



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

WIDE AREA AUGMENTATION SYSTEM PERFORMANCE ANALYSIS REPORT

July 2021

Report #77

Reporting Period: April 01 to June 30, 2021

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

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Executive Summary

Since 1999, the Wide Area Augmentation System (WAAS) Test Team at the FAA William J. Hughes Technical Center has reported GPS performance as measured against the GPS Standard Positioning Service (SPS) Signal Specification in quarterly GPS Performance Analysis Network (PAN) Reports. In addition to the GPS PAN reports, the WAAS Test Team has provided quarterly reports on WAAS performance. The current WAAS PAN Report #77 provides WAAS performance data from the April 01 through June 30, 2021 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—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 1.471 meters	Kansas City 0.476 meters	Juneau 0.687 meters	Fairbanks 0.522 meters
95% Vertical Accuracy (VPL <= 50 meters)	Los Angeles 1.540 meters	Denver 0.727 meters	Barrow 1.132 meters	Cold Bay 1.003 meters
LP Availability (HPL <= 40 meters)	Multiple Sites 100%	Multiple Sites 100%	All Sites 100%	All Sites 100%
LPV Availability (HPL <= 40 meters & VPL <= 50 meters)	Multiple Sites 100%	Multiple Sites 100%	All Sites 100%	All Sites 100%
LPV200 Availability (HPL <= 40 meters & VPL <= 35 meters)	Multiple Sites 100%	Miami 99.91%	Multiple Sites 100%	Barrow 99.54%
99% HPL	Miami 17.243 meters	Memphis 11.011 meters	Cold Bay 19.960 meters	Fairbanks 13.383 meters
99% VPL	Arcata 31.128 meters	Kansas City 19.645 meters	Barrow 32.188 meters	Juneau 22.088 meters

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1.0 INTRODUCTION

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

The objectives of this report are:

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

The evaluation uses the WAAS data transmitted from geostationary satellites (GEOs) pseudo-random noise (PRN) 131 (SM9), 133 (S15), and 138 (CRE). SM9, S15 and CRE 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	80	6931948
Atlantic City	90	7818221
Oklahoma City	78	6708738
WAAS:		
Albuquerque	91	7858652
Anchorage	91	7860952
Atlanta	91	7861825
Barrow	91	7846831
Bethel	91	7858252
Billings	91	7862042
Boston	91	7862355
Chicago	91	7861697
Cleveland	91	7847178
Cold Bay	91	7860714
Dallas	91	7859623
Denver	91	7857949
Fairbanks	91	7861509
Gander	91	7857973
Goose Bay	91	7862067
Houston	91	7858619
Iqaluit	91	7856877
Jacksonville	91	7862359
Juneau	91	7860848
Kansas City	90	7804334
Kotzebue	91	7858879
Los Angeles	90	7799435
Memphis	91	7861188
Merida	91	7823657
Mexico City	91	7856754
Miami	91	7860304
Minneapolis	91	7862198
New York	91	7862398
Oakland	91	7856896
Puerto Vallarta	91	7841384
Salt Lake City	91	7858721
San Jose Del Cabo	88	7575998
Seattle	91	7844287
Washington DC	91	7862105
Winnipeg	91	7862135

Table 1-3 NPA Evaluation Site

Location	Number of Days Evaluated	Number of Samples
Anchorage	91	7860927
Atlanta	91	7862398
Barrow	91	7848355
Bethel	91	7833815
Billings	91	7862271
Boston	91	7862398
Cleveland	91	7862398
Cold Bay	91	7860661
Fairbanks	91	7862169
Gander	91	7862355
Honolulu	91	7862393
Iqaluit	91	7859373
Juneau	91	7862307
Kansas City	91	7862392
Kotzebue	91	7859828
Los Angeles	91	7859818
Merida	91	7823082
Miami	91	7862398
Oakland	91	7862399
Salt Lake City	91	7862398
San Jose Del Cabo	89	7697891
San Juan	91	7862399
Seattle	91	7850728
Tapachula	85	7314466
Washington DC	91	7862398

The report is divided by the performance category:

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

Table 1-4 lists the evaluated WAAS performance parameters for this report. Note that these are the performance parameters associated with the WAAS system, and that these requirements are extracted from FAA Specifications FAA-E-2892C and FAA-E-2976, as applicable.

Table 1-4 WAAS Performance Parameters

Performance Parameter	Expected WAAS Performance
LPV Accuracy Horizontal	$\leq 1.5\text{m}$ error 95% of the time
LPV Accuracy Vertical	$\leq 2\text{m}$ error 95% of the time
LNAV Accuracy Horizontal	$\leq 36\text{m}$ 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 < 556m
Availability LNAV Alaska	99.9% availability with HPL < 556m
Availability En Route OCONUS	99.9% availability with HPL < 2nmi
Probability of Hazardous Misleading Information	$<10\text{e-}7$ per approach

1.1 Event Summary

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

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

Table 1-5 Events

Start Date	End Date	Location Satellite	Service Affected	Event Description
04/01/2021	04/01/2021	PRN9	LPV200_CONUS, LPV200_Alaska, LPV200_Canada	The reduction in LPV200 service in CONUS, Alaska, and Canada was due to a GPS NANU on PRN9 (see NANU2021018) which was unusable from 11:43 GMT to 17:45 GMT. The NANU caused moderate degradation of: (1) LPV200 coverage in CONUS from 12:55 GMT to 13:05 GMT and from 15:50 GMT to 16:05 GMT; (2) LPV200 coverage in Alaska from 14:00 GMT to 14:45 GMT; and (3) LPV200 coverage in Canada from 14:20 GMT to 14:45 GMT. Please see plot(s): LPV200 4/1/2021 Cov vs Time Alaska 4/1/2021 Cov vs Time Canada 4/1/2021 Cov vs Time Conus 4/1/2021
04/12/2021	04/22/2021	PRN24	LPV200_CONUS, LPV200_Alaska, LPV200_Canada	The reduction in LPV200 service in CONUS, Alaska, and Canada was due to a GPS NANU on PRN24 (see NANU2021022) which was unusable from 16:13 GMT on 4/12 to 15:35 GMT on 4/22. The NANU caused moderate degradation of:(1) LPV200 coverage in Alaska from 19:30 GMT to 20:10 GMT; and (2) LPV200 coverage in Canada from 19:40 GMT to 20:00 GMT each day of the NANU. The NANU also caused minor degradation of LPV200 coverage in CONUS from 23:00 GMT to 23:30 GMT each day of the NANU. Please see plot(s): LPV200 4/21/2021 Cov vs Time Alaska 4/21/2021 Cov vs Time Canada 4/21/2021 Cov vs Time Conus 4/21/2021
04/22/2021	04/22/2021	PRN7	LPV200_Canada	The reduction in LPV200 service in Canada was due to a GPS NANU on PRN7 (see NANU2021023) which was unusable from 12:17 GMT to 20:05 GMT. The NANU caused moderate degradation of LPV200 coverage in Canada from 14:15 GMT to 15:05 GMT. Please see plot(s): LPV200 4/22/2021 Cov vs Time Canada 4/22/2021

Start Date	End Date	Location Satellite	Service Affected	Event Description
05/17/2021	05/17/2021	GEO131, Santa Paula (SZ1)	LPV200_Canada	The uplink for the SM9 GEO, PRN131 switched from the Santa Paula uplink site to the Southbury uplink site at 14:12:14 GMT. This caused a 3-second outage of the GEO 131 broadcast and also caused the WAAS carrier smoothing algorithm to reinitialize for PRN131. The elevated UDREs on PRN131 caused moderate degradation of LPV200 coverage in Canada from 21:10 GMT to 22:20 GMT. TOW 137552-137556 Please see plot(s): LPV200_5/17/2021 Cov vs Time Canada 5/17/2021
05/26/2021	05/26/2021	GEO133, Brewster (BR1)	LPV200_Alaska	The uplink for the S15 GEO, PRN133 switched from the Brewster uplink site to the South Mountain uplink site at 15:38:31 GMT. This caused a 22-second outage of the GEO 133 broadcast and also caused the WAAS carrier smoothing algorithm to reinitialize for PRN133. In addition to the GUS switchover on GEO 131 (see event16159) the elevated UDREs on PRN133 caused moderate degradation of LPV200 coverage in Alaska from 20:50 GMT to 21:15 GMT and from 23:30 GMT to 23:45 GMT. TOW 315529-315552 Please see plot(s): LPV200_5/26/2021 Cov vs Time Alaska 5/26/2021
05/26/2021	05/26/2021	GEO131, Southbury (DX1)	LPV200_Alaska	The uplink for the SM9 GEO, PRN131 switched from the Southbury uplink site to the Santa Paula uplink site at 18:35:27 GMT. This caused a 3-second outage of the GEO 131 broadcast and also caused the WAAS carrier smoothing algorithm to reinitialize for PRN131. In addition to the GUS switchover on GEO 133 (see event16161) the elevated UDREs on PRN131 caused moderate degradation of LPV200 coverage in Alaska from 20:50 GMT to 21:15 GMT and from 23:30 GMT to 23:45 GMT. TOW 326145-326149 Please see plot(s): LPV200_5/26/2021 Cov vs Time Alaska 5/26/2021
05/28/2021	05/28/2021	PRN22	LPV200_Canada	The reduction in LPV200 service in Canada was due to a GPS NANU on PRN22 (see NANU2021030) which was unusable from 00:59 GMT to 07:00 GMT. The NANU caused minor degradation of LPV200 coverage in Canada from 06:45 GMT to 07:10 GMT.
06/10/2021	06/11/2021	PRN31	LPV200_CONUS	There was a GPS NANU on PRN31 (see NANU2021032) which was unusable from 20:13 GMT on 6/10 to 03:52 GMT on 6/11. The NANU on PRN31 caused very minor degradation of LPV200 service coverage in CONUS (CA).

Start Date	End Date	Location Satellite	Service Affected	Event Description
06/17/2021	06/17/2021	PRN11	None	SVN78 (PRN11) was launched on June 17th, 2021 (see NANU 2021034).
06/23/2021	06/23/2021	PRN28	None	SVN44 (PRN28) was decommissioned on June 23rd, 2021 (see NANU 2021035). This change in constellation had no impact on WAAS coverage.

Table 1-6 WAAS Upgrades

Start Date	End Date	Location	Event Description
04/01/2021	04/01/2021	Tapachula (MTP1), Tapachula (MTP2), Tapachula (MTP3)	SSM-58: This system support modification (SSM) supports the cutover to Build 3. This updates the software at MTP WRS to Software build W7.322L. The upgrade started at 06:00 on 04/01 and ended at 06:52 on 04/01.
04/01/2021	04/01/2021	Merida (MMD1), Merida (MMD2), Merida (MMD3)	SSM-58: This system support modification (SSM) supports the cutover to Build 3. This updates the software at MMD WRS to Software build W7.322L. The upgrade started at 18:01 on 04/01 and ended at 18:51 on 04/01.
04/02/2021	04/02/2021	Mexico City (MMX1), Mexico City (MMX2), Mexico City (MMX3)	SSM-58: This system support modification (SSM) supports the cutover to Build 3. This updates the software at MMX WRS to Software build W7.322L. The upgrade started at 13:41 on 04/02 and ended at 14:21 on 04/02.
04/02/2021	04/02/2021	San Jose Del Cabo (MSD1), San Jose Del Cabo (MSD2), San Jose Del Cabo (MSD3)	SSM-58: This system support modification (SSM) supports the cutover to Build 3. This updates the software at MSD WRS to Software build W7.322L. The upgrade started at 03:31 on 04/02 and ended at 04:11 on 04/02.
04/04/2021	04/04/2021	Cold Bay (CDB1), Cold Bay (CDB2), Cold Bay (CDB3)	SSM-58: This system support modification (SSM) supports the cutover to Build 3. This updates the software at CBD WRS to Software build W7.322L. The upgrade started at 15:59 on 04/04 and ended at 16:40 on 04/04.
04/05/2021	04/06/2021	Kotzebue (OTZ1), Kotzebue (OTZ2), Kotzebue (OTZ3)	SSM-58: This system support modification (SSM) supports the cutover to Build 3. This updates the software at OTZ WRS to Software build W7.322L. The upgrade started at 22:03 on 04/05 and ended at 00:03 on 04/06.
04/06/2021	04/06/2021	Barrow (BRW1), Barrow (BRW2), Barrow (BRW3)	SSM-58: This system support modification (SSM) supports the cutover to Build 3. This updates the software at BRW WRS to Software build W7.322L. The upgrade started at 17:35 on 04/06 and ended at 19:04 on 04/06.

Table 1-7 GUS Switchovers

Start Date	End Date	GUS Switch	Location Satellite	Service Affected	Event Description
04/29/2021	04/29/2021	Manual	GEO131, Santa Paula (SZ1)	None	The uplink for the SM9 GEO, PRN131 switched from the Santa Paula uplink site to the Southbury uplink site at 07:00:01 GMT. 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 370819-370823
05/01/2021	05/01/2021	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 07:41:52 GMT. 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 546130-546134
05/06/2021	05/06/2021	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 17:11:21 GMT. This caused an 18-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 407480-407499
05/08/2021	05/08/2021	Manual	GEO131, Santa Paula (SZ1)	None	The uplink for the SM9 GEO, PRN131 switched from the Santa Paula uplink site to the Southbury uplink site at 07:00:37 GMT. 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 543655-543659

Start Date	End Date	GUS Switch	Location Satellite	Service Affected	Event Description
05/13/2021	05/13/2021	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 17:34:04 GMT. 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 408862-408867
05/17/2021	05/17/2021	Manual	GEO131, Santa Paula (SZ1)	LPV200_Canada	The uplink for the SM9 GEO, PRN131 switched from the Santa Paula uplink site to the Southbury uplink site at 14:12:14 GMT. This caused a 3-second outage of the GEO 131 broadcast and also caused the WAAS carrier smoothing algorithm to reinitialize for PRN131. The elevated UDREs on PRN131 caused moderate degradation of LPV200 coverage in Canada from 21:10 GMT to 22:20 GMT. TOW 137552-137556
05/19/2021	05/19/2021	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 16:15:28 GMT. 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 317746-317750
05/23/2021	05/23/2021	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 01:11:44 GMT. This caused an 18-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 4322-4341

Start Date	End Date	GUS Switch	Location Satellite	Service Affected	Event Description
05/26/2021	05/26/2021	Manual	GEO131, Southbury (DX1)	LPV200 Alaska	The uplink for the SM9 GEO, PRN131 switched from the Southbury uplink site to the Santa Paula uplink site at 18:35:27 GMT. This caused a 3-second outage of the GEO 131 broadcast and also caused the WAAS carrier smoothing algorithm to reinitialize for PRN131. In addition to the GUS switchover on GEO 133 (see event16161) the elevated UDREs on PRN131 caused moderate degradation of LPV200 coverage in Alaska from 20:50 GMT to 21:15 GMT and from 23:30 GMT to 23:45 GMT. TOW 326145-326149
05/26/2021	05/26/2021	Missed Navigation Message	GEO133, Brewster (BR1), Los Angeles (CnV)	None	Brewster had CnV Source Select from Los Angeles to Atlanta. TOW 315529-315552
05/26/2021	05/26/2021	Faulted	GEO133, Brewster (BR1)	LPV200 Alaska	The uplink for the S15 GEO, PRN133 switched from the Brewster uplink site to the South Mountain uplink site at 15:38:31 GMT. This caused a 22-second outage of the GEO 133 broadcast and also caused the WAAS carrier smoothing algorithm to reinitialize for PRN133. In addition to the GUS switchover on GEO 131 (see event16159) the elevated UDREs on PRN133 caused moderate degradation of LPV200 coverage in Alaska from 20:50 GMT to 21:15 GMT and from 23:30 GMT to 23:45 GMT. TOW 315529-315552

Start Date	End Date	GUS Switch	Location Satellite	Service Affected	Event Description
06/14/2021	06/14/2021	Faulted	GEO131, Santa Paula (SZ1)	None	The uplink for the SM9 GEO, PRN131 switched from the Santa Paula uplink site to the Southbury uplink site at 19:14:12 GMT. This caused a 19-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 155670-155690
06/17/2021	06/17/2021	Manual	GEO138, Woodbine (QWE)	None	The uplink for the CRE GEO, PRN138 switched from the Woodbine uplink site to the Brewster-Buplink site at 10:58:01 GMT. This caused a 3-second outage of the GEO 138 broadcast and also caused the WAAS carrier smoothing algorithm to reinitialize for PRN138. There was no impact on coverage. TOW 385099-385103

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 CRE, SM9, and S15.

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

Section 7.0 provides the GEO ranging performance for CRE, SM9 and S15.

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

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

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

Section 11.0 provides the daily and quarterly average of SQM PRN type biases and PRN biases.

2.0 **WAAS POSITION ACCURACY**

Navigation error data, collected from WAAS and NSTB reference stations, was processed to determine position accuracy at each location. This was accomplished by using the GPS/WAAS position solution tool to compute a RTCA DO-229D-weighted least squares user navigation solution and WAAS horizontal protection level (HPL) and vertical protection level (VPL) once every second. The user position calculated for each receiver was compared to the surveyed position of the antenna to assess position error associated with the WAAS signal in space (SIS) over time. The position errors were analyzed and statistics were generated for the operational service levels shown in Table 1-1.

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

- The maximum 95% CONUS horizontal LPV error was 1.471 meters observed at Arcata.
- The maximum 95% CONUS vertical LPV error was 1.540 meters observed at Los Angeles.
- The minimum 95% CONUS horizontal LPV errors was 0.476 meters observed at Kansas City.
- The minimum 95% CONUS vertical LPV error was 0.727 meters observed at Denver.

Table 2-1 PA 95% Horizontal and Vertical Accuracy

Location	Horizontal (HAL=40m) (Meters)	Horizontal (HAL=556m) (Meters)	Vertical (VAL=50m) (Meters)	Percentage in PA mode (%)	SPS Accuracy	
					95% Horizontal	95% Vertical
Arcata	1.471	1.471	1.499	100	*	*
Atlantic City	1.140	1.140	1.489	100	*	*
Oklahoma City	2.186	2.186	1.912	100		
Albuquerque	0.624	0.624	1.010	100	1.54	4.01
Anchorage	0.575	0.575	1.007	100	1.73	3.25
Atlanta	0.722	0.722	1.070	100	1.5	3.93
Barrow	0.582	0.582	1.132	100	1.4	3.22
Bethel	0.548	0.548	1.128	100	1.76	3.61
Billings	0.546	0.546	0.814	100	1.56	3.38
Boston	0.625	0.625	0.889	100	1.48	3.4
Chicago	0.901	0.901	1.019	100	*	*
Cleveland	0.539	0.539	0.941	100	1.4	3.4
Cold Bay	0.643	0.643	1.003	100	1.57	3.77
Dallas	0.499	0.499	1.189	100	*	*
Denver	0.511	0.511	0.727	100	*	*
Fairbanks	0.522	0.522	1.075	100	1.71	3.35
Gander	0.639	0.639	1.119	100	1.68	2.99
Goose Bay	0.563	0.563	0.932	100	*	*
Houston	0.598	0.598	1.330	100	1.69	4.05
Iqaluit	0.645	0.646	1.045	100	1.37	2.89
Jacksonville	0.588	0.588	1.130	100	*	*
Juneau	0.687	0.687	1.067	100	1.57	2.97

Location	Horizontal (HAL=40m) (Meters)	Horizontal (HAL=556m) (Meters)	Vertical (VAL=50m) (Meters)	Percentage in PA mode (%)	SPS Accuracy	
					95% Horizontal	95% Vertical
Kansas City	0.476	0.476	0.963	100	1.49	3.72
Kotzebue	0.546	0.546	1.110	100	1.82	3.41
Los Angeles	0.856	0.856	1.540	100	1.83	4.65
Memphis	0.495	0.495	1.106	100	*	*
Merida	0.610	0.610	1.504	100	2.39	3.68
Mexico City	0.654	0.654	1.754	100	*	*
Miami	0.741	0.741	1.372	100	1.95	3.87
Minneapolis	0.713	0.713	0.963	100	1.51	3.24
New York	0.545	0.545	1.034	100	*	*
Oakland	0.783	0.783	1.509	100	1.83	4.69
Puerto Vallarta	0.684	0.684	1.834	100	*	*
Salt Lake City	0.558	0.558	0.808	100	1.58	3.98
San Jose Del Cabo	0.705	0.705	2.087	100	2.85	4.23
Seattle	0.600	0.600	0.849	100	1.59	3.9
Washington DC	0.722	0.722	0.937	100	1.46	3.57
Winnipeg	0.513	0.513	0.833	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 3.299 meters observed at Honolulu.
- The maximum 99.999% horizontal error was 7.424 meters observed at Honolulu.
- The minimum 95% horizontal error was 0.931 meters observed at Iqaluit.
- The minimum 99.999% horizontal error was 1.868 meters observed at Salt Lake City.

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

Location	95% Horizontal (Meters)	99.999% Horizontal (Meters)	Percentage in NPA Mode (%)	Maximum Horizontal Error (Meters)
Anchorage	1.738	2.785	100	2.927
Atlanta	1.104	2.149	100	3.311
Barrow	1.276	2.552	100	2.667
Bethel	1.721	3.058	100	5.346
Billings	1.211	2.195	100	2.385
Boston	1.278	2.477	100	2.669
Cleveland	1.109	1.955	100	3.110
Cold Bay	1.395	2.433	100	2.561
Fairbanks	1.767	2.794	100	3.838
Gander	1.297	3.184	100	3.434
Honolulu	3.299	7.424	100	7.758
Iqaluit	0.931	2.248	100	16.908
Juneau	1.407	2.352	100	2.726
Kansas City	1.110	2.144	100	2.294
Kotzebue	1.720	2.848	100	3.084
Los Angeles	1.684	2.563	100	2.705
Merida	1.745	3.245	100	3.363
Miami	1.595	3.403	100	3.613
Oakland	1.583	2.432	100	2.663
Salt Lake City	1.114	1.868	100	2.012
San Jose Del Cabo	2.181	4.092	99.999	4.381
San Juan	1.320	5.457	100	5.816
Seattle	1.169	2.175	100	2.449
Tapachula	2.210	4.811	100	4.998
Washington DC	1.289	2.082	100	2.223

Table 2-3 shows the quarterly maximum LPV error statistics: (1) the column Horizontal Error column shows the maximum position errors while the calculated HPL meets the LPV service level defined in Table 1-1, (2) the Vertical Error column shows the maximum position errors while the calculated VPL meets the LPV service level, (3) the Horizontal Error/HPL column and the Vertical Error/VPL column show the ratio of position error to protection level at the time the maximum error occurred, (4) the Horizontal Maximum Ratio column and the Vertical Maximum Ratio column show the maximum position error to protection level ratio for the quarter. During this reporting period, the maximum LPV horizontal error was 2.408 meters occurred at Arcata and maximum vertical LPV error was 5.789 meters occurred at Barrow.

Table 2-3 Maximum LPV Error Statistics

Location	Horizontal Error (m)	Horizontal Error HPL	Horizontal Maximum Ratio	Vertical Error (m)	Vertical Error VPL	Vertical Maximum Ratio
Arcata	2.408	0.190	0.209	3.382	0.109	0.165
Atlantic City-a	2.288	0.199	0.203	3.778	0.153	0.178
Albuquerque	1.530	0.145	0.151	2.904	0.106	0.150
Anchorage	1.434	0.101	0.131	2.997	0.102	0.163
Atlanta	1.675	0.172	0.172	2.641	0.156	0.167
Barrow	1.746	0.137	0.138	5.789	0.120	0.168
Bethel	2.293	0.142	0.146	3.705	0.151	0.156
Billings	1.441	0.115	0.134	1.994	0.127	0.129
Boston	1.430	0.112	0.112	2.158	0.115	0.141
Chicago	1.969	0.160	0.192	2.474	0.138	0.160

Location	Horizontal Error (m)	Horizontal Error HPL	Horizontal Maximum Ratio	Vertical Error (m)	Vertical Error VPL	Vertical Maximum Ratio
Cleveland	1.342	0.092	0.123	2.375	0.136	0.155
Cold Bay	1.477	0.104	0.104	2.412	0.120	0.130
Dallas	1.349	0.109	0.132	2.478	0.157	0.189
Denver	1.347	0.113	0.131	2.426	0.116	0.129
Fairbanks	1.930	0.157	0.157	3.702	0.140	0.161
Gander	1.658	0.082	0.104	2.605	0.111	0.123
Goose Bay	1.687	0.078	0.108	2.541	0.113	0.118
Houston	1.650	0.165	0.165	2.888	0.129	0.206
Iqaluit	2.331	0.127	0.159	3.616	0.094	0.147
Jacksonville	1.285	0.095	0.123	2.463	0.157	0.157
Juneau	1.742	0.124	0.150	3.285	0.160	0.160
Kansas City	1.246	0.113	0.130	2.305	0.153	0.175
Kotzebue	1.646	0.106	0.126	3.567	0.135	0.141
Los Angeles	1.709	0.143	0.143	2.773	0.112	0.189
Memphis	1.533	0.110	0.129	2.505	0.104	0.155
Merida	1.384	0.123	0.127	3.818	0.142	0.166
Mexico City	2.115	0.089	0.112	3.500	0.090	0.149
Miami	1.628	0.104	0.156	3.460	0.176	0.178
Minneapolis	1.782	0.155	0.158	2.580	0.126	0.158
New York	1.288	0.101	0.107	2.892	0.145	0.145
Oakland	1.777	0.129	0.129	2.953	0.137	0.183
Puerto Vallarta	1.694	0.066	0.111	3.778	0.099	0.159
Salt Lake City	1.264	0.115	0.123	2.203	0.120	0.130
San Jose Del Cabo	2.371	0.075	0.119	4.187	0.119	0.194
Seattle	1.720	0.145	0.145	2.170	0.109	0.130
Washington DC	1.452	0.131	0.152	2.474	0.115	0.132
Winnipeg	1.277	0.110	0.110	2.519	0.129	0.135

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.

- April 15, 2021—Position errors in CONUS were elevated. The maximum 95% horizontal and vertical LPV errors were 1.306 meters and 1.761 meters at Chicago and Los Angeles, respectively. The Kp index was 5.
- May 12, 2021—Position errors in Alaska and Canada were elevated. The maximum 95% horizontal and vertical LPV errors were 1.405 meters and 1.999 meters at Iqaluit and Barrow, respectively. The Kp index was 7.

Figure 2-1. LPV 95% Horizontal Accuracy

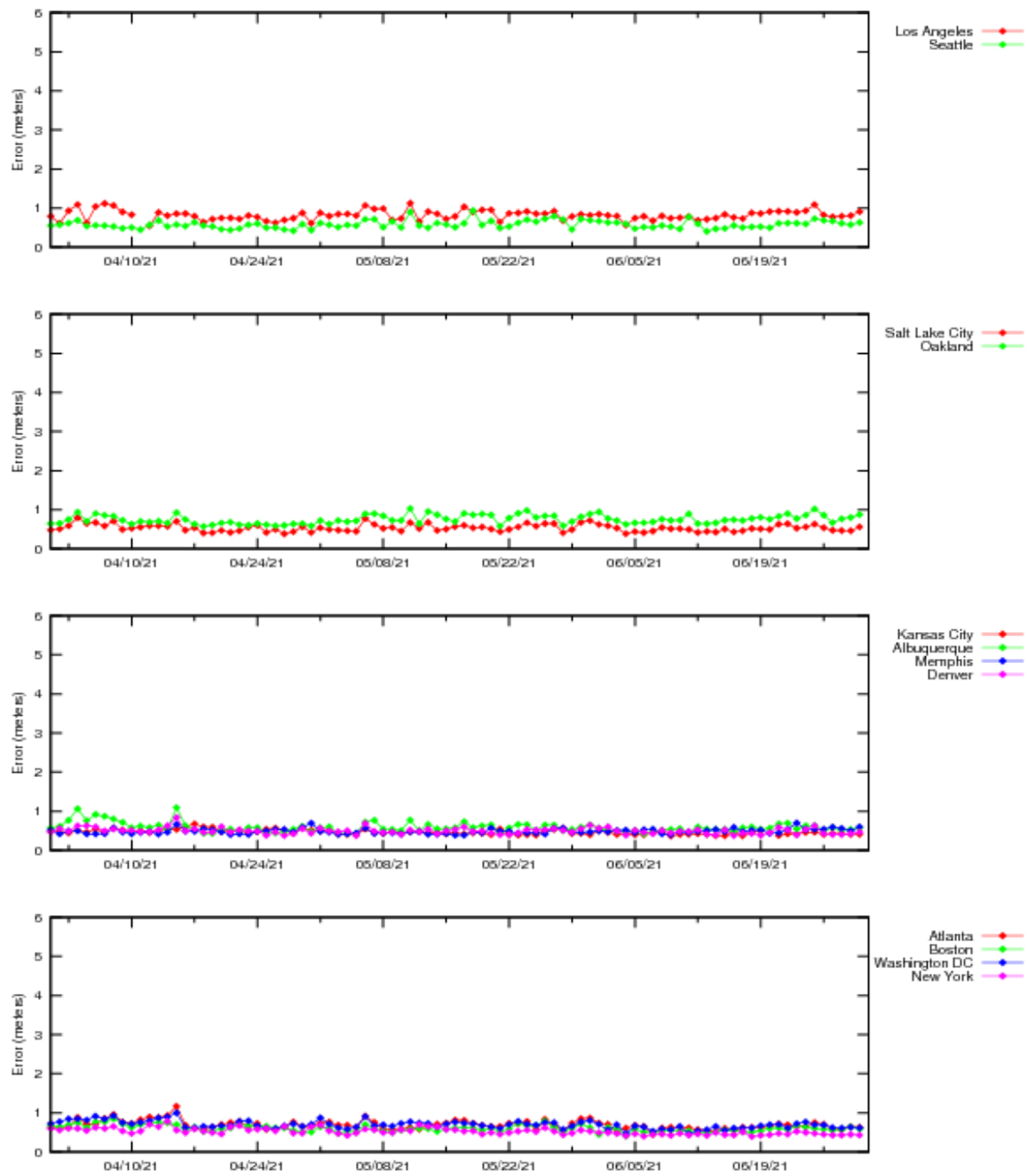


Figure 2-2 LPV 95% Horizontal Accuracy

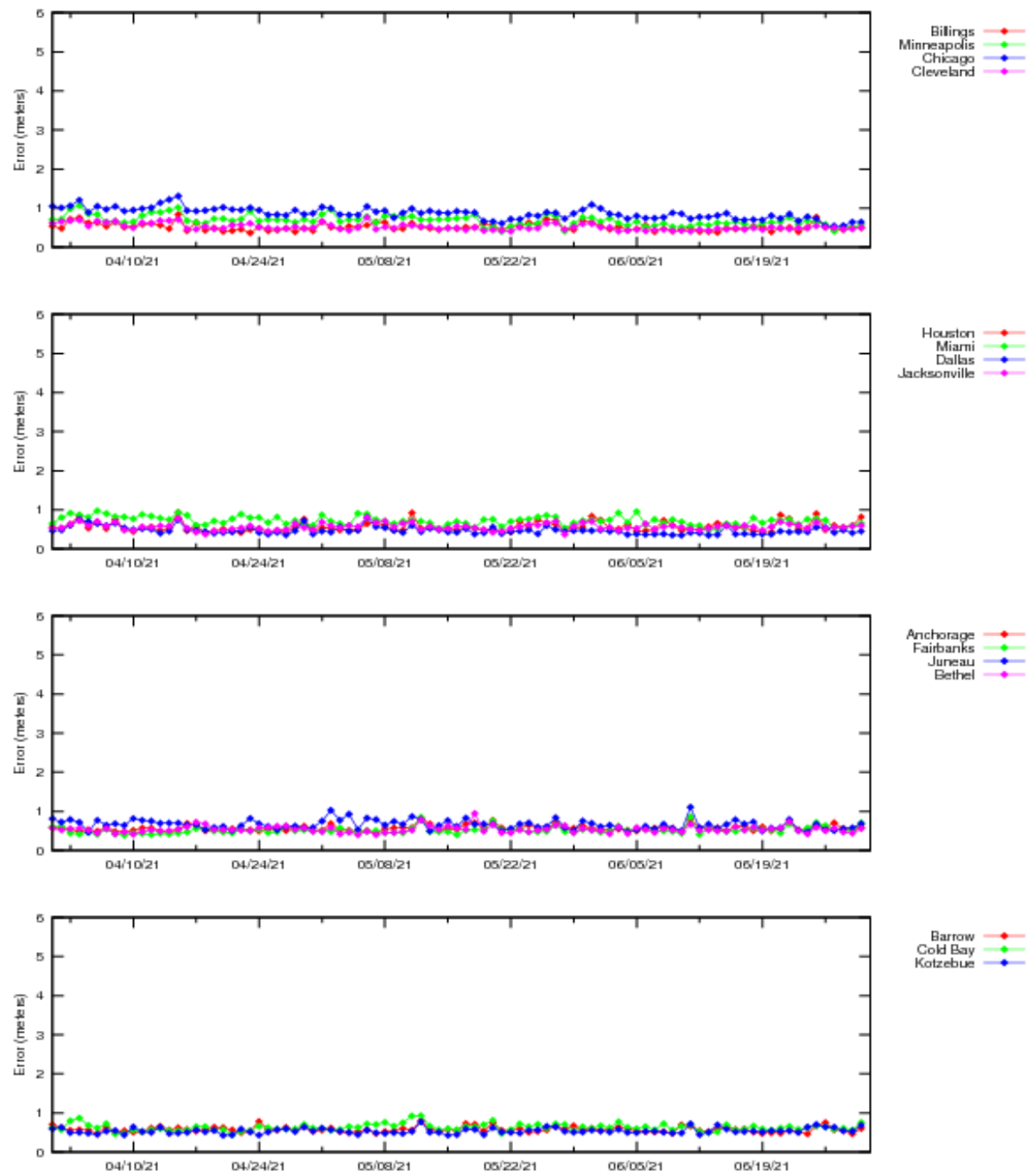


Figure 2-3 LPV 95% Horizontal Accuracy

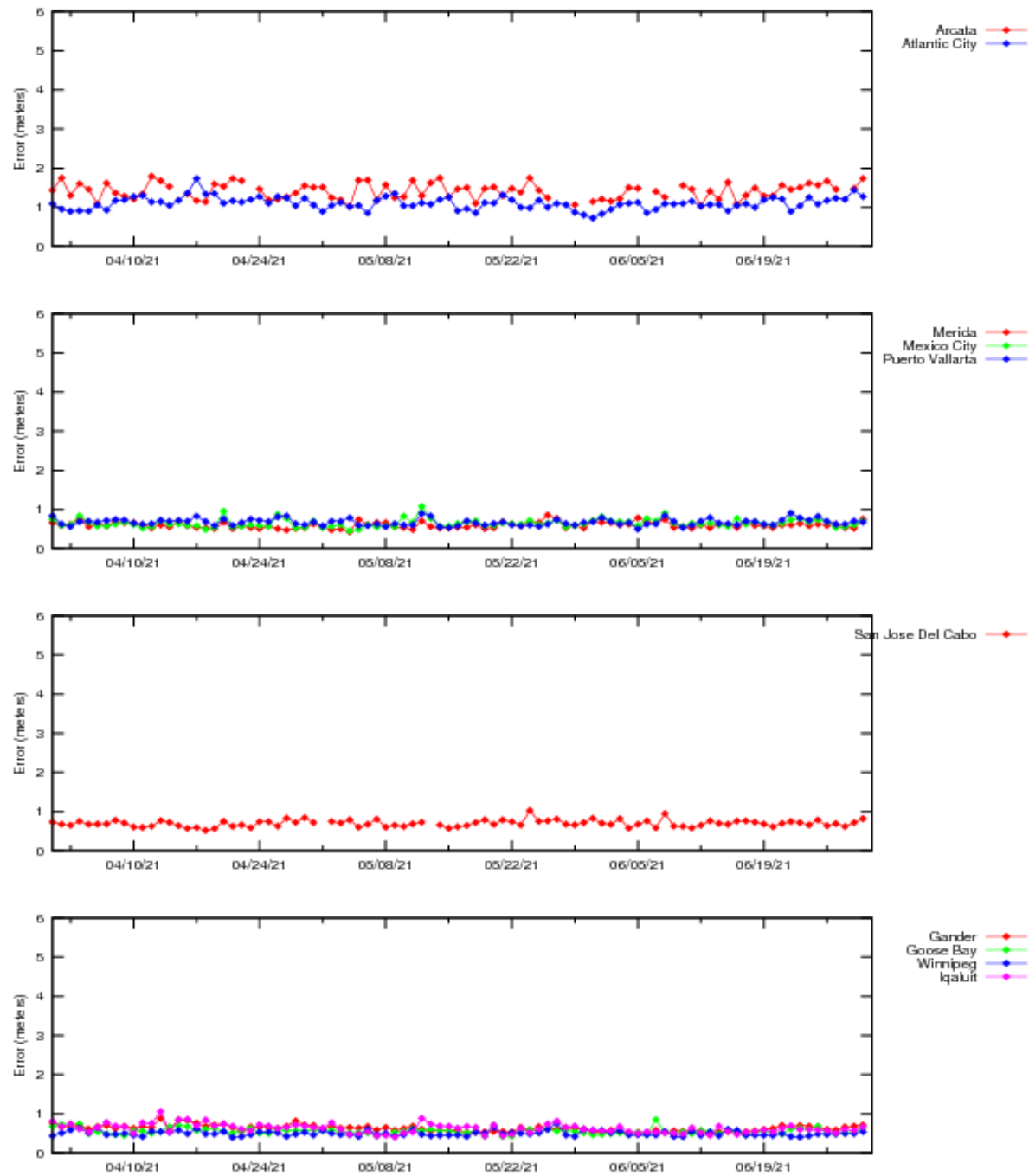


Figure 2-4. LPV 95% Vertical Accuracy

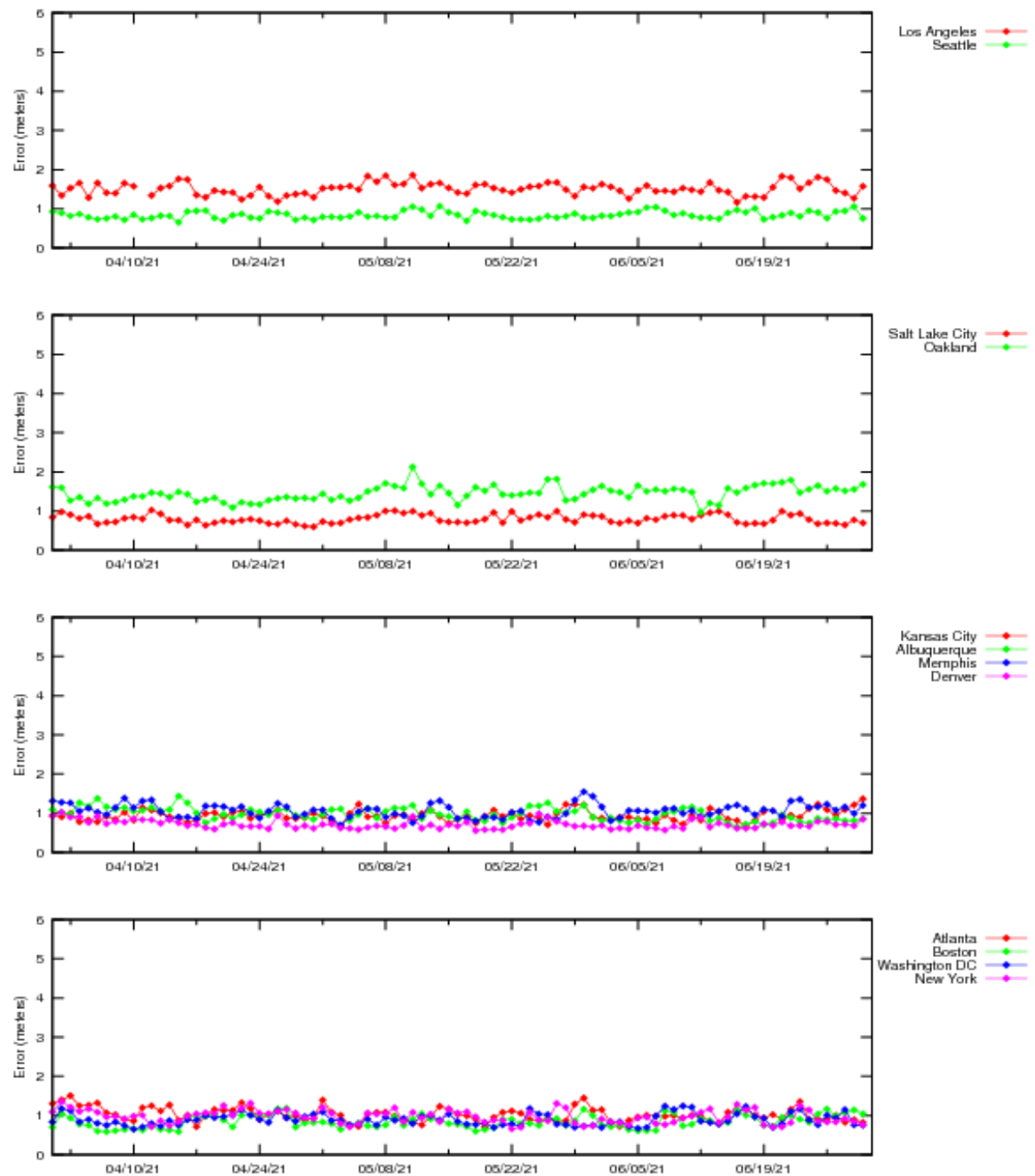


Figure 2-5 LPV 95% Vertical Accuracy

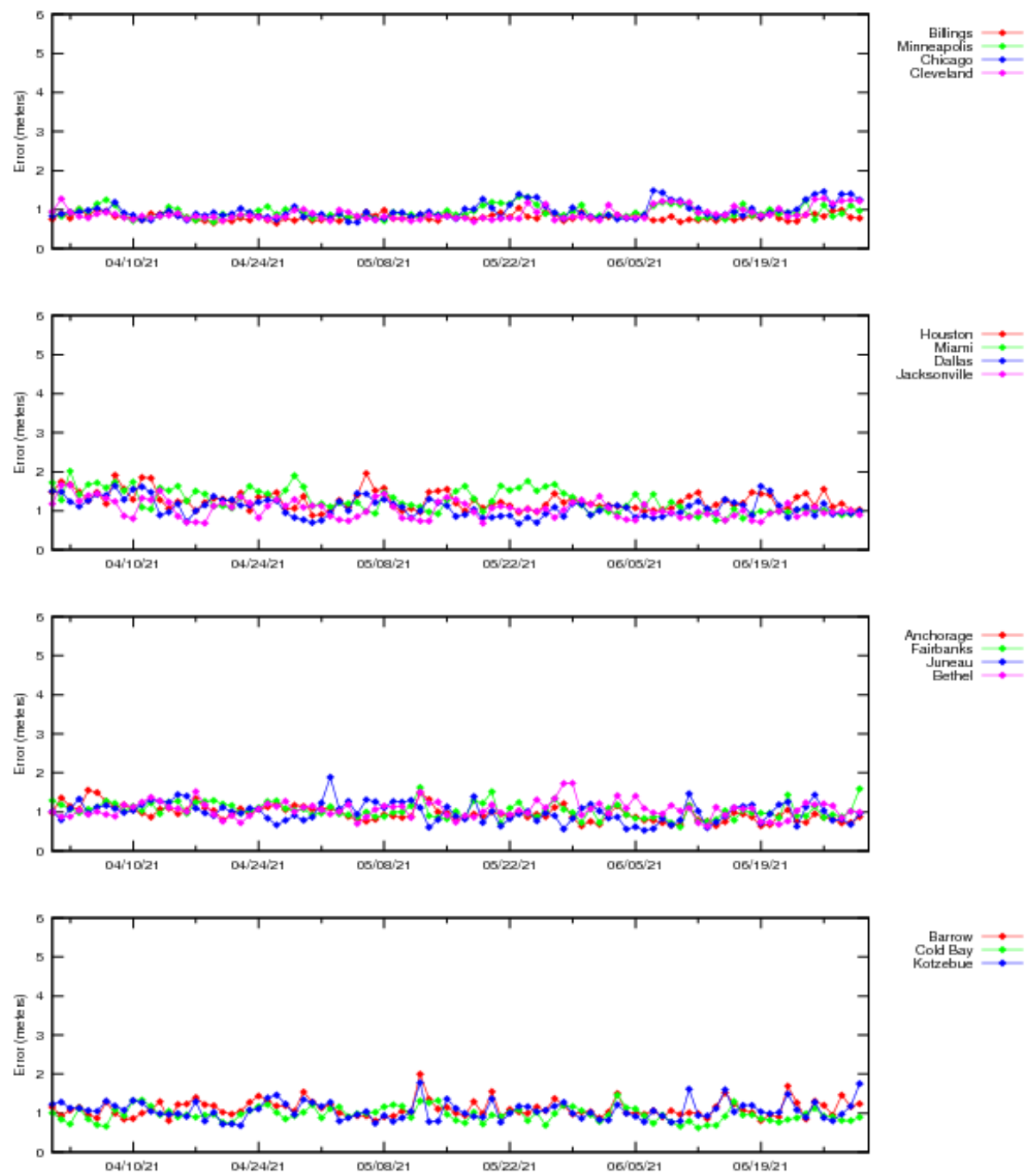


Figure 2-6 LPV 95% Vertical Accuracy

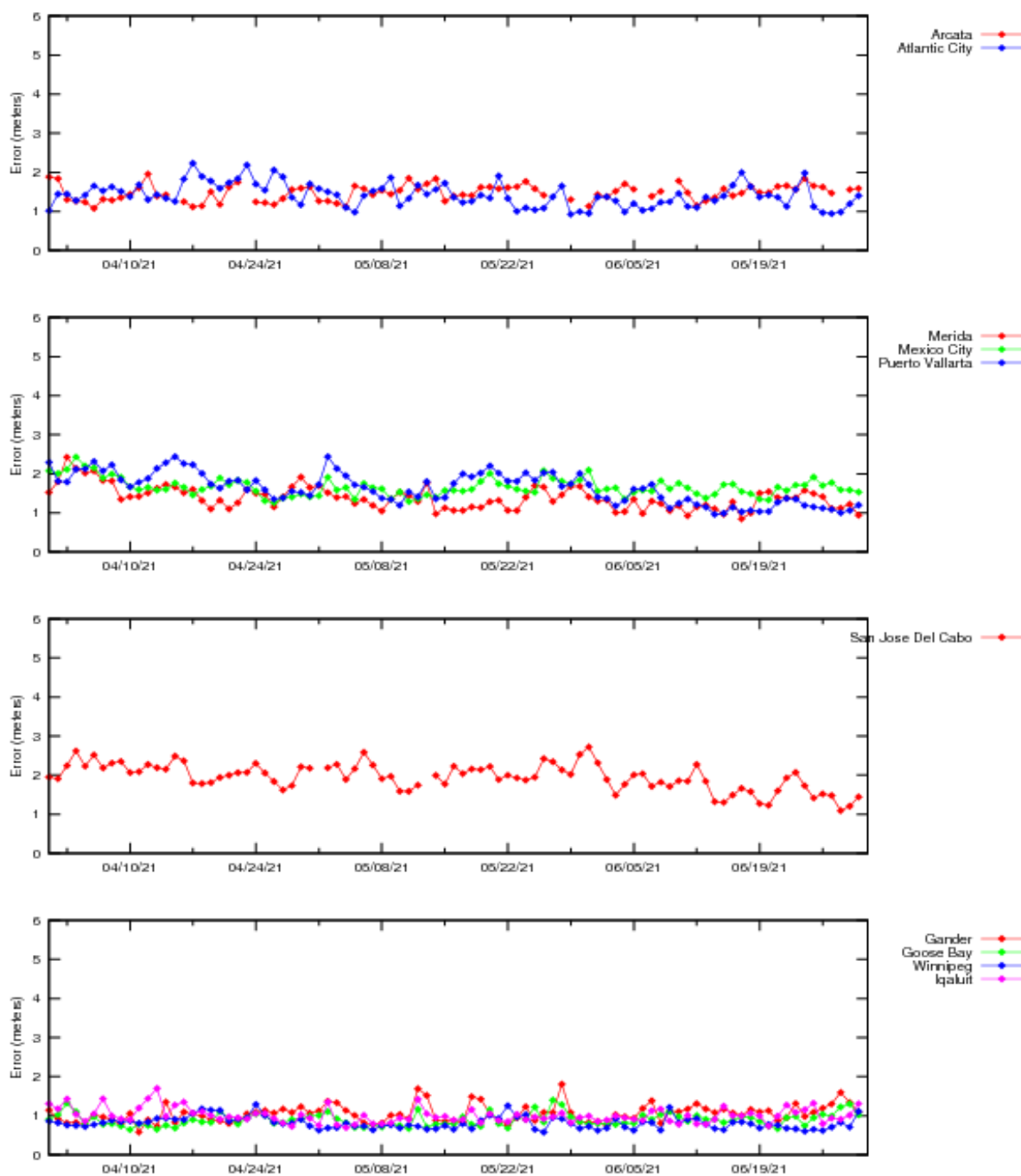


Figure 2-7 and Figure 2-8 show the daily NPA 95% horizontal accuracy at the NPA evaluation sites for the reporting period. There were no noteworthy increases in 95% NPA position errors due to geomagnetic activity.

Figure 2-7 NPA 95% Horizontal Accuracy

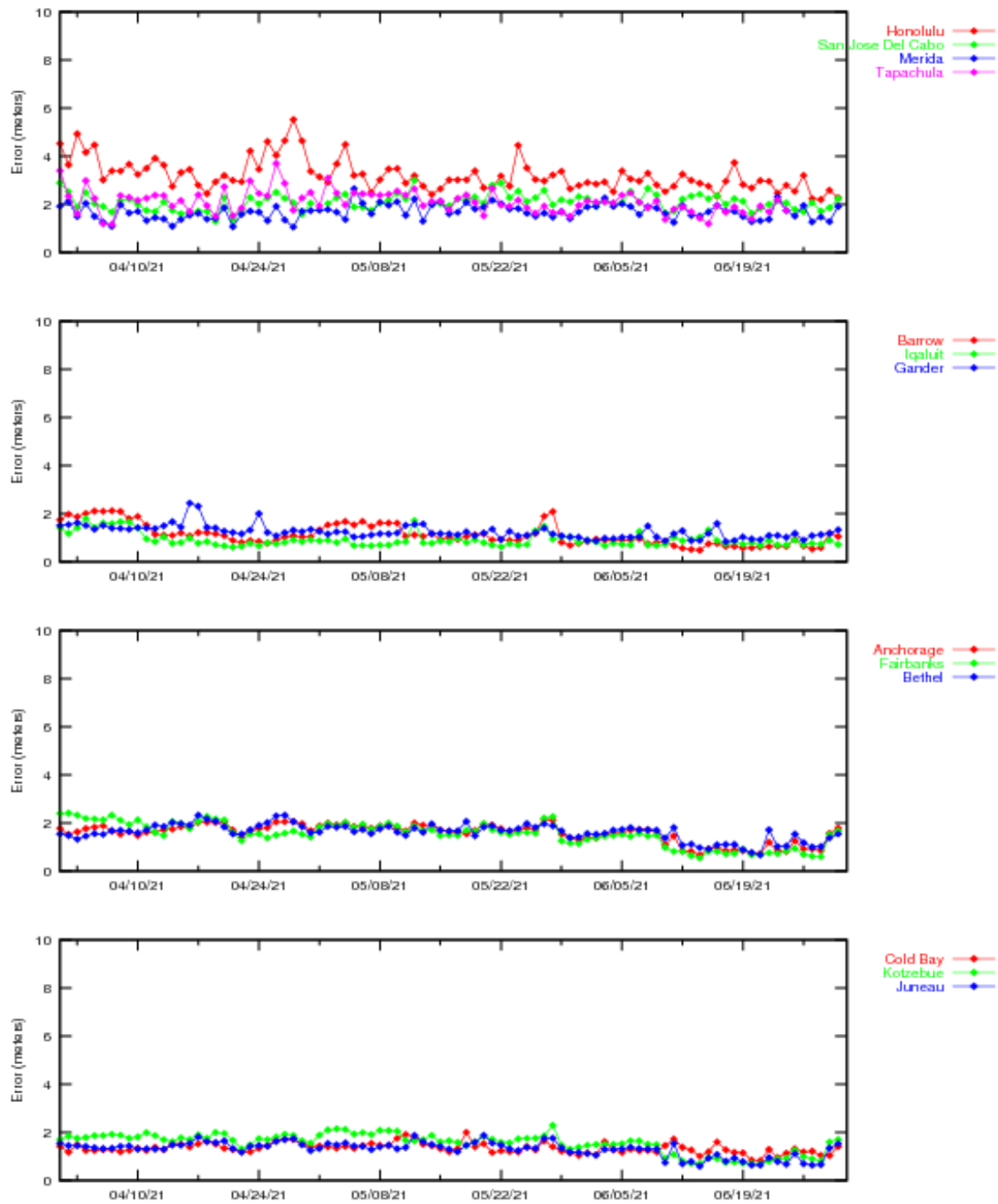


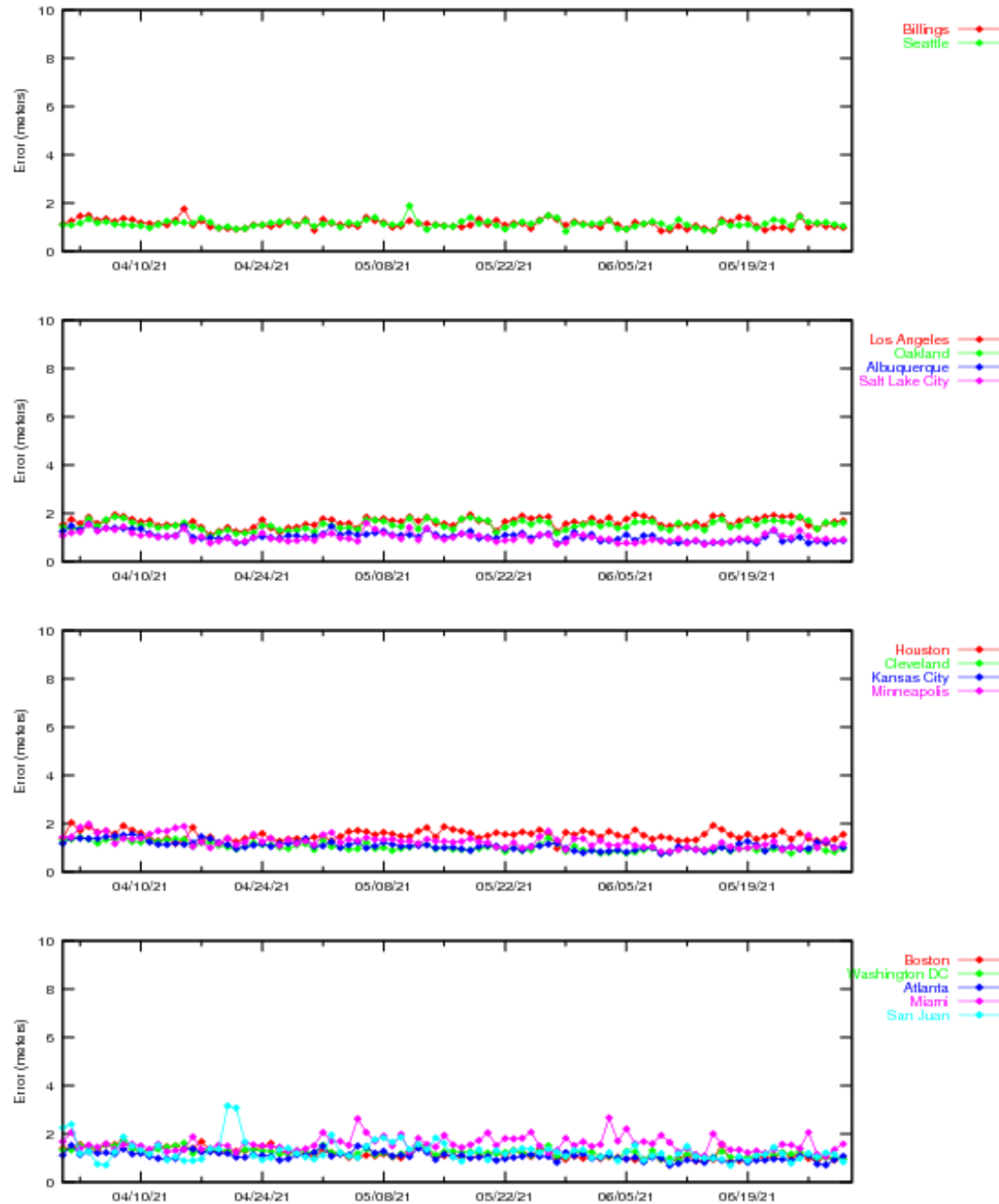
Figure 2-8 NPA 95% Horizontal Accuracy

Figure 2-9 through Figure 2-12 show the distributions of the vertical and horizontal errors at all 38 WAAS receiver for the quarter. Figure 2-9 and Figure 2-10 show the triangular distributions of vertical position error (VPE) versus VPL and horizontal position error (HPE) versus HPL: (1) the horizontal axis is the position error, (2) the vertical axis is the WAAS protection level where lower protection levels equate to better availability, (3) the diagonal line shows the point where error equals protection level, (4) above and to the left of the diagonal line show where errors are bounded (WAAS is providing integrity in the position domain), and (5) below and to the right show where errors are

not bounded (HMI could be present). Figure 2-11 and Figure 2-12 show the 2-D histograms of HPE, VPE, and normalized position errors: (1) the blue trace shows the distributions of the actual HPE and VPE; (2) the horizontal axis is the position errors and the vertical axis is the total count of data samples (log scale) in each 0.1-meter bin; (3) the magenta trace shows the distributions of the actual horizontal and vertical errors normalized by one-sigma value of the protection level: horizontal protection level (HPL/6.0) and vertical protection level (VPL/5.33); (4) the horizontal axis is the standard units and vertical axis is the observed distribution of normalized errors data samples in each 0.1-sigma bin. The narrowness of the normalized error distributions indicates good safety performance.

Figure 2-9 LPV Horizontal Error Bounding Triangle Chart

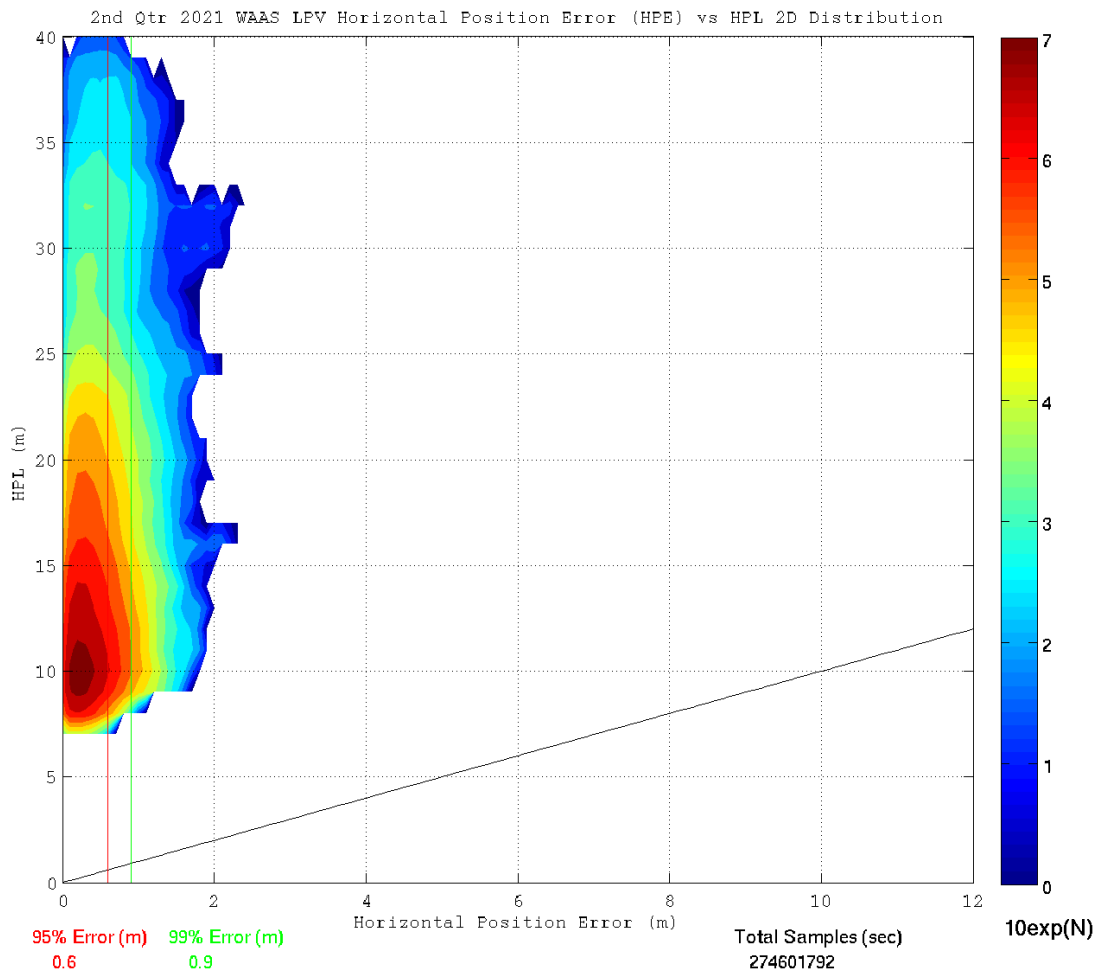


Figure 2-10 LPV Vertical Error Bounding Triangle Chart

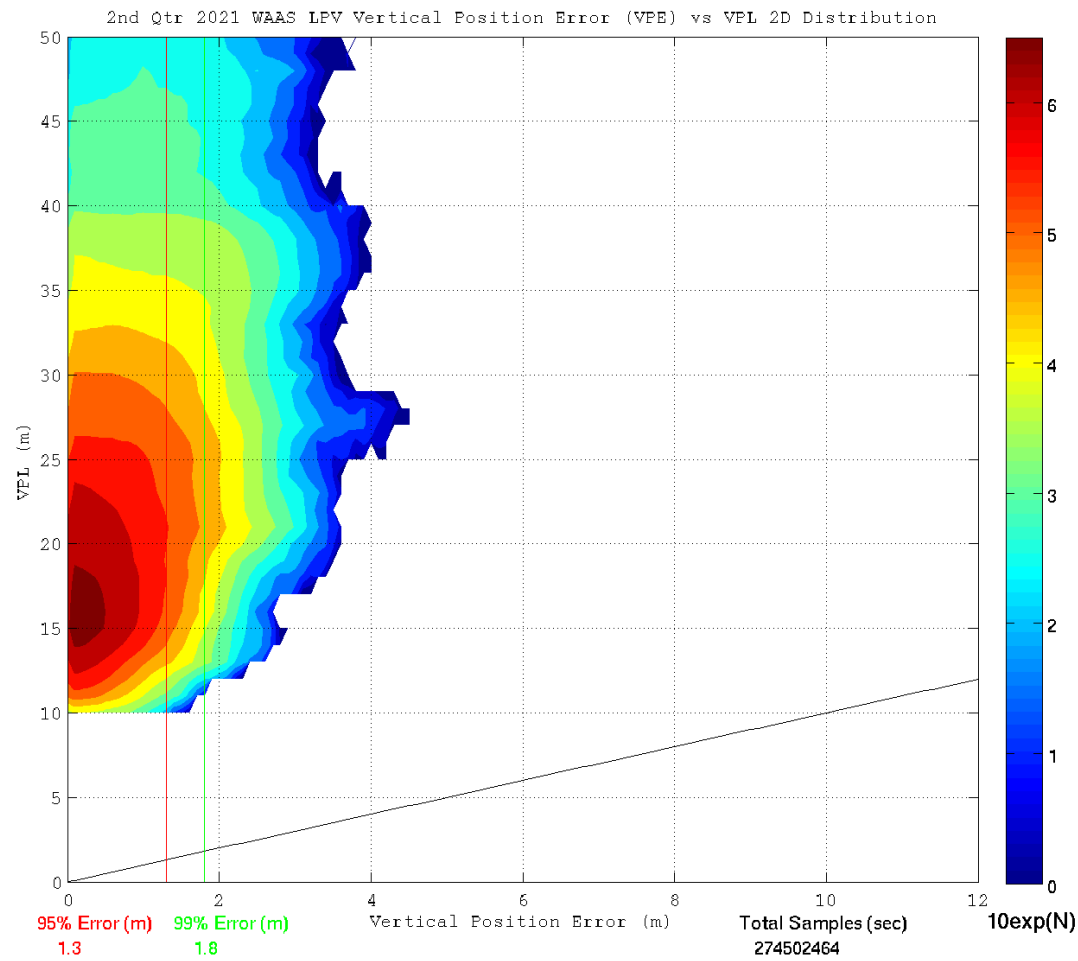


Figure 2-11 LPV 2-D Horizontal Error Distribution Histogram

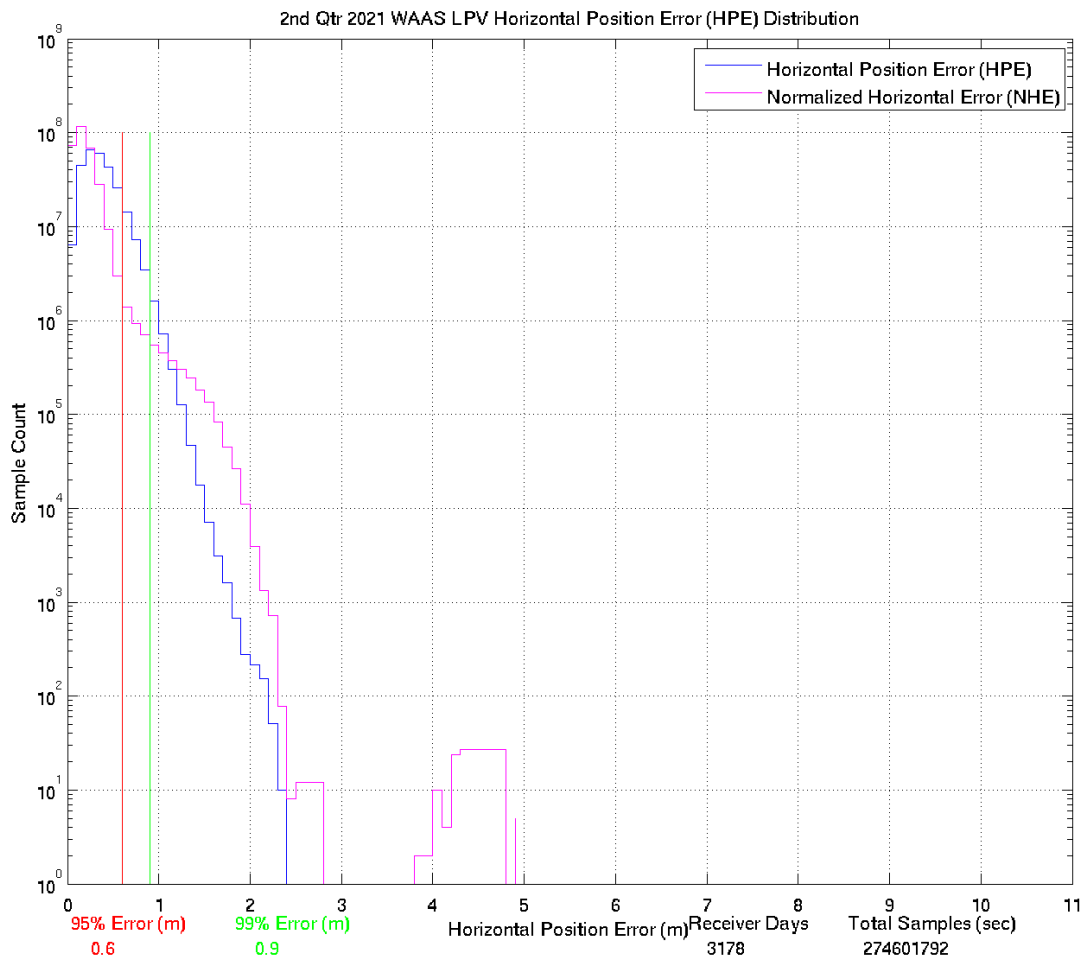
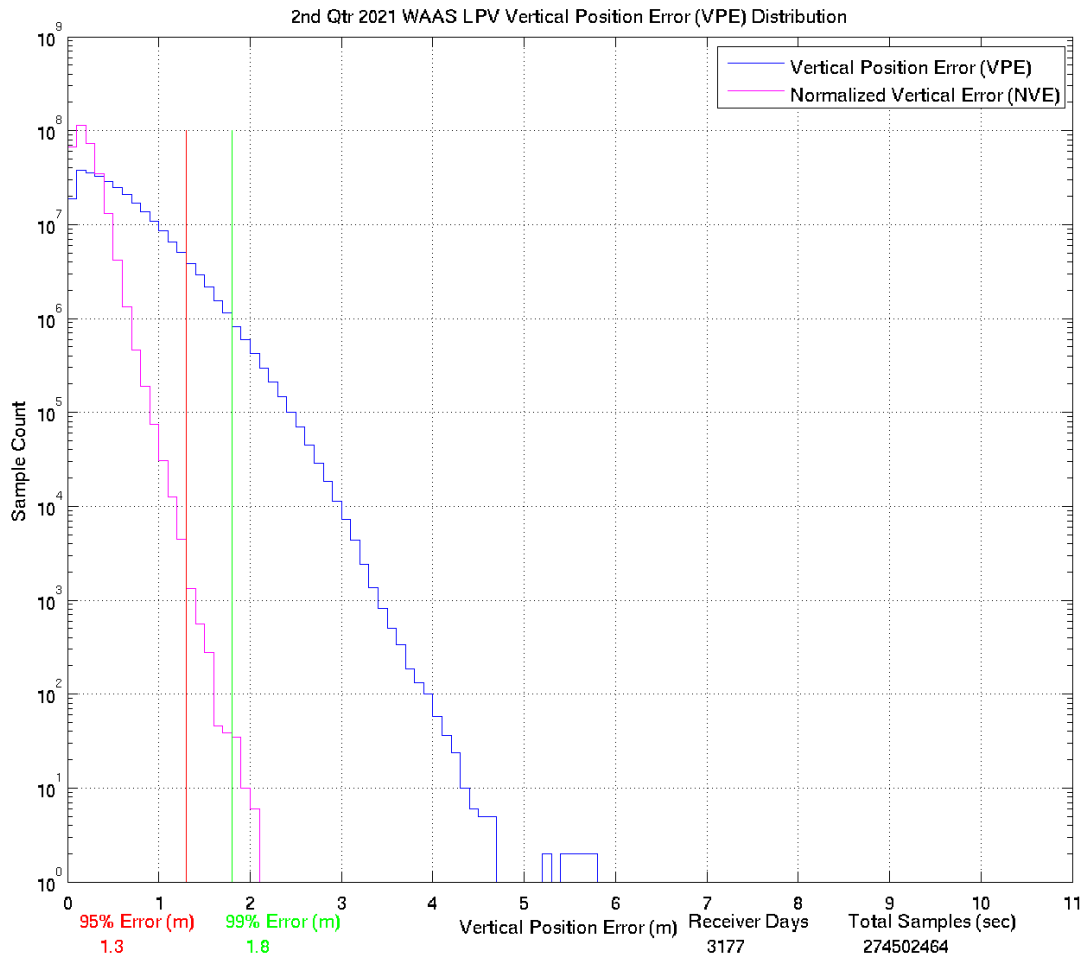


Figure 2-12 LPV 2-D Vertical Error Distribution Histogram

3.0 AVAILABILITY

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

- The maximum 99% CONUS HPL was 17.243 meters observed at Miami
- The maximum 99% CONUS VPL was 31.128 meters observed at Arcata
- The minimum 99% CONUS HPL was 11.011 meters observed at Memphis
- The minimum 99% CONUS VPL was 19.645 meters observed at Kansas City
- The maximum 99% Alaska HPL was 19.960 meters observed at Cold Bay
- The maximum 99% Alaska VPL was 32.188 meters observed at Barrow
- The minimum 99% Alaska HPL was 13.383 meters observed at Fairbanks
- The minimum 99% Alaska VPL was 22.088 meters observed at Juneau

Table 3-1 99% Protection Level

Location	99% HPL (Meters)	99% VPL (Meters)	Percentage in PA mode (%)
Arcata	14.374	31.128	100
Atlantic City	14.736	22.401	100
Oklahoma City	11.995	24.056	100
Albuquerque	11.688	23.540	100
Anchorage	13.632	22.460	100
Atlanta	11.936	24.167	100
Barrow	16.199	32.188	100
Bethel	15.277	25.058	100
Billings	12.642	21.371	100
Boston	15.427	21.796	100
Chicago	12.343	22.400	100
Cleveland	14.658	24.181	100
Cold Bay	19.960	29.436	100
Dallas	11.149	21.648	100
Denver	11.307	24.620	100
Fairbanks	13.383	23.390	100
Gander	20.767	28.584	100
Goose Bay	19.084	26.439	100
Houston	12.148	23.466	100
Iqaluit	20.075	32.328	100
Jacksonville	13.672	25.961	100
Juneau	14.366	22.088	100
Kansas City	11.233	19.645	100
Kotzebue	15.059	28.595	100
Los Angeles	14.190	28.659	100
Memphis	11.011	22.000	100
Merida	21.351	38.239	100
Mexico City	23.178	43.325	100
Miami	17.243	28.343	100
Minneapolis	12.747	21.678	100
New York	15.161	21.927	100
Oakland	13.860	27.927	100
Puerto Vallarta	25.713	45.739	100
Salt Lake City	11.401	21.613	100
San Jose Del Cabo	23.156	38.402	100
Seattle	13.152	22.029	100
Washington DC	13.448	23.417	100
Winnipeg	14.310	22.514	100

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

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

Figure 3-1 through Figure 3-6 show the daily availability of LPV and LPV200 service levels. Figure 3-7 through Figure 3-12 show the daily interruptions of LPV and LPV200 service levels.

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

Location	LP WAAS With 15 Minute Window (%)	LPV WAAS With 15 Minute Window (%)	LPV200 WAAS With 15 Minute Window (%)
Arcata	100	100	100
Atlantic City	100	100	100
Prescott	99.96	99.96	97.92
Albuquerque	100	100	100
Anchorage	100	100	100
Atlanta	100	100	100
Barrow	100	100	99.54
Bethel	100	100	100
Billings	100	100	100
Boston	100	100	100
Chicago	100	100	100
Cleveland	100	100	100
Cold Bay	100	100	99.97
Dallas	100	100	100
Denver	100	100	100
Fairbanks	100	100	100
Gander	100	100	100
Goose Bay	100	100	100
Houston	100	100	100
Iqaluit	99.91	99.9	99.77
Jacksonville	100	100	100
Juneau	100	100	99.99
Kansas City	100	100	100
Kotzebue	100	100	99.91
Los Angeles	100	100	100
Memphis	100	100	100
Merida	100	99.87	97.27
Mexico City	100	99.82	95.11
Miami	100	100	99.91
Minneapolis	100	100	100
New York	100	100	100
Oakland	100	100	100
Puerto Vallarta	99.99	99.28	95.26
Salt Lake City	100	100	100
San Jose Del Cabo	100	99.52	96.51
Seattle	100	100	100
Washington DC	100	100	100
Winnipeg	100	100	100

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

Location	LP Outages (Number)	LP Outage Rates	LPV Outages (Number)	LPV Outage Rates	LPV200 Outages (Number)	LPV200 Outage Rates
Arcata	0	0	0	0	0	0
Atlantic City	0	0	0	0	0	0
Atlantic City-a	0	0	0	0	0	0
Oklahoma City	0	0	0	0	4	0.000089

Prescott	36	0.000728	37	0.000748	442	0.009126
Albuquerque	0	0	0	0	0	0
Anchorage	0	0	0	0	0	0
Atlanta	0	0	0	0	0	0
Barrow	0	0	4	0.000076	75	0.001440
Bethel	0	0	0	0	0	0
Billings	0	0	0	0	0	0
Boston	0	0	0	0	0	0
Chicago	0	0	0	0	0	0
Cleveland	0	0	0	0	0	0
Cold Bay	0	0	0	0	3	0.000057
Dallas	0	0	0	0	1	0.000019
Denver	0	0	0	0	0	0
Fairbanks	1	0.000019	1	0.000019	1	0.000019
Gander	0	0	0	0	0	0
Goose Bay	0	0	0	0	0	0
Houston	0	0	0	0	1	0.000019
Iqaluit	7	0.000134	10	0.000191	58	0.001110
Jacksonville	0	0	0	0	0	0
Juneau	0	0	0	0	2	0.000038
Kansas City	0	0	0	0	0	0
Kotzebue	0	0	0	0	12	0.000229
Los Angeles	0	0	0	0	1	0.000019
Memphis	0	0	0	0	0	0
Merida	0	0	12	0.000230	215	0.004238
Mexico City	0	0	40	0.000765	501	0.010057
Miami	0	0	0	0	12	0.000229
Minneapolis	0	0	0	0	0	0
New York	0	0	0	0	0	0
Oakland	0	0	0	0	0	0
Puerto Vallarta	2	0.000038	91	0.001753	446	0.008956
Salt Lake City	0	0	0	0	0	0
San Jose Del Cabo	0	0	85	0.001691	349	0.007160
Seattle	0	0	0	0	0	0
Washington DC	0	0	0	0	0	0
Winnipeg	0	0	0	0	0	0

Figure 3-1 LPV Instantaneous Availability

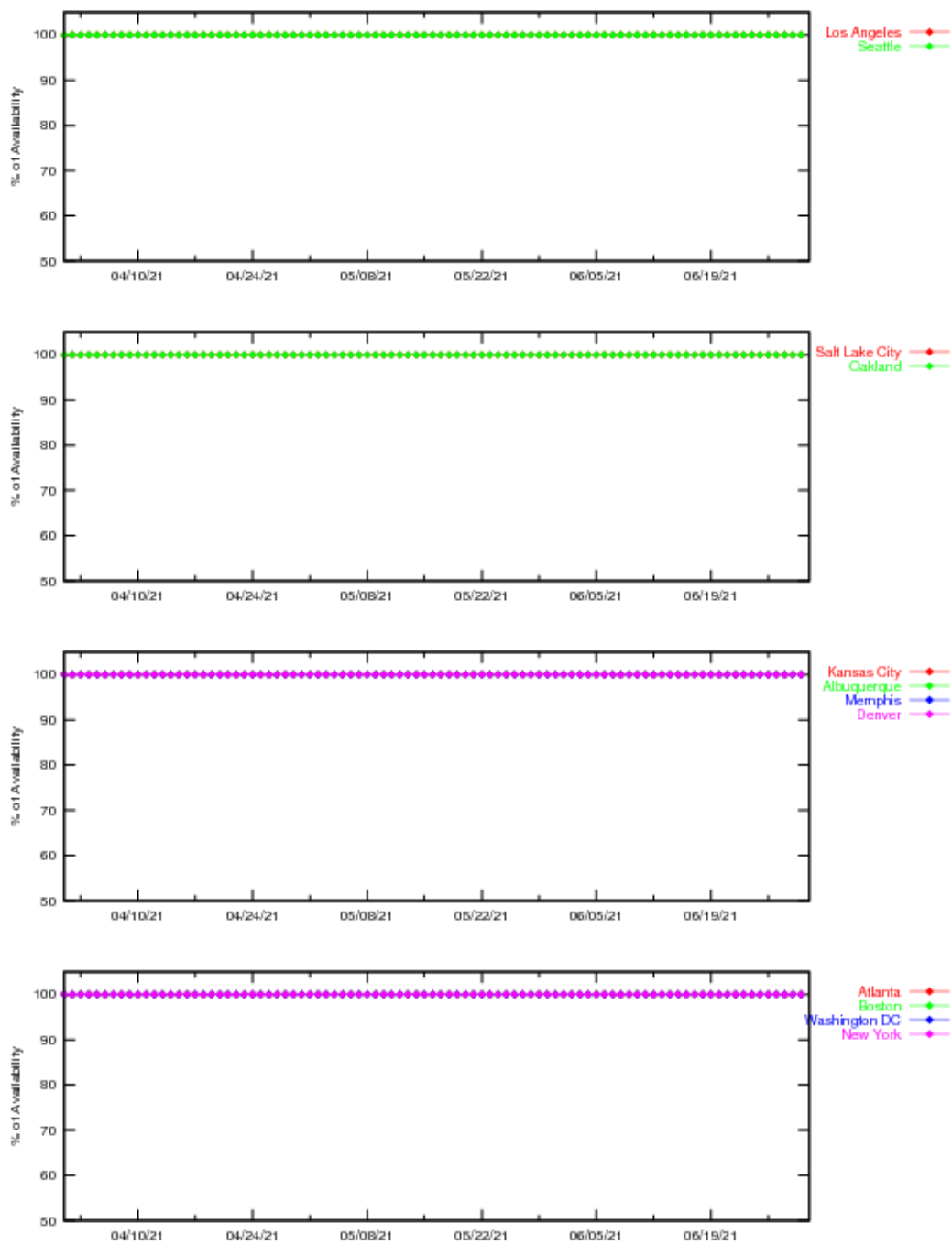


Figure 3-2 LPV Instantaneous Availability

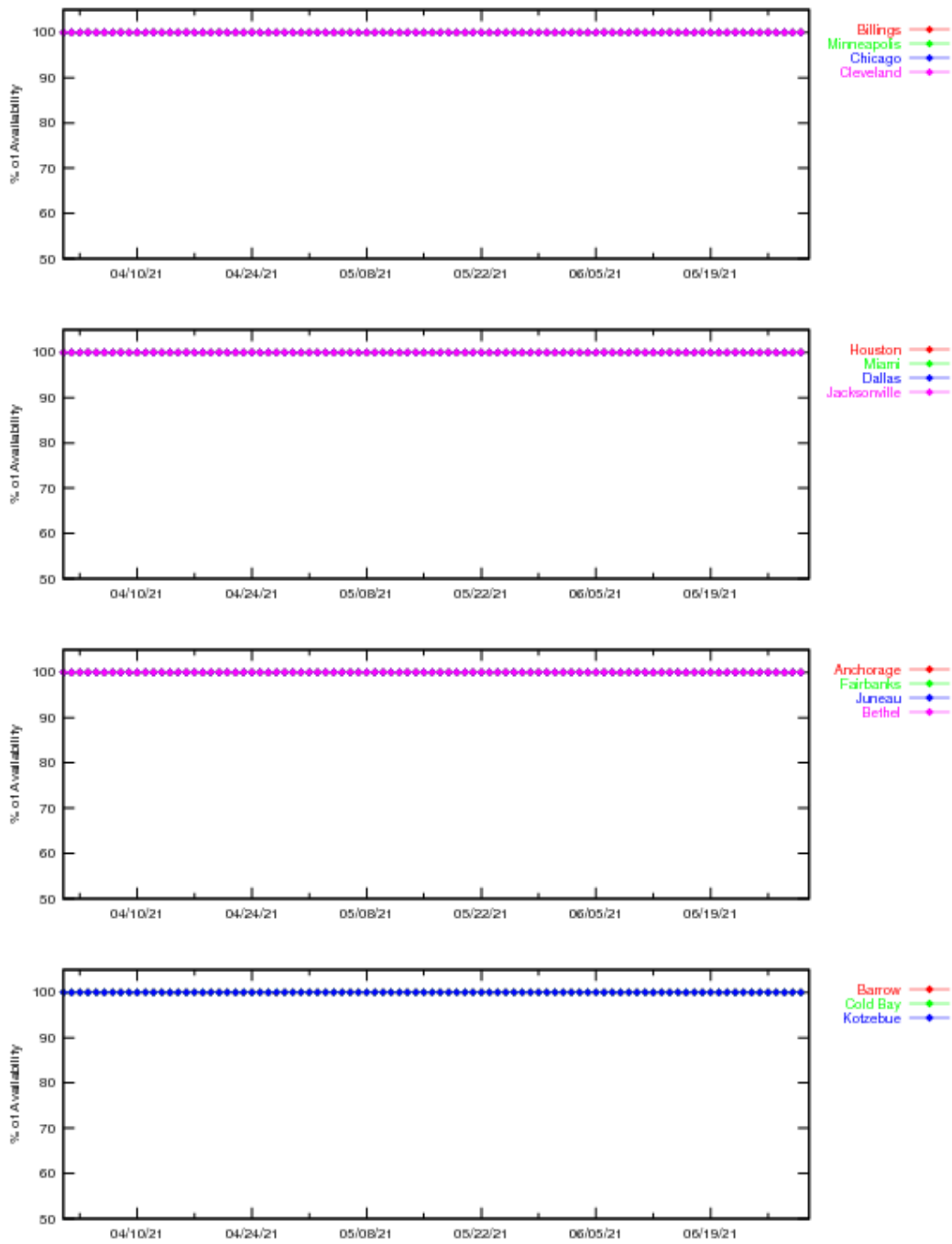


Figure 3-3 LPV Instantaneous Availability

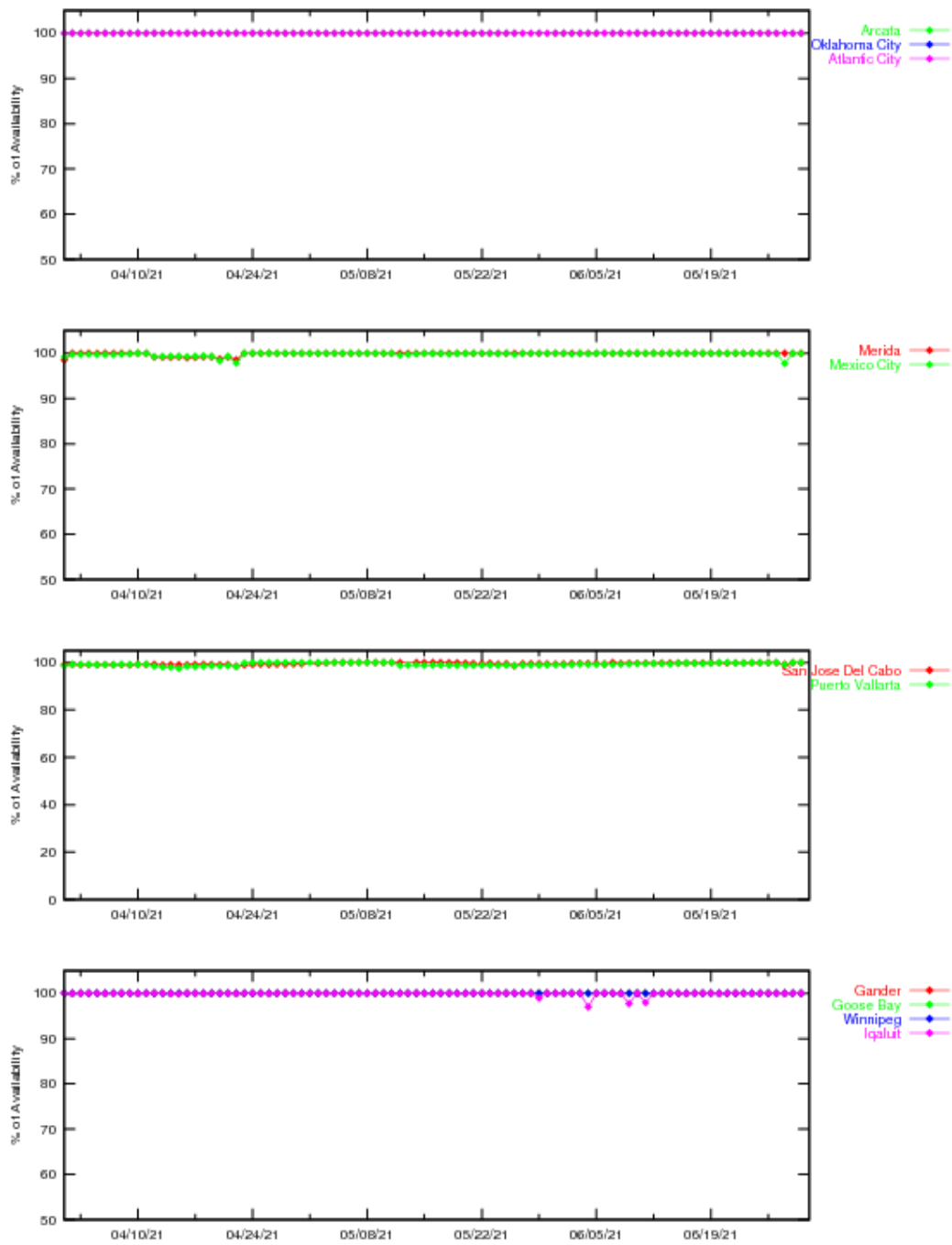


Figure 3-4 LPV200 Instantaneous Availability

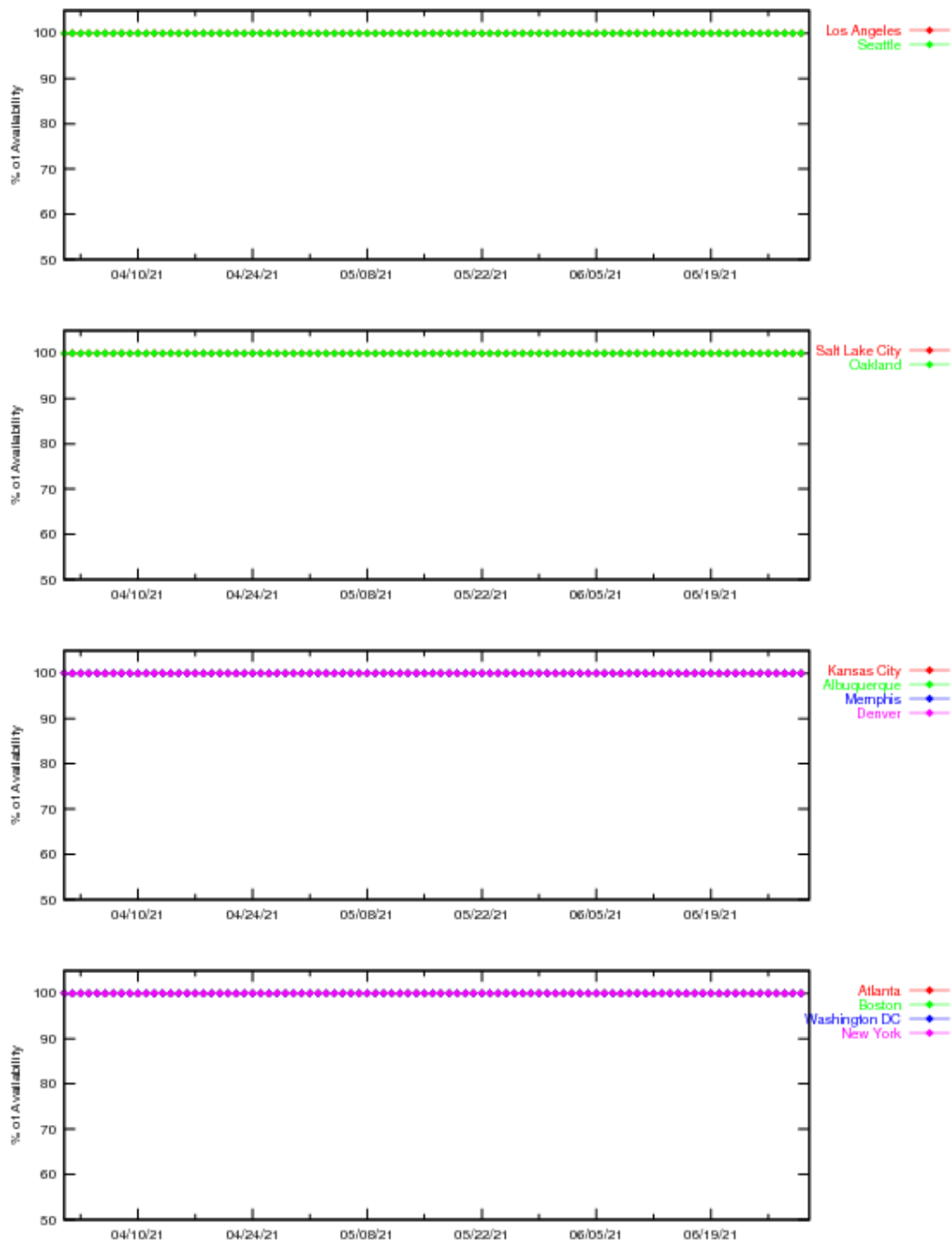


Figure 3-5 LPV200 Instantaneous Availability

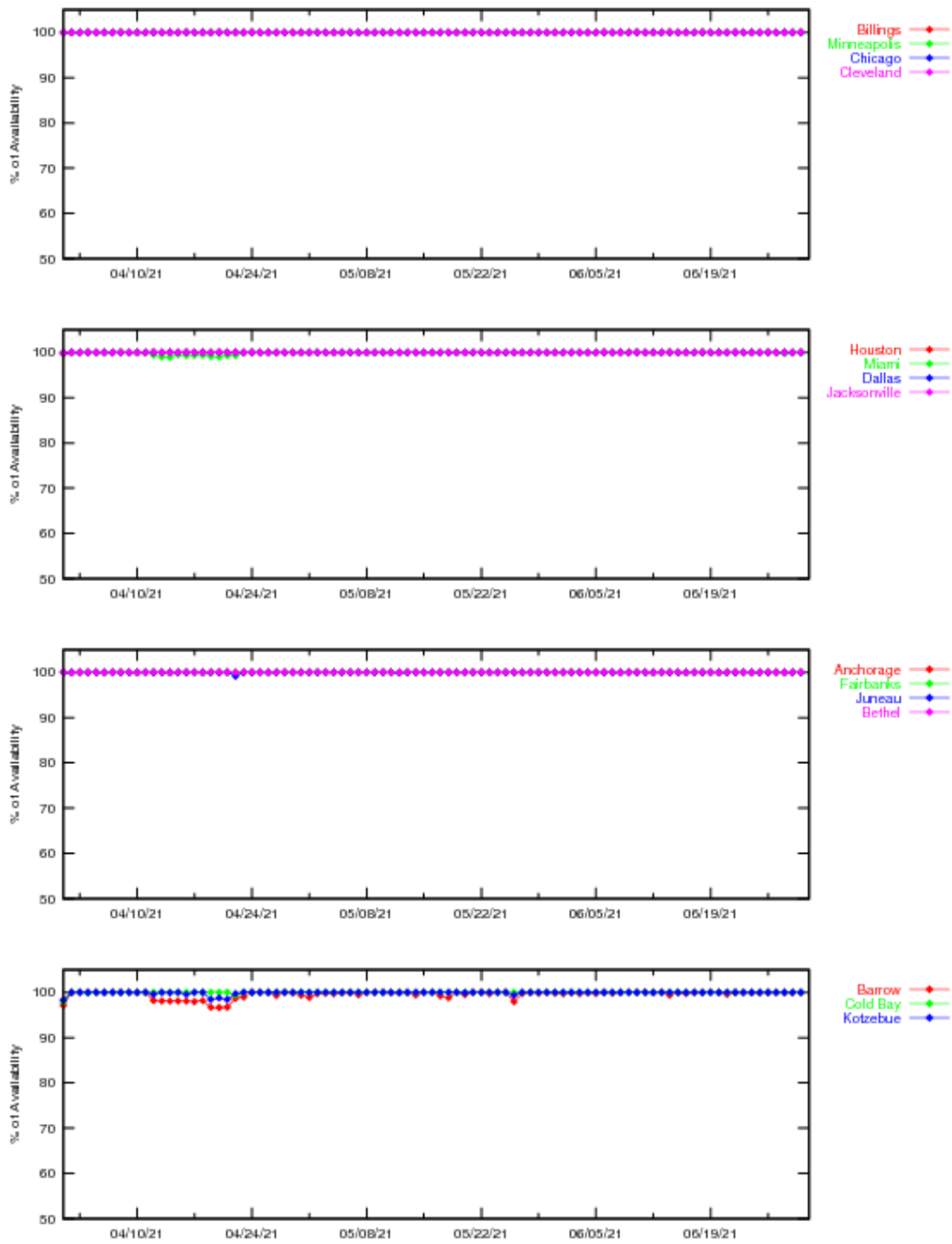


Figure 3-6 LPV200 Instantaneous Availability

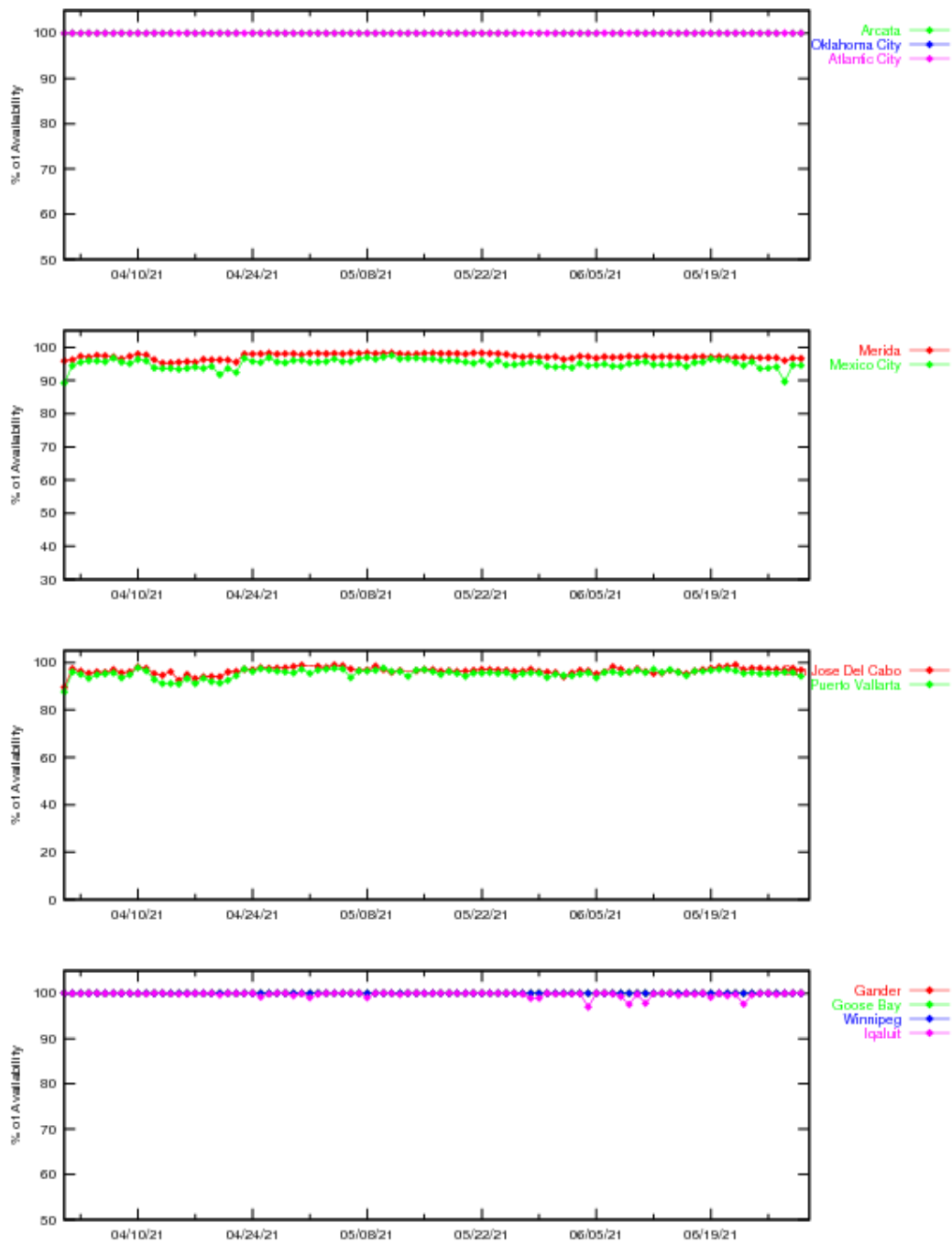


Figure 3-7 LPV Outages

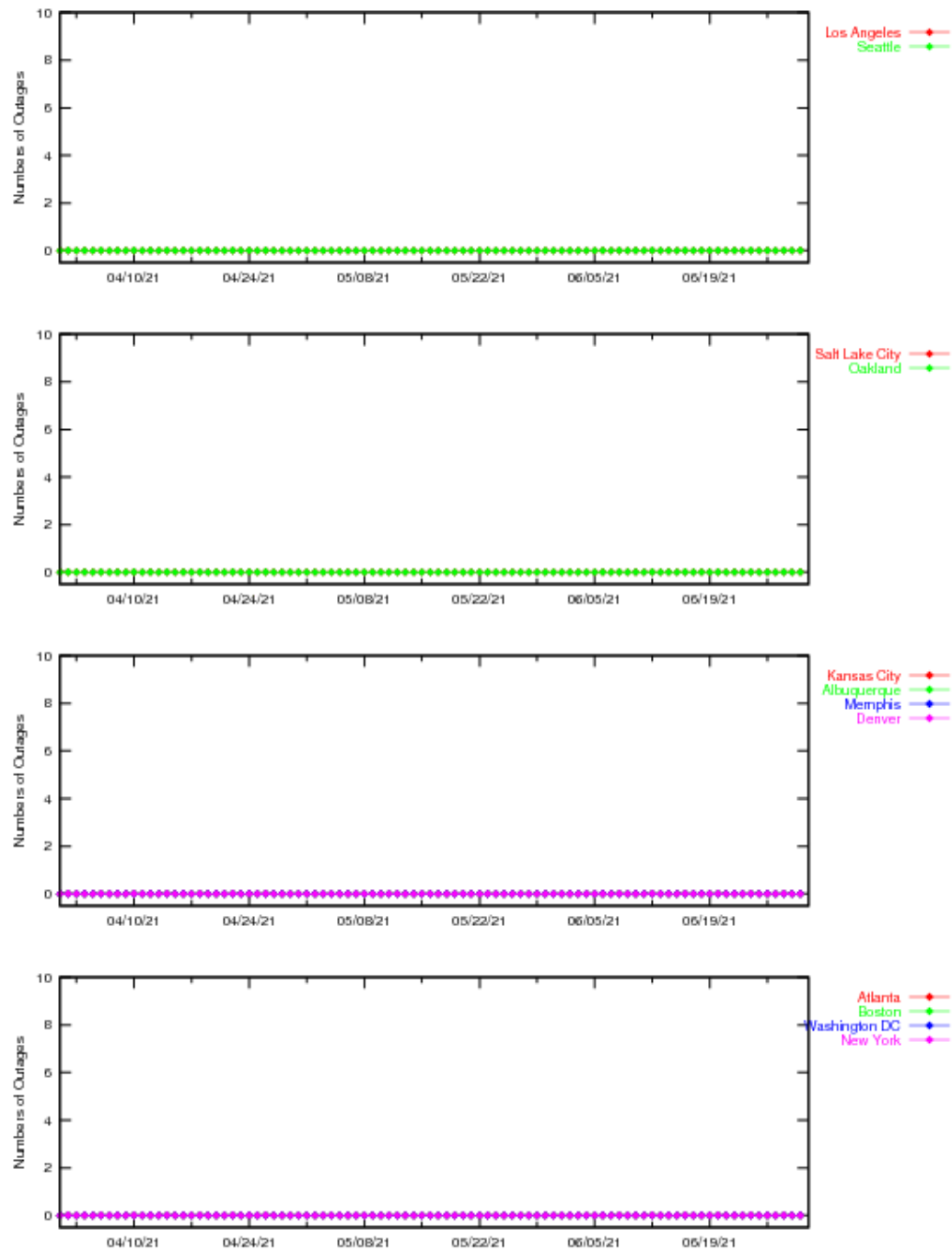


Figure 3-8 LPV Outages

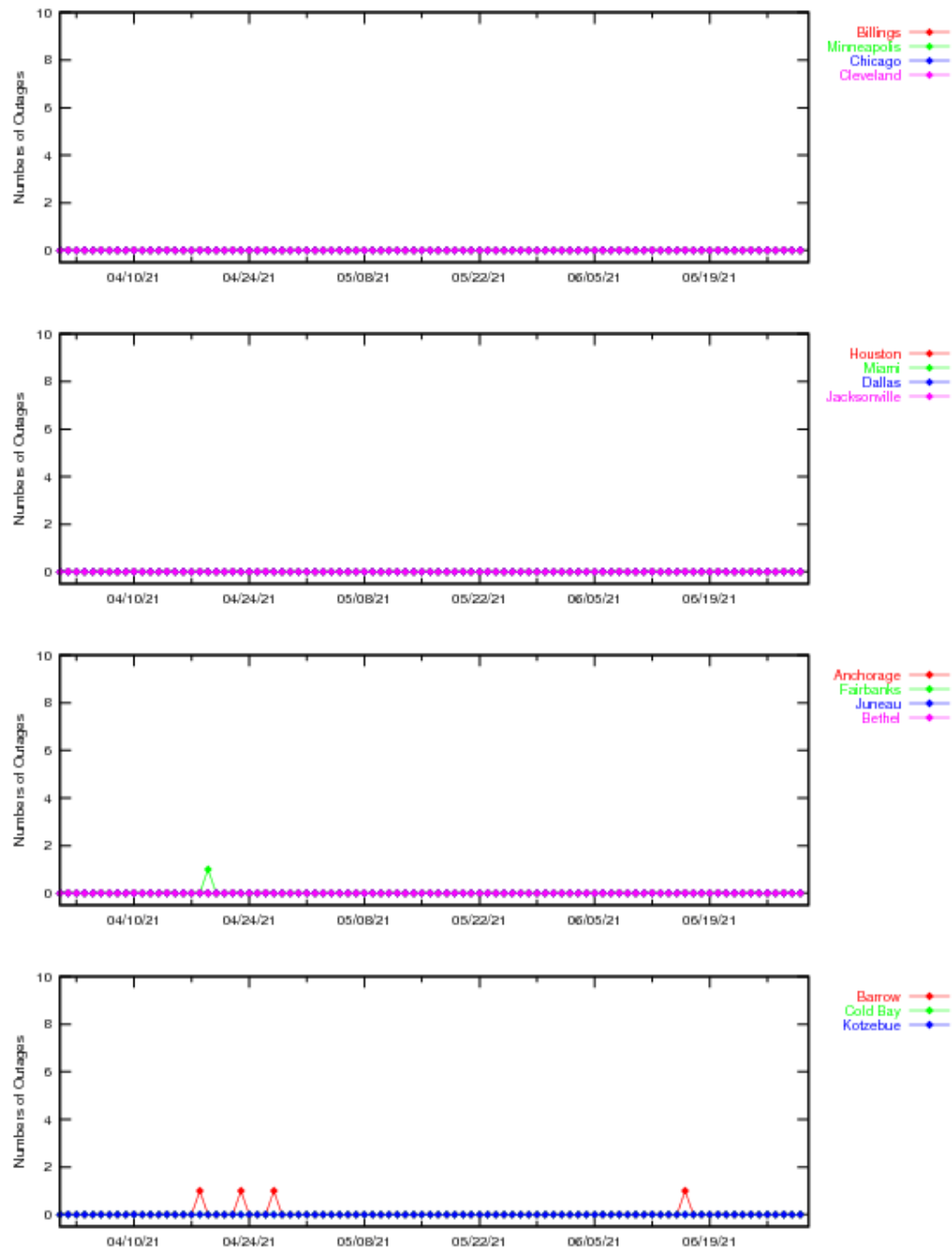


Figure 3-9 LPV Outages

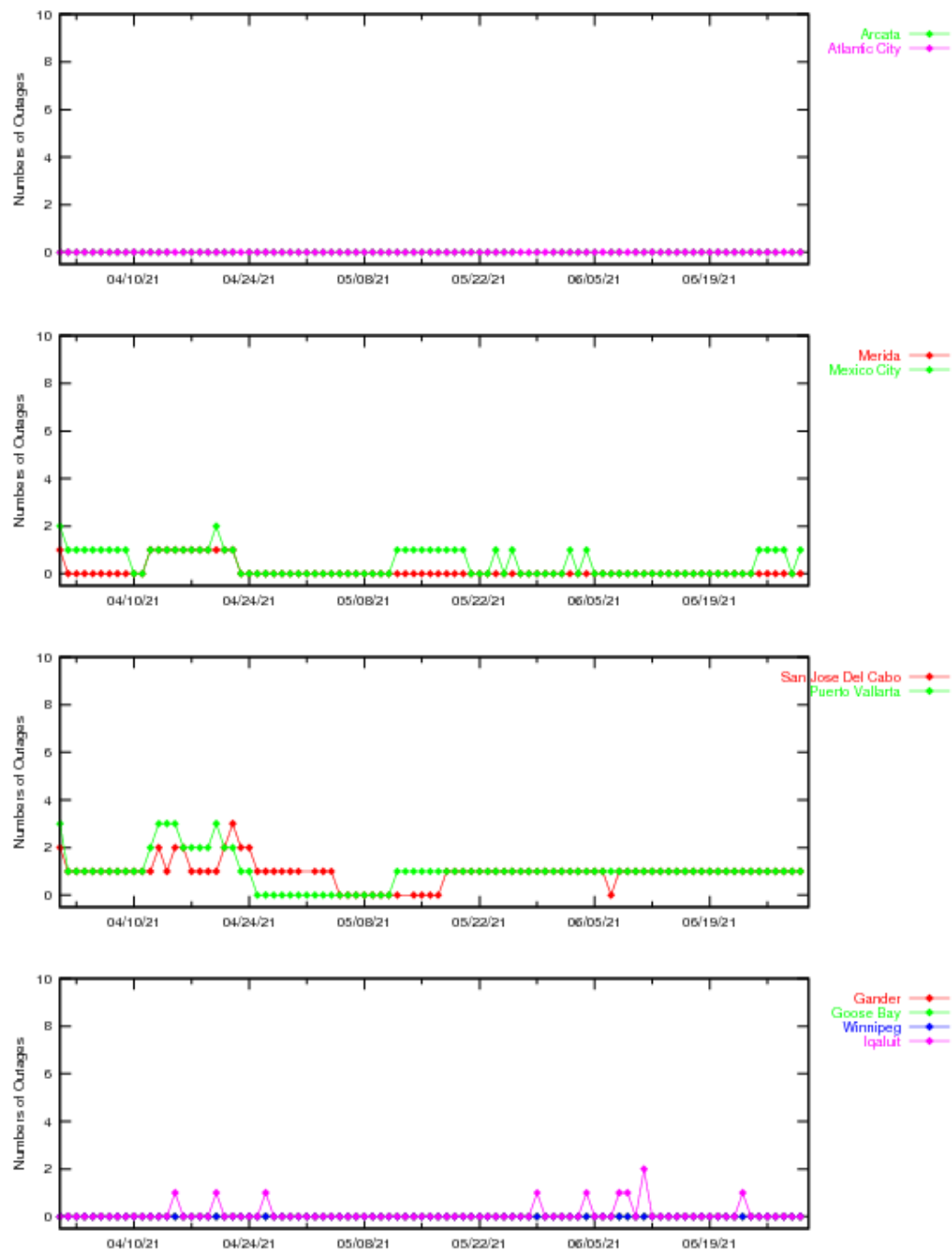


Figure 3-10 LPV200 Outages

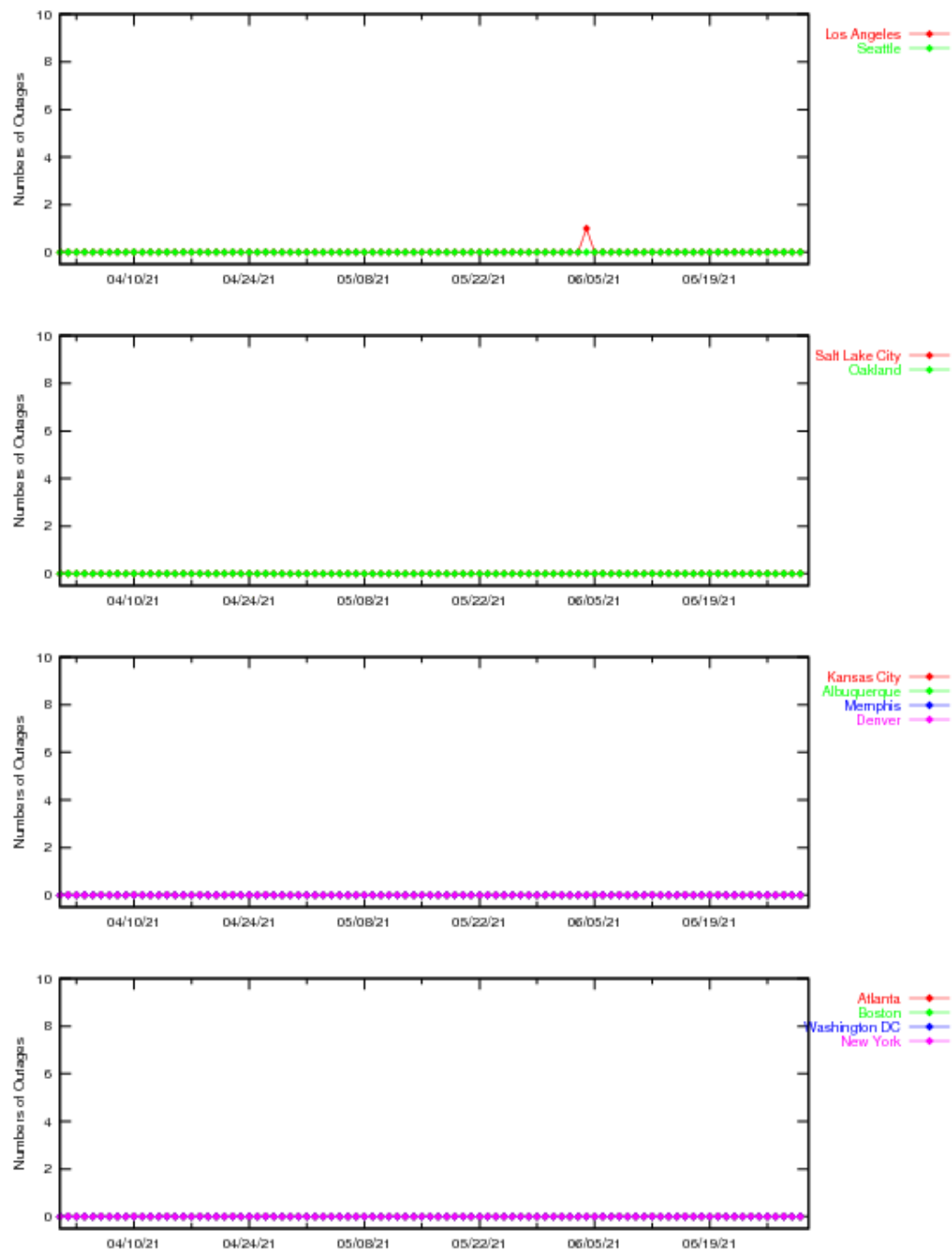


Figure 3-11 LPV200 Outages

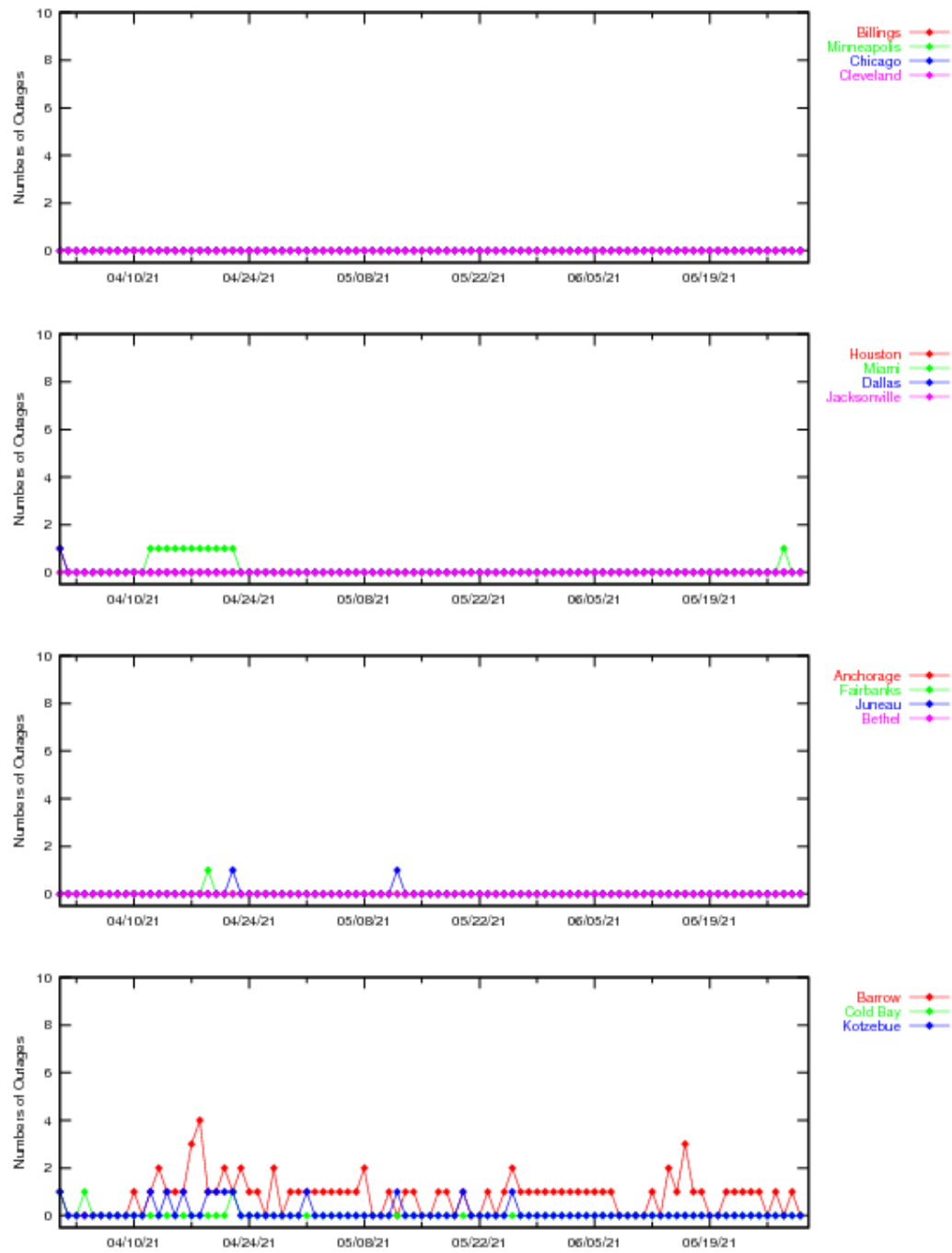
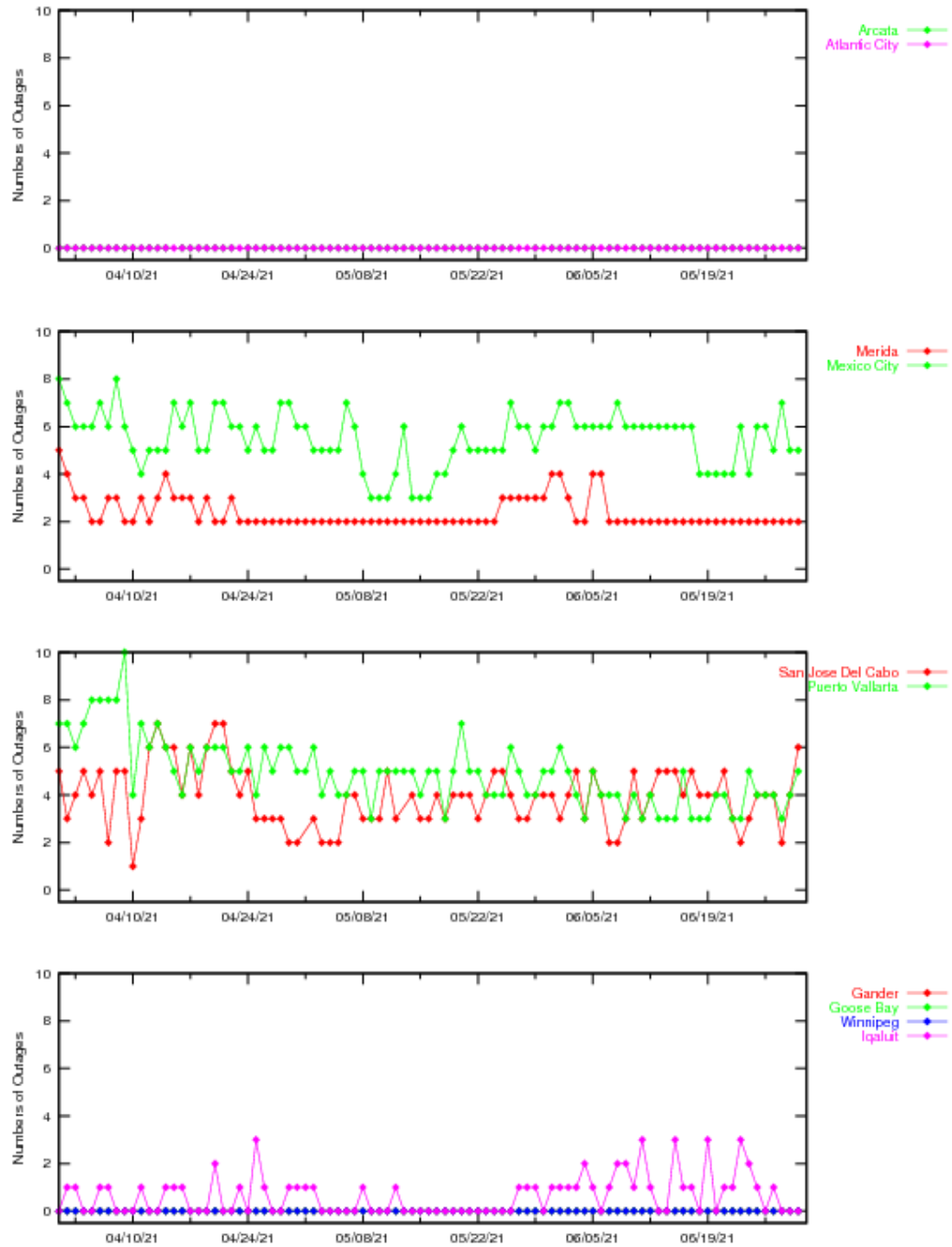


Figure 3-12 LPV200 Outages



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

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

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

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

Location	NPA Outages (Number)	NPA Outage Rates
Albuquerque	0	0
Anchorage	0	0
Atlanta	0	0
Barrow	0	0
Bethel	0	0
Billings	0	0
Boston	0	0
Cleveland	0	0
Cold Bay	0	0
Fairbanks	0	0
Gander	0	0
Honolulu	0	0
Houston	0	0
Iqaluit	0	0
Juneau	0	0
Kansas City	0	0
Kotzebue	0	0

Location	NPA Outages (Number)	NPA Outage Rates
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	1	0.000019
San Juan	0	0
Seattle	0	0
Tapachula	0	0
Washington DC	0	0

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

- April 1 – Satellite maintenance elevated UDREs on PRN9 and reduced LPV200 availability in CONUS, Alaska, and Canada.
- April 12 – 24 – Satellite maintenance elevated UDREs on PRN24 and reduced LPV200 availability in CONUS, Alaska, and Canada.
- April 22 – Satellite maintenance elevated UDREs on PRN7 and reduced LPV200 availability in Canada.
- May 17 – A GUS switchover on SM9 caused a reduction of LPV200 availability in Canada.
- May 26 – A GUS switchover on S15 caused a reduction of LPV200 availability in Alaska.
- May 26 – A GUS switchover on SM9 caused a reduction of LPV200 availability in Alaska.
- May 28 – Satellite maintenance elevated UDREs on PRN22 and reduced LPV200 availability in Canada.
- June 1 – Local RFI at Merida caused a reduction and eventual loss of space vehicle (SV) tracking. The outage occurred at 22:12.
- June 4 – Local RFI at Seattle caused a reduction and eventual loss of space vehicle (SV) tracking. The outage occurred at 18:44.
- June 10 – Satellite maintenance elevated UDREs on PRN31 and reduced LPV200 availability in CONUS.
- June 17 – SVN-78 (PRN11) was launched.
- June 23 – SVN-44 (PRN28) was decommissioned.

4.0 **COVERAGE**

The WAAS coverage area evaluation estimates the percent of service volume where WAAS provided service for the operational service levels defined in Table 1-1. The WAAS message and GPS/GEO satellite status are used to determine WAAS availability across North America. For PA coverage, protection levels were calculated at 30-second intervals at 1-degree spacing over the PA service volume, whereas for NPA coverage, the protection levels were calculated at 30-second intervals at 5-degree spacing over the NPA service volume.

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

Figure 4-1 LP North America Coverage for the Quarter

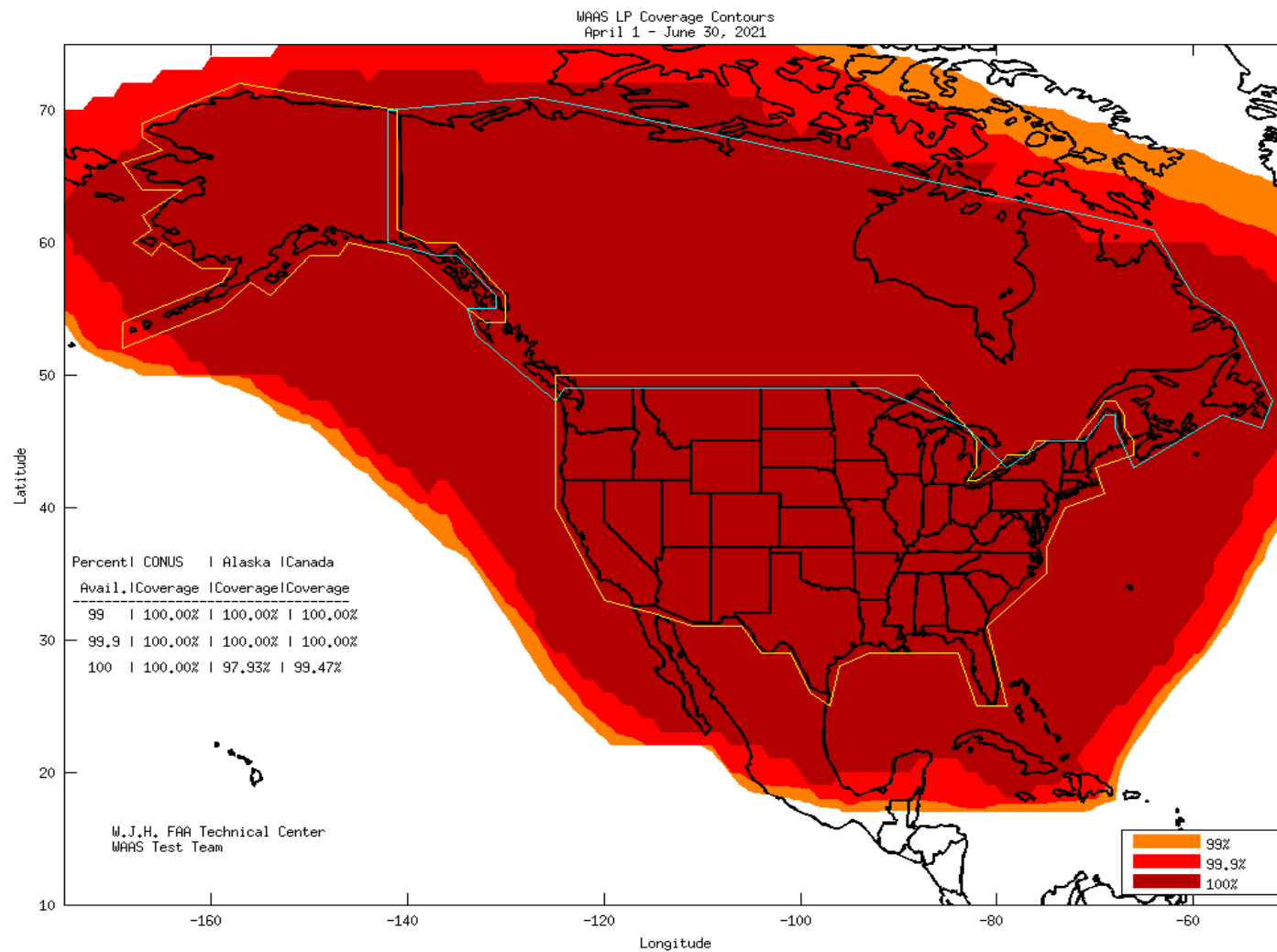


Figure 4-2 LPV North America Coverage for the Quarter

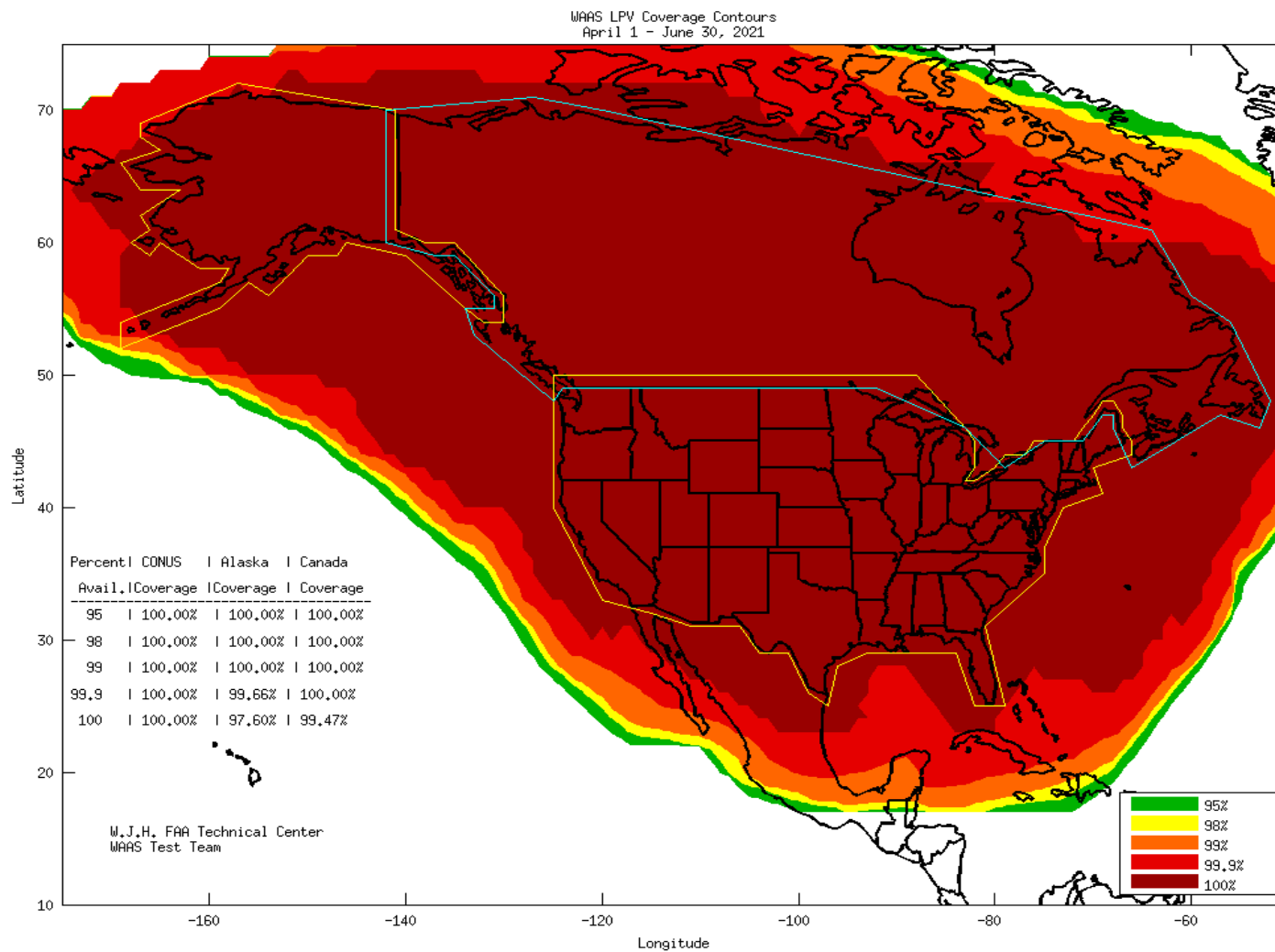


Figure 4-3 LPV200 North America Coverage for the Quarter

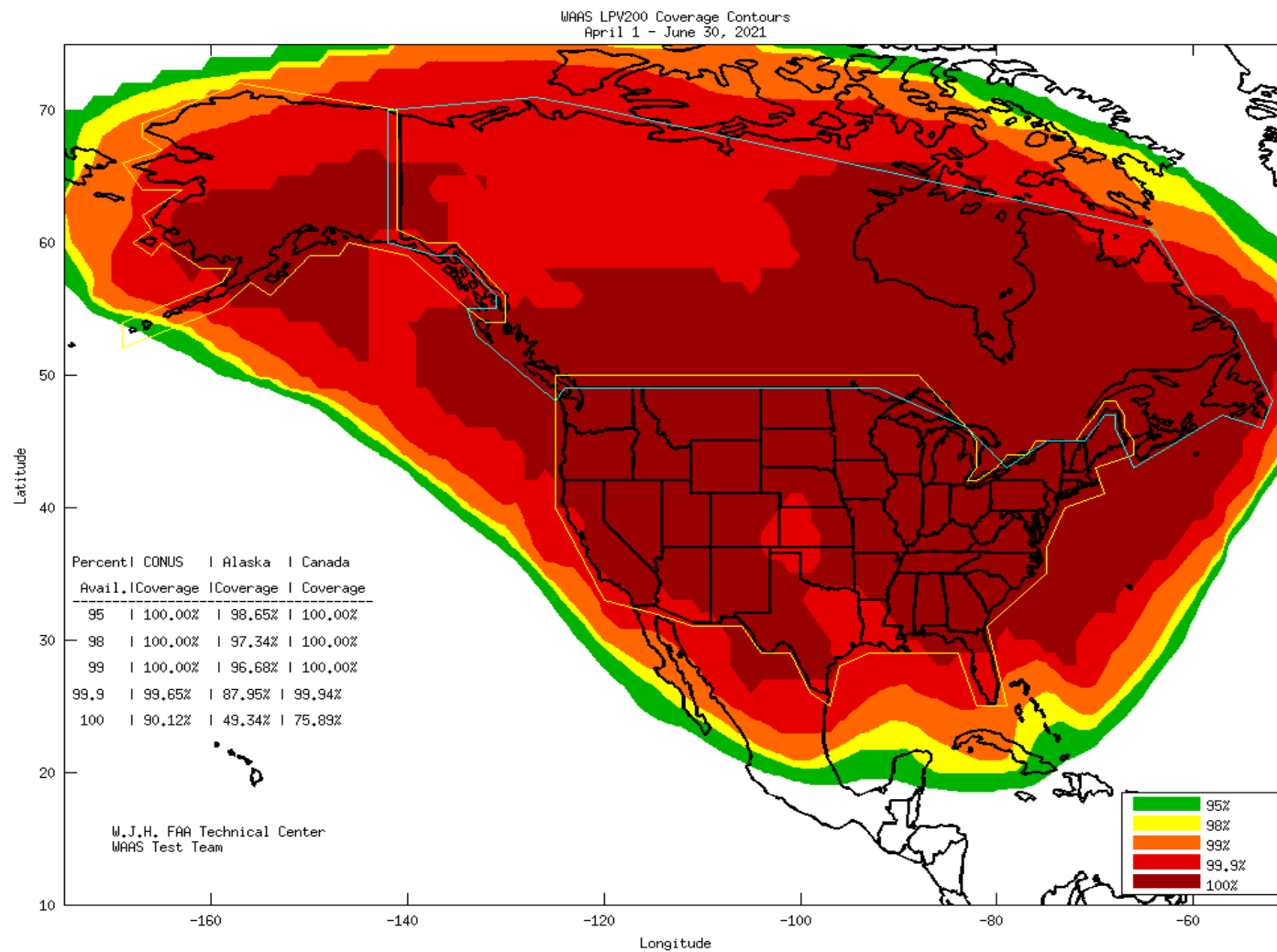


Figure 4-4 Daily LPV and LPV200 CONUS Coverage

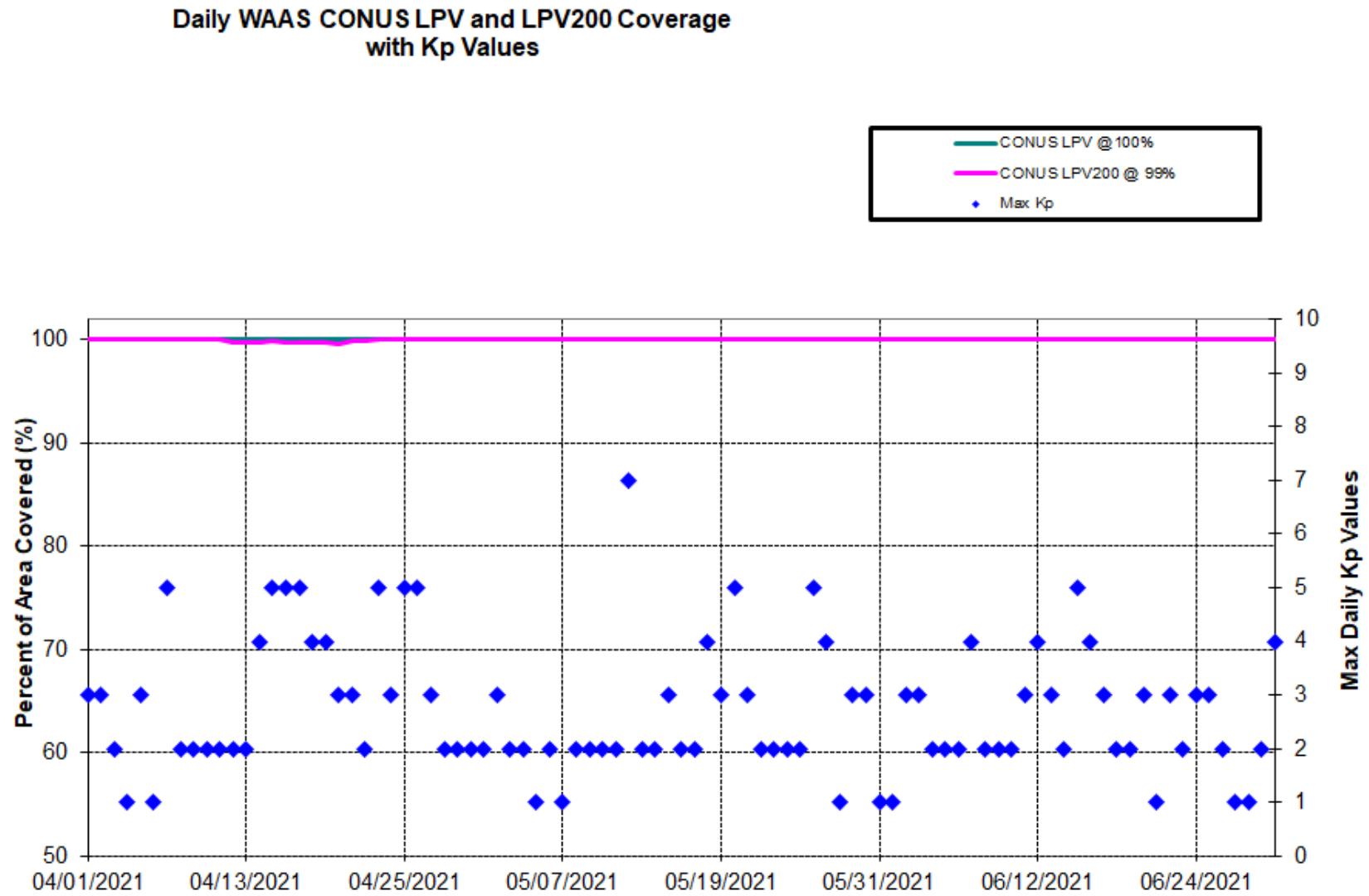


Figure 4-5 Daily LPV and LPV200 Alaska Coverage

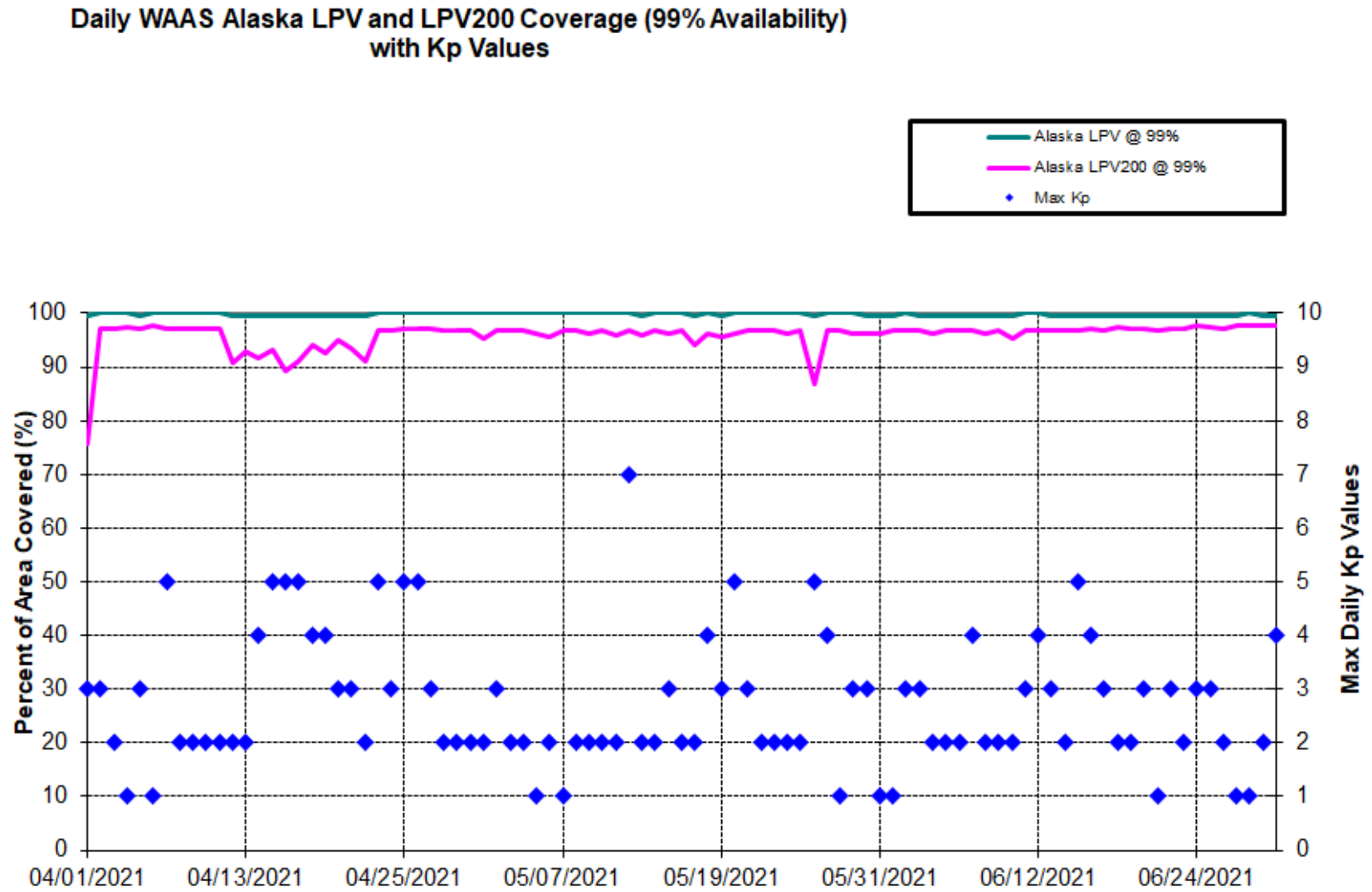
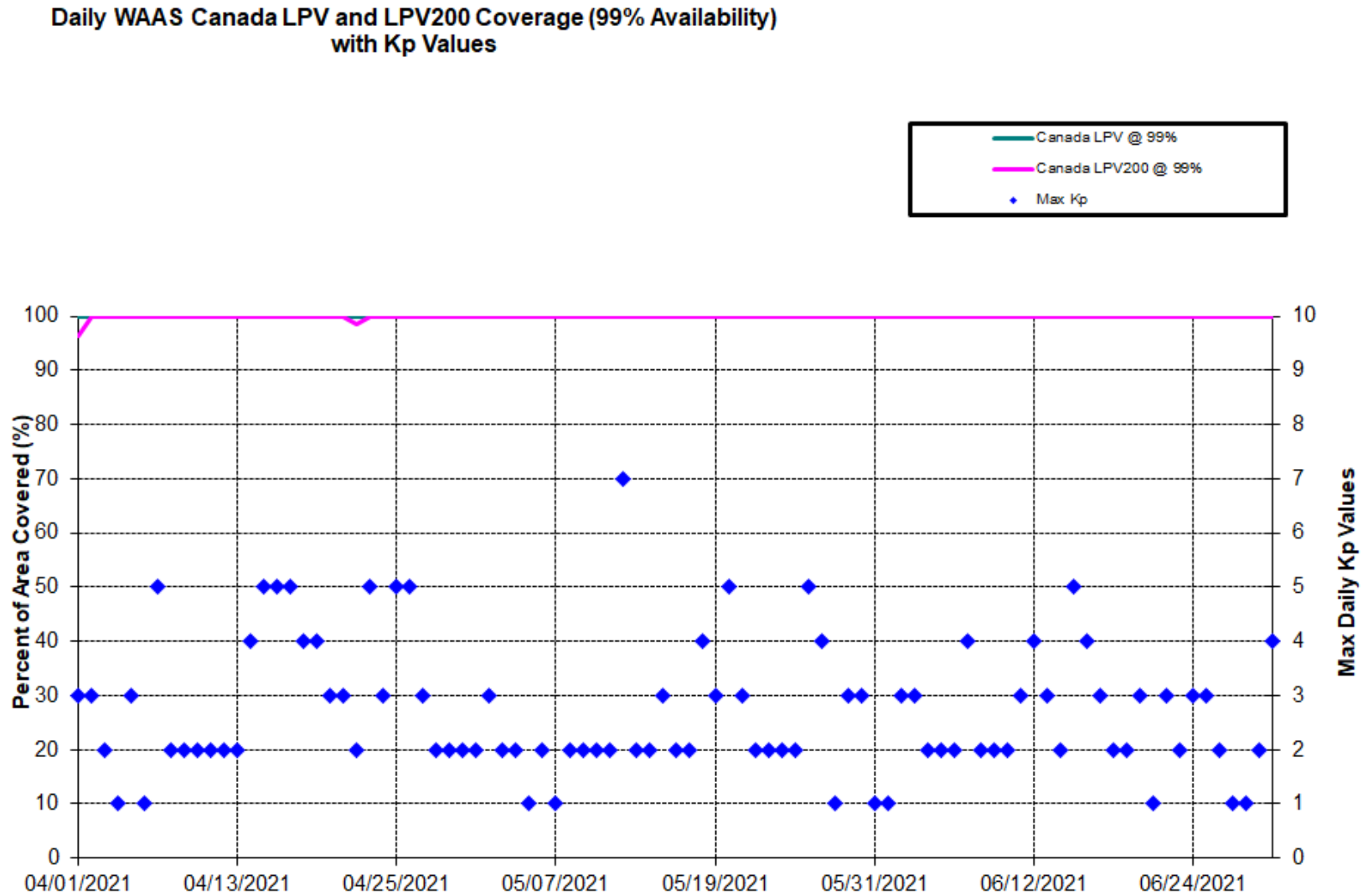


Figure 4-6 Daily LPV and LPV200 Canada Coverage



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

Figure 4-7 RNP 0.1 Coverage for the Quarter

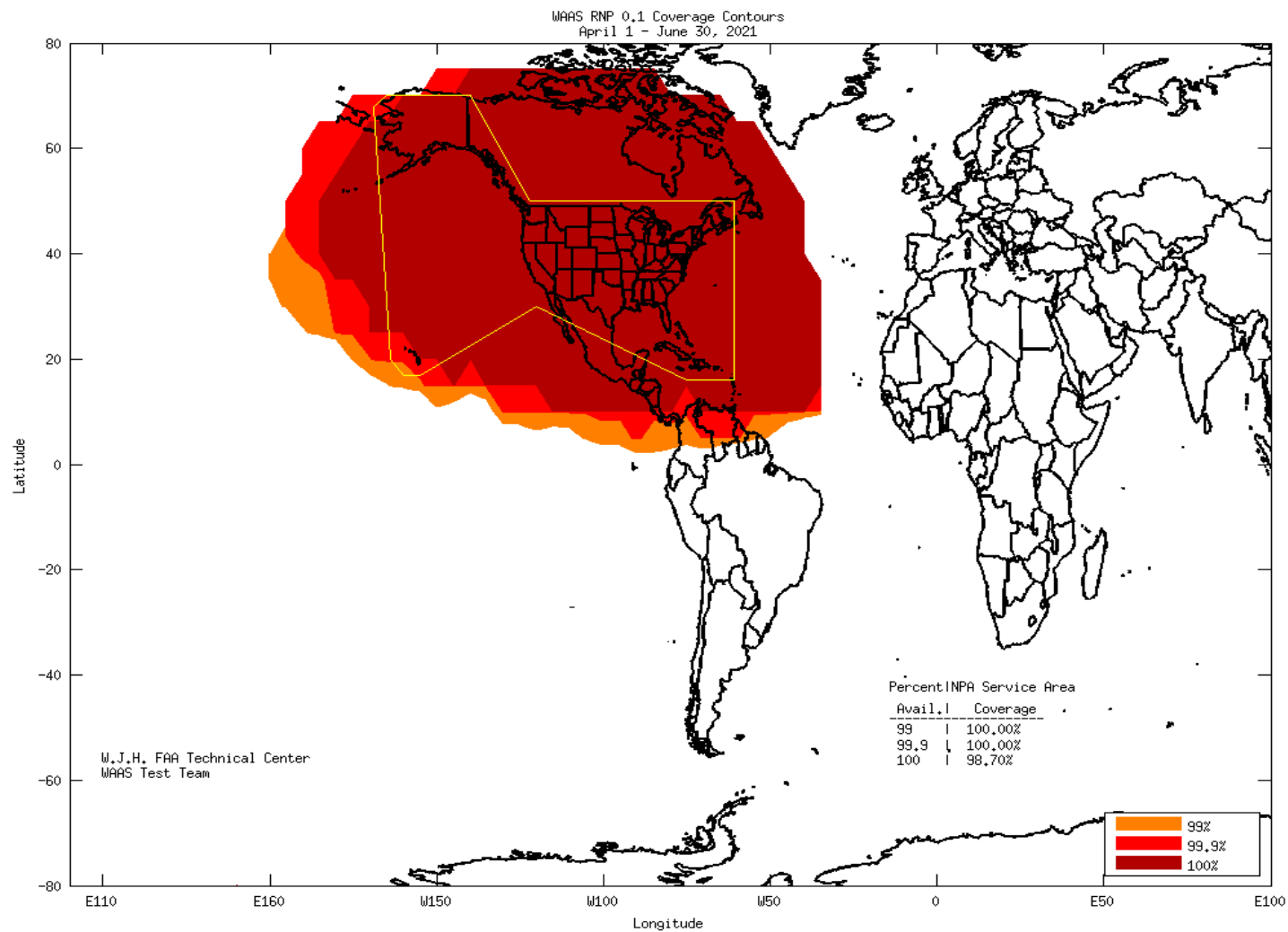


Figure 4-8 RNP 0.3 Coverage for the Quarter

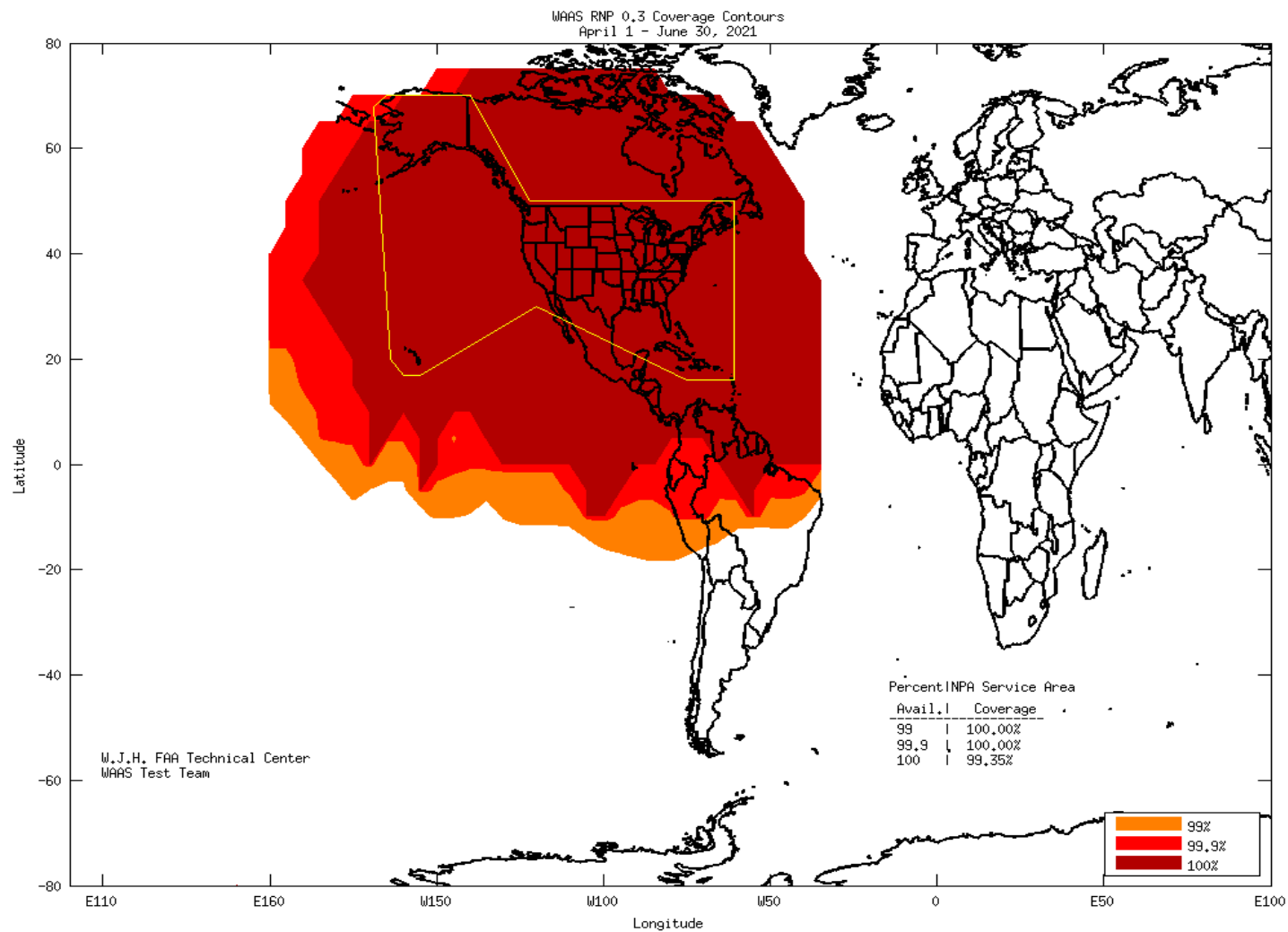
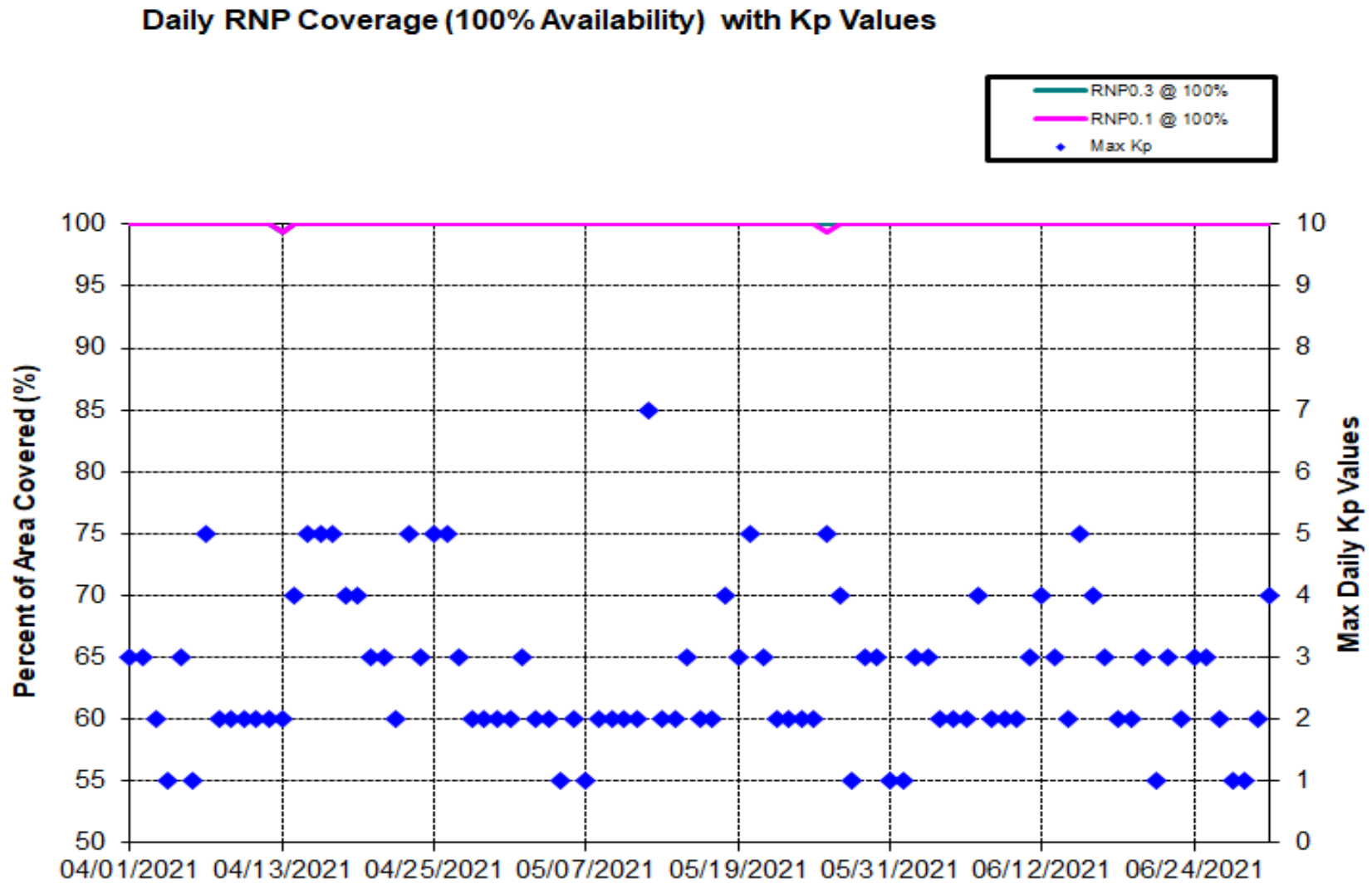


Figure 4-9 Daily RNP Coverage



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

- April 1 – Satellite maintenance elevated UDREs on PRN9 and reduced LPV200 availability in CONUS, Alaska, and Canada.
- April 12 – 24 – Satellite maintenance elevated UDREs on PRN24 and reduced LPV200 availability in CONUS, Alaska, and Canada.
- April 22 – Satellite maintenance elevated UDREs on PRN7 and reduced LPV200 availability in Canada.
- May 17 – A GUS switchover on SM9 caused a reduction of LPV200 availability in Canada.
- May 26 – A GUS switchover on S15 caused a reduction of LPV200 availability in Alaska.
- May 26 – A GUS switchover on SM9 caused a reduction of LPV200 availability in Alaska.
- May 28 – Satellite maintenance elevated UDREs on PRN22 and reduced LPV200 availability in Canada.
- June 10 – Satellite maintenance elevated UDREs on PRN31 and reduced LPV200 availability in CONUS.
- June 17 – SVN-78 (PRN11) was launched.
- June 23 – SVN-44 (PRN28) was decommissioned.

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 2.765 at Oklahoma City and there were no HMI events. There has not been an HMI event since WAAS was made available to the public in August 2000. In July 2003, WAAS was commissioned by the FAA for safety of life services.

Table 5-1 Minimum Safety Margin Index and HMI Statistics

Location	Horizontal Safety Index (meters)	Vertical Safety Index (meters)	Number of HMIs
Arcata	5.275	9.208	0
Atlantic City	5.031	6.552	0
Oklahoma City	2.765	3.958	0
Albuquerque	6.906	9.398	0
Anchorage	9.928	9.817	0
Atlanta	5.811	6.421	0
Barrow	7.273	8.353	0
Bethel	7.026	6.638	0
Billings	8.675	7.877	0
Boston	8.932	8.726	0
Chicago	6.231	7.246	0

Location	Horizontal Safety Index (meters)	Vertical Safety Index (meters)	Number of HMIs
Cleveland	10.907	7.349	0
Cold Bay	9.599	8.302	0
Dallas	9.140	6.376	0
Denver	8.813	8.599	0
Fairbanks	6.381	7.149	0
Gander	12.183	8.971	0
Goose Bay	12.844	8.851	0
Houston	6.044	7.736	0
Iqaluit	7.903	10.657	0
Jacksonville	10.526	6.359	0
Juneau	8.052	6.246	0
Kansas City	8.868	6.534	0
Kotzebue	9.464	7.422	0
Los Angeles	6.984	8.912	0
Memphis	9.065	9.570	0
Merida	8.100	7.026	0
Mexico City	11.275	11.090	0
Miami	9.591	5.687	0
Minneapolis	6.451	7.943	0
New York	9.871	6.908	0
Oakland	7.781	7.291	0
Puerto Vallarta	15.043	10.052	0
Salt Lake City	8.709	8.304	0
San Jose Del Cabo	13.363	8.391	0
Seattle	6.897	9.138	0
Washington DC	7.631	8.697	0
Winnipeg	9.092	7.772	0

5.2 Broadcast Alerts

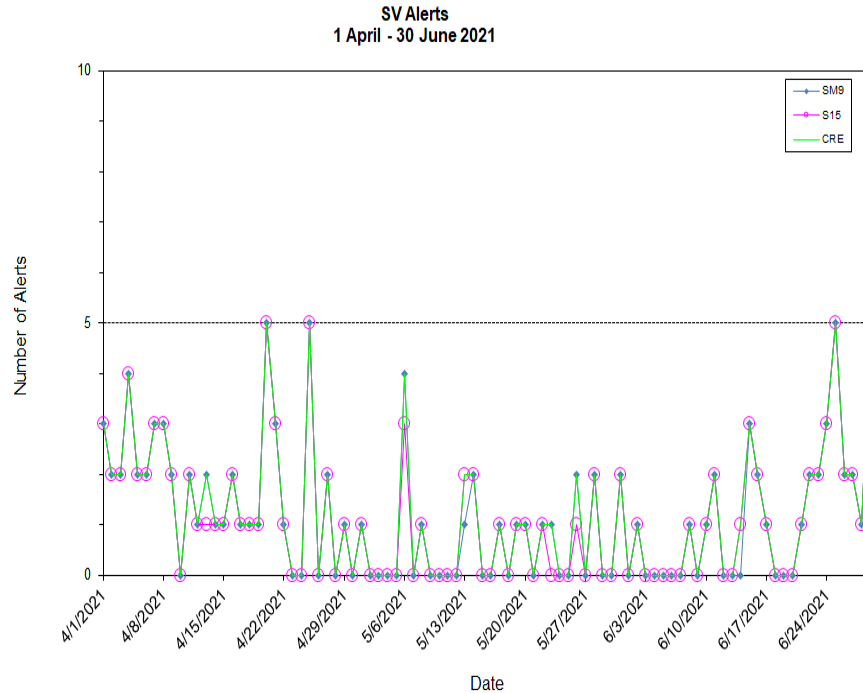
The WAAS transmits alert messages for user protection when the active WAAS corrections are no longer bound by the UDREs. Alerts increase the UDRE for one or more PRNs, which can reduce the weighting of the satellite or exclude the satellite from the navigation solution. An increase in UDREs after an 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	Message Type	SM9	S15	Message Type
T2	54	54	54	0.593406593	0.593406593	0.593406593
T3	20	20	20	0.21978022	0.21978022	0.21978022
T4	36	34	38	0.395604396	0.373626374	0.417582418
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 :	110	108	112	1.208791209	1.186813187	1.230769231
Days in Service	91	91	91			

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 CRE)

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

Data	Associated Message Types	Maximum Update Interval (seconds)	En Route, Terminal, NPA Timeout (seconds)	Precision Approach Timeout (seconds)
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 CRE GEO.

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	106896	1	126
2	1310503	35	25
3	1310376	54	25
4	1310433	48	25
7	99496	2	146
9	92135	1	168
10	99361	4	127
17	31368	0	0

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

PRN	On Time (number received)	Late (number received)	Max Late Length (seconds)
1	48366	0	0
2	47744	0	0
3	47521	0	0
4	46767	0	0
5	47349	1	170
6	47442	0	0
7	46701	0	0
8	48017	0	0
9	46750	0	0
10	46896	0	0
12	46876	0	0
13	48892	0	0
14	46223	1	170
15	47402	0	0
16	47483	0	0
17	47393	0	0
18	46733	0	0
19	46229	0	0
20	46808	1	170

PRN	On Time (number received)	Late (number received)	Max Late Length (seconds)
21	50341	0	0
22	47380	0	0
23	46295	0	0
24	43644	0	0
25	48520	0	0
26	47858	0	0
27	48516	0	0
28	41967	1	170
29	47072	0	0
30	46724	0	0
31	47336	0	0
32	46251	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	39745	0	0
2	39249	0	0
3	39033	0	0
4	38432	0	0
5	38864	1	209
6	38960	0	0
7	38323	0	0
8	39413	0	0
9	38339	1	209
10	38517	0	0
12	38518	0	0
13	40161	0	0
14	37968	0	0
15	38874	0	0
16	38962	0	0
17	38892	0	0
18	38312	0	0
19	37955	2	207
20	38415	0	0
21	41367	0	0
22	38948	0	0
23	37980	0	0
24	35840	0	0
25	39866	0	0
26	39294	0	0
27	39901	0	0
28	34485	1	211
29	38669	0	0
30	38387	0	0
31	38822	0	0
32	37968	0	0
131	75100	1	5232
133	75396	1	207
138	75644	0	0

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	27306	4	305
0	1	27295	4	304
0	2	27294	3	305
1	0	27288	6	313
1	1	27291	3	304
1	2	27307	2	577
1	3	27289	5	307
1	4	27289	8	578
2	0	27288	4	582
2	1	27287	3	305
2	2	27293	1	305
2	3	27296	2	313
2	4	27305	1	309
3	0	27299	3	304
3	1	27298	4	307
3	2	27288	6	303
9	0	27286	4	306
9	1	27290	4	302
9	2	27303	2	577
9	3	27292	2	301
9	4	27291	3	302
9	5	27292	2	301
9	6	27294	4	344

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

Band	On Time (number received)	Late (number received)	Max Late Length (seconds)
0	35823	0	0
1	35806	1	345
2	35815	1	315
3	35752	1	447
9	35751	1	423

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	107285	0	0
2	1310495	33	33
3	1310367	53	27
4	1310417	47	32
7	99527	9	195
9	92130	1	177
10	99673	7	129
17	31386	2	302

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

PRN	On Time (number received)	Late (number received)	Max Late Length (seconds)
1	48366	0	0
2	47735	0	0
3	47523	1	165
4	46761	0	0
5	47350	0	0
6	47438	0	0
7	46686	1	187
8	48010	0	0
9	46754	0	0
10	46897	2	182
12	46871	0	0
13	48900	0	0
14	46230	2	175
15	47389	3	183
16	47484	0	0
17	47387	0	0
18	46723	0	0
19	46217	2	166
20	46800	1	177
21	50313	0	0
22	47378	1	187
23	46308	0	0
24	43633	1	164
25	48517	1	182
26	47845	0	0
27	48518	0	0
28	41969	0	0
29	47070	0	0
30	46715	3	183
31	47321	0	0
32	46249	0	0

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

PRN	On Time (number received)	Late (number received)	Max Late Length (seconds)
1	39736	3	210
2	39233	0	0
3	39023	1	206
4	38419	0	0
5	38849	0	0
6	38963	0	0
7	38326	0	0
8	39401	0	0
9	38342	0	0
10	38511	0	0
12	38505	1	141
13	40175	0	0
14	37971	0	0
15	38874	0	0
16	38956	0	0
17	38881	1	145

PRN	On Time (number received)	Late (number received)	Max Late Length (seconds)
18	38307	0	0
19	37950	1	205
20	38411	0	0
21	41350	1	224
22	38935	0	0
23	37968	1	208
24	35844	0	0
25	39878	1	145
26	39301	1	121
27	39886	1	139
28	34479	1	210
29	38656	0	0
30	38391	1	200
31	38816	0	0
32	37966	0	0
131	75078	2	5231
133	75445	0	0
138	75599	3	208

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	27306	4	305
0	1	27295	4	304
0	2	27294	3	305
1	0	27288	6	313
1	1	27291	3	304
1	2	27307	2	577
1	3	27289	5	307
1	4	27289	8	578
2	0	27288	4	582
2	1	27287	3	305
2	2	27293	1	305
2	3	27296	2	313
2	4	27305	1	309
3	0	27299	3	304
3	1	27298	4	307
3	2	27288	6	303
9	0	27286	4	306
9	1	27290	4	302
9	2	27303	2	577
9	3	27292	2	301
9	4	27291	3	302
9	5	27292	2	301
9	6	27294	4	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	35823	0	0
1	35806	1	345
2	35815	1	315
3	35752	1	447
9	35751	1	423

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

Message Type	On Time (number received)	Late (number received)	Max Late Length (seconds)
1	107436	0	0
2	1310507	33	13
3	1310380	52	10
4	1310445	43	10
7	99959	2	121
9	92133	0	0
10	99881	4	132
17	31427	0	0

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

PRN	On Time (number received)	Late (number received)	Max Late Length (seconds)
1	48362	0	0
2	47741	0	0
3	47523	0	0
4	46762	0	0
5	47346	0	0
6	47430	0	0
7	46692	0	0
8	48020	0	0
9	46749	0	0
10	46901	0	0
12	46870	0	0
13	48896	0	0
14	46224	0	0
15	47404	0	0
16	47461	0	0
17	47391	0	0
18	46728	0	0
19	46227	0	0
20	46811	0	0
21	50311	0	0
22	47375	0	0
23	46291	0	0
24	43654	0	0
25	48521	0	0
26	47837	0	0
27	48519	0	0
28	41965	0	0
29	47072	0	0
30	46723	0	0
31	47332	0	0
32	46255	0	0

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

PRN	On Time (number received)	Late (number received)	Max Late Length (seconds)
1	39733	0	0
2	39240	0	0
3	39036	0	0
4	38429	0	0
5	38860	0	0
6	38956	0	0
7	38324	0	0
8	39422	0	0
9	38332	0	0
10	38521	0	0
12	38521	0	0
13	40146	0	0
14	37960	0	0
15	38873	0	0
16	38962	0	0
17	38884	0	0

PRN	On Time (number received)	Late (number received)	Max Late Length (seconds)
18	38300	0	0
19	37967	0	0
20	38395	0	0
21	41335	0	0
22	38951	0	0
23	37978	0	0
24	35831	0	0
25	39854	0	0
26	39294	0	0
27	39894	0	0
28	34474	0	0
29	38678	0	0
30	38394	0	0
31	38828	0	0
32	37974	0	0
131	75089	1	5231
133	75403	0	0
138	75642	0	0

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

Band	Block	On Time (number received)	Late (number received)	Max Late Length (seconds)
0	0	27292	2	305
0	1	27296	2	306
0	2	27299	4	305
1	0	27289	2	304
1	1	27287	4	302
1	2	27291	4	302
1	3	27320	3	306
1	4	27285	2	304
2	0	27294	5	305
2	1	27285	6	307
2	2	27293	2	306
2	3	27300	2	304
2	4	27299	3	303
3	0	27295	3	304
3	1	27292	2	301
3	2	27293	1	301
9	0	27303	3	304
9	1	27301	1	301
9	2	27288	2	301
9	3	27303	3	304
9	4	27289	1	307
9	5	27301	5	304
9	6	27294	4	304

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

Band	On Time (number received)	Late (number received)	Max Late Length (seconds)
0	35805	0	0
1	35822	0	0
2	35794	0	0
3	35781	0	0
9	35806	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.

No satellite glitches were visible to WAAS during the quarter.

6.0 SV RANGE ACCURACY

Range accuracy evaluation computes the probability that the WAAS UDRE and GIVE statistically bound 99.9% of the range residuals for each satellite tracked by the receiver. A UDRE is broadcasted by the WAAS for each monitored satellite and the 99.9% bound (3.29 sigma) of the pseudorange residual error after application of fast and long-term corrections is checked. The pseudorange residual error is determined by taking the difference between the raw pseudorange and a calculated reference range. The reference range is equal to the true range between the corrected satellite position and surveyed user antenna plus all corrections (i.e., WAAS fast clock, WAAS long-term clock, WAAS ionospheric delay, tropospheric delay, receiver clock bias, and multipath). Because the true ionospheric delay and multipath error are not precisely known, the estimated variance in these error sources are added to the UDRE before comparing it to the residual error.

The GPS satellite range residual errors were calculated for 12 WAAS receivers during the quarter. Table 6-1 and Table 6-2 show the range error 95% index and 99.9% bounding statistics for each SV at the selected locations. Figure 6-1 through Figure 6-3 show the 95% range error for each SV measured by the WAAS receivers at the Washington, D.C. reference station.

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

Site → PRN ↓	Minneapolis			Chicago			Boston			Juneau			Honolulu			Salt Lake City		
	95% Range Error (m)	Max Range Error (m)	Max Range Error Sigma	95% Range Error (m)	Max Range Error (m)	Max Range Error Sigma	95% Range Error (m)	Max Range Error (m)	Max Range Error Sigma	95% Range Error (m)	Max Range Error (m)	Max Range Error Sigma	95% Range Error (m)	Max Range Error (m)	Max Range Error Sigma	95% Range Error (m)	Max Range Error (m)	Max Range Error Sigma
1*	0.835	2.565	0.720	1.106	2.480	0.722	1.279	2.638	0.747	0.900	3.308	1.579	0.953	2.595	0.790	0.938	5.669	1.505
2	0.930	2.121	0.694	1.048	2.421	0.799	0.916	1.878	1.553	1.032	2.596	0.833	1.078	2.272	1.616	1.008	2.467	0.860
3*	0.796	2.596	0.804	1.229	4.033	1.308	1.653	3.778	1.233	0.932	1.991	0.658	1.498	3.490	1.112	1.082	2.983	0.945
4	1.036	2.428	0.820	1.140	4.441	1.324	0.910	2.026	1.345	1.074	2.184	0.645	1.135	2.203	0.921	0.919	2.016	1.555
5	1.022	2.667	0.850	1.148	3.230	1.060	1.033	2.184	0.870	0.960	2.362	0.825	1.307	3.194	1.086	1.215	2.772	1.131
6*	0.895	2.384	0.794	0.984	1.843	0.746	0.966	1.973	0.959	0.993	2.928	1.376	1.140	3.492	1.021	1.159	2.818	0.892
7	1.504	4.296	1.356	1.266	2.299	1.079	1.542	2.957	1.013	1.457	3.513	1.034	0.903	2.115	0.638	0.913	2.250	0.700
8*	1.328	4.678	1.395	1.064	2.773	0.830	0.914	2.653	0.775	1.075	3.029	0.946	1.042	3.752	1.211	1.033	3.066	0.878
9*	0.945	2.589	0.843	1.069	3.039	0.911	1.051	2.325	1.343	0.951	2.170	0.646	1.429	2.387	1.562	1.004	3.089	0.947
10	0.714	1.832	0.649	1.051	3.415	1.078	0.945	2.065	0.710	1.195	3.326	0.981	0.997	2.321	0.905	0.705	2.285	0.611
11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	0.815	2.265	0.797	1.020	3.769	1.146	0.963	3.141	1.030	1.002	2.714	0.912	1.445	4.853	1.516	1.217	2.815	1.046
13	1.131	3.388	0.962	1.021	2.059	0.774	1.320	3.150	0.935	1.244	4.070	1.329	0.852	2.546	1.077	0.917	4.876	1.319
14	1.544	3.678	1.174	1.639	3.730	1.196	1.384	2.938	1.059	1.676	3.151	0.951	1.152	2.209	0.799	1.109	2.739	1.033
15	1.089	2.140	0.967	1.031	2.957	0.929	1.146	2.970	0.870	0.857	2.609	0.792	1.319	2.463	0.814	0.997	2.161	0.904
16	1.077	2.898	0.931	0.882	3.313	1.130	1.104	3.836	1.129	1.178	2.503	1.493	0.975	2.257	0.742	0.957	2.048	0.728
17	0.924	2.638	0.882	1.058	2.630	1.204	1.021	2.069	0.849	1.034	2.469	0.825	2.629	8.605	2.636	1.039	2.023	0.874
18	1.179	2.881	0.908	0.874	1.875	0.313	0.911	3.638	1.390	1.279	3.052	1.313	1.205	2.516	0.778	0.782	2.736	0.944
19	1.002	2.479	0.809	0.893	2.059	0.694	1.001	2.438	0.832	1.085	2.086	1.027	1.789	5.218	1.770	0.997	4.020	1.178
20	0.971	3.256	1.076	1.101	2.638	1.195	0.966	1.925	0.653	1.133	4.163	2.131	1.749	7.638	2.759	1.185	4.040	1.719
21	1.267	3.756	1.150	0.883	2.234	0.720	0.905	2.973	1.444	1.498	3.266	1.080	1.370	4.199	1.620	0.856	2.983	0.838
22	1.131	2.648	0.832	1.187	5.294	1.584	1.118	3.181	1.003	1.628	4.756	1.382	1.304	4.568	1.422	1.147	2.596	0.802
23	0.936	2.520	0.923	0.777	1.889	0.995	0.764	1.672	0.638	1.372	3.049	0.828	1.178	2.911	0.968	0.804	2.335	0.963
24*	0.759	4.160	1.237	0.917	2.104	0.812	1.147	2.920	1.537	0.838	2.680	0.853	1.244	2.892	0.885	0.951	2.845	0.804
25*	0.850	2.631	0.803	0.939	2.371	0.863	1.000	2.367	0.636	1.010	2.259	0.729	1.343	2.591	1.629	1.432	4.673	1.385
26*	1.148	3.529	1.215	0.910	2.773	0.841	1.004	2.539	0.790	1.179	2.500	0.813	1.010	2.407	1.339	1.034	2.480	0.731
27*	1.073	3.634	1.106	1.051	2.921	1.047	1.168	2.926	0.897	0.984	3.562	1.395	0.915	2.957	0.921	0.943	1.924	0.807
28	1.069	3.013	1.045	1.050	3.539	1.137	1.147	2.335	0.765	1.533	3.407	1.131	1.073	3.196	1.165	0.809	2.711	0.479
29	1.164	3.039	1.013	1.084	3.128	0.937	0.972	1.998	1.070	1.140	2.276	1.188	1.808	2.990	0.977	0.957	2.651	0.813
30*	1.213	2.786	0.920	1.333	3.862	1.263	0.988	2.637	0.818	0.979	2.276	1.138	1.519	2.628	1.173	0.914	1.694	1.366
31	0.910	2.915	1.079	0.755	2.605	0.824	0.775	2.180	0.759	1.312	2.900	0.859	1.191	3.312	1.242	0.910	2.760	0.857
32	0.776	1.572	0.873	0.961	2.632	1.079	0.792	1.914	0.610	1.177	2.993	1.366	2.193	6.104	2.050	0.836	4.001	1.408
131	1.878	4.343	1.004	1.613	3.852	0.342	1.624	4.323	0.840	1.885	3.750	0.825	1.810	4.548	1.448	1.373	3.572	1.186
133	2.547	4.392	0.923	1.635	3.137	0.552	1.349	2.789	0.557	1.189	2.951	0.668	1.228	2.926	0.792	1.152	2.522	0.606
138	1.777	4.047	1.109	1.337	2.665	0.709	1.609	3.351	0.995	1.470	3.809	0.454	1.439	3.966	0.981	1.146	2.680	0.679

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

Site	Billings			Miami			Albuquerque			Kansas City			Los Angeles			Atlanta		
PRN ↓	95% Range Error (m)	Max Range Error (m)	Max Range Error Sigma	95% Range Error (m)	Max Range Error (m)	Max Range Error Sigma	95% Range Error (m)	Max Range Error (m)	Max Range Error Sigma	95% Range Error (m)	Max Range Error (m)	Max Range Error Sigma	95% Range Error (m)	Max Range Error (m)	Max Range Error Sigma	95% Range Error (m)	Max Range Error (m)	Max Range Error Sigma
1*	1.000	2.049	1.174	0.942	1.865	0.934	0.914	2.349	0.723	1.141	2.568	0.940	1.373	2.687	1.397	1.072	2.801	0.839
2	1.743	4.104	1.639	1.620	3.013	1.316	1.347	2.569	1.549	1.600	3.509	1.557	1.558	3.311	1.555	0.794	1.616	1.335
3*	0.823	2.052	0.685	1.190	3.621	1.194	0.917	3.016	0.851	1.020	4.216	1.300	1.369	3.056	0.923	1.177	2.934	0.854
4	0.826	1.911	0.881	0.840	1.970	0.740	1.029	2.157	0.619	0.832	2.269	0.707	1.584	2.573	1.584	0.823	1.978	1.149
5	1.022	2.914	1.478	2.787	8.034	2.177	1.292	2.381	1.858	1.969	4.499	1.813	1.687	2.900	1.752	1.178	3.635	1.430
6*	1.168	2.888	0.951	2.759	9.229	2.789	1.212	2.273	1.275	1.308	5.097	1.654	1.632	3.496	2.030	1.202	2.494	0.699
7	1.178	3.648	1.164	1.653	3.706	1.769	0.884	2.642	0.713	0.765	1.648	0.535	1.368	2.194	1.266	0.833	1.960	0.736
8*	0.845	2.088	1.159	0.906	2.276	0.714	1.515	4.467	1.342	0.960	2.598	0.804	1.838	4.592	1.670	0.877	1.792	0.727
9*	1.152	3.602	1.490	1.039	2.677	0.928	0.827	3.023	0.916	1.162	4.556	1.536	1.526	2.519	1.639	0.821	1.912	0.910
10	1.069	3.595	1.125	0.798	3.131	0.993	0.737	1.725	0.859	1.608	4.078	1.323	1.023	1.889	0.545	0.756	1.824	1.192
11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	1.002	2.473	0.797	1.357	3.924	1.337	1.433	2.786	0.890	0.950	3.842	1.199	1.778	2.887	1.759	0.885	2.196	0.799
13	0.850	2.676	0.773	1.132	2.786	1.161	1.035	3.177	0.987	1.057	2.413	1.149	1.311	2.983	0.901	0.868	1.766	1.398
14	1.167	3.250	0.949	1.240	3.187	1.209	0.897	2.085	0.575	1.240	2.865	0.927	0.763	2.773	0.904	1.204	1.875	1.225
15	0.822	2.384	0.812	1.070	2.417	1.293	1.313	2.971	0.960	2.065	6.481	1.941	1.624	3.138	0.896	1.046	2.045	1.435
16	1.821	4.651	1.709	0.962	2.081	0.680	1.135	3.104	1.374	1.942	3.684	1.812	1.497	2.855	1.218	0.820	2.005	1.421
17	1.180	2.612	0.836	1.263	3.290	1.321	0.983	2.404	0.744	1.069	3.430	1.189	1.579	3.453	1.824	0.867	1.618	1.337
18	0.886	2.016	0.624	1.448	2.895	0.910	0.806	1.832	0.485	0.833	2.979	0.913	1.253	2.145	0.414	0.845	1.870	1.554
19	1.026	3.494	1.019	1.282	3.098	0.814	1.075	3.681	1.052	1.969	5.598	1.999	1.291	3.219	1.954	0.771	1.802	0.564
20	1.247	3.430	1.483	1.359	7.548	2.226	1.163	2.802	1.371	1.341	5.604	1.943	1.498	2.721	0.829	0.992	2.779	1.053
21	1.362	3.490	0.998	0.908	2.733	0.811	1.120	5.747	1.708	1.593	7.631	2.326	1.283	3.292	1.012	0.807	2.582	0.738
22	1.295	2.542	1.224	1.159	4.172	1.469	1.284	3.361	1.277	1.322	2.897	1.131	1.438	3.108	0.950	1.184	2.678	1.025
23	0.926	2.786	1.184	0.976	3.724	1.155	0.815	2.081	0.641	0.868	2.578	0.821	1.177	2.351	0.768	0.859	1.952	1.472
24*	0.907	2.224	0.651	0.896	2.013	0.751	0.920	3.196	1.068	0.893	3.042	0.913	1.349	2.989	1.657	0.952	2.088	0.742
25*	1.464	3.118	1.038	1.015	2.216	0.725	1.402	2.558	2.005	1.403	3.253	1.075	1.864	3.420	0.993	0.912	2.490	0.833
26*	1.121	3.323	1.047	1.234	2.798	1.159	1.226	4.256	1.309	1.353	4.117	1.396	1.574	4.012	1.173	0.819	1.606	0.461
27*	1.046	2.594	0.868	0.951	2.144	0.731	1.679	5.269	1.599	1.414	4.612	1.446	1.330	3.569	1.085	0.797	2.466	0.798
28	1.375	4.407	1.310	1.259	2.717	1.067	0.809	2.795	0.852	1.027	3.358	1.017	1.162	2.502	0.745	1.038	2.076	1.043
29	1.091	2.898	1.263	1.059	2.088	0.304	0.974	2.371	0.764	1.066	2.266	0.942	1.758	2.862	1.750	1.112	2.418	1.488
30*	0.998	3.206	1.041	0.988	2.092	0.713	1.052	3.227	1.011	1.153	3.411	1.330	1.477	2.862	1.385	0.926	1.605	1.290
31	2.008	5.072	1.671	1.511	8.637	2.254	1.214	2.170	1.249	1.448	7.103	2.461	1.696	3.397	1.049	0.794	1.998	0.928
32	1.282	2.796	1.321	0.821	3.010	0.836	0.943	2.108	0.589	0.833	3.289	1.051	1.216	1.993	0.833	0.734	1.667	0.510
131	2.055	4.427	1.255	1.480	2.963	0.652	2.086	3.996	0.741	1.517	3.986	1.095	2.139	6.501	1.096	1.598	3.548	0.869
133	1.487	3.244	0.748	1.133	3.012	0.735	1.827	3.121	0.754	2.226	3.470	0.838	1.831	3.512	0.720	1.517	2.976	0.743
138	1.248	3.052	0.428	2.074	4.287	0.568	1.105	2.877	0.696	2.050	4.017	1.122	2.939	4.664	1.047	1.140	2.721	0.822

Figure 6-1 Range Error (PRN1 – PRN16) – Washington D.C.

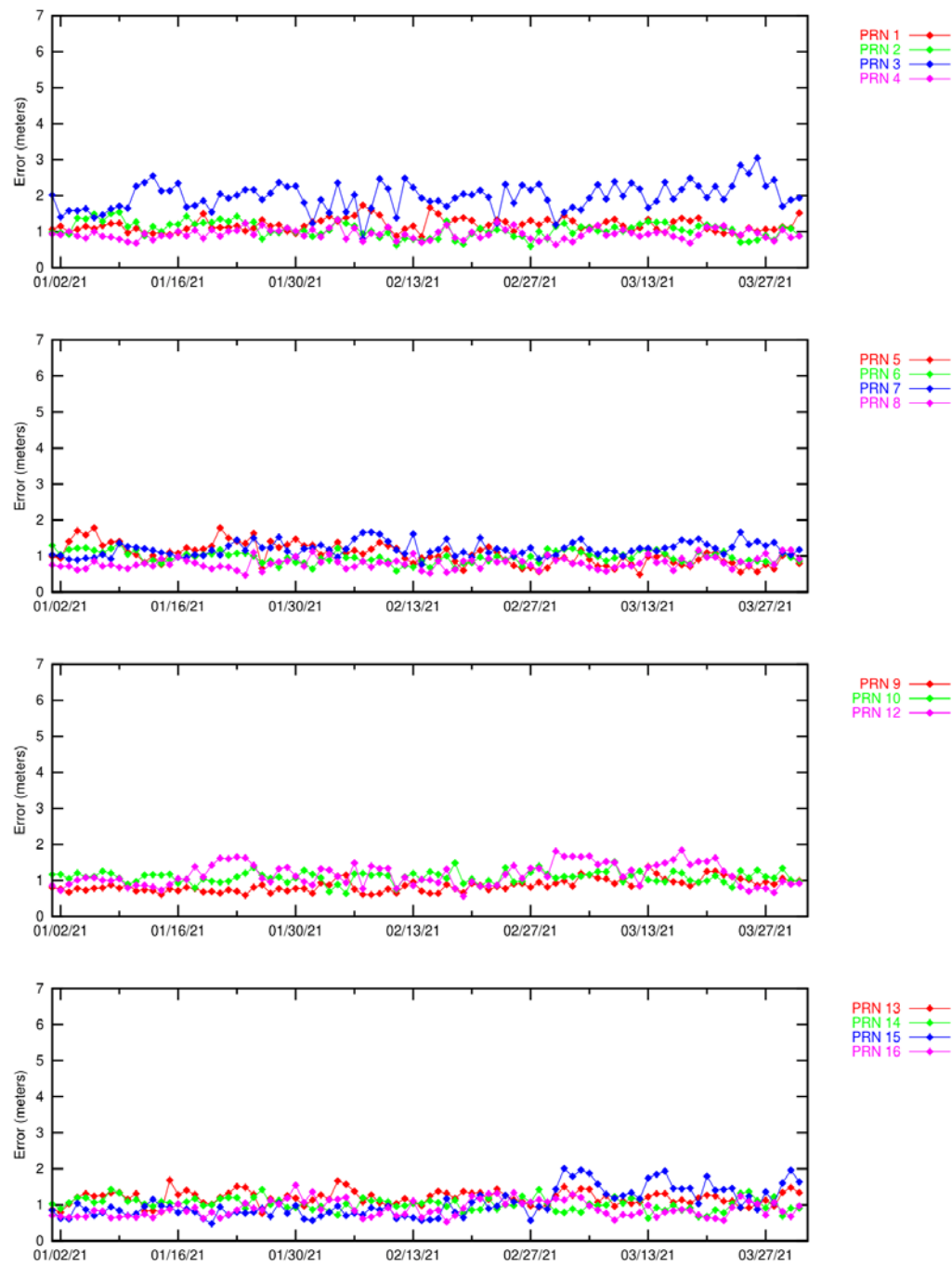


Figure 6-2 Range Error (PRN17 – PRN32) – Washington D.C.

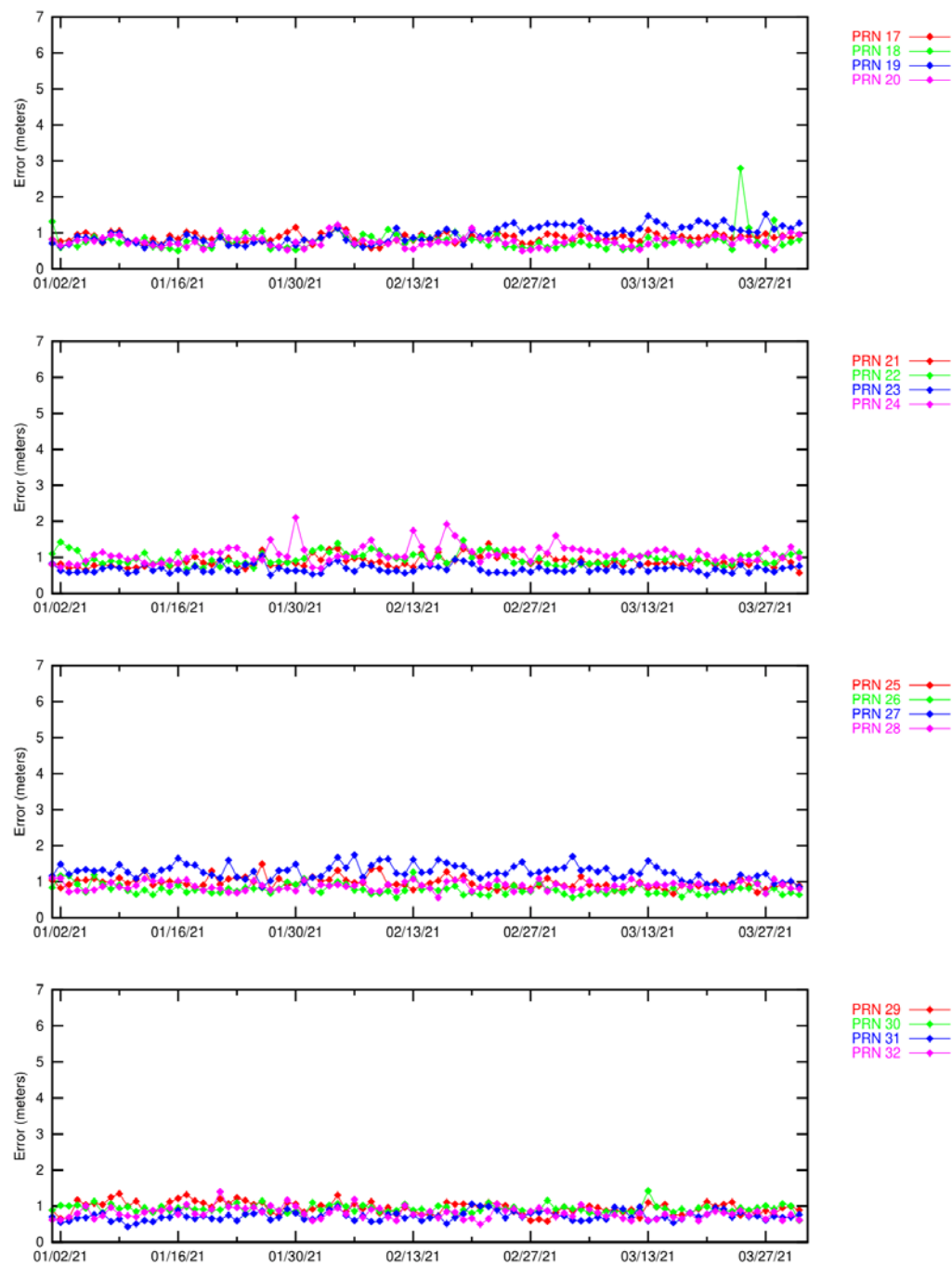
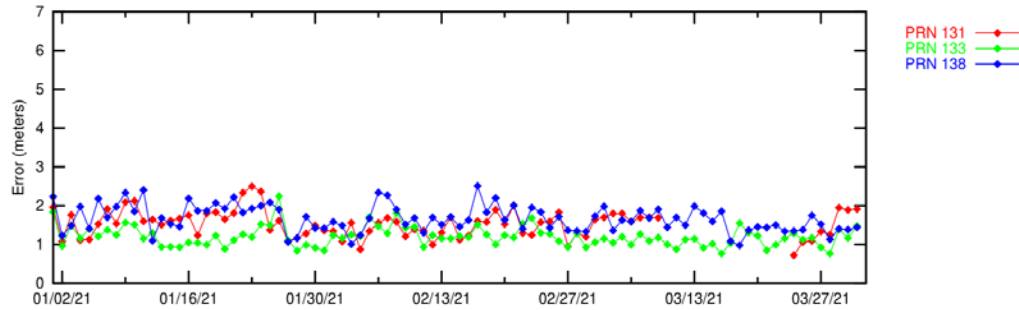


Figure 6-3 Range Error (PRN131, PRN133, and PRN138) – Washington D.C.

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

The GPS satellite ionospheric errors were calculated for 12 WAAS receivers during the quarter. Table 6-3 and Table 6-4 show the ionospheric error 95% index and 99.9% bounding statistics for each SV at the selected locations. Figure 6-4 and Figure 6-5 show the 95% ionospheric error for each SV measured by the WAAS receiver at the Chicago reference station.

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

Site	Minneapolis			Chicago			Boston			Juneau			Honolulu			Salt Lake City		
PRN ↓	95% Iono Error (m)	Max Iono Error (m)	Max Iono Error Sigma	95% Iono Error (m)	Max Iono Error (m)	Max Iono Error Sigma	95% Iono Error (m)	Max Iono Error (m)	Max Iono Error Sigma	95% Iono Error (m)	Max Iono Error (m)	Max Iono Error Sigma	95% Iono Error (m)	Max Iono Error (m)	Max Iono Error Sigma	95% Iono Error (m)	Max Iono Error (m)	Max Iono Error Sigma
1	0.280	1.190	0.401	0.474	1.827	0.693	0.343	1.081	0.471	0.628	2.157	1.039	0.347	1.312	0.475	0.368	1.630	0.562
2	0.363	1.068	0.424	0.340	1.455	0.573	0.357	1.372	0.406	0.481	1.316	0.359	0.372	1.318	0.459	0.398	1.400	0.414
3	0.369	1.580	0.532	0.577	2.797	0.881	0.536	1.560	0.654	0.322	1.014	0.243	0.532	2.573	0.889	0.445	1.922	0.529
4	0.395	1.486	0.427	0.437	2.219	0.505	0.468	1.055	0.472	0.368	1.464	0.391	0.557	1.521	0.481	0.338	2.473	0.548
5	0.291	1.303	0.598	0.402	2.084	0.654	0.260	1.031	0.315	0.356	1.380	0.425	0.695	2.431	0.914	0.513	1.529	0.457
6	0.392	1.023	0.374	0.514	1.977	0.655	0.310	1.087	0.401	0.378	1.477	0.540	0.638	2.899	0.880	0.691	2.223	0.599
7	0.747	2.345	0.818	0.432	1.210	0.316	0.574	1.902	0.652	0.543	2.420	0.688	0.455	2.067	0.465	0.338	1.323	0.373
8	0.390	2.741	0.625	0.374	1.828	0.510	0.253	1.355	0.402	0.320	1.502	0.500	0.686	3.010	0.946	0.331	2.182	0.706
9	0.336	1.351	0.394	0.429	1.329	0.346	0.373	1.035	0.361	0.318	1.514	0.483	0.428	1.535	0.485	0.344	1.405	0.340
10	0.254	1.212	0.387	0.495	2.483	0.770	0.487	2.237	0.731	0.399	1.707	0.429	0.438	1.272	0.311	0.355	1.102	0.266
11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	0.397	1.385	0.410	0.495	3.121	0.827	0.369	1.517	0.349	0.387	1.720	0.462	0.645	2.660	0.820	0.613	1.824	0.550
13	0.406	1.700	0.488	0.385	1.161	0.374	0.444	1.950	0.572	0.371	2.592	0.974	0.380	2.175	0.653	0.268	1.751	0.614
14	0.910	2.598	0.919	0.910	3.022	0.922	0.854	1.841	0.580	0.886	2.548	0.714	0.627	1.501	0.493	0.788	1.759	0.859
15	0.443	1.787	0.468	0.344	1.577	0.556	0.353	2.278	0.659	0.308	1.844	0.615	0.624	1.742	0.424	0.333	1.492	0.472
16	0.272	1.413	0.432	0.266	1.721	0.448	0.274	1.884	0.527	0.362	1.737	0.630	0.548	1.922	0.526	0.420	1.752	0.573
17	0.406	1.304	0.439	0.504	2.042	0.836	0.346	1.253	0.398	0.318	1.260	0.376	1.310	6.135	1.980	0.472	2.043	0.525
18	0.449	2.091	0.559	0.474	1.197	0.323	0.471	2.278	0.663	0.337	1.147	0.405	0.474	1.584	0.418	0.363	1.767	0.528
19	0.422	1.801	0.603	0.345	1.664	0.504	0.399	1.136	0.503	0.292	2.083	0.766	0.686	3.434	0.959	0.528	2.865	0.747
20	0.296	1.384	0.425	0.485	1.766	0.877	0.339	1.902	0.591	0.414	2.144	0.649	0.775	4.412	1.009	0.457	3.748	0.822
21	0.511	2.231	0.570	0.331	1.800	0.529	0.303	1.657	0.881	0.371	1.402	0.593	0.536	2.339	0.917	0.564	1.771	0.536
22	0.389	1.776	0.606	0.465	2.488	0.683	0.357	1.696	0.411	0.526	1.797	1.231	0.434	2.623	0.802	0.481	1.645	0.388
23	0.439	1.573	0.461	0.345	1.379	0.410	0.401	1.530	0.487	0.393	2.289	1.011	0.363	2.306	0.593	0.369	1.879	0.713
24	0.251	1.616	0.475	0.388	1.172	0.381	0.419	1.159	0.654	0.285	1.480	0.721	0.343	1.617	0.561	0.464	1.972	0.636
25	0.295	1.993	0.562	0.405	1.707	0.489	0.299	1.491	0.568	0.259	1.577	0.311	0.365	1.326	0.402	0.758	3.276	0.907
26	0.391	1.532	0.454	0.448	1.550	0.668	0.317	1.440	0.420	0.422	2.267	0.735	0.586	1.466	0.910	0.497	1.271	0.453
27	0.337	1.836	0.450	0.585	2.352	0.722	0.297	1.252	0.381	0.493	1.838	0.611	0.408	2.376	0.765	0.295	0.789	0.299
28	0.407	2.214	0.721	0.334	2.247	0.743	0.437	1.990	0.604	0.519	1.819	0.498	0.571	1.707	0.432	0.358	1.305	0.457
29	0.477	1.908	0.434	0.419	1.703	0.418	0.389	1.408	0.370	0.315	1.781	0.433	0.877	1.811	0.557	0.331	1.736	0.425
30	0.393	1.733	0.476	0.584	2.329	0.599	0.439	1.145	0.278	0.343	1.274	0.389	0.719	1.745	0.767	0.250	1.146	0.300
31	0.324	1.849	0.565	0.248	1.125	0.477	0.389	1.528	0.644	0.490	2.065	0.626	0.769	2.813	0.684	0.377	1.547	0.375
32	0.331	0.987	0.403	0.543	2.424	0.878	0.379	0.929	0.297	0.421	1.807	0.649	0.832	4.920	1.172	0.552	2.180	0.561

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

Site	Billings			Miami			Albuquerque			Kansas City			Atlanta			Los Angeles		
PR N ↓	95% Iono Error (m)	Max Iono Error (m)	Max Iono Error Sigma	95% Iono Error (m)	Max Iono Error (m)	Max Iono Error Sigma	95% Iono Error (m)	Max Iono Error (m)	Max Iono Error Sigma	95% Iono Error (m)	Max Iono Error (m)	Max Iono Error Sigma	95% Iono Error (m)	Max Iono Error (m)	Max Iono Error Sigma	95% Iono Error (m)	Max Iono Error (m)	Max Iono Error Sigma
1	0.333	1.020	0.469	0.290	1.201	0.437	0.331	1.136	0.528	0.457	1.323	0.478	0.393	0.943	0.572	0.503	1.754	0.498
2	0.699	2.535	0.830	0.481	1.888	0.438	0.566	2.284	0.538	0.378	1.826	0.567	0.316	1.133	0.392	0.619	2.286	0.454
3	0.381	0.869	0.266	0.536	2.657	0.805	0.403	2.040	0.579	0.476	2.560	0.915	0.678	1.715	0.781	0.405	1.808	0.426
4	0.489	1.892	0.433	0.441	0.935	0.320	0.426	1.866	0.465	0.285	0.844	0.289	0.320	1.125	0.347	0.613	1.626	0.413
5	0.437	1.559	0.478	0.897	4.937	0.935	0.401	1.675	0.473	0.858	3.070	1.094	0.345	1.803	0.632	0.583	2.387	0.531
6	0.548	2.285	0.681	1.122	5.357	1.312	0.585	1.838	0.456	0.740	3.069	1.052	0.439	1.602	0.449	0.958	2.314	0.537
7	0.645	2.213	0.498	0.839	2.341	0.841	0.347	1.097	0.384	0.339	1.288	0.354	0.403	1.338	0.419	0.371	0.956	0.332
8	0.304	1.197	0.526	0.394	1.361	0.358	0.763	2.408	0.889	0.434	1.872	0.705	0.325	0.938	0.300	0.885	3.912	1.016
9	0.506	2.152	0.560	0.542	1.667	0.529	0.367	1.582	0.448	0.455	2.414	0.789	0.413	1.217	0.337	0.422	1.539	0.325
10	0.524	2.237	0.656	0.475	1.452	0.451	0.344	1.338	0.335	0.547	3.011	0.879	0.388	1.631	0.478	0.291	1.356	0.325
11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	0.699	1.954	0.519	0.625	2.659	0.795	0.626	1.722	0.520	0.374	1.905	0.572	0.354	1.404	0.476	0.487	2.134	0.413
13	0.381	1.024	0.421	0.290	1.162	0.355	0.264	1.147	0.467	0.353	1.268	0.487	0.303	1.686	0.559	0.465	2.109	0.685
14	0.708	1.366	0.428	0.782	1.817	0.575	0.568	1.236	0.736	0.840	1.831	0.735	0.824	1.900	0.567	0.604	2.695	0.708
15	0.332	1.826	0.645	0.395	2.224	0.614	0.423	1.762	0.509	0.641	3.828	1.137	0.268	1.639	0.363	0.673	1.963	0.671
16	0.675	3.105	1.164	0.321	2.264	0.585	0.526	1.786	0.622	0.790	2.189	0.627	0.351	1.387	0.361	0.713	1.890	0.687
17	0.595	1.887	0.801	0.448	1.897	0.662	0.435	1.628	0.369	0.699	1.740	0.905	0.263	0.748	0.367	0.566	2.424	0.276
18	0.455	1.765	0.488	0.918	2.645	0.840	0.367	1.012	0.223	0.492	1.959	0.519	0.391	0.851	0.540	0.294	1.609	0.427
19	0.538	1.591	0.745	0.473	1.877	0.409	0.464	1.585	0.365	0.728	3.672	1.210	0.235	0.846	0.236	0.441	1.635	0.355
20	0.670	2.828	1.208	0.590	5.087	1.293	0.436	2.235	0.494	0.602	3.898	1.320	0.324	1.553	0.466	0.484	2.190	0.455
21	0.381	1.492	0.541	0.349	1.445	0.454	0.386	2.462	0.944	0.703	5.099	1.757	0.315	1.249	0.326	0.372	1.231	0.301
22	0.632	1.629	0.554	0.584	2.292	0.702	0.756	2.402	0.955	0.529	1.949	0.678	0.656	1.703	0.640	0.399	1.942	0.394
23	0.300	1.317	0.470	0.528	2.170	0.703	0.331	1.498	0.342	0.623	1.322	0.417	0.331	0.997	0.312	0.327	1.410	0.397
24	0.407	1.137	0.448	0.337	1.060	0.350	0.389	1.268	0.580	0.353	2.185	0.947	0.367	1.020	0.561	0.689	2.086	0.775
25	0.670	1.651	0.743	0.386	1.214	0.361	0.639	1.483	0.568	0.587	1.929	1.127	0.272	1.386	0.463	0.731	1.716	0.660
26	0.487	1.443	0.622	0.397	2.104	0.552	0.471	2.238	0.675	0.630	3.384	1.026	0.444	1.167	0.869	0.689	3.443	0.901
27	0.321	1.309	0.586	0.377	1.261	0.450	0.640	2.603	1.107	0.505	2.460	0.768	0.364	1.059	0.370	0.383	1.512	0.434
28	0.574	2.114	0.580	0.426	1.750	0.580	0.327	1.081	0.258	0.439	1.934	0.598	0.433	1.258	0.453	0.377	1.661	0.430
29	0.461	1.471	0.348	0.514	1.251	0.709	0.394	1.672	0.432	0.394	0.972	0.323	0.401	1.171	0.301	0.653	1.793	0.391
30	0.513	2.218	0.561	0.418	1.322	0.376	0.516	1.923	0.503	0.337	1.731	0.490	0.358	1.285	0.353	0.491	1.608	0.400
31	1.166	3.162	1.095	0.578	5.632	1.375	0.530	1.689	0.368	0.690	6.014	1.870	0.378	1.655	0.430	0.620	2.935	0.625
32	0.977	1.950	0.938	0.664	2.251	0.427	0.686	1.412	0.742	0.609	1.415	0.708	0.531	1.411	0.794	0.386	1.229	0.293

Figure 6-4 Ionospheric Error (PRN1 – PRN16) – Washington D.C.

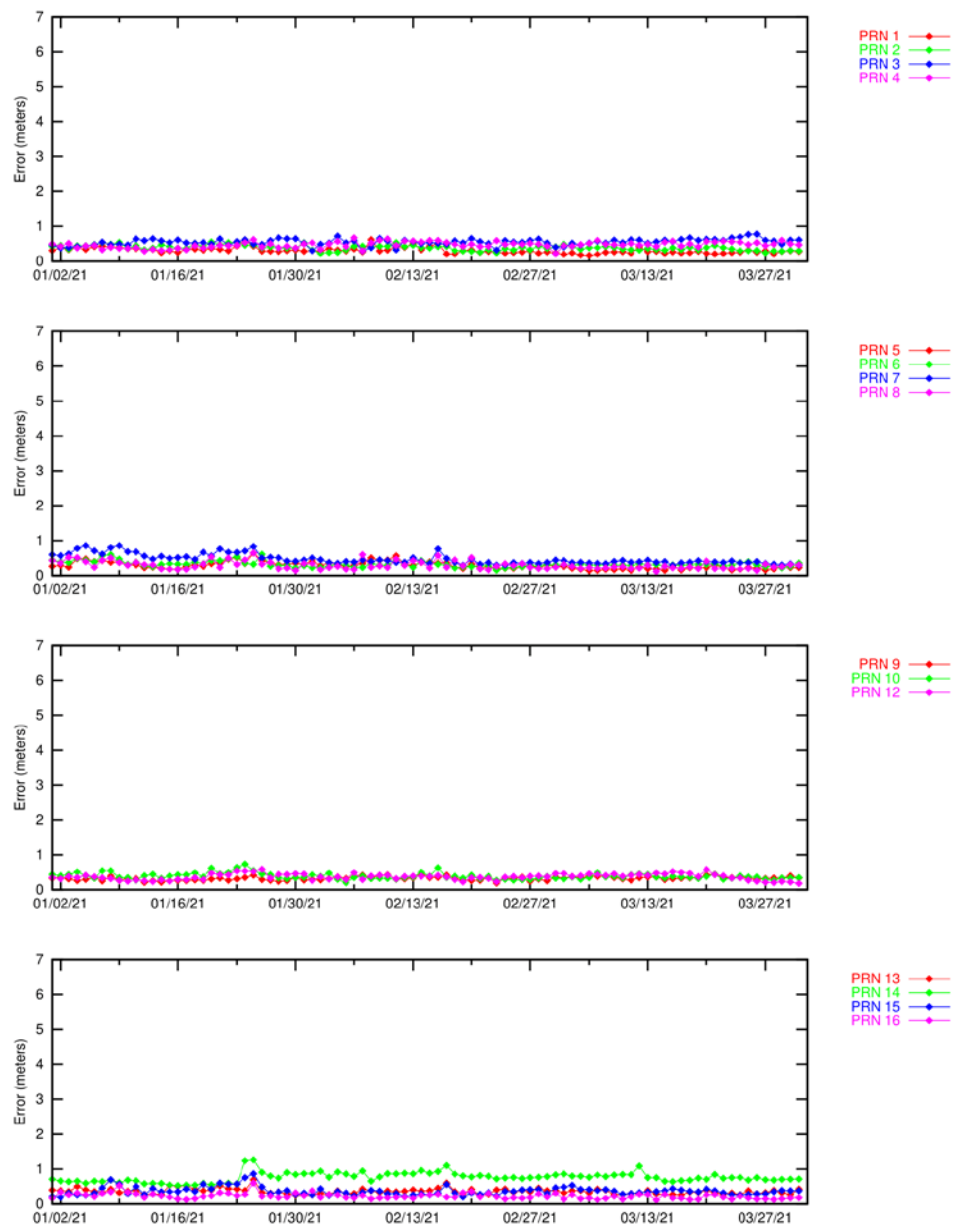
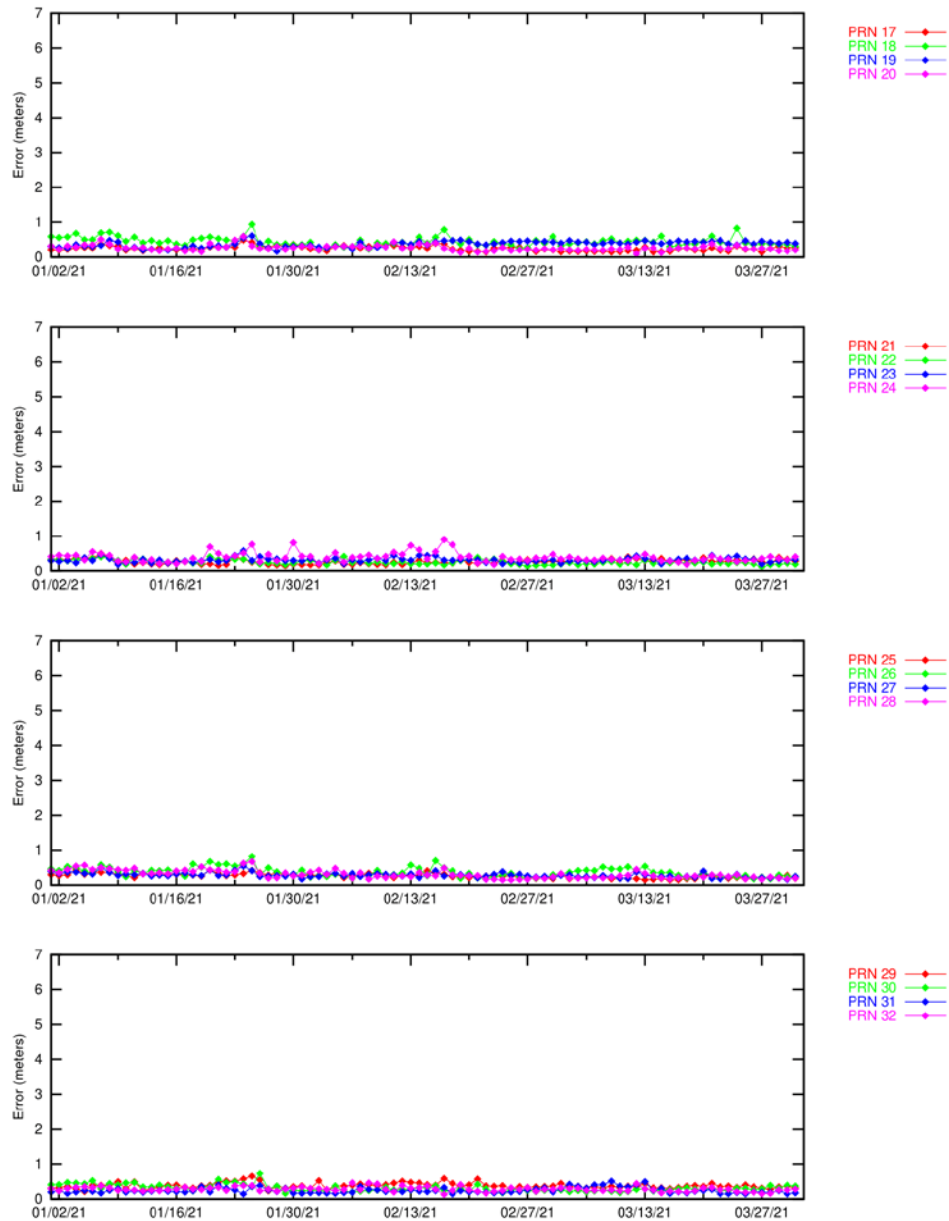


Figure 6-5 Ionospheric Error (PRN17 – PRN32) – Washington D.C.

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 CRE GEO PA ranging availability, respectively.

The reductions in SM9 GEO PA, S15 GEO PA and CRE 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	99.11	0.09	0.49	0.32
SM9 131	S15	99.56	0.06	0.37	0.00
SM9 131	CRE	99.91	0.01	0.08	0.00
S15 133	SM9	99.13	0.09	0.47	0.31
S15 133	S15	99.56	0.06	0.38	0.00
S15 133	CRE	99.91	0.01	0.08	0.00
CRE 138	SM9	99.13	0.09	0.47	0.31
CRE 138	S15	99.56	0.06	0.38	0.00
CRE 138	CRE	99.91	0.01	0.08	0.00

Figure 7-1 Daily PA SM9 GEO Ranging Availability Trend

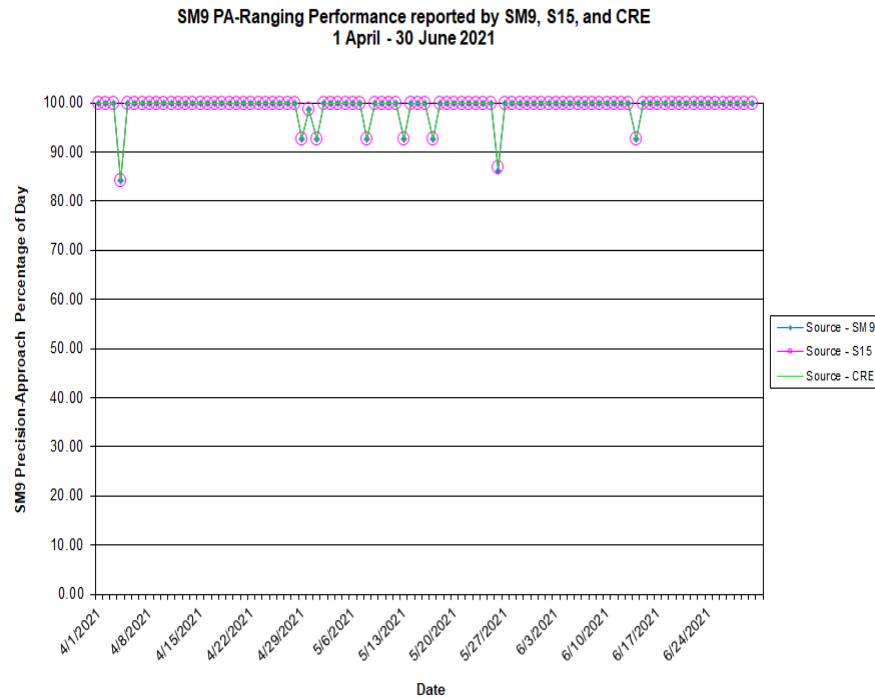


Figure 7-2 Daily PA S15 GEO Ranging Availability Trend

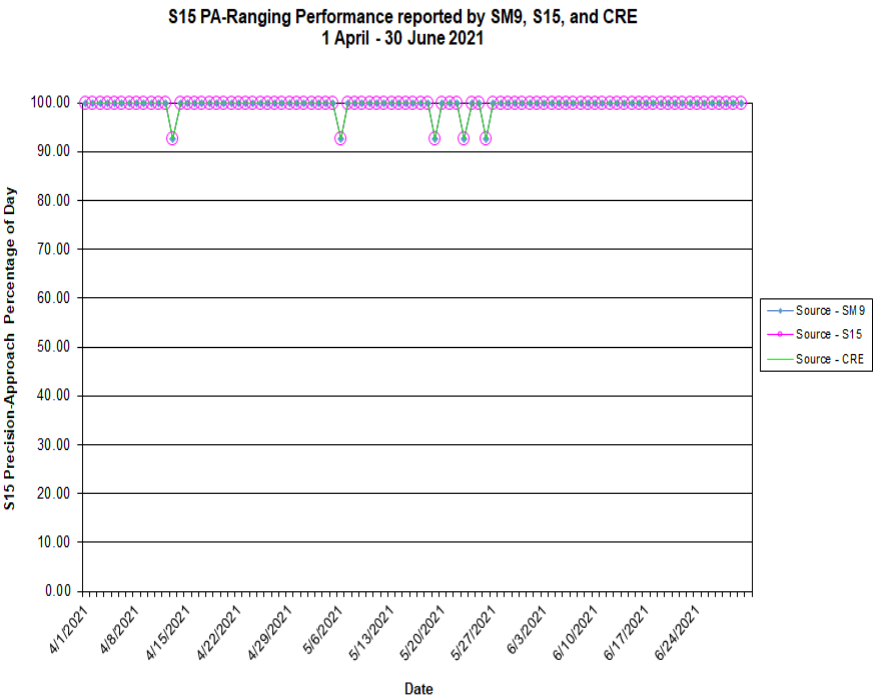
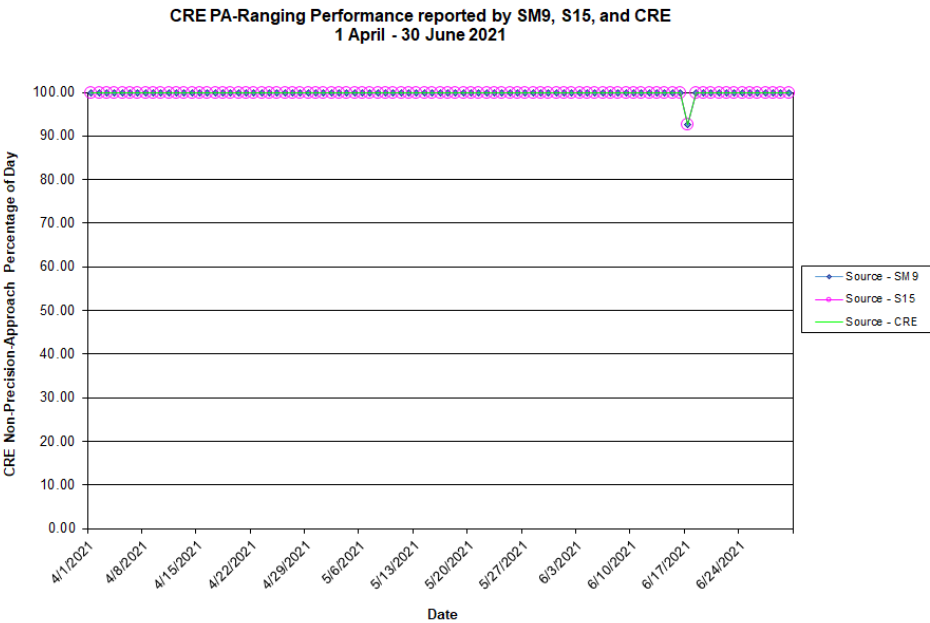


Figure 7-3 Daily PA CRE GEO Ranging Availability Trend



8.0 WAAS AIRPORT AVAILABILITY

The WAAS airport availability evaluation determines the number and length of LPV service outages at selected airports using the transmitted WAAS navigation message. The navigation messages transmitted from all GEO satellites are processed simultaneously, and WAAS protection levels (VPL and HPL) are computed at each airport once every 30 seconds in accordance with the RTCA DO-229D. The WAAS LPV service is available for a user when the VPL is less than or equal to the VAL of 50 meters and the HPL is less than or equal to the HAL of 40 meters. If both conditions are met, WAAS LPV service is available at that airport. Consequently, if either one of the conditions are not met, the WAAS LPV service outage and its duration is recorded.

When the LPV service becomes unavailable, it is not considered available again until protection levels are below or equal to alert limits for at least 15 minutes. Although this will minimally reduce LPV service availability, it substantially reduces the number of service outages and prevents excessive switching in and out of service availability. Similar service analyses are computed for the LP and LPV200 services in accordance with HAL and VAL shown in Table 1-1. Table 8-1 shows the WAAS LPV service availability and outages at selected airports in the US and Canada. Figure 8-1 through Figure 8-6 provide graphical representation of the LP, LPV, and LPV200 availability and outage counts at airports in the US and Canada that have published GPS area navigation (RNAV) Instrument Approach Procedures (IAPs). These results are geographically depicted on an interactive web page and are accessible at <http://www.nstb.tc.faa.gov/AirportOutages/>.

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

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

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
2C7	SHAKTOOLIK	AK	LPV	0	100	0	100	1	99.999
6A8	ALLAKAKET	AK	LP	0	100	0	100	1	99.998
7KA	TATITLEK	AK	LP	0	100	0	100	0	100
9A3	CHUATHBALUK	AK	LPV	0	100	0	100	0	100
ADQ	KODIAK	AK	LPV	0	100	0	100	0	100
AFM	AMBLER	AK	LPV	0	100	0	100	1	99.991
AKN	KING SALMON	AK	LPV	0	100	0	100	0	100
AKW	KLAWOCK	AK	LP	0	100	0	100	0	100
ANC	TED STEVENS ANCHORAGE INTL	AK	LPV200	0	100	0	100	0	100
ANI	ANIAK	AK	LPV	0	100	0	100	0	100
AQH	QUINHAGAK	AK	LPV	0	100	0	100	0	100
AQT	NUIQSUT	AK	LPV	0	100	0	100	1	99.982
AWI	WAINWRIGHT	AK	LPV	0	100	0	100	60	99.618
BET	BETHEL	AK	LPV200	0	100	0	100	0	100
BRW	WILEY POST-WILL ROGERS MEMORIA	AK	LPV	0	100	0	100	60	99.616
BVK	BUCKLAND	AK	LPV	0	100	0	100	1	99.993
CDB	COLD BAY	AK	LPV200	0	100	0	100	2	99.971
CDV	MERLE K (MUDHOLE) SMITH	AK	LPV	0	100	0	100	0	100
CEM	CENTRAL	AK	LP	0	100	0	100	0	100
CLP	CLARKS POINT	AK	LPV	0	100	0	100	0	100
CXF	COLDFOOT	AK	LP	0	100	0	100	1	99.992
D76	ROBERT/BOB/CURTIS MEMORIAL	AK	LPV	0	100	0	100	6	99.976
DEE	DEERING	AK	LPV	0	100	0	100	6	99.970
DLG	DILLINGHAM	AK	LPV	0	100	0	100	0	100
ELI	ELIM	AK	LPV	0	100	0	100	1	99.998
ENA	KENAI MUNICIPAL	AK	LPV200	0	100	0	100	0	100
ENM	EMMONAK	AK	LPV	0	100	0	100	1	99.996
FAI	FAIRBANKS INTL	AK	LPV200	0	100	0	100	0	100
FYU	FORT YUKON	AK	LPV	0	100	0	100	0	100
GAL	EDWARD G PITKA SR	AK	LPV	0	100	0	100	1	99.999
GAM	GAMBELL	AK	LPV	0	100	0	100	16	99.755
GKN	GULKANA	AK	LPV	0	100	0	100	0	100
GST	GUSTAVUS	AK	LP	0	100	0	100	1	99.998
HLA	HUSLIA	AK	LPV	0	100	0	100	1	99.997
HOM	HOMER	AK	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
HPB	HOOPER BAY	AK	LP	0	100	0	100	2	99.989
HRR	HEALY RIVER	AK	LP	0	100	0	100	0	100
IHK	KIPNUK	AK	LPV	0	100	0	100	0	100
ILI	ILIAMNA	AK	LPV	0	100	0	100	0	100
IWK	WALES	AK	LP	0	100	0	100	13	99.857
IYS	WASILLA	AK	LPV	0	100	0	100	0	100
KAL	KALTAG	AK	LPV	0	100	0	100	1	99.999
KGX	GRAYLING	AK	LP	0	100	0	100	0	100
KSM	ST MARY'S	AK	LPV200	0	100	0	100	0	100
KTN	KETCHIKAN INTL	AK	LPV	0	100	0	100	0	100
KTS	BREVIG MISSION	AK	LPV	0	100	0	100	13	99.894
KWT	KWETHLUK	AK	LPV	0	100	0	100	0	100
KYU	KOYUKUK	AK	LPV	0	100	0	100	1	99.998
MCG	MC GRATH	AK	LP	0	100	0	100	0	100
MDM	MARSHALL DON HUNTER SR	AK	LP	0	100	0	100	0	100
MDO	MIDDLETON ISLAND	AK	LP	0	100	0	100	0	100
MLY	MANLEY HOT SPRINGS	AK	LP	0	100	0	100	0	100
OME	NOME	AK	LPV	0	100	0	100	9	99.959
OOK	TOKSOOK BAY	AK	LP	0	100	0	100	1	99.992
ORT	NORTHWAY	AK	LP	0	100	0	100	0	100
OTZ	RALPH WIEN MEMORIAL	AK	LPV	0	100	0	100	10	99.947
PAQ	WARREN "BUD" WOODS PALMER MUNICIPAL	AK	LP	0	100	0	100	0	100
PBV	ST GEORGE	AK	LPV	0	100	1	99.998	15	99.857
PHO	POINT HOPE	AK	LPV	0	100	0	100	17	99.702
PTU	PLATINUM	AK	LPV	0	100	0	100	0	100
RBY	RUBY	AK	LPV	0	100	0	100	1	99.999
RSH	RUSSIAN MISSION	AK	LP	0	100	0	100	0	100
SCC	DEADHORSE	AK	LPV200	0	100	0	100	1	99.982
SCM	SCAMMON BAY	AK	LP	0	100	0	100	2	99.990
SDP	SAND POINT	AK	LPV	0	100	0	100	1	99.995
SHG	SHUNGNAL	AK	LP	0	100	0	100	1	99.992
SHX	SHAGELUK	AK	LPV	0	100	0	100	0	100
SIT	SITKA ROCKY GUTIERREZ	AK	LP	0	100	0	100	1	99.997
SMK	ST MICHAEL	AK	LPV	0	100	0	100	0	100
SXQ	SOLDOTNA	AK	LP	0	100	0	100	0	100
TKA	TALKEETNA	AK	LPV	0	100	0	100	0	100
TOG	TOGIAK	AK	LP	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
WLK	SELAWIK	AK	LPV	0	100	0	100	1	99.992
WMO	WHITE MOUNTAIN	AK	LP	0	100	0	100	1	99.995
WNA	NAPAKIAK	AK	LPV	0	100	0	100	0	100
WSN	SOUTH NAKNEK NR 2	AK	LPV	0	100	0	100	0	100
WTK	NOATAK	AK	LPV	0	100	0	100	13	99.897
YAK	YAKUTAT	AK	LPV200	0	100	0	100	1	99.997
02A	CHILTON COUNTY	AL	LP	0	100	0	100	0	100
06A	MOTON FIELD MUNICIPAL	AL	LPV	0	100	0	100	0	100
09A	BUTLER-CHOCTAW COUNTY	AL	LPV	0	100	0	100	0	100
0J6	HEADLAND MUNICIPAL	AL	LPV	0	100	0	100	0	100
0R1	ATMORE MUNICIPAL	AL	LPV	0	100	0	100	0	100
11A	CLAYTON MUNICIPAL	AL	LPV	0	100	0	100	0	100
12J	BREWTON MUNICIPAL	AL	LPV	0	100	0	100	0	100
1A9	PRATTVILLE - GROUBY FIELD	AL	LPV	0	100	0	100	0	100
1M4	POSEY FIELD	AL	LPV	0	100	0	100	0	100
1R8	BAY MINETTE MUNICIPAL	AL	LPV	0	100	0	100	0	100
2R5	ST ELMO	AL	LPV	0	100	0	100	0	100
33J	GENEVA MUNICIPAL	AL	LP	0	100	0	100	0	100
3M8	NORTH PICKENS	AL	LP	0	100	0	100	0	100
4A9	ISBELL FIELD	AL	LPV	0	100	0	100	0	100
5R1	ROY WILCOX	AL	LP	0	100	0	100	0	100
5R4	FOLEY MUNICIPAL	AL	LPV	0	100	0	100	0	100
71J	OZARK-BLACKWELL FIELD	AL	LPV	0	100	0	100	0	100
79J	SOUTH ALABAMA RGNL AT BILL BEN	AL	LPV	0	100	0	100	0	100
8A0	ALBERTVILLE RGNL-THOMAS J BRUM	AL	LPV	0	100	0	100	0	100
8A1	GUNTERSVILLE MUNICIPAL - JOE STARNE	AL	LPV	0	100	0	100	0	100
9A4	COURTLAND	AL	LPV200	0	100	0	100	0	100
A08	VAIDEN FIELD	AL	LPV	0	100	0	100	0	100
ALX	THOMAS C RUSSELL FLD	AL	LPV	0	100	0	100	0	100
ANB	ANNISTON RGNL	AL	LPV	0	100	0	100	0	100
ASN	TALLADEGA MUNICIPAL	AL	LPV200	0	100	0	100	0	100
AUO	AUBURN UNIVERSITY RGNL	AL	LPV200	0	100	0	100	0	100
BFM	MOBILE DOWNTOWN	AL	LPV200	0	100	0	100	0	100
BHM	BIRMINGHAM-SHUTTLESWORTH INTL	AL	LPV200	0	100	0	100	0	100
CMD	CULLMAN RGNL-FOLSOM FIELD	AL	LPV	0	100	0	100	0	100
CQF	H L SONNY CALLAHAN	AL	LPV200	0	100	0	100	0	100
DCU	PRYOR FIELD RGNL	AL	LPV200	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
DHN	DOTHAN RGNL	AL	LPV200	0	100	0	100	0	100
DYA	DEMOPOLIS RGNL	AL	LPV	0	100	0	100	0	100
EDN	ENTERPRISE MUNICIPAL	AL	LPV	0	100	0	100	0	100
EET	SHELBY COUNTY	AL	LPV	0	100	0	100	0	100
EKY	BESSEMER	AL	LPV	0	100	0	100	0	100
EUF	WEEDON FIELD	AL	LPV	0	100	0	100	0	100
GAD	NORTHEAST ALABAMA RGNL	AL	LPV200	0	100	0	100	0	100
GZH	EVERGREEN RGNL/MIDDLETON FIELD	AL	LP	0	100	0	100	0	100
HAB	MARION COUNTY-RANKIN FITE	AL	LPV	0	100	0	100	0	100
HSV	HUNTSVILLE INTL-CARL T JONES F	AL	LPV200	0	100	0	100	0	100
JFX	WALKER COUNTY-BEVILL FIELD	AL	LPV	0	100	0	100	0	100
JKA	JACK EDWARDS NATIONAL	AL	LPV200	0	100	0	100	0	100
M95	RICHARD ARTHUR FIELD	AL	LPV	0	100	0	100	0	100
MDQ	HUNTSVILLE EXECUTIVE TOM SHARP	AL	LPV200	0	100	0	100	0	100
MGM	MONTGOMERY RGNL (DANNELLY FIEL	AL	LPV200	0	100	0	100	0	100
MOB	MOBILE RGNL	AL	LPV200	0	100	0	100	0	100
MSL	NORTHWEST ALABAMA RGNL	AL	LPV200	0	100	0	100	0	100
PLR	ST CLAIR COUNTY	AL	LPV	0	100	0	100	0	100
PYP	CENTRE-PIEDMONT-CHEROKEE COUNT	AL	LPV	0	100	0	100	0	100
SCD	MERKEL FIELD SYLACAUGA MUNICIPAL	AL	LPV	0	100	0	100	0	100
SEM	CRAIG FIELD	AL	LPV200	0	100	0	100	0	100
TCL	TUSCALOOSA RGNL	AL	LPV	0	100	0	100	0	100
TOI	TROY MUNICIPAL AT N KENNETH CAMPBEL	AL	LPV	0	100	0	100	0	100
0M0	BILLY FREE MUNICIPAL	AR	LPV	0	100	0	100	0	100
42A	MELBOURNE MUNICIPAL - JOHN E MILLER	AR	LP	0	100	0	100	0	100
4A5	SEARCY COUNTY	AR	LPV	0	100	0	100	0	100
4M1	CARROLL COUNTY	AR	LP	0	100	0	100	0	100
4M3	CARLISLE MUNICIPAL	AR	LPV	0	100	0	100	0	100
6M7	MARIANNA/LEE COUNTY-STEVE EDWA	AR	LPV	0	100	0	100	0	100
7M1	MC GEHEE MUNICIPAL	AR	LP	0	100	0	100	0	100
9M8	SHERIDAN MUNICIPAL	AR	LPV	0	100	0	100	0	100
ADF	DEXTER B FLORENCE MEMORIAL FIE	AR	LPV	0	100	0	100	0	100
ARG	WALNUT RIDGE RGNL	AR	LPV200	0	100	0	100	0	100
ASG	SPRINGDALE MUNICIPAL	AR	LPV	0	100	0	100	0	100
AWM	WEST MEMPHIS MUNICIPAL	AR	LPV	0	100	0	100	0	100
BPK	BAXTER COUNTY	AR	LPV	0	100	0	100	0	100
BVX	BATESVILLE RGNL	AR	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
BYH	ARKANSAS INTL	AR	LPV200	0	100	0	100	0	100
CDH	HARRELL FIELD	AR	LPV	0	100	0	100	0	100
CXW	CANTRELL FLD	AR	LPV	0	100	0	100	0	100
DRP	DELTA RGNL	AR	LPV	0	100	0	100	0	100
ELD	SOUTH ARKANSAS RGNL AT GOODWIN	AR	LPV	0	100	0	100	0	100
FLP	MARION COUNTY RGNL	AR	LPV	0	100	0	100	0	100
FSM	FORT SMITH RGNL	AR	LPV200	0	100	0	100	0	100
FYV	DRAKE FIELD	AR	LPV	0	100	0	100	0	100
H34	HUNTSVILLE MUNICIPAL	AR	LPV	0	100	0	100	0	100
HEE	THOMPSON-ROBBINS	AR	LPV	0	100	0	100	0	100
HRO	BOONE COUNTY	AR	LPV	0	100	0	100	0	100
JBR	JONESBORO MUNICIPAL	AR	LPV200	0	100	0	100	0	100
LIT	BILL AND HILLARY CLINTON NATIO	AR	LPV200	0	100	0	100	0	100
LLQ	MONTICELLO MUNICIPAL/ELLIS FIELD	AR	LPV	0	100	0	100	0	100
M18	HOPE MUNICIPAL	AR	LP	0	100	0	100	0	100
M19	NEWPORT RGNL	AR	LPV	0	100	0	100	0	100
M32	LAKE VILLAGE MUNICIPAL	AR	LP	0	100	0	100	0	100
M70	POCAHONTAS MUNICIPAL	AR	LPV	0	100	0	100	0	100
M77	HOWARD COUNTY	AR	LP	0	100	0	100	0	100
MXA	MANILA MUNICIPAL	AR	LPV	0	100	0	100	0	100
ORK	NORTH LITTLE ROCK MUNICIPAL	AR	LPV	0	100	0	100	0	100
PBF	PINE BLUFF RGNL AIRPORT GRIDER	AR	LPV	0	100	0	100	0	100
ROG	ROGERS EXECUTIVE - CARTER FIEL	AR	LPV	0	100	0	100	0	100
RUE	RUSSELLVILLE RGNL	AR	LPV	0	100	0	100	0	100
SGT	STUTTGART MUNICIPAL CARL HUMPHREY F	AR	LPV	0	100	0	100	0	100
SLG	SMITH FIELD	AR	LPV	0	100	0	100	0	100
SRC	SEARCY MUNICIPAL	AR	LPV	0	100	0	100	0	100
SUZ	SALINE COUNTY RGNL	AR	LPV	0	100	0	100	0	100
TXK	TEXARKANA RGNL-WEBB FIELD	AR	LPV	0	100	0	100	1	99.999
VBT	BENTONVILLE MUNICIPAL/LOUISE M THAD	AR	LPV	0	100	0	100	0	100
XNA	NORTHWEST ARKANSAS RGNL	AR	LPV200	0	100	0	100	0	100
AVQ	MARANA RGNL	AZ	LP	0	100	0	100	0	100
AZC	COLORADO CITY MUNICIPAL	AZ	LPV	0	100	0	100	0	100
CGZ	CASA GRANDE MUNICIPAL	AZ	LPV	0	100	0	100	0	100
DVT	PHOENIX DEER VALLEY	AZ	LPV	0	100	0	100	0	100
FFZ	FALCON FLD	AZ	LP	0	100	0	100	0	100
FHU	SIERRA VISTA MUNICIPAL-LIBBY AAF	AZ	LPV200	0	100	0	100	1	99.996

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
FLG	FLAGSTAFF PULLIAM	AZ	LPV	0	100	0	100	0	100
GCN	GRAND CANYON NATIONAL PARK	AZ	LPV	0	100	0	100	0	100
GEU	GLENDALE MUNICIPAL	AZ	LPV	0	100	0	100	0	100
GYR	PHOENIX GOODYEAR	AZ	LP	0	100	0	100	0	100
HII	LAKE HAVASU CITY	AZ	LPV	0	100	0	100	0	100
IFP	LAUGHLIN/BULLHEAD INTL	AZ	LPV	0	100	0	100	0	100
IGM	KINGMAN	AZ	LPV	0	100	0	100	0	100
IWA	PHOENIX-MESA GATEWAY	AZ	LPV200	0	100	0	100	0	100
JTC	SPRINGERVILLE MUNICIPAL	AZ	LP	0	100	0	100	0	100
P20	AVI SUQUILLA	AZ	LPV	0	100	0	100	0	100
P33	COCHISE COUNTY	AZ	LPV	0	100	0	100	0	100
PGA	PAGE MUNICIPAL	AZ	LPV	0	100	0	100	0	100
PHX	PHOENIX SKY HARBOR INTL	AZ	LPV	0	100	0	100	0	100
PRC	PRESCOTT RGNL - ERNEST A LOVE	AZ	LPV200	0	100	0	100	0	100
RQE	WINDOW ROCK	AZ	LP	0	100	0	100	0	100
RYN	RYAN FIELD	AZ	LPV	0	100	0	100	1	99.999
SAD	SAFFORD RGNL	AZ	LPV	0	100	0	100	0	100
SJN	ST JOHNS INDUSTRIAL AIR PARK	AZ	LP	0	100	0	100	0	100
SOW	SHOW LOW RGNL	AZ	LPV200	0	100	0	100	0	100
TUS	TUCSON INTL	AZ	LPV	0	100	0	100	0	100
AAT	ALTURAS MUNICIPAL	CA	LPV	0	100	0	100	0	100
ACV	CALIFORNIA REDWOOD COAST-HUMBO	CA	LPV	0	100	0	100	0	100
APC	NAPA COUNTY	CA	LPV	0	100	0	100	0	100
APV	APPLE VALLEY	CA	LPV	0	100	0	100	0	100
AUN	AUBURN MUNICIPAL	CA	LPV	0	100	0	100	0	100
BFL	MEADOWS FIELD	CA	LPV	0	100	0	100	0	100
BLH	BLYTHE	CA	LP	0	100	0	100	0	100
BUR	BOB HOPE	CA	LP	0	100	0	100	0	100
C83	BYRON	CA	LPV	0	100	0	100	0	100
CCB	CABLE	CA	LP	0	100	0	100	0	100
CCR	BUCHANAN FIELD	CA	LPV	0	100	0	100	0	100
CEC	JACK MC NAMARA FIELD	CA	LPV	0	100	0	100	0	100
CIC	CHICO MUNICIPAL	CA	LPV	0	100	0	100	0	100
CMA	CAMARILLO	CA	LPV	0	100	0	100	0	100
CNO	CHINO	CA	LPV	0	100	0	100	0	100
CPU	CALAVERAS CO-MAURY RASMUSSEN F	CA	LP	0	100	0	100	0	100
CRQ	MC CLELLAN-PALOMAR	CA	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
CVH	HOLLISTER MUNICIPAL	CA	LPV	0	100	0	100	0	100
DAG	BARSTOW-DAGGETT	CA	LPV	0	100	0	100	0	100
DWA	YOLO COUNTY	CA	LPV	0	100	0	100	0	100
F70	FRENCH VALLEY	CA	LPV	0	100	0	100	0	100
FAT	FRESNO YOSEMITE INTL	CA	LPV200	0	100	0	100	0	100
GOO	NEVADA COUNTY	CA	LPV	0	100	0	100	0	100
HAF	HALF MOON BAY	CA	LPV	0	100	0	100	0	100
HHR	JACK NORTHROP FIELD/HAWTHORNE	CA	LPV	0	100	0	100	0	100
HJO	HANFORD MUNICIPAL	CA	LPV	0	100	0	100	0	100
HWD	HAYWARD EXECUTIVE	CA	LPV	0	100	0	100	0	100
L35	BIG BEAR CITY	CA	LP	0	100	0	100	0	100
LAX	LOS ANGELES INTL	CA	LPV200	0	100	0	100	0	100
LGB	LONG BEACH /DAUGHERTY FIELD/	CA	LPV	0	100	0	100	0	100
LHM	LINCOLN RGNL/KARL HARDER FIELD	CA	LPV200	0	100	0	100	0	100
LLR	LITTLE RIVER	CA	LP	0	100	0	100	1	99.999
LSN	LOS BANOS MUNICIPAL	CA	LPV	0	100	0	100	0	100
LVK	LIVERMORE MUNICIPAL	CA	LPV200	0	100	0	100	0	100
MAE	MADERA MUNICIPAL	CA	LPV	0	100	0	100	0	100
MCE	MERCED RGNL/MACREADY FIELD	CA	LPV	0	100	0	100	0	100
MER	CASTLE	CA	LPV200	0	100	0	100	0	100
MHR	SACRAMENTO MATHER	CA	LPV200	0	100	0	100	0	100
MIT	SHAFTER-MINTER FIELD	CA	LPV	0	100	0	100	0	100
MOD	MODESTO CITY-CO-HARRY SHAM FLD	CA	LPV	0	100	0	100	0	100
MRY	MONTEREY RGNL	CA	LPV	0	100	0	100	1	99.999
MYF	MONTGOMERY-GIBBS EXECUTIVE	CA	LPV200	0	100	0	100	0	100
MYV	YUBA COUNTY	CA	LPV200	0	100	0	100	0	100
NUQ	MOFFETT FEDERAL AFLD	CA	LPV200	0	100	0	100	0	100
O02	NERVINO	CA	LPV	0	100	0	100	0	100
O08	COLUSA COUNTY	CA	LPV	0	100	0	100	0	100
O27	OAKDALE	CA	LPV	0	100	0	100	0	100
O32	REEDLEY MUNICIPAL	CA	LPV	0	100	0	100	0	100
O69	PETALUMA MUNICIPAL	CA	LPV	0	100	0	100	0	100
O88	RIO VISTA MUNICIPAL	CA	LP	0	100	0	100	0	100
OAK	METROPOLITAN OAKLAND INTL	CA	LPV200	0	100	0	100	0	100
ONT	ONTARIO INTL	CA	LPV200	0	100	0	100	0	100
OVE	OROVILLE MUNICIPAL	CA	LPV	0	100	0	100	0	100
OXR	OXNARD	CA	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
PMD	PALMDALE USAF PLANT 42	CA	LPV200	0	100	0	100	0	100
POC	BRACKETT FIELD	CA	LPV	0	100	0	100	0	100
PRB	PASO ROBLES MUNICIPAL	CA	LPV	0	100	0	100	0	100
PVF	PLACERVILLE	CA	LPV	0	100	0	100	0	100
RAL	RIVERSIDE MUNICIPAL	CA	LPV	0	100	0	100	0	100
RBL	RED BLUFF MUNICIPAL	CA	LPV	0	100	0	100	0	100
RDD	REDDING MUNICIPAL	CA	LPV	0	100	0	100	0	100
RHV	REID-HILLVIEW OF SANTA CLARA C	CA	LPV	0	100	0	100	0	100
RIV	MARCH ARB	CA	LPV200	0	100	0	100	0	100
SAC	SACRAMENTO EXECUTIVE	CA	LPV	0	100	0	100	0	100
SAN	SAN DIEGO INTL	CA	LPV	0	100	0	100	1	99.999
SBA	SANTA BARBARA MUNICIPAL	CA	LPV	0	100	0	100	1	99.999
SBD	SAN BERNARDINO INTL	CA	LPV	0	100	0	100	0	100
SBP	SAN LUIS COUNTY RGNL	CA	LPV200	0	100	0	100	1	99.999
SCK	STOCKTON METROPOLITAN	CA	LPV200	0	100	0	100	0	100
SDM	BROWN FIELD MUNICIPAL	CA	LPV200	0	100	0	100	1	99.999
SEE	GILLESPIE FIELD	CA	LP	0	100	0	100	0	100
SFO	SAN FRANCISCO INTL	CA	LPV200	0	100	0	100	0	100
SJC	NORMAN Y MINETA SAN JOSE INTL	CA	LPV200	0	100	0	100	0	100
SMF	SACRAMENTO INTL	CA	LPV200	0	100	0	100	0	100
SMO	SANTA MONICA MUNICIPAL	CA	LPV	0	100	0	100	0	100
SMX	SANTA MARIA PUB/CAPT G ALLAN H	CA	LPV200	0	100	0	100	1	99.999
SNA	JOHN WAYNE AIRPORT-ORANGE COUN	CA	LPV200	0	100	0	100	0	100
SNS	SALINAS MUNICIPAL	CA	LPV200	0	100	0	100	0	100
STS	CHARLES M SCHULZ - SONOMA COUN	CA	LPV200	0	100	0	100	0	100
TCY	TRACY MUNICIPAL	CA	LPV	0	100	0	100	0	100
TNP	TWENTYNINE PALMS	CA	LP	0	100	0	100	0	100
TOA	ZAMPERINI FIELD	CA	LPV	0	100	0	100	0	100
TRK	TRUCKEE-TAHOE	CA	LP	0	100	0	100	0	100
TRM	JACQUELINE COCHRAN RGNL	CA	LPV	0	100	0	100	0	100
TVL	LAKE TAHOE	CA	LP	0	100	0	100	0	100
VCB	NUT TREE	CA	LPV	0	100	0	100	0	100
VCV	SOUTHERN CALIFORNIA LOGISTICS	CA	LPV	0	100	0	100	0	100
VIS	VISALIA MUNICIPAL	CA	LPV	0	100	0	100	0	100
WJF	GENERAL WM J FOX AIRFIELD	CA	LPV	0	100	0	100	0	100
WLW	WILLOWS-GLENN COUNTY	CA	LPV	0	100	0	100	0	100
WVI	WATSONVILLE MUNICIPAL	CA	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
1V6	FREMONT COUNTY	CO	LPV	0	100	0	100	0	100
20V	MC ELROY AIRFIELD	CO	LPV	0	100	0	100	0	100
2V5	WRAY MUNICIPAL	CO	LPV200	0	100	0	100	0	100
2V6	YUMA MUNICIPALCIPAL	CO	LPV200	0	100	0	100	0	100
4V0	RANGELY	CO	LPV	0	100	0	100	0	100
4V1	SPANISH PEAKS AIRFIELD	CO	LPV	0	100	0	100	0	100
AEJ	CENTRAL COLORADO RGNL	CO	LP	0	100	0	100	0	100
AJZ	BLAKE FIELD	CO	LPV	0	100	0	100	0	100
AKO	COLORADO PLAINS RGNL	CO	LPV	0	100	0	100	0	100
ALS	SAN LUIS VALLEY RGNL/BERGMAN F	CO	LPV200	0	100	0	100	0	100
APA	CENTENNIAL	CO	LPV200	0	100	0	100	0	100
BJC	ROCKY MOUNTAIN METROPOLITAN	CO	LPV200	0	100	0	100	0	100
CAG	CRAIG-MOFFAT	CO	LP	0	100	0	100	0	100
CEZ	CORTEZ MUNICIPAL	CO	LPV	0	100	0	100	0	100
COS	CITY OF COLORADO SPRINGS MUNICIPAL	CO	LPV200	0	100	0	100	0	100
DEN	DENVER INTL	CO	LPV200	0	100	0	100	0	100
DRO	DURANGO-LA PLATA COUNTY	CO	LPV200	0	100	0	100	0	100
FMM	FORT MORGAN MUNICIPAL	CO	LPV	0	100	0	100	0	100
FNL	NORTHERN COLORADO RGNL	CO	LPV200	0	100	0	100	0	100
FTG	FRONT RANGE	CO	LPV200	0	100	0	100	0	100
GJT	GRAND JUNCTION REGIONAL	CO	LPV200	0	100	0	100	0	100
GXY	GREELEY-WELD COUNTY	CO	LPV200	0	100	0	100	0	100
HDN	YAMPA VALLEY	CO	LPV200	0	100	0	100	0	100
ITR	KIT CARSON COUNTY	CO	LPV	0	100	0	100	1	99.996
LAA	LAMAR MUNICIPAL	CO	LPV	0	100	0	100	1	99.998
LHX	LA JUNTA MUNICIPAL	CO	LPV	0	100	0	100	1	99.999
LMO	VANCE BRAND	CO	LPV	0	100	0	100	0	100
MTJ	MONTROSE RGNL	CO	LPV	0	100	0	100	0	100
MVI	MONTE VISTA MUNICIPAL	CO	LPV	0	100	0	100	0	100
PSO	STEVENS FIELD	CO	LP	0	100	0	100	0	100
PUB	PUEBLO MEMORIAL	CO	LPV200	0	100	0	100	0	100
RCV	ASTRONAUT KENT ROMINGER	CO	LPV	0	100	0	100	0	100
RIL	RIFLE GARFIELD COUNTY	CO	LPV	0	100	0	100	0	100
STK	STERLING MUNICIPAL	CO	LPV	0	100	0	100	0	100
TEX	TELLURIDE RGNL	CO	LP	0	100	0	100	0	100
4B8	ROBERTSON FIELD	CT	LP	0	100	0	100	0	100
BDL	BRADLEY INTL	CT	LPV200	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
BDR	IGOR I SIKORSKY MEMORIAL	CT	LPV	0	100	0	100	0	100
DXR	DANBURY MUNICIPAL	CT	LP	0	100	0	100	0	100
GON	GROTON-NEW LONDON	CT	LPV	0	100	0	100	0	100
HVN	TWEED-NEW HAVEN	CT	LPV	0	100	0	100	0	100
IJD	WINDHAM	CT	LP	0	100	0	100	0	100
MMK	MERIDEN MARKHAM MUNICIPAL	CT	LP	0	100	0	100	0	100
OXC	WATERBURY-OXFORD	CT	LPV	0	100	0	100	0	100
DCA	RONALD REAGAN WASHINGTON NATIO	DC	LPV	0	100	0	100	0	100
HEF	MANASSAS RGNL/HARRY P DAVIS FI	DC	LPV	0	100	0	100	0	100
IAD	WASHINGTON DULLES INTL	DC	LPV200	0	100	0	100	0	100
33N	DELAWARE AIRPARK	DE	LP	0	100	0	100	0	100
DOV	DOVER AFB	DE	LPV200	0	100	0	100	0	100
EVY	SUMMIT	DE	LPV	0	100	0	100	0	100
GED	DELAWARE COASTAL	DE	LPV	0	100	0	100	0	100
ILG	NEW CASTLE	DE	LPV	0	100	0	100	0	100
1J0	TRI-COUNTY	FL	LP	0	100	0	100	0	100
24J	SUWANNEE COUNTY	FL	LPV	0	100	0	100	0	100
28J	PALATKA MUNICIPAL - LT KAY LARKIN F	FL	LPV	0	100	0	100	0	100
40J	PERRY-FOLEY	FL	LPV	0	100	0	100	0	100
54J	DEFUNIAK SPRINGS	FL	LP	0	100	0	100	0	100
AAF	APALACHICOLA RGNL-CLEVE RANDOL	FL	LPV	0	100	0	100	0	100
APF	NAPLES MUNICIPAL	FL	LPV	0	100	0	100	11	99.953
AVO	AVON PARK EXECUTIVE	FL	LPV	0	100	0	100	1	99.998
BCT	BOCA RATON	FL	LPV	0	100	0	100	12	99.936
BKV	BROOKSVILLE-TAMPA BAY RGNL	FL	LPV	0	100	0	100	0	100
BOW	BARTOW EXECUTIVE	FL	LPV	0	100	0	100	1	99.998
CEW	BOB SIKES	FL	LPV	0	100	0	100	0	100
CGC	CRYSTAL RIVER-CAPTAIN TOM DAVI	FL	LP	0	100	0	100	0	100
CHN	WAUCHULA MUNICIPAL	FL	LP	0	100	0	100	1	99.997
COI	MERRITT ISLAND	FL	LPV	0	100	0	100	0	100
CRG	JACKSONVILLE EXECUTIVE AT CRAI	FL	LPV200	0	100	0	100	0	100
CTY	CROSS CITY	FL	LPV	0	100	0	100	0	100
DAB	DAYTONA BEACH INTL	FL	LPV200	0	100	0	100	0	100
DED	DELAND MUNICIPAL-SIDNEY H TAYLOR FI	FL	LPV	0	100	0	100	0	100
DTS	DESTIN EXECUTIVE	FL	LPV	0	100	0	100	0	100
ECP	NORTHWEST FLORIDA BEACHES INTL	FL	LPV200	0	100	0	100	0	100
EVB	NEW SMYRNA BEACH MUNICIPAL	FL	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
EYW	KEY WEST INTL	FL	LPV	0	100	0	100	13	99.885
F45	NORTH PALM BEACH COUNTY GENERA	FL	LPV	0	100	0	100	12	99.960
FHB	FERNANDINA BEACH MUNICIPAL	FL	LPV	0	100	0	100	0	100
FIN	FLAGLER EXECUTIVE	FL	LPV	0	100	0	100	0	100
FLL	FORT LAUDERDALE/HOLLYWOOD INTL	FL	LPV200	0	100	0	100	12	99.927
FMY	PAGE FIELD	FL	LPV	0	100	0	100	11	99.970
FPR	TREASURE COAST INTL	FL	LPV	0	100	0	100	4	99.996
FXE	FORT LAUDERDALE EXECUTIVE	FL	LPV200	0	100	0	100	12	99.932
GIF	WINTER HAVEN RGNL	FL	LPV	0	100	0	100	1	99.999
GNV	GAINESVILLE RGNL	FL	LPV	0	100	0	100	0	100
HEG	HERLONG RECREATIONAL	FL	LPV	0	100	0	100	0	100
IMM	IMMOKALEE RGNL	FL	LPV	0	100	0	100	11	99.961
ISM	KISSIMMEE GATEWAY	FL	LPV200	0	100	0	100	0	100
JAX	JACKSONVILLE INTL	FL	LPV200	0	100	0	100	0	100
LAL	LAKELAND LINDER INTL	FL	LPV200	0	100	0	100	1	99.999
LCQ	LAKE CITY GATEWAY	FL	LPV	0	100	0	100	0	100
LEE	LEESBURG INTL	FL	LPV	0	100	0	100	0	100
LNA	PALM BEACH COUNTY PARK	FL	LP	0	100	0	100	12	99.947
MAI	MARIANNA MUNICIPAL	FL	LPV	0	100	0	100	0	100
MCO	ORLANDO INTL	FL	LPV200	0	100	0	100	0	100
MIA	MIAMI INTL	FL	LPV200	0	100	0	100	12	99.914
MKY	MARCO ISLAND EXECUTIVE	FL	LPV	0	100	0	100	11	99.947
MLB	MELBOURNE INTL	FL	LPV200	0	100	0	100	1	99.999
MTH	THE FLORIDA KEYS MARATHON INTL	FL	LPV	0	100	0	100	12	99.884
OBE	OKEECHOBEE COUNTY	FL	LPV	0	100	0	100	8	99.992
OCF	OCALA INTL-JIM TAYLOR FIELD	FL	LPV200	0	100	0	100	0	100
OMN	ORMOND BEACH MUNICIPAL	FL	LPV	0	100	0	100	0	100
OPF	MIAMI-OPA LOCKA EXECUTIVE	FL	LPV200	0	100	0	100	12	99.922
ORL	EXECUTIVE	FL	LPV200	0	100	0	100	0	100
PBI	PALM BEACH INTL	FL	LPV200	0	100	0	100	12	99.951
PCM	PLANT CITY	FL	LPV	0	100	0	100	1	99.999
PGD	PUNTA GORDA	FL	LPV200	0	100	0	100	10	99.988
PHK	PALM BEACH CO GLADES	FL	LPV	0	100	0	100	11	99.965
PIE	ST PETE-CLEARWATER INTL	FL	LPV200	0	100	0	100	1	99.999
PMP	POMPANO BEACH AIRPARK	FL	LPV	0	100	0	100	12	99.933
PNS	PENSACOLA INTL	FL	LPV200	0	100	0	100	0	100
RSW	SOUTHWEST FLORIDA INTL	FL	LPV	0	100	0	100	11	99.967

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
SEF	SEBRING RGNL	FL	LPV	0	100	0	100	3	99.996
SFB	ORLANDO SANFORD INTL	FL	LPV200	0	100	0	100	0	100
SGJ	NORTHEAST FLORIDA RGNL	FL	LPV	0	100	0	100	0	100
SRQ	SARASOTA/BRADENTON INTL	FL	LPV200	0	100	0	100	1	99.996
SUA	WITHAM FIELD	FL	LPV	0	100	0	100	11	99.982
TIX	SPACE COAST RGNL	FL	LPV200	0	100	0	100	0	100
TLH	TALLAHASSEE INTL	FL	LPV200	0	100	0	100	0	100
TMB	MIAMI EXECUTIVE	FL	LPV200	0	100	0	100	12	99.911
TNT	DADE-COLLIER TRAINING AND TRAN	FL	LPV200	0	100	0	100	12	99.932
TPA	TAMPA INTL	FL	LPV200	0	100	0	100	1	99.999
TPF	PETER O KNIGHT	FL	LP	0	100	0	100	1	99.999
TTS	NASA SHUTTLE LANDING FACILITY	FL	LPV200	0	100	0	100	0	100
VDF	TAMPA EXECUTIVE	FL	LPV	0	100	0	100	1	99.999
VNC	VENICE MUNICIPAL	FL	LP	0	100	0	100	5	99.993
VQQ	CECIL	FL	LPV200	0	100	0	100	0	100
VRB	VERO BEACH RGNL	FL	LPV200	0	100	0	100	3	99.998
X07	LAKE WALES MUNICIPAL	FL	LP	0	100	0	100	1	99.999
X14	LA BELLE MUNICIPAL	FL	LPV	0	100	0	100	11	99.976
X23	UMATILLA MUNICIPAL	FL	LP	0	100	0	100	0	100
X35	MARION COUNTY	FL	LP	0	100	0	100	0	100
X50	MASSEY RANCH AIRPARK	FL	LP	0	100	0	100	0	100
X51	MIAMI HOMESTEAD GENERAL AVIATI	FL	LPV	0	100	0	100	12	99.907
ZPH	ZEPHYRHILLS MUNICIPAL	FL	LPV	0	100	0	100	0	100
09J	JEKYLL ISLAND	GA	LPV200	0	100	0	100	0	100
15J	COOK COUNTY	GA	LPV	0	100	0	100	0	100
17J	DONALSONVILLE MUNICIPAL	GA	LPV	0	100	0	100	0	100
18A	FRANKLIN COUNTY	GA	LPV	0	100	0	100	0	100
19A	JACKSON COUNTY	GA	LPV	0	100	0	100	0	100
2J3	LOUISVILLE MUNICIPAL	GA	LPV	0	100	0	100	0	100
2J5	MILLEN	GA	LPV	0	100	0	100	0	100
3J7	GREENE COUNTY RGNL	GA	LPV	0	100	0	100	0	100
48A	COCHRAN	GA	LPV	0	100	0	100	0	100
49A	GILMER COUNTY	GA	LPV	0	100	0	100	0	100
4A4	POLK COUNTY AIRPORT- CORNELIUS	GA	LPV	0	100	0	100	0	100
4J1	BRANTLEY COUNTY	GA	LPV	0	100	0	100	0	100
4J2	BERRIEN CO	GA	LPV	0	100	0	100	0	100
4J5	QUITMAN BROOKS COUNTY	GA	LP	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
52A	MADISON MUNICIPAL	GA	LP	0	100	0	100	0	100
6A1	BUTLER MUNICIPAL	GA	LPV	0	100	0	100	0	100
6A2	GRIFFIN-SPALDING COUNTY	GA	LPV	0	100	0	100	0	100
70J	CAIRO-GRADY COUNTY	GA	LPV	0	100	0	100	0	100
75J	TURNER COUNTY	GA	LP	0	100	0	100	0	100
9A5	BARWICK LAFAYETTE	GA	LP	0	100	0	100	0	100
ABY	SOUTHWEST GEORGIA RGNL	GA	LPV200	0	100	0	100	0	100
ACJ	JIMMY CARTER RGNL	GA	LPV	0	100	0	100	0	100
AGS	AUGUSTA RGNL AT BUSH FIELD	GA	LPV200	0	100	0	100	0	100
AHN	ATHENS/BEN EPPS	GA	LPV200	0	100	0	100	0	100
AJR	HABERSHAM COUNTY	GA	LPV	0	100	0	100	0	100
AMG	BACON COUNTY	GA	LPV	0	100	0	100	0	100
ATL	HARTSFIELD - JACKSON ATLANTA I	GA	LPV200	0	100	0	100	0	100
AYS	WAYCROSS-WARE COUNTY	GA	LPV200	0	100	0	100	0	100
BGE	DECATUR COUNTY INDUSTRIAL AIR	GA	LPV200	0	100	0	100	0	100
BHC	BAXLEY MUNICIPAL	GA	LPV	0	100	0	100	0	100
BIJ	EARLY COUNTY	GA	LPV	0	100	0	100	0	100
BQK	BRUNSWICK GOLDEN ISLES	GA	LPV200	0	100	0	100	0	100
CCO	NEWNAN COWETA COUNTY	GA	LPV	0	100	0	100	0	100
CKF	CRISP COUNTY-CORDELE	GA	LPV	0	100	0	100	0	100
CNI	CHEROKEE COUNTY	GA	LPV	0	100	0	100	0	100
CSG	COLUMBUS	GA	LPV	0	100	0	100	0	100
CTJ	WEST GEORGIA RGNL - O V GRAY F	GA	LPV	0	100	0	100	0	100
CVC	COVINGTON MUNICIPAL	GA	LPV	0	100	0	100	0	100
CWV	CLAXTON-EVANS COUNTY	GA	LPV	0	100	0	100	0	100
CXU	CAMILLA-MITCHELL COUNTY	GA	LPV	0	100	0	100	0	100
CZL	TOM B DAVID FLD	GA	LPV	0	100	0	100	0	100
D73	MONROE-WALTON COUNTY	GA	LP	0	100	0	100	0	100
DBN	W H 'BUD' BARRON	GA	LPV200	0	100	0	100	0	100
DNL	DANIEL FIELD	GA	LPV	0	100	0	100	0	100
DNN	DALTON MUNICIPAL	GA	LPV	0	100	0	100	0	100
DQH	DOUGLAS MUNICIPAL	GA	LPV200	0	100	0	100	0	100
EBA	ELBERT COUNTY-PATZ FIELD	GA	LP	0	100	0	100	0	100
EZM	HEART OF GEORGIA RGNL	GA	LPV200	0	100	0	100	0	100
FFC	ATLANTA RGNL FALCON FIELD	GA	LPV	0	100	0	100	0	100
FTY	FULTON COUNTY AIRPORT-BROWN FI	GA	LPV	0	100	0	100	0	100
FZG	FITZGERALD MUNICIPAL	GA	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
GVL	LEE GILMER MEMORIAL	GA	LPV	0	100	0	100	0	100
HOE	HOMERVILLE	GA	LPV	0	100	0	100	0	100
HQU	THOMSON-MCDUFFIE COUNTY	GA	LPV	0	100	0	100	0	100
IYY	WASHINGTON-WILKES COUNTY	GA	LPV	0	100	0	100	0	100
JCA	JACKSON COUNTY	GA	LPV	0	100	0	100	0	100
JES	JESUP-WAYNE COUNTY	GA	LPV	0	100	0	100	0	100
JYL	PLANTATION ARPK	GA	LPV	0	100	0	100	0	100
JZP	PICKENS COUNTY	GA	LPV	0	100	0	100	0	100
LGC	LAGRANGE-CALLAWAY	GA	LPV200	0	100	0	100	0	100
LHW	WRIGHT AAF (FORT STEWART)/MIDC	GA	LPV	0	100	0	100	0	100
LZU	GWINNETT COUNTY - BRISCOE FIEL	GA	LPV200	0	100	0	100	0	100
MAC	MACON DOWNTOWN	GA	LPV	0	100	0	100	0	100
MCN	MIDDLE GEORGIA RGNL	GA	LPV200	0	100	0	100	0	100
MGR	MOULTRIE MUNICIPAL	GA	LPV200	0	100	0	100	0	100
MHP	METTER MUNICIPAL	GA	LPV	0	100	0	100	0	100
MLJ	BALDWIN COUNTY RGNL	GA	LPV	0	100	0	100	0	100
MQW	TELFAIR-WHEELER	GA	LPV	0	100	0	100	0	100
OKZ	KAOLIN FIELD	GA	LPV	0	100	0	100	0	100
OPN	THOMASTON-UPSON COUNTY	GA	LPV200	0	100	0	100	0	100
PIM	HARRIS COUNTY	GA	LPV	0	100	0	100	0	100
PUJ	PAULDING NORTHWEST ATLANTA	GA	LPV200	0	100	0	100	0	100
PXE	PERRY-HOUSTON COUNTY	GA	LPV	0	100	0	100	0	100
RMG	RICHARD B RUSSELL REGIONAL - J	GA	LPV	0	100	0	100	0	100
RVJ	SWINTON SMITH FLD AT REIDSVILL	GA	LP	0	100	0	100	0	100
RYY	COBB COUNTY INTL-MCCOLLUM FIEL	GA	LPV200	0	100	0	100	0	100
SAV	SAVANNAH/HILTON HEAD INTL	GA	LPV200	0	100	0	100	0	100
SBO	EAST GEORGIA REGIONAL	GA	LPV	0	100	0	100	0	100
TBR	STATESBORO-BULLOCH COUNTY	GA	LPV	0	100	0	100	0	100
TMA	HENRY TIFT MYERS	GA	LPV	0	100	0	100	0	100
TOC	TOCCOA RG LETOURNEAU FIELD	GA	LPV	0	100	0	100	0	100
TVI	THOMASVILLE RGNL	GA	LPV	0	100	0	100	0	100
VDI	VIDALIA RGNL	GA	LPV200	0	100	0	100	0	100
VLD	VALDOSTA RGNL	GA	LPV	0	100	0	100	0	100
VPC	CARTERSVILLE	GA	LPV	0	100	0	100	0	100
WDR	BARROW COUNTY	GA	LPV	0	100	0	100	0	100
3Y2	GEORGE L SCOTT MUNICIPAL	IA	LPV	0	100	0	100	0	100
4C8	ALBIA MUNICIPAL	IA	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
AIO	ATLANTIC MUNICIPAL	IA	LPV	0	100	0	100	0	100
ALO	WATERLOO RGNL	IA	LPV200	0	100	0	100	0	100
AMW	AMES MUNICIPAL	IA	LPV	0	100	0	100	0	100
AWG	WASHINGTON MUNICIPAL	IA	LPV200	0	100	0	100	0	100
BNW	BOONE MUNICIPAL	IA	LPV	0	100	0	100	0	100
BRL	SOUTHEAST IOWA RGNL	IA	LPV200	0	100	0	100	0	100
CAV	CLARION MUNICIPAL	IA	LPV	0	100	0	100	0	100
CBF	COUNCIL BLUFFS MUNICIPAL	IA	LPV200	0	100	0	100	0	100
CCY	NORTHEAST IOWA RGNL	IA	LPV	0	100	0	100	0	100
CID	THE EASTERN IOWA	IA	LPV200	0	100	0	100	0	100
CIN	ARTHUR N NEU	IA	LPV	0	100	0	100	0	100
CKP	CHEROKEE COUNTY RGNL	IA	LPV	0	100	0	100	0	100
CSQ	CRESTON MUNICIPAL	IA	LPV	0	100	0	100	0	100
CWI	CLINTON MUNICIPAL	IA	LPV200	0	100	0	100	0	100
DBQ	DUBUQUE RGNL	IA	LPV200	0	100	0	100	0	100
DEH	DECORAH MUNICIPAL	IA	LPV	0	100	0	100	0	100
DNS	DENISON MUNICIPAL	IA	LPV	0	100	0	100	0	100
DSM	DES MOINES INTL	IA	LPV200	0	100	0	100	0	100
DVN	DAVENPORT MUNICIPAL	IA	LPV200	0	100	0	100	0	100
EAG	EAGLE GROVE MUNICIPAL	IA	LPV	0	100	0	100	0	100
EBS	WEBSTER CITY MUNICIPAL	IA	LPV	0	100	0	100	0	100
EFW	JEFFERSON MUNICIPAL	IA	LPV	0	100	0	100	0	100
EOK	KEOKUK MUNICIPAL	IA	LPV	0	100	0	100	0	100
EST	ESTHERVILLE MUNICIPAL	IA	LPV	0	100	0	100	0	100
FFL	FAIRFIELD MUNICIPAL	IA	LPV	0	100	0	100	0	100
FOD	FORT DODGE RGNL	IA	LPV200	0	100	0	100	0	100
FSW	FORT MADISON MUNICIPAL	IA	LPV	0	100	0	100	0	100
FXV	FOREST CITY MUNICIPAL	IA	LPV	0	100	0	100	0	100
GCT	GUTHRIE COUNTY RGNL	IA	LPV	0	100	0	100	0	100
GFZ	GREENFIELD MUNICIPAL	IA	LPV	0	100	0	100	0	100
GGI	GRINNELL RGNL	IA	LPV	0	100	0	100	0	100
HPT	HAMPTON MUNICIPAL	IA	LPV	0	100	0	100	0	100
I75	OSCEOLA MUNICIPAL	IA	LPV	0	100	0	100	0	100
ICL	SCHENCK FIELD	IA	LPV	0	100	0	100	0	100
IFA	IOWA FALLS MUNICIPAL	IA	LPV	0	100	0	100	0	100
IIB	INDEPENDENCE MUNICIPAL	IA	LPV	0	100	0	100	0	100
IKV	ANKENY RGNL	IA	LPV200	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
IOW	IOWA CITY MUNICIPAL	IA	LPV	0	100	0	100	0	100
LRJ	LE MARS MUNICIPAL	IA	LPV	0	100	0	100	0	100
MCW	MASON CITY MUNICIPAL	IA	LPV200	0	100	0	100	0	100
MIW	MARSHALLTOWN MUNICIPAL	IA	LPV	0	100	0	100	0	100
MPZ	MOUNT PLEASANT MUNICIPAL	IA	LPV	0	100	0	100	0	100
MUT	MUSCATINE MUNICIPAL	IA	LPV200	0	100	0	100	0	100
MXO	MONTICELLO RGNL	IA	LP	0	100	0	100	0	100
OOA	OSKALOOSA MUNICIPAL	IA	LPV	0	100	0	100	0	100
OQW	MAQUOKETA MUNICIPAL	IA	LPV	0	100	0	100	0	100
ORC	ORANGE CITY MUNICIPAL	IA	LPV	0	100	0	100	0	100
OTM	OTTUMWA RGNL	IA	LPV	0	100	0	100	0	100
OXV	KNOXVILLE MUNICIPAL	IA	LPV	0	100	0	100	0	100
PEA	PELLA MUNICIPAL	IA	LPV	0	100	0	100	0	100
POH	POCAHONTAS MUNICIPAL	IA	LPV	0	100	0	100	0	100
PRO	PERRY MUNICIPAL	IA	LPV200	0	100	0	100	0	100
RDK	RED OAK MUNICIPAL	IA	LPV	0	100	0	100	0	100
RRQ	ROCK RAPIDS MUNICIPAL	IA	LP	0	100	0	100	0	100
SDA	SHENANDOAH MUNICIPAL	IA	LPV	0	100	0	100	0	100
SHL	SHELDON RGNL	IA	LPV	0	100	0	100	0	100
SKI	SAC CITY MUNICIPAL	IA	LPV	0	100	0	100	0	100
SLB	STORM LAKE MUNICIPAL	IA	LPV	0	100	0	100	0	100
SPW	SPENCER MUNICIPAL	IA	LPV200	0	100	0	100	0	100
SUX	SIOUX GATEWAY/BRIG GEN BUD DAY	IA	LPV200	0	100	0	100	0	100
SXK	SIOUX COUNTY RGNL	IA	LPV200	0	100	0	100	0	100
TNU	NEWTON MUNICIPAL-EARL JOHNSON FIELD	IA	LPV200	0	100	0	100	0	100
TVK	CENTERVILLE MUNICIPAL	IA	LPV	0	100	0	100	0	100
TZT	BELLE PLAINE MUNICIPAL	IA	LPV	0	100	0	100	0	100
VTI	VINTON VETERANS MEMORIAL ARPK	IA	LPV	0	100	0	100	0	100
1U7	BEAR LAKE COUNTY	ID	LPV	0	100	0	100	0	100
BOI	BOISE AIR TERMINAL/GOWEN FLD	ID	LPV200	0	100	0	100	0	100
COE	COEUR D'ALENE - PAPPY BOYINGTO	ID	LPV200	0	100	0	100	0	100
DIJ	DRIGGS-REED MEMORIAL	ID	LP	0	100	0	100	0	100
EUL	CALDWELL INDUSTRIAL	ID	LPV	0	100	0	100	0	100
GNG	GOODING MUNICIPAL	ID	LPV	0	100	0	100	0	100
IDA	IDAHO FALLS RGNL	ID	LPV200	0	100	0	100	0	100
JER	JEROME COUNTY	ID	LPV	0	100	0	100	0	100
LWS	LEWISTON-NEZ PERCE COUNTY	ID	LPV200	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
MAN	NAMPA MUNICIPAL	ID	LPV	0	100	0	100	0	100
MYL	MC CALL MUNICIPAL	ID	LPV	0	100	0	100	0	100
PIH	POCATELLO RGNL	ID	LPV200	0	100	0	100	0	100
SUN	FRIEDMAN MEMORIAL	ID	LP	0	100	0	100	0	100
SZT	SANDPOINT	ID	LP	0	100	0	100	0	100
TWF	JOSLIN FIELD - MAGIC VALLEY RG	ID	LPV200	0	100	0	100	0	100
U76	MOUNTAIN HOME MUNICIPAL	ID	LPV	0	100	0	100	0	100
1H2	EFFINGHAM COUNTY MEMORIAL	IL	LPV	0	100	0	100	0	100
3LF	LITCHFIELD MUNICIPAL	IL	LPV	0	100	0	100	0	100
3MY	MOUNT HAWLEY AUXILIARY	IL	LPV	0	100	0	100	0	100
AJG	MOUNT CARMEL MUNICIPAL	IL	LPV	0	100	0	100	0	100
ALN	ST LOUIS RGNL	IL	LPV200	0	100	0	100	0	100
ARR	AURORA MUNICIPAL	IL	LPV200	0	100	0	100	0	100
BLV	SCOTT AFB/MIDAMERICA	IL	LPV200	0	100	0	100	0	100
BMI	CENTRAL IL RGNL ARPT AT BLOOMI	IL	LPV	0	100	0	100	0	100
C15	PEKIN MUNICIPAL	IL	LPV	0	100	0	100	0	100
C73	DIXON MUNICIPAL-CHARLES R WALGREEN	IL	LPV	0	100	0	100	0	100
C75	MARSHALL COUNTY	IL	LP	0	100	0	100	0	100
CIR	CAIRO RGNL	IL	LP	0	100	0	100	0	100
CMI	UNIVERSITY OF ILLINOIS-WILLARD	IL	LPV200	0	100	0	100	0	100
CPS	ST LOUIS DOWNTOWN	IL	LPV200	0	100	0	100	0	100
CTK	INGERSOLL	IL	LPV	0	100	0	100	0	100
CUL	CARMI MUNICIPAL	IL	LP	0	100	0	100	0	100
DEC	DECATUR	IL	LPV200	0	100	0	100	0	100
DKB	DE KALB TAYLOR MUNICIPAL	IL	LPV	0	100	0	100	0	100
DNV	VERMILION REGIONAL	IL	LPV	0	100	0	100	0	100
DPA	DUPAGE	IL	LPV200	0	100	0	100	0	100
ENL	CENTRALIA MUNICIPAL	IL	LPV	0	100	0	100	0	100
EZI	KEWANEE MUNICIPAL	IL	LPV	0	100	0	100	0	100
FEP	ALBERTUS	IL	LPV	0	100	0	100	0	100
FOA	FLORA MUNICIPAL	IL	LPV	0	100	0	100	0	100
GBG	GALESBURG MUNICIPAL	IL	LPV200	0	100	0	100	0	100
GRE	GREENVILLE	IL	LPV	0	100	0	100	0	100
HSB	HARRISBURG-RALEIGH	IL	LPV	0	100	0	100	0	100
I63	MOUNT STERLING MUNICIPAL	IL	LPV	0	100	0	100	0	100
IGQ	LANSING MUNICIPAL	IL	LPV	0	100	0	100	0	100
IKK	GREATER KANKAKEE	IL	LPV200	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
LOT	LEWIS UNIVERSITY	IL	LPV200	0	100	0	100	0	100
LWV	LAWRENCEVILLE-VINCENNES INTL	IL	LPV200	0	100	0	100	0	100
MDW	CHICAGO MIDWAY INTL	IL	LPV	0	100	0	100	0	100
MLI	QUAD CITY INTL	IL	LPV200	0	100	0	100	0	100
MQB	MACOMB MUNICIPAL	IL	LPV200	0	100	0	100	0	100
MTO	COLES COUNTY MEMORIAL	IL	LPV200	0	100	0	100	0	100
MVN	MOUNT VERNON	IL	LPV	0	100	0	100	0	100
MWA	VETERANS AIRPORT OF SOUTHERN I	IL	LPV200	0	100	0	100	0	100
OLY	OLNEY-NOBLE	IL	LPV	0	100	0	100	0	100
ORD	CHICAGO O'HARE INTL	IL	LPV200	0	100	0	100	0	100
PIA	GENERAL DOWNING - PEORIA INTL	IL	LPV	0	100	0	100	0	100
PJY	PINCKNEYVILLE-DU QUOIN	IL	LPV	0	100	0	100	0	100
PNT	PONTIAC MUNICIPAL	IL	LPV	0	100	0	100	0	100
PPQ	PITTSFIELD PENSTONE MUNICIPAL	IL	LPV	0	100	0	100	0	100
PRG	EDGAR COUNTY	IL	LPV	0	100	0	100	0	100
PWK	CHICAGO EXECUTIVE	IL	LPV	0	100	0	100	0	100
RFD	CHICAGO/ROCKFORD INTL	IL	LPV200	0	100	0	100	0	100
RPJ	ROCHELLE MUNICIPAL AIRPORT-KORITZ F	IL	LPV	0	100	0	100	0	100
RSV	CRAWFORD CO	IL	LPV	0	100	0	100	0	100
SAR	SPARTA COMMUNICIPALTY-HUNTER FIELD	IL	LPV	0	100	0	100	0	100
SFY	TRI-TOWNSHIP	IL	LP	0	100	0	100	0	100
SLO	SALEM-LECKRONE	IL	LPV200	0	100	0	100	0	100
SPI	ABRAHAM LINCOLN CAPITAL	IL	LPV	0	100	0	100	0	100
SQI	WHITESIDE CO ARPT-JOS H BITTOR	IL	LPV200	0	100	0	100	0	100
TIP	RANTOUL NATL AVN CNTR-FRANK EL	IL	LPV	0	100	0	100	0	100
UGN	WAUKEGAN NATIONAL	IL	LPV	0	100	0	100	0	100
UIN	QUINCY RGNL-BALDWIN FIELD	IL	LPV200	0	100	0	100	0	100
VYS	ILLINOIS VALLEY RGNL-WALTER A	IL	LPV	0	100	0	100	0	100
2R2	HENDRICKS COUNTY-GORDON GRAHAM	IN	LPV	0	100	0	100	0	100
50I	KENTLAND MUNICIPAL	IN	LPV	0	100	0	100	0	100
AID	ANDERSON MUNICIPAL-DARLINGTON FIELD	IN	LPV	0	100	0	100	0	100
ASW	WARSAW MUNICIPAL	IN	LPV	0	100	0	100	0	100
BAK	COLUMBUS MUNICIPAL	IN	LPV	0	100	0	100	0	100
BFR	VIRGIL I GRISSOM MUNICIPAL	IN	LP	0	100	0	100	0	100
BMG	MONROE COUNTY	IN	LPV200	0	100	0	100	0	100
C62	KENDALLVILLE MUNICIPAL	IN	LPV	0	100	0	100	0	100
C65	PLYMOUTH MUNICIPAL	IN	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
CEV	METTEL FIELD	IN	LPV	0	100	0	100	0	100
CFJ	CRAWFORDSVILLE RGNL	IN	LPV	0	100	0	100	0	100
DCY	DAVIESS COUNTY	IN	LPV	0	100	0	100	0	100
EKM	ELKHART MUNICIPAL	IN	LPV	0	100	0	100	0	100
EVV	EVANSVILLE RGNL	IN	LPV200	0	100	0	100	0	100
EYE	EAGLE CREEK AIRPARK	IN	LPV	0	100	0	100	0	100
FKR	FRANKFORT MUNICIPAL	IN	LPV	0	100	0	100	0	100
FRH	FRENCH LICK MUNICIPAL	IN	LPV	0	100	0	100	0	100
FWA	FORT WAYNE INTL	IN	LPV200	0	100	0	100	0	100
GEZ	SHELBYVILLE MUNICIPAL	IN	LPV	0	100	0	100	0	100
GGP	LOGANSPOUT/CASS COUNTY	IN	LPV200	0	100	0	100	0	100
GPC	PUTNAM COUNTY RGNL	IN	LPV	0	100	0	100	0	100
GSH	GOSHEN MUNICIPAL	IN	LPV	0	100	0	100	0	100
GWB	DE KALB COUNTY	IN	LPV	0	100	0	100	0	100
GYV	GARY/CHICAGO INTL	IN	LPV200	0	100	0	100	0	100
HFY	INDY SOUTH GREENWOOD	IN	LPV	0	100	0	100	0	100
HNB	HUNTINGBURG	IN	LPV	0	100	0	100	0	100
HUF	TERRE HAUTE RGNL	IN	LPV200	0	100	0	100	0	100
I22	RANDOLPH COUNTY	IN	LPV	0	100	0	100	0	100
I76	PERU MUNICIPAL	IN	LPV	0	100	0	100	0	100
IMS	MADISON MUNICIPAL	IN	LPV	0	100	0	100	0	100
IND	INDIANAPOLIS INTL	IN	LPV200	0	100	0	100	0	100
JVY	CLARK RGNL	IN	LPV200	0	100	0	100	0	100
LAF	PURDUE UNIVERSITY	IN	LPV	0	100	0	100	0	100
MCX	WHITE COUNTY	IN	LP	0	100	0	100	0	100
MIE	DELAWARE COUNTY RGNL	IN	LPV	0	100	0	100	0	100
MQJ	INDIANAPOLIS RGNL	IN	LPV200	0	100	0	100	0	100
MZZ	MARION MUNICIPAL	IN	LPV	0	100	0	100	0	100
OKK	KOKOMO MUNICIPAL	IN	LPV200	0	100	0	100	0	100
OVO	NORTH VERNON	IN	LPV	0	100	0	100	0	100
OXI	STARKE COUNTY	IN	LPV	0	100	0	100	0	100
PLD	PORTLAND MUNICIPAL	IN	LPV	0	100	0	100	0	100
PPO	LA PORTE MUNICIPAL	IN	LPV	0	100	0	100	0	100
RCR	FULTON COUNTY	IN	LPV	0	100	0	100	0	100
RID	RICHMOND MUNICIPAL	IN	LPV200	0	100	0	100	0	100
RWN	ARENS FIELD	IN	LPV	0	100	0	100	0	100
RZL	JASPER COUNTY	IN	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
SBN	SOUTH BEND INTL	IN	LPV200	0	100	0	100	0	100
SER	FREEMAN MUNICIPAL	IN	LPV	0	100	0	100	0	100
SIV	SULLIVAN COUNTY	IN	LPV	0	100	0	100	0	100
SMD	SMITH FIELD	IN	LPV	0	100	0	100	0	100
TEL	PERRY COUNTY MUNICIPAL	IN	LP	0	100	0	100	0	100
TYQ	INDIANAPOLIS EXECUTIVE	IN	LPV	0	100	0	100	0	100
UWL	NEW CASTLE HENRY COUNTY MARLAT	IN	LPV	0	100	0	100	0	100
VPZ	PORTER COUNTY RGNL	IN	LPV	0	100	0	100	0	100
3AU	AUGUSTA MUNICIPAL	KS	LP	0	100	0	100	0	100
3K3	SYRACUSE-HAMILTON COUNTY MUNICIPAL	KS	LPV	0	100	0	100	1	99.998
3K8	COMANCHE COUNTY	KS	LPV	0	100	0	100	1	99.998
5K2	TRIBUNE MUNICIPAL	KS	LPV	0	100	0	100	1	99.997
9K8	KINGMAN AIRPORT - CLYDE CESSNA	KS	LP	0	100	0	100	0	100
AAO	COLONEL JAMES JABARA	KS	LPV	0	100	0	100	0	100
ADT	ATWOOD-RAWLINS COUNTY CITY-COU	KS	LPV	0	100	0	100	1	99.995
ANY	ANTHONY MUNICIPAL	KS	LPV	0	100	0	100	0	100
BEC	BEECH FACTORY	KS	LPV	0	100	0	100	0	100
CBK	SHALZ FIELD	KS	LPV	0	100	0	100	1	99.996
CFV	COFFEYVILLE MUNICIPAL	KS	LPV	0	100	0	100	0	100
CNK	BLOSSER MUNICIPAL	KS	LP	0	100	0	100	0	100
DDC	DODGE CITY RGNL	KS	LPV200	0	100	0	100	1	99.997
EGT	WELLINGTON MUNICIPAL	KS	LPV200	0	100	0	100	0	100
EHA	ELKHART-MORTON COUNTY	KS	LPV	0	100	0	100	1	99.999
EMP	EMPORIA MUNICIPAL	KS	LPV	0	100	0	100	0	100
EQA	EL DORADO/CAPTAIN JACK THOMAS	KS	LPV200	0	100	0	100	0	100
EWK	NEWTON-CITY-COUNTY	KS	LPV	0	100	0	100	0	100
FOE	TOPEKA RGNL	KS	LPV	0	100	0	100	0	100
FSK	FORT SCOTT MUNICIPAL	KS	LPV	0	100	0	100	0	100
GBD	GREAT BEND MUNICIPAL	KS	LPV200	0	100	0	100	1	99.997
GCK	GARDEN CITY RGNL	KS	LPV	0	100	0	100	1	99.997
GLD	RENNER FLD /GOODLAND MUNICIPAL/	KS	LPV200	0	100	0	100	1	99.995
HLC	HILL CITY MUNICIPAL	KS	LPV	0	100	0	100	1	99.995
HQG	HUGOTON MUNICIPAL	KS	LPV	0	100	0	100	1	99.998
HRU	HERINGTON RGNL	KS	LPV	0	100	0	100	0	100
HUT	HUTCHINSON RGNL	KS	LPV200	0	100	0	100	0	100
HYS	HAYS RGNL	KS	LPV200	0	100	0	100	1	99.996
ICT	WICHITA DWIGHT D EISENHOWER NA	KS	LPV200	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
IDP	INDEPENDENCE MUNICIPAL	KS	LPV200	0	100	0	100	0	100
IXD	NEW CENTURY AIRCENTER	KS	LPV	0	100	0	100	0	100
K38	WASHINGTON COUNTY VETERAN'S ME	KS	LPV	0	100	0	100	0	100
K78	ABILENE MUNICIPAL	KS	LPV	0	100	0	100	0	100
K79	JETMORE MUNICIPAL	KS	LPV	0	100	0	100	1	99.996
K81	MIAMI COUNTY	KS	LPV	0	100	0	100	0	100
K82	SMITH CENTER MUNICIPAL	KS	LPV200	0	100	0	100	0	100
K88	ALLEN COUNTY	KS	LPV	0	100	0	100	0	100
LBL	LIBERAL MID-AMERICA RGNL	KS	LPV200	0	100	0	100	1	99.999
LQR	LARNED-PAWNEE COUNTY	KS	LPV	0	100	0	100	1	99.997
LWC	LAWRENCE MUNICIPAL	KS	LPV200	0	100	0	100	0	100
LYO	LYONS-RICE COUNTY MUNICIPAL	KS	LPV	0	100	0	100	0	100
MHK	MANHATTAN RGNL	KS	LPV200	0	100	0	100	0	100
MPR	MC PHERSON	KS	LPV	0	100	0	100	0	100
MYZ	MARYSVILLE MUNICIPAL	KS	LPV	0	100	0	100	0	100
NRN	NORTON MUNICIPAL	KS	LPV	0	100	0	100	1	99.997
OEL	OAKLEY MUNICIPAL	KS	LPV	0	100	0	100	1	99.996
OIN	OBERLIN MUNICIPAL	KS	LPV	0	100	0	100	1	99.994
OJC	JOHNSON COUNTY EXECUTIVE	KS	LPV	0	100	0	100	0	100
OWI	OTTAWA MUNICIPAL	KS	LPV	0	100	0	100	0	100
PHG	PHILLIPSBURG MUNICIPAL	KS	LPV	0	100	0	100	0	100
PPF	TRI-CITY	KS	LPV	0	100	0	100	0	100
PTS	ATKINSON MUNICIPAL	KS	LPV	0	100	0	100	0	100
PTT	PRATT RGNL	KS	LPV	0	100	0	100	1	99.998
RCP	ROOKS COUNTY RGNL	KS	LPV	0	100	0	100	1	99.999
RPB	BELLEVILLE MUNICIPAL	KS	LPV	0	100	0	100	0	100
RSL	RUSSELL MUNICIPAL	KS	LPV	0	100	0	100	0	100
SLN	SALINA RGNL	KS	LPV	0	100	0	100	0	100
SYF	CHEYENNE COUNTY MUNICIPAL	KS	LPV	0	100	0	100	1	99.998
TOP	PHILIP BILLARD MUNICIPAL	KS	LPV	0	100	0	100	0	100
TQK	SCOTT CITY MUNICIPAL	KS	LPV	0	100	0	100	1	99.996
UKL	COFFEY COUNTY	KS	LPV	0	100	0	100	0	100
ULS	ULYSSES	KS	LPV	0	100	0	100	1	99.998
WLD	STROTHER FIELD	KS	LPV	0	100	0	100	0	100
0I8	CYNTHIANA-HARRISON COUNTY	KY	LP	0	100	0	100	0	100
18I	MC CREARY COUNTY	KY	LP	0	100	0	100	0	100
27K	GEORGETOWN-SCOTT COUNTY RGNL	KY	LPV200	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
2I0	MADISONVILLE RGNL	KY	LPV	0	100	0	100	0	100
2M0	PRINCETON-CALDWELL COUNTY	KY	LPV	0	100	0	100	0	100
4M7	RUSSELLVILLE-LOGAN COUNTY	KY	LPV	0	100	0	100	0	100
5M9	MARION-CRITTENDEN COUNTY	KY	LPV	0	100	0	100	0	100
6I2	LEBANON SPRINGFIELD-GEORGE HOE	KY	LPV	0	100	0	100	0	100
AAS	TAYLOR COUNTY	KY	LPV	0	100	0	100	0	100
BRY	SAMUELS FIELD	KY	LPV	0	100	0	100	0	100
BWG	BOWLING GREEN-WARREN COUNTY RG	KY	LPV200	0	100	0	100	0	100
BYL	WILLIAMSBURG-WHITLEY COUNTY	KY	LPV	0	100	0	100	0	100
CEY	KYLE-OAKLEY FIELD	KY	LPV	0	100	0	100	0	100
CPF	WENDELL H FORD	KY	LPV200	0	100	0	100	0	100
CVG	CINCINNATI/NORTHERN KENTUCKY I	KY	LPV200	0	100	0	100	0	100
DVK	STUART POWELL FIELD	KY	LPV	0	100	0	100	0	100
DWU	ASHLAND RGNL	KY	LP	0	100	0	100	0	100
EHR	HENDERSON CITY-COUNTY	KY	LPV	0	100	0	100	0	100
EKQ	WAYNE COUNTY	KY	LPV	0	100	0	100	0	100
EKX	ADDINGTON FIELD	KY	LPV	0	100	0	100	0	100
FFT	CAPITAL CITY	KY	LPV	0	100	0	100	0	100
FGX	FLEMING-MASON	KY	LPV	0	100	0	100	0	100
GLW	GLASGOW MUNICIPAL	KY	LPV	0	100	0	100	0	100
HVC	HOPKINSVILLE-CHRISTIAN COUNTY	KY	LPV	0	100	0	100	0	100
I93	BRECKINRIDGE COUNTY	KY	LPV	0	100	0	100	0	100
IOB	MOUNT STERLING-MONTGOMERY COUN	KY	LPV	0	100	0	100	0	100
JQD	OHIO COUNTY	KY	LPV	0	100	0	100	0	100
K24	RUSSELL COUNTY	KY	LPV	0	100	0	100	0	100
K62	GENE SNYDER	KY	LP	0	100	0	100	0	100
KY8	HANCOCK CO-RON LEWIS FIELD	KY	LPV	0	100	0	100	0	100
LEX	BLUE GRASS	KY	LPV	0	100	0	100	0	100
LOU	BOWMAN FIELD	KY	LPV	0	100	0	100	0	100
LOZ	LONDON-CORBIN ARPT-MAGEE FIELD	KY	LPV	0	100	0	100	0	100
M20	LEITCHFIELD-GRAYSON CO	KY	LPV	0	100	0	100	0	100
M21	MUHLENBERG COUNTY	KY	LP	0	100	0	100	0	100
M25	MAYFIELD GRAVES COUNTY	KY	LPV	0	100	0	100	0	100
OWB	OWENSBORO-DAVIESS COUNTY RGNL	KY	LPV200	0	100	0	100	0	100
PAH	BARKLEY RGNL	KY	LPV200	0	100	0	100	0	100
PBX	PIKE COUNTY-HATCHER FIELD	KY	LPV200	0	100	0	100	0	100
RGA	CENTRAL KENTUCKY RGNL	KY	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
SDF	LOUISVILLE MUHAMMAD ALI INTL	KY	LPV200	0	100	0	100	0	100
SJS	BIG SANDY RGNL	KY	LPV	0	100	0	100	0	100
SME	LAKE CUMBERLAND RGNL	KY	LPV	0	100	0	100	0	100
SYM	MOREHEAD-ROWAN COUNTY CLYDE A	KY	LPV200	0	100	0	100	0	100
TWT	STURGIS MUNICIPAL	KY	LPV	0	100	0	100	0	100
TZV	TOMPKINSVILLE-MONROE COUNTY	KY	LPV	0	100	0	100	0	100
0R4	CONCORDIA PARISH	LA	LPV	0	100	0	100	1	99.999
0R7	THE RED RIVER	LA	LPV	0	100	0	100	1	99.997
3R4	HART	LA	LPV	0	100	0	100	1	99.995
3R7	JENNINGS	LA	LPV	0	100	0	100	1	99.994
5R8	DE QUINCY INDUSTRIAL AIRPARK	LA	LPV	0	100	0	100	1	99.995
ACP	ALLEN PARISH	LA	LPV	0	100	0	100	1	99.995
AEX	ALEXANDRIA INTL	LA	LPV200	0	100	0	100	1	99.996
APS	PORT OF SOUTH LOUISIANA EXECUT	LA	LPV	0	100	0	100	1	99.997
ARA	ACADIANA RGNL	LA	LPV200	0	100	0	100	1	99.994
BQP	MOREHOUSE MEMORIAL	LA	LPV	0	100	0	100	0	100
BTR	BATON ROUGE METROPOLITAN` RYAN	LA	LPV200	0	100	0	100	1	99.997
BXA	GEORGE R CARR MEMORIAL AIR FLD	LA	LPV	0	100	0	100	0	100
CWF	CHENNAULT INTL	LA	LPV200	0	100	0	100	1	99.994
DTN	SHREVEPORT DOWNTOWN	LA	LPV	0	100	0	100	1	99.998
ESF	ESLER RGNL	LA	LPV200	0	100	0	100	1	99.997
F88	JONESBORO	LA	LP	0	100	0	100	1	99.998
GAO	SOUTH LAFOURCHE LEONARD MILLER	LA	LPV200	0	100	0	100	1	99.996
HDC	HAMMOND NORTHSHORE RGNL	LA	LPV200	0	100	0	100	1	99.998
HUM	HOUMA-TERREBONNE	LA	LPV200	0	100	0	100	1	99.996
HZR	FALSE RIVER RGNL	LA	LPV	0	100	0	100	1	99.997
IER	NATCHITOCHES RGNL	LA	LPV	0	100	0	100	1	99.996
IYA	ABBEVILLE CHRIS CRUSTA MEMORIA	LA	LPV	0	100	0	100	1	99.994
L39	LEESVILLE	LA	LPV	0	100	0	100	1	99.995
LCH	LAKE CHARLES RGNL	LA	LPV200	0	100	0	100	1	99.994
LFT	LAFAYETTE RGNL/PAUL FOURNET FI	LA	LPV200	0	100	0	100	1	99.995
M79	JOHN H HOOKS JR MEMORIAL	LA	LPV	0	100	0	100	0	100
MLU	MONROE RGNL	LA	LPV200	0	100	0	100	0	100
MSY	LOUIS ARMSTRONG NEW ORLEANS IN	LA	LPV200	0	100	0	100	1	99.998
NEW	LAKEFRONT	LA	LPV	0	100	0	100	1	99.998
OPL	ST LANDRY PARISH-AHART FIELD	LA	LPV	0	100	0	100	1	99.995
PTN	HARRY P WILLIAMS MEMORIAL	LA	LPV200	0	100	0	100	1	99.995

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
REG	LOUISIANA RGNL	LA	LPV	0	100	0	100	1	99.996
RSN	RUSTON RGNL	LA	LPV	0	100	0	100	1	99.999
SHV	SHREVEPORT RGNL	LA	LPV200	0	100	0	100	1	99.997
SPH	SPRINGHILL	LA	LPV	0	100	0	100	1	99.999
TVR	VICKSBURG TALLULAH RGNL	LA	LPV200	0	100	0	100	0	100
UXL	SOUTHLAND FIELD	LA	LPV	0	100	0	100	1	99.995
3B0	SOUTHBRIDGE MUNICIPAL	MA	LPV	0	100	0	100	0	100
ACK	NANTUCKET MEMORIAL	MA	LPV200	0	100	0	100	0	100
BAF	WESTFIELD-BARNES RGNL	MA	LPV	0	100	0	100	0	100
BED	LAURENCE G HANSCOM FLD	MA	LPV200	0	100	0	100	0	100
BOS	GENERAL EDWARD LAWRENCE LOGAN	MA	LPV200	0	100	0	100	0	100
BVY	BEVERLY RGNL	MA	LPV	0	100	0	100	0	100
EWB	NEW BEDFORD RGNL	MA	LPV200	0	100	0	100	0	100
GBR	WALTER J KOLADZA	MA	LP	0	100	0	100	0	100
GHG	MARSHFIELD MUNICIPAL - GEORGE HARLO	MA	LPV	0	100	0	100	0	100
HYA	BARNSTABLE MUNICIPAL-BOARDMAN/POLAN	MA	LPV200	0	100	0	100	0	100
LWM	LAWRENCE MUNICIPAL	MA	LPV200	0	100	0	100	0	100
MVY	MARTHA'S VINEYARD	MA	LPV200	0	100	0	100	0	100
ORE	ORANGE MUNICIPAL	MA	LPV	0	100	0	100	0	100
ORH	WORCESTER RGNL	MA	LPV200	0	100	0	100	0	100
OWD	NORWOOD MEMORIAL	MA	LPV	0	100	0	100	0	100
PSF	PITTSFIELD MUNICIPAL	MA	LPV	0	100	0	100	0	100
PVC	PROVINCETOWN MUNICIPAL	MA	LPV200	0	100	0	100	0	100
PYM	PLYMOUTH MUNICIPAL	MA	LPV200	0	100	0	100	0	100
TAN	TAUNTON MUNICIPAL - KING FIELD	MA	LPV	0	100	0	100	0	100
2G4	GARRETT COUNTY	MD	LPV	0	100	0	100	0	100
2W5	MARYLAND	MD	LP	0	100	0	100	0	100
2W6	ST MARY'S COUNTY RGNL	MD	LPV	0	100	0	100	0	100
BWI	BALTIMORE/WASHINGTON INTL THUR	MD	LPV200	0	100	0	100	0	100
CBE	GREATER CUMBERLAND RGNL	MD	LPV	0	100	0	100	0	100
CGE	CAMBRIDGE-DORCHESTER RGNL	MD	LPV	0	100	0	100	0	100
DMW	CARROLL COUNTY RGNL/JACK B POA	MD	LPV200	0	100	0	100	0	100
ESN	EASTON/NEWNAM FIELD	MD	LPV200	0	100	0	100	0	100
FDK	FREDERICK MUNICIPAL	MD	LPV	0	100	0	100	0	100
GAI	MONTGOMERY COUNTY AIRPARK	MD	LPV	0	100	0	100	0	100
HGR	HAGERSTOWN RGNL-RICHARD A HENS	MD	LPV200	0	100	0	100	0	100
MTN	MARTIN STATE	MD	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
OXB	OCEAN CITY MUNICIPAL	MD	LPV	0	100	0	100	0	100
SBY	SALISBURY-OCEAN CITY WICOMICO	MD	LPV200	0	100	0	100	0	100
W29	BAY BRIDGE	MD	LPV	0	100	0	100	0	100
1B0	DEXTER RGNL	ME	LP	0	100	0	100	0	100
2B7	PITTSFIELD MUNICIPAL	ME	LPV	0	100	0	100	0	100
3B1	GREENVILLE MUNICIPAL	ME	LPV	0	100	0	100	0	100
59B	NEWTON FIELD	ME	LP	0	100	0	100	0	100
81B	OXFORD COUNTY RGNL	ME	LP	0	100	0	100	0	100
AUG	AUGUSTA STATE	ME	LPV200	0	100	0	100	0	100
BGR	BANGOR INTL	ME	LPV200	0	100	0	100	0	100
BHB	HANCOCK COUNTY-BAR HARBOR	ME	LPV200	0	100	0	100	0	100
BST	BELFAST MUNICIPAL	ME	LPV	0	100	0	100	0	100
BXM	BRUNSWICK EXECUTIVE	ME	LPV200	0	100	0	100	0	100
CAR	CARIBOU MUNICIPAL	ME	LPV	0	100	0	100	0	100
EPM	EASTPORT MUNICIPAL	ME	LPV	0	100	0	100	0	100
FVE	NORTHERN AROOSTOOK RGNL	ME	LPV200	0	100	0	100	0	100
HUL	HOULTON INTL	ME	LP	0	100	0	100	0	100
IZG	EASTERN SLOPES RGNL	ME	LPV	0	100	0	100	0	100
LEW	AUBURN/LEWISTON MUNICIPAL	ME	LPV200	0	100	0	100	0	100
LRG	LINCOLN RGNL	ME	LP	0	100	0	100	0	100
MLT	MILLINOCKET MUNICIPAL	ME	LPV	0	100	0	100	0	100
OWK	CENTRAL MAINE ARPT OF NORRIDGE	ME	LPV	0	100	0	100	0	100
PQI	PRESQUE ISLE INTL	ME	LPV200	0	100	0	100	0	100
PWM	PORTLAND INTL JETPORT	ME	LPV200	0	100	0	100	0	100
RKD	KNOX COUNTY RGNL	ME	LPV200	0	100	0	100	0	100
SFM	SANFORD SEACOAST RGNL	ME	LPV200	0	100	0	100	0	100
WVL	WATERVILLE ROBERT LAFLEUR	ME	LPV200	0	100	0	100	0	100
48D	CLARE MUNICIPAL	MI	LP	0	100	0	100	0	100
4D0	ABRAMS MUNICIPAL	MI	LP	0	100	0	100	0	100
6Y1	BOIS BLANC ISLAND	MI	LP	0	100	0	100	0	100
77G	MARLETTE TOWNSHIP	MI	LPV	0	100	0	100	0	100
9D9	HASTINGS	MI	LPV	0	100	0	100	0	100
ACB	ANTRIM COUNTY	MI	LPV	0	100	0	100	0	100
ADG	LENAWEE COUNTY	MI	LPV	0	100	0	100	0	100
AMN	GRATIOT COMMUNICIPALTY	MI	LPV	0	100	0	100	0	100
ANJ	SAULT STE MARIE MUNICIPAL/SANDERSON	MI	LPV	0	100	0	100	0	100
APN	ALPENA COUNTY RGNL	MI	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
ARB	ANN ARBOR MUNICIPAL	MI	LPV	0	100	0	100	0	100
AZO	KALAMAZOO/BATTLE CREEK INTL	MI	LPV200	0	100	0	100	0	100
BAX	HURON COUNTY MEMORIAL	MI	LPV	0	100	0	100	0	100
BEH	SOUTHWEST MICHIGAN RGNL	MI	LPV200	0	100	0	100	0	100
BIV	WEST MICHIGAN RGNL	MI	LPV	0	100	0	100	0	100
BTL	W K KELLOGG	MI	LPV200	0	100	0	100	0	100
C04	OCEANA COUNTY	MI	LPV	0	100	0	100	0	100
C20	ANDREWS UNIVERSITY AIRPARK	MI	LP	0	100	0	100	0	100
CAD	WEXFORD COUNTY	MI	LPV200	0	100	0	100	0	100
CFS	TUSCOLA AREA	MI	LP	0	100	0	100	0	100
CIU	CHIPPEWA COUNTY INTL	MI	LPV	0	100	0	100	0	100
CMX	HOUGHTON COUNTY MEMORIAL	MI	LPV	0	100	0	100	0	100
CVX	CHARLEVOIX MUNICIPAL	MI	LPV	0	100	0	100	0	100
D95	DUPONT-LAPEER	MI	LP	0	100	0	100	0	100
DET	COLEMAN A YOUNG MUNICIPAL	MI	LPV	0	100	0	100	0	100
DTW	DETROIT METROPOLITAN WAYNE COU	MI	LPV200	0	100	0	100	0	100
ERY	LUCE COUNTY	MI	LPV	0	100	0	100	0	100
ESC	DELTA COUNTY	MI	LPV200	0	100	0	100	0	100
FFX	FREMONT MUNICIPAL	MI	LPV	0	100	0	100	0	100
FNT	BISHOP INTL	MI	LPV200	0	100	0	100	0	100
GDW	GLADWIN ZETTEL MEMORIAL	MI	LP	0	100	0	100	0	100
GLR	GAYLORD RGNL	MI	LPV	0	100	0	100	0	100
GRR	GERALD R FORD INTL	MI	LPV200	0	100	0	100	0	100
HTL	ROSCOMMON COUNTY - BLODGETT ME	MI	LP	0	100	0	100	0	100
HYX	SAGINAW COUNTY H W BROWNE	MI	LPV200	0	100	0	100	0	100
IKW	JACK BARSTOW	MI	LPV	0	100	0	100	0	100
IMT	FORD	MI	LPV	0	100	0	100	0	100
IRS	KIRSCH MUNICIPAL	MI	LPV	0	100	0	100	0	100
ISQ	SCHOOLCRAFT COUNTY	MI	LP	0	100	0	100	0	100
IWD	GOGEBIC-IRON COUNTY	MI	LPV200	0	100	0	100	0	100
JXN	JACKSON COUNTY-REYNOLDS FIELD	MI	LPV200	0	100	0	100	0	100
JYM	HILLSDALE MUNICIPAL	MI	LPV	0	100	0	100	0	100
LAN	CAPITAL REGION INTL	MI	LPV200	0	100	0	100	0	100
LDM	MASON COUNTY	MI	LPV	0	100	0	100	0	100
MBL	MANISTEE CO-BLACKER	MI	LPV200	0	100	0	100	0	100
MBS	MBS INTL	MI	LPV200	0	100	0	100	0	100
MCD	MACKINAC ISLAND	MI	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
MKG	MUSKEGON COUNTY	MI	LPV200	0	100	0	100	0	100
MNM	MENOMINEE RGNL	MI	LPV200	0	100	0	100	0	100
MOP	MOUNT PLEASANT MUNICIPAL	MI	LPV	0	100	0	100	0	100
N98	BOYNE CITY MUNICIPAL	MI	LP	0	100	0	100	0	100
OEB	BRANCH COUNTY MEMORIAL	MI	LPV	0	100	0	100	0	100
OGM	ONTONAGON COUNTY - SCHUSTER FI	MI	LPV	0	100	0	100	0	100
OSC	OSCODA-WURTSMITH	MI	LPV200	0	100	0	100	0	100
OZW	LIVINGSTON COUNTY SPENCER J HA	MI	LPV200	0	100	0	100	0	100
PHN	ST CLAIR COUNTY INTL	MI	LPV200	0	100	0	100	0	100
PLN	PELLSTON RGNL AIRPORT OF EMMET	MI	LPV200	0	100	0	100	0	100
PTK	OAKLAND COUNTY INTL	MI	LPV200	0	100	0	100	0	100
RMY	BROOKS FIELD	MI	LP	0	100	0	100	0	100
RNP	OWOSSO COMMUNICIPALTY	MI	LPV	0	100	0	100	0	100
RQB	ROBEN-HOOD	MI	LPV200	0	100	0	100	0	100
SAW	SAWYER INTL	MI	LPV200	0	100	0	100	0	100
SLH	CHEBOYGAN COUNTY	MI	LPV	0	100	0	100	0	100
TEW	MASON JEWETT FIELD	MI	LP	0	100	0	100	0	100
TTF	CUSTER	MI	LPV	0	100	0	100	0	100
TVC	CHERRY CAPITAL	MI	LPV200	0	100	0	100	0	100
Y31	WEST BRANCH COMMUNICIPALTY	MI	LP	0	100	0	100	0	100
YIP	WILLOW RUN	MI	LPV200	0	100	0	100	0	100
16D	PERHAM MUNICIPAL	MN	LPV	0	100	0	100	0	100
3N8	MAHNOMEN COUNTY	MN	LPV	0	100	0	100	0	100
ACQ	WASECA MUNICIPAL	MN	LPV	0	100	0	100	0	100
ADC	WADENA MUNICIPAL	MN	LPV	0	100	0	100	0	100
AEL	ALBERT LEA MUNICIPAL	MN	LPV	0	100	0	100	0	100
AIT	AITKIN MUNICIPAL-STEVE KURTZ FIELD	MN	LPV	0	100	0	100	0	100
ANE	ANOKA COUNTY-BLAINE (JANES FIE	MN	LPV	0	100	0	100	0	100
AUM	AUSTIN MUNICIPAL	MN	LPV200	0	100	0	100	0	100
AXN	CHANDLER FIELD	MN	LPV	0	100	0	100	0	100
BBB	BENSON MUNICIPAL	MN	LPV	0	100	0	100	0	100
BDE	BAUDETTE INTL	MN	LPV	0	100	0	100	0	100
BDH	WILLMAR MUNICIPAL-JOHN L RICE FIELD	MN	LPV200	0	100	0	100	0	100
BJI	BEMIDJI RGNL	MN	LPV200	0	100	0	100	0	100
BRD	BRAINERD LAKES RGNL	MN	LPV200	0	100	0	100	0	100
CBG	CAMBRIDGE MUNICIPAL	MN	LPV	0	100	0	100	0	100
CFE	BUFFALO MUNICIPAL	MN	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
CKC	GRAND MARAIS/COOK COUNTY	MN	LPV	0	100	0	100	0	100
CKN	CROOKSTON MUNICIPAL KIRKWOOD FLD	MN	LPV	0	100	0	100	0	100
CNB	MYERS FIELD	MN	LPV	0	100	0	100	0	100
COQ	CLOQUET CARLTON COUNTY	MN	LPV	0	100	0	100	0	100
CQM	COOK MUNICIPAL	MN	LP	0	100	0	100	0	100
D39	SAUK CENTRE MUNICIPAL	MN	LPV	0	100	0	100	0	100
D42	SPRINGFIELD MUNICIPAL	MN	LP	0	100	0	100	0	100
DLH	DULUTH INTL	MN	LPV200	0	100	0	100	0	100
DTL	DETROIT LAKES-WETHING FIELD	MN	LPV	0	100	0	100	0	100
DVP	SLAYTON MUNICIPAL	MN	LP	0	100	0	100	0	100
DXX	LAC QUI PARLE COUNTY	MN	LPV200	0	100	0	100	0	100
ELO	ELY MUNICIPAL	MN	LPV200	0	100	0	100	0	100
ETH	WHEATON MUNICIPAL	MN	LP	0	100	0	100	0	100
EVM	EVELETH-VIRGINIA MUNICIPAL	MN	LPV	0	100	0	100	0	100
FBL	FARIBAULT MUNICIPAL-LIZ WALL STROHF	MN	LPV	0	100	0	100	0	100
FCM	FLYING CLOUD	MN	LPV200	0	100	0	100	0	100
FFM	FERGUS FALLS MUNICIPAL-EINAR MICKEL	MN	LPV200	0	100	0	100	0	100
FKA	FILLMORE COUNTY	MN	LPV	0	100	0	100	0	100
FOZ	BIGFORK MUNICIPAL	MN	LP	0	100	0	100	0	100
FRM	FAIRMONT MUNICIPAL	MN	LPV	0	100	0	100	0	100
FSE	FOSSTON MUNICIPAL-ANDERSON FIELD	MN	LP	0	100	0	100	0	100
GHW	GLENWOOD MUNICIPAL	MN	LPV	0	100	0	100	0	100
GPZ	GRAND RAPIDS/ITASCA CO-GORDON	MN	LPV	0	100	0	100	0	100
GYL	GLENCOE MUNICIPAL	MN	LPV	0	100	0	100	0	100
HCD	HUTCHINSON MUNICIPAL-BUTLER FIELD	MN	LPV	0	100	0	100	0	100
HCO	HALLOCK MUNICIPAL	MN	LPV	0	100	0	100	0	100
HIB	RANGE RGNL	MN	LPV200	0	100	0	100	0	100
INL	FALLS INTL-EINARSON FIELD	MN	LPV	0	100	0	100	0	100
JKJ	MOORHEAD MUNICIPAL	MN	LPV	0	100	0	100	0	100
JMR	MORA MUNICIPAL	MN	LPV	0	100	0	100	0	100
JYG	ST JAMES MUNICIPAL	MN	LPV	0	100	0	100	0	100
LJF	LITCHFIELD MUNICIPAL	MN	LPV	0	100	0	100	0	100
LVN	AIRLAKE	MN	LPV200	0	100	0	100	0	100
LXL	LITTLE FALLS/MORRISON COUNTY-L	MN	LPV	0	100	0	100	0	100
LYV	QUENTIN AANENSON FIELD	MN	LPV200	0	100	0	100	0	100
MJQ	JACKSON MUNICIPAL	MN	LPV	0	100	0	100	0	100
MKT	MANKATO RGNL	MN	LPV200	0	100	0	100	0	100

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

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
94K	CASSVILLE MUNICIPAL	MO	LPV	0	100	0	100	0	100
AIZ	LEE C FINE MEMORIAL	MO	LPV	0	100	0	100	0	100
BBG	BRANSON	MO	LPV200	0	100	0	100	0	100
BUM	BUTLER MEMORIAL	MO	LPV	0	100	0	100	0	100
CGI	CAPE GIRARDEAU RGNL	MO	LPV200	0	100	0	100	0	100
CHT	CHILLICOTHE MUNICIPAL	MO	LPV	0	100	0	100	0	100
COU	COLUMBIA RGNL	MO	LPV200	0	100	0	100	0	100
DMO	SEDALIA RGNL	MO	LPV	0	100	0	100	0	100
DXE	DEXTER MUNICIPAL	MO	LPV	0	100	0	100	0	100
EIW	COUNTY MEMORIAL	MO	LPV	0	100	0	100	0	100
EOS	NEOSHO HUGH ROBINSON	MO	LPV	0	100	0	100	0	100
EVU	NORTHWEST MISSOURI RGNL	MO	LPV	0	100	0	100	0	100
EZZ	CAMERON MEMORIAL	MO	LPV	0	100	0	100	0	100
FAM	FARMINGTON RGNL	MO	LPV	0	100	0	100	0	100
FTT	ELTON HENSLEY MEMORIAL	MO	LPV	0	100	0	100	0	100
FWB	BRANSON WEST MUNICIPAL - EMERSON FI	MO	LPV200	0	100	0	100	0	100
FYG	WASHINGTON RGNL	MO	LPV	0	100	0	100	0	100
GLY	CLINTON RGNL	MO	LPV	0	100	0	100	0	100
GPH	MIDWEST NATIONAL AIR CENTER	MO	LPV	0	100	0	100	0	100
H79	ELDON MODEL AIRPARK	MO	LP	0	100	0	100	0	100
H88	A PAUL VANCE FREDERICKTOWN RGN	MO	LPV	0	100	0	100	0	100
HAE	HANNIBAL RGNL	MO	LPV	0	100	0	100	0	100
HFJ	MONETT RGNL	MO	LPV	0	100	0	100	0	100
HIG	HIGGINSVILLE INDUSTRIAL MUNICIPAL	MO	LPV	0	100	0	100	0	100
IRK	KIRKSVILLE RGNL	MO	LPV200	0	100	0	100	0	100
JEF	JEFFERSON CITY MEMORIAL	MO	LPV	0	100	0	100	0	100
JLN	JOPLIN RGNL	MO	LPV	0	100	0	100	0	100
K15	GRAND GLAIZE-OSAGE BEACH	MO	LP	0	100	0	100	0	100
K57	GOULD PETERSON MUNICIPAL	MO	LPV	0	100	0	100	0	100
K89	MACON-FOWER MEMORIAL	MO	LPV	0	100	0	100	0	100
LLU	LAMAR MUNICIPAL	MO	LPV	0	100	0	100	0	100
LRY	LAWRENCE SMITH MEMORIAL	MO	LPV	0	100	0	100	0	100
LXT	LEE'S SUMMIT MUNICIPAL	MO	LPV	0	100	0	100	0	100
M05	CARUTHERSVILLE MEMORIAL	MO	LPV	0	100	0	100	0	100
M12	STEELE MUNICIPAL	MO	LPV	0	100	0	100	0	100
M17	BOLIVAR MUNICIPAL	MO	LPV	0	100	0	100	0	100
M48	HOUSTON MEMORIAL	MO	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
MAW	MALDEN RGNL	MO	LPV	0	100	0	100	0	100
MBY	OMAR N BRADLEY	MO	LPV	0	100	0	100	0	100
MCI	KANSAS CITY INTL	MO	LPV200	0	100	0	100	0	100
MHL	MARSHALL MEMORIAL MUNICIPAL	MO	LPV	0	100	0	100	0	100
MKC	CHARLES B WHEELER DOWNTOWN	MO	LPV	0	100	0	100	0	100
MNF	MOUNTAIN VIEW	MO	LP	0	100	0	100	0	100
MO3	STOCKTON MUNICIPAL	MO	LP	0	100	0	100	0	100
MO8	NORTH CENTRAL MISSOURI RGNL	MO	LPV	0	100	0	100	0	100
MYJ	MEXICO MEMORIAL	MO	LPV	0	100	0	100	0	100
NVD	NEVADA MUNICIPAL	MO	LPV200	0	100	0	100	0	100
OZS	CAMDENTON MEMORIAL-LAKE RGNL	MO	LPV	0	100	0	100	0	100
PCD	PERRYVILLE RGNL	MO	LPV	0	100	0	100	0	100
PLK	M GRAHAM CLARK DOWNTOWN	MO	LPV200	0	100	0	100	0	100
POF	POPLAR BLUFF MUNICIPAL	MO	LPV	0	100	0	100	0	100
RAW	WARSAW MUNICIPAL	MO	LPV200	0	100	0	100	0	100
RCM	SKYHAVEN	MO	LPV	0	100	0	100	0	100
SGF	SPRINGFIELD-BRANSON NATIONAL	MO	LPV	0	100	0	100	0	100
SIK	SIKESTON MEMORIAL MUNICIPAL	MO	LPV	0	100	0	100	0	100
STJ	ROSECRANS MEMORIAL	MO	LPV200	0	100	0	100	0	100
STL	ST LOUIS LAMBERT INTL	MO	LPV200	0	100	0	100	0	100
SUS	SPIRIT OF ST LOUIS	MO	LPV200	0	100	0	100	0	100
TBN	WAYNESVILLE-ST ROBERT RGNL FOR	MO	LPV	0	100	0	100	0	100
TKX	KENNETT MEMORIAL	MO	LPV	0	100	0	100	0	100
TRX	TRENTON MUNICIPAL	MO	LPV	0	100	0	100	0	100
UBX	CUBA MUNICIPAL	MO	LPV	0	100	0	100	0	100
UNO	WEST PLAINS RGNL	MO	LPV	0	100	0	100	0	100
UUV	SULLIVAN RGNL	MO	LPV	0	100	0	100	0	100
VER	JESSE VIERTEL MEMORIAL	MO	LPV	0	100	0	100	0	100
VIH	ROLLA NATIONAL	MO	LPV	0	100	0	100	0	100
OR0	COLUMBIA-MARION COUNTY	MS	LPV	0	100	0	100	0	100
17M	MAGEE MUNICIPAL	MS	LP	0	100	0	100	0	100
5A4	OKOLONA MUNICIPAL-RICHARD STOVALL F	MS	LPV	0	100	0	100	0	100
5A6	WINONA-MONTGOMERY COUNTY	MS	LP	0	100	0	100	0	100
87I	YAZOO COUNTY	MS	LPV	0	100	0	100	0	100
8M1	BOONEVILLE/BALDWYN	MS	LPV	0	100	0	100	0	100
CKM	FLETCHER FIELD	MS	LPV	0	100	0	100	0	100
CRX	ROSCOE TURNER	MS	LPV200	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
GLH	GREENVILLE MID-DELTA	MS	LPV200	0	100	0	100	0	100
GNF	GRENADA MUNICIPAL	MS	LPV	0	100	0	100	0	100
GPT	GULFPORT-BILOXI INTL	MS	LPV200	0	100	0	100	0	100
GTR	GOLDEN TRIANGLE RGNL	MS	LPV200	0	100	0	100	0	100
GWO	GREENWOOD-LEFLORE	MS	LPV	0	100	0	100	0	100
HBG	HATTIESBURG BOBBY L CHAIN MUNICIPAL	MS	LPV200	0	100	0	100	0	100
HEZ	HARDY-ANDERS FIELD NATCHEZ-ADA	MS	LPV200	0	100	0	100	1	99.999
HKS	HAWKINS FIELD	MS	LPV	0	100	0	100	0	100
HSA	STENNIS INTL	MS	LPV200	0	100	0	100	0	100
IDL	INDIANOLA MUNICIPAL	MS	LPV	0	100	0	100	0	100
JAN	JACKSON-MEDGAR WILEY EVERS INT	MS	LPV200	0	100	0	100	0	100
JVW	JOHN BELL WILLIAMS	MS	LPV200	0	100	0	100	0	100
LMS	LOUISVILLE WINSTON COUNTY	MS	LPV	0	100	0	100	0	100
LUL	HESLER-NOBLE FIELD	MS	LPV	0	100	0	100	0	100
M11	COPIAH COUNTY	MS	LPV	0	100	0	100	0	100
M40	MONROE COUNTY	MS	LPV	0	100	0	100	0	100
M41	HOLLY SPRINGS-MARSHALL COUNTY	MS	LPV	0	100	0	100	0	100
M43	PRENTISS-JEFFERSON DAVIS COUNT	MS	LPV	0	100	0	100	0	100
MBO	BRUCE CAMPBELL FIELD	MS	LPV	0	100	0	100	0	100
MCB	MC COMB/PIKE COUNTY/JOHN E LEW	MS	LPV200	0	100	0	100	1	99.999
MEI	KEY FIELD	MS	LPV200	0	100	0	100	0	100
MJD	PICAYUNE MUNICIPAL	MS	LPV	0	100	0	100	0	100
MMS	SELS	MS	LPV	0	100	0	100	0	100
MPE	PHILADELPHIA MUNICIPAL	MS	LPV	0	100	0	100	0	100
OLV	OLIVE BRANCH	MS	LPV200	0	100	0	100	0	100
PIB	HATTIESBURG-LAUREL RGNL	MS	LPV200	0	100	0	100	0	100
PMU	PANOLA COUNTY	MS	LPV	0	100	0	100	0	100
PQL	TRENT LOTT INTL	MS	LPV200	0	100	0	100	0	100
RNV	CLEVELAND MUNICIPAL	MS	LPV	0	100	0	100	0	100
STF	GEORGE M BRYAN	MS	LPV200	0	100	0	100	0	100
TUP	TUPELO RGNL	MS	LPV200	0	100	0	100	0	100
UBS	COLUMBUS-LOWNDES COUNTY	MS	LPV	0	100	0	100	0	100
UOX	UNIVERSITY-OXFORD	MS	LPV	0	100	0	100	0	100
UTA	TUNICA MUNICIPAL	MS	LPV200	0	100	0	100	0	100
VKS	VICKSBURG MUNICIPAL	MS	LP	0	100	0	100	0	100
1S3	TILLITT FIELD	MT	LPV	0	100	0	100	0	100
4U6	CIRCLE TOWN COUNTY	MT	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
6S0	BIG TIMBER	MT	LPV	0	100	0	100	0	100
6S8	LAUREL MUNICIPAL	MT	LPV	0	100	0	100	0	100
7S0	RONAN	MT	LPV	0	100	0	100	0	100
7S1	TWIN BRIDGES	MT	LPV	0	100	0	100	0	100
BHK	BAKER MUNICIPAL	MT	LPV	0	100	0	100	0	100
BIL	BILLINGS LOGAN INTL	MT	LPV200	0	100	0	100	0	100
BTM	BERT MOONEY	MT	LPV	0	100	0	100	0	100
BZN	BOZEMAN YELLOWSTONE INTL	MT	LPV	0	100	0	100	0	100
CTB	CUT BANK INTL	MT	LPV200	0	100	0	100	0	100
DLN	DILLON	MT	LPV	0	100	0	100	0	100
EKS	ENNIS - BIG SKY	MT	LPV	0	100	0	100	0	100
GDV	DAWSON COMMUNICIPALTY	MT	LPV	0	100	0	100	0	100
GGW	WOKAL FIELD/GLASGOW-VALLEY COU	MT	LPV200	0	100	0	100	0	100
GPI	GLACIER PARK INTL	MT	LPV	0	100	0	100	0	100
GTF	GREAT FALLS INTL	MT	LPV200	0	100	0	100	0	100
HLN	HELENA RGNL	MT	LPV	0	100	0	100	0	100
HVR	HAVRE CITY-COUNTY	MT	LPV	0	100	0	100	0	100
LVM	MISSION FIELD	MT	LP	0	100	0	100	0	100
LWT	LEWISTOWN MUNICIPAL	MT	LPV200	0	100	0	100	0	100
M75	MALTA	MT	LP	0	100	0	100	0	100
MLS	FRANK WILEY FIELD	MT	LPV	0	100	0	100	0	100
MSO	MISSOULA INTL	MT	LPV200	0	100	0	100	0	100
OLF	L M CLAYTON	MT	LPV200	0	100	0	100	0	100
PO1	POPLAR MUNICIPAL	MT	LPV200	0	100	0	100	0	100
PWD	SHER-WOOD	MT	LPV200	0	100	0	100	0	100
RPX	ROUNDUP	MT	LPV	0	100	0	100	0	100
S01	CONRAD	MT	LPV	0	100	0	100	0	100
SBX	SHELBY	MT	LPV	0	100	0	100	0	100
SDY	SIDNEY-RICHLAND RGNL	MT	LPV	0	100	0	100	0	100
WYS	YELLOWSTONE	MT	LPV200	0	100	0	100	0	100
43A	MONTGOMERY COUNTY	NC	LP	0	100	0	100	0	100
7W6	HYDE COUNTY	NC	LP	0	100	0	100	0	100
ACZ	HENDERSON FIELD	NC	LPV	0	100	0	100	0	100
AFP	ANSON COUNTY - JEFF CLOUD FIEL	NC	LPV	0	100	0	100	0	100
AKH	GASTONIA MUNICIPAL	NC	LPV	0	100	0	100	0	100
ASJ	TRI-COUNTY	NC	LPV	0	100	0	100	0	100
AVL	ASHEVILLE RGNL	NC	LPV200	0	100	0	100	0	100

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

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
OAJ	ALBERT J ELLIS	NC	LPV200	0	100	0	100	0	100
OCW	WASHINGTON-WARREN	NC	LPV	0	100	0	100	0	100
ONX	CURRITUCK COUNTY RGNL	NC	LPV	0	100	0	100	0	100
PGV	PITT-GREENVILLE	NC	LPV	0	100	0	100	0	100
PMZ	PLYMOUTH MUNICIPAL	NC	LP	0	100	0	100	0	100
RCZ	RICHMOND COUNTY	NC	LPV	0	100	0	100	0	100
RDU	RALEIGH-DURHAM INTL	NC	LPV200	0	100	0	100	0	100
RHP	WESTERN CAROLINA RGNL	NC	LP	0	100	0	100	0	100
RUQ	MID-CAROLINA RGNL	NC	LPV200	0	100	0	100	0	100
RWI	ROCKY MOUNT-WILSON RGNL	NC	LPV	0	100	0	100	0	100
SCR	SILER CITY MUNICIPAL	NC	LPV	0	100	0	100	0	100
SOP	MOORE COUNTY	NC	LPV200	0	100	0	100	0	100
SUT	CAPE FEAR RGNL JETPORT/HOWIE F	NC	LPV	0	100	0	100	0	100
SVH	STATESVILLE RGNL	NC	LPV200	0	100	0	100	0	100
TDF	PERSON COUNTY	NC	LPV200	0	100	0	100	0	100
TTA	RALEIGH EXEC JETPORT AT SANFOR	NC	LPV200	0	100	0	100	0	100
UKF	WILKES COUNTY	NC	LPV200	0	100	0	100	0	100
VUJ	STANLY COUNTY	NC	LPV200	0	100	0	100	0	100
W03	WILSON INDUSTRIAL AIR CENTER	NC	LPV	0	100	0	100	0	100
W40	MOUNT OLIVE MUNICIPAL	NC	LPV	0	100	0	100	0	100
ZEF	ELKIN MUNICIPAL	NC	LP	0	100	0	100	0	100
06D	ROLLA MUNICIPAL	ND	LPV	0	100	0	100	0	100
20U	BEACH	ND	LPV	0	100	0	100	0	100
2C8	CAVALIER MUNICIPAL	ND	LPV	0	100	0	100	0	100
3H4	HILLSBORO MUNICIPAL	ND	LPV	0	100	0	100	0	100
46D	CARRINGTON MUNICIPAL	ND	LPV	0	100	0	100	0	100
4E7	ELLENDALE MUNICIPAL	ND	LPV	0	100	0	100	0	100
51D	EDGELEY MUNICIPAL	ND	LPV	0	100	0	100	0	100
5L0	LAKOTA MUNICIPAL	ND	LPV	0	100	0	100	0	100
5N8	CASSELTON ROBERT MILLER RGNL	ND	LPV	0	100	0	100	0	100
6L3	LISBON MUNICIPAL	ND	LPV	0	100	0	100	0	100
7L2	LINTON MUNICIPAL	ND	LPV	0	100	0	100	0	100
9D7	CANDO MUNICIPAL	ND	LPV	0	100	0	100	0	100
BAC	BARNES COUNTY MUNICIPAL	ND	LPV	0	100	0	100	0	100
BIS	BISMARCK MUNICIPAL	ND	LPV200	0	100	0	100	0	100
BWP	HARRY STERN	ND	LPV	0	100	0	100	0	100
BWW	BOWMAN RGNL	ND	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
D05	GARRISON MUNICIPAL	ND	LPV	0	100	0	100	0	100
D09	BOTTINEAU MUNICIPAL	ND	LPV	0	100	0	100	0	100
D55	ROBERTSON FIELD	ND	LPV	0	100	0	100	0	100
D57	GLEN ULLIN RGNL	ND	LPV	0	100	0	100	0	100
D60	TIOGA MUNICIPAL	ND	LPV	0	100	0	100	0	100
DIK	DICKINSON - THEODORE ROOSEVELT	ND	LPV200	0	100	0	100	0	100
DVL	DEVILS LAKE RGNL	ND	LPV200	0	100	0	100	0	100
FAR	HECTOR INTL	ND	LPV200	0	100	0	100	0	100
GAF	HUTSON FIELD	ND	LPV	0	100	0	100	0	100
GFK	GRAND FORKS INTL	ND	LPV	0	100	0	100	0	100
GWR	GWINNER-ROGER MELROE FIELD	ND	LPV	0	100	0	100	0	100
HEI	HETTINGER MUNICIPAL	ND	LPV	0	100	0	100	0	100
HZE	MERCER COUNTY RGNL	ND	LPV	0	100	0	100	0	100
ISN	SLOULIN FLD INTL	ND	LPV200	0	100	0	100	0	100
JMS	JAMESTOWN RGNL	ND	LPV200	0	100	0	100	0	100
K74	ROBERT ODEGAARD FIELD	ND	LP	0	100	0	100	0	100
MOT	MINOT INTL	ND	LPV	0	100	0	100	0	100
RUG	RUGBY MUNICIPAL	ND	LP	0	100	0	100	0	100
S25	WATFORD CITY MUNICIPAL	ND	LPV	0	100	0	100	0	100
Y19	MANDAN MUNICIPAL	ND	LPV	0	100	0	100	0	100
07K	CENTRAL CITY MUNICIPAL - LARRY REIN	NE	LPV	0	100	0	100	0	100
08K	HARVARD STATE	NE	LPV	0	100	0	100	0	100
0B4	HARTINGTON MUNICIPAL/ BUD BECKER FL	NE	LPV	0	100	0	100	0	100
0C4	PENDER MUNICIPAL	NE	LPV	0	100	0	100	0	100
0F4	LOUP CITY MUNICIPAL	NE	LPV	0	100	0	100	0	100
0G3	TECUMSEH MUNICIPAL	NE	LPV	0	100	0	100	0	100
0V3	PIONEER VILLAGE FIELD	NE	LPV	0	100	0	100	0	100
12K	SUPERIOR MUNICIPAL	NE	LPV	0	100	0	100	0	100
47V	CURTIS MUNICIPAL	NE	LPV	0	100	0	100	1	99.997
4D9	ALMA MUNICIPAL	NE	LPV	0	100	0	100	0	100
4V9	ANTELOPE COUNTY	NE	LPV	0	100	0	100	0	100
6K3	CREIGHTON MUNICIPAL	NE	LPV	0	100	0	100	0	100
7V7	RED CLOUD MUNICIPAL	NE	LPV	0	100	0	100	0	100
8V2	STUART-ATKINSON MUNICIPAL	NE	LPV	0	100	0	100	0	100
93Y	DAVID CITY MUNICIPAL	NE	LPV	0	100	0	100	0	100
9V5	MODISSETT	NE	LPV	0	100	0	100	0	100
AFK	NEBRASKA CITY MUNICIPAL	NE	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
AHQ	WAHOO MUNICIPAL	NE	LPV	0	100	0	100	0	100
AIA	ALLIANCE MUNICIPAL	NE	LPV200	0	100	0	100	0	100
ANW	AINSWORTH RGNL	NE	LPV200	0	100	0	100	0	100
AUH	AURORA MUNICIPAL - AL POTTER FIELD	NE	LPV	0	100	0	100	0	100
BBW	BROKEN BOW MUNICIPAL/KEITH GLAZE FL	NE	LPV	0	100	0	100	0	100
BFF	WESTERN NEBRASKA RGNL/WILLIAM	NE	LPV	0	100	0	100	0	100
BIE	BEATRICE MUNICIPAL	NE	LPV200	0	100	0	100	0	100
BTA	BLAIR MUNICIPAL	NE	LPV	0	100	0	100	0	100
BUB	CRAM FIELD	NE	LPV	0	100	0	100	0	100
BVN	ALBION MUNICIPAL	NE	LPV	0	100	0	100	0	100
CDR	CHADRON MUNICIPAL	NE	LPV200	0	100	0	100	0	100
CEK	CRETE MUNICIPAL	NE	LPV	0	100	0	100	0	100
CSB	CAMBRIDGE MUNICIPAL	NE	LPV	0	100	0	100	1	99.998
CZD	COZAD MUNICIPAL	NE	LPV	0	100	0	100	0	100
EAR	KEARNEY RGNL	NE	LPV200	0	100	0	100	0	100
FBY	FAIRBURY MUNICIPAL	NE	LPV	0	100	0	100	0	100
FET	FREMONT MUNICIPAL	NE	LPV	0	100	0	100	0	100
FMZ	FAIRMONT STATE AIRFIELD	NE	LPV	0	100	0	100	0	100
FNB	BRENNER FIELD	NE	LPV	0	100	0	100	0	100
GGF	GRANT MUNICIPAL	NE	LPV	0	100	0	100	0	100
GRI	CENTRAL NEBRASKA RGNL	NE	LPV	0	100	0	100	0	100
GRN	GORDON MUNICIPAL	NE	LPV	0	100	0	100	0	100
HDE	BREWSTER FIELD	NE	LPV	0	100	0	100	0	100
HSI	HASTINGS MUNICIPAL	NE	LPV	0	100	0	100	0	100
IBM	KIMBALL MUNICIPAL/ROBERT E ARRAJ FI	NE	LPV	0	100	0	100	0	100
IML	IMPERIAL MUNICIPAL	NE	LPV	0	100	0	100	0	100
JYR	YORK MUNICIPAL	NE	LPV	0	100	0	100	0	100
K01	FARINGTON FIELD	NE	LPV	0	100	0	100	0	100
LBF	NORTH PLATTE RGNL AIRPORT LEE	NE	LPV200	0	100	0	100	0	100
LCG	WAYNE MUNICIPAL/ STAN MORRIS FLD	NE	LPV	0	100	0	100	0	100
LNK	LINCOLN	NE	LPV200	0	100	0	100	0	100
LXN	JIM KELLY FIELD	NE	LPV	0	100	0	100	0	100
MCK	MC COOK BEN NELSON RGNL	NE	LPV	0	100	0	100	1	99.994
MLE	MILLARD	NE	LPV	0	100	0	100	0	100
ODX	EVELYN SHARP FIELD	NE	LPV	0	100	0	100	0	100
OFK	NORFOLK RGNL/KARL STEFAN MEMOR	NE	LPV	0	100	0	100	0	100
OGA	SEARLE FIELD	NE	LPV	0	100	0	100	0	100

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

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
LFVP	ST PIERRE	NL	LPV	0	100	0	100	0	100
0E0	MORIARTY MUNICIPAL	NM	LPV	0	100	0	100	0	100
ABQ	ALBUQUERQUE INTL SUNPORT	NM	LPV200	0	100	0	100	0	100
AEG	DOUBLE EAGLE II	NM	LPV200	0	100	0	100	0	100
ALM	ALAMOGORDO-WHITE SANDS RGNL	NM	LPV	0	100	0	100	0	100
ATS	ARTESIA MUNICIPAL	NM	LPV200	0	100	0	100	0	100
CAO	CLAYTON MUNICIPAL ARPK	NM	LPV	0	100	0	100	0	100
CNM	CAVERN CITY AIR TRML	NM	LPV200	0	100	0	100	0	100
CVN	CLOVIS MUNICIPAL	NM	LPV200	0	100	0	100	0	100
DMN	DEMING MUNICIPAL	NM	LPV	0	100	0	100	0	100
E06	LEA COUNTY-ZIP FRANKLIN MEMORI	NM	LPV	0	100	0	100	0	100
FMN	FOUR CORNERS RGNL	NM	LPV200	0	100	0	100	0	100
HOB	LEA COUNTY RGNL	NM	LPV	0	100	0	100	0	100
LAM	LOS ALAMOS	NM	LP	0	100	0	100	0	100
LRU	LAS CRUCES INTL	NM	LPV200	0	100	0	100	0	100
ONM	SOCORRO MUNICIPAL	NM	LP	0	100	0	100	0	100
ROW	ROSWELL INTL AIR CENTER	NM	LPV	0	100	0	100	0	100
SAF	SANTA FE MUNICIPAL	NM	LPV200	0	100	0	100	0	100
SRR	SIERRA BLANCA RGNL	NM	LPV200	0	100	0	100	0	100
SVC	GRANT COUNTY	NM	LPV	0	100	0	100	0	100
05U	EUREKA	NV	LP	0	100	0	100	0	100
67L	MESQUITE	NV	LP	0	100	0	100	0	100
BAM	BATTLE MOUNTAIN	NV	LPV	0	100	0	100	0	100
CXP	CARSON	NV	LP	0	100	0	100	0	100
ELY	ELY ARPT /YELLAND FLD/	NV	LPV	0	100	0	100	0	100
HTH	HAWTHORNE INDUSTRIAL	NV	LP	0	100	0	100	0	100
LAS	MC CARRAN INTL	NV	LPV	0	100	0	100	0	100
LOL	DERBY FIELD	NV	LPV	0	100	0	100	0	100
RNO	RENO/TAHOE INTL	NV	LPV	0	100	0	100	0	100
RTS	RENO/STEAD	NV	LPV	0	100	0	100	0	100
SPZ	SILVER SPRINGS	NV	LPV	0	100	0	100	0	100
TPH	TONOPAH	NV	LP	0	100	0	100	0	100
WMC	WINNEMUCCA MUNICIPAL	NV	LPV	0	100	0	100	0	100
06N	RANDALL	NY	LP	0	100	0	100	0	100
0G7	FINGER LAKES RGNL	NY	LPV	0	100	0	100	0	100
1B1	COLUMBIA COUNTY	NY	LPV	0	100	0	100	0	100
20N	KINGSTON-ULSTER	NY	LPV	0	100	0	100	0	100

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

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

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
DAY	JAMES M COX DAYTON INTL	OH	LPV200	0	100	0	100	0	100
DLZ	DELAWARE MUNICIPAL - JIM MOORE FIEL	OH	LPV	0	100	0	100	0	100
EDJ	BELLEFONTAINE RGNL	OH	LPV	0	100	0	100	0	100
EOP	PIKE COUNTY	OH	LP	0	100	0	100	0	100
FDY	FINDLAY	OH	LPV	0	100	0	100	0	100
FZI	FOSTORIA METROPOLITAN	OH	LPV	0	100	0	100	0	100
GQQ	GALION MUNICIPAL	OH	LP	0	100	0	100	0	100
HAO	BUTLER CO RGNL-HOGAN FIELD	OH	LPV	0	100	0	100	0	100
HOC	HIGHLAND COUNTY	OH	LP	0	100	0	100	0	100
HZY	NORTHEAST OHIO RGNL	OH	LPV	0	100	0	100	0	100
I10	NOBLE COUNTY	OH	LP	0	100	0	100	0	100
I19	GREENE COUNTY-LEWIS A JACKSON	OH	LPV	0	100	0	100	0	100
I40	RICHARD DOWNING	OH	LPV	0	100	0	100	0	100
I66	CLINTON FIELD	OH	LPV	0	100	0	100	0	100
I68	WARREN COUNTY/JOHN LANE FIELD	OH	LPV	0	100	0	100	0	100
I69	CLERMONT COUNTY	OH	LP	0	100	0	100	0	100
I74	GRIMES FIELD	OH	LPV	0	100	0	100	0	100
ILN	WILMINGTON AIR PARK	OH	LPV200	0	100	0	100	0	100
LCK	RICKENBACKER INTL	OH	LPV200	0	100	0	100	0	100
LHQ	FAIRFIELD COUNTY	OH	LPV200	0	100	0	100	0	100
LNN	WILLOUGHBY LOST NATION MUNICIPAL	OH	LPV	0	100	0	100	0	100
LPR	LORAIN COUNTY RGNL	OH	LPV200	0	100	0	100	0	100
LUK	CINCINNATI MUNICIPAL AIRPORT LUNKEN	OH	LPV	0	100	0	100	0	100
MFD	MANSFIELD LAHM RGNL	OH	LPV200	0	100	0	100	0	100
MGY	DAYTON-WRIGHT BROTHERS	OH	LPV	0	100	0	100	0	100
MNN	MARION MUNICIPAL	OH	LPV	0	100	0	100	0	100
MRT	UNION COUNTY	OH	LP	0	100	0	100	0	100
MWO	MIDDLETOWN REGIONAL/HOOK FIELD	OH	LPV	0	100	0	100	0	100
OSU	OHIO STATE UNIVERSITY	OH	LPV200	0	100	0	100	0	100
OWX	PUTNAM COUNTY	OH	LPV	0	100	0	100	0	100
OXD	MIAMI UNIVERSITY	OH	LPV	0	100	0	100	0	100
PCW	ERIE-OTTAWA INTL	OH	LPV	0	100	0	100	0	100
PHD	HARRY CLEVER FIELD	OH	LP	0	100	0	100	0	100
PMH	GREATER PORTSMOUTH RGNL	OH	LPV	0	100	0	100	0	100
POV	PORTAGE COUNTY	OH	LPV	0	100	0	100	0	100
RZT	ROSS COUNTY	OH	LPV	0	100	0	100	0	100
S24	SANDUSKY COUNTY RGNL	OH	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
SCA	SIDNEY MUNICIPAL	OH	LPV	0	100	0	100	0	100
SGH	SPRINGFIELD-BECKLEY MUNICIPAL	OH	LPV200	0	100	0	100	0	100
TDZ	TOLEDO EXECUTIVE	OH	LPV	0	100	0	100	0	100
TOL	TOLEDO EXPRESS	OH	LPV200	0	100	0	100	0	100
TSO	CARROLL COUNTY-TOLSON	OH	LP	0	100	0	100	0	100
TZR	BOLTON FIELD	OH	LPV	0	100	0	100	0	100
UNI	OHIO UNIVERSITY	OH	LPV200	0	100	0	100	0	100
USE	FULTON COUNTY	OH	LPV	0	100	0	100	0	100
UYF	MADISON COUNTY	OH	LPV	0	100	0	100	0	100
VES	DARKE COUNTY	OH	LPV	0	100	0	100	0	100
VTA	NEWARK-HEATH	OH	LP	0	100	0	100	0	100
YNG	YOUNGSTOWN-WARREN RGNL	OH	LPV	0	100	0	100	0	100
ZZV	ZANESVILLE MUNICIPAL	OH	LPV200	0	100	0	100	0	100
1F0	ARDMORE DOWNTOWN EXECUTIVE	OK	LP	0	100	0	100	0	100
1K8	SOUTH GRAND LAKE RGNL	OK	LPV	0	100	0	100	0	100
1O4	THOMAS MUNICIPAL	OK	LPV	0	100	0	100	0	100
2K4	SCOTT FIELD	OK	LPV	0	100	0	100	0	100
4O4	MC CURTAIN COUNTY RGNL	OK	LP	0	100	0	100	0	100
6K4	FAIRVIEW MUNICIPAL	OK	LPV	0	100	0	100	0	100
80F	ANTLERS MUNICIPAL	OK	LPV	0	100	0	100	0	100
ADH	ADA RGNL	OK	LPV	0	100	0	100	0	100
ADM	ARDMORE MUNICIPAL	OK	LPV	0	100	0	100	0	100
AVK	ALVA RGNL	OK	LPV	0	100	0	100	1	99.999
AXS	ALTUS/QUARTZ MOUNTAIN RGNL	OK	LPV	0	100	0	100	0	100
BKN	BLACKWELL-TONKAWA MUNICIPAL	OK	LPV	0	100	0	100	0	100
BVO	BARTLESVILLE MUNICIPAL	OK	LPV	0	100	0	100	0	100
CHK	CHICKASHA MUNICIPAL	OK	LPV200	0	100	0	100	0	100
CLK	CLINTON RGNL	OK	LPV	0	100	0	100	0	100
CSM	CLINTON-SHERMAN	OK	LPV200	0	100	0	100	1	99.999
CUH	CUSHING MUNICIPAL	OK	LPV	0	100	0	100	0	100
DUA	DURANT RGNL - EAKER FIELD	OK	LPV	0	100	0	100	0	100
DUC	HALLIBURTON FIELD	OK	LPV200	0	100	0	100	0	100
ELK	ELK CITY RGNL BUSINESS	OK	LPV	0	100	0	100	1	99.999
F22	PERRY MUNICIPAL	OK	LPV	0	100	0	100	0	100
FDR	FREDERICK RGNL	OK	LPV200	0	100	0	100	1	99.999
GCM	CLAREMORE RGNL	OK	LPV	0	100	0	100	0	100
GMJ	GROVE MUNICIPAL	OK	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
GOK	GUTHRIE-EDMOND RGNL	OK	LPV	0	100	0	100	0	100
GUY	GUYMON MUNICIPAL	OK	LPV	0	100	0	100	1	99.999
GZL	STIGLER RGNL	OK	LPV	0	100	0	100	0	100
H71	MID-AMERICA INDUSTRIAL	OK	LPV	0	100	0	100	0	100
HBR	HOBART RGNL	OK	LPV	0	100	0	100	0	100
HHW	STAN STAMPER MUNICIPAL	OK	LPV	0	100	0	100	0	100
HSD	SUNDANCE	OK	LPV	0	100	0	100	0	100
LAW	LAWTON-FORT SILL RGNL	OK	LPV200	0	100	0	100	0	100
MKO	MUSKOGEE-DAVIS RGNL	OK	LPV	0	100	0	100	0	100
MLC	MC ALESTER RGNL	OK	LPV	0	100	0	100	0	100
OJA	THOMAS P STAFFORD	OK	LPV	0	100	0	100	0	100
OKC	WILL ROGERS WORLD	OK	LPV200	0	100	0	100	0	100
OKM	OKMULGEE RGNL	OK	LPV200	0	100	0	100	0	100
OUN	UNIVERSITY OF OKLAHOMA WESTHEI	OK	LPV200	0	100	0	100	0	100
OWP	WILLIAM R POGUE MUNICIPAL	OK	LPV	0	100	0	100	0	100
PNC	PONCA CITY RGNL	OK	LPV	0	100	0	100	0	100
PVJ	PAULS VALLEY MUNICIPAL	OK	LPV200	0	100	0	100	0	100
PWA	WILEY POST	OK	LPV200	0	100	0	100	0	100
RCE	CLARENCE E PAGE MUNICIPAL	OK	LPV	0	100	0	100	0	100
RVS	RICHARD LLOYD JONES JR	OK	LPV200	0	100	0	100	0	100
SNL	SHAWNEE RGNL	OK	LPV200	0	100	0	100	0	100
SWO	STILLWATER RGNL	OK	LPV200	0	100	0	100	0	100
TQH	TAHLEQUAH MUNICIPAL	OK	LPV	0	100	0	100	0	100
TUL	TULSA INTL	OK	LPV200	0	100	0	100	0	100
WDG	ENID WOODRING RGNL	OK	LPV200	0	100	0	100	0	100
WWR	WEST WOODWARD	OK	LPV	0	100	0	100	1	99.999
3S8	GRANTS PASS	OR	LP	0	100	0	100	0	100
77S	HOBBY FIELD	OR	LPV	0	100	0	100	0	100
AST	ASTORIA RGNL	OR	LPV	0	100	0	100	0	100
BDN	BEND MUNICIPAL	OR	LPV	0	100	0	100	0	100
BKE	BAKER CITY MUNICIPAL	OR	LPV	0	100	0	100	0	100
CVO	CORVALLIS MUNICIPAL	OR	LPV200	0	100	0	100	0	100
EUG	MAHLON SWEET FIELD	OR	LPV200	0	100	0	100	0	100
GCD	GRANT CO RGNL/OGILVIE FIELD	OR	LPV	0	100	0	100	0	100
HIO	PORTLAND-HILLSBORO	OR	LPV200	0	100	0	100	0	100
LGD	LA GRANDE/UNION COUNTY	OR	LPV	0	100	0	100	0	100
LKV	LAKE COUNTY	OR	LPV	0	100	0	100	0	100

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

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
HMZ	BEDFORD COUNTY	PA	LPV	0	100	0	100	0	100
HZL	HAZLETON RGNL	PA	LPV	0	100	0	100	0	100
IDI	INDIANA COUNTY/JIMMY STEWART F	PA	LPV	0	100	0	100	0	100
IPT	WILLIAMSPORT RGNL	PA	LPV	0	100	0	100	0	100
JST	JOHN MURTHA JOHNSTOWN-CAMBRIA	PA	LPV200	0	100	0	100	0	100
LBE	ARNOLD PALMER RGNL	PA	LPV200	0	100	0	100	0	100
LNS	LANCASTER	PA	LPV200	0	100	0	100	0	100
LOM	WINGS FIELD	PA	LPV	0	100	0	100	0	100
MDT	HARRISBURG INTL	PA	LPV	0	100	0	100	0	100
MPO	POCONO MOUNTAINS MUNICIPAL	PA	LPV	0	100	0	100	0	100
MQS	CHESTER COUNTY G O CARLSON	PA	LPV	0	100	0	100	0	100
N38	WELLSBORO JOHNSTON	PA	LP	0	100	0	100	0	100
N79	NORTHUMBERLAND COUNTY	PA	LPV	0	100	0	100	0	100
N96	BELLEFONTE	PA	LPV	0	100	0	100	0	100
OQN	BRANDYWINE RGNL	PA	LP	0	100	0	100	0	100
OYM	ST MARYS MUNICIPAL	PA	LPV	0	100	0	100	0	100
PHL	PHILADELPHIA INTL	PA	LPV200	0	100	0	100	0	100
PIT	PITTSBURGH INTL	PA	LPV200	0	100	0	100	0	100
PNE	NORTHEAST PHILADELPHIA	PA	LPV200	0	100	0	100	0	100
PSB	MID-STATE	PA	LPV	0	100	0	100	0	100
PTW	HERITAGE FIELD	PA	LPV	0	100	0	100	0	100
RDG	READING RGNL/CARL A SPAATZ FIE	PA	LPV	0	100	0	100	0	100
RVL	MIFFLIN COUNTY	PA	LPV	0	100	0	100	0	100
SEG	PENN VALLEY	PA	LP	0	100	0	100	0	100
THV	YORK	PA	LP	0	100	0	100	0	100
UCP	NEW CASTLE MUNICIPAL	PA	LPV	0	100	0	100	0	100
UKT	QUAKERTOWN	PA	LP	0	100	0	100	0	100
UNV	UNIVERSITY PARK	PA	LPV200	0	100	0	100	0	100
VVS	JOSEPH A HARDY CONNELLSVILLE	PA	LPV	0	100	0	100	0	100
WAY	GREENE COUNTY	PA	LPV	0	100	0	100	0	100
WBW	WILKES-BARRE WYOMING VALLEY	PA	LPV	0	100	0	100	0	100
XLL	ALLENTOWN QUEEN CITY MUNICIPAL	PA	LP	0	100	0	100	0	100
ZER	SCHUYLKILL COUNTY/JOE ZERBEY	PA	LPV200	0	100	0	100	0	100
BID	BLOCK ISLAND STATE	RI	LPV	0	100	0	100	0	100
OQU	QUONSET STATE	RI	LPV200	0	100	0	100	0	100
PVD	THEODORE FRANCIS GREEN STATE	RI	LPV200	0	100	0	100	0	100
SFZ	NORTH CENTRAL STATE	RI	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
35A	UNION COUNTY` TROY SHELTON FIE	SC	LP	0	100	0	100	0	100
6J0	LEXINGTON COUNTY	SC	LPV	0	100	0	100	0	100
AIK	AIKEN RGNL	SC	LPV200	0	100	0	100	0	100
AND	ANDERSON RGNL	SC	LPV200	0	100	0	100	0	100
AQX	ALLENDALDE COUNTY	SC	LPV	0	100	0	100	0	100
ARW	BEAUFORT COUNTY	SC	LPV200	0	100	0	100	0	100
BBP	MARLBORO COUNTY JETPORT - H E	SC	LPV	0	100	0	100	0	100
BNL	BARNWELL RGNL	SC	LPV	0	100	0	100	0	100
CAE	COLUMBIA METROPOLITAN	SC	LPV200	0	100	0	100	0	100
CDN	WOODWARD FIELD	SC	LPV	0	100	0	100	0	100
CEU	OCONEE COUNTY RGNL	SC	LPV200	0	100	0	100	0	100
CHS	CHARLESTON AFB/INTL	SC	LPV200	0	100	0	100	0	100
CKI	WILLIAMSBURG RGNL	SC	LPV	0	100	0	100	0	100
CQW	CHERAW MUNICIPAL/LYNCH BELLINGER FI	SC	LPV	0	100	0	100	0	100
CRE	GRAND STRAND	SC	LPV200	0	100	0	100	0	100
CUB	JIM HAMILTON L B OWENS	SC	LPV	0	100	0	100	0	100
DCM	CHESTER CATAWBA RGNL	SC	LPV	0	100	0	100	0	100
DYB	SUMMERVILLE	SC	LPV200	0	100	0	100	0	100
FDW	FAIRFIELD COUNTY	SC	LPV	0	100	0	100	0	100
FLO	FLORENCE RGNL	SC	LPV	0	100	0	100	0	100
GGE	GEORGETOWN COUNTY	SC	LPV	0	100	0	100	0	100
GMU	GREENVILLE DOWNTOWN	SC	LPV200	0	100	0	100	0	100
GRD	GREENWOOD COUNTY	SC	LPV	0	100	0	100	0	100
GSP	GREENVILLE SPARTANBURG INTL	SC	LPV200	0	100	0	100	0	100
GYH	DONALDSON FIELD	SC	LPV	0	100	0	100	0	100
HVS	HARTSVILLE RGNL	SC	LPV	0	100	0	100	0	100
HXD	HILTON HEAD	SC	LPV	0	100	0	100	0	100
HYW	CONWAY-HORRY COUNTY	SC	LPV	0	100	0	100	0	100
JZI	CHARLESTON EXECUTIVE	SC	LPV200	0	100	0	100	0	100
LKR	LANCASTER COUNTY-MC WHIRTER FI	SC	LPV200	0	100	0	100	0	100
LQK	PICKENS COUNTY	SC	LPV	0	100	0	100	0	100
LRO	MT PLEASANT RGNL-FAISON FIELD	SC	LPV	0	100	0	100	0	100
LUX	LAURENS COUNTY	SC	LPV	0	100	0	100	0	100
MAO	MARION COUNTY	SC	LPV	0	100	0	100	0	100
MKS	BERKELEY COUNTY	SC	LPV	0	100	0	100	0	100
MYR	MYRTLE BEACH INTL	SC	LPV200	0	100	0	100	0	100
OGB	ORANGEBURG MUNICIPAL	SC	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
PYG	PAGELAND	SC	LPV	0	100	0	100	0	100
RBW	LOWCOUNTRY RGNL	SC	LPV200	0	100	0	100	0	100
SMS	SUMTER	SC	LPV200	0	100	0	100	0	100
SPA	SPARTANBURG DOWNTOWN MEMORIAL/	SC	LPV200	0	100	0	100	0	100
UDG	DARLINGTON COUNTY	SC	LPV	0	100	0	100	0	100
UZA	ROCK HILL/YORK CO/BRYANT FIELD	SC	LPV200	0	100	0	100	0	100
0D8	GETTYSBURG MUNICIPAL	SD	LP	0	100	0	100	0	100
49B	STURGIS MUNICIPAL	SD	LPV	0	100	0	100	0	100
4X4	WESSINGTON SPRINGS	SD	LP	0	100	0	100	0	100
8D3	SISSETON MUNICIPAL	SD	LPV	0	100	0	100	0	100
8D7	CLARK COUNTY	SD	LP	0	100	0	100	0	100
8V3	PARKSTON MUNICIPAL	SD	LPV	0	100	0	100	0	100
98D	ONIDA MUNICIPAL	SD	LP	0	100	0	100	0	100
9D0	HIGHMORE MUNICIPAL	SD	LPV	0	100	0	100	0	100
9D1	GREGORY MUNICIPAL - FLYNN FLD	SD	LPV	0	100	0	100	0	100
9V6	MARTIN MUNICIPAL	SD	LPV	0	100	0	100	0	100
9V9	CHAMBERLAIN MUNICIPAL	SD	LP	0	100	0	100	0	100
ABR	ABERDEEN RGNL	SD	LPV200	0	100	0	100	0	100
AGZ	WAGNER MUNICIPAL	SD	LPV	0	100	0	100	0	100
ATY	WATERTOWN RGNL	SD	LPV200	0	100	0	100	0	100
BKX	BROOKINGS RGNL	SD	LPV200	0	100	0	100	0	100
EFC	BELLE FOURCHE MUNICIPAL	SD	LPV	0	100	0	100	0	100
FSD	JOE FOSS FIELD	SD	LPV200	0	100	0	100	0	100
HON	HURON RGNL	SD	LPV200	0	100	0	100	0	100
HSR	HOT SPRINGS MUNICIPAL	SD	LP	0	100	0	100	0	100
ICR	WINNER RGNL	SD	LPV	0	100	0	100	0	100
IEN	PINE RIDGE	SD	LPV	0	100	0	100	0	100
LEM	LEMMON MUNICIPAL	SD	LPV	0	100	0	100	0	100
MBG	MOBRIDGE MUNICIPAL	SD	LPV	0	100	0	100	0	100
MDS	MADISON MUNICIPAL	SD	LPV	0	100	0	100	0	100
MHE	MITCHELL MUNICIPAL	SD	LPV	0	100	0	100	0	100
MKA	MILLER MUNICIPAL	SD	LPV	0	100	0	100	0	100
PHP	PHILIP	SD	LPV	0	100	0	100	0	100
PIR	PIERRE RGNL	SD	LPV	0	100	0	100	0	100
RAP	RAPID CITY RGNL	SD	LPV200	0	100	0	100	0	100
SPF	BLACK HILLS-CLYDE ICE FIELD	SD	LPV	0	100	0	100	0	100
SUO	ROSEBUD SIOUX TRIBAL	SD	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
VMR	HAROLD DAVIDSON FIELD	SD	LPV	0	100	0	100	0	100
YKN	CHAN GURNEY MUNICIPAL	SD	LPV200	0	100	0	100	0	100
0A3	SMITHVILLE MUNICIPAL	TN	LPV	0	100	0	100	0	100
0M3	JOHN A BAKER FLD	TN	LP	0	100	0	100	0	100
0M4	BENTON COUNTY	TN	LPV	0	100	0	100	0	100
0M5	HUMPHREYS COUNTY	TN	LP	0	100	0	100	0	100
1A3	MARTIN CAMPBELL FIELD	TN	LP	0	100	0	100	0	100
1M5	PORTLAND MUNICIPAL	TN	LPV	0	100	0	100	0	100
2A0	MARK ANTON	TN	LPV	0	100	0	100	0	100
2M2	LAWRENCEBURG-LAWRENCE COUNTY	TN	LPV	0	100	0	100	0	100
2M8	CHARLES W BAKER	TN	LPV	0	100	0	100	0	100
3A2	NEW TAZEWEEL MUNICIPAL	TN	LP	0	100	0	100	0	100
3M7	LAFAYETTE MUNICIPAL	TN	LPV	0	100	0	100	0	100
8A3	LIVINGSTON MUNICIPAL	TN	LP	0	100	0	100	0	100
BGF	WINCHESTER MUNICIPAL	TN	LPV	0	100	0	100	0	100
BNA	NASHVILLE INTL	TN	LPV200	0	100	0	100	0	100
CHA	LOVELL FIELD	TN	LPV200	0	100	0	100	0	100
CKV	OUTLAW FIELD	TN	LPV	0	100	0	100	0	100
CSV	CROSSVILLE MEMORIAL-WHITSON FI	TN	LPV200	0	100	0	100	0	100
DYR	DYERSBURG RGNL	TN	LPV	0	100	0	100	0	100
FYE	FAYETTE COUNTY	TN	LPV	0	100	0	100	0	100
FYM	FAYETTEVILLE MUNICIPAL	TN	LPV	0	100	0	100	0	100
GCY	GREENEVILLE-GREENE COUNTY MUNICIPAL	TN	LPV	0	100	0	100	0	100
GHM	CENTERVILLE MUNICIPAL	TN	LP	0	100	0	100	0	100
GKT	GATLINBURG-PIGEON FORGE	TN	LPV	0	100	0	100	0	100
GZS	ABERNATHY FIELD	TN	LPV	0	100	0	100	0	100
HZD	CARROLL COUNTY	TN	LPV	0	100	0	100	0	100
JAU	COLONEL TOMMY C STINER AIRFIEL	TN	LP	0	100	0	100	0	100
JWN	JOHN C TUNE	TN	LPV	0	100	0	100	0	100
LUG	ELLINGTON	TN	LPV	0	100	0	100	0	100
M01	GENERAL DEWITT SPAIN	TN	LPV	0	100	0	100	0	100
M08	WILLIAM L WHITEHURST FIELD	TN	LP	0	100	0	100	0	100
M53	HUMBOLDT MUNICIPAL	TN	LPV	0	100	0	100	0	100
M54	LEBANON MUNICIPAL	TN	LPV	0	100	0	100	0	100
M91	SPRINGFIELD ROBERTSON COUNTY	TN	LPV	0	100	0	100	0	100
MBT	MURFREESBORO MUNICIPAL	TN	LPV	0	100	0	100	0	100
MEM	MEMPHIS INTL	TN	LPV200	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
MKL	MC KELLAR-SIPES RGNL	TN	LPV200	0	100	0	100	0	100
MMI	MCMINN COUNTY	TN	LPV	0	100	0	100	0	100
MNV	MONROE COUNTY	TN	LPV	0	100	0	100	0	100
MOR	MOORE-MURRELL	TN	LPV	0	100	0	100	0	100
MQY	SMYRNA	TN	LPV200	0	100	0	100	0	100
MRC	MAURY COUNTY	TN	LPV	0	100	0	100	0	100
NQA	MILLINGTON-MEMPHIS	TN	LPV200	0	100	0	100	0	100
PHT	HENRY COUNTY	TN	LPV200	0	100	0	100	0	100
PVE	BEECH RIVER RGNL	TN	LPV	0	100	0	100	0	100
RKW	ROCKWOOD MUNICIPAL	TN	LPV	0	100	0	100	0	100
RNC	WARREN COUNTY MEMORIAL	TN	LPV	0	100	0	100	0	100
RVN	HAWKINS COUNTY	TN	LP	0	100	0	100	0	100
RZR	CLEVELAND RGNL JETPORT	TN	LPV200	0	100	0	100	0	100
SCX	SCOTT MUNICIPAL	TN	LPV	0	100	0	100	0	100
SNH	SAVANNAH-HARDIN COUNTY	TN	LPV	0	100	0	100	0	100
SRB	UPPER CUMBERLAND RGNL	TN	LPV	0	100	0	100	0	100
SYI	BOMAR FIELD-SHELBYVILLE MUNICIPAL	TN	LPV	0	100	0	100	0	100
SZY	ROBERT SIBLEY	TN	LPV	0	100	0	100	0	100
TGC	GIBSON COUNTY	TN	LP	0	100	0	100	0	100
THA	TULLAHOMA RGNL ARPT/WM NORTHER	TN	LPV	0	100	0	100	0	100
TRI	TRI-CITIES	TN	LPV200	0	100	0	100	0	100
TYS	MC GHEE TYSON	TN	LPV200	0	100	0	100	0	100
UCY	EVERETT-STEWART RGNL	TN	LPV200	0	100	0	100	0	100
XNX	SUMNER COUNTY RGNL	TN	LPV	0	100	0	100	0	100
0F2	BOWIE MUNICIPAL	TX	LPV	0	100	0	100	1	99.999
11R	BRENHAM MUNICIPAL	TX	LPV	0	100	0	100	1	99.998
2R9	KENEDY RGNL	TX	LP	0	100	0	100	0	100
3R9	LAKEWAY AIRPARK	TX	LP	0	100	0	100	0	100
3T5	FAYETTE RGNL AIR CENTER	TX	LPV	0	100	0	100	0	100
41F	FLOYDADA MUNICIPAL	TX	LP	0	100	0	100	0	100
45R	HAWTHORNE FIELD	TX	LP	0	100	0	100	1	99.995
4T2	KENNETH COPELAND	TX	LPV	0	100	0	100	1	99.996
50R	LOCKHART MUNICIPAL	TX	LPV	0	100	0	100	0	100
5C1	BOERNE STAGE FIELD	TX	LP	0	100	0	100	0	100
5T9	MAVERICK COUNTY MEMORIAL INTL	TX	LPV	0	100	0	100	0	100
60R	NAVASOTA MUNICIPAL	TX	LPV	0	100	0	100	1	99.998
6R3	CLEVELAND MUNICIPAL	TX	LPV	0	100	0	100	1	99.996

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
77F	WINTERS MUNICIPAL	TX	LP	0	100	0	100	0	100
8F3	CROSBYTON MUNICIPAL	TX	LP	0	100	0	100	0	100
ABI	ABILENE RGNL	TX	LPV200	0	100	0	100	0	100
ACT	WACO RGNL	TX	LPV200	0	100	0	100	1	99.998
ADS	ADDISON	TX	LPV	0	100	0	100	1	99.996
AFW	FORT WORTH ALLIANCE	TX	LPV200	0	100	0	100	1	99.996
ALI	ALICE INTL	TX	LPV	0	100	0	100	0	100
AMA	RICK HUSBAND AMARILLO INTL	TX	LPV200	0	100	0	100	0	100
ARM	WHARTON RGNL	TX	LPV	0	100	0	100	1	99.999
ASL	HARRISON COUNTY	TX	LPV	0	100	0	100	1	99.997
AUS	AUSTIN-BERGSTROM INTL	TX	LPV200	0	100	0	100	0	100
AXH	HOUSTON-SOUTHWEST	TX	LPV	0	100	0	100	1	99.998
BAZ	NEW BRAUNFELS RGNL	TX	LPV	0	100	0	100	0	100
BBD	CURTIS FIELD	TX	LPV	0	100	0	100	0	100
BEA	BEEVILLE MUNICIPAL	TX	LPV	0	100	0	100	0	100
BFE	TERRY COUNTY	TX	LPV	0	100	0	100	0	100
BGD	HUTCHINSON COUNTY	TX	LPV	0	100	0	100	0	100
BKD	STEPHENS COUNTY	TX	LP	0	100	0	100	1	99.999
BKS	BROOKS COUNTY	TX	LPV	0	100	0	100	0	100
BMT	BEAUMONT MUNICIPAL	TX	LPV	0	100	0	100	1	99.995
BPG	BIG SPRING MC MAHON-WRINKLE	TX	LPV200	0	100	0	100	0	100
BPT	JACK BROOKS RGNL	TX	LPV200	0	100	0	100	1	99.995
BRO	BROWNSVILLE/SOUTH PADRE ISLAND	TX	LPV200	0	100	0	100	1	99.997
BWD	BROWNWOOD RGNL	TX	LPV	0	100	0	100	0	100
BYY	BAY CITY RGNL	TX	LPV	0	100	0	100	1	99.999
CDS	CHILDRESS MUNICIPAL	TX	LPV200	0	100	0	100	0	100
CFD	COULTER FIELD	TX	LPV	0	100	0	100	1	99.998
CLL	EASTERWOOD FIELD	TX	LPV200	0	100	0	100	1	99.998
CNW	TSTC WACO	TX	LPV200	0	100	0	100	1	99.998
COM	COLEMAN MUNICIPAL	TX	LPV	0	100	0	100	0	100
COT	COTULLA-LA SALLE COUNTY	TX	LPV	0	100	0	100	0	100
CPT	CLEBURNE RGNL	TX	LPV	0	100	0	100	1	99.997
CRP	CORPUS CHRISTI INTL	TX	LPV200	0	100	0	100	0	100
CVB	CASTROVILLE MUNICIPAL	TX	LPV	0	100	0	100	0	100
CWC	KICKAPOO DOWNTOWN	TX	LPV	0	100	0	100	2	99.999
CXO	CONROE-NORTH HOUSTON RGNL	TX	LPV200	0	100	0	100	1	99.996
CZT	DIMMIT COUNTY	TX	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
DAL	DALLAS LOVE FIELD	TX	LPV200	0	100	0	100	1	99.996
DFW	DALLAS-FORT WORTH INTL	TX	LPV200	0	100	0	100	1	99.996
DHT	DALHART MUNICIPAL	TX	LPV	0	100	0	100	0	100
DKR	HOUSTON COUNTY	TX	LP	0	100	0	100	1	99.995
DRT	DEL RIO INTL	TX	LPV	0	100	0	100	0	100
DTO	DENTON ENTERPRISE	TX	LPV200	0	100	0	100	1	99.996
DUX	MOORE COUNTY	TX	LPV200	0	100	0	100	0	100
DWH	DAVID WAYNE HOOKS MEMORIAL	TX	LPV	0	100	0	100	1	99.997
E01	ROY HURD MEMORIAL	TX	LP	0	100	0	100	0	100
E11	ANDREWS COUNTY	TX	LPV	0	100	0	100	0	100
E19	GRUVER MUNICIPAL	TX	LP	0	100	0	100	1	99.999
E30	BRUCE FIELD	TX	LPV	0	100	0	100	0	100
E38	ALPINE-CASPARIS MUNICIPAL	TX	LPV	0	100	0	100	0	100
EBG	SOUTH TEXAS INTL AT EDINBURG	TX	LPV	0	100	0	100	1	99.999
EDC	AUSTIN EXECUTIVE	TX	LPV200	0	100	0	100	0	100
EFD	ELLINGTON	TX	LPV200	0	100	0	100	1	99.997
ELA	EAGLE LAKE	TX	LP	0	100	0	100	1	99.999
ELP	EL PASO INTL	TX	LP	0	100	0	100	0	100
ERV	KERRVILLE MUNICIPAL/LOUIS SCHREINER	TX	LPV	0	100	0	100	0	100
ETN	EASTLAND MUNICIPAL	TX	LP	0	100	0	100	1	99.999
F00	JONES FIELD	TX	LPV	0	100	0	100	1	99.998
F05	WILBARGER COUNTY	TX	LPV	0	100	0	100	0	100
F49	SLATON MUNICIPAL	TX	LPV	0	100	0	100	0	100
F98	YOAKUM COUNTY	TX	LPV	0	100	0	100	0	100
FST	FORT STOCKTON-PECOS COUNTY	TX	LPV	0	100	0	100	0	100
FTW	FORT WORTH MEACHAM INTL	TX	LPV200	0	100	0	100	1	99.996
FWS	FORT WORTH SPINKS	TX	LPV200	0	100	0	100	1	99.997
GDJ	GRANBURY RGNL	TX	LPV	0	100	0	100	1	99.998
GGG	EAST TEXAS RGNL	TX	LPV	0	100	0	100	1	99.996
GKY	ARLINGTON MUNICIPAL	TX	LPV200	0	100	0	100	1	99.996
GLE	GAINESVILLE MUNICIPAL	TX	LPV	0	100	0	100	1	99.999
GLS	SCHOLES INTL AT GALVESTON	TX	LPV200	0	100	0	100	1	99.997
GNC	GAINES COUNTY	TX	LPV	0	100	0	100	0	100
GRK	ROBERT GRAY AAF	TX	LPV200	0	100	0	100	0	100
GTU	GEORGETOWN MUNICIPAL	TX	LPV	0	100	0	100	0	100
GVT	MAJORS	TX	LPV200	0	100	0	100	1	99.996
GYI	NORTH TEXAS RGNL/PERRIN FIELD	TX	LPV200	0	100	0	100	1	99.999

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
HBV	JIM HOGG COUNTY	TX	LPV	0	100	0	100	0	100
HDO	SOUTH TEXAS RGNL AT HONDO	TX	LPV	0	100	0	100	0	100
HHF	HEMPHILL COUNTY	TX	LPV	0	100	0	100	0	100
HOU	WILLIAM P HOBBY	TX	LPV200	0	100	0	100	1	99.997
HQZ	MESQUITE METRO	TX	LPV	0	100	0	100	1	99.995
HRL	VALLEY INTL	TX	LPV200	0	100	0	100	1	99.998
HRX	HEREFORD MUNICIPAL	TX	LPV200	0	100	0	100	0	100
HYI	SAN MARCOS RGNL	TX	LPV200	0	100	0	100	0	100
IAH	GEORGE BUSH INTERCONTINENTAL/H	TX	LPV200	0	100	0	100	1	99.997
IKG	KLEBERG COUNTY	TX	LPV	0	100	0	100	0	100
ILE	SKYLARK FIELD	TX	LPV200	0	100	0	100	1	99.999
INJ	HILLSBORO MUNICIPAL	TX	LPV	0	100	0	100	1	99.997
INK	WINKLER COUNTY	TX	LPV200	0	100	0	100	0	100
IWS	WEST HOUSTON	TX	LP	0	100	0	100	1	99.998
JAS	JASPER COUNTY-BELL FIELD	TX	LPV	0	100	0	100	1	99.995
JSO	CHEROKEE COUNTY	TX	LPV	0	100	0	100	1	99.995
JWY	MID-WAY RGNL	TX	LPV200	0	100	0	100	1	99.996
JXI	FOX STEPHENS FIELD - GILMER MU	TX	LP	0	100	0	100	1	99.996
LBB	LUBBOCK PRESTON SMITH INTL	TX	LPV200	0	100	0	100	0	100
LBX	TEXAS GULF COAST RGNL	TX	LPV	0	100	0	100	1	99.998
LFK	ANGELINA COUNTY	TX	LPV	0	100	0	100	1	99.995
LHB	HEARNE MUNICIPAL	TX	LPV200	0	100	0	100	1	99.998
LIU	LITTLEFIELD TAYLOR BROWN MUNICIPAL	TX	LPV	0	100	0	100	0	100
LLN	LEVELLAND MUNICIPAL	TX	LPV	0	100	0	100	0	100
LNC	LANCASTER RGNL	TX	LPV200	0	100	0	100	1	99.996
LRD	LAREDO INTL	TX	LPV200	0	100	0	100	0	100
LUD	DECATUR MUNICIPAL	TX	LPV	0	100	0	100	1	99.996
LUV	LAMESA MUNICIPAL	TX	LPV200	0	100	0	100	0	100
LVJ	PEARLAND RGNL	TX	LPV	0	100	0	100	1	99.997
LXY	MEXIA-LIMESTONE CO	TX	LP	0	100	0	100	1	99.997
MAF	MIDLAND INTL AIR AND SPACE POR	TX	LPV200	0	100	0	100	0	100
MDD	MIDLAND AIRPARK	TX	LPV	0	100	0	100	0	100
MFE	MC ALLEN MILLER INTL	TX	LPV200	0	100	0	100	1	99.998
MKN	COMANCHE COUNTY-CITY	TX	LPV	0	100	0	100	0	100
MNZ	HAMILTON MUNICIPAL	TX	LPV	0	100	0	100	1	99.999
MWL	MINERAL WELLS	TX	LPV200	0	100	0	100	1	99.998
OCH	NACOGDOCHES A L MANGHAM JR RGN	TX	LPV200	0	100	0	100	1	99.995

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
ODO	ODESSA-SCHLEMEYER FIELD	TX	LPV200	0	100	0	100	0	100
ONY	OLNEY MUNICIPAL	TX	LPV	0	100	0	100	1	99.998
ORG	ORANGE COUNTY	TX	LPV	0	100	0	100	1	99.995
PEQ	PECOS MUNICIPAL	TX	LPV200	0	100	0	100	0	100
PIL	PORT ISABEL-CAMERON COUNTY	TX	LPV	0	100	0	100	1	99.998
PKV	CALHOUN COUNTY	TX	LPV	0	100	0	100	0	100
PPA	PERRY LEFORS FIELD	TX	LPV	0	100	0	100	0	100
PRX	COX FIELD	TX	LPV	0	100	0	100	1	99.998
PSX	PALACIOS MUNICIPAL	TX	LPV	0	100	0	100	0	100
PVW	HALE COUNTY	TX	LPV	0	100	0	100	0	100
PWG	MC GREGOR EXECUTIVE	TX	LPV	0	100	0	100	1	99.998
PYX	PERRYTON OCHILTREE COUNTY	TX	LPV	0	100	0	100	0	100
RAS	MUSTANG BEACH	TX	LPV	0	100	0	100	0	100
RBD	DALLAS EXECUTIVE	TX	LPV200	0	100	0	100	1	99.996
RBO	NUECES COUNTY	TX	LPV	0	100	0	100	0	100
RKP	ARANSAS CO	TX	LPV	0	100	0	100	0	100
RYW	LAGO VISTA TX - RUSTY ALLEN	TX	LPV	0	100	0	100	0	100
SAT	SAN ANTONIO INTL	TX	LPV200	0	100	0	100	0	100
SGR	SUGAR LAND RGNL	TX	LPV200	0	100	0	100	1	99.998
SJT	SAN ANGELO RGNL/MATHIS FIELD	TX	LPV	0	100	0	100	0	100
SLR	SULPHUR SPRINGS MUNICIPAL	TX	LPV	0	100	0	100	1	99.996
SNK	WINSTON FIELD	TX	LPV200	0	100	0	100	0	100
SWI	SHERMAN MUNICIPAL	TX	LP	0	100	0	100	1	99.997
SWW	AVENGER FIELD	TX	LPV	0	100	0	100	0	100
T23	ALBANY MUNICIPAL	TX	LPV	0	100	0	100	0	100
T41	LA PORTE MUNICIPAL	TX	LPV	0	100	0	100	1	99.997
T74	TAYLOR MUNICIPAL	TX	LPV	0	100	0	100	0	100
T78	LIBERTY MUNICIPAL	TX	LP	0	100	0	100	1	99.996
T82	GILLESPIE COUNTY	TX	LPV	0	100	0	100	0	100
TDW	TRADEWIND	TX	LPV	0	100	0	100	0	100
TFP	MCCAMPBELL-PORTER	TX	LPV	0	100	0	100	0	100
TKI	MCKINNEY NATIONAL	TX	LPV200	0	100	0	100	1	99.996
TME	HOUSTON EXECUTIVE	TX	LPV	0	100	0	100	1	99.998
TPL	DRAUGHON-MILLER CENTRAL TEXAS	TX	LPV200	0	100	0	100	1	99.999
TRL	TERRELL MUNICIPAL	TX	LPV	0	100	0	100	1	99.995
TX2	CHASE FIELD INDUSTRIAL	TX	LPV	0	100	0	100	0	100
TXW	MID VALLEY	TX	LPV	0	100	0	100	1	99.998

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
TYR	TYLER POUNDS RGNL	TX	LPV200	0	100	0	100	1	99.995
UTS	HUNTSVILLE MUNICIPAL	TX	LPV	0	100	0	100	1	99.996
VCT	VICTORIA RGNL	TX	LPV200	0	100	0	100	0	100
XBP	BRIDGEPORT MUNICIPAL	TX	LPV	0	100	0	100	1	99.997
41U	MANTI-EPHRAIM	UT	LPV	0	100	0	100	0	100
74V	ROOSEVELT MUNICIPAL	UT	LPV	0	100	0	100	0	100
BCE	BRYCE CANYON	UT	LPV	0	100	0	100	0	100
BDG	BLANDING MUNICIPAL	UT	LPV	0	100	0	100	0	100
BMC	BRIGHAM CITY RGNL	UT	LP	0	100	0	100	0	100
CDC	CEDAR CITY RGNL	UT	LPV	0	100	0	100	0	100
CNY	CANYONLANDS FIELD	UT	LP	0	100	0	100	0	100
DTA	DELTA MUNICIPAL	UT	LP	0	100	0	100	0	100
ENV	WENDOVER	UT	LPV	0	100	0	100	0	100
FOM	FILLMORE MUNICIPAL	UT	LPV	0	100	0	100	0	100
LGU	LOGAN-CACHE	UT	LPV	0	100	0	100	0	100
OGD	OGDEN-HINCKLEY	UT	LPV	0	100	0	100	0	100
PUC	CARBON COUNTY RGNL/BUCK DAVIS	UT	LP	0	100	0	100	0	100
PVU	PROVO MUNICIPAL	UT	LPV200	0	100	0	100	0	100
RIF	RICHFIELD MUNICIPAL	UT	LP	0	100	0	100	0	100
SGU	ST GEORGE RGNL	UT	LPV	0	100	0	100	0	100
SLC	SALT LAKE CITY INTL	UT	LPV200	0	100	0	100	0	100
SPK	SPANISH FORK ARPT SPRINGVILLE-	UT	LP	0	100	0	100	0	100
TVY	BOLINDER FIELD-TOOELE VALLEY	UT	LPV200	0	100	0	100	0	100
U14	NEPHI MUNICIPAL	UT	LPV	0	100	0	100	0	100
U42	SOUTH VALLEY RGNL	UT	LPV	0	100	0	100	0	100
U55	PANGUITCH MUNICIPAL	UT	LPV200	0	100	0	100	0	100
VEL	VERNAL RGNL	UT	LPV	0	100	0	100	0	100
0V4	BROOKNEAL/CAMPBELL COUNTY	VA	LPV	0	100	0	100	0	100
0VG	LEE COUNTY	VA	LPV	0	100	0	100	0	100
AVC	MECKLENBURG-BRUNSWICK RGNL	VA	LPV	0	100	0	100	0	100
BCB	VIRGINIA TECH/MONTGOMERY EXECU	VA	LPV	0	100	0	100	0	100
BKT	ALLEN C PERKINSON BLACKSTONE A	VA	LPV	0	100	0	100	0	100
CHO	CHARLOTTESVILLE-ALBEMARLE	VA	LPV200	0	100	0	100	0	100
CJR	CULPEPER RGNL	VA	LPV	0	100	0	100	0	100
CPK	CHESAPEAKE RGNL	VA	LPV200	0	100	0	100	0	100
DAN	DANVILLE RGNL	VA	LPV200	0	100	0	100	0	100
EMV	EMPORIA-GREENSVILLE RGNL	VA	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
FCI	RICHMOND EXECUTIVE-CHESTERFIEL	VA	LPV	0	100	0	100	0	100
FKN	FRANKLIN RGNL	VA	LPV	0	100	0	100	0	100
FVX	FARMVILLE RGNL	VA	LPV	0	100	0	100	0	100
FYJ	MIDDLE PENINSULA RGNL	VA	LPV	0	100	0	100	0	100
HLX	TWIN COUNTY	VA	LPV	0	100	0	100	0	100
HSP	INGALLS FIELD	VA	LPV	0	100	0	100	0	100
HWY	WARRENTON-FAUQUIER	VA	LPV200	0	100	0	100	0	100
JFZ	TAZEWELL COUNTY	VA	LPV	0	100	0	100	0	100
JYO	LEESBURG EXECUTIVE	VA	LPV	0	100	0	100	0	100
LKU	LOUISA COUNTY/FREEMAN FIELD	VA	LPV	0	100	0	100	0	100
LNP	LONESOME PINE	VA	LPV	0	100	0	100	0	100
LUA	LURAY CAVERNS	VA	LP	0	100	0	100	0	100
LYH	LYNCHBURG RGNL/PRESTON GLENN F	VA	LPV	0	100	0	100	0	100
MFV	ACCOMACK COUNTY	VA	LPV	0	100	0	100	0	100
MKJ	MOUNTAIN EMPIRE	VA	LPV	0	100	0	100	0	100
MTV	BLUE RIDGE	VA	LPV	0	100	0	100	0	100
OPF	HANOVER COUNTY MUNICIPAL	VA	LPV	0	100	0	100	0	100
OKV	WINCHESTER RGNL	VA	LPV200	0	100	0	100	0	100
ORF	NORFOLK INTL	VA	LPV200	0	100	0	100	0	100
PHF	NEWPORT NEWS/WILLIAMSBURG INTL	VA	LPV200	0	100	0	100	0	100
PSK	NEW RIVER VALLEY	VA	LPV200	0	100	0	100	0	100
PTB	DINWIDDIE COUNTY	VA	LPV	0	100	0	100	0	100
PVG	HAMPTON ROADS EXECUTIVE	VA	LPV200	0	100	0	100	0	100
RIC	RICHMOND INTL	VA	LPV200	0	100	0	100	0	100
RMN	STAFFORD RGNL	VA	LPV	0	100	0	100	0	100
ROA	ROANOKE-BLACKSBURG RGNL/WOODRU	VA	LPV	0	100	0	100	0	100
SFQ	SUFFOLK EXECUTIVE	VA	LPV	0	100	0	100	0	100
SHD	SHENANDOAH VALLEY RGNL	VA	LPV200	0	100	0	100	0	100
VJI	VIRGINIA HIGHLANDS	VA	LPV	0	100	0	100	0	100
W78	WILLIAM M TUCK	VA	LPV	0	100	0	100	0	100
W96	NEW KENT COUNTY	VA	LP	0	100	0	100	0	100
WAL	WALLOPS FLIGHT FACILITY	VA	LPV	0	100	0	100	0	100
XSA	TAPPAHANNOCK-ESSEX COUNTY	VA	LPV	0	100	0	100	0	100
BTB	BURLINGTON INTL	VT	LPV200	0	100	0	100	0	100
EFK	NORTHEAST KINGDOM INTL	VT	LP	0	100	0	100	0	100
FSO	FRANKLIN COUNTY STATE	VT	LPV	0	100	0	100	0	100
MPV	EDWARD F KNAPP STATE	VT	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
MVL	MORRISVILLE-STOWE STATE	VT	LPV	0	100	0	100	0	100
RUT	RUTLAND - SOUTHERN VERMONT RGN	VT	LPV	0	100	0	100	0	100
ALW	WALLA WALLA RGNL	WA	LPV200	0	100	0	100	0	100
AWO	ARLINGTON MUNICIPAL	WA	LPV200	0	100	0	100	0	100
BLI	BELLINGHAM INTL	WA	LPV200	0	100	0	100	0	100
BVS	SKAGIT RGNL	WA	LPV	0	100	0	100	0	100
CLM	WILLIAM R FAIRCHILD INTL	WA	LPV	0	100	0	100	0	100
CLS	CHEHALIS-CENTRALIA	WA	LPV	0	100	0	100	0	100
DEW	DEER PARK	WA	LPV	0	100	0	100	0	100
EPH	EPHRATA MUNICIPAL	WA	LPV	0	100	0	100	0	100
FHR	FRIDAY HARBOR	WA	LPV	0	100	0	100	0	100
GEG	SPOKANE INTL	WA	LPV200	0	100	0	100	0	100
HQM	BOWERMAN	WA	LPV200	0	100	0	100	0	100
MWH	GRANT CO INTL	WA	LPV200	0	100	0	100	0	100
OLM	OLYMPIA RGNL	WA	LPV200	0	100	0	100	0	100
ORS	ORCAS ISLAND	WA	LP	0	100	0	100	0	100
PAE	SNOHOMISH COUNTY (PAINE FLD)	WA	LPV200	0	100	0	100	0	100
PLU	PIERCE COUNTY - THUN FIELD	WA	LPV	0	100	0	100	0	100
PSC	TRI-CITIES	WA	LPV200	0	100	0	100	0	100
PWT	BREMERTON NATIONAL	WA	LPV200	0	100	0	100	0	100
RLD	RICHLAND	WA	LPV	0	100	0	100	0	100
RNT	RENTON MUNICIPAL	WA	LPV	0	100	0	100	0	100
SEA	SEATTLE-TACOMA INTL	WA	LPV200	0	100	0	100	0	100
SFF	FELTS FIELD	WA	LPV	0	100	0	100	0	100
SHN	SANDERSON FIELD	WA	LPV	0	100	0	100	0	100
TDO	ED CARLSON MEMORIAL FIELD - SO	WA	LPV	0	100	0	100	0	100
TIW	TACOMA NARROWS	WA	LPV	0	100	0	100	0	100
YKM	YAKIMA AIR TERMINAL/MCALLISTER	WA	LPV200	0	100	0	100	0	100
3T3	BOYCEVILLE MUNICIPAL	WI	LPV	0	100	0	100	0	100
57C	EAST TROY MUNICIPAL	WI	LPV	0	100	0	100	0	100
61C	FORT ATKINSON MUNICIPAL	WI	LP	0	100	0	100	0	100
82C	MAUSTON-NEW LISBON UNION	WI	LP	0	100	0	100	0	100
8D1	NEW HOLSTEIN MUNICIPAL	WI	LPV	0	100	0	100	0	100
AHH	AMERY MUNICIPAL	WI	LP	0	100	0	100	0	100
AIG	LANGLADE COUNTY	WI	LPV	0	100	0	100	0	100
ARV	LAKELAND/NOBLE F LEE MEMORIAL	WI	LPV	0	100	0	100	0	100
ASX	JOHN F KENNEDY MEMORIAL	WI	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
ATW	APPLETON INTL	WI	LPV200	0	100	0	100	0	100
AUW	WAUSAU DOWNTOWN	WI	LPV200	0	100	0	100	0	100
BCK	BLACK RIVER FALLS AREA	WI	LPV	0	100	0	100	0	100
BUU	BURLINGTON MUNICIPAL	WI	LP	0	100	0	100	0	100
C29	MIDDLETON MUNICIPAL - MOREY FIELD	WI	LPV	0	100	0	100	0	100
C35	REEDSBURG MUNICIPAL	WI	LP	0	100	0	100	0	100
C47	PORTAGE MUNICIPAL	WI	LP	0	100	0	100	0	100
CLI	CLINTONVILLE MUNICIPAL	WI	LPV	0	100	0	100	0	100
CMY	SPARTA/FORT MC COY	WI	LPV	0	100	0	100	0	100
CWA	CENTRAL WISCONSIN	WI	LPV200	0	100	0	100	0	100
DLL	BARABOO-WISCONSIN DELLS RGNL	WI	LPV	0	100	0	100	0	100
EAU	CHIPPEWA VALLEY RGNL	WI	LPV200	0	100	0	100	0	100
EGV	EAGLE RIVER UNION	WI	LPV	0	100	0	100	0	100
ENW	KENOSHA RGNL	WI	LPV200	0	100	0	100	0	100
ETB	WEST BEND MUNICIPAL	WI	LPV	0	100	0	100	0	100
EZS	SHAWANO MUNICIPAL	WI	LPV	0	100	0	100	0	100
FLD	FOND DU LAC COUNTY	WI	LPV	0	100	0	100	0	100
GRB	GREEN BAY-AUSTIN STRAUBEL INTL	WI	LPV200	0	100	0	100	0	100
GTG	GRANTSBURG MUNICIPAL	WI	LP	0	100	0	100	0	100
HXF	HARTFORD MUNICIPAL	WI	LPV	0	100	0	100	0	100
HYR	SAWYER COUNTY	WI	LPV	0	100	0	100	0	100
ISW	ALEXANDER FIELD SOUTH WOOD COU	WI	LPV	0	100	0	100	0	100
JVL	SOUTHERN WISCONSIN RGNL	WI	LPV200	0	100	0	100	0	100
LNR	TRI-COUNTY RGNL	WI	LPV	0	100	0	100	0	100
LSE	LA CROSSE RGNL	WI	LPV	0	100	0	100	0	100
LUM	MENOMONIE MUNICIPAL-SCORE FIELD	WI	LPV	0	100	0	100	0	100
MDZ	TAYLOR COUNTY	WI	LPV	0	100	0	100	0	100
MFI	MARSHFIELD MUNICIPAL	WI	LPV	0	100	0	100	0	100
MKE	GENERAL MITCHELL INTL	WI	LPV200	0	100	0	100	0	100
MRJ	IOWA COUNTY	WI	LPV200	0	100	0	100	0	100
MSN	DANE COUNTY RGNL-TRUAX FIELD	WI	LPV200	0	100	0	100	0	100
MTW	MANITOWOC COUNTY	WI	LPV200	0	100	0	100	0	100
MWC	LAWRENCE J TIMMERMAN	WI	LPV	0	100	0	100	0	100
OCQ	OCONTO-J DOUGLAS BAKE MUNICIPAL	WI	LP	0	100	0	100	0	100
OEO	L O SIMENSTAD MUNICIPAL	WI	LPV200	0	100	0	100	0	100
OSH	WITTMAN RGNL	WI	LPV200	0	100	0	100	0	100
OVS	BOSCOBEL	WI	LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
PBH	PRICE COUNTY	WI	LPV	0	100	0	100	0	100
PCZ	WAUPACA MUNICIPAL	WI	LPV	0	100	0	100	0	100
PVB	PLATTEVILLE MUNICIPAL	WI	LPV	0	100	0	100	0	100
RAC	BATTEN INTL	WI	LPV	0	100	0	100	0	100
RCX	RUSK COUNTY	WI	LPV	0	100	0	100	0	100
RHI	RHINELANDER-ONEIDA COUNTY	WI	LPV200	0	100	0	100	0	100
RNH	NEW RICHMOND RGNL	WI	LPV	0	100	0	100	0	100
RPD	RICE LAKE RGNL - CARL'S FIELD	WI	LPV200	0	100	0	100	0	100
RRL	MERRILL MUNICIPAL	WI	LPV	0	100	0	100	0	100
SBM	SHEBOYGAN COUNTY MEMORIAL	WI	LPV200	0	100	0	100	0	100
STE	STEVENS POINT MUNICIPAL	WI	LPV	0	100	0	100	0	100
SUE	DOOR COUNTY CHERRYLAND	WI	LPV	0	100	0	100	0	100
SUW	RICHARD I BONG	WI	LP	0	100	0	100	0	100
TKV	TOMAHAWK RGNL	WI	LP	0	100	0	100	0	100
UBE	CUMBERLAND MUNICIPAL	WI	LPV	0	100	0	100	0	100
UES	WAUKESHA COUNTY	WI	LPV200	0	100	0	100	0	100
UNU	DODGE COUNTY	WI	LPV	0	100	0	100	0	100
VIQ	NEILLSVILLE MUNICIPAL	WI	LPV	0	100	0	100	0	100
Y50	WAUTOMA MUNICIPAL	WI	LP	0	100	0	100	0	100
Y55	CRANDON/STEVE CONWAY MUNICIPAL	WI	LPV	0	100	0	100	0	100
Y72	BLOYER FIELD	WI	LP	0	100	0	100	0	100
3I2	MASON COUNTY	WV	LPV	0	100	0	100	0	100
6L4	LOGAN COUNTY	WV	LPV	0	100	0	100	0	100
BKW	RALEIGH COUNTY MEMORIAL	WV	LPV200	0	100	0	100	0	100
BLF	MERCER COUNTY	WV	LPV	0	100	0	100	0	100
CKB	NORTH CENTRAL WEST VIRGINIA	WV	LPV200	0	100	0	100	0	100
CRW	YEAGER	WV	LPV200	0	100	0	100	0	100
HLG	WHEELING OHIO CO	WV	LPV200	0	100	0	100	0	100
HTS	TRI-STATE/MILTON J FERGUSON FI	WV	LPV200	0	100	0	100	0	100
I18	JACKSON COUNTY	WV	LPV200	0	100	0	100	0	100
LWB	GREENBRIER VALLEY	WV	LPV	0	100	0	100	0	100
MGW	MORGANTOWN MUNICIPAL-WALTER L BILL	WV	LPV200	0	100	0	100	0	100
MRB	EASTERN WV RGNL/SHEPHERD FLD	WV	LPV	0	100	0	100	0	100
PKB	MID-OHIO VALLEY RGNL	WV	LPV	0	100	0	100	0	100
USW	BOGGS FIELD	WV	LPV	0	100	0	100	0	100
W22	UPSHUR COUNTY RGNL	WV	LPV	0	100	0	100	0	100
W35	POTOMAC AIRPARK	WV	LP	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
W99	GRANT COUNTY	WV	LPV	0	100	0	100	0	100
BYG	JOHNSON COUNTY	WY	LPV	0	100	0	100	0	100
COD	YELLOWSTONE RGNL	WY	LPV	0	100	0	100	0	100
CPR	CASPER/NATRONA COUNTY INTL	WY	LPV	0	100	0	100	0	100
CYS	CHEYENNE RGNL/JERRY OLSON FIEL	WY	LPV200	0	100	0	100	0	100
DGW	CONVERSE COUNTY	WY	LPV200	0	100	0	100	0	100
DWX	DIXON	WY	LP	0	100	0	100	0	100
ECS	MONDELL FIELD	WY	LPV	0	100	0	100	0	100
EMM	KEMMERER MUNICIPAL	WY	LPV	0	100	0	100	0	100
EVW	EVANSTON-UINTA COUNTY BURNS FI	WY	LPV	0	100	0	100	0	100
FBR	FORT BRIDGER	WY	LP	0	100	0	100	0	100
GCC	GILLETTE-CAMPBELL COUNTY	WY	LPV	0	100	0	100	0	100
GEY	SOUTH BIG HORN COUNTY	WY	LPV	0	100	0	100	0	100
GUR	CAMP GUERNSEY	WY	LP	0	100	0	100	0	100
HSG	HOT SPRINGS COUNTY	WY	LPV	0	100	0	100	0	100
JAC	JACKSON HOLE	WY	LPV200	0	100	0	100	0	100
LAR	LARAMIE RGNL	WY	LPV	0	100	0	100	0	100
PNA	RALPH WENZ FIELD	WY	LPV	0	100	0	100	0	100
POY	POWELL MUNICIPAL	WY	LPV	0	100	0	100	0	100
RIW	RIVERTON RGNL	WY	LPV200	0	100	0	100	0	100
RKS	SOUTHWEST WYOMING RGNL	WY	LPV200	0	100	0	100	0	100
RWL	RAWLINS MUNICIPAL/HARVEY FIELD	WY	LPV	0	100	0	100	0	100
SAA	SHIVELY FIELD	WY	LPV	0	100	0	100	0	100
SHR	SHERIDAN COUNTY	WY	LPV	0	100	0	100	0	100
U68	NORTH BIG HORN COUNTY	WY	LPV	0	100	0	100	0	100
W43	HULETT MUNICIPAL	WY	LPV	0	100	0	100	0	100
WRL	WORLAND MUNICIPAL	WY	LPV	0	100	0	100	0	100
CAJ4	ANAHIM LAKE		LPV	0	100	0	100	0	100
CAL4	ALBIAN		LPV	0	100	0	100	0	100
CAU4	VANDERHOOF		LPV	0	100	0	100	0	100
CBN9	TSAY KEH		LP	0	100	0	100	1	99.999
CCN2	GRAND MANAN		LPV	0	100	0	100	0	100
CDJ4	CLEARWATER		LPV	0	100	0	100	0	100
CDK2	DIIAVIK		LPV	0	100	0	100	2	99.992
CEB5	FAIRVIEW		LPV	0	100	0	100	0	100
CEC4	JASPER-HINTON		LP	0	100	0	100	0	100
CEL8	ELEONORE		LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
CEQ3	CAMROSE		LPV	0	100	0	100	0	100
CET2	CONKLIN (LEISMER)		LPV	0	100	0	100	0	100
CEV3	VEGREVILLE		LPV	0	100	0	100	0	100
CEW3	ST. PAUL		LPV	0	100	0	100	0	100
CEZ3	COOKING LAKE		LPV	0	100	0	100	0	100
CFB6	JOSEPHBURG		LPV	0	100	0	100	0	100
CFM4	DONNELLY		LPV	0	100	0	100	0	100
CFX5	RENARD		LPV	0	100	0	100	0	100
CGK2	GAHCHO KUE		LPV	0	100	0	100	1	99.990
CJA3	MORDEN REGIONAL		LPV	0	100	0	100	0	100
CJC5	SHAUNAVON		LPV	0	100	0	100	0	100
CJE3	WEYBURN		LPV	0	100	0	100	0	100
CJH3	MAIDSTONE		LPV	0	100	0	100	0	100
CJP9	CHARLOT RIVER		LP	0	100	0	100	1	99.995
CJQ4	MAPLE CREEK		LPV	0	100	0	100	0	100
CJW7	CIGAR LAKE		LPV	0	100	0	100	1	99.999
CJY3	TISDALE		LPV	0	100	0	100	0	100
CJZ3	MELFORT (MILLER FIELD)		LPV	0	100	0	100	0	100
CKQ8	MCARTHUR RIVER		LPV	0	100	0	100	1	99.998
CKZ7	WINKLER		LPV	0	100	0	100	0	100
CMB2	MEADOWBANK		LPV	0	100	0	100	0	100
CNV8	EDENVALE		LPV	0	100	0	100	0	100
CNY3	COLLINGWOOD		LPV	0	100	0	100	0	100
CRL4	KIRBY LAKE		LP	0	100	0	100	0	100
CSC3	DRUMMONDVILLE		LPV	0	100	0	100	0	100
CSD4	MONT-LAURIER		LPV	0	100	0	100	0	100
CSE5	MONTMAGNY		LPV	0	100	0	100	0	100
CSH4	LEBEL-SUR-QUEVILLON		LPV	0	100	0	100	0	100
CSK6	SNAP LAKE		LPV	0	100	0	100	2	99.992
CSR3	VICTORIAVILLE		LPV	0	100	0	100	0	100
CTP9	DONALDSON		LPV	0	100	0	100	0	100
CTT5	LA ROMAINE		LPV	0	100	0	100	0	100
CTU2	FONTANGES		LPV	0	100	0	100	0	100
CVB2	VOISEY'S BAY		LPV	0	100	0	100	0	100
CYAC	CAT LAKE		LPV	0	100	0	100	0	100
CYAD	LA GRANDE-3		LPV	0	100	0	100	0	100
CYAH	LA GRANDE-4		LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
CYAS	KANGIRSUK		LPV	0	100	0	100	0	100
CYBE	URANIUM CITY		LPV	0	100	0	100	1	99.995
CYBF	BONNYVILLE		LPV	0	100	0	100	0	100
CYBK	BAKER LAKE		LPV	0	100	0	100	0	100
CYBL	CAMPBELL RIVER		LPV	0	100	0	100	0	100
CYBR	BRANDON MUNICIPALCIPALITY		LPV	0	100	0	100	0	100
CYBU	NIPAWIN		LPV	0	100	0	100	0	100
CYBW	SPRINGBANK		LPV	0	100	0	100	0	100
CYBX	LOURDES-DE-BLANC-SABLON		LPV	0	100	0	100	0	100
CYCD	NANAIMO		LPV	0	100	0	100	0	100
CYCH	MIRAMICHI		LPV	0	100	0	100	0	100
CYCK	CHATHAM-KENT		LPV	0	100	0	100	0	100
CYCL	CHARLO		LPV	0	100	0	100	0	100
CYCS	CHESTERFIELD INLET		LPV	0	100	0	100	0	100
CYCZ	FAIRMONT HOT SPRINGS		LPV	0	100	0	100	0	100
CYDF	DEER LAKE		LPV200	0	100	0	100	0	100
CYDQ	DAWSON CREEK		LPV	0	100	0	100	0	100
CYEE	HURONIA		LPV	0	100	0	100	0	100
CYEG	EDMONTON INTL		LPV200	0	100	0	100	0	100
CYEK	ARVIAT		LPV	0	100	0	100	0	100
CYEN	ESTEVAN REGIONAL		LPV	0	100	0	100	0	100
CYES	EDMUNDSTON		LPV	0	100	0	100	0	100
CYEV	INUVIK (MIKE ZUBKO)		LPV	0	100	0	100	1	99.989
CYFY	MAGNY		LPV	0	100	0	100	0	100
CYFA	FORT ALBANY		LPV	0	100	0	100	0	100
CYFB	IQALUIT		LPV	6	99.910	6	99.910	27	99.831
CYFC	FREDERICTON INTL		LPV	0	100	0	100	0	100
CYFI	FIREBAG		LPV	0	100	0	100	0	100
CYFO	FLIN FLON		LPV	0	100	0	100	0	100
CYFS	FORT SIMPSON		LPV	0	100	0	100	1	99.994
CYGH	FORT GOOD HOPE		LPV	0	100	0	100	2	99.993
CYBK	KINGSTON		LPV	0	100	0	100	0	100
CYGL	LA GRANDE RIVIERE		LPV	0	100	0	100	0	100
CYGR	ILES-DE-LA-MADELEINE		LPV	0	100	0	100	0	100
CYGV	HAVRE ST-PIERRE		LPV	0	100	0	100	0	100
CYGW	KUUUJUAPIK		LPV	0	100	0	100	0	100
CYGX	GILLAM		LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
CYHA	QUAQTAQ		LPV	2	99.993	2	99.993	2	99.993
CYHD	DRYDEN REGIONAL		LPV	0	100	0	100	0	100
CYHH	NEMISCAU		LPV	0	100	0	100	0	100
CYHM	HAMILTON		LPV	0	100	0	100	0	100
CYHR	CHEVERY		LPV	0	100	0	100	0	100
CYHU	ST-HUBERT		LPV	0	100	0	100	0	100
CYHZ	STANFIELD INTL		LPV200	0	100	0	100	0	100
CYIF	ST-AUGUSTIN		LPV	0	100	0	100	0	100
CYIK	IVUJIVIK		LPV	0	100	0	100	0	100
CYIV	ISLAND LAKE		LPV	0	100	0	100	0	100
CYJT	STEPHENVILLE		LPV	0	100	0	100	0	100
CYKA	KAMLOOPS		LPV	0	100	0	100	0	100
CYKC	COLLINS BAY		LPV	0	100	0	100	1	99.999
CYKF	WATERLOO		LPV200	0	100	0	100	0	100
CYKG	KANGIJSUJUAQ (WAKEHAM BAY)		LPV	0	100	0	100	0	100
CYKJ	KEY LAKE		LPV	0	100	0	100	1	99.999
CYKM	KINCARDINE		LPV	0	100	0	100	0	100
CYKO	AKULIVIK		LPV	0	100	0	100	0	100
CYKQ	WASKAGANISH		LPV	0	100	0	100	0	100
CYLB	LAC LA BICHE		LPV	0	100	0	100	0	100
CYLL	LLOYDMINSTER		LPV	0	100	0	100	0	100
CYLS	LAKE SIMCOE		LPV	0	100	0	100	0	100
CYLU	KANGIJSUALUJJUAQ (GEORGES RIVER)		LPV	0	100	0	100	3	99.991
CYLW	KELOWNA		LPV	0	100	0	100	0	100
CYMJ	AIR VICE MARSHAL C.M. MCEWEN		LP	0	100	0	100	0	100
CYMM	FORT MCMURRAY		LPV	0	100	0	100	0	100
CYMT	CHAPAIS		LPV	0	100	0	100	0	100
CYMU	UMIUJUAQ		LPV	0	100	0	100	0	100
CYMX	MONTREAL INTL (MIRABEL)		LPV200	0	100	0	100	0	100
CYNC	WEMINDJI		LPV	0	100	0	100	0	100
CYND	GATINEAU		LPV	0	100	0	100	0	100
CYNL	POINTS NORTH LANDING		LPV	0	100	0	100	1	99.999
CYNR	HORIZON		LPV	0	100	0	100	0	100
CYOA	EKATI		LPV	0	100	0	100	2	99.989
CYOC	OLD CROW		LPV	0	100	0	100	1	99.995
CYOD	GROUP CAPTAIN R.W. MCNAIR		LP	0	100	0	100	0	100
CYOO	OSHAWA EXECUTIVE AIRPORT		LPV	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
CYOP	RAINBOW LAKE		LPV	0	100	0	100	0	100
CYOS	BILLY BISHOP REGIONAL		LPV	0	100	0	100	0	100
CYOW	MACDONALD-CARTIER INTL		LPV200	0	100	0	100	0	100
CYPA	PRINCE ALBERT (GLASS FIELD)		LPV	0	100	0	100	0	100
CYPE	PEACE RIVER		LPV	0	100	0	100	0	100
CYPK	PITT MEADOWS		LPV	0	100	0	100	0	100
CYPL	PICKLE LAKE		LPV	0	100	0	100	0	100
CYPQ	PETERBOROUGH		LPV	0	100	0	100	0	100
CYPR	PRINCE RUPERT		LPV	0	100	0	100	0	100
CYPX	PUVIRNITUQ		LPV	0	100	0	100	0	100
CYPZ	BURNS LAKE		LP	0	100	0	100	0	100
CYQB	JEAN LESAGE INTL		LPV200	0	100	0	100	0	100
CYQD	THE PAS		LPV	0	100	0	100	0	100
CYQF	RED DEER REGIONAL		LPV	0	100	0	100	0	100
CYQH	WATSON LAKE		LPV	0	100	0	100	1	99.996
CYQI	YARMOUTH		LPV	0	100	0	100	0	100
CYQL	LETHBRIDGE		LPV200	0	100	0	100	0	100
CYQM	GREATER MONCTON ROMEO LEBLANC INTL		LPV	0	100	0	100	0	100
CYQR	REGINA INTL		LPV200	0	100	0	100	0	100
CYQS	ST. THOMAS MUNICIPALCIPALITY		LPV	0	100	0	100	0	100
CYQT	THUNDER BAY		LPV200	0	100	0	100	0	100
CYQU	GRANDE PRAIRIE		LPV	0	100	0	100	0	100
CYQW	NORTH BATTLEFORD		LPV	0	100	0	100	0	100
CYQX	GANDER INTL		LPV200	0	100	0	100	0	100
CYQY	J.A. DOUGLAS MCCURDY		LPV	0	100	0	100	0	100
CYQZ	QUESNEL		LPV	0	100	0	100	0	100
CYRB	RESOLUTE BAY		LPV	111	99.430	114	99.390	603	95.498
CYRI	RIVIERE-DU-LOUP		LPV	0	100	0	100	0	100
CYRJ	ROBERVAL		LPV	0	100	0	100	0	100
CYRL	RED LAKE		LPV	0	100	0	100	0	100
CYRQ	TROIS-RIVIERES		LPV200	0	100	0	100	0	100
CYRT	RANKIN INLET		LPV	0	100	0	100	0	100
CYSA	STRATFORD MUNICIPALCIPALITY		LPV	0	100	0	100	0	100
CYSB	SUDBURY		LPV	0	100	0	100	0	100
CYSC	SHERBROOKE		LPV	0	100	0	100	0	100
CYSG	ST-GEORGES		LPV	0	100	0	100	0	100
CYSJ	SAINT JOHN		LPV200	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
CYSK	SANIKILUAQ		LPV	0	100	0	100	0	100
CYSM	FORT SMITH		LPV	0	100	0	100	1	99.995
CYSN	NIAGARA DISTRICT		LPV	0	100	0	100	0	100
CYTF	ALMA		LPV	0	100	0	100	0	100
CYTH	THOMPSON		LPV200	0	100	0	100	0	100
CYTL	BIG TROUT LAKE		LPV	0	100	0	100	0	100
CYTQ	TASIUJAQ		LPV	0	100	0	100	0	100
CYTS	TIMMINS (VICTOR M. POWER)		LPV	0	100	0	100	0	100
CYTZ	BILLY BISHOP TORONTO CITY AIRPORT		LPV	0	100	0	100	0	100
CYUL	PIERRE-ELLIOTT-TRUDEAU INTL		LPV200	0	100	0	100	0	100
CYUY	ROUYN-NORANDA		LPV200	0	100	0	100	0	100
CYVB	BONAVENTURE		LPV	0	100	0	100	0	100
CYVO	VAL-DOR		LPV200	0	100	0	100	0	100
CYVQ	NORMAN WELLS		LPV	0	100	0	100	2	99.996
CYVR	VANCOUVER INTL		LPV200	0	100	0	100	0	100
CYVV	WIARTON		LPV	0	100	0	100	0	100
CYWG	JAMES ARMSTRONG RICHARDSON INTL		LPV200	0	100	0	100	0	100
CYWK	WABUSH		LPV	0	100	0	100	0	100
CYWL	WILLIAMS LAKE		LPV	0	100	0	100	0	100
CYWM	ATHABASCA		LPV	0	100	0	100	0	100
CYWP	WEBEQUIE		LPV	0	100	0	100	0	100
CYXE	JOHN G. DIEFENBAKER INTL		LPV200	0	100	0	100	0	100
CYXH	MEDICINE HAT		LPV	0	100	0	100	0	100
CYXJ	FORT ST. JOHN		LPV	0	100	0	100	0	100
CYXL	SIOUX LOOKOUT		LPV	0	100	0	100	0	100
CYXS	PRINCE GEORGE		LPV200	0	100	0	100	0	100
CYXT	TERRACE		LPV	0	100	0	100	0	100
CYXU	LONDON		LPV200	0	100	0	100	0	100
CYXX	ABBOTSFORD		LPV	0	100	0	100	0	100
CYXY	ERIK NIELSEN INTL		LPV200	0	100	0	100	1	99.999
CYYB	NORTH BAY		LPV200	0	100	0	100	0	100
CYYC	YYC CALGARY INTL		LPV200	0	100	0	100	0	100
CYYD	SMITHERS		LPV	0	100	0	100	0	100
CYYF	PENTICTON		LPV	0	100	0	100	0	100
CYYG	CHARLOTTETOWN		LPV	0	100	0	100	0	100
CYYH	TALOYOAK		LPV	2	99.990	2	99.990	5	99.928
CYYJ	VICTORIA INTL		LPV200	0	100	0	100	0	100

Airport	Airport Name	State/ Province	Service	LP Outages	LP Avail (%)	LPV Outages	LPV Avail (%)	LPV200 Outages	LPV200 Avail (%)
CYYQ	CHURCHILL		LPV	0	100	0	100	0	100
CYYR	GOOSE BAY		LP	0	100	0	100	0	100
CYYT	ST. JOHN'S INTL		LPV	0	100	0	100	0	100
CYYW	ARMSTRONG		LPV	0	100	0	100	0	100
CYYY	MONT-JOLI		LPV	0	100	0	100	0	100
CYYZ	LESTER B. PEARSON INTL		LPV200	0	100	0	100	0	100
CYZD	DOWNSVIEW		LPV	0	100	0	100	0	100
CYZF	YELLOWKNIFE		LPV	0	100	0	100	1	99.996
CYZG	SALLUIT		LPV	0	100	0	100	0	100
CYZP	SANDSPIT		LPV	0	100	0	100	0	100
CYZR	SARNIA (CHRIS HADFIELD)		LPV	0	100	0	100	0	100
CYZT	PORT HARDY		LPV	0	100	0	100	0	100
CYZU	WHITECOURT		LPV	0	100	0	100	0	100
CYZV	SEPT-ILES		LPV200	0	100	0	100	0	100
CYZX	GREENWOOD		LP	0	100	0	100	0	100
CZBB	BOUNDARY BAY		LPV	0	100	0	100	0	100
CZBF	BATHURST		LPV	0	100	0	100	0	100
CZJG	JENPEG		LPV	0	100	0	100	0	100
CZPB	SACHIGO LAKE		LP	0	100	0	100	0	100
CZPC	PINCHER CREEK		LPV	0	100	0	100	0	100
CZVL	VILLENEUVE		LPV	0	100	0	100	0	100

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

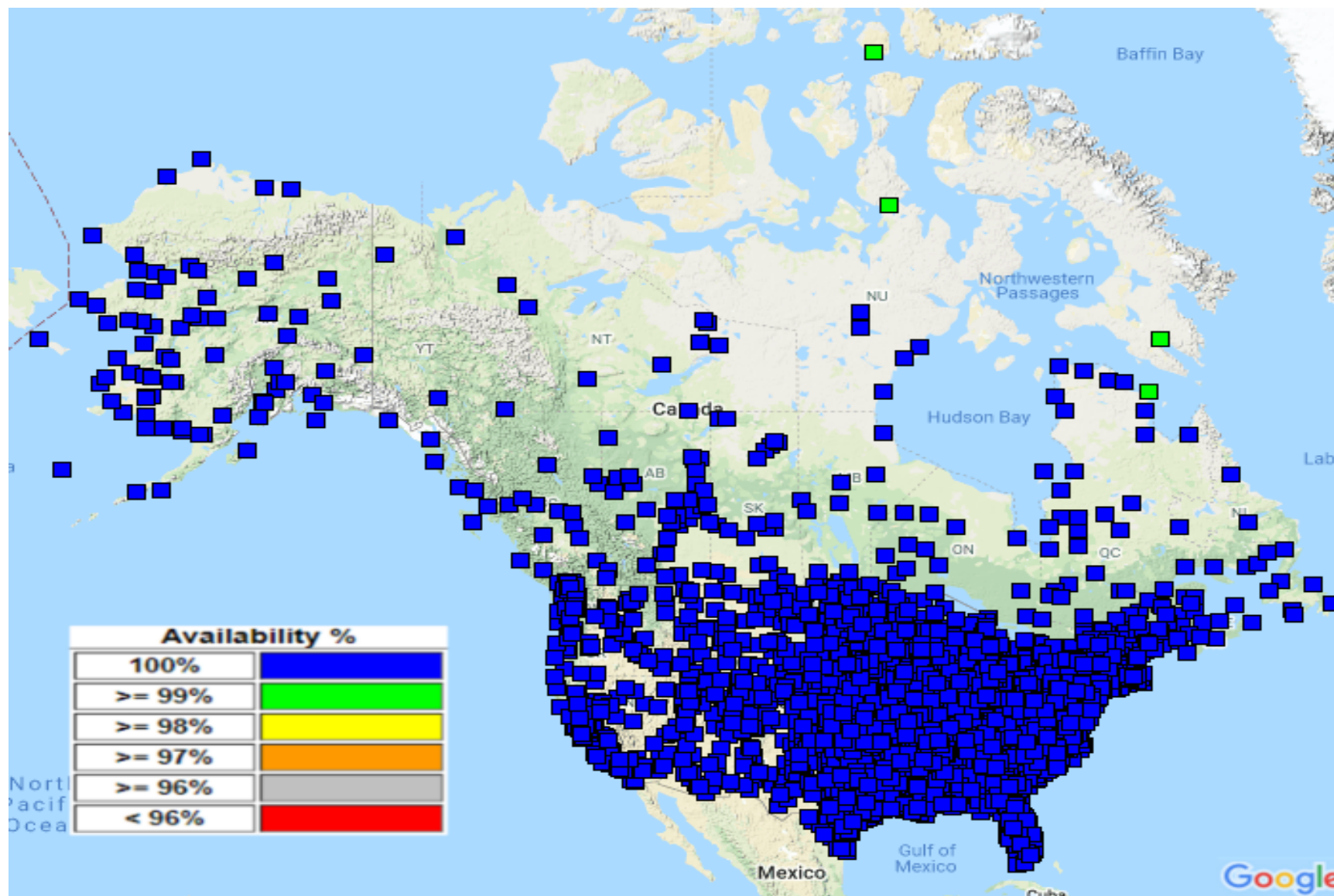


Figure 8-2 WAAS LP Outages at Airports in the US and Canada with GPS RNAV IAPs

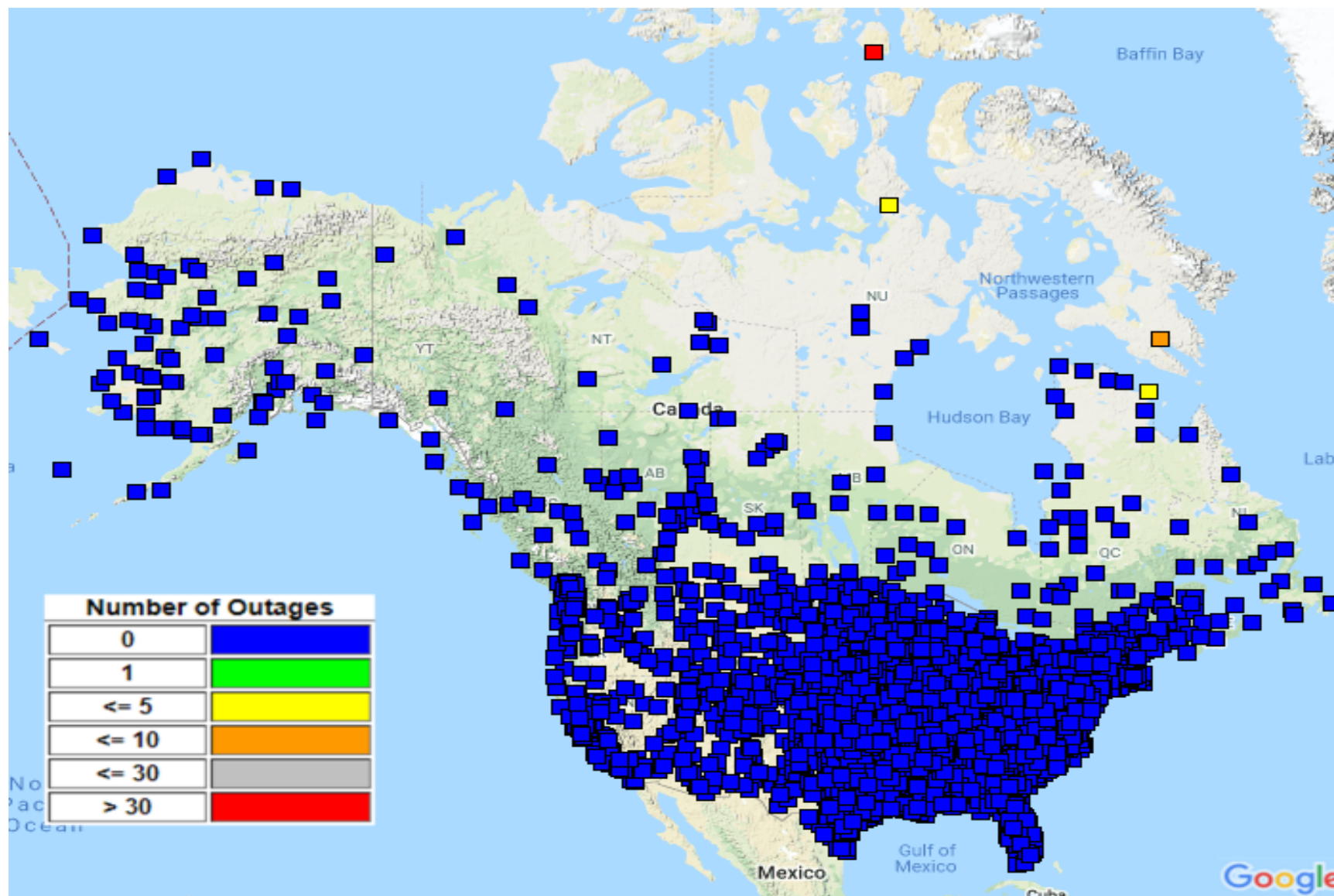


Figure 8-3 WAAS LPV Availability Airports in the US and Canada with GPS RNAV IAPs

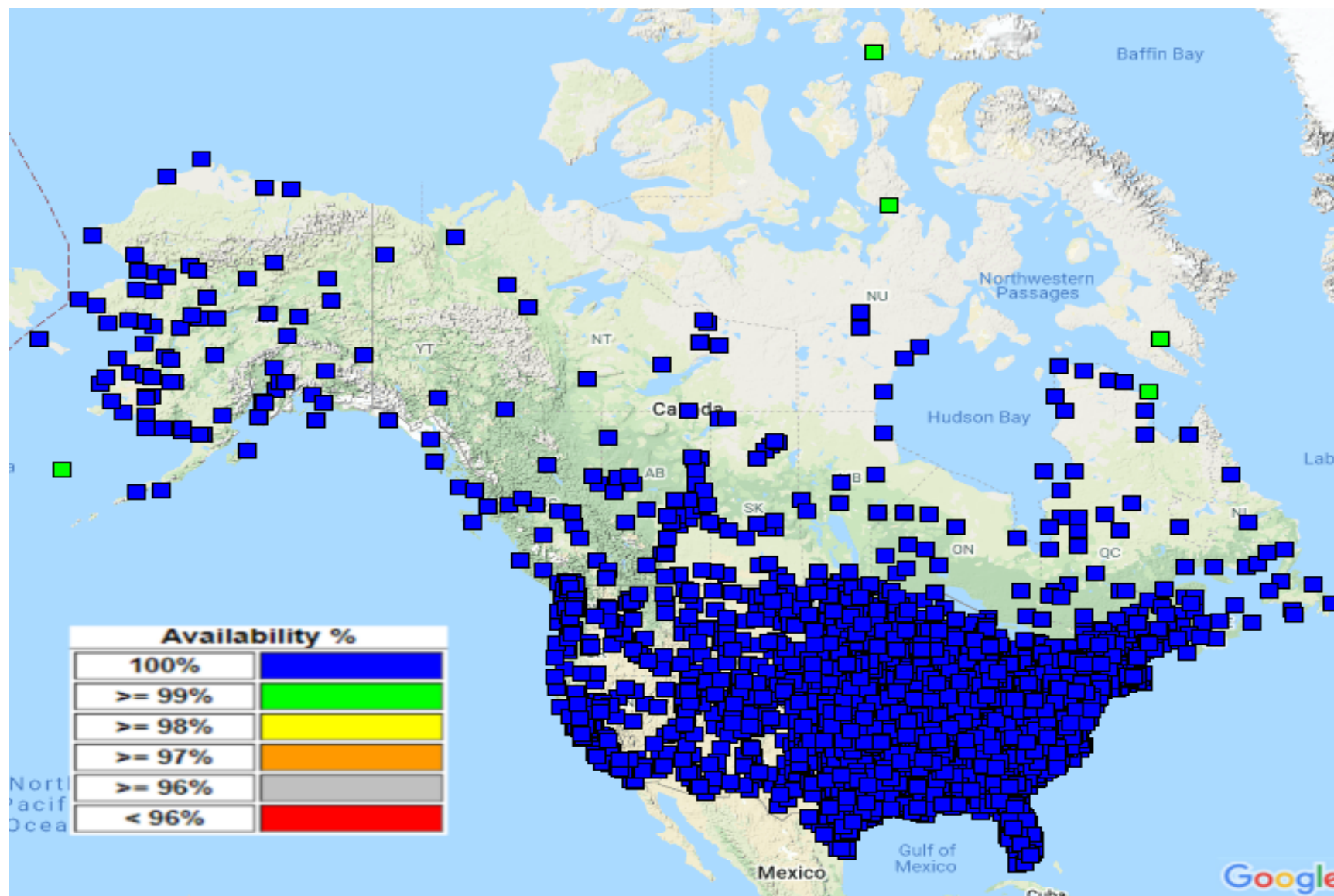


Figure 8-4 WAAS LPV Outages at Airports in the US and Canada with GPS RNAV IAPs

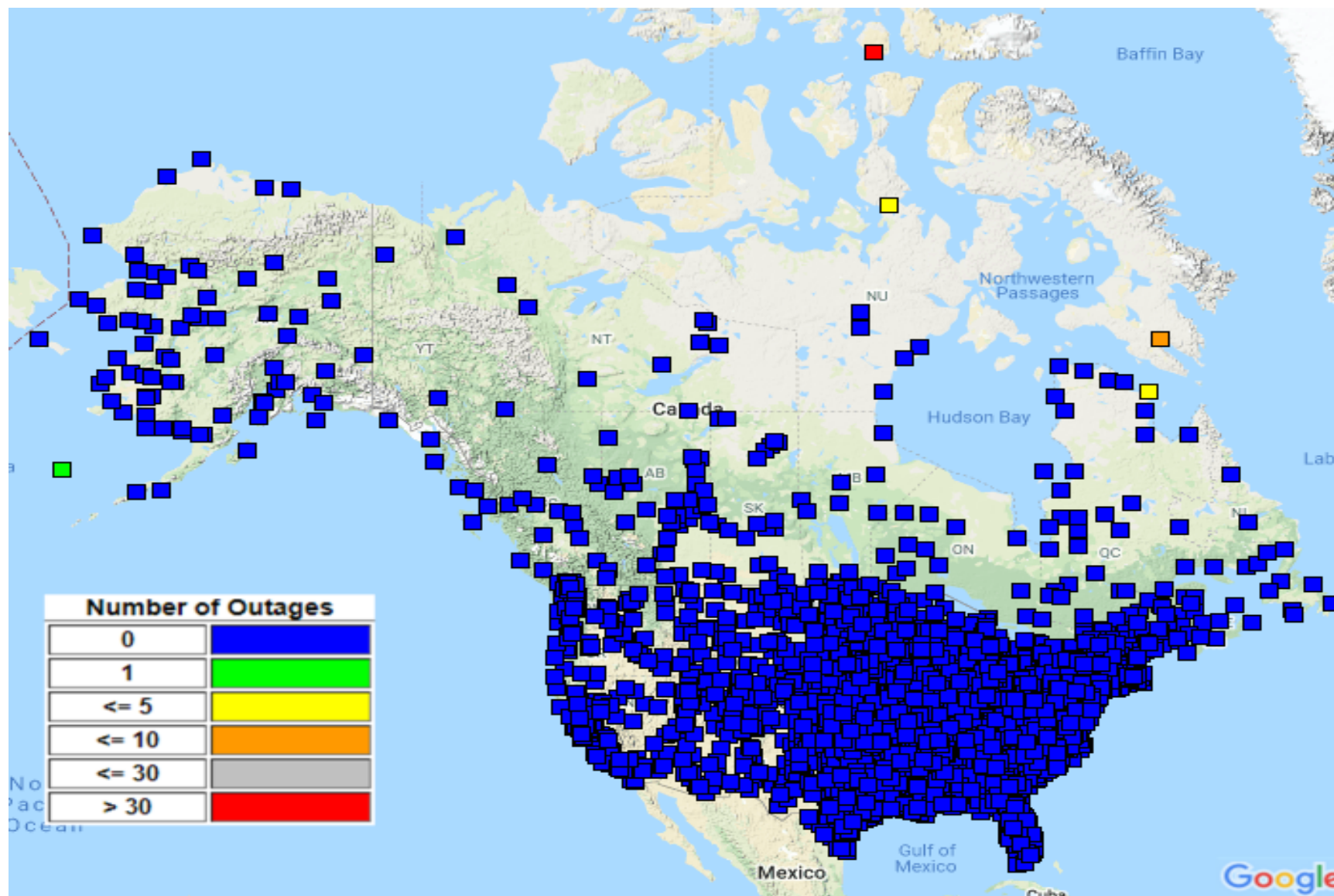


Figure 8-5 WAAS LPV200 Availability at Airports in the US and Canada with GPS RNAV IAPs

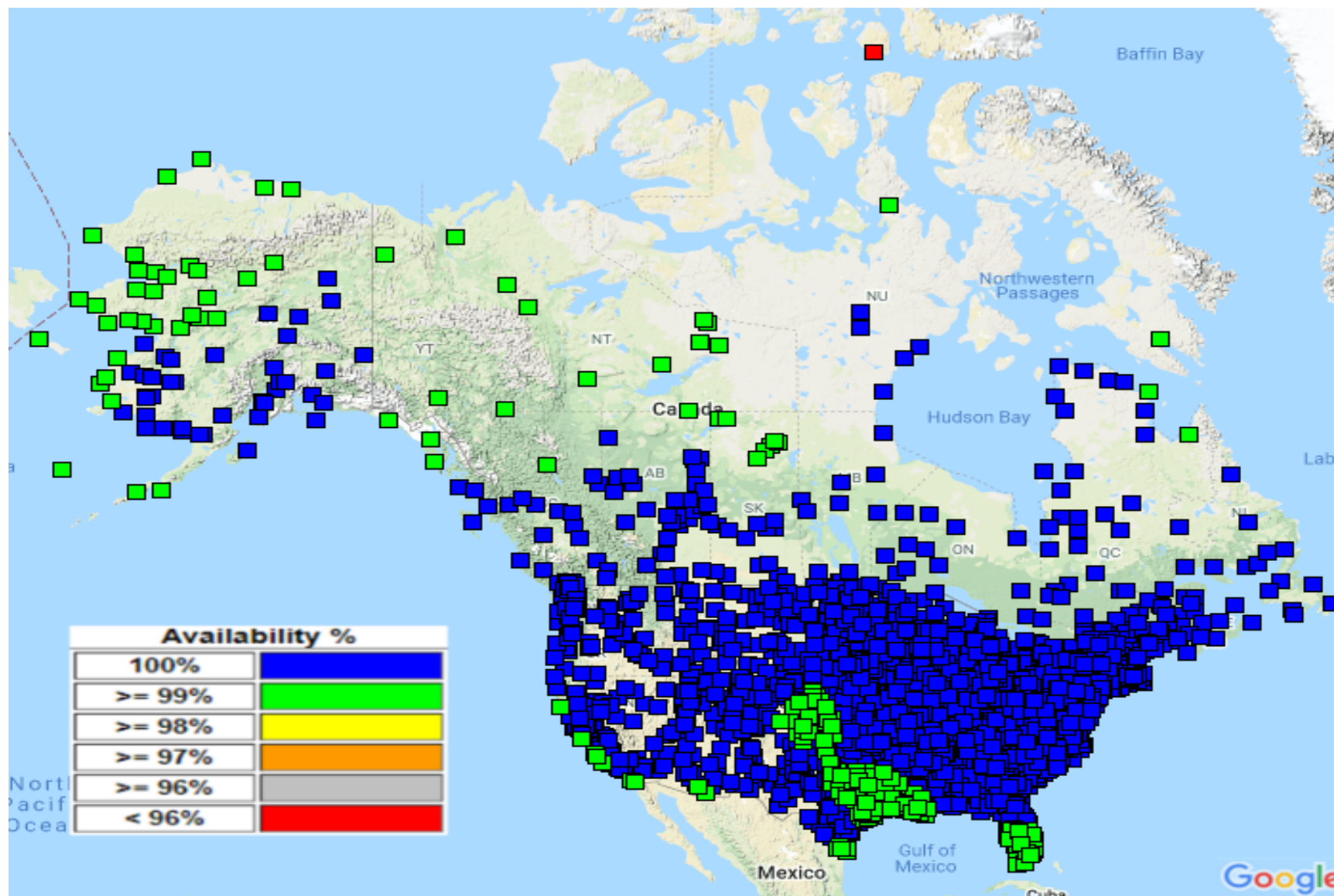
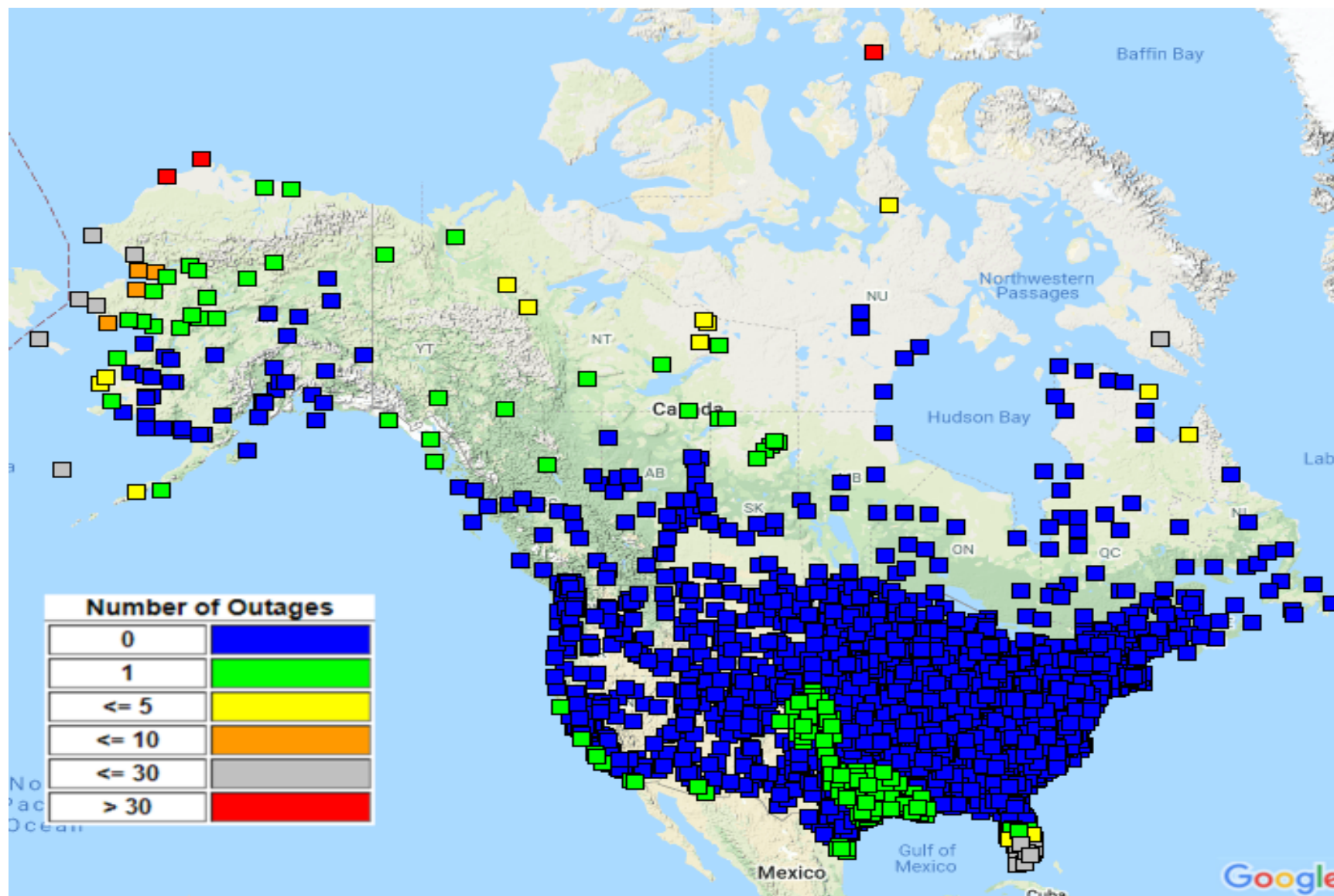


Figure 8-6 WAAS LPV200 Outages at Airports in the US and Canada with GPS RNAV IAPs



9.0 WAAS CNMP BOUNDING ANALYSIS

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

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

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

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

Figure 9-1 CNMP Bounding Statistics

WAAS Site	WRE	Jul 20	Aug 20	Sep 20	Oct 20	Nov 20	Dec 20	Jan 21	Feb 21	Mar 21	Apr 21	May 21	Jun 21
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	Jul 20	Aug 20	Sep 20	Oct 20	Nov 20	Dec 20	Jan 21	Feb 21	Mar 21	Apr 21	May 21	Jun 21
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 07/03/2021 with the exception of Tapachula which was out of service at the end of this quarter. Tapachula was surveyed on 06/23/2021. 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 National Geodetic Survey (NGS) Online Positioning User Service (OPUS) and the Canadian Spatial Reference System (CSRS) Precise Point Positioning (PPP) service. The IGS08 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 25cm or less. The CSRS surveys' RSSs of the reported ECEF sigmas were 12.1mm or less. The OPUS and CSRS surveys agreed to an average of 1.1cm with a standard deviation of 5.7mm. The maximum of difference was 2.5 cm at Honolulu Thread C (ZHN3).

The OPUS positions were compared to the positions in Release 53. The survey was completed on April 10, 2020. The OPUS surveys agree with Release 53 to better or equal to 4.2 cm for most sites. The maximum difference excluding outliers was 8.6 cm at Honolulu A (ZHN1). The antenna positions are interpolated forward in time.

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

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

WRE	X(m)	Y(m)	Z(m)	LATITUDE	LONGITUDE	H(m)
BET1	-2965385	-972577	5543893	60.78791	161.8417	52.181
BET2	-2965386	-972580	5543892	60.78789	161.8417	52.17
BET3	-2965389	-972577	5543891	60.78788	161.8417	52.181
BIL1	-1416446	-4223577	4550862	45.80371	108.5397	1112.225
BIL2	-1416450	-4223575	4550863	45.80372	108.5398	1112.24
BIL3	-1416442	-4223574	4550866	45.80376	108.5397	1112.226
BRW1	-1886759	-809059	6018494	71.28276	156.7899	15.565
BRW2	-1886757	-809056	6018496	71.2828	156.79	15.57
BRW3	-1886755	-809060	6018495	71.28279	156.7899	15.556
CDB1	-3484099	-1084749	5213679	55.19237	162.7064	49.696
CDB2	-3484106	-1084742	5213676	55.19233	162.7065	49.669
CDB3	-3484112	-1084735	5213673	55.19228	162.7067	49.692
FAI1	-2304742	-1448715	5748844	64.80963	147.8473	150.014
FAI2	-2304742	-1448707	5748846	64.80968	147.8475	150.021
FAI3	-2304733	-1448707	5748849	64.80975	147.8474	150.017
JNU1	-2354255	-2388550	5407043	58.36257	134.5857	16.246
JNU2	-2354253	-2388566	5407037	58.36247	134.5855	16.258
JNU3	-2354240	-2388569	5407041	58.36254	134.5853	16.246
MMD1	35070.34	-5959687	2264366	20.93191	89.66284	29.087
MMD2	35065.42	-5959687	2264365	20.9319	89.66289	29.132
MMD3	35065.08	-5959685	2264370	20.93195	89.66289	29.114
MMX1	-948701	-5943933	2109212	19.43165	99.06839	2233.097
MMX2	-948696	-5943933	2109214	19.43168	99.06835	2233.082
MMX3	-948705	-5943933	2109210	19.43163	99.06843	2233.125
MPR1	-1570142	-5759531	2238185	20.679	105.2492	10.989
MPR2	-1570139	-5759530	2238189	20.67904	105.2492	11.264
MPR3	-1570144	-5759528	2238191	20.67906	105.2492	10.996
MSD1	-1979520	-5523223	2493107	23.16045	109.7177	104.297
MSD2	-1979522	-5523225	2493101	23.16039	109.7177	104.273
MSD3	-1979526	-5523222	2493104	23.16042	109.7177	104.271
MTP1	-254854	-6162909	1617805	14.79137	92.368	54.923
MTP2	-254851	-6162910	1617802	14.79133	92.36797	54.887
MTP3	-254856	-6162910	1617800	14.79132	92.36801	54.787
OTZ1	-2396056	-750356	5843502	66.88733	162.6114	10.864
OTZ2	-2396053	-750354	5843504	66.88737	162.6114	10.855
OTZ3	-2396053	-750358	5843503	66.88735	162.6113	10.867
YFB1	1035381	-2634290	5696540	63.73149	68.54319	10.063

WRE	X(m)	Y(m)	Z(m)	LATITUDE	LONGITUDE	H(m)
YFB2	1035372	-2634296	5696538	63.73146	68.54341	9.986
YFB3	1035366	-2634307	5696534	63.73139	68.5436	10.053
YQX1	2430425	-3419640	4788224	48.96649	54.59763	146.896
YQX2	2430432	-3419639	4788221	48.96645	54.59753	146.897
YQX3	2430440	-3419638	4788218	48.96641	54.59744	146.908
YWG1	-520165	-4083476	4855843	49.90057	97.2594	222.111
YWG2	-520151	-4083469	4855850	49.90068	97.25922	222.123
YWG3	-520153	-4083478	4855843	49.90057	97.25923	222.119
YXR1	1885341	-3321428	5091172	53.30865	60.41947	37.884
YXR2	1885344	-3321420	5091176	53.30871	60.41937	37.891
YXR3	1885340	-3321413	5091182	53.3088	60.41937	37.89
ZAB1	-1488637	-5003947	3654558	35.17357	106.5674	1620.128
ZAB2	-1488632	-5003948	3654558	35.17357	106.5673	1620.185
ZAB3	-1488632	-5003951	3654554	35.17353	106.5673	1620.171
ZAN1	-2659537	-1549115	5567751	61.2292	149.7803	80.702
ZAN2	-2659549	-1549111	5567746	61.22912	149.7804	80.702
ZAN3	-2659541	-1549107	5567751	61.2292	149.7804	80.695
ZAU1	138704	-4761244	4227764	41.78266	88.33134	195.866
ZAU2	138704.2	-4761249	4227759	41.7826	88.33134	195.88
ZAU3	138711	-4761248	4227759	41.7826	88.33126	195.879
ZBW1	1490299	-4448983	4306011	42.73572	71.48043	39.115
ZBW2	1490304	-4448981	4306011	42.73572	71.48036	39.149
ZBW3	1490306	-4448985	4306007	42.73567	71.48035	39.144
ZDC1	1069126	-4839599	4001127	39.1016	77.54275	80.049
ZDC2	1069128	-4839604	4001120	39.10152	77.54273	80.049
ZDC3	1069124	-4839603	4001123	39.10155	77.54278	80.053
ZDV1	-1273629	-4711376	4094890	40.1873	105.1272	1541.349
ZDV2	-1273623	-4711377	4094890	40.1873	105.1272	1541.336
ZDV3	-1273625	-4711380	4094886	40.18725	105.1272	1541.331
ZFW1	-659983	-5324061	3438276	32.83065	97.06647	155.619
ZFW2	-659989	-5324063	3438271	32.8306	97.06653	155.583
ZFW3	-659984	-5324064	3438272	32.8306	97.06647	155.622
ZHN1	-5508637	-2234493	2303722	21.31299	157.9208	24.65
ZHN2	-5508656	-2234483	2303687	21.31265	157.921	25.007
ZHN3	-5508648	-2234497	2303694	21.31272	157.9208	25.062
ZHU1	-513865	-5506452	3166720	29.9619	95.33143	10.756
ZHU2	-513867	-5506455	3166714	29.96183	95.33145	10.821
ZHU3	-513873	-5506458	3166709	29.96177	95.33151	10.807
ZJX1	772646.3	-5434462	3237232	30.69886	81.90819	2.135

WRE	X(m)	Y(m)	Z(m)	LATITUDE	LONGITUDE	H(m)
ZJX2	772649.7	-5434464	3237228	30.69882	81.90815	2.133
ZJX3	772645.6	-5434466	3237225	30.69879	81.9082	2.111
ZKC1	-415248	-4954556	3982161	38.88016	94.79084	305.879
ZKC2	-415231	-4954558	3982161	38.88016	94.79065	305.881
ZKC3	-415237	-4954561	3982156	38.8801	94.79071	305.611
ZLA1	-2474410	-4637295	3602184	34.60352	118.0839	763.515
ZLA2	-2474405	-4637297	3602184	34.60352	118.0838	763.498
ZLA3	-2474411	-4637297	3602180	34.60348	118.0839	763.583
ZLC1	-1808273	-4486411	4145303	40.78604	111.9522	1287.426
ZLC2	-1808275	-4486414	4145298	40.78599	111.9522	1287.418
ZLC3	-1808271	-4486416	4145298	40.78599	111.9521	1287.427
ZMA1	966042.2	-5663000	2761582	25.82461	80.31919	-7.606
ZMA2	966029.2	-5662999	2761586	25.82466	80.31932	-8.249
ZMA3	966037.3	-5662998	2761586	25.82466	80.31924	-7.907
ZME1	4070.776	-5226189	3644028	35.06739	89.95537	68.592
ZME2	4070.808	-5226187	3644033	35.06744	89.95537	68.873
ZME3	4064.613	-5226187	3644033	35.06744	89.95544	68.853
ZMP1	-249979	-4539297	4458955	44.63746	93.15209	262.625
ZMP2	-249973	-4539298	4458955	44.63746	93.15201	262.642
ZMP3	-249974	-4539302	4458951	44.63741	93.15202	262.574
ZNY1	1406145	-4627344	4144322	40.78433	73.09717	6.445
ZNY2	1406146	-4627347	4144317	40.78428	73.09716	5.909
ZNY3	1406141	-4627349	4144317	40.78428	73.09723	5.915
ZOA1	-2684437	-4293337	3865352	37.54305	122.016	-3.503
ZOA2	-2684434	-4293341	3865350	37.54303	122.0159	-3.499
ZOA3	-2684438	-4293342	3865346	37.54298	122.0159	-3.424
ZOB1	650770.1	-4754716	4187421	41.29715	82.20645	223.645
ZOB2	650777.7	-4754715	4187423	41.29717	82.20635	225.145
ZOB3	650776.1	-4754720	4187415	41.29709	82.20638	223.423
ZSE1	-2308930	-3668170	4663526	47.28699	122.1884	82.094
ZSE2	-2308935	-3668175	4663520	47.28691	122.1884	82.154
ZSE3	-2308936	-3668179	4663516	47.28686	122.1884	82.098
ZSU1	2462589	-5529372	2003725	18.43134	65.99348	-28.098
ZSU2	2462588	-5529377	2003712	18.43122	65.99351	-28.076
ZSU3	2462594	-5529375	2003710	18.4312	65.99345	-28.137
ZTL1	529840.3	-5305249	3489343	33.37969	84.29673	261.136

Figure 10-1 to Figure 10-3 show the RSS of the ECEF differences between the OPUS survey antenna phase center locations and the locations in Release 53. Figure 10-4 to Figure 10-6 show the OPUS surveys overall RMS quality indications.

Figure 10-1 Build WE7164c Antenna Positions Deltas OPUS Survey

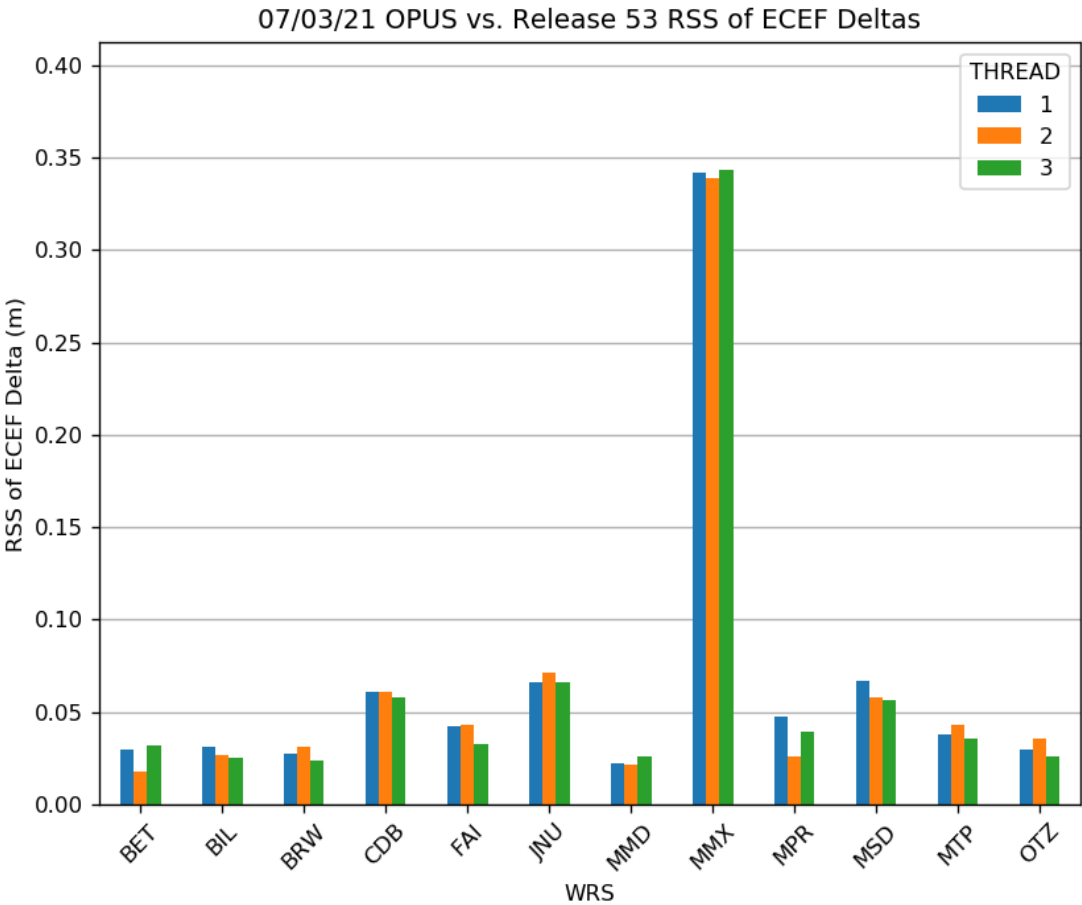


Figure 10-2 Build WE7.164c Antenna Positions Deltas OPUS Survey

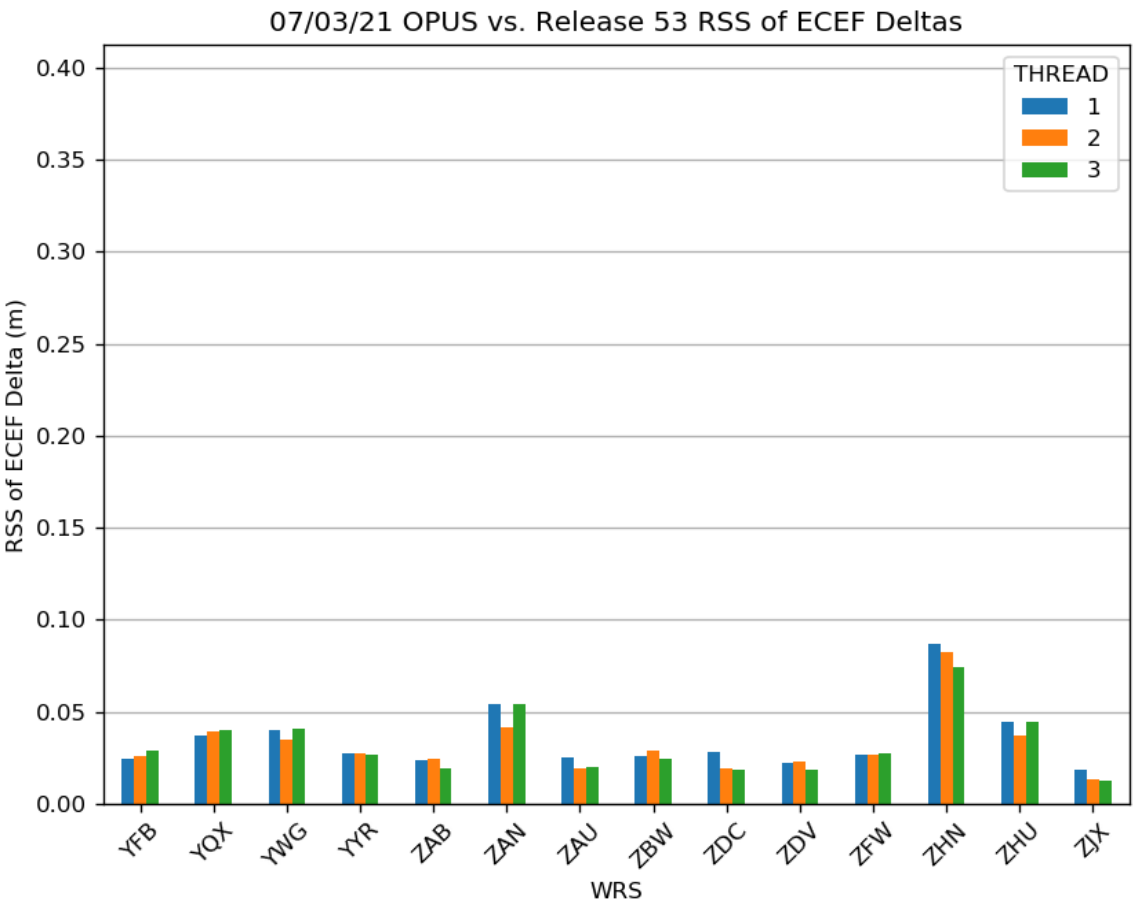


Figure 10-3 Build WE7.164c Antenna Positions Deltas OPUS Survey

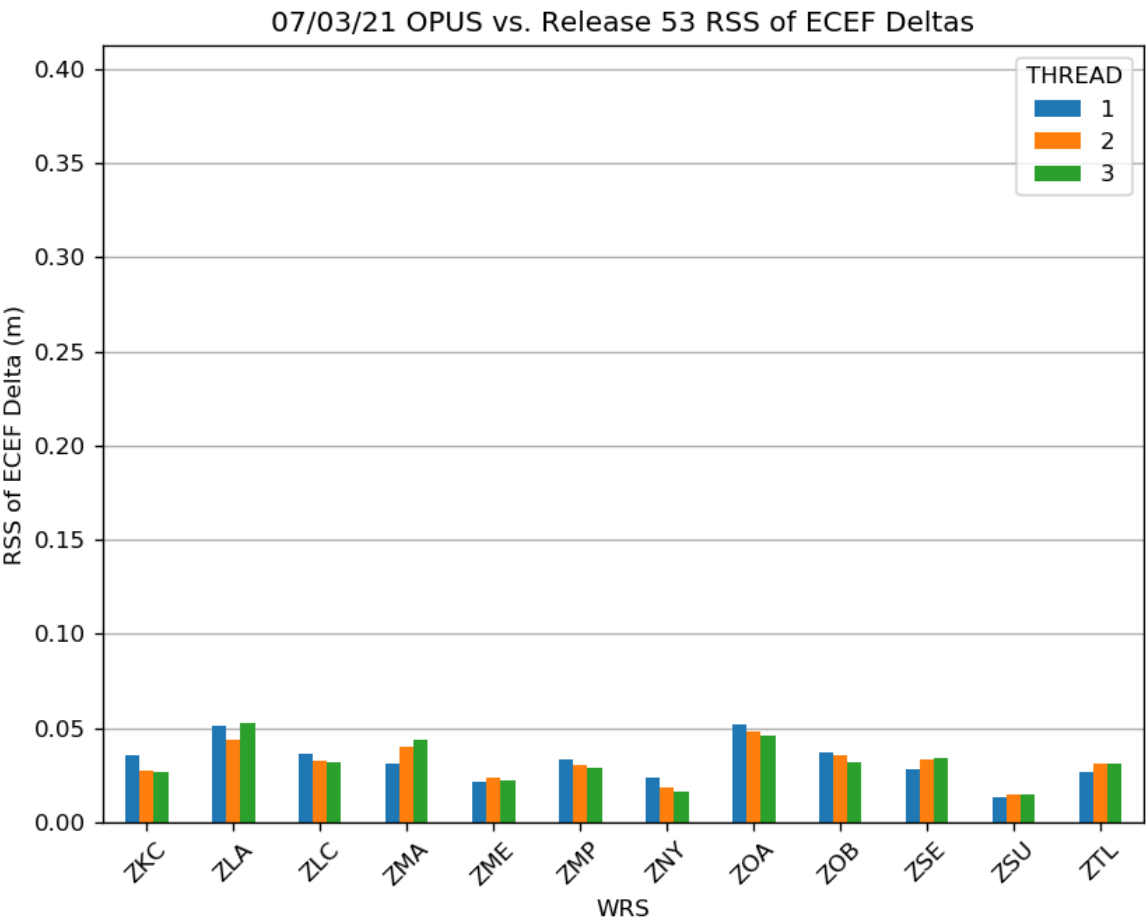


Figure 10-4 OPUS Survey Overall RMS Qualities

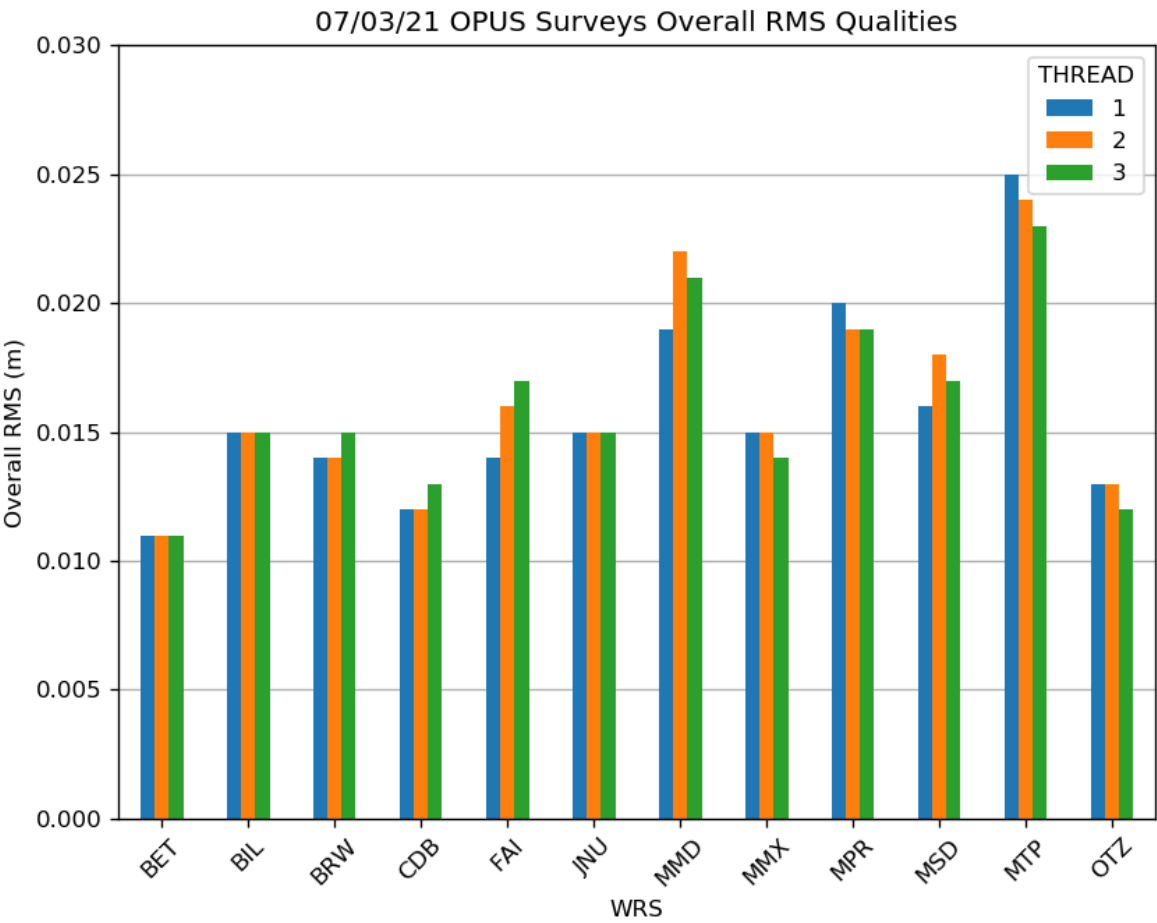


Figure 10-5 OPUS Survey Overall RMS Qualities

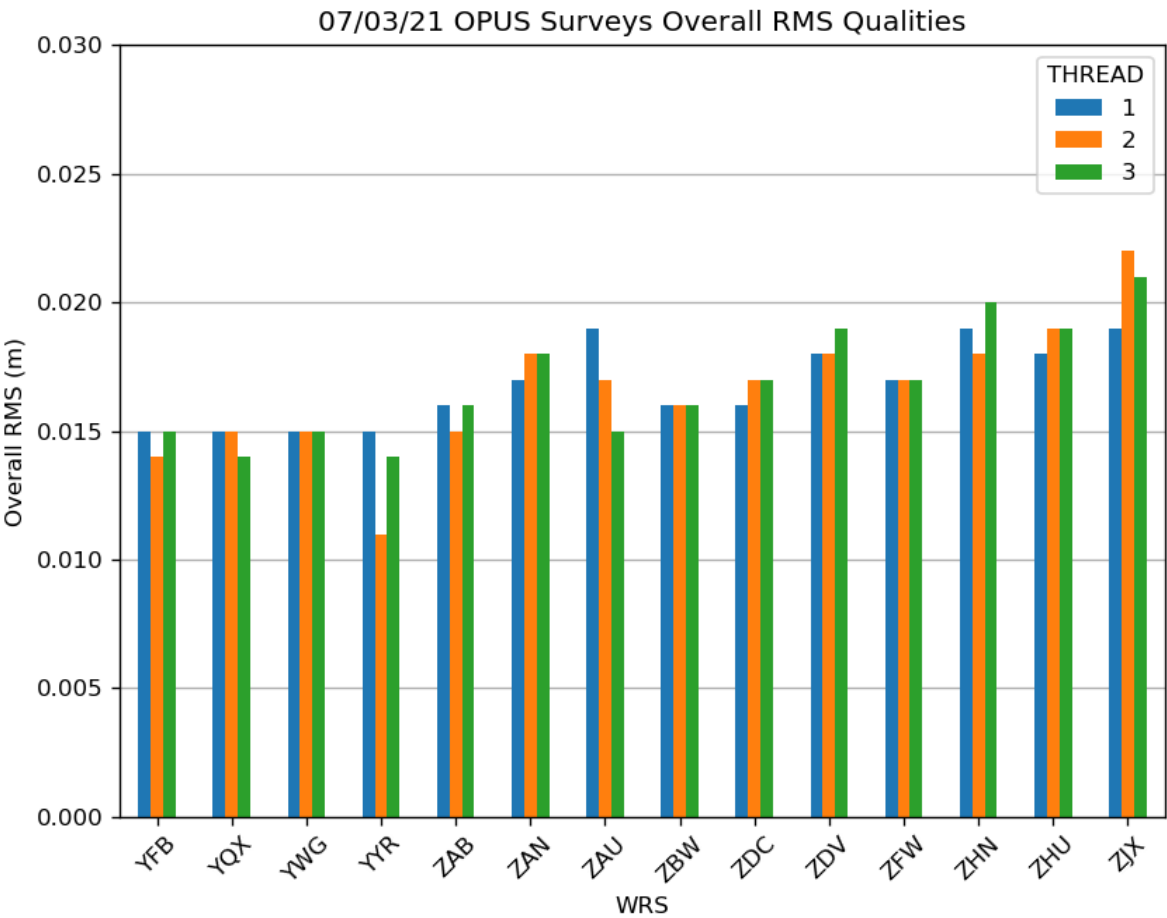
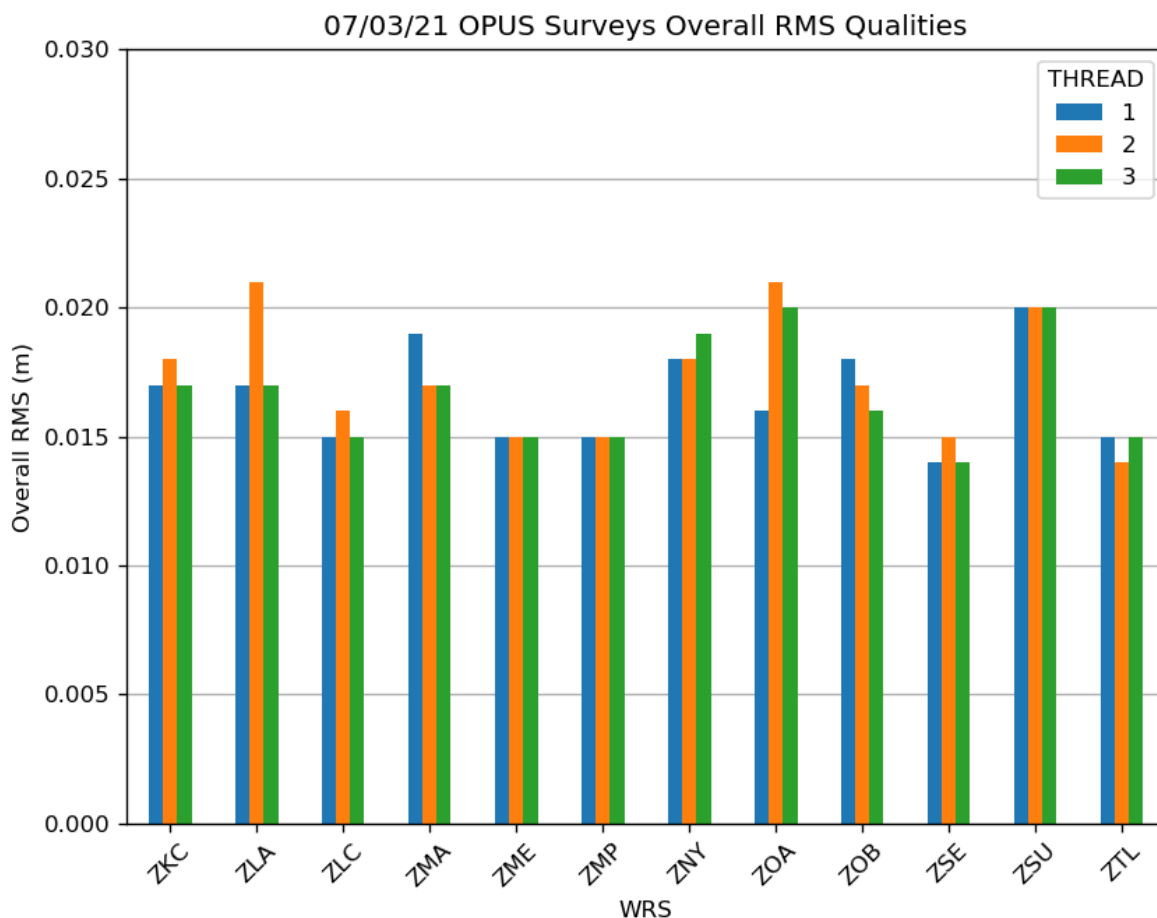


Figure 10-6 OPUS Survey Overall RMS Qualities

The “take action” threshold established by the WAAS Integrity Performance Panel (WIPP) is 25 cm for Mexico City and 10 cm for the remaining sites. The large MMX allowance is required because of the rapid subsidence in Mexico City (approximately 28 to 30 cm/year).

Figure 10-7 to Figure 10-9 show the RSS of the ECEF difference between the OPUS positions and the CSRS positions. Note that the OPUS positions are in IGS08 and the CSRS positions are in ITRF-2008. Figure 10-10 to Figure 10-12 show the RSS of the ECEF sigma's survey qualities reported by CSRS.

Figure 10-7 OPUS vs. CSRS RSS ECEF Deltas

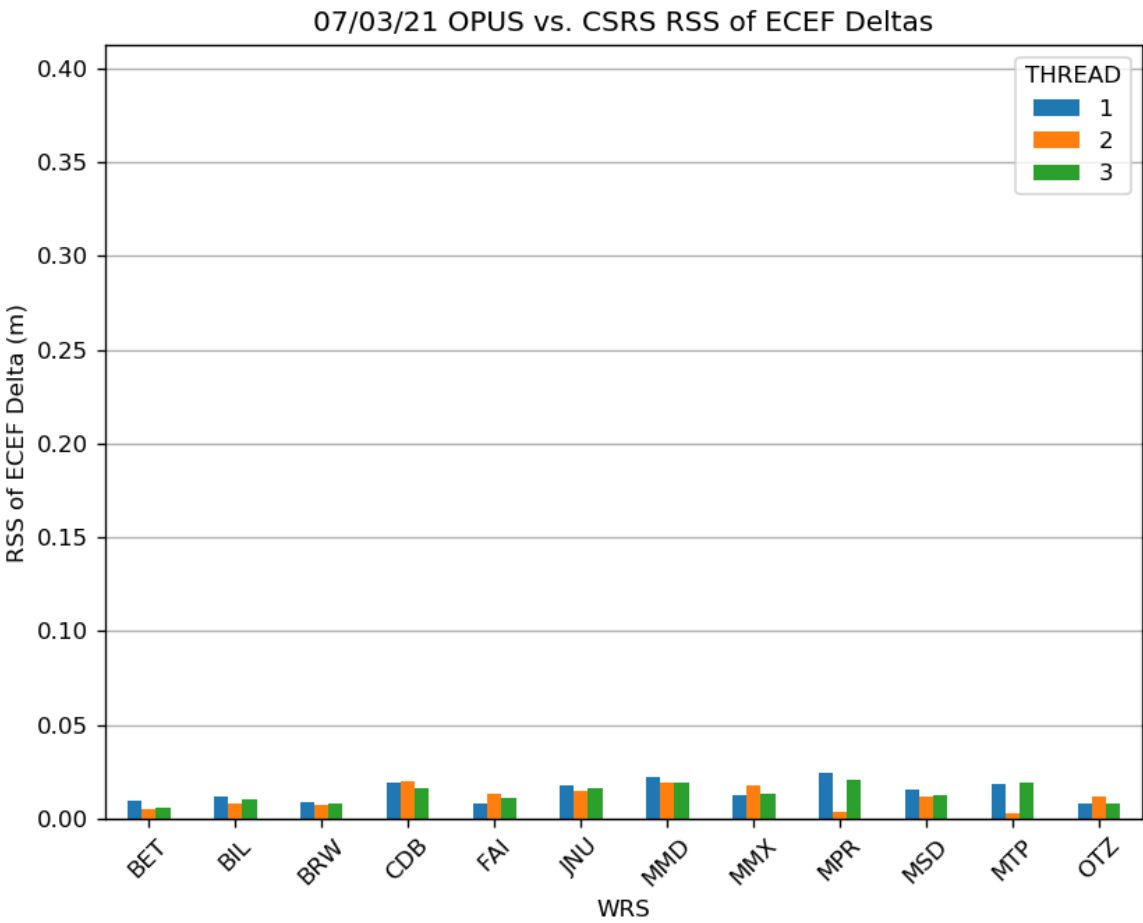


Figure 10-8 OPUS vs. CSRS RSS ECEF Deltas

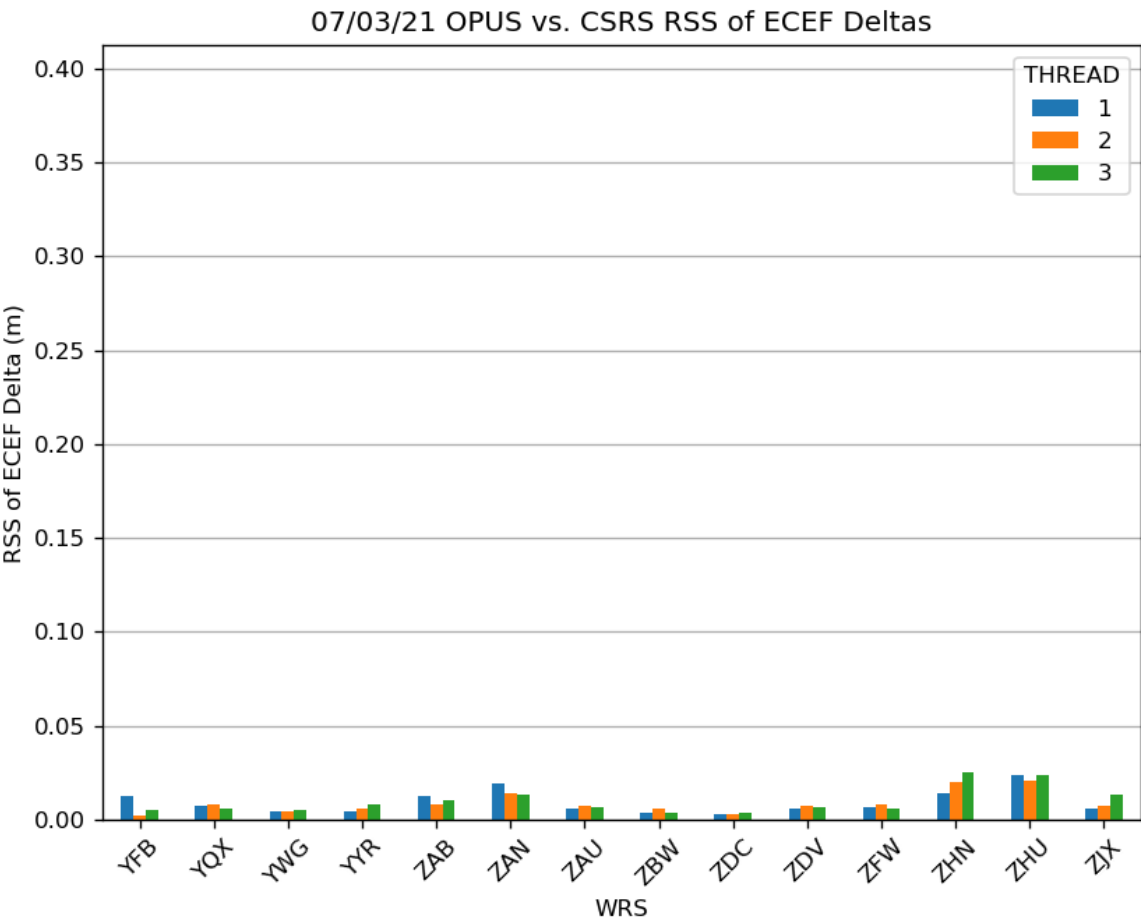


Figure 10-9 OPUS vs. CSRS RSS ECEF Deltas

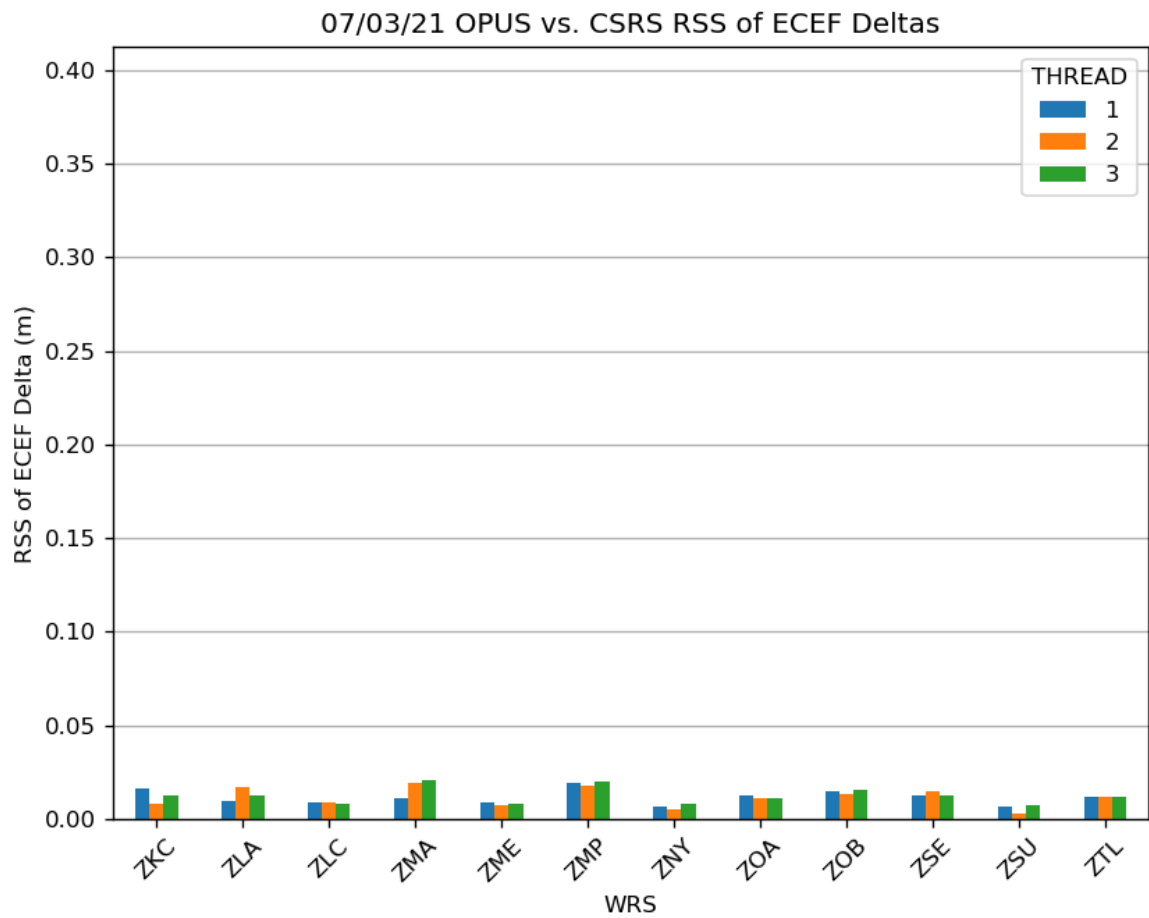


Figure 10-10 CSRS Survey Qualities

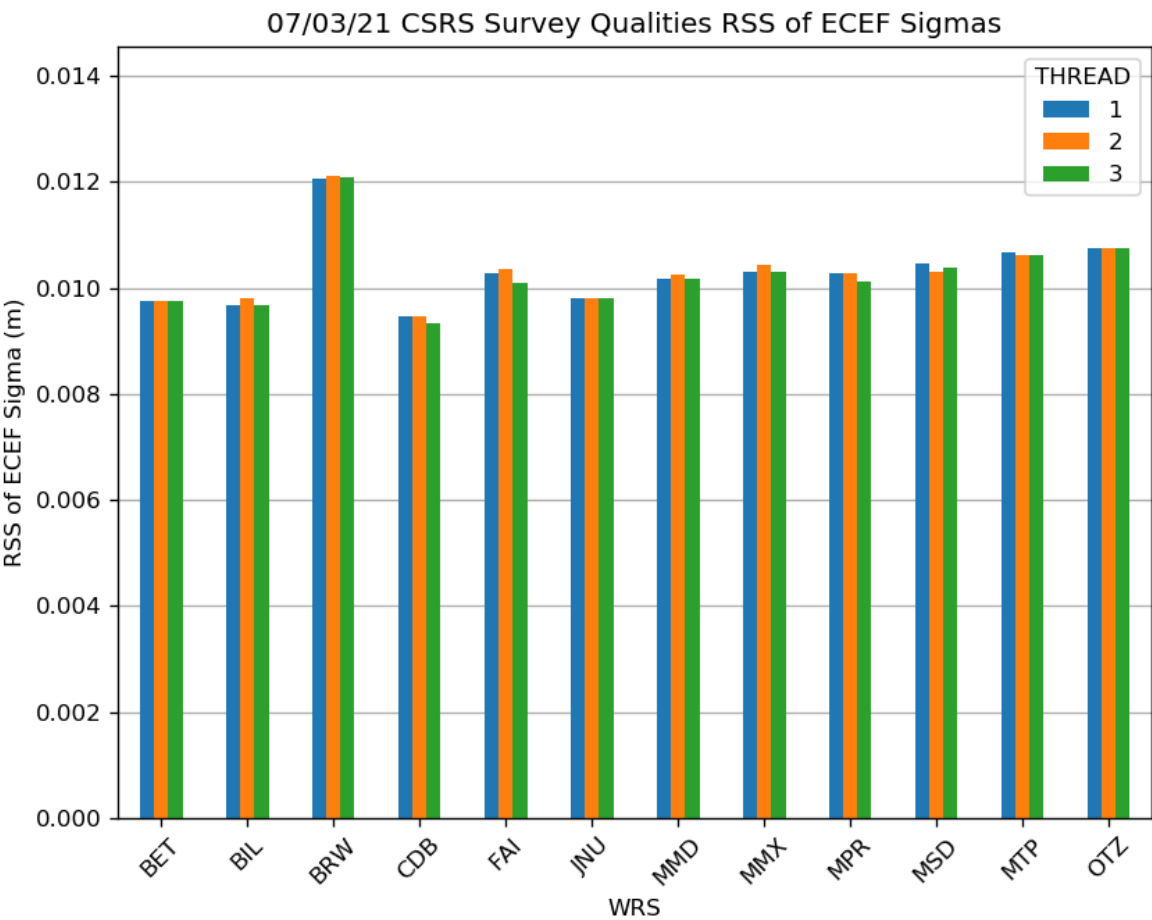


Figure 10-11 CSRS Survey Qualities

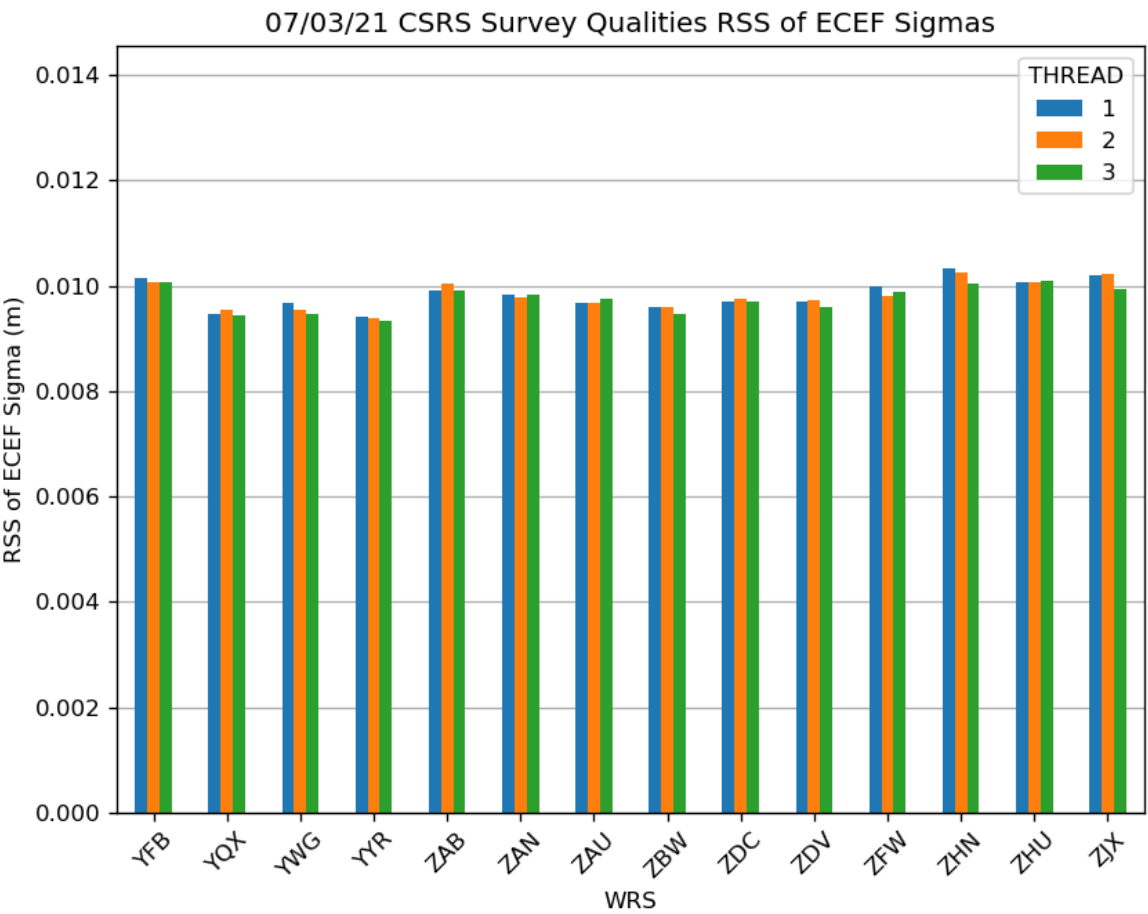
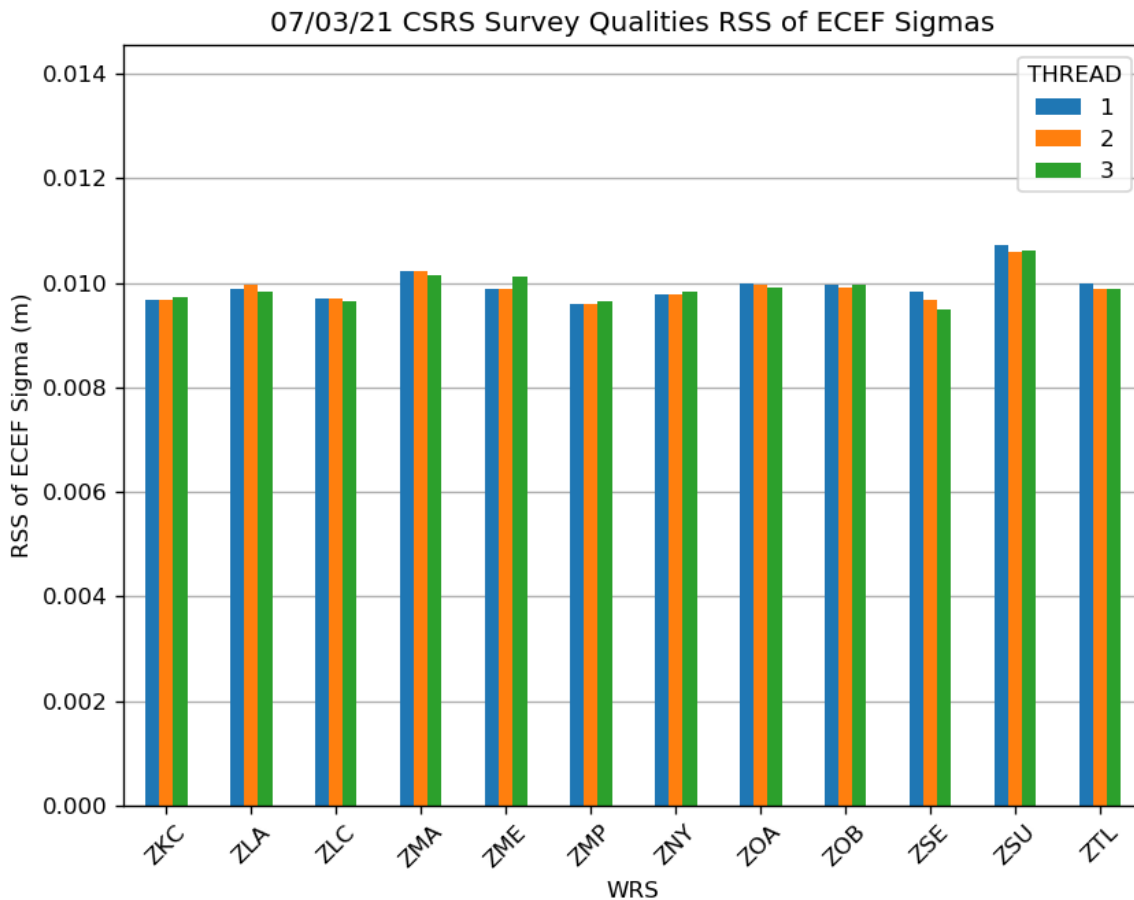


Figure 10-12 CSRS Survey Qualities



11.0 SQM

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

The WAAS SQM offline monitoring effort includes the monitoring of the PRN type biases, trips, and the estimated deformation for each satellite (referred to as PRN bias in this report).

11.1 Alpha Metrics

The alpha metrics values are pre-determined by offline integrity analysis and are defined as constants in the SQM algorithm. These values remained unchanged for this reporting period and are listed in Table 11-1. Currently there are four sets of alpha metrics in the WAAS SQM algorithm that form four detection metrics for each receiver channel. For this report, the four detection metrics (DM) will be referred to as: DM1, DM2, DM3, and DM4.

Table 11-1 Alpha Metrics

Correlator Spacing	DM1	DM2	DM3	DM4
-0.1	0	0.43407318	0	-0.36110353
-0.075	0	0.48570652	-0.0058771682	-0.74860302
-0.05	-0.4071265	-0.69931105	-0.011382325	0.23726003
-0.025	1	-0.010099034	0.00037033029	-0.0076011735
0	0	0	0	0
0.025	-0.25	0.13317879	0.99991788	-0.062414070
0.05	1.008525	-0.22851782	0	0.25177272
0.075	0	0.10209042	0	0.42875623
0.1	0	0.078436452	0	0.41602138

11.2 Type Bias

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

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

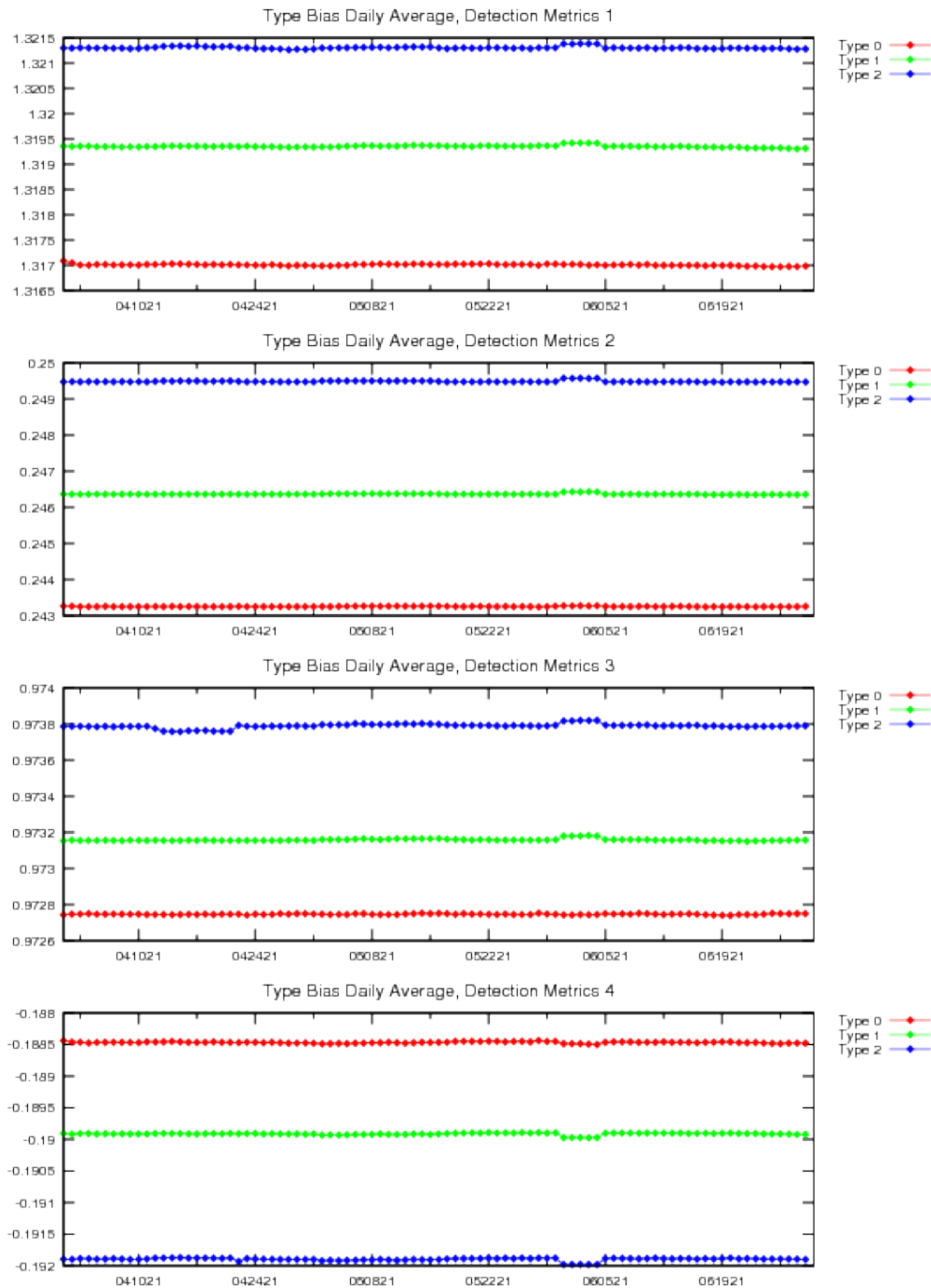
Table 11-2 Type Bias Average for the Quarter

Detection Metric	Type 0	Type 1	Type 2
DM 1	1.31701	1.31936	1.32131
DM 2	0.243255	0.24637	0.249492
DM 3	0.972747	0.973159	0.97379
DM 4	-0.188466	-0.189913	-0.191896

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

Detection Metric	Type 0	Type 1	Type 2
DM 1	1.31933	1.32154	1.32326
DM 2	0.241834	0.245043	0.24818
DM 3	0.973001	0.973505	0.974073
DM 4	-0.187145	-0.188811	-0.190827

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 0.0007250 observed on PRN19, (2) the maximum average for DM2 is 0.0002114 observed on PRN19, (3) the maximum average for DM3 is 0.0004577 observed on PRN18, (4) the maximum average for DM4 is 0.0004277 observed on PRN21.

Table 11-4 PRN Bias Average for the Quarter

PRN	DM 1	DM 2	DM 3	DM 4
1	0.000215852	9.48167e-05	4.68633e-05	0.000151466
2	0.000226691	5.99611e-05	0.000103086	0.000112422
3	0.000219967	6.09689e-05	0.000100784	0.000144733
4	0.000723091	0.000258538	0.000410242	0.000276222
5	0.000175902	7.79367e-05	0.00011051	0.000117647
6	0.000605449	9.63089e-05	6.61822e-05	0.00022494
7	0.000169104	0.000122964	5.12156e-05	0.000123604
8	0.000346702	9.44133e-05	0.000109052	0.000150556
9	0.000225787	3.97667e-05	0.000157813	0.000162548
10	0.00019405	5.98256e-05	8.02178e-05	0.000191622
11				
12	0.000332843	0.000103472	8.32056e-05	8.907e-05
13	0.000623907	6.05733e-05	5.15067e-05	0.000287573
14	0.000485194	0.00019235	0.000409938	0.000294739
15	0.000353793	0.000118093	4.56278e-05	0.000101988
16	0.000217598	4.71767e-05	0.000110702	0.00017403
17	0.00032734	0.000110352	4.82689e-05	8.50589e-05
18	0.000631887	0.000186533	0.000457701	0.000295116
19	0.000724994	0.000211422	9.19289e-05	0.000153064
20	0.00017108	6.37067e-05	4.72089e-05	0.000133817
21	0.000221047	9.36933e-05	0.000102292	0.000427651
22	0.000154967	4.87733e-05	0.000110942	0.000274073
23	0.000381074	0.000169253	0.000380274	0.000297108
24	0.000226996	8.99099e-05	0.000190784	0.00022989
25	0.000479938	8.80767e-05	4.40722e-05	0.000178948
26	0.000212128	0.000107326	0.000109938	0.000156033
27	0.000381453	0.000171418	0.000180611	0.000317446
28	0.000286838	4.76988e-05	4.78622e-05	0.000121037
29	0.000305764	0.000122566	0.000165699	0.00029522
30	0.000332	7.29578e-05	0.000104162	9.57e-05
31	0.00024482	8.53089e-05	9.14444e-05	0.000159666
32	0.000224894	6.18356e-05	5.20089e-05	0.000202301

Figure 11-2 PRN Bias Average for the Quarter

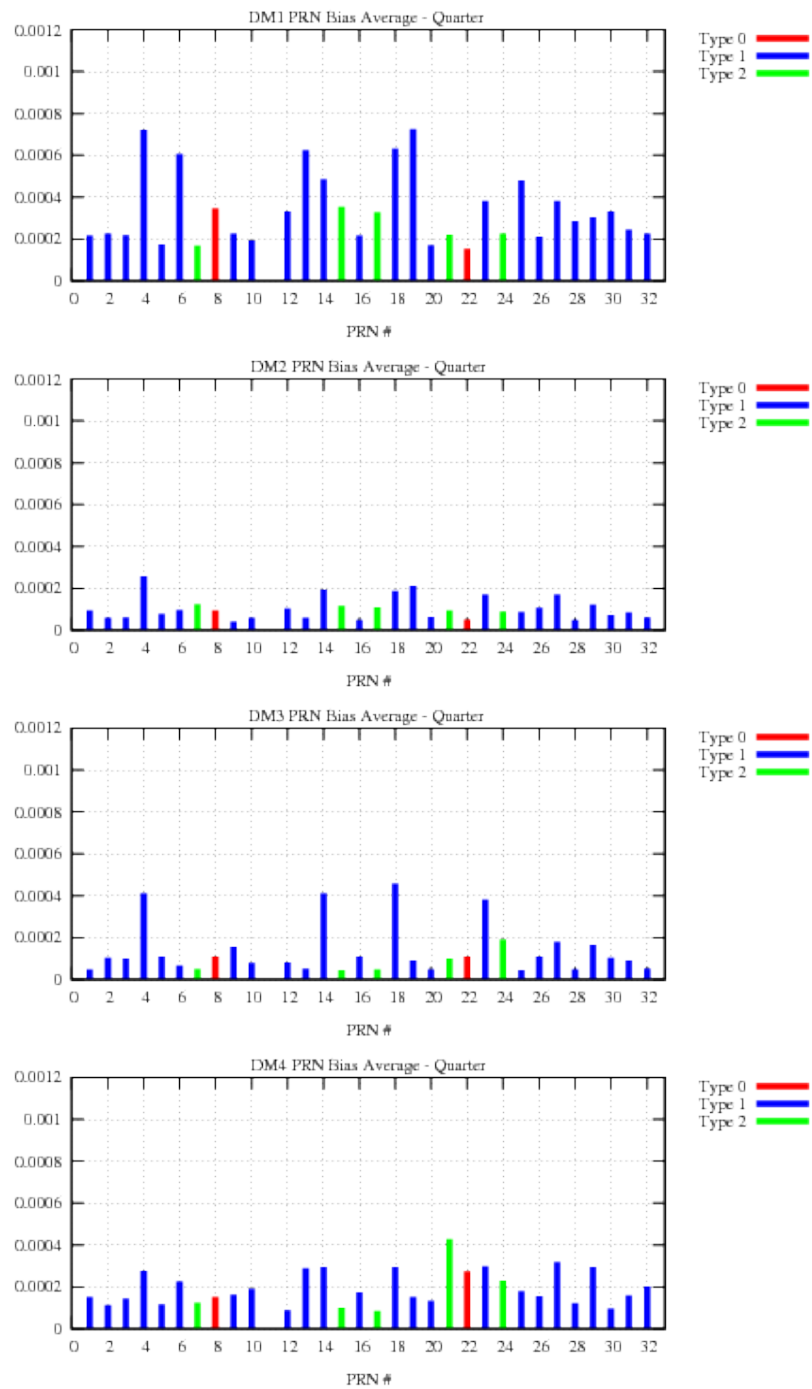


Figure 11-3 to Figure 11-10 show the daily PRN bias for each PRN for four detection metrics. PRN24 was set to unusable from April 12 to April 22 due [NANU2021022](#). PRN28 was set to unusable beginning June 21 until further notice due to [NANU2021033](#).

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

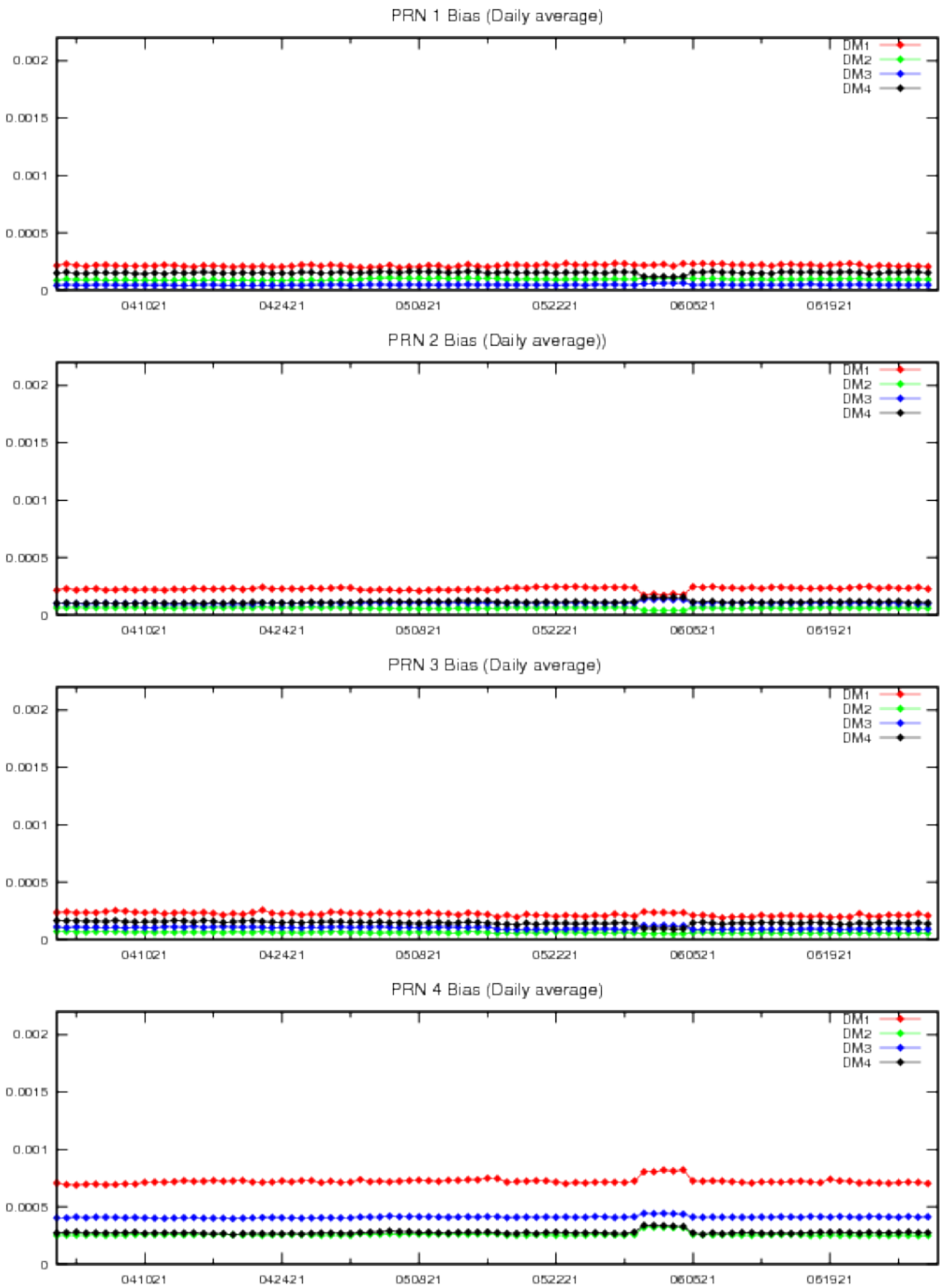


Figure 11-4 PRN Bias Average Trend (PRN5 – PRN8)

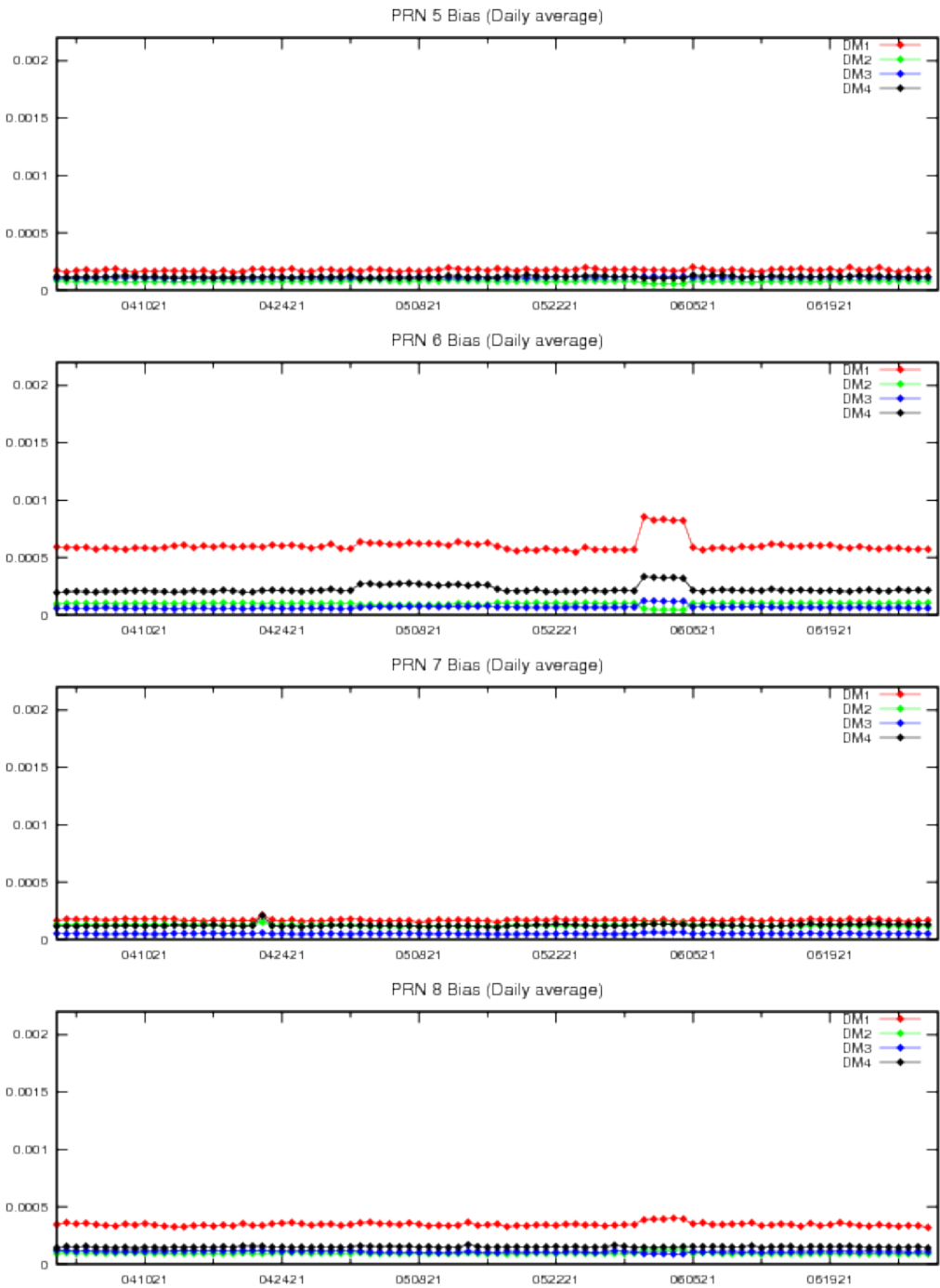


Figure 11-5 PRN Bias Average Trend (PRN9 – PRN12)

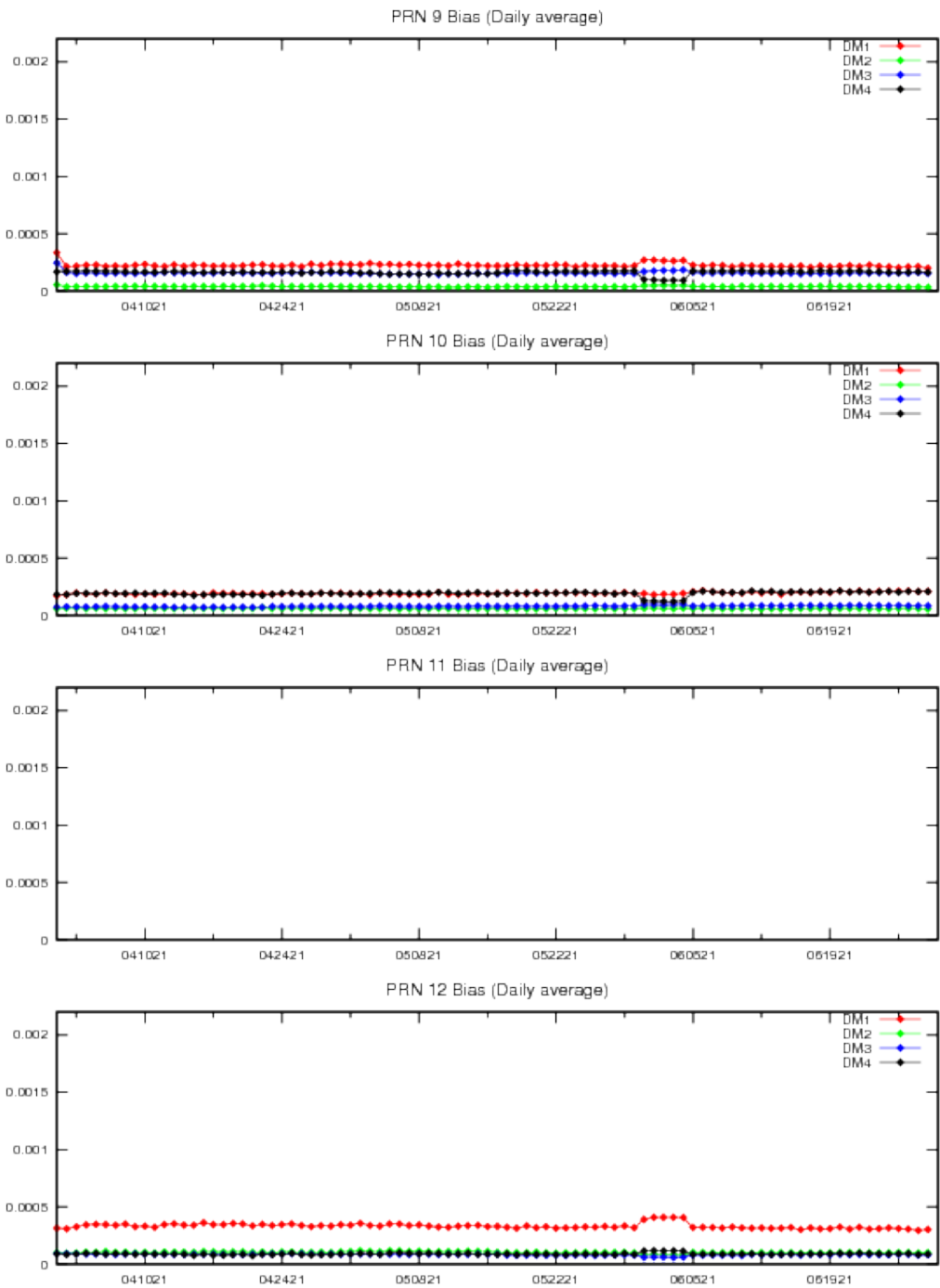


Figure 11-6 PRN Bias Average Trend (PRN13 – PRN16)

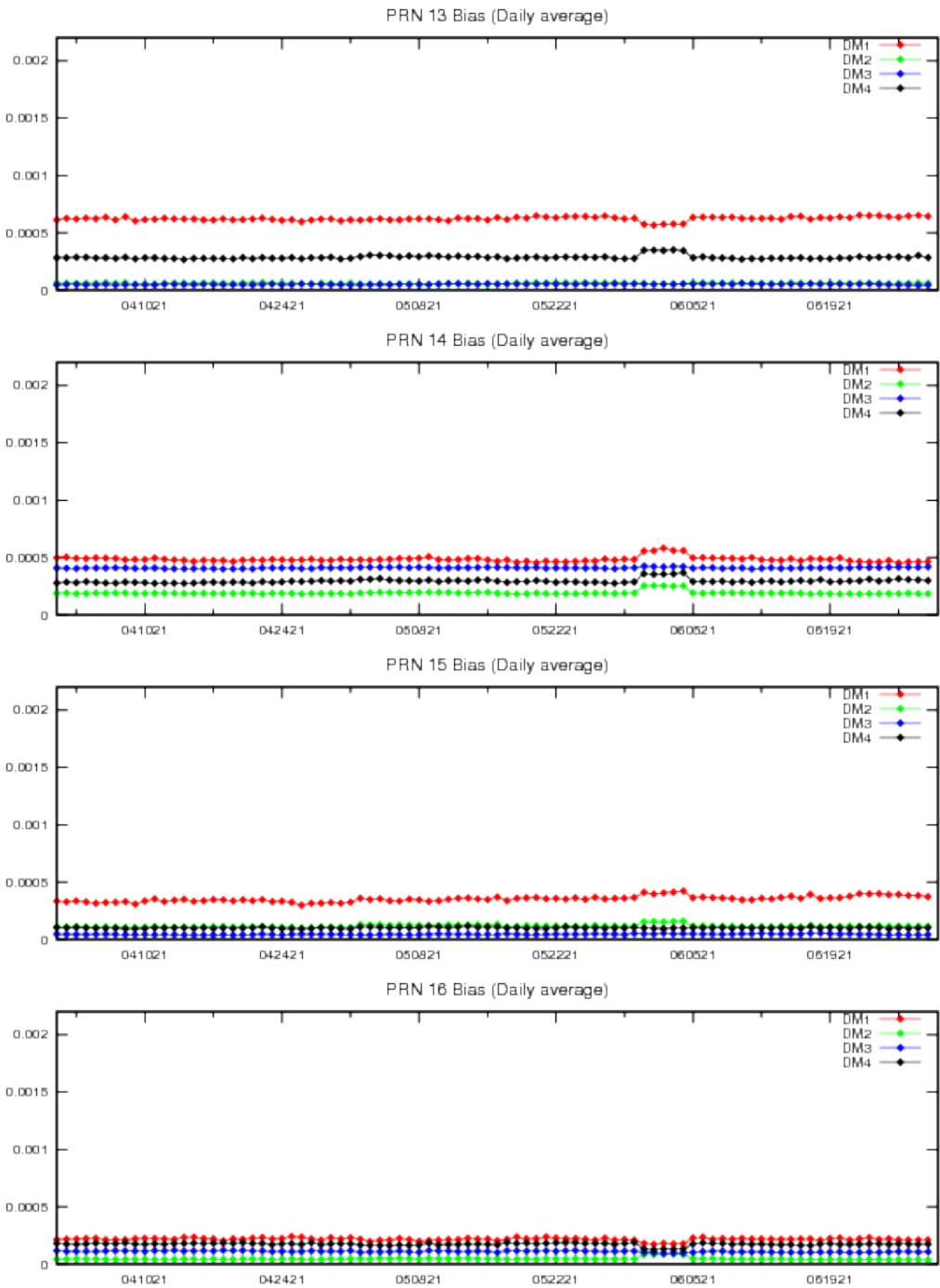


Figure 11-7 PRN Bias Average Trend (PRN17 – PRN20)

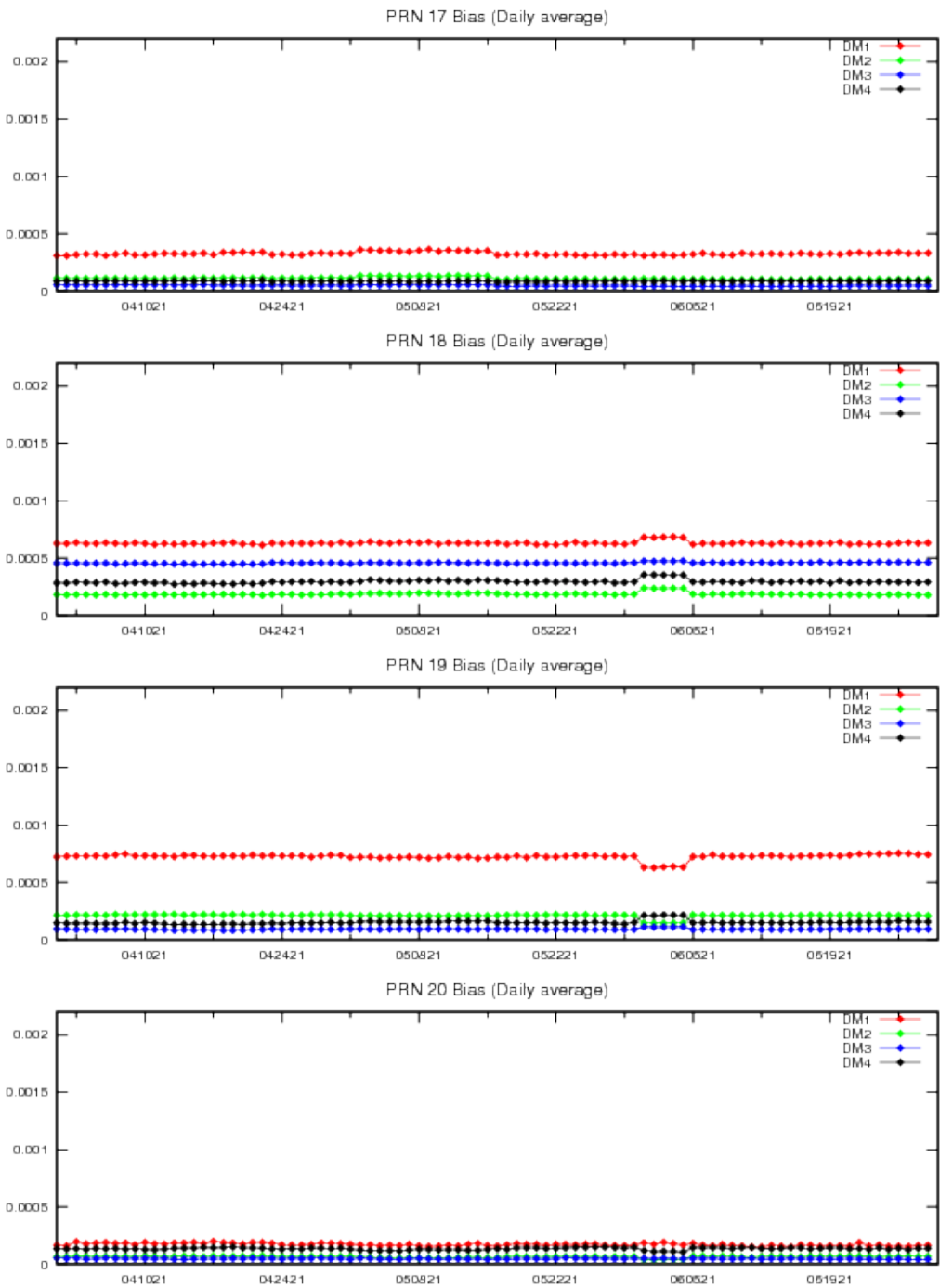


Figure 11-8 PRN Bias Average Trend (PRN21 – PRN24)

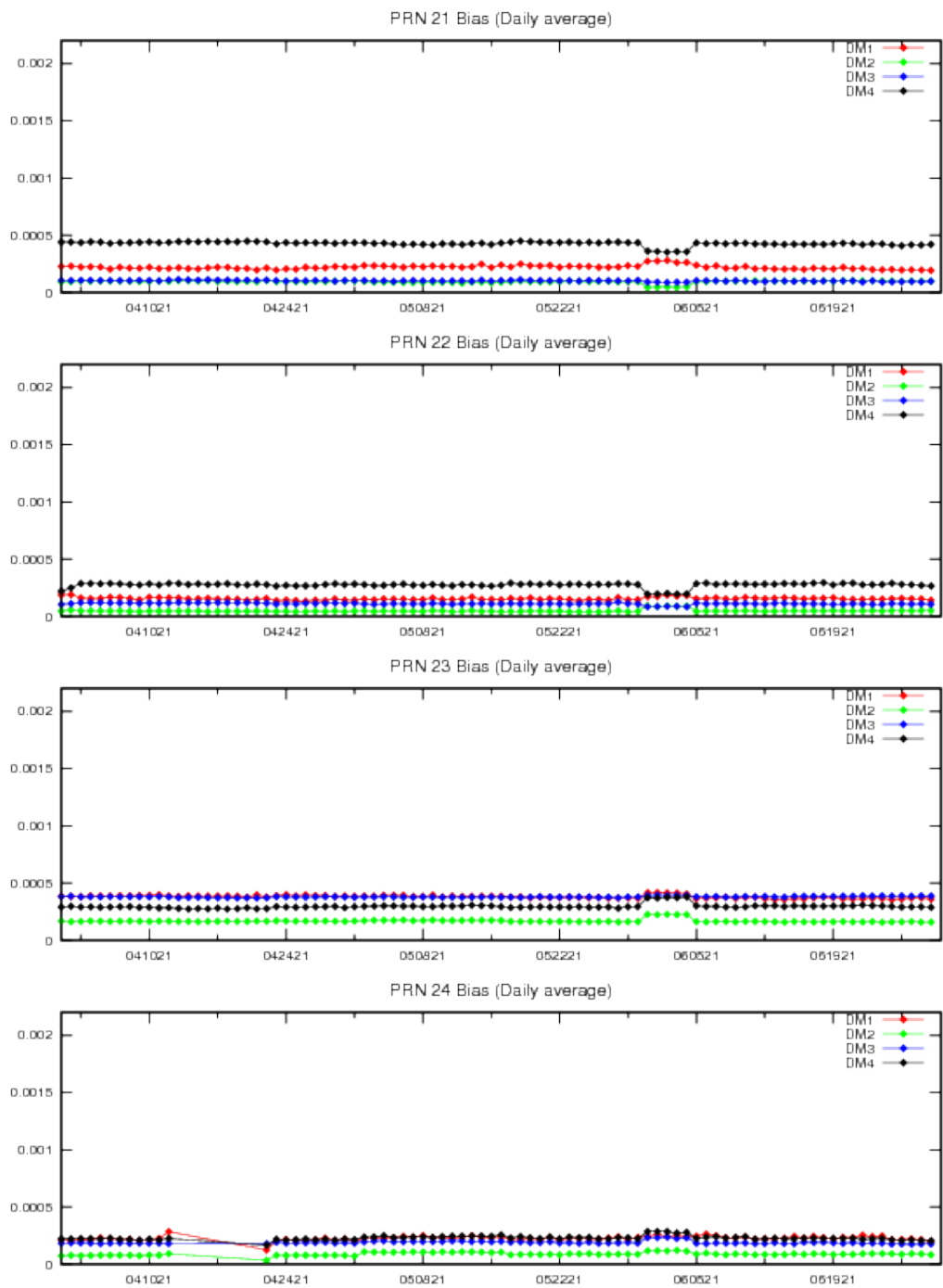


Figure 11-9 PRN Bias Average Trend (PRN25 – PRN28)

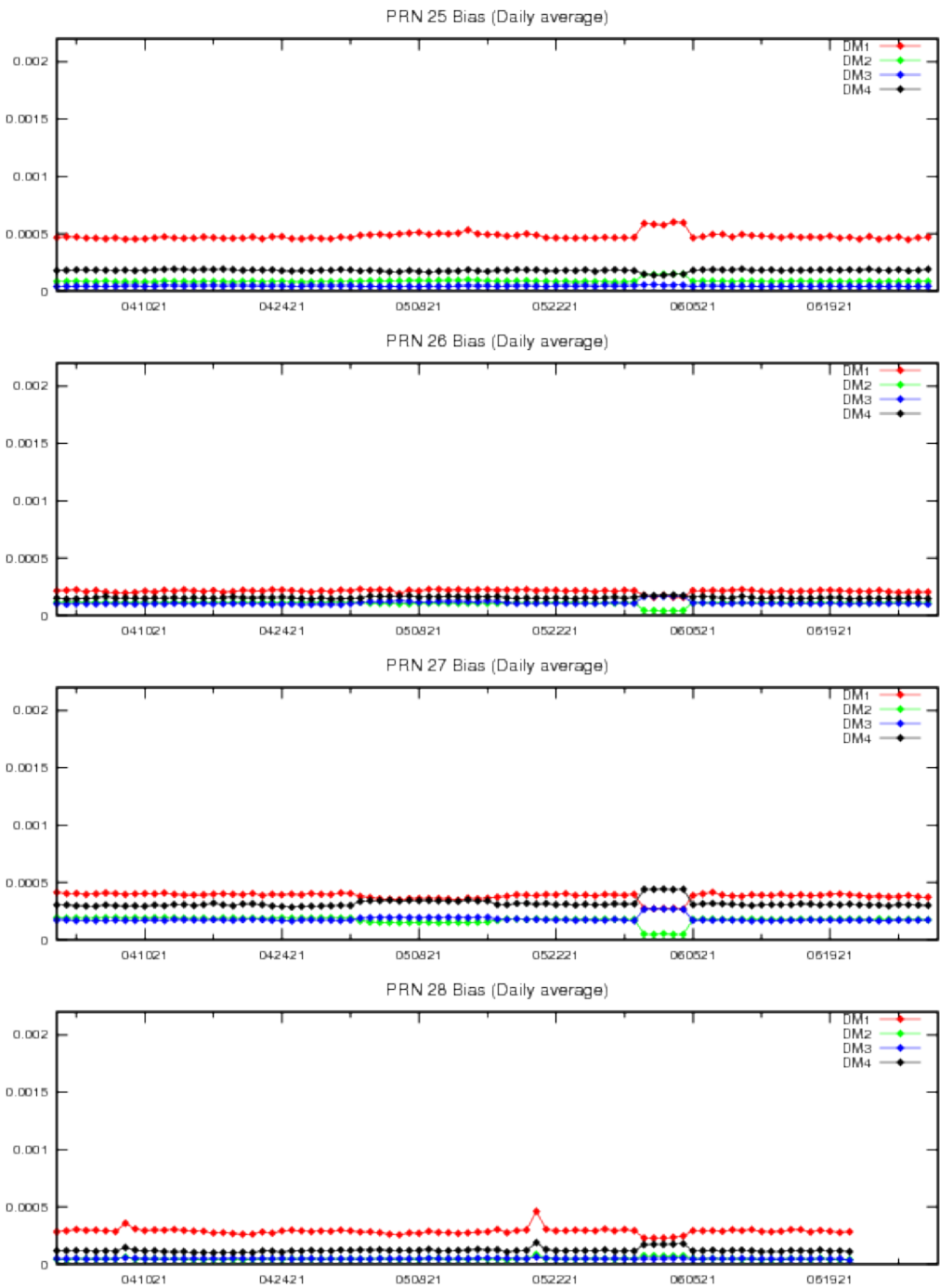
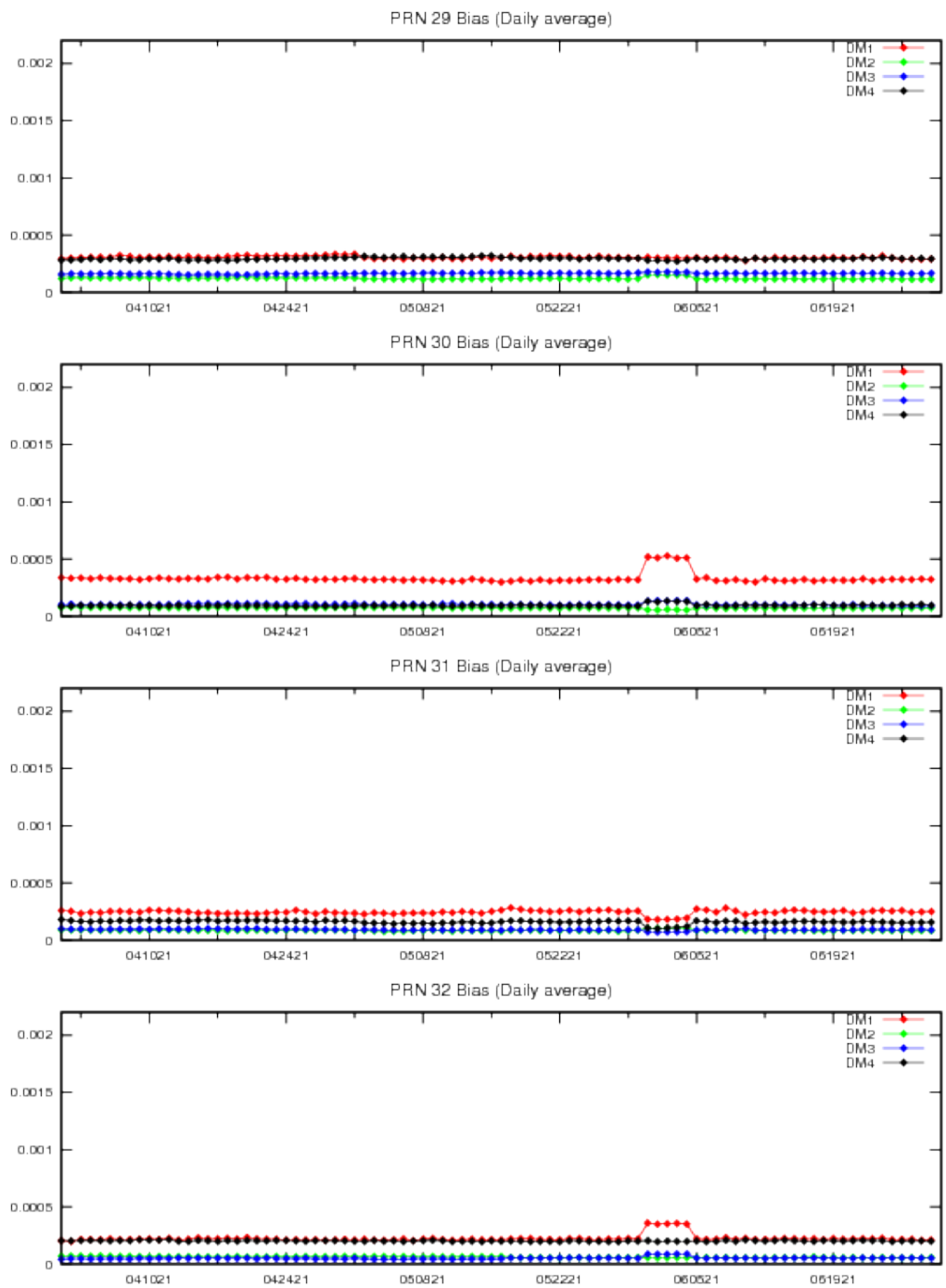


Figure 11-10 PRN Bias Average Trend (PRN29 – PRN32)



11.4 SQM Trips

A SQM trip occurs when the estimated deformation exceeds threshold. There were 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.

CRE. GEO PRN138

CRW. GEO PRN135

CSRS. Canadian Spatial Reference System

DM. Detection metrics

DR. Discrepancy Report.

ECEF. Earth-centered, Earth-fixed.

FAA. Federal Aviation Administration

FD. Fault Detection

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

GEO. Geostationary satellite

GMT. Greenwich Mean Time

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

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

GUS. Ground uplink station

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

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

HPE. Horizontal position error

HPL. Horizontal protection level. The radius of a circle in the horizontal plane (the plane tangent to the WGS-84 ellipsoid), with its center being at the true position, which describes the region that is assured to contain the indicated horizontal position. It is based on the error estimates provided by WAAS.

IAP. Instrument Approach Procedures

IGS. International GPS Service.

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

Kp. Planetary index

LNAV. Lateral navigation

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

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

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

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

NAS. National Airspace System

Navigation Message. Message structure designed to carry navigation data.

NGS. National Geodetic Survey

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

NTSB. National Satellite Test Bed

OCONUS. Outside Contiguous United States

OPUS. Online Positioning Use Server

PAN. Performance Analysis Network

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

PPP. Precise Point Positioning.

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

PRN. Pseudo-random noise

RAIM. Receiver autonomous integrity monitoring

RFI. Radio frequency interference

RNAV. Area navigation

RNP. Required Navigation Performance

RSS. Residual sum of squares.

S15. GEO PRN133

SBAS. Space Based Augmentation System

SIS. Signal in space

SM9. GEO PRN131

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

SSM. System support modification

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

SV. Space vehicle.

SVN. Space Vehicle Number.

TOW. Time of GPS week

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

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

VPE. Vertical position error

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

VNAV. Vertical navigation

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

WIPP. WAAS Integrity Performance Panel

WJHTC. William J. Hughes Technical Center

WRE. Wide-Area Reference Equipment

WRS. WAAS reference station

Appendix B: Additional Coverage Plots

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

Figure B-1 98% CONUS LP Availability Contour

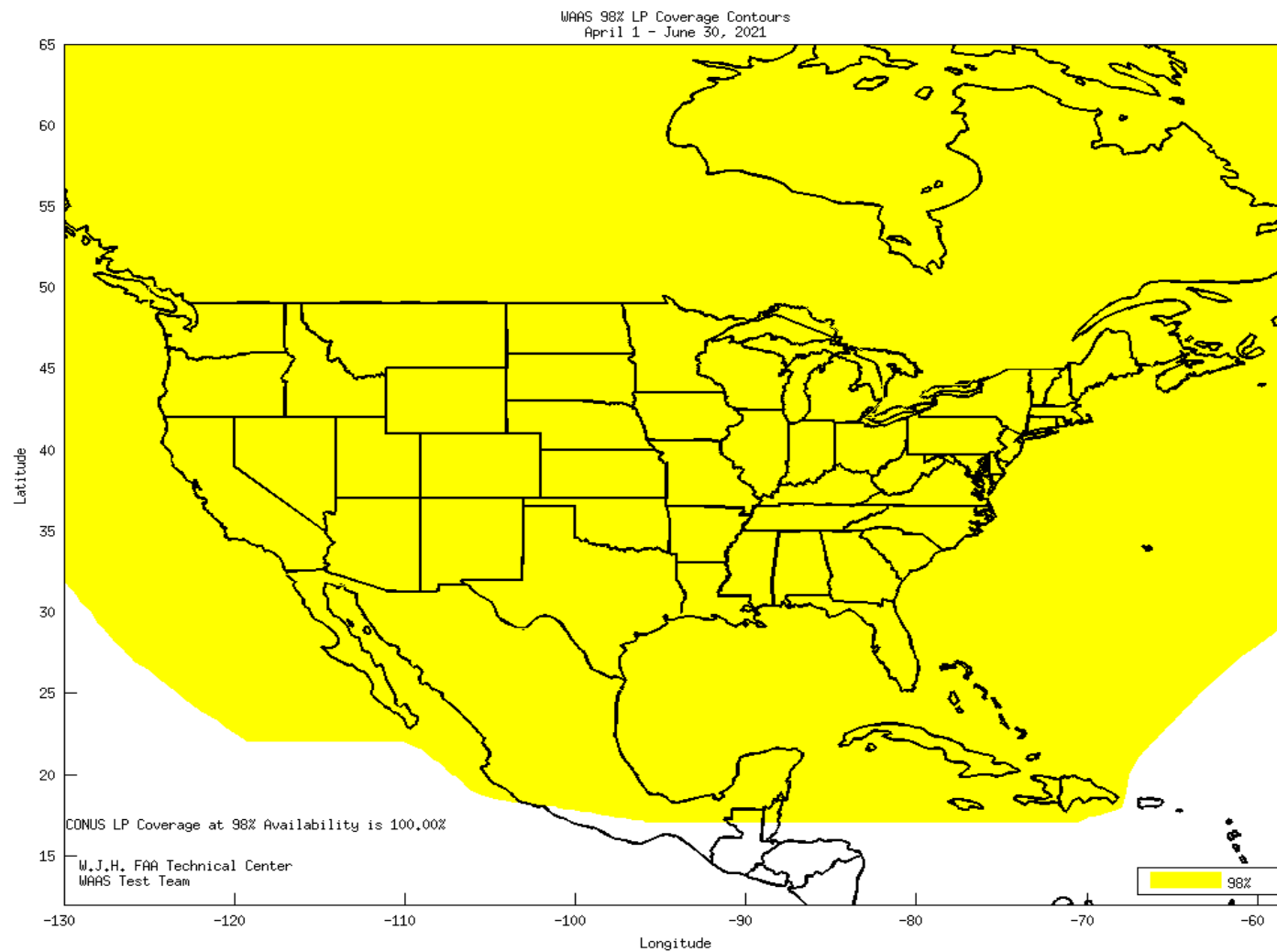


Figure B-2 98% Alaska LP Availability Contour

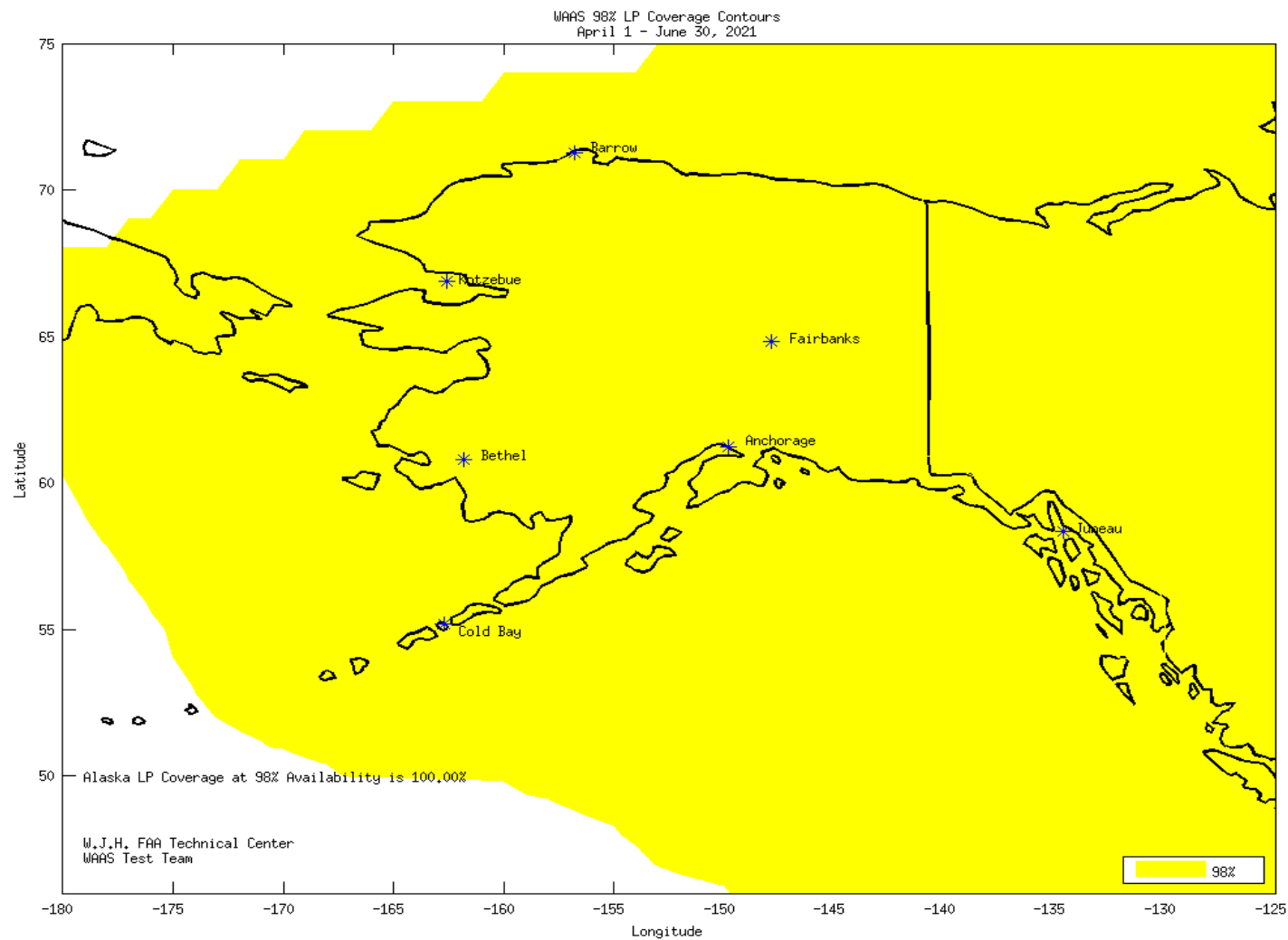


Figure B-3 98% CONUS LPV Availability Contour

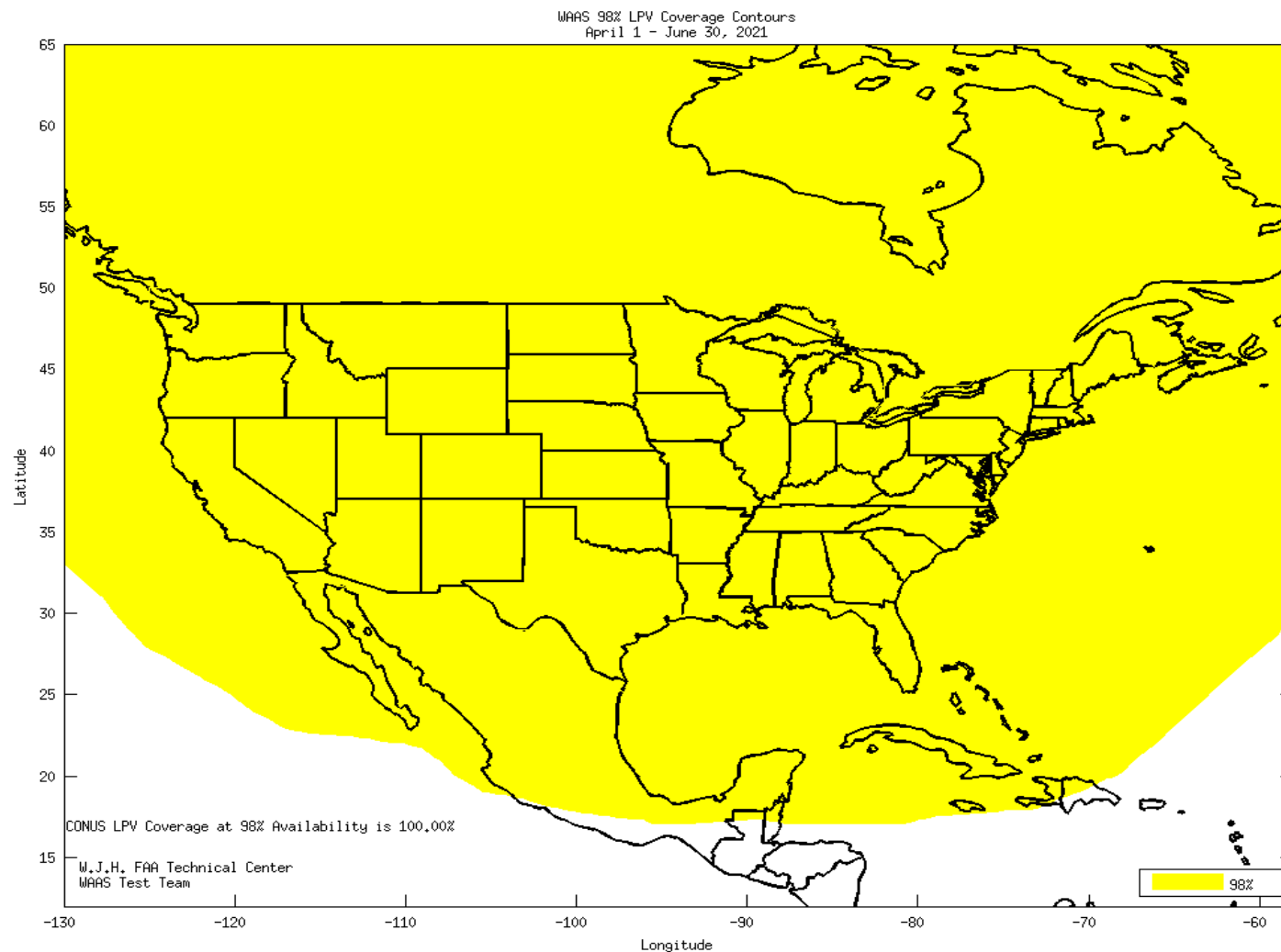


Figure B-4 98% Alaska LPV Availability Contour

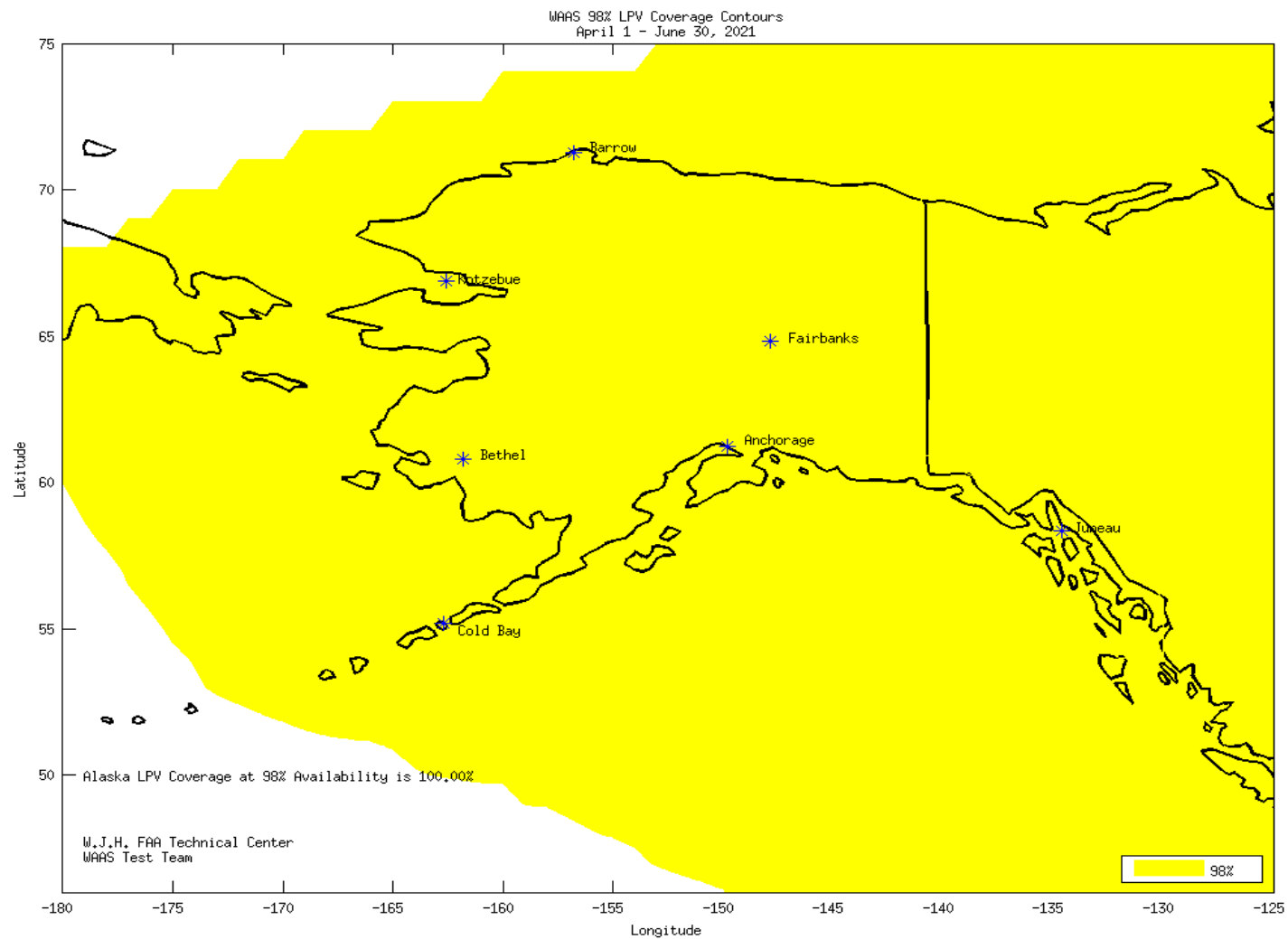


Figure B-5 98% CONUS LPV200 Availability Contour

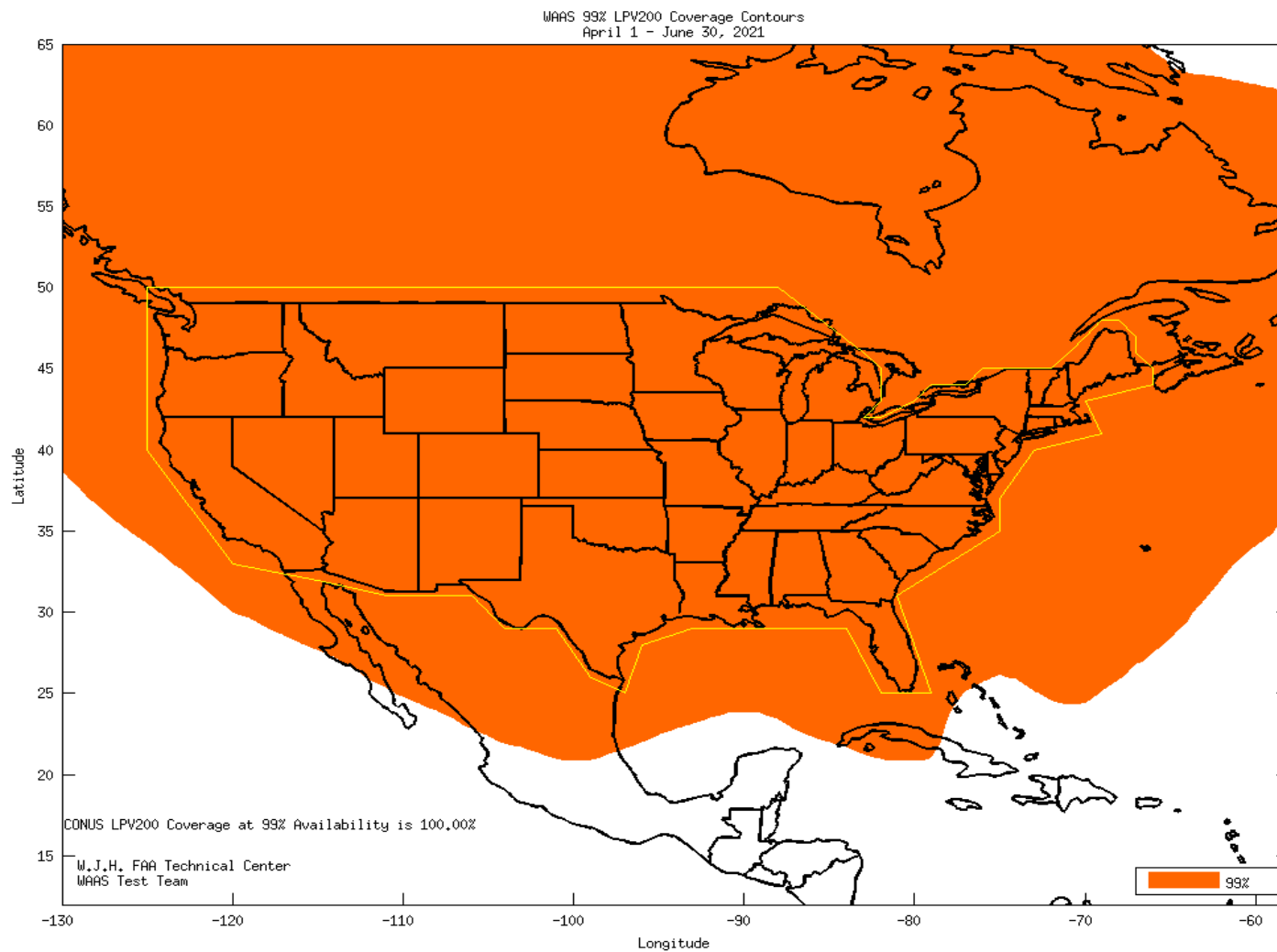


Figure B-6 98% Alaska LPV200 Availability Contour

