



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

WIDE AREA AUGMENTATION SYSTEM PERFORMANCE ANALYSIS REPORT

October 2024

Report #90

Reporting Period: July 01 to September 30, 2024

<http://www.nstb.tc.faa.gov>

**FAA William J. Hughes Technical Center
Atlantic City International Airport, NJ 08405**

DOCUMENT VERSION CONTROL

VERSION	DESCRIPTION OF CHANGE	DATE
0.1	Initial Version of Document	10/22/2024
0.2	Technical Edit	10/23/2024
0.3	Peer Review	10/30/2024
1.0	Final Edit	10/31/2024

Executive Summary

Since 1999, the Wide Area Augmentation System (WAAS) Test Team at the FAA William J. Hughes Technical Center has reported GPS performance as measured against the GPS Standard Positioning Service (SPS) Signal Specification in quarterly GPS Performance Analysis Network (PAN) Reports. In addition to the GPS PAN reports, the WAAS Test Team has provided quarterly reports on WAAS performance. The current WAAS PAN Report #90 provides WAAS performance data from the July 01 through September 30, 2024 reporting period.

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

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

Parameter	CONUS Site/Maximum	CONUS Site/Minimum	Alaska Site/Maximum	Alaska Site/Minimum
95% Horizontal Accuracy (HPL ≤ 40 meters)	Arcata 1.354 meters	Memphis 0.687 meters	Juneau 0.973 meters	Bethel 0.771 meters
95% Vertical Accuracy (VPL ≤ 50 meters)	Oakland 1.875 meters	Salt Lake City 1.024 meters	Barrow 1.763 meters	Cold Bay 1.288 meters
LP Availability (HPL ≤ 40 meters)	Albuquerque 100%	Miami 99.63%	Kotzebue 99.93%	Juneau 99.82%
LPV Availability (HPL ≤ 40 meters & VPL ≤ 50 meters)	Los Angeles 99.99%	Miami 99.54%	Cold Bay 99.88%	Juneau 99.71%
LPV200 Availability (HPL ≤ 40 meters & VPL ≤ 35 meters)	Elko GT 99.95%	Miami 99.08%	Bethel 99.77%	Juneau 99.47%
99% HPL	Miami 21.912 meters	Salt Lake City 11.159 meters	Cold Bay 21.224 meters	Fairbanks 14.743 meters
99% VPL	Miami 33.295 meters	Billings 20.702 meters	Barrow 30.654 meters	Anchorage 23.824 meters

TABLE OF CONTENTS

1.0	INTRODUCTION.....	1
1.1	Event Summary	4
1.2	Report Overview.....	21
2.0	WAAS POSITION ACCURACY	21
3.0	AVAILABILITY.....	38
4.0	COVERAGE.....	58
5.0	INTEGRITY.....	70
5.1	HMI Analysis	70
5.2	Broadcast Alerts	71
5.3	Availability of WAAS Messages (SM9, S15, and G30).....	72
5.4	Satellite Glitches.....	83
6.0	SV RANGE ACCURACY	85
7.0	GEO RANGING PERFORMANCE	95
8.0	WAAS AIRPORT AVAILABILITY.....	97
9.0	WAAS CNMP BOUNDING ANALYSIS.....	177
10.0	WRS ANTENNA SURVEY VALIDATION.....	180
11.0	SQM.....	191
11.1	Alpha Metrics	191
11.2	Type Bias.....	191
11.3	PRN Bias	193
11.4	SQM Trips.....	203
	APPENDIX A: GLOSSARY AND ACRONYMS	A-1
	APPENDIX B: ADDITIONAL COVERAGE PLOTS.....	B-1

LIST OF FIGURES

Figure 2-1 LPV 95% Horizontal Accuracy	27
Figure 2-2 LPV 95% Horizontal Accuracy	28
Figure 2-3 LPV 95% Horizontal Accuracy	29
Figure 2-4 LPV 95% Vertical Accuracy.....	30
Figure 2-5 LPV 95% Vertical Accuracy.....	31
Figure 2-6 LPV 95% Vertical Accuracy.....	32
Figure 2-7 NPA 95% Horizontal Accuracy	33
Figure 2-8 NPA 95% Horizontal Accuracy	34
Figure 2-9 LPV Horizontal Error Bounding Triangle Chart.....	35
Figure 2-10 LPV Vertical Error Bounding Triangle Chart.....	36
Figure 2-11 LPV 2-D Horizontal Error Distribution Histogram	37
Figure 2-12 LPV 2-D Vertical Error Distribution Histogram.....	38
Figure 3-1 LPV Instantaneous Availability	43
Figure 3-2 LPV Instantaneous Availability	44
Figure 3-3 LPV Instantaneous Availability	45
Figure 3-4 LPV200 Instantaneous Availability	46
Figure 3-5 LPV200 Instantaneous Availability	47
Figure 3-6 LPV200 Instantaneous Availability	48
Figure 3-7 LPV Outages.....	49
Figure 3-8 LPV Outages.....	50
Figure 3-9 LPV Outages.....	51
Figure 3-10 LPV200 Outages.....	52
Figure 3-11 LPV200 Outages.....	53
Figure 3-12 LPV200 Outages.....	54
Figure 4-1 LP North America Coverage for the Quarter	60
Figure 4-2 LPV North America Coverage for the Quarter	61
Figure 4-3 LPV200 North America Coverage for the Quarter	62
Figure 4-4 Daily LPV and LPV200 CONUS Coverage	63
Figure 4-5 Daily LPV and LPV200 Alaska Coverage.....	64
Figure 4-6 Daily LPV and LPV200 Canada Coverage.....	65
Figure 4-7 RNP 0.1 Coverage for the Quarter	67
Figure 4-8 RNP 0.3 Coverage for the Quarter	68
Figure 4-9 Daily RNP Coverage.....	69
Figure 5-1 SV Daily Alert Trend.....	72
Figure 5-2 SV Glitch Trend.....	84

Figure 6-1 Range Error (PRN1–PRN16)–Washington, DC	88
Figure 6-2 Range Error (PRN17–PRN32)–Washington, DC	89
Figure 6-3 Range Error (PRN131, PRN133, and PRN138)–Washington, DC.....	90
Figure 6-4 Ionospheric Error (PRN1–PRN16)–Washington, DC.....	93
Figure 6-5 Ionospheric Error (PRN17–PRN32)–Washington, DC.....	94
Figure 7-1 Daily PA SM9 GEO Ranging Availability Trend.....	95
Figure 7-2 Daily PA S15 GEO Ranging Availability Trend	96
Figure 7-3 Daily PA G30 GEO Ranging Availability Trend.....	96
Figure 8-1 WAAS LP Availability at Airports in the U.S. and Canada with GPS RNAV IAPs	171
Figure 8-2 WAAS LP Outages at Airports in the U.S. and Canada with GPS RNAV IAPs	172
Figure 8-3 WAAS LPV Availability Airports in the U.S. and Canada with GPS RNAV IAPs	173
Figure 8-4 WAAS LPV Outages at Airports in the U.S. and Canada with GPS RNAV IAPs	174
Figure 8-5 WAAS LPV200 Availability at Airports in the U.S. and Canada with GPS RNAV IAPs	175
Figure 8-6 WAAS LPV200 Outages at Airports in the U.S. and Canada with GPS RNAV IAPs	176
Table 9-1 CNMP Bounding Statistics	178
Figure 10-1 WAAS C&V Calculated Antenna Positions Deltas OPUS Survey.....	185
Figure 10-2 WAAS C&V Calculated Antenna Positions Deltas OPUS Survey.....	185
Figure 10-3 WAAS C&V Calculated Antenna Positions Deltas OPUS Survey.....	186
Figure 10-4 OPUS Survey Overall RMS Qualities	186
Figure 10-5 OPUS Survey Overall RMS Qualities	187
Figure 10-6 OPUS Survey Overall RMS Qualities	187
Figure 10-7 OPUS vs. CSRS RSS ECEF Deltas	188
Figure 10-8 OPUS vs. CSRS RSS ECEF Deltas	188
Figure 10-9 OPUS vs. CSRS RSS ECEF Deltas	189
Figure 10-10 CSRS Survey Qualities	189
Figure 10-11 CSRS Survey Qualities	190
Figure 10-12 CSRS Survey Qualities	190
Figure 11-1 Type Bias Average Trend	193
Figure 11-2 PRN Bias Average for the Quarter.....	195
Figure 11-3 PRN Bias Average Trend (PRN1–PRN4).....	196
Figure 11-4 PRN Bias Average Trend (PRN5–PRN8).....	197
Figure 11-5 PRN Bias Average Trend (PRN9–PRN12).....	198
Figure 11-6 PRN Bias Average Trend (PRN13–PRN16).....	199
Figure 11-7 PRN Bias Average Trend (PRN17–PRN20).....	200
Figure 11-8 PRN Bias Average Trend (PRN21–PRN24).....	201
Figure 11-9 PRN Bias Average Trend (PRN25–PRN28).....	202
Figure 11-10 PRN Bias Average Trend (PRN29–PRN32).....	203

Figure B-1 98% CONUS LP Availability ContourB-2

Figure B-2 98% Alaska LP Availability Contour.....B-3

Figure B-3 98% CONUS LPV Availability Contour.....B-4

Figure B-4 98% Alaska LPV Availability Contour.....B-5

Figure B-5 99% CONUS LPV200 Availability Contour.....B-6

Figure B-6 99% Alaska LPV200 Availability ContourB-7

LIST OF TABLES

Table 1-1 WAAS Service Levels.....	1
Table 1-2 PA Evaluation Sites.....	2
Table 1-3 NPA Evaluation Site	3
Table 1-4 WAAS Performance Parameters	4
Table 1-5 Events.....	5
Table 1-6 WAAS Upgrades.....	18
Table 1-7 GUS Switchovers	18
Table 2-1 PA 95% Horizontal and Vertical Accuracy	22
Table 2-2 NPA 95% and 99.999% Horizontal Accuracy	23
Table 2-3 Maximum LPV Error Statistics	24
Table 3-1 99% Protection Level	39
Table 3-2 PA Availability (15-minute window).....	40
Table 3-3 LP, LPV, and LPV200 Outage Rate (Per 150-sec approach).....	41
Table 3-4 NPA Availability (15-minute window).....	55
Table 3-5 NPA Outage Rates (Excluding FD/FDE).....	56
Table 5-1 Minimum Safety Margin Index and HMI Statistics	70
Table 5-2 WAAS SV Alert.....	71
Table 5-3 Update Rates for WAAS Messages.....	72
Table 5-4 WAAS Fast Correction and Degradation Message Rates–SM9.....	73
Table 5-5 WAAS Long Correction Message Rates (Type 24 and 25)–SM9.....	74
Table 5-6 WAAS Ephemeris Covariance Message Rates (Type 28)–SM9.....	74
Table 5-7 WAAS Ionospheric Correction Message Rates (Type 26)–SM9	75
Table 5-8 WAAS Ionospheric Mask Message Rates (Type 18)–SM9	76
Table 5-9 WAAS Fast Correction and Degradation Message Rates–S15	76
Table 5-10 WAAS Long Correction Message Rates (Type 24 and 25)–S15	77
Table 5-11 WAAS Ephemeris Covariance Message Rates (Type 28)–S15	78
Table 5-12 WAAS Ionospheric Correction Message Rates (Type 26)–S15.....	79
Table 5-13 WAAS Ionospheric Mask Message Rates (Type 18)–S15.....	79
Table 5-14 WAAS Fast Correction and Degradation Message Rates–G30.....	79
Table 5-15 WAAS Long Correction Message Rates (Type 24 and 25)–G30.....	80
Table 5-16 WAAS Ephemeris Covariance Message Rates (Type 28)–G30.....	81
Table 5-17 WAAS Ionospheric Correction Message Rates (Type 26)–G30.....	82
Table 5-18 WAAS Ionospheric Mask Message Rates (Type 18)–G30	82
Table 6-1 Range Error 95% Index and 3.29 Sigma Bounding	86
Table 6-2 Range Error 95% Index and 99.9% Bounding	87

Table 6-3 Ionospheric Error 95% Index and 99.9% Sigma Bounding.....	91
Table 6-4 Ionospheric Error 95% Index and 99.9% Sigma Bounding.....	92
Table 7-1 GEO Ranging Availability	95
Table 8-1 WAAS LP, LPV, and LPV200 Outages and Availability	98
Table 10-1 WAAS Antenna Positions (OPUS IGS08) as of 10/01/2024	181
Table 11-1 Alpha Metrics	191
Table 11-2 Type Bias Average for the Quarter.....	192
Table 11-3 Type Bias Average Since January 1, 2008	192
Table 11-4 PRN Bias Average for the Quarter	194

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 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	86	7446910
Atlantic City	90	7746003
Elko	85	7385800
Grand Forks	85	7311298
Oklahoma City	74	6376921
WAAS:		
Albuquerque	92	7947569
Anchorage	92	7942777
Atlanta	92	7947552
Barrow	92	7947101
Bethel	92	7948444
Billings	92	7948129
Boston	92	7948426
Chicago	92	7947555
Cleveland	92	7937654
Cold Bay	92	7948597
Dallas	92	7945386
Denver	92	7945384
Fairbanks	92	7948064
Gander	92	7915851
Goose Bay	92	7947311
Houston	92	7945816
Iqaluit	90	7812155
Jacksonville	92	7919393
Juneau	92	7943806
Kansas City	92	7945507
Kotzebue	91	7904685
Los Angeles	92	7944562
Memphis	92	7947511
Merida	92	7913969
Mexico City	67	5802190
Miami	92	7945875
Minneapolis	92	7948514
New York	92	7948306
Oakland	92	7933131
Puerto Vallarta	49	4200240

Location	Number of Days Evaluated	Number of Samples
Salt Lake City	92	7947682
San Jose Del Cabo	44	3785226
Seattle	92	7939911
Washington, DC	92	7947513
Winnipeg	92	7948421

Table 1-3 NPA Evaluation Site

Location	Number of Days Evaluated	Number of Samples
Albuquerque	91	7862390
Anchorage	91	7862390
Atlanta	91	7862389
Barrow	91	7859338
Bethel	91	7862296
Billings	91	7862066
Boston	91	7862385
Cleveland	91	7859452
Cold Bay	91	7862381
Fairbanks	91	7862172
Gander	91	7862107
Honolulu	91	7862382
Houston	91	7862388
Iqaluit	90	7733728
Juneau	91	7862386
Kansas City	91	7843659
Kotzebue	90	7818183
Los Angeles	91	7862387
Merida	91	7837170
Miami	91	7862390
Minneapolis	91	7854934
Oakland	91	7862388
Salt Lake City	91	7862390
San Jose Del Cabo	47	4042641
San Juan	91	7862384
Seattle	91	7862388
Tapachula	42	3610015
Washington, DC	91	7859240

The report is divided by the performance category:

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

Table 1-4 lists the evaluated WAAS performance parameters for this report. Note that these are the performance parameters associated with the WAAS system, and that these requirements are extracted from FAA Specification FAA-E-2892.

Table 1-4 WAAS Performance Parameters

Performance Parameter	Expected WAAS Performance
LPV Accuracy Horizontal	≤ 1.5 m error 95% of the time
LPV Accuracy Vertical	≤ 2 m error 95% of the time
LNAV Accuracy Horizontal	≤ 36 m error 95% of the time
Availability LPV CONUS	99% availability of 100% of CONUS
Availability LPV Alaska	95% availability of 75% of Alaska
Availability LNAV CONUS	99.99% availability with HPL <556 m
Availability LNAV Alaska	99.9% availability with HPL <556 m
Availability En Route OCONUS	99.9% availability with HPL <2 nmi
Probability of Hazardous Misleading Information	<10e-7 per approach

1.1 Event Summary

Table 1-5 lists events that affected WAAS performance or the ability to determine the WAAS performance during the reporting period. The events include GPS or WAAS anomalies, relevant receiver malfunctions, receiver maintenance, and ionospheric activity. The reporting of ionospheric activity includes reference to the planetary index (Kp) for the event time period. The Kp index quantifies the disturbance in the Earth's magnetic field and is an indicator of solar storms causing geomagnetic disturbances resulting in an unpredictable ionosphere. The detection of an ionospheric disturbance causes the WAAS to increase Grid Ionospheric Vertical Error (GIVE) values, making PA service unavailable.

Analyses of events that merit more detailed investigations are documented in the Discrepancy Reports (DRs). The DRs are available at <http://www.nstb.tc.faa.gov> under “WAAS Technical Reports” and also accessible via hyperlink in Table 1-5. Note that “TOW” is the time of GPS week, which is the cumulative number of seconds beginning 00:00:00 Sunday (GMT without leap seconds). WAAS Upgrades 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
7/5/2024	7/5/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Canada	Geomagnetic activity (KP = 3) disturbed the ionosphere causing elevated GIVE values. This resulted in minor degradation of LPV200 service coverage in Canada from 10:30 UTC to 10:35 UTC. Please see plot(s): LPV200_7/5/2024 Cov vs Time Canada 7/5/2024
7/26/2024	7/26/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_CONUS, LPV200_Canada	Geomagnetic activity (KP = 4.67) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of: (1) LPV200 service coverage in CONUS from 14:30 UTC to 15:00 UTC and from 20:00 UTC to 20:40 UTC; and (2) LPV200 service coverage in Canada from 03:45 UTC to 03:55 UTC. Please see plot(s): LPV200_7/26/2024 Cov vs Time Canada 7/26/2024 Cov vs Time Conus 7/26/2024
8/1/2024	8/1/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Canada	Geomagnetic activity (KP = 5) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of LPV200 service coverage in Canada from 00:20 UTC to 01:00 UTC and from 01:35 UTC to 02:40 UTC. Please see plot(s): LPV200_8/1/2024 Cov vs Time Canada 8/1/2024
8/4/2024	8/4/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_CONUS, LPV200_CONUS, LPV200_Canada	Geomagnetic activity (KP = 5) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of: (1) LPV service coverage in CONUS from 17:30 UTC to 19:30 UTC; (2) LPV200 service coverage in CONUS from 17:20 UTC to 20:05 UTC and from 20:35 UTC to 20:55 UTC. The elevated GIVE values also caused moderate degradation of LPV200 service coverage in Canada from 14:40 UTC to 14:45 UTC and from 23:00 UTC to 23:10 UTC. Please see plot(s): LPV_8/4/2024 LPV200_8/4/2024 Cov vs Time Canada 8/4/2024 Cov vs Time Conus 8/4/2024
8/8/2024	8/8/2024	PRN13	LPV200_CONUS	There was a GPS NANU on PRN 13 (see NANU 2024038) which was unusable from 13:29 UTC to 18:24 UTC. The NANU caused moderate degradation of LPV200 service coverage in CONUS from 19:10 UTC to 19:40 UTC.

				Please see plot(s): LPV200 8/8/2024 Cov vs Time Conus 8/8/2024
8/12/2024	8/12/2024		None	There were CCC trips on all GEOs. This resulted in the GEOs spiking to a UDRE of 14 throughout the beginning of the day. UDREs remained elevated throughout the rest of the day. This was the result of high perturbations in the ionosphere due to a geomagnetic storm (KP=8).
8/12/2024	8/12/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_CONUS, LPV_Alaska, LPV_Canada, LPV200_CONUS, LPV200_Alaska, LPV200_Canada	Geomagnetic activity (KP = 5) caused by a G4 geomagnetic storm disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of: LPV service coverage in CONUS from 00:55 UTC to 09:00 UTC and from 17:00 UTC to 19:35 UTC; (2) LPV service coverage in Alaska from 03:20 UTC to 05:00 UTC, 06:10 UTC to 07:35 UTC, and from 09:35 UTC to 10:10 UTC; (3) LPV service coverage in Canada from 00:40 UTC to 05:55 UTC; (4) LPV200 service coverage in CONUS from 00:35 UTC to 09:30 UTC, 09:40 UTC to 10:35 UTC, 11:50 UTC to 14:55 UTC, and from 16:40 UTC to 22:05 UTC; (5) LPV200 service coverage in Alaska from 00:50 UTC to 01:05 UTC, 01:30 UTC to 01:55 UTC, 02:55 UTC to 08:50 UTC, 09:35 UTC to 10:50 UTC, and from 21:45 UTC to 23:00 UTC; (6) LPV200 service coverage in Canada from 00:30 UTC to 05:55 UTC, 06:10 UTC to 07:10 UTC, 09:35 UTC to 10:10 UTC, and from 22:10 UTC to 23:00 UTC. Please see plot(s): LPV 8/12/2024 LPV200 8/12/2024 Cov vs Time Alaska 8/12/2024 Cov vs Time Canada 8/12/2024 Cov vs Time Conus 8/12/2024
8/13/2024	8/13/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_CONUS, LPV200_Canada	Geomagnetic activity (KP = 4.67) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of: (1) LPV200 service coverage in CONUS (SoCal, NM, AZ, TX, LA, East Coast) from 03:30 UTC to 04:05 UTC and from 21:40 UTC to 22:00 UTC; (2) LPV200 service coverage in Canada from the start of the day to 00:35 UTC, 01:00 UTC to 01:10 UTC, 02:50 UTC to 04:00 UTC, 22:15 UTC to 22:40 UTC, and from 23:30 UTC to the end of the day. Please see plot(s): LPV200 8/13/2024 Cov vs Time Canada 8/13/2024 Cov vs Time Conus 8/13/2024

8/14/2024	8/14/2024	Washington D.C. (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 periodically from 00:00 UTC to 10:20 UTC. Please see plot(s): LPV200_8/14/2024 Cov vs Time Canada 8/14/2024
8/16/2024	8/16/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_CONUS, LPV200_Canada	Geomagnetic activity (KP = 3) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of: (1) CONUS (CA, AZ NM, TX) from 18:50 UTC to 19:10 UTC, 18:50 UTC to 20:00 UTC, and from 21:05 UTC to 21:45 UTC; (2) LPV200 service coverage in Canada from 01:10 UTC to 01:25 UTC, 02:15 UTC to 02:55 UTC, and from 03:10 UTC to 03:40 UTC. Please see plot(s): LPV200_8/16/2024 Cov vs Time Canada 8/16/2024 Cov vs Time Conus 8/16/2024
8/17/2024	8/17/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_CONUS, 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 17:00 UTC to 18:05 UTC and from 21:25 UTC to the end of the day. The elevated GIVE values also caused moderate degradation of LPV service coverage in Canada from 22:05 UTC to 23:20 UTC. The elevated GIVE values also caused minor degradation of LPV200 service coverage in CONUS (Maine) from 18:40 UTC to 09:10 UTC. Please see plot(s): LPV_8/17/2024 LPV200_8/17/2024 Cov vs Time Canada 8/17/2024 Cov vs Time Conus 8/17/2024
8/18/2024	8/18/2024	Washington D.C. (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 Canada from 00:35 UTC to 02:10 UTC. Please see plot(s): LPV200_8/18/2024 Cov vs Time Canada 8/18/2024
8/19/2024	8/19/2024	Washington D.C. (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 Canada from 21:50 UTC to 23:55 UTC. Please see plot(s): LPV200_8/19/2024 Cov vs Time Canada 8/19/2024

8/20/2024	8/20/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_CONUS, LPV200_Canada	Geomagnetic activity (KP = 3.67) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of: (1) LPV service coverage in Canada from 02:00 UTC to 02:10 UTC and from 04:15 UTC to 04:25 UTC; and (2): LPV200 service coverage in Canada from 00:10 UTC to 04:25 UTC. The elevated GIVE values also resulted in minor degradation of LPV200 service coverage in CONUS from 13:00 UTC to 13:10 UTC, from 18:20 UTC to 19:00 UTC, and from 21:10 UTC to 21:30 UTC. Please see plot(s): LPV 8/20/2024 LPV200 8/20/2024 Cov vs Time Canada 8/20/2024 Cov vs Time Conus 8/20/2024
8/21/2024	8/21/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_Canada	Geomagnetic activity (KP = 2) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of: (1) LPV service coverage in Canada from 00:50 UTC to 01:20 UTC; and (2) LPV200 service coverage in Canada from 00:50 UTC to 01:20 UTC and from 04:10 UTC to 04:20 UTC. Please see plot(s): LPV 8/21/2024 LPV200 8/21/2024 Cov vs Time Canada 8/21/2024
8/22/2024	8/22/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Canada	Geomagnetic activity (KP = 3.33) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of LPV200 service coverage in Canada from 02:25 UTC to 02:35 UTC and from 02:45 UTC to 03:25 UTC. Please see plot(s): LPV200 8/22/2024 Cov vs Time Canada 8/22/2024
8/23/2024	8/23/2024	Washington D.C. (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 15:30 UTC to 15:55 UTC Please see plot(s): LPV200 8/23/2024 Cov vs Time Canada 8/23/2024
8/24/2024	8/24/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_CONUS, 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 22:40 UTC to 23:15 UTC. The elevated GIVE values also resulted in minor degradation of LPV200 service coverage in CONUS from 18:25 UTC to 18:35 UTC. Please see plot(s):

				LPV200 8/24/2024 Cov vs Time Canada 8/24/2024 Cov vs Time Conus 8/24/2024
8/25/2024	8/25/2024	Washington D.C. (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 00:01 UTC to 01:00 UTC, 03:00 UTC to 03:40 UTC, and from 03:50 UTC to 03:55 UTC. Please see plot(s): LPV200 8/25/2024 Cov vs Time Canada 8/25/2024
8/27/2024	8/28/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_Canada	Geomagnetic activity (KP = 3.67) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of: (1) LPV service coverage in Canada from 02:25 UTC on 8/27 to 03:40 UTC on 8/28; (2) LPV200 service coverage in Canada from 22:15 UTC on 8/27 to 03:50 UTC on 8/28. Please see plot(s): LPV 8/27/2024 LPV200 8/27/2024 Cov vs Time Canada 8/27/2024 LPV 8/28/2024 LPV200 8/28/2024 Cov vs Time Canada 8/28/2024
8/28/2024	8/28/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_CONUS, LPV_Alaska, LPV200_CONUS, LPV200_Alaska, LPV200_Canada	Geomagnetic activity (KP = 5.67) caused by a G2 geomagnetic storm disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of: (1) LPV service coverage in CONUS from 01:50 UTC to 03:30 UTC; (2) LPV service coverage in Alaska from 01:45 UTC to 03:20 UTC and from 08:55 UTC to 09:20 UTC; (3) LPV200 service coverage in CONUS from 01:30 UTC to 03:40 UTC, 15:55 UTC to 16:40 UTC, 17:35 UTC to 18:25 UTC, and from 19:00 UTC to 19:20 UTC; (4) LPV200 service coverage in Alaska from 00:55 UTC to 03:20 UTC, 06:20 UTC to 07:40 UTC, 08:50 UTC to 09:50 UTC, and from 11:45 UTC to 15:35 UTC; (5) LPV200 service coverage in Canada from 05:10 UTC to 06:10 UTC and from 06:40 UTC to 06:55 UTC. Please see plot(s): LPV 8/28/2024 LPV200 8/28/2024 Cov vs Time Alaska 8/28/2024 Cov vs Time Canada 8/28/2024 Cov vs Time Conus 8/28/2024

8/30/2024	8/30/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_Canada	Geomagnetic activity (KP = 4.67) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of: (1) LPV service coverage in Canada from 20:45 UTC to 22:45 UTC; (2) LPV200 service coverage in Canada from 13:55 UTC to 14:30 UTC, 18:35 UTC to 19:25 UTC, 20:15 UTC to 22:55 UTC, and from 23:10 UTC to 23:55 UTC. Please see plot(s): LPV 8/30/2024 LPV200 8/30/2024 Cov vs Time Canada 8/30/2024
8/31/2024	8/31/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_CONUS, LPV200_CONUS, LPV200_Canada	Geomagnetic activity (KP = 4.67) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of LPV200 service coverage in CONUS from 16:25 UTC to 18:10 UTC. The elevated GIVE values also caused moderate degradation of: (1) LPV service coverage in CONUS from 16:55 UTC to 18:00 UTC; (2) LPV200 service coverage in Canada from 00:10 UTC to 00:45 UTC and from 01:05 UTC to 01:50 UTC. Please see plot(s): LPV 8/31/2024 LPV200 8/31/2024 Cov vs Time Canada 8/31/2024 Cov vs Time Conus 8/31/2024
9/1/2024	9/1/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_CONUS, LPV200_Canada	Geomagnetic activity (KP = 3.67) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of LPV200 service coverage in Canada from 00:55 UTC to 02:35 UTC and from 15:40 UTC to 18:50 UTC. The elevated GIVE values also results in minor degradation of: (1) LPV200 service coverage in CONUS from 17:35 UTC to 18:10 UTC and from 18:30 UTC to 18:40 UTC; and (2) LPV service coverage in Canada from 01:15 UTC to 01:25 UTC. Please see plot(s): LPV 9/1/2024 LPV200 9/1/2024 Cov vs Time Canada 9/1/2024 Cov vs Time Conus 9/1/2024
9/2/2024	9/2/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_CONUS, LPV200_Canada	Geomagnetic activity (KP = 2.67) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of: (1) LPV200 service coverage in CONUS from 12:00 UTC to 12:30 UTC and 17:50 UTC to 18:10 UTC; and (2) LPV200 service coverage in Canada from 03:00 UTC to 03:30 UTC. Please see plot(s): LPV200 9/2/2024

				Cov vs Time Canada 9/2/2024 Cov vs Time Conus 9/2/2024
9/3/2024	9/3/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Canada	Geomagnetic activity (KP = 2.33) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of LPV200 service coverage in Canada from 20:45 UTC to 21:15 UTC. Please see plot(s): LPV200 9/3/2024 Cov vs Time Canada 9/3/2024
9/4/2024	9/4/2024	Washington D.C. (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 23:35 UTC to 23:50 UTC. Please see plot(s): LPV200 9/4/2024 Cov vs Time Canada 9/4/2024
9/5/2024	9/5/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_Canada	Geomagnetic activity (KP = 2.33) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of LPV200 service coverage in Canada from 00:50 UTC to 00:55 UTC, 09:10 UTC to 09:20 UTC, 10:45 UTC to 11:20 UTC, and from 13:50 UTC to 15:15 UTC. The elevated GIVE values also caused moderate degradation of LPV service coverage in Canada from 08:45 UTC to 08:50 UTC. Please see plot(s): LPV 9/5/2024 LPV200 9/5/2024 Cov vs Time Canada 9/5/2024
9/6/2024	9/6/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Alaska, LPV200_Canada	Geomagnetic activity (KP = 3) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of: (1) LPV200 service coverage in Alaska from 08:15 UTC to 09:15 UTC; (2) LPV200 service coverage in Canada from 08:15 UTC to 09:15 UTC. Please see plot(s): LPV200 9/6/2024 Cov vs Time Alaska 9/6/2024 Cov vs Time Canada 9/6/2024
9/7/2024	9/7/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_CONUS, LPV200_Canada	Geomagnetic activity (KP = 2.67) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of: (1) LPV200 service coverage in CONUS (FL) from 02:10 UTC to 02:30 UTC; (2) LPV200 service coverage in Canada from 20:25 UTC to 21:05 UTC. Please see plot(s): LPV200 9/7/2024 Cov vs Time Canada 9/7/2024

				Cov vs Time Conus 9/7/2024
9/8/2024	9/8/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Canada	Geomagnetic activity (KP = 2.67) caused by a G2 geomagnetic storm disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of LPV200 service coverage in Canada from 10:30 UTC to 11:20 UTC and from 23:30 UTC to 23:50 UTC. Please see plot(s): LPV200 9/8/2024 Cov vs Time Canada 9/8/2024
9/9/2024	9/9/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Canada	Geomagnetic activity (KP = 3) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of LPV200 service coverage in Canada from 01:35 UTC to 02:20 UTC and from 19:15 UTC to 21:15 UTC. The elevated GIVE values also caused moderate degradation of service coverage in CONUS (FL) from 02:00 UTC to 02:30 UTC, 16:55 UTC to 17:30 UTC, and from 19:50 UTC to 20:20 UTC. Please see plot(s): LPV200 9/9/2024 Cov vs Time Canada 9/9/2024
9/10/2024	9/10/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_Canada	Geomagnetic activity (KP = 2.67) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of: (1) LPV service coverage in Canada from 03:15 UTC to 03:25 UTC; and (2) LPV200 service coverage in Canada from 02:50 UTC to 03:25 UTC, 08:50 UTC to 09:00 UTC. Please see plot(s): LPV 9/10/2024 LPV200 9/10/2024 Cov vs Time Canada 9/10/2024
9/11/2024	9/11/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_CONUS, LPV200_Canada	Geomagnetic activity (KP = 3) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of LPV200 service coverage in Canada from 19:20 UTC to 20:00 UTC. The elevated GIVE values also resulted in moderate degradation of LPV service coverage in Canada from 19:20 UTC to 19:45 UTC. The elevated GIVE values also resulted in minor degradation of LPV200 service coverage in CONUS from 11:35 UTC to 11:45 UTC. Please see plot(s): LPV 9/11/2024 LPV200 9/11/2024 Cov vs Time Canada 9/11/2024 Cov vs Time Conus 9/11/2024
9/12/2024	9/12/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_CONUS, LPV_Alaska, LPV_Canada,	Geomagnetic activity (KP = 7) caused by a G3 geomagnetic storm disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of: (1) LPV service coverage in CONUS from 20:00 UTC to 22:00

			LPV200_CONUS, LPV200_Alaska, LPV200_Canada	UTC; (2) LPV service coverage in Alaska from 09:45 UTC to 11:20 UTC; (3) LPV service coverage in Canada from 09:30 UTC to 10:50 UTC and from 19:20 UTC to 23:30 UTC; (4) LPV200 service coverage in CONUS from 16:30 UTC to 17:25 UTC, 17:50 UTC to 18:15 UTC, and from 19:35 UTC to 23:05 UTC; (5) LPV200 service coverage in Alaska from 07:35 UTC to 13:30 UTC and from 19:50 UTC to 20:55 UTC; (6) LPV200 service coverage in Canada from 07:40 UTC to 11:05 UTC, 15:20 UTC to 15:45 UTC, and from 18:50 UTC to 23:35 UTC. Please see plot(s): LPV_9/12/2024 LPV200_9/12/2024 Cov vs Time Alaska_9/12/2024 Cov vs Time Canada_9/12/2024 Cov vs Time Conus_9/12/2024
9/13/2024	9/14/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Alaska, LPV_Canada, LPV200_CONUS, LPV200_Alaska, LPV200_Canada	Geomagnetic activity (KP = 6) caused by a G3 geomagnetic storm disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of: (1) LPV service coverage in Alaska from 22:40 UTC on 9/13 to 01:00 UTC on 9/14; (2) LPV service coverage in Canada from 21:55 UTC in 9/13 to 01:00 UTC on 9/14; (3) LPV200 service coverage in CONUS from 16:20 UTC to 17:15 UTC, 19:05 UTC to 19:55 UTC, and from 22:25 UTC on 9/13 to the end of the day; (4) LPV200 service coverage in Alaska from 22:35 UTC on 9/13 to 01:05 UTC on 9/14; (5) LPV200 service coverage in Canada from 00:20 UTC on 9/13 to 01:05 UTC on 9/13, 01:25 UTC to 01:45 UTC, 04:10 UTC on 9/13 to 04:45 UTC, and from 20:05 UTC on 9/13 to 01:30 UTC on 9/14; Please see plot(s): LPV_9/13/2024 LPV200_9/13/2024 Cov vs Time Alaska_9/13/2024 Cov vs Time Canada_9/13/2024 Cov vs Time Conus_9/13/2024 LPV_9/14/2024 LPV200_9/14/2024 Cov vs Time Alaska_9/14/2024 Cov vs Time Canada_9/14/2024
9/14/2024	9/14/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Alaska, LPV_Canada, LPV200_Alaska, LPV200_Canada	Geomagnetic activity (KP = 4.33) caused by a G3 geomagnetic storm disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of: (1) LPV service coverage in Canada from 21:55 UTC to 23:20 UTC; (2) LPV200 service coverage in Canada from 19:45 UTC to 23:35 UTC. Please see plot(s):

				LPV 9/14/2024 LPV200 9/14/2024 Cov vs Time Alaska 9/14/2024 Cov vs Time Canada 9/14/2024
9/15/2024	9/15/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_Canada	Geomagnetic activity (KP = 4) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of: (1) LPV service coverage in Canada from 00:25 UTC to 00:35 UTC; (2) LPV200 service coverage in Canada from the start of the day to 00:40 UTC and from 23:00 UTC to 23:35 UTC. Please see plot(s): LPV 9/15/2024 LPV200 9/15/2024 Cov vs Time Canada 9/15/2024
9/16/2024	9/16/2024	Washington D.C. (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 significant degradation of LPV200 service coverage in Canada from 01:15 UTC to 03:10 UTC and from 04:00 UTC to 04:35 UTC. The elevated GIVE values also caused moderate degradation of LPV service coverage in Canada from 01:35 UTC to 02:20 UTC. Please see plot(s): LPV 9/16/2024 LPV200 9/16/2024 Cov vs Time Canada 9/16/2024
9/17/2024	9/17/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_CONUS, LPV_Alaska, LPV_Canada, LPV200_CONUS, LPV200_Alaska, LPV200_Canada	Geomagnetic activity (KP = 7.67) caused by a G4 geomagnetic storm disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of: (1) LPV service coverage in CONUS from 01:30 UTC to 04:55 UTC and from 16:15 UTC to 16:25 UTC; (2) LPV service coverage in Alaska from 02:20 UTC to 02:55 UTC and from 03:40 UTC to 04:55 UTC; (3) LPV service coverage in Canada from 02:20 UTC to 03:05 UTC and from 03:25 UTC to 04:15 UTC; (4) LPV200 service coverage in CONUS from 01:30 UTC to 04:55 UTC, 07:35 UTC to 07:55 UTC, 08:15 UTC to 08:35 UTC, and from 16:00 UTC to 16:40 UTC; (5) LPV200 service coverage in Alaska from 02:10 UTC to 05:55 UTC and from 09:50 UTC to 10:45 UTC; (6) LPV200 service coverage in Canada from 01:00 UTC to 01:35 UTC, 01:55 UTC to 03:10 UTC, 03:20 UTC to 04:30 UTC, and from 10:00 UTC to 10:25 UTC. Please see plot(s): LPV 9/17/2024 LPV200 9/17/2024 Cov vs Time Alaska 9/17/2024 Cov vs Time Canada 9/17/2024

				Cov vs Time Conus 9/17/2024
9/19/2024	9/19/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_Canada	Geomagnetic activity (KP = 4.67) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of LPV200 service coverage in Canada from the start of the day until 03:15 UTC. The elevated GIVE values also caused moderate degradation of LPV service coverage in Canada from 00:05 UTC to 01:55 UTC. Please see plot(s): LPV 9/19/2024 LPV200 9/19/2024 Cov vs Time Canada 9/19/2024
9/20/2024	9/20/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Canada	Geomagnetic activity (KP = 3.33) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of LPV200 service coverage in Canada from 19:45 UTC to 20:00 UTC, 20:55 UTC to 21:10 UTC, 23:00 UTC to 23:20 UTC, and from 23:40 UTC to the end of the day. Please see plot(s): LPV200 9/20/2024 Cov vs Time Canada 9/20/2024
9/21/2024	9/21/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Canada	Geomagnetic activity (KP = 2) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of LPV200 service coverage in Canada from the start of the day until 03:15 UTC. Please see plot(s): LPV200 9/21/2024 Cov vs Time Canada 9/21/2024
9/22/2024	9/22/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Canada	Geomagnetic activity (KP = 2) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of LPV200 service coverage in Canada from 03:35 UTC to 04:20 UTC. Please see plot(s): LPV200 9/22/2024 Cov vs Time Canada 9/22/2024
9/23/2024	9/23/2024	Washington D.C. (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 significant degradation of LPV200 service coverage in Canada from 13:25 UTC to 13:45 UTC and from 16:25 UTC to 19:20 UTC. The elevated GIVE values also caused moderate degradation of LPV service coverage in Canada from 16:45 UTC to 18:30 UTC. Please see plot(s): LPV 9/23/2024 LPV200 9/23/2024 Cov vs Time Canada 9/23/2024

9/24/2024	9/25/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Canada	Geomagnetic activity (KP = 4.67) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of LPV200 service coverage in Canada from 19:20 UTC on 9/24 to 19:45 UTC on 9/24, 20:40 UTC on 9/24 to 21:20 UTC on 9/24, and from 23:45 UTC on 9/24 to 02:55 UTC on 9/25. Please see plot(s): LPV200 9/24/2024 Cov vs Time Canada 9/24/2024 LPV200 9/25/2024 Cov vs Time Canada 9/25/2024
9/25/2024	9/26/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_CONUS, LPV_Canada, LPV200_CONUS, LPV200_Alaska, LPV200_Canada	Geomagnetic activity (KP = 5) caused by a G1 geomagnetic storm disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of: (1) LPV service coverage in Canada from 20:20 UTC on 9/25 to 02:00 UTC on 9/26; (2) LPV200 service coverage in Canada from 19:50 UTC on 9/25 to 02:00 UTC on 9/26. The elevated GIVE values also caused moderate degradation of: (1) LPV service coverage in CONUS from 00:40 UTC on 9/25 to 01:20 UTC on 9/25; (2) LPV200 service coverage in CONUS 00:05 UTC on 9/25 to 01:50 UTC on 9/25, 15:50 UTC on 9/25 to 16:20 UTC on 9/25, 18:15 UTC on 9/25 to 19:00 UTC on 9/25, and from 22:15 UTC on 9/25 to 22:45 UTC on 9/25; The elevated GIVE values also caused minor degradation of LPV200 service coverage in Alaska from 04:05 UTC on 9/25 to 04:25 UTC on 9/25 and from 06:55 UTC on 9/25 to 07:55 UTC on 9/25. Please see plot(s): LPV 9/25/2024 LPV200 9/25/2024 Cov vs Time Alaska 9/25/2024 Cov vs Time Canada 9/25/2024 Cov vs Time Conus 9/25/2024 LPV 9/26/2024 LPV200 9/26/2024 Cov vs Time Alaska 9/26/2024 Cov vs Time Canada 9/26/2024 Cov vs Time Conus 9/26/2024
9/26/2024	9/26/2024	Washington D.C. (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 significant degradation of LPV200 service coverage in Canada 14:55 UTC to 15:55 UTC and from 23:15 UTC to 23:40 UTC. The elevated GIVE values also caused moderate degradation of LPV200 service coverage in Alaska from 00:25 UTC to 01:25 UTC. Please see plot(s): LPV200 9/26/2024 Cov vs Time Alaska 9/26/2024

				Cov vs Time Canada 9/26/2024
9/27/2024	9/27/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_CONUS, LPV200_Canada	Geomagnetic activity (KP = 2.67) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of: (1) LPV200 service coverage in CONUS (FL) from 10:20 UTC to 10:35 UTC and from 22:50 UTTC to 23:20 UTC; (2) LPV200 service coverage in Canada from 09:30 UTC to 09:50 UTC, 10:30 UTC to 11:10 UTC, 11:20 UTC to 11:40 UTC, and from 12:05 UTC to 12:30 UTC. Please see plot(s): LPV200 9/27/2024 Cov vs Time Canada 9/27/2024 Cov vs Time Conus 9/27/2024
9/27/2024	9/27/2024	PRN31	LPV200_CONUS	There was a GPS NANU on PRN 31 (see NANU 2024046) which was unusable from 04:45 UTC to 11:18 UTC. The NANU caused moderate degradation of LPV200 service coverage in CONUS (NM and FL) from 10:20 UTC to 10:35 UTC. Please see plot(s): LPV200 9/27/2024 Cov vs Time Conus 9/27/2024
9/28/2024	9/28/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_CONUS, LPV200_Alaska, LPV200_Canada	Geomagnetic activity (KP = 3) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of LPV200 service coverage in Canada from 12:00 UTC to 12:50 UTC, 14:10 UTC to 15:10 UTC, and from 18:05 UTC to 19:30 UTC. The elevated GIVE values also caused moderate degradation of: (1) LPV service coverage in Canada from 19:05 UTC to 19:25 UTC; (2) LPV200 service coverage in CONUS (FL) from 00:25 UTC to 02:05 UTC and from 22:40 UTC to 23:20 UTC; (3) LPV200 service coverage in Alaska from 11:50 UTC to 14:05 UTC and from 15:30 UTC to 17:10 UTC. Please see plot(s): LPV 9/28/2024 LPV200 9/28/2024 Cov vs Time Alaska 9/28/2024 Cov vs Time Canada 9/28/2024 Cov vs Time Conus 9/28/2024
9/29/2024	9/30/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_CONUS, LPV_Canada, LPV200_CONUS, LPV200_Alaska, LPV200_Canada	Geomagnetic activity (KP = 3.33) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of LPV200 service coverage in Canada from 00:20 UTC on 9/29 to 04:00 UTC on 9/29, 21:00 UTC on 9/29 to 22:45 UTC on 9/29, and from 23:50 UTC on 9/29 to 00:25 on 9/30. The elevated GIVE values also caused moderate degradation of: (1) LPV service coverage in Canada from 00:25 UTC on 9/29 to 01:15 UTC on 9/29 and from 03:05 UTC on 9/29 to 03:40 UTC on 9/29; (2) LPV service coverage in

				CONUS (FL) from 00:20 UTC on 9/29 to 01:25 UTC on 9/29; (3) LPV200 service coverage in CONUS (FL) from 00:15 UTC on 9/29 to 01:35 UTC on 9/29; The elevated GIVE values also caused minor degradation of LPV200 service coverage in Alaska from 01:50 UTC on 9/29 to 03:35 UTC on 9/29 and from 08:40 UTC on 9/29 to 08:50 UTC on 9/29. Please see plot(s): LPV_9/29/2024 LPV200_9/29/2024 Cov vs Time Alaska_9/29/2024 Cov vs Time Canada_9/29/2024 Cov vs Time Conus_9/29/2024 LPV200_9/30/2024 Cov vs Time Canada_9/30/2024
9/30/2024	9/30/2024	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_CONUS, LPV200_Canada	Geomagnetic activity (KP = 4.33) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of LPV200 service coverage in Canada from 01:20 UTC to 02:35 UTC, 18:00 UTC to 21:15 UTC, and from 21:45 UTC to 22:55 UTC. The elevated GIVE values also caused moderate degradation of: (1) LPV service coverage in Canada from 22:45 UTC to 22:50 UTC; (2) LPV200 service coverage in CONUS (FL) from 15:35 UTC to 16:05 UTC and from 18:15 UTC to 18:45 UTC. Please see plot(s): LPV_9/30/2024 LPV200_9/30/2024 Cov vs Time Canada_9/30/2024 Cov vs Time Conus_9/30/2024

Table 1-6 WAAS Upgrades

Start Date	End Date	Location Satellite	Event Description
N/A	N/A	N/A	N/A

Table 1-7 GUS Switchovers

Start Date	End Date	GUS Switch	Location Satellite	Service Affected	Event Description
07/01/2024	07/01/2024	Manual	GEO135, Brewster (BR2)	None	The uplink for the G30 GEO, PRN135 switched from the Brewster uplink site to the Napa uplink site at 14:42:25 UTC. This caused a

					3-second outage of the GEO 135 broadcast and also caused the WAAS carrier smoothing algorithm to reinitialize for PRN135. There was no impact on coverage. TOW 591898-591903
07/05/2024	07/05/2024	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 10:30:21 UTC. This caused a 15-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 469839-469855
07/06/2024	07/06/2024	Manual	GEO131, Santa_Paula (SZ1)	None	The uplink for the SM9 GEO, PRN131 switched from the Santa_Paula uplink site to the Southbury uplink site at 11:14:16 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 558874-558878
07/10/2024	07/10/2024	Manual	GEO135, Napa (AP1)	None	The uplink for the G30 GEO, PRN135 switched from the Napa uplink site to the Brewster uplink site at 07:01:32 UTC. This caused a 3-second outage of the GEO 135 broadcast and also caused the WAAS carrier smoothing algorithm to reinitialize for PRN135. There was no impact on coverage. TOW 284510-284514
07/24/2024	07/24/2024	Manual	GEO131, Southbury (DX1)	None	The uplink for the SM9 GEO, PRN131 switched from the Southbury uplink site to the Santa_Paula uplink site at 07:01:24 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 284502-284506
07/25/2024	07/25/2024	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 22:54:29 UTC. This caused a 17-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 428087-42810
07/25/2024	07/25/2024	Manual	GEO131, Southbury (DX1)	None	The uplink for the SM9 GEO, PRN131 switched from the Santa_Paula uplink site to the Southbury uplink site at 12:35:47 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 390965-390969
07/25/2024	07/25/2024	Faulted	GEO131, Santa_Paula (SZ1)	None	The uplink for the SM9 GEO, PRN131 switched from the Southbury uplink site to the Santa_Paula uplink site at 11:01:36 UTC. This caused a 16-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 385314-385331
08/08/2024	08/08/2024	Faulted	GEO131, Santa_Paula (SZ1)	None	The uplink for the SM9 GEO, PRN131 switched from the Southbury uplink site to the Santa_Paula uplink site at 11:31:04 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 387082-387097
08/28/2024	08/28/2024	Manual	GEO131, Southbury (DX1)	None	The uplink for the SM9 GEO, PRN131 switched from the Southbury uplink site to the Santa_Paula uplink site at 23:35:28 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 344146-344150
09/04/2024	09/04/2024	Manual	GEO133, Brewster (BR1)	None	The uplink for the S15 GEO, PRN133 switched from the Brewster uplink site to the South Mountain uplink site at 12:59:49 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 306007-306011
09/18/2024	09/18/2024	Manual	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 07:03:33 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 284631-284635
09/26/2024	09/26/2024	Manual	GEO131, Santa_Paula (SZ1)	None	The uplink for the SM9 GEO, PRN131 switched from the Santa_Paula uplink site to the Southbury uplink site at 07:11:59 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 371537-371541
09/19/2024	09/19/2024	Missed Navigation Message	GEO131, Santa_Paula (SZ1), Washington DC (CnV)		Santa_Paula had CnV Source Select from Washington DC to Atlanta. TOW 363481-363483
08/28/2024	08/28/2024	Manual	GEO131, Southbury (DX1)		The uplink for the SM9 GEO, PRN131 switched from the Southbury uplink site to the Santa_Paula uplink site at 23:35:28 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 344146-344150

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 1.354 meters observed at Arcata.
- The maximum 95% CONUS vertical LPV error was 1.875 meters observed at Oakland.
- The minimum 95% CONUS horizontal LPV errors was 0.687 meters observed at Memphis.
- The minimum 95% CONUS vertical LPV error was 1.024 meters observed at Salt Lake City.

Table 2-1 PA 95% Horizontal and Vertical Accuracy

Location	Horizontal (HAL=40 m) (m)	Horizontal (HAL=556 m) (m)	Vertical (VAL=50 m) (m)	Percentage in PA Mode (%)	SPS Accuracy	
					95% Horizontal (m)	95% Vertical (m)
Arcata	1.354	1.355	1.807	100	*	*
Atlantic City	1.119	1.121	1.864	100	*	*
Elko	1.013	1.014	1.235	100	*	*
Grand Forks	1.160	1.168	1.863	100	*	*
Oklahoma City	0.913	0.914	1.395	100	*	*
Albuquerque	0.930	0.930	1.121	100	3.55	4.20
Anchorage	0.888	0.889	1.512	100	3.05	4.65
Atlanta	1.060	1.062	1.204	100	3.31	4.79
Barrow	0.811	0.814	1.763	100	3.35	4.99
Bethel	0.771	0.773	1.428	100	2.90	5.19
Billings	0.792	0.796	1.159	100	2.24	3.94
Boston	0.910	0.913	1.280	100	2.91	4.33
Chicago	0.983	0.990	1.230	100	*	*
Cleveland	0.878	0.882	1.329	100	2.58	4.19
Cold Bay	0.826	0.827	1.288	100	2.17	5.28
Dallas	0.822	0.822	1.382	100	*	*
Denver	0.840	0.841	1.052	100	*	*
Fairbanks	0.841	0.844	1.583	100	3.38	4.36
Gander	0.972	0.990	1.421	99.999	3.02	4.36
Goose Bay	1.013	1.034	1.633	100	*	*
Houston	0.971	0.971	1.399	100	4.16	4.89
Iqaluit	1.300	1.326	2.096	100	*	*
Jacksonville	0.950	0.954	1.278	100	*	*
Juneau	0.973	0.977	1.425	100	2.70	4.47
Kansas City	0.820	0.823	1.158	100	2.85	3.98
Kotzebue	0.819	0.820	1.657	100	3.58	4.89
Los Angeles	1.088	1.088	1.691	100	4.26	4.17
Memphis	0.687	0.688	1.159	100	*	*
Merida	1.335	1.352	2.224	100	5.82	7.92
Mexico City	1.356	1.370	2.728	100	*	*
Miami	1.297	1.307	1.531	100	4.45	6.05
Minneapolis	0.843	0.849	1.232	100	2.30	3.83
New York	0.972	0.974	1.258	100	*	*
Oakland	1.046	1.046	1.875	100	4.34	3.91
Puerto Vallarta	1.359	1.370	2.480	100	*	*
Salt Lake City	0.748	0.748	1.024	100	2.94	3.98

Location	Horizontal (HAL=40 m) (m)	Horizontal (HAL=556 m) (m)	Vertical (VAL=50 m) (m)	Percentage in PA Mode (%)	SPS Accuracy	
					95% Horizontal (m)	95% Vertical (m)
San Jose Del Cabo	1.326	1.329	2.574	100	*	*
Seattle	0.857	0.859	1.141	100	2.34	4.01
Washington, DC	0.892	0.894	1.226	100	2.87	4.34
Winnipeg	0.842	0.851	1.430	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 9.569 meters observed at Honolulu.
- The maximum 99.999% horizontal error was 25.351 meters observed at San Juan.
- The minimum 95% horizontal error was 1.871 meters observed at Seattle.
- The minimum 99.999% horizontal error was 4.672 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	2.555	6.638	100	6.771
Anchorage	3.107	5.757	100	5.929
Atlanta	2.895	6.375	100	6.492
Barrow	3.264	5.890	100	6.030
Bethel	2.712	5.690	100	5.816
Billings	1.971	6.389	100	6.640
Boston	2.721	6.989	100	7.154
Cleveland	2.323	7.334	100	7.507
Cold Bay	1.952	4.672	100	4.915
Fairbanks	3.336	6.048	100	6.182
Gander	2.683	6.159	99.999	6.386
Honolulu	9.569	22.477	100	23.885
Houston	3.227	8.017	100	8.181
Iqaluit	3.236	7.256	100	7.407
Juneau	2.504	5.034	100	5.170
Kansas City	2.122	6.832	100	6.917
Kotzebue	3.441	6.113	100	6.399
Los Angeles	2.899	6.276	100	6.488
Merida	3.843	12.193	100	12.558
Miami	3.518	8.597	100	8.723
Minneapolis	2.091	8.077	100	8.256

Location	95% Horizontal (m)	99.999% Horizontal (m)	Percentage in NPA Mode (%)	Maximum Horizontal Error (m)
Oakland	2.779	6.478	100	6.645
Salt Lake City	2.165	6.107	100	6.278
San Jose Del Cabo	4.180	8.957	100	9.265
San Juan	4.842	25.351	100	25.516
Seattle	1.871	5.677	100	5.845
Tapachula	5.592	14.692	100	14.756
Washington, DC	2.659	7.035	100	7.172

Table 2-3 shows the quarterly maximum LPV error statistics: (1) the Horizontal Error column shows the maximum position errors while the calculated HPL meets the LPV service level defined in Table 1-1, (2) the Vertical Error column shows the maximum position errors while the calculated VPL meets the LPV service level, (3) the Horizontal Error/HPL column and the Vertical Error/VPL column show the ratio of position error to protection level at the time the maximum error occurred, (4) the Horizontal Maximum Ratio column and the Vertical Maximum Ratio column show the maximum position error to protection level ratio for the quarter. During this reporting period, the maximum LPV horizontal error was 5.519 meters occurred at Winnipeg and maximum vertical LPV error was 8.182 meters occurred at Cleveland.

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	2.551	0.202	0.231	3.977	0.144	0.198
Atlantic City	3.069	0.118	0.222	7.058	0.248	0.254
Elko	2.939	0.163	0.234	3.530	0.124	0.180
Grand Forks	4.208	0.129	0.225	5.456	0.149	0.231
Oklahoma City	2.494	0.201	0.201	3.838	0.224	0.241
Albuquerque	2.762	0.242	0.242	4.395	0.165	0.181
Anchorage	3.016	0.119	0.186	7.019	0.140	0.214
Atlanta	2.458	0.202	0.209	4.402	0.117	0.186
Barrow	2.638	0.095	0.165	5.828	0.179	0.207
Bethel	2.716	0.072	0.172	4.738	0.190	0.200
Billings	2.560	0.161	0.212	5.110	0.111	0.201
Boston	3.971	0.160	0.211	5.520	0.111	0.211
Chicago	3.183	0.102	0.233	7.799	0.156	0.230
Cleveland	3.647	0.106	0.239	8.182	0.175	0.231
Cold Bay	3.334	0.093	0.144	4.069	0.155	0.155
Dallas	2.491	0.101	0.192	5.767	0.144	0.222
Denver	3.958	0.158	0.265	4.782	0.120	0.198
Fairbanks	2.316	0.063	0.183	5.210	0.224	0.232
Gander	3.509	0.116	0.152	4.891	0.106	0.161
Goose Bay	3.589	0.187	0.187	6.130	0.181	0.222

Location	Horizontal Error (m)	Horizontal Error/HPL	Horizontal Maximum Ratio	Vertical Error (m)	Vertical Error/VPL	Vertical Maximum Ratio
Houston	3.034	0.104	0.230	4.709	0.149	0.203
Iqaluit	3.997	0.183	0.199	7.800	0.194	0.270
Jacksonville	2.832	0.074	0.201	4.359	0.219	0.219
Juneau	3.476	0.092	0.211	6.601	0.146	0.212
Kansas City	2.273	0.231	0.241	4.143	0.192	0.246
Kotzebue	3.021	0.088	0.167	5.895	0.214	0.215
Los Angeles	2.895	0.187	0.220	4.606	0.140	0.197
Memphis	2.537	0.217	0.218	4.106	0.145	0.210
Merida	3.517	0.093	0.226	5.794	0.139	0.212
Mexico City	5.319	0.147	0.237	7.208	0.151	0.213
Miami	3.911	0.144	0.221	6.672	0.260	0.261
Minneapolis	2.688	0.178	0.218	5.080	0.190	0.248
New York	3.254	0.118	0.210	4.731	0.185	0.202
Oakland	3.442	0.227	0.267	4.513	0.158	0.195
Puerto Vallarta	3.406	0.245	0.245	6.519	0.138	0.193
Salt Lake City	2.816	0.222	0.233	3.970	0.139	0.182
San Jose Del Cabo	3.633	0.225	0.225	6.932	0.157	0.222
Seattle	2.734	0.137	0.221	4.551	0.117	0.165
Washington, DC	3.125	0.189	0.231	6.126	0.350	0.350
Winnipeg	5.519	0.284	0.284	7.994	0.302	0.303

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.

- July 26, 2024—Position errors in Alaska and Canada were elevated. The maximum 95% horizontal and vertical LPV errors were 1.295 meters and 2.528 meters at Juneau and Kotzebue respectively. The Kp index was 4.7.
- August 12, 2024—Position errors in CONUS, Alaska, Canada, and Mexico were elevated. The maximum 95% horizontal and vertical LPV errors were 2.818 meters and 4.014 meters at Miami and Merida respectively. The Kp index was 8.0.
- August 28, 2024—Position errors in CONUS and Canada were elevated. The maximum 95% horizontal and vertical LPV errors were 2.038 meters and 2.605 meters at Boston and Oakland respectively. The Kp index was 5.7.
- August 31, 2024—Position errors in CONUS were elevated. The maximum 95% horizontal and vertical LPV errors were 1.949 meters and 2.367 meters at Elko and Grand Forks respectively. The Kp index was 4.7.
- September 12-13, 2024—Position errors in CONUS and Mexico were elevated. The maximum 95% horizontal and vertical LPV errors were 2.540 meters and 4.580 meters at Boston and San Jose Del Cabo respectively. The Kp index was 7.0 and 6.0 respectively.

- September 17, 2024—Position errors in CONUS and Mexico were elevated. The maximum 95% horizontal and vertical LPV errors were 1.909 meters and 3.363 meters at Seattle and Puerto Vallarta respectively. The Kp index was 7.7.
- September 25, 2024—Position errors in Canada were elevated. The maximum 95% horizontal and vertical LPV errors were 1.788 meters and 2.742 meters at Winnipeg. The Kp index was 5.0.

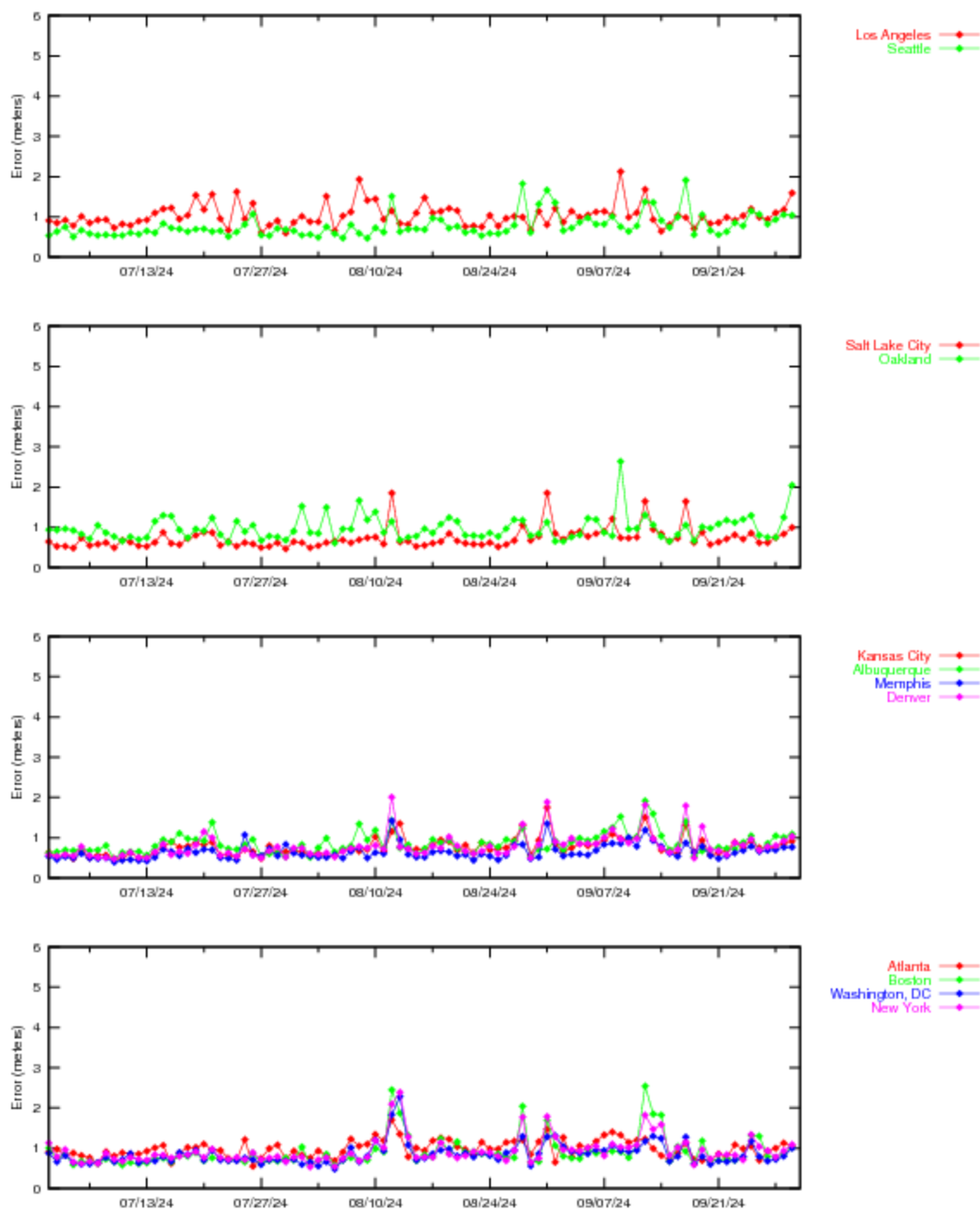


Figure 2-1 LPV 95% Horizontal Accuracy

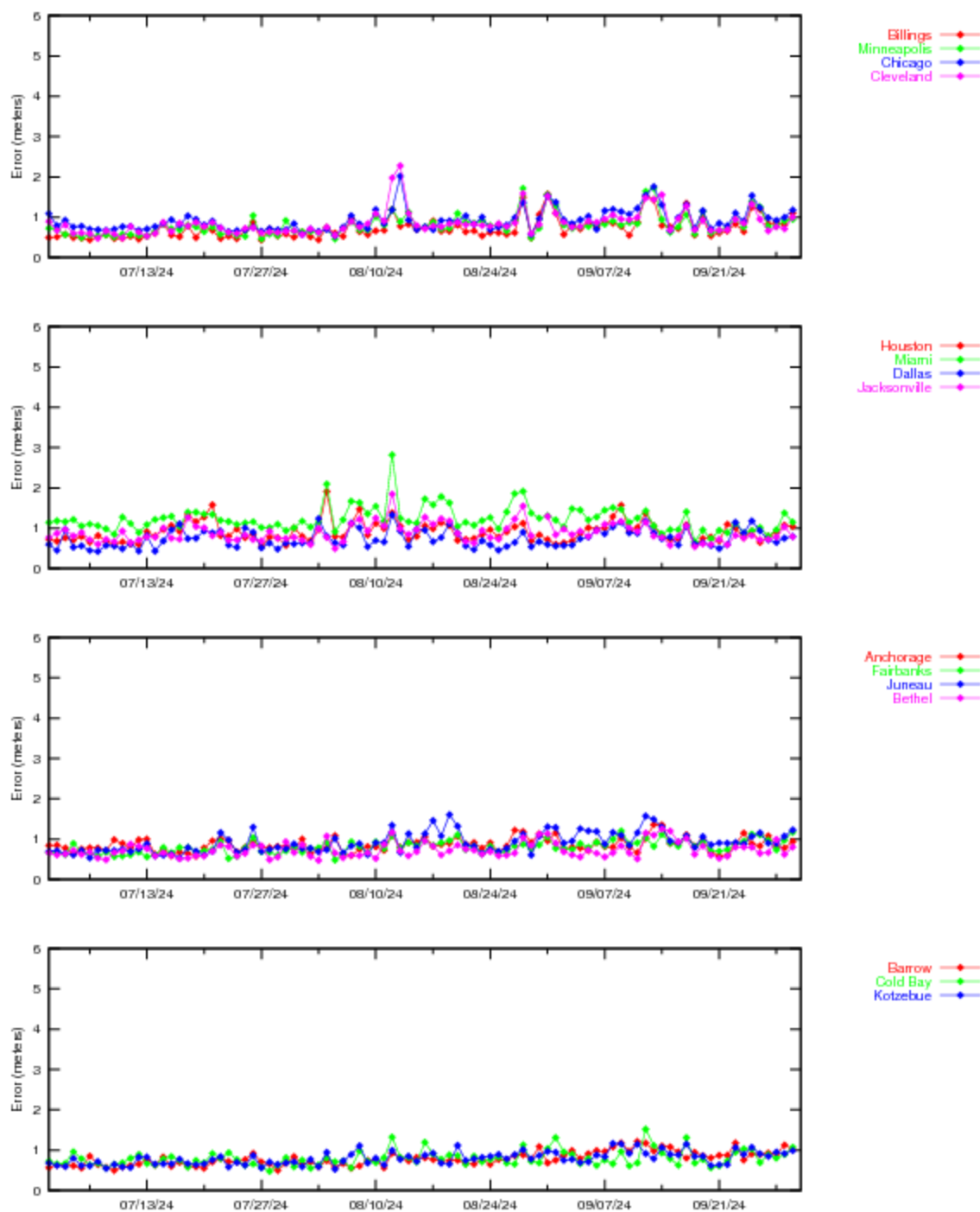


Figure 2-2 LPV 95% Horizontal Accuracy

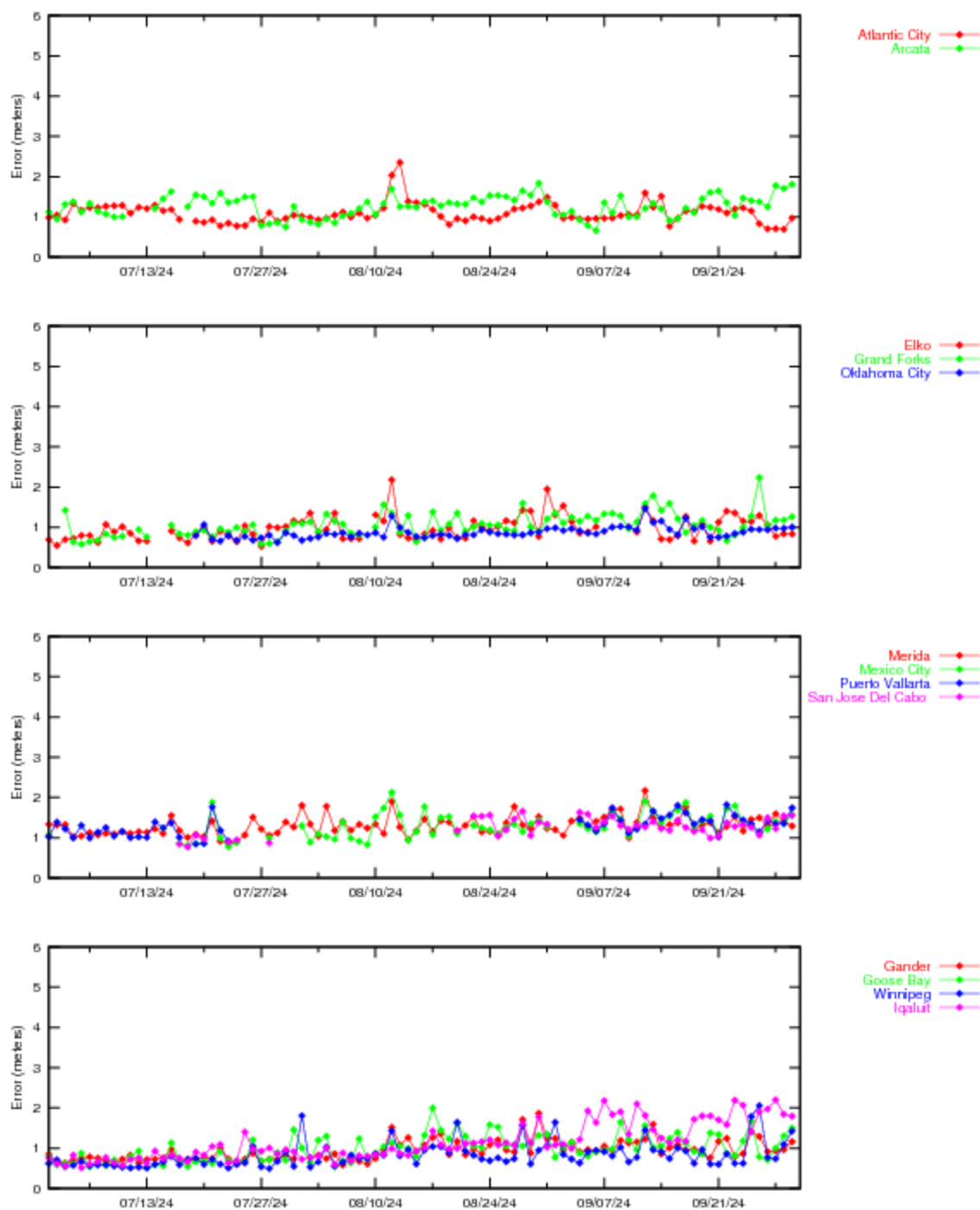


Figure 2-3 LPV 95% Horizontal Accuracy

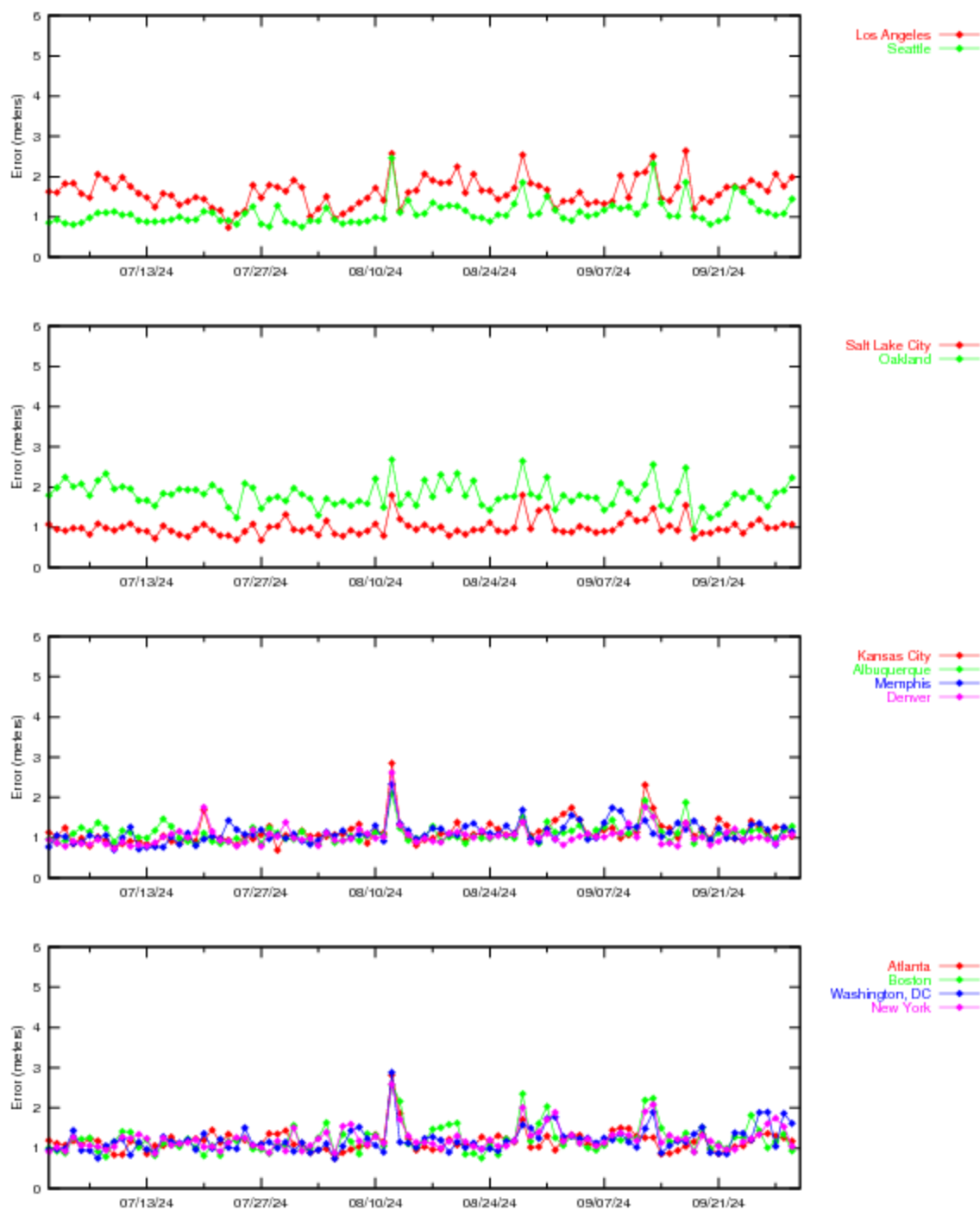


Figure 2-4 LPV 95% Vertical Accuracy

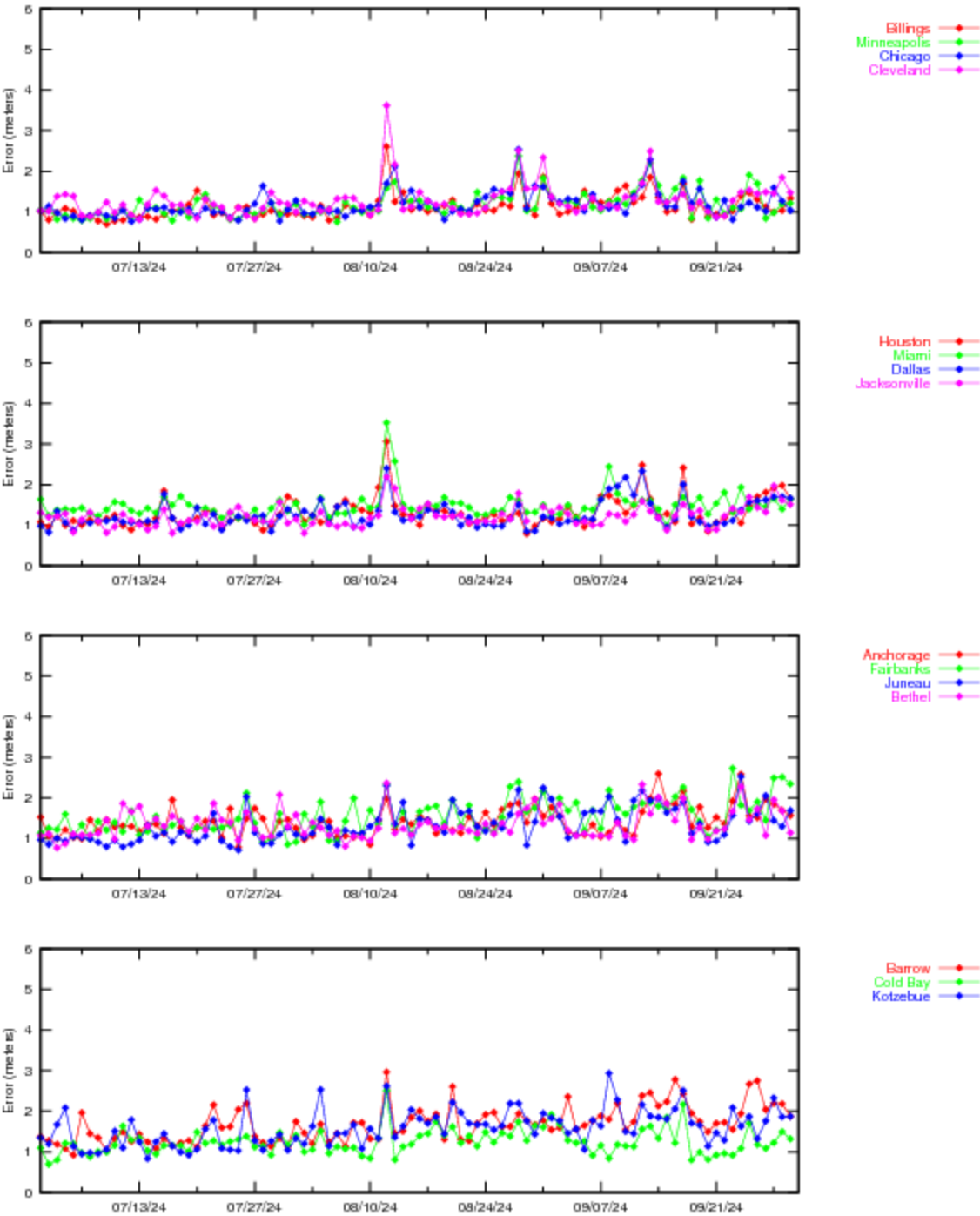


Figure 2-5 LPV 95% Vertical Accuracy

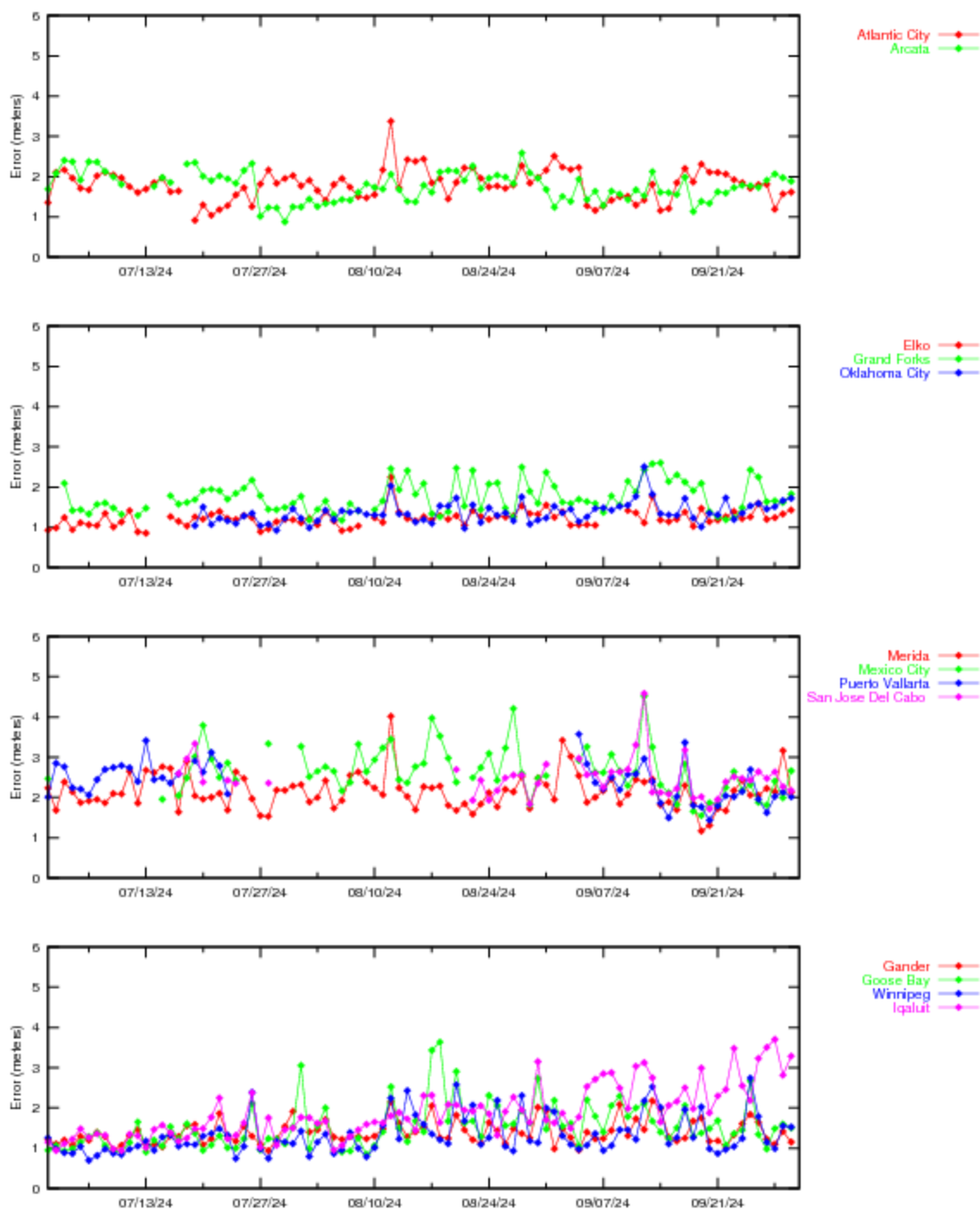


Figure 2-6 LPV 95% Vertical Accuracy

Figure 2-7 and Figure 2-8 show the daily NPA 95% horizontal accuracy at the NPA evaluation sites for the reporting period. The increases in 95% NPA position errors were due to geomagnetic activity occurred on August 12, 28, and 31 and September 12-13, 2024.

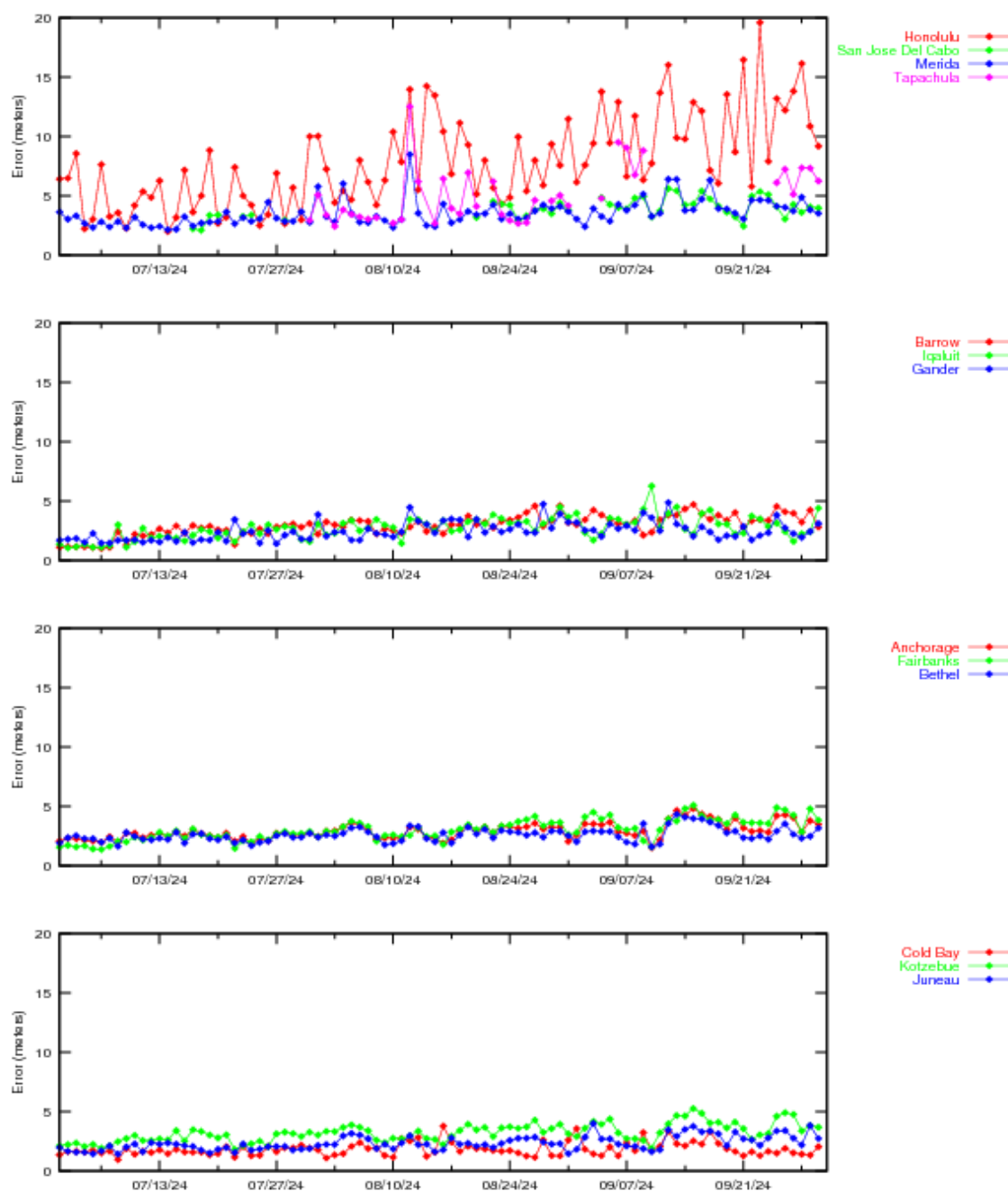


Figure 2-7 NPA 95% Horizontal Accuracy

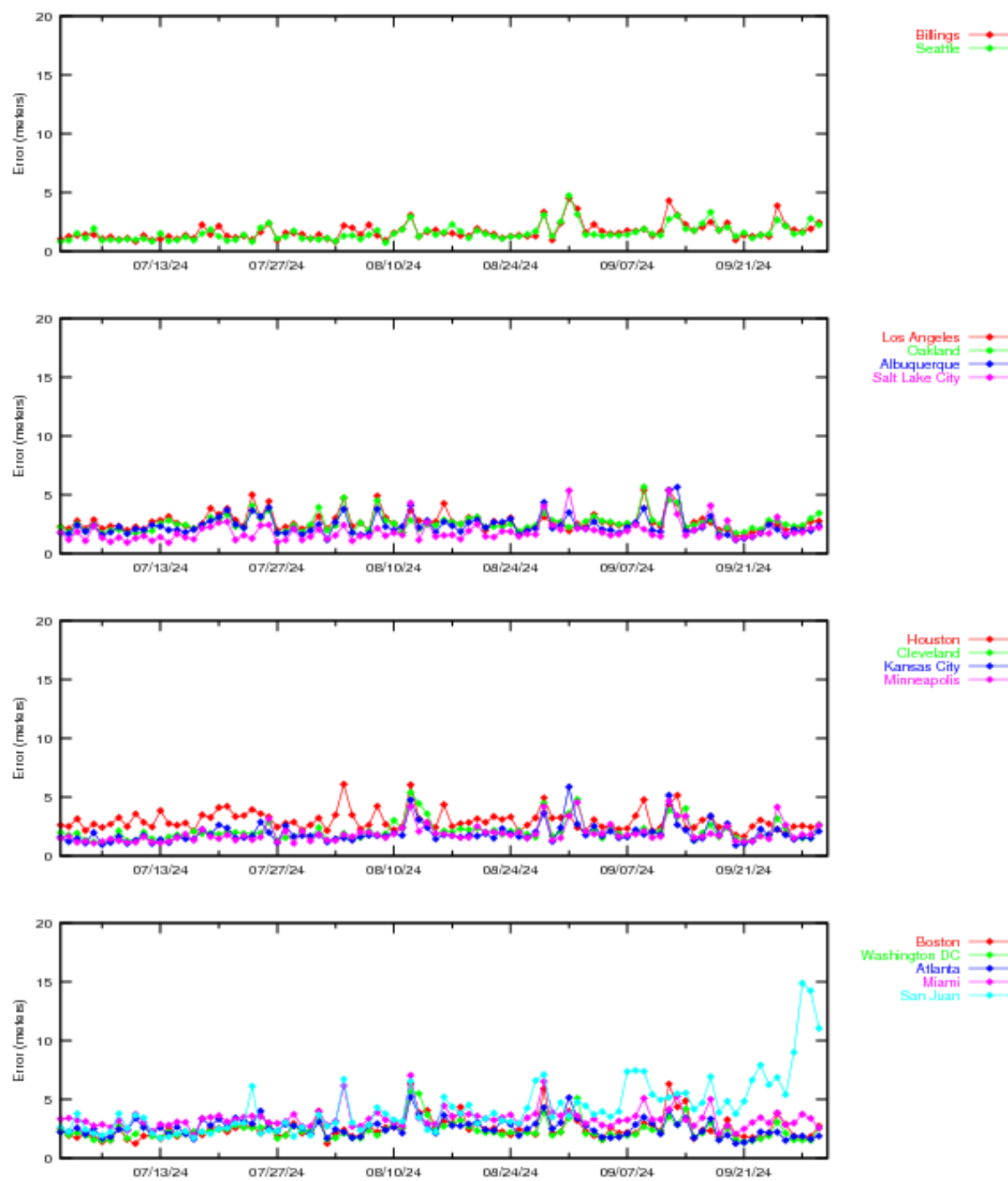


Figure 2-8 NPA 95% Horizontal Accuracy

Figure 2-9 through Figure 2-12 show the distributions of the vertical and horizontal errors at all 38 WAAS receiver for the quarter. Figure 2-9 and Figure 2-10 show the triangular distributions of vertical position error (VPE) versus VPL and horizontal position error (HPE) versus HPL: (1) the horizontal axis is the position error, (2) the vertical axis is the WAAS protection level where lower protection levels equate to better availability, (3) the diagonal line shows the point where error equals protection level, (4) above and to the left of the diagonal line show where errors are bounded (WAAS is providing integrity in the position domain), and (5) below and to the right show where errors are not bounded (HMI could be present). In Figure 2-9, the dip at 4.5 m was due to ionospheric activity. This is also reflected in Figure 2-11. 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.

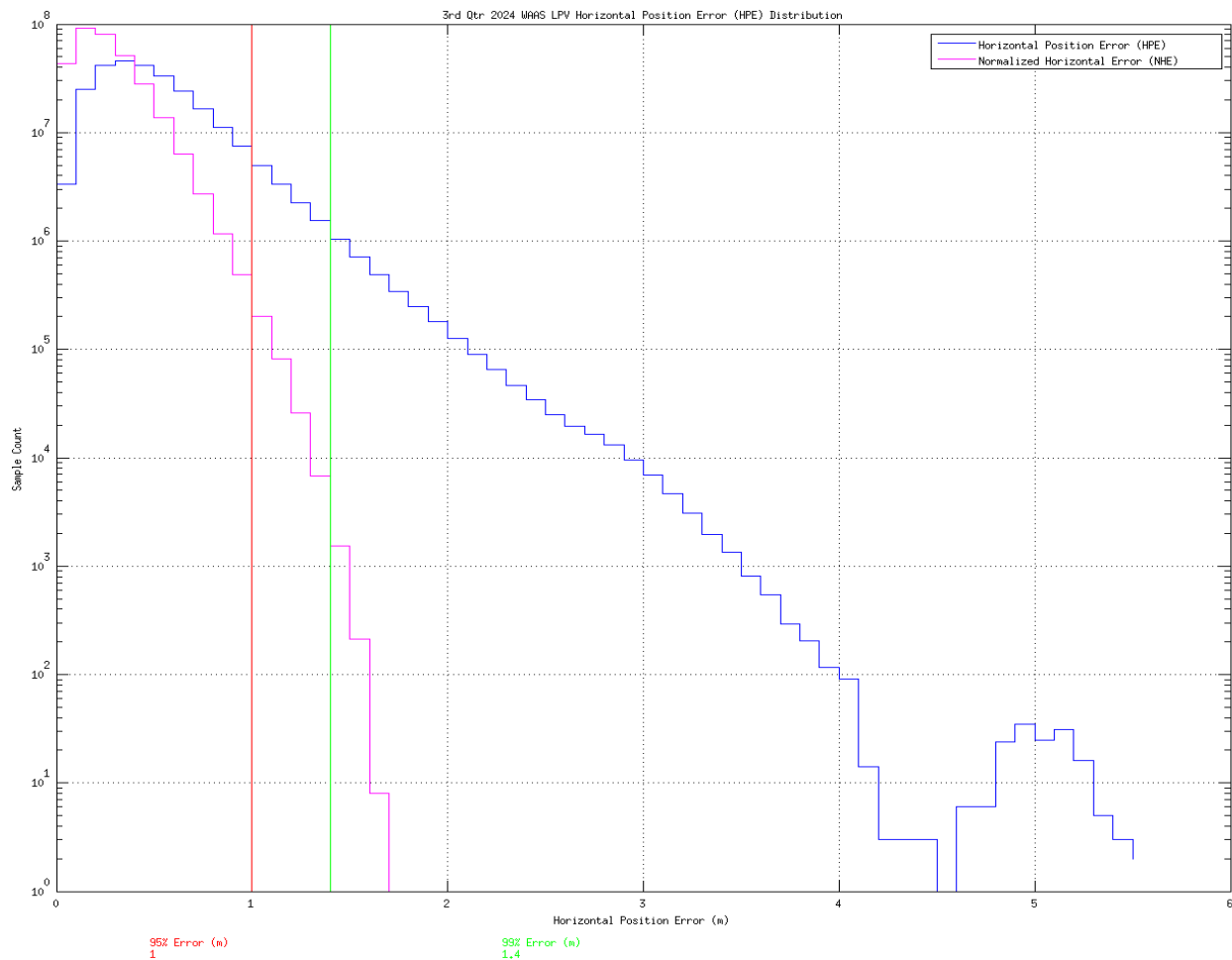


Figure 2-9 LPV Horizontal Error Bounding Triangle Chart

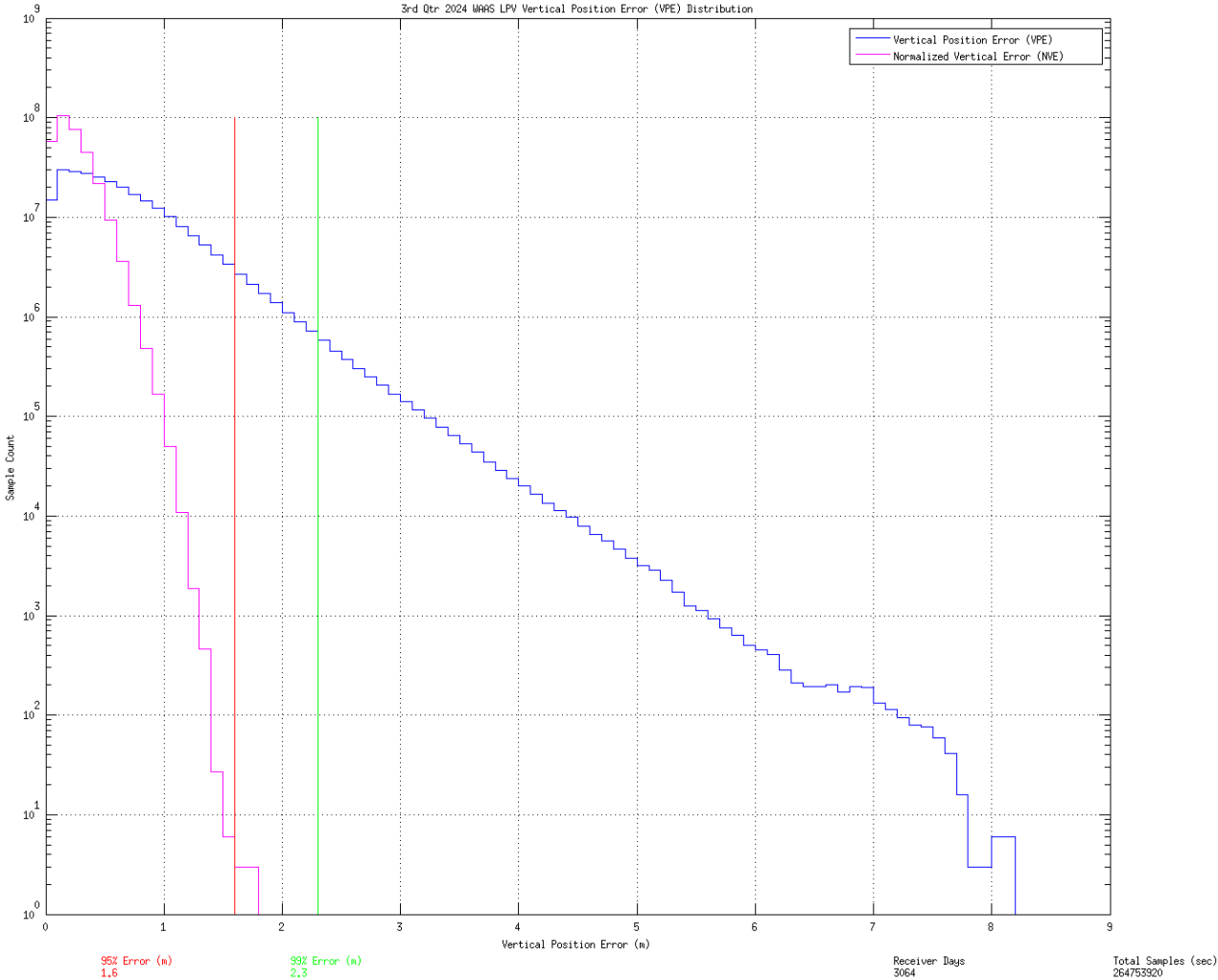


Figure 2-10 LPV Vertical Error Bounding Triangle Chart

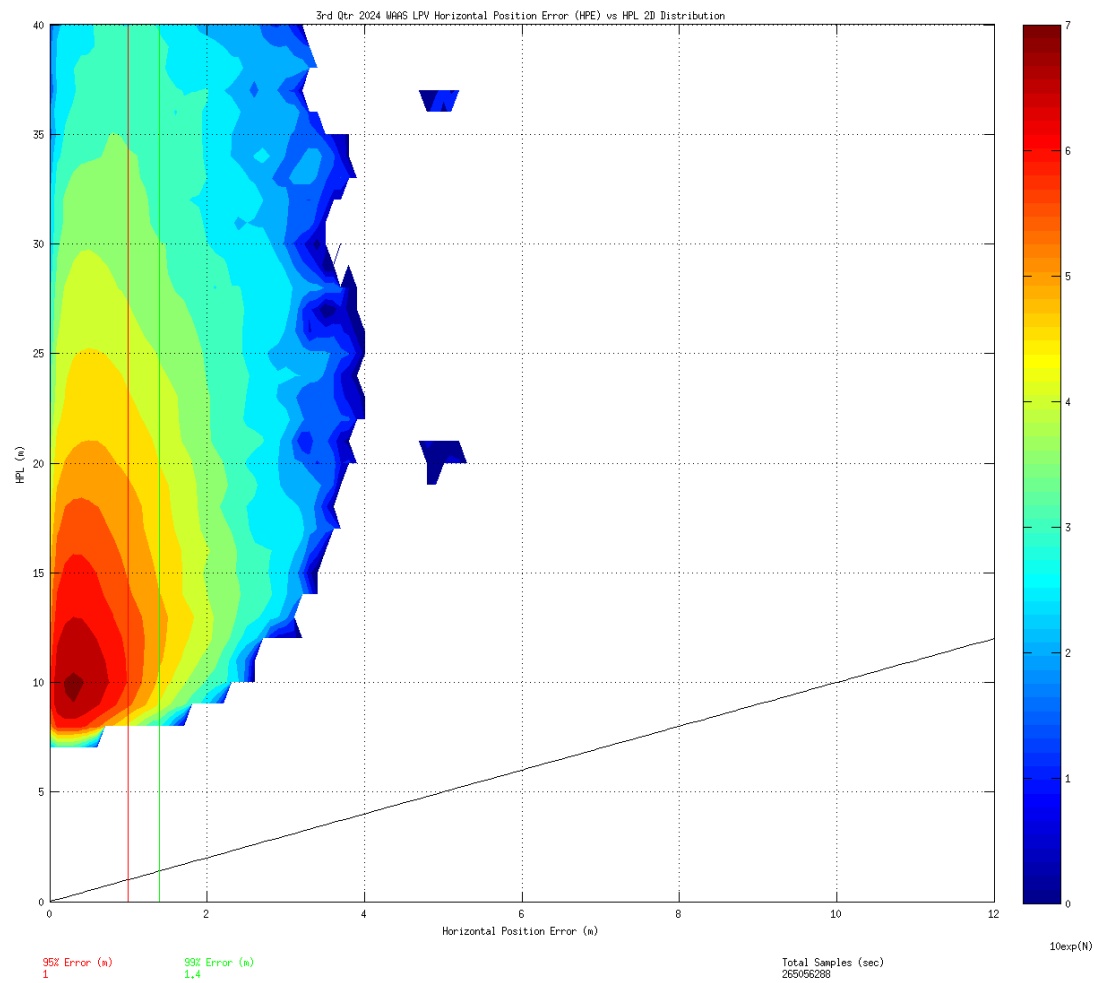


Figure 2-11 LPV 2-D Horizontal Error Distribution Histogram

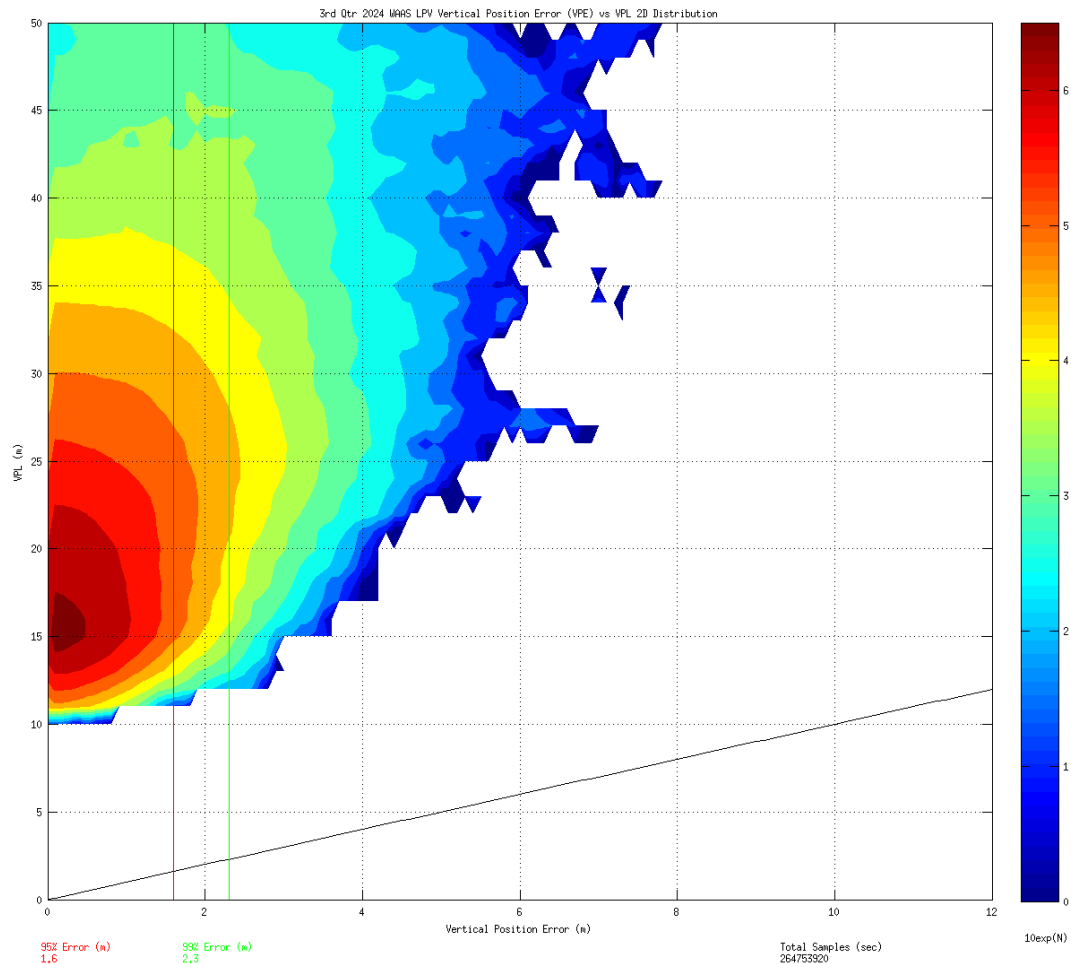


Figure 2-12 LPV 2-D Vertical Error Distribution Histogram

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 21.912 meters observed at Miami
- The maximum 99% CONUS VPL was 33.295 meters observed at Miami
- The minimum 99% CONUS HPL was 11.159 meters observed at Salt Lake City
- The minimum 99% CONUS VPL was 20.702 meters observed at Billings
- The maximum 99% Alaska HPL was 21.224 meters observed at Cold Bay
- The maximum 99% Alaska VPL was 30.654 meters observed at Barrow
- The minimum 99% Alaska HPL was 14.743 meters observed at Fairbanks
- The minimum 99% Alaska VPL was 23.824 meters observed at Anchorage

Table 3-1 99% Protection Level

Location	99% HPL (m)	99% VPL (m)	PA mode (%)
Arcata	16.262	29.317	100
Atlantic City	14.729	24.097	100
Elko	13.431	22.870	100
Grand Forks	14.520	23.469	100
Oklahoma City	12.184	22.49	100
Albuquerque	13.191	28.943	100
Anchorage	14.952	23.824	100
Atlanta	12.288	22.879	100
Barrow	17.412	30.654	100
Bethel	16.429	25.987	100
Billings	12.174	20.702	100
Boston	16.089	22.430	100
Chicago	11.890	23.164	100
Cleveland	14.822	22.414	100
Cold Bay	21.224	30.213	100
Dallas	12.186	22.199	100
Denver	11.269	23.484	100
Fairbanks	14.743	25.383	100
Gander	25.417	34.771	99.999
Goose Bay	24.735	32.347	100
Houston	13.734	25.399	100
Iqaluit	38.894	50.973	100
Jacksonville	14.240	25.628	100
Juneau	15.458	24.854	100
Kansas City	11.216	23.121	100
Kotzebue	16.023	28.174	100
Los Angeles	13.413	30.649	100
Memphis	11.569	24.124	100
Merida	29.176	55.839	100
Mexico City	33.214	64.002	100
Miami	21.912	33.295	100
Minneapolis	12.596	21.844	100
New York	15.208	23.596	100
Oakland	13.546	30.378	100
Puerto Vallarta	30.272	53.154	100
Salt Lake City	11.159	22.623	100
San Jose Del Cabo	26.168	50.349	100
Seattle	14.683	24.457	100
Washington, DC	13.679	22.296	100
Winnipeg	14.926	23.774	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	99.92	99.92	99.77
Atlantic City	99.96	99.96	99.9
Elko	99.96	99.96	99.95
Grand Forks	99.7	99.67	99.55
Oklahoma City	99.93	99.91	99.78
Albuquerque	100	99.98	99.92
Anchorage	99.87	99.79	99.66
Atlanta	99.93	99.91	99.82
Barrow	99.85	99.83	99.55
Bethel	99.87	99.86	99.77
Billings	99.87	99.84	99.7
Boston	99.93	99.92	99.84
Chicago	99.77	99.74	99.72
Cleveland	99.86	99.84	99.75
Cold Bay	99.91	99.88	99.56
Dallas	99.95	99.95	99.87
Denver	99.92	99.91	99.85
Fairbanks	99.86	99.79	99.65
Gander	99.54	99.5	98.8
Goose Bay	99.48	99.45	99.04
Houston	99.98	99.94	99.84
Iqaluit	98.79	98.33	93.46
Jacksonville	99.89	99.83	99.8
Juneau	99.82	99.71	99.47
Kansas City	99.82	99.79	99.77
Kotzebue	99.93	99.81	99.66
Los Angeles	100	99.99	99.91

Location	LP WAAS With 15-Minute Window (%)	LPV WAAS With 15-Minute Window (%)	LPV200 WAAS With 15-Minute Window (%)
Memphis	99.95	99.93	99.89
Merida	99.3	98.18	92.84
Mexico City	99.32	97.53	86.36
Miami	99.63	99.54	99.08
Minneapolis	99.73	99.72	99.69
New York	99.97	99.97	99.9
Oakland	99.98	99.98	99.77
Puerto Vallarta	99.56	98.45	81.71
Salt Lake City	99.95	99.95	99.93
San Jose Del Cabo	99.56	98.68	89.67
Seattle	99.92	99.92	99.87
Washington, DC	99.94	99.92	99.85
Winnipeg	99.73	99.69	99.59

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

Location	LP Outages (Number)	LP Outage Rates	LPV Outages (Number)	LPV Outage Rates	LPV200 Outages (Number)	LPV200 Outage Rates
Arcata	2	0.000040	2	0.000040	12	0.000242
Atlantic City	2	0.000039	2	0.000039	4	0.000078
Elko	1	0.000020	1	0.000020	2	0.000041
Grand Forks	3	0.000062	6	0.000124	7	0.000144
Oklahoma City	2	0.000047	3	0.000071	3	0.000071
Albuquerque	0	0.000000	2	0.000038	6	0.000113
Anchorage	6	0.000113	7	0.000132	12	0.000227
Atlanta	2	0.000038	3	0.000057	3	0.000057
Barrow	4	0.000076	5	0.000095	23	0.000436
Bethel	4	0.000076	4	0.000076	7	0.000132
Billings	3	0.000057	3	0.000057	5	0.000095
Boston	2	0.000038	2	0.000038	5	0.000095
Chicago	1	0.000019	1	0.000019	2	0.000038
Cleveland	4	0.000076	5	0.000095	2	0.000038
Cold Bay	7	0.000132	7	0.000132	29	0.000550
Dallas	2	0.000038	2	0.000038	5	0.000095
Denver	2	0.000038	2	0.000038	3	0.000057
Fairbanks	5	0.000094	6	0.000113	14	0.000265
Gander	16	0.000305	16	0.000305	45	0.000863
Goose Bay	11	0.000209	11	0.000209	20	0.000381
Houston	3	0.000057	4	0.000076	8	0.000151

Location	LP Outages (Number)	LP Outage Rates	LPV Outages (Number)	LPV Outage Rates	LPV200 Outages (Number)	LPV200 Outage Rates
Iqaluit	81	0.001574	121	0.002363	424	0.008711
Jacksonville	3	0.000057	3	0.000057	4	0.000076
Juneau	5	0.000095	8	0.000152	18	0.000342
Kansas City	2	0.000038	2	0.000038	2	0.000038
Kotzebue	6	0.000114	6	0.000114	20	0.000381
Los Angeles	0	0.000000	1	0.000019	15	0.000283
Memphis	1	0.000019	2	0.000038	3	0.000057
Merida	14	0.000267	111	0.002143	238	0.004859
Mexico City	12	0.000312	142	0.003764	570	0.017062
Miami	7	0.000133	8	0.000152	38	0.000724
Minneapolis	3	0.000057	2	0.000038	3	0.000057
New York	1	0.000019	1	0.000019	6	0.000113
Oakland	1	0.000019	1	0.000019	14	0.000265
Puerto Vallarta	6	0.000215	111	0.004027	470	0.020541
Salt Lake City	1	0.000019	1	0.000019	1	0.000019
San Jose Del Cabo	4	0.000159	58	0.002329	285	0.012594
Seattle	1	0.000019	1	0.000019	7	0.000132
Washington, DC	3	0.000057	3	0.000057	5	0.000095
Winnipeg	4	0.000076	4	0.000076	9	0.000171

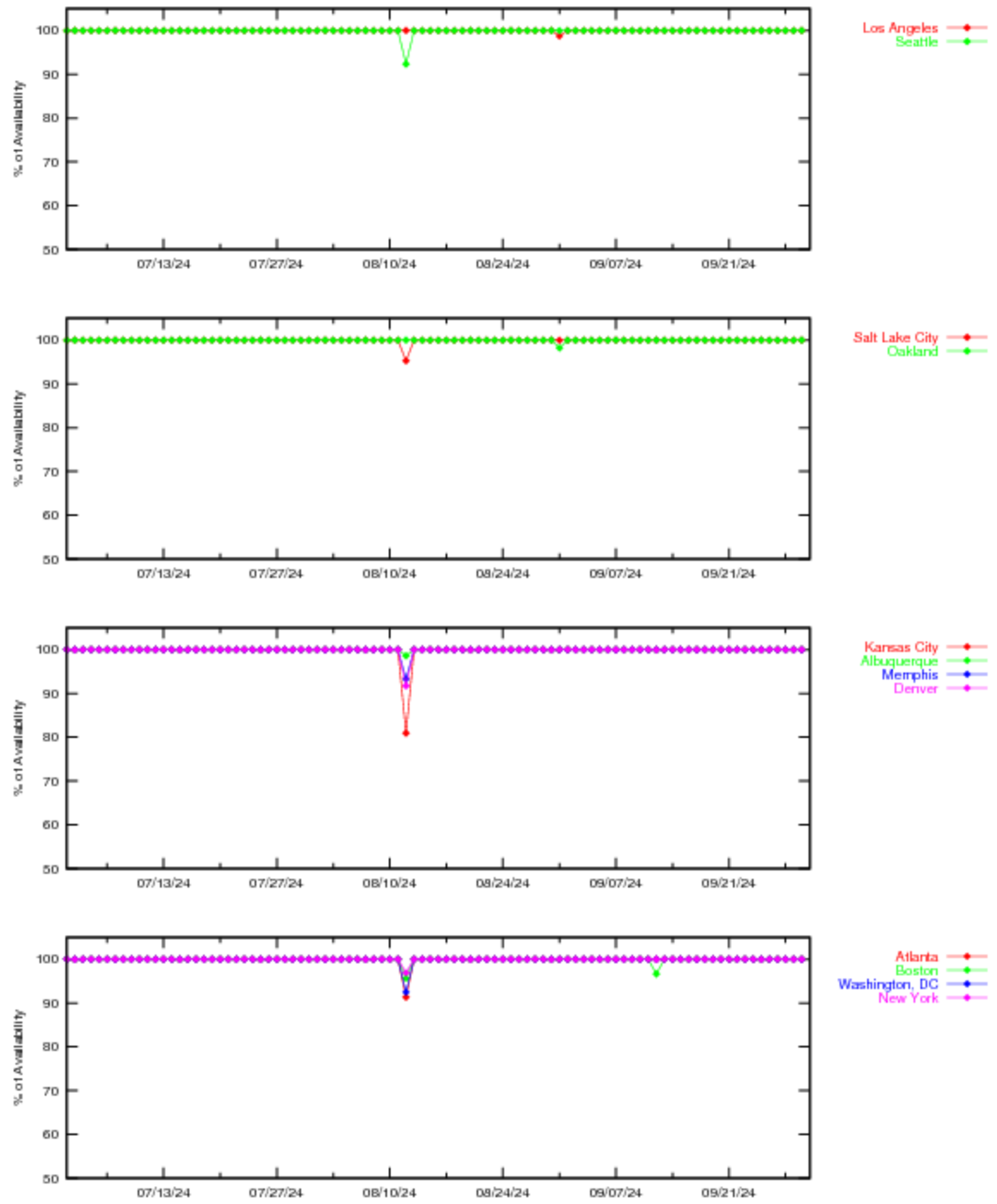


Figure 3-1 LPV Instantaneous Availability

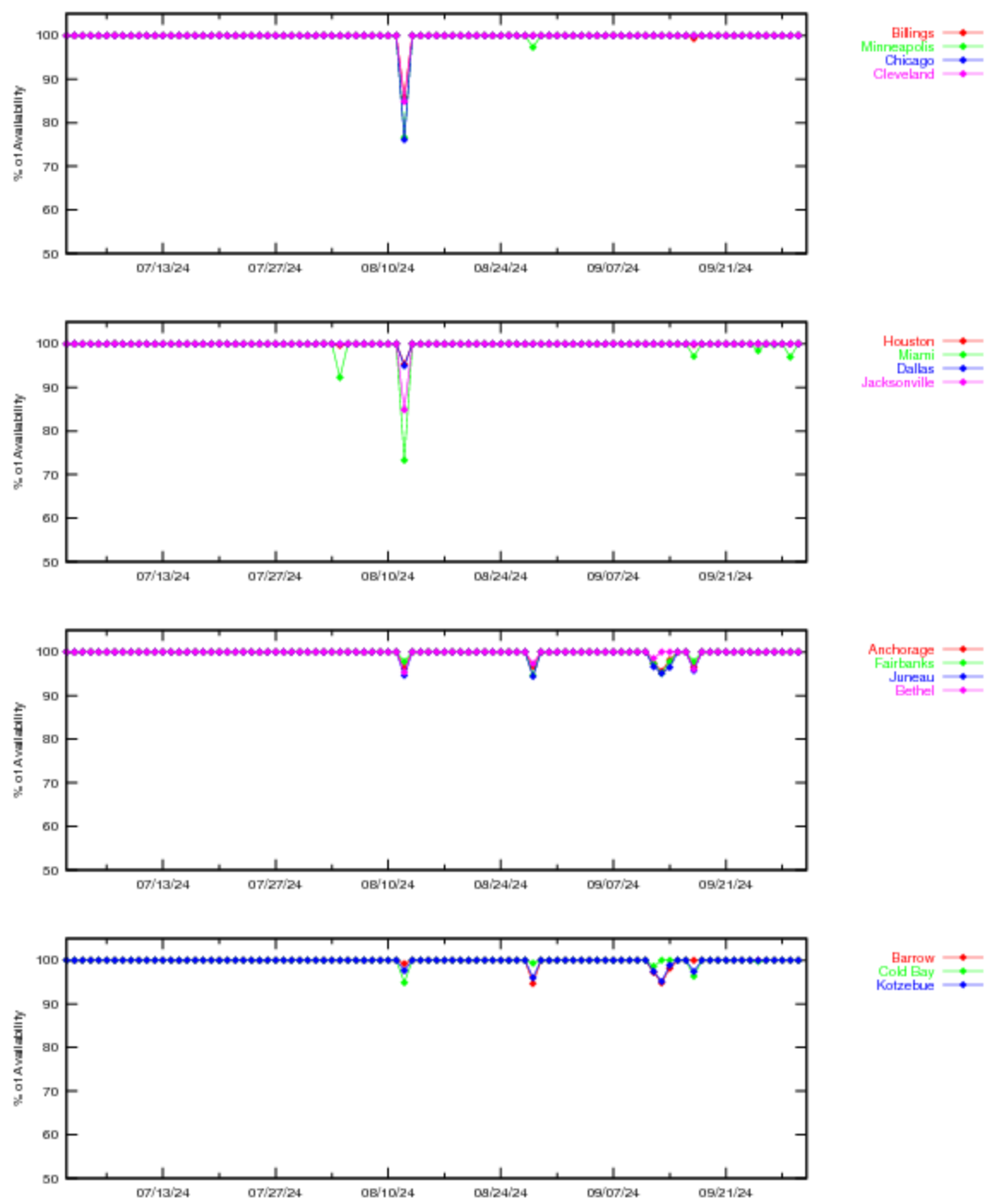


Figure 3-2 LPV Instantaneous Availability

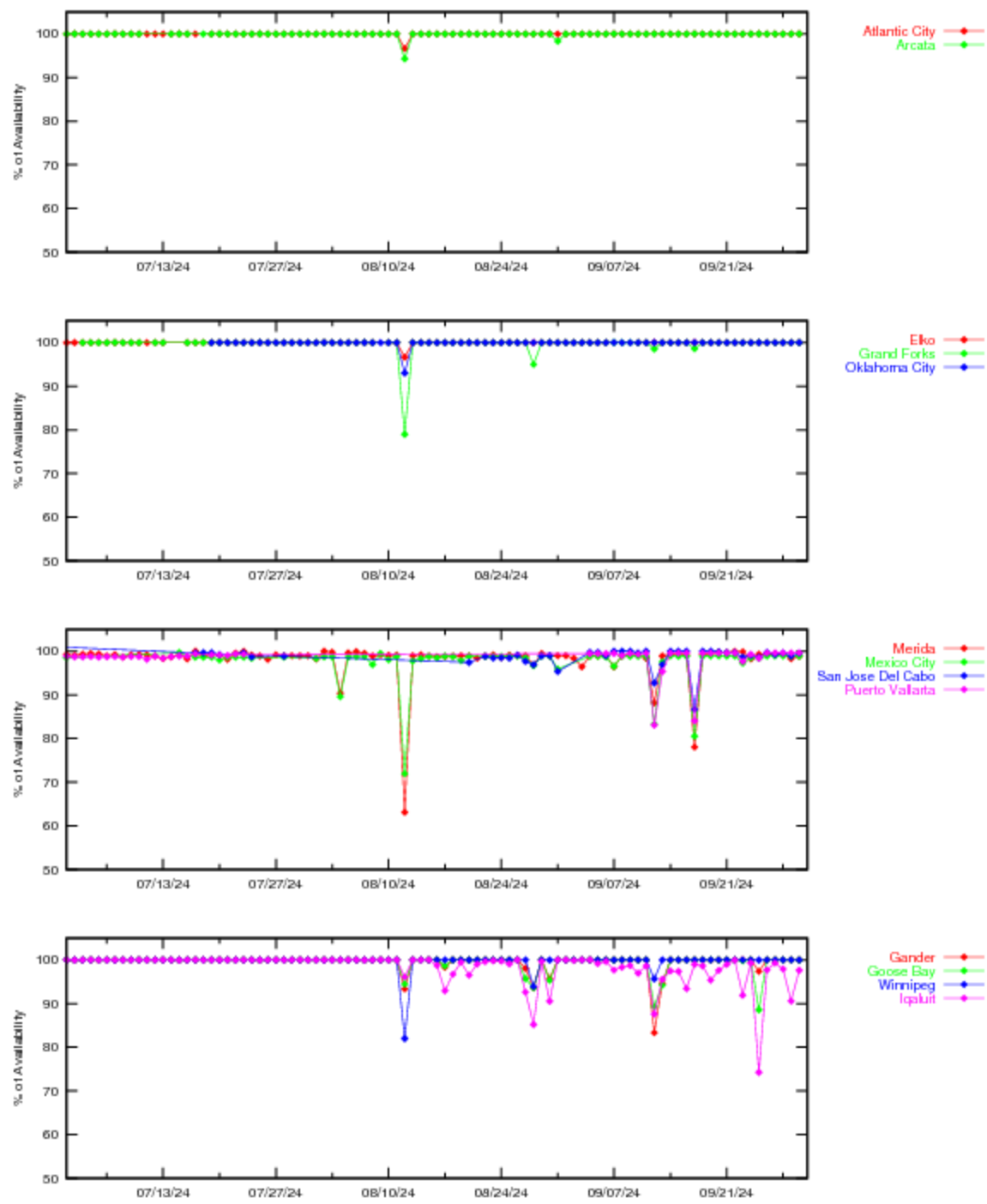


Figure 3-3 LPV Instantaneous Availability

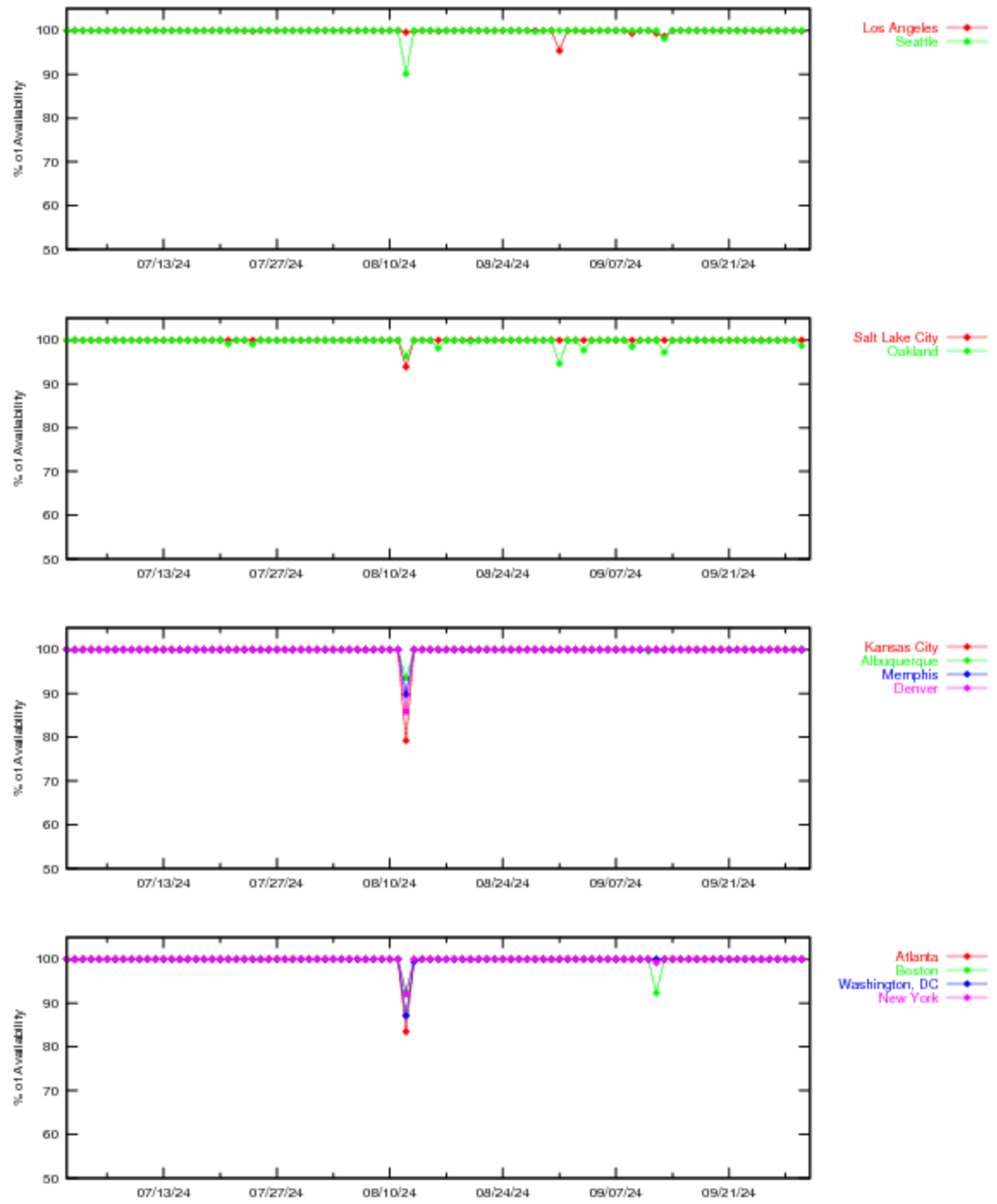


Figure 3-4 LPV200 Instantaneous Availability

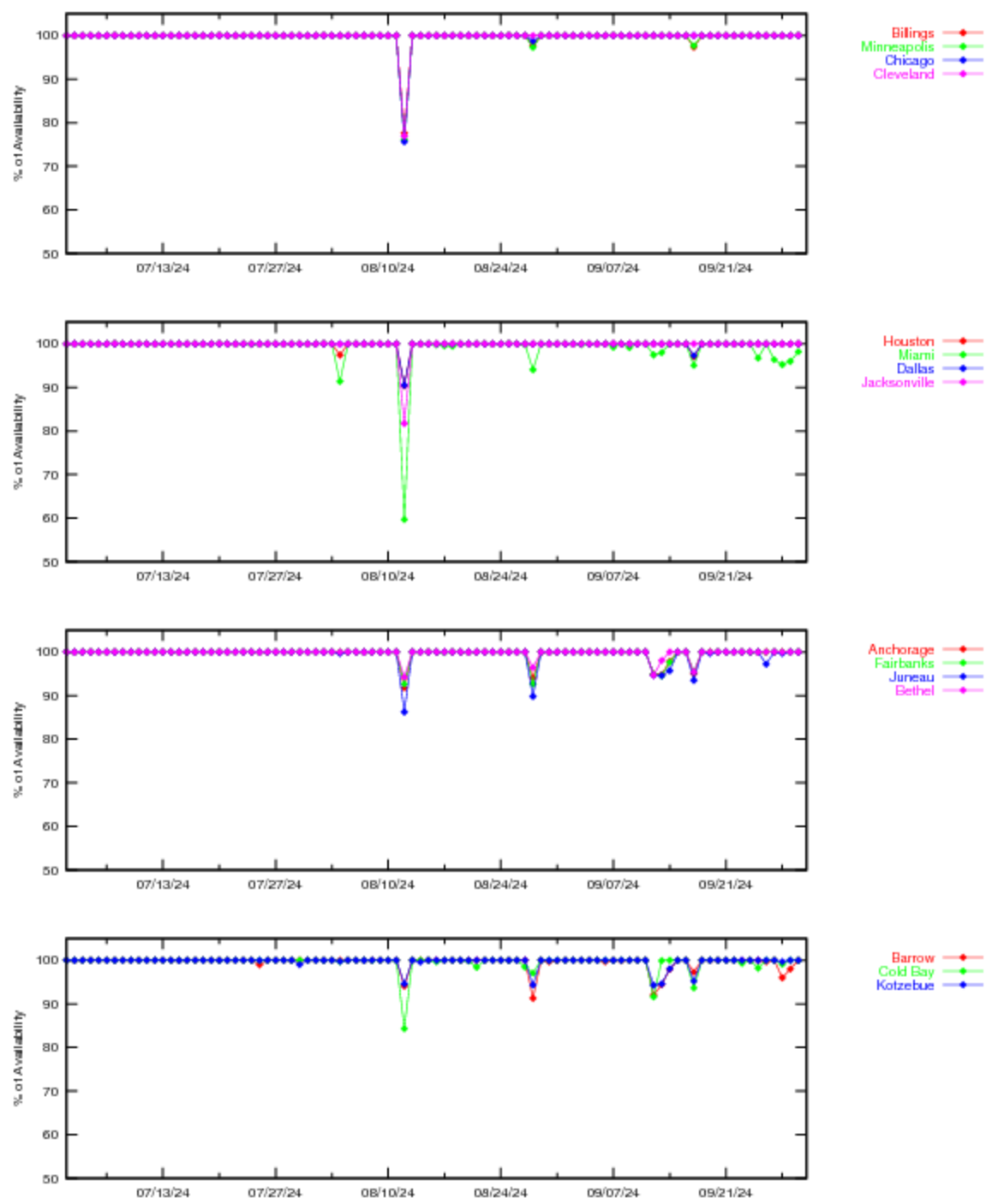


Figure 3-5 LPV200 Instantaneous Availability

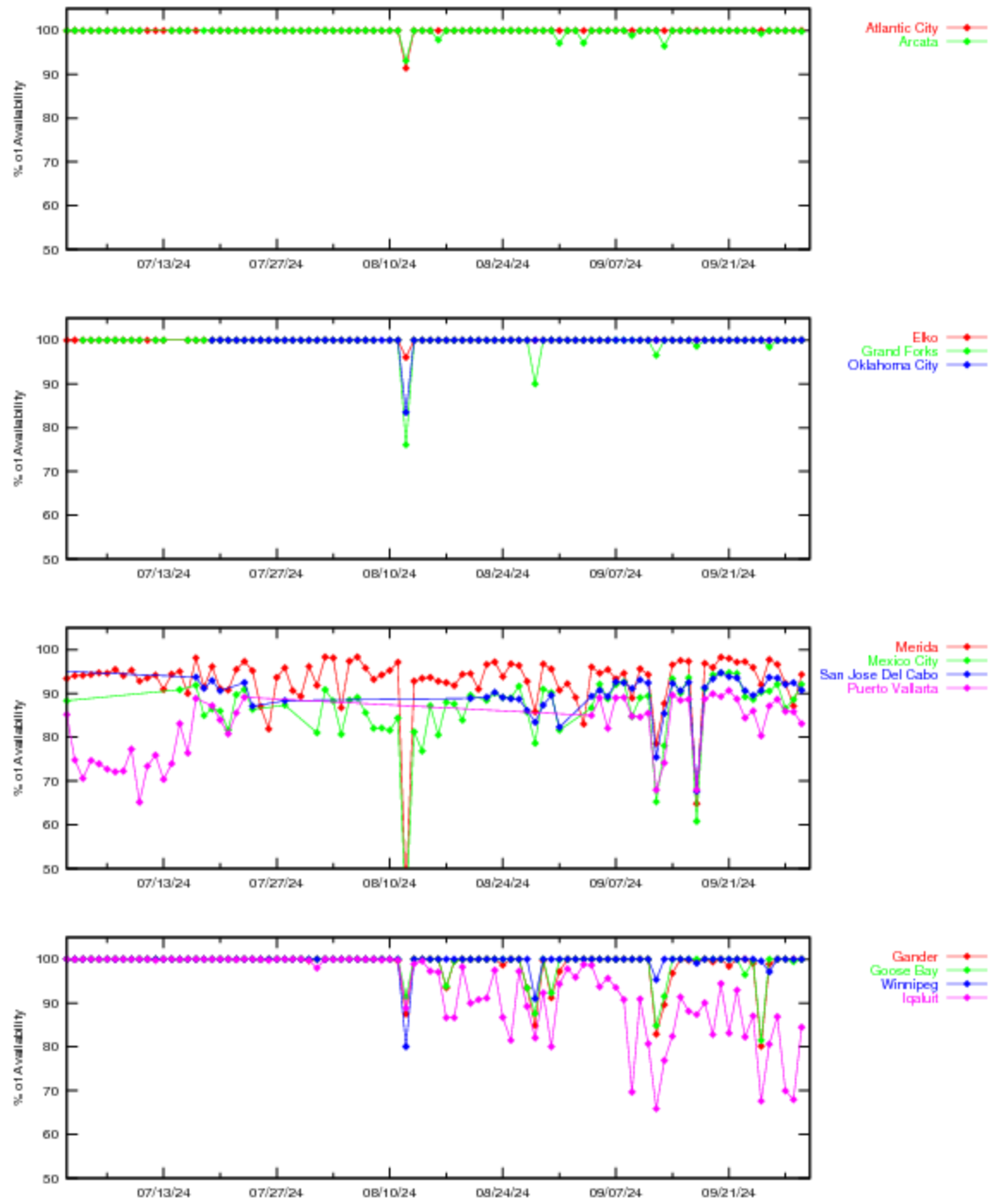


Figure 3-6 LPV200 Instantaneous Availability

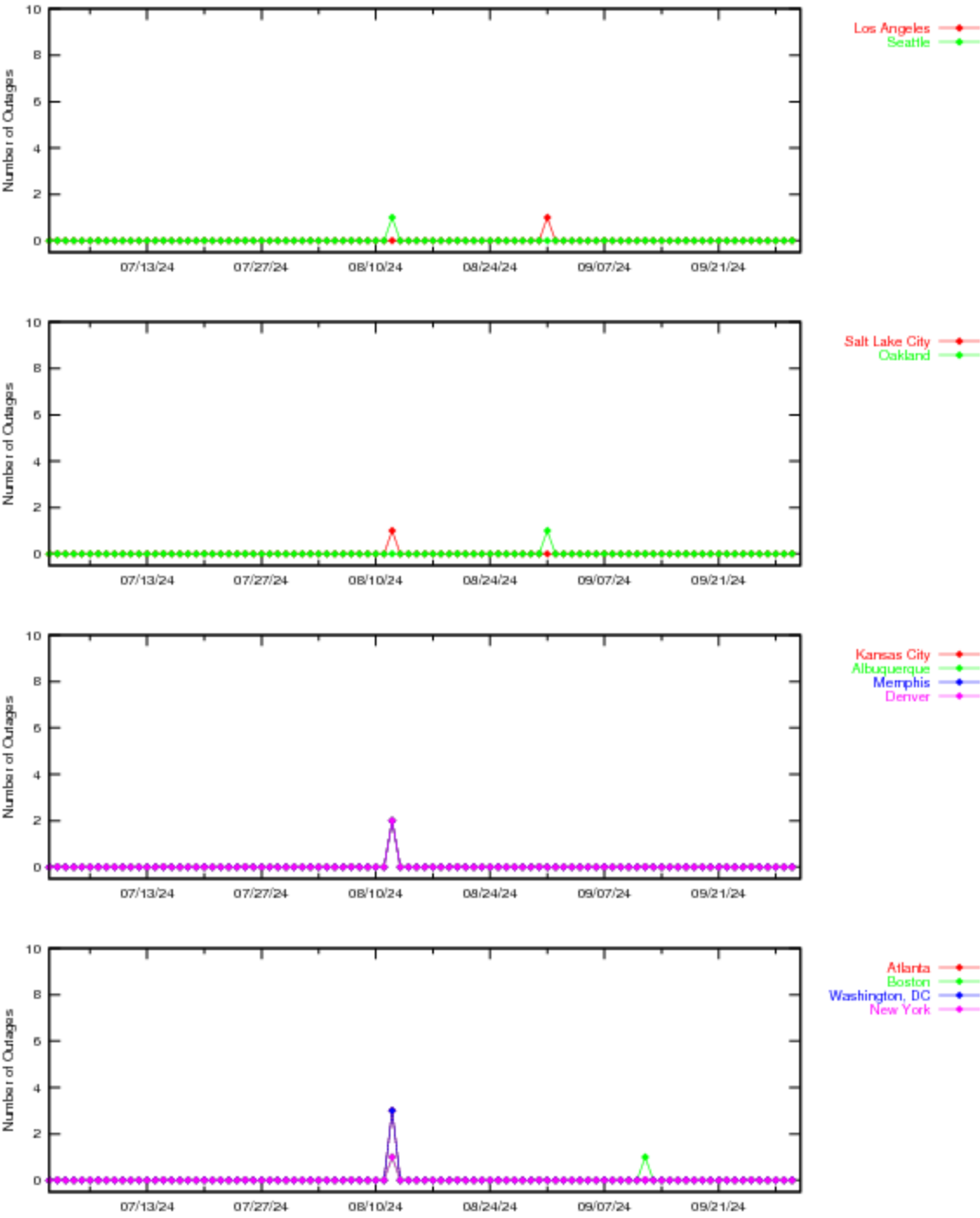


Figure 3-7 LPV Outages

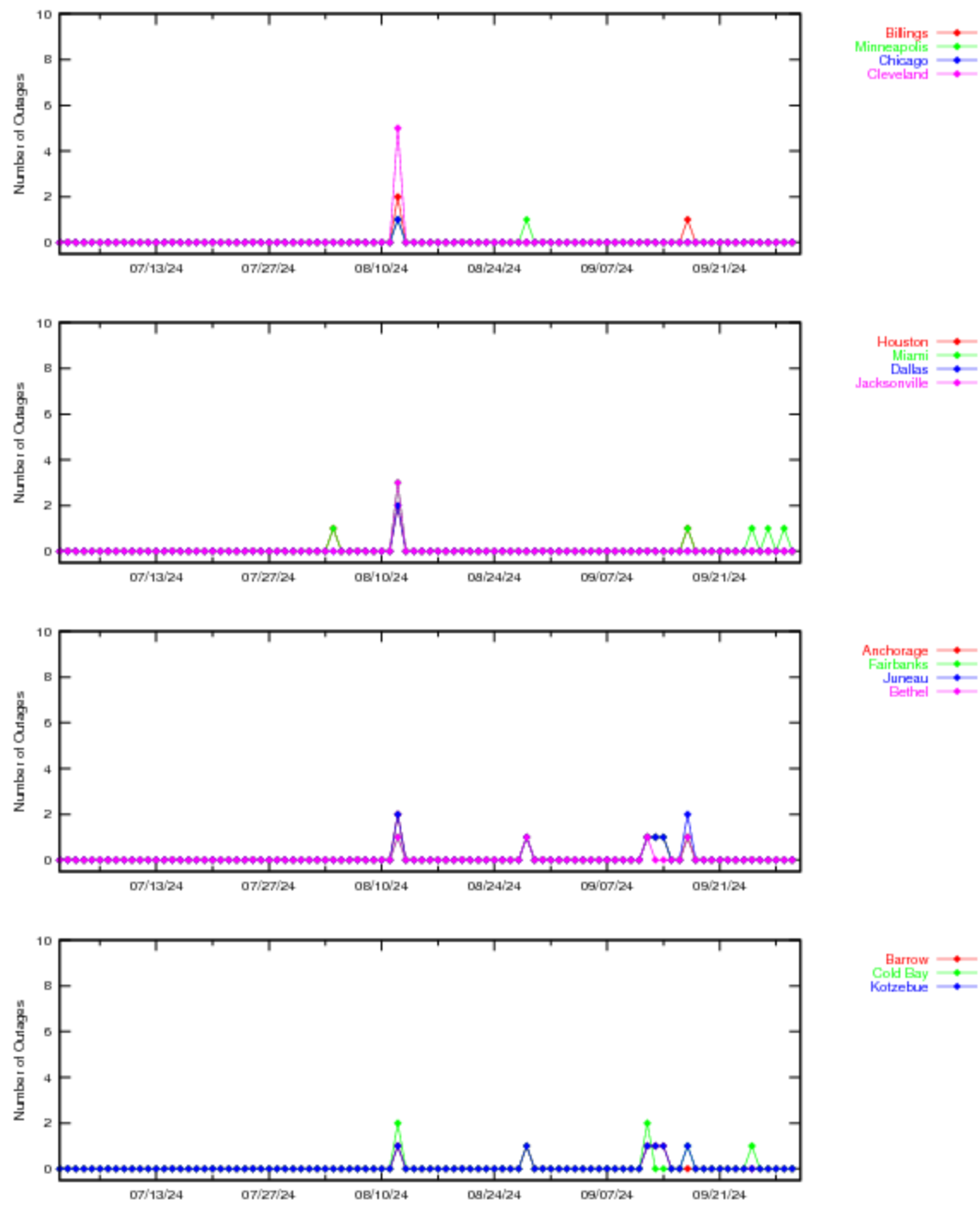


Figure 3-8 LPV Outages

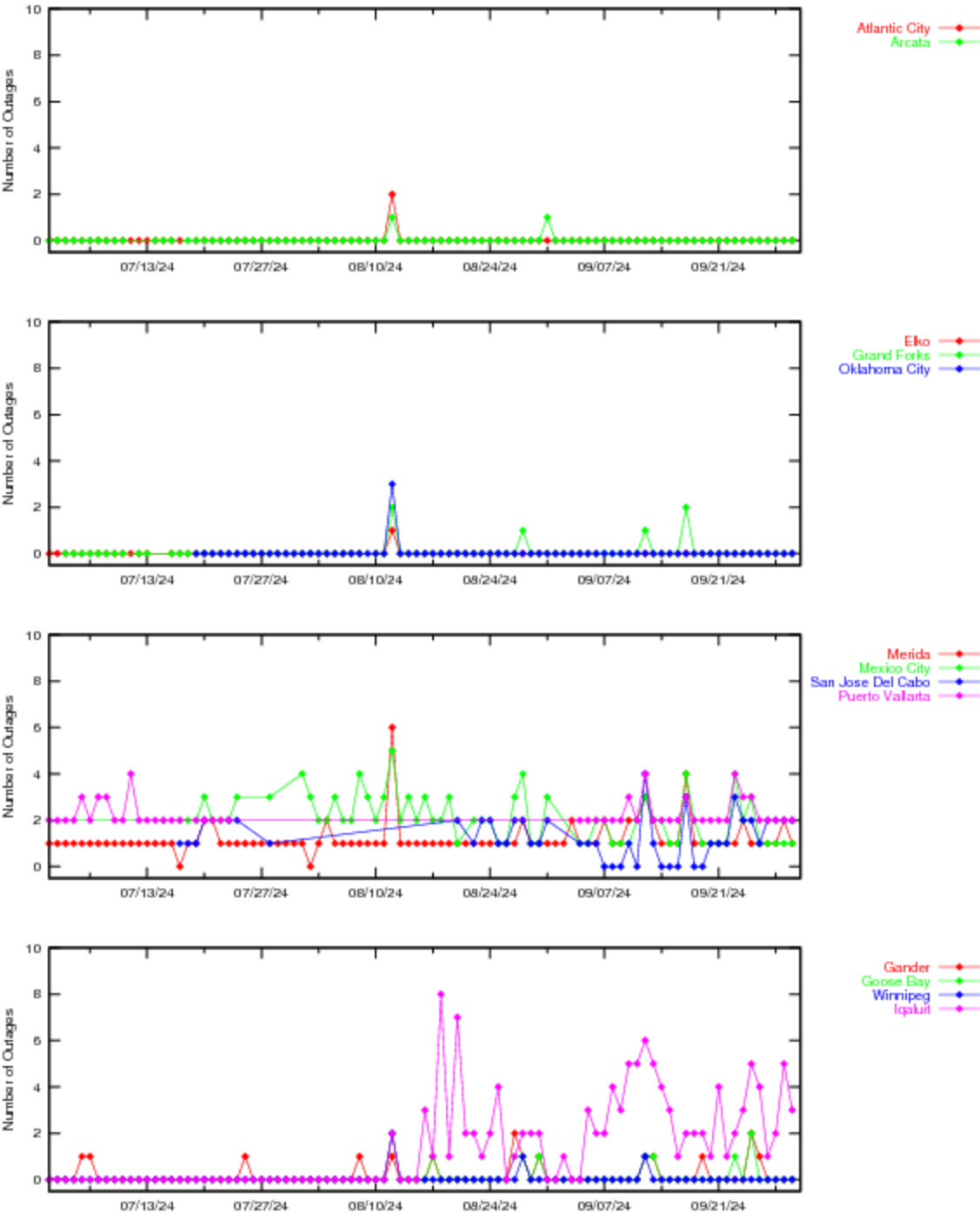


Figure 3-9 LPV Outages

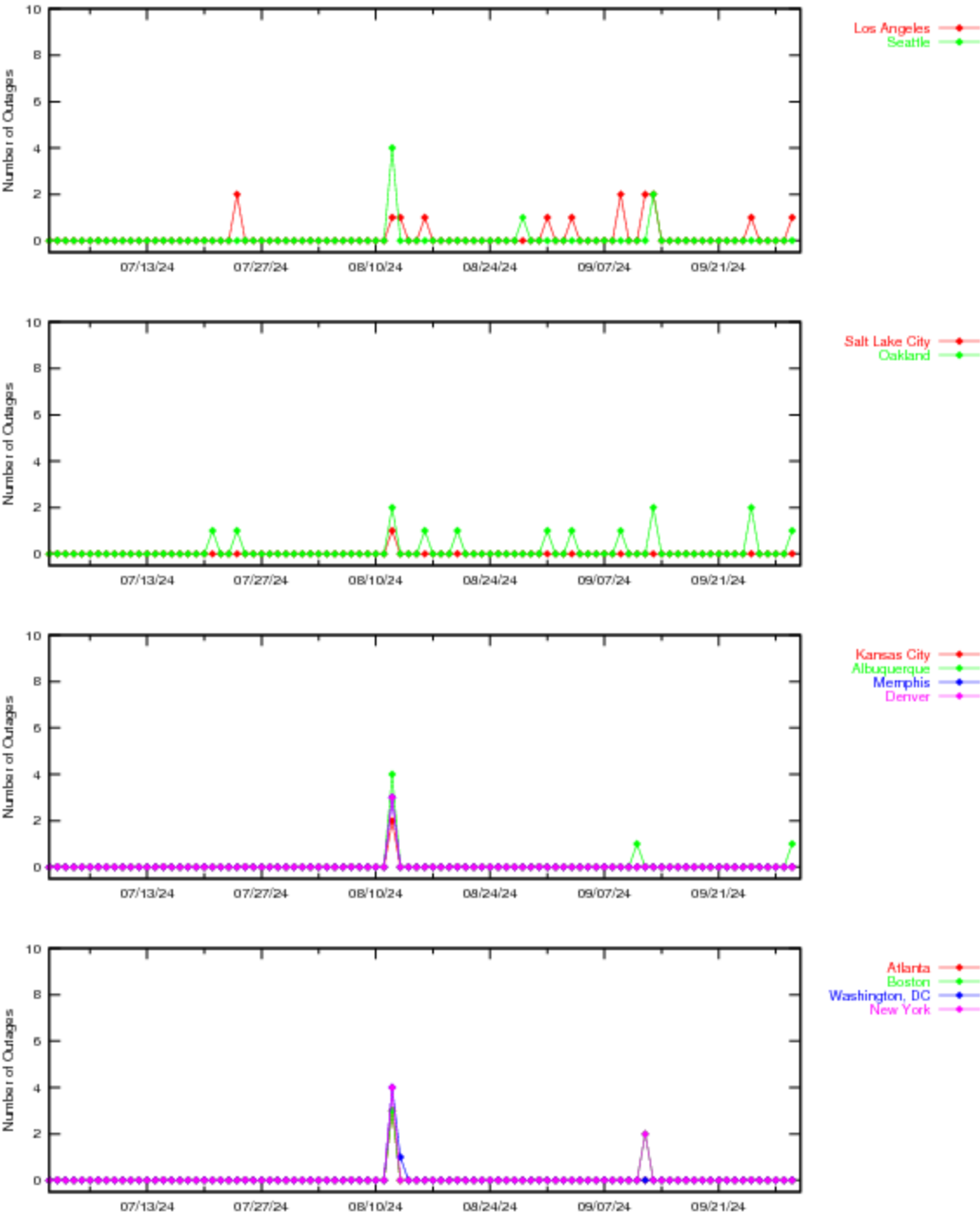


Figure 3-10 LPV200 Outages

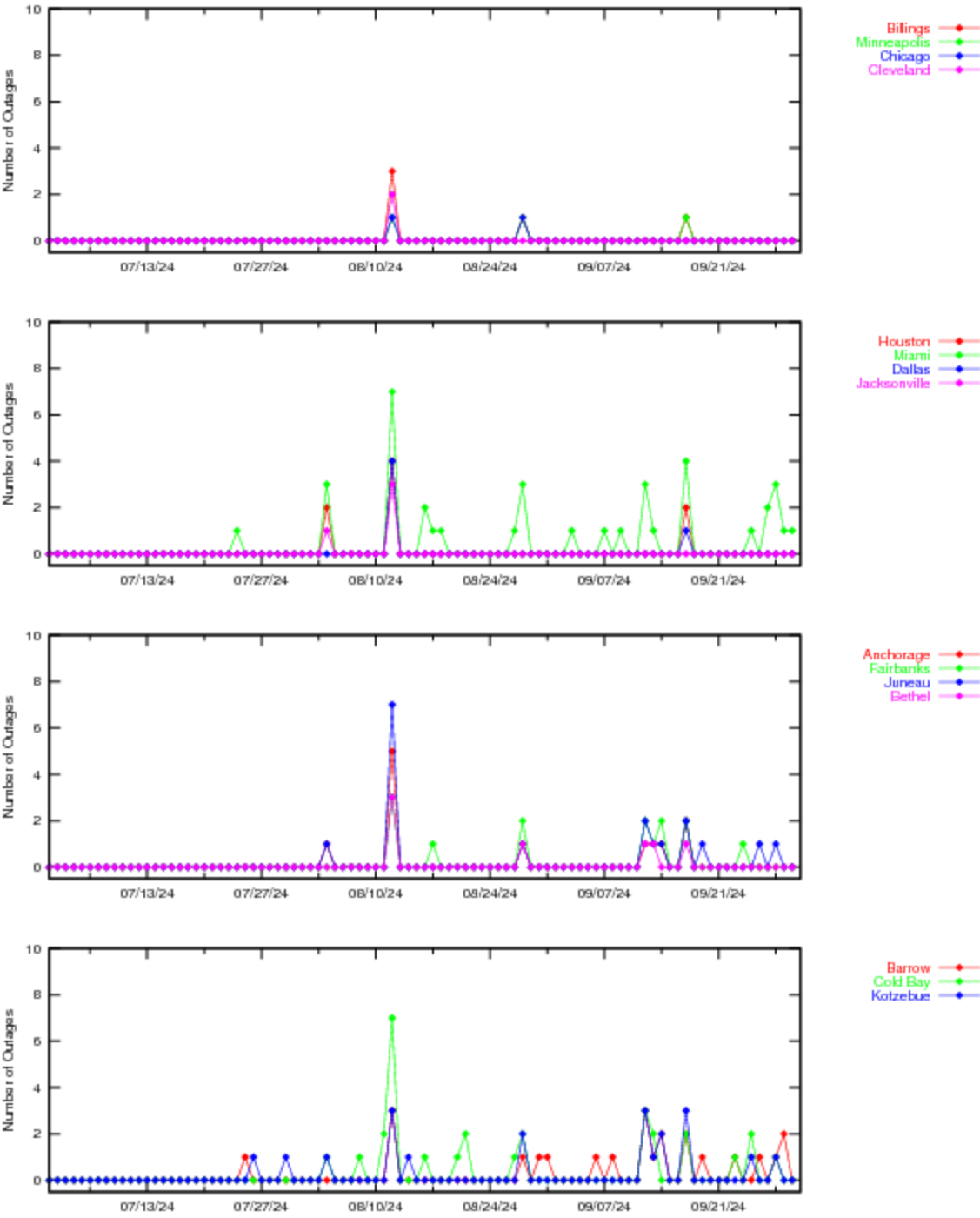


Figure 3-11 LPV200 Outages



Figure 3-12 LPV200 Outages

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

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

Location	NPA Availability (Excluding RAIM/FDE) (%)
Arcata	100
Atlantic City	100
Bangor	100
Elko	100
Grand Forks	100
Oklahoma City	100
Albuquerque	100
Anchorage	100
Atlanta	100
Barrow	100
Bethel	100
Billings	100
Boston	100
Cleveland	100
Cold Bay	100
Fairbanks	100
Gander	99.9995
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

Location	NPA Availability (Excluding RAIM/FDE) (%)
Tapachula	100
Washington, DC	100

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

Location	NPA Outages (Number)	NPA Outage Rates
Oklahoma City	0	0
Albuquerque	0	0
Anchorage	0	0
Atlanta	0	0
Barrow	0	0
Bethel	0	0
Billings	0	0
Boston	0	0
Cleveland	0	0
Cold Bay	0	0
Fairbanks	0	0
Gander	4	0.000075
Honolulu	0	0
Houston	0	0
Iqaluit	0	0
Juneau	0	0
Kansas City	0	0
Kotzebue	0	0
Los Angeles	0	0
Merida	0	0
Miami	0	0
Minneapolis	0	0
Oakland	0	0
Salt Lake City	0	0
San Jose Del Cabo	0	0
San Juan	0	0
Seattle	0	0
Tapachula	0	0
Washington, DC	0	0

The availability decreases for this quarter were due to satellite outages, geomagnetic activity, communication outages, radio frequency interference (RFI), and elevated UDREi and GIVE values. Gander NPA outages are a result of GEO PRN131 missed navigation messages on 07/05/2024, 07/25/2024, 08/08/2024, and 09/19/2024. Gander is in a single

GEO coverage zone and affected by GEO PRN131 outages. Northeast WAAS coverage boundaries were not affected by GEO PRN131 outages. Noteworthy events that affected availability are:

- Jul 5 – Geomagnetic activity increased GIVES and reduced LPV200 availability in Canada.
- Jul 26 -- Geomagnetic activity increased GIVES and reduced LPV200 availability in CONUS and Canada.
- Aug 1 – Geomagnetic activity increased GIVES and reduced LPV200 availability in Canada.
- Aug 4 – Geomagnetic activity increased GIVES and reduced LPV in CONUS and LPV200 availability in CONUS and Canada.
- Aug 8 – Satellite maintenance elevated UDREs on PRN 13 and reduced LPV200 availability in CONUS.
- Aug 12 – There were CCC trips on all GEOs elevating their UDREs.
- Aug 12 – Geomagnetic activity increased GIVES and reduced LPV and LPV200 availability in CONUS, Alaska, and Canada.
- Aug 13 – Geomagnetic activity increased GIVES and reduced LPV200 availability in CONUS and Canada.
- Aug 14 – Geomagnetic activity increased GIVES and reduced LPV200 availability in Canada.
- Aug 16 – Geomagnetic activity increased GIVES and reduced LPV200 availability in CONUS and Canada.
- Aug 17 – Geomagnetic activity increased GIVES and reduced LPV availability in Canada and LPV200 availability in CONUS and Canada.
- Aug 18 – Geomagnetic activity increased GIVES and reduced LPV200 availability in Canada.
- Aug 19 – Geomagnetic activity increased GIVES and reduced LPV200 availability in Canada.
- Aug 20 – Geomagnetic activity increased GIVES and reduced LPV availability in Canada and LPV200 availability in CONUS and Canada.
- Aug 21 – Geomagnetic activity increased GIVES and reduced LPV and LPV200 availability in Canada.
- Aug 22 – Geomagnetic activity increased GIVES and reduced LPV200 availability in Canada.
- Aug 23 – Geomagnetic activity increased GIVES and reduced LPV200 availability in Canada.
- Aug 24 – Geomagnetic activity increased GIVES and reduced LPV200 availability in CONUS and Canada.
- Aug 25 – Geomagnetic activity increased GIVES and reduced LPV200 availability in Canada.
- Aug 27 – Geomagnetic activity increased GIVES and reduced LPV and LPV200 availability in Canada.
- Aug 28 – Geomagnetic activity increased GIVES and reduced LPV and LPV200 availability in CONUS, Alaska, and Canada.
- Aug 30 – Geomagnetic activity increased GIVES and reduced LPV and LPV200 availability in Canada.
- Aug 31 – Geomagnetic activity increased GIVES and reduced LPV availability in CONUS and LPV200 availability in CONUS and Canada.
- Sep 1 – Geomagnetic activity increased GIVES and reduced LPV availability in Canada and LPV200 availability in CONUS and Canada.
- Sep 2 – Geomagnetic activity increased GIVES and reduced LPV200 availability in CONUS and Canada.
- Sep 3 – Geomagnetic activity increased GIVES and reduced LPV200 availability in Canada.
- Sep 4 – Geomagnetic activity increased GIVES and reduced LPV200 availability in Canada.

- Sep 5 – Geomagnetic activity increased GIVES and reduced LPV and LPV200 availability in Canada.
- Sep 6 – Geomagnetic activity increased GIVES and reduced LPV200 availability in Alaska and Canada.
- Sep 7 – Geomagnetic activity increased GIVES and reduced LPV200 availability in CONUS and Canada.
- Sep 8 – Geomagnetic activity increased GIVES and reduced LPV200 availability in Canada.
- Sep 9 – Geomagnetic activity increased GIVES and reduced LPV200 availability in Canada.
- Sep 10 – Geomagnetic activity increased GIVES and reduced LPV and LPV200 availability in Canada.
- Sep 11 – Geomagnetic activity increased GIVES and reduced LPV availability in Canada and LPV200 availability in CONUS and Canada.
- Sep 12 – Geomagnetic activity increased GIVES and reduced LPV and LPV200 availability in CONUS, Alaska, and Canada.
- Sep 13 – Geomagnetic activity increased GIVES and reduced LPV availability in Alaska and Canada and LPV200 availability in CONUS, Alaska, and Canada.
- Sep 14 – Geomagnetic activity increased GIVES and reduced LPV and LPV200 availability in Alaska and Canada.
- Sep 15 – Geomagnetic activity increased GIVES and reduced LPV and LPV200 availability in Canada.
- Sep 16 – Geomagnetic activity increased GIVES and reduced LPV and LPV200 availability in Canada.
- Sep 17 – Geomagnetic activity increased GIVES and reduced LPV and LPV200 availability in CONUS, Alaska, and Canada.
- Sep 19 – Geomagnetic activity increased GIVES and reduced LPV and LPV200 availability in Canada.
- Sep 20 – Geomagnetic activity increased GIVES and reduced LPV200 availability in Canada.
- Sep 21 – Geomagnetic activity increased GIVES and reduced LPV200 availability in Canada.
- Sep 22 – Geomagnetic activity increased GIVES and reduced LPV200 availability in Canada.
- Sep 23 – Geomagnetic activity increased GIVES and reduced LPV and LPV200 availability in Canada.
- Sep 24 – 25 – Geomagnetic activity increased GIVES and reduced LPV200 availability in Canada.
- Sep 25 – 26 – Geomagnetic activity increased GIVES and reduced LPV availability in CONUS and Canada and LPV200 availability in CONUS, Alaska, and Canada.
- Sep 27 – Geomagnetic activity increased GIVES and reduced LPV200 availability in CONUS and Canada.
- Sep 27 – Satellite maintenance elevated UDREs on PRN 31 and reduced LPV200 availability in CONUS.
- Sep 28 – Geomagnetic activity increased GIVES and reduced LPV availability in CONUS and Canada and LPV200 availability in CONUS, Alaska, and Canada.
- Sep 29 – 30 – Geomagnetic activity increased GIVES and reduced LPV availability in Canada and LPV200 availability in CONUS and Canada.

4.0 **COVERAGE**

The WAAS coverage area evaluation estimates the percent of service volume where WAAS provided service for the operational service levels defined in Table 1-1. The WAAS message and GPS/GEO satellite status are used to determine WAAS availability across North America. For PA coverage, protection levels were calculated at 30-second

intervals at 1-degree spacing over the PA service volume, whereas for NPA coverage, the protection levels were calculated at 30-second intervals at 5-degree spacing over the NPA service volume.

Daily PA analysis was conducted for LP, LPV, and LPV200 service levels. The PA coverage plots provide 100%, 99.9%, 99%, 98%, and 95% availability contours. Figure 4-1 shows the rollup LP North America coverage, Figure 4-2 shows the rollup LPV North America coverage, Figure 4-3 shows the rollup LPV200 North America coverage, Figure 4-4 shows the daily LPV and LPV200 CONUS coverage, Figure 4-5 shows the daily LPV Alaska coverage at 99% availability and ionosphere Kp index values, and Figure 4-6 shows the daily LPV and LPV200 Canada coverage at 99% availability and ionosphere Kp index values. See APPENDIX B: ADDITIONAL COVERAGE PLOTS for coverage plots of 98% LP and LPV availability contour and 99% LPV200 availability contour. Kp quantifies the disturbance in the earth's magnetic field and is an indicator of solar storms causing geomagnetic disturbances, which can cause an unpredictable ionosphere. When the WAAS detects a disturbed ionosphere, it increases GIVE values that may result in unavailable PA service.

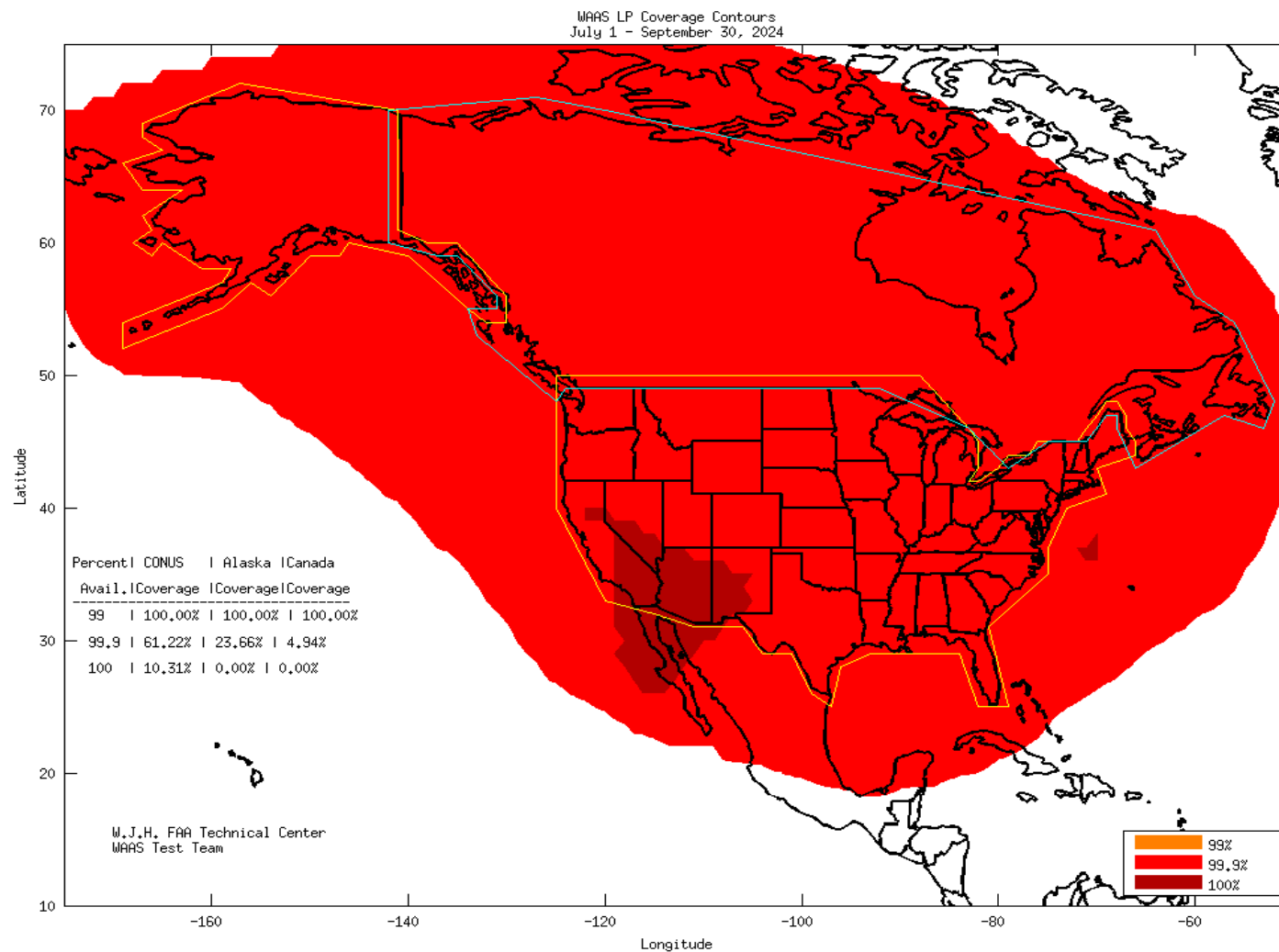


Figure 4-1 LP North America Coverage for the Quarter

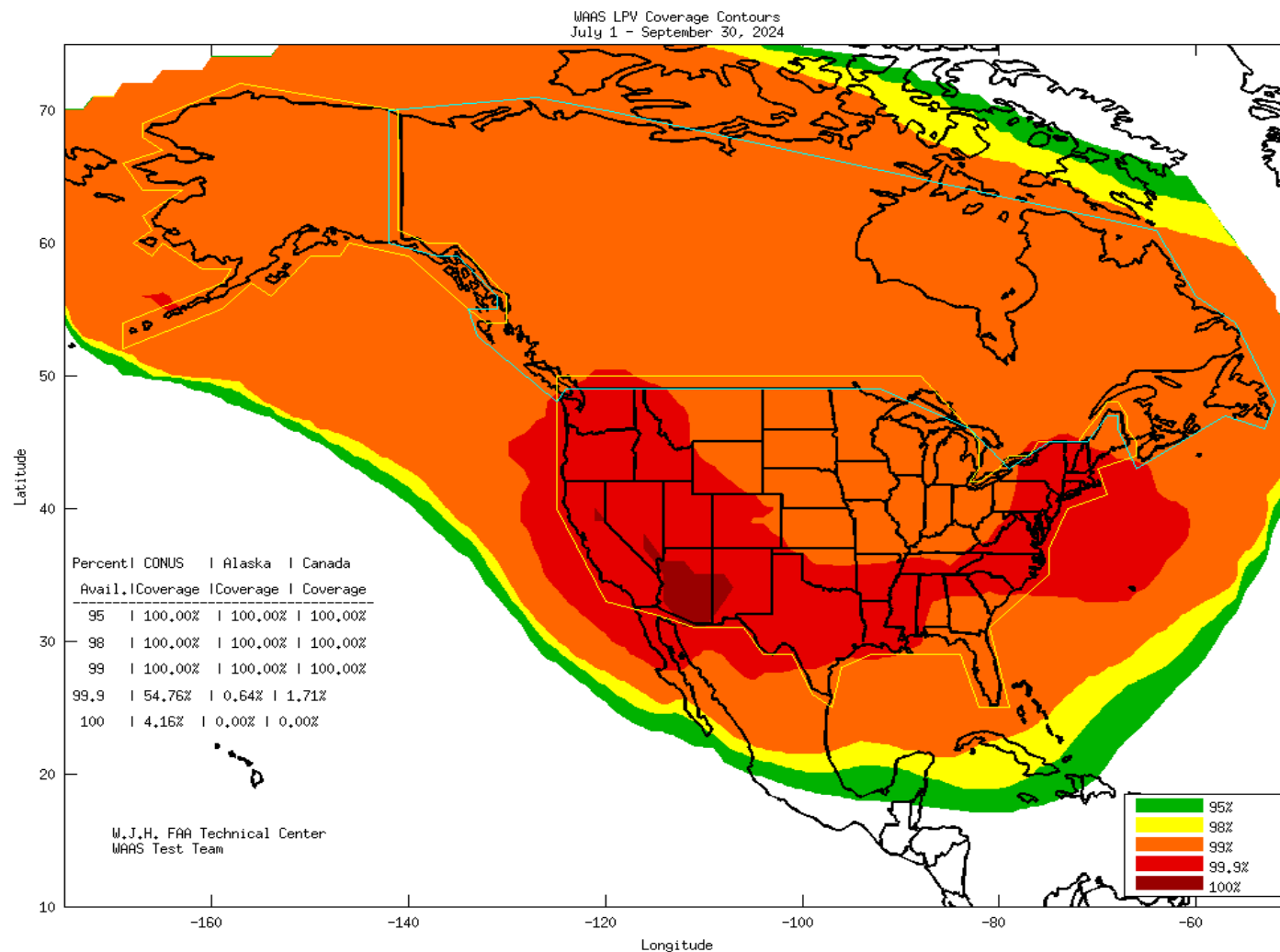


Figure 4-2 LPV North America Coverage for the Quarter

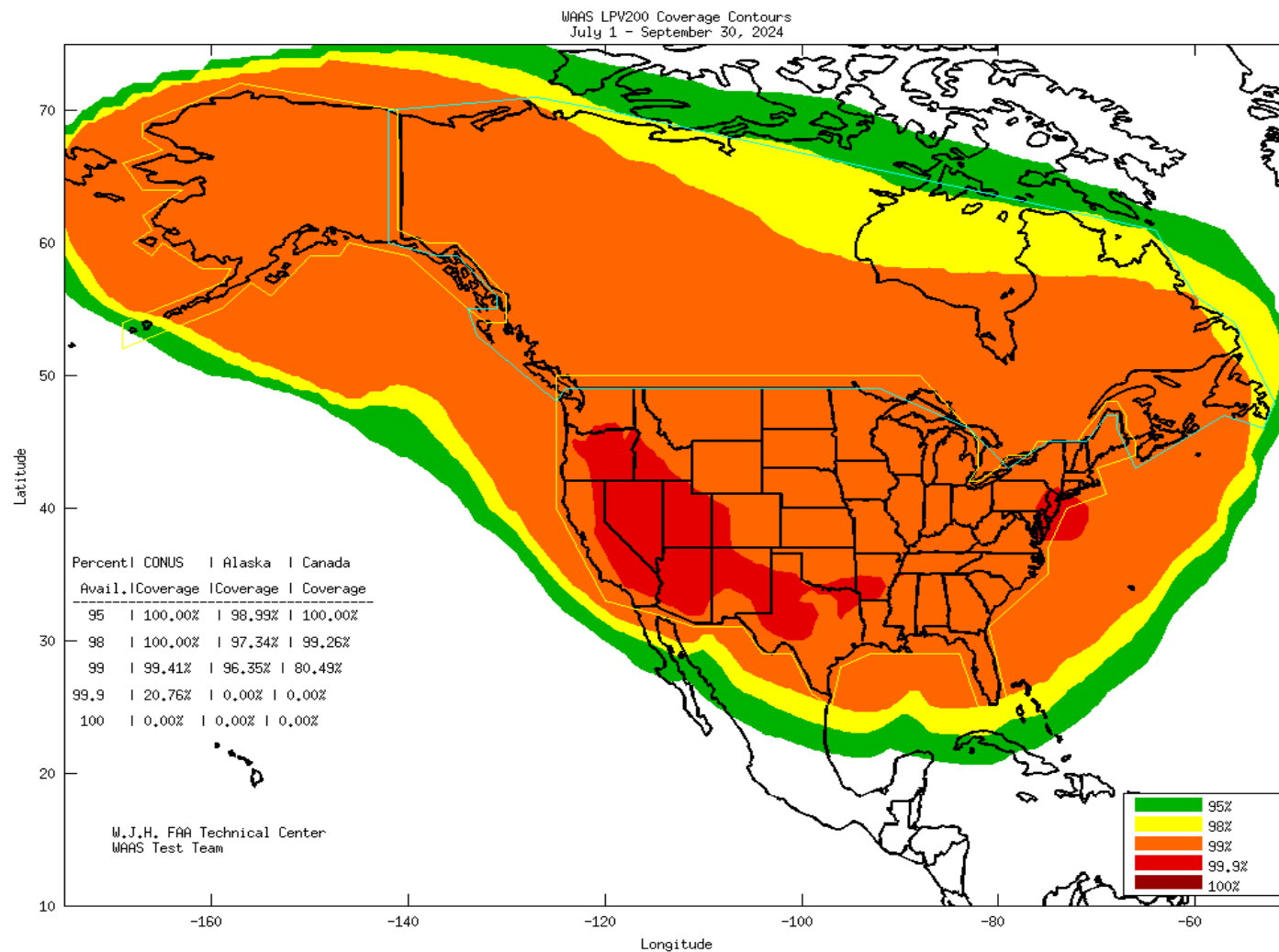


Figure 4-3 LPV200 North America Coverage for the Quarter

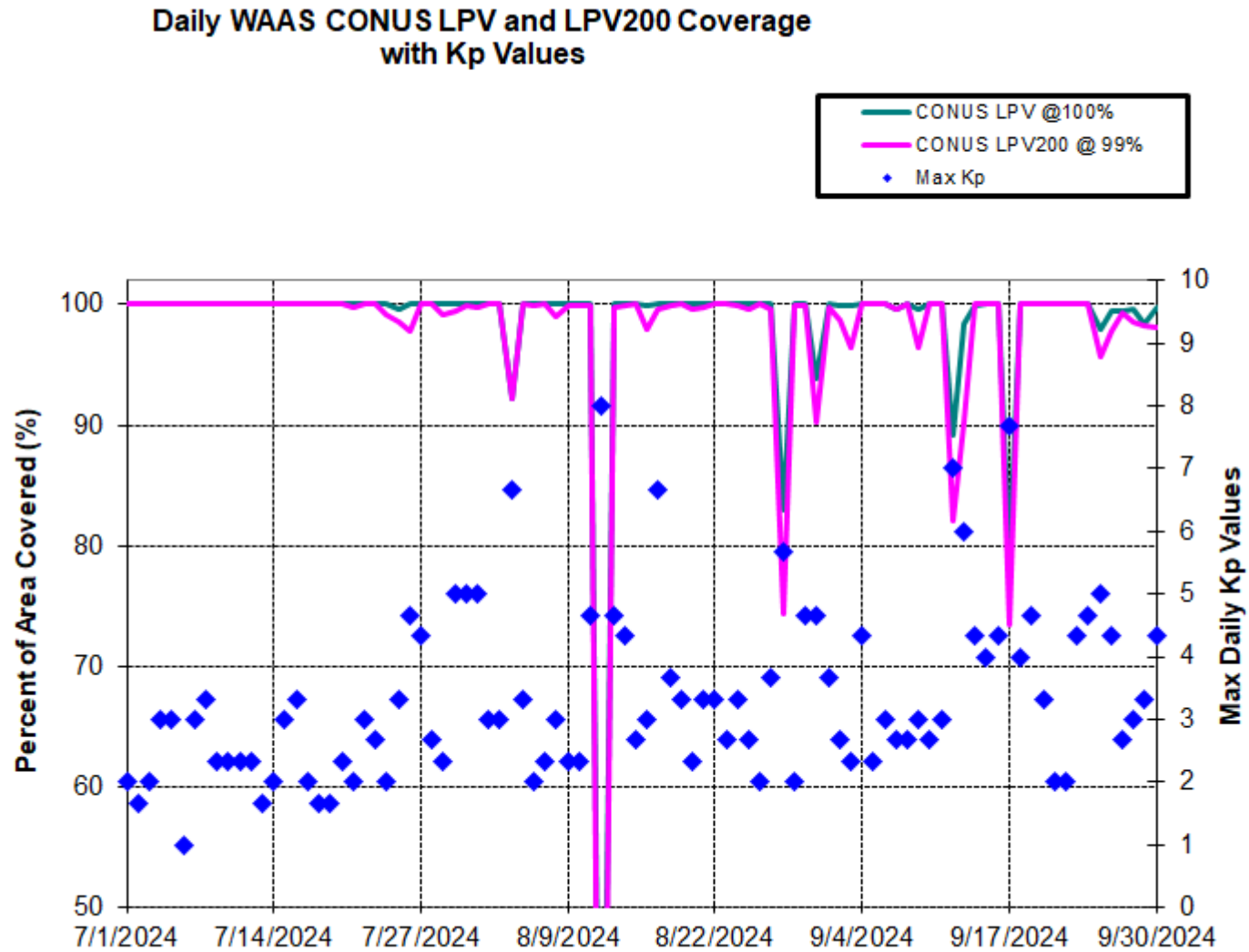


Figure 4-4 Daily LPV and LPV200 CONUS Coverage

Daily WAAS Alaska LPV and LPV200 Coverage (99% Availability) with Kp Values

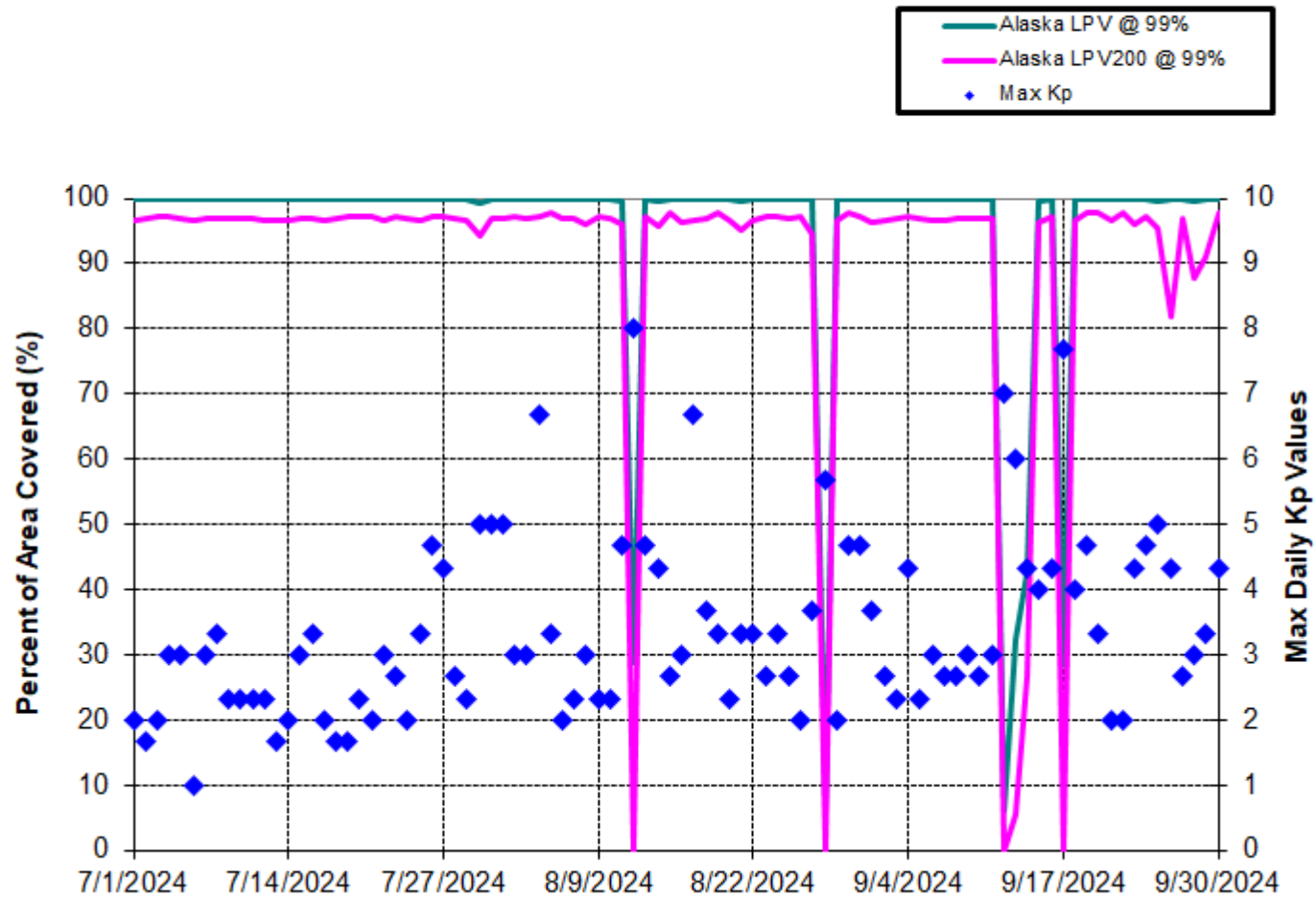


Figure 4-5 Daily LPV and LPV200 Alaska Coverage

Daily WAAS Canada LPV and LPV200 Coverage (99% Availability) with Kp Values

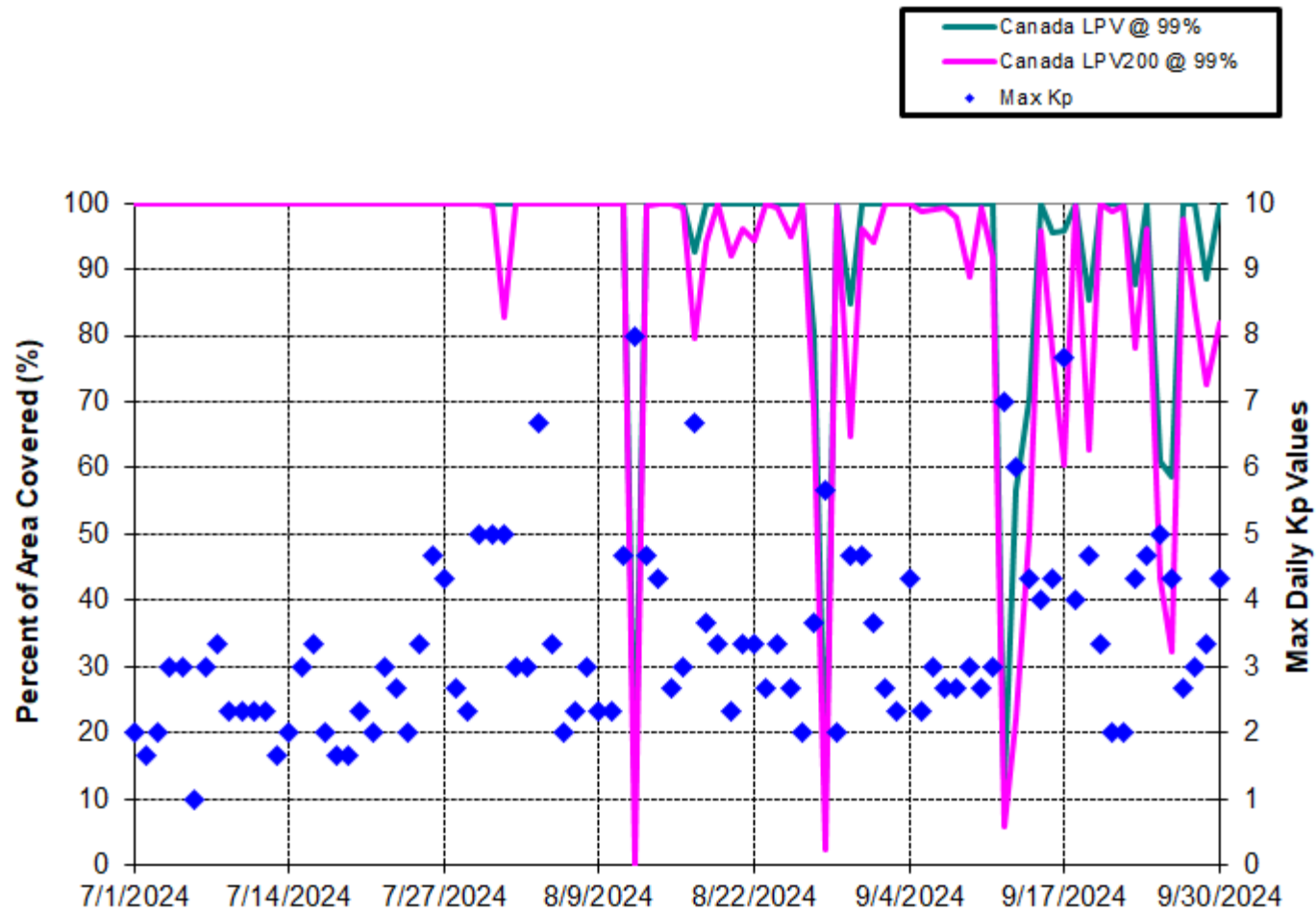


Figure 4-6 Daily LPV and LPV200 Canada Coverage

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

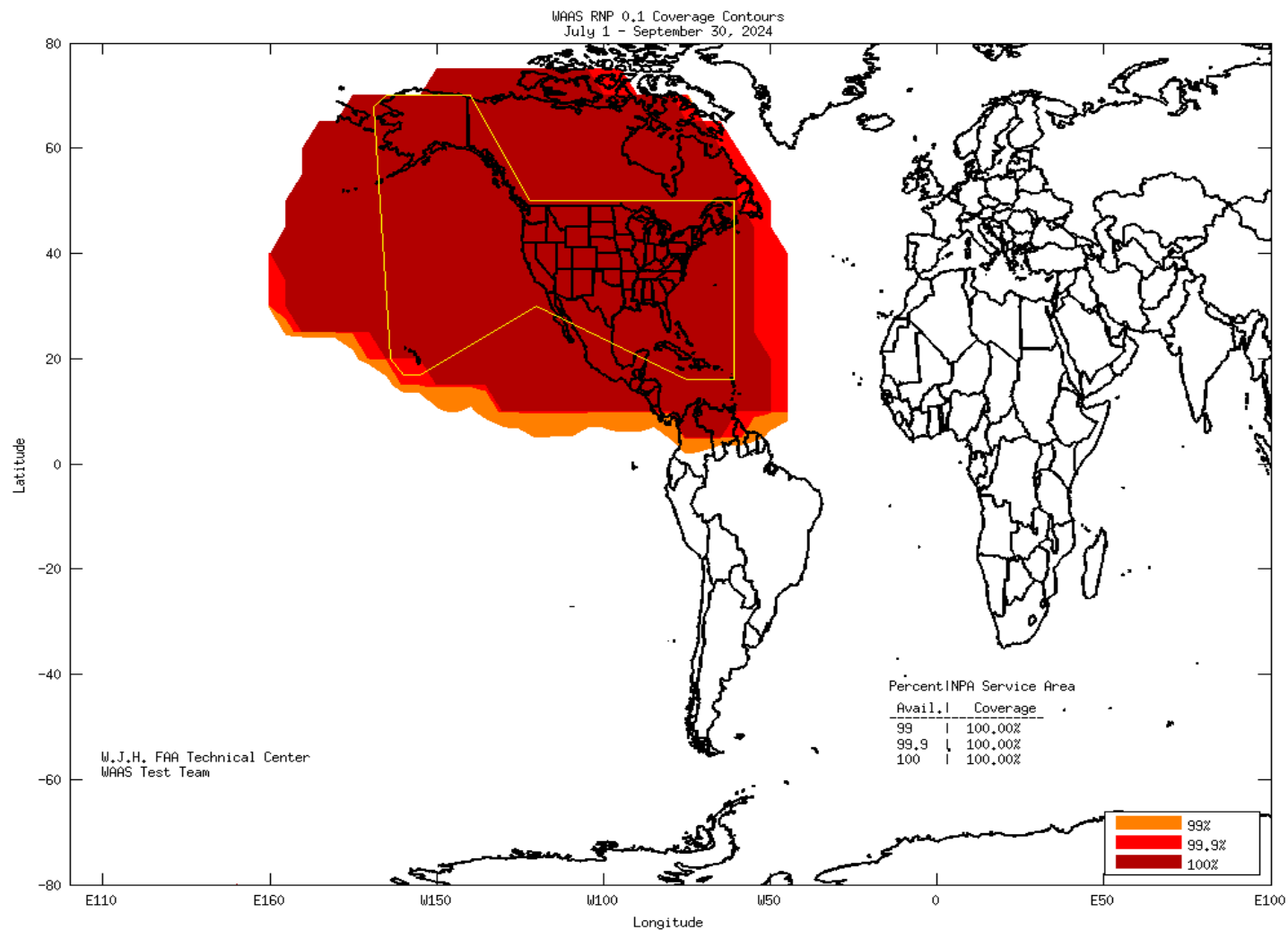


Figure 4-7 RNP 0.1 Coverage for the Quarter

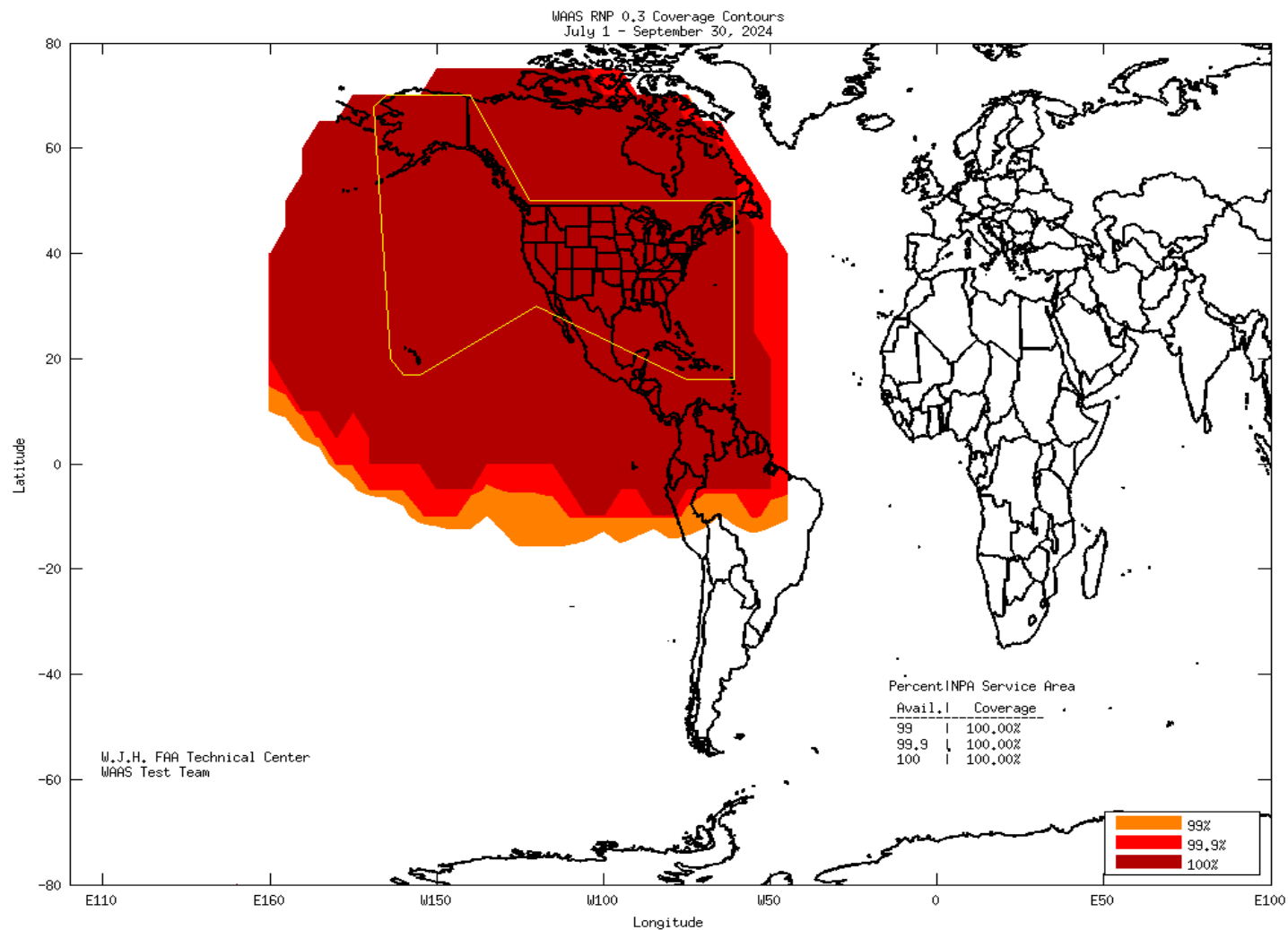


Figure 4-8 RNP 0.3 Coverage for the Quarter

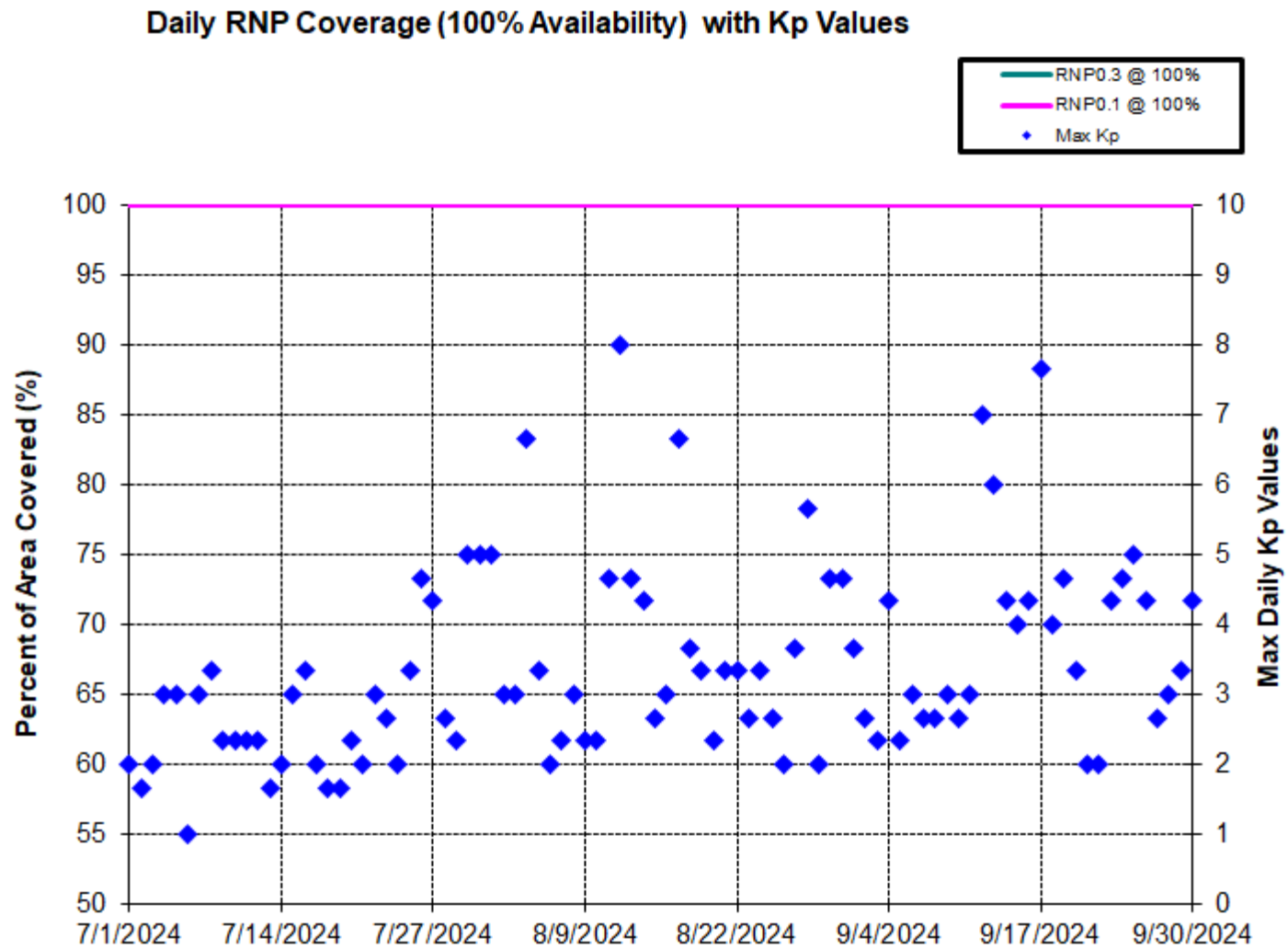


Figure 4-9 Daily RNP Coverage

5.0 INTEGRITY

5.1 HMI Analysis

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

A computed safety margin index of greater than one indicates safe bounding of the greatest observed error, less than one indicates that the maximum error was not bounded, and a result equal to one means that the maximum position error was equal to the protection level. An HMI event occurs if the position error exceeds the protection level in the vertical or horizontal dimensions at any time and coupled with the passage of 6.2 seconds before this event is corrected by WAAS.

Table 5-1 lists the safety margin index and the number of HMI events. For this reporting period, the lowest safety margin index is 2.857 at Washington, DC 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	4.942	6.951	0
Atlantic City	8.472	4.038	0
Elko	6.119	8.080	0
Grand Forks	7.750	6.707	0
Oklahoma City	4.976	4.461	0
Albuquerque	4.126	6.044	0
Anchorage	8.429	7.119	0
Atlanta	4.961	8.536	0
Barrow	10.499	5.588	0
Bethel	13.908	5.266	0
Billings	6.208	9.027	0
Boston	6.231	8.969	0
Chicago	9.803	6.407	0
Cleveland	9.477	5.721	0
Cold Bay	10.767	6.437	0
Dallas	9.887	6.949	0
Denver	6.334	8.339	0
Fairbanks	15.951	4.464	0
Gander	8.620	9.401	0

Location	Horizontal Safety Index (m)	Vertical Safety Index (m)	Number of HMIs
Goose Bay	5.344	5.521	0
Houston	9.621	6.693	0
Iqaluit	5.479	5.142	0
Jacksonville	13.562	4.562	0
Juneau	10.883	6.841	0
Kansas City	4.320	5.203	0
Kotzebue	11.362	4.663	0
Los Angeles	5.341	7.157	0
Memphis	4.603	6.882	0
Merida	10.723	7.182	0
Mexico City	6.789	6.630	0
Miami	6.934	3.844	0
Minneapolis	5.620	5.259	0
New York	8.503	5.413	0
Oakland	4.401	6.334	0
Puerto Vallarta	4.088	7.225	0
Salt Lake City	4.503	7.218	0
San Jose Del Cabo	4.447	6.353	0
Seattle	7.279	8.567	0
Washington, DC	5.304	2.857	0
Winnipeg	3.522	3.308	0

5.2 Broadcast Alerts

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

Table 5-2 WAAS SV Alert

Message Type	Number of Alerts			Average Alerts Per Day		
	SM9	S15	G30	SM9	S15	G30
T2	7	7	7	0.0761	0.0761	0.0761
T3	10	12	11	0.1087	0.1304	0.1196
T4	15	17	18	0.163	0.1848	0.1957
T5	0	0	0	0	0	0
T6	0	0	0	0	0	0
T24	0	0	0	0	0	0
T26	0	0	0	0	0	0
Total SV Alerts	32	36	36	0.3478	0.3913	0.3913
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.

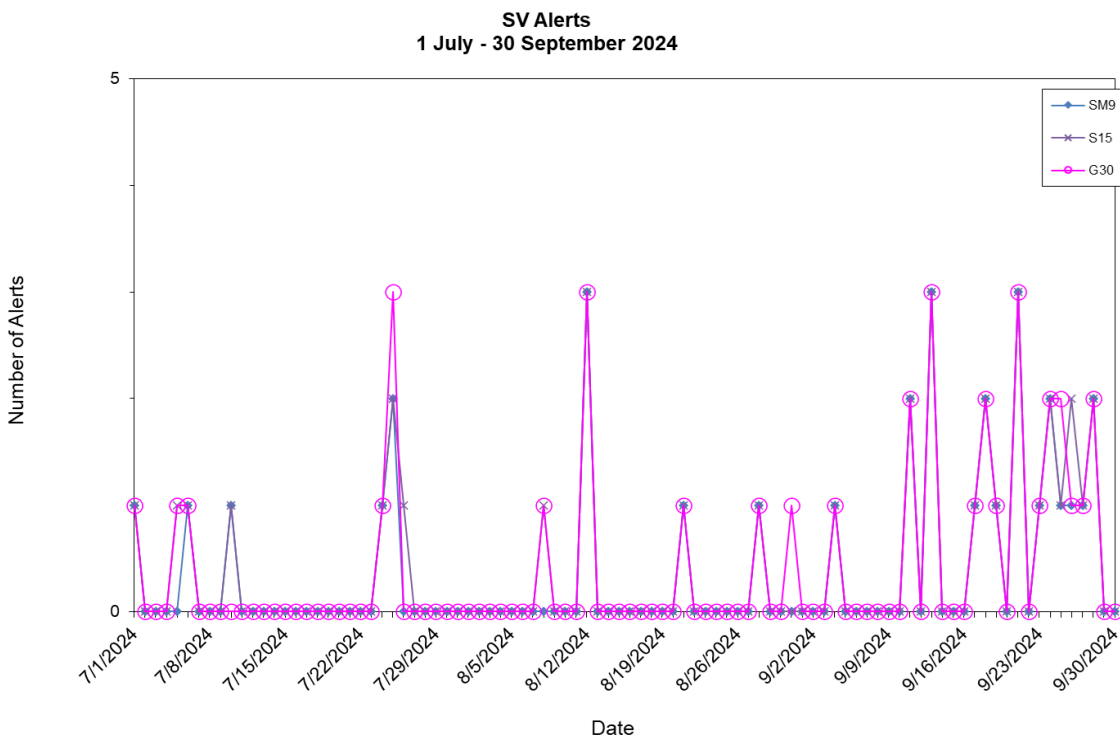


Figure 5-1 SV Daily Alert Trend

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 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 (faulted) to Southbury on July 25, 2024, causing a 17-second message outage.

The high Max Late Length reported by S15 GEO for SM9 GEO Type 28 messages occurred after PRN131 switched from Santa Paula (manual) to Southbury on September 28, 2024, causing a 3-second message outage.

The high Max Late Length reported by S15 GEO for G30 GEO Type 28 messages occurred after PRN135 switched from Napa (manual) to Brewster on July 10, 2024, causing a 3-second message outage.

The high Max Late Length reported by G30 GEO for G30 GEO Type 28 messages occurred after PRN135 switched from Napa (manual) to Brewster on July 10, 2024, causing a 3-second message outage.

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

Message Type	On Time (number received)	Late (number received)	Max Late Length (seconds)
1	101775	3	172
2	1324838	28	24
3	1324843	30	26
4	1324866	27	24
7	95014	13	152
9	93262	3	177
10	94861	6	132
17	31251	2	492

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	N/A	N/A	N/A
2	49666	0	0
3	48211	0	0
4	47357	0	0
5	47368	0	0
6	47935	0	0
7	47390	0	0
8	48222	0	0
9	47317	1	168
10	47420	0	0
11	47597	0	0
12	47381	1	182
13	48358	2	178
14	46258	1	178
15	47304	0	0
16	47783	0	0
17	47828	0	0
18	46755	0	0
19	46299	0	0
20	48169	0	0
21	50173	0	0
22	47402	0	0
23	46914	0	0
24	48496	1	168
25	49064	0	0
26	48343	0	0
27	48695	0	0
28	48146	1	180
29	47320	1	180
30	47147	0	0
31	47532	0	0
32	47301	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	N/A	N/A	N/A
2	41051	6	160

PRN	On Time (number received)	Late (number received)	Max Late Length (seconds)
3	39532	0	0
4	38890	1	208
5	39055	1	143
6	39371	4	208
7	39089	7	198
8	39810	3	211
9	38895	1	151
10	39200	2	160
11	39144	1	122
12	38970	2	204
13	40122	12	192
14	38253	6	211
15	38989	0	0
16	39295	1	206
17	39323	1	148
18	38604	7	184
19	38133	0	0
20	39602	1	205
21	41420	17	208
22	39244	17	186
23	38642	0	0
24	40158	8	205
25	40366	2	168
26	39698	0	0
27	40283	6	178
28	39507	0	0
29	38922	0	0
30	38835	0	0
31	38984	0	0
32	38983	2	125
131	75932	2	5490
133	76053	1	124
135	76177	1	153

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	27658	4	512
0	1	27654	5	514
0	2	27652	8	523

Band	Block	On Time (number received)	Late (number received)	Max Late Length (seconds)
1	0	27659	2	366
1	1	27654	8	354
1	2	27655	5	306
1	3	27660	3	304
1	4	27660	4	306
2	0	27664	1	301
2	1	27659	2	305
2	2	27654	8	303
2	3	27653	8	306
2	4	27658	3	301
3	0	27651	6	578
3	1	27651	5	584
3	2	27653	4	355
9	0	27652	5	579
9	1	27657	5	361
9	2	27654	7	340
9	3	27651	7	336
9	4	27654	7	324
9	5	27656	6	340
9	6	27655	6	576

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

Band	On Time (number received)	Late (number received)	Max Late Length (seconds)
0	35348	1	333
1	35372	1	365
2	35363	1	381
3	35368	1	357
9	35354	1	328

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	101115	2	126
2	1324842	31	24
3	1324863	27	24
4	1324883	23	24
7	94361	21	180
9	93266	1	169
10	94342	16	136

Message Type	On Time (number received)	Late (number received)	Max Late Length (seconds)
17	31237	3	345

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

Message Type	On Time (number received)	Late (number received)	Max Late Length (seconds)
1	N/A	N/A	N/A
2	49668	1	156
3	48213	0	0
4	47360	0	0
5	47355	0	0
6	47940	2	169
7	47386	0	0
8	48222	0	0
9	47317	1	178
10	47434	0	0
11	47617	0	0
12	47379	0	0
13	48345	0	0
14	46250	0	0
15	47300	0	0
16	47775	0	0
17	47826	1	156
18	46747	0	0
19	46300	0	0
20	48168	0	0
21	50169	1	169
22	47398	0	0
23	46901	0	0
24	48504	1	176
25	49061	1	176
26	48357	0	0
27	48686	1	158
28	48155	0	0
29	47329	0	0
30	47146	0	0
31	47538	3	180
32	47305	1	151

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

PRN	On Time (number received)	Late (number received)	Max Late Length (seconds)
1	N/A	N/A	N/A
2	41048	6	161
3	39527	1	129
4	38899	0	0
5	39050	0	0
6	39367	2	129
7	39096	11	240
8	39800	3	211
9	38902	0	0
10	39172	8	226
11	39115	1	160
12	38966	0	0
13	40132	6	164
14	38235	6	312
15	39006	0	0
16	39291	1	184
17	39323	0	0
18	38592	13	187
19	38144	1	133
20	39600	0	0
21	41400	11	160
22	39204	21	208
23	38626	1	172
24	40136	5	168
25	40339	6	152
26	39691	0	0
27	40215	17	178
28	39511	1	126
29	38909	1	128
30	38853	0	0
31	38994	1	211
32	38978	0	0
131	75929	4	5553
133	76082	2	177
135	76167	2	5566

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	27657	2	347
0	1	27657	2	532
0	2	27654	4	541
1	0	27649	6	538
1	1	27650	7	526
1	2	27657	4	530
1	3	27653	4	576
1	4	27659	2	576
2	0	27655	4	321
2	1	27651	7	315
2	2	27657	4	312
2	3	27657	0	0
2	4	27655	6	306
3	0	27658	4	306
3	1	27652	8	577
3	2	27650	7	577
9	0	27656	4	352
9	1	27655	6	333
9	2	27655	6	351
9	3	27661	2	333
9	4	27655	4	321
9	5	27654	5	351
9	6	27651	7	344

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

Band	On Time (number received)	Late (number received)	Max Late Length (seconds)
0	35317	0	0
1	35310	1	422
2	35318	1	468
3	35358	2	388
9	35311	1	338

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	101709	0	0
2	1324848	28	12

Message Type	On Time (number received)	Late (number received)	Max Late Length (seconds)
3	1324859	28	12
4	1324895	20	18
7	94550	7	176
9	93272	0	0
10	94518	10	178
17	31278	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	N/A	N/A	N/A
2	49655	0	0
3	48212	0	0
4	47359	0	0
5	47367	0	0
6	47936	0	0
7	47395	0	0
8	48214	0	0
9	47332	0	0
10	47436	0	0
11	47605	0	0
12	47371	0	0
13	48353	0	0
14	46258	0	0
15	47307	0	0
16	47782	0	0
17	47817	0	0
18	46736	0	0
19	46300	0	0
20	48166	0	0
21	50155	0	0
22	47393	0	0
23	46898	0	0
24	48500	0	0
25	49054	0	0
26	48350	0	0
27	48685	0	0
28	48146	0	0
29	47324	0	0
30	47143	0	0

PRN	On Time (number received)	Late (number received)	Max Late Length (seconds)
31	47538	0	0
32	47300	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	N/A	N/A	N/A
2	41026	3	208
3	39513	1	208
4	38896	0	0
5	39046	0	0
6	39379	0	0
7	39093	12	209
8	39801	0	0
9	38886	1	207
10	39181	9	210
11	39122	0	0
12	38963	1	212
13	40118	7	168
14	38246	3	154
15	38999	1	208
16	39288	0	0
17	39305	0	0
18	38592	4	176
19	38150	2	209
20	39605	0	0
21	41451	13	208
22	39213	22	193
23	38645	0	0
24	40128	6	155
25	40367	3	144
26	39684	0	0
27	40253	12	178
28	39504	0	0
29	38926	0	0
30	38841	0	0
31	38985	1	201
32	38991	0	0
131	75917	1	207
133	76090	0	0

PRN	On Time (number received)	Late (number received)	Max Late Length (seconds)
135	76181	1	5566

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	27657	2	302
0	1	27654	6	306
0	2	27657	5	306
1	0	27657	3	303
1	1	27658	1	301
1	2	27660	1	306
1	3	27655	3	305
1	4	27658	3	305
2	0	27659	1	302
2	1	27654	3	304
2	2	27657	2	305
2	3	27655	3	306
2	4	27659	2	305
3	0	27653	6	580
3	1	27656	3	305
3	2	27654	3	304
9	0	27655	5	576
9	1	27654	4	578
9	2	27653	5	304
9	3	27657	3	305
9	4	27661	2	301
9	5	27654	3	576
9	6	27653	7	306

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

Band	Block	On Time (number received)	Late (number received)
0	35372	0	0
1	35380	0	0
2	35360	0	0
3	35401	0	0
9	35407	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. Severity 0, displayed by blue dots, indicates fewer than 10 receivers lost track of the satellite. Severity 1, displayed by green dots, indicates a significant number of receivers, but not all receivers, lost track of the satellite. Severity 2, displayed by yellow dots, indicates only Signal Quality Monitoring (SQM) was affected, and all receivers lost track. Severity 3, displayed by red dots, indicates more than just SQM was affected, and all receivers lost track.

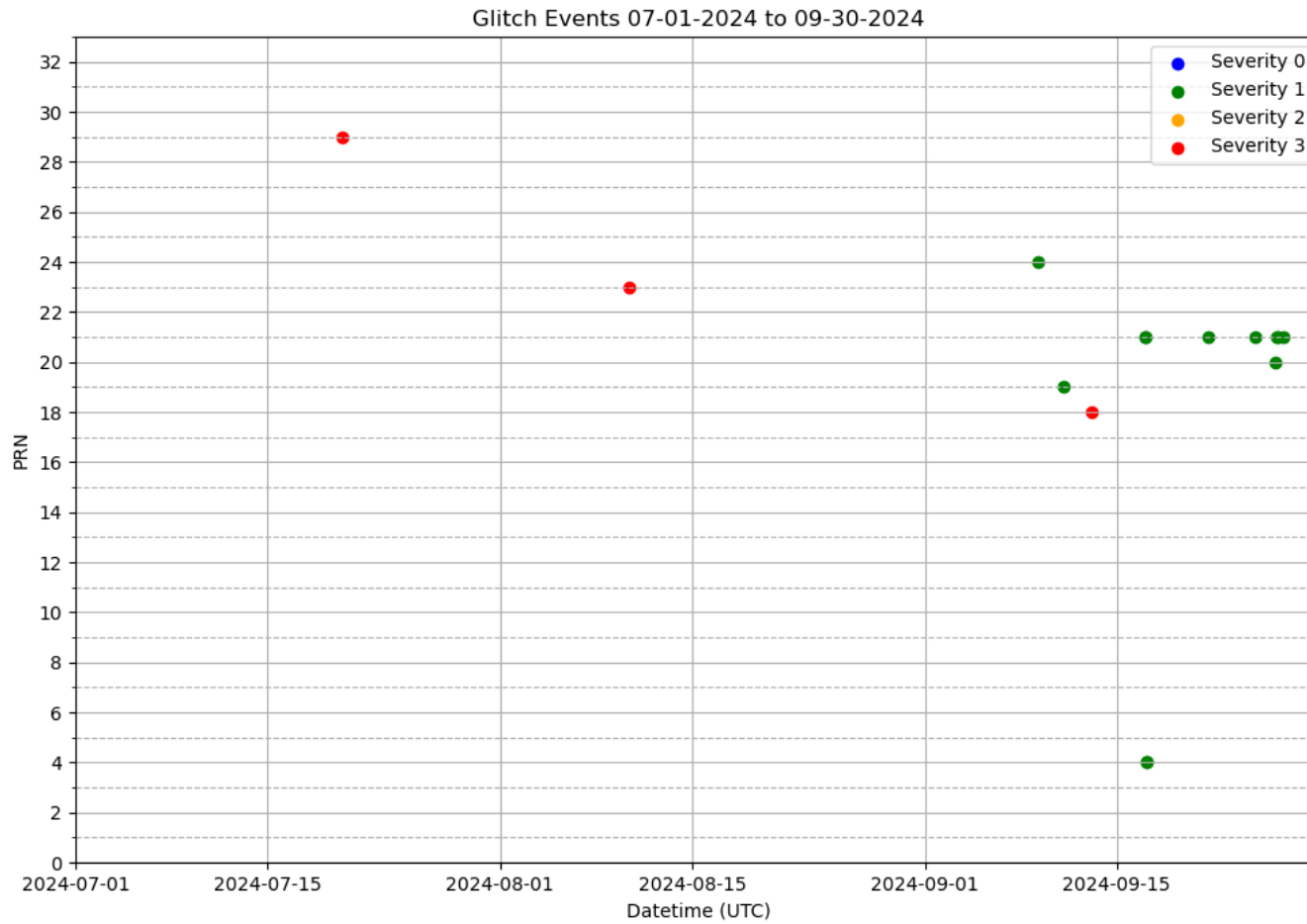


Figure 5-2 SV Glitch Trend

6.0 SV RANGE ACCURACY

WAAS transmits UDRE and GIVE values to support protection levels such that the position error is bounded 99.9999%. The position domain analysis in this report provides the information regarding how well the transmitted WAAS UDRE and GIVE values bound the position errors. A UDRE is broadcasted by the WAAS for each monitored satellite, and the 95% error bound and the maximum normalized value (divided by σ_{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 σ_{UDRE}) at the time of the maximum range error. Figure 6-1 through Figure 6-2 show the 95% range error for each SV measured by the WAAS receivers at the Washington, DC reference station.

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

Site	Minneapolis			Chicago			Boston			Juneau			Honolulu			Salt Lake City		
PRN ↓	0.95 Range Error (m)	Max Range Error (m)	Max Range Error Sigma	0.95 Range Error (m)	Max Range Error (m)	Max Range Error Sigma	0.95 Range Error (m)	Max Range Error (m)	Max Range Error Sigma	0.95 Range Error (m)	Max Range Error (m)	Max Range Error Sigma	0.95 Range Error (m)	Max Range Error (m)	Max Range Error Sigma	0.95 Range Error (m)	Max Range Error (m)	Max Range Error Sigma
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	1.569	4.110	1.223	1.275	2.823	1.095	1.250	4.219	1.428	1.287	3.220	1.378	1.342	3.657	1.193	1.167	3.289	0.909
3	1.111	4.927	3.362	1.724	4.210	1.338	1.435	3.017	1.199	1.057	2.377	1.351	1.670	3.789	1.154	1.641	4.567	1.372
4	1.356	4.916	4.021	1.313	4.406	1.347	1.186	3.213	0.996	1.369	4.350	1.794	1.142	2.648	2.287	1.123	2.923	0.941
5	1.009	2.150	0.963	1.052	2.073	1.237	1.370	3.089	2.061	1.501	5.202	2.639	1.445	2.756	1.924	1.188	3.240	1.008
6	1.066	2.964	1.257	1.169	2.842	1.462	1.080	2.453	1.534	1.335	3.392	1.115	1.180	3.035	1.088	1.038	2.301	0.744
7	1.405	5.296	3.569	1.319	3.361	1.100	1.591	3.249	1.727	1.479	4.772	3.223	1.129	2.947	2.343	1.126	3.313	1.040
8	1.570	4.840	3.344	1.325	4.096	1.269	1.021	3.190	1.598	1.591	4.609	1.721	1.339	2.877	1.829	1.063	2.473	1.507
9	1.414	4.856	2.960	1.366	3.676	1.646	1.061	3.046	1.561	1.325	4.675	2.515	1.900	3.941	1.539	0.974	2.299	0.749
10	1.618	2.786	0.884	1.375	3.232	0.636	1.655	2.959	1.650	1.639	3.203	1.009	1.009	2.677	0.715	1.147	2.364	0.864
11	1.169	3.002	1.054	1.342	2.717	1.279	1.417	2.961	0.967	1.454	3.756	2.205	1.672	7.140	2.208	1.121	2.617	0.743
12	1.417	3.117	0.959	1.373	3.009	1.013	1.128	3.046	0.589	1.398	3.190	1.144	1.641	4.706	1.468	1.152	2.844	0.907
13	2.272	4.985	1.856	1.758	3.313	1.558	1.516	3.427	1.655	1.196	3.230	1.304	1.302	3.171	1.733	0.879	2.828	2.338
14	1.775	5.716	1.829	1.322	3.232	1.055	1.179	3.055	1.769	1.572	4.834	1.694	1.519	3.516	2.359	1.308	3.019	2.213
15	2.021	4.198	1.633	1.005	2.622	1.069	1.375	2.752	1.617	1.680	3.332	1.934	1.296	2.963	1.181	0.872	2.943	1.612
16	1.638	5.090	4.321	1.156	2.746	1.076	1.141	2.842	2.083	1.470	4.725	2.362	1.187	2.940	1.038	0.892	2.095	0.632
17	1.314	3.710	1.209	1.472	3.071	1.918	1.484	3.312	1.657	1.452	4.755	2.297	1.945	12.071	3.809	1.410	3.424	1.057
18	1.506	2.546	2.084	1.328	3.003	0.505	1.781	3.447	1.068	1.476	3.798	1.442	1.169	3.015	1.139	1.181	3.072	1.044
19	1.331	3.775	1.193	1.698	3.428	1.441	1.220	3.051	0.966	1.421	2.881	0.872	1.194	4.905	0.819	1.393	3.796	2.412
20	1.612	6.863	3.045	1.211	2.776	0.889	1.280	3.013	0.930	1.598	5.181	3.713	1.280	3.066	1.045	1.099	2.489	0.753
21	0.925	3.260	1.092	1.134	2.739	0.781	1.233	2.878	0.874	1.554	3.542	1.155	1.440	3.234	1.201	1.329	3.681	1.183
22	1.270	3.826	1.501	1.168	2.644	0.955	1.327	2.618	1.567	1.219	3.039	0.857	1.860	4.107	2.780	1.417	5.244	1.809
23	1.698	3.226	1.358	1.311	3.309	1.077	1.614	3.621	1.476	1.794	4.098	1.206	1.129	2.630	0.893	1.733	4.455	1.872
24	1.653	2.973	1.860	1.586	2.944	1.527	1.467	3.003	0.916	2.015	3.539	1.588	1.442	3.736	1.107	1.289	3.898	1.055
25	1.334	2.973	0.903	1.925	4.706	1.387	1.490	3.135	1.410	1.510	3.604	1.762	1.221	3.480	1.433	1.455	5.427	1.555
26	1.197	5.105	4.074	1.342	4.653	1.387	1.051	2.716	2.012	1.250	3.253	2.473	1.151	2.480	0.783	1.234	3.040	0.868
27	1.955	4.653	3.621	1.215	2.852	1.387	1.457	2.971	1.415	1.488	4.506	1.716	1.127	3.253	1.167	1.457	3.398	0.978
28	1.152	3.900	2.546	1.096	3.079	1.722	1.123	2.674	0.954	1.670	3.273	1.991	0.976	3.138	1.229	1.621	3.267	1.081
29	1.273	4.801	2.530	1.410	4.827	1.710	1.323	3.233	1.570	1.416	3.164	1.451	1.245	2.394	1.399	1.225	2.664	0.787
30	1.263	4.888	2.335	1.200	3.306	0.992	1.352	2.897	1.784	1.536	5.515	3.731	1.417	3.293	2.343	1.055	3.036	2.100
31	1.051	4.565	3.068	1.246	3.927	2.030	1.085	2.971	1.864	1.661	3.140	1.864	1.548	13.036	3.653	1.051	3.943	1.257
32	0.993	2.733	1.370	1.202	3.296	2.103	0.939	3.207	1.087	1.346	3.201	1.071	1.553	5.605	1.851	1.155	4.375	1.325
131	1.637	6.171	0.271	1.292	5.771	0.348	1.558	6.091	0.501	1.599	5.111	0.176	1.473	3.767	0.312	1.397	3.792	1.258
133	1.587	5.342	0.465	1.588	4.425	0.146	1.698	4.211	0.461	1.419	4.794	0.344	1.721	5.873	0.425	1.312	3.796	0.844
135	2.349	4.650	1.101	1.415	4.809	0.167	1.433	5.493	0.432	1.790	4.913	0.309	1.787	6.421	0.488	1.296	3.427	0.942

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

Site	Billings			Miami			Albuquerque			Kansas City			Los Angeles			Atlanta		
PRN ↓	0.95 Range Error (m)	Max Range Error (m)	Max Range Error Sigma	0.95 Range Error (m)	Max Range Error (m)	Max Range Error Sigma	0.95 Range Error (m)	Max Range Error (m)	Max Range Error Sigma	0.95 Range Error (m)	Max Range Error (m)	Max Range Error Sigma	0.95 Range Error (m)	Max Range Error (m)	Max Range Error Sigma	0.95 Range Error (m)	Max Range Error (m)	Max Range Error Sigma
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	1.082	2.674	1.648	1.513	4.067	2.258	1.203	3.992	1.401	1.321	3.944	1.336	1.388	4.193	2.236	0.993	3.578	1.241
3	0.950	2.915	1.238	1.660	4.868	2.425	1.110	3.161	1.077	1.085	3.181	1.090	1.107	2.539	0.920	1.249	3.308	1.283
4	0.999	3.049	1.991	1.677	3.959	2.123	0.893	3.676	1.611	0.962	2.247	1.707	1.201	2.676	0.437	0.956	2.503	1.895
5	1.396	3.740	1.484	1.835	5.506	1.024	1.056	2.213	0.818	2.815	5.044	1.481	1.352	3.105	0.974	1.263	3.299	1.105
6	0.992	2.878	1.393	1.896	5.252	2.239	1.037	2.591	1.497	1.010	3.729	1.147	1.322	2.874	0.869	1.035	3.157	1.002
7	1.106	3.575	2.858	2.646	6.203	3.120	0.857	2.717	1.180	0.969	3.038	2.021	1.277	4.151	2.162	0.923	2.990	2.583
8	1.116	3.341	1.875	1.502	3.990	2.041	1.182	3.302	2.000	1.070	3.240	1.395	1.418	2.700	1.559	0.907	2.562	1.922
9	1.019	3.184	1.082	1.348	4.711	2.294	1.141	2.697	1.911	1.097	3.928	1.265	1.338	2.694	0.776	0.981	2.994	0.967
10	1.886	4.033	1.173	1.664	3.483	1.902	1.134	2.959	0.824	1.460	3.321	1.040	1.269	2.421	1.329	1.228	2.628	1.482
11	1.370	4.500	1.459	1.440	3.910	1.174	1.120	3.790	1.035	1.300	4.717	1.416	1.465	2.677	1.534	1.227	2.247	1.838
12	1.144	2.410	0.804	2.069	5.116	1.843	1.042	2.555	0.888	1.544	4.558	1.536	1.473	3.196	0.857	1.143	2.349	0.658
13	1.235	3.223	2.162	1.634	4.688	2.294	1.236	2.796	0.801	1.263	3.036	0.920	1.505	4.197	1.345	1.458	3.276	0.923
14	1.189	3.349	1.001	2.153	5.850	2.248	0.934	2.766	0.528	1.233	3.125	2.661	1.211	3.759	2.156	0.855	2.596	1.895
15	1.443	3.003	1.596	1.786	3.688	1.828	1.143	3.273	1.038	1.581	4.846	1.534	1.610	3.121	1.484	1.427	2.588	1.443
16	1.272	3.414	2.337	1.729	4.158	2.399	1.472	5.868	2.061	1.574	5.089	1.534	1.402	2.700	0.971	1.066	2.522	0.712
17	1.775	4.427	1.328	1.368	4.630	1.214	1.259	2.596	1.945	1.642	4.135	1.511	1.486	3.869	2.485	1.063	2.821	1.848
18	1.376	2.605	2.032	2.000	5.699	1.805	0.960	2.061	0.839	1.333	2.913	2.562	1.230	3.289	1.134	1.463	2.665	2.202
19	2.072	4.262	1.302	1.271	3.908	2.265	1.312	4.981	1.395	1.055	5.052	1.549	1.630	3.430	1.924	1.023	2.611	1.365
20	1.011	3.375	1.489	1.491	3.710	1.187	1.330	2.911	1.333	1.263	4.103	1.215	1.564	3.750	1.210	1.268	3.127	1.280
21	1.201	3.730	1.260	1.567	5.462	1.054	1.561	5.322	1.697	1.546	7.146	2.217	1.398	4.059	2.144	0.953	2.711	2.023
22	1.152	2.269	1.116	1.756	4.839	1.603	1.470	3.617	2.736	1.440	2.930	1.976	2.035	4.541	3.044	1.427	2.992	1.372
23	1.484	2.845	0.876	1.901	4.089	1.235	1.308	2.301	1.628	1.894	4.025	1.369	1.296	2.839	0.542	1.303	2.552	1.748
24	1.561	3.147	2.458	1.423	3.075	1.646	1.206	3.832	1.136	1.072	3.502	1.142	1.509	3.167	1.606	1.320	2.631	0.819
25	1.708	3.342	1.471	1.465	3.239	1.956	1.404	2.617	1.810	1.494	4.096	1.286	1.620	3.717	1.187	1.132	2.890	0.970
26	1.706	3.635	1.167	1.540	4.434	2.826	1.209	3.638	1.077	1.553	6.052	2.562	1.658	4.217	1.275	0.884	1.906	0.939
27	1.089	3.357	2.018	1.584	4.136	2.466	1.041	3.263	1.749	1.247	3.028	0.981	1.808	5.138	1.698	1.328	2.548	1.880
28	1.447	2.693	1.230	3.066	7.959	2.492	1.131	2.687	1.420	1.341	4.946	1.351	1.248	2.844	0.433	1.069	2.470	0.861
29	1.172	2.421	0.830	1.902	3.934	1.077	1.246	3.220	1.045	1.450	3.006	1.262	1.880	3.756	1.289	1.295	2.834	1.043
30	1.812	4.018	2.168	1.359	4.221	1.466	0.936	2.759	2.045	1.175	3.369	1.235	1.164	3.940	2.503	0.923	2.986	2.342
31	1.346	3.490	1.143	1.789	5.765	0.854	0.880	2.467	0.969	1.242	4.824	1.963	1.199	2.506	1.091	1.024	2.216	1.256
32	1.096	3.145	1.046	1.704	4.974	1.344	0.998	2.490	0.442	1.049	3.323	1.160	1.439	2.786	0.901	0.906	2.023	0.692
131	1.931	4.293	1.203	1.742	7.471	0.827	1.902	5.943	0.648	1.681	4.182	0.378	2.156	4.947	1.409	1.477	4.942	0.362
133	1.612	3.960	0.268	1.725	5.047	0.579	1.926	4.258	1.028	2.533	4.769	1.152	2.086	4.651	0.924	1.434	4.145	0.536
135	1.538	3.486	0.243	1.859	5.068	0.566	1.454	3.713	0.910	1.876	4.315	1.169	1.891	4.599	0.512	1.229	3.658	0.187

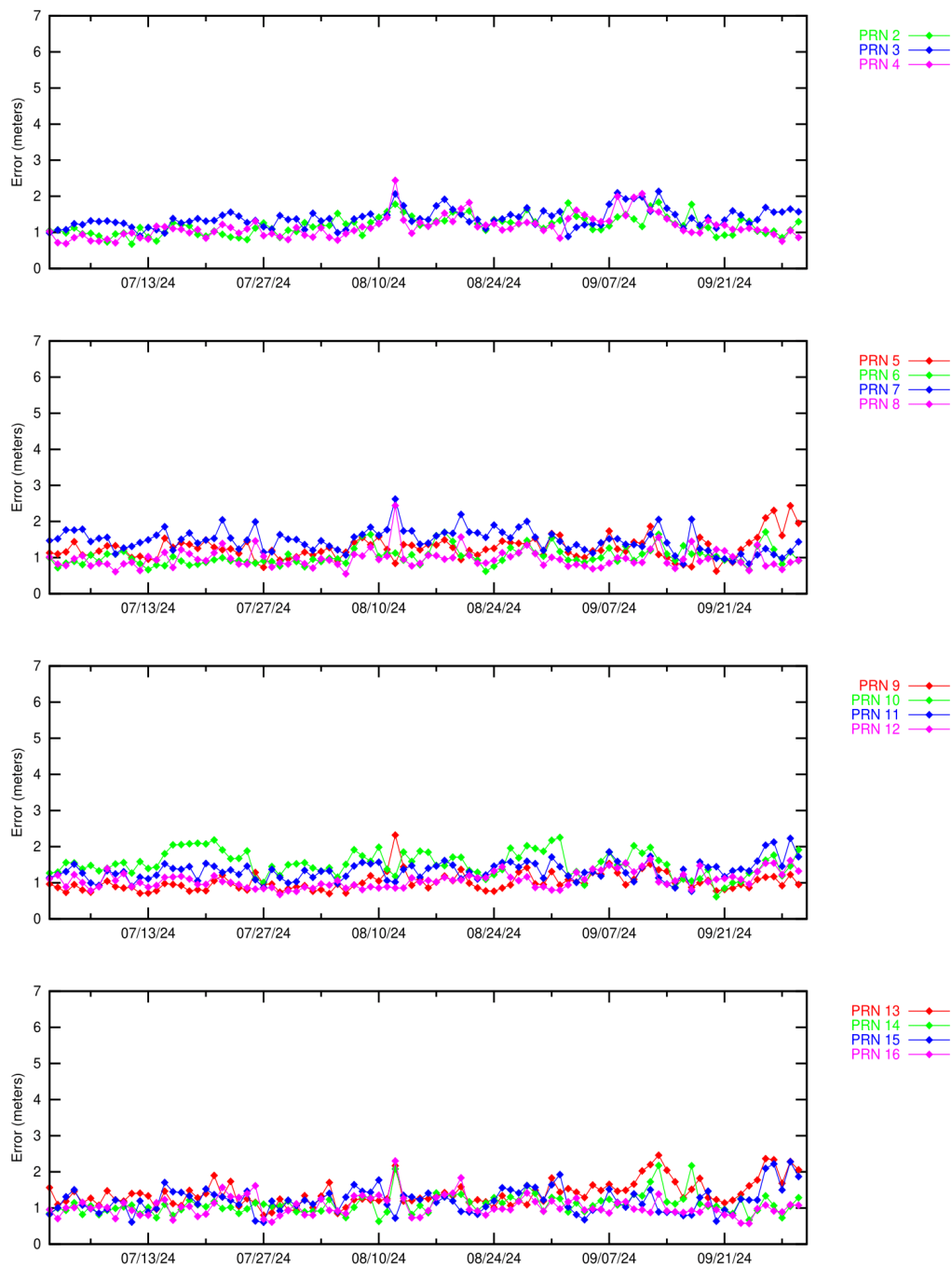


Figure 6-1 Range Error (PRN1–PRN16)–Washington, DC

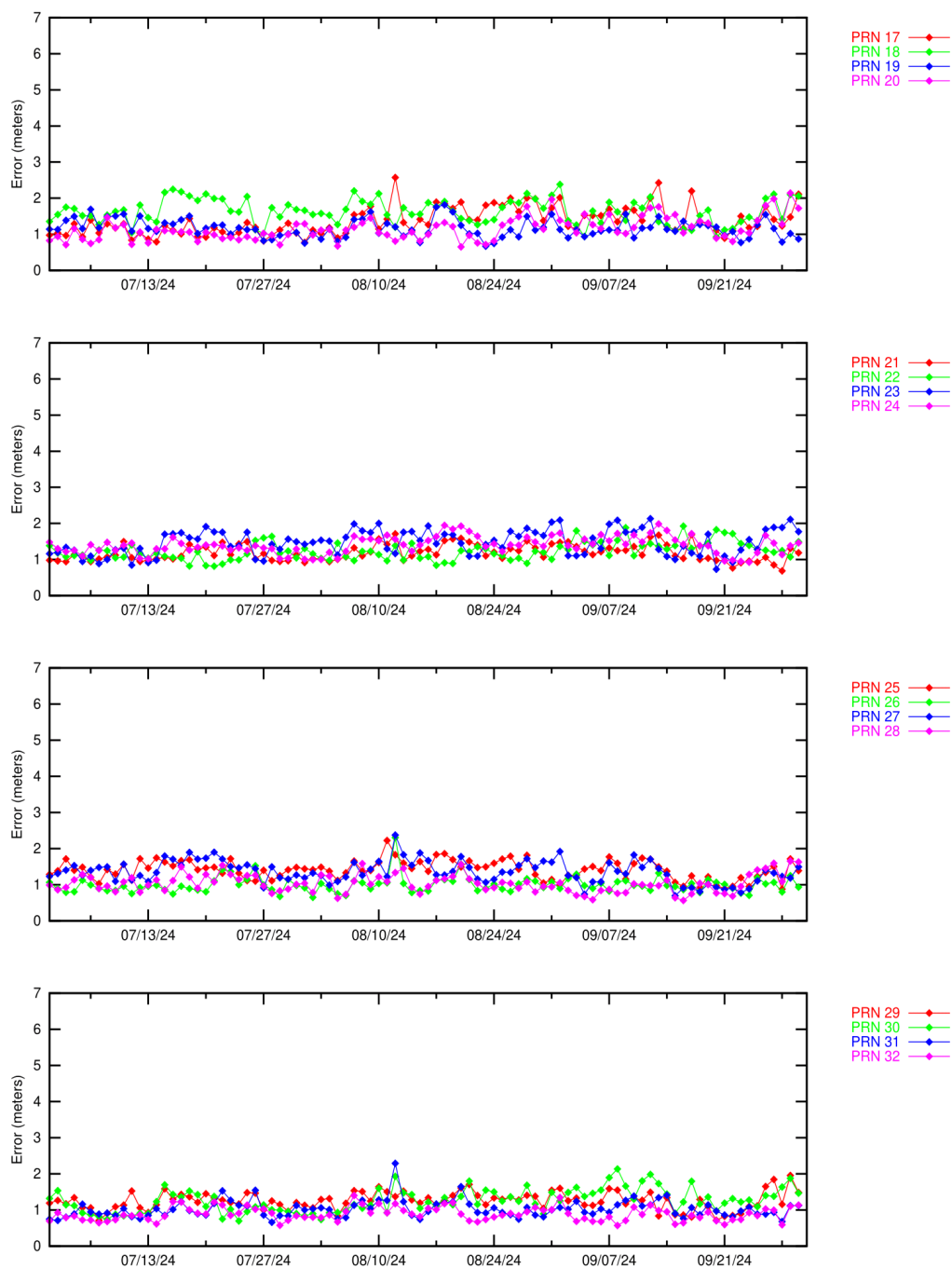


Figure 6-2 Range Error (PRN17–PRN32)–Washington, DC

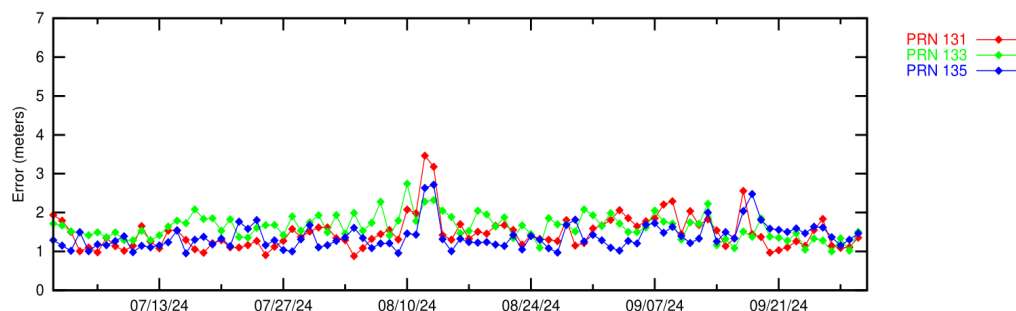


Figure 6-3 Range Error (PRN131, PRN133, and PRN138)–Washington, DC

A GIVE is broadcasted by the WAAS for each monitored IGP and the maximum normalized value (divided by sigma_UISE [User Ionospheric Slant Error]) of the ionospheric error after application of ionospheric corrections is checked. The WAAS broadcasts the ionospheric model using IGPs at predefined geographic locations. Each IGP contains the vertical ionospheric delay and the delay error in the form of the GIVE. The ionospheric error is determined by taking the difference between the WAAS vertical ionospheric delay interpolated from the IGP and GPS dual frequency measurement at that GPS satellite.

The GPS satellite ionospheric errors were calculated for 12 WAAS receivers during the quarter. Table 6-3 and Table 6-4 show the ionospheric error 95% index, maximum ionospheric error, and maximum normalized value (divided by sigma_UISE) for each SV at the selected locations. Figure 6-4 and Figure 6-5 show the 95% ionospheric error for each SV measured by the WAAS receiver at the Washington, DC reference station.

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

Site	Minneapolis			Chicago			Boston			Juneau			Honolulu			Salt Lake City		
PRN ↓	0.95 Iono Error (m)	Max Iono Error (m)	Max Iono Error Sigma	0.95 Iono Error (m)	Max Iono Error (m)	Max Iono Error Sigma	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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	0.656	2.630	0.681	0.634	2.431	0.177	0.615	3.284	1.234	0.648	2.300	0.697	0.523	3.029	1.013	0.413	1.541	0.176
3	0.528	1.985	0.976	0.702	3.666	0.311	0.632	2.772	0.112	0.567	2.388	0.801	0.748	3.010	1.060	0.593	1.589	0.529
4	0.715	3.294	0.206	0.689	3.816	0.809	0.811	2.050	0.713	0.714	3.208	0.241	0.856	3.073	0.103	0.564	2.925	0.692
5	0.425	4.265	0.757	0.405	1.569	0.608	0.669	2.255	0.942	0.672	6.697	0.607	1.147	2.903	1.206	0.504	2.039	0.555
6	0.575	2.813	0.210	0.534	1.761	0.576	0.516	2.124	0.558	0.591	2.384	0.784	0.693	3.205	0.703	0.585	1.526	0.363
7	0.781	5.609	0.257	0.786	3.987	0.107	0.888	4.017	0.156	0.720	3.251	0.634	0.628	2.571	0.549	0.641	2.087	0.420
8	0.624	3.060	0.170	0.852	2.911	0.999	0.586	1.895	0.682	0.588	3.900	0.362	1.052	3.527	0.789	0.658	2.202	0.631
9	0.638	3.604	0.788	0.659	2.609	0.608	0.510	2.635	0.691	0.519	2.638	0.201	0.769	2.214	0.732	0.592	2.170	0.474
10	0.885	2.494	0.763	0.777	2.549	0.762	0.824	2.807	0.762	0.905	3.651	0.747	0.629	2.130	0.334	0.575	1.741	0.464
11	0.539	2.108	0.903	0.874	2.623	0.844	0.607	2.391	0.605	0.777	2.478	0.600	1.025	5.257	1.162	0.612	3.671	1.059
12	0.517	2.288	0.591	0.581	4.599	0.839	0.522	2.164	0.524	0.607	3.206	0.756	0.776	2.376	1.018	0.529	1.484	0.615
13	0.871	6.314	1.753	0.726	4.570	1.275	0.502	3.025	1.158	0.589	2.328	0.642	0.539	2.489	0.399	0.427	1.832	0.482
14	0.865	3.327	0.194	0.559	3.550	0.741	0.618	1.637	0.613	0.761	3.869	0.138	0.685	2.540	0.602	0.831	1.791	0.478
15	0.869	3.986	0.347	0.470	3.141	0.781	0.500	1.919	0.490	0.803	4.707	1.097	0.985	3.290	0.420	0.483	2.056	0.585
16	0.729	2.859	0.912	0.693	2.722	0.986	0.625	2.402	0.622	0.783	2.931	0.561	1.386	6.288	1.199	0.652	2.723	0.635
17	0.651	1.864	0.777	0.709	3.747	0.939	0.793	2.270	1.182	0.689	2.606	1.035	1.296	6.919	1.821	0.669	2.108	0.523
18	0.814	2.440	0.887	0.607	2.579	0.563	0.836	2.162	0.725	0.765	3.020	0.584	0.912	4.572	0.209	0.655	1.952	0.566
19	0.642	2.720	0.951	0.692	3.145	1.013	0.644	3.026	0.871	0.620	2.601	0.880	0.754	5.177	1.009	0.687	2.646	0.654
20	0.684	3.391	0.265	0.491	2.383	0.702	0.514	2.452	0.524	0.802	3.570	1.249	0.756	3.228	0.701	0.526	3.618	0.237
21	0.489	2.597	0.672	0.550	2.082	0.662	0.446	1.378	0.466	0.580	2.370	0.787	0.612	4.154	0.770	0.668	2.117	0.572
22	0.853	2.365	0.767	0.832	2.450	0.893	0.794	1.807	0.797	1.021	2.925	0.733	0.940	3.477	0.673	0.867	4.288	1.608
23	0.887	2.404	0.983	0.748	3.117	1.014	0.908	3.344	1.148	0.908	3.693	0.868	0.752	3.287	0.499	1.106	4.440	1.175
24	0.657	2.279	1.048	0.635	2.178	0.645	0.609	2.711	0.937	0.704	2.211	1.022	0.603	3.033	0.649	0.466	2.241	0.844
25	0.519	2.376	0.601	0.703	3.428	0.822	0.588	1.674	0.766	0.604	3.749	0.189	0.578	2.135	0.863	0.772	6.012	1.274
26	0.747	3.833	0.738	0.623	2.375	0.985	0.670	1.713	0.776	0.655	2.456	0.671	1.156	6.011	0.565	0.516	2.763	0.267
27	0.750	3.959	1.633	0.577	2.724	0.894	0.662	2.478	0.614	0.651	2.617	0.785	0.654	3.072	0.125	0.539	1.915	0.135
28	1.016	3.486	0.846	0.560	2.477	0.328	0.892	2.756	0.590	0.876	3.572	0.475	1.472	4.926	0.970	0.734	3.723	0.871
29	0.787	3.522	1.247	0.631	2.417	0.470	0.582	2.390	0.206	0.618	4.283	0.540	0.857	4.066	0.142	0.526	1.872	0.407
30	0.741	3.427	0.358	0.684	3.512	0.338	0.689	2.347	0.740	0.640	2.666	0.560	0.821	2.742	0.737	0.711	1.827	0.197
31	0.688	3.108	0.852	0.757	2.693	0.832	0.963	3.444	0.842	0.986	3.712	0.845	1.941	12.243	3.111	0.809	3.592	0.808
32	0.763	2.825	1.037	0.842	2.885	0.813	0.803	2.717	0.960	0.782	2.730	0.737	1.323	3.683	0.931	0.573	3.383	0.878

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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	0.433	1.258	0.411	0.655	2.436	0.080	0.472	1.914	0.858	0.528	2.099	0.824	0.445	4.813	0.149	0.595	2.701	0.524
3	0.531	2.406	0.539	0.824	4.191	0.342	0.670	2.469	0.709	0.495	2.068	0.785	0.591	2.301	0.641	0.553	2.561	0.490
4	0.526	2.717	0.146	0.758	2.603	0.176	0.787	3.324	0.707	0.628	2.663	0.263	0.636	4.375	0.136	0.566	3.631	0.219
5	0.879	2.938	0.756	0.903	4.513	1.013	0.625	2.751	0.599	1.202	4.663	1.370	0.510	1.973	0.522	0.880	3.319	0.553
6	0.565	4.074	0.356	0.855	3.917	0.786	0.633	3.165	0.545	0.590	1.882	0.890	0.624	3.269	0.795	0.910	2.601	0.395
7	0.716	3.251	0.205	1.475	3.798	1.150	0.543	3.822	0.397	0.619	2.708	0.153	0.633	2.312	0.758	0.612	3.055	0.681
8	0.475	3.082	0.189	0.814	4.227	0.951	0.394	2.103	0.860	0.499	2.267	0.604	0.574	2.809	0.682	0.587	2.514	0.594
9	0.648	2.610	0.586	0.740	2.401	0.881	0.591	2.798	0.509	0.550	3.115	0.953	0.549	2.474	0.563	0.456	2.774	0.231
10	1.075	2.915	1.044	0.821	2.626	0.180	0.592	2.260	0.635	0.763	3.084	0.792	0.609	2.209	0.696	0.818	2.401	0.747
11	0.743	2.851	1.126	0.799	2.650	0.544	0.571	2.911	0.635	0.713	2.943	0.948	0.594	2.210	0.581	0.657	2.627	0.654
12	0.691	2.487	0.529	0.958	2.947	1.179	0.547	2.241	0.650	0.561	2.312	0.706	0.517	2.463	0.596	0.494	2.402	0.478
13	0.547	2.052	0.718	0.705	2.211	0.784	0.566	2.329	0.605	0.558	2.996	0.781	0.577	2.419	0.118	0.613	2.044	0.634
14	0.732	2.291	0.824	1.201	3.388	0.737	0.465	1.792	0.584	0.682	2.079	0.980	0.557	2.010	0.660	0.562	2.635	0.779
15	0.656	2.141	1.044	0.936	2.905	0.567	0.596	3.090	0.634	0.633	3.563	1.087	0.604	2.230	0.873	0.778	2.738	0.357
16	0.463	2.562	0.153	0.907	6.344	0.614	0.668	2.979	0.724	0.663	3.403	1.000	0.622	2.300	0.234	0.686	3.746	0.220
17	0.866	2.887	0.925	0.833	6.066	1.221	0.665	2.841	1.368	0.939	7.335	0.616	0.760	1.858	0.517	0.609	3.132	0.375
18	0.777	2.610	0.693	1.206	3.816	1.322	0.609	2.456	0.427	0.625	1.600	0.540	0.696	1.734	0.743	0.663	2.416	0.696
19	1.003	4.973	1.312	0.774	3.116	0.569	0.685	2.266	0.911	0.649	3.212	0.907	0.577	2.340	0.599	0.739	3.223	0.410
20	0.609	3.437	0.762	0.733	2.643	0.618	0.774	2.887	0.697	0.765	3.197	0.982	0.571	2.716	0.536	0.650	3.627	0.474
21	0.503	1.885	0.692	0.728	2.515	0.627	0.550	2.145	0.710	0.718	4.281	1.457	0.508	2.963	0.109	0.568	2.811	0.747
22	0.922	1.844	0.538	1.009	2.942	0.820	0.918	2.859	0.595	0.896	2.906	0.848	0.904	2.293	0.554	0.811	2.679	0.779
23	0.739	2.006	0.926	1.049	3.685	1.220	0.777	3.359	0.399	1.075	3.130	1.146	0.651	1.967	0.722	1.055	2.630	0.754
24	0.538	1.709	0.750	0.792	2.717	0.703	0.553	3.448	0.903	0.619	2.856	0.665	0.783	3.718	0.770	0.586	1.599	0.522
25	0.705	2.219	0.687	0.691	2.114	0.540	0.620	2.022	0.543	0.500	2.688	0.898	0.591	2.277	0.629	0.473	1.869	0.482
26	0.584	2.666	0.437	0.873	5.209	1.015	0.509	3.284	0.116	0.643	3.913	1.220	0.666	2.470	0.500	0.609	2.790	0.348
27	0.506	2.517	0.168	0.745	3.620	0.441	0.474	2.067	0.704	0.555	3.719	1.165	0.710	2.052	1.123	0.695	3.260	0.723
28	0.759	2.974	0.737	0.884	11.638	0.803	0.818	2.504	0.321	0.748	3.625	0.831	1.010	8.420	0.651	0.955	3.725	0.648
29	0.569	2.666	0.463	0.940	3.310	0.092	0.650	2.347	0.746	0.651	4.211	0.524	0.784	2.928	0.276	0.645	2.997	0.282
30	1.019	3.321	0.753	0.778	1.665	0.514	0.676	3.274	0.680	0.731	3.950	0.123	0.574	1.809	0.530	0.558	3.168	0.435
31	0.724	3.155	0.772	1.056	12.904	0.347	1.135	3.986	0.801	0.987	3.563	1.066	0.953	2.787	0.634	1.093	3.317	1.247
32	0.681	3.450	0.868	0.945	6.272	0.509	0.743	2.395	0.637	0.907	3.032	0.888	0.596	3.428	0.178	0.897	4.194	0.289

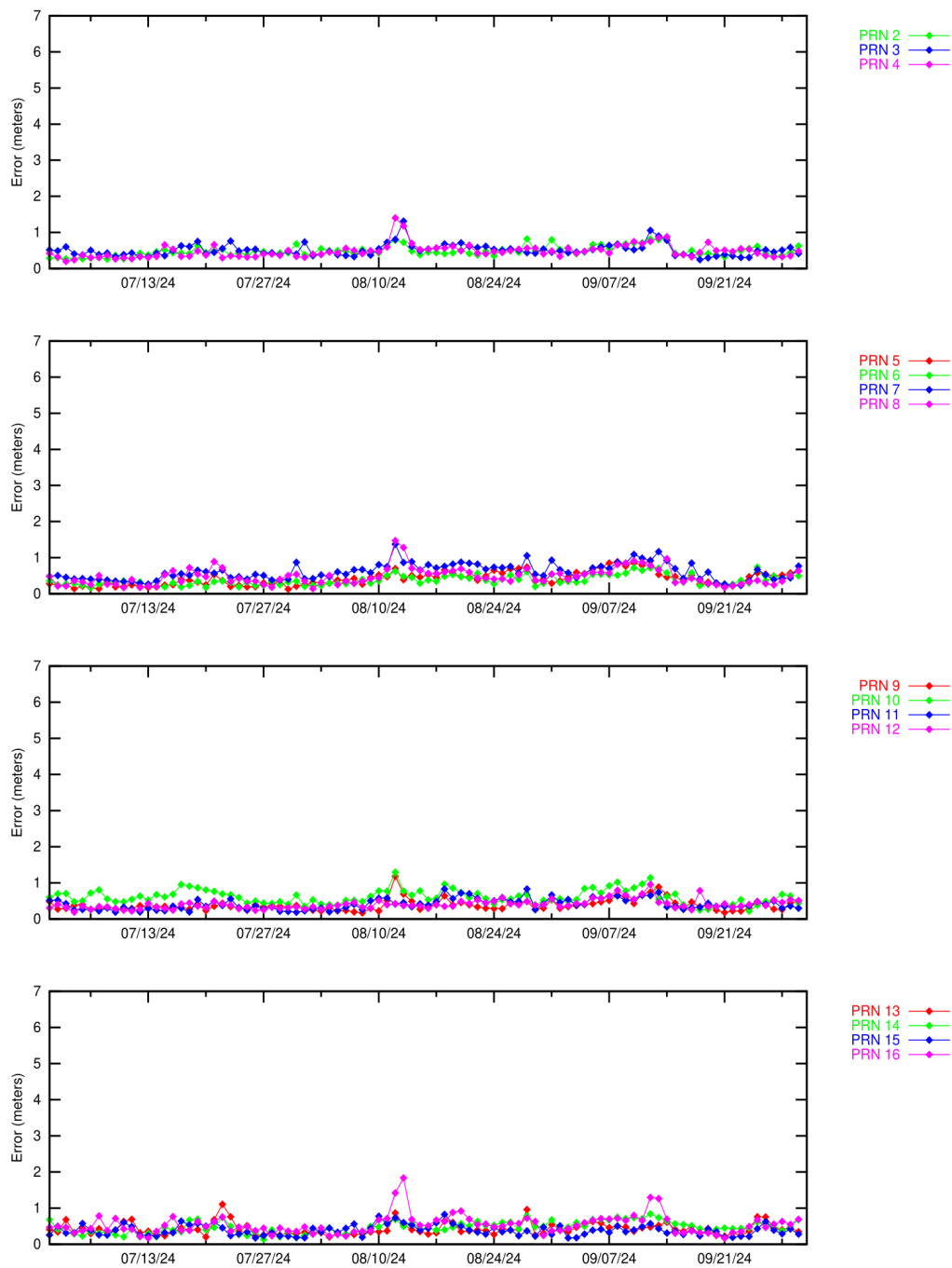


Figure 6-4 Ionospheric Error (PRN1–PRN16)–Washington, DC

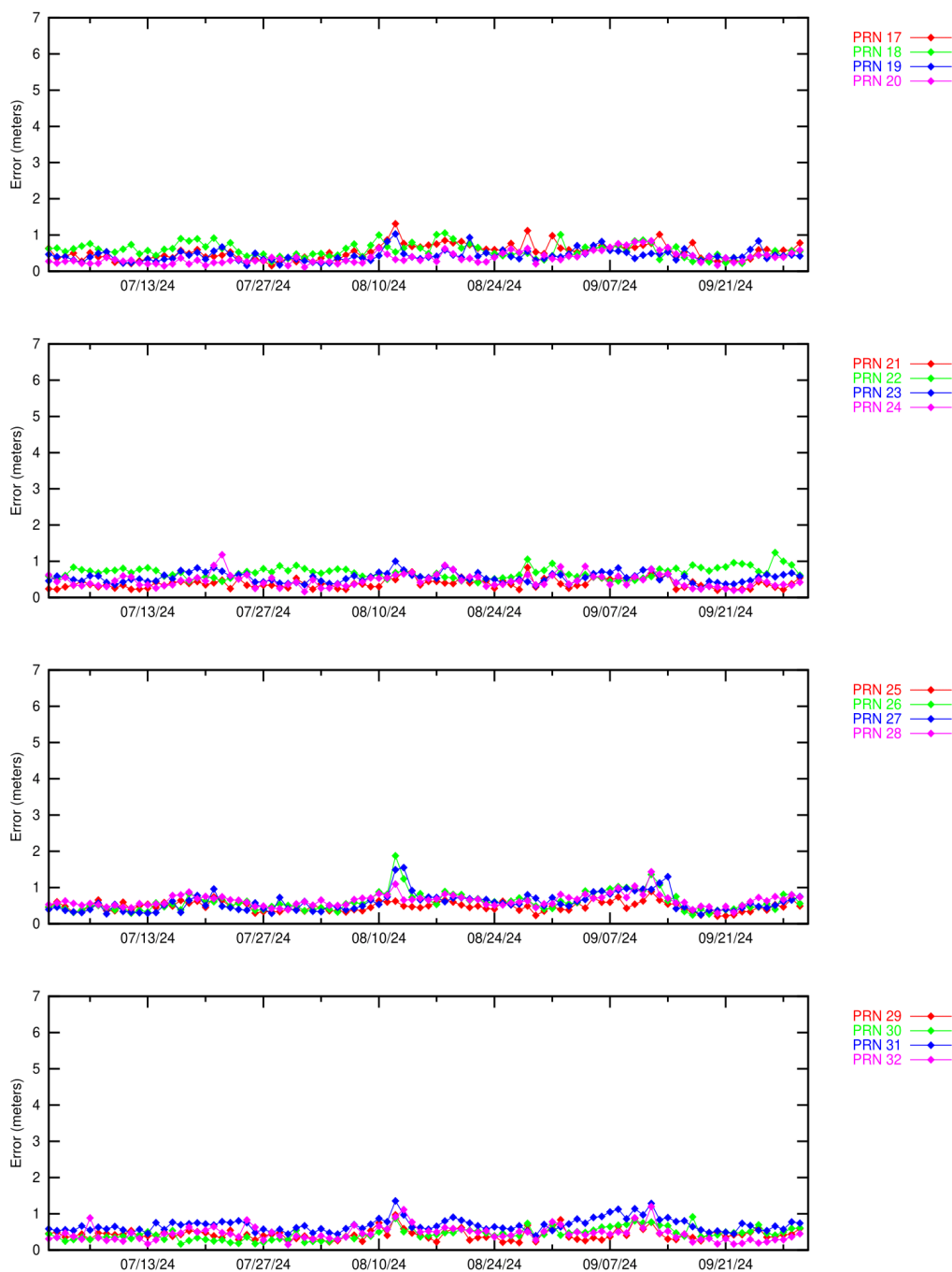


Figure 6-5 Ionospheric Error (PRN17–PRN32)–Washington, DC

For this reporting period, most satellite range errors were bounded at least 99.9% of the time by UDRE. Other unbounded errors (i.e., errors bounded less than 100% of the time) were due to geomagnetic activity, noise, and/or multipath. PRN1 was unavailable for the quarter.

7.0 GEO RANGING PERFORMANCE

The WAAS GEO navigation messages provide corrections and UDRE values for each satellite. The GEO ranging availability from each GEO navigation message source was evaluated separately to determine the quality of service provided.

Table 7-1 shows the GEO PA and NPA ranging availability as well as the percentage of time the GEO UDRE was set to “Not Monitored” and “Do Not Use.” Figure 7-1 to Figure 7-3 show the trend of SM9, S15, and G30 GEO PA ranging availability, respectively.

The reductions in SM9 GEO PA, S15 GEO PA, and G30 GEO PA ranging availability were due to GUS switchovers (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	99.25	0.08	0.61	0.06
SM9 131	S15	99.24	0.04	0.57	0.16
SM9 131	G30	99.42	0.01	0.44	0.13
S15 133	SM9	99.25	0.08	0.62	0.06
S15 133	S15	99.23	0.04	0.58	0.16
S15 133	G30	99.42	0.01	0.44	0.12
G30 135	SM9	99.25	0.08	0.61	0.06
G30 135	S15	99.24	0.04	0.57	0.16
G30 135	G30	99.34	0.02	0.51	0.13

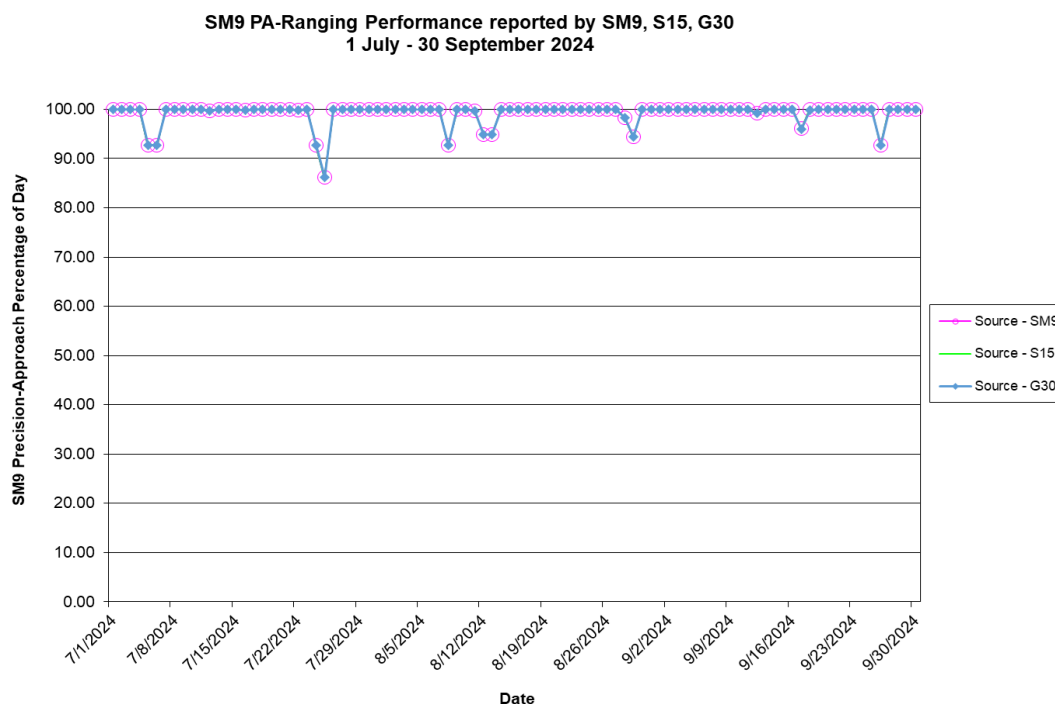


Figure 7-1 Daily PA SM9 GEO Ranging Availability Trend

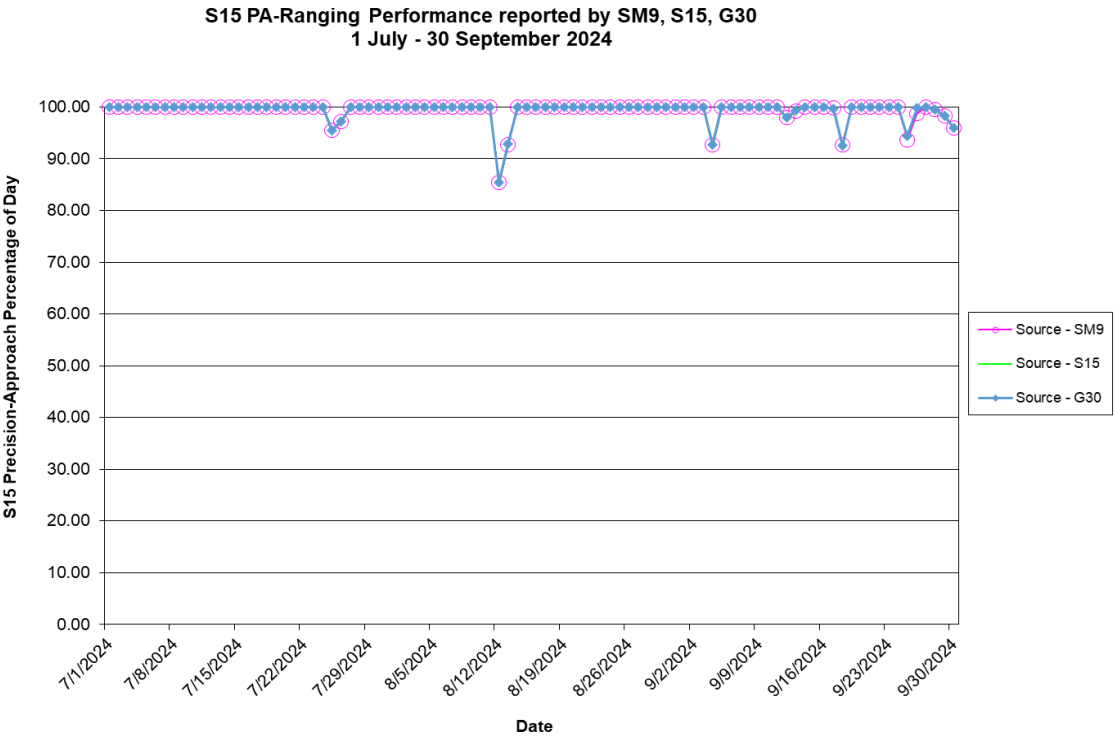


Figure 7-2 Daily PA S15 GEO Ranging Availability Trend

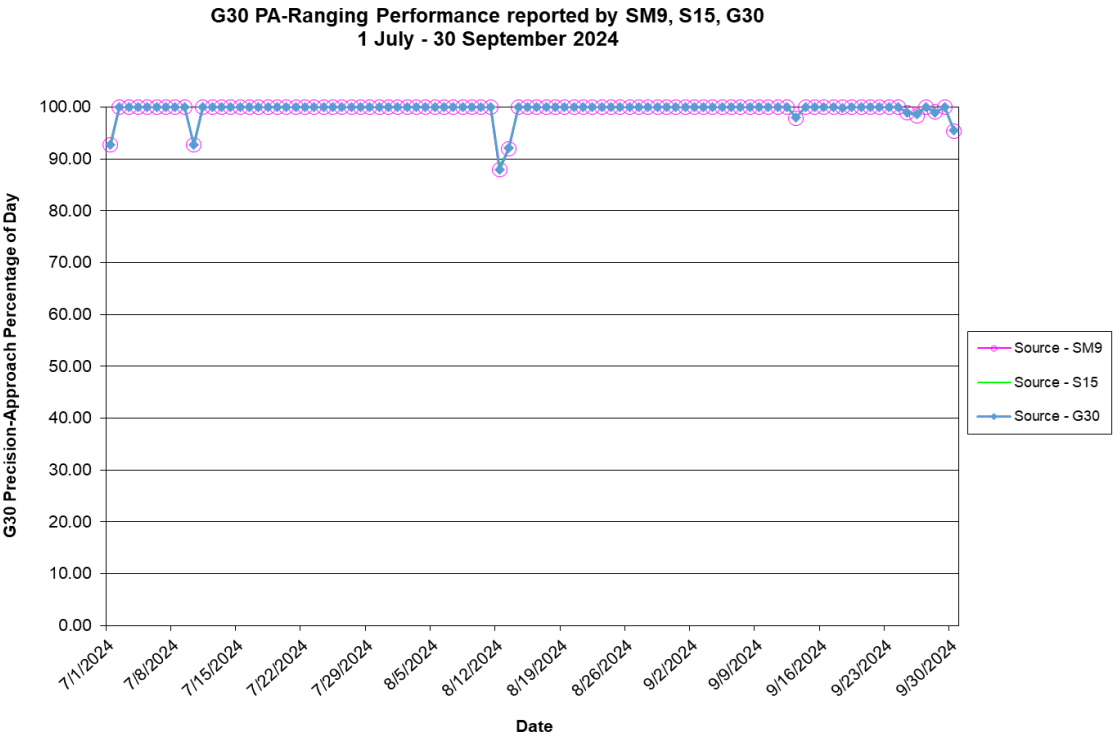


Figure 7-3 Daily PA G30 GEO Ranging Availability Trend

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	5	99.863	7	99.702	14	99.439
CEA3	OLDS-DIDSBURY	AB	LPV	2	99.898	5	99.849	9	99.652
CEB5	FAIRVIEW	AB	LPV	4	99.818	5	99.761	12	99.539
CEC4	JASPER-HINTON	AB	LP	3	99.877	4	99.843	10	99.632
CEH3	PONOKA (LABRIE FIELD)	AB	LPV	4	99.879	5	99.825	7	99.599
CEH5	RED EARTH CREEK	AB	LP	5	99.875	6	99.780	14	99.502
CEH6	PROVOST	AB	LPV	3	99.801	6	99.783	9	99.583
CEN3	THREE HILLS	AB	LPV	2	99.892	6	99.836	9	99.644
CEN5	COLD LAKE REGIONAL	AB	LPV	3	99.820	6	99.719	13	99.491
CEQ3	CAMROSE	AB	LPV	4	99.875	5	99.824	10	99.572
CET2	CONKLIN (LEISMER)	AB	LPV	3	99.852	6	99.725	12	99.485
CEV3	VEGREVILLE	AB	LPV	5	99.853	5	99.782	10	99.536
CEW3	ST. PAUL	AB	LPV	3	99.809	7	99.748	11	99.520
CEX3	WETASKIWIN REGIONAL	AB	LPV	4	99.878	5	99.824	9	99.586
CEZ3	COOKING LAKE	AB	LPV	4	99.867	6	99.846	10	99.544
CFB6	JOSEPHBURG	AB	LPV	4	99.869	7	99.840	10	99.552
CFM4	DONNELLY	AB	LPV	4	99.872	6	99.793	12	99.536
CYBF	BONNYVILLE	AB	LPV	3	99.818	6	99.723	11	99.516
CYBW	SPRINGBANK	AB	LPV	2	99.897	4	99.860	6	99.677
CYEG	EDMONTON INTL	AB	LPV200	4	99.871	6	99.842	10	99.567
CYFI	FIREBAG	AB	LPV	7	99.855	7	99.698	14	99.425
CYLB	LAC LA BICHE	AB	LPV	3	99.835	7	99.769	11	99.507
CYLL	LLOYDMINSTER	AB	LPV	3	99.807	5	99.733	11	99.553
CYMM	FORT MCMURRAY	AB	LPV200	5	99.856	7	99.709	13	99.460
CYNR	HORIZON	AB	LPV	5	99.862	7	99.703	14	99.432
CYOD	GROUP CAPTAIN R.W. MCNAIR	AB	LP	3	99.819	6	99.719	14	99.505
CYOJ	HIGH LEVEL	AB	LPV	4	99.846	8	99.772	15	99.423
CYOP	RAINBOW LAKE	AB	LPV	4	99.857	6	99.754	14	99.446
CYPE	PEACE RIVER	AB	LPV	4	99.830	6	99.772	12	99.527
CYPY	FORT CHIPEWYAN	AB	LPV	6	99.820	7	99.672	15	99.381
CYQF	RED DEER REGIONAL	AB	LPV	3	99.895	6	99.840	8	99.618
CYQL	LETHBRIDGE	AB	LPV200	1	99.899	5	99.866	6	99.709
CYQU	GRANDE PRAIRIE	AB	LPV200	5	99.830	5	99.783	13	99.582

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
CYWM	ATHABASCA	AB	LPV	3	99.861	4	99.805	12	99.518
CYXH	MEDICINE HAT	AB	LPV	1	99.824	4	99.802	5	99.661
CYYC	YYC CALGARY INTL	AB	LPV200	2	99.897	5	99.852	7	99.675
CYZU	WHITECOURT	AB	LPV	3	99.875	5	99.844	12	99.599
CZPC	PINCHER CREEK	AB	LPV	2	99.917	5	99.890	6	99.750
CZVL	VILLENEUVE	AB	LPV	4	99.868	7	99.847	11	99.558
2C7	SHAKTOOLIK	AK	LPV	6	99.907	5	99.853	7	99.729
6A8	ALLAKAKET	AK	LP	3	99.880	5	99.817	9	99.722
7KA	TATITLEK	AK	LP	5	99.853	6	99.797	8	99.624
9A3	CHUATHBALUK	AK	LPV	6	99.889	5	99.853	9	99.728
ADQ	KODIAK	AK	LPV	6	99.858	7	99.810	10	99.630
AFM	AMBLER	AK	LPV	3	99.893	5	99.818	11	99.718
AKN	KING SALMON	AK	LPV	4	99.862	5	99.837	9	99.725
ANC	TED STEVENS ANCHORAGE INTL	AK	LPV200	6	99.860	5	99.804	9	99.645
ANI	ANIAK	AK	LPV	5	99.890	4	99.853	9	99.738
AQH	QUINHAGAK	AK	LPV	4	99.868	4	99.855	9	99.755
AQT	NUIQSUT	AK	LPV	4	99.876	3	99.837	18	99.669
ATK	ATQASUK EDWARD BURNELL SR MEML	AK	LPV	3	99.861	4	99.828	16	99.621
AWI	WAINWRIGHT	AK	LPV	3	99.863	4	99.826	20	99.594
BET	BETHEL	AK	LPV200	4	99.874	4	99.860	7	99.769
BRW	WILEY POST-WILL ROGERS MEML	AK	LPV	3	99.856	4	99.837	20	99.579
BVK	BUCKLAND	AK	LPV	6	99.928	7	99.884	7	99.719
CDB	COLD BAY	AK	LPV200	6	99.918	6	99.891	26	99.577
CDV	MERLE K (MUDHOLE) SMITH	AK	LPV	5	99.860	6	99.800	9	99.627
CEM	CENTRAL	AK	LP	3	99.850	4	99.829	11	99.674
CLP	CLARKS POINT	AK	LPV	4	99.860	5	99.841	8	99.728
CXF	COLDFOOT	AK	LP	3	99.868	5	99.832	9	99.704
D76	ROBERT/BOB/CURTIS MEML	AK	LPV	5	99.926	5	99.834	8	99.732
DEE	DEERING	AK	LPV	5	99.940	6	99.871	7	99.702
DLG	DILLINGHAM	AK	LPV	4	99.860	4	99.842	8	99.741
ELI	ELIM	AK	LPV	5	99.909	4	99.854	7	99.723
ENA	KENAI MUNICIPAL	AK	LPV200	6	99.867	5	99.818	10	99.672
ENM	EMMONAK	AK	LPV	5	99.897	4	99.857	9	99.762
FAI	FAIRBANKS INTL	AK	LPV200	3	99.864	5	99.791	10	99.663
FYU	FORT YUKON	AK	LPV	3	99.847	4	99.830	10	99.672

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
GAL	EDWARD G PITKA SR	AK	LPV	6	99.880	5	99.783	7	99.713
GAM	GAMBELL	AK	LPV	6	99.918	5	99.830	25	99.569
GKN	GULKANA	AK	LPV	5	99.849	5	99.795	9	99.625
GST	GUSTAVUS	AK	LP	4	99.828	8	99.752	10	99.530
HLA	HUSLIA	AK	LPV	5	99.890	5	99.800	8	99.728
HOM	HOMER	AK	LPV	6	99.873	6	99.813	10	99.661
HPB	HOOPER BAY	AK	LP	5	99.892	5	99.874	13	99.746
HRR	HEALY RIVER	AK	LP	5	99.858	5	99.784	9	99.666
IAN	BOB BAKER MEML	AK	LPV	5	99.923	6	99.824	8	99.732
IIK	KIPNUK	AK	LPV	4	99.866	4	99.857	11	99.747
ILI	ILIAMNA	AK	LPV	6	99.884	5	99.845	8	99.707
IWK	WALES	AK	LP	5	99.916	5	99.847	15	99.676
IYS	WASILLA	AK	LPV	7	99.870	6	99.806	10	99.652
KAL	KALTAG	AK	LPV	6	99.888	6	99.815	7	99.716
KGX	GRAYLING	AK	LP	6	99.887	5	99.850	9	99.766
KKK	KOYUK ALFRED ADAMS	AK	LP	6	99.912	5	99.857	6	99.718
KSM	ST MARY'S	AK	LPV200	4	99.880	4	99.857	7	99.771
KTN	KETCHIKAN INTL	AK	LPV	5	99.811	4	99.756	10	99.576
KTS	BREVIK MISSION	AK	LPV	5	99.911	5	99.859	10	99.680
KWT	KWETHLUK	AK	LPV	4	99.874	4	99.859	7	99.772
KYU	KOYUKUK	AK	LPV	6	99.886	5	99.784	7	99.717
MCG	MC GRATH	AK	LP	6	99.873	5	99.795	9	99.690
MDM	MARSHALL DON HUNTER SR	AK	LP	4	99.882	4	99.859	7	99.773
MDO	MIDDLETON ISLAND	AK	LP	4	99.857	6	99.750	9	99.634
MLY	MANLEY HOT SPRINGS	AK	LP	4	99.868	5	99.798	9	99.677
MOU	MOUNTAIN VILLAGE	AK	LPV200	4	99.883	4	99.864	7	99.772
MYU	MEKORYUK	AK	LPV	5	99.898	5	99.883	20	99.727
OME	NOME	AK	LPV	5	99.906	4	99.857	8	99.706
OOK	TOKSOOK BAY	AK	LP	5	99.893	5	99.883	12	99.751
ORT	NORTHWAY	AK	LP	3	99.850	4	99.820	10	99.624
OTZ	RALPH WIEN MEML	AK	LPV	5	99.937	5	99.816	10	99.696
PAQ	WARREN 'BUD' WOODS PALMER MUNICIPAL	AK	LP	7	99.864	6	99.803	9	99.638
PBV	ST GEORGE	AK	LPV	4	99.911	8	99.879	51	99.262
PHO	POINT HOPE	AK	LPV	4	99.929	5	99.807	17	99.581
PTU	PLATINUM	AK	LPV	4	99.884	4	99.851	9	99.739

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
RBV	RUBY	AK	LPV	7	99.870	5	99.785	8	99.705
RSH	RUSSIAN MISSION	AK	LP	5	99.903	4	99.867	7	99.772
SCC	DEADHORSE	AK	LPV200	3	99.869	3	99.836	20	99.657
SCM	SCAMMON BAY	AK	LP	4	99.877	4	99.854	11	99.746
SDP	SAND POINT	AK	LPV	5	99.922	5	99.886	18	99.693
SHG	SHUNGNAK	AK	LP	3	99.892	5	99.818	9	99.711
SHX	SHAGELUK	AK	LPV	6	99.886	5	99.853	9	99.745
SIT	SITKA ROCKY GUTIERREZ	AK	LP	7	99.819	7	99.734	10	99.550
SLQ	SLEETMUTE	AK	LP	6	99.884	5	99.822	8	99.702
SMK	ST MICHAEL	AK	LPV	5	99.898	4	99.849	7	99.753
SXQ	SOLDOTNA	AK	LP	6	99.867	5	99.818	10	99.670
TER	TELLER	AK	LPV200	5	99.911	5	99.859	10	99.681
TKA	TALKEETNA	AK	LPV	7	99.872	5	99.799	8	99.656
TOG	TOGIAK	AK	LP	4	99.867	4	99.847	9	99.732
WLK	SELAWIK	AK	LPV	5	99.924	5	99.828	7	99.733
WMO	WHITE MOUNTAIN	AK	LPV	5	99.903	4	99.858	7	99.726
WNA	NAPAKIAK	AK	LPV	4	99.874	4	99.863	7	99.762
WSN	SOUTH NAKNEK NR 2	AK	LPV	4	99.862	5	99.838	9	99.724
WTK	NOATAK	AK	LPV	3	99.929	5	99.809	12	99.702
YAK	YAKUTAT	AK	LPV200	3	99.844	6	99.791	10	99.546
02A	CHILTON COUNTY	AL	LP	2	99.941	3	99.900	3	99.812
06A	MOTON FLD MUNICIPAL	AL	LPV	2	99.902	2	99.870	3	99.812
09A	BUTLER/CHOCTAW COUNTY	AL	LPV	3	99.936	4	99.907	5	99.841
0J6	HEADLAND MUNICIPAL	AL	LPV	3	99.896	3	99.871	4	99.830
0R1	ATMORE MUNICIPAL	AL	LPV	3	99.919	4	99.902	4	99.813
11A	CLAYTON MUNICIPAL	AL	LPV	2	99.894	3	99.873	4	99.829
12J	BREWTON MUNICIPAL	AL	LPV	4	99.903	4	99.880	4	99.813
1A9	PRATTVILLE - GROUBY FLD	AL	LPV	3	99.915	3	99.882	3	99.810
1M4	POSEY FLD	AL	LPV	2	99.935	2	99.925	4	99.863
1R8	BAY MINETTE MUNICIPAL	AL	LPV	3	99.923	4	99.905	4	99.809
2R5	ST ELMO	AL	LPV	4	99.925	6	99.910	7	99.816
33J	GENEVA MUNICIPAL	AL	LP	4	99.894	3	99.864	4	99.812
3M8	NORTH PICKENS	AL	LP	2	99.934	3	99.905	4	99.853
4A9	ISBELL FLD	AL	LPV	2	99.928	2	99.923	4	99.870
5R1	ROY WILCOX	AL	LP	3	99.934	4	99.915	5	99.835

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
5R4	FOLEY MUNICIPAL	AL	LPV	5	99.916	6	99.902	6	99.802
71J	OZARK/BLACKWELL FLD	AL	LPV	3	99.897	3	99.866	4	99.816
79J	SOUTH ALABAMA RGNL AT BILL BEN	AL	LPV	4	99.894	3	99.863	4	99.812
8A0	ALBERTVILLE RGNL/THOMAS J BRUM	AL	LPV	2	99.932	2	99.922	4	99.863
8A1	GUNTERSVILLE MUNICIPAL/JOE STARNES	AL	LPV	2	99.931	2	99.926	4	99.869
9A4	COURTLAND	AL	LPV200	2	99.931	2	99.924	4	99.883
A08	VAIDEN FLD	AL	LPV	3	99.935	3	99.900	4	99.824
ALX	THOMAS C RUSSELL FLD	AL	LPV	2	99.930	3	99.892	3	99.812
ANB	ANNISTON RGNL	AL	LPV	2	99.932	2	99.926	3	99.820
ASN	TALLADEGA MUNICIPAL	AL	LPV200	2	99.932	2	99.925	3	99.820
AUO	AUBURN UNIVERSITY RGNL	AL	LPV200	2	99.901	2	99.871	3	99.813
BFM	MOBILE DOWNTOWN	AL	LPV200	4	99.922	6	99.905	6	99.801
BHM	BIRMINGHAM-SHUTTLESWORTH INTL	AL	LPV200	2	99.935	2	99.927	4	99.831
CMD	CULLMAN RGNL-FOLSOM FLD	AL	LPV	2	99.935	2	99.924	4	99.866
CQF	H L SONNY CALLAHAN	AL	LPV200	4	99.920	6	99.903	6	99.802
DCU	PRYOR FLD RGNL	AL	LPV200	2	99.931	2	99.924	4	99.883
DHN	DOTHAN RGNL	AL	LPV200	3	99.896	3	99.866	4	99.828
DYA	DEMOPOLIS RGNL	AL	LPV	3	99.931	3	99.900	5	99.845
EDN	ENTERPRISE MUNICIPAL	AL	LPV	4	99.895	3	99.864	4	99.812
EET	SHELBY COUNTY	AL	LPV	2	99.935	3	99.898	3	99.820
EKY	BESSEMER	AL	LPV200	2	99.935	3	99.909	4	99.831
EUF	WEEDON FLD	AL	LPV	2	99.895	2	99.874	3	99.815
GAD	NORTHEAST ALABAMA RGNL	AL	LPV200	2	99.932	2	99.922	3	99.820
GZH	EVERGREEN RGNL/MIDDLETON FLD	AL	LP	4	99.906	4	99.886	4	99.812
HAB	MARION COUNTY-RANKIN FITE	AL	LPV	2	99.935	2	99.925	5	99.857
HSV	HUNTSVILLE INTL-CARL T JONES F	AL	LPV200	2	99.931	2	99.925	4	99.881
JFX	WALKER COUNTY-BEVILL FLD	AL	LPV	2	99.935	2	99.926	4	99.841
JKA	GULF SHORES INTL/JACK EDWARDS	AL	LPV200	5	99.915	6	99.896	7	99.802
M95	RICHARD ARTHUR FLD	AL	LPV	2	99.939	2	99.929	4	99.845
MDQ	HUNTSVILLE EXEC TOM SHARP JR F	AL	LPV200	2	99.928	2	99.922	3	99.880
MGM	MONTGOMERY RGNL (DANNELLY FLD)	AL	LPV200	3	99.900	3	99.864	3	99.810
MOB	MOBILE RGNL	AL	LPV200	4	99.924	6	99.910	7	99.819
MSL	NORTHWEST ALABAMA RGNL	AL	LPV200	2	99.935	2	99.924	3	99.884
PLR	ST CLAIR COUNTY	AL	LPV	2	99.935	2	99.928	3	99.820
PYP	CENTRE-PIEDMONT-CHEROKEE COUNT	AL	LPV	2	99.932	2	99.923	3	99.820

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
SCD	MERKEL FLD SYLACAUGA MUNICIPAL	AL	LPV	2	99.932	3	99.903	3	99.820
SEM	CRAIG FLD	AL	LPV200	4	99.914	4	99.886	4	99.824
TCL	TUSCALOOSA NTL	AL	LPV	2	99.932	3	99.897	4	99.845
TOI	TROY MUNICIPAL AT N KENNETH CAMPBEL	AL	LPV	3	99.886	3	99.865	4	99.814
0M0	BILLY FREE MUNICIPAL	AR	LPV	1	99.962	2	99.941	6	99.880
42A	MELBOURNE MUNICIPAL - JOHN E MILLER	AR	LP	2	99.887	3	99.877	2	99.819
4A5	SEARCY COUNTY	AR	LPV	2	99.901	3	99.882	3	99.834
4M1	CARROLL COUNTY	AR	LP	2	99.860	2	99.852	2	99.794
4M3	CARLISLE MUNICIPAL	AR	LPV	1	99.949	2	99.930	3	99.877
6M7	MARIANNA/LEE COUNTY-STEVE EDWA	AR	LPV	1	99.949	2	99.934	3	99.893
7M1	MC GEHEE MUNICIPAL	AR	LP	1	99.960	2	99.942	5	99.886
9M8	SHERIDAN-GRANT COUNTY RGNL	AR	LPV	1	99.959	2	99.940	4	99.903
ADF	DEXTER B FLORENCE MEML FLD	AR	LPV	1	99.958	2	99.943	3	99.914
ARG	WALNUT RIDGE RGNL	AR	LPV200	3	99.901	4	99.890	2	99.821
ASG	SPRINGDALE MUNICIPAL	AR	LPV	3	99.890	3	99.876	2	99.810
AWM	WEST MEMPHIS MUNICIPAL	AR	LPV	1	99.949	2	99.934	3	99.872
BPK	BAXTER COUNTY	AR	LPV	3	99.872	3	99.869	3	99.796
BVX	BATESVILLE RGNL	AR	LPV	2	99.925	3	99.916	2	99.828
BYH	ARKANSAS INTL	AR	LPV200	2	99.914	3	99.900	2	99.826
CDH	HARRELL FLD	AR	LPV	2	99.958	3	99.943	4	99.919
CXW	CONWAY RGNL	AR	LPV	1	99.949	2	99.932	4	99.881
DRP	DELTA RGNL	AR	LPV	1	99.949	2	99.929	3	99.873
ELD	SOUTH ARKANSAS RGNL AT GOODWIN	AR	LPV	2	99.956	3	99.938	4	99.902
FLP	MARION COUNTY RGNL	AR	LPV	3	99.886	3	99.871	3	99.797
FSM	FORT SMITH RGNL	AR	LPV200	2	99.956	4	99.937	3	99.865
FYV	DRAKE FLD	AR	LPV	2	99.893	3	99.882	2	99.817
H34	HUNTSVILLE MUNICIPAL	AR	LPV	2	99.894	3	99.879	2	99.814
HEE	THOMPSON-ROBBINS	AR	LPV	1	99.953	2	99.938	4	99.889
HRO	BOONE COUNTY	AR	LPV	3	99.886	3	99.871	2	99.791
JBR	JONESBORO MUNICIPAL	AR	LPV200	2	99.927	3	99.910	2	99.826
LIT	BILL AND HILLARY CLINTON NTL/A	AR	LPV200	1	99.955	2	99.932	5	99.901
LLQ	MONTICELLO MUNICIPAL/ELLIS FLD	AR	LPV	1	99.960	2	99.941	5	99.887
M18	HOPE MUNICIPAL	AR	LP	2	99.953	3	99.941	4	99.921
M19	NEWPORT RGNL	AR	LPV	2	99.938	3	99.922	2	99.826
M32	LAKE VILLAGE MUNICIPAL	AR	LP	1	99.960	4	99.938	4	99.892

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
M70	POCAHONTAS MUNICIPAL	AR	LPV	3	99.885	3	99.873	2	99.819
M77	HOWARD COUNTY	AR	LP	2	99.956	3	99.944	4	99.910
MXA	MANILA MUNICIPAL	AR	LPV	2	99.926	3	99.904	2	99.826
ORK	NORTH LITTLE ROCK MUNICIPAL	AR	LPV	1	99.949	2	99.932	5	99.900
PBF	PINEBLUFF RGNL/GRIDER FLD	AR	LPV	1	99.962	2	99.941	5	99.894
ROG	ROGERS EXEC - CARTER FLD	AR	LPV	2	99.857	2	99.855	2	99.809
RUE	RUSSELLVILLE RGNL	AR	LPV	2	99.949	3	99.932	3	99.873
SGT	STUTTGART MUNICIPAL CARL HUMPHREY F	AR	LPV	1	99.950	2	99.936	3	99.889
SLG	SMITH FLD	AR	LPV	3	99.886	3	99.873	2	99.810
SRC	SEARCY MUNICIPAL	AR	LPV	1	99.949	2	99.930	2	99.855
SUZ	SALINE COUNTY RGNL	AR	LPV	1	99.955	2	99.934	4	99.906
TXK	TEXARKANA RGNL-WEBB FLD	AR	LPV	2	99.948	3	99.938	5	99.918
VBT	BENTONVILLE MUNICIPAL/LOUISE M THAD	AR	LPV	3	99.869	3	99.867	2	99.810
XNA	NORTHWEST ARKANSAS NTL	AR	LPV200	3	99.883	3	99.870	2	99.810
AVQ	MARANA RGNL	AZ	LP	0	100	0	100	8	99.948
AZC	COLORADO CITY MUNICIPAL	AZ	LPV	0	100	1	99.972	1	99.964
CGZ	CASA GRANDE MUNICIPAL	AZ	LPV	0	100	0	100	6	99.954
CHD	CHANDLER MUNICIPAL	AZ	LPV	0	100	0	100	5	99.957
DVT	PHOENIX DEER VALLEY	AZ	LPV	0	100	0	100	4	99.964
FFZ	FALCON FLD	AZ	LP	0	100	0	100	5	99.960
FHU	SIERRA VISTA MUNICIPAL-LIBBY AAF	AZ	LPV200	0	100	0	100	25	99.810
FLG	FLAGSTAFF PULLIAM	AZ	LPV	0	100	0	100	2	99.996
GCN	GRAND CANYON NTL PARK	AZ	LPV	0	100	0	100	2	99.978
GEU	GLENDALE MUNICIPAL	AZ	LPV	0	100	0	100	4	99.958
GYR	PHOENIX GOODYEAR	AZ	LP	0	100	0	100	4	99.956
HII	LAKE HAVASU CITY	AZ	LPV	0	100	0	100	5	99.955
IFP	LAUGHLIN/BULLHEAD INTL	AZ	LPV	0	100	0	100	4	99.976
IGM	KINGMAN	AZ	LPV	0	100	0	100	4	99.986
IWA	PHOENIX-MESA GATEWAY	AZ	LPV200	0	100	0	100	5	99.958
JTC	SPRINGERVILLE MUNICIPAL	AZ	LP	0	100	0	100	5	99.990
P08	COOLIDGE MUNICIPAL	AZ	LPV	0	100	0	100	6	99.955
P20	AVI SUQUILLA	AZ	LPV	0	100	0	100	4	99.938
P33	COCHISE COUNTY	AZ	LPV	0	100	0	100	26	99.926
PGA	PAGE MUNICIPAL	AZ	LPV	0	100	1	99.972	1	99.964
PHX	PHOENIX SKY HARBOR INTL	AZ	LPV	0	100	0	100	4	99.959

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
PRC	PRESCOTT RGNL - ERNEST A LOVE	AZ	LPV200	0	100	0	100	4	99.983
RQE	WINDOW ROCK	AZ	LP	0	100	0	100	3	99.981
RYN	RYAN FLD	AZ	LPV	0	100	0	100	11	99.932
SAD	SAFFORD RGNL	AZ	LPV	0	100	0	100	13	99.950
SJN	ST JOHNS INDUSTRIAL AIR PARK	AZ	LPV	0	100	0	100	3	99.993
SOW	SHOW LOW RGNL	AZ	LPV200	0	100	0	100	6	99.990
TUS	TUCSON INTL	AZ	LPV	0	100	0	100	11	99.936
TYL	TAYLOR	AZ	LPV	0	100	0	100	4	99.995
CAJ4	ANAHIM LAKE	BC	LPV	2	99.871	5	99.843	9	99.669
CAJ9	FORT WARE	BC	LP	4	99.801	5	99.756	12	99.591
CAU4	VANDERHOOF	BC	LPV	4	99.834	4	99.780	11	99.641
CBN9	TSAY KEH	BC	LP	4	99.800	5	99.756	12	99.607
CBW4	BOB QUINN LAKE	BC	LP	6	99.795	6	99.746	11	99.595
CYBL	CAMPBELL RIVER	BC	LPV	2	99.898	2	99.873	10	99.774
CYCD	NANAIMO	BC	LPV	1	99.915	2	99.893	9	99.823
CYCZ	FAIRMONT HOT SPRINGS	BC	LPV	1	99.918	4	99.891	7	99.736
CYDL	DEASE LAKE	BC	LP	7	99.809	6	99.734	12	99.552
CYDQ	DAWSON CREEK	BC	LPV	5	99.818	5	99.760	16	99.616
CYKA	KAMLOOPS	BC	LPV	1	99.910	4	99.887	9	99.758
CYLW	KELOWNA	BC	LPV	1	99.910	2	99.905	9	99.782
CYPK	PITT MEADOWS	BC	LPV	1	99.913	3	99.909	9	99.834
CYPR	PRINCE RUPERT	BC	LPV	4	99.838	4	99.761	9	99.592
CYQQ	COMOX	BC	LPV200	2	99.912	2	99.883	10	99.793
CYQZ	QUESNEL	BC	LPV	3	99.851	5	99.814	11	99.656
CYVR	VANCOUVER INTL	BC	LPV200	1	99.913	2	99.892	10	99.827
CYWL	WILLIAMS LAKE	BC	LPV	2	99.885	4	99.830	12	99.701
CYXJ	FORT ST. JOHN	BC	LPV200	4	99.813	5	99.758	16	99.615
CYXS	PRINCE GEORGE	BC	LPV200	4	99.838	5	99.786	12	99.652
CYXT	TERRACE	BC	LPV	3	99.843	5	99.782	11	99.613
CYXX	ABBOTSFORD	BC	LPV	1	99.913	2	99.912	9	99.837
CYYD	SMITHERS	BC	LPV	3	99.835	5	99.776	11	99.585
CYYE	FORT NELSON	BC	LPV200	4	99.838	5	99.760	19	99.550
CYYF	PENTICTON	BC	LPV	1	99.910	1	99.906	7	99.803
CYYJ	VICTORIA INTL	BC	LPV200	1	99.915	2	99.909	10	99.835
CYZP	SANDSPIT	BC	LPV	2	99.869	4	99.756	10	99.590

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
CYZT	PORT HARDY	BC	LPV	2	99.880	3	99.859	11	99.719
CZBB	BOUNDARY BAY	BC	LPV	1	99.913	2	99.894	9	99.833
AAT	ALTURAS MUNICIPAL	CA	LPV	1	99.959	1	99.953	4	99.900
ACV	CALIFORNIA REDWOOD COAST-HUMBO	CA	LPV	2	99.968	3	99.943	12	99.761
APC	NAPA COUNTY	CA	LPV200	1	99.982	1	99.980	14	99.809
APV	APPLE VALLEY	CA	LPV	0	100	1	99.988	6	99.931
AUN	AUBURN MUNICIPAL	CA	LPV	0	100	0	100	9	99.876
BFL	MEADOWS FLD	CA	LPV	0	100	1	99.987	17	99.887
BLH	BLYTHE	CA	LP	0	100	1	99.993	5	99.925
BUR	BOB HOPE	CA	LP	0	100	1	99.986	18	99.887
C83	BYRON	CA	LPV	1	99.997	1	99.980	11	99.821
CCB	CABLE	CA	LP	0	100	1	99.987	8	99.915
CCR	BUCHANAN FLD	CA	LPV	1	99.981	1	99.981	12	99.802
CEC	JACK MC NAMARA FLD	CA	LPV	2	99.960	2	99.924	12	99.777
CIC	CHICO MUNICIPAL	CA	LPV	0	100	1	99.989	9	99.835
CMA	CAMARILLO	CA	LPV	0	100	1	99.971	26	99.774
CNO	CHINO	CA	LPV	0	100	1	99.986	8	99.914
CPU	CALAVERAS COUNTY-MAURY RASMUS	CA	LP	1	99.998	1	99.998	9	99.912
CRQ	MC CLELLAN-PALOMAR	CA	LPV	0	100	1	99.986	16	99.817
CVH	HOLLISTER MUNICIPAL	CA	LPV	1	99.994	1	99.979	15	99.809
DAG	BARSTOW-DAGGETT	CA	LPV	0	100	1	99.989	4	99.940
DWA	YOLO COUNTY	CA	LPV	1	99.999	1	99.982	12	99.826
F70	FRENCH VALLEY	CA	LPV	0	100	1	99.986	11	99.880
FAT	FRESNO YOSEMITE INTL	CA	LPV200	1	99.994	1	99.994	11	99.899
FCH	FRESNO CHANDLER EXEC	CA	LPV	1	99.994	1	99.994	11	99.893
GOO	NEVADA COUNTY	CA	LPV	0	100	0	100	8	99.875
HAF	HALF MOON BAY	CA	LPV	1	99.981	1	99.978	14	99.760
HHR	JACK NORTHROP FLD/HAWTHORNE MU	CA	LPV	0	100	2	99.985	23	99.849
HJO	HANFORD MUNICIPAL	CA	LPV	1	99.992	1	99.992	12	99.890
HWD	HAYWARD EXEC	CA	LPV	1	99.981	1	99.981	12	99.780
L35	BIG BEAR CITY	CA	LP	0	100	1	99.988	6	99.929
LAX	LOS ANGELES INTL	CA	LPV200	0	100	2	99.984	25	99.847
LGB	LONG BEACH (DAUGHERTY FLD)	CA	LPV	0	100	1	99.986	23	99.845
LHM	LINCOLN RGNL/KARL HARDER FLD	CA	LPV200	0	100	1	99.999	9	99.868
LLR	LITTLE RIVER	CA	LP	1	99.978	2	99.972	16	99.743

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
LSN	LOS BANOS MUNICIPAL	CA	LPV	1	99.995	1	99.995	11	99.852
LVK	LIVERMORE MUNICIPAL	CA	LPV200	1	99.997	1	99.980	13	99.810
MAE	MADERA MUNICIPAL	CA	LPV	1	99.994	1	99.994	11	99.890
MCE	MERCED RGNL/MACREADY FLD	CA	LPV200	1	99.995	1	99.995	10	99.885
MER	CASTLE	CA	LPV200	1	99.995	1	99.995	10	99.886
MHR	SACRAMENTO MATHER	CA	LPV200	1	99.999	1	99.999	10	99.870
MHV	MOJAVE AIR AND SPACE PORT	CA	LP	0	100	1	99.987	14	99.929
MIT	SHAFTER-MINTER FLD	CA	LPV	0	100	1	99.987	17	99.883
MOD	MODESTO CITY-COUNTY-HARRY SHAM	CA	LPV200	1	99.996	1	99.996	10	99.875
MRY	MONTEREY RGNL	CA	LPV	1	99.994	1	99.971	22	99.720
MYF	MONTGOMERY-GIBBS EXEC	CA	LPV200	0	100	2	99.985	21	99.778
MYV	YUBA COUNTY	CA	LPV200	0	100	1	99.995	9	99.849
NUQ	MOFFETT FEDERAL AIRFIELD	CA	LPV200	1	99.980	1	99.980	12	99.783
O02	NERVINO	CA	LPV	0	100	1	99.996	7	99.913
O08	COLUSA COUNTY	CA	LPV	0	100	1	99.987	10	99.823
O27	OAKDALE	CA	LPV	1	99.997	1	99.997	9	99.881
O32	REEDLEY MUNICIPAL	CA	LPV	1	99.995	1	99.993	11	99.906
O69	PETALUMA MUNICIPAL	CA	LPV	1	99.982	1	99.978	12	99.778
O88	RIO VISTA MUNICIPAL	CA	LP	1	99.998	1	99.981	11	99.825
OAK	METRO OAKLAND INTL	CA	LPV200	1	99.981	1	99.981	12	99.778
ONT	ONTARIO INTL	CA	LPV200	0	100	1	99.987	7	99.916
OVE	OROVILLE MUNICIPAL	CA	LPV	0	100	1	99.994	9	99.838
OXR	OXNARD	CA	LPV	0	100	1	99.971	30	99.751
PMD	PALMDALE USAF PLANT 42	CA	LPV200	0	100	1	99.987	14	99.918
POC	BRACKETT FLD	CA	LPV	0	100	1	99.986	12	99.914
PRB	PASO ROBLES MUNICIPAL	CA	LPV	1	99.990	1	99.971	21	99.788
PVF	PLACERVILLE	CA	LPV	1	99.999	1	99.999	10	99.894
RAL	RIVERSIDE MUNICIPAL	CA	LPV	0	100	1	99.987	7	99.915
RBL	RED BLUFF MUNICIPAL	CA	LPV	0	100	1	99.984	10	99.809
RDD	REDDING MUNICIPAL	CA	LPV	1	99.999	2	99.984	9	99.822
RHV	REID-HILLVIEW OF SANTA CLARA C	CA	LPV	1	99.995	1	99.980	13	99.812
RIV	MARCH ARB	CA	LPV200	0	100	1	99.987	7	99.915
SAC	SACRAMENTO EXEC	CA	LPV	1	99.999	2	99.995	11	99.852
SAN	SAN DIEGO INTL	CA	LPV	0	100	2	99.983	22	99.756
SBA	SANTA BARBARA MUNICIPAL	CA	LPV	1	99.987	2	99.964	31	99.686

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
SBD	SAN BERNARDINO INTL	CA	LPV	0	100	1	99.987	7	99.917
SBP	SAN LUIS COUNTY RGNL	CA	LPV200	1	99.989	1	99.970	23	99.735
SCK	STOCKTON METRO	CA	LPV200	1	99.997	2	99.997	10	99.845
SDM	BROWN FLD MUNICIPAL	CA	LPV200	0	100	2	99.983	20	99.735
SEE	GILLESPIE FLD	CA	LP	0	100	1	99.986	20	99.783
SFO	SAN FRANCISCO INTL	CA	LPV200	1	99.981	1	99.978	13	99.771
SJC	NORMAN Y MINETA SAN JOSE INTL	CA	LPV200	2	99.995	1	99.980	13	99.795
SMF	SACRAMENTO INTL	CA	LPV200	1	99.999	2	99.994	10	99.855
SMO	SANTA MONICA MUNICIPAL	CA	LPV	0	100	2	99.984	23	99.855
SMX	SANTA MARIA PUB/CAPT G ALLAN H	CA	LPV200	1	99.988	2	99.964	28	99.708
SNA	JOHN WAYNE/ORANGE COUNTY	CA	LPV200	0	100	1	99.986	23	99.852
SNS	SALINAS MUNICIPAL	CA	LPV200	1	99.994	1	99.971	18	99.773
STS	CHARLES M SCHULZ - SONOMA COUN	CA	LPV200	1	99.983	1	99.974	12	99.774
TCY	TRACY MUNICIPAL	CA	LPV	1	99.997	2	99.992	11	99.832
TNP	TWENTYNINE PALMS	CA	LP	0	100	1	99.989	4	99.930
TOA	ZAMPERINI FLD	CA	LPV	0	100	2	99.984	27	99.830
TRK	TRUCKEE-TAHOE	CA	LP	0	100	0	100	7	99.920
TRM	JACQUELINE COCHRAN RGNL	CA	LPV	0	100	1	99.987	9	99.910
TVL	LAKE TAHOE	CA	LP	1	99.999	1	99.999	8	99.915
VCB	NUT TREE	CA	LPV	1	99.998	1	99.981	12	99.819
VCV	SOUTHERN CALIFORNIA LOGISTICS	CA	LPV	0	100	1	99.987	6	99.930
VIS	VISALIA MUNICIPAL	CA	LPV	1	99.998	1	99.992	12	99.902
WJF	GENERAL WM J FOX AIRFIELD	CA	LPV	0	100	1	99.987	15	99.913
WLW	WILLOWS/GLENN COUNTY	CA	LPV	0	100	1	99.983	10	99.817
WVI	WATSONVILLE MUNICIPAL	CA	LPV	1	99.995	1	99.980	16	99.776
1V6	FREMONT COUNTY	CO	LPV	3	99.920	3	99.900	3	99.854
20V	MC ELROY AIRFIELD	CO	LPV	2	99.919	2	99.919	3	99.852
2V5	WRAY MUNICIPAL	CO	LPV200	3	99.897	3	99.875	3	99.784
2V6	YUMA MUNICIPAL	CO	LPV200	2	99.910	2	99.893	3	99.799
33V	WALDEN-JACKSON COUNTY	CO	LPV	2	99.918	2	99.917	4	99.806
4V0	RANGELY	CO	LPV	1	99.936	1	99.936	4	99.920
4V1	SPANISH PEAKS AIRFIELD	CO	LPV	3	99.934	3	99.918	4	99.861
AEJ	CENTRAL COLORADO RGNL	CO	LP	3	99.919	3	99.912	3	99.861
AJZ	BLAKE FLD	CO	LPV	1	99.956	2	99.950	2	99.904
AKO	COLORADO PLAINS RGNL	CO	LPV	2	99.920	2	99.896	2	99.812

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
ALS	SAN LUIS VALLEY RGNL/BERGMAN F	CO	LPV200	3	99.954	3	99.930	4	99.860
APA	CENTENNIAL	CO	LPV200	2	99.921	2	99.910	3	99.852
BJC	ROCKY MOUNTAIN METRO	CO	LPV200	2	99.920	2	99.910	3	99.848
CAG	CRAIG-MOFFAT	CO	LP	2	99.926	2	99.919	3	99.844
CEZ	CORTEZ MUNICIPAL	CO	LPV	1	99.980	2	99.966	3	99.932
CFO	COLORADO AIR AND SPACE PORT	CO	LPV200	2	99.921	2	99.910	3	99.848
COS	CITY OF COLORADO SPRINGS MUNICIPAL	CO	LPV200	3	99.915	3	99.895	3	99.836
DEN	DENVER INTL	CO	LPV200	2	99.920	2	99.910	3	99.847
DRO	DURANGO-LA PLATA COUNTY	CO	LPV200	1	99.971	2	99.964	4	99.908
FMM	FORT MORGAN MUNICIPAL	CO	LPV	2	99.919	2	99.904	2	99.806
FNL	NORTHERN COLORADO RGNL	CO	LPV200	2	99.919	2	99.908	4	99.814
FTG	FRONT RANGE	CO	LPV200	2	99.921	2	99.910	3	99.848
GJT	GRAND JUNCTION RGNL	CO	LPV200	1	99.951	1	99.947	2	99.910
GXY	GREELEY-WELD COUNTY	CO	LPV200	2	99.920	2	99.900	3	99.801
HDN	YAMPA VALLEY	CO	LPV200	2	99.926	2	99.918	3	99.841
ITR	KIT CARSON COUNTY	CO	LPV	3	99.887	4	99.877	3	99.788
LAA	SOUTHEAST COLORADO RGNL	CO	LPV	3	99.900	3	99.892	2	99.816
LHX	LA JUNTA MUNICIPAL	CO	LPV	3	99.925	3	99.907	3	99.826
LMO	VANCE BRAND	CO	LPV	2	99.920	2	99.911	3	99.844
MTJ	MONTROSE RGNL	CO	LPV200	1	99.957	2	99.950	2	99.904
MVI	MONTE VISTA MUNICIPAL	CO	LPV	3	99.954	3	99.931	4	99.860
PSO	STEVENS FLD	CO	LP	3	99.964	3	99.945	3	99.880
PUB	PUEBLO MEML	CO	LPV200	3	99.923	3	99.905	3	99.832
RCV	ASTRONAUT KENT ROMINGER	CO	LPV	3	99.954	3	99.930	3	99.867
RIL	RIFLE GARFIELD COUNTY	CO	LPV	2	99.931	2	99.923	2	99.863
STK	STERLING MUNICIPAL	CO	LPV	2	99.902	2	99.880	3	99.789
TEX	TELLURIDE RGNL	CO	LP	1	99.961	2	99.951	3	99.906
4B8	ROBERTSON FLD	CT	LP	1	99.971	1	99.957	6	99.883
BDL	BRADLEY INTL	CT	LPV200	1	99.967	1	99.955	6	99.884
BDR	IGOR I SIKORSKY MEML	CT	LPV	1	99.971	1	99.957	6	99.905
DXR	DANBURY MUNICIPAL	CT	LP	1	99.971	1	99.957	5	99.889
GON	GROTON-NEW LONDON	CT	LPV	1	99.971	1	99.957	6	99.883
HVN	TWEED/NEW HAVEN	CT	LPV	1	99.971	1	99.957	6	99.897
IJD	WINDHAM	CT	LP	1	99.971	1	99.957	6	99.883
MMK	MERIDEN MARKHAM MUNICIPAL	CT	LP	1	99.971	1	99.957	6	99.883

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
OXC	WATERBURY-OXFORD	CT	LPV	1	99.971	1	99.957	6	99.895
DCA	RONALD REAGAN WASHINGTON NTL	DC	LPV	3	99.970	4	99.950	5	99.864
HEF	MANASSAS RGNL/HARRY P DAVIS FL	DC	LPV	3	99.971	3	99.919	5	99.862
IAD	WASHINGTON DULLES INTL	DC	LPV200	3	99.947	3	99.921	5	99.861
33N	DELAWARE AIRPARK	DE	LP	2	99.971	2	99.965	5	99.900
DOV	DOVER AFB	DE	LPV200	2	99.970	2	99.965	5	99.901
EVY	SUMMIT	DE	LPV	2	99.966	2	99.966	5	99.900
GED	DELAWARE COASTAL	DE	LPV	2	99.977	2	99.964	6	99.909
ILG	NEW CASTLE	DE	LPV	2	99.966	2	99.966	5	99.902
1J0	TRI-COUNTY	FL	LP	4	99.893	3	99.866	4	99.815
24J	SUWANNEE COUNTY	FL	LPV	3	99.870	4	99.833	5	99.787
28J	PALATKA MUNICIPAL - LT KAY LARKIN F	FL	LPV	4	99.850	4	99.811	5	99.780
40J	PERRY-FOLEY	FL	LPV	3	99.868	4	99.839	5	99.788
54J	DEFUNIAK SPRINGS	FL	LP	4	99.892	3	99.863	4	99.808
AAF	APALACHICOLA RGNL-CLEVE RANDOL	FL	LPV	5	99.853	5	99.840	7	99.787
APF	NAPLES MUNICIPAL	FL	LPV	7	99.710	9	99.600	26	99.210
AVO	AVON PARK EXEC	FL	LPV	4	99.736	7	99.683	16	99.474
BCR	TRI-COUNTY	FL	LPV	4	99.893	3	99.866	4	99.815
BCT	BOCA RATON	FL	LPV	8	99.661	8	99.598	33	99.142
BKV	BROOKSVILLE-TAMPA BAY RGNL	FL	LPV	7	99.809	7	99.766	12	99.635
BOW	BARTOW EXEC	FL	LPV	4	99.736	7	99.700	15	99.512
CEW	BOB SIKES	FL	LPV	4	99.894	3	99.863	4	99.807
CGC	CRYSTAL RIVER-CAPT TOM DAVIS F	FL	LP	6	99.845	5	99.794	10	99.718
CHN	WAUCHULA MUNICIPAL	FL	LP	4	99.736	6	99.672	17	99.452
COI	MERRITT ISLAND	FL	LPV	6	99.768	8	99.734	15	99.550
CRG	JACKSONVILLE EXEC AT CRAIG	FL	LPV200	3	99.883	4	99.832	5	99.789
CTY	CROSS CITY	FL	LPV	3	99.862	4	99.825	6	99.776
DAB	DAYTONA BEACH INTL	FL	LPV200	4	99.834	3	99.796	8	99.729
DED	DELAND MUNICIPAL-SIDNEY H TAYLOR FL	FL	LPV	4	99.837	4	99.794	8	99.713
DTS	DESTIN EXEC	FL	LPV	5	99.892	4	99.860	5	99.804
ECP	NORTHWEST FLORIDA BEACHES INTL	FL	LPV200	4	99.895	3	99.863	4	99.808
EVV	NEW SMYRNA BEACH MUNICIPAL	FL	LPV	4	99.833	4	99.788	8	99.704
EYW	KEY WEST INTL	FL	LPV	10	99.552	15	99.462	46	98.732
F45	NORTH PALM BEACH COUNTY GENERA	FL	LPV	5	99.726	9	99.637	27	99.284
FHB	FERNANDINA BEACH MUNICIPAL	FL	LPV	2	99.891	3	99.840	3	99.806

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
FIN	FLAGLER EXEC	FL	LPV	4	99.839	3	99.797	7	99.749
FLL	FORT LAUDERDALE/HOLLYWOOD INTL	FL	LPV200	8	99.647	8	99.572	37	99.100
FMY	PAGE FLD	FL	LPV	5	99.728	8	99.650	23	99.248
FPR	TREASURE COAST INTL	FL	LPV	4	99.736	8	99.683	19	99.409
FPY	PERRY-FOLEY	FL	LPV	3	99.868	4	99.839	5	99.788
FXE	FORT LAUDERDALE EXEC	FL	LPV200	8	99.653	8	99.584	33	99.126
GIF	WINTER HAVEN RGNL	FL	LPV	4	99.736	6	99.705	15	99.530
GNV	GAINESVILLE RGNL	FL	LPV	3	99.861	3	99.800	5	99.780
HEG	HERLONG RECREATIONAL	FL	LPV	3	99.875	4	99.823	5	99.787
IMM	IMMOKALEE RGNL	FL	LPV	6	99.716	9	99.610	25	99.224
ISM	KISSIMMEE GATEWAY	FL	LPV200	6	99.770	7	99.741	16	99.556
JAX	JACKSONVILLE INTL	FL	LPV200	3	99.883	4	99.832	5	99.799
LAL	LAKELAND LINDER INTL	FL	LPV200	5	99.749	7	99.715	15	99.523
LCQ	LAKE CITY GATEWAY	FL	LPV	3	99.870	3	99.806	5	99.783
LEE	LEESBURG INTL	FL	LPV	5	99.831	5	99.786	11	99.686
LNA	PALM BEACH COUNTY PARK	FL	LP	7	99.715	8	99.609	29	99.166
MAI	MARIANNA MUNICIPAL	FL	LPV	3	99.893	3	99.866	4	99.821
MCO	ORLANDO INTL	FL	LPV200	6	99.786	7	99.756	14	99.567
MIA	MIAMI INTL	FL	LPV200	8	99.643	9	99.555	38	99.066
MKY	MARCO ISLAND EXEC	FL	LPV	8	99.686	9	99.573	29	99.185
MLB	MELBOURNE ORLANDO INTL	FL	LPV200	5	99.749	8	99.713	18	99.519
MTH	THE FLORIDA KEYS MARATHON INTL	FL	LPV	10	99.563	15	99.465	50	98.791
OBE	OKEECHOBEE COUNTY	FL	LPV	4	99.736	8	99.659	20	99.376
OCF	OCALA INTL-JIM TAYLOR FLD	FL	LPV200	4	99.840	3	99.798	8	99.749
OMN	ORMOND BEACH MUNICIPAL	FL	LPV	4	99.838	3	99.797	7	99.732
OPF	MIAMI-OPA LOCKA EXEC	FL	LPV200	8	99.643	9	99.561	38	99.083
ORL	EXEC	FL	LPV200	6	99.793	7	99.765	14	99.597
PBI	PALM BEACH INTL	FL	LPV200	5	99.721	8	99.611	29	99.201
PCM	PLANT CITY	FL	LPV	5	99.751	7	99.720	15	99.538
PGD	PUNTA GORDA	FL	LPV200	5	99.731	7	99.653	22	99.312
PHK	PALM BEACH COUNTY GLADES	FL	LPV	5	99.735	9	99.636	26	99.272
PIE	ST PETE-CLEARWATER INTL	FL	LPV200	6	99.764	7	99.717	15	99.556
PMP	POMPANO BEACH AIRPARK	FL	LPV	8	99.653	8	99.586	33	99.127
PNS	PENSACOLA INTL	FL	LPV200	5	99.896	5	99.877	6	99.801
RSW	SOUTHWEST FLORIDA INTL	FL	LPV	5	99.727	8	99.648	24	99.246

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
SEF	SEBRING RGNL	FL	LPV	4	99.736	8	99.679	20	99.438
SFB	ORLANDO SANFORD INTL	FL	LPV200	4	99.803	5	99.775	13	99.669
SGJ	NORTHEAST FLORIDA RGNL	FL	LPV	4	99.858	4	99.816	5	99.783
SRQ	SARASOTA/BRADENTON INTL	FL	LPV200	4	99.736	6	99.661	17	99.442
SUA	WITHAM FLD	FL	LPV	4	99.733	8	99.654	23	99.347
TIX	SPACE COAST RGNL	FL	LPV200	6	99.796	7	99.764	16	99.582
TLH	TALLAHASSEE INTL	FL	LPV200	3	99.876	3	99.862	6	99.817
TMB	MIAMI EXEC	FL	LPV200	8	99.640	11	99.537	41	99.042
TNT	DADE-COLLIER TRAINING AND TRAN	FL	LPV200	8	99.641	9	99.557	34	99.131
TPA	TAMPA INTL	FL	LPV200	5	99.751	7	99.717	15	99.547
TPF	PETER O KNIGHT	FL	LP	5	99.751	7	99.708	15	99.541
TTS	NASA SHUTTLE LANDING FACILITY	FL	LPV200	5	99.798	6	99.766	15	99.613
VDF	TAMPA EXEC	FL	LPV	5	99.751	7	99.712	15	99.555
VNC	VENICE MUNICIPAL	FL	LP	5	99.730	6	99.653	18	99.373
VQQ	CECIL	FL	LPV200	3	99.871	4	99.819	5	99.786
VRB	VERO BEACH RGNL	FL	LPV200	4	99.736	8	99.684	18	99.439
X07	LAKE WALES MUNICIPAL	FL	LP	4	99.736	7	99.696	15	99.507
X14	LA BELLE MUNICIPAL	FL	LPV	5	99.729	7	99.642	23	99.259
X35	MARION COUNTY	FL	LP	4	99.840	3	99.798	8	99.747
X51	MIAMI HOMESTEAD GENERAL AVIATI	FL	LPV	8	99.630	12	99.530	41	99.010
ZPH	ZEPHYRHILLS MUNICIPAL	FL	LPV	5	99.751	6	99.726	14	99.576
09J	JEKYLL ISLAND	GA	LPV200	2	99.894	3	99.841	2	99.815
15J	COOK COUNTY	GA	LPV	2	99.891	2	99.866	3	99.816
17J	DONALSONVILLE MUNICIPAL	GA	LPV	3	99.895	2	99.874	4	99.821
18A	FRANKLIN-HART	GA	LPV	3	99.919	3	99.919	4	99.863
19A	JACKSON COUNTY	GA	LPV	3	99.920	3	99.913	4	99.853
2J3	LOUISVILLE MUNICIPAL	GA	LPV	2	99.926	5	99.893	3	99.826
2J5	MILLEN	GA	LPV	3	99.907	4	99.873	2	99.826
3J7	GREENE COUNTY RGNL	GA	LPV	2	99.928	3	99.917	4	99.838
48A	COCHRAN	GA	LPV	2	99.919	3	99.867	2	99.826
49A	GILMER COUNTY	GA	LPV	3	99.923	3	99.921	4	99.883
4A4	POLK COUNTY/CORNELIUS MOORE FL	GA	LPV	2	99.932	2	99.924	3	99.823
4J1	BRANTLEY COUNTY	GA	LPV	2	99.891	3	99.848	2	99.823
4J2	BERRIEN COUNTY	GA	LPV	2	99.891	2	99.866	3	99.818
4J5	QUITMAN BROOKS COUNTY	GA	LP	2	99.887	2	99.865	3	99.809

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
52A	MADISON MUNICIPAL	GA	LP	2	99.928	3	99.916	4	99.837
6A1	BUTLER MUNICIPAL	GA	LPV	2	99.902	3	99.870	3	99.818
6A2	GRIFFIN-SPALDING COUNTY	GA	LPV	2	99.932	3	99.903	3	99.824
70J	CAIRO-GRADY COUNTY	GA	LPV	2	99.887	2	99.867	4	99.826
75J	TURNER COUNTY	GA	LP	2	99.891	3	99.870	2	99.823
9A5	BARWICK LAFAYETTE	GA	LP	3	99.934	3	99.931	4	99.886
ABY	SOUTHWEST GEORGIA RGNL	GA	LPV200	2	99.889	2	99.870	3	99.815
ACJ	JIMMY CARTER RGNL	GA	LPV	2	99.891	3	99.864	3	99.819
AGS	AUGUSTA RGNL AT BUSH FLD	GA	LPV200	3	99.911	4	99.893	4	99.835
AHN	ATHENS/BEN EPPS	GA	LPV200	3	99.924	3	99.913	4	99.838
AJR	HABERSHAM COUNTY	GA	LPV	3	99.915	3	99.915	4	99.874
AMG	BACON COUNTY	GA	LPV	3	99.904	4	99.861	2	99.823
ATL	HARTSFIELD - JACKSON ATLANTA I	GA	LPV200	2	99.932	2	99.925	3	99.823
AYS	WAYCROSS-WARE COUNTY	GA	LPV200	2	99.891	3	99.843	2	99.823
BGE	DECATUR COUNTY INDUSTRIAL AIR	GA	LPV200	2	99.882	2	99.870	4	99.822
BHC	BAXLEY MUNICIPAL	GA	LPV	3	99.904	3	99.847	2	99.823
BIJ	EARLY COUNTY	GA	LPV	2	99.891	2	99.874	4	99.830
BQK	BRUNSWICK GOLDEN ISLES	GA	LPV200	2	99.899	3	99.848	2	99.819
CCO	NEWNAN COWETA COUNTY	GA	LPV	2	99.932	3	99.904	3	99.823
CKF	CRISP COUNTY-CORDELE	GA	LPV	2	99.891	3	99.863	2	99.823
CNI	CHEROKEE COUNTY RGNL	GA	LPV	2	99.928	2	99.926	4	99.866
CSG	COLUMBUS	GA	LPV	2	99.898	2	99.869	3	99.813
CTJ	WEST GEORGIA RGNL - O V GRAY F	GA	LPV	2	99.932	2	99.923	3	99.823
CVC	COVINGTON MUNICIPAL	GA	LPV	2	99.928	3	99.918	4	99.839
CWV	CLAXTON-EVANS COUNTY	GA	LPV	3	99.904	3	99.848	2	99.823
CXU	CAMILLA-MITCHELL COUNTY	GA	LPV	2	99.888	2	99.870	4	99.835
CZL	TOM B DAVID FLD	GA	LPV	2	99.928	2	99.925	4	99.869
D73	CY NUNNALLY MEML	GA	LP	2	99.928	3	99.919	4	99.840
DBN	W H 'BUD' BARRON	GA	LPV200	2	99.920	3	99.869	3	99.826
DNL	DANIEL FLD	GA	LPV	4	99.918	4	99.907	4	99.835
DNN	DALTON MUNICIPAL	GA	LPV	3	99.922	3	99.919	3	99.886
DQH	DOUGLAS MUNICIPAL	GA	LPV200	2	99.891	2	99.868	2	99.823
EBA	ELBERT COUNTY-PATZ FLD	GA	LP	3	99.916	3	99.915	4	99.833
EZM	HEART OF GEORGIA RGNL	GA	LPV200	2	99.895	3	99.868	2	99.826
FFC	ATLANTA RGNL FALCON FLD	GA	LPV	2	99.932	3	99.906	3	99.823

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
FTY	FULTON COUNTY EXEC/CHARLIE BRO	GA	LPV	2	99.932	2	99.925	3	99.823
FZG	FITZGERALD MUNICIPAL	GA	LPV	2	99.891	3	99.866	2	99.823
GVL	LEE GILMER MEML	GA	LPV	3	99.920	3	99.918	4	99.856
HMP	ATLANTA SPEEDWAY	GA	LPV200	2	99.932	3	99.907	3	99.824
HOE	HOMERVILLE	GA	LPV	2	99.891	3	99.857	3	99.817
HQU	THOMSON-MCDUFFIE COUNTY	GA	LPV	3	99.927	3	99.915	4	99.833
IYY	WASHINGTON/WILKES COUNTY	GA	LPV	3	99.924	3	99.914	4	99.832
JCA	JACKSON COUNTY	GA	LPV	3	99.920	3	99.913	4	99.853
JES	JESUP-WAYNE COUNTY	GA	LPV	2	99.899	3	99.848	2	99.823
JYL	PLANTATION AIRPARK	GA	LPV	3	99.897	4	99.869	2	99.823
JZP	PICKENS COUNTY	GA	LPV	3	99.932	3	99.930	4	99.877
LGC	LAGRANGE/CALLAWAY	GA	LPV200	1	99.909	2	99.876	3	99.817
LHW	WRIGHT AAF (FORT STEWART)/MIDC	GA	LPV	2	99.887	3	99.849	2	99.823
LZU	GWINNETT COUNTY/BRISCOE FLD	GA	LPV200	2	99.928	3	99.923	4	99.839
MAC	MACON DOWNTOWN	GA	LPV	2	99.918	4	99.879	3	99.826
MCN	MIDDLE GEORGIA RGNL	GA	LPV200	2	99.917	4	99.878	3	99.826
MGR	MOULTRIE MUNICIPAL	GA	LPV200	2	99.889	2	99.866	3	99.812
MHP	JOHN EDWIN JONES SR FLD/METTER	GA	LPV	3	99.907	3	99.848	3	99.822
MLJ	BALDWIN COUNTY RGNL	GA	LPV	2	99.928	4	99.895	3	99.825
MQW	TELFAR-WHEELER	GA	LPV	2	99.900	3	99.868	2	99.826
OKZ	KAOLIN FLD	GA	LPV	2	99.926	4	99.893	3	99.826
OPN	THOMASTON-UPSON COUNTY	GA	LPV200	1	99.909	3	99.871	3	99.824
PIM	HARRIS COUNTY	GA	LPV	1	99.909	2	99.876	3	99.816
PUJ	PAULDING NORTHWEST ATLANTA	GA	LPV200	2	99.932	2	99.924	3	99.823
PXE	PERRY-HOUSTON COUNTY	GA	LPV	1	99.906	3	99.866	2	99.826
RMG	RICHARD B RUSSELL RGNL - J H T	GA	LPV	2	99.928	2	99.924	4	99.867
RVJ	SWINTON SMITH FLD AT REIDSVILL	GA	LP	3	99.911	3	99.848	2	99.823
RYY	COBB COUNTY INTL/MCCOLLUM FLD	GA	LPV200	2	99.928	2	99.925	3	99.823
SAV	SAVANNAH/HILTON HEAD INTL	GA	LPV200	3	99.891	3	99.853	2	99.823
SBO	EAST GEORGIA RGNL	GA	LPV	3	99.909	4	99.862	2	99.826
TBR	STATESBORO-BULLOCH COUNTY	GA	LPV	3	99.898	4	99.863	2	99.823
TMA	HENRY TIFT MYERS	GA	LPV	2	99.891	2	99.870	2	99.823
TOC	TOCCOA RG LETOURNEAU FLD	GA	LPV	3	99.915	3	99.915	4	99.874
TVI	THOMASVILLE RGNL	GA	LPV	2	99.888	2	99.865	3	99.810
VDI	VIDALIA RGNL	GA	LPV200	3	99.916	3	99.848	2	99.823

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
VLD	VALDOSTA RGNL	GA	LPV	2	99.886	2	99.866	3	99.809
VPC	CARTERSVILLE	GA	LPV	2	99.928	2	99.924	3	99.823
WDR	BARROW COUNTY	GA	LPV	3	99.927	3	99.912	4	99.836
3Y2	GEORGE L SCOTT MUNICIPAL	IA	LPV	2	99.743	2	99.718	2	99.705
4C8	ALBIA MUNICIPAL	IA	LPV	1	99.764	2	99.725	2	99.715
AIO	ATLANTIC MUNICIPAL	IA	LPV	2	99.770	3	99.716	3	99.687
ALO	WATERLOO RGNL	IA	LPV200	1	99.747	2	99.716	4	99.702
AMW	AMES MUNICIPAL	IA	LPV	2	99.768	3	99.717	3	99.678
AWG	WASHINGTON MUNICIPAL	IA	LPV200	1	99.751	2	99.727	2	99.709
BNW	BOONE MUNICIPAL	IA	LPV	2	99.768	3	99.714	3	99.678
BRL	SOUTHEAST IOWA RGNL	IA	LPV200	1	99.760	1	99.743	2	99.724
C25	WAVERLY MUNICIPAL	IA	LPV	2	99.745	3	99.720	4	99.697
CAV	CLARION MUNICIPAL	IA	LPV	3	99.763	3	99.714	3	99.678
CBF	COUNCIL BLUFFS MUNICIPAL	IA	LPV200	2	99.774	3	99.716	3	99.689
CCY	NORTHEAST IOWA RGNL	IA	LPV	2	99.734	3	99.715	4	99.695
CID	THE EASTERN IOWA	IA	LPV200	1	99.749	2	99.721	3	99.706
CIN	ARTHUR N NEU	IA	LPV	2	99.777	3	99.714	3	99.678
CKP	CHEROKEE COUNTY RGNL	IA	LPV	3	99.770	3	99.696	3	99.677
CSQ	CRESTON MUNICIPAL	IA	LPV	2	99.778	2	99.722	3	99.696
CWI	CLINTON MUNICIPAL	IA	LPV200	1	99.747	2	99.726	2	99.708
DBQ	DUBUQUE RGNL	IA	LPV200	1	99.747	2	99.721	2	99.707
DEH	DECORAH MUNICIPAL	IA	LPV	2	99.733	2	99.718	2	99.705
DNS	DENISON MUNICIPAL	IA	LPV	2	99.778	4	99.702	3	99.678
DSM	DES MOINES INTL	IA	LPV200	1	99.751	2	99.716	3	99.679
DVN	DAVENPORT MUNICIPAL	IA	LPV200	1	99.750	2	99.729	2	99.709
EAG	EAGLE GROVE MUNICIPAL	IA	LPV	3	99.763	3	99.718	3	99.678
EBS	WEBSTER CITY MUNICIPAL	IA	LPV	2	99.767	3	99.714	3	99.678
EFW	JEFFERSON MUNICIPAL	IA	LPV	2	99.777	3	99.714	3	99.678
EOK	KEOKUK MUNICIPAL	IA	LPV	1	99.759	1	99.743	2	99.736
EST	ESTHERVILLE MUNICIPAL	IA	LPV	3	99.755	4	99.700	3	99.677
FFL	FAIRFIELD MUNICIPAL	IA	LPV	1	99.762	2	99.727	2	99.715
FOD	FORT DODGE RGNL	IA	LPV200	2	99.766	3	99.714	3	99.678
FSW	FORT MADISON MUNICIPAL	IA	LPV	1	99.760	1	99.743	2	99.726
FXY	FOREST CITY MUNICIPAL	IA	LPV	3	99.747	3	99.714	3	99.678
GCT	GUTHRIE COUNTY RGNL	IA	LPV	2	99.767	3	99.713	3	99.678

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
GFZ	GREENFIELD MUNICIPAL	IA	LPV	2	99.771	2	99.720	3	99.687
GGI	GRINNELL RGNL	IA	LPV	2	99.761	2	99.719	3	99.701
HPT	HAMPTON MUNICIPAL	IA	LPV	3	99.763	3	99.717	3	99.678
I75	OSCEOLA MUNICIPAL	IA	LPV	1	99.764	2	99.721	3	99.710
ICL	SCHENCK FLD	IA	LPV	3	99.785	1	99.733	3	99.720
IFA	IOWA FALLS MUNICIPAL	IA	LPV	3	99.764	3	99.715	3	99.678
IIB	JAMES H CONNELL FLD AT INDEPEN	IA	LPV	1	99.748	2	99.716	3	99.704
IKV	ANKENY RGNL	IA	LPV200	1	99.750	2	99.718	3	99.678
IOW	IOWA CITY MUNICIPAL	IA	LPV	2	99.762	2	99.724	2	99.708
LRJ	LE MARS MUNICIPAL	IA	LPV	3	99.772	3	99.696	3	99.677
LWD	LAMONI MUNICIPAL	IA	LPV	2	99.770	1	99.735	2	99.726
MCW	MASON CITY MUNICIPAL	IA	LPV200	3	99.747	3	99.713	3	99.678
MIW	MARSHALLTOWN MUNICIPAL	IA	LPV	1	99.749	2	99.717	4	99.695
MPZ	MOUNT PLEASANT MUNICIPAL	IA	LPV	1	99.761	2	99.739	2	99.719
MUT	MUSCATINE MUNICIPAL	IA	LPV200	2	99.763	2	99.728	2	99.709
MXO	MONTICELLO RGNL	IA	LP	1	99.748	2	99.720	2	99.706
OOA	OSKALOOSA MUNICIPAL	IA	LPV	1	99.758	2	99.726	2	99.709
OQW	MAQUOKETA MUNICIPAL	IA	LPV	1	99.747	2	99.723	2	99.708
ORC	ORANGE CITY MUNICIPAL	IA	LPV	3	99.768	3	99.696	3	99.677
OTM	OTTUMWA RGNL	IA	LPV	1	99.763	2	99.726	2	99.713
OXV	KNOXVILLE MUNICIPAL	IA	LPV	1	99.755	2	99.722	3	99.706
PEA	PELLA MUNICIPAL	IA	LPV	1	99.751	2	99.723	3	99.705
POH	POCAHONTAS MUNICIPAL	IA	LPV	2	99.766	4	99.709	3	99.678
PRO	PERRY MUNICIPAL	IA	LPV200	1	99.751	3	99.713	3	99.678
RDK	RED OAK MUNICIPAL	IA	LPV	2	99.776	2	99.725	3	99.693
RRQ	ROCK RAPIDS MUNICIPAL	IA	LP	3	99.767	4	99.708	3	99.675
SDA	SHENANDOAH MUNICIPAL	IA	LPV	3	99.786	1	99.733	3	99.715
SHL	SHELDON RGNL	IA	LPV	3	99.767	4	99.708	3	99.676
SKI	SAC CITY MUNICIPAL	IA	LPV	2	99.776	3	99.692	3	99.678
SLB	STORM LAKE MUNICIPAL	IA	LPV	3	99.772	3	99.695	3	99.677
SPW	SPENCER MUNICIPAL	IA	LPV200	4	99.766	4	99.701	3	99.677
SUX	SIOUX GATEWAY/BRIG GENERAL BUD	IA	LPV200	3	99.773	3	99.693	3	99.677
SXK	SIOUX COUNTY RGNL	IA	LPV200	3	99.769	3	99.696	3	99.677
TNU	NEWTON MUNICIPAL-EARL JOHNSON FLD	IA	LPV200	1	99.750	2	99.718	4	99.699
TVK	CENTERVILLE MUNICIPAL	IA	LPV	1	99.761	2	99.736	2	99.725

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
TZT	BELLE PLAINE MUNICIPAL	IA	LPV	1	99.749	2	99.719	3	99.703
VTI	VINTON VETERANS MEML AIRPARK	IA	LPV	1	99.749	2	99.718	3	99.704
1U7	BEAR LAKE COUNTY	ID	LPV	1	99.935	1	99.935	6	99.881
BOI	BOISE AIR TRML/GOWEN FLD	ID	LPV200	1	99.927	1	99.924	2	99.903
COE	COEUR D'ALENE/PAPPY BOYINGTON	ID	LPV200	1	99.913	1	99.910	6	99.836
DIJ	DRIGGS-REED MEML	ID	LP	1	99.924	3	99.917	7	99.826
EUL	TREASURE VALLEY EXEC AT CALDWE	ID	LPV	1	99.934	1	99.929	2	99.904
GNG	GOODING MUNICIPAL	ID	LPV	1	99.935	1	99.934	1	99.906
IDA	IDAHO FALLS RGNL	ID	LPV200	1	99.935	1	99.924	4	99.852
JER	JEROME COUNTY	ID	LPV	1	99.935	1	99.935	2	99.905
LWS	LEWISTON/NEZ PERCE COUNTY	ID	LPV200	1	99.914	1	99.911	2	99.897
MAN	NAMPA MUNICIPAL	ID	LPV	1	99.934	1	99.929	2	99.903
MYL	MC CALL MUNICIPAL	ID	LPV	1	99.918	1	99.913	2	99.894
PIH	POCATELLO RGNL	ID	LPV200	1	99.935	1	99.935	5	99.867
SUN	FRIEDMAN MEML	ID	LP	1	99.935	1	99.929	2	99.898
SZT	SANDPOINT	ID	LP	1	99.913	2	99.910	5	99.802
TWF	JOSLIN FLD/MAGIC VALLEY RGNL	ID	LPV200	1	99.935	1	99.935	1	99.906
U76	MOUNTAIN HOME MUNICIPAL	ID	LPV	1	99.938	1	99.933	2	99.902
1H2	EFFINGHAM COUNTY MEML	IL	LPV	4	99.854	3	99.790	2	99.767
3LF	LITCHFIELD MUNICIPAL	IL	LPV	2	99.807	2	99.767	2	99.763
3MY	MOUNT HAWLEY AUXILIARY	IL	LPV	3	99.778	2	99.757	2	99.729
AJG	MOUNT CARMEL MUNICIPAL	IL	LPV	3	99.879	3	99.797	2	99.766
ALN	ST LOUIS RGNL	IL	LPV200	2	99.808	2	99.773	2	99.764
ARR	AURORA MUNICIPAL	IL	LPV200	2	99.767	1	99.742	2	99.720
BLV	SCOTT AFB/MIDAMERICA ST LOUIS	IL	LPV200	3	99.832	2	99.797	2	99.770
BMI	CENTRAL IL RGNL/BLOOMINGTON-NO	IL	LPV	3	99.778	2	99.760	1	99.740
C15	PEKIN MUNICIPAL	IL	LPV	3	99.778	2	99.758	1	99.740
C73	DIXON MUNICIPAL-CHARLES R WALGREEN	IL	LPV	2	99.760	2	99.738	2	99.714
C75	MARSHALL COUNTY	IL	LP	2	99.766	1	99.745	2	99.727
CIR	CAIRO RGNL	IL	LP	3	99.876	2	99.848	3	99.787
CMI	UNIVERSITY OF ILLINOIS/WILLARD	IL	LPV200	5	99.829	2	99.763	2	99.761
CPS	ST LOUIS DOWNTOWN	IL	LPV200	3	99.832	2	99.797	2	99.764
CTK	INGERSOLL	IL	LPV	2	99.765	2	99.756	1	99.737
CUL	CARMI MUNICIPAL	IL	LPV	3	99.879	3	99.824	3	99.782
DEC	DECATUR	IL	LPV200	3	99.810	2	99.762	2	99.761

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
DKB	DE KALB TAYLOR MUNICIPAL	IL	LPV	2	99.763	1	99.740	2	99.717
DNV	VERMILION RGNL	IL	LPV	3	99.833	2	99.765	2	99.753
DPA	DUPAGE	IL	LPV200	1	99.766	1	99.740	2	99.721
ENL	CENTRALIA MUNICIPAL	IL	LPV	4	99.866	3	99.803	2	99.769
EZI	KEWANEE MUNICIPAL	IL	LPV	2	99.761	2	99.743	2	99.714
FEP	ALBERTUS	IL	LPV	2	99.759	2	99.727	2	99.713
FOA	FLORA MUNICIPAL	IL	LPV	4	99.869	3	99.797	2	99.767
GBG	GALESBURG MUNICIPAL	IL	LPV200	2	99.770	1	99.744	2	99.721
GRE	GREENVILLE	IL	LPV	4	99.849	3	99.790	2	99.769
HSB	HARRISBURG-RALEIGH	IL	LPV	3	99.877	3	99.840	3	99.784
I63	MOUNT STERLING MUNICIPAL	IL	LPV	3	99.785	2	99.759	1	99.741
IGQ	LANSING MUNICIPAL	IL	LPV	2	99.785	1	99.747	2	99.735
IKK	GREATER KANKAKEE	IL	LPV200	2	99.787	1	99.747	2	99.735
LOT	LEWIS UNIVERSITY	IL	LPV200	2	99.781	1	99.743	2	99.727
LWV	LAWRENCEVILLE-VINCENNES INTL	IL	LPV200	4	99.873	3	99.794	2	99.766
MDW	CHICAGO MIDWAY INTL	IL	LPV	2	99.780	1	99.742	2	99.727
MLI	QUAD CITIES INTL	IL	LPV200	2	99.762	2	99.730	2	99.709
MQB	MACOMB MUNICIPAL	IL	LPV200	1	99.758	1	99.744	2	99.736
MTO	COLES COUNTY MEML	IL	LPV200	4	99.838	3	99.783	2	99.764
MVN	MOUNT VERNON	IL	LPV	4	99.875	3	99.808	2	99.768
MWA	VETERANS AIRPORT OF SOUTHERN I	IL	LPV200	3	99.875	3	99.842	2	99.769
OLY	OLNEY-NOBLE	IL	LPV	4	99.871	3	99.796	2	99.767
ORD	CHICAGO O'HARE INTL	IL	LPV200	2	99.778	1	99.740	2	99.726
PIA	GENERAL DOWNING - PEORIA INTL	IL	LPV	3	99.778	2	99.757	2	99.733
PJY	PINCKNEYVILLE/DU QUOIN	IL	LPV	3	99.874	3	99.836	2	99.769
PNT	PONTIAC MUNICIPAL	IL	LPV	2	99.773	1	99.746	2	99.726
PPQ	PITTSFIELD PENSTONE MUNICIPAL	IL	LPV	2	99.802	2	99.759	2	99.755
PRG	EDGAR COUNTY	IL	LPV	4	99.835	3	99.780	2	99.764
PWK	CHICAGO EXEC	IL	LPV	2	99.778	1	99.740	2	99.724
RFD	CHICAGO/ROCKFORD INTL	IL	LPV200	2	99.761	2	99.744	2	99.711
RPJ	ROCHELLE MUNICIPAL/KORITZ FLD	IL	LPV	2	99.761	2	99.739	2	99.715
RSV	CRAWFORD COUNTY	IL	LPV	4	99.858	3	99.790	2	99.765
SAR	SPARTA COMMUNICIPALTY-HUNTER FLD	IL	LPV	2	99.842	2	99.824	2	99.770
SFY	TRI-TOWNSHIP	IL	LP	1	99.747	2	99.726	2	99.708
SLO	SALEM-LECKRONE	IL	LPV200	4	99.867	3	99.800	2	99.769

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
SPI	ABRAHAM LINCOLN CAPITAL	IL	LPV	3	99.781	2	99.761	2	99.758
SQI	WHITESIDE COUNTY/JOS H BITTORF	IL	LPV200	1	99.747	2	99.737	2	99.713
TIP	RANTOUL NTL AVN CNTR-FRANK ELL	IL	LPV	4	99.826	2	99.763	1	99.740
UGN	WAUKEGAN NTL	IL	LPV	2	99.776	1	99.743	2	99.720
UIN	QUINCY RGNL-BALDWIN FLD	IL	LPV200	3	99.789	2	99.758	2	99.740
VYS	ILLINOIS VALLEY RGNL-WALTER A	IL	LPV	2	99.766	1	99.745	2	99.719
2R2	HENDRICKS COUNTY-GORDON GRAHAM	IN	LPV	2	99.822	3	99.780	2	99.763
50I	KENTLAND MUNICIPAL	IN	LPV	3	99.810	1	99.748	1	99.735
AID	ANDERSON MUNICIPAL-DARLINGTON FLD	IN	LPV	3	99.831	5	99.809	1	99.750
ASW	WARSAW MUNICIPAL	IN	LPV200	2	99.815	2	99.766	1	99.735
BAK	COLUMBUS MUNICIPAL	IN	LPV	3	99.855	4	99.829	2	99.762
BFR	VIRGIL I GRISSOM MUNICIPAL	IN	LP	4	99.861	3	99.816	2	99.766
BMG	MONROE COUNTY	IN	LPV200	4	99.855	4	99.808	2	99.763
C62	KENDALLVILLE MUNICIPAL	IN	LPV	2	99.813	3	99.778	1	99.735
C65	PLYMOUTH MUNICIPAL	IN	LPV	3	99.812	1	99.749	1	99.735
CEV	METTEL FLD	IN	LPV	2	99.826	3	99.803	2	99.767
CFJ	CRAWFORDSVILLE RGNL	IN	LPV	3	99.832	3	99.780	2	99.763
DCY	DAVISS COUNTY	IN	LPV	4	99.867	4	99.809	2	99.764
EKM	ELKHART MUNICIPAL	IN	LPV	3	99.810	1	99.746	1	99.735
EVV	EVANSVILLE RGNL	IN	LPV200	3	99.880	3	99.822	3	99.789
EYE	EAGLE CREEK AIRPARK	IN	LPV	2	99.821	3	99.781	2	99.763
FKR	FRANKFORT CLINTON COUNTY RGNL	IN	LPV	3	99.832	3	99.781	1	99.740
FRH	FRENCH LICK MUNICIPAL	IN	LPV	4	99.868	3	99.816	2	99.767
FWA	FORT WAYNE INTL	IN	LPV200	3	99.829	2	99.767	1	99.735
GEZ	SHELBYVILLE MUNICIPAL	IN	LPV	2	99.827	3	99.805	2	99.762
GGP	LOGANSPOUT/CASS COUNTY	IN	LPV200	3	99.833	3	99.778	1	99.739
GPC	PUTNAM COUNTY RGNL	IN	LPV	3	99.823	2	99.767	2	99.764
GSH	GOSHEN MUNICIPAL	IN	LPV	2	99.813	1	99.747	1	99.735
GWB	DE KALB COUNTY	IN	LPV	2	99.816	3	99.781	1	99.735
GYV	GARY/CHICAGO INTL	IN	LPV200	2	99.786	1	99.747	2	99.735
HFY	INDY SOUTH GREENWOOD	IN	LPV	2	99.825	3	99.790	2	99.763
HNB	HUNTINGBURG	IN	LPV	4	99.874	3	99.818	3	99.789
HUF	TERRE HAUTE RGNL	IN	LPV200	4	99.838	3	99.780	2	99.764
I22	RANDOLPH COUNTY	IN	LPV	3	99.832	5	99.814	1	99.740
I76	PERU MUNICIPAL	IN	LPV	3	99.832	3	99.778	1	99.739

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
IMS	MADISON MUNICIPAL	IN	LPV	3	99.865	4	99.830	2	99.783
IND	INDIANAPOLIS INTL	IN	LPV200	2	99.823	3	99.783	2	99.763
JVY	CLARK RGNL	IN	LPV200	3	99.867	4	99.833	3	99.809
LAF	PURDUE UNIVERSITY	IN	LPV	3	99.833	3	99.781	1	99.740
MCX	WHITE COUNTY	IN	LP	4	99.829	3	99.775	1	99.739
MIE	DELAWARE COUNTY RGNL	IN	LPV	3	99.832	5	99.807	1	99.740
MQJ	INDIANAPOLIS RGNL	IN	LPV200	2	99.822	3	99.790	2	99.762
MZZ	MARION MUNICIPAL - MCKINNEY FLD	IN	LPV200	3	99.833	3	99.780	1	99.739
OKK	KOKOMO MUNICIPAL	IN	LPV200	3	99.833	3	99.780	1	99.739
OVO	NORTH VERNON	IN	LPV	3	99.860	4	99.829	2	99.772
OXI	STARKE COUNTY	IN	LPV	3	99.810	1	99.748	1	99.735
PLD	PORTLAND MUNICIPAL	IN	LPV	3	99.833	5	99.807	1	99.739
PPO	LA PORTE MUNICIPAL	IN	LPV	3	99.804	1	99.748	1	99.735
RCR	FULTON COUNTY	IN	LPV	3	99.815	2	99.764	1	99.735
RID	RICHMOND MUNICIPAL	IN	LPV200	2	99.826	3	99.803	2	99.768
RWN	ARENS FLD	IN	LPV	3	99.811	2	99.763	1	99.735
RZL	JASPER COUNTY	IN	LPV	3	99.807	1	99.748	1	99.735
SBN	SOUTH BEND INTL	IN	LPV200	3	99.810	1	99.747	1	99.735
SER	FREEMAN MUNICIPAL	IN	LPV	3	99.862	4	99.831	2	99.767
SIV	SULLIVAN COUNTY	IN	LPV	4	99.857	3	99.789	2	99.765
SMD	SMITH FLD	IN	LPV	2	99.816	3	99.780	1	99.735
TEL	PERRY COUNTY MUNICIPAL	IN	LP	4	99.874	4	99.841	3	99.789
TYQ	INDIANAPOLIS EXEC	IN	LPV	3	99.831	3	99.780	2	99.763
UWL	NEW CASTLE HENRY COUNTY MARLAT	IN	LPV	2	99.822	3	99.803	2	99.767
VPZ	PORTER COUNTY RGNL	IN	LPV	3	99.800	1	99.747	1	99.735
1QK	GOVE COUNTY	KS	LPV	2	99.869	3	99.810	4	99.790
3AU	AUGUSTA MUNICIPAL	KS	LP	4	99.838	4	99.827	3	99.793
3K3	SYRACUSE-HAMILTON COUNTY MUNICIPAL	KS	LPV	3	99.904	5	99.890	2	99.808
3K7	MARK HOARD MEML	KS	LPV	3	99.892	2	99.830	3	99.798
3K8	COMANCHE COUNTY	KS	LPV	2	99.893	3	99.827	3	99.781
5K2	TRIBUNE MUNICIPAL	KS	LPV	3	99.892	3	99.847	3	99.799
9K8	KINGMAN/CLYDE CESSNA FLD	KS	LP	4	99.863	4	99.834	3	99.773
AAO	COLONEL JAMES JABARA	KS	LPV	4	99.840	4	99.822	3	99.792
ADT	ATWOOD-RAWLINS COUNTY CITY-COU	KS	LPV	1	99.870	1	99.845	2	99.791
ANY	ANTHONY MUNICIPAL	KS	LPV	4	99.869	4	99.837	3	99.776

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
BEC	BEECH FACTORY	KS	LPV	4	99.841	4	99.827	3	99.793
CBK	SHALZ FLD	KS	LPV	2	99.858	2	99.832	3	99.788
CFV	COFFEYVILLE MUNICIPAL	KS	LPV	4	99.866	3	99.833	2	99.795
CNK	BLOSSER MUNICIPAL	KS	LP	3	99.835	2	99.801	3	99.780
DDC	DODGE CITY RGNL	KS	LPV200	2	99.889	4	99.840	4	99.792
EGT	WELLINGTON MUNICIPAL	KS	LPV200	3	99.846	4	99.832	4	99.790
EHA	ELKHART-MORTON COUNTY	KS	LPV	3	99.914	4	99.911	4	99.807
EMP	EMPORIA MUNICIPAL	KS	LPV	2	99.820	2	99.798	2	99.775
EQA	EL DORADO/CAPT JACK THOMAS MEM	KS	LPV200	4	99.837	4	99.817	4	99.793
EWK	NEWTON-CITY-COUNTY	KS	LPV	4	99.834	4	99.812	3	99.792
FOE	TOPEKA RGNL	KS	LPV	2	99.819	2	99.795	2	99.775
FSK	FORT SCOTT MUNICIPAL	KS	LPV	3	99.838	2	99.798	2	99.785
GBD	GREAT BEND MUNICIPAL	KS	LPV200	4	99.860	3	99.806	4	99.785
GCK	GARDEN CITY RGNL	KS	LPV	3	99.909	4	99.858	4	99.798
GLD	RENNER FLD /GOODLAND MUNICIPAL/	KS	LPV200	3	99.877	2	99.831	3	99.788
HLC	HILL CITY MUNICIPAL	KS	LPV	3	99.864	3	99.810	3	99.795
HQG	HUGOTON MUNICIPAL	KS	LPV	3	99.913	4	99.886	4	99.803
HRU	HERINGTON RGNL	KS	LPV	2	99.821	2	99.799	2	99.773
HUT	HUTCHINSON RGNL	KS	LPV200	4	99.853	4	99.818	3	99.771
HYS	HAYS RGNL	KS	LPV200	3	99.857	3	99.804	4	99.789
ICT	WICHITA DWIGHT D EISENHOWER NT	KS	LPV200	3	99.841	4	99.827	4	99.787
IDP	INDEPENDENCE MUNICIPAL	KS	LPV200	4	99.866	3	99.833	2	99.795
IXD	NEW CENTURY AIRCENTER	KS	LPV	2	99.818	2	99.794	2	99.776
K38	WASHINGTON COUNTY VETERAN'S ME	KS	LPV	3	99.828	2	99.799	2	99.753
K78	ABILENE MUNICIPAL	KS	LPV	2	99.822	2	99.800	2	99.772
K79	JETMORE MUNICIPAL	KS	LPV	2	99.889	4	99.832	4	99.793
K81	MIAMI COUNTY	KS	LPV	2	99.818	2	99.794	2	99.776
K82	SMITH CENTER MUNICIPAL	KS	LPV200	3	99.842	2	99.803	2	99.780
K88	ALLEN COUNTY	KS	LPV	3	99.838	2	99.797	2	99.778
LBL	LIBERAL MID-AMERICA RGNL	KS	LPV200	3	99.913	4	99.886	3	99.789
LQR	LARNED-PAWNEE COUNTY	KS	LPV	4	99.873	3	99.807	4	99.789
LWC	LAWRENCE RGNL	KS	LPV200	2	99.818	2	99.794	2	99.775
LYO	LYONS-RICE COUNTY MUNICIPAL	KS	LPV	4	99.853	3	99.801	3	99.771
MHK	MANHATTAN RGNL	KS	LPV200	2	99.821	2	99.799	2	99.769
MPR	MC PHERSON	KS	LPV	3	99.835	3	99.801	3	99.791

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
MYZ	MARYSVILLE MUNICIPAL	KS	LPV	2	99.812	2	99.797	2	99.750
NRN	NORTON MUNICIPAL	KS	LPV	2	99.869	2	99.809	2	99.786
OEL	OAKLEY MUNICIPAL	KS	LPV	2	99.869	3	99.831	3	99.794
OIN	OBERLIN MUNICIPAL	KS	LPV	1	99.870	2	99.842	2	99.789
OJC	JOHNSON COUNTY EXEC	KS	LPV	2	99.817	2	99.793	2	99.772
OWI	OTTAWA MUNICIPAL	KS	LPV	2	99.818	2	99.795	2	99.776
PHG	PHILLIPSBURG MUNICIPAL	KS	LPV	3	99.852	2	99.808	2	99.787
PPF	TRI-CITY	KS	LPV	4	99.863	3	99.833	2	99.795
PTS	ATKINSON MUNICIPAL	KS	LPV	4	99.852	3	99.829	2	99.787
PTT	PRATT RGNL	KS	LPV	4	99.873	4	99.832	4	99.786
RCP	ROOKS COUNTY RGNL	KS	LPV	4	99.849	3	99.803	3	99.792
RPB	BELLEVILLE MUNICIPAL	KS	LPV	3	99.832	2	99.800	3	99.773
RSL	RUSSELL MUNICIPAL	KS	LPV	2	99.825	3	99.806	4	99.794
SLN	SALINA RGNL	KS	LPV	3	99.835	2	99.801	2	99.794
SYF	CHEYENNE COUNTY MUNICIPAL	KS	LPV	3	99.888	3	99.855	3	99.795
TOP	PHILIP BILLARD MUNICIPAL	KS	LPV	2	99.819	2	99.795	2	99.768
TQK	SCOTT CITY MUNICIPAL	KS	LPV	2	99.875	3	99.827	4	99.798
UKL	COFFEY COUNTY	KS	LPV	2	99.820	2	99.797	2	99.775
ULS	ULYSSES	KS	LPV	3	99.912	4	99.879	3	99.785
WLD	STROTHER FLD	KS	LPV	4	99.873	4	99.839	3	99.797
0I8	CYNTHIANA-HARRISON COUNTY	KY	LP	3	99.870	3	99.846	4	99.828
18I	MC CREARY COUNTY	KY	LP	3	99.885	3	99.873	4	99.834
1M7	FULTON	KY	LPV	3	99.878	3	99.874	3	99.801
27K	GEORGETOWN-SCOTT COUNTY RGNL	KY	LPV200	3	99.870	3	99.846	4	99.827
2I0	MADISONVILLE RGNL	KY	LPV	2	99.884	4	99.846	3	99.789
2M0	PRINCETON-CALDWELL COUNTY	KY	LPV	2	99.884	4	99.863	3	99.789
4M7	RUSSELLVILLE-LOGAN COUNTY	KY	LPV	2	99.884	4	99.865	3	99.789
5M9	MARION-CRITTENDEN COUNTY JAMES	KY	LPV	3	99.884	3	99.843	3	99.789
6I2	LEBANON SPRINGFIELD-GEORGE HOE	KY	LPV	3	99.870	3	99.847	4	99.827
AAS	TAYLOR COUNTY	KY	LPV	3	99.870	3	99.856	4	99.827
BRY	SAMUELS FLD	KY	LPV	3	99.870	4	99.847	4	99.827
BWG	BOWLING GREEN-WARREN COUNTY RG	KY	LPV200	3	99.883	4	99.859	3	99.814
BYL	WILLIAMSBURG-WHITLEY COUNTY	KY	LPV	3	99.889	3	99.876	4	99.834
CEY	KYLE-OAKLEY FLD	KY	LPV	3	99.884	3	99.876	3	99.797
CPF	WENDELL H FORD	KY	LPV200	3	99.883	3	99.874	4	99.839

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
CVG	CINCINNATI/NORTHERN KENTUCKY I	KY	LPV200	3	99.862	4	99.828	3	99.804
DVK	STUART POWELL FLD	KY	LPV	3	99.870	4	99.848	4	99.827
DWU	ASHLAND RGNL	KY	LP	3	99.888	3	99.870	4	99.838
EHR	HENDERSON CITY-COUNTY	KY	LPV	3	99.880	3	99.825	3	99.789
EKQ	WAYNE COUNTY	KY	LPV	3	99.877	3	99.863	4	99.827
EKX	ADDINGTON FLD	KY	LPV	3	99.873	4	99.847	3	99.813
FFT	CAPITAL CITY	KY	LPV	3	99.870	4	99.844	4	99.827
FGX	FLEMING-MASON	KY	LPV	3	99.881	3	99.858	4	99.828
GLW	GLASGOW MUNICIPAL	KY	LPV	3	99.878	4	99.860	3	99.813
HVC	HOPKINSVILLE-CHRISTIAN COUNTY	KY	LPV	2	99.884	4	99.878	3	99.792
I93	BRECKINRIDGE COUNTY	KY	LPV	3	99.877	4	99.845	3	99.789
IOB	MOUNT STERLING/MONTGOMERY COUN	KY	LPV	3	99.881	3	99.859	4	99.838
JQD	OHIO COUNTY	KY	LPV	3	99.883	4	99.849	3	99.789
K24	RUSSELL COUNTY	KY	LPV	3	99.874	3	99.860	4	99.827
K62	GENE SNYDER	KY	LP	3	99.870	4	99.836	3	99.805
KY8	HANCOCK COUNTY/RON LEWIS FLD	KY	LPV	4	99.877	4	99.841	3	99.789
LEX	BLUE GRASS	KY	LPV	3	99.870	3	99.846	4	99.827
LOU	BOWMAN FLD	KY	LPV	3	99.867	4	99.833	3	99.813
LOZ	LONDON/CORBIN/MAGEE	KY	LPV	3	99.881	3	99.868	4	99.834
M20	LEITCHFIELD-GRAYSON COUNTY	KY	LPV	3	99.878	4	99.846	3	99.814
M21	MUHLENBERG COUNTY	KY	LP	2	99.884	4	99.853	3	99.789
M25	MAYFIELD GRAVES COUNTY	KY	LPV	3	99.882	3	99.873	3	99.793
OWB	OWENSBORO/DAVIESS COUNTY RGNL	KY	LPV200	3	99.881	4	99.840	3	99.789
PAH	BARKLEY RGNL	KY	LPV200	3	99.881	3	99.863	3	99.788
PBX	PIKE COUNTY/HATCHER FLD	KY	LPV200	3	99.895	3	99.877	4	99.838
RGA	CENTRAL KENTUCKY RGNL	KY	LPV	3	99.870	4	99.851	4	99.827
SDF	LOUISVILLE MUHAMMAD ALI INTL	KY	LPV200	3	99.867	4	99.834	3	99.813
SJS	BIG SANDY RGNL	KY	LPV	3	99.890	3	99.877	4	99.840
SME	LAKE CUMBERLAND RGNL	KY	LPV	3	99.871	3	99.858	4	99.827
SYM	MOREHEAD-ROWAN COUNTY CLYDE A	KY	LPV200	3	99.881	3	99.859	4	99.838
TWT	STURGIS MUNICIPAL	KY	LPV	3	99.884	3	99.830	3	99.789
TZV	TOMPKINSVILLE/MONROE COUNTY	KY	LPV	3	99.881	4	99.863	4	99.827
0R4	CONCORDIA PARISH	LA	LPV	2	99.938	3	99.931	6	99.849
0R7	THE RED RIVER	LA	LPV	2	99.932	2	99.928	5	99.878
3R4	HART	LA	LPV	2	99.939	2	99.935	7	99.878

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
3R7	JENNINGS	LA	LPV	2	99.938	3	99.932	5	99.832
5R8	DE QUINCY INDUSTRIAL AIRPARK	LA	LPV	2	99.938	3	99.932	6	99.865
ACP	ALLEN PARISH	LA	LPV	2	99.938	3	99.932	7	99.858
AEX	ALEXANDRIA INTL	LA	LPV200	2	99.938	2	99.935	7	99.856
APS	PORT OF SOUTH LOUISIANA EXEC R	LA	LPV	3	99.935	5	99.904	8	99.839
ARA	ACADIANA RGNL	LA	LPV200	2	99.938	3	99.932	6	99.829
BQP	MOREHOUSE MEML	LA	LPV	3	99.943	3	99.919	4	99.877
BTR	BATON ROUGE METRO` RYAN FLD	LA	LPV200	2	99.938	4	99.921	7	99.858
BXA	GEORGE R CARR MEML AIR FLD	LA	LPV	2	99.939	3	99.899	6	99.864
CWF	CHENNAULT INTL	LA	LPV200	2	99.938	3	99.932	6	99.861
DTN	SHREVEPORT DOWNTOWN	LA	LPV	2	99.941	2	99.934	5	99.886
ESF	ESLER RGNL	LA	LPV200	2	99.938	2	99.935	7	99.855
F88	JONESBORO	LA	LP	2	99.931	2	99.928	5	99.886
GAO	SOUTH LAFOURCHE LEONARD MILLER	LA	LPV200	4	99.932	5	99.893	8	99.818
HDC	HAMMOND NORTHSHORE RGNL	LA	LPV200	3	99.937	5	99.906	7	99.860
HUM	HOUMA-TERREBONNE	LA	LPV200	4	99.932	5	99.893	8	99.823
HZR	FALSE RIVER RGNL	LA	LPV	2	99.938	3	99.932	7	99.864
IER	NATCHITOCES RGNL	LA	LPV	2	99.931	2	99.928	6	99.875
IYA	ABBEVILLE CHRIS CRUSTA MEML	LA	LPV	2	99.938	3	99.932	6	99.818
L39	LEESVILLE	LA	LPV	2	99.938	2	99.935	7	99.877
LCH	LAKE CHARLES RGNL	LA	LPV200	2	99.938	3	99.932	6	99.860
LFT	LAFAYETTE RGNL/PAUL FOURNET FL	LA	LPV200	2	99.938	3	99.932	5	99.841
M79	JOHN H HOOKS JR MEML	LA	LPV	2	99.928	3	99.924	5	99.861
MLU	MONROE RGNL	LA	LPV200	2	99.932	3	99.926	5	99.868
MSY	LOUIS ARMSTRONG NEW ORLEANS IN	LA	LPV200	3	99.935	5	99.904	8	99.837
NEW	LAKEFRONT	LA	LPV	3	99.935	5	99.904	8	99.843
OPL	ST LANDRY PARISH-AHART FLD	LA	LPV	2	99.938	3	99.932	7	99.853
PTN	HARRY P WILLIAMS MEML	LA	LPV200	4	99.932	5	99.916	8	99.831
REG	LOUISIANA RGNL	LA	LPV	3	99.935	5	99.918	6	99.850
RSN	RUSTON RGNL	LA	LPV	2	99.932	2	99.928	5	99.886
SHV	SHREVEPORT RGNL	LA	LPV200	2	99.935	2	99.928	5	99.890
SPH	SPRINGHILL	LA	LPV	2	99.938	3	99.924	4	99.899
TVR	VICKSBURG TALLULAH RGNL	LA	LPV200	2	99.929	4	99.919	5	99.855
UXL	SOUTHLAND FLD	LA	LPV	2	99.938	3	99.932	6	99.861
3B0	SOUTHBRIDGE MUNICIPAL	MA	LPV	1	99.967	1	99.954	6	99.859

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
ACK	NANTUCKET MEML	MA	LPV200	2	99.949	2	99.935	5	99.851
BAF	WESTFIELD-BARNES RGNL	MA	LPV	2	99.961	2	99.949	6	99.877
BED	LAURENCE G HANSCOM FLD	MA	LPV200	2	99.929	2	99.916	5	99.840
BOS	GENERAL EDWARD LAWRENCE LOGAN	MA	LPV200	2	99.931	2	99.918	5	99.840
BVY	BEVERLY RGNL	MA	LPV	2	99.927	2	99.913	5	99.840
EWB	NEW BEDFORD RGNL	MA	LPV200	3	99.961	3	99.944	5	99.846
GBR	WALTER J KOLADZA	MA	LP	2	99.957	2	99.943	6	99.882
GHG	MARSHFIELD MUNICIPAL - GEORGE HARLO	MA	LPV	2	99.938	2	99.926	5	99.838
HYA	CAPE COD GATEWAY	MA	LPV200	2	99.948	2	99.934	5	99.841
LWM	LAWRENCE MUNICIPAL	MA	LPV200	2	99.928	2	99.913	5	99.839
MVY	MARTHA'S VINEYARD	MA	LPV200	2	99.952	2	99.938	5	99.850
ORE	ORANGE MUNICIPAL	MA	LPV	2	99.960	2	99.949	6	99.852
ORH	WORCESTER RGNL	MA	LPV200	2	99.964	2	99.950	6	99.857
OWD	NORWOOD MEML	MA	LPV	2	99.939	2	99.928	5	99.840
PSF	PITTSFIELD MUNICIPAL	MA	LPV	2	99.958	2	99.944	6	99.862
PVC	PROVINCETOWN MUNICIPAL	MA	LPV200	2	99.938	2	99.926	5	99.839
PYM	PLYMOUTH MUNICIPAL	MA	LPV200	2	99.945	2	99.926	5	99.840
TAN	TAUNTON MUNICIPAL - KING FLD	MA	LPV	2	99.947	2	99.929	5	99.841
CJA3	MORDEN REGIONAL	MB	LPV	4	99.736	5	99.700	7	99.583
CJJ4	DELORAINÉ	MB	LPV	4	99.756	6	99.700	6	99.616
CJW5	RUSSELL	MB	LPV	3	99.746	3	99.697	10	99.615
CKK7	STEINBACH (SOUTH)	MB	LPV	4	99.738	4	99.687	9	99.590
CKZ7	WINKLER	MB	LPV	4	99.736	5	99.700	7	99.584
CYAV	ST. ANDREWS	MB	LPV	5	99.724	4	99.682	10	99.584
CYBR	BRANDON MUNICIPALCIPALITY	MB	LPV	4	99.756	5	99.713	7	99.594
CYFO	FLIN FLON	MB	LPV	4	99.715	4	99.651	16	99.394
CYGX	GILLAM	MB	LPV	5	99.664	7	99.580	22	99.133
CYIV	ISLAND LAKE	MB	LPV	3	99.670	6	99.606	12	99.261
CYQD	THE PAS	MB	LPV	3	99.721	4	99.671	17	99.437
CYTH	THOMPSON	MB	LPV200	3	99.686	6	99.595	17	99.265
CYVD	R.J. (BOB) ANDREW FIELD REGIONAL	MB	LPV	3	99.774	4	99.725	7	99.621
CYWG	JAMES ARMSTRONG RICHARDSON INTL	MB	LPV200	4	99.732	4	99.692	10	99.589
CYYQ	CHURCHILL	MB	LPV	7	99.540	7	99.442	32	98.915
CZJG	JENPEG	MB	LPV	3	99.690	5	99.629	19	99.345
2G4	GARRETT COUNTY	MD	LPV	3	99.896	3	99.892	4	99.825

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
2W5	MARYLAND	MD	LP	2	99.983	3	99.954	5	99.865
2W6	ST MARY'S COUNTY RGNL	MD	LPV	2	99.986	2	99.961	6	99.883
BWI	BALTIMORE/WASHINGTON INTL THUR	MD	LPV200	2	99.967	3	99.966	5	99.857
CBE	GREATER CUMBERLAND RGNL	MD	LPV	3	99.899	3	99.896	4	99.830
CGE	CAMBRIDGE-DORCHESTER RGNL	MD	LPV	2	99.986	2	99.964	6	99.893
DMW	CARROLL COUNTY RGNL/JACK B POA	MD	LPV200	3	99.964	4	99.952	5	99.854
ESN	EASTON/NEWNAM FLD	MD	LPV200	2	99.986	2	99.965	5	99.879
FDK	FREDERICK MUNICIPAL	MD	LPV	3	99.942	3	99.936	5	99.850
GAI	MONTGOMERY COUNTY AIRPARK	MD	LPV	3	99.960	3	99.935	5	99.857
HGR	HAGERSTOWN RGNL/RICHARD A HENS	MD	LPV200	4	99.932	4	99.910	5	99.843
MTN	MARTIN STATE	MD	LPV	3	99.966	3	99.966	5	99.868
OXB	OCEAN CITY MUNICIPAL	MD	LPV	2	99.975	2	99.961	6	99.919
SBY	SALISBURY-OCEAN CITY WICOMICO	MD	LPV200	2	99.980	2	99.963	7	99.915
W29	BAY BRIDGE	MD	LPV	3	99.983	2	99.966	5	99.869
1B0	DEXTER RGNL	ME	LP	2	99.898	3	99.880	4	99.820
2B7	PITTSFIELD MUNICIPAL	ME	LPV	2	99.898	3	99.880	4	99.823
3B1	GREENVILLE MUNICIPAL	ME	LPV	2	99.898	3	99.875	5	99.791
59B	NEWTON FLD	ME	LP	2	99.895	3	99.876	5	99.792
81B	OXFORD COUNTY RGNL	ME	LP	2	99.908	3	99.902	5	99.828
AUG	AUGUSTA STATE	ME	LPV200	2	99.903	3	99.898	4	99.826
BGR	BANGOR INTL	ME	LPV200	2	99.899	3	99.881	4	99.813
BHB	HANCOCK COUNTY/BAR HARBOR	ME	LPV200	2	99.903	3	99.878	4	99.820
BST	BELFAST MUNICIPAL	ME	LPV	2	99.901	3	99.883	4	99.818
BXM	BRUNSWICK EXEC	ME	LPV200	2	99.911	3	99.906	5	99.827
CAR	CARIBOU MUNICIPAL	ME	LPV	2	99.870	2	99.869	7	99.712
EPM	EASTPORT MUNICIPAL	ME	LPV	2	99.884	3	99.878	6	99.788
FVE	NORTHERN AROOSTOOK RGNL	ME	LPV200	2	99.869	2	99.867	7	99.714
HUL	HOULTON INTL	ME	LP	2	99.877	3	99.875	7	99.753
IZG	EASTERN SLOPES RGNL	ME	LPV	2	99.920	2	99.913	5	99.832
LEW	AUBURN/LEWISTON MUNICIPAL	ME	LPV200	2	99.908	3	99.902	5	99.827
LRG	LINCOLN RGNL	ME	LP	2	99.880	3	99.877	5	99.781
MLT	MILLINOCKET MUNICIPAL	ME	LPV	2	99.877	3	99.875	5	99.777
OWK	CENTRAL MAINE /NORRIDGEWOCK	ME	LPV	2	99.898	3	99.893	4	99.824
PQI	PRESQUE ISLE INTL	ME	LPV200	2	99.872	3	99.869	7	99.726
PWM	PORTLAND INTL JETPORT	ME	LPV200	2	99.917	2	99.909	5	99.832

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
RKD	KNOX COUNTY RGNL	ME	LPV200	2	99.906	3	99.906	4	99.825
SFM	SANFORD SEACOAST RGNL	ME	LPV200	2	99.921	2	99.913	6	99.829
WVL	WATERVILLE ROBERT LAFLEUR	ME	LPV200	2	99.899	4	99.898	4	99.825
48D	CLARE MUNICIPAL	MI	LP	1	99.764	2	99.762	2	99.718
4D0	ABRAMS MUNICIPAL	MI	LP	2	99.781	2	99.757	1	99.732
6Y1	BOIS BLANC ISLAND	MI	LP	2	99.791	2	99.789	6	99.696
77G	MARLETTE TOWNSHIP	MI	LPV	2	99.782	1	99.768	2	99.752
9D9	HASTINGS	MI	LPV	2	99.778	2	99.754	1	99.732
ACB	ANTRIM COUNTY	MI	LPV	2	99.780	2	99.767	6	99.733
ADG	LENAWEE COUNTY	MI	LPV	3	99.827	3	99.782	1	99.732
AMN	GRATIOT COMMUNICIPALTY	MI	LPV	1	99.768	2	99.760	2	99.730
ANJ	SAULT STE MARIE MUNICIPAL/SANDERSON	MI	LPV	3	99.780	4	99.774	7	99.680
APN	ALPENA COUNTY RGNL	MI	LPV	1	99.778	1	99.775	5	99.762
ARB	ANN ARBOR MUNICIPAL	MI	LPV	3	99.823	1	99.768	2	99.746
AZO	KALAMAZOO/BATTLE CREEK INTL	MI	LPV200	2	99.784	2	99.756	1	99.732
BAX	HURON COUNTY MEML	MI	LPV	2	99.782	1	99.768	1	99.757
BEH	SOUTHWEST MICHIGAN RGNL	MI	LPV200	3	99.801	1	99.746	1	99.732
BIV	WEST MICHIGAN RGNL	MI	LPV200	1	99.764	2	99.752	1	99.732
BTL	BATTLE CREEK EXEC AT KELLOGG F	MI	LPV200	2	99.781	2	99.755	1	99.732
C04	OCEANA COUNTY	MI	LPV	1	99.764	2	99.752	2	99.714
C20	ANDREWS UNIVERSITY AIRPARK	MI	LP	3	99.804	1	99.746	1	99.732
CAD	WEXFORD COUNTY	MI	LPV200	1	99.768	2	99.766	3	99.712
CFS	TUSCOLA AREA	MI	LP	2	99.782	1	99.768	2	99.752
CIU	CHIPPEWA COUNTY INTL	MI	LPV	3	99.788	5	99.782	6	99.670
CMX	HOUGHTON COUNTY MEML	MI	LPV	3	99.729	4	99.707	8	99.630
CVX	CHARLEVOIX MUNICIPAL	MI	LPV	2	99.790	2	99.777	6	99.717
D95	DUPONT-LAPEER	MI	LP	3	99.800	1	99.768	2	99.751
DET	COLEMAN A YOUNG MUNICIPAL	MI	LPV	3	99.827	1	99.768	2	99.752
DTW	DETROIT METRO WAYNE COUNTY	MI	LPV200	3	99.827	1	99.768	2	99.752
ERY	LUCE COUNTY	MI	LPV	2	99.793	4	99.771	6	99.667
ESC	DELTA COUNTY	MI	LPV200	1	99.778	2	99.758	7	99.697
FFX	FREMONT MUNICIPAL	MI	LPV	1	99.764	2	99.752	2	99.716
FNT	BISHOP INTL	MI	LPV200	2	99.785	1	99.768	2	99.747
GDW	GLADWIN ZETTEL MEML	MI	LP	1	99.764	1	99.764	2	99.719
GLR	GAYLORD RGNL	MI	LPV	2	99.780	1	99.768	5	99.735

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
GRR	GERALD R FORD INTL	MI	LPV200	1	99.764	2	99.753	2	99.731
HTL	ROSCOMMON COUNTY - BLODGETT ME	MI	LP	1	99.768	2	99.767	4	99.730
HYX	SAGINAW COUNTY H W BROWNE	MI	LPV200	1	99.768	1	99.768	2	99.746
IKW	JACK BARSTOW	MI	LPV	1	99.768	1	99.768	2	99.730
IMT	FORD	MI	LPV	2	99.774	2	99.756	8	99.684
IRS	KIRSCH MUNICIPAL	MI	LPV	2	99.810	1	99.744	1	99.732
ISQ	SCHOOLCRAFT COUNTY	MI	LP	2	99.793	3	99.759	5	99.685
IWD	GOGEBIC/IRON COUNTY	MI	LPV200	2	99.753	3	99.751	6	99.659
JXN	JACKSON COUNTY-REYNOLDS FLD	MI	LPV200	2	99.794	2	99.758	1	99.732
JYM	HILLSDALE MUNICIPAL	MI	LPV	2	99.812	2	99.761	1	99.732
LAN	CAPITAL REGION INTL	MI	LPV200	2	99.782	2	99.758	1	99.732
LDM	MASON COUNTY	MI	LPV	1	99.768	3	99.752	3	99.709
MBL	MANISTEE COUNTY/BLACKER	MI	LPV200	1	99.768	3	99.765	3	99.710
MBS	MBS INTL	MI	LPV200	1	99.768	1	99.768	2	99.731
MCD	MACKINAC ISLAND	MI	LPV	2	99.792	2	99.789	6	99.692
MKG	MUSKEGON COUNTY	MI	LPV200	1	99.764	2	99.753	2	99.718
MNM	MENOMINEE RGNL	MI	LPV200	1	99.768	2	99.747	8	99.705
MOP	MOUNT PLEASANT MUNICIPAL	MI	LPV	1	99.768	2	99.763	2	99.729
N98	BOYNE CITY MUNICIPAL	MI	LP	2	99.787	2	99.774	6	99.730
OEB	BRANCH COUNTY MEML	MI	LPV	2	99.808	2	99.756	1	99.732
OGM	ONTONAGON COUNTY - SCHUSTER FL	MI	LPV	3	99.728	3	99.711	9	99.661
OSC	OSCODA-WURTSMITH	MI	LPV200	1	99.768	1	99.768	3	99.760
OZW	LIVINGSTON COUNTY SPENCER J HA	MI	LPV200	2	99.794	2	99.766	1	99.732
PHN	ST CLAIR COUNTY INTL	MI	LPV200	3	99.825	1	99.768	2	99.752
PLN	PELLSTON RGNL/EMMET COUNTY	MI	LPV200	2	99.791	1	99.778	6	99.704
PTK	OAKLAND COUNTY INTL	MI	LPV200	3	99.810	1	99.768	2	99.752
RMV	BROOKS FLD	MI	LP	2	99.783	2	99.755	1	99.732
RNP	OWOSSO COMMUNICIPALTY	MI	LPV	2	99.782	2	99.760	2	99.731
RQB	ROBEN-HOOD	MI	LPV200	1	99.764	2	99.756	2	99.715
SAW	SAWYER INTL	MI	LPV200	2	99.768	3	99.755	7	99.669
SLH	CHEBOYGAN COUNTY	MI	LPV	2	99.791	2	99.789	6	99.701
TEW	MASON JEWETT FLD	MI	LP	2	99.785	2	99.758	1	99.732
TTF	CUSTER	MI	LPV	3	99.828	2	99.789	2	99.749
TVC	CHERRY CAPITAL	MI	LPV200	2	99.780	2	99.767	6	99.727
Y31	WEST BRANCH COMMUNICIPALTY	MI	LP	1	99.764	1	99.764	4	99.735

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
Y70	IONIA COUNTY	MI	LPV	2	99.780	2	99.756	2	99.730
YIP	WILLOW RUN	MI	LPV200	3	99.827	1	99.768	2	99.750
16D	PERHAM MUNICIPAL	MN	LPV	3	99.771	5	99.738	5	99.619
3N8	MAHNOMEN COUNTY	MN	LPV	4	99.760	6	99.738	6	99.594
ACQ	WASECA MUNICIPAL	MN	LPV	3	99.735	3	99.713	3	99.677
ADC	WADENA MUNICIPAL	MN	LPV	3	99.775	3	99.727	6	99.647
AEL	ALBERT LEA MUNICIPAL	MN	LPV	3	99.740	3	99.714	3	99.678
AIT	AITKIN MUNICIPAL/STEVE KURTZ FLD	MN	LPV	3	99.773	3	99.728	5	99.625
ANE	ANOKA COUNTY-BLAINE (JANES FLD	MN	LPV	2	99.743	2	99.732	4	99.684
AUM	AUSTIN MUNICIPAL	MN	LPV200	3	99.740	2	99.714	3	99.678
AXN	CHANDLER FLD	MN	LPV	3	99.768	4	99.724	5	99.677
BBB	BENSON MUNICIPAL	MN	LPV	3	99.768	3	99.708	4	99.683
BDE	BAUDETTE INTL	MN	LPV	4	99.743	5	99.698	8	99.566
BDH	WILLMAR MUNICIPAL/JOHN L RICE FLD	MN	LPV200	2	99.750	3	99.707	3	99.685
BJI	BEMIDJI RGNL	MN	LPV200	4	99.752	5	99.706	5	99.582
BRD	BRAINERD LAKES RGNL	MN	LPV200	3	99.774	3	99.727	6	99.640
CBG	CAMBRIDGE MUNICIPAL	MN	LPV	2	99.753	3	99.748	6	99.697
CFE	BUFFALO MUNICIPAL	MN	LPV	2	99.750	3	99.728	4	99.684
CKC	GRAND MARAIS/COOK COUNTY	MN	LPV	4	99.749	5	99.698	8	99.596
CKN	CROOKSTON MUNICIPAL/KIRKWOOD FLD	MN	LPV	4	99.753	7	99.725	5	99.571
CNB	MYERS FLD	MN	LPV	3	99.739	3	99.689	3	99.685
COQ	CLOQUET/CARLTON COUNTY	MN	LPV	4	99.764	4	99.745	6	99.632
CQM	COOK MUNICIPAL	MN	LP	4	99.747	5	99.704	7	99.571
D39	SAUK CENTRE MUNICIPAL	MN	LPV	3	99.768	3	99.726	5	99.691
D42	SPRINGFIELD MUNICIPAL	MN	LP	3	99.736	4	99.706	3	99.684
DLH	DULUTH INTL	MN	LPV200	3	99.739	4	99.733	7	99.623
DTL	DETROIT LAKES/WETHING FLD	MN	LPV	3	99.771	5	99.744	5	99.609
DVP	SLAYTON MUNICIPAL	MN	LP	3	99.752	4	99.704	3	99.675
DXX	LAC QUI PARLE COUNTY	MN	LPV200	2	99.750	3	99.707	3	99.685
ELO	ELY MUNICIPAL	MN	LPV200	4	99.746	4	99.690	7	99.576
ETH	WHEATON MUNICIPAL	MN	LP	3	99.769	3	99.721	5	99.683
EVM	EVELETH-VIRGINIA MUNICIPAL	MN	LPV	4	99.748	4	99.705	8	99.600
FBL	FARIBAULT MUNICIPAL-LIZ WALL STROHF	MN	LPV	3	99.730	2	99.713	3	99.687
FCM	FLYING CLOUD	MN	LPV200	2	99.743	2	99.732	3	99.686
FFM	FERGUS FALLS MUNICIPAL/EINAR MICKEL	MN	LPV200	3	99.774	4	99.732	5	99.663

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
FKA	FILLMORE COUNTY	MN	LPV	2	99.723	2	99.713	4	99.696
FOZ	BIGFORK MUNICIPAL	MN	LP	4	99.749	5	99.706	6	99.572
FRM	FAIRMONT MUNICIPAL	MN	LPV	3	99.742	4	99.706	3	99.678
FSE	FOSSTON MUNICIPAL-ANDERSON FLD	MN	LP	4	99.754	6	99.721	5	99.573
GHW	GLENWOOD MUNICIPAL	MN	LPV	3	99.768	4	99.724	5	99.690
GPZ	GRAND RAPIDS/ITASCA COUNTY-GOR	MN	LPV200	4	99.748	3	99.706	6	99.606
GYL	GLENCOE MUNICIPAL	MN	LPV	3	99.736	3	99.711	3	99.686
HCD	HUTCHINSON MUNICIPAL/BUTLER FLD	MN	LPV	2	99.743	3	99.725	3	99.686
HCO	HALLOCK MUNICIPAL	MN	LPV	4	99.750	6	99.699	6	99.571
HIB	RANGE RGNL	MN	LPV200	4	99.748	4	99.705	7	99.586
INL	FALLS INTL/EINARSON FLD	MN	LPV	4	99.740	5	99.695	8	99.575
JKJ	MOORHEAD MUNICIPAL	MN	LPV	3	99.770	5	99.743	5	99.623
JMR	MORA MUNICIPAL	MN	LPV	2	99.753	3	99.747	6	99.683
JYG	ST JAMES MUNICIPAL	MN	LPV	3	99.737	4	99.709	3	99.677
LJF	LITCHFIELD MUNICIPAL	MN	LPV	2	99.750	3	99.725	3	99.686
LVN	AIRLAKE	MN	LPV200	3	99.734	2	99.717	3	99.686
LXL	LITTLE FALLS/MORRISON COUNTY-L	MN	LPV	3	99.768	3	99.728	6	99.672
LYV	QUENTIN AANENSON FLD	MN	LPV200	4	99.766	4	99.700	3	99.675
MJQ	JACKSON MUNICIPAL	MN	LPV	3	99.746	4	99.704	3	99.677
MKT	MANKATO RGNL	MN	LPV200	3	99.733	4	99.710	3	99.685
MML	SOUTHWEST MINNESOTA RGNL MARSH	MN	LPV200	3	99.740	3	99.689	3	99.682
MOX	MORRIS MUNICIPAL/CHARLIE SCHMIDT FL	MN	LPV	3	99.768	3	99.709	4	99.675
MSP	MINNEAPOLIS-ST PAUL INTL/WOLD-	MN	LPV200	2	99.743	2	99.732	3	99.686
MVE	MONTEVIDEO-CHIPPEWA COUNTY	MN	LPV	3	99.763	3	99.707	3	99.685
MWM	WINDOM MUNICIPAL	MN	LPV	3	99.741	4	99.707	3	99.676
MZH	MOOSE LAKE CARLTON COUNTY	MN	LPV	2	99.753	3	99.746	5	99.631
ONA	WINONA MUNICIPAL-MAX CONRAD FLD	MN	LPV	2	99.717	2	99.713	4	99.710
ORB	ORR RGNL	MN	LP	4	99.745	5	99.705	7	99.569
OTG	WORTHINGTON MUNICIPAL	MN	LPV200	4	99.758	4	99.700	3	99.676
OWA	OWATONNA DEGNER RGNL	MN	LPV200	3	99.733	2	99.713	3	99.677
PEX	PAYNESVILLE MUNICIPAL	MN	LPV200	2	99.753	3	99.725	4	99.679
PKD	PARK RAPIDS MUNICIPAL/KONSHOK FLD	MN	LPV200	4	99.767	5	99.734	5	99.606
PQN	PIPESTONE MUNICIPAL	MN	LPV200	3	99.761	3	99.691	3	99.675
RGK	RED WING RGNL	MN	LPV200	3	99.739	3	99.732	3	99.686
ROS	RUSH CITY RGNL	MN	LPV	2	99.753	3	99.749	6	99.698

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
ROX	ROSEAU MUNICIPAL/RUDY BILLBERG FLD	MN	LPV	4	99.738	5	99.701	9	99.588
RRT	WARROAD INTL MEML	MN	LPV200	4	99.736	5	99.699	9	99.584
RST	ROCHESTER INTL	MN	LPV200	3	99.736	2	99.713	4	99.696
RWF	REDWOOD FALLS MUNICIPAL	MN	LPV	3	99.731	4	99.700	3	99.685
SAZ	STAPLES MUNICIPAL	MN	LPV	3	99.775	3	99.730	6	99.643
SBU	BLUE EARTH MUNICIPAL	MN	LPV	3	99.742	4	99.707	3	99.678
SGS	SOUTH ST PAUL MUNICIPAL-RICHARD E F	MN	LPV	2	99.743	2	99.732	3	99.686
STC	ST CLOUD RGNL	MN	LPV200	2	99.753	3	99.727	4	99.681
STP	ST PAUL DOWNTOWN HOLMAN FLD	MN	LPV	2	99.743	2	99.732	3	99.685
TOB	DODGE CENTER	MN	LPV	3	99.735	2	99.713	3	99.677
TVF	THIEF RIVER FALLS RGNL	MN	LPV	4	99.753	6	99.713	5	99.571
TWM	RICHARD B HELGESON	MN	LPV	3	99.729	4	99.719	7	99.615
ULM	NEW ULM MUNICIPAL	MN	LPV200	3	99.733	4	99.707	3	99.684
VVV	ORTONVILLE MUNICIPAL-MARTINSON FLD	MN	LP	2	99.754	3	99.709	4	99.683
Y49	WALKER MUNICIPAL	MN	LP	4	99.753	5	99.706	5	99.598
Y63	ELBOW LAKE MUNICIPAL - PRIDE OF THE	MN	LPV	3	99.769	3	99.716	5	99.675
03D	MEMPHIS MEML	MO	LPV	2	99.773	1	99.741	2	99.731
1H0	CREVE COEUR	MO	LPV	3	99.825	2	99.779	2	99.764
1MO	MOUNTAIN GROVE MEML	MO	LP	2	99.851	3	99.837	2	99.780
2H2	JERRY SUMNERS SR AURORA MUNICIPAL	MO	LP	2	99.851	2	99.816	2	99.793
6M6	LEWIS COUNTY RGNL	MO	LPV	2	99.777	2	99.757	2	99.739
8WC	WASHINGTON COUNTY	MO	LPV	2	99.848	2	99.841	2	99.785
94K	CASSVILLE MUNICIPAL	MO	LPV	2	99.858	3	99.838	2	99.798
AIZ	LEE C FINE MEML	MO	LPV	3	99.830	2	99.809	2	99.767
BBG	BRANSON	MO	LPV200	2	99.855	2	99.850	2	99.789
BUM	BUTLER MEML	MO	LPV	3	99.832	2	99.794	2	99.767
CGI	CAPE GIRARDEAU RGNL	MO	LPV200	3	99.873	2	99.848	2	99.773
CHT	CHILLICOTHE MUNICIPAL	MO	LPV	2	99.808	2	99.754	2	99.752
COU	COLUMBIA RGNL	MO	LPV200	2	99.813	2	99.785	2	99.755
DMO	SEDALIA RGNL	MO	LPV	2	99.814	2	99.792	2	99.753
DXE	DEXTER MUNICIPAL	MO	LPV	3	99.877	2	99.848	3	99.810
EIW	COUNTY MEML	MO	LPV	3	99.877	3	99.861	3	99.812
EOS	NEOSHO HUGH ROBINSON	MO	LPV	2	99.857	3	99.832	2	99.810
EVU	NORTHWEST MISSOURI RGNL	MO	LPV	3	99.783	2	99.750	2	99.731
EZZ	CAMERON MEML	MO	LPV	2	99.812	2	99.756	2	99.752

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
FAM	FARMINGTON RGNL	MO	LPV	2	99.848	2	99.844	2	99.789
FTT	ELTON HENSLEY MEML	MO	LPV	2	99.812	2	99.783	2	99.755
FWB	BRANSON WEST MUNICIPAL - EMERSON FL	MO	LPV200	2	99.852	2	99.847	2	99.790
FYG	WASHINGTON RGNL	MO	LPV	3	99.824	2	99.780	2	99.765
GLY	CLINTON RGNL	MO	LPV	3	99.830	2	99.793	2	99.758
GPH	MIDWEST NTL AIR CENTER	MO	LPV	2	99.816	2	99.781	2	99.759
H19	BOWLING GREEN MUNICIPAL	MO	LPV	2	99.809	2	99.769	3	99.755
H79	ELDON MODEL AIRPARK	MO	LP	3	99.827	2	99.795	2	99.762
H88	A PAUL VANCE FREDERICKTOWN RGN	MO	LPV	2	99.849	2	99.844	2	99.796
HAE	HANNIBAL RGNL	MO	LPV	2	99.804	2	99.758	3	99.753
HFJ	MONETT RGNL	MO	LPV	2	99.858	3	99.828	2	99.798
HIG	HIGGINSVILLE INDUSTRIAL MUNICIPAL	MO	LPV	2	99.815	2	99.782	2	99.754
IRK	KIRKSVILLE RGNL	MO	LPV200	2	99.776	2	99.753	2	99.736
JEF	JEFFERSON CITY MEML	MO	LPV	2	99.812	2	99.795	2	99.756
JLN	JOPLIN RGNL	MO	LPV	3	99.852	2	99.817	2	99.795
K15	GRAND GLAIZE-OSAGE BEACH	MO	LP	3	99.830	2	99.809	2	99.764
K57	GOULD PETERSON MUNICIPAL	MO	LPV	3	99.791	2	99.749	2	99.728
K89	MACON-FOWER MEML	MO	LPV	2	99.812	2	99.761	3	99.751
LLU	LAMAR MUNICIPAL	MO	LPV	3	99.839	2	99.817	2	99.781
LRV	LAWRENCE SMITH MEML	MO	LPV	3	99.829	2	99.793	2	99.764
LXT	LEE'S SUMMIT MUNICIPAL	MO	LPV	2	99.817	2	99.792	2	99.763
M05	CARUTHERSVILLE MEML	MO	LPV	4	99.898	4	99.881	2	99.819
M12	STEELE MUNICIPAL	MO	LPV	4	99.908	4	99.890	2	99.821
M17	BOLIVAR MUNICIPAL	MO	LPV	3	99.844	2	99.811	2	99.771
M48	HOUSTON MEML	MO	LPV	2	99.852	3	99.833	2	99.779
MAW	MALDEN RGNL	MO	LPV	3	99.884	3	99.867	2	99.816
MBY	OMAR N BRADLEY	MO	LPV	2	99.815	2	99.770	2	99.753
MCI	KANSAS CITY INTL	MO	LPV200	2	99.817	2	99.792	2	99.761
MHL	MARSHALL MEML MUNICIPAL	MO	LPV	2	99.814	2	99.778	2	99.753
MKC	CHARLES B WHEELER DOWNTOWN	MO	LPV	2	99.817	2	99.793	2	99.764
MNF	MOUNTAIN VIEW	MO	LP	2	99.855	2	99.848	2	99.778
MO3	STOCKTON MUNICIPAL	MO	LP	3	99.839	2	99.812	2	99.777
MO8	NORTH CENTRAL MISSOURI RGNL	MO	LPV	2	99.810	2	99.753	2	99.752
MYJ	MEXICO MEML	MO	LPV	2	99.813	2	99.776	2	99.755
NVD	NEVADA MUNICIPAL	MO	LPV200	3	99.836	2	99.798	2	99.775

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
OZS	CAMDENTON MEML-LAKE RGNL	MO	LPV	3	99.833	2	99.809	2	99.767
PCD	PERRYVILLE RGNL	MO	LPV	2	99.844	2	99.836	2	99.774
PLK	M GRAHAM CLARK DOWNTOWN	MO	LPV200	2	99.853	2	99.849	2	99.789
POF	POPLAR BLUFF RGNL BUSINESS	MO	LPV	2	99.863	2	99.848	2	99.814
RAW	WARSAW MUNICIPAL	MO	LPV200	3	99.829	2	99.795	2	99.755
RCM	SKYHAVEN	MO	LPV	2	99.815	2	99.792	2	99.756
SGF	SPRINGFIELD-BRANSON NTL	MO	LPV	2	99.848	2	99.815	2	99.774
SIK	SIKESTON MEML MUNICIPAL	MO	LPV	3	99.876	2	99.848	3	99.790
STJ	ROSECRANS MEML	MO	LPV200	2	99.807	2	99.776	2	99.752
STL	ST LOUIS LAMBERT INTL	MO	LPV200	3	99.824	2	99.779	2	99.765
SUS	SPIRIT OF ST LOUIS	MO	LPV200	3	99.826	2	99.781	2	99.765
TBN	WAYNESVILLE-ST ROBERT RGNL FOR	MO	LPV	3	99.845	2	99.811	2	99.767
TKX	KENNETT MEML	MO	LPV	3	99.892	3	99.872	2	99.819
TRX	TRENTON MUNICIPAL	MO	LPV	2	99.772	2	99.751	2	99.749
UBX	CUBA MUNICIPAL	MO	LPV	3	99.839	3	99.832	2	99.766
UNO	WEST PLAINS RGNL	MO	LPV	2	99.857	2	99.848	2	99.779
UUV	SULLIVAN RGNL	MO	LPV	3	99.835	3	99.822	2	99.766
VER	JESSE VIERTEL MEML	MO	LPV	2	99.813	2	99.782	2	99.754
VIH	ROLLA NTL	MO	LPV	3	99.834	2	99.807	2	99.766
0R0	COLUMBIA/MARION COUNTY	MS	LPV	2	99.932	3	99.914	6	99.862
17M	MAGEE MUNICIPAL	MS	LP	2	99.934	3	99.918	6	99.855
5A4	OKOLONA MUNICIPAL/RICHARD STOVALL F	MS	LPV	2	99.931	2	99.921	4	99.846
5A6	WINONA-MONTGOMERY COUNTY	MS	LP	1	99.953	3	99.935	4	99.860
87I	YAZOO COUNTY	MS	LPV	2	99.943	3	99.913	4	99.866
8M1	BOONEVILLE/BALDWYN	MS	LPV	2	99.935	2	99.923	3	99.878
CKM	FLETCHER FLD	MS	LPV	1	99.953	2	99.937	4	99.875
CRX	ROSCOE TURNER	MS	LPV200	2	99.935	2	99.923	3	99.880
GLH	GREENVILLE MID-DELTA	MS	LPV200	1	99.961	2	99.943	5	99.887
GNF	GRENADA MUNICIPAL	MS	LPV	1	99.953	2	99.937	4	99.846
GPT	GULFPORT-BILOXI INTL	MS	LPV200	3	99.935	7	99.912	7	99.845
GTR	GOLDEN TRIANGLE RGNL	MS	LPV200	2	99.935	3	99.924	4	99.850
GWO	GREENWOOD-LEFLORE	MS	LPV	1	99.953	2	99.937	5	99.877
HBG	HATTIESBURG BOBBY L CHAIN MUNICIPAL	MS	LPV200	2	99.932	4	99.920	6	99.862
HEZ	HARDY-ANDERS FLD/NATCHEZ-ADAMS	MS	LPV200	2	99.938	3	99.931	6	99.849
HKS	HAWKINS FLD	MS	LPV	2	99.935	3	99.915	4	99.855

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
HSA	STENNIS INTL	MS	LPV200	3	99.935	5	99.898	7	99.849
IDL	INDIANOLA MUNICIPAL	MS	LPV	1	99.957	2	99.938	5	99.880
JAN	JACKSON-MEDGAR WILEY EVERS INT	MS	LPV200	2	99.935	3	99.912	4	99.855
JVW	JOHN BELL WILLIAMS	MS	LPV200	2	99.940	3	99.921	5	99.855
LMS	LOUISVILLE/WINSTON COUNTY	MS	LPV	1	99.953	3	99.912	4	99.857
LUL	HESLER-NOBLE FLD	MS	LPV	2	99.932	3	99.919	5	99.855
M11	COPIAH COUNTY	MS	LPV	2	99.930	4	99.923	6	99.855
M40	MONROE COUNTY	MS	LPV	2	99.935	2	99.924	4	99.845
M41	HOLLY SPRINGS-MARSHALL COUNTY	MS	LPV	2	99.939	2	99.922	2	99.884
M43	PRENTISS-JEFFERSON DAVIS COUNT	MS	LPV	2	99.934	4	99.913	6	99.853
MBO	BRUCE CAMPBELL FLD	MS	LPV	2	99.935	3	99.912	4	99.855
MCB	MC COMB/PIKE COUNTY/JOHN E LEW	MS	LPV200	2	99.938	3	99.919	6	99.867
MEI	KEY FLD	MS	LPV200	2	99.935	3	99.908	5	99.868
MJD	PICAYUNE MUNICIPAL	MS	LPV	3	99.935	5	99.898	7	99.848
MMS	SELS	MS	LPV	1	99.953	2	99.937	4	99.875
MPE	PHILADELPHIA MUNICIPAL	MS	LPV	2	99.946	3	99.906	5	99.861
OLV	OLIVE BRANCH/TAYLOR FLD	MS	LPV200	2	99.944	2	99.927	3	99.893
PIB	HATTIESBURG/LAUREL RGNL	MS	LPV200	2	99.932	3	99.921	6	99.862
PMU	PANOLA COUNTY	MS	LPV	1	99.949	2	99.933	4	99.884
PQL	TRENT LOTT INTL	MS	LPV200	3	99.931	6	99.918	8	99.825
RNV	CLEVELAND MUNICIPAL	MS	LPV	1	99.953	2	99.938	4	99.857
STF	GEORGE M BRYAN	MS	LPV200	2	99.936	4	99.916	4	99.849
TUP	TUPELO RGNL	MS	LPV200	2	99.935	2	99.923	4	99.872
UBS	COLUMBUS-LOWNDES COUNTY	MS	LPV	2	99.935	3	99.924	4	99.850
UOX	UNIVERSITY-OXFORD	MS	LPV	2	99.937	2	99.920	4	99.877
UTA	TUNICA MUNICIPAL	MS	LPV200	1	99.949	2	99.934	3	99.892
VKS	VICKSBURG MUNICIPAL	MS	LP	2	99.935	4	99.925	5	99.855
00U	BIG HORN COUNTY	MT	LPV200	3	99.861	4	99.826	4	99.701
1S3	TILLITT FLD	MT	LPV	1	99.831	3	99.790	3	99.719
4U6	CIRCLE TOWN COUNTY	MT	LPV	3	99.830	5	99.783	6	99.697
6S0	BIG TIMBER	MT	LPV	3	99.882	4	99.855	4	99.750
6S8	LAUREL MUNICIPAL	MT	LPV	3	99.876	3	99.848	4	99.729
7S0	RONAN	MT	LPV	1	99.917	1	99.906	6	99.801
7S1	TWIN BRIDGES	MT	LPV	1	99.920	1	99.912	5	99.806
BHK	BAKER MUNICIPAL	MT	LPV	3	99.790	4	99.762	3	99.709

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
BIL	BILLINGS LOGAN INTL	MT	LPV200	3	99.873	3	99.847	4	99.704
BTM	BERT MOONEY	MT	LPV	1	99.920	1	99.909	5	99.800
BZN	BOZEMAN YELLOWSTONE INTL	MT	LPV	4	99.912	6	99.903	4	99.781
CII	CHOTEAU	MT	LPV200	2	99.915	4	99.889	7	99.743
CTB	CUT BANK INTL	MT	LPV200	2	99.913	5	99.881	7	99.743
DLN	DILLON	MT	LPV	1	99.920	1	99.913	6	99.833
EKS	ENNIS BIG SKY	MT	LPV	1	99.920	3	99.908	5	99.804
GDV	DAWSON COMMUNICIPALTY	MT	LPV	3	99.825	4	99.762	5	99.702
GGW	WOKAL FLD/GLASGOW-VALLEY COUNT	MT	LPV200	1	99.831	4	99.807	5	99.668
GPI	GLACIER PARK INTL	MT	LPV	1	99.920	2	99.902	6	99.770
GTF	GREAT FALLS INTL	MT	LPV200	3	99.877	3	99.866	5	99.743
HLN	HELENA RGNL	MT	LPV	1	99.920	1	99.909	5	99.772
HRF	RAVALLI COUNTY	MT	LPV	1	99.917	1	99.913	6	99.855
HVR	HAVRE CITY-COUNTY	MT	LPV	2	99.850	3	99.833	5	99.676
HWQ	WHEATLAND COUNTY AT HARLOWTON	MT	LPV	3	99.875	5	99.867	7	99.739
LVM	MISSION FLD	MT	LP	3	99.883	3	99.844	4	99.755
LWT	LEWISTOWN MUNICIPAL	MT	LPV200	3	99.869	3	99.843	5	99.712
M75	MALTA	MT	LP	2	99.843	3	99.810	6	99.673
MLS	FRANK WILEY FLD	MT	LPV	1	99.829	4	99.777	3	99.711
MSO	MISSOULA MONTANA	MT	LPV200	1	99.917	1	99.909	5	99.830
OLF	L M CLAYTON	MT	LPV200	2	99.829	6	99.785	4	99.639
PO1	POPLAR MUNICIPAL	MT	LPV200	3	99.823	6	99.779	5	99.659
PWD	SHER-WOOD	MT	LPV200	3	99.812	4	99.782	5	99.647
RPX	ROUNDUP	MT	LPV	2	99.854	3	99.841	5	99.703
RVF	RUBY VALLEY FLD	MT	LPV	1	99.920	1	99.912	5	99.806
S01	CONRAD	MT	LPV	2	99.912	5	99.881	7	99.725
SBX	SHELBY	MT	LPV	2	99.888	4	99.858	6	99.712
SDY	SIDNEY-RICHLAND RGNL	MT	LPV	4	99.812	5	99.757	4	99.650
WYS	YELLOWSTONE	MT	LPV200	2	99.908	4	99.889	5	99.804
CCE3	JUNIPER	NB	LP	2	99.870	2	99.866	8	99.721
CCN2	GRAND MANAN	NB	LPV	2	99.884	3	99.878	6	99.788
CCR3	FLORENCEVILLE	NB	LPV	2	99.875	2	99.869	8	99.740
CDJ4	CLEARWATER	NB	LPV	2	99.867	2	99.858	8	99.706
CYCH	MIRAMICHI	NB	LPV	2	99.859	3	99.841	9	99.690
CYCL	CHARLO	NB	LPV	4	99.846	4	99.828	8	99.634

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
CYFC	FREDERICTON INTL	NB	LPV	2	99.871	2	99.871	7	99.721
CYQM	GREATER MONCTON ROMEO LEBLANC INTL	NB	LPV200	2	99.865	3	99.861	9	99.700
CYSJ	SAINT JOHN	NB	LPV	2	99.880	3	99.872	6	99.727
CYSL	ST. LEONARD	NB	LPV	2	99.868	2	99.866	7	99.710
CZBF	BATHURST	NB	LPV	4	99.852	4	99.829	8	99.639
43A	MONTGOMERY COUNTY	NC	LP	3	99.924	3	99.915	2	99.887
7W6	HYDE COUNTY	NC	LP	1	99.978	3	99.969	3	99.858
ACZ	HENDERSON FLD	NC	LPV	3	99.915	3	99.915	4	99.868
AFP	ANSON COUNTY/JEFF CLOUD FLD	NC	LPV	3	99.907	3	99.907	2	99.884
AKH	GASTONIA MUNICIPAL	NC	LPV	3	99.912	3	99.910	3	99.876
ASJ	TRI-COUNTY AT HENRY JOYNER FIE	NC	LPV	2	99.974	3	99.966	4	99.868
AVL	ASHEVILLE RGNL	NC	LPV200	2	99.901	2	99.893	3	99.879
BUY	BURLINGTON/ALAMANCE RGNL	NC	LPV	3	99.940	3	99.933	2	99.886
CLT	CHARLOTTE/DOUGLAS INTL	NC	LPV200	3	99.913	3	99.910	3	99.876
CPC	COLUMBUS COUNTY MUNICIPAL	NC	LPV	4	99.907	4	99.907	4	99.860
CTZ	CLINTON-SAMPSON COUNTY	NC	LPV200	3	99.921	3	99.919	3	99.879
DPL	DUPLIN COUNTY	NC	LPV200	3	99.928	3	99.925	3	99.876
ECG	ELIZABETH CITY CG AIR STATION/	NC	LPV	1	99.984	2	99.982	3	99.845
EDE	NORTHEASTERN RGNL	NC	LPV200	1	99.980	2	99.978	2	99.852
EHO	SHELBY-CLEVELAND COUNTY RGNL	NC	LPV	3	99.913	3	99.910	3	99.877
EQY	CHARLOTTE/MONROE EXEC	NC	LPV200	3	99.906	3	99.906	3	99.871
EWN	COASTAL CAROLINA RGNL	NC	LPV	3	99.934	3	99.928	3	99.869
EXX	DAVIDSON COUNTY	NC	LPV	3	99.925	3	99.917	3	99.887
EYF	CURTIS L BROWN JR FLD	NC	LPV	3	99.907	3	99.907	4	99.872
FAY	FAYETTEVILLE RGNL/GRANNIS FLD	NC	LPV200	3	99.917	3	99.915	3	99.881
FFA	FIRST FLIGHT	NC	LP	1	99.983	2	99.982	3	99.843
FQD	RUTHERFORD COUNTY/MARCHMAN FLD	NC	LPV	2	99.903	2	99.895	3	99.878
GEV	ASHE COUNTY	NC	LP	3	99.914	3	99.907	4	99.844
GSO	PIEDMONT TRIAD INTL	NC	LPV200	3	99.932	3	99.925	2	99.887
GWV	WAYNE EXEC JETPORT	NC	LPV200	3	99.929	3	99.920	3	99.876
HBI	ASHEBORO RGNL	NC	LPV	3	99.925	3	99.916	2	99.887
HKY	HICKORY RGNL	NC	LPV200	2	99.903	2	99.895	3	99.877
HNZ	HENDERSON/OXFORD	NC	LPV	2	99.946	3	99.941	4	99.881
HRJ	HARNETT RGNL JETPORT	NC	LPV	3	99.929	3	99.920	3	99.884
ILM	WILMINGTON INTL	NC	LPV200	4	99.915	4	99.907	4	99.851

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
INT	SMITH REYNOLDS	NC	LPV200	3	99.931	3	99.924	4	99.885
IPJ	LINCOLN-TON-LINCOLN COUNTY RGNL	NC	LPV	2	99.903	2	99.895	3	99.876
ISO	KINSTON RGNL JETPORT AT STALLI	NC	LPV200	3	99.935	3	99.925	3	99.872
IXA	HALIFAX/NORTHAMPTON RGNL	NC	LPV200	2	99.972	3	99.957	4	99.872
JNX	JOHNSTON RGNL	NC	LPV	3	99.930	3	99.921	3	99.878
JQF	CONCORD-PADGETT RGNL	NC	LPV	2	99.903	2	99.895	3	99.875
LBT	LUMBERTON RGNL	NC	LPV	3	99.908	3	99.908	3	99.868
LHZ	TRIANGLE NORTH EXEC	NC	LPV200	2	99.947	3	99.941	3	99.878
MCZ	MARTIN COUNTY	NC	LPV	2	99.971	3	99.961	3	99.869
MEB	LAURINBURG/MAXTON	NC	LPV200	3	99.912	3	99.912	3	99.873
MQI	DARE COUNTY RGNL	NC	LPV	1	99.982	2	99.981	3	99.844
MRH	MICHAEL J SMITH FLD	NC	LPV	3	99.923	3	99.923	4	99.860
MRN	FOOTHILLS RGNL	NC	LPV	2	99.903	2	99.895	3	99.873
MWK	MOUNT AIRY/SURRY COUNTY	NC	LPV	3	99.930	3	99.923	4	99.878
OAJ	ALBERT J ELLIS	NC	LPV200	3	99.926	3	99.925	4	99.871
OCW	WASHINGTON-WARREN	NC	LPV	2	99.964	3	99.958	3	99.865
ONX	CURRITUCK COUNTY RGNL	NC	LPV	1	99.984	2	99.983	3	99.840
PGV	PITT-GREENVILLE	NC	LPV	2	99.957	3	99.948	3	99.867
PMZ	PLYMOUTH MUNICIPAL	NC	LP	1	99.980	2	99.975	3	99.866
RCZ	RICHMOND COUNTY	NC	LPV	3	99.912	3	99.912	2	99.880
RDU	RALEIGH-DURHAM INTL	NC	LPV200	3	99.944	3	99.937	3	99.884
RHP	WESTERN CAROLINA RGNL	NC	LP	3	99.910	3	99.910	3	99.881
RUQ	MID-CAROLINA RGNL	NC	LPV200	2	99.906	2	99.897	3	99.880
RWI	ROCKY MOUNT/WILSON RGNL	NC	LPV	2	99.948	3	99.941	3	99.876
SCR	SILER CITY MUNICIPAL	NC	LPV	3	99.926	3	99.917	2	99.887
SOP	MOORE COUNTY	NC	LPV200	3	99.921	3	99.915	2	99.887
SUT	CAPE FEAR RGNL JETPORT/HOWIE F	NC	LPV	4	99.905	3	99.891	4	99.851
SVH	STATESVILLE RGNL	NC	LPV200	2	99.903	2	99.894	3	99.875
TDF	RALEIGH RGNL AT PERSON COUNTY	NC	LPV200	3	99.945	3	99.939	4	99.883
TTA	RALEIGH EXEC JETPORT AT SANFOR	NC	LPV200	3	99.927	3	99.918	2	99.886
UKF	WILKES COUNTY	NC	LPV200	3	99.928	3	99.921	4	99.873
VUJ	STANLY COUNTY	NC	LPV200	2	99.903	2	99.893	3	99.888
W03	WILSON INDUSTRIAL AIR CENTER	NC	LPV	2	99.947	3	99.940	3	99.876
W40	MOUNT OLIVE MUNICIPAL	NC	LPV	3	99.929	3	99.918	3	99.877
ZEF	ELKIN MUNICIPAL	NC	LP	3	99.930	3	99.923	4	99.872

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
06D	ROLLA MUNICIPAL	ND	LPV	3	99.754	6	99.696	6	99.610
20U	BEACH	ND	LPV	3	99.807	4	99.762	4	99.697
2C8	CAVALIER MUNICIPAL	ND	LPV	4	99.750	5	99.699	7	99.584
3H4	HILLSBORO MUNICIPAL	ND	LPV	3	99.769	6	99.729	6	99.600
46D	CARRINGTON MUNICIPAL	ND	LPV	3	99.754	6	99.721	4	99.610
4E7	ELLENDALE MUNICIPAL	ND	LPV	4	99.756	4	99.731	6	99.679
51D	EDGELEY MUNICIPAL	ND	LPV	4	99.770	4	99.722	5	99.686
5L0	LAKOTA MUNICIPAL	ND	LPV	3	99.766	5	99.731	5	99.603
5N8	CASSELTON ROBERT MILLER RGNL	ND	LPV	3	99.773	5	99.736	5	99.622
6L3	LISBON MUNICIPAL	ND	LPV	3	99.772	4	99.722	5	99.656
7L2	LINTON MUNICIPAL	ND	LPV	4	99.748	4	99.718	4	99.690
9D7	CANDO MUNICIPAL	ND	LPV	3	99.753	7	99.714	5	99.598
BAC	BARNES COUNTY MUNICIPAL	ND	LPV	3	99.771	4	99.722	5	99.621
BIS	BISMARCK MUNICIPAL	ND	LPV200	5	99.759	4	99.722	5	99.683
BWP	HARRY STERN	ND	LPV	3	99.774	4	99.725	5	99.670
BWW	BOWMAN RGNL	ND	LPV	3	99.781	4	99.758	4	99.715
D05	GARRISON MUNICIPAL	ND	LPV	5	99.745	5	99.737	4	99.606
D09	BOTTINEAU MUNICIPAL	ND	LPV	4	99.753	6	99.707	6	99.616
D55	ROBERTSON FLD	ND	LPV	3	99.755	5	99.698	6	99.575
D57	GLEN ULLIN RGNL	ND	LPV	5	99.781	4	99.731	5	99.683
D60	TIOGA MUNICIPAL	ND	LPV	5	99.777	5	99.752	5	99.620
DIK	DICKINSON/THEODORE ROOSEVELT R	ND	LPV200	4	99.775	4	99.745	5	99.686
DVL	DEVILS LAKE RGNL	ND	LPV200	3	99.754	5	99.731	5	99.603
FAR	HECTOR INTL	ND	LPV200	3	99.770	5	99.743	5	99.623
GAF	HUTSON FLD	ND	LPV	4	99.750	7	99.716	5	99.566
GFK	GRAND FORKS INTL	ND	LPV	4	99.754	6	99.727	5	99.570
GWR	GWINNER-ROGER MELROE FLD	ND	LPV	3	99.773	3	99.709	6	99.664
HEI	HETTINGER/JB LINDQUIST RGNL	ND	LPV	4	99.773	4	99.754	4	99.710
HZE	MERCER COUNTY RGNL	ND	LPV	5	99.778	5	99.732	6	99.644
ISN	SLOULIN FLD INTL	ND	LPV200	4	99.786	5	99.750	5	99.633
JMS	JAMESTOWN RGNL	ND	LPV200	3	99.770	4	99.721	6	99.655
K74	ROBERT ODEGAARD FLD	ND	LP	3	99.773	4	99.724	6	99.639
MOT	MINOT INTL	ND	LPV	5	99.747	6	99.728	5	99.621
RUG	RUGBY MUNICIPAL	ND	LP	3	99.752	6	99.730	6	99.614
S25	WATFORD CITY MUNICIPAL	ND	LPV	4	99.780	5	99.750	5	99.626

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
XWA	WILLISTON BASIN INTL	ND	LPV200	5	99.811	5	99.750	5	99.633
Y19	MANDAN RGNL/LAWLER FLD	ND	LPV	5	99.760	4	99.722	5	99.683
07K	CENTRAL CITY MUNICIPAL - LARRY REIN	NE	LPV	4	99.812	3	99.761	4	99.715
08K	HARVARD STATE	NE	LPV	3	99.820	2	99.776	4	99.741
0B4	HARTINGTON MUNICIPAL/ BUD BECKER FL	NE	LPV	3	99.766	3	99.700	3	99.674
0C4	PENDER MUNICIPAL	NE	LPV	4	99.776	3	99.690	3	99.677
0F4	LOUP CITY MUNICIPAL	NE	LPV	4	99.825	3	99.762	4	99.718
0G3	TECUMSEH MUNICIPAL	NE	LPV	3	99.796	2	99.761	2	99.729
0V3	PIONEER VILLAGE FLD	NE	LPV	3	99.833	2	99.782	2	99.767
12K	SUPERIOR MUNICIPAL	NE	LPV	3	99.835	3	99.798	3	99.770
47V	CURTIS MUNICIPAL	NE	LPV	2	99.855	3	99.817	3	99.756
4D9	ALMA MUNICIPAL	NE	LPV	3	99.862	2	99.806	2	99.775
4V9	ANTELOPE COUNTY	NE	LPV	4	99.794	4	99.716	3	99.686
6K3	CREIGHTON MUNICIPAL	NE	LPV	4	99.776	4	99.718	3	99.674
7V7	RED CLOUD MUNICIPAL	NE	LPV	3	99.838	3	99.800	2	99.773
8V2	STUART-ATKINSON MUNICIPAL	NE	LPV	4	99.784	4	99.723	3	99.692
93Y	DAVID CITY MUNICIPAL	NE	LPV	4	99.795	4	99.740	3	99.692
9V5	MODISETT	NE	LPV	3	99.823	3	99.773	5	99.733
AFK	NEBRASKA CITY MUNICIPAL	NE	LPV	3	99.793	2	99.755	3	99.723
AHQ	WAHOO MUNICIPAL	NE	LPV	4	99.786	4	99.733	3	99.690
AIA	ALLIANCE MUNICIPAL	NE	LPV200	3	99.852	3	99.786	5	99.741
ANW	AINSWORTH RGNL	NE	LPV200	4	99.805	3	99.750	4	99.707
AUH	AURORA MUNICIPAL - AL POTTER FLD	NE	LPV	3	99.819	2	99.771	4	99.721
BBW	BROKEN BOW MUNICIPAL/KEITH GLAZE FL	NE	LPV	4	99.825	4	99.770	4	99.716
BFF	WESTERN NEBRASKA RGNL/WILLIAM	NE	LPV	3	99.877	3	99.806	4	99.752
BIE	BEATRICE MUNICIPAL	NE	LPV200	2	99.795	2	99.772	2	99.744
BTA	BLAIR MUNICIPAL	NE	LPV	4	99.782	3	99.713	3	99.686
BUB	CRAM FLD	NE	LPV	4	99.810	4	99.760	4	99.714
BVN	ALBION MUNICIPAL	NE	LPV	4	99.804	4	99.730	4	99.701
CDR	CHADRON MUNICIPAL	NE	LPV200	4	99.847	3	99.772	3	99.724
CEK	CRETE MUNICIPAL	NE	LPV	3	99.807	2	99.766	3	99.721
CSB	CAMBRIDGE MUNICIPAL	NE	LPV	2	99.866	3	99.812	2	99.775
CZD	COZAD MUNICIPAL	NE	LPV	3	99.843	3	99.802	3	99.740
EAR	KEARNEY RGNL	NE	LPV200	3	99.830	2	99.780	3	99.746
FBY	FAIRBURY MUNICIPAL	NE	LPV	3	99.813	2	99.777	2	99.746

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
FET	FREMONT MUNICIPAL	NE	LPV	4	99.783	3	99.712	3	99.686
FMZ	FAIRMONT STATE AIRFIELD	NE	LPV	3	99.814	2	99.773	4	99.739
FNB	BRENNER FLD	NE	LPV	2	99.782	2	99.760	2	99.747
GGF	GRANT MUNICIPAL	NE	LPV	1	99.859	2	99.840	3	99.741
GRI	CENTRAL NEBRASKA RGNL	NE	LPV	3	99.820	3	99.770	4	99.721
GRN	GORDON MUNICIPAL	NE	LPV	3	99.822	3	99.769	3	99.700
HDE	BREWSTER FLD	NE	LPV	3	99.842	2	99.784	2	99.770
HSI	HASTINGS MUNICIPAL	NE	LPV	3	99.827	2	99.778	3	99.751
IBM	KIMBALL MUNICIPAL/ROBERT E ARRAJ FL	NE	LPV	2	99.889	3	99.843	3	99.761
IML	IMPERIAL MUNICIPAL	NE	LPV	1	99.866	1	99.831	3	99.770
JYR	YORK MUNICIPAL	NE	LPV	3	99.813	2	99.766	4	99.715
K01	FARINGTON FLD	NE	LPV	3	99.792	2	99.757	2	99.729
LBF	NORTH PLATTE RGNL/LEE BIRD FLD	NE	LPV200	3	99.845	3	99.797	3	99.731
LCG	WAYNE MUNICIPAL/ STAN MORRIS FLD	NE	LPV	3	99.765	3	99.691	3	99.674
LNK	LINCOLN	NE	LPV200	3	99.802	2	99.756	3	99.698
LXN	JIM KELLY FLD	NE	LPV	3	99.844	3	99.794	3	99.743
MCK	MC COOK BEN NELSON RGNL	NE	LPV	1	99.866	3	99.838	2	99.777
MLE	MILLARD	NE	LPV	3	99.791	4	99.730	3	99.690
ODX	EVELYN SHARP FLD	NE	LPV	4	99.813	3	99.740	4	99.715
OFK	NORFOLK RGNL/KARL STEFAN MEML	NE	LPV200	4	99.790	3	99.701	3	99.674
OGA	SEARLE FLD	NE	LPV	1	99.856	4	99.826	3	99.732
OKS	GARDEN COUNTY/KING RHILEY FLD	NE	LPV	2	99.873	3	99.829	3	99.725
OLU	COLUMBUS MUNICIPAL	NE	LPV	4	99.798	4	99.721	3	99.691
OMA	EPPLEY AIRFIELD	NE	LPV200	3	99.788	3	99.713	3	99.689
ONL	THE O'NEILL MUNICIPAL-JOHN L BAKER	NE	LPV	4	99.783	4	99.720	3	99.686
PMV	PLATTSMOUTH MUNICIPAL/DOUGLAS V DUE	NE	LPV	3	99.794	3	99.746	3	99.695
RBE	ROCK COUNTY	NE	LPV	4	99.787	4	99.722	3	99.692
SCB	SCRIBNER STATE	NE	LPV	4	99.786	4	99.706	3	99.683
SNY	SIDNEY MUNICIPAL/LLOYD W CARR FLD	NE	LPV	2	99.888	4	99.852	4	99.761
SWT	SEWARD MUNICIPAL	NE	LPV	3	99.806	2	99.757	3	99.698
TIF	THOMAS COUNTY	NE	LPV	4	99.817	3	99.763	4	99.713
TQE	TEKAMAH MUNICIPAL	NE	LPV	3	99.762	4	99.703	3	99.678
VTN	MILLER FLD	NE	LPV	4	99.805	4	99.737	3	99.692
ASH	BOIRE FLD	NH	LPV200	2	99.927	2	99.917	5	99.834
CON	CONCORD MUNICIPAL	NH	LPV	2	99.924	2	99.915	5	99.833

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
DAW	SKYHAVEN	NH	LPV	2	99.921	2	99.913	6	99.829
EEN	DILLANT/HOPKINS	NH	LPV	3	99.928	3	99.924	6	99.853
HIE	MOUNT WASHINGTON RGNL	NH	LPV	2	99.920	2	99.910	5	99.826
LCI	LACONIA MUNICIPAL	NH	LPV	2	99.920	2	99.913	5	99.834
LEB	LEBANON MUNICIPAL	NH	LPV	3	99.923	3	99.920	5	99.812
MHT	MANCHESTER BOSTON RGNL	NH	LPV200	2	99.926	2	99.915	5	99.829
PSM	PORTSMOUTH INTL AT PEASE	NH	LPV200	2	99.923	2	99.913	5	99.835
47N	CENTRAL JERSEY RGNL	NJ	LP	1	99.974	1	99.974	4	99.913
4N1	GREENWOOD LAKE	NJ	LP	1	99.971	1	99.949	5	99.893
ACY	ATLANTIC CITY INTL	NJ	LPV200	2	99.964	2	99.964	4	99.913
CDW	ESSEX COUNTY	NJ	LPV	1	99.974	1	99.966	4	99.899
EWR	NEWARK LIBERTY INTL	NJ	LPV200	1	99.974	1	99.967	4	99.913
MIV	MILLVILLE MUNICIPAL	NJ	LPV200	2	99.964	2	99.964	4	99.912
MJX	OCEAN COUNTY	NJ	LPV	1	99.974	1	99.974	4	99.912
MMU	MORRISTOWN MUNICIPAL	NJ	LPV200	1	99.974	1	99.967	4	99.899
N12	LAKEWOOD	NJ	LP	1	99.974	1	99.974	4	99.912
N14	FLYING W	NJ	LPV	2	99.965	2	99.965	4	99.912
N40	SKY MANOR	NJ	LP	2	99.968	2	99.968	4	99.899
TEB	TETERBORO	NJ	LPV	1	99.974	1	99.966	4	99.900
TTN	TRENTON MERCER	NJ	LPV	2	99.967	2	99.967	4	99.912
VAY	SOUTH JERSEY RGNL	NJ	LP	2	99.966	2	99.966	4	99.913
WWD	CAPE MAY COUNTY	NJ	LPV	2	99.963	2	99.963	4	99.919
CVB2	VOISEY'S BAY	NL	LPV	10	99.354	10	99.307	16	98.950
CYDF	DEER LAKE	NL	LPV200	8	99.640	8	99.632	15	99.392
CYJT	STEPHENVILLE	NL	LPV	6	99.672	6	99.651	15	99.485
CYQX	GANDER INTL	NL	LPV200	9	99.561	9	99.528	39	98.868
CYWK	WABUSH	NL	LPV	9	99.624	9	99.575	14	99.226
CYYR	GOOSE BAY	NL	LPV	10	99.484	10	99.467	18	99.093
CYYT	ST. JOHN'S INTL	NL	LPV	7	99.582	24	99.513	144	98.053
CZUM	CHURCHILL FALLS	NL	LPV	11	99.558	11	99.504	17	99.216
LFVM	MIQUELON	NL	LPV	7	99.665	7	99.648	19	99.423
LFVP	ST PIERRE	NL	LPV	7	99.669	7	99.646	17	99.418
0E0	MORIARTY MUNICIPAL	NM	LPV	0	100	2	99.976	5	99.922
ABQ	ALBUQUERQUE INTL SUNPORT	NM	LPV200	0	100	2	99.984	5	99.941
AEG	DOUBLE EAGLE II	NM	LPV200	0	100	2	99.993	5	99.946

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
ALM	ALAMOGORDO-WHITE SANDS RGNL	NM	LPV	0	100	3	99.972	41	99.853
ATS	ARTESIA MUNICIPAL	NM	LPV200	0	100	4	99.967	10	99.912
CAO	CLAYTON MUNICIPAL AIRPARK	NM	LPV	3	99.951	3	99.910	4	99.839
CNM	CAVERN CITY AIR TRML	NM	LPV200	1	99.986	1	99.975	7	99.923
CVN	CLOVIS RGNL	NM	LPV200	2	99.995	2	99.956	5	99.919
DMN	DEMING MUNICIPAL	NM	LPV	0	100	1	99.996	71	99.575
E06	LEA COUNTY/ZIP FRANKLIN MEML	NM	LPV	1	99.998	3	99.955	4	99.898
FMN	FOUR CORNERS RGNL	NM	LPV200	1	99.982	2	99.970	4	99.924
HOB	LEA COUNTY RGNL	NM	LPV	1	99.994	3	99.973	4	99.898
LAM	LOS ALAMOS	NM	LP	0	100	3	99.983	4	99.904
LRU	LAS CRUCES INTL	NM	LPV200	0	100	1	99.975	71	99.664
ONM	SOCORRO MUNICIPAL	NM	LP	0	100	0	100	13	99.924
ROW	ROSWELL AIR CENTER	NM	LPV	0	100	4	99.945	7	99.895
SAF	SANTA FE MUNICIPAL	NM	LPV200	0	100	2	99.977	4	99.911
SRR	SIERRA BLANCA RGNL	NM	LPV200	0	100	4	99.989	14	99.907
SVC	GRANT COUNTY	NM	LPV	0	100	0	100	69	99.608
CCQ3	DEBERT	NS	LPV	3	99.861	3	99.861	8	99.661
CYHZ	STANFIELD INTL	NS	LPV200	2	99.866	2	99.865	8	99.692
CYQI	YARMOUTH	NS	LPV	2	99.900	3	99.888	4	99.785
CYQY	J.A. DOUGLAS MCCURDY	NS	LPV200	4	99.803	5	99.775	7	99.592
CYTN	TRENTON	NS	LPV	3	99.855	3	99.855	7	99.633
CYZX	GREENWOOD	NS	LP	2	99.872	2	99.869	7	99.721
CDK2	DIAVIK	NT	LPV	5	99.849	11	99.615	44	98.748
CEU9	SAMBAA K'E	NT	LPV	4	99.866	5	99.780	20	99.439
CGK2	GAHCHO KUE	NT	LPV	6	99.804	11	99.540	37	98.976
CSK6	SNAP LAKE	NT	LPV	7	99.812	8	99.585	34	99.039
CYEV	INUVIK (MIKE ZUBKO)	NT	LPV	3	99.876	4	99.807	25	99.460
CYFR	FORT RESOLUTION	NT	LPV	6	99.819	7	99.667	19	99.294
CYFS	FORT SIMPSON	NT	LPV	5	99.872	5	99.779	22	99.432
CYGH	FORT GOOD HOPE	NT	LPV	3	99.865	7	99.797	24	99.392
CYHY	MERLYN CARTER AIRPORT	NT	LPV	5	99.860	9	99.715	14	99.359
CYJP	FORT PROVIDENCE	NT	LPV	4	99.867	9	99.713	17	99.376
CYKD	FREDDIE CARMICHAEL	NT	LPV	3	99.864	3	99.807	23	99.520
CYOA	EKATI	NT	LPV	6	99.869	11	99.625	47	98.739
CYOC	OLD CROW	NT	LPV	3	99.857	3	99.831	15	99.636

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
CYPC	PAULATUK (NORA ALIQATCHIALUK RUBEN)	NT	LPV	4	99.862	8	99.735	87	98.874
CYSM	FORT SMITH	NT	LPV	6	99.783	7	99.641	16	99.364
CYSY	SACHS HARBOUR (DAVID NASOGALUAK JR. SAARYUAQ)	NT	LPV	3	99.849	11	99.683	170	97.769
CYUB	JAMES GRUBEN	NT	LPV	3	99.877	6	99.793	35	99.367
CYVQ	NORMAN WELLS	NT	LPV	3	99.864	6	99.807	24	99.384
CYWJ	DELINE	NT	LPV	2	99.877	7	99.786	24	99.307
CYZF	YELLOWKNIFE	NT	LPV200	5	99.830	10	99.697	19	99.225
CZFM	FORT MCPHERSON	NT	LPV	3	99.857	3	99.807	20	99.556
CZFN	TULITA	NT	LPV	3	99.867	6	99.806	24	99.406
CMB2	MEADOWBANK	NU	LPV	9	99.647	14	99.348	58	97.784
CMR2	MARY RIVER	NU	LPV	841	90.154	942	84.984	1131	55.395
CYBK	BAKER LAKE	NU	LPV	14	99.651	12	99.314	58	98.059
CYCS	CHESTERFIELD INLET	NU	LPV	11	99.491	18	99.220	74	97.980
CYEK	ARVIAT	NU	LPV	10	99.539	9	99.338	41	98.617
CYFB	IQALUIT	NU	LPV200	84	98.797	120	98.420	393	93.990
CYRB	RESOLUTE BAY	NU	LPV	647	94.278	829	88.759	1230	52.286
CYRT	RANKIN INLET	NU	LPV	11	99.498	14	99.271	57	98.277
CYSK	SANIKILUAQ	NU	LPV	9	99.558	11	99.402	18	98.946
CYTE	KINNGAIT AIRPORT	NU	LPV	27	99.362	43	99.035	261	96.317
CYYH	TALOYOAK	NU	LPV	21	99.669	47	98.999	302	94.434
05U	EUREKA	NV	LP	1	99.978	1	99.974	1	99.960
10U	OWYHEE	NV	LPV200	1	99.953	1	99.941	1	99.918
67L	MESQUITE	NV	LP	0	100	1	99.990	1	99.967
BAM	BATTLE MOUNTAIN	NV	LPV	1	99.960	1	99.960	1	99.940
BVU	BOULDER CITY MUNICIPAL	NV	LP	0	100	0	100	4	99.984
CXP	CARSON CITY	NV	LP	0	100	1	99.997	6	99.940
ELY	ELY/YELLAND FLD	NV	LPV	1	99.976	1	99.972	2	99.961
HTH	HAWTHORNE INDUSTRIAL	NV	LP	0	100	1	99.998	4	99.944
LAS	HARRY REID INTL	NV	LPV200	0	100	0	100	4	99.984
LOL	DERBY FLD	NV	LPV	1	99.985	1	99.981	2	99.934
RNO	RENO/TAHOE INTL	NV	LPV	0	100	1	99.996	6	99.929
RTS	RENO/STEAD	NV	LPV	0	100	1	99.996	5	99.926
SPZ	SILVER SPRINGS	NV	LPV	0	100	1	99.996	6	99.934
TPH	TONOPAH	NV	LP	0	100	1	99.997	2	99.944

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
VGT	NORTH LAS VEGAS	NV	LP	0	100	0	100	4	99.974
WMC	WINNEMUCCA MUNICIPAL	NV	LPV	1	99.960	1	99.953	1	99.929
06N	RANDALL	NY	LP	2	99.963	2	99.948	5	99.891
0G7	FINGER LAKES RGNL	NY	LPV	3	99.938	3	99.904	4	99.848
1B1	COLUMBIA COUNTY	NY	LPV	2	99.957	2	99.943	5	99.880
20N	KINGSTON-ULSTER	NY	LPV	2	99.955	2	99.941	5	99.884
44N	SKY ACRES	NY	LPV	2	99.961	2	99.944	5	99.883
4B6	TICONDEROGA MUNICIPAL	NY	LPV	4	99.927	4	99.925	4	99.823
5B2	SARATOGA COUNTY	NY	LPV	2	99.952	2	99.942	4	99.847
5G0	LE ROY	NY	LP	3	99.919	3	99.895	4	99.824
9G0	BUFFALO AIRFIELD	NY	LP	3	99.908	2	99.883	3	99.801
9G3	AKRON/JESSON FLD	NY	LP	3	99.907	2	99.881	2	99.789
ALB	ALBANY INTL	NY	LPV200	2	99.953	2	99.942	5	99.856
ART	WATERTOWN INTL	NY	LPV200	3	99.938	3	99.902	3	99.829
BGM	GREATER BINGHAMTON/EDWIN A LIN	NY	LPV200	3	99.939	4	99.928	5	99.883
BUF	BUFFALO NIAGARA INTL	NY	LPV200	3	99.907	2	99.882	2	99.790
ELM	ELMIRA/CORNING RGNL	NY	LPV200	5	99.942	4	99.903	4	99.857
ELZ	WELLSVILLE MUNICIPAL/TARANTINE FLD	NY	LPV200	4	99.915	4	99.897	3	99.819
FOK	FRANCIS S GABRESKI	NY	LPV200	1	99.971	1	99.964	6	99.903
FRG	REPUBLIC	NY	LPV200	1	99.974	1	99.966	5	99.907
FZY	OSWEGO COUNTY	NY	LPV	3	99.938	4	99.917	4	99.835
GFL	FLOYD BENNETT MEML	NY	LPV200	3	99.945	3	99.937	5	99.840
GVQ	GENESEE COUNTY	NY	LPV200	3	99.918	2	99.881	3	99.806
HPN	WESTCHESTER COUNTY	NY	LPV	1	99.971	1	99.964	5	99.890
HTF	HORNELL MUNICIPAL	NY	LPV	5	99.931	4	99.897	3	99.819
HTO	EAST HAMPTON	NY	LPV	1	99.971	1	99.964	6	99.886
HWV	BROOKHAVEN	NY	LPV	1	99.971	1	99.964	6	99.904
IAG	NIAGARA FALLS INTL	NY	LPV	2	99.892	2	99.880	2	99.790
ISP	LONG ISLAND MAC ARTHUR	NY	LPV200	1	99.974	1	99.966	5	99.907
ITH	ITHACA TOMPKINS INTL	NY	LPV	3	99.938	4	99.921	3	99.847
IUA	CANANDAIGUA	NY	LPV	4	99.938	3	99.897	3	99.848
JFK	JOHN F KENNEDY INTL	NY	LPV200	1	99.974	1	99.966	6	99.923
JHW	CHAUTAUQUA COUNTY/JAMESTOWN	NY	LPV200	3	99.889	3	99.881	3	99.806
K09	PISECO	NY	LP	3	99.946	3	99.939	4	99.845
LGA	LAGUARDIA	NY	LPV	1	99.974	1	99.966	5	99.915

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
MAL	MALONE-DUFORT	NY	LPV	3	99.922	4	99.921	4	99.813
MGJ	ORANGE COUNTY	NY	LPV	2	99.961	2	99.947	5	99.892
MSS	MASSENA INTL-RICHARDS FLD	NY	LPV	4	99.917	5	99.912	4	99.812
MSV	SULLIVAN COUNTY INTL	NY	LPV	2	99.952	2	99.938	5	99.882
N23	SIDNEY MUNICIPAL	NY	LP	3	99.941	4	99.933	5	99.875
N66	ALBERT S NADER RGNL	NY	LPV	2	99.948	3	99.940	5	99.868
NY0	FULTON COUNTY	NY	LPV	2	99.949	2	99.941	5	99.847
OGS	OGDENSBURG INTL	NY	LPV	4	99.923	5	99.907	4	99.821
OIC	LT WARREN EATON	NY	LP	3	99.941	4	99.931	5	99.866
OLE	CATTARAUGUS COUNTY-OLEAN	NY	LPV	3	99.914	3	99.878	3	99.814
PBG	PLATTSBURGH INTL	NY	LPV	3	99.918	3	99.918	4	99.817
PEO	PENN YAN	NY	LPV	4	99.934	4	99.904	3	99.847
POU	HUDSON VALLEY RGNL	NY	LPV	2	99.963	2	99.946	5	99.886
RME	GRIFFISS INTL	NY	LPV200	3	99.940	4	99.927	3	99.836
ROC	FREDERICK DOUGLASS/GREATER ROC	NY	LPV200	4	99.934	3	99.896	4	99.827
SCH	SCHENECTADY COUNTY	NY	LPV200	2	99.952	2	99.942	5	99.853
SDC	WILLIAMSON-SODUS	NY	LPV	4	99.932	3	99.903	4	99.841
SLK	ADIRONDACK RGNL	NY	LPV200	3	99.922	3	99.922	4	99.816
SWF	NEW YORK STEWART INTL	NY	LPV200	2	99.962	2	99.947	5	99.892
SYR	SYRACUSE HANCOCK INTL	NY	LPV200	3	99.939	4	99.921	3	99.850
VGC	HAMILTON MUNICIPAL	NY	LPV	3	99.940	4	99.928	5	99.864
0G6	WILLIAMS COUNTY	OH	LPV	3	99.827	3	99.783	1	99.732
10G	HOLMES COUNTY	OH	LP	3	99.855	4	99.837	2	99.745
16G	SENECA COUNTY	OH	LPV	4	99.852	5	99.820	2	99.746
17G	PORT BUCYRUS-CRAWFORD COUNTY	OH	LP	3	99.841	4	99.826	2	99.745
1G0	WOOD COUNTY	OH	LPV	3	99.835	4	99.807	2	99.745
1G3	KENT STATE UNIVERSITY	OH	LPV	4	99.872	4	99.858	2	99.750
2G2	GEARY A BATES/JEFFERSON COUNTY	OH	LPV	4	99.871	4	99.857	4	99.804
4G5	MONROE COUNTY	OH	LP	4	99.877	4	99.859	4	99.803
4I3	KNOX COUNTY	OH	LPV200	3	99.854	4	99.831	2	99.746
5A1	NORWALK-HURON COUNTY	OH	LP	4	99.852	5	99.827	2	99.749
6G5	BARNESVILLE-BRADFIELD	OH	LP	3	99.859	3	99.843	3	99.787
7G8	GEAUGA COUNTY	OH	LP	3	99.866	3	99.860	4	99.772
AKR	AKRON FULTON INTL	OH	LP	4	99.872	4	99.857	2	99.749
AOH	LIMA ALLEN COUNTY	OH	LPV200	3	99.838	5	99.820	1	99.735

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
AXV	NEIL ARMSTRONG	OH	LPV	3	99.837	5	99.819	1	99.739
BJJ	WAYNE COUNTY	OH	LPV	4	99.870	5	99.853	2	99.746
BKL	BURKE LAKEFRONT	OH	LPV	3	99.867	4	99.855	2	99.750
CAK	AKRON-CANTON RGNL	OH	LPV200	4	99.871	4	99.856	2	99.747
CDI	CAMBRIDGE MUNICIPAL	OH	LP	3	99.857	3	99.842	2	99.773
CGF	CUYAHOGA COUNTY	OH	LPV200	3	99.867	3	99.858	2	99.750
CLE	CLEVELAND-HOPKINS INTL	OH	LPV200	4	99.866	5	99.855	2	99.750
CMH	JOHN GLENN COLUMBUS INTL	OH	LPV200	3	99.855	4	99.823	4	99.791
CQA	LAKEFIELD	OH	LPV	3	99.833	4	99.800	1	99.739
CYO	PICKAWAY COUNTY MEML	OH	LPV	4	99.869	4	99.827	3	99.794
DAY	JAMES M COX DAYTON INTL	OH	LPV200	2	99.828	3	99.808	3	99.773
DLZ	DELAWARE MUNICIPAL/JIM MOORE FLD	OH	LPV	3	99.840	4	99.823	1	99.735
EDJ	BELLEFONTAINE RGNL	OH	LPV	3	99.838	4	99.823	1	99.739
EOP	PIKE COUNTY	OH	LP	3	99.884	3	99.857	3	99.803
FDY	FINDLAY	OH	LPV	3	99.838	5	99.819	2	99.745
FZI	FOSTORIA METRO	OH	LPV	4	99.851	4	99.809	2	99.747
GQQ	GALION MUNICIPAL	OH	LP	3	99.841	4	99.826	2	99.745
HAO	BUTLER COUNTY RGNL/HOGAN FLD	OH	LPV	2	99.835	3	99.805	3	99.804
HOC	HIGHLAND COUNTY	OH	LP	3	99.876	4	99.853	3	99.804
HZY	NORTHEAST OHIO RGNL	OH	LPV	3	99.864	3	99.859	4	99.787
I10	NOBLE COUNTY	OH	LP	4	99.870	4	99.854	4	99.801
I19	GREENE COUNTY/LEWIS A JACKSON	OH	LPV	2	99.834	3	99.813	2	99.781
I40	RICHARD DOWNING	OH	LPV	3	99.854	4	99.837	2	99.746
I66	CLINTON FLD	OH	LPV	2	99.838	3	99.815	3	99.803
I68	WARREN COUNTY/JOHN LANE FLD	OH	LPV	2	99.838	3	99.809	2	99.790
I69	CLERMONT COUNTY	OH	LP	3	99.866	4	99.838	3	99.804
I74	GRIMES FLD	OH	LPV	3	99.840	4	99.823	2	99.754
ILN	WILMINGTON AIR PARK	OH	LPV200	2	99.840	3	99.815	3	99.803
LCK	RICKENBACKER INTL	OH	LPV200	3	99.855	3	99.812	3	99.793
LHQ	FAIRFIELD COUNTY	OH	LPV200	3	99.855	3	99.813	3	99.793
LNN	LAKE COUNTY EXEC	OH	LPV	3	99.866	4	99.857	2	99.750
LPR	LORAIN COUNTY RGNL	OH	LPV200	4	99.861	5	99.851	2	99.750
LUK	CINCINNATI MUNICIPAL/LUNKEN FLD	OH	LPV	3	99.865	4	99.832	3	99.804
MFD	MANSFIELD LAHM RGNL	OH	LPV200	3	99.849	4	99.827	2	99.746
MGY	DAYTON-WRIGHT BROTHERS	OH	LPV	2	99.835	3	99.809	2	99.790

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
MNN	MARION MUNICIPAL	OH	LPV	3	99.841	4	99.825	1	99.732
MRT	UNION COUNTY	OH	LP	3	99.840	4	99.823	2	99.752
MWO	MIDDLETOWN RGNL/HOOK FLD	OH	LPV	2	99.835	3	99.807	2	99.790
OSU	OHIO STATE UNIVERSITY	OH	LPV200	3	99.842	4	99.823	2	99.755
OWX	PUTNAM COUNTY	OH	LPV	3	99.837	5	99.816	1	99.733
OXD	MIAMI UNIVERSITY	OH	LPV	2	99.830	3	99.804	2	99.772
PCW	ERIE-OTTAWA INTL	OH	LPV	3	99.836	3	99.815	2	99.750
PHD	HARRY CLEVER FLD	OH	LP	3	99.859	3	99.842	3	99.760
PMH	GREATER PORTSMOUTH RGNL	OH	LPV	3	99.888	3	99.867	3	99.804
POV	PORTAGE COUNTY	OH	LPV	4	99.873	4	99.859	2	99.750
RZT	ROSS COUNTY	OH	LPV	4	99.872	4	99.830	3	99.803
S24	SANDUSKY COUNTY RGNL	OH	LPV	4	99.850	4	99.811	2	99.749
SCA	SIDNEY MUNICIPAL	OH	LPV	3	99.838	4	99.820	1	99.739
SGH	SPRINGFIELD/BECKLEY MUNICIPAL	OH	LPV200	2	99.831	3	99.812	2	99.781
TDZ	TOLEDO EXEC	OH	LPV	3	99.836	3	99.812	2	99.750
TOL	EUGENE F KRANZ TOLEDO EXPRESS	OH	LPV200	3	99.833	3	99.793	1	99.732
TSO	CARROLL COUNTY-TOLSON	OH	LP	4	99.870	4	99.855	4	99.774
TZR	BOLTON FLD	OH	LPV	2	99.832	3	99.812	3	99.793
UNI	OHIO UNIVERSITY	OH	LPV200	3	99.884	3	99.867	4	99.825
USE	FULTON COUNTY	OH	LPV	3	99.830	3	99.787	1	99.732
UYF	MADISON COUNTY	OH	LPV	2	99.831	3	99.811	3	99.780
VES	DARKE COUNTY	OH	LPV	3	99.833	4	99.815	1	99.739
VTM	NEWARK-HEATH	OH	LP	3	99.854	4	99.832	3	99.775
YNG	YOUNGSTOWN/WARREN RGNL	OH	LPV	3	99.873	3	99.860	4	99.784
ZZV	ZANESVILLE MUNICIPAL	OH	LPV200	3	99.855	4	99.840	2	99.775
1F0	ARDMORE DOWNTOWN EXEC	OK	LP	2	99.946	3	99.939	5	99.915
1K8	SOUTH GRAND LAKE RGNL	OK	LPV	3	99.869	4	99.865	2	99.812
1O4	THOMAS MUNICIPAL	OK	LPV	3	99.947	4	99.920	3	99.814
2K4	SCOTT FLD	OK	LPV	1	99.964	3	99.945	3	99.894
3F7	JONES MEML	OK	LPV	3	99.936	5	99.909	3	99.830
4O4	MC CURTAIN COUNTY RGNL	OK	LP	2	99.947	3	99.935	5	99.923
6K4	FAIRVIEW MUNICIPAL	OK	LPV	3	99.906	4	99.869	2	99.790
80F	ANTLERS MUNICIPAL	OK	LPV	2	99.946	3	99.934	4	99.912
ADH	ADA RGNL	OK	LPV	2	99.942	3	99.934	5	99.884
ADM	ARDMORE MUNICIPAL	OK	LPV	2	99.946	3	99.937	5	99.910

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
AVK	ALVA RGNL	OK	LPV	3	99.915	4	99.859	3	99.782
AXS	ALTUS/QUARTZ MOUNTAIN RGNL	OK	LPV	1	99.965	3	99.954	3	99.894
BKN	BLACKWELL-TONKAWA MUNICIPAL	OK	LPV	4	99.864	4	99.854	3	99.779
BVO	BARTLESVILLE MUNICIPAL	OK	LPV	4	99.870	5	99.853	3	99.813
CHK	CHICKASHA MUNICIPAL	OK	LPV200	2	99.942	3	99.929	5	99.852
CLK	CLINTON RGNL	OK	LPV	2	99.954	3	99.921	5	99.845
CSM	CLINTON/SHERMAN	OK	LPV200	2	99.954	3	99.923	5	99.878
CUH	CUSHING MUNICIPAL	OK	LPV	3	99.905	4	99.880	3	99.824
DUA	DURANT RGNL/EAKER FLD	OK	LPV	2	99.946	3	99.937	5	99.918
DUC	HALLIBURTON FLD	OK	LPV200	2	99.946	3	99.934	4	99.892
ELK	ELK CITY RGNL BUSINESS	OK	LPV	2	99.961	3	99.923	5	99.873
F22	PERRY MUNICIPAL	OK	LPV	5	99.890	4	99.864	3	99.794
FDR	FREDERICK RGNL	OK	LPV200	2	99.961	2	99.940	5	99.909
GCM	CLAREMORE RGNL	OK	LPV	4	99.869	4	99.868	3	99.812
GMJ	GROVE MUNICIPAL	OK	LPV	3	99.868	4	99.859	2	99.811
GOK	GUTHRIE/EDMOND RGNL	OK	LPV	3	99.929	4	99.900	3	99.812
GUY	GUYMON MUNICIPAL	OK	LPV	3	99.922	4	99.913	4	99.809
GZL	STIGLER RGNL	OK	LPV	2	99.954	3	99.941	4	99.864
H71	MID-AMERICA INDUSTRIAL	OK	LPV	4	99.882	4	99.868	3	99.812
HBR	HOBART RGNL	OK	LPV	2	99.954	3	99.924	3	99.893
HHW	STAN STAMPER MUNICIPAL	OK	LPV	2	99.946	3	99.934	4	99.914
HSD	SUNDANCE	OK	LPV	3	99.938	4	99.921	3	99.815
LAW	LAWTON-FORT SILL RGNL	OK	LPV200	2	99.957	3	99.930	3	99.892
MKO	MUSKOGEE-DAVIS RGNL	OK	LPV	4	99.943	5	99.923	3	99.832
MLC	MC ALESTER RGNL	OK	LPV	2	99.943	3	99.932	5	99.885
OJA	WEATHERFORD STAFFORD	OK	LPV	2	99.954	3	99.923	4	99.831
OKC	WILL ROGERS WORLD	OK	LPV200	2	99.942	3	99.933	4	99.831
OKM	OKMULGEE RGNL	OK	LPV200	3	99.941	5	99.921	3	99.829
OUN	UNIVERSITY OF OKLAHOMA WESTHEI	OK	LPV200	2	99.942	3	99.934	4	99.840
OWP	WILLIAM R POGUE MUNICIPAL	OK	LPV	3	99.880	4	99.866	4	99.824
PNC	PONCA CITY RGNL	OK	LPV	4	99.865	4	99.854	3	99.781
PVJ	PAULS VALLEY MUNICIPAL	OK	LPV200	2	99.946	3	99.936	5	99.873
PWA	WILEY POST	OK	LPV200	2	99.942	4	99.931	3	99.816
RCE	CLARENCE E PAGE MUNICIPAL	OK	LPV	2	99.942	4	99.933	3	99.818
RKR	ROBERT S KERR	OK	LPV	1	99.957	2	99.942	3	99.875

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
RQO	EL RENO RGNL	OK	LPV	2	99.942	3	99.927	3	99.818
RVS	TULSA RIVERSIDE	OK	LPV200	3	99.882	4	99.871	4	99.828
SNL	SHAWNEE RGNL	OK	LPV200	2	99.942	3	99.932	4	99.844
SWO	STILLWATER RGNL	OK	LPV200	3	99.903	4	99.874	4	99.813
TQH	TAHLEQUAH MUNICIPAL	OK	LPV	3	99.904	3	99.883	1	99.819
TUL	TULSA INTL	OK	LPV200	3	99.880	4	99.866	4	99.824
WDG	ENID WOODRING RGNL	OK	LPV200	3	99.904	4	99.875	3	99.793
WWR	WEST WOODWARD	OK	LPV	3	99.918	4	99.880	3	99.784
CNV8	EDENVALE	ON	LPV	3	99.864	3	99.841	3	99.804
CNY3	COLLINGWOOD	ON	LPV	4	99.847	3	99.824	3	99.812
CYAC	CAT LAKE	ON	LPV	3	99.682	6	99.654	14	99.395
CYAM	SAULT STE. MARIE	ON	LPV200	3	99.780	5	99.773	6	99.668
CYCC	CORNWALL REGIONAL	ON	LPV	4	99.907	5	99.905	4	99.803
CYCK	CHATHAM-KENT	ON	LPV	3	99.843	4	99.820	2	99.753
CYEE	HURONIA	ON	LPV	3	99.831	2	99.815	3	99.804
CYFA	FORT ALBANY	ON	LPV	5	99.601	5	99.529	10	99.347
CY GK	KINGSTON	ON	LPV	3	99.936	3	99.900	3	99.793
CYHD	DRYDEN REGIONAL	ON	LPV	4	99.733	5	99.687	10	99.559
CYHF	HEARST (RENE FONTAINE) MUNICIPALCIPALITY	ON	LPV	4	99.747	5	99.688	8	99.519
CYHM	HAMILTON	ON	LPV	4	99.856	4	99.856	3	99.782
CYHS	SAUGEEN MUNICIPALCIPALITY	ON	LPV	2	99.795	2	99.788	3	99.774
CYKF	WATERLOO	ON	LPV200	4	99.856	5	99.853	2	99.782
CYKM	KINCARDINE	ON	LPV	1	99.780	1	99.773	2	99.760
CYKZ	BUTTONVILLE MUNICIPALCIPAL	ON	LPV	2	99.876	2	99.869	3	99.796
CYLS	LAKE SIMCOE	ON	LPV	3	99.866	3	99.846	3	99.807
CYMG	MANITOUWADGE	ON	LPV	3	99.754	4	99.707	11	99.580
CYMO	MOOSONEE	ON	LPV	7	99.693	5	99.590	9	99.421
CYOO	OSHAWA EXECUTIVE AIRPORT	ON	LPV	2	99.878	2	99.871	4	99.813
CYOS	BILLY BISHOP REGIONAL	ON	LPV	2	99.800	2	99.797	3	99.795
CYOW	MACDONALD-CARTIER INTL	ON	LPV200	4	99.899	4	99.867	3	99.781
CYPL	PICKLE LAKE	ON	LPV	3	99.680	7	99.630	12	99.399
CYPQ	PETERBOROUGH	ON	LPV	2	99.884	2	99.877	3	99.797
CYPT	PELEE ISLAND	ON	LPV	3	99.838	3	99.814	2	99.750
CYQG	WINDSOR	ON	LPV	3	99.828	1	99.768	2	99.752
CYQK	KENORA	ON	LPV	4	99.719	6	99.680	10	99.577

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
CYQS	ST. THOMAS MUNICIPALCIPALITY	ON	LPV	3	99.837	4	99.830	3	99.774
CYQT	THUNDER BAY	ON	LPV200	4	99.737	4	99.699	9	99.589
CYRL	RED LAKE	ON	LPV	3	99.696	4	99.679	12	99.501
CYSA	STRATFORD MUNICIPALCIPALITY	ON	LPV	3	99.837	4	99.830	3	99.779
CYSB	SUDBURY	ON	LPV	2	99.786	2	99.782	8	99.742
CYSN	NIAGARA DISTRICT	ON	LPV	2	99.887	2	99.876	2	99.789
CYTL	BIG TROUT LAKE	ON	LPV	5	99.623	6	99.521	13	99.203
CYTS	TIMMINS (VICTOR M. POWER)	ON	LPV200	3	99.779	4	99.763	7	99.603
CYTZ	BILLY BISHOP TORONTO CITY AIRPORT	ON	LPV	2	99.877	2	99.870	2	99.784
CYVV	WIARTON	ON	LPV	2	99.800	2	99.797	3	99.795
CYWP	WEBEQUIE	ON	LPV	4	99.623	6	99.527	14	99.273
CYXL	SIOUX LOOKOUT	ON	LPV	5	99.714	5	99.678	11	99.530
CYXR	EARLTON (TIMISKAMING REGIONAL)	ON	LPV	2	99.790	3	99.789	8	99.681
CYXU	LONDON	ON	LPV200	3	99.837	4	99.827	3	99.770
CYYB	NORTH BAY	ON	LPV200	2	99.812	2	99.811	5	99.765
CYYU	KAPUSKASING	ON	LPV	3	99.766	5	99.749	9	99.569
CYYW	ARMSTRONG	ON	LPV	3	99.707	5	99.678	13	99.491
CYYZ	LESTER B. PEARSON INTL	ON	LPV200	3	99.867	3	99.860	2	99.783
CYZD	DOWNSVIEW	ON	LPV	3	99.875	3	99.869	2	99.783
CYZR	SARNIA (CHRIS HADFIELD)	ON	LPV	3	99.826	1	99.768	2	99.752
CZPB	SACHIGO LAKE	ON	LP	3	99.665	7	99.573	15	99.222
3S8	GRANTS PASS	OR	LP	2	99.963	2	99.935	9	99.844
77S	HOBBY FLD	OR	LPV	1	99.931	1	99.931	5	99.882
AST	ASTORIA RGNL	OR	LPV	1	99.927	1	99.927	5	99.859
BDN	BEND MUNICIPAL	OR	LPV	1	99.934	1	99.931	4	99.897
BKE	BAKER CITY MUNICIPAL	OR	LPV	2	99.929	2	99.925	2	99.897
CVO	CORVALLIS MUNICIPAL	OR	LPV200	1	99.931	1	99.931	5	99.889
EUG	MAHLON SWEET FLD	OR	LPV200	1	99.931	1	99.931	6	99.889
GCD	GRANT COUNTY RGNL/OGILVIE FLD	OR	LPV	1	99.933	1	99.926	2	99.893
HIO	PORTLAND-HILLSBORO	OR	LPV200	1	99.929	1	99.928	4	99.872
LGD	LA GRANDE/UNION COUNTY	OR	LPV	2	99.924	2	99.924	2	99.893
LKV	LAKE COUNTY	OR	LPV	1	99.955	1	99.949	5	99.920
LMT	CRATER LAKE/KLAMATH RGNL	OR	LPV	1	99.950	1	99.949	6	99.867
MMV	MC MINNVILLE MUNICIPAL	OR	LPV	1	99.931	1	99.929	3	99.888
ONO	ONTARIO MUNICIPAL	OR	LPV	1	99.934	1	99.929	2	99.904

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
ONP	NEWPORT MUNICIPAL	OR	LPV	1	99.931	1	99.931	6	99.880
OTH	SOUTHWEST OREGON RGNL	OR	LPV	1	99.935	1	99.931	8	99.872
PDT	EASTERN OREGON RGNL AT PENDLET	OR	LPV200	1	99.912	1	99.912	2	99.892
PDX	PORTLAND INTL	OR	LPV200	1	99.928	1	99.927	5	99.870
RDM	ROBERTS FLD	OR	LPV200	1	99.931	1	99.931	4	99.897
S33	MADRAS MUNICIPAL	OR	LPV	1	99.931	1	99.929	4	99.897
S39	PRINEVILLE	OR	LP	1	99.929	1	99.928	4	99.901
SLE	MCNARY FLD	OR	LPV200	1	99.931	1	99.930	4	99.890
SPB	SCAPPOOSE	OR	LPV	1	99.928	1	99.927	4	99.869
UAO	AURORA STATE	OR	LPV	1	99.930	1	99.928	3	99.888
22N	JAKE ARNER MEML	PA	LP	2	99.963	2	99.963	5	99.887
29D	GROVE CITY	PA	LP	3	99.870	3	99.863	5	99.806
2G9	SOMERSET COUNTY	PA	LPV	4	99.904	3	99.888	4	99.835
6G1	TITUSVILLE	PA	LPV	4	99.867	3	99.852	3	99.807
6P7	MCVILLE	PA	LP	4	99.893	3	99.876	5	99.823
8G2	CORRY-LAWRENCE	PA	LPV	4	99.866	4	99.861	2	99.790
8N8	DANVILLE	PA	LP	3	99.953	4	99.945	5	99.868
9D4	DECK	PA	LPV	2	99.965	2	99.965	5	99.882
ABE	LEHIGH VALLEY INTL	PA	LPV200	2	99.965	2	99.965	5	99.898
AFJ	WASHINGTON COUNTY	PA	LPV200	3	99.885	3	99.873	5	99.820
AGC	ALLEGHENY COUNTY	PA	LPV200	3	99.882	3	99.877	5	99.820
AOO	ALTOONA/BLAIR COUNTY	PA	LPV	3	99.906	3	99.881	4	99.835
AVP	WILKES-BARRE/SCRANTON INTL	PA	LPV200	4	99.957	4	99.943	5	99.883
AXQ	CLARION COUNTY	PA	LPV	4	99.888	3	99.866	4	99.819
BFD	BRADFORD RGNL	PA	LPV	3	99.899	4	99.883	3	99.820
BTP	PITTSBURGH/BUTLER RGNL	PA	LPV	3	99.870	3	99.866	5	99.820
BVI	BEAVER COUNTY	PA	LPV	4	99.872	4	99.862	6	99.803
CXY	CAPITAL CITY	PA	LPV	3	99.961	4	99.950	5	99.863
DUJ	DUBOIS RGNL	PA	LPV200	4	99.905	3	99.871	3	99.820
ERI	ERIE INTL/TOM RIDGE FLD	PA	LPV	3	99.848	3	99.847	3	99.788
FIG	CLEARFIELD-LAWRENCE	PA	LPV	3	99.908	4	99.890	3	99.837
FKL	VENANGO RGNL	PA	LPV	4	99.873	3	99.855	5	99.809
FWQ	ROSTRAVER	PA	LPV	3	99.883	3	99.878	5	99.821
GKJ	PORT MEADVILLE	PA	LP	3	99.858	3	99.857	3	99.788
HMZ	BEDFORD COUNTY	PA	LPV	3	99.906	3	99.878	4	99.833

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
HZL	HAZLETON RGNL	PA	LPV	3	99.959	3	99.947	5	99.885
IDI	INDIANA COUNTY/JIMMY STEWART F	PA	LPV	4	99.904	3	99.887	4	99.831
IPT	WILLIAMSPORT RGNL	PA	LPV	5	99.948	4	99.903	4	99.856
JST	JOHN MURTHA JOHNSTOWN/CAMBRIA	PA	LPV200	4	99.906	3	99.883	4	99.834
LBE	ARNOLD PALMER RGNL	PA	LPV200	4	99.901	3	99.884	5	99.826
LNS	LANCASTER	PA	LPV200	2	99.968	3	99.968	5	99.889
LOM	WINGS FLD	PA	LPV	2	99.967	2	99.967	5	99.911
MDT	HARRISBURG INTL	PA	LPV	2	99.966	3	99.955	5	99.872
MPO	POCONO MOUNTAINS RGNL	PA	LPV	1	99.964	1	99.950	4	99.891
MQS	CHESTER COUNTY G O CARLSON	PA	LPV	2	99.967	2	99.967	5	99.888
N38	GRAND CANYON RGNL	PA	LP	5	99.936	4	99.899	3	99.830
N57	NEW GARDEN	PA	LP	2	99.967	2	99.967	5	99.889
N79	NORTHUMBERLAND COUNTY	PA	LPV	3	99.953	3	99.953	5	99.868
N96	BELLEFONTE	PA	LPV	3	99.907	4	99.900	3	99.837
OQN	BRANDYWINE RGNL	PA	LP	2	99.967	2	99.967	5	99.892
OYM	ST MARYS MUNICIPAL	PA	LPV	3	99.905	4	99.883	3	99.834
PHL	PHILADELPHIA INTL	PA	LPV200	2	99.966	2	99.966	5	99.904
PIT	PITTSBURGH INTL	PA	LPV200	4	99.873	4	99.864	6	99.818
PNE	NORTHEAST PHILADELPHIA	PA	LPV200	2	99.966	2	99.966	4	99.912
PSB	MID-STATE	PA	LPV	3	99.907	4	99.897	3	99.837
PTW	HERITAGE FLD	PA	LPV	2	99.968	2	99.968	5	99.898
RDG	READING RGNL/CARL A SPAATZ FLD	PA	LPV	2	99.967	2	99.967	5	99.894
RVL	MIFFLIN COUNTY	PA	LPV	4	99.921	5	99.919	3	99.840
SEG	PENN VALLEY	PA	LP	3	99.953	4	99.940	4	99.858
THV	YORK	PA	LP	2	99.968	3	99.957	4	99.849
UCP	NEW CASTLE MUNICIPAL	PA	LPV	3	99.870	3	99.860	5	99.804
UKT	QUAKERTOWN	PA	LP	2	99.968	2	99.968	5	99.898
UNV	UNIVERSITY PARK	PA	LPV200	3	99.907	4	99.898	3	99.840
VVS	JOSEPH A HARDY CONNELLSVILLE	PA	LPV	3	99.886	3	99.881	5	99.823
WAY	GREENE COUNTY	PA	LPV	3	99.887	3	99.877	5	99.820
WBW	WILKES-BARRE WYOMING VALLEY	PA	LPV	4	99.955	4	99.941	5	99.883
XLL	ALLENTOWN QUEEN CITY MUNICIPAL	PA	LP	2	99.969	2	99.969	5	99.898
ZER	SCHUYLKILL COUNTY/JOE ZERBEY	PA	LPV200	3	99.957	3	99.957	5	99.870
CYYG	CHARLOTTETOWN	PE	LPV	3	99.844	3	99.838	8	99.634
CEL8	ELEONORE	QC	LPV	9	99.652	8	99.581	11	99.403

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
CFX5	RENARD	QC	LPV	7	99.656	8	99.595	11	99.340
CSC3	DRUMMONDVILLE	QC	LPV	2	99.906	3	99.889	4	99.789
CSD4	MONT-LAURIER	QC	LPV	4	99.855	3	99.832	3	99.767
CSF3	POSTE MONTAGNAIS (MILE 134)	QC	LPV	7	99.649	9	99.634	13	99.314
CSH4	LEBEL-SUR-QUEVILLON	QC	LPV	3	99.761	3	99.752	6	99.609
CSR3	VICTORIAVILLE (ANDRE-FORTIN)	QC	LPV	2	99.895	3	99.880	5	99.788
CSU2	CHISASIBI	QC	LPV	6	99.590	7	99.522	12	99.260
CTP9	DONALDSON	QC	LPV	17	99.393	17	99.185	76	97.919
CTT5	LA ROMAINE	QC	LPV	8	99.661	8	99.658	15	99.424
CTU2	FONTANGES	QC	LPV	6	99.644	7	99.571	16	99.159
CYAD	LA GRANDE-3	QC	LPV	8	99.633	7	99.573	14	99.299
CYAH	LA GRANDE-4	QC	LPV	6	99.629	7	99.576	16	99.271
CYAS	KANGIRSUK	QC	LPV	12	99.302	10	99.214	53	98.231
CYBC	BAIE-COMEAU	QC	LPV200	3	99.808	3	99.798	9	99.606
CYBG	BAGOTVILLE	QC	LPV200	2	99.873	4	99.854	9	99.696
CYBX	LOURDES-DE-BLANC-SABLON	QC	LPV	10	99.522	10	99.415	28	98.989
CYFY	MAGNY	QC	LPV	3	99.764	3	99.764	7	99.630
CYFJ	MONT-TREMBLANT	QC	LPV	5	99.871	6	99.863	3	99.756
CYGL	LA GRANDE RIVIERE	QC	LPV	7	99.604	7	99.540	15	99.314
CYGP	GASPE (MICHEL-POULIOT)	QC	LPV	3	99.776	3	99.772	9	99.576
CYGR	ILES-DE-LA-MADELEINE	QC	LPV	6	99.785	6	99.766	8	99.583
CYGV	HAVRE ST-PIERRE	QC	LPV	7	99.707	7	99.699	14	99.539
CYGW	KUUJJUARAPIK	QC	LPV	6	99.572	7	99.483	20	99.171
CYHA	QUAQTAQ	QC	LPV	18	99.307	17	99.197	73	98.023
CYHH	NEMISCAU	QC	LPV	7	99.669	7	99.634	5	99.431
CYHR	CHEVERY	QC	LPV	9	99.644	10	99.633	15	99.318
CYHU	ST-HUBERT	QC	LPV	3	99.908	4	99.907	4	99.805
CYIF	ST-AUGUSTIN	QC	LPV	9	99.567	9	99.544	12	99.205
CYIK	IVUJIVIK	QC	LPV	14	99.478	23	99.192	88	97.790
CYKG	KANGIQSUJUAQ (WAKEHAM BAY)	QC	LPV	21	99.355	23	99.183	83	97.949
CYKL	SCHEFFERVILLE	QC	LPV	8	99.528	9	99.462	18	99.133
CYKO	AKULIVIK	QC	LPV	14	99.480	12	99.282	47	98.148
CYKQ	WASKAGANISH	QC	LPV	7	99.669	5	99.604	8	99.413
CYLA	AUPALUK	QC	LPV	10	99.302	10	99.226	43	98.458
CYLQ	LA TUQUE	QC	LPV	3	99.877	3	99.865	5	99.734

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
CYLU	KANGIQSUALUJJUAQ (GEORGES RIVER)	QC	LPV	13	99.343	14	99.217	41	98.389
CYME	RUSSELL-BURNETT	QC	LPV	3	99.812	3	99.798	9	99.602
CYMT	CHAPAIS	QC	LPV	8	99.799	9	99.790	8	99.565
CYMU	UMIUJUAQ	QC	LPV	8	99.538	13	99.461	18	98.992
CYMW	MANIWAKI	QC	LPV	4	99.857	3	99.835	2	99.767
CYMX	MONTREAL INTL (MIRABEL)	QC	LPV200	3	99.902	4	99.896	3	99.792
CYNA	NATASHQUAN	QC	LPV	6	99.675	6	99.673	15	99.511
CYNC	WEMINDJI	QC	LPV	7	99.584	6	99.531	11	99.305
CYND	GATINEAU	QC	LPV	5	99.887	4	99.859	3	99.781
CYNM	MATAGAMI	QC	LPV	4	99.737	5	99.716	7	99.573
CYPH	INUKJUAQ	QC	LPV	10	99.438	9	99.302	30	98.699
CYPN	PORT-MENIER	QC	LPV	4	99.730	6	99.726	13	99.561
CYPX	PUVIRNITUQ	QC	LPV	11	99.440	11	99.284	44	98.371
CYQB	JEAN LESAGE INTL	QC	LPV200	2	99.883	3	99.863	6	99.764
CYRI	RIVIERE-DU-LOUP	QC	LPV	2	99.873	3	99.862	6	99.698
CYRJ	ROBERVAL	QC	LPV	4	99.869	5	99.857	8	99.692
CYRQ	TROIS-RIVIERES	QC	LPV200	2	99.893	3	99.876	5	99.789
CYSC	SHERBROOKE	QC	LPV	2	99.897	3	99.890	4	99.810
CYSG	ST-GEORGES	QC	LPV	2	99.893	3	99.875	6	99.784
CYTF	ALMA	QC	LPV	2	99.876	4	99.857	7	99.684
CYTQ	TASIUJUAQ	QC	LPV	10	99.334	10	99.235	38	98.569
CYUL	PIERRE-ELLIOTT-TRUDEAU INTL	QC	LPV200	3	99.905	4	99.904	4	99.805
CYUY	ROUYN-NORANDA	QC	LPV200	3	99.790	3	99.790	7	99.644
CYVB	BONAVENTURE	QC	LPV	4	99.821	4	99.815	8	99.604
CYVO	VAL-DOR	QC	LPV200	2	99.779	2	99.779	5	99.658
CYVP	KUUIJUAQ	QC	LPV200	10	99.371	10	99.243	35	98.724
CYYY	MONT-JOLI	QC	LPV	4	99.838	4	99.825	8	99.642
CYZG	SALLUIT	QC	LPV	16	99.451	19	99.157	93	97.875
CYZV	SEPT-ILES	QC	LPV200	4	99.746	5	99.738	13	99.563
BID	BLOCK ISLAND STATE	RI	LPV	1	99.971	1	99.964	5	99.872
OQU	QUONSET STATE	RI	LPV200	1	99.971	1	99.957	7	99.866
PVD	RHODE ISLAND TF GREEN INTL	RI	LPV200	1	99.971	1	99.957	7	99.863
SFZ	NORTH CENTRAL STATE	RI	LPV	1	99.971	1	99.957	7	99.858
35A	UNION COUNTY` TROY SHELTON FLD	SC	LP	3	99.907	3	99.907	4	99.871
6J0	LEXINGTON COUNTY	SC	LPV	3	99.892	3	99.892	4	99.834

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
AIK	AIKEN RGNL	SC	LPV200	4	99.908	3	99.893	4	99.832
AND	ANDERSON RGNL	SC	LPV200	3	99.912	3	99.912	4	99.868
AQX	ALLENDALE COUNTY	SC	LPV	3	99.902	4	99.877	2	99.823
ARW	BEAUFORT EXEC	SC	LPV200	3	99.890	3	99.859	2	99.819
BBP	MARLBORO COUNTY JETPORT - H E	SC	LPV	3	99.909	3	99.909	3	99.872
BNL	BARNWELL RGNL	SC	LPV	3	99.905	3	99.896	2	99.826
CAE	COLUMBIA METRO	SC	LPV200	3	99.891	3	99.891	4	99.838
CDN	WOODWARD FLD	SC	LPV	3	99.890	3	99.890	4	99.850
CEU	OCONEE COUNTY RGNL	SC	LPV200	3	99.911	3	99.911	4	99.873
CHS	CHARLESTON AFB/INTL	SC	LPV200	3	99.891	3	99.885	2	99.828
CKI	WILLIAMSBURG RGNL	SC	LPV	3	99.888	3	99.888	3	99.855
CQW	CHERAW MUNICIPAL/LYNCH BELLINGER FL	SC	LPV	3	99.912	3	99.912	3	99.873
CRE	GRAND STRAND	SC	LPV200	4	99.907	3	99.893	4	99.849
CUB	JIM HAMILTON L B OWENS	SC	LPV	3	99.891	3	99.891	4	99.839
DCM	CHESTER CATAWBA RGNL	SC	LPV	3	99.901	3	99.901	4	99.871
DYB	SUMMERVILLE	SC	LPV200	3	99.897	3	99.889	2	99.830
FDW	FAIRFIELD COUNTY	SC	LPV	3	99.900	3	99.900	4	99.850
FLO	FLORENCE RGNL	SC	LPV	3	99.895	3	99.895	3	99.863
GGE	GEORGETOWN COUNTY	SC	LPV	3	99.904	3	99.894	2	99.833
GMU	GREENVILLE DOWNTOWN	SC	LPV200	3	99.906	3	99.906	3	99.875
GRD	GREENWOOD COUNTY	SC	LPV	3	99.905	3	99.905	4	99.852
GSP	GREENVILLE SPARTANBURG INTL	SC	LPV200	3	99.904	3	99.904	3	99.875
GYH	DONALDSON FLD	SC	LPV	3	99.907	3	99.907	4	99.873
HVS	HARTSVILLE RGNL	SC	LPV	3	99.903	3	99.903	3	99.866
HXD	HILTON HEAD	SC	LPV	2	99.875	3	99.857	2	99.819
HYW	CONWAY-HORRY COUNTY	SC	LPV	3	99.893	3	99.893	3	99.860
JZI	CHARLESTON EXEC	SC	LPV200	3	99.889	3	99.885	2	99.828
LKR	LANCASTER COUNTY-MC WHIRTER FL	SC	LPV200	3	99.901	3	99.901	4	99.865
LQK	PICKENS COUNTY	SC	LPV	3	99.912	3	99.912	3	99.876
LRO	MT PLEASANT RGNL-FAISON FLD	SC	LPV	2	99.878	2	99.873	2	99.828
LUX	LAURENS COUNTY	SC	LPV	3	99.907	3	99.907	4	99.866
MAO	MARION COUNTY	SC	LPV	3	99.894	3	99.894	3	99.861
MKS	BERKELEY COUNTY	SC	LPV	3	99.897	3	99.889	2	99.829
MYR	MYRTLE BEACH INTL	SC	LPV200	3	99.893	3	99.893	2	99.839
OGB	ORANGEBURG MUNICIPAL	SC	LPV	3	99.891	3	99.891	4	99.844

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
PYG	PAGELAND	SC	LPV	3	99.904	3	99.904	3	99.878
RBW	LOWCOUNTRY RGNL	SC	LPV200	3	99.896	4	99.888	2	99.824
SMS	SUMTER	SC	LPV200	3	99.889	3	99.889	3	99.856
SPA	SPARTANBURG DOWNTOWN MEML/SIMP	SC	LPV200	3	99.905	3	99.905	3	99.874
UDG	DARLINGTON COUNTY	SC	LPV	3	99.902	3	99.902	3	99.865
UZA	ROCK HILL/YORK COUNTY/BRYANT F	SC	LPV200	3	99.906	3	99.906	3	99.872
0D8	GETTYSBURG MUNICIPAL	SD	LP	3	99.741	3	99.726	5	99.693
49B	STURGIS MUNICIPAL	SD	LPV	3	99.788	3	99.750	3	99.717
4X4	WESSINGTON SPRINGS	SD	LP	4	99.747	3	99.701	3	99.681
8D3	SISSETON MUNICIPAL	SD	LPV	3	99.766	3	99.718	5	99.684
8D7	CLARK COUNTY	SD	LP	3	99.742	3	99.718	3	99.686
8V3	PARKSTON MUNICIPAL	SD	LPV	3	99.773	3	99.696	3	99.674
98D	ONIDA MUNICIPAL	SD	LP	3	99.754	3	99.730	5	99.695
9D0	HIGHMORE MUNICIPAL	SD	LPV	3	99.749	3	99.728	4	99.698
9D1	GREGORY MUNICIPAL - FLYNN FLD	SD	LPV	3	99.764	3	99.713	3	99.686
9V6	MARTIN MUNICIPAL	SD	LPV	3	99.809	3	99.768	3	99.700
9V9	CHAMBERLAIN MUNICIPAL	SD	LP	4	99.766	4	99.734	3	99.673
ABR	ABERDEEN RGNL	SD	LPV200	3	99.741	3	99.718	5	99.690
AGZ	WAGNER MUNICIPAL	SD	LPV	3	99.765	3	99.703	3	99.684
ATY	WATERTOWN RGNL	SD	LPV200	3	99.752	3	99.710	3	99.676
BKX	BROOKINGS RGNL	SD	LPV200	4	99.748	3	99.691	3	99.679
EFC	BELLE FOURCHE MUNICIPAL	SD	LPV	3	99.794	3	99.750	3	99.723
FSD	JOE FOSS FLD	SD	LPV200	3	99.772	3	99.695	3	99.673
HON	HURON RGNL	SD	LPV200	4	99.738	4	99.714	3	99.681
HSR	HOT SPRINGS MUNICIPAL	SD	LP	3	99.846	3	99.769	3	99.726
ICR	WINNER RGNL	SD	LPV	3	99.762	4	99.726	3	99.686
IEN	PINE RIDGE	SD	LPV	3	99.821	3	99.772	4	99.724
LEM	LEMMON MUNICIPAL	SD	LPV	4	99.770	4	99.754	4	99.709
MBG	MOBRIDGE MUNICIPAL	SD	LPV	3	99.737	3	99.722	4	99.700
MDS	MADISON MUNICIPAL	SD	LPV	4	99.759	3	99.696	3	99.672
MHE	MITCHELL MUNICIPAL	SD	LPV	4	99.756	3	99.703	3	99.674
MKA	MILLER MUNICIPAL	SD	LPV	4	99.740	4	99.715	3	99.677
PHP	PHILIP	SD	LPV	2	99.769	3	99.744	4	99.713
PIR	PIERRE RGNL	SD	LPV	3	99.762	4	99.736	4	99.709
RAP	RAPID CITY RGNL	SD	LPV200	3	99.788	3	99.750	3	99.721

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
SPF	BLACK HILLS-CLYDE ICE FLD	SD	LPV	3	99.794	3	99.750	3	99.722
SUO	ROSEBUD SIOUX TRIBAL	SD	LPV	3	99.806	5	99.742	3	99.689
VMR	HAROLD DAVIDSON FLD	SD	LPV	3	99.775	3	99.698	3	99.674
YKN	CHAN GURNEY MUNICIPAL	SD	LPV200	3	99.776	3	99.700	3	99.674
CCB2	SEABEE MINE	SK	LPV	4	99.712	4	99.640	15	99.373
CJC5	SHAUNAVON	SK	LPV	1	99.827	5	99.797	5	99.641
CJE3	WEYBURN	SK	LPV	2	99.784	6	99.772	5	99.638
CJH3	MAIDSTONE	SK	LPV	3	99.804	5	99.734	12	99.561
CJP9	CHARLOT RIVER	SK	LP	8	99.770	7	99.645	19	99.193
CJQ4	MAPLE CREEK	SK	LPV	1	99.824	5	99.784	5	99.642
CJU4	HUMBOLDT	SK	LPV	2	99.766	4	99.709	10	99.596
CJW7	CIGAR LAKE	SK	LPV	4	99.691	5	99.629	17	99.201
CJY3	TISDALE	SK	LPV	2	99.761	4	99.699	12	99.539
CJZ3	MELFORT (MILLER FIELD)	SK	LPV	2	99.761	4	99.702	11	99.557
CKQ8	MCARTHUR RIVER	SK	LPV	4	99.692	5	99.643	15	99.245
CYBE	URANIUM CITY	SK	LPV	8	99.753	8	99.644	18	99.161
CYBU	NIPAWIN	SK	LPV	2	99.759	3	99.679	15	99.496
CYEN	ESTEVAN REGIONAL	SK	LPV	3	99.787	7	99.764	5	99.616
CYES	EDMUNDSTON	SK	LPV	2	99.868	2	99.866	6	99.694
CYKC	COLLINS BAY	SK	LPV	4	99.687	6	99.623	15	99.132
CYKJ	KEY LAKE	SK	LPV	4	99.713	5	99.646	12	99.291
CYLJ	MEADOW LAKE	SK	LPV	3	99.816	6	99.709	12	99.498
CYMJ	AIR VICE MARSHAL C.M. MCEWEN	SK	LPV200	3	99.782	4	99.776	6	99.646
CYNL	POINTS NORTH LANDING	SK	LPV	4	99.687	5	99.625	17	99.140
CYPA	PRINCE ALBERT (GLASS FIELD)	SK	LPV	2	99.762	4	99.701	12	99.522
CYQR	REGINA INTL	SK	LPV200	3	99.781	5	99.763	7	99.663
CYQV	YORKTON MUNICIPALCIPALITY	SK	LPV	3	99.751	3	99.699	8	99.619
CYQW	NORTH BATTLEFORD	SK	LPV	2	99.783	4	99.717	10	99.572
CYVC	LA RONGE (BARBER FIELD)	SK	LPV	4	99.734	4	99.652	14	99.410
CYXE	JOHN G. DIEFENBAKER INTL	SK	LPV200	2	99.772	3	99.718	11	99.612
CYYN	SWIFT CURRENT	SK	LPV	3	99.818	3	99.777	5	99.632
0A3	SMITHVILLE MUNICIPAL	TN	LPV	2	99.888	2	99.888	4	99.849
0M3	PAUL BRIDGES FLD	TN	LP	3	99.923	3	99.917	3	99.870
0M4	BENTON COUNTY	TN	LPV	3	99.903	4	99.898	4	99.833
0M5	HUMPHREYS COUNTY	TN	LP	2	99.891	3	99.886	3	99.801

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
1A3	MARTIN CAMPBELL FLD	TN	LP	3	99.915	3	99.913	3	99.886
1M5	PORTLAND MUNICIPAL	TN	LPV	2	99.884	4	99.878	3	99.817
2A0	MARK ANTON	TN	LPV	3	99.906	3	99.904	3	99.878
2M2	LAWRENCEBURG-LAWRENCE COUNTY	TN	LPV	2	99.931	2	99.925	3	99.880
2M8	CHARLES W BAKER	TN	LPV	1	99.953	2	99.937	5	99.882
3A2	NEW TAZEVELL MUNICIPAL	TN	LP	2	99.895	3	99.892	4	99.840
3M7	LAFAYETTE MUNICIPAL	TN	LPV	3	99.887	4	99.879	4	99.835
8A3	LIVINGSTON MUNICIPAL	TN	LP	2	99.884	3	99.880	4	99.832
BGF	WINCHESTER MUNICIPAL	TN	LPV	3	99.921	3	99.917	3	99.878
BNA	NASHVILLE INTL	TN	LPV200	2	99.888	3	99.884	4	99.842
CHA	LOVELL FLD	TN	LPV200	3	99.910	3	99.907	3	99.879
CKV	OUTLAW FLD	TN	LPV	2	99.884	4	99.880	3	99.793
CSV	CROSSVILLE MEML-WHITSON FLD	TN	LPV200	2	99.884	2	99.884	4	99.840
DYR	DYERSBURG RGNL	TN	LPV	2	99.887	3	99.881	3	99.831
FYE	FAYETTE COUNTY	TN	LPV	2	99.935	2	99.922	3	99.872
FYM	FAYETTEVILLE MUNICIPAL	TN	LPV	2	99.928	2	99.922	3	99.881
GCY	GREENEVILLE MUNICIPAL	TN	LPV	3	99.915	3	99.909	4	99.847
GHM	CENTERVILLE MUNICIPAL	TN	LP	3	99.909	3	99.909	4	99.866
GKT	GATLINBURG-PIGEON FORGE	TN	LPV	2	99.895	2	99.895	4	99.861
GZS	ABERNATHY FLD	TN	LPV	2	99.931	2	99.925	3	99.882
HZD	CARROLL COUNTY	TN	LPV	2	99.887	3	99.883	3	99.807
JAU	COLONEL TOMMY C STINER AIRFIEL	TN	LP	2	99.895	3	99.893	4	99.841
JWN	JOHN C TUNE	TN	LPV	2	99.888	3	99.883	4	99.838
LUG	ELLINGTON	TN	LPV	3	99.920	3	99.915	3	99.874
M01	GENERAL DEWITT SPAIN	TN	LPV	1	99.949	2	99.934	3	99.879
M08	WILLIAM L WHITEHURST FLD	TN	LP	2	99.931	2	99.921	3	99.882
M53	HUMBOLDT MUNICIPAL	TN	LPV	2	99.913	2	99.913	3	99.835
M54	LEBANON MUNICIPAL	TN	LPV	2	99.888	3	99.884	4	99.844
M91	SPRINGFIELD ROBERTSON COUNTY	TN	LPV	2	99.884	4	99.880	3	99.793
MBT	MURFREESBORO MUNICIPAL	TN	LPV	3	99.903	3	99.903	4	99.856
MEM	MEMPHIS INTL	TN	LPV200	1	99.949	2	99.934	3	99.893
MKL	MC KELLAR-SIPES RGNL	TN	LPV200	2	99.918	2	99.918	3	99.839
MMI	MCMINN COUNTY	TN	LPV	3	99.913	3	99.912	3	99.878
MNV	MONROE COUNTY	TN	LPV	3	99.907	3	99.906	3	99.875
MOR	MOORE-MURRELL	TN	LPV	3	99.909	3	99.909	4	99.847

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
MQY	SMYRNA	TN	LPV200	3	99.903	3	99.903	4	99.850
MRC	MAURY COUNTY RGNL	TN	LPV	3	99.921	3	99.915	3	99.874
NQA	MILLINGTON/MEMPHIS	TN	LPV200	2	99.946	2	99.930	4	99.863
PHT	HENRY COUNTY	TN	LPV200	2	99.885	3	99.880	3	99.799
PVE	BEECH RIVER RGNL	TN	LPV	2	99.917	2	99.917	3	99.841
RKW	ROCKWOOD MUNICIPAL	TN	LPV	2	99.884	2	99.884	4	99.841
RNC	WARREN COUNTY MEML	TN	LPV	3	99.904	3	99.904	4	99.866
RVN	HAWKINS COUNTY	TN	LP	2	99.901	3	99.893	4	99.837
RZR	CLEVELAND RGNL JETPORT	TN	LPV200	3	99.913	3	99.911	3	99.885
SCX	SCOTT MUNICIPAL	TN	LPV	2	99.884	3	99.879	4	99.829
SNH	SAVANNAH-HARDIN COUNTY	TN	LPV	2	99.931	2	99.923	3	99.880
SRB	UPPER CUMBERLAND RGNL	TN	LPV	2	99.884	2	99.884	4	99.841
SYI	BOMAR FLD/SHELBYVILLE MUNICIPAL	TN	LPV	3	99.920	3	99.915	3	99.874
SZY	ROBERT SIBLEY	TN	LPV	2	99.931	2	99.923	3	99.881
TGC	GIBSON COUNTY	TN	LP	2	99.887	3	99.884	3	99.833
THA	TULLAHOMA RGNL/WM NORTHERN FLD	TN	LPV	3	99.918	3	99.914	3	99.884
TRI	TRI-CITIES	TN	LPV200	2	99.903	2	99.895	4	99.835
TYS	MC GHEE TYSON	TN	LPV200	2	99.895	2	99.895	4	99.861
UCY	EVERETT-STEWART RGNL	TN	LPV200	3	99.880	3	99.876	3	99.804
XNX	MUSIC CITY EXEC	TN	LPV	2	99.888	4	99.882	4	99.835
0F2	BOWIE MUNICIPAL	TX	LPV	2	99.957	2	99.940	5	99.892
11R	BRENHAM MUNICIPAL	TX	LPV	1	99.992	5	99.946	6	99.854
2R9	KENEDY RGNL	TX	LP	2	99.967	4	99.966	12	99.722
3R9	LAKEWAY AIRPARK	TX	LP	1	99.999	3	99.967	6	99.855
3T5	FAYETTE RGNL AIR CENTER	TX	LPV	3	99.992	5	99.959	7	99.834
41F	FLOYDADA MUNICIPAL	TX	LP	1	99.975	2	99.953	5	99.907
45R	HAWTHORNE FLD	TX	LP	2	99.962	3	99.943	6	99.866
4T2	KENNETH COPELAND	TX	LPV	2	99.968	3	99.944	5	99.893
50R	LOCKHART MUNICIPAL	TX	LPV	2	99.987	4	99.967	8	99.826
5C1	BOERNE STAGE FLD	TX	LP	1	99.971	2	99.967	9	99.841
5T9	MAVERICK COUNTY MEML INTL	TX	LPV	1	99.961	2	99.957	19	99.815
60R	NAVASOTA MUNICIPAL	TX	LPV	1	99.990	5	99.957	6	99.855
6R3	CLEVELAND MUNICIPAL	TX	LPV	3	99.978	3	99.941	7	99.864
77F	WINTERS MUNICIPAL	TX	LP	1	99.999	2	99.951	6	99.909
8F3	CROSBYTON MUNICIPAL	TX	LP	1	99.986	3	99.952	4	99.897

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
ABI	ABILENE RGNL	TX	LPV200	1	99.987	2	99.951	5	99.894
ACT	WACO RGNL	TX	LPV200	2	99.985	3	99.947	5	99.877
ADS	ADDISON	TX	LPV	2	99.949	2	99.946	5	99.868
AFW	FORT WORTH ALLIANCE	TX	LPV200	2	99.960	3	99.946	6	99.886
ALI	ALICE INTL	TX	LPV	3	99.842	8	99.811	29	99.569
AMA	RICK HUSBAND AMARILLO INTL	TX	LPV200	1	99.968	2	99.957	3	99.894
ARM	WHARTON RGNL	TX	LPV	4	99.969	4	99.923	12	99.782
ASL	HARRISON COUNTY	TX	LPV	2	99.941	2	99.934	5	99.890
AUS	AUSTIN-BERGSTROM INTL	TX	LPV200	1	99.998	3	99.967	6	99.844
AXH	HOUSTON/SOUTHWEST	TX	LPV	4	99.967	4	99.920	10	99.799
BAZ	NEW BRAUNFELS NTL	TX	LPV	1	99.971	2	99.967	8	99.816
BBD	CURTIS FLD	TX	LPV	0	100	2	99.968	5	99.890
BEA	BEEVILLE MUNICIPAL	TX	LPV	3	99.967	5	99.964	17	99.647
BFE	TERRY COUNTY	TX	LPV	1	99.999	3	99.938	3	99.899
BGD	HUTCHINSON COUNTY	TX	LPV	1	99.968	3	99.960	5	99.867
BKD	STEPHENS COUNTY	TX	LP	1	99.979	3	99.950	5	99.894
BKS	BROOKS COUNTY	TX	LPV	5	99.804	8	99.717	37	99.394
BMT	BEAUMONT MUNICIPAL	TX	LPV	2	99.962	3	99.945	6	99.865
BPG	BIG SPRING MC MAHON-WRINKLE	TX	LPV200	1	99.997	2	99.970	5	99.911
BPT	JACK BROOKS RGNL	TX	LPV200	2	99.962	3	99.937	7	99.854
BRO	BROWNSVILLE/SOUTH PADRE ISLAND	TX	LPV200	6	99.694	7	99.642	68	99.143
BWD	BROWNWOOD RGNL	TX	LPV	1	99.999	2	99.952	5	99.900
BYY	BAY CITY RGNL	TX	LPV	3	99.954	4	99.922	10	99.746
CDS	CHILDRESS MUNICIPAL	TX	LPV200	1	99.968	3	99.955	4	99.905
CFD	COULTER FLD	TX	LPV	1	99.992	4	99.966	6	99.869
CLL	EASTERWOOD FLD	TX	LPV200	1	99.992	6	99.962	6	99.867
CNW	TSTC WACO	TX	LPV200	2	99.977	3	99.950	5	99.874
COM	COLEMAN MUNICIPAL	TX	LPV	1	99.999	2	99.952	6	99.902
COT	COTULLA-LA SALLE COUNTY	TX	LPV	2	99.967	2	99.967	23	99.717
CPT	CLEBURNE RGNL	TX	LPV	2	99.970	3	99.948	6	99.861
CRP	CORPUS CHRISTI INTL	TX	LPV200	4	99.841	9	99.795	26	99.556
CVB	CASTROVILLE MUNICIPAL	TX	LPV	1	99.971	2	99.967	13	99.812
CWC	KICKAPOO DOWNTOWN	TX	LPV	2	99.957	2	99.945	6	99.898
CXO	CONROE/NORTH HOUSTON RGNL	TX	LPV200	3	99.978	3	99.942	7	99.872
CZT	DIMMIT COUNTY	TX	LPV	1	99.971	2	99.967	26	99.756

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
DAL	DALLAS LOVE FLD	TX	LPV200	2	99.949	2	99.946	5	99.868
DFW	DALLAS-FORT WORTH INTL	TX	LPV200	2	99.949	2	99.946	5	99.869
DHT	DALHART MUNICIPAL	TX	LPV	2	99.944	3	99.927	3	99.854
DKR	HOUSTON COUNTY	TX	LP	3	99.956	2	99.936	4	99.892
DRT	DEL RIO INTL	TX	LPV	1	99.971	2	99.967	15	99.858
DTO	DENTON ENTERPRISE	TX	LPV200	2	99.949	2	99.946	5	99.897
DUX	MOORE COUNTY	TX	LPV200	1	99.968	3	99.960	5	99.864
DWH	DAVID WAYNE HOOKS MEML	TX	LPV	3	99.979	4	99.945	7	99.844
E01	ROY HURD MEML	TX	LP	1	99.975	1	99.975	5	99.912
E11	ANDREWS COUNTY	TX	LPV	1	99.987	1	99.975	5	99.911
E19	GRUVER MUNICIPAL	TX	LP	3	99.937	3	99.918	5	99.832
E30	BRUCE FLD	TX	LPV	0	100	2	99.961	5	99.899
E38	ALPINE-CASPARIS MUNICIPAL	TX	LPV	1	99.975	1	99.975	10	99.889
EBG	SOUTH TEXAS INTL AT EDINBURG	TX	LPV	6	99.749	7	99.673	52	99.230
EDC	AUSTIN EXEC	TX	LPV200	0	100	5	99.964	6	99.850
EFD	ELLINGTON	TX	LPV200	5	99.970	5	99.937	10	99.804
ELA	EAGLE LAKE	TX	LP	4	99.974	5	99.944	10	99.823
ELP	EL PASO INTL	TX	LP	0	100	1	99.975	74	99.667
ERV	KERRVILLE MUNICIPAL/LOUIS SCHREINER	TX	LPV	2	99.985	2	99.967	5	99.870
ETN	EASTLAND MUNICIPAL	TX	LP	1	99.979	3	99.952	5	99.895
F00	JONES FLD	TX	LPV	2	99.946	3	99.937	4	99.924
F05	WILBARGER COUNTY	TX	LPV	1	99.968	3	99.953	5	99.910
F49	CITY OF SLATON/LARRY T NEAL ME	TX	LPV	1	99.997	3	99.956	3	99.896
F98	YOAKUM COUNTY	TX	LPV	0	100	3	99.934	4	99.898
FST	FORT STOCKTON-PECOS COUNTY	TX	LPV	1	99.975	1	99.975	8	99.906
FTW	FORT WORTH MEACHAM INTL	TX	LPV200	2	99.960	3	99.953	6	99.869
FWS	FORT WORTH SPINKS	TX	LPV200	2	99.960	3	99.950	6	99.859
GDJ	GRANBURY RGNL	TX	LPV	2	99.968	3	99.944	6	99.867
GGG	EAST TEXAS RGNL	TX	LPV	2	99.942	2	99.928	5	99.882
GKY	ARLINGTON MUNICIPAL	TX	LPV200	2	99.960	3	99.955	6	99.858
GLE	GAINESVILLE MUNICIPAL	TX	LPV	2	99.946	3	99.942	6	99.907
GLS	SCHOLES INTL AT GALVESTON	TX	LPV200	5	99.963	4	99.909	11	99.790
GNC	GAINES COUNTY	TX	LPV	1	99.995	3	99.964	3	99.899
GRK	ROBERT GRAY AAF	TX	LPV200	0	100	2	99.967	5	99.867
GTU	GEORGETOWN MUNICIPAL	TX	LPV	0	100	3	99.966	6	99.862

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
GVT	MAJORS	TX	LPV200	2	99.949	2	99.946	4	99.895
GYI	NORTH TEXAS RGNL/PERRIN FLD	TX	LPV200	2	99.946	3	99.939	5	99.922
GZN	GREGORY M SIMMONS MEML	TX	LPV	1	99.979	3	99.951	5	99.895
HBV	JIM HOGG COUNTY	TX	LPV	4	99.811	9	99.748	38	99.438
HDO	SOUTH TEXAS RGNL AT HONDO	TX	LPV	1	99.971	2	99.967	14	99.847
HHF	HEMPHILL COUNTY	TX	LPV	4	99.952	4	99.908	5	99.844
HOU	WILLIAM P HOBBY	TX	LPV200	5	99.971	5	99.938	10	99.805
HQZ	MESQUITE METRO	TX	LPV	2	99.949	2	99.946	6	99.864
HRL	VALLEY INTL	TX	LPV200	5	99.726	7	99.650	55	99.193
HRX	HEREFORD MUNICIPAL	TX	LPV200	2	99.987	2	99.949	3	99.909
HYI	SAN MARCOS RGNL	TX	LPV200	2	99.987	2	99.967	7	99.829
IAH	GEORGE BUSH INTCNTL/HOUSTON	TX	LPV200	3	99.978	4	99.945	8	99.840
IKG	KLEBERG COUNTY	TX	LPV	4	99.831	7	99.742	34	99.484
ILE	SKYLARK FLD	TX	LPV200	0	100	2	99.964	5	99.875
INJ	HILLSBORO MUNICIPAL	TX	LPV	2	99.961	3	99.949	6	99.874
INK	WINKLER COUNTY	TX	LPV200	1	99.975	1	99.975	5	99.912
IWS	WEST HOUSTON	TX	LP	2	99.983	4	99.943	8	99.824
JAS	JASPER COUNTY/BELL FLD	TX	LPV	2	99.940	3	99.933	7	99.877
JSO	CHEROKEE COUNTY	TX	LPV	2	99.951	3	99.940	5	99.884
JWY	MID-WAY RGNL	TX	LPV200	2	99.960	3	99.955	6	99.857
JXI	FOX STEPHENS FLD - GILMER MUNICIPAL	TX	LP	2	99.944	2	99.937	5	99.890
LBB	LUBBOCK PRESTON SMITH INTL	TX	LPV200	1	99.996	3	99.955	3	99.899
LBX	TEXAS GULF COAST RGNL	TX	LPV	4	99.966	4	99.919	10	99.746
LFK	ANGELINA COUNTY	TX	LPV	4	99.967	2	99.936	6	99.890
LHB	HEARNE MUNICIPAL	TX	LPV200	1	99.994	5	99.959	6	99.871
LIU	LITTLEFIELD TAYLOR BROWN MUNICIPAL	TX	LPV	2	99.996	2	99.955	4	99.915
LLN	LEVELLAND MUNICIPAL	TX	LPV	1	99.998	3	99.952	3	99.899
LNC	LANCASTER RGNL	TX	LPV200	2	99.949	2	99.946	6	99.857
LRD	LAREDO INTL	TX	LPV200	3	99.853	6	99.808	41	99.479
LUD	DECATUR MUNICIPAL	TX	LPV	2	99.957	2	99.942	4	99.897
LUV	LAMESA MUNICIPAL	TX	LPV200	2	99.999	3	99.949	3	99.899
LVJ	PEARLAND RGNL	TX	LPV	4	99.966	4	99.919	10	99.801
LXY	MEXIA-LIMESTONE COUNTY	TX	LP	2	99.962	3	99.955	6	99.873
MAF	MIDLAND INTL AIR AND SPACE POR	TX	LPV200	1	99.987	1	99.971	6	99.922
MDD	MIDLAND AIRPARK	TX	LPV	1	99.989	1	99.971	5	99.923

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
MFE	MC ALLEN MILLER INTL	TX	LPV200	5	99.726	7	99.655	61	99.153
MKN	COMANCHE COUNTY-CITY	TX	LPV	1	99.988	2	99.953	5	99.900
MNZ	HAMILTON MUNICIPAL	TX	LPV	1	99.998	2	99.958	5	99.883
MWL	MINERAL WELLS RGNL	TX	LPV200	2	99.968	3	99.946	6	99.892
OCH	NACOGDOCHES A L MANGHAM JR RGN	TX	LPV200	3	99.954	2	99.935	6	99.879
ODO	ODESSA-SCHLEMEYER FLD	TX	LPV200	1	99.984	1	99.971	6	99.922
ONY	OLNEY MUNICIPAL	TX	LPV	1	99.968	3	99.955	4	99.895
ORG	ORANGE COUNTY	TX	LPV	2	99.962	3	99.954	6	99.858
PEQ	PECOS MUNICIPAL	TX	LPV200	1	99.975	1	99.975	7	99.906
PIL	PORT ISABEL-CAMERON COUNTY	TX	LPV	7	99.701	7	99.649	53	99.204
PKV	CALHOUN COUNTY	TX	LPV	3	99.965	4	99.951	11	99.704
PPA	PERRY LEFORS FLD	TX	LPV	1	99.967	3	99.960	5	99.869
PRX	COX FLD	TX	LPV	2	99.946	3	99.935	5	99.921
PSX	PALACIOS MUNICIPAL	TX	LPV	3	99.957	4	99.934	11	99.710
PVW	HALE COUNTY	TX	LPV	1	99.975	2	99.954	5	99.919
PWG	MC GREGOR EXEC	TX	LPV	2	99.998	3	99.949	5	99.877
PYX	PERRYTON OCHILTREE COUNTY	TX	LPV	3	99.923	4	99.904	5	99.824
RAS	MUSTANG BEACH	TX	LPV	3	99.844	9	99.797	19	99.570
RBD	DALLAS EXEC	TX	LPV200	2	99.949	2	99.946	6	99.857
RBO	NUECES COUNTY	TX	LPV	4	99.841	9	99.797	26	99.559
RKP	ARANSAS COUNTY	TX	LPV	4	99.895	7	99.881	15	99.619
RYW	LAGO VISTA TX/RUSTY ALLEN	TX	LPV	0	100	3	99.966	6	99.857
SAT	SAN ANTONIO INTL	TX	LPV200	1	99.971	2	99.967	10	99.812
SGR	SUGAR LAND RGNL	TX	LPV200	4	99.968	4	99.920	10	99.802
SJT	SAN ANGELO RGNL/MATHIS FLD	TX	LPV	1	99.998	2	99.969	5	99.907
SLR	SULPHUR SPRINGS MUNICIPAL	TX	LPV	2	99.946	3	99.943	4	99.893
SNK	WINSTON FLD	TX	LPV200	1	99.997	3	99.949	5	99.893
SWI	SHERMAN MUNICIPAL	TX	LP	2	99.946	3	99.939	6	99.921
SWW	AVENGER FLD	TX	LPV	1	99.997	2	99.950	5	99.893
T23	ALBANY MUNICIPAL	TX	LPV	1	99.979	3	99.948	5	99.893
T41	LA PORTE MUNICIPAL	TX	LPV	5	99.974	5	99.942	9	99.808
T74	TAYLOR MUNICIPAL	TX	LPV	0	100	5	99.962	6	99.852
T78	LIBERTY MUNICIPAL	TX	LP	3	99.978	3	99.944	8	99.856
T82	GILLESPIE COUNTY	TX	LPV	2	99.993	2	99.967	5	99.883
TDW	TRADEWIND	TX	LPV	1	99.968	2	99.957	3	99.894

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
TFP	MCCAMPBELL-PORTER	TX	LPV	3	99.873	8	99.827	18	99.592
TKI	MCKINNEY NTL	TX	LPV200	2	99.949	2	99.946	7	99.899
TME	HOUSTON EXEC	TX	LPV	2	99.987	5	99.940	9	99.820
TPL	DRAUGHON-MILLER CENTRAL TEXAS	TX	LPV200	1	99.999	3	99.952	5	99.874
TRL	TERRELL MUNICIPAL	TX	LPV	2	99.949	2	99.946	7	99.884
TX2	CHASE FLD INDUSTRIAL	TX	LPV	3	99.967	5	99.962	15	99.647
TXW	MID VALLEY	TX	LPV	5	99.724	7	99.652	59	99.178
TYR	TYLER POUNDS RGNL	TX	LPV200	2	99.946	2	99.942	5	99.884
UTS	HUNTSVILLE MUNICIPAL	TX	LPV	3	99.981	3	99.941	6	99.889
VCT	VICTORIA RGNL	TX	LPV200	3	99.967	4	99.955	11	99.733
XBP	BRIDGEPORT MUNICIPAL	TX	LPV	2	99.957	3	99.941	4	99.897
41U	MANTI-EPHRAIM	UT	LPV	1	99.960	1	99.957	1	99.938
74V	ROOSEVELT MUNICIPAL	UT	LPV	1	99.943	1	99.942	2	99.925
BCE	BRYCE CANYON	UT	LPV	1	99.997	1	99.972	1	99.956
BDG	BLANDING MUNICIPAL	UT	LPV	1	99.986	1	99.971	2	99.953
BMC	BRIGHAM CITY RGNL	UT	LP	1	99.953	1	99.941	4	99.908
CDC	CEDAR CITY RGNL	UT	LPV	1	99.999	1	99.972	1	99.957
CNY	CANYONLANDS RGNL	UT	LP	1	99.960	1	99.957	2	99.937
DTA	DELTA MUNICIPAL	UT	LP	1	99.971	1	99.964	1	99.938
ENV	WENDOVER	UT	LPV	1	99.957	1	99.949	1	99.935
FOM	FILLMORE MUNICIPAL	UT	LPV	1	99.972	1	99.967	1	99.940
LGU	LOGAN-CACHE	UT	LPV	1	99.942	1	99.941	5	99.904
OGD	OGDEN-HINCKLEY	UT	LPV	1	99.953	1	99.941	4	99.912
PUC	CARBON COUNTY RGNL/BUCK DAVIS	UT	LP	1	99.956	1	99.952	2	99.932
PVU	PROVO MUNICIPAL	UT	LPV200	1	99.957	1	99.950	2	99.934
RIF	RICHFIELD MUNICIPAL	UT	LP	1	99.972	1	99.967	1	99.941
SGU	ST GEORGE RGNL	UT	LPV	0	100	1	99.976	1	99.965
SLC	SALT LAKE CITY INTL	UT	LPV200	1	99.953	1	99.949	1	99.935
SPK	SPANISH FORK MUNICIPAL/WOODHOUSE FL	UT	LP	1	99.957	1	99.950	2	99.934
TVY	BOLINDER FLD-TOOELE VALLEY	UT	LPV200	1	99.953	1	99.950	1	99.935
U14	NEPHI MUNICIPAL	UT	LPV	1	99.960	1	99.953	1	99.935
U42	SOUTH VALLEY RGNL	UT	LPV	1	99.953	1	99.949	1	99.935
U55	PANGUITCH MUNICIPAL	UT	LPV200	1	99.984	1	99.971	1	99.956
VEL	VERNAL RGNL	UT	LPV	1	99.936	1	99.936	2	99.917
0V4	BROOKNEAL/CAMPBELL COUNTY	VA	LPV	3	99.951	3	99.932	4	99.881

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
0VG	LEE COUNTY	VA	LPV	2	99.898	3	99.890	4	99.830
AVC	MECKLENBURG-BRUNSWICK RGNL	VA	LPV	2	99.954	3	99.949	4	99.867
BCB	VIRGINIA TECH/MONTGOMERY EXEC	VA	LPV	3	99.923	3	99.907	4	99.857
BKT	ALLEN C PERKINSON BLACKSTONE A	VA	LPV	2	99.981	3	99.962	4	99.865
CHO	CHARLOTTESVILLE-ALBEMARLE	VA	LPV200	4	99.943	4	99.909	5	99.873
CJR	CULPEPER RGNL	VA	LPV	3	99.964	3	99.910	5	99.865
CPK	CHESAPEAKE RGNL	VA	LPV200	1	99.985	2	99.983	3	99.837
DAN	DANVILLE RGNL	VA	LPV200	3	99.946	3	99.940	3	99.885
EMV	EMPORIA-GREENSVILLE RGNL	VA	LPV	2	99.975	3	99.963	4	99.864
FCI	RICHMOND EXEC/CHESTERFIELD COU	VA	LPV	1	99.986	3	99.969	4	99.852
FKN	FRANKLIN RGNL	VA	LPV	1	99.986	2	99.980	4	99.852
FVX	FARMVILLE RGNL	VA	LPV	3	99.962	4	99.948	4	99.867
FYJ	MIDDLE PENINSULA RGNL	VA	LPV	1	99.986	3	99.969	5	99.855
HLX	TWIN COUNTY	VA	LPV	2	99.912	2	99.905	4	99.843
HSP	INGALLS FLD	VA	LPV	4	99.943	3	99.919	4	99.886
HWY	WARRENTON/FAUQUIER	VA	LPV200	3	99.965	3	99.910	5	99.863
JFZ	TAZEWELL COUNTY	VA	LPV	2	99.903	3	99.891	4	99.830
JYO	LEESBURG EXEC	VA	LPV	3	99.944	3	99.918	5	99.855
LKU	LOUISA COUNTY/FREEMAN FLD	VA	LPV	3	99.972	5	99.935	5	99.874
LNP	LONESOME PINE	VA	LPV	2	99.903	3	99.890	4	99.831
LUA	LURAY CAVERNS	VA	LP	4	99.925	4	99.916	5	99.864
LYH	LYNCHBURG RGNL/PRESTON GLENN F	VA	LPV	3	99.956	3	99.923	4	99.883
MFV	ACCOMACK COUNTY	VA	LPV	1	99.986	2	99.967	6	99.871
MKJ	MOUNTAIN EMPIRE	VA	LPV	2	99.903	3	99.892	4	99.835
MTV	BLUE RIDGE	VA	LPV	3	99.932	3	99.925	4	99.883
OFP	HANOVER COUNTY MUNICIPAL	VA	LPV	1	99.986	3	99.960	5	99.868
OKV	WINCHESTER RGNL	VA	LPV200	4	99.930	4	99.909	4	99.832
ORF	NORFOLK INTL	VA	LPV200	1	99.985	3	99.982	3	99.830
PHF	NEWPORT NEWS/WILLIAMSBURG INTL	VA	LPV200	1	99.986	3	99.981	5	99.863
PSK	NEW RIVER VALLEY	VA	LPV200	2	99.912	2	99.895	4	99.855
PTB	DINWIDDIE COUNTY	VA	LPV	1	99.983	3	99.969	4	99.854
PVG	HAMPTON ROADS EXEC	VA	LPV200	1	99.985	2	99.984	3	99.835
RIC	RICHMOND INTL	VA	LPV200	1	99.986	3	99.969	5	99.863
RMN	STAFFORD RGNL	VA	LPV	2	99.979	3	99.937	5	99.869
ROA	ROANOKE/BLACKSBURG RGNL (WOODR	VA	LPV	3	99.924	3	99.909	4	99.869

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
SFQ	SUFFOLK EXEC	VA	LPV	1	99.985	2	99.980	3	99.838
SHD	SHENANDOAH VALLEY RGNL	VA	LPV200	4	99.937	4	99.909	5	99.870
VJI	VIRGINIA HIGHLANDS	VA	LPV	2	99.903	3	99.893	4	99.829
W78	WILLIAM M TUCK	VA	LPV	3	99.949	3	99.943	4	99.881
W96	NEW KENT COUNTY	VA	LP	1	99.986	3	99.977	5	99.862
WAL	WALLOPS FLIGHT FACILITY	VA	LPV	2	99.985	2	99.961	5	99.894
XSA	TAPPAHANNOCK/ESSEX COUNTY	VA	LPV	1	99.986	3	99.959	5	99.864
BTB	BURLINGTON INTL	VT	LPV200	3	99.921	3	99.920	5	99.813
EFK	NORTHEAST KINGDOM INTL	VT	LP	2	99.909	3	99.898	4	99.809
FSO	FRANKLIN COUNTY STATE	VT	LPV	2	99.913	3	99.913	6	99.818
MPV	EDWARD F KNAPP STATE	VT	LPV	2	99.924	2	99.920	5	99.810
MVL	MORRISVILLE-STOWE STATE	VT	LPV	2	99.924	2	99.920	5	99.810
RUT	RUTLAND - SOUTHERN VERMONT RGN	VT	LPV	3	99.924	3	99.919	5	99.829
ALW	WALLA WALLA RGNL	WA	LPV200	1	99.911	1	99.911	2	99.898
AWO	ARLINGTON MUNICIPAL	WA	LPV200	1	99.915	1	99.915	8	99.850
BLI	BELLINGHAM INTL	WA	LPV200	1	99.913	2	99.913	9	99.839
BVS	SKAGIT RGNL	WA	LPV	1	99.915	1	99.915	9	99.840
CLM	WILLIAM R FAIRCHILD INTL	WA	LPV	1	99.916	1	99.916	11	99.828
CLS	CHEHALIS-CENTRALIA	WA	LPV	1	99.926	1	99.925	5	99.863
DEW	DEER PARK	WA	LPV	1	99.910	1	99.910	7	99.853
EPH	EPHRATA MUNICIPAL	WA	LPV	1	99.911	1	99.911	4	99.890
FHR	FRIDAY HARBOR	WA	LPV	1	99.915	2	99.915	11	99.840
GEG	SPOKANE INTL	WA	LPV200	1	99.910	1	99.910	5	99.867
HQM	BOWERMAN	WA	LPV200	1	99.923	1	99.920	5	99.855
KLS	SOUTHWEST WASHINGTON RGNL	WA	LPV	1	99.927	1	99.926	5	99.872
MWH	GRANT COUNTY INTL	WA	LPV200	1	99.911	1	99.911	4	99.890
OLM	OLYMPIA RGNL	WA	LPV200	1	99.923	1	99.920	5	99.869
ORS	ORCAS ISLAND	WA	LP	1	99.914	2	99.914	9	99.840
PAE	SNOHOMISH COUNTY (PAINE FLD)	WA	LPV200	1	99.916	1	99.916	8	99.854
PLU	PIERCE COUNTY - THUN FLD	WA	LPV	1	99.923	1	99.920	7	99.876
PSC	TRI-CITIES	WA	LPV200	1	99.912	1	99.912	2	99.897
PWT	BREMERTON NTL	WA	LPV200	1	99.921	1	99.917	8	99.854
RLD	RICHLAND	WA	LPV	1	99.912	1	99.912	2	99.896
RNT	RENTON MUNICIPAL	WA	LPV	1	99.920	1	99.917	8	99.871
SEA	SEATTLE-TACOMA INTL	WA	LPV200	1	99.920	1	99.917	7	99.873

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
SFF	FELTS FLD	WA	LPV	1	99.910	1	99.910	5	99.866
SHN	SANDERSON FLD	WA	LPV	1	99.923	1	99.920	6	99.857
TDO	ED CARLSON MEML FLD - SOUTH LE	WA	LPV	1	99.926	1	99.926	5	99.872
TIW	TACOMA NARROWS	WA	LPV	1	99.923	1	99.919	7	99.875
YKM	YAKIMA AIR TRML/MCALLISTER FLD	WA	LPV200	1	99.920	1	99.920	3	99.893
3T3	BOYCEVILLE MUNICIPAL	WI	LPV	2	99.743	2	99.740	5	99.696
57C	EAST TROY MUNICIPAL	WI	LPV	1	99.764	1	99.743	2	99.711
61C	FORT ATKINSON MUNICIPAL	WI	LP	2	99.764	2	99.730	2	99.710
82C	MAUSTON/NEW LISBON UNION	WI	LP	3	99.746	2	99.715	4	99.703
8D1	NEW HOLSTEIN MUNICIPAL	WI	LPV	1	99.761	3	99.733	4	99.710
AHH	AMERY MUNICIPAL	WI	LP	2	99.743	2	99.739	5	99.682
AIG	LANGLADE COUNTY	WI	LPV	2	99.756	2	99.744	8	99.700
ARV	LAKELAND/NOBLE F LEE MEML FLD	WI	LPV	2	99.753	2	99.753	7	99.691
ASX	JOHN F KENNEDY MEML	WI	LPV	2	99.753	3	99.750	7	99.656
ATW	APPLETON INTL	WI	LPV200	1	99.761	3	99.740	5	99.701
AUW	WAUSAU DOWNTOWN	WI	LPV200	2	99.738	2	99.736	7	99.692
BCK	BLACK RIVER FALLS AREA	WI	LPV	2	99.738	2	99.717	2	99.712
BUU	BURLINGTON MUNICIPAL	WI	LP	1	99.764	1	99.743	2	99.712
C29	MIDDLETON MUNICIPAL/MOREY FLD	WI	LPV	2	99.760	2	99.723	3	99.708
C35	REEDSBURG MUNICIPAL	WI	LP	2	99.757	2	99.718	4	99.706
C47	PORTAGE MUNICIPAL	WI	LP	2	99.761	2	99.719	4	99.708
CLI	CLINTONVILLE MUNICIPAL	WI	LPV	1	99.768	2	99.746	6	99.696
CMY	SPARTA/FORT MC COY	WI	LPV	2	99.721	2	99.714	3	99.712
CWA	CENTRAL WISCONSIN	WI	LPV200	2	99.742	2	99.736	7	99.693
DLL	BARABOO/WISCONSIN DELLS RGNL	WI	LPV	2	99.759	2	99.718	4	99.707
EAU	CHIPPEWA VALLEY RGNL	WI	LPV200	2	99.743	2	99.741	3	99.709
EGV	EAGLE RIVER UNION	WI	LPV	2	99.754	2	99.754	6	99.688
ENW	KENOSHA RGNL	WI	LPV200	2	99.776	1	99.743	2	99.718
ETB	WEST BEND MUNICIPAL	WI	LPV	1	99.763	1	99.740	3	99.709
EZS	SHAWANO MUNICIPAL	WI	LPV	1	99.768	2	99.746	8	99.701
FLD	FOND DU LAC COUNTY	WI	LPV	1	99.761	2	99.720	4	99.708
GRB	GREEN BAY/AUSTIN STRAUBEL INTL	WI	LPV200	1	99.768	2	99.749	5	99.695
GTG	GRANTSBURG MUNICIPAL	WI	LP	2	99.753	2	99.750	6	99.681
HXF	HARTFORD MUNICIPAL	WI	LPV	1	99.763	2	99.727	3	99.710
HYR	SAWYER COUNTY	WI	LPV	2	99.753	3	99.751	6	99.700

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
ISW	ALEXANDER FLD SOUTH WOOD COUNT	WI	LPV	2	99.748	2	99.721	5	99.698
JVL	SOUTHERN WISCONSIN RGNL	WI	LPV200	2	99.762	2	99.733	2	99.710
LNK	TRI-COUNTY RGNL	WI	LPV	1	99.744	2	99.719	3	99.709
LSE	LA CROSSE RGNL	WI	LPV	2	99.721	2	99.714	2	99.705
LUM	MENOMONIE MUNICIPAL/SCORE FLD	WI	LPV	2	99.743	2	99.740	4	99.701
MDZ	TAYLOR COUNTY	WI	LPV	2	99.743	2	99.743	6	99.718
MFI	MARSHFIELD MUNICIPAL	WI	LPV	2	99.739	2	99.736	5	99.704
MKE	GENERAL MITCHELL INTL	WI	LPV200	1	99.764	1	99.742	2	99.715
MRJ	IOWA COUNTY	WI	LPV200	1	99.744	2	99.724	2	99.711
MSN	DANE COUNTY RGNL/TRUAX FLD	WI	LPV200	2	99.761	2	99.723	3	99.708
MTW	MANITOWOC COUNTY	WI	LPV200	1	99.761	3	99.740	4	99.706
MWC	LAWRENCE J TIMMERMAN	WI	LPV	1	99.764	1	99.741	2	99.712
OCQ	OCONTO/J DOUGLAS BAKE MUNICIPAL	WI	LP	1	99.768	2	99.749	7	99.703
OEO	L O SIMENSTAD MUNICIPAL	WI	LPV200	2	99.743	2	99.735	5	99.681
OSH	WITTMAN RGNL	WI	LPV200	1	99.761	2	99.720	5	99.708
OVS	BOSCOBEL	WI	LPV	2	99.744	2	99.718	2	99.710
PBH	PRICE COUNTY	WI	LPV	2	99.753	2	99.753	6	99.695
PCZ	WAUPACA MUNICIPAL	WI	LPV	1	99.761	2	99.723	6	99.698
PVB	PLATTEVILLE MUNICIPAL	WI	LPV	1	99.746	2	99.726	2	99.707
RAC	BATTEN INTL	WI	LPV	1	99.764	1	99.742	2	99.715
RCX	RUSK COUNTY	WI	LPV	2	99.743	2	99.741	4	99.728
RHI	RHINELANDER/ONEIDA COUNTY	WI	LPV200	2	99.754	2	99.754	7	99.687
RNH	NEW RICHMOND RGNL	WI	LPV	2	99.743	2	99.739	4	99.684
RPD	RICE LAKE RGNL/CARL'S FLD	WI	LPV200	2	99.743	2	99.740	6	99.714
RRL	MERRILL MUNICIPAL	WI	LPV	2	99.743	2	99.743	9	99.703
SBM	SHEBOYGAN COUNTY MEML	WI	LPV200	1	99.761	3	99.746	3	99.710
STE	STEVENS POINT MUNICIPAL	WI	LPV	2	99.750	2	99.737	7	99.695
SUE	DOOR COUNTY CHERRYLAND	WI	LPV	1	99.768	2	99.750	7	99.705
SUW	RICHARD I BONG	WI	LP	3	99.751	4	99.745	7	99.633
TKV	TOMAHAWK RGNL	WI	LP	2	99.754	2	99.754	8	99.708
UBE	CUMBERLAND MUNICIPAL	WI	LPV	2	99.743	2	99.740	5	99.703
UES	WAUKESHA COUNTY	WI	LPV200	1	99.764	1	99.742	2	99.711
UNU	DODGE COUNTY	WI	LPV	1	99.763	2	99.720	3	99.707
VIQ	NEILLSVILLE MUNICIPAL	WI	LPV	2	99.735	2	99.723	3	99.709
Y50	WAUTOMA MUNICIPAL	WI	LP	2	99.760	2	99.715	5	99.706

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
Y55	CRANDON/STEVE CONWAY MUNICIPAL	WI	LPV	2	99.755	2	99.755	8	99.682
Y72	BLOYER FLD	WI	LP	3	99.739	2	99.715	3	99.710
3I2	MASON COUNTY	WV	LPV	3	99.887	3	99.872	4	99.826
6L4	LOGAN COUNTY	WV	LPV	3	99.900	3	99.877	4	99.843
BKW	RALEIGH COUNTY MEML	WV	LPV200	2	99.903	3	99.890	4	99.851
BLF	MERCER COUNTY	WV	LPV	2	99.903	3	99.892	4	99.849
CKB	NORTH CENTRAL WEST VIRGINIA	WV	LPV200	3	99.896	3	99.888	5	99.824
CRW	WEST VIRGINIA INTL YEAGER	WV	LPV200	3	99.889	3	99.876	4	99.843
HLG	WHEELING OHIO COUNTY	WV	LPV200	4	99.872	4	99.858	4	99.804
HTS	TRI-STATE/MILTON J FERGUSON FL	WV	LPV200	3	99.888	3	99.877	4	99.835
I18	JACKSON COUNTY	WV	LPV200	3	99.887	3	99.877	4	99.826
LWB	GREENBRIER VALLEY	WV	LPV	4	99.920	4	99.898	5	99.875
MGW	MORGANTOWN MUNICIPAL (WALTER L BILL	WV	LPV200	3	99.891	3	99.883	5	99.815
MRB	EASTERN WV RGNL/SHEPHERD FLD	WV	LPV	4	99.933	4	99.909	4	99.831
PKB	MID-OHIO VALLEY RGNL	WV	LPV	3	99.886	3	99.872	4	99.825
USW	BOGGS FLD	WV	LPV	3	99.891	3	99.881	4	99.833
W22	UPSHUR COUNTY RGNL	WV	LPV	3	99.901	3	99.888	4	99.827
W35	POTOMAC AIRPARK	WV	LP	4	99.926	4	99.903	4	99.827
W99	GRANT COUNTY	WV	LP	3	99.903	3	99.897	4	99.840
BYG	JOHNSON COUNTY	WY	LPV	3	99.846	3	99.787	4	99.732
COD	YELLOWSTONE RGNL	WY	LPV	2	99.889	4	99.851	5	99.760
CPR	CASPER/NATRONA COUNTY INTL	WY	LPV	3	99.872	4	99.820	5	99.763
CYS	CHEYENNE RGNL/JERRY OLSON FLD	WY	LPV200	2	99.905	3	99.872	3	99.773
DGW	CONVERSE COUNTY	WY	LPV200	3	99.865	4	99.805	4	99.762
DWX	DIXON	WY	LP	2	99.925	2	99.925	5	99.800
EAN	PHIFER AIRFIELD	WY	LPV200	3	99.884	4	99.812	4	99.772
ECS	MONDELL FLD	WY	LPV	3	99.814	2	99.757	3	99.732
EMM	KEMMERER MUNICIPAL	WY	LPV	1	99.935	1	99.935	7	99.872
EVW	EVANSTON-UINTA COUNTY BURNS FL	WY	LPV	1	99.941	1	99.941	4	99.905
FBR	FORT BRIDGER	WY	LP	1	99.935	1	99.935	6	99.884
GCC	NORTHEAST WYOMING RGNL	WY	LPV	2	99.804	3	99.775	3	99.730
GEY	SOUTH BIG HORN COUNTY	WY	LPV	3	99.877	3	99.819	4	99.727
GUR	CAMP GUERNSEY	WY	LP	3	99.875	4	99.802	4	99.764
HSG	HOT SPRINGS COUNTY	WY	LPV	3	99.889	4	99.868	3	99.739
JAC	JACKSON HOLE	WY	LPV200	2	99.917	4	99.913	6	99.792

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
LAR	LARAMIE RGNL	WY	LPV	2	99.908	3	99.879	3	99.769
LND	HUNT FLD	WY	LPV	2	99.913	3	99.902	5	99.791
PNA	RALPH WENZ FLD	WY	LPV	2	99.918	3	99.918	5	99.807
POY	POWELL MUNICIPAL	WY	LPV	2	99.889	3	99.848	4	99.732
RIW	CENTRAL WYOMING RGNL	WY	LPV200	3	99.893	4	99.883	4	99.764
RKS	SOUTHWEST WYOMING RGNL	WY	LPV200	1	99.935	1	99.927	6	99.839
RWL	RAWLINS MUNICIPAL/HARVEY FLD	WY	LPV	2	99.913	4	99.895	4	99.768
SAA	SHIVELY FLD	WY	LPV	3	99.923	5	99.908	4	99.766
SHR	SHERIDAN COUNTY	WY	LPV	4	99.849	3	99.789	5	99.730
U68	NORTH BIG HORN COUNTY	WY	LPV	2	99.889	3	99.846	4	99.733
W43	HULETT MUNICIPAL	WY	LPV	3	99.801	4	99.769	3	99.727
WRL	WORLAND MUNICIPAL	WY	LPV	3	99.887	3	99.841	4	99.735
CYMA	MAYO	YT	LPV	3	99.852	5	99.804	12	99.600
CYQH	WATSON LAKE	YT	LPV	4	99.823	6	99.767	14	99.533
CYXY	ERIK NIELSEN INTL	YT	LPV200	3	99.847	7	99.773	12	99.563
CYZW	TESLIN	YT	LPV	3	99.836	6	99.773	12	99.563

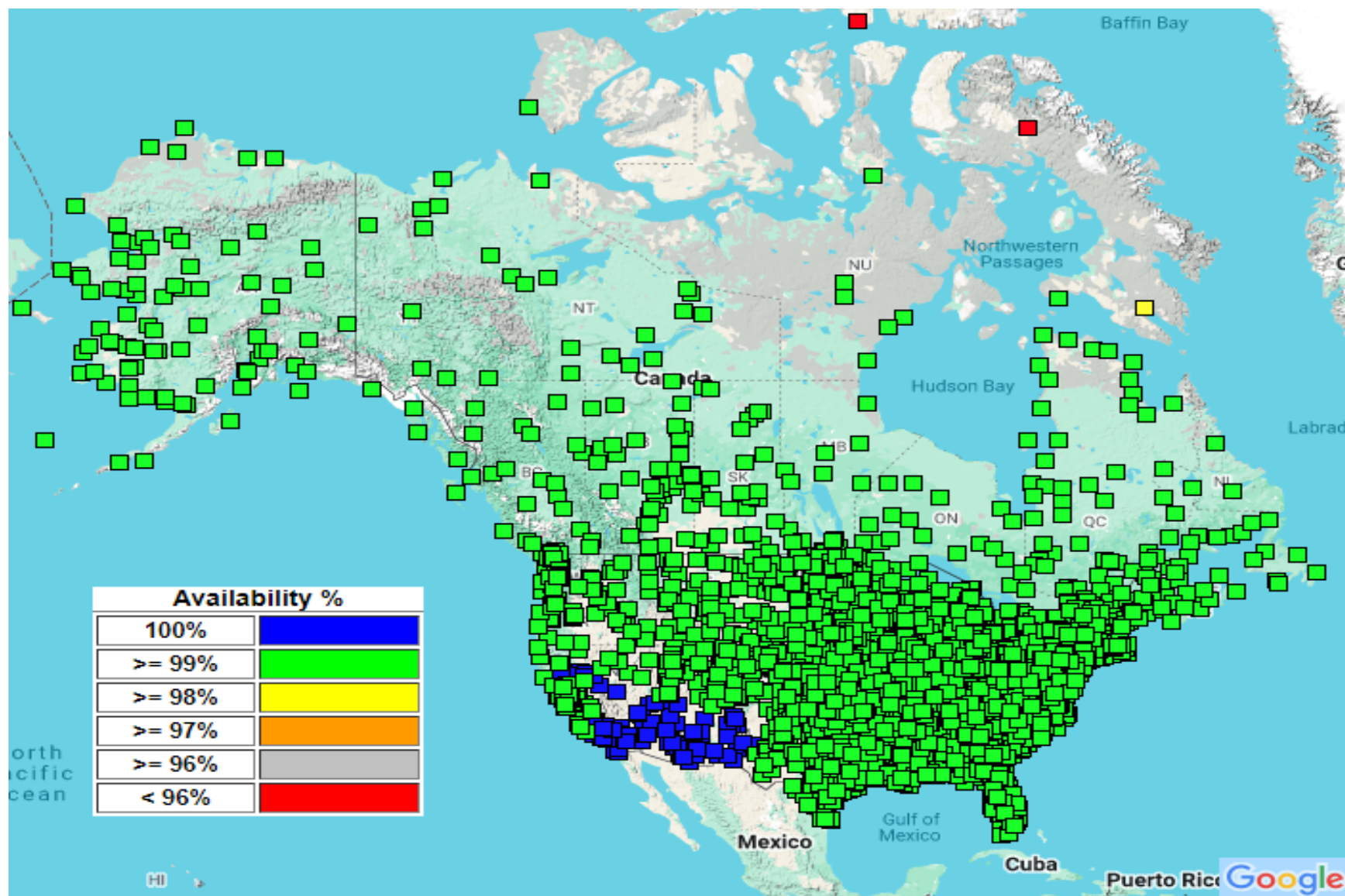


Figure 8-1 WAAS LP Availability at Airports in the U.S. and Canada with GPS RNAV IAPs

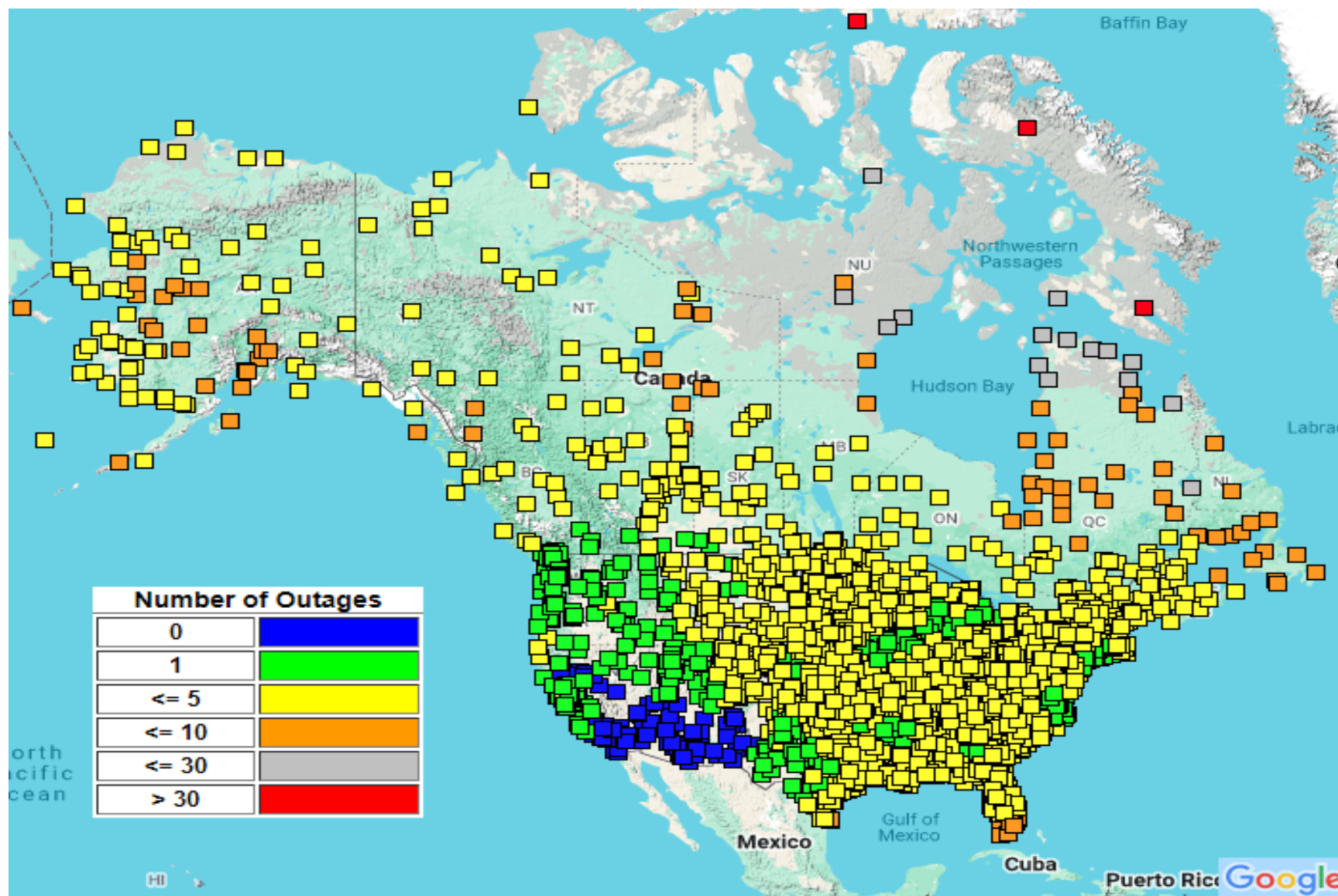


Figure 8-2 WAAS LP Outages at Airports in the U.S. and Canada with GPS RNAV IAPs

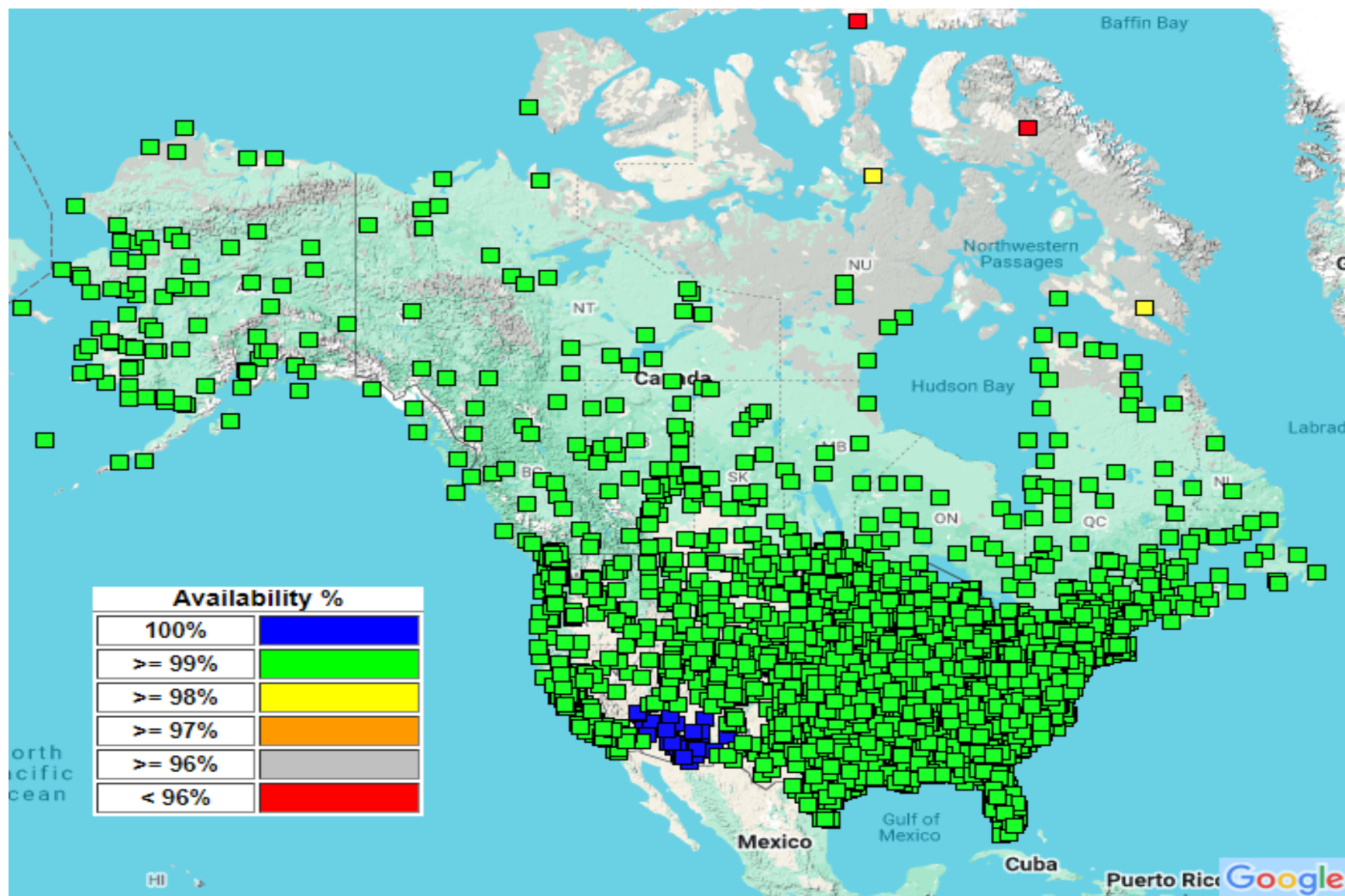


Figure 8-3 WAAS LPV Availability Airports in the U.S. and Canada with GPS RNAV IAPs

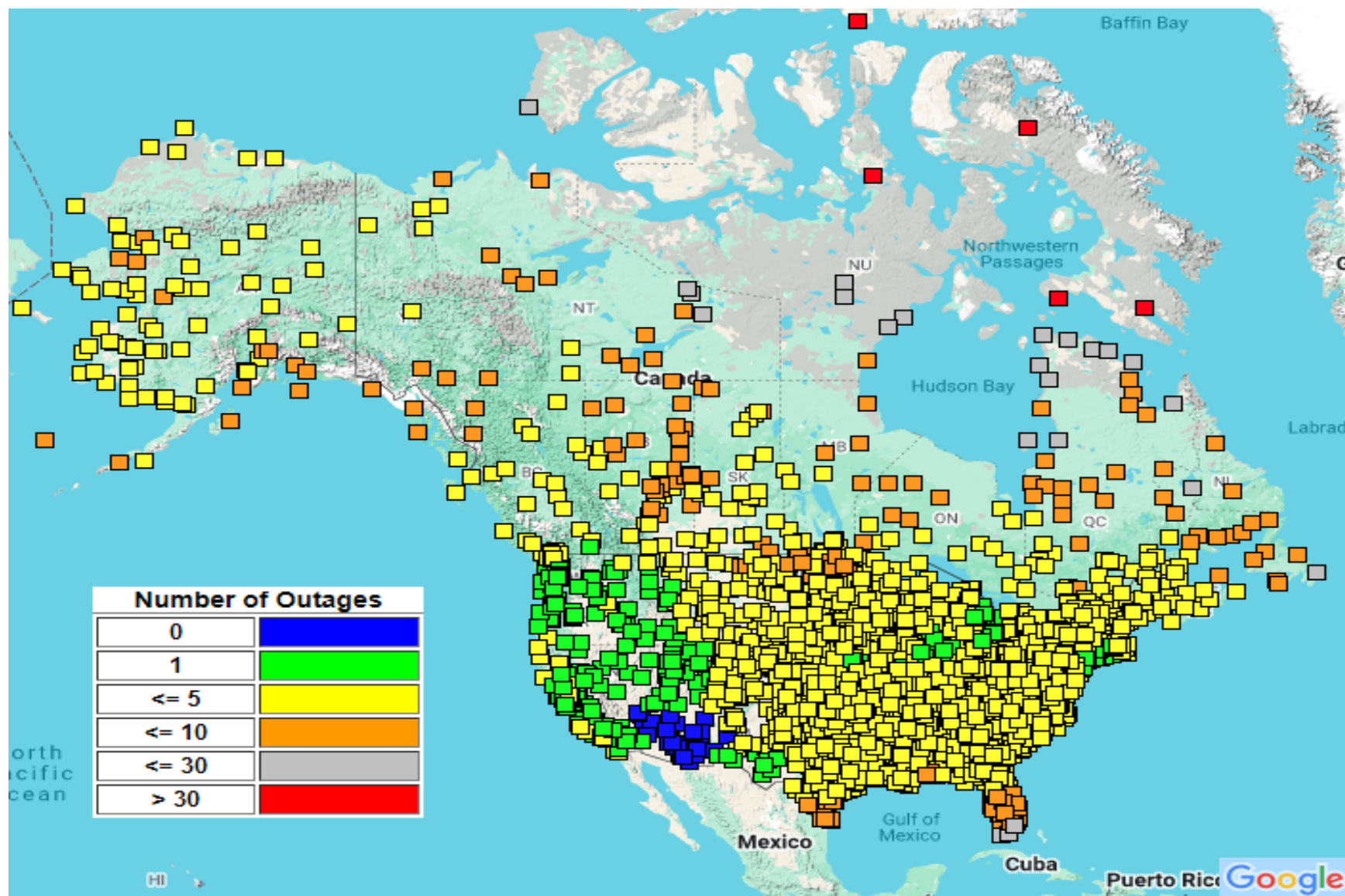


Figure 8-4 WAAS LPV Outages at Airports in the U.S. and Canada with GPS RNAV IAPs

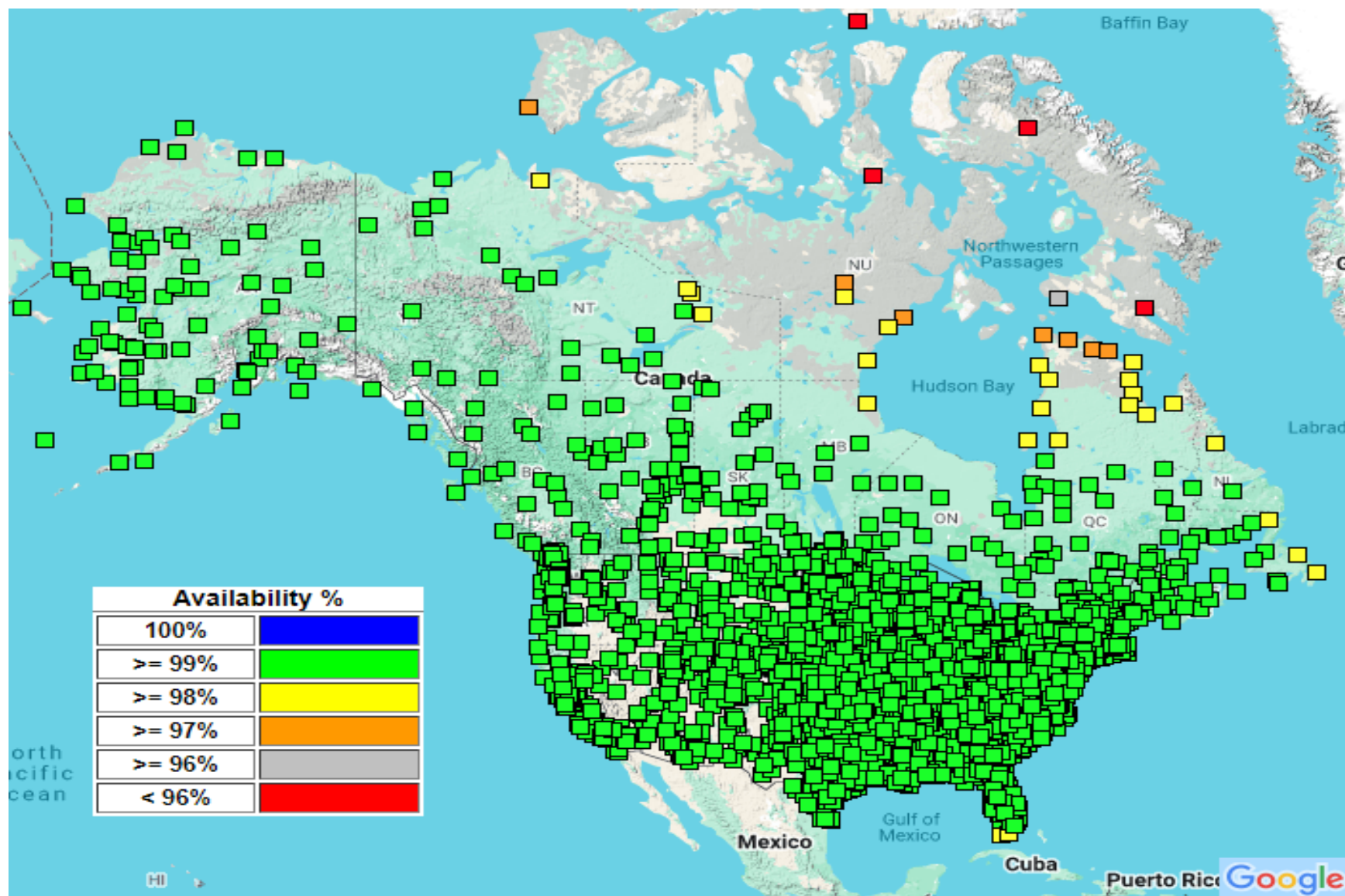


Figure 8-5 WAAS LPV200 Availability at Airports in the U.S. and Canada with GPS RNAV IAPs

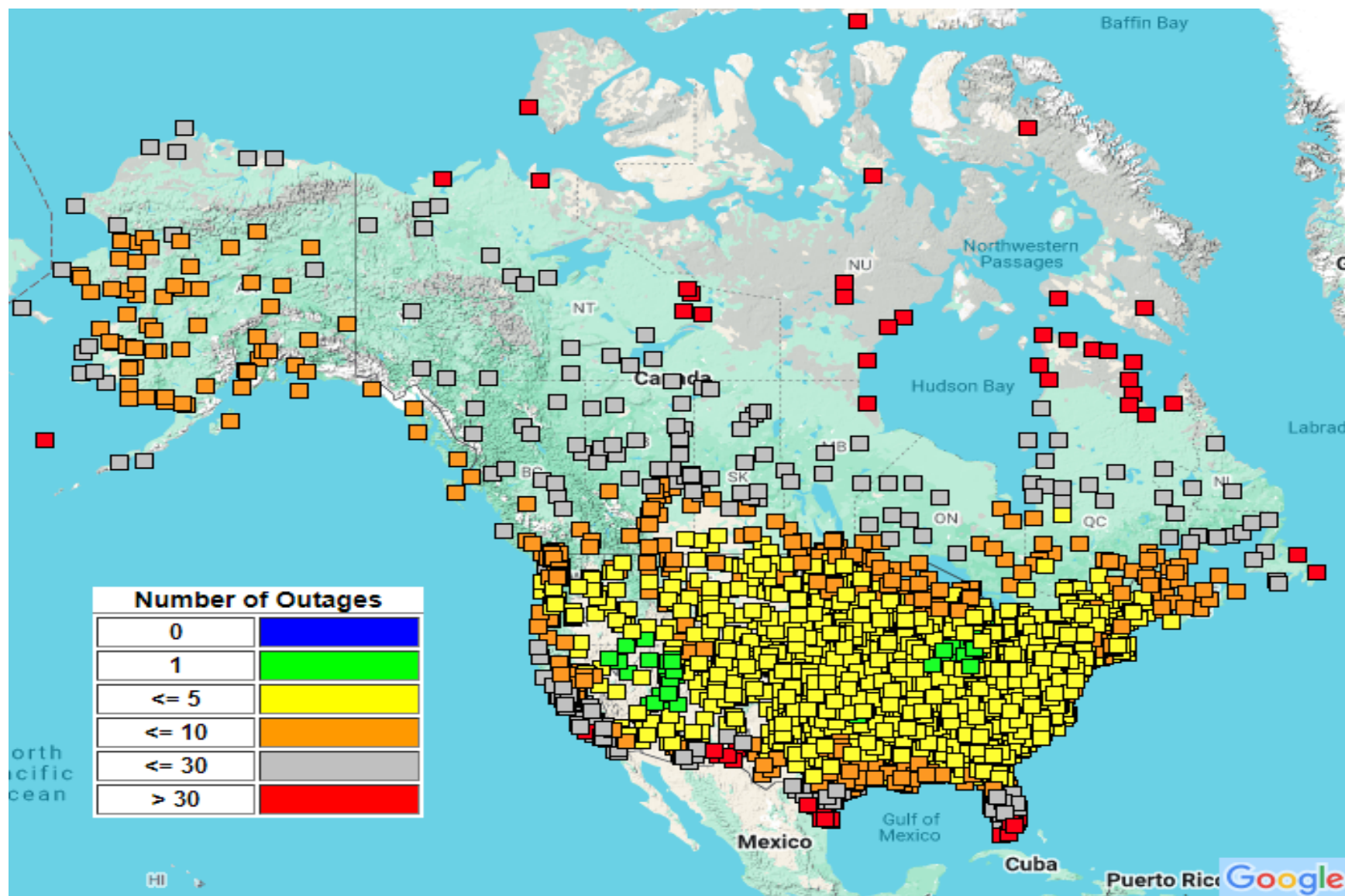


Figure 8-6 WAAS LPV200 Outages at Airports in the U.S. and Canada with GPS RNAV IAPs

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 23	Nov 23	Dec 23	Jan 24	Feb 24	Mar 24	Apr 24	May 24	Jun 24	Jul 24	Aug 24	Sep 24
Albuquerque	A	.	.	.	.	.	.	.	.	.	.	.	.
	B	.	.	.	.	.	.	.	.	.	.	.	.
	C	.	.	.	.	.	.	.	.	.	.	.	.
Anchorage	A	.	.	.	.	.	.	.	.	.	.	.	.
	B	.	.	.	.	.	.	.	.	.	.	.	.
	C	.	.	.	.	.	.	.	.	.	.	.	.
Atlanta	A	.	.	.	.	.	.	.	.	.	.	.	.
	B	.	.	.	.	.	.	.	.	.	.	.	.
	C	.	.	.	.	.	.	.	.	.	.	.	.
Barrow	A	.	.	.	.	.	.	.	.	.	.	.	.
	B	.	.	.	.	.	.	.	.	.	.	.	.
	C	.	.	.	.	.	.	.	.	.	.	.	.
Bethel	A	.	.	.	.	.	.	.	.	.	.	.	.
	B	.	.	.	.	.	.	.	.	.	.	.	.
	C	.	.	.	.	.	.	.	.	.	.	.	.
Billings	A	.	.	.	.	.	.	.	.	.	.	.	.
	B	.	.	.	.	.	.	.	.	.	.	.	.
	C	.	.	.	.	.	.	.	.	.	.	.	.
Boston	A	.	.	.	.	.	.	.	.	.	.	.	.
	B	.	.	.	.	.	.	.	.	.	.	.	.
	C	.	.	.	.	.	.	.	.	.	.	.	.
Chicago	A	.	.	.	.	.	.	.	.	.	.	.	.
	B	.	.	.	.	.	.	.	.	.	.	.	.
	C	.	.	.	.	.	.	.	.	.	.	.	.
Cleveland	A	.	.	.	.	.	.	.	.	.	.	.	.
	B	.	.	.	.	.	.	.	.	.	.	.	.
	C	.	.	.	.	.	.	.	.	.	.	.	.
Cold Bay	A	.	.	.	.	.	.	.	.	.	.	.	.
	B	.	.	.	.	.	.	.	.	.	.	.	.
	C	.	.	.	.	.	.	.	.	.	.	.	.
Dallas	A	.	.	.	.	.	.	.	.	.	.	.	.
	B	.	.	.	.	.	.	.	.	.	.	.	.
	C	.	.	.	.	.	.	.	.	.	.	.	.
Denver	A	.	.	.	.	.	.	.	.	.	.	.	.
	B	.	.	.	.	.	.	.	.	.	.	.	.
	C	.	.	.	.	.	.	.	.	.	.	.	.
Fairbanks	A	.	.	.	.	.	.	.	.	.	.	.	.
	B	.	.	.	.	.	.	.	.	.	.	.	.
	C	.	.	.	.	.	.	.	.	.	.	.	.
Gander	A	.	.	.	.	.	.	.	.	.	.	.	.
	B	.	.	.	.	.	.	.	.	.	.	.	.
	C	.	.	.	.	.	.	.	.	.	.	.	.
Goose Bay	A	.	.	.	.	.	.	.	.	.	.	.	.
	B	.	.	.	.	.	.	.	.	.	.	.	.
	C	.	.	.	.	.	.	.	.	.	.	.	.
Honolulu	A	.	.	.	.	.	.	.	.	.	.	.	.
	B	.	.	.	.	.	.	.	.	.	.	.	.
	C	.	.	.	.	.	.	.	.	.	.	.	.
Houston	A	.	.	.	.	.	.	.	.	.	.	.	.
	B	.	.	.	.	.	.	.	.	.	.	.	.
	C	.	.	.	.	.	.	.	.	.	.	.	.
Iqaluit	A	.	.	.	.	.	.	.	.	.	.	.	.
	B	.	.	.	.	.	.	.	.	.	.	.	.
	C	.	.	.	.	.	.	.	.	.	.	.	.
Jacksonville	A	.	.	.	.	.	.	.	.	.	.	.	.
	B	.	.	.	.	.	.	.	.	.	.	.	.
	C	.	.	.	.	.	.	.	.	.	.	.	.

WAAS Site	WRE	Oct 23	Nov 23	Dec 23	Jan 24	Feb 24	Mar 24	Apr 24	May 24	Jun 24	Jul 24	Aug 24	Sep 24
Juneau	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Kansas City	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Kotzebue	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Los Angeles	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Memphis	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Merida	A	–	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Mexico City	A	–	–	–	–	–	–	•	•	•	•	•	•
	B	–	–	–	–	–	–	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Miami	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Minneapolis	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
New York	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Oakland	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Puerto Vallarta	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Salt Lake City	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
San Jose Del Cabo	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
San Juan	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Seattle	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Tapachula	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Washington, DC	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Winnipeg	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•

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

10.0 WRS ANTENNA SURVEY VALIDATION

Antenna L1 phase center position surveys were performed for all the WAAS Reference Station antennas using 24 hour sets on 10/01/2024. Mexico City Thread C (MMX3) and Puerto Vallarta Thread B (MPR2) are excluded from this since they were out of service. Each WAAS WRS has three independent threads of WRE: (1) Thread A is also referred to as Thread 1, (2) Thread B is also referred to as Thread 2, and (3) Thread C is referred to as Thread 3.

Duplicate surveys were performed using both the NGS OPUS and the CSRS PPP services. The International GPS Service (IGS) 08 reference frame is used for the OPUS solutions. A value of -0.4445 meters was used for the antenna reference point (ARP) to antenna phase center (APC) offset for the MicroPulse MPL-WAAS-2225W WAAS antennas in the processing of the data.

The OPUS-reported RMS quality metrics were 2.6 cm or less. The CSRS surveys' RSSs of the reported ECEF sigmas were 11.9 mm or less. The OPUS and CSRS surveys agreed to an average of 1.7 cm with a standard deviation of 6.32 mm. The maximum of difference was 3.37 cm for Mexico City Thread B (MMX2).

The OPUS positions were compared to the positions computed by the WAAS C&Vs. The survey was completed on October 1, 2024. The OPUS surveys agree with the calculated positions to better or equal to 2.01 cm for most sites. The maximum difference was 9.49 cm at Mexico City Thread B (MMX2).

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

Table 10-1 WAAS Antenna Positions (OPUS IGS08) as of 10/01/2024

WRE	X(m)	Y(m)	Z(m)	LATITUDE	LONGITUDE	H(m)
BET1	-2965385.279	-972576.669	5543892.752	60.787913	-161.8417254	52.171
BET2	-2965386.044	-972580.395	5543891.689	60.7878935	-161.8416648	52.165
BET3	-2965388.626	-972577.522	5543890.838	60.7878776	-161.8417297	52.182
BIL1	-1416446.044	-4223577.013	4550862.068	45.803706	-108.539725	1112.217
BIL2	-1416450.117	-4223574.865	4550862.793	45.8037153	-108.5397835	1112.22
BIL3	-1416441.745	-4223574.266	4550865.925	45.8037558	-108.5396839	1112.214
BRW1	-1886759.163	-809058.718	6018494.374	71.2827626	-156.789926	15.552
BRW2	-1886756.58	-809055.966	6018495.562	71.2827954	-156.7899681	15.568
BRW3	-1886755.485	-809059.754	6018495.381	71.2827907	-156.7898589	15.552
CDB1	-3484099.303	-1084748.823	5213678.475	55.1923715	-162.7064052	49.714
CDB2	-3484105.934	-1084741.632	5213675.525	55.1923254	-162.706544	49.685
CDB3	-3484112.22	-1084734.852	5213672.779	55.192282	-162.706675	49.706
FAI1	-2304742.068	-1448715.362	5748843.664	64.8096278	-147.8473422	150.028
FAI2	-2304741.603	-1448706.545	5748846.047	64.8096782	-147.8474941	150.019
FAI3	-2304733.078	-1448707.483	5748849.202	64.8097447	-147.8473819	150.015
JNU1	-2354255.206	-2388549.736	5407043.197	58.3625728	-134.5857098	16.318
JNU2	-2354253.12	-2388565.847	5407037.032	58.3624673	-134.5854912	16.32
JNU3	-2354239.905	-2388568.702	5407041.493	58.3625437	-134.5852961	16.319
MMD1	35070.307	-5959686.652	2264365.761	20.9319093	-89.6628418	29.103
MMD2	35065.383	-5959687.029	2264364.984	20.9319016	-89.6628891	29.15
MMD3	35065.049	-5959685.233	2264369.635	20.9319466	-89.6628922	29.132
MMX1	-948700.653	-5943932.348	2109211.606	19.431654	-99.0683904	2232.129
MMX2	-948696.216	-5943932.166	2109214.036	19.4316774	-99.0683489	2232.108
MMX3						
MPR1	-1570142.303	-5759530.593	2238184.742	20.6790032	-105.249204	10.983
MPR2						
MPR3	-1570143.585	-5759527.977	2238190.553	20.6790593	-105.2492224	10.99

WRE	X(m)	Y(m)	Z(m)	LATITUDE	LONGITUDE	H(m)
MSD1	-1979520.275	-5523222.735	2493107.038	23.1604494	-109.7176542	104.279
MSD2	-1979521.849	-5523225.062	2493100.633	23.1603865	-109.717661	104.262
MSD3	-1979526.293	-5523221.801	2493104.304	23.1604226	-109.7177126	104.262
MTP1	-254854.395	-6162909.125	1617805.094	14.7913663	-92.3679996	54.911
MTP2	-254850.774	-6162910.157	1617801.663	14.7913343	-92.3679656	54.887
MTP3	-254855.546	-6162910.277	1617800.138	14.7913203	-92.3680098	54.805
OTZ1	-2396056.261	-750356.225	5843502.371	66.8873296	-162.6113732	10.85
OTZ2	-2396053.089	-750354.395	5843503.894	66.8873644	-162.6113914	10.848
OTZ3	-2396053.069	-750358.336	5843503.409	66.8873532	-162.6113054	10.857
YFB1	1035381.23	-2634289.679	5696539.638	63.7314913	-68.5431878	10.096
YFB2	1035372.012	-2634296.101	5696538.255	63.7314648	-68.543409	10.008
YFB3	1035365.934	-2634306.859	5696534.473	63.7313871	-68.5436032	10.064
YQX1	2430424.443	-3419640.419	4788223.926	48.9664912	-54.5976345	146.891
YQX2	2430432.386	-3419639.083	4788220.882	48.9664494	-54.5975355	146.901
YQX3	2430440.286	-3419637.715	4788217.87	48.9664081	-54.5974367	146.901
YWG1	-520164.61	-4083475.992	4855842.985	49.9005735	-97.2594008	222.111
YWG2	-520150.733	-4083468.93	4855850.387	49.9006766	-97.2592216	222.131
YWG3	-520152.611	-4083478.053	4855842.558	49.9005674	-97.2592315	222.124
YYR1	1885341.225	-3321428.398	5091171.766	53.3086482	-60.4194712	37.896
YYR2	1885344.191	-3321419.918	5091176.181	53.3087145	-60.4193697	37.905
YYR3	1885339.901	-3321413.102	5091182.173	53.3088046	-60.4193752	37.902
ZAB1	-1488637.002	-5003946.533	3654557.645	35.1735747	-106.5673515	1620.121
ZAB2	-1488631.667	-5003948.222	3654557.623	35.1735741	-106.5672901	1620.188
ZAB3	-1488632.444	-5003950.802	3654553.772	35.1735317	-106.5672902	1620.172
ZAN1	-2659536.821	-1549114.669	5567750.72	61.2292008	-149.7802542	80.71
ZAN2	-2659548.58	-1549110.71	5567746.238	61.2291172	-149.7804281	80.713
ZAN3	-2659541.526	-1549106.589	5567750.708	61.2292008	-149.7804283	80.699
ZAU1	138703.935	-4761244.131	4227763.921	41.7826581	-88.3313389	195.869
ZAU2	138704.199	-4761248.746	4227758.756	41.7825957	-88.3313373	195.873

WRE	X(m)	Y(m)	Z(m)	LATITUDE	LONGITUDE	H(m)
ZAU3	138710.904	-4761248.48	4227758.834	41.7825966	-88.3312566	195.873
ZBW1	1490299.04	-4448983.196	4306010.541	42.735721	-71.480428	39.12
ZBW2	1490304.153	-4448981.184	4306010.887	42.735725	-71.480361	39.147
ZBW3	1490305.865	-4448984.813	4306006.576	42.7356722	-71.4803553	39.148
ZDC1	1069125.585	-4839598.992	4001126.524	39.1015962	-77.5427486	80.048
ZDC2	1069127.982	-4839603.619	4001120.321	39.1015242	-77.542733	80.043
ZDC3	1069123.885	-4839602.701	4001122.52	39.1015497	-77.542777	80.049
ZDV1	-1273628.784	-4711375.568	4094890.061	40.1873027	-105.1272264	1541.353
ZDV2	-1273623.08	-4711377.083	4094890.07	40.1873029	-105.1271571	1541.339
ZDV3	-1273625.093	-4711380.283	4094885.784	40.1872524	-105.1271701	1541.334
ZFW1	-659983.346	-5324060.779	3438276.446	32.8306494	-97.0664734	155.622
ZFW2	-659988.62	-5324063.335	3438271.453	32.830596	-97.0665259	155.592
ZFW3	-659983.646	-5324063.848	3438271.651	32.830598	-97.0664725	155.612
ZHN1	-5508637.227	-2234492.551	2303722.57	21.312994	-157.9208348	24.65
ZHN2	-5508656.408	-2234482.887	2303687.34	21.3126512	-157.9209906	25.02
ZHN3	-5508647.803	-2234496.81	2303694.434	21.3127198	-157.9208351	25.046
ZHU1	-513864.6	-5506451.626	3166720.417	29.9618962	-95.3314277	10.763
ZHU2	-513867.249	-5506455.022	3166714.251	29.9618317	-95.3314517	10.827
ZHU3	-513873.526	-5506457.666	3166708.657	29.9617735	-95.3315139	10.819
ZJX1	772646.302	-5434462.186	3237231.76	30.6988599	-81.9081866	2.125
ZJX2	772649.631	-5434463.748	3237228.371	30.6988243	-81.9081545	2.128
ZJX3	772645.566	-5434466.175	3237225.261	30.6987918	-81.9082	2.114
ZKC1	-415247.681	-4954556.391	3982161.097	38.8801592	-94.7908357	305.898
ZKC2	-415231.288	-4954557.71	3982161.15	38.8801599	-94.7906462	305.889
ZKC3	-415237.409	-4954561.049	3982155.951	38.8801017	-94.7907133	305.614
ZLA1	-2474410.207	-4637294.458	3602183.615	34.6035191	-118.0838989	763.524
ZLA2	-2474404.915	-4637297.241	3602183.608	34.6035192	-118.0838338	763.49
ZLA3	-2474411.517	-4637296.945	3602179.637	34.6034752	-118.0838988	763.579
ZLC1	-1808273.405	-4486410.801	4145302.942	40.7860425	-111.9521798	1287.421

WRE	X(m)	Y(m)	Z(m)	LATITUDE	LONGITUDE	H(m)
ZLC2	-1808274.794	-4486414.424	4145298.449	40.785989	-111.952179	1287.423
ZLC3	-1808270.589	-4486416.127	4145298.45	40.785989	-111.9521252	1287.43
ZMA1	966042.184	-5662999.831	2761581.534	25.8246125	-80.319191	-7.583
ZMA2	966029.207	-5662999.122	2761586.018	25.8246603	-80.3193174	-8.223
ZMA3	966037.285	-5662997.963	2761586.377	25.8246624	-80.319236	-7.872
ZME1	4070.736	-5226189.293	3644028.418	35.0673941	-89.9553717	68.597
ZME2	4070.767	-5226186.743	3644032.532	35.0674376	-89.9553713	68.873
ZME3	4064.574	-5226186.62	3644032.691	35.0674395	-89.9554392	68.86
ZMP1	-249978.561	-4539297.485	4458955.005	44.637463	-93.1520878	262.618
ZMP2	-249972.758	-4539297.823	4458955.002	44.6374629	-93.1520145	262.629
ZMP3	-249973.854	-4539302.105	4458950.529	44.6374068	-93.1520253	262.571
ZNY1	1406144.45	-4627343.971	4144322.116	40.7843294	-73.0971677	6.438
ZNY2	1406146.253	-4627347.023	4144317.312	40.7842764	-73.0971578	5.908
ZNY3	1406140.694	-4627348.679	4144317.351	40.7842768	-73.0972265	5.909
ZOA1	-2684437.133	-4293337.153	3865351.958	37.543055	-122.0159518	-3.503
ZOA2	-2684434.125	-4293341.238	3865349.534	37.5430274	-122.0158984	-3.499
ZOA3	-2684438.498	-4293342.111	3865345.676	37.542983	-122.0159352	-3.424
ZOB1	650770.003	-4754715.653	4187420.747	41.2971547	-82.2064468	223.647
ZOB2	650777.685	-4754714.828	4187422.765	41.297167	-82.2063546	225.147
ZOB3	650776.011	-4754719.652	4187414.975	41.2970873	-82.2063822	223.426
ZSE1	-2308930.391	-3668169.665	4663526.406	47.2869925	-122.1883742	82.084
ZSE2	-2308934.778	-3668175.209	4663519.998	47.2869069	-122.1883843	82.144
ZSE3	-2308935.844	-3668179.484	4663516.056	47.2868552	-122.1883661	82.087
ZSU1	2462589.502	-5529372.042	2003724.615	18.4313371	-65.9934759	-28.097
ZSU2	2462587.57	-5529377.409	2003712.324	18.43122	-65.9935133	-28.078
ZSU3	2462594.195	-5529375.145	2003710.244	18.4312004	-65.9934473	-28.14
ZTL1	529840.253	-5305248.822	3489342.864	33.3796887	-84.2967276	261.14
ZTL2	529846.632	-5305247.986	3489343.154	33.3796919	-84.2966585	261.134
ZTL3	529847.315	-5305251.412	3489337.907	33.3796351	-84.2966549	261.151

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.

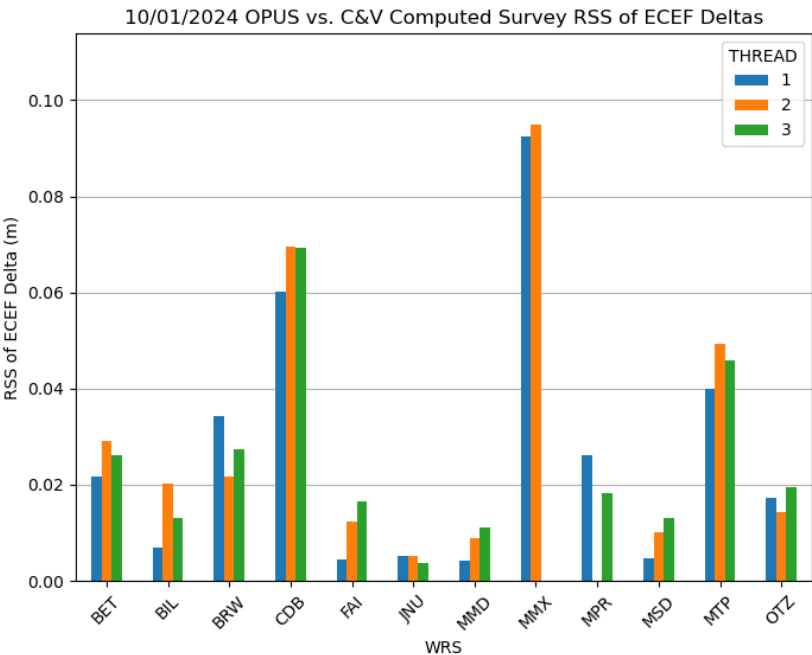


Figure 10-1 WAAS C&V Calculated Antenna Positions Deltas OPUS Survey

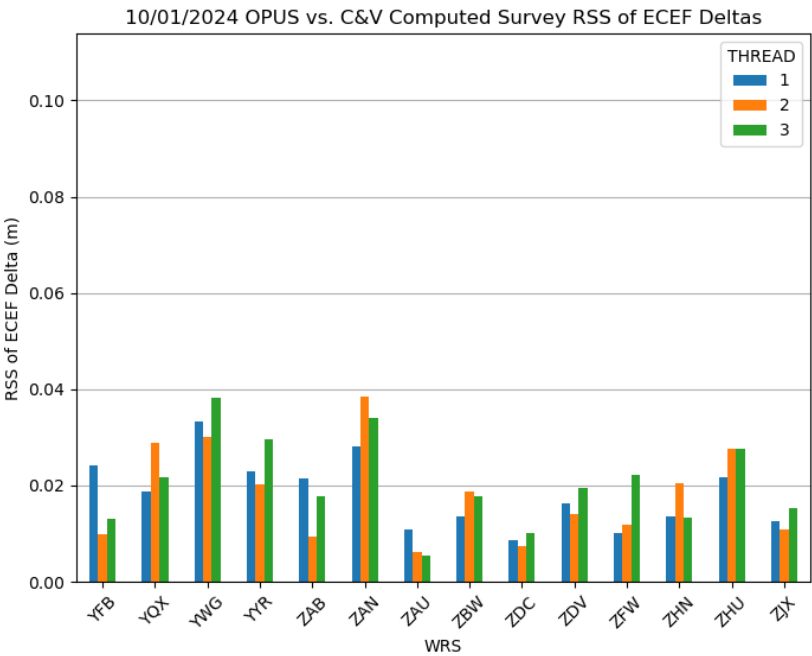


Figure 10-2 WAAS C&V Calculated Antenna Positions Deltas OPUS Survey

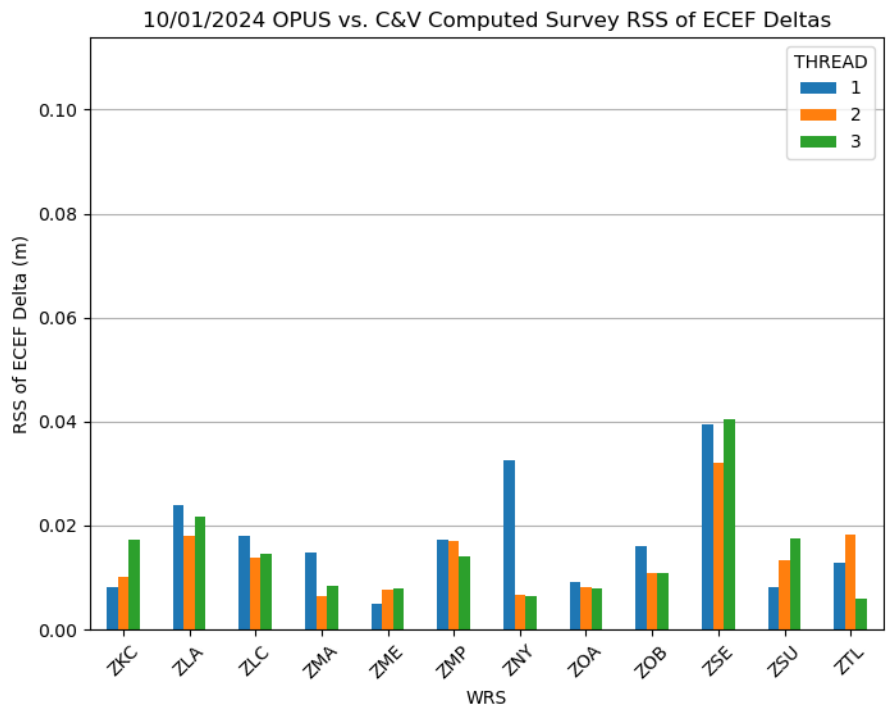


Figure 10-3 WAAS C&V Calculated Antenna Positions Deltas OPUS Survey

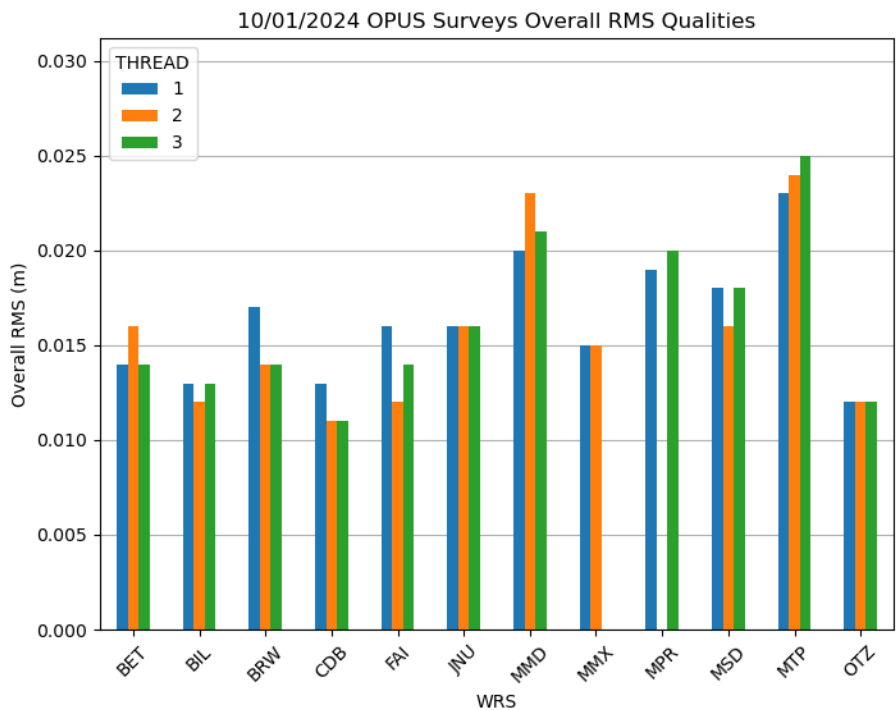


Figure 10-4 OPUS Survey Overall RMS Qualities

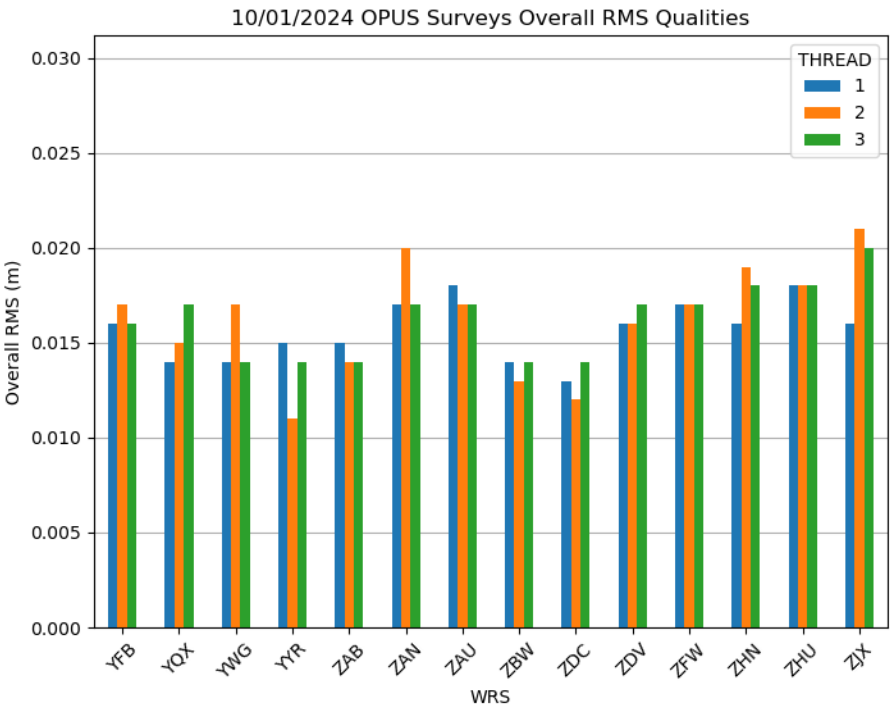


Figure 10-5 OPUS Survey Overall RMS Qualities

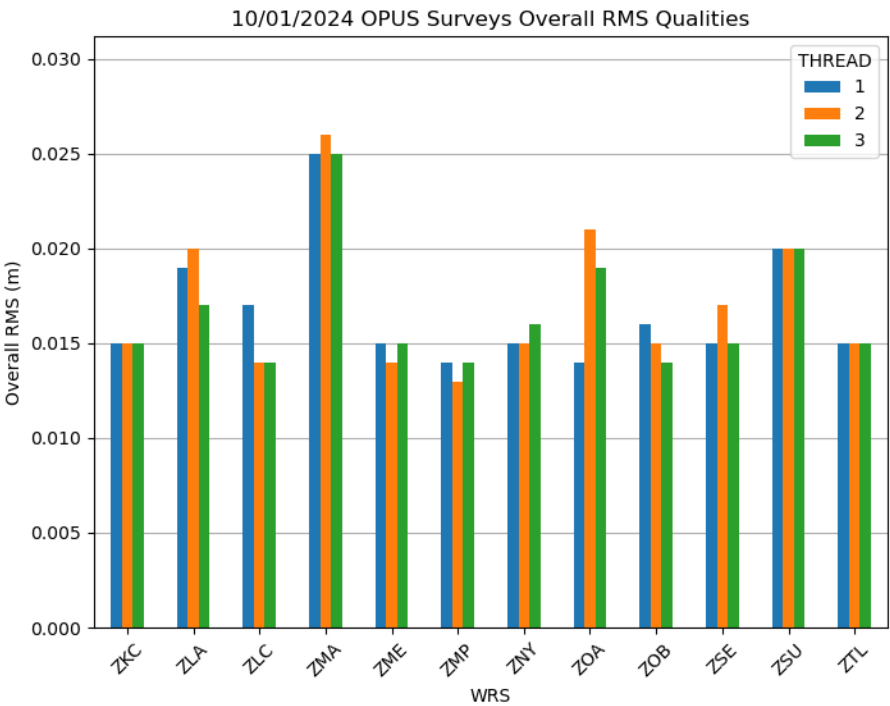


Figure 10-6 OPUS Survey Overall RMS Qualities

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.

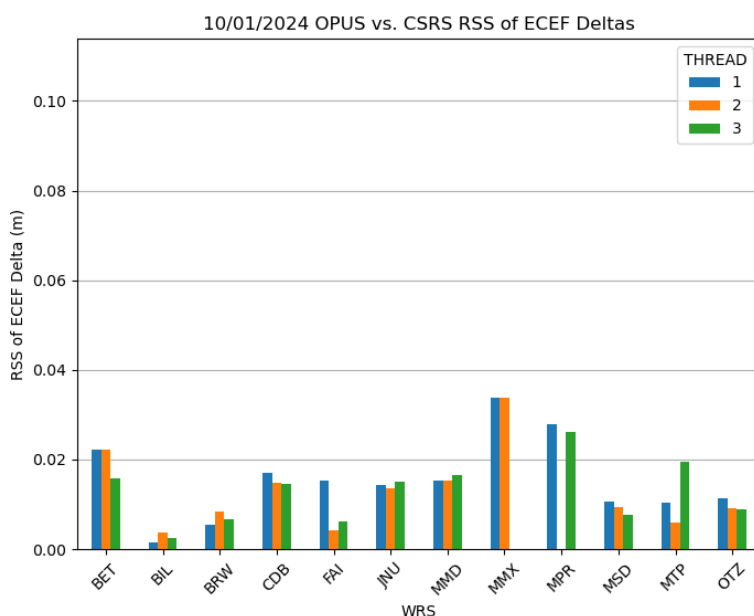


Figure 10-7 OPUS vs. CSRS RSS ECEF Deltas

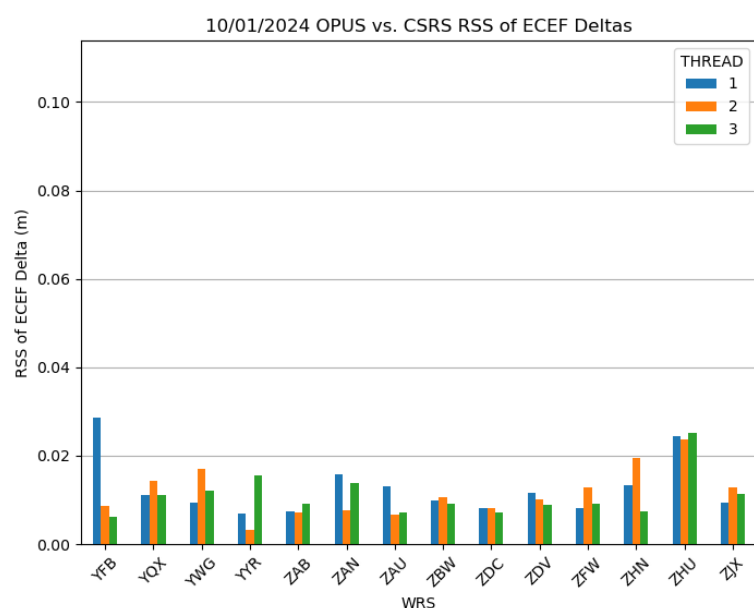


Figure 10-8 OPUS vs. CSRS RSS ECEF Deltas

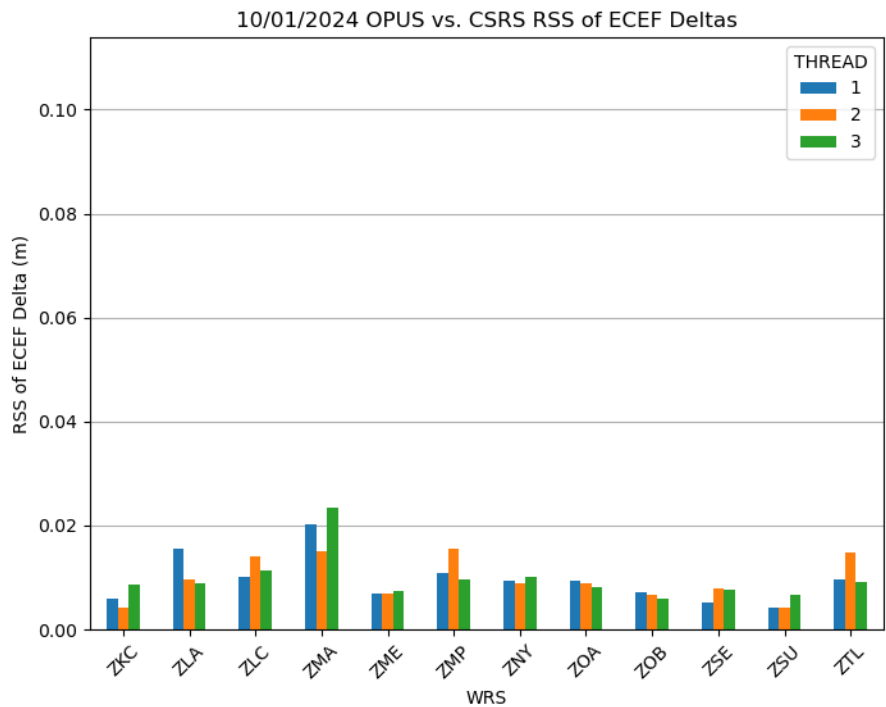


Figure 10-9 OPUS vs. CSRS RSS ECEF Deltas

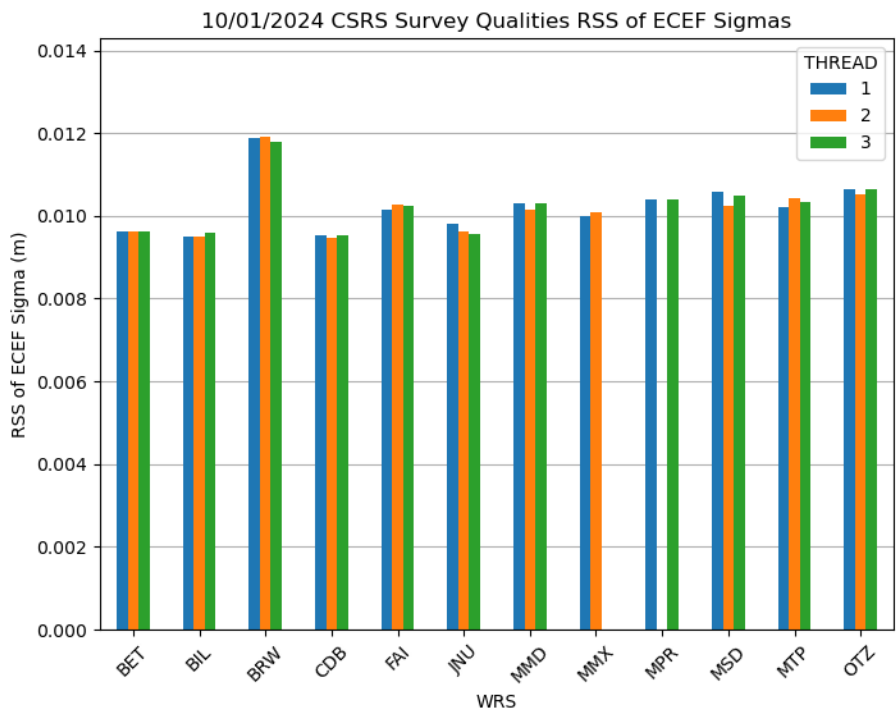


Figure 10-10 CSRS Survey Qualities

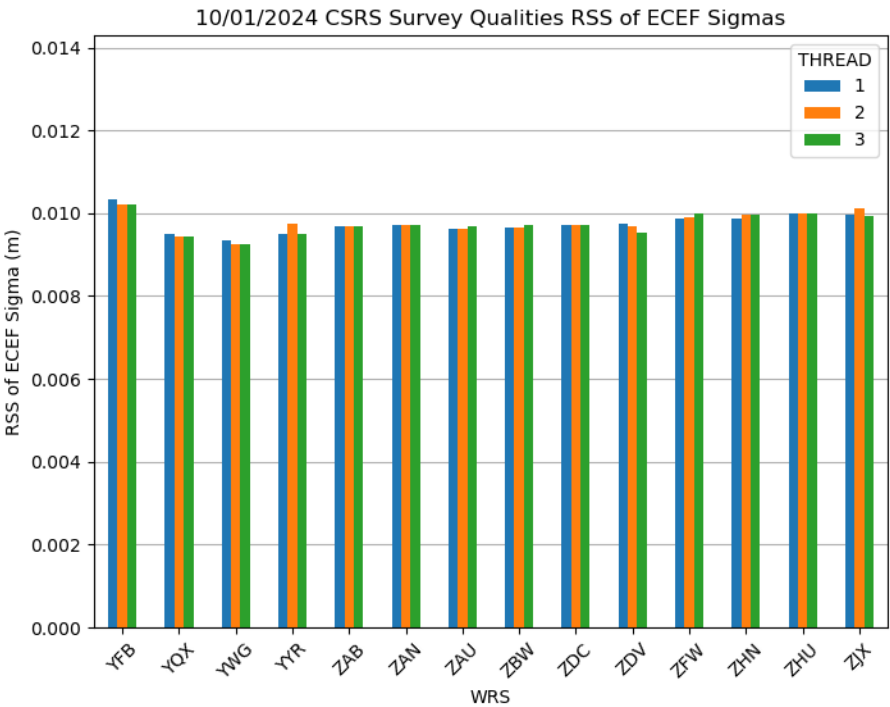


Figure 10-11 CSRS Survey Qualities

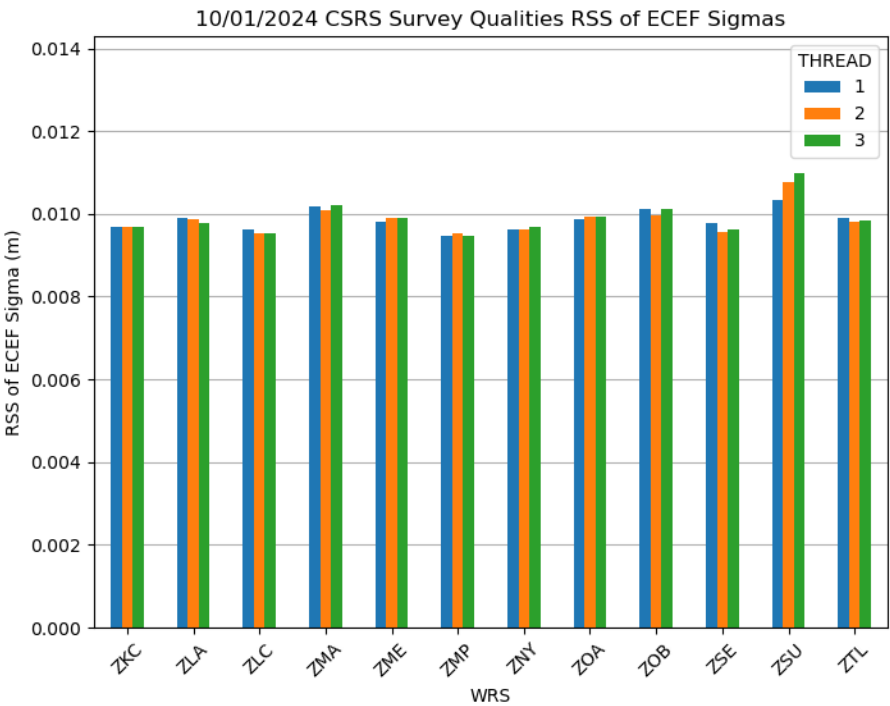


Figure 10-12 CSRS Survey Qualities

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. Table 11-2 shows the Type Bias Average for the quarter, and Table 11-2 shows the rollup for the Type Bias Average since January 1, 2008.

For this reporting period, the GEO-type biases were not evaluated. Figure 11-1 shows the daily Type Bias averages of the four detection metrics for the quarter.

Table 11-2 Type Bias Average for the Quarter

Detection Metric	Type 0	Type 1	Type 2
DM 1	1.31773	1.31939	1.32142
DM 2	0.243316	0.246374	0.249529
DM 3	0.972655	0.973122	0.973794
DM 4	-0.188022	-0.189899	-0.191923

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

Detection Metric	Type 0	Type 1	Type 2
DM 1	1.31592	1.31809	1.31985
DM 2	0.241555	0.244732	0.247861
DM 3	0.970705	0.971196	0.971779
DM 4	-0.186912	-0.188584	-0.190593

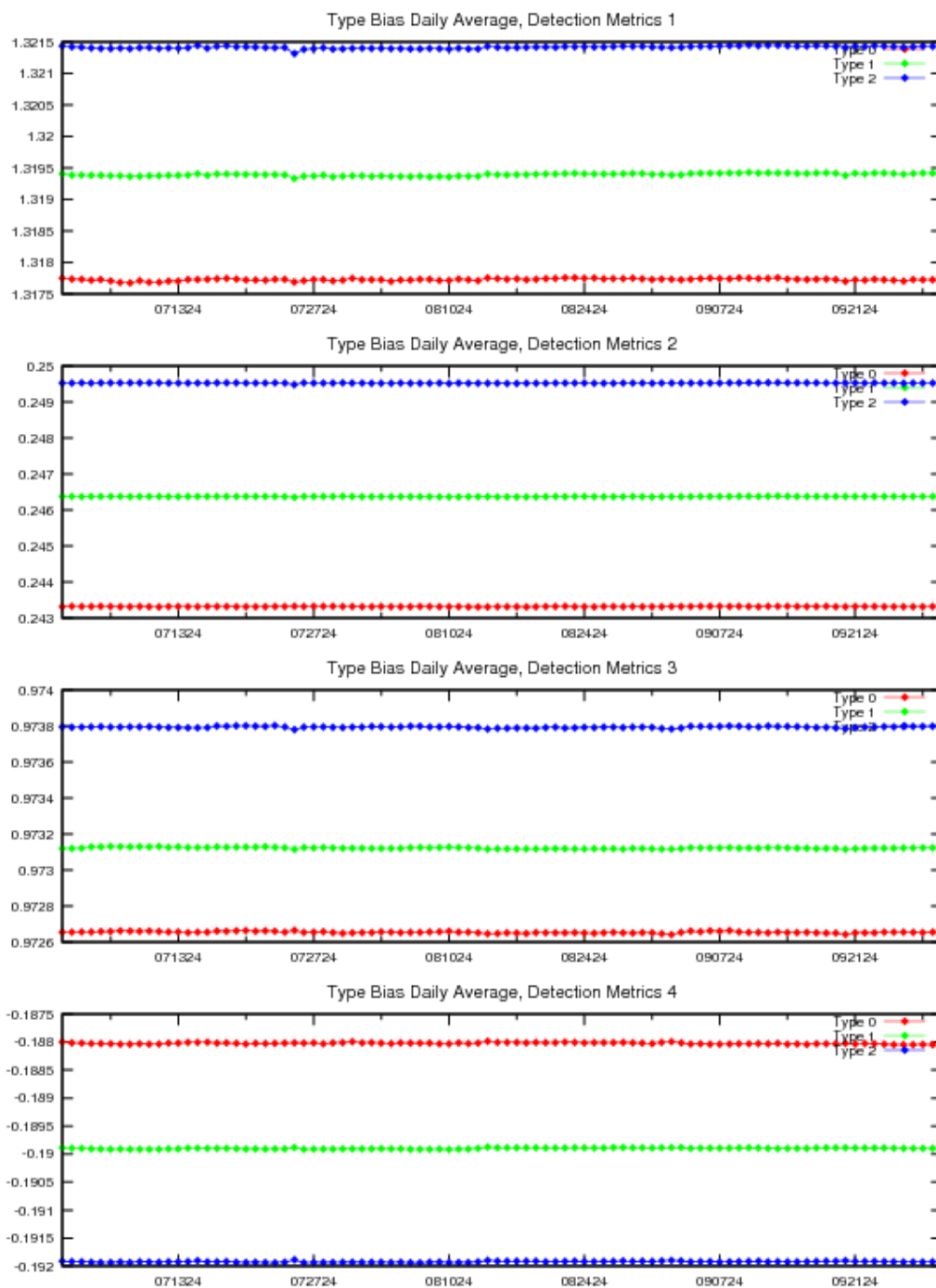


Figure 11-1 Type Bias Average Trend

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 0.0014312 observed on PRN22, (2) the maximum average for DM2 is 0.0002086 observed on PRN14, (3) the maximum average for DM3 is 0.0004445 observed on PRN18, (4) the maximum average for DM4 is 0.0006297 observed on PRN22.

Table 11-4 PRN Bias Average for the Quarter

PRN	DM 1	DM 2	DM 3	DM 4
1	N/A	N/A	N/A	N/A
2	0.000229308	5.66304e-05	9.98554e-05	0.000108391
3	0.000182351	6.53609e-05	9.88848e-05	9.6462e-05
4	0.000745834	0.000239083	0.000405658	0.000245536
5	0.000151734	6.57326e-05	0.000109072	9.05576e-05
6	0.000819263	7.69489e-05	9.46076e-05	0.000342223
7	0.000157153	0.000158285	4.33011e-05	0.000135918
8	0.000357928	0.000130358	8.43163e-05	0.000140267
9	0.000247458	9.05739e-05	0.000138495	8.90652e-05
10	0.000169946	7.04554e-05	7.39522e-05	9.86239e-05
11	0.000344728	0.000123804	0.000396813	0.000330315
12	0.000368792	4.19978e-05	4.49435e-05	9.65717e-05
13	0.000565621	5.71652e-05	5.66989e-05	0.000255409
14	0.000536616	0.00020858	0.000393595	0.000248128
15	0.000376689	0.000117987	5.66641e-05	0.000101465
16	0.000180562	4.92359e-05	0.000110087	0.000202941
17	0.000355285	9.64043e-05	5.50207e-05	9.10239e-05
18	0.000651314	0.000173136	0.000444533	0.000280871
19	0.000693629	0.000195107	8.02554e-05	0.000130109
20	0.0001512	8.65196e-05	4.22772e-05	0.000149045
21	0.000216563	7.65674e-05	0.000119593	0.000447539
22	0.00143122	0.000133483	5.76011e-05	0.000629745
23	0.0004209	0.000182877	0.00036644	0.000276574
24	0.000200779	6.45207e-05	0.00020768	0.000283674
25	0.00047969	0.000129373	3.99348e-05	0.000161947
26	0.000162677	6.51022e-05	0.000117501	0.00015769
27	0.000274864	0.000151479	0.000223729	0.000321948
28	0.000300636	0.000117012	0.000387007	0.000343646
29	0.000341575	0.000144977	0.000160304	0.000274222
30	0.000286621	0.000116876	0.000114859	0.000118362
31	0.000154933	0.000117128	5.85967e-05	0.000120452
32	0.000301722	0.000142754	4.91054e-05	0.000300602

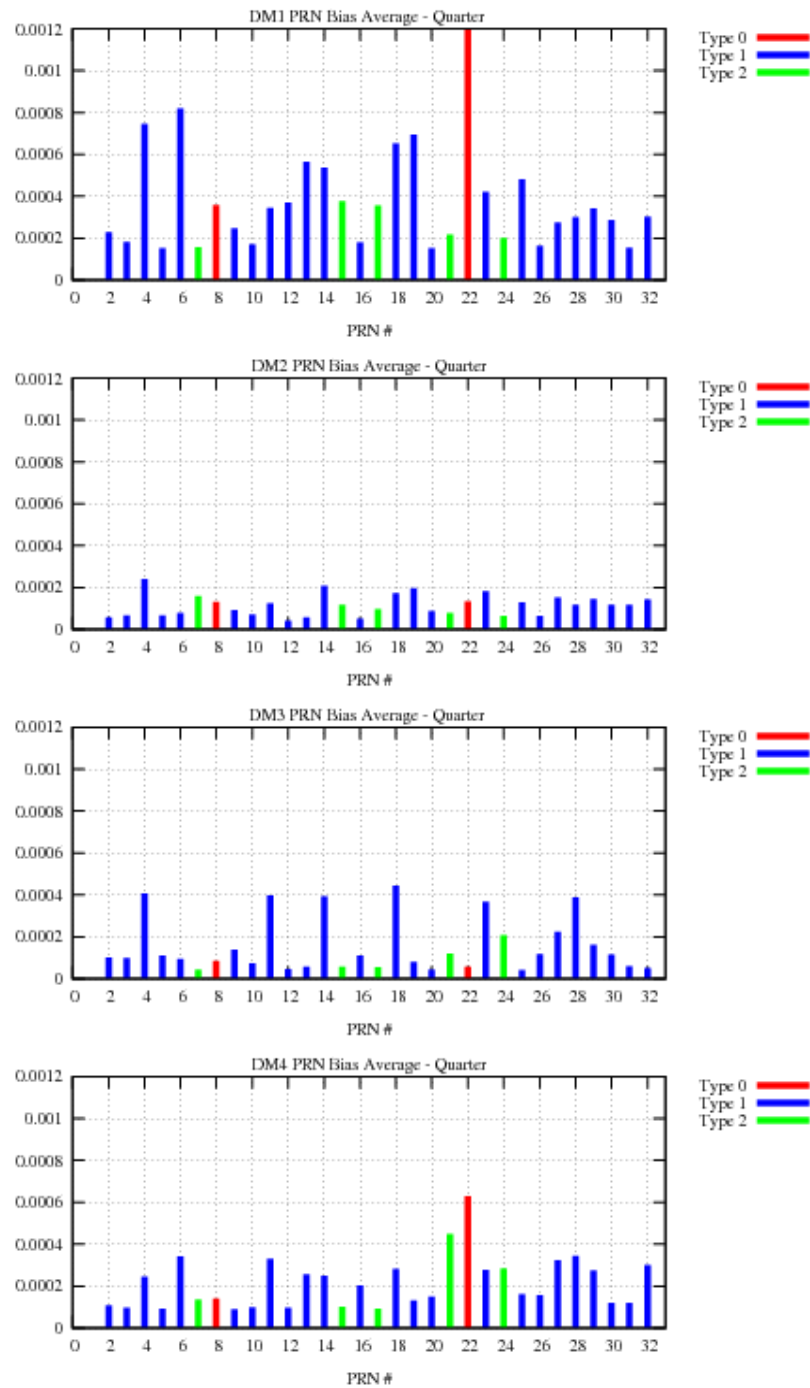


Figure 11-2 PRN Bias Average for the Quarter

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.

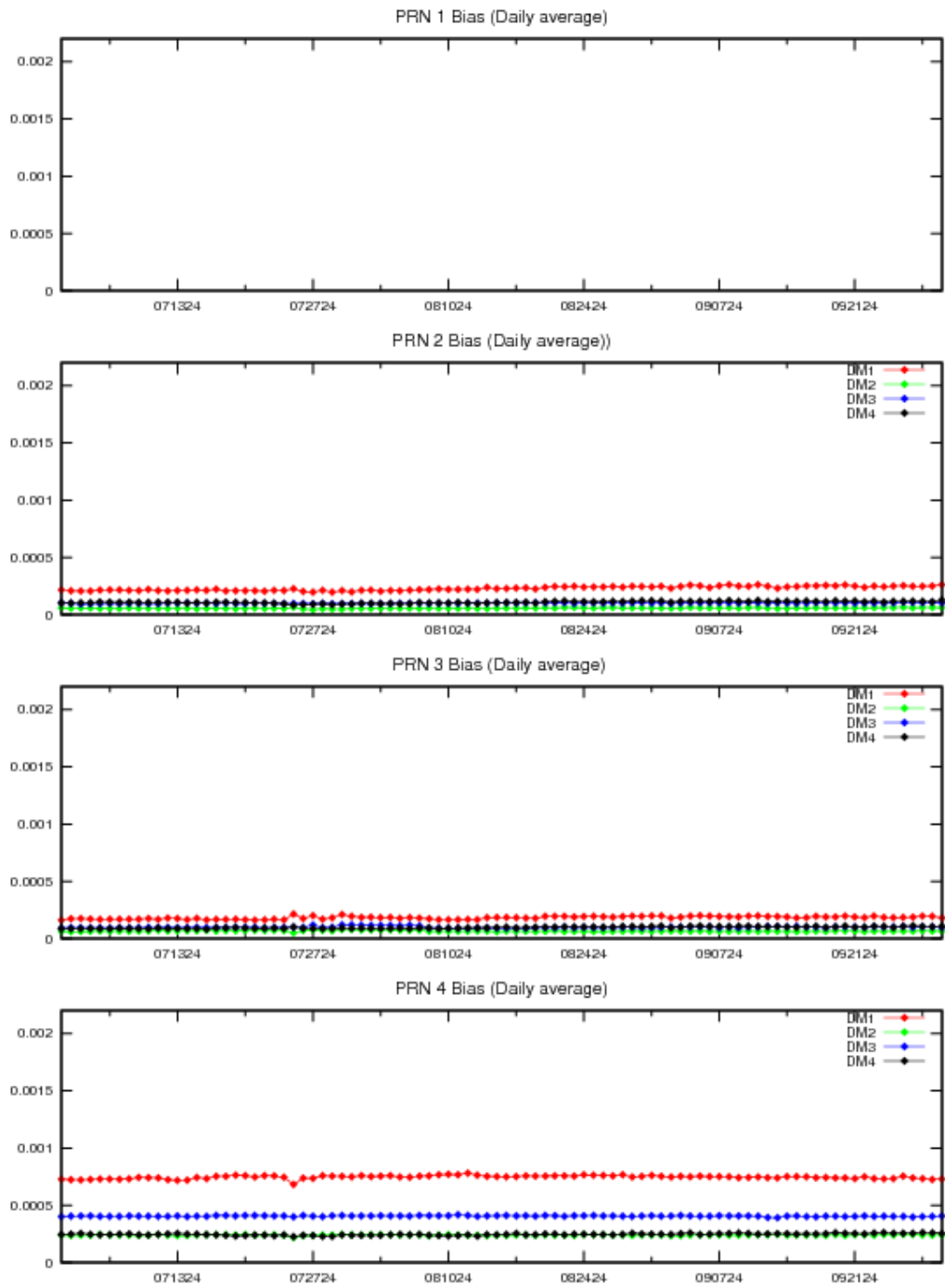


Figure 11-3 PRN Bias Average Trend (PRN1–PRN4)

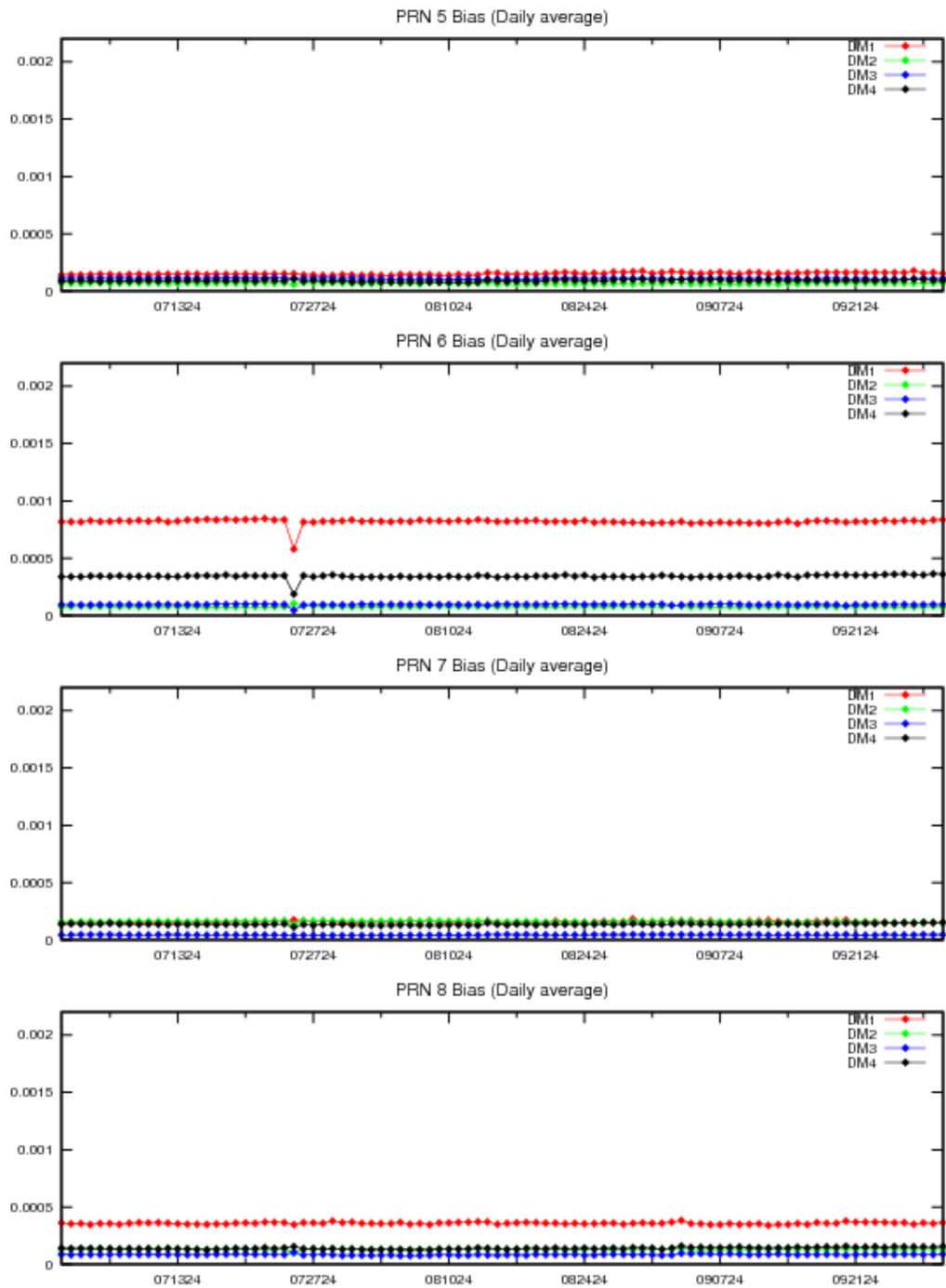


Figure 11-4 PRN Bias Average Trend (PRN5–PRN8)

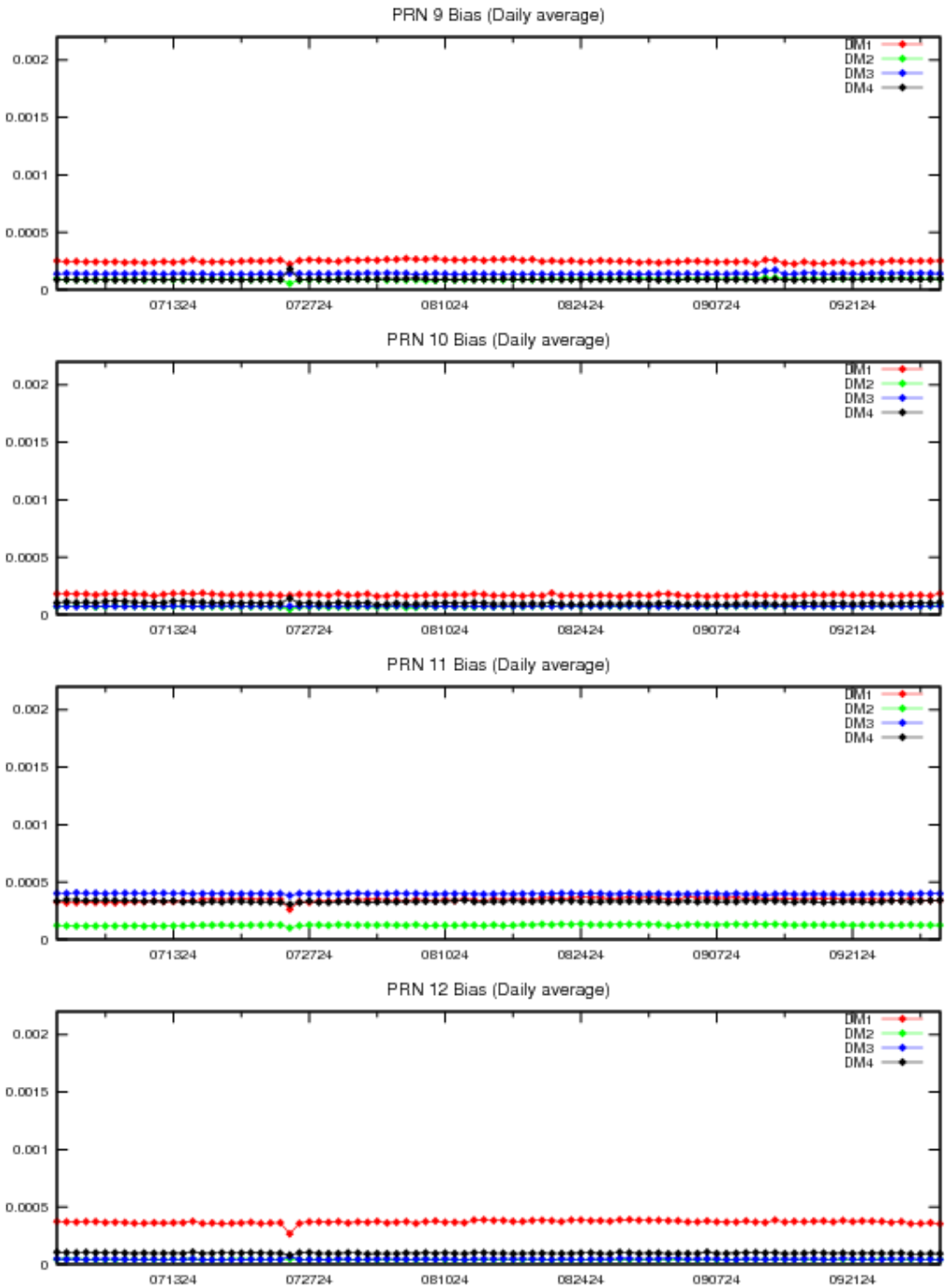


Figure 11-5 PRN Bias Average Trend (PRN9–PRN12)

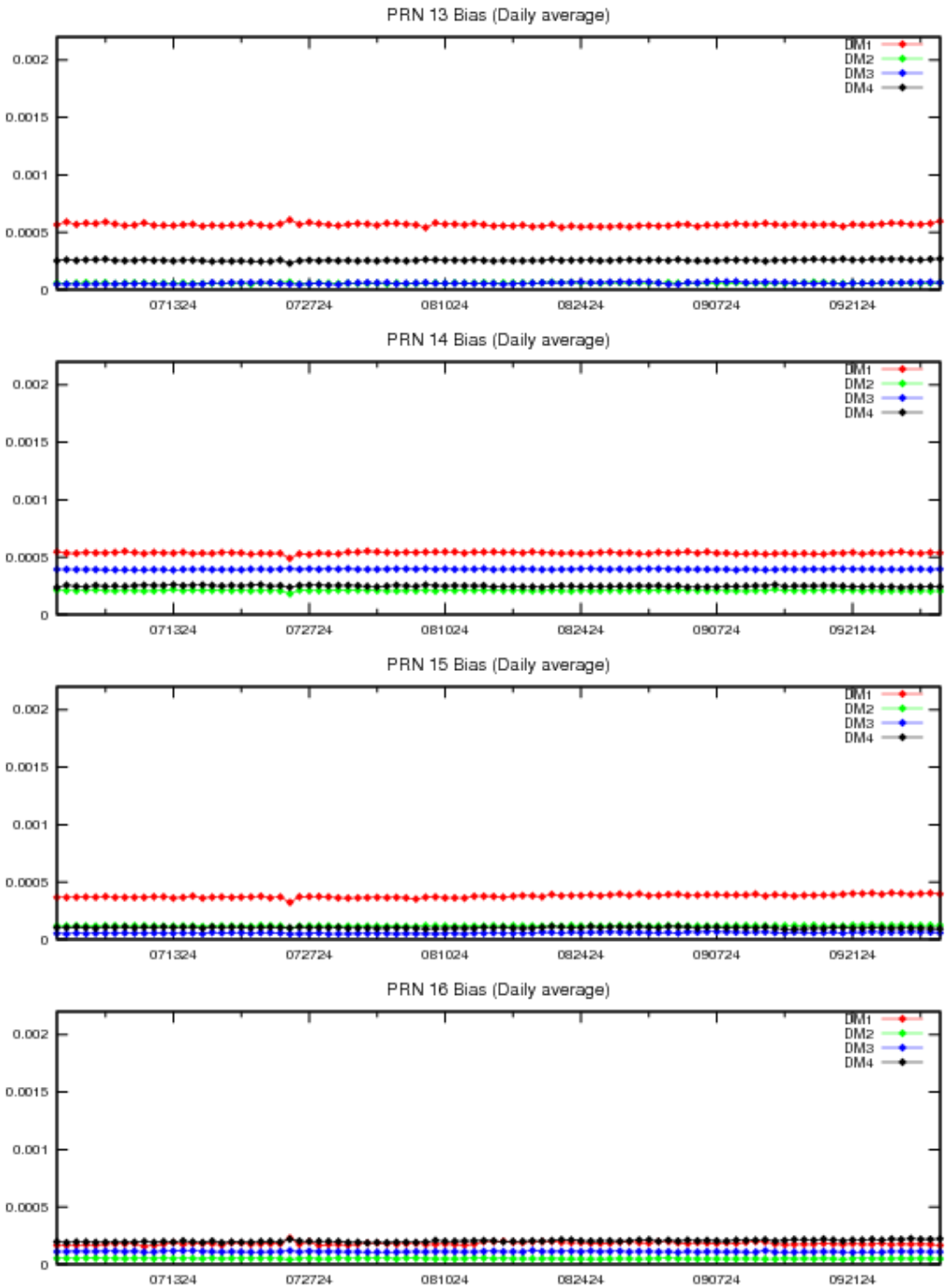


Figure 11-6 PRN Bias Average Trend (PRN13–PRN16)

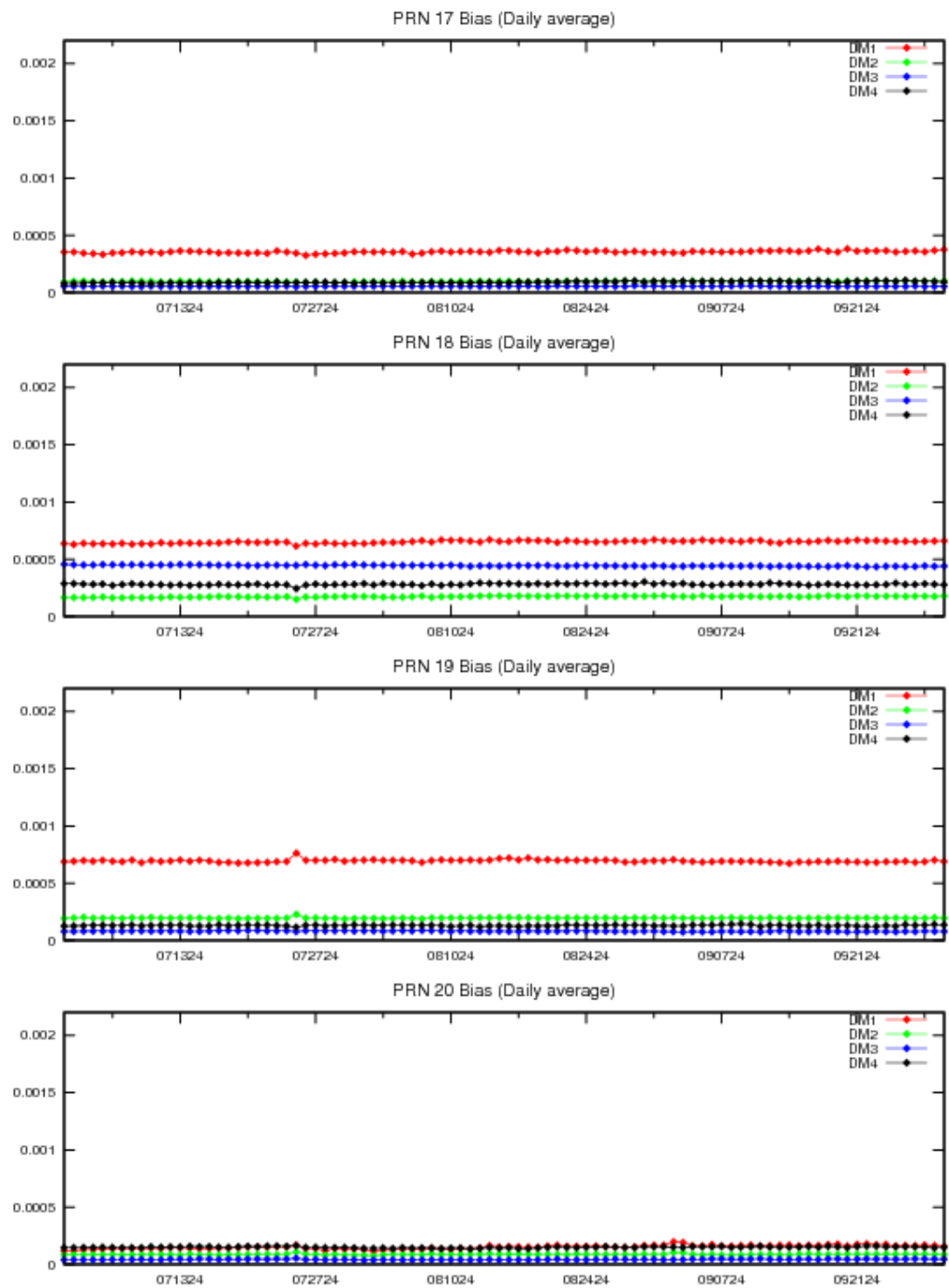


Figure 11-7 PRN Bias Average Trend (PRN17–PRN20)

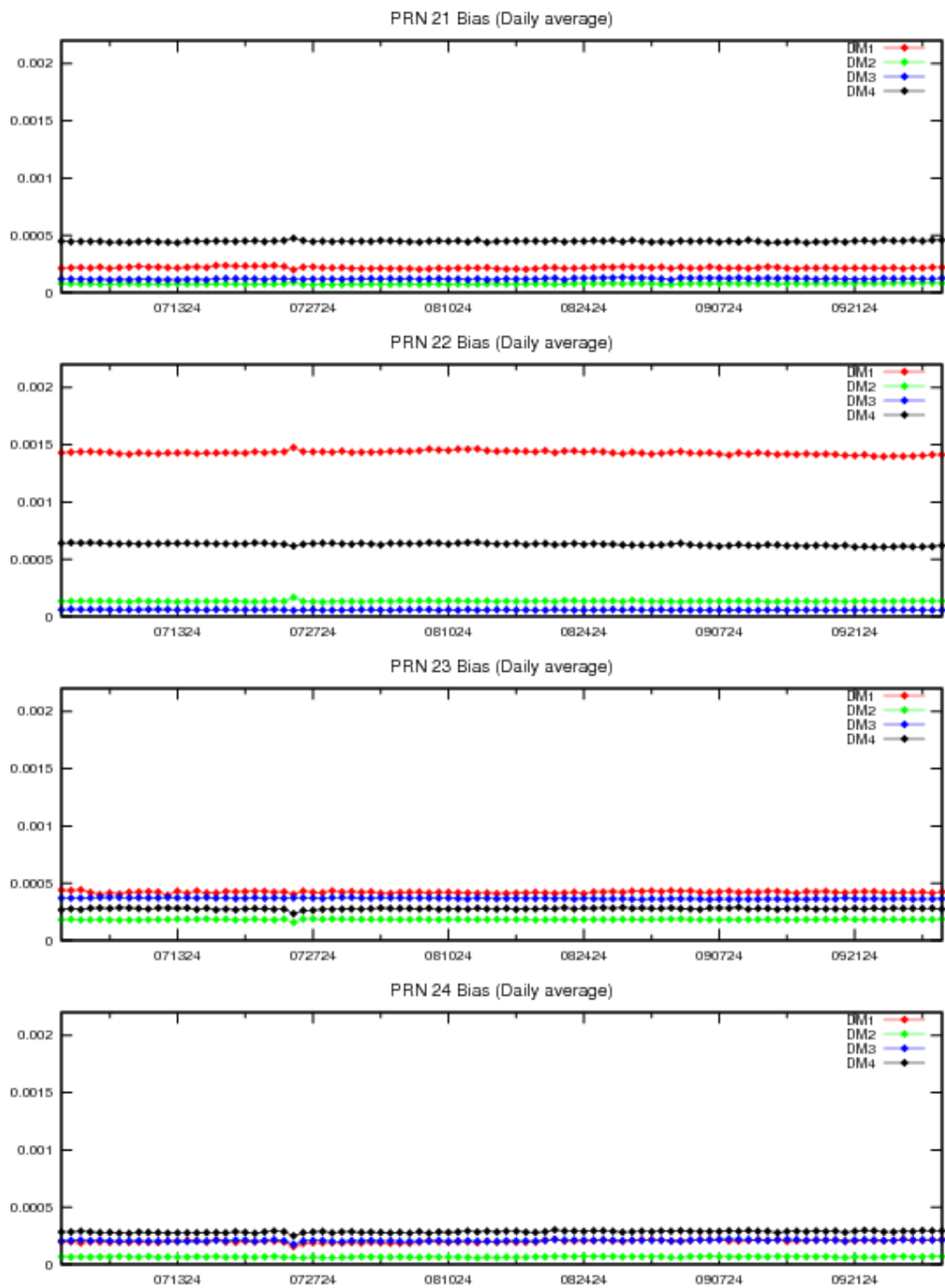


Figure 11-8 PRN Bias Average Trend (PRN21–PRN24)

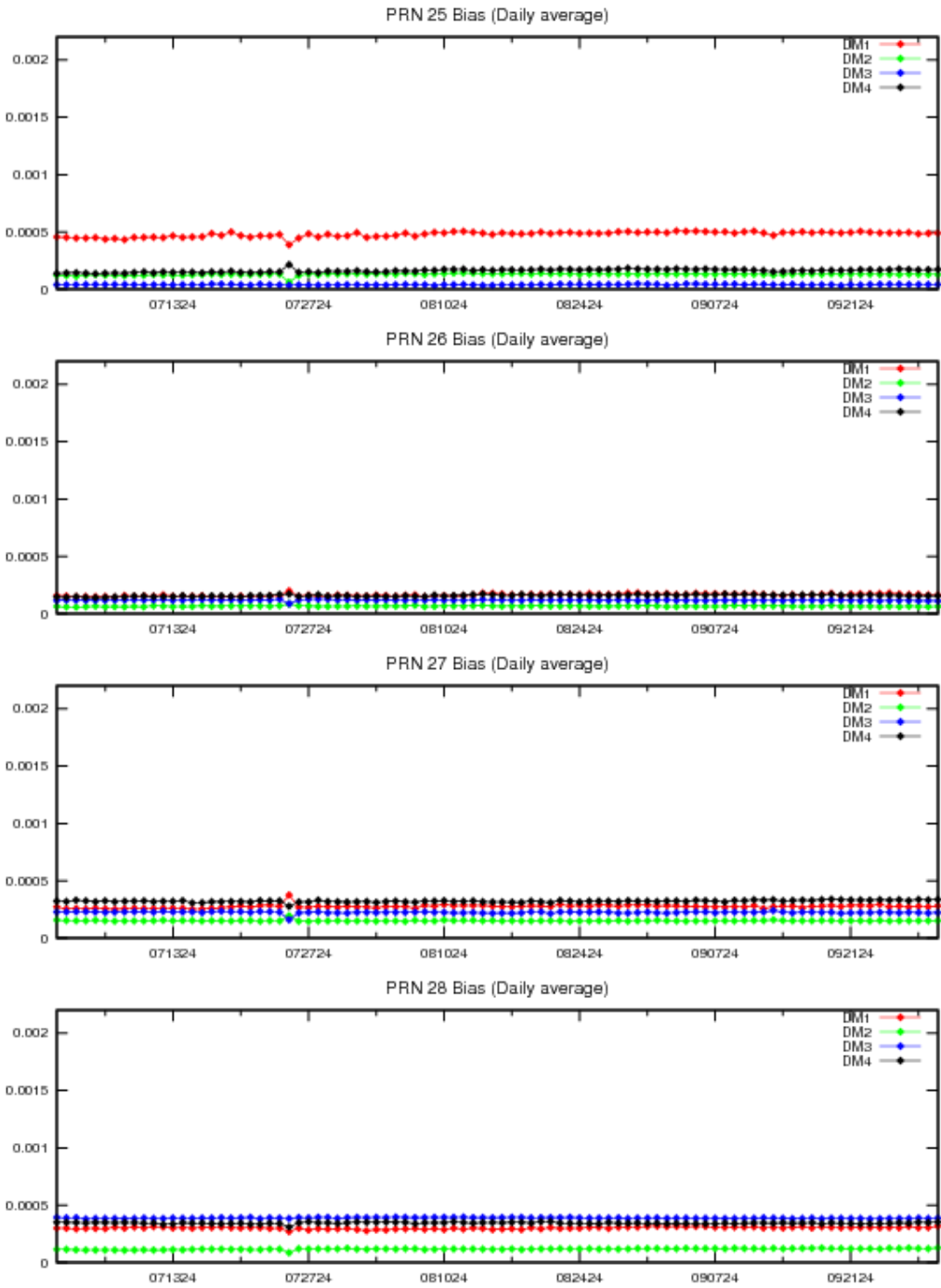


Figure 11-9 PRN Bias Average Trend (PRN25–PRN28)

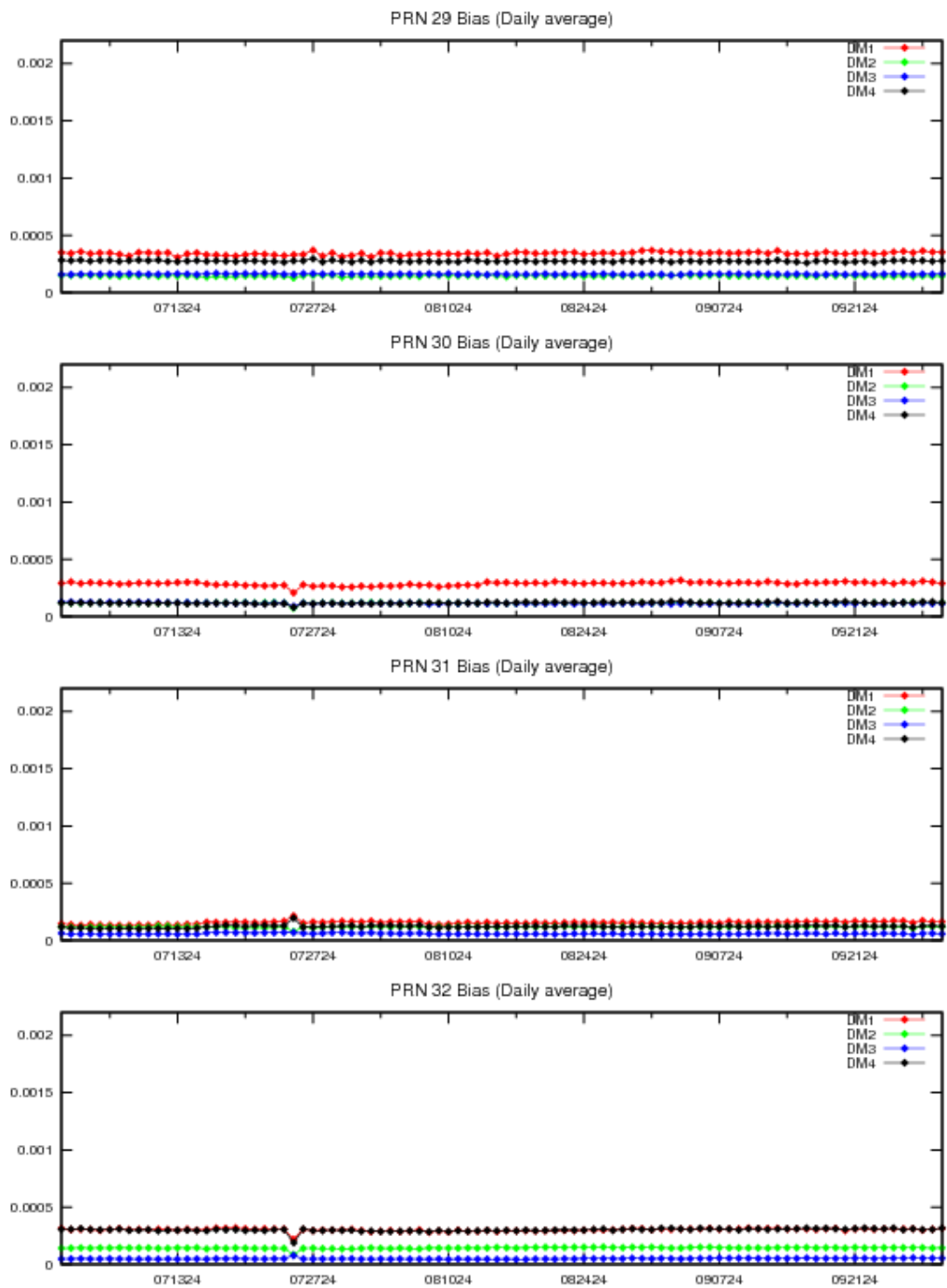


Figure 11-10 PRN Bias Average Trend (PRN29–PRN32)

11.4 SQM Trips

There we no SQM trips observed in this quarter.

APPENDIX A: GLOSSARY AND ACRONYMS

General Terms and Definitions

Alert. An alert is an indication provided by the GPS/WAAS equipment to inform the user when the positioning performance achieved by the equipment does not meet the integrity requirements.

AMR. GEO PRN133

APC. Antenna phase center

ARP. Antenna reference point

Availability. The availability of a navigation system is the ability of the system to provide the required function and performance at the initiation of the intended operation. Availability is an indication of the ability of the system to provide usable service within the specified coverage area.

C&V. The Correction and Verification Subsystem

CNMP. Code noise and multipath

CONUS. Continental United States

Continuity. The continuity of a system is the ability of the total system (comprising all elements necessary to maintain aircraft position within the defined airspace) to perform its function without interruption during the intended operation. More specifically, continuity is the probability that the specified system performance will be maintained for the duration of a phase of operation, presuming that the system was available at the beginning of that phase of operation.

Coverage. The coverage provided by a radio navigation system is the surface area or space volume in which the signals are adequate to permit the user to determine position to a specified level of accuracy. Coverage is influenced by system geometry, signal power levels, receiver sensitivity, atmospheric noise conditions, and other factors that affect signal availability.

CSRS. Canadian Spatial Reference System

DM. Detection metrics

DR. Discrepancy Report.

ECEF. Earth-centered, Earth-fixed.

FAA. Federal Aviation Administration

FD. Fault Detection

FDE. Fault Detection and Exclusion. A receiver processing scheme that autonomously provides integrity monitoring for the position solution using redundant range measurements. The FDE consists of two distinct parts: fault detection and fault exclusion. The fault detection part detects the presence of an unacceptably large position error for a given mode of flight. Upon the detection, fault exclusion follows and excludes the source of the unacceptably large position error, thereby allowing navigation to return to normal performance without an interruption in service.

G30. GEO PRN135

GEO. Geostationary satellite

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

GMT. Greenwich Mean Time

GPS. Global Positioning System. A space-based positioning, velocity, and time system composed of space, control, and user segments. The space segment, when fully operational, will be composed of 24 satellites in six orbital planes. The control segment consists of five monitor stations, three ground antennas, and a master control station. The user segment consists of antennas and receiver-processors that provide positioning, velocity, and precise timing to the user.

GUS. Ground uplink station

HAL. Horizontal alert limit. The radius of a circle in the horizontal plane (the local plane tangent to the WGS-84 ellipsoid), with its center being at the true position, which describes the region that is required to contain the indicated horizontal position with a probability of $1-10^{-7}$ 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. Ionospheric grid point. A geographically defined point for which the WAAS provides the vertical ionospheric delay.

IGS. International GPS Service.

Kp. Planetary index

LNAV. Lateral navigation

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

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

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

NANU. Notice Advisory to Navstar Users. NANU is an advisory message to inform users of a change in the GPS constellation. These messages inform users in advance of planned maintenance and also notify users of unscheduled outages.

NAS. National Airspace System

Navigation Message. Message structure designed to carry navigation data.

NGS. National Geodetic Survey

NPA Navigation Mode. Non-precision approach navigation mode. Refers to the navigation solution operating with a minimum of four satellites with fast and long term WAAS corrections (no WAAS ionospheric corrections) available.

NTSB. National Satellite Test Bed

OCONUS. Outside Contiguous United States

OPUS. Online Positioning Use Server

PA Navigation Mode. Precision approach navigation mode. Refers to the navigation solution operating with a minimum of four satellites with all WAAS corrections (fast, long term, and ionospheric) available.

PAN. Performance Analysis Network

Position Solution. The use of ranging signal measurements and navigation data from at least four satellites to solve for three position coordinates and a time offset.

PPP. Precise Point Positioning.

PRN. Pseudo-random noise

RAIM. Receiver autonomous integrity monitoring

RFI. Radio frequency interference

RNAV. Area navigation

RNP. Required Navigation Performance

RSS. Residual sum of squares.

S15. GEO PRN133

SBAS. Space Based Augmentation System

SIS. Signal in space

SM9. GEO PRN131

SPS. Standard positioning service. Three-dimensional position and time determination capability provided to a user equipped with a minimum capability GPS SPS receiver in accordance with GPS national policy and the performance specifications.

SQM. Signal quality monitor. Monitors correlator measurements to detect signal deformations that originate in the GPS or GEO satellites and ensures that the UDREs are sufficiently inflated to protect given the monitor's current observations.

SSM. System support modification

SV. Space vehicle.

SVN. Space Vehicle Number.

TOW. Time of GPS week

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

UTC. Coordinated Universal Time

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

VNAV. Vertical navigation

VPE. Vertical position error

VPL. Vertical protection level. Half the length of a segment on the vertical axis (perpendicular to the horizontal plane of WGS-84 ellipsoid), with its center being at the true position, which describes the region that is assured to contain the indicated vertical position. It is based upon the error estimates provided by WAAS.

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

WIPP. WAAS Integrity Performance Panel

WJHTC. William J. Hughes Technical Center

WRE. Wide-Area Reference Equipment

WRS. WAAS reference station

APPENDIX B: ADDITIONAL COVERAGE PLOTS

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

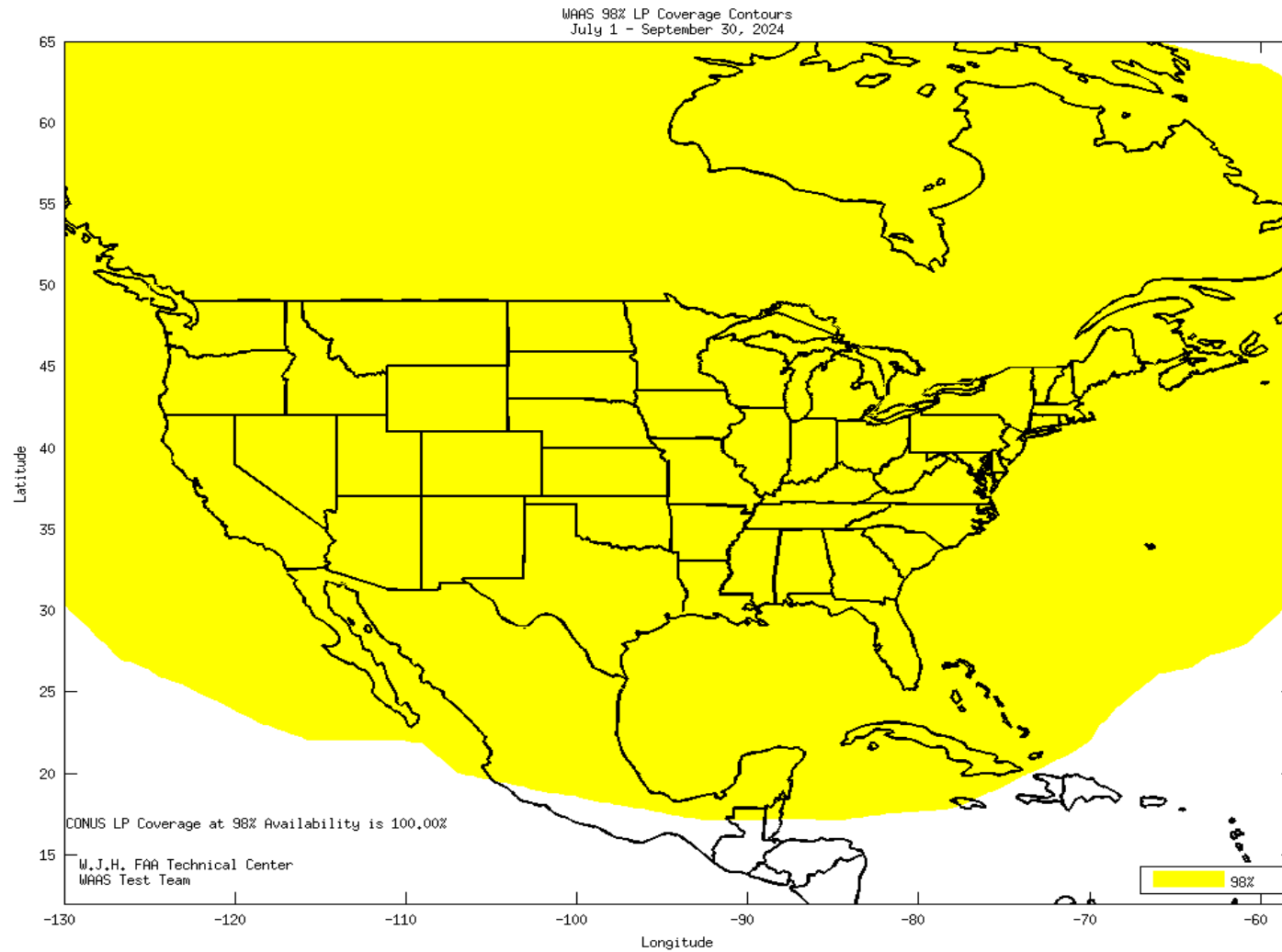


Figure B-1 98% CONUS LP Availability Contour

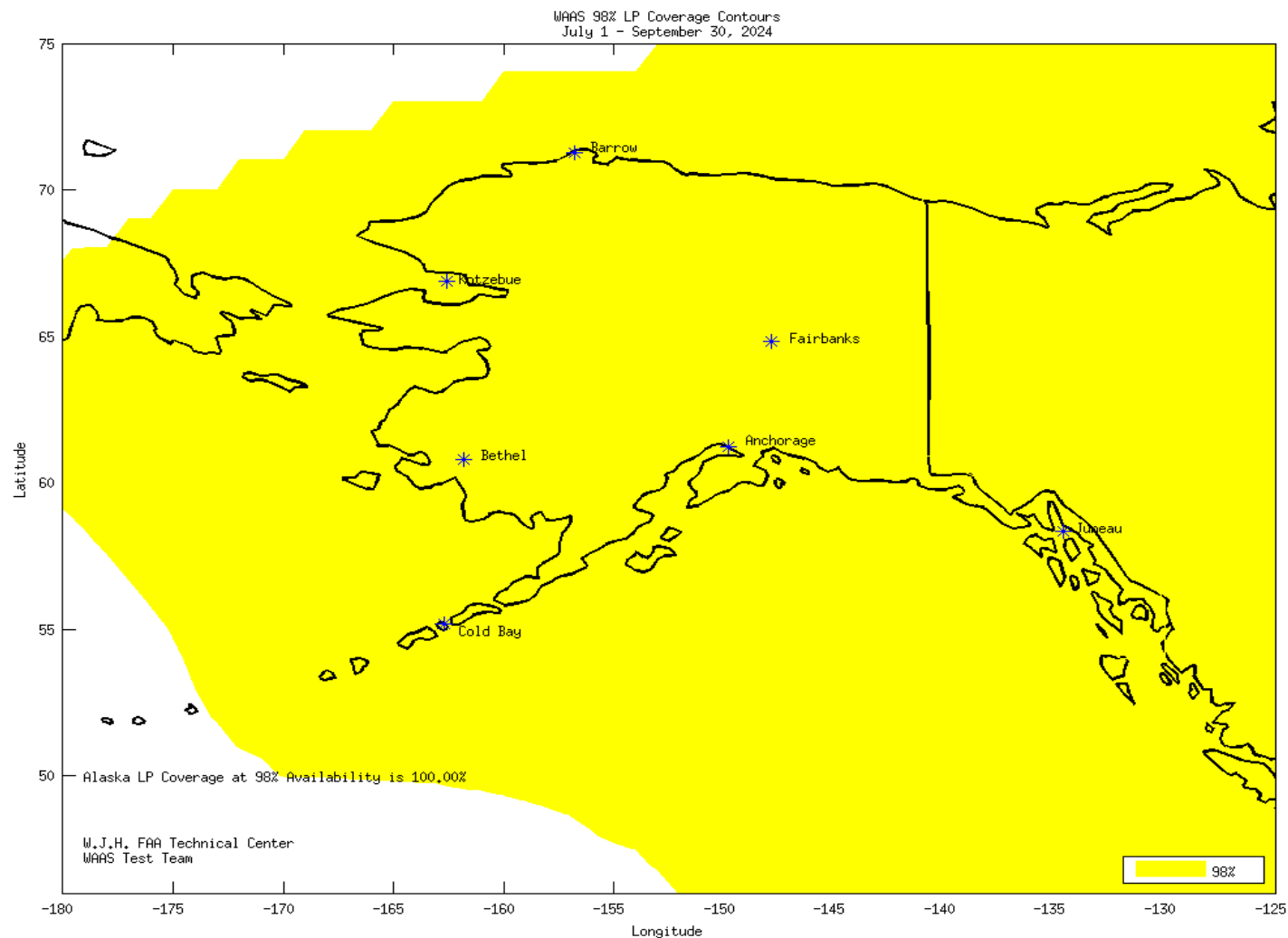


Figure B-2 98% Alaska LP Availability Contour

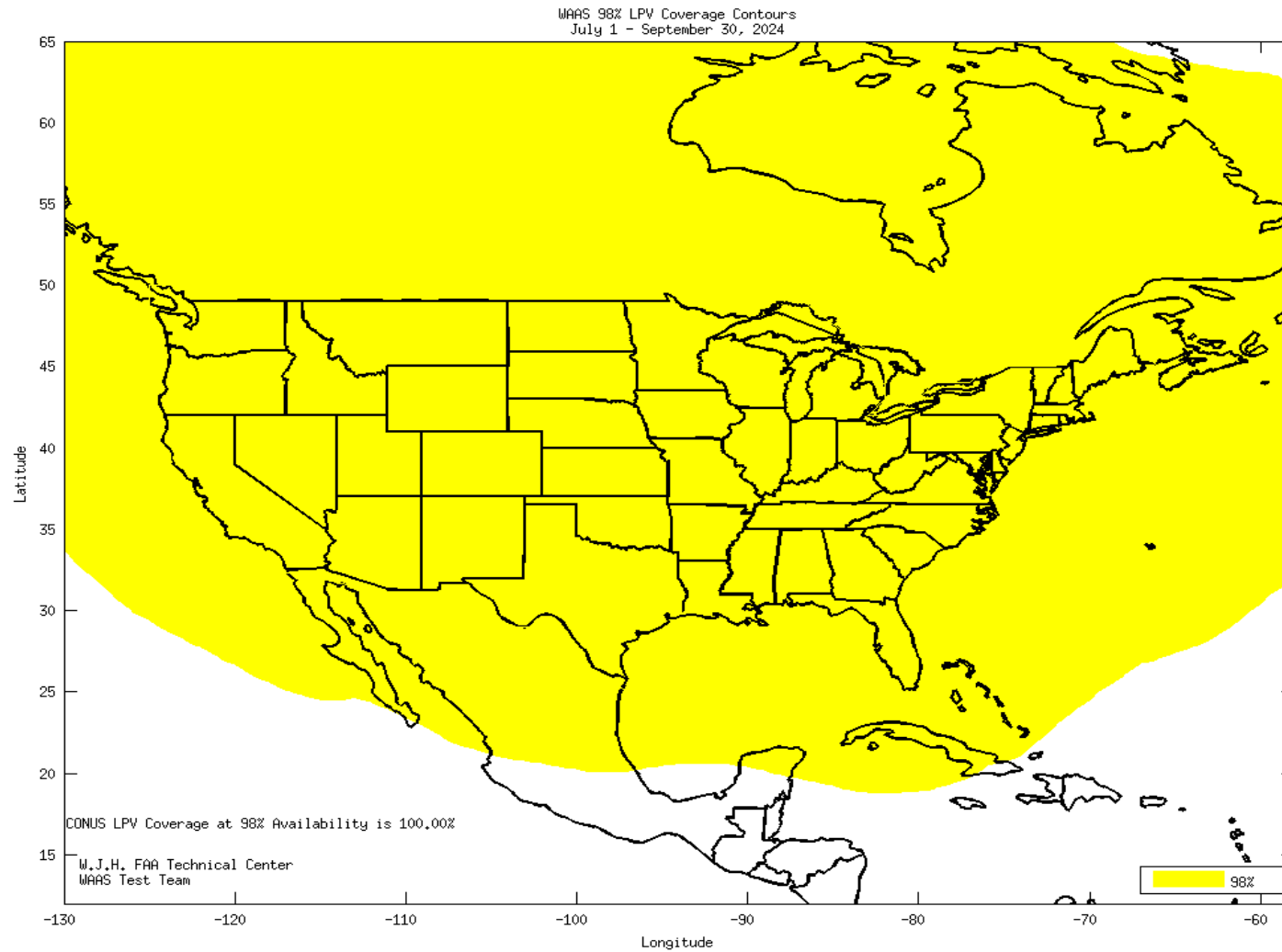


Figure B-3 98% CONUS LPV Availability Contour

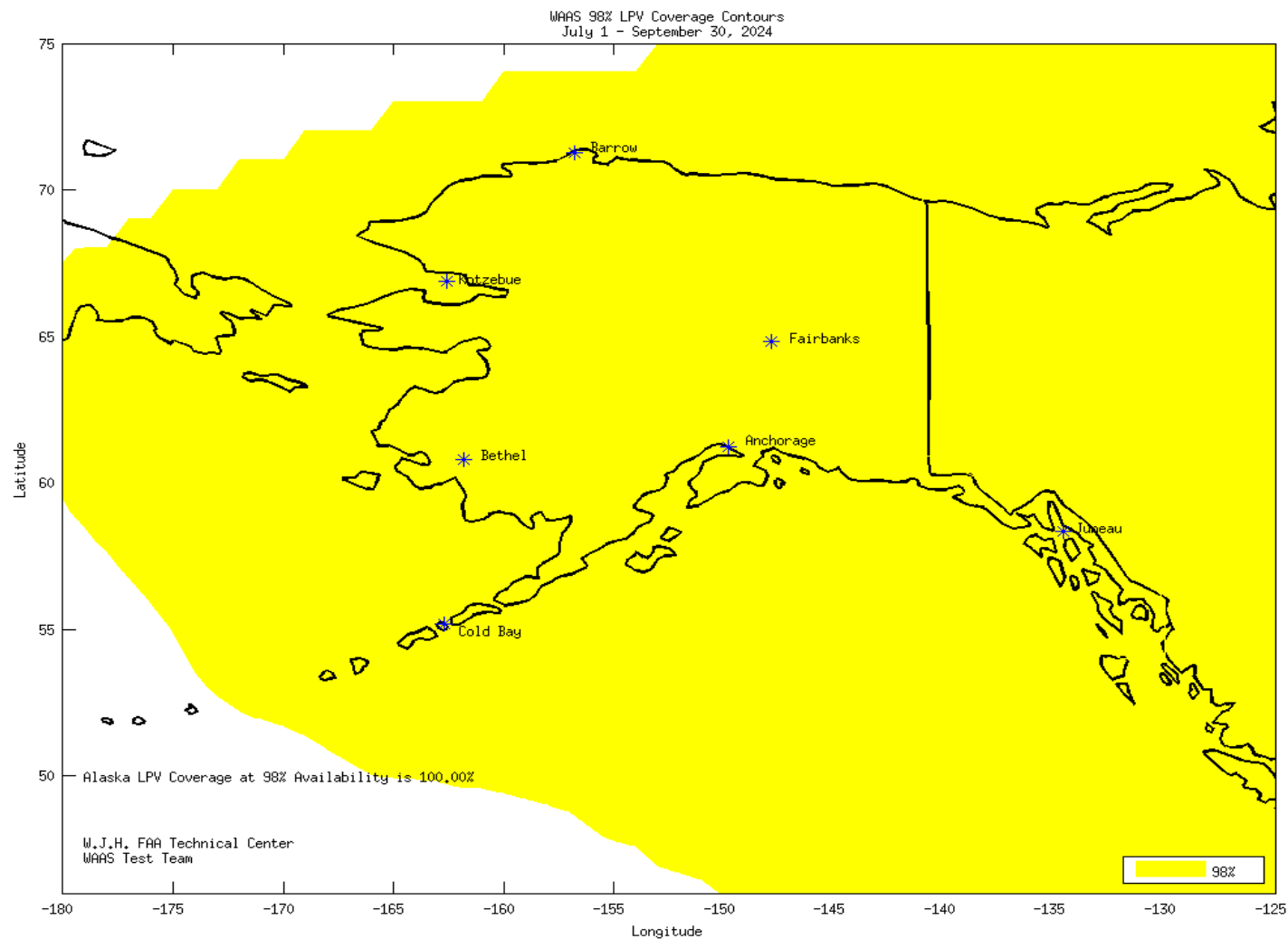


Figure B-4 98% Alaska LPV Availability Contour

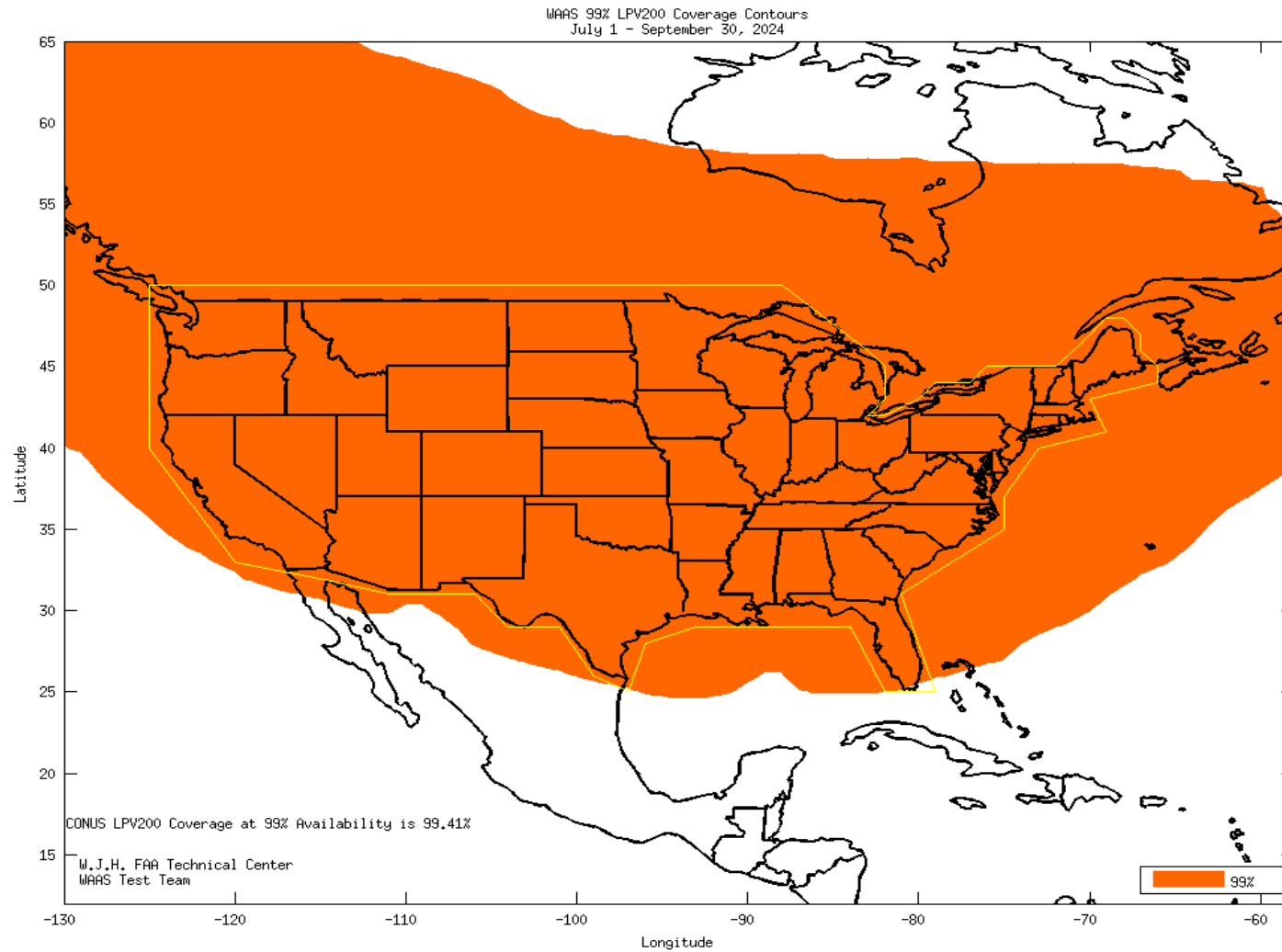


Figure B-5 99% CONUS LPV200 Availability Contour

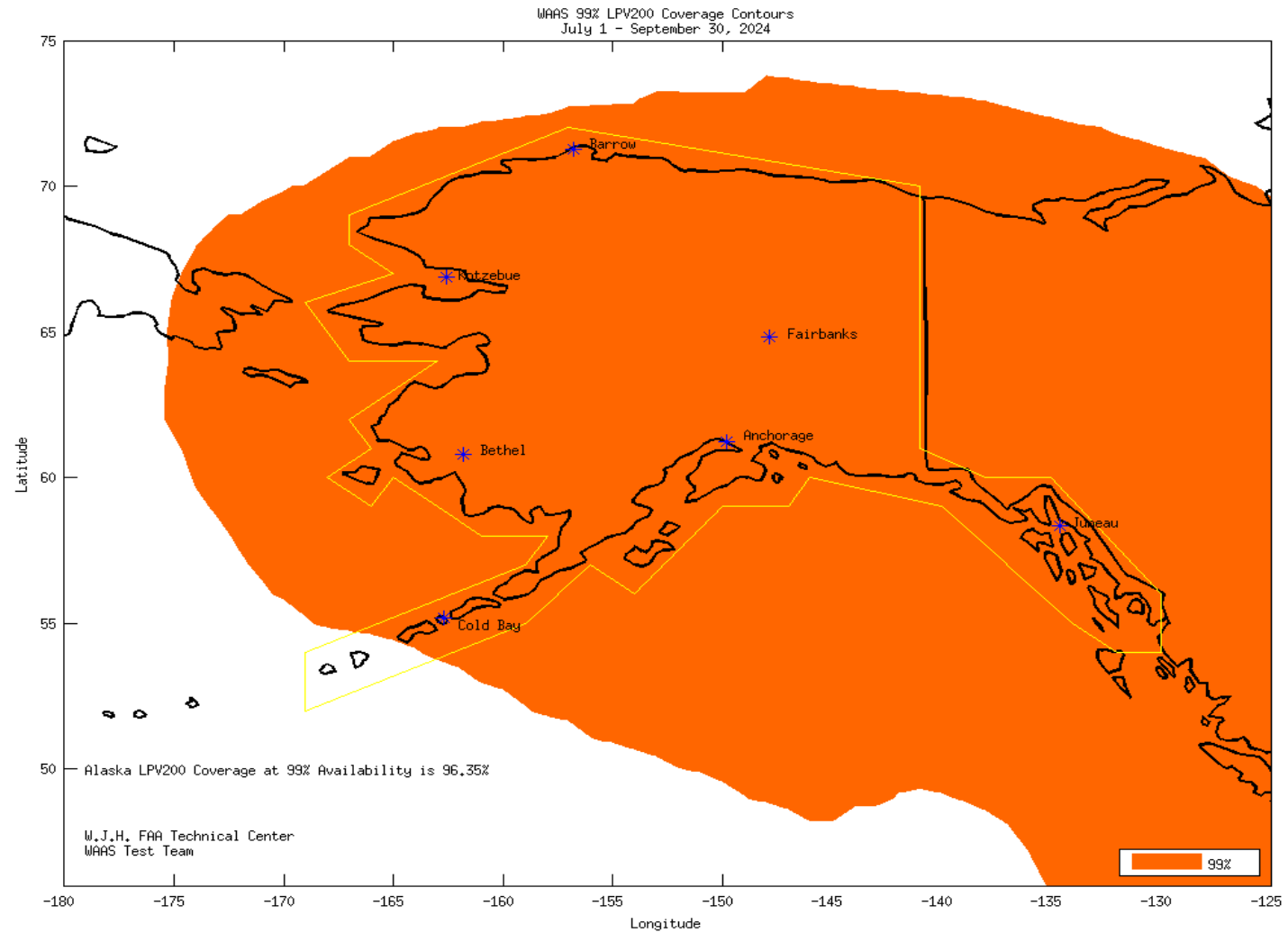


Figure B-6 99% Alaska LPV200 Availability Contour