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

WIDE AREA AUGMENTATION SYSTEM PERFORMANCE ANALYSIS REPORT

October 2023

Report #86
Reporting Period: July 01 to September 30, 2023
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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 #86 provides WAAS performance data from the July 01 through September 30, 2023 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 1.567 meters	Salt Lake City 0.590 meters	Juneau 0.799 meters	Bethel 0.672 meters
95% Vertical Accuracy (VPL <= 50 meters)	Atlantic City-a 1.770 meters	Seattle 0.958 meters	Barrow 1.590 meters	Bethel 1.181 meters
LP Availability (HPL <= 40 meters)	Multiple Sites 100%	Atlantic City-a 100%	Cold Bay 100%	Juneau 99.84%
LPV Availability (HPL <= 40 meters & VPL <= 50 meters)	Multiple Sites 100%	Multiple Sites 100%	Cold Bay 100%	Fairbanks 99.82%
LPV200 Availability (HPL <= 40 meters & VPL <= 35 meters)	Multiple Sites 100%	Los Angeles 99.79%	Bethel 99.89%	Kotzebue 99.72%
99% HPL	Miami 18.287 meters	Denver 11.009 meters	Cold Bay 20.444 meters	Anchorage 13.932 meters
99% VPL	Los Angeles 29.804 meters	Kansas City 19.960 meters	Barrow 32.036 meters	Anchorage 24.476 meters

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

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 <= 0.3 nmi
RNP 0.1	NPA	HPL <= 0.1 nmi
LNAV	NPA	HPL <= 556 m
LNAV/VNAV	PA	HPL <= 556 m VPL <= 50 m
LP	PA	HPL <= 40 m
LPV	PA	HPL <= 40 m VPL <= 50 m
LPV200	PA	HPL <= 40 m VPL <= 35 m

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

The results in this report are based on the application of the WAAS corrections to receiver data from the WAAS network and the FAA's National Satellite Test Bed (NSTB) network, and from analyses based on the WAAS-broadcasted correction data. Table 1-2 lists the receivers used in the PA analyses, and `NPA Evaluation Site`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	68	5869003
Atlantic City-a	85	7347897
Oklahoma City	87	7513630
WAAS:		
Albuquerque	92	7947474
Anchorage	92	7944540
Atlanta	92	7943844
Barrow	60	5180107
Bethel	91	7857573
Billings	92	7943008
Boston	92	7943842
Chicago	92	7948094
Cleveland	92	7931028
Cold Bay	92	7948163
Dallas	92	7947415
Denver	92	7935241
Fairbanks	91	7849239
Gander	92	7936213
Goose Bay	92	7948045
Houston	92	7937571
Iqaluit	92	7940121
Jacksonville	92	7944373
Juneau	92	7938936
Kansas City	92	7942221
Kotzebue	92	7946297
Los Angeles	92	7933879
Memphis	92	7944528
Merida	88	7638979
Mexico City	86	7461249
Miami	92	7944201
Minneapolis	92	7948389
New York	92	7945041
Oakland	92	7940513
Puerto Vallarta	88	7639459
Salt Lake City	92	7943483
San Jose Del Cabo	76	6580247
Seattle	92	7942112
Washington, DC	92	7942160
Winnipeg	92	7944535

Table 1-3 NPA Evaluation Site

Location	Number of Days Evaluated	Number of Samples
Albuquerque	92	7948429
Anchorage	92	7943343
Atlanta	92	7945037
Barrow	62	5322136
Bethel	92	7918705
Billings	92	7943757
Boston	92	7937752
Cleveland	92	7944633
Cold Bay	92	7945777
Fairbanks	92	7908824
Gander	92	7943975
Honolulu	92	7941660
Houston	92	7944780
Iqaluit	92	7948166
Juneau	92	7944671
Kansas City	92	7948433
Kotzebue	92	7944862
Los Angeles	92	7943518
Merida	38	3282618
Miami	92	7945010
Minneapolis	92	7944426
Oakland	92	7926657
Salt Lake City	92	7948209
San Jose Del Cabo	81	7039861
San Juan	92	7948433
Seattle	92	7948435
Tapachula	84	7270837
Washington, DC	92	7939159

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 inEvents 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
05/09/2023	07/10/2023	Washington, DC (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_CONUS	Starting around May 9th, the tech center began observing degradation in Southern CONUS. This is a result of increased DOPs in the region starting in January along with an increase in IGP GIVEs. Both these increases caused minor degradation in Southern California, New Mexico, Arizona, Western Texas, and the Florida panhandle.
07/06/2023	07/06/2023	Washington, DC (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_CONUS	Geomagnetic activity (KP = 3) disturbed the ionosphere causing elevated GIVE values. This resulted in minor degradation of LPV200 service coverage in CONUS (Socal, NM, AZ, TX, FL) from 16:45 UTC to 17:15 UTC. Please see plot(s): LPV200_7/6/2023 Cov_vs_Time_Conus_7/6/2023
07/07/2023	07/07/2023	Washington, DC (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_CONUS	Geomagnetic activity (KP = 4) disturbed the ionosphere causing elevated GIVE values. This resulted in minor degradation of LPV200 service coverage in CONUS (Socal, NM, AZ, TX, FL) from 16:40 UTC to 17:10 UTC. Please see plot(s): LPV200_7/7/2023 Cov_vs_Time_Conus_7/7/2023
07/08/2023	07/08/2023	Washington, DC (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_CONUS	Geomagnetic activity (KP = 4) disturbed the ionosphere causing elevated GIVE values. This resulted in minor degradation of LPV200 service coverage in CONUS (Socal, NM, AZ, TX, FL) from 16:45 UTC to 17:00 UTC. Please see plot(s): LPV200_7/8/2023 Cov_vs_Time_Conus_7/8/2023
7/10/2023	7/10/2023	PRN1	None	There was an SQM Trip on PRN1 on detection metrics 2, 3, and 4. The trip occurred at 09:56:59 UTC and left its tripped state at 11:06:31 UTC.
07/10/2023	07/10/2023	PRN28	LPV200_CONUS	The reduction in LPV200 service in CONUS was due to a GPS NANU on PRN28 (see NANU2023038), which was unusable from 11:10 UTC to 16:49 UTC. The NANU caused moderate degradation of LPV200 service coverage in CONUS from 16:25 UTC to 17:05 UTC. Please see plot(s): LPV200_7/10/2023 Cov_vs_Time_Conus_7/10/2023
07/10/2023	07/14/2023	PRN28	LPV200_CONUS	The reduction in LPV200 service in CONUS was due to a GPS NANU on PRN28 (see NANU2023040), which was unusable from 23:00 UTC on 7/10 to 01:07 UTC on 7/14. The NANU caused moderate degradation of LPV200 service coverage in CONUS from 16:10 UTC to 17:05 UTC each day of the NANU. Please see plot(s): LPV200_7/13/2023 Cov_vs_Time_Conus_7/13/2023
07/14/2023	07/14/2023	PRN30	LPV200_CONUS, LPV200_Canada	The reduction in LPV200 service in CONUS and Canada was due to a GPS NANU on PRN30 (see NANU2023041), which was unusable from 01:48 UTC to 06:59 UTC. Following the NANU, the UDREs for PRN30 elevated to Do

Start Date	End Date	Location Satellite	Service Affected	Event Description
				Not Use from around 07:00 UTC to 09:01 UTC The elevated UDREs caused moderate degradation of: (1) LPV200 service coverage in CONUS from 7:10 UTC to 7:20 UTC; and (2) LPV200 service coverage in Canada from 01:45 UTC to 02:20 UTC and from 04:05 UTC to 04:15 UTC. Please see plot(s): LPV200_7/14/2023 Cov_vs_Time_Canada_7/14/2023 Cov_vs_Time_Conus_7/14/2023
07/17/2023	07/17/2023	Washington, DC (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_CONUS, LPV_Alaska, LPV200_CONUS, LPV200_Canada	Geomagnetic activity (KP = 4) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of LPV200 service coverage in CONUS (California) from 00:05 UTC to 01:00 UTC. The elevated GIVE values also caused moderate degradation of: (1) LPV service coverage in CONUS (California) from 00:40 UTC to 00:55 UTC; (2) LPV200 service coverage in Alaska from 10:00 UTC to 11:30 UTC; (3) LPV200 service coverage in Canada from 00:15 UTC to 00:30 UTC and from 01:05 UTC to 01:35 UTC. Please see plot(s): LPV200_7/17/2023 Cov_vs_Time_Alaska_7/17/2023 Cov_vs_Time_Canada_7/17/2023 Cov_vs_Time_Conus_7/17/2023
07/18/2023	07/18/2023	Washington, DC (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_CONUS, LPV200_Alaska	Geomagnetic activity (KP = 4.67) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of LPV200 service coverage in CONUS (SoCal, FL) from 15:55 UTC to 16:20 UTC. The elevated GIVE values also caused moderate degradation of LPV200 service coverage in Alaska from 00:35 UTC to 01:40 UTC. Please see plot(s): LPV200_7/18/2023 Cov_vs_Time_Alaska_7/18/2023 Cov_vs_Time_Conus_7/18/2023
07/27/2023	07/27/2023	Washington, DC (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 minor degradation of LPV200 service coverage in CONUS (SoCal, AZ) from 15:20 UTC to 15:45 UTC. The elevated GIVE values also caused (1) minor degradation of LPV200 service coverage in Canada from 12:10 UTC to 12:30 UTC; (2) minor degradation of LPV service coverage in Canada from 12:15 UTC to 12:30 UTC. Please see plot(s): LPV_7/27/2023 LPV200_7/27/2023 Cov_vs_Time_Canada_7/27/2023 Cov_vs_Time_Conus_7/27/2023
07/28/2023	07/28/2023	Washington, DC (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 minor degradation of LPV200 service coverage in CONUS (SoCal, TX, FL) from 15:15 UTC to 15:40 UTC. The elevated GIVE values also caused minor degradation of: (1) LPV200 service in Canada from 12:05 UTC to 12:30 UTC; and (2) LPV service coverage in Canada from 12:05 UTC to 12:30 UTC.

Start Date	End Date	Location Satellite	Service Affected	Event Description
				Please see plot(s): LPV_7/28/2023 LPV200_7/28/2023 Cov_vs_Time_Canada_7/28/2023 Cov_vs_Time_Conus_7/28/2023
07/29/2023	07/29/2023	Washington, DC (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_CONUS	There was a ring 1 outage for all Mexico sites. This in combination with the ongoing Ring 2 Mexico network outage caused a complete network outage for these sites from 13:47 UTC to 18:13 UTC. The lack of observations from Mexico sites increased IGPs over New Mexico and Arizona resulting in moderate degradation of LPV200 service coverage from 15:10 UTC to 15:55 UTC. Please see plot(s): LPV200_7/29/2023 Cov_vs_Time_Conus_7/29/2023
07/30/2023	07/30/2023	Washington, DC (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_CONUS, LPV200_Canada	Geomagnetic activity (KP = 3) disturbed the ionosphere causing elevated GIVE values. This resulted in minor degradation of LPV200 service coverage in CONUS (AZ) from 15:20 UTC to 15:30 UTC. The elevated GIVE values also caused minor degradation of LPV200 service coverage in Canada from 11:55 UTC to 12:20 UTC and from 12:05 UTC to 12:30 UTC and from 12:00 UTC to 12:20 UTC. Please see plot(s): LPV200_7/30/2023 Cov_vs_Time_Canada_7/30/2023 Cov_vs_Time_Conus_7/30/2023
07/31/2023	07/31/2023	Washington, DC (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_Canada	Geomagnetic activity (KP = 2) disturbed the ionosphere causing elevated GIVE values. This resulted in minor degradation of LPV200 service coverage in Canada from 11:55 UTC to 12:15 UTC. The elevated GIVE values also caused minor degradation of LPV service coverage in Canada from 11:55 UTC to 12:15 UTC. Please see plot(s): LPV_7/31/2023 LPV200_7/31/2023 Cov_vs_Time_Canada_7/31/2023
08/01/2023	08/01/2023	Washington, DC (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_CONUS, LPV200_Canada	Geomagnetic activity (KP = 3.33) disturbed the ionosphere causing elevated GIVE values. This resulted in minor degradation of LPV200 service coverage in CONUS (SoCal, AZ, NM) from 15:00 UTC to 15:25 UTC. The elevated GIVE values also caused minor degradation of: (1) LPV200 service coverage in Canada from 00:55 UTC to 01:30 UTC; and (2) LPV service coverage in Canada from 11:45 UTC to 12:10 UTC; (3) minor degradation of LPV service coverage in Canada from 11:45 UTC to 12:10 UTC. Please see plot(s): LPV_8/1/2023 LPV200_8/1/2023 Cov_vs_Time_Canada_8/1/2023 Cov_vs_Time_Conus_8/1/2023
08/03/2023	08/03/2023	Washington, DC (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_CONUS	Geomagnetic activity (KP = 4) disturbed the ionosphere causing elevated GIVE values. This resulted in minor degradation of LPV200 service coverage in CONUS from 11:40 UTC to 12:05 UTC. The elevated GIVE values also caused

Start Date	End Date	Location Satellite	Service Affected	Event Description
				minor degradation of LPV service coverage in Canada from 11:45 UTC to 12:05 UTC. Please see plot(s): LPV200_8/3/2023 Cov_vs_Time_Conus_8/3/2023
08/04/2023	08/04/2023	Washington, DC (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Canada	Geomagnetic activity (KP = 4.33) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of LPV200 service coverage in Canada from 23:40 UTC on 8/4 to 04:05 UTC on 8/5. The elevated GIVE values also caused minor degradation of: (1) LPV200 service coverage in Canada from 11:35 UTC to 12:00 UTC on 8/4; and (2) LPV service coverage in Canada from 11:35 UTC to 12:00 UTC on 8/4. Please see plot(s): LPV200_8/4/2023 Cov_vs_Time_Canada_8/4/2023
08/04/2023	08/04/2023	Washington, DC (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_Canada	Geomagnetic activity (KP = 4.33) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of LPV200 service coverage in Canada from 23:40 UTC on 8/4 to 04:05 UTC on 8/5. The elevated GIVE values also caused minor degradation of LPV200 service coverage in Canada from 11:35 UTC to 12:00 UTC on 8/4. Please see plot(s): LPV200_8/4/2023 Cov_vs_Time_Canada_8/4/2023
08/05/2023	08/05/2023	Washington, DC (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_CONUS, LPV200_Alaska, LPV200_Canada	Geomagnetic activity (KP = 6.67) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of LPV200 service coverage in Canada from 00:00 UTC to 03:00 UTC, 03:20 UTC to 03:55 UTC, and 07:50 UTC to 08:20 UTC. The elevated GIVE values also resulted in moderate degradation of (1) LPV200 service coverage in CONUS from 01:05 UTC to 01:50 UTC, 02:35 UTC to 02:55 UTC, 05:20 UTC to 05:30 UTC, 07:30 UTC to 07:50 UTC, 14:40 UTC to 15:05 UTC, and from 20:45 UTC to 21:10 UTC; (2) LPV200 service coverage in Alaska from 03:15 UTC to 03:50 UTC, 04:45 UTC to 08:00 UTC, 08:45 UTC to 09:50 UTC, and 11:30 UTC to 12:35 UTC, 13:00 UTC to 13:25 UTC, 14:20 UTC to 14:55 UTC, 20:35 UTC to 21:55 UTC, and from 23:20 UTC on 8/5 to 00:15 UTC on 8/6; (3) minor degradation of LPV service coverage in Canada from 01:35 UTC to 02:10 UTC, and from 11:30 UTC to 11:55 UTC. Please see plot(s): LPV_8/5/2023 LPV200_8/5/2023 Cov_vs_Time_Alaska_8/5/2023 Cov_vs_Time_Canada_8/5/2023 Cov_vs_Time_Conus_8/5/2023
08/06/2023	08/06/2023	Washington, DC (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_CONUS, LPV200_Canada	Geomagnetic activity (KP = 1.33) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of (1) LPV200 service coverage CONUS (SoCal, NM, AZ, TX, FL) from 07:05 UTC to 07:20 UTC, 10:30 UTC to 10:40 UTC, 14:35 UTC to 15:20 UTC, and from 10:35 UTC to

Start Date	End Date	Location Satellite	Service Affected	Event Description
				21:05 UTC. The elevated GIVE values also caused degradation of LPV200 service coverage in Canada from 07:50 UTC to 08:15 UTC and from 11:30 to 11:50 UTC. Please see plot(s): LPV200_8/6/2023 Cov_vs_Time_Canada_8/6/2023 Cov_vs_Time_Conus_8/6/2023
08/07/2023	08/08/2023	Washington, DC (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Alaska, LPV200_Canada	Geomagnetic activity (KP = 4.33) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of: (1) LPV200 service coverage in Alaska from 23:00 UTC to 23:55 UTC; and (2) LPV200 service coverage in Canada from 23:00 UTC on 8/7 to 00:20 UTC on 8/8. Please see plot(s): LPV200_8/7/2023 Cov_vs_Time_Alaska_8/7/2023 Cov_vs_Time_Canada_8/7/2023 Cov_vs_Time_Alaska_8/8/2023 Cov_vs_Time_Canada_8/8/2023
08/10/2023	08/29/2023	PRN28	LPV200_CONUS	The reduction in LPV200 service in CONUS was due to a GPS NANU on PRN28 (see NANU2023051), which was unusable from 23:52 UTC on 8/10 to 23:04 UTC on 8/29. This resulted in moderate degradation of LPV200 service coverage CONUS over California, New Mexico, Arizona, and Western Texas. This outage lasted approximately 35-40 minutes each day. Please see plot(s): LPV200_8/28/2023 Cov_vs_Time_Conus_8/28/2023
08/11/2023	08/11/2023	PRN1	None	There was a GPS NANU on PRN1 (see NANU2023036) broadcasting that SV63 would be unusable until further notice. SV63 (PRN1) was decommissioned on August 10, 2023 at 22:00 UTC (see NANU 2023044). There was no impact on coverage.
08/18/2023	08/18/2023	Washington, DC (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 22:55 UTC on 8/18 to 01:00 UTC on 8/19. Please see plot(s): LPV200_8/18/2023 Cov_vs_Time_Canada_8/18/2023
08/21/2023	08/21/2023	Washington, DC (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 03:45 UTC to 04:10 UTC and from 23:00 UTC to 23:40 UTC. Please see plot(s): LPV200_8/21/2023 Cov_vs_Time_Conus_8/21/2023
08/22/2023	08/23/2023	PRN15	LPV200_CONUS	The reduction in LPV200 service in CONUS was due to a GPS NANU on PRN25 (see NANU2023048), which was unusable from 16:11 UTC on 8/22 to 14:46 UTC on 8/23. The NANU caused significant degradation of LPV200 service coverage in CONUS from 17:20 UTC to 17:50 UTC and from 19:15

Start Date	End Date	Location Satellite	Service Affected	Event Description
				UTC to 20:00 UTC on 8/22. Please see plot(s): LPV200_8/22/2023 Cov_vs_Time_Conus_8/22/2023
08/24/2023	08/28/2023	Barrow (BRW1), Barrow (BRW2), Barrow (BRW3)	LPV200_Canada	The Barrow (BRW) reference station was put into protective shutdown due to high temperatures on 8/24. The lack of observations in the region caused elevated GIVEs, which resulting in moderate degradation of: LPV200 service coverage in Canada from around 15:20 UTC to 15:35 UTC each day. Barrow Threads A and C returned to service at 23:54 UTC on 8/28. Please see plot(s): LPV200_8/27/2023 Cov_vs_Time_Canada_8/27/2023
08/24/2023	08/24/2023	Washington, DC (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Alaska, LPV200_Canada	Geomagnetic activity (KP = 3.33) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of: (1) LPV200 service coverage in Alaska from 22:10 UTC to 22:40 UTC; and (2) LPV200 service coverage in Canada from 22:30 UTC to 23:45 UTC. Please see plot(s): LPV200_8/24/2023 Cov_vs_Time_Alaska_8/24/2023 Cov_vs_Time_Canada_8/24/2023
09/02/2023	09/02/2023	Washington, DC (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Canada	Geomagnetic activity (KP = 5.33) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of LPV200 service coverage in Canada from 21:50 UTC to 22:50 UTC and from 23:15 UTC to 23:55 UTC. The elevated GIVE values also caused minor degradation of LPV200 service coverage in Alaska from 07:00 UTC to 08:10 UTC and from 21:35 UTC to 22:20 UTC. Please see plot(s): LPV200_9/2/2023 Cov_vs_Time_Canada_9/2/2023
09/03/2023	09/03/2023	Washington, DC (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Canada	Geomagnetic activity (KP = 5.67) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of LPV200 service coverage in Canada from 01:40 UTC to 01:50 UTC, from 09:40 UTC to 09:50 UTC, and from 22:35 UTC to 22:40 UTC. Please see plot(s): LPV200_9/3/2023 Cov_vs_Time_Canada_9/3/2023
09/05/2023	09/05/2023	Washington, DC (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Canada	Geomagnetic activity (KP = 2.67) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of LPV200 service coverage in Canada from 09:30 UTC to 09:45 UTC and from 14:40 UTC to 14:50 UTC. Please see plot(s): LPV200_9/5/2023 Cov_vs_Time_Canada_9/5/2023
09/07/2023	09/08/2023	PRN2	LPV200_Canada	The reduction in LPV200 service in Alaska was due to a GPS NANU on PRN2 (NANU2023054), which was unusable from 20:23 UTC on 9/7 to 02:25 on 9/8 UTC. The NANU caused moderate degradation of LPV200 service coverage in Alaska from 21:15 UTC on 9/7 to 22:15 UTC on 9/7. Please see plot(s): LPV200_9/7/2023 Cov_vs_Time_Canada_9/7/2023

Start Date	End Date	Location Satellite	Service Affected	Event Description
09/12/2023	09/12/2023	Washington, DC (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_CONUS, LPV200_Alaska, LPV200_Canada	Geomagnetic activity (KP = 5.67) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of LPV200 service coverage in Canada from 15:35 UTC to 22:55 UTC. The elevated GIVE values also caused moderate degradation of LPV200 service coverage in (1) CONUS from 17:55 UTC to 18:50 UTC; (2) Alaska from 11:35 UTC to 16:20 UTC and from 20:50 UTC to 21:40 UTC; (3) significant degradation of LPV service coverage in Canada from 16:05 UTC to 19:45 UTC; Please see plot(s): LPV_9/12/2023 LPV200_9/12/2023 Cov_vs_Time_Alaska_9/12/2023 Cov_vs_Time_Canada_9/12/2023 Cov_vs_Time_Conus_9/12/2023
09/13/2023	09/13/2023	Washington, DC (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Alaska, LPV200_Canada	Geomagnetic activity (KP = 4.67) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of LPV200 service coverage in Alaska from 00:05 UTC to 00:15 UTC, 14:15 UTC to 15:00 UTC, and from 20:50 UTC to 21:35 UTC. The elevated GIVE values also caused moderate degradation of LPV200 service coverage in Canada from 00:05 UTC to 00:15 UTC, 00:25 UTC to 00:45 UTC, 01:15 UTC to 01:55 UTC, 08:50 UTC to 09:15 UTC, and from 14:05 to 14:30 UTC. Please see plot(s): LPV200_9/13/2023 Cov_vs_Time_Alaska_9/13/2023 Cov_vs_Time_Canada_9/13/2023
09/14/2023	09/14/2023	Washington, DC (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_Canada	The reduction in LPV200 service in CONUS was due to a GPS NANU on PRN9 (see NANU2023056), which was unusable from 23:52 UTC on 9/14 to 05:04 UTC on 9/15. The NANU caused moderate degradation of LPV200 service coverage in CONUS from 02:25 UTC to 02:50 UTC. The NANU along with elevated GIVEs also caused moderate degradation of LPV200 service coverage in: (1) Alaska from 00:20 UTC to 01:40 UTC; and (2) Canada from 01:05 UTC to 01:40 UTC. Please see plot(s): LPV200_9/15/2023 Cov_vs_Time_Alaska_9/15/2023 Cov_vs_Time_Canada_9/15/2023 Cov_vs_Time_Conus_9/15/2023
09/14/2023	09/15/2023	PRN9	LPV200_CONUS, LPV200_Alaska, 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 01:20 UTC on 9/14 to 01:50 UTC on 9/14, 02:00 UTC on 9/14 to 03:00 UTC on 9/14, 08:50 UTC on 9/14 to 09:10 UTC on 9/14, 21:05 UTC on 9/14 to 01:40 UTC on 9/15. The elevated GIVE values also caused moderate degradation of LPV service coverage in Canada from 02:15 UTC to 02:40 UTC and from 08:50 UTC to 09:10 UTC.

Start Date	End Date	Location Satellite	Service Affected	Event Description
				Please see plot(s): LPV_9/14/2023 LPV200_9/14/2023 Cov_vs_Time_Canada_9/14/2023
09/15/2023	09/15/2023	Washington, DC (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_CONUS, LPV200_Alaska, LPV200_Canada	Geomagnetic activity (KP = 2.67) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of LPV200 service coverage in CONUS from 02:25 UTC to 02:50 UTC. The elevated GIVE values along with NANU also caused moderate degradation of LPV200 service coverage in (1) Alaska from 00:20 UTC to 01:40 UTC; (2) Canada from 01:05 UTC to 01:40 UTC. Please see plot(s): LPV200_9/15/2023 Cov_vs_Time_Alaska_9/15/2023 Cov_vs_Time_Canada_9/15/2023 Cov_vs_Time_Conus_9/15/2023
9/16/2023	9/16/2023	Washington, DC (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Canada	Geomagnetic activity (KP = 3) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of LPV200 service in Canada from 01:10 UTC to 02:50 UTC. Please see plot(s): LPV200_9/16/2023 Cov_vs_Time_Canada_9/16/2023
09/17/2023	09/17/2023	Washington, DC (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Canada	Geomagnetic activity (KP = 3.67) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of LPV200 service coverage in Alaska from 08:35 UTC to 09:45 UTC. Please see plot(s): LPV200_9/17/2023 Cov_vs_Time_Canada_9/17/2023
09/18/2023	09/18/2023	Washington, DC (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_CONUS, LPV200_Alaska, 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 17:35 UTC to 23:15 UTC. The elevated GIVE values also caused (1) moderate degradation of LPV200 service coverage in Alaska from 17:40 UTC to 18:50 UTC, and from 20:20 UTC to 21:20 UTC; (2) minor degradation of LPV200 service coverage in CONUS from 20:20 UTC to 21:25 UTC; (3) significant degradation of LPV service coverage in Canada from 20:20 UTC to 21:35 UTC. Please see plot(s): LPV_9/18/2023 LPV200_9/18/2023 Cov_vs_Time_Alaska_9/18/2023 Cov_vs_Time_Canada_9/18/2023 Cov_vs_Time_Conus_9/18/2023
9/19/2023	9/19/2023	Washington, DC (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_Canada	Geomagnetic activity (KP = 3) disturbed the ionosphere causing elevated GIVE values. This was caused by a G3 geomagnetic storm. This resulted in moderate degradation of: (1) LPV200 service coverage in Canada from 01:00 UTC to 03:30 UTC and (2) LPV service coverage in Canada from 01:00 UTC to 01:15 UTC. Please see plot(s): LPV_9/19/2023 LPV200_9/19/2023 Cov_vs_Time_Canada_9/19/2023

Start Date	End Date	Location Satellite	Service Affected	Event Description
09/24/2023	09/25/2023	Washington, DC (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_CONUS, LPV_Alaska, LPV_Canada, LPV200_CONUS, LPV200_Alaska, LPV200_Canada	Geomagnetic activity (KP = 5.67) disturbed the ionosphere causing elevated GIVE values. This was caused by a G2 geomagnetic storm. This resulted in significant degradation of: (1) LPV200 service coverage in CONUS from 22:20 UTC on 9/24 to 02:35 UTC on 9/25; (2) LPV200 service coverage in Alaska from 22:45 UTC on 9/24 to 03:10 UTC on 9/25; (3) LPV200 service coverage in Canada from 21:40 UTC on 9/24 to 03:10 UTC on 9/25; (4) LPV service coverage in Alaska from 22:45 UTC on 9/24 to 03:10 UTC on 9/25; and (5) LPV service coverage in Canada from 22:15 UTC on 9/24 to 03:10 UTC on 9/24. The elevated GIVE values also caused moderate degradation of LPV service coverage in CONUS from 00:30 UTC on 9/25 to 01:25 UTC on 9/25. Please see plot(s): LPV_9/24/2023 LPV200_9/24/2023 Cov_vs_Time_Alaska_9/24/2023 Cov_vs_Time_Canada_9/24/2023 Cov_vs_Time_Conus_9/24/2023 LPV_9/25/2023 LPV200_9/25/2023 Cov_vs_Time_Alaska_9/25/2023 Cov_vs_Time_Canada_9/25/2023 Cov_vs_Time_Conus_9/25/2023
9/27/2023	9/27/2023	Washington, DC (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_CONUS, LPV200_CONUS	Geomagnetic activity (KP = 4) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of: (1) LPV200 service coverage in CONUS from 01:05 UTC to 02:25 UTC; and (2) LPV service coverage in CONUS from 01:05 UTC to 02:25 UTC. Please see plot(s): LPV_9/27/2023 LPV200_9/27/2023 Cov_vs_Time_Conus_9/27/2023
9/29/2023	9/29/2023	Washington, DC (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Alaska, LPV200_Alaska, LPV200_Canada	Geomagnetic activity (KP = 3) disturbed the ionosphere causing elevated GIVE values. This was caused by a G1 geomagnetic storm. This resulted in moderate degradation of: (1) LPV200 service coverage in Alaska from 07:50 UTC to 11:05 UTC; and (2) LPV200 service coverage in Canada from 07:45 UTC to 10:55 UTC. The elevated GIVE values also resulted in minor degradation of LPV service coverage in Alaska from 09:00 UTC to 09:40 UTC. Please see plot(s): LPV_9/29/2023 LPV200_9/29/2023 Cov_vs_Time_Alaska_9/29/2023 Cov_vs_Time_Canada_9/29/2023
9/30/2023	9/30/2023	Washington, DC (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 in Canada from 18:00 UTC to 23:50 UTC. The elevated GIVE values also resulted in moderate degradation of LPV service coverage in Canada from 22:20 UTC to 22:30 UTC. Please see plot(s): LPV_9/30/2023 LPV200_9/30/2023 Cov_vs_Time_Canada_9/30/2023

Table 1-6 WAAS Upgrades

Start Date	End Date	Location Satellite	Event Description
05/24/2023	07/24/2023	Santa Paula (SZ1)	SSM-WAAS-062: This system support modification (SSM) upgrades the Santa Paula (SZ1) GUS to software build W7.391L.
07/06/2023	07/06/2023	Boston (ZBW1), Boston (ZBW2), Boston (ZBW3)	SSM-WAAS-062: This system support modification (SSM) upgrades the Boston (ZBW) WRS to software build W7.391L.
07/10/2023	07/11/2023	Houston (ZHU1), Houston (ZHU2), Houston (ZHU3)	SSM-WAAS-062: This system support modification (SSM) upgrades the Huston (ZHU) WRS to software build W7.391L.
07/11/2023	07/11/2023	Mexico City (MMX1), Mexico City (MMX2), Mexico City (MMX3)	SSM-WAAS-062: This system support modification (SSM) upgrades the Mexico City (MMX) WRS to software build W7.391L.
07/12/2023	07/12/2023	Gander (YQX1), Gander (YQX2), Gander (YQX3)	SSM-WAAS-062: This system support modification (SSM) upgrades the Gander (YQX) WRS to software build W7.391L.
07/13/2023	07/14/2023	Dallas (ZFW1), Dallas (ZFW2), Dallas (ZFW3)	SSM-WAAS-062: This system support modification (SSM) upgrades the Dallas Fort Worth (ZFW) WRS to software build W7.391L.
07/14/2023	07/14/2023	Puerto Vallarta (MPR1), Puerto Vallarta (MPR2), Puerto Vallarta (MPR3)	SSM-WAAS-062: This system support modification (SSM) upgrades the Puerto Vallarta (MPR) WRS to software build W7.391L.
07/17/2023	07/17/2023	Winnipeg (YWG1), Winnipeg (YWG2), Winnipeg (YWG3)	SSM-WAAS-062: This system support modification (SSM) upgrades the Winnepeg (YWG) WRS to software build W7.391L.
07/18/2023	07/18/2023	Tapachula (MTP1), Tapachula (MTP2), Tapachula (MTP3)	SSM-WAAS-062: This system support modification (SSM) upgrades the Tapachula (MTP) WRS to software build W7.391L.
08/01/2023	08/01/2023	Denver (ZDV1), Denver (ZDV2), Denver (ZDV3)	SSM-WAAS-062: This system support modification (SSM) upgrades the Denver (ZDV) WRS to software build W7.391L.
08/01/2023	08/02/2023	Chicago (ZAU1), Chicago (ZAU2), Chicago (ZAU3)	SSM-WAAS-062: This system support modification (SSM) upgrades the Chicago (ZAU) WRS to software build W7.391L. The upgrade on ZAU Thread C was completed on 8/1. The upgrades on ZAU Threads A and B were completed on 8/2.

08/02/2023	08/02/2023	Bethel (BET1), Bethel (BET2), Bethel (BET3)	SSM-WAAS-062: This system support modification (SSM) upgrades the Bethel (BET) WRS to software build W7.391L.
08/02/2023	08/03/2023	Cleveland (ZOB1), Cleveland (ZOB2), Cleveland (ZOB3)	SSM-WAAS-062: This system support modification (SSM) upgrades the Cleveland (ZOB) WRS to software build W7.391L. ZOB Threads B and C were upgraded on 8/9. ZOB Thread A was upgraded on 8/10.
08/03/2023	08/03/2023	Billings (BIL1), Billings (BIL2), Billings (BIL3)	SSM-WAAS-062: This system support modification (SSM) upgrades the Billings (BIL) WRS to software build W7.391L.
08/03/2023	08/04/2023	Minneapolis (ZMP1), Minneapolis (ZMP2), Minneapolis (ZMP3)	SSM-WAAS-062: This system support modification (SSM) upgrades the Minneapolis (ZMP) WRS to software build W7.391L. ZMP thread C was upgraded on 8/10. ZMP threads A and B were upgraded on 8/11.
08/16/2023	08/16/2023	Barrow (BRW1), Barrow (BRW2), Barrow (BRW3)	SSM-WAAS-062: This system support modification (SSM) upgrades the Barrow (BRW) WRS to software build W7.391L.
08/16/2023	08/16/2023	Los Angeles (ZLA1), Los Angeles (ZLA2), Los Angeles (ZLA3)	SSM-WAAS-062: This system support modification (SSM) upgrades the Los Angeles (ZLA) WRS to software build W7.391L. ZLA Thread C was upgraded on 8/16. ZLA Threads A and B were upgraded on 8/17.
08/21/2023	08/22/2023	Anchorage (ZAN)	SSM-WAAS-062: This system support modification (SSM) upgrades the Anchorage (ZAN) WRS to software build W7.391L. ZAN Thread A was upgraded on 8/21. ZAN Threads B and C were upgraded on 8/22.
08/29/2023	08/30/2023	Atlanta (ZTL1), Atlanta (ZTL2), Atlanta (ZTL3)	SSM-WAAS-062: This system support modification (SSM) upgrades the Atlanta (ZTL) WRS to software build W7.391L. ZTL Thread C was upgraded on 8/29. ZTL Threads A and B were upgraded on 8/30.
08/29/2023	08/30/2023	Fairbanks (FAI1), Fairbanks (FAI2), Fairbanks (FAI3)	SSM-WAAS-062: This system support modification (SSM) upgrades the Fairbanks (FAI) WRS to software build W7.391L. FAI Thread C was upgraded on 8/29. FAI Threads A and B were upgraded on 8/30.
09/05/2023	09/06/2023	Kotzebue (OTZ1), Kotzebue (OTZ2), Kotzebue (OTZ3)	SSM-WAAS-062: This system support modification (SSM) upgrades the Kotzebue (OTZ) WRS to software build W7.391L. OTZ Thread C was upgraded on 9/5. OTZ Threads A and B were upgraded on 9/6.
09/12/2023	09/13/2023	Cold Bay (CDB1), Cold Bay (CDB2), Cold Bay (CDB3)	SSM-WAAS-062: This system support modification (SSM) upgrades the Cold Bay (CDB) WRS to software build W7.391L. CDB Threads B and C were upgraded on 9/12. CDB Thread A was upgraded on 9/13.
09/19/2023	09/19/2023	Memphis (ZME1), Memphis (ZME2), Memphis (ZME3)	SSM-WAAS-062: This system support modification (SSM) upgrades the Memphis (ZME) WRS to software build W7.391L.

09/20/2023	09/20/2023	Miami (ZMA1), Miami (ZMA2), Miami (ZMA3)	SSM-WAAS-062: This system support modification (SSM) upgrades the Miami (ZMA) WRS to software build W7.391L.
09/21/2023	09/21/2023	New York (ZNY1), New York (ZNY2), New York (ZNY3)	SSM-WAAS-062: This system support modification (SSM) upgrades the New York (ZNY) WRS to software build W7.391L.
09/22/2023	09/22/2023	Jacksonville (ZJX1), Jacksonville (ZJX2), Jacksonville (ZJX3)	SSM-WAAS-062: This system support modification (SSM) upgrades the Jacksonville (ZJX) WRS to software build W7.391L.
09/27/2023	09/27/2023	Merida (MMD1)	SSM-WAAS-062: This system support modification (SSM) upgrades the Honolulu (ZHN) WRS to software build W7.391L.

Table 1-7 GUS Switchovers

Start Date	End Date	GUS Switch	Location Satellite	Service Affected	Event Description
07/04/2023	07/04/2023	Faulted	GEO131, Southbury (DX1)	None	The uplink for the SM9 GEO, PRN131 switched from the Southbury uplink site to the Santa Paula uplink site at 21:49:45 UTC. This caused a 14-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 251403-251418
07/05/2023	07/05/2023	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 07:00:52 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 284470-284474
07/06/2023	07/06/2023	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 7:02:16 UTC. This caused a 3-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 370954-370958
07/06/2023	07/06/2023	Faulted	GEO133, South Mountain (CM1)	None	The uplink for the S15 GEO, PRN133 switched from the South Mountain uplink site to the Brewster uplink site at 7:02:21 UTC. This caused a 14-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 370959-370974

07/07/2023	07/07/2023	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 7:05:00 UTC. This caused a 3-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 457518-457522
07/14/2023	07/14/2023	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 07:00:47 UTC. This caused a 4-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 457265-457270
07/29/2023	07/29/2023	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 07:03:02 UTC. This caused a 4-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 543800-543805
08/05/2023	08/05/2023	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 07:01:06 UTC. This caused a 4-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 543684-543689
08/14/2023	08/14/2023	Faulted	GEO131, Santa_Paula (SZ1)	LPV200_Alaska, LPV200_Canada	The uplink for the SM9 GEO, PRN131 switched from the Santa Paula uplink site to the Southbury uplink site at 21:47:41 UTC. The fault was caused by communications issues at Santa Paula. This caused a 17-second outage of the GEO 131 broadcast and also caused the WAAS carrier smoothing algorithm to reinitialize for PRN131. The elevated UDREs on PRN131 caused moderate degradation of LPV200 service coverage in Canada from 23:20 UTC on 8/14 to 01:15 UTC on 8/15. The elevated UDREs on PRN131 also caused minor degradation of LPV200 service coverage in Alaska from 22:40 UTC to 23:05 UTC. TOW 164879-164897
08/15/2023	08/15/2023	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 07:04:25 UTC. This manual switchover was to perform scheduled maintenance at Southbury. This caused a 4-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 198283-198288
08/16/2023	08/16/2023	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 19:29:49 UTC. This switchover was the result of the conclusion of scheduled maintenance at Southbury.

					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 329407-329411
08/25/2023	08/25/2023	Manual	GEO135, Napa (AP1)	None	The uplink for the G30 GEO, PRN135 switched from the Napa uplink site to the Brewster uplink site at 14:23:51 UTC. This was performed due to a CCC trip, which elevated UDREs on PRN135 to NOT MONITORED from 06:10 UTC until the switchover. 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 483849-483853
08/31/2023	08/31/2023	Manual	GEO133, South Mountain (CM1)		GEO 133, manual switchover from South Mountain to Brewster. TOW 371151-371155

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-229D-weighted least squares user navigation solution and WAAS horizontal protection level (HPL) and vertical protection level (VPL) once every second. The user position calculated for each receiver was compared to the surveyed position of the antenna to assess position error associated with the WAAS signal in space (SIS) over time. The position errors were analyzed, and statistics were generated for the operational service levels shown in Table 1-1.

Table 2-1 shows PA horizontal and vertical position accuracy maintained for 95% of the time at LP, LPV, and lateral navigation (LNAV)/vertical navigation (VNAV) operational service levels as well as 95% SPS accuracy for certain locations. Note that WAAS accuracy statistics presented are compiled only when all WAAS corrections (i.e., fast, long term, and ionospheric corrections) for at least four satellites are available; this is referred to as PA navigation mode. 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 1.567 meters observed at Arcata.
- The maximum 95% CONUS vertical LPV error was 1.770 meters observed at Atlantic City-a.
- The minimum 95% CONUS horizontal LPV errors was 0.590 meters observed at Salt Lake City.
- The minimum 95% CONUS vertical LPV error was 0.958 meters observed at Seattle.

Table 2-1 PA 95% Horizontal and Vertical Accuracy

Location	Horizontal (HAL=40m) (m)	Horizontal (HAL=556m) (m)	Vertical (VAL=50m) (m)	Percentage in PA Mode (%)	SPS Accuracy	
					95% Horizontal (m)	95% Vertical (m)
Arcata	1.567	1.567	1.592	100	*	*
Atlantic City-a	1.297	1.297	1.770	100	*	*
Oklahoma City	1.236	1.236	1.280	100	*	*
Albuquerque	0.740	0.740	1.003	100	2.84	3.9
Anchorage	0.739	0.740	1.272	100	2.87	4.22
Atlanta	0.865	0.865	1.089	100	2.45	3.98
Barrow	0.695	0.696	1.590	100	*	*
Bethel	0.672	0.673	1.181	100	2.85	4.56
Billings	0.610	0.610	1.050	100	2.01	3.73
Boston	0.699	0.699	1.140	100	2.59	3.96
Chicago	0.661	0.661	1.019	100	*	*
Cleveland	0.644	0.644	1.100	100	2.14	3.69
Cold Bay	0.702	0.702	1.202	100	2.07	4.7
Dallas	0.653	0.653	1.262	100	*	*
Denver	0.592	0.592	1.031	100	*	*
Fairbanks	0.718	0.722	1.315	100	2.91	4
Gander	0.972	0.974	1.399	99.999	2.72	4.41
Goose Bay	1.072	1.077	1.567	100	*	*
Houston	0.733	0.733	1.491	100	3.46	4.2
Iqaluit	0.940	0.946	1.711	100	2.38	4.99
Jacksonville	0.677	0.677	1.237	100	*	*
Juneau	0.799	0.803	1.231	100	2.68	4.18
Kansas City	0.633	0.633	1.099	100	2.08	3.46
Kotzebue	0.783	0.785	1.522	100	3.08	4.43
Los Angeles	0.871	0.871	1.561	100	3.57	4.29
Memphis	0.619	0.619	1.134	100	*	*
Merida	1.102	1.103	1.837	100	*	*
Mexico City	1.084	1.085	2.273	100	*	*
Miami	0.895	0.895	1.434	100	3.63	5.26
Minneapolis	0.662	0.662	1.029	100	1.99	3.56
New York	0.766	0.766	1.119	100	*	*
Oakland	0.851	0.851	1.682	100	3.1	4.51
Puerto Vallarta	1.088	1.089	1.917	99.999	*	*
Salt Lake City	0.590	0.590	0.979	100	2.14	3.81
San Jose Del Cabo	1.092	1.092	1.897	99.999	5.42	6.78
Seattle	0.680	0.680	0.958	100	1.97	4
Washington, DC	0.698	0.698	1.041	100	2.35	3.72
Winnipeg	0.714	0.715	1.136	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 7.206 meters observed at Honolulu.
- The maximum 99.999% horizontal error was 20.781 meters observed at Tapachula.
- The minimum 95% horizontal error was 1.487 meters observed at Salt Lake City.
- The minimum 99.999% horizontal error was 4.380 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	2.036	5.246	100	5.475
Anchorage	3.031	5.757	100	5.896
Atlanta	1.977	5.556	100	5.792
Barrow	2.364	4.811	100	4.911
Bethel	2.836	5.465	100	5.676
Billings	1.711	4.576	100	4.817
Boston	2.235	5.677	100	5.850
Cleveland	1.743	4.785	100	4.991
Cold Bay	1.954	4.380	100	4.532
Fairbanks	2.947	6.959	100	7.080
Gander	2.434	5.697	100	9.587
Honolulu	7.206	14.170	100	14.453
Houston	2.586	5.463	100	5.743
Iqaluit	2.437	5.798	100	5.999
Juneau	2.583	4.919	100	7.017
Kansas City	1.509	4.552	100	4.734
Kotzebue	3.126	7.393	100	7.536
Los Angeles	2.448	5.998	100	6.142
Merida	3.407	7.916	100	8.042
Miami	2.878	6.246	100	6.836
Minneapolis	1.654	4.724	100	4.908
Oakland	2.226	6.838	100	7.080
Salt Lake City	1.487	6.104	100	6.288
San Jose Del Cabo	3.855	12.072	100	12.257
San Juan	3.164	12.719	100	12.990
Seattle	1.544	4.578	100	4.671
Tapachula	4.571	20.781	100	21.012
Washington, DC	1.968	4.852	100	5.039

Table 2-3 shows the quarterly maximum LPV error statistics: (1) the column Horizontal Error column shows the maximum position errors while the calculated HPL meets the LPV service level defined in Table 1-1, (2) the Vertical Error column shows the maximum position errors while the calculated VPL meets the LPV service level, (3) the Horizontal Error/HPL column and the Vertical Error/VPL column show the ratio of position error to protection level at the time the maximum error occurred, (4) the Horizontal Maximum Ratio column and the Vertical Maximum Ratio column show the maximum position error to protection level ratio for the quarter. During this reporting period, the maximum LPV horizontal error was 5.291 meters occurred at Merida and maximum vertical LPV error was 8.171 meters occurred at Fairbanks.

Table 2-3 Maximum LPV Error Statistics

Location	Horizontal Error (m)	Horizontal Error/ HPL	Horizontal Maximum Ratio	Vertical Error (m)	Vertical Error/ VPL	Vertical Maximum Ratio
Arcata	2.398	0.195	0.232	3.693	0.185	0.185
Atlantic City-GA-LL	2.134	0.183	0.186	3.003	0.133	0.185
Atlantic City-GB-LL	2.157	0.181	0.187	3.087	0.167	0.188
Atlantic City-GT-LL	2.233	0.148	0.196	3.635	0.206	0.217
Atlantic City-a	2.373	0.225	0.225	3.562	0.194	0.205
Elko-LL	2.271	0.161	0.232	3.417	0.139	0.170
Oklahoma City	2.262	0.182	0.226	3.269	0.176	0.206
Albuquerque	2.170	0.197	0.203	2.800	0.140	0.160
Anchorage	2.251	0.172	0.183	3.953	0.177	0.177
Atlanta	1.988	0.153	0.206	2.606	0.128	0.167
Barrow	3.003	0.077	0.145	4.800	0.149	0.179
Bethel	2.431	0.171	0.171	5.199	0.196	0.197
Billings	2.517	0.240	0.247	4.640	0.194	0.203
Boston	2.302	0.164	0.171	3.726	0.131	0.185
Chicago	2.891	0.223	0.255	4.740	0.147	0.180
Cleveland	2.445	0.228	0.228	3.417	0.140	0.174
Cold Bay	3.845	0.157	0.157	3.953	0.109	0.149
Dallas	1.834	0.175	0.179	3.424	0.197	0.223
Denver	2.262	0.215	0.215	2.737	0.143	0.177
Fairbanks	2.578	0.162	0.179	8.171	0.218	0.218
Gander	3.118	0.159	0.164	4.369	0.101	0.149
Goose Bay	4.126	0.169	0.188	6.323	0.138	0.189
Houston	1.855	0.210	0.210	4.086	0.189	0.226
Iqaluit	3.198	0.101	0.192	5.491	0.127	0.166
Jacksonville	1.792	0.149	0.172	2.773	0.162	0.179
Juneau	3.314	0.214	0.214	4.611	0.180	0.223
Kansas City	1.877	0.228	0.228	2.875	0.140	0.208
Kotzebue	3.081	0.135	0.169	7.631	0.169	0.238
Los Angeles	1.986	0.148	0.170	4.087	0.172	0.188
Memphis	1.685	0.159	0.163	3.360	0.166	0.195
Merida	5.291	0.250	0.250	7.788	0.285	0.285
Mexico City	3.708	0.265	0.267	5.327	0.157	0.189
Miami	2.151	0.114	0.165	3.646	0.150	0.180
Minneapolis	3.042	0.245	0.254	5.362	0.198	0.218
New York	2.559	0.171	0.197	3.330	0.185	0.194
Oakland	2.745	0.189	0.189	4.191	0.182	0.207
Puerto Vallarta	4.625	0.183	0.307	5.005	0.127	0.166
Salt Lake City	2.593	0.233	0.233	2.847	0.117	0.152
San Jose Del Cabo	3.790	0.176	0.176	5.577	0.144	0.201
Seattle	3.040	0.255	0.255	3.438	0.149	0.149
Washington, DC	2.281	0.212	0.218	2.862	0.153	0.175
Winnipeg	3.139	0.159	0.183	7.326	0.242	0.256

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.

- August 5, 2023—Position errors in CONUS Alaska, and Canada were elevated. The maximum 95% horizontal and vertical LPV errors were 2.082 meters and 3.302 meters at Chicago and Winnipeg, respectively. The Kp index was 6.7.
- September 12–13. 2023—Position errors in CONUS, Alaska, and Canada were elevated. The maximum 95% horizontal and vertical LPV errors were 1.962 meters and 2.837 meters at Seattle and Goose Bay, respectively. The Kp index was 5.7 and 4.7, respectively.
- September 18–19. 2023—Position errors in CONUS, Alaska, and Canada were elevated. The maximum 95% horizontal and vertical LPV errors were 2.290 meters and 3.109 meters at Goose Bay. The Kp index was 5.0 and 6.7, respectively.
- September 24–26. 2023—Position errors in CONUS, Alaska, Canada, and Mexico were elevated. The maximum 95% horizontal and vertical LPV errors were 2.102 meters and 2.726 meters at Mexico City and Winnipeg, respectively. The Kp index was 5.7, 5.3, and 5.3, respectively.

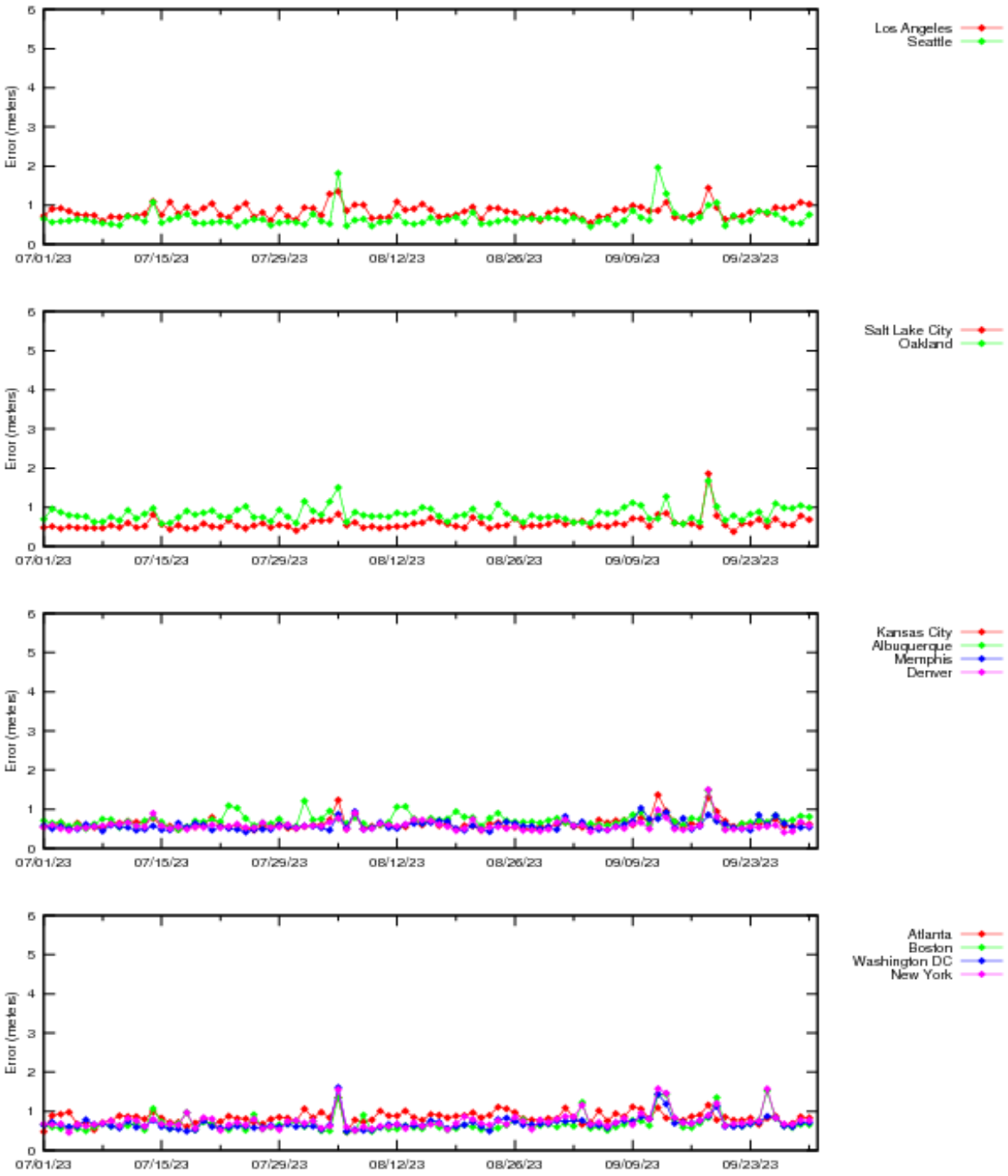

Figure 2-1 LPV 95% Horizontal Accuracy

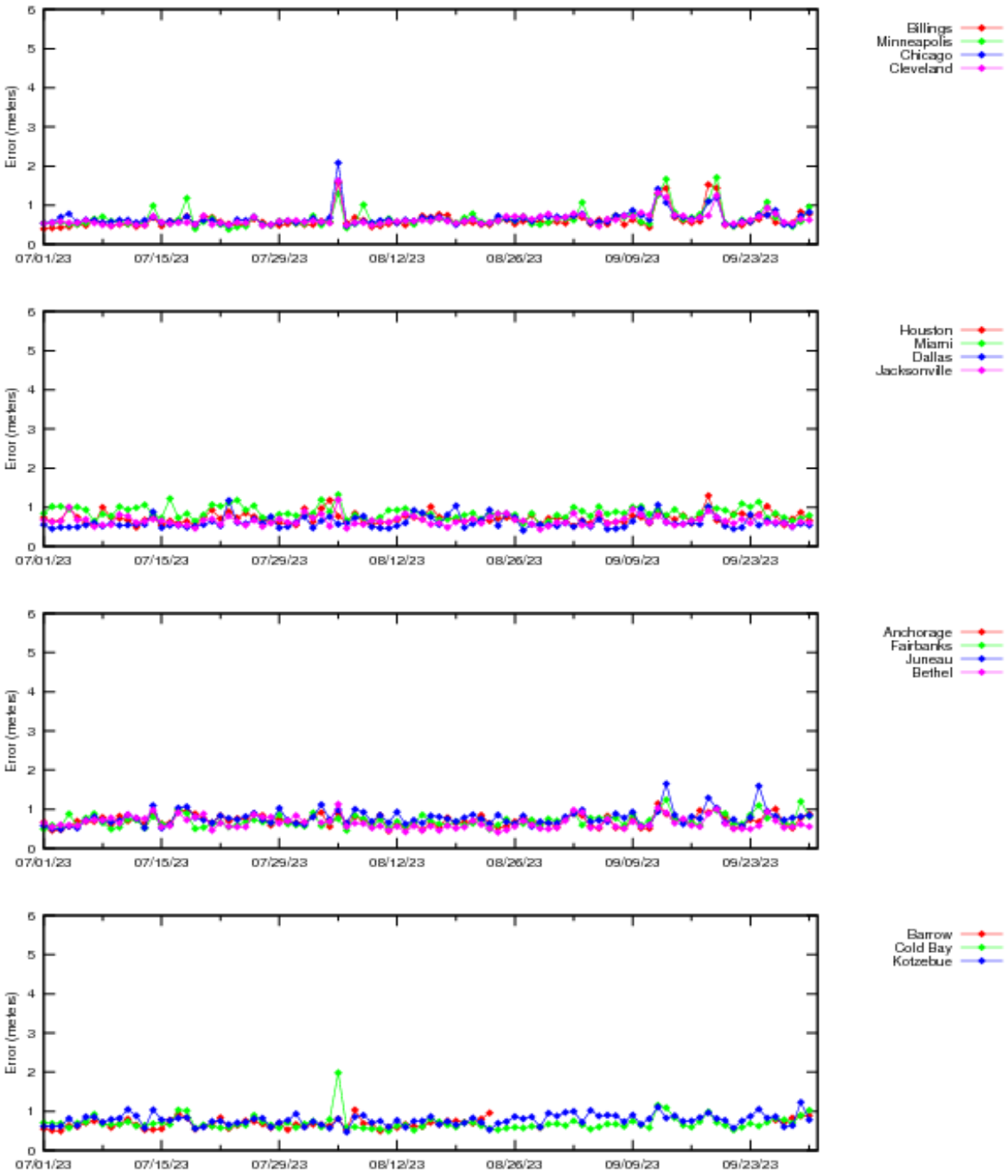

Figure 2-2 LPV 95% Horizontal Accuracy

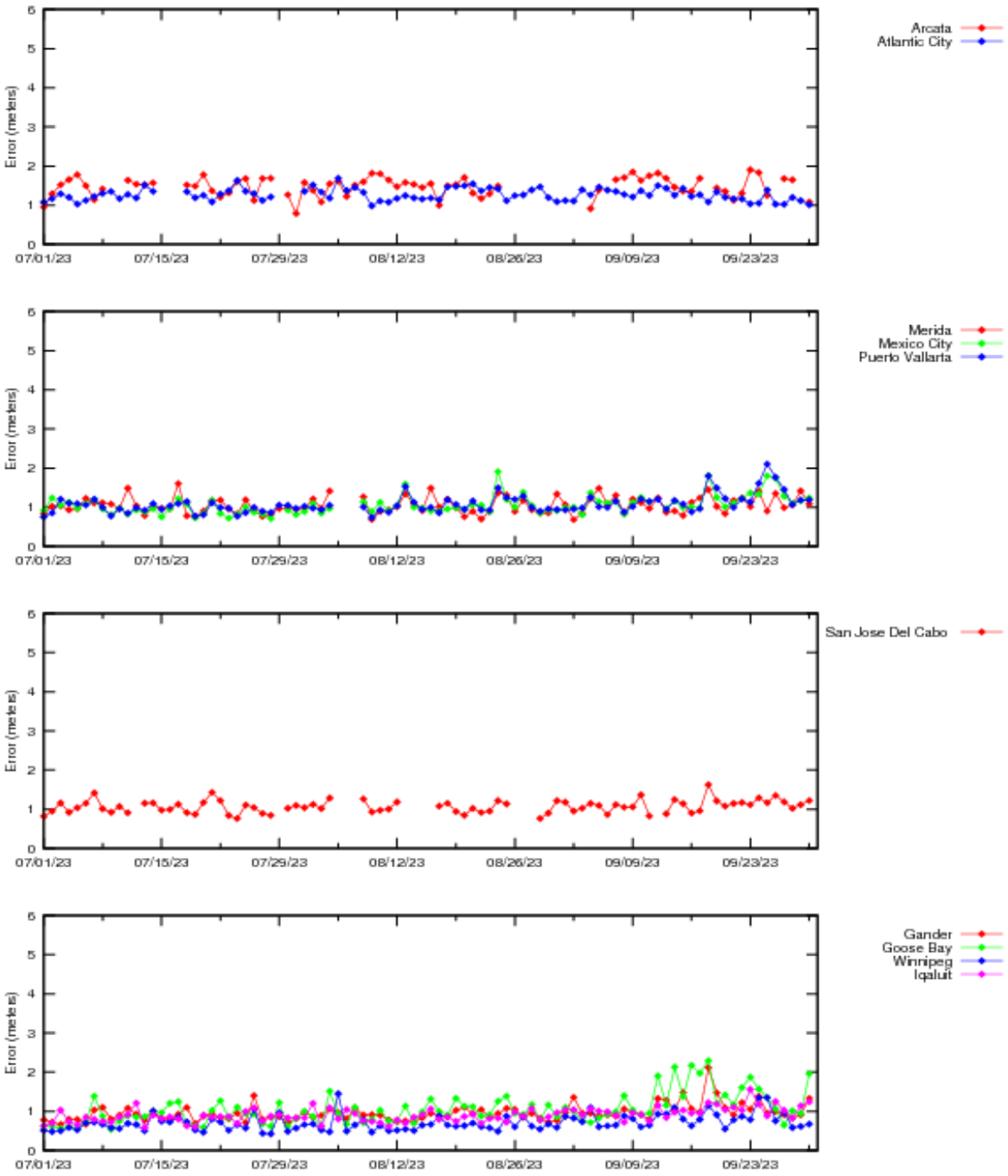

Figure 2-3 LPV 95% Horizontal Accuracy

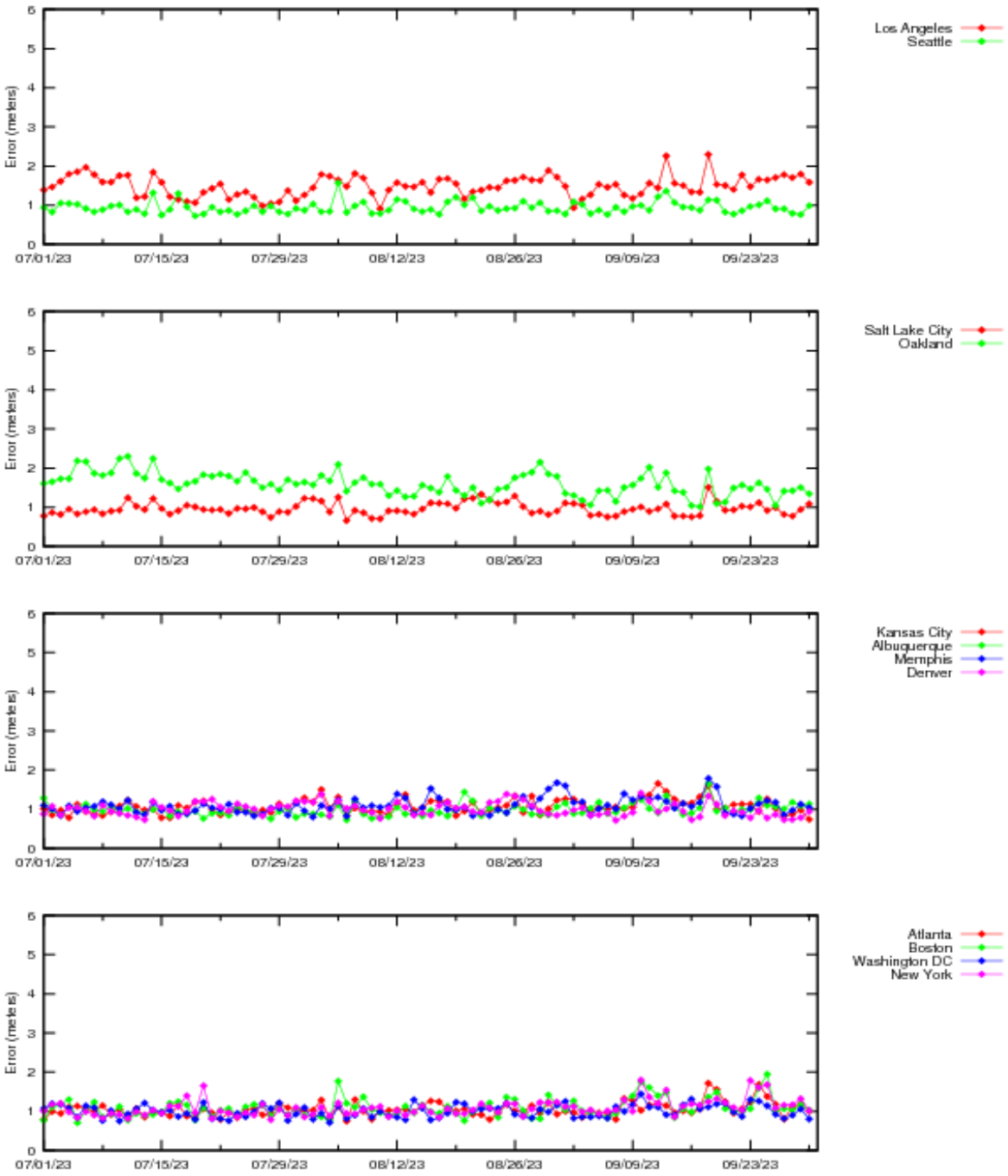

Figure 2-4 LPV 95% Vertical Accuracy

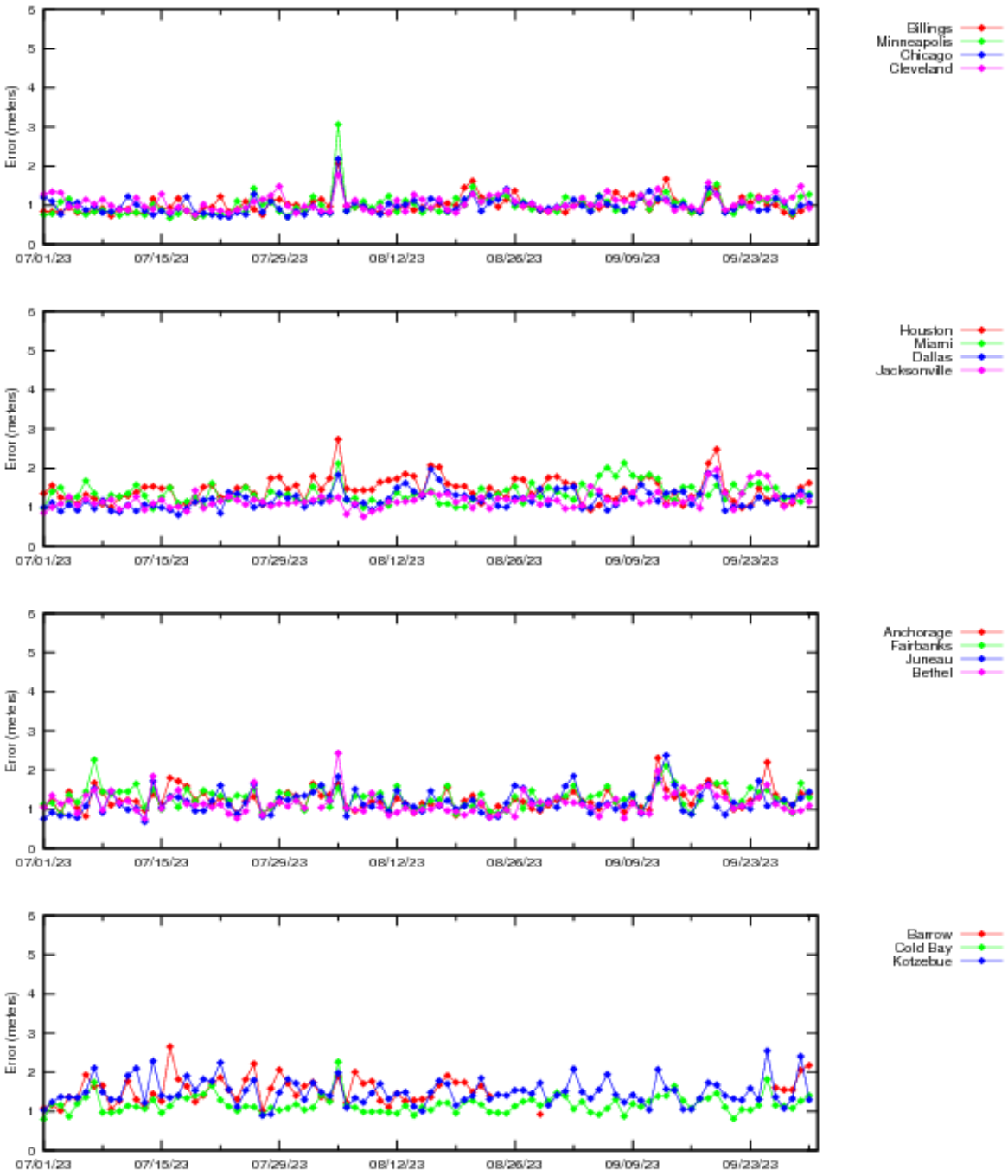

Figure 2-5 LPV 95% Vertical Accuracy

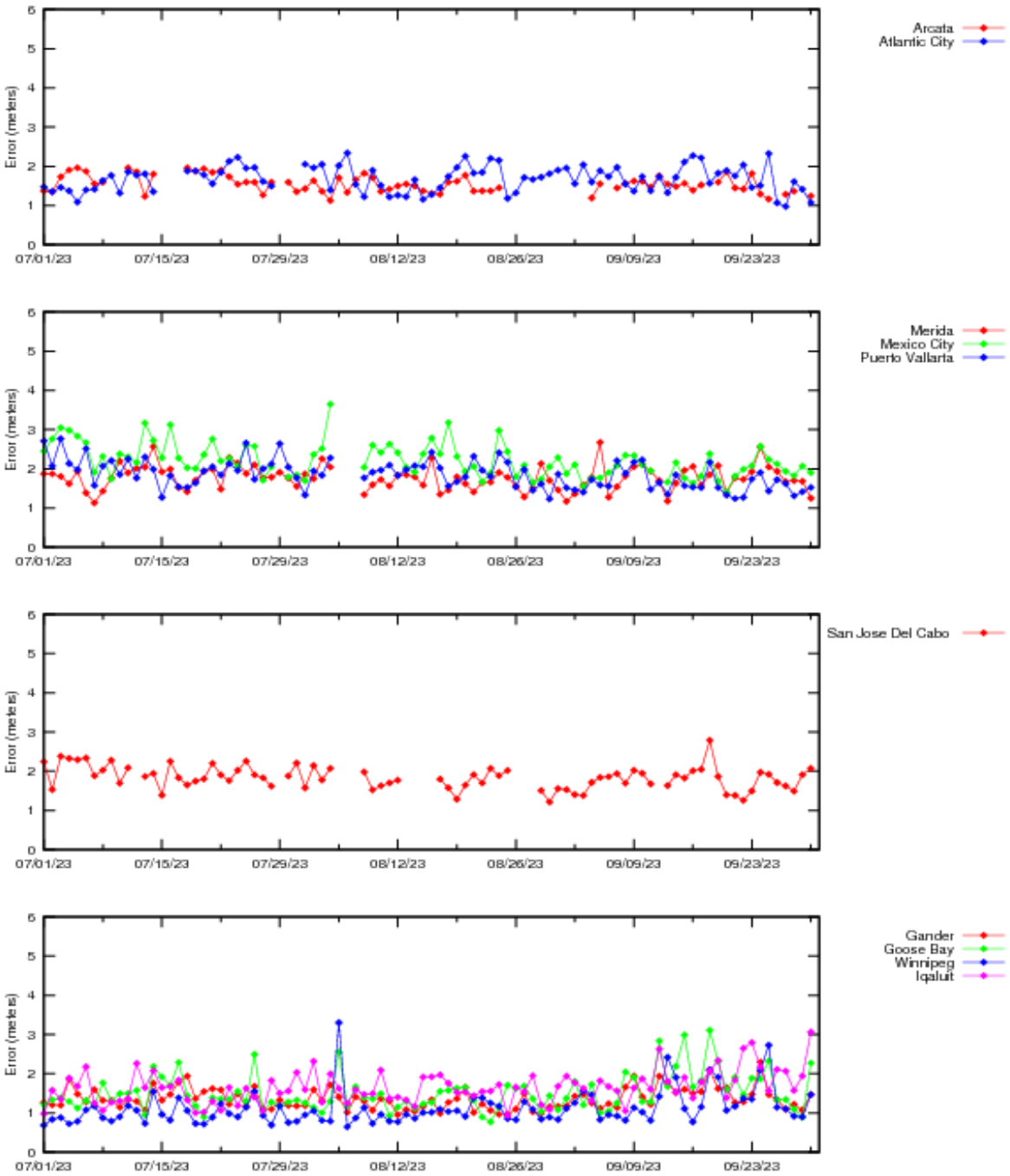

Figure 2-6 LPV 95% Vertical Accuracy

Figure 2-7 and Figure 2-8 show the daily NPA 95% horizontal accuracy at the NPA evaluation sites for the reporting period. The increases in 95% NPA position errors were due to geomagnetic activity occurred on August 5, September 12–13, September 18–19, and September 26, 2023.

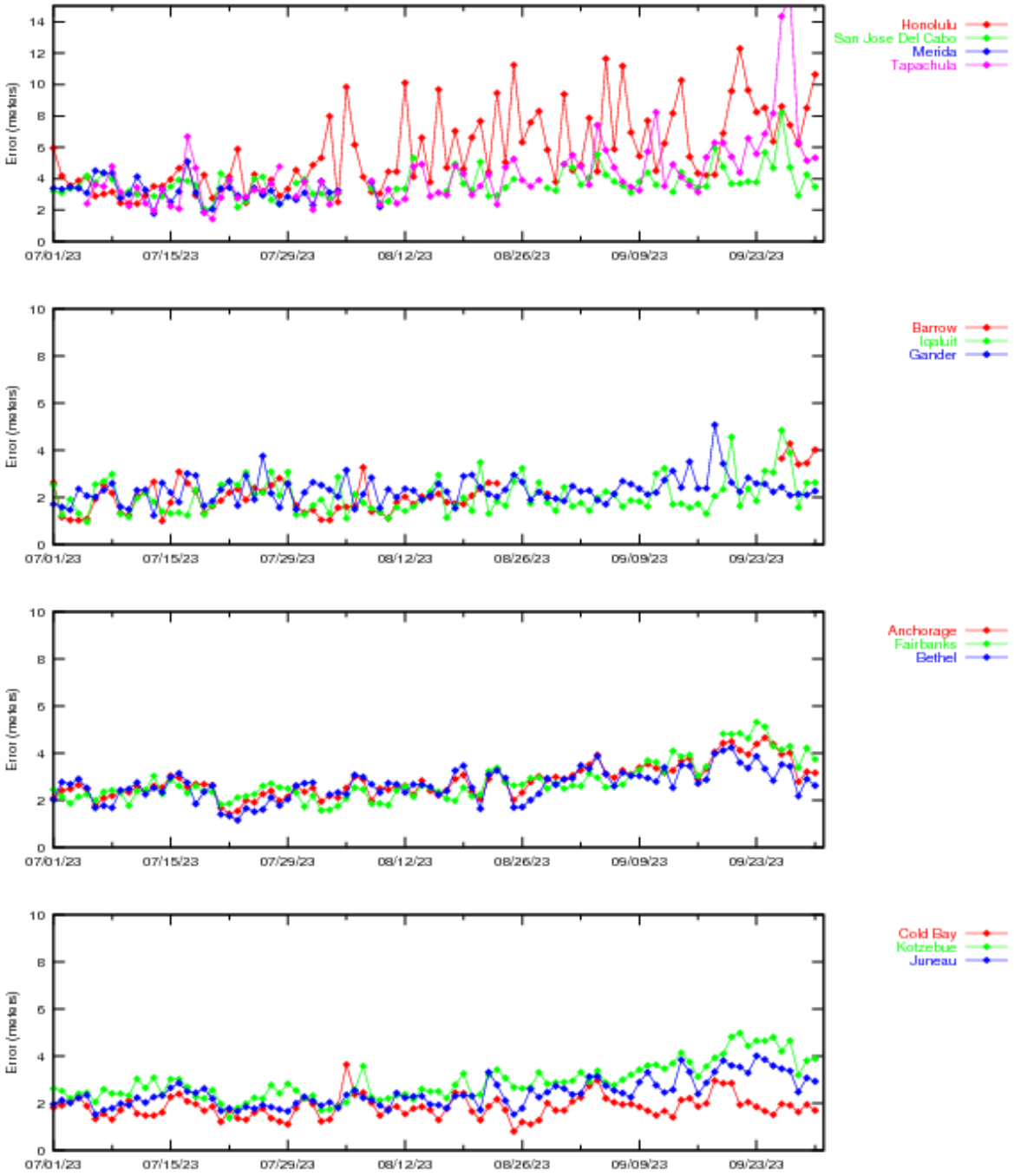

Figure 2-7 NPA 95% Horizontal Accuracy

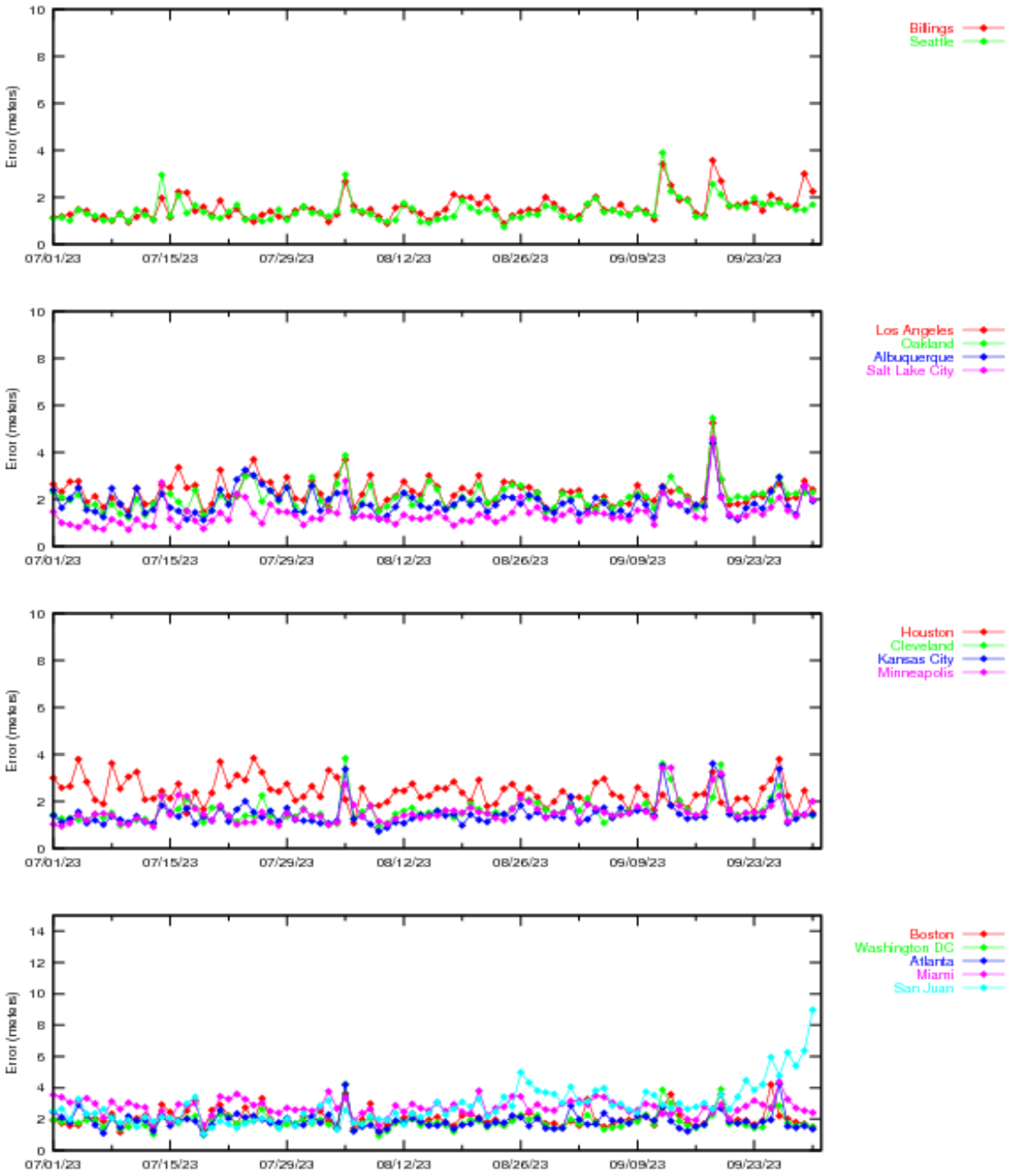

Figure 2-8 NPA 95% Horizontal Accuracy

Figure 2-9 through Figure 2-12 show the distributions of the vertical and horizontal errors at all 38 WAAS receiver for the quarter. Figure 2-9 and Figure 2-10 show the triangular distributions of vertical position error (VPE) versus VPL and horizontal position error (HPE) versus HPL: (1) the horizontal axis is the position error, (2) the vertical axis is the WAAS protection level where lower protection levels equate to better availability, (3) the diagonal line shows the point where error equals protection level, (4) above and to the left of the diagonal line show where errors are bounded (WAAS is providing integrity in the position domain), and (5) below and to the right show where errors are not bounded (HMI could be present). Figure 2-11 and Figure 2-12 show the 2-D histograms of HPE, VPE, and normalized position errors: (1) the blue trace shows the distributions of the actual HPE and VPE; (2) the horizontal axis is the position errors and the vertical axis is the total count of data samples (log scale) in each 0.1-meter bin; (3) the magenta trace shows the distributions of the actual horizontal and vertical errors normalized by one-sigma value of the protection level: horizontal protection level (HPL/6.0) and vertical protection level (VPL/5.33); (4) the horizontal axis is the standard units and vertical axis is the observed distribution of normalized errors data samples in each 0.1-sigma bin. The narrowness of the normalized error distributions indicates good safety performance.

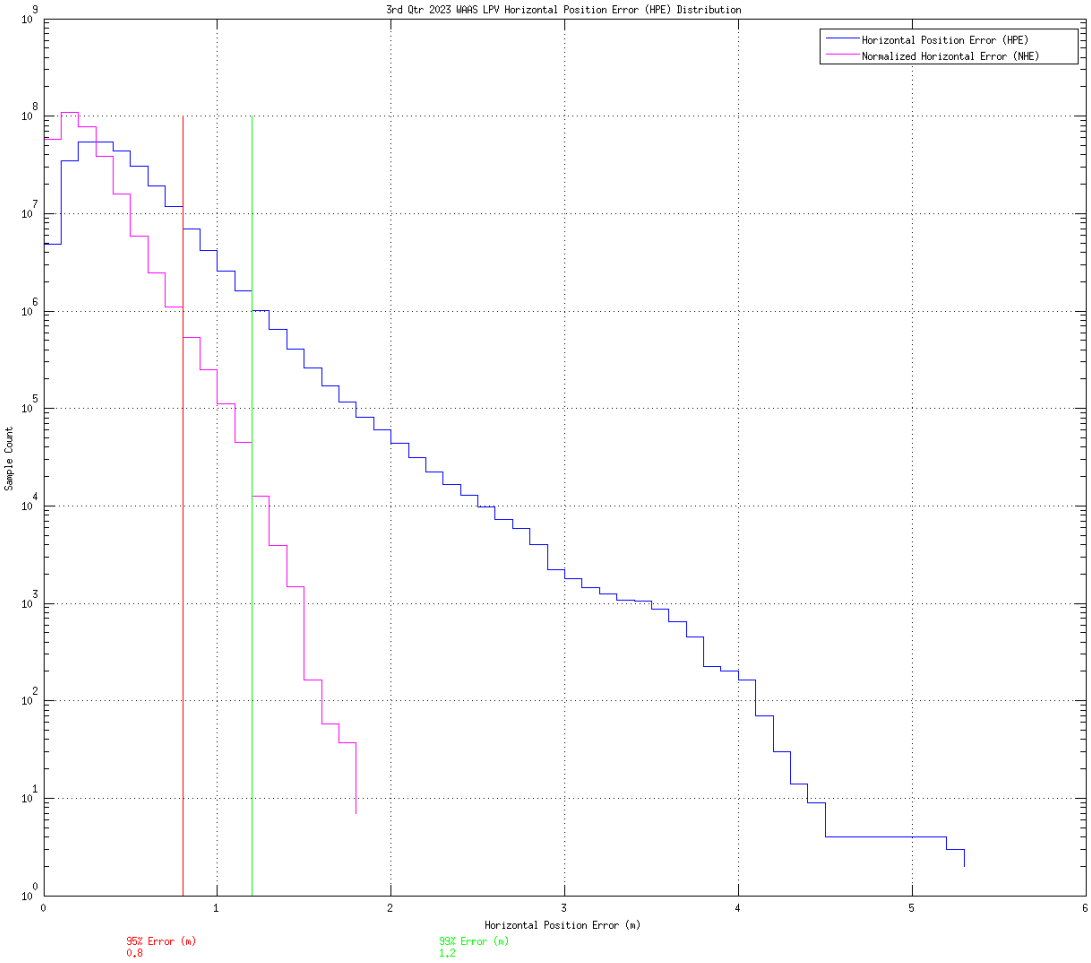

Figure 2-9 LPV Horizontal Error Bounding Triangle Chart

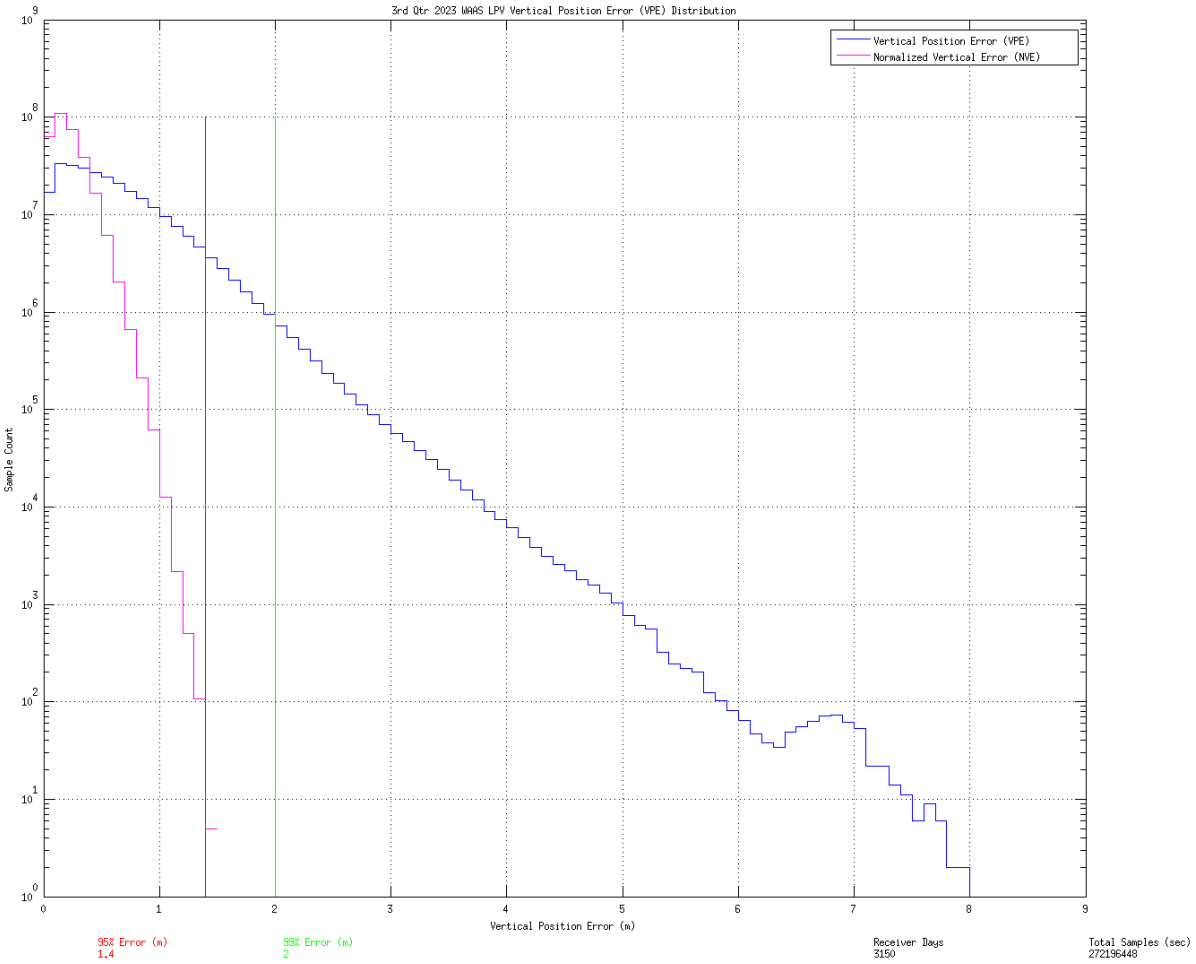

Figure 2-10 LPV Vertical Error Bounding Triangle Chart

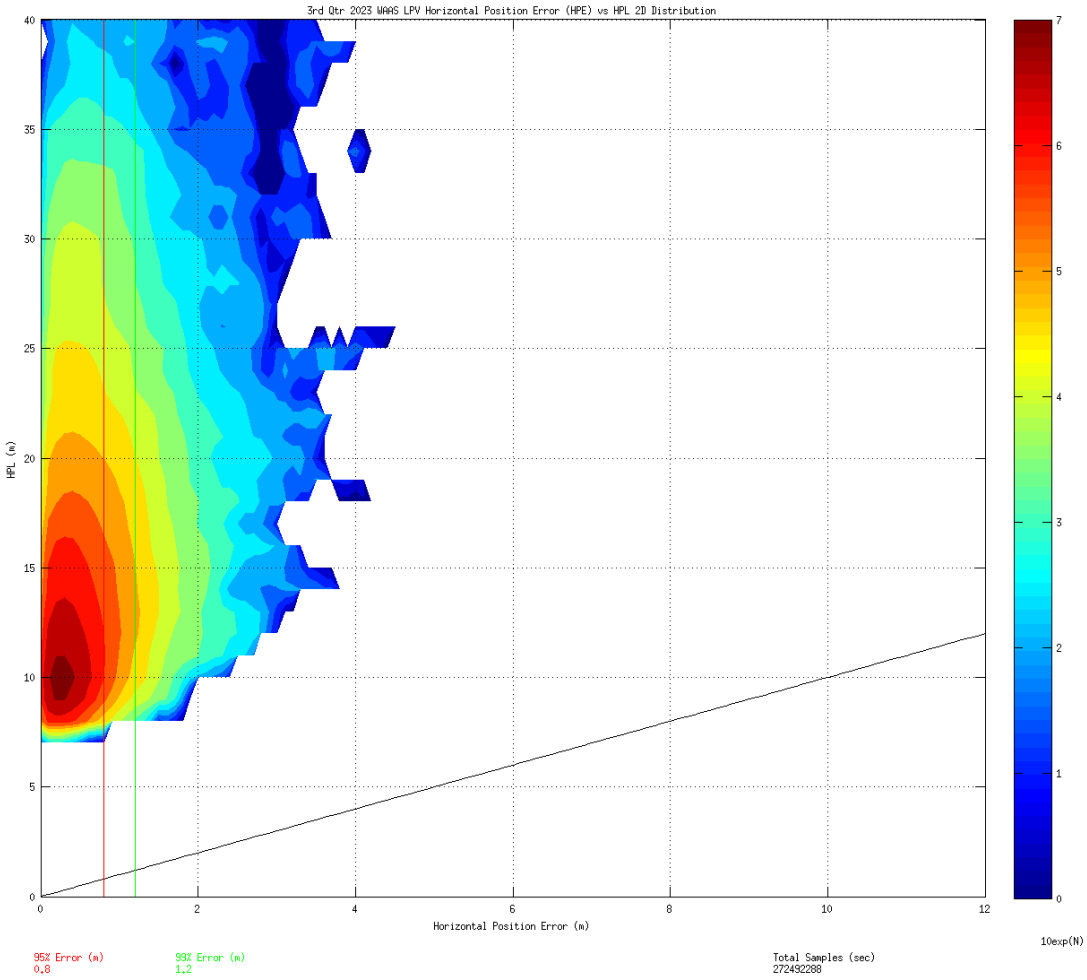

Figure 2-11 LPV 2-D Horizontal Error Distribution Histogram

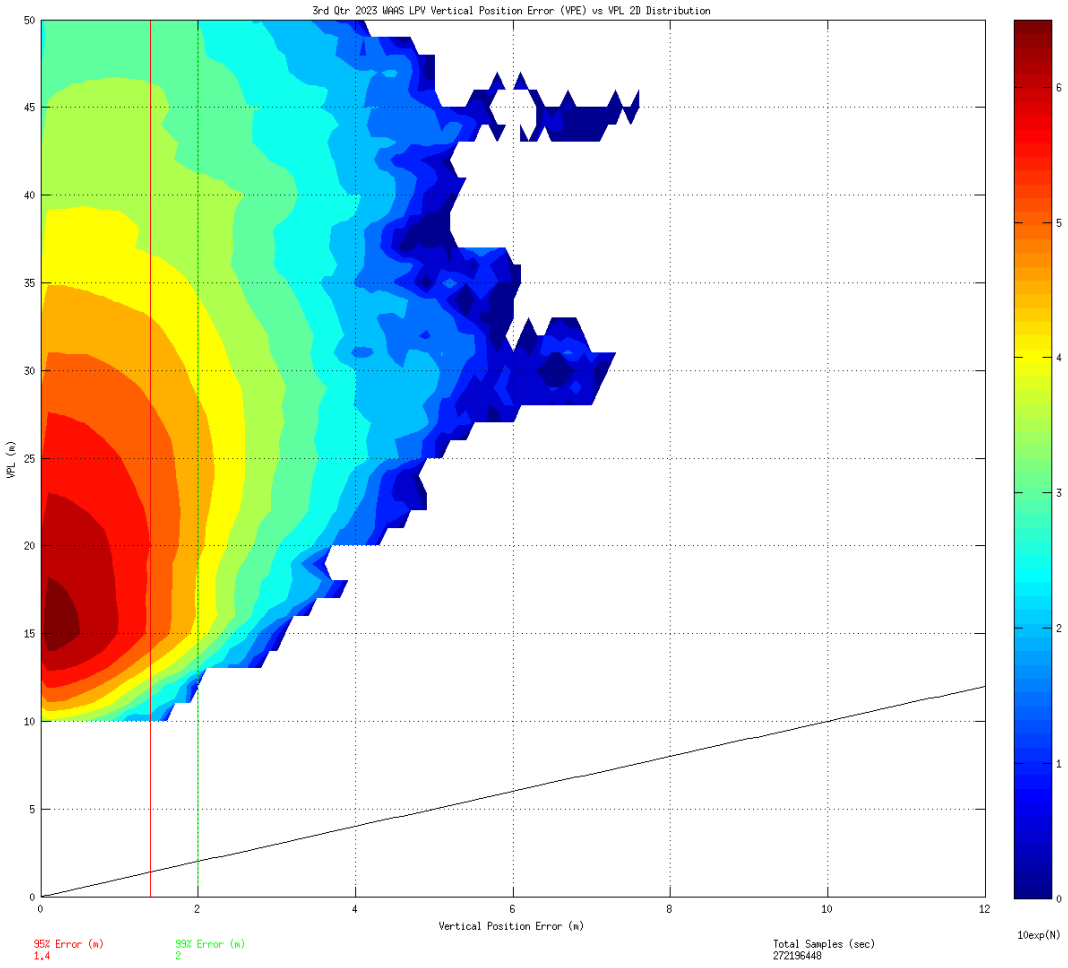

Figure 2-12 LPV 2-D Vertical Error Distribution Histogram

3.0 AVAILABILITY

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

- The maximum 99% CONUS HPL was 18.287 meters observed at Miami.
- The maximum 99% CONUS VPL was 29.804 meters observed at Los Angeles.
- The minimum 99% CONUS HPL was 11.009 meters observed at Denver.
- The minimum 99% CONUS VPL was 19.960 meters observed at Kansas City.
- The maximum 99% Alaska HPL was 20.444 meters observed at Cold Bay.
- The maximum 99% Alaska VPL was 32.036 meters observed at Barrow.
- The minimum 99% Alaska HPL was 13.932 meters observed at Anchorage.
- The minimum 99% Alaska VPL was 24.476 meters observed at Anchorage.

Table 3-1 99% Protection Level

Location	99% HPL (m)	99% VPL (m)	Percentage in PA Mode (%)
Arcata	13.963	29.373	100
Atlantic City-a	14.371	22.804	100
Oklahoma City	13.326	22.091	100
Albuquerque	12.200	27.171	100
Anchorage	13.932	24.476	100
Atlanta	11.922	21.550	100
Barrow	15.591	32.036	100
Bethel	16.122	27.673	100
Billings	12.362	21.659	100
Boston	15.288	23.353	100
Chicago	12.008	21.176	100
Cleveland	14.706	22.162	100
Cold Bay	20.444	30.677	100
Dallas	11.130	20.706	100
Denver	11.009	22.312	100
Fairbanks	13.960	26.528	100
Gander	23.404	32.689	99.999
Goose Bay	19.476	27.392	100
Houston	12.238	22.629	100
Iqaluit	26.931	41.231	100
Jacksonville	13.778	23.504	100
Juneau	13.975	24.861	100
Kansas City	11.357	19.960	100
Kotzebue	16.226	30.385	100
Los Angeles	13.404	29.804	100
Memphis	11.507	20.667	100
Merida	21.119	40.271	100
Mexico City	30.766	51.244	100
Miami	18.287	28.218	100
Minneapolis	11.869	21.734	100
New York	15.089	23.213	100
Oakland	13.467	27.931	100
Puerto Vallarta	30.835	51.785	99.999
Salt Lake City	11.664	23.392	100
San Jose Del Cabo	27.862	56.957	99.999
Seattle	14.817	22.989	100
Washington, DC	13.503	22.046	100
Winnipeg	14.361	22.310	100

Availability of LP, LPV, and LPV200 services are evaluated by monitoring the WAAS protection levels at receiver locations. Service is available when the VPL is less than the vertical alert limit (VAL) and the HPL is less than the horizontal alert limit (HAL). When the protection level exceeds the alert limit, the service is unavailable and an outage in service is recorded along with its duration. The operational service is not available again until both protection levels

are within the alert limits for at least 15 minutes. Although this will cause minimal reduction in operational service availability, it will substantially reduce the number of service outages and prevent excessive switching in/out of service availability.

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

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

Location	LP WAAS With 15-Minute Window (%)	LPV WAAS With 15-Minute Window (%)	LPV200 WAAS With 15-Minute Window (%)
Arcata	100	100	100
Atlantic City-GA-LL	100	100	99.98
Atlantic City-GB-LL	100	100	99.98
Atlantic City-GT-LL	100	100	99.98
Atlantic City-a	100	100	99.98
Elko-LL	100	100	100
Oklahoma City	100	100	99.99
Prescott	99.99	99.99	98.48
Albuquerque	100	100	100
Anchorage	99.89	99.84	99.81
Atlanta	100	100	100
Barrow	99.96	99.96	99.74
Bethel	99.97	99.94	99.89
Billings	100	100	100
Boston	100	100	99.99
Chicago	100	100	99.98
Cleveland	100	100	100
Cold Bay	100	100	99.83
Dallas	100	100	100
Denver	100	100	100
Fairbanks	99.85	99.82	99.8
Gander	99.86	99.84	99.43
Goose Bay	99.85	99.83	99.71
Houston	100	100	99.99
Iqaluit	99.71	99.47	97.57
Jacksonville	100	100	99.98
Juneau	99.84	99.82	99.81
Kansas City	100	100	100
Kotzebue	99.88	99.86	99.72
Los Angeles	100	100	99.79
Memphis	100	100	100
Merida	99.93	99.84	97.35
Mexico City	99.93	98.71	90.97
Miami	100	100	99.96
Minneapolis	100	100	99.97

Location	LP WAAS With 15-Minute Window (%)	LPV WAAS With 15-Minute Window (%)	LPV200 WAAS With 15-Minute Window (%)
New York	100	100	99.98
Oakland	100	100	99.95
Puerto Vallarta	99.92	98.66	86.35
Salt Lake City	100	100	100
San Jose Del Cabo	99.97	98.29	91.07
Seattle	100	100	100
Washington, DC	100	100	99.98
Winnipeg	99.99	99.98	99.93

Table 3-3 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	0	0.000000	0	0.000000	0	0.000000
Atlantic City-GA-LL	0	0.000000	0	0.000000	2	0.000041
Atlantic City-GB-LL	0	0.000000	0	0.000000	2	0.000040
Atlantic City-GT-LL	0	0.000000	0	0.000000	1	0.000022
Atlantic City-a	0	0.000000	0	0.000000	1	0.000020
Elko-LL	0	0.000000	0	0.000000	1	0.000021
Oklahoma City	0	0.000000	0	0.000000	1	0.000020
Prescott	7	0.000527	7	0.000527	113	0.008640
Albuquerque	0	0.000000	0	0.000000	0	0.000000
Anchorage	2	0.000038	2	0.000038	4	0.000076
Atlanta	0	0.000000	0	0.000000	1	0.000019
Barrow	1	0.000029	1	0.000029	24	0.000697
Bethel	1	0.000019	1	0.000019	5	0.000096
Billings	0	0.000000	0	0.000000	0	0.000000
Boston	0	0.000000	0	0.000000	1	0.000019
Chicago	0	0.000000	0	0.000000	1	0.000019
Cleveland	0	0.000000	0	0.000000	0	0.000000
Cold Bay	0	0.000000	0	0.000000	15	0.000284
Dallas	0	0.000000	0	0.000000	1	0.000019
Denver	0	0.000000	0	0.000000	0	0.000000
Fairbanks	3	0.000057	2	0.000038	12	0.000230
Gander	6	0.000114	8	0.000151	52	0.000988
Goose Bay	3	0.000057	3	0.000057	7	0.000132
Houston	0	0.000000	0	0.000000	2	0.000038
Iqaluit	12	0.000227	41	0.000779	132	0.002556
Jacksonville	0	0.000000	0	0.000000	1	0.000019
Juneau	2	0.000038	2	0.000038	3	0.000057
Kansas City	0	0.000000	0	0.000000	1	0.000019
Kotzebue	3	0.000057	4	0.000076	23	0.000435
Los Angeles	0	0.000000	1	0.000019	27	0.000512
Memphis	0	0.000000	0	0.000000	1	0.000019
Merida	1	0.000020	25	0.000492	240	0.004841

Location	LP Outages (Number)	LP Outage Rates	LPV Outages (Number)	LPV Outage Rates	LPV200 Outages (Number)	LPV200 Outage Rates
Mexico City	3	0.000060	179	0.003646	642	0.014189
Miami	0	0.000000	0	0.000000	7	0.000132
Minneapolis	0	0.000000	0	0.000000	1	0.000019
New York	0	0.000000	0	0.000000	2	0.000038
Oakland	0	0.000000	0	0.000000	9	0.000170
Puerto Vallarta	8	0.000157	148	0.002945	788	0.017918
Salt Lake City	0	0.000000	0	0.000000	0	0.000000
San Jose Del Cabo	2	0.000046	102	0.002366	393	0.009837
Seattle	0	0.000000	0	0.000000	1	0.000019
Washington, DC	0	0.000000	0	0.000000	1	0.000019
Winnipeg	1	0.000019	1	0.000019	4	0.000076

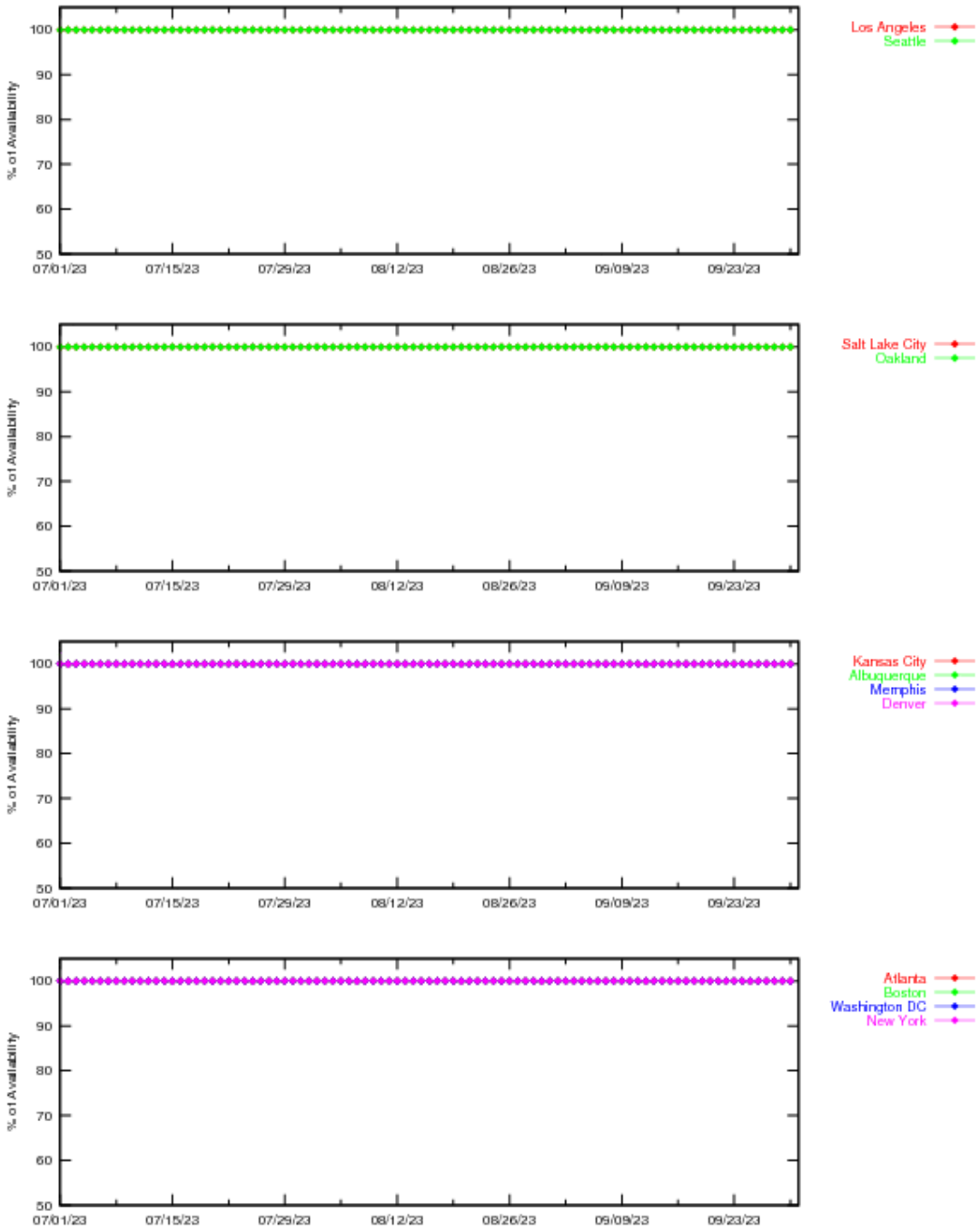

Figure 3-1 LPV Instantaneous Availability

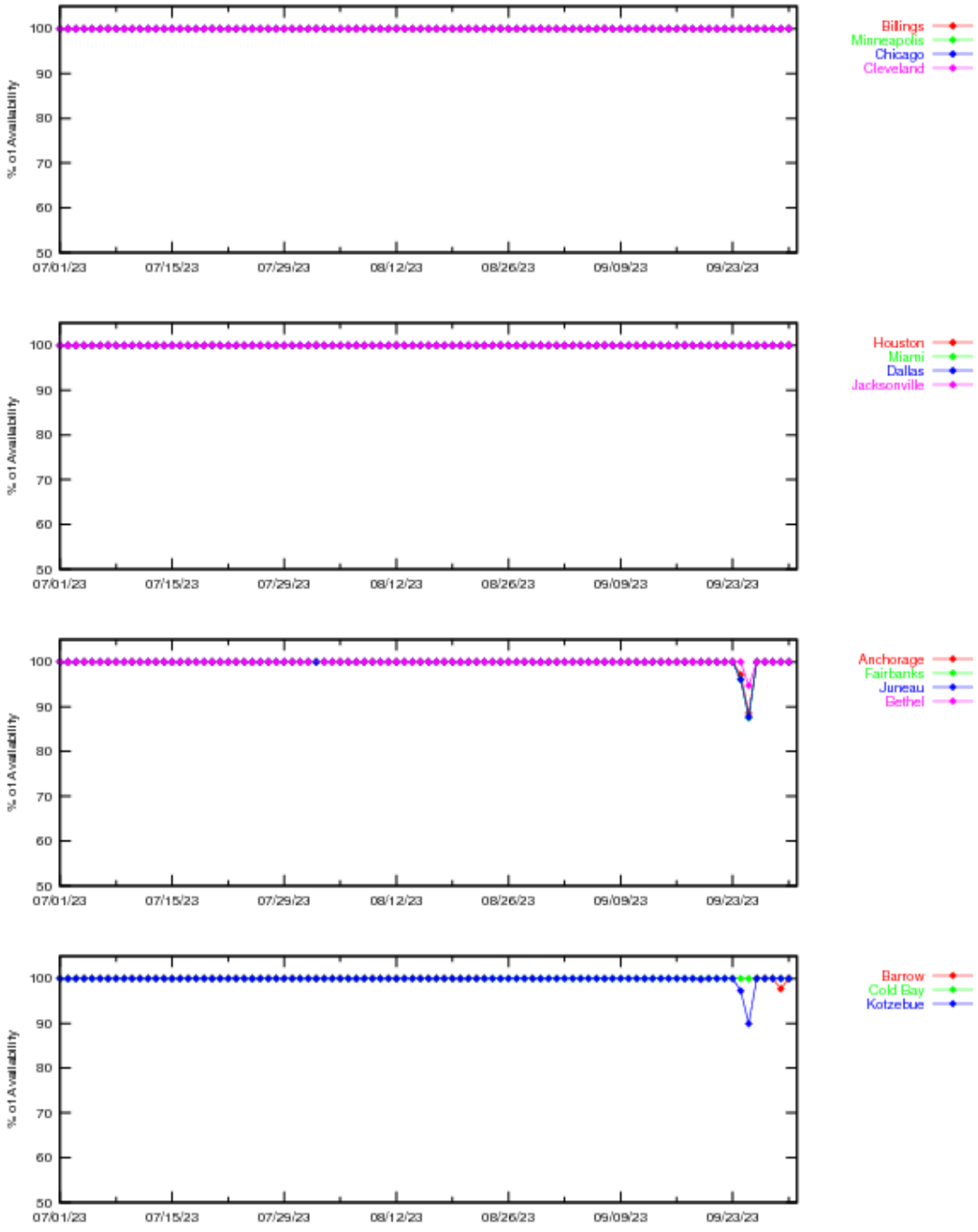

Figure 3-2 LPV Instantaneous Availability

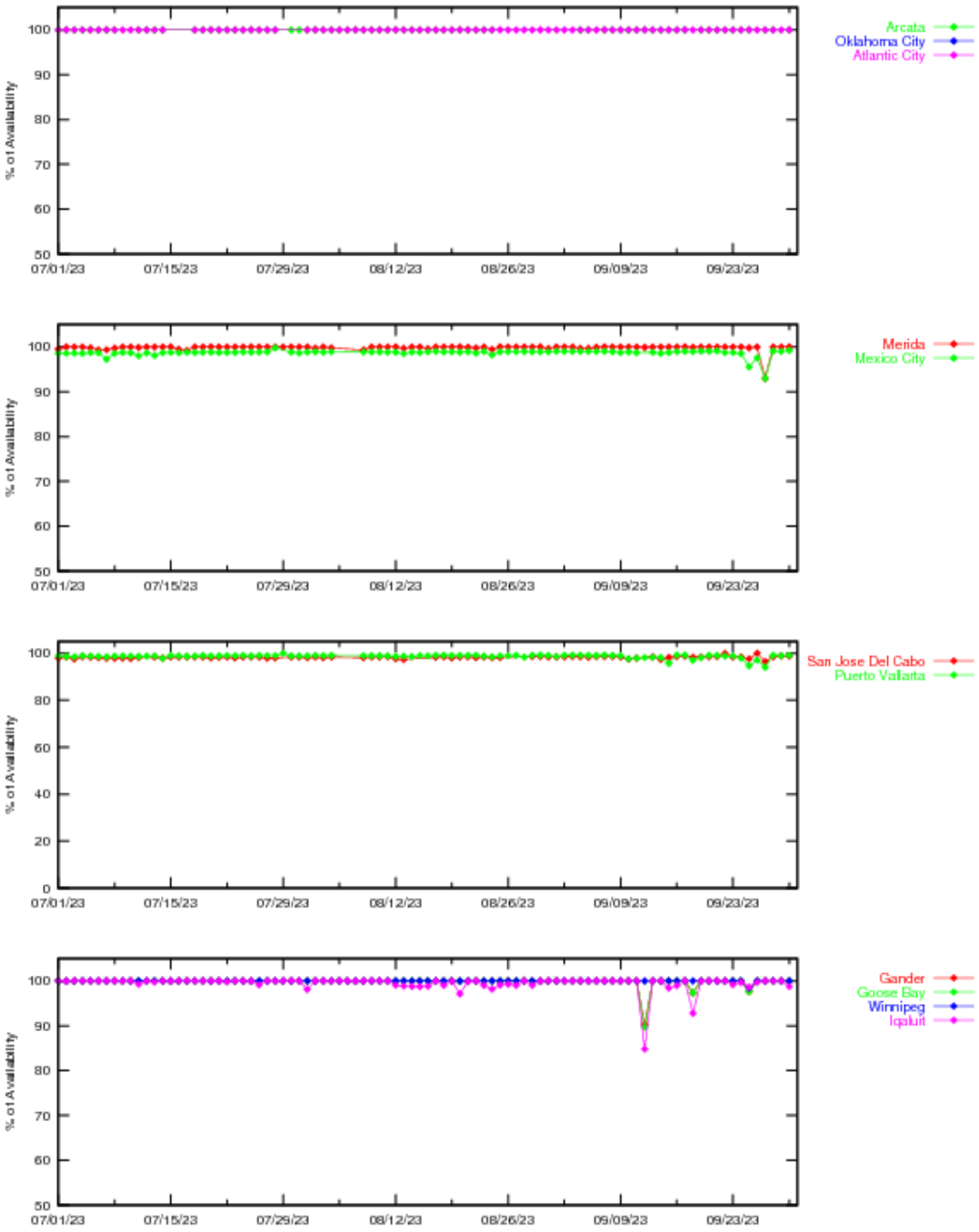

Figure 3-3 LPV Instantaneous Availability

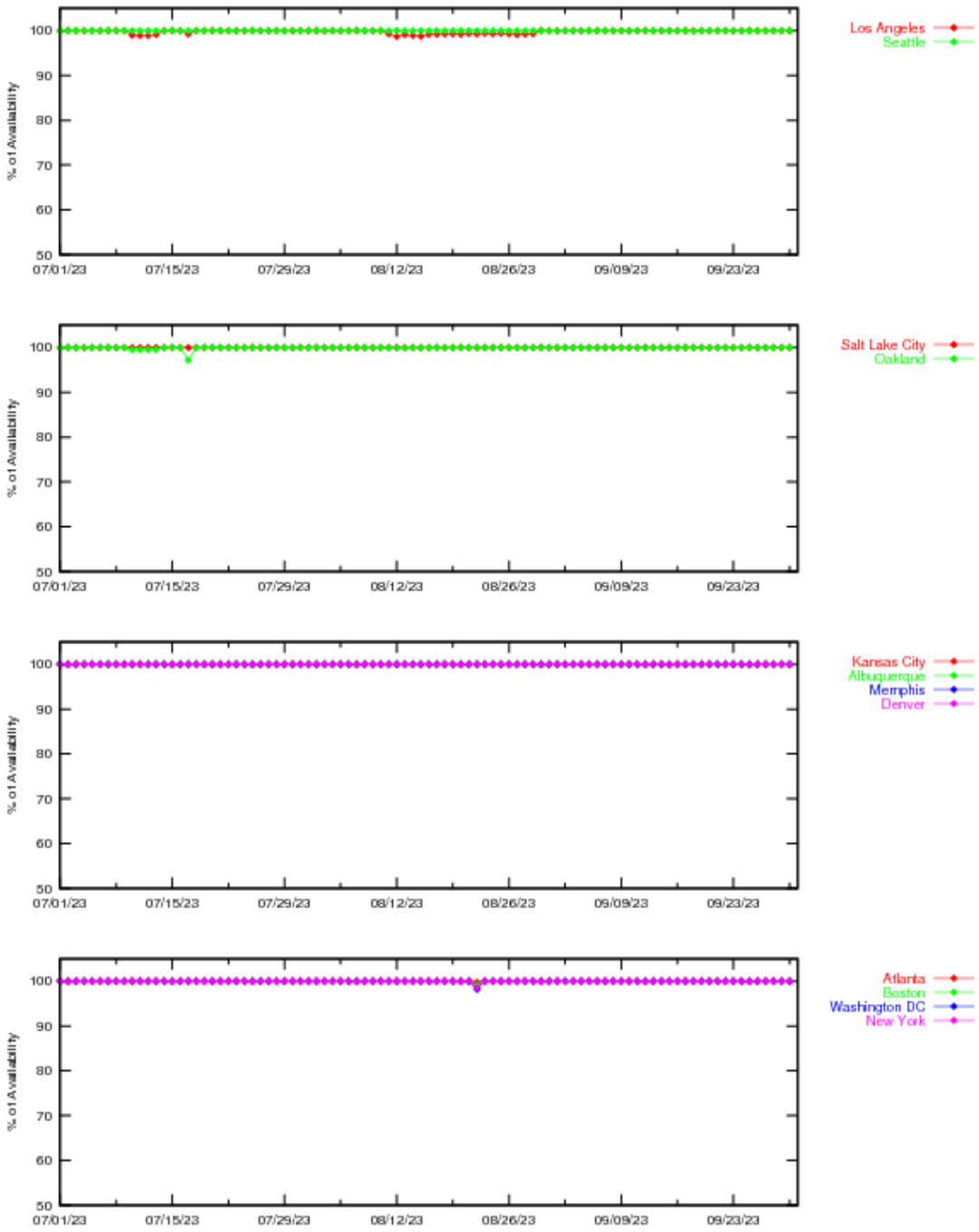

Figure 3-4 LPV200 Instantaneous Availability

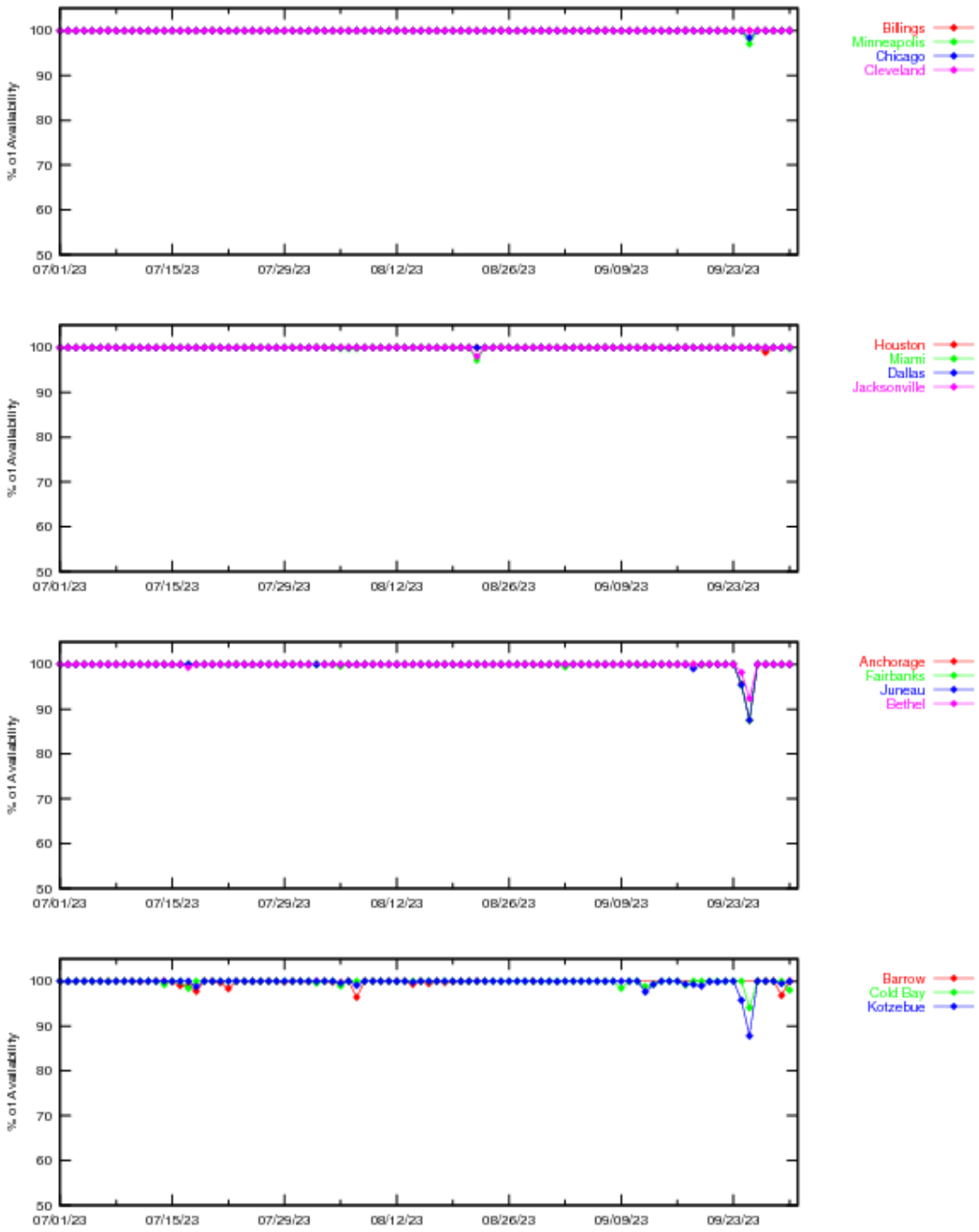

Figure 3-5 LPV200 Instantaneous Availability

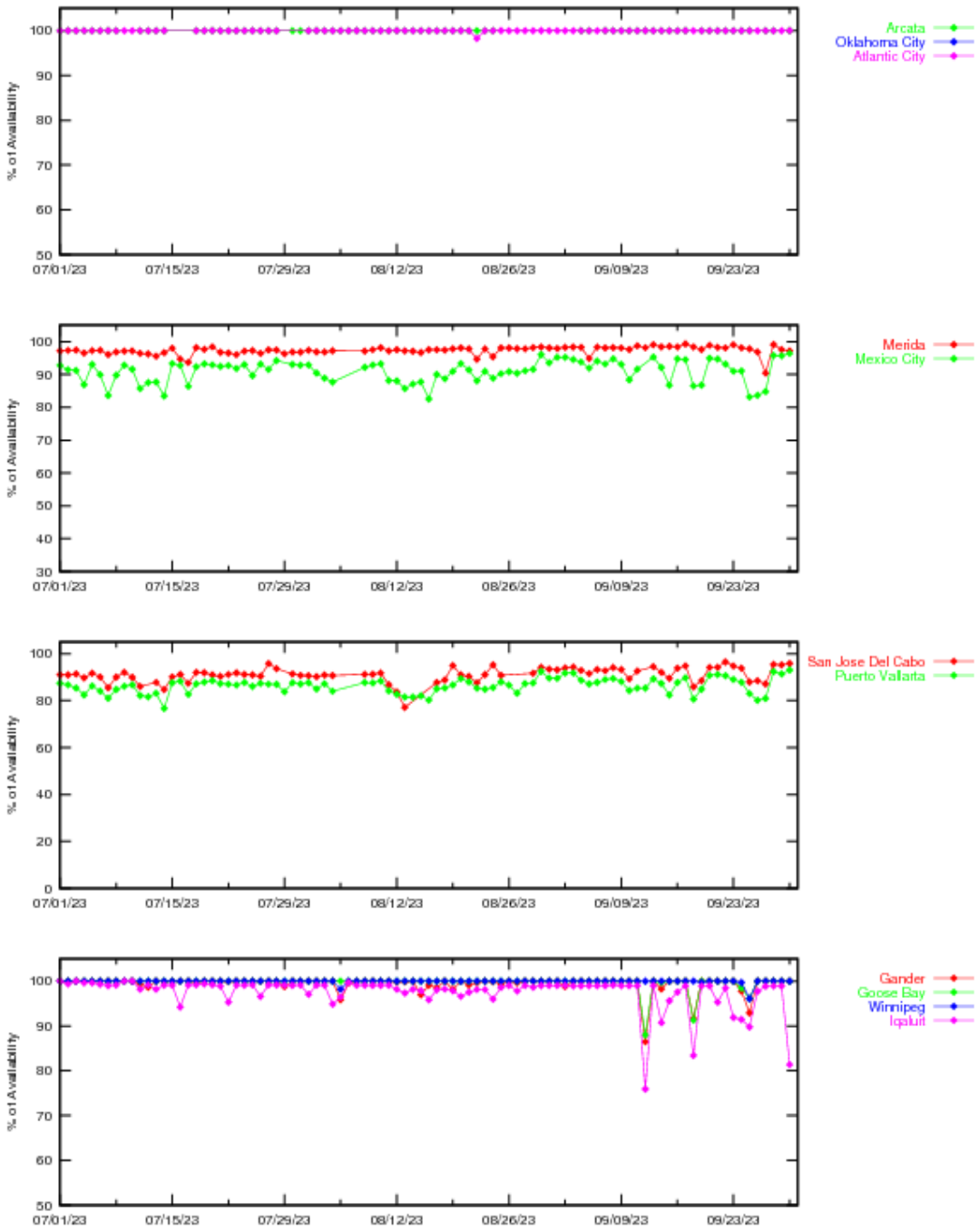

Figure 3-6 LPV200 Instantaneous Availability

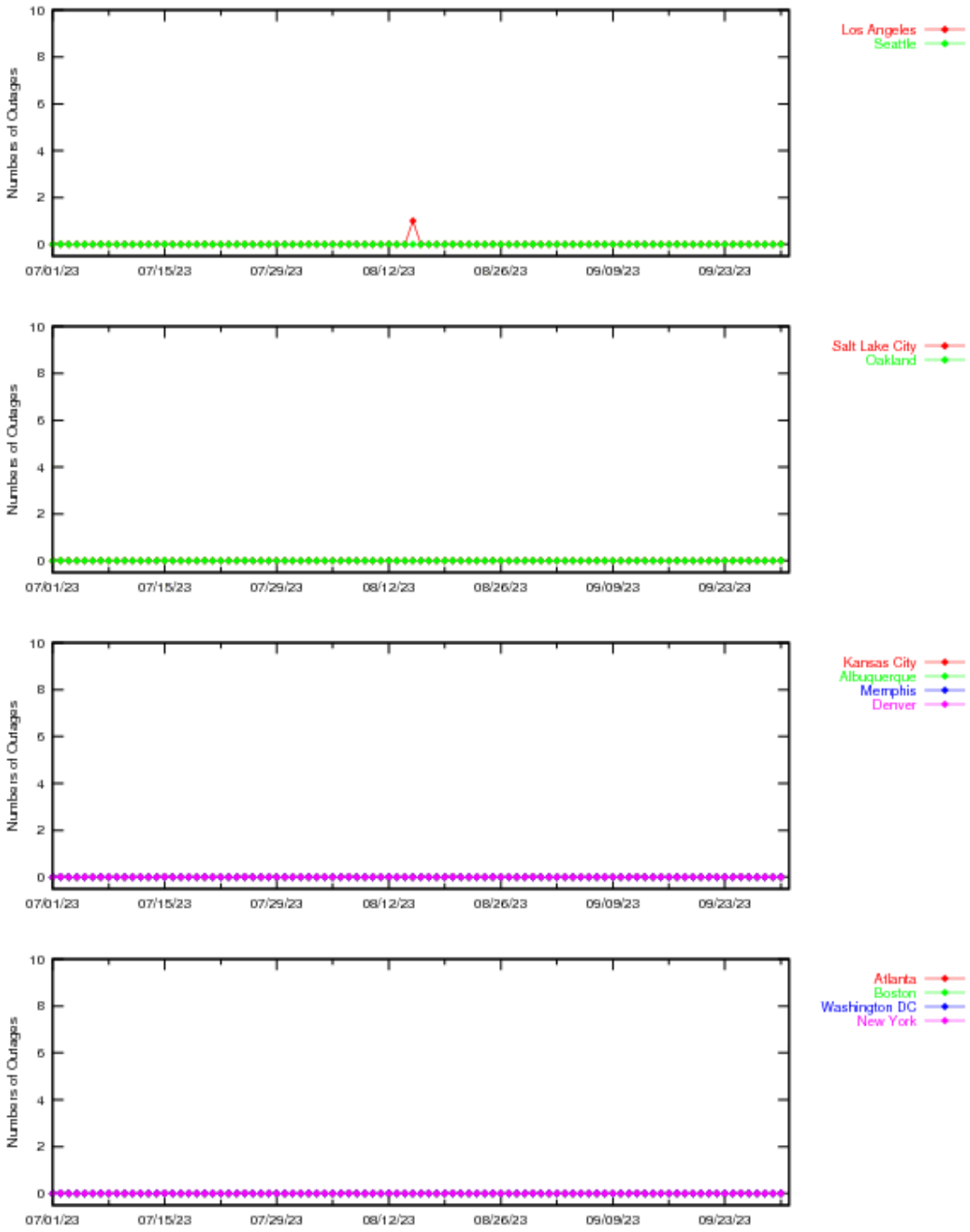

Figure 3-7 LPV Outages

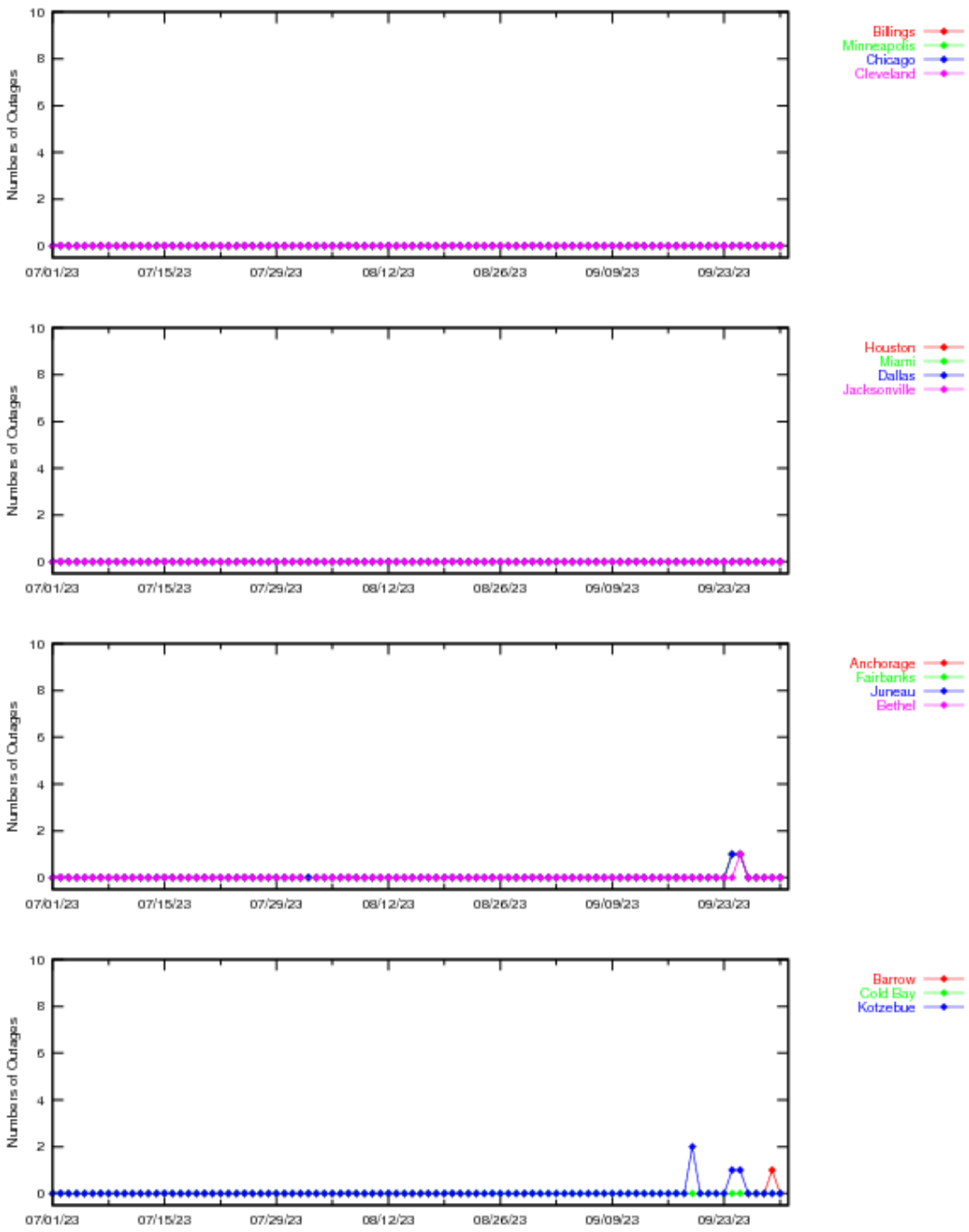

Figure 3-8 LPV Outages

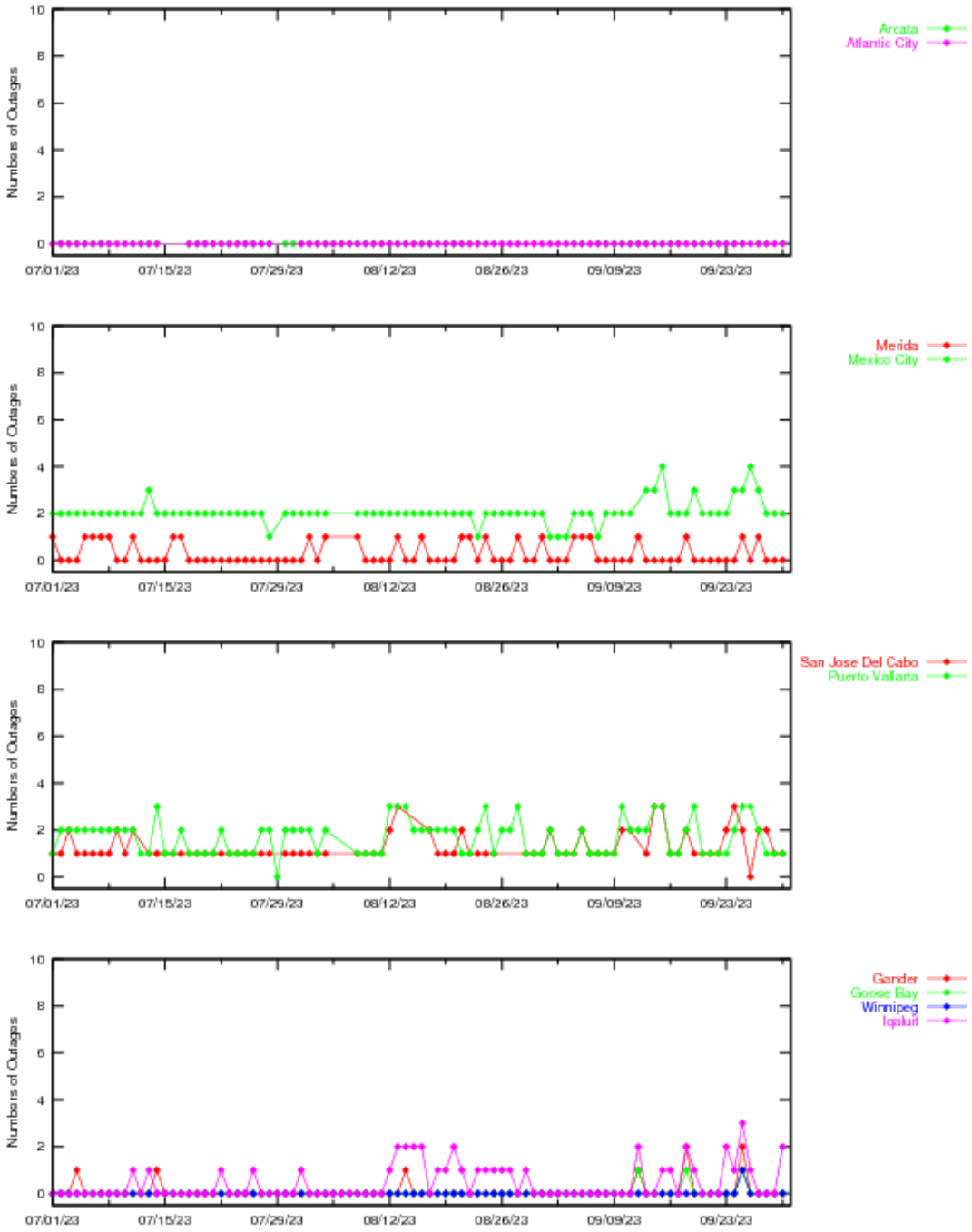

Figure 3-9 LPV Outages

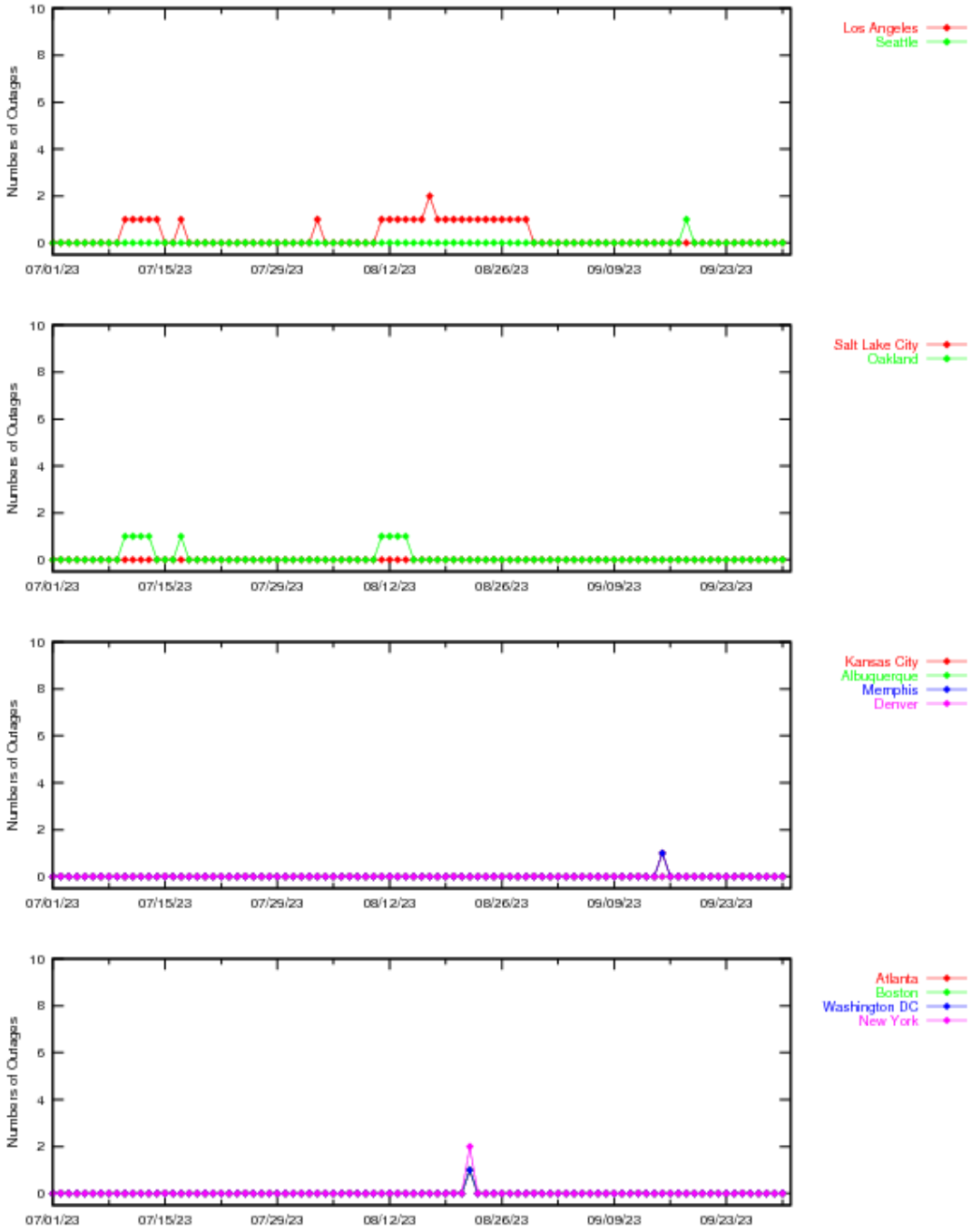

Figure 3-10 LPV200 Outages

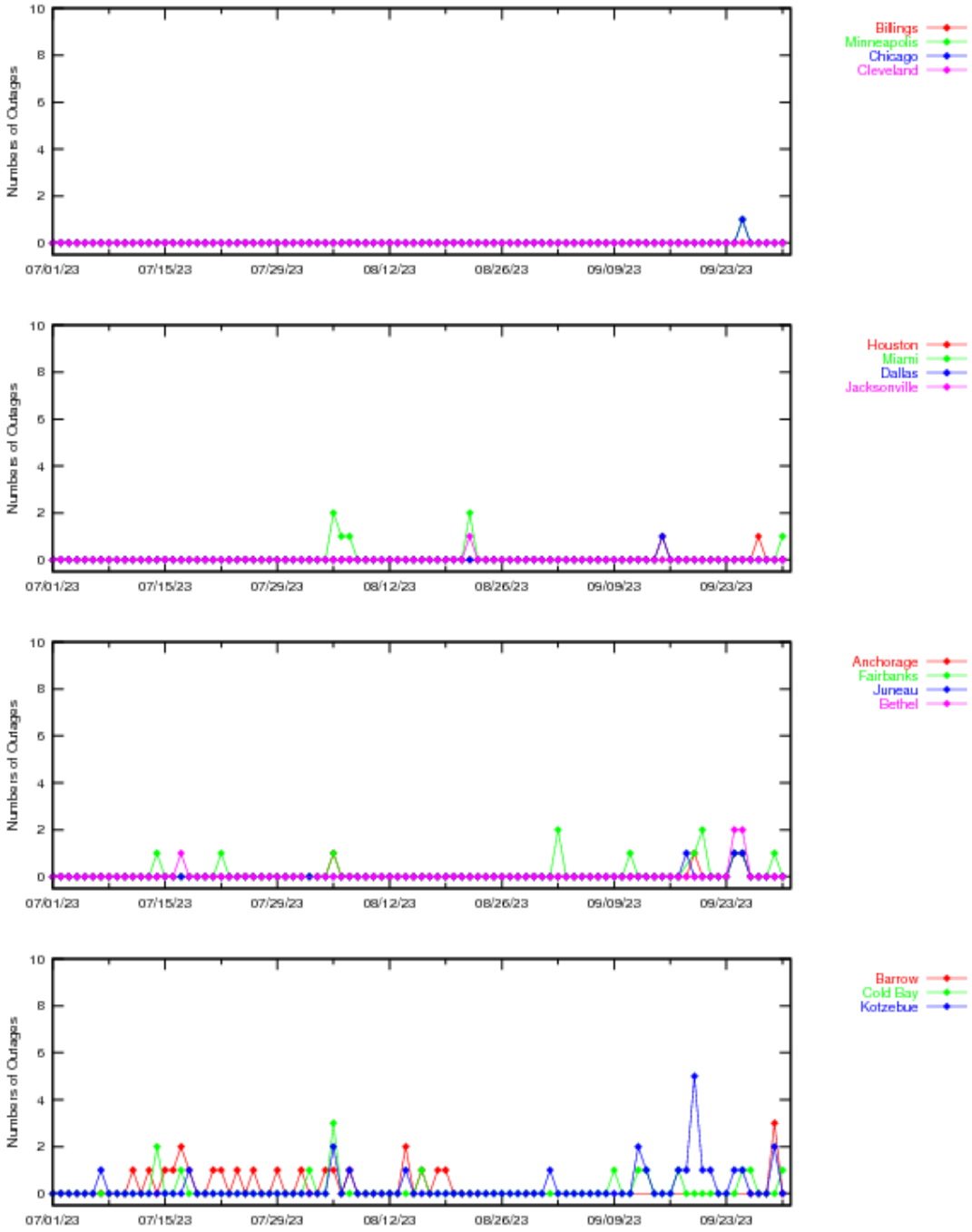

Figure 3-11 LPV200 Outages

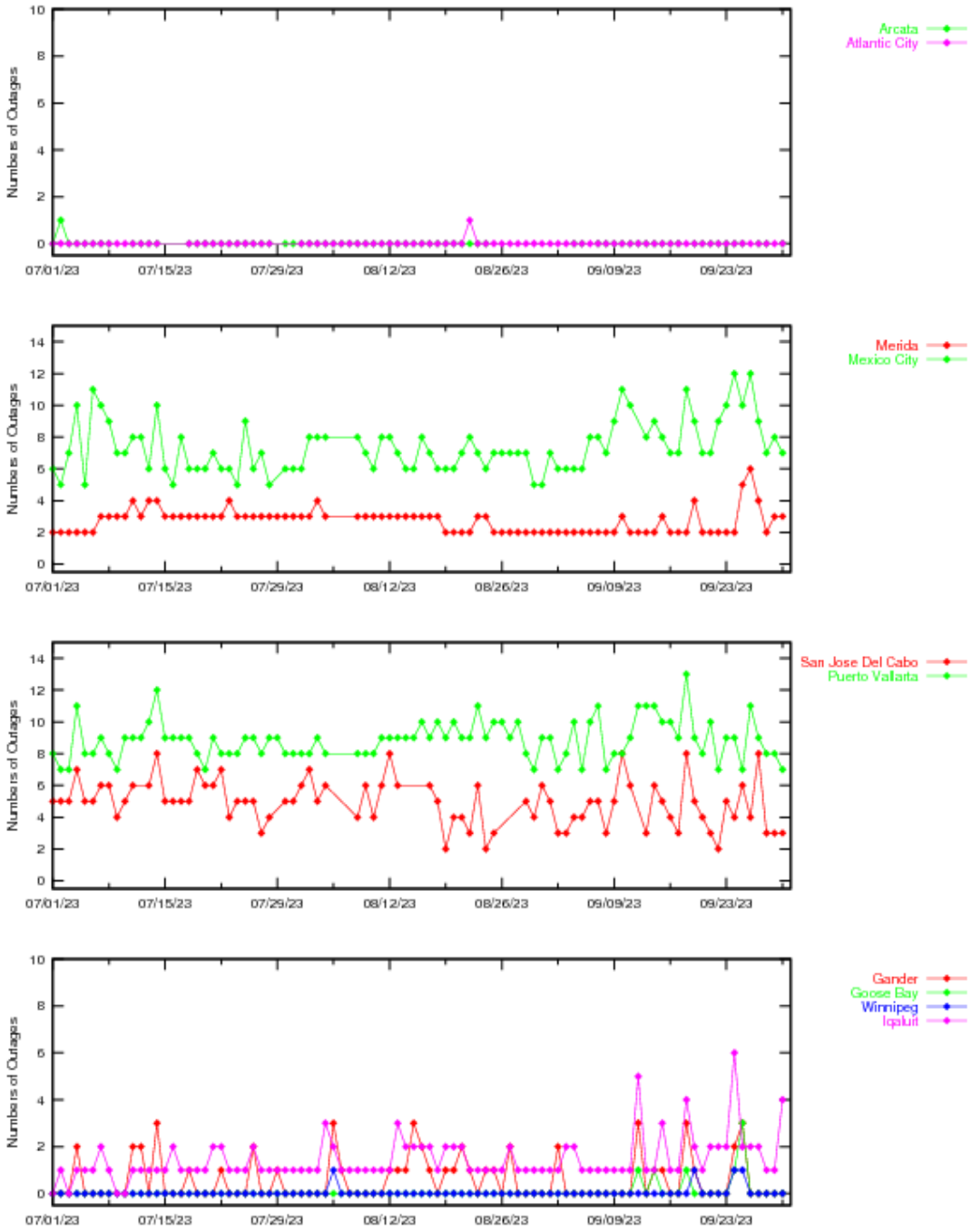

Figure 3-12 LPV200 Outages

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-a	100
Atlantic City-GA-LL	100
Atlantic City-GB-LL	100
Atlantic City-GT-LL	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
Arcata	0	0
Atlantic City-a	0	0
Atlantic City-GA-LL	0	0
Atlantic City-GB-LL	0	0
Atlantic City-GT-LL	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:

- May 9–Jul 10—Increased DOPs and an increase of IGP GIVEs caused a reduction of LPV200 availability in southern CONUS.

- Jul 6—Geomagnetic activity increased GIVEs and reduced LPV200 availability in CONUS.
- Jul 7—Geomagnetic activity increased GIVEs and reduced LPV200 availability in CONUS.
- Jul 8—Geomagnetic activity increased GIVEs and reduced LPV200 availability in CONUS.
- Jul 10—There was an SQM Trip on PRN1 on detection metrics 2, 3, and 4. The trip occurred at 09:56:59 UTC and left its tripped state at 11:06:31 UTC.
- Jul 10–14—Satellite maintenance elevated UDREs on PRN28 and reduced LPV200 availability in CONUS.
- Jul 14—Satellite maintenance elevated UDREs on PRN30 and reduced LPV200 availability in CONUS and Canada.
- Jul 17—Geomagnetic activity increased GIVEs and reduced LPV200 availability in CONUS, Alaska, and Canada.
- Jul 18—Geomagnetic activity increased GIVEs and reduced LPV200 availability in CONUS and Alaska.
- Jul 27—Geomagnetic activity increased GIVEs and reduced LPV availability in Canada and LPV200 availability in CONUS and Canada.
- Jul 28—Geomagnetic activity increased GIVEs and reduced LPV availability in Canada LPV200 availability in CONUS and Canada.
- Jul 29—A network communication outage at all Mexico sites reduced observations in the region and elevated GIVE values. The elevated GIVE values reduced LPV200 availability in CONUS.
- Jul 30—Geomagnetic activity increased GIVEs and reduced LPV200 availability in CONUS and Canada.
- Jul 31—Geomagnetic activity increased GIVEs and reduced LPV and LPV200 availability in Canada.
- Aug 1—Geomagnetic activity increased GIVEs and reduced LPV availability in Canada and LPV200 availability in CONUS and Canada.
- Aug 3—Geomagnetic activity increased GIVEs and reduced LPV200 availability in CONUS.
- Aug 4—Geomagnetic activity increased GIVEs and reduced LPV200 availability in Canada.
- Aug 5—Geomagnetic activity increased GIVEs and reduced LPV availability in Canada and LPV200 availability in CONUS, Alaska, and Canada.
- Aug 6—Geomagnetic activity increased GIVEs and reduced LPV200 availability in CONUS and Canada.
- Aug 7–8—Geomagnetic activity increased GIVEs and reduced LPV200 availability in Alaska and Canada.
- Aug 10–29—Satellite maintenance elevated UDREs on PRN28 and reduced LPV200 availability in CONUS.
- Aug 10—PRN1 was decommissioned on August 10, 2023 at 22:00 UTC.
- Aug 18—Geomagnetic activity increased GIVEs and reduced LPV200 availability in Canada.
- Aug 21—Geomagnetic activity increased GIVEs and reduced LPV200 availability in Canada.
- Aug 22—Satellite maintenance elevated UDREs on PRN25 and reduced LPV200 availability in CONUS.
- Aug 24–28—The Barrow (BRW) reference station was put into protective shutdown due to high temperatures. The shutdown reduced GPS observations in the region and elevated GIVE values. The elevated GIVE values reduced LPV200 availability in Canada.
- Aug 24—Geomagnetic activity increased GIVEs and reduced LPV200 availability in Alaska and Canada.

- Sep 2—Geomagnetic activity increased GIVEs and reduced LPV200 availability in Canada.
- Sep 3—Geomagnetic activity increased GIVEs and reduced LPV200 availability in Canada.
- Sep 5—Geomagnetic activity increased GIVEs and reduced LPV200 availability in Canada.
- Sep 7–8—Satellite maintenance elevated UDREs on PRN2 and reduced LPV200 availability in Canada.
- Sep 12—Geomagnetic activity increased GIVEs and reduced LPV availability in Canada and. LPV200 availability in CONUS, Alaska, and Canada.
- Sep 13—Geomagnetic activity increased GIVEs and reduced LPV200 availability in Alaska and Canada.
- Sep 14–15—Satellite maintenance elevated UDREs on PRN9 and reduced LPV200 availability in CONUS, Alaska, and Canada.
- Sep 14—Geomagnetic activity increased GIVEs and reduced LPV and LPV200 availability in Canada.
- Sep 15—Geomagnetic activity increased GIVEs and reduced LPV200 availability in CONUS, Alaska, and Canada.
- Sep 16—Geomagnetic activity increased GIVEs and reduced LPV200 availability in Canada.
- Sep 17—Geomagnetic activity increased GIVEs and reduced LPV200 availability in Canada.
- Sep 18—Geomagnetic activity increased GIVEs and reduced LPV availability in Canada and LPV200 availability in CONUS, Alaska, and Canada.
- Sep 19—Geomagnetic activity increased GIVEs and reduced LPV and LPV200 availability in Canada.
- Sep 24–25—Geomagnetic activity increased GIVEs and reduced LPV and LPV200 availability in CONUS, Alaska, and Canada.
- Sep 27—Geomagnetic activity increased GIVEs and reduced LPV and LPV200 availability in CONUS.
- Sep 29—Geomagnetic activity increased GIVEs and reduced LPV availability in Alaska and LPV200 availability in Alaska and Canada.
- Sep 30—Geomagnetic activity increased GIVEs and reduced LPV and LPV200 availability in 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: ADDIOTIONAL COVERAGE PLOTSfor coverage plots of 98% LP and LPV availability contour and 99% LPV200 availability contour. Kp quantifies the disturbance in the Earth’s magnetic field and is an indicator of solar storms causing geomagnetic disturbances, which can cause an unpredictable ionosphere. When the WAAS detects a disturbed ionosphere, it increases GIVE values that may result in unavailable PA service.

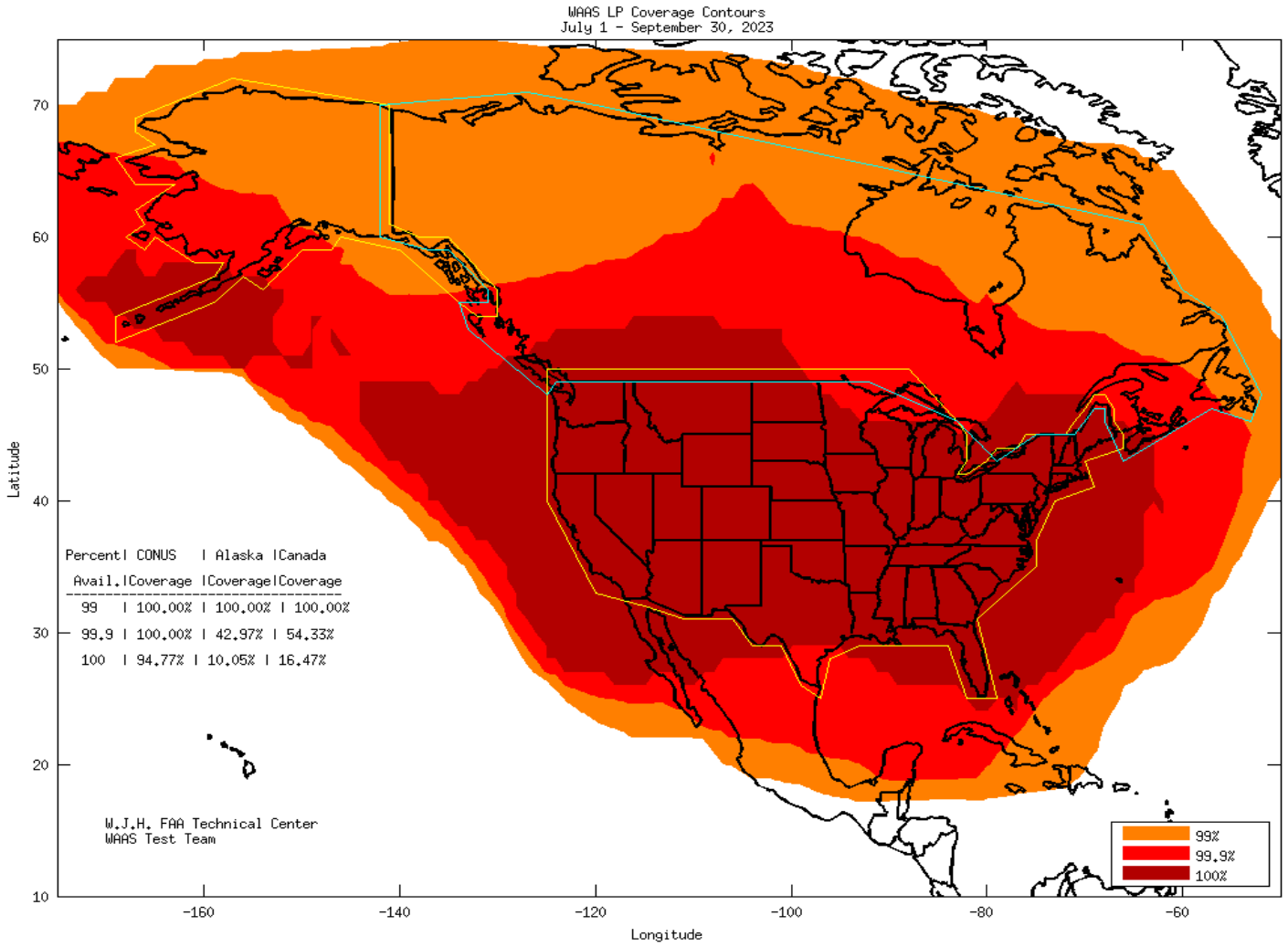

Figure 4-1 LP North America Coverage for the Quarter

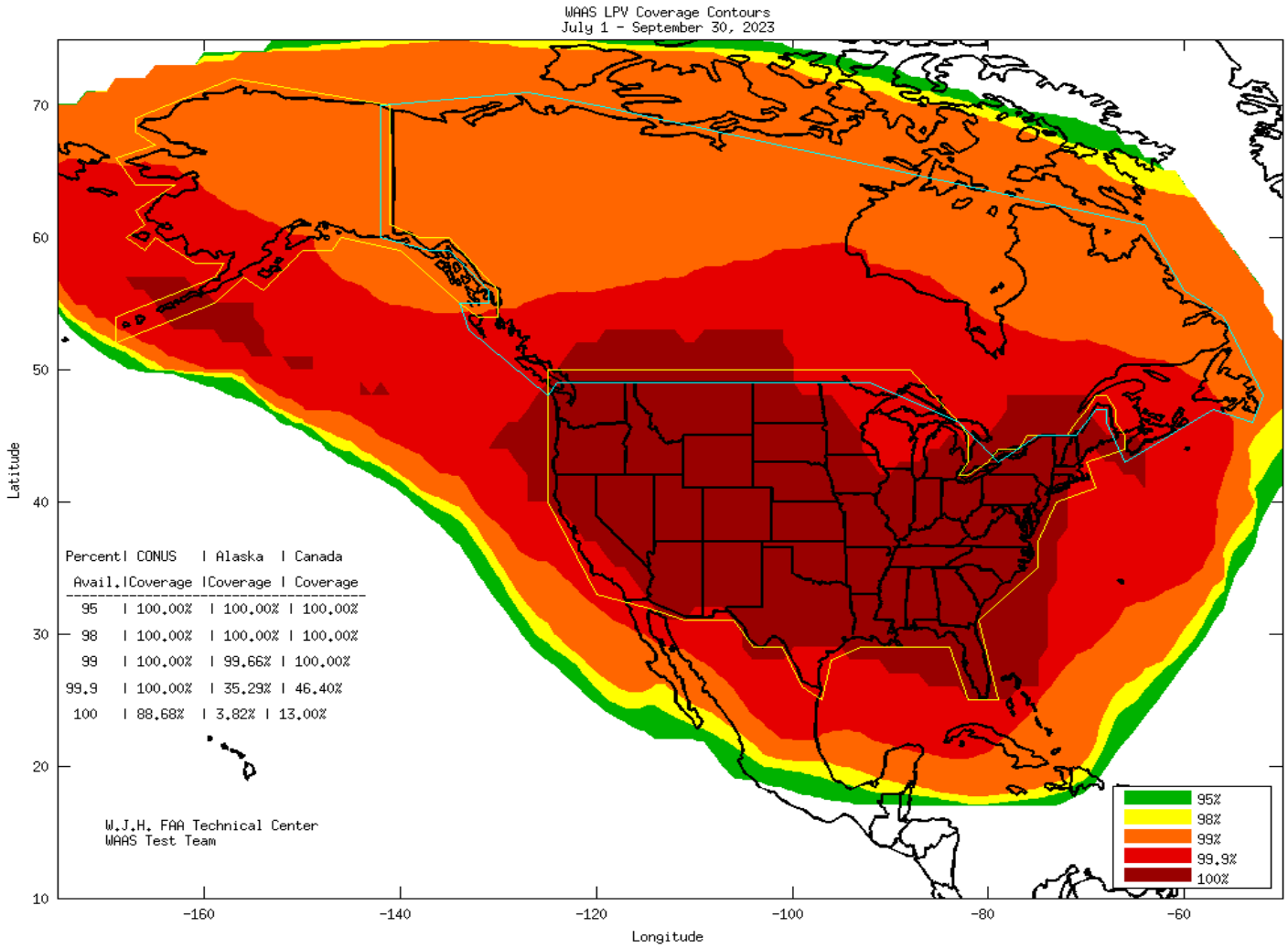

Figure 4-2 LPV North America Coverage for the Quarter

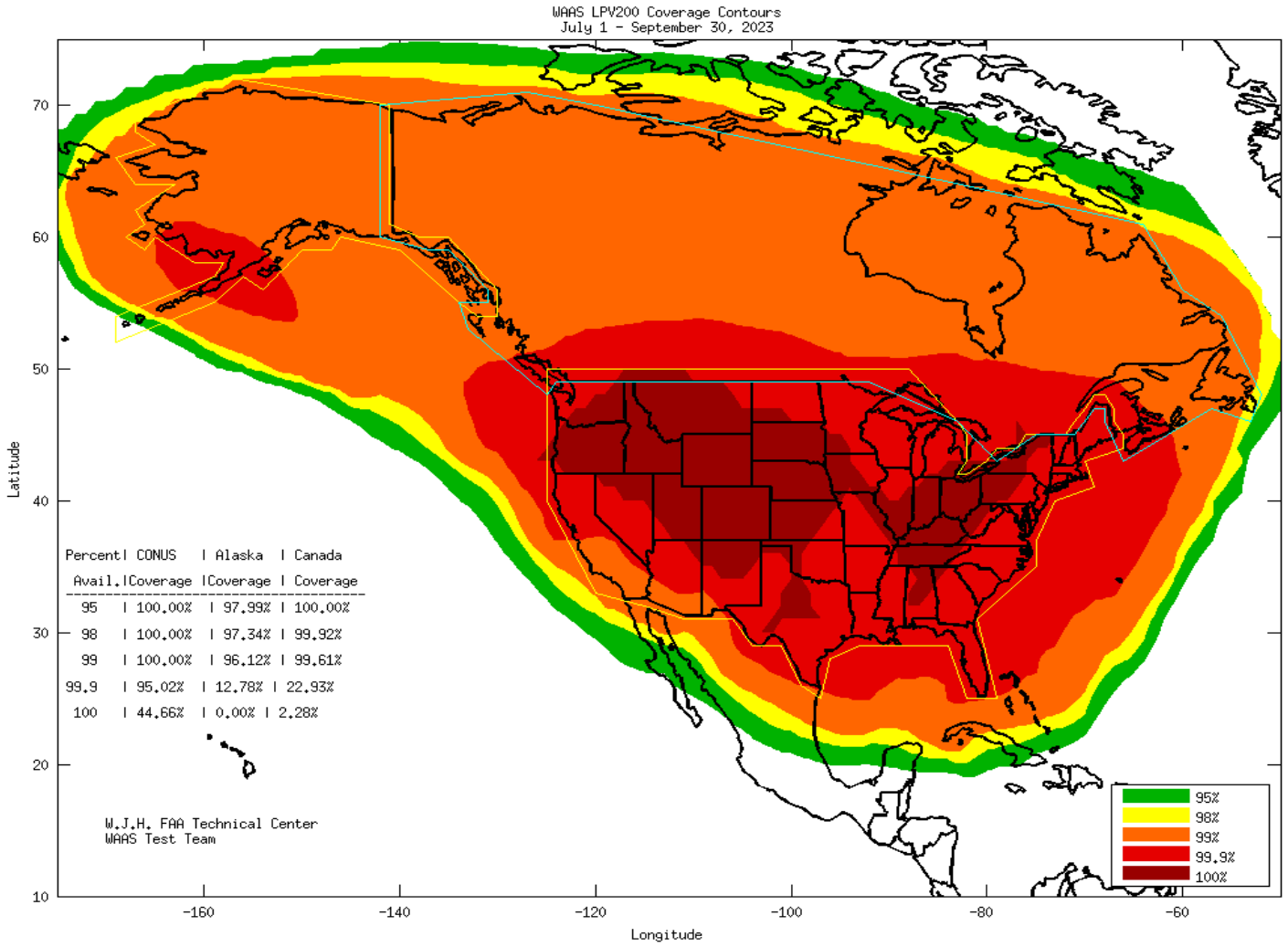

Figure 4-3 LPV200 North America Coverage for the Quarter

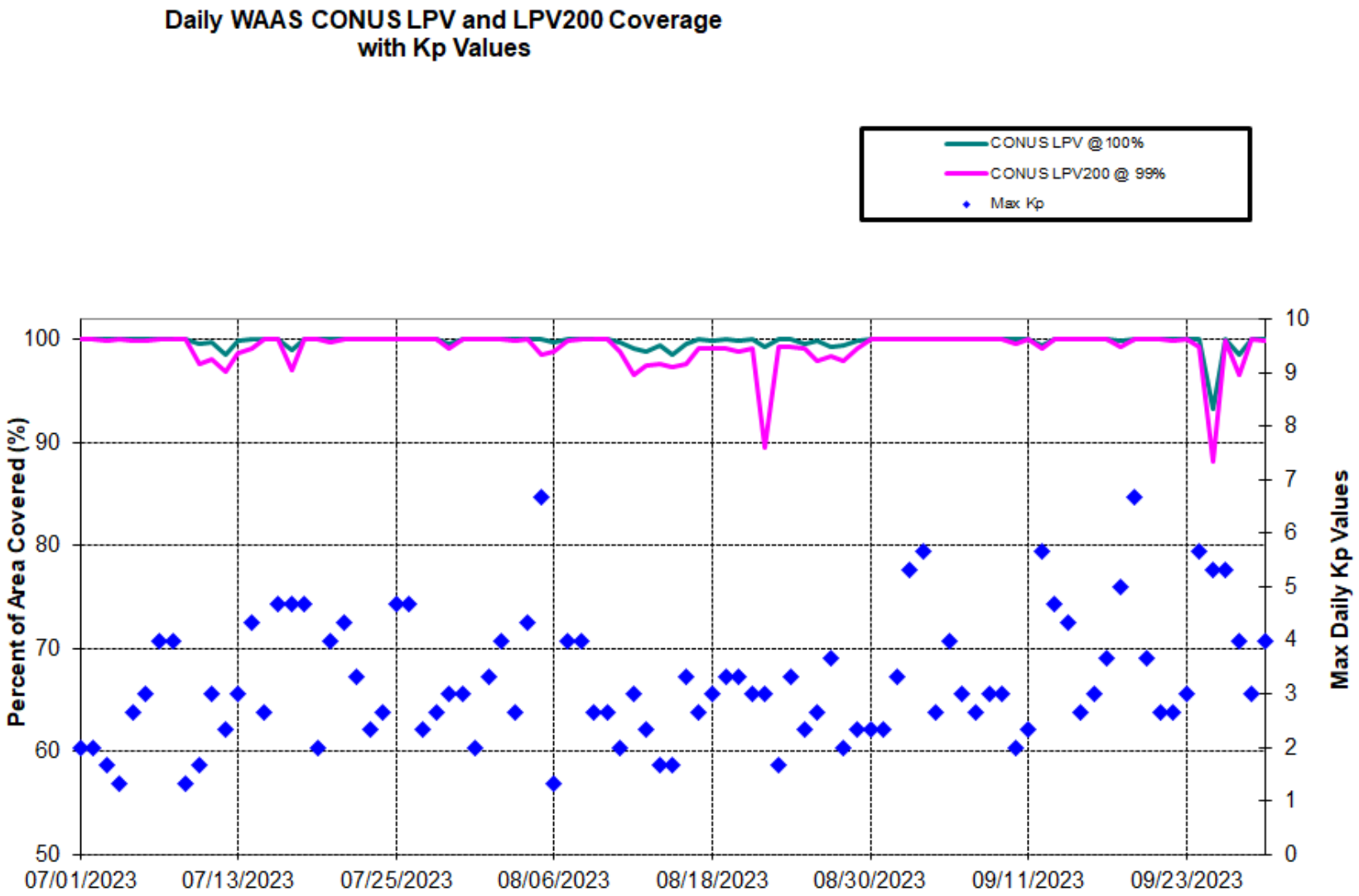

Figure 4-4 Daily LPV and LPV200 CONUS Coverage

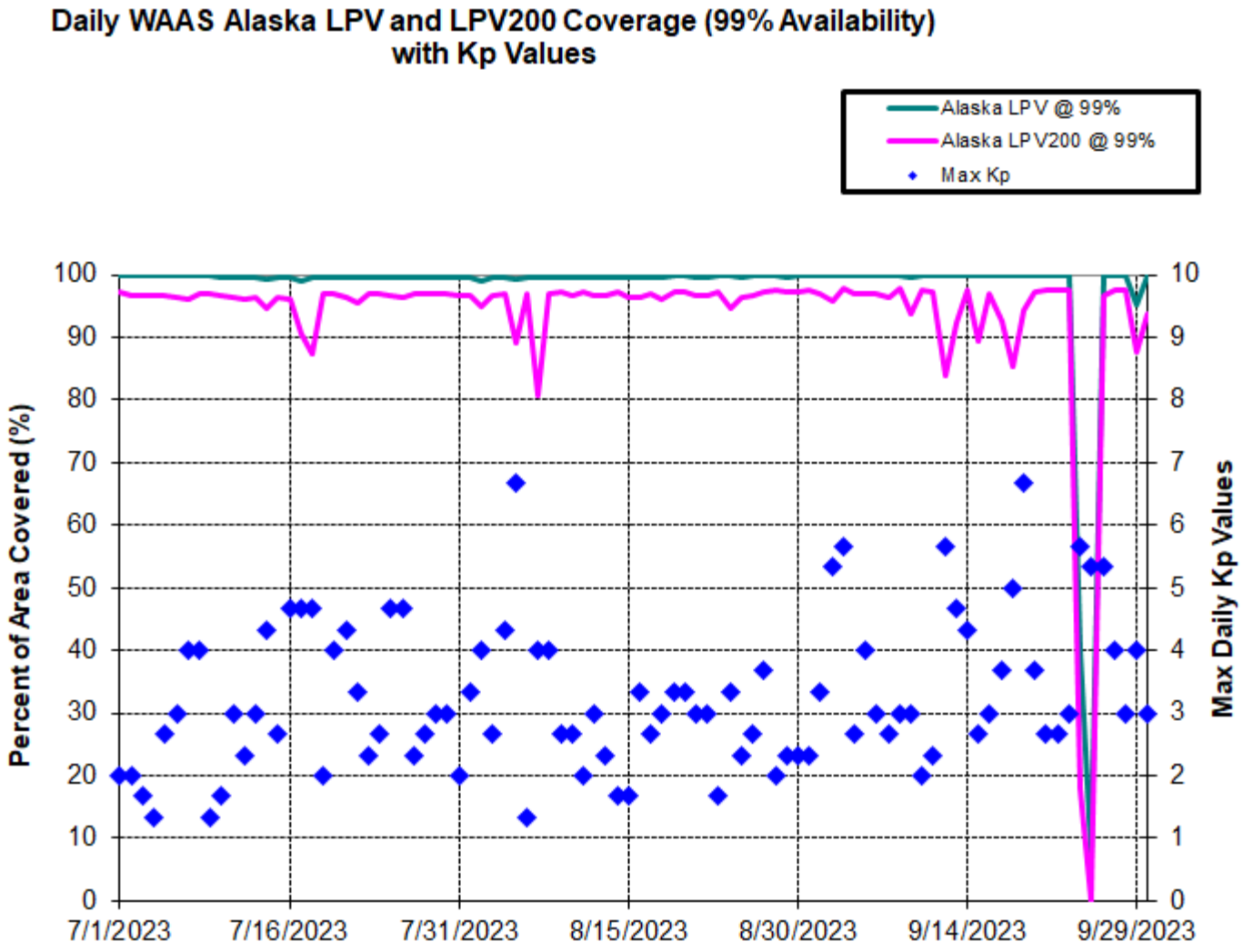

Figure 4-5 Daily LPV and LPV200 Alaska Coverage

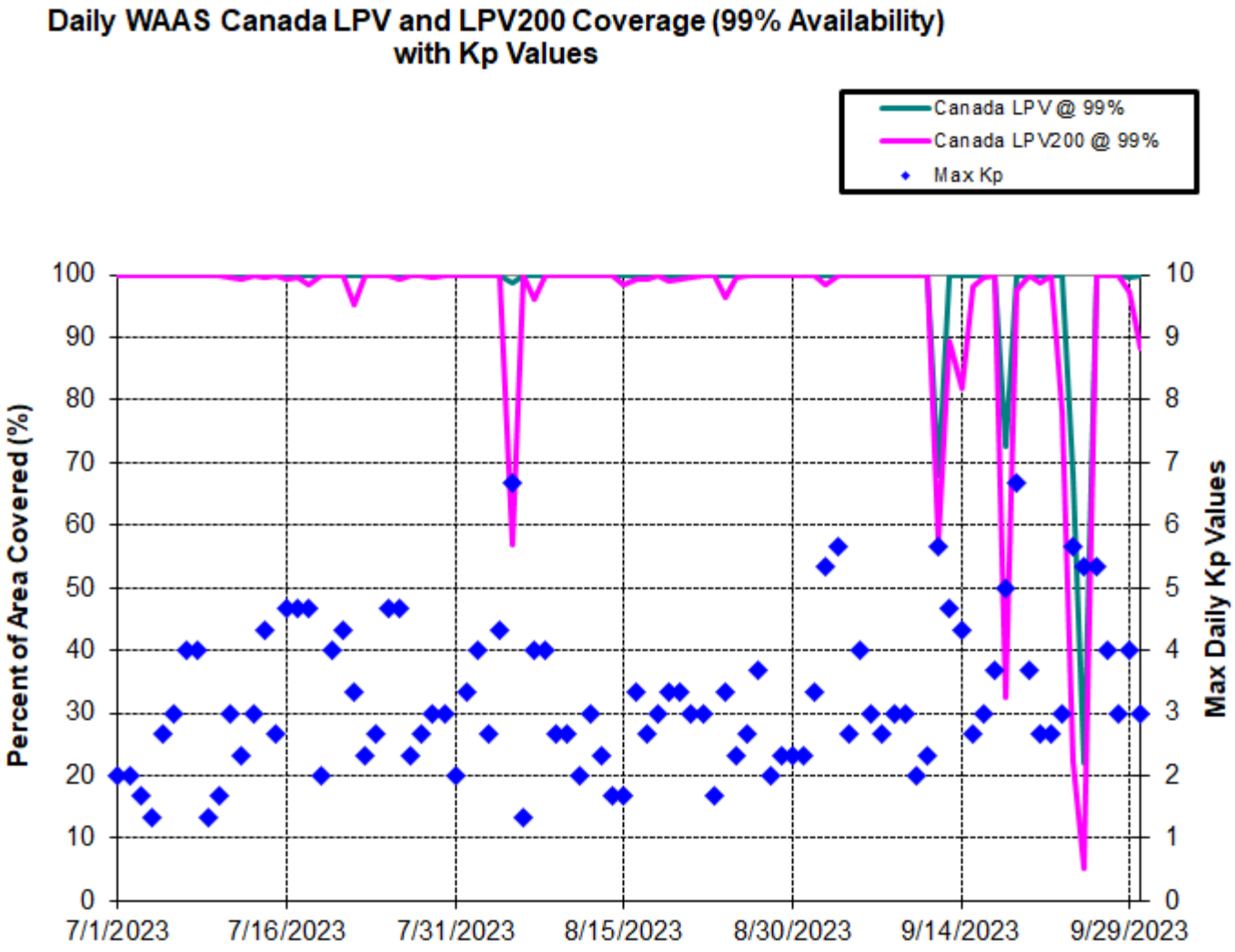

Figure 4-6 Daily LPV and LPV200 Canada Coverage

Daily analysis for NPA was conducted for the Required Navigation Performance (RNP) 0.1 and RNP 0.3 service levels based on a 100% availability requirement. The NPA coverage plots provide 100%, 99.9%, and 99% availability contours. Figure 4-7 shows the rollup RNP 0.1 coverage and Figure 4-8 shows the rollup RNP 0.3 coverage for the quarter. Figure 4-9 shows the daily RNP coverage at 100% availability and ionosphere Kp index values for this quarter.

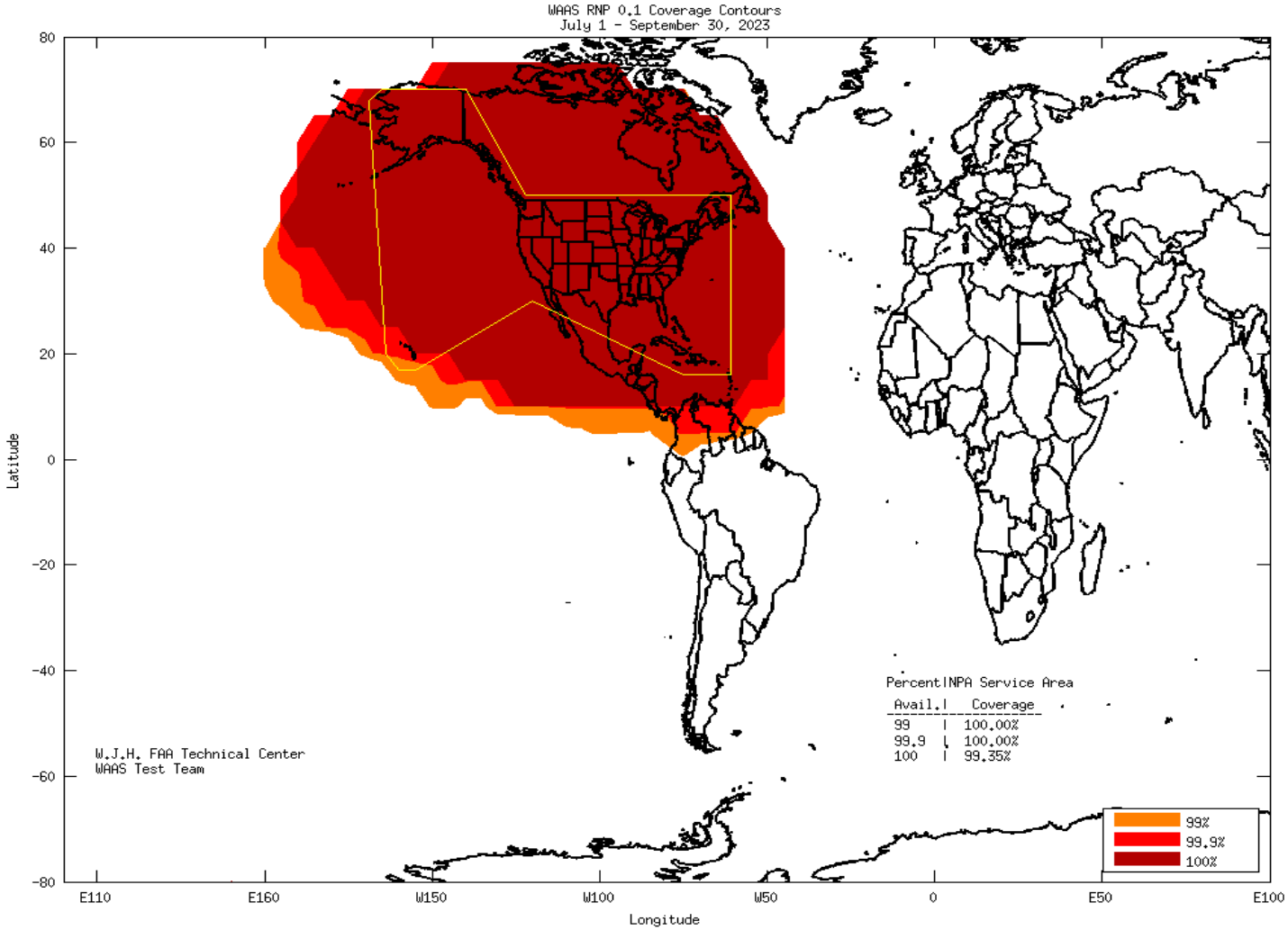

Figure 4-7 RNP 0.1 Coverage for the Quarter

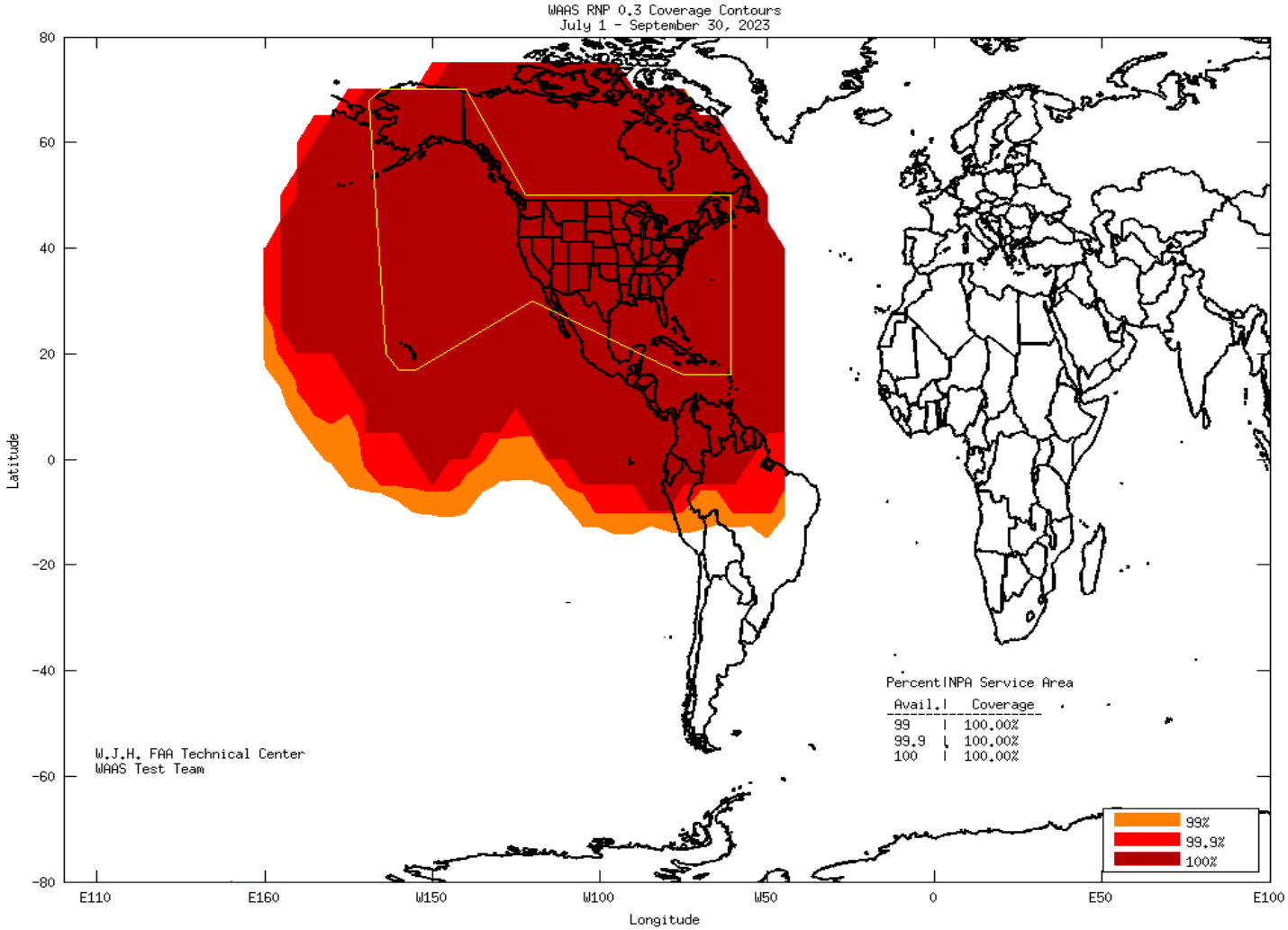

Figure 4-8 RNP 0.3 Coverage for the Quarter

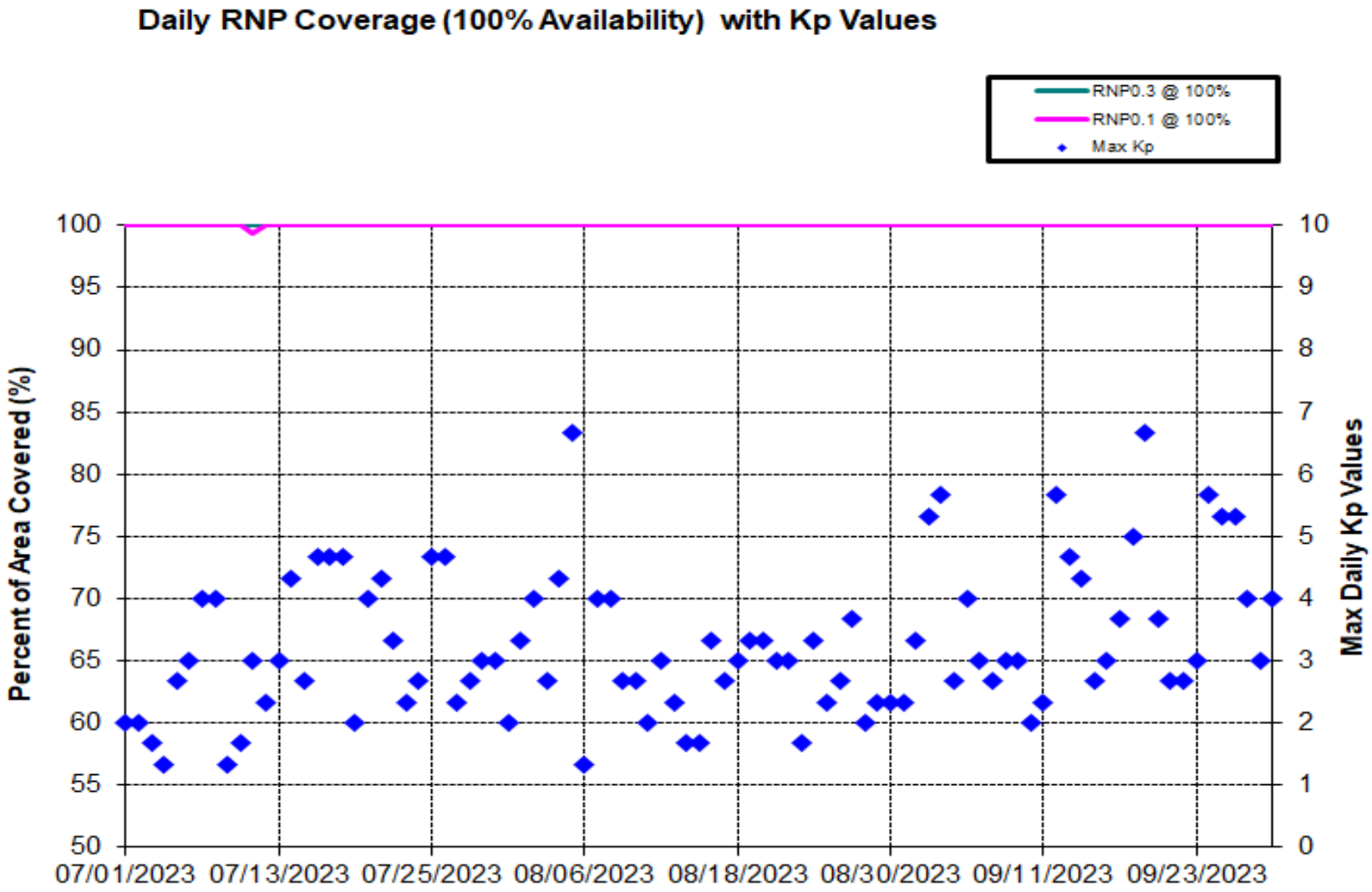

Figure 4-9 Daily RNP Coverage

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

- May 9–Jul 10—Increased DOPs and an increase of IGP GIVEs caused a reduction of LPV200 coverage in southern CONUS.
- Jul 6—Geomagnetic activity increased GIVEs and reduced LPV200 coverage in CONUS.
- Jul 7—Geomagnetic activity increased GIVEs and reduced LPV200 coverage in CONUS.
- Jul 8—Geomagnetic activity increased GIVEs and reduced LPV200 coverage in CONUS.
- Jul 10—There was an SQM Trip on PRN1 on detection metrics 2, 3, and 4. The trip occurred at 09:56:59 UTC and left its tripped state at 11:06:31 UTC.
- Jul 10–14—Satellite maintenance elevated UDREs on PRN28 and reduced LPV200 coverage in CONUS.
- Jul 14—Satellite maintenance elevated UDREs on PRN30 and reduced LPV200 coverage in CONUS and Canada.
- Jul 17—Geomagnetic activity increased GIVEs and reduced LPV200 coverage in CONUS, Alaska, and Canada.
- Jul 18—Geomagnetic activity increased GIVEs and reduced LPV200 coverage in CONUS and Alaska.
- Jul 27—Geomagnetic activity increased GIVEs and reduced LPV coverage in Canada and LPV200 coverage in CONUS and Canada.
- Jul 28—Geomagnetic activity increased GIVEs and reduced LPV coverage in Canada LPV200 coverage in CONUS and Canada.
- Jul 29—A network communication outage at all Mexico sites reduced observations in the region and elevated GIVE values. The elevated GIVE values reduced LPV200 coverage in CONUS.
- Jul 30—Geomagnetic activity increased GIVEs and reduced LPV200 coverage in CONUS and Canada.
- Jul 31—Geomagnetic activity increased GIVEs and reduced LPV and LPV200 coverage in Canada.
- Aug 1—Geomagnetic activity increased GIVEs and reduced LPV coverage in Canada and LPV200 coverage in CONUS and Canada.
- Aug 3—Geomagnetic activity increased GIVEs and reduced LPV200 coverage in CONUS.
- Aug 4—Geomagnetic activity increased GIVEs and reduced LPV200 coverage in Canada.
- Aug 5—Geomagnetic activity increased GIVEs and reduced LPV coverage in Canada and LPV200 coverage in CONUS, Alaska, and Canada.
- Aug 6—Geomagnetic activity increased GIVEs and reduced LPV200 coverage in CONUS and Canada.
- Aug 7–8—Geomagnetic activity increased GIVEs and reduced LPV200 coverage in Alaska and Canada.
- Aug 10–29—Satellite maintenance elevated UDREs on PRN28 and reduced LPV200 coverage in CONUS.
- Aug 10—PRN1 was decommissioned on August 10, 2023 at 22:00 UTC.
- Aug 18—Geomagnetic activity increased GIVEs and reduced LPV200 coverage in Canada.
- Aug 21—Geomagnetic activity increased GIVEs and reduced LPV200 coverage in Canada.
- Aug 22—Satellite maintenance elevated UDREs on PRN25 and reduced LPV200 coverage in CONUS.

- Aug 24–28—The Barrow (BRW) reference station was put into protective shutdown due to high temperatures. The shutdown reduced GPS observations in the region and elevated GIVE values. The elevated GIVE values reduced LPV200 coverage in Canada.
- Aug 24—Geomagnetic activity increased GIVEs and reduced LPV200 coverage in Alaska and Canada.
- Sep 2—Geomagnetic activity increased GIVEs and reduced LPV200 coverage in Canada.
- Sep 3—Geomagnetic activity increased GIVEs and reduced LPV200 coverage in Canada.
- Sep 5—Geomagnetic activity increased GIVEs and reduced LPV200 coverage in Canada.
- Sep 7–8—Satellite maintenance elevated UDREs on PRN2 and reduced LPV200 coverage in Canada.
- Sep 12—Geomagnetic activity increased GIVEs and reduced LPV coverage in Canada and. LPV200 coverage in CONUS, Alaska, and Canada.
- Sep 13—Geomagnetic activity increased GIVEs and reduced LPV200 coverage in Alaska and Canada.
- Sep 14–15—Satellite maintenance elevated UDREs on PRN9 and reduced LPV200 coverage in CONUS, Alaska, and Canada.
- Sep 14—Geomagnetic activity increased GIVEs and reduced LPV and LPV200 coverage in Canada.
- Sep 15—Geomagnetic activity increased GIVEs and reduced LPV200 coverage in CONUS, Alaska, and Canada.
- Sep 16—Geomagnetic activity increased GIVEs and reduced LPV200 coverage in Canada.
- Sep 17—Geomagnetic activity increased GIVEs and reduced LPV200 coverage in Canada.
- Sep 18—Geomagnetic activity increased GIVEs and reduced LPV coverage in Canada and LPV200 coverage in CONUS, Alaska, and Canada.
- Sep 19—Geomagnetic activity increased GIVEs and reduced LPV and LPV200 coverage in Canada.
- Sep 24–25—Geomagnetic activity increased GIVEs and reduced LPV and LPV200 coverage in CONUS, Alaska, and Canada.
- Sep 27—Geomagnetic activity increased GIVEs and reduced LPV and LPV200 coverage in CONUS.
- Sep 29—Geomagnetic activity increased GIVEs and reduced LPV coverage in Alaska and LPV200 coverage in Alaska and Canada.
- Sep 30—Geomagnetic activity increased GIVEs and reduced LPV and LPV200 coverage in Canada.

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 3.504 at Merida 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	5.130	5.414	0
Atlantic City-a	4.451	5.160	0
Oklahoma City	5.495	5.676	0
Albuquerque	5.073	7.156	0
Anchorage	5.828	5.653	0
Atlanta	6.529	7.818	0
Barrow	13.057	6.715	0
Bethel	5.856	5.108	0
Billings	4.172	5.160	0
Boston	6.079	7.648	0
Chicago	4.480	6.783	0
Cleveland	4.389	7.123	0
Cold Bay	6.354	9.139	0
Dallas	5.701	5.086	0
Denver	4.656	6.989	0
Fairbanks	6.169	4.597	0
Gander	6.299	9.893	0
Goose Bay	5.915	7.271	0
Houston	4.764	5.279	0
Iqaluit	9.943	7.856	0
Jacksonville	6.706	6.190	0
Juneau	4.667	5.555	0
Kansas City	4.387	7.166	0
Kotzebue	7.423	5.909	0
Los Angeles	6.760	5.822	0
Memphis	6.299	6.015	0
Merida	3.994	3.504	0
Mexico City	3.775	6.370	0
Miami	8.761	6.647	0
Minneapolis	4.077	5.055	0
New York	5.838	5.405	0
Oakland	5.300	5.493	0
Puerto Vallarta	5.464	7.851	0
Salt Lake City	4.291	8.579	0
San Jose Del Cabo	5.666	6.934	0
Seattle	3.923	6.732	0
Washington, DC	4.715	6.531	0
Winnipeg	6.273	4.132	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	10	10	11	0.1087	0.1087	0.1196
T3	4	5	4	0.0435	0.0543	0.0435
T4	13	18	19	0.1413	0.1957	0.2065
T5	0	0	0	0.0000	0.0000	0.0000
T6	0	0	1	0.0000	0.0000	0.0109
T24	0	0	0	0.0000	0.0000	0.0000
T26	0	0	0	0.0000	0.0000	0.0000
Total SV Alerts	27	33	35	0.2935	0.3587	0.3804
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.

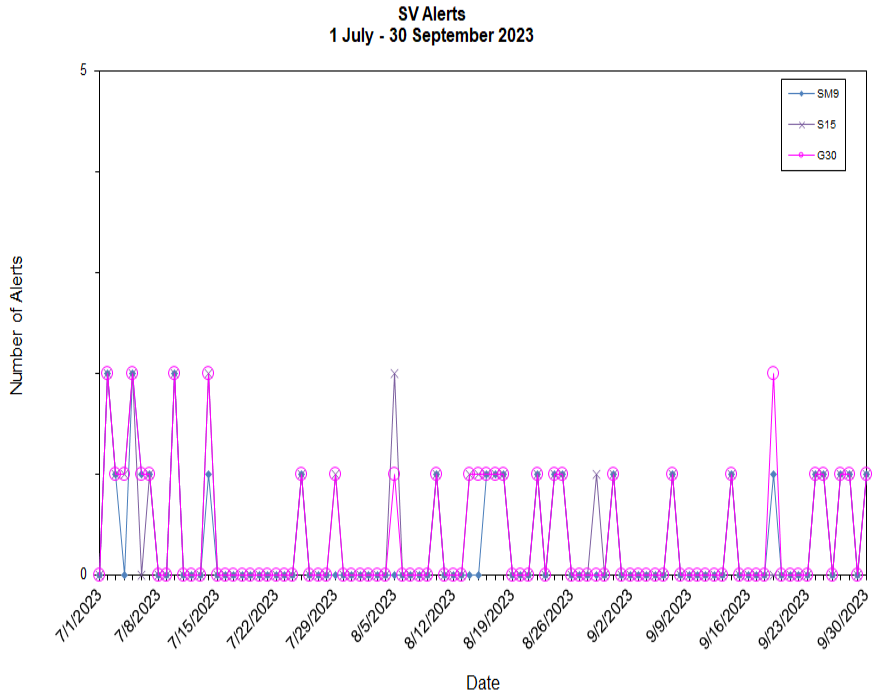

Figure 5-1 SV Daily Alert Trend

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-229C	See Table A-8 in RTCA DO-229C	See Table A-8 in RTCA DO-229C
Long Term Corrections	24, 25	120	360	240
GEO Nav. Data	9	120	360	240
Fast Correction Degradation	7	120	360	240
Weighting Factors	8	120	240	240
Degradation Parameters	10	120	360	240
Ionospheric Grid Mask	18	300	None	None
Ionospheric Corrections	26	300	600	600
UTC Timing Data	12	300	None	None
Almanac Data	17	300	None	None

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

For this quarter, statistics reported for late messages were mainly caused by GEO SIS outages, GUS switchovers, and SV alerts; excluding message type 7 and 10. Furthermore, the delay of message types 7 and 10 had little or no impact on user performance and safety, and they 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 SM9 GEO Type 28 messages occurred after PRN131 switched from Santa Paula (manual) to Southbury on July 29, 2023, causing a 4-second message outage. The high Max Late Length reported by G30 GEO for G30 GEO Type 28 messages occurred after PRN135 switched from Napa (manual) to Brewster on August 25, 2023, causing a 3-second message outage.

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

PRN	On Time (number received)	Late (number received)	Max Late Length (seconds)
1	101058	1	121
2	1310460	22	27
3	1310433	28	27
4	1310480	19	21
7	93912	14	130

PRN	On Time (number received)	Late (number received)	Max Late Length (seconds)
9	92257	0	0
10	94036	14	132
17	30963	0	0

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	5078	0	0
2	49693	0	0
3	47536	0	0
4	46773	0	0
5	46666	0	0
6	47368	0	0
7	46636	1	165
8	47676	2	178
9	46359	0	0
10	46879	0	0
11	46871	0	0
12	46619	1	170
13	48207	0	0
14	45903	0	0
15	46179	0	0
16	47042	1	167
17	47261	0	0
18	46196	0	0
19	45461	0	0
20	47459	0	0
21	49913	2	171
22	21622	0	0
23	46332	1	178
24	48726	0	0
25	48737	0	0
26	47557	0	0
27	48355	1	170
28	35772	0	0
29	46773	0	0
30	46263	0	0
31	47164	0	0
32	46162	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	4170	0	0
2	41287	3	157
3	39427	1	208
4	38900	0	0
5	38885	0	0
6	39344	0	0
7	38777	1	134
8	39654	0	0
9	38524	0	0
10	38956	0	0
11	38996	0	0
12	38726	0	0
13	40256	1	144
14	38237	1	204
15	38476	0	0
16	39147	0	0
17	39243	0	0
18	38470	6	180
19	37799	0	0
20	39495	0	0
21	41521	5	161
22	18254	0	0
23	38497	0	0
24	40631	0	0
25	40484	2	199
26	39503	0	0
27	40276	4	240
28	29779	0	0
29	38849	0	0
30	38579	0	0
31	39094	2	208
32	38327	0	0
131	76049	1	5473
133	76270	1	5494
135	76151	1	5436

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	27351	6	306
0	1	27355	3	306
0	2	27354	3	304
1	0	27356	1	305
1	1	27354	3	306
1	2	27349	7	306
1	3	27351	7	579
1	4	27357	1	301
2	0	27347	9	304
2	1	27354	4	304
2	2	27355	3	304
2	3	27351	6	302
2	4	27353	5	305
3	0	27348	6	579
3	1	27354	5	580
3	2	27356	3	580
9	0	27357	2	311
9	1	27356	3	306
9	2	27360	1	304
9	3	27357	2	304
9	4	27358	4	305
9	5	27353	5	304
9	6	27348	8	306

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

Band	On Time (number received)	Late (number received)	Max Late Length (seconds)
0	35055	0	0
1	35044	0	0
2	35021	0	0
3	35054	2	472
9	35040	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	101103	1	121
2	1310459	24	24
3	1310438	28	27
4	1310492	16	26
7	94080	15	128
9	92254	1	178
10	93987	14	127
17	30970	0	0

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

PRN	On Time (number received)	Late (number received)	Max Late Length (seconds)
1	5079	0	0
2	49689	1	166
3	47536	0	0
4	46783	0	0
5	46665	0	0
6	47366	0	0
7	46644	0	0
8	47667	2	183
9	46361	0	0
10	46878	0	0
11	46880	0	0
12	46611	0	0
13	48200	1	167
14	45894	0	0
15	46190	0	0
16	47037	1	179
17	47260	0	0
18	46186	0	0
19	45464	0	0
20	47461	0	0
21	49909	0	0
22	21622	0	0
23	46339	2	183
24	48731	0	0
25	48734	0	0
26	47557	0	0

PRN	On Time (number received)	Late (number received)	Max Late Length (seconds)
27	48355	2	181
28	35768	1	173
29	46774	0	0
30	46263	0	0
31	47159	1	179
32	46164	1	166

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

PRN	On Time (number received)	Late (number received)	Max Late Length (seconds)
1	4173	0	0
2	41287	0	0
3	39416	0	0
4	38875	0	0
5	38887	1	126
6	39340	0	0
7	38774	0	0
8	39643	4	240
9	38525	1	208
10	38931	0	0
11	38986	0	0
12	38697	1	211
13	40258	4	152
14	38230	0	0
15	38482	0	0
16	39138	0	0
17	39237	0	0
18	38475	4	178
19	37812	0	0
20	39502	0	0
21	41529	5	168
22	18251	0	0
23	38508	0	0
24	40632	0	0
25	40468	2	211
26	39480	0	0
27	40278	4	211
28	29797	0	0
29	38846	1	208
30	38575	1	206

PRN	On Time (number received)	Late (number received)	Max Late Length (seconds)
31	39081	0	0
32	38305	0	0
131	76054	4	5504
133	76255	0	0
135	76164	1	5496

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	27354	4	305
0	1	27360	1	301
0	2	27356	2	301
1	0	27351	5	304
1	1	27349	8	305
1	2	27358	1	301
1	3	27356	3	307
1	4	27355	4	307
2	0	27348	10	307
2	1	27350	6	305
2	2	27348	9	578
2	3	27347	6	581
2	4	27355	3	304
3	0	27356	2	301
3	1	27355	1	304
3	2	27357	3	305
9	0	27352	6	304
9	1	27355	5	305
9	2	27353	5	577
9	3	27356	2	305
9	4	27357	1	304
9	5	27353	2	304
9	6	27347	8	305

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

Band	On Time (number received)	Late (number received)	Max Late Length (seconds)
0	35064	0	0
1	35060	0	0
2	35037	0	0
3	35034	0	0

Band	On Time (number received)	Late (number received)	Max Late Length (seconds)
9	35031	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	107770	3	126
2	1310473	20	12
3	1310442	27	12
4	1310503	14	12
7	99536	8	174
9	92261	0	0
10	99787	7	134
17	31532	0	0

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	5080	0	0
2	49692	0	0
3	47532	0	0
4	46777	0	0
5	46667	0	0
6	47367	0	0
7	46643	0	0
8	47669	1	178
9	46358	0	0
10	46882	0	0
11	46877	0	0
12	46609	0	0
13	48196	0	0
14	45896	0	0
15	46179	0	0
16	47041	0	0
17	47264	0	0
18	46188	0	0
19	45463	0	0
20	47457	0	0
21	49911	0	0
22	21625	0	0
23	46337	1	178

PRN	On Time (number received)	Late (number received)	Max Late Length (seconds)
24	48725	0	0
25	48738	0	0
26	47563	0	0
27	48372	0	0
28	35766	0	0
29	46770	0	0
30	46260	0	0
31	47165	0	0
32	46173	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	4172	0	0
2	41272	0	0
3	39420	0	0
4	38887	0	0
5	38891	1	205
6	39342	0	0
7	38782	1	169
8	39656	0	0
9	38523	0	0
10	38929	0	0
11	38987	0	0
12	38713	0	0
13	40252	0	0
14	38244	0	0
15	38473	0	0
16	39137	1	205
17	39249	0	0
18	38470	0	0
19	37784	0	0
20	39515	0	0
21	41529	0	0
22	18251	0	0
23	38520	0	0
24	40635	0	0
25	40459	0	0
26	39516	0	0
27	40292	0	0

PRN	On Time (number received)	Late (number received)	Max Late Length (seconds)
28	29789	0	0
29	38845	0	0
30	38597	0	0
31	39074	0	0
32	38304	0	0
131	76047	0	0
133	76217	1	211
135	76167	1	5308

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	27350	3	301
0	1	27351	2	305
0	2	27348	6	306
1	0	27354	4	302
1	1	27348	6	304
1	2	27345	8	306
1	3	27350	4	305
1	4	27347	6	304
2	0	27348	8	304
2	1	27352	8	312
2	2	27349	4	312
2	3	27351	5	305
2	4	27345	8	576
3	0	27349	5	304
3	1	27355	4	304
3	2	27347	8	305
9	0	27352	5	305
9	1	27351	3	304
9	2	27355	3	305
9	3	27350	4	305
9	4	27348	7	304
9	5	27347	9	305
9	6	27351	5	306

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

Band	On Time (number received)	Late (number received)	Max Late Length (seconds)
0	35841	0	0
1	35849	0	0
2	35837	0	0
3	35845	0	0
9	35856	0	0

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.

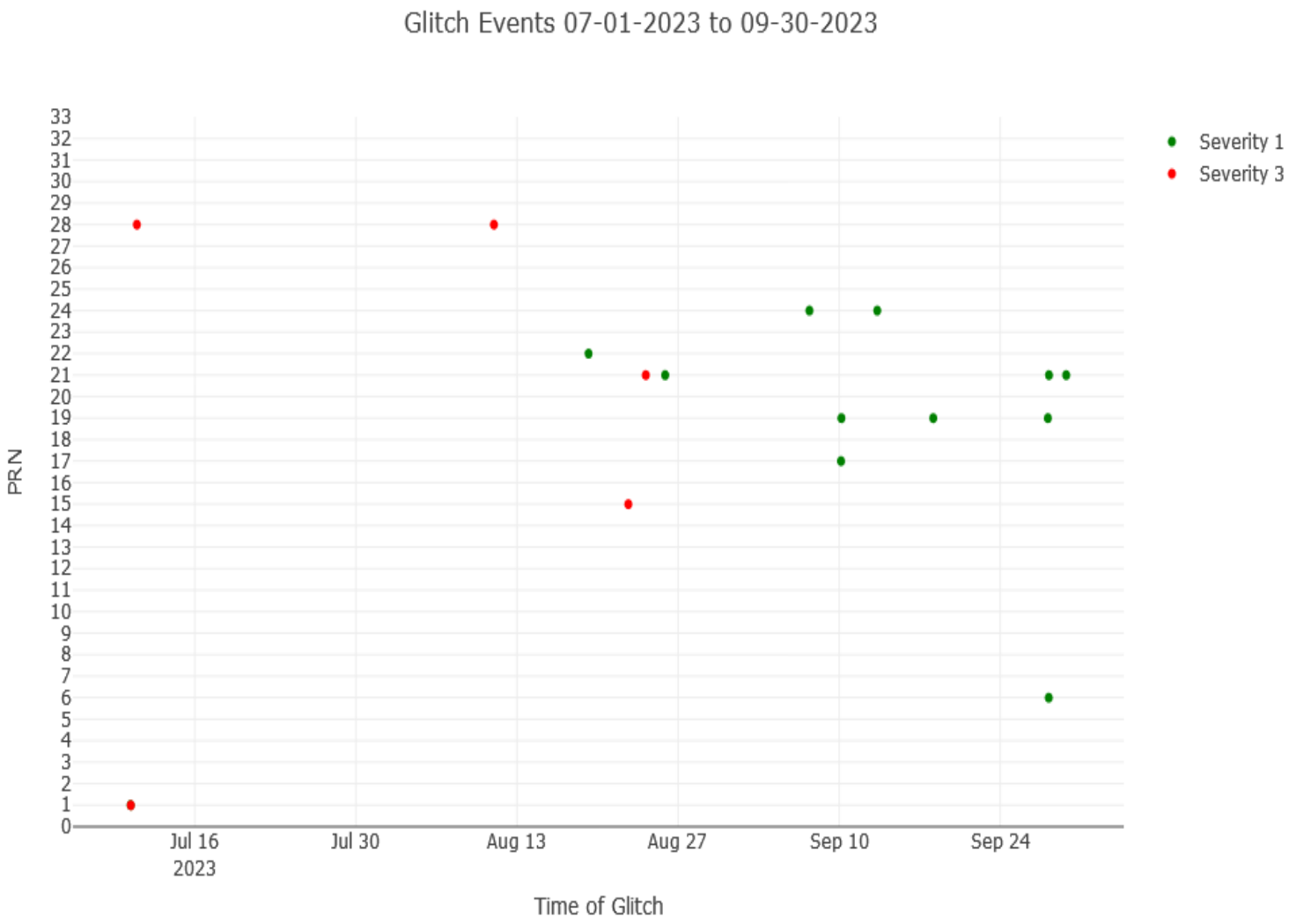

Figure 5-2 SV Glitch Trend

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	1.016	2.664	1.018	0.972	3.003	0.881	0.905	1.730	0.821	0.946	1.953	0.858	1.280	3.084	0.949	0.761	2.063	0.582
2	1.065	3.473	1.083	1.001	2.635	1.020	1.070	2.595	0.804	1.378	2.443	0.887	1.467	3.766	1.114	1.064	2.891	0.882
3	1.006	2.832	0.942	1.250	7.326	2.254	1.608	3.832	1.158	1.227	2.964	1.542	1.490	4.056	1.499	1.489	4.116	1.542
4	1.240	3.328	2.228	0.906	2.525	0.858	1.215	3.223	1.052	1.552	3.982	1.225	1.317	2.440	2.095	1.052	3.028	0.853
5	0.845	1.682	0.869	1.165	2.494	0.859	1.232	2.523	1.707	1.491	3.750	2.282	1.489	3.326	1.128	0.990	2.252	0.806
6	1.006	2.467	0.842	1.118	2.295	1.194	1.293	3.237	1.069	1.679	3.075	2.208	1.204	2.551	1.087	1.078	3.585	1.306
7	1.426	3.819	2.756	1.152	2.434	1.417	1.753	3.558	1.772	1.766	3.874	1.728	1.496	2.944	2.163	1.053	3.177	1.091
8	1.852	3.868	1.181	1.058	2.917	1.013	0.944	2.654	0.808	1.491	3.512	1.392	1.186	2.825	1.676	0.944	2.295	0.802
9	1.188	3.460	2.613	1.366	3.397	1.027	1.060	2.594	1.189	1.574	3.568	1.717	1.538	2.953	0.997	0.943	2.418	0.697
10	1.090	2.398	0.851	1.033	2.505	0.916	1.213	2.796	0.993	1.582	3.230	1.940	1.717	3.061	1.452	1.487	2.960	1.150
11	0.879	1.947	0.615	1.310	2.802	1.286	1.131	2.181	0.710	1.377	3.832	2.321	1.671	6.631	1.898	1.060	2.163	1.440
12	1.107	2.157	0.682	1.217	2.631	1.141	1.178	3.871	1.158	1.466	4.348	1.238	1.300	4.064	1.237	1.303	2.561	1.031
13	1.319	3.200	1.400	1.501	4.004	1.330	1.410	3.088	0.925	1.457	4.039	1.254	1.152	2.595	1.141	1.142	3.727	1.017
14	1.003	2.881	1.310	1.086	2.456	1.228	0.976	2.255	0.721	1.287	2.940	1.232	1.099	2.259	1.455	1.218	3.499	0.942
15	1.657	4.010	1.628	0.973	3.062	0.918	1.128	3.716	1.127	1.619	2.851	0.787	0.860	2.151	1.121	0.870	2.121	0.972
16	1.726	3.595	2.787	1.053	2.361	1.342	1.234	3.460	1.077	1.717	3.388	1.959	1.290	2.605	1.545	0.965	2.282	0.658
17	1.186	2.976	1.079	1.229	3.213	1.520	1.219	2.744	1.348	1.554	2.959	1.167	2.022	10.793	3.592	1.146	2.821	0.841
18	1.627	3.471	1.287	1.046	3.503	0.593	1.461	4.379	1.312	1.600	3.753	1.146	1.160	3.025	0.906	1.106	3.398	1.715
19	1.188	2.750	0.997	0.834	1.975	0.729	1.249	2.394	1.575	1.685	3.210	0.912	0.957	3.160	0.892	1.457	4.928	1.489
20	1.769	4.024	1.691	1.263	3.308	1.167	1.371	4.568	1.342	1.784	3.691	1.339	1.250	3.045	1.039	1.177	2.829	0.843
21	0.839	4.205	1.289	0.968	2.750	0.817	1.051	2.385	0.782	1.274	2.555	0.842	1.531	5.592	1.724	0.964	4.261	1.400
22	1.254	2.197	1.913	1.341	3.484	1.094	1.544	2.482	1.627	1.053	2.598	0.873	1.783	2.920	0.884	1.364	2.490	0.934
23	1.875	2.960	1.189	1.082	2.457	1.410	1.156	2.164	1.369	1.637	3.490	1.300	1.076	2.269	0.806	1.614	3.348	1.367
24	1.416	3.210	0.935	1.120	2.328	0.779	1.300	2.997	0.939	1.717	3.140	2.101	1.333	2.920	0.891	1.366	3.457	1.004
25	1.358	3.335	1.144	1.277	3.059	1.186	1.445	2.851	1.240	1.477	2.721	1.329	0.872	2.101	0.638	1.722	5.348	1.523
26	1.081	2.903	1.257	1.249	3.023	1.020	1.134	2.707	0.833	1.524	3.408	1.114	1.246	2.177	1.362	1.059	2.088	0.667
27	1.008	3.096	2.502	0.984	2.539	1.213	1.260	2.750	0.826	1.318	2.928	0.951	1.154	2.926	0.880	1.258	3.891	1.131
28	0.779	2.674	1.643	1.194	2.641	1.405	1.163	2.573	1.103	1.773	3.269	1.390	1.275	3.621	1.280	1.358	2.483	1.108
29	1.281	2.743	1.478	1.169	2.980	1.042	1.277	2.589	1.534	1.572	2.937	1.630	1.063	3.249	1.090	1.460	2.990	0.914
30	1.159	3.440	1.942	1.051	3.509	1.174	1.212	2.767	1.357	1.400	3.783	2.553	1.692	3.204	2.181	0.988	1.980	0.580
31	1.023	2.688	1.932	1.217	3.063	1.719	1.096	2.766	0.902	1.719	3.125	1.105	1.472	7.407	2.321	1.052	3.848	1.220
32	1.329	3.076	1.535	0.983	2.365	1.617	1.230	2.497	2.067	1.261	2.709	0.908	1.155	5.070	1.394	1.214	4.460	1.355
131	1.635	6.261	0.776	1.292	5.020	0.446	1.357	4.092	0.421	1.755	4.870	0.612	1.362	4.861	0.842	1.265	3.782	1.231
133	1.562	4.750	0.994	1.659	3.813	0.681	1.592	4.058	0.819	1.533	4.659	0.896	1.297	3.221	0.833	1.196	3.944	0.945
135	2.256	5.413	1.274	1.339	3.323	0.645	1.500	3.542	0.756	1.951	4.657	0.880	1.685	4.086	1.077	1.231	3.635	1.008

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	0.946	1.623	0.731	1.045	1.850	1.258	1.461	2.910	0.892	0.853	2.546	0.942	1.288	1.827	0.923	1.129	2.276	0.941
2	1.572	3.279	1.382	1.286	2.802	1.179	1.065	5.499	1.773	1.310	7.138	2.167	1.303	2.691	0.929	0.886	1.845	0.954
3	1.131	2.990	1.625	1.409	3.190	1.111	1.141	3.286	1.128	1.243	4.117	1.408	1.032	2.726	0.848	1.176	2.936	1.003
4	1.337	3.168	2.251	1.302	2.686	1.579	0.908	2.805	0.798	1.078	2.303	0.917	1.032	3.470	0.951	0.892	2.095	0.731
5	1.639	3.115	1.189	1.612	154.906	47.132	1.012	2.354	1.655	2.245	4.459	1.397	1.474	2.956	1.148	1.221	2.569	0.952
6	1.604	3.746	1.389	2.197	9.184	2.803	0.883	2.180	0.711	1.823	3.381	1.343	1.460	3.184	1.231	1.116	2.865	0.908
7	1.126	3.596	1.188	1.931	5.022	1.971	0.931	2.467	0.902	1.047	2.267	1.068	1.300	2.453	0.482	0.936	2.217	0.733
8	1.049	3.075	1.705	1.406	3.299	1.322	0.870	2.242	1.018	1.033	3.559	1.365	1.529	3.186	0.741	0.840	1.973	0.613
9	1.186	4.139	1.223	1.253	3.303	1.428	0.894	3.109	0.934	1.142	5.578	1.930	1.208	3.535	0.900	1.013	2.117	1.302
10	1.744	3.523	1.016	1.094	2.792	1.651	1.166	2.630	0.851	1.231	2.239	1.574	1.186	4.364	1.249	1.138	2.693	0.871
11	1.327	4.376	1.411	1.388	3.384	0.946	1.083	2.572	0.697	1.145	3.460	1.049	1.520	3.010	0.824	1.113	2.328	1.414
12	1.462	2.743	2.263	1.535	4.206	1.403	0.989	2.404	2.045	1.450	4.410	1.420	1.495	3.753	1.109	1.182	2.240	0.774
13	1.105	2.423	0.763	1.138	2.585	1.450	0.892	2.226	1.378	1.193	2.756	0.877	1.352	2.778	0.880	1.280	2.421	1.566
14	1.200	2.822	1.303	1.302	3.151	1.350	0.974	2.443	0.951	0.834	1.991	0.684	1.254	2.430	1.367	0.826	1.894	0.589
15	1.430	3.413	1.081	1.128	2.732	1.298	0.908	3.584	1.085	1.705	4.302	1.267	1.410	3.053	0.713	1.255	2.753	0.755
16	1.556	4.224	1.607	1.452	4.177	1.199	1.404	4.566	1.525	1.885	4.886	1.732	1.233	3.141	0.978	1.065	2.394	1.659
17	1.884	4.189	1.355	1.264	3.312	0.823	1.204	2.980	1.181	1.503	4.532	1.402	1.699	2.990	0.845	1.081	2.200	0.747
18	1.166	2.542	0.867	1.220	2.878	1.871	0.933	2.724	0.699	1.257	2.401	1.070	1.105	2.466	0.484	1.201	3.316	1.174
19	1.088	2.930	0.897	1.284	3.128	0.885	1.063	2.141	0.736	0.966	3.190	1.209	1.615	2.819	1.488	1.043	2.474	0.947
20	1.107	2.770	1.108	1.317	2.878	1.602	1.182	2.983	1.334	1.630	5.625	1.859	1.665	3.104	1.067	1.235	2.509	0.698
21	1.045	2.437	0.996	1.344	3.309	1.160	1.036	2.888	0.915	1.328	3.525	1.090	1.187	2.311	0.737	0.820	2.117	0.859
22	1.399	2.984	0.868	2.014	3.177	1.058	1.746	2.736	1.844	1.462	2.529	2.226	2.266	4.673	1.342	1.561	2.374	1.693
23	1.378	2.868	1.214	1.295	3.963	1.257	1.014	2.334	0.711	1.588	2.943	1.001	0.994	2.673	0.962	1.087	2.174	0.794
24	1.459	2.713	1.346	1.128	2.779	0.918	1.045	4.418	1.322	0.973	3.131	1.030	1.329	2.950	1.562	1.101	2.513	1.079
25	1.433	2.842	1.201	1.264	2.630	1.357	1.294	2.700	0.807	1.161	3.892	1.189	1.422	3.252	0.958	1.285	2.960	0.994
26	1.637	3.507	1.579	1.499	3.351	1.372	1.238	3.775	1.169	1.819	5.039	1.684	1.790	3.280	1.210	1.112	2.019	1.436
27	1.026	2.944	1.772	1.393	3.197	1.064	1.216	2.266	0.912	0.991	2.463	0.775	1.137	3.526	1.275	0.917	2.384	0.768
28	1.701	3.561	1.449	2.348	7.894	2.178	0.937	4.852	2.641	1.829	5.511	1.669	1.562	4.053	1.294	1.112	2.578	0.953
29	1.194	2.667	0.772	1.471	2.971	0.831	1.107	2.371	0.701	1.641	3.424	1.693	1.546	3.710	1.021	1.129	2.266	0.683
30	1.537	3.515	2.020	1.117	3.609	1.174	0.896	2.901	0.794	1.068	2.921	0.888	1.149	2.559	0.688	0.940	1.911	0.600
31	1.347	3.247	1.481	1.449	4.579	1.104	0.877	2.736	1.503	1.622	5.750	2.490	1.134	2.888	1.093	1.002	2.311	1.830
32	1.266	3.108	0.957	1.292	3.372	1.152	1.196	3.160	0.922	1.124	4.100	1.365	1.024	2.487	0.699	1.028	2.147	1.104
131	1.914	4.223	0.656	1.431	4.895	0.576	1.945	4.176	1.343	1.570	5.085	0.756	2.049	4.007	1.216	1.469	4.478	0.587
133	1.571	4.710	1.050	1.492	4.663	1.075	1.891	3.875	0.919	2.222	3.859	0.930	1.972	4.252	0.865	1.169	3.444	0.796
135	1.738	3.647	0.966	1.759	5.249	1.099	1.467	3.454	0.967	1.845	4.335	0.644	1.721	4.230	0.985	1.275	3.483	0.828

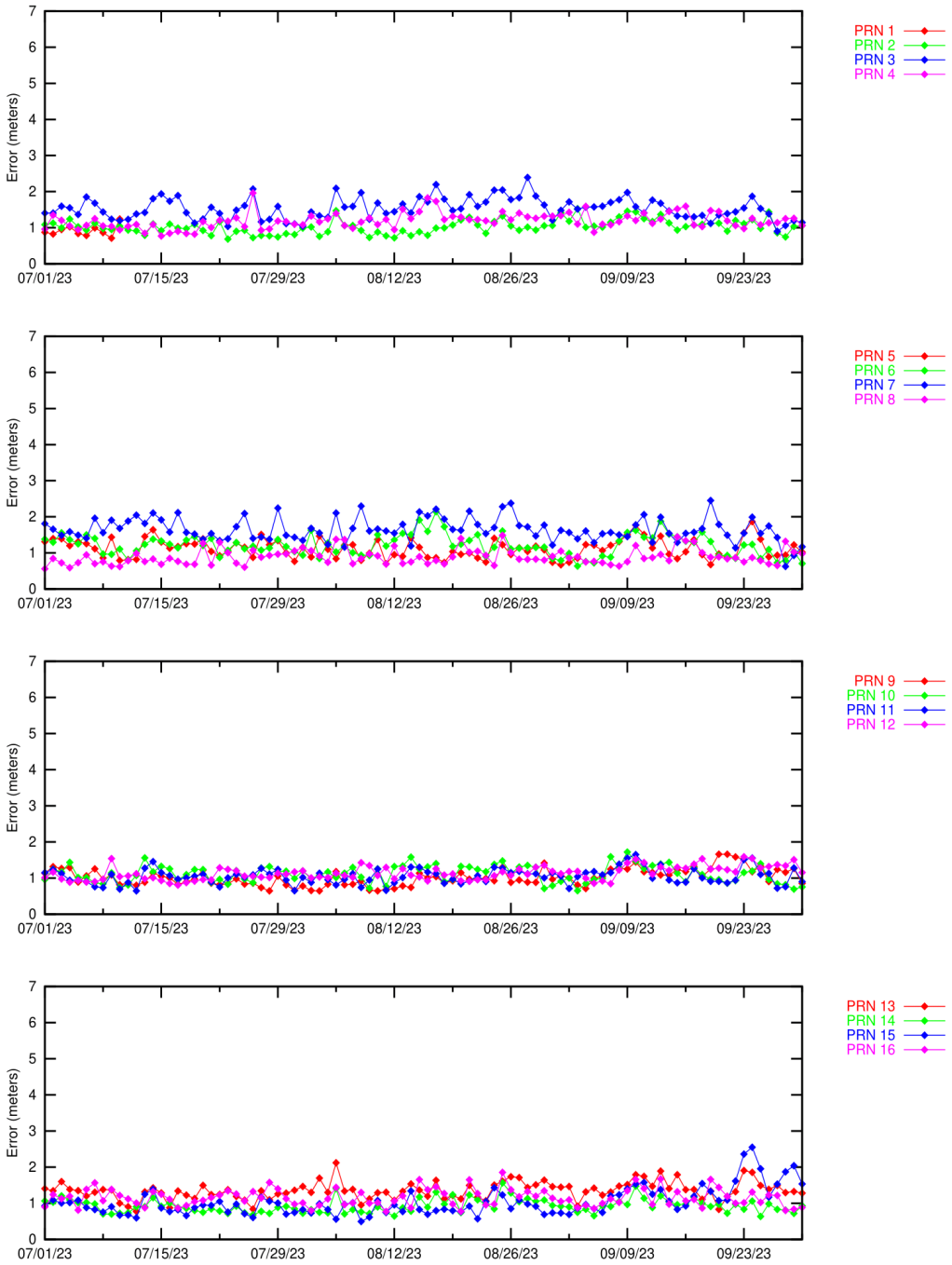

Figure 6-1 Range Error (PRN1–PRN16)—Washington, DC

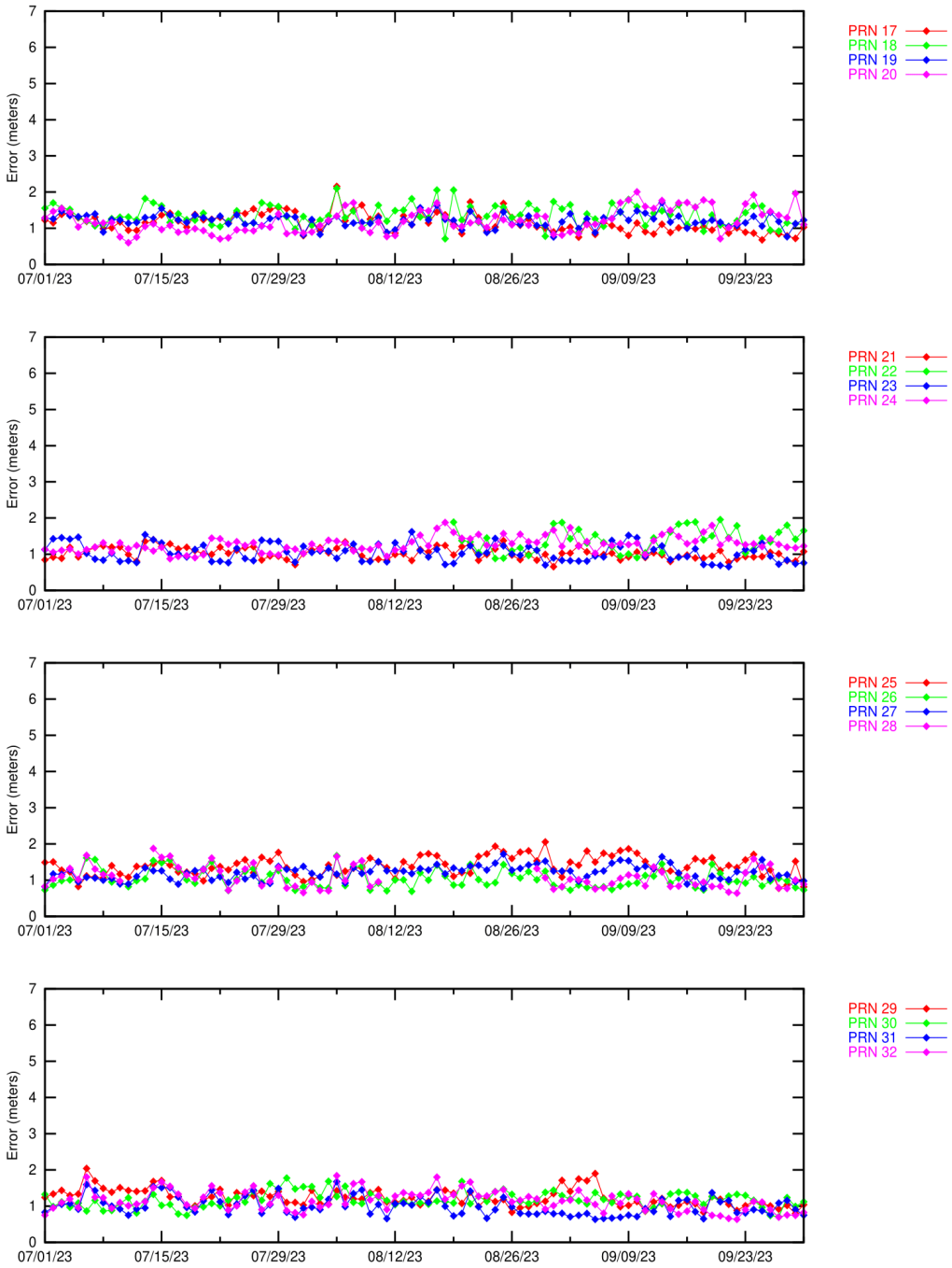

Figure 6-2 Range Error (PRN17–PRN32)—Washington, DC

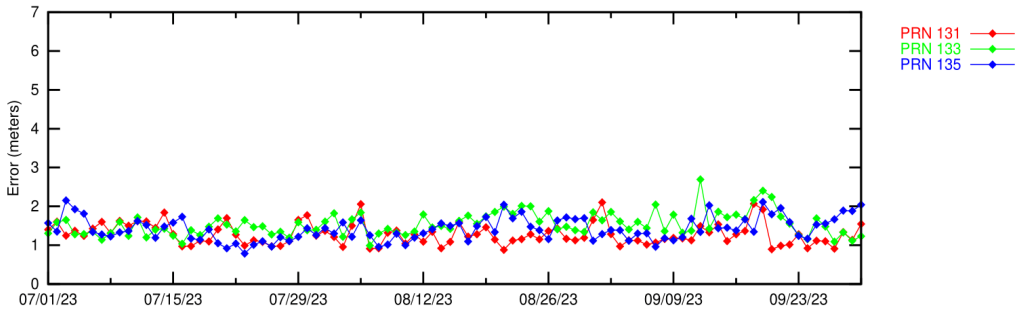

Figure 6-3 Range Error (PRN131, PRN133, and PRN138)—Washington, DC

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 value. 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	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	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
1	0.474	1.473	0.437	0.422	2.049	0.589	0.263	0.880	0.363	0.522	1.097	0.426	0.469	1.331	0.452	0.378	1.211	0.488
2	0.519	2.061	0.594	0.372	5.429	1.155	0.453	1.962	0.652	0.588	2.405	0.487	0.492	2.581	0.908	0.420	1.537	0.735
3	0.537	2.072	0.453	0.546	6.686	1.012	0.703	3.493	0.760	0.514	2.804	0.705	0.658	3.084	0.679	0.583	1.949	0.584
4	0.704	2.559	0.923	0.556	2.402	0.635	0.747	1.809	0.646	0.674	3.533	0.701	0.765	3.049	0.694	0.510	2.178	0.509
5	0.374	1.159	0.400	0.418	1.595	0.783	0.596	1.753	0.583	0.700	3.588	0.147	1.024	1.997	1.180	0.396	1.759	0.410
6	0.404	3.037	0.527	0.401	1.968	0.967	0.600	2.535	0.544	0.668	1.820	0.797	0.935	4.062	0.878	0.353	2.169	0.561
7	0.756	3.850	1.086	0.645	4.422	0.118	0.862	2.662	0.789	0.765	3.095	1.850	0.597	1.827	0.496	0.497	2.300	0.737
8	0.677	2.918	1.407	0.535	3.561	1.335	0.332	1.492	0.485	0.605	2.200	0.722	0.801	4.826	0.643	0.373	2.533	0.844
9	0.592	3.331	0.617	0.583	3.183	0.666	0.442	2.894	0.596	0.532	3.331	1.143	0.533	2.279	0.648	0.394	1.710	0.513
10	0.623	2.167	0.653	0.572	2.151	0.800	0.686	2.162	0.529	0.940	2.427	0.923	0.991	2.883	0.921	0.715	2.123	0.564
11	0.381	1.215	0.536	0.847	2.374	0.706	0.472	1.885	0.830	0.644	3.326	0.918	0.978	6.020	1.312	0.550	1.619	0.460
12	0.426	2.588	0.740	0.428	3.438	0.685	0.397	2.271	0.682	0.607	4.357	1.223	0.644	2.357	0.720	0.722	1.666	0.497
13	0.561	2.316	1.179	0.543	2.243	0.573	0.446	1.757	0.502	0.645	3.551	0.799	0.547	2.301	0.659	0.445	1.403	0.509
14	0.630	3.029	0.979	0.464	2.254	0.767	0.597	2.122	0.734	0.642	2.677	0.083	0.729	1.741	0.540	0.685	3.739	0.803
15	0.688	2.756	0.634	0.337	1.922	0.594	0.425	1.837	0.623	0.726	2.332	0.694	0.660	3.070	0.621	0.365	1.486	0.429
16	0.735	2.382	0.531	0.381	1.915	0.677	0.518	2.388	0.719	0.799	3.616	0.806	0.806	5.827	1.135	0.445	1.861	0.586
17	0.635	2.176	0.897	0.554	2.603	0.868	0.718	2.864	0.671	0.725	2.412	0.672	1.221	9.598	1.877	0.565	2.229	0.606
18	0.863	3.100	0.892	0.528	2.223	0.642	0.598	4.749	1.300	0.736	3.635	0.274	0.743	3.341	0.330	0.533	1.330	0.377
19	0.716	1.723	0.525	0.343	3.155	0.595	0.730	1.830	0.517	0.737	1.859	0.948	0.792	3.021	0.668	0.926	4.163	1.101
20	0.704	1.922	0.574	0.529	2.254	0.578	0.559	1.375	0.472	0.854	2.256	0.512	0.749	2.421	0.508	0.408	1.785	0.435
21	0.408	1.942	0.489	0.415	4.007	0.783	0.409	1.930	0.493	0.552	2.010	0.508	0.616	3.262	0.121	0.402	1.961	0.743
22	0.845	1.879	0.858	0.835	2.431	0.875	0.757	1.501	0.481	0.865	2.283	0.623	0.787	2.695	0.651	0.860	1.969	0.710
23	1.001	2.263	0.839	0.543	2.051	0.518	0.680	2.572	0.566	0.902	2.253	0.842	0.658	2.284	0.595	0.967	2.602	0.923
24	0.618	2.205	0.510	0.546	1.438	0.412	0.541	2.098	0.521	0.625	2.207	0.813	0.487	1.896	0.568	0.439	2.150	0.722
25	0.483	2.040	0.537	0.489	2.491	0.629	0.503	1.943	0.668	0.620	2.395	0.286	0.400	1.613	0.517	0.809	4.267	1.136
26	0.574	2.313	0.129	0.702	2.088	0.700	0.628	1.731	0.499	0.679	3.063	0.410	1.035	3.796	0.790	0.555	2.312	0.821
27	0.414	2.002	1.128	0.409	2.461	1.233	0.509	2.010	0.482	0.584	2.778	0.672	0.592	2.874	0.765	0.412	1.392	0.557
28	0.647	2.095	0.566	0.732	2.063	0.925	0.832	3.139	0.766	0.824	3.025	0.490	1.532	3.919	0.746	0.609	2.872	0.690
29	0.614	3.313	0.729	0.481	2.226	0.407	0.585	1.962	0.315	0.671	7.370	0.210	0.766	2.646	0.486	0.640	1.449	0.375
30	0.617	2.568	0.737	0.519	2.094	0.569	0.571	2.508	0.531	0.619	2.659	1.674	0.650	2.447	0.518	0.495	1.705	0.446
31	0.601	2.434	0.753	0.585	1.864	0.388	0.727	2.295	0.556	0.963	2.893	0.775	1.608	7.891	2.071	0.637	3.171	0.775
32	1.079	2.808	1.026	0.663	6.246	0.579	0.881	2.197	1.144	0.804	3.490	1.258	1.151	4.388	0.415	0.711	3.629	0.798

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	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	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
1	0.287	0.665	0.272	0.413	1.475	0.485	0.571	1.042	0.488	0.443	1.489	0.530	0.505	1.375	0.511	0.376	1.401	0.393
2	0.433	2.335	0.668	0.554	1.789	0.493	0.437	2.083	1.033	0.642	2.990	1.030	0.375	1.472	0.351	0.406	1.587	0.467
3	0.444	1.849	0.207	0.577	3.331	0.122	0.590	3.780	0.963	0.544	2.555	1.001	0.613	2.270	0.597	0.529	2.910	0.351
4	0.525	1.762	0.888	0.528	2.516	0.215	0.842	2.357	0.512	0.598	1.780	0.736	0.562	4.041	0.389	0.519	2.701	0.661
5	0.799	2.501	0.456	0.845	2.890	0.569	0.533	2.595	0.627	1.057	2.859	1.144	0.518	1.554	0.507	0.786	2.518	0.552
6	0.707	2.807	0.684	1.091	8.061	1.541	0.635	2.866	0.653	0.907	4.024	1.133	0.589	2.197	0.437	0.551	2.175	0.527
7	0.540	2.739	0.863	1.057	3.270	1.046	0.511	1.676	0.491	0.585	2.081	0.562	0.624	1.974	0.555	0.596	2.216	0.272
8	0.436	1.280	0.290	0.624	2.489	0.717	0.452	1.212	0.480	0.447	2.137	0.629	0.560	1.418	0.441	0.710	4.534	1.004
9	0.573	2.768	0.790	0.632	2.854	0.339	0.533	2.330	0.638	0.545	3.405	1.066	0.533	1.868	0.435	0.440	2.465	0.359
10	0.965	2.674	1.007	0.629	2.087	0.480	0.559	2.345	0.518	0.595	2.285	0.752	0.666	2.910	0.692	0.554	2.627	0.600
11	0.611	2.791	0.644	0.712	1.948	0.760	0.534	2.683	0.614	0.655	2.650	0.848	0.508	1.548	0.402	0.502	2.282	0.552
12	0.599	2.655	0.699	0.677	2.815	0.853	0.439	1.419	0.692	0.612	2.200	0.663	0.502	1.910	0.444	0.458	2.050	0.441
13	0.441	1.638	0.536	0.450	2.194	0.713	0.462	1.764	0.828	0.468	1.465	0.691	0.536	2.594	0.752	0.456	1.777	0.541
14	0.626	1.736	0.829	0.737	3.597	0.999	0.513	1.572	0.436	0.490	1.739	0.495	0.544	1.299	0.330	0.386	2.739	0.958
15	0.464	2.330	0.781	0.577	1.869	0.599	0.455	2.053	0.609	0.894	2.885	1.426	0.572	2.951	0.677	0.573	2.567	0.668
16	0.402	3.240	0.750	0.566	6.876	1.294	0.514	2.370	0.848	1.129	3.440	1.378	0.572	1.821	0.454	0.625	2.541	0.214
17	0.918	2.413	0.832	0.722	10.218	1.752	0.630	2.523	0.536	1.032	2.148	1.251	0.692	2.284	0.559	0.507	2.346	0.268
18	0.602	1.784	0.527	0.767	1.710	0.611	0.509	1.633	0.417	0.543	1.436	0.796	0.673	2.592	0.779	0.489	1.672	0.160
19	0.564	1.866	0.550	0.642	3.133	0.385	0.545	3.256	0.704	0.626	3.149	0.726	0.644	1.644	0.621	0.483	2.780	0.452
20	0.459	2.575	0.204	0.536	2.278	0.550	0.621	2.415	0.606	0.928	3.334	1.120	0.553	1.843	0.463	0.678	2.506	0.526
21	0.390	1.681	0.850	0.482	1.919	0.581	0.385	1.213	0.790	0.506	1.732	0.650	0.404	1.975	0.799	0.478	2.026	0.630
22	0.804	1.769	0.797	1.047	2.651	0.916	1.045	2.993	0.261	0.740	1.764	0.577	0.718	1.505	0.441	0.928	1.887	0.513
23	0.671	1.877	0.676	0.876	4.031	0.839	0.541	1.593	0.511	0.893	2.245	0.874	0.663	2.172	0.661	0.568	2.130	0.523
24	0.484	1.167	0.781	0.601	1.849	0.467	0.426	1.684	0.537	0.437	1.614	0.578	0.623	2.329	0.844	0.505	1.515	0.378
25	0.508	2.149	0.574	0.585	2.499	0.482	0.535	1.966	0.585	0.474	1.824	0.699	0.593	2.279	0.646	0.389	1.482	0.188
26	0.588	2.184	0.674	0.633	3.394	0.652	0.423	2.246	0.634	0.738	3.085	1.202	0.753	1.715	0.638	0.679	2.156	0.491
27	0.393	1.514	0.909	0.524	2.587	0.414	0.428	1.476	0.770	0.368	1.136	0.506	0.431	1.432	0.424	0.436	2.335	0.668
28	0.990	2.783	0.955	1.253	7.654	0.632	0.779	2.127	1.047	1.113	4.968	1.663	0.854	2.953	0.538	0.612	2.674	0.607
29	0.534	3.012	0.674	0.760	3.372	0.641	0.532	1.502	0.419	0.735	2.633	0.841	0.535	1.948	0.361	0.592	2.754	0.241
30	0.763	2.708	0.715	0.608	1.833	0.529	0.513	2.337	0.584	0.591	1.504	0.396	0.580	1.668	0.487	0.463	2.544	0.535
31	0.704	3.443	0.352	0.913	5.728	0.548	0.716	2.728	0.770	1.160	4.639	1.589	0.722	2.343	0.700	0.809	2.459	0.268
32	0.750	1.900	0.604	0.763	7.739	0.666	0.908	2.705	0.763	0.847	2.626	0.663	0.843	2.320	0.583	0.828	2.394	0.870

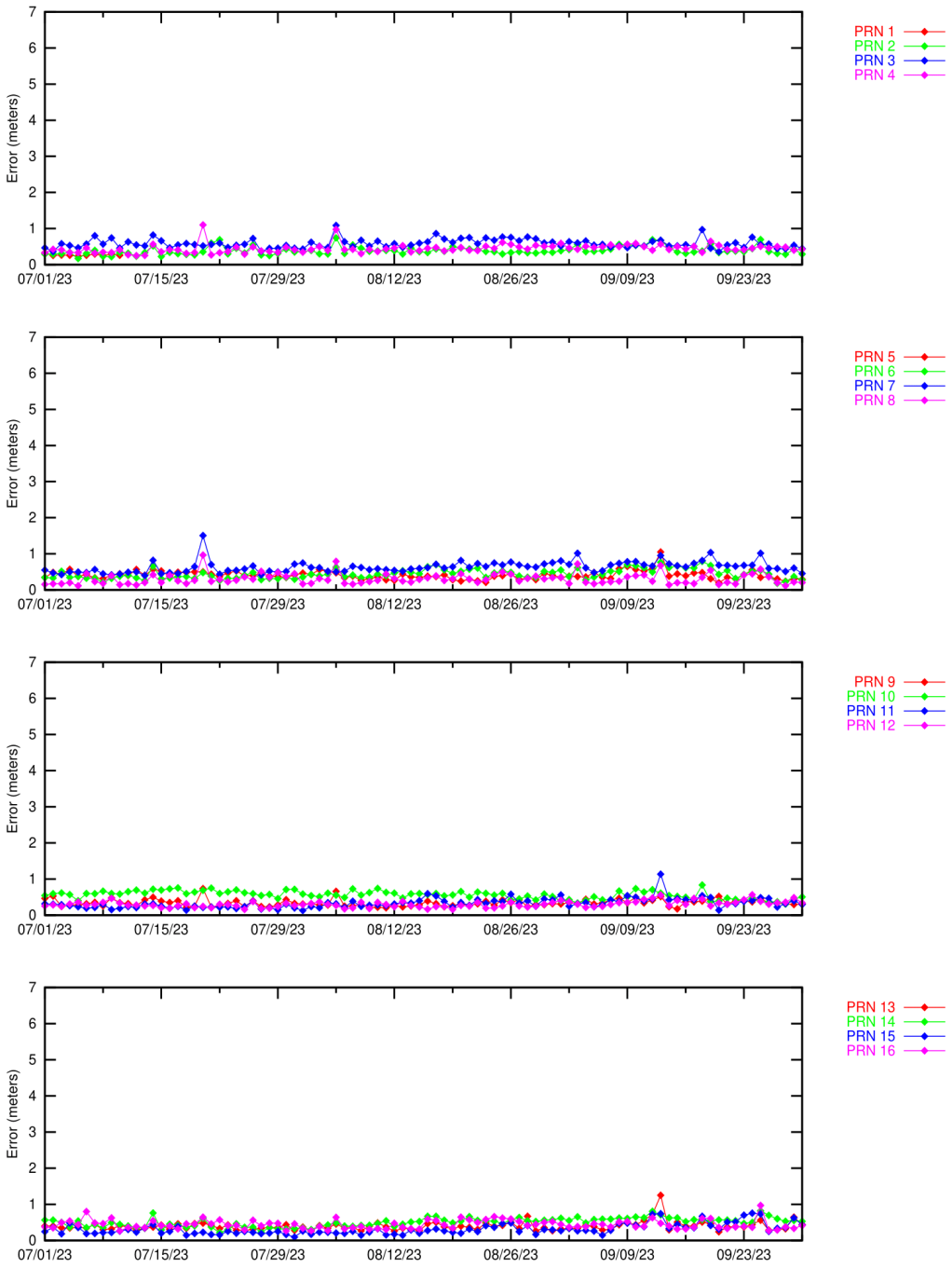

Figure 6-4 Ionospheric Error (PRN1–PRN16)—Washington, DC

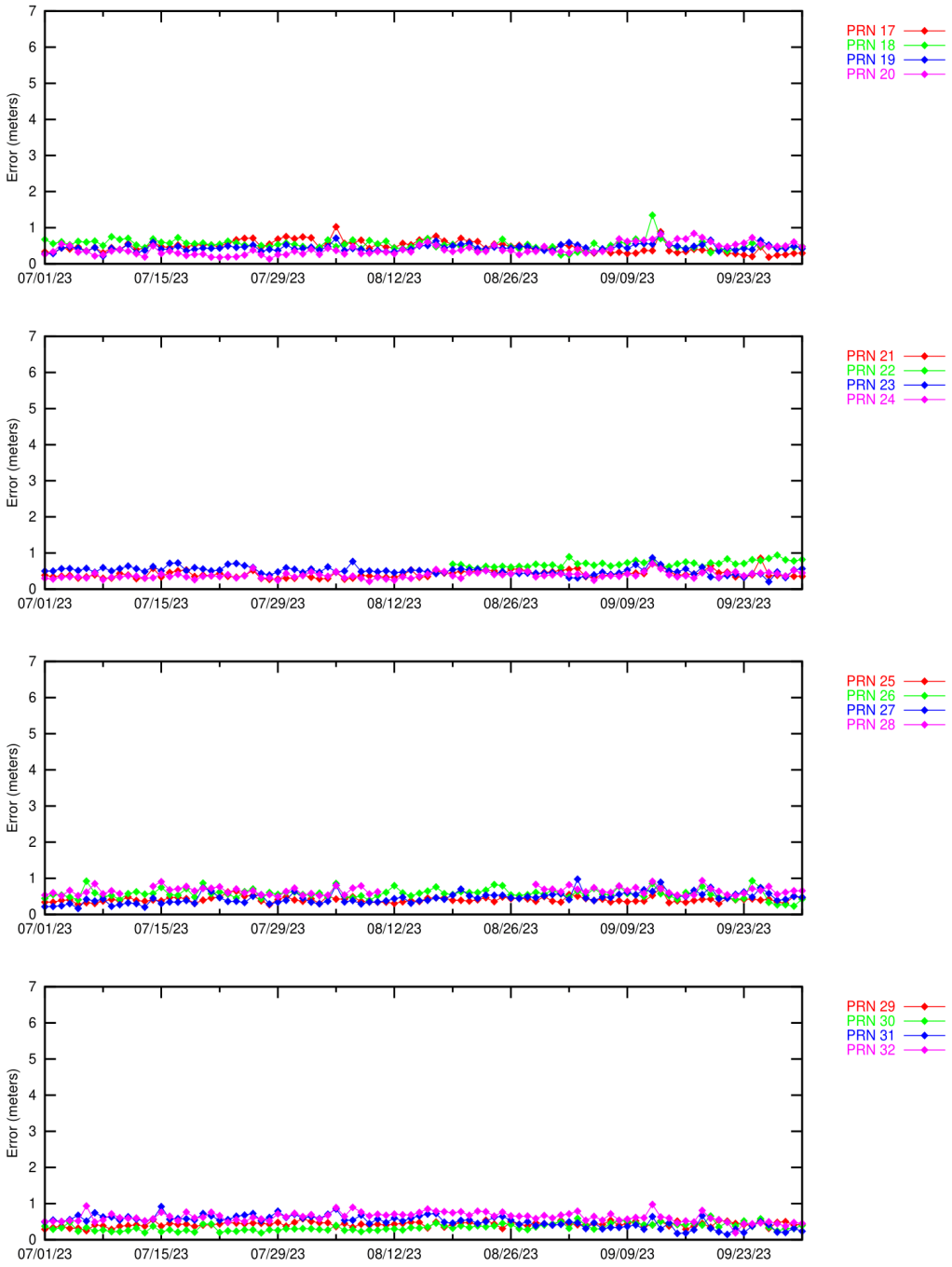

Figure 6-5 Ionospheric Error (PRN17–PRN32)—Washington, DC

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.

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 (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	99.30	0.09	0.57	0.05
SM9 131	S15	99.65	0.05	0.28	0.03
SM9 131	G30	99.54	0.01	0.00	0.45
S15 133	SM9	99.29	0.09	0.57	0.05
S15 133	S15	99.64	0.05	0.28	0.03
S15 133	G30	99.54	0.01	0.00	0.45
G30 135	SM9	99.29	0.09	0.57	0.05
G30 135	S15	99.64	0.05	0.28	0.03
G30 135	G30	99.54	0.01	0.00	0.45

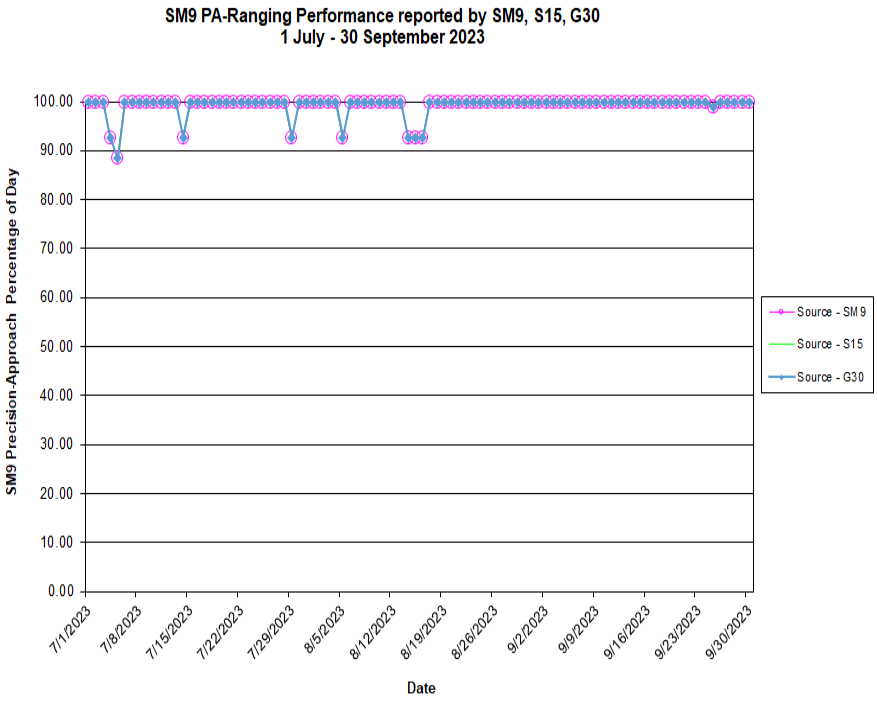

Figure 7-1 Daily PA SM9 GEO Ranging Availability Trend

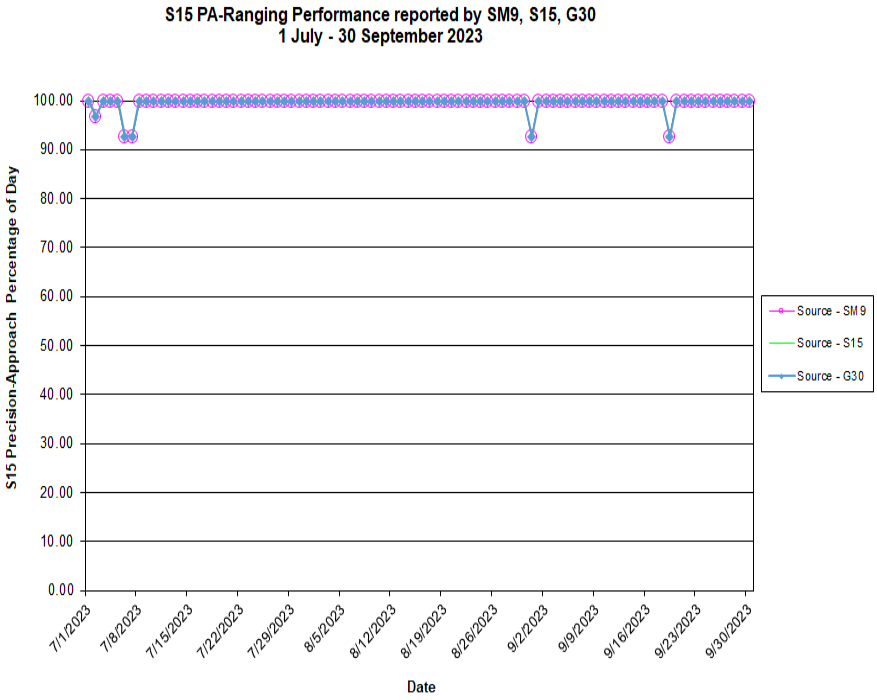

Figure 7-2 Daily PA S15 GEO Ranging Availability Trend

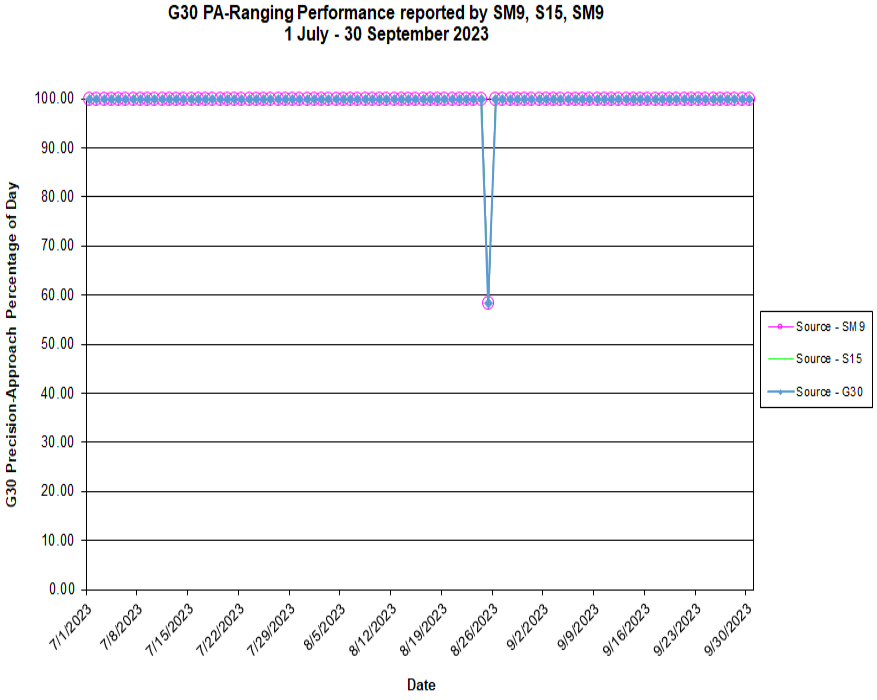

Figure 7-3 Daily PA G30 GEO Ranging Availability Trend

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-229D. The WAAS LPV service is available for a user when the VPL is less than or equal to the VAL of 50 meters and the HPL is less than or equal to the HAL of 40 meters. If both conditions are met, WAAS LPV service is available at that airport. Consequently, if either one of the conditions are not met, the WAAS LPV service outage and its duration is recorded.

When the LPV service becomes unavailable, it is not considered available again until protection levels are below or equal to alert limits for at least 15 minutes. Although this will minimally reduce LPV service availability, it substantially reduces the number of service outages and prevents excessive switching in and out of service availability. Similar service analyses are computed for the LP and LPV200 services in accordance with HAL and VAL shown in Table 1-1. Table 8-1 shows the WAAS LPV service availability and outages at selected airports in the 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 U.S. 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	2	99.934	2	99.890	5	99.775
CEA3	OLDS-DIDSBURY	AB	LPV	0	100	0	100	2	99.981
CEH3	PONOKA (LABRIE FIELD)	AB	LPV	0	100	0	100	5	99.917
CEH6	PROVOST	AB	LPV	0	100	0	100	5	99.964
CEV3	VEGREVILLE	AB	LPV	0	100	1	99.999	4	99.887
CYBW	SPRINGBANK	AB	LPV	0	100	0	100	2	99.986
CYEG	EDMONTON INTL	AB	LPV200	0	100	0	100	4	99.894
CYLL	LLOYDMINSTER	AB	LPV	0	100	1	99.999	7	99.913
CYMM	FORT MCMURRAY	AB	LPV200	1	99.947	3	99.903	4	99.781
CYOD	GROUP CAPTAIN R.W. MCNAIR	AB	LP	1	99.999	3	99.986	8	99.858
CYPY	FORT CHIPEWYAN	AB	LPV	3	99.920	4	99.855	8	99.737
CYQF	RED DEER REGIONAL	AB	LPV	0	100	0	100	4	99.961
CYXH	MEDICINE HAT	AB	LPV	0	100	0	100	0	100
CYYC	YYC CALGARY INTL	AB	LPV200	0	100	0	100	2	99.986
CZVL	VILLENEUVE	AB	LPV	0	100	0	100	4	99.892
CEB5	FAIRVIEW	AB	LPV	2	99.929	2	99.881	4	99.809
CEC4	JASPER-HINTON	AB	LP	0	100	0	100	5	99.865
CEH5	RED EARTH CREEK	AB	LP	3	99.935	2	99.885	4	99.792
CEN3	THREE HILLS	AB	LPV	0	100	0	100	2	99.982
CEN5	COLD LAKE REGIONAL	AB	LPV	1	99.998	3	99.985	8	99.853
CEQ3	CAMROSE	AB	LPV	0	100	0	100	4	99.894
CET2	CONKLIN (LEISMER)	AB	LPV	1	99.975	4	99.937	6	99.800
CEW3	ST. PAUL	AB	LPV	0	100	2	99.997	7	99.878
CEX3	WETASKIWIN REGIONAL	AB	LPV	0	100	0	100	4	99.896
CEZ3	COOKING LAKE	AB	LPV	0	100	0	100	4	99.893
CFB6	JOSEPHBURG	AB	LPV	0	100	2	99.998	4	99.891
CFM4	DONNELLY	AB	LPV	3	99.949	4	99.918	4	99.808
CYBF	BONNYVILLE	AB	LPV	1	99.999	3	99.987	8	99.870
CYFI	FIREBAG	AB	LPV	1	99.937	2	99.890	5	99.775
CYLB	LAC LA BICHE	AB	LPV	2	99.990	3	99.969	7	99.858
CYNR	HORIZON	AB	LPV	2	99.934	2	99.890	5	99.769
CYOJ	HIGH LEVEL	AB	LPV	3	99.888	2	99.836	4	99.769
CYOP	RAINBOW LAKE	AB	LPV	2	99.872	1	99.846	4	99.755
CYPE	PEACE RIVER	AB	LPV	2	99.934	2	99.881	4	99.803
CYQL	LETHBRIDGE	AB	LPV200	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
CYQU	GRANDE PRAIRIE	AB	LPV200	3	99.965	4	99.933	2	99.817
CYWM	ATHABASCA	AB	LPV	1	99.999	5	99.973	5	99.863
CYZU	WHITECOURT	AB	LPV	0	100	2	99.987	4	99.866
CZPC	PINCHER CREEK	AB	LPV	0	100	0	100	0	100
2C7	SHAKTOOLIK	AK	LPV	2	99.895	2	99.885	4	99.813
6A8	ALLAKAKET	AK	LP	1	99.858	1	99.833	5	99.812
7KA	TATITLEK	AK	LP	2	99.866	2	99.834	2	99.812
9A3	CHUATHBALUK	AK	LPV	2	99.925	2	99.920	1	99.833
ADQ	KODIAK	AK	LPV	3	99.966	2	99.938	3	99.877
AFM	AMBLER	AK	LPV	1	99.863	1	99.836	6	99.800
AKN	KING SALMON	AK	LPV	2	99.973	1	99.942	3	99.907
ANC	TED STEVENS ANCHORAGE INTL	AK	LPV200	2	99.892	2	99.858	2	99.817
ANI	ANIAK	AK	LPV	2	99.926	2	99.921	1	99.844
AQH	QUINHAGAK	AK	LPV	1	99.991	1	99.947	5	99.898
AQT	NUIQSUT	AK	LPV	2	99.817	2	99.806	18	99.653
ATK	ATQASUK EDWARD BURNELL SR MEML	AK	LPV	2	99.823	3	99.809	31	99.534
AWI	WAINWRIGHT	AK	LPV	2	99.826	3	99.816	47	99.389
BET	BETHEL	AK	LPV200	1	99.968	1	99.943	5	99.883
BRW	WILEY POST-WILL ROGERS MEML	AK	LPV	2	99.809	3	99.794	64	99.226
BVK	BUCKLAND	AK	LPV	2	99.884	1	99.859	5	99.801
CDB	COLD BAY	AK	LPV200	0	100	0	100	14	99.839
CDV	MERLE K (MUDHOLE) SMITH	AK	LPV	1	99.847	1	99.826	2	99.824
CEM	CENTRAL	AK	LP	1	99.831	1	99.822	3	99.810
CLP	CLARKS POINT	AK	LPV	1	99.990	1	99.942	4	99.906
CXF	COLDFOOT	AK	LP	1	99.855	1	99.824	7	99.797
D76	ROBERT/BOB/CURTIS MEML	AK	LPV	2	99.875	1	99.858	7	99.786
DEE	DEERING	AK	LPV	2	99.886	2	99.875	6	99.779
DLG	DILLINGHAM	AK	LPV	3	99.989	1	99.942	4	99.899
ELI	ELIM	AK	LPV	2	99.896	2	99.888	5	99.806
ENA	KENAI MUNICIPAL	AK	LPV200	2	99.906	2	99.893	2	99.829
ENM	EMMONAK	AK	LPV	1	99.963	1	99.939	5	99.813
FAI	FAIRBANKS INTL	AK	LPV200	2	99.849	1	99.822	1	99.813
FYU	FORT YUKON	AK	LPV	1	99.830	1	99.822	4	99.798
GAL	EDWARD G PITKA SR	AK	LPV	2	99.886	1	99.837	2	99.817
GAM	GAMBELL	AK	LPV	1	99.942	2	99.912	45	99.526
GKN	GULKANA	AK	LPV	1	99.851	1	99.822	1	99.812
GST	GUSTAVUS	AK	LP	1	99.843	1	99.824	1	99.815

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
HLA	HUSLIA	AK	LPV	2	99.884	1	99.833	2	99.816
HOM	HOMER	AK	LPV	2	99.906	2	99.903	1	99.829
HPB	HOOPER BAY	AK	LP	1	99.964	1	99.939	10	99.840
HRR	HEALY RIVER	AK	LP	1	99.860	1	99.822	1	99.815
IAN	BOB BAKER MEML	AK	LPV	1	99.862	1	99.837	6	99.792
IIK	KIPNUK	AK	LPV	1	99.987	1	99.947	5	99.890
ILI	ILIAMNA	AK	LPV	3	99.937	3	99.932	2	99.868
IWK	WALES	AK	LP	2	99.890	2	99.880	22	99.695
IYS	WASILLA	AK	LPV	2	99.881	1	99.841	1	99.817
KAL	KALTAG	AK	LPV	2	99.890	2	99.855	2	99.818
KGX	GRAYLING	AK	LP	1	99.907	1	99.897	1	99.822
KKA	KOYUK ALFRED ADAMS	AK	LP	2	99.888	2	99.884	4	99.806
KSM	ST MARY'S	AK	LPV200	1	99.964	1	99.939	4	99.823
KTN	KETCHIKAN INTL	AK	LPV	2	99.914	2	99.840	2	99.809
KTS	BREVIG MISSION	AK	LPV	2	99.890	2	99.886	12	99.733
KWT	KWETHLUK	AK	LPV	1	99.968	1	99.943	5	99.884
KYU	KOYUKUK	AK	LPV	2	99.887	1	99.837	2	99.817
MCG	MC GRATH	AK	LP	2	99.897	1	99.840	1	99.818
MDM	MARSHALL DON HUNTER SR	AK	LP	2	99.963	2	99.937	3	99.840
MDO	MIDDLETON ISLAND	AK	LP	2	99.884	2	99.862	2	99.819
MLY	MANLEY HOT SPRINGS	AK	LP	1	99.858	1	99.833	1	99.816
MOU	MOUNTAIN VILLAGE	AK	LPV200	1	99.963	1	99.939	4	99.818
MYU	MEKORYUK	AK	LPV	1	99.985	2	99.965	10	99.859
OME	NOME	AK	LPV	2	99.903	2	99.897	8	99.762
OOK	TOKSOOK BAY	AK	LP	1	99.983	1	99.944	7	99.878
ORT	NORTHWAY	AK	LP	1	99.835	1	99.819	1	99.810
OTZ	RALPH WIEN MEML	AK	LPV	2	99.877	1	99.858	8	99.772
PAQ	WARREN 'BUD' WOODS PALMER MUNICIPAL	AK	LP	2	99.881	1	99.826	1	99.816
PBV	ST GEORGE	AK	LPV	0	100	2	99.996	68	99.325
PHO	POINT HOPE	AK	LPV	2	99.871	3	99.861	54	99.538
PTU	PLATINUM	AK	LPV	1	99.994	1	99.948	6	99.908
RBY	RUBY	AK	LPV	2	99.885	1	99.833	2	99.818
RSH	RUSSIAN MISSION	AK	LP	2	99.942	2	99.935	2	99.843
SCC	DEADHORSE	AK	LPV200	2	99.817	2	99.801	16	99.663
SCM	SCAMMON BAY	AK	LP	1	99.963	1	99.939	9	99.836
SDP	SAND POINT	AK	LPV	0	100	0	100	11	99.878
SHG	SHUNGNAK	AK	LP	1	99.864	1	99.833	6	99.805

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
SHX	SHAGELUK	AK	LPV	1	99.907	1	99.895	1	99.822
SIT	SITKA ROCKY GUTIERREZ	AK	LP	1	99.846	1	99.824	2	99.816
SLQ	SLEETMUTE	AK	LP	1	99.906	1	99.895	1	99.821
SMK	ST MICHAEL	AK	LPV	1	99.909	1	99.902	3	99.815
SXQ	SOLDOTNA	AK	LP	2	99.906	2	99.903	2	99.828
TER	TELLER	AK	LPV200	2	99.890	2	99.886	12	99.740
TKA	TALKEETNA	AK	LPV	2	99.882	1	99.833	1	99.817
TOG	TOGIAK	AK	LP	1	99.994	1	99.945	5	99.918
WLK	SELAWIK	AK	LPV	1	99.862	1	99.837	5	99.805
WMO	WHITE MOUNTAIN	AK	LPV	2	99.895	2	99.888	5	99.787
WNA	NAPAKIAK	AK	LPV	1	99.968	1	99.943	5	99.893
WSN	SOUTH NAKNEK NR 2	AK	LPV	2	99.976	1	99.942	3	99.906
WTK	NOATAK	AK	LPV	1	99.862	1	99.858	14	99.735
YAK	YAKUTAT	AK	LPV200	1	99.837	1	99.822	1	99.809
02A	CHILTON COUNTY	AL	LP	0	100	0	100	0	100
06A	MOTON FLD MUNICIPAL	AL	LPV	0	100	0	100	1	99.998
09A	BUTLER/CHOCTAW COUNTY	AL	LPV	0	100	0	100	0	100
0J6	HEADLAND MUNICIPAL	AL	LPV	0	100	0	100	1	99.990
0R1	ATMORE MUNICIPAL	AL	LPV	0	100	0	100	1	99.997
11A	CLAYTON MUNICIPAL	AL	LPV	0	100	0	100	1	99.997
12J	BREWTON MUNICIPAL	AL	LPV	0	100	0	100	1	99.992
1A9	PRATTVILLE - GROUBY FLD	AL	LPV	0	100	0	100	0	100
1M4	POSEY FLD	AL	LPV	0	100	0	100	0	100
1R8	BAY MINETTE MUNICIPAL	AL	LPV	0	100	0	100	1	99.998
2R5	ST ELMO	AL	LPV	0	100	0	100	1	99.997
33J	GENEVA MUNICIPAL	AL	LP	0	100	0	100	1	99.990
3M8	NORTH PICKENS	AL	LP	0	100	0	100	0	100
4A9	ISBELL FLD	AL	LPV	0	100	0	100	0	100
5R1	ROY WILCOX	AL	LP	0	100	0	100	0	100
5R4	FOLEY MUNICIPAL	AL	LPV	0	100	0	100	1	99.991
71J	OZARK/BLACKWELL FLD	AL	LPV	0	100	0	100	1	99.991
79J	SOUTH ALABAMA RGNL AT BILL BEN	AL	LPV	0	100	0	100	1	99.992
8A0	ALBERTVILLE RGNL/THOMAS J BRUM	AL	LPV	0	100	0	100	0	100
8A1	GUNTERSVILLE MUNICIPAL/JOE STARNES	AL	LPV	0	100	0	100	0	100
9A4	COURTLAND	AL	LPV200	0	100	0	100	0	100
A08	VAIDEN FLD	AL	LPV	0	100	0	100	0	100
ALX	THOMAS C RUSSELL FLD	AL	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
ANB	ANNISTON RGNL	AL	LPV	0	100	0	100	0	100
ASN	TALLADEGA MUNICIPAL	AL	LPV200	0	100	0	100	0	100
AUO	AUBURN UNIVERSITY RGNL	AL	LPV200	0	100	0	100	1	99.998
BFM	MOBILE DOWNTOWN	AL	LPV200	0	100	0	100	1	99.997
BHM	BIRMINGHAM-SHUTTLESWORTH INTL	AL	LPV200	0	100	0	100	0	100
CMD	CULLMAN RGNL-FOLSOM FLD	AL	LPV	0	100	0	100	0	100
CQF	H L SONNY CALLAHAN	AL	LPV200	0	100	0	100	1	99.994
DCU	PRYOR FLD RGNL	AL	LPV200	0	100	0	100	0	100
DHN	DOTHAN RGNL	AL	LPV200	0	100	0	100	1	99.991
DYA	DEMOPOLIS RGNL	AL	LPV	0	100	0	100	0	100
EDN	ENTERPRISE MUNICIPAL	AL	LPV	0	100	0	100	1	99.991
EET	SHELBY COUNTY	AL	LPV	0	100	0	100	0	100
EKY	BESSEMER	AL	LPV200	0	100	0	100	0	100
EUF	WEEDON FLD	AL	LPV	0	100	0	100	1	99.997
GAD	NORTHEAST ALABAMA RGNL	AL	LPV200	0	100	0	100	0	100
GZH	EVERGREEN RGNL/MIDDLETON FLD	AL	LP	0	100	0	100	1	99.998
HAB	MARION COUNTY-RANKIN FITE	AL	LPV	0	100	0	100	0	100
HSV	HUNTSVILLE INTL-CARL T JONES F	AL	LPV200	0	100	0	100	0	100
JFX	WALKER COUNTY-BEVILL FLD	AL	LPV	0	100	0	100	0	100
JKA	GULF SHORES INTL/JACK EDWARDS	AL	LPV200	0	100	0	100	1	99.989
M95	RICHARD ARTHUR FLD	AL	LPV	0	100	0	100	0	100
MDQ	HUNTSVILLE EXEC TOM SHARP JR F	AL	LPV200	0	100	0	100	0	100
MGM	MONTGOMERY RGNL (DANNELLY FLD)	AL	LPV200	0	100	0	100	0	100
MOB	MOBILE RGNL	AL	LPV200	0	100	0	100	1	99.998
MSL	NORTHWEST ALABAMA RGNL	AL	LPV200	0	100	0	100	0	100
PLR	ST CLAIR COUNTY	AL	LPV	0	100	0	100	0	100
PYP	CENTRE-PIEDMONT-CHEROKEE COUNT	AL	LPV	0	100	0	100	0	100
SCD	MERKEL FLD SYLACAUGA MUNICIPAL	AL	LPV	0	100	0	100	0	100
SEM	CRAIG FLD	AL	LPV200	0	100	0	100	0	100
TCL	TUSCALOOSA NTL	AL	LPV	0	100	0	100	0	100
TOI	TROY MUNICIPAL AT N KENNETH CAMPBEL	AL	LPV	0	100	0	100	1	99.998
0M0	BILLY FREE MUNICIPAL	AR	LPV	0	100	0	100	1	99.994
42A	MELBOURNE MUNICIPAL - JOHN E MILLER	AR	LP	0	100	0	100	1	99.997
4A5	SEARCY COUNTY	AR	LPV	0	100	0	100	1	99.995
4M1	CARROLL COUNTY	AR	LP	0	100	0	100	1	99.995
4M3	CARLISLE MUNICIPAL	AR	LPV	0	100	0	100	1	99.995
6M7	MARIANNA/LEE COUNTY-STEVE EDWA	AR	LPV	0	100	0	100	1	99.997

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
7M1	MC GEHEE MUNICIPAL	AR	LP	0	100	0	100	1	99.994
9M8	SHERIDAN-GRANT COUNTY RGNL	AR	LPV	0	100	0	100	1	99.995
ADF	DEXTER B FLORENCE MEML FLD	AR	LPV	0	100	0	100	1	99.995
ARG	WALNUT RIDGE RGNL	AR	LPV200	0	100	0	100	1	99.998
ASG	SPRINGDALE MUNICIPAL	AR	LPV	0	100	0	100	1	99.995
AWM	WEST MEMPHIS MUNICIPAL	AR	LPV	0	100	0	100	1	99.998
BPK	BAXTER COUNTY	AR	LPV	0	100	0	100	1	99.997
BVX	BATESVILLE RGNL	AR	LPV	0	100	0	100	1	99.997
BYH	ARKANSAS INTL	AR	LPV200	0	100	0	100	1	99.999
CDH	HARRELL FLD	AR	LPV	0	100	0	100	1	99.995
CXW	CONWAY RGNL	AR	LPV	0	100	0	100	1	99.995
DRP	DELTA RGNL	AR	LPV	0	100	0	100	1	99.997
ELD	SOUTH ARKANSAS RGNL AT GOODWIN	AR	LPV	0	100	0	100	1	99.994
FLP	MARION COUNTY RGNL	AR	LPV	0	100	0	100	1	99.997
FSM	FORT SMITH RGNL	AR	LPV200	0	100	0	100	1	99.995
FYV	DRAKE FLD	AR	LPV	0	100	0	100	1	99.995
H34	HUNTSVILLE MUNICIPAL	AR	LPV	0	100	0	100	1	99.995
HEE	THOMPSON-ROBBINS	AR	LPV	0	100	0	100	1	99.997
HRO	BOONE COUNTY	AR	LPV	0	100	0	100	1	99.995
JBR	JONESBORO MUNICIPAL	AR	LPV200	0	100	0	100	1	99.998
LIT	BILL AND HILLARY CLINTON NTL/A	AR	LPV200	0	100	0	100	1	99.995
LLQ	MONTICELLO MUNICIPAL/ELLIS FLD	AR	LPV	0	100	0	100	1	99.994
M18	HOPE MUNICIPAL	AR	LP	0	100	0	100	1	99.995
M19	NEWPORT RGNL	AR	LPV	0	100	0	100	1	99.997
M32	LAKE VILLAGE MUNICIPAL	AR	LP	0	100	0	100	1	99.994
M70	POCAHONTAS MUNICIPAL	AR	LPV	0	100	0	100	1	99.999
M77	HOWARD COUNTY	AR	LP	0	100	0	100	1	99.995
MXA	MANILA MUNICIPAL	AR	LPV	0	100	0	100	1	99.999
ORK	NORTH LITTLE ROCK MUNICIPAL	AR	LPV	0	100	0	100	1	99.995
PBF	PINEBLUFF RGNL/GRIDER FLD	AR	LPV	0	100	0	100	1	99.994
ROG	ROGERS EXEC - CARTER FLD	AR	LPV	0	100	0	100	1	99.995
RUE	RUSSELLVILLE RGNL	AR	LPV	0	100	0	100	1	99.995
SGT	STUTTGART MUNICIPAL CARL HUMPHREY F	AR	LPV	0	100	0	100	1	99.995
SLG	SMITH FLD	AR	LPV	0	100	0	100	1	99.995
SRC	SEARCY MUNICIPAL	AR	LPV	0	100	0	100	1	99.996
SUZ	SALINE COUNTY RGNL	AR	LPV	0	100	0	100	1	99.995
TXK	TEXARKANA RGNL-WEBB FLD	AR	LPV	0	100	0	100	1	99.995

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
VBT	BENTONVILLE MUNICIPAL/LOUISE M THAD	AR	LPV	0	100	0	100	1	99.995
XNA	NORTHWEST ARKANSAS NTL	AR	LPV200	0	100	0	100	1	99.995
AVQ	MARANA RGNL	AZ	LP	0	100	0	100	24	99.862
AZC	COLORADO CITY MUNICIPAL	AZ	LPV	0	100	0	100	1	99.999
CGZ	CASA GRANDE MUNICIPAL	AZ	LPV	0	100	0	100	16	99.893
CHD	CHANDLER MUNICIPAL	AZ	LPV	0	100	0	100	13	99.913
DVT	PHOENIX DEER VALLEY	AZ	LPV	0	100	0	100	13	99.931
FFZ	FALCON FLD	AZ	LP	0	100	0	100	12	99.926
FHU	SIERRA VISTA MUNICIPAL-LIBBY AAF	AZ	LPV200	0	100	0	100	78	99.634
FLG	FLAGSTAFF PULLIAM	AZ	LPV	0	100	0	100	5	99.994
GCN	GRAND CANYON NTL PARK	AZ	LPV	0	100	0	100	3	99.997
GEU	GLENDALE MUNICIPAL	AZ	LPV	0	100	0	100	15	99.919
GYR	PHOENIX GOODYEAR	AZ	LP	0	100	0	100	16	99.910
HII	LAKE HAVASU CITY	AZ	LPV	0	100	0	100	21	99.926
IFP	LAUGHLIN/BULLHEAD INTL	AZ	LPV	0	100	0	100	19	99.955
IGM	KINGMAN	AZ	LPV	0	100	0	100	14	99.973
IWA	PHOENIX-MESA GATEWAY	AZ	LPV200	0	100	0	100	12	99.918
JTC	SPRINGERVILLE MUNICIPAL	AZ	LP	0	100	0	100	7	99.995
P08	COOLIDGE MUNICIPAL	AZ	LPV	0	100	0	100	14	99.899
P20	AVI SUQUILLA	AZ	LPV	0	100	0	100	23	99.898
P33	COCHISE COUNTY	AZ	LPV	0	100	0	100	63	99.753
PGA	PAGE MUNICIPAL	AZ	LPV	0	100	0	100	0	100
PHX	PHOENIX SKY HARBOR INTL	AZ	LPV	0	100	0	100	13	99.920
PRC	PRESCOTT RGNL - ERNEST A LOVE	AZ	LPV200	0	100	0	100	11	99.972
RQE	WINDOW ROCK	AZ	LP	0	100	0	100	0	100
RYN	RYAN FLD	AZ	LPV	0	100	0	100	29	99.817
SAD	SAFFORD RGNL	AZ	LPV	0	100	0	100	47	99.869
SJN	ST JOHNS INDUSTRIAL AIR PARK	AZ	LPV	0	100	0	100	1	99.999
SOW	SHOW LOW RGNL	AZ	LPV200	0	100	0	100	7	99.992
TUS	TUCSON INTL	AZ	LPV	0	100	0	100	29	99.805
TYL	TAYLOR	AZ	LPV	0	100	0	100	7	99.994
CAJ4	ANAHIM LAKE	BC	LPV	0	100	2	99.970	5	99.855
CAU4	VANDERHOOF	BC	LPV	2	99.981	4	99.938	3	99.834
CYBL	CAMPBELL RIVER	BC	LPV	0	100	2	99.995	3	99.939
CYCD	NANAIMO	BC	LPV	0	100	0	100	2	99.949
CYDQ	DAWSON CREEK	BC	LPV	2	99.934	3	99.897	3	99.808
CYPK	PITT MEADOWS	BC	LPV	0	100	0	100	3	99.963

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
CYQQ	COMOX	BC	LPV200	0	100	1	99.999	3	99.941
CYQZ	QUESNEL	BC	LPV	0	100	2	99.981	6	99.878
CYVR	VANCOUVER INTL	BC	LPV200	0	100	0	100	2	99.950
CYXJ	FORT ST. JOHN	BC	LPV200	2	99.934	3	99.870	3	99.809
CYXS	PRINCE GEORGE	BC	LPV200	1	99.987	4	99.940	3	99.824
CYXX	ABBOTSFORD	BC	LPV	0	100	0	100	3	99.967
CYYD	SMITHERS	BC	LPV	4	99.960	3	99.897	2	99.805
CYYE	FORT NELSON	BC	LPV200	2	99.860	1	99.839	4	99.751
CYYJ	VICTORIA INTL	BC	LPV200	0	100	0	100	3	99.966
CYZT	PORT HARDY	BC	LPV	0	100	2	99.976	7	99.917
CZBB	BOUNDARY BAY	BC	LPV	0	100	0	100	3	99.963
CAJ9	FORT WARE	BC	LP	3	99.892	1	99.834	3	99.792
CBN9	TSAY KEH	BC	LP	3	99.904	1	99.840	2	99.804
CBW4	BOB QUINN LAKE	BC	LP	3	99.873	1	99.835	2	99.808
CYCZ	FAIRMONT HOT SPRINGS	BC	LPV	0	100	0	100	0	100
CYDL	DEASE LAKE	BC	LP	1	99.843	1	99.835	2	99.802
CYKA	KAMLOOPS	BC	LPV	0	100	0	100	4	99.949
CYLW	KELOWNA	BC	LPV	0	100	0	100	1	99.978
CYPR	PRINCE RUPERT	BC	LPV	3	99.967	3	99.892	2	99.810
CYWL	WILLIAMS LAKE	BC	LPV	0	100	1	99.999	5	99.907
CYXT	TERRACE	BC	LPV	3	99.974	3	99.897	3	99.806
CYYF	PENTICTON	BC	LPV	0	100	0	100	1	99.997
CYZP	SANDSPIT	BC	LPV	2	99.957	2	99.898	3	99.796
AAT	ALTURAS MUNICIPAL	CA	LPV	0	100	0	100	0	100
ACV	CALIFORNIA REDWOOD COAST-HUMBO	CA	LPV	0	100	0	100	2	99.965
APC	NAPA COUNTY	CA	LPV200	0	100	0	100	5	99.966
APV	APPLE VALLEY	CA	LPV	0	100	0	100	24	99.824
AUN	AUBURN MUNICIPAL	CA	LPV	0	100	0	100	1	99.976
BFL	MEADOWS FLD	CA	LPV	0	100	0	100	25	99.808
BLH	BLYTHE	CA	LP	0	100	0	100	24	99.835
BUR	BOB HOPE	CA	LP	0	100	4	99.997	30	99.715
C83	BYRON	CA	LPV	0	100	0	100	5	99.960
CCB	CABLE	CA	LP	0	100	1	99.999	28	99.736
CCR	BUCHANAN FLD	CA	LPV	0	100	0	100	5	99.962
CEC	JACK MC NAMARA FLD	CA	LPV	0	100	0	100	1	99.983
CIC	CHICO MUNICIPAL	CA	LPV	0	100	0	100	1	99.973
CMA	CAMARILLO	CA	LPV	0	100	6	99.994	34	99.679

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
CNO	CHINO	CA	LPV	0	100	2	99.998	31	99.716
CPU	CALAVERAS COUNTY-MAURY RASMUSS	CA	LP	0	100	0	100	5	99.969
CRQ	MC CLELLAN-PALOMAR	CA	LPV	0	100	6	99.995	44	99.617
CVH	HOLLISTER MUNICIPAL	CA	LPV	0	100	0	100	24	99.884
DAG	BARSTOW-DAGGETT	CA	LPV	0	100	0	100	23	99.864
DWA	YOLO COUNTY	CA	LPV	0	100	0	100	1	99.972
F70	FRENCH VALLEY	CA	LPV	0	100	1	99.999	34	99.696
FAT	FRESNO YOSEMITE INTL	CA	LPV200	0	100	0	100	24	99.852
FCH	FRESNO CHANDLER EXEC	CA	LPV	0	100	0	100	24	99.848
GOO	NEVADA COUNTY	CA	LPV	0	100	0	100	1	99.977
HAF	HALF MOON BAY	CA	LPV	0	100	1	99.998	8	99.949
HHR	JACK NORTHROP FLD/HAWTHORNE MU	CA	LPV	0	100	5	99.995	32	99.673
HJO	HANFORD MUNICIPAL	CA	LPV	0	100	0	100	24	99.827
HWD	HAYWARD EXEC	CA	LPV	0	100	0	100	5	99.955
L35	BIG BEAR CITY	CA	LP	0	100	0	100	24	99.795
LAX	LOS ANGELES INTL	CA	LPV200	0	100	5	99.995	32	99.672
LGB	LONG BEACH (DAUGHERTY FLD)	CA	LPV	0	100	5	99.996	32	99.670
LHM	LINCOLN RGNL/KARL HARDER FLD	CA	LPV200	0	100	0	100	1	99.975
LLR	LITTLE RIVER	CA	LP	0	100	0	100	4	99.947
LSN	LOS BANOS MUNICIPAL	CA	LPV	0	100	0	100	24	99.895
LVK	LIVERMORE MUNICIPAL	CA	LPV200	0	100	0	100	5	99.957
MAE	MADERA MUNICIPAL	CA	LPV	0	100	0	100	24	99.877
MCE	MERCED RGNL/MACREADY FLD	CA	LPV200	0	100	0	100	24	99.915
MER	CASTLE	CA	LPV200	0	100	0	100	24	99.927
MHR	SACRAMENTO MATHER	CA	LPV200	0	100	0	100	1	99.975
MHV	MOJAVE AIR AND SPACE PORT	CA	LP	0	100	0	100	26	99.826
MIT	SHAFTER-MINTER FLD	CA	LPV	0	100	1	99.999	25	99.807
MOD	MODESTO CITY-COUNTY-HARRY SHAM	CA	LPV200	0	100	0	100	12	99.953
MRY	MONTEREY RGNL	CA	LPV	0	100	2	99.997	25	99.856
MYF	MONTGOMERY-GIBBS EXEC	CA	LPV200	0	100	7	99.992	53	99.572
MYV	YUBA COUNTY	CA	LPV200	0	100	0	100	1	99.974
NUQ	MOFFETT FEDERAL AIRFIELD	CA	LPV200	0	100	0	100	13	99.947
O02	NERVINO	CA	LPV	0	100	0	100	1	99.981
O08	COLUSA COUNTY	CA	LPV	0	100	0	100	1	99.971
O27	OAKDALE	CA	LPV	0	100	0	100	8	99.959
O32	REEDLEY MUNICIPAL	CA	LPV	0	100	0	100	24	99.850
O69	PETALUMA MUNICIPAL	CA	LPV	0	100	0	100	8	99.964

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
O88	RIO VISTA MUNICIPAL	CA	LP	0	100	0	100	5	99.967
OAK	METRO OAKLAND INTL	CA	LPV200	0	100	0	100	5	99.956
ONT	ONTARIO INTL	CA	LPV200	0	100	1	99.999	28	99.734
OVE	OROVILLE MUNICIPAL	CA	LPV	0	100	0	100	1	99.974
OXR	OXNARD	CA	LPV	0	100	7	99.992	34	99.670
PMD	PALMDALE USAF PLANT 42	CA	LPV200	0	100	1	99.999	27	99.786
POC	BRACKETT FLD	CA	LPV	0	100	2	99.998	29	99.728
PRB	PASO ROBLES MUNICIPAL	CA	LPV	0	100	3	99.997	29	99.752
PVF	PLACERVILLE	CA	LPV	0	100	0	100	1	99.978
RAL	RIVERSIDE MUNICIPAL	CA	LPV	0	100	1	99.999	29	99.724
RBL	RED BLUFF MUNICIPAL	CA	LPV	0	100	0	100	1	99.972
RDD	REDDING MUNICIPAL	CA	LPV	0	100	0	100	1	99.972
RHV	REID-HILLVIEW OF SANTA CLARA C	CA	LPV	0	100	0	100	16	99.940
RIV	MARCH ARB	CA	LPV200	0	100	1	99.999	29	99.724
SAC	SACRAMENTO EXEC	CA	LPV	0	100	0	100	2	99.973
SAN	SAN DIEGO INTL	CA	LPV	0	100	8	99.991	55	99.556
SBA	SANTA BARBARA MUNICIPAL	CA	LPV	0	100	7	99.988	37	99.665
SBD	SAN BERNARDINO INTL	CA	LPV	0	100	1	99.999	27	99.758
SBP	SAN LUIS COUNTY RGNL	CA	LPV200	0	100	4	99.994	35	99.697
SCK	STOCKTON METRO	CA	LPV200	0	100	0	100	5	99.962
SDM	BROWN FLD MUNICIPAL	CA	LPV200	0	100	8	99.991	61	99.544
SEE	GILLESPIE FLD	CA	LP	0	100	6	99.994	51	99.587
SFO	SAN FRANCISCO INTL	CA	LPV200	0	100	0	100	6	99.953
SJC	NORMAN Y MINETA SAN JOSE INTL	CA	LPV200	0	100	0	100	17	99.942
SMF	SACRAMENTO INTL	CA	LPV200	0	100	0	100	1	99.973
SMO	SANTA MONICA MUNICIPAL	CA	LPV	0	100	5	99.996	32	99.680
SMX	SANTA MARIA PUB/CAPT G ALLAN H	CA	LPV200	0	100	4	99.993	42	99.665
SNA	JOHN WAYNE/ORANGE COUNTY	CA	LPV200	0	100	5	99.996	34	99.669
SNS	SALINAS MUNICIPAL	CA	LPV200	0	100	1	99.999	24	99.861
STS	CHARLES M SCHULZ - SONOMA COUN	CA	LPV200	0	100	0	100	4	99.964
TCY	TRACY MUNICIPAL	CA	LPV	0	100	0	100	6	99.957
TNP	TWENTYNINE PALMS	CA	LP	0	100	0	100	23	99.822
TOA	ZAMPERINI FLD	CA	LPV	0	100	6	99.995	32	99.655
TRK	TRUCKEE-TAHOE	CA	LP	0	100	0	100	1	99.981
TRM	JACQUELINE COCHRAN RGNL	CA	LPV	0	100	1	99.999	24	99.753
TVL	LAKE TAHOE	CA	LP	0	100	0	100	1	99.982
VCB	NUT TREE	CA	LPV	0	100	0	100	4	99.969

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
VCV	SOUTHERN CALIFORNIA LOGISTICS	CA	LPV	0	100	0	100	25	99.821
VIS	VISALIA MUNICIPAL	CA	LPV	0	100	0	100	24	99.832
WJF	GENERAL WM J FOX AIRFIELD	CA	LPV	0	100	1	99.999	27	99.794
WLW	WILLOWS/GLENN COUNTY	CA	LPV	0	100	0	100	1	99.972
WVI	WATSONVILLE MUNICIPAL	CA	LPV	0	100	1	99.999	24	99.896
1V6	FREMONT COUNTY	CO	LPV	0	100	0	100	0	100
20V	MC ELROY AIRFIELD	CO	LPV	0	100	0	100	0	100
2V5	WRAY MUNICIPAL	CO	LPV200	0	100	0	100	0	100
2V6	YUMA MUNICIPAL	CO	LPV200	0	100	0	100	0	100
33V	WALDEN-JACKSON COUNTY	CO	LPV	0	100	0	100	0	100
4V0	RANGELY	CO	LPV	0	100	0	100	0	100
4V1	SPANISH PEAKS AIRFIELD	CO	LPV	0	100	0	100	0	100
AEJ	CENTRAL COLORADO RGNL	CO	LP	0	100	0	100	0	100
AJZ	BLAKE FLD	CO	LPV	0	100	0	100	0	100
AKO	COLORADO PLAINS RGNL	CO	LPV	0	100	0	100	0	100
ALS	SAN LUIS VALLEY RGNL/BERGMAN F	CO	LPV200	0	100	0	100	0	100
APA	CENTENNIAL	CO	LPV200	0	100	0	100	0	100
BJC	ROCKY MOUNTAIN METRO	CO	LPV200	0	100	0	100	0	100
CAG	CRAIG-MOFFAT	CO	LP	0	100	0	100	0	100
CEZ	CORTEZ MUNICIPAL	CO	LPV	0	100	0	100	0	100
CFO	COLORADO AIR AND SPACE PORT	CO	LPV200	0	100	0	100	0	100
COS	CITY OF COLORADO SPRINGS MUNICIPAL	CO	LPV200	0	100	0	100	0	100
DEN	DENVER INTL	CO	LPV200	0	100	0	100	0	100
DRO	DURANGO-LA PLATA COUNTY	CO	LPV200	0	100	0	100	0	100
FMM	FORT MORGAN MUNICIPAL	CO	LPV	0	100	0	100	0	100
FNL	NORTHERN COLORADO RGNL	CO	LPV200	0	100	0	100	0	100
FTG	FRONT RANGE	CO	LPV200	0	100	0	100	0	100
GJT	GRAND JUNCTION RGNL	CO	LPV200	0	100	0	100	0	100
GXY	GREELEY-WELD COUNTY	CO	LPV200	0	100	0	100	0	100
HDN	YAMPA VALLEY	CO	LPV200	0	100	0	100	0	100
ITR	KIT CARSON COUNTY	CO	LPV	0	100	0	100	0	100
LAA	SOUTHEAST COLORADO RGNL	CO	LPV	0	100	0	100	0	100
LHX	LA JUNTA MUNICIPAL	CO	LPV	0	100	0	100	0	100
LMO	VANCE BRAND	CO	LPV	0	100	0	100	0	100
MTJ	MONTROSE RGNL	CO	LPV200	0	100	0	100	0	100
MVI	MONTE VISTA MUNICIPAL	CO	LPV	0	100	0	100	0	100
PSO	STEVENS FLD	CO	LP	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
PUB	PUEBLO MEML	CO	LPV200	0	100	0	100	0	100
RCV	ASTRONAUT KENT ROMINGER	CO	LPV	0	100	0	100	0	100
RIL	RIFLE GARFIELD COUNTY	CO	LPV	0	100	0	100	0	100
STK	STERLING MUNICIPAL	CO	LPV	0	100	0	100	0	100
TEX	TELLURIDE RGNL	CO	LP	0	100	0	100	0	100
4B8	ROBERTSON FLD	CT	LP	0	100	0	100	1	99.987
BDL	BRADLEY INTL	CT	LPV200	0	100	0	100	1	99.987
BDR	IGOR I SIKORSKY MEML	CT	LPV	0	100	0	100	1	99.986
DXR	DANBURY MUNICIPAL	CT	LP	0	100	0	100	1	99.986
GON	GROTON-NEW LONDON	CT	LPV	0	100	0	100	1	99.987
HVN	TWEED/NEW HAVEN	CT	LPV	0	100	0	100	1	99.986
IJD	WINDHAM	CT	LP	0	100	0	100	1	99.988
MMK	MERIDEN MARKHAM MUNICIPAL	CT	LP	0	100	0	100	1	99.987
OXC	WATERBURY-OXFORD	CT	LPV	0	100	0	100	1	99.986
DCA	RONALD REAGAN WASHINGTON NTL	DC	LPV	0	100	0	100	1	99.983
HEF	MANASSAS RGNL/HARRY P DAVIS FL	DC	LPV	0	100	0	100	1	99.984
IAD	WASHINGTON DULLES INTL	DC	LPV200	0	100	0	100	1	99.985
33N	DELAWARE AIRPARK	DE	LP	0	100	0	100	1	99.980
DOV	DOVER AFB	DE	LPV200	0	100	0	100	1	99.980
EVY	SUMMIT	DE	LPV	0	100	0	100	1	99.980
GED	DELAWARE COASTAL	DE	LPV	0	100	0	100	1	99.980
ILG	NEW CASTLE	DE	LPV	0	100	0	100	1	99.981
1J0	TRI-COUNTY	FL	LP	0	100	0	100	1	99.989
24J	SUWANNEE COUNTY	FL	LPV	0	100	0	100	1	99.979
28J	PALATKA MUNICIPAL - LT KAY LARKIN F	FL	LPV	0	100	0	100	1	99.979
40J	PERRY-FOLEY	FL	LPV	0	100	0	100	1	99.978
54J	DEFUNIAK SPRINGS	FL	LP	0	100	0	100	1	99.989
AAF	APALACHICOLA RGNL-CLEVE RANDOL	FL	LPV	0	100	0	100	1	99.977
APF	NAPLES MUNICIPAL	FL	LPV	0	100	0	100	14	99.963
AVO	AVON PARK EXEC	FL	LPV	0	100	0	100	2	99.976
BCR	TRI-COUNTY	FL	LPV	0	100	0	100	1	99.989
BCT	BOCA RATON	FL	LPV	0	100	0	100	6	99.967
BKV	BROOKSVILLE-TAMPA BAY RGNL	FL	LPV	0	100	0	100	1	99.978
BOW	BARTOW EXEC	FL	LPV	0	100	0	100	1	99.976
CEW	BOB SIKES	FL	LPV	0	100	0	100	1	99.990
CGC	CRYSTAL RIVER-CAPT TOM DAVIS F	FL	LP	0	100	0	100	1	99.978
CHN	WAUCHULA MUNICIPAL	FL	LP	0	100	0	100	2	99.976

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
COI	MERRITT ISLAND	FL	LPV	0	100	0	100	1	99.976
CRG	JACKSONVILLE EXEC AT CRAIG	FL	LPV200	0	100	0	100	1	99.979
CTY	CROSS CITY	FL	LPV	0	100	0	100	1	99.979
DAB	DAYTONA BEACH INTL	FL	LPV200	0	100	0	100	1	99.977
DED	DELAND MUNICIPAL-SIDNEY H TAYLOR FL	FL	LPV	0	100	0	100	1	99.977
DTS	DESTIN EXEC	FL	LPV	0	100	0	100	1	99.981
ECP	NORTHWEST FLORIDA BEACHES INTL	FL	LPV200	0	100	0	100	1	99.980
EVB	NEW SMYRNA BEACH MUNICIPAL	FL	LPV	0	100	0	100	1	99.977
EYW	KEY WEST INTL	FL	LPV	0	100	2	99.998	34	99.860
F45	NORTH PALM BEACH COUNTY GENERA	FL	LPV	0	100	0	100	4	99.971
FHB	FERNANDINA BEACH MUNICIPAL	FL	LPV	0	100	0	100	1	99.979
FIN	FLAGLER EXEC	FL	LPV	0	100	0	100	1	99.978
FLL	FORT LAUDERDALE/HOLLYWOOD INTL	FL	LPV200	0	100	0	100	6	99.964
FMY	PAGE FLD	FL	LPV	0	100	0	100	11	99.966
FPR	TREASURE COAST INTL	FL	LPV	0	100	0	100	2	99.973
FPY	PERRY-FOLEY	FL	LPV	0	100	0	100	1	99.978
FXE	FORT LAUDERDALE EXEC	FL	LPV200	0	100	0	100	5	99.966
GIF	WINTER HAVEN RGNL	FL	LPV	0	100	0	100	1	99.977
GNV	GAINESVILLE RGNL	FL	LPV	0	100	0	100	1	99.979
HEG	HERLONG RECREATIONAL	FL	LPV	0	100	0	100	1	99.979
IMM	IMMOKALEE RGNL	FL	LPV	0	100	0	100	11	99.964
ISM	KISSIMMEE GATEWAY	FL	LPV200	0	100	0	100	1	99.977
JAX	JACKSONVILLE INTL	FL	LPV200	0	100	0	100	1	99.979
LAL	LAKELAND LINDER INTL	FL	LPV200	0	100	0	100	1	99.977
LCQ	LAKE CITY GATEWAY	FL	LPV	0	100	0	100	1	99.980
LEE	LEESBURG INTL	FL	LPV	0	100	0	100	1	99.977
LNA	PALM BEACH COUNTY PARK	FL	LP	0	100	0	100	7	99.967
MAI	MARIANNA MUNICIPAL	FL	LPV	0	100	0	100	1	99.985
MCO	ORLANDO INTL	FL	LPV200	0	100	0	100	1	99.977
MIA	MIAMI INTL	FL	LPV200	0	100	0	100	6	99.960
MKY	MARCO ISLAND EXEC	FL	LPV	0	100	0	100	12	99.963
MLB	MELBOURNE ORLANDO INTL	FL	LPV200	0	100	0	100	2	99.976
MTH	THE FLORIDA KEYS MARATHON INTL	FL	LPV	0	100	0	100	32	99.893
OBE	OKEECHOBEE COUNTY	FL	LPV	0	100	0	100	2	99.973
OCF	OCALA INTL-JIM TAYLOR FLD	FL	LPV200	0	100	0	100	1	99.978
OMN	ORMOND BEACH MUNICIPAL	FL	LPV	0	100	0	100	1	99.978
OPF	MIAMI-OPA LOCKA EXEC	FL	LPV200	0	100	0	100	6	99.963

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
ORL	EXEC	FL	LPV200	0	100	0	100	1	99.977
PBI	PALM BEACH INTL	FL	LPV200	0	100	0	100	4	99.969
PCM	PLANT CITY	FL	LPV	0	100	0	100	1	99.977
PGD	PUNTA GORDA	FL	LPV200	0	100	0	100	11	99.970
PHK	PALM BEACH COUNTY GLADES	FL	LPV	0	100	0	100	7	99.969
PIE	ST PETE-CLEARWATER INTL	FL	LPV200	0	100	0	100	5	99.975
PMP	POMPANO BEACH AIRPARK	FL	LPV	0	100	0	100	5	99.966
PNS	PENSACOLA INTL	FL	LPV200	0	100	0	100	1	99.987
RSW	SOUTHWEST FLORIDA INTL	FL	LPV	0	100	0	100	12	99.966
SEF	SEBRING RGNL	FL	LPV	0	100	0	100	2	99.975
SFB	ORLANDO SANFORD INTL	FL	LPV200	0	100	0	100	1	99.977
SGJ	NORTHEAST FLORIDA RGNL	FL	LPV	0	100	0	100	1	99.979
SRQ	SARASOTA/BRADENTON INTL	FL	LPV200	0	100	0	100	8	99.972
SUA	WITHAM FLD	FL	LPV	0	100	0	100	2	99.972
TIX	SPACE COAST RGNL	FL	LPV200	0	100	0	100	1	99.976
TLH	TALLAHASSEE INTL	FL	LPV200	0	100	0	100	1	99.979
TMB	MIAMI EXEC	FL	LPV200	0	100	0	100	7	99.959
TNT	DADE-COLLIER TRAINING AND TRAN	FL	LPV200	0	100	0	100	5	99.964
TPA	TAMPA INTL	FL	LPV200	0	100	0	100	2	99.977
TPF	PETER O KNIGHT	FL	LP	0	100	0	100	1	99.977
TTS	NASA SHUTTLE LANDING FACILITY	FL	LPV200	0	100	0	100	1	99.976
VDF	TAMPA EXEC	FL	LPV	0	100	0	100	1	99.977
VNC	VENICE MUNICIPAL	FL	LP	0	100	0	100	9	99.971
VQQ	CECIL	FL	LPV200	0	100	0	100	1	99.979
VRB	VERO BEACH RGNL	FL	LPV200	0	100	0	100	2	99.973
X07	LAKE WALES MUNICIPAL	FL	LP	0	100	0	100	1	99.976
X14	LA BELLE MUNICIPAL	FL	LPV	0	100	0	100	9	99.970
X35	MARION COUNTY	FL	LP	0	100	0	100	1	99.978
X51	MIAMI HOMESTEAD GENERAL AVIATI	FL	LPV	0	100	0	100	14	99.956
ZPH	ZEPHYRHILLS MUNICIPAL	FL	LPV	0	100	0	100	1	99.977
09J	JEKYLL ISLAND	GA	LPV200	0	100	0	100	1	99.980
15J	COOK COUNTY	GA	LPV	0	100	0	100	1	99.983
17J	DONALSONVILLE MUNICIPAL	GA	LPV	0	100	0	100	1	99.988
18A	FRANKLIN-HART	GA	LPV	0	100	0	100	1	99.997
19A	JACKSON COUNTY	GA	LPV	0	100	0	100	1	99.997
2J3	LOUISVILLE MUNICIPAL	GA	LPV	0	100	0	100	1	99.987
2J5	MILLEN	GA	LPV	0	100	0	100	1	99.985

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
3J7	GREENE COUNTY RGNL	GA	LPV	0	100	0	100	1	99.996
48A	COCHRAN	GA	LPV	0	100	0	100	1	99.988
49A	GILMER COUNTY	GA	LPV	0	100	0	100	0	100
4A4	POLK COUNTY/CORNELIUS MOORE FL	GA	LPV	0	100	0	100	0	100
4J1	BRANTLEY COUNTY	GA	LPV	0	100	0	100	1	99.980
4J2	BERRIEN COUNTY	GA	LPV	0	100	0	100	1	99.982
4J5	QUITMAN BROOKS COUNTY	GA	LP	0	100	0	100	1	99.980
52A	MADISON MUNICIPAL	GA	LP	0	100	0	100	1	99.997
6A1	BUTLER MUNICIPAL	GA	LPV	0	100	0	100	1	99.996
6A2	GRIFFIN-SPALDING COUNTY	GA	LPV	0	100	0	100	1	99.997
70J	CAIRO-GRADY COUNTY	GA	LPV	0	100	0	100	1	99.984
75J	TURNER COUNTY	GA	LP	0	100	0	100	1	99.988
9A5	BARWICK LAFAYETTE	GA	LP	0	100	0	100	0	100
ABY	SOUTHWEST GEORGIA RGNL	GA	LPV200	0	100	0	100	1	99.988
ACJ	JIMMY CARTER RGNL	GA	LPV	0	100	0	100	1	99.990
AGS	AUGUSTA RGNL AT BUSH FLD	GA	LPV200	0	100	0	100	1	99.987
AHN	ATHENS/BEN EPPS	GA	LPV200	0	100	0	100	1	99.997
AJR	HABERSHAM COUNTY	GA	LPV	0	100	0	100	1	99.998
AMG	BACON COUNTY	GA	LPV	0	100	0	100	1	99.982
ATL	HARTSFIELD - JACKSON ATLANTA I	GA	LPV200	0	100	0	100	1	99.998
AYS	WAYCROSS-WARE COUNTY	GA	LPV200	0	100	0	100	1	99.982
BGE	DECATUR COUNTY INDUSTRIAL AIR	GA	LPV200	0	100	0	100	1	99.985
BHC	BAXLEY MUNICIPAL	GA	LPV	0	100	0	100	1	99.982
BIJ	EARLY COUNTY	GA	LPV	0	100	0	100	1	99.990
BQK	BRUNSWICK GOLDEN ISLES	GA	LPV200	0	100	0	100	1	99.980
CCO	NEWNAN COWETA COUNTY	GA	LPV	0	100	0	100	1	99.998
CKF	CRISP COUNTY-CORDELE	GA	LPV	0	100	0	100	1	99.988
CNI	CHEROKEE COUNTY RGNL	GA	LPV	0	100	0	100	0	100
CSG	COLUMBUS	GA	LPV	0	100	0	100	1	99.998
CTJ	WEST GEORGIA RGNL - O V GRAY F	GA	LPV	0	100	0	100	0	100
CVC	COVINGTON MUNICIPAL	GA	LPV	0	100	0	100	1	99.997
CWV	CLAXTON-EVANS COUNTY	GA	LPV	0	100	0	100	1	99.982
CXU	CAMILLA-MITCHELL COUNTY	GA	LPV	0	100	0	100	1	99.985
CZL	TOM B DAVID FLD	GA	LPV	0	100	0	100	0	100
D73	CY NUNNALLY MEML	GA	LP	0	100	0	100	1	99.997
DBN	W H 'BUD' BARRON	GA	LPV200	0	100	0	100	1	99.988
DNL	DANIEL FLD	GA	LPV	0	100	0	100	1	99.987

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
DNN	DALTON MUNICIPAL	GA	LPV	0	100	0	100	0	100
DQH	DOUGLAS MUNICIPAL	GA	LPV200	0	100	0	100	1	99.983
EBA	ELBERT COUNTY-PATZ FLD	GA	LP	0	100	0	100	1	99.996
EZM	HEART OF GEORGIA RGNL	GA	LPV200	0	100	0	100	1	99.988
FFC	ATLANTA RGNL FALCON FLD	GA	LPV	0	100	0	100	1	99.998
FTY	FULTON COUNTY EXEC/CHARLIE BRO	GA	LPV	0	100	0	100	0	100
FZG	FITZGERALD MUNICIPAL	GA	LPV	0	100	0	100	1	99.984
GVL	LEE GILMER MEML	GA	LPV	0	100	0	100	1	99.998
HMP	ATLANTA SPEEDWAY	GA	LPV200	0	100	0	100	1	99.998
HOE	HOMERVILLE	GA	LPV	0	100	0	100	1	99.981
HQU	THOMSON-MCDUFFIE COUNTY	GA	LPV	0	100	0	100	1	99.993
IIY	WASHINGTON/WILKES COUNTY	GA	LPV	0	100	0	100	1	99.995
JCA	JACKSON COUNTY	GA	LPV	0	100	0	100	1	99.997
JES	JESUP-WAYNE COUNTY	GA	LPV	0	100	0	100	1	99.980
JYL	PLANTATION AIRPARK	GA	LPV	0	100	0	100	1	99.983
JZP	PICKENS COUNTY	GA	LPV	0	100	0	100	0	100
LGC	LAGRANGE/CALLAWAY	GA	LPV200	0	100	0	100	1	99.998
LHW	WRIGHT AAF (FORT STEWART)/MIDC	GA	LPV	0	100	0	100	1	99.980
LZU	GWINNETT COUNTY/BRISCOE FLD	GA	LPV200	0	100	0	100	1	99.998
MAC	MACON DOWNTOWN	GA	LPV	0	100	0	100	1	99.995
MCN	MIDDLE GEORGIA RGNL	GA	LPV200	0	100	0	100	1	99.995
MGR	MOULTRIE MUNICIPAL	GA	LPV200	0	100	0	100	1	99.984
MHP	JOHN EDWIN JONES SR FLD/METTER	GA	LPV	0	100	0	100	1	99.983
MLJ	BALDWIN COUNTY RGNL	GA	LPV	0	100	0	100	1	99.995
MQW	TELFAIR-WHEELER	GA	LPV	0	100	0	100	1	99.987
OKZ	KAOLIN FLD	GA	LPV	0	100	0	100	1	99.993
OPN	THOMASTON-UPSON COUNTY	GA	LPV200	0	100	0	100	1	99.997
PIM	HARRIS COUNTY	GA	LPV	0	100	0	100	1	99.998
PUJ	PAULDING NORTHWEST ATLANTA	GA	LPV200	0	100	0	100	0	100
PXE	PERRY-HOUSTON COUNTY	GA	LPV	0	100	0	100	1	99.995
RMG	RICHARD B RUSSELL RGNL - J H T	GA	LPV	0	100	0	100	0	100
RVJ	SWINTON SMITH FLD AT REIDSVILL	GA	LP	0	100	0	100	1	99.983
RYY	COBB COUNTY INTL/MCCOLLUM FLD	GA	LPV200	0	100	0	100	0	100
SAV	SAVANNAH/HILTON HEAD INTL	GA	LPV200	0	100	0	100	1	99.980
SBO	EAST GEORGIA RGNL	GA	LPV	0	100	0	100	1	99.987
TBR	STATESBORO-BULLOCH COUNTY	GA	LPV	0	100	0	100	1	99.983
TMA	HENRY TIFT MYERS	GA	LPV	0	100	0	100	1	99.984

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
TOC	TOCCOA RG LETOURNEAU FLD	GA	LPV	0	100	0	100	1	99.998
TVI	THOMASVILLE RGNL	GA	LPV	0	100	0	100	1	99.982
VDI	VIDALIA RGNL	GA	LPV200	0	100	0	100	1	99.983
VLD	VALDOSTA RGNL	GA	LPV	0	100	0	100	1	99.980
VPC	CARTERSVILLE	GA	LPV	0	100	0	100	0	100
WDR	BARROW COUNTY	GA	LPV	0	100	0	100	1	99.997
3Y2	GEORGE L SCOTT MUNICIPAL	IA	LPV	0	100	0	100	2	99.965
4C8	ALBIA MUNICIPAL	IA	LPV	0	100	0	100	0	100
AIO	ATLANTIC MUNICIPAL	IA	LPV	0	100	0	100	0	100
ALO	WATERLOO RGNL	IA	LPV200	0	100	0	100	3	99.979
AMW	AMES MUNICIPAL	IA	LPV	0	100	0	100	0	100
AWG	WASHINGTON MUNICIPAL	IA	LPV200	0	100	0	100	1	99.999
BNW	BOONE MUNICIPAL	IA	LPV	0	100	0	100	0	100
BRL	SOUTHEAST IOWA RGNL	IA	LPV200	0	100	0	100	0	100
C25	WAVERLY MUNICIPAL	IA	LPV	0	100	0	100	1	99.971
CAV	CLARION MUNICIPAL	IA	LPV	0	100	0	100	0	100
CBF	COUNCIL BLUFFS MUNICIPAL	IA	LPV200	0	100	0	100	0	100
CCY	NORTHEAST IOWA RGNL	IA	LPV	0	100	0	100	1	99.972
CID	THE EASTERN IOWA	IA	LPV200	0	100	0	100	3	99.980
CIN	ARTHUR N NEU	IA	LPV	0	100	0	100	0	100
CKP	CHEROKEE COUNTY RGNL	IA	LPV	0	100	0	100	0	100
CSQ	CRESTON MUNICIPAL	IA	LPV	0	100	0	100	0	100
CWI	CLINTON MUNICIPAL	IA	LPV200	0	100	0	100	2	99.980
DBQ	DUBUQUE RGNL	IA	LPV200	0	100	0	100	2	99.967
DEH	DECORAH MUNICIPAL	IA	LPV	0	100	1	99.996	2	99.965
DNS	DENISON MUNICIPAL	IA	LPV	0	100	0	100	0	100
DSM	DES MOINES INTL	IA	LPV200	0	100	0	100	0	100
DVN	DAVENPORT MUNICIPAL	IA	LPV200	0	100	0	100	2	99.981
EAG	EAGLE GROVE MUNICIPAL	IA	LPV	0	100	0	100	0	100
EBS	WEBSTER CITY MUNICIPAL	IA	LPV	0	100	0	100	0	100
EFW	JEFFERSON MUNICIPAL	IA	LPV	0	100	0	100	0	100
EOK	KEOKUK MUNICIPAL	IA	LPV	0	100	0	100	0	100
EST	ESTHERVILLE MUNICIPAL	IA	LPV	0	100	0	100	0	100
FFL	FAIRFIELD MUNICIPAL	IA	LPV	0	100	0	100	0	100
FOD	FORT DODGE RGNL	IA	LPV200	0	100	0	100	0	100
FSW	FORT MADISON MUNICIPAL	IA	LPV	0	100	0	100	0	100
FXY	FOREST CITY MUNICIPAL	IA	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
GCT	GUTHRIE COUNTY RGNL	IA	LPV	0	100	0	100	0	100
GFZ	GREENFIELD MUNICIPAL	IA	LPV	0	100	0	100	0	100
GGI	GRINNELL RGNL	IA	LPV	0	100	0	100	1	99.998
HPT	HAMPTON MUNICIPAL	IA	LPV	0	100	0	100	0	100
I75	OSCEOLA MUNICIPAL	IA	LPV	0	100	0	100	0	100
ICL	SCHENCK FLD	IA	LPV	0	100	0	100	0	100
IFA	IOWA FALLS MUNICIPAL	IA	LPV	0	100	0	100	0	100
IIB	JAMES H CONNELL FLD AT INDEPEN	IA	LPV	0	100	0	100	2	99.965
IKV	ANKENY RGNL	IA	LPV200	0	100	0	100	0	100
IOW	IOWA CITY MUNICIPAL	IA	LPV	0	100	0	100	2	99.983
LRJ	LE MARS MUNICIPAL	IA	LPV	0	100	0	100	0	100
LWD	LAMONI MUNICIPAL	IA	LPV	0	100	0	100	0	100
MCW	MASON CITY MUNICIPAL	IA	LPV200	0	100	0	100	0	100
MIW	MARSHALLTOWN MUNICIPAL	IA	LPV	0	100	0	100	0	100
MPZ	MOUNT PLEASANT MUNICIPAL	IA	LPV	0	100	0	100	0	100
MUT	MUSCATINE MUNICIPAL	IA	LPV200	0	100	0	100	1	99.989
MXO	MONTICELLO RGNL	IA	LP	0	100	0	100	2	99.967
OOA	OSKALOOSA MUNICIPAL	IA	LPV	0	100	0	100	1	99.999
OQW	MAQUOKETA MUNICIPAL	IA	LPV	0	100	0	100	3	99.979
ORC	ORANGE CITY MUNICIPAL	IA	LPV	0	100	0	100	0	100
OTM	OTTUMWA RGNL	IA	LPV	0	100	0	100	0	100
OXV	KNOXVILLE MUNICIPAL	IA	LPV	0	100	0	100	0	100
PEA	PELLA MUNICIPAL	IA	LPV	0	100	0	100	1	99.999
POH	POCAHONTAS MUNICIPAL	IA	LPV	0	100	0	100	0	100
PRO	PERRY MUNICIPAL	IA	LPV200	0	100	0	100	0	100
RDK	RED OAK MUNICIPAL	IA	LPV	0	100	0	100	0	100
RRQ	ROCK RAPIDS MUNICIPAL	IA	LP	0	100	0	100	0	100
SDA	SHENANDOAH MUNICIPAL	IA	LPV	0	100	0	100	0	100
SHL	SHELDON RGNL	IA	LPV	0	100	0	100	0	100
SKI	SAC CITY MUNICIPAL	IA	LPV	0	100	0	100	0	100
SLB	STORM LAKE MUNICIPAL	IA	LPV	0	100	0	100	0	100
SPW	SPENCER MUNICIPAL	IA	LPV200	0	100	0	100	0	100
SUX	SIOUX GATEWAY/BRIG GENERAL BUD	IA	LPV200	0	100	0	100	0	100
SXK	SIOUX COUNTY RGNL	IA	LPV200	0	100	0	100	0	100
TNU	NEWTON MUNICIPAL-EARL JOHNSON FLD	IA	LPV200	0	100	0	100	1	99.998
TVK	CENTERVILLE MUNICIPAL	IA	LPV	0	100	0	100	0	100
TZT	BELLE PLAINE MUNICIPAL	IA	LPV	0	100	0	100	3	99.991

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
VTI	VINTON VETERANS MEML AIRPARK	IA	LPV	0	100	0	100	3	99.978
1U7	BEAR LAKE COUNTY	ID	LPV	0	100	0	100	0	100
BOI	BOISE AIR TRML/GOWEN FLD	ID	LPV200	0	100	0	100	0	100
COE	COEUR D'ALENE/PAPPY BOYINGTON	ID	LPV200	0	100	0	100	0	100
DIJ	DRIGGS-REED MEML	ID	LP	0	100	0	100	0	100
EUL	TREASURE VALLEY EXEC AT CALDWE	ID	LPV	0	100	0	100	0	100
GNG	GOODING MUNICIPAL	ID	LPV	0	100	0	100	0	100
IDA	IDAHO FALLS RGNL	ID	LPV200	0	100	0	100	0	100
JER	JEROME COUNTY	ID	LPV	0	100	0	100	0	100
LWS	LEWISTON/NEZ PERCE COUNTY	ID	LPV200	0	100	0	100	0	100
MAN	NAMPA MUNICIPAL	ID	LPV	0	100	0	100	0	100
MYL	MC CALL MUNICIPAL	ID	LPV	0	100	0	100	0	100
PIH	POCATELLO RGNL	ID	LPV200	0	100	0	100	0	100
SUN	FRIEDMAN MEML	ID	LP	0	100	0	100	0	100
SZT	SANDPOINT	ID	LP	0	100	0	100	0	100
TWF	JOSLIN FLD/MAGIC VALLEY RGNL	ID	LPV200	0	100	0	100	0	100
U76	MOUNTAIN HOME MUNICIPAL	ID	LPV	0	100	0	100	0	100
1H2	EFFINGHAM COUNTY MEML	IL	LPV	0	100	0	100	0	100
3LF	LITCHFIELD MUNICIPAL	IL	LPV	0	100	0	100	0	100
3MY	MOUNT HAWLEY AUXILIARY	IL	LPV	0	100	0	100	0	100
AJG	MOUNT CARMEL MUNICIPAL	IL	LPV	0	100	0	100	0	100
ALN	ST LOUIS RGNL	IL	LPV200	0	100	0	100	0	100
ARR	AURORA MUNICIPAL	IL	LPV200	0	100	0	100	1	99.981
BLV	SCOTT AFB/MIDAMERICA ST LOUIS	IL	LPV200	0	100	0	100	0	100
BMI	CENTRAL IL RGNL/BLOOMINGTON-NO	IL	LPV	0	100	0	100	0	100
C15	PEKIN MUNICIPAL	IL	LPV	0	100	0	100	0	100
C73	DIXON MUNICIPAL-CHARLES R WALGREEN	IL	LPV	0	100	0	100	2	99.979
C75	MARSHALL COUNTY	IL	LP	0	100	0	100	1	99.990
CIR	CAIRO RGNL	IL	LP	0	100	0	100	0	100
CMI	UNIVERSITY OF ILLINOIS/WILLARD	IL	LPV200	0	100	0	100	0	100
CPS	ST LOUIS DOWNTOWN	IL	LPV200	0	100	0	100	0	100
CTK	INGERSOLL	IL	LPV	0	100	0	100	0	100
CUL	CARMI MUNICIPAL	IL	LPV	0	100	0	100	0	100
DEC	DECATUR	IL	LPV200	0	100	0	100	0	100
DKB	DE KALB TAYLOR MUNICIPAL	IL	LPV	0	100	0	100	1	99.967
DNV	VERMILION RGNL	IL	LPV	0	100	0	100	0	100
DPA	DUPAGE	IL	LPV200	0	100	0	100	1	99.981

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
ENL	CENTRALIA MUNICIPAL	IL	LPV	0	100	0	100	0	100
EZI	KEWANEE MUNICIPAL	IL	LPV	0	100	0	100	1	99.989
FEP	ALBERTUS	IL	LPV	0	100	0	100	1	99.967
FOA	FLORA MUNICIPAL	IL	LPV	0	100	0	100	0	100
GBG	GALESBURG MUNICIPAL	IL	LPV200	0	100	0	100	1	99.999
GRE	GREENVILLE	IL	LPV	0	100	0	100	0	100
HSB	HARRISBURG-RALEIGH	IL	LPV	0	100	0	100	0	100
I63	MOUNT STERLING MUNICIPAL	IL	LPV	0	100	0	100	0	100
IGQ	LANSING MUNICIPAL	IL	LPV	0	100	0	100	1	99.993
IKK	GREATER KANKAKEE	IL	LPV200	0	100	0	100	1	99.999
LOT	LEWIS UNIVERSITY	IL	LPV200	0	100	0	100	1	99.985
LWV	LAWRENCEVILLE-VINCENNES INTL	IL	LPV200	0	100	0	100	0	100
MDW	CHICAGO MIDWAY INTL	IL	LPV	0	100	0	100	1	99.984
MLI	QUAD CITIES INTL	IL	LPV200	0	100	0	100	1	99.984
MQB	MACOMB MUNICIPAL	IL	LPV200	0	100	0	100	0	100
MTO	COLES COUNTY MEML	IL	LPV200	0	100	0	100	0	100
MVN	MOUNT VERNON	IL	LPV	0	100	0	100	0	100
MWA	VETERANS AIRPORT OF SOUTHERN I	IL	LPV200	0	100	0	100	0	100
OLY	OLNEY-NOBLE	IL	LPV	0	100	0	100	0	100
ORD	CHICAGO O'HARE INTL	IL	LPV200	0	100	0	100	1	99.981
PIA	GENERAL DOWNING - PEORIA INTL	IL	LPV	0	100	0	100	0	100
PJY	PINCKNEYVILLE/DU QUOIN	IL	LPV	0	100	0	100	0	100
PNT	PONTIAC MUNICIPAL	IL	LPV	0	100	0	100	1	99.999
PPQ	PITTSFIELD PENSTONE MUNICIPAL	IL	LPV	0	100	0	100	0	100
PRG	EDGAR COUNTY	IL	LPV	0	100	0	100	0	100
PWK	CHICAGO EXEC	IL	LPV	0	100	0	100	1	99.981
RFD	CHICAGO/ROCKFORD INTL	IL	LPV200	0	100	0	100	1	99.967
RPJ	ROCHELLE MUNICIPAL/KORITZ FLD	IL	LPV	0	100	0	100	1	99.967
RSV	CRAWFORD COUNTY	IL	LPV	0	100	0	100	0	100
SAR	SPARTA COMMUNICIPALTY-HUNTER FLD	IL	LPV	0	100	0	100	0	100
SFY	TRI-TOWNSHIP	IL	LP	0	100	0	100	2	99.979
SLO	SALEM-LECKRONE	IL	LPV200	0	100	0	100	0	100
SPI	ABRAHAM LINCOLN CAPITAL	IL	LPV	0	100	0	100	0	100
SQI	WHITESIDE COUNTY/JOS H BITTORF	IL	LPV200	0	100	0	100	2	99.980
TIP	RANTOUL NTL AVN CNTR-FRANK ELL	IL	LPV	0	100	0	100	0	100
UGN	WAUKEGAN NTL	IL	LPV	0	100	0	100	1	99.981
UIN	QUINCY RGNL-BALDWIN FLD	IL	LPV200	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
VYS	ILLINOIS VALLEY RGNL-WALTER A	IL	LPV	0	100	0	100	1	99.989
2R2	HENDRICKS COUNTY-GORDON GRAHAM	IN	LPV	0	100	0	100	0	100
50I	KENTLAND MUNICIPAL	IN	LPV	0	100	0	100	0	100
AID	ANDERSON MUNICIPAL-DARLINGTON FLD	IN	LPV	0	100	0	100	0	100
ASW	WARSAW MUNICIPAL	IN	LPV200	0	100	0	100	0	100
BAK	COLUMBUS MUNICIPAL	IN	LPV	0	100	0	100	0	100
BFR	VIRGIL I GRISSOM MUNICIPAL	IN	LP	0	100	0	100	0	100
BMG	MONROE COUNTY	IN	LPV200	0	100	0	100	0	100
C62	KENDALLVILLE MUNICIPAL	IN	LPV	0	100	0	100	0	100
C65	PLYMOUTH MUNICIPAL	IN	LPV	0	100	0	100	0	100
CEV	METTEL FLD	IN	LPV	0	100	0	100	0	100
CFJ	CRAWFORDSVILLE RGNL	IN	LPV	0	100	0	100	0	100
DCY	DAVIESS COUNTY	IN	LPV	0	100	0	100	0	100
EKM	ELKHART MUNICIPAL	IN	LPV	0	100	0	100	0	100
EVV	EVANSVILLE RGNL	IN	LPV200	0	100	0	100	0	100
EYE	EAGLE CREEK AIRPARK	IN	LPV	0	100	0	100	0	100
FKR	FRANKFORT CLINTON COUNTY RGNL	IN	LPV	0	100	0	100	0	100
FRH	FRENCH LICK MUNICIPAL	IN	LPV	0	100	0	100	0	100
FWA	FORT WAYNE INTL	IN	LPV200	0	100	0	100	0	100
GEZ	SHELBYVILLE MUNICIPAL	IN	LPV	0	100	0	100	0	100
GGP	LOGANSPORT/CASS COUNTY	IN	LPV200	0	100	0	100	0	100
GPC	PUTNAM COUNTY RGNL	IN	LPV	0	100	0	100	0	100
GSH	GOSHEN MUNICIPAL	IN	LPV	0	100	0	100	0	100
GWB	DE KALB COUNTY	IN	LPV	0	100	0	100	0	100
GYY	GARY/CHICAGO INTL	IN	LPV200	0	100	0	100	1	99.993
HFY	INDY SOUTH GREENWOOD	IN	LPV	0	100	0	100	0	100
HNB	HUNTINGBURG	IN	LPV	0	100	0	100	0	100
HUF	TERRE HAUTE RGNL	IN	LPV200	0	100	0	100	0	100
I22	RANDOLPH COUNTY	IN	LPV	0	100	0	100	0	100
I76	PERU MUNICIPAL	IN	LPV	0	100	0	100	0	100
IMS	MADISON MUNICIPAL	IN	LPV	0	100	0	100	0	100
IND	INDIANAPOLIS INTL	IN	LPV200	0	100	0	100	0	100
JVY	CLARK RGNL	IN	LPV200	0	100	0	100	0	100
LAF	PURDUE UNIVERSITY	IN	LPV	0	100	0	100	0	100
MCX	WHITE COUNTY	IN	LP	0	100	0	100	0	100
MIE	DELAWARE COUNTY RGNL	IN	LPV	0	100	0	100	0	100
MQJ	INDIANAPOLIS RGNL	IN	LPV200	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
MZZ	MARION MUNICIPAL - MCKINNEY FLD	IN	LPV200	0	100	0	100	0	100
OKK	KOKOMO MUNICIPAL	IN	LPV200	0	100	0	100	0	100
OVO	NORTH VERNON	IN	LPV	0	100	0	100	0	100
OXI	STARKE COUNTY	IN	LPV	0	100	0	100	0	100
PLD	PORTLAND MUNICIPAL	IN	LPV	0	100	0	100	0	100
PPO	LA PORTE MUNICIPAL	IN	LPV	0	100	0	100	1	99.997
RCR	FULTON COUNTY	IN	LPV	0	100	0	100	0	100
RID	RICHMOND MUNICIPAL	IN	LPV200	0	100	0	100	0	100
RWN	ARENS FLD	IN	LPV	0	100	0	100	0	100
RZL	JASPER COUNTY	IN	LPV	0	100	0	100	0	100
SBN	SOUTH BEND INTL	IN	LPV200	0	100	0	100	0	100
SER	FREEMAN MUNICIPAL	IN	LPV	0	100	0	100	0	100
SIV	SULLIVAN COUNTY	IN	LPV	0	100	0	100	0	100
SMD	SMITH FLD	IN	LPV	0	100	0	100	0	100
TEL	PERRY COUNTY MUNICIPAL	IN	LP	0	100	0	100	0	100
TYQ	INDIANAPOLIS EXEC	IN	LPV	0	100	0	100	0	100
UWL	NEW CASTLE HENRY COUNTY MARLAT	IN	LPV	0	100	0	100	0	100
VPZ	PORTER COUNTY RGNL	IN	LPV	0	100	0	100	1	99.997
1QK	GOVE COUNTY	KS	LPV	0	100	0	100	0	100
3AU	AUGUSTA MUNICIPAL	KS	LP	0	100	0	100	1	99.999
3K3	SYRACUSE-HAMILTON COUNTY MUNICIPAL	KS	LPV	0	100	0	100	0	100
3K7	MARK HOARD MEML	KS	LPV	0	100	0	100	0	100
3K8	COMANCHE COUNTY	KS	LPV	0	100	0	100	0	100
5K2	TRIBUNE MUNICIPAL	KS	LPV	0	100	0	100	0	100
9K8	KINGMAN/CLYDE CESSNA FLD	KS	LP	0	100	0	100	0	100
AAO	COLONEL JAMES JABARA	KS	LPV	0	100	0	100	0	100
ADT	ATWOOD-RAWLINS COUNTY CITY-COU	KS	LPV	0	100	0	100	0	100
ANY	ANTHONY MUNICIPAL	KS	LPV	0	100	0	100	0	100
BEC	BEECH FACTORY	KS	LPV	0	100	0	100	0	100
CBK	SHALZ FLD	KS	LPV	0	100	0	100	0	100
CFV	COFFEYVILLE MUNICIPAL	KS	LPV	0	100	0	100	1	99.995
CNK	BLOSSER MUNICIPAL	KS	LP	0	100	0	100	0	100
DDC	DODGE CITY RGNL	KS	LPV200	0	100	0	100	0	100
EGT	WELLINGTON MUNICIPAL	KS	LPV200	0	100	0	100	1	99.997
EHA	ELKHART-MORTON COUNTY	KS	LPV	0	100	0	100	0	100
EMP	EMPORIA MUNICIPAL	KS	LPV	0	100	0	100	1	99.997
EQA	EL DORADO/CAPT JACK THOMAS MEM	KS	LPV200	0	100	0	100	1	99.996

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
EWK	NEWTON-CITY-COUNTY	KS	LPV	0	100	0	100	0	100
FOE	TOPEKA RGNL	KS	LPV	0	100	0	100	0	100
FSK	FORT SCOTT MUNICIPAL	KS	LPV	0	100	0	100	1	99.995
GBD	GREAT BEND MUNICIPAL	KS	LPV200	0	100	0	100	0	100
GCK	GARDEN CITY RGNL	KS	LPV	0	100	0	100	0	100
GLD	RENNER FLD /GOODLAND MUNICIPAL/	KS	LPV200	0	100	0	100	0	100
HLC	HILL CITY MUNICIPAL	KS	LPV	0	100	0	100	0	100
HQG	HUGOTON MUNICIPAL	KS	LPV	0	100	0	100	0	100
HRU	HERINGTON RGNL	KS	LPV	0	100	0	100	0	100
HUT	HUTCHINSON RGNL	KS	LPV200	0	100	0	100	0	100
HYS	HAYS RGNL	KS	LPV200	0	100	0	100	0	100
ICT	WICHITA DWIGHT D EISENHOWER NT	KS	LPV200	0	100	0	100	0	100
IDP	INDEPENDENCE MUNICIPAL	KS	LPV200	0	100	0	100	1	99.995
IXD	NEW CENTURY AIRCENTER	KS	LPV	0	100	0	100	1	99.996
K38	WASHINGTON COUNTY VETERAN'S ME	KS	LPV	0	100	0	100	0	100
K78	ABILENE MUNICIPAL	KS	LPV	0	100	0	100	0	100
K79	JETMORE MUNICIPAL	KS	LPV	0	100	0	100	0	100
K81	MIAMI COUNTY	KS	LPV	0	100	0	100	1	99.996
K82	SMITH CENTER MUNICIPAL	KS	LPV200	0	100	0	100	0	100
K88	ALLEN COUNTY	KS	LPV	0	100	0	100	1	99.995
LBL	LIBERAL MID-AMERICA RGNL	KS	LPV200	0	100	0	100	0	100
LQR	LARNED-PAWNEE COUNTY	KS	LPV	0	100	0	100	0	100
LWC	LAWRENCE RGNL	KS	LPV200	0	100	0	100	1	99.996
LYO	LYONS-RICE COUNTY MUNICIPAL	KS	LPV	0	100	0	100	0	100
MHK	MANHATTAN RGNL	KS	LPV200	0	100	0	100	0	100
MPR	MC PHERSON	KS	LPV	0	100	0	100	0	100
MYZ	MARYSVILLE MUNICIPAL	KS	LPV	0	100	0	100	0	100
NRN	NORTON MUNICIPAL	KS	LPV	0	100	0	100	0	100
OEL	OAKLEY MUNICIPAL	KS	LPV	0	100	0	100	0	100
OIN	OBERLIN MUNICIPAL	KS	LPV	0	100	0	100	0	100
OJC	JOHNSON COUNTY EXEC	KS	LPV	0	100	0	100	1	99.997
OWI	OTTAWA MUNICIPAL	KS	LPV	0	100	0	100	1	99.996
PHG	PHILLIPSBURG MUNICIPAL	KS	LPV	0	100	0	100	0	100
PPF	TRI-CITY	KS	LPV	0	100	0	100	1	99.995
PTS	ATKINSON MUNICIPAL	KS	LPV	0	100	0	100	1	99.995
PTT	PRATT RGNL	KS	LPV	0	100	0	100	0	100
RCP	ROOKS COUNTY RGNL	KS	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
RPB	BELLEVILLE MUNICIPAL	KS	LPV	0	100	0	100	0	100
RSL	RUSSELL MUNICIPAL	KS	LPV	0	100	0	100	0	100
SLN	SALINA RGNL	KS	LPV	0	100	0	100	0	100
SYF	CHEYENNE COUNTY MUNICIPAL	KS	LPV	0	100	0	100	0	100
TOP	PHILIP BILLARD MUNICIPAL	KS	LPV	0	100	0	100	0	100
TQK	SCOTT CITY MUNICIPAL	KS	LPV	0	100	0	100	0	100
UKL	COFFEY COUNTY	KS	LPV	0	100	0	100	1	99.995
ULS	ULYSSES	KS	LPV	0	100	0	100	0	100
WLD	STROTHER FLD	KS	LPV	0	100	0	100	1	99.997
0I8	CYNTHIANA-HARRISON COUNTY	KY	LP	0	100	0	100	0	100
18I	MC CREARY COUNTY	KY	LP	0	100	0	100	0	100
1M7	FULTON	KY	LPV	0	100	0	100	0	100
27K	GEORGETOWN-SCOTT COUNTY RGNL	KY	LPV200	0	100	0	100	0	100
2I0	MADISONVILLE RGNL	KY	LPV	0	100	0	100	0	100
2M0	PRINCETON-CALDWELL COUNTY	KY	LPV	0	100	0	100	0	100
4M7	RUSSELLVILLE-LOGAN COUNTY	KY	LPV	0	100	0	100	0	100
5M9	MARION-CRITTENDEN COUNTY JAMES	KY	LPV	0	100	0	100	0	100
6I2	LEBANON SPRINGFIELD-GEORGE HOE	KY	LPV	0	100	0	100	0	100
AAS	TAYLOR COUNTY	KY	LPV	0	100	0	100	0	100
BRY	SAMUELS FLD	KY	LPV	0	100	0	100	0	100
BWG	BOWLING GREEN-WARREN COUNTY RG	KY	LPV200	0	100	0	100	0	100
BYL	WILLIAMSBURG-WHITLEY COUNTY	KY	LPV	0	100	0	100	0	100
CEY	KYLE-OAKLEY FLD	KY	LPV	0	100	0	100	0	100
CPF	WENDELL H FORD	KY	LPV200	0	100	0	100	0	100
CVG	CINCINNATI/NORTHERN KENTUCKY I	KY	LPV200	0	100	0	100	0	100
DVK	STUART POWELL FLD	KY	LPV	0	100	0	100	0	100
DWU	ASHLAND RGNL	KY	LP	0	100	0	100	0	100
EHR	HENDERSON CITY-COUNTY	KY	LPV	0	100	0	100	0	100
EKQ	WAYNE COUNTY	KY	LPV	0	100	0	100	0	100
EKX	ADDINGTON FLD	KY	LPV	0	100	0	100	0	100
FFT	CAPITAL CITY	KY	LPV	0	100	0	100	0	100
FGX	FLEMING-MASON	KY	LPV	0	100	0	100	0	100
GLW	GLASGOW MUNICIPAL	KY	LPV	0	100	0	100	0	100
HVC	HOPKINSVILLE-CHRISTIAN COUNTY	KY	LPV	0	100	0	100	0	100
I93	BRECKINRIDGE COUNTY	KY	LPV	0	100	0	100	0	100
IOB	MOUNT STERLING/MONTGOMERY COUN	KY	LPV	0	100	0	100	0	100
JQD	OHIO COUNTY	KY	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
K24	RUSSELL COUNTY	KY	LPV	0	100	0	100	0	100
K62	GENE SNYDER	KY	LP	0	100	0	100	0	100
KY8	HANCOCK COUNTY/RON LEWIS FLD	KY	LPV	0	100	0	100	0	100
LEX	BLUE GRASS	KY	LPV	0	100	0	100	0	100
LOU	BOWMAN FLD	KY	LPV	0	100	0	100	0	100
LOZ	LONDON/CORBIN/MAGEE	KY	LPV	0	100	0	100	0	100
M20	LEITCHFIELD-GRAYSON COUNTY	KY	LPV	0	100	0	100	0	100
M21	MUHLENBERG COUNTY	KY	LP	0	100	0	100	0	100
M25	MAYFIELD GRAVES COUNTY	KY	LPV	0	100	0	100	0	100
OWB	OWENSBORO/DAVIESS COUNTY RGNL	KY	LPV200	0	100	0	100	0	100
PAH	BARKLEY RGNL	KY	LPV200	0	100	0	100	0	100
PBX	PIKE COUNTY/HATCHER FLD	KY	LPV200	0	100	0	100	0	100
RGA	CENTRAL KENTUCKY RGNL	KY	LPV	0	100	0	100	0	100
SDF	LOUISVILLE MUHAMMAD ALI INTL	KY	LPV200	0	100	0	100	0	100
SJS	BIG SANDY RGNL	KY	LPV	0	100	0	100	0	100
SME	LAKE CUMBERLAND RGNL	KY	LPV	0	100	0	100	0	100
SYM	MOREHEAD-ROWAN COUNTY CLYDE A	KY	LPV200	0	100	0	100	0	100
TWT	STURGIS MUNICIPAL	KY	LPV	0	100	0	100	0	100
TZV	TOMPKINSVILLE/MONROE COUNTY	KY	LPV	0	100	0	100	0	100
0R4	CONCORDIA PARISH	LA	LPV	0	100	0	100	1	99.994
0R7	THE RED RIVER	LA	LPV	0	100	0	100	1	99.994
3R4	HART	LA	LPV	0	100	0	100	1	99.994
3R7	JENNINGS	LA	LPV	0	100	0	100	1	99.994
5R8	DE QUINCY INDUSTRIAL AIRPARK	LA	LPV	0	100	0	100	1	99.995
ACP	ALLEN PARISH	LA	LPV	0	100	0	100	1	99.994
AEX	ALEXANDRIA INTL	LA	LPV200	0	100	0	100	1	99.994
APS	PORT OF SOUTH LOUISIANA EXEC R	LA	LPV	0	100	0	100	1	99.995
ARA	ACADIANA RGNL	LA	LPV200	0	100	0	100	2	99.987
BQP	MOREHOUSE MEML	LA	LPV	0	100	0	100	1	99.994
BTR	BATON ROUGE METRO` RYAN FLD	LA	LPV200	0	100	0	100	1	99.994
BXA	GEORGE R CARR MEML AIR FLD	LA	LPV	0	100	0	100	1	99.997
CWF	CHENNAULT INTL	LA	LPV200	0	100	0	100	2	99.994
DTN	SHREVEPORT DOWNTOWN	LA	LPV	0	100	0	100	1	99.995
ESF	ESLER RGNL	LA	LPV200	0	100	0	100	1	99.994
F88	JONESBORO	LA	LP	0	100	0	100	1	99.994
GAO	SOUTH LAFOURCHE LEONARD MILLER	LA	LPV200	0	100	0	100	3	99.978
HDC	HAMMOND NORTHSHORE RGNL	LA	LPV200	0	100	0	100	1	99.996

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
HUM	HOUMA-TERREBONNE	LA	LPV200	0	100	0	100	3	99.978
HZR	FALSE RIVER RGNL	LA	LPV	0	100	0	100	1	99.994
IER	NATCHITOCHES RGNL	LA	LPV	0	100	0	100	1	99.994
IYA	ABBEVILLE CHRIS CRUSTA MEML	LA	LPV	0	100	0	100	2	99.986
L39	LEESVILLE	LA	LPV	0	100	0	100	1	99.994
LCH	LAKE CHARLES RGNL	LA	LPV200	0	100	0	100	2	99.989
LFT	LAFAYETTE RGNL/PAUL FOURNET FL	LA	LPV200	0	100	0	100	1	99.994
M79	JOHN H HOOKS JR MEML	LA	LPV	0	100	0	100	1	99.994
MLU	MONROE RGNL	LA	LPV200	0	100	0	100	1	99.994
MSY	LOUIS ARMSTRONG NEW ORLEANS IN	LA	LPV200	0	100	0	100	1	99.995
NEW	LAKEFRONT	LA	LPV	0	100	0	100	2	99.996
OPL	ST LANDRY PARISH-AHART FLD	LA	LPV	0	100	0	100	1	99.994
PTN	HARRY P WILLIAMS MEML	LA	LPV200	0	100	0	100	2	99.980
REG	LOUISIANA RGNL	LA	LPV	0	100	0	100	1	99.995
RSN	RUSTON RGNL	LA	LPV	0	100	0	100	1	99.995
SHV	SHREVEPORT RGNL	LA	LPV200	0	100	0	100	1	99.995
SPH	SPRINGHILL	LA	LPV	0	100	0	100	1	99.995
TVR	VICKSBURG TALLULAH RGNL	LA	LPV200	0	100	0	100	1	99.994
UXL	SOUTHLAND FLD	LA	LPV	0	100	0	100	2	99.989
3B0	SOUTHBRIDGE MUNICIPAL	MA	LPV	0	100	0	100	1	99.989
ACK	NANTUCKET MEML	MA	LPV200	0	100	1	99.997	1	99.990
BAF	WESTFIELD-BARNES RGNL	MA	LPV	0	100	0	100	1	99.988
BED	LAURENCE G HANSCOM FLD	MA	LPV200	0	100	0	100	1	99.990
BOS	GENERAL EDWARD LAWRENCE LOGAN	MA	LPV200	0	100	0	100	1	99.990
BVY	BEVERLY RGNL	MA	LPV	0	100	0	100	1	99.990
EWB	NEW BEDFORD RGNL	MA	LPV200	0	100	1	99.999	1	99.990
GBR	WALTER J KOLADZA	MA	LP	0	100	0	100	1	99.987
GHG	MARSHFIELD MUNICIPAL - GEORGE HARLO	MA	LPV	0	100	1	99.999	1	99.990
HYA	CAPE COD GATEWAY	MA	LPV200	0	100	1	99.997	1	99.990
LWM	LAWRENCE MUNICIPAL	MA	LPV200	0	100	0	100	1	99.990
MVY	MARTHA'S VINEYARD	MA	LPV200	0	100	1	99.998	1	99.990
ORE	ORANGE MUNICIPAL	MA	LPV	0	100	0	100	1	99.989
ORH	WORCESTER RGNL	MA	LPV200	0	100	0	100	1	99.989
OWD	NORWOOD MEML	MA	LPV	0	100	0	100	1	99.990
PSF	PITTSFIELD MUNICIPAL	MA	LPV	0	100	0	100	1	99.987
PVC	PROVINCETOWN MUNICIPAL	MA	LPV200	0	100	1	99.998	1	99.990
PYM	PLYMOUTH MUNICIPAL	MA	LPV200	0	100	1	99.999	1	99.990

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
TAN	TAUNTON MUNICIPAL - KING FLD	MA	LPV	0	100	0	100	1	99.990
CJJ4	DELORAINE	MB	LPV	0	100	0	100	3	99.963
CJW5	RUSSELL	MB	LPV	0	100	0	100	4	99.956
CYAV	ST. ANDREWS	MB	LPV	1	99.983	1	99.983	5	99.939
CYFO	FLIN FLON	MB	LPV	1	99.966	2	99.953	5	99.807
CYIV	ISLAND LAKE	MB	LPV	1	99.949	2	99.947	4	99.807
CYTH	THOMPSON	MB	LPV200	1	99.947	3	99.940	9	99.749
CYVD	R.J. (BOB) ANDREW FIELD REGIONAL	MB	LPV	0	100	0	100	4	99.955
CYYQ	CHURCHILL	MB	LPV	2	99.918	3	99.887	12	99.611
CJA3	MORDEN REGIONAL	MB	LPV	0	100	1	99.998	2	99.955
CKK7	STEINBACH (SOUTH)	MB	LPV	1	99.986	1	99.983	4	99.944
CKZ7	WINKLER	MB	LPV	0	100	1	99.998	2	99.955
CYBR	BRANDON MUNICIPALCIPALITY	MB	LPV	0	100	0	100	3	99.956
CYGX	GILLAM	MB	LPV	1	99.947	1	99.915	13	99.732
CYQD	THE PAS	MB	LPV	1	99.988	1	99.966	4	99.809
CYWG	JAMES ARMSTRONG RICHARDSON INTL	MB	LPV200	1	99.986	1	99.983	4	99.934
CZJG	JENPEG	MB	LPV	1	99.957	1	99.949	8	99.794
2G4	GARRETT COUNTY	MD	LPV	0	100	0	100	0	100
2W5	MARYLAND	MD	LP	0	100	0	100	1	99.982
2W6	ST MARY'S COUNTY RGNL	MD	LPV	0	100	0	100	1	99.980
BWI	BALTIMORE/WASHINGTON INTL THUR	MD	LPV200	0	100	0	100	1	99.983
CBE	GREATER CUMBERLAND RGNL	MD	LPV	0	100	0	100	0	100
CGE	CAMBRIDGE-DORCHESTER RGNL	MD	LPV	0	100	0	100	1	99.980
DMW	CARROLL COUNTY RGNL/JACK B POA	MD	LPV200	0	100	0	100	1	99.985
ESN	EASTON/NEWNAM FLD	MD	LPV200	0	100	0	100	1	99.980
FDK	FREDERICK MUNICIPAL	MD	LPV	0	100	0	100	1	99.988
GAI	MONTGOMERY COUNTY AIRPARK	MD	LPV	0	100	0	100	1	99.985
HGR	HAGERSTOWN RGNL/RICHARD A HENS	MD	LPV200	0	100	0	100	1	99.990
MTN	MARTIN STATE	MD	LPV	0	100	0	100	1	99.982
OXB	OCEAN CITY MUNICIPAL	MD	LPV	0	100	0	100	2	99.979
SBY	SALISBURY-OCEAN CITY WICOMICO	MD	LPV200	0	100	0	100	2	99.978
W29	BAY BRIDGE	MD	LPV	0	100	0	100	1	99.982
1B0	DEXTER RGNL	ME	LP	0	100	0	100	2	99.992
2B7	PITTSFIELD MUNICIPAL	ME	LPV	0	100	0	100	2	99.993
3B1	GREENVILLE MUNICIPAL	ME	LPV	0	100	0	100	2	99.990
59B	NEWTON FLD	ME	LP	0	100	0	100	1	99.999
81B	OXFORD COUNTY RGNL	ME	LP	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
AUG	AUGUSTA STATE	ME	LPV200	0	100	0	100	1	99.999
BGR	BANGOR INTL	ME	LPV200	0	100	0	100	2	99.992
BHB	HANCOCK COUNTY/BAR HARBOR	ME	LPV200	0	100	0	100	2	99.990
BST	BELFAST MUNICIPAL	ME	LPV	0	100	0	100	2	99.992
BXM	BRUNSWICK EXEC	ME	LPV200	0	100	0	100	0	100
CAR	CARIBOU MUNICIPAL	ME	LPV	0	100	1	99.997	4	99.938
EPM	EASTPORT MUNICIPAL	ME	LPV	0	100	0	100	3	99.965
FVE	NORTHERN AROOSTOOK RGNL	ME	LPV200	0	100	1	99.997	4	99.936
HUL	HOULTON INTL	ME	LP	0	100	1	99.996	3	99.957
IZG	EASTERN SLOPES RGNL	ME	LPV	0	100	0	100	1	99.998
LEW	AUBURN/LEWISTON MUNICIPAL	ME	LPV200	0	100	0	100	0	100
LRG	LINCOLN RGNL	ME	LP	0	100	0	100	3	99.981
MLT	MILLINOCKET MUNICIPAL	ME	LPV	0	100	0	100	3	99.981
OWK	CENTRAL MAINE /NORRIDGEWOCK	ME	LPV	0	100	0	100	1	99.998
PQI	PRESQUE ISLE INTL	ME	LPV200	0	100	1	99.997	3	99.957
PWM	PORTLAND INTL JETPORT	ME	LPV200	0	100	1	99.999	1	99.998
RKD	KNOX COUNTY RGNL	ME	LPV200	0	100	0	100	2	99.996
SFM	SANFORD SEACOAST RGNL	ME	LPV200	0	100	0	100	1	99.990
WVL	WATERVILLE ROBERT LAFLEUR	ME	LPV200	0	100	0	100	1	99.997
48D	CLARE MUNICIPAL	MI	LP	0	100	0	100	1	99.986
4D0	ABRAMS MUNICIPAL	MI	LP	0	100	0	100	0	100
6Y1	BOIS BLANC ISLAND	MI	LP	0	100	1	99.982	2	99.960
77G	MARLETTE TOWNSHIP	MI	LPV	0	100	0	100	0	100
9D9	HASTINGS	MI	LPV	0	100	0	100	1	99.994
ACB	ANTRIM COUNTY	MI	LPV	0	100	2	99.994	2	99.963
ADG	LENAWEE COUNTY	MI	LPV	0	100	0	100	0	100
AMN	GRATIOT COMMUNICIPALTY	MI	LPV	0	100	0	100	1	99.986
ANJ	SAULT STE MARIE MUNICIPAL/SANDERSON	MI	LPV	0	100	1	99.981	2	99.957
APN	ALPENA COUNTY RGNL	MI	LPV	0	100	0	100	2	99.963
ARB	ANN ARBOR MUNICIPAL	MI	LPV	0	100	0	100	0	100
AZO	KALAMAZOO/BATTLE CREEK INTL	MI	LPV200	0	100	0	100	0	100
BAX	HURON COUNTY MEML	MI	LPV	0	100	0	100	1	99.999
BEH	SOUTHWEST MICHIGAN RGNL	MI	LPV200	0	100	0	100	1	99.993
BIV	WEST MICHIGAN RGNL	MI	LPV200	0	100	0	100	1	99.986
BTL	BATTLE CREEK EXEC AT KELLOGG F	MI	LPV200	0	100	0	100	0	100
C04	OCEANA COUNTY	MI	LPV	0	100	0	100	1	99.981
C20	ANDREWS UNIVERSITY AIRPARK	MI	LP	0	100	0	100	1	99.995

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
CAD	WEXFORD COUNTY	MI	LPV200	0	100	0	100	2	99.963
CFS	TUSCOLA AREA	MI	LP	0	100	0	100	0	100
CIU	CHIPPEWA COUNTY INTL	MI	LPV	0	100	1	99.981	2	99.957
CMX	HOUGHTON COUNTY MEML	MI	LPV	1	99.989	1	99.964	3	99.957
CVX	CHARLEVOIX MUNICIPAL	MI	LPV	0	100	1	99.982	2	99.962
D95	DUPONT-LAPEER	MI	LP	0	100	0	100	0	100
DET	COLEMAN A YOUNG MUNICIPAL	MI	LPV	0	100	0	100	0	100
DTW	DETROIT METRO WAYNE COUNTY	MI	LPV200	0	100	0	100	0	100
ERY	LUCE COUNTY	MI	LPV	0	100	1	99.979	2	99.958
ESC	DELTA COUNTY	MI	LPV200	0	100	1	99.978	2	99.963
FFX	FREMONT MUNICIPAL	MI	LPV	0	100	0	100	1	99.986
FNT	BISHOP INTL	MI	LPV200	0	100	0	100	0	100
GDW	GLADWIN ZETTEL MEML	MI	LP	0	100	0	100	1	99.982
GLR	GAYLORD RGNL	MI	LPV	0	100	0	100	2	99.963
GRR	GERALD R FORD INTL	MI	LPV200	0	100	0	100	1	99.986
HTL	ROSCOMMON COUNTY - BLODGETT ME	MI	LP	0	100	0	100	2	99.963
HYX	SAGINAW COUNTY H W BROWNE	MI	LPV200	0	100	0	100	0	100
IKW	JACK BARSTOW	MI	LPV	0	100	0	100	1	99.986
IMT	FORD	MI	LPV	0	100	1	99.977	2	99.963
IRS	KIRSCH MUNICIPAL	MI	LPV	0	100	0	100	0	100
ISQ	SCHOOLCRAFT COUNTY	MI	LP	0	100	1	99.978	2	99.960
IWD	GOGEBIC/IRON COUNTY	MI	LPV200	1	99.989	1	99.967	1	99.961
JXN	JACKSON COUNTY-REYNOLDS FLD	MI	LPV200	0	100	0	100	0	100
JYM	HILLSDALE MUNICIPAL	MI	LPV	0	100	0	100	0	100
LAN	CAPITAL REGION INTL	MI	LPV200	0	100	0	100	0	100
LDM	MASON COUNTY	MI	LPV	0	100	0	100	1	99.968
MBL	MANISTEE COUNTY/BLACKER	MI	LPV200	0	100	0	100	1	99.968
MBS	MBS INTL	MI	LPV200	0	100	0	100	0	100
MCD	MACKINAC ISLAND	MI	LPV	0	100	1	99.982	2	99.958
MKG	MUSKEGON COUNTY	MI	LPV200	0	100	0	100	1	99.986
MNM	MENOMINEE RGNL	MI	LPV200	0	100	1	99.981	1	99.966
MOP	MOUNT PLEASANT MUNICIPAL	MI	LPV	0	100	0	100	1	99.986
N98	BOYNE CITY MUNICIPAL	MI	LP	0	100	1	99.982	2	99.963
OEB	BRANCH COUNTY MEML	MI	LPV	0	100	0	100	0	100
OGM	ONTONAGON COUNTY - SCHUSTER FL	MI	LPV	1	99.989	1	99.964	2	99.958
OSC	OSCODA-WURTSMITH	MI	LPV200	0	100	0	100	1	99.983
OZW	LIVINGSTON COUNTY SPENCER J HA	MI	LPV200	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
PHN	ST CLAIR COUNTY INTL	MI	LPV200	0	100	0	100	0	100
PLN	PELLSTON RGNL/EMMET COUNTY	MI	LPV200	0	100	1	99.982	2	99.960
PTK	OAKLAND COUNTY INTL	MI	LPV200	0	100	0	100	0	100
RMY	BROOKS FLD	MI	LP	0	100	0	100	0	100
RNP	OWOSSO COMMUNICIPALTY	MI	LPV	0	100	0	100	0	100
RQB	ROBEN-HOOD	MI	LPV200	0	100	0	100	1	99.985
SAW	SAWYER INTL	MI	LPV200	1	99.996	1	99.966	2	99.961
SLH	CHEBOYGAN COUNTY	MI	LPV	0	100	1	99.982	2	99.961
TEW	MASON JEWETT FLD	MI	LP	0	100	0	100	0	100
TTF	CUSTER	MI	LPV	0	100	0	100	0	100
TVC	CHERRY CAPITAL	MI	LPV200	0	100	1	99.996	2	99.963
Y31	WEST BRANCH COMMUNICIPALTY	MI	LP	0	100	0	100	2	99.975
Y70	IONIA COUNTY	MI	LPV	0	100	0	100	1	99.986
YIP	WILLOW RUN	MI	LPV200	0	100	0	100	0	100
16D	PERHAM MUNICIPAL	MN	LPV	0	100	0	100	1	99.983
3N8	MAHNOMEN COUNTY	MN	LPV	0	100	0	100	1	99.963
ACQ	WASECA MUNICIPAL	MN	LPV	0	100	0	100	1	99.997
ADC	WADENA MUNICIPAL	MN	LPV	0	100	0	100	1	99.983
AEL	ALBERT LEA MUNICIPAL	MN	LPV	0	100	0	100	0	100
AIT	AITKIN MUNICIPAL/STEVE KURTZ FLD	MN	LPV	0	100	1	99.986	1	99.970
ANE	ANOKA COUNTY-BLAINE (JANES FLD	MN	LPV	0	100	0	100	1	99.967
AUM	AUSTIN MUNICIPAL	MN	LPV200	0	100	0	100	1	99.968
AXN	CHANDLER FLD	MN	LPV	0	100	0	100	1	99.990
BBB	BENSON MUNICIPAL	MN	LPV	0	100	0	100	0	100
BDE	BAUDETTE INTL	MN	LPV	1	99.986	1	99.976	3	99.947
BDH	WILLMAR MUNICIPAL/JOHN L RICE FLD	MN	LPV200	0	100	0	100	0	100
BJI	BEMIDJI RGNL	MN	LPV200	0	100	0	100	2	99.959
BRD	BRAINERD LAKES RGNL	MN	LPV200	0	100	0	100	1	99.971
CBG	CAMBRIDGE MUNICIPAL	MN	LPV	0	100	0	100	1	99.964
CFE	BUFFALO MUNICIPAL	MN	LPV	0	100	0	100	1	99.981
CKC	GRAND MARAIS/COOK COUNTY	MN	LPV	1	99.983	1	99.964	3	99.947
CKN	CROOKSTON MUNICIPAL/KIRKWOOD FLD	MN	LPV	0	100	0	100	2	99.955
CNB	MYERS FLD	MN	LPV	0	100	0	100	0	100
COQ	CLOQUET/CARLTON COUNTY	MN	LPV	0	100	1	99.967	1	99.959
CQM	COOK MUNICIPAL	MN	LP	1	99.986	1	99.964	2	99.949
D39	SAUK CENTRE MUNICIPAL	MN	LPV	0	100	0	100	1	99.995
D42	SPRINGFIELD MUNICIPAL	MN	LP	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
DLH	DULUTH INTL	MN	LPV200	1	99.994	1	99.967	2	99.958
DTL	DETROIT LAKES/WETHING FLD	MN	LPV	0	100	0	100	1	99.982
DVP	SLAYTON MUNICIPAL	MN	LP	0	100	0	100	0	100
DXX	LAC QUI PARLE COUNTY	MN	LPV200	0	100	0	100	0	100
ELO	ELY MUNICIPAL	MN	LPV200	1	99.983	1	99.964	2	99.954
ETH	WHEATON MUNICIPAL	MN	LP	0	100	0	100	0	100
EVM	EVELETH-VIRGINIA MUNICIPAL	MN	LPV	1	99.986	1	99.967	2	99.949
FBL	FARIBAULT MUNICIPAL-LIZ WALL STROHF	MN	LPV	0	100	0	100	1	99.986
FCM	FLYING CLOUD	MN	LPV200	0	100	0	100	1	99.981
FFM	FERGUS FALLS MUNICIPAL/EINAR MICKEL	MN	LPV200	0	100	0	100	1	99.987
FKA	FILLMORE COUNTY	MN	LPV	0	100	1	99.996	1	99.967
FOZ	BIGFORK MUNICIPAL	MN	LP	1	99.986	1	99.982	2	99.948
FRM	FAIRMONT MUNICIPAL	MN	LPV	0	100	0	100	0	100
FSE	FOSSTON MUNICIPAL-ANDERSON FLD	MN	LP	0	100	0	100	2	99.960
GHW	GLENWOOD MUNICIPAL	MN	LPV	0	100	0	100	0	100
GPZ	GRAND RAPIDS/ITASCA COUNTY-GOR	MN	LPV200	1	99.993	1	99.986	2	99.949
GYL	GLENCOE MUNICIPAL	MN	LPV	0	100	0	100	1	99.986
HCD	HUTCHINSON MUNICIPAL/BUTLER FLD	MN	LPV	0	100	0	100	1	99.989
HCO	HALLOCK MUNICIPAL	MN	LPV	0	100	1	99.999	2	99.953
HIB	RANGE RGNL	MN	LPV200	1	99.988	1	99.967	2	99.948
INL	FALLS INTL/EINARSON FLD	MN	LPV	1	99.983	1	99.971	2	99.948
JKJ	MOORHEAD MUNICIPAL	MN	LPV	0	100	0	100	1	99.982
JMR	MORA MUNICIPAL	MN	LPV	0	100	1	99.989	1	99.971
JYG	ST JAMES MUNICIPAL	MN	LPV	0	100	0	100	0	100
LJF	LITCHFIELD MUNICIPAL	MN	LPV	0	100	0	100	1	99.989
LVN	AIRLAKE	MN	LPV200	0	100	0	100	1	99.967
LXL	LITTLE FALLS/MORRISON COUNTY-L	MN	LPV	0	100	0	100	1	99.979
LYV	QUENTIN AANENSON FLD	MN	LPV200	0	100	0	100	0	100
MJQ	JACKSON MUNICIPAL	MN	LPV	0	100	0	100	0	100
MKT	MANKATO RGNL	MN	LPV200	0	100	0	100	0	100
MML	SOUTHWEST MINNESOTA RGNL MARSH	MN	LPV200	0	100	0	100	0	100
MOX	MORRIS MUNICIPAL/CHARLIE SCHMIDT FL	MN	LPV	0	100	0	100	0	100
MSP	MINNEAPOLIS-ST PAUL INTL/WOLD-	MN	LPV200	0	100	0	100	1	99.967
MVE	MONTEVIDEO-CHIPPEWA COUNTY	MN	LPV	0	100	0	100	0	100
MWM	WINDOM MUNICIPAL	MN	LPV	0	100	0	100	0	100
MZH	MOOSE LAKE CARLTON COUNTY	MN	LPV	0	100	1	99.967	1	99.963
ONA	WINONA MUNICIPAL-MAX CONRAD FLD	MN	LPV	0	100	1	99.994	1	99.967

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
ORB	ORR RGNL	MN	LP	1	99.986	1	99.964	2	99.948
OTG	WORTHINGTON MUNICIPAL	MN	LPV200	0	100	0	100	0	100
OWA	OWATONNA DEGNER RGNL	MN	LPV200	0	100	0	100	1	99.989
PEX	PAYNESVILLE MUNICIPAL	MN	LPV200	0	100	0	100	1	99.998
PKD	PARK RAPIDS MUNICIPAL/KONSHOK FLD	MN	LPV200	0	100	0	100	1	99.982
PQN	PIPESTONE MUNICIPAL	MN	LPV200	0	100	0	100	0	100
RGK	RED WING RGNL	MN	LPV200	0	100	1	99.994	1	99.967
ROS	RUSH CITY RGNL	MN	LPV	0	100	1	99.989	1	99.964
ROX	ROSEAU MUNICIPAL/RUDY BILLBERG FLD	MN	LPV	1	99.986	1	99.983	2	99.954
RRT	WARROAD INTL MEML	MN	LPV200	1	99.986	1	99.983	3	99.949
RST	ROCHESTER INTL	MN	LPV200	0	100	0	100	1	99.967
RWF	REDWOOD FALLS MUNICIPAL	MN	LPV	0	100	0	100	0	100
SAZ	STAPLES MUNICIPAL	MN	LPV	0	100	0	100	1	99.982
SBU	BLUE EARTH MUNICIPAL	MN	LPV	0	100	0	100	0	100
SGS	SOUTH ST PAUL MUNICIPAL-RICHARD E F	MN	LPV	0	100	0	100	1	99.967
STC	ST CLOUD RGNL	MN	LPV200	0	100	0	100	1	99.981
STP	ST PAUL DOWNTOWN HOLMAN FLD	MN	LPV	0	100	0	100	1	99.967
TOB	DODGE CENTER	MN	LPV	0	100	0	100	1	99.967
TVF	THIEF RIVER FALLS RGNL	MN	LPV	0	100	0	100	2	99.954
TWM	RICHARD B HELGESON	MN	LPV	1	99.988	1	99.967	2	99.957
ULM	NEW ULM MUNICIPAL	MN	LPV200	0	100	0	100	0	100
VVV	ORTONVILLE MUNICIPAL-MARTINSON FLD	MN	LP	0	100	0	100	0	100
Y49	WALKER MUNICIPAL	MN	LP	0	100	0	100	2	99.958
Y63	ELBOW LAKE MUNICIPAL - PRIDE OF THE	MN	LPV	0	100	0	100	1	99.989
03D	MEMPHIS MEML	MO	LPV	0	100	0	100	0	100
1H0	CREVE COEUR	MO	LPV	0	100	0	100	0	100
1MO	MOUNTAIN GROVE MEML	MO	LP	0	100	0	100	1	99.998
2H2	JERRY SUMNERS SR AURORA MUNICIPAL	MO	LP	0	100	0	100	1	99.995
6M6	LEWIS COUNTY RGNL	MO	LPV	0	100	0	100	0	100
8WC	WASHINGTON COUNTY	MO	LPV	0	100	0	100	0	100
94K	CASSVILLE MUNICIPAL	MO	LPV	0	100	0	100	1	99.995
AIZ	LEE C FINE MEML	MO	LPV	0	100	0	100	1	99.999
BBG	BRANSON	MO	LPV200	0	100	0	100	1	99.996
BUM	BUTLER MEML	MO	LPV	0	100	0	100	1	99.997
CGI	CAPE GIRARDEAU RGNL	MO	LPV200	0	100	0	100	0	100
CHT	CHILLICOTHE MUNICIPAL	MO	LPV	0	100	0	100	1	99.999
COU	COLUMBIA RGNL	MO	LPV200	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
DMO	SEDALIA RGNL	MO	LPV	0	100	0	100	1	99.998
DXE	DEXTER MUNICIPAL	MO	LPV	0	100	0	100	0	100
EIW	COUNTY MEML	MO	LPV	0	100	0	100	0	100
EOS	NEOSHO HUGH ROBINSON	MO	LPV	0	100	0	100	1	99.995
EVU	NORTHWEST MISSOURI RGNL	MO	LPV	0	100	0	100	0	100
EZZ	CAMERON MEML	MO	LPV	0	100	0	100	1	99.998
FAM	FARMINGTON RGNL	MO	LPV	0	100	0	100	0	100
FTT	ELTON HENSLEY MEML	MO	LPV	0	100	0	100	0	100
FWB	BRANSON WEST MUNICIPAL - EMERSON FL	MO	LPV200	0	100	0	100	1	99.995
FYG	WASHINGTON RGNL	MO	LPV	0	100	0	100	0	100
GLY	CLINTON RGNL	MO	LPV	0	100	0	100	1	99.997
GPH	MIDWEST NTL AIR CENTER	MO	LPV	0	100	0	100	1	99.998
H19	BOWLING GREEN MUNICIPAL	MO	LPV	0	100	0	100	0	100
H79	ELDON MODEL AIRPARK	MO	LP	0	100	0	100	1	99.999
H88	A PAUL VANCE FREDERICKTOWN RGN	MO	LPV	0	100	0	100	0	100
HAE	HANNIBAL RGNL	MO	LPV	0	100	0	100	0	100
HFJ	MONETT RGNL	MO	LPV	0	100	0	100	1	99.995
HIG	HIGGINSVILLE INDUSTRIAL MUNICIPAL	MO	LPV	0	100	0	100	1	99.998
IRK	KIRKSVILLE RGNL	MO	LPV200	0	100	0	100	0	100
JEF	JEFFERSON CITY MEML	MO	LPV	0	100	0	100	0	100
JLN	JOPLIN RGNL	MO	LPV	0	100	0	100	1	99.995
K15	GRAND GLAIZE-OSAGE BEACH	MO	LP	0	100	0	100	1	99.998
K57	GOULD PETERSON MUNICIPAL	MO	LPV	0	100	0	100	0	100
K89	MACON-FOWER MEML	MO	LPV	0	100	0	100	0	100
LLU	LAMAR MUNICIPAL	MO	LPV	0	100	0	100	1	99.995
LRY	LAWRENCE SMITH MEML	MO	LPV	0	100	0	100	1	99.997
LXT	LEE'S SUMMIT MUNICIPAL	MO	LPV	0	100	0	100	1	99.997
M05	CARUTHERSVILLE MEML	MO	LPV	0	100	0	100	0	100
M12	STEELE MUNICIPAL	MO	LPV	0	100	0	100	1	99.999
M17	BOLIVAR MUNICIPAL	MO	LPV	0	100	0	100	1	99.997
M48	HOUSTON MEML	MO	LPV	0	100	0	100	1	99.999
MAW	MALDEN RGNL	MO	LPV	0	100	0	100	0	100
MBY	OMAR N BRADLEY	MO	LPV	0	100	0	100	0	100
MCI	KANSAS CITY INTL	MO	LPV200	0	100	0	100	1	99.997
MHL	MARSHALL MEML MUNICIPAL	MO	LPV	0	100	0	100	1	99.999
MKC	CHARLES B WHEELER DOWNTOWN	MO	LPV	0	100	0	100	1	99.997
MNF	MOUNTAIN VIEW	MO	LP	0	100	0	100	1	99.999

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
MO3	STOCKTON MUNICIPAL	MO	LP	0	100	0	100	1	99.996
MO8	NORTH CENTRAL MISSOURI RGNL	MO	LPV	0	100	0	100	0	100
MYJ	MEXICO MEML	MO	LPV	0	100	0	100	0	100
NVD	NEVADA MUNICIPAL	MO	LPV200	0	100	0	100	1	99.996
OZS	CAMDENTON MEML-LAKE RGNL	MO	LPV	0	100	0	100	1	99.998
PCD	PERRYVILLE RGNL	MO	LPV	0	100	0	100	0	100
PLK	M GRAHAM CLARK DOWNTOWN	MO	LPV200	0	100	0	100	1	99.996
POF	POPLAR BLUFF RGNL BUSINESS	MO	LPV	0	100	0	100	0	100
RAW	WARSAW MUNICIPAL	MO	LPV200	0	100	0	100	1	99.998
RCM	SKYHAVEN	MO	LPV	0	100	0	100	1	99.998
SGF	SPRINGFIELD-BRANSON NTL	MO	LPV	0	100	0	100	1	99.996
SIK	SIKESTON MEML MUNICIPAL	MO	LPV	0	100	0	100	0	100
STJ	ROSECRANS MEML	MO	LPV200	0	100	0	100	0	100
STL	ST LOUIS LAMBERT INTL	MO	LPV200	0	100	0	100	0	100
SUS	SPIRIT OF ST LOUIS	MO	LPV200	0	100	0	100	0	100
TBN	WAYNESVILLE-ST ROBERT RGNL FOR	MO	LPV	0	100	0	100	1	99.999
TKX	KENNETT MEML	MO	LPV	0	100	0	100	0	100
TRX	TRENTON MUNICIPAL	MO	LPV	0	100	0	100	1	99.999
UBX	CUBA MUNICIPAL	MO	LPV	0	100	0	100	0	100
UNO	WEST PLAINS RGNL	MO	LPV	0	100	0	100	1	99.998
UUV	SULLIVAN RGNL	MO	LPV	0	100	0	100	0	100
VER	JESSE VIERTEL MEML	MO	LPV	0	100	0	100	1	99.999
VIH	ROLLA NTL	MO	LPV	0	100	0	100	0	100
0R0	COLUMBIA/MARION COUNTY	MS	LPV	0	100	0	100	1	99.997
17M	MAGEE MUNICIPAL	MS	LP	0	100	0	100	1	99.996
5A4	OKOLONA MUNICIPAL/RICHARD STOVALL F	MS	LPV	0	100	0	100	1	99.998
5A6	WINONA-MONTGOMERY COUNTY	MS	LP	0	100	0	100	1	99.996
87I	YAZOO COUNTY	MS	LPV	0	100	0	100	1	99.994
8M1	BOONEVILLE/BALDWYN	MS	LPV	0	100	0	100	0	100
CKM	FLETCHER FLD	MS	LPV	0	100	0	100	1	99.996
CRX	ROSCOE TURNER	MS	LPV200	0	100	0	100	0	100
GLH	GREENVILLE MID-DELTA	MS	LPV200	0	100	0	100	1	99.994
GNF	GRENADA MUNICIPAL	MS	LPV	0	100	0	100	1	99.996
GPT	GULFPORT-BILOXI INTL	MS	LPV200	0	100	0	100	1	99.998
GTR	GOLDEN TRIANGLE RGNL	MS	LPV200	0	100	0	100	1	99.998
GWO	GREENWOOD-LEFLORE	MS	LPV	0	100	0	100	1	99.995
HBG	HATTIESBURG BOBBY L CHAIN MUNICIPAL	MS	LPV200	0	100	0	100	1	99.999

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
HEZ	HARDY-ANDERS FLD/NATCHEZ-ADAMS	MS	LPV200	0	100	0	100	1	99.994
HKS	HAWKINS FLD	MS	LPV	0	100	0	100	1	99.995
HSA	STENNIS INTL	MS	LPV200	0	100	0	100	1	99.998
IDL	INDIANOLA MUNICIPAL	MS	LPV	0	100	0	100	1	99.994
JAN	JACKSON-MEDGAR WILEY EVERS INT	MS	LPV200	0	100	0	100	1	99.995
JVW	JOHN BELL WILLIAMS	MS	LPV200	0	100	0	100	1	99.994
LMS	LOUISVILLE/WINSTON COUNTY	MS	LPV	0	100	0	100	1	99.997
LUL	HESLER-NOBLE FLD	MS	LPV	0	100	0	100	1	99.999
M11	COPIAH COUNTY	MS	LPV	0	100	0	100	1	99.995
M40	MONROE COUNTY	MS	LPV	0	100	0	100	1	99.999
M41	HOLLY SPRINGS-MARSHALL COUNTY	MS	LPV	0	100	0	100	1	99.999
M43	PRENTISS-JEFFERSON DAVIS COUNT	MS	LPV	0	100	0	100	1	99.997
MBO	BRUCE CAMPBELL FLD	MS	LPV	0	100	0	100	1	99.995
MCB	MC COMB/PIKE COUNTY/JOHN E LEW	MS	LPV200	0	100	0	100	1	99.995
MEI	KEY FLD	MS	LPV200	0	100	0	100	1	99.999
MJD	PICAYUNE MUNICIPAL	MS	LPV	0	100	0	100	1	99.997
MMS	SELFS	MS	LPV	0	100	0	100	1	99.997
MPE	PHILADELPHIA MUNICIPAL	MS	LPV	0	100	0	100	1	99.998
OLV	OLIVE BRANCH/TAYLOR FLD	MS	LPV200	0	100	0	100	1	99.998
PIB	HATTIESBURG/LAUREL RGNL	MS	LPV200	0	100	0	100	1	99.998
PMU	PANOLA COUNTY	MS	LPV	0	100	0	100	1	99.998
PQL	TRENT LOTT INTL	MS	LPV200	0	100	0	100	2	99.997
RNV	CLEVELAND MUNICIPAL	MS	LPV	0	100	0	100	1	99.995
STF	GEORGE M BRYAN	MS	LPV200	0	100	0	100	1	99.998
TUP	TUPELO RGNL	MS	LPV200	0	100	0	100	1	99.999
UBS	COLUMBUS-LOWNDES COUNTY	MS	LPV	0	100	0	100	1	99.999
UOX	UNIVERSITY-OXFORD	MS	LPV	0	100	0	100	1	99.998
UTA	TUNICA MUNICIPAL	MS	LPV200	0	100	0	100	1	99.997
VKS	VICKSBURG MUNICIPAL	MS	LP	0	100	0	100	1	99.994
00U	BIG HORN COUNTY	MT	LPV200	0	100	0	100	0	100
1S3	TILLITT FLD	MT	LPV	0	100	0	100	0	100
4U6	CIRCLE TOWN COUNTY	MT	LPV	0	100	0	100	0	100
6S0	BIG TIMBER	MT	LPV	0	100	0	100	0	100
6S8	LAUREL MUNICIPAL	MT	LPV	0	100	0	100	0	100
7S0	RONAN	MT	LPV	0	100	0	100	0	100
7S1	TWIN BRIDGES	MT	LPV	0	100	0	100	0	100
BHK	BAKER MUNICIPAL	MT	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
BIL	BILLINGS LOGAN INTL	MT	LPV200	0	100	0	100	0	100
BTM	BERT MOONEY	MT	LPV	0	100	0	100	0	100
BZN	BOZEMAN YELLOWSTONE INTL	MT	LPV	0	100	0	100	0	100
CII	CHOTEAU	MT	LPV200	0	100	0	100	0	100
CTB	CUT BANK INTL	MT	LPV200	0	100	0	100	0	100
DLN	DILLON	MT	LPV	0	100	0	100	0	100
EKS	ENNIS BIG SKY	MT	LPV	0	100	0	100	0	100
GDV	DAWSON COMMUNICIPALTY	MT	LPV	0	100	0	100	0	100
GGW	WOKAL FLD/GLASGOW-VALLEY COUNT	MT	LPV200	0	100	0	100	0	100
GPI	GLACIER PARK INTL	MT	LPV	0	100	0	100	0	100
GTF	GREAT FALLS INTL	MT	LPV200	0	100	0	100	0	100
HLN	HELENA RGNL	MT	LPV	0	100	0	100	0	100
HRF	RAVALLI COUNTY	MT	LPV	0	100	0	100	0	100
HVR	HAVRE CITY-COUNTY	MT	LPV	0	100	0	100	0	100
HWQ	WHEATLAND COUNTY AT HARLOWTON	MT	LPV	0	100	0	100	0	100
LVM	MISSION FLD	MT	LP	0	100	0	100	0	100
LWT	LEWISTOWN MUNICIPAL	MT	LPV200	0	100	0	100	0	100
M75	MALTA	MT	LP	0	100	0	100	0	100
MLS	FRANK WILEY FLD	MT	LPV	0	100	0	100	0	100
MSO	MISSOULA MONTANA	MT	LPV200	0	100	0	100	0	100
OLF	L M CLAYTON	MT	LPV200	0	100	0	100	1	99.998
PO1	POPLAR MUNICIPAL	MT	LPV200	0	100	0	100	1	99.997
PWD	SHER-WOOD	MT	LPV200	0	100	0	100	1	99.992
RPX	ROUNDUP	MT	LPV	0	100	0	100	0	100
RVF	RUBY VALLEY FLD	MT	LPV	0	100	0	100	0	100
S01	CONRAD	MT	LPV	0	100	0	100	0	100
SBX	SHELBY	MT	LPV	0	100	0	100	0	100
SDY	SIDNEY-RICHLAND RGNL	MT	LPV	0	100	0	100	0	100
WYS	YELLOWSTONE	MT	LPV200	0	100	0	100	0	100
CCN2	GRAND MANAN	NB	LPV	0	100	0	100	3	99.965
CYCH	MIRAMICHI	NB	LPV	1	99.992	1	99.990	5	99.911
CYCL	CHARLO	NB	LPV	3	99.986	3	99.983	5	99.915
CYQM	GREATER MONCTON ROMEO LEBLANC INTL	NB	LPV200	1	99.992	1	99.992	4	99.928
CYSJ	SAINT JOHN	NB	LPV	0	100	1	99.999	3	99.956
CYSL	ST. LEONARD	NB	LPV	0	100	1	99.996	4	99.930
CZBF	BATHURST	NB	LPV	3	99.986	2	99.973	5	99.910
CCE3	JUNIPER	NB	LP	0	100	1	99.994	4	99.936

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
CCR3	FLORENCEVILLE	NB	LPV	0	100	1	99.995	3	99.942
CDJ4	CLEARWATER	NB	LPV	0	100	1	99.994	4	99.929
CYFC	FREDERICTON INTL	NB	LPV	0	100	1	99.992	4	99.939
43A	MONTGOMERY COUNTY	NC	LP	0	100	0	100	1	99.982
7W6	HYDE COUNTY	NC	LP	0	100	0	100	2	99.969
ACZ	HENDERSON FLD	NC	LPV	0	100	0	100	2	99.976
AFP	ANSON COUNTY/JEFF CLOUD FLD	NC	LPV	0	100	0	100	1	99.983
AKH	GASTONIA MUNICIPAL	NC	LPV	0	100	0	100	1	99.993
ASJ	TRI-COUNTY AT HENRY JOYNER FIE	NC	LPV	0	100	0	100	1	99.977
AVL	ASHEVILLE RGNL	NC	LPV200	0	100	0	100	1	99.999
BUY	BURLINGTON/ALAMANCE RGNL	NC	LPV	0	100	0	100	1	99.983
CLT	CHARLOTTE/DOUGLAS INTL	NC	LPV200	0	100	0	100	1	99.988
CPC	COLUMBUS COUNTY MUNICIPAL	NC	LPV	0	100	0	100	1	99.978
CTZ	CLINTON-SAMPSON COUNTY	NC	LPV200	0	100	0	100	1	99.978
DPL	DUPLIN COUNTY	NC	LPV200	0	100	0	100	2	99.977
ECG	ELIZABETH CITY CG AIR STATION/	NC	LPV	0	100	0	100	2	99.972
EDE	NORTHEASTERN RGNL	NC	LPV200	0	100	0	100	2	99.973
EHO	SHELBY-CLEVELAND COUNTY RGNL	NC	LPV	0	100	0	100	1	99.995
EQY	CHARLOTTE/MONROE EXEC	NC	LPV200	0	100	0	100	1	99.985
EWN	COASTAL CAROLINA RGNL	NC	LPV	0	100	0	100	2	99.972
EXX	DAVIDSON COUNTY	NC	LPV	0	100	0	100	1	99.987
EYF	CURTIS L BROWN JR FLD	NC	LPV	0	100	0	100	1	99.978
FAY	FAYETTEVILLE RGNL/GRANNIS FLD	NC	LPV200	0	100	0	100	1	99.980
FFA	FIRST FLIGHT	NC	LP	0	100	0	100	2	99.970
FQD	RUTHERFORD COUNTY/MARCHMAN FLD	NC	LPV	0	100	0	100	1	99.997
GEV	ASHE COUNTY	NC	LP	0	100	0	100	1	99.999
GSO	PIEDMONT TRIAD INTL	NC	LPV200	0	100	0	100	1	99.987
GWW	WAYNE EXEC JETPORT	NC	LPV200	0	100	0	100	1	99.978
HBI	ASHEBORO RGNL	NC	LPV	0	100	0	100	1	99.983
HKY	HICKORY RGNL	NC	LPV200	0	100	0	100	1	99.996
HNZ	HENDERSON/OXFORD	NC	LPV	0	100	0	100	1	99.981
HRJ	HARNETT RGNL JETPORT	NC	LPV	0	100	0	100	1	99.980
ILM	WILMINGTON INTL	NC	LPV200	0	100	0	100	2	99.975
INT	SMITH REYNOLDS	NC	LPV200	0	100	0	100	1	99.988
IPJ	LINCOLNTON-LINCOLN COUNTY RGNL	NC	LPV	0	100	0	100	1	99.995
ISO	KINSTON RGNL JETPORT AT STALLI	NC	LPV200	0	100	0	100	2	99.976
IXA	HALIFAX/NORTHAMPTON RGNL	NC	LPV200	0	100	0	100	1	99.979

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
JNX	JOHNSTON RGNL	NC	LPV	0	100	0	100	1	99.980
JQF	CONCORD-PADGETT RGNL	NC	LPV	0	100	0	100	1	99.987
LBT	LUMBERTON RGNL	NC	LPV	0	100	0	100	1	99.980
LHZ	TRIANGLE NORTH EXEC	NC	LPV200	0	100	0	100	1	99.980
MCZ	MARTIN COUNTY	NC	LPV	0	100	0	100	2	99.977
MEB	LAURINBURG/MAXTON	NC	LPV200	0	100	0	100	1	99.980
MQI	DARE COUNTY RGNL	NC	LPV	0	100	0	100	2	99.970
MRH	MICHAEL J SMITH FLD	NC	LPV	0	100	0	100	2	99.970
MRN	FOOTHILLS RGNL	NC	LPV	0	100	0	100	1	99.997
MWK	MOUNT AIRY/SURRY COUNTY	NC	LPV	0	100	0	100	1	99.996
OAJ	ALBERT J ELLIS	NC	LPV200	0	100	0	100	2	99.974
OCW	WASHINGTON-WARREN	NC	LPV	0	100	0	100	2	99.974
ONX	CURRITUCK COUNTY RGNL	NC	LPV	0	100	0	100	2	99.972
PGV	PITT-GREENVILLE	NC	LPV	0	100	0	100	2	99.977
PMZ	PLYMOUTH MUNICIPAL	NC	LP	0	100	0	100	2	99.973
RCZ	RICHMOND COUNTY	NC	LPV	0	100	0	100	1	99.981
RDU	RALEIGH-DURHAM INTL	NC	LPV200	0	100	0	100	1	99.980
RHP	WESTERN CAROLINA RGNL	NC	LP	0	100	0	100	0	100
RUQ	MID-CAROLINA RGNL	NC	LPV200	0	100	0	100	1	99.988
RWI	ROCKY MOUNT/WILSON RGNL	NC	LPV	0	100	0	100	1	99.978
SCR	SILER CITY MUNICIPAL	NC	LPV	0	100	0	100	1	99.982
SOP	MOORE COUNTY	NC	LPV200	0	100	0	100	1	99.981
SUT	CAPE FEAR RGNL JETPORT/HOWIE F	NC	LPV	0	100	0	100	2	99.975
SVH	STATESVILLE RGNL	NC	LPV200	0	100	0	100	1	99.995
TDF	RALEIGH RGNL AT PERSON COUNTY	NC	LPV200	0	100	0	100	1	99.982
TTA	RALEIGH EXEC JETPORT AT SANFOR	NC	LPV200	0	100	0	100	1	99.981
UKF	WILKES COUNTY	NC	LPV200	0	100	0	100	1	99.996
VUJ	STANLY COUNTY	NC	LPV200	0	100	0	100	1	99.985
W03	WILSON INDUSTRIAL AIR CENTER	NC	LPV	0	100	0	100	1	99.979
W40	MOUNT OLIVE MUNICIPAL	NC	LPV	0	100	0	100	1	99.978
ZEF	ELKIN MUNICIPAL	NC	LP	0	100	0	100	1	99.996
06D	ROLLA MUNICIPAL	ND	LPV	0	100	0	100	2	99.964
20U	BEACH	ND	LPV	0	100	0	100	0	100
2C8	CAVALIER MUNICIPAL	ND	LPV	0	100	1	99.999	3	99.953
3H4	HILLSBORO MUNICIPAL	ND	LPV	0	100	0	100	1	99.963
46D	CARRINGTON MUNICIPAL	ND	LPV	0	100	0	100	1	99.975
4E7	ELLENDALE MUNICIPAL	ND	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
51D	EDGELEY MUNICIPAL	ND	LPV	0	100	0	100	0	100
5L0	LAKOTA MUNICIPAL	ND	LPV	0	100	0	100	1	99.972
5N8	CASSELTON ROBERT MILLER RGNL	ND	LPV	0	100	0	100	1	99.982
6L3	LISBON MUNICIPAL	ND	LPV	0	100	0	100	1	99.989
7L2	LINTON MUNICIPAL	ND	LPV	0	100	0	100	0	100
9D7	CANDO MUNICIPAL	ND	LPV	0	100	0	100	2	99.968
BAC	BARNES COUNTY MUNICIPAL	ND	LPV	0	100	0	100	1	99.982
BIS	BISMARCK MUNICIPAL	ND	LPV200	0	100	0	100	0	100
BWP	HARRY STERN	ND	LPV	0	100	0	100	1	99.988
BWW	BOWMAN RGNL	ND	LPV	0	100	0	100	0	100
D05	GARRISON MUNICIPAL	ND	LPV	0	100	0	100	1	99.995
D09	BOTTINEAU MUNICIPAL	ND	LPV	0	100	0	100	2	99.967
D55	ROBERTSON FLD	ND	LPV	0	100	1	99.999	2	99.955
D57	GLEN ULLIN RGNL	ND	LPV	0	100	0	100	0	100
D60	TIOGA MUNICIPAL	ND	LPV	0	100	0	100	1	99.994
DIK	DICKINSON/THEODORE ROOSEVELT R	ND	LPV200	0	100	0	100	0	100
DVL	DEVILS LAKE RGNL	ND	LPV200	0	100	0	100	1	99.972
FAR	HECTOR INTL	ND	LPV200	0	100	0	100	1	99.982
GAF	HUTSON FLD	ND	LPV	0	100	0	100	2	99.954
GFK	GRAND FORKS INTL	ND	LPV	0	100	0	100	2	99.960
GWR	GWINNER-ROGER MELROE FLD	ND	LPV	0	100	0	100	1	99.997
HEI	HETTINGER/JB LINDQUIST RGNL	ND	LPV	0	100	0	100	0	100
HZE	MERCER COUNTY RGNL	ND	LPV	0	100	0	100	0	100
ISN	SLOULIN FLD INTL	ND	LPV200	0	100	0	100	1	99.994
JMS	JAMESTOWN RGNL	ND	LPV200	0	100	0	100	1	99.982
K74	ROBERT ODEGAARD FLD	ND	LP	0	100	0	100	1	99.982
MOT	MINOT INTL	ND	LPV	0	100	0	100	1	99.977
RUG	RUGBY MUNICIPAL	ND	LP	0	100	0	100	1	99.972
S25	WATFORD CITY MUNICIPAL	ND	LPV	0	100	0	100	1	99.999
XWA	WILLISTON BASIN INTL	ND	LPV200	0	100	0	100	1	99.993
Y19	MANDAN RGNL/LAWLER FLD	ND	LPV	0	100	0	100	0	100
07K	CENTRAL CITY MUNICIPAL - LARRY REIN	NE	LPV	0	100	0	100	0	100
08K	HARVARD STATE	NE	LPV	0	100	0	100	0	100
0B4	HARTINGTON MUNICIPAL/ BUD BECKER FL	NE	LPV	0	100	0	100	0	100
0C4	PENDER MUNICIPAL	NE	LPV	0	100	0	100	0	100
0F4	LOUP CITY MUNICIPAL	NE	LPV	0	100	0	100	0	100
0G3	TECUMSEH MUNICIPAL	NE	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
0V3	PIONEER VILLAGE FLD	NE	LPV	0	100	0	100	0	100
12K	SUPERIOR MUNICIPAL	NE	LPV	0	100	0	100	0	100
47V	CURTIS MUNICIPAL	NE	LPV	0	100	0	100	0	100
4D9	ALMA MUNICIPAL	NE	LPV	0	100	0	100	0	100
4V9	ANTELOPE COUNTY	NE	LPV	0	100	0	100	0	100
6K3	CREIGHTON MUNICIPAL	NE	LPV	0	100	0	100	0	100
7V7	RED CLOUD MUNICIPAL	NE	LPV	0	100	0	100	0	100
8V2	STUART-ATKINSON MUNICIPAL	NE	LPV	0	100	0	100	0	100
93Y	DAVID CITY MUNICIPAL	NE	LPV	0	100	0	100	0	100
9V5	MODISETT	NE	LPV	0	100	0	100	0	100
AFK	NEBRASKA CITY MUNICIPAL	NE	LPV	0	100	0	100	0	100
AHQ	WAHOO MUNICIPAL	NE	LPV	0	100	0	100	0	100
AIA	ALLIANCE MUNICIPAL	NE	LPV200	0	100	0	100	0	100
ANW	AINSWORTH RGNL	NE	LPV200	0	100	0	100	0	100
AUH	AURORA MUNICIPAL - AL POTTER FLD	NE	LPV	0	100	0	100	0	100
BBW	BROKEN BOW MUNICIPAL/KEITH GLAZE FL	NE	LPV	0	100	0	100	0	100
BFF	WESTERN NEBRASKA RGNL/WILLIAM	NE	LPV	0	100	0	100	0	100
BIE	BEATRICE MUNICIPAL	NE	LPV200	0	100	0	100	0	100
BTA	BLAIR MUNICIPAL	NE	LPV	0	100	0	100	0	100
BUB	CRAM FLD	NE	LPV	0	100	0	100	0	100
BVN	ALBION MUNICIPAL	NE	LPV	0	100	0	100	0	100
CDR	CHADRON MUNICIPAL	NE	LPV200	0	100	0	100	0	100
CEK	CRETE MUNICIPAL	NE	LPV	0	100	0	100	0	100
CSB	CAMBRIDGE MUNICIPAL	NE	LPV	0	100	0	100	0	100
CZD	COZAD MUNICIPAL	NE	LPV	0	100	0	100	0	100
EAR	KEARNEY RGNL	NE	LPV200	0	100	0	100	0	100
FBY	FAIRBURY MUNICIPAL	NE	LPV	0	100	0	100	0	100
FET	FREMONT MUNICIPAL	NE	LPV	0	100	0	100	0	100
FMZ	FAIRMONT STATE AIRFIELD	NE	LPV	0	100	0	100	0	100
FNB	BRENNER FLD	NE	LPV	0	100	0	100	0	100
GGF	GRANT MUNICIPAL	NE	LPV	0	100	0	100	0	100
GRI	CENTRAL NEBRASKA RGNL	NE	LPV	0	100	0	100	0	100
GRN	GORDON MUNICIPAL	NE	LPV	0	100	0	100	0	100
HDE	BREWSTER FLD	NE	LPV	0	100	0	100	0	100
HSI	HASTINGS MUNICIPAL	NE	LPV	0	100	0	100	0	100
IBM	KIMBALL MUNICIPAL/ROBERT E ARRAJ FL	NE	LPV	0	100	0	100	0	100
IML	IMPERIAL MUNICIPAL	NE	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
JYR	YORK MUNICIPAL	NE	LPV	0	100	0	100	0	100
K01	FARINGTON FLD	NE	LPV	0	100	0	100	0	100
LBF	NORTH PLATTE RGNL/LEE BIRD FLD	NE	LPV200	0	100	0	100	0	100
LCG	WAYNE MUNICIPAL/ STAN MORRIS FLD	NE	LPV	0	100	0	100	0	100
LNK	LINCOLN	NE	LPV200	0	100	0	100	0	100
LXN	JIM KELLY FLD	NE	LPV	0	100	0	100	0	100
MCK	MC COOK BEN NELSON RGNL	NE	LPV	0	100	0	100	0	100
MLE	MILLARD	NE	LPV	0	100	0	100	0	100
ODX	EVELYN SHARP FLD	NE	LPV	0	100	0	100	0	100
OFK	NORFOLK RGNL/KARL STEFAN MEML	NE	LPV200	0	100	0	100	0	100
OGA	SEARLE FLD	NE	LPV	0	100	0	100	0	100
OKS	GARDEN COUNTY/KING RHILEY FLD	NE	LPV	0	100	0	100	0	100
OLU	COLUMBUS MUNICIPAL	NE	LPV	0	100	0	100	0	100
OMA	EPPLEY AIRFIELD	NE	LPV200	0	100	0	100	0	100
ONL	THE O'NEILL MUNICIPAL-JOHN L BAKER	NE	LPV	0	100	0	100	0	100
PMV	PLATTSMOUTH MUNICIPAL/DOUGLAS V DUE	NE	LPV	0	100	0	100	0	100
RBE	ROCK COUNTY	NE	LPV	0	100	0	100	0	100
SCB	SCRIBNER STATE	NE	LPV	0	100	0	100	0	100
SNY	SIDNEY MUNICIPAL/LLOYD W CARR FLD	NE	LPV	0	100	0	100	0	100
SWT	SEWARD MUNICIPAL	NE	LPV	0	100	0	100	0	100
TIF	THOMAS COUNTY	NE	LPV	0	100	0	100	0	100
TQE	TEKAMAH MUNICIPAL	NE	LPV	0	100	0	100	0	100
VTN	MILLER FLD	NE	LPV	0	100	0	100	0	100
ASH	BOIRE FLD	NH	LPV200	0	100	0	100	1	99.990
CON	CONCORD MUNICIPAL	NH	LPV	0	100	0	100	1	99.990
DAW	SKYHAVEN	NH	LPV	0	100	0	100	1	99.990
EEN	DILLANT/HOPKINS	NH	LPV	0	100	0	100	1	99.989
HIE	MOUNT WASHINGTON RGNL	NH	LPV	0	100	0	100	1	99.999
LCI	LACONIA MUNICIPAL	NH	LPV	0	100	0	100	1	99.990
LEB	LEBANON MUNICIPAL	NH	LPV	0	100	0	100	1	99.990
MHT	MANCHESTER BOSTON RGNL	NH	LPV200	0	100	0	100	1	99.990
PSM	PORTSMOUTH INTL AT PEASE	NH	LPV200	0	100	0	100	1	99.990
47N	CENTRAL JERSEY RGNL	NJ	LP	0	100	0	100	2	99.982
4N1	GREENWOOD LAKE	NJ	LP	0	100	0	100	1	99.984
ACY	ATLANTIC CITY INTL	NJ	LPV200	0	100	0	100	2	99.981
CDW	ESSEX COUNTY	NJ	LPV	0	100	0	100	2	99.984
EWR	NEWARK LIBERTY INTL	NJ	LPV200	0	100	0	100	2	99.983

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
MIV	MILLVILLE MUNICIPAL	NJ	LPV200	0	100	0	100	2	99.981
MJX	OCEAN COUNTY	NJ	LPV	0	100	0	100	2	99.982
MMU	MORRISTOWN MUNICIPAL	NJ	LPV200	0	100	0	100	2	99.983
N12	LAKEWOOD	NJ	LP	0	100	0	100	2	99.981
N14	FLYING W	NJ	LPV	0	100	0	100	2	99.982
N40	SKY MANOR	NJ	LP	0	100	0	100	2	99.982
TEB	TETERBORO	NJ	LPV	0	100	0	100	2	99.984
TTN	TRENTON MERCER	NJ	LPV	0	100	0	100	2	99.982
VAY	SOUTH JERSEY RGNL	NJ	LP	0	100	0	100	2	99.981
WWD	CAPE MAY COUNTY	NJ	LPV	0	100	0	100	2	99.980
CYDF	DEER LAKE	NL	LPV200	3	99.866	3	99.866	7	99.772
CYJT	STEPHENVILLE	NL	LPV	4	99.906	4	99.906	6	99.792
CYQX	GANDER INTL	NL	LPV200	3	99.859	5	99.841	41	99.496
CYWK	WABUSH	NL	LPV	3	99.854	3	99.846	5	99.748
CYYR	GOOSE BAY	NL	LPV	3	99.852	3	99.834	6	99.718
CYYT	ST. JOHN'S INTL	NL	LPV	3	99.839	87	99.376	158	98.394
CZUM	CHURCHILL FALLS	NL	LPV	3	99.852	3	99.841	5	99.752
CVB2	VOISEY'S BAY	NL	LPV	4	99.828	3	99.800	7	99.691
LFVM	MIQUELON	NL	LPV	4	99.900	4	99.898	6	99.736
LFVP	ST PIERRE	NL	LPV	5	99.915	5	99.915	10	99.725
0E0	MORIARTY MUNICIPAL	NM	LPV	0	100	0	100	0	100
ABQ	ALBUQUERQUE INTL SUNPORT	NM	LPV200	0	100	0	100	0	100
AEG	DOUBLE EAGLE II	NM	LPV200	0	100	0	100	0	100
ALM	ALAMOGORDO-WHITE SANDS RGNL	NM	LPV	0	100	0	100	5	99.988
ATS	ARTESIA MUNICIPAL	NM	LPV200	0	100	0	100	7	99.990
CAO	CLAYTON MUNICIPAL AIRPARK	NM	LPV	0	100	0	100	0	100
CNM	CAVERN CITY AIR TRML	NM	LPV200	0	100	0	100	14	99.974
CVN	CLOVIS RGNL	NM	LPV200	0	100	0	100	3	99.997
DMN	DEMING MUNICIPAL	NM	LPV	0	100	0	100	34	99.904
E06	LEA COUNTY/ZIP FRANKLIN MEML	NM	LPV	0	100	0	100	14	99.970
FMN	FOUR CORNERS RGNL	NM	LPV200	0	100	0	100	0	100
HOB	LEA COUNTY RGNL	NM	LPV	0	100	0	100	13	99.971
LAM	LOS ALAMOS	NM	LP	0	100	0	100	0	100
LRU	LAS CRUCES INTL	NM	LPV200	0	100	0	100	20	99.954
ONM	SOCORRO MUNICIPAL	NM	LP	0	100	0	100	0	100
ROW	ROSWELL AIR CENTER	NM	LPV	0	100	0	100	5	99.996
SAF	SANTA FE MUNICIPAL	NM	LPV200	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
SRR	SIERRA BLANCA RGNL	NM	LPV200	0	100	0	100	1	99.999
SVC	GRANT COUNTY	NM	LPV	0	100	0	100	37	99.904
CCQ3	DEBERT	NS	LPV	1	99.997	1	99.992	3	99.923
CYHZ	STANFIELD INTL	NS	LPV200	0	100	1	99.995	3	99.927
CYQY	J.A. DOUGLAS MCCURDY	NS	LPV200	2	99.967	2	99.967	4	99.862
CYTN	TRENTON	NS	LPV	1	99.992	1	99.989	4	99.907
CYZX	GREENWOOD	NS	LP	0	100	0	100	3	99.938
CYQI	YARMOUTH	NS	LPV	0	100	0	100	2	99.972
CYEV	INUVIK (MIKE ZUBKO)	NT	LPV	1	99.845	1	99.821	18	99.628
CYFS	FORT SIMPSON	NT	LPV	1	99.843	2	99.840	4	99.725
CYGH	FORT GOOD HOPE	NT	LPV	1	99.847	1	99.829	10	99.709
CYHY	MERLYN CARTER AIRPORT	NT	LPV	2	99.873	2	99.821	6	99.725
CYKD	FREDDIE CARMICHAEL	NT	LPV	1	99.844	2	99.820	17	99.642
CYPC	PAULATUK (NORA ALIQATCHIALUK RUBEN)	NT	LPV	1	99.845	4	99.806	28	99.452
CYSY	SACHS HARBOUR (DAVID NASOGALUAK JR. SAARYUAQ)	NT	LPV	4	99.802	9	99.699	126	98.621
CYUB	JAMES GRUBEN	NT	LPV	1	99.847	3	99.805	38	99.489
CYVQ	NORMAN WELLS	NT	LPV	1	99.844	2	99.832	6	99.729
CZFM	FORT MCPHERSON	NT	LPV	1	99.844	1	99.821	14	99.694
CDK2	DIAVIK	NT	LPV	2	99.884	2	99.812	15	99.549
CEU9	SAMBAA K'E	NT	LPV	2	99.856	1	99.840	4	99.724
CGK2	GAHCHO KUE	NT	LPV	2	99.886	2	99.814	12	99.567
CSK6	SNAP LAKE	NT	LPV	2	99.884	2	99.812	13	99.629
CYFR	FORT RESOLUTION	NT	LPV	2	99.874	2	99.819	7	99.697
CYJP	FORT PROVIDENCE	NT	LPV	2	99.866	2	99.827	4	99.729
CYOA	EKATI	NT	LPV	2	99.884	2	99.812	15	99.558
CYOC	OLD CROW	NT	LPV	1	99.831	2	99.815	8	99.759
CYSM	FORT SMITH	NT	LPV	2	99.897	2	99.821	8	99.719
CYWJ	DELINE	NT	LPV	1	99.841	2	99.824	8	99.694
CYZF	YELLOWKNIFE	NT	LPV200	2	99.873	2	99.813	10	99.686
CZFN	TULITA	NT	LPV	1	99.840	2	99.824	5	99.727
CMB2	MEADOWBANK	NU	LPV	2	99.878	3	99.793	15	99.276
CYBK	BAKER LAKE	NU	LPV	2	99.878	3	99.793	17	99.308
CYEK	ARVIAT	NU	LPV	2	99.879	4	99.855	14	99.481
CYFB	IQALUIT	NU	LPV200	10	99.720	34	99.509	112	97.658
CYRB	RESOLUTE BAY	NU	LPV	577	83.405	650	81.879	1311	55.894
CYRT	RANKIN INLET	NU	LPV	2	99.878	3	99.840	22	99.391

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
CYTE	KINNGAIT AIRPORT	NU	LPV	4	99.773	9	99.724	59	98.679
CYYH	TALOYOAK	NU	LPV	12	99.749	21	99.538	115	97.882
CMR2	MARY RIVER	NU	LPV	734	86.945	824	84.850	1208	65.189
CYCS	CHESTERFIELD INLET	NU	LPV	3	99.863	3	99.832	20	99.371
CYSK	SANIKILUAQ	NU	LPV	2	99.883	3	99.830	6	99.708
05U	EUREKA	NV	LP	0	100	0	100	0	100
10U	OWYHEE	NV	LPV200	0	100	0	100	0	100
67L	MESQUITE	NV	LP	0	100	0	100	1	99.995
BAM	BATTLE MOUNTAIN	NV	LPV	0	100	0	100	0	100
BVU	BOULDER CITY MUNICIPAL	NV	LP	0	100	0	100	17	99.971
CXP	CARSON CITY	NV	LP	0	100	0	100	1	99.984
ELY	ELY/YELLAND FLD	NV	LPV	0	100	0	100	1	99.998
HTH	HAWTHORNE INDUSTRIAL	NV	LP	0	100	0	100	5	99.980
LAS	HARRY REID INTL	NV	LPV200	0	100	0	100	18	99.967
LOL	DERBY FLD	NV	LPV	0	100	0	100	1	99.998
RNO	RENO/TAHOE INTL	NV	LPV	0	100	0	100	1	99.987
RTS	RENO/STEAD	NV	LPV	0	100	0	100	1	99.983
SPZ	SILVER SPRINGS	NV	LPV	0	100	0	100	1	99.992
TPH	TONOPAH	NV	LP	0	100	0	100	20	99.976
VGT	NORTH LAS VEGAS	NV	LP	0	100	0	100	18	99.970
WMC	WINNEMUCCA MUNICIPAL	NV	LPV	0	100	0	100	0	100
06N	RANDALL	NY	LP	0	100	0	100	1	99.984
0G7	FINGER LAKES RGNL	NY	LPV	0	100	0	100	0	100
1B1	COLUMBIA COUNTY	NY	LPV	0	100	0	100	1	99.986
20N	KINGSTON-ULSTER	NY	LPV	0	100	0	100	1	99.986
44N	SKY ACRES	NY	LPV	0	100	0	100	1	99.986
4B6	TICONDEROGA MUNICIPAL	NY	LPV	0	100	0	100	1	99.997
5B2	SARATOGA COUNTY	NY	LPV	0	100	0	100	1	99.992
5G0	LE ROY	NY	LP	0	100	0	100	0	100
9G0	BUFFALO AIRFIELD	NY	LP	0	100	0	100	0	100
9G3	AKRON/JESSON FLD	NY	LP	0	100	0	100	0	100
ALB	ALBANY INTL	NY	LPV200	0	100	0	100	1	99.987
ART	WATERTOWN INTL	NY	LPV200	0	100	0	100	0	100
BGM	GREATER BINGHAMTON/EDWIN A LIN	NY	LPV200	0	100	0	100	0	100
BUF	BUFFALO NIAGARA INTL	NY	LPV200	0	100	0	100	0	100
ELM	ELMIRA/CORNING RGNL	NY	LPV200	0	100	0	100	0	100
ELZ	WELLSVILLE MUNICIPAL/TARANTINE FLD	NY	LPV200	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
FOK	FRANCIS S GABRESKI	NY	LPV200	0	100	0	100	2	99.985
FRG	REPUBLIC	NY	LPV200	0	100	0	100	2	99.983
FZY	OSWEGO COUNTY	NY	LPV	0	100	0	100	0	100
GFL	FLOYD BENNETT MEML	NY	LPV200	0	100	0	100	1	99.993
GVQ	GENESEE COUNTY	NY	LPV200	0	100	0	100	0	100
HPN	WESTCHESTER COUNTY	NY	LPV	0	100	0	100	2	99.984
HTF	HORNELL MUNICIPAL	NY	LPV	0	100	0	100	0	100
HTO	EAST HAMPTON	NY	LPV	0	100	0	100	2	99.987
HWV	BROOKHAVEN	NY	LPV	0	100	0	100	2	99.985
IAG	NIAGARA FALLS INTL	NY	LPV	0	100	0	100	0	100
ISP	LONG ISLAND MAC ARTHUR	NY	LPV200	0	100	0	100	2	99.985
ITH	ITHACA TOMPKINS INTL	NY	LPV	0	100	0	100	0	100
IUA	CANANDAIGUA	NY	LPV	0	100	0	100	0	100
JFK	JOHN F KENNEDY INTL	NY	LPV200	0	100	0	100	2	99.983
JHW	CHAUTAUQUA COUNTY/JAMESTOWN	NY	LPV200	0	100	0	100	0	100
K09	PISECO	NY	LP	0	100	0	100	1	99.999
LGA	LAGUARDIA	NY	LPV	0	100	0	100	2	99.983
MAL	MALONE-DUFORT	NY	LPV	0	100	0	100	0	100
MGJ	ORANGE COUNTY	NY	LPV	0	100	0	100	1	99.985
MSS	MASSENA INTL-RICHARDS FLD	NY	LPV	0	100	0	100	0	100
MSV	SULLIVAN COUNTY INTL	NY	LPV	0	100	0	100	1	99.984
N23	SIDNEY MUNICIPAL	NY	LP	0	100	0	100	1	99.998
N66	ALBERT S NADER RGNL	NY	LPV	0	100	0	100	1	99.997
NY0	FULTON COUNTY	NY	LPV	0	100	0	100	1	99.995
OGS	OGDENSBURG INTL	NY	LPV	0	100	0	100	0	100
OIC	LT WARREN EATON	NY	LP	0	100	0	100	0	100
OLE	CATTARAUGUS COUNTY-OLEAN	NY	LPV	0	100	0	100	0	100
PBG	PLATTSBURGH INTL	NY	LPV	0	100	0	100	0	100
PEO	PENN YAN	NY	LPV	0	100	0	100	0	100
POU	HUDSON VALLEY RGNL	NY	LPV	0	100	0	100	1	99.986
RME	GRIFFISS INTL	NY	LPV200	0	100	0	100	0	100
ROC	FREDERICK DOUGLASS/GREATER ROC	NY	LPV200	0	100	0	100	0	100
SCH	SCHENECTADY COUNTY	NY	LPV200	0	100	0	100	1	99.989
SDC	WILLIAMSON-SODUS	NY	LPV	0	100	0	100	0	100
SLK	ADIRONDACK RGNL	NY	LPV200	0	100	0	100	0	100
SWF	NEW YORK STEWART INTL	NY	LPV200	0	100	0	100	1	99.985
SYR	SYRACUSE HANCOCK INTL	NY	LPV200	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
VGC	HAMILTON MUNICIPAL	NY	LPV	0	100	0	100	0	100
0G6	WILLIAMS COUNTY	OH	LPV	0	100	0	100	0	100
10G	HOLMES COUNTY	OH	LP	0	100	0	100	0	100
16G	SENECA COUNTY	OH	LPV	0	100	0	100	0	100
17G	PORT BUCYRUS-CRAWFORD COUNTY	OH	LP	0	100	0	100	0	100
1G0	WOOD COUNTY	OH	LPV	0	100	0	100	0	100
1G3	KENT STATE UNIVERSITY	OH	LPV	0	100	0	100	0	100
2G2	GEARY A BATES/JEFFERSON COUNTY	OH	LPV	0	100	0	100	0	100
4G5	MONROE COUNTY	OH	LP	0	100	0	100	0	100
4I3	KNOX COUNTY	OH	LPV200	0	100	0	100	0	100
5A1	NORWALK-HURON COUNTY	OH	LP	0	100	0	100	0	100
6G5	BARNESVILLE-BRADFIELD	OH	LP	0	100	0	100	0	100
7G8	GEAUGA COUNTY	OH	LP	0	100	0	100	0	100
AKR	AKRON FULTON INTL	OH	LP	0	100	0	100	0	100
AOH	LIMA ALLEN COUNTY	OH	LPV200	0	100	0	100	0	100
AXV	NEIL ARMSTRONG	OH	LPV	0	100	0	100	0	100
BJJ	WAYNE COUNTY	OH	LPV	0	100	0	100	0	100
BKL	BURKE LAKEFRONT	OH	LPV	0	100	0	100	0	100
CAK	AKRON-CANTON RGNL	OH	LPV200	0	100	0	100	0	100
CDI	CAMBRIDGE MUNICIPAL	OH	LP	0	100	0	100	0	100
CGF	CUYAHOGA COUNTY	OH	LPV200	0	100	0	100	0	100
CLE	CLEVELAND-HOPKINS INTL	OH	LPV200	0	100	0	100	0	100
CMH	JOHN GLENN COLUMBUS INTL	OH	LPV200	0	100	0	100	0	100
CQA	LAKEFIELD	OH	LPV	0	100	0	100	0	100
CYO	PICKAWAY COUNTY MEML	OH	LPV	0	100	0	100	0	100
DAY	JAMES M COX DAYTON INTL	OH	LPV200	0	100	0	100	0	100
DLZ	DELAWARE MUNICIPAL/JIM MOORE FLD	OH	LPV	0	100	0	100	0	100
EDJ	BELLEFONTAINE RGNL	OH	LPV	0	100	0	100	0	100
EOP	PIKE COUNTY	OH	LP	0	100	0	100	0	100
FDY	FINDLAY	OH	LPV	0	100	0	100	0	100
FZI	FOSTORIA METRO	OH	LPV	0	100	0	100	0	100
GQQ	GALION MUNICIPAL	OH	LP	0	100	0	100	0	100
HAO	BUTLER COUNTY RGNL/HOGAN FLD	OH	LPV	0	100	0	100	0	100
HOC	HIGHLAND COUNTY	OH	LP	0	100	0	100	0	100
HZY	NORTHEAST OHIO RGNL	OH	LPV	0	100	0	100	0	100
I10	NOBLE COUNTY	OH	LP	0	100	0	100	0	100
I19	GREENE COUNTY/LEWIS A JACKSON	OH	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
I40	RICHARD DOWNING	OH	LPV	0	100	0	100	0	100
I66	CLINTON FLD	OH	LPV	0	100	0	100	0	100
I68	WARREN COUNTY/JOHN LANE FLD	OH	LPV	0	100	0	100	0	100
I69	CLERMONT COUNTY	OH	LP	0	100	0	100	0	100
I74	GRIMES FLD	OH	LPV	0	100	0	100	0	100
ILN	WILMINGTON AIR PARK	OH	LPV200	0	100	0	100	0	100
LCK	RICKENBACKER INTL	OH	LPV200	0	100	0	100	0	100
LHQ	FAIRFIELD COUNTY	OH	LPV200	0	100	0	100	0	100
LNN	LAKE COUNTY EXEC	OH	LPV	0	100	0	100	0	100
LPR	LORAIN COUNTY RGNL	OH	LPV200	0	100	0	100	0	100
LUK	CINCINNATI MUNICIPAL/LUNKEN FLD	OH	LPV	0	100	0	100	0	100
MFD	MANSFIELD LAHM RGNL	OH	LPV200	0	100	0	100	0	100
MGY	DAYTON-WRIGHT BROTHERS	OH	LPV	0	100	0	100	0	100
MNN	MARION MUNICIPAL	OH	LPV	0	100	0	100	0	100
MRT	UNION COUNTY	OH	LP	0	100	0	100	0	100
MWO	MIDDLETOWN RGNL/HOOK FLD	OH	LPV	0	100	0	100	0	100
OSU	OHIO STATE UNIVERSITY	OH	LPV200	0	100	0	100	0	100
OWX	PUTNAM COUNTY	OH	LPV	0	100	0	100	0	100
OXD	MIAMI UNIVERSITY	OH	LPV	0	100	0	100	0	100
PCW	ERIE-OTTAWA INTL	OH	LPV	0	100	0	100	0	100
PHD	HARRY CLEVER FLD	OH	LP	0	100	0	100	0	100
PMH	GREATER PORTSMOUTH RGNL	OH	LPV	0	100	0	100	0	100
POV	PORTAGE COUNTY	OH	LPV	0	100	0	100	0	100
RZT	ROSS COUNTY	OH	LPV	0	100	0	100	0	100
S24	SANDUSKY COUNTY RGNL	OH	LPV	0	100	0	100	0	100
SCA	SIDNEY MUNICIPAL	OH	LPV	0	100	0	100	0	100
SGH	SPRINGFIELD/BECKLEY MUNICIPAL	OH	LPV200	0	100	0	100	0	100
TDZ	TOLEDO EXEC	OH	LPV	0	100	0	100	0	100
TOL	EUGENE F KRANZ TOLEDO EXPRESS	OH	LPV200	0	100	0	100	0	100
TSO	CARROLL COUNTY-TOLSON	OH	LP	0	100	0	100	0	100
TZR	BOLTON FLD	OH	LPV	0	100	0	100	0	100
UNI	OHIO UNIVERSITY	OH	LPV200	0	100	0	100	0	100
USE	FULTON COUNTY	OH	LPV	0	100	0	100	0	100
UYF	MADISON COUNTY	OH	LPV	0	100	0	100	0	100
VES	DARKE COUNTY	OH	LPV	0	100	0	100	0	100
VTA	NEWARK-HEATH	OH	LP	0	100	0	100	0	100
YNG	YOUNGSTOWN/WARREN RGNL	OH	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
ZZV	ZANESVILLE MUNICIPAL	OH	LPV200	0	100	0	100	0	100
1F0	ARDMORE DOWNTOWN EXEC	OK	LP	0	100	0	100	1	99.998
1K8	SOUTH GRAND LAKE RGNL	OK	LPV	0	100	0	100	1	99.995
1O4	THOMAS MUNICIPAL	OK	LPV	0	100	0	100	1	99.999
2K4	SCOTT FLD	OK	LPV	0	100	0	100	0	100
3F7	JONES MEML	OK	LPV	0	100	0	100	1	99.995
4O4	MC CURTAIN COUNTY RGNL	OK	LP	0	100	0	100	1	99.995
6K4	FAIRVIEW MUNICIPAL	OK	LPV	0	100	0	100	1	99.999
80F	ANTLERS MUNICIPAL	OK	LPV	0	100	0	100	1	99.995
ADH	ADA RGNL	OK	LPV	0	100	0	100	1	99.997
ADM	ARDMORE MUNICIPAL	OK	LPV	0	100	0	100	1	99.997
AVK	ALVA RGNL	OK	LPV	0	100	0	100	0	100
AXS	ALTUS/QUARTZ MOUNTAIN RGNL	OK	LPV	0	100	0	100	0	100
BKN	BLACKWELL-TONKAWA MUNICIPAL	OK	LPV	0	100	0	100	1	99.997
BVO	BARTLESVILLE MUNICIPAL	OK	LPV	0	100	0	100	1	99.995
CHK	CHICKASHA MUNICIPAL	OK	LPV200	0	100	0	100	1	99.998
CLK	CLINTON RGNL	OK	LPV	0	100	0	100	0	100
CSM	CLINTON/SHERMAN	OK	LPV200	0	100	0	100	0	100
CUH	CUSHING MUNICIPAL	OK	LPV	0	100	0	100	1	99.996
DUA	DURANT RGNL/EAKER FLD	OK	LPV	0	100	0	100	1	99.997
DUC	HALLIBURTON FLD	OK	LPV200	0	100	0	100	1	99.999
ELK	ELK CITY RGNL BUSINESS	OK	LPV	0	100	0	100	0	100
F22	PERRY MUNICIPAL	OK	LPV	0	100	0	100	1	99.997
FDR	FREDERICK RGNL	OK	LPV200	0	100	0	100	0	100
GCM	CLAREMORE RGNL	OK	LPV	0	100	0	100	1	99.995
GMJ	GROVE MUNICIPAL	OK	LPV	0	100	0	100	1	99.995
GOK	GUTHRIE/EDMOND RGNL	OK	LPV	0	100	0	100	1	99.997
GUY	GUYMON MUNICIPAL	OK	LPV	0	100	0	100	0	100
GZL	STIGLER RGNL	OK	LPV	0	100	0	100	1	99.995
H71	MID-AMERICA INDUSTRIAL	OK	LPV	0	100	0	100	1	99.995
HBR	HOBART RGNL	OK	LPV	0	100	0	100	0	100
HHW	STAN STAMPER MUNICIPAL	OK	LPV	0	100	0	100	1	99.995
HSD	SUNDANCE	OK	LPV	0	100	0	100	1	99.998
LAW	LAWTON-FORT SILL RGNL	OK	LPV200	0	100	0	100	1	99.999
MKO	MUSKOGEE-DAVIS RGNL	OK	LPV	0	100	0	100	1	99.995
MLC	MC ALESTER RGNL	OK	LPV	0	100	0	100	1	99.995
OJA	WEATHERFORD STAFFORD	OK	LPV	0	100	0	100	1	99.999

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
OKC	WILL ROGERS WORLD	OK	LPV200	0	100	0	100	1	99.998
OKM	OKMULGEE RGNL	OK	LPV200	0	100	0	100	1	99.995
OUN	UNIVERSITY OF OKLAHOMA WESTHEI	OK	LPV200	0	100	0	100	1	99.998
OWP	WILLIAM R POGUE MUNICIPAL	OK	LPV	0	100	0	100	1	99.995
PNC	PONCA CITY RGNL	OK	LPV	0	100	0	100	1	99.997
PVJ	PAULS VALLEY MUNICIPAL	OK	LPV200	0	100	0	100	1	99.998
PWA	WILEY POST	OK	LPV200	0	100	0	100	1	99.997
RCE	CLARENCE E PAGE MUNICIPAL	OK	LPV	0	100	0	100	1	99.998
RKR	ROBERT S KERR	OK	LPV	0	100	0	100	1	99.995
RQO	EL RENO RGNL	OK	LPV	0	100	0	100	1	99.998
RVS	TULSA RIVERSIDE	OK	LPV200	0	100	0	100	1	99.995
SNL	SHAWNEE RGNL	OK	LPV200	0	100	0	100	1	99.997
SWO	STILLWATER RGNL	OK	LPV200	0	100	0	100	1	99.997
TQH	TAHLEQUAH MUNICIPAL	OK	LPV	0	100	0	100	1	99.995
TUL	TULSA INTL	OK	LPV200	0	100	0	100	1	99.995
WDG	ENID WOODRING RGNL	OK	LPV200	0	100	0	100	1	99.998
WWR	WEST WOODWARD	OK	LPV	0	100	0	100	0	100
CNY3	COLLINGWOOD	ON	LPV	0	100	0	100	1	99.992
CYAC	CAT LAKE	ON	LPV	1	99.959	1	99.950	4	99.850
CYAM	SAULT STE. MARIE	ON	LPV200	0	100	1	99.980	2	99.957
CYCC	CORNWALL REGIONAL	ON	LPV	0	100	0	100	0	100
CYHD	DRYDEN REGIONAL	ON	LPV	1	99.982	1	99.965	5	99.916
CYHM	HAMILTON	ON	LPV	0	100	0	100	0	100
CYHS	SAUGEEN MUNICIPALCIPALITY	ON	LPV	0	100	0	100	1	99.998
CYKF	WATERLOO	ON	LPV200	0	100	0	100	0	100
CYKZ	BUTTONVILLE MUNICIPALCIPAL	ON	LPV	0	100	0	100	1	99.999
CYLS	LAKE SIMCOE	ON	LPV	0	100	0	100	1	99.998
CYMO	MOOSONEE	ON	LPV	2	99.963	2	99.958	4	99.873
CYOW	MACDONALD-CARTIER INTL	ON	LPV200	0	100	0	100	0	100
CYPL	PICKLE LAKE	ON	LPV	1	99.961	1	99.951	3	99.857
CYPQ	PETERBOROUGH	ON	LPV	0	100	0	100	1	99.997
CYQG	WINDSOR	ON	LPV	0	100	0	100	0	100
CYQK	KENORA	ON	LPV	1	99.978	1	99.971	5	99.928
CYQS	ST. THOMAS MUNICIPALCIPALITY	ON	LPV	0	100	0	100	0	100
CYQT	THUNDER BAY	ON	LPV200	1	99.971	1	99.964	3	99.939
CYSN	NIAGARA DISTRICT	ON	LPV	0	100	0	100	0	100
CYTL	BIG TROUT LAKE	ON	LPV	1	99.947	1	99.921	6	99.818

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
CYTS	TIMMINS (VICTOR M. POWER)	ON	LPV200	1	99.979	1	99.974	2	99.931
CYXL	SIOUX LOOKOUT	ON	LPV	1	99.981	1	99.963	4	99.898
CYXR	EARLTON (TIMISKAMING REGIONAL)	ON	LPV	1	99.998	1	99.994	2	99.957
CYXU	LONDON	ON	LPV200	0	100	0	100	0	100
CYYU	KAPUSKASING	ON	LPV	1	99.973	1	99.968	2	99.925
CYYZ	LESTER B. PEARSON INTL	ON	LPV200	0	100	0	100	1	99.999
CYZD	DOWNSVIEW	ON	LPV	0	100	0	100	1	99.999
CZPB	SACHIGO LAKE	ON	LP	1	99.951	2	99.934	7	99.819
CNV8	EDENVALE	ON	LPV	0	100	0	100	1	99.992
CYCK	CHATHAM-KENT	ON	LPV	0	100	0	100	0	100
CYEE	HURONIA	ON	LPV	0	100	0	100	1	99.992
CYFA	FORT ALBANY	ON	LPV	1	99.932	1	99.928	5	99.855
CYGK	KINGSTON	ON	LPV	0	100	0	100	0	100
CYHF	HEARST (RENE FONTAINE) MUNICIPALCIPALITY	ON	LPV	2	99.972	2	99.960	2	99.923
CYKM	KINCARDINE	ON	LPV	0	100	0	100	1	99.992
CYMG	MANITOUWADGE	ON	LPV	1	99.966	1	99.955	2	99.927
CYOO	OSHAWA EXECUTIVE AIRPORT	ON	LPV	0	100	0	100	1	99.998
CYOS	BILLY BISHOP REGIONAL	ON	LPV	0	100	0	100	1	99.987
CYPT	PELEE ISLAND	ON	LPV	0	100	0	100	0	100
CYRL	RED LAKE	ON	LPV	1	99.976	1	99.963	4	99.872
CYSA	STRATFORD MUNICIPALCIPALITY	ON	LPV	0	100	0	100	0	100
CYSB	SUDBURY	ON	LPV	1	99.996	1	99.996	2	99.961
CYTZ	BILLY BISHOP TORONTO CITY AIRPORT	ON	LPV	0	100	0	100	1	99.999
CYVV	WIARTON	ON	LPV	0	100	0	100	1	99.987
CYWP	WEBEQUIE	ON	LPV	1	99.939	1	99.921	5	99.855
CYYB	NORTH BAY	ON	LPV200	0	100	1	99.997	2	99.992
CYYW	ARMSTRONG	ON	LPV	1	99.963	1	99.963	4	99.895
CYZR	SARNIA (CHRIS HADFIELD)	ON	LPV	0	100	0	100	0	100
3S8	GRANTS PASS	OR	LP	0	100	0	100	0	100
77S	HOBBY FLD	OR	LPV	0	100	0	100	0	100
AST	ASTORIA RGNL	OR	LPV	0	100	0	100	1	99.999
BDN	BEND MUNICIPAL	OR	LPV	0	100	0	100	0	100
BKE	BAKER CITY MUNICIPAL	OR	LPV	0	100	0	100	0	100
CVO	CORVALLIS MUNICIPAL	OR	LPV200	0	100	0	100	0	100
EUG	MAHLON SWEET FLD	OR	LPV200	0	100	0	100	0	100
GCD	GRANT COUNTY RGNL/OGILVIE FLD	OR	LPV	0	100	0	100	0	100
HIO	PORTLAND-HILLSBORO	OR	LPV200	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
LGD	LA GRANDE/UNION COUNTY	OR	LPV	0	100	0	100	0	100
LKV	LAKE COUNTY	OR	LPV	0	100	0	100	0	100
LMT	CRATER LAKE/KLAMATH RGNL	OR	LPV	0	100	0	100	0	100
MMV	MC MINNVILLE MUNICIPAL	OR	LPV	0	100	0	100	0	100
ONO	ONTARIO MUNICIPAL	OR	LPV	0	100	0	100	0	100
ONP	NEWPORT MUNICIPAL	OR	LPV	0	100	0	100	0	100
OTH	SOUTHWEST OREGON RGNL	OR	LPV	0	100	0	100	0	100
PDT	EASTERN OREGON RGNL AT PENDLET	OR	LPV200	0	100	0	100	0	100
PDX	PORTLAND INTL	OR	LPV200	0	100	0	100	0	100
RDM	ROBERTS FLD	OR	LPV200	0	100	0	100	0	100
S33	MADRAS MUNICIPAL	OR	LPV	0	100	0	100	0	100
S39	PRINEVILLE	OR	LP	0	100	0	100	0	100
SLE	MCNARY FLD	OR	LPV200	0	100	0	100	0	100
SPB	SCAPPOOSE	OR	LPV	0	100	0	100	0	100
UAO	AURORA STATE	OR	LPV	0	100	0	100	0	100
22N	JAKE ARNER MEML	PA	LP	0	100	0	100	1	99.982
29D	GROVE CITY	PA	LP	0	100	0	100	0	100
2G9	SOMERSET COUNTY	PA	LPV	0	100	0	100	0	100
6G1	TITUSVILLE	PA	LPV	0	100	0	100	0	100
6P7	MCVILLE	PA	LP	0	100	0	100	0	100
8G2	CORRY-LAWRENCE	PA	LPV	0	100	0	100	0	100
8N8	DANVILLE	PA	LP	0	100	0	100	1	99.984
9D4	DECK	PA	LPV	0	100	0	100	1	99.984
ABE	LEHIGH VALLEY INTL	PA	LPV200	0	100	0	100	1	99.982
AFJ	WASHINGTON COUNTY	PA	LPV200	0	100	0	100	0	100
AGC	ALLEGHENY COUNTY	PA	LPV200	0	100	0	100	0	100
AOO	ALTOONA/BLAIR COUNTY	PA	LPV	0	100	0	100	0	100
AVP	WILKES-BARRE/SCRANTON INTL	PA	LPV200	0	100	0	100	1	99.983
AXQ	CLARION COUNTY	PA	LPV	0	100	0	100	0	100
BFD	BRADFORD RGNL	PA	LPV	0	100	0	100	0	100
BTP	PITTSBURGH/BUTLER RGNL	PA	LPV	0	100	0	100	0	100
BVI	BEAVER COUNTY	PA	LPV	0	100	0	100	0	100
CXY	CAPITAL CITY	PA	LPV	0	100	0	100	1	99.986
DUJ	DUBOIS RGNL	PA	LPV200	0	100	0	100	0	100
ERI	ERIE INTL/TOM RIDGE FLD	PA	LPV	0	100	0	100	0	100
FIG	CLEARFIELD-LAWRENCE	PA	LPV	0	100	0	100	0	100
FKL	VENANGO RGNL	PA	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
FWQ	ROSTRAVER	PA	LPV	0	100	0	100	0	100
GKJ	PORT MEADVILLE	PA	LP	0	100	0	100	0	100
HMZ	BEDFORD COUNTY	PA	LPV	0	100	0	100	0	100
HZL	HAZLETON RGNL	PA	LPV	0	100	0	100	1	99.982
IDI	INDIANA COUNTY/JIMMY STEWART F	PA	LPV	0	100	0	100	0	100
IPT	WILLIAMSPORT RGNL	PA	LPV	0	100	0	100	0	100
JST	JOHN MURTHA JOHNSTOWN/CAMBRIA	PA	LPV200	0	100	0	100	0	100
LBE	ARNOLD PALMER RGNL	PA	LPV200	0	100	0	100	0	100
LNS	LANCASTER	PA	LPV200	0	100	0	100	1	99.983
LOM	WINGS FLD	PA	LPV	0	100	0	100	2	99.981
MDT	HARRISBURG INTL	PA	LPV	0	100	0	100	1	99.984
MPO	POCONO MOUNTAINS RGNL	PA	LPV	0	100	0	100	1	99.983
MQS	CHESTER COUNTY G O CARLSON	PA	LPV	0	100	0	100	1	99.982
N38	GRAND CANYON RGNL	PA	LP	0	100	0	100	0	100
N57	NEW GARDEN	PA	LP	0	100	0	100	1	99.982
N79	NORTHUMBERLAND COUNTY	PA	LPV	0	100	0	100	1	99.984
N96	BELLEFONTE	PA	LPV	0	100	0	100	0	100
OQN	BRANDYWINE RGNL	PA	LP	0	100	0	100	1	99.981
OYM	ST MARYS MUNICIPAL	PA	LPV	0	100	0	100	0	100
PHL	PHILADELPHIA INTL	PA	LPV200	0	100	0	100	2	99.981
PIT	PITTSBURGH INTL	PA	LPV200	0	100	0	100	0	100
PNE	NORTHEAST PHILADELPHIA	PA	LPV200	0	100	0	100	2	99.981
PSB	MID-STATE	PA	LPV	0	100	0	100	0	100
PTW	HERITAGE FLD	PA	LPV	0	100	0	100	1	99.982
RDG	READING RGNL/CARL A SPAATZ FLD	PA	LPV	0	100	0	100	1	99.982
RVL	MIFFLIN COUNTY	PA	LPV	0	100	0	100	0	100
SEG	PENN VALLEY	PA	LP	0	100	0	100	1	99.996
THV	YORK	PA	LP	0	100	0	100	1	99.985
UCP	NEW CASTLE MUNICIPAL	PA	LPV	0	100	0	100	0	100
UKT	QUAKERTOWN	PA	LP	0	100	0	100	1	99.982
UNV	UNIVERSITY PARK	PA	LPV200	0	100	0	100	0	100
VVS	JOSEPH A HARDY CONNELLSVILLE	PA	LPV	0	100	0	100	0	100
WAY	GREENE COUNTY	PA	LPV	0	100	0	100	0	100
WBW	WILKES-BARRE WYOMING VALLEY	PA	LPV	0	100	0	100	1	99.982
XLL	ALLENTOWN QUEEN CITY MUNICIPAL	PA	LP	0	100	0	100	1	99.982
ZER	SCHUYLKILL COUNTY/JOE ZERBEY	PA	LPV200	0	100	0	100	1	99.984
CYYG	CHARLOTTETOWN	PE	LPV	2	99.988	1	99.974	5	99.905

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
CEL8	ELEONORE	QC	LPV	4	99.941	3	99.874	4	99.777
CSF3	POSTE MONTAGNAIS (MILE 134)	QC	LPV	4	99.879	4	99.868	7	99.781
CSR3	VICTORIAVILLE (ANDRE-FORTIN)	QC	LPV	0	100	0	100	1	99.997
CSU2	CHISASIBI	QC	LPV	3	99.900	3	99.882	4	99.755
CTP9	DONALDSON	QC	LPV	5	99.802	4	99.774	48	99.285
CTT5	LA ROMAINE	QC	LPV	4	99.883	4	99.883	6	99.799
CTU2	FONTANGES	QC	LPV	3	99.873	3	99.849	3	99.683
CYAD	LA GRANDE-3	QC	LPV	3	99.864	2	99.848	5	99.772
CYAH	LA GRANDE-4	QC	LPV	3	99.878	2	99.853	5	99.735
CYAS	KANGIRSUK	QC	LPV	4	99.829	4	99.795	20	99.455
CYBC	BAIE-COMEAU	QC	LPV200	2	99.989	2	99.986	6	99.909
CYBG	BAGOTVILLE	QC	LPV200	0	100	0	100	3	99.967
CYBX	LOURDES-DE-BLANC-SABLON	QC	LPV	3	99.852	4	99.849	19	99.624
CYEY	MAGNY	QC	LPV	0	100	1	99.999	2	99.949
CYFJ	MONT-TREMBLANT	QC	LPV	0	100	0	100	1	99.997
CYGL	LA GRANDE RIVIERE	QC	LPV	2	99.887	3	99.868	3	99.768
CYGP	GASPE (MICHEL-POULIOT)	QC	LPV	2	99.964	2	99.964	6	99.870
CYGR	ILES-DE-LA-MADELEINE	QC	LPV	1	99.967	1	99.967	5	99.861
CYGW	KUUJJUARAPIK	QC	LPV	2	99.881	2	99.852	6	99.725
CYHA	QUAQTAQ	QC	LPV	3	99.830	4	99.797	47	99.330
CYHH	NEMISCAU	QC	LPV	2	99.958	2	99.938	3	99.808
CYHR	CHEVERY	QC	LPV	3	99.860	3	99.860	6	99.797
CYHU	ST-HUBERT	QC	LPV	0	100	0	100	0	100
CYIF	ST-AUGUSTIN	QC	LPV	3	99.852	3	99.852	6	99.769
CYIK	IVUJIVIK	QC	LPV	6	99.826	5	99.778	44	99.265
CYKG	KANGIQSUJUAQ (WAKEHAM BAY)	QC	LPV	5	99.841	4	99.787	52	99.275
CYKL	SCHEFFERVILLE	QC	LPV	3	99.842	3	99.842	5	99.695
CYKO	AKULIVIK	QC	LPV	3	99.833	3	99.799	18	99.441
CYLA	AUPALUK	QC	LPV	4	99.823	5	99.818	16	99.498
CYLU	KANGIQSUALUJJUAQ (GEORGES RIVER)	QC	LPV	3	99.803	3	99.790	17	99.501
CYMT	CHAPAIS	QC	LPV	1	99.986	1	99.986	4	99.893
CYMU	UMIUJAQ	QC	LPV	2	99.852	3	99.833	7	99.704
CYMW	MANIWAKI	QC	LPV	0	100	0	100	1	99.997
CYMX	MONTREAL INTL (MIRABEL)	QC	LPV200	0	100	0	100	0	100
CYNA	NATASHQUAN	QC	LPV	3	99.896	3	99.896	6	99.817
CYND	GATINEAU	QC	LPV	0	100	0	100	0	100
CYNM	MATAGAMI	QC	LPV	1	99.989	1	99.989	4	99.922

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
CYPH	INUKJUAK	QC	LPV	2	99.862	3	99.816	9	99.608
CYPN	PORT-MENIER	QC	LPV	2	99.946	3	99.945	6	99.830
CYPX	PUVIRNITUQ	QC	LPV	3	99.855	3	99.798	18	99.484
CYQB	JEAN LESAGE INTL	QC	LPV200	0	100	0	100	1	99.992
CYRI	RIVIERE-DU-LOUP	QC	LPV	0	100	0	100	4	99.950
CYRQ	TROIS-RIVIERES	QC	LPV200	0	100	0	100	1	99.992
CYSC	SHERBROOKE	QC	LPV	0	100	0	100	0	100
CYSG	ST-GEORGES	QC	LPV	0	100	0	100	1	99.997
CYTQ	TASIUJAQ	QC	LPV	4	99.836	5	99.810	12	99.556
CYUL	PIERRE-ELLIOTT-TRUDEAU INTL	QC	LPV200	0	100	0	100	0	100
CYUY	ROUYN-NORANDA	QC	LPV200	1	99.998	1	99.995	2	99.953
CYVB	BONAVENTURE	QC	LPV	2	99.969	2	99.969	5	99.904
CYVO	VAL-DOR	QC	LPV200	0	100	0	100	2	99.957
CYVP	KUUJJUAQ	QC	LPV200	3	99.807	3	99.806	14	99.606
CYYY	MONT-JOLI	QC	LPV	1	99.997	2	99.993	4	99.918
CYZG	SALLUIT	QC	LPV	5	99.800	3	99.744	45	99.210
CYZV	SEPT-ILES	QC	LPV200	3	99.946	4	99.945	7	99.818
CFX5	RENARD	QC	LPV	3	99.890	3	99.875	4	99.750
CSC3	DRUMMONDVILLE	QC	LPV	0	100	0	100	1	99.999
CSD4	MONT-LAURIER	QC	LPV	0	100	0	100	1	99.997
CSH4	LEBEL-SUR-QUEVILLON	QC	LPV	0	100	1	99.998	2	99.936
CYGV	HAVRE ST-PIERRE	QC	LPV	4	99.923	4	99.914	6	99.813
CYKQ	WASKAGANISH	QC	LPV	2	99.958	2	99.958	2	99.860
CYLQ	LA TUQUE	QC	LPV	0	100	0	100	1	99.980
CYME	RUSSELL-BURNETT	QC	LPV	2	99.990	2	99.983	5	99.909
CYNC	WEMINDJI	QC	LPV	2	99.919	2	99.905	4	99.799
CYRJ	ROBERVAL	QC	LPV	0	100	0	100	2	99.972
CYTF	ALMA	QC	LPV	1	99.999	1	99.999	2	99.971
BID	BLOCK ISLAND STATE	RI	LPV	0	100	0	100	1	99.988
OQU	QUONSET STATE	RI	LPV200	0	100	0	100	1	99.989
PVD	RHODE ISLAND TF GREEN INTL	RI	LPV200	0	100	0	100	1	99.989
SFZ	NORTH CENTRAL STATE	RI	LPV	0	100	0	100	1	99.989
35A	UNION COUNTY` TROY SHELTON FLD	SC	LP	0	100	0	100	1	99.993
6J0	LEXINGTON COUNTY	SC	LPV	0	100	0	100	1	99.985
AIK	AIKEN RGNL	SC	LPV200	0	100	0	100	1	99.987
AND	ANDERSON RGNL	SC	LPV200	0	100	0	100	1	99.997
AQX	ALLENDALE COUNTY	SC	LPV	0	100	0	100	1	99.982

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
ARW	BEAUFORT EXEC	SC	LPV200	0	100	0	100	1	99.980
BBP	MARLBORO COUNTY JETPORT - H E	SC	LPV	0	100	0	100	1	99.980
BNL	BARNWELL RGNL	SC	LPV	0	100	0	100	1	99.983
CAE	COLUMBIA METRO	SC	LPV200	0	100	0	100	1	99.985
CDN	WOODWARD FLD	SC	LPV	0	100	0	100	1	99.983
CEU	OCONEE COUNTY RGNL	SC	LPV200	0	100	0	100	1	99.997
CHS	CHARLESTON AFB/INTL	SC	LPV200	0	100	0	100	1	99.980
CKI	WILLIAMSBURG RGNL	SC	LPV	0	100	0	100	1	99.980
CQW	CHERAW MUNICIPAL/LYNCH BELLINGER FL	SC	LPV	0	100	0	100	1	99.981
CRE	GRAND STRAND	SC	LPV200	0	100	0	100	1	99.978
CUB	JIM HAMILTON L B OWENS	SC	LPV	0	100	0	100	1	99.983
DCM	CHESTER CATAWBA RGNL	SC	LPV	0	100	0	100	1	99.988
DYB	SUMMERVILLE	SC	LPV200	0	100	0	100	1	99.980
FDW	FAIRFIELD COUNTY	SC	LPV	0	100	0	100	1	99.985
FLO	FLORENCE RGNL	SC	LPV	0	100	0	100	1	99.980
GGE	GEORGETOWN COUNTY	SC	LPV	0	100	0	100	1	99.979
GMU	GREENVILLE DOWNTOWN	SC	LPV200	0	100	0	100	1	99.996
GRD	GREENWOOD COUNTY	SC	LPV	0	100	0	100	1	99.993
GSP	GREENVILLE SPARTANBURG INTL	SC	LPV200	0	100	0	100	1	99.996
GYH	DONALDSON FLD	SC	LPV	0	100	0	100	1	99.996
HVS	HARTSVILLE RGNL	SC	LPV	0	100	0	100	1	99.981
HXD	HILTON HEAD	SC	LPV	0	100	0	100	1	99.980
HYW	CONWAY-HORRY COUNTY	SC	LPV	0	100	0	100	1	99.979
JZI	CHARLESTON EXEC	SC	LPV200	0	100	0	100	1	99.980
LKR	LANCASTER COUNTY-MC WHIRTER FL	SC	LPV200	0	100	0	100	1	99.985
LQK	PICKENS COUNTY	SC	LPV	0	100	0	100	1	99.997
LRO	MT PLEASANT RGNL-FAISON FLD	SC	LPV	0	100	0	100	1	99.980
LUX	LAURENS COUNTY	SC	LPV	0	100	0	100	1	99.993
MAO	MARION COUNTY	SC	LPV	0	100	0	100	1	99.980
MKS	BERKELEY COUNTY	SC	LPV	0	100	0	100	1	99.980
MYR	MYRTLE BEACH INTL	SC	LPV200	0	100	0	100	1	99.978
OGB	ORANGEBURG MUNICIPAL	SC	LPV	0	100	0	100	1	99.982
PYG	PAGELAND	SC	LPV	0	100	0	100	1	99.983
RBW	LOWCOUNTRY RGNL	SC	LPV200	0	100	0	100	1	99.980
SMS	SUMTER	SC	LPV200	0	100	0	100	1	99.981
SPA	SPARTANBURG DOWNTOWN MEML/SIMP	SC	LPV200	0	100	0	100	1	99.995
UDG	DARLINGTON COUNTY	SC	LPV	0	100	0	100	1	99.981

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
UZA	ROCK HILL/YORK COUNTY/BRYANT F	SC	LPV200	0	100	0	100	1	99.988
0D8	GETTYSBURG MUNICIPAL	SD	LP	0	100	0	100	0	100
49B	STURGIS MUNICIPAL	SD	LPV	0	100	0	100	0	100
4X4	WESSINGTON SPRINGS	SD	LP	0	100	0	100	0	100
8D3	SISSETON MUNICIPAL	SD	LPV	0	100	0	100	0	100
8D7	CLARK COUNTY	SD	LP	0	100	0	100	0	100
8V3	PARKSTON MUNICIPAL	SD	LPV	0	100	0	100	0	100
98D	ONIDA MUNICIPAL	SD	LP	0	100	0	100	0	100
9D0	HIGHMORE MUNICIPAL	SD	LPV	0	100	0	100	0	100
9D1	GREGORY MUNICIPAL - FLYNN FLD	SD	LPV	0	100	0	100	0	100
9V6	MARTIN MUNICIPAL	SD	LPV	0	100	0	100	0	100
9V9	CHAMBERLAIN MUNICIPAL	SD	LP	0	100	0	100	0	100
ABR	ABERDEEN RGNL	SD	LPV200	0	100	0	100	0	100
AGZ	WAGNER MUNICIPAL	SD	LPV	0	100	0	100	0	100
ATY	WATERTOWN RGNL	SD	LPV200	0	100	0	100	0	100
BKX	BROOKINGS RGNL	SD	LPV200	0	100	0	100	0	100
EFC	BELLE FOURCHE MUNICIPAL	SD	LPV	0	100	0	100	0	100
FSD	JOE FOSS FLD	SD	LPV200	0	100	0	100	0	100
HON	HURON RGNL	SD	LPV200	0	100	0	100	0	100
HSR	HOT SPRINGS MUNICIPAL	SD	LP	0	100	0	100	0	100
ICR	WINNER RGNL	SD	LPV	0	100	0	100	0	100
IEN	PINE RIDGE	SD	LPV	0	100	0	100	0	100
LEM	LEMMON MUNICIPAL	SD	LPV	0	100	0	100	0	100
MBG	MOBRIDGE MUNICIPAL	SD	LPV	0	100	0	100	0	100
MDS	MADISON MUNICIPAL	SD	LPV	0	100	0	100	0	100
MHE	MITCHELL MUNICIPAL	SD	LPV	0	100	0	100	0	100
MKA	MILLER MUNICIPAL	SD	LPV	0	100	0	100	0	100
PHP	PHILIP	SD	LPV	0	100	0	100	0	100
PIR	PIERRE RGNL	SD	LPV	0	100	0	100	0	100
RAP	RAPID CITY RGNL	SD	LPV200	0	100	0	100	0	100
SPF	BLACK HILLS-CLYDE ICE FLD	SD	LPV	0	100	0	100	0	100
SUO	ROSEBUD SIOUX TRIBAL	SD	LPV	0	100	0	100	0	100
VMR	HAROLD DAVIDSON FLD	SD	LPV	0	100	0	100	0	100
YKN	CHAN GURNEY MUNICIPAL	SD	LPV200	0	100	0	100	0	100
CJC5	SHAUNAVON	SK	LPV	0	100	0	100	1	99.997
CKQ8	MCARTHUR RIVER	SK	LPV	1	99.952	3	99.888	8	99.731
CYEN	ESTEVAN REGIONAL	SK	LPV	0	100	0	100	2	99.986

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
CYKJ	KEY LAKE	SK	LPV	1	99.955	4	99.910	6	99.748
CYLJ	MEADOW LAKE	SK	LPV	1	99.998	3	99.988	6	99.851
CYMJ	AIR VICE MARSHAL C.M. MCEWEN	SK	LPV200	0	100	0	100	4	99.977
CYPA	PRINCE ALBERT (GLASS FIELD)	SK	LPV	0	100	0	100	7	99.888
CYQR	REGINA INTL	SK	LPV200	0	100	0	100	5	99.971
CYVC	LA RONGE (BARBER FIELD)	SK	LPV	1	99.965	3	99.961	6	99.784
CYYN	SWIFT CURRENT	SK	LPV	0	100	0	100	2	99.984
CCB2	SEABEE MINE	SK	LPV	1	99.957	3	99.941	6	99.775
CJE3	WEYBURN	SK	LPV	0	100	0	100	4	99.977
CJH3	MAIDSTONE	SK	LPV	0	100	1	99.999	5	99.918
CJP9	CHARLOT RIVER	SK	LP	2	99.908	2	99.825	8	99.709
CJQ4	MAPLE CREEK	SK	LPV	0	100	0	100	1	99.998
CJU4	HUMBOLDT	SK	LPV	0	100	0	100	6	99.951
CJW7	CIGAR LAKE	SK	LPV	1	99.946	5	99.884	11	99.719
CJY3	TISDALE	SK	LPV	0	100	0	100	6	99.892
CJZ3	MELFORT (MILLER FIELD)	SK	LPV	0	100	0	100	6	99.898
CYBE	URANIUM CITY	SK	LPV	2	99.909	2	99.826	9	99.708
CYBU	NIPAWIN	SK	LPV	0	100	0	100	6	99.854
CYES	EDMUNDSTON	SK	LPV	0	100	1	99.998	4	99.934
CYKC	COLLINS BAY	SK	LPV	1	99.946	4	99.878	12	99.710
CYNL	POINTS NORTH LANDING	SK	LPV	1	99.946	5	99.882	12	99.711
CYQV	YORKTON MUNICIPALCIPALITY	SK	LPV	0	100	0	100	6	99.955
CYQW	NORTH BATTLEFORD	SK	LPV	0	100	0	100	5	99.921
CYXE	JOHN G. DIEFENBAKER INTL	SK	LPV200	0	100	0	100	4	99.948
0A3	SMITHVILLE MUNICIPAL	TN	LPV	0	100	0	100	0	100
0M3	PAUL BRIDGES FLD	TN	LP	0	100	0	100	0	100
0M4	BENTON COUNTY	TN	LPV	0	100	0	100	0	100
0M5	HUMPHREYS COUNTY	TN	LP	0	100	0	100	0	100
1A3	MARTIN CAMPBELL FLD	TN	LP	0	100	0	100	0	100
1M5	PORTLAND MUNICIPAL	TN	LPV	0	100	0	100	0	100
2A0	MARK ANTON	TN	LPV	0	100	0	100	0	100
2M2	LAWRENCEBURG-LAWRENCE COUNTY	TN	LPV	0	100	0	100	0	100
2M8	CHARLES W BAKER	TN	LPV	0	100	0	100	1	99.998
3A2	NEW TAZEWELL MUNICIPAL	TN	LP	0	100	0	100	0	100
3M7	LAFAYETTE MUNICIPAL	TN	LPV	0	100	0	100	0	100
8A3	LIVINGSTON MUNICIPAL	TN	LP	0	100	0	100	0	100
BGF	WINCHESTER MUNICIPAL	TN	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
BNA	NASHVILLE INTL	TN	LPV200	0	100	0	100	0	100
CHA	LOVELL FLD	TN	LPV200	0	100	0	100	0	100
CKV	OUTLAW FLD	TN	LPV	0	100	0	100	0	100
CSV	CROSSVILLE MEML-WHITSON FLD	TN	LPV200	0	100	0	100	0	100
DYR	DYERSBURG RGNL	TN	LPV	0	100	0	100	0	100
FYE	FAYETTE COUNTY	TN	LPV	0	100	0	100	1	99.999
FYM	FAYETTEVILLE MUNICIPAL	TN	LPV	0	100	0	100	0	100
GCY	GREENEVILLE MUNICIPAL	TN	LPV	0	100	0	100	0	100
GHM	CENTERVILLE MUNICIPAL	TN	LP	0	100	0	100	0	100
GKT	GATLINBURG-PIGEON FORGE	TN	LPV	0	100	0	100	0	100
GZS	ABERNATHY FLD	TN	LPV	0	100	0	100	0	100
HZD	CARROLL COUNTY	TN	LPV	0	100	0	100	0	100
JAU	COLONEL TOMMY C STINER AIRFIEL	TN	LP	0	100	0	100	0	100
JWN	JOHN C TUNE	TN	LPV	0	100	0	100	0	100
LUG	ELLINGTON	TN	LPV	0	100	0	100	0	100
M01	GENERAL DEWITT SPAIN	TN	LPV	0	100	0	100	1	99.998
M08	WILLIAM L WHITEHURST FLD	TN	LP	0	100	0	100	0	100
M53	HUMBOLDT MUNICIPAL	TN	LPV	0	100	0	100	0	100
M54	LEBANON MUNICIPAL	TN	LPV	0	100	0	100	0	100
M91	SPRINGFIELD ROBERTSON COUNTY	TN	LPV	0	100	0	100	0	100
MBT	MURFREESBORO MUNICIPAL	TN	LPV	0	100	0	100	0	100
MEM	MEMPHIS INTL	TN	LPV200	0	100	0	100	1	99.998
MKL	MC KELLAR-SIPES RGNL	TN	LPV200	0	100	0	100	0	100
MMI	MCMINN COUNTY	TN	LPV	0	100	0	100	0	100
MNV	MONROE COUNTY	TN	LPV	0	100	0	100	0	100
MOR	MOORE-MURRELL	TN	LPV	0	100	0	100	0	100
MQY	SMYRNA	TN	LPV200	0	100	0	100	0	100
MRC	MAURY COUNTY RGNL	TN	LPV	0	100	0	100	0	100
NQA	MILLINGTON/MEMPHIS	TN	LPV200	0	100	0	100	1	99.999
PHT	HENRY COUNTY	TN	LPV200	0	100	0	100	0	100
PVE	BEECH RIVER RGNL	TN	LPV	0	100	0	100	0	100
RKW	ROCKWOOD MUNICIPAL	TN	LPV	0	100	0	100	0	100
RNC	WARREN COUNTY MEML	TN	LPV	0	100	0	100	0	100
RVN	HAWKINS COUNTY	TN	LP	0	100	0	100	0	100
RZR	CLEVELAND RGNL JETPORT	TN	LPV200	0	100	0	100	0	100
SCX	SCOTT MUNICIPAL	TN	LPV	0	100	0	100	0	100
SNH	SAVANNAH-HARDIN COUNTY	TN	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
SRB	UPPER CUMBERLAND RGNL	TN	LPV	0	100	0	100	0	100
SYI	BOMAR FLD/SHELBYVILLE MUNICIPAL	TN	LPV	0	100	0	100	0	100
SZY	ROBERT SIBLEY	TN	LPV	0	100	0	100	0	100
TGC	GIBSON COUNTY	TN	LP	0	100	0	100	0	100
THA	TULLAHOMA RGNL/WM NORTHERN FLD	TN	LPV	0	100	0	100	0	100
TRI	TRI-CITIES	TN	LPV200	0	100	0	100	0	100
TYS	MC GHEE TYSON	TN	LPV200	0	100	0	100	0	100
UCY	EVERETT-STEWART RGNL	TN	LPV200	0	100	0	100	0	100
XNX	MUSIC CITY EXEC	TN	LPV	0	100	0	100	0	100
0F2	BOWIE MUNICIPAL	TX	LPV	0	100	0	100	1	99.999
11R	BRENHAM MUNICIPAL	TX	LPV	0	100	0	100	1	99.995
2R9	KENEDY RGNL	TX	LP	0	100	0	100	1	99.974
3R9	LAKEWAY AIRPARK	TX	LP	0	100	0	100	0	100
3T5	FAYETTE RGNL AIR CENTER	TX	LPV	0	100	0	100	1	99.985
41F	FLOYDADA MUNICIPAL	TX	LP	0	100	0	100	1	99.999
45R	HAWTHORNE FLD	TX	LP	0	100	0	100	1	99.997
4T2	KENNETH COPELAND	TX	LPV	0	100	0	100	1	99.999
50R	LOCKHART MUNICIPAL	TX	LPV	0	100	0	100	1	99.984
5C1	BOERNE STAGE FLD	TX	LP	0	100	0	100	1	99.983
5T9	MAVERICK COUNTY MEML INTL	TX	LPV	0	100	0	100	1	99.979
60R	NAVASOTA MUNICIPAL	TX	LPV	0	100	0	100	0	100
6R3	CLEVELAND MUNICIPAL	TX	LPV	0	100	0	100	1	99.998
77F	WINTERS MUNICIPAL	TX	LP	0	100	0	100	0	100
8F3	CROSBYTON MUNICIPAL	TX	LP	0	100	0	100	0	100
ABI	ABILENE RGNL	TX	LPV200	0	100	0	100	0	100
ACT	WACO RGNL	TX	LPV200	0	100	0	100	0	100
ADS	ADDISON	TX	LPV	0	100	0	100	1	99.998
AFW	FORT WORTH ALLIANCE	TX	LPV200	0	100	0	100	1	99.999
ALI	ALICE INTL	TX	LPV	1	99.992	1	99.992	1	99.952
AMA	RICK HUSBAND AMARILLO INTL	TX	LPV200	0	100	0	100	1	99.998
ARM	WHARTON RGNL	TX	LPV	0	100	0	100	1	99.972
ASL	HARRISON COUNTY	TX	LPV	0	100	0	100	1	99.995
AUS	AUSTIN-BERGSTROM INTL	TX	LPV200	0	100	0	100	1	99.995
AXH	HOUSTON/SOUTHWEST	TX	LPV	0	100	0	100	1	99.978
BAZ	NEW BRAUNFELS NTL	TX	LPV	0	100	0	100	1	99.983
BBD	CURTIS FLD	TX	LPV	0	100	0	100	0	100
BEA	BEEVILLE MUNICIPAL	TX	LPV	0	100	0	100	1	99.963

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
BFE	TERRY COUNTY	TX	LPV	0	100	0	100	8	99.994
BGD	HUTCHINSON COUNTY	TX	LPV	0	100	0	100	0	100
BKD	STEPHENS COUNTY	TX	LP	0	100	0	100	0	100
BKS	BROOKS COUNTY	TX	LPV	1	99.975	1	99.975	3	99.944
BMT	BEAUMONT MUNICIPAL	TX	LPV	0	100	0	100	2	99.988
BPG	BIG SPRING MC MAHON-WRINKLE	TX	LPV200	0	100	0	100	0	100
BPT	JACK BROOKS RGNL	TX	LPV200	0	100	0	100	2	99.985
BRO	BROWNSVILLE/SOUTH PADRE ISLAND	TX	LPV200	2	99.972	1	99.951	10	99.916
BWD	BROWNWOOD RGNL	TX	LPV	0	100	0	100	0	100
BYY	BAY CITY RGNL	TX	LPV	0	100	0	100	1	99.968
CDS	CHILDRESS MUNICIPAL	TX	LPV200	0	100	0	100	0	100
CFD	COULTER FLD	TX	LPV	0	100	0	100	0	100
CLL	EASTERWOOD FLD	TX	LPV200	0	100	0	100	0	100
CNW	TSTC WACO	TX	LPV200	0	100	0	100	0	100
COM	COLEMAN MUNICIPAL	TX	LPV	0	100	0	100	0	100
COT	COTULLA-LA SALLE COUNTY	TX	LPV	0	100	0	100	1	99.978
CPT	CLEBURNE RGNL	TX	LPV	0	100	0	100	1	99.999
CRP	CORPUS CHRISTI INTL	TX	LPV200	1	99.992	1	99.992	1	99.960
CVB	CASTROVILLE MUNICIPAL	TX	LPV	0	100	0	100	1	99.981
CWC	KICKAPOO DOWNTOWN	TX	LPV	0	100	0	100	0	100
CXO	CONROE/NORTH HOUSTON RGNL	TX	LPV200	0	100	0	100	1	99.999
CZT	DIMMIT COUNTY	TX	LPV	0	100	0	100	1	99.978
DAL	DALLAS LOVE FLD	TX	LPV200	0	100	0	100	1	99.998
DFW	DALLAS-FORT WORTH INTL	TX	LPV200	0	100	0	100	1	99.998
DHT	DALHART MUNICIPAL	TX	LPV	0	100	0	100	0	100
DKR	HOUSTON COUNTY	TX	LP	0	100	0	100	1	99.997
DRT	DEL RIO INTL	TX	LPV	0	100	0	100	1	99.982
DTO	DENTON ENTERPRISE	TX	LPV200	0	100	0	100	1	99.999
DUX	MOORE COUNTY	TX	LPV200	0	100	0	100	0	100
DWH	DAVID WAYNE HOOKS MEML	TX	LPV	0	100	0	100	2	99.990
E01	ROY HURD MEML	TX	LP	0	100	0	100	2	99.994
E11	ANDREWS COUNTY	TX	LPV	0	100	0	100	7	99.995
E19	GRUVER MUNICIPAL	TX	LP	0	100	0	100	0	100
E30	BRUCE FLD	TX	LPV	0	100	0	100	0	100
E38	ALPINE-CASPARIS MUNICIPAL	TX	LPV	0	100	0	100	3	99.997
EBG	SOUTH TEXAS INTL AT EDINBURG	TX	LPV	1	99.975	1	99.975	6	99.934
EDC	AUSTIN EXEC	TX	LPV200	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
EFD	ELLINGTON	TX	LPV200	0	100	0	100	2	99.982
ELA	EAGLE LAKE	TX	LP	0	100	0	100	1	99.983
ELP	EL PASO INTL	TX	LP	0	100	0	100	23	99.952
ERV	KERRVILLE MUNICIPAL/LOUIS SCHREINER	TX	LPV	0	100	0	100	1	99.989
ETN	EASTLAND MUNICIPAL	TX	LP	0	100	0	100	0	100
F00	JONES FLD	TX	LPV	0	100	0	100	1	99.997
F05	WILBARGER COUNTY	TX	LPV	0	100	0	100	0	100
F49	CITY OF SLATON/LARRY T NEAL ME	TX	LPV	0	100	0	100	5	99.997
F98	YOAKUM COUNTY	TX	LPV	0	100	0	100	11	99.981
FST	FORT STOCKTON-PECOS COUNTY	TX	LPV	0	100	0	100	3	99.998
FTW	FORT WORTH MEACHAM INTL	TX	LPV200	0	100	0	100	1	99.999
FWS	FORT WORTH SPINKS	TX	LPV200	0	100	0	100	1	99.999
GDJ	GRANBURY RGNL	TX	LPV	0	100	0	100	0	100
GGG	EAST TEXAS RGNL	TX	LPV	0	100	0	100	1	99.995
GKY	ARLINGTON MUNICIPAL	TX	LPV200	0	100	0	100	1	99.998
GLE	GAINESVILLE MUNICIPAL	TX	LPV	0	100	0	100	1	99.998
GLS	SCHOLES INTL AT GALVESTON	TX	LPV200	0	100	0	100	2	99.972
GNC	GAINES COUNTY	TX	LPV	0	100	0	100	11	99.987
GRK	ROBERT GRAY AAF	TX	LPV200	0	100	0	100	0	100
GTU	GEORGETOWN MUNICIPAL	TX	LPV	0	100	0	100	0	100
GVT	MAJORS	TX	LPV200	0	100	0	100	1	99.997
GYI	NORTH TEXAS RGNL/PERRIN FLD	TX	LPV200	0	100	0	100	1	99.997
GZN	GREGORY M SIMMONS MEML	TX	LPV	0	100	0	100	0	100
HBV	JIM HOGG COUNTY	TX	LPV	1	99.975	1	99.975	3	99.950
HDO	SOUTH TEXAS RGNL AT HONDO	TX	LPV	0	100	0	100	1	99.982
HHF	HEMPHILL COUNTY	TX	LPV	0	100	0	100	0	100
HOU	WILLIAM P HOBBY	TX	LPV200	0	100	0	100	2	99.982
HQZ	MESQUITE METRO	TX	LPV	0	100	0	100	1	99.997
HRL	VALLEY INTL	TX	LPV200	1	99.975	2	99.973	6	99.930
HRX	HEREFORD MUNICIPAL	TX	LPV200	0	100	0	100	1	99.997
HYI	SAN MARCOS RGNL	TX	LPV200	0	100	0	100	1	99.986
IAH	GEORGE BUSH INTCNTL/HOUSTON	TX	LPV200	0	100	0	100	2	99.988
IKG	KLEBERG COUNTY	TX	LPV	1	99.987	1	99.987	3	99.949
ILE	SKYLARK FLD	TX	LPV200	0	100	0	100	0	100
INJ	HILLSBORO MUNICIPAL	TX	LPV	0	100	0	100	1	99.999
INK	WINKLER COUNTY	TX	LPV200	0	100	0	100	8	99.991
IWS	WEST HOUSTON	TX	LP	0	100	0	100	1	99.984

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
JAS	JASPER COUNTY/BELL FLD	TX	LPV	0	100	0	100	1	99.995
JSO	CHEROKEE COUNTY	TX	LPV	0	100	0	100	1	99.996
JWY	MID-WAY RGNL	TX	LPV200	0	100	0	100	1	99.998
JXI	FOX STEPHENS FLD - GILMER MUNICIPAL	TX	LP	0	100	0	100	1	99.995
LBB	LUBBOCK PRESTON SMITH INTL	TX	LPV200	0	100	0	100	4	99.996
LBX	TEXAS GULF COAST RGNL	TX	LPV	0	100	0	100	1	99.970
LFK	ANGELINA COUNTY	TX	LPV	0	100	0	100	1	99.996
LHB	HEARNE MUNICIPAL	TX	LPV200	0	100	0	100	0	100
LIU	LITTLEFIELD TAYLOR BROWN MUNICIPAL	TX	LPV	0	100	0	100	5	99.997
LLN	LEVELLAND MUNICIPAL	TX	LPV	0	100	0	100	7	99.992
LNC	LANCASTER RGNL	TX	LPV200	0	100	0	100	1	99.998
LRD	LAREDO INTL	TX	LPV200	1	99.975	1	99.975	3	99.963
LUD	DECATUR MUNICIPAL	TX	LPV	0	100	0	100	1	99.999
LUV	LAMESA MUNICIPAL	TX	LPV200	0	100	0	100	1	99.999
LVJ	PEARLAND RGNL	TX	LPV	0	100	0	100	2	99.978
LXY	MEXIA-LIMESTONE COUNTY	TX	LP	0	100	0	100	1	99.999
MAF	MIDLAND INTL AIR AND SPACE POR	TX	LPV200	0	100	0	100	1	99.998
MDD	MIDLAND AIRPARK	TX	LPV	0	100	0	100	1	99.998
MFE	MC ALLEN MILLER INTL	TX	LPV200	1	99.974	1	99.974	9	99.920
MKN	COMANCHE COUNTY-CITY	TX	LPV	0	100	0	100	0	100
MNZ	HAMILTON MUNICIPAL	TX	LPV	0	100	0	100	0	100
MWL	MINERAL WELLS RGNL	TX	LPV200	0	100	0	100	0	100
OCH	NACOGDOCHES A L MANGHAM JR RGN	TX	LPV200	0	100	0	100	1	99.996
ODO	ODESSA-SCHLEMEYER FLD	TX	LPV200	0	100	0	100	1	99.998
ONY	OLNEY MUNICIPAL	TX	LPV	0	100	0	100	0	100
ORG	ORANGE COUNTY	TX	LPV	0	100	0	100	2	99.987
PEQ	PECOS MUNICIPAL	TX	LPV200	0	100	0	100	9	99.989
PIL	PORT ISABEL-CAMERON COUNTY	TX	LPV	2	99.973	2	99.964	6	99.931
PKV	CALHOUN COUNTY	TX	LPV	0	100	0	100	1	99.965
PPA	PERRY LEFORS FLD	TX	LPV	0	100	0	100	0	100
PRX	COX FLD	TX	LPV	0	100	0	100	1	99.995
PSX	PALACIOS MUNICIPAL	TX	LPV	0	100	0	100	1	99.966
PVW	HALE COUNTY	TX	LPV	0	100	0	100	2	99.999
PWG	MC GREGOR EXEC	TX	LPV	0	100	0	100	0	100
PYX	PERRYTON OCHILTREE COUNTY	TX	LPV	0	100	0	100	0	100
RAS	MUSTANG BEACH	TX	LPV	1	99.993	1	99.993	1	99.961
RBD	DALLAS EXEC	TX	LPV200	0	100	0	100	1	99.998

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
RBO	NUECES COUNTY	TX	LPV	1	99.992	1	99.992	1	99.960
RKP	ARANSAS COUNTY	TX	LPV	1	99.994	1	99.994	1	99.963
RYW	LAGO VISTA TX/RUSTY ALLEN	TX	LPV	0	100	0	100	0	100
SAT	SAN ANTONIO INTL	TX	LPV200	0	100	0	100	1	99.983
SGR	SUGAR LAND RGNL	TX	LPV200	0	100	0	100	1	99.983
SJT	SAN ANGELO RGNL/MATHIS FLD	TX	LPV	0	100	0	100	0	100
SLR	SULPHUR SPRINGS MUNICIPAL	TX	LPV	0	100	0	100	1	99.996
SNK	WINSTON FLD	TX	LPV200	0	100	0	100	0	100
SWI	SHERMAN MUNICIPAL	TX	LP	0	100	0	100	1	99.997
SWW	AVENGER FLD	TX	LPV	0	100	0	100	0	100
T23	ALBANY MUNICIPAL	TX	LPV	0	100	0	100	0	100
T41	LA PORTE MUNICIPAL	TX	LPV	0	100	0	100	2	99.982
T74	TAYLOR MUNICIPAL	TX	LPV	0	100	0	100	0	100
T78	LIBERTY MUNICIPAL	TX	LP	0	100	0	100	2	99.989
T82	GILLESPIE COUNTY	TX	LPV	0	100	0	100	1	99.998
TDW	TRADEWIND	TX	LPV	0	100	0	100	1	99.998
TFP	MCCAMPBELL-PORTER	TX	LPV	1	99.993	1	99.993	1	99.961
TKI	MCKINNEY NTL	TX	LPV200	0	100	0	100	1	99.998
TME	HOUSTON EXEC	TX	LPV	0	100	0	100	1	99.984
TPL	DRAUGHON-MILLER CENTRAL TEXAS	TX	LPV200	0	100	0	100	0	100
TRL	TERRELL MUNICIPAL	TX	LPV	0	100	0	100	1	99.997
TX2	CHASE FLD INDUSTRIAL	TX	LPV	0	100	0	100	1	99.963
TXW	MID VALLEY	TX	LPV	1	99.975	1	99.975	7	99.924
TYR	TYLER POUNDS RGNL	TX	LPV200	0	100	0	100	1	99.996
UTS	HUNTSVILLE MUNICIPAL	TX	LPV	0	100	0	100	1	99.998
VCT	VICTORIA RGNL	TX	LPV200	0	100	0	100	1	99.965
XBP	BRIDGEPORT MUNICIPAL	TX	LPV	0	100	0	100	1	99.999
41U	MANTI-EPHRAIM	UT	LPV	0	100	0	100	0	100
74V	ROOSEVELT MUNICIPAL	UT	LPV	0	100	0	100	0	100
BCE	BRYCE CANYON	UT	LPV	0	100	0	100	0	100
BDG	BLANDING MUNICIPAL	UT	LPV	0	100	0	100	0	100
BMC	BRIGHAM CITY RGNL	UT	LP	0	100	0	100	0	100
CDC	CEDAR CITY RGNL	UT	LPV	0	100	0	100	1	99.999
CNY	CANYONLANDS RGNL	UT	LP	0	100	0	100	0	100
DTA	DELTA MUNICIPAL	UT	LP	0	100	0	100	0	100
ENV	WENDOVER	UT	LPV	0	100	0	100	0	100
FOM	FILLMORE MUNICIPAL	UT	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
LGU	LOGAN-CACHE	UT	LPV	0	100	0	100	0	100
OGD	OGDEN-HINCKLEY	UT	LPV	0	100	0	100	0	100
PUC	CARBON COUNTY RGNL/BUCK DAVIS	UT	LP	0	100	0	100	0	100
PVU	PROVO MUNICIPAL	UT	LPV200	0	100	0	100	0	100
RIF	RICHFIELD MUNICIPAL	UT	LP	0	100	0	100	0	100
SGU	ST GEORGE RGNL	UT	LPV	0	100	0	100	1	99.997
SLC	SALT LAKE CITY INTL	UT	LPV200	0	100	0	100	0	100
SPK	SPANISH FORK MUNICIPAL/WOODHOUSE FL	UT	LP	0	100	0	100	0	100
TVY	BOLINDER FLD-TOOELE VALLEY	UT	LPV200	0	100	0	100	0	100
U14	NEPHI MUNICIPAL	UT	LPV	0	100	0	100	0	100
U42	SOUTH VALLEY RGNL	UT	LPV	0	100	0	100	0	100
U55	PANGUITCH MUNICIPAL	UT	LPV200	0	100	0	100	0	100
VEL	VERNAL RGNL	UT	LPV	0	100	0	100	0	100
0V4	BROOKNEAL/CAMPBELL COUNTY	VA	LPV	0	100	0	100	1	99.987
0VG	LEE COUNTY	VA	LPV	0	100	0	100	0	100
AVC	MECKLENBURG-BRUNSWICK RGNL	VA	LPV	0	100	0	100	1	99.980
BCB	VIRGINIA TECH/MONTGOMERY EXEC	VA	LPV	0	100	0	100	1	99.997
BKT	ALLEN C PERKINSON BLACKSTONE A	VA	LPV	0	100	0	100	1	99.981
CHO	CHARLOTTESVILLE-ALBEMARLE	VA	LPV200	0	100	0	100	1	99.988
CJR	CULPEPER RGNL	VA	LPV	0	100	0	100	1	99.985
CPK	CHESAPEAKE RGNL	VA	LPV200	0	100	0	100	1	99.976
DAN	DANVILLE RGNL	VA	LPV200	0	100	0	100	1	99.983
EMV	EMPORIA-GREENSVILLE RGNL	VA	LPV	0	100	0	100	1	99.980
FCI	RICHMOND EXEC/CHESTERFIELD COU	VA	LPV	0	100	0	100	1	99.980
FKN	FRANKLIN RGNL	VA	LPV	0	100	0	100	1	99.977
FVX	FARMVILLE RGNL	VA	LPV	0	100	0	100	1	99.982
FYJ	MIDDLE PENINSULA RGNL	VA	LPV	0	100	0	100	1	99.977
HLX	TWIN COUNTY	VA	LPV	0	100	0	100	1	99.997
HSP	INGALLS FLD	VA	LPV	0	100	0	100	1	99.999
HWY	WARRENTON/FAUQUIER	VA	LPV200	0	100	0	100	1	99.984
JFZ	TAZEWELL COUNTY	VA	LPV	0	100	0	100	0	100
JYO	LEESBURG EXEC	VA	LPV	0	100	0	100	1	99.988
LKU	LOUISA COUNTY/FREEMAN FLD	VA	LPV	0	100	0	100	1	99.983
LNP	LONESOME PINE	VA	LPV	0	100	0	100	0	100
LUA	LURAY CAVERNS	VA	LP	0	100	0	100	1	99.991
LYH	LYNCHBURG RGNL/PRESTON GLENN F	VA	LPV	0	100	0	100	1	99.988
MFV	ACCOMACK COUNTY	VA	LPV	0	100	0	100	1	99.978

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
MKJ	MOUNTAIN EMPIRE	VA	LPV	0	100	0	100	0	100
MTV	BLUE RIDGE	VA	LPV	0	100	0	100	1	99.989
OFP	HANOVER COUNTY MUNICIPAL	VA	LPV	0	100	0	100	1	99.981
OKV	WINCHESTER RGNL	VA	LPV200	0	100	0	100	1	99.991
ORF	NORFOLK INTL	VA	LPV200	0	100	0	100	1	99.976
PHF	NEWPORT NEWS/WILLIAMSBURG INTL	VA	LPV200	0	100	0	100	1	99.977
PSK	NEW RIVER VALLEY	VA	LPV200	0	100	0	100	1	99.999
PTB	DINWIDDIE COUNTY	VA	LPV	0	100	0	100	1	99.980
PVG	HAMPTON ROADS EXEC	VA	LPV200	0	100	0	100	1	99.976
RIC	RICHMOND INTL	VA	LPV200	0	100	0	100	1	99.980
RMN	STAFFORD RGNL	VA	LPV	0	100	0	100	1	99.982
ROA	ROANOKE/BLACKSBURG RGNL (WOODR	VA	LPV	0	100	0	100	1	99.996
SFQ	SUFFOLK EXEC	VA	LPV	0	100	0	100	1	99.976
SHD	SHENANDOAH VALLEY RGNL	VA	LPV200	0	100	0	100	1	99.991
VJI	VIRGINIA HIGHLANDS	VA	LPV	0	100	0	100	0	100
W78	WILLIAM M TUCK	VA	LPV	0	100	0	100	1	99.982
W96	NEW KENT COUNTY	VA	LP	0	100	0	100	1	99.980
WAL	WALLOPS FLIGHT FACILITY	VA	LPV	0	100	0	100	2	99.978
XSA	TAPPAHANNOCK/ESSEX COUNTY	VA	LPV	0	100	0	100	1	99.980
BTV	BURLINGTON INTL	VT	LPV200	0	100	0	100	1	99.999
EFK	NORTHEAST KINGDOM INTL	VT	LP	0	100	0	100	0	100
FSO	FRANKLIN COUNTY STATE	VT	LPV	0	100	0	100	0	100
MPV	EDWARD F KNAPP STATE	VT	LPV	0	100	0	100	1	99.994
MVL	MORRISVILLE-STOWE STATE	VT	LPV	0	100	0	100	1	99.997
RUT	RUTLAND - SOUTHERN VERMONT RGN	VT	LPV	0	100	0	100	1	99.989
ALW	WALLA WALLA RGNL	WA	LPV200	0	100	0	100	0	100
AWO	ARLINGTON MUNICIPAL	WA	LPV200	0	100	0	100	2	99.995
BLI	BELLINGHAM INTL	WA	LPV200	0	100	0	100	3	99.971
BVS	SKAGIT RGNL	WA	LPV	0	100	0	100	3	99.977
CLM	WILLIAM R FAIRCHILD INTL	WA	LPV	0	100	0	100	3	99.972
CLS	CHEHALIS-CENTRALIA	WA	LPV	0	100	0	100	1	99.999
DEW	DEER PARK	WA	LPV	0	100	0	100	0	100
EPH	EPHRATA MUNICIPAL	WA	LPV	0	100	0	100	0	100
FHR	FRIDAY HARBOR	WA	LPV	0	100	0	100	3	99.973
GEG	SPOKANE INTL	WA	LPV200	0	100	0	100	0	100
HQM	BOWERMAN	WA	LPV200	0	100	0	100	1	99.996
KLS	SOUTHWEST WASHINGTON RGNL	WA	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
MWH	GRANT COUNTY INTL	WA	LPV200	0	100	0	100	0	100
OLM	OLYMPIA RGNL	WA	LPV200	0	100	0	100	1	99.998
ORS	ORCAS ISLAND	WA	LP	0	100	0	100	3	99.967
PAE	SNOHOMISH COUNTY (PAINE FLD)	WA	LPV200	0	100	0	100	1	99.997
PLU	PIERCE COUNTY - THUN FLD	WA	LPV	0	100	0	100	1	99.999
PSC	TRI-CITIES	WA	LPV200	0	100	0	100	0	100
PWT	BREMERTON NTL	WA	LPV200	0	100	0	100	1	99.997
RLD	RICHLAND	WA	LPV	0	100	0	100	0	100
RNT	RENTON MUNICIPAL	WA	LPV	0	100	0	100	1	99.998
SEA	SEATTLE-TACOMA INTL	WA	LPV200	0	100	0	100	1	99.998
SFF	FELTS FLD	WA	LPV	0	100	0	100	0	100
SHN	SANDERSON FLD	WA	LPV	0	100	0	100	1	99.997
TDO	ED CARLSON MEML FLD - SOUTH LE	WA	LPV	0	100	0	100	0	100
TIW	TACOMA NARROWS	WA	LPV	0	100	0	100	1	99.998
YKM	YAKIMA AIR TRML/MCALLISTER FLD	WA	LPV200	0	100	0	100	0	100
3T3	BOYCEVILLE MUNICIPAL	WI	LPV	0	100	2	99.983	1	99.964
57C	EAST TROY MUNICIPAL	WI	LPV	0	100	0	100	1	99.967
61C	FORT ATKINSON MUNICIPAL	WI	LP	0	100	0	100	1	99.967
82C	MAUSTON/NEW LISBON UNION	WI	LP	0	100	1	99.973	2	99.966
8D1	NEW HOLSTEIN MUNICIPAL	WI	LPV	0	100	1	99.987	1	99.967
AHH	AMERY MUNICIPAL	WI	LP	0	100	2	99.985	1	99.964
AIG	LANGLADE COUNTY	WI	LPV	0	100	1	99.967	2	99.963
ARV	LAKELAND/NOBLE F LEE MEML FLD	WI	LPV	0	100	1	99.967	1	99.962
ASX	JOHN F KENNEDY MEML	WI	LPV	1	99.989	1	99.967	1	99.960
ATW	APPLETON INTL	WI	LPV200	0	100	1	99.968	1	99.967
AUW	WAUSAU DOWNTOWN	WI	LPV200	0	100	1	99.967	2	99.963
BCK	BLACK RIVER FALLS AREA	WI	LPV	0	100	1	99.972	2	99.966
BUU	BURLINGTON MUNICIPAL	WI	LP	0	100	0	100	1	99.967
C29	MIDDLETON MUNICIPAL/MOREY FLD	WI	LPV	0	100	1	99.995	1	99.967
C35	REEDSBURG MUNICIPAL	WI	LP	0	100	1	99.994	2	99.966
C47	PORTAGE MUNICIPAL	WI	LP	0	100	1	99.994	2	99.967
CLI	CLINTONVILLE MUNICIPAL	WI	LPV	0	100	1	99.967	1	99.964
CMY	SPARTA/FORT MC COY	WI	LPV	0	100	1	99.974	2	99.966
CWA	CENTRAL WISCONSIN	WI	LPV200	0	100	1	99.967	2	99.963
DLL	BARABOO/WISCONSIN DELLS RGNL	WI	LPV	0	100	1	99.994	2	99.967
EAU	CHIPPEWA VALLEY RGNL	WI	LPV200	0	100	1	99.968	1	99.964
EGV	EAGLE RIVER UNION	WI	LPV	0	100	1	99.967	1	99.963

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
ENW	KENOSHA RGNL	WI	LPV200	0	100	0	100	1	99.981
ETB	WEST BEND MUNICIPAL	WI	LPV	0	100	0	100	1	99.967
EZS	SHAWANO MUNICIPAL	WI	LPV	0	100	1	99.967	1	99.964
FLD	FOND DU LAC COUNTY	WI	LPV	0	100	1	99.994	1	99.967
GRB	GREEN BAY/AUSTIN STRAUBEL INTL	WI	LPV200	0	100	1	99.981	1	99.967
GTG	GRANTSBURG MUNICIPAL	WI	LP	0	100	1	99.967	1	99.964
HXF	HARTFORD MUNICIPAL	WI	LPV	0	100	0	100	1	99.967
HYR	SAWYER COUNTY	WI	LPV	0	100	1	99.967	1	99.959
ISW	ALEXANDER FLD SOUTH WOOD COUNT	WI	LPV	0	100	1	99.967	2	99.966
JVL	SOUTHERN WISCONSIN RGNL	WI	LPV200	0	100	0	100	1	99.967
LNR	TRI-COUNTY RGNL	WI	LPV	0	100	1	99.995	2	99.967
LSE	LA CROSSE RGNL	WI	LPV	0	100	1	99.995	2	99.966
LUM	MENOMONIE MUNICIPAL/SCORE FLD	WI	LPV	0	100	2	99.984	1	99.964
MDZ	TAYLOR COUNTY	WI	LPV	0	100	1	99.967	2	99.963
MFI	MARSHFIELD MUNICIPAL	WI	LPV	0	100	1	99.967	2	99.964
MKE	GENERAL MITCHELL INTL	WI	LPV200	0	100	0	100	1	99.970
MRJ	IOWA COUNTY	WI	LPV200	0	100	1	99.996	2	99.967
MSN	DANE COUNTY RGNL/TRUAX FLD	WI	LPV200	0	100	1	99.995	1	99.967
MTW	MANITOWOC COUNTY	WI	LPV200	0	100	1	99.986	1	99.967
MWC	LAWRENCE J TIMMERMAN	WI	LPV	0	100	0	100	1	99.967
OCQ	OCONTO/J DOUGLAS BAKE MUNICIPAL	WI	LP	0	100	1	99.981	1	99.965
OEO	L O SIMENSTAD MUNICIPAL	WI	LPV200	0	100	1	99.997	1	99.964
OSH	WITTMAN RGNL	WI	LPV200	0	100	1	99.973	1	99.967
OVS	BOSCOBEL	WI	LPV	0	100	1	99.995	2	99.966
PBH	PRICE COUNTY	WI	LPV	0	100	1	99.967	1	99.963
PCZ	WAUPACA MUNICIPAL	WI	LPV	0	100	1	99.967	1	99.967
PVB	PLATTEVILLE MUNICIPAL	WI	LPV	0	100	1	99.999	2	99.967
RAC	BATTEN INTL	WI	LPV	0	100	0	100	1	99.980
RCX	RUSK COUNTY	WI	LPV	0	100	1	99.967	1	99.963
RHI	RHINELANDER/ONEIDA COUNTY	WI	LPV200	0	100	1	99.967	1	99.963
RNH	NEW RICHMOND RGNL	WI	LPV	0	100	1	99.993	1	99.964
RPD	RICE LAKE RGNL/CARL'S FLD	WI	LPV200	0	100	1	99.967	1	99.964
RRL	MERRILL MUNICIPAL	WI	LPV	0	100	1	99.967	2	99.962
SBM	SHEBOYGAN COUNTY MEML	WI	LPV200	0	100	1	99.998	1	99.967
STE	STEVENS POINT MUNICIPAL	WI	LPV	0	100	1	99.967	2	99.964
SUE	DOOR COUNTY CHERRYLAND	WI	LPV	0	100	1	99.981	1	99.966
SUW	RICHARD I BONG	WI	LP	0	100	1	99.967	1	99.958

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
TKV	TOMAHAWK RGNL	WI	LP	0	100	1	99.967	2	99.962
UBE	CUMBERLAND MUNICIPAL	WI	LPV	0	100	1	99.967	1	99.964
UES	WAUKESHA COUNTY	WI	LPV200	0	100	0	100	1	99.967
UNU	DODGE COUNTY	WI	LPV	0	100	0	100	1	99.967
VIQ	NEILLSVILLE MUNICIPAL	WI	LPV	0	100	1	99.967	2	99.966
Y50	WAUTOMA MUNICIPAL	WI	LP	0	100	1	99.969	1	99.967
Y55	CRANDON/STEVE CONWAY MUNICIPAL	WI	LPV	0	100	1	99.967	1	99.963
Y72	BLOYER FLD	WI	LP	0	100	1	99.972	2	99.966
3I2	MASON COUNTY	WV	LPV	0	100	0	100	0	100
6L4	LOGAN COUNTY	WV	LPV	0	100	0	100	0	100
BKW	RALEIGH COUNTY MEML	WV	LPV200	0	100	0	100	0	100
BLF	MERCER COUNTY	WV	LPV	0	100	0	100	0	100
CKB	NORTH CENTRAL WEST VIRGINIA	WV	LPV200	0	100	0	100	0	100
CRW	WEST VIRGINIA INTL YEAGER	WV	LPV200	0	100	0	100	0	100
HLG	WHEELING OHIO COUNTY	WV	LPV200	0	100	0	100	0	100
HTS	TRI-STATE/MILTON J FERGUSON FL	WV	LPV200	0	100	0	100	0	100
I18	JACKSON COUNTY	WV	LPV200	0	100	0	100	0	100
LWB	GREENBRIER VALLEY	WV	LPV	0	100	0	100	0	100
MGW	MORGANTOWN MUNICIPAL (WALTER L BILL	WV	LPV200	0	100	0	100	0	100
MRB	EASTERN WV RGNL/SHEPHERD FLD	WV	LPV	0	100	0	100	1	99.991
PKB	MID-OHIO VALLEY RGNL	WV	LPV	0	100	0	100	0	100
USW	BOGGS FLD	WV	LPV	0	100	0	100	0	100
W22	UPSHUR COUNTY RGNL	WV	LPV	0	100	0	100	0	100
W35	POTOMAC AIRPARK	WV	LP	0	100	0	100	1	99.999
W99	GRANT COUNTY	WV	LP	0	100	0	100	0	100
BYG	JOHNSON COUNTY	WY	LPV	0	100	0	100	0	100
COD	YELLOWSTONE RGNL	WY	LPV	0	100	0	100	0	100
CPR	CASPER/NATRONA COUNTY INTL	WY	LPV	0	100	0	100	0	100
CYS	CHEYENNE RGNL/JERRY OLSON FLD	WY	LPV200	0	100	0	100	0	100
DGW	CONVERSE COUNTY	WY	LPV200	0	100	0	100	0	100
DWX	DIXON	WY	LP	0	100	0	100	0	100
EAN	PHIFER AIRFIELD	WY	LPV200	0	100	0	100	0	100
ECS	MONDELL FLD	WY	LPV	0	100	0	100	0	100
EMM	KEMMERER MUNICIPAL	WY	LPV	0	100	0	100	0	100
EVW	EVANSTON-UINTA COUNTY BURNS FL	WY	LPV	0	100	0	100	0	100
FBR	FORT BRIDGER	WY	LP	0	100	0	100	0	100
GCC	NORTHEAST WYOMING RGNL	WY	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
GEY	SOUTH BIG HORN COUNTY	WY	LPV	0	100	0	100	0	100
GUR	CAMP GUERNSEY	WY	LP	0	100	0	100	0	100
HSG	HOT SPRINGS COUNTY	WY	LPV	0	100	0	100	0	100
JAC	JACKSON HOLE	WY	LPV200	0	100	0	100	0	100
LAR	LARAMIE RGNL	WY	LPV	0	100	0	100	0	100
LND	HUNT FLD	WY	LPV	0	100	0	100	0	100
PNA	RALPH WENZ FLD	WY	LPV	0	100	0	100	0	100
POY	POWELL MUNICIPAL	WY	LPV	0	100	0	100	0	100
RIW	CENTRAL WYOMING RGNL	WY	LPV200	0	100	0	100	0	100
RKS	SOUTHWEST WYOMING RGNL	WY	LPV200	0	100	0	100	0	100
RWL	RAWLINS MUNICIPAL/HARVEY FLD	WY	LPV	0	100	0	100	0	100
SAA	SHIVELY FLD	WY	LPV	0	100	0	100	0	100
SHR	SHERIDAN COUNTY	WY	LPV	0	100	0	100	0	100
U68	NORTH BIG HORN COUNTY	WY	LPV	0	100	0	100	0	100
W43	HULETT MUNICIPAL	WY	LPV	0	100	0	100	0	100
WRL	WORLAND MUNICIPAL	WY	LPV	0	100	0	100	0	100
CYQH	WATSON LAKE	YT	LPV	1	99.843	1	99.832	3	99.780
CYXY	ERIK NIELSEN INTL	YT	LPV200	1	99.840	1	99.817	2	99.807
CYMA	MAYO	YT	LPV	1	99.835	1	99.821	2	99.806
CYZW	TESLIN	YT	LPV	1	99.840	1	99.824	4	99.803

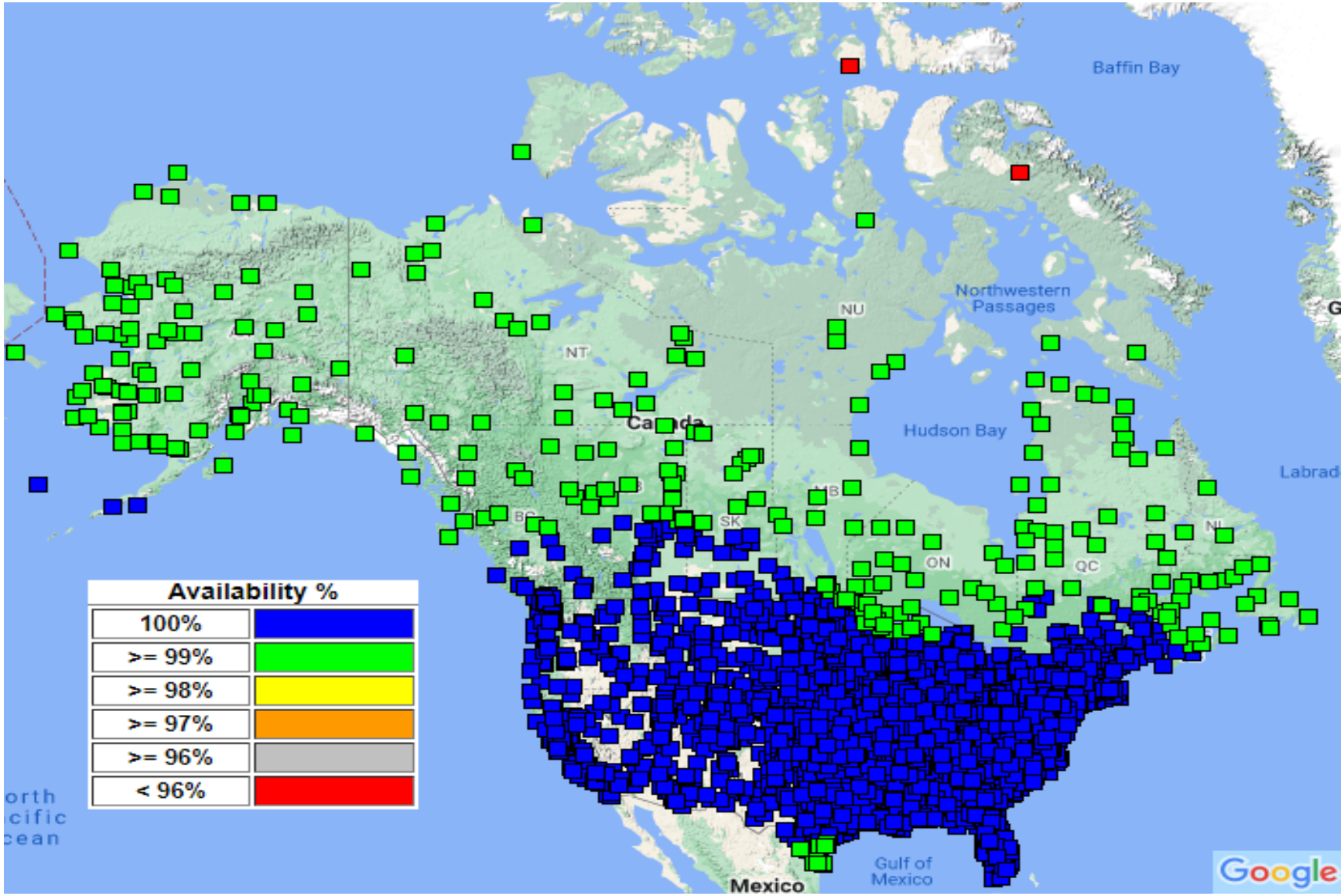

Figure 8-1 WAAS LP Availability at Airports in the U.S. and Canada With GPS RNAV IAPs

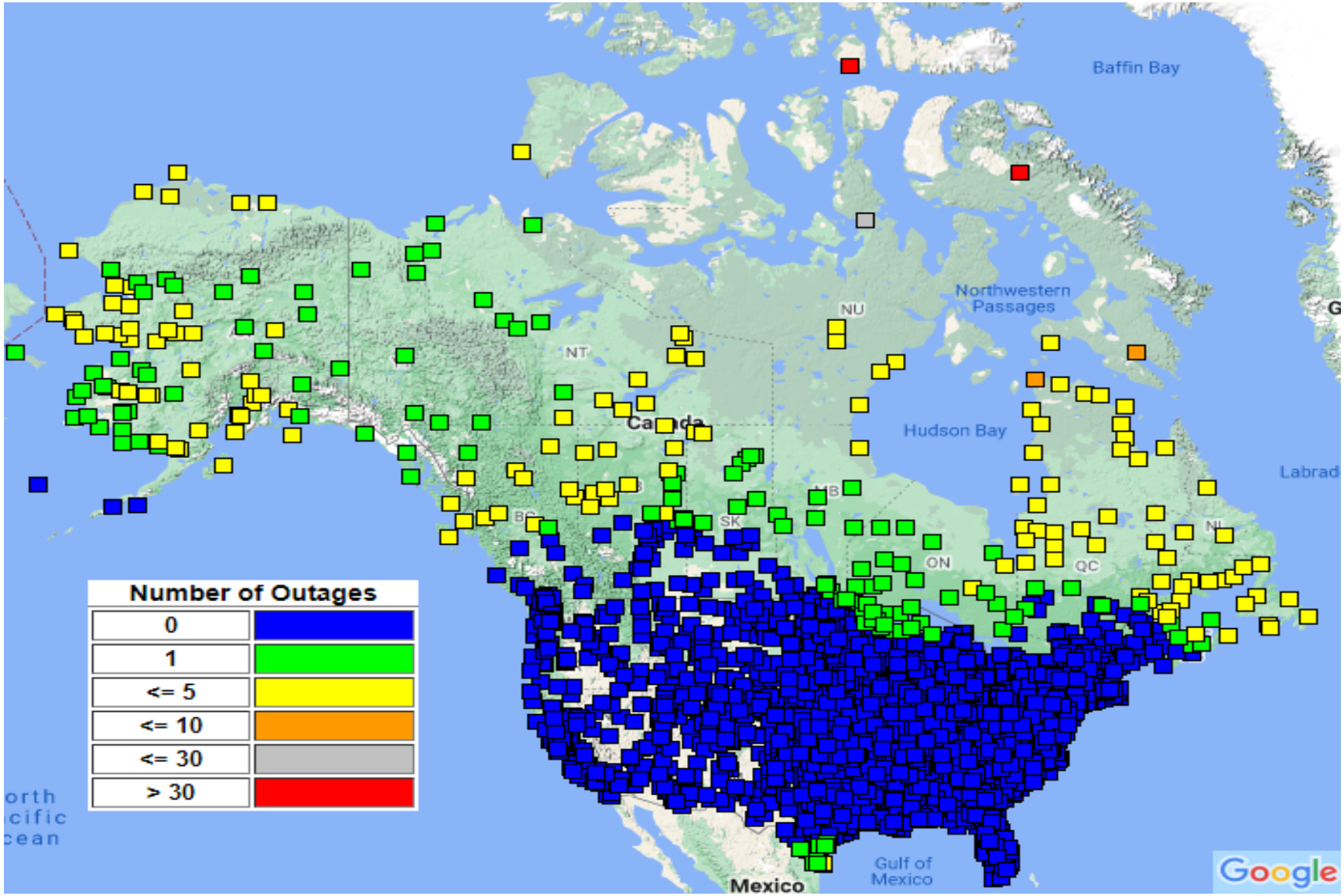

Figure 8-2 WAAS LP Outages at Airports in the U.S. and Canada With GPS RNAV IAPs

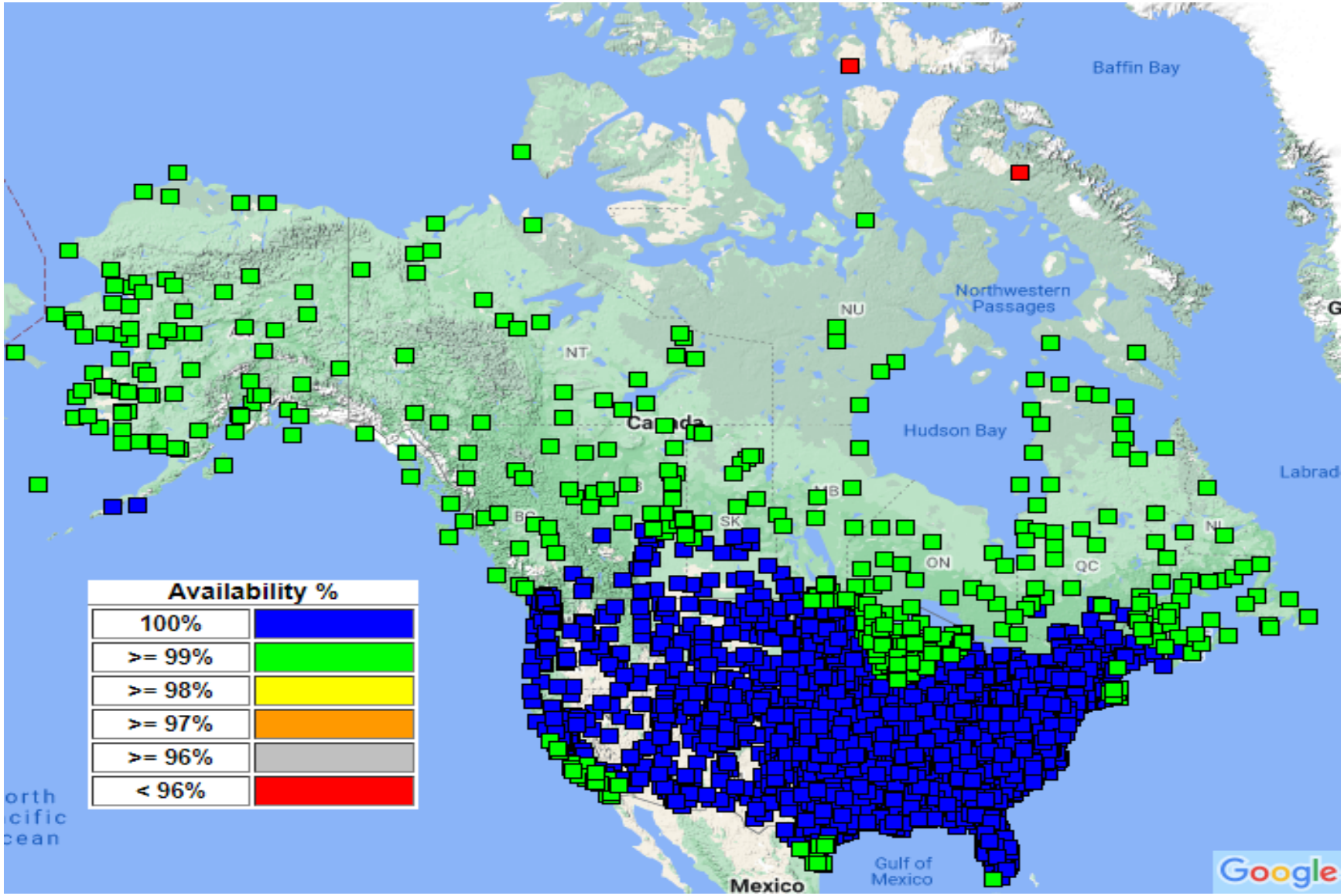

Figure 8-3 WAAS LPV Availability Airports in the U.S. and Canada With GPS RNAV IAPs

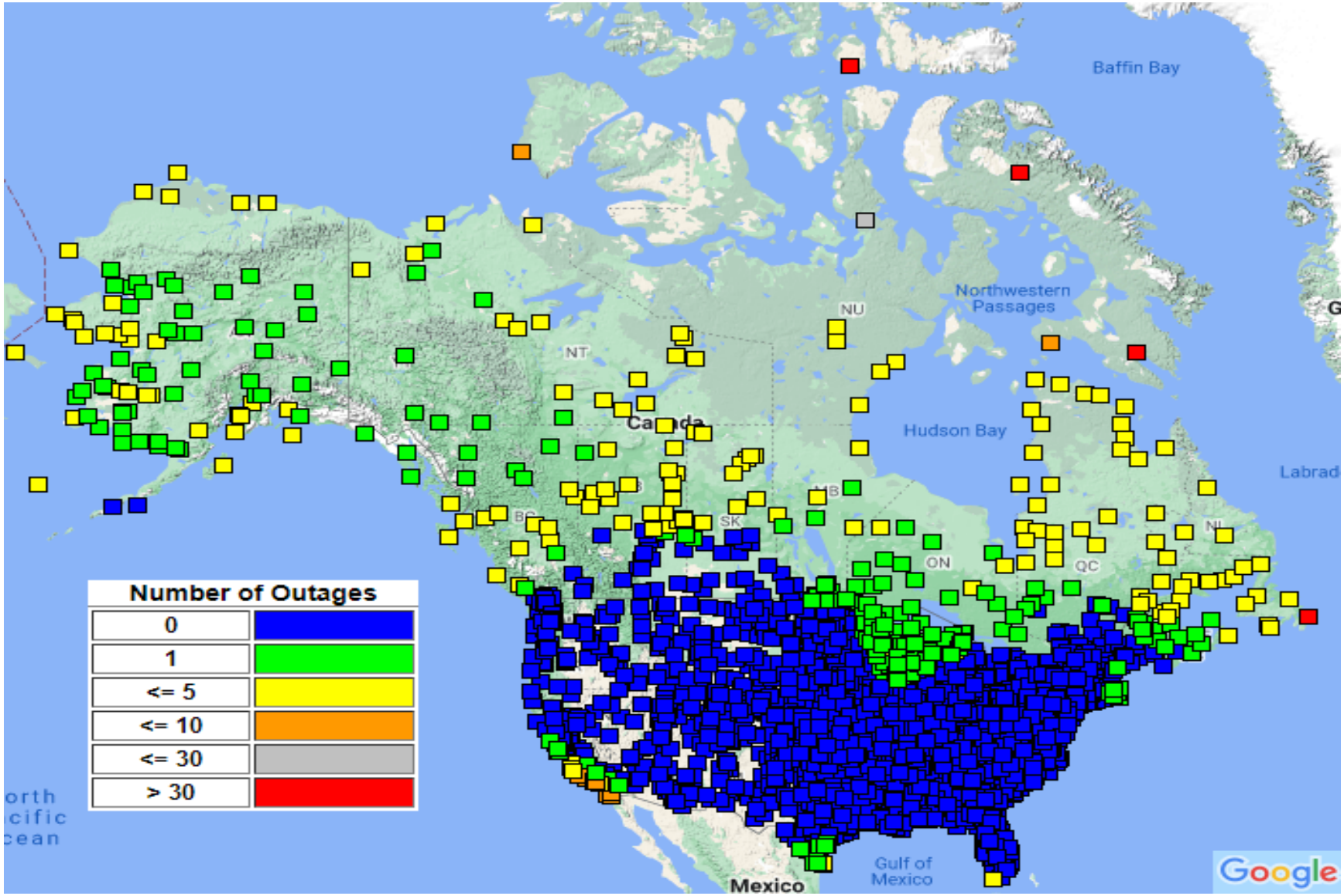

Figure 8-4 WAAS LPV Outages at Airports in the U.S. and Canada With GPS RNAV IAPs

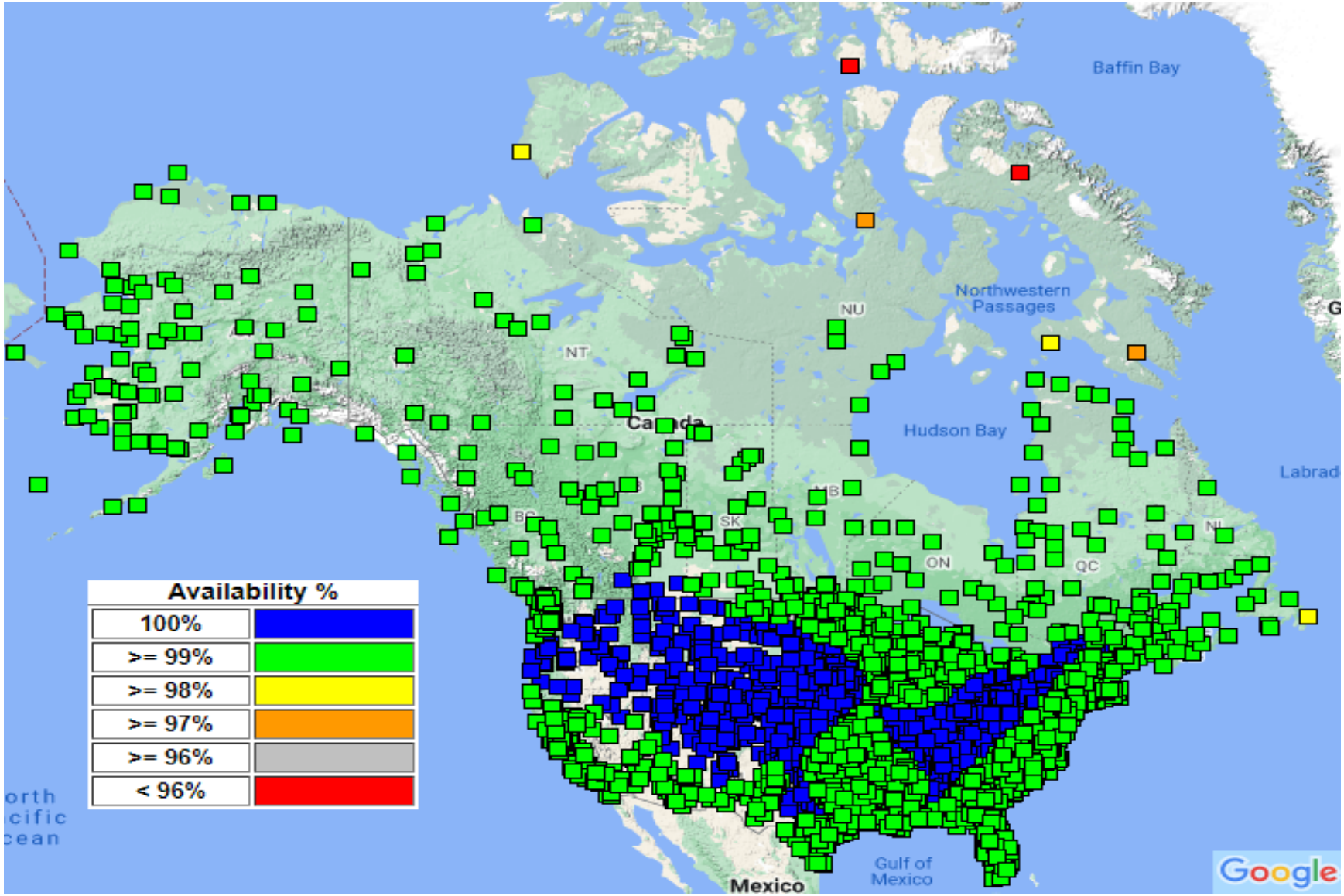

Figure 8-5 WAAS LPV200 Availability at Airports in the U.S. and Canada With GPS RNAV IAPs

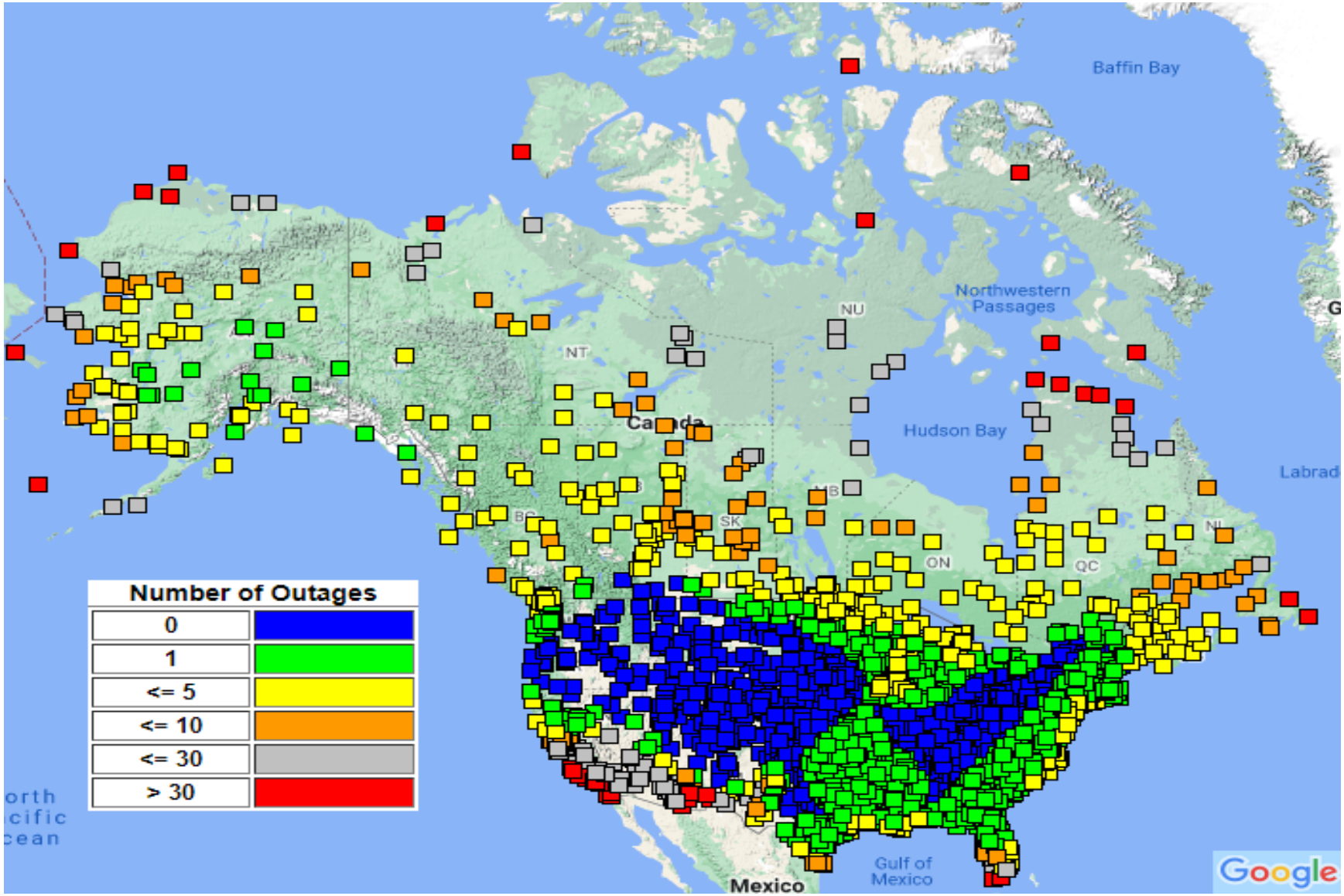

Figure 8-6 WAAS LPV200 Outages at Airports in the U.S. and Canada With GPS RNAV IAPs

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 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	Oct 22	Nov 22	Dec 22	Jan 23	Feb 23	Mar 23	Apr 23	May 23	Jun 23	Jul 23	Aug 23	Sep 23
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	Oct 22	Nov 22	Dec 22	Jan 23	Feb 23	Mar 23	Apr 23	May 23	Jun 23	Jul 23	Aug 23	Sep 23
Juneau	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Kansas City	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Kotzebue	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Los Angeles	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Memphis	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Merida	A	•	•	•	•	•	–	–	–	•	•	•	–
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Mexico City	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	–	–	–	–	–	–	–	–	–	–	–	–
	C	•	•	•	•	•	•	•	•	•	•	•	•
Miami	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Minneapolis	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	–	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
New York	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Oakland	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Puerto Vallarta	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Salt Lake City	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
San Jose Del Cabo	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
San Juan	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Seattle	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Tapachula	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	–	–	–	–	–	–	–	–	–	–
	C	•	•	•	•	•	•	•	•	•	•	•	•
Washington, DC	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Winnipeg	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	–
	C	•	•	•	•	•	•	•	•	•	•	•	•

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

10.0 WRS ANTENNA SURVEY VALIDATION

Antenna L1 phase center position surveys were performed for all the WAAS Reference Station antennas using 24 hour sets on 10/06/2023. Bethel Thread B (BET2), Merida Thread A (MMD1), Mexico City Thread A (MMX1), Mexico City Thread B (MMX2), Tapachula Thread B (MTP2), and Winnipeg Thread B (YWG2) 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 2.7 cm or less. The CSRS surveys' RSSs of the reported ECEF sigmas were 11.79 mm or less. The OPUS and CSRS surveys agreed to an average of 1.17 cm with a standard deviation of 6.33 mm. The maximum of difference was 3.27cm at Bethel Thread A (BET1).

The OPUS positions were compared to the positions computed by the WAAS C&Vs. The survey was completed on October 06, 2023. The OPUS surveys agree with the calculated positions to better or equal to 1.84 cm for most sites. The maximum difference was 6.97 cm at Bethel Thread A (BET1).

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

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

WRE	X (m)	Y (m)	Z (m)	LATITUDE	LONGITUDE	H (m)
BET1	-2965385.256	-972576.665	5543892.763	60.7879132	-161.8417254	52.169
BET2	N/A	N/A	N/A	N/A	N/A	N/A
BET3	-2965388.594	-972577.517	5543890.842	60.7878779	-161.8417296	52.17
BIL1	-1416446.031	-4223577.011	4550862.064	45.803706	-108.5397249	1112.21
BIL2	-1416450.108	-4223574.861	4550862.802	45.8037154	-108.5397834	1112.222
BIL3	-1416441.732	-4223574.263	4550865.923	45.8037558	-108.5396837	1112.207
BRW1	-1886759.137	-809058.708	6018494.376	71.2827628	-156.7899259	15.545
BRW2	-1886756.555	-809055.957	6018495.561	71.2827956	-156.7899681	15.558
BRW3	-1886755.461	-809059.75	6018495.382	71.2827909	-156.7898588	15.546
CDB1	-3484099.264	-1084748.828	5213678.479	55.1923718	-162.706405	49.697
CDB2	-3484105.898	-1084741.633	5213675.531	55.1923257	-162.7065438	49.671
CDB3	-3484112.181	-1084734.858	5213672.792	55.1922823	-162.7066747	49.697
FAI1	-2304742.04	-1448715.353	5748843.667	64.809628	-147.8473421	150.018
FAI2	-2304741.581	-1448706.542	5748846.06	64.8096784	-147.8474939	150.022
FAI3	-2304733.056	-1448707.481	5748849.216	64.809745	-147.8473817	150.019
JNU1	-2354255.179	-2388549.724	5407043.191	58.362573	-134.5857096	16.299
JNU2	-2354253.089	-2388565.834	5407037.024	58.3624675	-134.585491	16.297
JNU3	-2354239.877	-2388568.69	5407041.487	58.3625439	-134.585296	16.299
MMD1	N/A	N/A	N/A	N/A	N/A	N/A
MMD2	35065.396	-5959687.008	2264364.985	20.9319017	-89.662889	29.131
MMD3	35065.055	-5959685.212	2264369.639	20.9319467	-89.6628922	29.114
MMX1	N/A	N/A	N/A	N/A	N/A	N/A
MMX2	N/A	N/A	N/A	N/A	N/A	N/A
MMX3	-948705.131	-5943932.817	2109209.278	19.4316307	-99.0684317	2232.457
MPR1	-1570142.286	-5759530.586	2238184.741	20.6790032	-105.2492038	10.972
MPR2	-1570139.471	-5759530.096	2238188.776	20.6790412	-105.249179	11.262
MPR3	-1570143.568	-5759527.976	2238190.552	20.6790593	-105.2492223	10.984
MSD1	-1979520.235	-5523222.778	2493107.034	23.1604492	-109.7176537	104.302
MSD2	-1979521.804	-5523225.098	2493100.626	23.1603864	-109.7176605	104.277
MSD3	-1979526.248	-5523221.834	2493104.3	23.1604225	-109.7177121	104.275
MTP1	-254854.398	-6162909.137	1617805.101	14.7913664	-92.3679996	54.925

WRE	X (m)	Y (m)	Z (m)	LATITUDE	LONGITUDE	H (m)
MTP2	N/A	N/A	N/A	N/A	N/A	N/A
MTP3	-254855.55	-6162910.27	1617800.134	14.7913202	-92.3680099	54.797
OTZ1	-2396056.238	-750356.221	5843502.391	66.8873299	-162.6113731	10.859
OTZ2	-2396053.067	-750354.393	5843503.907	66.8873647	-162.6113913	10.851
OTZ3	-2396053.042	-750358.331	5843503.424	66.8873535	-162.6113054	10.86
YFB1	1035381.245	-2634289.678	5696539.617	63.7314911	-68.5431875	10.079
YFB2	1035372.029	-2634296.093	5696538.236	63.7314648	-68.5434086	9.991
YFB3	1035365.949	-2634306.85	5696534.463	63.7313871	-68.5436028	10.054
YQX1	2430424.462	-3419640.422	4788223.926	48.9664911	-54.5976343	146.9
YQX2	2430432.407	-3419639.079	4788220.87	48.9664492	-54.5975352	146.898
YQX3	2430440.311	-3419637.712	4788217.86	48.966408	-54.5974364	146.902
YWG1	-520164.589	-4083475.981	4855842.988	49.9005736	-97.2594005	222.104
YWG2	N/A	N/A	N/A	N/A	N/A	N/A
YWG3	-520152.592	-4083478.041	4855842.559	49.9005675	-97.2592312	222.116
YYR1	1885341.237	-3321428.393	5091171.75	53.3086481	-60.419471	37.884
YYR2	1885344.206	-3321419.918	5091176.169	53.3087143	-60.4193695	37.899
YYR3	1885339.931	-3321413.095	5091182.171	53.3088045	-60.4193747	37.906
ZAB1	-1488636.986	-5003946.527	3654557.65	35.1735748	-106.5673514	1620.116
ZAB2	-1488631.651	-5003948.217	3654557.631	35.1735742	-106.5672899	1620.185
ZAB3	-1488632.431	-5003950.801	3654553.779	35.1735318	-106.5672901	1620.173
ZAN1	-2659536.806	-1549114.677	5567750.735	61.229201	-149.7802539	80.719
ZAN2	-2659548.565	-1549110.723	5567746.248	61.2291173	-149.7804277	80.719
ZAN3	-2659541.512	-1549106.597	5567750.718	61.2292009	-149.780428	80.704
ZAU1	138703.949	-4761244.125	4227763.916	41.7826581	-88.3313387	195.862
ZAU2	138704.213	-4761248.75	4227758.76	41.7825957	-88.3313371	195.879
ZAU3	138710.917	-4761248.484	4227758.838	41.7825966	-88.3312564	195.878
ZBW1	1490299.055	-4448983.188	4306010.531	42.735721	-71.4804278	39.112
ZBW2	1490304.171	-4448981.18	4306010.88	42.735725	-71.4803608	39.143
ZBW3	1490305.879	-4448984.806	4306006.568	42.7356721	-71.4803551	39.141
ZDC1	1069125.602	-4839598.988	4001126.524	39.1015962	-77.5427484	80.048
ZDC2	1069128.001	-4839603.616	4001120.32	39.1015242	-77.5427328	80.044
ZDC3	1069123.901	-4839602.703	4001122.521	39.1015497	-77.5427768	80.054

WRE	X (m)	Y (m)	Z (m)	LATITUDE	LONGITUDE	H (m)
ZDV1	-1273628.771	-4711375.569	4094890.062	40.1873027	-105.1272262	1541.352
ZDV2	-1273623.066	-4711377.078	4094890.075	40.187303	-105.1271569	1541.336
ZDV3	-1273625.079	-4711380.28	4094885.787	40.1872525	-105.1271699	1541.331
ZFW1	-659983.335	-5324060.784	3438276.456	32.8306495	-97.0664732	155.63
ZFW2	-659988.606	-5324063.332	3438271.454	32.8305961	-97.0665257	155.588
ZFW3	-659983.633	-5324063.859	3438271.664	32.8305981	-97.0664723	155.627
ZHN1	-5508637.229	-2234492.618	2303722.554	21.3129938	-157.9208342	24.67
ZHN2	-5508656.392	-2234482.936	2303687.303	21.3126508	-157.9209901	25.01
ZHN3	-5508647.807	-2234496.87	2303694.398	21.3127194	-157.9208345	25.057
ZHU1	-513864.59	-5506451.618	3166720.416	29.9618962	-95.3314276	10.755
ZHU2	-513867.244	-5506455.016	3166714.25	29.9618317	-95.3314517	10.821
ZHU3	-513873.515	-5506457.658	3166708.654	29.9617735	-95.3315138	10.81
ZJX1	772646.314	-5434462.177	3237231.751	30.6988599	-81.9081864	2.115
ZJX2	772649.642	-5434463.743	3237228.365	30.6988243	-81.9081543	2.122
ZJX3	772645.578	-5434466.166	3237225.25	30.6987917	-81.9081999	2.102
ZKC1	-415247.666	-4954556.386	3982161.095	38.8801592	-94.7908356	305.892
ZKC2	-415231.275	-4954557.701	3982161.147	38.8801599	-94.7906461	305.879
ZKC3	-415237.393	-4954561.048	3982155.952	38.8801017	-94.7907131	305.612
ZLA1	-2474410.169	-4637294.469	3602183.608	34.6035191	-118.0838985	763.513
ZLA2	-2474404.895	-4637297.272	3602183.609	34.6035192	-118.0838334	763.506
ZLA3	-2474411.497	-4637296.956	3602179.63	34.6034752	-118.0838985	763.575
ZLC1	-1808273.389	-4486410.804	4145302.955	40.7860426	-111.9521796	1287.427
ZLC2	-1808274.776	-4486414.426	4145298.458	40.7859891	-111.9521788	1287.425
ZLC3	-1808270.571	-4486416.132	4145298.458	40.785989	-111.952125	1287.433
ZMA1	966042.188	-5662999.809	2761581.528	25.8246126	-80.3191909	-7.604
ZMA2	966029.216	-5662999.115	2761586.02	25.8246603	-80.3193172	-8.227
ZMA3	966037.294	-5662997.947	2761586.369	25.8246624	-80.3192359	-7.889
ZME1	4070.749	-5226189.292	3644028.414	35.0673941	-89.9553716	68.594
ZME2	4070.781	-5226186.74	3644032.528	35.0674376	-89.9553712	68.869
ZME3	4064.587	-5226186.615	3644032.687	35.0674395	-89.9554391	68.854
ZMP1	-249978.547	-4539297.482	4458955.006	44.637463	-93.1520876	262.616
ZMP2	-249972.742	-4539297.823	4458955.005	44.6374629	-93.1520143	262.63

WRE	X (m)	Y (m)	Z (m)	LATITUDE	LONGITUDE	H (m)
ZMP3	-249973.841	-4539302.101	4458950.529	44.6374068	-93.1520252	262.568
ZNY1	1406144.465	-4627343.967	4144322.107	40.7843293	-73.0971676	6.433
ZNY2	1406146.268	-4627347.016	4144317.301	40.7842763	-73.0971576	5.899
ZNY3	1406140.708	-4627348.673	4144317.341	40.7842767	-73.0972264	5.902
ZOA1	-2684437.115	-4293337.182	3865351.957	37.5430549	-122.0159515	-3.492
ZOA2	-2684434.107	-4293341.266	3865349.532	37.5430273	-122.0158981	-3.489
ZOA3	-2684438.479	-4293342.137	3865345.672	37.5429829	-122.0159348	-3.417
ZOB1	650770.017	-4754715.652	4187420.746	41.2971547	-82.2064467	223.647
ZOB2	650777.697	-4754714.826	4187422.765	41.297167	-82.2063545	225.147
ZOB3	650776.025	-4754719.649	4187414.973	41.2970872	-82.2063821	223.424
ZSE1	-2308930.379	-3668169.667	4663526.411	47.2869925	-122.1883741	82.085
ZSE2	-2308934.774	-3668175.215	4663520.007	47.286907	-122.1883842	82.152
ZSE3	-2308935.834	-3668179.493	4663516.068	47.2868553	-122.1883659	82.097
ZSU1	2462589.493	-5529372.053	2003724.607	18.431337	-65.993476	-28.094
ZSU2	2462587.563	-5529377.416	2003712.312	18.4312199	-65.9935134	-28.078
ZSU3	2462594.189	-5529375.157	2003710.233	18.4312003	-65.9934474	-28.136
ZTL1	529840.268	-5305248.815	3489342.861	33.3796887	-84.2967275	261.134
ZTL2	529846.646	-5305247.972	3489343.144	33.3796919	-84.2966584	261.118
ZTL3	529847.329	-5305251.411	3489337.91	33.3796352	-84.2966547	261.153

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 shows the OPUS surveys overall RMS quality indications.

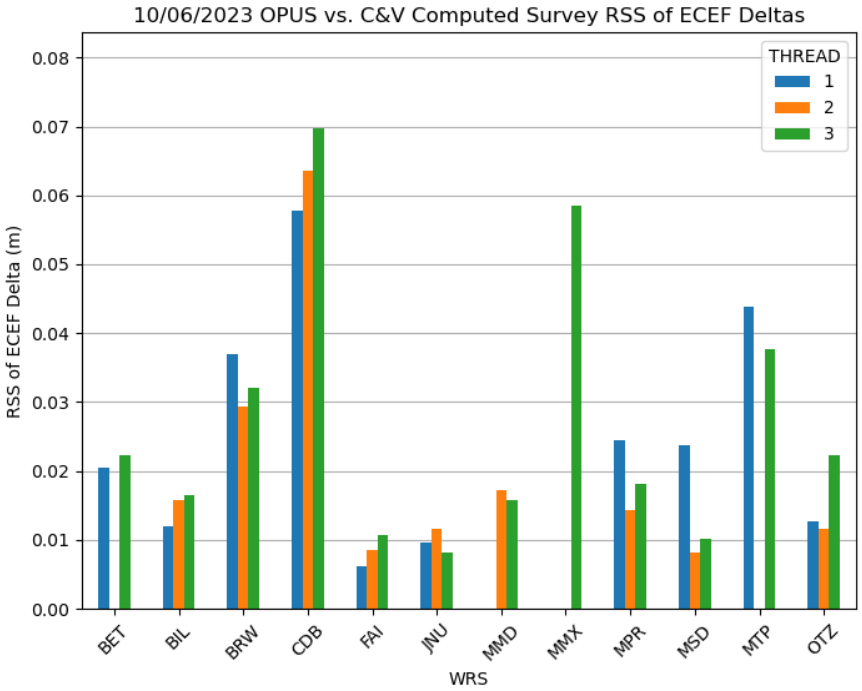

Figure 10-1 WAAS C&V Calculated Antenna Positions Deltas OPUS Survey

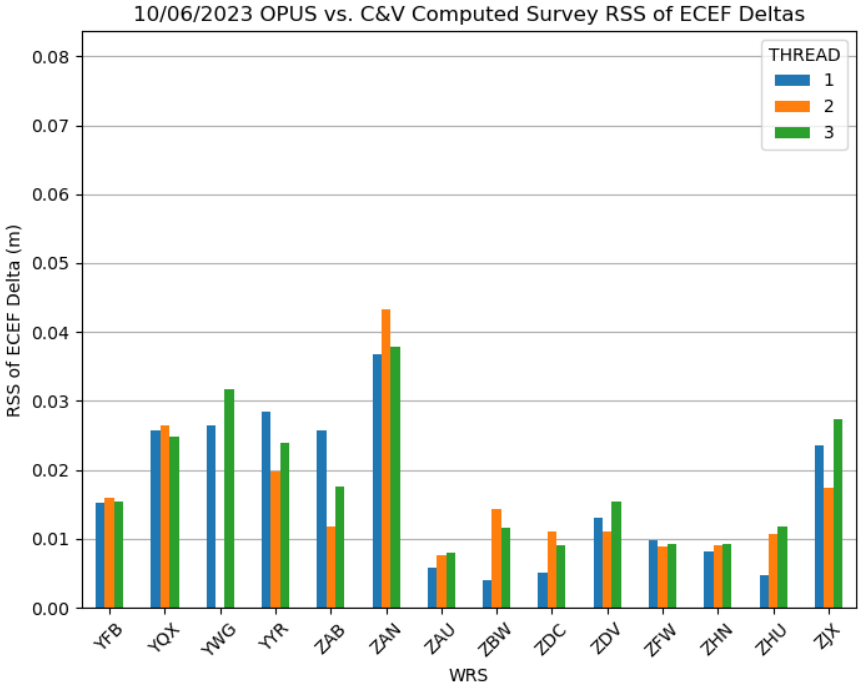

Figure 10-2 WAAS C&V Calculated Antenna Positions Deltas OPUS Survey

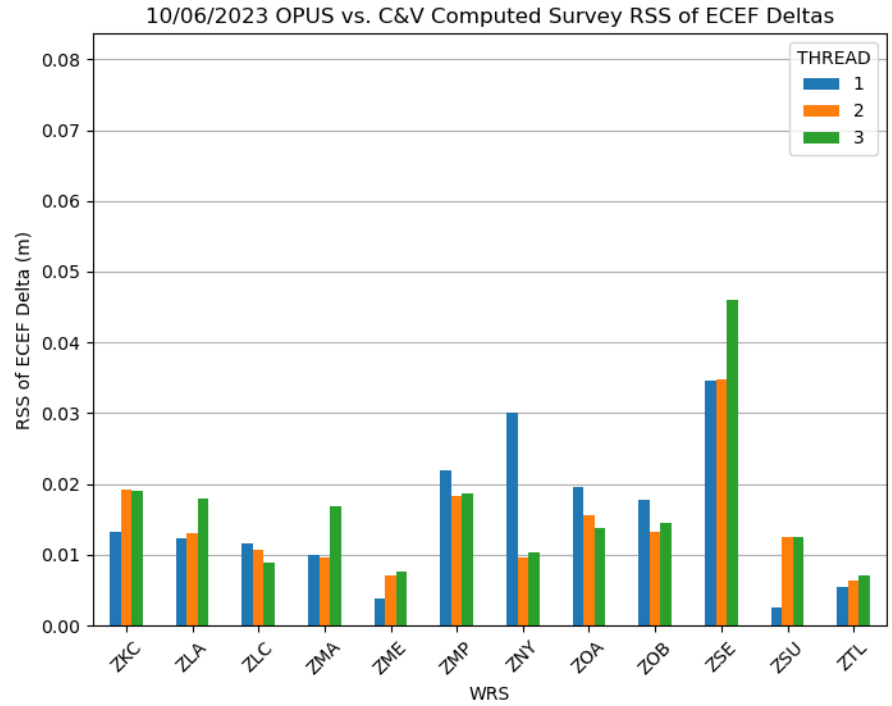

Figure 10-3 WAAS C&V Calculated Antenna Positions Deltas OPUS Survey

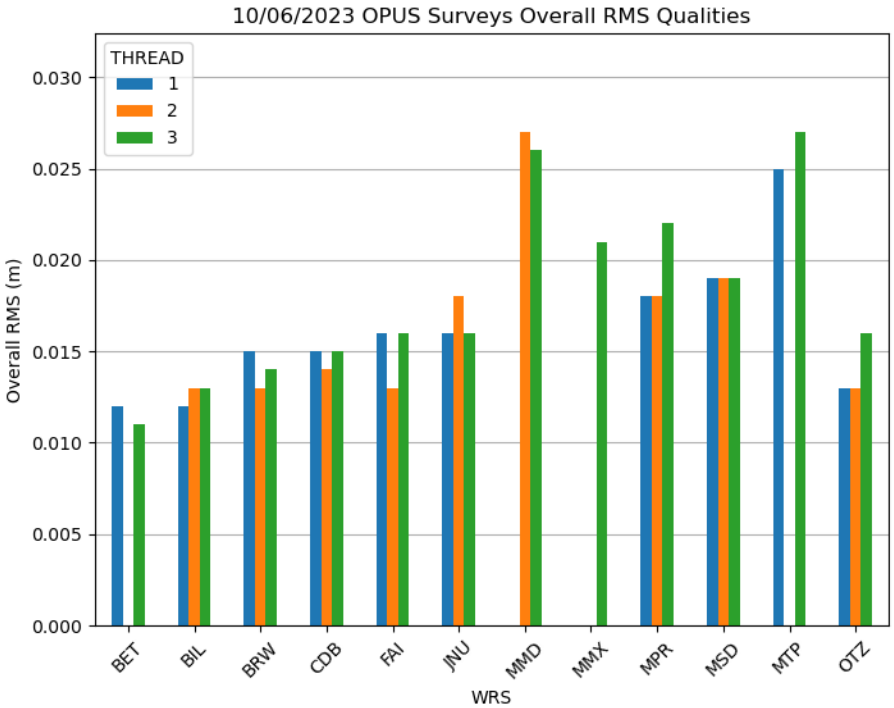

Figure 10-4 OPUS Survey Overall RMS Qualities

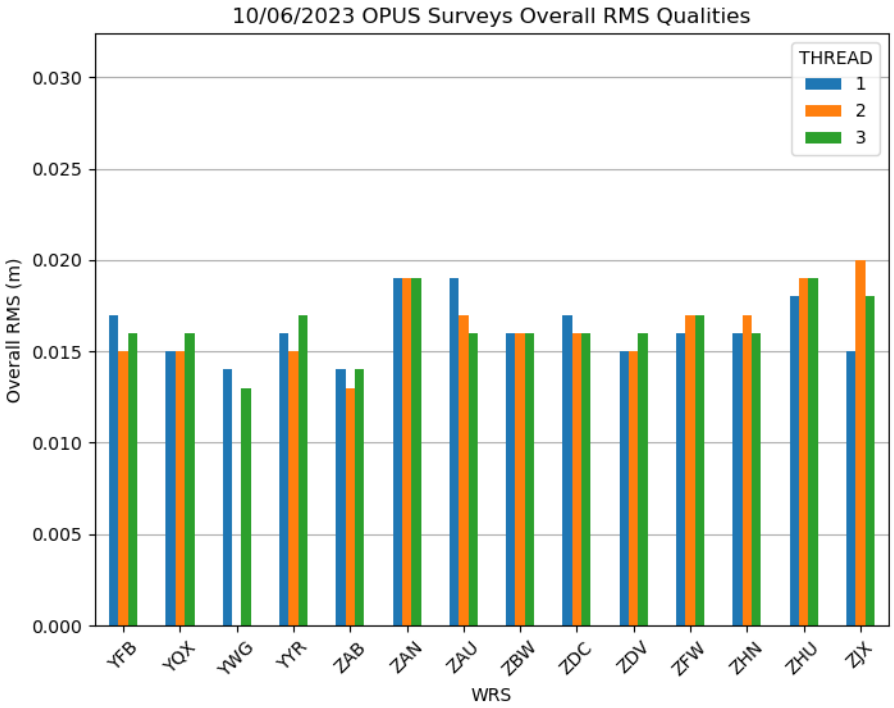

Figure 10-5 OPUS Survey Overall RMS Qualities

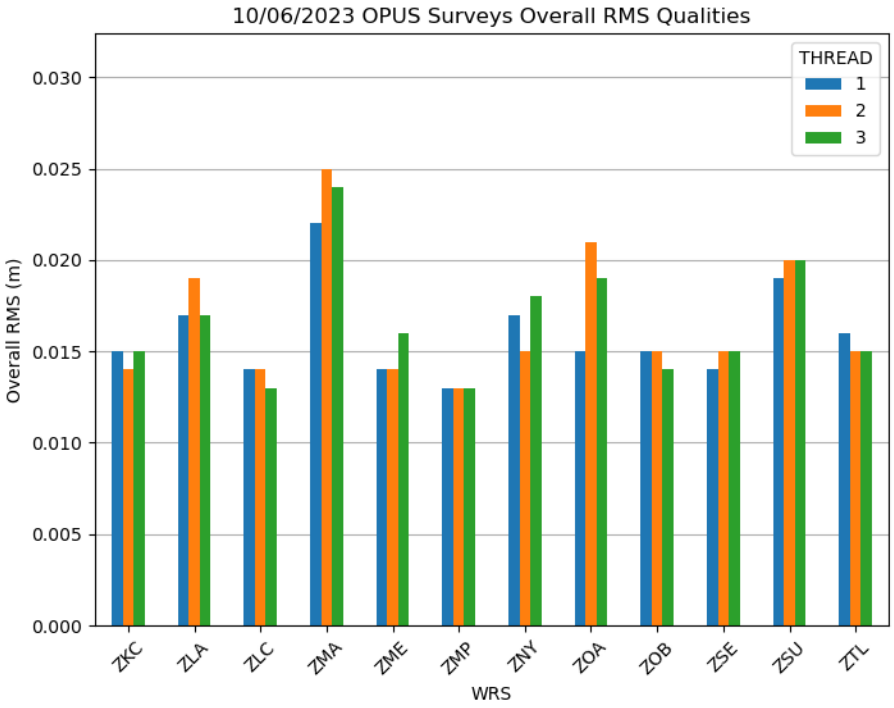

Figure 10-6 OPUS Survey Overall RMS Qualities

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.

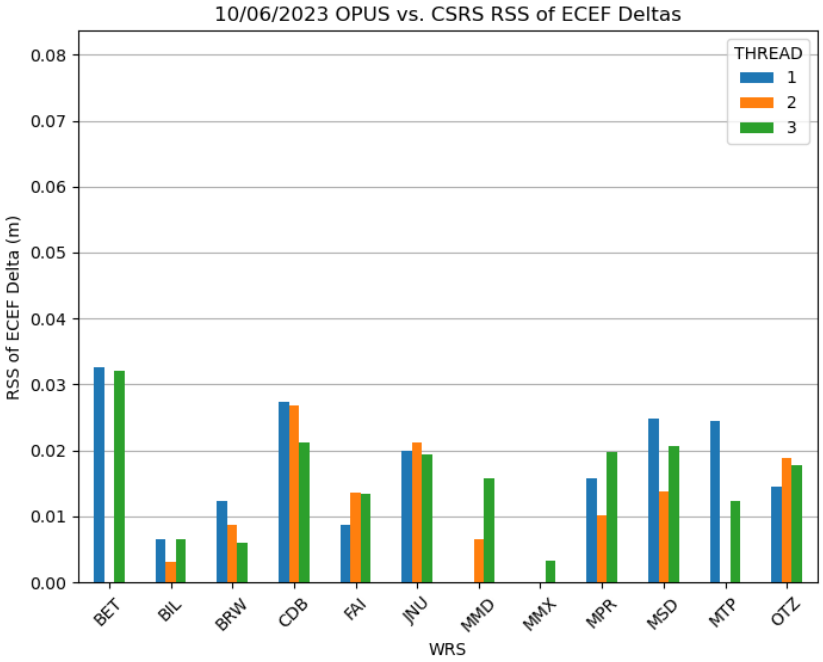

Figure 10-7 OPUS vs. CSRS RSS ECEF Deltas

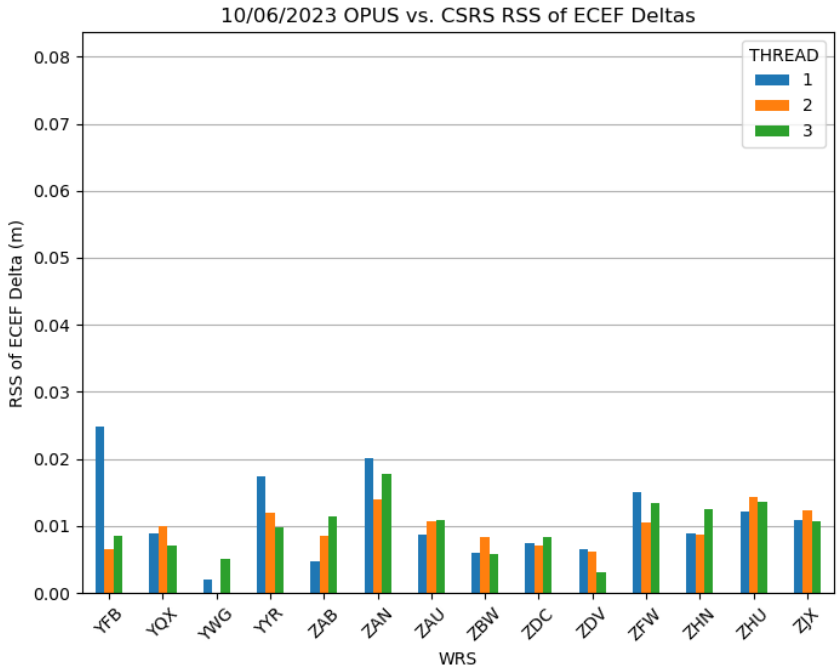

Figure 10-8 OPUS vs. CSRS RSS ECEF Deltas

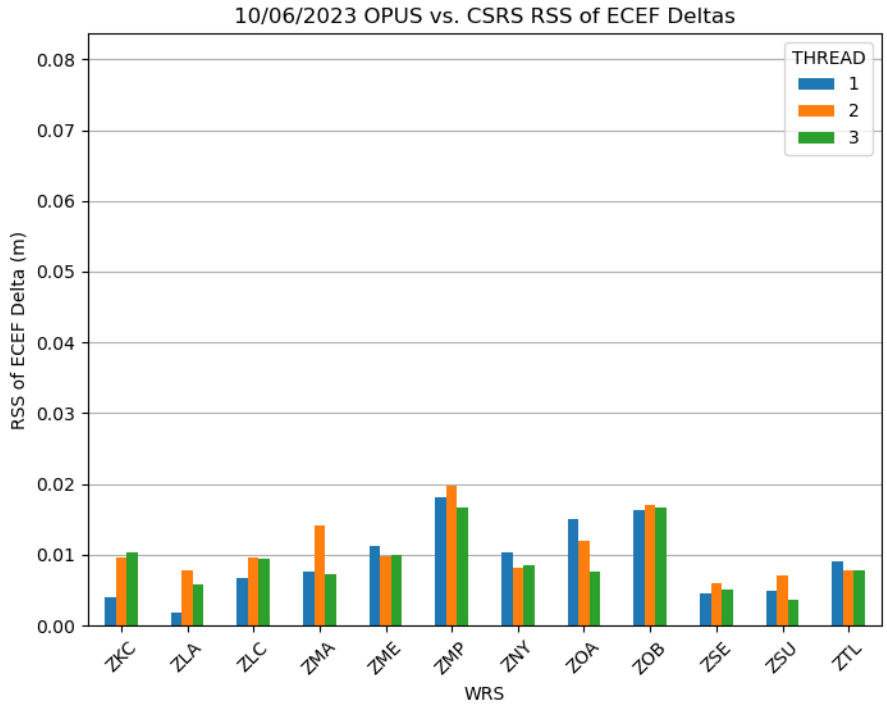

Figure 10-9 OPUS vs. CSRS RSS ECEF Deltas

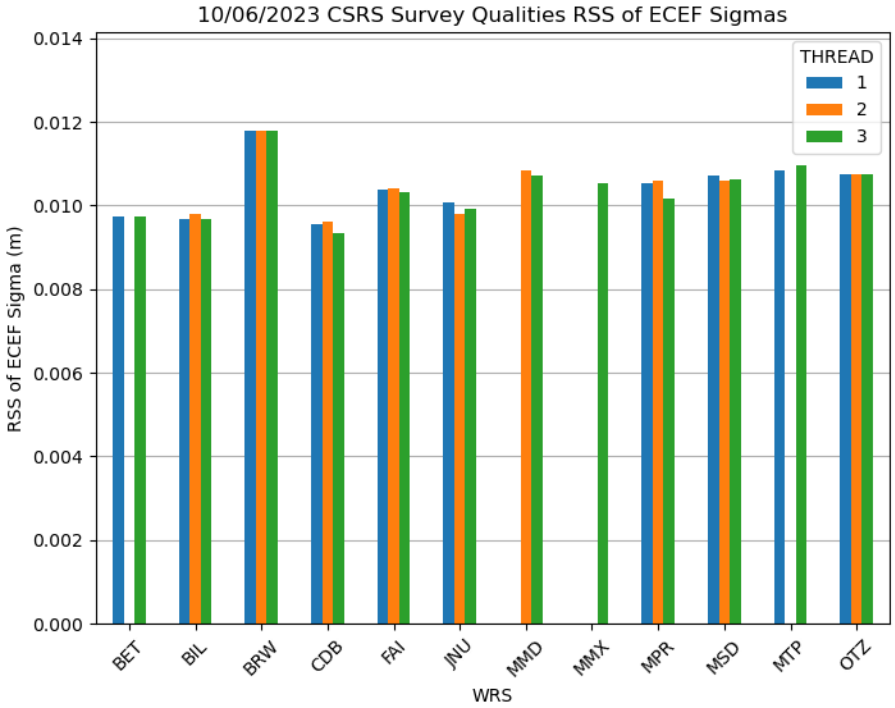

Figure 10-10 CSRS Survey Qualities

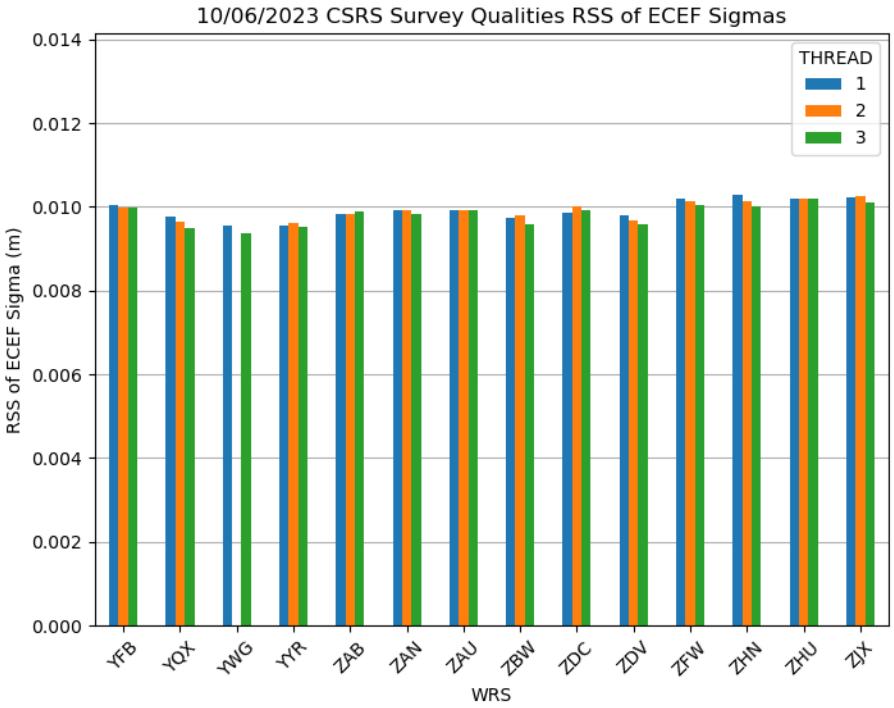

Figure 10-11 CSRS Survey Qualities

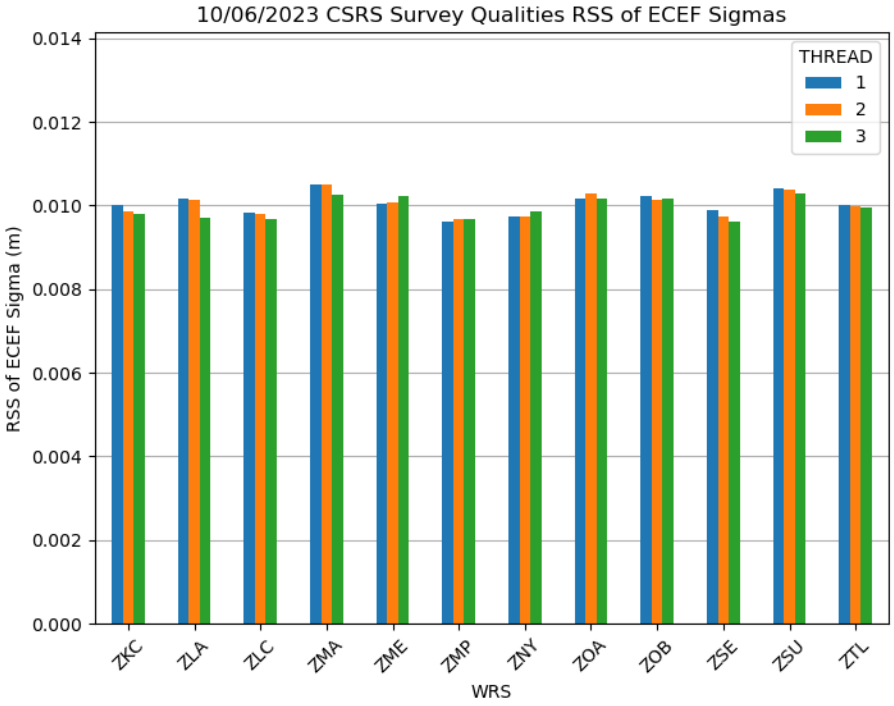

Figure 10-12 CSRS Survey Qualities

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 elevated daily average type bias from 08-18-2023 for Type 0 on DM 1, DM3, and DM4. This is the result of SVN44 being initialized as PRN22. It was previously SVN41.

Table 11-2 Type Bias Average for the Quarter

Detection Metric	Type 0	Type 1	Type 2
DM 1	1.12915	1.1309	1.1326
DM 2	0.208531	0.211177	0.213859
DM 3	0.833763	0.834109	0.83468
DM 4	-0.161328	-0.162762	-0.164482

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

Detection Metric	Type 0	Type 1	Type 2
DM 1	1.31581	1.318	1.31976
DM 2	0.241442	0.244628	0.247755
DM 3	0.97058	0.971073	0.971651
DM 4	-0.186841	-0.188501	-0.190509

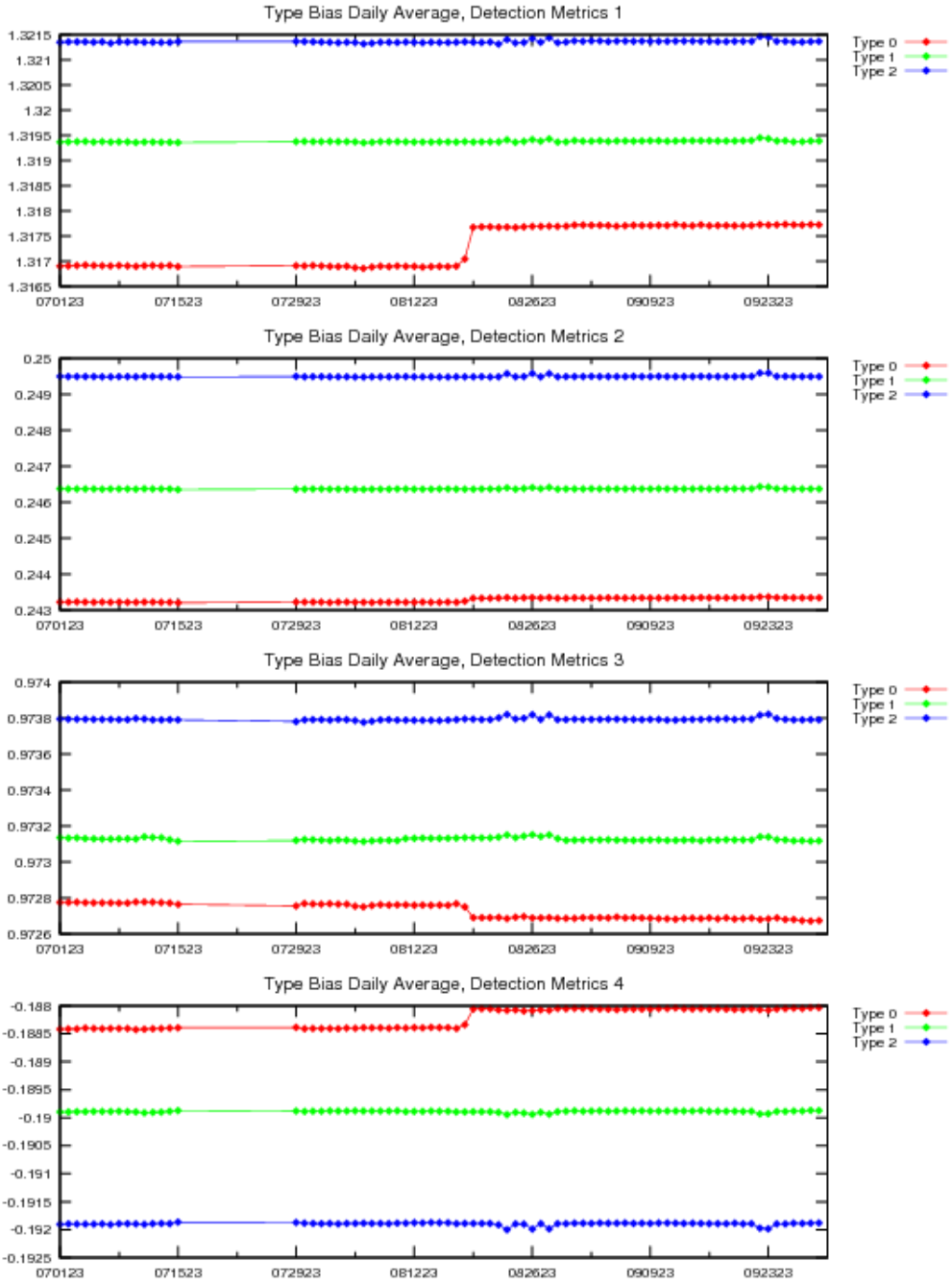

Figure 11-1 Type Bias Average Trend

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 0.0014596 observed on PRN22, (2) the maximum average for DM2 is 0.0002128 observed on PRN19, (3) the maximum average for DM3 is 0.0004491 observed on PRN18, (4) the maximum average for DM4 is 0.0006191 observed on PRN22.

Figure 11-2 shows elevated average PRN Bias over the quarter on DM 1 and DM 4 for PRN22, which returned to service on 08-18-2023. Figure 11-3–Figure 11-10 show the daily PRN bias for each PRN for four detection metrics. PRN Bias for most PRNs show deviation from 08-23-2023 to 08-28-2023 and 09-22-2023 to 09-23-2023 likely due to L2 signal power testing. Figure 11-3–Figure 11-10 show there was a gap in SQM processing between 07-16-2023 and 07-28-2023. We are working on reconstituting the underlying data and will publish the results in the next revision of this report. Figure 11-3 shows no SQM data for PRN1 as a result of its decommissioning on 07-10-2023. Figure 11-6 shows an increase in PRN15 SQM bias as a result of an unusable NANU from 08-22-2023 to 08-23-2023. Figure 11-8 shows PRN22 coming back into service on 08-18-2023. Figure 11-9 shows no SQM data for PRN28 as a result of unusable NANUs from 07-10-2023 to 07-14-2023 and from 08-10-2023 to 08-29-2023.

Table 11-4 PRN Bias Average for the Quarter

PRN	DM 1	DM 2	DM 3	DM 4
1	0.00019173	8.419e-05	4.512e-05	0.00012666
2	0.000254694	6.86705e-05	0.000106644	0.000109383
3	0.000206945	6.13038e-05	9.84538e-05	0.000133792
4	0.000685477	0.000243073	0.000398169	0.000254763
5	0.000160236	6.85462e-05	0.000105464	0.000110224
6	0.000582369	9.60269e-05	5.21872e-05	0.000222167
7	0.000160882	0.000124114	4.59795e-05	0.0001229
8	0.000356835	9.25462e-05	0.000119528	0.000175873
9	0.000246513	5.0241e-05	0.000163714	0.000172009
10	0.000170301	5.05897e-05	7.87205e-05	0.000169329
11	0.000296662	0.000128719	0.000380599	0.000335003
12	0.000311168	9.28949e-05	7.76346e-05	7.8759e-05
13	0.000626964	5.83359e-05	6.19256e-05	0.000258854
14	0.000495344	0.000190347	0.000394277	0.000247882
15	0.000344059	0.000119708	5.70667e-05	0.000102331
16	0.000222006	4.46923e-05	0.000117965	0.000200686
17	0.000366313	0.000109655	5.485e-05	8.37e-05
18	0.000633564	0.000177527	0.00044909	0.000267022
19	0.000729797	0.000212846	7.81526e-05	0.000128455
20	0.000170365	7.93487e-05	5.03013e-05	0.000141105
21	0.000203474	8.75872e-05	0.000119295	0.000454369
22	0.00145964	0.00015307	5.82023e-05	0.000619133
23	0.000392483	0.000169355	0.000366632	0.000256838
24	0.000199433	8.11282e-05	0.000198917	0.000255499
25	0.000446904	7.77333e-05	3.86744e-05	0.000204936

PRN	DM 1	DM 2	DM 3	DM 4
26	0.000203888	0.000105378	0.000103854	0.000169388
27	0.000359042	0.000163851	0.000185927	0.000331354
28	0.00022689	9.87138e-05	0.000370536	0.000350169
29	0.000319883	0.000132578	0.000152827	0.000271077
30	0.000326341	8.04744e-05	0.000104788	8.58218e-05
31	0.000238114	6.85782e-05	9.22897e-05	0.000199817
32	0.000228078	5.60205e-05	6.09936e-05	0.000202828

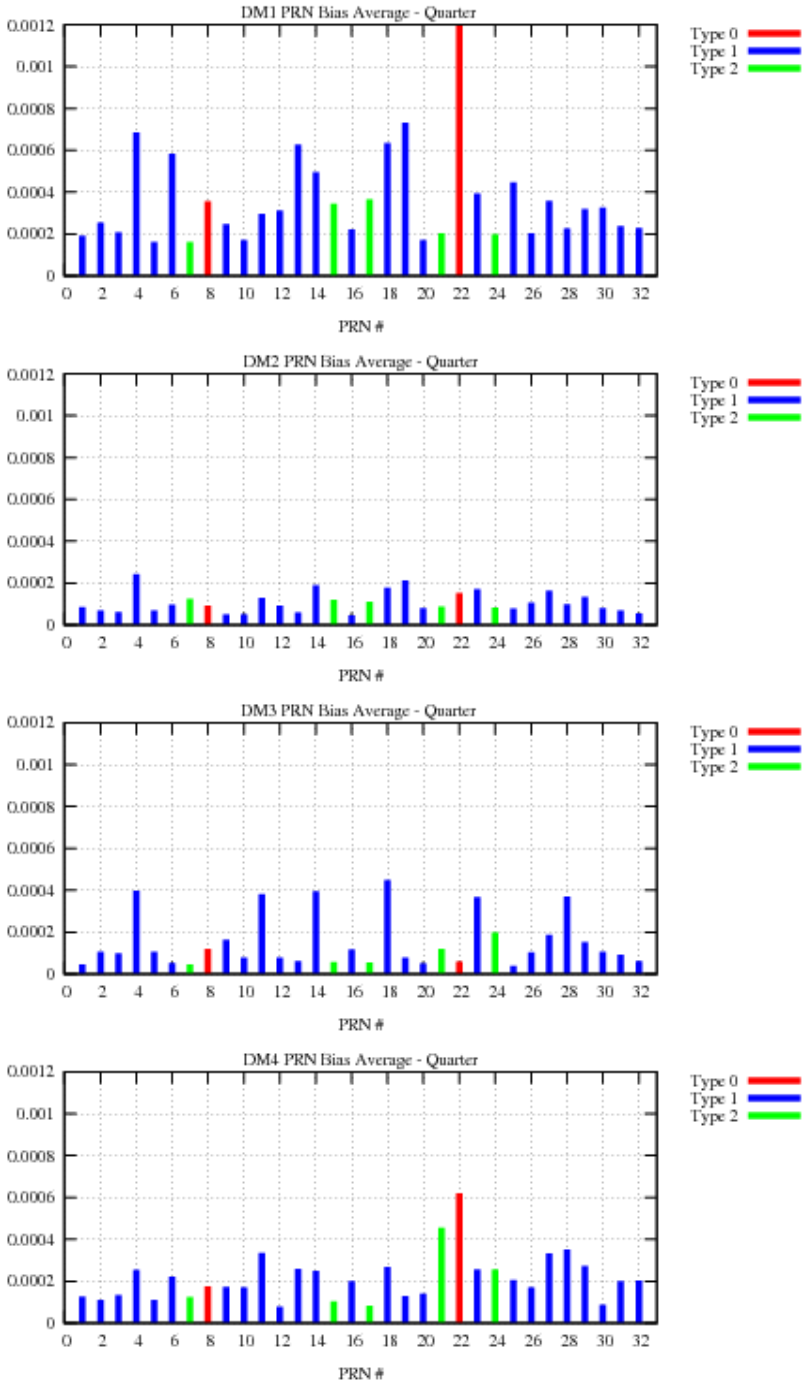

Figure 11-2 PRN Bias Average for the Quarter

Figure 11-3 to Figure 11-10 show the daily PRN bias for each PRN, for four detection metrics. Small bumps were due to NANUs.

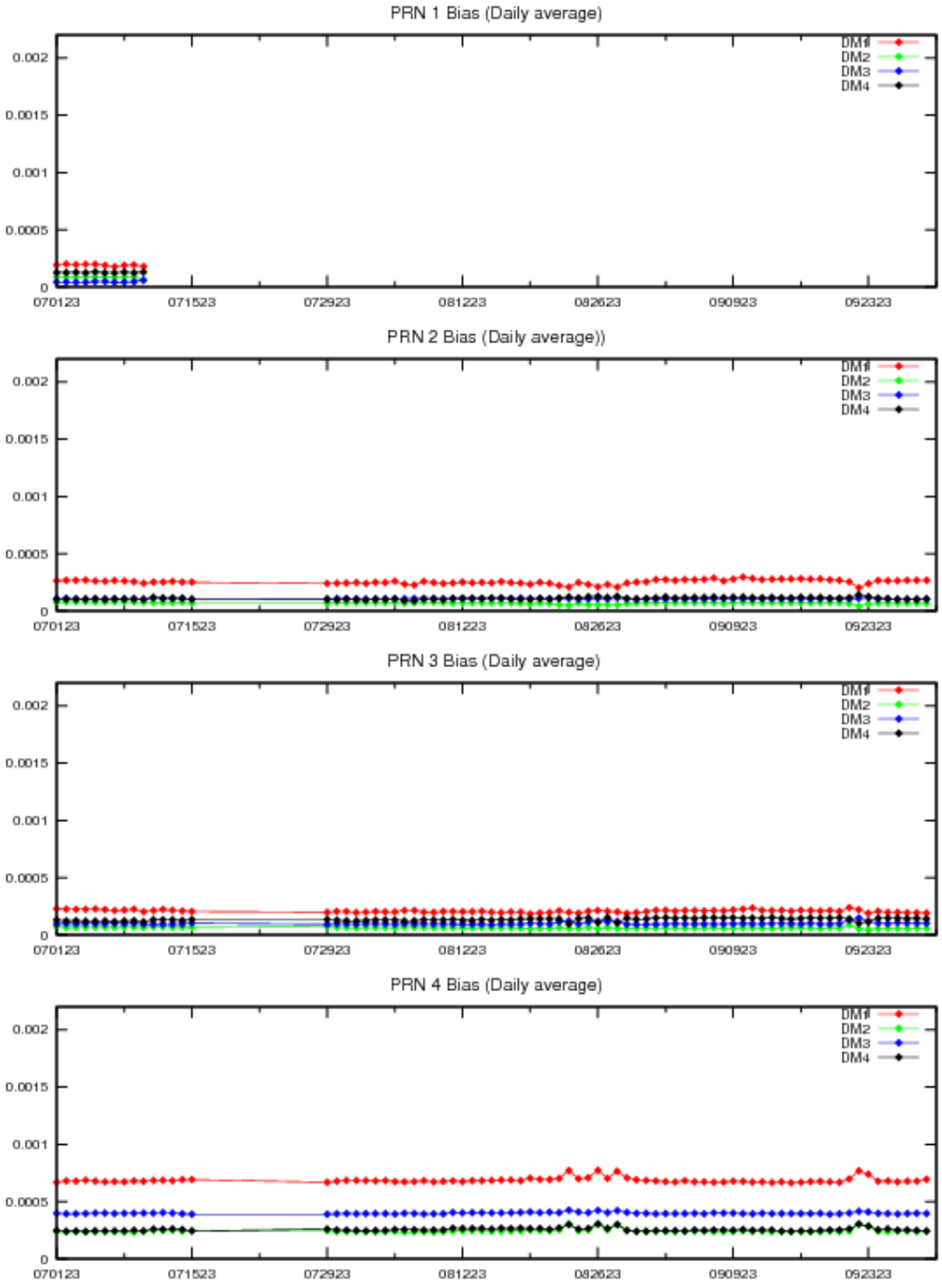

Figure 11-3 PRN Bias Average Trend (PRN1–PRN4)

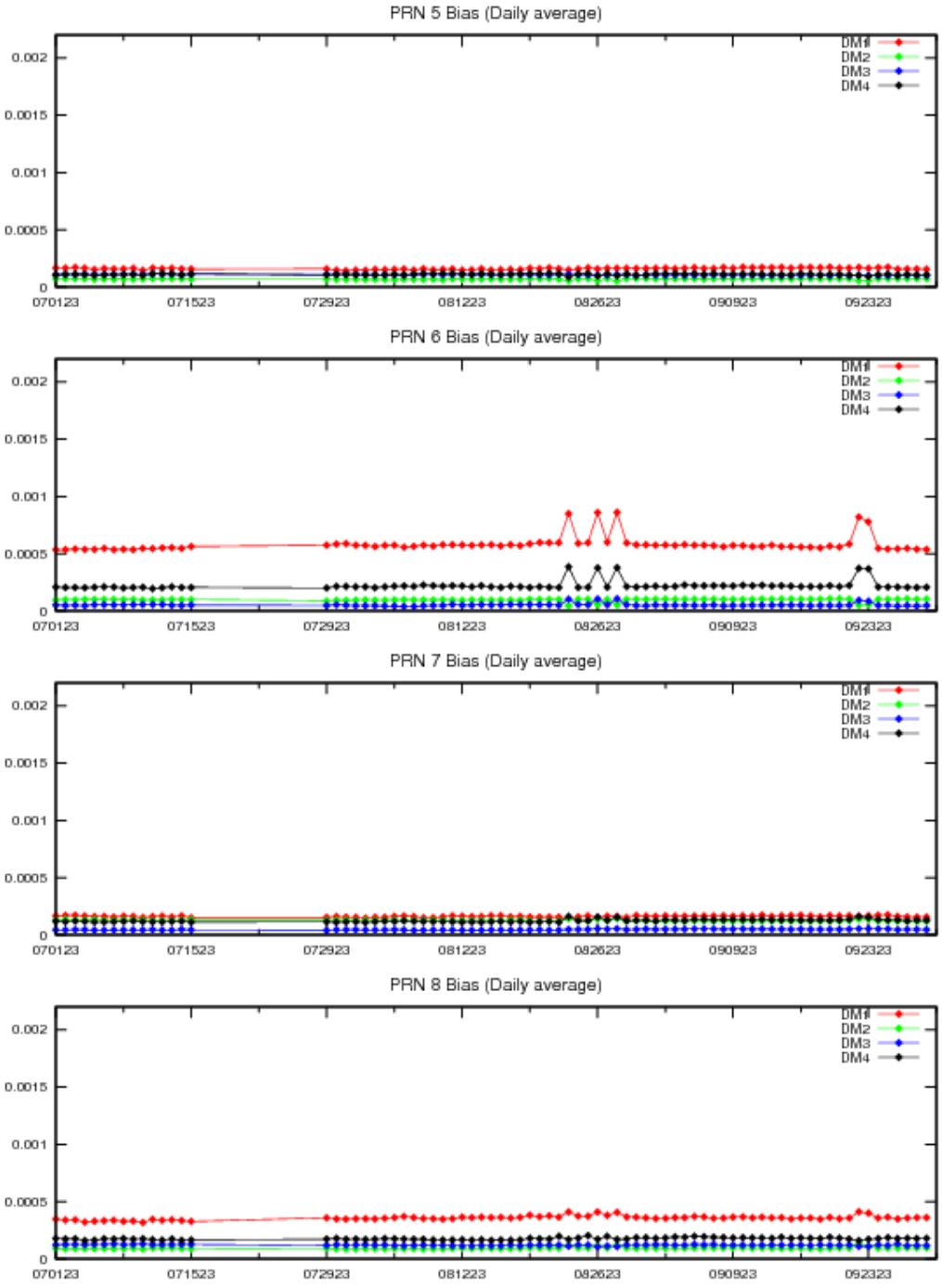

Figure 11-4 PRN Bias Average Trend (PRN5–PRN8)

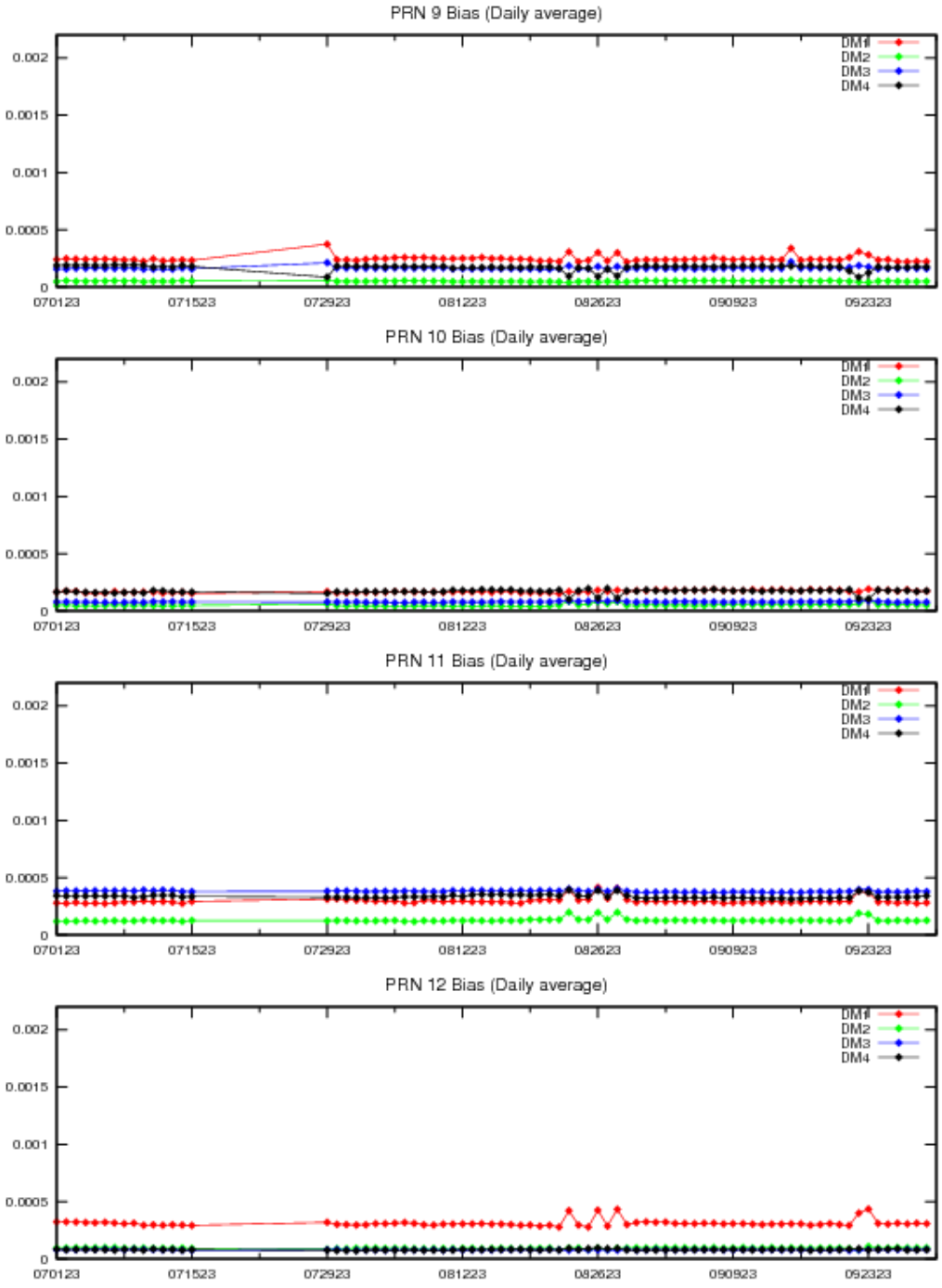

Figure 11-5 PRN Bias Average Trend (PRN9–PRN12)

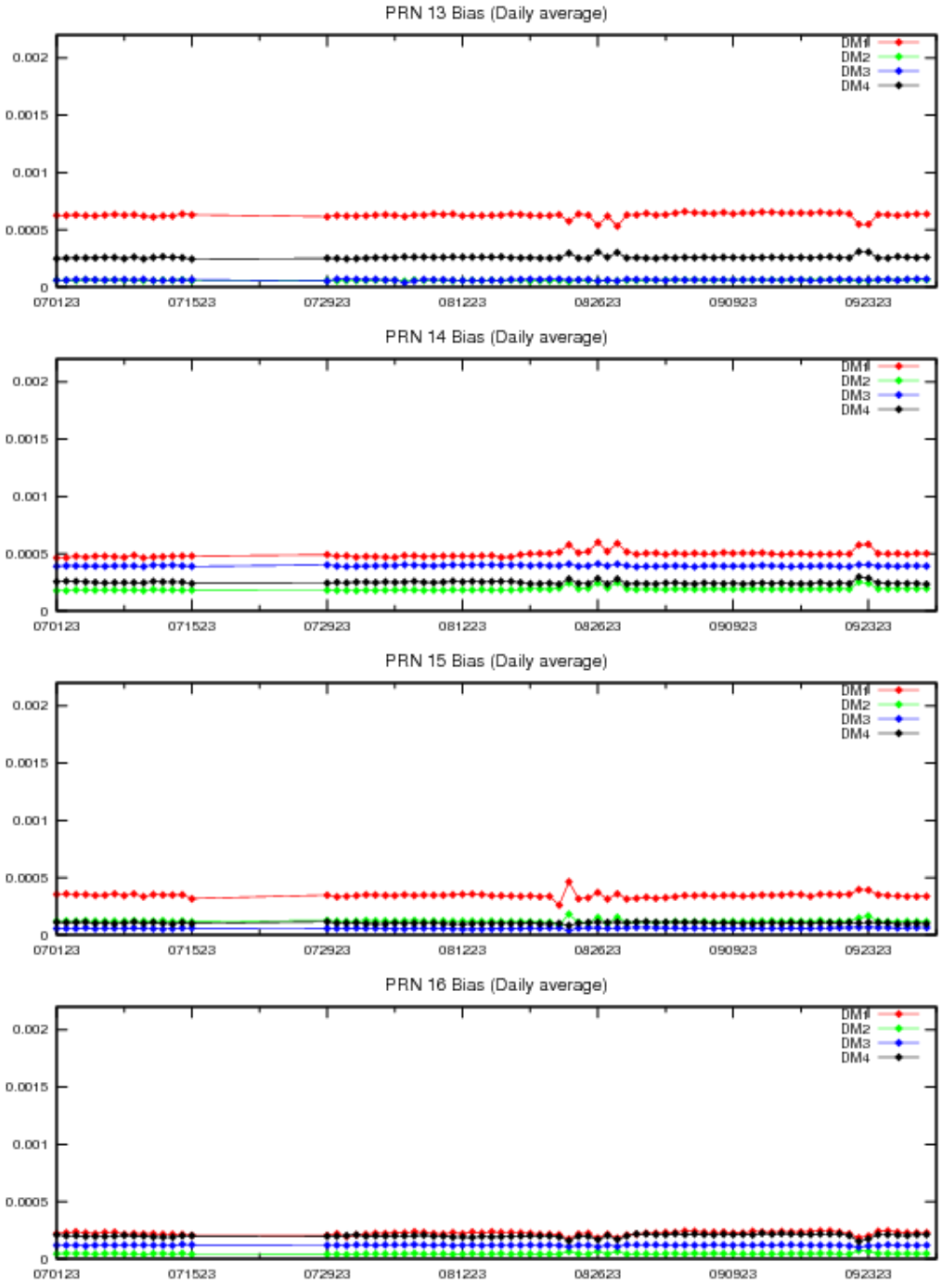

Figure 11-6 PRN Bias Average Trend (PRN13–PRN16)

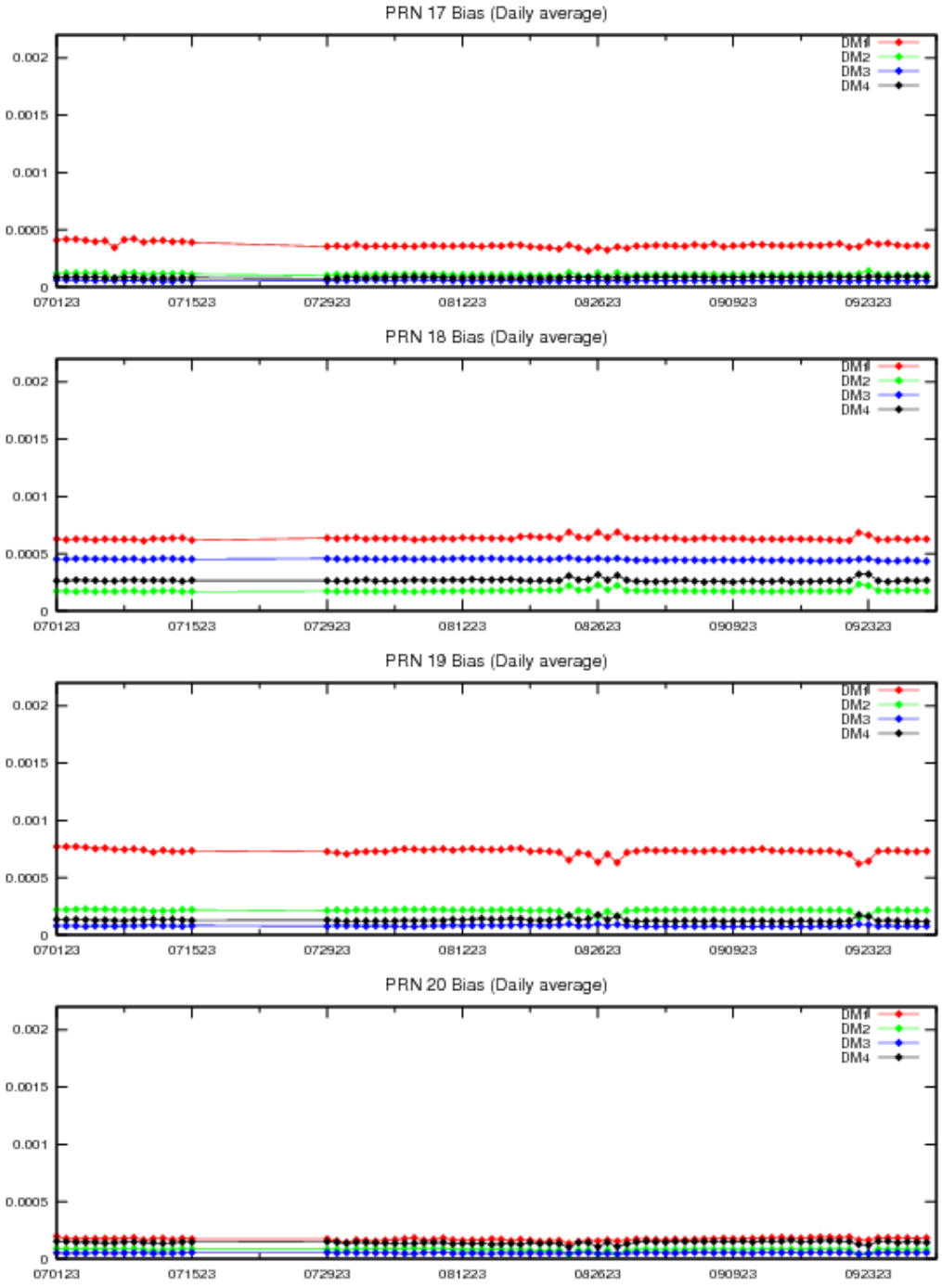

Figure 11-7 PRN Bias Average Trend (PRN17–PRN20)

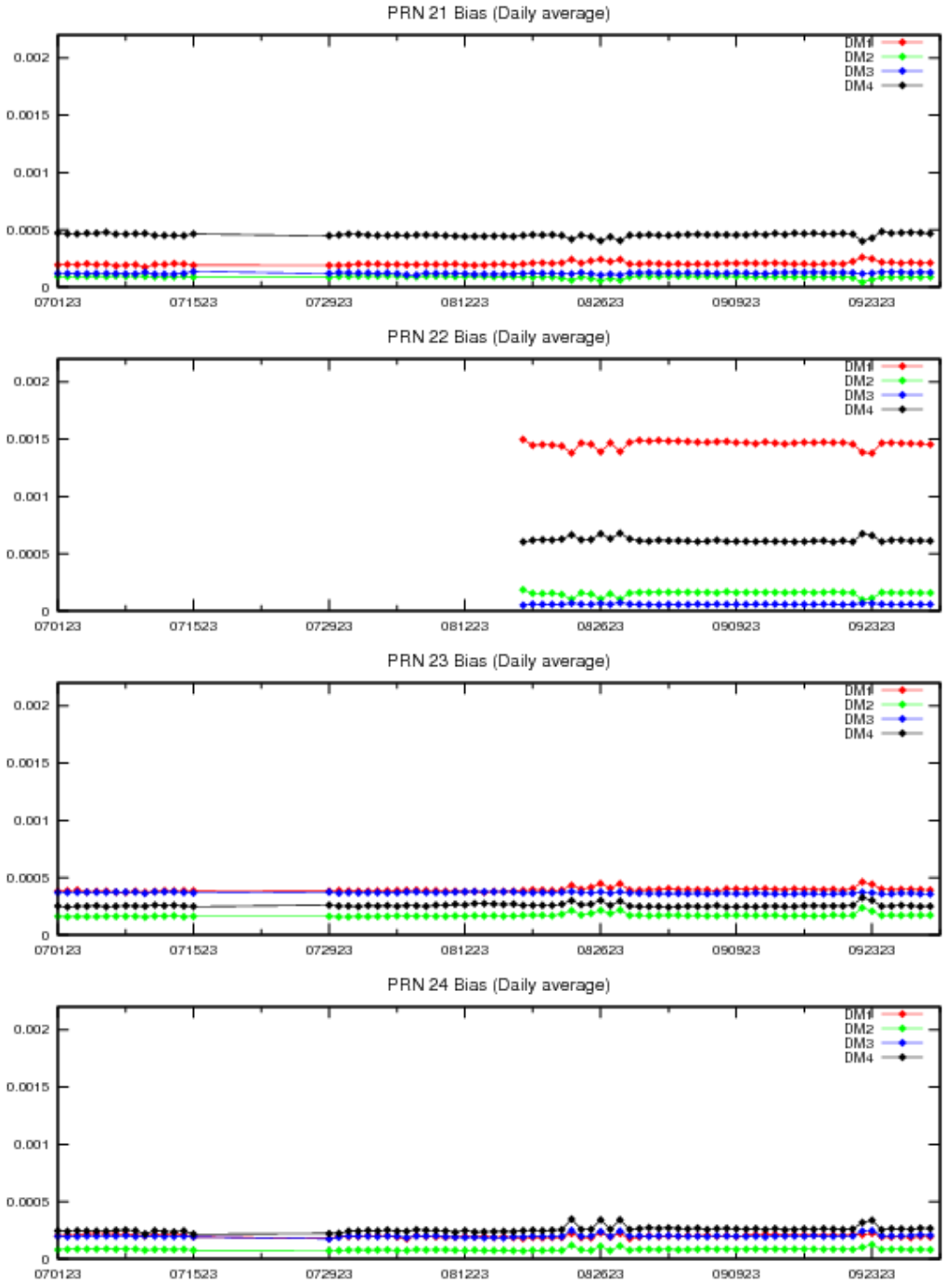

Figure 11-8 PRN Bias Average Trend (PRN21–PRN24)

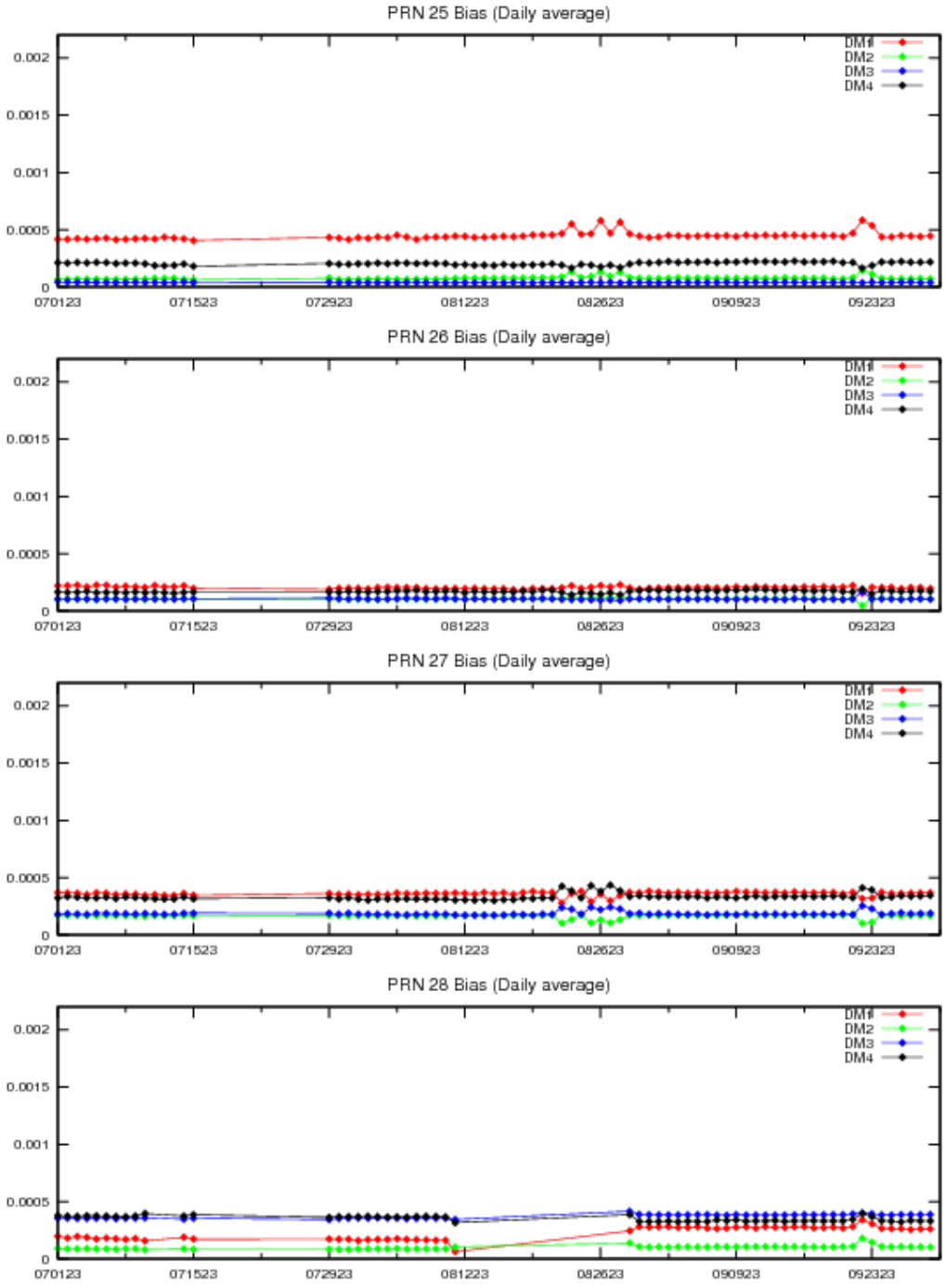

Figure 11-9 PRN Bias Average Trend (PRN25–PRN28)

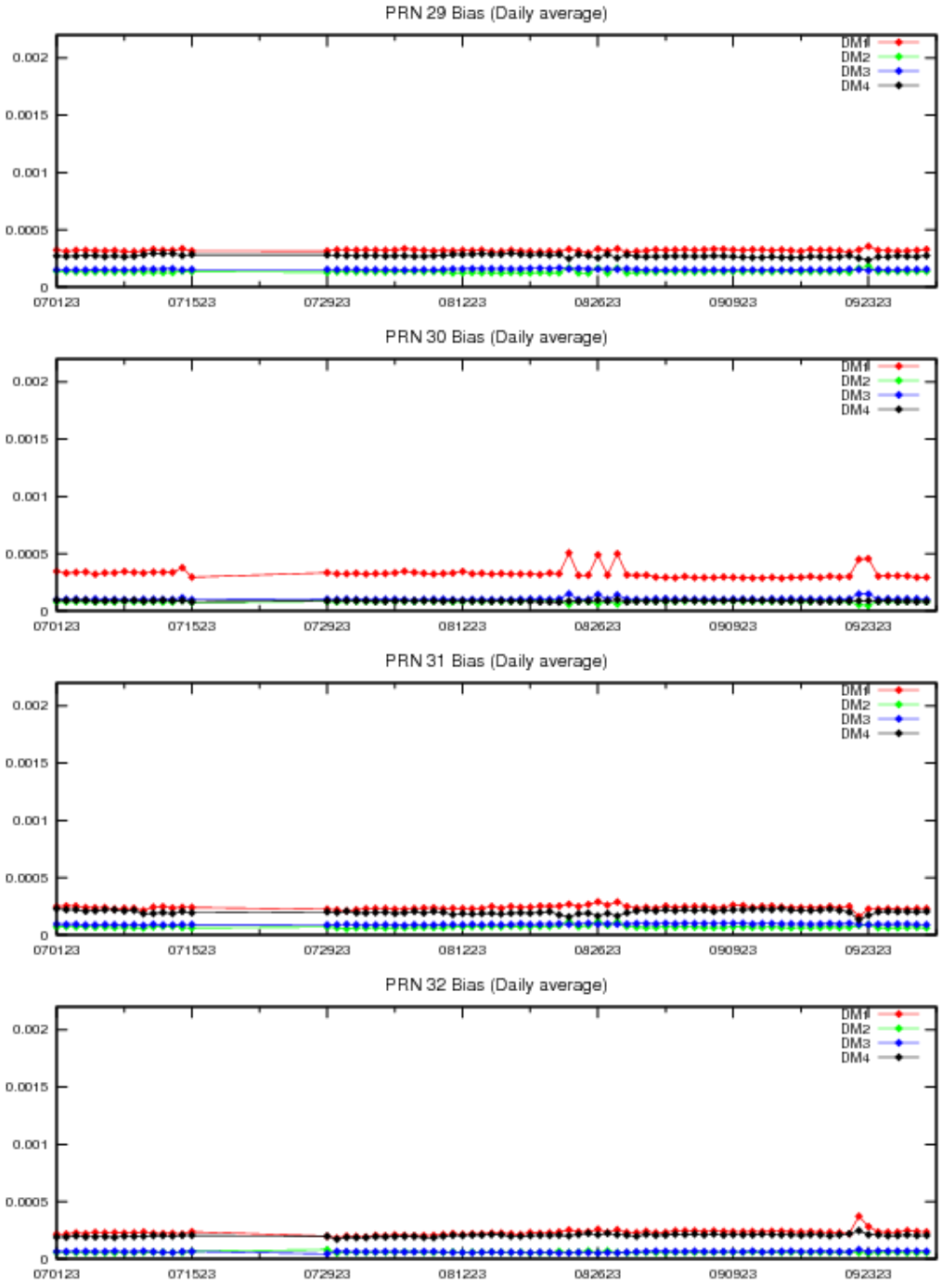

Figure 11-10 PRN Bias Average Trend (PRN29–PRN32)

11.4 SQM Trips

An SQM trip occurs when the estimated deformation exceeds threshold. PRN1 tripped on detection metrics 2, 3, and 4 at 09:57:21 UTC and left its tripped state at 11:06:31 UTC on 07-10-2023.

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 value 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.

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: ADDIOTIONAL 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.

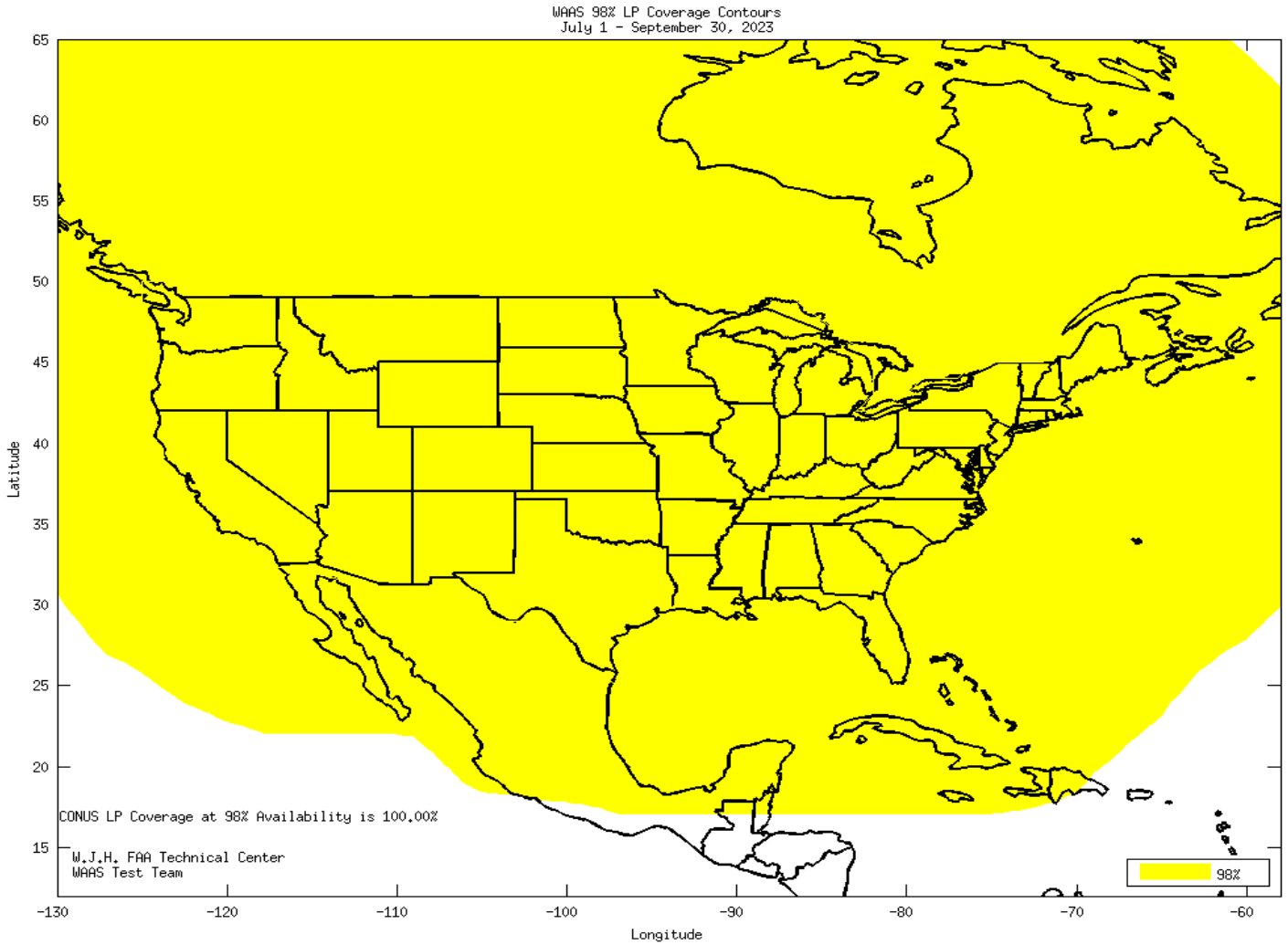

Figure B-1 98% CONUS LP Availability Contour

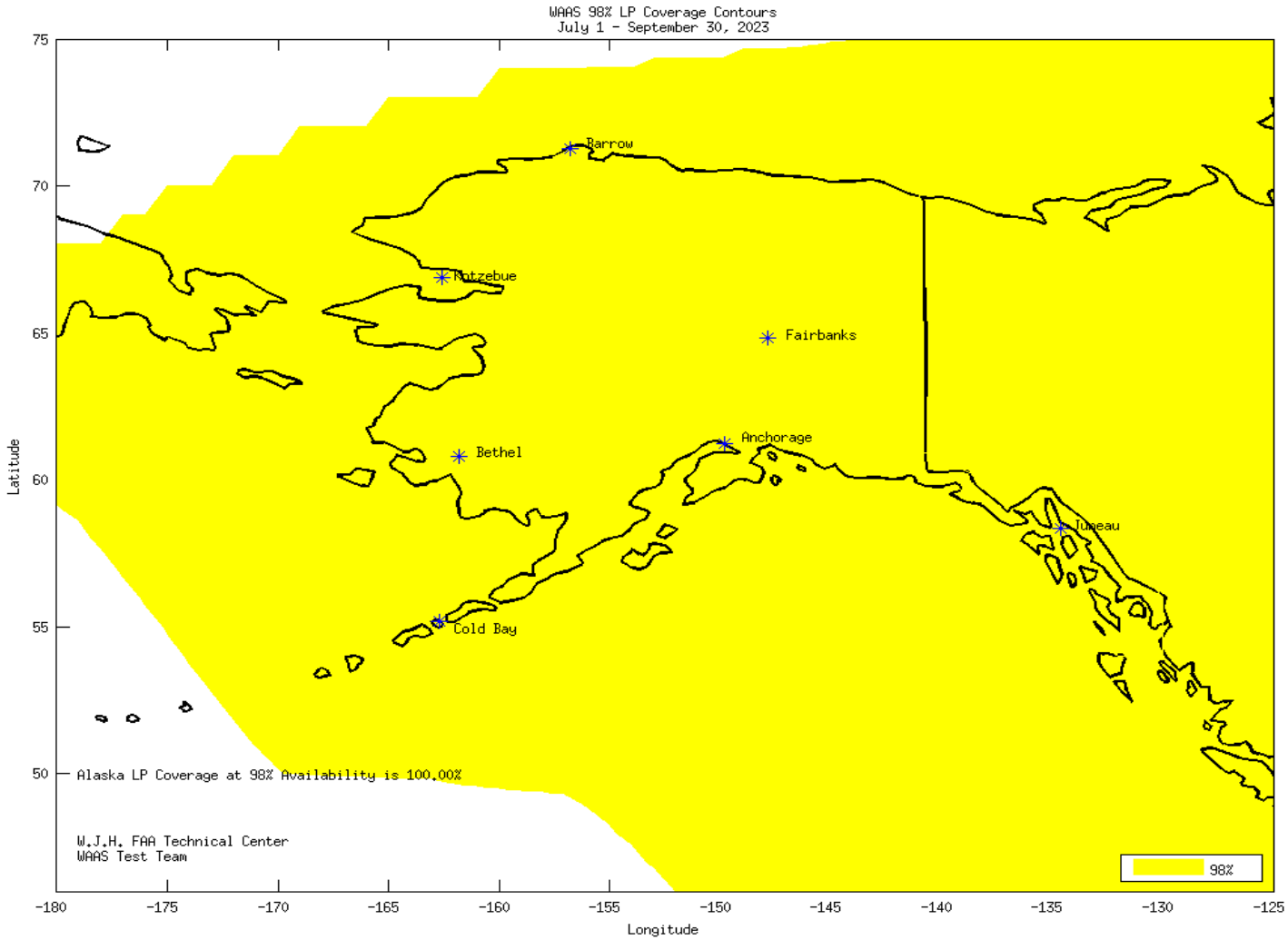

Figure B-2 98% Alaska LP Availability Contour

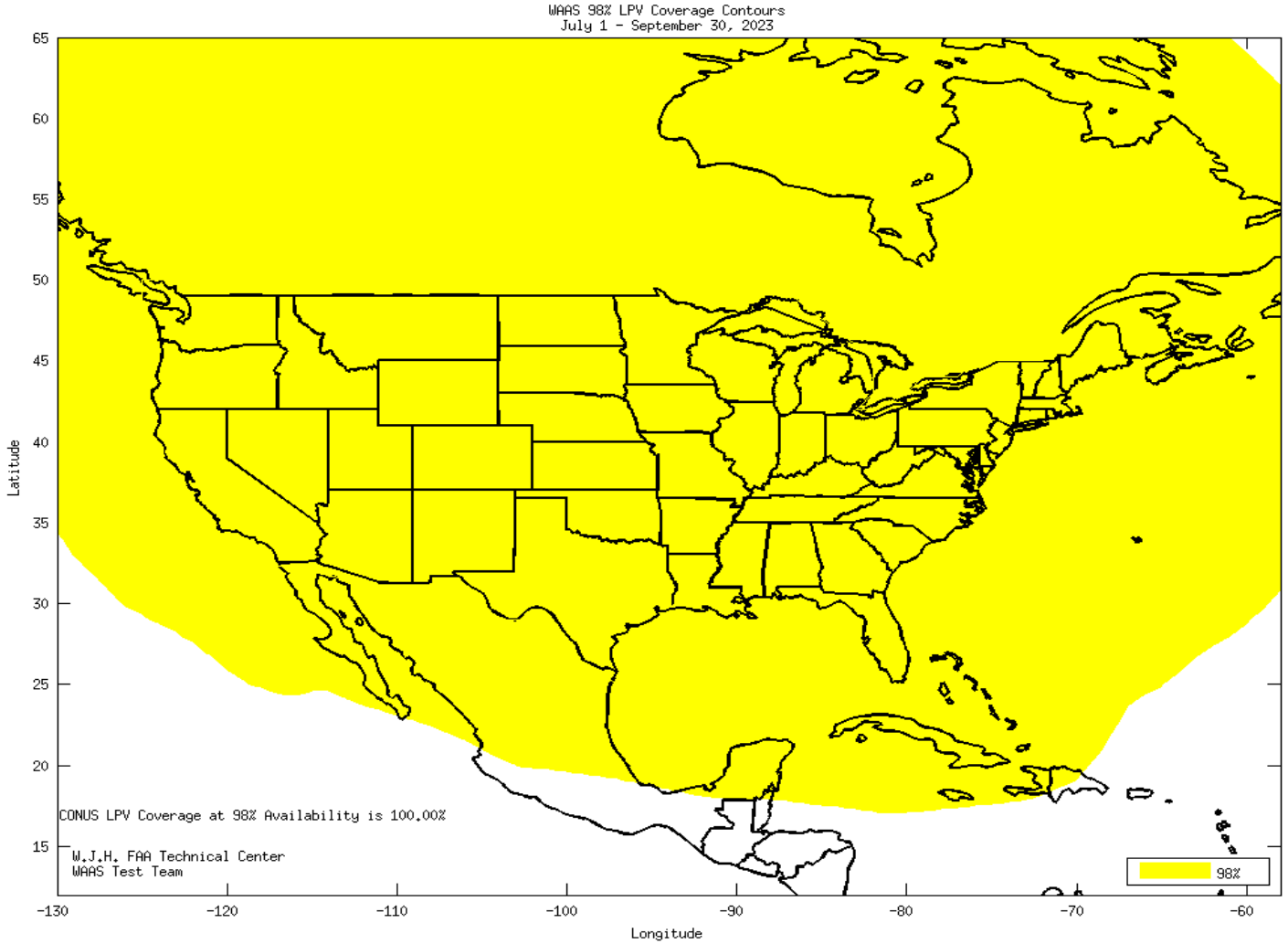

Figure B-3 98% CONUS LPV Availability Contour

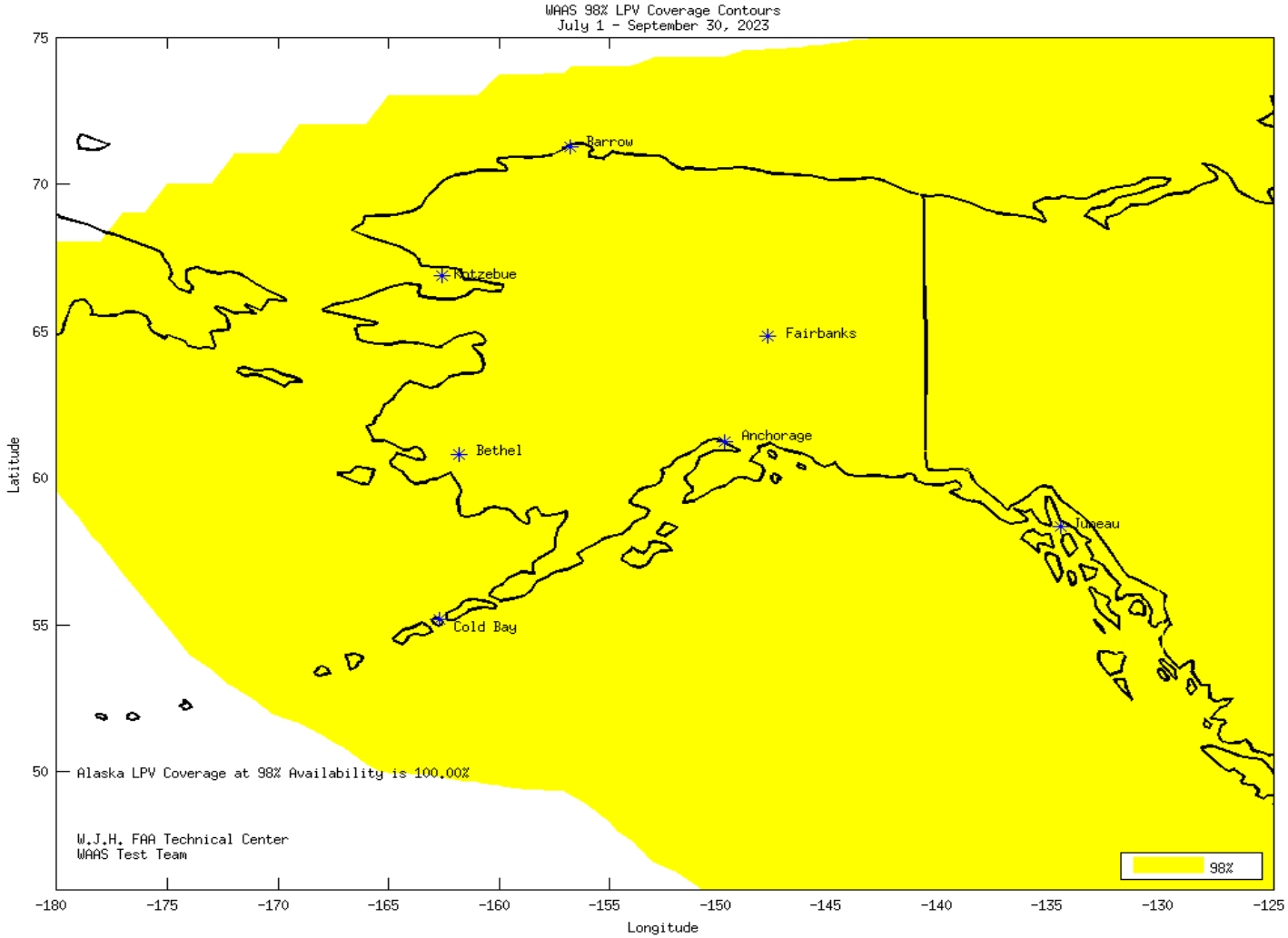

Figure B-4 98% Alaska LPV Availability Contour

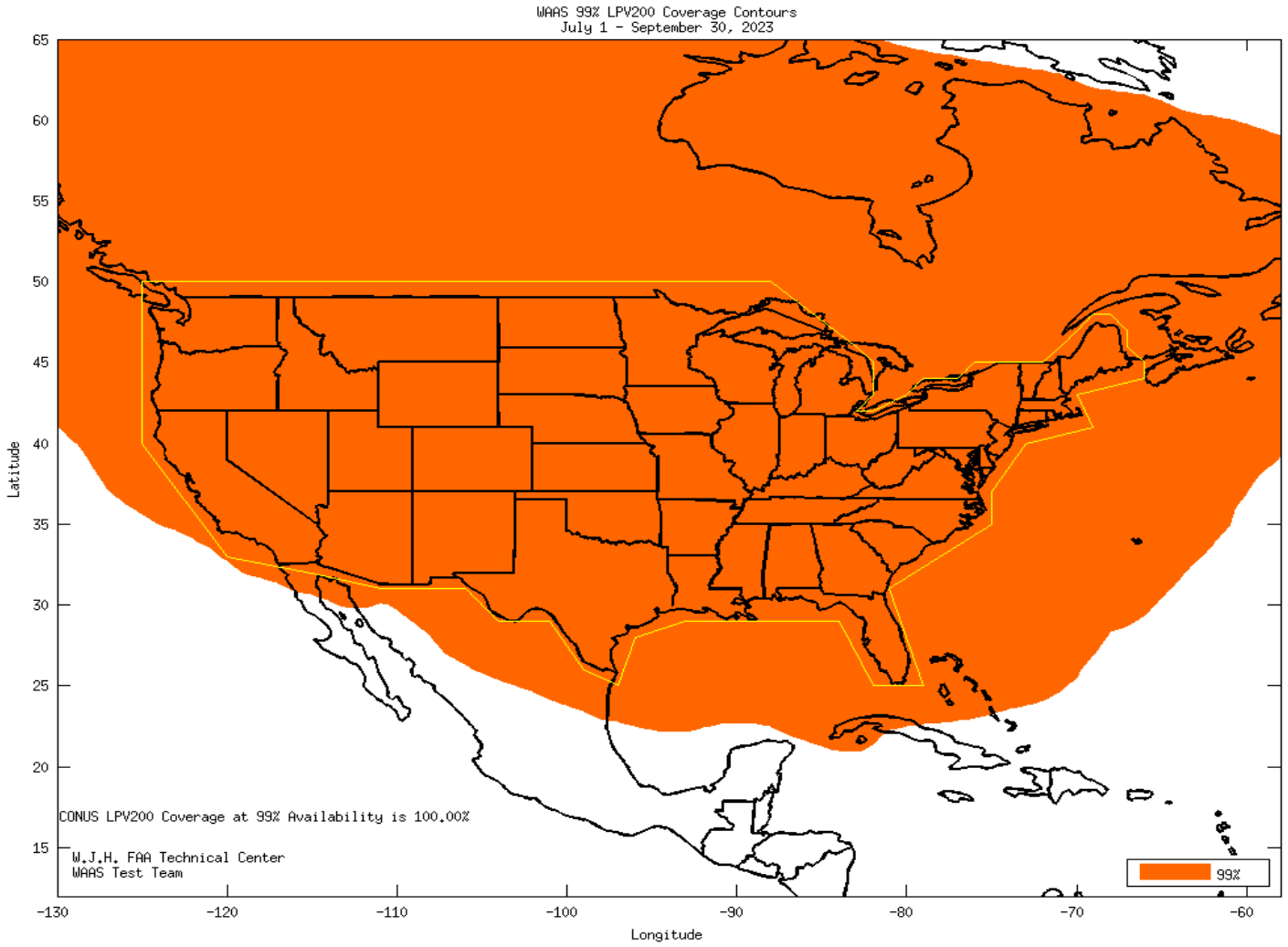

Figure B-5 99% CONUS LPV200 Availability Contour

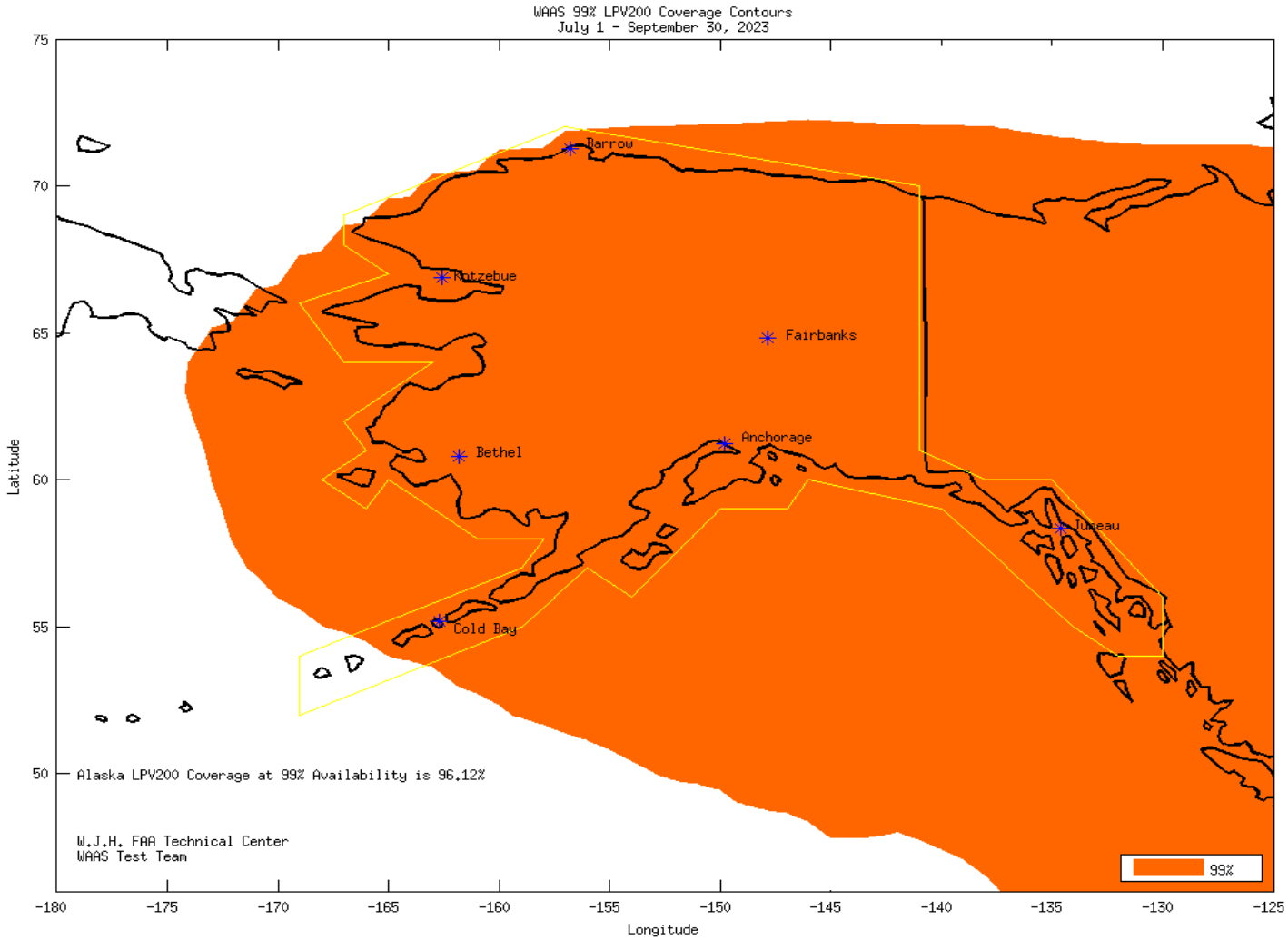

Figure B-6 99% Alaska LPV200 Availability Contour