

This report was revised on August 11, 2017 to correct linking and formatting issues.

This report was revised on December 14, 2017 to correct figure captions 4-6 through 4-9.

WIDE AREA AUGMENTATION SYSTEM PERFORMANCE ANALYSIS REPORT

Report #61

Reporting Period: April 1 to June 30, 2017

July 2017

**FAA William J. Hughes Technical Center
NSTB/WAAS T&E Team
Atlantic City International Airport, NJ 08405
<http://www.nstb.tc.faa.gov/>**

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 #61 provides WAAS performance data from the April 1 through June 30, 2017 reporting period.

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

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

Parameter	CONUS Site/Maximum	CONUS Site/Minimum	Alaska Site/Maximum	Alaska Site/Minimum
95% Horizontal Accuracy (HPL <= 40 meters)	Arcata 1.4 meters	Kansas City 0.505 meters	Anchorage 0.708 meters	Bethel 0.571 meters
95% Vertical Accuracy (VPL <= 50 meters)	Los Angeles 1.491 meters	Billings 0.752 meters	Anchorage 1.302 meters	Juneau 0.96 meters
LP Availability (HPL <= 40 meters)	All Sites 100%	All Sites 100%	All Sites 100%	All Sites 100%
LPV Availability (HPL <= 40 meters & VPL <= 50 meters)	All Sites 100%	All Sites 100%	Multiple Sites 100%	Barrow 99.99%
LPV200 Availability (HPL <= 40 meters & VPL <= 35 meters)	Multiple Sites 100%	Oakland 99.42%	Anchorage and Bethel 100 %	Barrow 98.96%
99% HPL	Atlanta 16.184 meters	Oklahoma City 10.932	Cold Bay 21.119 meters	Juneau 13.034 meters
99% VPL	Oakland 32.342 meters	Kansas City 18.276 meters	Barrow 34.347	Billings 19.183 meters

TABLE OF CONTENTS

1.0 INTRODUCTION.....	1
1.1 Event Summary	4
1.2 Report Overview	12
2.0 WAAS POSITION ACCURACY	13
3.0 AVAILABILITY	33
4.0 COVERAGE	53
5.0 INTEGRITY.....	63
5.1 HMI Analysis	63
5.2 Broadcast Alerts	65
5.3 Availability of WAAS Messages (CRE, CRW, and AMR)	66
5.4 Satellite Glitches.....	75
6.0 SV RANGE ACCURACY	76
7.0 GEO RANGING PERFORMANCE	85
8.0 WAAS AIRPORT AVAILABILITY.....	88
9.0 WAAS CNMP BOUNDING ANALYSIS.....	151
10.0 WRS ANTENNA SURVEY VALIDATION.....	155
11.0 SQM.....	171
11.1 Alpha Metrics	171
11.2 Type Bias.....	171
11.3 PRN Bias	174
11.4 SQM Trips.....	185
Appendix A: Glossary and Acronyms	186
Appendix B: Additional Coverage Plots.....	190

LIST OF FIGURES

Figure 2-1 LPV 95% Horizontal Accuracy20

Figure 2-2 LPV 95% Horizontal Accuracy21

Figure 2-3 LPV 95% Horizontal Accuracy22

Figure 2-4 LPV 95% Vertical Accuracy.....23

Figure 2-5 LPV 95% Vertical Accuracy.....24

Figure 2-6 LPV 95% Vertical Accuracy.....25

Figure 2-7 NPA 95% Horizontal Accuracy26

Figure 2-8 NPA 95% Horizontal Accuracy27

Figure 2-9 LPV Horizontal Error Bounding Triangle Chart.....29

Figure 2-10 LPV Vertical Error Bounding Triangle Chart.....30

Figure 2-11 LPV 2-D Horizontal Error Distribution Histogram31

Figure 2-12 LPV 2-D Vertical Error Distribution Histogram.....32

Figure 3-1 LPV Instantaneous Availability41

Figure 3-2 LPV Instantaneous Availability42

Figure 3-3 LPV Instantaneous Availability43

Figure 3-4 LPV200 Instantaneous Availability44

Figure 3-5 LPV200 Instantaneous Availability45

Figure 3-6 LPV200 Instantaneous Availability46

Figure 3-7 LPV Outages.....47

Figure 3-8 LPV Outages.....48

Figure 3-9 LPV Outages.....49

Figure 3-10 LPV200 Outages.....50

Figure 3-11 LPV200 Outages.....51

Figure 3-12 LPV200 Outages.....52

Figure 4-1 LP North America Coverage for the Quarter55

Figure 4-2 LPV North America Coverage for the Quarter56

Figure 4-3 LPV200 North America Coverage for the Quarter57

Figure 4-4 RNP 0.1 Coverage for the Quarter58

Figure 4-5 RNP 0.3 Coverage for the Quarter59

Figure 4-6 Daily LPV and LPV200 CONUS Coverage60

Figure 4-7 Daily LPV and LPV200 Alaska Coverage.....61

Figure 4-8 Daily LPV and LPV200 Canada Coverage.....62

Figure 4-9 Daily RNP Coverage.....63

Figure 5-1 SV Daily Alert Trend.....65

Figure 6-1 95% Range Error (PRN-1–PRN-16)–Washington D.C.81

Figure 6-2 95% Range Error (PRN-17–PRN-32)–Washington D.C.82

Figure 6-3 95% Ionospheric Error (PRN-1–PRN-16)–Washington D.C.....83

Figure 6-4 95% Ionospheric Error (PRN-17–PRN-32)–Washington D.C.....84

Figure 7-1 Daily PA CRW GEO Ranging Availability Trend86

Figure 7-2 Daily PA CRE GEO Ranging Availability Trend.....87

Figure 8-1 WAAS LP Availability at Airports in the US and Canada With GPS RNAV IAPs145

Figure 8-2 WAAS LP Outages at Airports in the US and Canada With GPS RNAV IAPs146

Figure 8-3 WAAS LPV Availability Airports in the US and Canada With GPS RNAV IAPs147

Figure 8-4 WAAS LPV Outages at Airports in the US and Canada With GPS RNAV IAPs148

Figure 8-5 WAAS LPV Outages at Airports in the US and Canada With GPS RNAV IAPs149

Figure 8-6 WAAS LPV200 Outages at Airports in the US and Canada With GPS RNAV IAPs150

Figure 10-1 Build WE7.164c Antenna Positions Deltas OPUS Survey159

Figure 10-2 Build WE7.164c Antenna Positions Deltas OPUS Survey160

Figure 10-3 Build WE7.164c Antenna Positions Deltas OPUS Survey161

Figure 10-4 OPUS Survey Overall RMS Qualities162

Figure 10-5 OPUS Survey Overall RMS Qualities163

Figure 10-6 OPUS Survey Overall RMS Qualities164

Figure 10-7 OPUS vs. CSRS RSS ECEF Deltas165

Figure 10-8 OPUS vs. CSRS RSS ECEF Deltas166

Figure 10-9 OPUS vs. CSRS RSS ECEF Deltas167

Figure 10-10 CSRS Survey Qualities168

Figure 10-11 CSRS Survey Qualities169

Figure 10-12 CSRS Survey Qualities170

Figure 11-1 Type Bias Average Trend173

Figure 11-2 PRN Bias Average for the Quarter.....176

Figure 11-3 PRN Bias Average Trend (PRN-1–PRN-4).....177

Figure 11-4 PRN Bias Average Trend (PRN-5–PRN-8).....178

Figure 11-5 PRN Bias Average Trend (PRN-9–PRN-12).....179

Figure 11-6 PRN Bias Average Trend (PRN-13–PRN-16).....180

Figure 11-7 PRN Bias Average Trend (PRN-17–PRN-20).....181

Figure 11-8 PRN Bias Average Trend (PRN-21–PRN-24).....182

Figure 11-9 PRN Bias Average Trend (PRN-25–PRN-28).....183

Figure 11-10 PRN Bias Average Trend (PRN-29–PRN-32).....184

Figure B-1. 98% CONUS LP Availability Contour191

Figure B-2. 98% Alaska LP Availability Contour.....192

Figure B-3. 98% CONUS LPV Availability Contour193

Figure B-4. 98% Alaska LPV Availability Contour194

Figure B-5. 99% CONUS LPV200 Availability Contour.....195

Figure B-6. 99% Alaska LPV200 Availability Contour.....196

LIST OF TABLES

Table 1-1 WAAS Service Levels 1

Table 1-2 PA Evaluation Sites..... 2

Table 1-3 NPA Evaluation Sites..... 3

Table 1-4 WAAS Performance Parameters 4

Table 1-5 Events..... 5

Table 1-6 WAAS Upgrades..... 9

Table 1-7 GUS Switchovers 10

Table 2-1 PA 95% Horizontal and Vertical Accuracy..... 14

Table 2-2 NPA 95% and 99.999% Horizontal Accuracy 15

Table 2-3 Maximum LPV Error Statistics 18

Table 3-1 99% Protection Level..... 34

Table 3-2 PA Availability (15-minute window)..... 37

Table 3-3 NPA Availability (15-minute window)..... 38

Table 3-4 LPV and LPV200 Outage Rate (Per 150 sec approach)..... 39

Table 3-5 NPA Outage Rates (Excluding FD/FDE)..... 40

Table 5-1 Minimum Safety Margin Index and HMI Statistics 64

Table 5-2 WAAS SV Alert..... 65

Table 5-3 Update Rates for WAAS Messages..... 66

Table 5-4 WAAS Fast Correction and Degradation Message Rates–AMR 66

Table 5-5 WAAS Long Correction Message Rates (Type 24 and 25)–AMR 67

Table 5-6 WAAS Ephemeris Covariance Message Rates (Type 28)–AMR 68

Table 5-7 WAAS Ionospheric Correction Message Rates (Type 26)–AMR..... 69

Table 5-8 WAAS Ionospheric Mask Message Rates (Type 18)–AMR 69

Table 5-9 WAAS Fast Correction and Degradation Message Rates–CRW 69

Table 5-10 WAAS Long Correction Message Rates (Type 24 and 25)–CRW 70

Table 5-11 WAAS Ephemeris Covariance Message Rates (Type 28)–CRW 71

Table 5-12 WAAS Ionospheric Correction Message Rates (Type 26)–CRW..... 72

Table 5-13 WAAS Ionospheric Mask Message Rates (Type 18)–CRW 72

Table 5-14 WAAS Fast Correction and Degradation Message Rates–CRE..... 73

Table 5-15 WAAS Long Correction Message Rates (Type 24 and 25)–CRE..... 73

Table 5-16 WAAS Ephemeris Covariance Message Rates (Type 28)–CRE..... 74

Table 5-17 WAAS Ionospheric Correction Message Rates (Type 26)–CRE 75

Table 5-18 WAAS Ionospheric Mask Message Rates (Type 18)–CRE 75

Table 6-1 Range Error 95% Index and 3.29 Sigma Bounding 77

Table 6-2 Range Error 95% Index and 99.9% Bounding 78

Table 6-3 Ionospheric Error 95% Index and 99.9% Sigma Bounding..... 79

Table 6-4 Ionospheric Error 95% Index and 99.9% Bounding..... 80

Table 7-1 GEO Ranging Availability 85

Table 8-1 WAAS LP, LPV, and LPV200 Outages and Availability 88

Table 9-1 CNMP Bounding Statistics 152

Table 10-1 WAAS Antenna Positions (OPUS IGS08) as of 04/02/2017 156

Table 11-1 Alpha Metrics..... 171

Table 11-2 Type Bias Average for the Quarter 172

Table 11-3 Type Bias Average Since January 1, 2008 172

Table 11-4 PRN Bias Average for the Quarter 175

1.0 INTRODUCTION

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

The objectives of this report are:

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

The evaluation uses the WAAS data transmitted from geostationary satellites (GEOs) pseudo-random noise (PRN) 135 (CRW), PRN 138 (CRE), and PRN 133 (AMR). CRE and CRW GEOs provide a precision approach (PA) ranging capability that supports all levels of WAAS service. As of January 18, 2015, the AMR GEO indefinitely discontinued non-precision approach (NPA) ranging service.

In this report, the terms "PA" and "NPA" are used in reference of the two modes of user equipment operation. These terms were used in the original WAAS specification, FAA-E-2892. See Table 1-1 for a mapping of PA and NPA to the user service levels.

Table 1-1 WAAS Service Levels

User Service	NPA or PA	WAAS Protection Levels
RNP 0.3	NPA	HPL <= 0.3 nmi
RNP 0.1	NPA	HPL <= 0.1 nmi
LNAV	NPA	HPL <= 556 m
LNAV/VNAV	PA	HPL <= 556 m VPL <= 50 m
LP	PA	HPL <= 40 m
LPV	PA	HPL <= 40 m VPL <= 50 m
LPV200	PA	HPL <= 40 m VPL <= 35 m

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

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

Table 1-2 PA Evaluation Sites

Location	Number of Days Evaluated	Number of Samples
NSTB:		
Arcata	90	7777604
Atlantic City	90	7818849
Oklahoma City	90	7768401
WAAS:		
Albuquerque	91	7843703
Anchorage	91	7847912
Atlanta	91	7861977
Barrow	91	7857473
Bethel	91	7855552
Billings	91	7862327
Boston	91	7862310
Chicago	91	7853450
Cleveland	91	7820037
Cold Bay	91	7862124
Dallas	91	7860422
Denver	91	7858979
Fairbanks	91	7861254
Gander	91	7861580
Goose Bay	91	7862049
Houston	91	7860153
Iqaluit	91	7859012
Jacksonville	91	7862154
Juneau	91	7860052
Kansas City	91	7861135
Kotzebue	91	7848256
Los Angeles	91	7856720
Memphis	91	7861794
Merida	91	7852282
Mexico City	91	7851786
Miami	91	7845983
Minneapolis	91	7862228
New York	91	7862378
Oakland	91	7857976
Puerto Vallarta	91	7856138
Salt Lake City	91	7861961
San Jose Del Cabo	91	7852941
Seattle	91	7852250
Washington DC	91	7862395
Winnipeg	91	7862364

Table 1-3 NPA Evaluation Sites

Location	Number of Days Evaluated	Number of Samples
Albuquerque	91	7862306
Anchorage	91	7859749
Atlanta	91	7862354
Barrow	91	7857420
Bethel	91	7854472
Billings	91	7862328
Boston	91	7862323
Cleveland	91	7862394
Cold Bay	91	7862395
Fairbanks	91	7860137
Gander	91	7861528
Honolulu	91	7850127
Houston	91	7862399
Iqaluit	91	7857374
Juneau	91	7861210
Kansas City	91	7862330
Kotzebue	91	7859503
Los Angeles	91	7862394
Merida	91	7845199
Miami	91	7832983
Minneapolis	91	7862391
Oakland	91	7862399
Salt Lake City	91	7860049
San Jose Del Cabo	91	7859819
San Juan	91	7862382
Seattle	91	7862391
Tapachula	90	7798479
Washington DC	91	7862395

The report is divided by the performance category:

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

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

Table 1-4 WAAS Performance Parameters

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

1.1 Event Summary

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

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

Table 1-5 Events

Start Date	End Date	Location/Satellites	Service Affected	Event Description
4/4/2017	4/4/2017	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Alaska, LPV200_Canada	Geomagnetic activity ($K_p = 5$) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of LPV200 service coverage in Alaska from 06:55 GMT to 07:15 GMT. The elevated GIVE values also resulted in minor degradation of LPV200 service coverage in Canada from 06:58 GMT to 07:14 GMT. Please see plots LPV200 4/4/2017 and Cov vs Time Alaska 4/4/2017 .
4/22/2017	4/24/2017	PRN 6	LPV200_CONUS	WAAS set PRN 6 UDREi to Not Monitored (UDREi = 14) from April 22–April 24. Signal anomaly on PRN 6 was observed from the WRS receivers on all 3 days and caused moderate degradation of LPV200 service coverage in CONUS from 01:09 GMT on April 22 to 01:16 GMT on April 24 2017. See DR 138 . Please see plots LPV200 4/24/2017 and Cov vs Time Conus 4/24/2017 .
4/22/2017	4/22/2017	PRN 16	LPV200_Canada	The reduction in LPV200 service coverage in Canada was due to a GPS NANU on PRN 16 (see NANU2017033), which was unusable from 16:37 GMT to 16:46 GMT. The NANU caused minor degradation of LPV200 service coverage in Canada from 16:37 GMT to 16:46 GMT. Please see plots LPV200 4/22/2017 , Cov vs Time Alaska 4/22/2017 , and Cov vs Time Canada 4/22/2017 .
5/17/2017	5/17/2017	GEO 135,Napa (APC)	LPV200_CONUS	The uplink for the CRW GEO, GEO 135, switched from the Napa uplink site to the Littleton uplink site at 16:50:29 GMT. This caused an 18-second outage of the GEO 135 broadcast and also caused the WAAS carrier smoothing algorithm to reinitialize for PRN 135. This also caused the UDRE for GEO 135 to be elevated. The elevated UDRE for GEO 135 cause minor degradation of LPV200 service coverage in CONUS from 23:26 GMT to 23:34 GMT. TOW 319846-319865.
5/19/2017	5/19/2017	PRN 12	LPV200_CONUS	The reduction in LPV200 service coverage in CONUS was due to a GPS NANU on PRN 12 (see NANU2017044) which was unusable from 00:08 GMT to 06:01 GMT. The NANU caused minor degradation of LPV200 service coverage in CONUS from 03:34 GMT to 03:59 GMT. Please see plots LPV200 5/19/2017 and Cov vs Time Conus 5/19/2017 .

Start Date	End Date	Location/Satellites	Service Affected	Event Description
5/24/2017	5/24/2017	All Receivers	None	WAAS Receivers experienced delayed signal acquisition after Faulted GUS switchover. The NSTB GPS/WAAS receiver at Arcata was able to track and provide a valid WUM from CRW GEO 4-seconds earlier than WAAS receivers. Most WAAS receivers took 3–16 seconds longer than Arcata to acquire track on the GEO after the GUS Faulted switchover. In addition to the slower acquisition, all WAAS receivers did not provide a valid WUM for 2–3 seconds after tracking had been established. See DR 139 .
5/24/2017	5/24/2017	GEO138,Brewster-B (BRE-B)	LPV200_Alaska, LPV200_Canada	The uplink for the CRE GEO, PRN 138, switched from the Brewster-B uplink site to the Woodbine uplink site at 01:57:26 GMT. This caused a 16-second outage of the GEO 138 broadcast and also caused the WAAS carrier smoothing algorithm to reinitialize for PRN 138. The elevated UDRE for GEO 138 caused minor degradation of (1) LPV200 service coverage in Alaska from 03:40 GMT to 04:00 GMT; and (2) LPV200 service coverage in Canada from 02:14 GMT to 02:20 GMT. TOW 266263-266280. Please see plots LPV200_5/24/2017 and Cov_vs_Time_Alaska_5/24/2017 .
5/25/2017	5/26/2017	GEO138,Woodbine (QWE)	LPV200_Alaska, LPV200_Canada	The uplink for the CRE GEO, PRN 138 switched from the Woodbine uplink site to the Brewster-B uplink site at 23:08:30 GMT on 5/25. This caused a 21-second outage of the GEO 138 broadcast and also caused the WAAS carrier smoothing algorithm to reinitialize for PRN 138. The elevated UDRE for GEO 138 caused minor degradation of (1) LPV200 service coverage in Alaska from 03:30 GMT to 03:52 GMT; and (2) LPV200 service coverage in Canada from 01:01 GMT to 01:28 GMT. TOW 428927-428949. Please see plot LPV200_5/26/2017 .

Start Date	End Date	Location/Satellites	Service Affected	Event Description
5/28/2017	5/28/2017	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Alaska, LPV200_Canada	Geomagnetic activity (Kp = 7) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of (1) LPV200 service coverage in Alaska from 03:11 GMT to 03:43 GMT and from 07:38 GMT to 07:53 GMT and (2) LPV200 service coverage in Canada from 02:40 GMT to 03:32 GMT. The elevated GIVE values also caused WAAS GPS UDRE internal threshold trips to increase the UDREi to Not Monitored of: (1) PRN 8, which caused degradation of LPV200 service coverage in Alaska from 07:37 GMT to 07:48 GMT; and (2) PRN 10, which caused degradation of LPV200 service coverage in CONUS (Oregon/California) from 09:59 GMT to 10:02 GMT. Please see plots LPV200 5/28/2017, Cov vs Time Alaska 5/28/2017, and Cov vs Time Canada 5/28/2017.
5/29/2017	5/29/2017	PRN 21	LPV200_CONUS	PRN 21 had an SV Alert to Not Monitored, which caused an LPV200 outage in CONUS (Arizona/New Mexico) from 01:47:30 GMT to 01:50:30 GMT. Please see plot LPV200 5/29/2017.
6/2/2017	6/2/2017	PRN 18	LPV200_Alaska, LPV200_Canada	The reduction in LPV200 service coverage in Alaska and Canada was due to a GPS NANU on PRN 18 (see NANU2017048), which was unusable from 01:41 GMT to 07:01 GMT. The NANU caused minor degradation of: (1) LPV200 service coverage in Alaska from 03:04 GMT to 03:20 GMT; and (2) LPV200 service coverage in Canada from 06:29 GMT to 06:42 GMT. Please see plot LPV200 6/2/2017.
6/7/2017	6/7/2017	PRN 28	LPV200_CONUS, LPV200_Alaska, LPV200_Canada	The reduction in LPV200 service coverage in CONUS, Alaska, and Canada was due to a GPS NANU on PRN 28 (see NANU2017051), which was unusable from 18:19 GMT to 22:26 GMT. The NANU caused significant degradation of LPV200 service coverage in CONUS from 20:02 GMT to 20:33 GMT and from 21:06 GMT to 22:09 GMT. The NANU also caused moderate degradation of (1) LPV200 service coverage in Alaska from 18:46 GMT to 19:42 GMT and (2) LPV200 service coverage in Canada from 18:45 GMT to 20:14 GMT. Please see plots LPV200 6/7/2017, Cov vs Time Alaska 6/7/2017, and Cov vs Time Canada 6/7/2017, and Cov vs Time Conus 6/7/2017.

Start Date	End Date	Location/Satellites	Service Affected	Event Description
6/15/2017	6/16/2017	PRN 15	LPV200_Alaska	The reduction in LPV200 service coverage in Alaska was due to a GPS NANU on PRN 15 (see NANU2017056), which was unusable from 18:42 GMT on 6/15 to 00:59 GMT on 6/16. The NANU caused minor degradation of LPV200 service coverage in Alaska from 18:44 GMT to 19:05 GMT on 6/15. Please see plots LPV200 6/15/2017 and Cov vs Time Alaska 6/15/2017 .
6/21/2017	6/21/2017	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Canada	Geomagnetic activity ($K_p = 2$) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of LPV200 service coverage in Canada from 22:02 GMT to 22:35 GMT. Please see plots LPV200 6/21/2017 and Cov vs Time Canada 6/21/2017 .
6/22/2017	6/22/2017	PRN 13	LPV200_CONUS	The reduction in LPV200 service coverage in CONUS was due to a GPS NANU on PRN 13 (see NANU2017058) which was unusable from 00:31 GMT to 03:06 GMT. The NANU caused moderate degradation of LPV200 service coverage in CONUS from 01:14 GMT to 01:44 GMT. Please see plots LPV200 6/22/2017 and Cov vs Time Conus 6/22/2017 .
6/26/2017	6/26/2017	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Canada	Several IGPs at latitude 70 and longitudes -80 to -50 were set to Not-Monitored from 15:37 GMT to 16:25 GMT. The OKC WAAS performance monitoring tool reported that the Iqaluit WRS experienced a sub-frame reasonability warning and YFB PID Down fault which removed Iqaluit WRS from the WAAS correction processing during the time that IGPs were set to the Not Monitored state. The Not Monitored IGPs caused minor degradation to LPV200 service coverage in Canada from 15:38 GMT until 16:21 GMT. This type of event has occurred on 9/28/2016 and 10/27/2016. See DR 133 . Please see plots LPV200 6/26/2017 and Cov vs Time Canada 6/26/2017 .

Start Date	End Date	Location/Satellites	Service Affected	Event Description
6/29/2017	6/30/2017	PRN 20	LPV200_CONUS, LPV200_Alaska	The reduction in LPV200 service coverage in CONUS and Alaska was due to a GPS NANU on PRN 20 (see NANU2017063), which was unusable from 23:29 GMT on 6/29 to 02:01 GMT on 6/30. The NANU caused minor degradation of (1) LPV200 service coverage in CONUS from 23:33 GMT to 23:42 GMT on 6/29 and from 00:23 GMT to 01:06 GMT on 6/30; and (2) LPV200 service coverage in Alaska from 01:20 GMT to 01:26 GMT on 6/30. Please see plots LPV200 6/29/2017, Cov vs Time Conus 6/29/2017, LPV200 6/30/2017, Cov vs Time Alaska 6/30/2017, and Cov vs Time Conus 6/30/2017.

Table 1-6 WAAS Upgrades

Start Date	End Date	Location	Event Description
04/04/2017	04/04/2017	Chicago (ZAU1), Chicago (ZAU2), Chicago (ZAU3)	SSM-47: This system support modification (SSM) upgrades the processors at the ZAU WRS. This upgrade supports the cutover to WAAS Release 1. This upgrade caused a 7983 second outage from the ZAU WRS from 14:18:29 GMT to 16:31:33 GMT.
04/04/2017	04/04/2017	Mexico City (MMX1), Mexico City (MMX2), Mexico City (MMX3)	SSM-47: This system support modification (SSM) upgrades the processors at the MMX WRS. This upgrade supports the cutover to WAAS Release 1. This upgrade caused a 3395 second outage from the MMX WRS from 14:58:39 GMT to 15:55:15 GMT.
04/13/2017	04/13/2017	Miami (ZMA1), Miami (ZMA2), Miami (ZMA3)	SSM-47: This system support modification (SSM) upgrades the processors at the ZMA WRS. This upgrade supports the cutover to WAAS Release 1. This upgrade caused a 790 second outage from the ZMA WRS from 01:21:57 GMT to 01:35:08 GMT.
04/19/2017	04/19/2017	Iqaluit (YFB1), Iqaluit (YFB2), Iqaluit (YFB3)	SSM-47: This system support modification (SSM) upgrades the processors at the YFB WRS. This upgrade supports the cutover to WAAS Release 1. This upgrade caused a 961 second outage from the YFB WRS from 22:44:43 GMT to 23:00:45 GMT.
04/19/2017	04/19/2017	Barrow (BRW1), Barrow (BRW2), Barrow (BRW3)	SSM-47: This system support modification (SSM) upgrades the processors at the BRW WRS. This upgrade supports the cutover to WAAS Release 1.

Table 1-7 GUS Switchovers

Start Date	End Date	GUS Switch	Location/Satellites	Service Affected	Event Description
4/7/2017	4/7/2017	Faulted	GEO135,Littleton (APA)	None	The uplink for the CRW GEO, GEO 135, switched from the Littleton uplink site to the Napa uplink site at 07:09 GMT. This caused a 16-second outage of the GEO 135 broadcast and also caused the WAAS carrier smoothing algorithm to reinitialize for PRN 135. This also caused the UDRE for GEO 135 to be elevated. No effect on coverage. TOW 457792-457809.
4/11/2017	4/11/2017	Faulted	GEO133,Paumalu (HDH)	None	The uplink for the AMR GEO, GEO 133, switched from the Paumalu uplink site to the Santa Paula uplink site at 17:45 GMT. This caused a 20-second outage of the GEO 133 broadcast and also caused the WAAS carrier smoothing algorithm to reinitialize for PRN 133. This also caused the UDRE for GEO 133 to be elevated. TOW 236722-236743.
4/15/2017	4/15/2017	Faulted	GEO138,Woodbine (QWE)	None	The uplink for the CRE GEO, PRN 138 switched from the Woodbine uplink site to the Brewster-B uplink site at 06:26:20 GMT. This caused a 14-second outage of the GEO 138 broadcast and also caused the WAAS carrier smoothing algorithm to reinitialize for PRN 138. No effect on coverage. TOW 541597-541612.
4/19/2017	4/19/2017	Manual	GEO133,Santa_Paula (SZP)	None	The uplink for the AMR GEO, GEO 133, switched from the Santa Paula uplink site to the Paumalu uplink site at 08:00:04 GMT. This caused a 4-second outage of the GEO 133 broadcast and also caused the WAAS carrier smoothing algorithm to reinitialize for PRN 133. This also caused the UDRE for GEO 133 to be elevated. TOW 288021-288026.
4/20/2017	4/20/2017	Faulted	GEO133,Paumalu (HDH)	None	The uplink for the AMR GEO, GEO 133, switched from the Paumalu uplink site to the Santa Paula uplink site at 12:01:41 GMT. This caused a 20-second outage of the GEO 133 broadcast and also caused the WAAS carrier smoothing algorithm to reinitialize for PRN 133. This also caused the UDRE for GEO 133 to be elevated. TOW 388918-388939.

Start Date	End Date	GUS Switch	Location/Satellites	Service Affected	Event Description
5/8/2017	5/8/2017	Faulted	GEO133,Santa_Paula (SZP)	None	The uplink for the AMR GEO, GEO 133, switched from the Santa Paula uplink site to the Paumalu uplink site at 23:27:20 GMT. This caused a 14-second outage of the GEO 133 broadcast and also caused the WAAS carrier smoothing algorithm to reinitialize for PRN 133. This also caused the UDRE for GEO 133 to be elevated. TOW 170857-170872.
5/17/2017	5/17/2017	Faulted	GEO135,Napa (APC)	LPV200_CONUS	The uplink for the CRW GEO, GEO 135, switched from the Napa uplink site to the Littleton uplink site at 16:50:29 GMT. This caused an 18-second outage of the GEO 135 broadcast and also caused the WAAS carrier smoothing algorithm to reinitialize for PRN 135. This also caused the UDRE for GEO 135 to be elevated. The elevated UDRE for GEO 135 cause minor degradation of LPV200 service coverage in CONUS from 23:26 GMT to 23:34 GMT. TOW 319846-319865.
5/24/2017	5/24/2017	Faulted	GEO138,Brewster-B (BRE-B)	LPV200_Alaska, LPV200_Canada	The uplink for the CRE GEO, PRN 138 switched from the Brewster-B uplink site to the Woodbine uplink site at 01:57:26 GMT. This caused a 16-second outage of the GEO 138 broadcast and also caused the WAAS carrier smoothing algorithm to reinitialize for PRN 138. The elevated UDRE for GEO 138 caused minor degradation of (1) LPV200 service coverage in Alaska from 03:40 GMT to 04:00 GMT, and (2) LPV200 service coverage in Canada from 02:14 GMT to 02:20 GMT. TOW 266263-266280. Please see plots LPV200 5/24/2017 and Cov vs Time Alaska 5/24/2017
5/25/2017	5/26/2017	Manual	GEO138,Woodbine (QWE)	LPV200_Alaska, LPV200_Canada	The uplink for the CRE GEO, PRN 138 switched from the Woodbine uplink site to the Brewster-B uplink site at 23:08:30 GMT on 5/25. This caused a 21-second outage of the GEO 138 broadcast and also caused the WAAS carrier smoothing algorithm to reinitialize for PRN 138. The elevated UDRE for GEO 138 caused minor degradation of (1) LPV200 service coverage in Alaska from 03:30 GMT to 03:52 GMT; and (2) LPV200 service coverage in Canada from 01:01 GMT to 01:28 GMT. TOW 428927-428949. Please see plot LPV200 5/26/2017 .

Start Date	End Date	GUS Switch	Location/Satellites	Service Affected	Event Description
4/7/2017	4/7/2017	Faulted	GEO135, Littleton (APA)	None	The uplink for the CRW GEO, GEO 135, switched from the Littleton uplink site to the Napa uplink site at 07:09 GMT. This caused a 16-second outage of the GEO 135 broadcast and also caused the WAAS carrier smoothing algorithm to reinitialize for PRN 135. This also caused the UDRE for GEO 135 to be elevated. No effect on coverage. TOW 457792-457809.
4/11/2017	4/11/2017	Faulted	GEO133, Paumalu (HDH)	None	The uplink for the AMR GEO, GEO 133, switched from the Paumalu uplink site to the Santa Paula uplink site at 17:45 GMT. This caused a 20-second outage of the GEO 133 broadcast and also caused the WAAS carrier smoothing algorithm to reinitialize for PRN 133. This also caused the UDRE for GEO 133 to be elevated. TOW 236722-236743.
4/15/2017	4/15/2017	Faulted	GEO138, Woodbine (QWE)	None	The uplink for the CRE GEO, PRN 138, switched from the Woodbine uplink site to the Brewster-B uplink site at 06:26:20 GMT. This caused a 14-second outage of the GEO 138 broadcast and also caused the WAAS carrier smoothing algorithm to reinitialize for PRN 138. No effect on coverage. TOW 541597-541612.
4/19/2017	4/19/2017	Manual	GEO133, Santa_Paula (SZP)	None	The uplink for the AMR GEO, GEO 133, switched from the Santa Paula uplink site to the Paumalu uplink site at 08:00:04 GMT. This caused a 4-second outage of the GEO 133 broadcast and also caused the WAAS carrier smoothing algorithm to reinitialize for PRN 133. This also caused the UDRE for GEO 133 to be elevated. TOW 288021-288026.

1.2 Report Overview

Section 2.0 provides the observed Localizer Performance with Vertical Guidance (LPV) and NPA performance for the evaluated receiver locations (see Table 1-2 and Table 1-3). This section also shows tabulated data for the 95% accuracy and the maximum inaccuracy. In addition, the daily 95% accuracy for each receiver and the histograms of vertical and horizontal error are shown.

Section 3.0 provides the summary of the WAAS instantaneous availability performance at each receiver for three operational service levels. In addition, the daily availability, number of outages, and outage rate for each evaluated receiver are also reported.

Section 4.0 provides geographic plots of the WAAS service availability. Also shown in this section are plots of the percentage of the Continental United States (CONUS) and Alaska service areas covered by various levels of service availability.

Section 5.0 provides the summary of the Hazardous Misleading Information (HMI) analysis as well as a safety margin index for each receiver. This section also shows update rates of WAAS messages transmitted from CRE, CRW, and AMR.

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

Section 7.0 provides the GEO ranging performance for CRE and CRW.

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

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

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

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

2.0 WAAS POSITION ACCURACY

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

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

- The maximum 95% CONUS horizontal LPV error was 1.400 meters observed at Arcata.
- The maximum 95% CONUS vertical LPV error was 1.491 meters observed at Los Angeles.
- The minimum 95% CONUS horizontal LPV errors was 0.505 meters observed at Kansas City.
- The minimum 95% CONUS vertical LPV error was 0.752 meters observed at Billings.

Table 2-1 PA 95% Horizontal and Vertical Accuracy

Location	Horizontal (HAL=40m) (Meters)	Horizontal (HAL=556m) (Meters)	Vertical (VAL=50m) (Meters)	Percentage in PA mode (%)	SPS Accuracy	
					95% Horizontal (Meters)	95% Vertical (Meters)
Arcata	1.4	1.4	1.228	100	*	*
Atlantic City	1.269	1.269	1.436	100	*	*
Oklahoma City	0.557	0.557	1.023	100	*	*
Albuquerque	0.593	0.593	1.037	100	1.655	4.224
Anchorage	0.708	0.708	1.302	100	*	*
Atlanta	0.621	0.621	1.071	100	1.682	4.364
Barrow	0.573	0.573	1.095	99.99968	*	*
Bethel	0.571	0.571	1.027	100	1.999	3.904
Billings	0.656	0.656	0.752	100	1.582	3.862
Boston	0.729	0.729	1.011	100	1.779	3.997
Chicago	0.745	0.745	0.981	100	*	*
Cleveland	0.683	0.683	0.89	100	1.792	4.225
Cold Bay	0.597	0.597	1.062	100	*	*
Dallas	0.597	0.597	1.266	100	*	*
Denver	0.591	0.591	0.815	100	*	*
Fairbanks	0.574	0.574	1.043	100	1.761	3.594
Gander	0.674	0.674	1.003	100	*	*
Goose Bay	0.706	0.706	0.837	100	*	*
Houston	0.684	0.684	1.391	100	*	*
Iqaluit	0.766	0.766	0.972	100	*	*
Jacksonville	0.624	0.624	1.225	100	*	*
Juneau	0.6	0.6	0.96	100	*	*
Kansas City	0.505	0.505	0.894	100	1.654	4.193
Kotzebue	0.615	0.615	1.153	99.99969	1.888	3.672
Los Angeles	0.826	0.826	1.491	100	1.845	4.729
Memphis	0.529	0.529	0.989	100	*	*
Merida	0.665	0.665	1.32	100	*	*
Mexico City	0.662	0.662	2.866	100	*	*
Miami	0.73	0.73	1.314	100	2.022	4.245
Minneapolis	0.653	0.653	0.797	100	1.629	3.915
New York	0.683	0.683	0.923	100	*	*
Oakland	0.692	0.692	1.431	100	1.787	4.883
Puerto Vallarta	0.696	0.696	1.874	100	*	*
Salt Lake City	0.563	0.563	0.823	100	1.571	4.255
San Jose Del Cabo	0.904	0.904	2.078	100	*	*
Seattle	0.577	0.577	0.827	100	1.548	3.992
Washington DC	0.679	0.679	0.99	100	1.710	4.237
Winnipeg	0.548	0.548	0.857	100	*	*

* = SPS Data not processed

NPA navigation mode is when only WAAS fast and long term corrections are available to a user (i.e., no ionospheric corrections). Table 2-2 shows the 95%, 99.999%, and maximum NPA horizontal position accuracy. The maximum and minimum NPA errors for this reporting period are as below:

- The maximum 95% horizontal error was 2.891 meters observed at Honolulu.
- The maximum 99.999% horizontal error was 7.163 meters observed at Honolulu.
- The minimum 95% horizontal error was 0.822 meters observed at Iqaluit.
- The minimum 99.999% horizontal error was 1.894 meters observed at Kansas 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
Albuquerque	1.026	2.914	100	3.111
Anchorage	1.983	3.644	100	3.857
Atlanta	1.061	2.334	100	2.528
Barrow	1.306	3.108	100	3.211
Bethel	1.669	3.073	100	3.188
Billings	1.282	3.418	100	3.605
Boston	1.229	2.569	100	2.731
Cleveland	1.113	2.828	100	3.113
Cold Bay	1.361	2.681	100	2.892
Fairbanks	1.738	3.806	100	5.707
Gander	1.146	3.024	100	3.165
Honolulu	2.891	7.163	100	7.431
Houston	1.644	4.104	100	4.224
Iqaluit	0.822	3.003	100	3.17
Juneau	1.516	3.185	100	3.415
Kansas City	0.941	1.984	100	2.148
Kotzebue	1.614	3.243	100	4.903
Los Angeles	1.496	3.401	100	3.555
Merida	1.894	4.808	100	4.988
Miami	1.557	4.947	100	5.092
Minneapolis	1.21	3.254	100	3.371
Oakland	1.171	2.645	100	2.825
Salt Lake City	1.054	3.394	100	3.616
San Jose Del Cabo	2.013	4.274	100	4.394
San Juan	1.705	5.312	100	5.428
Seattle	1.133	3.876	100	4
Tapachula	2.255	5.372	100	5.527
Washington DC	1.199	2.327	100	2.592

Table 2-3 shows the quarterly maximum LPV error statistics: (1) the column Horizontal Error column shows the maximum position errors while the calculated HPL meets the LPV service level defined in Table 1-1, (2) the Vertical Error column shows the maximum position errors while the calculated VPL meets the LPV service level, (3) the Horizontal Error/HPL column and the Vertical Error/VPL column show the ratio of position error to protection level at the time the maximum error occurred, (4) the Horizontal Maximum Ratio column and the Vertical Maximum Ratio column show the maximum position error to protection level ratio for the quarter. During this reporting period, the maximum LPV horizontal error was 5.938 meters occurred at Fairbanks and maximum vertical LPV error was 7.050 meters occurred at Mexico City.

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	2.548	0.200	0.216	3.267	0.111	0.167
Atlantic City	2.503	0.143	0.244	3.390	0.159	0.203
Oklahoma City	1.274	0.153	0.153	2.622	0.187	0.201
Albuquerque	1.374	0.159	0.159	2.357	0.119	0.164
Anchorage	3.412	0.144	0.171	3.253	0.179	0.179
Atlanta	1.985	0.159	0.159	3.100	0.124	0.174
Barrow	1.931	0.064	0.181	4.151	0.164	0.185
Bethel	2.440	0.158	0.163	3.435	0.126	0.153
Billings	1.961	0.102	0.160	2.918	0.123	0.150
Boston	1.612	0.130	0.134	2.580	0.123	0.135
Chicago	2.165	0.113	0.169	3.159	0.124	0.173
Cleveland	2.500	0.142	0.146	3.057	0.127	0.151
Cold Bay	1.453	0.099	0.099	2.681	0.096	0.120
Dallas	1.560	0.169	0.169	2.941	0.163	0.223
Denver	1.416	0.113	0.164	2.662	0.110	0.171
Fairbanks	5.938	0.234	0.238	5.656	0.127	0.241
Gander	1.475	0.087	0.093	2.550	0.070	0.103
Goose Bay	1.849	0.072	0.114	2.671	0.092	0.115
Houston	1.792	0.168	0.221	2.695	0.186	0.209
Iqaluit	2.560	0.133	0.141	3.852	0.081	0.154
Jacksonville	1.872	0.145	0.145	3.265	0.140	0.197
Juneau	2.023	0.098	0.143	4.857	0.218	0.218
Kansas City	2.018	0.174	0.174	4.723	0.245	0.245
Kotzebue	2.196	0.122	0.152	4.317	0.132	0.177
Los Angeles	1.685	0.121	0.138	2.827	0.145	0.162
Memphis	2.178	0.154	0.154	4.849	0.246	0.248
Merida	1.788	0.080	0.131	4.157	0.118	0.141
Mexico City	2.279	0.086	0.114	7.050	0.256	0.256
Miami	1.852	0.164	0.164	3.823	0.119	0.155
Minneapolis	1.762	0.116	0.143	3.256	0.121	0.155
New York	2.108	0.174	0.174	1.987	0.133	0.136
Oakland	1.538	0.122	0.127	2.895	0.136	0.159
Puerto Vallarta	1.844	0.096	0.096	4.632	0.167	0.182
Salt Lake City	1.522	0.146	0.146	2.736	0.144	0.157
San Jose Del Cabo	1.956	0.098	0.136	4.363	0.096	0.196
Seattle	2.531	0.186	0.186	3.261	0.109	0.177
Washington DC	2.056	0.089	0.137	2.382	0.117	0.163
Winnipeg	2.761	0.134	0.228	2.311	0.172	0.182

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 22–25, 2017—Position errors in CONUS and Alaska were elevated. The maximum 95% horizontal and vertical LPV errors were 1.759 meters and 1.990 meters at Arcata and Atlantic City, respectively. The Kp index range was 6, 6, 4, and 4, respectively.
- May 15, 2017—Position errors in CONUS were elevated. The maximum 95% horizontal and vertical LPV errors were 1.482 meters and 1.828 meters at Atlantic City and Houston, respectively. The Kp index was 4.
- May 28, 2017—Position errors in CONUS, Alaska, Canada, and Mexico were elevated. The maximum 95% horizontal and vertical LPV errors were 1.632 meters and 4.567 meters at Arcata and Mexico City, respectively. The Kp index was 7.
- June 16–17, 2017—Position errors in CONUS and Canada were elevated. The maximum 95% horizontal and vertical LPV errors were 1.392 meters and 2.110 meters at Arcata and Atlantic City, respectively. The Kp index was 4.

Figure 2-1 LPV 95% Horizontal Accuracy

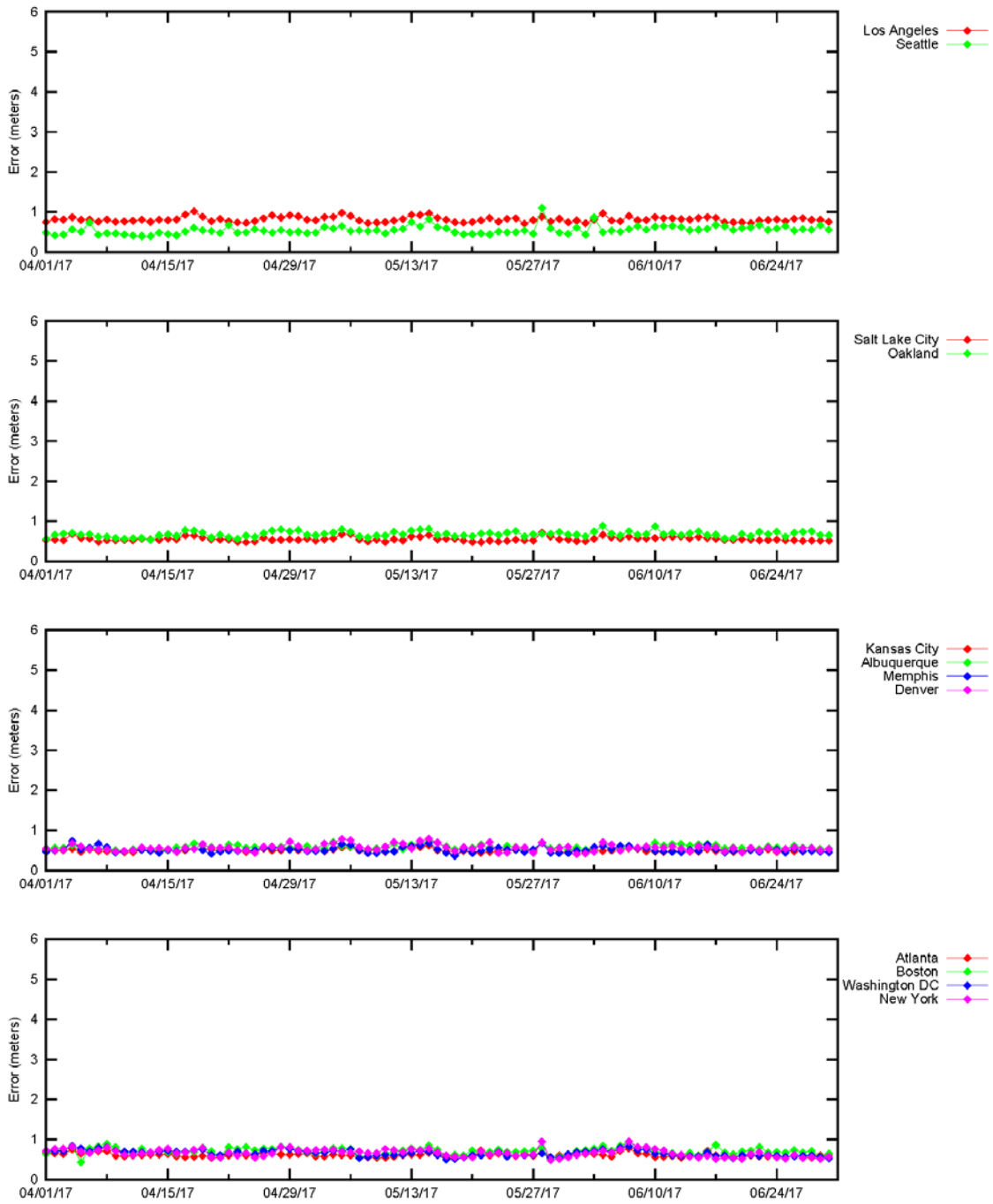


Figure 2-2 LPV 95% Horizontal Accuracy

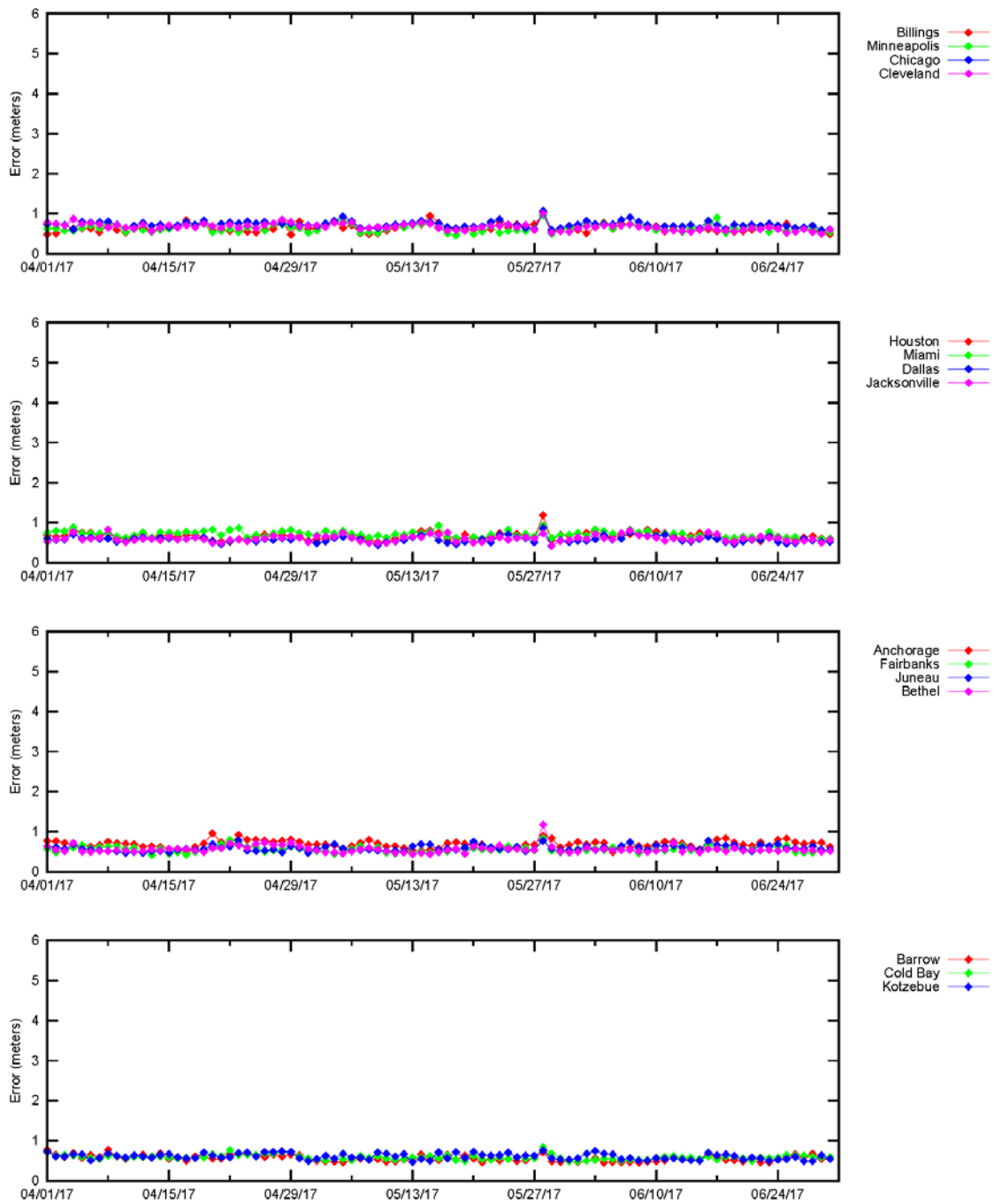


Figure 2-3 LPV 95% Horizontal Accuracy

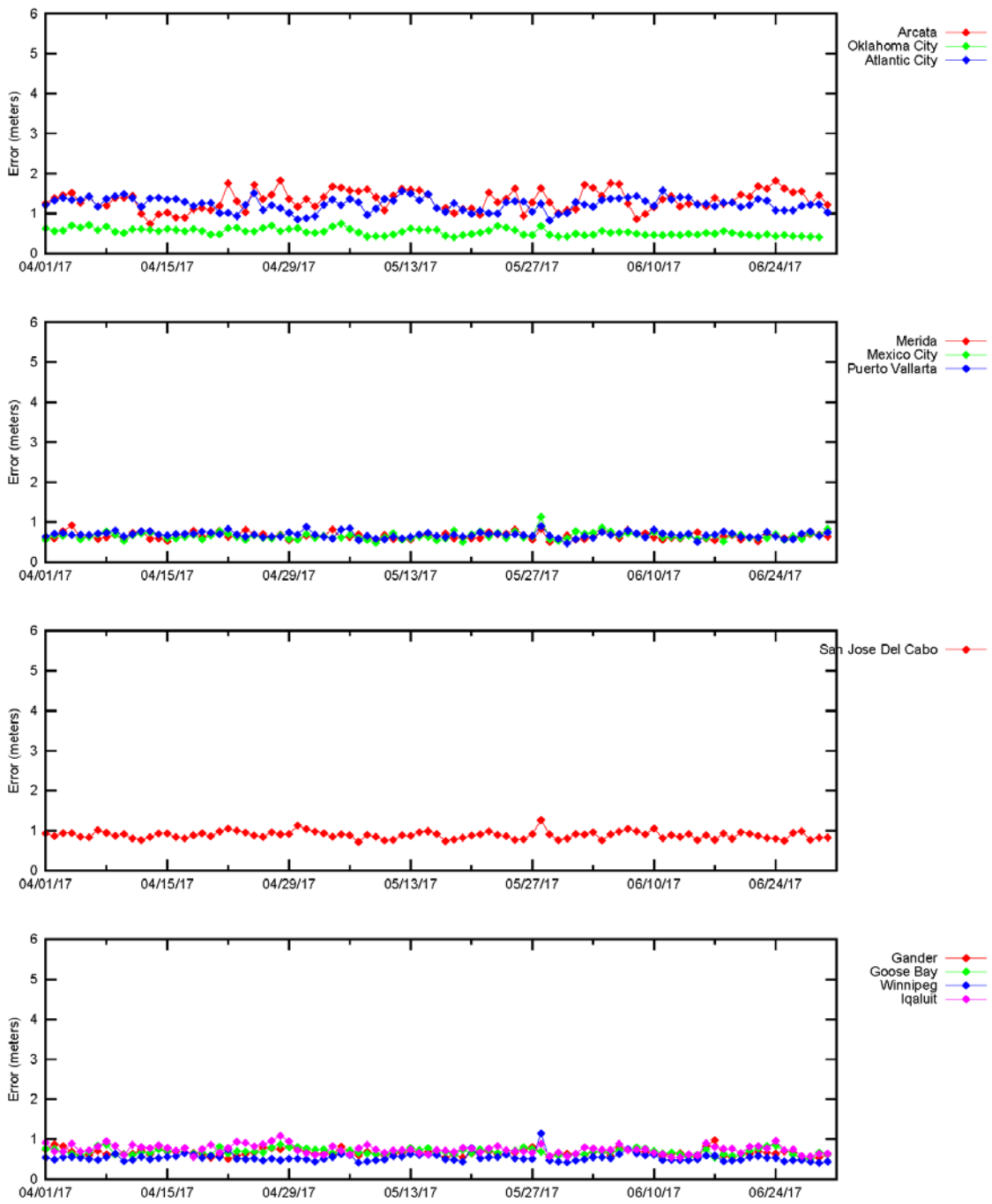


Figure 2-4 LPV 95% Vertical Accuracy

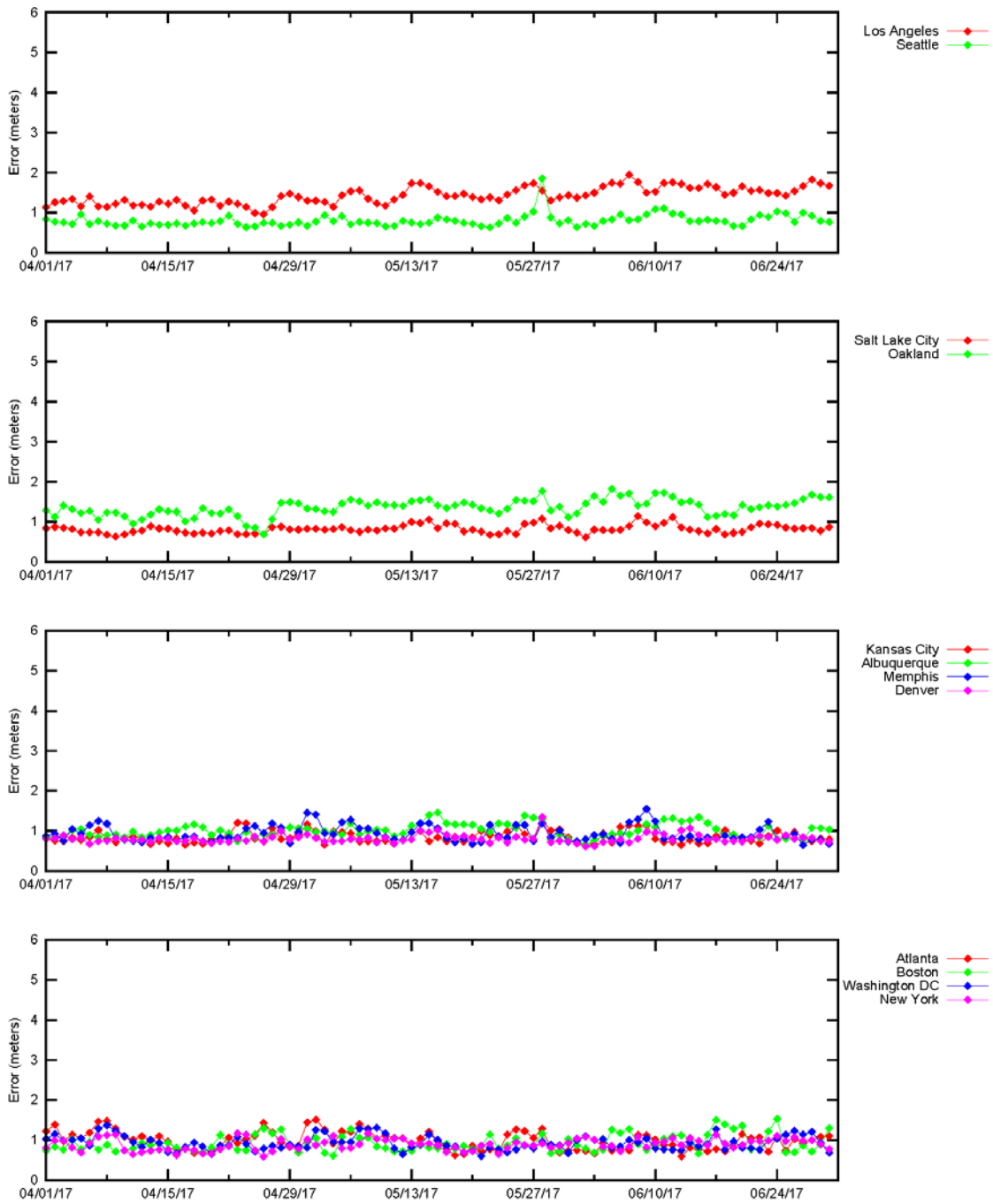


Figure 2-5 LPV 95% Vertical Accuracy

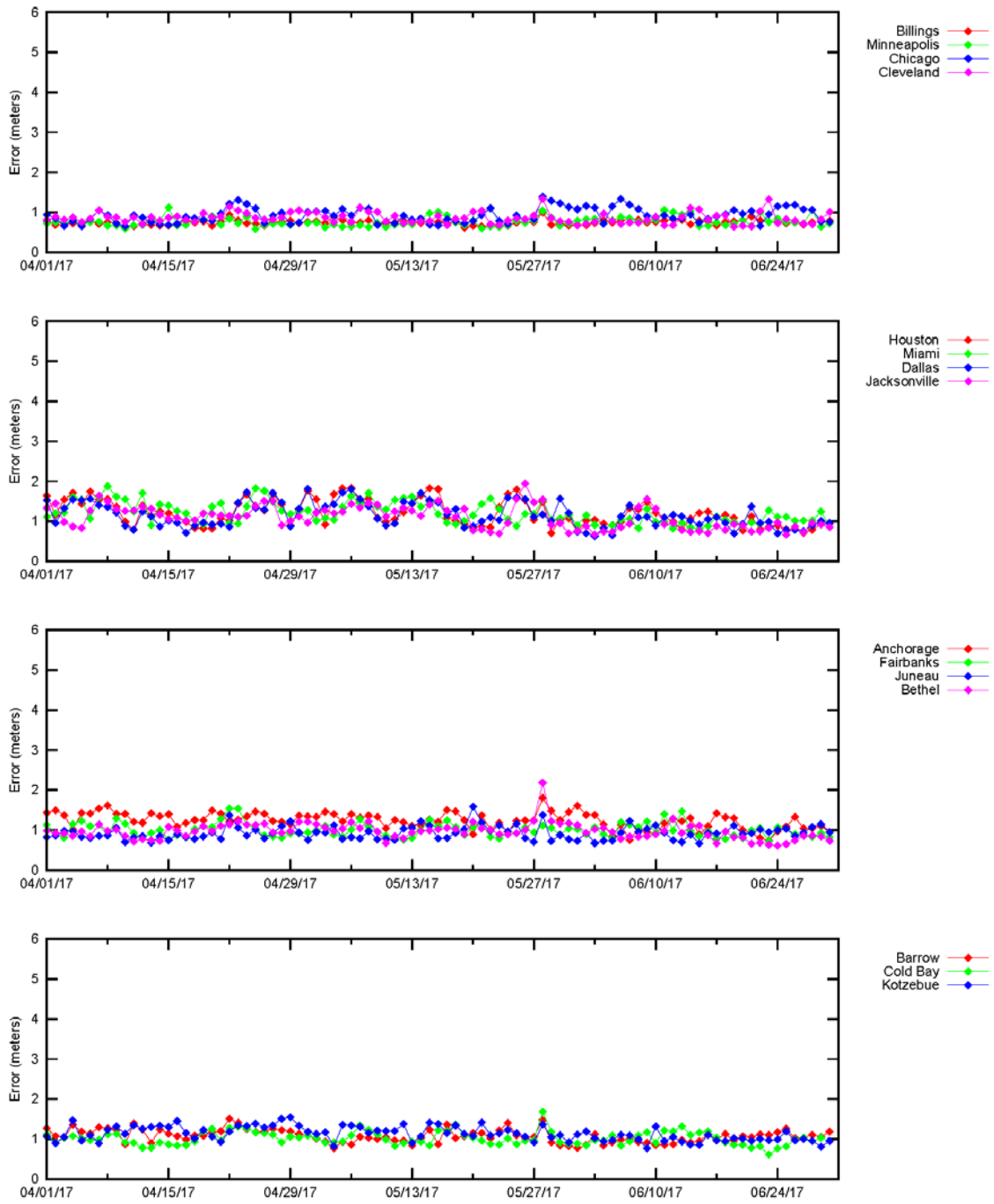


Figure 2-6 LPV 95% Vertical Accuracy

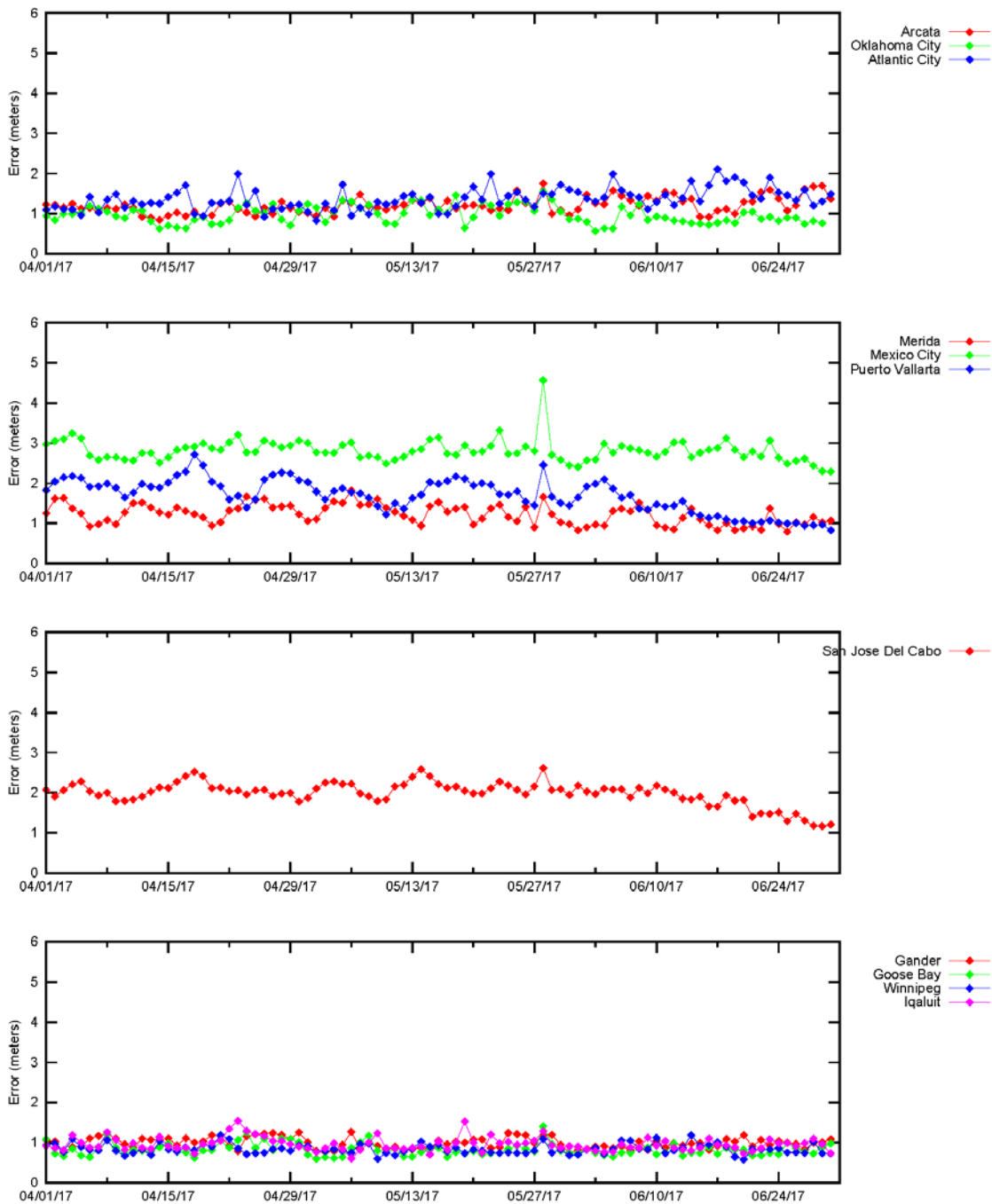


Figure 2-7 and Figure 2-8 show the daily NPA 95% horizontal accuracy at the NPA evaluation sites for the reporting period. The increases in 95% NPA position errors due to geomagnetic activity occurred on April 1–4; May 18 and 28; and June 16 and 17, 2017.

Figure 2-7 NPA 95% Horizontal Accuracy

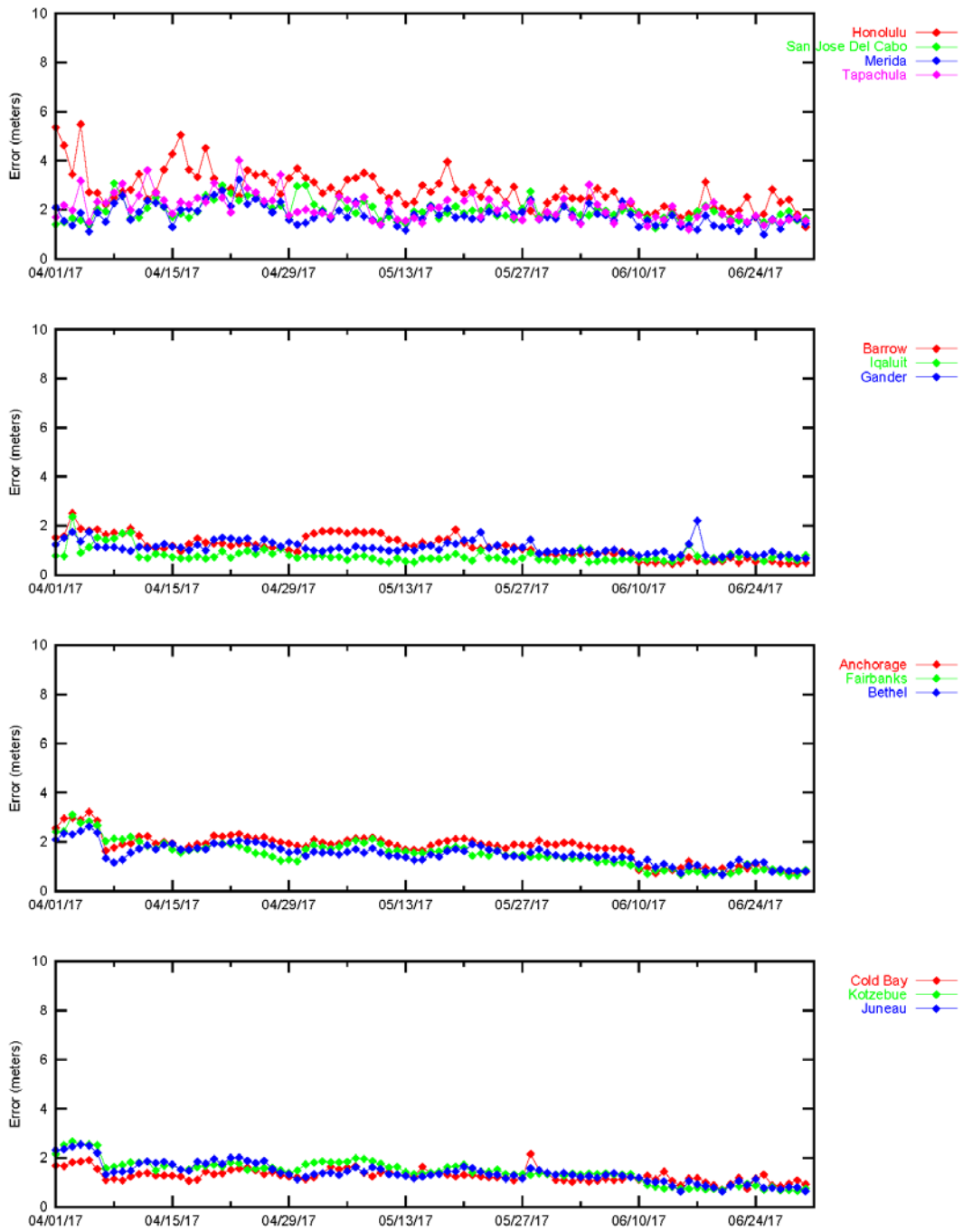


Figure 2-8 NPA 95% Horizontal Accuracy

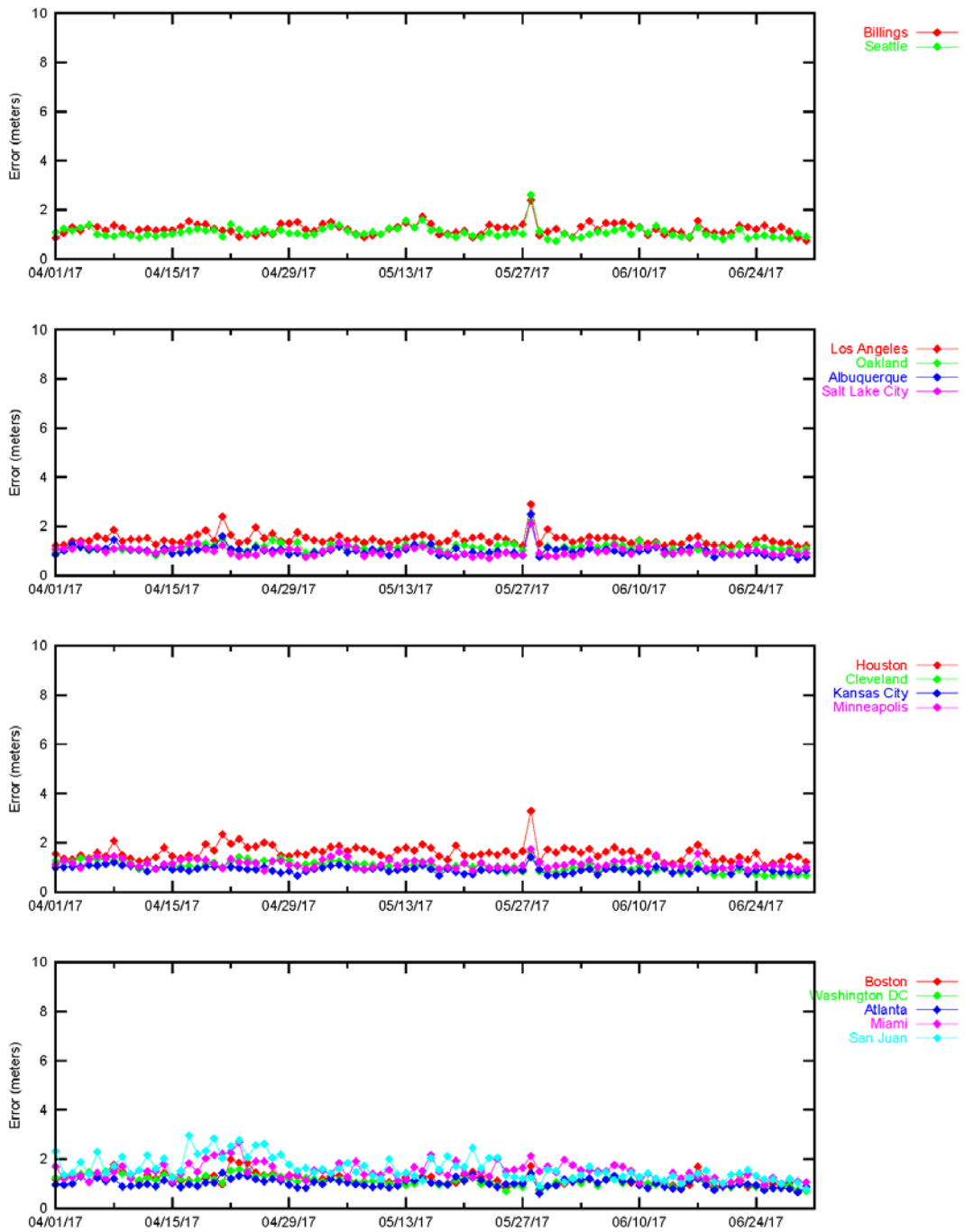


Figure 2-9 through Figure 2-12 show the distributions of the vertical and horizontal errors at all 38 WAAS receiver for the quarter. Figure 2-9 and Figure 2-10 show the triangular distributions of vertical position error (VPE) versus VPL and horizontal position error (HPE) versus HPL: (1) the horizontal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

Figure 2-9 LPV Horizontal Error Bounding Triangle Chart

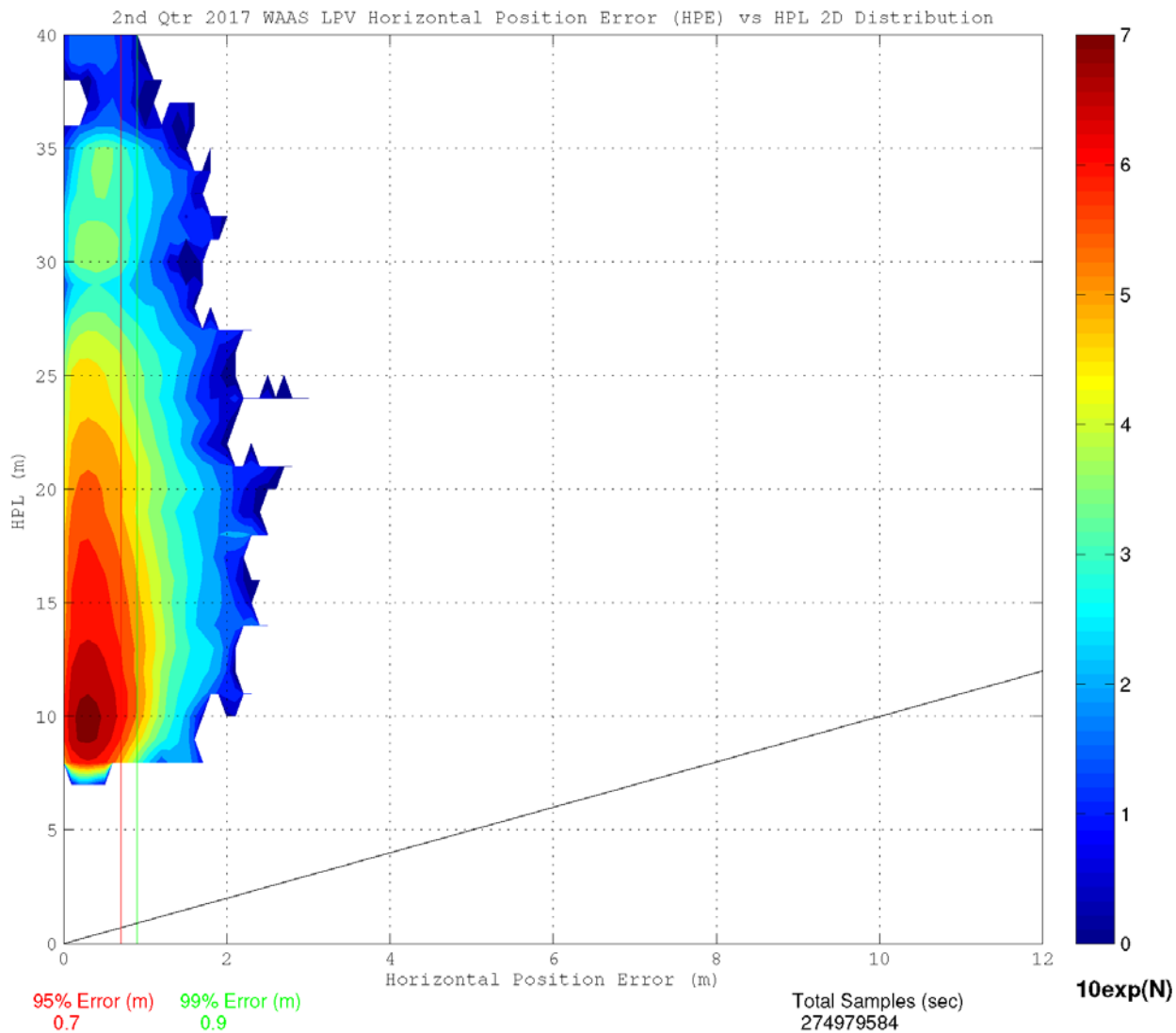


Figure 2-10 LPV Vertical Error Bounding Triangle Chart

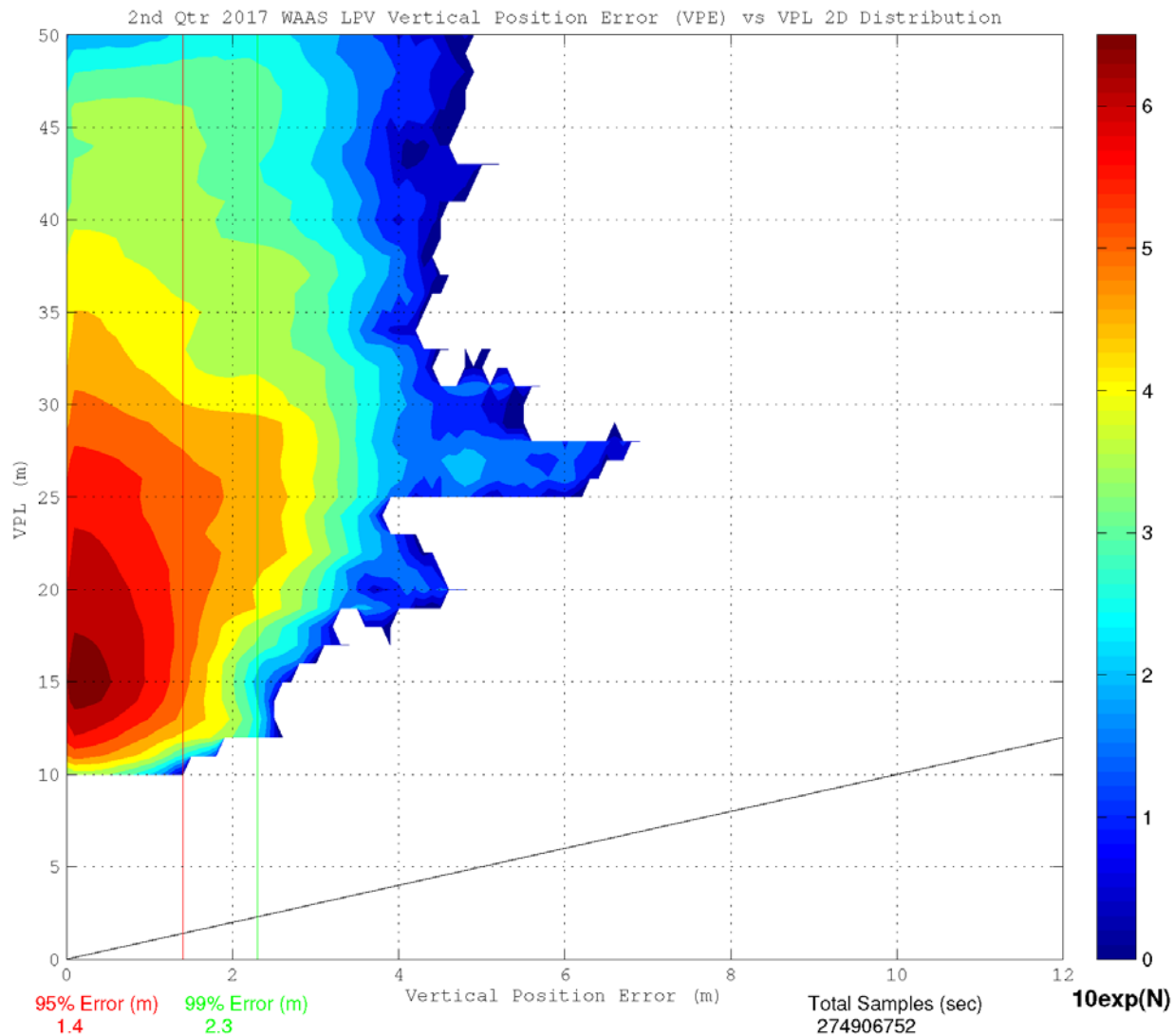


Figure 2-11 LPV 2-D Horizontal Error Distribution Histogram

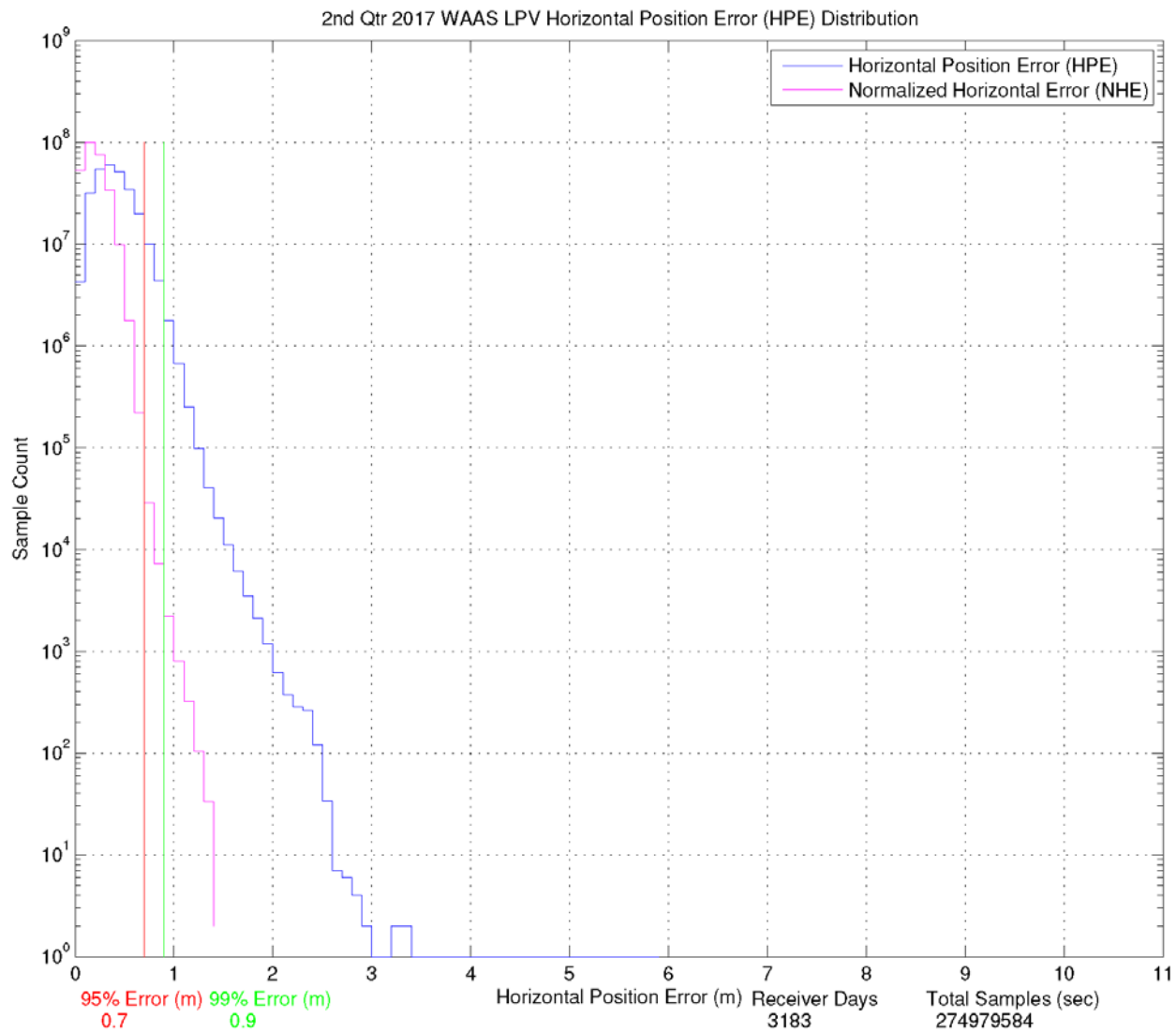
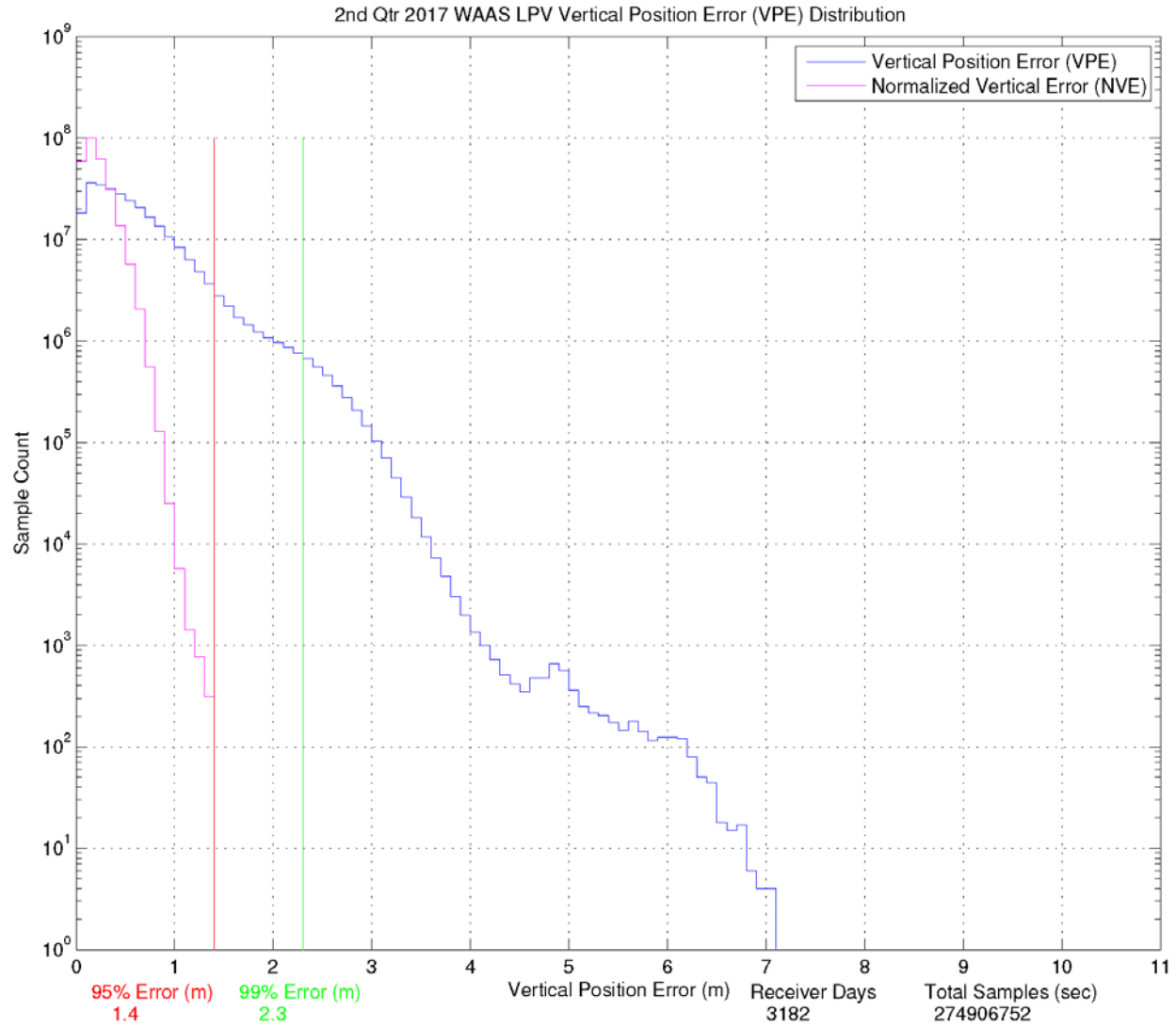


Figure 2-12 LPV 2-D Vertical Error Distribution Histogram



3.0 AVAILABILITY

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

- The maximum 99% CONUS HPL was 16.041 meters observed at Cleveland
- The maximum 99% CONUS VPL was 32.342 meters observed at Oakland
- The minimum 99% CONUS HPL was 11.253 meters observed at Denver
- The minimum 99% CONUS VPL was 18.276 meters observed at Kansas City
- The maximum 99% Alaska HPL was 21.119 meters observed at Cold Bay
- The maximum 99% Alaska VPL was 34.347 meters observed at Barrow
- The minimum 99% Alaska HPL was 13.034 meters observed at Juneau
- The minimum 99% Alaska VPL was 22.696 meters observed at Anchorage

Table 3-1 99% Protection Level

Location	99% HPL (meters)	99% VPL (meters)	Percentage in PA mode
Arcata	13.576	29.142	100
Atlantic City	16.184	23.093	100
Oklahoma City	10.932	18.527	100
Albuquerque	11.264	20.971	100
Anchorage	13.819	22.696	100
Atlanta	12.784	22.543	100
Barrow	15.703	34.347	99.99968
Bethel	16.068	25.394	100
Billings	12.59	19.183	100
Boston	14.574	21.014	100
Chicago	12.153	21.348	100
Cleveland	16.041	22.081	100
Cold Bay	21.119	28.678	100
Dallas	11.281	19.477	100
Denver	11.253	20.767	100
Fairbanks	13.693	24.62	100
Gander	24.85	35.761	100
Goose Bay	23.038	26.967	100
Houston	11.667	22.416	100
Iqaluit	29.689	37.976	100
Jacksonville	13.242	23.459	100
Juneau	13.034	23.653	100
Kansas City	11.414	18.276	100
Kotzebue	16.174	30.167	99.99969
Los Angeles	14.619	28.858	100
Memphis	11.635	20.127	100
Merida	21.398	38.261	100
Mexico City	25.335	45.001	100
Miami	13.093	27.657	100
Minneapolis	12.775	20.192	100
New York	13.791	21.101	100
Oakland	14.136	32.342	100
Puerto Vallarta	23.126	45.489	100
Salt Lake City	11.68	20.969	100
San Jose Del Cabo	21.725	45.559	100
Seattle	13.078	21.671	100
Washington DC	15.757	23.623	100
Winnipeg	13.669	20.991	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 3-4 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.

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 3-3 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.

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 4—Geomagnetic activity caused elevated GIVE values, which reduced LPV200 availability in Alaska and Canada.
- April 16—Local RFI at Miami caused a reduction and eventual loss of space vehicle (SV) tracking. The outage time occurred from 02:54:23 GMT to 02:56:19 GMT.
- April 22—PRN 6 was set to Not-Monitored due to a carrier cycle slip, which reduced LPV200 availability in CONUS. See [DR 138](#).
- April 22—Satellite maintenance caused elevated UDRE values on PRN 16 and reduced LPV200 availability in Canada.
- April 29—Local RFI at Miami caused a reduction and eventual loss of SV tracking. The outage time occurred from 07:53:23 GMT to 07:54:55 GMT.
- May 17—A GUS switchover on CRW caused a reduction in LPV200 availability in CONUS.
- May 19—Satellite maintenance caused elevated UDRE values on PRN 12 and reduced LPV200 availability in CONUS.
- May 24—WAAS Receivers experienced delayed signal acquisition after a faulted GUS switchover. In addition to the slower acquisition, all WAAS receivers failed to provide a valid WUM for 2–3 seconds after tracking had been established. See [DR 139](#).
- May 25—A GUS switchover on CRE caused a reduction in LPV200 availability in Alaska and Canada.
- May 28—Geomagnetic activity caused elevated GIVE values, which reduced LPV200 availability in Alaska and Canada.
- May 29—PRN 21 was set to Not Monitored due to a carrier cycle slip, which reduced LPV200 availability in CONUS.
- May 31—Local RFI at Miami caused a reduction and eventual loss of SV tracking. The outage occurred from 16:21:10 GMT to 16:21:45 GMT.
- June 2—Satellite maintenance caused elevated UDRE values on PRN 18 and reduced LPV200 availability in Alaska and Canada.
- June 7—Satellite maintenance caused elevated UDRE values on PRN 28 and reduced LPV200 availability in CONUS, Alaska, and Canada.
- June 15—Satellite maintenance caused elevated UDRE values on PRN 15 and reduced LPV200 availability in Alaska.
- June 21—Geomagnetic activity caused elevated GIVE values, which reduced LPV200 availability in Canada.
- June 22—Satellite maintenance caused elevated UDRE values on PRN 13 and reduced LPV200 availability in CONUS.

- June 26—Several IGPS were set to Not Monitored. During this time, the WAAS performance monitor reported that the Iqaluit WRS experienced a sub-frame reasonability warning and a YFB PID Down fault. This removed Iqaluit from the WAAS correction processing. This reduced LPV200 availability in Canada. See [DR 133](#).
- June 29—Satellite maintenance caused elevated UDRE values on PRN 20 and reduced LPV200 availability in CONUS and Alaska.

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

Location	LP WAAS With 15 minute window	LPV WAAS With 15 minute window	LPV200 WAAS With 15 minute window
Arcata	100	100	99.97
Atlantic City	100	100	100
Oklahoma City	100	100	100
Albuquerque	100	100	100
Anchorage	100	100	100
Atlanta	100	100	100
Barrow	100	99.99	98.96
Bethel	100	100	100
Billings	100	100	100
Boston	100	100	99.99
Chicago	100	100	100
Cleveland	100	100	100
Cold Bay	100	100	99.95
Dallas	100	100	100
Denver	100	100	100
Fairbanks	100	100	99.99
Gander	100	99.99	97.83
Goose Bay	100	100	100
Houston	100	100	100
Iqaluit	99.98	99.98	96.01
Jacksonville	100	100	100
Juneau	100	100	99.99
Kansas City	100	100	100
Kotzebue	100	100	99.91
Los Angeles	100	100	99.95
Memphis	100	100	100
Merida	100	99.98	95.98
Mexico City	100	99.36	93.34
Miami	100	100	99.97
Minneapolis	100	100	100
New York	100	100	99.99
Oakland	100	100	99.42
Puerto Vallarta	100	99.8	94.27
Salt Lake City	100	100	100
San Jose Del Cabo	100	99.79	94.34
Seattle	100	100	100
Washington DC	100	100	100
Winnipeg	100	100	100

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

Location	NPA Availability (Excluding RAIM/FDE)
Albuquerque	1
Anchorage	1
Atlanta	1
Barrow	1
Bethel	1
Billings	1
Boston	1
Cleveland	1
Cold Bay	1
Fairbanks	1
Gander	1
Honolulu	1
Houston	1
Iqaluit	1
Juneau	1
Kansas City	1
Kotzebue	1
Los Angeles	1
Merida	1
Miami	1
Minneapolis	1
Oakland	1
Salt Lake City	1
San Jose Del Cabo	1
San Juan	1
Seattle	1
Tapachula	1
Washington DC	1

Table 3-4 LPV and LPV200 Outage Rate (Per 150 sec approach)

Location	LP Outages	LP Outage Rates	LPV Outages	LPV Outage Rates	LPV 200 Outages	LPV 200 Outage Rates
Arcata	0	0	0	0	2	0.000039
Atlantic City	0	0	0	0	0	0
Oklahoma City	0	0	0	0	0	0
Albuquerque	0	0	0	0	1	0.000019
Anchorage	0	0	1	0.000019	2	0.000038
Atlanta	0	0	0	0	0	0
Barrow	3	0.000057	5	0.000095	170	0.00328
Bethel	0	0	0	0	2	0.000038
Billings	0	0	0	0	0	0
Boston	0	0	0	0	1	0.000019
Chicago	0	0	0	0	0	0
Cleveland	0	0	0	0	1	0.000019
Cold Bay	0	0	0	0	8	0.000153
Dallas	0	0	0	0	0	0
Denver	0	0	0	0	1	0.000019
Fairbanks	1	0.000019	1	0.000019	5	0.000095
Gander	0	0	1	0.000019	184	0.003589
Goose Bay	0	0	0	0	2	0.000038
Houston	0	0	0	0	0	0
Iqaluit	3	0.000057	5	0.000095	307	0.006103
Jacksonville	0	0	0	0	2	0.000038
Juneau	0	0	0	0	3	0.000057
Kansas City	0	0	0	0	0	0
Kotzebue	2	0.000038	4	0.000076	32	0.000612
Los Angeles	0	0	0	0	2	0.000038
Memphis	0	0	0	0	0	0
Merida	0	0	1	0.000019	280	0.005573
Mexico City	1	0.000019	111	0.002134	514	0.010521
Miami	0	0	2	0.000038	5	0.000096
Minneapolis	0	0	0	0	0	0
New York	0	0	0	0	1	0.000019
Oakland	0	0	0	0	94	0.001805
Puerto Vallarta	0	0	103	0.001971	369	0.007474
Salt Lake City	0	0	0	0	0	0
San Jose Del Cabo	1	0.000019	62	0.001187	289	0.005851
Seattle	0	0	0	0	0	0
Washington DC	0	0	0	0	0	0
Winnipeg	0	0	0	0	0	0

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

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

Figure 3-1 LPV Instantaneous Availability

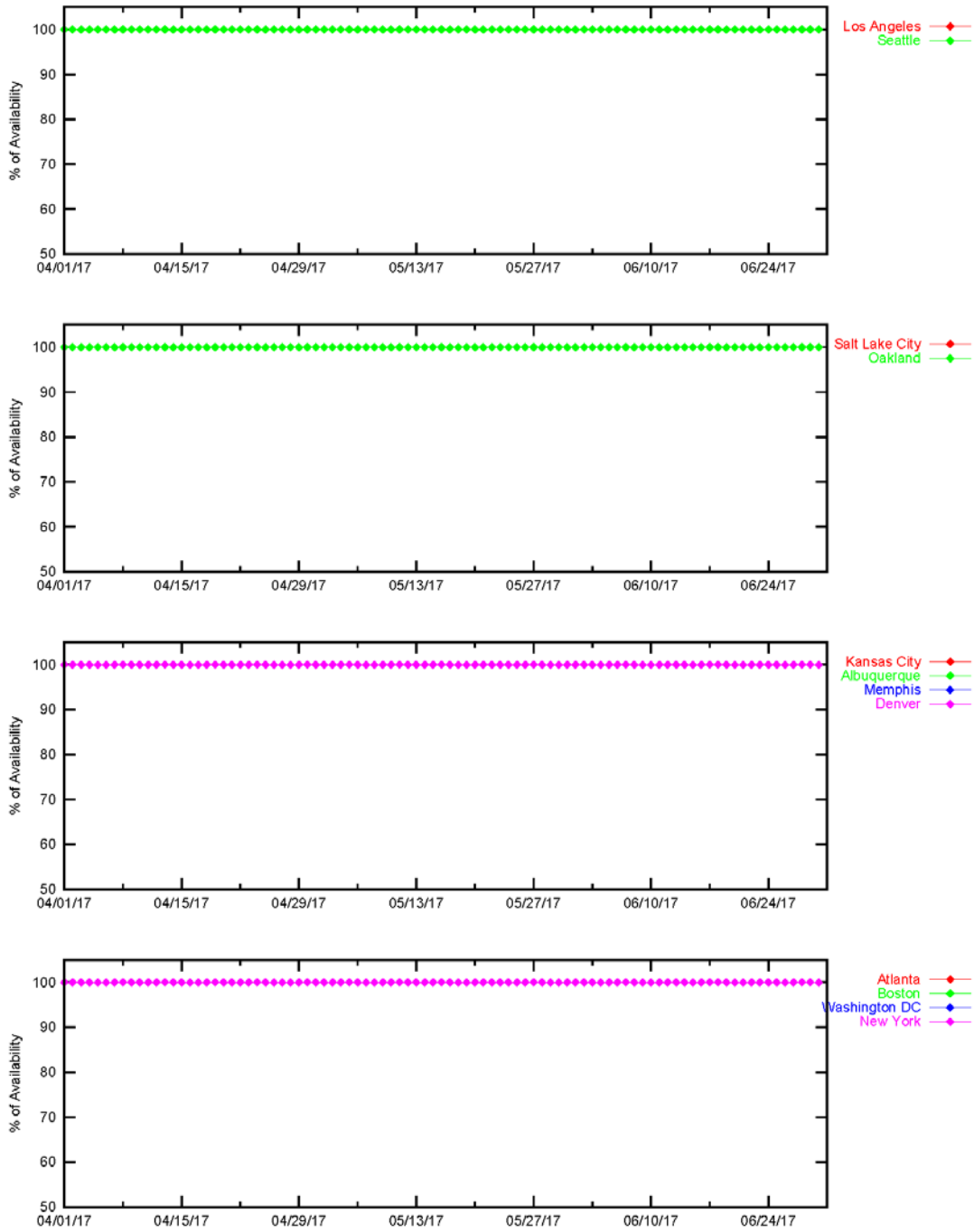


Figure 3-2 LPV Instantaneous Availability

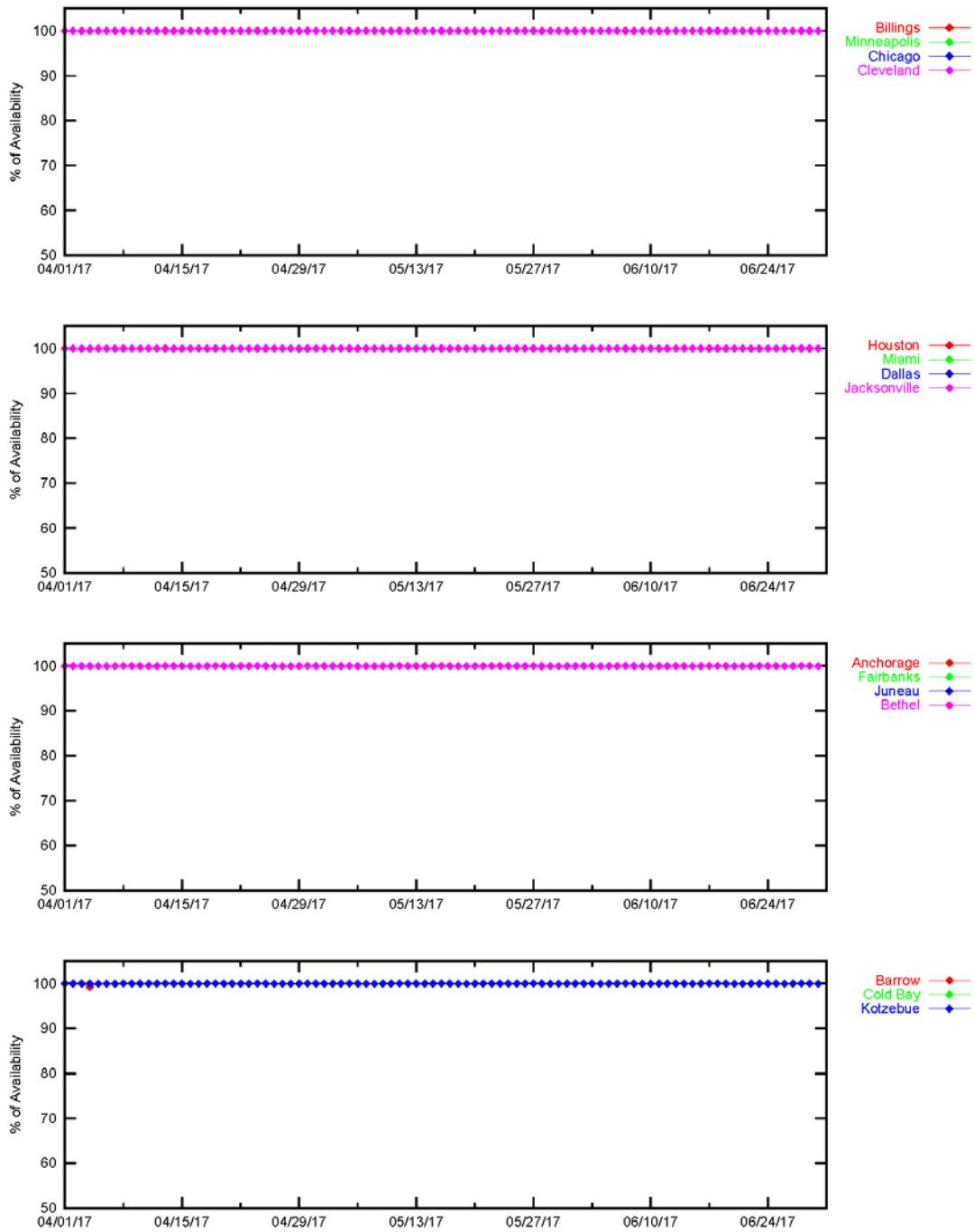


Figure 3-3 LPV Instantaneous Availability

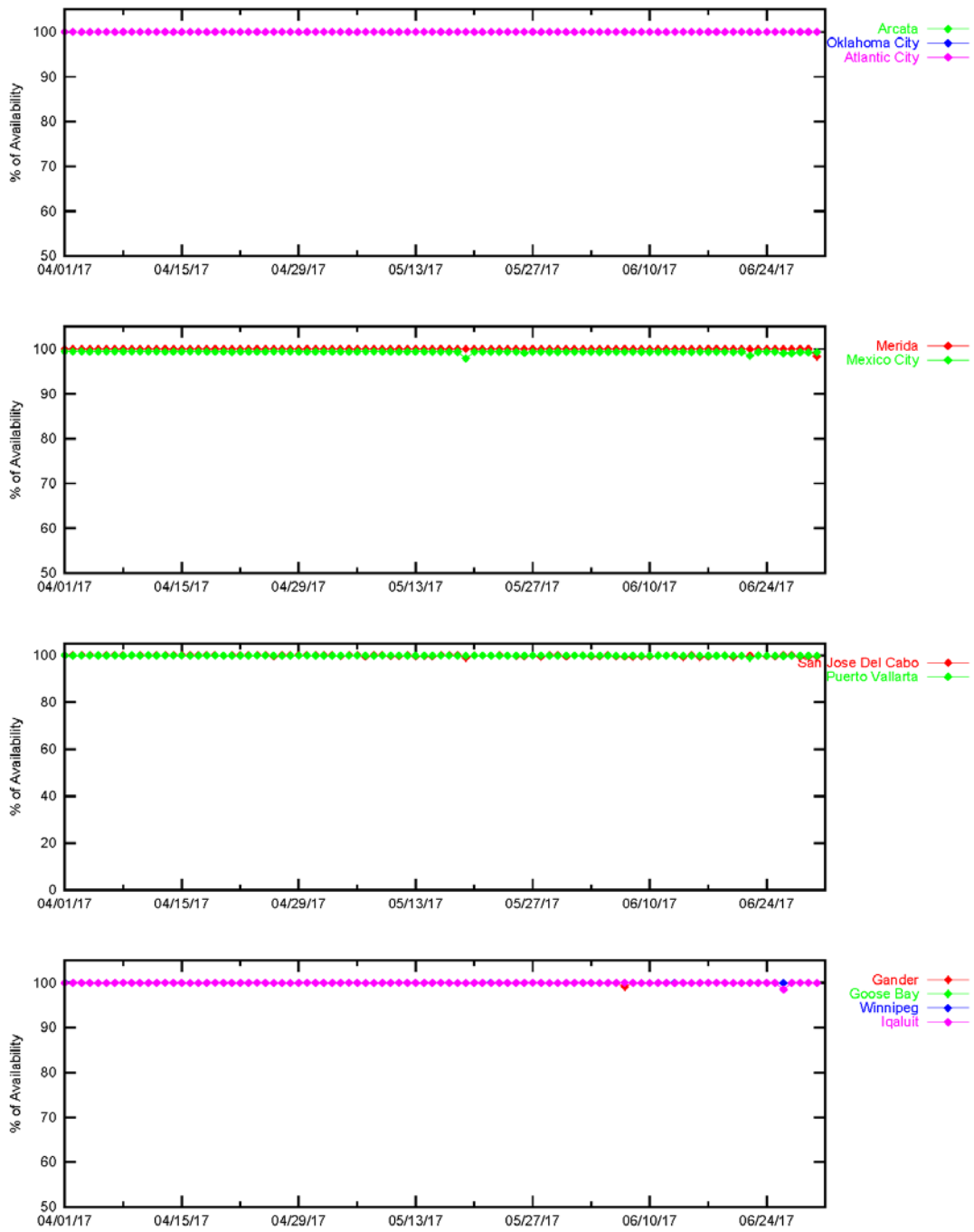


Figure 3-4 LPV200 Instantaneous Availability

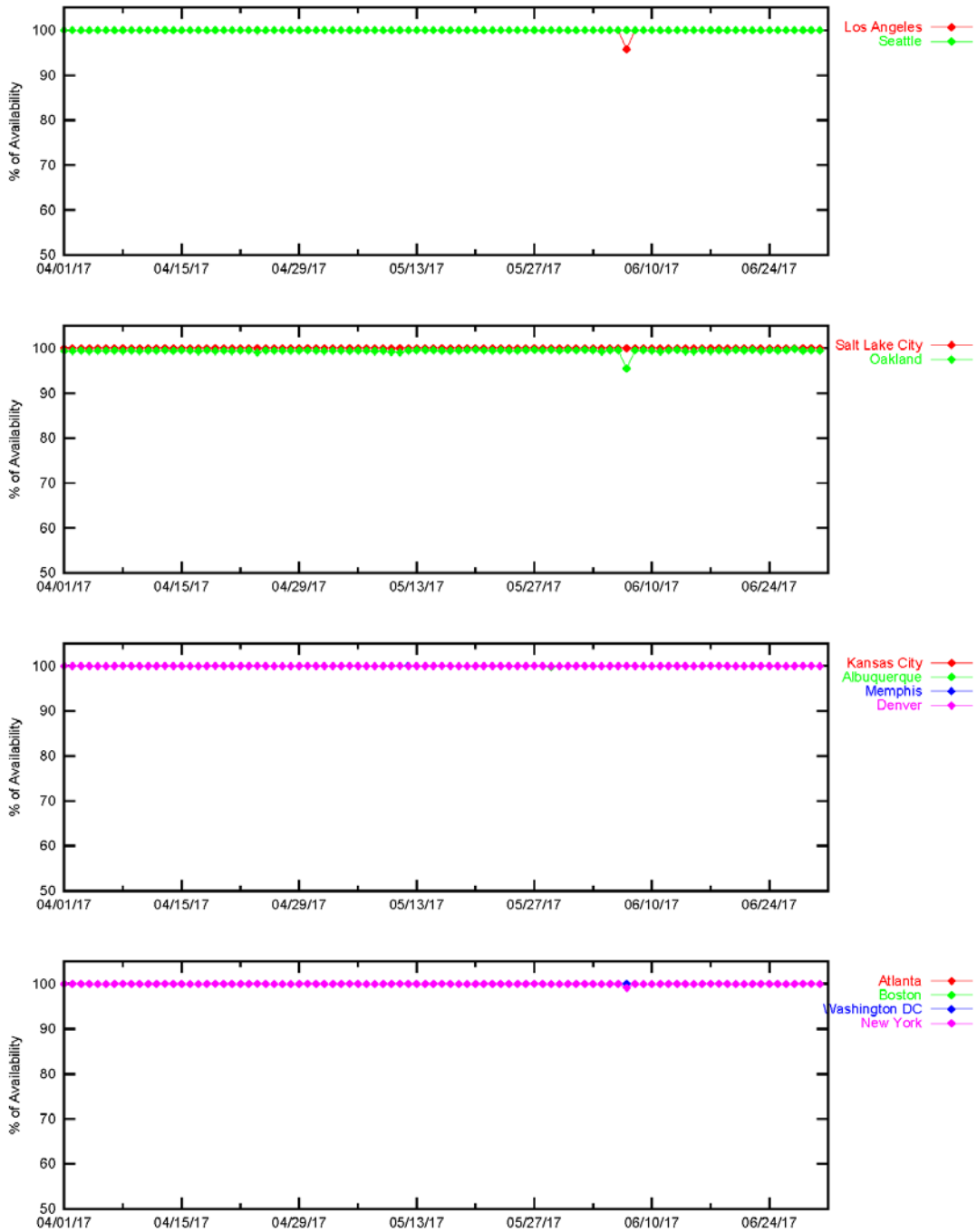


Figure 3-5 LPV200 Instantaneous Availability

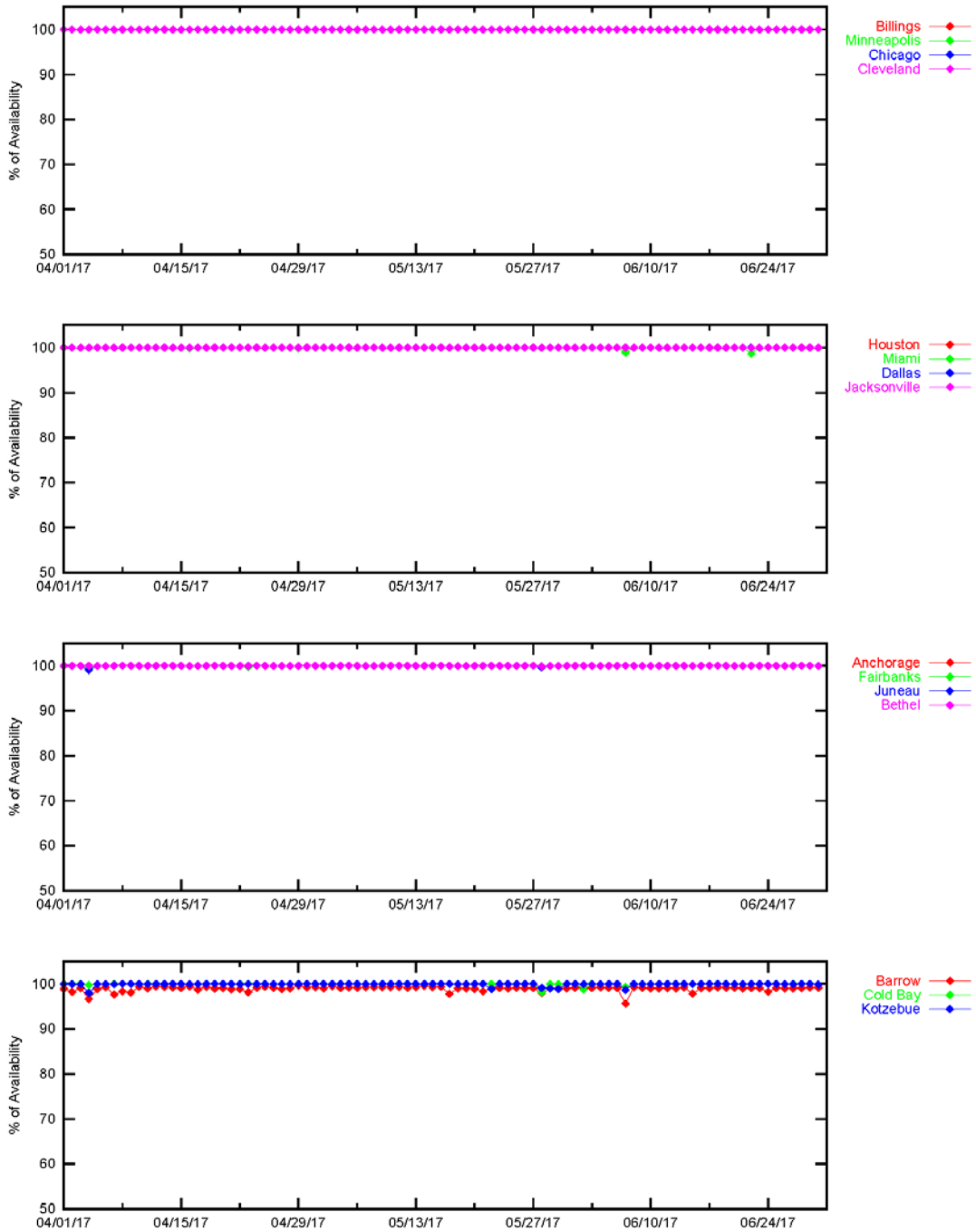


Figure 3-6 LPV200 Instantaneous Availability

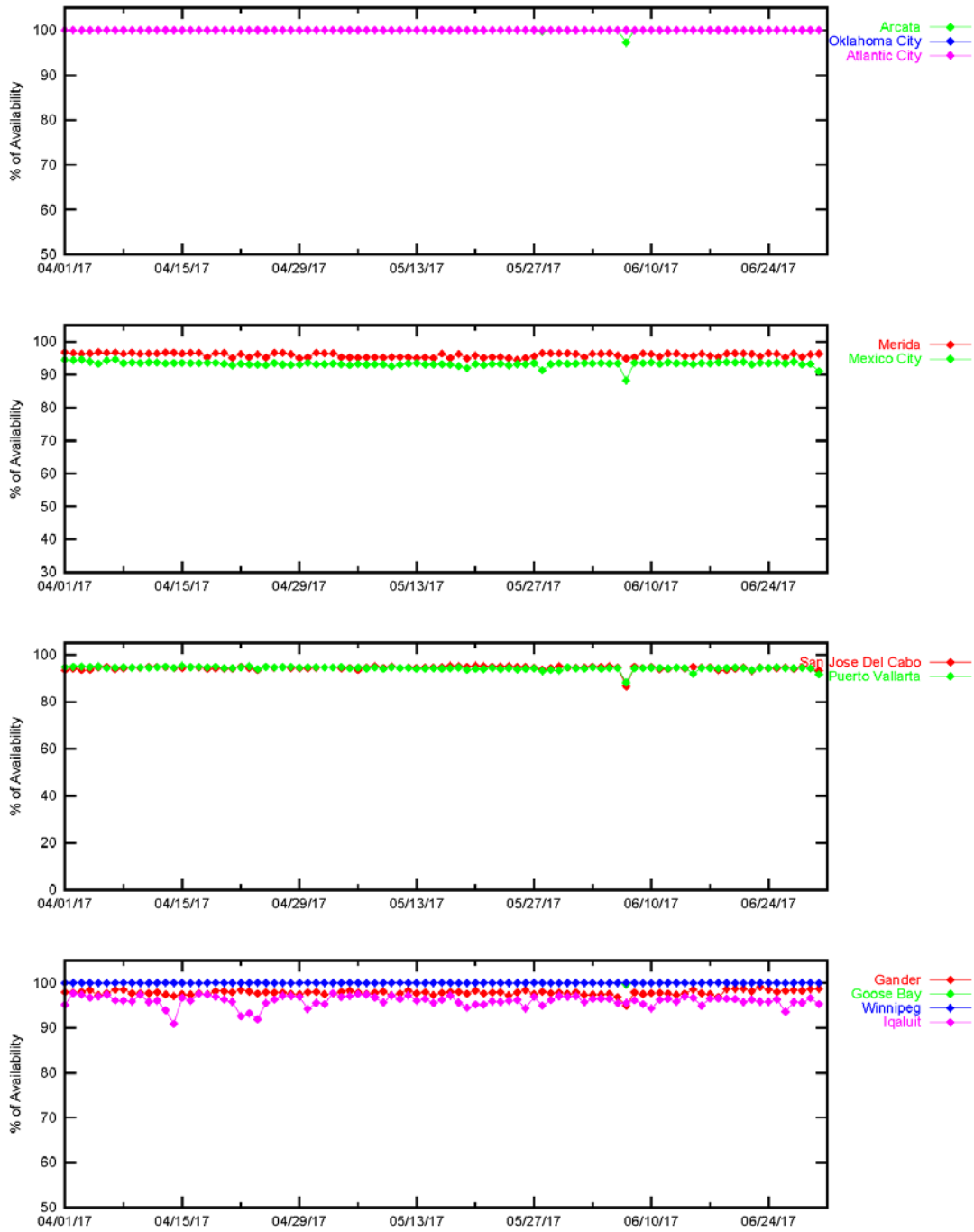


Figure 3-7 LPV Outages

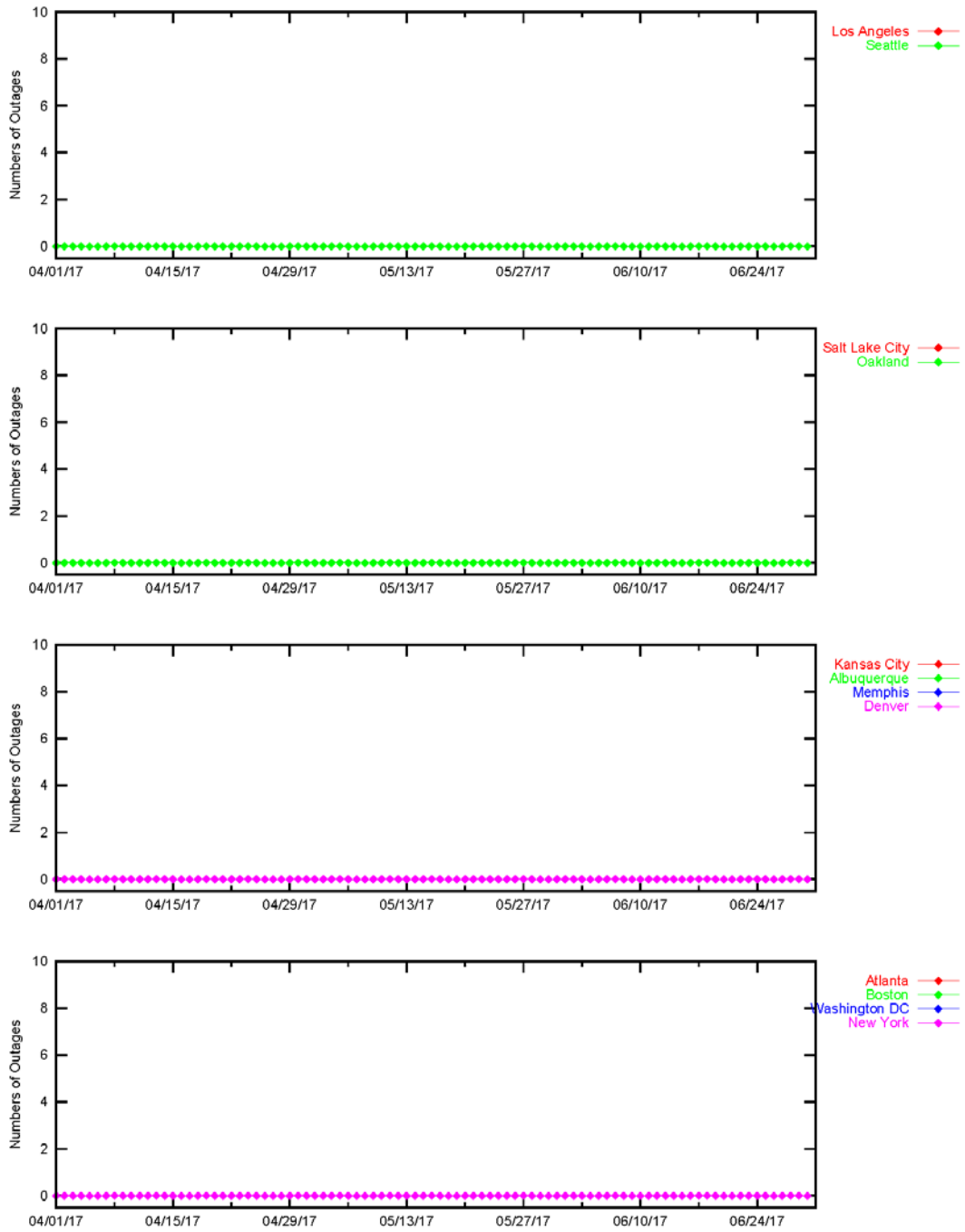


Figure 3-8 LPV Outages

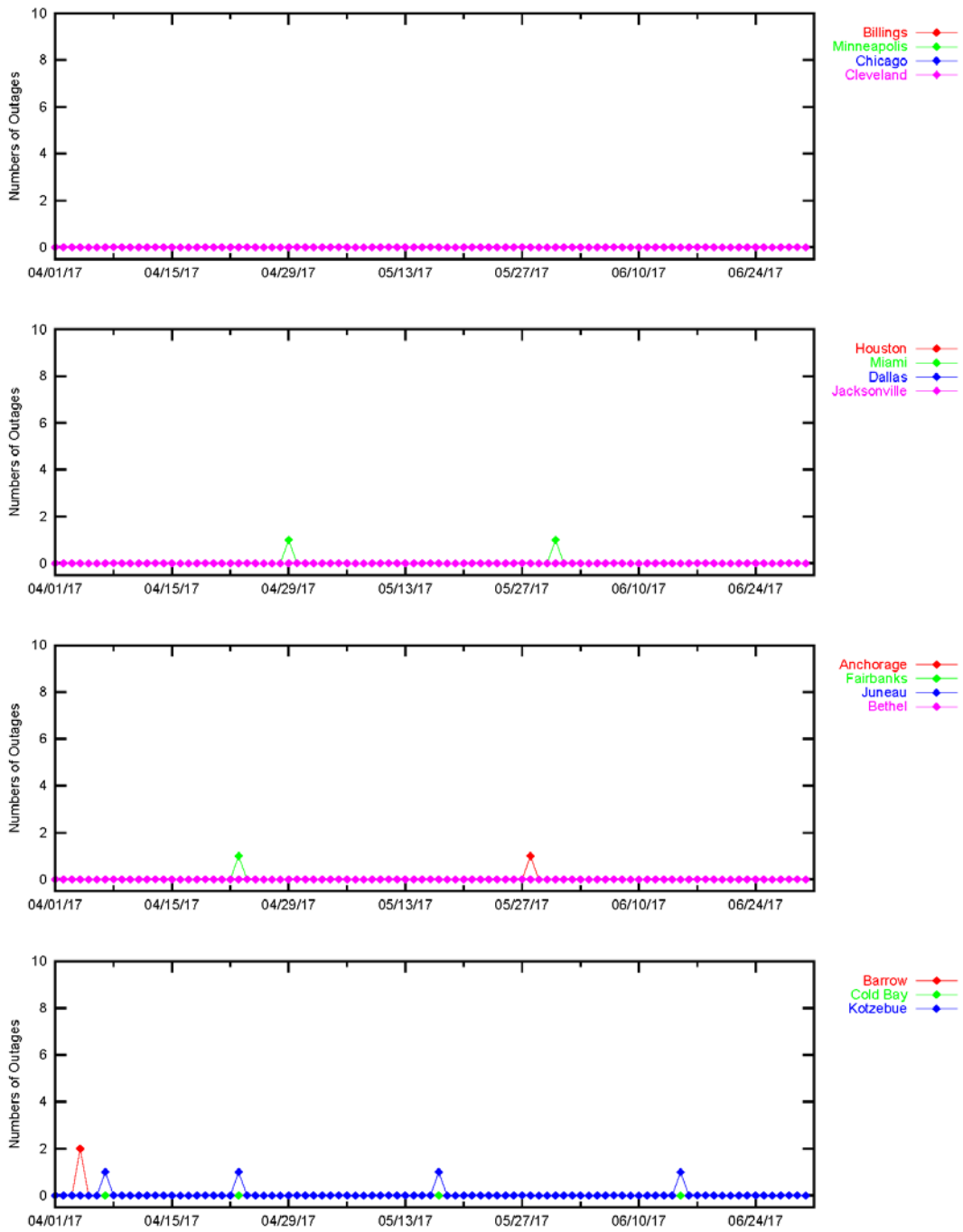


Figure 3-9 LPV Outages

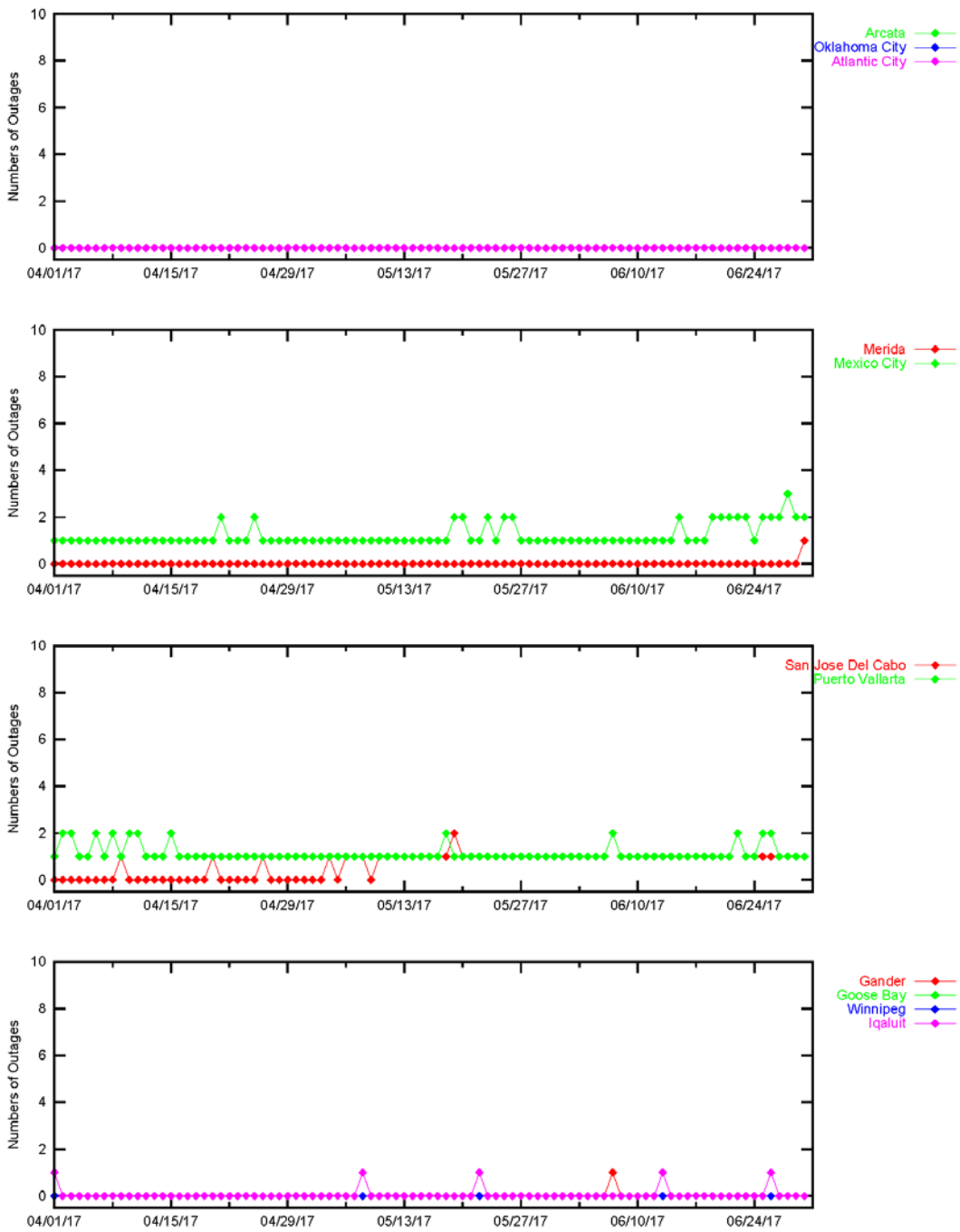


Figure 3-10 LPV200 Outages

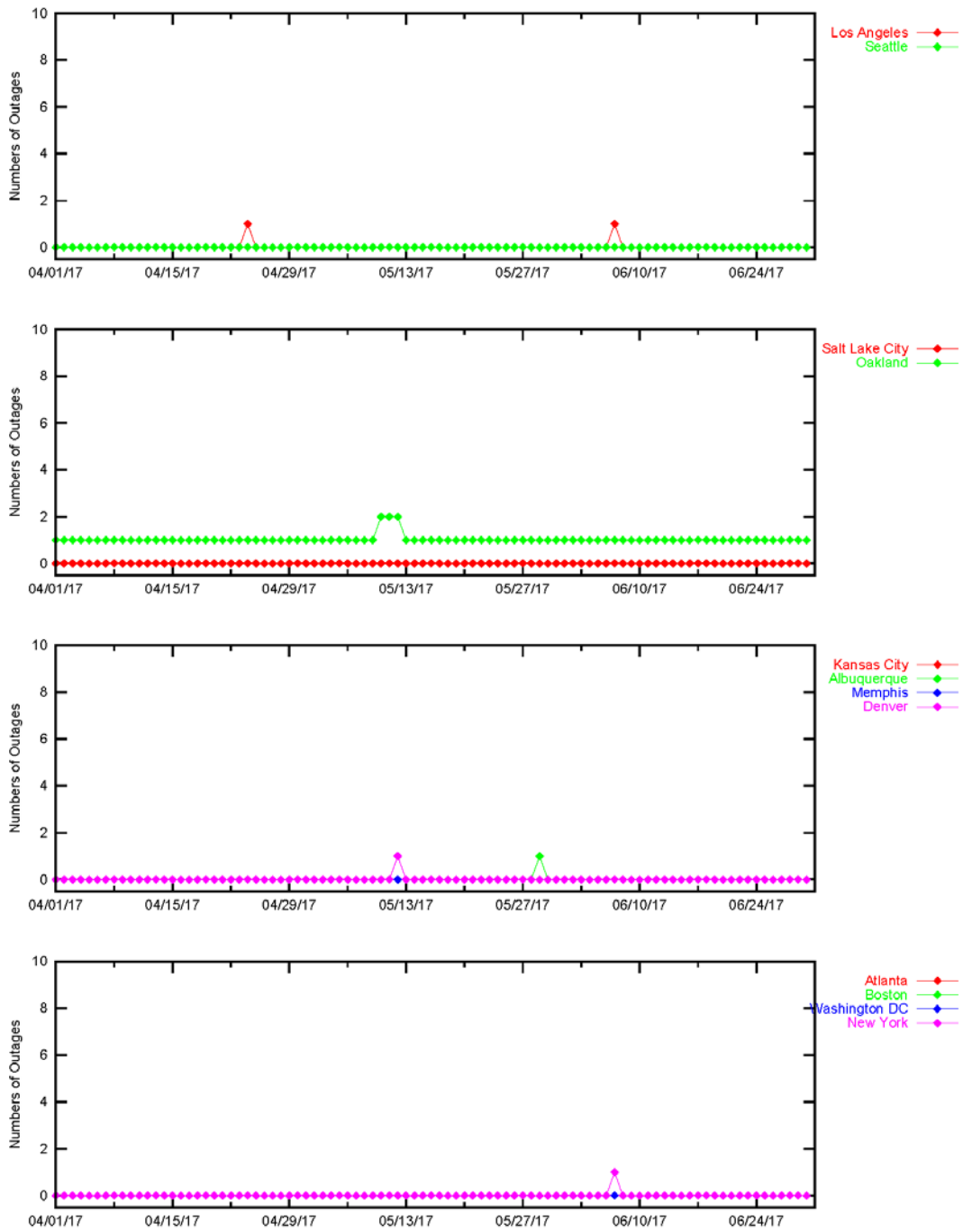


Figure 3-11 LPV200 Outages

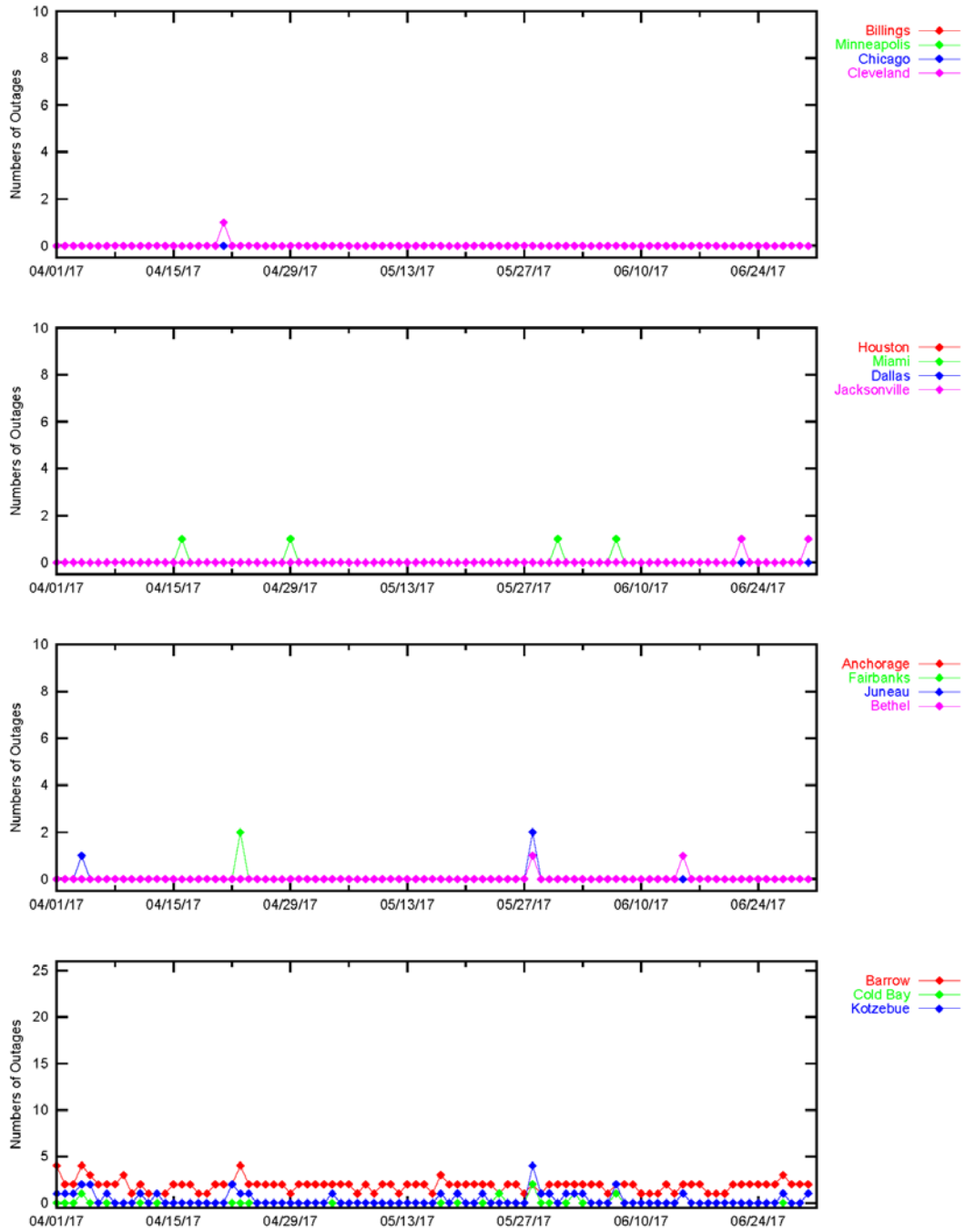
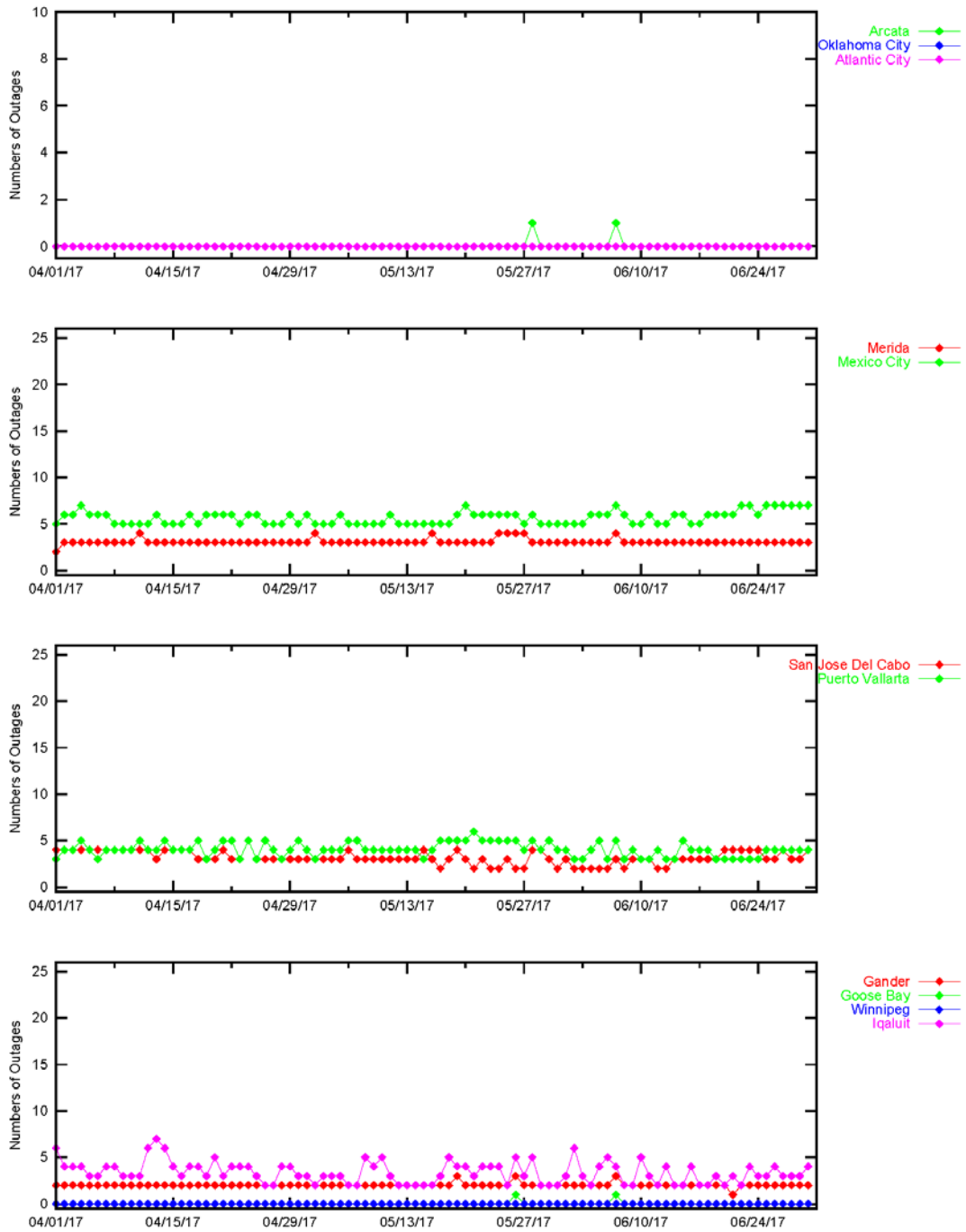


Figure 3-12 LPV200 Outages



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 4-6 shows the daily LPV and LPV200 CONUS coverage, Figure 4-7 shows the daily LPV Alaska coverage at 99% availability and ionosphere Kp index values, and Figure 4-8 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.

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 4-4 shows the rollup RNP 0.1 coverage and Figure 4-5 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.

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 4—Geomagnetic activity caused elevated GIVE values, which reduced LPV200 coverage in Alaska and Canada.
- April 22—PRN 6 was set to Not Monitored due to a carrier cycle slip, which reduced LPV200 coverage in CONUS. See [DR 138](#).
- April 22—Satellite maintenance caused elevated UDRE values on PRN 16 and reduced LPV200 coverage in Canada.
- May 17—A GUS switchover on CRW caused a reduction in LPV200 coverage in CONUS.
- May 19—Satellite maintenance caused elevated UDRE values on PRN 12 and reduced LPV200 coverage in CONUS.
- May 24—WAAS receivers experienced delayed signal acquisition after a faulted GUS switchover. In addition to the slower acquisition, all WAAS receivers failed to provide a valid WUM for 2–3 seconds after tracking had been established. See [DR 139](#).
- May 25—A GUS switchover on CRE caused a reduction in LPV200 coverage in Alaska and Canada.
- May 28—Geomagnetic activity caused elevated GIVE values, which reduced LPV200 coverage in Alaska and Canada.
- May 29—PRN 21 was set to Not Monitored due to a carrier cycle slip, which reduced LPV200 coverage in CONUS.
- June 2—Satellite maintenance caused elevated UDRE values on PRN 18 and reduced LPV200 coverage in Alaska and Canada.
- June 7—Satellite maintenance caused elevated UDRE values on PRN 28 and reduced LPV200 coverage in CONUS, Alaska, and Canada.
- June 15—Satellite maintenance caused elevated UDRE values on PRN 15 and reduced LPV200 coverage in Alaska.
- June 21—Geomagnetic activity caused elevated GIVE values, which reduced LPV200 coverage in Canada.
- June 22—Satellite maintenance caused elevated UDRE values on PRN 13 and reduced LPV200 coverage in CONUS.

- June 26—Several IGPS were set to Not Monitored. During this time, the WAAS performance monitor reported that the Iqaluit WRS experienced a sub-frame reasonability warning and a YFB PID Down fault. This removed Iqaluit from the WAAS correction processing. This reduced LPV200 coverage in Canada. See [DR 133](#).
- June 29—Satellite maintenance caused elevated UDRE values on PRN 20 and reduced LPV200 coverage in CONUS and Alaska.

Figure 4-1 LP North America Coverage for the Quarter

WAAS LP Coverage Contours
 April 1 - June 30, 2017

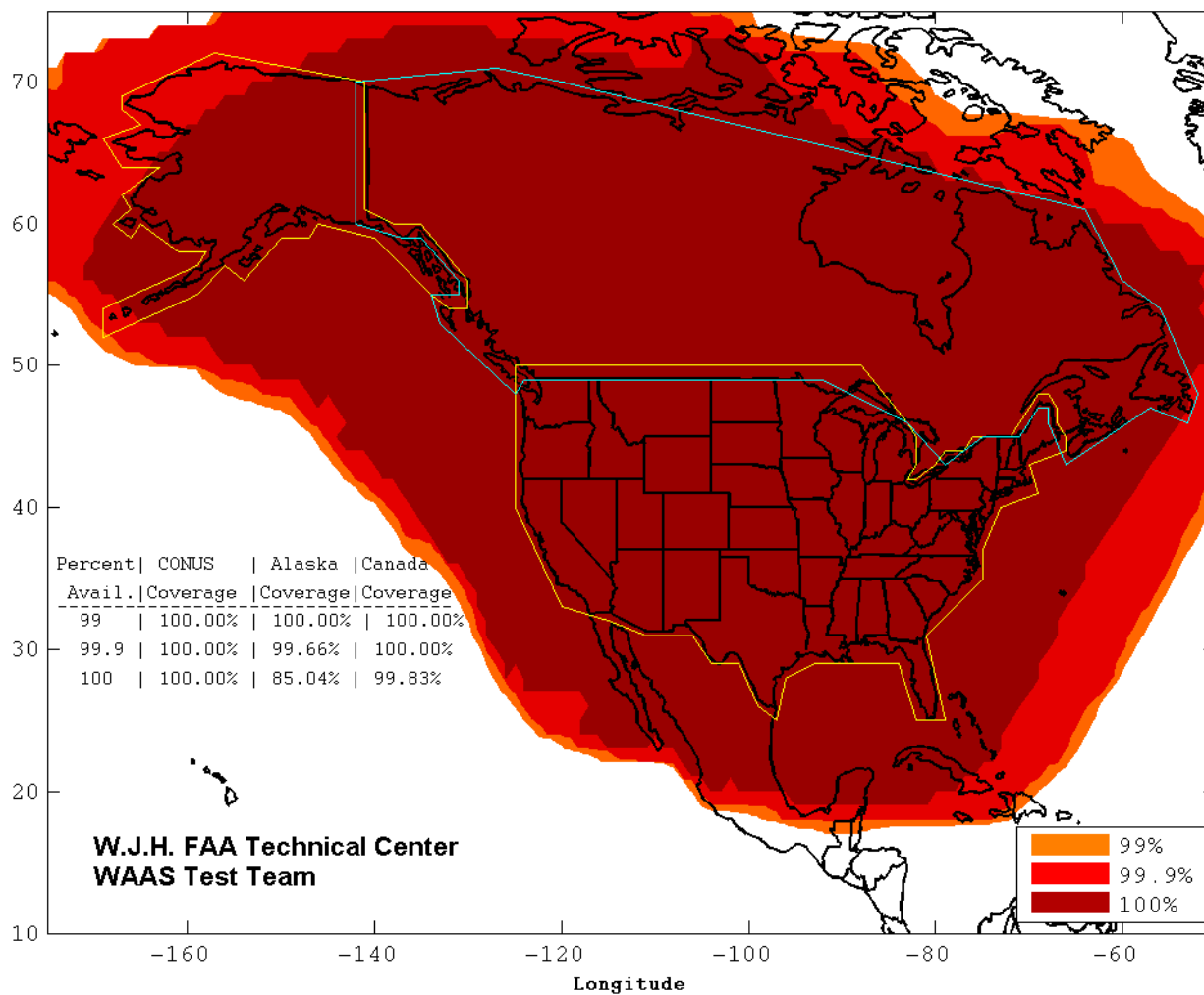


Figure 4-2 LPV North America Coverage for the Quarter

WAAS LPV Coverage Contours
April 1 - June 30, 2017

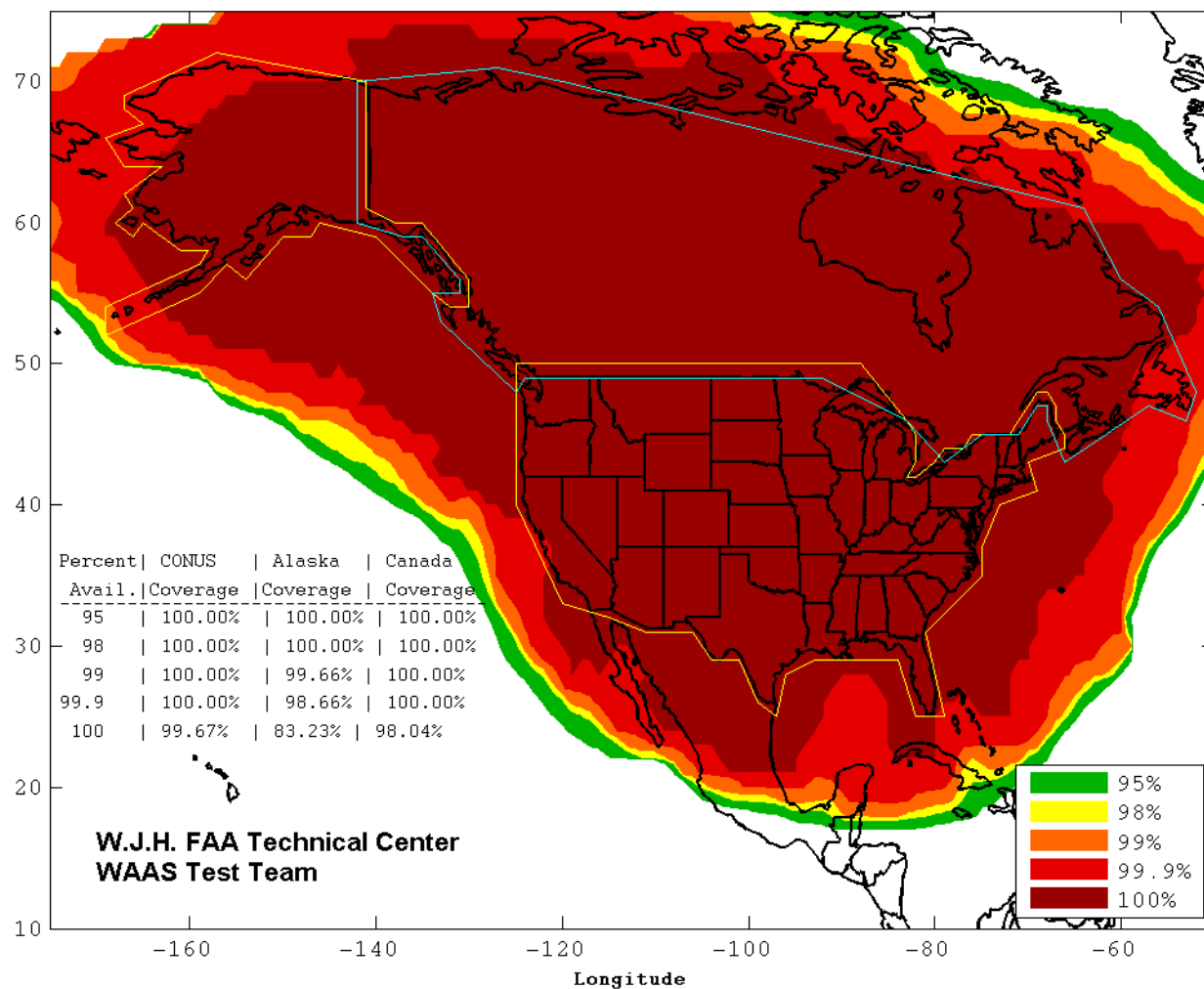


Figure 4-3 LPV200 North America Coverage for the Quarter

WAAS LPV200 Coverage Contours
April 1 – June 30, 2017

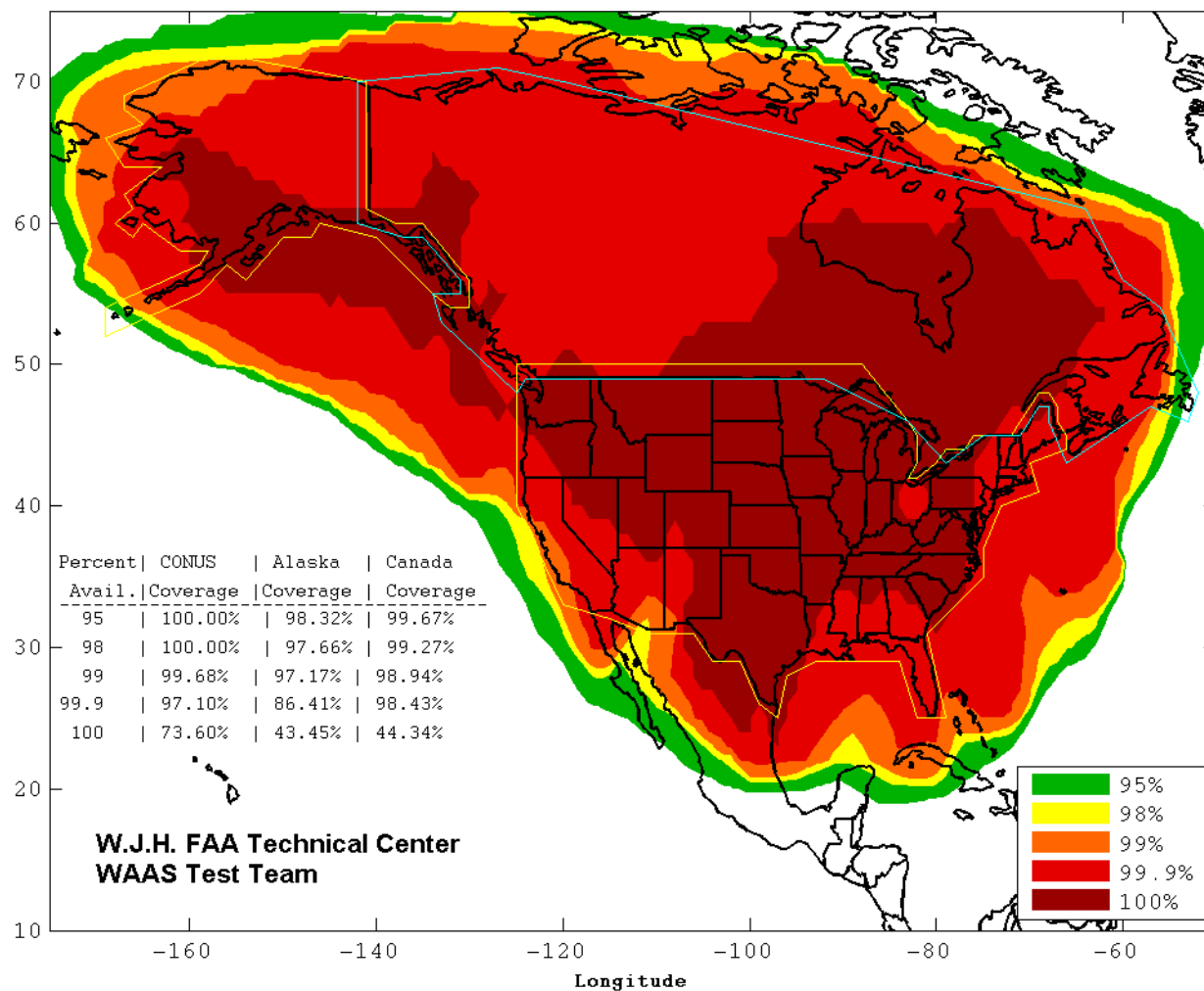


Figure 4-4 RNP 0.1 Coverage for the Quarter

WAAS RNP 0.1 Coverage Contours
 April 1 - June 30, 2017

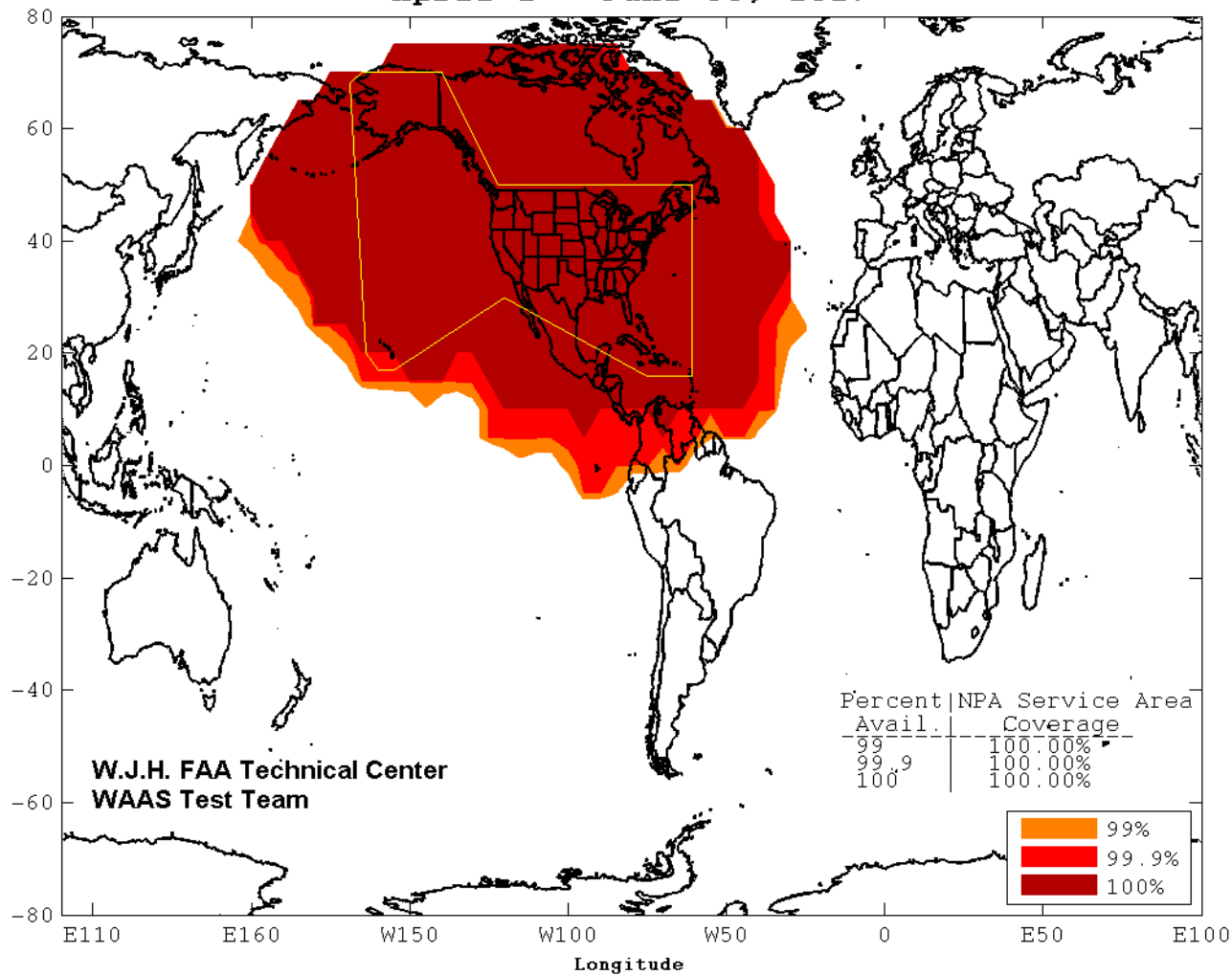


Figure 4-5 RNP 0.3 Coverage for the Quarter

WAAS RNP 0.3 Coverage Contours
April 1 – June 30, 2017

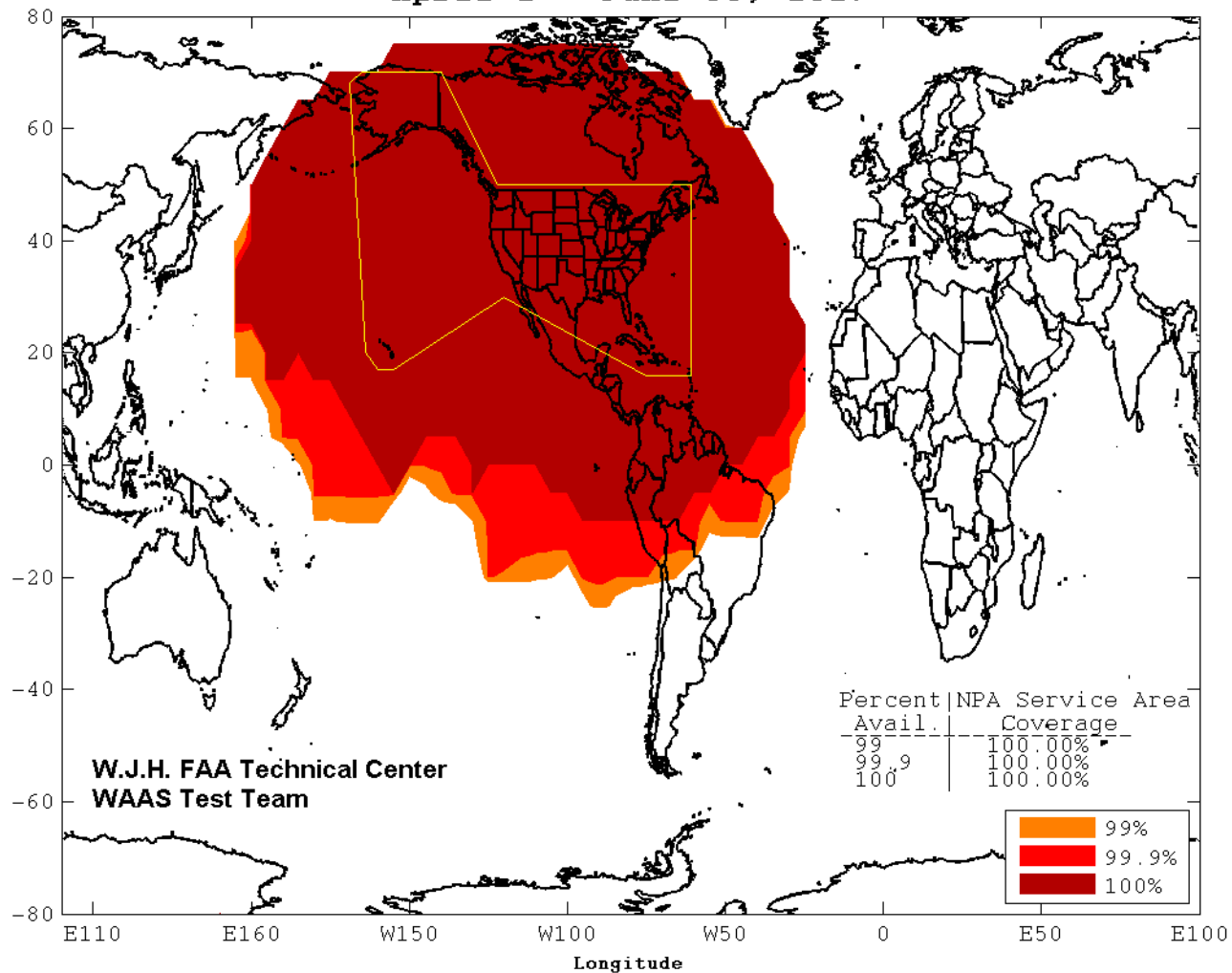


Figure 4-6 Daily LPV and LPV200 CONUS Coverage

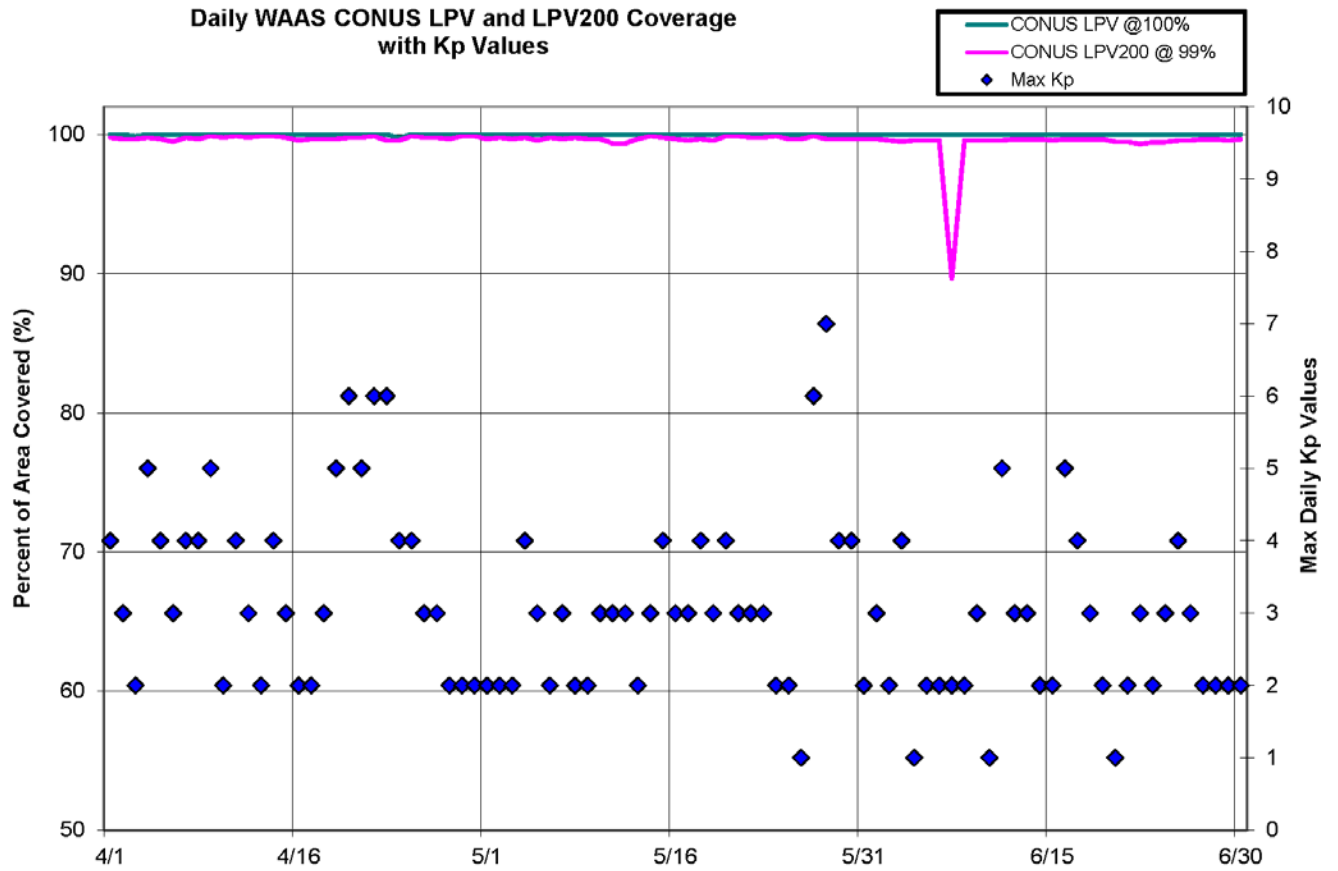


Figure 4-7 Daily LPV and LPV200 Alaska Coverage

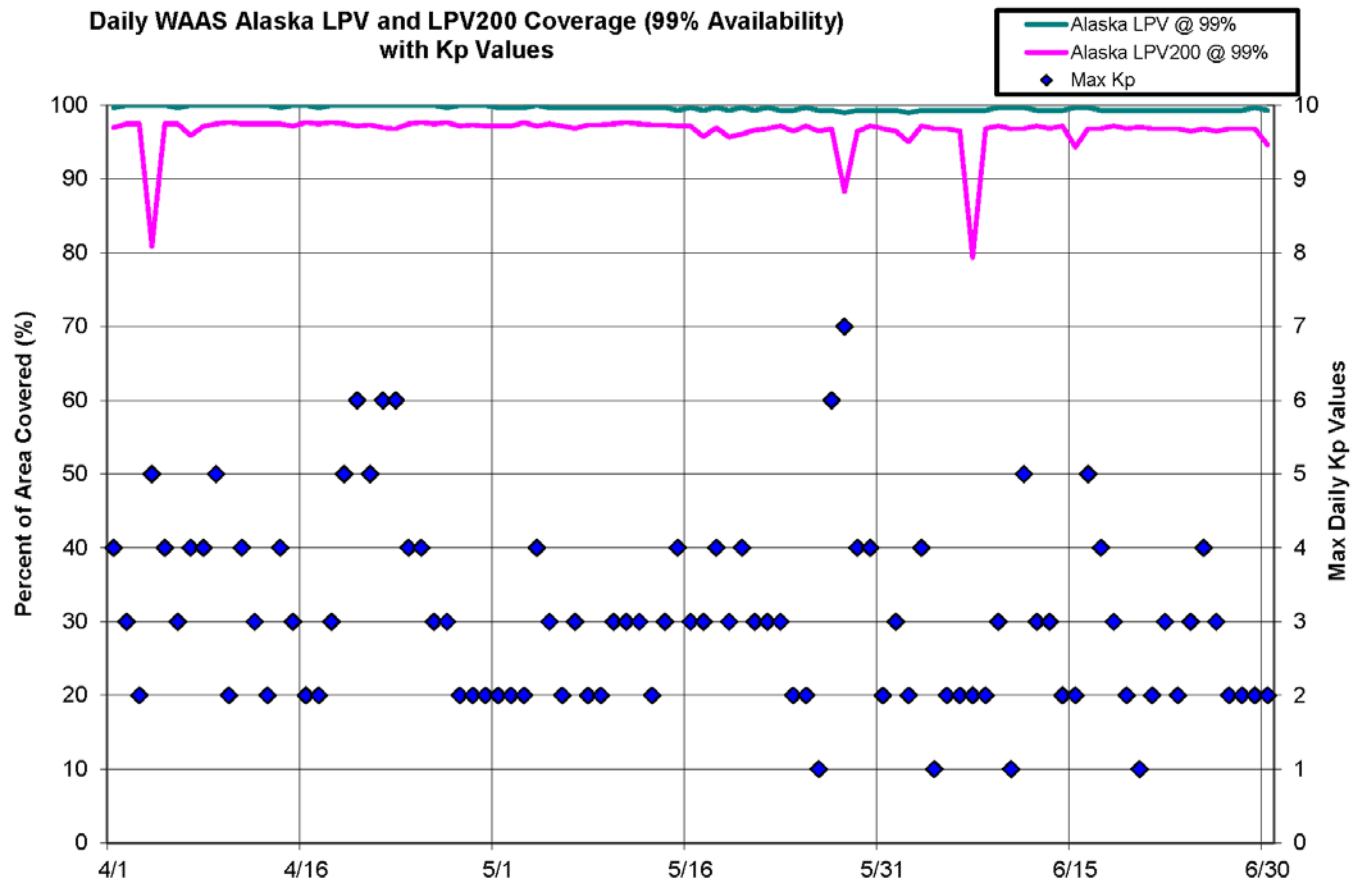


Figure 4-8 Daily LPV and LPV200 Canada Coverage

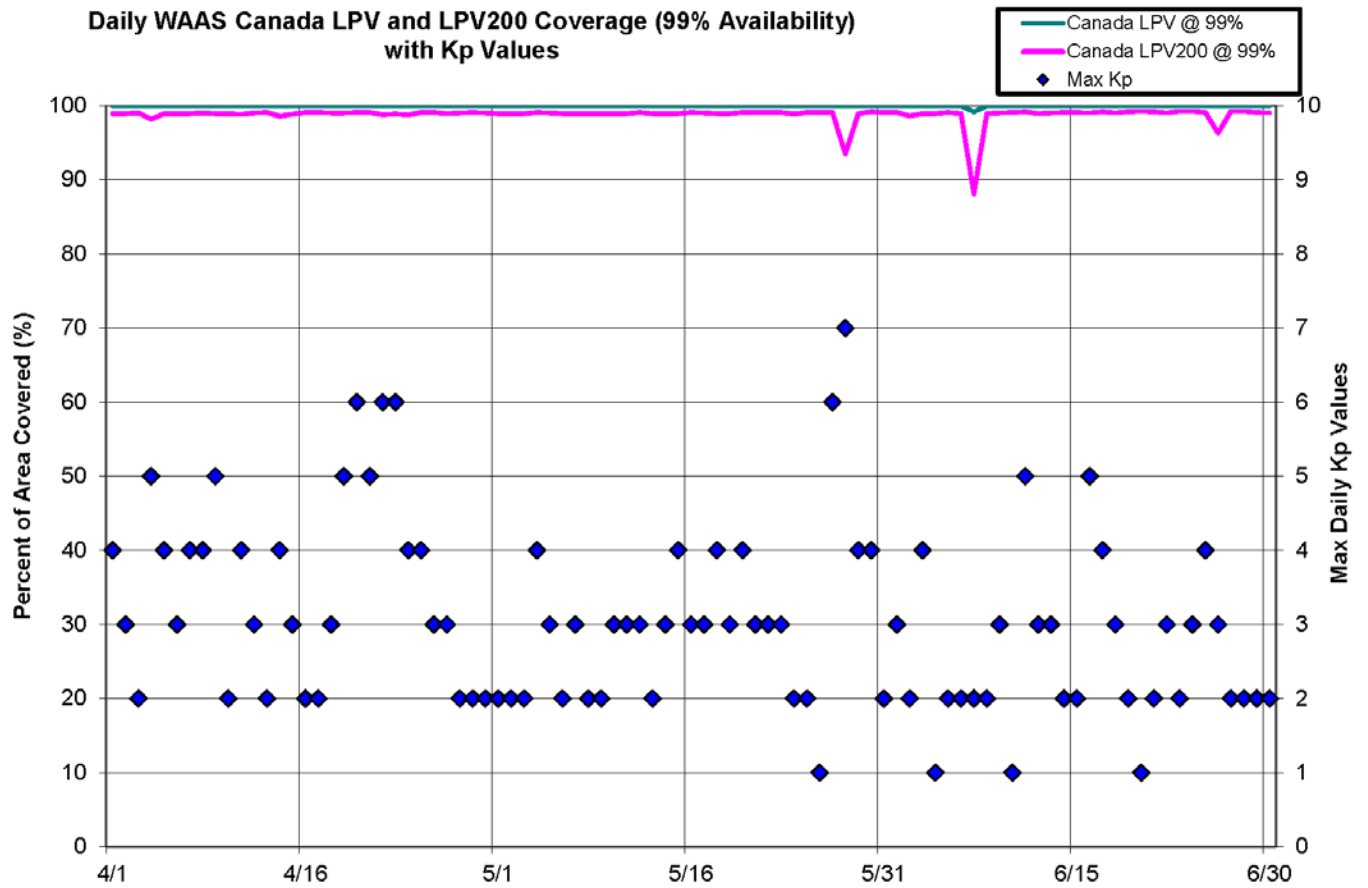
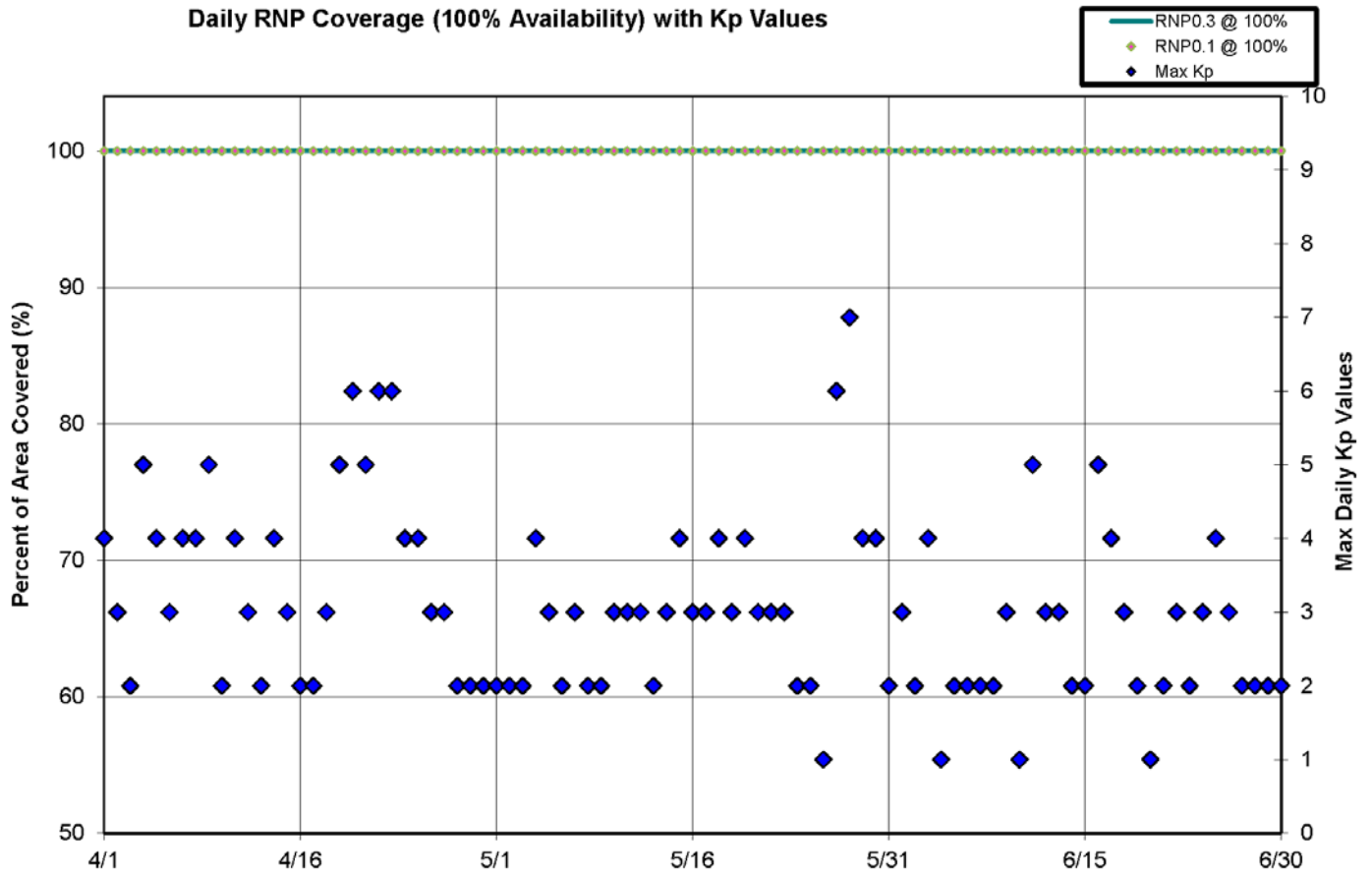


Figure 4-9 Daily RNP Coverage



5.0 INTEGRITY

5.1 HMI Analysis

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

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

Table 5-1 lists the safety margin index and the number of HMI events. For this reporting period, the lowest safety margin index is 3.907943 at Mexico 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	Safety Index		Number of HMIs
	Horizontal	Vertical	
Arcata	5	9.04	0
Atlantic City	7	6.29	0
Oklahoma City	6.55	5.36	0
Albuquerque	6.3	8.4	0
Anchorage	6.94	5.59	0
Atlanta	6.3	8.04	0
Barrow	15.71	6.1	0
Bethel	6.33	7.94	0
Billings	9.83	8.15	0
Boston	7.72	8.1	0
Chicago	8.85	8.03	0
Cleveland	7.03	7.9	0
Cold Bay	10.07	10.4	0
Dallas	5.91	6.12	0
Denver	8.81	9.06	0
Fairbanks	4.28	7.87	0
Gander	11.53	14.24	0
Goose Bay	13.85	10.88	0
Houston	5.96	5.37	0
Iqaluit	7.53	12.41	0
Jacksonville	6.9	7.15	0
Juneau	10.25	4.58	0
Kansas City	5.74	4.08	0
Kotzebue	8.17	7.55	0
Los Angeles	8.23	6.91	0
Memphis	6.49	4.06	0
Merida	12.49	8.5	0
Mexico City	11.62	3.91	0
Miami	6.11	8.42	0
Minneapolis	8.64	8.24	0
New York	5.74	7.51	0
Oakland	8.21	7.37	0
Puerto Vallarta	10.46	5.99	0
Salt Lake City	6.85	6.95	0
San Jose Del Cabo	10.26	10.46	0
Seattle	5.39	9.14	0
Washington DC	11.26	8.58	0
Winnipeg	7.44	5.81	0

5.2 Broadcast Alerts

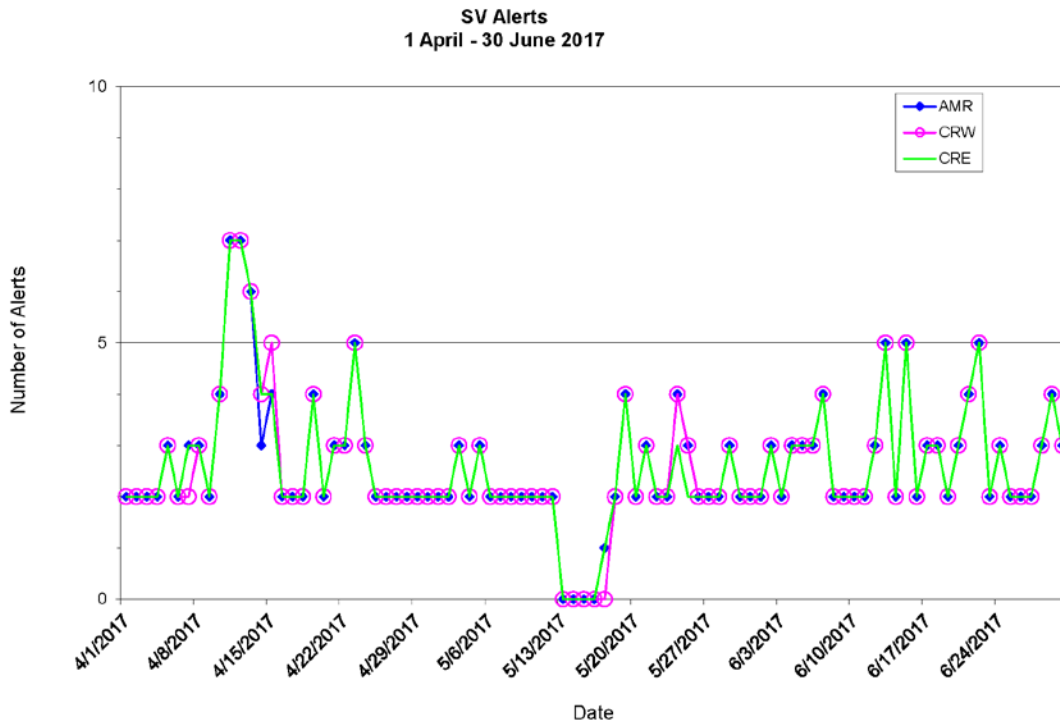
The WAAS transmits alert messages for user protection when the active WAAS corrections are no longer bound by the UDREs. Alerts increase the UDRE for one or more PRNs, which can reduce the weighting of the satellite or exclude the satellite from the navigation solution. An increase in UDREs after an alert effectively increases the user protection levels (HPL and VPL), which affects the availability. In addition, 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		
	AMR	CRW	CRE	AMR	CRW	CRE
2	203	203	203	2.2308	2.2308	2.2308
3	12	12	12	0.1319	0.1319	0.1319
4	23	23	22	0.2527	0.2527	0.2418
5	0	0	0	0.0000	0.0000	0.0000
6	0	0	0	0.0000	0.0000	0.0000
24	0	0	0	0.0000	0.0000	0.0000
26	0	0	0	0.0000	0.0000	0.0000
Total Alerts	238	238	237	2.6154	2.6154	2.6044
Days in Service	91	91	91			

Figure 5-1 shows the daily SV alerts. The number of alerts on one GEO is often the same as the number of alerts on the other GEO; therefore, lines tend to overlap in most points on this plot.

Figure 5-1 SV Daily Alert Trend



5.3 Availability of WAAS Messages (CRE, CRW, and AMR)

Accurate and current calculations of user position are dependent on the broadcast and receipt of the WAAS message within precise time specifications. This aspect of the WAAS is critical to maintaining continuity requirements. Each message type in the WAAS SIS has a specific timeout interval and expected worst-case broadcast interval. Table 5-3 lists the maximum intervals at which each message must broadcast to meet system requirements.

Table 5-3 Update Rates for WAAS Messages

Data	Associated Message Types	Maximum Update Interval (seconds)	En Route, Terminal, NPA Timeout (seconds)	Precision Approach Timeout (seconds)
WAAS in Test Mode	0	6	N/A	N/A
PRN Mask	1	60	None	None
UDREI	2-6, 24	6	18	12
Fast Corrections	2-5, 24	See Table A-8 in RTCA DO-229C	See Table A-8 in RTCA DO-229C	See Table A-8 in RTCA DO-229C
Long Term Corrections	24, 25	120	360	240
GEO Nav. Data	9	120	360	240
Fast Correction Degradation	7	120	360	240
Weighting Factors	8	120	240	240
Degradation Parameters	10	120	360	240
Ionospheric Grid Mask	18	300	None	None
Ionospheric Corrections	26	300	600	600
UTC Timing Data	12	300	None	None
Almanac Data	17	300	None	None

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

For this quarter, statistics reported for late messages were mainly caused by GEO SIS outages, GUS switchovers, and SV alerts; excluding message type 7 and 10. Furthermore, the delay of message types 7 and 10 had little or no impact on user performance and safety, and were not caused by GEO SIS outages, GUS switchovers, or SV alerts. Table 5-4 through Table 5-8 show statistics for fast correction, long correction, ephemeris covariance, ionosphere correction, and ionospheric mask message rates broadcasted on AMR GEO. Table 5-9 through Table 5-13 show statistics for message rates broadcasted on CRW GEO. Table 5-14 through Table 5-18 show statistics for message rates broadcasted on CRE GEO.

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

Message Type	On Time	Late	Max Late Length (seconds)
1	105982	0	0
2	1310956	31	24
3	1310333	68	24
4	1310393	47	24
7	99172	3	127
9	92137	0	0
10	99241	1	187
17	31387	0	0

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

SV	On Time	Late	Max Late Length (seconds)
1	48965	0	0
2	47265	0	0
3	48236	1	180
5	47529	0	0
6	47632	0	0
7	46887	1	166
8	48081	0	0
9	47216	0	0
10	46940	1	173
11	48395	0	0
12	46679	0	0
13	48592	0	0
14	46536	2	168
15	47602	1	161
16	47505	0	0
17	47247	0	0
18	46286	0	0
19	46325	0	0
20	46624	0	0
21	47441	2	166
22	47692	0	0
23	47097	0	0
24	49382	0	0
25	48578	1	173
26	47947	0	0
27	48652	0	0
28	47365	0	0
29	47027	1	168
30	46771	1	161
31	47700	0	0
32	46126	0	0

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

SV	On Time	Late	Max Late Length (seconds)
1	40194	0	0
2	38843	0	0
3	39657	0	0
5	38981	0	0
6	39025	1	209
7	38516	0	0
8	39483	0	0
9	38811	0	0
10	38543	0	0
11	39796	0	0
12	38346	1	210
13	39924	0	0
14	38212	1	206
15	39099	0	0
16	38949	1	209
17	38855	0	0
18	38005	0	0
19	37981	0	0
20	38260	0	0
21	38999	0	0
22	39178	1	210
23	38717	0	0
24	40569	1	208
25	39903	1	206
26	39406	0	0
27	39945	0	0
28	38926	0	0
29	38626	1	208
30	38416	1	208
31	39140	0	0
32	37878	0	0
135	75534	2	210
138	75542	3	210

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

Band	Block	On Time	Late	Max Late Length (seconds)
0	0	27304	4	301
0	1	27298	2	305
0	2	27305	3	306
1	0	27281	7	306
1	1	27312	4	305
1	2	27299	5	304
1	3	27298	5	576
1	4	27297	3	307
2	0	27294	9	576
2	1	27291	5	306
2	2	27313	3	305
2	3	27301	3	306
2	4	27310	5	306
3	0	27297	2	306
3	1	27287	3	576
3	2	27285	5	576
9	0	27312	2	578
9	1	27297	2	305
9	2	27312	3	305
9	3	27295	5	305
9	4	27299	1	301
9	5	27291	1	305
9	6	27306	6	306

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

Band	On Time	Late	Max Late Length (seconds)
0	35810	1	396
1	35778	0	0
2	35803	0	0
3	35816	1	426
9	35790	0	0

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

Message Type	On Time	Late	Max Late Length (seconds)
1	98903	0	0
2	1310958	31	25
3	1310332	70	24
4	1310396	46	27
7	92785	11	130
9	92137	0	0
10	92775	1	126
17	30787	0	0

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

SV	On Time	Late	Max Late Length (seconds)
1	48974	0	0
2	47263	1	166
3	48241	0	0
5	47525	1	168
6	47623	0	0
7	46895	1	163
8	48082	1	179
9	47227	0	0
10	46961	0	0
11	48396	0	0
12	46676	0	0
13	48589	1	156
14	46532	0	0
15	47603	1	174
16	47502	1	172
17	47252	0	0
18	46287	0	0
19	46336	0	0
20	46621	1	168
21	47455	0	0
22	47689	0	0
23	47092	1	179
24	49371	0	0
25	48576	1	145
26	47946	0	0
27	48650	1	161
28	47362	1	156
29	47026	0	0
30	46766	1	174
31	47689	0	0
32	46123	0	0

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

SV	On Time	Late	Max Late Length (seconds)
1	40206	1	168
2	38842	0	0
3	39677	0	0
5	38984	1	208
6	39050	0	0
7	38508	0	0
8	39481	3	161
9	38816	0	0
10	38546	3	203
11	39778	7	187
12	38345	0	0
13	39932	8	208
14	38215	0	0
15	39091	0	0
16	38957	2	209
17	38855	0	0
18	38001	1	168
19	37999	0	0
20	38279	1	208
21	38985	0	0
22	39193	0	0
23	38691	2	209
24	40561	0	0
25	39909	0	0
26	39403	0	0
27	39969	2	126
28	38919	4	208
29	38642	0	0
30	38410	0	0
31	39133	0	0
32	37858	0	0
135	75536	1	4272
138	75532	0	0

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

Band	Block	On Time	Late	Max Late Length (seconds)
0	0	27298	1	301
0	1	27313	2	301
0	2	27293	1	301
1	0	27304	2	305
1	1	27313	1	304
1	2	27289	5	302
1	3	27314	3	576
1	4	27301	4	579
2	0	27312	5	587
2	1	27302	4	307
2	2	27308	2	304
2	3	27295	3	301
2	4	27308	2	301
3	0	27298	3	576
3	1	27310	3	576
3	2	27296	3	302
9	0	27300	3	301
9	1	27303	0	0
9	2	27299	0	0
9	3	27291	8	305
9	4	27312	3	307
9	5	27307	4	305
9	6	27303	4	301

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

Band	On Time	Late	Max Late Length (seconds)
0	34812	0	0
1	34824	0	0
2	34838	0	0
3	34863	0	0
9	34841	0	0

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

Message Type	On Time	Late	Max Late Length (seconds)
1	106016	1	179
2	1310958	29	34
3	1310331	68	28
4	1310388	47	31
7	99249	0	0
9	92137	0	0
10	99224	2	125
17	31374	1	497

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

SV	On Time	Late	Max Late Length (seconds)
1	48965	1	179
2	47265	0	0
3	48242	0	0
5	47530	0	0
6	47632	0	0
7	46888	1	151
8	48084	0	0
9	47218	0	0
10	46963	0	0
11	48397	0	0
12	46675	0	0
13	48589	0	0
14	46533	0	0
15	47599	0	0
16	47503	0	0
17	47259	0	0
18	46290	0	0
19	46316	1	176
20	46627	0	0
21	47445	0	0
22	47692	0	0
23	47099	0	0
24	49378	0	0
25	48570	1	170
26	47942	0	0
27	48655	0	0
28	47368	0	0
29	47027	0	0
30	46772	0	0
31	47692	1	179
32	46121	0	0

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

SV	On Time	Late	Max Late Length (seconds)
1	40206	0	0
2	38861	0	0
3	39685	0	0
5	38996	0	0
6	39036	0	0
7	38519	0	0
8	39479	0	0
9	38802	0	0
10	38553	0	0
11	39776	0	0
12	38350	0	0
13	39933	1	206
14	38205	0	0
15	39100	0	0
16	38951	0	0
17	38841	0	0
18	38003	0	0
19	37990	2	210
20	38271	0	0
21	38996	0	0
22	39197	0	0
23	38711	0	0
24	40562	0	0
25	39940	0	0
26	39416	1	206
27	39956	0	0
28	38920	0	0
29	38642	0	0
30	38405	0	0
31	39133	0	0
32	37841	0	0
135	75530	0	0
138	75534	0	0

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

Band	Block	On Time	Late	Max Late Length (seconds)
1	0	27287	3	582
0	1	27310	4	579
0	2	27298	5	307
1	0	27296	7	305
1	1	27296	3	305
1	2	27302	1	301
1	3	27307	4	304
1	4	27297	2	305
2	0	27302	9	303
2	1	27290	5	306
2	2	27300	3	306
2	3	27300	4	306
2	4	27306	2	304
3	0	27294	5	578
3	1	27297	10	577
3	2	27287	5	306
9	0	27305	3	304
9	1	27294	6	305
9	2	27305	3	305
9	3	27308	5	305
9	4	27292	3	583
9	5	27300	3	588
9	6	27294	4	578

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

Band	On Time	Late	Max Late Length (seconds)
0	35757	0	0
1	35744	0	0
2	35795	0	0
3	35800	0	0
9	35728	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 and Figure 6-2 show the 95% range error for each SV measured by the WAAS receivers at the Chicago reference station.

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

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

For this reporting period, most satellite range errors were bounded at least 99.9% of the time by UDRE. Other unbounded errors (i.e., errors bounded less than 100% of the time) were due to geomagnetic activity, noise, and/or multipath. PRN 4 was unavailable for the quarter.

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

Site SV ↓	Billings		Albuquerque		Boston		Washington DC		Houston		Kansas City	
	95% Range Error	3.29 Sigma Bounding(%)	95% Range Error	3.29 Sigma Bounding(%)	95% Range Error	3.29 Sigma Bounding(%)	95% Range Error	3.29 Sigma Bounding(%)	95% Range Error	3.29 Sigma Bounding(%)	95% Range Error	3.29 Sigma Bounding(%)
1*	0.841	100	1.307	100	1.081	100	1.3	100	1.055	100	1.481	100
2	1.135	100	1.654	100	1.514	100	1.204	100	1.476	100	1.712	100
3*	0.93	100	1.555	100	1.589	100	1.32	100	1.5	100	1.677	100
4	-	-	-	-	-	-	-	-	-	-	-	-
5	0.979	100	1.611	100	1.095	100	1.496	100	0.968	100	2.031	100
6*	1.146	100	2.084	100	0.747	100	1.355	100	1.144	100	1.65	100
7	0.845	100	1.298	100	0.986	100	1.124	100	0.902	100	1.358	100
8*	0.886	100	1.243	100	1.159	100	1.231	100	1.218	100	1.251	100
9*	1.04	100	1.028	100	1.04	100	1.287	100	1.088	100	1.49	100
10	1.598	100	0.859	100	1.707	100	0.802	100	1.014	100	0.831	100
11	1.123	100	1.397	100	1	100	1.444	100	1.099	100	1.149	100
12	0.828	100	1.415	100	1.135	100	1.206	100	1.117	100	1.156	100
13	1.037	100	1.775	100	1.187	100	1.125	100	1.034	100	1.418	100
14	0.796	100	1.27	100	1.557	100	0.85	100	0.933	100	1.663	100
15	1.311	100	1.567	100	1.126	100	1.226	100	1.342	100	1.345	100
16	1.787	100	1.518	100	1.02	100	1.118	100	1.062	100	1.361	100
17	1.984	100	1.033	100	1.375	100	1.143	100	1.33	100	1.146	100
18	1.183	100	1.292	100	1.26	100	1.036	100	1.145	100	1.238	100
19	1.112	100	0.941	100	1.217	100	1.001	100	1.242	100	1.195	100
20	1.525	100	1.434	100	0.893	100	1.09	100	1.456	100	1.244	100
21	0.762	100	1.178	100	1.548	100	1.319	100	1.29	100	1.289	100
22	0.97	100	1.166	100	0.914	100	1.34	100	0.979	100	0.994	100
23	0.911	100	1.336	100	1.124	100	1.09	100	1.517	100	1.192	100
24*	0.708	100	1.954	100	1.073	100	1.216	100	0.994	100	1.589	100
25*	1.27	100	1.347	100	1.239	100	0.888	100	1.35	100	1.433	100
26*	0.882	100	1.333	100	1.436	100	1.315	100	1.095	100	1.074	100
27*	1.165	100	2.152	100	0.927	100	1.093	100	0.976	100	1.02	100
28	1.003	100	1.244	100	1.233	100	1.142	100	1.13	100	1.411	100
29	1.096	100	1.227	100	0.973	100	0.931	100	1.289	100	1.356	100
30*	1.043	100	1.366	100	0.788	100	1.2	100	1.077	100	1.159	100
31	0.893	100	1.467	100	1.185	100	1.183	100	1.17	100	1.387	100
32	1.196	100	1.004	100	1.313	100	0.788	100	1.451	100	0.944	100
135	1.845	100	1.375	100	2.722	100	1.745	100	2.283	100	1.747	100
138	1.307	100	1.135	100	1.23	100	1.655	100	1.429	100	1.861	100

***Note: Reduced range bounding on Block IIF space vehicles is due to the difference between L1 C/A and L1P satellite signal delays.**

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

Site SV ↓	Los Angeles		Salt Lake City		Miami		Minneapolis		Atlanta		Juneau	
	95% Range Error	3.29 Sigma Bounding(%)	95% Range Error	3.29 Sigma Bounding(%)	95% Range Error	3.29 Sigma Bounding(%)	95% Range Error	3.29 Sigma Bounding(%)	95% Range Error	3.29 Sigma Bounding(%)	95% Range Error	3.29 Sigma Bounding(%)
1*	2.177	100	0.81	100	0.973	100	0.81	100	1.143	100	0.832	100
2	1.722	100	1.198	100	1.333	100	0.84	100	1.037	100	1.074	100
3*	1.712	100	1.285	100	1.023	100	0.849	100	1.248	100	0.742	100
4	-	-	-	-	-	-	-	-	-	-	-	-
5	1.591	100	0.852	100	1.137	100	0.909	100	1.15	100	1.045	100
6*	1.745	100	1.06	100	3.074	100	0.968	100	1.37	100	0.825	100
7	1.62	100	0.807	100	1.989	100	0.682	100	1.067	100	1.327	100
8*	1.977	100	0.822	100	1.275	100	1.134	100	0.889	100	1.355	100
9*	1.803	100	0.823	100	1.116	100	0.756	100	1.093	100	0.981	100
10	1.28	100	0.885	100	1.203	100	0.982	100	0.664	100	1.175	100
11	2.114	100	0.857	100	1.309	100	0.958	100	1.302	100	1.106	100
12	1.443	100	1.289	100	1.197	100	1.15	100	0.924	100	1.228	100
13	1.171	100	0.762	100	1.552	100	1	100	1.049	100	0.936	100
14	1.475	100	0.986	100	0.922	100	1.011	100	0.854	100	1.166	100
15	1.621	100	0.859	100	1.259	100	1.027	100	1.133	100	1.11	100
16	1.715	100	0.898	100	0.867	100	0.76	100	0.897	100	1.183	100
17	1.427	100	0.763	100	1.076	100	0.736	100	1.078	100	1.121	100
18	1.369	100	0.752	100	1.024	100	1.189	100	0.828	100	1.134	100
19	1.484	100	1.606	100	1.15	100	0.957	100	1.21	100	0.981	100
20	1.489	100	1.406	100	0.983	100	0.776	100	0.822	100	1.034	100
21	1.464	100	0.753	100	1.07	100	0.854	100	1.364	100	1.237	100
22	1.828	100	0.85	100	1.047	100	1.29	100	0.911	100	1.258	100
23	2.102	100	0.793	100	0.996	100	0.897	100	0.935	100	1.174	100
24*	1.543	100	1.211	100	0.861	100	1.182	100	1.239	100	1.368	100
25*	1.684	100	1.171	100	1.046	100	1.222	100	1.628	100	1.334	100
26*	2.885	100	1.091	100	1.07	100	1.055	100	1.179	100	1.312	100
27*	1.468	100	0.772	100	0.789	100	1.646	100	0.781	100	0.87	100
28	1.541	100	0.961	100	1.148	100	1.032	100	1.064	100	1.379	100
29	1.599	100	1.162	100	1.106	100	1	100	1.211	100	1.37	100
30*	1.667	100	0.82	100	1.065	100	0.857	100	1.067	100	1.117	100
31	1.675	100	0.857	100	1.06	100	0.745	100	1.004	100	1.37	100
32	1.066	100	0.87	100	1.298	100	1.232	100	0.772	100	1.095	100
135	1.574	100	1.643	100	1.424	100	2.075	100	1.832	100	1.414	100
138	3.004	100	1.386	100	1.746	100	1.784	100	1.295	100	1.375	100

***Note: Reduced range bounding on Block IIF space vehicles is due to the difference between L1 C/A and L1P satellite signal delays.**

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

Site SV ↓	Billings		Albuquerque		Boston		Washington DC		Houston		Kansas City	
	95% Iono Error	3.29 Sigma Bounding(%)	95% Iono Error	3.29 Sigma Bounding(%)	95% Iono Error	3.29 Sigma Bounding(%)	95% Iono Error	3.29 Sigma Bounding(%)	95% Iono Error	3.29 Sigma Bounding(%)	95% Iono Error	3.29 Sigma Bounding(%)
1	0.434	100	0.654	100	0.472	100	0.555	100	0.382	100	0.750	100
2	0.729	100	0.834	100	0.871	100	0.449	100	0.773	100	0.680	100
3	0.357	100	0.830	100	0.763	100	0.483	100	0.434	100	0.778	100
4	-	-	-	-	-	-	-	-	-	-	-	-
5	0.528	100	0.713	100	0.442	100	0.529	100	0.776	100	0.886	100
6	0.543	100	0.937	100	0.399	100	0.581	100	0.705	100	0.708	100
7	0.466	100	0.819	100	0.384	100	0.428	100	0.408	100	0.636	100
8	0.363	100	0.571	100	0.568	100	0.395	100	0.701	100	0.576	100
9	0.623	100	0.620	100	0.318	100	0.617	100	0.367	100	0.719	100
10	1.001	100	0.353	100	0.589	100	0.296	100	0.723	100	0.299	100
11	0.370	100	0.628	100	0.301	100	0.394	100	0.537	100	0.438	100
12	0.487	100	0.604	100	0.421	100	0.392	100	0.472	100	0.410	100
13	0.286	100	0.779	100	0.388	100	0.424	100	0.414	100	0.525	100
14	0.487	100	0.593	100	0.816	100	0.248	100	0.589	100	0.741	100
15	0.393	100	0.862	100	0.277	100	0.547	100	0.462	100	0.682	100
16	0.696	100	0.746	100	0.339	100	0.427	100	0.577	100	0.608	100
17	1.196	100	0.617	100	0.883	100	0.367	100	0.647	100	0.420	100
18	0.576	100	0.545	100	0.318	100	0.516	100	0.672	100	0.392	100
19	0.808	100	0.601	100	0.735	100	0.243	100	1.026	100	0.352	100
20	0.766	100	0.768	100	0.430	100	0.509	100	0.455	100	0.577	100
21	0.265	100	0.608	100	0.570	100	0.781	100	0.551	100	0.503	100
22	0.484	100	0.441	100	0.421	100	0.601	100	0.442	100	0.369	100
23	0.370	100	0.811	100	0.468	100	0.541	100	0.715	100	0.474	100
24	0.243	100	0.964	100	0.364	100	0.529	100	0.376	100	0.586	100
25	0.467	100	0.658	100	0.414	100	0.227	100	0.541	100	0.448	100
26	0.288	100	0.531	100	0.441	100	0.448	100	0.816	100	0.443	100
27	0.357	100	0.896	100	0.480	100	0.360	100	0.461	100	0.347	100
28	0.447	100	0.689	100	0.328	100	0.363	100	0.522	100	0.539	100
29	0.386	100	0.505	100	0.392	100	0.428	100	0.761	100	0.596	100
30	0.376	100	1.000	100	0.440	100	0.760	100	0.562	100	0.515	100
31	0.459	100	0.649	100	0.498	100	0.498	100	0.883	100	0.668	100
32	0.649	100	0.529	100	0.560	100	0.379	100	1.156	100	0.361	100

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

Site SV ↓	Los Angeles		Salt Lake City		Miami		Minneapolis		Atlanta		Juneau	
	95% Iono Error	3.29 Sigma Bounding(%)	95% Iono Error	3.29 Sigma Bounding(%)	95% Iono Error	3.29 Sigma Bounding(%)	95% Iono Error	3.29 Sigma Bounding(%)	95% Iono Error	3.29 Sigma Bounding(%)	95% Iono Error	3.29 Sigma Bounding(%)
1	1.064	100	0.339	100	0.375	100	0.315	100	0.616	100	0.335	100
2	0.723	100	0.524	100	0.741	100	0.335	100	0.452	100	0.472	100
3	0.509	100	0.487	100	0.364	100	0.405	100	0.798	100	0.282	100
4	-	-	-	-	-	-	-	-	-	-	-	-
5	0.950	100	0.478	100	0.698	100	0.307	100	0.500	100	0.433	100
6	0.849	100	0.547	100	1.580	100	0.304	100	0.705	100	0.283	100
7	0.608	100	0.334	100	0.804	100	0.272	100	0.630	100	0.518	100
8	0.982	100	0.305	100	0.707	100	0.416	100	0.312	100	0.549	100
9	0.684	100	0.447	100	0.388	100	0.291	100	0.621	100	0.343	100
10	0.359	100	0.553	100	0.735	100	0.509	100	0.281	100	0.559	100
11	0.921	100	0.323	100	0.356	100	0.296	100	0.548	100	0.345	100
12	0.541	100	0.470	100	0.541	100	0.488	100	0.419	100	0.644	100
13	0.557	100	0.218	100	0.578	100	0.386	100	0.687	100	0.402	100
14	0.491	100	0.606	100	0.542	100	0.511	100	0.406	100	0.585	100
15	0.904	100	0.343	100	0.434	100	0.378	100	0.582	100	0.385	100
16	0.806	100	0.318	100	0.330	100	0.278	100	0.446	100	0.531	100
17	0.549	100	0.421	100	0.606	100	0.335	100	0.403	100	0.465	100
18	0.432	100	0.374	100	0.633	100	0.435	100	0.471	100	0.380	100
19	0.512	100	1.334	100	0.645	100	0.251	100	0.412	100	0.491	100
20	0.613	100	0.575	100	0.550	100	0.334	100	0.345	100	0.450	100
21	0.562	100	0.363	100	0.644	100	0.376	100	0.774	100	0.505	100
22	0.755	100	0.331	100	0.591	100	0.419	100	0.370	100	0.516	100
23	0.903	100	0.289	100	0.572	100	0.466	100	0.547	100	0.535	100
24	0.813	100	0.434	100	0.360	100	0.322	100	0.719	100	0.594	100
25	0.701	100	0.489	100	0.505	100	0.452	100	0.812	100	0.481	100
26	1.533	100	0.290	100	0.377	100	0.373	100	0.514	100	0.416	100
27	0.558	100	0.263	100	0.258	100	0.614	100	0.356	100	0.495	100
28	0.557	100	0.384	100	0.500	100	0.447	100	0.509	100	0.524	100
29	0.762	100	0.381	100	0.695	100	0.409	100	0.664	100	0.449	100
30	0.672	100	0.298	100	0.469	100	0.374	100	0.658	100	0.386	100
31	0.730	100	0.476	100	0.687	100	0.321	100	0.529	100	0.616	100
32	0.402	100	0.746	100	0.849	100	0.767	100	0.330	100	0.621	100

Figure 6-1 95% Range Error (PRN-1-PRN-16)-Washington D.C.

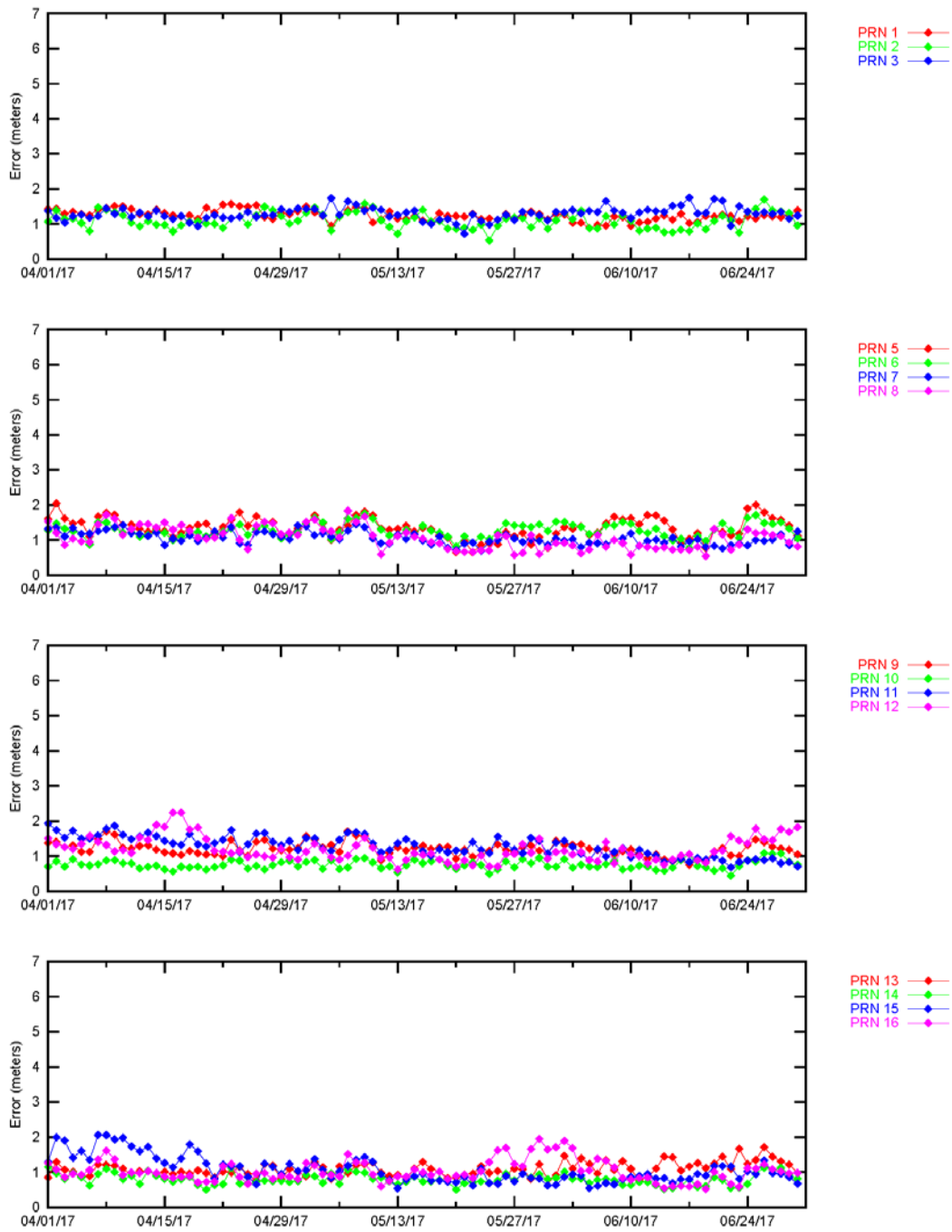


Figure 6-2 95% Range Error (PRN-17-PRN-32)-Washington D.C.

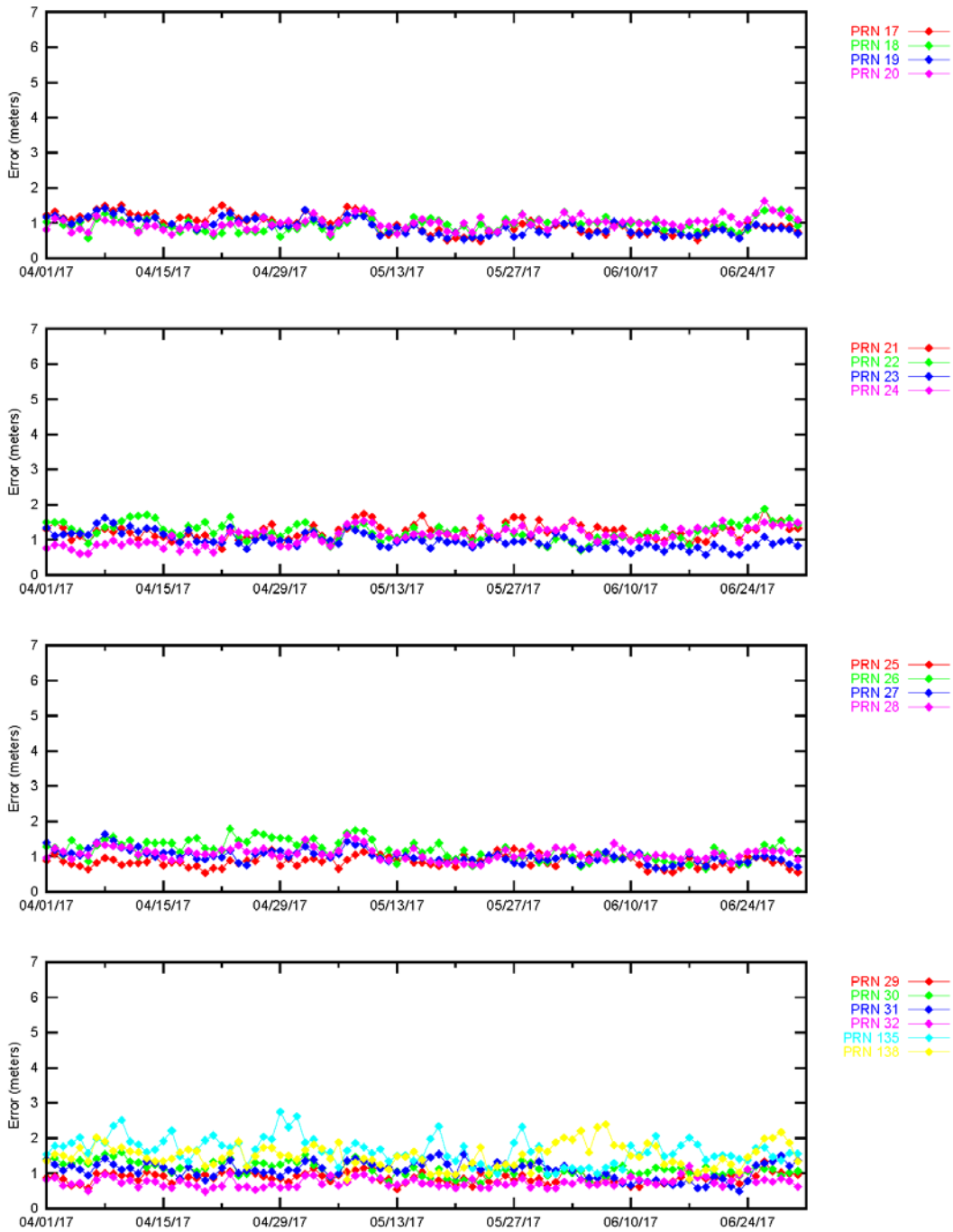


Figure 6-3 95% Ionospheric Error (PRN-1-PRN-16)-Washington D.C.

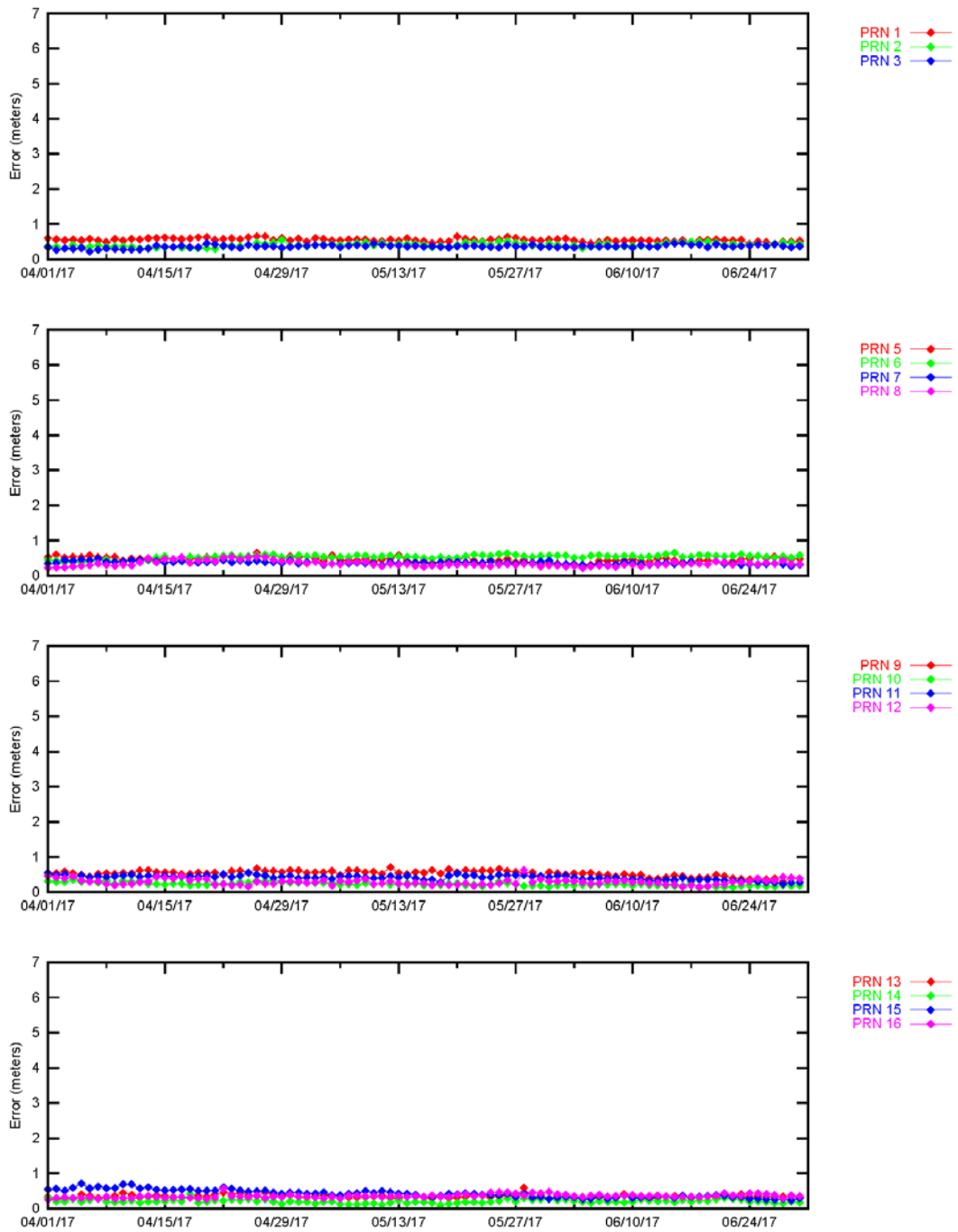
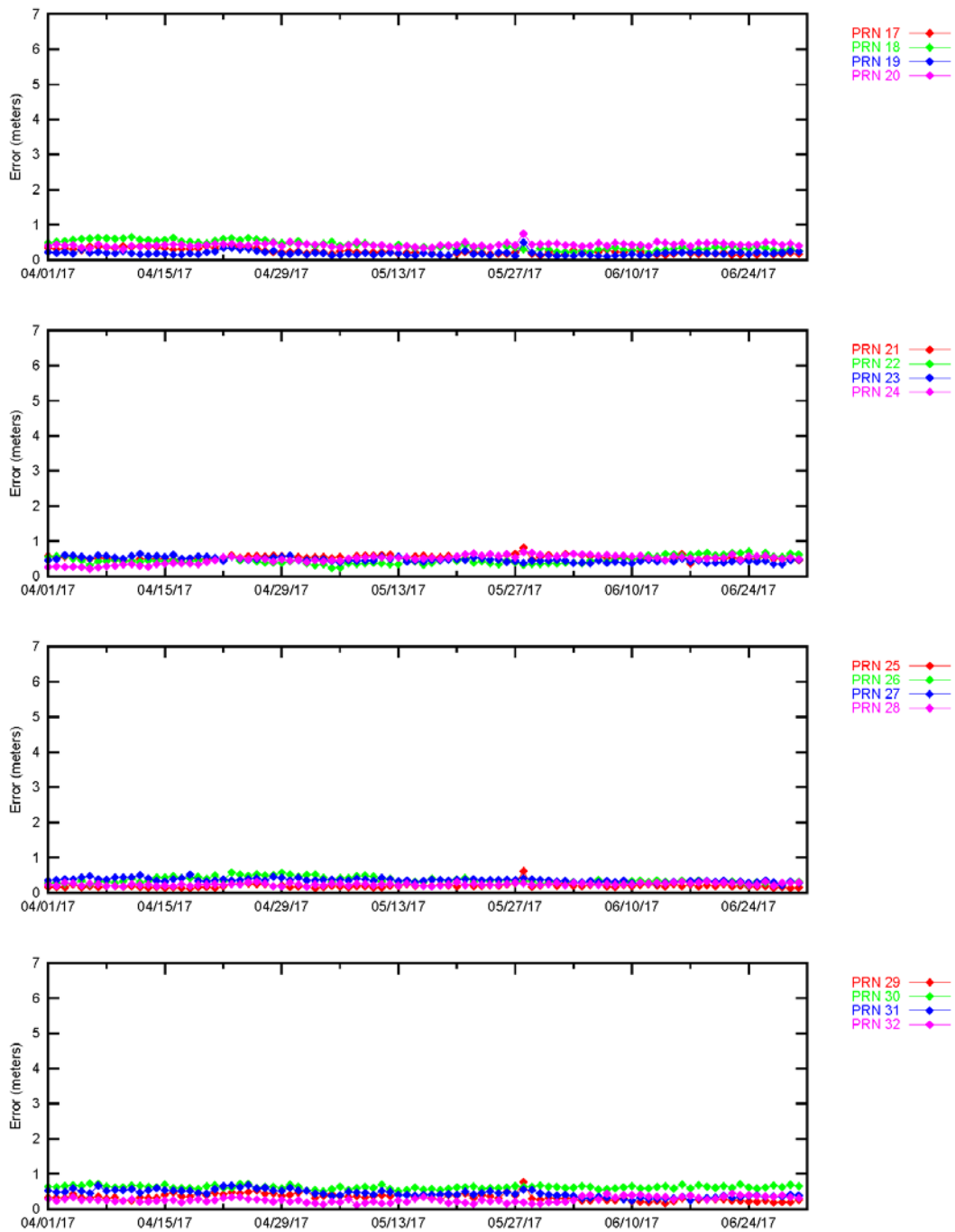


Figure 6-4 95% Ionospheric Error (PRN-17–PRN-32)–Washington D.C.



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.

The reductions in CRW GEO PA and CRE GEO PA ranging availability were due to GUS switchovers (see Figure 7-1 and Figure 7-2). Refer to Table 1-7 for detailed information on the GUS switchovers for this reporting period.

Table 7-1 shows the GEO PA and NPA ranging availability as well as the percentage of time the GEO UDRE was set to “Not Monitored” and “Do Not Use.” Figure 7-1 and Figure 7-2 show the trend of CRW GEO PA and CRE GEO PA ranging availability, respectively.

The reductions in CRW GEO PA and CRE GEO PA ranging availability were due to GUS switchovers (see Figure 7-1 and Figure 7-2). Refer to Table 1-7 for detailed information on the GUS switchovers for this reporting period.

Table 7-1 GEO Ranging Availability

GEO Source	GEO	PA (%)	NPA (%)	Not Monitored (%)	Do Not Use (%)
CRW 135	CRW	99.84	0.02	0.11	0.03
CRW 135	CRE	99.80	0.03	0.17	0.00
CRW 135	AMR	0.00	0.00	99.62	0.38
CRE 138	CRW	99.84	0.02	0.11	0.03
CRE 138	CRE	99.80	0.03	0.17	0.00
CRE 138	AMR	0.00	0.00	99.62	0.38
AMR 133	CRW	99.84	0.02	0.11	0.03
AMR 133	CRE	99.80	0.03	0.17	0.00
AMR 133	AMR	0.00	0.00	99.62	0.38

Figure 7-1 Daily PA CRW GEO Ranging Availability Trend
CRW PA-Ranging Performance reported by AMR, CRW, and CRE
1 April - 30 June 2017

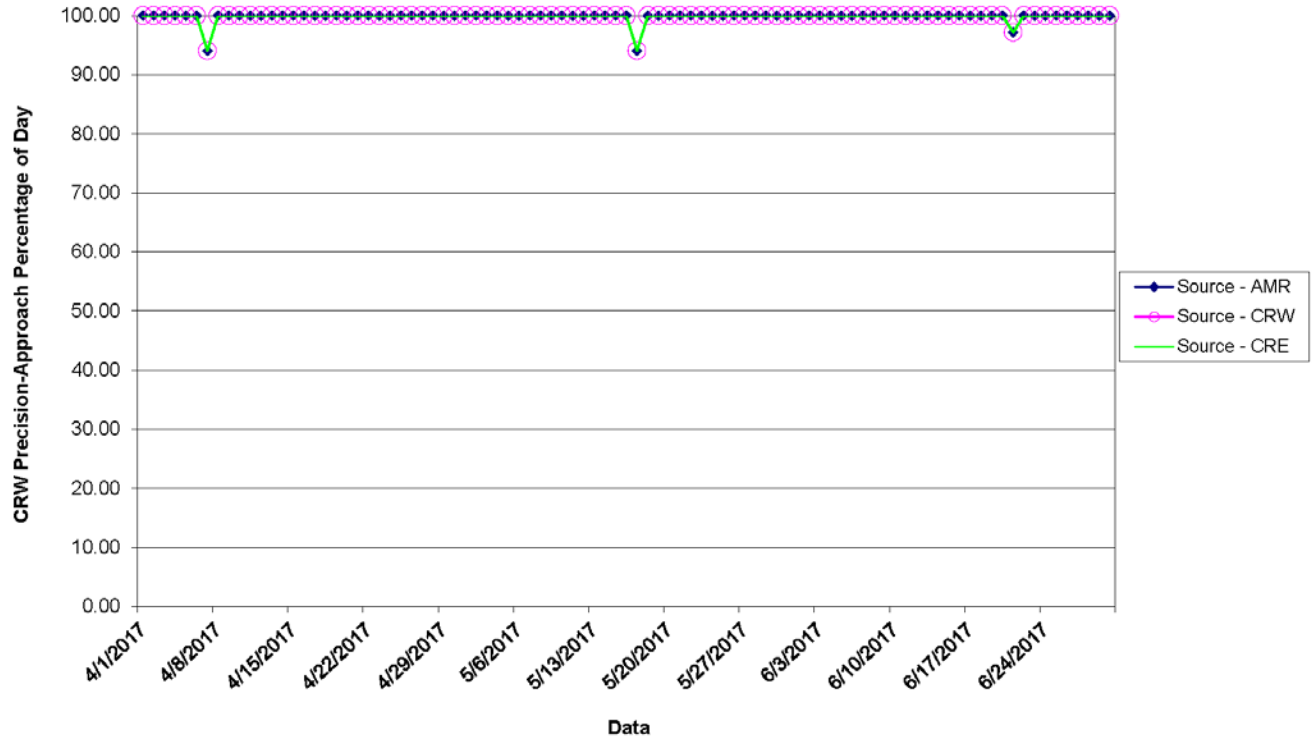
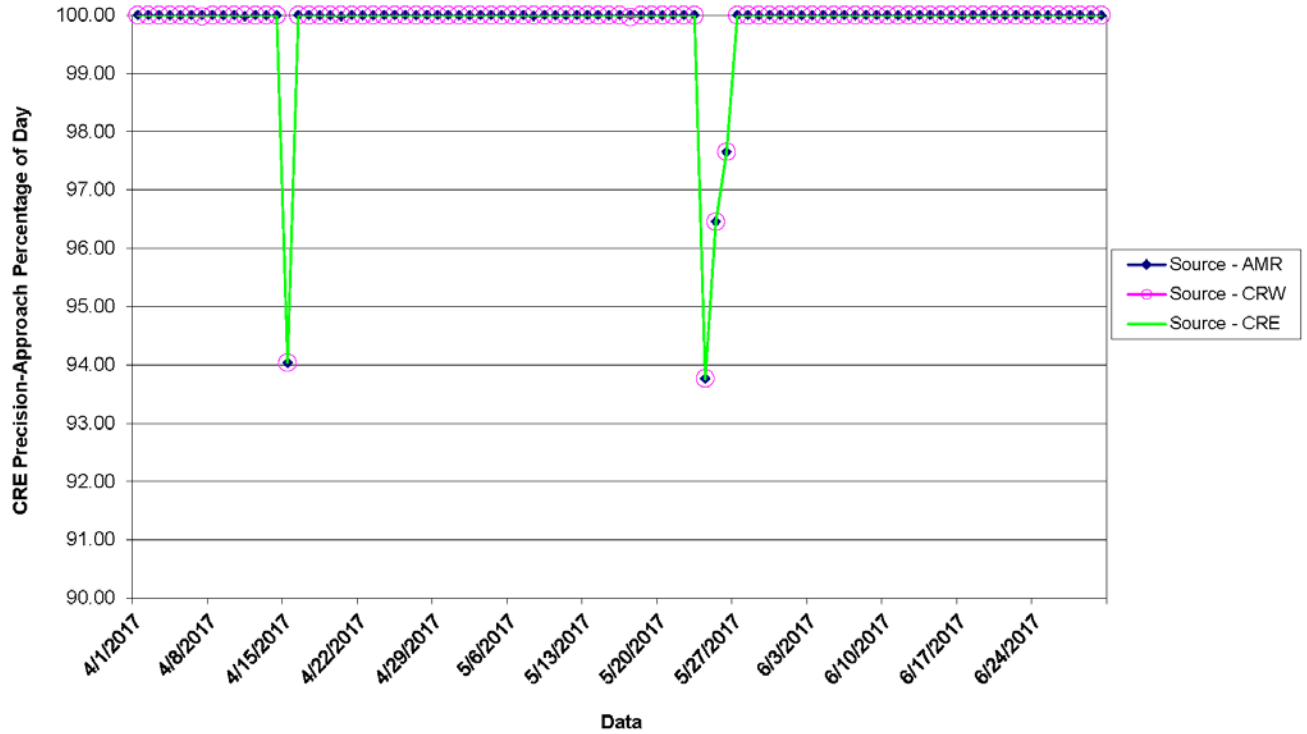


Figure 7-2 Daily PA CRE GEO Ranging Availability Trend

**CRE PA-Ranging Performance reported by AMR, CRW, and CRE
1 April - 30 June 2017**



8.0 WAAS AIRPORT AVAILABILITY

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

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

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

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

Airport ID	Airport Name	State/Province	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV200 Outages	LPV200 Avail
CAL4	FORT MACKAY/ALBIAN AERODROME	AB	LPV	0	100	0	100	3	99.9763
CEV3	VEGREVILLE	AB	LPV	0	100	0	100	2	99.9866
CYEG	EDMONTON / JOSEPHBURG	AB	LPV	0	100	0	100	2	99.9859
CYXD	EDMONTON CITY CTR	AB	LPV	0	100	0	100	2	99.9855
2C7	SHAKTOOLIK	AK	LPV	0	100	0	100	0	100
6A8	ALLAKAKET	AK	LP	0	100	0	100	2	99.9954
7KA	TATITLEK	AK	LP	0	100	0	100	0	100
9A3	CHUATHBALUK	AK	LPV	0	100	0	100	0	100
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
AQH	QUINHAGAK	AK	LPV	0	100	0	100	1	99.9985
AQT	NUIQSUT	AK	LPV	0	100	0	100	14	99.9508
BET	BETHEL	AK	LPV200	0	100	0	100	1	99.9985
BRW	WILEY POST-WILL ROGERS MEMORIA	AK	LPV	1	99.9996	2	99.9924	137	99.0728
CDB	COLD BAY	AK	LPV200	0	100	0	100	6	99.9596

Airport ID	Airport Name	State/ Province	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV200 Outages	LPV200 Avail
CDV	MERLE K (MUDHOLE) SMITH	AK	LPV	0	100	0	100	0	100
CEM	CENTRAL	AK	LP	0	100	0	100	2	99.9947
CLP	CLARKS POINT	AK	LPV	0	100	0	100	0	100
CXF	COLDFOOT	AK	LP	0	100	0	100	4	99.9821
D76	ROBERT/BOB/CURTIS MEMORIAL	AK	LPV	1	99.9996	2	99.9992	21	99.9691
DLG	DILLINGHAM	AK	LPV	0	100	0	100	0	100
ELI	ELIM	AK	LPV	0	100	0	100	0	100
ENA	KENAI MUNICIPAL	AK	LPV200	0	100	0	100	0	100
ENM	EMMONAK	AK	LPV	0	100	0	100	2	99.9973
FAI	FAIRBANKS INTL	AK	LPV200	0	100	0	100	2	99.9958
GAL	EDWARD G PITKA SR	AK	LPV	0	100	0	100	0	100
GAM	GAMBELL	AK	LPV	1	99.9996	2	99.9989	163	99.0602
GKN	GULKANA	AK	LPV	0	100	0	100	8	99.9969
GST	GUSTAVUS	AK	LP	0	100	0	100	0	100
HLA	HUSLIA	AK	LPV	0	100	0	100	1	99.9996
HOM	HOMER	AK	LPV	0	100	0	100	0	100
HPB	HOOPER BAY	AK	LP	0	100	0	100	4	99.9897
ILI	ILIAMNA	AK	LPV	0	100	0	100	0	100
IYS	WASILLA	AK	LPV	0	100	0	100	0	100
KAL	KALTAG	AK	LPV	0	100	0	100	0	100
KSM	ST MARY'S	AK	LPV200	0	100	0	100	1	99.9981
KTN	KETCHIKAN INTL	AK	LPV	0	100	0	100	0	100
KTS	BREVIK MISSION	AK	LPV	1	99.9996	1	99.9996	46	99.8787
KWT	KWETHLUK	AK	LPV	0	100	0	100	1	99.9989
KYU	KOYUKUK	AK	LPV	0	100	0	100	0	100
MCG	MC GRATH	AK	LP	0	100	0	100	0	100
MDM	MARSHALL DON HUNTER SR	AK	LP	0	100	0	100	1	99.9989
MDO	MIDDLETON ISLAND	AK	LP	0	100	0	100	0	100
OME	NOME	AK	LPV	1	99.9996	1	99.9996	18	99.9611
OOK	TOKSOOK BAY	AK	LP	0	100	0	100	2	99.9916
ORT	NORTHWAY	AK	LP	0	100	0	100	44	99.9733
OTZ	RALPH WIEN MEMORIAL	AK	LPV	1	99.9996	1	99.9996	20	99.9588
PAQ	PALMER MUNICIPAL	AK	LP	0	100	0	100	0	100
PHO	POINT HOPE	AK	LPV	1	99.9996	2	99.9992	78	99.6768
RBY	RUBY	AK	LPV	0	100	0	100	0	100
SCC	DEADHORSE	AK	LPV	0	100	0	100	16	99.9435
SCM	SCAMMON BAY	AK	LP	0	100	0	100	3	99.9924
SHG	SHUNGNAK	AK	LP	0	100	0	100	2	99.995
SHX	SHAGELUK	AK	LPV	0	100	0	100	0	100

Airport ID	Airport Name	State/Province	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV200 Outages	LPV200 Avail
SIT	SITKA ROCKY GUTIERREZ	AK	LP	0	100	0	100	0	100
SMK	ST MICHAEL	AK	LPV	0	100	0	100	0	100
SXQ	SOLDOTNA	AK	LP	0	100	0	100	0	100
UNK	UNALAKLEET	AK	LP	0	100	0	100	0	100
WLK	SELAWIK	AK	LPV	0	100	0	100	2	99.9992
WMO	WHITE MOUNTAIN	AK	LP	0	100	0	100	0	100
WNA	NAPAKIAK	AK	LPV	0	100	0	100	1	99.9985
YAK	YAKUTAT	AK	LPV200	0	100	0	100	0	100
06A	MOTON FIELD MUNICIPAL	AL	LPV	0	100	0	100	3	99.9985
0J6	HEADLAND MUNICIPAL	AL	LPV	0	100	0	100	3	99.9969
0R1	ATMORE MUNICIPAL	AL	LP	0	100	0	100	1	99.9989
11A	CLAYTON MUNICIPAL	AL	LPV	0	100	0	100	3	99.9981
12J	BREWTON MUNICIPAL	AL	LPV	0	100	0	100	3	99.9966
1M4	POSEY FIELD	AL	LPV	0	100	0	100	0	100
1R8	BAY MINETTE MUNICIPAL	AL	LPV	0	100	0	100	1	99.9985
2R5	ST ELMO	AL	LPV	0	100	0	100	1	99.9981
33J	GENEVA MUNICIPAL	AL	LP	0	100	0	100	3	99.9962
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	1	99.9989
5R4	FOLEY MUNICIPAL	AL	LPV	0	100	0	100	3	99.9973
71J	BLACKWELL FIELD	AL	LPV	0	100	0	100	3	99.9966
79J	SOUTH ALABAMA RGNL AT BILL BEN	AL	LPV	0	100	0	100	3	99.9962
8A0	ALBERTVILLE RGNL-THOMAS J BRUM	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	1	99.9996
ALX	THOMAS C RUSSELL FLD	AL	LPV	0	100	0	100	1	99.9996
ANB	ANNISTON RGNL	AL	LPV	0	100	0	100	0	100
ASN	TALLADEGA MUNICIPAL	AL	LPV200	0	100	0	100	0	100
AUO	AUBURN UNIVERSITY RGNL	AL	LPV200	0	100	0	100	1	99.9996
BFM	MOBILE DOWNTOWN	AL	LPV200	0	100	0	100	1	99.9981
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	1	99.9981
DCU	PRYOR FIELD RGNL	AL	LPV200	0	100	0	100	0	100
DHN	DOTHAN RGNL	AL	LPV200	0	100	0	100	3	99.9969
DYA	DEMOPOLIS RGNL	AL	LPV	0	100	0	100	1	99.9996
EDN	ENTERPRISE MUNICIPAL	AL	LPV	0	100	0	100	3	99.9966
EET	SHELBY COUNTY	AL	LPV	0	100	0	100	0	100

Airport ID	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV200 Outages	LPV200 Avail
EKY	BESSEMER	AL	LPV	0	100	0	100	0	100
EUF	WEEDON FIELD	AL	LPV	0	100	0	100	3	99.9981
GAD	NORTHEAST ALABAMA RGNL	AL	LPV200	0	100	0	100	0	100
GZH	MIDDLETON FIELD	AL	LP	0	100	0	100	3	99.9981
HAB	MARION COUNTY-RANKIN FITE	AL	LPV	0	100	0	100	0	100
HSV	HUNTSVILLE INTL-CARL T JONES F	AL	LPV200	0	100	0	100	0	100
JFX	WALKER COUNTY-BEVILL FIELD	AL	LPV	0	100	0	100	0	100
JKA	JACK EDWARDS	AL	LPV200	0	100	0	100	3	99.9962
M95	RICHARD ARTHUR FIELD	AL	LPV	0	100	0	100	0	100
MDQ	HUNTSVILLE EXECUTIVE AIRPORT T	AL	LPV200	0	100	0	100	0	100
MGM	MONTGOMERY RGNL (DANNELLY FIEL	AL	LPV200	0	100	0	100	3	99.9985
MOB	MOBILE RGNL	AL	LPV200	0	100	0	100	1	99.9981
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	1	99.9996
TCL	TUSCALOOSA RGNL	AL	LPV	0	100	0	100	0	100
TOI	TROY MUNICIPAL AIRPORT AT N KENNETH	AL	LPV	0	100	0	100	3	99.9973
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
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
ADF	DEXTER B FLORENCE MEMORIAL FIE	AR	LPV	0	100	0	100	0	100
ARG	WALNUT RIDGE RGNL	AR	LPV200	0	100	0	100	0	100
ASG	SPRINGDALE MUNICIPAL	AR	LPV	0	100	0	100	0	100
AWM	WEST MEMPHIS MUNICIPAL	AR	LPV200	0	100	0	100	0	100
BPK	BAXTER COUNTY	AR	LPV	0	100	0	100	0	100
BVX	BATESVILLE RGNL	AR	LPV	0	100	0	100	0	100
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

Airport ID	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV200 Outages	LPV200 Avail
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
FSM	FORT SMITH RGNL	AR	LPV200	0	100	0	100	0	100
FYV	DRAKE FIELD	AR	LPV	0	100	0	100	0	100
H34	HUNTSVILLE MUNICIPAL	AR	LPV	0	100	0	100	0	100
HRO	BOONE COUNTY	AR	LPV	0	100	0	100	0	100
JBR	JONESBORO MUNICIPAL	AR	LPV200	0	100	0	100	0	100
LIT	BILL AND HILLARY CLINTON NATIO	AR	LPV200	0	100	0	100	0	100
M18	HOPE MUNICIPAL	AR	LP	0	100	0	100	0	100
M19	NEWPORT MUNICIPAL	AR	LPV	0	100	0	100	0	100
M77	HOWARD COUNTY	AR	LP	0	100	0	100	0	100
MXA	MANILA MUNICIPAL	AR	LPV	0	100	0	100	0	100
ORK	NORTH LITTLE ROCK MUNICIPAL	AR	LPV	0	100	0	100	0	100
PBF	GRIDER FIELD	AR	LPV	0	100	0	100	0	100
ROG	ROGERS EXECUTIVE - CARTER FIEL	AR	LPV	0	100	0	100	0	100
RUE	RUSSELLVILLE RGNL	AR	LPV	0	100	0	100	0	100
SGT	STUTTGART MUNICIPAL	AR	LPV	0	100	0	100	0	100
SLG	SMITH FIELD	AR	LPV	0	100	0	100	0	100
SRC	SEARCY MUNICIPAL	AR	LPV	0	100	0	100	0	100
SUZ	SALINE COUNTY RGNL	AR	LPV	0	100	0	100	0	100
TXK	TEXARKANA RGNL-WEBB FIELD	AR	LPV	0	100	0	100	0	100
VBT	BENTONVILLE MUNICIPAL/LOUISE M THAD	AR	LPV	0	100	0	100	0	100
XNA	NORTHWEST ARKANSAS RGNL	AR	LPV200	0	100	0	100	0	100
AVQ	MARANA RGNL	AZ	LP	0	100	0	100	93	99.1018
DVT	PHOENIX DEER VALLEY	AZ	LPV	0	100	0	100	1	99.9802
FFZ	FALCON FLD	AZ	LP	0	100	0	100	1	99.9805
FHU	SIERRA VISTA MUNICIPAL-LIBBY AAF	AZ	LPV200	0	100	0	100	93	99.0549
FLG	FLAGSTAFF PULLIAM	AZ	LPV	0	100	0	100	1	99.9931
GEU	GLENDALE MUNICIPAL	AZ	LPV	0	100	0	100	1	99.9767
HII	LAKE HAVASU CITY	AZ	LPV	0	100	0	100	1	99.9695
IFP	LAUGHLIN/BULLHEAD INTL	AZ	LPV	0	100	0	100	1	99.9771
IGM	KINGMAN	AZ	LPV	0	100	0	100	1	99.9824
IWA	PHOENIX-MESA GATEWAY	AZ	LPV200	0	100	0	100	1	99.9805
JTC	SPRINGERVILLE MUNICIPAL	AZ	LP	0	100	0	100	16	99.9882
P20	AVI SUQUILLA	AZ	LPV	0	100	0	100	1	99.9649

Airport ID	Airport Name	State/Province	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV200 Outages	LPV200 Avail
P33	COCHISE COUNTY	AZ	LPV	0	100	0	100	93	99.362
PGA	PAGE MUNICIPAL	AZ	LPV	0	100	0	100	0	100
PHX	PHOENIX SKY HARBOR INTL	AZ	LPV	0	100	0	100	1	99.9802
PRC	ERNEST A LOVE FIELD	AZ	LPV200	0	100	0	100	1	99.9859
RQE	WINDOW ROCK	AZ	LP	0	100	0	100	1	99.9969
SAD	SAFFORD RGNL	AZ	LPV	0	100	0	100	86	99.7516
SJN	ST JOHNS INDUSTRIAL AIR PARK	AZ	LP	0	100	0	100	15	99.9886
SOW	SHOW LOW RGNL	AZ	LPV	0	100	0	100	16	99.9832
TUS	TUCSON INTL	AZ	LPV	0	100	0	100	93	99.0221
CYBL	CAMPBELL RIVER	BC	LPV	0	100	0	100	1	99.9943
CYCD	NANAIMO	BC	LPV	0	100	0	100	1	99.9996
CYVR	VANCOUVER INTL	BC	LPV	0	100	0	100	1	99.9985
CYXS	PRINCE GEORGE	BC	LPV	0	100	0	100	1	99.9943
CYYJ	VICTORIA INTL	BC	LPV	0	100	0	100	0	100
CZBB	VANCOUVER / BOUNDARY BAY	BC	LPV	0	100	0	100	1	99.9996
AAT	ALTURAS MUNICIPAL	CA	LPV	0	100	0	100	1	99.9969
ACV	ARCATA	CA	LPV200	0	100	0	100	2	99.9687
APC	NAPA COUNTY	CA	LPV	0	100	0	100	92	99.4509
APV	APPLE VALLEY	CA	LPV	0	100	0	100	2	99.9576
AUN	AUBURN MUNICIPAL	CA	LPV	0	100	0	100	2	99.9737
BFL	MEADOWS FIELD	CA	LPV200	0	100	0	100	17	99.9489
BLH	BLYTHE	CA	LP	0	100	0	100	2	99.963
C83	BYRON	CA	LPV	0	100	0	100	92	99.612
CCB	CABLE	CA	LP	0	100	0	100	3	99.9557
CCR	BUCHANAN FIELD	CA	LPV	0	100	0	100	92	99.465
CEC	JACK MC NAMARA FIELD	CA	LPV	0	100	0	100	2	99.9702
CIC	CHICO MUNICIPAL	CA	LPV	0	100	0	100	2	99.9683
CMA	CAMARILLO	CA	LPV	0	100	0	100	78	99.8787
CNO	CHINO	CA	LPV	0	100	0	100	3	99.955
CRQ	MC CLELLAN-PALOMAR	CA	LPV	0	100	0	100	3	99.9534
CVH	HOLLISTER MUNICIPAL	CA	LPV	0	100	1	99.9996	92	99.4345
DAG	BARSTOW-DAGGETT	CA	LPV	0	100	0	100	2	99.9695
DWA	YOLO COUNTY	CA	LPV	0	100	0	100	3	99.9615
F70	FRENCH VALLEY	CA	LPV	0	100	0	100	3	99.9557
FAT	FRESNO YOSEMITE INTL	CA	LPV200	0	100	0	100	11	99.9554
HAF	HALF MOON BAY	CA	LPV	0	100	1	99.9996	92	99.1243
HHR	JACK NORTHROP FIELD/HAWTHORNE	CA	LPV	0	100	0	100	3	99.9443
HWD	HAYWARD EXECUTIVE	CA	LPV	0	100	0	100	92	99.3231
L35	BIG BEAR CITY	CA	LP	0	100	0	100	2	99.9576

Airport ID	Airport Name	State/ Province	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV200 Outages	LPV200 Avail
LAX	LOS ANGELES INTL	CA	LPV	0	100	0	100	3	99.9443
LGB	LONG BEACH /DAUGHERTY FIELD/	CA	LPV	0	100	0	100	3	99.9527
LHM	LINCOLN RGNL/KARL HARDER FIELD	CA	LPV200	0	100	0	100	2	99.9664
LLR	LITTLE RIVER	CA	LP	0	100	0	100	88	99.573
LSN	LOS BANOS MUNICIPAL	CA	LPV	0	100	0	100	90	99.7009
LVK	LIVERMORE MUNICIPAL	CA	LPV	0	100	0	100	92	99.4639
MAE	MADERA MUNICIPAL	CA	LPV	0	100	0	100	42	99.9302
MCE	MERCED RGNL/MACREADY FIELD	CA	LPV	0	100	0	100	70	99.8863
MER	CASTLE	CA	LPV200	0	100	0	100	61	99.8958
MHR	SACRAMENTO MATHER	CA	LPV200	0	100	0	100	2	99.963
MIT	SHAFTER-MINTER FIELD	CA	LPV	0	100	0	100	32	99.9409
MOD	MODESTO CITY-CO-HARRY SHAM FLD	CA	LPV	0	100	0	100	79	99.8413
MRY	MONTEREY RGNL	CA	LPV	0	100	1	99.9996	92	99.2037
MYF	MONTGOMERY FIELD	CA	LPV200	0	100	0	100	3	99.9531
MYV	YUBA COUNTY	CA	LPV200	0	100	0	100	2	99.9672
O02	NERVINO	CA	LPV	0	100	0	100	1	99.9741
O27	OAKDALE	CA	LPV	0	100	0	100	30	99.9321
O69	PETALUMA MUNICIPAL	CA	LPV	0	100	0	100	92	99.2922
O88	RIO VISTA MUNICIPAL	CA	LP	0	100	0	100	86	99.7966
OAK	METROPOLITAN OAKLAND INTL	CA	LPV200	0	100	0	100	92	99.2995
ONT	ONTARIO INTL	CA	LPV	0	100	0	100	3	99.9557
OVE	OROVILLE MUNICIPAL	CA	LPV	0	100	0	100	2	99.9676
OXR	OXNARD	CA	LPV	0	100	0	100	88	99.8478
PMD	PALMDALE USAF PLANT 42	CA	LPV200	0	100	0	100	2	99.9561
POC	BRACKETT FIELD	CA	LPV	0	100	0	100	3	99.955
PRB	PASO ROBLES MUNICIPAL	CA	LPV200	0	100	0	100	92	99.5085
PVF	PLACERVILLE	CA	LPV	0	100	0	100	2	99.9729
RAL	RIVERSIDE MUNICIPAL	CA	LPV	0	100	0	100	3	99.9557
RBL	RED BLUFF MUNICIPAL	CA	LPV	0	100	0	100	1	99.9699
RDD	REDDING MUNICIPAL	CA	LPV	0	100	0	100	1	99.9702
RHV	REID-HILLVIEW OF SANTA CLARA C	CA	LPV	0	100	1	99.9996	92	99.3674
SAC	SACRAMENTO EXECUTIVE	CA	LPV	0	100	0	100	3	99.9618
SAN	SAN DIEGO INTL	CA	LPV	0	100	0	100	3	99.9531
SBA	SANTA BARBARA MUNICIPAL	CA	LPV	0	100	0	100	93	99.6493
SBP	SAN LUIS COUNTY RGNL	CA	LPV200	0	100	0	100	92	99.4402
SCK	STOCKTON METROPOLITAN	CA	LPV	0	100	0	100	77	99.847
SDM	BROWN FIELD MUNICIPAL	CA	LPV200	0	100	0	100	3	99.9534

Airport ID	Airport Name	State/ Province	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV200 Outages	LPV200 Avail
SEE	GILLESPIE FIELD	CA	LP	0	100	0	100	3	99.9538
SFO	SAN FRANCISCO INTL	CA	LPV200	0	100	1	99.9996	92	99.1987
SJC	NORMAN Y MINETA SAN JOSE INTL	CA	LPV200	0	100	1	99.9996	92	99.3197
SMF	SACRAMENTO INTL	CA	LPV200	0	100	0	100	2	99.9634
SMX	SANTA MARIA PUB/CAPT G ALLAN H	CA	LPV200	0	100	0	100	92	99.4708
SNA	JOHN WAYNE AIRPORT-ORANGE COUN	CA	LPV200	0	100	0	100	3	99.9531
SNS	SALINAS MUNICIPAL	CA	LPV200	0	100	1	99.9996	92	99.3086
STS	CHARLES M SCHULZ - SONOMA COUN	CA	LPV200	0	100	0	100	93	99.3036
TCY	TRACY MUNICIPAL	CA	LPV	0	100	0	100	92	99.6451
TNP	TWENTYNINE PALMS	CA	LP	0	100	0	100	2	99.9641
TOA	ZAMPERINI FIELD	CA	LPV	0	100	0	100	3	99.9443
TRK	TRUCKEE-TAHOE	CA	LP	0	100	0	100	1	99.9733
VCB	NUT TREE	CA	LPV	0	100	0	100	83	99.8069
VCV	SOUTHERN CALIFORNIA LOGISTICS	CA	LPV	0	100	0	100	2	99.9576
VIS	VISALIA MUNICIPAL	CA	LPV200	0	100	0	100	10	99.9538
WJF	GENERAL WM J FOX AIRFIELD	CA	LPV	0	100	0	100	2	99.9561
WLW	WILLOWS-GLENN COUNTY	CA	LPV	0	100	0	100	2	99.9683
WVI	WATSONVILLE MUNICIPAL	CA	LPV	0	100	1	99.9996	92	99.2823
1V6	FREMONT COUNTY	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
ALS	SAN LUIS VALLEY RGNL/BERGMAN F	CO	LPV200	0	100	0	100	0	100
APA	CENTENNIAL	CO	LPV200	0	100	0	100	0	100
BJC	ROCKY MOUNTAIN METROPOLITAN	CO	LPV200	0	100	0	100	0	100
CEZ	CORTEZ MUNICIPAL	CO	LPV	0	100	0	100	0	100
COS	CITY OF COLORADO SPRINGS MUNICIPAL	CO	LPV200	0	100	0	100	0	100
DEN	DENVER INTL	CO	LPV200	0	100	0	100	0	100
DRO	DURANGO-LA PLATA COUNTY	CO	LPV200	0	100	0	100	1	99.9996
FMM	FORT MORGAN MUNICIPAL	CO	LP	0	100	0	100	0	100
FNL	FORT COLLINS-LOVELAND MUNICIPAL	CO	LPV200	0	100	0	100	0	100
FTG	FRONT RANGE	CO	LPV200	0	100	0	100	0	100
GJT	GRAND JUNCTION REGIONAL	CO	LPV200	0	100	0	100	0	100
GXY	GREELEY-WELD COUNTY	CO	LPV200	0	100	0	100	0	100
HDN	YAMPA VALLEY	CO	LPV200	0	100	0	100	0	100

Airport ID	Airport Name	State/Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV200 Outages	LPV200 Avail
ITR	KIT CARSON COUNTY	CO	LPV	0	100	0	100	0	100
LAA	LAMAR MUNICIPAL	CO	LPV	0	100	0	100	0	100
LHX	LA JUNTA MUNICIPAL	CO	LPV	0	100	0	100	0	100
LMO	VANCE BRAND	CO	LPV	0	100	0	100	0	100
MTJ	MONTROSE RGNL	CO	LPV	0	100	0	100	0	100
PUB	PUEBLO MEMORIAL	CO	LPV200	0	100	0	100	0	100
RIL	GARFIELD COUNTY RGNL	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	1	99.9996
4B8	ROBERTSON FIELD	CT	LP	0	100	0	100	1	99.9901
BDL	BRADLEY INTL	CT	LPV200	0	100	0	100	1	99.9908
GON	GROTON-NEW LONDON	CT	LPV	0	100	0	100	1	99.9882
HVN	TWEED-NEW HAVEN	CT	LPV	0	100	0	100	1	99.9893
IJD	WINDHAM	CT	LP	0	100	0	100	1	99.9897
MMK	MERIDEN MARKHAM MUNICIPAL	CT	LP	0	100	0	100	1	99.9897
OXC	WATERBURY-OXFORD	CT	LPV	0	100	0	100	1	99.9908
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	1	99.9958
EVY	SUMMIT	DE	LPV	0	100	0	100	0	100
GED	DELAWARE COASTAL	DE	LPV	0	100	0	100	1	99.9954
ILG	NEW CASTLE	DE	LPV	0	100	0	100	1	99.9958
1J0	TRI-COUNTY	FL	LP	0	100	0	100	3	99.9958
24J	SUWANNEE COUNTY	FL	LPV	0	100	0	100	3	99.9969
28J	PALATKA MUNICIPAL - LT KAY LARKIN F	FL	LPV	0	100	0	100	2	99.9985
40J	PERRY-FOLEY	FL	LPV	0	100	0	100	3	99.9954
54J	DEFUNIAK SPRINGS	FL	LP	0	100	0	100	3	99.9947
AAF	APALACHICOLA RGNL-CLEVE RANDOL	FL	LPV	0	100	0	100	3	99.9931
APF	NAPLES MUNICIPAL	FL	LPV	0	100	0	100	5	99.984
AVO	AVON PARK EXECUTIVE	FL	LPV	0	100	0	100	3	99.9901
BCT	BOCA RATON	FL	LPV	0	100	0	100	2	99.9775
BKV	BROOKSVILLE-TAMPA BAY RGNL	FL	LPV	0	100	0	100	4	99.9947
BOW	BARTOW MUNICIPAL	FL	LPV	0	100	0	100	3	99.9912
CEW	BOB SIKES	FL	LPV	0	100	0	100	3	99.9939
CGC	CRYSTAL RIVER-CAPTAIN TOM DAVI	FL	LP	0	100	0	100	3	99.9954
CHN	WAUCHULA MUNICIPAL	FL	LP	0	100	0	100	4	99.9893

Airport ID	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV200 Outages	LPV200 Avail
COI	MERRITT ISLAND	FL	LPV	0	100	0	100	2	99.9931
CRG	JACKSONVILLE EXECUTIVE AT CRAI	FL	LPV200	0	100	0	100	2	99.9992
CTY	CROSS CITY	FL	LPV	0	100	0	100	3	99.9954
DAB	DAYTONA BEACH INTL	FL	LPV200	0	100	0	100	2	99.9969
DED	DELAND MUNICIPAL-SIDNEY H TAYLOR FI	FL	LPV	0	100	0	100	3	99.9962
DTS	DESTIN EXECUTIVE	FL	LPV	0	100	0	100	3	99.9939
ECP	NORTHWEST FLORIDA BEACHES INTL	FL	LPV200	0	100	0	100	3	99.9939
EVB	NEW SMYRNA BEACH MUNICIPAL	FL	LPV	0	100	0	100	2	99.9966
EYW	KEY WEST INTL	FL	LPV	0	100	0	100	5	99.9695
F45	NORTH PALM BEACH COUNTY GENERA	FL	LPV	0	100	0	100	2	99.9886
FHB	FERNANDINA BEACH MUNICIPAL	FL	LPV	0	100	0	100	1	99.9996
FIN	FLAGLER COUNTY	FL	LPV	0	100	0	100	3	99.9981
FLL	FORT LAUDERDALE/HOLLYWOOD INTL	FL	LPV	0	100	0	100	2	99.9737
FMY	PAGE FIELD	FL	LPV	0	100	0	100	5	99.9847
FPR	ST LUCIE COUNTY INTL	FL	LPV	0	100	0	100	2	99.9901
FXE	FORT LAUDERDALE EXECUTIVE	FL	LPV200	0	100	0	100	2	99.9744
GIF	WINTER HAVEN'S GILBERT	FL	LPV	0	100	0	100	3	99.992
GNV	GAINESVILLE RGNL	FL	LPV	0	100	0	100	3	99.9973
HEG	HERLONG RECREATIONAL	FL	LPV	0	100	0	100	2	99.9992
IMM	IMMOKALEE RGNL	FL	LPV	0	100	0	100	4	99.9859
ISM	KISSIMMEE GATEWAY	FL	LPV200	0	100	0	100	3	99.9928
JAX	JACKSONVILLE INTL	FL	LPV200	0	100	0	100	2	99.9992
LAL	LAKELAND LINDER RGNL	FL	LPV200	0	100	0	100	4	99.9905
LCQ	LAKE CITY GATEWAY	FL	LPV	0	100	0	100	3	99.9981
LEE	LEESBURG INTL	FL	LPV	0	100	0	100	3	99.9958
LNA	PALM BEACH COUNTY PARK	FL	LP	0	100	0	100	2	99.9882
MCO	ORLANDO INTL	FL	LPV200	0	100	0	100	2	99.9939
MIA	MIAMI INTL	FL	LPV200	0	100	0	100	2	99.9729
MKY	MARCO ISLAND	FL	LPV	0	100	0	100	5	99.9779
MLB	MELBOURNE INTL	FL	LPV200	0	100	0	100	2	99.9928
MTH	THE FLORIDA KEYS MARATHON	FL	LPV	0	100	0	100	3	99.9714
OBE	OKEECHOBEE COUNTY	FL	LPV	0	100	0	100	2	99.9897
OCF	OCALA INTL-JIM TAYLOR FIELD	FL	LPV200	0	100	0	100	3	99.9969

Airport ID	Airport Name	State/ Province	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV200 Outages	LPV200 Avail
OMN	ORMOND BEACH MUNICIPAL	FL	LPV	0	100	0	100	2	99.9981
OPF	OPA-LOCKA EXECUTIVE	FL	LPV200	0	100	0	100	2	99.9733
ORL	EXECUTIVE	FL	LPV200	0	100	0	100	3	99.9935
PBI	PALM BEACH INTL	FL	LPV200	0	100	0	100	2	99.9882
PCM	PLANT CITY	FL	LPV	0	100	0	100	4	99.9905
PGD	PUNTA GORDA	FL	LPV200	0	100	0	100	4	99.9855
PHK	PALM BEACH CO GLADES	FL	LPV	0	100	0	100	2	99.9878
PIE	ST PETE-CLEARWATER INTL	FL	LPV200	0	100	0	100	4	99.9889
PMP	POMPANO BEACH AIRPARK	FL	LPV	0	100	0	100	2	99.976
PNS	PENSACOLA INTL	FL	LPV200	0	100	0	100	3	99.9939
RSW	SOUTHWEST FLORIDA INTL	FL	LPV	0	100	0	100	5	99.9855
SEF	SEBRING RGNL	FL	LPV	0	100	0	100	3	99.9912
SFB	ORLANDO SANFORD INTL	FL	LPV200	0	100	0	100	2	99.9958
SGJ	NORTHEAST FLORIDA RGNL	FL	LPV	0	100	0	100	2	99.9992
SRQ	SARASOTA/BRADENTON INTL	FL	LPV200	0	100	0	100	4	99.9866
SUA	WITHAM FIELD	FL	LPV	0	100	0	100	2	99.9897
TIX	SPACE COAST RGNL	FL	LPV200	0	100	0	100	2	99.9935
TLH	TALLAHASSEE INTL	FL	LPV200	0	100	0	100	3	99.995
TMB	MIAMI EXECUTIVE	FL	LPV200	0	100	0	100	2	99.9725
TNT	DADE-COLLIER TRAINING AND TRAN	FL	LPV200	0	100	0	100	3	99.9752
TPA	TAMPA INTL	FL	LPV200	0	100	0	100	4	99.9893
TPF	PETER O KNIGHT	FL	LP	0	100	0	100	4	99.9901
TTS	NASA SHUTTLE LANDING FACILITY	FL	LPV200	0	100	0	100	2	99.9939
VDF	TAMPA EXECUTIVE	FL	LPV	0	100	0	100	4	99.9905
VNC	VENICE MUNICIPAL	FL	LP	0	100	0	100	4	99.9855
VQQ	CECIL	FL	LPV200	0	100	0	100	2	99.9989
VRB	VERO BEACH MUNICIPAL	FL	LPV200	0	100	0	100	2	99.9931
X07	LAKE WALES MUNICIPAL	FL	LP	0	100	0	100	3	99.9912
X14	LA BELLE MUNICIPAL	FL	LPV	0	100	0	100	3	99.9874
X23	UMATILLA MUNICIPAL	FL	LP	0	100	0	100	3	99.9966
X26	SEBASTIAN MUNICIPAL	FL	LP	0	100	0	100	2	99.9928
X35	MARION COUNTY	FL	LP	0	100	0	100	3	99.9966
X50	MASSEY RANCH AIRPARK	FL	LP	0	100	0	100	2	99.9962
X51	HOMESTEAD GENERAL AVIATION	FL	LPV	0	100	0	100	2	99.9729
ZPH	ZEPHYRHILLS MUNICIPAL	FL	LPV	0	100	0	100	4	99.9912
09J	JEKYLL ISLAND	GA	LPV200	0	100	0	100	1	99.9996
15J	COOK COUNTY	GA	LPV	0	100	0	100	3	99.9977
17J	DONALSONVILLE MUNICIPAL	GA	LPV	0	100	0	100	3	99.9969

Airport ID	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV200 Outages	LPV200 Avail
18A	FRANKLIN COUNTY	GA	LPV	0	100	0	100	0	100
19A	JACKSON COUNTY	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	1	99.9996
4A4	POLK COUNTY AIRPORT-CORNELIUS	GA	LPV	0	100	0	100	0	100
4J1	BRANTLEY COUNTY	GA	LPV	0	100	0	100	2	99.9992
4J5	QUITMAN BROOKS COUNTY	GA	LP	0	100	0	100	3	99.9973
52A	MADISON MUNICIPAL	GA	LP	0	100	0	100	0	100
6A1	BUTLER MUNICIPAL	GA	LPV	0	100	0	100	1	99.9996
6A2	GRIFFIN-SPALDING COUNTY	GA	LPV	0	100	0	100	0	100
70J	CAIRO-GRADY COUNTY	GA	LPV	0	100	0	100	3	99.9969
ABY	SOUTHWEST GEORGIA RGNL	GA	LPV200	0	100	0	100	3	99.9981
ACJ	JIMMY CARTER RGNL	GA	LPV	0	100	0	100	2	99.9992
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	2	99.9989
ATL	HARTSFIELD - JACKSON ATLANTA I	GA	LPV200	0	100	0	100	0	100
AYS	WAYCROSS-WARE COUNTY	GA	LPV200	0	100	0	100	2	99.9992
BGE	DECATUR COUNTY INDUSTRIAL AIR	GA	LPV200	0	100	0	100	3	99.9969
BHC	BAXLEY MUNICIPAL	GA	LPV	0	100	0	100	1	99.9996
BIJ	EARLY COUNTY	GA	LPV	0	100	0	100	3	99.9973
BQK	BRUNSWICK GOLDEN ISLES	GA	LPV200	0	100	0	100	0	100
CCO	NEWMAN COWETA COUNTY	GA	LPV	0	100	0	100	0	100
CKF	CRISP COUNTY-CORDELE	GA	LPV	0	100	0	100	2	99.9989
CNI	CHEROKEE COUNTY	GA	LPV	0	100	0	100	0	100
CSG	COLUMBUS	GA	LPV	0	100	0	100	2	99.9992
CTJ	WEST GEORGIA RGNL - O V GRAY F	GA	LPV	0	100	0	100	0	100
CVC	COVINGTON MUNICIPAL	GA	LPV	0	100	0	100	0	100
CWV	CLAXTON-EVANS COUNTY	GA	LPV	0	100	0	100	0	100
CXU	CAMILLA-MITCHELL COUNTY	GA	LPV	0	100	0	100	3	99.9973
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
DNN	DALTON MUNICIPAL	GA	LPV	0	100	0	100	0	100
DQH	DOUGLAS MUNICIPAL	GA	LPV200	0	100	0	100	2	99.9989

Airport ID	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV200 Outages	LPV200 Avail
EBA	ELBERT COUNTY-PATZ FIELD	GA	LP	0	100	0	100	0	100
EZM	HEART OF GEORGIA RGNL	GA	LPV200	0	100	0	100	1	99.9996
FFC	ATLANTA RGNL FALCON FIELD	GA	LPV200	0	100	0	100	0	100
FTY	FULTON COUNTY AIRPORT-BROWN FI	GA	LPV	0	100	0	100	0	100
FZG	FITZGERALD MUNICIPAL	GA	LPV	0	100	0	100	2	99.9989
GVL	LEE GILMER MEMORIAL	GA	LPV	0	100	0	100	0	100
HOE	HOMERVILLE	GA	LPV	0	100	0	100	3	99.9981
HQU	THOMSON-MCDUFFIE COUNTY	GA	LPV	0	100	0	100	0	100
IYY	WASHINGTON-WILKES COUNTY	GA	LPV	0	100	0	100	0	100
JES	JESUP-WAYNE COUNTY	GA	LPV	0	100	0	100	2	99.9992
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	1	99.9996
LZU	GWINNETT COUNTY - BRISCOE FIEL	GA	LPV200	0	100	0	100	0	100
MAC	MACON DOWNTOWN	GA	LP	0	100	0	100	1	99.9996
MCN	MIDDLE GEORGIA RGNL	GA	LPV200	0	100	0	100	1	99.9996
MGR	MOULTRIE MUNICIPAL	GA	LPV200	0	100	0	100	3	99.9973
MLJ	BALDWIN COUNTY	GA	LPV	0	100	0	100	0	100
MQW	TELFAIR-WHEELER	GA	LPV	0	100	0	100	1	99.9996
OKZ	KAOLIN FIELD	GA	LPV	0	100	0	100	0	100
OPN	THOMASTON-UPSON COUNTY	GA	LPV200	0	100	0	100	1	99.9996
PIM	HARRIS COUNTY	GA	LPV	0	100	0	100	1	99.9996
PUJ	PAULDING NORTHWEST ATLANTA	GA	LPV200	0	100	0	100	0	100
PXE	PERRY-HOUSTON COUNTY	GA	LPV	0	100	0	100	1	99.9996
RMG	RICHARD B RUSSELL REGIONAL - J	GA	LPV	0	100	0	100	0	100
RVJ	SWINTON SMITH FLD AT REIDSVILL	GA	LP	0	100	0	100	1	99.9996
RYY	COBB COUNTY-MC COLLUM FIELD	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	3	99.9985
TOC	TOCCOA RG LETOURNEAU FIELD	GA	LPV	0	100	0	100	0	100
TVI	THOMASVILLE RGNL	GA	LPV	0	100	0	100	3	99.9973

Airport ID	Airport Name	State/ Province	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV200 Outages	LPV200 Avail
VDI	VIDALIA RGNL	GA	LPV200	0	100	0	100	1	99.9996
VLD	VALDOSTA RGNL	GA	LPV	0	100	0	100	3	99.9973
VPC	CARTERSVILLE	GA	LPV	0	100	0	100	0	100
WDR	BARROW COUNTY	GA	LPV	0	100	0	100	0	100
4C8	ALBIA MUNICIPAL	IA	LPV	0	100	0	100	0	100
AIO	ATLANTIC MUNICIPAL	IA	LPV	0	100	0	100	0	100
ALO	WATERLOO RGNL	IA	LPV	0	100	0	100	0	100
AMW	AMES MUNICIPAL	IA	LPV	0	100	0	100	0	100
AWG	WASHINGTON MUNICIPAL	IA	LPV200	0	100	0	100	0	100
BNW	BOONE MUNICIPAL	IA	LPV	0	100	0	100	0	100
BRL	SOUTHEAST IOWA RGNL	IA	LPV200	0	100	0	100	0	100
CBF	COUNCIL BLUFFS MUNICIPAL	IA	LPV200	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	LPV	0	100	0	100	0	100
DVN	DAVENPORT MUNICIPAL	IA	LPV200	0	100	0	100	0	100
EAG	EAGLE GROVE MUNICIPAL	IA	LPV	0	100	0	100	0	100
EBS	WEBSTER CITY MUNICIPAL	IA	LPV	0	100	0	100	0	100
EFW	JEFFERSON MUNICIPAL	IA	LPV	0	100	0	100	0	100
EOK	KEOKUK MUNICIPAL	IA	LPV	0	100	0	100	0	100
EST	ESTHERVILLE MUNICIPAL	IA	LPV	0	100	0	100	0	100
FFL	FAIRFIELD MUNICIPAL	IA	LPV	0	100	0	100	0	100
FOD	FORT DODGE RGNL	IA	LPV200	0	100	0	100	0	100
FXY	FOREST CITY MUNICIPAL	IA	LPV	0	100	0	100	0	100
GCT	GUTHRIE COUNTY RGNL	IA	LPV	0	100	0	100	0	100
GGI	GRINNELL RGNL	IA	LPV	0	100	0	100	0	100
HPT	HAMPTON MUNICIPAL	IA	LPV	0	100	0	100	0	100
I75	OSCEOLA MUNICIPAL	IA	LPV	0	100	0	100	0	100
ICL	SCHENCK FIELD	IA	LPV	0	100	0	100	0	100
IFA	IOWA FALLS MUNICIPAL	IA	LPV	0	100	0	100	0	100
IIB	INDEPENDENCE MUNICIPAL	IA	LP	0	100	0	100	0	100
IKV	ANKENY RGNL	IA	LPV	0	100	0	100	0	100
IOW	IOWA CITY MUNICIPAL	IA	LPV	0	100	0	100	0	100
LRJ	LE MARS MUNICIPAL	IA	LPV	0	100	0	100	0	100

Airport ID	Airport Name	State/ Province	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV200 Outages	LPV200 Avail
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
OTM	OTTUMWA RGNL	IA	LPV	0	100	0	100	0	100
OXV	KNOXVILLE MUNICIPAL	IA	LPV	0	100	0	100	0	100
PEA	PELLA MUNICIPAL	IA	LPV	0	100	0	100	0	100
POH	POCAHONTAS MUNICIPAL	IA	LPV	0	100	0	100	0	100
PRO	PERRY MUNICIPAL	IA	LPV200	0	100	0	100	0	100
RDK	RED OAK MUNICIPAL	IA	LPV	0	100	0	100	0	100
SDA	SHENANDOAH MUNICIPAL	IA	LPV	0	100	0	100	0	100
SHL	SHELDON MUNICIPAL	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/COL BUD DAY FIEL	IA	LPV200	0	100	0	100	0	100
TNU	NEWTON MUNICIPAL-EARL JOHNSON FIELD	IA	LPV	0	100	0	100	0	100
TVK	CENTERVILLE MUNICIPAL	IA	LPV	0	100	0	100	0	100
TZT	BELLE PLAINE MUNICIPAL	IA	LPV	0	100	0	100	0	100
VTI	VINTON VETERANS MEMORIAL ARPK	IA	LPV	0	100	0	100	0	100
BOI	BOISE AIR TERMINAL/GOWEN FLD	ID	LPV	0	100	0	100	0	100
COE	COEUR D'ALENE - PAPPY BOYINGTO	ID	LPV200	0	100	0	100	0	100
DIJ	DRIGGS-REED MEMORIAL	ID	LP	0	100	0	100	0	100
EUL	CALDWELL INDUSTRIAL	ID	LPV	0	100	0	100	0	100
GNG	GOODING MUNICIPAL	ID	LPV	0	100	0	100	0	100
IDA	IDAHO FALLS RGNL	ID	LPV200	0	100	0	100	0	100
JER	JEROME COUNTY	ID	LPV	0	100	0	100	0	100
LWS	LEWISTON-NEZ PERCE COUNTY	ID	LPV200	0	100	0	100	0	100
MAN	NAMPA MUNICIPAL	ID	LPV	0	100	0	100	0	100
MYL	MC CALL MUNICIPAL	ID	LPV	0	100	0	100	0	100
PIH	POCATELLO RGNL	ID	LPV200	0	100	0	100	0	100
TWF	JOSLIN FIELD - MAGIC VALLEY RG	ID	LPV200	0	100	0	100	0	100

Airport ID	Airport Name	State/ Province	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV200 Outages	LPV200 Avail
U76	MOUNTAIN HOME MUNICIPAL	ID	LPV	0	100	0	100	0	100
1H2	EFFINGHAM COUNTY MEMORIAL	IL	LPV	0	100	0	100	0	100
3LF	LITCHFIELD MUNICIPAL	IL	LPV	0	100	0	100	0	100
3MY	MOUNT HAWLEY AUXILIARY	IL	LP	0	100	0	100	0	100
AJG	MOUNT CARMEL MUNICIPAL	IL	LPV	0	100	0	100	0	100
ALN	ST LOUIS RGNL	IL	LPV200	0	100	0	100	0	100
ARR	AURORA MUNICIPAL	IL	LPV200	0	100	0	100	0	100
BLV	SCOTT AFB/MIDAMERICA	IL	LPV200	0	100	0	100	0	100
BMI	CENTRAL IL RGNL ARPT AT BLOOMI	IL	LPV	0	100	0	100	0	100
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
HSB	HARRISBURG-RALEIGH	IL	LPV	0	100	0	100	0	100
I63	MOUNT STERLING MUNICIPAL	IL	LPV	0	100	0	100	0	100
IGQ	LANSING MUNICIPAL	IL	LPV	0	100	0	100	0	100
IKK	GREATER KANKAKEE	IL	LPV200	0	100	0	100	0	100
LOT	LEWIS UNIVERSITY	IL	LPV200	0	100	0	100	0	100
LWV	LAWRENCEVILLE-VINCENNES INTL	IL	LPV200	0	100	0	100	0	100
MDW	CHICAGO MIDWAY INTL	IL	LPV	0	100	0	100	0	100
MLI	QUAD CITY INTL	IL	LPV200	0	100	0	100	0	100
MQB	MACOMB MUNICIPAL	IL	LPV200	0	100	0	100	0	100

Airport ID	Airport Name	State/ Province	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV200 Outages	LPV200 Avail
MTO	COLES COUNTY MEMORIAL	IL	LPV	0	100	0	100	0	100
MVN	MOUNT VERNON	IL	LPV	0	100	0	100	0	100
MWA	WILLIAMSON COUNTY RGNL	IL	LPV200	0	100	0	100	0	100
OLY	OLNEY-NOBLE	IL	LPV	0	100	0	100	0	100
ORD	CHICAGO O'HARE INTL	IL	LPV200	0	100	0	100	0	100
PIA	GENERAL DOWNING - PEORIA INTL	IL	LPV	0	100	0	100	0	100
PJY	PINCKNEYVILLE-DU QUOIN	IL	LPV	0	100	0	100	0	100
PNT	PONTIAC MUNICIPAL	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	LPV200	0	100	0	100	0	100
RSV	CRAWFORD CO	IL	LPV	0	100	0	100	0	100
SAR	SPARTA COMMUNICIPALTY-HUNTER FIELD	IL	LPV	0	100	0	100	0	100
SFY	TRI-TOWNSHIP	IL	LP	0	100	0	100	0	100
SLO	SALEM-LECKRONE	IL	LPV200	0	100	0	100	0	100
SPI	ABRAHAM LINCOLN CAPITAL	IL	LPV	0	100	0	100	0	100
SQI	WHITESIDE CO ARPT-JOS H BITTOR	IL	LPV	0	100	0	100	0	100
TIP	RANTOUL NATL AVN CNTR-FRANK EL	IL	LPV	0	100	0	100	0	100
UGN	WAUKEGAN RGNL	IL	LPV	0	100	0	100	0	100
UIN	QUINCY RGNL-BALDWIN FIELD	IL	LPV200	0	100	0	100	0	100
VYS	ILLINOIS VALLEY RGNL-WALTER A	IL	LPV	0	100	0	100	0	100
2R2	HENDRICKS COUNTY-GORDON GRAHAM	IN	LPV	0	100	0	100	0	100
4I7	PUTNAM COUNTY RGNL	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
CEV	METTEL FIELD	IN	LPV	0	100	0	100	0	100
DCY	DAVISS 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

Airport ID	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV200 Outages	LPV200 Avail
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
GSH	GOSHEN MUNICIPAL	IN	LPV	0	100	0	100	0	100
GWB	DE KALB COUNTY	IN	LPV	0	100	0	100	0	100
GYG	GARY/CHICAGO INTL	IN	LPV200	0	100	0	100	0	100
HFY	GREENWOOD MUNICIPAL	IN	LPV	0	100	0	100	0	100
HNB	HUNTINGBURG	IN	LPV	0	100	0	100	0	100
HUF	TERRE HAUTE INTL-HULMAN FIELD	IN	LPV200	0	100	0	100	0	100
I22	RANDOLPH COUNTY	IN	LPV	0	100	0	100	0	100
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
RZL	JASPER COUNTY	IN	LPV	0	100	0	100	0	100
SBN	SOUTH BEND INTL	IN	LPV	0	100	0	100	0	100
SER	FREEMAN MUNICIPAL	IN	LPV	0	100	0	100	0	100
SIV	SULLIVAN COUNTY	IN	LPV	0	100	0	100	0	100
SMD	SMITH FIELD	IN	LPV	0	100	0	100	0	100
TEL	PERRY COUNTY MUNICIPAL	IN	LP	0	100	0	100	0	100
TYQ	INDIANAPOLIS EXECUTIVE	IN	LPV	0	100	0	100	0	100
UWL	NEW CASTLE-HENRY CO MUNICIPAL	IN	LPV	0	100	0	100	0	100
VPZ	PORTER COUNTY RGNL	IN	LPV	0	100	0	100	0	100
3AU	AUGUSTA MUNICIPAL	KS	LP	0	100	0	100	0	100

Airport ID	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV200 Outages	LPV200 Avail
3K3	SYRACUSE-HAMILTON COUNTY MUNICIPAL	KS	LPV	0	100	0	100	0	100
5K2	TRIBUNE MUNICIPAL	KS	LPV	0	100	0	100	0	100
AAO	COLONEL JAMES JABARA	KS	LPV	0	100	0	100	0	100
ADT	ATWOOD-RAWLINS COUNTY CITY-COU	KS	LPV	0	100	0	100	0	100
ANY	ANTHONY MUNICIPAL	KS	LPV	0	100	0	100	0	100
BEC	BEECH FACTORY	KS	LPV	0	100	0	100	0	100
CBK	SHALZ FIELD	KS	LPV	0	100	0	100	0	100
CNK	BLOSSER MUNICIPAL	KS	LP	0	100	0	100	0	100
DDC	DODGE CITY RGNL	KS	LPV	0	100	0	100	0	100
EGT	WELLINGTON MUNICIPAL	KS	LPV	0	100	0	100	0	100
EHA	ELKHART-MORTON COUNTY	KS	LPV	0	100	0	100	0	100
EMP	EMPORIA MUNICIPAL	KS	LPV	0	100	0	100	0	100
EQA	EL DORADO/CAPTAIN JACK THOMAS	KS	LPV200	0	100	0	100	0	100
EWK	NEWTON-CITY-COUNTY	KS	LPV	0	100	0	100	0	100
FOE	FORBES FIELD	KS	LPV	0	100	0	100	0	100
FSK	FORT SCOTT MUNICIPAL	KS	LPV	0	100	0	100	0	100
GBD	GREAT BEND MUNICIPAL	KS	LPV200	0	100	0	100	0	100
GCK	GARDEN CITY RGNL	KS	LPV	0	100	0	100	0	100
GLD	RENNER FLD /GOODLAND MUNICIPAL/	KS	LPV200	0	100	0	100	0	100
HLC	HILL CITY MUNICIPAL	KS	LPV	0	100	0	100	0	100
HQG	HUGOTON MUNICIPAL	KS	LPV	0	100	0	100	0	100
HRU	HERINGTON RGNL	KS	LPV	0	100	0	100	0	100
HUT	HUTCHINSON RGNL	KS	LPV	0	100	0	100	0	100
HYS	HAYS RGNL	KS	LPV200	0	100	0	100	0	100
ICT	WICHITA DWIGHT D EISENHOWER NA	KS	LPV200	0	100	0	100	0	100
IDP	INDEPENDENCE MUNICIPAL	KS	LPV	0	100	0	100	0	100
IXD	NEW CENTURY AIRCENTER	KS	LPV	0	100	0	100	0	100
K38	WASHINGTON COUNTY VETERAN'S ME	KS	LPV	0	100	0	100	0	100
K78	ABILENE MUNICIPAL	KS	LPV	0	100	0	100	0	100
K81	MIAMI COUNTY	KS	LPV	0	100	0	100	0	100
K82	SMITH CENTER MUNICIPAL	KS	LPV200	0	100	0	100	0	100
K88	ALLEN COUNTY	KS	LPV	0	100	0	100	0	100
LBL	LIBERAL MID-AMERICA RGNL	KS	LPV200	0	100	0	100	0	100
LQR	LARNED-PAWNEE COUNTY	KS	LPV	0	100	0	100	0	100
LWC	LAWRENCE MUNICIPAL	KS	LPV200	0	100	0	100	0	100
MHK	MANHATTAN RGNL	KS	LPV200	0	100	0	100	0	100

Airport ID	Airport Name	State/ Province	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV200 Outages	LPV200 Avail
MPR	MC PHERSON	KS	LPV	0	100	0	100	0	100
MYZ	MARYSVILLE MUNICIPAL	KS	LPV	0	100	0	100	0	100
NRN	NORTON MUNICIPAL	KS	LPV	0	100	0	100	0	100
OEL	OAKLEY MUNICIPAL	KS	LPV	0	100	0	100	0	100
OIN	OBERLIN MUNICIPAL	KS	LPV	0	100	0	100	0	100
OJC	JOHNSON COUNTY EXECUTIVE	KS	LPV	0	100	0	100	0	100
OWI	OTTAWA MUNICIPAL	KS	LPV	0	100	0	100	0	100
PPF	TRI-CITY	KS	LPV	0	100	0	100	0	100
PTS	ATKINSON MUNICIPAL	KS	LPV	0	100	0	100	0	100
PTT	PRATT RGNL	KS	LPV	0	100	0	100	0	100
RCP	ROOKS COUNTY RGNL	KS	LPV	0	100	0	100	0	100
RPB	BELLEVILLE MUNICIPAL	KS	LPV	0	100	0	100	0	100
RSL	RUSSELL MUNICIPAL	KS	LPV	0	100	0	100	0	100
SLN	SALINA RGNL	KS	LPV	0	100	0	100	0	100
TOP	PHILIP BILLARD MUNICIPAL	KS	LPV200	0	100	0	100	0	100
TQK	SCOTT CITY MUNICIPAL	KS	LPV	0	100	0	100	0	100
UKL	COFFEY COUNTY	KS	LPV	0	100	0	100	0	100
ULS	ULYSSES	KS	LPV	0	100	0	100	0	100
WLD	STROTHER FIELD	KS	LPV	0	100	0	100	0	100
0I8	CYNTHIANA-HARRISON COUNTY	KY	LP	0	100	0	100	0	100
18I	MC CREARY COUNTY	KY	LP	0	100	0	100	0	100
27K	GEORGETOWN SCOTT COUNTY - MARS	KY	LPV200	0	100	0	100	0	100
2I0	MADISONVILLE RGNL	KY	LPV	0	100	0	100	0	100
2M0	PRINCETON-CALDWELL COUNTY	KY	LPV	0	100	0	100	0	100
4M7	RUSSELLVILLE-LOGAN COUNTY	KY	LPV	0	100	0	100	0	100
5M9	MARION-CRITTENDEN COUNTY	KY	LPV	0	100	0	100	0	100
6I2	LEBANON SPRINGFIELD-GEORGE HOE	KY	LP	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

Airport ID	Airport Name	State/Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV200 Outages	LPV200 Avail
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
I39	MADISON	KY	LPV200	0	100	0	100	0	100
IOB	MOUNT STERLING-MONTGOMERY COUN	KY	LPV	0	100	0	100	0	100
JQD	OHIO COUNTY	KY	LPV	0	100	0	100	0	100
K24	RUSSELL COUNTY	KY	LPV	0	100	0	100	0	100
K62	GENE SNYDER	KY	LP	0	100	0	100	0	100
KY8	HANCOCK CO-RON LEWIS FIELD	KY	LPV	0	100	0	100	0	100
LEX	BLUE GRASS	KY	LPV	0	100	0	100	0	100
LOU	BOWMAN FIELD	KY	LPV	0	100	0	100	0	100
LOZ	LONDON-CORBIN ARPT-MAGEE FIELD	KY	LPV	0	100	0	100	0	100
M21	MUHLENBERG COUNTY	KY	LP	0	100	0	100	0	100
M25	MAYFIELD GRAVES COUNTY	KY	LPV	0	100	0	100	0	100
OWB	OWENSBORO-DAVIESS COUNTY	KY	LPV200	0	100	0	100	0	100
PAH	BARKLEY RGNL	KY	LPV	0	100	0	100	0	100
SDF	LOUISVILLE INTL-STANDIFORD FIE	KY	LPV200	0	100	0	100	0	100
SJS	BIG SANDY RGNL	KY	LPV	0	100	0	100	0	100
SME	LAKE CUMBERLAND RGNL	KY	LPV	0	100	0	100	0	100
SYM	MOREHEAD-ROWAN COUNTY CLYDE A	KY	LPV200	0	100	0	100	0	100
TWT	STURGIS MUNICIPAL	KY	LPV	0	100	0	100	0	100
TZV	TOMPKINSVILLE-MONROE COUNTY	KY	LPV	0	100	0	100	0	100
1L0	ST JOHN THE BAPTIST PARISH	LA	LPV	0	100	0	100	1	99.9969
3R4	HART	LA	LPV	0	100	0	100	0	100
3R7	JENNINGS	LA	LPV	0	100	0	100	1	99.9992
5R8	DE QUINCY INDUSTRIAL AIRPARK	LA	LPV	0	100	0	100	0	100
ACP	ALLEN PARISH	LA	LPV	0	100	0	100	0	100
AEX	ALEXANDRIA INTL	LA	LPV200	0	100	0	100	0	100
ARA	ACADIANA RGNL	LA	LPV	0	100	0	100	1	99.9969

Airport ID	Airport Name	State/ Province	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV200 Outages	LPV200 Avail
BQP	MOREHOUSE MEMORIAL	LA	LPV	0	100	0	100	0	100
BTR	BATON ROUGE METROPOLITAN RYAN	LA	LPV200	0	100	0	100	1	99.9973
BXA	GEORGE R CARR MEMORIAL AIR FLD	LA	LPV	0	100	0	100	1	99.9977
CWF	CHENNAULT INTL	LA	LPV200	0	100	0	100	0	100
DTN	SHREVEPORT DOWNTOWN	LA	LPV	0	100	0	100	0	100
ESF	ESLER RGNL	LA	LPV200	0	100	0	100	1	99.9996
F88	JONESBORO	LA	LP	0	100	0	100	0	100
GAO	SOUTH LAFOURCHE LEONARD MILLER	LA	LPV200	0	100	0	100	1	99.9962
HDC	HAMMOND NORTHSORE RGNL	LA	LPV200	0	100	0	100	1	99.9973
HUM	HOUMA-TERREBONNE	LA	LPV200	0	100	0	100	1	99.9962
HZR	FALSE RIVER RGNL	LA	LPV	0	100	0	100	1	99.9973
IER	NATCHITOCHE RGNL	LA	LPV	0	100	0	100	0	100
IYA	ABBEVILLE CHRIS CRUSTA MEMORIA	LA	LPV	0	100	0	100	1	99.9973
L38	LOUISIANA RGNL	LA	LPV	0	100	0	100	1	99.9969
L39	LEESVILLE	LA	LPV	0	100	0	100	0	100
LCH	LAKE CHARLES RGNL	LA	LPV200	0	100	0	100	0	100
LFT	LAFAYETTE RGNL/PAUL FOURNET FI	LA	LPV	0	100	0	100	1	99.9973
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	99.9969
NEW	LAKEFRONT	LA	LPV	0	100	0	100	1	99.9973
OPL	ST LANDRY PARISH-AHART FIELD	LA	LPV	0	100	0	100	1	99.9977
PTN	HARRY P WILLIAMS MEMORIAL	LA	LPV200	0	100	0	100	1	99.9962
RSN	RUSTON RGNL	LA	LPV	0	100	0	100	0	100
SHV	SHREVEPORT RGNL	LA	LPV200	0	100	0	100	0	100
SPH	SPRINGHILL	LA	LPV	0	100	0	100	0	100
TVR	VICKSBURG TALLULAH RGNL	LA	LPV	0	100	0	100	1	99.9992
UXL	SOUTHLAND FIELD	LA	LPV	0	100	0	100	0	100
3B0	SOUTHBRIDGE MUNICIPAL	MA	LPV	0	100	0	100	1	99.9905
ACK	NANTUCKET MEMORIAL	MA	LPV200	0	100	0	100	1	99.9863
BAF	WESTFIELD-BARNES RGNL	MA	LPV	0	100	0	100	1	99.9912
BED	LAURENCE G HANSCOM FLD	MA	LPV200	0	100	0	100	1	99.9897
BOS	GENERAL EDWARD LAWRENCE LOGAN	MA	LPV200	0	100	0	100	1	99.9889
BVY	BEVERLY MUNICIPAL	MA	LPV	0	100	0	100	1	99.9897

Airport ID	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV200 Outages	LPV200 Avail
EWB	NEW BEDFORD RGNL	MA	LPV200	0	100	0	100	1	99.987
GBR	WALTER J KOLADZA	MA	LP	0	100	0	100	1	99.9947
GHG	MARSHFIELD MUNICIPAL - GEORGE HARLO	MA	LPV	0	100	0	100	1	99.9886
HYA	BARNSTABLE MUNICIPAL-BOARDMAN/POLAN	MA	LPV200	0	100	0	100	1	99.9874
LWM	LAWRENCE MUNICIPAL	MA	LPV200	0	100	0	100	1	99.9901
MVY	MARTHA'S VINEYARD	MA	LPV200	0	100	0	100	1	99.9863
ORE	ORANGE MUNICIPAL	MA	LPV	0	100	0	100	1	99.992
ORH	WORCESTER RGNL	MA	LPV200	0	100	0	100	1	99.9905
OWD	NORWOOD MEMORIAL	MA	LPV	0	100	0	100	1	99.9886
PSF	PITTSFIELD MUNICIPAL	MA	LPV	0	100	0	100	1	99.9935
PYM	PLYMOUTH MUNICIPAL	MA	LPV200	0	100	0	100	1	99.9878
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	LP	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	LPV	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
OXB	OCEAN CITY MUNICIPAL	MD	LPV	0	100	0	100	1	99.9935
SBY	SALISBURY-OCEAN CITY WICOMICO	MD	LPV200	0	100	0	100	1	99.9958
1B0	DEXTER RGNL	ME	LP	0	100	0	100	1	99.9981
81B	OXFORD COUNTY RGNL	ME	LP	0	100	0	100	1	99.9947
AUG	AUGUSTA STATE	ME	LPV200	0	100	0	100	1	99.9958
BGR	BANGOR INTL	ME	LPV	0	100	0	100	1	99.9977
BHB	HANCOCK COUNTY-BAR HARBOR	ME	LPV200	0	100	0	100	1	99.995
BST	BELFAST MUNICIPAL	ME	LPV	0	100	0	100	1	99.9962
BXM	BRUNSWICK EXECUTIVE	ME	LPV	0	100	0	100	1	99.9943
FVE	NORTHERN AROOSTOOK RGNL	ME	LPV	0	100	0	100	0	100
HUL	HOULTON INTL	ME	LP	0	100	0	100	1	99.9989
IZG	EASTERN SLOPES RGNL	ME	LPV	0	100	0	100	1	99.9939

Airport ID	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV200 Outages	LPV200 Avail
LEW	AUBURN/LEWISTON MUNICIPAL	ME	LPV200	0	100	0	100	1	99.9947
LRG	LINCOLN RGNL	ME	LP	0	100	0	100	1	99.9985
MLT	MILLINOCKET MUNICIPAL	ME	LPV	0	100	0	100	1	99.9996
PQI	NORTHERN MAINE RGNL ARPT AT PR	ME	LPV200	0	100	0	100	0	100
PWM	PORTLAND INTL JETPORT	ME	LPV200	0	100	0	100	1	99.9935
RKD	KNOX COUNTY RGNL	ME	LPV	0	100	0	100	1	99.9947
SFM	SANFORD SEACOAST RGNL	ME	LPV200	0	100	0	100	1	99.9924
WVL	WATERVILLE ROBERT LAFLEUR	ME	LPV200	0	100	0	100	1	99.9962
48D	CLARE MUNICIPAL	MI	LP	0	100	0	100	0	100
4D0	ABRAMS MUNICIPAL	MI	LP	0	100	0	100	0	100
6Y1	BOIS BLANC ISLAND	MI	LP	0	100	0	100	0	100
77G	MARLETTE	MI	LPV	0	100	0	100	0	100
9D9	HASTINGS	MI	LPV	0	100	0	100	0	100
ACB	ANTRIM COUNTY	MI	LPV	0	100	0	100	0	100
ADG	LENAWEE COUNTY	MI	LPV	0	100	0	100	0	100
AMN	GRATIOT COMMUNICIPALTY	MI	LPV	0	100	0	100	0	100
ANJ	SAULT STE MARIE MUNICIPAL/SANDERSON	MI	LPV	0	100	0	100	0	100
APN	ALPENA COUNTY RGNL	MI	LPV	0	100	0	100	0	100
ARB	ANN ARBOR MUNICIPAL	MI	LPV	0	100	0	100	0	100
AZO	KALAMAZOO/BATTLE CREEK INTL	MI	LPV	0	100	0	100	0	100
BAX	HURON COUNTY MEMORIAL	MI	LPV	0	100	0	100	0	100
BEH	SOUTHWEST MICHIGAN RGNL	MI	LPV200	0	100	0	100	0	100
BIV	WEST MICHIGAN RGNL	MI	LPV	0	100	0	100	0	100
BTL	W K KELLOGG	MI	LPV200	0	100	0	100	0	100
CAD	WEXFORD COUNTY	MI	LPV200	0	100	0	100	0	100
CIU	CHIPPEWA COUNTY INTL	MI	LPV	0	100	0	100	0	100
CMX	HOUGHTON COUNTY MEMORIAL	MI	LPV	0	100	0	100	0	100
CVX	CHARLEVOIX MUNICIPAL	MI	LPV	0	100	0	100	0	100
D95	DUPONT-LAPEER	MI	LP	0	100	0	100	0	100
DET	COLEMAN A YOUNG MUNICIPAL	MI	LPV	0	100	0	100	0	100
DTW	DETROIT METROPOLITAN WAYNE COU	MI	LPV200	0	100	0	100	0	100
ERY	LUCE COUNTY	MI	LPV	0	100	0	100	0	100
ESC	DELTA COUNTY	MI	LPV200	0	100	0	100	0	100
FFX	FREMONT MUNICIPAL	MI	LPV	0	100	0	100	0	100

Airport ID	Airport Name	State/ Province	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV200 Outages	LPV200 Avail
FNT	BISHOP INTL	MI	LPV200	0	100	0	100	0	100
GDW	GLADWIN ZETTEL MEMORIAL	MI	LP	0	100	0	100	0	100
GLR	GAYLORD RGNL	MI	LPV	0	100	0	100	0	100
GRR	GERALD R FORD INTL	MI	LPV200	0	100	0	100	0	100
HTL	ROSCOMMON COUNTY - BLODGETT ME	MI	LP	0	100	0	100	0	100
HYX	SAGINAW COUNTY H W BROWNE	MI	LPV	0	100	0	100	0	100
IKW	JACK BARSTOW	MI	LPV	0	100	0	100	0	100
IMT	FORD	MI	LPV	0	100	0	100	0	100
IRS	KIRSCH MUNICIPAL	MI	LPV	0	100	0	100	0	100
ISQ	SCHOOLCRAFT COUNTY	MI	LP	0	100	0	100	0	100
IWD	GOGEBIC-IRON COUNTY	MI	LPV200	0	100	0	100	0	100
JXN	JACKSON COUNTY- REYNOLDS FIELD	MI	LPV200	0	100	0	100	0	100
JYM	HILLSDALE MUNICIPAL	MI	LPV	0	100	0	100	0	100
LAN	CAPITAL REGION INTL	MI	LPV200	0	100	0	100	0	100
LDM	MASON COUNTY	MI	LPV	0	100	0	100	0	100
MBL	MANISTEE CO-BLACKER	MI	LPV200	0	100	0	100	0	100
MBS	MBS INTL	MI	LPV200	0	100	0	100	0	100
MCD	MACKINAC ISLAND	MI	LPV	0	100	0	100	0	100
MKG	MUSKEGON COUNTY	MI	LPV200	0	100	0	100	0	100
MNM	MENOMINEE-MARINETTE TWIN COUNT	MI	LPV200	0	100	0	100	0	100
MOP	MOUNT PLEASANT MUNICIPAL	MI	LPV	0	100	0	100	0	100
N98	BOYNE CITY MUNICIPAL	MI	LP	0	100	0	100	0	100
OEB	BRANCH COUNTY MEMORIAL	MI	LPV	0	100	0	100	0	100
OSC	OSCODA-WURTSMITH	MI	LPV200	0	100	0	100	0	100
OZW	LIVINGSTON COUNTY SPENCER J HA	MI	LPV200	0	100	0	100	0	100
PHN	ST CLAIR COUNTY INTL	MI	LPV200	0	100	0	100	0	100
PLN	PELLSTON RGNL AIRPORT OF EMMET	MI	LPV200	0	100	0	100	0	100
PTK	OAKLAND COUNTY INTL	MI	LPV200	0	100	0	100	0	100
RMY	BROOKS FIELD	MI	LP	0	100	0	100	0	100
RNP	OWOSSO COMMUNICIPALTY	MI	LPV	0	100	0	100	0	100
RQB	ROBEN-HOOD	MI	LPV200	0	100	0	100	0	100
SAW	SAWYER INTL	MI	LPV200	0	100	0	100	0	100
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

Airport ID	Airport Name	State/Province	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV200 Outages	LPV200 Avail
TVC	CHERRY CAPITAL	MI	LPV200	0	100	0	100	0	100
YIP	WILLOW RUN	MI	LPV	0	100	0	100	0	100
16D	PERHAM MUNICIPAL	MN	LPV	0	100	0	100	0	100
3N8	MAHNOMEN COUNTY	MN	LPV	0	100	0	100	0	100
ACQ	WASECA MUNICIPAL	MN	LPV	0	100	0	100	0	100
ADC	WADENA MUNICIPAL	MN	LPV	0	100	0	100	0	100
AEL	ALBERT LEA MUNICIPAL	MN	LPV	0	100	0	100	0	100
AIT	AITKIN MUNICIPAL-STEVE KURTZ FIELD	MN	LPV	0	100	0	100	0	100
ANE	ANOKA COUNTY-BLAINE ARPT(JANES	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
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	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

Airport ID	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV200 Outages	LPV200 Avail
FOZ	BIGFORK MUNICIPAL	MN	LP	0	100	0	100	0	100
FRM	FAIRMONT MUNICIPAL	MN	LPV	0	100	0	100	0	100
FSE	FOSSTON MUNICIPAL	MN	LP	0	100	0	100	0	100
GHW	GLENWOOD MUNICIPAL	MN	LPV	0	100	0	100	0	100
GPZ	GRAND RAPIDS/ITASCA CO-GORDON	MN	LPV	0	100	0	100	0	100
GYL	GLENCOE MUNICIPAL	MN	LPV	0	100	0	100	0	100
HCD	HUTCHINSON MUNICIPAL-BUTLER FIELD	MN	LPV	0	100	0	100	0	100
HCO	HALLOCK MUNICIPAL	MN	LPV	0	100	0	100	0	100
HIB	RANGE RGNL	MN	LPV200	0	100	0	100	0	100
INL	FALLS INTL-EINARSON FIELD	MN	LPV	0	100	0	100	0	100
JKJ	MOORHEAD MUNICIPAL	MN	LPV	0	100	0	100	0	100
JMR	MORA MUNICIPAL	MN	LPV	0	100	0	100	0	100
LJF	LITCHFIELD MUNICIPAL	MN	LPV	0	100	0	100	0	100
LVN	AIRLAKE	MN	LPV200	0	100	0	100	0	100
LXL	LITTLE FALLS/MORRISON COUNTY-L	MN	LPV	0	100	0	100	0	100
LYV	QUENTIN AANENSON FIELD	MN	LPV200	0	100	0	100	0	100
MGG	MAPLE LAKE MUNICIPAL	MN	LP	0	100	0	100	0	100
MJQ	JACKSON MUNICIPAL	MN	LPV	0	100	0	100	0	100
MKT	MANKATO RGNL	MN	LPV200	0	100	0	100	0	100
MML	SOUTHWEST MINNESOTA RGNL MARSH	MN	LPV200	0	100	0	100	0	100
MOX	MORRIS MUNICIPAL - CHARLIE SCHMIDT	MN	LPV	0	100	0	100	0	100
MSP	MINNEAPOLIS-ST PAUL INTL/WOLD-	MN	LPV200	0	100	0	100	0	100
MVE	MONTEVIDEO-CHIPPEWA COUNTY	MN	LPV	0	100	0	100	0	100
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

Airport ID	Airport Name	State/Province	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV200 Outages	LPV200 Avail
ROX	ROSEAU MUNICIPAL/RUDY BILLBERG FIEL	MN	LPV	0	100	0	100	0	100
RRT	WARROAD INTL MEMORIAL	MN	LPV	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
SGS	SOUTH ST PAUL MUNICIPAL-RICHARD E F	MN	LP	0	100	0	100	0	100
STC	ST CLOUD RGNL	MN	LPV200	0	100	0	100	0	100
STP	ST PAUL DOWNTOWN HOLMAN FLD	MN	LPV	0	100	0	100	0	100
TOB	DODGE CENTER	MN	LPV	0	100	0	100	0	100
TVF	THIEF RIVER FALLS RGNL	MN	LPV	0	100	0	100	0	100
TWM	RICHARD B HELGESON	MN	LPV	0	100	0	100	0	100
ULM	NEW ULM MUNICIPAL	MN	LPV200	0	100	0	100	0	100
VVV	ORTONVILLE MUNICIPAL-MARTINSON FIEL	MN	LP	0	100	0	100	0	100
Y49	WALKER MUNICIPAL	MN	LP	0	100	0	100	0	100
Y63	ELBOW LAKE MUNICIPAL - PRIDE OF THE	MN	LPV	0	100	0	100	0	100
03D	MEMPHIS MEMORIAL	MO	LPV	0	100	0	100	0	100
1H0	CREVE COEUR	MO	LPV	0	100	0	100	0	100
1MO	MOUNTAIN GROVE MEMORIAL	MO	LP	0	100	0	100	0	100
2H2	JERRY SUMNERS SR AURORA MUNICIPAL	MO	LP	0	100	0	100	0	100
6M6	LEWIS COUNTY RGNL	MO	LPV	0	100	0	100	0	100
8WC	WASHINGTON COUNTY	MO	LPV	0	100	0	100	0	100
94K	CASSVILLE MUNICIPAL	MO	LPV	0	100	0	100	0	100
AIZ	LEE C FINE MEMORIAL	MO	LPV	0	100	0	100	0	100
BBG	BRANSON	MO	LPV200	0	100	0	100	0	100
BUM	BUTLER MEMORIAL	MO	LPV	0	100	0	100	0	100
CGI	CAPE GIRARDEAU RGNL	MO	LPV200	0	100	0	100	0	100
CHT	CHILLICOTHE MUNICIPAL	MO	LPV	0	100	0	100	0	100
COU	COLUMBIA RGNL	MO	LPV	0	100	0	100	0	100
DMO	SEDALIA RGNL	MO	LPV	0	100	0	100	0	100
DXE	DEXTER MUNICIPAL	MO	LPV	0	100	0	100	0	100
EIW	COUNTY MEMORIAL	MO	LPV	0	100	0	100	0	100
EOS	NEOSHO HUGH ROBINSON	MO	LPV	0	100	0	100	0	100
EVU	NORTHWEST MISSOURI RGNL	MO	LPV	0	100	0	100	0	100
EZZ	CAMERON MEMORIAL	MO	LPV	0	100	0	100	0	100

Airport ID	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV200 Outages	LPV200 Avail
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
K02	PERRYVILLE MUNICIPAL	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
LRV	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
MAW	MALDEN RGNL	MO	LPV	0	100	0	100	0	100
MBY	OMAR N BRADLEY	MO	LPV	0	100	0	100	0	100
MCI	KANSAS CITY INTL	MO	LPV200	0	100	0	100	0	100
MHL	MARSHALL MEMORIAL MUNICIPAL	MO	LPV	0	100	0	100	0	100
MKC	CHARLES B WHEELER DOWNTOWN	MO	LPV200	0	100	0	100	0	100
MNF	MOUNTAIN VIEW	MO	LP	0	100	0	100	0	100
MO3	STOCKTON MUNICIPAL	MO	LP	0	100	0	100	0	100
MO8	NORTH CENTRAL MISSOURI RGNL	MO	LPV	0	100	0	100	0	100

Airport ID	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV200 Outages	LPV200 Avail
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
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	LPV200	0	100	0	100	0	100
SIK	SIKESTON MEMORIAL MUNICIPAL	MO	LPV	0	100	0	100	0	100
STJ	ROSECRANS MEMORIAL	MO	LPV200	0	100	0	100	0	100
STL	LAMBERT-ST LOUIS INTL	MO	LPV200	0	100	0	100	0	100
SUS	SPIRIT OF ST LOUIS	MO	LPV200	0	100	0	100	0	100
TBN	WAYNESVILLE-ST ROBERT RGNL FOR	MO	LPV	0	100	0	100	0	100
TKX	KENNETT MEMORIAL	MO	LPV	0	100	0	100	0	100
TRX	TRENTON MUNICIPAL	MO	LPV	0	100	0	100	0	100
UBX	CUBA MUNICIPAL	MO	LPV	0	100	0	100	0	100
UNO	WEST PLAINS RGNL	MO	LPV	0	100	0	100	0	100
UUV	SULLIVAN RGNL	MO	LPV	0	100	0	100	0	100
VER	JESSE VIERTTEL MEMORIAL	MO	LPV	0	100	0	100	0	100
VIH	ROLLA NATIONAL	MO	LPV200	0	100	0	100	0	100
0R0	COLUMBIA-MARION COUNTY	MS	LPV	0	100	0	100	1	99.9985
17M	MAGEE MUNICIPAL	MS	LP	0	100	0	100	1	99.9989
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	1	99.9996
8M1	BOONEVILLE/BALDWYN	MS	LPV	0	100	0	100	0	100
CKM	FLETCHER FIELD	MS	LPV	0	100	0	100	0	100
CRX	ROSCOE TURNER	MS	LPV200	0	100	0	100	0	100
GLH	GREENVILLE MID-DELTA	MS	LPV200	0	100	0	100	0	100
GNF	GRENADA MUNICIPAL	MS	LPV200	0	100	0	100	0	100
GPT	GULFPORT-BILOXI INTL	MS	LPV200	0	100	0	100	1	99.9977
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	1	99.9985
HEZ	HARDY-ANDERS FIELD NATCHEZ-ADA	MS	LPV200	0	100	0	100	1	99.9985

Airport ID	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV200 Outages	LPV200 Avail
HKS	HAWKINS FIELD	MS	LPV	0	100	0	100	1	99.9992
HSA	STENNIS INTL	MS	LPV200	0	100	0	100	1	99.9973
IDL	INDIANOLA MUNICIPAL	MS	LPV	0	100	0	100	0	100
JAN	JACKSON-MEDGAR WILEY EVERS INT	MS	LPV200	0	100	0	100	1	99.9992
JVW	JOHN BELL WILLIAMS	MS	LPV200	0	100	0	100	1	99.9992
LMS	LOUISVILLE WINSTON COUNTY	MS	LPV	0	100	0	100	1	99.9996
LUL	HESLER-NOBLE FIELD	MS	LPV	0	100	0	100	1	99.9989
M40	MONROE COUNTY	MS	LPV	0	100	0	100	0	100
M43	PRENTISS-JEFFERSON DAVIS COUNT	MS	LPV	0	100	0	100	1	99.9985
MBO	BRUCE CAMPBELL FIELD	MS	LP	0	100	0	100	1	99.9992
MCB	MC COMB/PIKE COUNTY/JOHN E LEW	MS	LPV	0	100	0	100	1	99.9981
MEI	KEY FIELD	MS	LPV200	0	100	0	100	1	99.9992
MJD	PICAYUNE MUNICIPAL	MS	LPV	0	100	0	100	1	99.9977
MMS	SELS	MS	LPV	0	100	0	100	0	100
MPE	PHILADELPHIA MUNICIPAL	MS	LPV	0	100	0	100	1	99.9996
OLV	OLIVE BRANCH	MS	LPV200	0	100	0	100	0	100
PIB	HATTIESBURG-LAUREL RGNL	MS	LPV200	0	100	0	100	1	99.9985
PMU	PANOLA COUNTY	MS	LPV	0	100	0	100	0	100
PQL	TRENT LOTT INTL	MS	LPV200	0	100	0	100	1	99.9977
RNV	CLEVELAND MUNICIPAL	MS	LPV	0	100	0	100	0	100
STF	GEORGE M BRYAN	MS	LPV200	0	100	0	100	0	100
TUP	TUPELO RGNL	MS	LPV200	0	100	0	100	0	100
UOX	UNIVERSITY-OXFORD	MS	LPV	0	100	0	100	0	100
UTA	TUNICA MUNICIPAL	MS	LPV200	0	100	0	100	0	100
VKS	VICKSBURG MUNICIPAL	MS	LP	0	100	0	100	1	99.9989
1S3	TILLITT FIELD	MT	LPV	0	100	0	100	0	100
4U6	CIRCLE TOWN COUNTY	MT	LPV	0	100	0	100	0	100
6S8	LAUREL MUNICIPAL	MT	LPV	0	100	0	100	0	100
7S0	RONAN	MT	LPV	0	100	0	100	0	100
BHK	BAKER MUNICIPAL	MT	LPV	0	100	0	100	0	100
BIL	BILLINGS LOGAN INTL	MT	LPV200	0	100	0	100	0	100
BTM	BERT MOONEY	MT	LPV	0	100	0	100	0	100
BZN	BOZEMAN YELLOWSTONE INTL	MT	LPV	0	100	0	100	0	100
CTB	CUT BANK INTL	MT	LPV200	0	100	0	100	0	100
DLN	DILLON	MT	LPV	0	100	0	100	0	100
EKS	ENNIS - BIG SKY	MT	LPV	0	100	0	100	0	100
GDV	DAWSON COMMUNICIPALTY	MT	LPV	0	100	0	100	0	100

Airport ID	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV200 Outages	LPV200 Avail
GGW	WOKAL FIELD/GLASGOW INTL	MT	LPV200	0	100	0	100	0	100
GPI	GLACIER PARK INTL	MT	LPV	0	100	0	100	0	100
GTF	GREAT FALLS INTL	MT	LPV200	0	100	0	100	0	100
HLN	HELENA RGNL	MT	LPV	0	100	0	100	0	100
HVR	HAVRE CITY-COUNTY	MT	LPV	0	100	0	100	0	100
LVM	MISSION FIELD	MT	LP	0	100	0	100	0	100
LWT	LEWISTOWN MUNICIPAL	MT	LPV200	0	100	0	100	0	100
M75	MALTA	MT	LP	0	100	0	100	0	100
MLS	FRANK WILEY FIELD	MT	LPV	0	100	0	100	0	100
MSO	MISSOULA INTL	MT	LPV	0	100	0	100	0	100
OLF	L M CLAYTON	MT	LPV200	0	100	0	100	0	100
PO1	POPLAR MUNICIPAL	MT	LPV200	0	100	0	100	0	100
PWD	SHER-WOOD	MT	LPV200	0	100	0	100	0	100
RPX	ROUNDUP	MT	LPV	0	100	0	100	0	100
SBX	SHELBY	MT	LPV	0	100	0	100	0	100
SDY	SIDNEY-RICHLAND MUNICIPAL	MT	LPV	0	100	0	100	0	100
WYS	YELLOWSTONE	MT	LPV200	0	100	0	100	0	100
CYCL	CHARLO	NB	LPV	0	100	0	100	0	100
CYQM	MONCTON INTL	NB	LPV	0	100	0	100	1	99.9928
43A	MONTGOMERY 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 FIE	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	LPV	0	100	0	100	0	100
BUY	BURLINGTON-ALAMANCE RGNL	NC	LPV	0	100	0	100	0	100
CLT	CHARLOTTE/DOUGLAS INTL	NC	LPV200	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	LPV	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

Airport ID	Airport Name	State/ Province	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV200 Outages	LPV200 Avail
EYF	CURTIS L BROWN JR FIELD	NC	LPV200	0	100	0	100	0	100
FAY	FAYETTEVILLE RGNL/GRANNIS FIEL	NC	LPV200	0	100	0	100	0	100
FQD	RUTHERFORD CO - MARCHMAN FIELD	NC	LPV	0	100	0	100	0	100
GSO	PIEDMONT TRIAD INTL	NC	LPV200	0	100	0	100	0	100
GWW	WAYNE EXECUTIVE JETPORT	NC	LPV200	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-TON-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 REGIONAL	NC	LPV	0	100	0	100	0	100
JQF	CONCORD 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	1	99.9981
MRH	MICHAEL J SMITH FIELD	NC	LP	0	100	0	100	0	100
MRN	FOOTHILLS REGIONAL	NC	LPV200	0	100	0	100	0	100
MWK	MOUNT AIRY/SURRY COUNTY	NC	LPV	0	100	0	100	0	100
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
RUQ	ROWAN COUNTY	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

Airport ID	Airport Name	State/ Province	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV200 Outages	LPV200 Avail
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
VUJ	STANLY COUNTY	NC	LPV200	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
2C8	CAVALIER MUNICIPAL	ND	LPV	0	100	0	100	0	100
3H4	HILLSBORO MUNICIPAL	ND	LPV	0	100	0	100	0	100
46D	CARRINGTON MUNICIPAL	ND	LPV	0	100	0	100	0	100
51D	EDGELEY MUNICIPAL	ND	LPV	0	100	0	100	0	100
5N8	CASSELTON ROBERT MILLER RGNL	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
D09	BOTTINEAU MUNICIPAL	ND	LPV	0	100	0	100	0	100
D55	ROBERTSON FIELD	ND	LPV	0	100	0	100	0	100
D60	TIOGA MUNICIPAL	ND	LPV	0	100	0	100	0	100
DIK	DICKINSON - THEODORE ROOSEVELT	ND	LPV200	0	100	0	100	0	100
DVL	DEVILS LAKE RGNL	ND	LPV200	0	100	0	100	0	100
FAR	HECTOR INTL	ND	LPV200	0	100	0	100	0	100
GAF	HUTSON FIELD	ND	LPV	0	100	0	100	0	100
GFK	GRAND FORKS INTL	ND	LPV	0	100	0	100	0	100
GWR	GWINNER-ROGER MELROE FIELD	ND	LPV200	0	100	0	100	0	100
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

Airport ID	Airport Name	State/ Province	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV200 Outages	LPV200 Avail
0B4	HARTINGTON MUNICIPAL/ BUD BECKER FL	NE	LPV	0	100	0	100	0	100
0C4	PENDER MUNICIPAL	NE	LPV	0	100	0	100	0	100
0F4	LOUP CITY MUNICIPAL	NE	LPV	0	100	0	100	0	100
0G3	TECUMSEH MUNICIPAL	NE	LPV	0	100	0	100	0	100
0V3	PIONEER VILLAGE FIELD	NE	LPV	0	100	0	100	0	100
12K	SUPERIOR MUNICIPAL	NE	LPV	0	100	0	100	0	100
47V	CURTIS MUNICIPAL	NE	LPV	0	100	0	100	0	100
4D9	ALMA MUNICIPAL	NE	LPV	0	100	0	100	0	100
4V9	ANTELOPE COUNTY	NE	LPV	0	100	0	100	0	100
6K3	CREIGHTON MUNICIPAL	NE	LPV	0	100	0	100	0	100
7V7	RED CLOUD MUNICIPAL	NE	LPV	0	100	0	100	0	100
8V2	STUART-ATKINSON MUNICIPAL	NE	LPV	0	100	0	100	0	100
93Y	DAVID CITY MUNICIPAL	NE	LPV	0	100	0	100	0	100
9V5	MODISETT	NE	LPV	0	100	0	100	0	100
AFK	NEBRASKA CITY MUNICIPAL	NE	LPV	0	100	0	100	0	100
AHQ	WAHOO MUNICIPAL	NE	LPV	0	100	0	100	0	100
AIA	ALLIANCE MUNICIPAL	NE	LPV200	0	100	0	100	0	100
ANW	AINSWORTH RGNL	NE	LPV200	0	100	0	100	0	100
AUH	AURORA MUNICIPAL - AL POTTER FIELD	NE	LPV	0	100	0	100	0	100
BBW	BROKEN BOW MUNICIPAL/KEITH GLAZE FL	NE	LPV	0	100	0	100	0	100
BFF	WESTERN NEBRASKA RGNL/WILLIAM	NE	LPV	0	100	0	100	0	100
BIE	BEATRICE MUNICIPAL	NE	LPV200	0	100	0	100	0	100
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
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

Airport ID	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV200 Outages	LPV200 Avail
IBM	KIMBALL MUNICIPAL/ROBERT E ARRAJ FI	NE	LPV	0	100	0	100	0	100
IML	IMPERIAL MUNICIPAL	NE	LPV	0	100	0	100	0	100
JYR	YORK MUNICIPAL	NE	LPV	0	100	0	100	0	100
LBF	NORTH PLATTE RGNL AIRPORT LEE	NE	LPV200	0	100	0	100	0	100
LCG	WAYNE MUNICIPAL/ STAN MORRIS FLD	NE	LPV	0	100	0	100	0	100
LNK	LINCOLN	NE	LPV	0	100	0	100	0	100
LXN	JIM KELLY FIELD	NE	LPV	0	100	0	100	0	100
MCK	MC COOK BEN NELSON RGNL	NE	LPV	0	100	0	100	0	100
MLE	MILLARD	NE	LPV	0	100	0	100	0	100
ODX	EVELYN SHARP FIELD	NE	LPV	0	100	0	100	0	100
OFK	NORFOLK RGNL/KARL STEFAN MEMOR	NE	LPV	0	100	0	100	0	100
OGA	SEARLE FIELD	NE	LPV	0	100	0	100	0	100
OKS	GARDEN COUNTY	NE	LPV	0	100	0	100	0	100
OLU	COLUMBUS MUNICIPAL	NE	LPV	0	100	0	100	0	100
OMA	EPPLEY AIRFIELD	NE	LPV200	0	100	0	100	0	100
ONL	THE O'NEILL MUNICIPAL-JOHN L BAKER	NE	LPV	0	100	0	100	0	100
PMV	PLATTSMOUTH MUNICIPAL	NE	LPV	0	100	0	100	0	100
RBE	ROCK COUNTY	NE	LPV	0	100	0	100	0	100
SCB	SCRIBNER STATE	NE	LPV	0	100	0	100	0	100
SNY	SIDNEY MUNICIPAL/LLOYD W CARR FIELD	NE	LPV	0	100	0	100	0	100
SWT	SEWARD MUNICIPAL	NE	LPV	0	100	0	100	0	100
TIF	THOMAS COUNTY	NE	LPV	0	100	0	100	0	100
VTN	MILLER FIELD	NE	LPV	0	100	0	100	0	100
ASH	BOIRE FIELD	NH	LPV200	0	100	0	100	1	99.9908
CON	CONCORD MUNICIPAL	NH	LPV	0	100	0	100	1	99.9916
DAW	SKYHAVEN	NH	LPV	0	100	0	100	1	99.992
EEN	DILLANT-HOPKINS	NH	LPV	0	100	0	100	1	99.9928
HIE	MOUNT WASHINGTON RGNL	NH	LPV	0	100	0	100	1	99.9947
LCI	LACONIA MUNICIPAL	NH	LPV	0	100	0	100	1	99.9928
LEB	LEBANON MUNICIPAL	NH	LPV	0	100	0	100	1	99.9947
MHT	MANCHESTER	NH	LPV200	0	100	0	100	1	99.9908
PSM	PORTSMOUTH INTL AT PEASE	NH	LPV200	0	100	0	100	1	99.9916
47N	CENTRAL JERSEY RGNL	NJ	LP	0	100	0	100	1	99.9931
4N1	GREENWOOD LAKE	NJ	LP	0	100	0	100	1	99.9943
ACY	ATLANTIC CITY INTL	NJ	LPV200	0	100	0	100	1	99.9905

Airport ID	Airport Name	State/ Province	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV200 Outages	LPV200 Avail
CDW	ESSEX COUNTY	NJ	LPV	0	100	0	100	1	99.9939
EWR	NEWARK LIBERTY INTL	NJ	LPV	0	100	0	100	1	99.9931
MIV	MILLVILLE MUNICIPAL	NJ	LPV200	0	100	0	100	1	99.9928
MJX	OCEAN COUNTY	NJ	LPV	0	100	0	100	1	99.9916
MMU	MORRISTOWN MUNICIPAL	NJ	LPV200	0	100	0	100	1	99.9939
N14	FLYING W	NJ	LPV	0	100	0	100	1	99.992
N40	SKY MANOR	NJ	LP	0	100	0	100	1	99.9943
TEB	TETERBORO	NJ	LPV	0	100	0	100	1	99.9924
TTN	TRENTON MERCER	NJ	LPV200	0	100	0	100	1	99.9928
VAY	SOUTH JERSEY RGNL	NJ	LP	0	100	0	100	1	99.992
WWD	CAPE MAY COUNTY	NJ	LPV	0	100	0	100	1	99.992
CYDF	DEER LAKE	NL	LPV	0	100	1	99.9989	2	99.9794
ATS	ARTESIA MUNICIPAL	NM	LPV	0	100	0	100	0	100
CAO	CLAYTON MUNICIPAL ARPK	NM	LPV	0	100	0	100	0	100
CNM	CAVERN CITY AIR TRML	NM	LPV200	0	100	0	100	0	100
CVN	CLOVIS MUNICIPAL	NM	LPV200	0	100	0	100	0	100
DMN	DEMING MUNICIPAL	NM	LPV	0	100	0	100	55	99.9489
E06	LEA COUNTY-ZIP FRANKLIN MEMORI	NM	LPV	0	100	0	100	0	100
FMN	FOUR CORNERS RGNL	NM	LPV200	0	100	0	100	1	99.9981
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	LPV	0	100	0	100	0	100
ONM	SOCORRO MUNICIPAL	NM	LP	0	100	0	100	1	99.9992
ROW	ROSWELL INTL AIR CENTER	NM	LPV	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	42	99.9473
CYHZ	HALIFAX / STANFIELD INTL	NS	LPV	0	100	0	100	1	99.987
CYEV	INUVIK	NT	LPV	0	100	0	100	4	99.9691
05U	EUREKA	NV	LP	0	100	0	100	0	100
CXP	CARSON	NV	LP	0	100	0	100	1	99.9744
ELY	ELY ARPT /YELLAND FLD/	NV	LPV	0	100	0	100	0	100
LAS	MC CARRAN INTL	NV	LPV	0	100	0	100	2	99.9836
RNO	RENO/TAHOE INTL	NV	LPV	0	100	0	100	1	99.9744
RTS	RENO/STEAD	NV	LPV	0	100	0	100	1	99.9748
TPH	TONOPAH	NV	LP	0	100	0	100	1	99.9939
WMC	WINNEMUCCA MUNICIPAL	NV	LPV	0	100	0	100	0	100
06N	RANDALL	NY	LP	0	100	0	100	1	99.9954
0G7	FINGER LAKES RGNL	NY	LPV	0	100	0	100	0	100
1B1	COLUMBIA COUNTY	NY	LPV	0	100	0	100	1	99.9954
20N	KINGSTON-ULSTER	NY	LPV	0	100	0	100	1	99.995

Airport ID	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	1	99.9939
4B6	TICONDEROGA MUNICIPAL	NY	LPV	0	100	0	100	1	99.9969
5B2	SARATOGA COUNTY	NY	LPV	0	100	0	100	1	99.9973
5G0	LE ROY	NY	LP	0	100	0	100	0	100
9G0	BUFFALO AIRFIELD	NY	LP	0	100	0	100	0	100
9G3	AKRON	NY	LP	0	100	0	100	0	100
ALB	ALBANY INTL	NY	LPV200	0	100	0	100	1	99.9966
ART	WATERTOWN INTL	NY	LPV200	0	100	0	100	0	100
BGM	GREATER BINGHAMTON/EDWIN A LIN	NY	LPV200	0	100	0	100	1	99.9996
BUF	BUFFALO NIAGARA INTL	NY	LPV200	0	100	0	100	0	100
D38	CANANDAIGUA	NY	LPV	0	100	0	100	0	100
DKK	CHAUTAUQUA COUNTY/DUNKIRK	NY	LP	0	100	0	100	0	100
ELM	ELMIRA/CORNING RGNL	NY	LPV200	0	100	0	100	0	100
ELZ	WELLSVILLE MUNICIPAL ARPT TARANTINE	NY	LPV	0	100	0	100	0	100
FOK	FRANCIS S GABRESKI	NY	LPV200	0	100	0	100	1	99.9878
FRG	REPUBLIC	NY	LPV200	0	100	0	100	1	99.9912
FZY	OSWEGO COUNTY	NY	LPV	0	100	0	100	0	100
GFL	FLOYD BENNETT MEMORIAL	NY	LPV	0	100	0	100	1	99.9977
GVQ	GENESEE COUNTY	NY	LPV200	0	100	0	100	0	100
HPN	WESTCHESTER COUNTY	NY	LPV	0	100	0	100	1	99.9924
HTF	HORNELL MUNICIPAL	NY	LPV	0	100	0	100	0	100
HTO	EAST HAMPTON	NY	LPV	0	100	0	100	1	99.9878
HWV	BROOKHAVEN	NY	LPV	0	100	0	100	1	99.9882
IAG	NIAGARA FALLS INTL	NY	LPV	0	100	0	100	0	100
ISP	LONG ISLAND MAC ARTHUR	NY	LPV200	0	100	0	100	1	99.9889
ITH	ITHACA TOMPKINS RGNL	NY	LPV	0	100	0	100	0	100
JFK	JOHN F KENNEDY INTL	NY	LPV200	0	100	0	100	1	99.9912
JHW	CHAUTAUQUA COUNTY/JAMESTOWN	NY	LPV200	0	100	0	100	0	100
K09	PISECO	NY	LP	0	100	0	100	0	100
LGA	LAGUARDIA	NY	LPV	0	100	0	100	1	99.992
MAL	MALONE-DUFORT	NY	LPV	0	100	0	100	0	100
MGJ	ORANGE COUNTY	NY	LPV	0	100	0	100	1	99.9954
MSS	MASSENA INTL-RICHARDS FIELD	NY	LPV	0	100	0	100	0	100
MSV	SULLIVAN COUNTY INTL	NY	LPV	0	100	0	100	1	99.9966
N23	SIDNEY MUNICIPAL	NY	LP	0	100	0	100	1	99.9989
N66	ONEONTA MUNICIPAL	NY	LPV	0	100	0	100	1	99.9985
NY0	FULTON COUNTY	NY	LPV	0	100	0	100	1	99.9977

Airport ID	Airport Name	State/ Province	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV200 Outages	LPV200 Avail
OGS	OGDENSBURG INTL	NY	LPV	0	100	0	100	0	100
OIC	LT WARREN EATON	NY	LP	0	100	0	100	1	99.9992
OLE	CATTARAUGUS COUNTY- OLEAN	NY	LPV	0	100	0	100	0	100
PBG	PLATTSBURGH INTL	NY	LPV	0	100	0	100	1	99.9989
PEO	PENN YAN	NY	LPV	0	100	0	100	0	100
POU	DUTCHESS COUNTY	NY	LPV	0	100	0	100	1	99.9939
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	1	99.9969
SDC	WILLIAMSON-SODUS	NY	LPV	0	100	0	100	0	100
SLK	ADIRONDACK RGNL	NY	LPV200	0	100	0	100	0	100
SWF	STEWART INTL	NY	LPV200	0	100	0	100	1	99.9939
SYR	SYRACUSE HANCOCK INTL	NY	LPV200	0	100	0	100	0	100
VGC	HAMILTON MUNICIPAL	NY	LPV	0	100	0	100	1	99.9996
0G6	WILLIAMS COUNTY	OH	LPV	0	100	0	100	0	100
10G	HOLMES COUNTY	OH	LP	0	100	0	100	1	99.9996
16G	SENECA COUNTY	OH	LPV	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
4G5	MONROE COUNTY	OH	LP	0	100	0	100	0	100
4I3	KNOX COUNTY	OH	LPV200	0	100	0	100	1	99.9996
5A1	NORWALK-HURON COUNTY	OH	LP	0	100	0	100	1	99.9996
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	1	99.9996
BKL	BURKE LAKEFRONT	OH	LPV	0	100	0	100	1	99.9996
CAK	AKRON-CANTON RGNL	OH	LPV200	0	100	0	100	0	100
CDI	CAMBRIDGE MUNICIPAL	OH	LP	0	100	0	100	0	100
CGF	CUYAHOGA COUNTY	OH	LPV	0	100	0	100	1	99.9996
CLE	CLEVELAND-HOPKINS INTL	OH	LPV200	0	100	0	100	1	99.9996
CMH	PORT COLUMBUS INTL	OH	LPV200	0	100	0	100	1	99.9996
CQA	LAKEFIELD	OH	LPV	0	100	0	100	0	100
DAY	JAMES M COX DAYTON INTL	OH	LPV200	0	100	0	100	0	100
DLZ	DELAWARE MUNICIPAL - JIM MOORE FIEL	OH	LPV	0	100	0	100	1	99.9996
EDJ	BELLEFONTAINE RGNL	OH	LPV	0	100	0	100	1	99.9996
EOP	PIKE COUNTY	OH	LP	0	100	0	100	0	100

Airport ID	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV200 Outages	LPV200 Avail
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	1	99.9996
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
I19	GREENE COUNTY-LEWIS A JACKSON	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	1	99.9996
ILN	WILMINGTON AIR PARK	OH	LPV200	0	100	0	100	0	100
LCK	RICKENBACKER INTL	OH	LPV200	0	100	0	100	1	99.9996
LHQ	FAIRFIELD COUNTY	OH	LPV200	0	100	0	100	1	99.9996
LNN	WILLOUGHBY LOST NATION MUNICIPAL	OH	LPV	0	100	0	100	0	100
LPR	LORAIN COUNTY RGNL	OH	LPV200	0	100	0	100	1	99.9996
LUK	CINCINNATI MUNICIPAL AIRPORT LUNKEN	OH	LPV	0	100	0	100	0	100
MFD	MANSFIELD LAHM RGNL	OH	LPV200	0	100	0	100	1	99.9996
MGY	DAYTON-WRIGHT BROTHERS	OH	LPV	0	100	0	100	0	100
MNN	MARION MUNICIPAL	OH	LPV	0	100	0	100	1	99.9996
MRT	UNION COUNTY	OH	LP	0	100	0	100	1	99.9996
MWO	MIDDLETOWN REGIONAL/HOOK FIELD	OH	LPV	0	100	0	100	0	100
OSU	OHIO STATE UNIVERSITY	OH	LPV200	0	100	0	100	1	99.9996
OWX	PUTNAM COUNTY	OH	LPV	0	100	0	100	0	100
OXD	MIAMI UNIVERSITY	OH	LPV	0	100	0	100	0	100
PCW	ERIE-OTTAWA INTL	OH	LPV	0	100	0	100	0	100
PHD	HARRY CLEVER FIELD	OH	LP	0	100	0	100	0	100
PMH	GREATER PORTSMOUTH RGNL	OH	LPV	0	100	0	100	0	100
POV	PORTAGE COUNTY	OH	LPV	0	100	0	100	0	100
RZT	ROSS COUNTY	OH	LPV	0	100	0	100	0	100
S24	SANDUSKY COUNTY RGNL	OH	LPV	0	100	0	100	0	100
SCA	SIDNEY MUNICIPAL	OH	LPV	0	100	0	100	1	99.9996
SGH	SPRINGFIELD-BECKLEY MUNICIPAL	OH	LPV200	0	100	0	100	0	100
TDZ	TOLEDO EXECUTIVE	OH	LP	0	100	0	100	0	100
TOL	TOLEDO EXPRESS	OH	LPV200	0	100	0	100	0	100

Airport ID	Airport Name	State/Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV200 Outages	LPV200 Avail
TSO	CARROLL COUNTY-TOLSON	OH	LP	0	100	0	100	0	100
TZR	BOLTON FIELD	OH	LPV200	0	100	0	100	1	99.9996
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
YNG	YOUNGSTOWN-WARREN RGNL	OH	LPV	0	100	0	100	0	100
1F0	ARDMORE DOWNTOWN EXECUTIVE	OK	LP	0	100	0	100	0	100
1O4	THOMAS MUNICIPAL	OK	LPV	0	100	0	100	0	100
80F	ANTLERS MUNICIPAL	OK	LPV	0	100	0	100	0	100
ADH	ADA MUNICIPAL	OK	LPV	0	100	0	100	0	100
ADM	ARDMORE MUNICIPAL	OK	LPV200	0	100	0	100	0	100
AVK	ALVA RGNL	OK	LPV	0	100	0	100	0	100
AXS	ALTUS/QUARTZ MOUNTAIN RGNL	OK	LPV	0	100	0	100	0	100
BKN	BLACKWELL-TONKAWA MUNICIPAL	OK	LPV	0	100	0	100	0	100
BVO	BARTLESVILLE MUNICIPAL	OK	LPV	0	100	0	100	0	100
CHK	CHICKASHA MUNICIPAL	OK	LPV200	0	100	0	100	0	100
CLK	CLINTON RGNL	OK	LPV200	0	100	0	100	0	100
CSM	CLINTON-SHERMAN	OK	LPV200	0	100	0	100	0	100
DUA	DURANT RGNL - EAKER FIELD	OK	LPV	0	100	0	100	0	100
DUC	HALLIBURTON FIELD	OK	LPV	0	100	0	100	0	100
ELK	ELK CITY RGNL BUSINESS	OK	LPV	0	100	0	100	0	100
F22	PERRY MUNICIPAL	OK	LPV	0	100	0	100	0	100
FDR	FREDERICK RGNL	OK	LPV200	0	100	0	100	0	100
GCM	CLAREMORE RGNL	OK	LPV	0	100	0	100	0	100
GMJ	GROVE MUNICIPAL	OK	LPV	0	100	0	100	0	100
GOK	GUTHRIE-EDMOND RGNL	OK	LPV	0	100	0	100	0	100
GUY	GUYMON MUNICIPAL	OK	LPV	0	100	0	100	0	100
GZL	STIGLER RGNL	OK	LPV	0	100	0	100	0	100
HBR	HOBART RGNL	OK	LPV	0	100	0	100	0	100
HSD	SUNDANCE	OK	LPV	0	100	0	100	0	100
MKO	DAVIS FIELD	OK	LPV	0	100	0	100	0	100
MLC	MC ALESTER RGNL	OK	LPV	0	100	0	100	0	100
OJA	THOMAS P STAFFORD	OK	LPV	0	100	0	100	0	100
OKC	WILL ROGERS WORLD	OK	LPV200	0	100	0	100	0	100
OKM	OKMULGEE RGNL	OK	LPV	0	100	0	100	0	100
OUN	UNIVERSITY OF OKLAHOMA WESTHEI	OK	LPV200	0	100	0	100	0	100
OWP	WILLIAM R POGUE MUNICIPAL	OK	LPV	0	100	0	100	0	100

Airport ID	Airport Name	State/ Province	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV200 Outages	LPV200 Avail
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	LPV	0	100	0	100	0	100
SNL	SHAWNEE RGNL	OK	LPV200	0	100	0	100	0	100
SWO	STILLWATER RGNL	OK	LPV200	0	100	0	100	0	100
TQH	TAHLEQUAH MUNICIPAL	OK	LPV	0	100	0	100	0	100
TUL	TULSA INTL	OK	LPV200	0	100	0	100	0	100
WDG	ENID WOODRING RGNL	OK	LPV200	0	100	0	100	0	100
WWR	WEST WOODWARD	OK	LPV	0	100	0	100	0	100
CNS7	KINCARDINE	ON	LPV	0	100	0	100	0	100
CYHD	DRYDEN REGIONAL	ON	LPV	0	100	0	100	0	100
CYKF	KITCHENER / WATERLOO	ON	LPV	0	100	0	100	0	100
CYOW	OTTAWA / MACDONALDCARTIER INTL	ON	LPV	0	100	0	100	0	100
CYQT	THUNDER BAY	ON	LPV	0	100	0	100	0	100
CYTS	TIMMINS / VICTOR M POWER	ON	LPV	0	100	0	100	0	100
CYXL	SIOUX LOOKOUT	ON	LPV	0	100	0	100	0	100
AST	ASTORIA RGNL	OR	LPV	0	100	0	100	0	100
BDN	BEND MUNICIPAL	OR	LPV	0	100	0	100	0	100
BKE	BAKER CITY MUNICIPAL	OR	LPV	0	100	0	100	0	100
CVO	CORVALLIS MUNICIPAL	OR	LPV200	0	100	0	100	1	99.9996
EUG	MAHLON SWEET FIELD	OR	LPV200	0	100	0	100	1	99.9969
GCD	GRANT CO RGNL/OGILVIE FIELD	OR	LPV	0	100	0	100	0	100
HIO	PORTLAND-HILLSBORO	OR	LPV200	0	100	0	100	0	100
LGD	LA GRANDE/UNION COUNTY	OR	LPV	0	100	0	100	0	100
LKV	LAKE COUNTY	OR	LPV	0	100	0	100	0	100
LMT	KLAMATH FALLS	OR	LPV	0	100	0	100	1	99.9939
MMV	MC MINNVILLE MUNICIPAL	OR	LPV	0	100	0	100	0	100
ONO	ONTARIO MUNICIPAL	OR	LPV	0	100	0	100	0	100
OTH	SOUTHWEST OREGON RGNL	OR	LPV	0	100	0	100	2	99.9828
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

Airport ID	Airport Name	State/ Province	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV200 Outages	LPV200 Avail
SPB	SCAPPOOSE INDUSTRIAL AIRPARK	OR	LPV	0	100	0	100	0	100
UAO	AURORA STATE	OR	LPV	0	100	0	100	0	100
22N	JAKE ARNER MEMORIAL	PA	LP	0	100	0	100	1	99.9996
29D	GROVE CITY	PA	LP	0	100	0	100	0	100
2G9	SOMERSET COUNTY	PA	LPV	0	100	0	100	0	100
8G2	CORRY-LAWRENCE	PA	LPV	0	100	0	100	0	100
8N8	DANVILLE	PA	LP	0	100	0	100	0	100
9D4	DECK	PA	LPV	0	100	0	100	0	100
ABE	LEHIGH VALLEY INTL	PA	LPV200	0	100	0	100	1	99.9947
AFJ	WASHINGTON COUNTY	PA	LPV200	0	100	0	100	0	100
AGC	ALLEGHENY COUNTY	PA	LPV200	0	100	0	100	0	100
AOO	ALTOONA-BLAIR COUNTY	PA	LPV	0	100	0	100	0	100
AVP	WILKES-BARRE/SCRANTON INTL	PA	LPV200	0	100	0	100	1	99.9969
AXQ	CLARION COUNTY	PA	LPV	0	100	0	100	0	100
BFD	BRADFORD RGNL	PA	LPV	0	100	0	100	0	100
BTP	BUTLER COUNTY/K W SCHOLTER FIE	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
HMZ	BEDFORD COUNTY	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	LPV	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	1	99.9931
MDT	HARRISBURG INTL	PA	LPV	0	100	0	100	0	100
MPO	POCONO MOUNTAINS MUNICIPAL	PA	LPV	0	100	0	100	1	99.9958
MQS	CHESTER COUNTY G O CARLSON	PA	LPV	0	100	0	100	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

Airport ID	Airport Name	State/ Province	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV200 Outages	LPV200 Avail
OQN	BRANDYWINE	PA	LP	0	100	0	100	1	99.9958
OYM	ST MARYS MUNICIPAL	PA	LPV	0	100	0	100	0	100
PHL	PHILADELPHIA INTL	PA	LPV	0	100	0	100	1	99.9928
PIT	PITTSBURGH INTL	PA	LPV200	0	100	0	100	0	100
PNE	NORTHEAST PHILADELPHIA	PA	LPV	0	100	0	100	1	99.9928
PSB	MID-STATE	PA	LPV	0	100	0	100	0	100
PTW	HERITAGE FIELD	PA	LPV	0	100	0	100	1	99.9973
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
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	1	99.9947
UNV	UNIVERSITY PARK	PA	LPV200	0	100	0	100	0	100
VVS	JOSEPH A HARDY CONNELLSVILLE	PA	LPV	0	100	0	100	0	100
WAY	GREENE COUNTY	PA	LPV	0	100	0	100	0	100
WBW	WILKES-BARRE WYOMING VALLEY	PA	LPV	0	100	0	100	1	99.9996
XLL	ALLENTOWN QUEEN CITY MUNICIPAL	PA	LP	0	100	0	100	1	99.9947
ZER	SCHUYLKILL COUNTY /JOE ZERBEY/	PA	LPV200	0	100	0	100	0	100
CPN8	OPINACA	QC	LPV	0	100	0	100	0	100
CSR3	VICTORIAVILLE	QC	LPV	0	100	0	100	1	99.9996
CTP9	KATTINIQ / DONALDSON	QC	LPV	0	100	0	100	1	99.987
CYFY	AMOS	QC	LPV	0	100	0	100	0	100
CYHU	MONTREAL / STHUBERT	QC	LPV	0	100	0	100	0	100
CYIF	STAUGUSTIN	QC	LPV	0	100	0	100	1	99.9874
CYMX	MONTREAL (MIRABEL INTL)	QC	LPV	0	100	0	100	0	100
CYQB	QUEBEC / JEAN LESAGE INTL	QC	LPV	0	100	0	100	0	100
CYRI	RIVIEREDULOUP	QC	LPV	0	100	0	100	0	100
CYRQ	TROISRIVIERES	QC	LPV	0	100	0	100	0	100
CYVB	BONAVENTURE	QC	LPV	0	100	0	100	1	99.9992
CYVP	KUUJJUAQ	QC	LPV	0	100	0	100	1	99.9996
CYYY	MONTJOLI	QC	LPV	0	100	0	100	0	100
BID	BLOCK ISLAND STATE	RI	LPV	0	100	0	100	1	99.9866
OQU	QUONSET STATE	RI	LPV	0	100	0	100	1	99.9874
PVD	THEODORE FRANCIS GREEN STATE	RI	LPV200	0	100	0	100	1	99.9878
SFZ	NORTH CENTRAL STATE	RI	LPV	0	100	0	100	1	99.9886
35A	UNION COUNTY TROY SHELTON FIE	SC	LP	0	100	0	100	0	100

Airport ID	Airport Name	State/Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV200 Outages	LPV200 Avail
6J0	LEXINGTON COUNTY AT PELION	SC	LPV	0	100	0	100	0	100
AIK	AIKEN MUNICIPAL	SC	LPV200	0	100	0	100	0	100
AND	ANDERSON RGNL	SC	LPV200	0	100	0	100	0	100
AQX	ALLENDALE 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
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
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
GSP	GREENVILLE SPARTANBURG INTL	SC	LPV200	0	100	0	100	0	100
GYH	DONALDSON FIELD	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	LPV200	0	100	0	100	0	100
RBW	LOWCOUNTRY RGNL	SC	LPV	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 JETPORT	SC	LPV	0	100	0	100	0	100

Airport ID	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV200 Outages	LPV200 Avail
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
8V3	PARKSTON MUNICIPAL	SD	LPV	0	100	0	100	0	100
9D1	GREGORY MUNICIPAL - FLYNN FLD	SD	LPV	0	100	0	100	0	100
ABR	ABERDEEN RGNL	SD	LPV200	0	100	0	100	0	100
AGZ	WAGNER MUNICIPAL	SD	LPV	0	100	0	100	0	100
ATY	WATERTOWN RGNL	SD	LPV200	0	100	0	100	0	100
BKX	BROOKINGS RGNL	SD	LPV200	0	100	0	100	0	100
EFC	BELLE FOURCHE MUNICIPAL	SD	LPV	0	100	0	100	0	100
FSD	JOE FOSS FIELD	SD	LPV200	0	100	0	100	0	100
HON	HURON RGNL	SD	LPV200	0	100	0	100	0	100
HSR	HOT SPRINGS MUNICIPAL	SD	LP	0	100	0	100	0	100
ICR	WINNER RGNL	SD	LPV	0	100	0	100	0	100
LEM	LEMMON MUNICIPAL	SD	LPV	0	100	0	100	0	100
MBG	MOBRIDGE MUNICIPAL	SD	LPV	0	100	0	100	0	100
MDS	MADISON MUNICIPAL	SD	LPV	0	100	0	100	0	100
MHE	MITCHELL MUNICIPAL	SD	LPV	0	100	0	100	0	100
MKA	MILLER MUNICIPAL	SD	LPV	0	100	0	100	0	100
PHP	PHILIP	SD	LPV	0	100	0	100	0	100
PIR	PIERRE RGNL	SD	LPV	0	100	0	100	0	100
RAP	RAPID CITY RGNL	SD	LPV200	0	100	0	100	0	100
SPF	BLACK HILLS-CLYDE ICE FIELD	SD	LPV	0	100	0	100	0	100
VMR	HAROLD DAVIDSON FIELD	SD	LPV	0	100	0	100	0	100
YKN	CHAN GURNEY MUNICIPAL	SD	LPV200	0	100	0	100	0	100
CKQ8	MCARTHUR RIVER	SK	LPV	0	100	0	100	2	99.9897
CYKJ	KEY LAKE	SK	LPV	0	100	0	100	2	99.9851
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 TAZEWELL MUNICIPAL	TN	LP	0	100	0	100	0	100
3M7	LAFAYETTE MUNICIPAL	TN	LPV	0	100	0	100	0	100

Airport ID	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV200 Outages	LPV200 Avail
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
GKT	GATLINBURG-PIGEON FORGE	TN	LPV	0	100	0	100	0	100
GZS	ABERNATHY FIELD	TN	LPV	0	100	0	100	0	100
HZD	CARROLL COUNTY	TN	LPV	0	100	0	100	0	100
JAU	CAMPBELL COUNTY	TN	LP	0	100	0	100	0	100
JWN	JOHN C TUNE	TN	LPV	0	100	0	100	0	100
LUG	ELLINGTON	TN	LPV	0	100	0	100	0	100
M01	GENERAL DEWITT SPAIN	TN	LPV	0	100	0	100	0	100
M08	WILLIAM L WHITEHURST FIELD	TN	LP	0	100	0	100	0	100
M33	SUMNER COUNTY RGNL	TN	LPV	0	100	0	100	0	100
M54	LEBANON MUNICIPAL	TN	LPV	0	100	0	100	0	100
M91	SPRINGFIELD ROBERTSON COUNTY	TN	LPV	0	100	0	100	0	100
MBT	MURFREESBORO MUNICIPAL	TN	LPV	0	100	0	100	0	100
MEM	MEMPHIS INTL	TN	LPV200	0	100	0	100	0	100
MKL	MC KELLAR-SIPES RGNL	TN	LPV200	0	100	0	100	0	100
MMI	MCMINN COUNTY	TN	LPV	0	100	0	100	0	100
MNV	MONROE COUNTY	TN	LPV	0	100	0	100	0	100
MOR	MOORE-MURRELL	TN	LPV	0	100	0	100	0	100
MQY	SMYRNA	TN	LPV200	0	100	0	100	0	100
MRC	MAURY COUNTY	TN	LPV	0	100	0	100	0	100
NQA	MILLINGTON RGNL JETPORT	TN	LPV200	0	100	0	100	0	100
PHT	HENRY COUNTY	TN	LPV200	0	100	0	100	0	100
PVE	BEECH RIVER RGNL	TN	LPV	0	100	0	100	0	100
RKW	ROCKWOOD MUNICIPAL	TN	LPV	0	100	0	100	0	100
RNC	WARREN COUNTY MEMORIAL	TN	LPV	0	100	0	100	0	100
RZR	CLEVELAND RGNL JETPORT	TN	LPV200	0	100	0	100	0	100
SCX	SCOTT MUNICIPAL	TN	LPV	0	100	0	100	0	100

Airport ID	Airport Name	State/ Province	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV200 Outages	LPV200 Avail
SNH	SAVANNAH-HARDIN COUNTY	TN	LPV	0	100	0	100	0	100
SRB	UPPER CUMBERLAND RGNL	TN	LPV200	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
THA	TULLAHOMA RGNL ARPT/WM NORTHER	TN	LPV	0	100	0	100	0	100
TRI	TRI-CITIES RGNL TN/VA	TN	LPV200	0	100	0	100	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
11R	BRENHAM MUNICIPAL	TX	LPV	0	100	0	100	0	100
2F5	LAMESA MUNICIPAL	TX	LP	0	100	0	100	0	100
2R9	KARNES COUNTY	TX	LP	0	100	0	100	0	100
3R9	LAKEWAY AIRPARK	TX	LP	0	100	0	100	0	100
3T5	FAYETTE RGNL AIR CENTER	TX	LPV	0	100	0	100	0	100
45R	HAWTHORNE FIELD	TX	LP	0	100	0	100	0	100
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	0	100
6R3	CLEVELAND MUNICIPAL	TX	LPV	0	100	0	100	0	100
77F	WINTERS MUNICIPAL	TX	LP	0	100	0	100	0	100
8F3	CROSBYTON MUNICIPAL	TX	LP	0	100	0	100	0	100
ABI	ABILENE RGNL	TX	LPV200	0	100	0	100	0	100
ACT	WACO RGNL	TX	LPV200	0	100	0	100	0	100
ADS	ADDISON	TX	LPV	0	100	0	100	0	100
AFW	FORT WORTH ALLIANCE	TX	LPV200	0	100	0	100	0	100
ALI	ALICE INTL	TX	LPV	0	100	0	100	0	100
AMA	RICK HUSBAND AMARILLO INTL	TX	LPV200	0	100	0	100	0	100
ARM	WHARTON RGNL	TX	LPV	0	100	0	100	0	100
ASL	HARRISON COUNTY	TX	LPV	0	100	0	100	0	100
AUS	AUSTIN-BERGSTROM INTL	TX	LPV200	0	100	0	100	0	100
AXH	HOUSTON-SOUTHWEST	TX	LPV	0	100	0	100	0	100
BAZ	NEW BRAUNFELS RGNL	TX	LPV	0	100	0	100	0	100
BBD	CURTIS FIELD	TX	LPV	0	100	0	100	0	100
BKD	STEPHENS COUNTY	TX	LP	0	100	0	100	0	100
BPG	BIG SPRING MC MAHON-WRINKLE	TX	LPV200	0	100	0	100	0	100
BPT	JACK BROOKS RGNL	TX	LPV200	0	100	0	100	0	100

Airport ID	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV200 Outages	LPV200 Avail
BRO	BROWNSVILLE/SOUTH PADRE ISLAND	TX	LPV200	0	100	0	100	0	100
BWD	BROWNWOOD RGNL	TX	LPV	0	100	0	100	0	100
BYY	BAY CITY MUNICIPAL	TX	LPV	0	100	0	100	0	100
CDS	CHILDRESS MUNICIPAL	TX	LPV200	0	100	0	100	0	100
CFD	COULTER FIELD	TX	LPV	0	100	0	100	0	100
CLL	EASTERWOOD FIELD	TX	LPV200	0	100	0	100	0	100
CNW	TSTC WACO	TX	LPV200	0	100	0	100	0	100
COM	COLEMAN MUNICIPAL	TX	LPV	0	100	0	100	0	100
COT	COTULLA-LA SALLE COUNTY	TX	LPV	0	100	0	100	0	100
CPT	CLEBURNE RGNL	TX	LPV	0	100	0	100	0	100
CRP	CORPUS CHRISTI INTL	TX	LPV200	0	100	0	100	0	100
CVB	CASTROVILLE MUNICIPAL	TX	LPV	0	100	0	100	0	100
CXO	LONE STAR EXECUTIVE	TX	LPV200	0	100	0	100	0	100
CZT	DIMMIT COUNTY	TX	LPV	0	100	0	100	0	100
DAL	DALLAS LOVE FIELD	TX	LPV200	0	100	0	100	0	100
DFW	DALLAS/FORT WORTH INTL	TX	LPV200	0	100	0	100	0	100
DHT	DALHART MUNICIPAL	TX	LPV	0	100	0	100	0	100
DKR	HOUSTON COUNTY	TX	LP	0	100	0	100	0	100
DRT	DEL RIO INTL	TX	LPV	0	100	0	100	0	100
DTO	DENTON ENTERPRISE	TX	LPV200	0	100	0	100	0	100
DUX	MOORE COUNTY	TX	LPV200	0	100	0	100	0	100
DWH	DAVID WAYNE HOOKS MEMORIAL	TX	LPV	0	100	0	100	0	100
E01	ROY HURD MEMORIAL	TX	LP	0	100	0	100	0	100
E11	ANDREWS COUNTY	TX	LPV	0	100	0	100	0	100
E19	GRUVER MUNICIPAL	TX	LP	0	100	0	100	0	100
E30	BRUCE FIELD	TX	LPV	0	100	0	100	0	100
E38	ALPINE-CASPARIS MUNICIPAL	TX	LP	0	100	0	100	0	100
EBG	SOUTH TEXAS INTL AT EDINBURG	TX	LPV	0	100	0	100	0	100
EDC	AUSTIN EXECUTIVE	TX	LPV200	0	100	0	100	0	100
EFD	ELLINGTON	TX	LPV200	0	100	0	100	0	100
ELA	EAGLE LAKE	TX	LP	0	100	0	100	0	100
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	0	100
F00	JONES FIELD	TX	LPV	0	100	0	100	0	100
F05	WILBARGER COUNTY	TX	LPV	0	100	0	100	0	100
F98	YOAKUM COUNTY	TX	LPV	0	100	0	100	0	100

Airport ID	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV200 Outages	LPV200 Avail
FST	FORT STOCKTON-PECOS COUNTY	TX	LPV	0	100	0	100	0	100
FTW	FORT WORTH MEACHAM INTL	TX	LPV200	0	100	0	100	0	100
FWS	FORT WORTH SPINKS	TX	LPV200	0	100	0	100	0	100
GDJ	GRANBURY RGNL	TX	LPV	0	100	0	100	0	100
GGG	EAST TEXAS RGNL	TX	LPV	0	100	0	100	0	100
GKY	ARLINGTON MUNICIPAL	TX	LPV200	0	100	0	100	0	100
GLE	GAINESVILLE MUNICIPAL	TX	LPV	0	100	0	100	0	100
GLS	SCHOLES INTL AT GALVESTON	TX	LPV200	0	100	0	100	0	100
GNC	GAINES COUNTY	TX	LPV	0	100	0	100	0	100
GRK	ROBERT GRAY AAF	TX	LPV200	0	100	0	100	0	100
GVT	MAJORS	TX	LPV200	0	100	0	100	0	100
GYI	NORTH TEXAS RGNL/PERRIN FIELD	TX	LPV200	0	100	0	100	0	100
HBV	JIM HOGG COUNTY	TX	LPV	0	100	0	100	0	100
HDO	SOUTH TEXAS RGNL AT HONDO	TX	LPV	0	100	0	100	0	100
HHF	HEMPHILL COUNTY	TX	LPV	0	100	0	100	0	100
HOU	WILLIAM P HOBBY	TX	LPV200	0	100	0	100	0	100
HQZ	MESQUITE METRO	TX	LPV	0	100	0	100	0	100
HRL	VALLEY INTL	TX	LPV200	0	100	0	100	0	100
HRX	HEREFORD MUNICIPAL	TX	LPV200	0	100	0	100	0	100
HYI	SAN MARCOS REGIONAL	TX	LPV200	0	100	0	100	0	100
IAH	GEORGE BUSH INTERCONTINENTAL/H	TX	LPV200	0	100	0	100	0	100
IKG	KLEBERG COUNTY	TX	LPV	0	100	0	100	0	100
INJ	HILLSBORO MUNICIPAL	TX	LPV	0	100	0	100	0	100
INK	WINKLER COUNTY	TX	LPV200	0	100	0	100	0	100
IWS	WEST HOUSTON	TX	LP	0	100	0	100	0	100
JAS	JASPER COUNTY-BELL FIELD	TX	LPV	0	100	0	100	0	100
JSO	CHEROKEE COUNTY	TX	LPV200	0	100	0	100	0	100
JWY	MID-WAY RGNL	TX	LPV200	0	100	0	100	0	100
JXI	FOX STEPHENS FIELD - GILMER MU	TX	LP	0	100	0	100	0	100
LBB	LUBBOCK PRESTON SMITH INTL	TX	LPV200	0	100	0	100	0	100
LBX	TEXAS GULF COAST RGNL	TX	LPV	0	100	0	100	0	100
LFK	ANGELINA COUNTY	TX	LPV	0	100	0	100	0	100
LHB	HEARNE MUNICIPAL	TX	LPV200	0	100	0	100	0	100
LIU	LITTLEFIELD TAYLOR BROWN MUNICIPAL	TX	LPV	0	100	0	100	0	100
LLN	LEVELLAND MUNICIPAL	TX	LPV	0	100	0	100	0	100

Airport ID	Airport Name	State/Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV200 Outages	LPV200 Avail
LNC	LANCASTER RGNL	TX	LPV200	0	100	0	100	0	100
LRD	LAREDO INTL	TX	LPV200	0	100	0	100	0	100
LUD	DECATUR MUNICIPAL	TX	LPV	0	100	0	100	0	100
LVJ	PEARLAND RGNL	TX	LPV	0	100	0	100	0	100
LXY	MEXIA-LIMESTONE CO	TX	LP	0	100	0	100	0	100
MAF	MIDLAND INTL	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	LPV	0	100	0	100	0	100
MKN	COMANCHE COUNTY-CITY	TX	LPV	0	100	0	100	0	100
MNZ	HAMILTON MUNICIPAL	TX	LPV	0	100	0	100	0	100
OCH	A L MANGHAM JR RGNL	TX	LPV200	0	100	0	100	0	100
ODO	ODESSA-SCHLEMEYER FIELD	TX	LPV200	0	100	0	100	0	100
ONY	OLNEY MUNICIPAL	TX	LPV	0	100	0	100	0	100
ORG	ORANGE COUNTY	TX	LPV	0	100	0	100	0	100
PEQ	PECOS MUNICIPAL	TX	LPV200	0	100	0	100	0	100
PIL	PORT ISABEL-CAMERON COUNTY	TX	LPV	0	100	0	100	0	100
PKV	CALHOUN COUNTY	TX	LPV	0	100	0	100	0	100
PPA	PERRY LEFORS FIELD	TX	LPV	0	100	0	100	0	100
PRX	COX FIELD	TX	LPV	0	100	0	100	0	100
PSX	PALACIOS MUNICIPAL	TX	LPV	0	100	0	100	0	100
PVW	HALE COUNTY	TX	LPV	0	100	0	100	0	100
PWG	MC GREGOR EXECUTIVE	TX	LPV	0	100	0	100	0	100
PYX	PERRYTON OCHILTREE COUNTY	TX	LPV	0	100	0	100	0	100
RAS	MUSTANG BEACH	TX	LPV	0	100	0	100	0	100
RBD	DALLAS EXECUTIVE	TX	LPV	0	100	0	100	0	100
RBO	NUECES COUNTY	TX	LP	0	100	0	100	0	100
RKP	ARANSAS CO	TX	LPV	0	100	0	100	0	100
RYW	LAGO VISTA TX - RUSTY ALLEN	TX	LP	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	0	100
SJT	SAN ANGELO RGNL/MATHIS FIELD	TX	LPV	0	100	0	100	0	100
SLR	SULPHUR SPRINGS MUNICIPAL	TX	LPV200	0	100	0	100	0	100
SNK	WINSTON FIELD	TX	LPV200	0	100	0	100	0	100
SWI	SHERMAN MUNICIPAL	TX	LP	0	100	0	100	0	100
SWW	AVENGER FIELD	TX	LPV	0	100	0	100	0	100
T23	ALBANY MUNICIPAL	TX	LPV	0	100	0	100	0	100
T41	LA PORTE MUNICIPAL	TX	LPV	0	100	0	100	0	100
T59	WHEELER MUNICIPAL	TX	LP	0	100	0	100	0	100

Airport ID	Airport Name	State/Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV200 Outages	LPV200 Avail
T74	TAYLOR MUNICIPAL	TX	LPV	0	100	0	100	0	100
T78	LIBERTY MUNICIPAL	TX	LP	0	100	0	100	0	100
T82	GILLESPIE COUNTY	TX	LPV	0	100	0	100	0	100
TDW	TRADEWIND	TX	LPV	0	100	0	100	0	100
TFP	MCCAMPBELL-PORTER	TX	LPV	0	100	0	100	0	100
TKI	MCKINNEY NATIONAL	TX	LPV200	0	100	0	100	0	100
TME	HOUSTON EXECUTIVE	TX	LPV	0	100	0	100	0	100
TPL	DRAUGHON-MILLER CENTRAL TEXAS	TX	LPV200	0	100	0	100	0	100
TRL	TERRELL MUNICIPAL	TX	LPV	0	100	0	100	0	100
TYR	TYLER POUNDS RGNL	TX	LPV200	0	100	0	100	0	100
UTS	HUNTSVILLE MUNICIPAL	TX	LPV	0	100	0	100	0	100
VCT	VICTORIA RGNL	TX	LPV200	0	100	0	100	0	100
XBP	BRIDGEPORT MUNICIPAL	TX	LPV	0	100	0	100	0	100
BCE	BRYCE CANYON	UT	LPV	0	100	0	100	0	100
BDG	BLANDING MUNICIPAL	UT	LPV	0	100	0	100	0	100
BMC	BRIGHAM CITY	UT	LP	0	100	0	100	0	100
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	1	99.9981
SLC	SALT LAKE CITY INTL	UT	LPV200	0	100	0	100	0	100
TVY	BOLINDER FIELD-TOOELE VALLEY	UT	LPV200	0	100	0	100	0	100
U14	NEPHI MUNICIPAL	UT	LPV	0	100	0	100	0	100
U55	PANGUITCH MUNICIPAL	UT	LPV200	0	100	0	100	0	100
VEL	VERNAL RGNL	UT	LP	0	100	0	100	0	100
0V4	BROOKNEAL/CAMPBELL COUNTY	VA	LPV	0	100	0	100	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

Airport ID	Airport Name	State/Province	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV200 Outages	LPV200 Avail
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	LPV200	0	100	0	100	0	100
FCI	RICHMOND EXECUTIVE-CHESTERFIEL	VA	LPV	0	100	0	100	0	100
FKN	FRANKLIN MUNICIPAL-JOHN BEVERLY ROS	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

Airport ID	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV200 Outages	LPV200 Avail
WAL	WALLOPS FLIGHT FACILITY	VA	LPV	0	100	0	100	1	99.9958
XSA	TAPPAHANNOCK-ESSEX COUNTY	VA	LPV	0	100	0	100	0	100
BTV	BURLINGTON INTL	VT	LPV200	0	100	0	100	1	99.9973
EFK	NEWPORT STATE	VT	LP	0	100	0	100	1	99.9977
FSO	FRANKLIN COUNTY STATE	VT	LPV	0	100	0	100	1	99.9985
MPV	EDWARD F KNAPP STATE	VT	LPV	0	100	0	100	1	99.9962
MVL	MORRISVILLE-STOWE STATE	VT	LP	0	100	0	100	1	99.9969
RUT	RUTLAND - SOUTHERN VERMONT RGN	VT	LPV	0	100	0	100	1	99.995
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	LPV	0	100	0	100	0	100
ORS	ORCAS ISLAND	WA	LP	0	100	0	100	0	100
PAE	SNOHOMISH COUNTY (PAINE FLD)	WA	LPV200	0	100	0	100	0	100
PLU	PIERCE COUNTY - THUN FIELD	WA	LPV	0	100	0	100	0	100
PSC	TRI-CITIES	WA	LPV200	0	100	0	100	0	100
PWT	BREMERTON NATIONAL	WA	LPV200	0	100	0	100	0	100
RLD	RICHLAND	WA	LPV	0	100	0	100	0	100
RNT	RENTON MUNICIPAL	WA	LPV	0	100	0	100	0	100
SEA	SEATTLE-TACOMA INTL	WA	LPV200	0	100	0	100	0	100
SFF	FELTS FIELD	WA	LPV	0	100	0	100	0	100
SHN	SANDERSON FIELD	WA	LPV	0	100	0	100	0	100
TDO	ED CARLSON MEMORIAL FIELD - SO	WA	LPV	0	100	0	100	0	100
TIW	TACOMA NARROWS	WA	LPV	0	100	0	100	0	100
YKM	YAKIMA AIR TERMINAL/MCALLISTER	WA	LPV200	0	100	0	100	0	100
3T3	BOYCEVILLE MUNICIPAL	WI	LPV	0	100	0	100	0	100
57C	EAST TROY MUNICIPAL	WI	LPV	0	100	0	100	0	100

Airport ID	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV200 Outages	LPV200 Avail
82C	MAUSTON-NEW LISBON UNION	WI	LP	0	100	0	100	0	100
8D1	NEW HOLSTEIN MUNICIPAL	WI	LPV	0	100	0	100	0	100
AHH	AMERY MUNICIPAL	WI	LP	0	100	0	100	0	100
AIG	LANGLADE COUNTY	WI	LPV	0	100	0	100	0	100
ARV	LAKELAND/NOBLE F LEE MEMORIAL	WI	LPV	0	100	0	100	0	100
ASX	JOHN F KENNEDY MEMORIAL	WI	LPV	0	100	0	100	0	100
ATW	APPLETON INTL	WI	LPV200	0	100	0	100	0	100
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
CLI	CLINTONVILLE MUNICIPAL	WI	LPV	0	100	0	100	0	100
CMY	SPARTA/FORT MC COY	WI	LPV	0	100	0	100	0	100
CWA	CENTRAL WISCONSIN	WI	LPV200	0	100	0	100	0	100
DLL	BARABOO WISCONSIN DELLS	WI	LPV	0	100	0	100	0	100
EAU	CHIPPEWA VALLEY RGNL	WI	LPV200	0	100	0	100	0	100
EGV	EAGLE RIVER UNION	WI	LPV	0	100	0	100	0	100
ENW	KENOSHA RGNL	WI	LPV200	0	100	0	100	0	100
ETB	WEST BEND MUNICIPAL	WI	LPV	0	100	0	100	0	100
EZS	SHAWANO MUNICIPAL	WI	LPV	0	100	0	100	0	100
FLD	FOND DU LAC COUNTY	WI	LPV	0	100	0	100	0	100
GRB	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

Airport ID	Airport Name	State/ Province	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV200 Outages	LPV200 Avail
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
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	JOHN H BATTEN	WI	LPV	0	100	0	100	0	100
RCX	RUSK COUNTY	WI	LPV	0	100	0	100	0	100
RHI	RHINELANDER-ONEIDA COUNTY	WI	LPV200	0	100	0	100	0	100
RNH	NEW RICHMOND RGNL	WI	LPV	0	100	0	100	0	100
RPD	RICE LAKE RGNL - CARL'S FIELD	WI	LPV	0	100	0	100	0	100
RRL	MERRILL MUNICIPAL	WI	LPV	0	100	0	100	0	100
SBM	SHEBOYGAN COUNTY MEMORIAL	WI	LPV200	0	100	0	100	0	100
STE	STEVENS POINT MUNICIPAL	WI	LPV200	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
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
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

Airport ID	Airport Name	State/ Province	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV200 Outages	LPV200 Avail
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
SXL	SUMMERSVILLE	WV	LP	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
W99	GRANT COUNTY	WV	LP	0	100	0	100	0	100
BYG	JOHNSON COUNTY	WY	LPV	0	100	0	100	0	100
COD	YELLOWSTONE RGNL	WY	LPV	0	100	0	100	0	100
CPR	CASPER/NATRONA COUNTY INTL	WY	LPV	0	100	0	100	0	100
CYS	CHEYENNE RGNL/JERRY OLSON FIEL	WY	LPV	0	100	0	100	0	100
DGW	CONVERSE COUNTY	WY	LPV200	0	100	0	100	0	100
ECS	MONDELL FIELD	WY	LPV	0	100	0	100	0	100
EMM	KEMMERER MUNICIPAL	WY	LPV	0	100	0	100	0	100
EVW	EVANSTON-UINTA COUNTY BURNS FI	WY	LPV	0	100	0	100	0	100
FBR	FORT BRIDGER	WY	LP	0	100	0	100	0	100
GCC	GILLETTE-CAMPBELL COUNTY	WY	LPV	0	100	0	100	0	100
GEY	SOUTH BIG HORN COUNTY	WY	LP	0	100	0	100	0	100
GUR	CAMP GUERNSEY	WY	LP	0	100	0	100	0	100
JAC	JACKSON HOLE	WY	LPV200	0	100	0	100	0	100
LAR	LARAMIE RGNL	WY	LPV	0	100	0	100	0	100
PNA	RALPH WENZ FIELD	WY	LPV	0	100	0	100	0	100
POY	POWELL MUNICIPAL	WY	LPV	0	100	0	100	0	100
RIW	RIVERTON RGNL	WY	LPV200	0	100	0	100	0	100
RKS	ROCK SPRINGS-SWEETWATER COUNTY	WY	LPV200	0	100	0	100	0	100
RWL	RAWLINS MUNICIPAL/HARVEY FIELD	WY	LPV	0	100	0	100	0	100
SAA	SHIVELY FIELD	WY	LPV	0	100	0	100	0	100
SHR	SHERIDAN COUNTY	WY	LPV	0	100	0	100	0	100
U68	NORTH BIG HORN COUNTY	WY	LPV	0	100	0	100	0	100
WRL	WORLAND MUNICIPAL	WY	LPV	0	100	0	100	0	100
CYQH	WATSON LAKE	YT	LPV	0	100	0	100	1	99.9989
CYXY	WHITEHORSE / ERIK NIELSEN INTL	YT	LPV	0	100	0	100	0	100

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

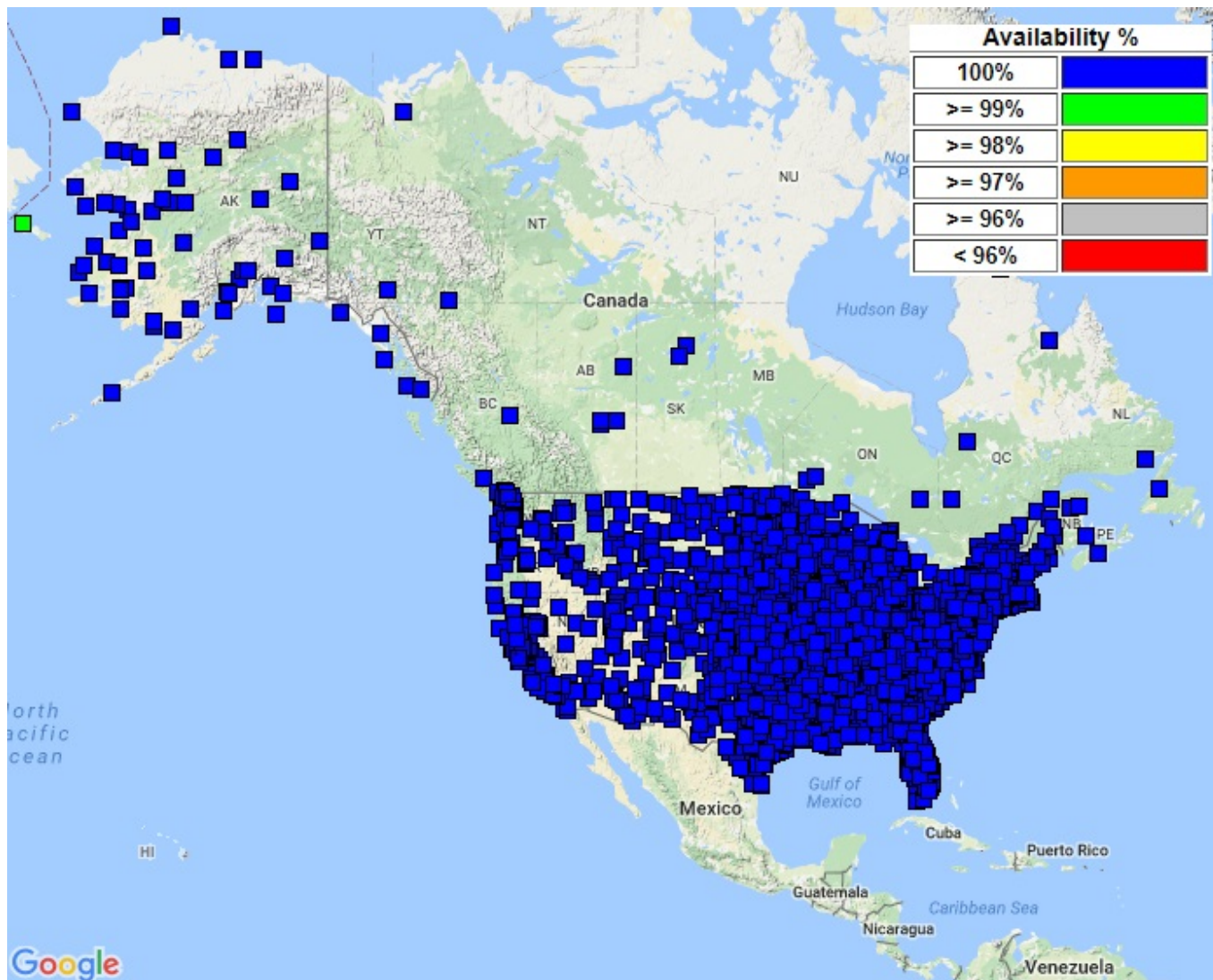


Figure 8-2 WAAS LP Outages at Airports in the US and Canada With GPS RNAV IAPs

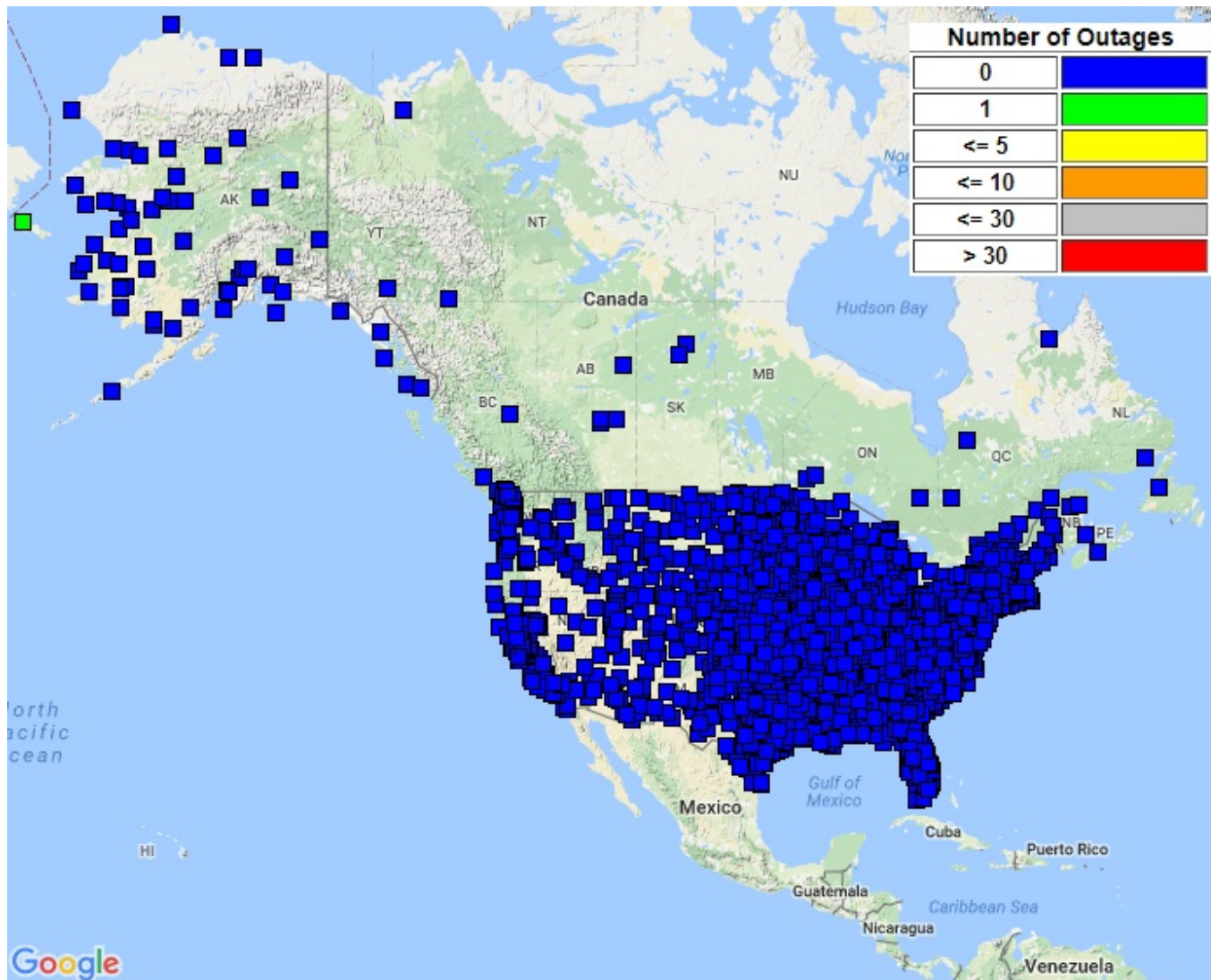


Figure 8-3 WAAS LPV Availability Airports in the US and Canada With GPS RNAV IAPs

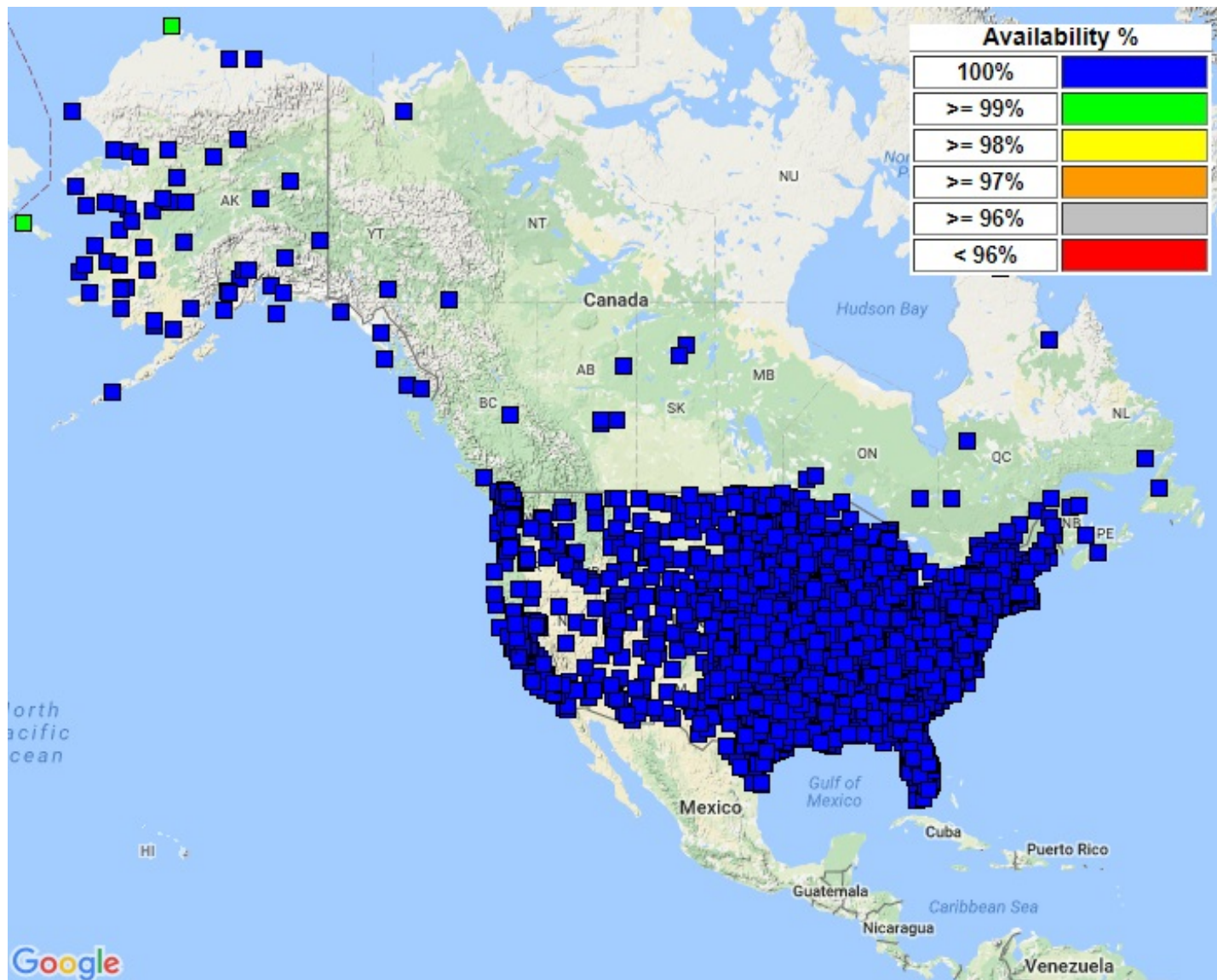


Figure 8-4 WAAS LPV Outages at Airports in the US and Canada With GPS RNAV IAPs

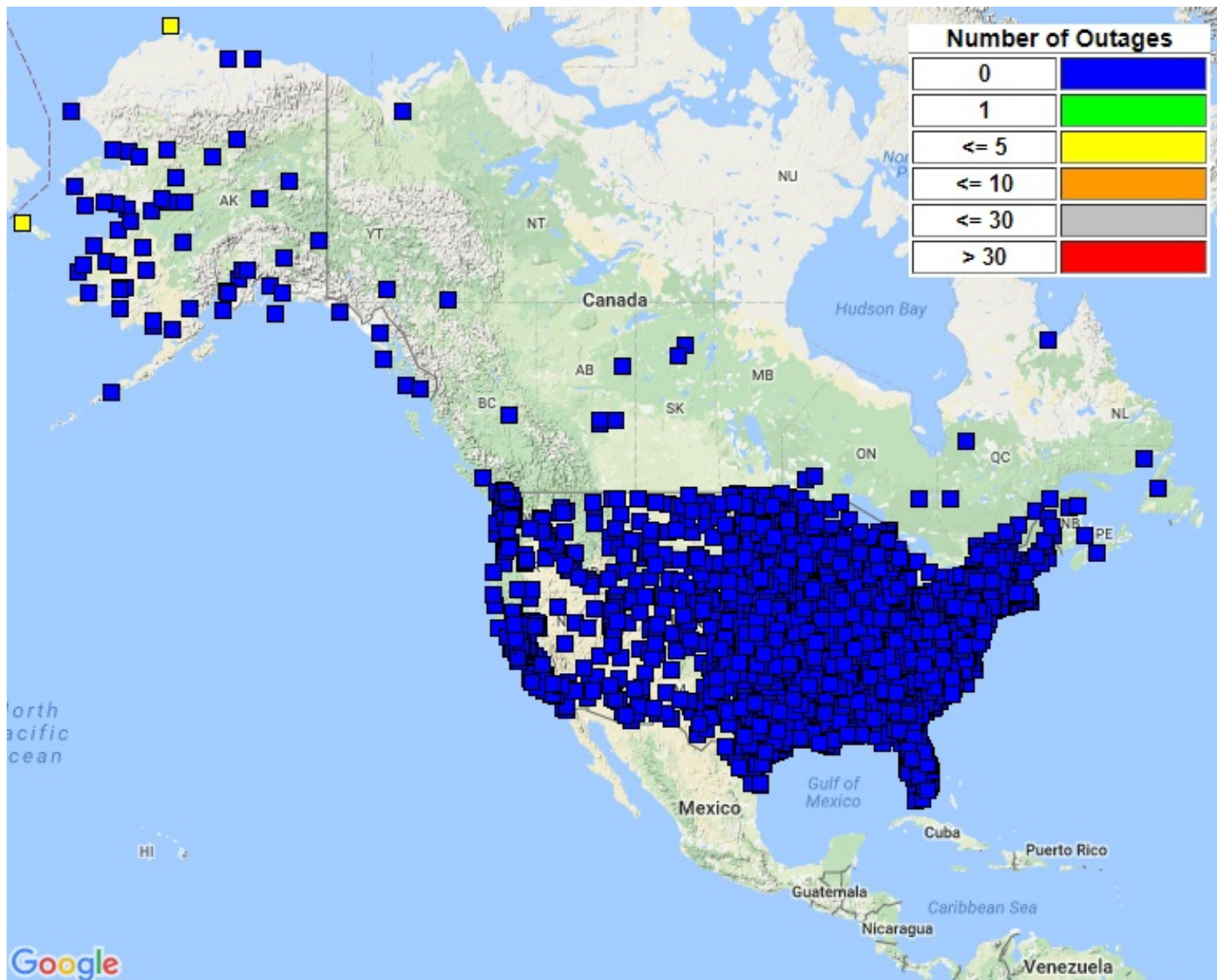


Figure 8-5 WAAS LPV Outages at Airports in the US and Canada With GPS RNAV IAPs

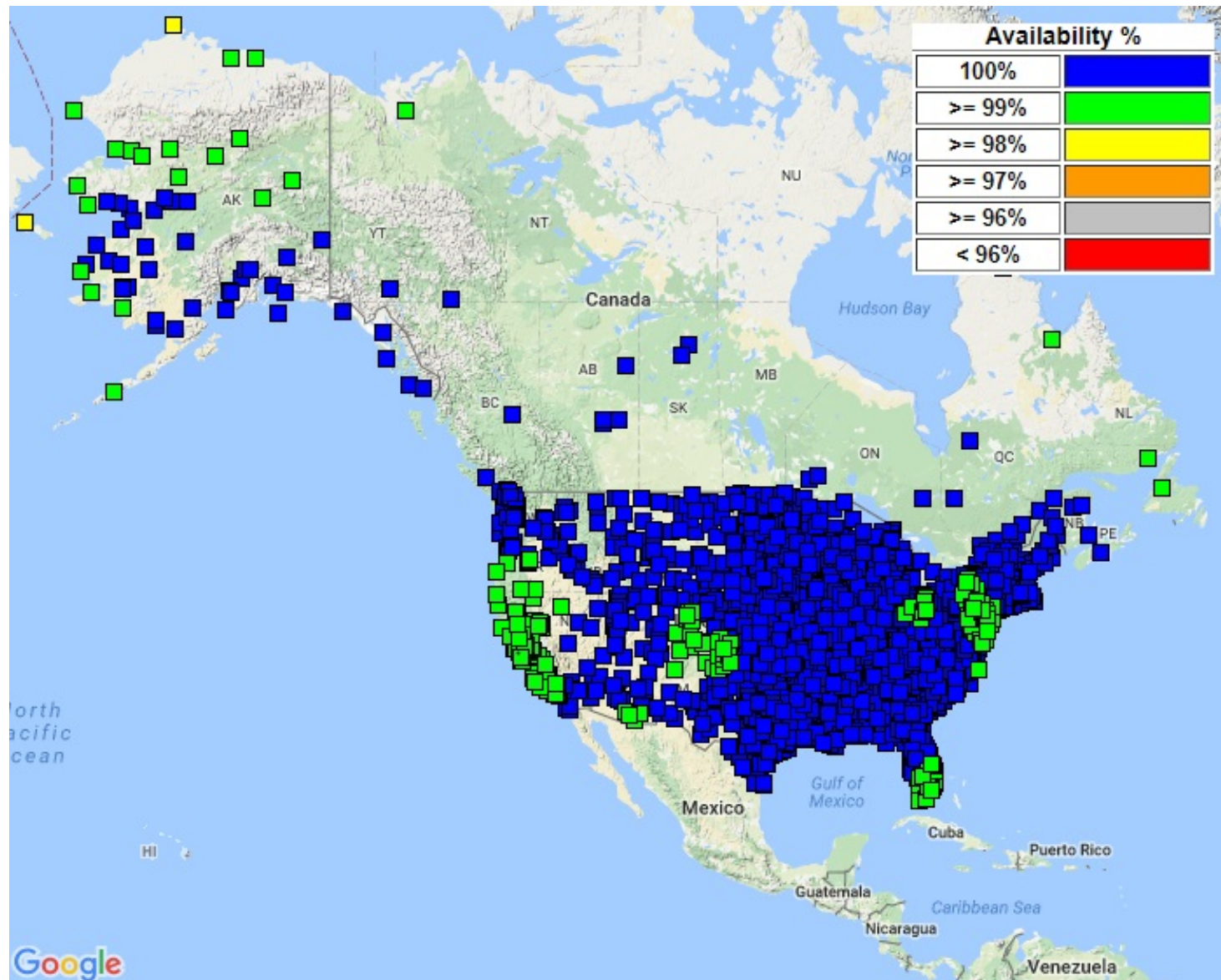
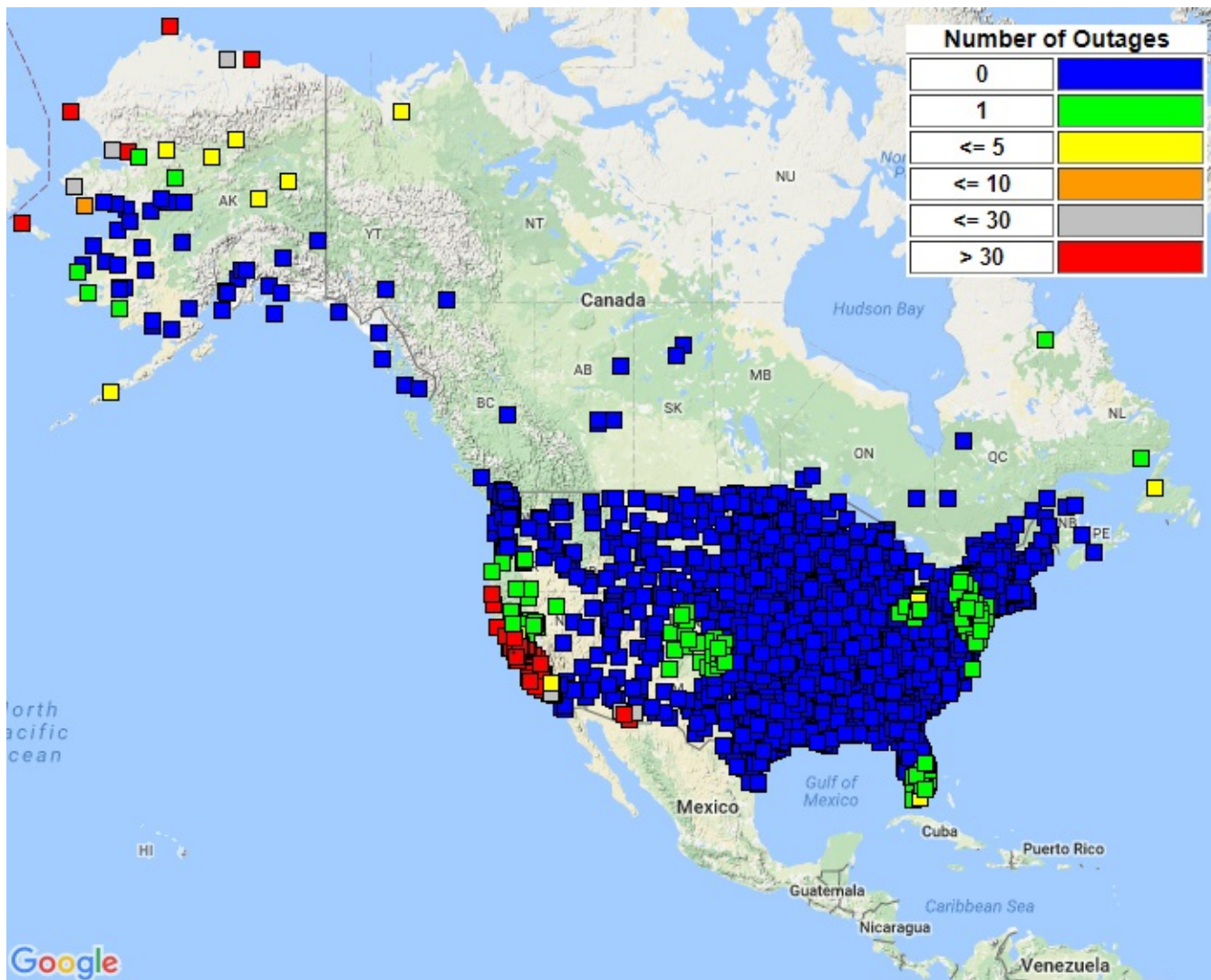


Figure 8-6 WAAS LPV200 Outages at Airports in the US and Canada With GPS RNAV IAPs



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. Table 9-1 shows the analysis results for the previous 12 months for all three threads of WRE at each WAAS reference station. The color coding represents four levels of performance based on the magnitude and probability distribution of the residual error and the bounding performance of the CNMP algorithm.

Table 9-1 CNMP Bounding Statistics

WAAS Site	WRE	Jul 16	Aug 16	Sep 16	Oct 16	Nov 16	Dec 16	Jan 17	Feb 17	Mar 17	Apr 17	May 17	Jun 17
Albuquerque	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Anchorage	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Atlanta	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Barrow	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Bethel	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Billings	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Boston	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Chicago	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Cleveland	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Cold Bay	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Dallas	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Denver	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Fairbanks	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Gander	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Goose Bay	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Honolulu	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Houston	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Iqaluit	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●

Jacksonville	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•

WAAS Site	WRE	Jul 16	Aug 16	Sep 16	Oct 16	Nov 16	Dec 16	Jan 17	Feb 17	Mar 17	Apr 17	May 17	Jun 17
Juneau	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Kansas City	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Kotzebue	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Los Angeles	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Memphis	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Merida	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Mexico City	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Miami	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Minneapolis	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
New York	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Oakland	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Puerto Vallarta	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Salt Lake City	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
San Jose Del Cabo	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
San Juan	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Seattle	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•
	C	•	•	•	•	•	•	•	•	•	•	•	•
Tapachula	A	•	•	•	•	•	•	•	•	•	•	•	•
	B	•	•	•	•	•	•	•	•	•	•	•	•

	C	●	●	●	●	●	●	●	●	●	●	●	●
Washington, DC	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Winnipeg	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●

- **Excellent** - 3.29σ 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
- No data available

10.0 WRS ANTENNA SURVEY VALIDATION

Antenna L1 phase center position surveys were performed for all the WAAS Reference Station antennas, with the exception of Denver Thread C (ZDV3), using 24 hour sets on 07/01/17. Each WAAS WRS has three independent threads of WRE: (1) Thread A is also referred to as Thread 1, (2) Thread B is also referred to as Thread 2, and (3) Thread C is referred to as Thread 3.

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

The OPUS-reported RMS quality metrics were 2.4 cm or less. The CSRS surveys' RSSs of the reported ECEF sigmas were 10 mm or less. The OPUS and CSRS surveys agreed to an average of 1.9 cm with a standard deviation of 8.7mm. The maximum of difference was 4.34 cm for Houston Thread C (ZHU3).

The OPUS positions were compared to the positions in the currently fielded WAAS software Build WE7.164c, which was fielded starting in September 2016. The OPUS surveys agree with the Build WE7.164c to better or equal to 2.1 cm for most sites. Outliers include Fairbanks, which had antennas remounted after undergoing roof repairs, saw a maximum difference of 8.6 cm on Thread C (FAI3), and Mexico City, due to rapid subsidence, saw a maximum difference of 6.5 cm on Thread C. Removing outliers, the maximum difference was 5.40 cm at Jacksonville Thread C (ZJX3). 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	-161.842	52.183
BET2	-2965386	-972580	5543892	60.7879	-161.842	52.184
BET3	-2965388	-972577	5543891	60.78788	-161.842	52.183
BIL1	-1416446	-4223577	4550862	45.80371	-108.54	1112.239
BIL2	-1416450	-4223575	4550863	45.80372	-108.54	1112.252
BIL3	-1416442	-4223574	4550866	45.80376	-108.54	1112.239
BRW1	-1886759	-809059	6018494	71.28276	-156.79	15.57
BRW2	-1886756	-809056	6018496	71.2828	-156.79	15.575
BRW3	-1886755	-809060	6018495	71.28279	-156.79	15.565
CDB1	-3484099	-1084749	5213679	55.19237	-162.706	49.695
CDB2	-3484106	-1084742	5213676	55.19233	-162.707	49.668
CDB3	-3484112	-1084735	5213673	55.19228	-162.707	49.686
FAI1	-2304742	-1448715	5748844	64.80963	-147.847	150.002
FAI2	-2304741	-1448707	5748846	64.80968	-147.847	150.009
FAI3	-2304733	-1448707	5748849	64.80975	-147.847	150.009
HNL1	-5508637	-2234493	2303722	21.31299	-157.921	24.666
HNL2	-5508656	-2234483	2303687	21.31265	-157.921	25.03
HNL3	-5508648	-2234497	2303694	21.31272	-157.921	25.067
JNU1	-2354255	-2388550	5407043	58.36257	-134.586	16.166
JNU2	-2354253	-2388566	5407037	58.36247	-134.585	16.165
JNU3	-2354240	-2388569	5407041	58.36255	-134.585	16.164
MMD1	35070.4	-5959687	2264366	20.93191	-89.6628	29.131
MMD2	35065.47	-5959687	2264365	20.9319	-89.6629	29.167
MMD3	35065.13	-5959685	2264370	20.93195	-89.6629	29.152
MMX1	-948701	-5943934	2109212	19.43165	-99.0684	2234.219
MMX2	-948696	-5943934	2109215	19.43168	-99.0683	2234.204
MMX3	-948705	-5943934	2109210	19.43163	-99.0684	2234.242
MPR1	-1570142	-5759531	2238185	20.679	-105.249	10.961
MPR2	-1570139	-5759530	2238189	20.67904	-105.249	11.26
MPR3	-1570144	-5759528	2238191	20.67906	-105.249	10.974
MSD1	-1979520	-5523223	2493107	23.16045	-109.718	104.281
MSD2	-1979522	-5523225	2493100	23.16039	-109.718	104.253
MSD3	-1979526	-5523222	2493104	23.16042	-109.718	104.263
MTP1	-254854	-6162909	1617805	14.79137	-92.368	54.937
MTP2	-254851	-6162910	1617802	14.79133	-92.368	54.906
MTP3	-254856	-6162910	1617800	14.79132	-92.368	54.803
OTZ1	-2396056	-750356	5843502	66.88733	-162.611	10.886
OTZ2	-2396053	-750354	5843504	66.88737	-162.611	10.873
OTZ3	-2396053	-750358	5843504	66.88735	-162.611	10.886

WRE	X(m)	Y(m)	Z(m)	Latitude	Longitude	H(m)
YFB1	1035381	-2634290	5696540	63.73149	-68.5432	10.061
YFB2	1035372	-2634296	5696538	63.73146	-68.5434	9.99
YFB3	1035366	-2634307	5696534	63.73139	-68.5436	10.053
YQX1	2430425	-3419640	4788224	48.96649	-54.5976	146.878
YQX2	2430433	-3419639	4788221	48.96645	-54.5975	146.858
YQX3	2430440	-3419638	4788218	48.96641	-54.5974	146.89
YWG1	-520164	-4083476	4855843	49.90057	-97.2594	222.11
YWG2	-520151	-4083469	4855850	49.90068	-97.2592	222.123
YWG3	-520152	-4083478	4855843	49.90057	-97.2592	222.12
YYR1	1885341	-3321428	5091172	53.30865	-60.4195	37.851
YYR2	1885344	-3321420	5091176	53.30871	-60.4194	37.865
YYR3	1885340	-3321413	5091182	53.3088	-60.4194	37.879
ZAB1	-1488637	-5003947	3654558	35.17358	-106.567	1620.124
ZAB2	-1488632	-5003948	3654558	35.17357	-106.567	1620.18
ZAB3	-1488632	-5003951	3654554	35.17353	-106.567	1620.17
ZAN1	-2659537	-1549115	5567751	61.2292	-149.78	80.698
ZAN2	-2659548	-1549111	5567746	61.22912	-149.78	80.702
ZAN3	-2659541	-1549107	5567751	61.2292	-149.78	80.692
ZAU1	138704.1	-4761244	4227764	41.78266	-88.3313	195.888
ZAU2	138704.3	-4761249	4227759	41.7826	-88.3313	195.893
ZAU3	138711	-4761248	4227759	41.7826	-88.3313	195.896
ZBW1	1490299	-4448983	4306011	42.73572	-71.4804	39.105
ZBW2	1490304	-4448981	4306011	42.73572	-71.4804	39.149
ZBW3	1490306	-4448985	4306007	42.73567	-71.4804	39.137
ZDC1	1069126	-4839599	4001127	39.1016	-77.5427	80.068
ZDC2	1069128	-4839604	4001120	39.10152	-77.5427	80.058
ZDC3	1069124	-4839603	4001123	39.10155	-77.5428	80.071
ZDV1	-1273629	-4711376	4094890	40.1873	-105.127	1541.354
ZDV2	-1273623	-4711377	4094890	40.1873	-105.127	1541.341
ZDV3	0	0	0	0	0	0
ZFW1	-659983	-5324061	3438276	32.83065	-97.0665	155.603
ZFW2	-659989	-5324063	3438271	32.8306	-97.0665	155.577
ZFW3	-659984	-5324064	3438272	32.8306	-97.0665	155.617
ZHU1	-513865	-5506452	3166720	29.9619	-95.3314	10.84
ZHU2	-513867	-5506455	3166714	29.96183	-95.3315	10.903
ZHU3	-513873	-5506458	3166709	29.96177	-95.3315	10.9
ZJX1	772646.4	-5434462	3237232	30.69886	-81.9082	2.115
ZJX2	772649.7	-5434464	3237228	30.69882	-81.9082	2.116
ZJX3	772645.7	-5434466	3237225	30.69879	-81.9082	2.099
ZKC1	-415248	-4954556	3982161	38.88016	-94.7908	305.897

WRE	X(m)	Y(m)	Z(m)	Latitude	Longitude	H(m)
ZKC2	-415231	-4954558	3982161	38.88016	-94.7906	305.889
ZKC3	-415237	-4954561	3982156	38.8801	-94.7907	305.631
ZLA1	-2474410	-4637295	3602184	34.60352	-118.084	763.505
ZLA2	-2474405	-4637297	3602184	34.60352	-118.084	763.506
ZLA3	-2474411	-4637297	3602180	34.60347	-118.084	763.567
ZLC1	-1808273	-4486411	4145303	40.78604	-111.952	1287.429
ZLC2	-1808275	-4486414	4145299	40.78599	-111.952	1287.438
ZLC3	-1808270	-4486416	4145299	40.78599	-111.952	1287.434
ZMA1	966042.3	-5663000	2761582	25.82461	-80.3192	-7.588
ZMA2	966029.3	-5662999	2761586	25.82466	-80.3193	-8.228
ZMA3	966037.4	-5662998	2761586	25.82466	-80.3192	-7.883
ZME1	4070.841	-5226189	3644028	35.06739	-89.9554	68.604
ZME2	4070.868	-5226187	3644033	35.06744	-89.9554	68.879
ZME3	4064.676	-5226187	3644033	35.06744	-89.9554	68.861
ZMP1	-249978	-4539298	4458955	44.63746	-93.1521	262.662
ZMP2	-249973	-4539298	4458955	44.63746	-93.152	262.681
ZMP3	-249974	-4539302	4458951	44.63741	-93.152	262.616
ZNY1	1406145	-4627344	4144322	40.78433	-73.0972	6.445
ZNY2	1406146	-4627347	4144317	40.78428	-73.0972	5.913
ZNY3	1406141	-4627349	4144317	40.78428	-73.0972	5.912
ZOA1	-2684437	-4293337	3865352	37.54305	-122.016	-3.502
ZOA2	-2684434	-4293341	3865349	37.54303	-122.016	-3.503
ZOA3	-2684438	-4293342	3865346	37.54298	-122.016	-3.431
ZOB1	650770.1	-4754716	4187421	41.29715	-82.2064	223.67
ZOB2	650777.8	-4754715	4187423	41.29717	-82.2064	225.181
ZOB3	650776.1	-4754720	4187415	41.29709	-82.2064	223.458
ZSE1	-2308930	-3668170	4663526	47.28699	-122.188	82.098
ZSE2	-2308935	-3668175	4663520	47.28691	-122.188	82.171
ZSE3	-2308936	-3668179	4663516	47.28686	-122.188	82.107
ZSU1	2462589	-5529372	2003725	18.43134	-65.9935	-28.092
ZSU2	2462588	-5529377	2003712	18.43122	-65.9935	-28.067
ZSU3	2462594	-5529375	2003710	18.4312	-65.9934	-28.127
ZTL1	529840.3	-5305249	3489343	33.37969	-84.2967	261.141
ZTL2	529846.7	-5305248	3489343	33.37969	-84.2967	261.123
ZTL3	529847.4	-5305251	3489338	33.37964	-84.2967	261.158

Figure 10-1 through Figure 10-3 show the RSS of the ECEF differences between the OPUS survey antenna phase center locations and the locations in the Build WE7.164c software. Figure 10-4 through Figure 10-6 shows the OPUS surveys overall RMS quality indications.

Figure 10-1 Build WE7.164c Antenna Positions Deltas OPUS Survey

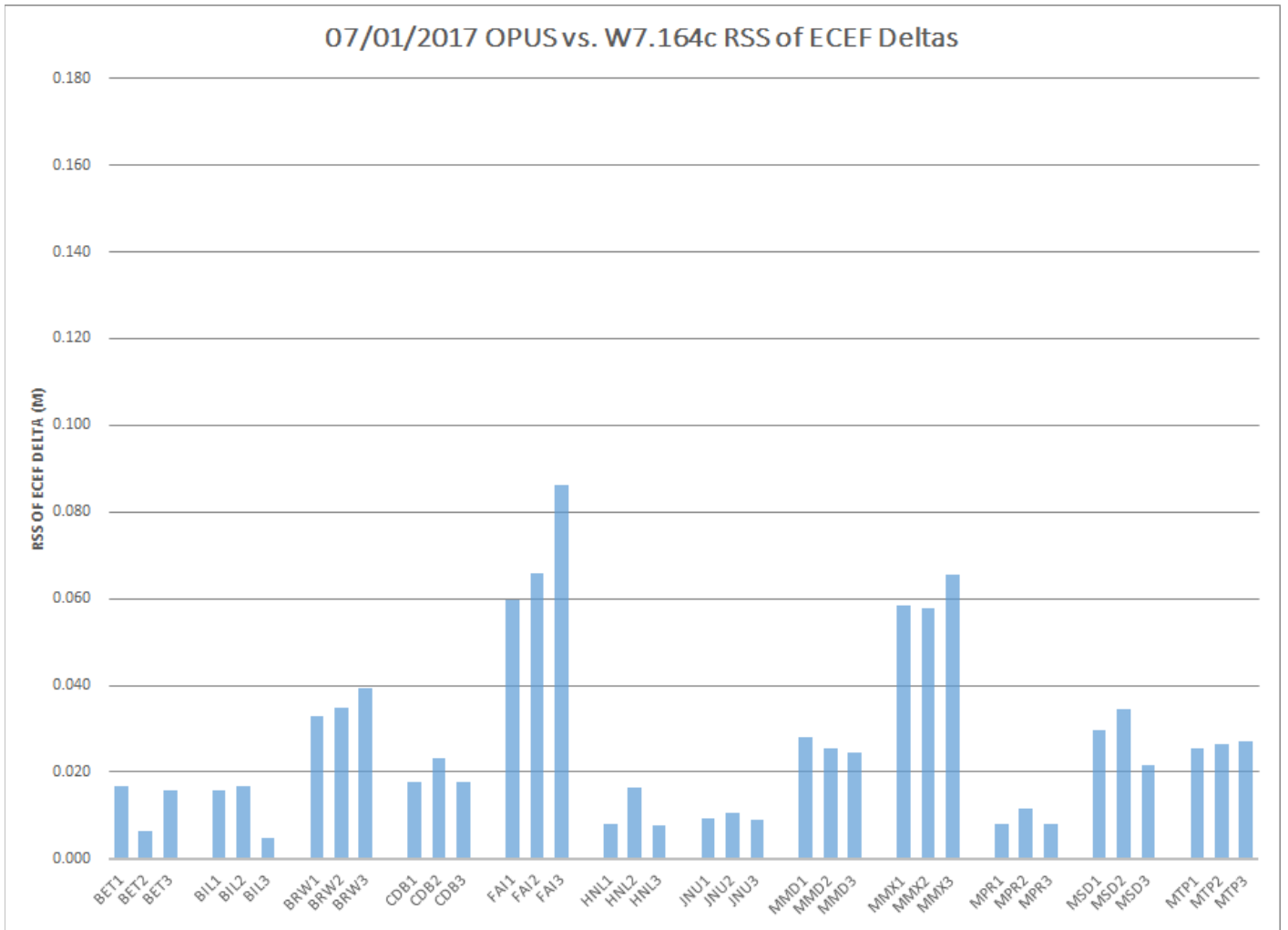


Figure 10-2 Build WE7.164c Antenna Positions Deltas OPUS Survey

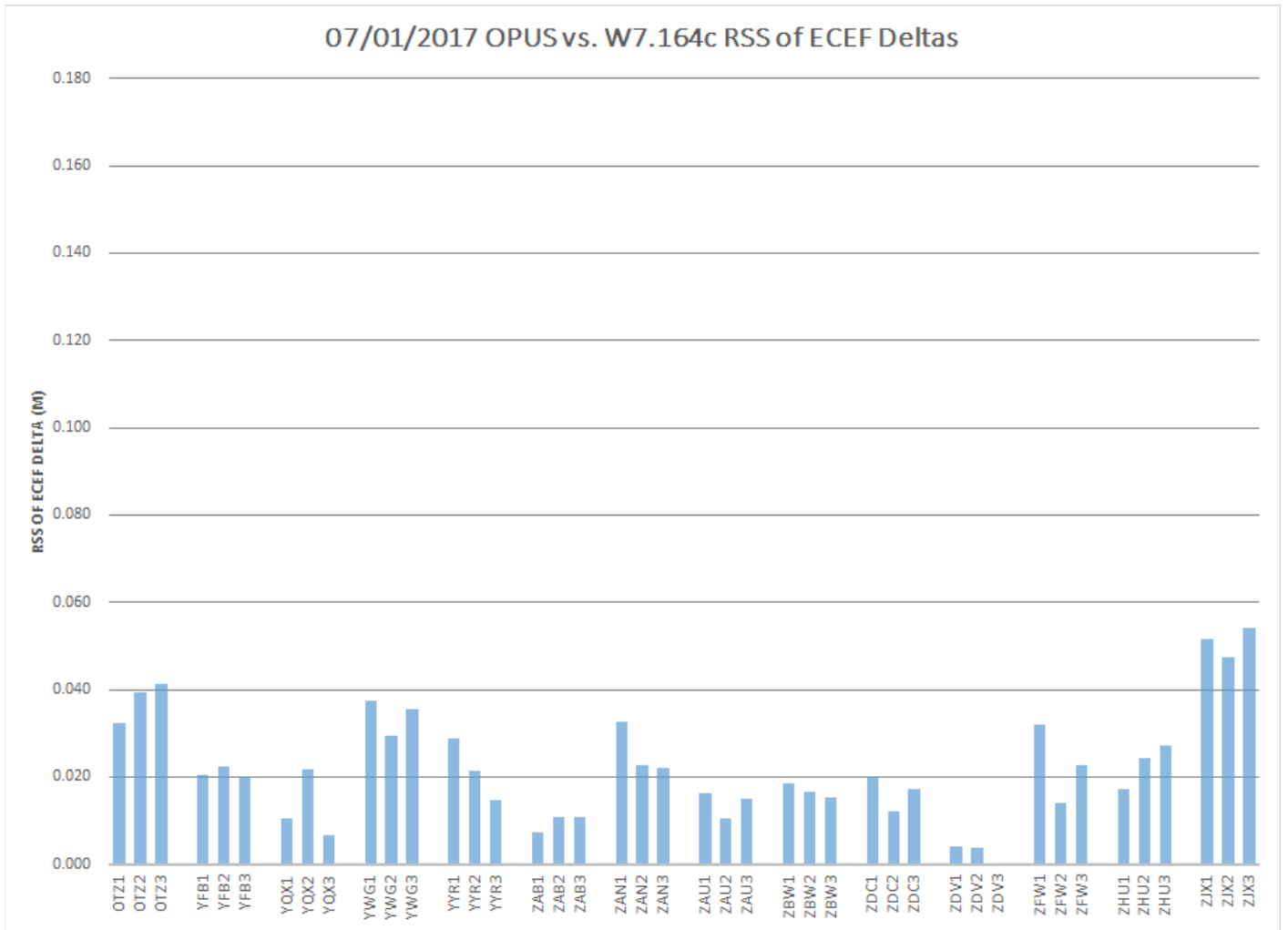


Figure 10-3 Build WE7.164c Antenna Positions Deltas OPUS Survey

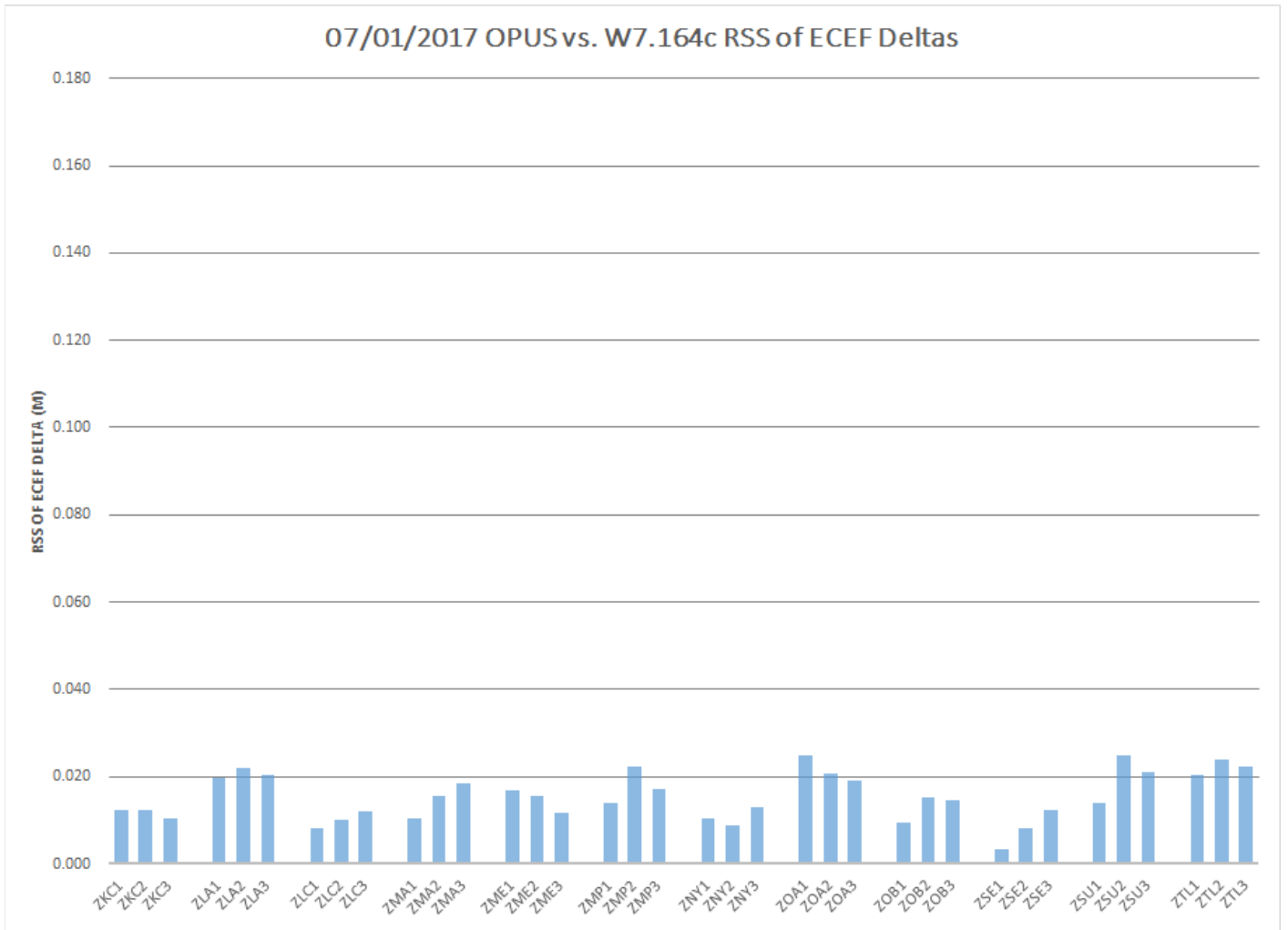


Figure 10-4 OPUS Survey Overall RMS Qualities

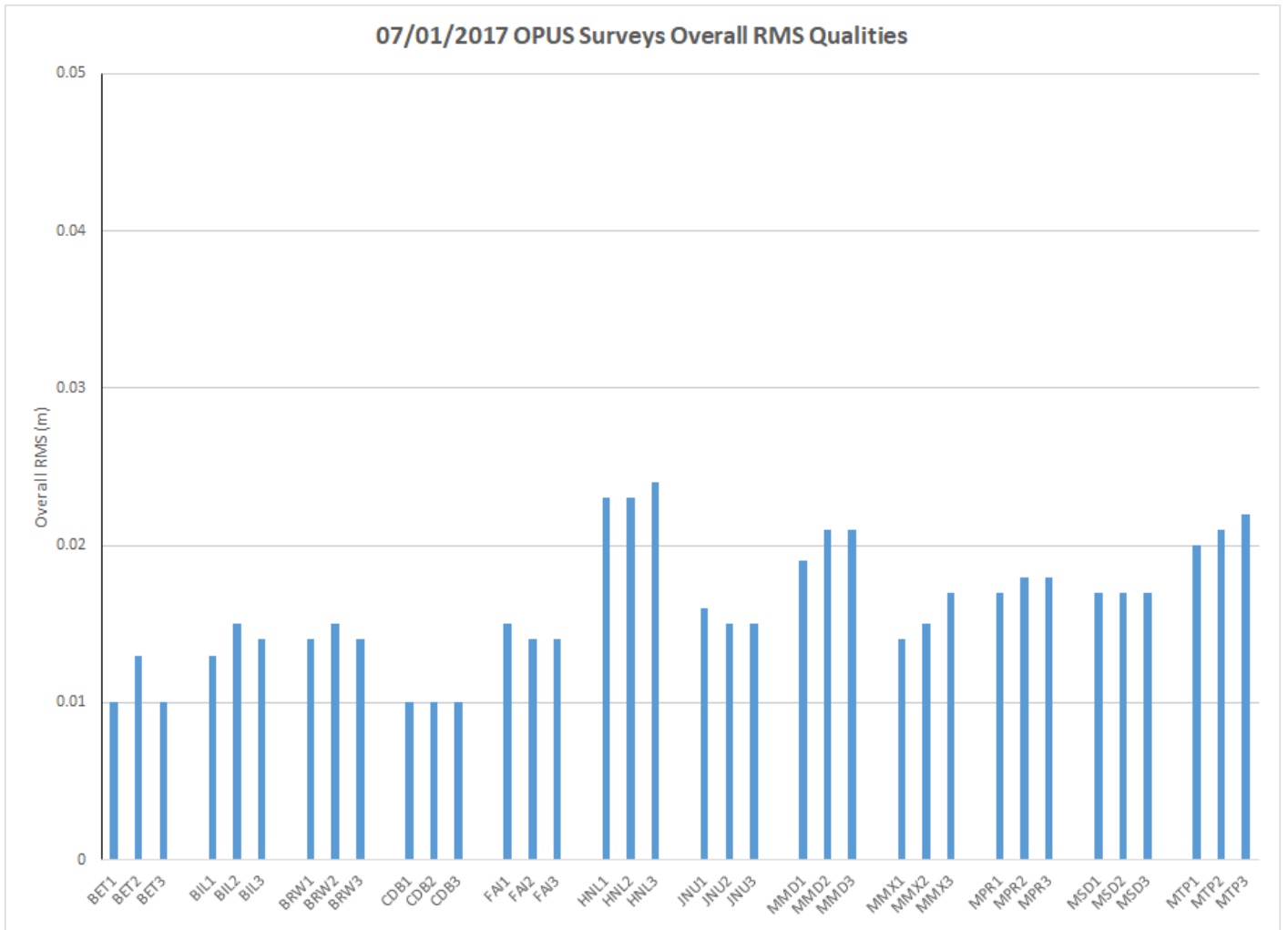


Figure 10-5 OPUS Survey Overall RMS Qualities

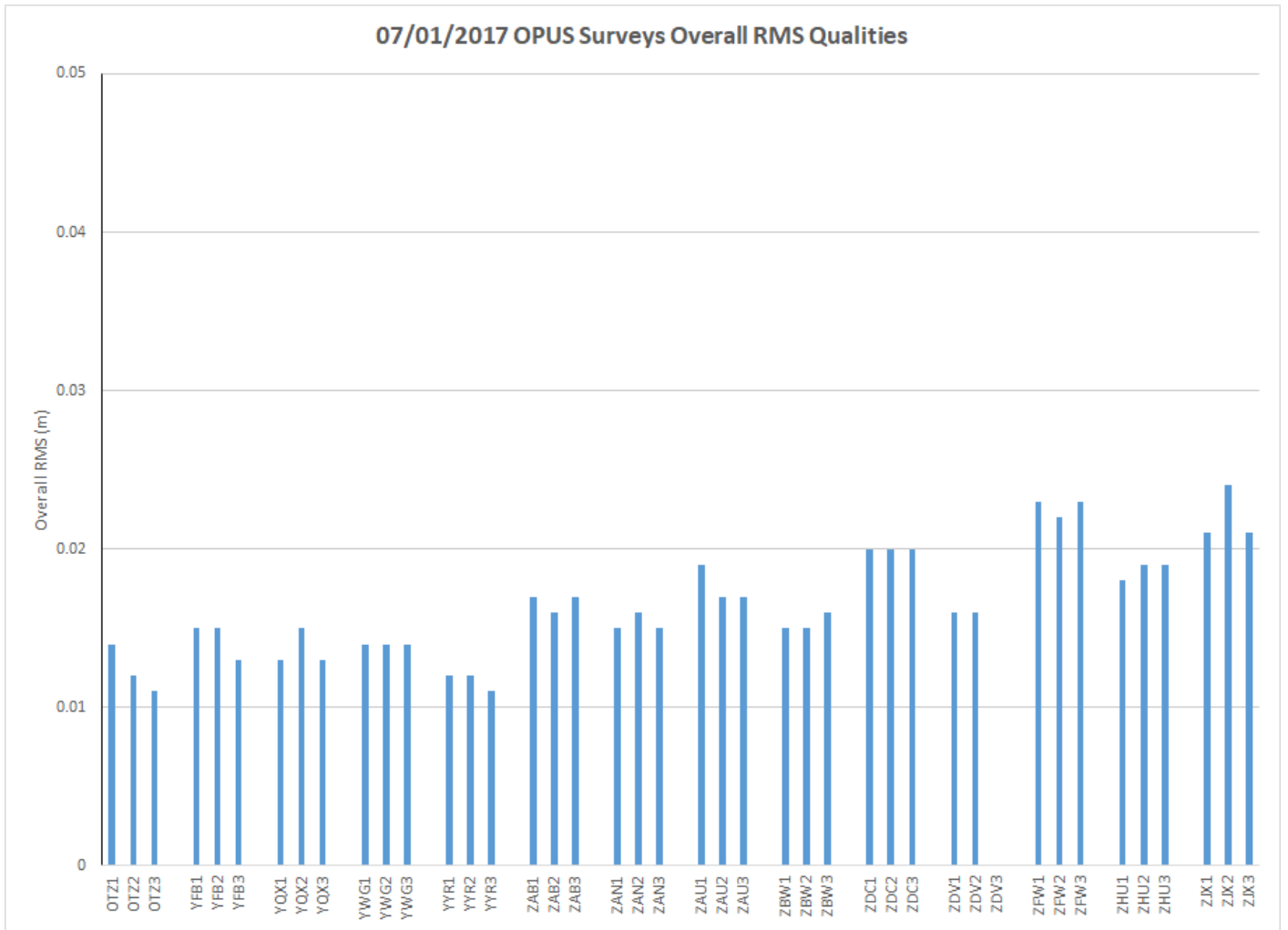
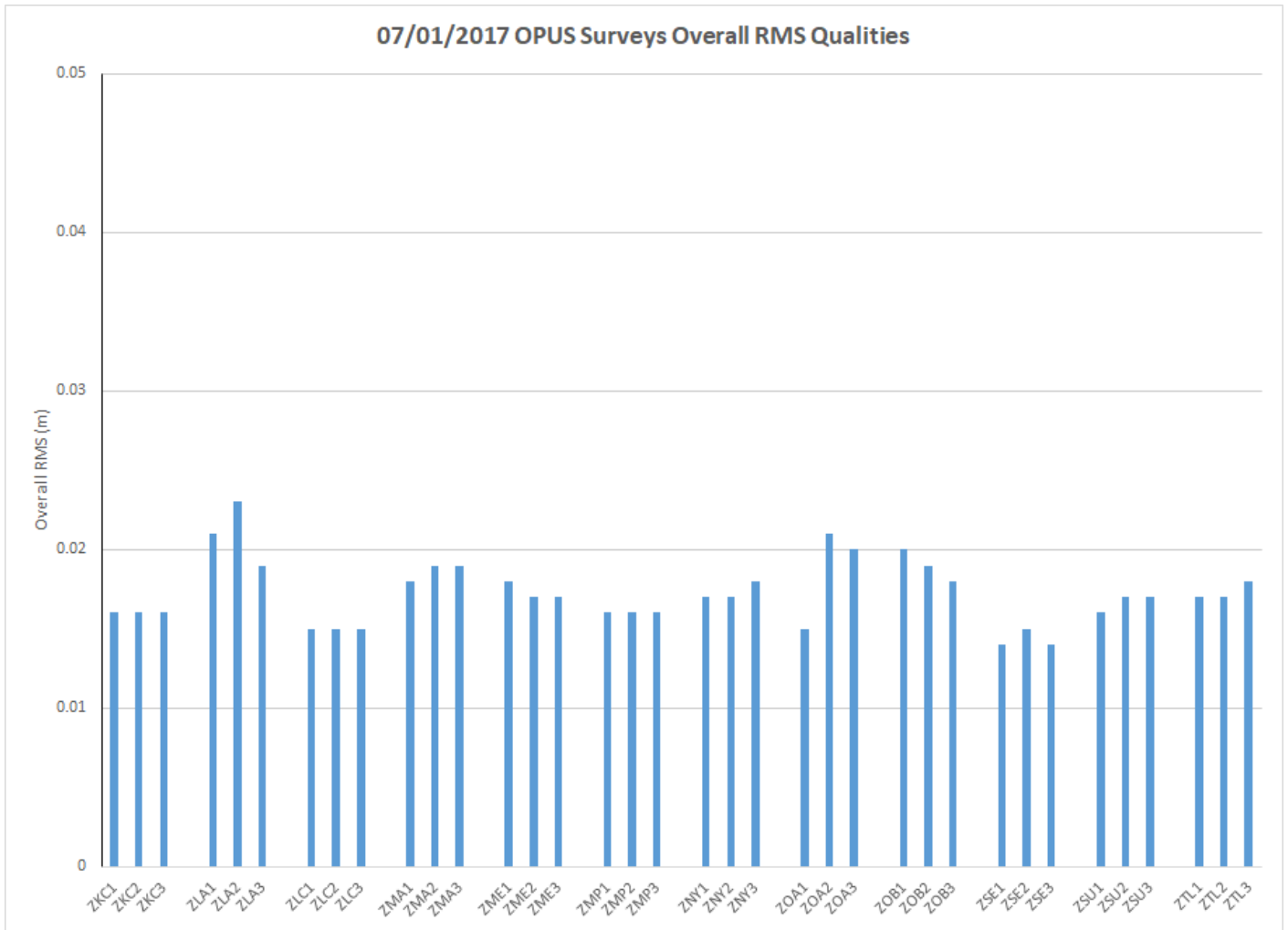


Figure 10-6 OPUS Survey Overall RMS Qualities



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

Figure 10-7 through Figure 10-9 show the RSS of the ECEF difference between the OPUS positions and the CSRS positions. Note that the OPUS positions are in IGS08 and the CSRS positions are in ITRF-2008.

Figure 10-7 OPUS vs. CSRS RSS ECEF Deltas

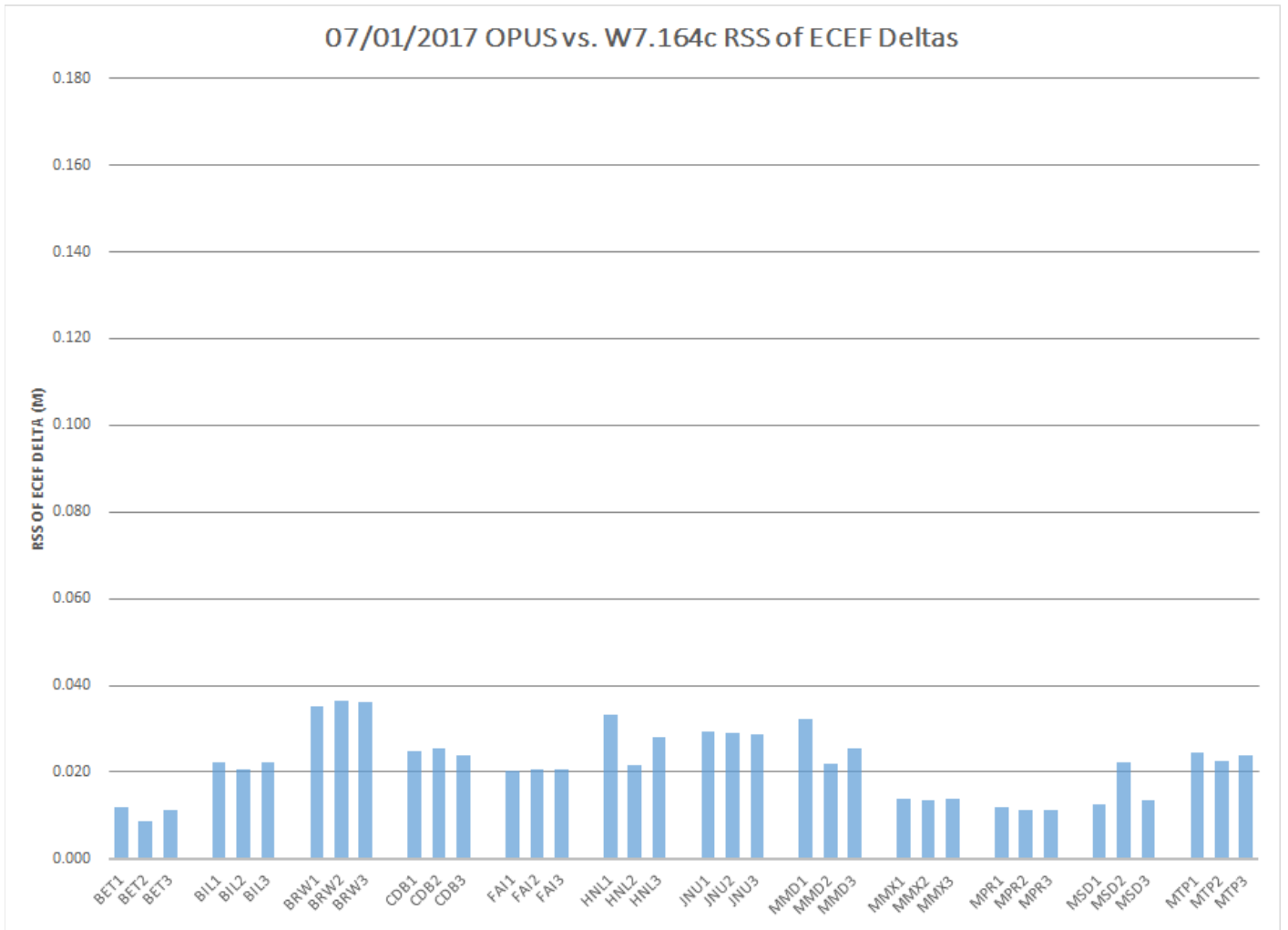


Figure 10-8 OPUS vs. CSRS RSS ECEF Deltas

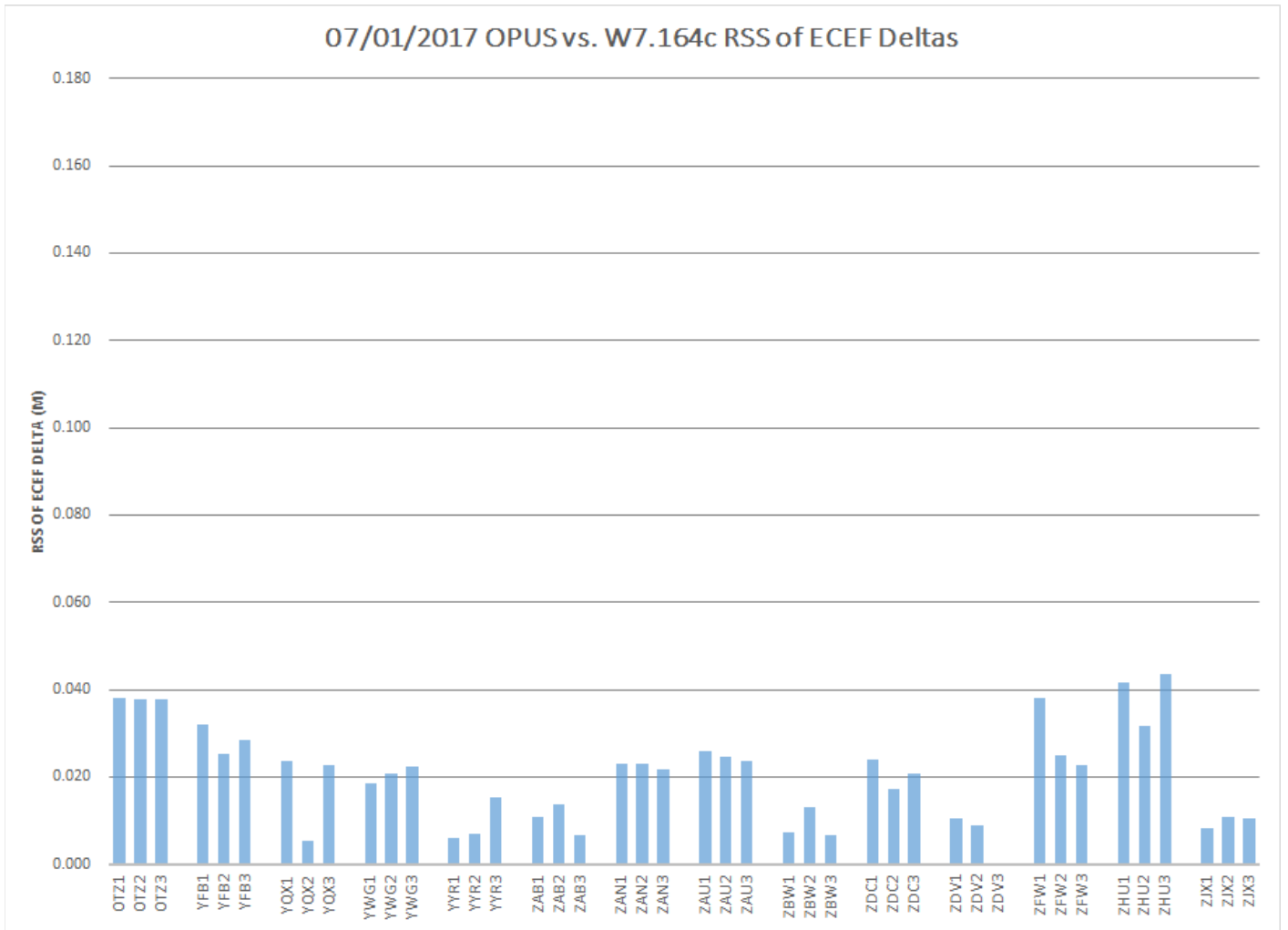


Figure 10-9 OPUS vs. CSRS RSS ECEF Deltas

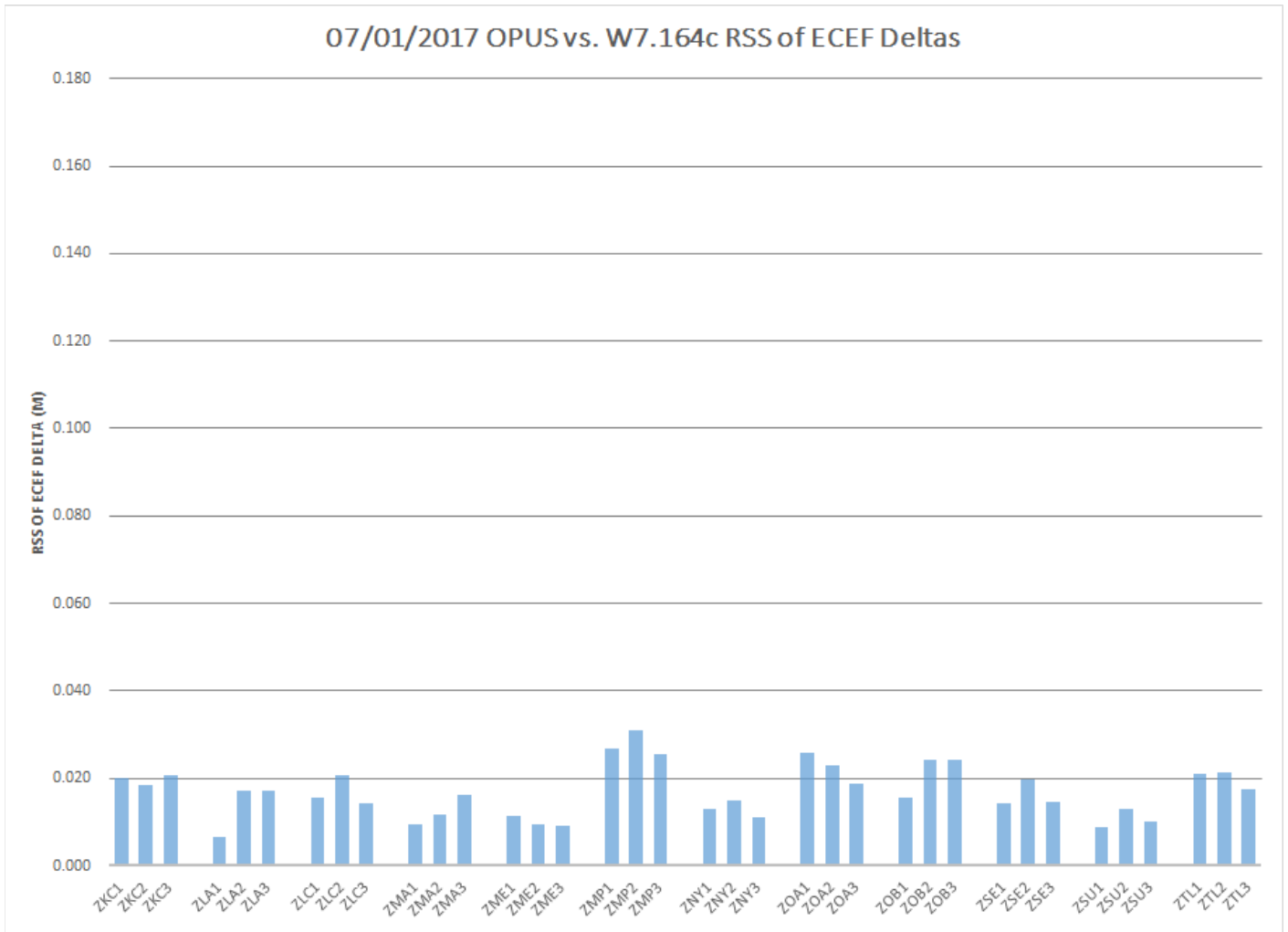


Figure 10-10 through Figure 10-12 show the RSS of the ECEF sigma's survey qualities reported by CSRS.

Figure 10-10 CSRS Survey Qualities

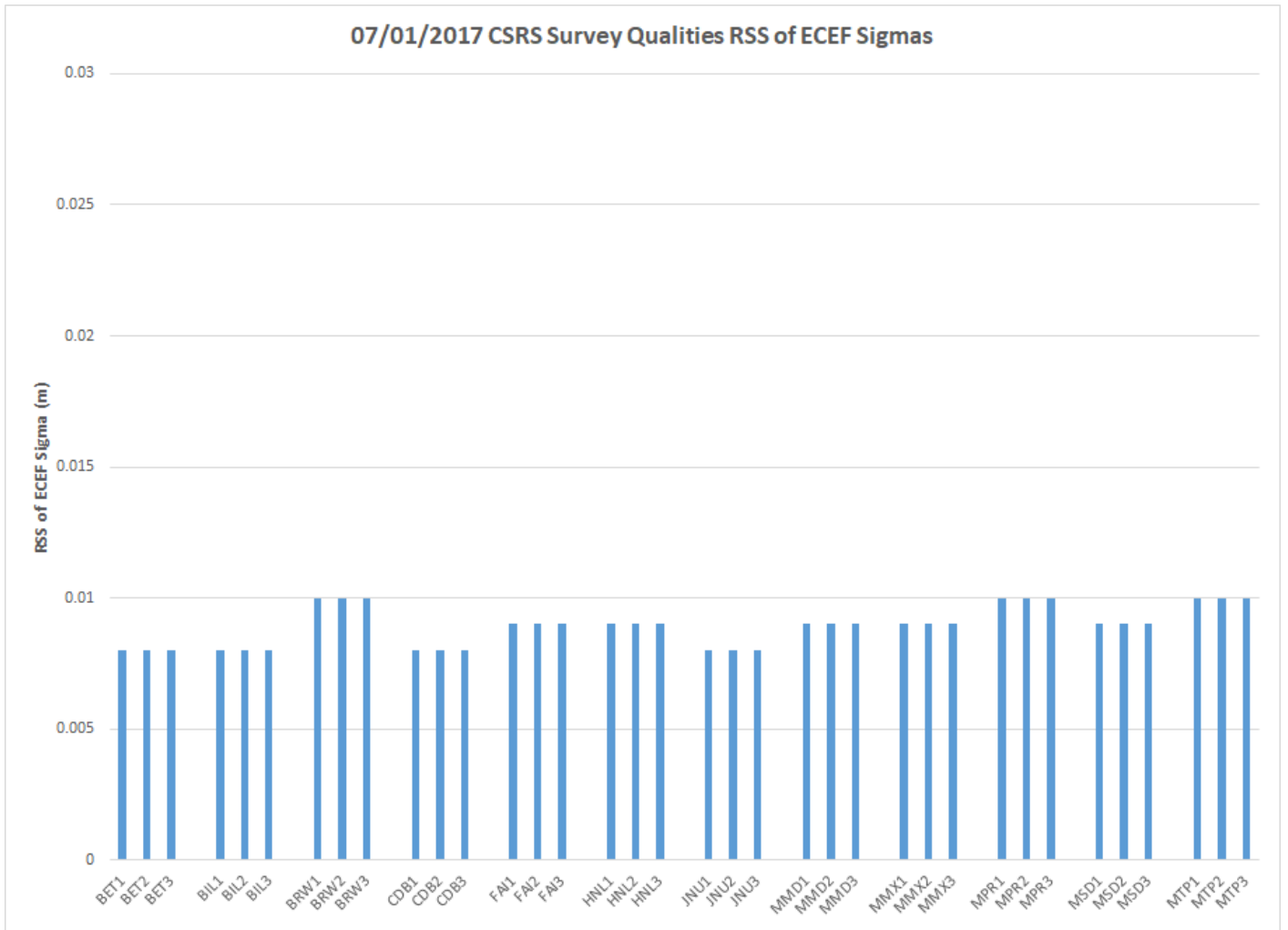


Figure 10-11 CSRS Survey Qualities

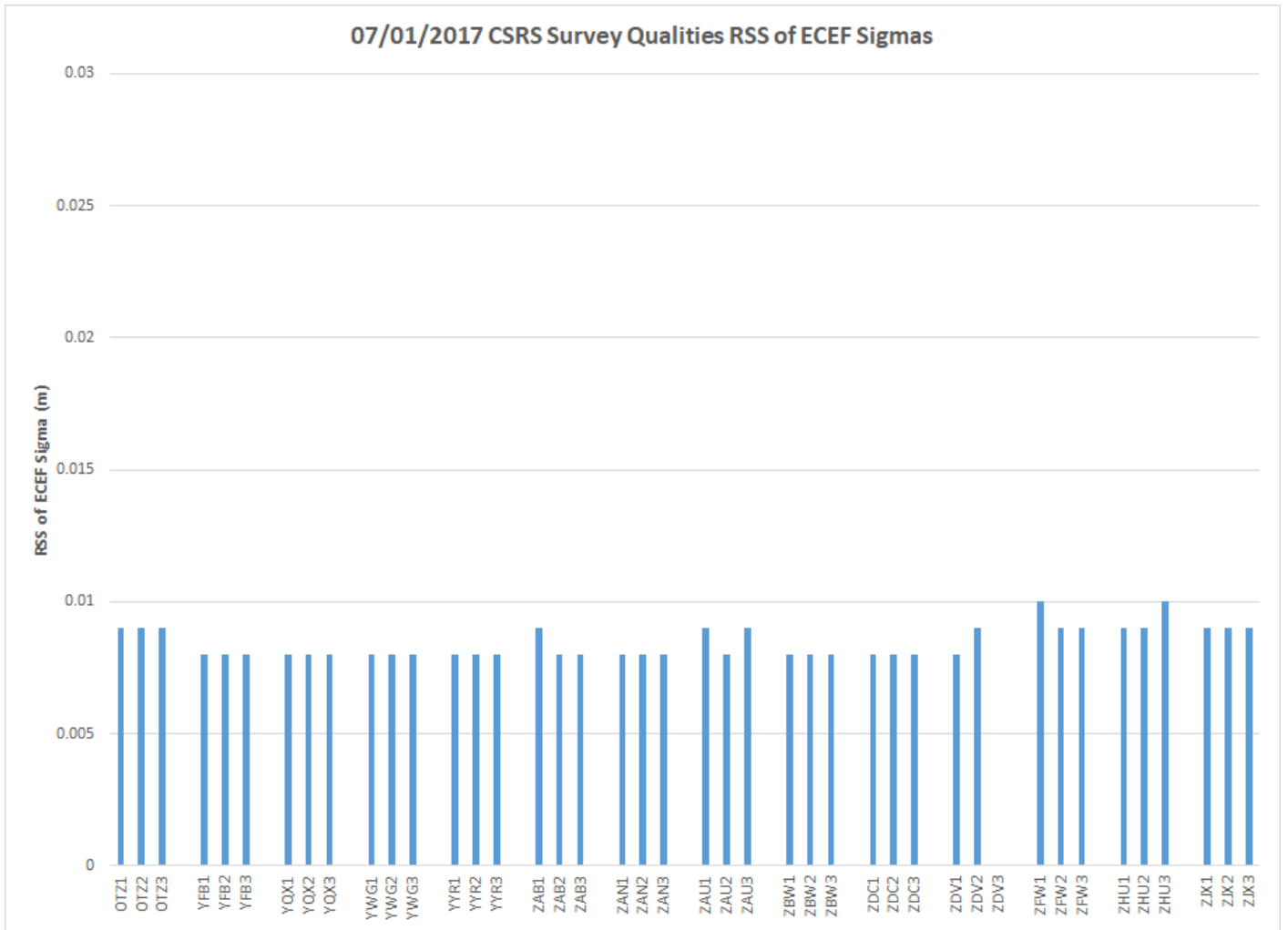
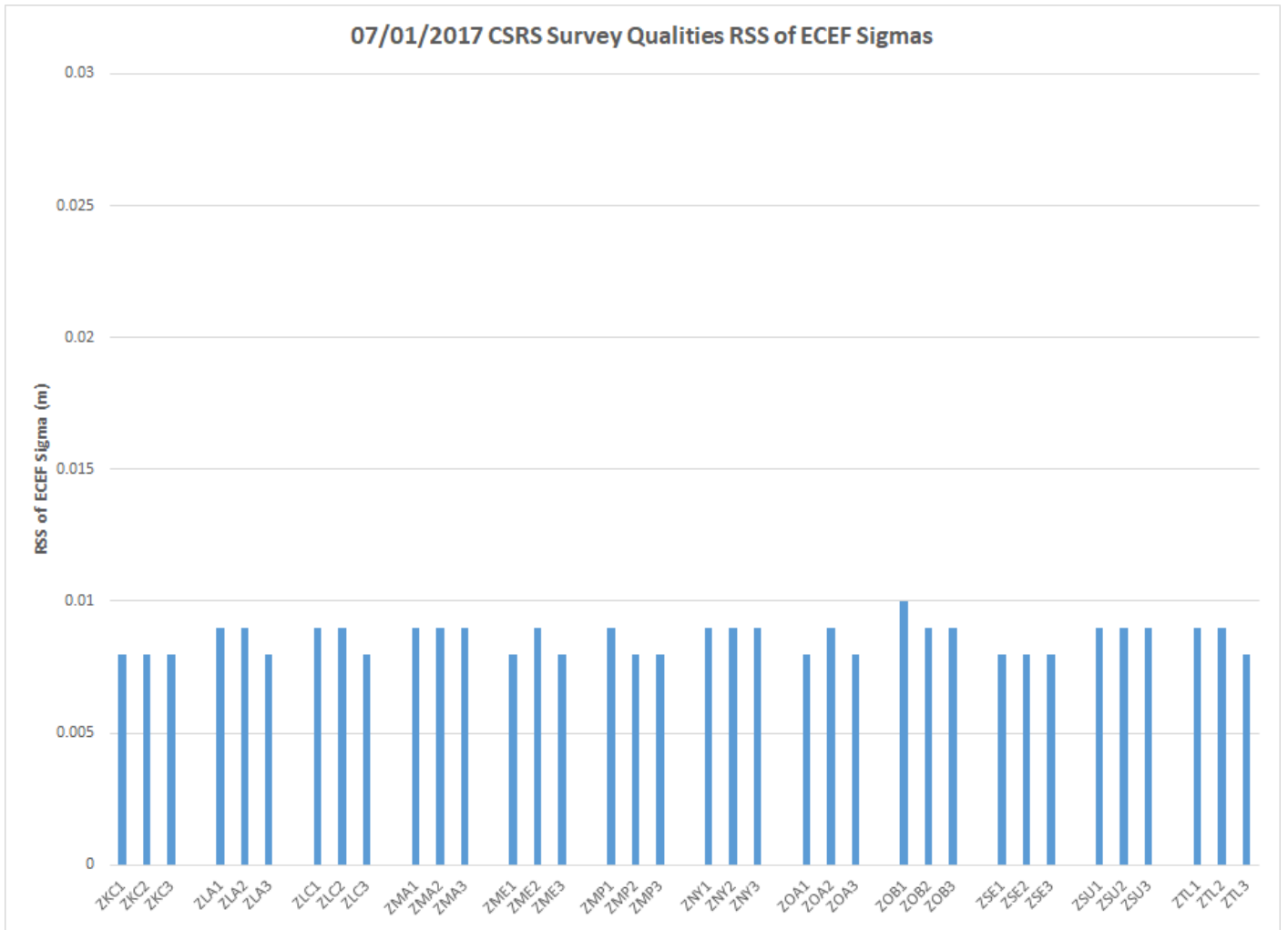


Figure 10-12 CSRS Survey Qualities



11.0 SQM

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

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

11.1 Alpha Metrics

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

Table 11-1 Alpha Metrics

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

11.2 Type Bias

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

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

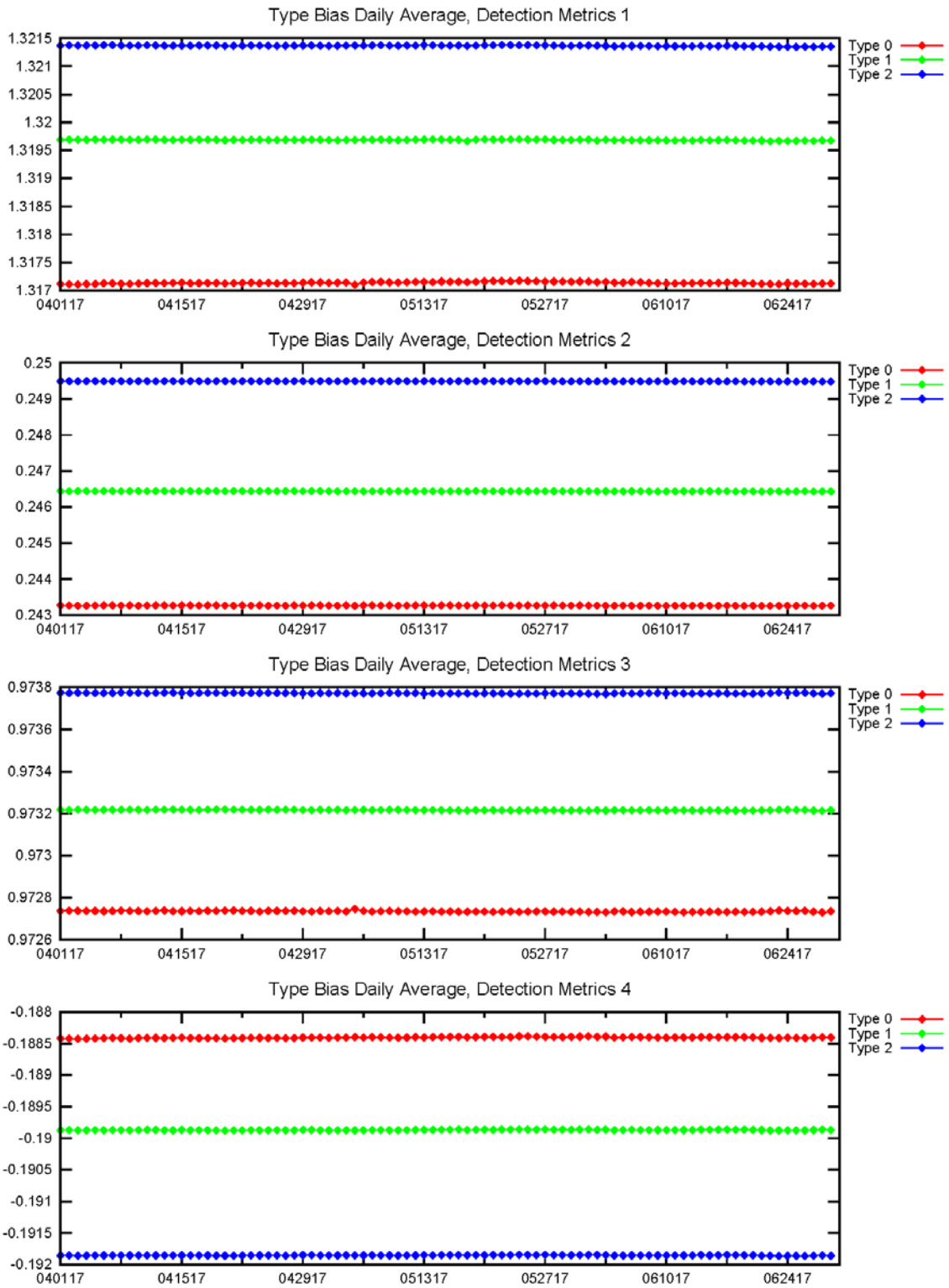
Table 11-2 Type Bias Average for the Quarter

Detection Metric	Type 0	Type 1	Type 2
DM 1	1.3171400	1.3196900	1.3213700
DM 2	0.2432670	0.2464380	0.2494920
DM 3	0.9727350	0.9732160	0.9737720
DM 4	-0.1884060	-0.1898710	-0.1918570

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

Detection Metric	Type 0	Type 1	Type 2
DM 1	1.3203000	1.3224000	1.3240900
DM 2	0.2412040	0.2444380	0.2476010
DM 3	0.9731170	0.9736360	0.9742010
DM 4	-0.1865810	-0.1883320	-0.1903670

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 0.001141 observed on PRN 11, (2) the maximum average for DM2 is 0.0001945 observed on PRN 27, (3) the maximum average for DM3 is 0.0002030 observed on PRN 29, and (4) the maximum average for DM4 is 0.0004829 observed on PRN 23.

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

Table 11-4 PRN Bias Average for the Quarter

PRN	DM1	DM2	DM3	DM4
1	0.0002547	0.0000641	0.0000525	0.0000976
2	0.0005328	0.0001487	0.0000702	0.0001527
3	0.0001554	0.0000486	0.0000583	0.0001032
4	Offline	Offline	Offline	Offline
5	0.0002062	0.0000603	0.0001324	0.0001283
6	0.0005140	0.0001057	0.0000838	0.0001081
7	0.0001586	0.0000944	0.0000584	0.0000899
8	0.0004185	0.0001269	0.0000970	0.0001397
9	0.0001890	0.0000524	0.0001378	0.0002161
10	0.0001672	0.0000475	0.0000802	0.0001658
11	0.0011410	0.0001836	0.0001040	0.0002711
12	0.0001540	0.0000495	0.0000841	0.0000934
13	0.0004916	0.0000366	0.0000534	0.0002534
14	0.0007504	0.0001335	0.0000456	0.0001770
15	0.0002560	0.0000720	0.0000461	0.0000985
16	0.0001512	0.0000596	0.0001194	0.0002219
17	0.0002094	0.0000530	0.0000471	0.0000849
18	0.0007068	0.0001385	0.0001073	0.0003022
19	0.0005750	0.0001869	0.0001004	0.0001044
20	0.0001608	0.0000411	0.0000504	0.0001311
21	0.0003403	0.0000542	0.0000840	0.0004468
22	0.0001573	0.0000395	0.0000918	0.0002627
23	0.0010559	0.0001911	0.0001242	0.0004829
24	0.0002269	0.0000612	0.0001547	0.0002441
25	0.0005988	0.0001155	0.0000478	0.0002206
26	0.0002674	0.0001163	0.0000636	0.0001434
27	0.0004470	0.0001945	0.0001359	0.0002696
28	0.0003055	0.0000377	0.0000748	0.0001396
29	0.0002650	0.0000822	0.0002030	0.0003455
30	0.0002106	0.0000734	0.0000769	0.0000947
31	0.0003504	0.0001274	0.0000513	0.0001657
32	0.0001759	0.0000515	0.0000853	0.0001113

Figure 11-2 PRN Bias Average for the Quarter

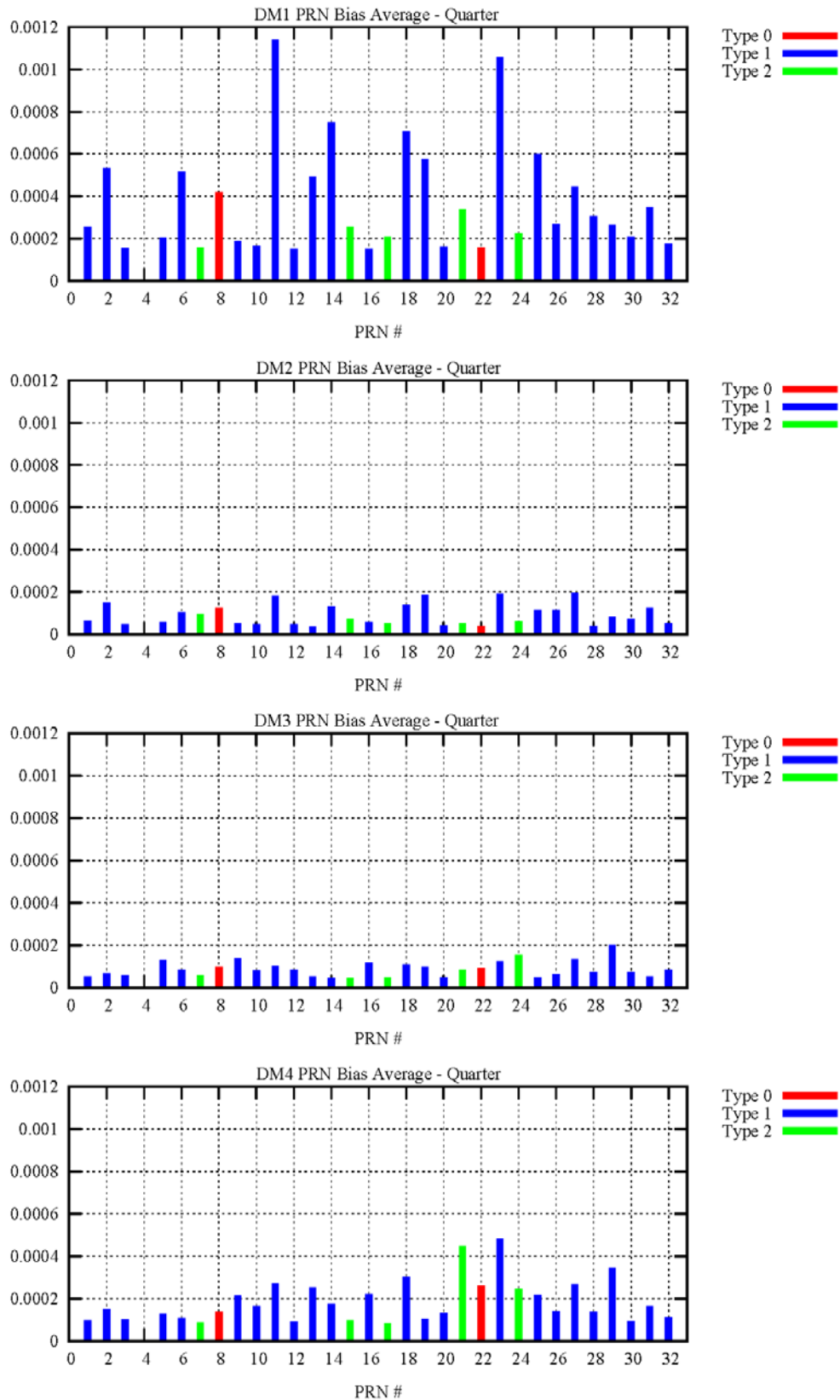


Figure 11-3 PRN Bias Average Trend (PRN-1-PRN-4)

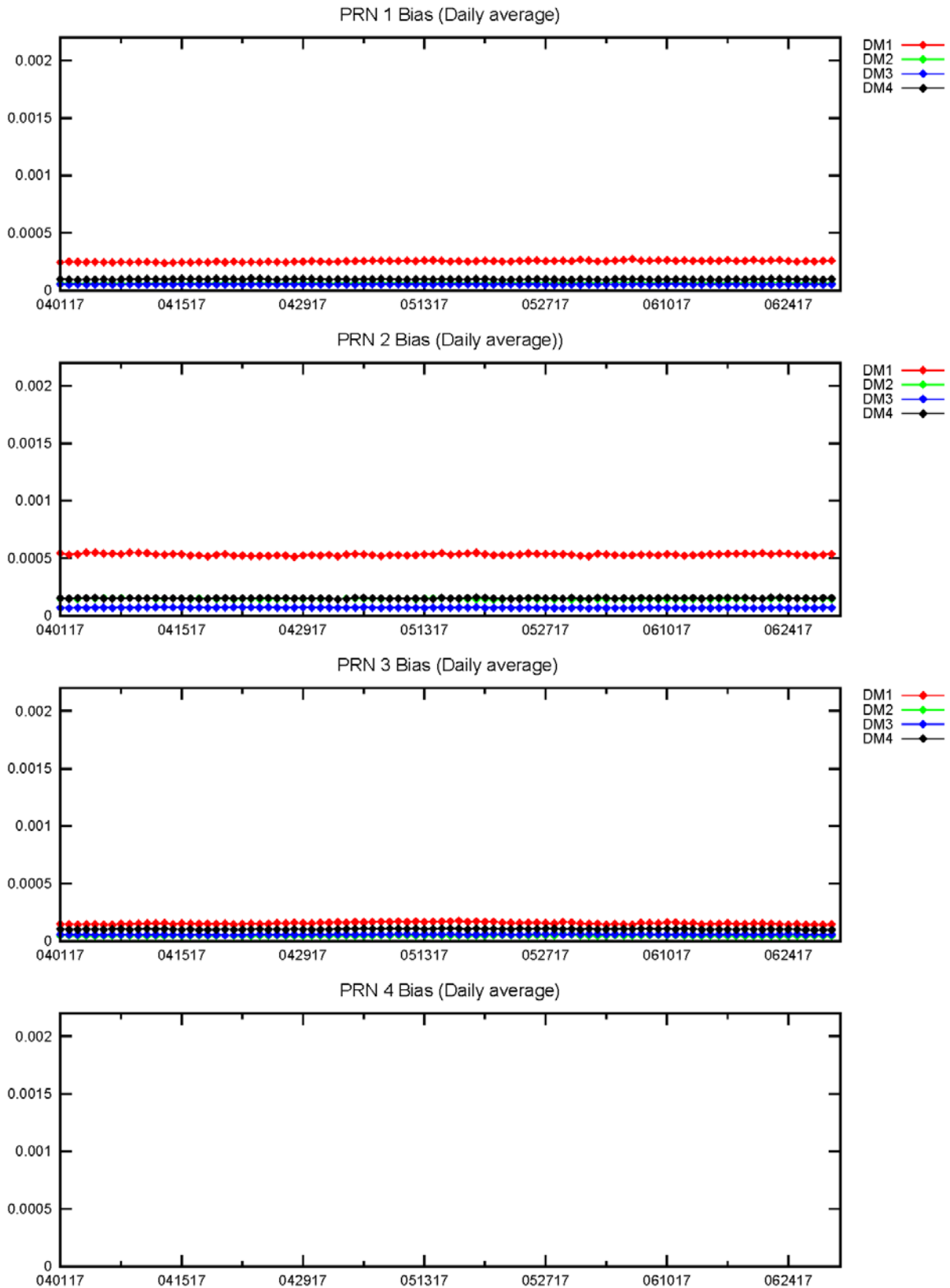


Figure 11-4 PRN Bias Average Trend (PRN-5-PRN-8)

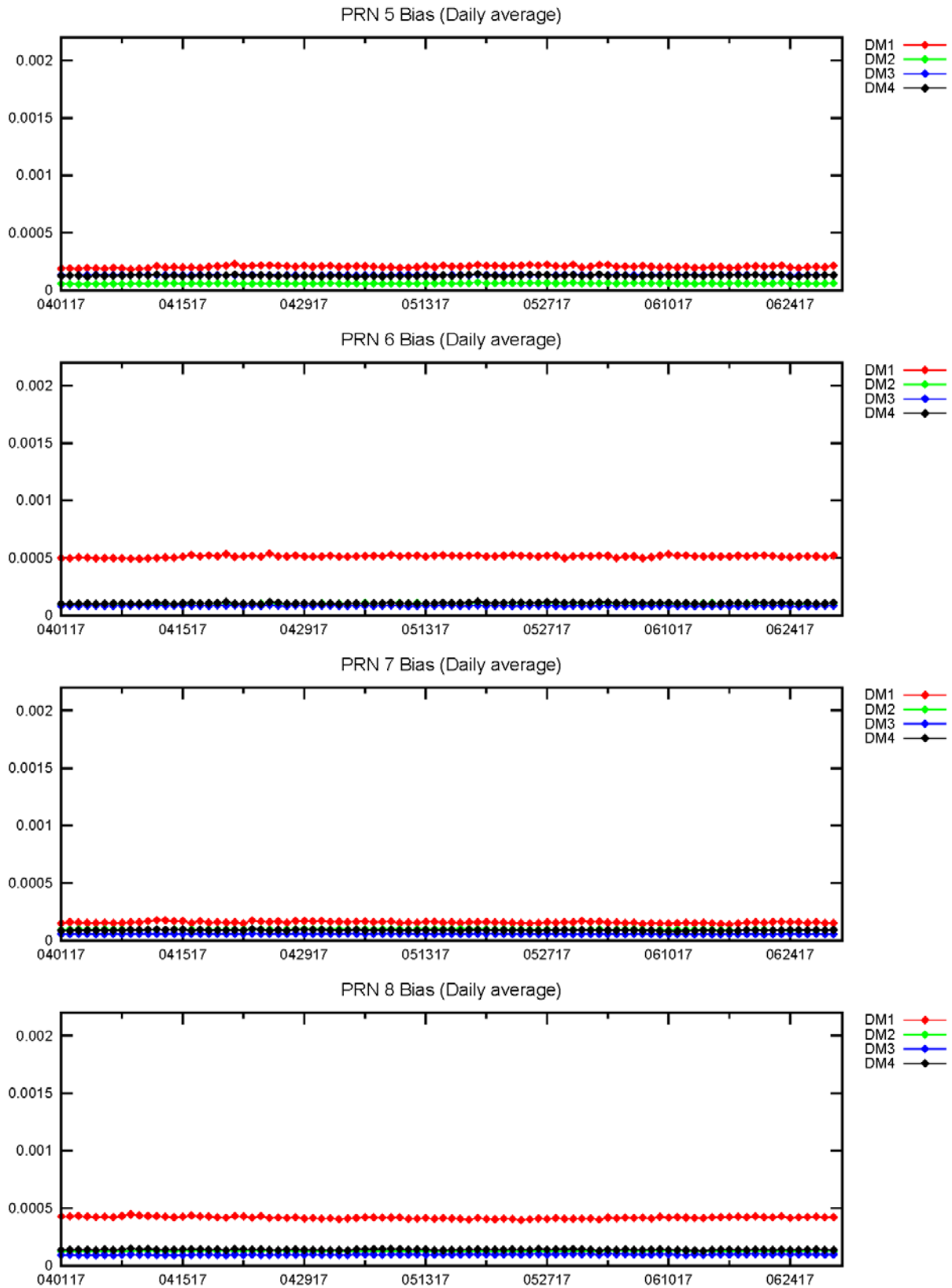


Figure 11-5 PRN Bias Average Trend (PRN-9-PRN-12)

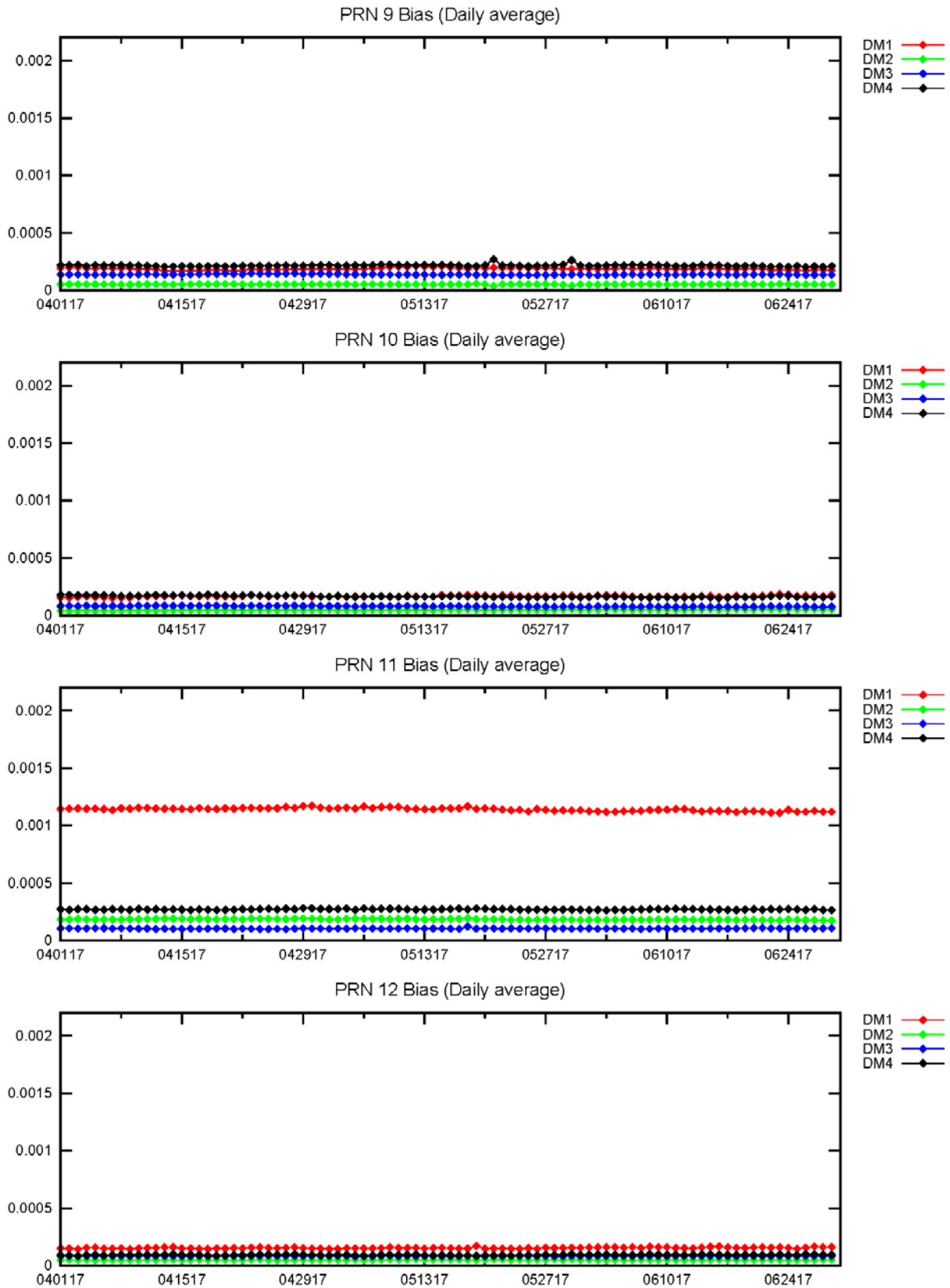


Figure 11-6 PRN Bias Average Trend (PRN-13-PRN-16)

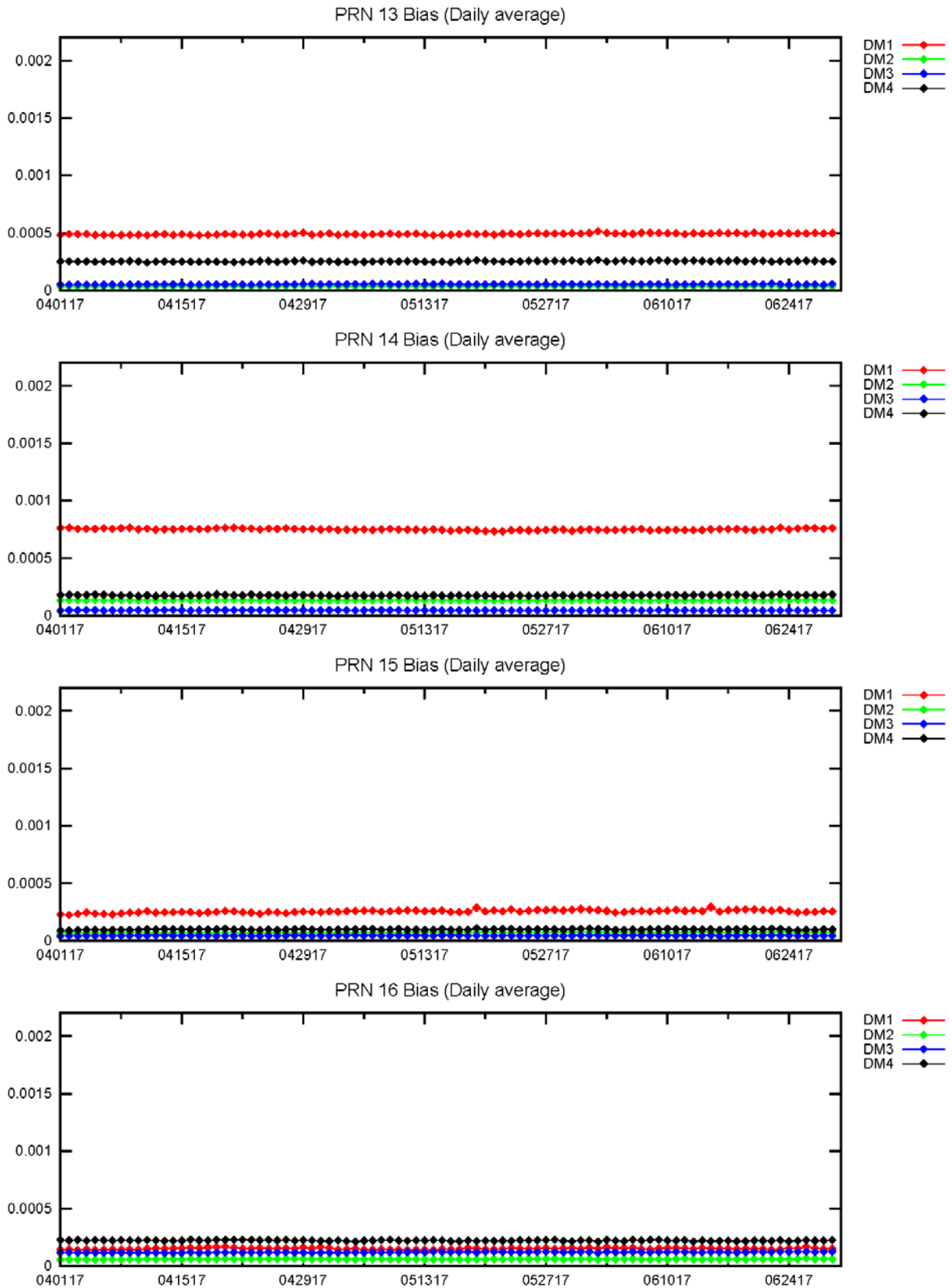


Figure 11-7 PRN Bias Average Trend (PRN-17-PRN-20)

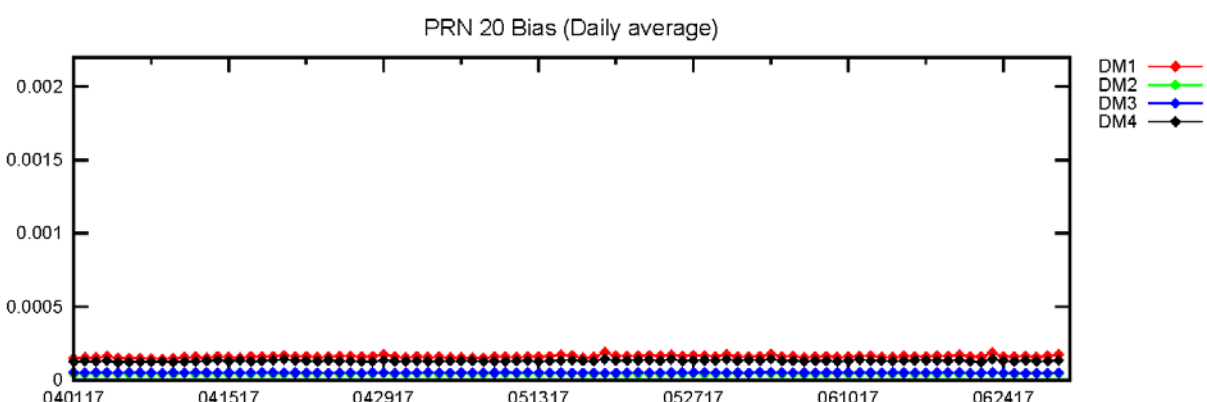
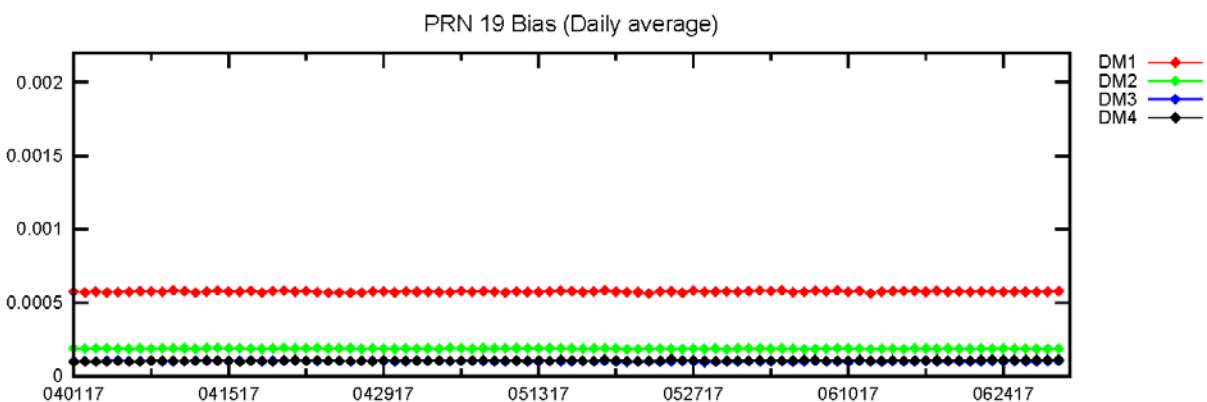
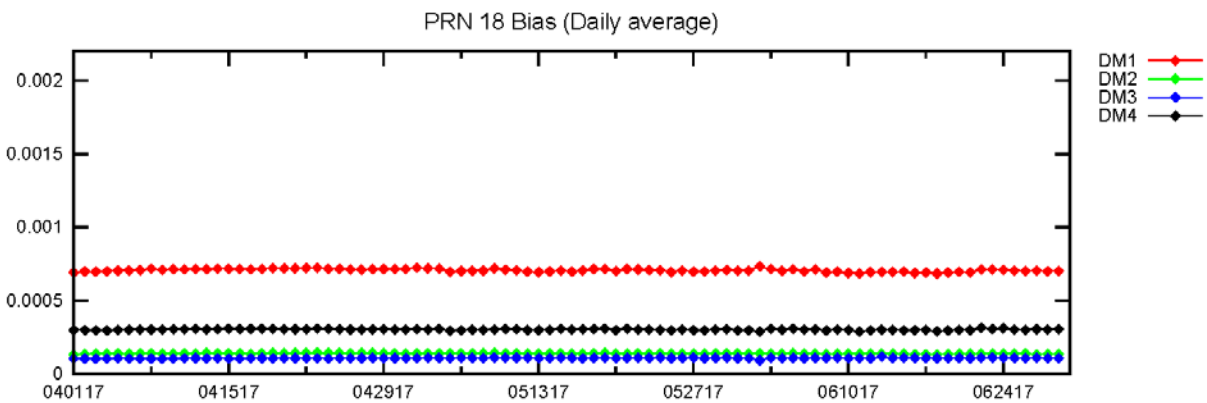
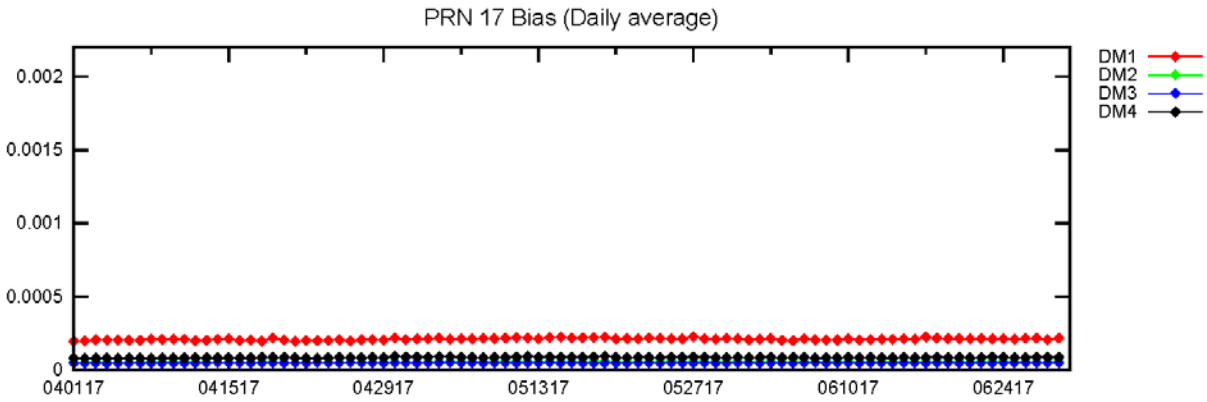


Figure 11-8 PRN Bias Average Trend (PRN-21-PRN-24)

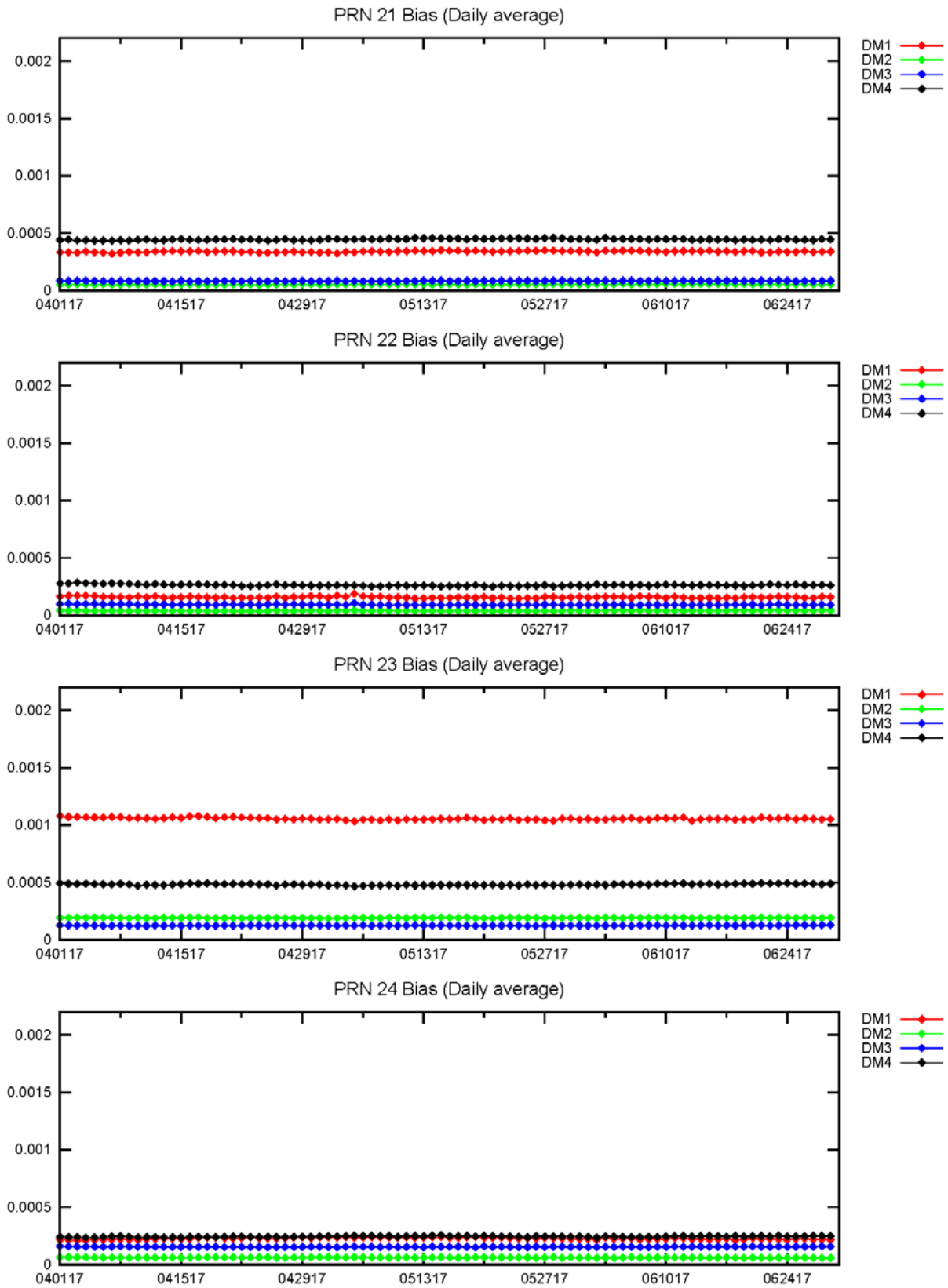


Figure 11-9 PRN Bias Average Trend (PRN-25-PRN-28)

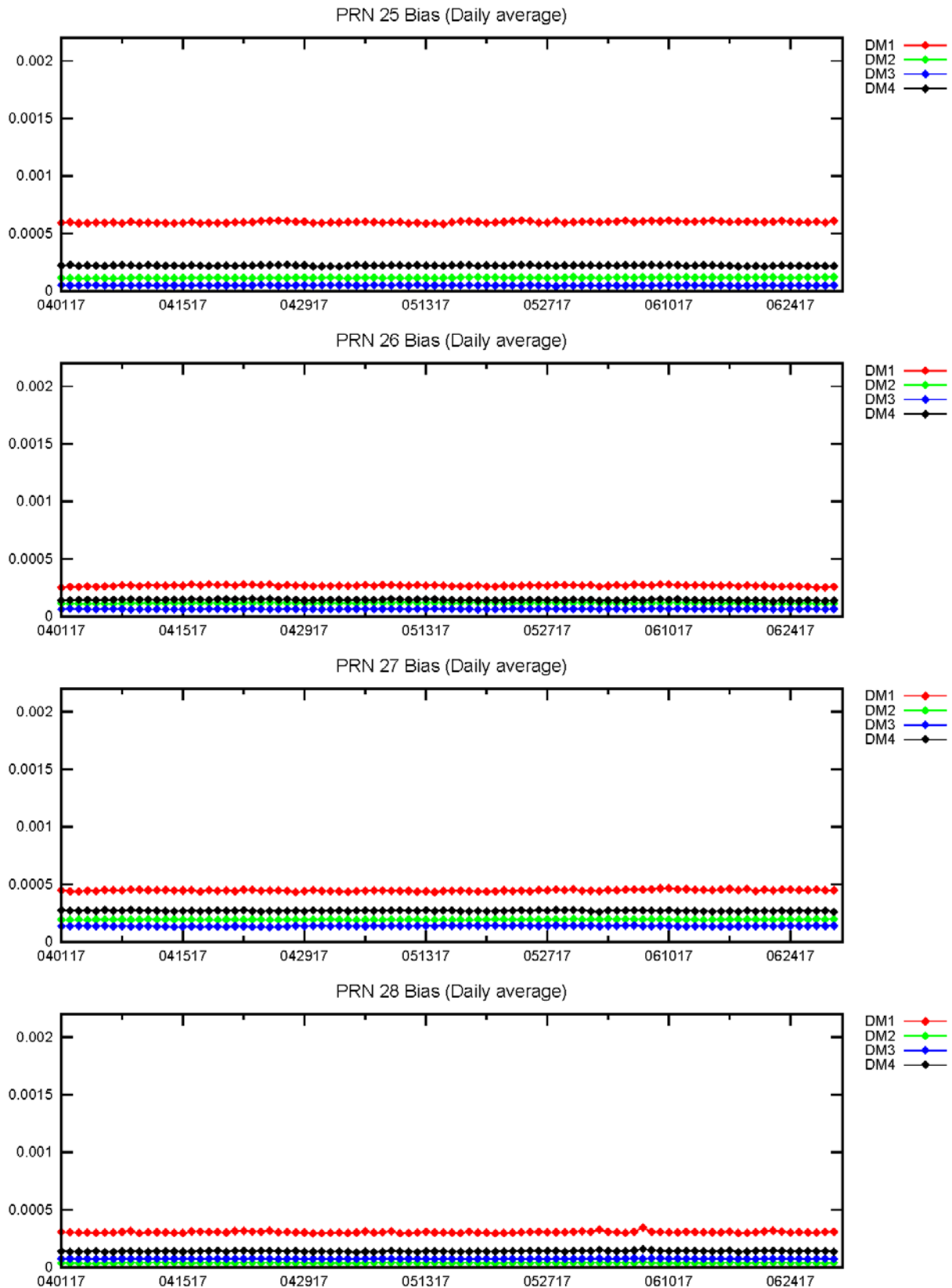
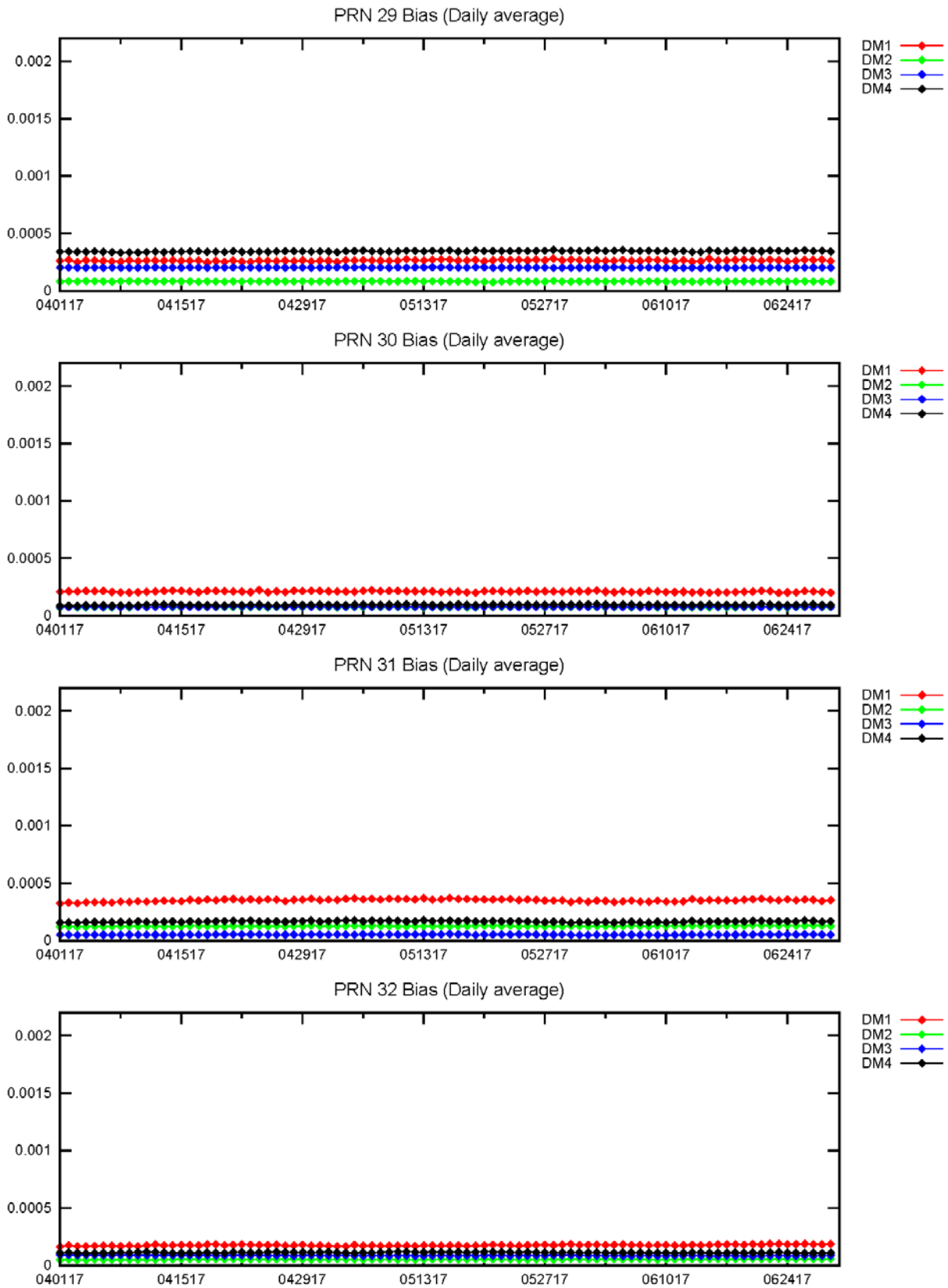


Figure 11-10 PRN Bias Average Trend (PRN-29-PRN-32)



11.4 SQM Trips

A SQM trip occurs when the estimated deformation exceeds threshold. For this reporting quarter, the William J. Hughes Technical Center (WJHTC) SQM tool observed a 1-second SQM trip on PRN 6 on 4/4/2017 at TOW 185,707; however, the operational system did not. At the time of the trip, PRN 6 was tracked by only five WREs. One big difference between the WJHTC and Operational SQM processing is that the WJHTC tool is less stringent—it does not require at least two receivers at each ground station to track the satellite to use the measurement. Therefore, it is likely that the Operational system did not have enough measurements to evaluate PRN 6 at the time the trip was observed by the WJHTC SQM tool.

Appendix A: Glossary and Acronyms

General Terms and Definitions

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

AMR. GEO PRN-133

APC. Antenna phase center

ARP. Antenna reference point

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

C&V. The Correction and Verification Subsystem

CNMP. Code noise and multipath

CONUS. Continental United States

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

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

CRE. GEO PRN-138

CRW. GEO PRN-135

CSRS. Canadian Spatial Reference System

DM. Detection metrics

DR. Discrepancy Report.

ECEF. Earth-centered, Earth-fixed.

FAA. Federal Aviation Administration

FD. Fault Detection

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

GEO. Geostationary satellite

GMT. Greenwich Mean Time

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

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

GUS. Ground uplink station

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

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

HPE. Horizontal position error

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

IAP. Instrument Approach Procedures

IGS. International GPS Service.

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

Kp. Planetary index

LNAV. Lateral navigation

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

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

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

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

NAS. National Airspace System

Navigation Message. Message structure designed to carry navigation data.

NGS. National Geodetic Survey

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

NTSB. National Satellite Test Bed

OCONUS. Outside Contiguous United States

OPUS. Online Positioning Use Server

PAN. Performance Analysis Network

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

PPP. Precise Point Positioning.

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

PRN. Pseudo-random noise

RAIM. Receiver autonomous integrity monitoring

RFI. Radio frequency interference

RNAV. Area navigation

RNP. Required Navigation Performance

RSS. Residual sum of squares.

SBAS. Space Based Augmentation System

SIS. Signal in space

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

SSM. System support modification

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

SV. Space vehicle.

SVN. Space Vehicle Number.

TOW. Time of GPS week

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

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

VPE. Vertical position error

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

VNAV. Vertical navigation

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

WIPP. WAAS Integrity Performance Panel

WJHTC. William J. Hughes Technical Center

WRE. Wide-Area Reference Equipment

WRS. WAAS reference station

Appendix B: Additional Coverage Plots

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

Figure B-1. 98% CONUS LP Availability Contour

WAAS 98% LP Coverage Contours
April 1 - June 30, 2017

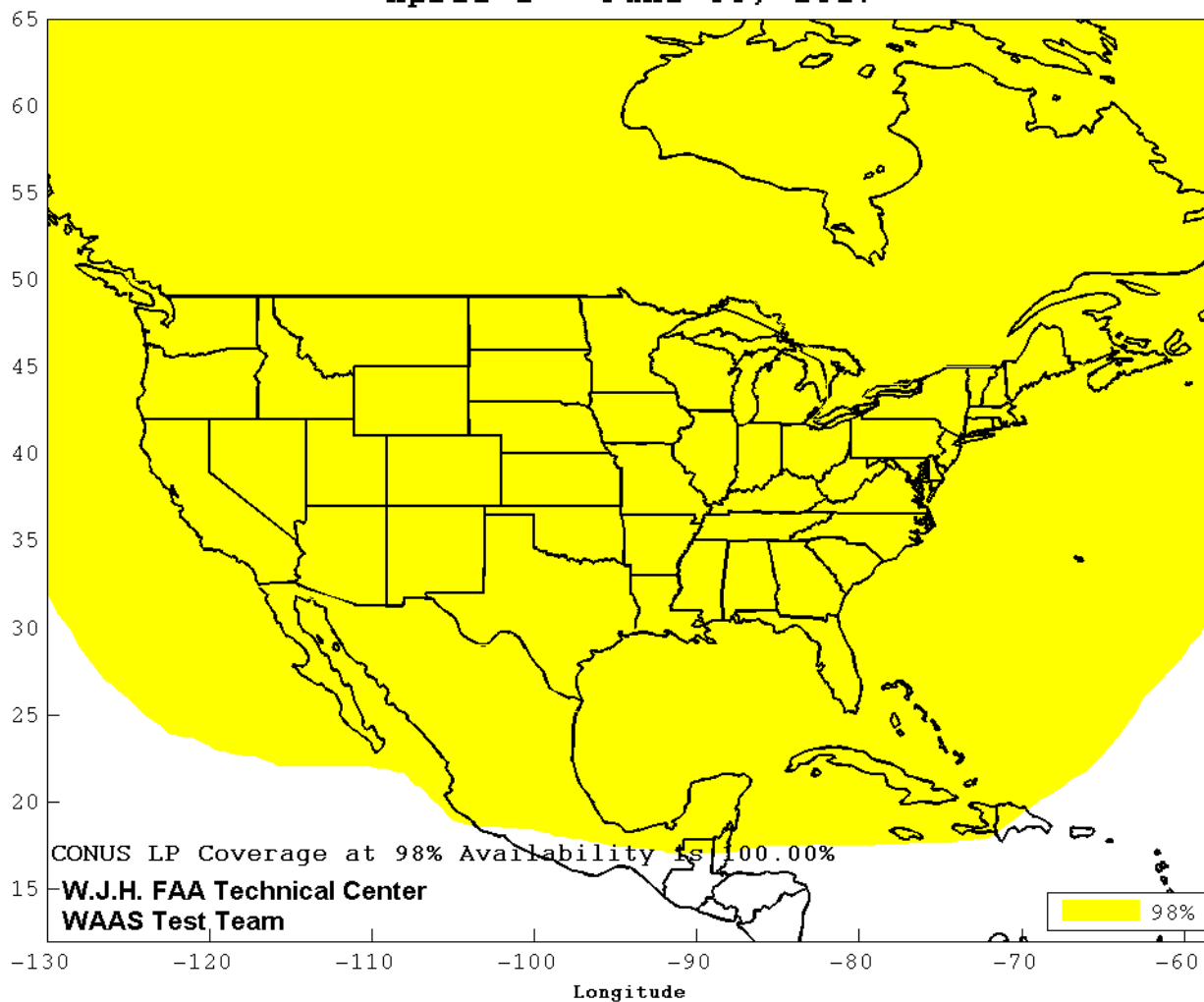


Figure B-2. 98% Alaska LP Availability Contour

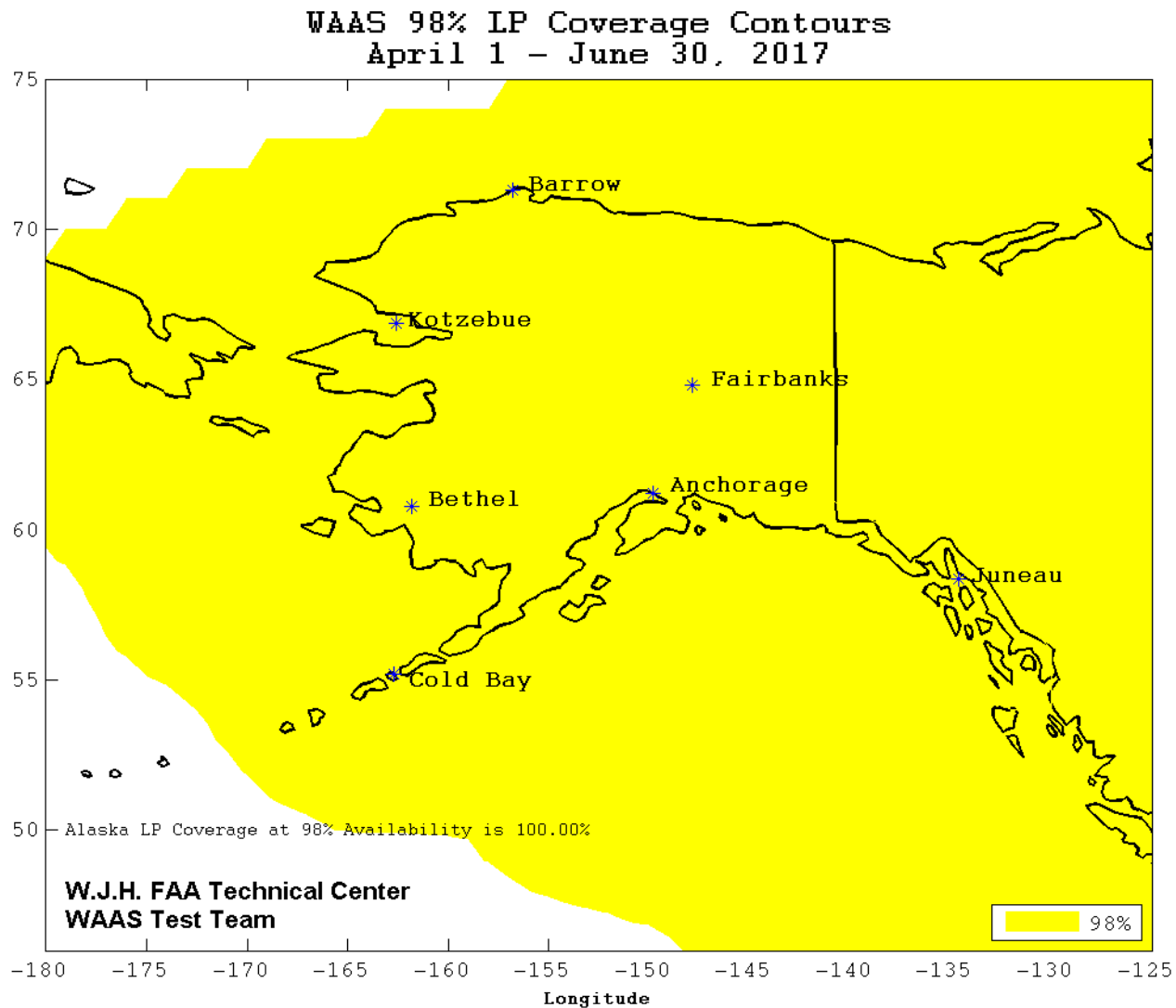


Figure B-3. 98% CONUS LPV Availability Contour

WAAS 98% LPV Coverage Contours
April 1 - June 30, 2017

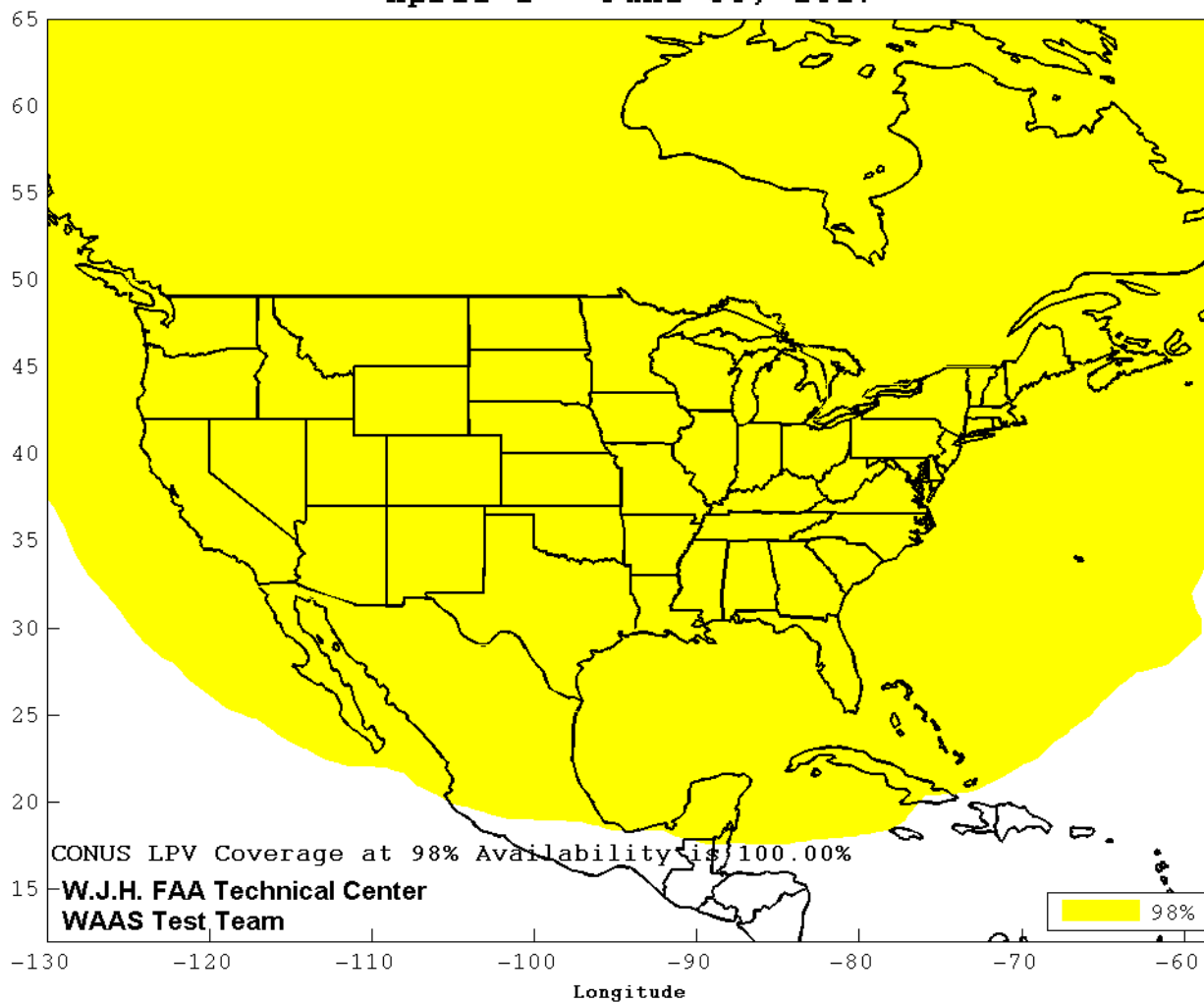


Figure B-4. 98% Alaska LPV Availability Contour

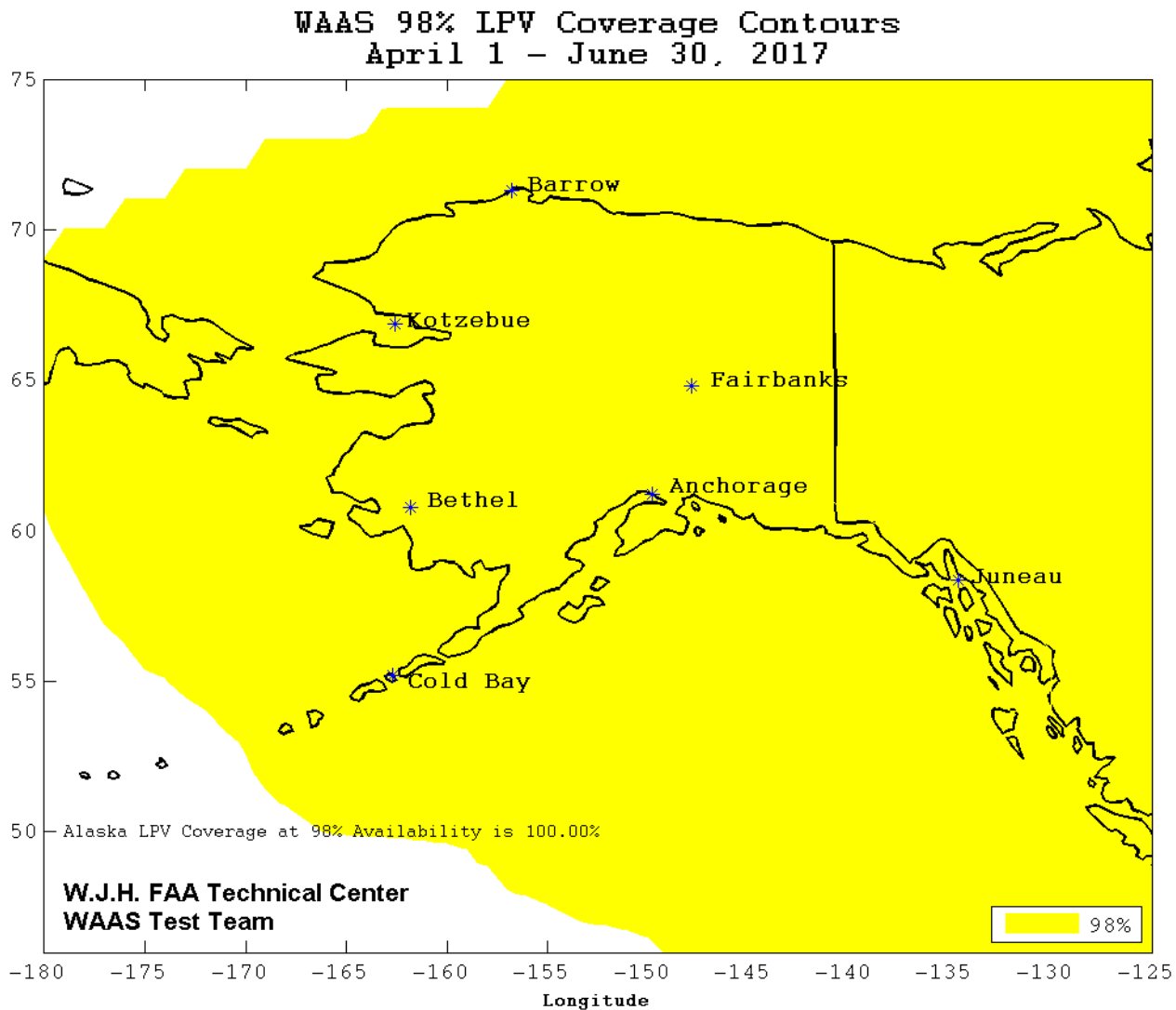


Figure B-5. 99% CONUS LPV200 Availability Contour

WAAS 99% LPV200 Coverage Contours
April 1 – June 30, 2017

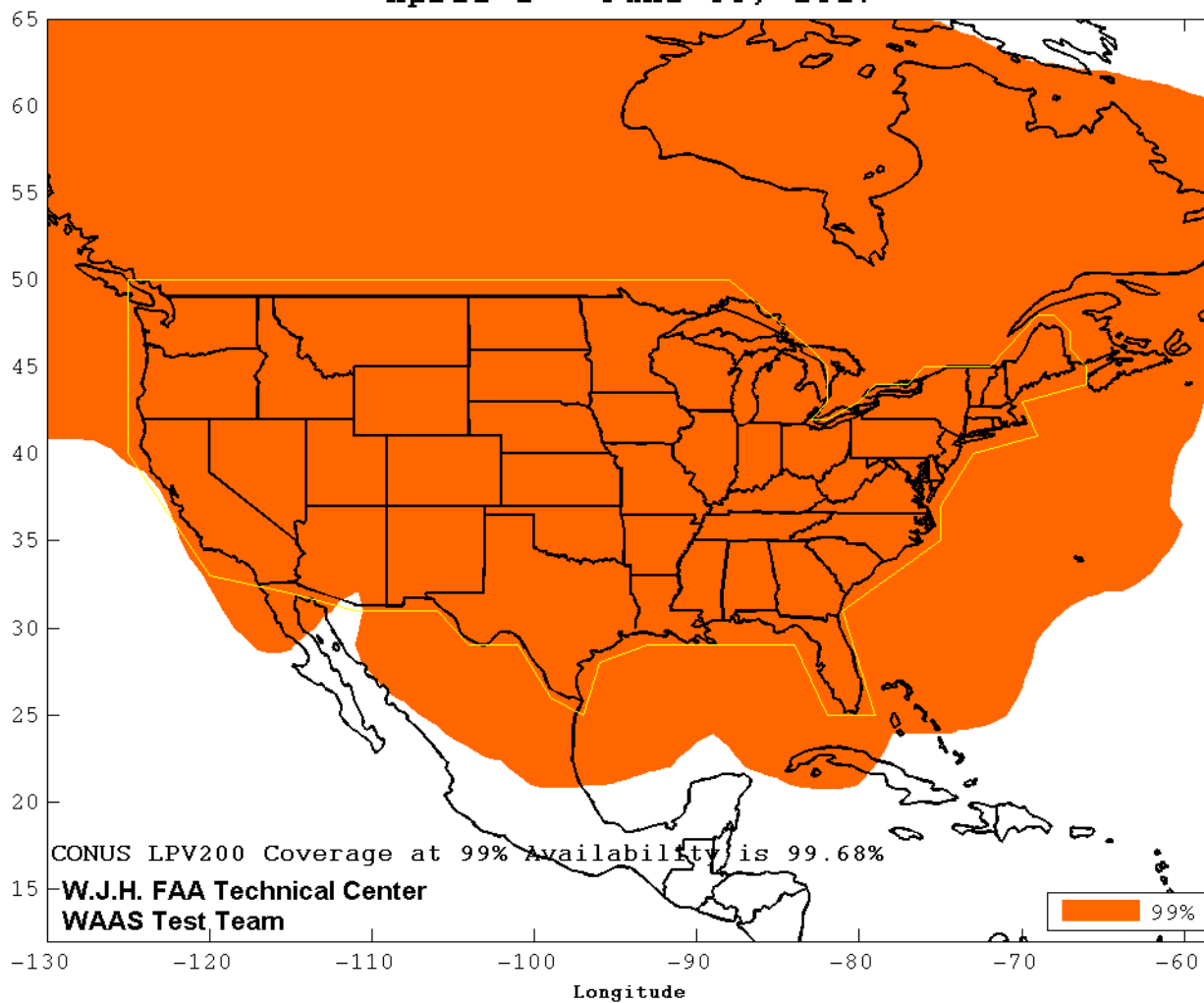


Figure B-6. 99% Alaska LPV200 Availability Contour

WAAS 99% LPV200 Coverage Contours
April 1 – June 30, 2017

