WIDE-AREA AUGMENTATION SYSTEM PERFORMANCE ANALYSIS REPORT

Report #56

Reporting Period: January 1 to March 31, 2016

April 2016

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Executive Summary

Since 1999, the Wide-Area Augmentation System (WAAS) Test Team at the William J. Hughes Technical Center has reported Global Positioning System (GPS) performance as measured against the GPS Standard Positioning Service (SPS) Signal Specification in quarterly GPS Performance Analysis Network (PAN) Report. In addition to the GPS PAN reports, the WAAS Test Team has provided quarterly reports on WAAS performance. The current WAAS PAN Report #56 provides WAAS-performance data from the January 1 through March 31, 2016 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 WAAS system support modification cutover began August 2015 with the first WAAS system upgrade to G3 receivers on September 4, 2015 in Seattle, WA. This was done in preparation for a full constellation of dual civil frequency GPS satellites (L1/L5). The end of this quarter showed 29 upgraded WAAS reference sites with a total of 87 upgraded G3 receivers on the WAAS system. WAAS PAN Report #56 is the second report to provide G3 receivers performance results.

The following table shows observations for accuracy and availability made during the reporting period for CONUS and Alaska sites (the international sites are presented in the body of this report). LP service is available when the calculated Horizontal Protection Level (HPL) is less than 40 meters. LPV service is available when the calculated HPL is less than 40 meters and the Vertical Protection Level (VPL) is less than 50 meters. LPV200 service is available when the calculated HPL is less than 40 meters and the VPL is less than 35 meters. The NSTB sites—Grand Forks, Atlantic City, and Arcata—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)	Atlantic City 1.415 meters	Salt Lake City 0.657 meters	Anchorage 0.768 meters	Bethel 0.605 meters
95% Vertical Accuracy (VPL <= 50 meters)	Miami 1.689 meters	Denver 0.826 meters	Barrow 1.441 meters	Bethel 0.966 meters
LP Availability (HPL <= 40 meters)	All Sites 100%	Grand Forks 99.92%	Kotzebue 99.98	Juneau 99.86%
LPV Availability (HPL <= 40 meters &	Multiple Sites 100%	Grand Forks 99.91%	Bethel 99.97%	Barrow 99.58%
LPV200 Availability (HPL <= 40 meters & VPL < =35 meters)	Multiple Sites 100%	Arcata 99.72%	Kotzebue 99.98	Cold Bay 93.83%
99% HPL	Arcata 17.53 meters	Oklahoma City 10.909 meters	Cold Bay 27.441 meters	Juneau 14.134 meters
99% VPL	Arcata 32.825 meters	Kansas City 19.371 meters	Barrow 43.214 meters	Juneau 23.472 meters

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1.0 INTRODUCTION

The Federal Aviation Administration (FAA) monitors Wide-Area Augmentation System (WAAS) and Global Positioning System (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 as well as improves position accuracy and availability of GPS within the WAAS coverage area.

The objectives of this report are as listed below:

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, and ionospheric activity on the WAAS performance.
3. To investigate GPS and WAAS anomalies and determine potential users impact.
4. To archive GPS and WAAS performance for future evaluations.

The evaluation utilizes the WAAS data transmitted from geostationary satellites (GEOs) 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 these terms to the user service levels.

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 receiver 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 1-1 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

Table 1-2 PA Evaluation Sites

	Number of Days Evaluated	Number of Samples
NSTB:		
Arcata	90	7803118
Atlantic City	90	7806210
Grand Forks	90	7757128
Oklahoma City	87	7488607
WAAS:		
Albuquerque	91	7858705
Anchorage	91	7845504
Atlanta	90	7775941
Barrow	91	7854492
Bethel	91	7862229
Billings	91	7848259
Boston	91	7853653
Chicago	91	7841926
Cleveland	91	7824453
Cold Bay	90	7774817
Dallas	91	7861550
Denver	91	7837417
Fairbanks	91	7862092
Gander	91	7862040
Goose Bay	91	7853874
Houston	91	7861700
Iqaluit	91	7860392
Jacksonville	91	7861452
Juneau	91	7859098
Kansas City	91	7861786
Kotzebue	91	7862034
Los Angeles	91	7853315
Memphis	91	7861720
Merida	91	7824170
Mexico City	91	7858376
Miami	91	7859560
Minneapolis	91	7849189
New York	91	7862397
Oakland	91	7850756
Puerto Vallarta	91	7857966
Salt Lake City	91	7840947
San Jose Del Cabo	80	6909304
Seattle	91	7855625
Washington DC	91	7861884
Winnipeg	91	7862232

Table 1-3 NPA Evaluation Sites

Location	Number of Days Evaluated	Number of Samples
Albuquerque	91	7862392
Anchorage	91	7843663
Atlanta	90	7813007
Barrow	91	7855582
Bethel	91	7860765
Billings	91	7844882
Boston	91	7851356
Cleveland	91	7848489
Cold Bay	91	7838341
Fairbanks	91	7859995
Gander	91	7855090
Honolulu	90	7775959
Houston	91	7862364
Iqaluit	91	7849614
Juneau	91	7861808
Kansas City	91	7862230
Kotzebue	91	7859713
Los Angeles	91	7861721
Merida	91	7849642
Miami	91	7862226
Minneapolis	91	7848479
Oakland	91	7853918
Salt Lake City	91	7840751
San Jose Del Cabo	80	6909663
San Juan	91	7861918
Seattle	91	7858539
Tapachula	91	7862029
Washington DC	91	7861756

The report is divided by the performance category, as listed below.

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 CNMP Analysis
9. WAAS Antenna Survey Validation
10. WAAS 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 these requirements are extracted from the FAA Specification FAA-E-2892C and FAA Specification 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 Hazardously Misleading Information (HMI)	< 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 Kp index 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 GEO uplink subsystem (GUS) switchovers, which are transitions from one GEO uplink site to the other GEO uplink site.

Table 1-5 Events

Start Date	End Date	Location Satellite	Service Affected	Event Description
12/18/2015	1/3/2016	San Jose Del Cabo (MSD1), San Jose Del Cabo (MSD2), San Jose Del Cabo (MSD3)	LPV200_CONUS	San Jose Del Cabo WAAS Reference Station (WRS) was taken offline. The loss of measurements resulted in elevated GIVE values in the south causing minor degradation of LPV200 service coverage in southern California around 21:48 until 21:55 GMT and in southeastern Arizona from 13:44 GMT until 13:55 GMT. Request to shutdown WRE-A&C until frequency standards are received to prevent continuous PID alerts.
12/31/2015	1/1/2016	Washington D.C. (CnV),	LPV200_CONUS, LPV200_Alaska, LPV200_Canada	Geomagnetic activity (Kp = 6) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of: (1) LPV200

Start Date	End Date	Location Satellite	Service Affected	Event Description
		Los Angeles (CnV), Atlanta (CnV)		service coverage in Alaska from 12:17 GMT until 12:48 GMT on 12/31 and 00:07 GMT until 00:40 GMT on 1/1; (2) LPV200 service coverage in Canada from 21:52 until 23:55 GMT on 12/31 and 00:01 GMT until 00:20 GMT, 01:22 GMT until 01:45 GMT, and 02:10 GMT until 02:20 GMT on 1/1; and (3) LPV200 service coverage in CONUS (north central region) from 23:36 GMT until 23:42 GMT on 12/31. The elevated GIVE values also resulted in minor degradation of LPV200 service coverage in CONUS from 00:05 GMT until 00:15 GMT on 1/1. Please see plot(s): LPV200_12/31/2015 Cov_vs_Time_Alaska_12/31/2015 Cov_vs_Time_Canada_12/31/2015
1/6/2016	1/6/2016	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Canada	Geomagnetic activity (Kp = 5) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of LPV200 service coverage in Canada from 01:00 GMT until 01:45 GMT. Please see plot(s): LPV200_1/6/2016
1/7/2016	1/7/2016	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Canada	Geomagnetic activity (Kp = 4) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of LPV200 service coverage in Canada from 01:33 GMT until 01:55 GMT. Please see plot(s): LPV200_1/7/2016
1/9/2016	1/9/2016	PRN25	LPV200_Canada	The reduction in Canada LPV200 service coverage was due to a GPS NANU on PRN-25 (see NANU2016004), which was unusable from 21:22 GMT to 23:58 GMT on 1/9. The NANU caused minor degradation of LPV200 service coverage in Canada from 22:19 GMT until 22:39 GMT and from 22:47 GMT to 23:28 GMT on 1/9. Please see plot(s): LPV200_1/9/2016
1/14/2016	1/14/2016	Iqaluit (YFB1), Iqaluit (YFB2), Iqaluit (YFB3)	LPV200_Canada	A 480 second data outage from Iqaluit reference station at about 04:20 GMT resulted in the reinitialization of the WAAS carrier smoothing algorithm. The loss of measurements resulted in elevated GIVE values and caused moderate degradation to the LPV200 service coverage in Canada from about 04:30 GMT until 05:00 GMT. Please see plot(s): LPV200_1/14/2016 Cov_vs_Time_Canada_1/14/2016
1/14/2016	1/14/2016	PRN135	LPV200_CONUS	A maneuver was changed for CRW GEO, causing the UDRE to be elevated. The elevated UDRE caused minor degradation to the LPV200 service coverage in CONUS by expanding the daily California outage to 30 minutes at 07:40 GMT. TOW 372278-375077. Please see plot(s): LPV200_1/14/2016 Cov_vs_Time_Conus_1/14/2016

Start Date	End Date	Location Satellite	Service Affected	Event Description
1/15/2016	1/15/2016	PRN28	LPV200_Alaska, LPV200_Canada	The reduction in Alaska and Canada coverage was due to a GPS NANU on PRN-28 (see NANU2016005), which was unusable from 01:21 GMT until 07:12 GMT on 1/15. The NANU caused moderate degradation of: (1) LPV200 service coverage in CONUS from 05:19 GMT until 05:35 GMT; (2) LPV200 service coverage in Alaska from 05:40 GMT until 06:05 GMT; and (3) LPV200 service coverage in Canada from 05:30 GMT until 06:15 GMT. Please see plot(s): LPV200_1/15/2016 Cov_vs_Time_Alaska_1/15/2016 Cov_vs_Time_Canada_1/15/2016
1/16/2016	1/16/2016	Anchorage (ZAN1), Anchorage (ZAN2), Anchorage (ZAN3)	Local	Localized RFI caused degraded tracking at the Anchorage reference station resulting in LPV200 service outages from 22:08 GMT until 22:10 GMT and 23:12 GMT until 23:14 GMT.
1/18/2016	1/18/2016	PRN21	LPV200_Alaska	Carrier Phase Anomaly on PRN-21 resulted in SV Alert to not monitored, which caused minor degradation of LPV200 service coverage in Alaska from about 13:36 GMT until 13:40 GMT. Please see plot(s): LPV200_1/18/2016
1/20/2016	1/21/2016	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Alaska, LPV200_CONUS, LPV200_Alaska, LPV200_Canada	Geomagnetic activity (Kp = 5 on 1/20; Kp=6 on 1/21) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of LPV200 service coverage in Alaska from 10:18 GMT until 11:00 GMT on 1/20. The elevated GIVE values also resulted in moderate degradation of: (1) LPV service coverage in Alaska from 10:30 GMT until 11:00 GMT on 1/20; and (2) LPV200 service coverage in Canada, extending the daily outages at 10:50 GMT, 13:10 GMT, and from 15:05 GMT until 15:40 GMT on 1/20. The elevated GIVE values also resulted in minor degradation of: (1) LPV200 service coverage in CONUS from about 19:17 GMT until 19:26 GMT on 1/20; (2) LPV200 service coverage in Alaska from 10:17 GMT until 10:40 GMT on 1/21; and (3) LPV200 service coverage in Canada from 05:57 GMT until 06:07 GMT. Please see plot(s): LPV_1/20/2016 LPV200_1/20/2016 Cov_vs_Time_Alaska_1/20/2016 Cov_vs_Time_Canada_1/20/2016 Cov_vs_Time_Conus_1/20/2016
1/22/2016	1/22/2016	PRN21	LPV200_Canada	Carrier Phase Anomaly on PRN-21 resulted in SV Alert to not monitored, which caused minor degradation of LPV200 service coverage in Canada from about 01:17 GMT until 01:30 GMT. PRN-21 alerted to not monitored again at 03:17 GMT with no impact to service.

Start Date	End Date	Location Satellite	Service Affected	Event Description
1/29/2016	1/29/2016	PRN12	LPV200_Alaska	The reduction in LPV200 Canada, Alaska, and CONUS and LPV Canada and Alaska coverage was due to a GPS NANU on PRN12 (see NANU2016010), which was unusable from 07:12 GMT until 13:56 GMT on 1/29. The NANU resulted in significant degradation of: (1) LPV200 service in Alaska from 07:26 GMT to 08:30 GMT and 09:30 GMT to 10:45 GMT; and (2) LPV200 service in CONUS from 07:12 GMT to 07:22 GMT and 10:49 GMT to 11:00 GMT. This NANU resulted in moderate degradation of: (1) LPV200 service in Canada from 07:40 GMT to 08:35 GMT; and (2) LPV service in Alaska from 07:30 GMT to 08:17 GMT and 09:49 GMT to 10:30 GMT. This NANU resulted in minor degradation of: LPV service in Canada from 07:45 GMT to 08:30 GMT. Please see plot(s): LPV_1/29/2016 LPV200_1/29/2016
2/3/2016	2/3/2016	Cold Bay (CDB1), Cold Bay (CDB2), Cold Bay (CDB3)	LPV_Alaska, LPV200_Alaska	SSM-44: This system support modification (SSM) upgrades Ring 2 of the WAAS Terrestrial Communications Subsystem (TCS) and the WAAS Reference Stations and Master Stations. This upgrade supports the transition to WAAS dual frequency operations. CDB WAAS reference receiver and router was upgraded on February 3rd, causing moderate degradation of the LPV200 service coverage Alaska from 16:44 GMT until 17:35 GMT and minor degradation of the LPV service coverage in southwest Alaska from 16:44 GMT until 17:30 GMT. Please see plot(s): Cov_vs_Time_Alaska_2/3/2016
2/7/2016	2/8/2016	GEO135, Littleton (APA)	LPV_Alaska, LPV200_Alaska, LPV200_Canada	The uplink for the CRW GEO, PRN-135 switched from the Littleton uplink site to the Napa uplink site at 05:16 GMT. This caused a 4 second outage of the CRW broadcast and also caused the WAAS carrier smoothing algorithm to reinitialize for PRN-135. This also caused the UDRE for CRW to be elevated. The elevated UDRE caused moderate degradation of: LPV200 service coverage in Alaska from 08:55 GMT to 09:36 GMT, 11:49 GMT to 12:09 GMT, 18:46 GMT to 18:58 GMT, and 21:25 GMT to 21:42 GMT on 2/7 and from 08:51 GMT to 09:32 GMT and 11:41 GMT to 12:10 GMT on 2/8. The elevated UDRE, along with increased geomagnetic activity, also caused minor degradation of: (1) LPV service coverage in Alaska from 11:49 GMT to 12:14 GMT on 2/7 and from 11:46 GMT to 12:09 GMT on 2/8; and (3)LPV200 service coverage in Canada from 19:33 GMT to 19:50 GMT on 2/7 and from 01:44 GMT to 02:00 GMT and scattered small outages across northern Canada on 2/8. The 4 second outage of the CRW broadcast followed by 3 Message Type 4 caused the fast corrections in Type 2 and 3 to time out PA mode for one second producing an LPV

Start Date	End Date	Location Satellite	Service Affected	Event Description
				outage for one second in Alaska at 5:16:16 GMT. Please see plot(s): LPV_2/7/2016 LPV200_2/7/2016 Cov_vs_Time_Alaska_2/7/2016 LPV_2/8/2016 LPV200_2/8/2016
2/8/2016	2/8/2016	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Alaska, LPV200_Canada	Geomagnetic activity (Kp = 5) disturbed the ionosphere causing elevated GIVE values. This resulted in minor degradation of: (1) LPV200 service coverage in Alaska from 08:51 GMT to 09:32 GMT and 11:45 GMT to 12:10 GMT; and (2) LPV200 service coverage in Canada around 01:45 GMT, 05:09 GMT, 08:44 GMT, and 4:08 GMT.
2/9/2016	2/9/2016	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Alaska, LPV200_Alaska	Geomagnetic activity (Kp = 4) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of the LPV200 service coverage in Alaska from about 09:04 GMT until 09:17 GMT. The elevated GIVE values also resulted in minor degradation of the LPV service coverage in Alaska from about 09:04 GMT until 09:08 GMT on 2/9. Please see plot(s): LPV_2/9/2016 LPV200_2/9/2016 Cov_vs_Time_Alaska_2/9/2016
2/10/2016	2/10/2016	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Alaska, LPV200_Canada	Geomagnetic activity (Kp = 5) disturbed the ionosphere causing elevated GIVE values. This resulted in minor degradation of: (1) LPV200 service coverage in Alaska pushing in service from about 01:30 GMT until 03:00 GMT and from 04:50 GMT until 05:05 GMT; and (2) LPV200 service coverage in Canada causing very small service outages around 03:00 GMT and 05:40 GMT. Please see plot(s): Cov_vs_Time_Alaska_2/10/2016
2/13/2016	2/14/2016	GEO135, NAPA (APC)	LPV_Alaska, LPV200_Alaska, LPV200_Canada	The uplink for the CRW GEO, PRN-135 switched from the Napa uplink site to the Littleton uplink site at 01:05 GMT. This caused a 13 second outage of the CRW broadcast and also caused the WAAS carrier smoothing algorithm to reinitialize for PRN-135. This also caused the UDRE for CRW to be elevated. The elevated UDRE for CRW caused moderate degradation of: (1) LPV200 service coverage in Alaska from 08:40 GMT until 09:10 GMT and 21:08 GMT until 21:20 GMT on 2/13 and 08:25 GMT until 09:10 GMT on 2/14. The elevated UDRE for CRW also caused minor degradation of: (1) LPV service coverage in Alaska at 01:05 GMT and from 11:25 GMT until 11:50 GMT on 2/13 and 11:22 GMT until 11:45 GMT on 2/14; (2) LPV200 service coverage in Canada from 05:00 GMT until 05:05 GMT and 14:00 GMT until 14:15 GMT on 2/13. TOW 522332-522346. Please see plot(s): LPV_2/13/2016 LPV200_2/13/2016 Cov_vs_Time_Alaska_2/13/2016
2/15/2016	2/15/2016	Miami (ZMA1)	None	Localized RFI caused degraded tracking at the Miami reference station resulting in a 61 second LPV200

Start Date	End Date	Location Satellite	Service Affected	Event Description
				service outage from 07:35:15 GMT to 07:36:16 GMT.
2/15/2016	2/15/2016	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Canada	Geomagnetic activity (Kp = 4) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of the LPV200 service coverage in Canada from about 22:43 GMT until 23:10 GMT. Please see plot(s): LPV200_2/15/2016
2/16/2016	2/17/2016	GEO135, Littleton (APA)	LPV_Alaska, LPV200_CONUS, LPV200_Alaska, LPV200_Canada	The uplink for the CRW GEO, PRN-135 switched from the Littleton uplink site to the Napa uplink site at 10:58 GMT. This caused a 4 second outage of the GEO 135 broadcast. This also caused the UDRE for GEO 135 to be elevated. The elevated UDRE for GEO 135, along with increased geomagnetic activity, caused moderate degradation of: (1) LPV service Coverage in Canada from 23:30 GMT to 23:55 GMT on 2/17; (2) LPV200 service coverage in Alaska from 08:34 GMT to 08:48 GMT, 11:12 GMT to 11:33 GMT, 18:07 GMT to 18:27 GMT, and 20:54 GMT to 21:04 GMT on 2/16 and from 08:26 GMT to 08:52 GMT, and 11:08 GMT to 11:23 GMT on 2/17; and (3) LPV200 service coverage in Canada from 11:22 GMT to 11:38 GMT, 18:55 GMT to 19:00 GMT, and 21:03 GMT to 21:40 GMT on 2/16 and from 18:52 GMT to 19:00 GMT, and from 20:45 GMT to 21:25 GMT on 2/17. The elevated UDRE for GEO 135, along with increased geomagnetic activity, also caused minor degradation of: (1) LPV service coverage in Alaska from 11:11 GMT to 11:37 GMT on 2/16. Please see plot(s): LPV_2/16/2016 LPV200_2/16/2016 Cov_vs_Time_Alaska_2/16/2016 Cov_vs_Time_Canada_2/16/2016 LPV_2/17/2016 LPV200_2/17/2016 Cov_vs_Time_Alaska_2/17/2016 Cov_vs_Time_Canada_2/17/2016
2/16/2016	2/17/2016	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_Alaska, LPV200_Canada	Geomagnetic activity (Kp = 6) disturbed the ionosphere causing elevated GIVE values. The elevated GIVE values, along with increased UDRE for GEO 135, caused moderate degradation of: (1) LPV service Coverage in Canada from 23:30 GMT to 23:55 GMT on 2/17; (2) LPV200 service coverage in Alaska from 08:34 GMT to 08:48 GMT, 11:12 GMT to 11:33 GMT, 18:07 GMT to 18:27 GMT, and 20:54 GMT to 21:04 GMT on 2/16 and from 08:26 GMT to 08:52 GMT, and 11:08 GMT to 11:23 GMT on 2/17; and (3) LPV200 service coverage in Canada from 11:22 GMT to 11:38 GMT, 18:55 GMT to 19:00 GMT, and 21:03 GMT to 21:40 GMT on 2/16 and from 18:52 GMT to 19:00 GMT, and from 20:45 GMT to 21:25 GMT on 2/17. Please see plot(s): LPV_2/16/2016 LPV200_2/16/2016

Start Date	End Date	Location Satellite	Service Affected	Event Description
				Cov_vs_Time_Alaska_2/16/2016 Cov_vs_Time_Canada_2/16/2016 LPV200_2/17/2016
2/17/2016	2/19/2016	GEO135, NAPA (APC)	LPV_Alaska, LPV200_Alaska, LPV200_Canada	The uplink for the CRW GEO, PRN-135 switched from the Littleton uplink site to the Napa uplink site at 23:39 GMT. This caused a 4 second outage of the GEO 135 broadcast. This also caused the UDRE for GEO 135 to be elevated. The elevated UDRE for GEO 135, along with increased geomagnetic activity, caused moderate degradation of: (1) LPV service Coverage in Canada from 23:30 GMT to 23:55 GMT on 2/17 and 00:00 GMT to 00:15 GMT on 2/18; (2) LPV200 service coverage in Alaska 23:51 GMT to 23:50 GMT on 2/17, 00:00 GMT to 01:10 GMT, 08:21 GMT to 09:00 GMT, 11:01 GMT until 11:20 GMT, 18:15 GMT to 18:20 GMT, and 20:48 GMT to 21:00 GMT on 2/18, and 08:20 GMT to 09:10 GMT and 11:00 GMT to 11:15 GMT on 2/19; and (3) LPV200 service coverage in Canada from 23:40 GMT to 23:59 GMT on 2/17 and 00:00 GMT until 01:00 GMT on 2/18. The elevated UDRE for GEO 135, along with increased geomagnetic activity, also caused minor degradation of: (1) LPV service coverage in Alaska from 11:05 GMT to 11:20 GMT on 2/18 and 11:00 GMT until 11:20 GMT on 2/19. The 4 second outage of the CRW broadcast followed by 3 Message Type 4 caused the fast corrections in Type 2 to time out PA mode for one second producing an LPV outage for one second in Alaska at 23:39:39 GMT. Please see plot(s): LPV_2/17/2016 LPV200_2/17/2016 Cov_vs_Time_Alaska_2/17/2016 Cov_vs_Time_Canada_2/17/2016 LP_2/18/2016 LPV_2/18/2016 Cov_vs_Time_Alaska_2/18/2016 Cov_vs_Time_Canada_2/18/2016
2/18/2016	2/19/2016	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_Canada	Geomagnetic activity (Kp = 5) disturbed the ionosphere causing elevated GIVE values. The elevated GIVE values, along with increased UDRE for GEO 135, caused moderate degradation of: (1) LPV200 service coverage in Canada from 00:00 GMT until 01:00 GMT on 2/18. The elevated GIVE values, along with increased UDRE for GEO 135, also caused minor degradation of: (1) LPV service coverage in Canada from 00:00 GMT to 00:15 GMT on 2/18; and (2) LPV200 service coverage in Canada at 04:25 GMT, 08:15 GMT,11:04 GMT, and 17:56 GMT on 2/19. Please see plot(s): LPV_2/18/2016 LPV200_2/18/2016 Cov_vs_Time_Canada_2/18/2016
2/19/2016	2/19/2016	GEO138	None	Brewster received the message .49 seconds late. Atlanta (ZTL) was the selected source. TOW 464982-464984.

Start Date	End Date	Location Satellite	Service Affected	Event Description
2/23/2016	2/24/2016	GEO135, Littleton (APA)	LPV_Alaska, LPV200_Alaska, LPV200_Canada	The uplink for the CRW GEO, PRN-135 switched from the Littleton uplink site to the Napa uplink site at 08:00 GMT. This caused a 4 second outage of the GEO 135 broadcast. This also caused the UDRE for GEO 135 to be elevated. The elevated UDRE for GEO 135 caused moderate degradation of: (1) LPV service coverage in Alaska from 08:06 GMT to 08:36 GMT and 10:44 GMT to 10:56 GMT on 2/23; (2) LPV200 service coverage in Alaska from 08:06 GMT to 08:36 GMT and 10:34 GMT to 11:12 GMT on 2/23 and from 10:39 GMT to 10:55 GMT and 17:30 GMT to 17:37 GMT and 20:27 GMT to 20:34 GMT on 2/24; and (3) LPV200 service coverage in Canada from 10:34 GMT to 11:04 GMT and 13:17 GMT to 14:05 GMT and 18:07 GMT to 18:31 GMT on 2/23. The elevated UDRE for GEO 135 also caused minor degradation of: (1) LPV service coverage in Alaska from 10:42 GMT to 11:00 GMT on 2/23 and from 10:40 GMT until 11:06 GMT on 2/24; (2) LPV200 service coverage in Canada from 10:49 GMT to 10:59 GMT and 13:42 GMT to 13:52 GMT and 18:22 GMT to 18:34 on 2/24. The elevated UDRE for GEO 135 also extended CONUS outages at 19:21 GMT by about 15 minutes. TOW 201623-201628. Please see plot(s): LPV_2/23/2016 LPV200_2/23/2016 Cov_vs_Time_Alaska_2/23/2016 Cov_vs_Time_Canada_2/23/2016 LPV200_2/24/2016 Cov_vs_Time_Alaska_2/24/2016 Cov_vs_Time_Canada_2/24/2016
2/28/2016	3/1/2016	PRN13	LPV200_CONUS, LPV200_Alaska, LPV200_Canada	The reduction in LPV200 Canada, Alaska, and CONUS coverage was due to a GPS NANU on PRN13 (see NANU2016018), which was unusable from 14:39 GMT on 2/28 to 00:06 GMT on 3/1. The NANU resulted in minor degradation of: (1) LPV200 service coverage in Southern CONUS from 08:50 GMT to 8:57 GMT and 09:57 GMT to 10:15 GMT on 2/29; (2) LPV200 service coverage in Alaska from 00:48 GMT to 01:15 GMT on 2/29; (3) LPV200 service coverage in Canada from 00:47 GMT to 00:51 GMT, 10:29 GMT to 10:35 GMT, and 13:54 GMT to 14:10 GMT on 2/29. Please see plot(s): LPV200_2/28/2016 Cov_vs_Time_Alaska_2/29/2016 Cov_vs_Time_Canada_2/29/2016
3/4/2016	3/4/2016	PRN15	LPV200_Alaska, LPV200_Canada	The reduction in LPV200 Canada and Alaska coverage was due to a GPS NANU on PRN-15 (see NANU2016020), which was unusable from 00:24 GMT until 05:52 GMT on 1/29. The NANU resulted in very minor degradation of: (1) LPV200 service in Alaska from 00:26 GMT to 00:35 GMT and 02:49 GMT to 02:59 GMT and 04:45 GMT to 04:51 GMT

Start Date	End Date	Location Satellite	Service Affected	Event Description
				and 05:20 GMT to 05:23 GMT; and (2) LPV200 service in Canada from 00:18 GMT to 00:23 GMT 01:36 GMT to 01:47 GMT.
3/5/2016	3/6/2016	GEO135, Napa (APC)	LPV_Alaska, LPV200_Alaska, LPV200_Canada	The uplink for the CRW GEO, PRN-135 switched from the Napa uplink site to the Littleton uplink site at 02:10 GMT. This caused a 15 second outage of the CRW broadcast and also caused the WAAS carrier smoothing algorithm to reinitialize for PRN-135. This also caused the UDRE for CRW to be elevated. The elevated UDRE for CRW caused moderate degradation of LPV200 service coverage in Alaska from 05:15 GMT to 05:22 GMT, from 07:03 GMT to 07:52 GMT, from 09:50 GMT to 10:10 GMT on 3/5, from 07:08 GMT to 07:34 GMT, from 09:55 GMT to 10:08 GMT, and from 14:31 GMT to 14:49 GMT on 3/6. The elevated UDRE for CRW also caused minor degradation of: (1) LPV200 service coverage in Canada from 10:07 GMT to 10:15 GMT, from 13:05 GMT to 13:10 GMT, from 17:22 GMT to 17:45 GMT, from 22:39 GMT to 22:48 GMT on 3/5, from 10:03 GMT to 10:11 GMT, from 12:07 GMT to 12:24 GMT, and from 14:49 GMT to 15:04 GMT on 3/6; (2) LPV service coverage in Alaska from 07:11 GMT to 07:46 GMT and from 10:00 GMT to 10:20 GMT on 3/5. TOW 526260-526276. Please see plot(s): LPV_3/5/2016 LPV200_3/5/2016 Cov_vs_Time_Alaska_3/5/2016 Cov_vs_Time_Canada_3/5/2016 Cov_vs_Time_Alaska_3/6/2016 Cov_vs_Time_Canada_3/6/2016
3/6/2016	3/7/2016	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_All, LPV200_All	Geomagnetic activity (Kp = 7) disturbed the ionosphere causing elevated GIVE values. This resulted in significant degradation of: (1) LPV service coverage in CONUS from 20:23 GMT on 3/6 to 00:34 GMT on 3/7; and (2) LPV service coverage in Canada from 17:27 GMT on 3/6 to 00:52 GMT on 3/7; (3) LPV200 service coverage in CONUS from 19:21 GMT on 3/6 to 00:34 GMT on 3/7; (4) LPV200 service coverage in Alaska from 21:55 GMT on 3/6 to 01:24 GMT on 3/7; and (5) LPV200 service coverage in Canada from 16:35 GMT on 3/6 to 00:52 GMT on 3/7. The elevated give values also resulted in moderate degradation of LPV coverage in Alaska from 22:07 GMT to 01:20 GMT on 3/7. See DR 130 Ionospheric Activity Effects on WAAS Performance 6-7March 2016. Please see plot(s): LP_3/6/2016 LPV_3/6/2016 LPV200_3/6/2016 Cov_vs_Time_Alaska_3/6/2016 Cov_vs_Time_Canada_3/6/2016 Cov_vs_Time_Conus_3/6/2016
3/8/2016	3/8/2016	PRN18	None	PRN-18 (SVN-54) started experiencing distortions in the correlation peak of the GPS signal. The WAAS monitor has only reached ~80% of the trip threshold at this time and has not yet caused degradation of the

Start Date	End Date	Location Satellite	Service Affected	Event Description
				WAAS service availability. See DR 131 Elevated Correlation Peak Distortion Observed Starting 3/8/16.
3/8/2016	3/8/2016	PRN25	LPV_CONUS, LPV_Alaska, LPV200_CONUS, LPV200_Alaska, LPV200_Canada	The reduction in LPV200 Canada, Alaska, and CONUS coverage was due to a GPS NANU on PRN-25 (see NANU2016021), which was unusable from 04:24 GMT to 09:20 GMT on 3/8. The NANU resulted in significant degradation of LPV200 service coverage in CONUS from 05:27 GMT to 5:50 GMT and from 07:52 GMT to 08:38 GMT. The NANU also resulted in moderate degradation of: (1) LPV200 service coverage in Alaska from 04:58 GMT to 05:11 GMT and from 06:45 GMT to 07:21 GMT; (2) LPV200 service coverage in Canada from 06:29 GMT to 06:45 GMT, 07:11 GMT to 07:43 GMT, from 08:30 GMT to 08:35 GMT, and from 09:14 GMT to 09:19 GMT; and (3) LPV service coverage in Alaska from 05:04 GMT to 05:07 GMT and from 06:47 GMT to 07:41 GMT. Please see plot(s): LPV_3/8/2016 LPV200_3/8/2016 Cov_vs_Time_Alaska_3/8/2016 Cov_vs_Time_Conus_3/8/2016
3/9/2016	3/9/2016	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Alaska, LPV200_Canada	Geomagnetic activity (Kp = 3) disturbed the ionosphere causing elevated GIVE values. This resulted in minor degradation of: (1) LPV200 service coverage in Alaska from 02:34 GMT to 02:37 GMT, from 09:52 GMT to 09:57 GMT and from 10:20 GMT to 10:24 GMT; and (2) LPV200 service coverage in Canada from 01:29 GMT to 01:33 GMT, from 08:39 GMT to 08:42 GMT, from 09:56 GMT to 10:05 GMT, from 20:04 GMT to 20:09 GMT, and from 21:24 GMT to 21:43 GMT. Please see plot(s): LPV200_3/9/2016
3/15/2016	3/15/2016	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Alaska	Geomagnetic activity (Kp = 5) disturbed the ionosphere causing elevated GIVE values. This resulted in moderate degradation of LPV200 service coverage in Alaska from 06:37 GMT to 07:02 GMT; The elevated GIVE values also resulted in minor degradation of LPV200 service coverage in Canada from 06:51 GMT to 07:08 GMT. Please see plot(s): LPV200_3/15/2016 Cov_vs_Time_Alaska_3/15/2016
3/19/2016	3/19/2016	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Alaska, LPV200_Canada	Geomagnetic activity (Kp = 4) disturbed the ionosphere causing elevated GIVE values. This resulted in minor degradation of: (1) LPV200 service coverage in Alaska from 09:02 GMT to 09:15 GMT; and (2) LPV200 service coverage in Canada from 09:09 GMT to 09:21 GMT and from 19:52 GMT to 20:06 GMT. Please see plot(s): LPV200_3/19/2016
3/20/2016	3/20/2016	Washington D.C. (CnV),	LPV200_Canada	Geomagnetic activity (Kp = 4) disturbed the ionosphere causing elevated GIVE values. This resulted in minor degradation of LPV200 service

Start Date	End Date	Location Satellite	Service Affected	Event Description
		Los Angeles (CnV), Atlanta (CnV)		coverage in Canada from 18:45 GMT to 19:35 GMT and from 19:22 to 20:16 GMT. Please see plot(s): LPV200_3/20/2016
3/28/2016	3/29/2016	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 08:00 GMT. This caused a 4 second outage of the GEO 138 broadcast. This also caused the UDRE for GEO 138 to be elevated. The elevated UDRE for GEO 138 caused minor degradation of: (1) LPV200 service coverage in Alaska from 08:25 GMT to 08:38 GMT on 3/28 and from 08:22 GMT to 08:35 GMT on 3/29; and (2) LPV200 service coverage in Canada from 20:50 GMT to 21:00 GMT on 3/28. TOW 115274-115279. Please see plot(s): LPV200_3/28/2016 LPV200_3/29/2016

Table 1-6 WAAS Upgrades

Start Date	End Date	Location	Event Description
01/05/2016	01/05/2016	Billings (BIL1), Billings (BIL2), Billings (BIL3)	SSM-44: This system support modification (SSM) upgrades Ring 2 of the WAAS Terrestrial Communications Subsystem (TCS) and the WAAS Reference Stations and Master Stations. This upgrade supports the transition to WAAS dual frequency operations. BIL WAAS reference receivers and router were upgraded.
01/07/2016	01/07/2016	Chicago (ZAU1), Chicago (ZAU2), Chicago (ZAU3)	SSM-44: This system support modification (SSM) upgrades Ring 2 of the WAAS Terrestrial Communications Subsystem (TCS) and the WAAS Reference Stations and Master Stations. This upgrade supports the transition to WAAS dual frequency operations. ZAU WAAS reference receivers and router were upgraded.
01/12/2016	01/12/2016	Denver (ZDV1), Denver (ZDV2), Denver (ZDV3)	SSM-44: This system support modification (SSM) upgrades Ring 2 of the WAAS Terrestrial Communications Subsystem (TCS) and the WAAS Reference Stations and Master Stations. This upgrade supports the transition to WAAS dual frequency operations. ZDV WAAS reference receivers and router were upgraded. Thread A receiver (WRE-A) experienced PCU issues.
01/21/2016	01/21/2016	Honolulu (HNL1), Honolulu (HNL2), Honolulu (HNL3)	SSM-44: This system support modification (SSM) upgrades Ring 2 of the WAAS Terrestrial Communications Subsystem (TCS) and the WAAS Reference Stations and Master Stations. This upgrade supports the transition to WAAS dual frequency operations. ZHN WAAS reference receivers and router were upgraded.

Start Date	End Date	Location	Event Description
01/27/2016	01/27/2016	Anchorage (ZAN1), Anchorage (ZAN2), Anchorage (ZAN3)	SSM-44: This system support modification (SSM) upgrades Ring 2 of the WAAS Terrestrial Communications Subsystem (TCS) and the WAAS Reference Stations and Master Stations. This upgrade supports the transition to WAAS dual frequency operations. ZAN WAAS reference receivers and router were upgraded.
02/03/2016	02/03/2016	Cold Bay (CDB1), Cold Bay (CDB2), Cold Bay (CDB3)	SSM-44: This system support modification (SSM) upgrades Ring 2 of the WAAS Terrestrial Communications Subsystem (TCS) and the WAAS Reference Stations and Master Stations. This upgrade supports the transition to WAAS dual frequency operations. CDB WAAS reference receivers and router were upgraded on February 3, causing moderate degradation of the LPV200 service coverage Alaska from 16:44 GMT until 17:35 GMT and minor degradation of the LPV service coverage in southwest Alaska from 16:44 GMT until 17:30 GMT.
02/10/2016	02/10/2016	Minneapolis (ZMP1), Minneapolis (ZMP2), Minneapolis (ZMP3)	SSM-44: This system support modification (SSM) upgrades Ring 2 of the WAAS Terrestrial Communications Subsystem (TCS) and the WAAS Reference Stations and Master Stations. This upgrade supports the transition to WAAS dual frequency operations. ZMP WAAS reference receivers and router were upgraded.
02/17/2016	02/17/2016	Cleveland (ZOB1), Cleveland (ZOB2), Cleveland (ZOB3)	SSM-44: This system support modification (SSM) upgrades Ring 2 of the WAAS Terrestrial Communications Subsystem (TCS) and the WAAS Reference Stations and Master Stations. This upgrade supports the transition to WAAS dual frequency operations. ZOB WAAS reference receivers and router were upgraded.
02/23/2016	02/23/2016	Oakland (ZOA1), Oakland (ZOA2), Oakland (ZOA3)	SSM-44: This system support modification (SSM) upgrades Ring 2 of the WAAS Terrestrial Communications Subsystem (TCS) and the WAAS Reference Stations and Master Stations. This upgrade supports the transition to WAAS dual frequency operations. ZOA WAAS reference receivers and router were upgraded.
02/23/2016	02/23/2016	Boston (ZBW1), Boston (ZBW2), Boston (ZBW3)	SSM-44: This system support modification (SSM) upgrades Ring 2 of the WAAS Terrestrial Communications Subsystem (TCS) and the WAAS Reference Stations and Master Stations. This upgrade supports the transition to WAAS dual frequency operations. ZBW WAAS reference receivers and router were upgraded.
03/03/2016	03/03/2016	Gander (YQX1), Gander (YQX2), Gander (YQX3)	SSM-44: This system support modification (SSM) upgrades Ring 2 of the WAAS Terrestrial Communications Subsystem (TCS) and the WAAS Reference Stations and Master Stations. This upgrade supports the transition to WAAS dual frequency operations. YQX WAAS reference receivers and router were upgraded.

Start Date	End Date	Location	Event Description
03/07/2016	03/08/2016	Goose Bay (YYR1), Goose Bay (YYR2), Goose Bay (YYR3)	SSM-44: This system support modification (SSM) upgrades Ring 2 of the WAAS Terrestrial Communications Subsystem (TCS) and the WAAS Reference Stations and Master Stations. This upgrade supports the transition to WAAS dual frequency operations. YYR WAAS reference receivers and router were upgraded.
03/08/2016	03/09/2016	Salt Lake City (ZLC1), Salt Lake City (ZLC2), Salt Lake City (ZLC3)	SSM-44: This system support modification (SSM) upgrades Ring 2 of the WAAS Terrestrial Communications Subsystem (TCS) and the WAAS Reference Stations and Master Stations. This upgrade supports the transition to WAAS dual frequency operations. ZLC WAAS reference receivers and router were upgraded.
03/15/2016	03/16/2016	Winnipeg (YWG1), Winnipeg (YWG2), Winnipeg (YWG3)	SSM-44: This system support modification (SSM) upgrades Ring 2 of the WAAS Terrestrial Communications Subsystem (TCS) and the WAAS Reference Stations and Master Stations. This upgrade supports the transition to WAAS dual frequency operations. YWG WAAS reference receivers and router were upgraded.
03/21/2016	03/22/2016	Iqaluit (YFB1), Iqaluit (YFB2), Iqaluit (YFB3)	SSM-44: This system support modification (SSM) upgrades Ring 2 of the WAAS Terrestrial Communications Subsystem (TCS) and the WAAS Reference Stations and Master Stations. This upgrade supports the transition to WAAS dual frequency operations. YFB WAAS reference receivers and router were upgraded.

Table 1-7 GUS Switchovers

Start Date	End Date	GUS Switch	Location/ Satellite	Service Affected	Event Description
1/12/2016	1/12/2016	Manual	GEO133, Santa_Paula (SZP)	None	The uplink for the AMR GEO, PRN-133 switched from the Santa Paula uplink site to the Paumalu uplink site at 15:31 GMT on 1/12. This caused a 4 second outage of the GEO 133 broadcast. Coverage was not affected. TOW 228693-228698.
1/13/2016	1/13/2016	Manual	GEO133, Paumalu (HDH)	None	The uplink for the AMR GEO, PRN-133 switched from the Paumalu uplink site to the Santa Paula uplink site at 08:20 GMT on 1/13. This caused a 4 second outage of the GEO 133 broadcast. Coverage was not affected. TOW 289226-289237.
1/21/2016	1/21/2016	Missed Navigation Message	GEO135, Littleton (APA), Atlanta (CnV)	None	The Littleton uplink for CRW GEO had a C&V Source Select Switch from Atlanta to Los Angeles at 05:41 GMT. The Atlanta C&V faulted causing Littleton to switch to Los Angeles. The ZTL WRS went offline at the same time (WRE-A and WRE-B 05:41 GMT; WRE-C 09:14 GMT). TOW 366134-366136.

Start Date	End Date	GUS Switch	Location/ Satellite	Service Affected	Event Description
1/21/2016	1/21/2016	Missed Navigation Message	GEO138, Brewster-B (BRE-B), Atlanta (CnV)	None	The Brewster-B uplink for CRE GEO had a C&V Source Select Switch from Atlanta to Los Angeles at 05:41 GMT. The Atlanta C&V faulted causing Littleton to switch to Los Angeles. The ZTL WRS went offline at the same time (WRE-A and WRE-B 05:41 GMT; WRE-C 09:14 GMT). TOW 366134-366136.
2/7/2016	2/8/2016	Manual	GEO135, Littleton (APA)	LPV_Alaska, LPV200_Alaska, LPV200_Canada	The uplink for the CRW GEO, PRN-135 switched from the Littleton uplink site to the Napa uplink site at 05:16 GMT. This caused a 4 second outage of the CRW broadcast and also caused the WAAS carrier smoothing algorithm to reinitialize for PRN-135. This also caused the UDRE for CRW to be elevated. The elevated UDRE caused moderate degradation of: LPV200 service coverage in Alaska from 08:55 GMT to 09:36 GMT, 11:49 GMT to 12:09 GMT, 18:46 GMT to 18:58 GMT, and 21:25 GMT to 21:42 GMT on 2/7 and from 08:51 GMT to 09:32 GMT and 11:41 GMT to 12:10 GMT on 2/8. The elevated UDRE, along with increased geomagnetic activity, also caused minor degradation of: (1) LPV service coverage in Alaska from 11:49 GMT to 12:14 GMT on 2/7 and from 11:46 GMT to 12:09 GMT on 2/8; and (3)LPV200 service coverage in Canada from 19:33 GMT to 19:50 GMT on 2/7 and from 01:44 GMT to 02:00 GMT and scattered small outages across northern Canada on 2/8. The 4 second outage of the CRW broadcast followed by 3 Message Type 4 caused the fast corrections in Type 2 and 3 to time out PA mode for one second producing an LPV outage for one second in Alaska at 5:16:16 GMT. Please see plot(s): LPV_2/7/2016 LPV200_2/7/2016 Cov_vs_Time_Alaska_2/7/2016 LPV_2/8/2016 LPV200_2/8/2016
2/13/2016	2/14/2016	Faulted	GEO135, NAPA (APC)	LPV_Alaska, LPV200_Alaska, LPV200_Canada	The uplink for the CRW GEO, PRN-135 switched from the Napa uplink site to the Littleton uplink site at 01:05 GMT. This caused a 13 second outage of the CRW broadcast and also caused the WAAS carrier smoothing algorithm to reinitialize for PRN-135. This also caused the UDRE for CRW to be elevated. The elevated UDRE for CRW caused moderate degradation of: (1) LPV200 service coverage in Alaska from 08:40 GMT until 09:10 GMT and 21:08 GMT until 21:20 GMT on 2/13 and 08:25 GMT until 09:10 GMT on 2/14. The elevated UDRE for CRW also caused minor degradation of: (1) LPV service coverage in Alaska at 01:05 GMT and from 11:25 GMT until 11:50 GMT on 2/13 and

Start Date	End Date	GUS Switch	Location/ Satellite	Service Affected	Event Description
					11:22 GMT until 11:45 GMT on 2/14; (2) LPV200 service coverage in Canada from 05:00 GMT until 05:05 GMT and 14:00 GMT until 14:15 GMT on 2/13. TOW 522332-522346. Please see plot(s): LPV_2/13/2016 LPV200_2/13/2016 Cov_vs_Time_Alaska_2/13/2016
2/16/2016	2/17/2016	Manual	GEO135, Littleton (APA)	LPV_Alaska, LPV200_CONUS, LPV200_Alaska, LPV200_Canada	The uplink for the CRW GEO, PRN-135 switched from the Littleton uplink site to the Napa uplink site at 10:58 GMT. This caused a 4 second outage of the GEO 135 broadcast. This also caused the UDRE for GEO 135 to be elevated. The elevated UDRE for GEO 135, along with increased geomagnetic activity, caused moderate degradation of: (1) LPV service Coverage in Canada from 23:30 GMT to 23:55 GMT on 2/17; (2) LPV200 service coverage in Alaska from 08:34 GMT to 08:48 GMT, 11:12 GMT to 11:33 GMT, 18:07 GMT to 18:27 GMT, and 20:54 GMT to 21:04 GMT on 2/16 and from 08:26 GMT to 08:52 GMT, and 11:08 GMT to 11:23 GMT on 2/17; and (3) LPV200 service coverage in Canada from 11:22 GMT to 11:38 GMT, 18:55 GMT to 19:00 GMT, and 21:03 GMT to 21:40 GMT on 2/16 and from 18:52 GMT to 19:00 GMT, and from 20:45 GMT to 21:25 GMT on 2/17. The elevated UDRE for GEO 135, along with increased geomagnetic activity, also caused minor degradation of: (1) LPV service coverage in Alaska from 11:11 GMT to 11:37 GMT on 2/16. Please see plot(s): LPV_2/16/2016 LPV200_2/16/2016 Cov_vs_Time_Alaska_2/16/2016 Cov_vs_Time_Canada_2/16/2016 LPV_2/17/2016 LPV200_2/17/2016 Cov_vs_Time_Alaska_2/17/2016 Cov_vs_Time_Canada_2/17/2016
2/17/2016	2/19/2016	Manual	GEO135, NAPA (APC)	LPV_Alaska, LPV200_Alaska, LPV200_Canada	The uplink for the CRW GEO, PRN-135 switched from the Littleton uplink site to the Napa uplink site at 23:39 GMT. This caused a 4 second outage of the GEO 135 broadcast. This also caused the UDRE for GEO 135 to be elevated. The elevated UDRE for GEO 135, along with increased geomagnetic activity, caused moderate degradation of: (1) LPV service Coverage in Canada from 23:30 GMT to 23:55 GMT on 2/17 and 00:00 GMT to 00:15 GMT on 2/18; (2) LPV200 service coverage in Alaska 23:51 GMT to 23:50 GMT on 2/17, 00:00 GMT to 01:10 GMT, 08:21 GMT to 09:00 GMT, 11:01 GMT until 11:20 GMT, 18:15 GMT to 18:20 GMT, and 20:48 GMT to 21:00 GMT on 2/18,

Start Date	End Date	GUS Switch	Location/ Satellite	Service Affected	Event Description
					and 08:20 GMT to 09:10 GMT and 11:00 GMT to 11:15 GMT on 2/19; and (3) LPV200 service coverage in Canada from 23:40 GMT to 23:59 GMT on 2/17 and 00:00 GMT until 01:00 GMT on 2/18. The elevated UDRE for GEO 135, along with increased geomagnetic activity, also caused minor degradation of: (1) LPV service coverage in Alaska from 11:05 GMT to 11:20 GMT on 2/18 and 11:00 GMT until 11:20 GMT on 2/19. The 4 second outage of the CRW broadcast followed by 3 Message Type 4 caused the fast corrections in Type 2 to time out PA mode for one second producing an LPV outage for one second in Alaska at 23:39:39 GMT. Please see plot(s): LPV_2/17/2016 LPV200_2/17/2016 Cov_vs_Time_Alaska_2/17/2016 Cov_vs_Time_Canada_2/17/2016 LP_2/18/2016 LPV_2/18/2016 Cov_vs_Time_Alaska_2/18/2016 Cov_vs_Time_Canada_2/18/2016
2/23/2016	2/24/2016	Manual	GEO135, Littleton (APA)	LPV_Alaska, LPV200_Alaska, LPV200_Canada	The uplink for the CRW GEO, PRN-135 switched from the Littleton uplink site to the Napa uplink site at 08:00 GMT. This caused a 4 second outage of the GEO 135 broadcast. This also caused the UDRE for GEO 135 to be elevated. The elevated UDRE for GEO 135 caused moderate degradation of: (1) LPV service coverage in Alaska from 08:06 GMT to 08:36 GMT and 10:44 GMT to 10:56 GMT on 2/23; (2) LPV200 service coverage in Alaska from 08:06 GMT to 08:36 GMT and 10:34 GMT to 11:12 GMT on 2/23 and from 10:39 GMT to 10:55 GMT and 17:30 GMT to 17:37 GMT and 20:27 GMT to 20:34 GMT on 2/24; and (3) LPV200 service coverage in Canada from 10:34 GMT to 11:04 GMT and 13:17 GMT to 14:05 GMT and 18:07 GMT to 18:31 GMT on 2/23. The elevated UDRE for GEO 135 also caused minor degradation of: (1) LPV service coverage in Alaska from 10:42 GMT to 11:00 GMT on 2/23 and from 10:40 GMT until 11:06 GMT on 2/24; (2) LPV200 service coverage in Canada from 10:49 GMT to 10:59 GMT and 13:42 GMT to 13:52 GMT and 18:22 GMT to 18:34 on 2/24. The elevated UDRE for GEO 135 also extended CONUS outages at 19:21 GMT by about 15 minutes. TOW 201623-201628. Please see plot(s): LPV_2/23/2016 LPV200_2/23/2016 Cov_vs_Time_Alaska_2/23/2016 Cov_vs_Time_Canada_2/23/2016 LPV200_2/24/2016

Start Date	End Date	GUS Switch	Location/ Satellite	Service Affected	Event Description
					Cov_vs_Time_Alaska_2/24/2016 Cov_vs_Time_Canada_2/24/2016
3/5/2016	3/6/2016	Faulted	GEO135, Napa (APC)	LPV_Alaska, LPV200_Alaska, LPV200_Canada	The uplink for the CRW GEO, PRN-135 switched from the Napa uplink site to the Littleton uplink site at 02:10 GMT. This caused a 15 second outage of the CRW broadcast and also caused the WAAS carrier smoothing algorithm to reinitialize for PRN-135. This also caused the UDRE for CRW to be elevated. The elevated UDRE for CRW caused moderate degradation of LPV200 service coverage in Alaska from 05:15 GMT to 05:22 GMT, from 07:03 GMT to 07:52 GMT, from 09:50 GMT to 10:10 GMT on 3/5, from 07:08 GMT to 07:34 GMT, from 09:55 GMT to 10:08 GMT, and from 14:31 GMT to 14:49 GMT on 3/6. The elevated UDRE for CRW also caused minor degradation of: (1) LPV200 service coverage in Canada from 10:07 GMT to 10:15 GMT, from 13:05 GMT to 13:10 GMT, from 17:22 GMT to 17:45 GMT, from 22:39 GMT to 22:48 GMT on 3/5, from 10:03 GMT to 10:11 GMT, from 12:07 GMT to 12:24 GMT, and from 14:49 GMT to 15:04 GMT on 3/6; (2) LPV service coverage in Alaska from 07:11 GMT to 07:46 GMT and from 10:00 GMT to 10:20 GMT on 3/5. TOW 526260-526276. Please see plot(s): LPV_3/5/2016 LPV200_3/5/2016 Cov_vs_Time_Alaska_3/5/2016 Cov_vs_Time_Canada_3/5/2016 Cov_vs_Time_Alaska_3/6/2016 Cov_vs_Time_Canada_3/6/2016
3/28/2016	3/29/2016	Manual	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 08:00 GMT. This caused a 4 second outage of the GEO 138 broadcast. This also caused the UDRE for GEO 138 to be elevated. The elevated UDRE for GEO 138 caused minor degradation of: (1) LPV200 service coverage in Alaska from 08:25 GMT to 08:38 GMT on 3/28 and from 08:22 GMT to 08:35 GMT on 3/29; and (2) LPV200 service coverage in Canada from 20:50 GMT to 21:00 GMT on 3/28. TOW 115274-115279. Please see plot(s): LPV200_3/28/2016 LPV200_3/29/2016

1.2 Report Overview

Section 2 provides the observed 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 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 provides geographic plots of the WAAS service availability. Also shown in this section are plots of the percentage of the CONUS and Alaska service areas covered by various levels of service availability.

Section 5 provides the summary of the 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 provides the UDRE and GIVE bounding percentage and the 95% index of the range and ionospheric accuracy for each satellite tracked by the WAAS receiver at 12 locations.

Section 7 provides the GEO ranging performance for CRE and CRW.

Section 8 provides the WAAS LPV availability and outages at selected airports.

Section 9 provides the assessment of WAAS CNMP bounding for 114 WAAS receivers.

Section 10 provides surveyed positions of all Wide-area Reference Equipment (WRE) as well as 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 provides the daily and quarterly average of Signal Quality Monitor (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 utilizing the GPS/WAAS position solution tool to compute a RTCA DO-229D weighted least squares user navigation solution, and WAAS horizontal and vertical protection levels (HPL & 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 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 LNAV/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 as below:

- The maximum 95% CONUS horizontal LPV error was 1.415 meters observed at Atlantic City.
- The maximum 95% CONUS vertical LPV error was 1.689 meters observed at Miami.
- The minimum 95% CONUS horizontal LPV errors was 0.654 meters observed at Oakland.
- The minimum 95% CONUS vertical LPV error was 0.826 meters observed at Denver.

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 minimum 95% horizontal error was 1.144 meters observed at Albuquerque.
- The minimum 99.999% horizontal error was 2.833 meters observed at Oakland.
- The maximum 95% horizontal error was 5.607 meters observed at Honolulu.
- The maximum 99.999% horizontal error was 12.95 meters observed at Honolulu.

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 4.139 meters occurred at Atlantic City, and maximum vertical LPV error was 7.713 meters occurred at Barrow.

Figures 2-1 to 2-3 show the daily LPV 95% horizontal accuracy at the PA evaluation sites, and Figures 2-4 to 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 Figures 2-1 to 2-6 are listed below.

- January 1, 2016—Position errors in CONUS and Alaska were elevated. The maximum 95% horizontal and vertical LPV errors were 1.408 meters and 2.13 meters at Atlantic City and Barrow, respectively. The Kp index range was 6.
- January 7, 2016—Position errors in CONUS were elevated. The maximum 95% horizontal and vertical LPV errors were 1.404 meters and 1.627 meters at Arcata and Miami, respectively. The Kp index range was 4.
- January 11, 2016—Position errors in CONUS and Canada were elevated. The maximum 95% horizontal and vertical LPV errors were 1.407 meters and 2.912 meters at Atlantic City and Iqaluit, respectively. The Kp index was 4.
- January 21, 2016—Position errors in CONUS, Alaska and Canada were elevated. The maximum 95% horizontal and vertical LPV errors were 1.706 meters and 2.784 meters at Atlantic City and Kotzebue, respectively. The Kp index was 5 to 6.
- February 7 and February 8, 2016—Position errors in CONUS were elevated. The maximum 95% horizontal and vertical LPV errors were 1.560 meters and 2.211 meters at Atlantic City and Miami, respectively. The Kp index was 4 to 5.
- February 16 through February 18, 2016—Position errors in CONUS, Alaska and Canada were elevated. The maximum 95% horizontal and vertical LPV errors were 1.637 meters and 2.639 meters at Atlantic City and Iqaluit, respectively. The Kp index was 5 to 6.
- March 6 and March 7, 2016—Position errors in CONUS, Alaska, Canada, and Mexico were elevated. The maximum 95% horizontal and vertical LPV errors were 2.561 meters and 4.468 meters at Boston and Iqaluit, respectively. The Kp index was 5 to 7.
- March 11, 2016—Position errors in Alaska were elevated. The maximum 95% horizontal and vertical LPV errors were 1.167 meters and 2.150 meters at Anchorage. The Kp index was 6.
- March 15 and March 16, 2016—Position errors in Alaska and Canada were elevated. The maximum 95% horizontal and vertical LPV errors were 1.300 meters and 1.891 meters at Gander and Barrow, respectively. The Kp index range was 5.
- March 27 and March 28, 2016—Position errors in CONUS and Canada were elevated. The maximum 95% horizontal and vertical LPV errors were 1.503 meters and 1.744 meters at Atlantic City and Iqaluit, respectively. The Kp index was 3 to 4.

Figures 2-7 and 2-8 show the daily NPA 95% horizontal accuracy at the NPA evaluation sites for the reporting period. The increases in 95% NPA position errors were due to geomagnetic activity occurred on January 1, 11, 20, and 21; February 7, 8, and 16-18; and March 6, 7, 11, 16, and 20, 2016.

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 errors (VPE) versus VPL and horizontal position errors (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 2D histograms of horizontal and vertical position errors and normalized position errors: (1) the blue trace shows the distributions of the actual horizontal and vertical errors; (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 - (HPL/6.0) and vertical - (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.

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	1.204	1.204	1.165	100	*	*
Atlantic City	1.415	1.417	1.346	100	*	*
Grand Forks	1.161	1.163	1.429	100	*	*
Oklahoma City	0.856	0.856	1.249	100	*	*
Albuquerque	0.685	0.685	0.946	100	1.892	3.742
Anchorage	0.768	0.768	1.312	100	*	*
Atlanta	0.805	0.805	1.223	100	2.091	3.828
Barrow	0.661	0.662	1.441	99.99975	*	*
Bethel	0.605	0.605	0.966	100	1.745	4.432
Billings	0.699	0.699	0.963	100	1.937	3.719
Boston	0.886	0.887	1.067	100	2.254	3.590
Chicago	0.893	0.894	0.932	100	*	*
Cleveland	0.886	0.887	0.968	100	2.336	3.675
Cold Bay	0.701	0.701	1.189	100	*	*
Dallas	0.776	0.776	1.399	100	*	*
Denver	0.684	0.684	0.826	100	*	*
Fairbanks	0.703	0.704	1.178	100	1.640	4.465
Gander	0.897	0.901	1.158	100	*	*
Goose Bay	0.836	0.841	1.091	100	*	*
Houston	0.844	0.844	1.568	100	2.097	4.049
Iqaluit	0.990	0.996	1.480	100	*	*
Jacksonville	0.832	0.832	1.454	100	*	*
Juneau	0.679	0.682	1.233	100	*	*
Kansas City	0.660	0.660	0.886	100	2.039	3.775
Kotzebue	0.708	0.709	1.267	99.99975	1.722	4.568
Los Angeles	0.854	0.854	1.052	100	1.995	4.185
Memphis	0.746	0.746	1.124	100	*	*
Merida	0.779	0.779	1.690	100	*	*
Mexico City	0.712	0.712	2.781	100	*	*
Miami	0.935	0.935	1.689	100	2.279	4.000
Minneapolis	0.738	0.739	0.943	100	2.100	3.663
New York	0.929	0.931	0.943	100	*	*
Oakland	0.654	0.654	1.031	100	1.971	4.238
Puerto Vallarta	0.758	0.759	1.967	100	*	*
Salt Lake City	0.657	0.657	0.850	100	1.870	3.652
San Jose Del Cabo	0.959	0.959	2.020	100	*	*
Seattle	0.751	0.752	0.920	100	1.896	3.731
Washington DC	0.917	0.919	1.104	100	2.292	3.725
Winnipeg	0.676	0.678	1.139	100	*	*

* = SPS Data not processed.

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	1.144	3.325	100	3.704
Anchorage	1.553	5.397	100	5.528
Atlanta	1.346	2.958	100	3.130
Barrow	1.329	3.448	100	3.615
Bethel	1.388	4.243	100	4.400
Billings	1.516	5.657	100	5.911
Boston	1.761	6.356	100	6.557
Cleveland	1.693	4.167	100	4.400
Cold Bay	1.296	3.587	100	3.818
Fairbanks	1.353	3.631	100	3.756
Gander	1.680	8.022	100	8.176
Honolulu	5.607	12.953	100	13.246
Houston	1.571	3.384	100	3.556
Iqaluit	1.676	6.106	100	6.287
Juneau	1.344	7.038	100	7.426
Kansas City	1.232	4.498	100	4.685
Kotzebue	1.377	2.991	100	3.200
Los Angeles	1.542	3.677	100	3.939
Merida	1.698	4.772	100	4.934
Miami	1.652	3.781	100	3.892
Minneapolis	1.493	4.970	100	5.244
Oakland	1.159	2.833	100	3.051
Salt Lake City	1.273	5.033	100	5.201
San Jose Del Cabo	1.975	6.086	100	6.275
San Juan	2.361	8.188	100	8.326
Seattle	1.386	3.897	100	4.162
Tapachula	2.427	6.668	100	6.896
Washington DC	1.781	3.354	100	3.520

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	2.798	0.228	0.232	3.266	0.098	0.151
Atlantic City	2.648	0.156	0.221	6.873	0.138	0.174
Grand Forks	3.615	0.141	0.213	5.283	0.106	0.213
Oklahoma City	1.999	0.185	0.203	3.138	0.101	0.194
Albuquerque	1.649	0.153	0.159	2.481	0.148	0.152
Anchorage	3.133	0.082	0.203	5.170	0.103	0.213
Atlanta	1.756	0.164	0.164	3.278	0.166	0.179
Barrow	2.410	0.195	0.195	7.002	0.151	0.203
Bethel	1.920	0.114	0.142	2.972	0.110	0.143
Billings	1.563	0.151	0.156	2.882	0.067	0.177
Boston	3.244	0.215	0.215	8.022	0.162	0.198
Chicago	3.950	0.191	0.191	8.841	0.258	0.258
Cleveland	2.343	0.060	0.186	6.789	0.216	0.216
Cold Bay	2.153	0.111	0.115	2.848	0.073	0.135
Dallas	1.620	0.157	0.179	2.716	0.209	0.210
Denver	1.888	0.139	0.190	2.381	0.119	0.149
Fairbanks	2.207	0.088	0.166	6.928	0.149	0.236
Gander	3.948	0.102	0.129	5.176	0.154	0.154
Goose Bay	2.696	0.070	0.150	5.900	0.138	0.173
Houston	2.056	0.179	0.192	3.104	0.206	0.213
Iqaluit	3.451	0.099	0.162	7.120	0.178	0.224
Jacksonville	1.721	0.148	0.162	3.178	0.146	0.184
Juneau	3.074	0.087	0.165	4.254	0.188	0.188
Kansas City	1.804	0.117	0.176	2.932	0.122	0.166
Kotzebue	2.504	0.089	0.142	5.924	0.190	0.211
Los Angeles	1.633	0.118	0.147	2.978	0.123	0.146
Memphis	1.538	0.157	0.178	2.506	0.139	0.162
Merida	1.875	0.106	0.157	3.982	0.158	0.162
Mexico City	2.116	0.077	0.120	4.687	0.192	0.209
Miami	2.117	0.129	0.163	3.750	0.148	0.199
Minneapolis	2.778	0.185	0.218	2.956	0.129	0.155
New York	2.419	0.167	0.167	5.757	0.130	0.182
Oakland	1.422	0.110	0.138	2.535	0.085	0.134
Puerto Vallarta	1.805	0.059	0.095	4.130	0.172	0.187
Salt Lake City	1.533	0.139	0.166	2.442	0.112	0.155
San Jose Del Cabo	2.070	0.116	0.132	4.119	0.099	0.169
Seattle	2.481	0.076	0.187	2.794	0.167	0.167
Washington DC	2.184	0.097	0.173	5.062	0.114	0.198
Winnipeg	2.955	0.167	0.186	6.029	0.200	0.202

Figure 2-1 LPV 95% Horizontal Accuracy

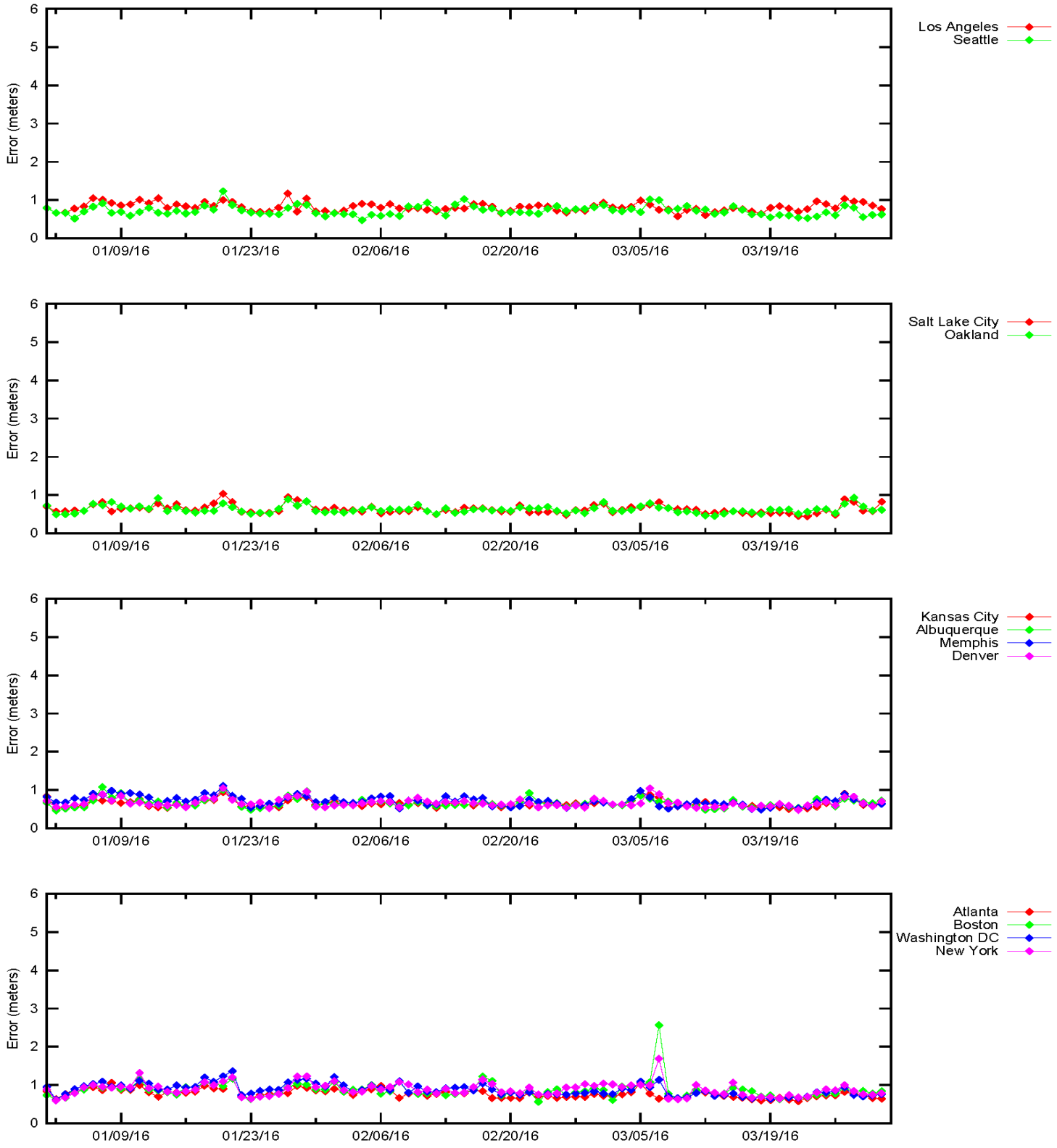


Figure 2-2 LPV 95% Horizontal Accuracy

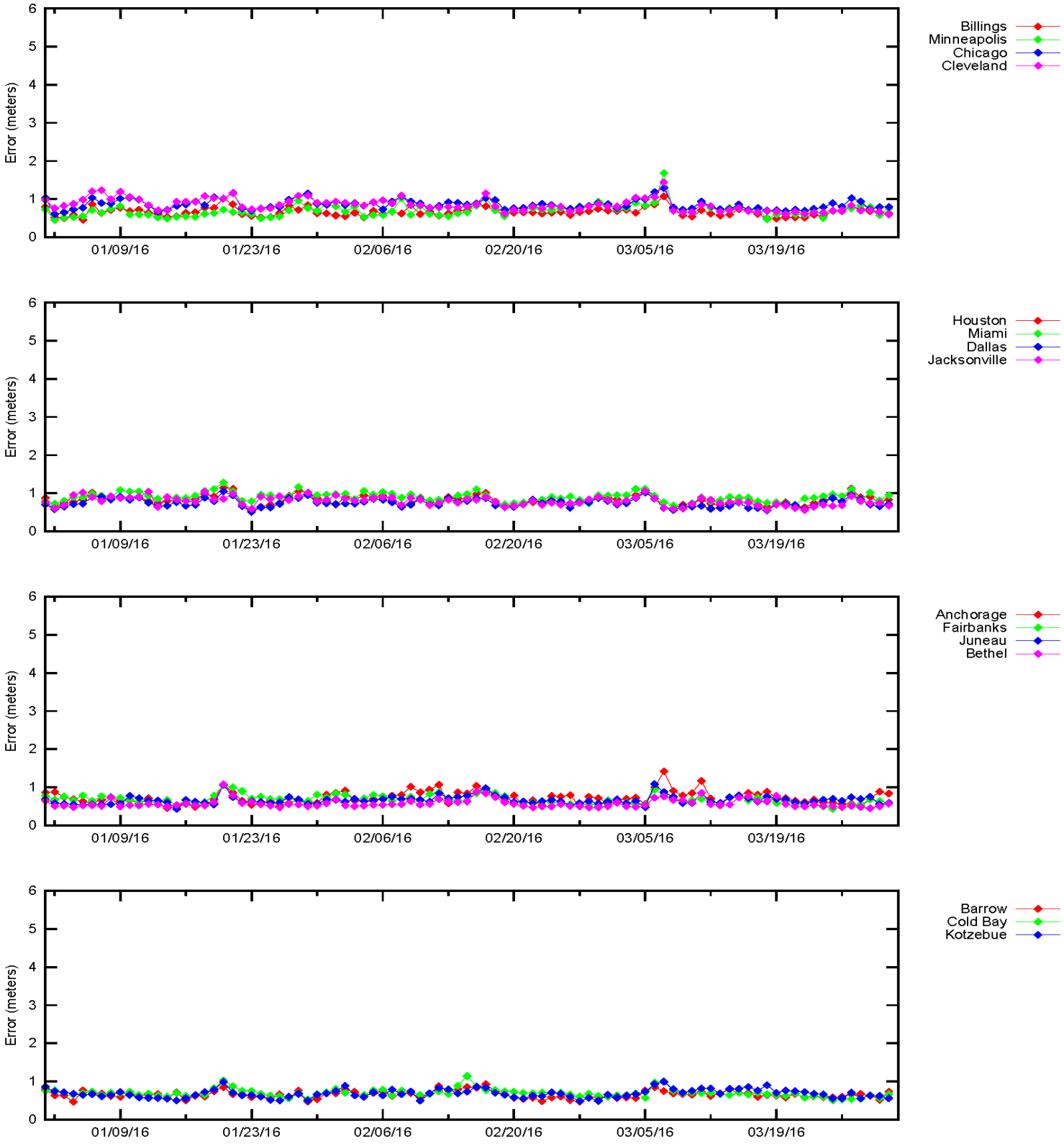


Figure 2-3 LPV 95% Horizontal Accuracy

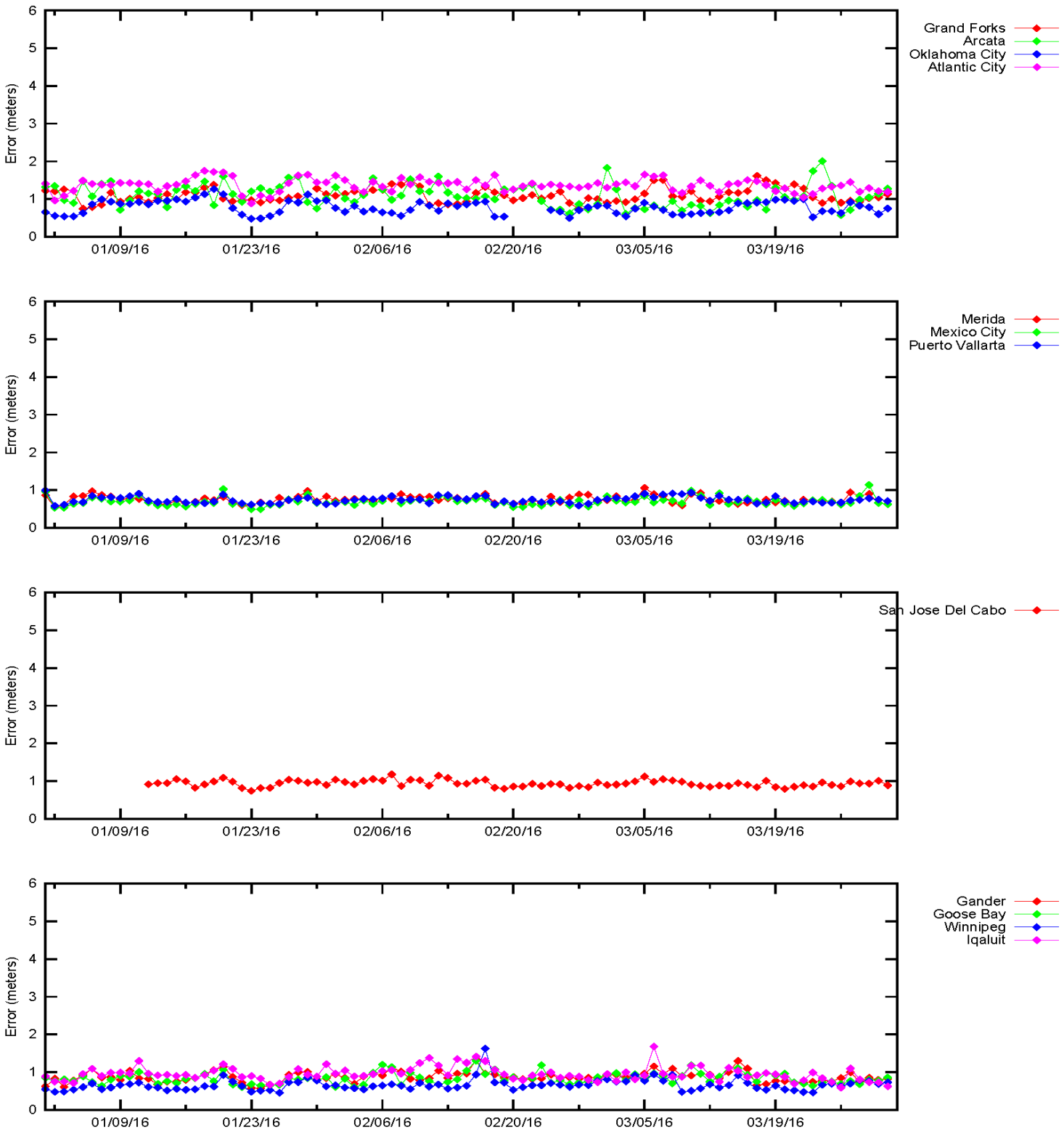


Figure 2-4 LPV 95% Vertical Accuracy

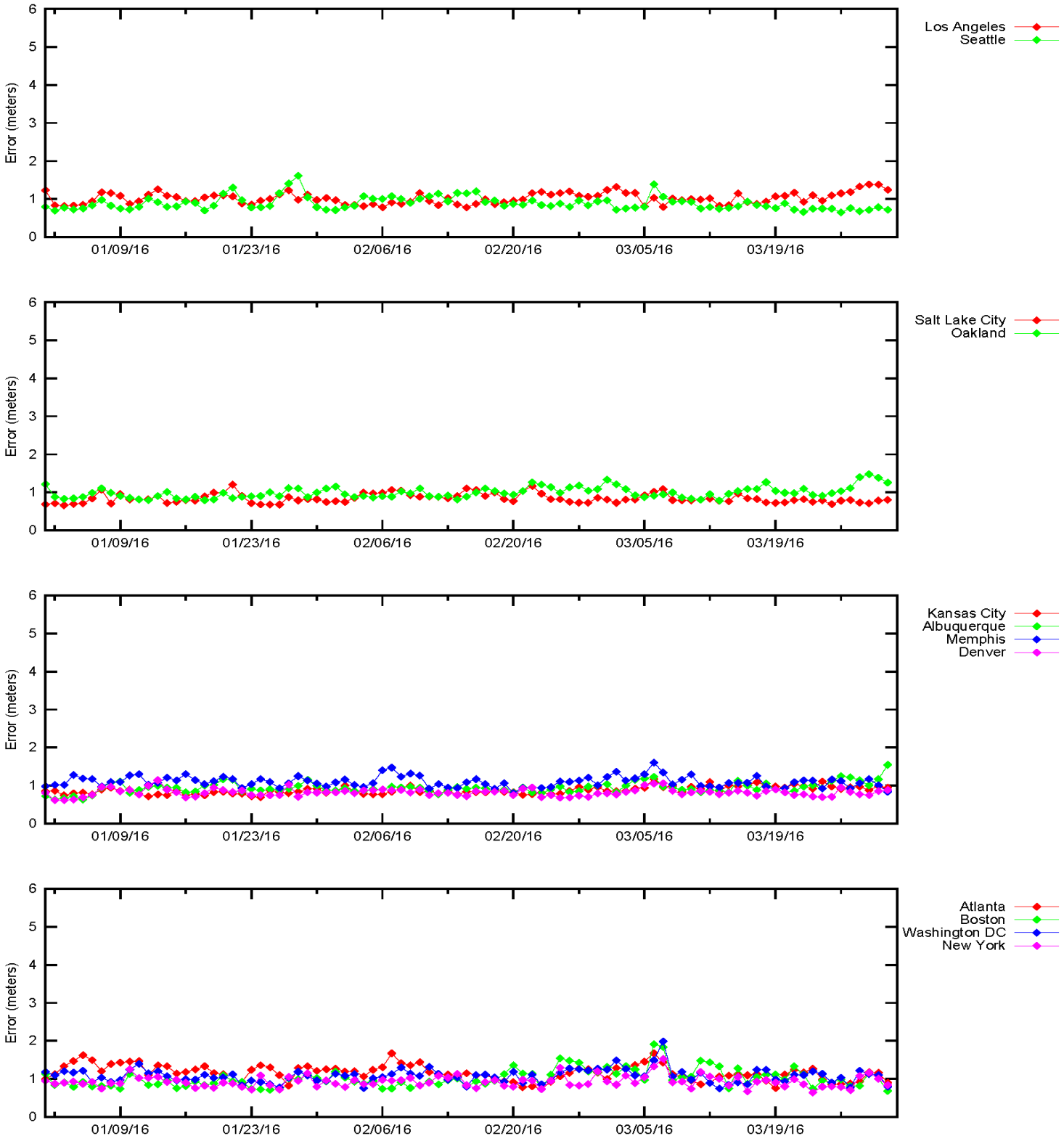


Figure 2-5 LPV 95% Vertical Accuracy

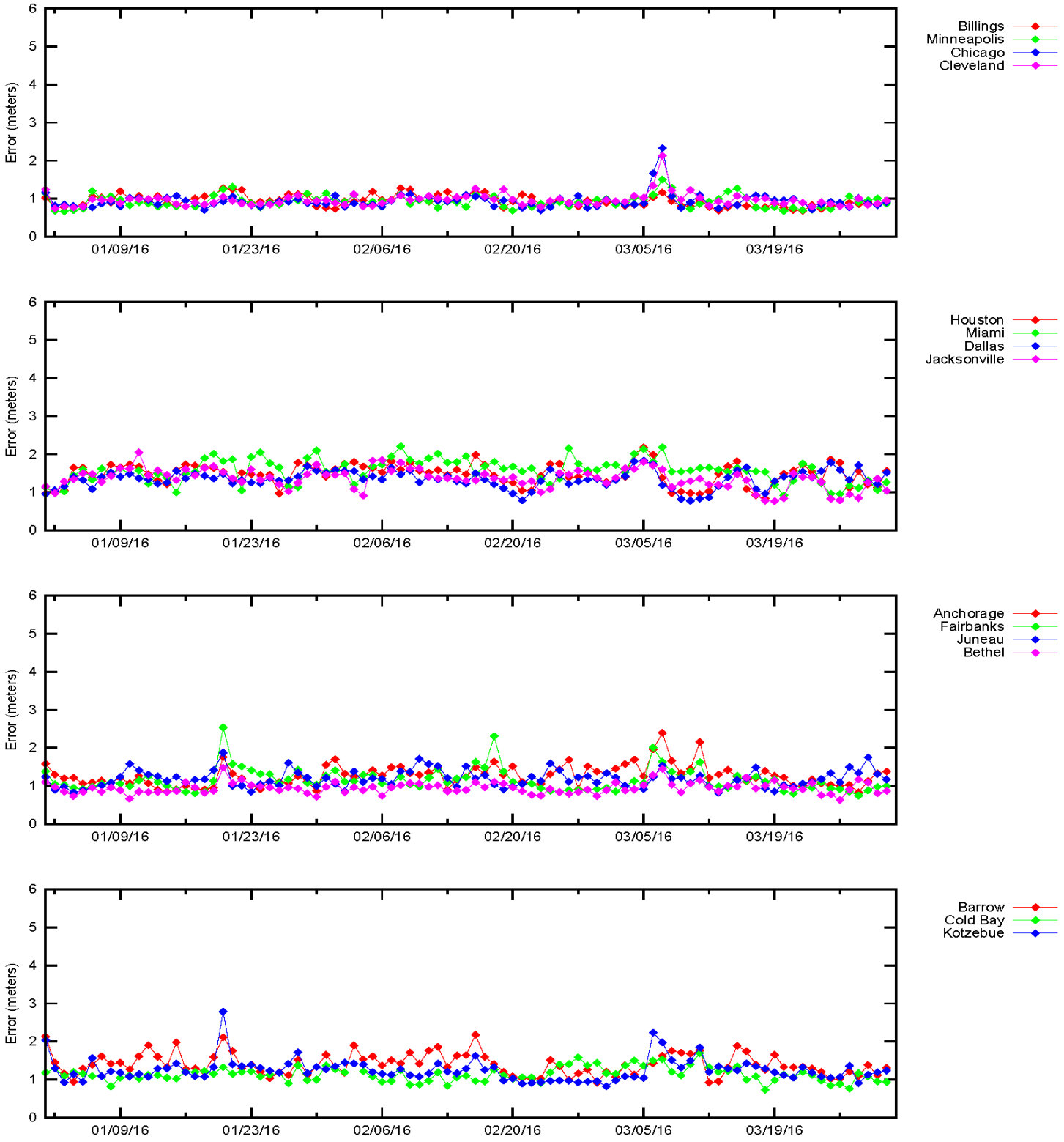


Figure 2-6 LPV 95% Vertical Accuracy

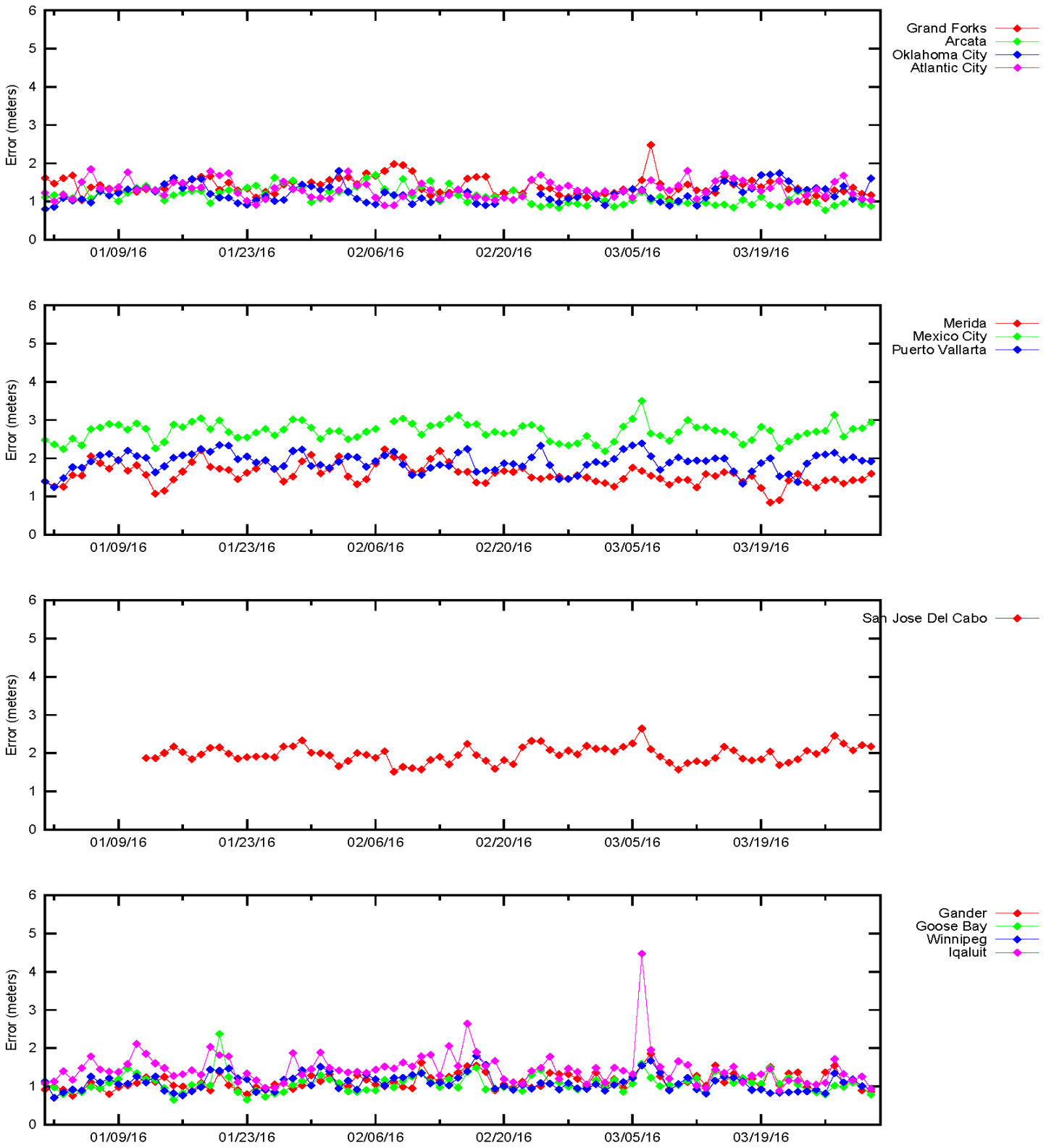


Figure 2-7 NPA 95% Horizontal Accuracy

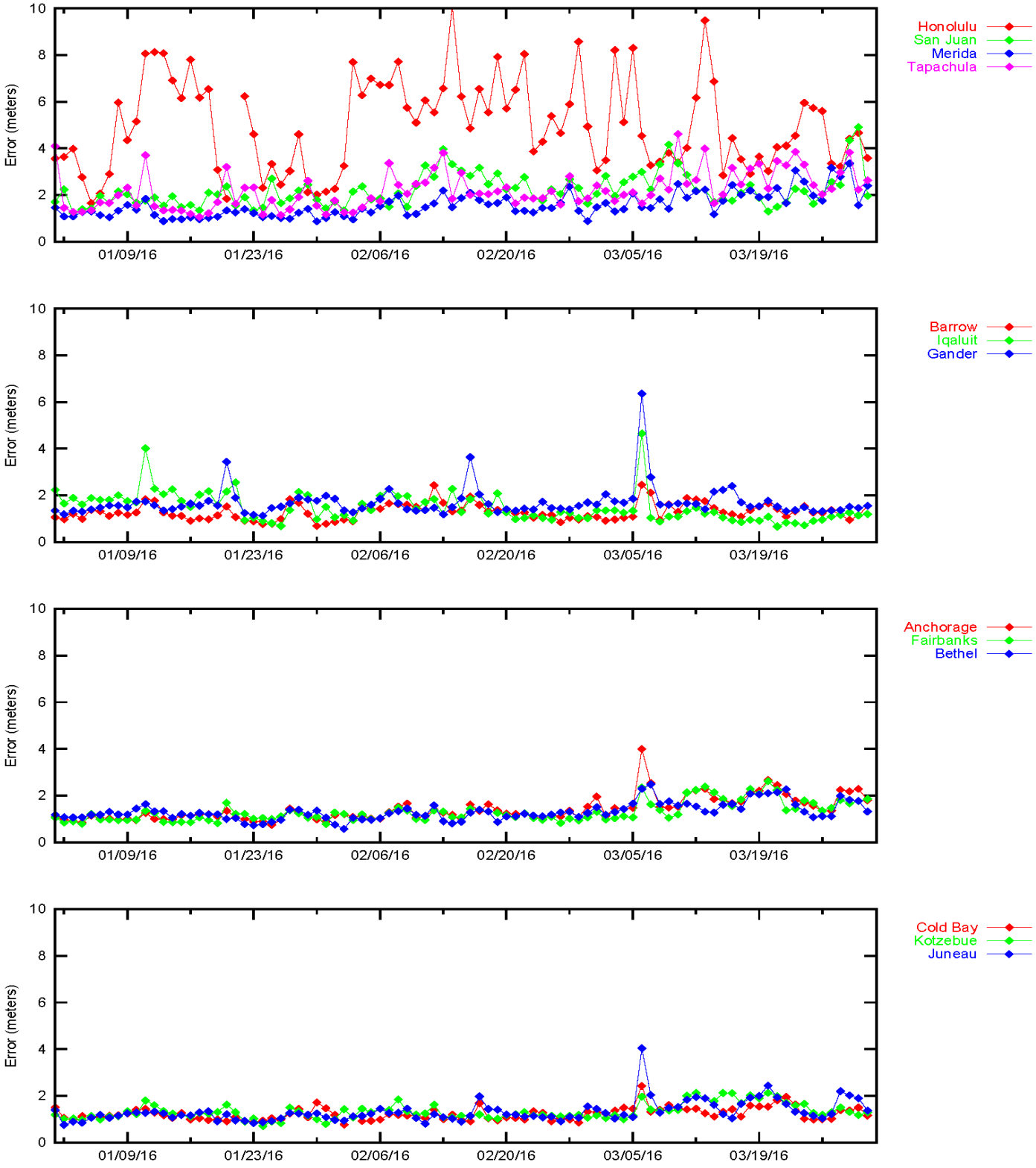


Figure 2-8 NPA 95% Horizontal Accuracy

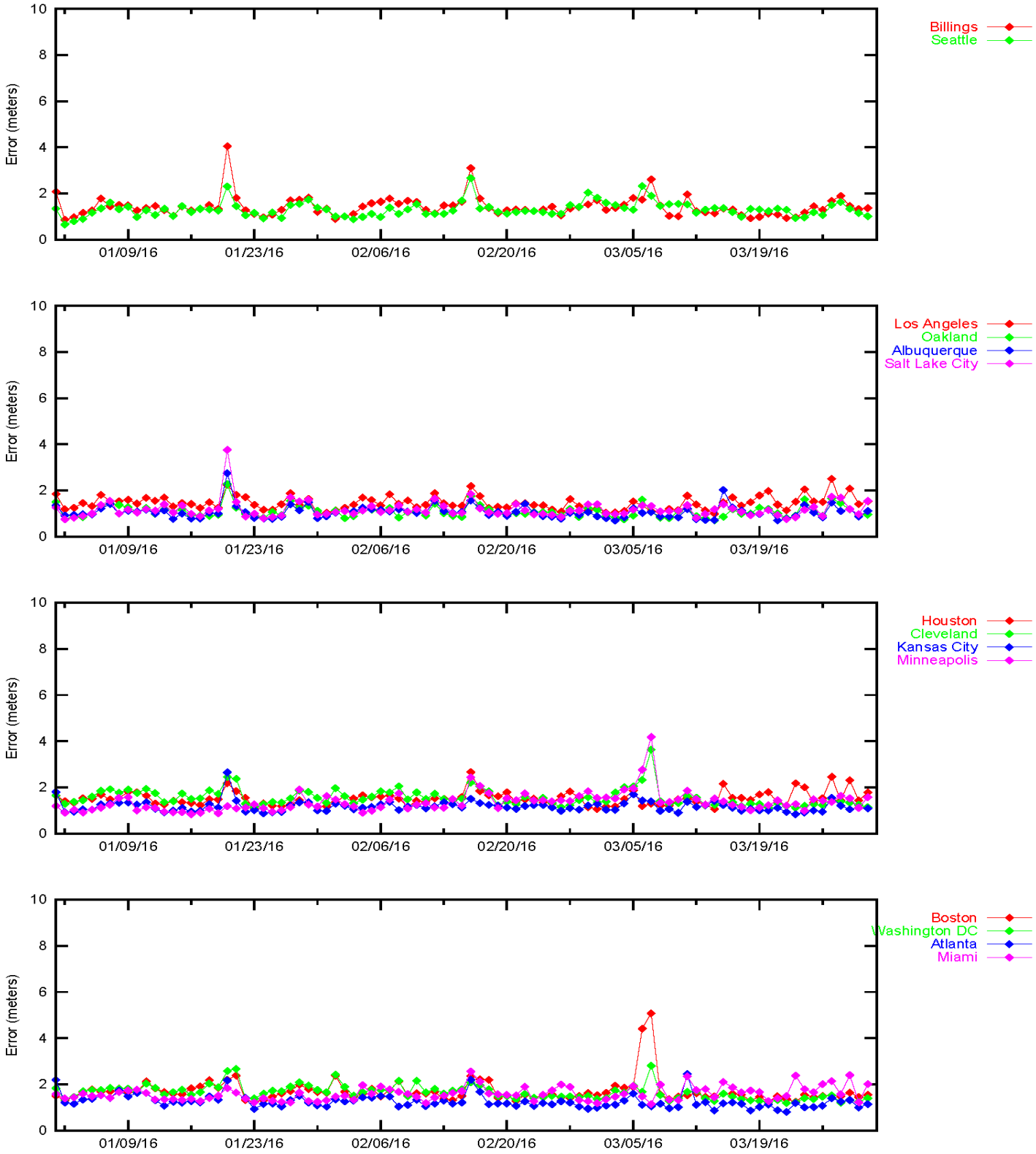


Figure 2-9 LPV Horizontal Error Bounding Triangle Chart

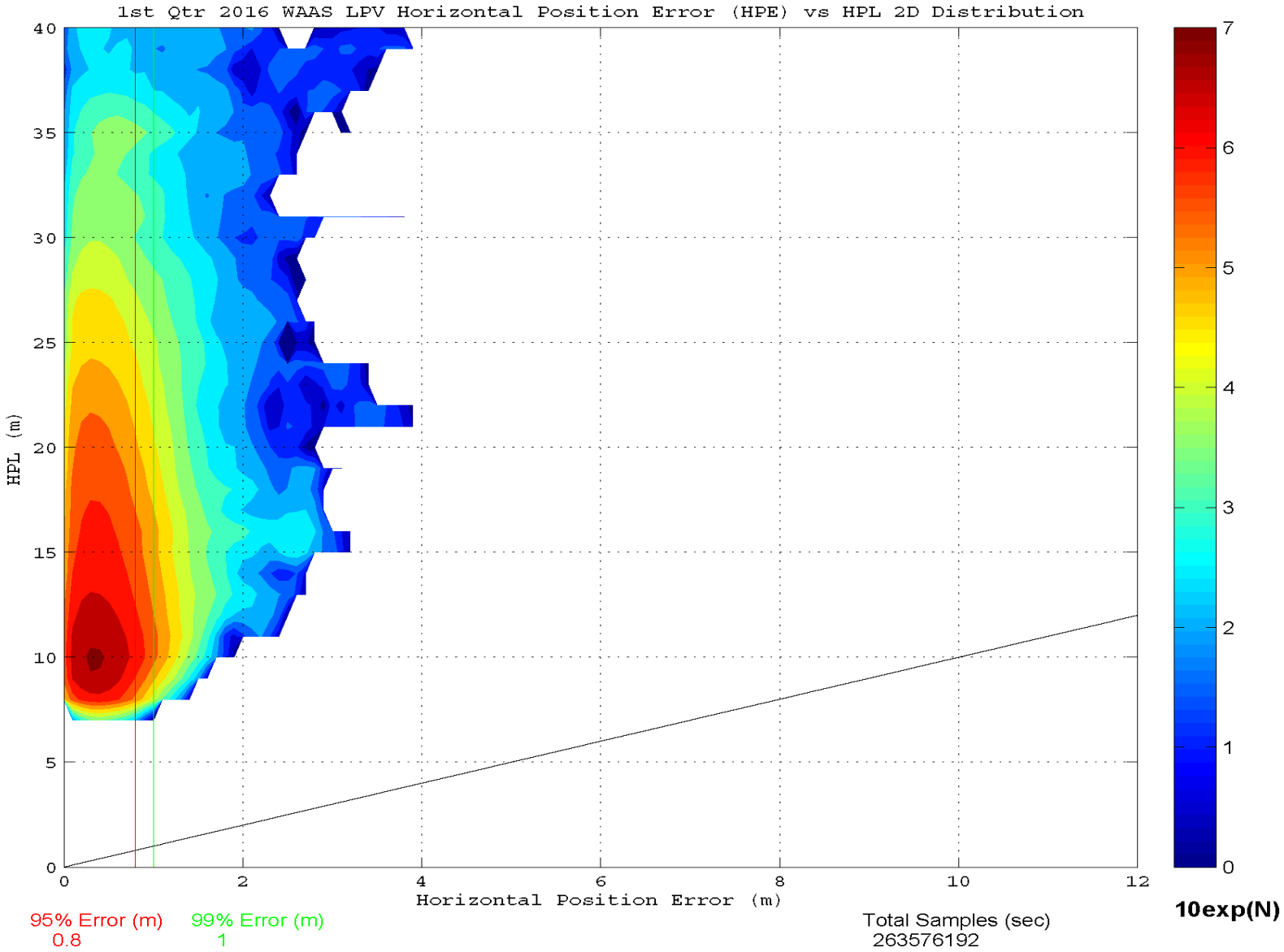


Figure 2-10 LPV Vertical Error Bounding Triangle Chart

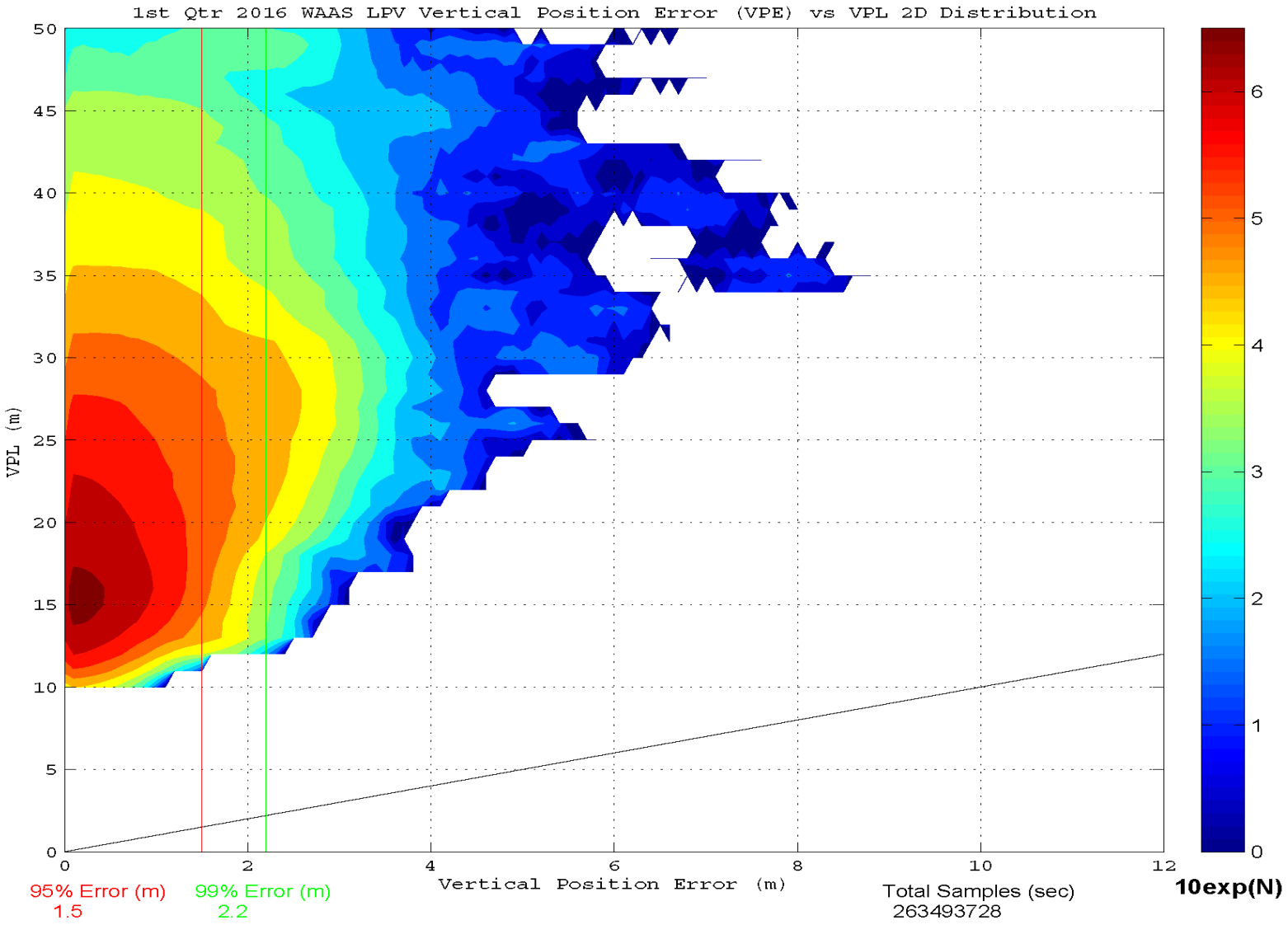


Figure 2-11 LPV 2-D Horizontal Error Distribution Histogram

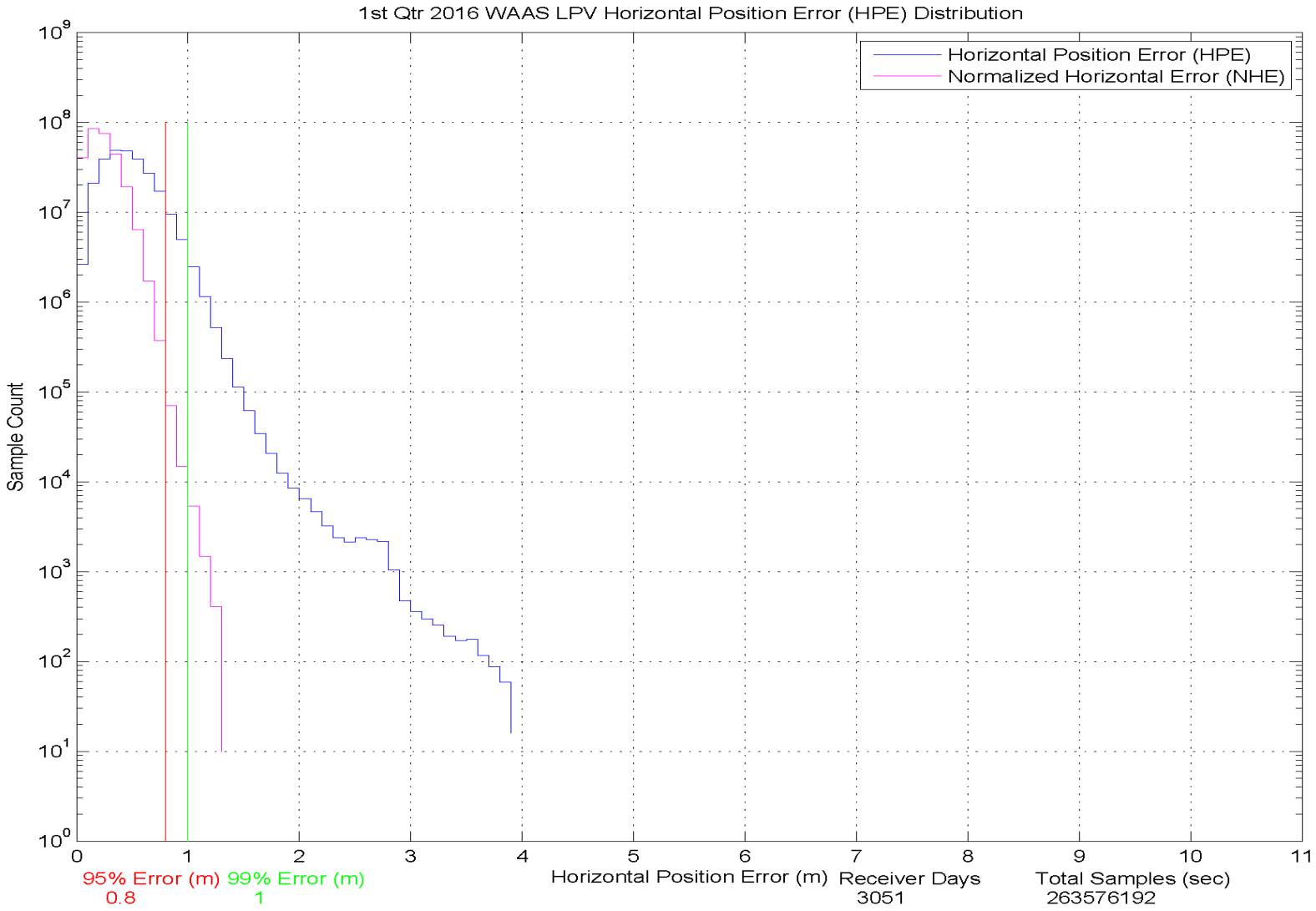
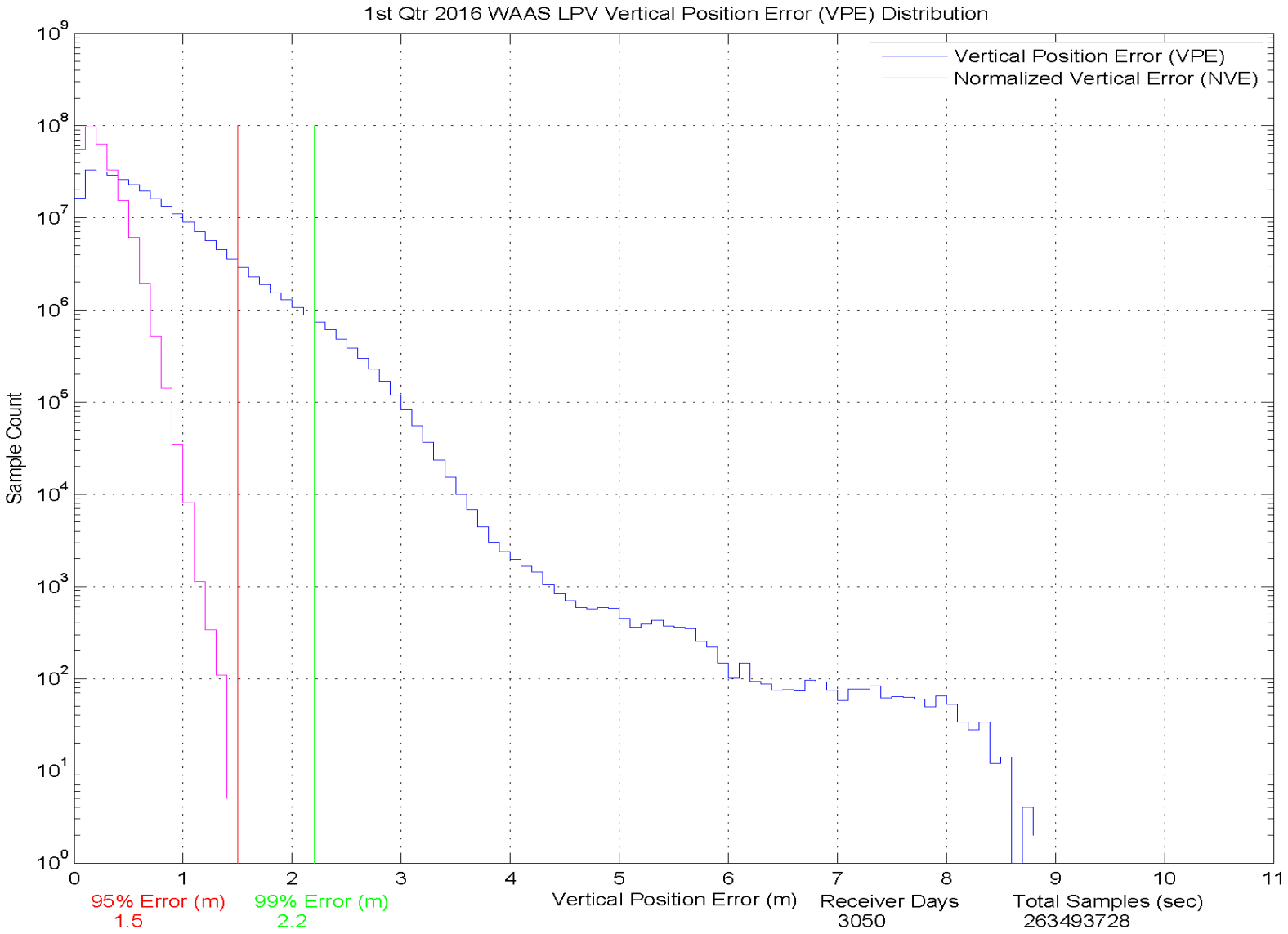


Figure 2-12 LPV 2-D Vertical Error Distribution Histogram



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. 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). The maximum and minimum VPL and HPL for this reporting period are listed as below:

- The maximum 99% CONUS HPL was 17.53 meters observed at Arcata
- The maximum 99% CONUS VPL was 32.825 meters observed at Arcata.
- The minimum 99% CONUS HPL was 10.909 meters observed at Oklahoma City.
- The minimum 99% CONUS VPL is 19.37 meters observed at Kansas City.
- The maximum 99% Alaska HPL was 27.441 meters observed at Cold Bay.
- The maximum 99% Alaska VPL was43.214 meters observed at Barrow.
- The minimum 99% Alaska HPL was 14.134 meters observed at Juneau.
- The minimum 99% Alaska VPL was 23.472 meters observed at Juneau.

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 HAL of 556 meters. The service is unavailable when HPL exceeds the HAL or when 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, RFI, and elevated UDRE and GIVE values. Noteworthy events that affected availability are listed below.

- January 1 – January 11, 2016—San Jose Del Cabo WRS was taken offline resulting in elevated GIVE values, which reduced LPV availability in Mexico and LPV200 availability in CONUS and Mexico.
- January 15, 2016—Satellite maintenance caused elevated UDREs on PRN-28 and reduced LPV200 availability in CONUS, Alaska, and Canada.
- January 16, 2016—Local RFI at Anchorage caused a reduction and eventual loss of SV tracking. LPV200 outages occurred at Anchorage from 22:08 GMT to 22:10 GMT and 23:12 GMT to 23:14 GMT.
- January 20 – 21, 2016—Geomagnetic activity caused elevated GIVE values, which reduced LPV availability in Alaska and LPV200 availability in CONUS, Alaska, and Canada.
- January 29, 2016—Satellite maintenance caused elevated UDREs on PRN-12 and reduced LPV availability in Alaska and Canada and LPV200 availability in CONUS, Alaska, and Canada.
- February 7 – 8, 13 – 14, 16 – 18, and 23 – 24, 2016—Elevated UDREs on CRW GEO caused reduced LPV availability in Alaska and LPV200 availability in Alaska and Canada.

- February 15, 2016—Local RFI at Miami caused a reduction and eventual loss of SV tracking. LPV200 outage occurred at Miami from 07:35 GMT to 07:36 GMT.
- March 6 – 7, 2016—Geomagnetic activity caused elevated GIVE values, which reduced LPV and LPV200 availability in CONUS, Alaska, and Canada. See DR 130 Ionospheric Activity Effects on WAAS Performance 6-7March 2016.
- March 8, 2016—Satellite maintenance caused elevated UDREs on PRN-25 and reduced LPV200 availability in CONUS, Alaska, and Canada.
- March 28, 2016—Elevated UDREs on CRE GEO caused reduced LPV200 availability in Alaska and Canada.

Table 3-1 99% Protection Level

Location	99% HPL (meters)	99% VPL (meters)	Percentage in PA mode
Arcata	17.530	32.825	100
Atlantic City	15.095	23.074	100
Grand Forks	14.072	23.445	100
Oklahoma City	10.909	21.642	100
Albuquerque	11.226	21.292	100
Anchorage	14.592	26.176	100
Atlanta	12.204	22.448	100
Barrow	17.806	43.214	99.999750
Bethel	17.828	29.185	100
Billings	12.505	21.324	100
Boston	15.330	21.729	100
Chicago	12.862	20.923	100
Cleveland	16.078	22.732	100
Cold Bay	27.441	39.669	100
Dallas	10.943	19.448	100
Denver	11.073	20.786	100
Fairbanks	14.228	26.582	100
Gander	25.105	36.582	100
Goose Bay	21.104	29.402	100
Houston	11.030	21.216	100
Iqaluit	34.044	44.806	100
Jacksonville	12.778	23.309	100
Juneau	14.134	23.472	100
Kansas City	11.055	19.371	100
Kotzebue	17.302	35.679	99.999750
Los Angeles	15.132	31.210	100
Memphis	11.432	19.965	100
Merida	23.801	38.431	100
Mexico City	28.259	39.735	100
Miami	15.176	26.506	100
Minneapolis	12.453	21.240	100
New York	14.599	21.616	100
Oakland	15.851	32.754	100
Puerto Vallarta	27.732	46.909	100
Salt Lake City	11.655	21.649	100
San Jose Del Cabo	22.923	41.020	100
Seattle	14.021	22.218	100
Washington DC	15.389	23.675	100
Winnipeg	15.049	22.392	100

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

Location	LP WAAS Availability (%)	LPV WAAS Availability (%)	LPV200 WAAS Availability (%)
Arcata	100	100	99.72
Atlantic City	99.96	99.95	99.94
Grand Forks	99.92	99.91	99.9
Oklahoma City	100	100	100
Albuquerque	100	100	100
Anchorage	99.96	99.92	99.82
Atlanta	100	100	100
Barrow	99.96	99.58	96.62
Bethel	99.98	99.97	99.86
Billings	99.96	99.96	99.95
Boston	99.95	99.93	99.9
Chicago	99.96	99.95	99.92
Cleveland	99.95	99.94	99.93
Cold Bay	99.98	99.92	93.83
Dallas	100	100	100
Denver	100	100	100
Fairbanks	99.9	99.87	99.77
Gander	99.79	99.78	97.26
Goose Bay	99.79	99.78	99.7
Houston	100	100	100
Iqaluit	99.67	99.4	89.86
Jacksonville	100	100	100
Juneau	99.86	99.86	99.82
Kansas City	100	100	100
Kotzebue	99.98	99.88	98.39
Los Angeles	100	100	99.89
Memphis	100	100	100
Merida	100	100	96.77
Mexico City	100	99.72	96
Miami	100	100	99.99
Minneapolis	99.92	99.92	99.92
New York	99.95	99.95	99.93
Oakland	100	100	99.84
Puerto Vallarta	99.97	99.49	90.91
Salt Lake City	100	100	100
San Jose Del Cabo	100	99.99	95.42
Seattle	99.97	99.94	99.92
Washington DC	99.96	99.96	99.95
Winnipeg	99.92	99.9	99.87

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

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

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

Location	LP Outages	LP Outage Rates	LPV Outages	LPV Outage Rates	LPV200 Outages	LPV200 Outage Rates
Arcata	0	0	1	0.000019	56	0.001079
Atlantic City	1	0.000019	1	0.000019	1	0.000019
Grand Forks	2	0.000039	2	0.000039	4	0.000077
Oklahoma City	0	0	0	0	0	0
Albuquerque	0	0	0	0	0	0
Anchorage	3	0.000057	6	0.000115	9	0.000172
Atlanta	0	0	0	0	0	0
Barrow	5	0.000096	29	0.000556	236	0.004665
Bethel	1	0.000019	1	0.000019	10	0.000191
Billings	1	0.000019	1	0.000019	2	0.000038
Boston	1	0.000019	1	0.000019	2	0.000038
Chicago	1	0.000019	1	0.000019	2	0.000038
Cleveland	1	0.000019	1	0.000019	1	0.000019
Cold Bay	1	0.000019	6	0.000116	508	0.010445
Dallas	0	0	0	0	0	0
Denver	0	0	0	0	0	0
Fairbanks	5	0.000095	5	0.000096	19	0.000363
Gander	1	0.000019	1	0.000019	257	0.005042
Goose Bay	1	0.000019	1	0.000019	9	0.000172
Houston	0	0	0	0	0	0
Iqaluit	13	0.000249	45	0.000864	537	0.011403
Jacksonville	0	0	0	0	1	0.000019
Juneau	2	0.000038	2	0.000038	8	0.000153
Kansas City	0	0	0	0	0	0
Kotzebue	5	0.000095	22	0.00042	136	0.002637
Los Angeles	0	0	1	0.000019	27	0.000516
Memphis	0	0	0	0	0	0
Merida	0	0	0	0	237	0.004677
Mexico City	2	0.000038	50	0.000957	607	0.012069
Miami	0	0	0	0	5	0.000095
Minneapolis	2	0.000038	2	0.000038	2	0.000038
New York	1	0.000019	1	0.000019	2	0.000038
Oakland	0	0	1	0.000019	42	0.000804
Puerto Vallarta	2	0.000038	57	0.001094	519	0.010898
Salt Lake City	0	0	0	0	0	0
San Jose Del Cabo	1	0.000022	3	0.000065	280	0.00637
Seattle	1	0.000019	1	0.000019	3	0.000057
Washington DC	1	0.000019	1	0.000019	1	0.000019
Winnipeg	2	0.000038	2	0.000038	5	0.000096

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

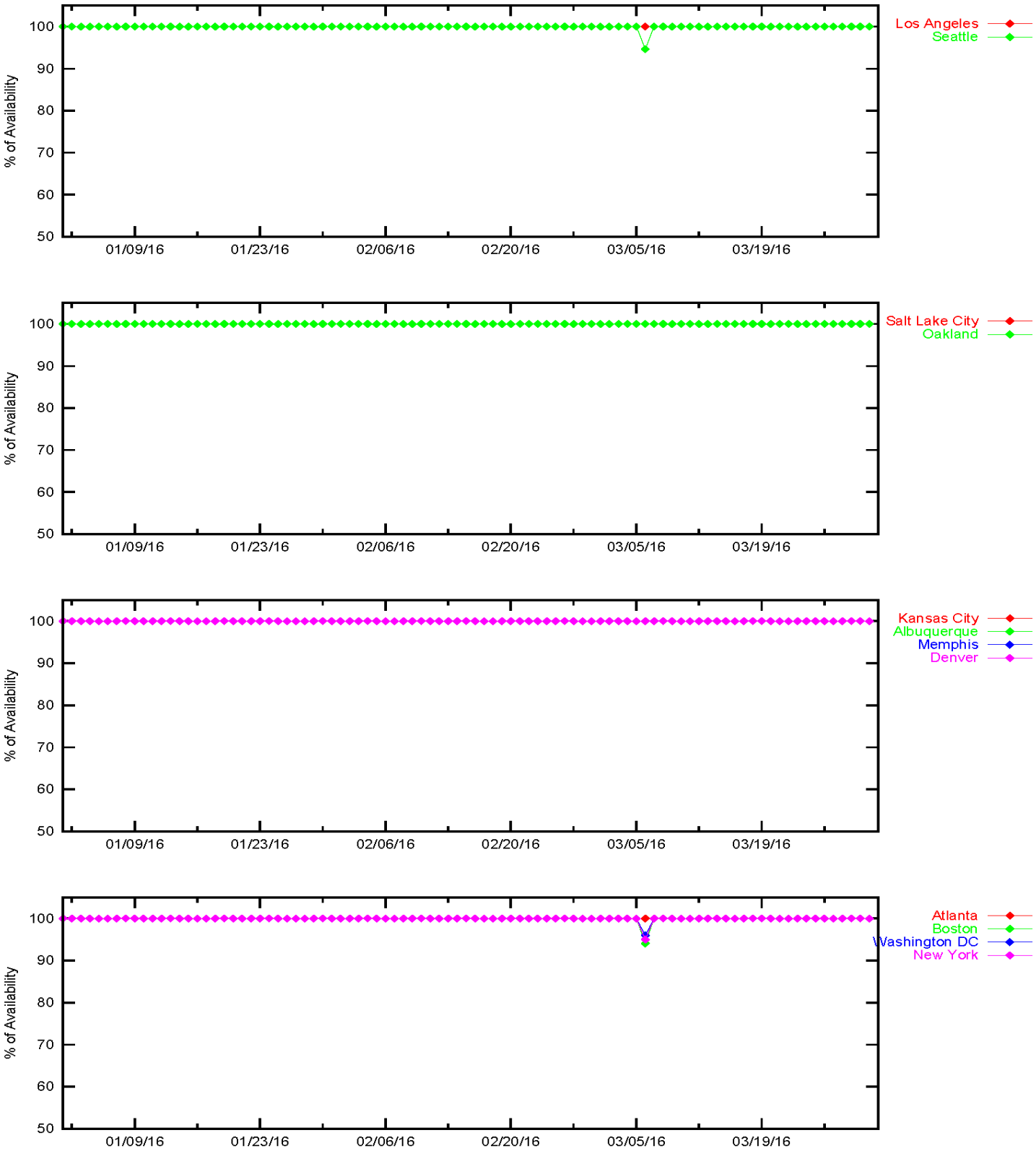


Figure 3-2 LPV Instantaneous Availability

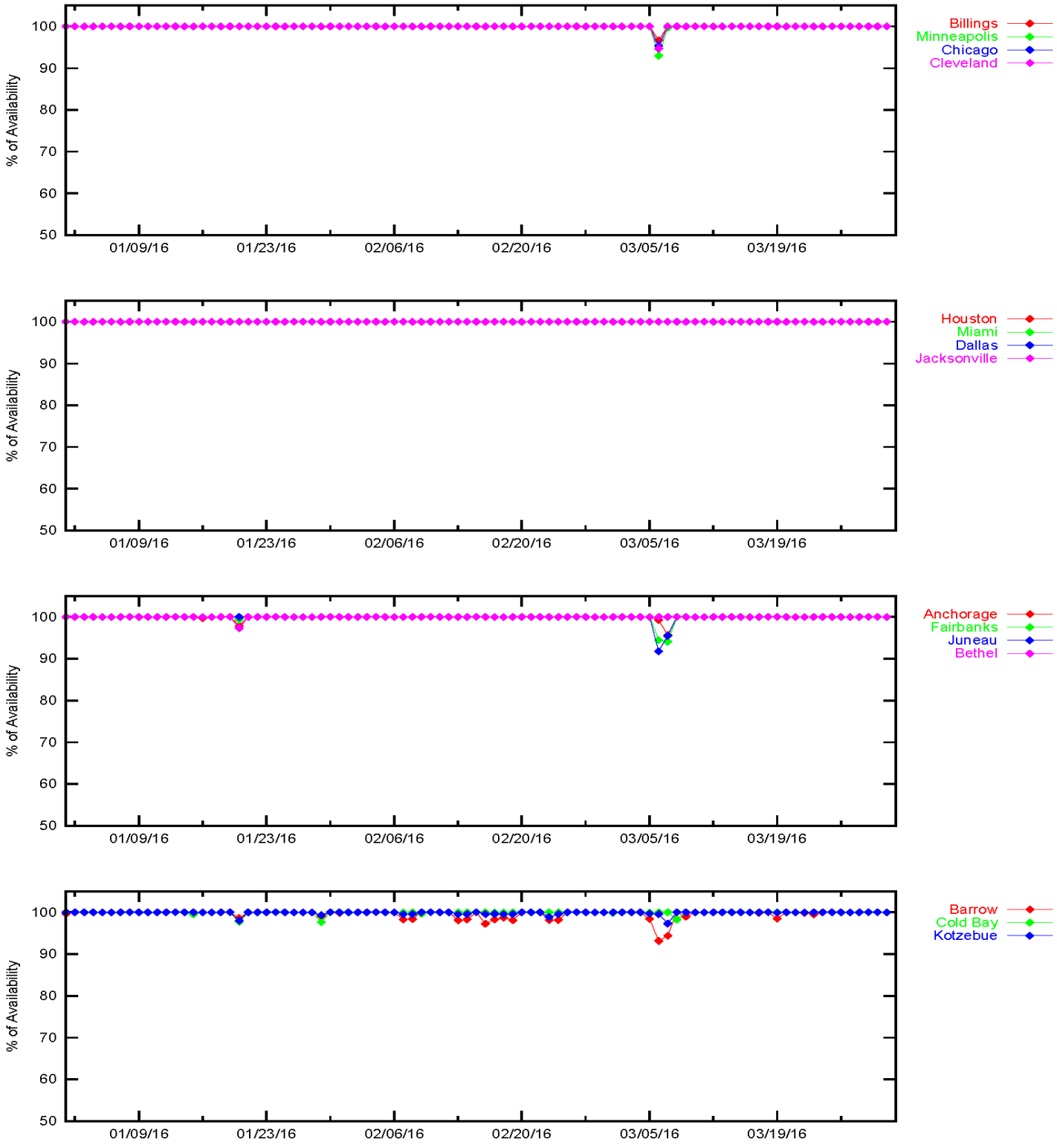


Figure 3-3 LPV Instantaneous Availability

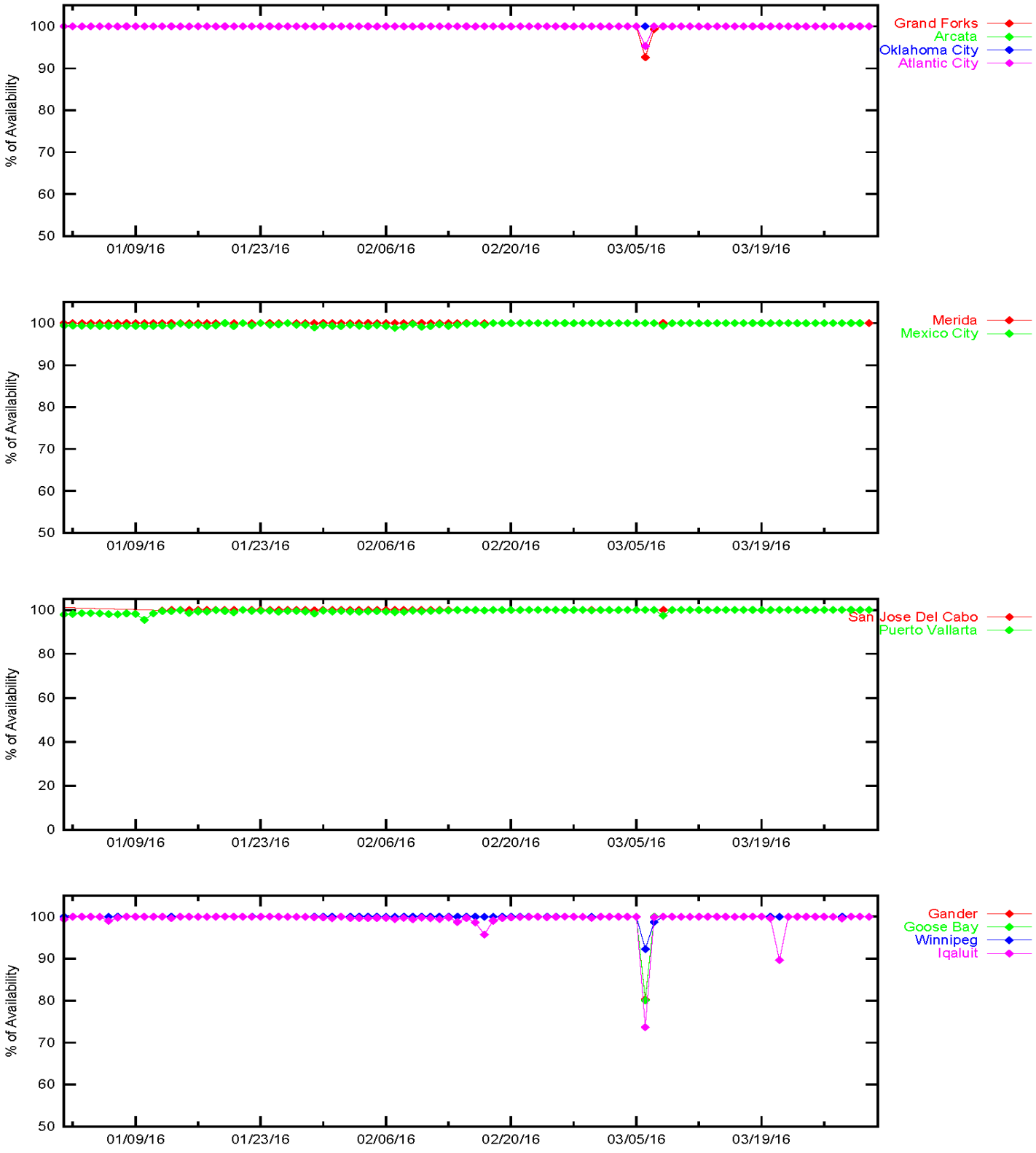


Figure 3-4 LPV200 Instantaneous Availability

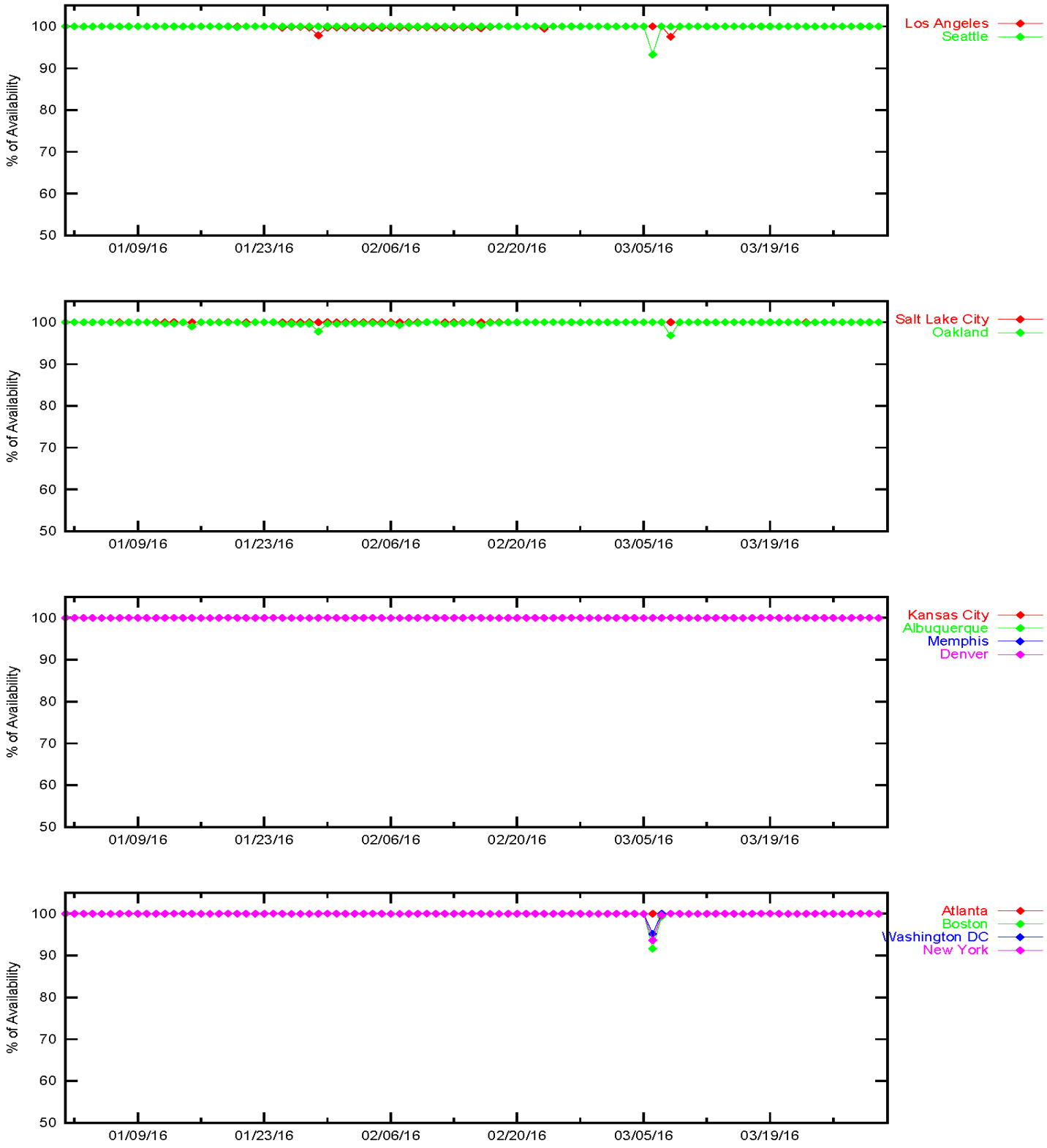


Figure 3-5 LPV200 Instantaneous Availability

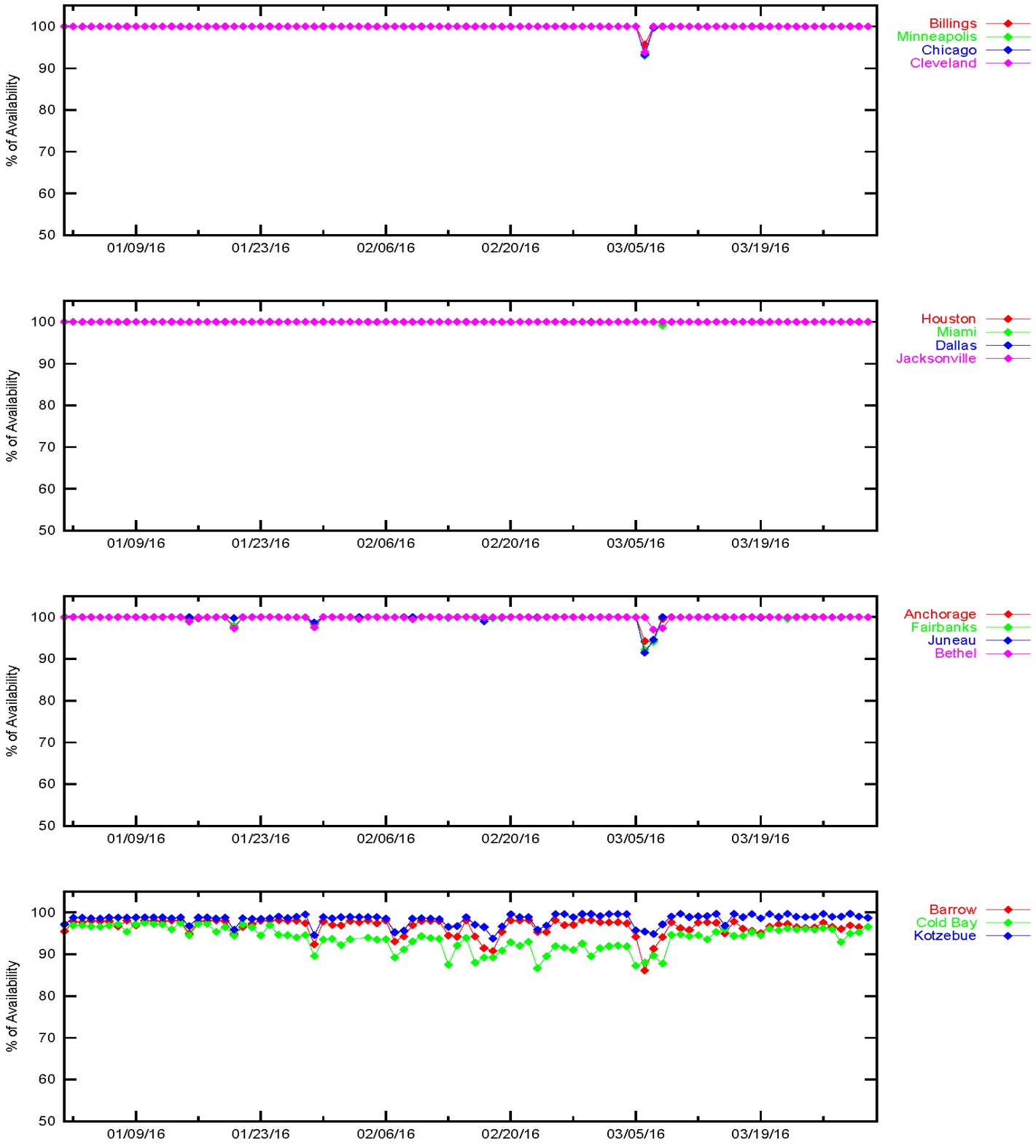


Figure 3-6 LPV200 Instantaneous Availability

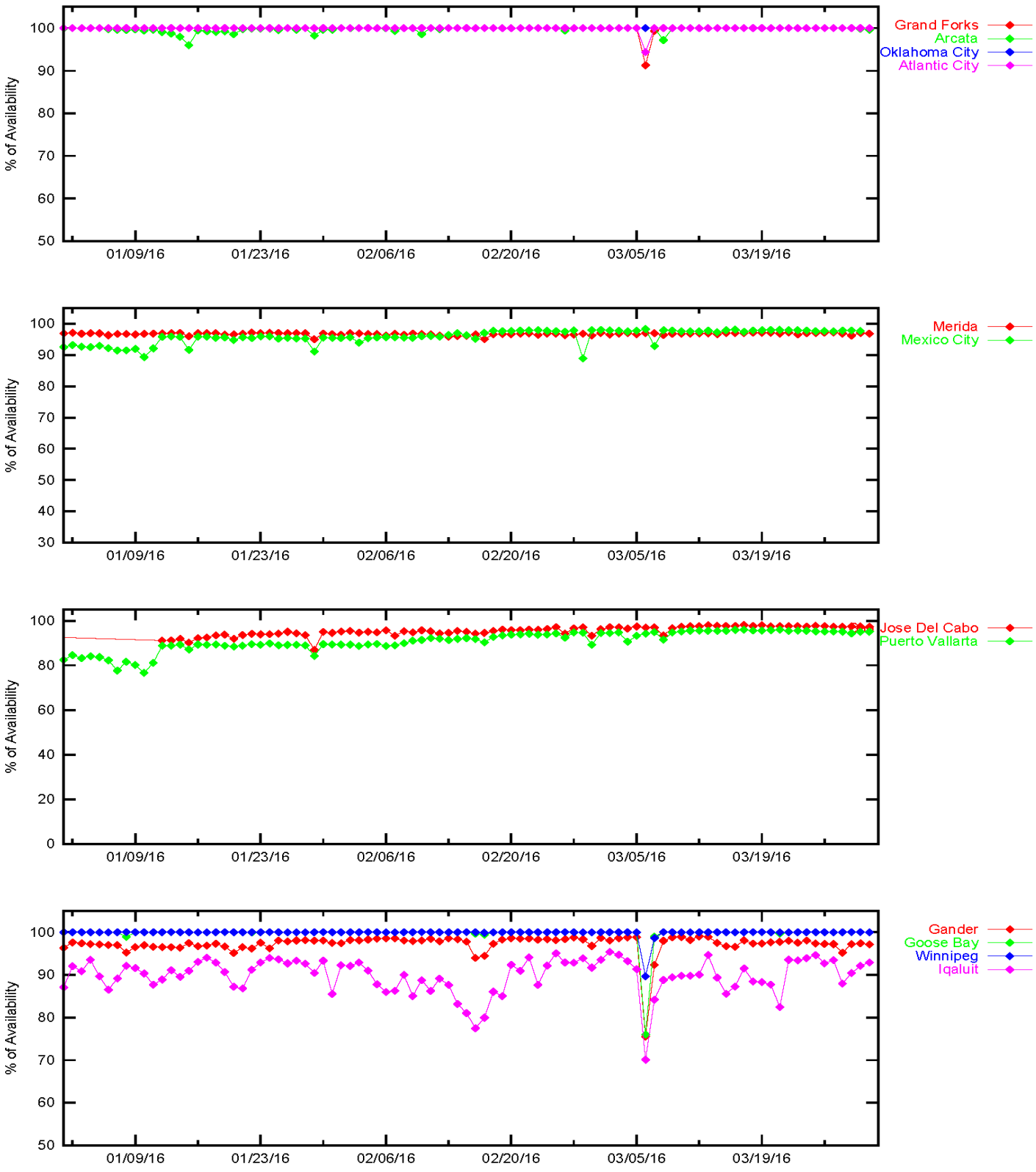


Figure 3-7 LPV Outages

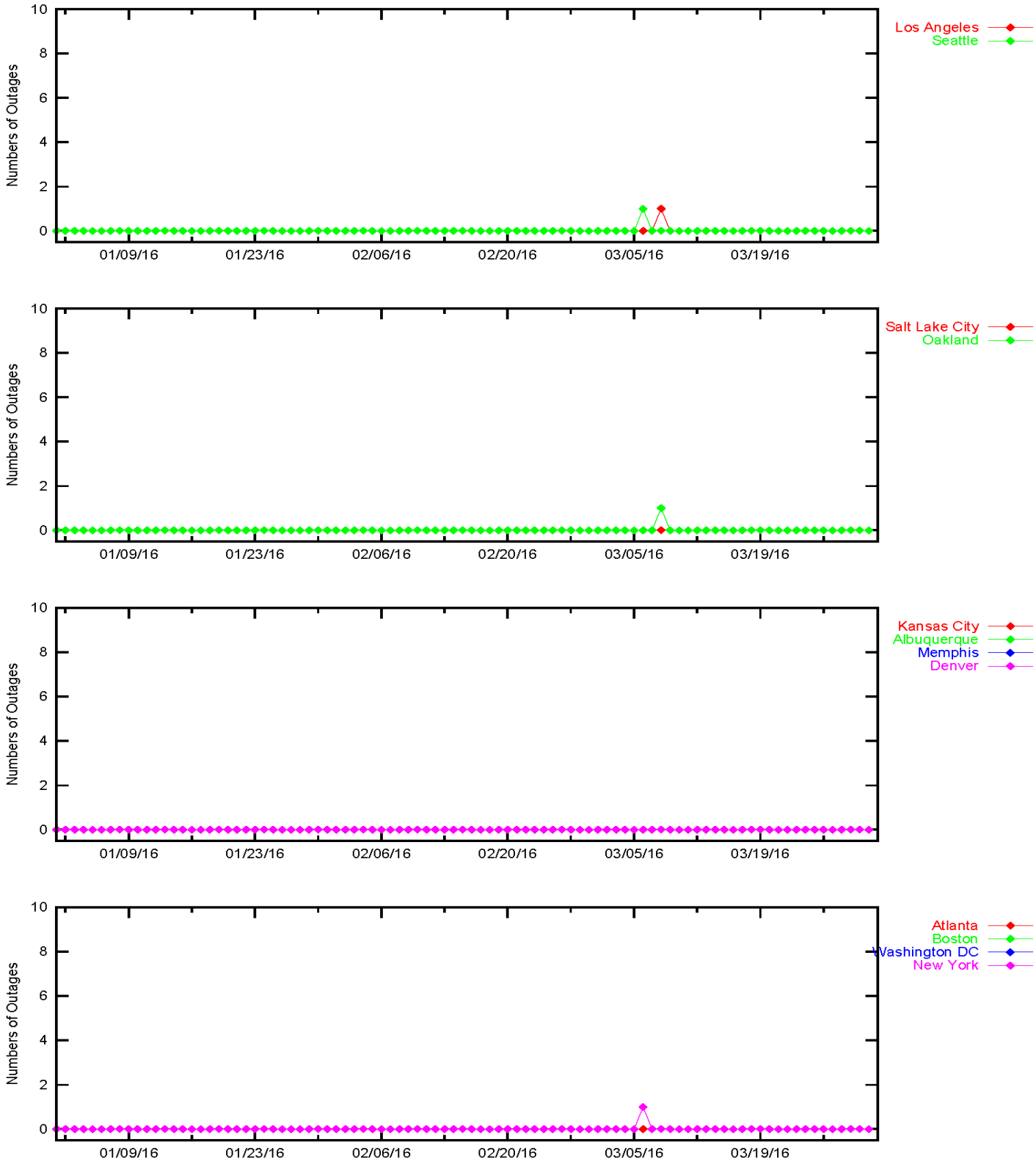


Figure 3-8 LPV Outages

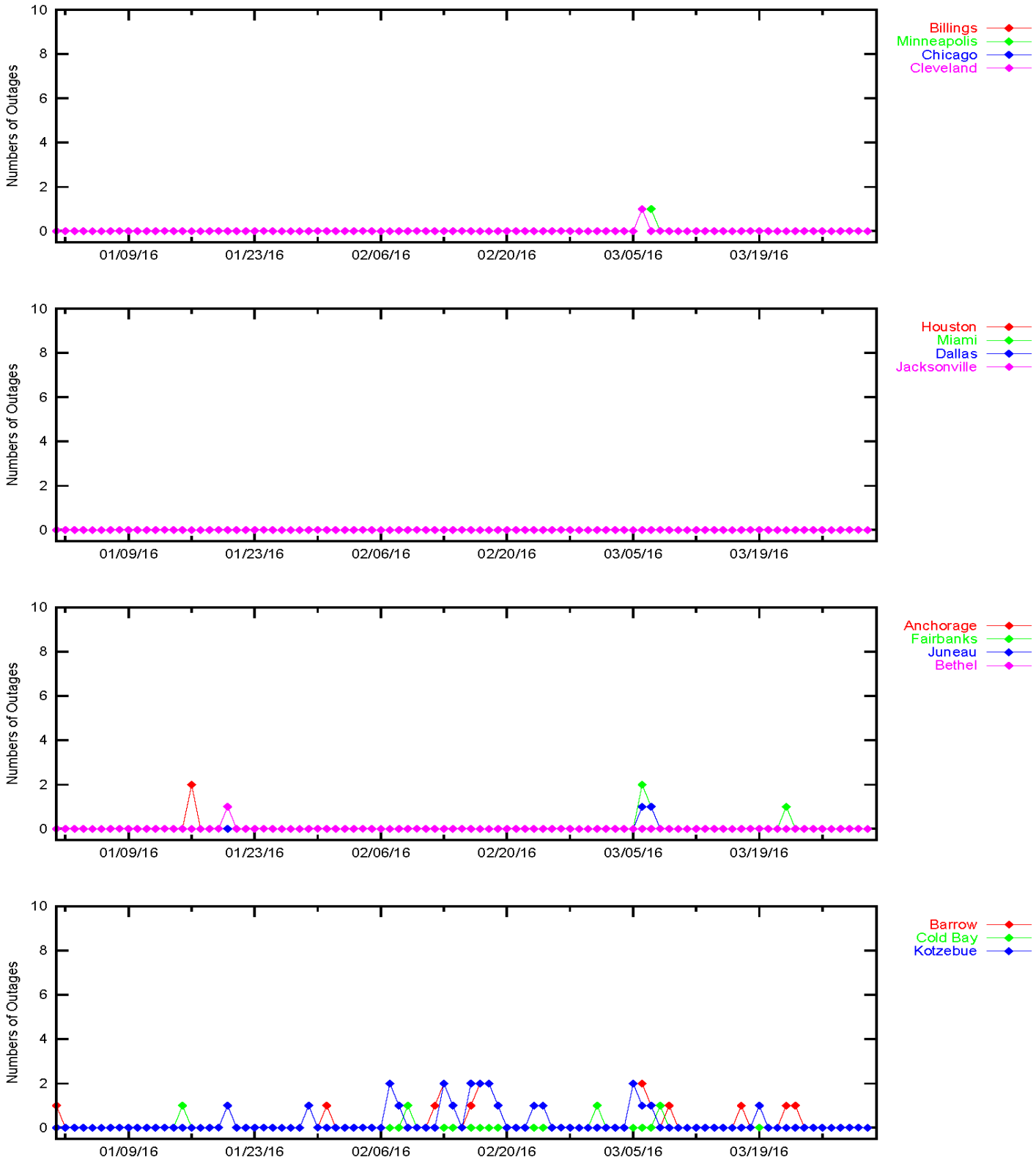


Figure 3-9 LPV Outages

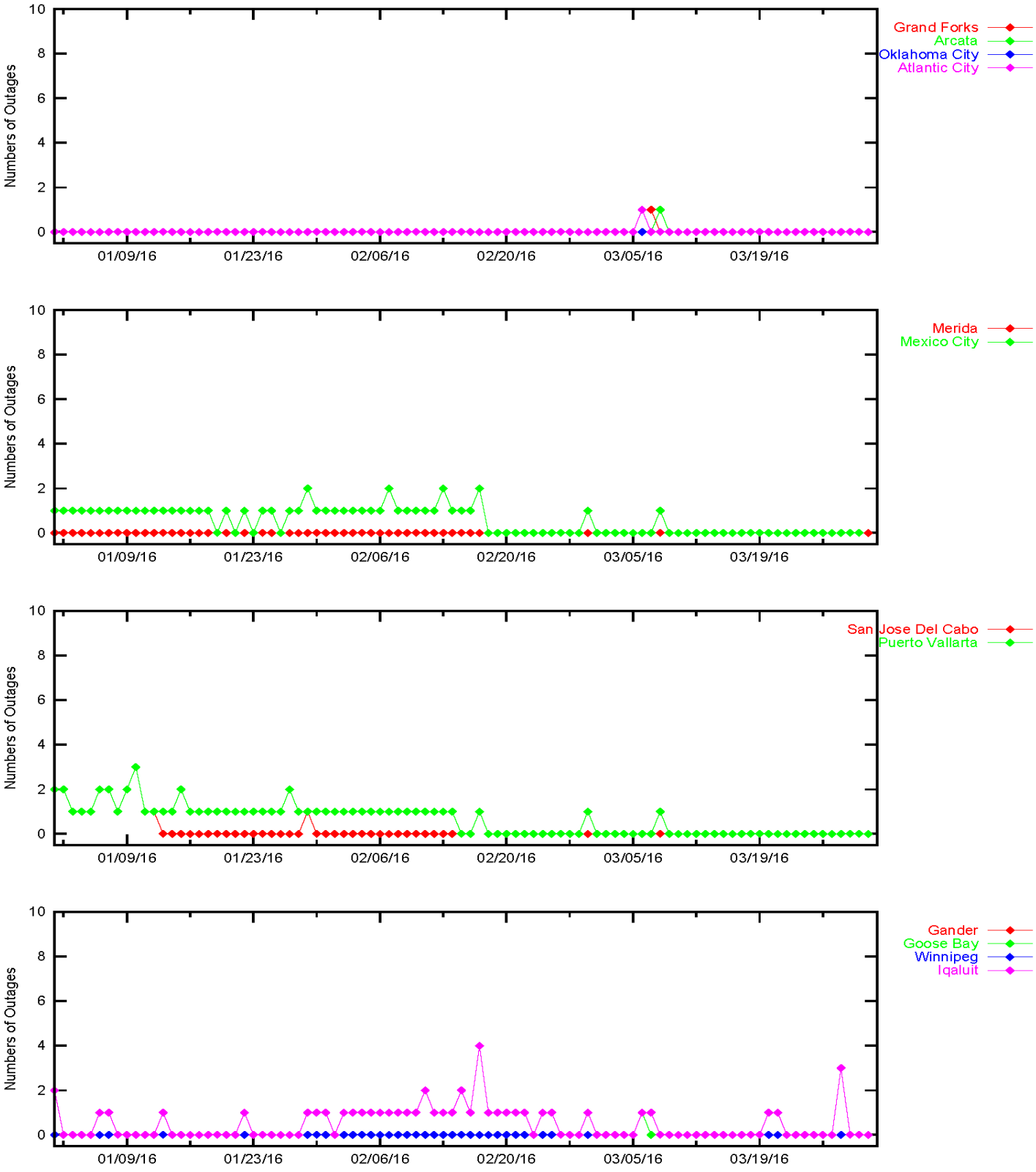


Figure 3-10 LPV200 Outages

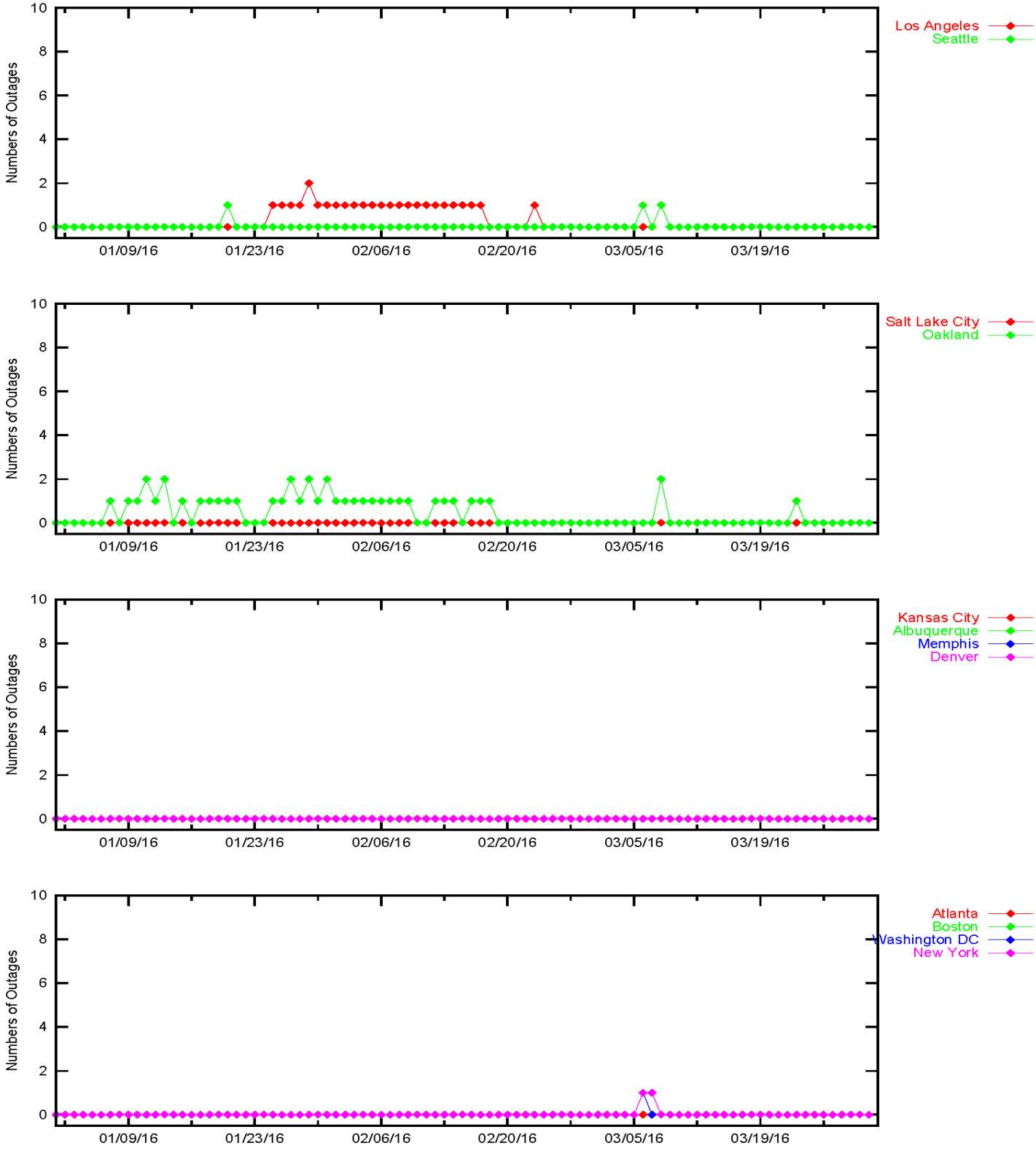


Figure 3-11 LPV200 Outages

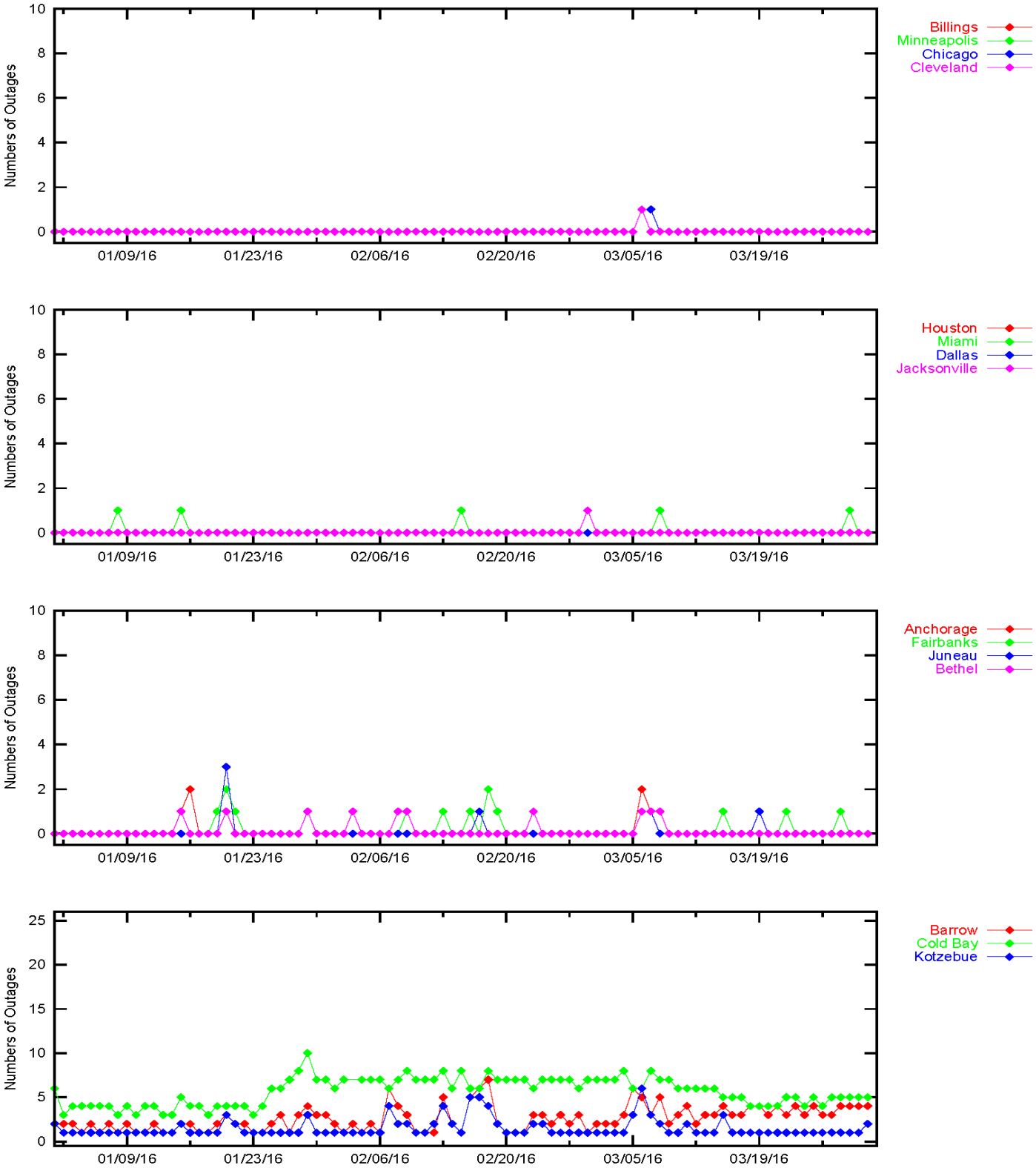
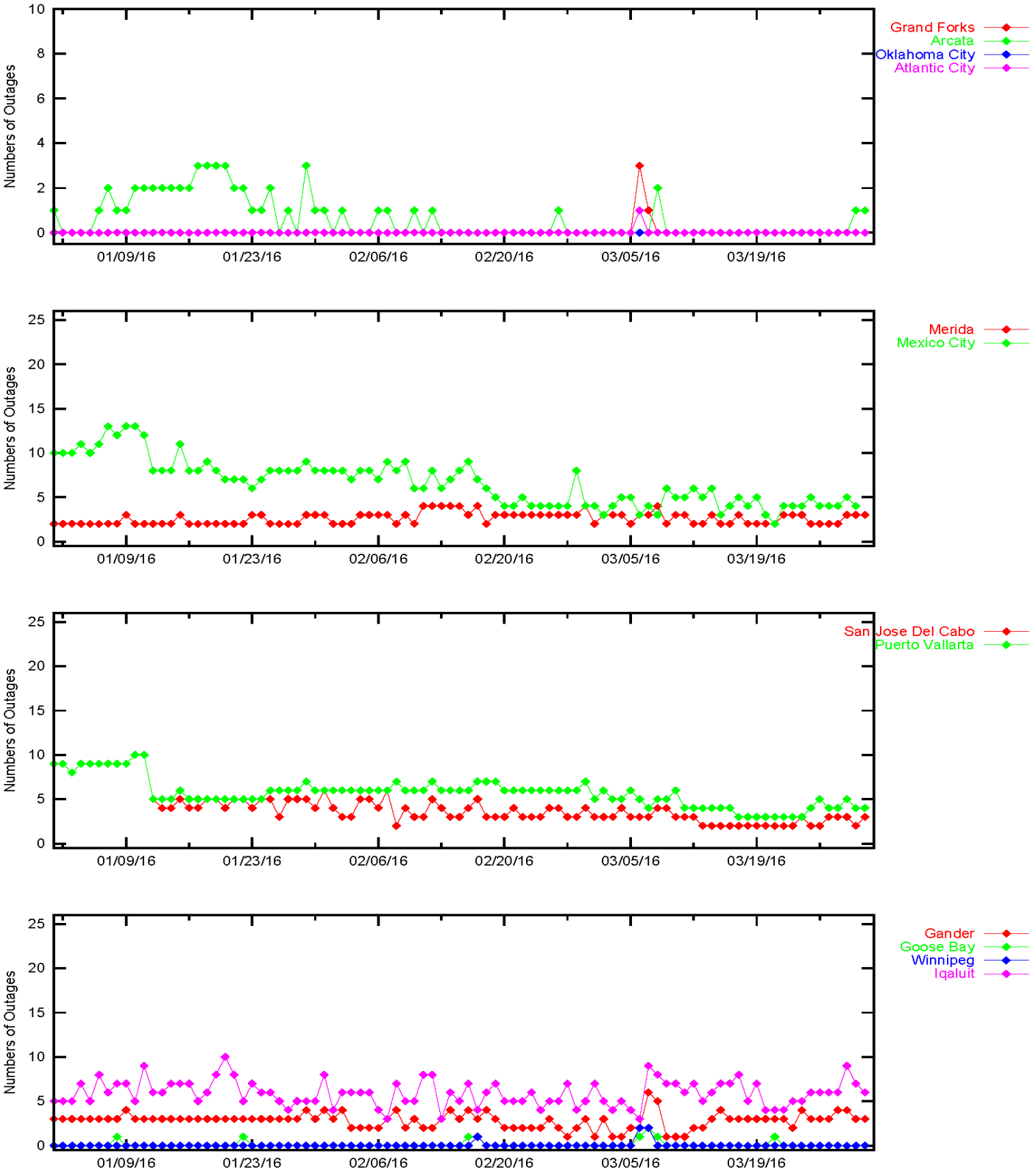


Figure 3-12 LPV200 Outages



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 one-degree spacing over the PA service volume, while for NPA coverage, the protection levels were calculated at 30-second intervals at five-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 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 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 listed below.

- January 1 – January 11, 2016—San Jose Del Cabo WRS was taken offline, resulting in elevated GIVE values which reduced LPV coverage in Mexico and LPV200 coverage in CONUS and Mexico.
- On January 15, 2016—Satellite maintenance caused elevated UDREs on PRN-28 and reduced LPV200 coverage in CONUS, Alaska, and Canada.
- January 20 – 21, 2016—Geomagnetic activity caused elevated GIVE values, which reduced LPV coverage in Alaska and LPV200 coverage in CONUS, Alaska, and Canada.
- January 29, 2016—Satellite maintenance caused elevated UDREs on PRN-12 and reduced LPV coverage in Alaska and Canada and LPV200 coverage in CONUS, Alaska, and Canada.
- February 7 – 8, 13 – 14, 16 – 18, and 23 – 24, 201—Elevated UDREs on CRW GEO caused reduced LPV coverage in Alaska and LPV200 coverage in Alaska and Canada.
- March 6 – 7, 2016—Geomagnetic activity caused elevated GIVE values, which reduced LPV and LPV200 coverage in CONUS, Alaska, and Canada. See DR 130 Ionospheric Activity Effects on WAAS Performance 6-7March 2016.
- March 8, 2016—Satellite maintenance caused elevated UDREs on PRN-25 and reduced LPV200 coverage in CONUS, Alaska, and Canada.
- March 28, 2-16—Elevated UDREs on CRE GEO caused reduced LPV200 coverage in Alaska and Canada.

Figure 4-1 LP North America Coverage for the Quarter

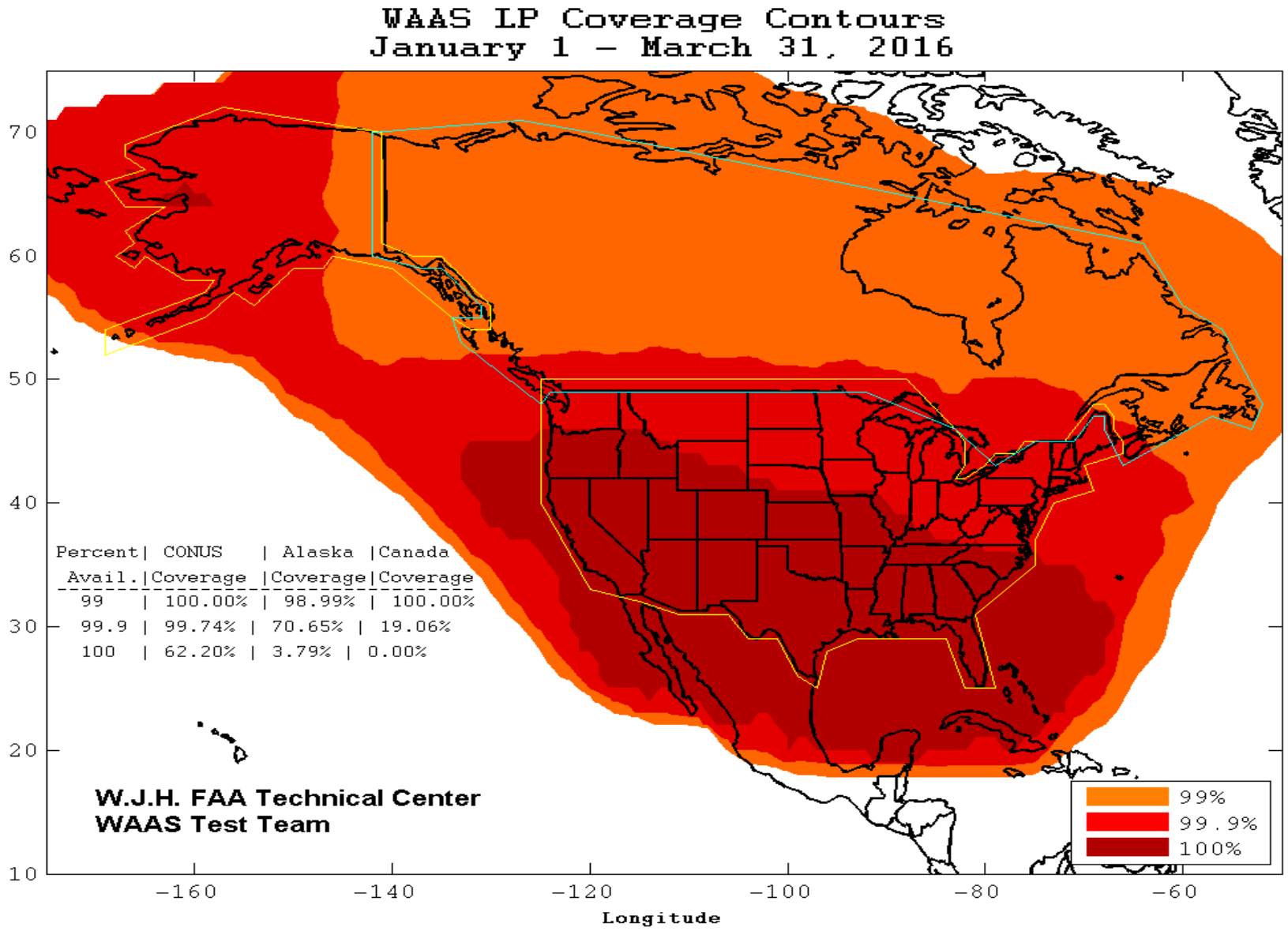


Figure 4-2 LPV North America Coverage for the Quarter

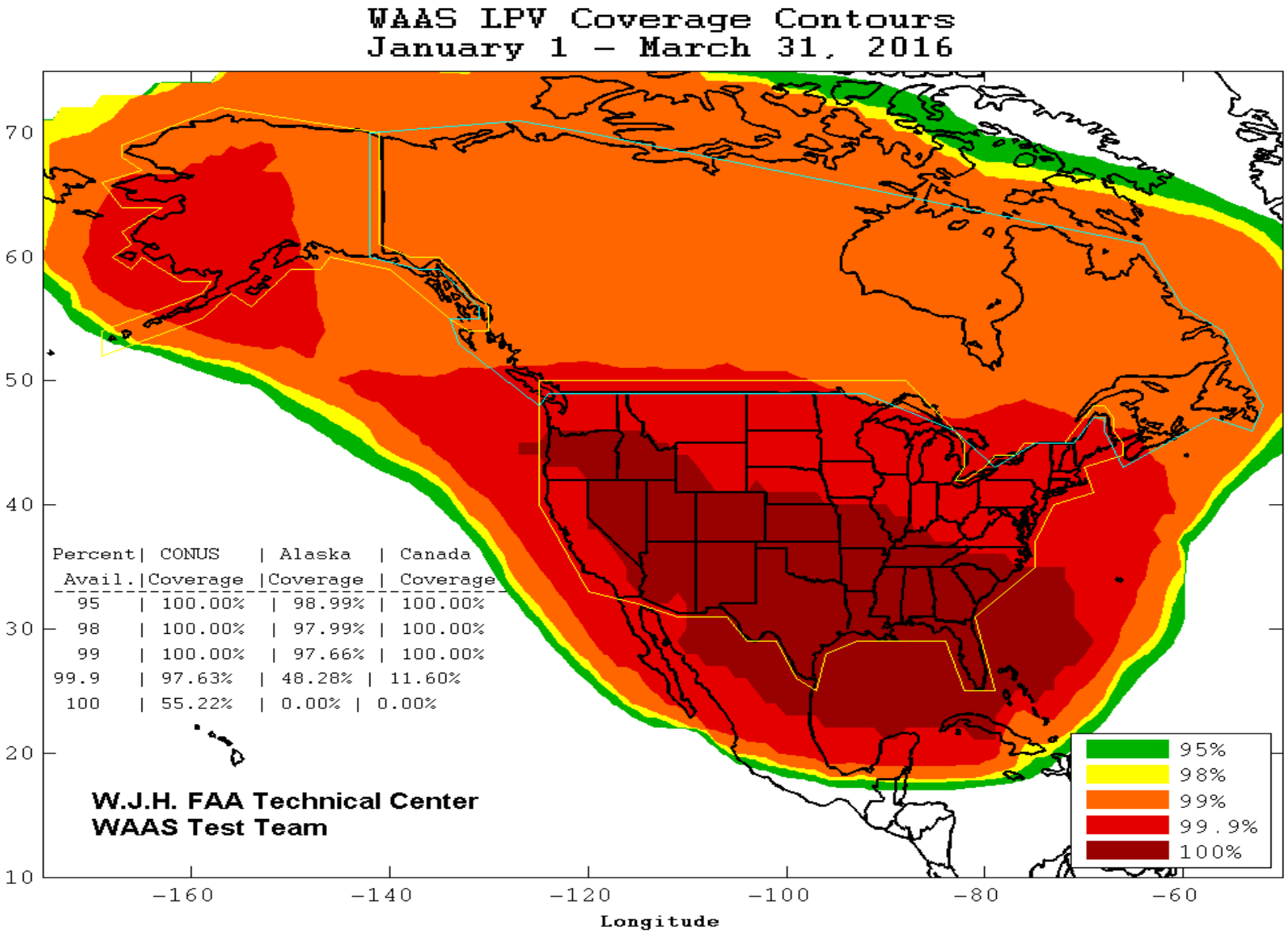


Figure 4-3 LPV200 North America Coverage for the Quarter

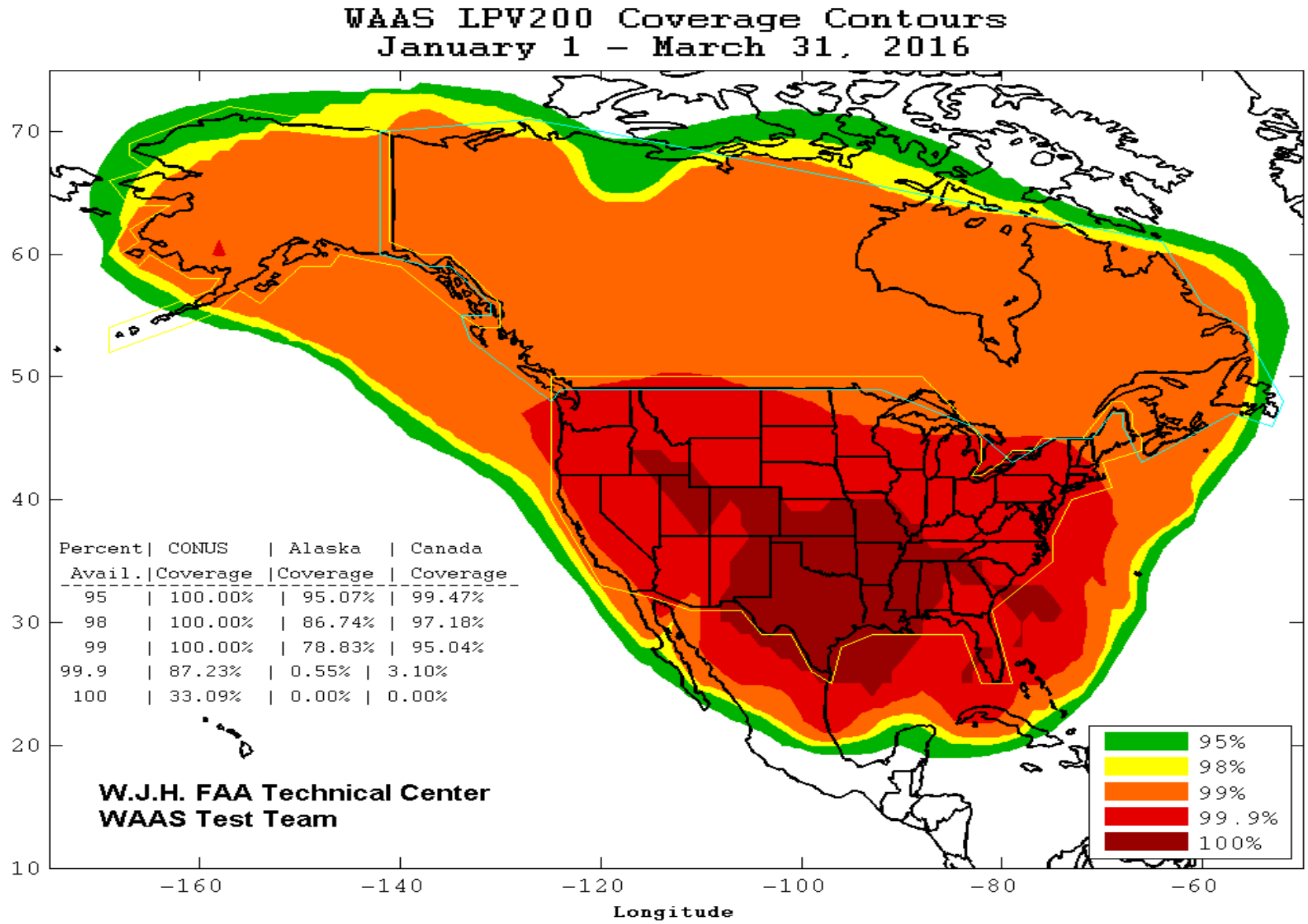


Figure 4-4 RNP 0.1 Coverage for the Quarter

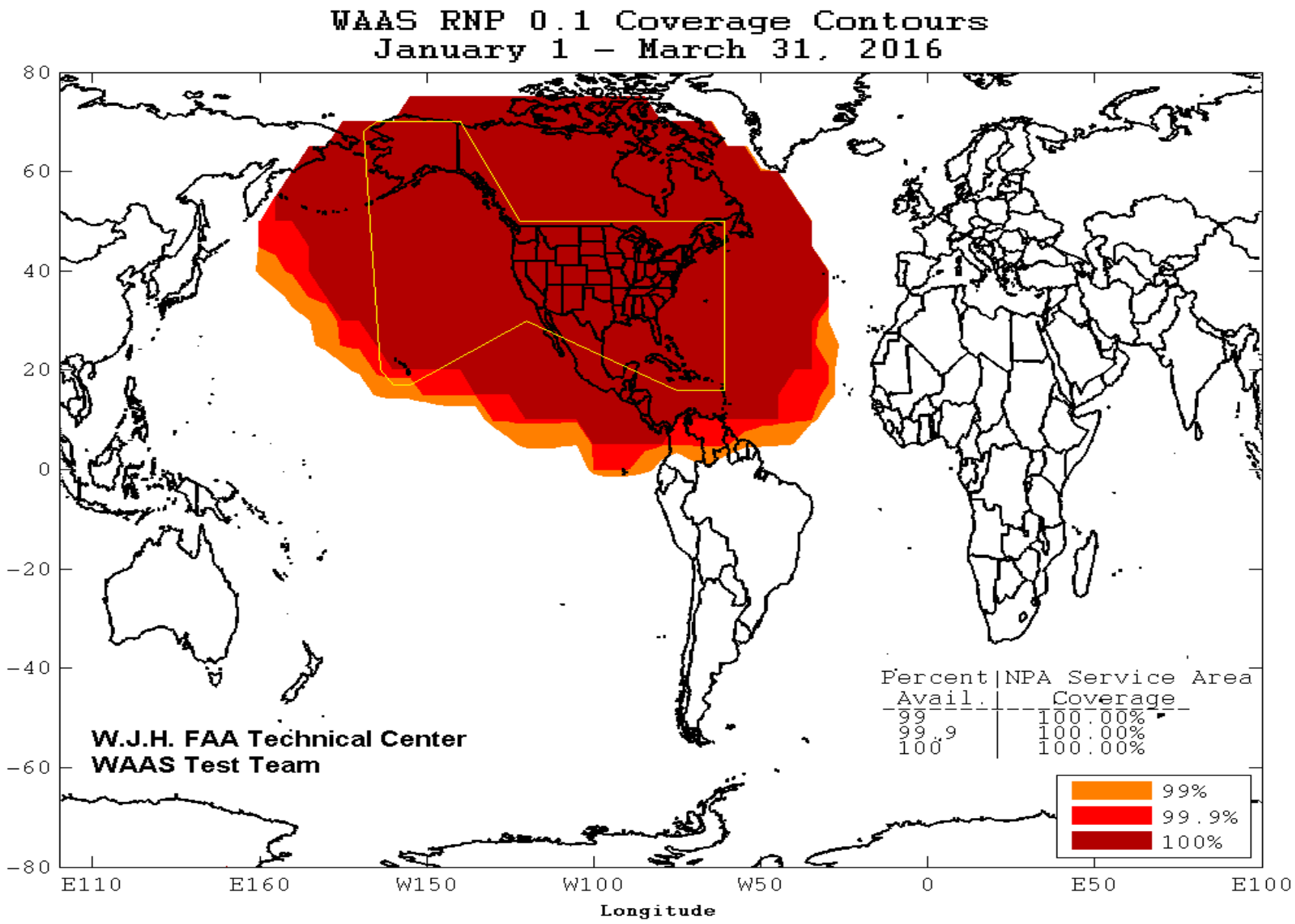


Figure 4-5 RNP 0.3 Coverage for the Quarter

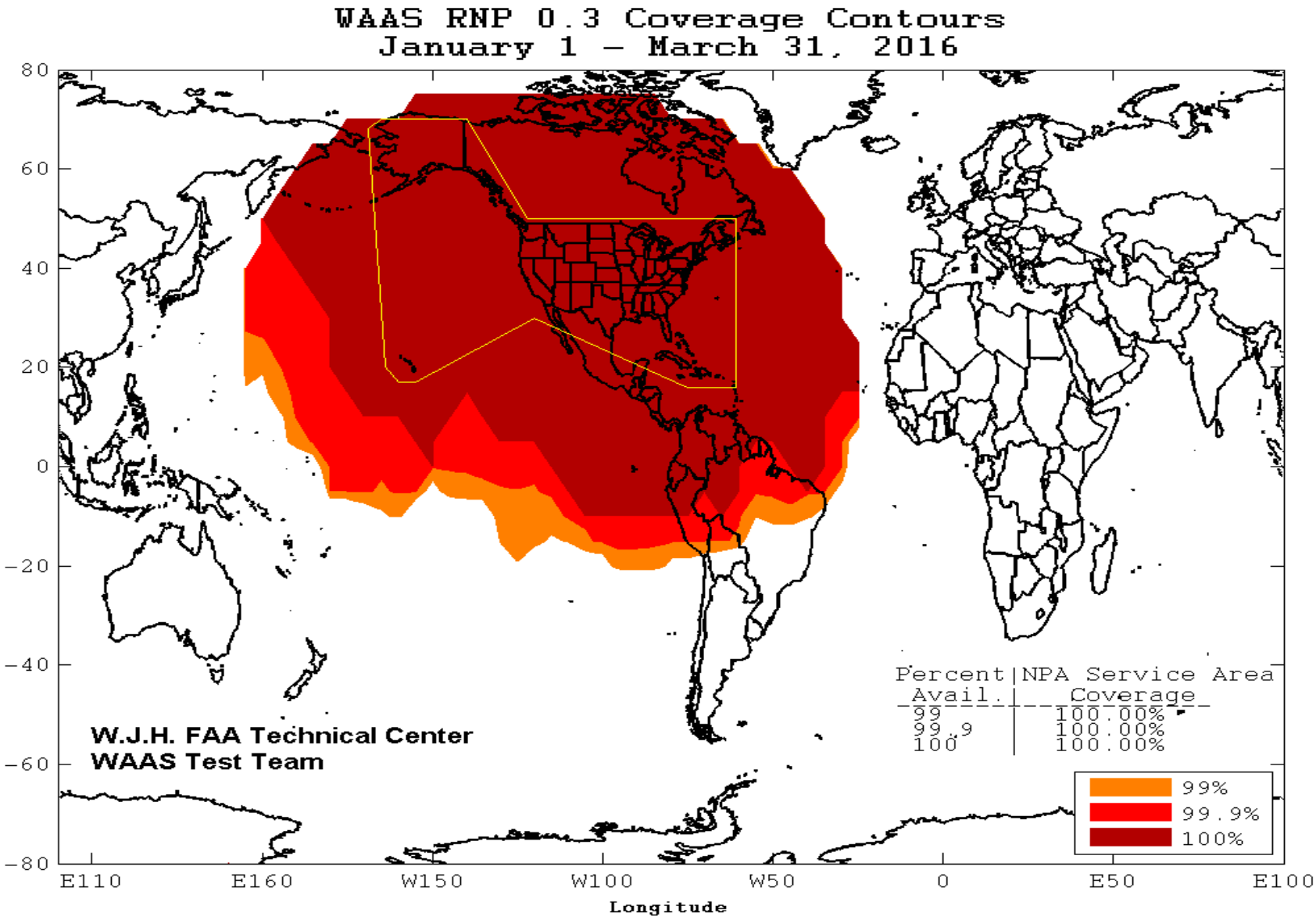


Figure 4-6 Daily LPV and LPV200 CONUS Coverage

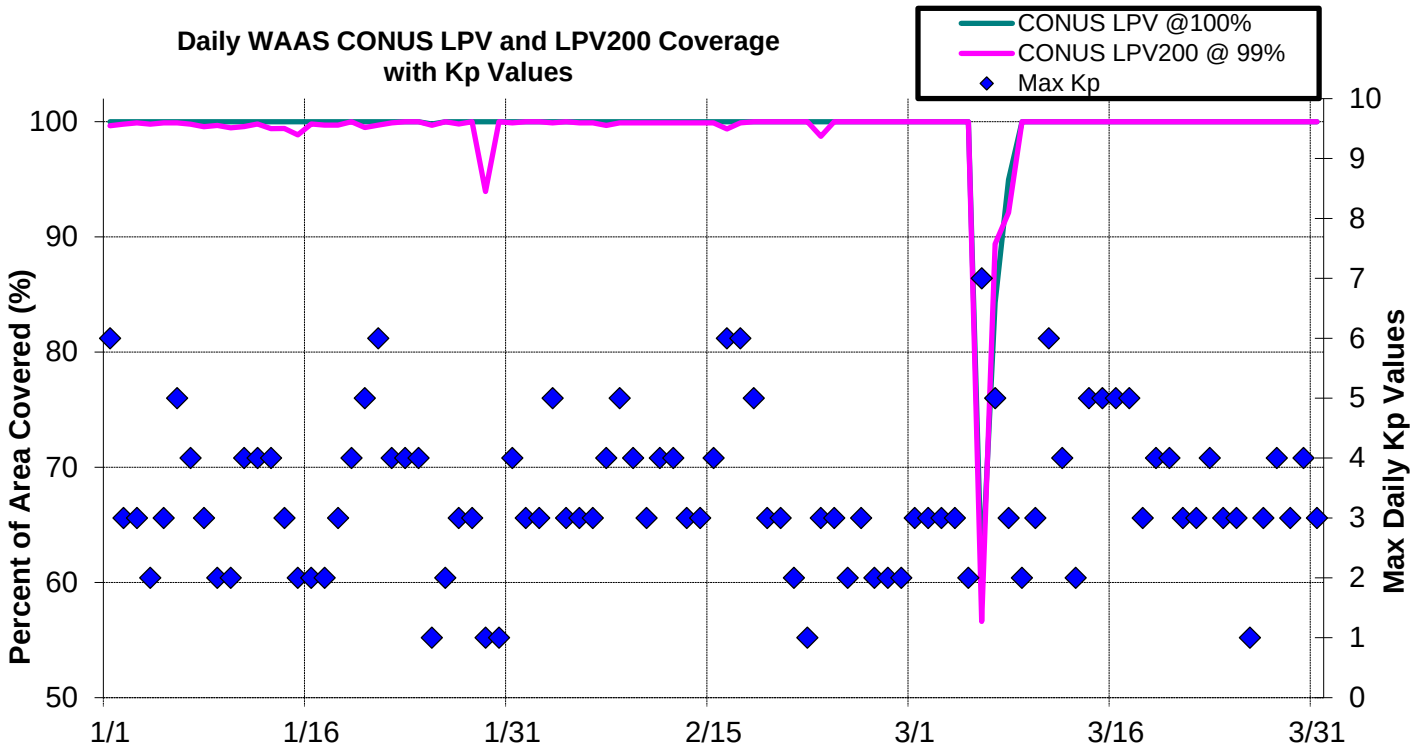


Figure 4-7 Daily LPV and LPV200 Alaska Coverage

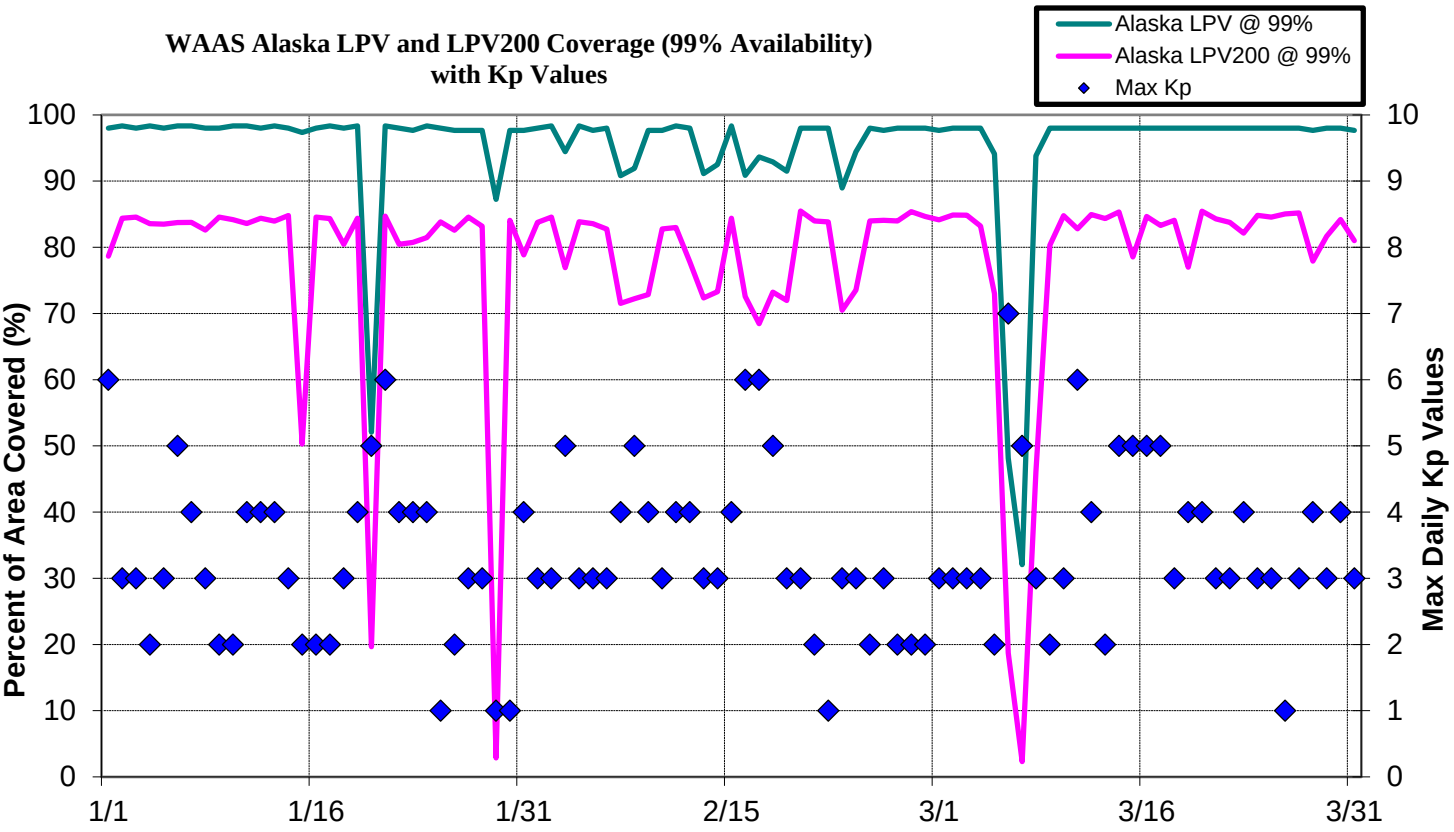


Figure 4-8 Daily LPV and LPV200 Canada Coverage

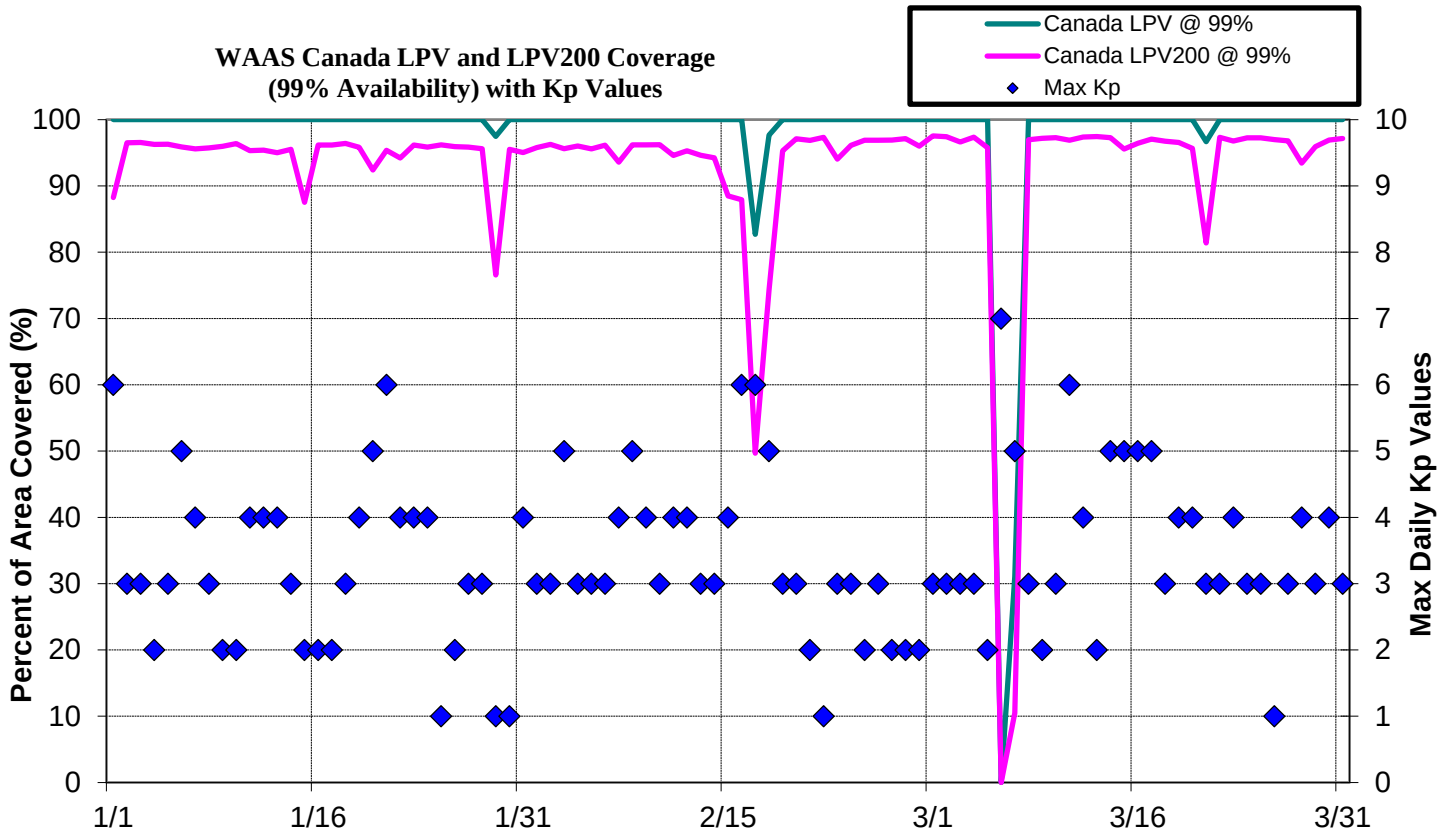
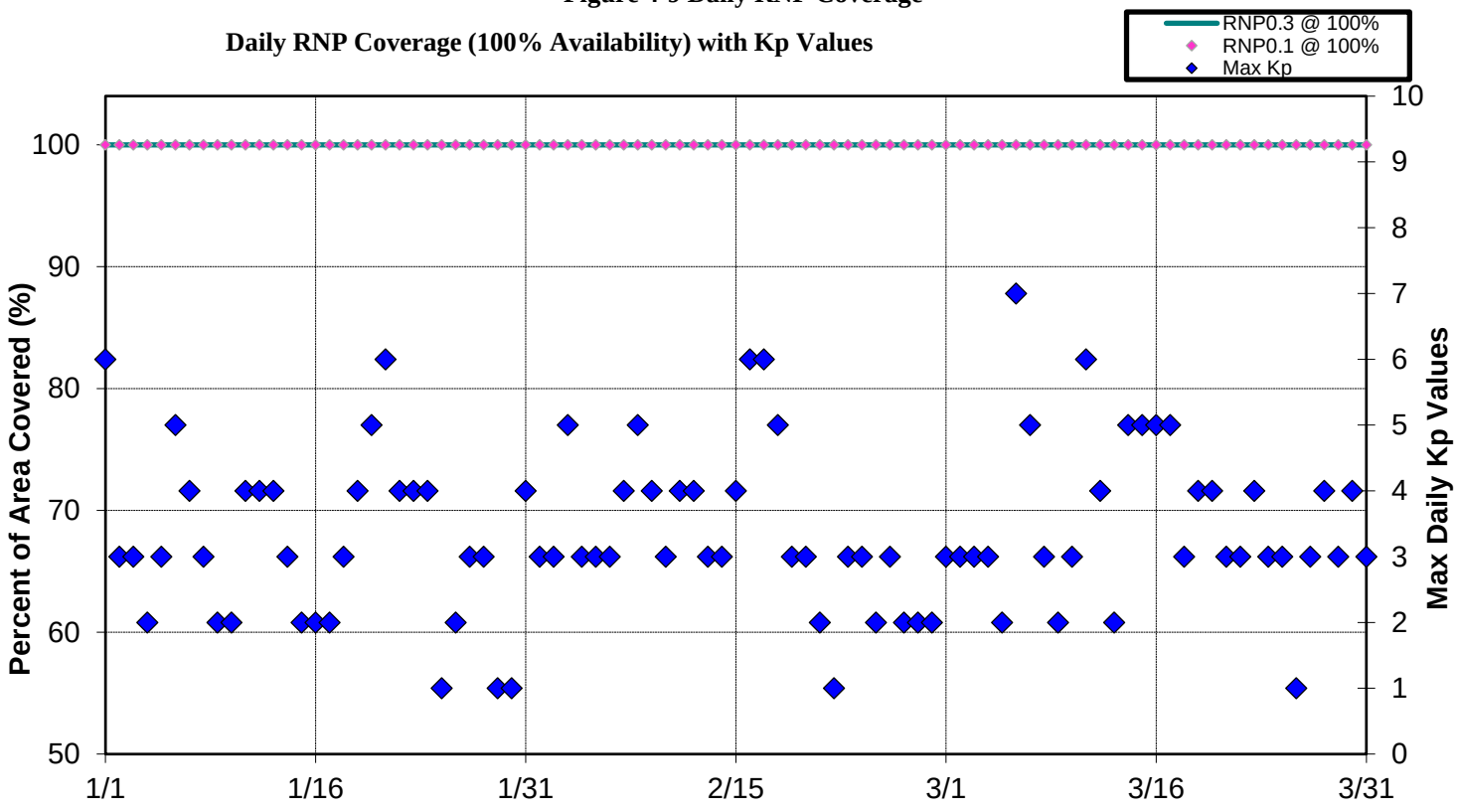


Figure 4-9 Daily RNP Coverage



5.0 INTEGRITY

5.1 HMI Analysis

Integrity analysis includes the identification and evaluation of hazardously misleading information (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/Horizontal Position Error and VPL/Vertical Position Error, 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 3.88 at Chicago, 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	4.40	10.18	0
Atlantic City	6.40	7.26	0
Grand Forks	7.09	9.43	0
Oklahoma City	5.40	9.87	0
Albuquerque	6.54	6.75	0
Anchorage	12.15	9.67	0
Atlanta	6.08	6.03	0
Barrow	5.12	6.62	0
Bethel	8.80	9.12	0
Billings	6.61	14.82	0
Boston	4.65	6.19	0
Chicago	5.23	3.88	0
Cleveland	16.71	4.64	0
Cold Bay	8.99	13.78	0
Dallas	6.38	4.79	0
Denver	7.18	8.44	0
Fairbanks	11.42	6.72	0
Gander	9.76	6.51	0
Goose Bay	14.32	7.24	0
Houston	5.59	4.85	0
Iqaluit	10.07	5.62	0
Jacksonville	6.74	6.85	0
Juneau	11.54	5.31	0
Kansas City	8.55	8.19	0
Kotzebue	11.29	5.27	0
Los Angeles	8.44	8.15	0
Memphis	6.36	7.21	0
Merida	9.42	6.34	0
Mexico City	12.93	5.22	0
Miami	7.74	6.75	0
Minneapolis	5.40	7.75	0
New York	5.99	7.71	0
Oakland	9.11	11.83	0
Puerto Vallarta	16.96	5.81	0
Salt Lake City	7.21	8.93	0
San Jose Del Cabo	8.64	10.06	0
Seattle	13.19	5.99	0
Washington DC	10.36	8.75	0
Winnipeg	6.00	5.01	0

5.2 Broadcast Alerts

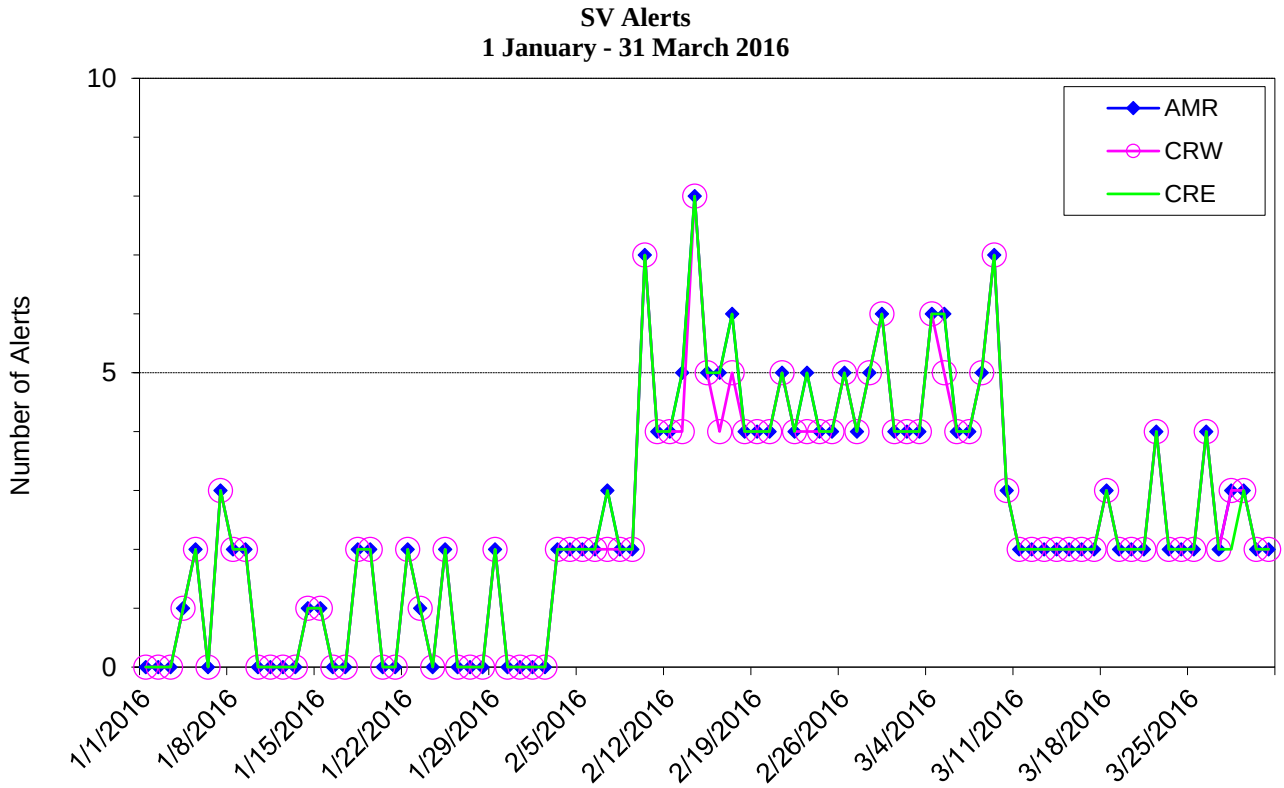
The WAAS transmits alert messages for user protection when the active WAAS corrections are no longer bound by the User Differential Range Errors (UDREs). Alerts increase the UDRE for one or more PRNs, which can reduce the weighting of the satellite or exclude the satellite from the navigation solution.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

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.

Table 5-2 WAAS SV Alert

Message Type	Number of Alerts			Average Alerts Per Day		
	AMR	**CRW**	**CRE**	**AMR**	**CRW**	**CRE**
2	122	122	122	1.3407	1.3407	1.3407
3	21	21	21	0.2308	0.2308	0.2308
4	89	83	88	0.9780	0.9121	0.9670
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	232	226	231	2.5495	2.4835	2.5385
Days in Service	91	91	91			

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 upon 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.

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. The lateness of message type 7 and 10, on occasions, has little or no impact on user performance and safety, and was 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 rated 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 5-3 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

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

Message Type	**On Time**	**Late**	**Max Late Length (seconds)**
1	104872	2	125
2	1310652	87	12
3	1310386	48	12
4	1310569	76	10
7	98129	1	128
9	92129	0	0
10	98060	8	131
17	31259	0	0

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

SV	On Time	Late	Max Late Length (seconds)
1	49002	0	0
2	47166	0	0
3	48016	0	0
5	47618	0	0
6	47429	0	0
7	47003	0	0
8	48362	0	0
9	47474	0	0
10	46927	0	0
11	48854	0	0
12	46486	0	0
13	48118	0	0
14	46742	0	0
15	47610	0	0
16	47755	0	0
17	47020	0	0
18	46475	0	0
19	45972	0	0
20	46764	0	0
21	47442	0	0
22	46873	0	0
23	47133	0	0
24	48820	0	0
25	48041	0	0
26	48630	0	0
27	48679	0	0
28	47581	0	0
29	46914	0	0
30	46977	0	0
31	47660	0	0
32	23985	0	0

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

SV	On Time	Late	Max Late Length (seconds)
1	40249	0	0
2	38774	1	205
3	39487	0	0
5	39055	0	0
6	38911	0	0
7	38541	0	0
8	39730	0	0
9	38888	0	0
10	38479	0	0
11	40146	0	0
12	38201	0	0
13	39547	0	0
14	38359	1	205
15	39088	0	0
16	39196	0	0
17	38639	0	0
18	38164	0	0
19	37727	0	0
20	38379	0	0
21	39019	0	0
22	38520	0	0
23	38747	0	0
24	40119	1	208
25	39490	0	0
26	39917	0	0
27	39984	0	0
28	39006	0	0
29	38557	1	208
30	38629	0	0
31	39134	0	0
32	19693	0	0
135	75370	0	0
138	75614	0	0

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

Band	Block	On Time	Late	Max Late Length (seconds)
0	0	27289	6	306
0	1	27283	8	306
0	2	27300	4	306
1	0	27281	3	302
1	1	27298	6	305
1	2	27295	1	301
1	3	27298	6	301
1	4	27288	4	304
2	0	27283	5	307
2	1	27289	3	306
2	2	27303	5	307
2	3	27286	6	307
2	4	27290	2	306
3	0	27294	5	582
3	1	27270	9	576
3	2	27307	5	306
9	0	27293	6	305
9	1	27279	4	305
9	2	27293	2	304
9	3	27287	4	305
9	4	27288	7	307
9	5	27289	6	305
9	6	27296	3	305

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

Band	On Time	Late	Max Late Length (seconds)
0	35564	0	0
1	35620	0	0
2	35610	1	432
3	35638	0	0
9	35634	0	0

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

Message Type	On Time	Late	Max Late Length (seconds)
1	104576	0	0
2	1310644	88	20
3	1310379	49	26
4	1310543	81	23
7	97926	6	141
9	92129	0	0
10	97851	5	182
17	31221	1	472

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

SV	On Time	Late	Max Late Length (seconds)
1	49008	1	172
2	47166	0	0
3	48014	0	0
5	47617	0	0
6	47425	0	0
7	47007	0	0
8	48353	1	151
9	47478	0	0
10	46922	0	0
11	48865	0	0
12	46487	0	0
13	48121	0	0
14	46736	0	0
15	47620	0	0
16	47773	1	172
17	47025	0	0
18	46476	0	0
19	45969	0	0
20	46764	0	0
21	47443	1	170
22	46878	0	0
23	47138	0	0
24	48820	1	168
25	48052	0	0
26	48622	0	0
27	48671	0	0
28	47573	0	0
29	46915	0	0
30	46984	0	0
31	47671	0	0
32	24009	0	0

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

SV	On Time	Late	Max Late Length (seconds)
1	40242	1	211
2	38774	0	0
3	39470	0	0
5	39056	0	0
6	38916	0	0
7	38545	1	209
8	39705	1	209
9	38893	0	0
10	38473	0	0
11	40137	2	206
12	38201	0	0
13	39534	0	0
14	38357	0	0
15	39073	0	0
16	39203	0	0
17	38640	0	0
18	38156	0	0
19	37719	0	0
20	38369	0	0
21	39034	1	208
22	38518	0	0
23	38730	1	206
24	40125	1	185
25	39476	0	0
26	39939	1	208
27	39982	0	0
28	39028	0	0
29	38549	0	0
30	38616	2	208
31	39115	0	0
32	19694	0	0
135	75360	0	0
138	75639	1	211

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

Band	Block	On Time	Late	Max Late Length (seconds)
0	0	27297	4	578
0	1	27286	5	306
0	2	27304	3	301
1	0	27293	2	306
1	1	27293	6	305
1	2	27285	2	303
1	3	27284	6	496
1	4	27294	4	507
2	0	27295	7	527
2	1	27290	5	305
2	2	27282	6	307
2	3	27290	6	307
2	4	27294	2	305
3	0	27288	4	302
3	1	27298	2	301
3	2	27279	5	306
9	0	27283	5	303
9	1	27302	6	307
9	2	27286	2	301
9	3	27294	5	305
9	4	27279	8	305
9	5	27302	1	301
9	6	27284	3	305

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

Band	On Time	Late	Max Late Length (seconds)
0	35594	1	352
1	35560	0	0
2	35583	0	0
3	35565	0	0
9	35554	0	0

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

Message Type	On Time	Late	Max Late Length (seconds)
0	3	0	0
1	104221	0	0
2	1310651	88	12
3	1310384	50	12
4	1310561	81	12
7	97541	4	124
9	92129	0	0
10	97559	3	136
17	31221	0	0

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

SV	On Time	Late	Max Late Length (seconds)
1	49012	0	0
2	47166	0	0
3	48010	0	0
5	47622	0	0
6	47429	0	0
7	47006	0	0
8	48366	0	0
9	47485	0	0
10	46930	0	0
11	48864	0	0
12	46487	0	0
13	48121	0	0
14	46737	0	0
15	47618	0	0
16	47757	0	0
17	47023	0	0
18	46474	0	0
19	45973	0	0
20	46760	0	0
21	47441	0	0
22	46874	0	0
23	47128	0	0
24	48820	0	0
25	48051	0	0
26	48615	0	0
27	48680	0	0
28	47579	0	0
29	46913	0	0
30	46979	0	0
31	47676	0	0
32	24002	0	0

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

SV	On Time	Late	Max Late Length (seconds)
1	40253	1	128
2	38782	0	0
3	39480	0	0
5	39051	0	0
6	38910	1	206
7	38557	0	0
8	39710	0	0
9	38888	0	0
10	38485	0	0
11	40144	1	155
12	38198	2	151
13	39546	0	0
14	38360	0	0
15	39068	1	163
16	39202	1	128
17	38635	1	139
18	38173	0	0
19	37722	0	0
20	38383	1	200
21	39025	1	206
22	38511	0	0
23	38746	0	0
24	40119	0	0
25	39479	0	0
26	39929	0	0
27	39978	0	0
28	38998	0	0
29	38560	0	0
30	38610	1	149
31	39116	1	200
32	19684	0	0
135	75362	0	0
138	75629	0	0

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

Band	Block	On Time	Late	Max Late Length (seconds)
0	0	27289	4	336
0	1	27295	2	338
0	2	27285	7	517
1	0	27301	3	524
1	1	27287	5	514
1	2	27292	4	500
1	3	27298	6	496
1	4	27290	3	512
2	0	27284	6	307
2	1	27287	6	303
2	2	27296	5	318
2	3	27292	5	318
2	4	27285	7	313
3	0	27289	6	481
3	1	27293	6	464
3	2	27296	3	480
9	0	27287	4	470
9	1	27281	6	493
9	2	27300	7	495
9	3	27289	4	336
9	4	27297	4	337
9	5	27290	3	330
9	6	27294	3	320

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

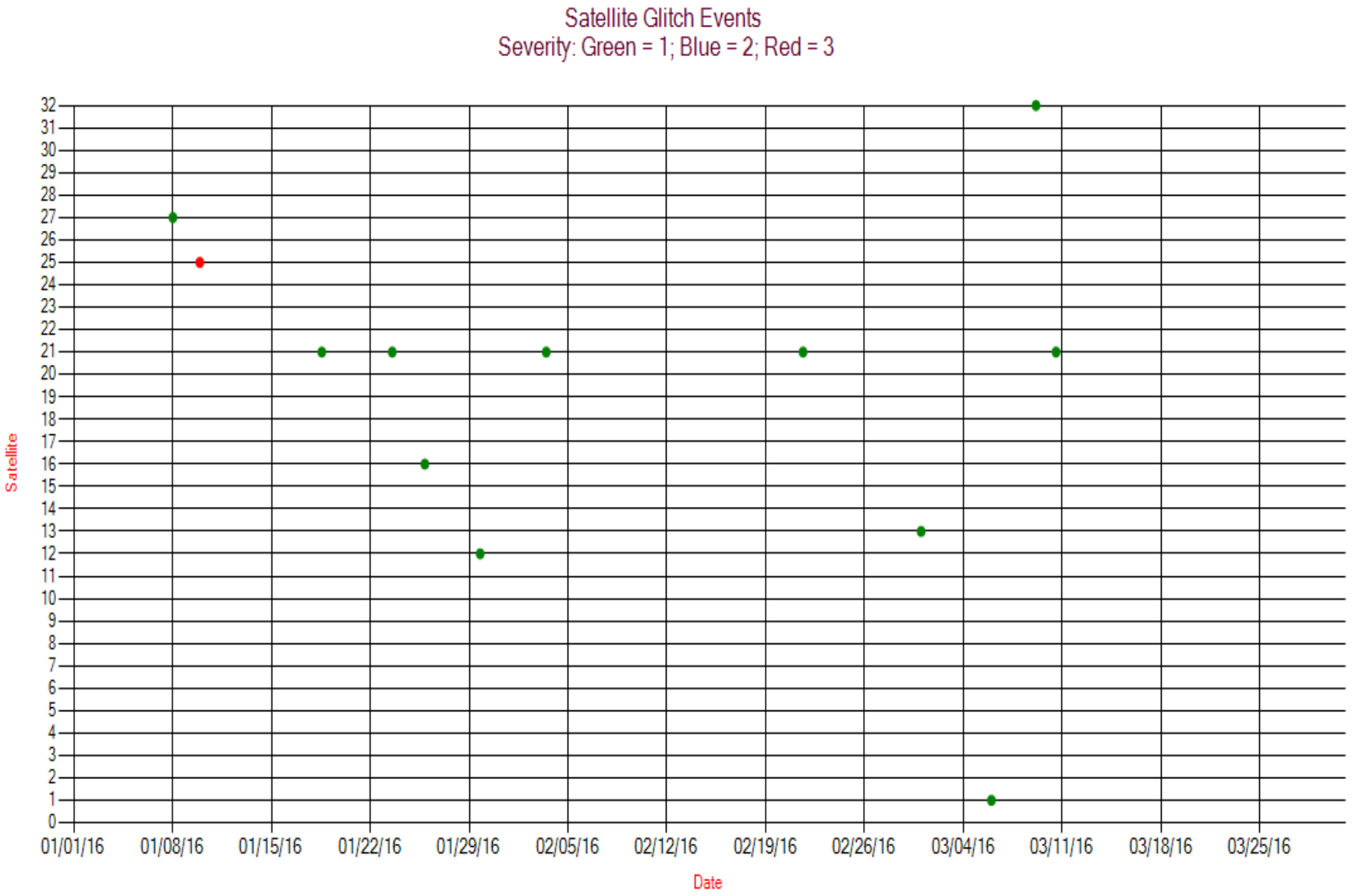
Band	On Time	Late	Max Late Length (seconds)
0	35549	0	0
1	35526	3	307
2	35551	0	0
3	35518	2	405
9	35523	0	0

5.4 Satellite Glitches

The GPS satellites occasionally have periods of signal carrier stability glitches of varying magnitude. These glitches are short degradations in the signal, which in severe cases may cause WAAS to lose track or cycle slip for some or all of the WAAS receivers. The more severe glitches will cause the WAAS reported UDRE to increase to 'Not Monitor' and result in an alert.

Figure 5-2 shows the satellite glitches visible to WAAS during the quarter. Glitches are categorized into three severity levels: (1) Severity one glitches cause a significant number of the receivers to simultaneously report bad subframe parity, (2) Severity two glitches cause all of the receivers to report bad subframe parity data and some receivers to also have cycle slips and/or lose tracking of L2 and or L1, (3) Severity three glitches cause all of the receivers to lose track of both L1 and L2 data. Note, the tool used to perform this Satellite Glitch Analysis also reports times when more than 14 GPS satellites are in view for some of the WAAS reference stations. The NovAtel WAAS G2 receiver is only capable of tracking 14 GPS satellites at a given time; GPS users may also experience this condition.

Figure 5-2 SV Glitch Trend



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 broadcast 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.

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 broadcast 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's and GPS dual frequency measurement at that GPS satellite.

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 99.9% Bounding

Site	Billings		Albuquerque		Boston		Washington DC		Houston		Kansas City	
SV ↓	95% Range Error (m)	99.9% Bounding (%)	95% Range Error (m)	99.9% Bounding (%)	95% Range Error (m)	99.9% Bounding (%)	95% Range Error (m)	99.9% Bounding (%)	95% Range Error (m)	99.9% Bounding (%)	95% Range Error (m)	99.9% Bounding (%)
1*	0.845	100	1.349	100	0.945	100	1.422	100	1.212	100	1.522	100
2	2.093	100	1.874	100	0.986	100	1.511	100	2.687	100	1.254	100
3*	0.801	100	1.758	100	1.846	100	1.608	100	1.776	100	2.071	100
4	-	-	-	-	-	-	-	-	-	-	-	-
5	1.227	100	1.448	100	1.029	100	1.472	100	1.132	100	1.441	100
6*	1.112	100	2.007	100	0.877	100	1.510	100	1.516	100	1.813	100
7	0.840	100	1.169	100	1.156	100	1.287	100	1.312	100	1.270	100
8*	1.112	100	0.913	100	1.150	100	1.193	100	1.246	100	1.119	100
9*	0.993	100	0.930	100	1.138	100	1.652	100	1.416	100	1.569	100
10	1.955	100	0.762	100	1.530	100	1.011	100	0.967	100	0.897	100
11	0.986	100	1.472	100	0.946	100	1.951	100	0.924	100	1.192	100
12	1.333	100	1.435	100	1.628	100	1.507	100	1.372	100	0.989	100
13	1.192	100	1.502	100	1.006	100	1.108	100	1.076	100	1.055	100
14	0.946	100	1.017	100	1.263	100	1.412	100	1.287	100	1.866	100
15	1.002	100	1.295	100	0.951	100	1.350	100	1.397	100	1.280	100
16	1.786	100	1.383	100	1.333	100	1.673	100	1.167	100	1.320	100
17	1.484	100	1.005	100	1.036	100	1.416	100	1.417	100	1.263	100
18	0.792	100	1.304	100	1.178	100	1.386	100	1.150	100	1.622	100
19	1.487	100	1.478	100	0.910	100	1.295	100	1.961	99.98	1.926	100
20	1.564	100	1.487	100	1.173	100	1.282	100	1.822	100	1.280	100
21	0.741	100	1.402	100	1.005	100	1.836	100	1.258	100	1.408	100
22	1.078	100	1.227	100	1.284	100	1.576	100	1.154	100	1.299	100
23	0.880	100	1.413	100	2.056	100	1.579	100	2.010	100	1.500	100
24*	1.038	100	1.795	100	1.076	100	1.070	100	1.032	100	1.372	100
25*	1.104	100	1.276	100	1.038	100	1.146	100	1.275	100	1.048	100
26*	0.874	100	1.083	100	1.602	100	1.484	100	1.067	100	1.295	100
27*	0.867	100	1.835	100	1.026	100	1.553	100	1.369	100	1.178	100
28	0.802	100	1.451	100	1.088	100	1.543	100	1.504	100	1.656	100
29	1.692	100	1.009	100	1.095	100	0.865	100	1.388	100	1.056	100
30*	1.011	100	1.226	100	1.005	100	1.444	100	1.482	100	1.200	100
31	0.962	100	1.357	100	1.099	100	1.538	100	1.148	100	1.318	100
32	2.034	100	1.287	100	1.214	100	1.638	100	1.508	100	1.223	100
135	1.937	100	1.643	100	3.136	100	2.085	100	2.332	100	2.065	100
138	1.334	100	1.304	100	1.525	100	1.629	100	1.736	100	1.919	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 →	Los Angeles		Salt Lake City		Miami		Minneapolis		Atlanta		Juneau	
SV ↓	95% Range Error (m)	99.9% Bounding (%)	95% Range Error (m)	99.9% Bounding (%)	95% Range Error (m)	99.9% Bounding (%)	95% Range Error (m)	99.9% Bounding (%)	95% Range Error (m)	99.9% Bounding (%)	95% Range Error (m)	99.9% Bounding (%)
1*	1.637	100	1.125	100	1.461	100	0.821	100	1.519	100	0.890	100
2	1.518	100	1.194	100	1.364	100	0.864	100	1.410	100	1.174	100
3*	1.425	100	1.447	100	1.542	100	1.075	100	1.607	100	0.940	100
4	-	-	-	-	-	-	-	-	-	-	-	-
5	1.556	100	0.916	100	1.174	100	0.954	100	1.180	100	1.196	100
6*	1.487	100	0.938	100	1.727	100	0.954	100	1.621	100	0.828	100
7	1.306	100	0.954	100	2.179	100	0.706	100	1.263	100	1.094	100
8*	1.382	100	1.112	100	0.909	100	1.658	100	0.865	100	1.337	100
9*	1.447	100	0.793	100	1.057	100	1.121	100	1.235	100	0.876	100
10	0.758	100	1.462	100	1.315	100	1.454	100	0.954	100	1.556	100
11	2.222	100	1.003	100	1.275	100	0.998	100	1.754	100	0.940	100
12	1.130	100	1.402	100	1.181	100	1.229	100	1.025	100	1.517	100
13	0.953	100	0.848	100	1.352	100	0.976	100	0.937	100	1.070	100
14	1.222	100	1.291	100	1.173	100	0.854	100	1.188	100	1.181	100
15	1.438	100	0.866	100	1.418	100	1.172	100	1.035	100	1.175	100
16	1.473	100	0.940	100	1.662	100	1.014	100	1.581	100	1.151	100
17	1.197	100	1.013	100	1.034	100	0.903	100	1.279	100	0.919	100
18	1.125	100	1.331	100	1.331	100	1.235	100	1.416	100	1.179	100
19	1.424	100	1.086	100	1.446	100	0.992	100	1.440	100	1.055	100
20	1.323	100	1.245	100	1.389	100	0.954	100	1.036	100	1.044	100
21	0.776	100	0.901	100	1.116	100	0.899	100	0.961	100	1.175	100
22	1.276	100	1.346	100	1.318	100	0.932	100	1.411	100	1.076	100
23	1.826	100	0.952	100	1.180	100	0.949	100	1.544	100	1.063	100
24*	1.154	100	1.388	100	1.072	100	1.106	100	0.985	100	1.573	100
25*	1.157	100	1.043	100	0.899	100	1.252	100	1.652	100	1.486	100
26*	1.722	100	1.090	100	1.460	100	1.234	100	1.291	100	1.408	100
27*	1.243	100	0.849	100	1.064	100	0.943	100	1.320	100	0.908	100
28	1.551	100	1.027	100	2.195	100	0.857	100	1.525	100	1.023	100
29	0.790	100	1.698	100	1.147	100	1.360	100	0.987	100	2.113	100
30*	1.398	100	0.691	100	1.302	100	0.745	100	1.275	100	0.972	100
31	1.203	100	0.893	100	1.564	100	0.927	100	1.523	100	1.501	100
32	1.301	100	1.160	100	1.305	100	1.121	100	1.715	100	1.296	100
135	1.517	100	1.613	100	1.551	100	2.203	100	1.952	100	1.527	100
138	2.563	100	1.780	100	2.132	100	2.621	100	1.395	100	1.538	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	Billings		Albuquerque		Boston		Washington DC		Houston		Kansas City	
SV ↓	95% Iono Error (m)	99.9% Bounding (%)	95% Iono Error (m)	99.9% Bounding (%)	95% Iono Error (m)	99.9% Bounding (%)	95% Iono Error (m)	99.9% Bounding (%)	95% Iono Error (m)	99.9% Bounding (%)	95% Iono Error (m)	99.9% Bounding (%)
1	0.552	100	0.691	100	0.589	100	0.664	100	0.480	100	0.721	100
2	1.255	100	1.042	100	0.473	100	0.833	100	1.283	100	0.710	100
3	0.419	100	1.129	100	0.696	100	0.754	100	0.685	100	1.066	100
4	-	-	-	-	-	-	-	-	-	-	-	-
5	0.758	100	0.757	100	0.728	100	0.592	100	0.844	100	0.565	100
6	0.624	100	1.031	100	0.558	100	0.762	100	0.657	100	0.926	100
7	0.459	100	0.709	100	0.527	100	0.570	100	0.690	100	0.772	100
8	0.611	100	0.478	100	0.751	100	0.376	100	0.888	100	0.397	100
9	0.578	100	0.615	100	0.367	100	0.775	100	0.612	100	0.690	100
10	1.042	100	0.406	100	0.777	100	0.463	100	0.650	100	0.453	100
11	0.289	100	0.725	100	0.581	100	0.637	100	0.482	100	0.563	100
12	0.651	100	0.699	100	0.674	100	0.523	100	0.493	100	0.498	100
13	0.422	100	0.644	100	0.540	100	0.550	100	0.560	100	0.508	100
14	0.571	100	0.736	100	0.804	100	0.520	100	0.690	100	1.009	100
15	0.357	100	0.796	100	0.360	100	0.617	100	0.511	100	0.775	100
16	0.797	100	0.845	100	0.360	100	0.730	100	0.604	100	0.673	100
17	0.880	100	0.741	100	0.716	100	0.619	100	0.491	100	0.648	100
18	0.638	100	0.856	100	0.548	100	0.715	100	0.527	100	0.659	100
19	0.825	100	0.870	100	0.551	100	0.548	100	0.738	100	0.842	100
20	0.758	100	0.978	100	0.655	100	0.763	100	0.706	100	0.591	100
21	0.431	100	0.936	100	0.542	100	1.233	100	0.555	100	0.706	100
22	0.503	100	0.745	100	0.550	100	0.744	100	0.549	100	0.632	100
23	0.546	100	1.038	100	0.819	100	0.868	100	1.082	100	0.710	100
24	0.436	100	0.863	100	0.426	100	0.416	100	0.459	100	0.514	100
25	0.468	100	0.679	100	0.456	100	0.368	100	0.609	100	0.394	100
26	0.393	100	0.477	100	0.446	100	0.486	100	0.989	100	0.527	100
27	0.412	100	0.820	100	0.461	100	0.615	100	0.466	100	0.468	100
28	0.493	100	0.926	100	0.407	100	0.746	100	0.591	100	0.830	100
29	0.837	100	0.415	100	0.632	100	0.417	100	0.814	100	0.545	100
30	0.423	100	0.946	100	0.685	100	0.973	100	0.705	100	0.599	100
31	0.521	100	0.743	100	0.499	100	0.623	100	0.766	100	0.633	100
32	0.886	100	0.747	100	0.609	100	0.850	100	0.721	100	0.626	100

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

Site	Los Angeles		Salt Lake City		Miami		Minneapolis		Atlanta		Juneau	
SV ↓	95% Iono Error (m)	99.9% Bounding (%)	95% Iono Error (m)	99.9% Bounding (%)	95% Iono Error (m)	99.9% Bounding (%)	95% Iono Error (m)	99.9% Bounding (%)	95% Iono Error (m)	99.9% Bounding (%)	95% Iono Error (m)	99.9% Bounding (%)
1	0.860	100	0.370	100	0.540	100	0.428	100	0.923	100	0.506	100
2	0.767	100	0.546	100	0.504	100	0.432	100	0.792	100	0.424	100
3	0.629	100	0.579	100	0.631	100	0.659	100	0.942	100	0.419	100
4	-	-	-	-	-	-	-	-	-	-	-	-
5	0.893	100	0.558	100	0.675	100	0.424	100	0.629	100	0.490	100
6	0.795	100	0.513	100	1.086	100	0.437	100	0.953	100	0.369	100
7	0.461	100	0.385	100	1.240	100	0.409	100	0.647	100	0.451	100
8	0.743	100	0.548	100	0.902	100	0.822	100	0.402	100	0.698	100
9	0.652	100	0.414	100	0.518	100	0.572	100	0.742	100	0.467	100
10	0.365	100	0.851	100	0.741	100	0.917	100	0.443	100	0.853	100
11	0.959	100	0.315	100	0.366	100	0.511	100	0.720	100	0.488	100
12	0.393	100	0.687	100	0.645	100	0.571	100	0.550	100	0.694	100
13	0.459	100	0.318	100	0.554	100	0.362	100	0.531	100	0.435	100
14	0.671	100	0.675	100	0.612	100	0.471	100	0.569	100	0.538	100
15	0.889	100	0.402	100	0.428	100	0.421	100	0.584	100	0.397	100
16	0.826	100	0.392	100	0.405	100	0.525	100	0.721	100	0.460	100
17	0.518	100	0.494	100	0.593	100	0.371	100	0.526	100	0.342	100
18	0.631	100	0.812	100	0.657	100	0.534	100	0.929	100	0.599	100
19	0.628	100	0.592	100	0.561	100	0.416	100	0.626	100	0.403	100
20	0.767	100	0.497	100	0.624	100	0.368	100	0.622	100	0.614	100
21	0.447	100	0.516	100	0.565	100	0.687	100	0.733	100	0.500	100
22	0.630	100	0.630	100	0.552	100	0.523	100	0.710	100	0.502	100
23	1.098	100	0.497	100	0.595	100	0.423	100	0.934	100	0.465	100
24	0.657	100	0.546	100	0.481	100	0.446	100	0.471	100	0.567	100
25	0.493	100	0.543	100	0.503	100	0.533	100	0.825	100	0.525	100
26	0.810	100	0.452	100	0.467	100	0.537	100	0.507	100	0.559	100
27	0.559	100	0.346	100	0.608	100	0.449	100	0.563	100	0.544	100
28	0.729	100	0.405	100	1.170	100	0.450	100	1.009	100	0.424	100
29	0.416	100	0.900	100	0.845	100	0.800	100	0.561	100	0.823	100
30	0.565	100	0.384	100	0.701	100	0.400	100	0.768	100	0.435	100
31	0.659	100	0.476	100	0.618	100	0.436	100	0.701	100	0.546	100
32	0.735	100	0.685	100	0.608	100	0.558	100	0.989	100	0.669	100

Figure 6-1 95% Range Error (PRN-1 – PRN-16) – Chicago

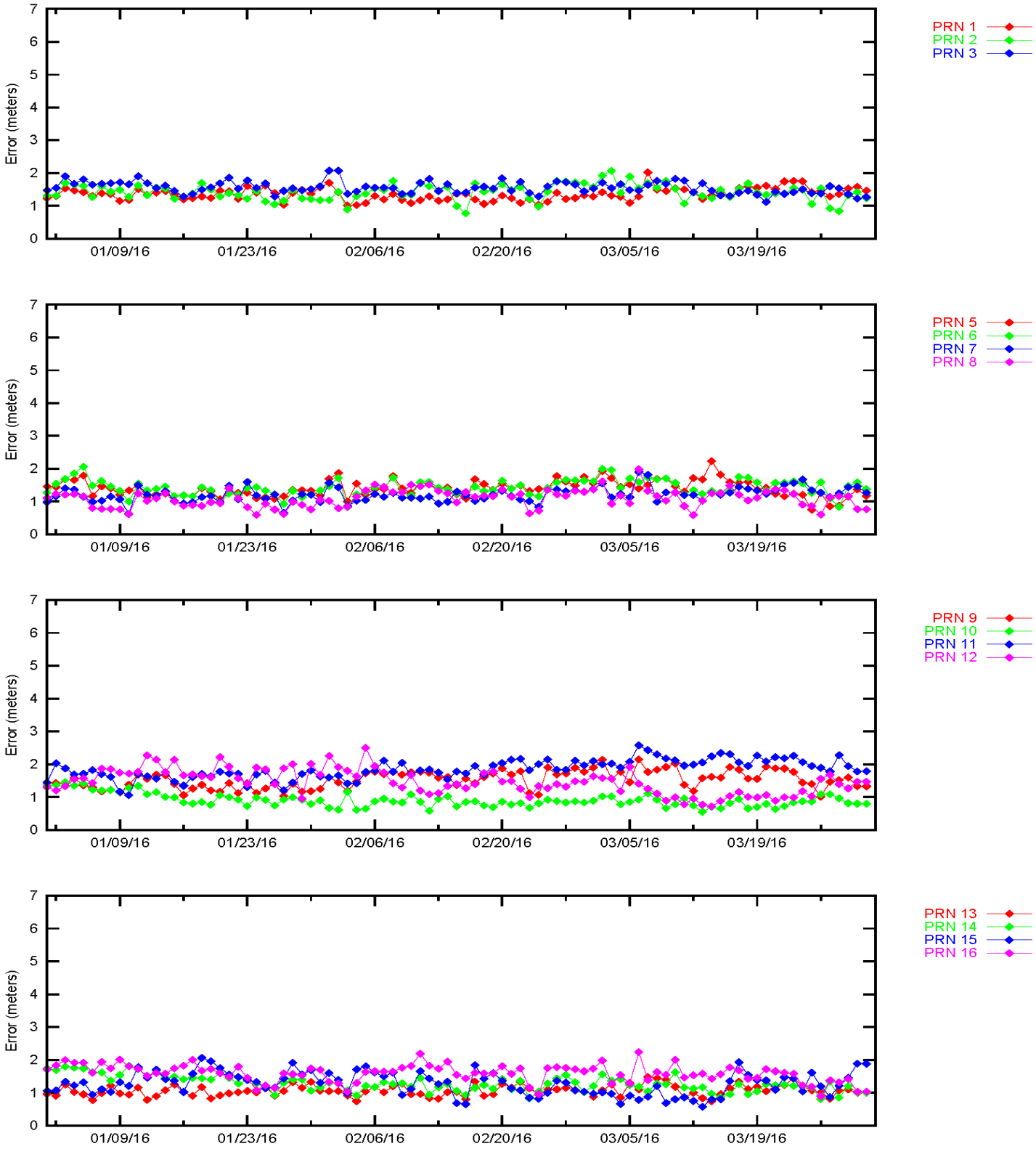


Figure 6-2 95% Range Error (PRN-17 – PRN-32) – Chicago

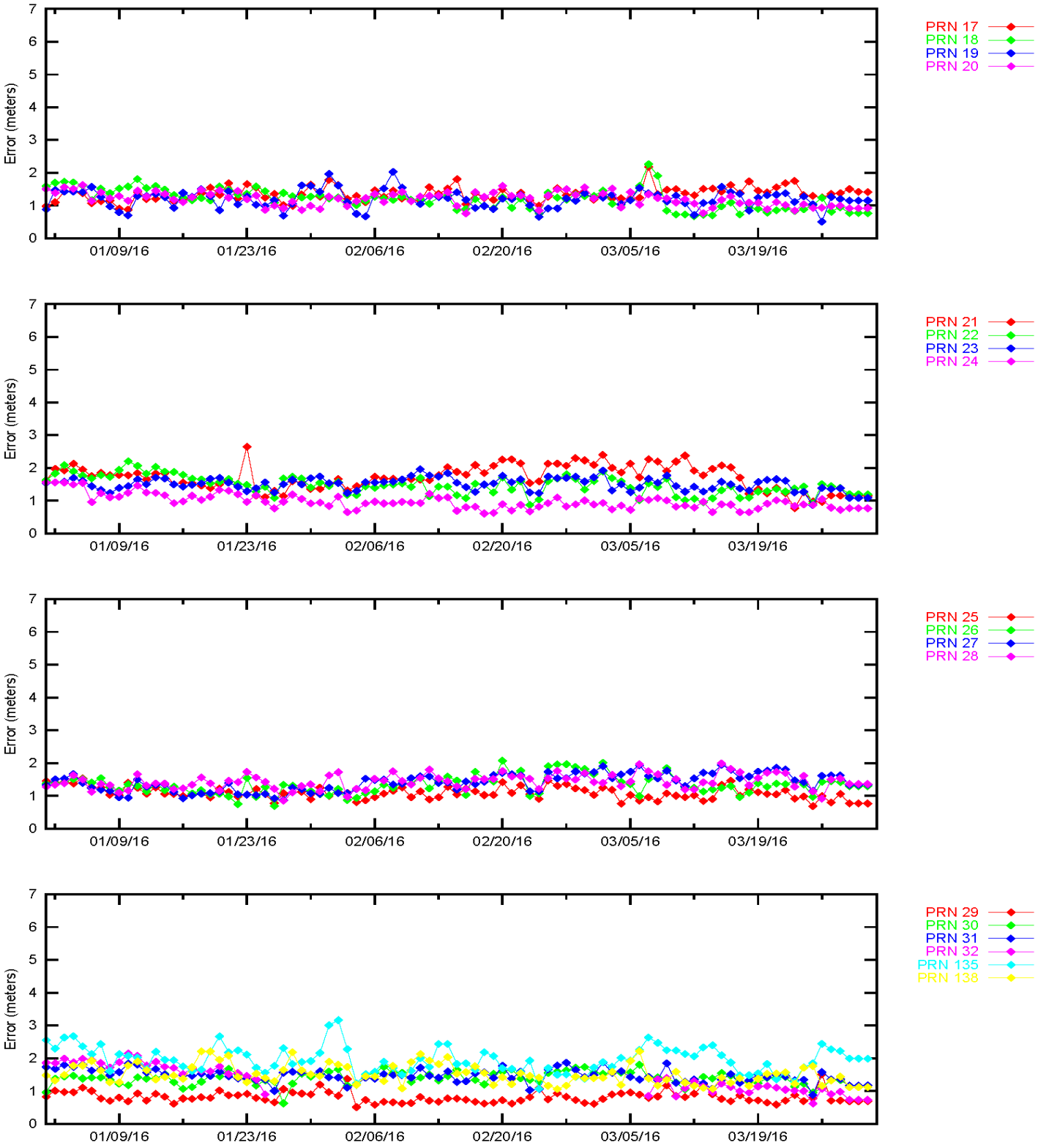


Figure 6-3 95% Ionospheric Error (PRN-1 – PRN-16) – Chicago

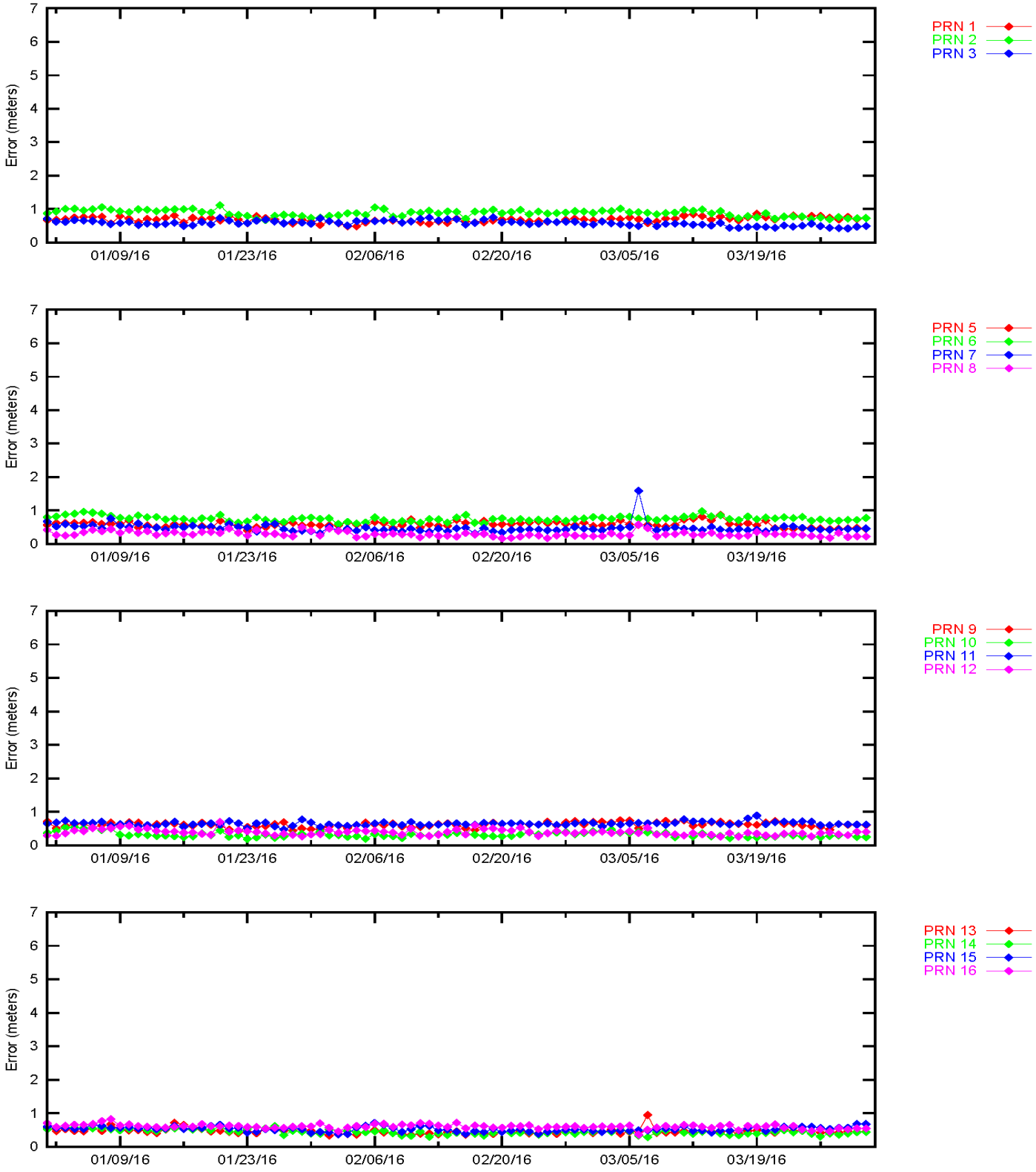
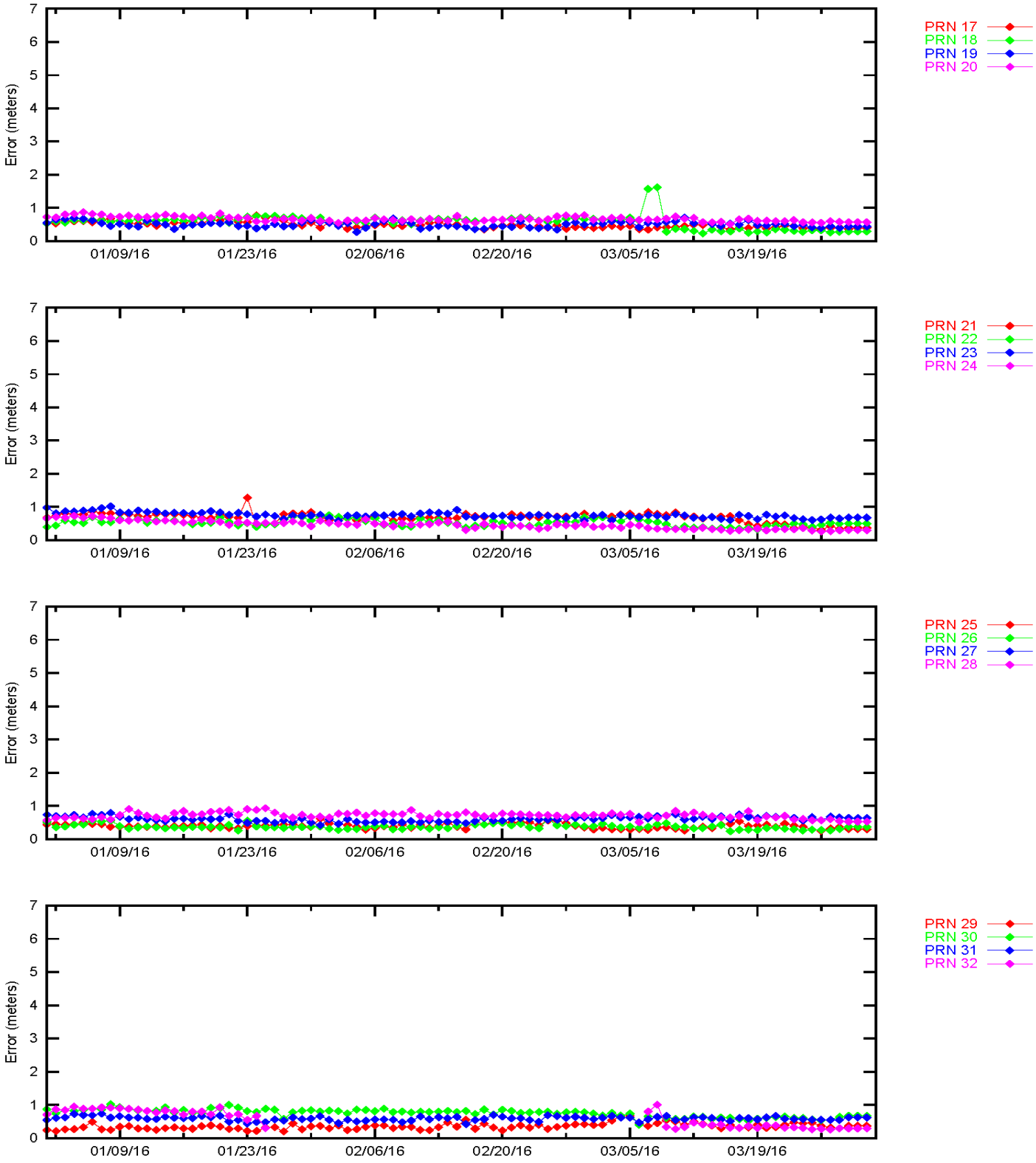


Figure 6-4 95% Ionospheric Error (PRN-17 - PRN-32) – Chicago



7.0 GEO RANGING PERFORMANCE

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

Table 7-1 shows the GEO PA and NPA ranging availability as well as the percentage of time the GEO UDRE was set to "Not Monitored" and "Do Not Use". Figure 7-1 and Figure 7-2 show the trend of CRW GEO PA and CRE GEO PA ranging availability, respectively. Figure 7-3 shows the trend of AMR GEO NPA ranging availability.

The reductions in CRW GEO PA and CRE GEO PA ranging availability were due to GUS switchovers (see Figure 7-1 and 7-2). Refer to Table 1-7 for detailed information on the GUS switchovers for this reporting period. Figure 7-3 shows AMR GEO NPA ranging was unavailable for this quarter. On July 18, 2015 the UDRE for AMR was indefinitely set to "Not Monitored," which meant users can use WAAS corrections without ranging capabilities.

Table 7-1 GEO Ranging Availability

GEO Source	GEO	PA (%)	NPA (%)	Not Monitored (%)	Do Not Use (%)
AMR 133	CRW	98.26	1.38	0.33	0.05
AMR 133	CRE	99.75	0.19	0.05	0.00
AMR 133	AMR	0.00	0.00	99.95	0.05
CRE 138	CRW	98.26	1.38	0.33	0.04
CRE 138	CRE	99.75	0.19	0.05	0.00
CRE 138	AMR	0.00	0.00	99.94	0.03
CRW 135	CRW	98.26	1.38	0.32	0.04
CRW 135	CRE	99.75	0.19	0.05	0.00
CRW 135	AMR	0.00	0.00	99.94	0.05

Figure 7-1 Daily PA CRW GEO Ranging Availability Trend

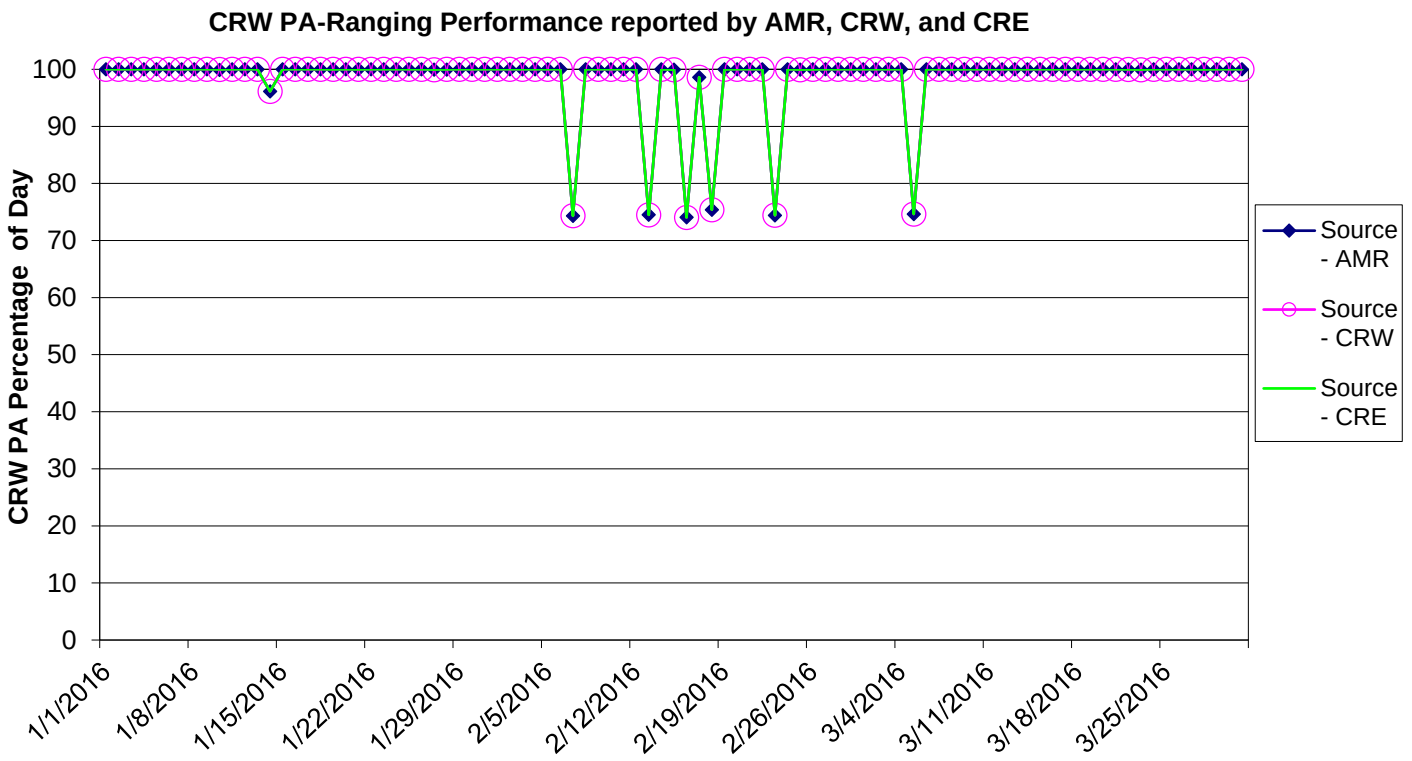


Figure 7-2 Daily PA CRE GEO Ranging Availability Trend

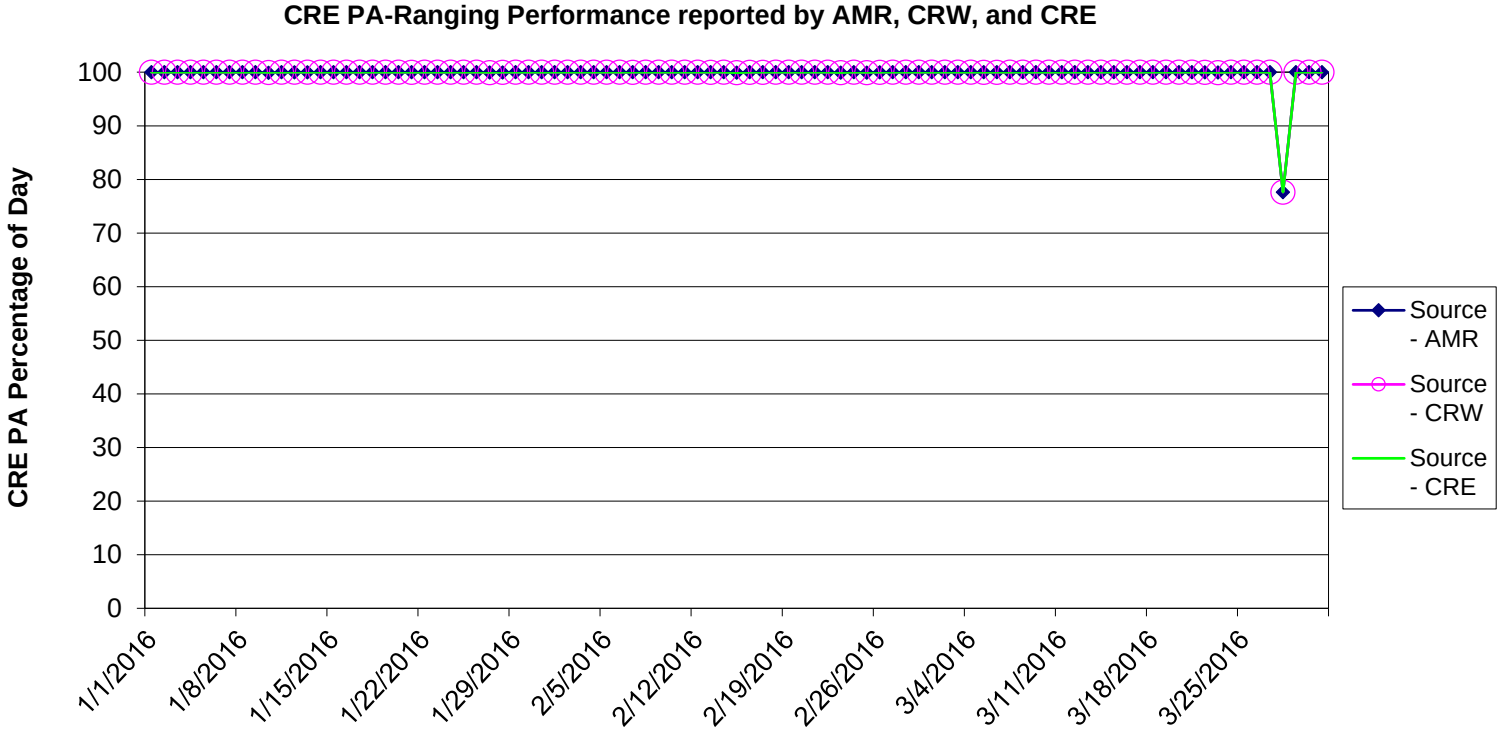
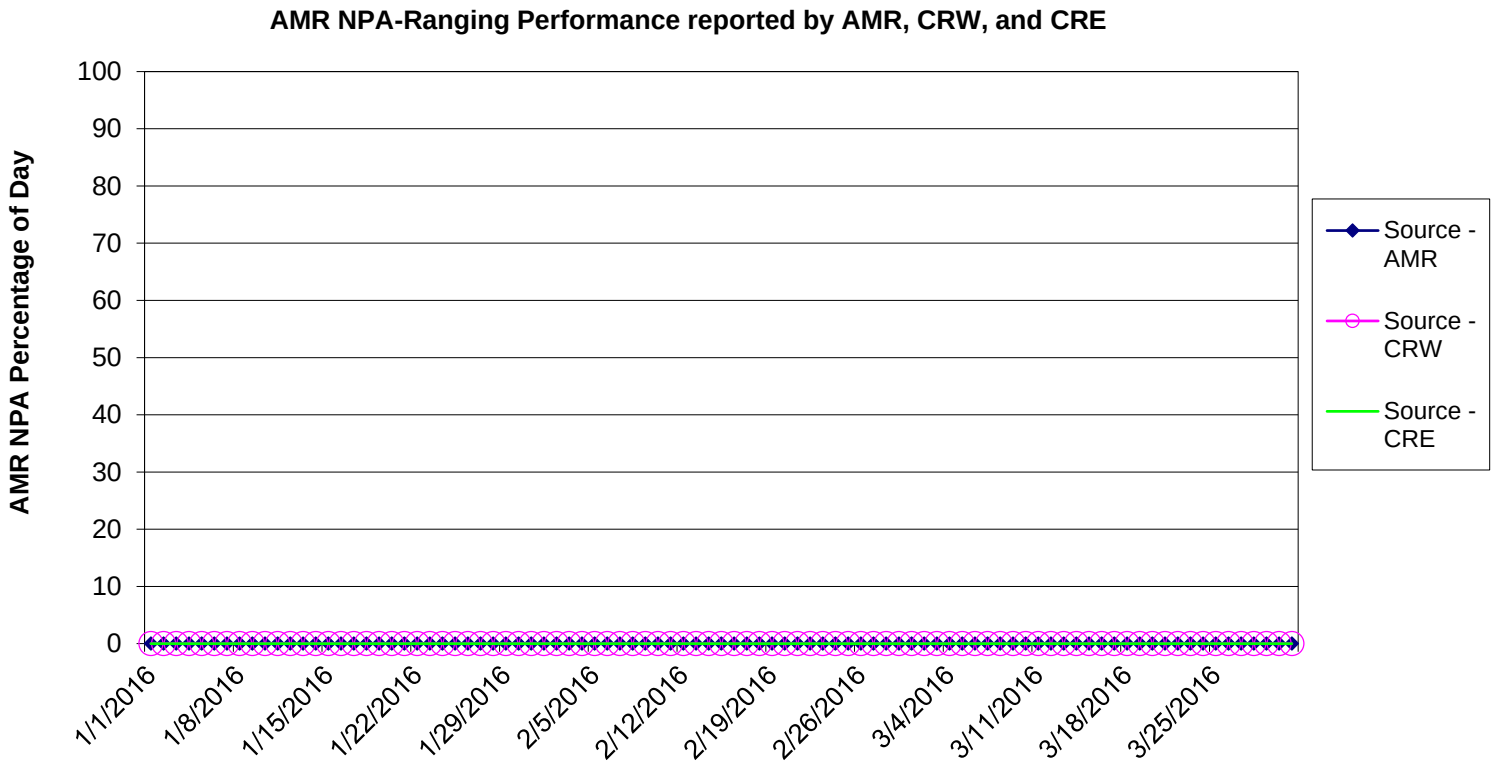


Figure 7-3 Daily NPA AMR GEO Ranging Availability Trend



8.0 WAAS AIRPORT AVAILABILITY

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

When the LPV service becomes unavailable, it is not considered available again until protection levels are below or equal to alert limits for at least 15 minutes. Although this will minimally reduce LPV service availability, it substantially reduces the number of service outages and prevents excessive switching in and out of service availability. Similar service analyses are computed for the LP and LPV200 services in accordance with HAL and VAL shown in Table 1-1. Table 8-1 shows the WAAS LPV service availability and outages at selected airports in the US and Canada. Figure 8-1 through Figure 8-6 provide graphical representation of the LP, LPV and LPV200 availability and outage counts at airports in the US and Canada that have published GPS 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/.

The interactive web page can be accessed by entering the web address into an Internet browser, selecting the current quarter from the drop-down menu on the upper left corner, and clicking “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” display WAAS availability for US airports with GPS RNAV IAPs; not selecting “Show all Airports” display only airports with approved LPV approaches are displayed, as shown in Table 8-1.

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

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
CAL4	FORT MACKAY / ALBIAN AERODROME	AB	LPV	1	99.8760	1	99.8741	3	99.8096
CEV3	VEGREVILLE	AB	LPV	1	99.8901	1	99.8775	2	99.8722
CYEG	EDMONTON / JOSEPHBURG	AB	LPV	1	99.8901	1	99.8840	2	99.8722
CYXD	EDMONTON CITY CTR	AB	LPV	1	99.8901	1	99.8825	2	99.8722
2C7	SHAKTOOLIK	AK	LPV	0	100	2	99.9824	9	99.8649
6A8	ALLAKAKET	AK	LP	2	99.9546	3	99.8958	28	99.6967
7KA	TATITLEK	AK	LP	3	99.8966	2	99.8565	4	99.8054
9A3	CHUATHBALUK	AK	LPV	1	99.9931	2	99.9721	6	99.8836
AKN	KING SALMON	AK	LPV	1	99.9931	1	99.9897	18	99.8913
AKW	KLAWOCK	AK	LP	1	99.8680	1	99.8668	3	99.8313
ANC	TED STEVENS ANCHORAGE INTL	AK	LPV200	2	99.9676	3	99.9271	6	99.8237
AQH	QUINHAGAK	AK	LPV	1	99.9844	2	99.9710	12	99.8607
AQT	NUIQSUT	AK	LPV	1	99.9126	1	99.8768	99	98.9236
BET	BETHEL	AK	LPV200	1	99.9844	1	99.9714	8	99.8813
BRW	WILEY POST-WILL ROGERS MEMORIA	AK	LPV	2	99.9596	27	99.61000	212	96.8796

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
CDB	COLD BAY	AK	LPV200	1	99.9760	7	99.8970	519	93.9999
CDV	MERLE K (MUDHOLE) SMITH	AK	LPV	3	99.8928	2	99.8558	4	99.8127
CEM	CENTRAL	AK	LP	1	99.8768	1	99.8581	24	99.7230
CLP	CLARKS POINT	AK	LPV	1	99.9931	1	99.9714	23	99.8783
CXF	COLDFOOT	AK	LP	2	99.9294	2	99.8916	30	99.6223
D76	ROBERT/BOB/CURTIS MEMORIAL	AK	LPV	3	99.9714	16	99.9038	118	98.6886
DLG	DILLINGHAM	AK	LPV	1	99.9889	1	99.9714	17	99.8821
ELI	ELIM	AK	LPV	0	100	1	99.9844	13	99.8539
ENA	KENAI MUNICIPAL	AK	LPV200	1	99.9813	2	99.9359	7	99.8413
ENM	EMMONAK	AK	LPV	1	99.9931	1	99.9741	14	99.85000
FAI	FAIRBANKS INTL	AK	LPV200	2	99.9054	3	99.8729	12	99.7848
GAL	EDWARD G PITKA SR	AK	LPV	1	99.9851	2	99.9584	6	99.8298
GAM	GAMBELL	AK	LPV	4	99.9771	83	99.7123	401	93.7447
GKN	GULKANA	AK	LPV	2	99.8909	1	99.8588	4	99.8004
GST	GUSTAVUS	AK	LP	1	99.8684	1	99.8649	3	99.8218
HLA	HUSLIA	AK	LPV	1	99.9706	4	99.9473	30	99.7783
HOM	HOMER	AK	LPV	2	99.9893	2	99.9458	9	99.8447
HPB	HOOPER BAY	AK	LP	1	99.9931	2	99.9638	29	99.7585
ILI	ILIAMNA	AK	LPV	1	99.9931	2	99.9687	13	99.8474
IYS	WASILLA	AK	LPV	3	99.9630	4	99.9111	5	99.8111
KAL	KALTAG	AK	LPV	0	100	2	99.9809	7	99.8745
KSM	ST MARY'S	AK	LPV200	1	99.9931	1	99.9725	8	99.8691
KTN	KETCHIKAN INTL	AK	LPV	1	99.8703	1	99.8668	3	99.8321
KTS	BREVIG MISSION	AK	LPV	2	99.9878	16	99.9401	138	98.0861
KWT	KWETHLUK	AK	LPV	1	99.9889	1	99.9714	7	99.8718
KYU	KOYUKUK	AK	LPV	1	99.9851	2	99.9580	7	99.8390
MCG	MC GRATH	AK	LP	1	99.9931	2	99.9393	6	99.8313
MDM	MARSHALL DON HUNTER SR	AK	LP	1	99.9931	1	99.9725	8	99.8737
MDO	MIDDLETON ISLAND	AK	LP	3	99.8943	3	99.8752	4	99.7932
OME	NOME	AK	LPV	2	99.9878	5	99.9588	124	98.6397
OOK	TOKSOOK BAY	AK	LP	1	99.9821	2	99.9687	23	99.7741
ORT	NORTHWAY	AK	LP	1	99.8745	1	99.8573	6	99.8138
OTZ	RALPH WIEN MEMORIAL	AK	LPV	3	99.9824	16	99.8863	127	98.5482
PAQ	PALMER MUNICIPAL	AK	LP	3	99.9599	3	99.8993	4	99.8123
PHO	POINT HOPE	AK	LPV	2	99.9855	20	99.8024	225	96.4061
RBY	RUBY	AK	LPV	1	99.9714	3	99.9401	6	99.8142
SCC	DEADHORSE	AK	LPV	1	99.9111	1	99.8764	99	98.8626
SCM	SCAMMON BAY	AK	LP	1	99.9931	2	99.9660	19	99.8161
SHG	SHUNGNAK	AK	LP	1	99.9706	4	99.9515	41	99.6822
SHX	SHAGELUK	AK	LPV	1	99.9931	2	99.9725	6	99.8794
SIT	SITKA ROCKY GUTIERREZ	AK	LP	1	99.8649	1	99.8649	3	99.8241
SMK	ST MICHAEL	AK	LPV	1	99.9977	1	99.9794	9	99.8699
SXQ	SOLDOTNA	AK	LP	1	99.9813	3	99.9363	7	99.8455

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
UNK	UNALAKLEET	AK	LP	0	100	2	99.9763	7	99.8684
WLK	SELAWIK	AK	LPV	1	99.9851	2	99.9538	37	99.7474
WMO	WHITE MOUNTAIN	AK	LP	0	100	1	99.9832	34	99.8321
WNA	NAPAKIAK	AK	LPV	1	99.9844	1	99.9714	8	99.8768
YAK	YAKUTAT	AK	LPV200	1	99.8684	1	99.8531	4	99.8111
06A	MOTON FIELD MUNICIPAL	AL	LPV	0	100	0	100	0	100
0J6	HEADLAND MUNICIPAL	AL	LPV	0	100	0	100	2	99.9981
0R1	ATMORE MUNICIPAL	AL	LP	0	100	0	100	0	100
11A	CLAYTON MUNICIPAL	AL	LPV	0	100	0	100	1	99.9992
12J	BREWTON MUNICIPAL	AL	LPV	0	100	0	100	0	100
1M4	POSEY FIELD	AL	LPV	0	100	0	100	0	100
1R8	BAY MINETTE MUNICIPAL	AL	LPV	0	100	0	100	0	100
2R5	ST ELMO	AL	LPV	0	100	0	100	0	100
33J	GENEVA MUNICIPAL	AL	LP	0	100	0	100	1	99.9985
3M8	NORTH PICKENS	AL	LP	0	100	0	100	0	100
4A9	ISBELL FIELD	AL	LPV	0	100	0	100	0	100
5R1	ROY WILCOX	AL	LP	0	100	0	100	0	100
5R4	FOLEY MUNICIPAL	AL	LPV	0	100	0	100	0	100
71J	BLACKWELL FIELD	AL	LPV	0	100	0	100	1	99.9985
79J	SOUTH ALABAMA RGNL AT BILL BEN	AL	LPV	0	100	0	100	0	100
8A0	ALBERTVILLE RGNL-THOMAS J BRUM	AL	LPV	0	100	0	100	0	100
9A4	COURTLAND	AL	LPV200	0	100	0	100	0	100
A08	VAIDEN FIELD	AL	LPV	0	100	0	100	0	100
ALX	THOMAS C RUSSELL FLD	AL	LPV	0	100	0	100	0	100
ANB	ANNISTON RGNL	AL	LPV	0	100	0	100	0	100
ASN	TALLADEGA MUNICIPAL	AL	LPV200	0	100	0	100	0	100
AUO	AUBURN UNIVERSITY RGNL	AL	LPV200	0	100	0	100	0	100
BFM	MOBILE DOWNTOWN	AL	LPV200	0	100	0	100	0	100
BHM	BIRMINGHAM-SHUTTLESWORTH INTL	AL	LPV200	0	100	0	100	0	100
CMD	CULLMAN RGNL-FOLSOM FIELD	AL	LPV	0	100	0	100	0	100
CQF	H L SONNY CALLAHAN	AL	LPV200	0	100	0	100	0	100
DCU	PRYOR FIELD RGNL	AL	LPV200	0	100	0	100	0	100
DHN	DOTHAN RGNL	AL	LPV200	0	100	0	100	1	99.9985
DYA	DEMOPOLIS RGNL	AL	LPV	0	100	0	100	0	100
EDN	ENTERPRISE MUNICIPAL	AL	LPV	0	100	0	100	1	99.9989
EET	SHELBY COUNTY	AL	LPV	0	100	0	100	0	100
EKY	BESSEMER	AL	LPV	0	100	0	100	0	100
EUF	WEEDON FIELD	AL	LPV	0	100	0	100	1	99.9992
GAD	NORTHEAST ALABAMA RGNL	AL	LPV200	0	100	0	100	0	100
GZH	MIDDLETON FIELD	AL	LP	0	100	0	100	0	100

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
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	0	100
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	0	100
MOB	MOBILE RGNL	AL	LPV200	0	100	0	100	0	100
MSL	NORTHWEST ALABAMA RGNL	AL	LPV200	0	100	0	100	0	100
PLR	ST CLAIR COUNTY	AL	LPV	0	100	0	100	0	100
PYP	CENTRE-PIEDMONT-CHEROKEE COUNT	AL	LPV	0	100	0	100	0	100
SCD	MERKEL FIELD SYLACAUGA MUNICIPAL	AL	LPV	0	100	0	100	0	100
SEM	CRAIG FIELD	AL	LPV200	0	100	0	100	0	100
TCL	TUSCALOOSA RGNL	AL	LPV	0	100	0	100	0	100
TOI	TROY MUNICIPAL AIRPORT AT N KENNETH	AL	LPV	0	100	0	100	0	100
0M0	BILLY FREE MUNICIPAL	AR	LPV	0	100	0	100	0	100
42A	MELBOURNE MUNICIPAL - JOHN E MILLER	AR	LP	0	100	0	100	0	100
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
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

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
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	1	99.9996	21	99.9279
DVT	PHOENIX DEER VALLEY	AZ	LPV	0	100	0	100	2	99.9901
FFZ	FALCON FLD	AZ	LP	0	100	0	100	2	99.9912
FHU	SIERRA VISTA MUNICIPAL-LIBBY AAF	AZ	LPV200	0	100	1	99.9996	28	99.8665
FLG	FLAGSTAFF PULLIAM	AZ	LPV	0	100	0	100	1	99.9912
GEU	GLENDALE MUNICIPAL	AZ	LPV	0	100	0	100	2	99.9886
HII	LAKE HAVASU CITY	AZ	LPV	0	100	0	100	2	99.9813
IFP	LAUGHLIN/BULLHEAD INTL	AZ	LPV	0	100	0	100	2	99.9844
IGM	KINGMAN	AZ	LPV	0	100	0	100	2	99.9847
IWA	PHOENIX-MESA GATEWAY	AZ	LPV200	0	100	0	100	1	99.9920
JTC	SPRINGERVILLE MUNICIPAL	AZ	LP	0	100	0	100	1	99.9943
P20	AVI SUQUILLA	AZ	LPV	0	100	0	100	2	99.9771
P33	COCHISE COUNTY	AZ	LPV	0	100	0	100	18	99.9164
PGA	PAGE MUNICIPAL	AZ	LPV	0	100	0	100	1	99.9977
PHX	PHOENIX SKY HARBOR INTL	AZ	LPV	0	100	0	100	2	99.9893
PRC	ERNEST A LOVE FIELD	AZ	LPV200	0	100	0	100	1	99.9897
RQE	WINDOW ROCK	AZ	LP	0	100	0	100	1	99.9912
SAD	SAFFORD RGNL	AZ	LPV	0	100	0	100	8	99.9710

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
SJN	ST JOHNS INDUSTRIAL AIR PARK	AZ	LP	0	100	0	100	1	99.9931
SOW	SHOW LOW RGNL	AZ	LPV	0	100	0	100	2	99.9908
TUS	TUCSON INTL	AZ	LPV	0	100	1	99.9985	28	99.8317
CYBL	CAMPBELL RIVER	BC	LPV	1	99.9309	1	99.9252	1	99.8836
CYCD	NANAIMO	BC	LPV	1	99.9382	1	99.9306	3	99.8886
CYVR	VANCOUVER INTL	BC	LPV	1	99.9382	1	99.9306	3	99.8863
CYXS	PRINCE GEORGE	BC	LPV	1	99.8832	1	99.8832	1	99.85000
CYYJ	VICTORIA INTL	BC	LPV	1	99.9382	1	99.9306	3	99.8913
CZBB	VANCOUVER / BOUNDARY BAY	BC	LPV	1	99.9382	1	99.9306	2	99.8874
AAT	ALTURAS MUNICIPAL	CA	LPV	0	100	1	99.9996	3	99.9725
ACV	ARCATA	CA	LPV200	0	100	1	99.9996	49	99.8283
APC	NAPA COUNTY	CA	LPV	0	100	1	99.9996	40	99.8581
APV	APPLE VALLEY	CA	LPV	0	100	1	99.9996	14	99.9523
AUN	AUBURN MUNICIPAL	CA	LPV	0	100	1	99.9996	4	99.9630
BFL	MEADOWS FIELD	CA	LPV200	0	100	1	99.9996	27	99.9126
BLH	BLYTHE	CA	LP	0	100	0	100	2	99.9733
C83	BYRON	CA	LPV	0	100	1	99.9996	30	99.8928
CCB	CABLE	CA	LP	0	100	1	99.9996	27	99.8955
CCR	BUCHANAN FIELD	CA	LPV	0	100	1	99.9996	39	99.8676
CEC	JACK MC NAMARA FIELD	CA	LPV	0	100	1	99.9996	38	99.8989
CIC	CHICO MUNICIPAL	CA	LPV	0	100	1	99.9996	5	99.9493
CMA	CAMARILLO	CA	LPV	0	100	1	99.9996	45	99.8119
CNO	CHINO	CA	LPV	0	100	1	99.9996	27	99.8920
CRQ	MC CLELLAN-PALOMAR	CA	LPV	0	100	1	99.9996	32	99.8596
CVH	HOLLISTER MUNICIPAL	CA	LPV	0	100	1	99.9996	36	99.8355
DAG	BARSTOW-DAGGETT	CA	LPV	0	100	1	99.9996	3	99.9645
DWA	YOLO COUNTY	CA	LPV	0	100	1	99.9996	29	99.9153
F70	FRENCH VALLEY	CA	LPV	0	100	1	99.9996	27	99.9012
FAT	FRESNO YOSEMITE INTL	CA	LPV200	0	100	1	99.9996	11	99.9534
HAF	HALF MOON BAY	CA	LPV	0	100	1	99.9996	70	99.6940
HHR	JACK NORTHROP FIELD/HAWTHORNE	CA	LPV	0	100	1	99.9996	30	99.8558
HWD	HAYWARD EXECUTIVE	CA	LPV	0	100	1	99.9996	44	99.8207
L35	BIG BEAR CITY	CA	LP	0	100	1	99.9996	10	99.9531
LAX	LOS ANGELES INTL	CA	LPV	0	100	1	99.9996	30	99.8531
LGB	LONG BEACH /DAUGHERTY FIELD/	CA	LPV	0	100	1	99.9996	29	99.8596
LHM	LINCOLN RGNL/KARL HARDER FIELD	CA	LPV200	0	100	1	99.9996	5	99.9599
LLR	LITTLE RIVER	CA	LP	0	100	1	99.9996	85	99.6482
LSN	LOS BANOS MUNICIPAL	CA	LPV	0	100	1	99.9996	25	99.9161
LVK	LIVERMORE MUNICIPAL	CA	LPV	0	100	1	99.9996	32	99.8680
MAE	MADERA MUNICIPAL	CA	LPV	0	100	1	99.9996	16	99.9508

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
MCE	MERCED RGNL/MACREADY FIELD	CA	LPV	0	100	1	99.9996	15	99.9447
MER	CASTLE	CA	LPV200	0	100	1	99.9996	14	99.9454
MHR	SACRAMENTO MATHER	CA	LPV200	0	100	1	99.9996	9	99.9542
MIT	SHAFTER-MINTER FIELD	CA	LPV	0	100	1	99.9996	30	99.9149
MOD	MODESTO CITY-CO-HARRY SHAM FLD	CA	LPV	0	100	1	99.9996	20	99.9367
MRY	MONTEREY RGNL	CA	LPV	0	100	1	99.9996	61	99.6604
MYF	MONTGOMERY FIELD	CA	LPV200	0	100	1	99.9996	33	99.8447
MYV	YUBA COUNTY	CA	LPV200	0	100	1	99.9996	6	99.9481
O02	NERVINO	CA	LPV	0	100	1	99.9996	2	99.9687
O27	OAKDALE	CA	LPV	0	100	1	99.9996	10	99.9462
O69	PETALUMA MUNICIPAL	CA	LPV	0	100	1	99.9996	58	99.8073
O88	RIO VISTA MUNICIPAL	CA	LP	0	100	1	99.9996	30	99.9035
OAK	METROPOLITAN OAKLAND INTL	CA	LPV200	0	100	1	99.9996	45	99.8123
ONT	ONTARIO INTL	CA	LPV	0	100	1	99.9996	27	99.8981
OVE	OROVILLE MUNICIPAL	CA	LPV	0	100	1	99.9996	5	99.9496
OXR	OXNARD	CA	LPV	0	100	1	99.9996	49	99.7806
PMD	PALMDALE USAF PLANT 42	CA	LPV200	0	100	1	99.9996	27	99.9023
POC	BRACKETT FIELD	CA	LPV	0	100	1	99.9996	27	99.8882
PRB	PASO ROBLES MUNICIPAL	CA	LPV200	0	100	1	99.9996	47	99.7569
PVF	PLACERVILLE	CA	LPV	0	100	1	99.9996	3	99.9634
RAL	RIVERSIDE MUNICIPAL	CA	LPV	0	100	1	99.9996	27	99.8996
RBL	RED BLUFF MUNICIPAL	CA	LPV	0	100	1	99.9996	13	99.9443
RDD	REDDING MUNICIPAL	CA	LPV	0	100	1	99.9996	14	99.9538
RHV	REID-HILLVIEW OF SANTA CLARA C	CA	LPV	0	100	1	99.9996	40	99.8264
SAC	SACRAMENTO EXECUTIVE	CA	LPV	0	100	1	99.9996	16	99.9328
SAN	SAN DIEGO INTL	CA	LPV	0	100	1	99.9996	36	99.8378
SBA	SANTA BARBARA MUNICIPAL	CA	LPV	0	100	1	99.9996	62	99.6654
SBP	SAN LUIS COUNTY RGNL	CA	LPV200	0	100	1	99.9996	60	99.6604
SCK	STOCKTON METROPOLITAN	CA	LPV	0	100	1	99.9996	20	99.9214
SDM	BROWN FIELD MUNICIPAL	CA	LPV200	0	100	1	99.9996	36	99.8386
SEE	GILLESPIE FIELD	CA	LP	0	100	1	99.9996	33	99.8573
SFO	SAN FRANCISCO INTL	CA	LPV200	0	100	1	99.9996	66	99.7630
SJC	NORMAN Y MINETA SAN JOSE INTL	CA	LPV200	0	100	1	99.9996	41	99.8157
SMF	SACRAMENTO INTL	CA	LPV200	0	100	1	99.9996	13	99.9336
SMX	SANTA MARIA PUB/CAPT G ALLAN H	CA	LPV200	0	100	1	99.9996	63	99.6406
SNA	JOHN WAYNE AIRPORT-ORANGE COUN	CA	LPV200	0	100	1	99.9996	30	99.8653
SNS	SALINAS MUNICIPAL	CA	LPV200	0	100	1	99.9996	48	99.7547

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
STS	CHARLES M SCHULZ - SONOMA COUN	CA	LPV200	0	100	1	99.9996	58	99.7932
TCY	TRACY MUNICIPAL	CA	LPV	0	100	1	99.9996	27	99.8993
TNP	TWENTYNINE PALMS	CA	LP	0	100	0	100	3	99.9649
TOA	ZAMPERINI FIELD	CA	LPV	0	100	1	99.9996	33	99.8481
TRK	TRUCKEE-TAHOE	CA	LP	0	100	0	100	2	99.9679
VCB	NUT TREE	CA	LPV	0	100	1	99.9996	31	99.8935
VCV	SOUTHERN CALIFORNIA LOGISTICS	CA	LPV	0	100	1	99.9996	18	99.9412
VIS	VISALIA MUNICIPAL	CA	LPV200	0	100	1	99.9996	14	99.9462
WJF	GENERAL WM J FOX AIRFIELD	CA	LPV	0	100	1	99.9996	27	99.8974
WLW	WILLOWS-GLENN COUNTY	CA	LPV	0	100	1	99.9996	12	99.9397
WVI	WATSONVILLE MUNICIPAL	CA	LPV	0	100	1	99.9996	47	99.7718
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	1	99.9996
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	1	99.9977
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	99.9939
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
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	1	99.9996
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	99.9977

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
4B8	ROBERTSON FIELD	CT	LP	1	99.9458	1	99.9424	1	99.9096
BDL	BRADLEY INTL	CT	LPV200	1	99.9458	1	99.9405	1	99.9088
GON	GROTON-NEW LONDON	CT	LPV	1	99.9489	1	99.9443	1	99.9088
HVN	TWEED-NEW HAVEN	CT	LPV	1	99.9489	1	99.9431	1	99.9111
IJD	WINDHAM	CT	LP	1	99.9458	1	99.9409	1	99.9088
MMK	MERIDEN MARKHAM MUNICIPAL	CT	LP	1	99.9458	1	99.9428	1	99.9103
OXC	WATERBURY-OXFORD	CT	LPV	1	99.9462	1	99.9428	1	99.9119
DCA	RONALD REAGAN WASHINGTON NATIO	DC	LPV	1	99.9561	1	99.9561	1	99.9458
HEF	MANASSAS RGNL/HARRY P DAVIS FI	DC	LPV	1	99.9561	1	99.9561	1	99.9473
IAD	WASHINGTON DULLES INTL	DC	LPV200	1	99.9561	1	99.9561	1	99.9473
33N	DELAWARE AIRPARK	DE	LP	1	99.9561	1	99.9561	1	99.9393
EVY	SUMMIT	DE	LPV	1	99.9561	1	99.9561	1	99.9386
GED	DELAWARE COASTAL	DE	LPV	1	99.9561	1	99.9561	1	99.9416
ILG	NEW CASTLE	DE	LPV	1	99.9561	1	99.9561	1	99.9386
1J0	TRI-COUNTY	FL	LP	0	100	0	100	1	99.9985
24J	SUWANNEE COUNTY	FL	LPV	0	100	0	100	1	99.9985
28J	PALATKA MUNICIPAL - LT KAY LARKIN F	FL	LPV	0	100	0	100	1	99.9981
40J	PERRY-FOLEY	FL	LPV	0	100	0	100	1	99.9981
54J	DEFUNIAK SPRINGS	FL	LP	0	100	0	100	1	99.9981
AAF	APALACHICOLA RGNL-CLEVE RANDOL	FL	LPV	0	100	0	100	3	99.9939
APF	NAPLES MUNICIPAL	FL	LPV	0	100	0	100	1	99.9989
AVO	AVON PARK EXECUTIVE	FL	LPV	0	100	0	100	0	100
BCT	BOCA RATON	FL	LPV	0	100	0	100	1	99.9916
BKV	BROOKSVILLE-TAMPA BAY RGNL	FL	LPV	0	100	0	100	1	99.9996
BOW	BARTOW MUNICIPAL	FL	LPV	0	100	0	100	0	100
CEW	BOB SIKES	FL	LPV	0	100	0	100	1	99.9996
CGC	CRYSTAL RIVER-CAPTAIN TOM DAVI	FL	LP	0	100	0	100	1	99.9985
CHN	WAUCHULA MUNICIPAL	FL	LP	0	100	0	100	0	100
COI	MERRITT ISLAND	FL	LPV	0	100	0	100	0	100
CRG	JACKSONVILLE EXECUTIVE AT CRAI	FL	LPV200	0	100	0	100	1	99.9992
CTY	CROSS CITY	FL	LPV	0	100	0	100	1	99.9977
DAB	DAYTONA BEACH INTL	FL	LPV200	0	100	0	100	1	99.9992
DED	DELAND MUNICIPAL-SIDNEY H TAYLOR FI	FL	LPV	0	100	0	100	1	99.9989
DTS	DESTIN EXECUTIVE	FL	LPV	0	100	0	100	1	99.9985
ECP	NORTHWEST FLORIDA BEACHES INTL	FL	LPV200	0	100	0	100	2	99.9973

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
EVB	NEW SMYRNA BEACH MUNICIPAL	FL	LPV	0	100	0	100	1	99.9992
EYW	KEY WEST INTL	FL	LPV	0	100	0	100	2	99.9882
F45	NORTH PALM BEACH COUNTY GENERA	FL	LPV	0	100	0	100	1	99.9939
FHB	FERNANDINA BEACH MUNICIPAL	FL	LPV	0	100	0	100	1	99.9992
FIN	FLAGLER COUNTY	FL	LPV	0	100	0	100	1	99.9985
FLL	FORT LAUDERDALE/HOLLYWOOD INTL	FL	LPV	0	100	0	100	1	99.9908
FMY	PAGE FIELD	FL	LPV	0	100	0	100	0	100
FPR	ST LUCIE COUNTY INTL	FL	LPV	0	100	0	100	1	99.9977
FXE	FORT LAUDERDALE EXECUTIVE	FL	LPV200	0	100	0	100	1	99.9920
GIF	WINTER HAVEN'S GILBERT	FL	LPV	0	100	0	100	0	100
GNV	GAINESVILLE RGNL	FL	LPV	0	100	0	100	1	99.9981
HEG	HERLONG RECREATIONAL	FL	LPV	0	100	0	100	1	99.9989
IMM	IMMOKALEE RGNL	FL	LPV	0	100	0	100	1	99.9985
ISM	KISSIMMEE GATEWAY	FL	LPV200	0	100	0	100	1	99.9996
JAX	JACKSONVILLE INTL	FL	LPV200	0	100	0	100	1	99.9989
LAL	LAKELAND LINDER RGNL	FL	LPV200	0	100	0	100	0	100
LCQ	LAKE CITY GATEWAY	FL	LPV	0	100	0	100	1	99.9985
LEE	LEESBURG INTL	FL	LPV	0	100	0	100	1	99.9992
LNA	PALM BEACH COUNTY PARK	FL	LP	0	100	0	100	1	99.9916
MCO	ORLANDO INTL	FL	LPV200	0	100	0	100	1	99.9996
MIA	MIAMI INTL	FL	LPV200	0	100	0	100	2	99.9905
MKY	MARCO ISLAND	FL	LPV	0	100	0	100	1	99.9977
MLB	MELBOURNE INTL	FL	LPV200	0	100	0	100	0	100
MTH	THE FLORIDA KEYS MARATHON	FL	LPV	0	100	0	100	2	99.9847
OBE	OKEECHOBEE COUNTY	FL	LPV	0	100	0	100	1	99.9996
OCF	OCALA INTL-JIM TAYLOR FIELD	FL	LPV200	0	100	0	100	1	99.9981
OMN	ORMOND BEACH MUNICIPAL	FL	LPV	0	100	0	100	1	99.9989
OPF	OPA-LOCKA EXECUTIVE	FL	LPV200	0	100	0	100	1	99.9905
ORL	EXECUTIVE	FL	LPV200	0	100	0	100	1	99.9996
PBI	PALM BEACH INTL	FL	LPV200	0	100	0	100	1	99.9924
PCM	PLANT CITY	FL	LPV	0	100	0	100	1	99.9996
PGD	PUNTA GORDA	FL	LPV200	0	100	0	100	0	100
PHK	PALM BEACH CO GLADES	FL	LPV	0	100	0	100	1	99.9962
PIE	ST PETE-CLEARWATER INTL	FL	LPV200	0	100	0	100	0	100
PMP	POMPANO BEACH AIRPARK	FL	LPV	0	100	0	100	1	99.9916
PNS	PENSACOLA INTL	FL	LPV200	0	100	0	100	0	100

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
RSW	SOUTHWEST FLORIDA INTL	FL	LPV	0	100	0	100	0	100
SEF	SEBRING RGNL	FL	LPV	0	100	0	100	0	100
SFB	ORLANDO SANFORD INTL	FL	LPV200	0	100	0	100	1	99.9996
SGJ	NORTHEAST FLORIDA RGNL	FL	LPV	0	100	0	100	1	99.9985
SRQ	SARASOTA/BRADENTON INTL	FL	LPV200	0	100	0	100	0	100
SUA	WITHAM FIELD	FL	LPV	0	100	0	100	1	99.9950
TIX	SPACE COAST RGNL	FL	LPV200	0	100	0	100	0	100
TLH	TALLAHASSEE INTL	FL	LPV200	0	100	0	100	2	99.9966
TMB	MIAMI EXECUTIVE	FL	LPV200	0	100	0	100	2	99.9897
TNT	DADE-COLLIER TRAINING AND TRAN	FL	LPV200	0	100	0	100	1	99.9939
TPA	TAMPA INTL	FL	LPV200	0	100	0	100	0	100
TPF	PETER O KNIGHT	FL	LP	0	100	0	100	1	99.9996
TTS	NASA SHUTTLE LANDING FACILITY	FL	LPV200	0	100	0	100	1	99.9996
VDF	TAMPA EXECUTIVE	FL	LPV	0	100	0	100	1	99.9996
VNC	VENICE MUNICIPAL	FL	LP	0	100	0	100	0	100
VQQ	CECIL	FL	LPV200	0	100	0	100	1	99.9985
VRB	VERO BEACH MUNICIPAL	FL	LPV200	0	100	0	100	1	99.9992
X07	LAKE WALES MUNICIPAL	FL	LP	0	100	0	100	0	100
X14	LA BELLE MUNICIPAL	FL	LPV	0	100	0	100	1	99.9989
X23	UMATILLA MUNICIPAL	FL	LP	0	100	0	100	1	99.9992
X26	SEBASTIAN MUNICIPAL	FL	LP	0	100	0	100	1	99.9996
X35	MARION COUNTY	FL	LP	0	100	0	100	1	99.9985
X50	MASSEY RANCH AIRPARK	FL	LP	0	100	0	100	1	99.9996
X51	HOMESTEAD GENERAL AVIATION	FL	LPV	0	100	0	100	2	99.9882
ZPH	ZEPHYRHILLS MUNICIPAL	FL	LPV	0	100	0	100	1	99.9996
09J	JEKYLL ISLAND	GA	LPV200	0	100	0	100	1	99.9996
15J	COOK COUNTY	GA	LPV	0	100	0	100	1	99.9989
17J	DONALSONVILLE MUNICIPAL	GA	LPV	0	100	0	100	2	99.9973
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	1	99.9996
4J5	QUITMAN BROOKS COUNTY	GA	LP	0	100	0	100	1	99.9989
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

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
70J	CAIRO-GRADY COUNTY	GA	LPV	0	100	0	100	2	99.9977
ABY	SOUTHWEST GEORGIA RGNL	GA	LPV200	0	100	0	100	2	99.9985
ACJ	JIMMY CARTER RGNL	GA	LPV	0	100	0	100	2	99.9989
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	1	99.9996
ATL	HARTSFIELD - JACKSON ATLANTA I	GA	LPV200	0	100	0	100	0	100
AYS	WAYCROSS-WARE COUNTY	GA	LPV200	0	100	0	100	1	99.9992
BGE	DECATUR COUNTY INDUSTRIAL AIR	GA	LPV200	0	100	0	100	2	99.9969
BHC	BAXLEY MUNICIPAL	GA	LPV	0	100	0	100	1	99.9996
BIJ	EARLY COUNTY	GA	LPV	0	100	0	100	2	99.9985
BQK	BRUNSWICK GOLDEN ISLES	GA	LPV200	0	100	0	100	1	99.9996
CCO	NEWNAN 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	1	99.9996
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	2	99.9981
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	1	99.9992
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	1	99.9996
GVL	LEE GILMER MEMORIAL	GA	LPV	0	100	0	100	0	100
HOE	HOMERVILLE	GA	LPV	0	100	0	100	1	99.9992
HQU	THOMSON-MCDUFFIE COUNTY	GA	LPV	0	100	0	100	0	100
IIY	WASHINGTON-WILKES COUNTY	GA	LPV	0	100	0	100	0	100
JES	JESUP-WAYNE COUNTY	GA	LPV	0	100	0	100	1	99.9996

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
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	0	100
MCN	MIDDLE GEORGIA RGNL	GA	LPV200	0	100	0	100	2	99.9992
MGR	MOULTRIE MUNICIPAL	GA	LPV200	0	100	0	100	2	99.9985
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	2	99.9992
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	1	99.9992
TOC	TOCCOA RG LETOURNEAU FIELD	GA	LPV	0	100	0	100	0	100
TVI	THOMASVILLE RGNL	GA	LPV	0	100	0	100	2	99.9985
VDI	VIDALIA RGNL	GA	LPV200	0	100	0	100	1	99.9996
VLD	VALDOSTA RGNL	GA	LPV	0	100	0	100	1	99.9989
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	1	99.9893	2	99.9618
AIO	ATLANTIC MUNICIPAL	IA	LPV	0	100	1	99.9874	2	99.9679
ALO	WATERLOO RGNL	IA	LPV	1	99.9313	1	99.9199	1	99.9199
AMW	AMES MUNICIPAL	IA	LPV	2	99.9752	2	99.9534	2	99.9378
AWG	WASHINGTON MUNICIPAL	IA	LPV200	0	100	1	99.9882	2	99.9580
BNW	BOONE MUNICIPAL	IA	LPV	2	99.9721	2	99.9508	2	99.9351
BRL	SOUTHEAST IOWA RGNL	IA	LPV200	0	100	1	99.9908	2	99.9599
CBF	COUNCIL BLUFFS MUNICIPAL	IA	LPV200	0	100	1	99.9897	2	99.9687
CID	THE EASTERN IOWA	IA	LPV200	1	99.9763	1	99.9638	2	99.9321

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
CIN	ARTHUR N NEU	IA	LPV	1	99.9824	2	99.9599	2	99.9367
CKP	CHEROKEE COUNTY RGNL	IA	LPV	1	99.9351	1	99.9203	1	99.9199
CSQ	CRESTON MUNICIPAL	IA	LPV	0	100	1	99.9889	2	99.9702
CWI	CLINTON MUNICIPAL	IA	LPV200	1	99.9618	1	99.95000	1	99.9199
DBQ	DUBUQUE RGNL	IA	LPV200	1	99.9466	1	99.9290	1	99.9199
DEH	DECORAH MUNICIPAL	IA	LPV	1	99.9241	1	99.9203	1	99.9199
DNS	DENISON MUNICIPAL	IA	LPV	1	99.9943	1	99.9725	2	99.9477
DSM	DES MOINES INTL	IA	LPV	0	100	1	99.9863	2	99.9668
DVN	DAVENPORT MUNICIPAL	IA	LPV200	1	99.9817	1	99.9611	1	99.9229
EAG	EAGLE GROVE MUNICIPAL	IA	LPV	1	99.9309	1	99.9199	1	99.9199
EBS	WEBSTER CITY MUNICIPAL	IA	LPV	2	99.9573	2	99.9328	1	99.9199
EFW	JEFFERSON MUNICIPAL	IA	LPV	1	99.9836	1	99.9618	2	99.9378
EOK	KEOKUK MUNICIPAL	IA	LPV	0	100	0	100	2	99.9866
EST	ESTHERVILLE MUNICIPAL	IA	LPV	1	99.9237	1	99.9199	1	99.9199
FFL	FAIRFIELD MUNICIPAL	IA	LPV	0	100	1	99.9893	2	99.9599
FOD	FORT DODGE RGNL	IA	LPV200	1	99.9340	1	99.9199	1	99.9199
FXY	FOREST CITY MUNICIPAL	IA	LPV	1	99.9237	1	99.9199	1	99.9199
GCT	GUTHRIE COUNTY RGNL	IA	LPV	0	100	1	99.9855	2	99.9634
GGI	GRINNELL RGNL	IA	LPV	1	99.9989	1	99.9786	2	99.9561
HPT	HAMPTON MUNICIPAL	IA	LPV	1	99.9302	1	99.9199	1	99.9199
I75	OSCEOLA MUNICIPAL	IA	LPV	0	100	1	99.9886	2	99.9695
ICL	SCHENCK FIELD	IA	LPV	0	100	0	100	1	99.9828
IFA	IOWA FALLS MUNICIPAL	IA	LPV	2	99.9454	1	99.9199	1	99.9199
IIB	INDEPENDENCE MUNICIPAL	IA	LP	2	99.9466	1	99.9199	1	99.9199
IKV	ANKENY RGNL	IA	LPV	1	99.9996	1	99.9802	2	99.9584
IOW	IOWA CITY MUNICIPAL	IA	LPV	1	99.9969	1	99.9767	2	99.9481
LRJ	LE MARS MUNICIPAL	IA	LPV	1	99.9386	1	99.9286	1	99.9199
MCW	MASON CITY MUNICIPAL	IA	LPV200	1	99.9237	1	99.9199	1	99.9199
MIW	MARSHALLTOWN MUNICIPAL	IA	LPV	2	99.9683	2	99.9496	2	99.9336
MPZ	MOUNT PLEASANT MUNICIPAL	IA	LPV	0	100	1	99.9901	2	99.9599
MUT	MUSCATINE MUNICIPAL	IA	LPV200	0	100	1	99.9878	2	99.9557
MXO	MONTICELLO RGNL	IA	LP	1	99.9580	1	99.9298	1	99.9199
OOA	OSKALOOSA MUNICIPAL	IA	LPV	0	100	1	99.9878	2	99.9603
OQW	MAQUOKETA MUNICIPAL	IA	LPV	1	99.9599	1	99.9344	1	99.9199
OTM	OTTUMWA RGNL	IA	LPV	0	100	1	99.9889	2	99.9607
OXV	KNOXVILLE MUNICIPAL	IA	LPV	0	100	1	99.9870	2	99.9615
PEA	PELLA MUNICIPAL	IA	LPV	0	100	1	99.9870	2	99.9603
POH	POCAHONTAS MUNICIPAL	IA	LPV	1	99.9321	1	99.9199	1	99.9199
PRO	PERRY MUNICIPAL	IA	LPV200	0	100	1	99.9855	2	99.9626
RDK	RED OAK MUNICIPAL	IA	LPV	0	100	1	99.9920	2	99.9706
SDA	SHENANDOAH MUNICIPAL	IA	LPV	0	100	0	100	2	99.9821
SHL	SHELDON MUNICIPAL	IA	LPV	1	99.9264	1	99.9203	1	99.9199

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
SKI	SAC CITY MUNICIPAL	IA	LPV	2	99.9668	2	99.9428	1	99.9199
SLB	STORM LAKE MUNICIPAL	IA	LPV	2	99.9493	2	99.9328	1	99.9199
SPW	SPENCER MUNICIPAL	IA	LPV200	1	99.9264	1	99.9199	1	99.9199
SUX	SIOUX GATEWAY/COL BUD DAY FIEL	IA	LPV200	2	99.9783	2	99.9546	1	99.9199
TNU	NEWTON MUNICIPAL-EARL JOHNSON FIELD	IA	LPV	1	99.9992	1	99.9790	2	99.9565
TVK	CENTERVILLE MUNICIPAL	IA	LPV	0	100	0	100	1	99.9832
TZT	BELLE PLAINE MUNICIPAL	IA	LPV	1	99.9840	1	99.9706	2	99.9397
VTI	VINTON VETERANS MEMORIAL ARPK	IA	LPV	2	99.9588	1	99.9199	1	99.9199
BOI	BOISE AIR TERMINAL/GOWEN FLD	ID	LPV	0	100	0	100	0	100
COE	COEUR D'ALENE - PAPPY BOYINGTO	ID	LPV200	1	99.9721	2	99.9645	1	99.9267
DIJ	DRIGGS-REED MEMORIAL	ID	LP	0	100	0	100	1	99.9947
EUL	CALDWELL INDUSTRIAL	ID	LPV	0	100	0	100	1	99.9996
GNG	GOODING MUNICIPAL	ID	LPV	0	100	0	100	0	100
IDA	IDAHO FALLS RGNL	ID	LPV200	0	100	0	100	1	99.9989
JER	JEROME COUNTY	ID	LPV	0	100	0	100	0	100
LWS	LEWISTON-NEZ PERCE COUNTY	ID	LPV200	0	100	0	100	2	99.9649
MAN	NAMPA MUNICIPAL	ID	LPV	0	100	0	100	1	99.9996
MYL	MC CALL MUNICIPAL	ID	LPV	0	100	0	100	1	99.9908
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
U76	MOUNTAIN HOME MUNICIPAL	ID	LPV	0	100	0	100	0	100
1H2	EFFINGHAM COUNTY MEMORIAL	IL	LPV	0	100	0	100	1	99.9981
3LF	LITCHFIELD MUNICIPAL	IL	LPV	0	100	0	100	1	99.9996
3MY	MOUNT HAWLEY AUXILIARY	IL	LP	1	99.9886	2	99.9798	3	99.9584
AJG	MOUNT CARMEL MUNICIPAL	IL	LPV	0	100	0	100	2	99.9954
ALN	ST LOUIS RGNL	IL	LPV200	0	100	0	100	0	100
ARR	AURORA MUNICIPAL	IL	LPV200	1	99.9596	1	99.9493	1	99.9237
BLV	SCOTT AFB/MIDAMERICA	IL	LPV200	0	100	0	100	0	100
BMI	CENTRAL IL RGNL ARPT AT BLOOMI	IL	LPV	1	99.9855	1	99.9855	1	99.9565
C15	PEKIN MUNICIPAL	IL	LPV	0	100	0	100	1	99.9699
C73	DIXON MUNICIPAL-CHARLES R WALGREEN	IL	LPV	1	99.9599	1	99.9496	1	99.9218
C75	MARSHALL COUNTY	IL	LP	1	99.9828	2	99.9725	1	99.9237
CIR	CAIRO RGNL	IL	LP	0	100	0	100	0	100

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
CMI	UNIVERSITY OF ILLINOIS-WILLARD	IL	LPV200	1	99.9863	1	99.9863	2	99.9824
CPS	ST LOUIS DOWNTOWN	IL	LPV200	0	100	0	100	0	100
CTK	INGERSOLL	IL	LPV	0	100	0	100	1	99.9702
CUL	CARMI MUNICIPAL	IL	LP	0	100	0	100	0	100
DEC	DECATUR	IL	LPV200	1	99.9935	1	99.9935	1	99.9935
DKB	DE KALB TAYLOR MUNICIPAL	IL	LPV	1	99.9596	1	99.9454	1	99.9218
DNV	VERMILION REGIONAL	IL	LPV	1	99.9805	1	99.9805	2	99.9592
DPA	DUPAGE	IL	LPV200	1	99.9584	1	99.9454	1	99.9229
ENL	CENTRALIA MUNICIPAL	IL	LPV	0	100	0	100	0	100
EZI	KEWANEE MUNICIPAL	IL	LPV	1	99.9870	2	99.9760	1	99.9237
FEP	ALBERTUS	IL	LPV	1	99.9550	1	99.9344	1	99.9199
FOA	FLORA MUNICIPAL	IL	LPV	0	100	0	100	1	99.9985
GBG	GALESBURG MUNICIPAL	IL	LPV200	0	100	1	99.9901	2	99.9573
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	1	99.9580	1	99.9493	1	99.9237
IKK	GREATER KANKAKEE	IL	LPV200	1	99.9748	2	99.9645	1	99.9378
LOT	LEWIS UNIVERSITY	IL	LPV200	1	99.9592	1	99.9493	1	99.9237
LWV	LAWRENCEVILLE-VINCENNES INTL	IL	LPV200	0	100	0	100	2	99.9897
MDW	CHICAGO MIDWAY INTL	IL	LPV	1	99.9576	1	99.9493	1	99.9237
MLI	QUAD CITY INTL	IL	LPV200	1	99.9832	1	99.9630	1	99.9233
MQB	MACOMB MUNICIPAL	IL	LPV200	0	100	0	100	1	99.9718
MTO	COLES COUNTY MEMORIAL	IL	LPV	1	99.9962	1	99.9962	1	99.9962
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	1	99.9977
ORD	CHICAGO O'HARE INTL	IL	LPV200	1	99.9527	1	99.9454	1	99.9225
PIA	GENERAL DOWNING - PEORIA INTL	IL	LPV	1	99.9989	2	99.9905	1	99.9695
PJY	PINCKNEYVILLE-DU QUOIN	IL	LPV	0	100	0	100	0	100
PNT	PONTIAC MUNICIPAL	IL	LPV	1	99.9798	2	99.9702	1	99.9382
PWK	CHICAGO EXECUTIVE	IL	LPV	1	99.9458	1	99.9382	1	99.9203
RFD	CHICAGO/ROCKFORD INTL	IL	LPV200	1	99.9527	1	99.9382	1	99.9199
RPJ	ROCHELLE MUNICIPAL AIRPORT-KORITZ F	IL	LPV200	1	99.9599	1	99.9496	1	99.9210
RSV	CRAWFORD CO	IL	LPV	1	99.9996	1	99.9996	2	99.9893
SAR	SPARTA COMMUNICIPALTY-HUNTER FIELD	IL	LPV	0	100	0	100	0	100
SFY	TRI-TOWNSHIP	IL	LP	1	99.9596	1	99.9454	1	99.9199
SLO	SALEM-LECKRONE	IL	LPV200	0	100	0	100	1	99.9992

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
SPI	ABRAHAM LINCOLN CAPITAL	IL	LPV	0	100	0	100	1	99.9996
SQI	WHITESIDE CO ARPT-JOS H BITTOR	IL	LPV	1	99.9615	1	99.95000	1	99.9233
TIP	RANTOUL NATL AVN CNTR-FRANK EL	IL	LPV	1	99.9832	1	99.9832	1	99.9546
UGN	WAUKEGAN RGNL	IL	LPV	1	99.9382	1	99.9378	1	99.9199
UIN	QUINCY RGNL-BALDWIN FIELD	IL	LPV200	0	100	0	100	0	100
VYS	ILLINOIS VALLEY RGNL-WALTER A	IL	LPV	1	99.9710	1	99.9504	1	99.9237
2R2	HENDRICKS COUNTY-GORDON GRAHAM	IN	LPV	1	99.9828	1	99.9748	3	99.9676
4I7	PUTNAM COUNTY RGNL	IN	LPV	1	99.9844	1	99.9748	2	99.9691
AID	ANDERSON MUNICIPAL-DARLINGTON FIELD	IN	LPV	1	99.9802	2	99.9714	1	99.9416
ASW	WARSAW MUNICIPAL	IN	LPV	1	99.9527	1	99.9493	1	99.9340
BAK	COLUMBUS MUNICIPAL	IN	LPV	1	99.9859	1	99.9748	2	99.9679
BFR	VIRGIL I GRISSOM MUNICIPAL	IN	LP	1	99.9874	1	99.9748	2	99.9744
BMG	MONROE COUNTY	IN	LPV200	1	99.9859	1	99.9748	2	99.9741
C62	KENDALLVILLE MUNICIPAL	IN	LPV	1	99.9493	1	99.9477	1	99.9321
CEV	METTEL FIELD	IN	LPV	2	99.9817	2	99.9718	1	99.9424
DCY	DAVIESS COUNTY	IN	LPV	1	99.9962	1	99.9962	1	99.9748
EKM	ELKHART MUNICIPAL	IN	LPV	1	99.9493	1	99.9477	1	99.9325
EVV	EVANSVILLE RGNL	IN	LPV200	0	100	0	100	2	99.9943
EYE	EAGLE CREEK AIRPARK	IN	LPV	1	99.9821	2	99.9744	1	99.9416
FKR	FRANKFORT MUNICIPAL	IN	LPV	1	99.9790	2	99.9737	1	99.9462
FRH	FRENCH LICK MUNICIPAL	IN	LPV	1	99.9954	1	99.9954	1	99.9748
FWA	FORT WAYNE INTL	IN	LPV200	1	99.9493	1	99.9493	1	99.9348
GEZ	SHELBYVILLE MUNICIPAL	IN	LPV	1	99.9844	2	99.9733	1	99.9424
GGP	LOGANSPORT/CASS COUNTY	IN	LPV200	1	99.9748	2	99.9664	1	99.9386
GSH	GOSHEN MUNICIPAL	IN	LPV	1	99.9493	1	99.9481	1	99.9332
GWB	DE KALB COUNTY	IN	LPV	1	99.9493	1	99.9481	1	99.9328
GYY	GARY/CHICAGO INTL	IN	LPV200	1	99.9573	1	99.9493	1	99.9237
HFY	GREENWOOD MUNICIPAL	IN	LPV	1	99.9840	2	99.9744	2	99.9557
HNB	HUNTINGBURG	IN	LPV	0	100	0	100	1	99.9748
HUF	TERRE HAUTE INTL-HULMAN FIELD	IN	LPV200	1	99.9859	1	99.9859	2	99.9744
I22	RANDOLPH COUNTY	IN	LPV	2	99.9752	2	99.9699	1	99.9416
IMS	MADISON MUNICIPAL	IN	LPV	1	99.9859	1	99.9748	2	99.9691
IND	INDIANAPOLIS INTL	IN	LPV200	1	99.9832	1	99.9748	2	99.9557
JVY	CLARK RGNL	IN	LPV200	1	99.9882	2	99.9870	1	99.9748
LAF	PURDUE UNIVERSITY	IN	LPV	1	99.9783	2	99.9718	1	99.9454
MCX	WHITE COUNTY	IN	LP	1	99.9752	2	99.9668	1	99.9382

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
MIE	DELAWARE COUNTY RGNL	IN	LPV	2	99.9763	2	99.9699	1	99.9416
MQJ	INDIANAPOLIS RGNL	IN	LPV200	1	99.9821	2	99.9725	1	99.9416
MZZ	MARION MUNICIPAL	IN	LPV	1	99.9752	2	99.9653	1	99.9355
OKK	KOKOMO MUNICIPAL	IN	LPV200	1	99.9752	2	99.9683	1	99.9351
OVO	NORTH VERNON	IN	LPV	1	99.9859	2	99.9744	2	99.9645
OXI	STARKE COUNTY	IN	LPV	1	99.9565	1	99.9493	1	99.9378
PLD	PORTLAND MUNICIPAL	IN	LPV	1	99.9523	1	99.9493	1	99.9416
PPO	LA PORTE MUNICIPAL	IN	LPV	1	99.9554	1	99.9493	1	99.9378
RCR	FULTON COUNTY	IN	LPV	1	99.9576	1	99.9496	1	99.9382
RID	RICHMOND MUNICIPAL	IN	LPV200	2	99.9790	2	99.9710	1	99.9424
RZL	JASPER COUNTY	IN	LPV	1	99.9748	2	99.9649	1	99.9382
SBN	SOUTH BEND INTL	IN	LPV	1	99.9493	1	99.9481	1	99.9370
SER	FREEMAN MUNICIPAL	IN	LPV	1	99.9859	1	99.9748	2	99.9729
SIV	SULLIVAN COUNTY	IN	LPV	1	99.9908	1	99.9908	1	99.9748
SMD	SMITH FIELD	IN	LPV	1	99.9493	1	99.9493	1	99.9340
TEL	PERRY COUNTY MUNICIPAL	IN	LP	0	100	0	100	1	99.9748
TYQ	INDIANAPOLIS EXECUTIVE	IN	LPV	1	99.9809	2	99.9741	1	99.9416
UWL	NEW CASTLE-HENRY CO MUNICIPAL	IN	LPV	1	99.9821	2	99.9714	1	99.9416
VPZ	PORTER COUNTY RGNL	IN	LPV	1	99.9569	1	99.9493	1	99.9378
3AU	AUGUSTA MUNICIPAL	KS	LP	0	100	0	100	0	100
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

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
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	1	99.9992
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
MPR	MC PHERSON	KS	LPV	0	100	0	100	0	100
MYZ	MARYSVILLE MUNICIPAL	KS	LPV	0	100	0	100	0	100
NRN	NORTON MUNICIPAL	KS	LPV	0	100	0	100	1	99.9977
OEL	OAKLEY MUNICIPAL	KS	LPV	0	100	0	100	0	100
OIN	OBERLIN MUNICIPAL	KS	LPV	0	100	0	100	1	99.9981
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	1	99.9859	1	99.9748	2	99.9634
18I	MC CREARY COUNTY	KY	LP	0	100	0	100	1	99.9924
27K	GEORGETOWN SCOTT COUNTY - MARS	KY	LPV200	1	99.9859	1	99.9748	2	99.9660

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
2I0	MADISONVILLE RGNL	KY	LPV	0	100	0	100	1	99.9981
2M0	PRINCETON-CALDWELL COUNTY	KY	LPV	0	100	0	100	0	100
4M7	RUSSELLVILLE-LOGAN COUNTY	KY	LPV	0	100	0	100	1	99.9969
5M9	MARION-CRITTENDEN COUNTY	KY	LPV	0	100	0	100	0	100
6I2	LEBANON SPRINGFIELD-GEORGE HOE	KY	LP	1	99.9989	1	99.9989	1	99.9752
AAS	TAYLOR COUNTY	KY	LPV	0	100	0	100	1	99.9760
BRY	SAMUELS FIELD	KY	LPV	1	99.9981	1	99.9981	2	99.9744
BWG	BOWLING GREEN-WARREN COUNTY RG	KY	LPV200	0	100	0	100	1	99.9962
BYL	WILLIAMSBURG-WHITLEY COUNTY	KY	LPV	0	100	0	100	1	99.9821
CEY	KYLE-OAKLEY FIELD	KY	LPV	0	100	0	100	0	100
CPF	WENDELL H FORD	KY	LPV200	1	99.9928	1	99.9893	2	99.9729
CVG	CINCINNATI/NORTHERN KENTUCKY I	KY	LPV200	2	99.9855	2	99.9733	1	99.9454
DVK	STUART POWELL FIELD	KY	LPV	1	99.9962	1	99.9962	2	99.9752
DWU	ASHLAND RGNL	KY	LP	2	99.9813	2	99.9702	1	99.9454
EHR	HENDERSON CITY-COUNTY	KY	LPV	0	100	0	100	1	99.9985
EKQ	WAYNE COUNTY	KY	LPV	0	100	0	100	1	99.9817
EKX	ADDINGTON FIELD	KY	LPV	0	100	0	100	1	99.9748
FFT	CAPITAL CITY	KY	LPV	1	99.9870	1	99.9748	2	99.9668
FGX	FLEMING-MASON	KY	LPV	2	99.9847	2	99.9737	1	99.9454
GLW	GLASGOW MUNICIPAL	KY	LPV	0	100	0	100	2	99.9947
HVC	HOPKINSVILLE-CHRISTIAN COUNTY	KY	LPV	0	100	0	100	0	100
I39	MADISON	KY	LPV200	1	99.9924	1	99.9924	2	99.9741
IOB	MOUNT STERLING-MONTGOMERY COUN	KY	LPV	1	99.9859	1	99.9752	2	99.9676
JQD	OHIO COUNTY	KY	LPV	0	100	0	100	2	99.9893
K24	RUSSELL COUNTY	KY	LPV	0	100	0	100	1	99.9767
K62	GENE SNYDER	KY	LP	1	99.9859	2	99.9737	2	99.9573
KY8	HANCOCK CO-RON LEWIS FIELD	KY	LPV	0	100	0	100	1	99.9748
LEX	BLUE GRASS	KY	LPV	1	99.9882	1	99.9882	2	99.9676
LOU	BOWMAN FIELD	KY	LPV	1	99.9908	1	99.9908	1	99.9748
LOZ	LONDON-CORBIN ARPT-MAGEE FIELD	KY	LPV	0	100	0	100	1	99.9771
M21	MUHLENBERG COUNTY	KY	LP	0	100	0	100	1	99.9973
M25	MAYFIELD GRAVES COUNTY	KY	LPV	0	100	0	100	0	100
OWB	OWENSBORO-DAVIESS COUNTY	KY	LPV200	0	100	0	100	2	99.9908

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
PAH	BARKLEY RGNL	KY	LPV	0	100	0	100	0	100
SDF	LOUISVILLE INTL-STANDIFORD FIE	KY	LPV200	1	99.9924	1	99.9924	1	99.9748
SJS	BIG SANDY RGNL	KY	LPV	2	99.9866	2	99.9863	2	99.9660
SME	LAKE CUMBERLAND RGNL	KY	LPV	0	100	0	100	1	99.9771
SYM	MOREHEAD-ROWAN COUNTY CLYDE A	KY	LPV200	1	99.9859	2	99.9744	1	99.9454
TWT	STURGIS MUNICIPAL	KY	LPV	0	100	0	100	0	100
TZV	TOMPKINSVILLE-MONROE COUNTY	KY	LPV	0	100	0	100	1	99.9947
1L0	ST JOHN THE BAPTIST PARISH	LA	LPV	0	100	0	100	0	100
3R4	HART	LA	LPV	0	100	0	100	0	100
3R7	JENNINGS	LA	LPV	0	100	0	100	0	100
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	0	100
BQP	MOREHOUSE MEMORIAL	LA	LPV	0	100	0	100	0	100
BTR	BATON ROUGE METROPOLITAN` RYAN	LA	LPV200	0	100	0	100	0	100
BXA	GEORGE R CARR MEMORIAL AIR FLD	LA	LPV	0	100	0	100	0	100
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	0	100
F88	JONESBORO	LA	LP	0	100	0	100	0	100
GAO	SOUTH LAFOURCHE LEONARD MILLER	LA	LPV200	0	100	0	100	0	100
HDC	HAMMOND NORTHSHORE RGNL	LA	LPV200	0	100	0	100	0	100
HUM	HOUMA-TERREBONNE	LA	LPV200	0	100	0	100	0	100
HZR	FALSE RIVER RGNL	LA	LPV	0	100	0	100	0	100
IER	NATCHITOCHES RGNL	LA	LPV	0	100	0	100	0	100
IYA	ABBEVILLE CHRIS CRUSTA MEMORIA	LA	LPV	0	100	0	100	0	100
L38	LOUISIANA RGNL	LA	LPV	0	100	0	100	0	100
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	0	100
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

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
MSY	LOUIS ARMSTRONG NEW ORLEANS IN	LA	LPV200	0	100	0	100	0	100
NEW	LAKEFRONT	LA	LPV	0	100	0	100	0	100
OPL	ST LANDRY PARISH-AHART FIELD	LA	LPV	0	100	0	100	0	100
PTN	HARRY P WILLIAMS MEMORIAL	LA	LPV200	0	100	0	100	0	100
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	0	100
UXL	SOUTHLAND FIELD	LA	LPV	0	100	0	100	0	100
3B0	SOUTHBRIDGE MUNICIPAL	MA	LPV	1	99.9458	1	99.9397	1	99.9088
ACK	NANTUCKET MEMORIAL	MA	LPV200	1	99.9489	1	99.9424	2	99.8989
BAF	WESTFIELD-BARNES RGNL	MA	LPV	1	99.9458	1	99.9401	1	99.9088
BED	LAURENCE G HANSCOM FLD	MA	LPV200	1	99.9458	1	99.9431	1	99.9019
BOS	GENERAL EDWARD LAWRENCE LOGAN	MA	LPV200	1	99.9458	1	99.9435	1	99.8977
BVY	BEVERLY MUNICIPAL	MA	LPV	1	99.9458	1	99.9401	1	99.8947
EWB	NEW BEDFORD RGNL	MA	LPV200	1	99.9458	1	99.9431	1	99.9038
GBR	WALTER J KOLADZA	MA	LP	1	99.9458	1	99.9386	1	99.9092
GHG	MARSHFIELD MUNICIPAL - GEORGE HARLO	MA	LPV	1	99.9458	1	99.9424	1	99.8977
HYA	BARNSTABLE MUNICIPAL-BOARDMAN/POLAN	MA	LPV200	1	99.9458	1	99.9424	2	99.8989
LWM	LAWRENCE MUNICIPAL	MA	LPV200	1	99.9458	1	99.9397	1	99.8966
MVY	MARTHA'S VINEYARD	MA	LPV200	1	99.9489	1	99.9424	2	99.9035
ORE	ORANGE MUNICIPAL	MA	LPV	1	99.9458	1	99.9367	1	99.9088
ORH	WORCESTER RGNL	MA	LPV200	1	99.9458	1	99.9431	1	99.9088
OWD	NORWOOD MEMORIAL	MA	LPV	1	99.9458	1	99.9435	1	99.9027
PSF	PITTSFIELD MUNICIPAL	MA	LPV	1	99.9458	1	99.9355	1	99.9088
PYM	PLYMOUTH MUNICIPAL	MA	LPV200	1	99.9458	1	99.9424	2	99.9004
2G4	GARRETT COUNTY	MD	LPV	1	99.9561	1	99.9561	1	99.9420
2W5	MARYLAND	MD	LP	1	99.9561	1	99.9561	1	99.9473
2W6	ST MARY'S COUNTY RGNL	MD	LPV	1	99.9561	1	99.9561	1	99.9496
BWI	BALTIMORE/WASHINGTON INTL THUR	MD	LPV200	1	99.9561	1	99.9561	1	99.9420
CBE	GREATER CUMBERLAND RGNL	MD	LP	1	99.9561	1	99.9561	1	99.9416
DMW	CARROLL COUNTY RGNL/JACK B POA	MD	LPV200	1	99.9561	1	99.9561	1	99.9409
ESN	EASTON/NEWNAM FIELD	MD	LPV	1	99.9561	1	99.9561	1	99.9424
FDK	FREDERICK MUNICIPAL	MD	LPV	1	99.9561	1	99.9561	1	99.9431
GAI	MONTGOMERY COUNTY AIRPARK	MD	LPV	1	99.9561	1	99.9561	1	99.9447

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
HGR	HAGERSTOWN RGNL-RICHARD A HENS	MD	LPV200	1	99.9561	1	99.9561	1	99.9439
MTN	MARTIN STATE	MD	LPV	1	99.9561	1	99.9561	1	99.9416
OXB	OCEAN CITY MUNICIPAL	MD	LPV	1	99.9561	1	99.9561	1	99.9451
SBY	SALISBURY-OCEAN CITY WICOMICO	MD	LPV200	1	99.9561	1	99.9561	1	99.9493
1B0	DEXTER RGNL	ME	LP	1	99.9199	1	99.9141	2	99.8806
81B	OXFORD COUNTY RGNL	ME	LP	1	99.9405	1	99.9336	1	99.8859
AUG	AUGUSTA STATE	ME	LPV200	1	99.9359	1	99.9199	1	99.8832
BGR	BANGOR INTL	ME	LPV	1	99.9199	1	99.9195	2	99.8806
BHB	HANCOCK COUNTY-BAR HARBOR	ME	LPV200	1	99.9336	1	99.9317	2	99.8806
BST	BELFAST MUNICIPAL	ME	LPV	1	99.9328	1	99.9203	2	99.8813
BXM	BRUNSWICK EXECUTIVE	ME	LPV	1	99.9451	1	99.9382	1	99.8832
FVE	NORTHERN AROOSTOOK RGNL	ME	LPV	2	99.8974	2	99.8943	2	99.7848
HUL	HOULTON INTL	ME	LP	1	99.9126	1	99.9012	5	99.8508
IZG	EASTERN SLOPES RGNL	ME	LPV	1	99.9458	1	99.9313	1	99.8905
LEW	AUBURN/LEWISTON MUNICIPAL	ME	LPV200	1	99.9451	1	99.9382	1	99.8832
LRG	LINCOLN RGNL	ME	LP	1	99.9145	1	99.9115	3	99.8680
MLT	MILLINOCKET MUNICIPAL	ME	LPV	1	99.9126	1	99.9092	3	99.8569
PQI	NORTHERN MAINE RGNL ARPT AT PR	ME	LPV200	1	99.8981	1	99.8974	2	99.8142
PWM	PORTLAND INTL JETPORT	ME	LPV200	1	99.9458	1	99.9386	1	99.8905
RKD	KNOX COUNTY RGNL	ME	LPV	1	99.9431	1	99.9382	1	99.8832
SFM	SANFORD SEACOAST RGNL	ME	LPV200	1	99.9458	1	99.9386	1	99.8924
WVL	WATERVILLE ROBERT LAFLEUR	ME	LPV200	1	99.9340	1	99.9195	1	99.8832
48D	CLARE MUNICIPAL	MI	LP	1	99.9344	1	99.9294	1	99.9164
4D0	ABRAMS MUNICIPAL	MI	LP	1	99.9382	1	99.9378	1	99.9260
6Y1	BOIS BLANC ISLAND	MI	LP	1	99.9229	2	99.9195	1	99.8764
77G	MARLETTE	MI	LPV	1	99.9378	1	99.9313	1	99.9164
9D9	HASTINGS	MI	LPV	1	99.9382	1	99.9378	1	99.9260
ACB	ANTRIM COUNTY	MI	LPV	1	99.9237	1	99.9199	1	99.9016
ADG	LENAWEE COUNTY	MI	LPV	1	99.9458	1	99.9454	1	99.9275
AMN	GRATIOT COMMUNICIPALTY	MI	LPV	1	99.9378	1	99.9306	1	99.9164
ANJ	SAULT STE MARIE MUNICIPAL/SANDERSON	MI	LPV	1	99.9199	2	99.9092	2	99.8542
APN	ALPENA COUNTY RGNL	MI	LPV	1	99.9267	1	99.9229	2	99.8955
ARB	ANN ARBOR MUNICIPAL	MI	LPV	1	99.9382	1	99.9378	1	99.9275
AZO	KALAMAZOO/BATTLE CREEK INTL	MI	LPV	1	99.9382	1	99.9378	1	99.9290
BAX	HURON COUNTY MEMORIAL	MI	LPV	1	99.9378	1	99.9306	1	99.9164

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
BEH	SOUTHWEST MICHIGAN RGNL	MI	LPV200	1	99.9454	1	99.9382	1	99.9317
BIV	WEST MICHIGAN RGNL	MI	LPV	1	99.9382	1	99.9374	1	99.9164
BTL	W K KELLOGG	MI	LPV200	1	99.9382	1	99.9378	1	99.9275
CAD	WEXFORD COUNTY	MI	LPV200	1	99.9267	1	99.9229	1	99.9164
CIU	CHIPPEWA COUNTY INTL	MI	LPV	2	99.9195	1	99.9050	2	99.8657
CMX	HOUGHTON COUNTY MEMORIAL	MI	LPV	1	99.9199	1	99.9050	2	99.8520
CVX	CHARLEVOIX MUNICIPAL	MI	LPV	1	99.9237	1	99.9199	1	99.8821
D95	DUPONT-LAPEER	MI	LP	1	99.9378	1	99.9317	1	99.9164
DET	COLEMAN A YOUNG MUNICIPAL	MI	LPV	1	99.9382	1	99.9378	1	99.9275
DTW	DETROIT METROPOLITAN WAYNE COU	MI	LPV200	1	99.9382	1	99.9378	1	99.9275
ERY	LUCE COUNTY	MI	LPV	2	99.9191	2	99.9183	2	99.8626
ESC	DELTA COUNTY	MI	LPV200	1	99.9229	1	99.9199	1	99.8790
FFX	FREMONT MUNICIPAL	MI	LPV	1	99.9378	1	99.9325	1	99.9164
FNT	BISHOP INTL	MI	LPV200	1	99.9382	1	99.9348	1	99.9168
GDW	GLADWIN ZETTEL MEMORIAL	MI	LP	1	99.9344	1	99.9290	1	99.9164
GLR	GAYLORD RGNL	MI	LPV	1	99.9237	1	99.9199	1	99.8905
GRR	GERALD R FORD INTL	MI	LPV200	1	99.9382	1	99.9374	1	99.9164
HTL	ROSCOMMON COUNTY - BLODGETT ME	MI	LP	1	99.9267	1	99.9229	1	99.9164
HYX	SAGINAW COUNTY H W BROWNE	MI	LPV	1	99.9378	1	99.9306	1	99.9164
IKW	JACK BARSTOW	MI	LPV	1	99.9355	1	99.9306	1	99.9164
IMT	FORD	MI	LPV	1	99.9199	1	99.9199	1	99.8794
IRS	KIRSCH MUNICIPAL	MI	LPV	1	99.9458	1	99.9458	1	99.9302
ISQ	SCHOOLCRAFT COUNTY	MI	LP	1	99.9229	2	99.9172	1	99.8699
IWD	GOGEBIC-IRON COUNTY	MI	LPV200	1	99.9199	2	99.9191	1	99.8802
JXN	JACKSON COUNTY-REYNOLDS FIELD	MI	LPV200	1	99.9382	1	99.9378	1	99.9275
JYM	HILLSDALE MUNICIPAL	MI	LPV	1	99.9458	1	99.9454	1	99.9275
LAN	CAPITAL REGION INTL	MI	LPV200	1	99.9382	1	99.9378	1	99.9275
LDM	MASON COUNTY	MI	LPV	1	99.9317	1	99.9271	1	99.9164
MBL	MANISTEE CO-BLACKER	MI	LPV200	1	99.9264	1	99.9225	1	99.9164
MBS	MBS INTL	MI	LPV200	1	99.9378	1	99.9306	1	99.9164
MCD	MACKINAC ISLAND	MI	LPV	1	99.9229	2	99.9195	1	99.8737
MKG	MUSKEGON COUNTY	MI	LPV200	1	99.9378	1	99.9336	1	99.9164
MNM	MENOMINEE-MARINETTE TWIN COUNT	MI	LPV200	1	99.9237	1	99.9199	1	99.8939
MOP	MOUNT PLEASANT MUNICIPAL	MI	LPV	1	99.9344	1	99.9298	1	99.9164
N98	BOYNE CITY MUNICIPAL	MI	LP	1	99.9237	1	99.9199	1	99.8821

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
OEB	BRANCH COUNTY MEMORIAL	MI	LPV	1	99.9458	1	99.9454	1	99.9275
OSC	OSCODA-WURTSMITH	MI	LPV200	1	99.9325	1	99.9229	1	99.9164
OZW	LIVINGSTON COUNTY SPENCER J HA	MI	LPV200	1	99.9382	1	99.9378	1	99.9275
PHN	ST CLAIR COUNTY INTL	MI	LPV200	1	99.9382	1	99.9363	1	99.9275
PLN	PELLSTON RGNL AIRPORT OF EMMET	MI	LPV200	1	99.9229	1	99.9199	1	99.8794
PTK	OAKLAND COUNTY INTL	MI	LPV200	1	99.9382	1	99.9378	1	99.9275
RMY	BROOKS FIELD	MI	LP	1	99.9382	1	99.9378	1	99.9275
RNP	OWOSSO COMMUNICIPALTY	MI	LPV	1	99.9382	1	99.9317	1	99.9168
RQB	ROBEN-HOOD	MI	LPV200	1	99.9344	1	99.9290	1	99.9164
SAW	SAWYER INTL	MI	LPV200	1	99.9199	2	99.9187	1	99.8649
SLH	CHEBOYGAN COUNTY	MI	LPV	1	99.9229	1	99.9199	1	99.8771
TEW	MASON JEWETT FIELD	MI	LP	1	99.9382	1	99.9378	1	99.9275
TTF	CUSTER	MI	LPV	1	99.9458	1	99.9378	1	99.9275
TVC	CHERRY CAPITAL	MI	LPV200	1	99.9237	1	99.9199	1	99.9080
YIP	WILLOW RUN	MI	LPV	1	99.9382	1	99.9378	1	99.9275
16D	PERHAM MUNICIPAL	MN	LPV	1	99.9199	1	99.9164	2	99.9058
3N8	MAHNOMEN COUNTY	MN	LPV	1	99.9199	1	99.9161	3	99.8993
ACQ	WASECA MUNICIPAL	MN	LPV	1	99.9229	1	99.9199	1	99.9199
ADC	WADENA MUNICIPAL	MN	LPV	1	99.9199	1	99.9164	2	99.9084
AEL	ALBERT LEA MUNICIPAL	MN	LPV	1	99.9237	1	99.9199	1	99.9199
AIT	AITKIN MUNICIPAL-STEVE KURTZ FIELD	MN	LPV	1	99.9199	1	99.9176	2	99.8966
ANE	ANOKA COUNTY-BLAINE ARPT(JANES	MN	LPV	1	99.9199	1	99.9199	1	99.9199
AUM	AUSTIN MUNICIPAL	MN	LPV200	1	99.9237	1	99.9199	1	99.9199
AXN	CHANDLER FIELD	MN	LPV	1	99.9199	1	99.9199	1	99.9134
BBB	BENSON MUNICIPAL	MN	LPV	1	99.9199	1	99.9199	1	99.9180
BDE	BAUDETTE INTL	MN	LPV	1	99.9199	1	99.9080	3	99.8531
BDH	WILLMAR MUNICIPAL-JOHN L RICE FIELD	MN	LPV200	1	99.9199	1	99.9199	1	99.9191
BJI	BEMIDJI RGNL	MN	LPV200	1	99.9199	1	99.9161	2	99.8775
BRD	BRAINERD LAKES RGNL	MN	LPV200	1	99.9199	1	99.9176	2	99.8974
CBG	CAMBRIDGE MUNICIPAL	MN	LPV	1	99.9199	1	99.9199	1	99.9012
CKC	GRAND MARAIS/COOK COUNTY	MN	LPV	1	99.9187	1	99.9035	4	99.8413
CKN	CROOKSTON MUNICIPAL KIRKWOOD FLD	MN	LPV	1	99.9199	1	99.9161	3	99.8966
CNB	MYERS FIELD	MN	LPV	1	99.9199	1	99.9199	1	99.9199
COQ	CLOQUET CARLTON COUNTY	MN	LPV	1	99.9199	1	99.9199	2	99.8886
CQM	COOK MUNICIPAL	MN	LP	1	99.9161	1	99.9161	3	99.8577
D39	SAUK CENTRE MUNICIPAL	MN	LPV	1	99.9199	1	99.9199	1	99.9145

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
D42	SPRINGFIELD MUNICIPAL	MN	LP	1	99.9229	1	99.9199	1	99.9199
DLH	DULUTH INTL	MN	LPV200	1	99.9199	1	99.9183	2	99.8810
DTL	DETROIT LAKES-WETHING FIELD	MN	LPV	1	99.9199	1	99.9164	2	99.9038
DVP	SLAYTON MUNICIPAL	MN	LP	1	99.9237	1	99.9199	1	99.9199
DXX	LAC QUI PARLE COUNTY	MN	LPV200	1	99.9199	1	99.9199	1	99.9199
ELO	ELY MUNICIPAL	MN	LPV200	1	99.9199	1	99.9031	4	99.8584
ETH	WHEATON MUNICIPAL	MN	LP	1	99.9199	1	99.9199	1	99.9145
EVM	EVELETH-VIRGINIA MUNICIPAL	MN	LPV	1	99.9168	1	99.9168	2	99.8695
FBL	FARIBAULT MUNICIPAL	MN	LPV	1	99.9222	1	99.9199	1	99.9199
FCM	FLYING CLOUD	MN	LPV200	1	99.9199	1	99.9199	1	99.9199
FFM	FERGUS FALLS MUNICIPAL-EINAR MICKEL	MN	LPV200	1	99.9199	1	99.9199	2	99.9111
FKA	FILLMORE COUNTY	MN	LPV	1	99.9237	1	99.9199	1	99.9199
FOZ	BIGFORK MUNICIPAL	MN	LP	1	99.9199	1	99.9153	2	99.8649
FRM	FAIRMONT MUNICIPAL	MN	LPV	1	99.9237	1	99.9199	1	99.9199
FSE	FOSSTON MUNICIPAL	MN	LP	1	99.9199	1	99.9161	3	99.8977
GHW	GLENWOOD MUNICIPAL	MN	LPV	1	99.9199	1	99.9199	1	99.9153
GPZ	GRAND RAPIDS/ITASCA CO-GORDON	MN	LPV	1	99.9199	1	99.9164	2	99.8794
GYL	GLENCOE MUNICIPAL	MN	LPV	1	99.9199	1	99.9199	1	99.9199
HCD	HUTCHINSON MUNICIPAL-BUTLER FIELD	MN	LPV	1	99.9199	1	99.9199	1	99.9199
HCO	HALLOCK MUNICIPAL	MN	LPV	1	99.9199	1	99.9122	2	99.8794
HIB	RANGE RGNL	MN	LPV200	1	99.9168	1	99.9168	2	99.8695
INL	FALLS INTL-EINARSON FIELD	MN	LPV	1	99.9161	2	99.9061	3	99.8516
JKJ	MOORHEAD MUNICIPAL	MN	LPV	1	99.9199	1	99.9164	2	99.9023
JMR	MORA MUNICIPAL	MN	LPV	1	99.9199	1	99.9199	1	99.9012
LJF	LITCHFIELD MUNICIPAL	MN	LPV	1	99.9199	1	99.9199	1	99.9195
LVN	AIRLAKE	MN	LPV200	1	99.9203	1	99.9199	1	99.9199
LXL	LITTLE FALLS/MORRISON COUNTY-L	MN	LPV	1	99.9199	1	99.9199	2	99.9008
LYV	QUENTIN AANENSON FIELD	MN	LPV200	1	99.9237	1	99.9199	1	99.9199
MGG	MAPLE LAKE MUNICIPAL	MN	LP	1	99.9199	1	99.9199	1	99.9199
MJQ	JACKSON MUNICIPAL	MN	LPV	1	99.9237	1	99.9199	1	99.9199
MKT	MANKATO RGNL	MN	LPV200	1	99.9229	1	99.9199	1	99.9199
MML	SOUTHWEST MINNESOTA RGNL MARSH	MN	LPV200	1	99.9199	1	99.9199	1	99.9199
MOX	MORRIS MUNICIPAL - CHARLIE SCHMIDT	MN	LPV	1	99.9199	1	99.9199	1	99.9172
MSP	MINNEAPOLIS-ST PAUL INTL/WOLD-	MN	LPV200	1	99.9199	1	99.9199	1	99.9199
MVE	MONTEVIDEO-CHIPPEWA COUNTY	MN	LPV	1	99.9199	1	99.9199	1	99.9199

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
MZH	MOOSE LAKE CARLTON COUNTY	MN	LPV	1	99.9199	1	99.9199	2	99.8977
ONA	WINONA MUNICIPAL-MAX CONRAD FLD	MN	LPV	1	99.9237	1	99.9199	1	99.9199
ORB	ORR RGNL	MN	LP	1	99.9161	1	99.9122	3	99.8565
OTG	WORTHINGTON MUNICIPAL	MN	LPV200	1	99.9237	1	99.9199	1	99.9199
OWA	OWATONNA DEGNER RGNL	MN	LPV200	1	99.9229	1	99.9199	1	99.9199
PEX	PAYNESVILLE MUNICIPAL	MN	LPV200	1	99.9199	1	99.9199	1	99.9187
PKD	PARK RAPIDS MUNICIPAL-KONSHOK FIELD	MN	LPV200	1	99.9199	1	99.9164	2	99.8790
PQN	PIPESTONE MUNICIPAL	MN	LPV200	1	99.9229	1	99.9199	1	99.9199
RGK	RED WING RGNL	MN	LPV200	1	99.9222	1	99.9199	1	99.9199
ROS	RUSH CITY RGNL	MN	LPV	1	99.9199	1	99.9199	1	99.9012
ROX	ROSEAU MUNICIPAL/RUDY BILLBERG FIEL	MN	LPV	1	99.9199	1	99.9115	2	99.8783
RRT	WARROAD INTL MEMORIAL	MN	LPV	1	99.9199	1	99.9107	2	99.8607
RST	ROCHESTER INTL	MN	LPV200	1	99.9229	1	99.9199	1	99.9199
RWF	REDWOOD FALLS MUNICIPAL	MN	LPV	1	99.9214	1	99.9199	1	99.9199
SAZ	STAPLES MUNICIPAL	MN	LPV	1	99.9199	1	99.9168	2	99.8974
SGS	SOUTH ST PAUL MUNICIPAL-RICHARD E F	MN	LP	1	99.9199	1	99.9199	1	99.9199
STC	ST CLOUD RGNL	MN	LPV200	1	99.9199	1	99.9199	1	99.9157
STP	ST PAUL DOWNTOWN HOLMAN FLD	MN	LPV	1	99.9199	1	99.9199	1	99.9199
TOB	DODGE CENTER	MN	LPV	1	99.9229	1	99.9199	1	99.9199
TVF	THIEF RIVER FALLS RGNL	MN	LPV	1	99.9199	1	99.9161	2	99.8832
TWM	RICHARD B HELGESON	MN	LPV	1	99.9199	2	99.9176	2	99.8710
ULM	NEW ULM MUNICIPAL	MN	LPV200	1	99.9229	1	99.9199	1	99.9199
VVV	ORTONVILLE MUNICIPAL-MARTINSON FIEL	MN	LP	1	99.9199	1	99.9199	1	99.9172
Y49	WALKER MUNICIPAL	MN	LP	1	99.9199	1	99.9161	2	99.8787
Y63	ELBOW LAKE MUNICIPAL - PRIDE OF THE	MN	LPV	1	99.9199	1	99.9199	1	99.9126
03D	MEMPHIS MEMORIAL	MO	LPV	0	100	0	100	2	99.9889
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

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
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
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	2	99.9992
K89	MACON-FOWER MEMORIAL	MO	LPV	0	100	0	100	0	100
LLU	LAMAR MUNICIPAL	MO	LPV	0	100	0	100	0	100
LRY	LAWRENCE SMITH MEMORIAL	MO	LPV	0	100	0	100	0	100
LXT	LEE'S SUMMIT MUNICIPAL	MO	LPV	0	100	0	100	0	100
M05	CARUTHERSVILLE MEMORIAL	MO	LPV	0	100	0	100	0	100
M12	STEELE MUNICIPAL	MO	LPV	0	100	0	100	0	100
M17	BOLIVAR MUNICIPAL	MO	LPV	0	100	0	100	0	100
M48	HOUSTON MEMORIAL	MO	LPV	0	100	0	100	0	100
MAW	MALDEN RGNL	MO	LPV	0	100	0	100	0	100
MBY	OMAR N BRADLEY	MO	LPV	0	100	0	100	0	100

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
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
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 VIERTEL 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	0	100
17M	MAGEE MUNICIPAL	MS	LP	0	100	0	100	0	100
5A4	OKOLONA MUNICIPAL-RICHARD STOVALL F	MS	LPV	0	100	0	100	0	100
5A6	WINONA-MONTGOMERY COUNTY	MS	LP	0	100	0	100	0	100
87I	YAZOO COUNTY	MS	LPV	0	100	0	100	0	100
8M1	BOONEVILLE/BALDWYN	MS	LPV	0	100	0	100	0	100
CKM	FLETCHER FIELD	MS	LPV	0	100	0	100	0	100
CRX	ROSCOE TURNER	MS	LPV200	0	100	0	100	0	100
GLH	GREENVILLE MID-DELTA	MS	LPV200	0	100	0	100	0	100

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
GNF	GRENADA MUNICIPAL	MS	LPV200	0	100	0	100	0	100
GPT	GULFPORT-BILOXI INTL	MS	LPV200	0	100	0	100	0	100
GTR	GOLDEN TRIANGLE RGNL	MS	LPV200	0	100	0	100	0	100
GWO	GREENWOOD-LEFLORE	MS	LPV	0	100	0	100	0	100
HBG	HATTIESBURG BOBBY L CHAIN MUNICIPAL	MS	LPV200	0	100	0	100	0	100
HEZ	HARDY-ANDERS FIELD NATCHEZ-ADA	MS	LPV200	0	100	0	100	0	100
HKS	HAWKINS FIELD	MS	LPV	0	100	0	100	0	100
HSA	STENNIS INTL	MS	LPV200	0	100	0	100	0	100
IDL	INDIANOLA MUNICIPAL	MS	LPV	0	100	0	100	0	100
JAN	JACKSON-MEDGAR WILEY EVERS INT	MS	LPV200	0	100	0	100	0	100
JVW	JOHN BELL WILLIAMS	MS	LPV200	0	100	0	100	0	100
LMS	LOUISVILLE WINSTON COUNTY	MS	LPV	0	100	0	100	0	100
LUL	HESLER-NOBLE FIELD	MS	LPV	0	100	0	100	0	100
M40	MONROE COUNTY	MS	LPV	0	100	0	100	0	100
M43	PRENTISS-JEFFERSON DAVIS COUNT	MS	LPV	0	100	0	100	0	100
MBO	BRUCE CAMPBELL FIELD	MS	LP	0	100	0	100	0	100
MCB	MC COMB/PIKE COUNTY/JOHN E LEW	MS	LPV	0	100	0	100	0	100
MEI	KEY FIELD	MS	LPV200	0	100	0	100	0	100
MJD	PICAYUNE MUNICIPAL	MS	LPV	0	100	0	100	0	100
MMS	SELFS	MS	LPV	0	100	0	100	0	100
MPE	PHILADELPHIA MUNICIPAL	MS	LPV	0	100	0	100	0	100
OLV	OLIVE BRANCH	MS	LPV200	0	100	0	100	0	100
PIB	HATTIESBURG-LAUREL RGNL	MS	LPV200	0	100	0	100	0	100
PMU	PANOLA COUNTY	MS	LPV	0	100	0	100	0	100
PQL	TRENT LOTT INTL	MS	LPV200	0	100	0	100	0	100
RNV	CLEVELAND MUNICIPAL	MS	LPV	0	100	0	100	0	100
STF	GEORGE M BRYAN	MS	LPV200	0	100	0	100	0	100
TUP	TUPELO RGNL	MS	LPV200	0	100	0	100	0	100
UOX	UNIVERSITY-OXFORD	MS	LPV	0	100	0	100	0	100
UTA	TUNICA MUNICIPAL	MS	LPV200	0	100	0	100	0	100
VKS	VICKSBURG MUNICIPAL	MS	LP	0	100	0	100	0	100
1S3	TILLITT FIELD	MT	LPV	1	99.9607	1	99.9493	1	99.9229
4U6	CIRCLE TOWN COUNTY	MT	LPV	1	99.9420	1	99.9233	1	99.9229
6S8	LAUREL MUNICIPAL	MT	LPV	1	99.9638	1	99.9638	1	99.9454
7S0	RONAN	MT	LPV	1	99.9672	1	99.9672	1	99.9191
BHK	BAKER MUNICIPAL	MT	LPV	1	99.9565	1	99.9374	1	99.9229
BIL	BILLINGS LOGAN INTL	MT	LPV200	1	99.9638	1	99.9638	1	99.9454
BTM	BERT MOONEY	MT	LPV	1	99.9847	1	99.9847	2	99.9683

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
BZN	BOZEMAN YELLOWSTONE INTL	MT	LPV	1	99.9832	1	99.9832	2	99.9622
CTB	CUT BANK INTL	MT	LPV200	1	99.9565	1	99.9565	1	99.9157
DLN	DILLON	MT	LPV	0	100	0	100	1	99.9828
EKS	ENNIS - BIG SKY	MT	LPV	1	99.9950	1	99.9950	1	99.9836
GDV	DAWSON COMMUNICIPALTY	MT	LPV	1	99.9454	1	99.9275	1	99.9229
GGW	WOKAL FIELD/GLASGOW INTL	MT	LPV200	1	99.9332	1	99.9233	1	99.9157
GPI	GLACIER PARK INTL	MT	LPV	1	99.9641	1	99.9527	1	99.9191
GTF	GREAT FALLS INTL	MT	LPV200	1	99.9565	1	99.9565	1	99.9275
HLN	HELENA RGNL	MT	LPV	1	99.9809	1	99.9809	2	99.9584
HVR	HAVRE CITY-COUNTY	MT	LPV	1	99.9374	1	99.9309	1	99.9161
LVM	MISSION FIELD	MT	LP	1	99.9844	1	99.9844	2	99.9641
LWT	LEWISTOWN MUNICIPAL	MT	LPV200	1	99.9603	1	99.9603	1	99.9313
M75	MALTA	MT	LP	1	99.9321	1	99.9271	1	99.9157
MLS	FRANK WILEY FIELD	MT	LPV	1	99.9603	1	99.9328	1	99.9229
MSO	MISSOULA INTL	MT	LPV	1	99.9775	1	99.9702	3	99.9554
OLF	L M CLAYTON	MT	LPV200	1	99.9344	1	99.9233	1	99.9157
PO1	POPLAR MUNICIPAL	MT	LPV200	1	99.9348	1	99.9233	1	99.9157
PWD	SHER-WOOD	MT	LPV200	1	99.9252	1	99.9229	2	99.8977
RPX	ROUNDUP	MT	LPV	1	99.9638	1	99.9638	1	99.9271
SBX	SHELBY	MT	LPV	1	99.9565	1	99.9565	1	99.9161
SDY	SIDNEY-RICHLAND MUNICIPAL	MT	LPV	1	99.9389	1	99.9233	1	99.9157
WYS	YELLOWSTONE	MT	LPV200	0	100	0	100	1	99.9855
CYCL	CHARLO	NB	LPV	3	99.8668	4	99.8581	3	99.7875
CYQM	MONCTON INTL	NB	LPV	3	99.8653	3	99.8653	2	99.7814
43A	MONTGOMERY COUNTY	NC	LP	0	100	0	100	1	99.9866
ACZ	HENDERSON FIELD	NC	LPV	0	100	0	100	1	99.9889
AFP	ANSON COUNTY -JEFF CLOUD FIE	NC	LPV	0	100	0	100	1	99.9893
AKH	GASTONIA MUNICIPAL	NC	LPV	0	100	0	100	1	99.9950
ASJ	TRI-COUNTY	NC	LPV	1	99.9996	2	99.9928	1	99.9527
AVL	ASHEVILLE RGNL	NC	LPV	0	100	0	100	0	100
BUY	BURLINGTON-ALAMANCE RGNL	NC	LPV	0	100	0	100	1	99.9786
CLT	CHARLOTTE/DOUGLAS INTL	NC	LPV200	0	100	0	100	1	99.9939
CTZ	CLINTON-SAMPSON COUNTY	NC	LPV200	0	100	0	100	1	99.9866
DPL	DUPLIN CO	NC	LPV200	0	100	0	100	1	99.9847
ECG	ELIZABETH CITY CG AIR STATION/	NC	LPV	1	99.9969	2	99.9897	1	99.9523
EDE	NORTHEASTERN RGNL	NC	LPV200	0	100	1	99.9962	2	99.9653

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
EHO	SHELBY-CLEVELAND COUNTY RGNL	NC	LPV	0	100	0	100	1	99.9973
EQY	CHARLOTTE-MONROE EXECUTIVE	NC	LPV	0	100	0	100	1	99.9924
EWN	COASTAL CAROLINA REGIONAL	NC	LPV	0	100	0	100	1	99.9844
EXX	DAVIDSON COUNTY	NC	LPV	0	100	0	100	1	99.9840
EYF	CURTIS L BROWN JR FIELD	NC	LPV200	0	100	0	100	1	99.9901
FAY	FAYETTEVILLE RGNL/GRANNIS FIEL	NC	LPV200	0	100	0	100	1	99.9874
FQD	RUTHERFORD CO - MARCHMAN FIELD	NC	LPV	0	100	0	100	1	99.9989
GSO	PIEDMONT TRIAD INTL	NC	LPV200	0	100	0	100	1	99.9794
GWW	WAYNE EXECUTIVE JETPORT	NC	LPV200	0	100	0	100	1	99.9817
HKY	HICKORY RGNL	NC	LPV200	0	100	0	100	1	99.9908
HNZ	HENDERSON-OXFORD	NC	LPV	0	100	1	99.9962	2	99.9702
HRJ	HARNETT RGNL JETPORT	NC	LPV	0	100	0	100	1	99.9817
ILM	WILMINGTON INTL	NC	LPV200	0	100	0	100	1	99.9939
INT	SMITH REYNOLDS	NC	LPV200	0	100	0	100	1	99.9802
IPJ	LINCOLNTON-LINCOLN COUNTY RGNL	NC	LPV	0	100	0	100	1	99.9939
ISO	KINSTON RGNL JETPORT AT STALLI	NC	LPV200	0	100	0	100	1	99.9824
IXA	HALIFAX-NORTHAMPTON RGNL	NC	LPV200	1	99.9996	2	99.9962	1	99.9527
JNX	JOHNSTON REGIONAL	NC	LPV	0	100	0	100	1	99.9798
JQF	CONCORD RGNL	NC	LPV	0	100	0	100	1	99.9912
LBT	LUMBERTON RGNL	NC	LPV	0	100	0	100	1	99.9912
LHZ	TRIANGLE NORTH EXECUTIVE	NC	LPV200	0	100	0	100	2	99.9760
MCZ	MARTIN COUNTY	NC	LPV	0	100	0	100	2	99.9657
MEB	LAURINBURG-MAXTON	NC	LPV200	0	100	0	100	1	99.9901
MQI	DARE COUNTY RGNL	NC	LPV	0	100	1	99.9989	1	99.9504
MRH	MICHAEL J SMITH FIELD	NC	LP	0	100	0	100	1	99.9855
MRN	FOOTHILLS REGIONAL	NC	LPV200	0	100	0	100	1	99.9886
MWK	MOUNT AIRY/SURRY COUNTY	NC	LPV	0	100	1	99.9973	1	99.9786
OAJ	ALBERT J ELLIS	NC	LPV200	0	100	0	100	1	99.9878
OCW	WASHINGTON-WARREN	NC	LPV	0	100	0	100	2	99.9687
ONX	CURRITUCK COUNTY RGNL	NC	LPV	1	99.9905	2	99.9824	1	99.9515
PGV	PITT-GREENVILLE	NC	LPV	0	100	0	100	2	99.9687
PMZ	PLYMOUTH MUNICIPAL	NC	LP	0	100	0	100	2	99.9645
RCZ	RICHMOND COUNTY	NC	LPV	0	100	0	100	1	99.9893
RDU	RALEIGH-DURHAM INTL	NC	LPV200	0	100	0	100	1	99.9798
RUQ	ROWAN COUNTY	NC	LPV200	0	100	0	100	1	99.9886

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
RWI	ROCKY MOUNT-WILSON RGNL	NC	LPV	0	100	0	100	1	99.9760
SCR	SILER CITY MUNICIPAL	NC	LPV	0	100	0	100	1	99.9821
SOP	MOORE COUNTY	NC	LPV200	0	100	0	100	1	99.9866
SUT	CAPE FEAR RGNL JETPORT/HOWIE F	NC	LPV	0	100	0	100	1	99.9977
SVH	STATESVILLE RGNL	NC	LPV200	0	100	0	100	1	99.9889
TDF	PERSON COUNTY	NC	LPV200	0	100	1	99.9973	1	99.9733
TTA	RALEIGH EXEC JETPORT AT SANFOR	NC	LPV200	0	100	0	100	1	99.9817
VUJ	STANLY COUNTY	NC	LPV200	0	100	0	100	1	99.9882
W40	MOUNT OLIVE MUNICIPAL	NC	LPV	0	100	0	100	1	99.9844
ZEF	ELKIN MUNICIPAL	NC	LP	0	100	0	100	1	99.9813
06D	ROLLA MUNICIPAL	ND	LPV	1	99.9199	1	99.9187	2	99.8920
2C8	CAVALIER MUNICIPAL	ND	LPV	1	99.9199	1	99.9126	2	99.8871
3H4	HILLSBORO MUNICIPAL	ND	LPV	1	99.9199	1	99.9161	3	99.8989
46D	CARRINGTON MUNICIPAL	ND	LPV	1	99.9199	1	99.9199	2	99.9023
51D	EDGELEY MUNICIPAL	ND	LPV	1	99.9199	1	99.9199	1	99.9103
5N8	CASSELTON ROBERT MILLER RGNL	ND	LPV	1	99.9199	1	99.9199	2	99.9035
7L2	LINTON MUNICIPAL	ND	LPV	1	99.9199	1	99.9199	1	99.9126
9D7	CANDO MUNICIPAL	ND	LPV	1	99.9199	1	99.9199	2	99.8909
BAC	BARNES COUNTY MUNICIPAL	ND	LPV	1	99.9199	1	99.9199	1	99.9061
BIS	BISMARCK MUNICIPAL	ND	LPV200	1	99.9199	1	99.9199	1	99.9080
BWP	HARRY STERN	ND	LPV	1	99.9199	1	99.9199	1	99.9115
D09	BOTTINEAU MUNICIPAL	ND	LPV	1	99.9199	1	99.9199	1	99.8920
D55	ROBERTSON FIELD	ND	LPV	1	99.9199	1	99.9138	2	99.8886
D60	TIOGA MUNICIPAL	ND	LPV	1	99.9233	1	99.9229	2	99.8901
DIK	DICKINSON - THEODORE ROOSEVELT	ND	LPV200	1	99.9420	1	99.9229	1	99.9199
DVL	DEVILS LAKE RGNL	ND	LPV200	1	99.9199	1	99.9199	2	99.9004
FAR	HECTOR INTL	ND	LPV200	1	99.9199	1	99.9164	3	99.9008
GAF	HUTSON FIELD	ND	LPV	1	99.9199	1	99.9153	2	99.8806
GFK	GRAND FORKS INTL	ND	LPV	1	99.9199	1	99.9161	3	99.8955
GWR	GWINNER-ROGER MELROE FIELD	ND	LPV200	1	99.9199	1	99.9199	1	99.9107
HZE	MERCER COUNTY RGNL	ND	LPV	1	99.9199	1	99.9199	1	99.9046
ISN	SLOULIN FLD INTL	ND	LPV200	1	99.9233	1	99.9229	2	99.9042
JMS	JAMESTOWN RGNL	ND	LPV200	1	99.9199	1	99.9199	1	99.9061
K74	ROBERT ODEGAARD FIELD	ND	LP	1	99.9199	1	99.9199	1	99.9088
MOT	MINOT INTL	ND	LPV	1	99.9199	1	99.9199	1	99.8920
RUG	RUGBY MUNICIPAL	ND	LP	1	99.9199	1	99.9199	1	99.8932
S25	WATFORD CITY MUNICIPAL	ND	LPV	1	99.9233	1	99.9229	1	99.9157
Y19	MANDAN MUNICIPAL	ND	LPV	1	99.9199	1	99.9199	1	99.9180

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
07K	CENTRAL CITY MUNICIPAL - LARRY REIN	NE	LPV	0	100	0	100	2	99.9889
08K	HARVARD STATE	NE	LPV	0	100	0	100	1	99.9950
0B4	HARTINGTON MUNICIPAL/ BUD BECKER FL	NE	LPV	2	99.9744	2	99.9573	1	99.9199
0C4	PENDER MUNICIPAL	NE	LPV	1	99.9874	2	99.9702	2	99.9355
0F4	LOUP CITY MUNICIPAL	NE	LPV	0	100	0	100	1	99.9939
0G3	TECUMSEH MUNICIPAL	NE	LPV	0	100	0	100	1	99.9981
0V3	PIONEER VILLAGE FIELD	NE	LPV	0	100	0	100	1	99.9947
12K	SUPERIOR MUNICIPAL	NE	LPV	0	100	0	100	1	99.9989
47V	CURTIS MUNICIPAL	NE	LPV	0	100	0	100	1	99.9981
4D9	ALMA MUNICIPAL	NE	LPV	0	100	0	100	1	99.9966
4V9	ANTELOPE COUNTY	NE	LPV	1	99.9901	1	99.9794	2	99.9424
6K3	CREIGHTON MUNICIPAL	NE	LPV	2	99.9798	2	99.9687	1	99.9199
7V7	RED CLOUD MUNICIPAL	NE	LPV	0	100	0	100	1	99.9985
8V2	STUART-ATKINSON MUNICIPAL	NE	LPV	1	99.9786	1	99.9786	1	99.9412
93Y	DAVID CITY MUNICIPAL	NE	LPV	0	100	0	100	2	99.9741
9V5	MODISETT	NE	LPV	1	99.9821	1	99.9790	1	99.9603
AFK	NEBRASKA CITY MUNICIPAL	NE	LPV	0	100	0	100	2	99.9905
AHQ	WAHOO MUNICIPAL	NE	LPV	0	100	1	99.9950	2	99.9729
AIA	ALLIANCE MUNICIPAL	NE	LPV200	0	100	0	100	2	99.9962
ANW	AINSWORTH RGNL	NE	LPV200	1	99.9786	1	99.9786	1	99.9416
AUH	AURORA MUNICIPAL - AL POTTER FIELD	NE	LPV	0	100	0	100	2	99.9943
BBW	BROKEN BOW MUNICIPAL/KEITH GLAZE FL	NE	LPV	0	100	0	100	1	99.9962
BFF	WESTERN NEBRASKA RGNL/WILLIAM	NE	LPV	0	100	1	99.9996	1	99.9969
BIE	BEATRICE MUNICIPAL	NE	LPV200	0	100	0	100	1	99.9977
BUB	CRAM FIELD	NE	LPV	0	100	0	100	2	99.9893
BVN	ALBION MUNICIPAL	NE	LPV	0	100	0	100	2	99.9729
CDR	CHADRON MUNICIPAL	NE	LPV200	1	99.9821	1	99.9790	1	99.9603
CEK	CRETE MUNICIPAL	NE	LPV	0	100	0	100	1	99.9966
CZD	COZAD MUNICIPAL	NE	LPV	0	100	0	100	1	99.9966
EAR	KEARNEY RGNL	NE	LPV200	0	100	0	100	1	99.9939
FBY	FAIRBURY MUNICIPAL	NE	LPV	0	100	0	100	1	99.9985
FET	FREMONT MUNICIPAL	NE	LPV	0	100	1	99.9920	2	99.9702
FMZ	FAIRMONT STATE AIRFIELD	NE	LPV	0	100	0	100	1	99.9958
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	2	99.9931
GRN	GORDON MUNICIPAL	NE	LPV	1	99.9798	1	99.9767	1	99.9569

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
HDE	BREWSTER FIELD	NE	LPV	0	100	0	100	1	99.9947
HSI	HASTINGS MUNICIPAL	NE	LPV	0	100	0	100	1	99.9950
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	2	99.9908
LBF	NORTH PLATTE RGNL AIRPORT LEE	NE	LPV200	0	100	0	100	1	99.9989
LCG	WAYNE MUNICIPAL/ STAN MORRIS FLD	NE	LPV	2	99.9844	2	99.9638	2	99.9317
LNK	LINCOLN	NE	LPV	0	100	0	100	2	99.9836
LXN	JIM KELLY FIELD	NE	LPV	0	100	0	100	1	99.9962
MCK	MC COOK BEN NELSON RGNL	NE	LPV	0	100	0	100	1	99.9985
MLE	MILLARD	NE	LPV	0	100	1	99.9928	2	99.9710
ODX	EVELYN SHARP FIELD	NE	LPV	0	100	0	100	2	99.9939
OFK	NORFOLK RGNL/KARL STEFAN MEMOR	NE	LPV	1	99.9943	1	99.9832	2	99.9481
OGA	SEARLE FIELD	NE	LPV	0	100	0	100	0	100
OKS	GARDEN COUNTY	NE	LPV	0	100	0	100	1	99.9992
OLU	COLUMBUS MUNICIPAL	NE	LPV	0	100	1	99.9981	2	99.9721
OMA	EPPLEY AIRFIELD	NE	LPV200	0	100	1	99.9901	2	99.9687
ONL	THE O'NEILL MUNICIPAL-JOHN L BAKER	NE	LPV	1	99.9790	1	99.9714	1	99.9367
PMV	PLATTSMOUTH MUNICIPAL	NE	LPV	0	100	1	99.9996	2	99.9794
RBE	ROCK COUNTY	NE	LPV	1	99.9786	1	99.9786	1	99.9416
SCB	SCRIBNER STATE	NE	LPV	0	100	1	99.9920	2	99.9699
SNY	SIDNEY MUNICIPAL/LLOYD W CARR FIELD	NE	LPV	0	100	0	100	0	100
SWT	SEWARD MUNICIPAL	NE	LPV	0	100	0	100	2	99.9855
TIF	THOMAS COUNTY	NE	LPV	1	99.9996	1	99.9966	2	99.9836
VTN	MILLER FIELD	NE	LPV	1	99.9752	1	99.9676	1	99.9531
ASH	BOIRE FIELD	NH	LPV200	1	99.9458	1	99.9351	1	99.9012
CON	CONCORD MUNICIPAL	NH	LPV	1	99.9458	1	99.9328	1	99.8966
DAW	SKYHAVEN	NH	LPV	1	99.9458	1	99.9386	1	99.8939
EEN	DILLANT-HOPKINS	NH	LPV	1	99.9458	1	99.9332	1	99.9038
HIE	MOUNT WASHINGTON RGNL	NH	LPV	1	99.9378	1	99.9309	1	99.8924
LCI	LACONIA MUNICIPAL	NH	LPV	1	99.9458	1	99.9321	1	99.8943
LEB	LEBANON MUNICIPAL	NH	LPV	1	99.9454	1	99.9317	1	99.8977
MHT	MANCHESTER	NH	LPV200	1	99.9458	1	99.9332	1	99.8974
PSM	PORTSMOUTH INTL AT PEASE	NH	LPV200	1	99.9458	1	99.9386	1	99.8943
47N	CENTRAL JERSEY RGNL	NJ	LP	1	99.9550	1	99.9454	1	99.9340
4N1	GREENWOOD LAKE	NJ	LP	1	99.9489	1	99.9431	2	99.9306

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
ACY	ATLANTIC CITY INTL	NJ	LPV200	1	99.9561	1	99.9493	1	99.9344
CDW	ESSEX COUNTY	NJ	LPV	1	99.9489	1	99.9454	2	99.9306
EWR	NEWARK LIBERTY INTL	NJ	LPV	1	99.9489	1	99.9454	2	99.9302
MIV	MILLVILLE MUNICIPAL	NJ	LPV200	1	99.9561	1	99.9561	1	99.9382
MJX	OCEAN COUNTY	NJ	LPV	1	99.9561	1	99.9489	1	99.9336
MMU	MORRISTOWN MUNICIPAL	NJ	LPV200	1	99.9489	1	99.9454	2	99.9309
N14	FLYING W	NJ	LPV	1	99.9561	1	99.9489	1	99.9348
N40	SKY MANOR	NJ	LP	1	99.9557	1	99.9454	1	99.9351
TEB	TETERBORO	NJ	LPV	1	99.9489	1	99.9454	2	99.9302
TTN	TRENTON MERCER	NJ	LPV200	1	99.9561	1	99.9489	1	99.9348
VAY	SOUTH JERSEY RGNL	NJ	LP	1	99.9561	1	99.9489	1	99.9348
WWD	CAPE MAY COUNTY	NJ	LPV	1	99.9561	1	99.9561	1	99.9386
CYDF	DEER LAKE	NL	LPV	1	99.7955	1	99.7951	32	99.6123
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	0	100
E06	LEA COUNTY-ZIP FRANKLIN MEMORI	NM	LPV	0	100	0	100	0	100
FMN	FOUR CORNERS RGNL	NM	LPV200	0	100	0	100	1	99.9931
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	0	100
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	5	99.9977
CYHZ	HALIFAX / STANFIELD INTL	NS	LPV	3	99.8920	3	99.8848	3	99.7837
CYEV	INUVIK	NT	LPV	1	99.8623	2	99.8573	46	99.6013
05U	EUREKA	NV	LP	0	100	0	100	1	99.9962
CXP	CARSON	NV	LP	0	100	0	100	2	99.9699
ELY	ELY ARPT /YELLAND FLD/	NV	LPV	0	100	0	100	1	99.9966
LAS	MC CARRAN INTL	NV	LPV	0	100	0	100	2	99.9790
RNO	RENO/TAHOE INTL	NV	LPV	0	100	0	100	2	99.9721
RTS	RENO/STEAD	NV	LPV	0	100	0	100	2	99.9721
TPH	TONOPAH	NV	LP	0	100	0	100	2	99.9783
WMC	WINNEMUCCA MUNICIPAL	NV	LPV	0	100	0	100	1	99.9950
06N	RANDALL	NY	LP	1	99.9489	1	99.9424	1	99.9164
0G7	FINGER LAKES RGNL	NY	LPV	1	99.9454	1	99.9321	1	99.9271
1B1	COLUMBIA COUNTY	NY	LPV	1	99.9458	1	99.9374	1	99.91000
20N	KINGSTON-ULSTER	NY	LPV	1	99.9458	1	99.9416	1	99.9157
44N	SKY ACRES	NY	LPV	1	99.9458	1	99.9420	1	99.9157
4B6	TICONDEROGA MUNICIPAL	NY	LPV	1	99.9454	1	99.9309	1	99.90000

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
5B2	SARATOGA COUNTY	NY	LPV	1	99.9454	1	99.9309	1	99.9088
5G0	LE ROY	NY	LP	1	99.9466	1	99.9321	1	99.9271
9G0	BUFFALO AIRFIELD	NY	LP	1	99.9454	1	99.9344	1	99.9271
9G3	AKRON	NY	LP	1	99.9454	1	99.9332	1	99.9271
ALB	ALBANY INTL	NY	LPV200	1	99.9454	1	99.9317	1	99.9088
ART	WATERTOWN INTL	NY	LPV200	1	99.9451	1	99.9309	1	99.9138
BGM	GREATER BINGHAMTON/EDWIN A LIN	NY	LPV200	1	99.9458	1	99.9405	1	99.9275
BUF	BUFFALO NIAGARA INTL	NY	LPV200	1	99.9454	1	99.9340	1	99.9271
D38	CANANDAIGUA	NY	LPV	1	99.9462	1	99.9321	1	99.9271
DKK	CHAUTAUQUA COUNTY/DUNKIRK	NY	LP	1	99.9454	1	99.9386	1	99.9271
ELM	ELMIRA/CORNING RGNL	NY	LPV200	1	99.9454	1	99.9401	1	99.9275
ELZ	WELLSVILLE MUNICIPAL ARPT`TARANTINE	NY	LPV	1	99.9473	1	99.9454	1	99.9275
FOK	FRANCIS S GABRESKI	NY	LPV200	1	99.9489	1	99.9454	1	99.9103
FRG	REPUBLIC	NY	LPV200	1	99.9489	1	99.9454	2	99.9286
FZY	OSWEGO COUNTY	NY	LPV	1	99.9454	1	99.9309	1	99.9164
GFL	FLOYD BENNETT MEMORIAL	NY	LPV	1	99.9454	1	99.9309	1	99.9046
GVQ	GENESEE COUNTY	NY	LPV200	1	99.9454	1	99.9317	1	99.9271
HPN	WESTCHESTER COUNTY	NY	LPV	1	99.9489	1	99.9451	1	99.9164
HTF	HORNELL MUNICIPAL	NY	LPV	1	99.9470	1	99.9393	1	99.9275
HTO	EAST HAMPTON	NY	LPV	1	99.9489	1	99.9454	1	99.9092
HWV	BROOKHAVEN	NY	LPV	1	99.9489	1	99.9454	1	99.9157
IAG	NIAGARA FALLS INTL	NY	LPV	1	99.9451	1	99.9332	1	99.9271
ISP	LONG ISLAND MAC ARTHUR	NY	LPV200	1	99.9489	1	99.9454	2	99.9275
ITH	ITHACA TOMPKINS RGNL	NY	LPV	1	99.9454	1	99.9397	1	99.9275
JFK	JOHN F KENNEDY INTL	NY	LPV200	1	99.9489	1	99.9454	2	99.9294
JHW	CHAUTAUQUA COUNTY/JAMESTOWN	NY	LPV200	1	99.9454	1	99.9393	1	99.9275
K09	PISECO	NY	LP	1	99.9454	1	99.9309	1	99.9084
LGA	LAGUARDIA	NY	LPV	1	99.9489	1	99.9454	2	99.9298
MAL	MALONE-DUFORT	NY	LPV	1	99.9378	1	99.9306	1	99.8958
MGJ	ORANGE COUNTY	NY	LPV	1	99.9462	1	99.9424	1	99.9164
MSS	MASSENA INTL-RICHARDS FIELD	NY	LPV	1	99.9351	1	99.9279	1	99.8974
MSV	SULLIVAN COUNTY INTL	NY	LPV	1	99.9458	1	99.9420	1	99.9164
N23	SIDNEY MUNICIPAL	NY	LP	1	99.9458	1	99.9405	1	99.9306
N66	ONEONTA MUNICIPAL	NY	LPV	1	99.9454	1	99.9401	1	99.9164
NY0	FULTON COUNTY	NY	LPV	1	99.9454	1	99.9309	1	99.9092
OGS	OGDENSBURG INTL	NY	LPV	1	99.9378	1	99.9309	1	99.9027
OIC	LT WARREN EATON	NY	LP	1	99.9454	1	99.9397	1	99.9306
OLE	CATTARAUGUS COUNTY-OLEAN	NY	LPV	1	99.9454	1	99.9393	1	99.9275

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
PBG	PLATTSBURGH INTL	NY	LPV	1	99.9378	1	99.9306	1	99.8943
PEO	PENN YAN	NY	LPV	1	99.9454	1	99.9393	1	99.9275
POU	DUTCHESS COUNTY	NY	LPV	1	99.9458	1	99.9424	1	99.9157
RME	GRIFFISS INTL	NY	LPV200	1	99.9454	1	99.9309	1	99.9157
ROC	GREATER ROCHESTER INTL	NY	LPV200	1	99.9466	1	99.9309	1	99.9180
SCH	SCHENECTADY COUNTY	NY	LPV200	1	99.9454	1	99.9309	1	99.9092
SDC	WILLIAMSON-SODUS	NY	LPV	1	99.9454	1	99.9309	1	99.9164
SLK	ADIRONDACK RGNL	NY	LPV200	1	99.9382	1	99.9309	1	99.9008
SWF	STEWART INTL	NY	LPV200	1	99.9462	1	99.9424	1	99.9164
SYR	SYRACUSE HANCOCK INTL	NY	LPV200	1	99.9454	1	99.9309	1	99.9164
VGC	HAMILTON MUNICIPAL	NY	LPV	1	99.9454	1	99.9317	1	99.9164
0G6	WILLIAMS COUNTY	OH	LPV	1	99.9493	1	99.9466	1	99.9317
10G	HOLMES COUNTY	OH	LP	1	99.9523	1	99.9458	1	99.9416
16G	SENECA COUNTY	OH	LPV	1	99.9493	1	99.9458	1	99.9340
1G0	WOOD COUNTY	OH	LPV	1	99.9493	1	99.9462	1	99.9317
1G3	KENT STATE UNIV	OH	LPV	1	99.9493	1	99.9458	1	99.9336
4G5	MONROE COUNTY	OH	LP	1	99.9576	1	99.9576	1	99.9416
4I3	KNOX COUNTY	OH	LPV200	1	99.9542	1	99.9458	1	99.9416
5A1	NORWALK-HURON COUNTY	OH	LP	1	99.9493	1	99.9458	1	99.9336
6G5	BARNESVILLE-BRADFIELD	OH	LP	1	99.9561	1	99.9458	1	99.9416
7G8	GEAUGA COUNTY	OH	LP	1	99.9458	1	99.9458	1	99.9275
AKR	AKRON FULTON INTL	OH	LP	1	99.9493	1	99.9458	1	99.9340
AOH	LIMA ALLEN COUNTY	OH	LPV200	1	99.9493	1	99.9493	1	99.9359
AXV	NEIL ARMSTRONG	OH	LPV	1	99.9523	1	99.9493	1	99.9416
BJJ	WAYNE COUNTY	OH	LPV	1	99.9493	1	99.9458	1	99.9351
BKL	BURKE LAKEFRONT	OH	LPV	1	99.9458	1	99.9458	1	99.9275
CAK	AKRON-CANTON RGNL	OH	LPV200	1	99.9493	1	99.9458	1	99.9348
CDI	CAMBRIDGE MUNICIPAL	OH	LP	1	99.9561	1	99.9462	1	99.9416
CGF	CUYAHOGA COUNTY	OH	LPV	1	99.9458	1	99.9458	1	99.9275
CLE	CLEVELAND-HOPKINS INTL	OH	LPV200	1	99.9458	1	99.9458	1	99.9275
CMH	PORT COLUMBUS INTL	OH	LPV200	1	99.9565	1	99.9458	1	99.9416
CQA	LAKEFIELD	OH	LPV	1	99.9523	1	99.9493	1	99.9416
DAY	JAMES M COX DAYTON INTL	OH	LPV200	1	99.9592	1	99.9519	1	99.9416
DLZ	DELAWARE MUNICIPAL - JIM MOORE FIEL	OH	LPV	1	99.9542	1	99.9458	1	99.9416
EDJ	BELLEFONTAINE RGNL	OH	LPV	1	99.9531	1	99.9458	1	99.9416
EOP	PIKE COUNTY	OH	LP	1	99.9607	1	99.9496	1	99.9454
FDY	FINDLAY	OH	LPV	1	99.9493	1	99.9481	1	99.9332
FZI	FOSTORIA METROPOLITAN	OH	LPV	1	99.9493	1	99.9458	1	99.9328
GQQ	GALION MUNICIPAL	OH	LP	1	99.9493	1	99.9458	1	99.9363
HAO	BUTLER CO RGNL-HOGAN FIELD	OH	LPV	2	99.9828	2	99.9718	1	99.9454
HOC	HIGHLAND COUNTY	OH	LP	1	99.9607	1	99.9496	1	99.9454
HZY	NORTHEAST OHIO RGNL	OH	LPV	1	99.9458	1	99.9454	1	99.9275

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
I19	GREENE COUNTY-LEWIS A JACKSON	OH	LPV	1	99.9588	1	99.9496	1	99.9443
I66	CLINTON FIELD	OH	LPV	1	99.9607	1	99.9496	1	99.9454
I68	WARREN COUNTY/JOHN LANE FIELD	OH	LPV	2	99.9824	2	99.9714	1	99.9454
I69	CLERMONT COUNTY	OH	LP	2	99.9832	2	99.9721	1	99.9454
I74	GRIMES FIELD	OH	LPV	1	99.9550	1	99.9462	1	99.9416
ILN	WILMINGTON AIR PARK	OH	LPV200	1	99.9607	1	99.9496	1	99.9454
LCK	RICKENBACKER INTL	OH	LPV200	1	99.9580	1	99.9493	1	99.9416
LHQ	FAIRFIELD COUNTY	OH	LPV200	1	99.9599	1	99.9493	1	99.9416
LNN	WILLOUGHBY LOST NATION MUNICIPAL	OH	LPV	1	99.9458	1	99.9454	1	99.9275
LPR	LORAIN COUNTY RGNL	OH	LPV200	1	99.9462	1	99.9458	1	99.9275
LUK	CINCINNATI MUNICIPAL AIRPORT LUNKEN	OH	LPV	2	99.9840	2	99.9729	1	99.9454
MFD	MANSFIELD LAHM RGNL	OH	LPV200	1	99.9493	1	99.9458	1	99.9359
MGY	DAYTON-WRIGHT BROTHERS	OH	LPV	2	99.9805	2	99.9706	1	99.9454
MNN	MARION MUNICIPAL	OH	LPV	1	99.9515	1	99.9458	1	99.9363
MRT	UNION COUNTY	OH	LP	1	99.9546	1	99.9458	1	99.9416
MWO	MIDDLETOWN REGIONAL/HOOK FIELD	OH	LPV	2	99.9813	2	99.9710	1	99.9454
OSU	OHIO STATE UNIVERSITY	OH	LPV200	1	99.9561	1	99.9458	1	99.9416
OWX	PUTNAM COUNTY	OH	LPV	1	99.9493	1	99.9481	1	99.9336
OXD	MIAMI UNIVERSITY	OH	LPV	2	99.9824	2	99.9718	1	99.9527
PCW	ERIE-OTTAWA INTL	OH	LPV	1	99.9458	1	99.9458	1	99.9275
PHD	HARRY CLEVER FIELD	OH	LP	1	99.9527	1	99.9458	1	99.9412
PMH	GREATER PORTSMOUTH RGNL	OH	LPV	1	99.9603	1	99.9493	1	99.9454
POV	PORTAGE COUNTY	OH	LPV	1	99.9489	1	99.9458	1	99.9336
RZT	ROSS COUNTY	OH	LPV	1	99.9603	1	99.9493	1	99.9454
S24	SANDUSKY COUNTY RGNL	OH	LPV	1	99.9493	1	99.9458	1	99.9332
SCA	SIDNEY MUNICIPAL	OH	LPV	1	99.9538	1	99.9493	1	99.9416
SGH	SPRINGFIELD-BECKLEY MUNICIPAL	OH	LPV200	1	99.9569	1	99.9493	1	99.9420
TDZ	TOLEDO EXECUTIVE	OH	LP	1	99.9489	1	99.9458	1	99.9275
TOL	TOLEDO EXPRESS	OH	LPV200	1	99.9493	1	99.9462	1	99.9313
TSO	CARROLL COUNTY-TOLSON	OH	LP	1	99.9523	1	99.9458	1	99.9409
TZR	BOLTON FIELD	OH	LPV200	1	99.9569	1	99.9470	1	99.9416
UNI	OHIO UNIVERSITY	OH	LPV200	1	99.9603	1	99.9493	1	99.9454
USE	FULTON COUNTY	OH	LPV	1	99.9493	1	99.9462	1	99.9309
UYF	MADISON COUNTY	OH	LPV	1	99.9565	1	99.9470	1	99.9416
YNG	YOUNGSTOWN-WARREN RGNL	OH	LPV	1	99.9473	1	99.9458	1	99.9275
1F0	ARDMORE DOWNTOWN EXECUTIVE	OK	LP	0	100	0	100	0	100

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
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
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

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
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	1	99.9344	1	99.9306	1	99.9164
CYHD	DRYDEN REGIONAL	ON	LPV	1	99.9122	2	99.8752	4	99.8218
CYKF	KITCHENER / WATERLOO	ON	LPV	1	99.9382	1	99.9325	1	99.9164
CYOW	OTTAWA / MACDONALDCARTIER INTL	ON	LPV	1	99.9306	1	99.9271	1	99.8966
CYQT	THUNDER BAY	ON	LPV	1	99.9187	1	99.8905	4	99.8226
CYTS	TIMMINS / VICTOR M POWER	ON	LPV	1	99.9157	1	99.8619	2	99.8165
CYXL	SIOUX LOOKOUT	ON	LPV	1	99.9050	2	99.8748	4	99.8138
AST	ASTORIA RGNL	OR	LPV	0	100	1	99.9996	2	99.9271
BDN	BEND MUNICIPAL	OR	LPV	0	100	0	100	2	99.9886
BKE	BAKER CITY MUNICIPAL	OR	LPV	0	100	0	100	1	99.9870
CVO	CORVALLIS MUNICIPAL	OR	LPV200	0	100	0	100	3	99.9508
EUG	MAHLON SWEET FIELD	OR	LPV200	0	100	0	100	3	99.9557
GCD	GRANT CO RGNL/OGILVIE FIELD	OR	LPV	0	100	0	100	2	99.9874
HIO	PORTLAND-HILLSBORO	OR	LPV200	0	100	0	100	2	99.9443
LGD	LA GRANDE/UNION COUNTY	OR	LPV	0	100	0	100	1	99.9828
LKV	LAKE COUNTY	OR	LPV	0	100	0	100	3	99.9916
LMT	KLAMATH FALLS	OR	LPV	0	100	1	99.9996	4	99.9710
MMV	MC MINNVILLE MUNICIPAL	OR	LPV	0	100	0	100	2	99.9493
ONO	ONTARIO MUNICIPAL	OR	LPV	0	100	0	100	0	100
OTH	SOUTHWEST OREGON RGNL	OR	LPV	0	100	0	100	20	99.9355
PDT	EASTERN OREGON RGNL AT PENDLET	OR	LPV200	0	100	0	100	1	99.9783
PDX	PORTLAND INTL	OR	LPV200	0	100	0	100	2	99.9458
RDM	ROBERTS FIELD	OR	LPV200	0	100	0	100	2	99.9851
S33	MADRAS MUNICIPALCIPAL	OR	LPV	0	100	0	100	2	99.9706
S39	PRINEVILLE	OR	LP	0	100	0	100	2	99.9824
SLE	MCNARY FLD	OR	LPV200	0	100	0	100	2	99.9504
SPB	SCAPPOOSE INDUSTRIAL AIRPARK	OR	LPV	0	100	0	100	2	99.9302
UAO	AURORA STATE	OR	LPV	0	100	0	100	2	99.9493
22N	JAKE ARNER MEMORIAL	PA	LP	1	99.9508	1	99.9458	1	99.9367
29D	GROVE CITY	PA	LP	1	99.9485	1	99.9458	1	99.9340
2G9	SOMERSET COUNTY	PA	LPV	1	99.9561	1	99.9504	1	99.9416
8G2	CORRY-LAWRENCE	PA	LPV	1	99.9454	1	99.9454	1	99.9275
8N8	DANVILLE	PA	LP	1	99.9542	1	99.9454	1	99.9359
9D4	DECK	PA	LPV	1	99.9561	1	99.9527	1	99.9378
ABE	LEHIGH VALLEY INTL	PA	LPV200	1	99.9519	1	99.9458	1	99.9359
AFJ	WASHINGTON COUNTY	PA	LPV200	1	99.9561	1	99.9527	1	99.9416
AGC	ALLEGHENY COUNTY	PA	LPV200	1	99.9557	1	99.9523	1	99.9401
AOO	ALTOONA-BLAIR COUNTY	PA	LPV	1	99.9561	1	99.9489	1	99.9393

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
AVP	WILKES-BARRE/SCRANTON INTL	PA	LPV200	1	99.9489	1	99.9431	1	99.9309
AXQ	CLARION COUNTY	PA	LPV	1	99.9473	1	99.9458	1	99.9275
BFD	BRADFORD RGNL	PA	LPV	1	99.9458	1	99.9454	1	99.9275
BTP	BUTLER COUNTY/K W SCHOLTER FIE	PA	LPV	1	99.9512	1	99.9458	1	99.9355
BVI	BEAVER COUNTY	PA	LPV	1	99.9508	1	99.9458	1	99.9393
CXY	CAPITAL CITY	PA	LPV	1	99.9561	1	99.9534	1	99.9389
DUJ	DUBOIS RGNL	PA	LPV200	1	99.9485	1	99.9458	1	99.9275
ERI	ERIE INTL/TOM RIDGE FIELD	PA	LPV	1	99.9454	1	99.9389	1	99.9275
FIG	CLEARFIELD-LAWRENCE	PA	LPV	1	99.9512	1	99.9458	1	99.9351
FKL	VENANGO RGNL	PA	LPV	1	99.9462	1	99.9454	1	99.9275
FWQ	ROSTRAVER	PA	LPV	1	99.9554	1	99.9519	1	99.9412
GKJ	PORT MEADVILLE	PA	LP	1	99.9458	1	99.9454	1	99.9275
HMZ	BEDFORD COUNTY	PA	LPV	1	99.9561	1	99.9496	1	99.9409
IPT	WILLIAMSPORT RGNL	PA	LPV	1	99.9466	1	99.9462	1	99.9275
JST	JOHN MURTHA JOHNSTOWN-CAMBRIA	PA	LPV200	1	99.9534	1	99.95000	1	99.9393
LBE	ARNOLD PALMER RGNL	PA	LPV	1	99.9546	1	99.9512	1	99.9401
LNS	LANCASTER	PA	LPV200	1	99.9561	1	99.9527	1	99.9378
LOM	WINGS FIELD	PA	LPV	1	99.9561	1	99.9489	1	99.9382
MDT	HARRISBURG INTL	PA	LPV	1	99.9561	1	99.9534	1	99.9386
MPO	POCONO MOUNTAINS MUNICIPAL	PA	LPV	1	99.9489	1	99.9428	1	99.9359
MQS	CHESTER COUNTY G O CARLSON	PA	LPV	1	99.9561	1	99.9527	1	99.9382
N38	WELLSBORO JOHNSTON	PA	LP	1	99.9470	1	99.9454	1	99.9275
N79	NORTHUMBERLAND COUNTY	PA	LPV	1	99.9550	1	99.9454	1	99.9363
N96	BELLEFONTE	PA	LPV	1	99.9508	1	99.9477	1	99.9386
OQN	BRANDYWINE	PA	LP	1	99.9561	1	99.9489	1	99.9382
OYM	ST MARYS MUNICIPAL	PA	LPV	1	99.9485	1	99.9454	1	99.9275
PHL	PHILADELPHIA INTL	PA	LPV	1	99.9561	1	99.9489	1	99.9382
PIT	PITTSBURGH INTL	PA	LPV200	1	99.9534	1	99.95000	1	99.9401
PNE	NORTHEAST PHILADELPHIA	PA	LPV	1	99.9561	1	99.9489	1	99.9351
PSB	MID-STATE	PA	LPV	1	99.9515	1	99.9485	1	99.9386
PTW	HERITAGE FIELD	PA	LPV	1	99.9561	1	99.9489	1	99.9378
RDG	READING RGNL/CARL A SPAATZ FIE	PA	LPV	1	99.9561	1	99.9458	1	99.9370
RVL	MIFFLIN COUNTY	PA	LPV	1	99.9523	1	99.9477	1	99.9386
THV	YORK	PA	LP	1	99.9561	1	99.9561	1	99.9389
UCP	NEW CASTLE MUNICIPAL	PA	LPV	1	99.9493	1	99.9458	1	99.9344
UKT	QUAKERTOWN	PA	LP	1	99.9561	1	99.9458	1	99.9359
UNV	UNIVERSITY PARK	PA	LPV200	1	99.9512	1	99.9481	1	99.9386

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
VVS	JOSEPH A HARDY CONNELLSVILLE	PA	LPV	1	99.9554	1	99.9519	1	99.9416
WAY	GREENE COUNTY	PA	LPV	1	99.9561	1	99.9561	1	99.9416
WBW	WILKES-BARRE WYOMING VALLEY	PA	LPV	1	99.9489	1	99.9435	1	99.9309
XLL	ALLENTOWN QUEEN CITY MUNICIPAL	PA	LP	1	99.9561	1	99.9458	1	99.9359
ZER	SCHUYLKILL COUNTY /JOE ZERBEY/	PA	LPV200	1	99.9557	1	99.9458	1	99.9378
CPN8	OPINACA	QC	LPV	2	99.8329	3	99.8298	2	99.7569
CSR3	VICTORIAVILLE	QC	LPV	1	99.9126	1	99.9103	2	99.8714
CTP9	KATTINIQ / DONALDSON	QC	LPV	2	99.8001	6	99.7550	53	99.2560
CYEY	AMOS	QC	LPV	1	99.9157	2	99.8783	2	99.8111
CYHU	MONTREAL / STHUBERT	QC	LPV	1	99.9222	1	99.9122	1	99.8935
CYIF	STAUGUSTIN	QC	LPV	1	99.7951	1	99.7943	2	99.7249
CYMX	MONTREAL (MIRABEL INTL)	QC	LPV	1	99.9199	1	99.9122	1	99.8935
CYQB	QUEBEC / JEAN LESAGE INTL	QC	LPV	1	99.9126	1	99.9077	4	99.8558
CYRI	RIVIEREDULOUP	QC	LPV	2	99.8882	2	99.8882	4	99.8226
CYRQ	TROISRIVIERES	QC	LPV	1	99.9126	1	99.9103	2	99.8699
CYVB	BONAVENTURE	QC	LPV	3	99.8550	4	99.8401	3	99.7806
CYVP	KUUJJUAQ	QC	LPV	1	99.7814	2	99.7547	9	99.5910
CYYY	MONTJOLI	QC	LPV	3	99.8684	3	99.8638	2	99.7634
BID	BLOCK ISLAND STATE	RI	LPV	1	99.9489	1	99.9435	1	99.9088
OQU	QUONSET STATE	RI	LPV	1	99.9489	1	99.9435	1	99.9088
PVD	THEODORE FRANCIS GREEN STATE	RI	LPV200	1	99.9458	1	99.9435	1	99.9088
SFZ	NORTH CENTRAL STATE	RI	LPV	1	99.9458	1	99.9435	1	99.9088
35A	UNION COUNTY` TROY SHELTON FIE	SC	LP	0	100	0	100	1	99.9989
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	1	99.9912
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	1	99.9958
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	1	99.9908

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
CRE	GRAND STRAND	SC	LPV200	0	100	0	100	1	99.9996
DCM	CHESTER CATAWBA RGNL	SC	LPV	0	100	0	100	1	99.9962
DYB	SUMMERVILLE	SC	LPV200	0	100	0	100	0	100
FDW	FAIRFIELD COUNTY	SC	LPV	0	100	0	100	1	99.9973
FLO	FLORENCE RGNL	SC	LPV	0	100	0	100	1	99.9954
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	1	99.9996
JZI	CHARLESTON EXECUTIVE	SC	LPV200	0	100	0	100	0	100
LKR	LANCASTER COUNTY-MC WHIRTER FI	SC	LPV200	0	100	0	100	1	99.9943
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	1	99.9947
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	1	99.9985
SPA	SPARTANBURG DOWNTOWN MEMORIAL	SC	LPV200	0	100	0	100	1	99.9996
UDG	DARLINGTON COUNTY JETPORT	SC	LPV	0	100	0	100	1	99.9931
UZA	ROCK HILL/YORK CO/BRYANT FIELD	SC	LPV200	0	100	0	100	1	99.9947
0D8	GETTYSBURG MUNICIPAL	SD	LP	1	99.9199	1	99.9199	1	99.9161
49B	STURGIS MUNICIPAL	SD	LPV	1	99.9607	1	99.9569	1	99.9473
8V3	PARKSTON MUNICIPAL	SD	LPV	1	99.9393	1	99.9279	1	99.9199
9D1	GREGORY MUNICIPAL - FLYNN FLD	SD	LPV	1	99.9607	1	99.9531	1	99.9382
ABR	ABERDEEN RGNL	SD	LPV200	1	99.9199	1	99.9199	1	99.9153
AGZ	WAGNER MUNICIPAL	SD	LPV	1	99.9531	1	99.9527	1	99.9199
ATY	WATERTOWN RGNL	SD	LPV200	1	99.9199	1	99.9199	1	99.9199
BKX	BROOKINGS RGNL	SD	LPV200	1	99.9199	1	99.9199	1	99.9199
EFC	BELLE FOURCHE MUNICIPAL	SD	LPV	1	99.9607	1	99.9569	1	99.9466
FSD	JOE FOSS FIELD	SD	LPV200	1	99.9237	1	99.9199	1	99.9199
HON	HURON RGNL	SD	LPV200	1	99.9199	1	99.9199	1	99.9199
HSR	HOT SPRINGS MUNICIPAL	SD	LP	1	99.9760	1	99.9607	1	99.9569
ICR	WINNER RGNL	SD	LPV	1	99.9607	1	99.9531	1	99.9382

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
LEM	LEMMON MUNICIPAL	SD	LPV	1	99.9416	1	99.9233	1	99.9199
MBG	MOBRIDGE MUNICIPAL	SD	LPV	1	99.9199	1	99.9199	1	99.9199
MDS	MADISON MUNICIPAL	SD	LPV	1	99.9199	1	99.9199	1	99.9199
MHE	MITCHELL MUNICIPAL	SD	LPV	1	99.9275	1	99.9222	1	99.9199
MKA	MILLER MUNICIPAL	SD	LPV	1	99.9199	1	99.9199	1	99.9199
PHP	PHILIP	SD	LPV	1	99.9607	1	99.9580	1	99.9378
PIR	PIERRE RGNL	SD	LPV	1	99.9470	1	99.9431	1	99.9199
RAP	RAPID CITY RGNL	SD	LPV200	1	99.9607	1	99.9599	1	99.9527
SPF	BLACK HILLS-CLYDE ICE FIELD	SD	LPV	1	99.9607	1	99.9569	1	99.9515
VMR	HAROLD DAVIDSON FIELD	SD	LPV	1	99.9454	1	99.9344	1	99.9199
YKN	CHAN GURNEY MUNICIPAL	SD	LPV200	1	99.9451	1	99.9386	1	99.9199
CKQ8	MCARTHUR RIVER	SK	LPV	2	99.8474	2	99.8344	6	99.7466
CYKJ	KEY LAKE	SK	LPV	2	99.8489	2	99.8466	4	99.7703
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	1	99.9973
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	1	99.9908
3M7	LAFAYETTE MUNICIPAL	TN	LPV	0	100	0	100	1	99.9958
8A3	LIVINGSTON MUNICIPAL	TN	LP	0	100	0	100	1	99.9943
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	1	99.9893
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	1	99.9920
JWN	JOHN C TUNE	TN	LPV	0	100	0	100	0	100
LUG	ELLINGTON	TN	LPV	0	100	0	100	0	100

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
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	1	99.9905
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	1	99.9928
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	1	99.9882
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

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
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
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

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
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
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

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
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
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

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
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
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	1	99.9973
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	1	99.9996
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

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
RIF	RICHFIELD MUNICIPAL	UT	LP	0	100	0	100	1	99.9996
SGU	ST GEORGE RGNL	UT	LPV	0	100	0	100	1	99.9928
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	1	99.9977
VEL	VERNAL RGNL	UT	LP	0	100	0	100	0	100
0V4	BROOKNEAL/CAMPBELL COUNTY	VA	LPV	1	99.9603	1	99.9561	1	99.9527
0VG	LEE COUNTY	VA	LPV	0	100	0	100	2	99.9893
AVC	MECKLENBURG-BRUNSWICK RGNL	VA	LPV	1	99.9901	2	99.9809	1	99.9527
BCB	VIRGINIA TECH/MONTGOMERY EXECU	VA	LPV	2	99.9855	2	99.9851	1	99.9546
BKT	ALLEN C PERKINSON BLACKSTONE A	VA	LPV	1	99.9603	1	99.9561	1	99.9527
CHO	CHARLOTTESVILLE-ALBEMARLE	VA	LPV200	1	99.9603	1	99.9561	1	99.9527
CJR	CULPEPER RGNL	VA	LPV	1	99.9603	1	99.9561	1	99.9481
CPK	CHESAPEAKE RGNL	VA	LPV200	2	99.9824	2	99.9733	1	99.9515
DAN	DANVILLE RGNL	VA	LPV200	0	100	1	99.9916	2	99.9702
EMV	EMPORIA-GREENSVILLE RGNL	VA	LPV200	1	99.9870	2	99.9775	1	99.9527
FCI	RICHMOND EXECUTIVE-CHESTERFIEL	VA	LPV	1	99.9603	1	99.9561	1	99.9527
FKN	FRANKLIN MUNICIPAL-JOHN BEVERLY ROS	VA	LPV	1	99.9840	2	99.9744	1	99.9523
FVX	FARMVILLE RGNL	VA	LPV	1	99.9603	1	99.9561	1	99.9527
FYJ	MIDDLE PENINSULA RGNL	VA	LPV	1	99.9603	1	99.9561	1	99.9519
HLX	TWIN COUNTY	VA	LPV	0	100	2	99.9958	2	99.9771
HSP	INGALLS FIELD	VA	LPV	1	99.9603	1	99.9565	1	99.9527
HWY	WARRENTON-FAUQUIER	VA	LPV200	1	99.9603	1	99.9561	1	99.9477
JFZ	TAZEWELL COUNTY	VA	LPV	1	99.9992	2	99.9889	2	99.9786
JYO	LEESBURG EXECUTIVE	VA	LPV	1	99.9561	1	99.9561	1	99.9473
LKU	LOUISA COUNTY/FREEMAN FIELD	VA	LPV	1	99.9603	1	99.9561	1	99.9527
LNP	LONESOME PINE	VA	LPV	0	100	1	99.9996	2	99.9809
LUA	LURAY CAVERNS	VA	LP	1	99.9561	1	99.9561	1	99.9496
LYH	LYNCHBURG RGNL/PRESTON GLENN F	VA	LPV	1	99.9603	1	99.9561	1	99.9527
MFV	ACCOMACK COUNTY	VA	LPV	1	99.9561	1	99.9561	1	99.9493
MKJ	MOUNTAIN EMPIRE	VA	LPV	0	100	2	99.9958	2	99.9798
MTV	BLUE RIDGE	VA	LPV	0	100	1	99.9958	1	99.9737

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
OFP	HANOVER COUNTY MUNICIPAL	VA	LPV	1	99.9603	1	99.9561	1	99.9527
OKV	WINCHESTER RGNL	VA	LPV200	1	99.9561	1	99.9561	1	99.9485
ORF	NORFOLK INTL	VA	LPV200	2	99.9737	1	99.9561	1	99.9496
PHF	NEWPORT NEWS/WILLIAMSBURG INTL	VA	LPV200	1	99.9603	1	99.9561	1	99.9508
PSK	NEW RIVER VALLEY	VA	LPV200	2	99.9855	2	99.9851	2	99.9668
PTB	DINWIDDIE COUNTY	VA	LPV	1	99.9603	1	99.9561	1	99.9527
PVG	HAMPTON ROADS EXECUTIVE	VA	LPV200	2	99.9783	2	99.9687	1	99.9515
RIC	RICHMOND INTL	VA	LPV200	1	99.9603	1	99.9561	1	99.9527
RMN	STAFFORD RGNL	VA	LPV	1	99.9603	1	99.9561	1	99.9481
ROA	ROANOKE-BLACKSBURG RGNL/WOODRU	VA	LPV	2	99.9851	2	99.9813	1	99.9527
SFQ	SUFFOLK EXECUTIVE	VA	LPV	1	99.9836	2	99.9741	1	99.9523
SHD	SHENANDOAH VALLEY RGNL	VA	LPV200	1	99.9603	1	99.9561	1	99.9523
VJI	VIRGINIA HIGHLANDS	VA	LPV	0	100	1	99.9992	1	99.9859
W78	WILLIAM M TUCK	VA	LPV	0	100	1	99.9905	1	99.9546
W96	NEW KENT COUNTY	VA	LP	1	99.9603	1	99.9561	1	99.9523
WAL	WALLOPS FLIGHT FACILITY	VA	LPV	1	99.9561	1	99.9561	1	99.9493
XSA	TAPPAHANNOCK-ESSEX COUNTY	VA	LPV	1	99.9603	1	99.9561	1	99.9519
BTV	BURLINGTON INTL	VT	LPV200	1	99.9382	1	99.9309	1	99.8943
EFK	NEWPORT STATE	VT	LP	1	99.9359	1	99.9306	1	99.8924
FSO	FRANKLIN COUNTY STATE	VT	LPV	1	99.9367	1	99.9306	1	99.8943
MPV	EDWARD F KNAPP STATE	VT	LPV	1	99.9454	1	99.9309	1	99.8977
MVL	MORRISVILLE-STOWE STATE	VT	LP	1	99.9378	1	99.9309	1	99.8943
RUT	RUTLAND - SOUTHERN VERMONT RGN	VT	LPV	1	99.9454	1	99.9309	1	99.9008
ALW	WALLA WALLA RGNL	WA	LPV200	0	100	0	100	1	99.9771
AWO	ARLINGTON MUNICIPAL	WA	LPV200	1	99.9672	1	99.9325	3	99.9016
BLI	BELLINGHAM INTL	WA	LPV200	1	99.9382	1	99.9306	3	99.8932
BVS	SKAGIT RGNL	WA	LPV	2	99.9622	1	99.9317	3	99.90000
CLM	WILLIAM R FAIRCHILD INTL	WA	LPV	1	99.9454	1	99.9306	3	99.9038
CLS	CHEHALIS-CENTRALIA	WA	LPV	1	99.9672	1	99.9435	2	99.9302
DEW	DEER PARK	WA	LPV	1	99.9641	1	99.9489	1	99.9195
EPH	EPHRATA MUNICIPAL	WA	LPV	1	99.9641	1	99.9603	1	99.9267
FHR	FRIDAY HARBOR	WA	LPV	1	99.9416	1	99.9306	2	99.9012
GEG	SPOKANE INTL	WA	LPV200	1	99.9645	2	99.9603	1	99.9286
HQM	BOWERMAN	WA	LPV200	1	99.9638	1	99.9313	3	99.9290
MWH	GRANT CO INTL	WA	LPV200	1	99.9641	1	99.9603	1	99.9267
OLM	OLYMPIA RGNL	WA	LPV	1	99.9672	1	99.9420	3	99.9298
ORS	ORCAS ISLAND	WA	LP	1	99.9382	1	99.9306	2	99.8939

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
PAE	SNOHOMISH COUNTY (PAINE FLD)	WA	LPV200	1	99.9672	1	99.9325	3	99.9077
PLU	PIERCE COUNTY - THUN FIELD	WA	LPV	1	99.9672	1	99.9424	3	99.9294
PSC	TRI-CITIES	WA	LPV200	0	100	0	100	1	99.9386
PWT	BREMERTON NATIONAL	WA	LPV200	1	99.9672	1	99.9416	3	99.9275
RLD	RICHLAND	WA	LPV	0	100	0	100	1	99.9386
RNT	RENTON MUNICIPAL	WA	LPV	1	99.9672	1	99.9416	3	99.9229
SEA	SEATTLE-TACOMA INTL	WA	LPV200	1	99.9672	1	99.9416	3	99.9286
SFF	FELTS FIELD	WA	LPV	1	99.9645	2	99.9603	1	99.9286
SHN	SANDERSON FIELD	WA	LPV	1	99.9672	1	99.9321	3	99.9298
TDO	ED CARLSON MEMORIAL FIELD - SO	WA	LPV	1	99.9775	1	99.9512	2	99.9302
TIW	TACOMA NARROWS	WA	LPV	1	99.9672	1	99.9416	3	99.9286
YKM	YAKIMA AIR TERMINAL/MCALLISTER	WA	LPV200	1	99.9725	1	99.9611	2	99.9306
3T3	BOYCEVILLE MUNICIPAL	WI	LPV	1	99.9199	1	99.9199	1	99.9191
57C	EAST TROY MUNICIPAL	WI	LPV	1	99.9382	1	99.9321	1	99.9199
82C	MAUSTON-NEW LISBON UNION	WI	LP	1	99.9248	1	99.9210	1	99.9199
8D1	NEW HOLSTEIN MUNICIPAL	WI	LPV	1	99.9275	1	99.9229	1	99.9199
AHH	AMERY MUNICIPAL	WI	LP	1	99.9199	1	99.9199	1	99.9054
AIG	LANGLADE COUNTY	WI	LPV	1	99.9229	1	99.9199	1	99.8955
ARV	LAKELAND/NOBLE F LEE MEMORIAL	WI	LPV	1	99.9199	1	99.9199	1	99.8821
ASX	JOHN F KENNEDY MEMORIAL	WI	LPV	1	99.9199	1	99.9199	2	99.8817
ATW	APPLETON INTL	WI	LPV200	1	99.9237	1	99.9199	1	99.9191
AUW	WAUSAU DOWNTOWN	WI	LPV200	1	99.9229	1	99.9199	1	99.91000
BCK	BLACK RIVER FALLS AREA	WI	LPV	1	99.9229	1	99.9199	1	99.9199
BUU	BURLINGTON MUNICIPAL	WI	LP	1	99.9382	1	99.9325	1	99.9199
C29	MIDDLETON MUNICIPAL - MOREY FIELD	WI	LPV	1	99.9382	1	99.9275	1	99.9199
C35	REEDSBURG MUNICIPAL	WI	LP	1	99.9267	1	99.9229	1	99.9199
CLI	CLINTONVILLE MUNICIPAL	WI	LPV	1	99.9229	1	99.9199	1	99.9168
CMY	SPARTA/FORT MC COY	WI	LPV	1	99.9237	1	99.9199	1	99.9199
CWA	CENTRAL WISCONSIN	WI	LPV200	1	99.9229	1	99.9199	1	99.9172
DLL	BARABOO WISCONSIN DELLS	WI	LPV	1	99.9328	1	99.9264	1	99.9199
EAU	CHIPPEWA VALLEY RGNL	WI	LPV200	1	99.9199	1	99.9199	1	99.9199
EGV	EAGLE RIVER UNION	WI	LPV	1	99.9199	1	99.9199	1	99.8802
ENW	KENOSHA RGNL	WI	LPV200	1	99.9382	1	99.9355	1	99.9199
ETB	WEST BEND MUNICIPAL	WI	LPV	1	99.9382	1	99.9283	1	99.9199
EZS	SHAWANO MUNICIPAL	WI	LPV	1	99.9229	1	99.9199	1	99.9107
FLD	FOND DU LAC COUNTY	WI	LPV	1	99.9317	1	99.9267	1	99.9199

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
GRB	AUSTIN STRAUBEL INTL	WI	LPV200	1	99.9237	1	99.9199	1	99.9168
GTG	GRANTSBURG MUNICIPAL	WI	LP	1	99.9199	1	99.9199	1	99.9012
HXF	HARTFORD MUNICIPAL	WI	LPV	1	99.9382	1	99.9279	1	99.9199
HYR	SAWYER COUNTY	WI	LPV	1	99.9199	1	99.9199	1	99.8905
ISW	ALEXANDER FIELD SOUTH WOOD COU	WI	LPV	1	99.9229	1	99.9199	1	99.9199
JVL	SOUTHERN WISCONSIN RGNL	WI	LPV200	1	99.9382	1	99.9317	1	99.9199
LNR	TRI-COUNTY RGNL	WI	LPV	1	99.9355	1	99.9267	1	99.9199
LSE	LA CROSSE RGNL	WI	LPV	1	99.9237	1	99.9199	1	99.9199
LUM	MENOMONIE MUNICIPAL-SCORE FIELD	WI	LPV	1	99.9199	1	99.9199	1	99.9199
MDZ	TAYLOR COUNTY	WI	LPV	1	99.9199	1	99.9199	1	99.90000
MFI	MARSHFIELD MUNICIPAL	WI	LPV	1	99.9229	1	99.9199	1	99.9191
MKE	GENERAL MITCHELL INTL	WI	LPV200	1	99.9382	1	99.9321	1	99.9199
MRJ	IOWA COUNTY	WI	LPV200	1	99.9382	1	99.9275	1	99.9199
MSN	DANE COUNTY RGNL-TRUAX FIELD	WI	LPV200	1	99.9382	1	99.9283	1	99.9199
MTW	MANITOWOC COUNTY	WI	LPV200	1	99.9256	1	99.9218	1	99.9183
MWC	LAWRENCE J TIMMERMAN	WI	LPV	1	99.9382	1	99.9317	1	99.9199
OCQ	OCONTO-J DOUGLAS BAKE MUNICIPAL	WI	LP	1	99.9237	1	99.9199	1	99.9084
OEO	L O SIMENSTAD MUNICIPAL	WI	LPV200	1	99.9199	1	99.9199	1	99.9058
OSH	WITTMAN RGNL	WI	LPV200	1	99.9264	1	99.9225	1	99.9199
OVS	BOSCOBEL	WI	LPV	1	99.9267	1	99.9229	1	99.9199
PBH	PRICE COUNTY	WI	LPV	1	99.9199	1	99.9199	1	99.8905
PCZ	WAUPACA MUNICIPAL	WI	LPV	1	99.9233	1	99.9199	1	99.9191
PVB	PLATTEVILLE MUNICIPAL	WI	LPV	1	99.9382	1	99.9275	1	99.9199
RAC	JOHN H BATTEN	WI	LPV	1	99.9382	1	99.9336	1	99.9199
RCX	RUSK COUNTY	WI	LPV	1	99.9199	1	99.9199	1	99.8924
RHI	RHINELANDER-ONEIDA COUNTY	WI	LPV200	1	99.9199	1	99.9199	1	99.8871
RNH	NEW RICHMOND RGNL	WI	LPV	1	99.9199	1	99.9199	1	99.9191
RPD	RICE LAKE RGNL - CARL'S FIELD	WI	LPV	1	99.9199	1	99.9199	1	99.9012
RRL	MERRILL MUNICIPAL	WI	LPV	1	99.9199	1	99.9199	1	99.8939
SBM	SHEBOYGAN COUNTY MEMORIAL	WI	LPV200	1	99.9344	1	99.9271	1	99.9199
STE	STEVENS POINT MUNICIPAL	WI	LPV200	1	99.9229	1	99.9199	1	99.9183
SUE	DOOR COUNTY CHERRYLAND	WI	LPV	1	99.9237	1	99.9199	1	99.9080
SUW	RICHARD I BONG	WI	LP	1	99.9199	1	99.9199	2	99.8890
TKV	TOMAHAWK RGNL	WI	LP	1	99.9199	1	99.9199	1	99.8905
UES	WAUKESHA COUNTY	WI	LPV200	1	99.9382	1	99.9317	1	99.9199
UNU	DODGE COUNTY	WI	LPV	1	99.9382	1	99.9275	1	99.9199

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
VIQ	NEILLSVILLE MUNICIPAL	WI	LPV	1	99.9229	1	99.9199	1	99.9199
Y50	WAUTOMA MUNICIPAL	WI	LP	1	99.9245	1	99.9206	1	99.9199
Y55	CRANDON/STEVE CONWAY MUNICIPAL	WI	LPV	1	99.9199	1	99.9199	1	99.8871
3I2	MASON COUNTY	WV	LPV	1	99.9603	1	99.9493	1	99.9454
6L4	LOGAN COUNTY	WV	LPV	2	99.9836	2	99.9832	1	99.9477
BKW	RALEIGH COUNTY MEMORIAL	WV	LPV200	2	99.9836	2	99.9836	1	99.9527
BLF	MERCER COUNTY	WV	LPV	2	99.9851	2	99.9847	1	99.9527
CKB	NORTH CENTRAL WEST VIRGINIA	WV	LPV200	1	99.9565	1	99.9565	1	99.9454
CRW	YEAGER	WV	LPV200	1	99.9603	1	99.9599	1	99.9454
HLG	WHEELING OHIO CO	WV	LPV200	1	99.9561	1	99.9527	1	99.9416
HTS	TRI-STATE/MILTON J FERGUSON FI	WV	LPV200	2	99.9824	2	99.9714	1	99.9454
I18	JACKSON COUNTY	WV	LPV200	1	99.9603	1	99.9493	1	99.9454
LWB	GREENBRIER VALLEY	WV	LPV	1	99.9603	1	99.9576	1	99.9527
MGW	MORGANTOWN MUNICIPAL-WALTER L BILL	WV	LPV200	1	99.9561	1	99.9557	1	99.9420
MRB	EASTERN WV RGNL/SHEPHERD FLD	WV	LPV	1	99.9561	1	99.9561	1	99.9447
PKB	MID-OHIO VALLEY RGNL	WV	LPV	1	99.9592	1	99.9493	1	99.9454
SXL	SUMMERSVILLE	WV	LP	1	99.9603	1	99.9584	1	99.9523
USW	BOGGS FIELD	WV	LPV	1	99.9603	1	99.9592	1	99.9454
W22	UPSHUR COUNTY RGNL	WV	LPV	1	99.9569	1	99.9569	1	99.9454
W99	GRANT COUNTY	WV	LP	1	99.9561	1	99.9561	1	99.9508
BYG	JOHNSON COUNTY	WY	LPV	1	99.9912	1	99.9638	1	99.9565
COD	YELLOWSTONE RGNL	WY	LPV	1	99.9950	2	99.9863	1	99.9603
CPR	CASPER/NATRONA COUNTY INTL	WY	LPV	0	100	1	99.9947	1	99.9607
CYS	CHEYENNE RGNL/JERRY OLSON FIEL	WY	LPV	0	100	0	100	0	100
DGW	CONVERSE COUNTY	WY	LPV200	0	100	1	99.9962	1	99.9603
ECS	MONDELL FIELD	WY	LPV	1	99.9607	1	99.9607	1	99.9565
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	1	99.9607	1	99.9607	1	99.9565
GEY	SOUTH BIG HORN COUNTY	WY	LP	1	99.9897	1	99.9638	1	99.9565
GUR	CAMP GUERNSEY	WY	LP	0	100	1	99.9981	2	99.9775
JAC	JACKSON HOLE	WY	LPV200	0	100	0	100	1	99.9954
LAR	LARAMIE RGNL	WY	LPV	0	100	0	100	1	99.9992
PNA	RALPH WENZ FIELD	WY	LPV	0	100	0	100	1	99.9928
POY	POWELL MUNICIPAL	WY	LPV	1	99.9882	2	99.9760	1	99.9565

Airport Id	Airport Name	State/ Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
RIW	RIVERTON RGNL	WY	LPV200	0	100	1	99.9920	1	99.9664
RKS	ROCK SPRINGS-SWEETWATER COUNTY	WY	LPV200	0	100	0	100	0	100
RWL	RAWLINS MUNICIPAL/HARVEY FIELD	WY	LPV	0	100	0	100	1	99.9966
SAA	SHIVELY FIELD	WY	LPV	0	100	0	100	1	99.9977
SHR	SHERIDAN COUNTY	WY	LPV	2	99.9893	1	99.9638	1	99.9565
U68	NORTH BIG HORN COUNTY	WY	LPV	1	99.9882	1	99.9638	1	99.9565
WRL	WORLAND MUNICIPAL	WY	LPV	1	99.9996	2	99.9802	1	99.9607
CYQH	WATSON LAKE	YT	LPV	1	99.8653	1	99.8619	4	99.8153
CYXY	WHITEHORSE / ERIK NIELSEN INTL	YT	LPV	1	99.8684	1	99.8649	4	99.7970

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

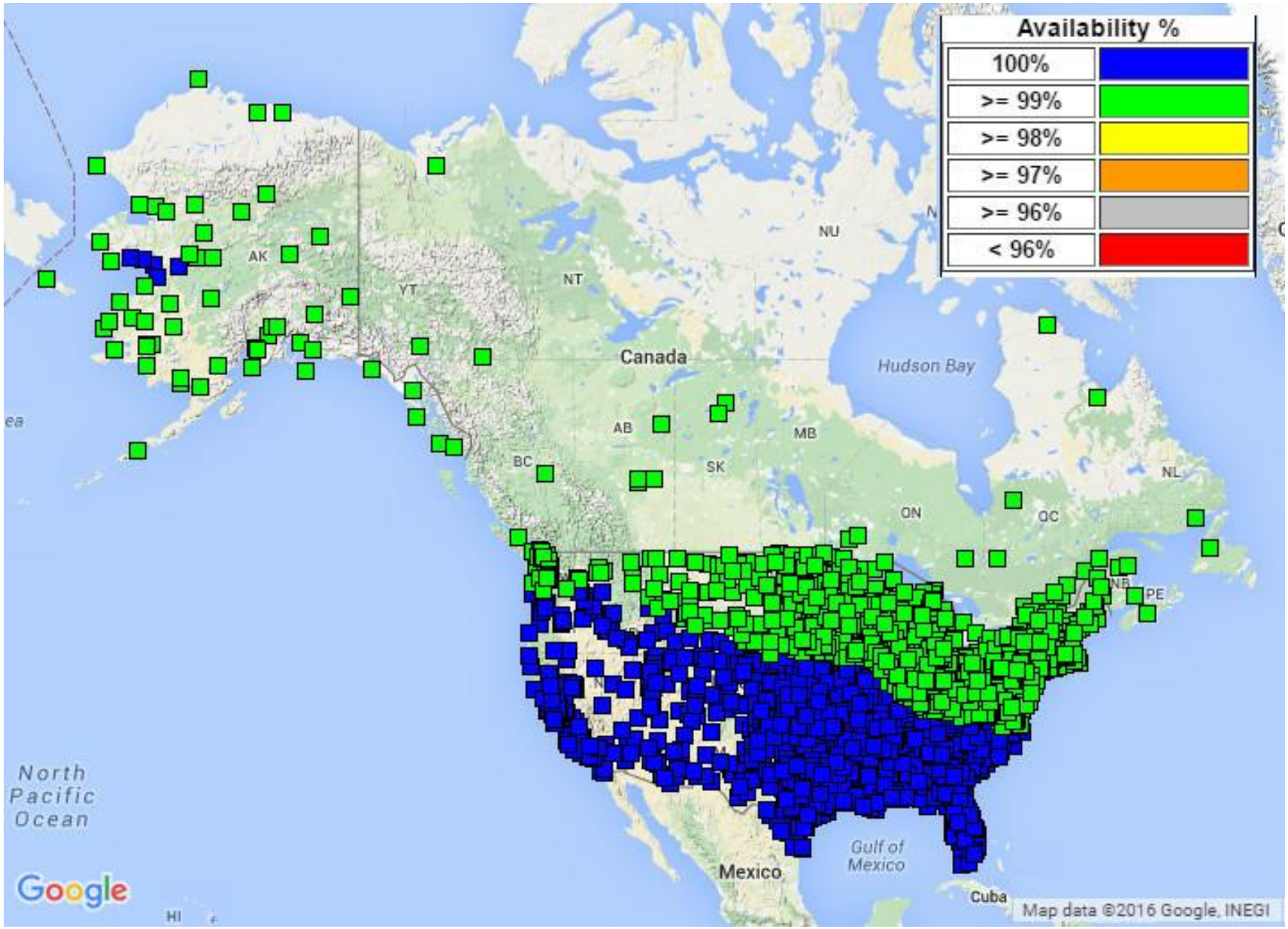


Figure 8-2 WAAS LP Outages at Airports in the US and Canada with GPS RNAV IAPs

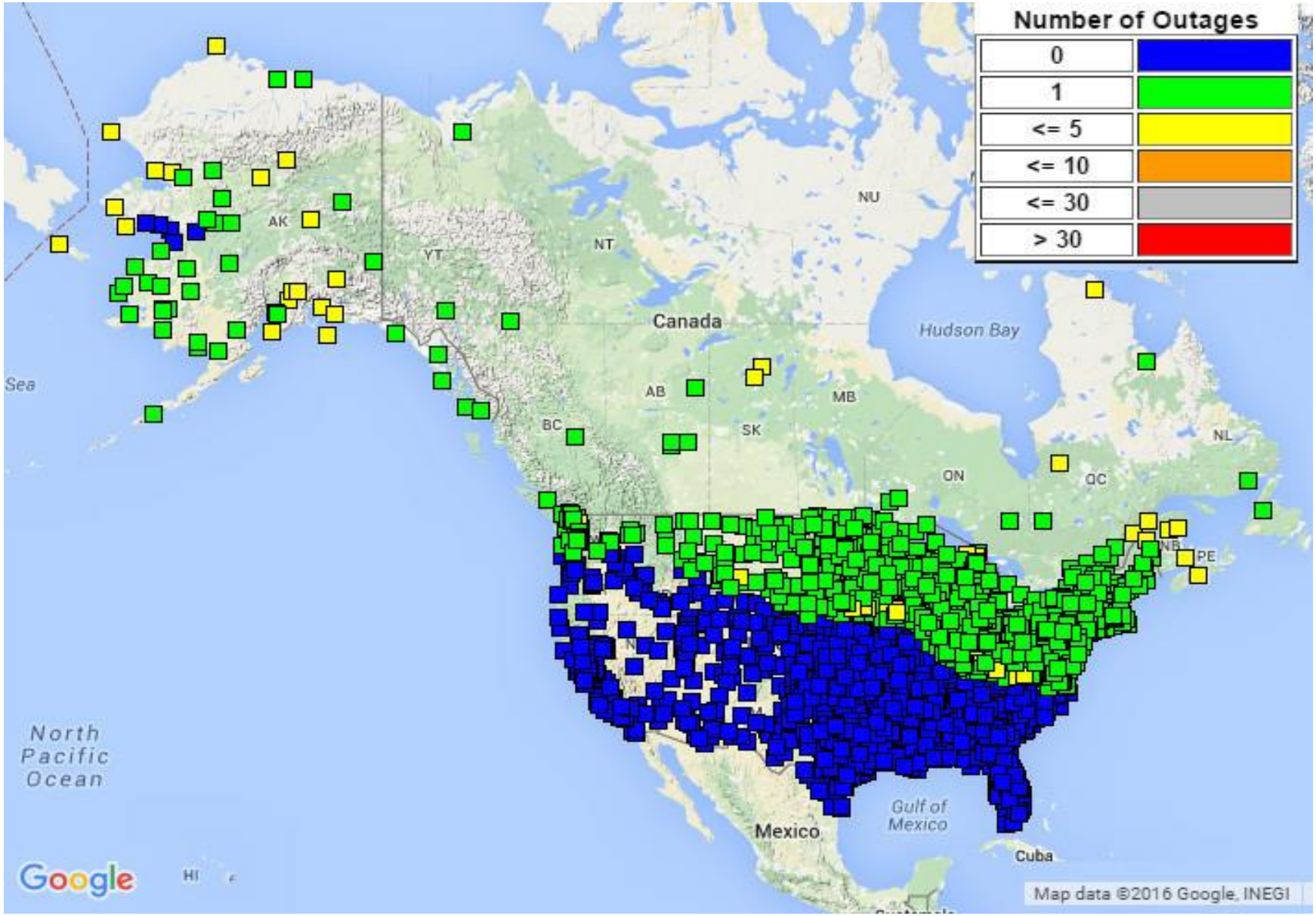


Figure 8-3 WAAS LPV Availability Airports in the US and Canada with GPS RNAV IAPs

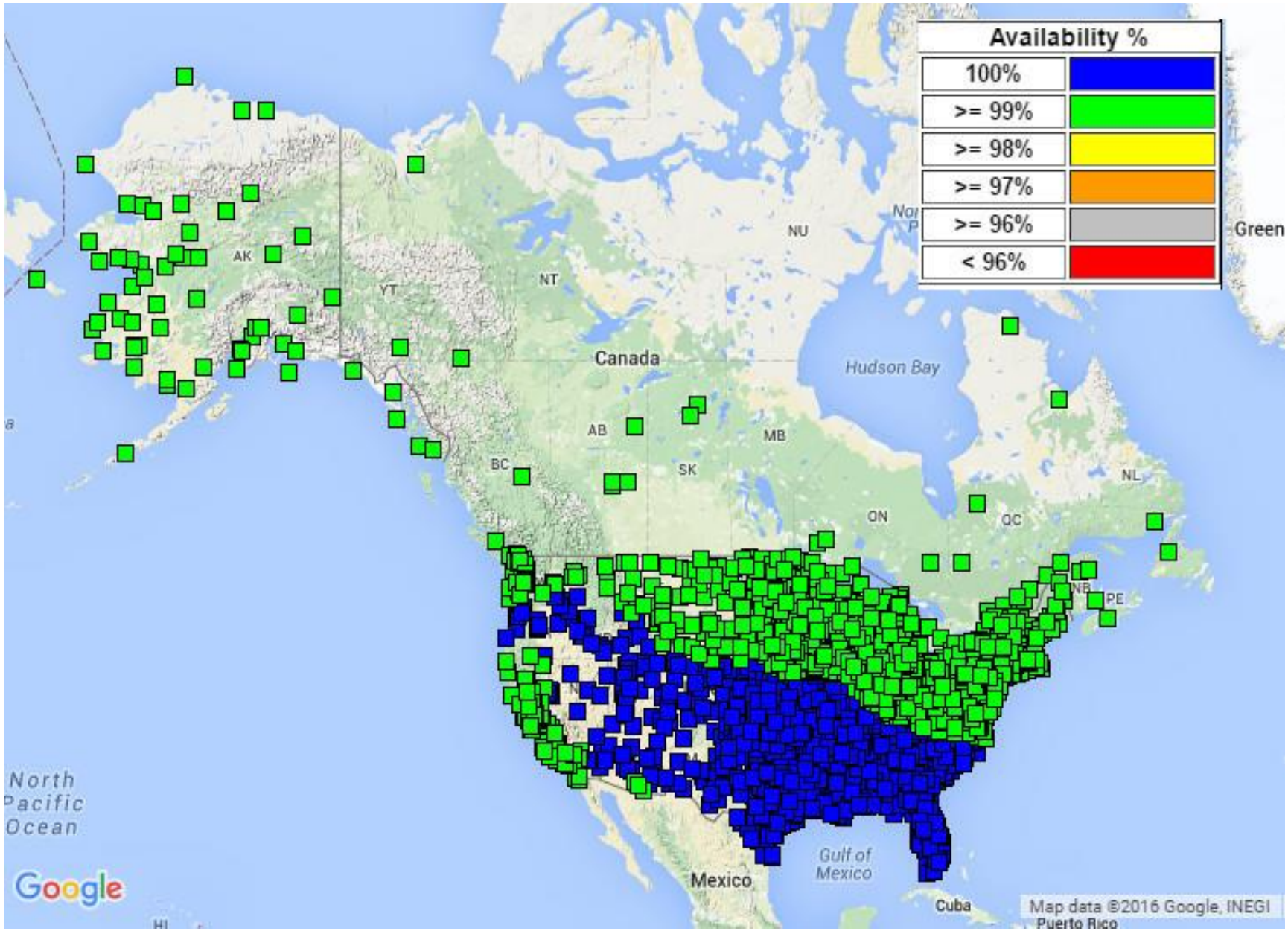


Figure 8-4 WAAS LPV Outages at Airports in the US and Canada with GPS RNAV IAPs

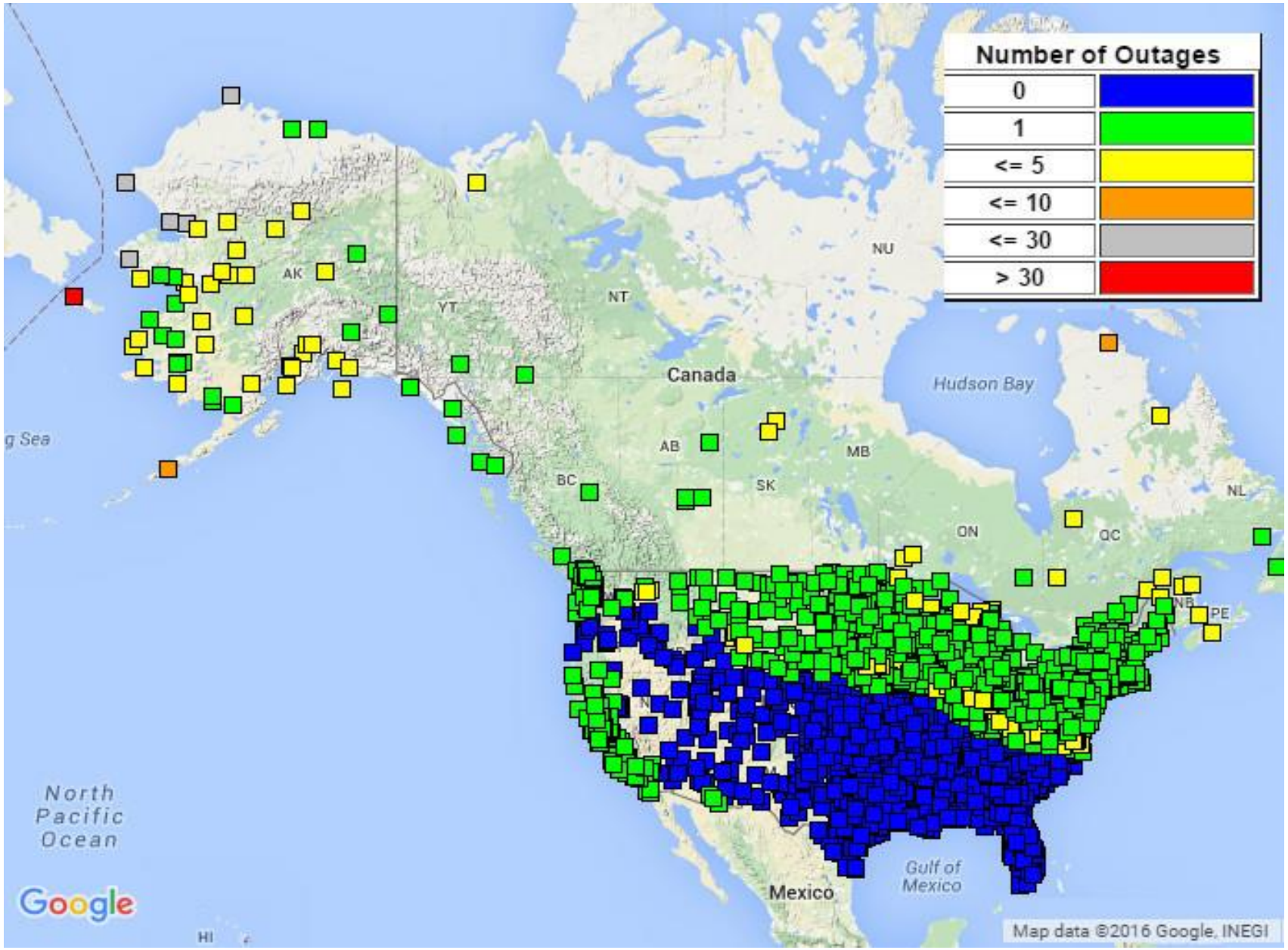


Figure 8-5 WAAS LPV200 Availability at Airports in the US and Canada with GPS RNAV IAPs

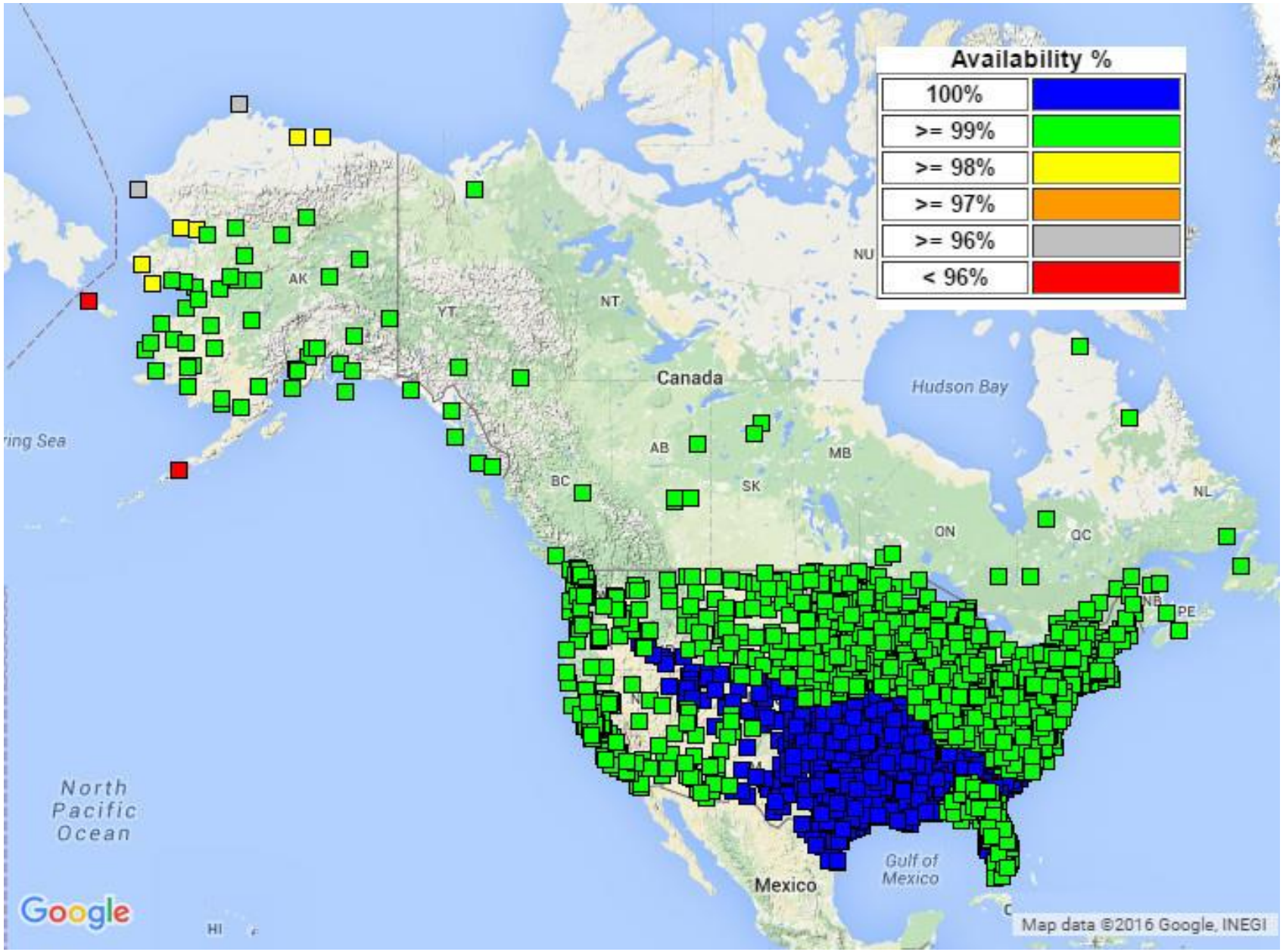
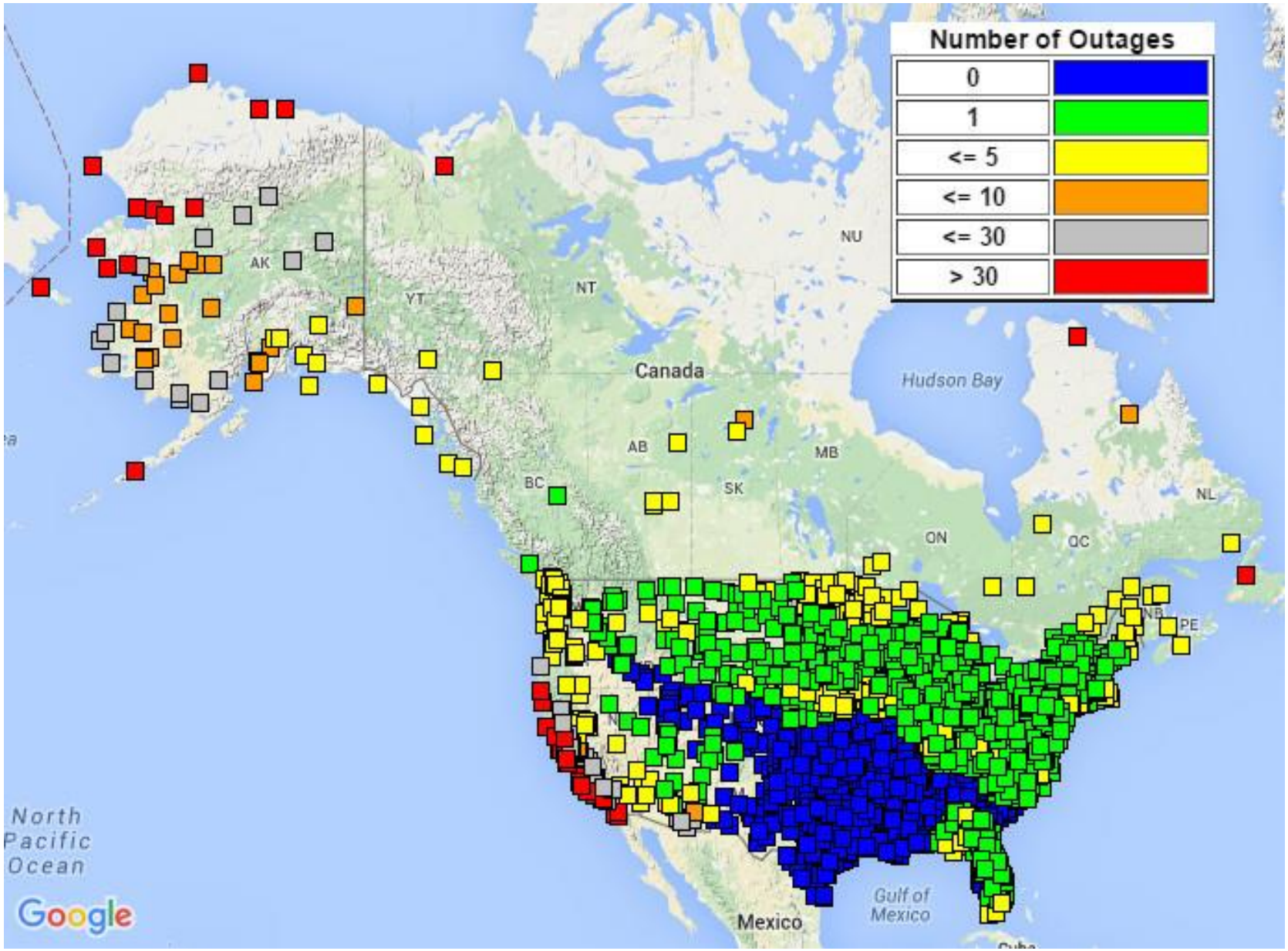


Figure 8-6 WAAS LPV200 Outages at Airports in the US and Canada with GPS RNAV IAPs



9.0 WAAS CODE NOISE AND MULTIPATH (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 in order 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 WRS producing persistent unbounded measurement errors is negligible. This off-line 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 in length 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	Apr 15	May 15	Jun 15	Jul 15	Aug 15	Sep 15	Oct 15	Nov 15	Dec 15	Jan 16	Feb 16	Mar 16
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	●	●	●	●	●	●	●	●	●	●	●	●

- ● **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

WAAS Site	WRE	Apr 15	May 15	Jun 15	Jul 15	Aug 15	Sep 15	Oct 15	Nov 15	Dec 15	Jan 16	Feb 16	Mar 16
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 WAAS REFERENCE STATION SURVEY VALIDATION

The antenna L1 phase center position surveys were performed for all WAAS WRE antennas using 24-hour data sets from 00:00 to 23:59:30 on April 1, 2016. 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. MSD Thread A (MSD1) was not operational for the majority of the quarter and was not evaluated.

Duplicate surveys were performed using both the National Geodetic Survey (NGS) Online Positioning User Service (OPUS) and the Canadian Spatial Reference System (CSRS) Precise Point Positioning (PPP) service. The IGS08 reference frame is used for the OPUS solutions. A value of -0.4445 meters was used for the antenna reference point (ARP) to antenna phase center (APC) offset for the MicroPulse MPL-WAAS-2225W WAAS antennas in the processing of the data.

The OPUS-reported RMS quality metrics were less than 2.4 cm. The CSRS surveys' RSSs of the reported ECEF sigmas were less than 10 mm. The OPUS and CSRS surveys agreed to an average of 1.5 cm. with a standard deviation of 7 mm. The maximum of difference was 4.2 cm for Thread 3 at Houston, TX. Threads A and B at Houston were outliers at 3.7 cm and 3.4 cm, respectively.

The OPUS positions were compared to the positions in the currently fielded WAAS software Build W7.126, which was fielded starting in August 2015. The OPUS surveys agree with the Build W7.126 positions better or equal to 5.2 cm for all sites, with the maximum of 5.2 cm at Barrow Thread C (BRW3). For Build W7.126 the maximum differences were at Barrow (5.2 cm) and Houston (4.2 cm). The antenna positions are interpolated forward in time. Build W7.126 positions are just after to the beginning of the interpolation useable period.

Table 10-1 shows the WAAS antenna L1 phase center positions using the OPUS data. Figures 10-1 to 10-3 show the RSS of the ECEF differences between the OPUS survey antenna phase center locations and the locations in the Build W7.126 software. Figures 10-4 to 10-6 show the OPUS surveys overall RMS quality indications.

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 allowance at Mexico City is required because of the rapid subsidence in Mexico City (approximately 28 to 30 cm/year).

Figures 10-7 to 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. Figures 10-10 to 10-12 show the RSS of the ECEF sigma's survey qualities reported by CSRS.

Figures 10-13 to 10-15 show the RSS of the ECEF differences between the OPUS survey antenna phase center locations and the locations in the Build W7.126 software.

Table 10-1 WAAS Antenna Positions (OPUS IGS08) as of 4/1/2016

WRE	X(m)	Y(m)	Z(m)	Latitude	Longitude	H(m)
BET1	-2965385.104	-972576.617	5543892.865	60.787915	-161.841725	52.180
BET2	-2965385.876	-972580.339	5543891.806	60.787895	-161.841665	52.180
BET3	-2965388.443	-972577.476	5543890.944	60.787880	-161.841730	52.183
BIL1	-1416445.914	-4223577.017	4550862.126	45.803707	-108.539723	1112.232
BIL2	-1416449.998	-4223574.882	4550862.858	45.803716	-108.539782	1112.251
BIL3	-1416441.613	-4223574.274	4550865.988	45.803756	-108.539682	1112.235
BRW1	-1886758.970	-809058.661	6018494.452	71.282764	-156.789925	15.562
BRW2	-1886756.381	-809055.909	6018495.631	71.282797	-156.789967	15.567
BRW3	-1886755.287	-809059.691	6018495.448	71.282793	-156.789858	15.550
CDB1	-3484099.103	-1084748.775	5213678.599	55.192374	-162.706405	49.698
CDB2	-3484105.741	-1084741.574	5213675.653	55.192328	-162.706544	49.675
CDB3	-3484112.016	-1084734.805	5213672.904	55.192284	-162.706675	49.690
FAI1	-2304741.865	-1448715.285	5748843.656	64.809630	-147.847341	149.930
FAI2	-2304741.392	-1448706.475	5748846.047	64.809680	-147.847493	149.927
FAI3	-2304732.858	-1448707.412	5748849.189	64.809747	-147.847381	149.908
HNL1	-5508637.131	-2234493.083	2303722.314	21.312991	-157.920830	24.661
HNL2	-5508656.303	-2234483.403	2303687.070	21.312649	-157.920986	25.012
HNL3	-5508647.713	-2234497.336	2303694.166	21.312717	-157.920830	25.055
JNU1	-2354254.954	-2388549.659	5407043.106	58.362574	-134.585708	16.119
JNU2	-2354252.866	-2388565.769	5407036.940	58.362469	-134.585489	16.119
JNU3	-2354239.643	-2388568.620	5407041.396	58.362545	-134.585294	16.109
MMD1	35070.397	-5959686.672	2264365.779	20.931909	-89.662841	29.128
MMD2	35065.468	-5959687.031	2264364.992	20.931902	-89.662888	29.155
MMD3	35065.130	-5959685.230	2264369.648	20.931947	-89.662891	29.135
MMX1	-948700.969	-5943934.617	2109212.380	19.431654	-99.068390	2234.547
MMX2	-948696.538	-5943934.464	2109214.811	19.431677	-99.068348	2234.554
MMX3	-948705.403	-5943934.824	2109209.963	19.431630	-99.068431	2234.594
MPR1	-1570142.240	-5759530.596	2238184.763	20.679003	-105.249203	10.978
MPR2	-1570139.415	-5759530.100	2238188.809	20.679041	-105.249179	11.264
MPR3	-1570143.527	-5759527.979	2238190.577	20.679059	-105.249222	10.986
MSD1						
MSD2	-1979521.471	-5523225.271	2493100.475	23.160385	-109.717657	104.264
MSD3	-1979525.916	-5523222.001	2493104.144	23.160421	-109.717708	104.255
MTP1	-254854.379	-6162909.168	1617805.075	14.791366	-92.367999	54.947
MTP2	-254850.751	-6162910.190	1617801.630	14.791334	-92.367965	54.910
MTP3	-254855.519	-6162910.309	1617800.117	14.791320	-92.368010	54.829
OTZ1	-2396056.071	-750356.170	5843502.493	66.887332	-162.611373	10.885
OTZ2	-2396052.901	-750354.340	5843504.012	66.887366	-162.611391	10.880
OTZ3	-2396052.879	-750358.279	5843503.525	66.887355	-162.611305	10.886
YFB1	1035381.393	-2634289.647	5696539.551	63.731491	-68.543184	10.031
YFB2	1035372.187	-2634296.056	5696538.188	63.731464	-68.543405	9.958
YFB3	1035366.102	-2634306.824	5696534.420	63.731387	-68.543600	10.030
YQX1	2430424.580	-3419640.395	4788223.841	48.966490	-54.597633	146.866
YQX2	2430432.543	-3419639.058	4788220.795	48.966448	-54.597534	146.881
YQX3	2430440.445	-3419637.690	4788217.784	48.966407	-54.597435	146.883

WRE	X(m)	Y(m)	Z(m)	Latitude	Longitude	H(m)
YWG1	-520164.435	-4083475.950	4855843.030	49.900574	-97.259398	222.104
YWG2	-520150.564	-4083468.890	4855850.424	49.900677	-97.259219	222.120
YWG3	-520152.438	-4083478.009	4855842.603	49.900568	-97.259229	222.117
YYR1	1885341.376	-3321428.368	5091171.677	53.308647	-60.419469	37.854
YYR2	1885344.332	-3321419.889	5091176.093	53.308714	-60.419368	37.861
YYR3	1885340.051	-3321413.072	5091182.094	53.308804	-60.419373	37.868
ZAB1	-1488636.877	-5003946.544	3654557.699	35.173575	-106.567350	1620.132
ZAB2	-1488631.541	-5003948.221	3654557.673	35.173575	-106.567289	1620.187
ZAB3	-1488632.320	-5003950.801	3654553.816	35.173532	-106.567289	1620.168
ZAN1	-2659536.699	-1549114.762	5567750.740	61.229201	-149.780252	80.699
ZAN2	-2659548.450	-1549110.807	5567746.247	61.229118	-149.780425	80.690
ZAN3	-2659541.408	-1549106.679	5567750.727	61.229201	-149.780426	80.688
ZAU1	138704.074	-4761244.139	4227763.930	41.782658	-88.331337	195.884
ZAU2	138704.333	-4761248.756	4227758.768	41.782596	-88.331336	195.892
ZAU3	138711.038	-4761248.492	4227758.848	41.782597	-88.331255	195.894
ZBW1	1490299.172	-4448983.174	4306010.506	42.735721	-71.480426	39.112
ZBW2	1490304.288	-4448981.164	4306010.854	42.735725	-71.480359	39.142
ZBW3	1490305.996	-4448984.787	4306006.539	42.735672	-71.480354	39.135
ZDC1	1069125.718	-4839598.987	4001126.513	39.101596	-77.542747	80.060
ZDC2	1069128.116	-4839603.621	4001120.308	39.101524	-77.542732	80.059
ZDC3	1069124.012	-4839602.703	4001122.501	39.101549	-77.542776	80.060
ZDV1	-1273628.650	-4711375.569	4094890.097	40.187303	-105.127225	1541.350
ZDV2	-1273622.944	-4711377.077	4094890.106	40.187303	-105.127156	1541.331
ZDV3	-1273624.953	-4711380.277	4094885.817	40.187253	-105.127168	1541.323
ZFW1	-659983.232	-5324060.772	3438276.464	32.830650	-97.066472	155.614
ZFW2	-659988.493	-5324063.324	3438271.466	32.830596	-97.066525	155.576
ZFW3	-659983.523	-5324063.850	3438271.677	32.830598	-97.066471	155.616
ZHU1	-513864.499	-5506451.704	3166720.481	29.961896	-95.331427	10.854
ZHU2	-513867.150	-5506455.102	3166714.319	29.961832	-95.331451	10.922
ZHU3	-513873.429	-5506457.753	3166708.725	29.961774	-95.331513	10.920
ZJX1	772646.412	-5434462.199	3237231.751	30.698860	-81.908185	2.145
ZJX2	772649.736	-5434463.742	3237228.348	30.698824	-81.908153	2.124
ZJX3	772645.675	-5434466.179	3237225.245	30.698792	-81.908199	2.123
ZKC1	-415247.555	-4954556.387	3982161.112	38.880159	-94.790834	305.896
ZKC2	-415231.162	-4954557.706	3982161.165	38.880160	-94.790645	305.887
ZKC3	-415237.282	-4954561.059	3982155.971	38.880102	-94.790712	305.626
ZLA1	-2474409.995	-4637294.598	3602183.554	34.603519	-118.083896	763.509
ZLA2	-2474404.718	-4637297.400	3602183.561	34.603519	-118.083831	763.503
ZLA3	-2474411.326	-4637297.082	3602179.581	34.603475	-118.083896	763.572
ZLC1	-1808273.254	-4486410.818	4145303.006	40.786043	-111.952178	1287.432
ZLC2	-1808274.653	-4486414.441	4145298.521	40.785990	-111.952177	1287.442
ZLC3	-1808270.442	-4486416.143	4145298.511	40.785990	-111.952124	1287.439
ZMA1	966042.274	-5662999.812	2761581.502	25.824612	-80.319190	-7.600
ZMA2	966029.299	-5662999.118	2761585.996	25.824660	-80.319316	-8.222
ZMA3	966037.378	-5662997.946	2761586.346	25.824662	-80.319235	-7.887

WRE	X(m)	Y(m)	Z(m)	Latitude	Longitude	H(m)
ZME1	4070.855	-5226189.289	3644028.420	35.067394	-89.955370	68.595
ZME2	4070.884	-5226186.739	3644032.533	35.067438	-89.955370	68.871
ZME3	4064.691	-5226186.615	3644032.691	35.067440	-89.955438	68.856
ZMP1	-249978.424	-4539297.501	4458955.052	44.637463	-93.152086	262.657
ZMP2	-249972.623	-4539297.840	4458955.053	44.637463	-93.152013	262.671
ZMP3	-249973.722	-4539302.122	4458950.582	44.637407	-93.152024	262.615
ZNY1	1406144.591	-4627343.989	4144322.065	40.784329	-73.097166	6.449
ZNY2	1406146.387	-4627347.019	4144317.283	40.784276	-73.097156	5.916
ZNY3	1406140.830	-4627348.676	4144317.323	40.784276	-73.097225	5.919
ZOA1	-2684436.928	-4293337.344	3865351.885	37.543054	-122.015949	-3.506
ZOA2	-2684433.926	-4293341.436	3865349.475	37.543027	-122.015895	-3.485
ZOA3	-2684438.289	-4293342.298	3865345.606	37.542982	-122.015932	-3.429
ZOB1	650770.145	-4754715.671	4187420.754	41.297155	-82.206445	223.679
ZOB2	650777.822	-4754714.841	4187422.771	41.297167	-82.206353	225.174
ZOB3	650776.153	-4754719.675	4187414.986	41.297087	-82.206381	223.465
ZSE1	-2308930.290	-3668169.670	4663526.459	47.286993	-122.188373	82.089
ZSE2	-2308934.685	-3668175.219	4663520.058	47.286908	-122.188383	82.160
ZSE3	-2308935.747	-3668179.502	4663516.118	47.286856	-122.188365	82.107
ZSU1	2462589.455	-5529372.106	2003724.507	18.431336	-65.993477	-28.094
ZSU2	2462587.522	-5529377.468	2003712.213	18.431219	-65.993514	-28.080
ZSU3	2462594.153	-5529375.214	2003710.137	18.431199	-65.993448	-28.131
ZTL1	529840.366	-5305248.814	3489342.852	33.379689	-84.296726	261.136
ZTL2	529846.740	-5305247.967	3489343.135	33.379692	-84.296657	261.117
ZTL3	529847.424	-5305251.409	3489337.903	33.379635	-84.296654	261.155

Figure 10-1 Build W7.126 Antenna Positions Deltas OPUS Survey

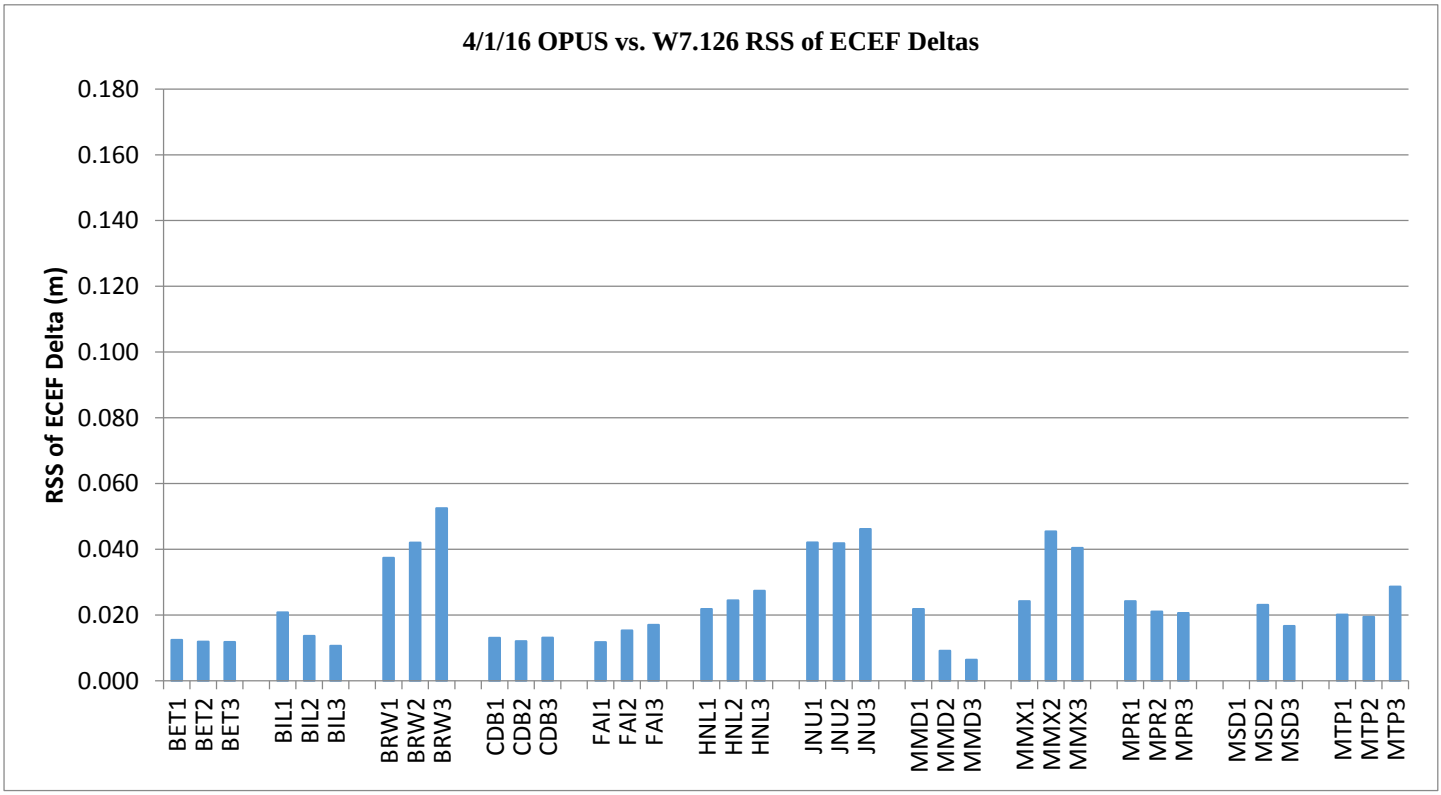


Figure 10-2 Build W7.126 Antenna Positions Deltas OPUS Survey

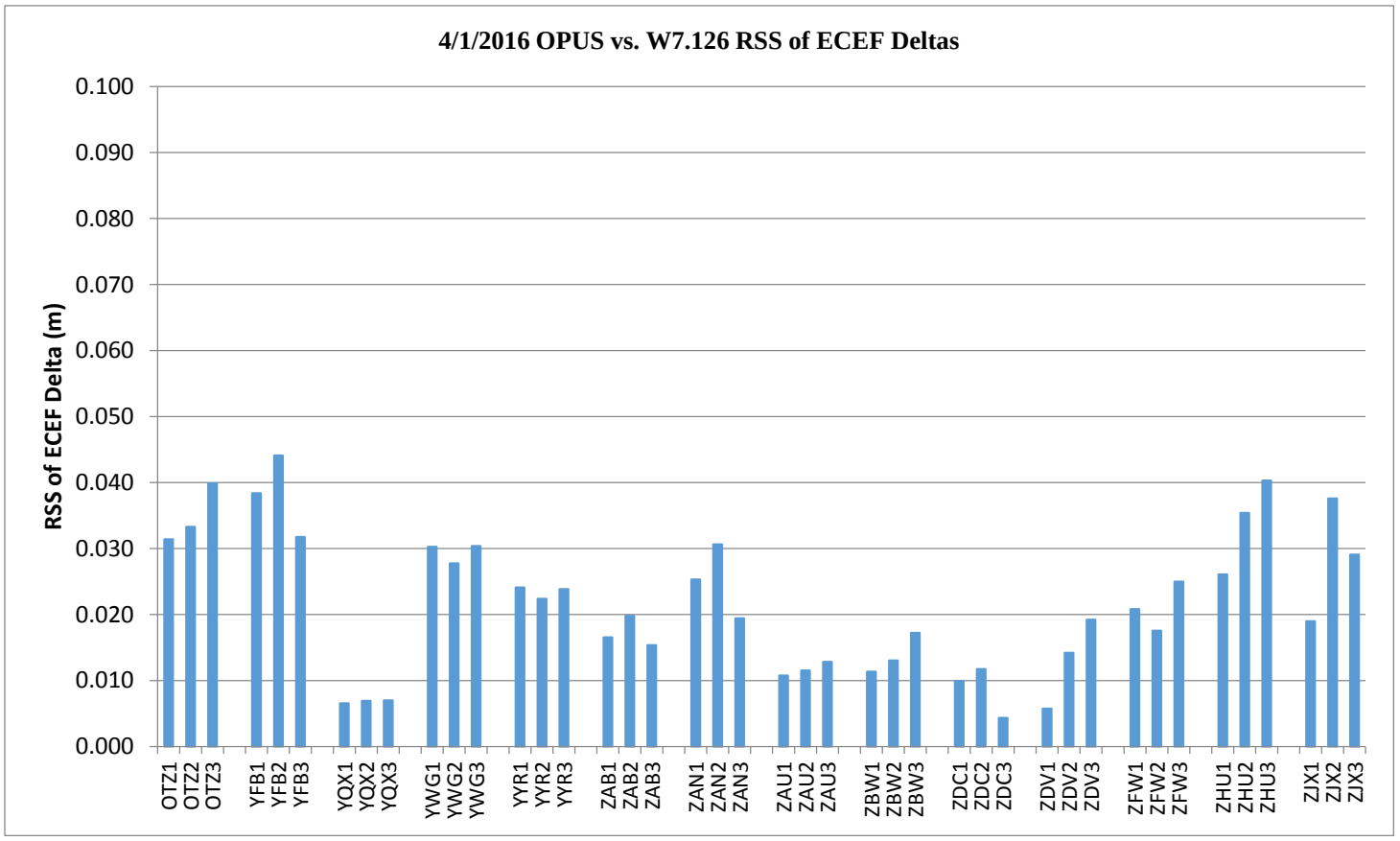


Figure 10-3 Build W7.126 Antenna Positions Deltas OPUS Survey

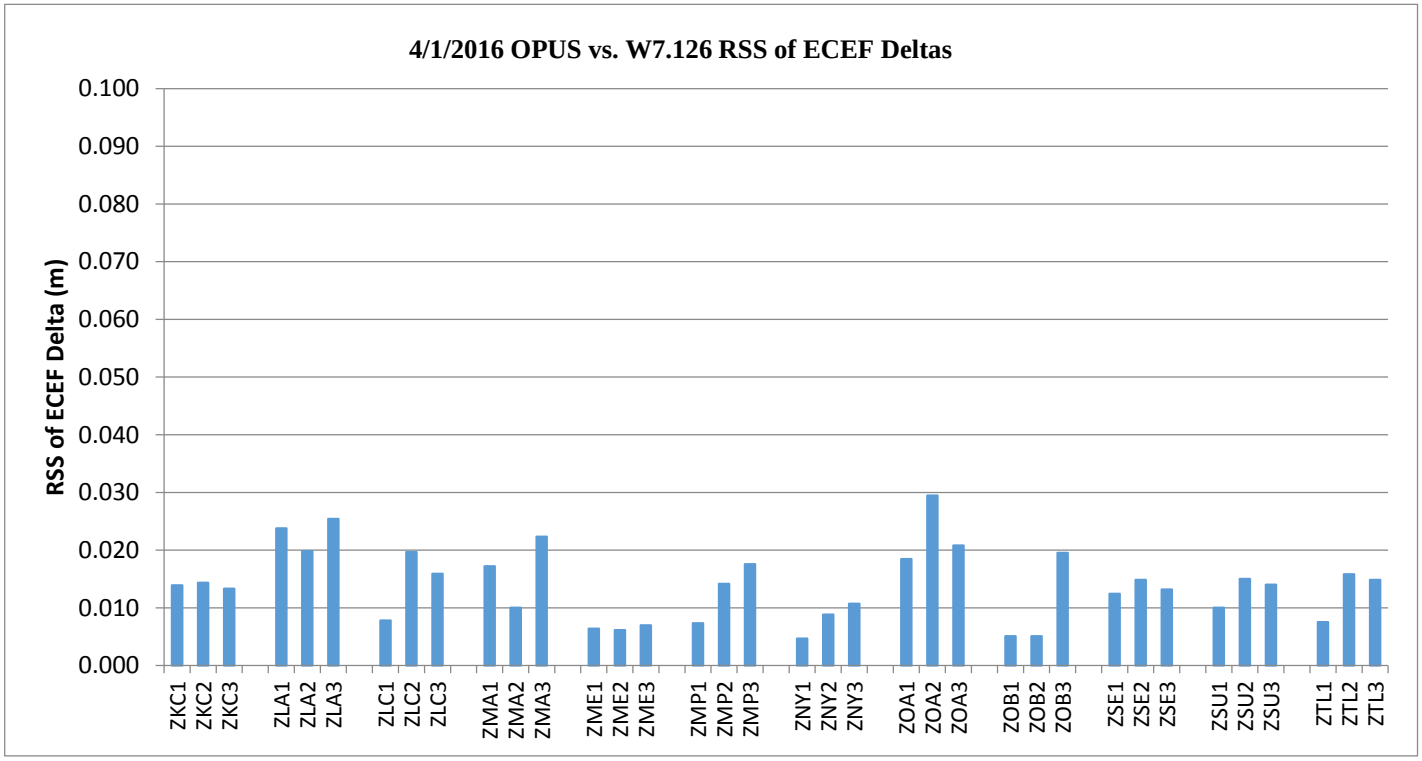


Figure 10-4 OPUS Survey Overall RMS Qualities

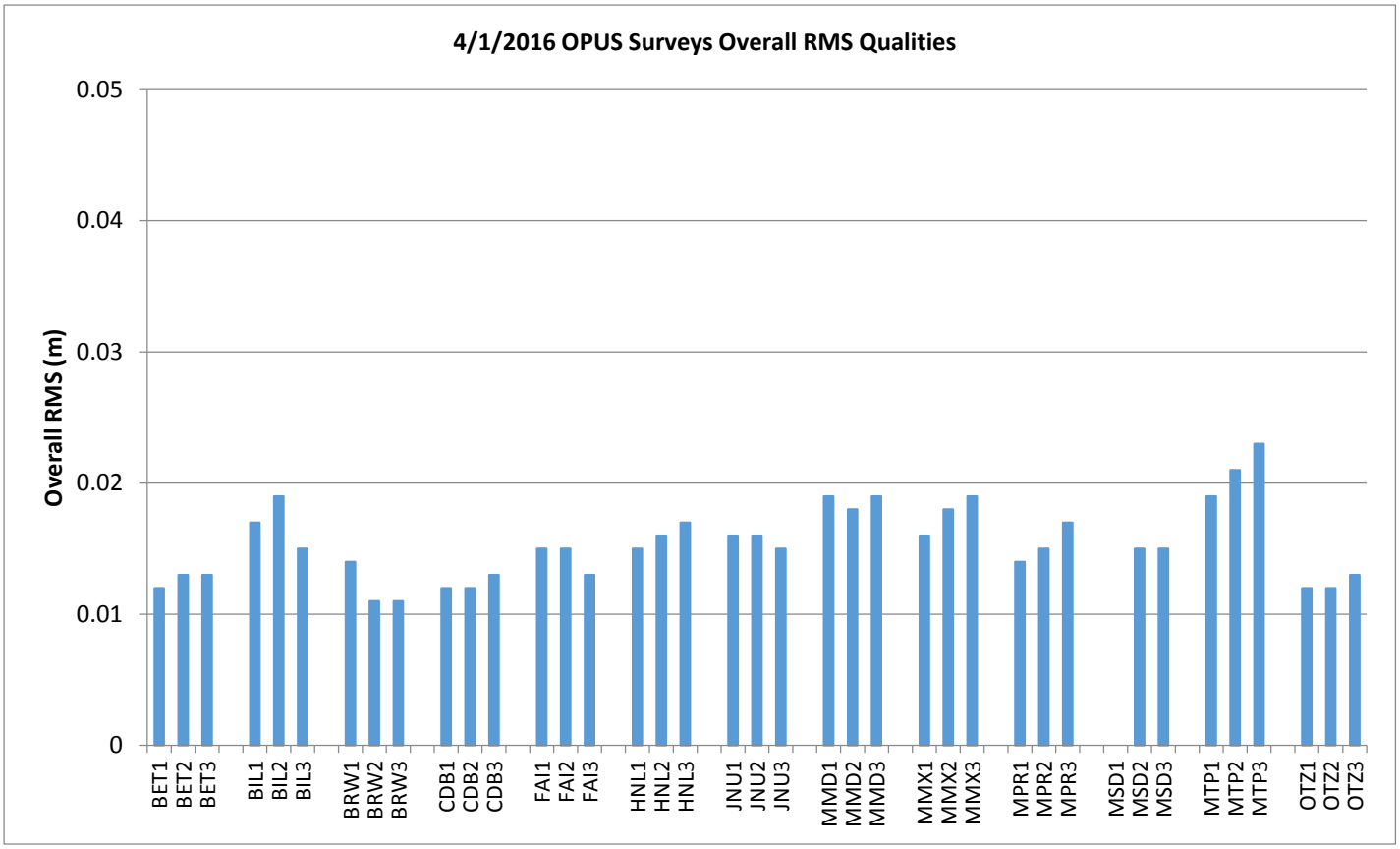


Figure 10-5 OPUS Survey Overall RMS Qualities

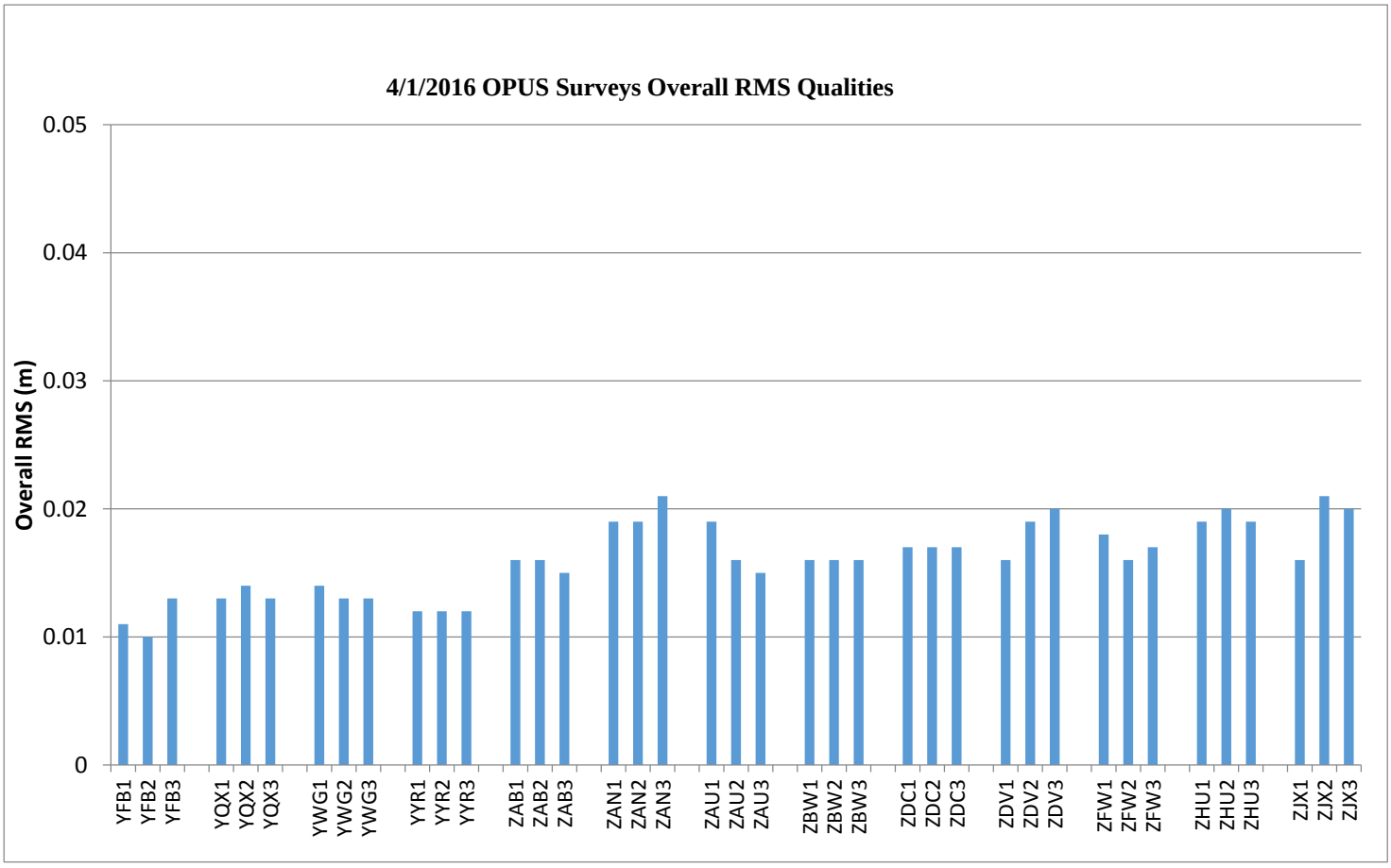


Figure 10-6 OPUS Survey Overall RMS Qualities

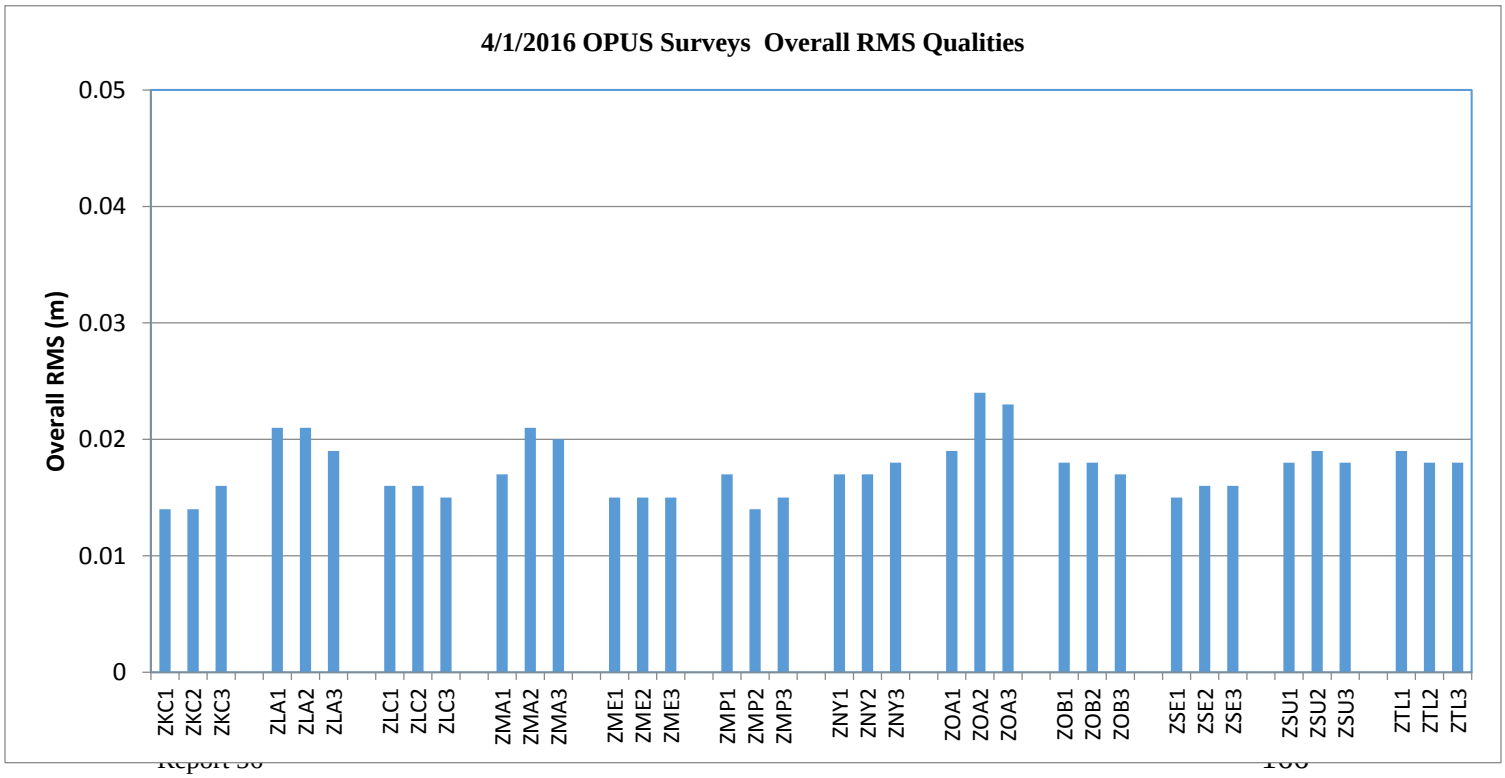


Figure 10-7 OPUS vs. CSRS RSS ECEF Deltas

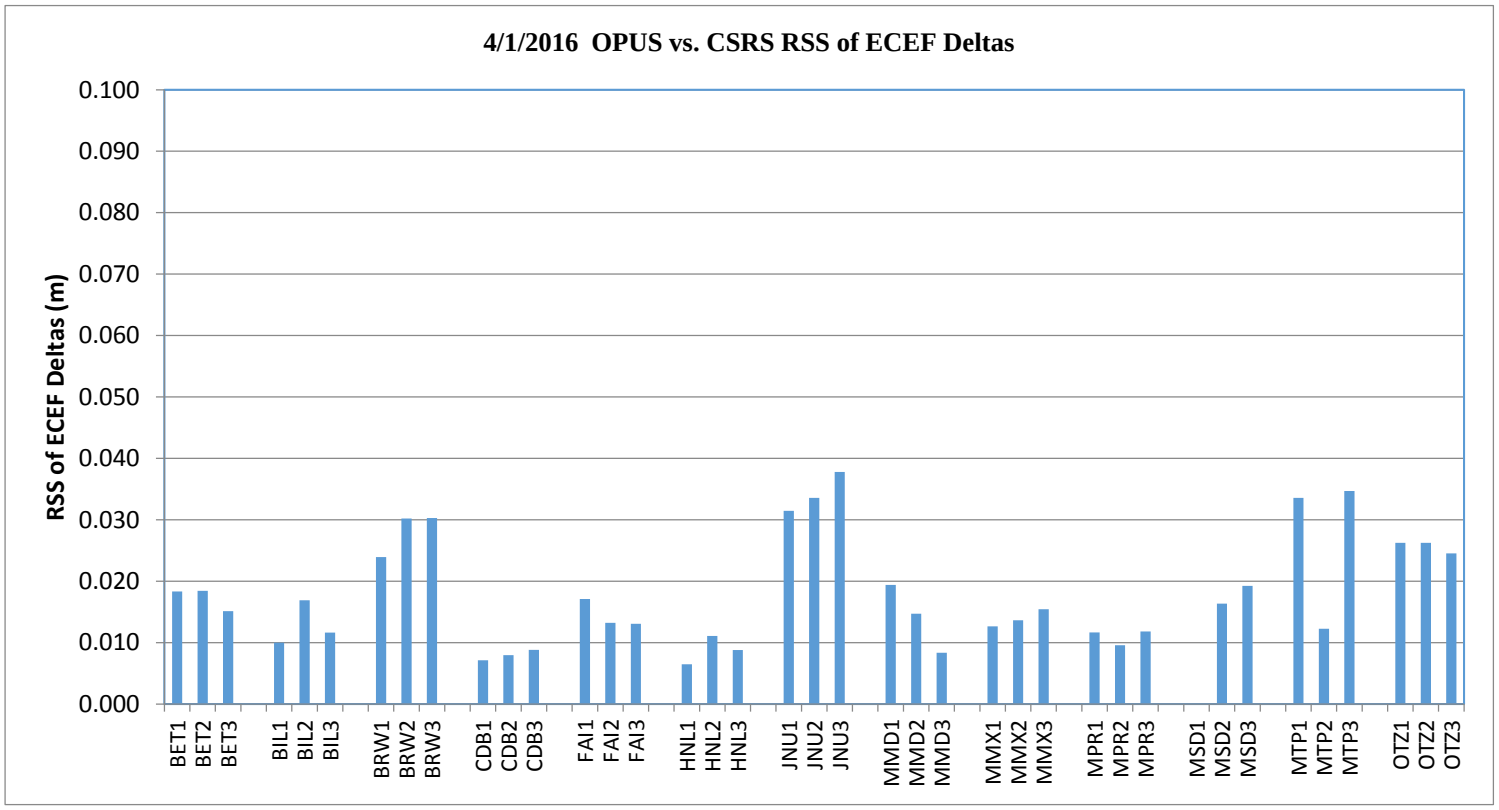


Figure 10-8 OPUS vs. CSRS RSS ECEF Deltas

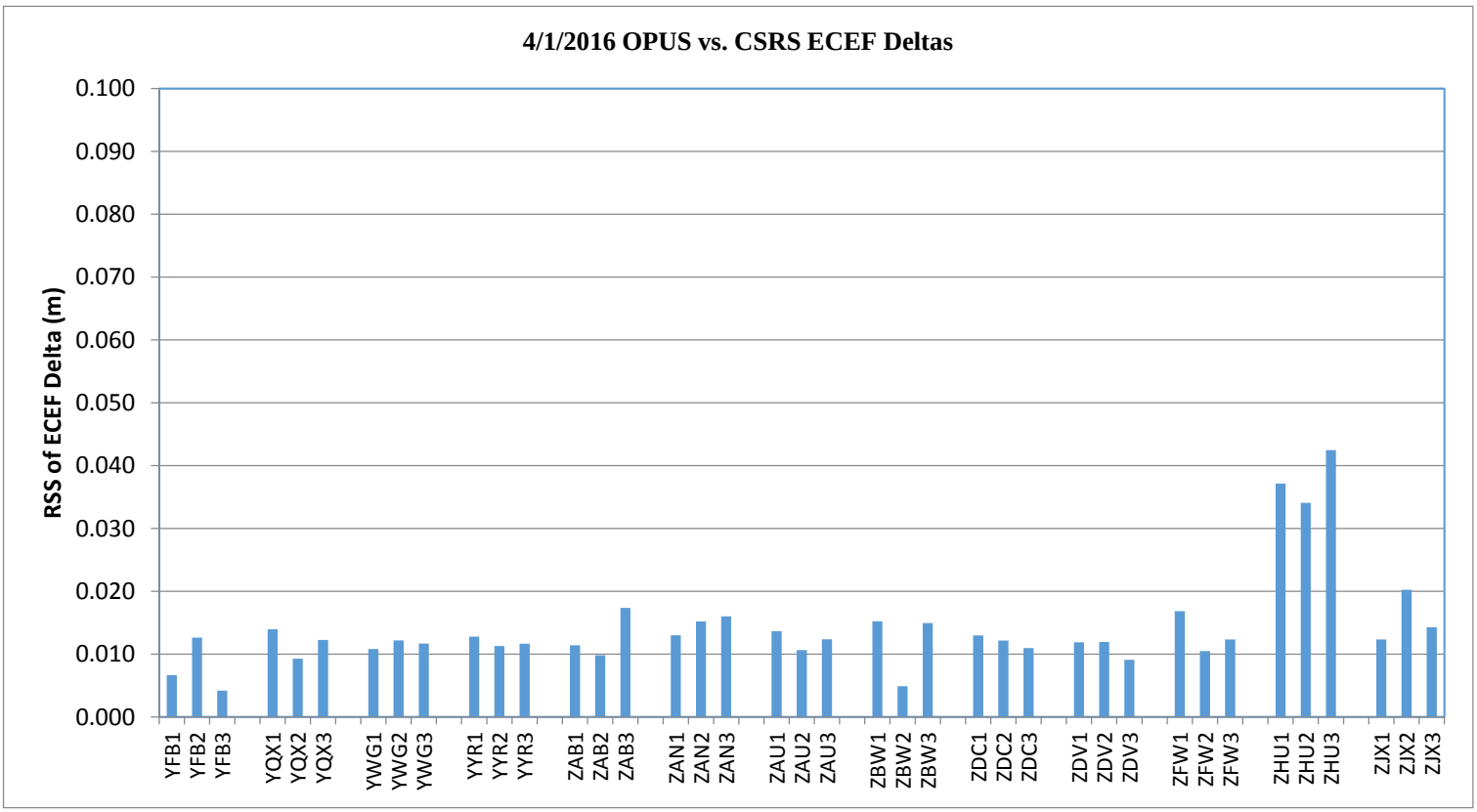


Figure 10-9 OPUS vs. CSRS RSS ECEF Deltas

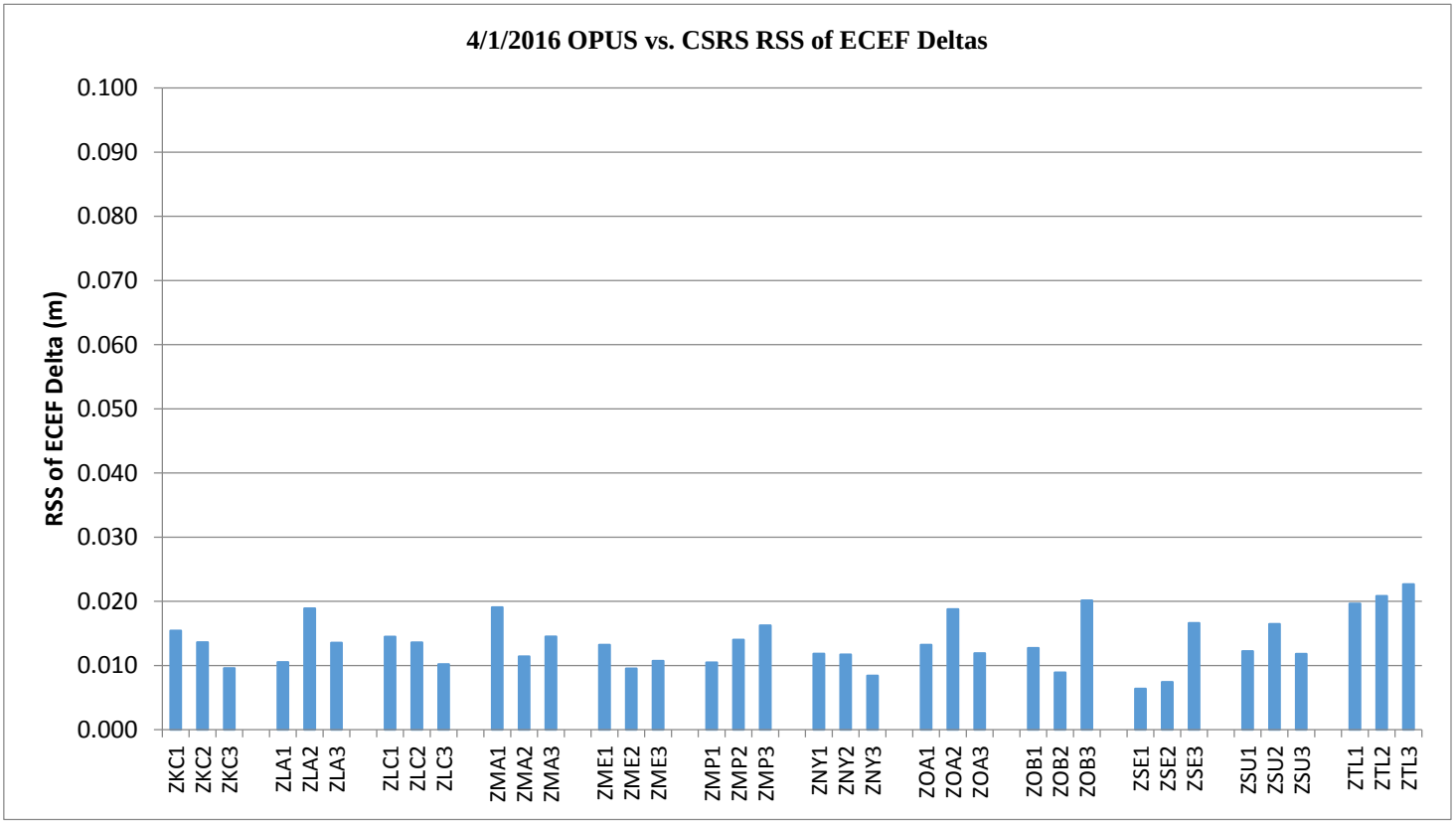


Figure 10-10 CSRS Survey Qualities

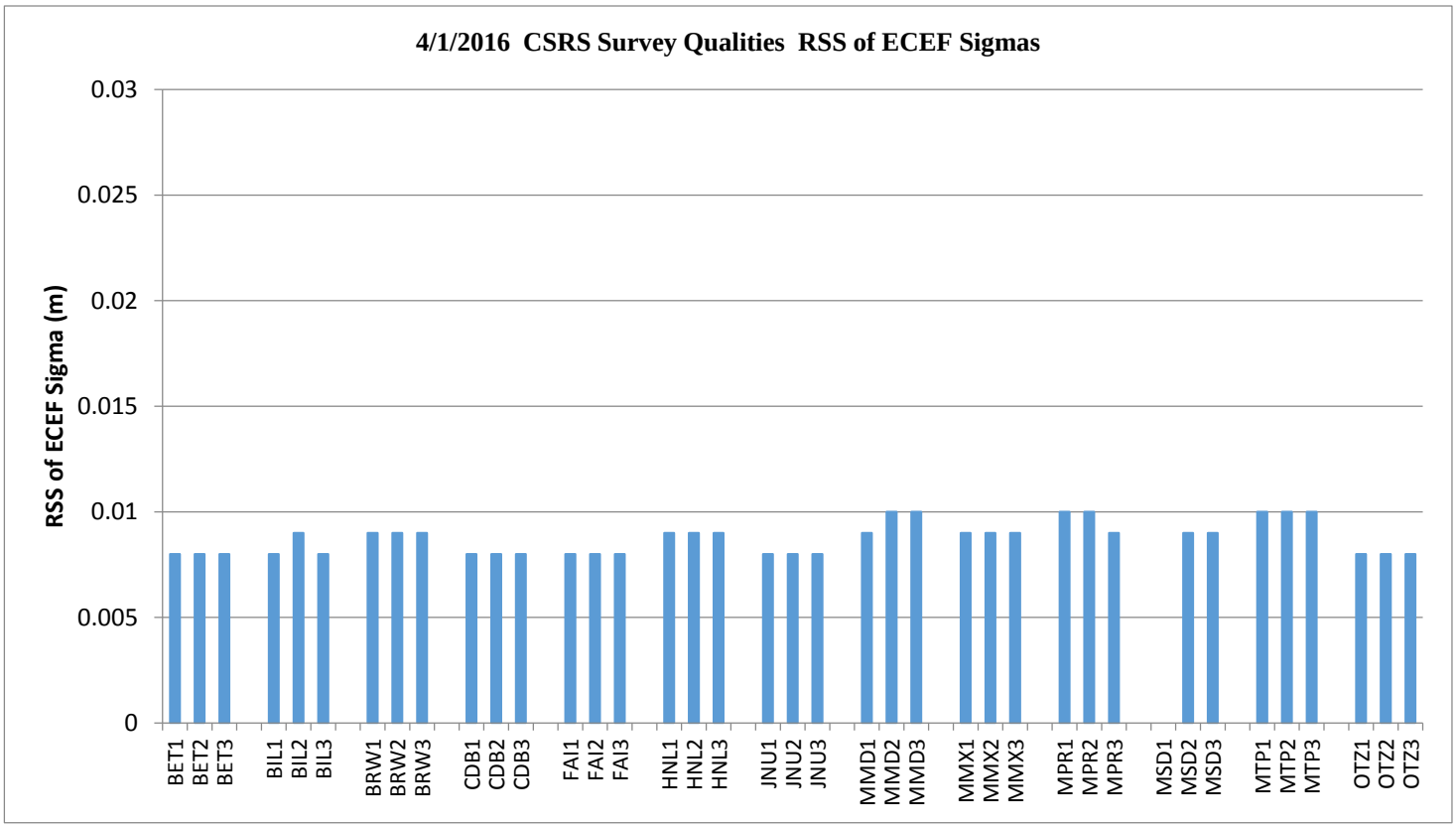


Figure 10-11 CSRS Survey Qualities

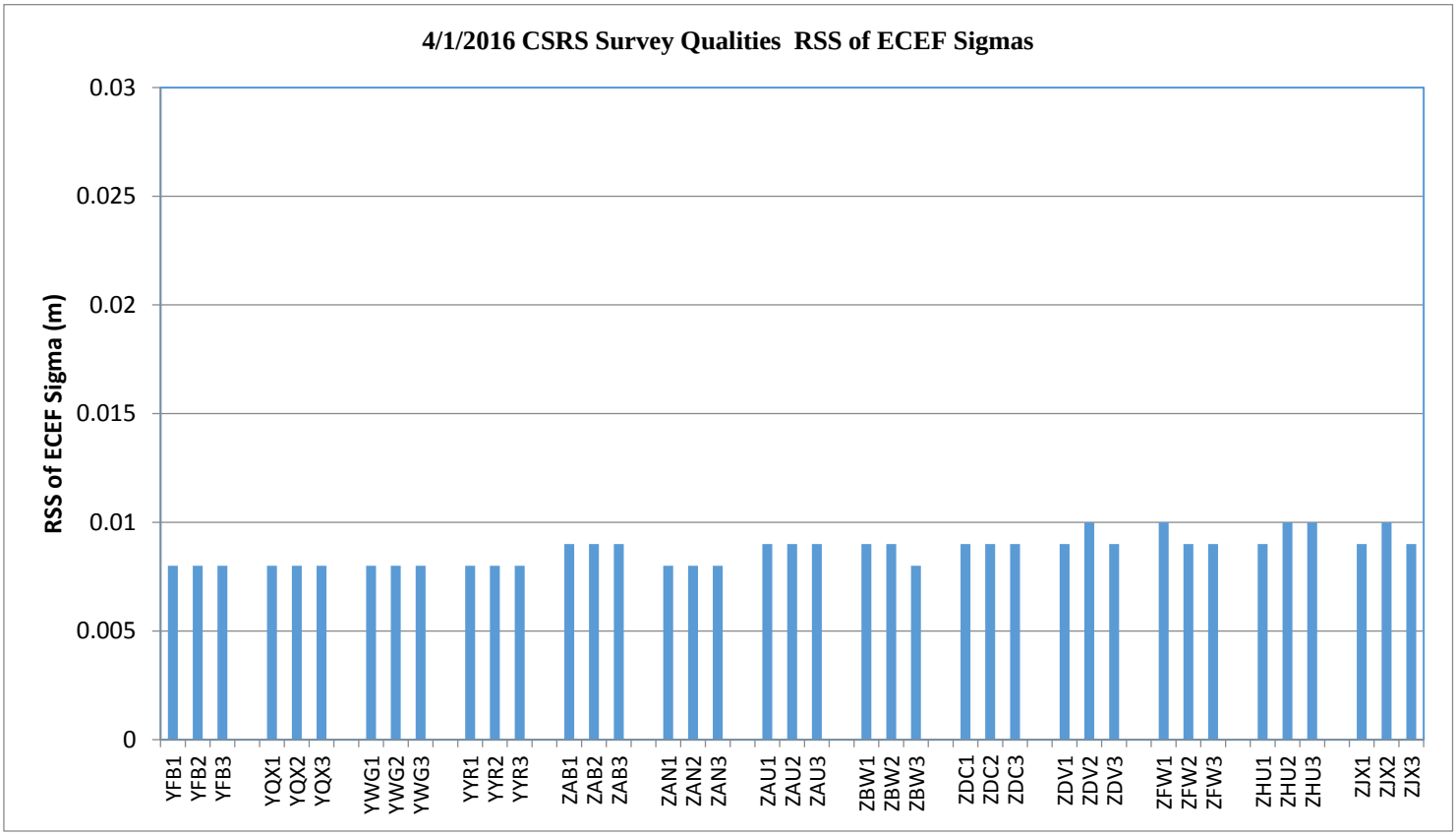
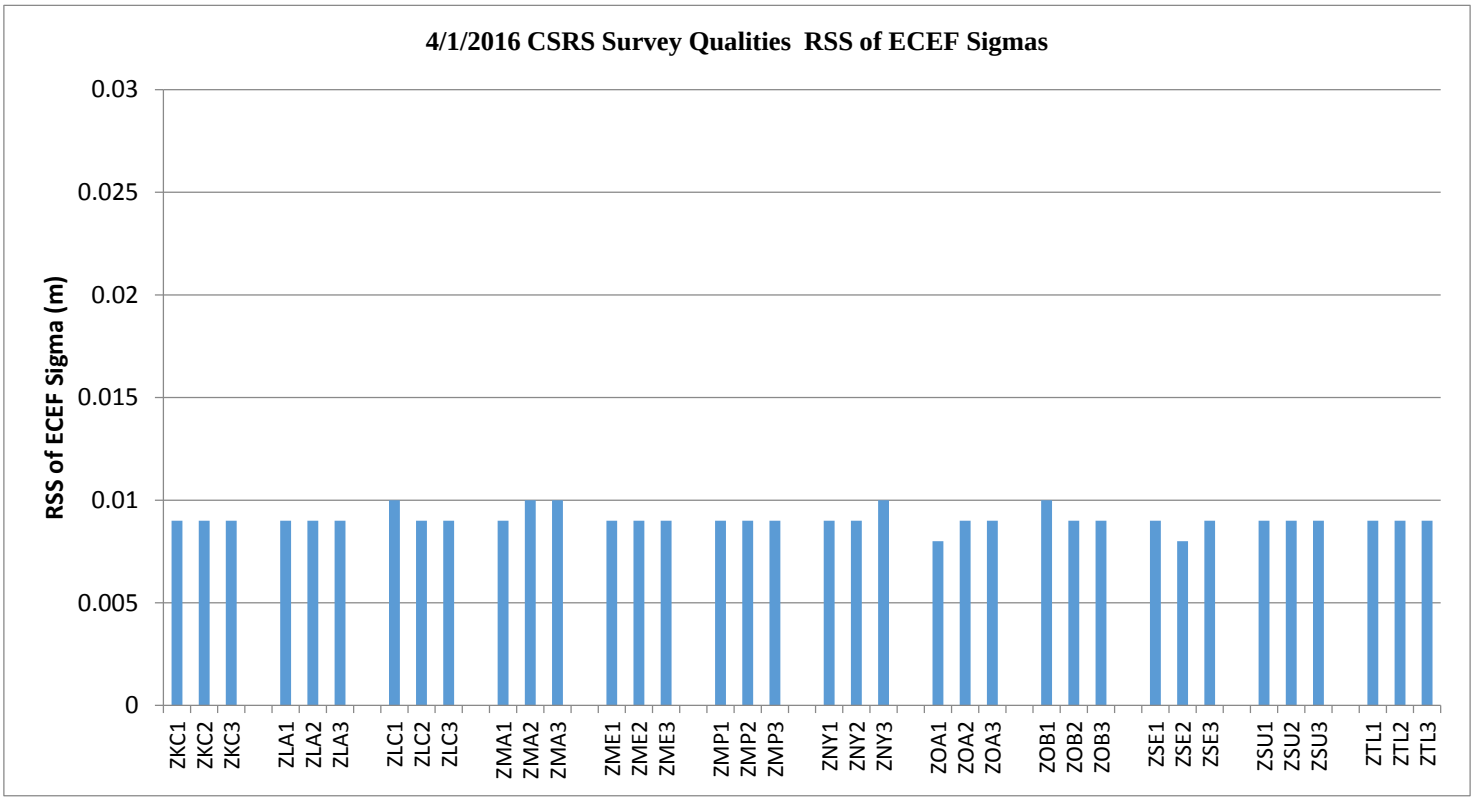


Figure 10-12 CSRS Survey Qualities



11.0 SIGNAL QUALITY MONITOR (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 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

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). 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, GEO-type biases are 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. The shifts in the type biases in Figure 11-1 were due to SQM data from G2 and G3 receivers, with 87 G3 receivers at the end of the quarter.

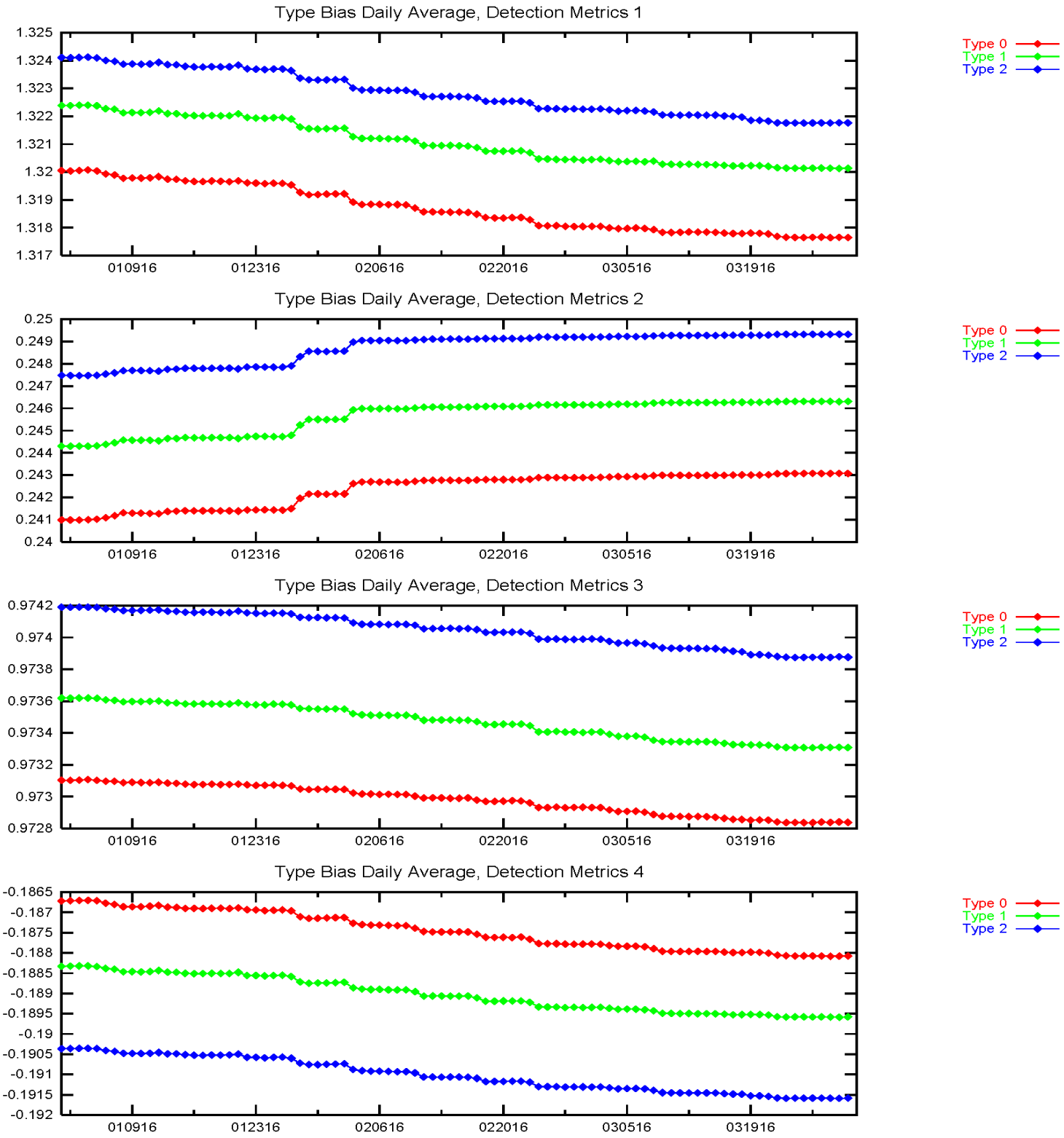
Table 11-2 Type Bias Average for the Quarter

Detection Metric	Type 0	Type 1	Type 2
DM 1	1.3186900	1.3210800	1.3228300
DM 2	0.2423640	0.2456420	0.2487050
DM 3	0.9729790	0.9734690	0.9740450
DM 4	-0.1874470	-0.1890210	-0.1910180

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

Detection Metric	Type 0	Type 1	Type 2
DM 1	1.3207800	1.3228100	1.3245100
DM 2	0.2408900	0.2441360	0.2473170
DM 3	0.9731730	0.9736990	0.9742650
DM 4	-0.1863030	-0.1880990	-0.1901410

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 followed: (1) the maximum average for DM1 is 0.00106 observed on PRN-18, (2) the maximum average for DM2 is 0.000308 observed on PRN-18, (3) the maximum average for DM3 is 0.0001820 observed on PRN-21, (4) the maximum average for DM4 is 0.0004237 observed on PRN-22.

Figure 11-3 to 11-10 show the daily PRN bias for each PRN, for four detection metrics. The PRN biases on DM1, DM2, and DM4 show slight shifts for most satellites. The shifts were due to the combination of SQM data from G2 and G3 receivers. There were 45 G3 receivers in the field at the beginning of the quarter and 87 G3 receivers in the field at the end of the quarter.

Figure 11-7 shows a small increase in PRN bias on PRN-19 on February 16, 2016 due to a NANU. The continuous significant increase in PRN bias—or distortion—on PRN-18 (SVN-54) was observed on March 8, 2016. This instance has not caused degradation of the WAAS service availability; see DR 131 Elevated Correlation Peak Distortion Observed Starting 3/8/16. Figure 11-8 shows the PRN biases on PRN-21 shifted slightly after coming back from a NANU on March 18, 2016. Figure 11-9 shows a small increase in PRN bias on PRN-27 on January 7, 2016 and a small increase in PRN bias on PRN-28 on January 15, 2016, both due to a NANU. Additionally, PRN-32 (SVN-23) was set to unusable on January 25, 2016; PRN-32 (SVN-70) became useable on March 8, 2016. PRN-4 was unavailable for the quarter.

Table 11-4 PRN Bias Average for the Quarter

PRN	SVN	DM1	DM2	DM3	DM4
1	63	0.0003108	0.0001276	0.0000566	0.0001175
2	61	0.0005402	0.0002278	0.0000605	0.0001367
3	69	0.0002434	0.0001305	0.0000493	0.0001163
4	34	Unavailable	Unavailable	Unavailable	Unavailable
5	50	0.0002679	0.0001539	0.0000834	0.0001332
6	67	0.0004996	0.0002111	0.0001070	0.0001441
7	48	0.0002440	0.0001322	0.0000518	0.0001731
8	72	0.0006636	0.0001879	0.0000541	0.0002853
9	39	0.0003096	0.0001583	0.0000877	0.0003219
10	73	0.0002612	0.0001644	0.0000928	0.0001785
11	46	0.0010493	0.0002428	0.0000828	0.0002274
12	58	0.0002549	0.0001384	0.0001030	0.0001270
13	43	0.0005096	0.0001345	0.0000577	0.0001802
14	41	0.0007258	0.0002037	0.0000906	0.0001262
15	55	0.0002201	0.0001436	0.0000395	0.0001911
16	56	0.0002198	0.0001454	0.0001263	0.0003228
17	53	0.0002782	0.0001640	0.0000522	0.0001555
18	54	0.0010596	0.0003088	0.0000986	0.0003283
19	59	0.0005387	0.0002553	0.0000654	0.0001135
20	51	0.0002243	0.0001708	0.0000414	0.0001816
21	45	0.0004779	0.0001152	0.0001820	0.0001125
22	47	0.0004319	0.0002072	0.0001032	0.0004237
23	60	0.0010033	0.0002408	0.0000879	0.0004215
24	65	0.0002357	0.0001439	0.0000626	0.0001012
25	62	0.0004692	0.0001579	0.0000580	0.0002104
26	71	0.0003121	0.0001471	0.0000391	0.0001730
27	66	0.0006036	0.0002195	0.0000403	0.0003027
28	44	0.0003322	0.0001561	0.0000554	0.0001142
29	57	0.0002969	0.0001653	0.0001337	0.0002684
30	64	0.0002810	0.0001196	0.0000410	0.0001606
31	52	0.0004098	0.0001684	0.0000567	0.0002542
32	23	0.0002369	0.0001857	0.0000985	0.0001185
32	70	0.0002629	0.0001166	0.0000638	0.0001107

Figure 11-2 PRN Bias Average for the Quarter

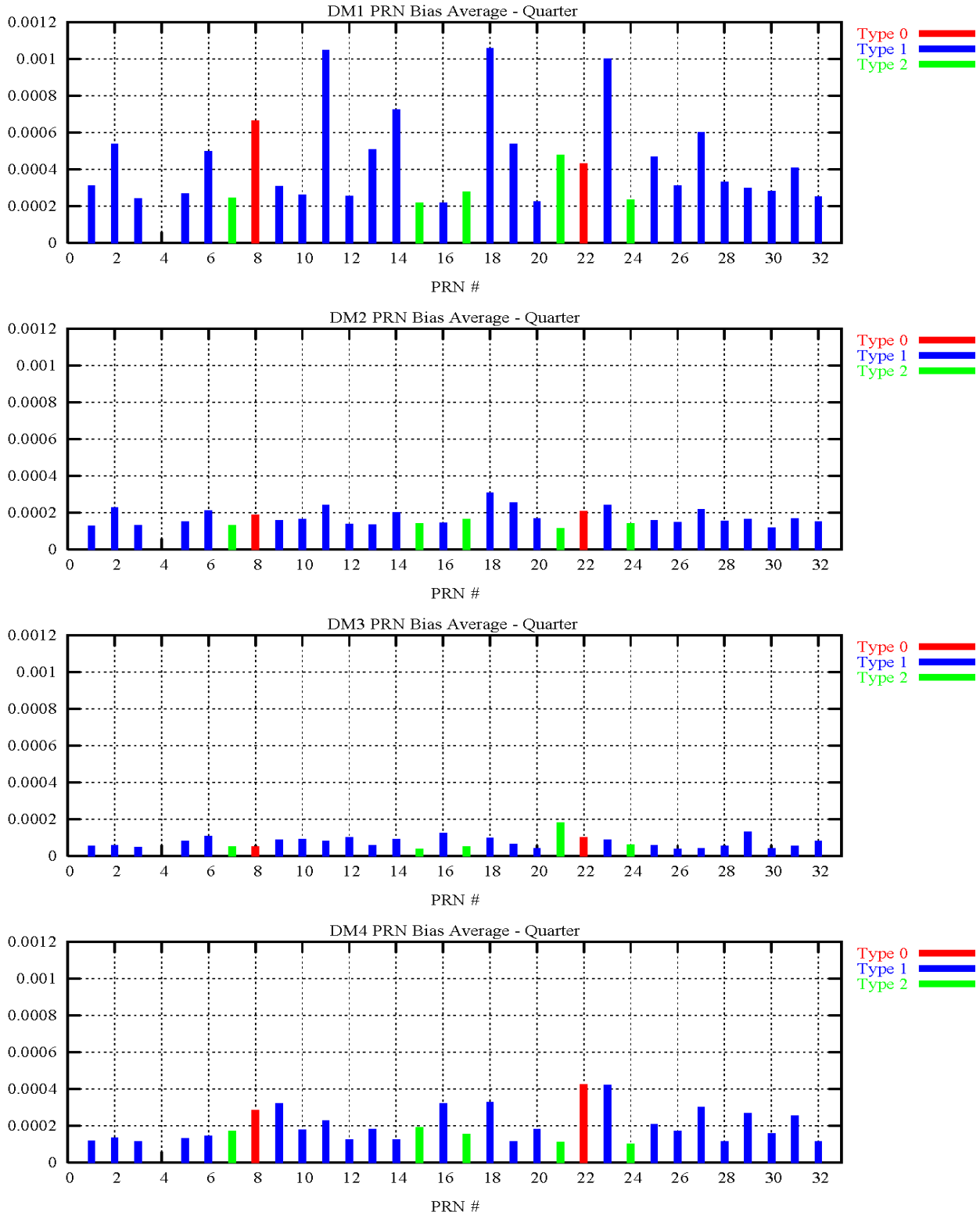


Figure 11-3 PRN Bias Average Trend (PRN-1 – PRN-4)

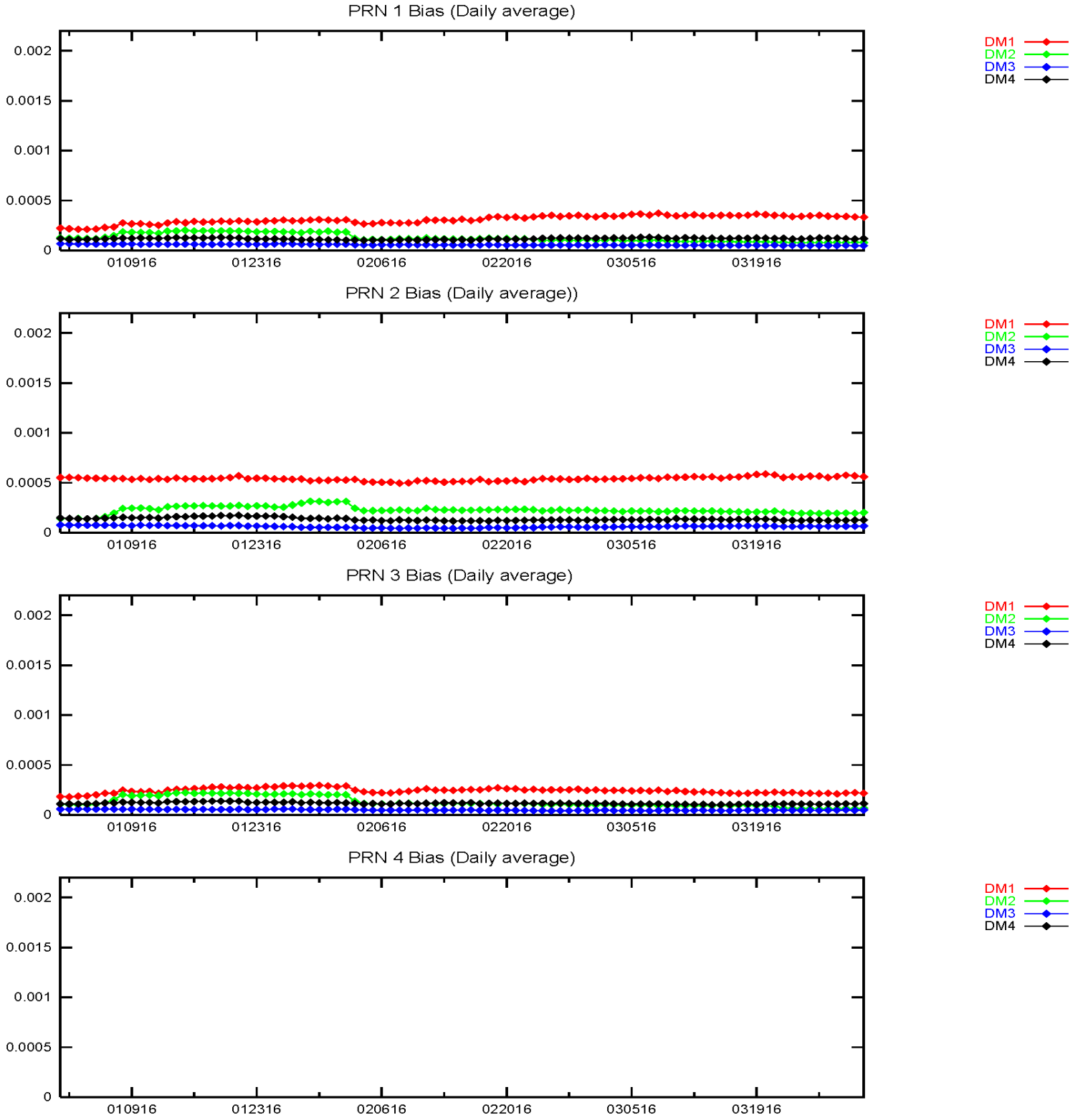


Figure 11-4 PRN Bias Average Trend (PRN-5 – PRN-8)

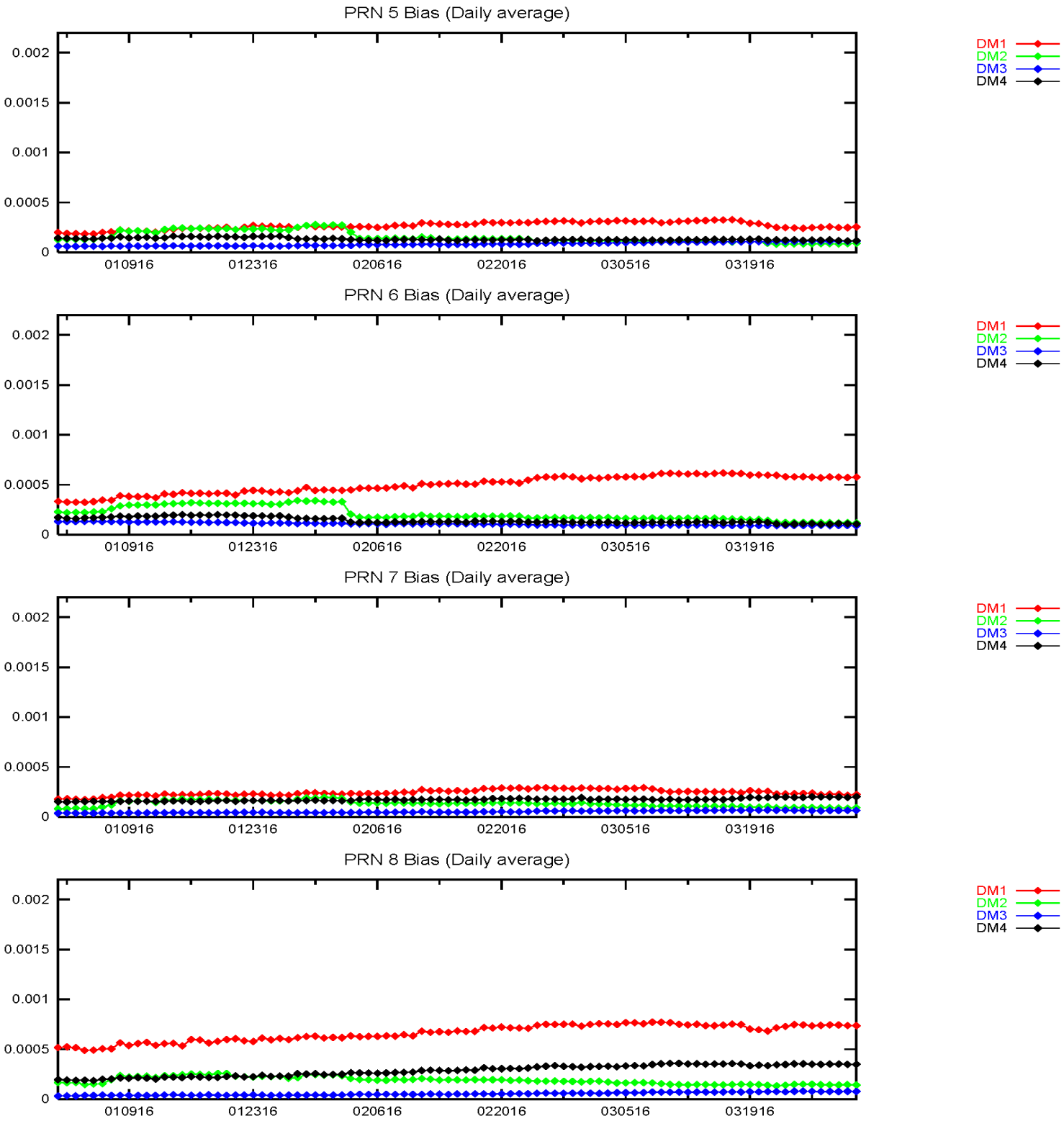


Figure 11-5 PRN Bias Average Trend (PRN-9 – PRN-12)

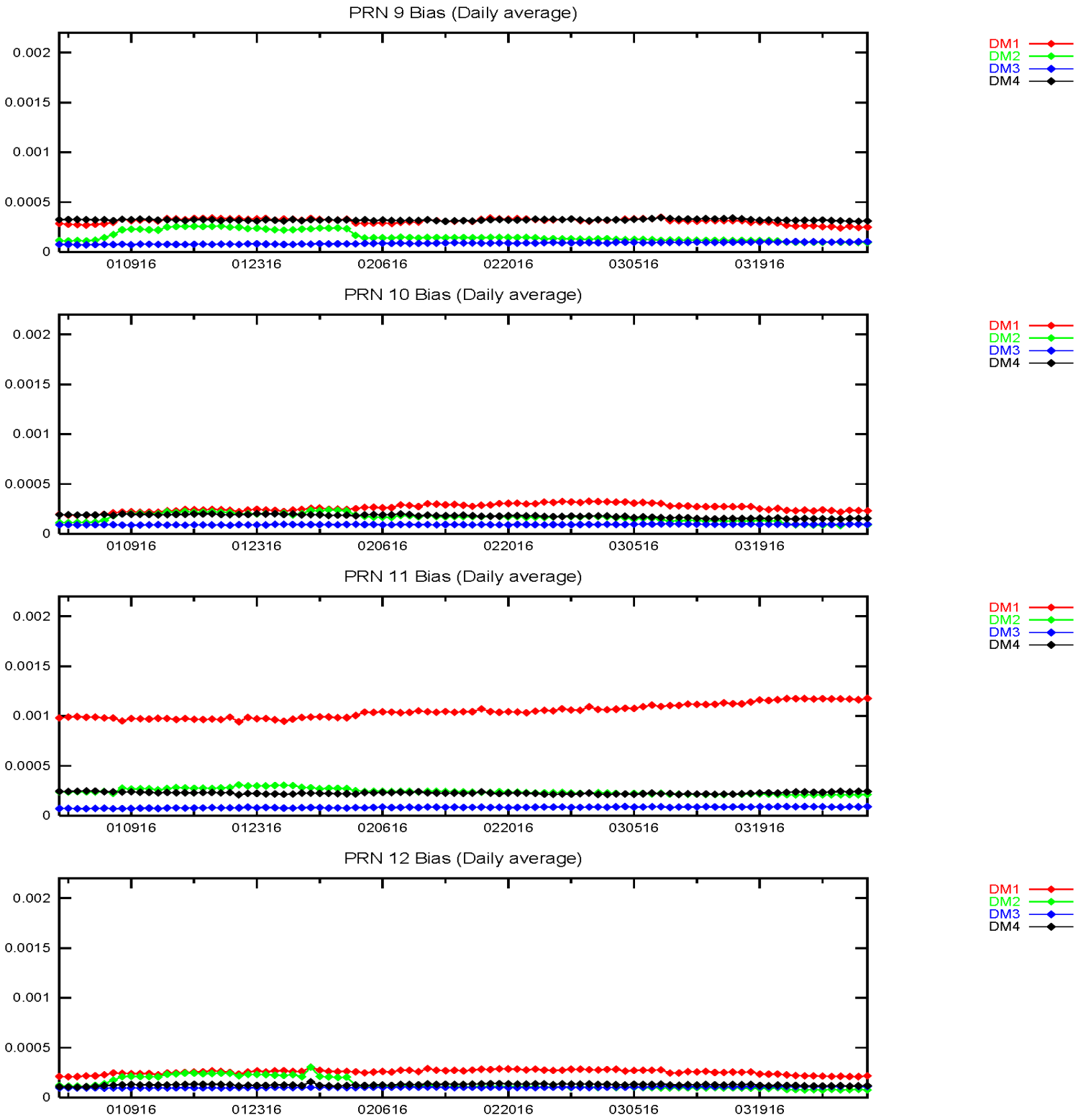


Figure 11-6 PRN Bias Average Trend (PRN-13 – PRN-16)

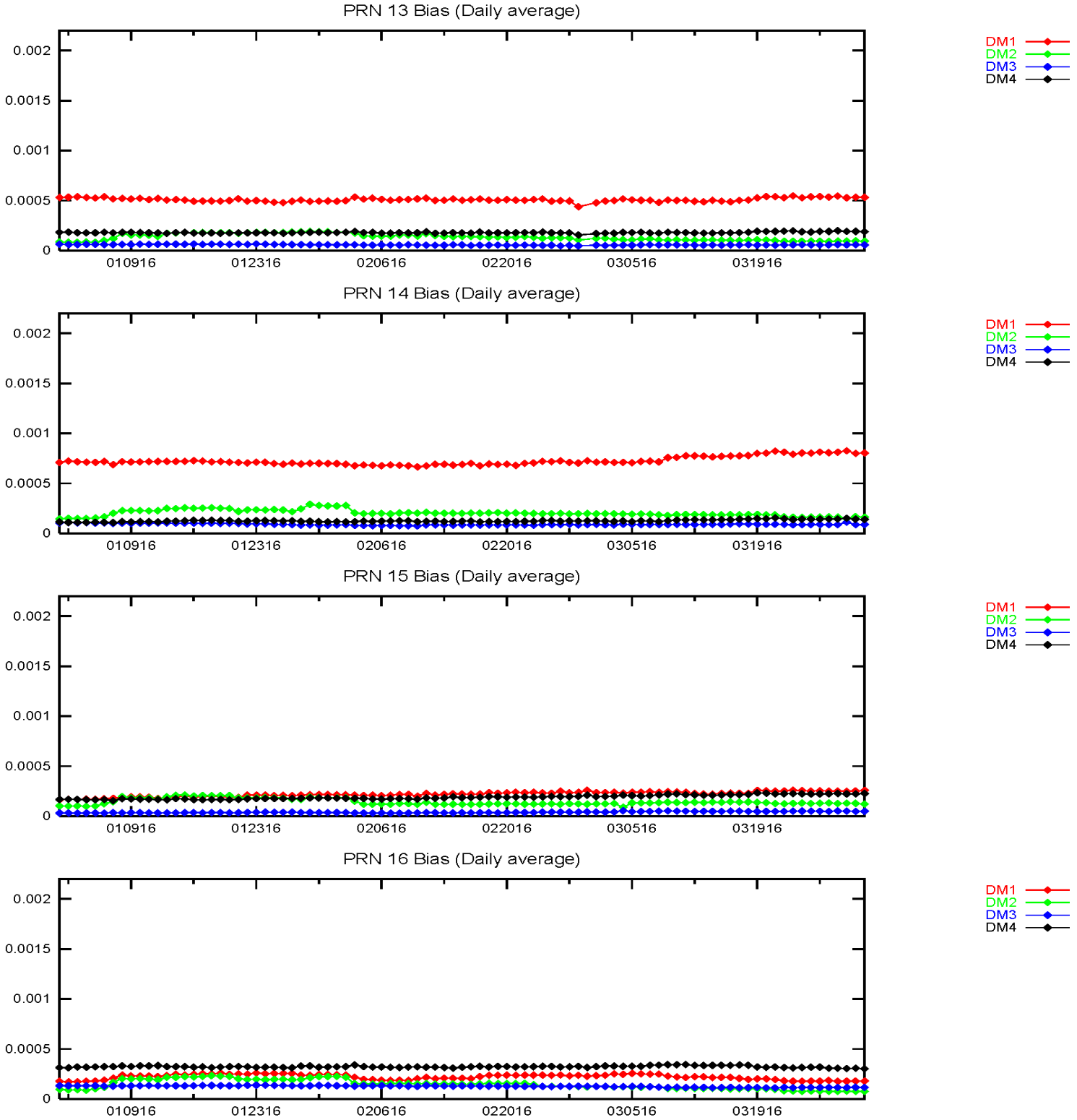


Figure 11-7 PRN Bias Average Trend (PRN-17 – PRN-20)

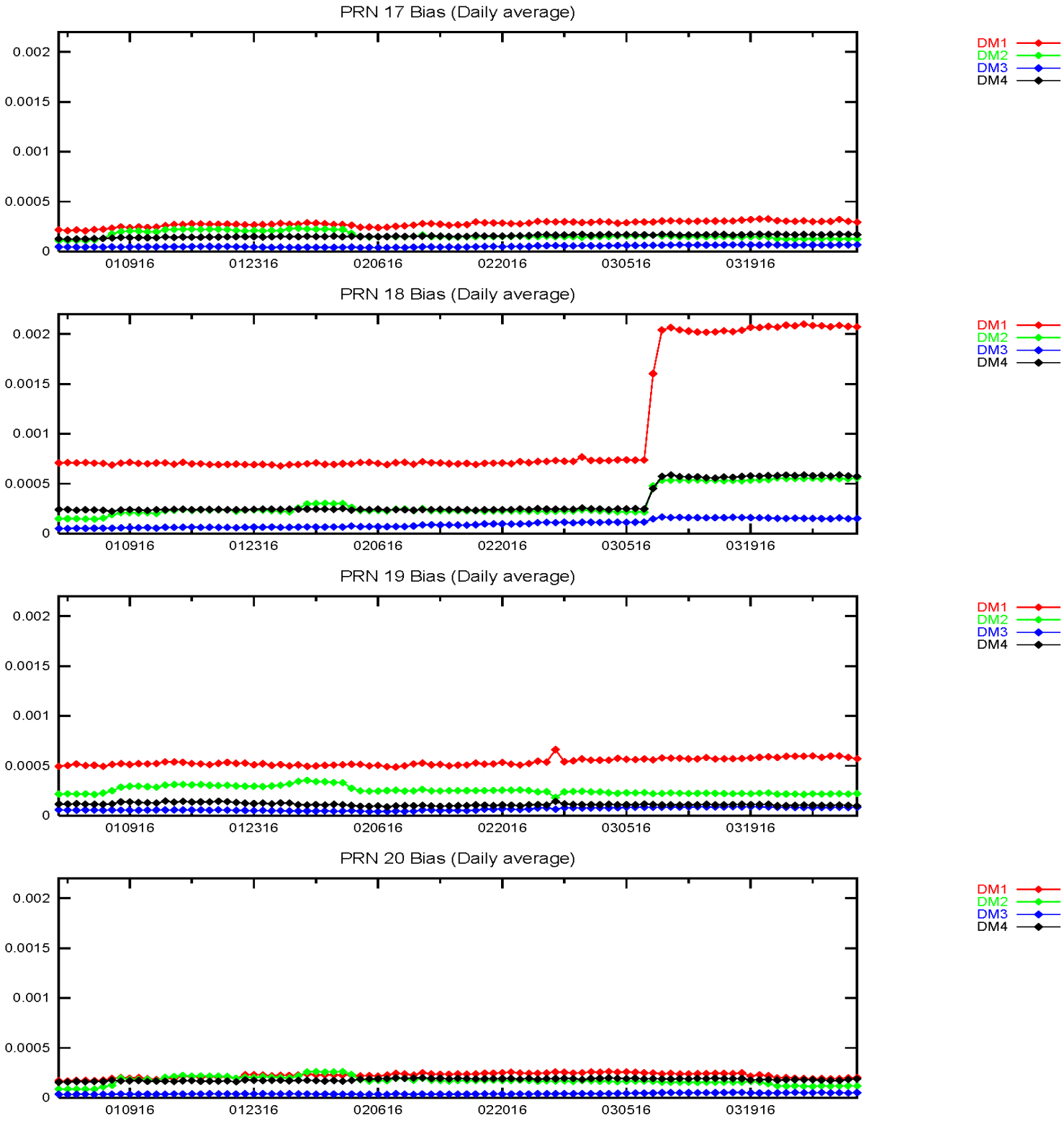


Figure 11-8 PRN Bias Average Trend (PRN-21 – PRN-24)

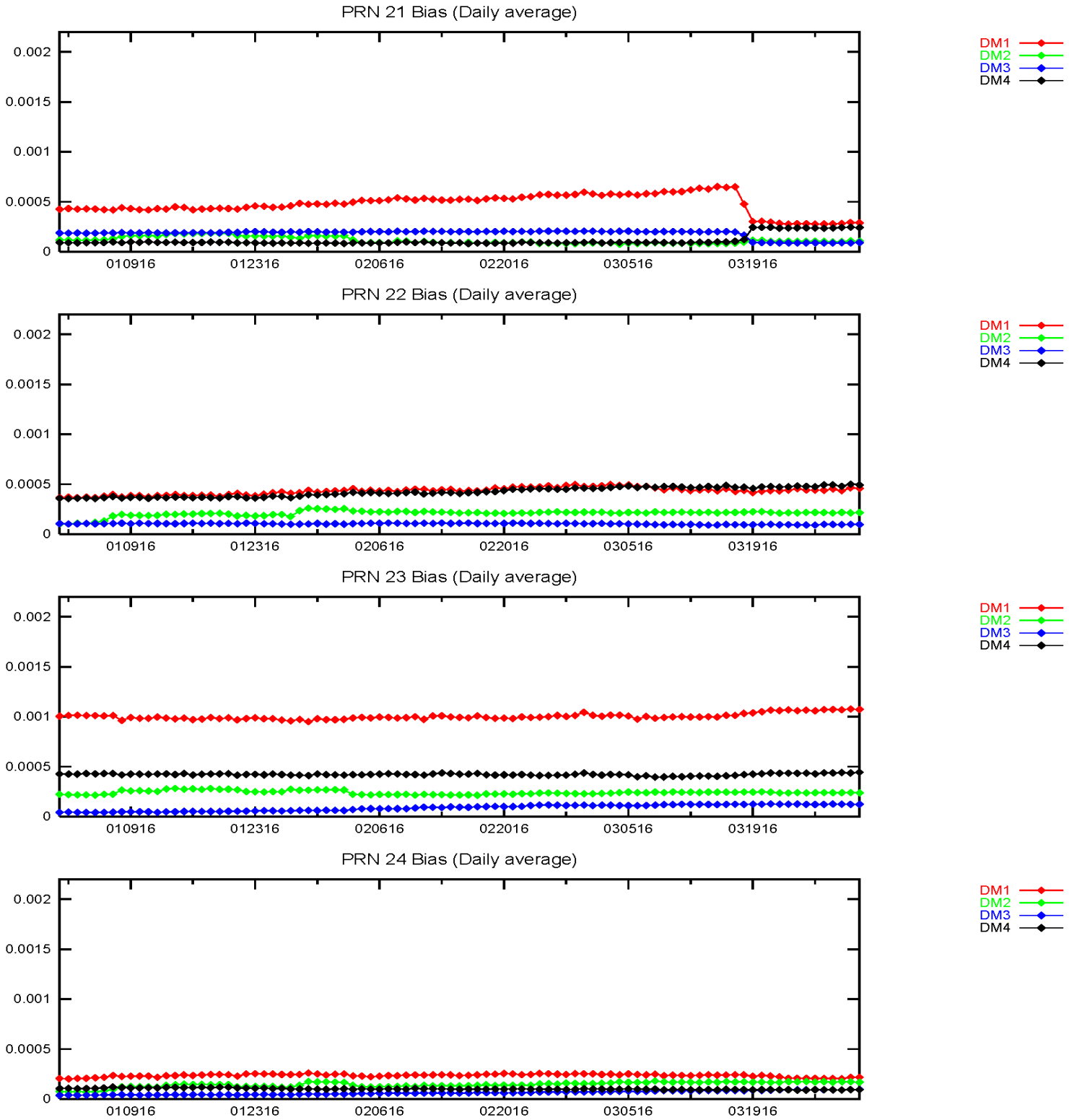


Figure 11-9 PRN Bias Average Trend (PRN-25 – PRN-28)

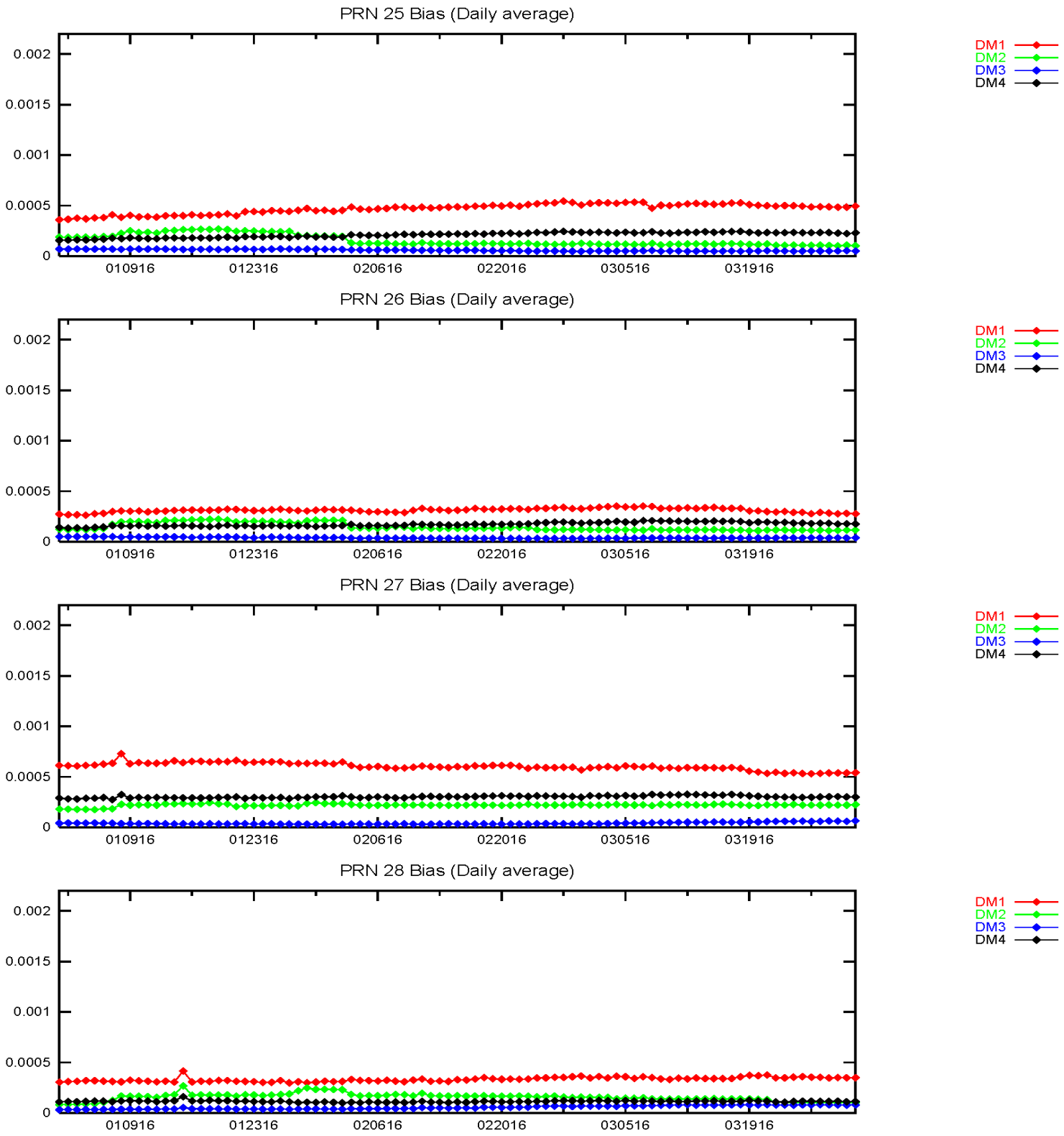
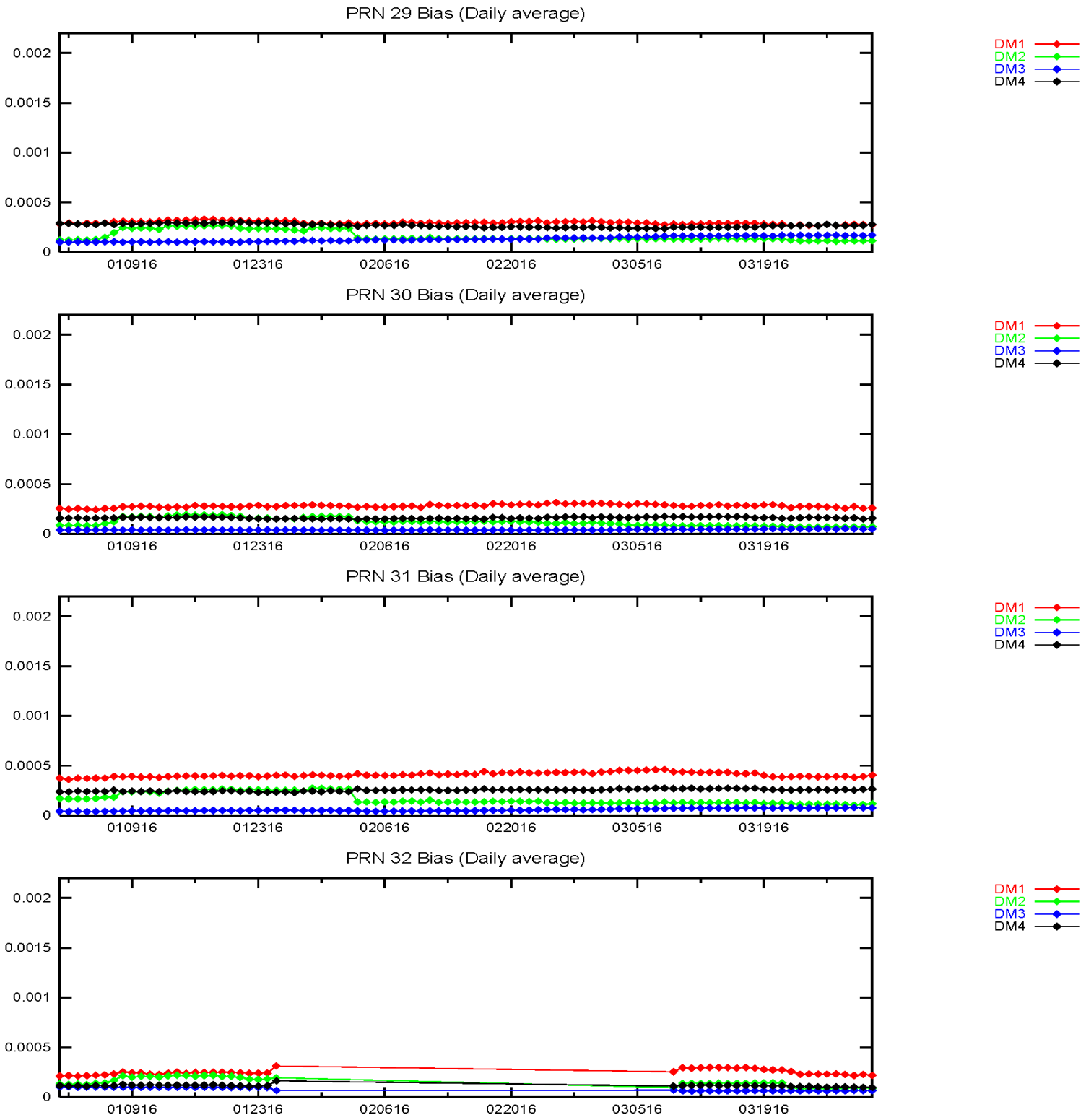


Figure 11-10 PRN Bias Average Trend (PRN-29 – PRN-32)



11.4 SQM Trips

A SQM trip occurs when the estimated deformation exceeds threshold. There were no SQM trips for this quarter.

Appendix A: Glossary

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.

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 that 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.

Dilution of Precision (DOP). The magnifying effect on GPS position error induced by mapping GPS ranging errors into position through the position solution. The DOP may be represented in any user local coordinate desired. Examples are HDOP for local horizontal, VDOP for local vertical, PDOP for all three coordinates, and TDOP for time.

DR. Discrepancy Report

Fault Detection and Exclusion (FDE). Fault detection and exclusion is 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.

Global Positioning System (GPS). 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.

Grid Ionospheric Vertical Error (GIVE). GIVEs indicate the accuracy of ionospheric vertical delay correction at a geographically defined ionospheric grid point (IGP). WAAS transmits one GIVE for each IGP in the mask.

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

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

Horizontal Protection Level (HPL). The Horizontal Protection Level is 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 upon the error estimates provided by WAAS.

IGS. International GPS Service.

Ionospheric Grid Point (IGP). IGP is a geographically defined point for which the WAAS provides the vertical ionospheric delay.

LNAV. Lateral Navigation.

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

LPV. Localizer Performance with Vertical Guidance. LPV is 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. LPV200 is a WAAS operational service level with a HAL equal to 40 meters and a VAL equal to 35 meters.

MOPS. Minimum Operational Performance Standards.

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.

Navigation Message. Message structure designed to carry navigation data.

Non-Precision Approach (NPA) Navigation Mode. The 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.

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.

Precision Approach (PA) Navigation Mode. The 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.

RFI. Radio Frequency Interference.

Selective Availability. Protection technique employed by the DOD to deny full system accuracy to unauthorized users.

S**ignal Quality Monitor (SQM)**. SQM 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.

Standard Positioning Service (SPS). 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.

User Differential Range Error (UDRE). UDRE's indicate the accuracy of combined fast and slow error corrections. WAAS transmits one UDRE for each satellite in the mask.

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

Vertical Protection Level (VPL). The Vertical Protection Level is 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.

Wide Area Augmentation System (WAAS). The WAAS is 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, as well as 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 in order 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.

Appendix B: Additional Coverage Plots

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

Figure B-1 98% CONUS LP Availability Contour

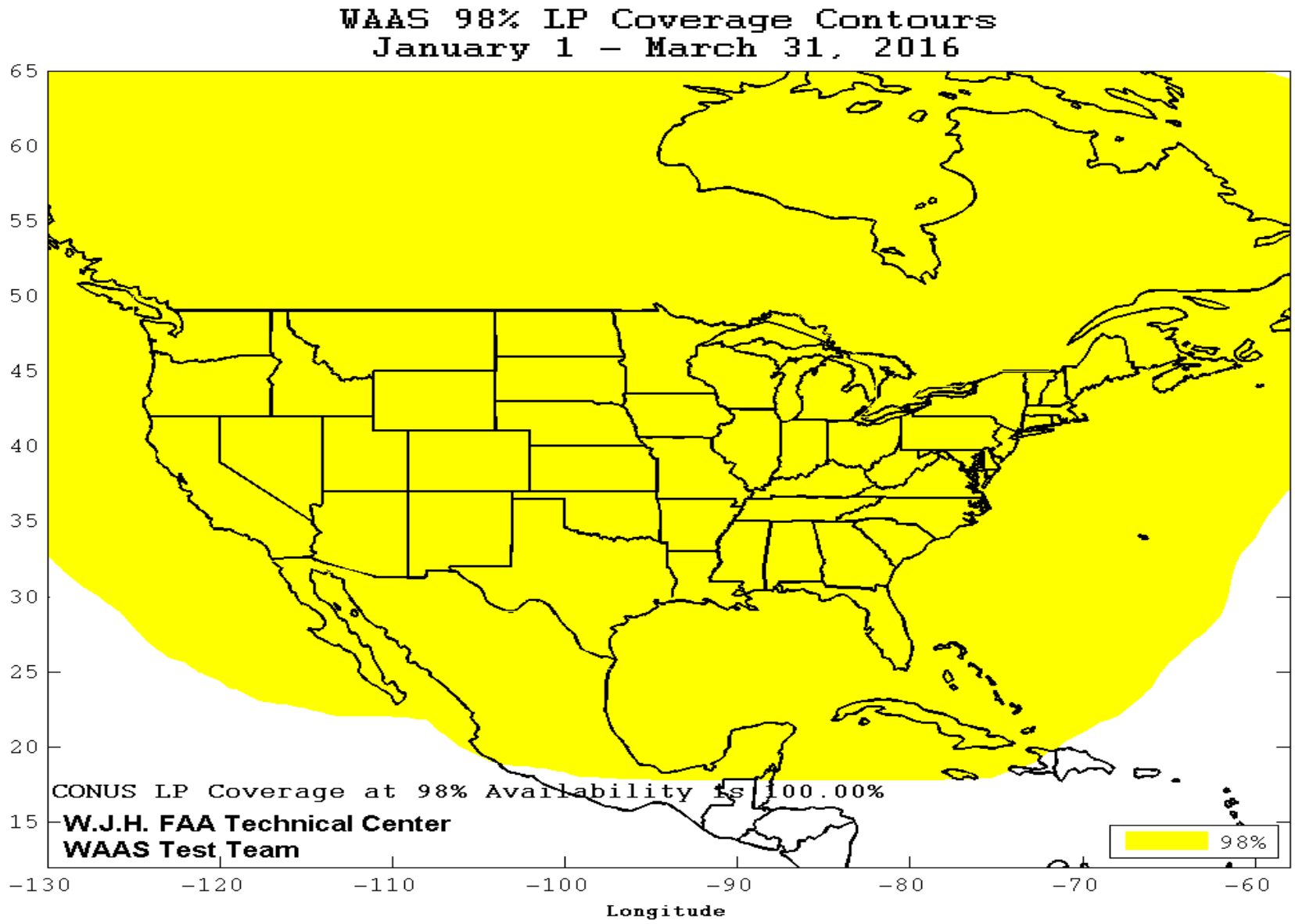


Figure B-2 98% Alaska LP Availability Contour

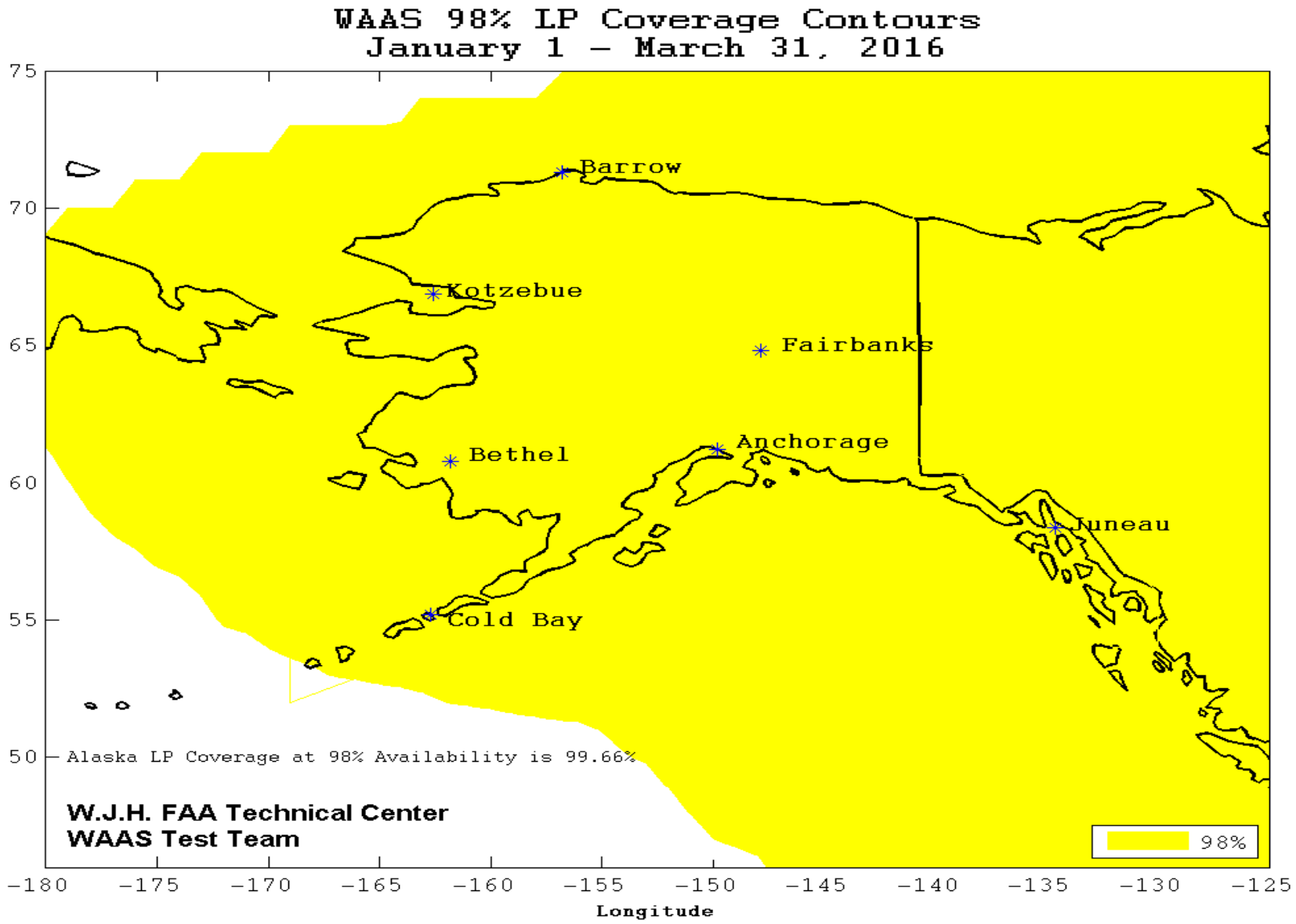


Figure B-3 98% CONUS LPV Availability Contour

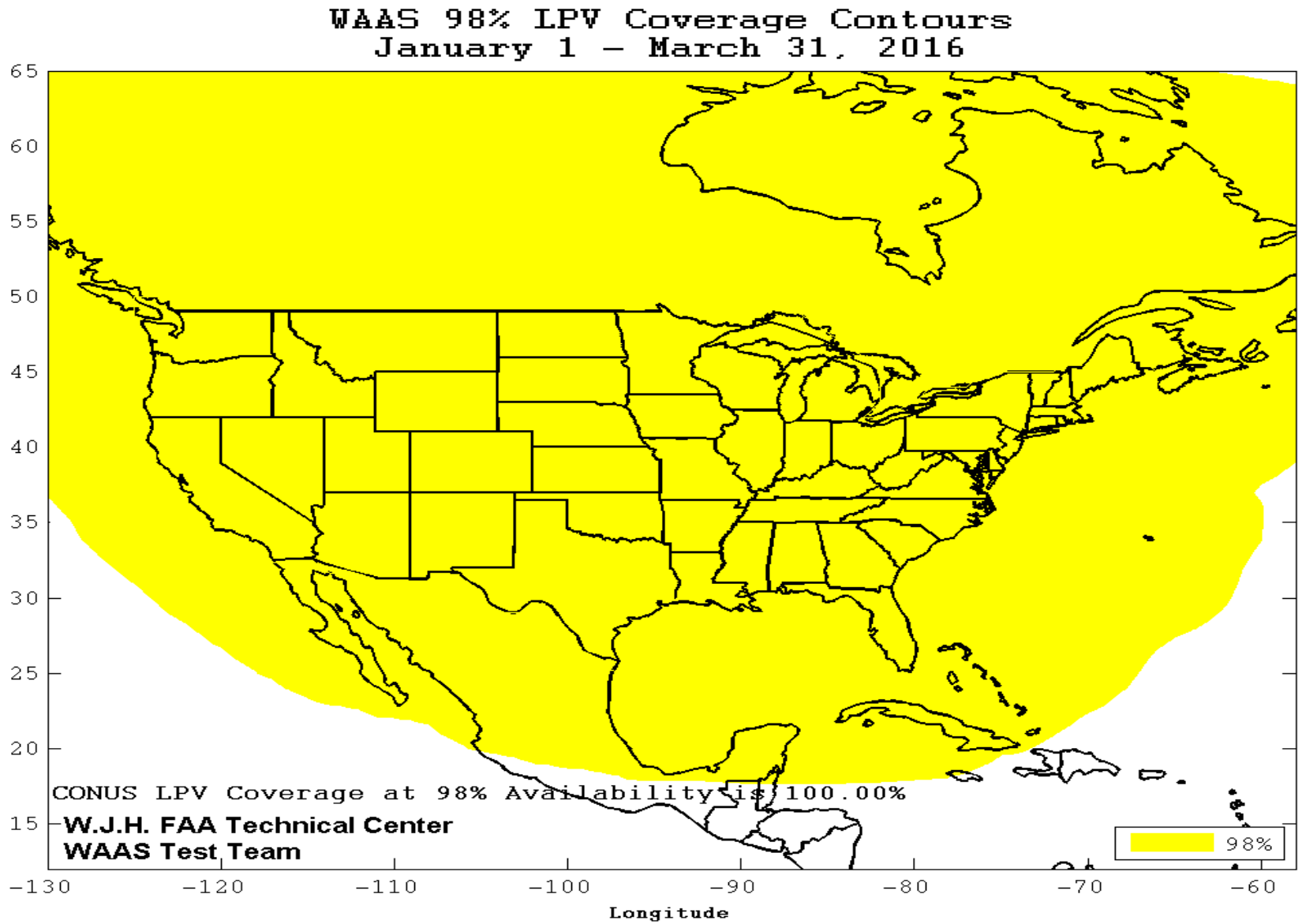


Figure B-4 98% Alaska LPV Availability Contour

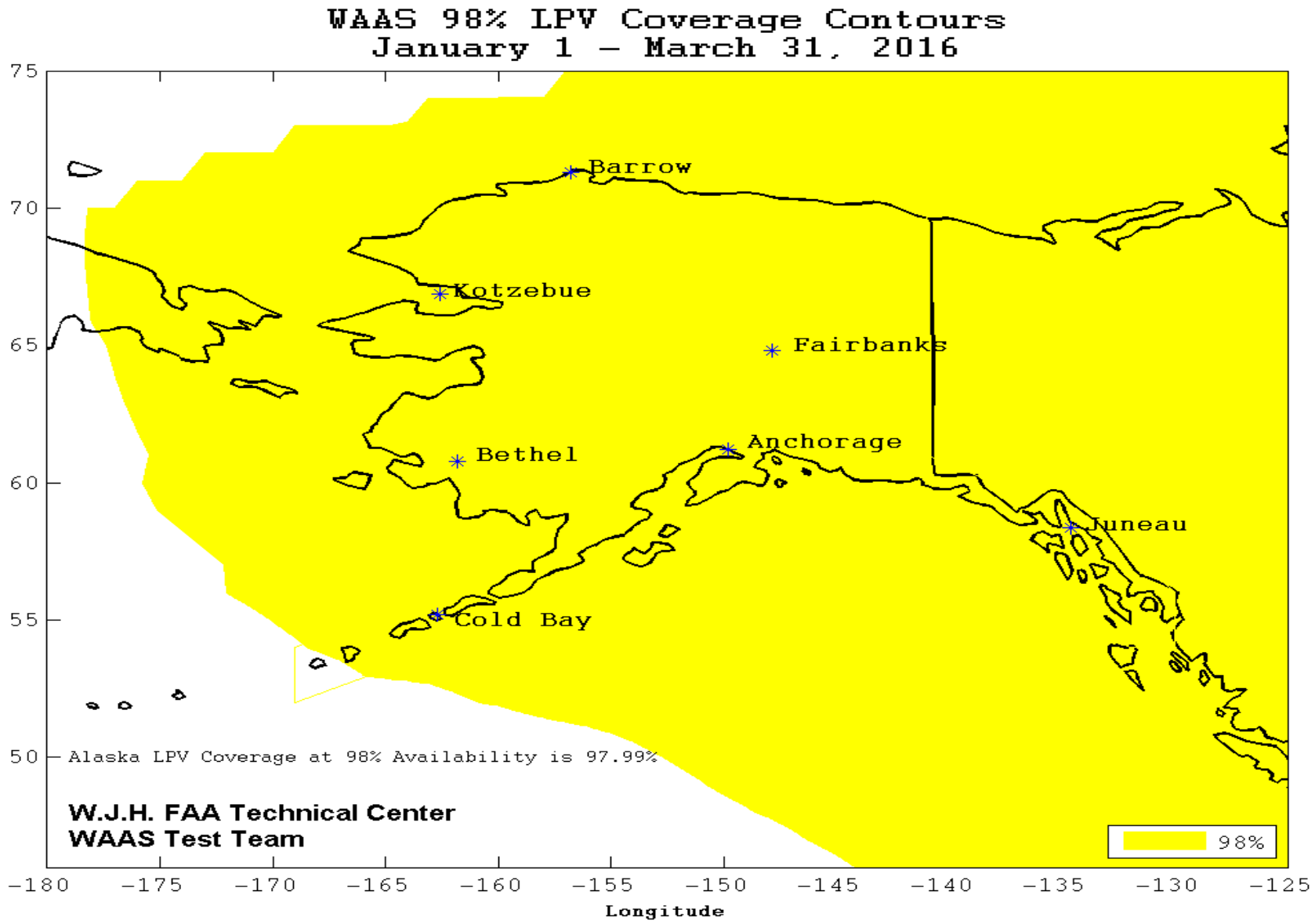


Figure B-5 99% CONUS LPV200 Availability Contour

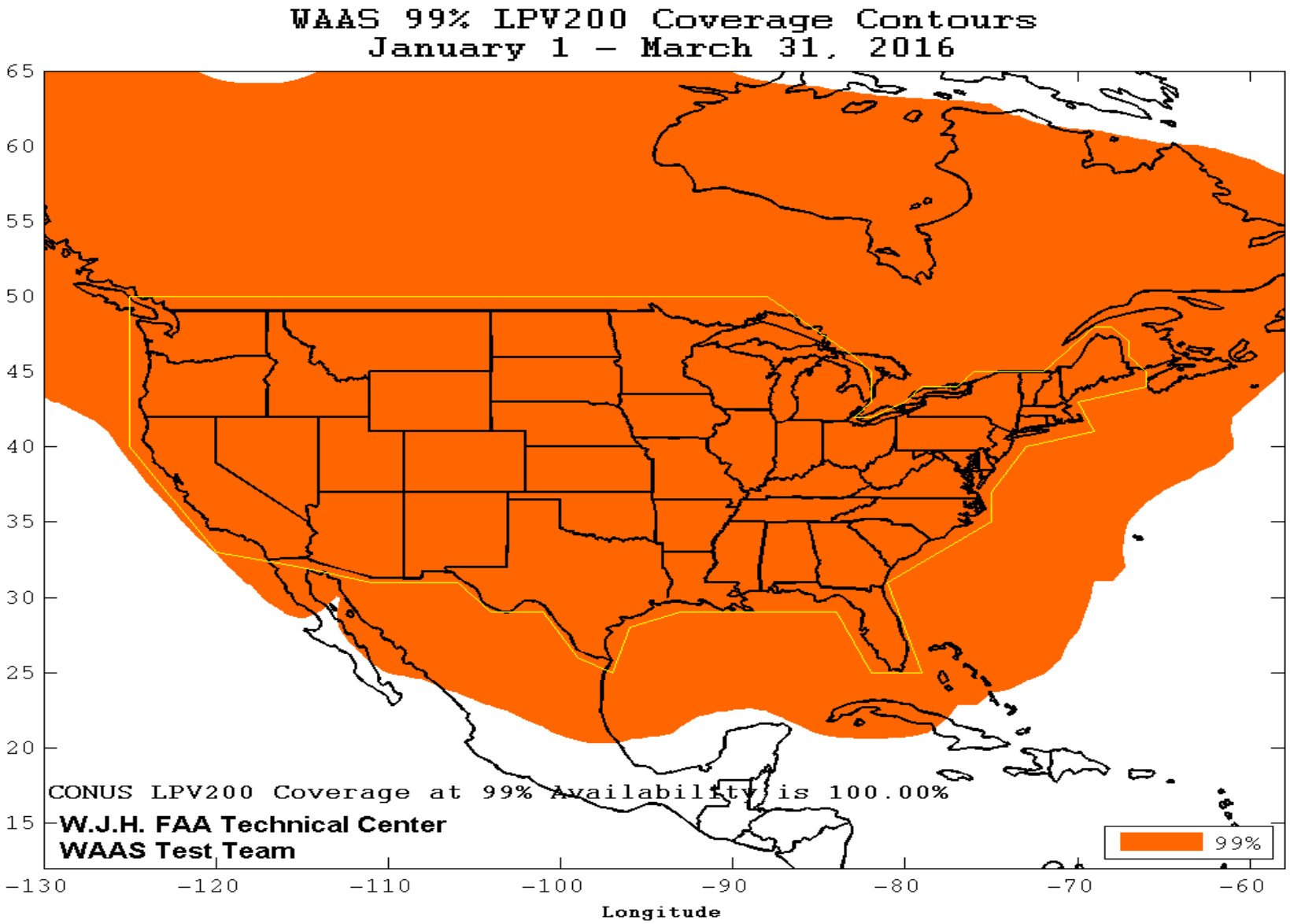


Figure B-6 99% Alaska LPV200 Availability Contour