLIER TRAINING AND TRAN	FL	LPV200	5	99.062	8	99.005	47	98.537
TPA	TAMPA INTL	FL	LPV200	2	99.096	2	99.090	15	99.036
TPF	PETER O KNIGHT	FL	LP	2	99.096	2	99.090	16	99.024
TTS	NASA SHUTTLE LANDING FACILITY	FL	LPV200	2	99.097	2	99.089	6	99.039
VDF	TAMPA EXEC	FL	LPV	2	99.096	2	99.090	14	99.036
VNC	VENICE MUNICIPAL	FL	LP	2	99.095	2	99.079	25	98.944

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
VQQ	CECIL	FL	LPV200	2	99.111	2	99.094	3	99.078
VRB	VERO BEACH RGNL	FL	LPV200	2	99.095	2	99.083	20	98.985
X07	LAKE WALES MUNICIPAL	FL	LP	2	99.095	2	99.088	14	99.025
X14	LA BELLE MUNICIPAL	FL	LPV	2	99.092	4	99.072	31	98.830
X35	MARION COUNTY	FL	LP	2	99.097	2	99.094	4	99.068
X51	MIAMI HOMESTEAD GENERAL AVIATI	FL	LPV	7	99.046	9	98.981	63	98.408
ZPH	ZEPHYRHILLS MUNICIPAL	FL	LPV	2	99.096	2	99.090	11	99.048
09J	JEKYLL ISLAND	GA	LPV200	2	99.139	2	99.100	2	99.087
15J	COOK COUNTY	GA	LPV	2	99.141	2	99.097	3	99.077
17J	DONALSONVILLE MUNICIPAL	GA	LPV	2	99.141	2	99.100	3	99.066
18A	FRANKLIN-HART	GA	LPV	2	99.169	2	99.165	2	99.112
19A	JACKSON COUNTY	GA	LPV	2	99.163	2	99.150	3	99.128
2J3	LOUISVILLE MUNICIPAL	GA	LPV	1	99.170	1	99.166	1	99.166
2J5	MILLEN	GA	LPV	2	99.152	2	99.126	2	99.096
3J7	GREENE COUNTY RGNL	GA	LPV	2	99.156	2	99.131	2	99.102
48A	COCHRAN	GA	LPV	2	99.147	2	99.118	2	99.090
49A	GILMER COUNTY	GA	LPV	1	99.173	1	99.170	1	99.166
4A4	POLK COUNTY/CORNELIUS MOORE FL	GA	LPV	2	99.156	2	99.155	2	99.148
4J1	BRANTLEY COUNTY	GA	LPV	2	99.139	2	99.098	2	99.087
4J2	BERRIEN COUNTY	GA	LPV	2	99.141	2	99.100	3	99.078
4J5	QUITMAN BROOKS COUNTY	GA	LP	2	99.134	2	99.097	3	99.074
52A	MADISON MUNICIPAL	GA	LP	2	99.151	2	99.136	2	99.104
6A1	BUTLER MUNICIPAL	GA	LPV	2	99.151	2	99.128	2	99.090
6A2	GRIFFIN-SPALDING COUNTY	GA	LPV	2	99.153	2	99.132	2	99.110
70J	CAIRO-GRADY COUNTY	GA	LPV	2	99.136	2	99.097	3	99.071
75J	TURNER COUNTY	GA	LP	1	99.170	1	99.170	2	99.166
9A5	BARWICK LAFAYETTE	GA	LP	1	99.173	1	99.170	1	99.166
ABY	SOUTHWEST GEORGIA RGNL	GA	LPV200	2	99.143	2	99.112	3	99.083
ACJ	JIMMY CARTER RGNL	GA	LPV	2	99.145	2	99.121	3	99.086
AGS	AUGUSTA RGNL AT BUSH FLD	GA	LPV200	2	99.156	2	99.136	2	99.098
AHN	ATHENS/BEN EPPS	GA	LPV200	2	99.156	2	99.142	2	99.109
AJR	HABERSHAM COUNTY	GA	LPV	1	99.166	1	99.166	3	99.144
AMG	BACON COUNTY	GA	LPV	2	99.142	2	99.101	2	99.087
ATL	HARTSFIELD - JACKSON ATLANTA I	GA	LPV200	2	99.154	2	99.151	3	99.135
AYS	WAYCROSS-WARE COUNTY	GA	LPV200	2	99.140	2	99.102	3	99.085
BGE	DECATUR COUNTY INDUSTRIAL AIR	GA	LPV200	2	99.140	2	99.100	3	99.067

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
BHC	BAXLEY MUNICIPAL	GA	LPV	2	99.144	2	99.104	2	99.087
BIJ	EARLY COUNTY	GA	LPV	2	99.144	2	99.114	3	99.076
BQK	BRUNSWICK GOLDEN ISLES	GA	LPV200	2	99.142	2	99.100	2	99.089
CCO	NEWNAN COWETA COUNTY	GA	LPV	2	99.153	2	99.153	3	99.133
CKF	CRISP COUNTY-CORDELE	GA	LPV	2	99.144	2	99.118	3	99.090
CNI	CHEROKEE COUNTY RGNL	GA	LPV	2	99.169	3	99.165	2	99.148
CSG	COLUMBUS	GA	LPV	2	99.152	2	99.134	3	99.085
CTJ	WEST GEORGIA RGNL - O V GRAY F	GA	LPV	2	99.155	2	99.155	2	99.148
CVC	COVINGTON MUNICIPAL	GA	LPV	2	99.150	2	99.136	2	99.110
CWV	CLAXTON-EVANS COUNTY	GA	LPV	2	99.148	2	99.115	2	99.094
CXU	CAMILLA-MITCHELL COUNTY	GA	LPV	2	99.140	2	99.100	3	99.071
CZL	TOM B DAVID FLD	GA	LPV	2	99.170	2	99.170	3	99.161
D73	CY NUNNALLY MEML	GA	LP	2	99.152	2	99.139	2	99.110
DBN	W H 'BUD' BARRON	GA	LPV200	2	99.147	2	99.121	2	99.090
DNL	DANIEL FLD	GA	LPV	2	99.156	2	99.138	2	99.098
DNN	DALTON MUNICIPAL	GA	LPV	1	99.166	1	99.166	2	99.165
DQH	DOUGLAS MUNICIPAL	GA	LPV200	2	99.141	2	99.105	3	99.085
EBA	ELBERT COUNTY-PATZ FLD	GA	LP	2	99.163	2	99.142	2	99.102
EZM	HEART OF GEORGIA RGNL	GA	LPV200	2	99.146	2	99.115	2	99.089
FFC	ATLANTA RGNL FALCON FLD	GA	LPV	2	99.153	3	99.150	3	99.131
FTY	FULTON COUNTY EXEC/CHARLIE BRO	GA	LPV	2	99.154	2	99.151	3	99.139
FZG	FITZGERALD MUNICIPAL	GA	LPV	2	99.142	2	99.110	2	99.087
GVL	LEE GILMER MEML	GA	LPV	2	99.167	3	99.165	3	99.138
HMP	ATLANTA SPEEDWAY	GA	LPV200	2	99.153	3	99.147	3	99.126
HOE	HOMERVILLE	GA	LPV	2	99.139	2	99.098	3	99.081
HQU	THOMSON-MCDUFFIE COUNTY	GA	LPV	2	99.156	2	99.130	2	99.098
IIY	WASHINGTON/WILKES COUNTY	GA	LPV	2	99.156	2	99.135	2	99.100
JCA	JACKSON COUNTY	GA	LPV	2	99.163	2	99.150	3	99.128
JES	JESUP-WAYNE COUNTY	GA	LPV	2	99.144	2	99.098	2	99.090
JYL	PLANTATION AIRPARK	GA	LPV	2	99.152	2	99.125	2	99.096
JZP	PICKENS COUNTY	GA	LPV	2	99.173	2	99.170	2	99.151
LGC	LAGRANGE/CALLAWAY	GA	LPV200	2	99.153	3	99.151	3	99.113
LHW	WRIGHT AAF (FORT STEWART)/MIDC	GA	LPV	2	99.148	2	99.105	2	99.093
LZU	GWINNETT COUNTY/BRISCOE FLD	GA	LPV200	2	99.156	2	99.151	3	99.133
MAC	MACON DOWNTOWN	GA	LPV	2	99.148	2	99.126	2	99.089
MCN	MIDDLE GEORGIA RGNL	GA	LPV200	2	99.148	2	99.128	2	99.090

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
MGR	MOULTRIE MUNICIPAL	GA	LPV200	2	99.139	2	99.097	3	99.075
MHP	JOHN EDWIN JONES SR FLD/METTER	GA	LPV	2	99.148	2	99.115	2	99.095
MLJ	BALDWIN COUNTY RGNL	GA	LPV	2	99.148	2	99.127	2	99.099
MQW	TELFAIR-WHEELER	GA	LPV	2	99.146	2	99.113	2	99.087
OKZ	KAOLIN FLD	GA	LPV	2	99.148	2	99.125	2	99.099
OPN	THOMASTON-UPSON COUNTY	GA	LPV200	2	99.152	2	99.131	2	99.091
PIM	HARRIS COUNTY	GA	LPV	2	99.153	3	99.147	2	99.090
PUJ	PAULDING NORTHWEST ATLANTA	GA	LPV200	2	99.155	2	99.155	2	99.148
PXE	PERRY-HOUSTON COUNTY	GA	LPV	2	99.148	2	99.126	2	99.090
RMG	RICHARD B RUSSELL RGNL - J H T	GA	LPV	2	99.167	2	99.156	2	99.149
RVJ	SWINTON SMITH FLD AT REIDSVILL	GA	LP	2	99.147	2	99.111	2	99.094
RYY	COBB COUNTY INTL/MCCOLLUM FLD	GA	LPV200	2	99.155	2	99.151	2	99.148
SAV	SAVANNAH/HILTON HEAD INTL	GA	LPV200	2	99.148	2	99.108	2	99.093
SBO	EAST GEORGIA RGNL	GA	LPV	2	99.148	2	99.120	2	99.096
TBR	STATESBORO-BULLOCH COUNTY	GA	LPV	2	99.150	2	99.119	2	99.096
TMA	HENRY TIFT MYERS	GA	LPV	2	99.142	2	99.103	3	99.082
TOC	TOCCOA RG LETOURNEAU FLD	GA	LPV	1	99.166	1	99.166	3	99.141
TVI	THOMASVILLE RGNL	GA	LPV	2	99.135	2	99.097	3	99.073
VDI	VIDALIA RGNL	GA	LPV200	2	99.146	2	99.113	2	99.087
VLD	VALDOSTA RGNL	GA	LPV	2	99.130	2	99.097	3	99.075
VPC	CARTERSVILLE	GA	LPV	2	99.159	2	99.155	2	99.148
WDR	BARROW COUNTY	GA	LPV	2	99.156	2	99.149	2	99.113
3Y2	GEORGE L SCOTT MUNICIPAL	IA	LPV	2	99.041	4	99.000	5	98.946
4C8	ALBIA MUNICIPAL	IA	LPV	2	99.113	3	99.076	3	99.016
AIO	ATLANTIC MUNICIPAL	IA	LPV	2	99.083	2	99.057	4	99.002
ALO	WATERLOO RGNL	IA	LPV200	2	99.045	4	99.017	5	98.952
AMW	AMES MUNICIPAL	IA	LPV	2	99.058	4	99.033	4	98.952
AWG	WASHINGTON MUNICIPAL	IA	LPV200	1	99.116	3	99.075	3	99.006
BNW	BOONE MUNICIPAL	IA	LPV	2	99.059	4	99.033	4	98.964
BRL	SOUTHEAST IOWA RGNL	IA	LPV200	1	99.123	2	99.119	2	99.019
C25	WAVERLY MUNICIPAL	IA	LPV	2	99.044	4	99.014	4	98.951
CAV	CLARION MUNICIPAL	IA	LPV	2	99.048	5	99.025	4	98.943
CBF	COUNCIL BLUFFS MUNICIPAL	IA	LPV200	2	99.083	2	99.058	3	99.013
CCY	NORTHEAST IOWA RGNL	IA	LPV	2	99.039	4	98.999	5	98.947
CID	THE EASTERN IOWA	IA	LPV200	3	99.096	3	99.050	4	98.969
CIN	ARTHUR N NEU	IA	LPV	2	99.069	3	99.034	4	98.970

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
CKP	CHEROKEE COUNTY RGNL	IA	LPV	2	99.056	4	99.017	4	98.968
CSQ	CRESTON MUNICIPAL	IA	LPV	3	99.098	2	99.058	2	99.024
CWI	CLINTON MUNICIPAL	IA	LPV200	2	99.116	3	99.056	5	99.003
DBQ	DUBUQUE RGNL	IA	LPV200	3	99.090	4	99.045	4	98.972
DEH	DECORAH MUNICIPAL	IA	LPV	2	99.035	4	98.990	6	98.942
DNS	DENISON MUNICIPAL	IA	LPV	2	99.069	3	99.035	4	98.981
DSM	DES MOINES INTL	IA	LPV200	3	99.088	2	99.056	4	98.993
DVN	DAVENPORT MUNICIPAL	IA	LPV200	1	99.123	3	99.078	3	99.005
EAG	EAGLE GROVE MUNICIPAL	IA	LPV	2	99.049	4	99.027	5	98.956
EBS	WEBSTER CITY MUNICIPAL	IA	LPV	2	99.050	4	99.029	5	98.960
EFW	JEFFERSON MUNICIPAL	IA	LPV	2	99.061	3	99.034	4	98.974
EOK	KEOKUK MUNICIPAL	IA	LPV	1	99.123	2	99.121	3	99.045
EST	ESTHERVILLE MUNICIPAL	IA	LPV	2	99.039	4	99.007	5	98.914
FFL	FAIRFIELD MUNICIPAL	IA	LPV	1	99.115	3	99.077	3	99.010
FOD	FORT DODGE RGNL	IA	LPV200	2	99.051	4	99.029	4	98.958
FSW	FORT MADISON MUNICIPAL	IA	LPV	1	99.123	2	99.118	2	99.022
FXY	FOREST CITY MUNICIPAL	IA	LPV	2	99.039	4	99.002	5	98.942
GCT	GUTHRIE COUNTY RGNL	IA	LPV	2	99.069	2	99.056	4	98.977
GFZ	GREENFIELD MUNICIPAL	IA	LPV	3	99.097	2	99.057	4	99.014
GGI	GRINNELL RGNL	IA	LPV	3	99.078	2	99.047	5	98.968
HPT	HAMPTON MUNICIPAL	IA	LPV	2	99.046	4	99.025	4	98.943
I75	OSCEOLA MUNICIPAL	IA	LPV	3	99.106	3	99.071	3	99.025
ICL	SCHENCK FLD	IA	LPV	3	99.103	2	99.063	3	99.044
IFA	IOWA FALLS MUNICIPAL	IA	LPV	2	99.047	4	99.028	4	98.946
IIB	JAMES H CONNELL FLD AT INDEPEN	IA	LPV	2	99.048	4	99.023	5	98.953
IKV	ANKENY RGNL	IA	LPV200	2	99.063	2	99.048	5	98.981
IOW	IOWA CITY MUNICIPAL	IA	LPV	3	99.105	2	99.052	3	99.002
LRJ	LE MARS MUNICIPAL	IA	LPV	2	99.056	4	99.019	5	98.949
LWD	LAMONI MUNICIPAL	IA	LPV	2	99.115	3	99.082	3	99.039
MCW	MASON CITY MUNICIPAL	IA	LPV200	2	99.039	4	99.003	5	98.945
MIW	MARSHALLTOWN MUNICIPAL	IA	LPV	2	99.056	4	99.030	5	98.948
MPZ	MOUNT PLEASANT MUNICIPAL	IA	LPV	1	99.118	4	99.105	3	99.014
MUT	MUSCATINE MUNICIPAL	IA	LPV200	1	99.119	3	99.080	3	99.008
MXO	MONTICELLO RGNL	IA	LP	4	99.091	3	99.037	4	98.974
OOA	OSKALOOSA MUNICIPAL	IA	LPV	2	99.110	3	99.072	3	99.006
OQW	MAQUOKETA MUNICIPAL	IA	LPV	3	99.101	4	99.051	4	98.980

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
ORC	ORANGE CITY MUNICIPAL	IA	LPV	2	99.056	4	99.016	7	98.936
OTM	OTTUMWA RGNL	IA	LPV	2	99.113	3	99.074	3	99.008
OXV	KNOXVILLE MUNICIPAL	IA	LPV	3	99.103	2	99.056	4	99.006
PEA	PELLA MUNICIPAL	IA	LPV	3	99.102	2	99.056	4	98.993
POH	POCAHONTAS MUNICIPAL	IA	LPV	2	99.052	5	99.026	5	98.956
PRO	PERRY MUNICIPAL	IA	LPV200	2	99.061	3	99.037	4	98.977
RDK	RED OAK MUNICIPAL	IA	LPV	3	99.096	2	99.059	3	99.035
RRQ	ROCK RAPIDS MUNICIPAL	IA	LP	2	99.045	4	99.007	6	98.868
SDA	SHENANDOAH MUNICIPAL	IA	LPV	3	99.100	2	99.061	3	99.043
SHL	SHELDON RGNL	IA	LPV	2	99.049	4	99.011	7	98.920
SKI	SAC CITY MUNICIPAL	IA	LPV	2	99.055	4	99.031	4	98.964
SLB	STORM LAKE MUNICIPAL	IA	LPV	2	99.055	4	99.029	4	98.967
SPW	SPENCER MUNICIPAL	IA	LPV200	2	99.048	4	99.012	5	98.920
SUX	SIOUX GATEWAY/BRIG GENERAL BUD	IA	LPV200	2	99.065	4	99.033	4	98.978
SXK	SIOUX COUNTY RGNL	IA	LPV200	2	99.056	4	99.016	5	98.937
TNU	NEWTON MUNICIPAL-EARL JOHNSON FLD	IA	LPV200	2	99.061	2	99.047	5	98.970
TVK	CENTERVILLE MUNICIPAL	IA	LPV	1	99.115	2	99.088	3	99.039
TZT	BELLE PLAINE MUNICIPAL	IA	LPV	3	99.072	3	99.048	5	98.950
VTI	VINTON VETERANS MEML AIRPARK	IA	LPV	2	99.057	4	99.033	5	98.956
1U7	BEAR LAKE COUNTY	ID	LPV	3	99.141	4	99.081	5	98.946
BOI	BOISE AIR TRML/GOWEN FLD	ID	LPV200	4	99.114	7	99.019	6	98.823
COE	COEUR D'ALENE/PAPPY BOYINGTON	ID	LPV200	11	98.840	13	98.686	17	98.411
DIJ	DRIGGS-REED MEML	ID	LP	4	99.083	5	98.991	6	98.882
EUL	TREASURE VALLEY EXEC AT CALDWE	ID	LPV	4	99.109	8	99.007	6	98.817
GNG	GOODING MUNICIPAL	ID	LPV	4	99.121	6	99.068	8	98.879
IDA	IDAHO FALLS RGNL	ID	LPV200	4	99.103	6	99.025	6	98.877
JER	JEROME COUNTY	ID	LPV	4	99.136	6	99.068	8	98.890
LWS	LEWISTON/NEZ PERCE COUNTY	ID	LPV200	7	99.012	11	98.857	14	98.555
MAN	NAMPA MUNICIPAL	ID	LPV	4	99.113	8	99.010	6	98.821
MYL	MC CALL MUNICIPAL	ID	LPV	3	99.064	7	98.917	6	98.791
PIH	POCATELLO RGNL	ID	LPV200	4	99.117	5	99.057	6	98.893
SUN	FRIEDMAN MEML	ID	LP	4	99.101	6	99.023	6	98.854
SZT	SANDPOINT	ID	LP	11	98.804	11	98.637	20	98.348
TWF	JOSLIN FLD/MAGIC VALLEY RGNL	ID	LPV200	3	99.145	6	99.059	8	98.904
U76	MOUNTAIN HOME MUNICIPAL	ID	LPV	4	99.135	6	99.043	7	98.848
1H2	EFFINGHAM COUNTY MEML	IL	LPV	1	99.148	1	99.148	2	99.147

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
3LF	LITCHFIELD MUNICIPAL	IL	LPV	1	99.148	1	99.148	2	99.134
3MY	MOUNT HAWLEY AUXILIARY	IL	LPV	1	99.134	2	99.134	2	99.023
AJG	MOUNT CARMEL MUNICIPAL	IL	LPV	1	99.152	1	99.148	2	99.147
ALN	ST LOUIS RGNL	IL	LPV200	1	99.148	1	99.148	2	99.132
ARR	AURORA MUNICIPAL	IL	LPV200	2	99.148	2	99.115	3	99.006
BLV	SCOTT AFB/MIDAMERICA ST LOUIS	IL	LPV200	1	99.152	1	99.148	2	99.143
BMI	CENTRAL IL RGNL/BLOOMINGTON-NO	IL	LPV	1	99.148	1	99.148	6	99.117
C15	PEKIN MUNICIPAL	IL	LPV	1	99.135	1	99.135	4	99.074
C73	DIXON MUNICIPAL-CHARLES R WALGREEN	IL	LPV	2	99.133	4	99.082	3	99.005
C75	MARSHALL COUNTY	IL	LP	1	99.137	2	99.135	2	99.022
CIR	CAIRO RGNL	IL	LP	1	99.152	1	99.148	1	99.148
CMI	UNIVERSITY OF ILLINOIS/WILLARD	IL	LPV200	1	99.148	1	99.148	2	99.133
CPS	ST LOUIS DOWNTOWN	IL	LPV200	1	99.152	1	99.148	2	99.141
CTK	INGERSOLL	IL	LPV	1	99.129	1	99.129	3	99.043
CUL	CARMI MUNICIPAL	IL	LPV	1	99.152	1	99.148	2	99.147
DEC	DECATUR	IL	LPV200	1	99.148	1	99.148	2	99.133
DKB	DE KALB TAYLOR MUNICIPAL	IL	LPV	2	99.147	5	99.102	3	99.002
DNV	VERMILION RGNL	IL	LPV	1	99.148	1	99.148	2	99.135
DPA	DUPAGE	IL	LPV200	2	99.148	3	99.113	3	99.005
ENL	CENTRALIA MUNICIPAL	IL	LPV	1	99.152	1	99.148	2	99.145
EZI	KEWANEE MUNICIPAL	IL	LPV	1	99.129	3	99.123	2	99.019
FEP	ALBERTUS	IL	LPV	2	99.110	4	99.050	3	98.974
FOA	FLORA MUNICIPAL	IL	LPV	1	99.152	1	99.148	2	99.147
GBG	GALESBURG MUNICIPAL	IL	LPV200	1	99.124	2	99.119	2	99.018
GRE	GREENVILLE	IL	LPV	1	99.148	1	99.148	2	99.145
HSB	HARRISBURG-RALEIGH	IL	LPV	1	99.152	1	99.148	2	99.146
I63	MOUNT STERLING MUNICIPAL	IL	LPV	1	99.123	1	99.123	2	99.099
IGQ	LANSING MUNICIPAL	IL	LPV	1	99.148	2	99.145	3	99.014
IKK	GREATER KANKAKEE	IL	LPV200	1	99.148	1	99.148	2	99.021
LOT	LEWIS UNIVERSITY	IL	LPV200	1	99.148	2	99.128	3	99.013
LWV	LAWRENCEVILLE-VINCENNES INTL	IL	LPV200	1	99.152	1	99.148	1	99.148
MDW	CHICAGO MIDWAY INTL	IL	LPV	1	99.148	2	99.127	3	99.012
MLI	QUAD CITIES INTL	IL	LPV200	1	99.123	3	99.093	3	99.011
MQB	MACOMB MUNICIPAL	IL	LPV200	1	99.123	1	99.123	3	99.046
MTO	COLES COUNTY MEML	IL	LPV200	1	99.148	1	99.148	2	99.137
MVN	MOUNT VERNON	IL	LPV	1	99.152	1	99.148	2	99.145

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
MWA	VETERANS AIRPORT OF SOUTHERN I	IL	LPV200	1	99.152	1	99.148	2	99.146
OLY	OLNEY-NOBLE	IL	LPV	1	99.152	1	99.148	2	99.147
ORD	CHICAGO O'HARE INTL	IL	LPV200	2	99.148	3	99.111	3	99.010
PIA	GENERAL DOWNING - PEORIA INTL	IL	LPV	1	99.133	1	99.133	2	99.031
PJY	PINCKNEYVILLE/DU QUOIN	IL	LPV	1	99.152	1	99.148	2	99.145
PNT	PONTIAC MUNICIPAL	IL	LPV	1	99.148	1	99.148	2	99.019
PPQ	PITTSFIELD PENSTONE MUNICIPAL	IL	LPV	1	99.125	1	99.125	2	99.100
PRG	EDGAR COUNTY	IL	LPV	1	99.148	1	99.148	2	99.145
PWK	CHICAGO EXEC	IL	LPV	2	99.148	4	99.109	3	99.010
RFD	CHICAGO/ROCKFORD INTL	IL	LPV200	2	99.119	4	99.064	4	98.995
RPJ	ROCHELLE MUNICIPAL/KORITZ FLD	IL	LPV	2	99.137	5	99.101	3	99.005
RSV	CRAWFORD COUNTY	IL	LPV	1	99.152	1	99.148	1	99.148
SAR	SPARTA COMMUNICIPALTY-HUNTER FLD	IL	LPV	1	99.152	1	99.148	2	99.144
SFY	TRI-TOWNSHIP	IL	LP	3	99.113	4	99.051	4	98.976
SLO	SALEM-LECKRONE	IL	LPV200	1	99.152	1	99.148	2	99.145
SPI	ABRAHAM LINCOLN CAPITAL	IL	LPV	1	99.148	1	99.148	2	99.123
SQI	WHITESIDE COUNTY/JOS H BITTORF	IL	LPV200	2	99.131	5	99.093	3	99.007
TIP	RANTOUL NTL AVN CNTR-FRANK ELL	IL	LPV	1	99.148	1	99.148	2	99.133
UGN	WAUKEGAN NTL	IL	LPV	2	99.121	4	99.076	4	99.002
UIN	QUINCY RGNL-BALDWIN FLD	IL	LPV200	1	99.123	1	99.123	2	99.099
VYS	ILLINOIS VALLEY RGNL-WALTER A	IL	LPV	1	99.139	2	99.132	2	99.015
2R2	HENDRICKS COUNTY-GORDON GRAHAM	IN	LPV	1	99.152	1	99.152	2	99.146
50I	KENTLAND MUNICIPAL	IN	LPV	1	99.148	1	99.148	5	99.092
AID	ANDERSON MUNICIPAL-DARLINGTON FLD	IN	LPV	1	99.152	1	99.152	2	99.144
ASW	WARSAW MUNICIPAL	IN	LPV200	1	99.152	1	99.152	3	99.087
BAK	COLUMBUS MUNICIPAL	IN	LPV	1	99.152	1	99.152	2	99.148
BFR	VIRGIL I GRISSOM MUNICIPAL	IN	LP	1	99.152	1	99.152	1	99.148
BMG	MONROE COUNTY	IN	LPV200	1	99.152	1	99.152	1	99.148
C62	KENDALLVILLE MUNICIPAL	IN	LPV	1	99.152	1	99.152	3	99.088
C65	PLYMOUTH MUNICIPAL	IN	LPV	1	99.152	1	99.152	3	99.060
CEV	METTEL FLD	IN	LPV	1	99.152	1	99.152	2	99.147
CFJ	CRAWFORDSVILLE RGNL	IN	LPV	1	99.152	1	99.148	2	99.145
DCY	DAVIESS COUNTY	IN	LPV	1	99.152	1	99.148	1	99.148
EKM	ELKHART MUNICIPAL	IN	LPV	1	99.152	1	99.152	5	99.055
EVV	EVANSVILLE RGNL	IN	LPV200	1	99.152	1	99.152	2	99.147
EYE	EAGLE CREEK AIRPARK	IN	LPV	1	99.152	1	99.152	2	99.146

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
FKR	FRANKFORT CLINTON COUNTY RGNL	IN	LPV	1	99.152	1	99.152	2	99.139
FRH	FRENCH LICK MUNICIPAL	IN	LPV	1	99.152	1	99.152	1	99.148
FWA	FORT WAYNE INTL	IN	LPV200	1	99.152	1	99.152	4	99.111
GEZ	SHELBYVILLE MUNICIPAL	IN	LPV	1	99.152	1	99.152	2	99.147
GGP	LOGANSPORT/CASS COUNTY	IN	LPV200	1	99.152	1	99.152	4	99.129
GPC	PUTNAM COUNTY RGNL	IN	LPV	1	99.152	1	99.148	2	99.146
GSH	GOSHEN MUNICIPAL	IN	LPV	1	99.152	1	99.152	4	99.080
GWB	DE KALB COUNTY	IN	LPV	1	99.152	1	99.152	3	99.094
GYY	GARY/CHICAGO INTL	IN	LPV200	1	99.148	2	99.135	3	99.014
HFY	INDY SOUTH GREENWOOD	IN	LPV	1	99.152	1	99.152	2	99.146
HNB	HUNTINGBURG	IN	LPV	1	99.152	1	99.152	1	99.148
HUF	TERRE HAUTE RGNL	IN	LPV200	1	99.152	1	99.148	2	99.147
I22	RANDOLPH COUNTY	IN	LPV	1	99.152	1	99.152	2	99.144
I76	PERU MUNICIPAL	IN	LPV	1	99.152	1	99.152	4	99.115
IMS	MADISON MUNICIPAL	IN	LPV	1	99.152	1	99.152	1	99.152
IND	INDIANAPOLIS INTL	IN	LPV200	1	99.152	1	99.152	2	99.146
JVY	CLARK RGNL	IN	LPV200	1	99.152	1	99.152	1	99.152
LAF	PURDUE UNIVERSITY	IN	LPV	1	99.148	1	99.148	3	99.136
MCX	WHITE COUNTY	IN	LP	1	99.148	1	99.148	3	99.115
MIE	DELAWARE COUNTY RGNL	IN	LPV	1	99.152	1	99.152	2	99.144
MQJ	INDIANAPOLIS RGNL	IN	LPV200	1	99.152	1	99.152	2	99.146
MZZ	MARION MUNICIPAL - MCKINNEY FLD	IN	LPV200	1	99.152	1	99.152	3	99.141
OKK	KOKOMO MUNICIPAL	IN	LPV200	1	99.152	1	99.152	4	99.136
OVO	NORTH VERNON	IN	LPV	1	99.152	1	99.152	1	99.151
OXI	STARKE COUNTY	IN	LPV	1	99.148	1	99.148	4	99.054
PLD	PORTLAND MUNICIPAL	IN	LPV	1	99.152	1	99.152	3	99.143
PPO	LA PORTE MUNICIPAL	IN	LPV	1	99.148	2	99.147	3	99.031
RCR	FULTON COUNTY	IN	LPV	1	99.152	1	99.152	3	99.091
RID	RICHMOND MUNICIPAL	IN	LPV200	1	99.152	1	99.152	2	99.147
RWN	ARENS FLD	IN	LPV	1	99.148	1	99.148	4	99.083
RZL	JASPER COUNTY	IN	LPV	1	99.148	1	99.148	4	99.063
SBN	SOUTH BEND INTL	IN	LPV200	1	99.152	2	99.151	5	99.053
SER	FREEMAN MUNICIPAL	IN	LPV	1	99.152	1	99.152	1	99.152
SIV	SULLIVAN COUNTY	IN	LPV	1	99.152	1	99.148	1	99.148
SMD	SMITH FLD	IN	LPV	1	99.152	1	99.152	3	99.093
TEL	PERRY COUNTY MUNICIPAL	IN	LP	1	99.152	1	99.152	1	99.148

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
TYQ	INDIANAPOLIS EXEC	IN	LPV	1	99.152	1	99.152	2	99.140
UWL	NEW CASTLE HENRY COUNTY MARLAT	IN	LPV	1	99.152	1	99.152	2	99.146
VPZ	PORTER COUNTY RGNL	IN	LPV	1	99.148	2	99.147	3	99.031
1QK	GOVE COUNTY	KS	LPV	3	99.142	2	99.111	3	99.068
3AU	AUGUSTA MUNICIPAL	KS	LP	1	99.108	2	99.104	3	99.090
3K3	SYRACUSE-HAMILTON COUNTY MUNICIPAL	KS	LPV	3	99.159	5	99.096	5	99.025
3K7	MARK HOARD MEML	KS	LPV	2	99.155	3	99.102	4	99.041
3K8	COMANCHE COUNTY	KS	LPV	2	99.132	3	99.080	3	99.025
5K2	TRIBUNE MUNICIPAL	KS	LPV	2	99.155	3	99.103	4	99.039
9K8	KINGMAN/CLYDE CESSNA FLD	KS	LP	2	99.093	3	99.084	3	99.055
AAO	COLONEL JAMES JABARA	KS	LPV	1	99.107	2	99.103	3	99.087
ADT	ATWOOD-RAWLINS COUNTY CITY-COU	KS	LPV	3	99.136	2	99.104	3	99.067
ANY	ANTHONY MUNICIPAL	KS	LPV	3	99.117	3	99.090	4	99.050
BEC	BEECH FACTORY	KS	LPV	1	99.106	2	99.103	3	99.088
CBK	SHALZ FLD	KS	LPV	2	99.142	2	99.109	3	99.069
CFV	COFFEYVILLE MUNICIPAL	KS	LPV	1	99.118	1	99.118	3	99.111
CNK	BLOSSER MUNICIPAL	KS	LP	2	99.119	2	99.111	4	99.069
DDC	DODGE CITY RGNL	KS	LPV200	2	99.129	3	99.073	4	99.029
EGT	WELLINGTON MUNICIPAL	KS	LPV200	2	99.095	3	99.094	3	99.072
EHA	ELKHART-MORTON COUNTY	KS	LPV	1	99.148	4	99.096	4	99.003
EMP	EMPORIA MUNICIPAL	KS	LPV	1	99.123	2	99.119	4	99.097
EQA	EL DORADO/CAPT JACK THOMAS MEM	KS	LPV200	1	99.108	2	99.105	3	99.091
EWK	NEWTON-CITY-COUNTY	KS	LPV	1	99.109	2	99.106	3	99.085
FOE	TOPEKA RGNL	KS	LPV	1	99.123	2	99.117	3	99.102
FSK	FORT SCOTT MUNICIPAL	KS	LPV	1	99.123	1	99.123	3	99.113
GBD	GREAT BEND MUNICIPAL	KS	LPV200	1	99.111	2	99.096	3	99.050
GCK	GARDEN CITY RGNL	KS	LPV	2	99.132	3	99.069	4	99.014
GLD	RENNER FLD /GOODLAND MUNICIPAL/	KS	LPV200	2	99.148	2	99.109	3	99.067
HLC	HILL CITY MUNICIPAL	KS	LPV	2	99.121	2	99.102	3	99.067
HQG	HUGOTON MUNICIPAL	KS	LPV	2	99.148	4	99.078	4	99.020
HRU	HERINGTON RGNL	KS	LPV	1	99.123	2	99.116	4	99.093
HUT	HUTCHINSON RGNL	KS	LPV200	1	99.105	2	99.098	3	99.064
HYS	HAYS RGNL	KS	LPV200	1	99.133	2	99.112	3	99.068
ICT	WICHITA DWIGHT D EISENHOWER NT	KS	LPV200	2	99.104	3	99.101	3	99.073
IDP	INDEPENDENCE MUNICIPAL	KS	LPV200	1	99.117	1	99.117	3	99.109
IXD	NEW CENTURY AIRCENTER	KS	LPV	1	99.123	2	99.119	2	99.088

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
K38	WASHINGTON COUNTY VETERAN'S ME	KS	LPV	2	99.119	2	99.110	5	99.095
K78	ABILENE MUNICIPAL	KS	LPV	1	99.123	2	99.115	3	99.091
K79	JETMORE MUNICIPAL	KS	LPV	2	99.127	3	99.073	4	99.033
K81	MIAMI COUNTY	KS	LPV	1	99.123	1	99.123	2	99.090
K82	SMITH CENTER MUNICIPAL	KS	LPV200	2	99.114	2	99.096	3	99.068
K88	ALLEN COUNTY	KS	LPV	1	99.123	1	99.123	4	99.106
LBL	LIBERAL MID-AMERICA RGNL	KS	LPV200	2	99.136	4	99.080	4	99.022
LQR	LARNED-PAWNEE COUNTY	KS	LPV	2	99.111	3	99.085	3	99.044
LWC	LAWRENCE RGNL	KS	LPV200	1	99.123	2	99.118	2	99.090
LYO	LYONS-RICE COUNTY MUNICIPAL	KS	LPV	1	99.106	2	99.098	3	99.053
MHK	MANHATTAN RGNL	KS	LPV200	1	99.123	2	99.116	5	99.099
MPR	MC PHERSON	KS	LPV	1	99.110	2	99.103	3	99.063
MYZ	MARYSVILLE MUNICIPAL	KS	LPV	2	99.119	2	99.110	4	99.093
NRN	NORTON MUNICIPAL	KS	LPV	2	99.120	2	99.098	3	99.068
OEL	OAKLEY MUNICIPAL	KS	LPV	2	99.145	2	99.110	3	99.068
OIN	OBERLIN MUNICIPAL	KS	LPV	2	99.119	2	99.101	3	99.068
OJC	JOHNSON COUNTY EXEC	KS	LPV	1	99.123	2	99.119	2	99.087
OWI	OTTAWA MUNICIPAL	KS	LPV	1	99.123	2	99.119	3	99.104
PHG	PHILLIPSBURG MUNICIPAL	KS	LPV	2	99.121	2	99.097	3	99.068
PPF	TRI-CITY	KS	LPV	1	99.123	1	99.123	3	99.107
PTS	ATKINSON MUNICIPAL	KS	LPV	1	99.123	1	99.123	4	99.119
PTT	PRATT RGNL	KS	LPV	3	99.119	3	99.080	4	99.035
RCP	ROOKS COUNTY RGNL	KS	LPV	2	99.123	2	99.101	3	99.067
RPB	BELLEVILLE MUNICIPAL	KS	LPV	2	99.113	2	99.109	4	99.069
RSL	RUSSELL MUNICIPAL	KS	LPV	1	99.130	2	99.113	3	99.072
SLN	SALINA RGNL	KS	LPV	1	99.123	2	99.115	3	99.074
SYF	CHEYENNE COUNTY MUNICIPAL	KS	LPV	2	99.146	2	99.108	3	99.066
TOP	PHILIP BILLARD MUNICIPAL	KS	LPV	1	99.123	2	99.117	3	99.102
TQK	SCOTT CITY MUNICIPAL	KS	LPV	2	99.154	3	99.101	4	99.042
UKL	COFFEY COUNTY	KS	LPV	1	99.123	2	99.119	4	99.101
ULS	ULYSSES	KS	LPV	3	99.159	4	99.081	4	99.016
WLD	STROTHER FLD	KS	LPV	1	99.106	1	99.106	3	99.090
0I8	CYNTHIANA-HARRISON COUNTY	KY	LP	1	99.152	1	99.152	1	99.152
18I	MC CREARY COUNTY	KY	LP	1	99.152	1	99.152	1	99.152
1M7	FULTON	KY	LPV	1	99.152	1	99.152	1	99.148
27K	GEORGETOWN-SCOTT COUNTY RGNL	KY	LPV200	1	99.152	1	99.152	1	99.152

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
2I0	MADISONVILLE RGNL	KY	LPV	1	99.152	1	99.152	1	99.148
2M0	PRINCETON-CALDWELL COUNTY	KY	LPV	1	99.152	1	99.152	1	99.148
4M7	RUSSELLVILLE-LOGAN COUNTY	KY	LPV	1	99.152	1	99.152	1	99.152
5M9	MARION-CRITTENDEN COUNTY JAMES	KY	LPV	1	99.152	1	99.152	1	99.148
6I2	LEBANON SPRINGFIELD-GEORGE HOE	KY	LPV	1	99.152	1	99.152	1	99.152
AAS	TAYLOR COUNTY	KY	LPV	1	99.152	1	99.152	1	99.152
BRY	SAMUELS FLD	KY	LPV	1	99.152	1	99.152	1	99.152
BWG	BOWLING GREEN-WARREN COUNTY RG	KY	LPV200	1	99.152	1	99.152	1	99.152
BYL	WILLIAMSBURG-WHITLEY COUNTY	KY	LPV	1	99.152	1	99.152	1	99.152
CEY	KYLE-OAKLEY FLD	KY	LPV	1	99.152	1	99.152	1	99.148
CPF	WENDELL H FORD	KY	LPV200	1	99.152	1	99.152	1	99.152
CVG	CINCINNATI/NORTHERN KENTUCKY I	KY	LPV200	1	99.152	1	99.152	1	99.152
DVK	STUART POWELL FLD	KY	LPV	1	99.152	1	99.152	1	99.152
DWU	ASHLAND RGNL	KY	LP	1	99.152	1	99.152	1	99.152
EHR	HENDERSON CITY-COUNTY	KY	LPV	1	99.152	1	99.152	2	99.147
EKQ	WAYNE COUNTY	KY	LPV	1	99.152	1	99.152	1	99.152
EKX	ADDINGTON FLD	KY	LPV	1	99.152	1	99.152	1	99.152
FFT	CAPITAL CITY	KY	LPV	1	99.152	1	99.152	1	99.152
FGX	FLEMING-MASON	KY	LPV	1	99.152	1	99.152	1	99.152
GLW	GLASGOW MUNICIPAL	KY	LPV	1	99.152	1	99.152	1	99.152
HVC	HOPKINSVILLE-CHRISTIAN COUNTY	KY	LPV	1	99.152	1	99.152	1	99.148
I93	BRECKINRIDGE COUNTY	KY	LPV	1	99.152	1	99.152	1	99.152
IOB	MOUNT STERLING/MONTGOMERY COUN	KY	LPV	1	99.152	1	99.152	1	99.152
JQD	OHIO COUNTY	KY	LPV	1	99.152	1	99.152	1	99.148
K24	RUSSELL COUNTY	KY	LPV	1	99.152	1	99.152	1	99.152
K62	GENE SNYDER	KY	LP	1	99.152	1	99.152	1	99.152
KY8	HANCOCK COUNTY/RON LEWIS FLD	KY	LPV	1	99.152	1	99.152	1	99.148
LEX	BLUE GRASS	KY	LPV	1	99.152	1	99.152	1	99.152
LOU	BOWMAN FLD	KY	LPV	1	99.152	1	99.152	1	99.152
LOZ	LONDON/CORBIN/MAGEE	KY	LPV	1	99.152	1	99.152	1	99.152
M20	LEITCHFIELD-GRAYSON COUNTY	KY	LPV	1	99.152	1	99.152	1	99.152
M21	MUHLENBERG COUNTY	KY	LP	1	99.152	1	99.152	1	99.148
M25	MAYFIELD GRAVES COUNTY	KY	LPV	1	99.152	1	99.152	1	99.148
OWB	OWENSBORO/DAVIESS COUNTY RGNL	KY	LPV200	1	99.152	1	99.152	1	99.148
PAH	BARKLEY RGNL	KY	LPV200	1	99.152	1	99.152	1	99.148
PBX	PIKE COUNTY/HATCHER FLD	KY	LPV200	1	99.152	1	99.152	1	99.152

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
RGA	CENTRAL KENTUCKY RGNL	KY	LPV	1	99.152	1	99.152	1	99.152
SDF	LOUISVILLE MUHAMMAD ALI INTL	KY	LPV200	1	99.152	1	99.152	1	99.152
SJS	BIG SANDY RGNL	KY	LPV	1	99.152	1	99.152	1	99.152
SME	LAKE CUMBERLAND RGNL	KY	LPV	1	99.152	1	99.152	1	99.152
SYM	MOREHEAD-ROWAN COUNTY CLYDE A	KY	LPV200	1	99.152	1	99.152	1	99.152
TWT	STURGIS MUNICIPAL	KY	LPV	1	99.152	1	99.152	1	99.148
TZV	TOMPKINSVILLE/MONROE COUNTY	KY	LPV	1	99.152	1	99.152	1	99.152
0R4	CONCORDIA PARISH	LA	LPV	2	99.121	2	99.108	4	99.083
0R7	THE RED RIVER	LA	LPV	1	99.153	1	99.151	2	99.136
3R4	HART	LA	LPV	2	99.132	2	99.105	3	99.088
3R7	JENNINGS	LA	LPV	2	99.117	2	99.105	3	99.060
5R8	DE QUINCY INDUSTRIAL AIRPARK	LA	LPV	2	99.119	2	99.105	3	99.062
ACP	ALLEN PARISH	LA	LPV	2	99.114	2	99.105	3	99.061
AEX	ALEXANDRIA INTL	LA	LPV200	3	99.131	2	99.105	4	99.084
APS	PORT OF SOUTH LOUISIANA EXEC R	LA	LPV	2	99.117	3	99.096	3	99.054
ARA	ACADIANA RGNL	LA	LPV200	3	99.124	2	99.105	3	99.052
BQP	MOREHOUSE MEML	LA	LPV	1	99.153	2	99.140	2	99.113
BTR	BATON ROUGE METRO` RYAN FLD	LA	LPV200	2	99.118	2	99.108	3	99.052
BXA	GEORGE R CARR MEML AIR FLD	LA	LPV	2	99.116	2	99.105	3	99.052
CWF	CHENNAULT INTL	LA	LPV200	2	99.119	2	99.105	3	99.061
DTN	SHREVEPORT DOWNTOWN	LA	LPV	2	99.151	3	99.121	3	99.096
ESF	ESLER RGNL	LA	LPV200	3	99.132	2	99.105	4	99.083
F88	JONESBORO	LA	LP	3	99.148	3	99.119	3	99.092
GAO	SOUTH LAFOURCHE LEONARD MILLER	LA	LPV200	2	99.113	2	99.072	4	99.054
HDC	HAMMOND NORTHSHORE RGNL	LA	LPV200	2	99.117	2	99.105	3	99.054
HUM	HOUMA-TERREBONNE	LA	LPV200	2	99.117	2	99.075	4	99.052
HZR	FALSE RIVER RGNL	LA	LPV	2	99.113	2	99.105	3	99.055
IER	NATCHITOCHES RGNL	LA	LPV	3	99.133	2	99.105	3	99.088
IYA	ABBEVILLE CHRIS CRUSTA MEML	LA	LPV	2	99.115	2	99.105	3	99.052
L39	LEESVILLE	LA	LPV	2	99.118	2	99.105	3	99.063
LCH	LAKE CHARLES RGNL	LA	LPV200	2	99.118	2	99.105	3	99.061
LFT	LAFAYETTE RGNL/PAUL FOURNET FL	LA	LPV200	3	99.124	2	99.105	3	99.052
M79	JOHN H HOOKS JR MEML	LA	LPV	2	99.138	2	99.126	3	99.096
MLU	MONROE RGNL	LA	LPV200	2	99.146	2	99.127	3	99.096
MSY	LOUIS ARMSTRONG NEW ORLEANS IN	LA	LPV200	2	99.117	3	99.087	3	99.055
NEW	LAKEFRONT	LA	LPV	2	99.113	2	99.073	3	99.052

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
OPL	ST LANDRY PARISH-AHART FLD	LA	LPV	3	99.124	2	99.105	3	99.057
PTN	HARRY P WILLIAMS MEML	LA	LPV200	3	99.125	2	99.079	4	99.048
REG	LOUISIANA RGNL	LA	LPV	2	99.117	3	99.104	3	99.053
RSN	RUSTON RGNL	LA	LPV	2	99.149	3	99.121	3	99.096
SHV	SHREVEPORT RGNL	LA	LPV200	2	99.151	3	99.116	3	99.096
SPH	SPRINGHILL	LA	LPV	1	99.153	1	99.151	2	99.115
TVR	VICKSBURG TALLULAH RGNL	LA	LPV200	2	99.135	2	99.127	3	99.107
UXL	SOUTHLAND FLD	LA	LPV	2	99.118	2	99.105	3	99.062
3B0	SOUTHBRIDGE MUNICIPAL	MA	LPV	2	99.098	2	99.094	4	99.069
ACK	NANTUCKET MEML	MA	LPV200	2	99.094	2	99.094	5	99.065
BAF	WESTFIELD-BARNES RGNL	MA	LPV	2	99.101	2	99.098	4	99.074
BED	LAURENCE G HANSCOM FLD	MA	LPV200	2	99.094	2	99.094	4	99.069
BOS	GENERAL EDWARD LAWRENCE LOGAN	MA	LPV200	2	99.094	2	99.094	4	99.069
BVY	BEVERLY RGNL	MA	LPV	2	99.094	2	99.094	4	99.066
EWB	NEW BEDFORD RGNL	MA	LPV200	2	99.101	2	99.098	5	99.071
GBR	WALTER J KOLADZA	MA	LP	2	99.101	2	99.101	4	99.079
GHG	MARSHFIELD MUNICIPAL - GEORGE HARLO	MA	LPV	2	99.094	2	99.094	5	99.065
HYA	CAPE COD GATEWAY	MA	LPV200	2	99.094	2	99.094	5	99.065
LWM	LAWRENCE MUNICIPAL	MA	LPV200	2	99.094	2	99.094	4	99.069
MVY	MARTHA'S VINEYARD	MA	LPV200	2	99.098	2	99.098	5	99.080
ORE	ORANGE MUNICIPAL	MA	LPV	2	99.097	2	99.094	4	99.072
ORH	WORCESTER RGNL	MA	LPV200	2	99.098	2	99.094	4	99.069
OWD	NORWOOD MEML	MA	LPV	2	99.094	2	99.094	4	99.069
PSF	PITTSFIELD MUNICIPAL	MA	LPV	2	99.101	2	99.099	4	99.073
PVC	PROVINCETOWN MUNICIPAL	MA	LPV200	2	99.094	2	99.094	5	99.064
PYM	PLYMOUTH MUNICIPAL	MA	LPV200	2	99.096	2	99.096	5	99.069
TAN	TAUNTON MUNICIPAL - KING FLD	MA	LPV	2	99.101	2	99.098	4	99.070
CJA3	MORDEN REGIONAL	MB	LPV	8	98.785	9	98.700	19	98.474
CJJ4	DELORAINE	MB	LPV	8	98.795	9	98.730	21	98.498
CJW5	RUSSELL	MB	LPV	12	98.685	12	98.618	32	98.042
CKK7	STEINBACH (SOUTH)	MB	LPV	9	98.763	11	98.649	19	98.321
CKZ7	WINKLER	MB	LPV	8	98.786	9	98.704	17	98.482
CYAV	ST. ANDREWS	MB	LPV	11	98.705	13	98.596	22	98.213
CYBR	BRANDON MUNICIPALCIPALITY	MB	LPV	10	98.720	9	98.657	21	98.402
CYFO	FLIN FLON	MB	LPV	23	98.092	32	97.766	49	96.541
CYGX	GILLAM	MB	LPV	33	97.132	51	96.503	99	94.361

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
CYIV	ISLAND LAKE	MB	LPV	21	98.125	31	97.843	74	96.301
CYQD	THE PAS	MB	LPV	19	98.226	27	97.974	45	96.784
CYTH	THOMPSON	MB	LPV200	27	97.618	41	97.052	77	95.510
CYVD	R.J. (BOB) ANDREW FIELD REGIONAL	MB	LPV	11	98.743	10	98.662	24	98.377
CYWG	JAMES ARMSTRONG RICHARDSON INTL	MB	LPV200	10	98.726	11	98.629	18	98.277
CYYQ	CHURCHILL	MB	LPV	65	95.495	69	94.755	156	90.311
CZJG	JENPEG	MB	LPV	21	98.140	34	97.711	59	96.519
2G4	GARRETT COUNTY	MD	LPV	1	99.152	1	99.152	1	99.152
2W5	MARYLAND	MD	LP	1	99.152	1	99.152	1	99.152
2W6	ST MARY'S COUNTY RGNL	MD	LPV	1	99.152	1	99.152	1	99.152
BWI	BALTIMORE/WASHINGTON INTL THUR	MD	LPV200	1	99.152	1	99.152	1	99.152
CBE	GREATER CUMBERLAND RGNL	MD	LPV	1	99.152	1	99.152	1	99.152
CGE	CAMBRIDGE-DORCHESTER RGNL	MD	LPV	1	99.152	1	99.152	1	99.152
DMW	CARROLL COUNTY RGNL/JACK B POA	MD	LPV200	1	99.152	1	99.152	2	99.150
ESN	EASTON/NEWNAM FLD	MD	LPV200	1	99.152	1	99.152	1	99.152
FDK	FREDERICK MUNICIPAL	MD	LPV	1	99.152	1	99.152	1	99.152
GAI	MONTGOMERY COUNTY AIRPARK	MD	LPV	1	99.152	1	99.152	1	99.152
HGR	HAGERSTOWN RGNL/RICHARD A HENS	MD	LPV200	1	99.152	1	99.152	2	99.149
MTN	MARTIN STATE	MD	LPV	1	99.152	1	99.152	1	99.137
OXB	OCEAN CITY MUNICIPAL	MD	LPV	1	99.152	1	99.152	2	99.133
SBY	SALISBURY-OCEAN CITY WICOMICO	MD	LPV200	1	99.152	1	99.152	3	99.148
W29	BAY BRIDGE	MD	LPV	1	99.152	1	99.152	1	99.152
1B0	DEXTER RGNL	ME	LP	2	99.037	3	99.024	12	98.795
2B7	PITTSFIELD MUNICIPAL	ME	LPV	2	99.042	3	99.031	10	98.835
3B1	GREENVILLE MUNICIPAL	ME	LPV	2	99.037	3	99.023	13	98.722
59B	NEWTON FLD	ME	LP	2	99.041	3	99.023	13	98.718
81B	OXFORD COUNTY RGNL	ME	LP	2	99.079	2	99.079	9	98.974
AUG	AUGUSTA STATE	ME	LPV200	2	99.079	3	99.078	9	98.927
BGR	BANGOR INTL	ME	LPV200	2	99.037	3	99.025	10	98.796
BHB	HANCOCK COUNTY/BAR HARBOR	ME	LPV200	2	99.040	3	99.031	9	98.805
BST	BELFAST MUNICIPAL	ME	LPV	2	99.066	3	99.057	9	98.836
BXM	BRUNSWICK EXEC	ME	LPV200	2	99.079	2	99.079	11	98.983
CAR	CARIBOU MUNICIPAL	ME	LPV	8	98.903	10	98.859	21	98.280
EPM	EASTPORT MUNICIPAL	ME	LPV	3	99.030	4	99.005	18	98.678
FVE	NORTHERN AROOSTOOK RGNL	ME	LPV200	10	98.843	14	98.779	21	98.206
HUL	HOULTON INTL	ME	LP	5	99.006	7	98.956	21	98.432

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
IZG	EASTERN SLOPES RGNL	ME	LPV	2	99.087	2	99.087	9	99.011
LEW	AUBURN/LEWISTON MUNICIPAL	ME	LPV200	2	99.079	2	99.079	10	98.985
LRG	LINCOLN RGNL	ME	LP	2	99.033	3	99.018	13	98.712
MLT	MILLINOCKET MUNICIPAL	ME	LPV	2	99.033	3	99.012	17	98.660
OWK	CENTRAL MAINE /NORRIDGEWOCK	ME	LPV	3	99.071	4	99.055	10	98.881
PQI	PRESQUE ISLE INTL	ME	LPV200	7	98.938	9	98.877	20	98.316
PWM	PORTLAND INTL JETPORT	ME	LPV200	2	99.087	2	99.087	8	99.002
RKD	KNOX COUNTY RGNL	ME	LPV200	2	99.077	2	99.065	9	98.917
SFM	SANFORD SEACOAST RGNL	ME	LPV200	2	99.091	2	99.091	6	99.024
WVL	WATERVILLE ROBERT LAFLEUR	ME	LPV200	3	99.076	4	99.058	10	98.896
48D	CLARE MUNICIPAL	MI	LP	3	99.103	4	99.082	7	98.982
4D0	ABRAMS MUNICIPAL	MI	LP	1	99.126	3	99.116	5	99.009
6Y1	BOIS BLANC ISLAND	MI	LP	5	99.006	6	98.949	14	98.815
77G	MARLETTE TOWNSHIP	MI	LPV	2	99.125	3	99.110	6	99.005
9D9	HASTINGS	MI	LPV	1	99.126	3	99.106	4	99.011
ACB	ANTRIM COUNTY	MI	LPV	4	99.038	6	99.006	11	98.906
ADG	LENAWEE COUNTY	MI	LPV	1	99.152	1	99.152	5	99.084
AMN	GRATIOT COMMUNICIPALTY	MI	LPV	1	99.126	3	99.085	5	98.992
ANJ	SAULT STE MARIE MUNICIPAL/SANDERSON	MI	LPV	5	98.959	5	98.889	20	98.660
APN	ALPENA COUNTY RGNL	MI	LPV	4	99.029	6	99.018	9	98.902
ARB	ANN ARBOR MUNICIPAL	MI	LPV	1	99.137	1	99.137	6	99.074
AZO	KALAMAZOO/BATTLE CREEK INTL	MI	LPV200	1	99.126	2	99.118	4	99.014
BAX	HURON COUNTY MEML	MI	LPV	2	99.120	4	99.098	5	98.968
BEH	SOUTHWEST MICHIGAN RGNL	MI	LPV200	1	99.139	3	99.127	4	99.016
BIV	WEST MICHIGAN RGNL	MI	LPV200	1	99.126	3	99.098	4	99.006
BTL	BATTLE CREEK EXEC AT KELLOGG F	MI	LPV200	1	99.126	2	99.118	4	99.012
C04	OCEANA COUNTY	MI	LPV	2	99.091	4	99.069	6	98.982
C20	ANDREWS UNIVERSITY AIRPARK	MI	LP	1	99.148	2	99.133	3	99.019
CAD	WEXFORD COUNTY	MI	LPV200	2	99.064	4	99.044	9	98.950
CFS	TUSCOLA AREA	MI	LP	2	99.125	3	99.099	6	99.004
CIU	CHIPPEWA COUNTY INTL	MI	LPV	5	98.966	5	98.891	20	98.728
CMX	HOUGHTON COUNTY MEML	MI	LPV	7	98.891	11	98.791	22	98.503
CVX	CHARLEVOIX MUNICIPAL	MI	LPV	5	99.032	8	98.991	13	98.882
D95	DUPONT-LAPEER	MI	LP	1	99.126	3	99.117	5	99.010
DET	COLEMAN A YOUNG MUNICIPAL	MI	LPV	1	99.128	2	99.120	6	99.081
DTW	DETROIT METRO WAYNE COUNTY	MI	LPV200	2	99.150	2	99.130	6	99.081

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
ERY	LUCE COUNTY	MI	LPV	5	98.975	7	98.896	18	98.647
ESC	DELTA COUNTY	MI	LPV200	4	98.990	7	98.917	17	98.780
FFX	FREMONT MUNICIPAL	MI	LPV	2	99.102	2	99.081	5	98.987
FNT	BISHOP INTL	MI	LPV200	1	99.126	4	99.115	5	99.011
GDW	GLADWIN ZETTEL MEML	MI	LP	3	99.101	4	99.077	8	98.976
GLR	GAYLORD RGNL	MI	LPV	4	99.033	6	99.022	10	98.893
GRR	GERALD R FORD INTL	MI	LPV200	1	99.126	2	99.092	4	99.001
HTL	ROSCOMMON COUNTY - BLODGETT ME	MI	LP	2	99.068	5	99.059	10	98.947
HYX	SAGINAW COUNTY H W BROWNE	MI	LPV200	1	99.126	3	99.089	6	98.992
IKW	JACK BARSTOW	MI	LPV	1	99.126	4	99.078	6	98.987
IMT	FORD	MI	LPV	6	98.981	9	98.920	15	98.755
IRS	KIRSCH MUNICIPAL	MI	LPV	1	99.139	1	99.139	7	99.071
ISQ	SCHOOLCRAFT COUNTY	MI	LP	4	98.982	7	98.911	18	98.746
IWD	GOGEBIC/IRON COUNTY	MI	LPV200	5	98.925	8	98.848	16	98.620
JXN	JACKSON COUNTY-REYNOLDS FLD	MI	LPV200	1	99.126	1	99.126	8	99.070
JYM	HILLSDALE MUNICIPAL	MI	LPV	1	99.140	1	99.140	6	99.077
LAN	CAPITAL REGION INTL	MI	LPV200	1	99.126	3	99.116	5	99.009
LDM	MASON COUNTY	MI	LPV	2	99.062	4	99.029	8	98.946
MBL	MANISTEE COUNTY/BLACKER	MI	LPV200	2	99.050	4	99.027	9	98.916
MBS	MBS INTL	MI	LPV200	1	99.126	4	99.079	6	98.990
MCD	MACKINAC ISLAND	MI	LPV	4	98.987	6	98.921	16	98.789
MKG	MUSKEGON COUNTY	MI	LPV200	2	99.102	2	99.081	5	98.987
MNM	MENOMINEE RGNL	MI	LPV200	2	99.013	6	98.965	11	98.845
MOP	MOUNT PLEASANT MUNICIPAL	MI	LPV	2	99.106	4	99.083	6	98.988
N98	BOYNE CITY MUNICIPAL	MI	LP	4	99.034	6	99.001	11	98.896
OEB	BRANCH COUNTY MEML	MI	LPV	1	99.137	1	99.137	6	99.079
OGM	ONTONAGON COUNTY - SCHUSTER FL	MI	LPV	6	98.899	10	98.807	17	98.570
OSC	OSCODA-WURTSMITH	MI	LPV200	4	99.094	5	99.074	9	98.951
OZW	LIVINGSTON COUNTY SPENCER J HA	MI	LPV200	1	99.126	3	99.119	6	99.025
PHN	ST CLAIR COUNTY INTL	MI	LPV200	2	99.120	2	99.116	6	99.053
PLN	PELLSTON RGNL/EMMET COUNTY	MI	LPV200	5	99.023	8	98.973	12	98.843
PTK	OAKLAND COUNTY INTL	MI	LPV200	1	99.126	2	99.118	7	99.071
RMY	BROOKS FLD	MI	LP	1	99.126	2	99.119	7	99.048
RNP	OWOSSO COMMUNICIPALTY	MI	LPV	1	99.126	3	99.089	5	98.998
RQB	ROBEN-HOOD	MI	LPV200	2	99.089	3	99.081	6	98.991
SAW	SAWYER INTL	MI	LPV200	6	98.942	7	98.868	16	98.637

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
SLH	CHEBOYGAN COUNTY	MI	LPV	6	99.020	7	98.971	13	98.834
TEW	MASON JEWETT FLD	MI	LP	1	99.126	2	99.117	6	99.023
TTF	CUSTER	MI	LPV	1	99.152	1	99.152	4	99.084
TVC	CHERRY CAPITAL	MI	LPV200	2	99.047	4	99.007	10	98.912
Y31	WEST BRANCH COMMUNICIPALTY	MI	LP	3	99.079	4	99.074	10	98.955
Y70	IONIA COUNTY	MI	LPV	1	99.126	2	99.093	5	98.998
YIP	WILLOW RUN	MI	LPV200	1	99.137	2	99.131	6	99.075
16D	PERHAM MUNICIPAL	MN	LPV	4	98.903	11	98.797	14	98.622
3N8	MAHNOMEN COUNTY	MN	LPV	5	98.893	12	98.723	12	98.563
ACQ	WASECA MUNICIPAL	MN	LPV	3	99.026	3	98.980	5	98.911
ADC	WADENA MUNICIPAL	MN	LPV	4	98.924	11	98.857	14	98.657
AEL	ALBERT LEA MUNICIPAL	MN	LPV	2	99.033	4	98.996	5	98.920
AIT	AITKIN MUNICIPAL/STEVE KURTZ FLD	MN	LPV	3	98.921	9	98.853	16	98.662
ANE	ANOKA COUNTY-BLAINE (JANES FLD	MN	LPV	3	98.979	4	98.940	8	98.874
AUM	AUSTIN MUNICIPAL	MN	LPV200	2	99.033	3	98.983	5	98.920
AXN	CHANDLER FLD	MN	LPV	3	98.949	7	98.914	12	98.786
BBB	BENSON MUNICIPAL	MN	LPV	3	98.967	7	98.933	8	98.837
BDE	BAUDETTE INTL	MN	LPV	8	98.805	11	98.640	18	98.341
BDH	WILLMAR MUNICIPAL/JOHN L RICE FLD	MN	LPV200	3	98.979	6	98.941	9	98.875
BJI	BEMIDJI RGNL	MN	LPV200	5	98.856	13	98.716	14	98.539
BRD	BRAINERD LAKES RGNL	MN	LPV200	3	98.925	9	98.871	16	98.676
CBG	CAMBRIDGE MUNICIPAL	MN	LPV	3	98.958	4	98.938	12	98.831
CFE	BUFFALO MUNICIPAL	MN	LPV	3	98.977	4	98.945	8	98.888
CKC	GRAND MARAIS/COOK COUNTY	MN	LPV	6	98.837	13	98.729	25	98.465
CKN	CROOKSTON MUNICIPAL/KIRKWOOD FLD	MN	LPV	6	98.866	11	98.691	13	98.547
CNB	MYERS FLD	MN	LPV	2	99.004	5	98.974	6	98.856
COQ	CLOQUET/CARLTON COUNTY	MN	LPV	5	98.910	10	98.831	18	98.599
CQM	COOK MUNICIPAL	MN	LP	6	98.820	11	98.719	18	98.439
D39	SAUK CENTRE MUNICIPAL	MN	LPV	3	98.951	6	98.923	10	98.837
D42	SPRINGFIELD MUNICIPAL	MN	LP	3	99.030	4	98.976	6	98.912
DLH	DULUTH INTL	MN	LPV200	6	98.904	10	98.817	18	98.570
DTL	DETROIT LAKES/WETHING FLD	MN	LPV	4	98.899	11	98.782	13	98.590
DVP	SLAYTON MUNICIPAL	MN	LP	2	99.034	4	98.995	6	98.862
DXX	LAC QUI PARLE COUNTY	MN	LPV200	2	98.986	7	98.948	7	98.848
ELO	ELY MUNICIPAL	MN	LPV200	6	98.819	11	98.732	22	98.470
ETH	WHEATON MUNICIPAL	MN	LP	3	98.953	6	98.904	10	98.819

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
EVM	EVELETH-VIRGINIA MUNICIPAL	MN	LPV	6	98.855	11	98.760	21	98.514
FBL	FARIBAULT MUNICIPAL-LIZ WALL STROHF	MN	LPV	3	99.024	4	98.959	5	98.909
FCM	FLYING CLOUD	MN	LPV200	3	98.996	4	98.949	7	98.894
FFM	FERGUS FALLS MUNICIPAL/EINAR MICKEL	MN	LPV200	3	98.945	8	98.886	13	98.702
FKA	FILLMORE COUNTY	MN	LPV	2	99.031	3	98.968	6	98.933
FOZ	BIGFORK MUNICIPAL	MN	LP	7	98.854	12	98.715	18	98.451
FRM	FAIRMONT MUNICIPAL	MN	LPV	2	99.036	4	98.995	5	98.920
FSE	FOSSTON MUNICIPAL-ANDERSON FLD	MN	LP	5	98.857	11	98.688	13	98.548
GHW	GLENWOOD MUNICIPAL	MN	LPV	3	98.951	7	98.921	9	98.818
GPZ	GRAND RAPIDS/ITASCA COUNTY-GOR	MN	LPV200	5	98.873	11	98.765	19	98.538
GYL	GLENCOE MUNICIPAL	MN	LPV	2	99.001	4	98.956	7	98.905
HCD	HUTCHINSON MUNICIPAL/BUTLER FLD	MN	LPV	2	99.000	4	98.951	7	98.902
HCO	HALLOCK MUNICIPAL	MN	LPV	11	98.816	11	98.662	19	98.459
HIB	RANGE RGNL	MN	LPV200	6	98.859	11	98.758	21	98.524
INL	FALLS INTL/EINARSON FLD	MN	LPV	8	98.797	12	98.676	22	98.333
JKJ	MOORHEAD MUNICIPAL	MN	LPV	4	98.905	9	98.784	13	98.606
JMR	MORA MUNICIPAL	MN	LPV	3	98.940	5	98.922	14	98.776
JYG	ST JAMES MUNICIPAL	MN	LPV	2	99.032	4	98.989	5	98.915
LJF	LITCHFIELD MUNICIPAL	MN	LPV	3	98.981	5	98.947	8	98.892
LVN	AIRLAKE	MN	LPV200	3	99.003	4	98.950	7	98.895
LXL	LITTLE FALLS/MORRISON COUNTY-L	MN	LPV	3	98.938	5	98.919	17	98.759
LYV	QUENTIN AANENSON FLD	MN	LPV200	2	99.040	4	99.005	6	98.865
MJQ	JACKSON MUNICIPAL	MN	LPV	2	99.036	4	99.002	5	98.913
MKT	MANKATO RGNL	MN	LPV200	3	99.025	4	98.976	6	98.913
MML	SOUTHWEST MINNESOTA RGNL MARSH	MN	LPV200	2	99.008	5	98.974	6	98.858
MOX	MORRIS MUNICIPAL/CHARLIE SCHMIDT FL	MN	LPV	3	98.959	7	98.921	9	98.832
MSP	MINNEAPOLIS-ST PAUL INTL/WOLD-	MN	LPV200	3	98.994	4	98.949	7	98.890
MVE	MONTEVIDEO-CHIPPEWA COUNTY	MN	LPV	2	98.985	6	98.944	7	98.849
MWM	WINDOM MUNICIPAL	MN	LPV	2	99.034	4	98.990	6	98.916
MZH	MOOSE LAKE CARLTON COUNTY	MN	LPV	3	98.922	8	98.865	19	98.633
ONA	WINONA MUNICIPAL-MAX CONRAD FLD	MN	LPV	3	99.024	3	98.967	8	98.907
ORB	ORR RGNL	MN	LP	6	98.818	12	98.708	20	98.416
OTG	WORTHINGTON MUNICIPAL	MN	LPV200	2	99.038	4	99.002	6	98.905
OWA	OWATONNA DEGNER RGNL	MN	LPV200	3	99.025	4	98.976	5	98.910
PEX	PAYNESVILLE MUNICIPAL	MN	LPV200	3	98.971	5	98.941	9	98.875
PKD	PARK RAPIDS MUNICIPAL/KONSHOK FLD	MN	LPV200	4	98.899	12	98.771	12	98.575

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
PQN	PIPESTONE MUNICIPAL	MN	LPV200	2	99.035	4	99.001	6	98.864
RGK	RED WING RGNL	MN	LPV200	3	98.997	4	98.951	7	98.891
ROS	RUSH CITY RGNL	MN	LPV	4	98.955	4	98.924	12	98.820
ROX	ROSEAU MUNICIPAL/RUDY BILLBERG FLD	MN	LPV	11	98.816	11	98.647	21	98.351
RRT	WARROAD INTL MEML	MN	LPV200	10	98.793	11	98.644	20	98.326
RST	ROCHESTER INTL	MN	LPV200	2	99.029	3	98.964	6	98.911
RWF	REDWOOD FALLS MUNICIPAL	MN	LPV	2	99.004	4	98.970	6	98.896
SAZ	STAPLES MUNICIPAL	MN	LPV	3	98.927	10	98.872	16	98.679
SBU	BLUE EARTH MUNICIPAL	MN	LPV	2	99.035	4	98.999	5	98.921
SGS	SOUTH ST PAUL MUNICIPAL-RICHARD E F	MN	LPV	3	98.995	4	98.949	7	98.890
STC	ST CLOUD RGNL	MN	LPV200	3	98.958	5	98.938	10	98.844
STP	ST PAUL DOWNTOWN HOLMAN FLD	MN	LPV	3	98.983	4	98.947	7	98.888
TOB	DODGE CENTER	MN	LPV	3	99.029	3	98.964	5	98.912
TVF	THIEF RIVER FALLS RGNL	MN	LPV	8	98.850	11	98.676	15	98.514
TWM	RICHARD B HELGESON	MN	LPV	5	98.889	9	98.798	18	98.545
ULM	NEW ULM MUNICIPAL	MN	LPV200	2	99.008	4	98.969	6	98.911
VVV	ORTONVILLE MUNICIPAL-MARTINSON FLD	MN	LP	3	98.973	7	98.927	8	98.841
Y49	WALKER MUNICIPAL	MN	LP	4	98.890	12	98.748	14	98.565
Y63	ELBOW LAKE MUNICIPAL - PRIDE OF THE	MN	LPV	3	98.949	6	98.897	11	98.749
03D	MEMPHIS MEML	MO	LPV	1	99.117	2	99.107	3	99.049
1H0	CREVE COEUR	MO	LPV	1	99.149	1	99.148	2	99.119
1MO	MOUNTAIN GROVE MEML	MO	LP	1	99.152	1	99.148	2	99.122
2H2	JERRY SUMNERS SR AURORA MUNICIPAL	MO	LP	1	99.133	1	99.133	1	99.123
6M6	LEWIS COUNTY RGNL	MO	LPV	1	99.123	1	99.123	3	99.087
8WC	WASHINGTON COUNTY	MO	LPV	1	99.152	1	99.148	2	99.137
94K	CASSVILLE MUNICIPAL	MO	LPV	1	99.136	1	99.136	1	99.123
AIZ	LEE C FINE MEML	MO	LPV	1	99.124	1	99.124	2	99.109
BBG	BRANSON	MO	LPV200	1	99.155	1	99.155	1	99.125
BUM	BUTLER MEML	MO	LPV	1	99.123	1	99.123	2	99.092
CGI	CAPE GIRARDEAU RGNL	MO	LPV200	1	99.152	1	99.148	1	99.148
CHT	CHILLICOTHE MUNICIPAL	MO	LPV	1	99.123	1	99.123	2	99.086
COU	COLUMBIA RGNL	MO	LPV200	1	99.123	1	99.123	2	99.108
DMO	SEDALIA RGNL	MO	LPV	1	99.123	1	99.123	2	99.087
DXE	DEXTER MUNICIPAL	MO	LPV	1	99.152	1	99.152	1	99.148
EIW	COUNTY MEML	MO	LPV	1	99.152	1	99.152	1	99.148
EOS	NEOSHO HUGH ROBINSON	MO	LPV	1	99.133	1	99.133	1	99.118

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
EVU	NORTHWEST MISSOURI RGNL	MO	LPV	1	99.115	3	99.088	2	99.060
EZZ	CAMERON MEML	MO	LPV	1	99.123	2	99.119	2	99.083
FAM	FARMINGTON RGNL	MO	LPV	1	99.152	1	99.148	2	99.139
FTT	ELTON HENSLEY MEML	MO	LPV	1	99.123	1	99.123	2	99.108
FWB	BRANSON WEST MUNICIPAL - EMERSON FL	MO	LPV200	1	99.139	1	99.139	1	99.125
FYG	WASHINGTON RGNL	MO	LPV	1	99.152	1	99.148	2	99.111
GLY	CLINTON RGNL	MO	LPV	1	99.123	1	99.123	2	99.093
GPH	MIDWEST NTL AIR CENTER	MO	LPV	1	99.123	2	99.119	2	99.084
H19	BOWLING GREEN MUNICIPAL	MO	LPV	1	99.123	1	99.123	2	99.099
H79	ELDON MODEL AIRPARK	MO	LP	1	99.123	1	99.123	2	99.108
H88	A PAUL VANCE FREDERICKTOWN RGN	MO	LPV	1	99.152	1	99.148	2	99.143
HAE	HANNIBAL RGNL	MO	LPV	1	99.123	1	99.123	2	99.098
HFJ	MONETT RGNL	MO	LPV	1	99.133	1	99.133	1	99.123
HIG	HIGGINSVILLE INDUSTRIAL MUNICIPAL	MO	LPV	1	99.123	1	99.123	2	99.085
IRK	KIRKSVILLE RGNL	MO	LPV200	1	99.123	2	99.115	3	99.084
JEF	JEFFERSON CITY MEML	MO	LPV	1	99.123	1	99.123	2	99.108
JLN	JOPLIN RGNL	MO	LPV	1	99.128	1	99.128	2	99.122
K15	GRAND GLAIZE-OSAGE BEACH	MO	LP	1	99.123	1	99.123	2	99.110
K57	GOULD PETERSON MUNICIPAL	MO	LPV	3	99.110	3	99.085	2	99.062
K89	MACON-FOWER MEML	MO	LPV	1	99.123	1	99.123	2	99.088
LLU	LAMAR MUNICIPAL	MO	LPV	1	99.124	1	99.124	3	99.118
LRY	LAWRENCE SMITH MEML	MO	LPV	1	99.123	1	99.123	2	99.088
LXT	LEE'S SUMMIT MUNICIPAL	MO	LPV	1	99.123	1	99.123	2	99.086
M05	CARUTHERSVILLE MEML	MO	LPV	1	99.152	1	99.152	1	99.149
M12	STEELE MUNICIPAL	MO	LPV	1	99.152	1	99.152	1	99.152
M17	BOLIVAR MUNICIPAL	MO	LPV	1	99.125	1	99.125	2	99.117
M48	HOUSTON MEML	MO	LPV	1	99.152	1	99.148	2	99.117
MAW	MALDEN RGNL	MO	LPV	1	99.152	1	99.152	1	99.148
MBY	OMAR N BRADLEY	MO	LPV	1	99.123	1	99.123	2	99.088
MCI	KANSAS CITY INTL	MO	LPV200	1	99.123	2	99.119	2	99.085
MHL	MARSHALL MEML MUNICIPAL	MO	LPV	1	99.123	1	99.123	2	99.086
MKC	CHARLES B WHEELER DOWNTOWN	MO	LPV	1	99.123	2	99.119	2	99.085
MNF	MOUNTAIN VIEW	MO	LP	1	99.152	1	99.148	1	99.141
MO3	STOCKTON MUNICIPAL	MO	LP	1	99.124	1	99.124	2	99.118
MO8	NORTH CENTRAL MISSOURI RGNL	MO	LPV	1	99.123	2	99.122	2	99.087
MYJ	MEXICO MEML	MO	LPV	1	99.123	1	99.123	2	99.098

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
NVD	NEVADA MUNICIPAL	MO	LPV200	1	99.123	1	99.123	2	99.101
OZS	CAMDENTON MEML-LAKE RGNL	MO	LPV	1	99.125	1	99.125	2	99.111
PCD	PERRYVILLE RGNL	MO	LPV	1	99.152	1	99.148	2	99.143
PLK	M GRAHAM CLARK DOWNTOWN	MO	LPV200	1	99.155	1	99.152	1	99.125
POF	POPLAR BLUFF RGNL BUSINESS	MO	LPV	1	99.152	1	99.152	1	99.148
RAW	WARSAW MUNICIPAL	MO	LPV200	1	99.123	1	99.123	2	99.097
RCM	SKYHAVEN	MO	LPV	1	99.123	1	99.123	2	99.085
SGF	SPRINGFIELD-BRANSON NTL	MO	LPV	1	99.131	1	99.131	2	99.120
SIK	SIKESTON MEML MUNICIPAL	MO	LPV	1	99.152	1	99.152	1	99.148
STJ	ROSECRANS MEML	MO	LPV200	1	99.122	2	99.116	3	99.082
STL	ST LOUIS LAMBERT INTL	MO	LPV200	1	99.148	1	99.148	2	99.122
SUS	SPIRIT OF ST LOUIS	MO	LPV200	1	99.150	1	99.148	2	99.118
TBN	WAYNESVILLE-ST ROBERT RGNL FOR	MO	LPV	1	99.131	1	99.131	2	99.111
TKX	KENNETT MEML	MO	LPV	1	99.152	1	99.152	1	99.148
TRX	TRENTON MUNICIPAL	MO	LPV	1	99.115	3	99.105	3	99.079
UBX	CUBA MUNICIPAL	MO	LPV	1	99.152	1	99.148	2	99.108
UNO	WEST PLAINS RGNL	MO	LPV	1	99.152	1	99.148	1	99.130
UUV	SULLIVAN RGNL	MO	LPV	1	99.152	1	99.148	2	99.113
VER	JESSE VIERTEL MEML	MO	LPV	1	99.123	1	99.123	2	99.088
VIH	ROLLA NTL	MO	LPV	1	99.128	1	99.128	2	99.108
0R0	COLUMBIA/MARION COUNTY	MS	LPV	2	99.130	2	99.119	3	99.056
17M	MAGEE MUNICIPAL	MS	LP	2	99.131	2	99.122	4	99.071
5A4	OKOLONA MUNICIPAL/RICHARD STOVALL F	MS	LPV	2	99.176	2	99.170	2	99.145
5A6	WINONA-MONTGOMERY COUNTY	MS	LP	2	99.174	2	99.138	2	99.134
87I	YAZOO COUNTY	MS	LPV	2	99.134	2	99.134	2	99.113
8M1	BOONEVILLE/BALDWYN	MS	LPV	1	99.178	1	99.173	1	99.170
CKM	FLETCHER FLD	MS	LPV	1	99.181	1	99.167	1	99.154
CRX	ROSCOE TURNER	MS	LPV200	1	99.173	1	99.173	1	99.161
GLH	GREENVILLE MID-DELTA	MS	LPV200	1	99.152	1	99.152	1	99.145
GNF	GRENADA MUNICIPAL	MS	LPV	1	99.181	1	99.155	1	99.141
GPT	GULFPORT-BILOXI INTL	MS	LPV200	2	99.113	2	99.069	3	99.054
GTR	GOLDEN TRIANGLE RGNL	MS	LPV200	2	99.166	2	99.131	2	99.127
GWO	GREENWOOD-LEFLORE	MS	LPV	3	99.160	2	99.138	2	99.135
HBG	HATTIESBURG BOBBY L CHAIN MUNICIPAL	MS	LPV200	2	99.129	2	99.118	3	99.055
HEZ	HARDY-ANDERS FLD/NATCHEZ-ADAMS	MS	LPV200	2	99.131	2	99.120	4	99.074
HKS	HAWKINS FLD	MS	LPV	2	99.134	2	99.127	4	99.089

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
HSA	STENNIS INTL	MS	LPV200	2	99.114	2	99.070	3	99.053
IDL	INDIANOLA MUNICIPAL	MS	LPV	1	99.151	1	99.151	1	99.145
JAN	JACKSON-MEDGAR WILEY EVERS INT	MS	LPV200	2	99.134	2	99.126	4	99.088
JVW	JOHN BELL WILLIAMS	MS	LPV200	2	99.134	2	99.126	4	99.088
LMS	LOUISVILLE/WINSTON COUNTY	MS	LPV	2	99.162	2	99.127	2	99.123
LUL	HESLER-NOBLE FLD	MS	LPV	2	99.130	2	99.120	3	99.058
M11	COPIAH COUNTY	MS	LPV	1	99.153	1	99.151	2	99.140
M40	MONROE COUNTY	MS	LPV	2	99.165	2	99.159	2	99.131
M41	HOLLY SPRINGS-MARSHALL COUNTY	MS	LPV	1	99.181	1	99.173	1	99.166
M43	PRENTISS-JEFFERSON DAVIS COUNT	MS	LPV	2	99.131	2	99.120	4	99.074
MBO	BRUCE CAMPBELL FLD	MS	LPV	2	99.134	2	99.128	4	99.091
MCB	MC COMB/PIKE COUNTY/JOHN E LEW	MS	LPV200	2	99.119	2	99.108	3	99.058
MEI	KEY FLD	MS	LPV200	2	99.131	2	99.120	3	99.084
MJD	PICAYUNE MUNICIPAL	MS	LPV	2	99.117	3	99.104	3	99.053
MMS	SELFS	MS	LPV	1	99.181	1	99.167	1	99.152
MPE	PHILADELPHIA MUNICIPAL	MS	LPV	3	99.148	2	99.126	2	99.109
OLV	OLIVE BRANCH/TAYLOR FLD	MS	LPV200	1	99.181	1	99.173	1	99.159
PIB	HATTIESBURG/LAUREL RGNL	MS	LPV200	2	99.130	2	99.119	3	99.058
PMU	PANOLA COUNTY	MS	LPV	1	99.181	1	99.173	1	99.156
PQL	TRENT LOTT INTL	MS	LPV200	2	99.112	2	99.071	3	99.055
RNV	CLEVELAND MUNICIPAL	MS	LPV	1	99.152	1	99.152	1	99.145
STF	GEORGE M BRYAN	MS	LPV200	2	99.165	2	99.130	2	99.126
TUP	TUPELO RGNL	MS	LPV200	1	99.180	1	99.173	1	99.155
UBS	COLUMBUS-LOWNDES COUNTY	MS	LPV	2	99.165	2	99.132	2	99.126
UOX	UNIVERSITY-OXFORD	MS	LPV	1	99.181	1	99.173	1	99.156
UTA	TUNICA MUNICIPAL	MS	LPV200	1	99.181	1	99.173	1	99.163
VKS	VICKSBURG MUNICIPAL	MS	LP	2	99.135	2	99.125	4	99.100
00U	BIG HORN COUNTY	MT	LPV200	2	99.018	5	98.946	10	98.804
1S3	TILLITT FLD	MT	LPV	5	98.973	6	98.864	10	98.688
4U6	CIRCLE TOWN COUNTY	MT	LPV	6	98.864	8	98.790	11	98.591
6S0	BIG TIMBER	MT	LPV	2	99.044	4	98.979	10	98.761
6S8	LAUREL MUNICIPAL	MT	LPV	4	99.010	6	98.924	10	98.711
7S0	RONAN	MT	LPV	12	98.865	13	98.706	15	98.448
7S1	TWIN BRIDGES	MT	LPV	2	99.087	6	98.958	8	98.819
BHK	BAKER MUNICIPAL	MT	LPV	5	98.937	6	98.870	10	98.700
BIL	BILLINGS LOGAN INTL	MT	LPV200	3	99.001	5	98.910	10	98.705

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
BTM	BERT MOONEY	MT	LPV	3	99.055	8	98.913	12	98.700
BZN	BOZEMAN YELLOWSTONE INTL	MT	LPV	3	99.019	6	98.927	12	98.729
CII	CHOTEAU	MT	LPV200	9	98.876	10	98.718	14	98.525
CTB	CUT BANK INTL	MT	LPV200	12	98.808	12	98.625	17	98.367
DLN	DILLON	MT	LPV	3	99.059	6	98.928	9	98.807
EKS	ENNIS BIG SKY	MT	LPV	3	99.059	6	98.946	10	98.816
GDV	DAWSON COMMUNICIPALTY	MT	LPV	6	98.871	9	98.814	11	98.617
GGW	WOKAL FLD/GLASGOW-VALLEY COUNT	MT	LPV200	6	98.849	8	98.743	14	98.473
GPI	GLACIER PARK INTL	MT	LPV	10	98.793	12	98.641	16	98.372
GTF	GREAT FALLS INTL	MT	LPV200	9	98.911	10	98.701	14	98.497
HLN	HELENA RGNL	MT	LPV	7	98.999	9	98.847	9	98.558
HRF	RAVALLI COUNTY	MT	LPV	3	99.082	9	98.929	11	98.683
HVR	HAVRE CITY-COUNTY	MT	LPV	9	98.832	13	98.714	15	98.433
HWQ	WHEATLAND COUNTY AT HARLOWTON	MT	LPV	4	99.016	7	98.930	8	98.677
LVM	MISSION FLD	MT	LP	3	99.020	6	98.942	12	98.742
LWT	LEWISTOWN MUNICIPAL	MT	LPV200	5	98.941	10	98.814	10	98.579
M75	MALTA	MT	LP	8	98.850	9	98.710	16	98.491
MLS	FRANK WILEY FLD	MT	LPV	5	98.937	7	98.865	11	98.697
MSO	MISSOULA MONTANA	MT	LPV200	9	98.965	12	98.778	13	98.540
OLF	L M CLAYTON	MT	LPV200	6	98.853	8	98.760	13	98.511
PO1	POPLAR MUNICIPAL	MT	LPV200	6	98.853	9	98.758	13	98.514
PWD	SHER-WOOD	MT	LPV200	8	98.835	11	98.740	17	98.434
RPX	ROUNDUP	MT	LPV	4	98.979	7	98.888	10	98.608
RVF	RUBY VALLEY FLD	MT	LPV	2	99.087	6	98.958	8	98.819
S01	CONRAD	MT	LPV	9	98.864	11	98.716	14	98.492
SBX	SHELBY	MT	LPV	12	98.808	12	98.632	16	98.372
SDY	SIDNEY-RICHLAND RGNL	MT	LPV	6	98.860	8	98.797	14	98.578
WYS	YELLOWSTONE	MT	LPV200	3	99.062	5	98.959	6	98.863
CCE3	JUNIPER	NB	LP	8	98.910	10	98.860	22	98.292
CCN2	GRAND MANAN	NB	LPV	3	99.030	4	99.003	18	98.702
CCR3	FLORENCEVILLE	NB	LPV	5	98.965	9	98.902	19	98.351
CDJ4	CLEARWATER	NB	LPV	9	98.875	12	98.838	21	98.221
CYCH	MIRAMICHI	NB	LPV	11	98.782	13	98.674	28	98.081
CYCL	CHARLO	NB	LPV	14	98.697	15	98.567	29	97.868
CYFC	FREDERICTON INTL	NB	LPV	4	98.974	6	98.942	20	98.426
CYQM	GREATER MONCTON ROMEO LEBLANC INTL	NB	LPV200	8	98.870	11	98.807	24	98.186

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
CYSJ	SAINT JOHN	NB	LPV	4	98.977	6	98.941	22	98.492
CYSL	ST. LEONARD	NB	LPV	10	98.857	14	98.797	23	98.180
CZBF	BATHURST	NB	LPV	13	98.715	14	98.581	31	97.935
43A	MONTGOMERY COUNTY	NC	LP	1	99.163	1	99.163	2	99.101
7W6	HYDE COUNTY	NC	LP	1	99.152	1	99.152	1	99.152
ACZ	HENDERSON FLD	NC	LPV	1	99.166	2	99.160	2	99.091
AFP	ANSON COUNTY/JEFF CLOUD FLD	NC	LPV	1	99.166	1	99.166	2	99.106
AKH	GASTONIA MUNICIPAL	NC	LPV	1	99.166	1	99.166	2	99.102
ASJ	TRI-COUNTY AT HENRY JOYNER FIE	NC	LPV	1	99.152	1	99.152	3	99.121
AVL	ASHEVILLE RGNL	NC	LPV200	1	99.155	1	99.155	2	99.143
BUY	BURLINGTON/ALAMANCE RGNL	NC	LPV	1	99.152	1	99.152	2	99.126
CLT	CHARLOTTE/DOUGLAS INTL	NC	LPV200	1	99.166	1	99.166	2	99.102
CPC	COLUMBUS COUNTY MUNICIPAL	NC	LPV	1	99.166	2	99.156	2	99.101
CTZ	CLINTON-SAMPSON COUNTY	NC	LPV200	1	99.163	2	99.159	2	99.099
DPL	DUPLIN COUNTY	NC	LPV200	1	99.163	2	99.159	2	99.093
ECG	ELIZABETH CITY CG AIR STATION/	NC	LPV	1	99.152	2	99.151	2	99.096
EDE	NORTHEASTERN RGNL	NC	LPV200	1	99.152	1	99.152	2	99.094
EHO	SHELBY-CLEVELAND COUNTY RGNL	NC	LPV	1	99.166	1	99.166	3	99.119
EQY	CHARLOTTE/MONROE EXEC	NC	LPV200	1	99.166	1	99.166	2	99.105
EWN	COASTAL CAROLINA RGNL	NC	LPV	1	99.152	2	99.149	2	99.091
EXX	DAVIDSON COUNTY	NC	LPV	1	99.152	1	99.152	3	99.126
EYF	CURTIS L BROWN JR FLD	NC	LPV	1	99.166	2	99.159	2	99.108
FAY	FAYETTEVILLE RGNL/GRANNIS FLD	NC	LPV200	1	99.163	2	99.161	2	99.108
FFA	FIRST FLIGHT	NC	LP	1	99.152	2	99.150	2	99.091
FQD	RUTHERFORD COUNTY/MARCHMAN FLD	NC	LPV	1	99.155	1	99.155	3	99.142
GEV	ASHE COUNTY	NC	LP	1	99.152	1	99.152	1	99.152
GSO	PIEDMONT TRIAD INTL	NC	LPV200	1	99.152	1	99.152	1	99.152
GWW	WAYNE EXEC JETPORT	NC	LPV200	1	99.152	1	99.152	2	99.100
HBI	ASHEBORO RGNL	NC	LPV	1	99.152	1	99.152	3	99.109
HKY	HICKORY RGNL	NC	LPV200	1	99.152	1	99.152	2	99.145
HNZ	HENDERSON/OXFORD	NC	LPV	1	99.152	1	99.152	2	99.128
HRJ	HARNETT RGNL JETPORT	NC	LPV	1	99.163	1	99.163	2	99.102
ILM	WILMINGTON INTL	NC	LPV200	1	99.166	2	99.156	2	99.084
INT	SMITH REYNOLDS	NC	LPV200	1	99.152	1	99.152	1	99.152
IPJ	LINCOLNTON-LINCOLN COUNTY RGNL	NC	LPV	1	99.153	1	99.153	3	99.119
ISO	KINSTON RGNL JETPORT AT STALLI	NC	LPV200	1	99.152	1	99.152	2	99.093

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
IXA	HALIFAX/NORTHAMPTON RGNL	NC	LPV200	1	99.152	1	99.152	2	99.122
JNX	JOHNSTON RGNL	NC	LPV	1	99.152	1	99.152	2	99.099
JQF	CONCORD-PADGETT RGNL	NC	LPV	1	99.163	1	99.163	3	99.112
LBT	LUMBERTON RGNL	NC	LPV	1	99.166	2	99.159	2	99.108
LHZ	TRIANGLE NORTH EXEC	NC	LPV200	1	99.152	1	99.152	3	99.118
MCZ	MARTIN COUNTY	NC	LPV	1	99.152	1	99.152	2	99.103
MEB	LAURINBURG/MAXTON	NC	LPV200	1	99.166	2	99.161	2	99.108
MQI	DARE COUNTY RGNL	NC	LPV	1	99.152	2	99.150	2	99.091
MRH	MICHAEL J SMITH FLD	NC	LPV	1	99.163	2	99.157	2	99.084
MRN	FOOTHILLS RGNL	NC	LPV	1	99.152	1	99.152	2	99.145
MWK	MOUNT AIRY/SURRY COUNTY	NC	LPV	1	99.152	1	99.152	1	99.152
OAJ	ALBERT J ELLIS	NC	LPV200	1	99.163	2	99.158	2	99.091
OCW	WASHINGTON-WARREN	NC	LPV	1	99.152	1	99.152	2	99.091
ONX	CURRITUCK COUNTY RGNL	NC	LPV	1	99.152	2	99.151	2	99.098
PGV	PITT-GREENVILLE	NC	LPV	1	99.152	1	99.152	2	99.094
PMZ	PLYMOUTH MUNICIPAL	NC	LP	1	99.152	1	99.152	2	99.093
RCZ	RICHMOND COUNTY	NC	LPV	1	99.166	1	99.166	2	99.108
RDU	RALEIGH-DURHAM INTL	NC	LPV200	1	99.152	1	99.152	2	99.102
RHP	WESTERN CAROLINA RGNL	NC	LP	1	99.166	1	99.166	2	99.155
RUQ	MID-CAROLINA RGNL	NC	LPV200	1	99.152	1	99.152	3	99.116
RWI	ROCKY MOUNT/WILSON RGNL	NC	LPV	1	99.152	1	99.152	2	99.101
SCR	SILER CITY MUNICIPAL	NC	LPV	1	99.152	1	99.152	3	99.110
SOP	MOORE COUNTY	NC	LPV200	1	99.163	1	99.163	2	99.104
SUT	CAPE FEAR RGNL JETPORT/HOWIE F	NC	LPV	1	99.166	2	99.153	2	99.095
SVH	STATESVILLE RGNL	NC	LPV200	1	99.152	1	99.152	2	99.144
TDF	RALEIGH RGNL AT PERSON COUNTY	NC	LPV200	1	99.152	1	99.152	2	99.136
TTA	RALEIGH EXEC JETPORT AT SANFOR	NC	LPV200	1	99.152	1	99.152	2	99.099
UKF	WILKES COUNTY	NC	LPV200	1	99.152	1	99.152	1	99.152
VUJ	STANLY COUNTY	NC	LPV200	1	99.159	1	99.159	2	99.099
W03	WILSON INDUSTRIAL AIR CENTER	NC	LPV	1	99.152	1	99.152	2	99.100
W40	MOUNT OLIVE MUNICIPAL	NC	LPV	1	99.163	2	99.162	2	99.099
ZEF	ELKIN MUNICIPAL	NC	LP	1	99.152	1	99.152	1	99.152
06D	ROLLA MUNICIPAL	ND	LPV	10	98.794	9	98.715	18	98.542
20U	BEACH	ND	LPV	6	98.881	8	98.819	10	98.630
2C8	CAVALIER MUNICIPAL	ND	LPV	10	98.802	10	98.685	17	98.463
3H4	HILLSBORO MUNICIPAL	ND	LPV	4	98.900	10	98.756	12	98.560

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
46D	CARRINGTON MUNICIPAL	ND	LPV	6	98.868	9	98.768	13	98.647
4E7	ELLENDALE MUNICIPAL	ND	LPV	3	98.946	6	98.917	8	98.794
51D	EDGELEY MUNICIPAL	ND	LPV	6	98.930	10	98.856	9	98.738
5L0	LAKOTA MUNICIPAL	ND	LPV	6	98.842	9	98.732	12	98.583
5N8	CASSELTON ROBERT MILLER RGNL	ND	LPV	4	98.906	9	98.795	12	98.623
6L3	LISBON MUNICIPAL	ND	LPV	5	98.931	10	98.839	12	98.705
7L2	LINTON MUNICIPAL	ND	LPV	6	98.934	7	98.893	10	98.738
9D7	CANDO MUNICIPAL	ND	LPV	9	98.825	9	98.723	16	98.572
BAC	BARNES COUNTY MUNICIPAL	ND	LPV	5	98.895	9	98.788	11	98.640
BIS	BISMARCK MUNICIPAL	ND	LPV200	6	98.890	10	98.811	11	98.694
BWP	HARRY STERN	ND	LPV	3	98.948	7	98.895	12	98.714
BWW	BOWMAN RGNL	ND	LPV	5	98.939	6	98.875	10	98.717
D05	GARRISON MUNICIPAL	ND	LPV	6	98.850	9	98.773	14	98.613
D09	BOTTINEAU MUNICIPAL	ND	LPV	8	98.804	9	98.733	18	98.555
D55	ROBERTSON FLD	ND	LPV	9	98.790	10	98.704	19	98.512
D57	GLEN ULLIN RGNL	ND	LPV	4	98.905	8	98.855	11	98.720
D60	TIOGA MUNICIPAL	ND	LPV	6	98.836	9	98.777	16	98.547
DIK	DICKINSON/THEODORE ROOSEVELT R	ND	LPV200	6	98.889	7	98.843	12	98.638
DVL	DEVILS LAKE RGNL	ND	LPV200	6	98.847	10	98.744	15	98.603
FAR	HECTOR INTL	ND	LPV200	4	98.904	9	98.780	13	98.605
GAF	HUTSON FLD	ND	LPV	10	98.822	10	98.682	14	98.512
GFK	GRAND FORKS INTL	ND	LPV	7	98.854	9	98.704	13	98.540
GWR	GWINNER-ROGER MELROE FLD	ND	LPV	4	98.948	7	98.875	10	98.727
HEI	HETTINGER/JB LINDQUIST RGNL	ND	LPV	5	98.942	6	98.893	11	98.751
HZE	MERCER COUNTY RGNL	ND	LPV	6	98.871	9	98.785	12	98.616
ISN	SLOULIN FLD INTL	ND	LPV200	6	98.851	8	98.787	15	98.539
JMS	JAMESTOWN RGNL	ND	LPV200	6	98.886	9	98.790	12	98.669
K74	ROBERT ODEGAARD FLD	ND	LP	4	98.908	10	98.809	12	98.642
MOT	MINOT INTL	ND	LPV	6	98.831	9	98.750	15	98.572
RUG	RUGBY MUNICIPAL	ND	LP	8	98.829	9	98.736	14	98.586
S25	WATFORD CITY MUNICIPAL	ND	LPV	6	98.856	8	98.792	13	98.582
XWA	WILLISTON BASIN INTL	ND	LPV200	5	98.879	7	98.815	13	98.603
Y19	MANDAN RGNL/LAWLER FLD	ND	LPV	5	98.877	10	98.812	11	98.693
07K	CENTRAL CITY MUNICIPAL - LARRY REIN	NE	LPV	2	99.101	3	99.075	3	99.051
08K	HARVARD STATE	NE	LPV	2	99.104	3	99.094	3	99.048
0B4	HARTINGTON MUNICIPAL/ BUD BECKER FL	NE	LPV	2	99.066	4	99.042	5	98.908

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
0C4	PENDER MUNICIPAL	NE	LPV	2	99.069	3	99.042	5	98.978
0F4	LOUP CITY MUNICIPAL	NE	LPV	2	99.101	3	99.080	3	99.028
0G3	TECUMSEH MUNICIPAL	NE	LPV	3	99.108	3	99.085	2	99.065
0V3	PIONEER VILLAGE FLD	NE	LPV	2	99.106	2	99.096	5	99.054
12K	SUPERIOR MUNICIPAL	NE	LPV	2	99.112	2	99.095	4	99.069
47V	CURTIS MUNICIPAL	NE	LPV	2	99.114	2	99.098	5	99.054
4D9	ALMA MUNICIPAL	NE	LPV	2	99.121	2	99.097	4	99.067
4V9	ANTELOPE COUNTY	NE	LPV	2	99.074	2	99.050	7	98.980
6K3	CREIGHTON MUNICIPAL	NE	LPV	2	99.070	3	99.040	5	98.913
7V7	RED CLOUD MUNICIPAL	NE	LPV	2	99.111	2	99.096	3	99.067
8V2	STUART-ATKINSON MUNICIPAL	NE	LPV	2	99.073	3	99.042	6	98.900
93Y	DAVID CITY MUNICIPAL	NE	LPV	2	99.095	3	99.070	3	99.045
9V5	MODISETT	NE	LPV	3	99.061	3	99.047	10	98.921
AFK	NEBRASKA CITY MUNICIPAL	NE	LPV	3	99.102	2	99.072	2	99.052
AHQ	WAHOO MUNICIPAL	NE	LPV	3	99.096	2	99.058	2	99.020
AIA	ALLIANCE MUNICIPAL	NE	LPV200	3	99.072	3	99.068	7	98.952
ANW	AINSWORTH RGNL	NE	LPV200	2	99.080	3	99.043	9	98.930
AUH	AURORA MUNICIPAL - AL POTTER FLD	NE	LPV	2	99.103	3	99.081	3	99.053
BBW	BROKEN BOW MUNICIPAL/KEITH GLAZE FL	NE	LPV	2	99.109	3	99.080	5	98.999
BFF	WESTERN NEBRASKA RGNL/WILLIAM	NE	LPV	3	99.071	3	99.070	5	98.971
BIE	BEATRICE MUNICIPAL	NE	LPV200	2	99.106	4	99.098	2	99.067
BTA	BLAIR MUNICIPAL	NE	LPV	2	99.083	2	99.057	4	99.002
BUB	CRAM FLD	NE	LPV	2	99.082	2	99.062	6	99.019
BVN	ALBION MUNICIPAL	NE	LPV	2	99.076	2	99.059	6	99.022
CDR	CHADRON MUNICIPAL	NE	LPV200	3	99.059	4	99.036	8	98.905
CEK	CRETE MUNICIPAL	NE	LPV	2	99.101	4	99.096	2	99.053
CSB	CAMBRIDGE MUNICIPAL	NE	LPV	2	99.119	2	99.098	3	99.066
CZD	COZAD MUNICIPAL	NE	LPV	2	99.112	2	99.097	4	99.030
EAR	KEARNEY RGNL	NE	LPV200	2	99.105	2	99.096	4	99.033
FBY	FAIRBURY MUNICIPAL	NE	LPV	2	99.113	3	99.108	2	99.070
FET	FREMONT MUNICIPAL	NE	LPV	3	99.095	2	99.057	3	99.012
FMZ	FAIRMONT STATE AIRFIELD	NE	LPV	2	99.106	3	99.093	3	99.053
FNB	BRENNER FLD	NE	LPV	2	99.115	2	99.090	3	99.077
GGF	GRANT MUNICIPAL	NE	LPV	2	99.112	2	99.100	5	99.047
GRI	CENTRAL NEBRASKA RGNL	NE	LPV	2	99.102	3	99.082	3	99.053
GRN	GORDON MUNICIPAL	NE	LPV	3	99.062	4	99.039	8	98.887

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
HDE	BREWSTER FLD	NE	LPV	2	99.119	2	99.096	3	99.059
HSI	HASTINGS MUNICIPAL	NE	LPV	2	99.104	3	99.095	4	99.035
IBM	KIMBALL MUNICIPAL/ROBERT E ARRAJ FL	NE	LPV	3	99.127	2	99.108	5	99.007
IML	IMPERIAL MUNICIPAL	NE	LPV	2	99.117	2	99.103	3	99.064
JYR	YORK MUNICIPAL	NE	LPV	2	99.096	3	99.076	2	99.053
K01	FARINGTON FLD	NE	LPV	3	99.110	3	99.085	2	99.064
LBF	NORTH PLATTE RGNL/LEE BIRD FLD	NE	LPV200	2	99.111	3	99.093	5	99.026
LCG	WAYNE MUNICIPAL/ STAN MORRIS FLD	NE	LPV	2	99.069	3	99.041	5	98.965
LNK	LINCOLN	NE	LPV200	3	99.101	3	99.076	2	99.051
LXN	JIM KELLY FLD	NE	LPV	2	99.113	2	99.097	3	99.033
MCK	MC COOK BEN NELSON RGNL	NE	LPV	2	99.119	2	99.099	3	99.066
MLE	MILLARD	NE	LPV	3	99.095	2	99.058	2	99.021
ODX	EVELYN SHARP FLD	NE	LPV	2	99.083	2	99.061	5	99.025
OFK	NORFOLK RGNL/KARL STEFAN MEML	NE	LPV200	2	99.072	2	99.048	5	98.971
OGA	SEARLE FLD	NE	LPV	2	99.111	2	99.099	5	99.023
OKS	GARDEN COUNTY/KING RHILEY FLD	NE	LPV	2	99.107	2	99.101	5	99.022
OLU	COLUMBUS MUNICIPAL	NE	LPV	2	99.091	3	99.070	2	99.021
OMA	EPPLEY AIRFIELD	NE	LPV200	2	99.083	2	99.057	3	99.013
ONL	THE O'NEILL MUNICIPAL-JOHN L BAKER	NE	LPV	2	99.072	3	99.042	6	98.902
PMV	PLATTSMOUTH MUNICIPAL/DOUGLAS V DUE	NE	LPV	3	99.095	2	99.059	3	99.041
RBE	ROCK COUNTY	NE	LPV	2	99.080	3	99.043	8	98.916
SCB	SCRIBNER STATE	NE	LPV	2	99.069	2	99.056	4	99.000
SNY	SIDNEY MUNICIPAL/LLOYD W CARR FLD	NE	LPV	2	99.110	2	99.103	6	99.038
SWT	SEWARD MUNICIPAL	NE	LPV	2	99.099	3	99.076	2	99.051
TIF	THOMAS COUNTY	NE	LPV	2	99.092	3	99.058	7	98.957
TQE	TEKAMAH MUNICIPAL	NE	LPV	2	99.069	3	99.050	4	98.988
VTN	MILLER FLD	NE	LPV	2	99.080	4	99.040	7	98.894
ASH	BOIRE FLD	NH	LPV200	2	99.094	2	99.094	4	99.068
CON	CONCORD MUNICIPAL	NH	LPV	2	99.092	2	99.092	4	99.053
DAW	SKYHAVEN	NH	LPV	2	99.092	2	99.092	5	99.042
EEN	DILLANT/HOPKINS	NH	LPV	2	99.095	2	99.094	4	99.067
HIE	MOUNT WASHINGTON RGNL	NH	LPV	2	99.082	2	99.082	8	98.991
LCI	LACONIA MUNICIPAL	NH	LPV	2	99.092	2	99.092	8	99.035
LEB	LEBANON MUNICIPAL	NH	LPV	2	99.095	2	99.094	6	99.048
MHT	MANCHESTER BOSTON RGNL	NH	LPV200	2	99.093	2	99.093	4	99.068
PSM	PORTSMOUTH INTL AT PEASE	NH	LPV200	2	99.092	2	99.092	5	99.049

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
47N	CENTRAL JERSEY RGNL	NJ	LP	2	99.138	2	99.137	2	99.113
4N1	GREENWOOD LAKE	NJ	LP	2	99.126	2	99.125	2	99.101
ACY	ATLANTIC CITY INTL	NJ	LPV200	1	99.152	1	99.152	1	99.137
CDW	ESSEX COUNTY	NJ	LPV	2	99.126	2	99.126	2	99.102
EWR	NEWARK LIBERTY INTL	NJ	LPV200	2	99.136	2	99.134	2	99.109
MIV	MILLVILLE MUNICIPAL	NJ	LPV200	1	99.152	1	99.152	1	99.137
MJX	OCEAN COUNTY	NJ	LPV	1	99.152	1	99.152	2	99.121
MMU	MORRISTOWN MUNICIPAL	NJ	LPV200	2	99.137	2	99.131	2	99.107
N12	LAKEWOOD	NJ	LP	1	99.152	2	99.151	2	99.121
N14	FLYING W	NJ	LPV	1	99.152	1	99.152	2	99.122
N40	SKY MANOR	NJ	LP	2	99.138	2	99.138	2	99.113
TEB	TETERBORO	NJ	LPV	2	99.127	2	99.127	2	99.102
TTN	TRENTON MERCER	NJ	LPV	1	99.152	2	99.144	2	99.119
VAY	SOUTH JERSEY RGNL	NJ	LP	1	99.152	1	99.152	2	99.122
WWD	CAPE MAY COUNTY	NJ	LPV	1	99.152	1	99.152	1	99.137
CVB2	VOISEY'S BAY	NL	LPV	58	93.775	67	93.567	114	91.083
CYDF	DEER LAKE	NL	LPV200	43	97.432	45	97.317	75	95.641
CYJT	STEPHENVILLE	NL	LPV	29	97.763	32	97.655	63	96.237
CYQX	GANDER INTL	NL	LPV200	51	96.739	56	96.501	131	93.130
CYWK	WABUSH	NL	LPV	61	95.960	59	95.606	81	94.062
CYYR	GOOSE BAY	NL	LPV	58	94.921	58	94.773	106	92.874
CYYT	ST. JOHN'S INTL	NL	LPV	50	96.988	57	96.492	224	91.666
CZUM	CHURCHILL FALLS	NL	LPV	58	95.194	61	95.004	85	93.437
LFVM	MIQUELON	NL	LPV	31	97.869	40	97.736	69	96.038
LFVP	ST PIERRE	NL	LPV	32	97.918	36	97.814	70	96.079
0E0	MORIARTY MUNICIPAL	NM	LPV	2	99.084	2	99.053	4	99.028
ABQ	ALBUQUERQUE INTL SUNPORT	NM	LPV200	2	99.084	2	99.053	3	99.025
AEG	DOUBLE EAGLE II	NM	LPV200	2	99.084	2	99.065	3	99.017
ALM	ALAMOGORDO-WHITE SANDS RGNL	NM	LPV	3	99.073	3	99.037	17	98.973
ATS	ARTESIA MUNICIPAL	NM	LPV200	3	99.099	3	99.058	5	98.989
CAO	CLAYTON MUNICIPAL AIRPARK	NM	LPV	2	99.145	4	99.084	3	99.011
CNM	CAVERN CITY AIR TRML	NM	LPV200	3	99.101	3	99.041	5	98.986
CVN	CLOVIS RGNL	NM	LPV200	2	99.083	2	99.057	3	99.023
DMN	DEMING MUNICIPAL	NM	LPV	2	99.051	3	99.021	52	98.812
E06	LEA COUNTY/ZIP FRANKLIN MEML	NM	LPV	3	99.107	3	99.070	5	98.999
FMN	FOUR CORNERS RGNL	NM	LPV200	3	99.144	3	99.088	3	99.024

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
HOB	LEA COUNTY RGNL	NM	LPV	3	99.115	3	99.071	5	98.997
LAM	LOS ALAMOS	NM	LP	4	99.123	2	99.054	5	99.030
LRU	LAS CRUCES INTL	NM	LPV200	3	99.075	2	99.022	41	98.886
ONM	SOCORRO MUNICIPAL	NM	LP	2	99.080	2	99.050	7	99.024
ROW	ROSWELL AIR CENTER	NM	LPV	2	99.083	2	99.061	5	99.021
SAF	SANTA FE MUNICIPAL	NM	LPV200	3	99.097	2	99.054	4	99.035
SRR	SIERRA BLANCA RGNL	NM	LPV200	2	99.083	2	99.061	6	99.021
SVC	GRANT COUNTY	NM	LPV	2	99.048	3	99.010	45	98.821
CCQ3	DEBERT	NS	LPV	7	98.908	11	98.877	24	98.182
CYHZ	STANFIELD INTL	NS	LPV200	4	98.924	5	98.904	23	98.249
CYQI	YARMOUTH	NS	LPV	3	99.033	4	99.006	12	98.755
CYQY	J.A. DOUGLAS MCCURDY	NS	LPV200	18	98.572	20	98.422	34	97.492
CYTN	TRENTON	NS	LPV	9	98.850	12	98.797	28	98.068
CYZX	GREENWOOD	NS	LP	5	98.948	6	98.929	21	98.433
CDK2	DIAVIK	NT	LPV	43	95.129	49	94.609	200	89.872
CEU9	SAMBAA K'E	NT	LPV	29	96.621	35	96.349	79	94.928
CGK2	GAHCHO KUE	NT	LPV	40	95.399	47	94.726	170	90.959
CSK6	SNAP LAKE	NT	LPV	35	95.418	43	94.824	164	91.359
CYEV	INUVIK (MIKE ZUBKO)	NT	LPV	30	95.719	41	95.454	133	93.652
CYFR	FORT RESOLUTION	NT	LPV	32	96.287	41	95.898	91	94.003
CYFS	FORT SIMPSON	NT	LPV	33	96.307	40	95.994	82	94.461
CYGH	FORT GOOD HOPE	NT	LPV	27	95.792	34	95.516	112	93.629
CYHY	MERLYN CARTER AIRPORT	NT	LPV	36	96.420	38	96.011	87	94.293
CYJP	FORT PROVIDENCE	NT	LPV	32	96.239	35	95.966	79	94.315
CYKD	FREDDIE CARMICHAEL	NT	LPV	32	95.832	37	95.502	121	94.011
CYOA	EKATI	NT	LPV	41	95.116	51	94.632	205	89.758
CYOC	OLD CROW	NT	LPV	25	96.078	30	95.781	60	94.906
CYPC	PAULATUK (NORA ALIQATCHIALUK RUBEN)	NT	LPV	41	95.314	55	94.740	234	90.220
CYSM	FORT SMITH	NT	LPV	28	96.548	31	96.200	69	94.468
CYSY	SACHS HARBOUR (DAVID NASOGALUAK JR. SAARYUAQ)	NT	LPV	47	95.037	80	94.138	335	86.962
CYUB	JAMES GRUBEN	NT	LPV	31	95.617	44	95.289	162	92.786
CYVQ	NORMAN WELLS	NT	LPV	28	95.853	34	95.548	106	93.713
CYWJ	DELINE	NT	LPV	29	95.714	33	95.459	121	93.054
CYZF	YELLOWKNIFE	NT	LPV200	33	95.942	39	95.393	107	93.363
CZFM	FORT MCPHERSON	NT	LPV	31	95.914	37	95.652	105	94.336

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
CZFN	TULITA	NT	LPV	28	95.859	33	95.537	101	93.732
CMB2	MEADOWBANK	NU	LPV	104	91.942	115	90.425	273	82.190
CMR2	MARY RIVER	NU	LPV	451	68.743	540	60.392	581	38.205
CYBK	BAKER LAKE	NU	LPV	96	92.340	104	90.787	256	83.489
CYCS	CHESTERFIELD INLET	NU	LPV	89	91.976	108	90.557	265	83.779
CYEK	ARVIAT	NU	LPV	77	93.793	91	92.614	190	87.785
CYFB	IQALUIT	NU	LPV200	253	84.578	290	83.465	389	70.834
CYRB	RESOLUTE BAY	NU	LPV	399	72.051	503	61.718	789	32.016
CYRT	RANKIN INLET	NU	LPV	85	92.418	107	91.003	240	84.711
CYSK	SANIKILUAQ	NU	LPV	67	94.725	74	94.119	112	91.408
CYTE	KINNGAIT AIRPORT	NU	LPV	220	88.379	251	87.249	417	76.028
CYYH	TALOYOAK	NU	LPV	304	86.321	353	82.923	489	65.991
05U	EUREKA	NV	LP	2	99.149	4	99.104	4	98.967
10U	OWYHEE	NV	LPV200	1	99.166	5	99.063	8	98.931
67L	MESQUITE	NV	LP	4	99.091	4	99.055	5	98.958
BAM	BATTLE MOUNTAIN	NV	LPV	1	99.170	4	99.098	8	98.912
BVU	BOULDER CITY MUNICIPAL	NV	LP	5	99.089	5	99.043	5	98.954
CXP	CARSON CITY	NV	LP	4	99.085	4	99.031	8	98.869
ELY	ELY/YELLAND FLD	NV	LPV	2	99.163	5	99.118	4	98.994
HTH	HAWTHORNE INDUSTRIAL	NV	LP	4	99.084	4	99.033	4	98.899
LAS	HARRY REID INTL	NV	LPV200	5	99.088	5	99.041	5	98.954
LOL	DERBY FLD	NV	LPV	3	99.141	4	99.084	8	98.890
RNO	RENO/TAHOE INTL	NV	LPV	3	99.096	4	99.045	8	98.864
RTS	RENO/STEAD	NV	LPV	3	99.096	4	99.045	8	98.862
SPZ	SILVER SPRINGS	NV	LPV	3	99.100	4	99.051	8	98.889
TPH	TONOPAH	NV	LP	4	99.096	4	99.038	5	98.938
VGT	NORTH LAS VEGAS	NV	LP	5	99.091	5	99.040	5	98.948
WMC	WINNEMUCCA MUNICIPAL	NV	LPV	1	99.166	5	99.084	10	98.886
06N	RANDALL	NY	LP	2	99.123	2	99.123	2	99.101
0G7	FINGER LAKES RGNL	NY	LPV	2	99.128	2	99.119	4	99.082
1B1	COLUMBIA COUNTY	NY	LPV	2	99.102	2	99.102	4	99.078
20N	KINGSTON-ULSTER	NY	LPV	2	99.109	2	99.109	4	99.084
44N	SKY ACRES	NY	LPV	2	99.107	2	99.107	4	99.090
4B6	TICONDEROGA MUNICIPAL	NY	LPV	2	99.095	2	99.095	6	99.054
5B2	SARATOGA COUNTY	NY	LPV	2	99.098	2	99.098	4	99.073
5G0	LE ROY	NY	LP	2	99.134	2	99.130	3	99.086

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
9G0	BUFFALO AIRFIELD	NY	LP	2	99.135	2	99.134	4	99.089
9G3	AKRON/JESSON FLD	NY	LP	2	99.132	2	99.128	4	99.088
ALB	ALBANY INTL	NY	LPV200	2	99.101	2	99.101	4	99.073
ART	WATERTOWN INTL	NY	LPV200	2	99.098	2	99.098	7	99.051
BGM	GREATER BINGHAMTON/EDWIN A LIN	NY	LPV200	2	99.126	2	99.126	3	99.095
BUF	BUFFALO NIAGARA INTL	NY	LPV200	2	99.135	2	99.133	4	99.089
ELM	ELMIRA/CORNING RGNL	NY	LPV200	2	99.131	2	99.128	3	99.098
ELZ	WELLSVILLE MUNICIPAL/TARANTINE FLD	NY	LPV200	2	99.133	2	99.131	4	99.105
FOK	FRANCIS S GABRESKI	NY	LPV200	2	99.108	2	99.108	2	99.098
FRG	REPUBLIC	NY	LPV200	2	99.126	2	99.121	2	99.105
FZY	OSWEGO COUNTY	NY	LPV	2	99.119	2	99.119	4	99.078
GFL	FLOYD BENNETT MEML	NY	LPV200	2	99.095	2	99.095	4	99.071
GVQ	GENESEE COUNTY	NY	LPV200	2	99.132	2	99.128	4	99.084
HPN	WESTCHESTER COUNTY	NY	LPV	2	99.116	2	99.116	2	99.101
HTF	HORNELL MUNICIPAL	NY	LPV	2	99.133	2	99.129	3	99.095
HTO	EAST HAMPTON	NY	LPV	2	99.108	2	99.108	3	99.089
HWV	BROOKHAVEN	NY	LPV	2	99.109	2	99.109	2	99.102
IAG	NIAGARA FALLS INTL	NY	LPV	2	99.132	2	99.132	4	99.087
ISP	LONG ISLAND MAC ARTHUR	NY	LPV200	2	99.112	2	99.112	2	99.103
ITH	ITHACA TOMPKINS INTL	NY	LPV	2	99.127	2	99.127	4	99.090
IUA	CANANDAIGUA	NY	LPV	2	99.133	2	99.129	3	99.092
JFK	JOHN F KENNEDY INTL	NY	LPV200	2	99.136	2	99.135	2	99.110
JHW	CHAUTAUQUA COUNTY/JAMESTOWN	NY	LPV200	2	99.136	2	99.136	4	99.102
K09	PISECO	NY	LP	2	99.098	2	99.098	5	99.073
LGA	LAGUARDIA	NY	LPV	2	99.136	2	99.130	2	99.104
MAL	MALONE-DUFORT	NY	LPV	3	99.080	3	99.080	6	99.007
MGJ	ORANGE COUNTY	NY	LPV	2	99.122	2	99.122	2	99.101
MSS	MASSENA INTL-RICHARDS FLD	NY	LPV	3	99.080	3	99.080	7	99.009
MSV	SULLIVAN COUNTY INTL	NY	LPV	2	99.124	2	99.124	3	99.096
N23	SIDNEY MUNICIPAL	NY	LP	2	99.125	2	99.125	3	99.083
N66	ALBERT S NADER RGNL	NY	LPV	2	99.125	2	99.119	3	99.083
NY0	FULTON COUNTY	NY	LPV	2	99.098	2	99.098	4	99.073
OGS	OGDENSBURG INTL	NY	LPV	3	99.084	3	99.084	7	99.019
OIC	LT WARREN EATON	NY	LP	2	99.125	2	99.119	3	99.083
OLE	CATTARAUGUS COUNTY-OLEAN	NY	LPV	2	99.134	2	99.134	4	99.098
PBG	PLATTSBURGH INTL	NY	LPV	3	99.084	3	99.084	6	99.011

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
PEO	PENN YAN	NY	LPV	2	99.130	2	99.128	4	99.092
POU	HUDSON VALLEY RGNL	NY	LPV	2	99.110	2	99.110	3	99.095
RME	GRIFFISS INTL	NY	LPV200	2	99.102	2	99.102	5	99.075
ROC	FREDERICK DOUGLASS/GREATER ROC	NY	LPV200	2	99.131	2	99.118	4	99.084
SCH	SCHENECTADY COUNTY	NY	LPV200	2	99.100	2	99.100	4	99.073
SDC	WILLIAMSON-SODUS	NY	LPV	2	99.119	2	99.119	4	99.079
SLK	ADIRONDACK RGNL	NY	LPV200	2	99.095	3	99.092	6	99.043
SWF	NEW YORK STEWART INTL	NY	LPV200	2	99.122	2	99.122	2	99.099
SYR	SYRACUSE HANCOCK INTL	NY	LPV200	2	99.119	2	99.119	4	99.078
VGC	HAMILTON MUNICIPAL	NY	LPV	2	99.119	2	99.119	4	99.080
0G6	WILLIAMS COUNTY	OH	LPV	1	99.152	1	99.152	3	99.095
10G	HOLMES COUNTY	OH	LP	1	99.152	1	99.152	1	99.148
16G	SENECA COUNTY	OH	LPV	1	99.152	1	99.152	4	99.137
17G	PORT BUCYRUS-CRAWFORD COUNTY	OH	LP	1	99.152	1	99.152	3	99.144
1G0	WOOD COUNTY	OH	LPV	1	99.152	1	99.152	3	99.099
1G3	KENT STATE UNIVERSITY	OH	LPV	1	99.152	1	99.152	2	99.123
2G2	GEARY A BATES/JEFFERSON COUNTY	OH	LPV	1	99.152	1	99.152	1	99.148
4G5	MONROE COUNTY	OH	LP	1	99.152	1	99.152	1	99.149
4I3	KNOX COUNTY	OH	LPV200	1	99.152	1	99.152	2	99.147
5A1	NORWALK-HURON COUNTY	OH	LP	1	99.152	1	99.152	5	99.135
6G5	BARNESVILLE-BRADFIELD	OH	LP	1	99.152	1	99.152	1	99.148
7G8	GEAUGA COUNTY	OH	LP	1	99.152	2	99.150	3	99.122
AKR	AKRON FULTON INTL	OH	LP	1	99.152	1	99.152	2	99.128
AOH	LIMA ALLEN COUNTY	OH	LPV200	1	99.152	1	99.152	3	99.140
AXV	NEIL ARMSTRONG	OH	LPV	1	99.152	1	99.152	3	99.143
BJJ	WAYNE COUNTY	OH	LPV	1	99.152	1	99.152	3	99.145
BKL	BURKE LAKEFRONT	OH	LPV	1	99.152	1	99.152	4	99.102
CAK	AKRON-CANTON RGNL	OH	LPV200	1	99.152	1	99.152	2	99.129
CDI	CAMBRIDGE MUNICIPAL	OH	LP	1	99.152	1	99.152	1	99.148
CGF	CUYAHOGA COUNTY	OH	LPV200	1	99.152	2	99.151	4	99.102
CLE	CLEVELAND-HOPKINS INTL	OH	LPV200	1	99.152	1	99.152	4	99.113
CMH	JOHN GLENN COLUMBUS INTL	OH	LPV200	1	99.152	1	99.152	2	99.147
CQA	LAKEFIELD	OH	LPV	1	99.152	1	99.152	3	99.143
CYO	PICKAWAY COUNTY MEML	OH	LPV	1	99.152	1	99.152	2	99.149
DAY	JAMES M COX DAYTON INTL	OH	LPV200	1	99.152	1	99.152	2	99.146
DLZ	DELAWARE MUNICIPAL/JIM MOORE FLD	OH	LPV	1	99.152	1	99.152	2	99.147

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
EDJ	BELLEFONTAINE RGNL	OH	LPV	1	99.152	1	99.152	2	99.144
EOP	PIKE COUNTY	OH	LP	1	99.152	1	99.152	1	99.152
FDY	FINDLAY	OH	LPV	1	99.152	1	99.152	4	99.136
FZI	FOSTORIA METRO	OH	LPV	1	99.152	1	99.152	4	99.135
GQQ	GALION MUNICIPAL	OH	LP	1	99.152	1	99.152	2	99.147
HAO	BUTLER COUNTY RGNL/HOGAN FLD	OH	LPV	1	99.152	1	99.152	2	99.148
HOC	HIGHLAND COUNTY	OH	LP	1	99.152	1	99.152	1	99.152
HZY	NORTHEAST OHIO RGNL	OH	LPV	1	99.152	2	99.138	3	99.116
I10	NOBLE COUNTY	OH	LP	1	99.152	1	99.152	1	99.148
I19	GREENE COUNTY/LEWIS A JACKSON	OH	LPV	1	99.152	1	99.152	2	99.147
I40	RICHARD DOWNING	OH	LPV	1	99.152	1	99.152	1	99.148
I66	CLINTON FLD	OH	LPV	1	99.152	1	99.152	2	99.148
I68	WARREN COUNTY/JOHN LANE FLD	OH	LPV	1	99.152	1	99.152	2	99.148
I69	CLERMONT COUNTY	OH	LP	1	99.152	1	99.152	1	99.152
I74	GRIMES FLD	OH	LPV	1	99.152	1	99.152	2	99.145
ILN	WILMINGTON AIR PARK	OH	LPV200	1	99.152	1	99.152	2	99.150
LCK	RICKENBACKER INTL	OH	LPV200	1	99.152	1	99.152	2	99.147
LHQ	FAIRFIELD COUNTY	OH	LPV200	1	99.152	1	99.152	2	99.148
LNN	LAKE COUNTY EXEC	OH	LPV	1	99.152	2	99.140	4	99.098
LPR	LORAIN COUNTY RGNL	OH	LPV200	1	99.152	1	99.152	5	99.127
LUK	CINCINNATI MUNICIPAL/LUNKEN FLD	OH	LPV	1	99.152	1	99.152	1	99.152
MFD	MANSFIELD LAHM RGNL	OH	LPV200	1	99.152	1	99.152	2	99.147
MGY	DAYTON-WRIGHT BROTHERS	OH	LPV	1	99.152	1	99.152	2	99.147
MNN	MARION MUNICIPAL	OH	LPV	1	99.152	1	99.152	2	99.146
MRT	UNION COUNTY	OH	LP	1	99.152	1	99.152	2	99.146
MWO	MIDDLETOWN RGNL/HOOK FLD	OH	LPV	1	99.152	1	99.152	2	99.147
OSU	OHIO STATE UNIVERSITY	OH	LPV200	1	99.152	1	99.152	2	99.147
OWX	PUTNAM COUNTY	OH	LPV	1	99.152	1	99.152	3	99.119
OXD	MIAMI UNIVERSITY	OH	LPV	1	99.152	1	99.152	2	99.147
PCW	ERIE-OTTAWA INTL	OH	LPV	1	99.152	1	99.152	4	99.091
PHD	HARRY CLEVER FLD	OH	LP	1	99.152	1	99.152	1	99.148
PMH	GREATER PORTSMOUTH RGNL	OH	LPV	1	99.152	1	99.152	1	99.152
POV	PORTAGE COUNTY	OH	LPV	1	99.152	1	99.152	2	99.123
RZT	ROSS COUNTY	OH	LPV	1	99.152	1	99.152	2	99.151
S24	SANDUSKY COUNTY RGNL	OH	LPV	1	99.152	1	99.152	4	99.135
SCA	SIDNEY MUNICIPAL	OH	LPV	1	99.152	1	99.152	2	99.144

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
SGH	SPRINGFIELD/BECKLEY MUNICIPAL	OH	LPV200	1	99.152	1	99.152	2	99.147
TDZ	TOLEDO EXEC	OH	LPV	1	99.152	1	99.152	4	99.095
TOL	EUGENE F KRANZ TOLEDO EXPRESS	OH	LPV200	1	99.152	1	99.152	4	99.095
TSO	CARROLL COUNTY-TOLSON	OH	LP	1	99.152	1	99.152	1	99.148
TZR	BOLTON FLD	OH	LPV	1	99.152	1	99.152	2	99.147
UNI	OHIO UNIVERSITY	OH	LPV200	1	99.152	1	99.152	1	99.152
USE	FULTON COUNTY	OH	LPV	1	99.152	1	99.152	4	99.095
UYF	MADISON COUNTY	OH	LPV	1	99.152	1	99.152	2	99.146
VES	DARKE COUNTY	OH	LPV	1	99.152	1	99.152	2	99.144
VTA	NEWARK-HEATH	OH	LP	1	99.152	1	99.152	2	99.148
YNG	YOUNGSTOWN/WARREN RGNL	OH	LPV	1	99.152	2	99.151	2	99.123
ZZV	ZANESVILLE MUNICIPAL	OH	LPV200	1	99.152	1	99.152	1	99.148
1F0	ARDMORE DOWNTOWN EXEC	OK	LP	1	99.151	1	99.148	3	99.105
1K8	SOUTH GRAND LAKE RGNL	OK	LPV	1	99.128	1	99.128	2	99.115
1O4	THOMAS MUNICIPAL	OK	LPV	2	99.141	3	99.121	3	99.068
2K4	SCOTT FLD	OK	LPV	2	99.133	4	99.110	2	99.055
3F7	JONES MEML	OK	LPV	1	99.135	1	99.135	4	99.131
4O4	MC CURTAIN COUNTY RGNL	OK	LP	1	99.155	1	99.151	2	99.143
6K4	FAIRVIEW MUNICIPAL	OK	LPV	2	99.140	2	99.122	3	99.035
80F	ANTLERS MUNICIPAL	OK	LPV	1	99.151	1	99.149	2	99.139
ADH	ADA RGNL	OK	LPV	1	99.151	1	99.148	2	99.131
ADM	ARDMORE MUNICIPAL	OK	LPV	1	99.151	1	99.148	3	99.131
AVK	ALVA RGNL	OK	LPV	2	99.136	2	99.102	3	99.030
AXS	ALTUS/QUARTZ MOUNTAIN RGNL	OK	LPV	2	99.133	3	99.109	2	99.055
BKN	BLACKWELL-TONKAWA MUNICIPAL	OK	LPV	3	99.119	2	99.104	3	99.075
BVO	BARTLESVILLE MUNICIPAL	OK	LPV	1	99.113	1	99.113	3	99.101
CHK	CHICKASHA MUNICIPAL	OK	LPV200	2	99.145	2	99.145	3	99.071
CLK	CLINTON RGNL	OK	LPV	2	99.140	3	99.113	4	99.065
CSM	CLINTON/SHERMAN	OK	LPV200	2	99.141	3	99.106	4	99.065
CUH	CUSHING MUNICIPAL	OK	LPV	2	99.133	2	99.133	3	99.128
DUA	DURANT RGNL/EAKER FLD	OK	LPV	1	99.151	1	99.148	2	99.143
DUC	HALLIBURTON FLD	OK	LPV200	2	99.151	3	99.146	2	99.083
ELK	ELK CITY RGNL BUSINESS	OK	LPV	2	99.139	4	99.105	3	99.052
F22	PERRY MUNICIPAL	OK	LPV	2	99.128	2	99.128	3	99.070
FDR	FREDERICK RGNL	OK	LPV200	2	99.142	2	99.096	3	99.069
GCM	CLAREMORE RGNL	OK	LPV	1	99.119	1	99.119	2	99.104

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
GMJ	GROVE MUNICIPAL	OK	LPV	1	99.135	1	99.135	1	99.116
GOK	GUTHRIE/EDMOND RGNL	OK	LPV	2	99.144	2	99.140	3	99.099
GUY	GUYMON MUNICIPAL	OK	LPV	1	99.148	4	99.115	4	99.016
GZL	STIGLER RGNL	OK	LPV	1	99.160	1	99.153	3	99.131
H71	MID-AMERICA INDUSTRIAL	OK	LPV	1	99.120	1	99.120	2	99.117
HBR	HOBART RGNL	OK	LPV	2	99.142	3	99.110	3	99.076
HHW	STAN STAMPER MUNICIPAL	OK	LPV	1	99.151	1	99.150	2	99.140
HSD	SUNDANCE	OK	LPV	2	99.144	2	99.137	3	99.071
LAW	LAWTON-FORT SILL RGNL	OK	LPV200	2	99.145	3	99.137	2	99.083
MKO	MUSKOGEE-DAVIS RGNL	OK	LPV	1	99.136	1	99.136	3	99.133
MLC	MC ALESTER RGNL	OK	LPV	1	99.151	1	99.148	2	99.127
OJA	WEATHERFORD STAFFORD	OK	LPV	2	99.141	3	99.122	3	99.068
OKC	WILL ROGERS WORLD	OK	LPV200	2	99.145	2	99.138	3	99.080
OKM	OKMULGEE RGNL	OK	LPV200	2	99.150	1	99.136	3	99.135
OUN	UNIVERSITY OF OKLAHOMA WESTHEI	OK	LPV200	2	99.145	2	99.142	3	99.086
OWP	WILLIAM R POGUE MUNICIPAL	OK	LPV	1	99.137	1	99.137	3	99.103
PNC	PONCA CITY RGNL	OK	LPV	2	99.107	2	99.107	3	99.080
PVJ	PAULS VALLEY MUNICIPAL	OK	LPV200	1	99.151	1	99.148	2	99.107
PWA	WILEY POST	OK	LPV200	2	99.144	2	99.138	3	99.079
RCE	CLARENCE E PAGE MUNICIPAL	OK	LPV	2	99.144	2	99.137	3	99.068
RKR	ROBERT S KERR	OK	LPV	1	99.175	1	99.173	2	99.135
RQO	EL RENO RGNL	OK	LPV	2	99.143	2	99.136	3	99.068
RVS	TULSA RIVERSIDE	OK	LPV200	1	99.137	1	99.137	4	99.130
SNL	SHAWNEE RGNL	OK	LPV200	2	99.148	3	99.141	4	99.116
SWO	STILLWATER RGNL	OK	LPV200	2	99.131	2	99.131	2	99.082
TQH	TAHLEQUAH MUNICIPAL	OK	LPV	1	99.148	1	99.148	2	99.148
TUL	TULSA INTL	OK	LPV200	2	99.136	2	99.136	3	99.103
WDG	ENID WOODRING RGNL	OK	LPV200	2	99.125	2	99.125	4	99.063
WWR	WEST WOODWARD	OK	LPV	2	99.136	3	99.105	4	99.030
CNV8	EDENVALE	ON	LPV	3	99.094	4	99.093	5	98.954
CNY3	COLLINGWOOD	ON	LPV	3	99.094	4	99.092	5	98.953
CYAC	CAT LAKE	ON	LPV	20	98.402	25	98.152	46	97.165
CYAM	SAULT STE. MARIE	ON	LPV200	5	98.957	5	98.887	19	98.641
CYCC	CORNWALL REGIONAL	ON	LPV	3	99.080	3	99.080	8	98.998
CYCK	CHATHAM-KENT	ON	LPV	1	99.134	2	99.123	4	99.070
CYEE	HURONIA	ON	LPV	3	99.087	4	99.086	5	98.945

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
CYFA	FORT ALBANY	ON	LPV	33	97.851	47	97.273	72	95.811
CYGK	KINGSTON	ON	LPV	2	99.098	2	99.098	8	99.033
CYHD	DRYDEN REGIONAL	ON	LPV	11	98.713	19	98.527	30	98.061
CYHF	HEARST (RENE FONTAINE) MUNICIPALCIPALITY	ON	LPV	9	98.745	20	98.546	42	97.568
CYHM	HAMILTON	ON	LPV	3	99.131	3	99.130	5	99.088
CYHS	SAUGEEN MUNICIPALCIPALITY	ON	LPV	4	99.108	4	99.093	5	98.967
CYKF	WATERLOO	ON	LPV200	2	99.113	2	99.109	7	99.064
CYKM	KINCARDINE	ON	LPV	4	99.107	4	99.071	6	98.974
CYKZ	BUTTONVILLE MUNICIPALCIPAL	ON	LPV	2	99.119	2	99.119	8	99.045
CYLS	LAKE SIMCOE	ON	LPV	3	99.090	4	99.090	6	98.964
CYMG	MANITOUWADGE	ON	LPV	8	98.802	20	98.581	40	98.153
CYMO	MOOSONEE	ON	LPV	32	98.237	41	97.810	57	96.536
CYOO	OSHAWA EXECUTIVE AIRPORT	ON	LPV	2	99.119	2	99.116	8	99.048
CYOS	BILLY BISHOP REGIONAL	ON	LPV	3	99.091	4	99.087	7	98.945
CYOW	MACDONALD-CARTIER INTL	ON	LPV200	3	99.075	3	99.075	8	98.959
CYPL	PICKLE LAKE	ON	LPV	18	98.432	28	98.183	52	97.241
CYPQ	PETERBOROUGH	ON	LPV	2	99.116	2	99.116	9	99.018
CYPT	PELEE ISLAND	ON	LPV	1	99.152	1	99.152	4	99.086
CYQG	WINDSOR	ON	LPV	2	99.150	2	99.128	6	99.081
CYQK	KENORA	ON	LPV	11	98.722	12	98.582	26	98.184
CYQS	ST. THOMAS MUNICIPALCIPALITY	ON	LPV	2	99.122	2	99.122	5	99.068
CYQT	THUNDER BAY	ON	LPV200	9	98.838	16	98.697	22	98.287
CYRL	RED LAKE	ON	LPV	16	98.565	19	98.411	35	97.791
CYSA	STRATFORD MUNICIPALCIPALITY	ON	LPV	2	99.113	2	99.113	6	99.039
CYSB	SUDBURY	ON	LPV	6	98.961	6	98.914	17	98.789
CYSN	NIAGARA DISTRICT	ON	LPV	2	99.133	2	99.132	4	99.083
CYTL	BIG TROUT LAKE	ON	LPV	33	97.825	46	97.303	79	95.322
CYTS	TIMMINS (VICTOR M. POWER)	ON	LPV200	8	98.851	17	98.716	37	98.155
CYTZ	BILLY BISHOP TORONTO CITY AIRPORT	ON	LPV	2	99.119	2	99.119	8	99.059
CYVV	WIARTON	ON	LPV	2	99.076	4	99.071	7	98.931
CYWP	WEBEQUIE	ON	LPV	32	97.986	40	97.468	69	95.738
CYXL	SIOUX LOOKOUT	ON	LPV	14	98.682	23	98.505	34	97.900
CYXR	EARLTON (TIMISKAMING REGIONAL)	ON	LPV	5	98.899	11	98.863	26	98.542
CYXU	LONDON	ON	LPV200	2	99.114	2	99.114	5	99.067
CYYB	NORTH BAY	ON	LPV200	3	99.014	6	99.001	8	98.844
CYYU	KAPUSKASING	ON	LPV	10	98.801	21	98.594	40	97.735

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
CYYW	ARMSTRONG	ON	LPV	16	98.619	26	98.411	38	97.738
CYYZ	LESTER B. PEARSON INTL	ON	LPV200	3	99.119	3	99.119	8	99.056
CYZD	DOWNSVIEW	ON	LPV	2	99.119	2	99.119	8	99.049
CYZR	SARNIA (CHRIS HADFIELD)	ON	LPV	2	99.116	2	99.116	6	99.053
CZPB	SACHIGO LAKE	ON	LP	25	98.011	38	97.528	74	95.744
3S8	GRANTS PASS	OR	LP	5	99.059	8	98.893	10	98.641
77S	HOBBY FLD	OR	LPV	5	99.064	6	98.891	9	98.712
AST	ASTORIA RGNL	OR	LPV	7	98.953	9	98.728	17	98.419
BDN	BEND MUNICIPAL	OR	LPV	6	99.075	8	98.890	9	98.723
BKE	BAKER CITY MUNICIPAL	OR	LPV	3	99.080	9	98.952	8	98.760
CVO	CORVALLIS MUNICIPAL	OR	LPV200	6	99.006	7	98.855	10	98.630
EUG	MAHLON SWEET FLD	OR	LPV200	6	99.022	8	98.859	8	98.627
GCD	GRANT COUNTY RGNL/OGILVIE FLD	OR	LPV	3	99.082	8	98.945	8	98.744
HIO	PORTLAND-HILLSBORO	OR	LPV200	5	98.982	7	98.810	13	98.539
LGD	LA GRANDE/UNION COUNTY	OR	LPV	3	99.066	9	98.902	9	98.746
LKV	LAKE COUNTY	OR	LPV	2	99.148	8	99.029	9	98.767
LMT	CRATER LAKE/KLAMATH RGNL	OR	LPV	4	99.095	8	98.953	13	98.701
MMV	MC MINNVILLE MUNICIPAL	OR	LPV	5	98.979	7	98.810	14	98.574
ONO	ONTARIO MUNICIPAL	OR	LPV	3	99.089	9	98.988	7	98.797
ONP	NEWPORT MUNICIPAL	OR	LPV	7	99.004	7	98.821	12	98.599
OTH	SOUTHWEST OREGON RGNL	OR	LPV	6	99.047	9	98.889	11	98.604
PDT	EASTERN OREGON RGNL AT PENDLET	OR	LPV200	6	99.039	8	98.874	12	98.625
PDX	PORTLAND INTL	OR	LPV200	5	98.983	7	98.810	13	98.539
RDM	ROBERTS FLD	OR	LPV200	6	99.076	9	98.890	9	98.725
S33	MADRAS MUNICIPAL	OR	LPV	6	99.062	9	98.874	9	98.699
S39	PRINEVILLE	OR	LP	6	99.077	9	98.904	9	98.721
SLE	MCNARY FLD	OR	LPV200	5	98.987	7	98.827	10	98.605
SPB	SCAPPOOSE	OR	LPV	6	98.962	7	98.788	16	98.541
UAO	AURORA STATE	OR	LPV	5	98.986	7	98.813	14	98.578
22N	JAKE ARNER MEML	PA	LP	2	99.139	2	99.133	2	99.108
29D	GROVE CITY	PA	LP	1	99.152	2	99.151	2	99.123
2G9	SOMERSET COUNTY	PA	LPV	1	99.152	1	99.152	2	99.150
6G1	TITUSVILLE	PA	LPV	1	99.152	2	99.136	3	99.122
6P7	MCVILLE	PA	LP	1	99.152	1	99.152	2	99.134
8G2	CORRY-LAWRENCE	PA	LPV	2	99.150	2	99.136	4	99.108
8N8	DANVILLE	PA	LP	2	99.141	2	99.133	2	99.106

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
9D4	DECK	PA	LPV	2	99.150	2	99.146	2	99.123
ABE	LEHIGH VALLEY INTL	PA	LPV200	2	99.139	2	99.138	2	99.110
AFJ	WASHINGTON COUNTY	PA	LPV200	1	99.152	1	99.152	1	99.148
AGC	ALLEGHENY COUNTY	PA	LPV200	1	99.152	1	99.152	2	99.151
AOO	ALTOONA/BLAIR COUNTY	PA	LPV	1	99.152	2	99.151	2	99.143
AVP	WILKES-BARRE/SCRANTON INTL	PA	LPV200	2	99.129	2	99.127	2	99.101
AXQ	CLARION COUNTY	PA	LPV	1	99.152	2	99.145	2	99.123
BFD	BRADFORD RGNL	PA	LPV	2	99.135	2	99.135	4	99.104
BTP	PITTSBURGH/BUTLER RGNL	PA	LPV	1	99.152	1	99.152	2	99.129
BVI	BEAVER COUNTY	PA	LPV	1	99.152	1	99.152	2	99.130
CXY	CAPITAL CITY	PA	LPV	1	99.152	2	99.150	2	99.126
DUJ	DUBOIS RGNL	PA	LPV200	1	99.152	2	99.141	2	99.123
ERI	ERIE INTL/TOM RIDGE FLD	PA	LPV	2	99.149	2	99.138	4	99.107
FIG	CLEARFIELD-LAWRENCE	PA	LPV	2	99.149	2	99.138	2	99.123
FKL	VENANGO RGNL	PA	LPV	1	99.152	2	99.137	2	99.123
FWQ	ROSTRAVER	PA	LPV	1	99.152	1	99.152	1	99.152
GKJ	PORT MEADVILLE	PA	LP	1	99.152	2	99.139	3	99.122
HMZ	BEDFORD COUNTY	PA	LPV	1	99.152	1	99.152	2	99.147
HZL	HAZLETON RGNL	PA	LPV	2	99.129	2	99.129	2	99.105
IDI	INDIANA COUNTY/JIMMY STEWART F	PA	LPV	1	99.152	2	99.150	2	99.133
IPT	WILLIAMSPORT RGNL	PA	LPV	2	99.131	2	99.131	2	99.105
JST	JOHN MURTHA JOHNSTOWN/CAMBRIA	PA	LPV200	1	99.152	1	99.152	2	99.146
LBE	ARNOLD PALMER RGNL	PA	LPV200	1	99.152	1	99.152	2	99.149
LNS	LANCASTER	PA	LPV200	1	99.152	2	99.150	2	99.125
LOM	WINGS FLD	PA	LPV	1	99.152	2	99.149	2	99.123
MDT	HARRISBURG INTL	PA	LPV	1	99.152	2	99.150	2	99.126
MPO	POCONO MOUNTAINS RGNL	PA	LPV	2	99.128	2	99.128	2	99.105
MQS	CHESTER COUNTY G O CARLSON	PA	LPV	1	99.152	1	99.152	2	99.124
N38	GRAND CANYON RGNL	PA	LP	2	99.132	2	99.131	3	99.101
N57	NEW GARDEN	PA	LP	1	99.152	1	99.152	2	99.124
N79	NORTHUMBERLAND COUNTY	PA	LPV	2	99.141	2	99.135	2	99.108
N96	BELLEFONTE	PA	LPV	2	99.144	2	99.138	2	99.112
OQN	BRANDYWINE RGNL	PA	LP	1	99.152	1	99.152	2	99.124
OYM	ST MARYS MUNICIPAL	PA	LPV	2	99.145	2	99.134	2	99.108
PHL	PHILADELPHIA INTL	PA	LPV200	1	99.152	1	99.152	2	99.123
PIT	PITTSBURGH INTL	PA	LPV200	1	99.152	1	99.152	2	99.147

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
PNE	NORTHEAST PHILADELPHIA	PA	LPV200	1	99.152	2	99.150	2	99.123
PSB	MID-STATE	PA	LPV	2	99.148	2	99.139	2	99.123
PTW	HERITAGE FLD	PA	LPV	1	99.152	2	99.147	2	99.123
RDG	READING RGNL/CARL A SPAATZ FLD	PA	LPV	2	99.150	2	99.144	2	99.122
RVL	MIFFLIN COUNTY	PA	LPV	2	99.148	2	99.142	2	99.115
SEG	PENN VALLEY	PA	LP	2	99.142	2	99.136	2	99.108
THV	YORK	PA	LP	1	99.152	1	99.152	2	99.127
UCP	NEW CASTLE MUNICIPAL	PA	LPV	1	99.152	1	99.152	2	99.123
UKT	QUAKERTOWN	PA	LP	2	99.143	2	99.139	2	99.116
UNV	UNIVERSITY PARK	PA	LPV200	2	99.144	2	99.139	2	99.112
VVS	JOSEPH A HARDY CONNELLSVILLE	PA	LPV	1	99.152	1	99.152	1	99.152
WAY	GREENE COUNTY	PA	LPV	1	99.152	1	99.152	1	99.152
WBW	WILKES-BARRE WYOMING VALLEY	PA	LPV	2	99.129	2	99.128	2	99.105
XLL	ALLENTOWN QUEEN CITY MUNICIPAL	PA	LP	2	99.139	2	99.139	2	99.113
ZER	SCHUYLKILL COUNTY/JOE ZERBEY	PA	LPV200	2	99.141	2	99.138	2	99.109
CYYG	CHARLOTTETOWN	PE	LPV	10	98.771	13	98.688	29	98.017
CEL8	ELEONORE	QC	LPV	50	96.970	45	96.439	78	94.969
CFX5	RENARD	QC	LPV	46	96.698	52	96.448	74	94.812
CSC3	DRUMMONDVILLE	QC	LPV	2	99.050	2	99.050	15	98.853
CSD4	MONT-LAURIER	QC	LPV	4	99.006	5	98.991	14	98.762
CSF3	POSTE MONTAGNAIS (MILE 134)	QC	LPV	54	96.703	59	96.555	68	94.835
CSH4	LEBEL-SUR-QUEVILLON	QC	LPV	6	98.834	10	98.752	32	97.945
CSR3	VICTORIAVILLE (ANDRE-FORTIN)	QC	LPV	2	99.047	5	99.021	17	98.734
CSU2	CHISASIBI	QC	LPV	50	96.533	46	96.036	93	94.211
CTP9	DONALDSON	QC	LPV	118	91.106	140	90.472	259	84.403
CTT5	LA ROMAINE	QC	LPV	46	97.446	51	97.311	75	95.708
CTU2	FONTANGES	QC	LPV	63	95.235	64	95.017	94	92.950
CYAD	LA GRANDE-3	QC	LPV	48	96.400	42	95.973	85	94.198
CYAH	LA GRANDE-4	QC	LPV	47	96.025	49	95.723	95	93.862
CYAS	KANGIRSUK	QC	LPV	83	92.002	100	91.619	172	86.765
CYBC	BAIE-COMEAU	QC	LPV200	13	98.620	15	98.474	27	97.719
CYBG	BAGOTVILLE	QC	LPV200	12	98.853	14	98.715	22	98.072
CYBX	LOURDES-DE-BLANC-SABLON	QC	LPV	57	95.580	65	95.290	108	92.748
CYEY	MAGNY	QC	LPV	6	98.849	9	98.787	31	98.150
CYFJ	MONT-TREMBLANT	QC	LPV	5	99.031	5	98.998	14	98.776
CYGL	LA GRANDE RIVIERE	QC	LPV	49	96.510	43	95.981	90	94.278

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
CYGP	GASPE (MICHEL-POULIOT)	QC	LPV	18	98.386	18	98.317	36	97.435
CYGR	ILES-DE-LA-MADELEINE	QC	LPV	17	98.377	18	98.336	37	97.352
CYGV	HAVRE ST-PIERRE	QC	LPV	34	97.872	36	97.802	51	96.749
CYGW	KUUJJUARAPIK	QC	LPV	61	95.488	63	95.134	112	92.658
CYHA	QUAQTAQ	QC	LPV	116	91.253	135	90.826	211	85.250
CYHH	NEMISCAU	QC	LPV	35	97.872	45	97.377	63	96.133
CYHR	CHEVERY	QC	LPV	51	97.121	51	96.982	82	95.302
CYHU	ST-HUBERT	QC	LPV	3	99.070	3	99.070	13	98.912
CYIF	ST-AUGUSTIN	QC	LPV	49	96.246	53	96.125	77	94.186
CYIK	IVUJIVIK	QC	LPV	114	90.752	139	89.921	298	82.878
CYKG	KANGIQSUJUAQ (WAKEHAM BAY)	QC	LPV	131	91.063	153	90.494	248	84.483
CYKL	SCHEFFERVILLE	QC	LPV	65	94.740	69	94.576	93	92.638
CYKO	AKULIVIK	QC	LPV	84	91.807	108	91.226	185	85.677
CYKQ	WASKAGANISH	QC	LPV	31	98.164	41	97.692	57	96.361
CYLA	AUPALUK	QC	LPV	76	92.408	93	92.109	165	87.805
CYLQ	LA TUQUE	QC	LPV	7	98.968	9	98.886	20	98.376
CYLU	KANGIQSUALUJJUAQ (GEORGES RIVER)	QC	LPV	81	92.575	97	92.157	177	87.633
CYME	RUSSELL-BURNETT	QC	LPV	12	98.648	14	98.473	26	97.763
CYMT	CHAPAIS	QC	LPV	13	98.717	17	98.589	37	97.756
CYMU	UMIUJAQ	QC	LPV	58	94.042	68	93.592	115	91.222
CYMW	MANIWAKI	QC	LPV	3	99.047	4	99.040	11	98.841
CYMX	MONTREAL INTL (MIRABEL)	QC	LPV200	2	99.058	2	99.058	11	98.914
CYNA	NATASHQUAN	QC	LPV	37	97.700	39	97.635	59	96.492
CYNC	WEMINDJI	QC	LPV	46	97.066	43	96.504	76	94.941
CYND	GATINEAU	QC	LPV	2	99.062	2	99.060	8	98.927
CYNM	MATAGAMI	QC	LPV	11	98.785	21	98.648	39	97.682
CYPH	INUKJUAK	QC	LPV	68	93.150	81	92.644	165	88.733
CYPN	PORT-MENIER	QC	LPV	28	98.114	28	98.063	47	96.921
CYPX	PUVIRNITUQ	QC	LPV	77	92.212	97	91.722	184	86.670
CYQB	JEAN LESAGE INTL	QC	LPV200	4	99.001	8	98.968	15	98.474
CYRI	RIVIERE-DU-LOUP	QC	LPV	11	98.828	13	98.729	21	98.135
CYRJ	ROBERVAL	QC	LPV	9	98.886	13	98.772	21	98.079
CYRQ	TROIS-RIVIERES	QC	LPV200	4	99.026	7	99.009	18	98.716
CYSC	SHERBROOKE	QC	LPV	3	99.069	3	99.069	14	98.867
CYSG	ST-GEORGES	QC	LPV	3	99.033	4	99.013	18	98.645
CYTF	ALMA	QC	LPV	10	98.869	15	98.750	22	98.040

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
CYTQ	TASIUJAQ	QC	LPV	69	92.734	78	92.420	160	88.577
CYUL	PIERRE-ELLIOTT-TRUDEAU INTL	QC	LPV200	3	99.071	3	99.071	11	98.944
CYUY	ROUYN-NORANDA	QC	LPV200	6	98.875	8	98.824	25	98.292
CYVB	BONAVENTURE	QC	LPV	14	98.619	15	98.489	29	97.814
CYVO	VAL-DOR	QC	LPV200	8	98.913	7	98.840	24	98.364
CYVP	KUUJJUAQ	QC	LPV200	72	93.007	82	92.763	147	89.428
CYYY	MONT-JOLI	QC	LPV	14	98.709	17	98.559	26	97.852
CYZG	SALLUIT	QC	LPV	126	90.785	148	90.026	285	83.317
CYZV	SEPT-ILES	QC	LPV200	31	98.107	28	97.984	57	97.025
BID	BLOCK ISLAND STATE	RI	LPV	2	99.105	2	99.102	3	99.089
OQU	QUONSET STATE	RI	LPV200	2	99.103	2	99.099	4	99.081
PVD	RHODE ISLAND TF GREEN INTL	RI	LPV200	2	99.102	2	99.098	4	99.073
SFZ	NORTH CENTRAL STATE	RI	LPV	2	99.100	2	99.096	4	99.070
35A	UNION COUNTY` TROY SHELTON FLD	SC	LP	1	99.166	1	99.166	2	99.105
6J0	LEXINGTON COUNTY	SC	LPV	1	99.167	2	99.148	2	99.100
AIK	AIKEN RGNL	SC	LPV200	1	99.170	2	99.141	2	99.098
AND	ANDERSON RGNL	SC	LPV200	1	99.166	1	99.166	2	99.106
AQX	ALLENDALE COUNTY	SC	LPV	2	99.155	2	99.134	2	99.097
ARW	BEAUFORT EXEC	SC	LPV200	2	99.153	2	99.116	2	99.094
BBP	MARLBORO COUNTY JETPORT - H E	SC	LPV	1	99.166	2	99.159	2	99.107
BNL	BARNWELL RGNL	SC	LPV	2	99.165	2	99.135	2	99.097
CAE	COLUMBIA METRO	SC	LPV200	1	99.166	2	99.153	2	99.101
CDN	WOODWARD FLD	SC	LPV	1	99.166	2	99.157	2	99.099
CEU	OCONEE COUNTY RGNL	SC	LPV200	1	99.166	1	99.166	2	99.119
CHS	CHARLESTON AFB/INTL	SC	LPV200	1	99.166	2	99.134	2	99.096
CKI	WILLIAMSBURG RGNL	SC	LPV	1	99.166	2	99.147	2	99.102
CQW	CHERAW MUNICIPAL/LYNCH BELLINGER FL	SC	LPV	1	99.166	2	99.161	2	99.107
CRE	GRAND STRAND	SC	LPV200	1	99.166	2	99.151	2	99.096
CUB	JIM HAMILTON L B OWENS	SC	LPV	1	99.166	2	99.155	2	99.101
DCM	CHESTER CATAWBA RGNL	SC	LPV	1	99.166	1	99.166	2	99.105
DYB	SUMMERVILLE	SC	LPV200	1	99.166	2	99.135	2	99.097
FDW	FAIRFIELD COUNTY	SC	LPV	1	99.166	2	99.165	2	99.105
FLO	FLORENCE RGNL	SC	LPV	1	99.166	2	99.155	2	99.099
GGE	GEORGETOWN COUNTY	SC	LPV	1	99.166	2	99.141	2	99.102
GMU	GREENVILLE DOWNTOWN	SC	LPV200	1	99.166	1	99.166	2	99.112
GRD	GREENWOOD COUNTY	SC	LPV	1	99.170	2	99.166	2	99.101

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
GSP	GREENVILLE SPARTANBURG INTL	SC	LPV200	1	99.166	1	99.166	2	99.112
GYH	DONALDSON FLD	SC	LPV	1	99.166	1	99.166	2	99.111
HVS	HARTSVILLE RGNL	SC	LPV	1	99.166	2	99.157	2	99.107
HXD	HILTON HEAD	SC	LPV	2	99.151	2	99.111	2	99.094
HYW	CONWAY-HORRY COUNTY	SC	LPV	1	99.166	2	99.151	2	99.103
JZI	CHARLESTON EXEC	SC	LPV200	2	99.157	2	99.121	2	99.095
LKR	LANCASTER COUNTY-MC WHIRTER FL	SC	LPV200	1	99.166	1	99.166	2	99.106
LQK	PICKENS COUNTY	SC	LPV	1	99.166	1	99.166	2	99.121
LRO	MT PLEASANT RGNL-FAISON FLD	SC	LPV	1	99.166	2	99.134	2	99.095
LUX	LAURENS COUNTY	SC	LPV	1	99.166	1	99.166	2	99.104
MAO	MARION COUNTY	SC	LPV	1	99.166	2	99.155	2	99.100
MKS	BERKELEY COUNTY	SC	LPV	1	99.166	2	99.137	2	99.097
MYR	MYRTLE BEACH INTL	SC	LPV200	1	99.166	2	99.149	2	99.101
OGB	ORANGEBURG MUNICIPAL	SC	LPV	1	99.166	2	99.140	2	99.098
PYG	PAGELAND	SC	LPV	1	99.166	1	99.166	2	99.107
RBW	LOWCOUNTRY RGNL	SC	LPV200	1	99.166	2	99.134	2	99.096
SMS	SUMTER	SC	LPV200	1	99.166	2	99.154	2	99.102
SPA	SPARTANBURG DOWNTOWN MEML/SIMP	SC	LPV200	1	99.166	1	99.166	2	99.106
UDG	DARLINGTON COUNTY	SC	LPV	1	99.166	2	99.158	2	99.107
UZA	ROCK HILL/YORK COUNTY/BRYANT F	SC	LPV200	1	99.166	1	99.166	2	99.105
0D8	GETTYSBURG MUNICIPAL	SD	LP	3	98.988	5	98.915	8	98.830
49B	STURGIS MUNICIPAL	SD	LPV	3	99.011	5	98.953	8	98.828
4X4	WESSINGTON SPRINGS	SD	LP	2	99.043	5	98.991	5	98.891
8D3	SISSETON MUNICIPAL	SD	LPV	3	98.962	6	98.906	8	98.834
8D7	CLARK COUNTY	SD	LP	3	99.004	5	98.960	6	98.864
8V3	PARKSTON MUNICIPAL	SD	LPV	2	99.054	5	99.007	7	98.896
98D	ONIDA MUNICIPAL	SD	LP	3	98.999	4	98.942	7	98.856
9D0	HIGHMORE MUNICIPAL	SD	LPV	3	99.002	6	98.938	8	98.839
9D1	GREGORY MUNICIPAL - FLYNN FLD	SD	LPV	2	99.060	6	99.025	7	98.885
9V6	MARTIN MUNICIPAL	SD	LPV	3	99.054	5	99.031	7	98.883
9V9	CHAMBERLAIN MUNICIPAL	SD	LP	2	99.051	6	99.007	7	98.885
ABR	ABERDEEN RGNL	SD	LPV200	3	98.980	6	98.911	7	98.839
AGZ	WAGNER MUNICIPAL	SD	LPV	2	99.059	5	99.018	6	98.899
ATY	WATERTOWN RGNL	SD	LPV200	2	99.004	6	98.949	7	98.840
BKX	BROOKINGS RGNL	SD	LPV200	3	99.033	6	98.993	6	98.859
EFC	BELLE FOURCHE MUNICIPAL	SD	LPV	3	98.996	5	98.946	9	98.811

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
FSD	JOE FOSS FLD	SD	LPV200	2	99.044	4	99.007	6	98.862
HON	HURON RGNL	SD	LPV200	4	99.032	5	98.956	7	98.863
HSR	HOT SPRINGS MUNICIPAL	SD	LP	3	99.049	4	99.026	8	98.891
ICR	WINNER RGNL	SD	LPV	2	99.061	5	99.032	7	98.877
IEN	PINE RIDGE	SD	LPV	3	99.060	4	99.039	7	98.871
LEM	LEMMON MUNICIPAL	SD	LPV	4	98.930	5	98.899	11	98.789
MBG	MOBRIDGE MUNICIPAL	SD	LPV	5	98.951	5	98.911	8	98.789
MDS	MADISON MUNICIPAL	SD	LPV	2	99.036	5	98.990	6	98.864
MHE	MITCHELL MUNICIPAL	SD	LPV	2	99.045	6	98.997	6	98.874
MKA	MILLER MUNICIPAL	SD	LPV	3	99.019	5	98.942	8	98.840
PHP	PHILIP	SD	LPV	3	99.031	6	99.005	7	98.862
PIR	PIERRE RGNL	SD	LPV	6	99.033	6	98.937	8	98.842
RAP	RAPID CITY RGNL	SD	LPV200	3	99.034	5	99.004	6	98.842
SPF	BLACK HILLS-CLYDE ICE FLD	SD	LPV	3	99.008	5	98.960	7	98.831
SUO	ROSEBUD SIOUX TRIBAL	SD	LPV	2	99.068	4	99.044	6	98.899
VMR	HAROLD DAVIDSON FLD	SD	LPV	2	99.056	4	99.023	6	98.907
YKN	CHAN GURNEY MUNICIPAL	SD	LPV200	2	99.056	5	99.018	6	98.899
CCB2	SEABEE MINE	SK	LPV	23	97.872	33	97.426	48	96.322
CJC5	SHAUNAVON	SK	LPV	11	98.791	12	98.657	20	98.348
CJE3	WEYBURN	SK	LPV	8	98.806	9	98.728	20	98.401
CJH3	MAIDSTONE	SK	LPV	22	98.389	25	98.091	36	97.252
CJP9	CHARLOT RIVER	SK	LP	34	96.611	34	96.253	91	94.472
CJQ4	MAPLE CREEK	SK	LPV	10	98.795	12	98.710	26	98.337
CJU4	HUMBOLDT	SK	LPV	18	98.639	28	98.385	34	97.553
CJW7	CIGAR LAKE	SK	LPV	26	96.893	30	96.408	85	94.606
CJY3	TISDALE	SK	LPV	20	98.520	28	98.257	35	97.233
CJZ3	MELFORT (MILLER FIELD)	SK	LPV	20	98.523	29	98.227	31	97.187
CKQ8	MCARTHUR RIVER	SK	LPV	27	96.983	34	96.438	83	94.839
CYBE	URANIUM CITY	SK	LPV	31	96.595	34	96.243	95	94.408
CYBU	NIPAWIN	SK	LPV	24	98.453	25	98.167	34	97.033
CYEN	ESTEVAN REGIONAL	SK	LPV	8	98.796	10	98.738	20	98.442
CYES	EDMUNDSTON	SK	LPV	10	98.808	12	98.713	19	98.200
CYKC	COLLINS BAY	SK	LPV	27	96.815	33	96.349	98	94.250
CYKJ	KEY LAKE	SK	LPV	28	97.168	36	96.693	61	95.406
CYLJ	MEADOW LAKE	SK	LPV	29	98.168	33	97.866	43	96.931
CYMJ	AIR VICE MARSHAL C.M. MCEWEN	SK	LPV200	10	98.738	14	98.625	27	98.135

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
CYNL	POINTS NORTH LANDING	SK	LPV	28	96.823	33	96.359	92	94.329
CYPA	PRINCE ALBERT (GLASS FIELD)	SK	LPV	23	98.367	29	98.071	33	97.050
CYQR	REGINA INTL	SK	LPV200	10	98.736	12	98.613	28	98.147
CYQV	YORKTON MUNICIPALCIPALITY	SK	LPV	12	98.696	18	98.616	27	97.905
CYQW	NORTH BATTLEFORD	SK	LPV	18	98.477	26	98.198	34	97.327
CYVC	LA RONGE (BARBER FIELD)	SK	LPV	28	98.018	32	97.631	46	96.496
CYXE	JOHN G. DIEFENBAKER INTL	SK	LPV200	17	98.641	29	98.379	36	97.571
CYYN	SWIFT CURRENT	SK	LPV	10	98.735	15	98.602	27	98.125
0A3	SMITHVILLE MUNICIPAL	TN	LPV	1	99.152	1	99.152	1	99.152
0M3	PAUL BRIDGES FLD	TN	LP	1	99.152	1	99.152	1	99.152
0M4	BENTON COUNTY	TN	LPV	1	99.152	1	99.152	1	99.152
0M5	HUMPHREYS COUNTY	TN	LP	1	99.152	1	99.152	1	99.152
1A3	MARTIN CAMPBELL FLD	TN	LP	1	99.166	1	99.166	2	99.160
1M5	PORTLAND MUNICIPAL	TN	LPV	1	99.152	1	99.152	1	99.152
2A0	MARK ANTON	TN	LPV	1	99.152	1	99.152	1	99.152
2M2	LAWRENCEBURG-LAWRENCE COUNTY	TN	LPV	1	99.166	1	99.166	1	99.157
2M8	CHARLES W BAKER	TN	LPV	1	99.181	1	99.170	1	99.155
3A2	NEW TAZEWELL MUNICIPAL	TN	LP	1	99.152	1	99.152	1	99.152
3M7	LAFAYETTE MUNICIPAL	TN	LPV	1	99.152	1	99.152	1	99.152
8A3	LIVINGSTON MUNICIPAL	TN	LP	1	99.152	1	99.152	1	99.152
BGF	WINCHESTER MUNICIPAL	TN	LPV	1	99.166	1	99.166	1	99.158
BNA	NASHVILLE INTL	TN	LPV200	1	99.152	1	99.152	1	99.152
CHA	LOVELL FLD	TN	LPV200	1	99.166	1	99.166	1	99.160
CKV	OUTLAW FLD	TN	LPV	1	99.152	1	99.152	1	99.152
CSV	CROSSVILLE MEML-WHITSON FLD	TN	LPV200	1	99.152	1	99.152	1	99.152
DYR	DYERSBURG RGNL	TN	LPV	1	99.152	1	99.152	1	99.152
FYE	FAYETTE COUNTY	TN	LPV	1	99.173	1	99.170	1	99.157
FYM	FAYETTEVILLE MUNICIPAL	TN	LPV	1	99.173	1	99.170	1	99.159
GCY	GREENEVILLE MUNICIPAL	TN	LPV	1	99.152	1	99.152	1	99.152
GHM	CENTERVILLE MUNICIPAL	TN	LP	1	99.152	1	99.152	1	99.152
GKT	GATLINBURG-PIGEON FORGE	TN	LPV	1	99.152	1	99.152	1	99.152
GZS	ABERNATHY FLD	TN	LPV	1	99.173	1	99.170	1	99.158
HZD	CARROLL COUNTY	TN	LPV	1	99.152	1	99.152	1	99.152
JAU	COLONEL TOMMY C STINER AIRFIEL	TN	LP	1	99.152	1	99.152	1	99.152
JWN	JOHN C TUNE	TN	LPV	1	99.152	1	99.152	1	99.152
LUG	ELLINGTON	TN	LPV	1	99.152	1	99.152	1	99.152

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
M01	GENERAL DEWITT SPAIN	TN	LPV	1	99.181	1	99.170	1	99.157
M08	WILLIAM L WHITEHURST FLD	TN	LP	1	99.173	1	99.170	1	99.157
M53	HUMBOLDT MUNICIPAL	TN	LPV	1	99.152	1	99.152	1	99.152
M54	LEBANON MUNICIPAL	TN	LPV	1	99.152	1	99.152	1	99.152
M91	SPRINGFIELD ROBERTSON COUNTY	TN	LPV	1	99.152	1	99.152	1	99.152
MBT	MURFREESBORO MUNICIPAL	TN	LPV	1	99.152	1	99.152	1	99.152
MEM	MEMPHIS INTL	TN	LPV200	1	99.181	1	99.173	1	99.159
MKL	MC KELLAR-SIPES RGNL	TN	LPV200	1	99.152	1	99.152	1	99.152
MMI	MCMINN COUNTY	TN	LPV	1	99.155	1	99.155	1	99.155
MNV	MONROE COUNTY	TN	LPV	1	99.152	1	99.152	1	99.152
MOR	MOORE-MURRELL	TN	LPV	1	99.152	1	99.152	1	99.152
MQY	SMYRNA	TN	LPV200	1	99.152	1	99.152	1	99.152
MRC	MAURY COUNTY RGNL	TN	LPV	1	99.152	1	99.152	1	99.152
NQA	MILLINGTON/MEMPHIS	TN	LPV200	2	99.172	2	99.168	1	99.155
PHT	HENRY COUNTY	TN	LPV200	1	99.152	1	99.152	1	99.148
PVE	BEECH RIVER RGNL	TN	LPV	1	99.152	1	99.152	1	99.152
RKW	ROCKWOOD MUNICIPAL	TN	LPV	1	99.152	1	99.152	1	99.152
RNC	WARREN COUNTY MEML	TN	LPV	1	99.152	1	99.152	1	99.152
RVN	HAWKINS COUNTY	TN	LP	1	99.152	1	99.152	1	99.152
RZR	CLEVELAND RGNL JETPORT	TN	LPV200	1	99.166	1	99.166	1	99.158
SCX	SCOTT MUNICIPAL	TN	LPV	1	99.152	1	99.152	1	99.152
SNH	SAVANNAH-HARDIN COUNTY	TN	LPV	1	99.173	1	99.170	1	99.158
SRB	UPPER CUMBERLAND RGNL	TN	LPV	1	99.152	1	99.152	1	99.152
SYI	BOMAR FLD/SHELBYVILLE MUNICIPAL	TN	LPV	1	99.152	1	99.152	1	99.152
SZY	ROBERT SIBLEY	TN	LPV	1	99.173	1	99.170	1	99.157
TGC	GIBSON COUNTY	TN	LP	1	99.152	1	99.152	1	99.152
THA	TULLAHOMA RGNL/WM NORTHERN FLD	TN	LPV	1	99.155	1	99.155	1	99.155
TRI	TRI-CITIES	TN	LPV200	1	99.152	1	99.152	1	99.152
TYS	MC GHEE TYSON	TN	LPV200	1	99.152	1	99.152	1	99.152
UCY	EVERETT-STEWART RGNL	TN	LPV200	1	99.152	1	99.152	1	99.148
XNX	MUSIC CITY EXEC	TN	LPV	1	99.152	1	99.152	1	99.152
0F2	BOWIE MUNICIPAL	TX	LPV	1	99.153	1	99.148	2	99.090
11R	BRENHAM MUNICIPAL	TX	LPV	2	99.102	2	99.077	4	99.044
2R9	KENEDY RGNL	TX	LP	2	99.088	3	99.056	6	98.967
3R9	LAKEWAY AIRPARK	TX	LP	1	99.122	2	99.122	5	99.014
3T5	FAYETTE RGNL AIR CENTER	TX	LPV	2	99.101	2	99.082	4	99.017

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
41F	FLOYDADA MUNICIPAL	TX	LP	4	99.127	3	99.095	3	99.028
45R	HAWTHORNE FLD	TX	LP	2	99.119	2	99.105	3	99.065
4T2	KENNETH COPELAND	TX	LPV	1	99.153	1	99.151	2	99.095
50R	LOCKHART MUNICIPAL	TX	LPV	2	99.120	3	99.098	5	99.001
5C1	BOERNE STAGE FLD	TX	LP	1	99.115	3	99.087	5	99.006
5T9	MAVERICK COUNTY MEML INTL	TX	LPV	1	99.085	3	99.060	10	98.990
60R	NAVASOTA MUNICIPAL	TX	LPV	2	99.103	2	99.078	4	99.047
6R3	CLEVELAND MUNICIPAL	TX	LPV	2	99.126	2	99.104	3	99.079
77F	WINTERS MUNICIPAL	TX	LP	1	99.127	2	99.119	7	99.042
8F3	CROSBYTON MUNICIPAL	TX	LP	3	99.137	3	99.095	3	99.036
ABI	ABILENE RGNL	TX	LPV200	3	99.145	2	99.115	6	99.060
ACT	WACO RGNL	TX	LPV200	1	99.141	2	99.136	5	99.061
ADS	ADDISON	TX	LPV	1	99.155	1	99.151	5	99.132
AFW	FORT WORTH ALLIANCE	TX	LPV200	1	99.153	1	99.151	3	99.093
ALI	ALICE INTL	TX	LPV	3	99.096	4	99.052	17	98.909
AMA	RICK HUSBAND AMARILLO INTL	TX	LPV200	3	99.123	3	99.088	2	99.033
ARM	WHARTON RGNL	TX	LPV	2	99.097	2	99.057	5	98.974
ASL	HARRISON COUNTY	TX	LPV	2	99.151	2	99.109	3	99.096
AUS	AUSTIN-BERGSTROM INTL	TX	LPV200	2	99.120	2	99.101	5	99.010
AXH	HOUSTON/SOUTHWEST	TX	LPV	2	99.090	2	99.076	6	98.988
BAZ	NEW BRAUNFELS NTL	TX	LPV	2	99.113	2	99.076	6	98.985
BBD	CURTIS FLD	TX	LPV	1	99.124	2	99.120	5	99.029
BEA	BEEVILLE MUNICIPAL	TX	LPV	2	99.084	3	99.044	6	98.956
BFE	TERRY COUNTY	TX	LPV	3	99.109	3	99.083	4	99.018
BGD	HUTCHINSON COUNTY	TX	LPV	2	99.129	4	99.099	2	99.040
BKD	STEPHENS COUNTY	TX	LP	3	99.148	2	99.111	4	99.079
BKS	BROOKS COUNTY	TX	LPV	2	99.012	3	99.008	25	98.819
BMT	BEAUMONT MUNICIPAL	TX	LPV	2	99.119	2	99.105	3	99.064
BPG	BIG SPRING MC MAHON-WRINKLE	TX	LPV200	2	99.123	3	99.112	6	98.998
BPT	JACK BROOKS RGNL	TX	LPV200	2	99.118	2	99.105	3	99.064
BRO	BROWNSVILLE/SOUTH PADRE ISLAND	TX	LPV200	3	99.001	5	98.930	68	98.629
BWD	BROWNWOOD RGNL	TX	LPV	1	99.127	1	99.126	6	99.053
BYY	BAY CITY RGNL	TX	LPV	2	99.088	2	99.055	6	98.971
CDS	CHILDRESS MUNICIPAL	TX	LPV200	2	99.131	3	99.096	3	99.043
CFD	COULTER FLD	TX	LPV	2	99.105	2	99.081	4	99.053
CLL	EASTERWOOD FLD	TX	LPV200	2	99.105	2	99.081	4	99.047

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
CNW	TSTC WACO	TX	LPV200	1	99.141	2	99.134	5	99.060
COM	COLEMAN MUNICIPAL	TX	LPV	1	99.127	2	99.124	6	99.054
COT	COTULLA-LA SALLE COUNTY	TX	LPV	2	99.095	3	99.055	11	98.989
CPT	CLEBURNE RGNL	TX	LPV	1	99.155	1	99.151	4	99.054
CRP	CORPUS CHRISTI INTL	TX	LPV200	3	99.078	4	99.038	15	98.919
CVB	CASTROVILLE MUNICIPAL	TX	LPV	2	99.114	3	99.076	5	99.002
CWC	KICKAPOO DOWNTOWN	TX	LPV	2	99.148	2	99.107	3	99.086
CXO	CONROE/NORTH HOUSTON RGNL	TX	LPV200	3	99.127	3	99.102	4	99.054
CZT	DIMMIT COUNTY	TX	LPV	2	99.087	3	99.055	14	98.987
DAL	DALLAS LOVE FLD	TX	LPV200	1	99.155	1	99.151	4	99.107
DFW	DALLAS-FORT WORTH INTL	TX	LPV200	1	99.155	1	99.151	5	99.110
DHT	DALHART MUNICIPAL	TX	LPV	2	99.136	4	99.084	2	99.029
DKR	HOUSTON COUNTY	TX	LP	2	99.137	2	99.105	3	99.090
DRT	DEL RIO INTL	TX	LPV	1	99.084	3	99.068	6	98.988
DTO	DENTON ENTERPRISE	TX	LPV200	1	99.153	1	99.151	3	99.115
DUX	MOORE COUNTY	TX	LPV200	2	99.143	4	99.093	2	99.029
DWH	DAVID WAYNE HOOKS MEML	TX	LPV	2	99.098	2	99.076	4	99.051
E01	ROY HURD MEML	TX	LP	2	99.101	4	99.062	6	99.002
E11	ANDREWS COUNTY	TX	LPV	1	99.127	4	99.075	5	98.995
E19	GRUVER MUNICIPAL	TX	LP	2	99.135	4	99.113	3	99.029
E30	BRUCE FLD	TX	LPV	1	99.127	3	99.118	7	99.041
E38	ALPINE-CASPARIS MUNICIPAL	TX	LPV	1	99.075	4	99.056	5	98.976
EBG	SOUTH TEXAS INTL AT EDINBURG	TX	LPV	3	99.006	6	98.958	52	98.715
EDC	AUSTIN EXEC	TX	LPV200	2	99.121	2	99.101	6	99.036
EFD	ELLINGTON	TX	LPV200	2	99.090	2	99.076	6	99.011
ELA	EAGLE LAKE	TX	LP	2	99.101	3	99.070	6	98.990
ELP	EL PASO INTL	TX	LP	3	99.085	3	99.059	41	98.904
ERV	KERRVILLE MUNICIPAL/LOUIS SCHREINER	TX	LPV	2	99.115	2	99.093	5	99.022
ETN	EASTLAND MUNICIPAL	TX	LP	1	99.141	2	99.126	5	99.071
F00	JONES FLD	TX	LPV	1	99.151	1	99.151	2	99.145
F05	WILBARGER COUNTY	TX	LPV	2	99.134	2	99.096	2	99.055
F49	CITY OF SLATON/LARRY T NEAL ME	TX	LPV	3	99.113	3	99.094	3	99.034
F98	YOAKUM COUNTY	TX	LPV	2	99.113	3	99.087	4	99.016
FST	FORT STOCKTON-PECOS COUNTY	TX	LPV	2	99.089	3	99.064	6	99.000
FTW	FORT WORTH MEACHAM INTL	TX	LPV200	1	99.155	1	99.151	3	99.089
FWS	FORT WORTH SPINKS	TX	LPV200	1	99.155	1	99.151	3	99.054

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
GDJ	GRANBURY RGNL	TX	LPV	2	99.154	1	99.130	4	99.078
GGG	EAST TEXAS RGNL	TX	LPV	2	99.151	2	99.107	3	99.096
GKY	ARLINGTON MUNICIPAL	TX	LPV200	1	99.155	1	99.151	4	99.077
GLE	GAINESVILLE MUNICIPAL	TX	LPV	1	99.151	1	99.148	3	99.113
GLS	SCHOLES INTL AT GALVESTON	TX	LPV200	2	99.089	2	99.073	7	98.997
GNC	GAINES COUNTY	TX	LPV	2	99.124	3	99.076	4	98.995
GRK	ROBERT GRAY AAF	TX	LPV200	1	99.126	1	99.126	6	99.043
GTU	GEORGETOWN MUNICIPAL	TX	LPV	1	99.123	2	99.119	5	99.037
GVT	MAJORS	TX	LPV200	1	99.155	1	99.151	4	99.130
GYI	NORTH TEXAS RGNL/PERRIN FLD	TX	LPV200	1	99.151	1	99.148	3	99.146
GZN	GREGORY M SIMMONS MEML	TX	LPV	1	99.136	2	99.122	4	99.071
HBV	JIM HOGG COUNTY	TX	LPV	2	99.013	3	99.009	28	98.824
HDO	SOUTH TEXAS RGNL AT HONDO	TX	LPV	2	99.113	3	99.076	5	99.001
HHF	HEMPHILL COUNTY	TX	LPV	2	99.132	4	99.106	3	99.045
HOU	WILLIAM P HOBBY	TX	LPV200	2	99.090	2	99.076	6	99.011
HQZ	MESQUITE METRO	TX	LPV	1	99.155	1	99.151	4	99.102
HRL	VALLEY INTL	TX	LPV200	3	99.004	6	98.948	55	98.692
HRX	HEREFORD MUNICIPAL	TX	LPV200	3	99.105	2	99.056	3	99.025
HYI	SAN MARCOS RGNL	TX	LPV200	2	99.120	3	99.102	5	99.001
IAH	GEORGE BUSH INTCNTL/HOUSTON	TX	LPV200	2	99.093	2	99.076	4	99.039
IKG	KLEBERG COUNTY	TX	LPV	3	99.091	4	99.049	19	98.862
ILE	SKYLARK FLD	TX	LPV200	1	99.126	1	99.126	6	99.043
INJ	HILLSBORO MUNICIPAL	TX	LPV	1	99.155	1	99.151	4	99.062
INK	WINKLER COUNTY	TX	LPV200	2	99.107	4	99.051	5	98.977
IWS	WEST HOUSTON	TX	LP	2	99.098	2	99.076	6	99.005
JAS	JASPER COUNTY/BELL FLD	TX	LPV	3	99.130	2	99.105	3	99.076
JSO	CHEROKEE COUNTY	TX	LPV	2	99.151	2	99.106	3	99.089
JWY	MID-WAY RGNL	TX	LPV200	1	99.155	1	99.151	5	99.091
JXI	FOX STEPHENS FLD - GILMER MUNICIPAL	TX	LP	1	99.155	2	99.148	2	99.101
LBB	LUBBOCK PRESTON SMITH INTL	TX	LPV200	3	99.109	3	99.086	3	99.034
LBX	TEXAS GULF COAST RGNL	TX	LPV	2	99.087	3	99.067	6	98.973
LFK	ANGELINA COUNTY	TX	LPV	2	99.134	2	99.105	3	99.082
LHB	HEARNE MUNICIPAL	TX	LPV200	2	99.109	2	99.083	4	99.059
LIU	LITTLEFIELD TAYLOR BROWN MUNICIPAL	TX	LPV	2	99.083	2	99.061	3	99.025
LLN	LEVELLAND MUNICIPAL	TX	LPV	3	99.110	3	99.074	3	99.032
LNC	LANCASTER RGNL	TX	LPV200	1	99.155	1	99.151	3	99.098

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
LRD	LAREDO INTL	TX	LPV200	2	99.048	3	99.040	27	98.836
LUD	DECATUR MUNICIPAL	TX	LPV	1	99.153	1	99.152	2	99.095
LUV	LAMESA MUNICIPAL	TX	LPV200	2	99.120	3	99.096	3	99.000
LVJ	PEARLAND RGNL	TX	LPV	2	99.090	2	99.076	6	98.999
LXY	MEXIA-LIMESTONE COUNTY	TX	LP	1	99.155	2	99.113	5	99.081
MAF	MIDLAND INTL AIR AND SPACE POR	TX	LPV200	1	99.127	4	99.070	6	99.001
MDD	MIDLAND AIRPARK	TX	LPV	2	99.126	4	99.079	6	98.997
MFE	MC ALLEN MILLER INTL	TX	LPV200	4	98.992	5	98.940	63	98.649
MKN	COMANCHE COUNTY-CITY	TX	LPV	1	99.135	1	99.126	6	99.054
MNZ	HAMILTON MUNICIPAL	TX	LPV	1	99.132	1	99.126	6	99.059
MWL	MINERAL WELLS RGNL	TX	LPV200	1	99.153	1	99.127	4	99.088
OCH	NACOGDOCHES A L MANGHAM JR RGN	TX	LPV200	2	99.136	2	99.105	3	99.088
ODO	ODESSA-SCHLEMEYER FLD	TX	LPV200	1	99.127	4	99.054	6	99.000
ONY	OLNEY MUNICIPAL	TX	LPV	2	99.150	2	99.105	3	99.082
ORG	ORANGE COUNTY	TX	LPV	2	99.118	2	99.105	3	99.063
PEQ	PECOS MUNICIPAL	TX	LPV200	2	99.094	4	99.062	6	98.989
PIL	PORT ISABEL-CAMERON COUNTY	TX	LPV	3	99.003	5	98.956	52	98.700
PKV	CALHOUN COUNTY	TX	LPV	2	99.089	3	99.038	6	98.962
PPA	PERRY LEFORS FLD	TX	LPV	2	99.134	4	99.101	2	99.043
PRX	COX FLD	TX	LPV	1	99.155	1	99.151	2	99.140
PSX	PALACIOS MUNICIPAL	TX	LPV	2	99.087	3	99.047	6	98.962
PVW	HALE COUNTY	TX	LPV	4	99.116	3	99.094	3	99.024
PWG	MC GREGOR EXEC	TX	LPV	1	99.141	2	99.137	5	99.061
PYX	PERRYTON OCHILTREE COUNTY	TX	LPV	2	99.132	4	99.111	4	99.024
RAS	MUSTANG BEACH	TX	LPV	3	99.079	4	99.029	13	98.928
RBD	DALLAS EXEC	TX	LPV200	1	99.155	1	99.151	4	99.094
RBO	NUECES COUNTY	TX	LPV	3	99.092	4	99.053	16	98.919
RKP	ARANSAS COUNTY	TX	LPV	2	99.080	3	99.034	8	98.949
RYW	LAGO VISTA TX/RUSTY ALLEN	TX	LPV	1	99.122	2	99.122	5	99.015
SAT	SAN ANTONIO INTL	TX	LPV200	1	99.115	3	99.084	6	98.996
SGR	SUGAR LAND RGNL	TX	LPV200	2	99.092	2	99.076	6	98.989
SJT	SAN ANGELO RGNL/MATHIS FLD	TX	LPV	1	99.124	4	99.116	6	99.016
SLR	SULPHUR SPRINGS MUNICIPAL	TX	LPV	1	99.155	1	99.151	3	99.142
SNK	WINSTON FLD	TX	LPV200	2	99.123	3	99.111	5	99.055
SWI	SHERMAN MUNICIPAL	TX	LP	1	99.151	1	99.150	3	99.146
SWW	AVENGER FLD	TX	LPV	2	99.129	2	99.116	6	99.055

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
T23	ALBANY MUNICIPAL	TX	LPV	2	99.137	2	99.112	4	99.070
T41	LA PORTE MUNICIPAL	TX	LPV	2	99.090	2	99.076	6	99.011
T74	TAYLOR MUNICIPAL	TX	LPV	2	99.123	2	99.102	5	99.036
T78	LIBERTY MUNICIPAL	TX	LP	2	99.118	2	99.103	3	99.066
T82	GILLESPIE COUNTY	TX	LPV	1	99.121	2	99.118	5	99.031
TDW	TRADEWIND	TX	LPV	3	99.117	3	99.082	2	99.033
TFP	MCCAMPBELL-PORTER	TX	LPV	2	99.080	3	99.031	9	98.934
TKI	MCKINNEY NTL	TX	LPV200	1	99.153	1	99.151	3	99.145
TME	HOUSTON EXEC	TX	LPV	2	99.098	2	99.076	6	99.004
TPL	DRAUGHON-MILLER CENTRAL TEXAS	TX	LPV200	1	99.127	3	99.122	5	99.045
TRL	TERRELL MUNICIPAL	TX	LPV	1	99.155	1	99.151	4	99.097
TX2	CHASE FLD INDUSTRIAL	TX	LPV	1	99.098	2	99.062	5	99.026
TXW	MID VALLEY	TX	LPV	3	99.001	4	98.962	54	98.740
TYR	TYLER POUNDS RGNL	TX	LPV200	2	99.155	2	99.114	3	99.097
UTS	HUNTSVILLE MUNICIPAL	TX	LPV	2	99.131	2	99.105	3	99.066
VCT	VICTORIA RGNL	TX	LPV200	2	99.090	3	99.042	6	98.964
XBP	BRIDGEPORT MUNICIPAL	TX	LPV	1	99.153	2	99.144	2	99.096
41U	MANTI-EPHRAIM	UT	LPV	2	99.170	3	99.153	3	99.056
74V	ROOSEVELT MUNICIPAL	UT	LPV	1	99.173	3	99.138	4	99.044
BCE	BRYCE CANYON	UT	LPV	2	99.152	3	99.129	6	98.969
BDG	BLANDING MUNICIPAL	UT	LPV	2	99.152	3	99.111	4	99.025
BMC	BRIGHAM CITY RGNL	UT	LP	1	99.166	2	99.111	6	98.964
CDC	CEDAR CITY RGNL	UT	LPV	3	99.152	4	99.101	5	98.959
CNY	CANYONLANDS RGNL	UT	LP	2	99.152	3	99.135	4	99.035
DTA	DELTA MUNICIPAL	UT	LP	2	99.170	4	99.142	4	99.050
ENV	WENDOVER	UT	LPV	1	99.170	4	99.112	5	99.022
FOM	FILLMORE MUNICIPAL	UT	LPV	2	99.152	4	99.128	5	99.051
LGU	LOGAN-CACHE	UT	LPV	2	99.161	4	99.096	6	98.959
OGD	OGDEN-HINCKLEY	UT	LPV	1	99.166	2	99.120	6	98.991
PUC	CARBON COUNTY RGNL/BUCK DAVIS	UT	LP	1	99.173	3	99.145	3	99.058
PVU	PROVO MUNICIPAL	UT	LPV200	1	99.173	3	99.141	3	99.047
RIF	RICHFIELD MUNICIPAL	UT	LP	2	99.152	3	99.133	6	99.036
SGU	ST GEORGE RGNL	UT	LPV	4	99.117	4	99.068	5	98.964
SLC	SALT LAKE CITY INTL	UT	LPV200	1	99.170	3	99.135	6	99.011
SPK	SPANISH FORK MUNICIPAL/WOODHOUSE FL	UT	LP	1	99.173	2	99.123	3	99.050
TVY	BOLINDER FLD-TOOELE VALLEY	UT	LPV200	1	99.170	3	99.143	6	99.028

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
U14	NEPHI MUNICIPAL	UT	LPV	1	99.173	4	99.144	3	99.051
U42	SOUTH VALLEY RGNL	UT	LPV	1	99.170	3	99.143	6	99.026
U55	PANGUITCH MUNICIPAL	UT	LPV200	2	99.152	3	99.127	7	98.981
VEL	VERNAL RGNL	UT	LPV	1	99.170	3	99.140	6	99.024
0V4	BROOKNEAL/CAMPBELL COUNTY	VA	LPV	1	99.152	1	99.152	1	99.152
0VG	LEE COUNTY	VA	LPV	1	99.152	1	99.152	1	99.152
AVC	MECKLENBURG-BRUNSWICK RGNL	VA	LPV	1	99.152	1	99.152	2	99.139
BCB	VIRGINIA TECH/MONTGOMERY EXEC	VA	LPV	1	99.152	1	99.152	1	99.152
BKT	ALLEN C PERKINSON BLACKSTONE A	VA	LPV	1	99.152	1	99.152	1	99.152
CHO	CHARLOTTESVILLE-ALBEMARLE	VA	LPV200	1	99.152	1	99.152	1	99.152
CJR	CULPEPER RGNL	VA	LPV	1	99.152	1	99.152	1	99.152
CPK	CHESAPEAKE RGNL	VA	LPV200	1	99.152	1	99.152	3	99.124
DAN	DANVILLE RGNL	VA	LPV200	1	99.152	1	99.152	1	99.152
EMV	EMPORIA-GREENSVILLE RGNL	VA	LPV	1	99.152	1	99.152	2	99.139
FCI	RICHMOND EXEC/CHESTERFIELD COU	VA	LPV	1	99.152	1	99.152	1	99.152
FKN	FRANKLIN RGNL	VA	LPV	1	99.152	1	99.152	2	99.125
FVX	FARMVILLE RGNL	VA	LPV	1	99.152	1	99.152	1	99.152
FYJ	MIDDLE PENINSULA RGNL	VA	LPV	1	99.152	1	99.152	1	99.152
HLX	TWIN COUNTY	VA	LPV	1	99.152	1	99.152	1	99.152
HSP	INGALLS FLD	VA	LPV	1	99.152	1	99.152	1	99.152
HWY	WARRENTON/FAUQUIER	VA	LPV200	1	99.152	1	99.152	1	99.152
JFZ	TAZEWELL COUNTY	VA	LPV	1	99.152	1	99.152	1	99.152
JYO	LEESBURG EXEC	VA	LPV	1	99.152	1	99.152	1	99.152
LKU	LOUISA COUNTY/FREEMAN FLD	VA	LPV	1	99.152	1	99.152	1	99.152
LNP	LONESOME PINE	VA	LPV	1	99.152	1	99.152	1	99.152
LUA	LURAY CAVERNS	VA	LP	1	99.152	1	99.152	1	99.152
LYH	LYNCHBURG RGNL/PRESTON GLENN F	VA	LPV	1	99.152	1	99.152	1	99.152
MFV	ACCOMACK COUNTY	VA	LPV	1	99.152	1	99.152	3	99.147
MKJ	MOUNTAIN EMPIRE	VA	LPV	1	99.152	1	99.152	1	99.152
MTV	BLUE RIDGE	VA	LPV	1	99.152	1	99.152	1	99.152
OFP	HANOVER COUNTY MUNICIPAL	VA	LPV	1	99.152	1	99.152	1	99.152
OKV	WINCHESTER RGNL	VA	LPV200	1	99.152	1	99.152	1	99.152
ORF	NORFOLK INTL	VA	LPV200	1	99.152	1	99.152	3	99.125
PHF	NEWPORT NEWS/WILLIAMSBURG INTL	VA	LPV200	1	99.152	1	99.152	3	99.141
PSK	NEW RIVER VALLEY	VA	LPV200	1	99.152	1	99.152	1	99.152
PTB	DINWIDDIE COUNTY	VA	LPV	1	99.152	1	99.152	1	99.152

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
PVG	HAMPTON ROADS EXEC	VA	LPV200	1	99.152	1	99.152	3	99.125
RIC	RICHMOND INTL	VA	LPV200	1	99.152	1	99.152	1	99.152
RMN	STAFFORD RGNL	VA	LPV	1	99.152	1	99.152	1	99.152
ROA	ROANOKE/BLACKSBURG RGNL (WOODR	VA	LPV	1	99.152	1	99.152	1	99.152
SFQ	SUFFOLK EXEC	VA	LPV	1	99.152	1	99.152	2	99.125
SHD	SHENANDOAH VALLEY RGNL	VA	LPV200	1	99.152	1	99.152	1	99.152
VJI	VIRGINIA HIGHLANDS	VA	LPV	1	99.152	1	99.152	1	99.152
W78	WILLIAM M TUCK	VA	LPV	1	99.152	1	99.152	2	99.151
W96	NEW KENT COUNTY	VA	LP	1	99.152	1	99.152	1	99.152
WAL	WALLOPS FLIGHT FACILITY	VA	LPV	1	99.152	1	99.152	3	99.147
XSA	TAPPAHANNOCK/ESSEX COUNTY	VA	LPV	1	99.152	1	99.152	1	99.152
BTV	BURLINGTON INTL	VT	LPV200	2	99.087	3	99.084	7	99.012
EFK	NORTHEAST KINGDOM INTL	VT	LP	3	99.072	3	99.072	10	98.967
FSO	FRANKLIN COUNTY STATE	VT	LPV	3	99.080	3	99.080	7	98.985
MPV	EDWARD F KNAPP STATE	VT	LPV	2	99.095	2	99.095	8	99.026
MVL	MORRISVILLE-STOWE STATE	VT	LPV	2	99.087	3	99.083	7	98.978
RUT	RUTLAND - SOUTHERN VERMONT RGN	VT	LPV	2	99.095	2	99.095	5	99.061
ALW	WALLA WALLA RGNL	WA	LPV200	6	99.016	11	98.859	14	98.550
AWO	ARLINGTON MUNICIPAL	WA	LPV200	8	98.702	12	98.596	18	98.294
BLI	BELLINGHAM INTL	WA	LPV200	10	98.646	12	98.535	23	98.223
BVS	SKAGIT RGNL	WA	LPV	9	98.683	13	98.568	19	98.254
CLM	WILLIAM R FAIRCHILD INTL	WA	LPV	9	98.688	12	98.553	21	98.267
CLS	CHEHALIS-CENTRALIA	WA	LPV	7	98.866	10	98.698	15	98.388
DEW	DEER PARK	WA	LPV	10	98.807	12	98.670	18	98.393
EPH	EPHRATA MUNICIPAL	WA	LPV	8	98.840	11	98.704	15	98.413
FHR	FRIDAY HARBOR	WA	LPV	9	98.653	11	98.536	21	98.230
GEG	SPOKANE INTL	WA	LPV200	12	98.850	13	98.693	17	98.412
HQM	BOWERMAN	WA	LPV200	8	98.791	10	98.637	16	98.325
KLS	SOUTHWEST WASHINGTON RGNL	WA	LPV	6	98.955	9	98.757	16	98.492
MWH	GRANT COUNTY INTL	WA	LPV200	8	98.844	10	98.705	14	98.425
OLM	OLYMPIA RGNL	WA	LPV200	8	98.816	9	98.673	14	98.380
ORS	ORCAS ISLAND	WA	LP	10	98.645	13	98.530	22	98.233
PAE	SNOHOMISH COUNTY (PAINE FLD)	WA	LPV200	8	98.713	11	98.612	14	98.329
PLU	PIERCE COUNTY - THUN FLD	WA	LPV	7	98.792	10	98.663	14	98.403
PSC	TRI-CITIES	WA	LPV200	6	98.977	9	98.811	12	98.531
PWT	BREMERTON NTL	WA	LPV200	7	98.754	10	98.621	14	98.325

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
RLD	RICHLAND	WA	LPV	6	98.967	10	98.807	12	98.527
RNT	RENTON MUNICIPAL	WA	LPV	7	98.762	9	98.640	15	98.359
SEA	SEATTLE-TACOMA INTL	WA	LPV200	7	98.762	9	98.639	14	98.342
SFF	FELTS FLD	WA	LPV	12	98.849	13	98.688	17	98.418
SHN	SANDERSON FLD	WA	LPV	7	98.765	9	98.632	14	98.329
TDO	ED CARLSON MEML FLD - SOUTH LE	WA	LPV	6	98.919	10	98.722	15	98.448
TIW	TACOMA NARROWS	WA	LPV	7	98.774	9	98.646	13	98.355
YKM	YAKIMA AIR TRML/MCALLISTER FLD	WA	LPV200	6	98.944	10	98.783	12	98.491
3T3	BOYCEVILLE MUNICIPAL	WI	LPV	3	98.990	4	98.943	8	98.868
57C	EAST TROY MUNICIPAL	WI	LPV	2	99.111	3	99.037	5	98.975
61C	FORT ATKINSON MUNICIPAL	WI	LP	2	99.067	2	99.019	4	98.953
82C	MAUSTON/NEW LISBON UNION	WI	LP	2	99.031	3	98.985	8	98.899
8D1	NEW HOLSTEIN MUNICIPAL	WI	LPV	2	99.030	3	98.994	7	98.919
AHH	AMERY MUNICIPAL	WI	LP	3	98.979	4	98.942	8	98.865
AIG	LANGLADE COUNTY	WI	LPV	2	99.010	5	98.959	10	98.837
ARV	LAKELAND/NOBLE F LEE MEML FLD	WI	LPV	4	98.958	6	98.906	15	98.721
ASX	JOHN F KENNEDY MEML	WI	LPV	4	98.909	7	98.851	16	98.613
ATW	APPLETON INTL	WI	LPV200	2	99.024	4	98.979	10	98.903
AUW	WAUSAU DOWNTOWN	WI	LPV200	2	99.009	5	98.961	9	98.851
BCK	BLACK RIVER FALLS AREA	WI	LPV	2	99.022	4	98.969	8	98.891
BUU	BURLINGTON MUNICIPAL	WI	LP	2	99.113	4	99.053	5	98.988
C29	MIDDLETON MUNICIPAL/MOREY FLD	WI	LPV	2	99.050	2	99.003	5	98.942
C35	REEDSBURG MUNICIPAL	WI	LP	2	99.034	2	98.992	7	98.923
C47	PORTAGE MUNICIPAL	WI	LP	2	99.039	2	98.992	8	98.925
CLI	CLINTONVILLE MUNICIPAL	WI	LPV	2	99.020	5	98.975	9	98.862
CMY	SPARTA/FORT MC COY	WI	LPV	2	99.028	3	98.983	8	98.904
CWA	CENTRAL WISCONSIN	WI	LPV200	2	99.010	5	98.962	9	98.855
DLL	BARABOO/WISCONSIN DELLS RGNL	WI	LPV	2	99.038	2	98.992	7	98.929
EAU	CHIPPEWA VALLEY RGNL	WI	LPV200	3	98.987	4	98.944	9	98.868
EGV	EAGLE RIVER UNION	WI	LPV	4	98.965	7	98.907	15	98.728
ENW	KENOSHA RGNL	WI	LPV200	3	99.117	4	99.058	4	98.996
ETB	WEST BEND MUNICIPAL	WI	LPV	2	99.067	2	99.017	4	98.940
EZS	SHAWANO MUNICIPAL	WI	LPV	2	99.019	5	98.973	9	98.848
FLD	FOND DU LAC COUNTY	WI	LPV	2	99.040	2	98.994	7	98.921
GRB	GREEN BAY/AUSTIN STRAUBEL INTL	WI	LPV200	2	99.020	5	98.976	10	98.882
GTG	GRANTSBURG MUNICIPAL	WI	LP	4	98.953	4	98.924	14	98.801

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
HXF	HARTFORD MUNICIPAL	WI	LPV	2	99.067	2	99.016	4	98.947
HYR	SAWYER COUNTY	WI	LPV	5	98.960	4	98.924	15	98.711
ISW	ALEXANDER FLD SOUTH WOOD COUNT	WI	LPV	2	99.023	5	98.966	9	98.886
JVL	SOUTHERN WISCONSIN RGNL	WI	LPV200	3	99.113	3	99.036	3	98.969
LNR	TRI-COUNTY RGNL	WI	LPV	2	99.045	2	98.992	5	98.938
LSE	LA CROSSE RGNL	WI	LPV	2	99.028	3	98.981	8	98.911
LUM	MENOMONIE MUNICIPAL/SCORE FLD	WI	LPV	3	98.992	4	98.945	9	98.870
MDZ	TAYLOR COUNTY	WI	LPV	4	99.000	6	98.944	9	98.839
MFI	MARSHFIELD MUNICIPAL	WI	LPV	2	99.009	5	98.961	9	98.876
MKE	GENERAL MITCHELL INTL	WI	LPV200	2	99.100	3	99.034	4	98.971
MRJ	IOWA COUNTY	WI	LPV200	2	99.051	2	99.008	4	98.952
MSN	DANE COUNTY RGNL/TRUAX FLD	WI	LPV200	2	99.054	2	99.003	5	98.948
MTW	MANITOWOC COUNTY	WI	LPV200	2	99.031	4	98.993	8	98.909
MWC	LAWRENCE J TIMMERMAN	WI	LPV	3	99.082	2	99.021	5	98.965
OCQ	OCONTO/J DOUGLAS BAKE MUNICIPAL	WI	LP	2	99.014	5	98.973	9	98.854
OEO	L O SIMENSTAD MUNICIPAL	WI	LPV200	3	98.976	4	98.939	9	98.865
OSH	WITTMAN RGNL	WI	LPV200	2	99.028	3	98.992	9	98.915
OVS	BOSCOBEL	WI	LPV	2	99.044	3	98.991	6	98.944
PBH	PRICE COUNTY	WI	LPV	3	98.975	4	98.930	14	98.780
PCZ	WAUPACA MUNICIPAL	WI	LPV	2	99.024	4	98.976	10	98.899
PVB	PLATTEVILLE MUNICIPAL	WI	LPV	2	99.058	2	99.011	4	98.958
RAC	BATTEN INTL	WI	LPV	2	99.102	4	99.051	4	98.977
RCX	RUSK COUNTY	WI	LPV	3	98.981	4	98.933	11	98.824
RHI	RHINELANDER/ONEIDA COUNTY	WI	LPV200	3	98.978	6	98.924	13	98.781
RNH	NEW RICHMOND RGNL	WI	LPV	3	98.979	4	98.943	8	98.871
RPD	RICE LAKE RGNL/CARL'S FLD	WI	LPV200	3	98.970	4	98.942	10	98.843
RRL	MERRILL MUNICIPAL	WI	LPV	3	99.005	5	98.944	10	98.843
SBM	SHEBOYGAN COUNTY MEML	WI	LPV200	2	99.050	2	99.007	6	98.925
STE	STEVENS POINT MUNICIPAL	WI	LPV	2	99.012	5	98.965	9	98.873
SUE	DOOR COUNTY CHERRYLAND	WI	LPV	2	99.020	5	98.967	10	98.868
SUW	RICHARD I BONG	WI	LP	5	98.910	9	98.832	18	98.607
TKV	TOMAHAWK RGNL	WI	LP	3	98.978	5	98.931	11	98.824
UBE	CUMBERLAND MUNICIPAL	WI	LPV	3	98.969	4	98.942	10	98.845
UES	WAUKESHA COUNTY	WI	LPV200	3	99.087	2	99.021	5	98.969
UNU	DODGE COUNTY	WI	LPV	2	99.050	2	99.002	4	98.944
VIQ	NEILLSVILLE MUNICIPAL	WI	LPV	2	99.013	5	98.965	9	98.880

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
Y50	WAUTOMA MUNICIPAL	WI	LP	2	99.027	2	98.988	9	98.910
Y55	CRANDON/STEVE CONWAY MUNICIPAL	WI	LPV	3	99.000	8	98.941	13	98.811
Y72	BLOYER FLD	WI	LP	2	99.028	3	98.984	8	98.898
3I2	MASON COUNTY	WV	LPV	1	99.152	1	99.152	1	99.152
6L4	LOGAN COUNTY	WV	LPV	1	99.152	1	99.152	1	99.152
BKW	RALEIGH COUNTY MEML	WV	LPV200	1	99.152	1	99.152	1	99.152
BLF	MERCER COUNTY	WV	LPV	1	99.152	1	99.152	1	99.152
CKB	NORTH CENTRAL WEST VIRGINIA	WV	LPV200	1	99.152	1	99.152	1	99.152
CRW	WEST VIRGINIA INTL YEAGER	WV	LPV200	1	99.152	1	99.152	1	99.152
HLG	WHEELING OHIO COUNTY	WV	LPV200	1	99.152	1	99.152	1	99.148
HTS	TRI-STATE/MILTON J FERGUSON FL	WV	LPV200	1	99.152	1	99.152	1	99.152
I18	JACKSON COUNTY	WV	LPV200	1	99.152	1	99.152	1	99.152
LWB	GREENBRIER VALLEY	WV	LPV	1	99.152	1	99.152	1	99.152
MGW	MORGANTOWN MUNICIPAL (WALTER L BILL	WV	LPV200	1	99.152	1	99.152	1	99.152
MRB	EASTERN WV RGNL/SHEPHERD FLD	WV	LPV	1	99.152	1	99.152	1	99.152
PKB	MID-OHIO VALLEY RGNL	WV	LPV	1	99.152	1	99.152	1	99.152
USW	BOGGS FLD	WV	LPV	1	99.152	1	99.152	1	99.152
W22	UPSHUR COUNTY RGNL	WV	LPV	1	99.152	1	99.152	1	99.152
W35	POTOMAC AIRPARK	WV	LP	1	99.152	1	99.152	2	99.150
W99	GRANT COUNTY	WV	LP	1	99.152	1	99.152	1	99.152
BYG	JOHNSON COUNTY	WY	LPV	3	99.024	5	98.979	8	98.845
COD	YELLOWSTONE RGNL	WY	LPV	3	99.033	5	98.981	7	98.856
CPR	CASPER/NATRONA COUNTY INTL	WY	LPV	3	99.054	5	99.038	6	98.903
CYS	CHEYENNE RGNL/JERRY OLSON FLD	WY	LPV200	3	99.124	2	99.101	5	98.998
DGW	CONVERSE COUNTY	WY	LPV200	3	99.056	5	99.048	6	98.928
DWX	DIXON	WY	LP	2	99.163	3	99.117	4	98.999
EAN	PHIFER AIRFIELD	WY	LPV200	3	99.064	3	99.061	5	98.953
ECS	MONDELL FLD	WY	LPV	3	99.037	5	98.997	7	98.867
EMM	KEMMERER MUNICIPAL	WY	LPV	3	99.153	4	99.084	7	98.965
EVW	EVANSTON-UINTA COUNTY BURNS FL	WY	LPV	1	99.166	2	99.120	6	98.977
FBR	FORT BRIDGER	WY	LP	1	99.166	2	99.109	7	98.978
GCC	NORTHEAST WYOMING RGNL	WY	LPV	3	98.997	5	98.955	7	98.848
GEY	SOUTH BIG HORN COUNTY	WY	LPV	3	99.033	5	98.982	7	98.824
GUR	CAMP GUERNSEY	WY	LP	3	99.061	3	99.059	6	98.952
HSG	HOT SPRINGS COUNTY	WY	LPV	4	99.055	5	99.011	5	98.897
JAC	JACKSON HOLE	WY	LPV200	3	99.085	5	99.002	6	98.896

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
LAR	LARAMIE RGNL	WY	LPV	3	99.129	3	99.098	5	98.967
LND	HUNT FLD	WY	LPV	2	99.116	3	99.070	4	98.951
PNA	RALPH WENZ FLD	WY	LPV	3	99.103	4	99.044	6	98.912
POY	POWELL MUNICIPAL	WY	LPV	3	99.033	5	98.976	8	98.812
RIW	CENTRAL WYOMING RGNL	WY	LPV200	3	99.083	5	99.038	5	98.914
RKS	SOUTHWEST WYOMING RGNL	WY	LPV200	2	99.163	3	99.110	6	98.964
RWL	RAWLINS MUNICIPAL/HARVEY FLD	WY	LPV	3	99.106	4	99.060	5	98.942
SAA	SHIVELY FLD	WY	LPV	2	99.139	3	99.097	5	98.954
SHR	SHERIDAN COUNTY	WY	LPV	3	99.022	5	98.973	10	98.829
U68	NORTH BIG HORN COUNTY	WY	LPV	3	99.033	5	98.977	8	98.811
W43	HULETT MUNICIPAL	WY	LPV	3	98.997	5	98.956	8	98.820
WRL	WORLAND MUNICIPAL	WY	LPV	4	99.050	5	98.997	6	98.859
CYMA	MAYO	YT	LPV	27	96.352	30	96.124	46	95.418
CYQH	WATSON LAKE	YT	LPV	30	96.865	36	96.535	62	95.535
CYXY	ERIK NIELSEN INTL	YT	LPV200	26	96.885	31	96.613	50	95.813
CYZW	TESLIN	YT	LPV	27	96.933	36	96.719	50	95.857

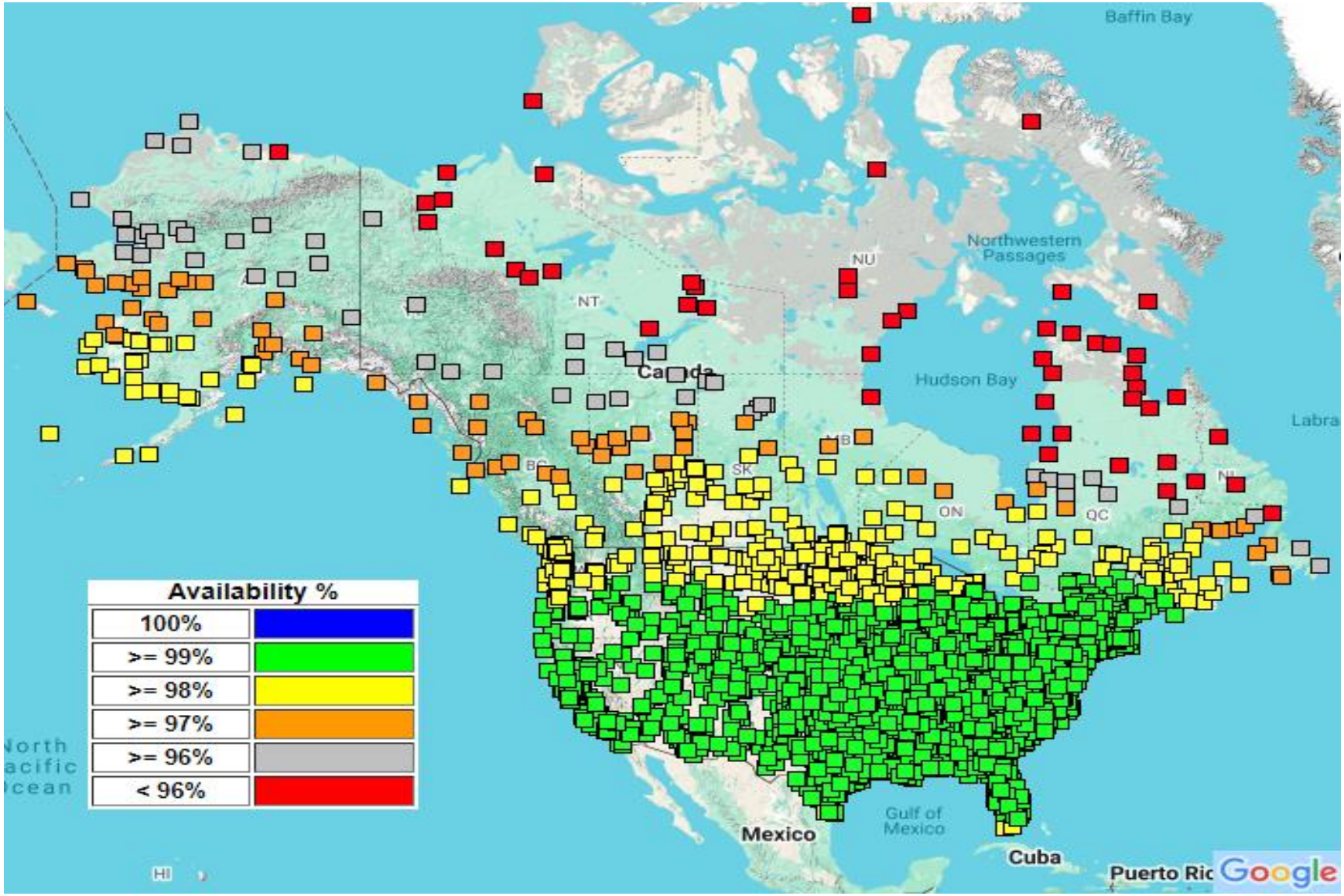

Figure 8-1 WAAS LP Availability at Airports in the U.S. and Canada with GPS RNAV IAPs

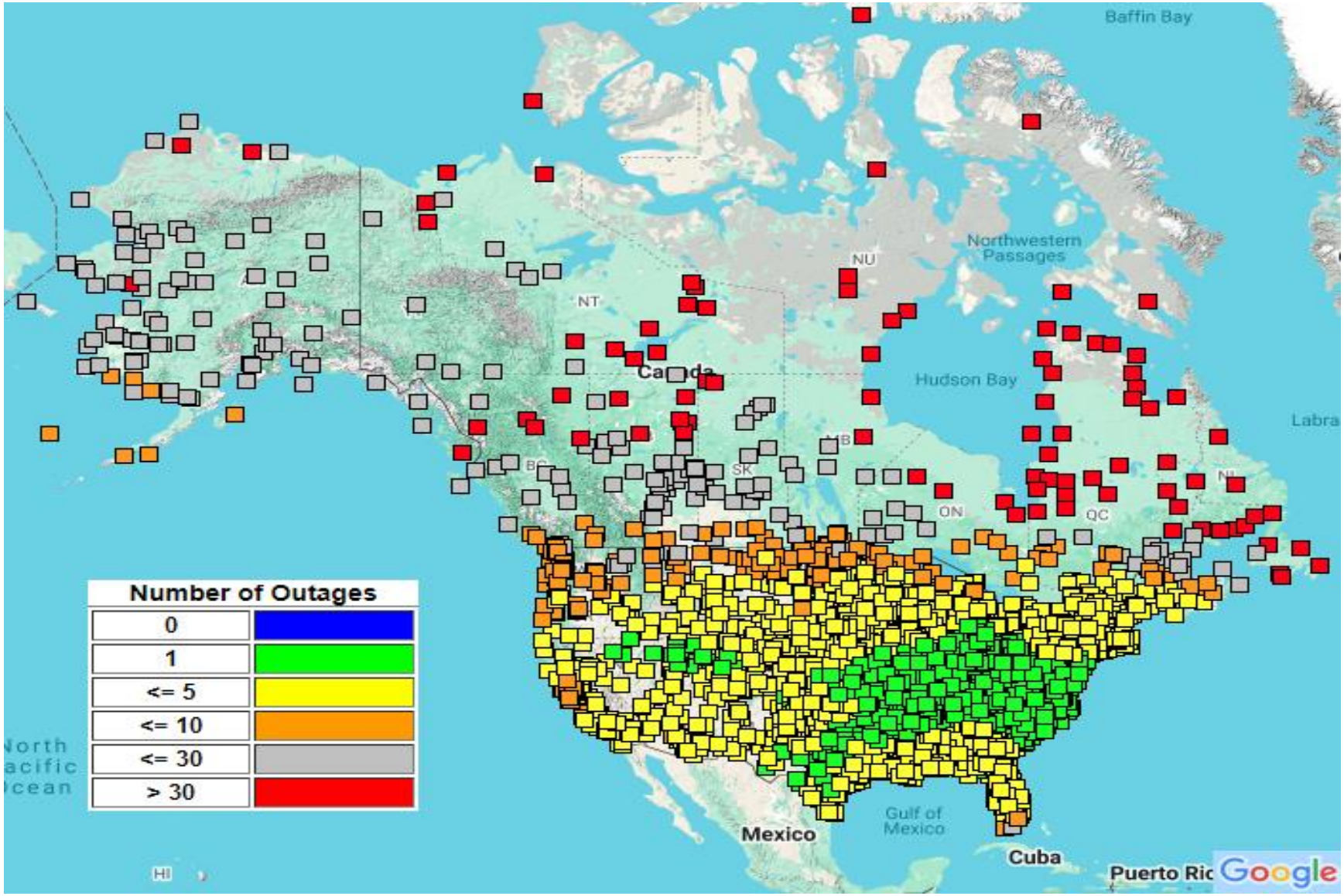

Figure 8-2 WAAS LP Outages at Airports in the U.S. and Canada with GPS RNAV IAPs

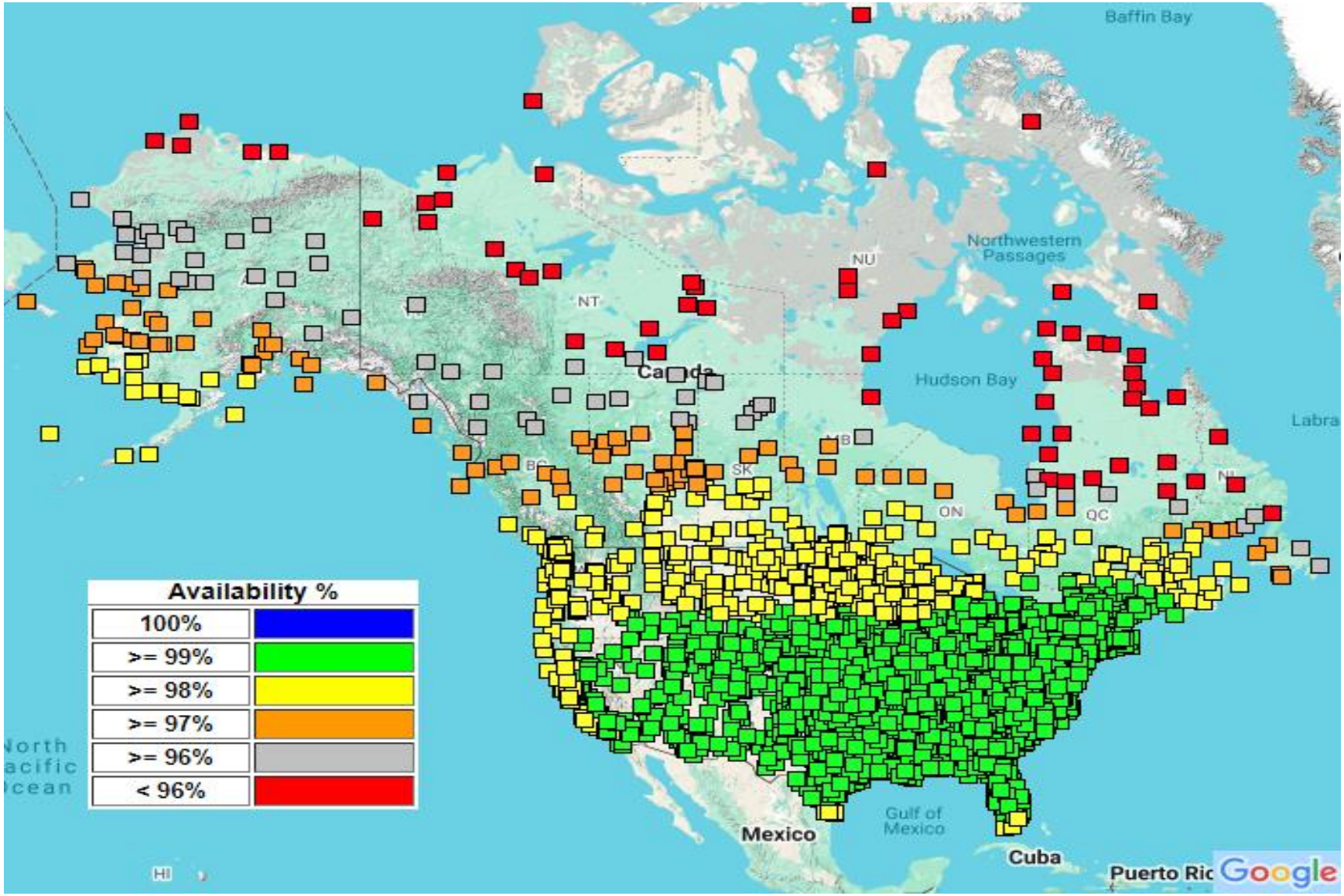

Figure 8-3 WAAS LPV Availability Airports in the U.S. and Canada with GPS RNAV IAPs

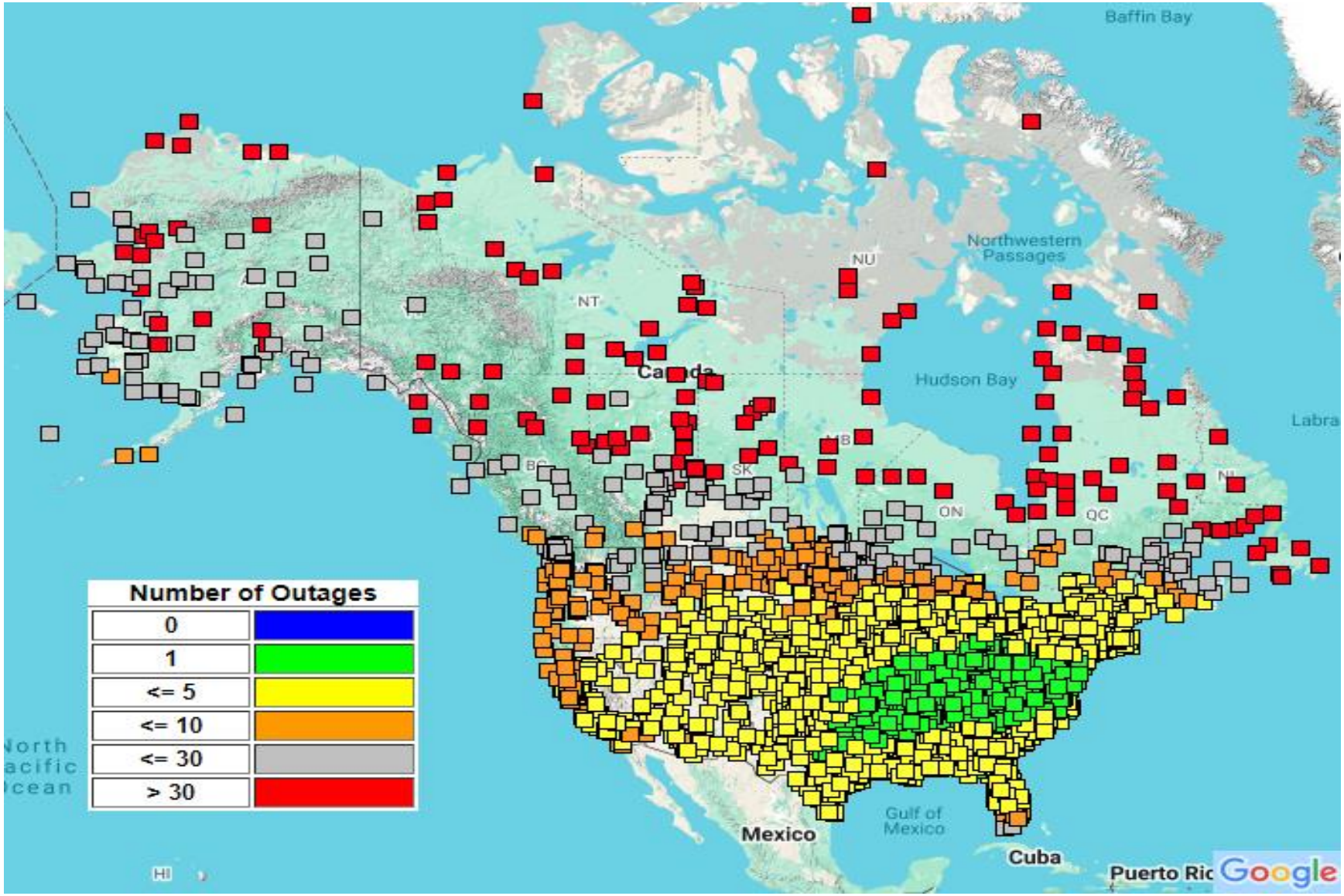

Figure 8-4 WAAS LPV Outages at Airports in the U.S. and Canada with GPS RNAV IAPs

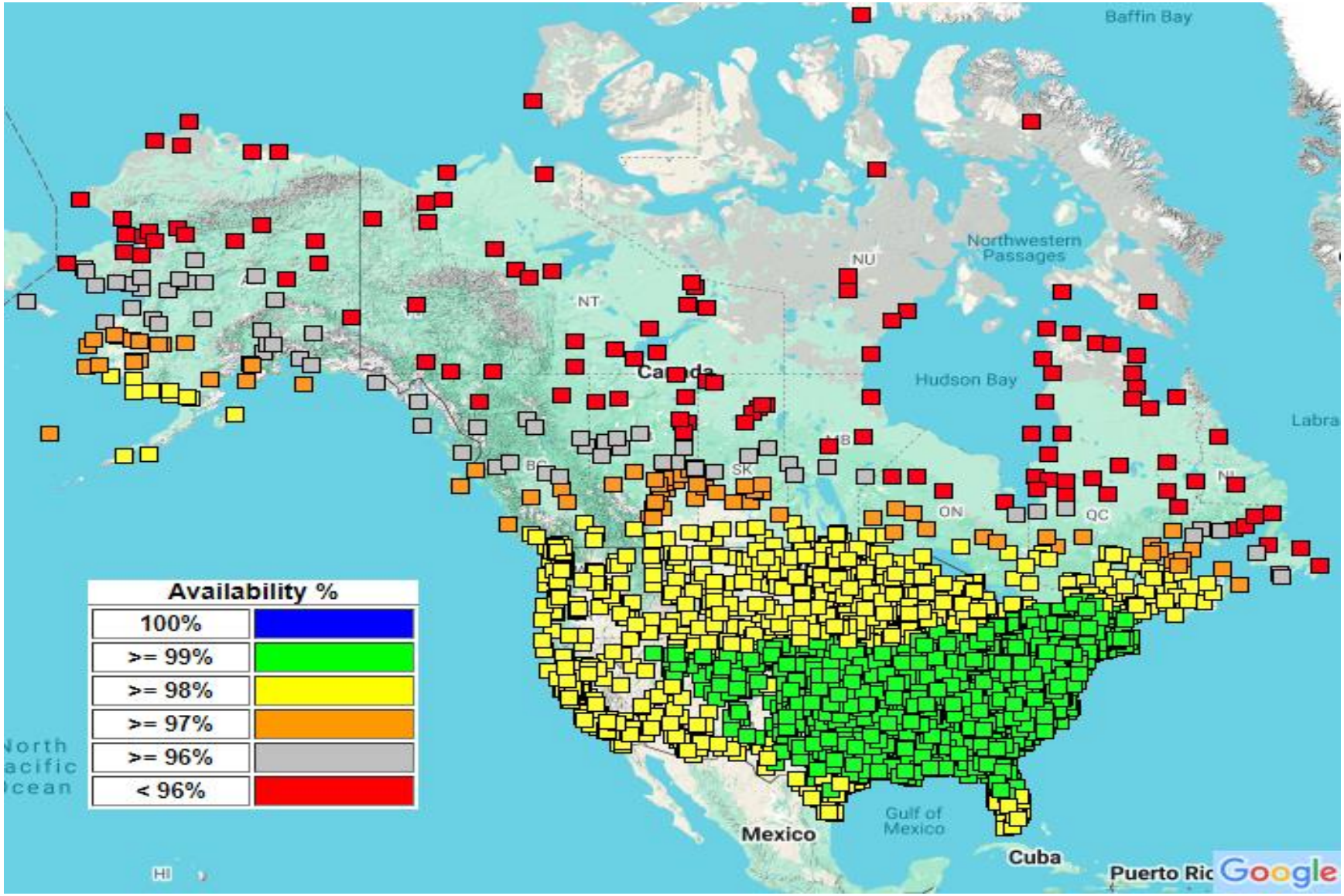

Figure 8-5 WAAS LPV200 Availability at Airports in the U.S. and Canada with GPS RNAV IAPs

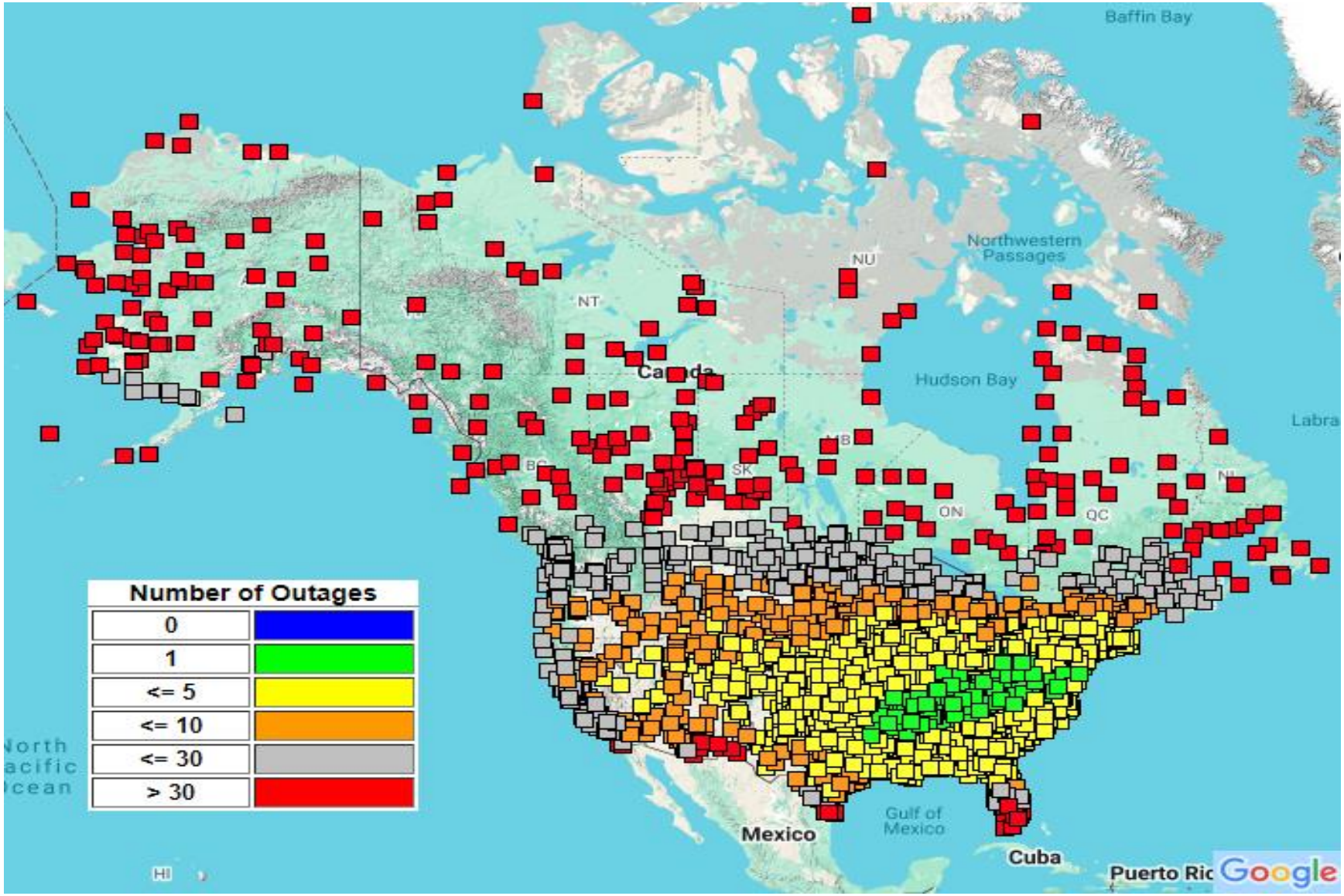

Figure 8-6 WAAS LPV200 Outages at Airports in the U.S. and Canada with GPS RNAV IAPs

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. Table 9-1 CNMP Bounding Statistics 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.

Table 9-1 CNMP Bounding Statistics

WAAS Site	WRE	Jan 24	Feb 24	Mar 24	Apr 24	May 24	Jun 24	Jul 24	Aug 24	Sep 24	Oct 24	Nov 24	Dec 24
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 24	Feb 24	Mar 24	Apr 24	May 24	Jun 24	Jul 24	Aug 24	Sep 24	Oct 24	Nov 24	Dec 24
Juneau	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Kansas City	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Kotzebue	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Los Angeles	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Memphis	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Merida	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Mexico City	A	–	–	–	•	•	•	•	•	•	•	–	–
	B	–	–	–	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	–	–	–	–	–	–	–
Miami	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Minneapolis	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
New York	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Oakland	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Puerto Vallarta	A	•	•	•	•	•	•	•	–	•	•	•	•
	B	•	•	•	•	–	–	–	–	–	–	–	–
	C	•	•	•	•	•	•	•	–	•	•	•	•
Salt Lake City	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	–	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
San Jose Del Cabo	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
San Juan	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Seattle	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Tapachula	A	•	•	•	–	–	–	–	•	•	•	•	•
	B	–	–	–	–	–	–	–	•	•	•	–	–
	C	•	•	•	–	–	–	–	•	•	•	–	•
Washington, DC	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Winnipeg	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•

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

10.0 WRS ANTENNA SURVEY VALIDATION

Antenna L1 phase center position surveys were performed for all the WRS antennas, using 24 hour sets on 12/25/2024. Tapachula Thread B (MTP2) survey was performed on 11/17/2024 and Merida Thread A (MMD1) survey was performed on 12/19/2024 due to data outages on the initial survey. Mexico City Thread A (MMX1), Mexico City Thread C (MMX3), and Puerto Vallerta Thread B (MPR2) are excluded from this since they were out of service. 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 2.4 cm or less. The CSRS surveys' RSSs of the reported ECEF sigmas were 12.2 mm or less. The OPUS and CSRS surveys agreed to an average of 1.45 cm with a standard deviation of 6.87 mm. The maximum of difference was 6.70 cm at Bethel Thread A (BET1).

The OPUS positions were compared to the positions in the currently fielded WAAS C&Vs. The survey was completed on December 25, 2024. The OPUS surveys agree with the calculated positions to better or equal to 2.12 cm for most sites. The maximum difference was 12.03 cm at Mexico City Thread B (MMX2).

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 12/25/2024

WRE	X(m)	Y(m)	Z(m)	LATITUDE	LONGITUDE	H(m)
BET1	-2965385.288	-972576.65	5543892.751	60.787913	-161.8417258	52.171
BET2	-2965386.061	-972580.394	5543891.674	60.7878934	-161.8416649	52.159
BET3	-2965388.636	-972577.523	5543890.821	60.7878774	-161.8417298	52.172
BIL1	-1416446.051	-4223577.011	4550862.057	45.8037059	-108.5397251	1112.209
BIL2	-1416450.121	-4223574.866	4550862.781	45.8037153	-108.5397835	1112.213
BIL3	-1416441.753	-4223574.266	4550865.917	45.8037557	-108.539684	1112.21
BRW1	-1886759.172	-809058.714	6018494.378	71.2827625	-156.7899262	15.558
BRW2	-1886756.59	-809055.967	6018495.559	71.2827953	-156.7899682	15.568
BRW3	-1886755.501	-809059.753	6018495.393	71.2827906	-156.7898591	15.568
CDB1	-3484099.31	-1084748.828	5213678.475	55.1923714	-162.7064052	49.718
CDB2	-3484105.943	-1084741.635	5213675.52	55.1923254	-162.706544	49.687
CDB3	-3484112.229	-1084734.854	5213672.781	55.1922819	-162.706675	49.713
FAI1	-2304742.053	-1448715.348	5748843.627	64.8096278	-147.8473423	149.986
FAI2	-2304741.595	-1448706.544	5748846.018	64.8096781	-147.8474941	149.99
FAI3	-2304733.075	-1448707.476	5748849.177	64.8097447	-147.847382	149.989
JNU1	-2354255.21	-2388549.737	5407043.199	58.3625728	-134.5857098	16.322
JNU2	-2354253.123	-2388565.848	5407037.03	58.3624673	-134.5854912	16.32
JNU3	-2354239.906	-2388568.699	5407041.491	58.3625437	-134.5852962	16.317
MMD1	35070.31	-5959686.654	2264365.762	20.9319093	-89.6628417	29.105
MMD2	35065.388	-5959687.019	2264364.983	20.9319016	-89.6628891	29.14
MMD3	35065.056	-5959685.23	2264369.635	20.9319466	-89.6628922	29.13
MMX2	-948696.216	-5943932.085	2109214.003	19.4316773	-99.068349	2232.022
MPR1	-1570142.296	-5759530.587	2238184.734	20.6790031	-105.2492039	10.973
MPR3	-1570143.578	-5759527.976	2238190.543	20.6790592	-105.2492224	10.983
MSD1	-1979520.293	-5523222.728	2493107.035	23.1604493	-109.7176544	104.277
MSD2	-1979521.859	-5523225.066	2493100.639	23.1603865	-109.7176611	104.271

WRE	X(m)	Y(m)	Z(m)	LATITUDE	LONGITUDE	H(m)
MSD3	-1979526.295	-5523221.789	2493104.307	23.1604226	-109.7177127	104.253
MTP1	-254854.398	-6162909.125	1617805.095	14.7913663	-92.3679996	54.911
MTP2	-254850.775	-6162910.164	1617801.664	14.7913343	-92.3679656	54.895
MTP3	-254855.544	-6162910.269	1617800.135	14.7913203	-92.3680098	54.796
OTZ1	-2396056.269	-750356.23	5843502.372	66.8873295	-162.6113731	10.855
OTZ2	-2396053.097	-750354.397	5843503.893	66.8873644	-162.6113914	10.85
OTZ3	-2396053.067	-750358.336	5843503.41	66.8873532	-162.6113054	10.857
YFB1	1035381.212	-2634289.667	5696539.613	63.7314913	-68.5431881	10.065
YFB2	1035372.006	-2634296.097	5696538.255	63.7314649	-68.5434091	10.006
YFB3	1035365.927	-2634306.855	5696534.474	63.7313872	-68.5436033	10.062
YQX2	2430432.38	-3419639.087	4788220.882	48.9664494	-54.5975356	146.901
YQX3	2430440.283	-3419637.723	4788217.883	48.9664082	-54.5974368	146.914
YQX3	2430440.283	-3419637.723	4788217.883	48.9664082	-54.5974368	146.914
YWG1	-520164.617	-4083475.988	4855842.976	49.9005734	-97.2594009	222.102
YWG2	-520150.747	-4083468.927	4855850.371	49.9006765	-97.2592218	222.118
YWG3	-520152.618	-4083478.043	4855842.547	49.9005674	-97.2592316	222.11
YYR1	1885341.221	-3321428.409	5091171.773	53.3086482	-60.4194713	37.906
YYR2	1885344.181	-3321419.921	5091176.187	53.3087145	-60.4193698	37.908
YYR3	1885339.895	-3321413.101	5091182.18	53.3088047	-60.4193752	37.906
ZAB1	-1488637.005	-5003946.535	3654557.648	35.1735747	-106.5673515	1620.125
ZAB2	-1488631.669	-5003948.22	3654557.623	35.1735741	-106.5672901	1620.187
ZAB3	-1488632.447	-5003950.799	3654553.77	35.1735317	-106.5672902	1620.17
ZAN1	-2659536.832	-1549114.666	5567750.725	61.2292008	-149.7802543	80.718
ZAN2	-2659548.587	-1549110.711	5567746.238	61.2291172	-149.7804281	80.716
ZAN3	-2659541.537	-1549106.589	5567750.711	61.2292008	-149.7804284	80.706
ZAU1	138703.937	-4761244.127	4227763.917	41.7826581	-88.3313388	195.864
ZAU2	138704.2	-4761248.747	4227758.755	41.7825957	-88.3313373	195.873
ZAU3	138710.903	-4761248.479	4227758.833	41.7825966	-88.3312566	195.871

WRE	X(m)	Y(m)	Z(m)	LATITUDE	LONGITUDE	H(m)
ZBW1	1490299.037	-4448983.191	4306010.537	42.735721	-71.4804281	39.114
ZBW2	1490304.15	-4448981.18	4306010.885	42.735725	-71.4803611	39.142
ZBW3	1490305.859	-4448984.806	4306006.573	42.7356722	-71.4803553	39.14
ZDC1	1069125.583	-4839598.988	4001126.529	39.1015963	-77.5427486	80.048
ZDC2	1069127.978	-4839603.616	4001120.326	39.1015243	-77.5427331	80.044
ZDC3	1069123.885	-4839602.702	4001122.528	39.1015498	-77.542777	80.055
ZDV1	-1273628.789	-4711375.57	4094890.055	40.1873026	-105.1272264	1541.352
ZDV2	-1273623.086	-4711377.08	4094890.065	40.1873029	-105.1271572	1541.335
ZDV3	-1273625.097	-4711380.283	4094885.783	40.1872524	-105.1271701	1541.335
ZFW1	-659983.35	-5324060.78	3438276.447	32.8306494	-97.0664734	155.624
ZFW2	-659988.621	-5324063.334	3438271.451	32.830596	-97.0665259	155.59
ZFW3	-659983.646	-5324063.862	3438271.657	32.830598	-97.0664725	155.627
ZHN1	-5508637.227	-2234492.539	2303722.589	21.3129942	-157.9208349	24.653
ZHN2	-5508656.406	-2234482.877	2303687.349	21.3126512	-157.9209907	25.018
ZHN3	-5508647.818	-2234496.79	2303694.429	21.3127198	-157.9208353	25.05
ZHU1	-513864.603	-5506451.625	3166720.418	29.9618962	-95.3314277	10.763
ZHU2	-513867.252	-5506455.027	3166714.257	29.9618317	-95.3314518	10.834
ZHU3	-513873.53	-5506457.667	3166708.659	29.9617735	-95.331514	10.821
ZJX1	772646.303	-5434462.193	3237231.765	30.6988599	-81.9081866	2.134
ZJX2	772649.631	-5434463.738	3237228.365	30.6988243	-81.9081544	2.116
ZJX3	772645.567	-5434466.175	3237225.263	30.6987918	-81.9082	2.115
ZKC1	-415247.683	-4954556.376	3982161.092	38.8801592	-94.7908358	305.884
ZKC2	-415231.291	-4954557.709	3982161.146	38.8801598	-94.7906462	305.886
ZKC3	-415237.411	-4954561.047	3982155.953	38.8801017	-94.7907133	305.613
ZLA1	-2474410.203	-4637294.447	3602183.617	34.6035192	-118.0838989	763.516
ZLA2	-2474404.92	-4637297.236	3602183.612	34.6035193	-118.0838338	763.491
ZLA3	-2474411.521	-4637296.937	3602179.637	34.6034752	-118.0838988	763.574
ZLC1	-1808273.406	-4486410.81	4145302.953	40.7860425	-111.9521797	1287.435

WRE	X(m)	Y(m)	Z(m)	LATITUDE	LONGITUDE	H(m)
ZLC2	-1808274.791	-4486414.431	4145298.454	40.785989	-111.9521789	1287.431
ZLC3	-1808270.588	-4486416.136	4145298.459	40.785989	-111.9521252	1287.442
ZMA1	966042.175	-5662999.813	2761581.534	25.8246126	-80.319191	-7.6
ZMA2	966029.204	-5662999.127	2761586.025	25.8246603	-80.3193174	-8.216
ZMA3	966037.28	-5662997.956	2761586.374	25.8246624	-80.319236	-7.881
ZME1	4070.727	-5226189.304	3644028.427	35.0673941	-89.9553718	68.611
ZME2	4070.758	-5226186.75	3644032.537	35.0674376	-89.9553714	68.882
ZME3	4064.568	-5226186.625	3644032.693	35.0674395	-89.9554393	68.865
ZMP1	-249978.567	-4539297.481	4458955.001	44.637463	-93.1520878	262.612
ZMP2	-249972.763	-4539297.823	4458955.002	44.6374629	-93.1520146	262.629
ZMP3	-249973.859	-4539302.101	4458950.527	44.6374068	-93.1520254	262.567
ZNY1	1406144.443	-4627343.966	4144322.112	40.7843294	-73.0971678	6.43
ZNY2	1406146.247	-4627347.019	4144317.313	40.7842764	-73.0971579	5.904
ZNY3	1406140.689	-4627348.675	4144317.349	40.7842768	-73.0972266	5.904
ZOA1	-2684437.14	-4293337.149	3865351.96	37.543055	-122.0159519	-3.502
ZOA2	-2684434.133	-4293341.23	3865349.536	37.5430274	-122.0158986	-3.499
ZOA3	-2684438.504	-4293342.109	3865345.68	37.5429831	-122.0159352	-3.421
ZOB1	650770.001	-4754715.652	4187420.743	41.2971547	-82.2064469	223.643
ZOB2	650777.682	-4754714.827	4187422.763	41.297167	-82.2063547	225.145
ZOB3	650776.01	-4754719.651	4187414.971	41.2970872	-82.2063823	223.423
ZSE1	-2308930.397	-3668169.668	4663526.407	47.2869924	-122.1883743	82.089
ZSE2	-2308934.791	-3668175.214	4663520.002	47.2869069	-122.1883844	82.154
ZSE3	-2308935.851	-3668179.489	4663516.06	47.2868552	-122.1883661	82.095
ZSU1	2462589.509	-5529372.04	2003724.623	18.4313372	-65.9934758	-28.094
ZSU2	2462587.567	-5529377.389	2003712.328	18.4312201	-65.9935132	-28.095
ZSU3	2462594.199	-5529375.146	2003710.251	18.4312004	-65.9934472	-28.136
ZTL1	529840.253	-5305248.812	3489342.859	33.3796887	-84.2967276	261.129
ZTL2	529846.628	-5305247.971	3489343.144	33.3796919	-84.2966586	261.116

WRE	X(m)	Y(m)	Z(m)	LATITUDE	LONGITUDE	H(m)
ZTL3	529847.309	-5305251.409	3489337.91	33.3796352	-84.2966549	261.15

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 C&V computed positions. Figure 10-4 through Figure 10-6 show the OPUS surveys overall RMS quality indications.

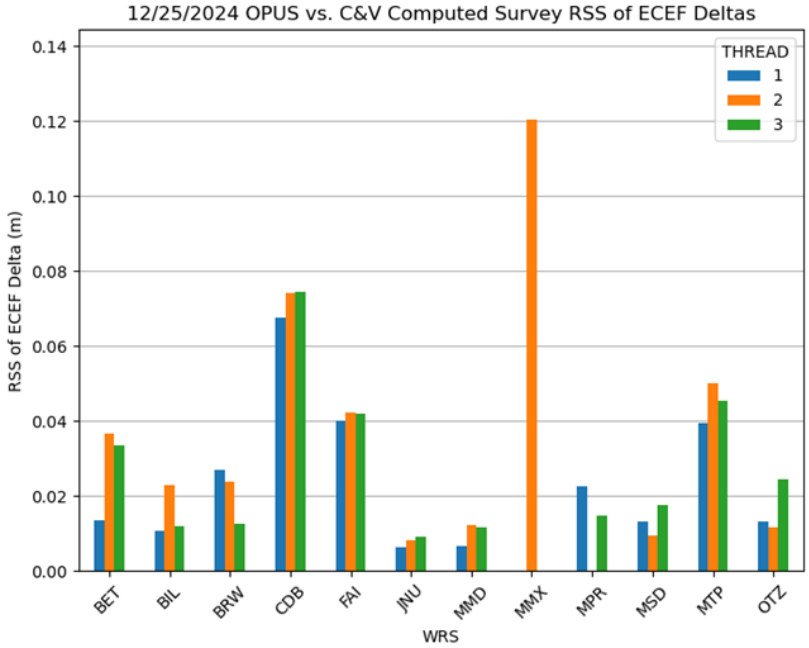

Figure 10-1 WAAS C&V Calculated Antenna Positions Deltas OPUS Survey

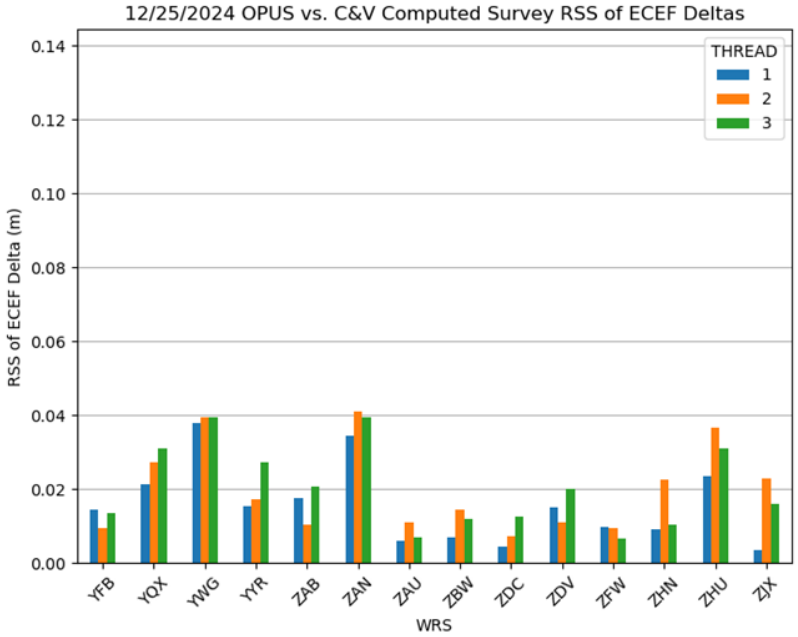

Figure 10-2 WAAS C&V Calculated Antenna Positions Deltas OPUS Survey

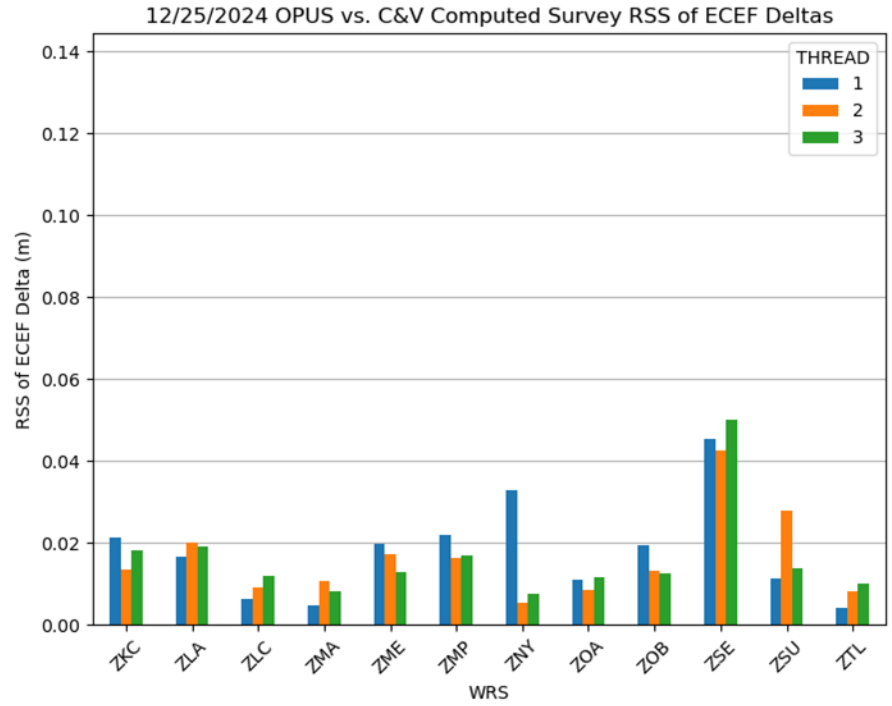

Figure 10-3 WAAS C&V Calculated Antenna Positions Deltas OPUS Survey

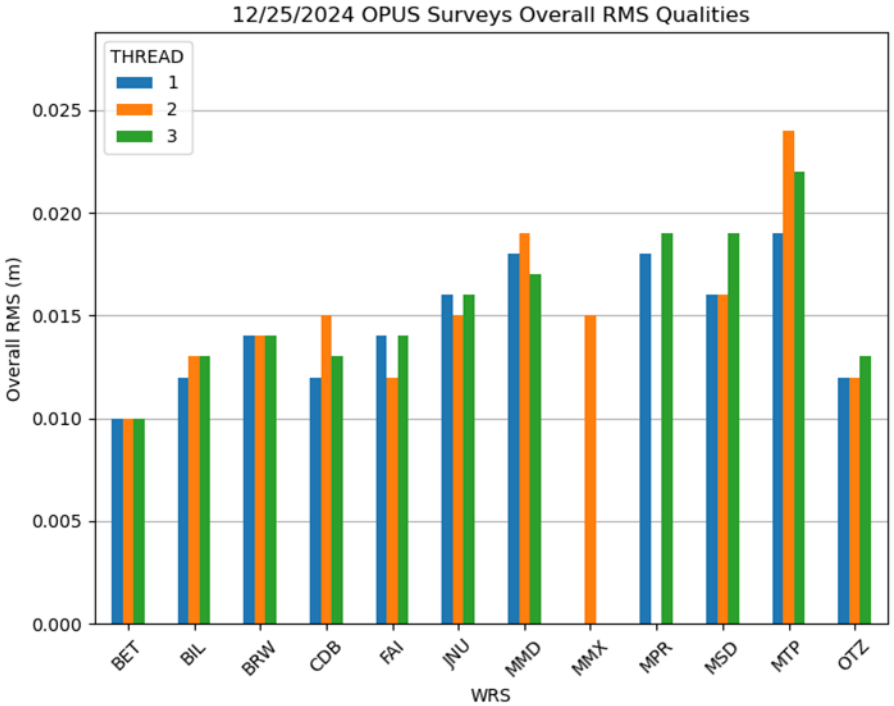

Figure 10-4 OPUS Survey Overall RMS Qualities

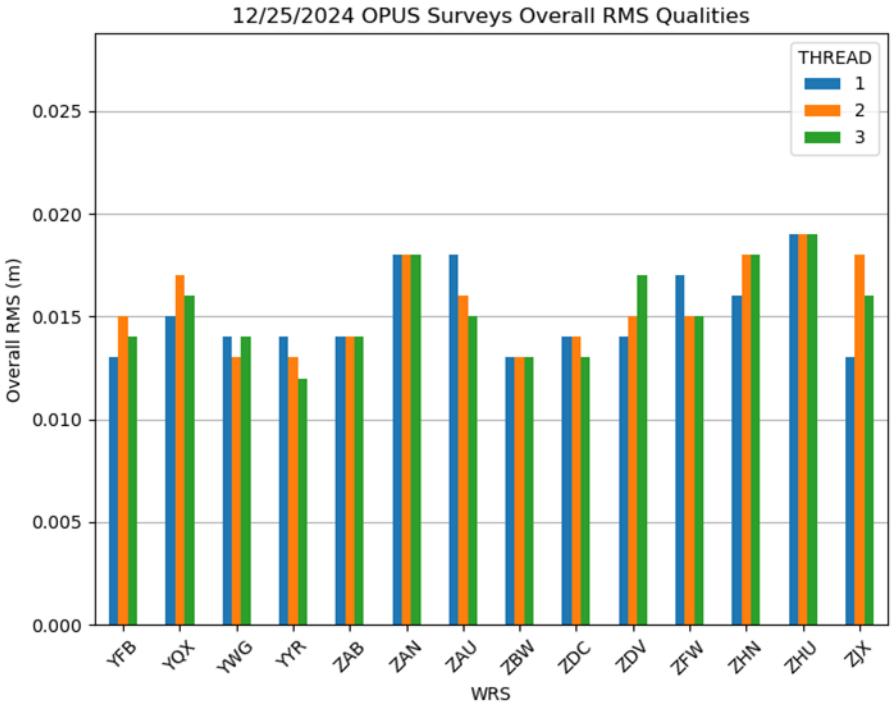

Figure 10-5 OPUS Survey Overall RMS Qualities

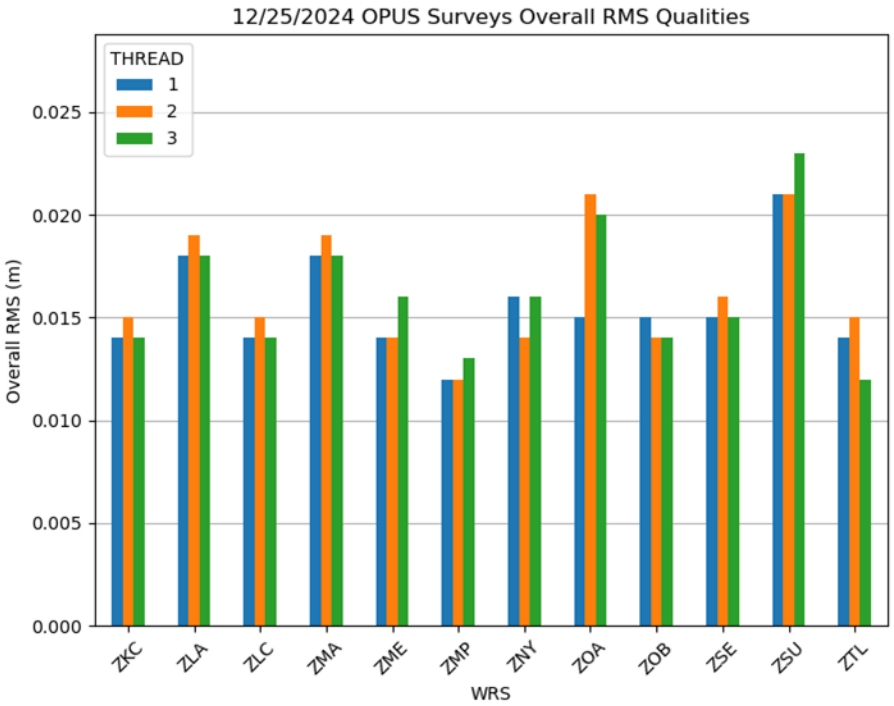

Figure 10-6 OPUS Survey Overall RMS Qualities

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

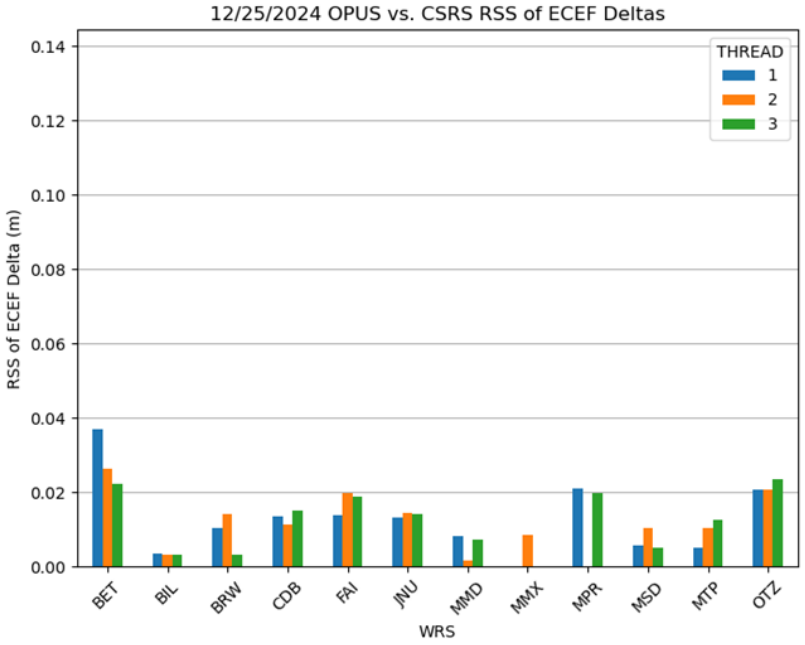

Figure 10-7 OPUS vs. CSRS RSS ECEF Deltas

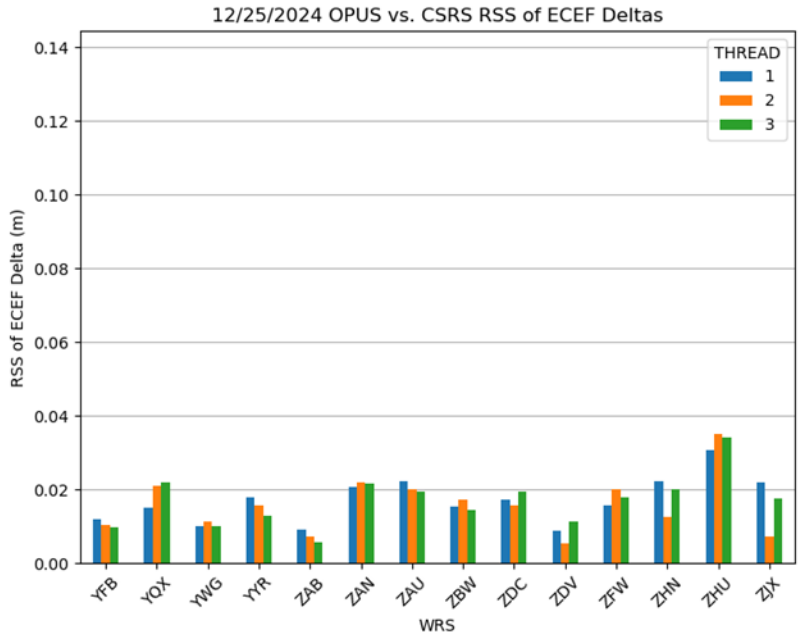

Figure 10-8 OPUS vs. CSRS RSS ECEF Deltas

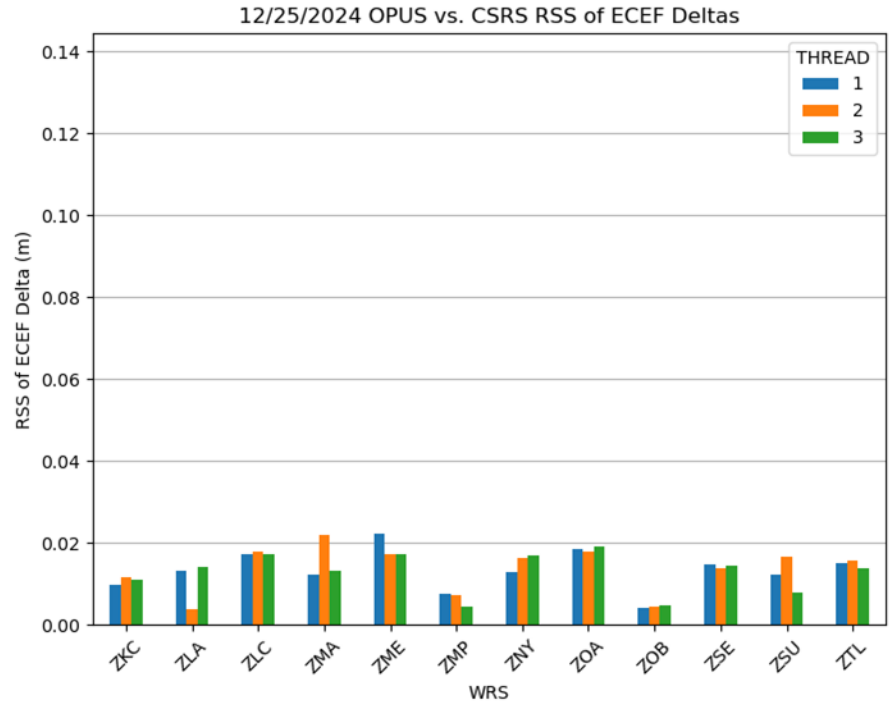

Figure 10-9 OPUS vs. CSRS RSS ECEF Deltas

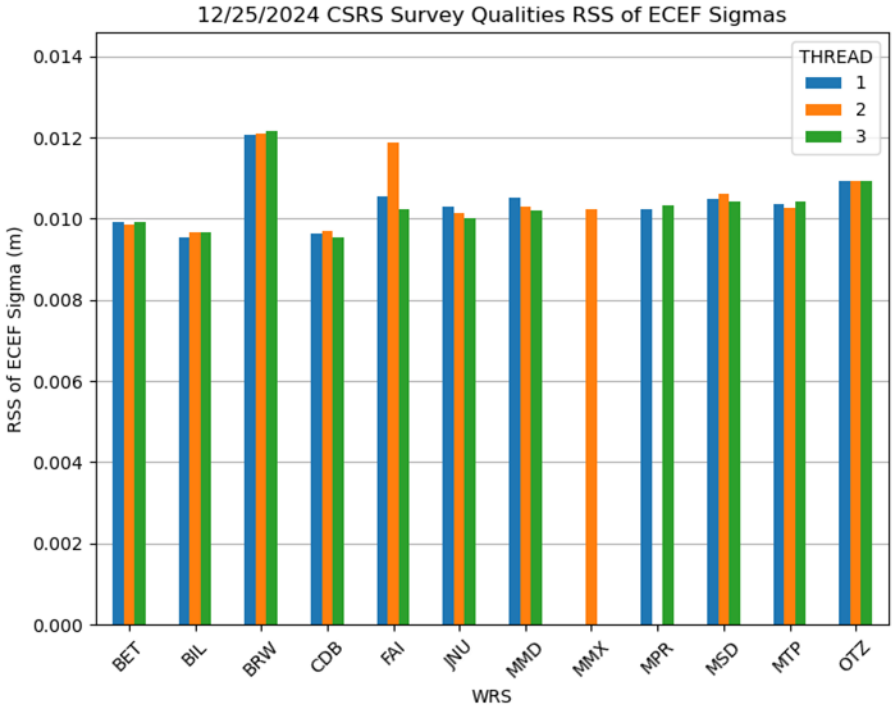

Figure 10-10 CSRS Survey Qualities

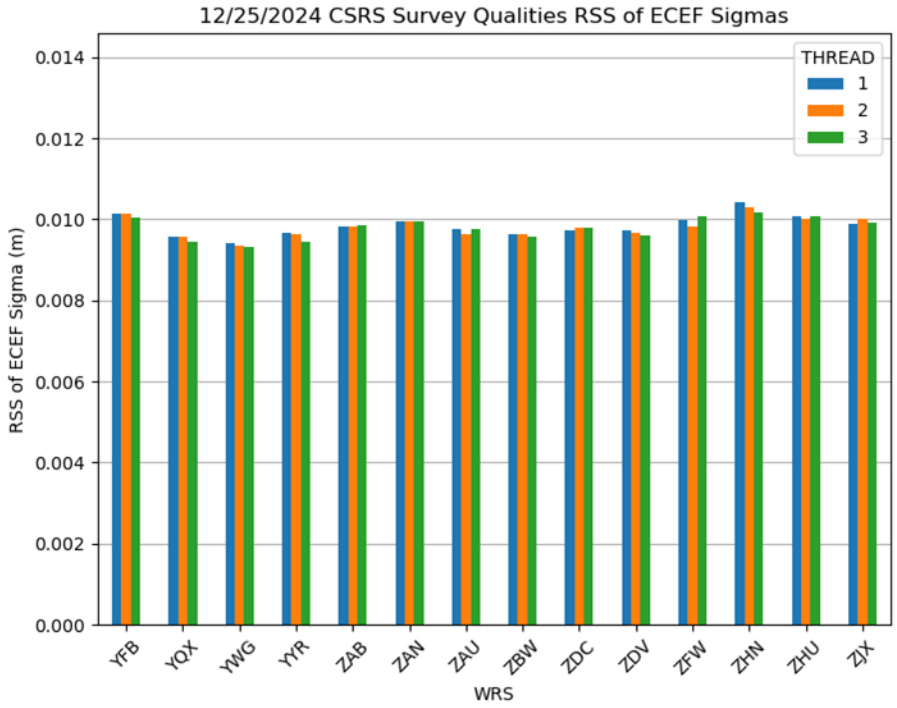

Figure 10-11 CSRS Survey Qualities

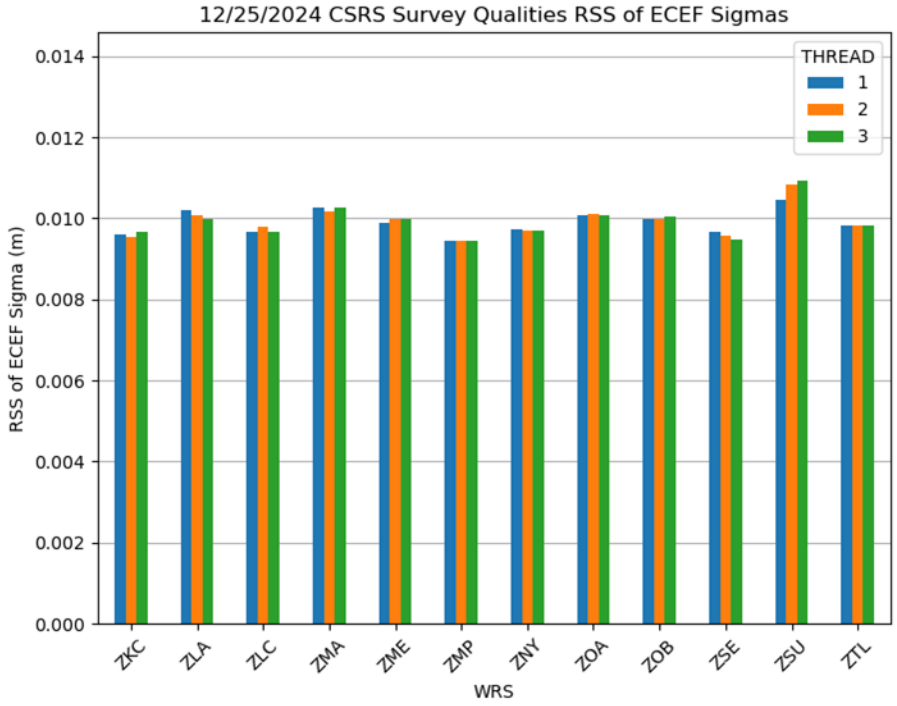

Figure 10-12 CSRS Survey Qualities

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 from 12-16-2024 for Type 0 on all four detection metrics. This is the result of PRN22 (SVN44) being decommissioned on 12-16-2024.

Table 11-2 Type Bias Average for the Quarter

Detection Metric	Type 0	Type 1	Type 2
DM 1	1.3176	1.31941	1.32144
DM 2	0.243301	0.246381	0.249536
DM 3	0.972665	0.973122	0.973798
DM 4	-0.188094	-0.189902	-0.191926

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

Detection Metric	Type 0	Type 1	Type 2
DM 1	1.31595	1.31811	1.31988
DM 2	0.241581	0.244757	0.247886
DM 3	0.970734	0.971224	0.971809
DM 4	-0.186929	-0.188604	-0.190613

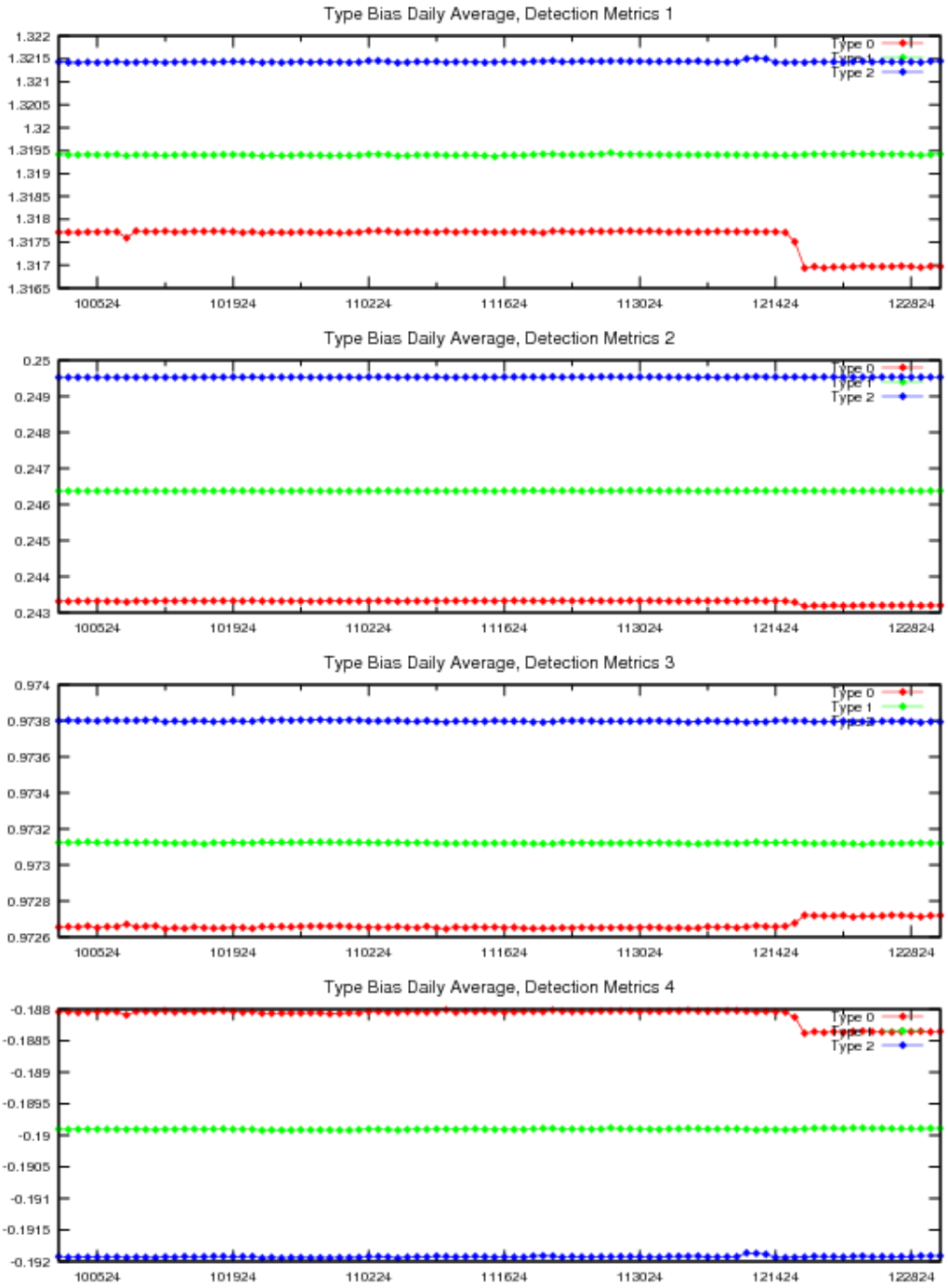

Figure 11-1 Type Bias Average Trend

11.3 PRN Bias

The PRN biases are evaluated as part of the WAAS SQM offline monitoring effort. A PRN bias is the overall estimated deformation per satellite across receivers. Detection metrics are adjusted for inter-receiver bias, corrected for PRN-type bias, and combined across receivers for each satellite. Relying on the assertion that the majority of the SV signals are healthy and normal, detection metrics are normalized over all the orbiting satellites, which results in an overall

PRN bias for each satellite. PRN biases are collected at each epoch and daily averages are computed for each satellite for four detection metrics.

Table 11-4 and Figure 11-2 show the rollup PRN bias averages for the quarter with the maximum values for each detection metrics as follows: (1) the maximum average for DM1 is 0.0014028 observed on PRN22, (2) the maximum average for DM2 is 0.0002064 observed on PRN14, (3) the maximum average for DM3 is 0.0004457 observed on PRN18, (4) the maximum average for DM4 is 0.0006184 observed on PRN22.

Table 11-4 PRN Bias Average for the Quarter

PRN	DM 1	DM 2	DM 3	DM 4
1				
2	0.00024088	6.22989e-05	0.000104116	0.000114677
3	0.000164317	6.0275e-05	9.52141e-05	9.59859e-05
4	0.000734263	0.000238825	0.000397935	0.00025326
5	0.00015653	7.03772e-05	0.000105407	9.63674e-05
6	0.0008394	7.77121e-05	9.45725e-05	0.000363644
7	0.000162572	0.000156313	4.9763e-05	0.000141632
8	0.000361385	0.000129183	8.39065e-05	0.000152395
9	0.000240161	9.19424e-05	0.00014084	9.06652e-05
10	0.000169649	7.86783e-05	7.59902e-05	0.000101703
11	0.000355282	0.000126049	0.000397389	0.00032735
12	0.000362161	4.14402e-05	4.64337e-05	9.43348e-05
13	0.000598371	6.20239e-05	6.08772e-05	0.000269939
14	0.000536405	0.000206435	0.000397568	0.000256487
15	0.000405524	0.000126576	6.09489e-05	0.000100412
16	0.00017595	4.8887e-05	0.000113962	0.000212517
17	0.000361212	0.000102125	5.43098e-05	9.255e-05
18	0.000652903	0.000168823	0.000445701	0.000274708
19	0.000694721	0.000201979	7.98326e-05	0.000127184
20	0.000163829	8.86489e-05	4.16707e-05	0.000152552
21	0.000213243	8.38264e-05	0.000121001	0.000447044
22	0.00140278	0.000136184	5.84922e-05	0.000618432
23	0.000409052	0.000180177	0.000363401	0.000281651
24	0.000207301	6.47522e-05	0.000213143	0.000278321
25	0.000492065	0.000125207	4.26402e-05	0.000162415
26	0.000154507	6.25033e-05	0.000118893	0.000155998
27	0.000275643	0.000149684	0.000220875	0.000337842
28	0.000308824	0.000120882	0.000380047	0.000347063
29	0.000336674	0.000147836	0.000162911	0.000264632
30	0.000296834	0.000115397	0.000115577	0.000124171
31	0.000162296	0.000121396	6.43304e-05	0.000116505
32	0.000299363	0.000147896	5.45576e-05	0.000297832

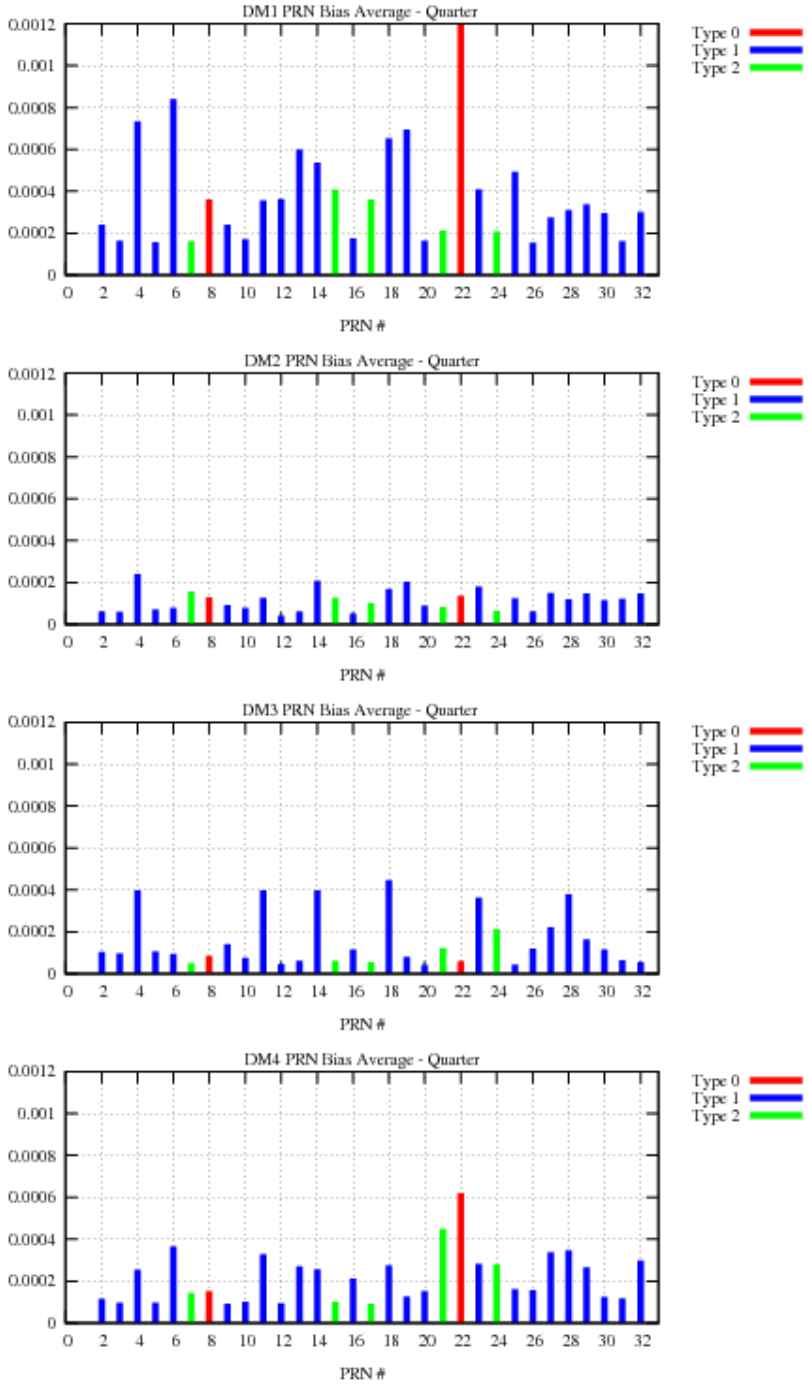

Figure 11-2 PRN Bias Average for the Quarter

Figure 11-3 to Figure 11-10 show the daily PRN bias for each PRN for four detection metrics. Figure 11-3 shows no SQM data for PRN1 as a result of its decommissioning. Figure 11-4 shows no SQM data for PRN6 Bias on 12-27-

2024 due to UNUSABLE NANU on PRN6. Figure 11-8 shows no SQM data for PRN21 Bias on 12-12-2024 due to NANU on PRN21. Figure 11-8 shows no SQM data for PRN22 from 12-17-2024 as a result of its decommissioning.

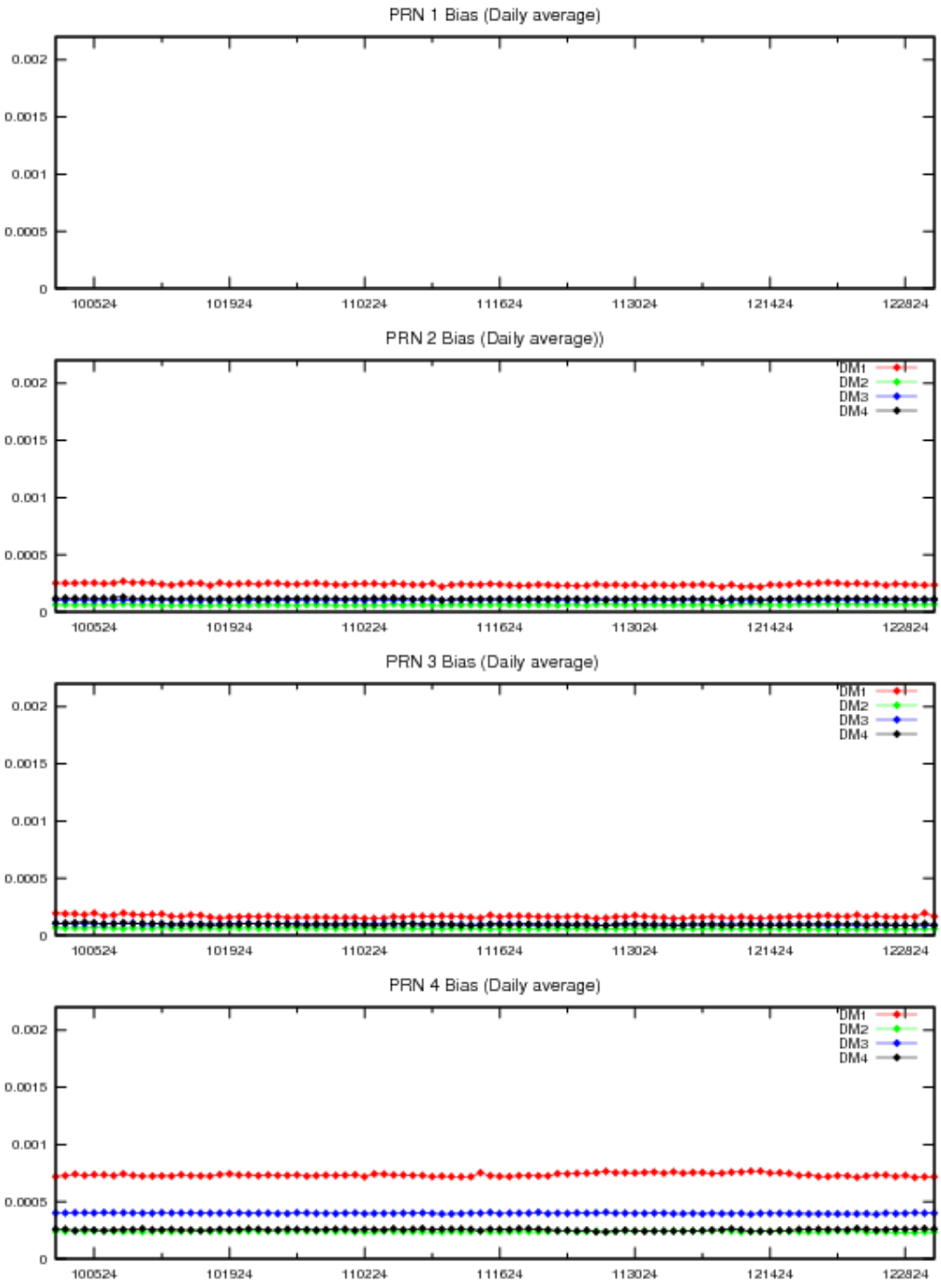

Figure 11-3 PRN Bias Average Trend (PRN1 – PRN4)

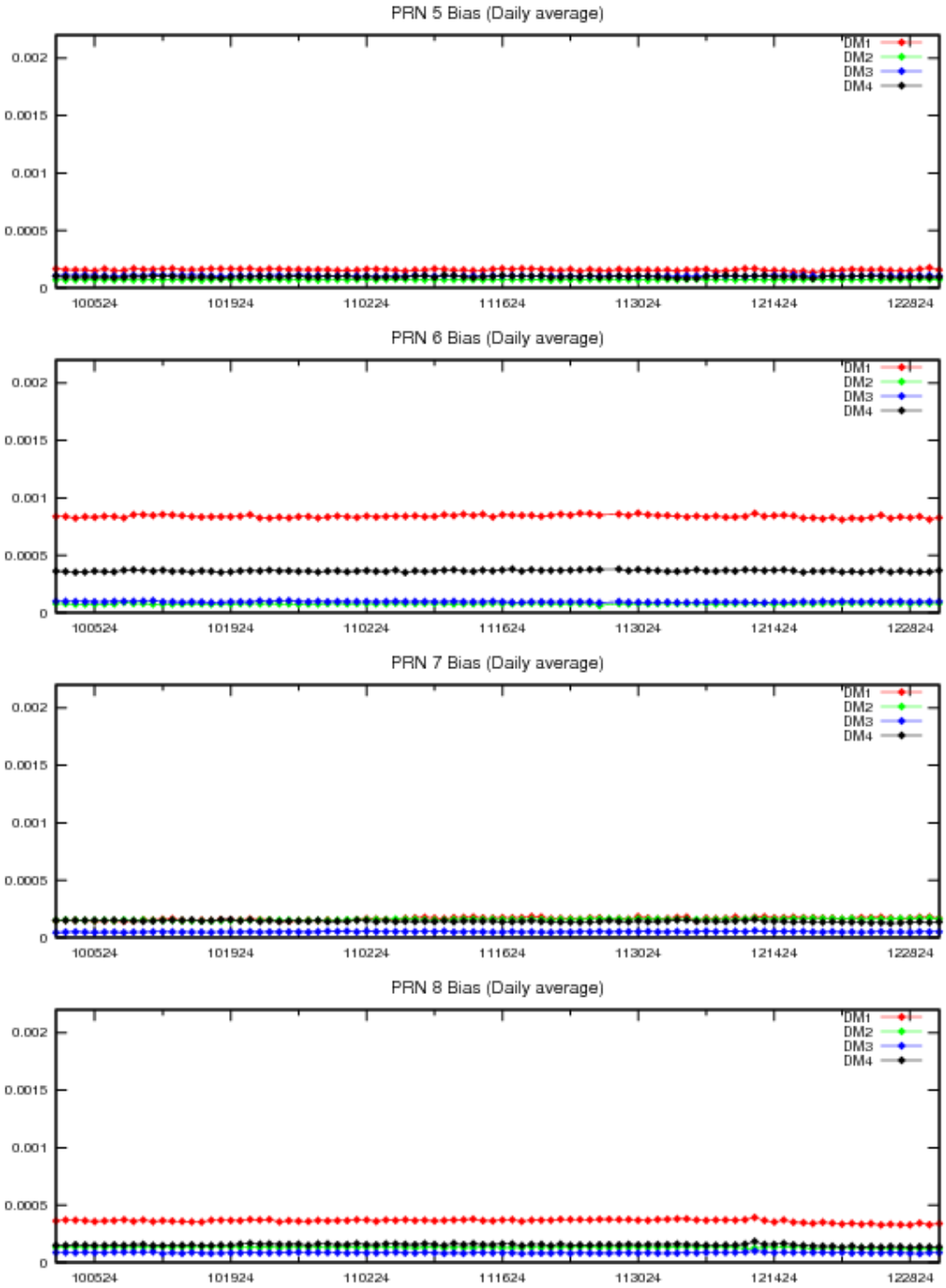

Figure 11-4 PRN Bias Average Trend (PRN5 – PRN8)

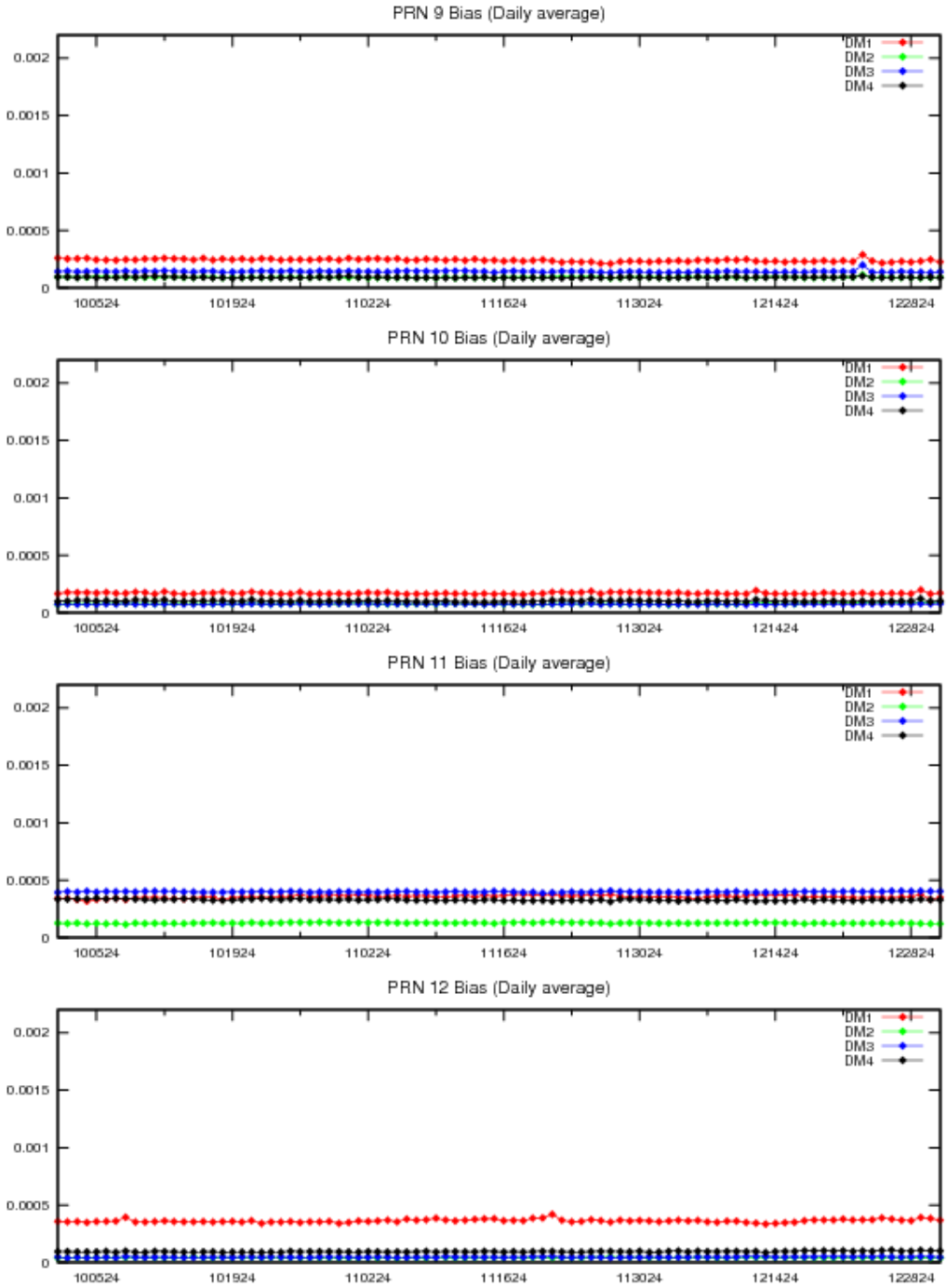

Figure 11-5 PRN Bias Average Trend (PRN9 – PRN12)

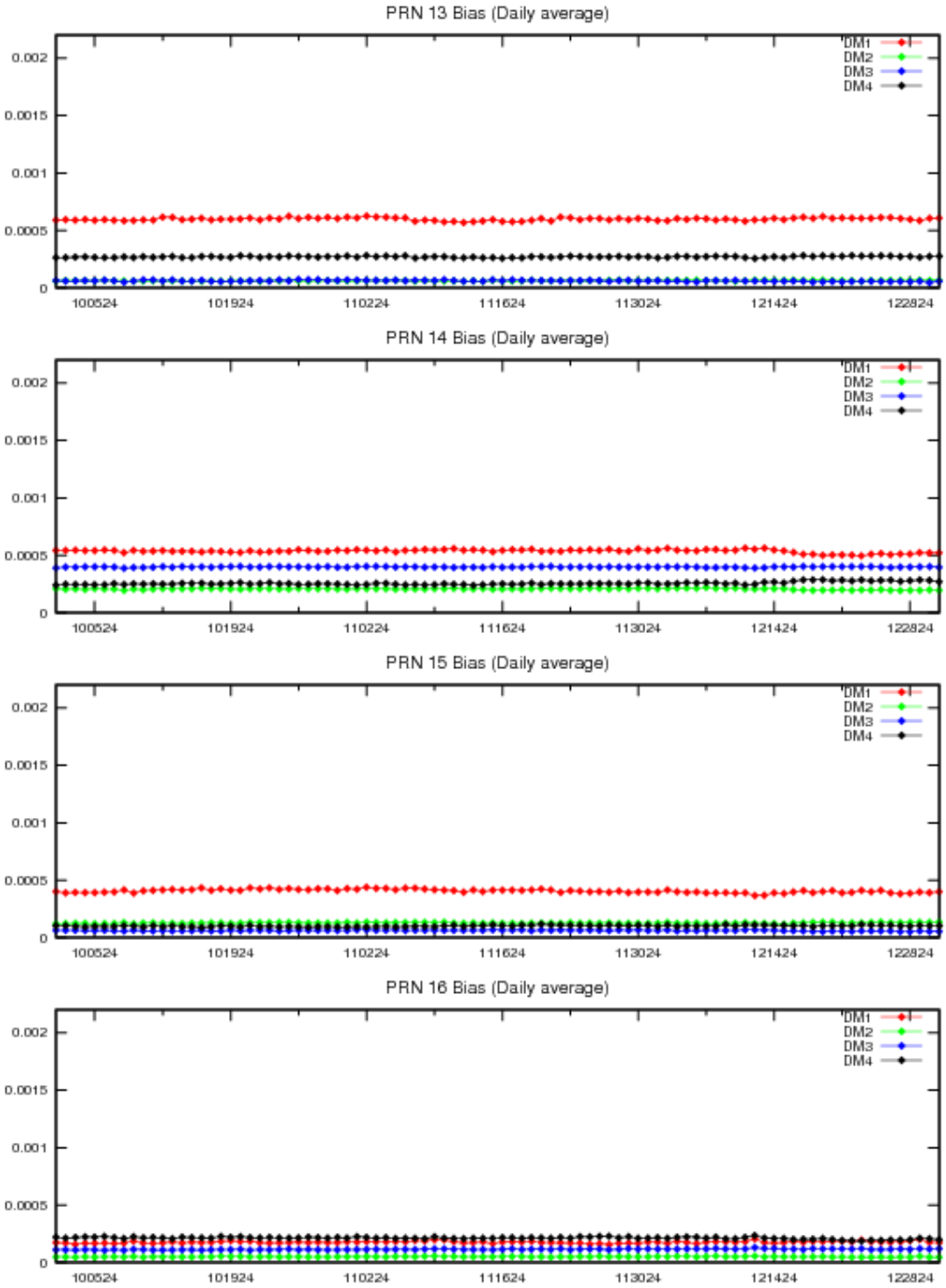

Figure 11-6 PRN Bias Average Trend (PRN13 – PRN16)

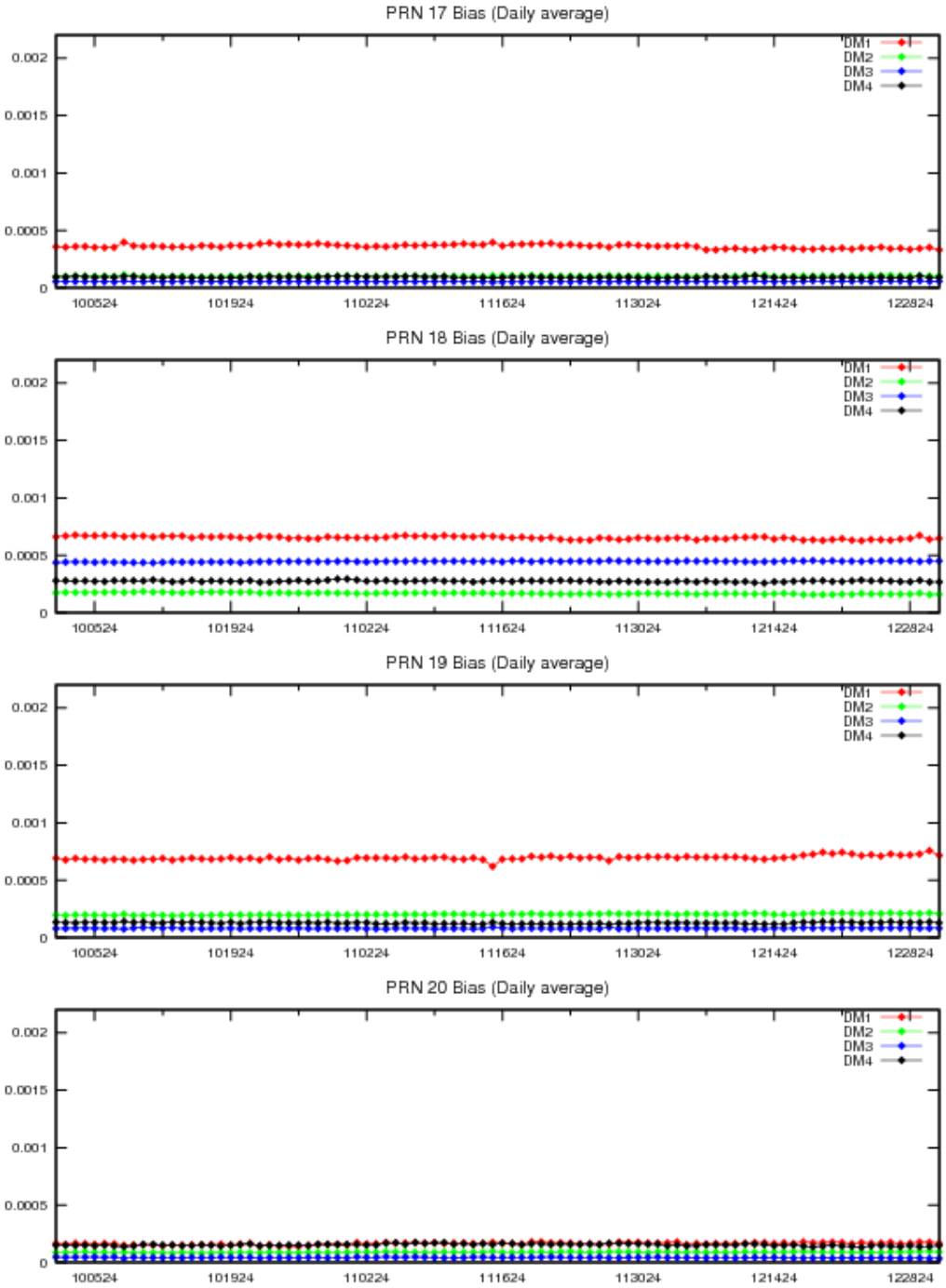

Figure 11-7 PRN Bias Average Trend (PRN17 – PRN20)

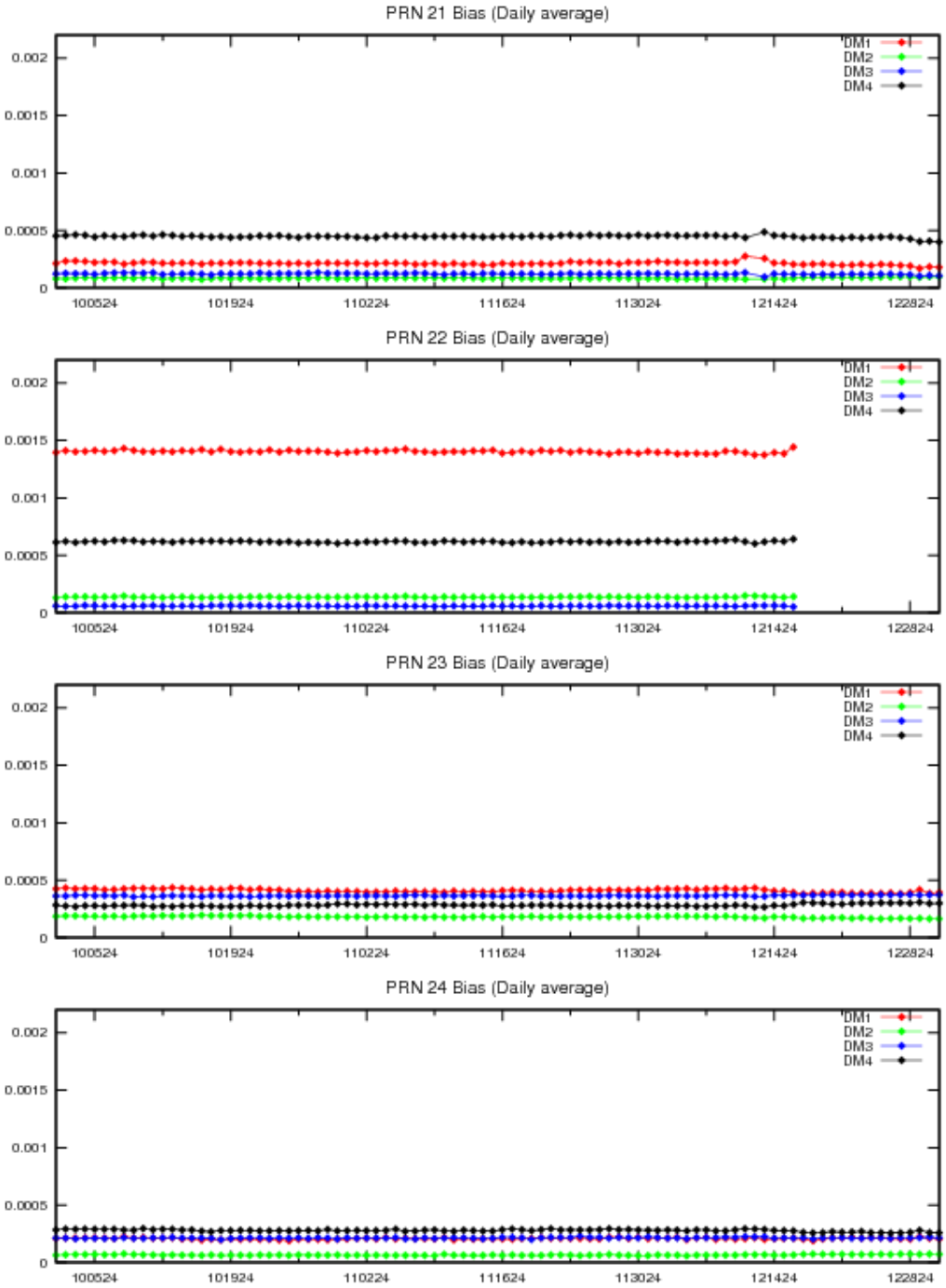

Figure 11-8 PRN Bias Average Trend (PRN21 – PRN24)

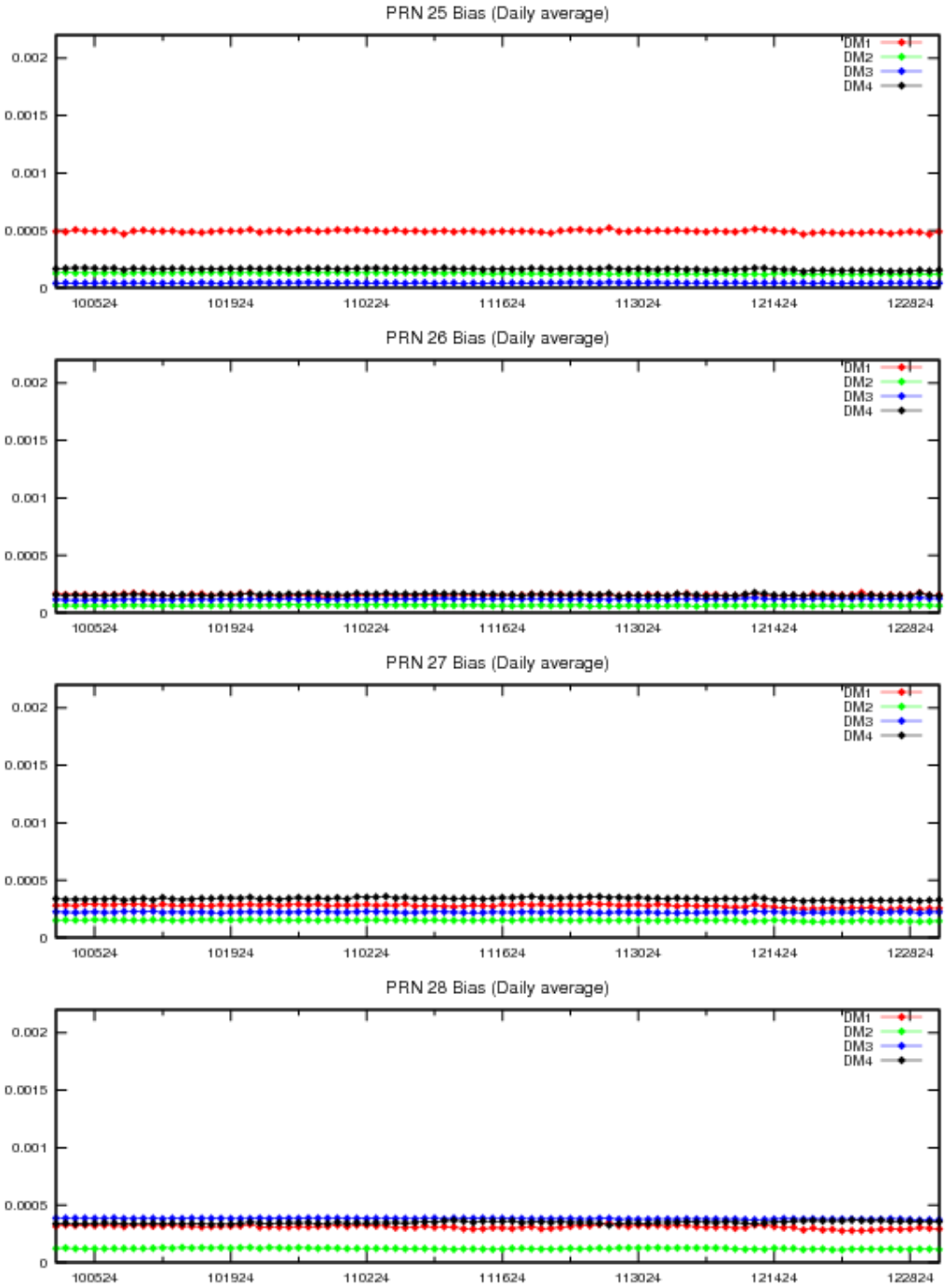

Figure 11-9 PRN Bias Average Trend (PRN25 – PRN28)

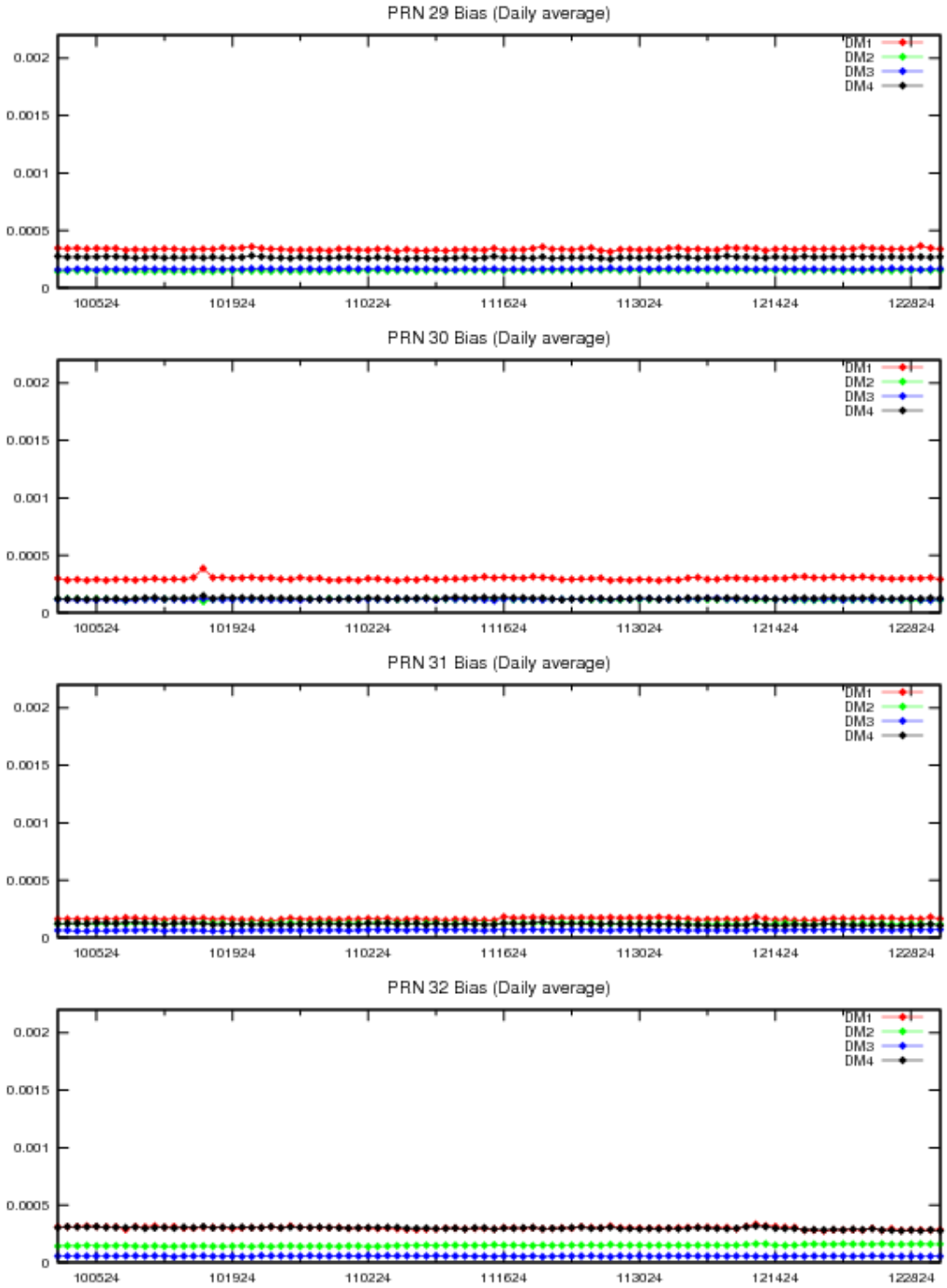

Figure 11-10 PRN Bias Average Trend (PRN29 – PRN32)

11.4 SQM Trips

There we no SQM trips observed in this quarter.

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 PRN133

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.

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.

G30. GEO PRN135

GEO. Geostationary satellite

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.

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.

GUS. Ground uplink station

HAL. Horizontal alert limit. The radius of a circle in the horizontal plane (the local plane tangent to the WGS-84 ellipsoid), with its center being at the true position, which describes the region that is required to contain the indicated horizontal position with a probability of $1\text{-}10^{-7}$ per flight hour, for a particular navigation mode, assuming the probability of a GPS satellite integrity failure being included in the position solution is less than or equal to 10^{-4} per hour.

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).

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

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

IGS. International GPS Service.

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

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.

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.

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.

S15. GEO PRN133

SBAS. Space Based Augmentation System

SIS. Signal in space

SM9. GEO PRN131

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.

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

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.

UTC. Coordinated Universal Time

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

VNAV. Vertical navigation

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.

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

WIPP. WAAS Integrity Performance Panel

WJHTC. William J. Hughes Technical Center

WRE. Wide-Area Reference Equipment

WRS. WAAS reference station

APPENDIX B: ADDITIONAL COVERAGE PLOTS

Appendix B includes the coverage plots with 99% LPV200 availability contour, 98% LPV availability contours, and 98% LP availability contours for the quarter. Figure B-1 shows CONUS coverage with 98% LP availability contour. Figure B-2 shows Alaska coverage with 98% LP availability contour. Figure B-3 shows CONUS coverage with 98% LPV availability contour. Figure B-4 shows Alaska coverage with 98% LPV availability contour. Figure B-5 shows CONUS coverage with 99% LPV200 availability contour. Figure B-6 shows Alaska coverage with 99% LPV200 availability contour.

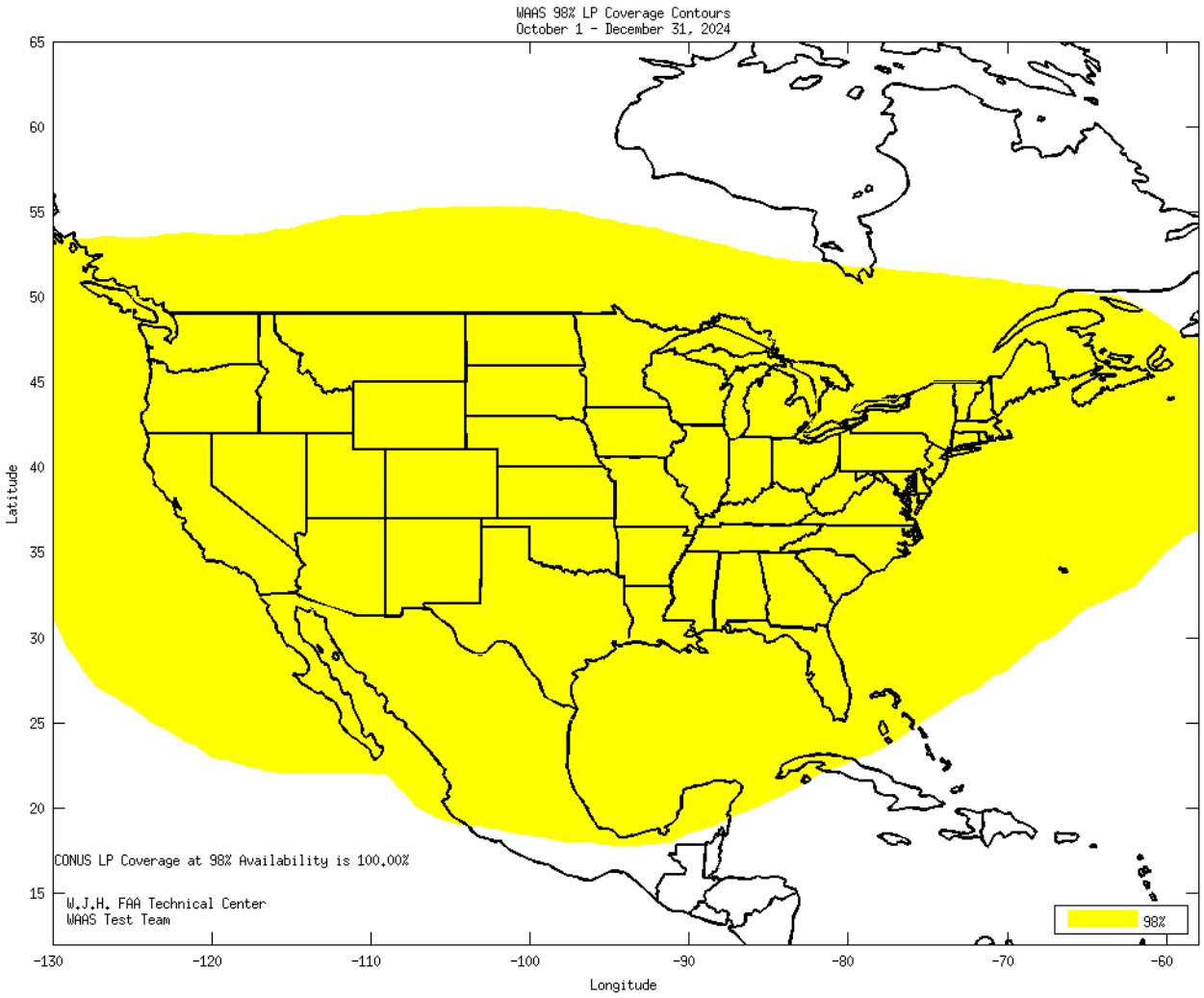

Figure B-1 98% CONUS LP Availability Contour

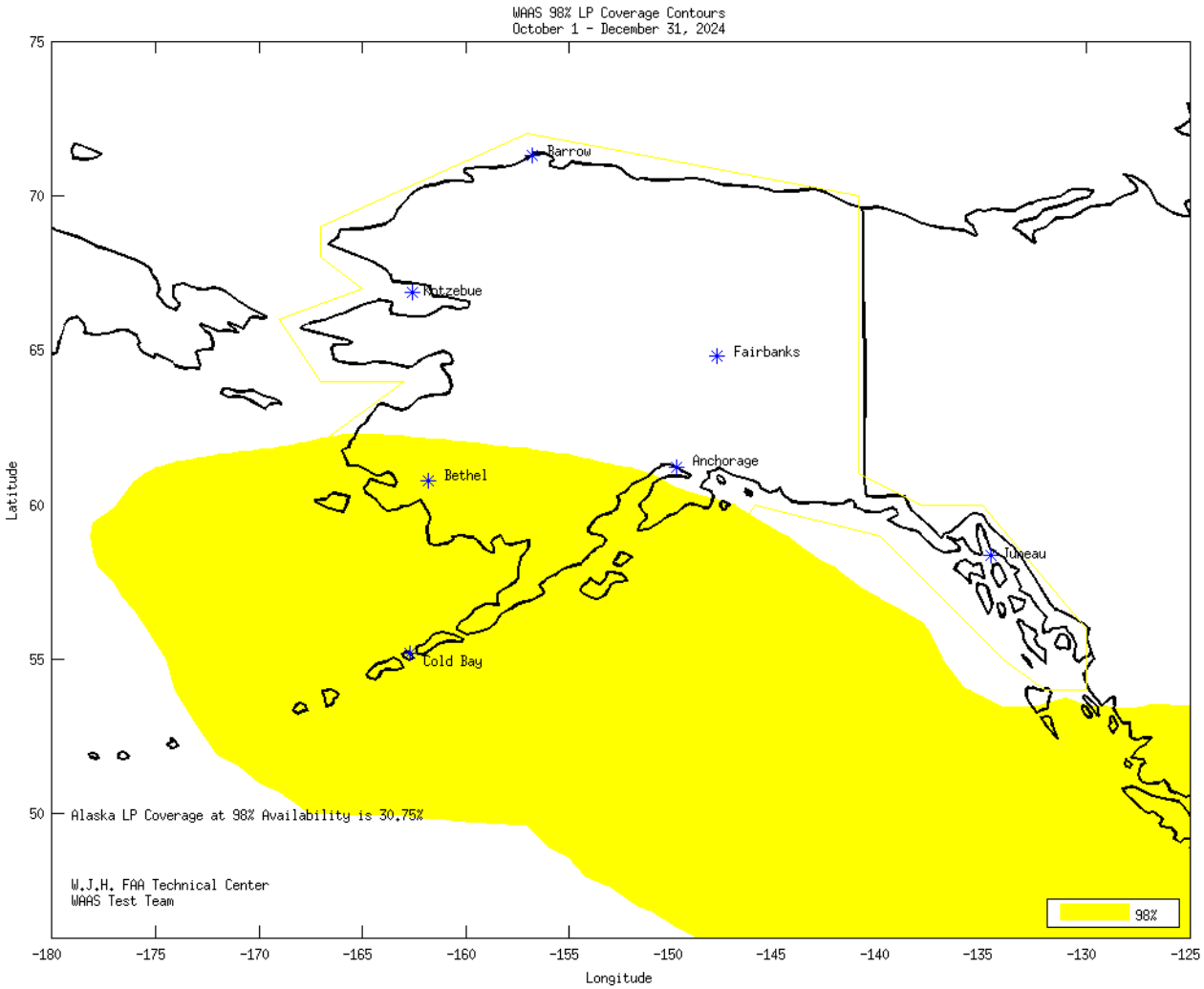

Figure B-2 98% Alaska LP Availability Contour

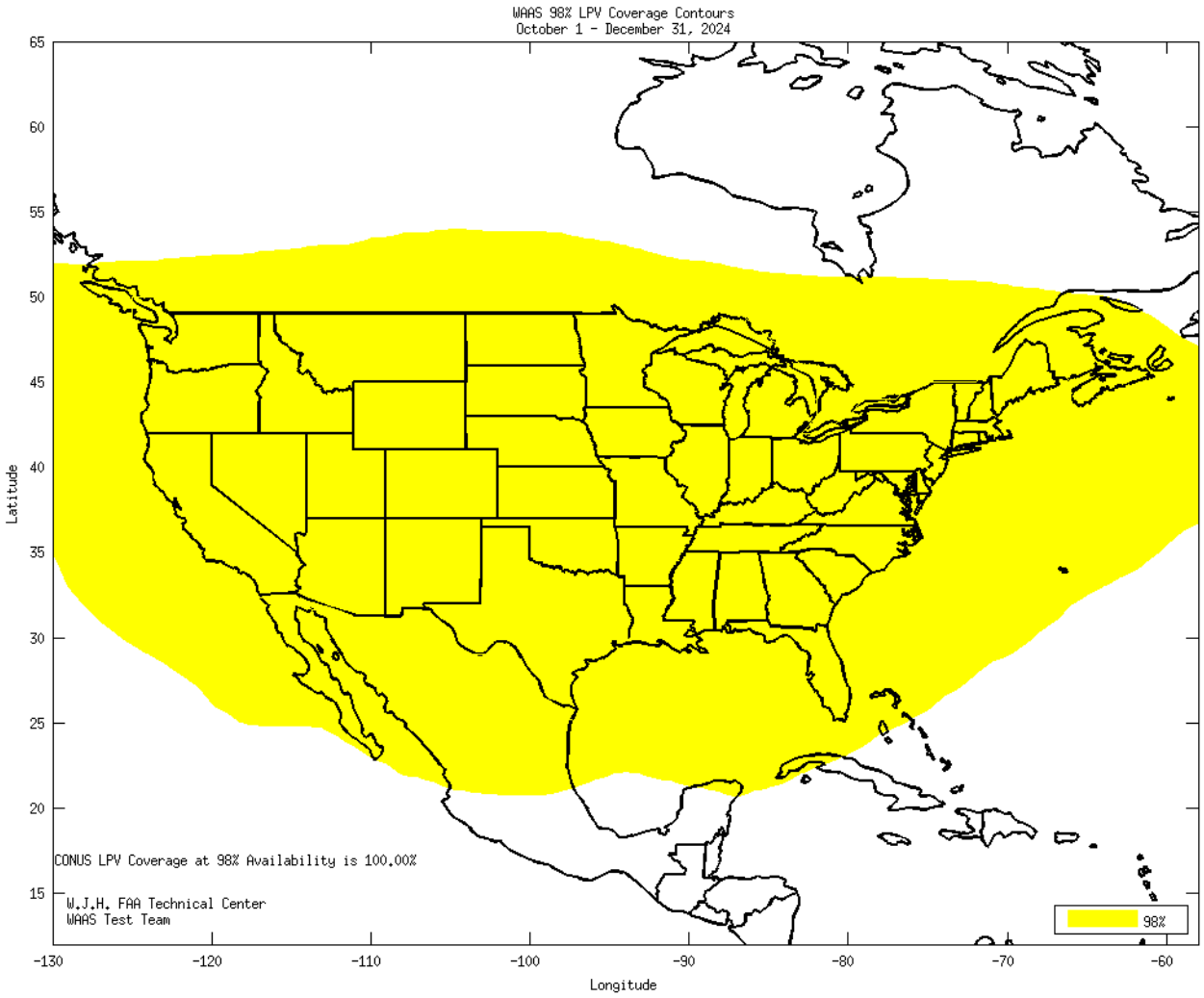

Figure B-3 98% CONUS LPV Availability Contour

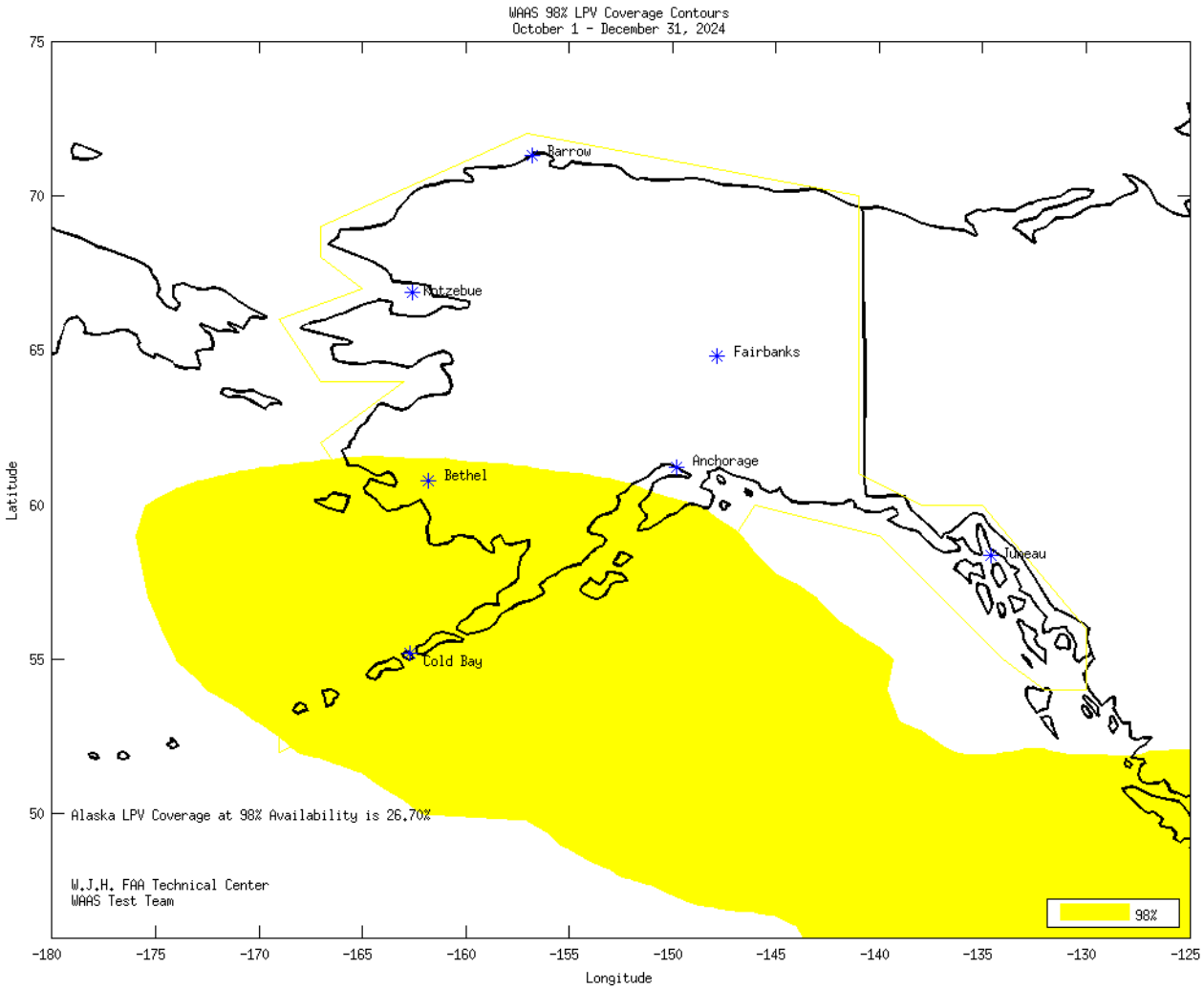

Figure B-4 98% Alaska LPV Availability Contour

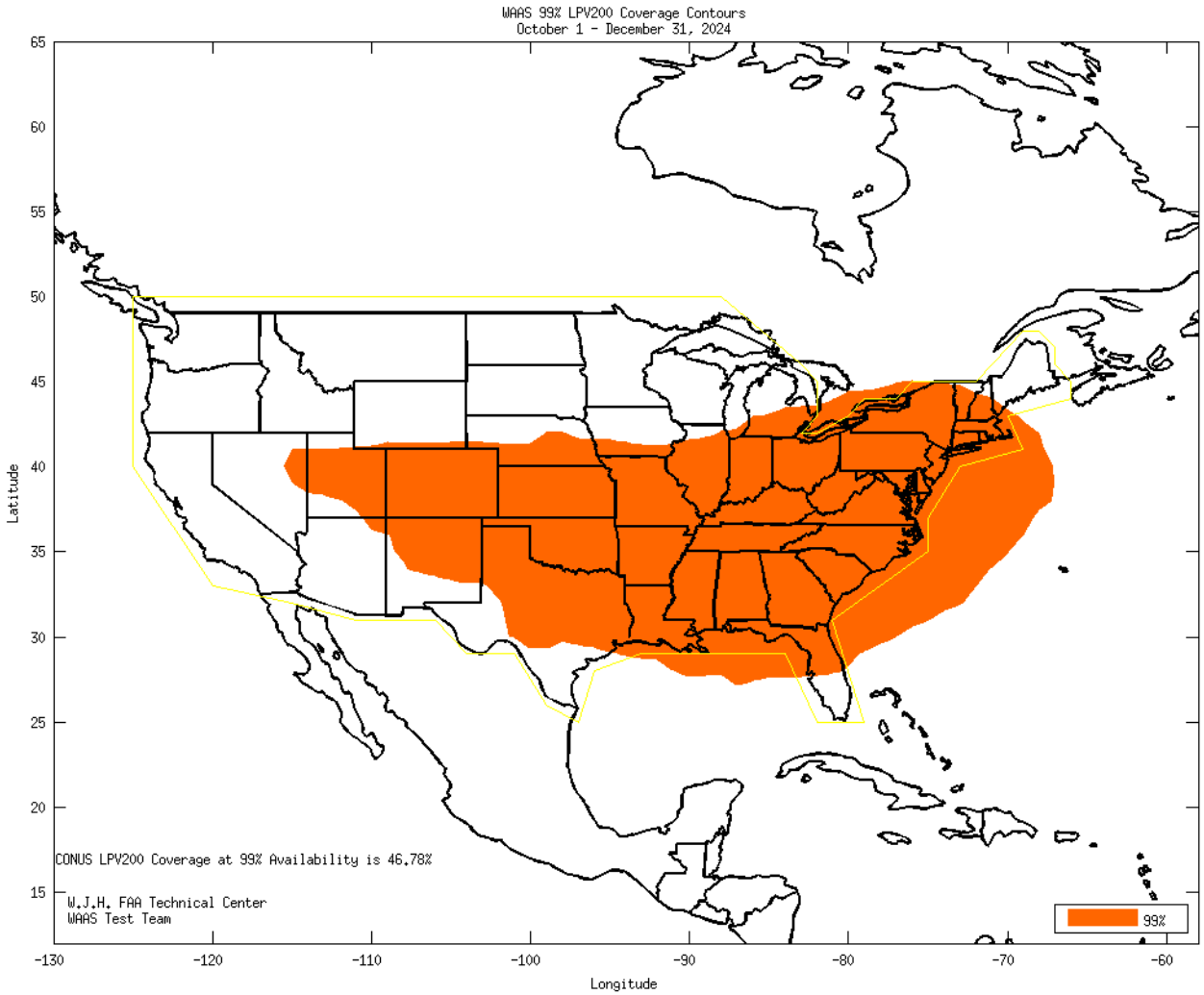

Figure B-5 99% CONUS LPV200 Availability Contour

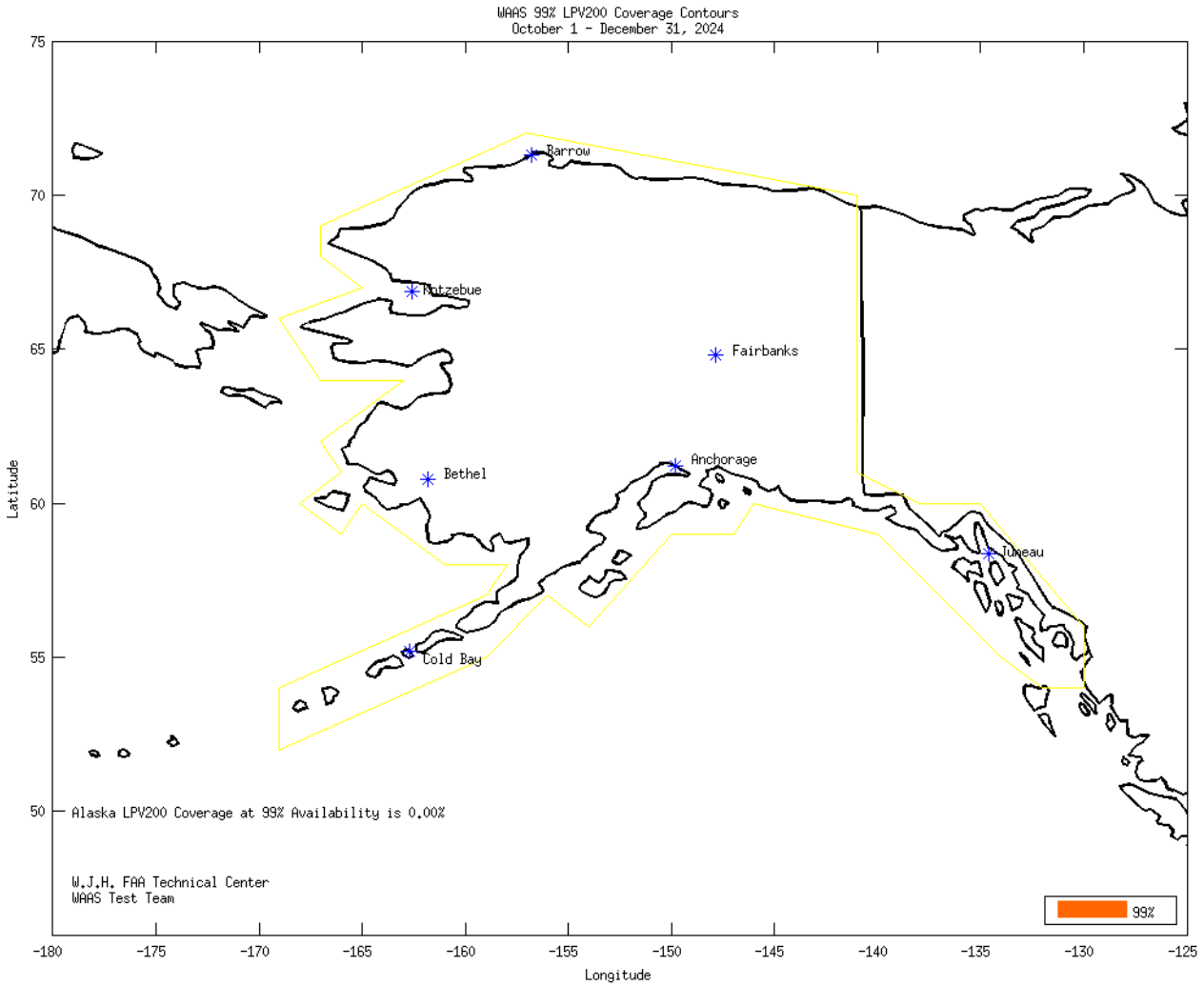

Figure B-6 99% Alaska LPV200 Availability Contour

APPENDIX C: RTCA TABLE DO-229F

Table A-8: Fast Corrections Degradation Factor and User Time-Out Interval Evaluation

Fast Corrections Degradation Factor Indicator (ai_i)	Fast Corrections Degradation Factor (a_i)- m/s^2	User Time-Out Interval for fast corrections - seconds En Route through LNAV Approach (I_{fc})	User Time-Out Interval for fast corrections - seconds LNAV/VNAV, LPV, LP Approach (I_{fc})	Maximum Fast Correction Update Interval (seconds)
0	0.00000	180	120	60
1	0.00005	180	120	60
2	0.00009	153	102	51
3	0.00012	135	90	45
4	0.00015	135	90	45
5	0.00020	117	78	39
6	0.00030	99	66	33
7	0.00045	81	54	27
8	0.00060	63	42	21
9	0.00090	45	30	15
10	0.00150	45	30	15
11	0.00210	27	18	9
12	0.00270	27	18	9
13	0.00330	27	18	9
14	0.00460	18	12	6
15	0.00580	18	12	6