

**WIDE-AREA AUGMENTATION SYSTEM
PERFORMANCE ANALYSIS REPORT**

Report #41

Reporting Period: April 1 to June 30, 2012

July 2012

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Executive Summary

Since 1999 the WAAS Test Team at the William J. Hughes Technical Center has reported GPS performance as measured against the GPS Standard Positioning Service (SPS) Signal Specification. These quarterly reports are known as the PAN (Performance Analysis Network) Report. In addition to that report, the WAAS Test Team reports on the performance of the Wide-Area Augmentation System (WAAS). This report, #41, covers WAAS performance during the period from April 1, 2012 to June 30, 2012.

The following table shows observations for accuracy and availability made during the reporting period for CONUS and Alaska sites. The international sites are excluded from this table, but are included in the body of the report. See the body of the report for additional results in accuracy, availability, safety index, range accuracy, WAAS broadcast message rates, and GEO ranging availability. 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. LPV 200 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 and Arcata, are outliers due to receiver quality issues, not 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)	Grand Forks 1.628 meters	Denver 0.518 meters	Fairbanks 0.72 meters	Bethel .581 meters
95% Vertical Accuracy (VPL <= 50 meters)	Grand Forks 1.98 meters	Salt Lake City 0.848 meters	Fairbanks 1.621 meters	Bethel 1.056 meters
LP Availability (HPL <= 40 meters)	Multiple Sites 100%	Washington DC 99.99%	Kotzebue 99.98%	Juneau 99.90%
LPV Availability (HPL <= 40 meters & VPL <= 50 meters)	Multiple Sites100%	Oakland 99.85%	Bethel 99.92%	Juneau 99.87%
LPV 200 Availability (HPL <= 40 meters & VPL <=35 meters)	Multiple Sites 100%	Arcata 97.61%	Bethel 99.84%	Cold Bay 97.60%
99% HPL	Miami 19.43 meters	Denver 10.91 meters	Cold Bay 27.98 meters	Fairbanks 13.43 meters
99% VPL	Oakland 43.70 meters	Chicago 19.52 meters	Cold Bay 36.63 meters	Anchorage 23.48 meters

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1.0 INTRODUCTION

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

Objectives of this report are:

- a. To evaluate and monitor the ability of WAAS to augment GPS by characterizing important performance parameters.
- b. To analyze the effects of GPS satellite operation and maintenance, and ionospheric activity on the WAAS performance.
- c. To investigate any GPS and WAAS anomalies and determine their impact on potential users.
- d. To archive performance of GPS and WAAS for future evaluations.

The WAAS data transmitted from Geostationary satellites (GEO) PRN#135 (CRW), PRN#138 (CRE) and PRN#133 (AMR) are used in the evaluation. CRE and CRW GEOs provide a precision approach (PA) ranging capability that supports all levels of WAAS service. AMR GEO provides only non-precision approach (NPA) ranging service.

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

Receivers in PA mode are required to: use all WAAS corrections, use only corrected satellites, not mix corrections from multiple GEOs, only use the designated Space Based Augmentation System (SBAS) for the published approach procedure, and not use ranging from a GPS or GEO satellite having a User Differential Range Error (UDRE) status of greater than 15 meters. Receiver in NPA mode may: mix corrected and uncorrected satellites, mix corrections from different GEOs or SBASs, use either the WAAS ionosphere corrections or the GPS Klobachar model for ionosphere corrections, and use ranging from a GPS or GEO satellite that have a UDRE status of greater than 15 meters. NPA mode receivers may also operate using Fault Detection / Fault Detection Exclusion (FD/FDE) in the absence of a SBAS. The data presented in this report does not take credit for the additional NPA mode availability and continuity provided by the use of FD/FDE, whether full FD/FDE or partial FD/FDE used to allow the mixing of corrected and uncorrected satellites. The NPA accuracy data presented in this report uses Klobachar ionosphere corrections in order to be conservative.

The results in this report are based on the application of the WAAS corrections to receiver data from the WAAS receiver network and receivers of the FAA's National Satellite Test Bed (NSTB) network and from analysis based on the correction data broadcast by WAAS. Table 1.2 lists the receivers used in the PA analyses. 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	66	5681998
Grand Forks	83	7165888
Oklahoma City	73	6340679
WAAS:		
Albuquerque	91	7842137
Anchorage	91	7844855
Atlanta	91	7842888
Barrow	91	7840411
Bethel	91	7838891
Billings	91	7842686
Boston	91	7847503
Chicago	91	7841258
Cleveland	91	7842601
Cold Bay	91	7837273
Dallas	91	7847454
Denver	91	7839944
Fairbanks	91	7840053
Gander	91	7847456
Goose Bay	91	7847560
Houston	91	7826433
Iqaluit	91	7842826
Jacksonville	91	7846357
Juneau	91	7833825
Kansas City	91	7842249
Kotzebue	91	7835063
Los Angeles	91	7842582
Memphis	91	7842794
Merida	91	7844369
Mexico City	91	7825699
Miami	91	7846727
Minneapolis	91	7846804
New York	91	7842566
Oakland	91	7847337
Puerto Vallarta	90	7748135
Salt Lake City	91	7843663
San Jose Del Cabo	91	7838662
Seattle	91	7847319
Washington DC	91	7841034
Winnipeg*	31	2678178
San Juan*	N/A	N/A

*Offline for roof reconstruction

Table 1-3 NPA Evaluation Sites

Location	Number of Days Evaluated	Number of Samples
Anchorage	91	7843699
Atlanta	91	7839530
Barrow	91	7842415
Bethel	91	7842089
Billings	91	7839124
Boston	91	7847650
Cleveland	91	7844481
Cold Bay	91	7835775
Fairbanks	91	7843208
Gander	91	7847712
Honolulu	91	7841587
Houston	91	7840228
Iqaluit	91	7841378
Juneau	91	7835700
Kansas City	91	7831310
Kotzebue	91	7834861
Los Angeles	91	7844678
Merida	91	7843104
Miami	91	7840163
Minneapolis	91	7835037
Oakland	91	7845037
Salt Lake City	91	7842036
San Jose Del Cabo	91	7842787
Seattle	91	7842995
Tapachula	91	7822943
Washington DC	91	7821012

The report is divided in the performance categories listed below.

1. WAAS Position Accuracy
2. WAAS Operational Service Availability
3. Coverage
4. Integrity
5. WAAS Range Domain Accuracy
6. GEO Ranging Performance
7. WAAS Airport Availability
8. WAAS CNMP Analysis
9. WAAS Antenna Survey Validation
10. SQM Analysis

Table 1.4 lists the performance parameters evaluated for the WAAS in this report. Please note that these are the performance parameters associated with the WAAS system. 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 noted during the reporting period that affected WAAS performance or the ability to determine the WAAS performance. These events include GPS or WAAS anomalies, relevant receiver malfunctions, and receiver maintenance conducted. Detailed analyses of particular events are documented in the Discrepancy Reports (DR). The DRs are posted on the website <http://www.nstb.tc.faa.gov> under 'WAAS Technical Reports' and can also be accessed via hyperlink from Table 1.5 below. Please note "TOW" is the time of GPS week, which is the cumulative number of seconds since 00:00:00 Sunday (GMT without leap seconds).

Table 1.6 lists events related to WAAS upgrades that happened this quarter. Table 1.7 lists events related to GUS switchovers. A GUS switchover is the transition from one uplink site to the other uplink site for a GEO.

Table 1-5 Events

Start Date	End Date	Location Satellite	Service Affected	Event Description
03/12/12	04/24/12	Boston (ZBW1), Boston (ZBW2), Boston (ZBW3)	Local	Suspected RFI caused a brief local LPV and LPV200 service outage.
03/28/12	04/02/12	Washington DC (ZDC1), Washington DC (ZDC2), Washington DC (ZDC3)	Local	A subset of the recurring RFI events caused brief local losses of service. There was a LPV200 outage on March 28 th and a LPV & LPV200 Outage on April 2 nd .
04/01/12	04/01/12	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Alaska, LPV200_CONUS, LPV200_Alaska	High GIVES ionospheric activity caused a loss of LPV200 service in northern Alaska. This event lasted for about 14 minutes starting at approximately 12:01 GMT.
04/05/12	04/05/12	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Alaska	Short term loss of LPV 200 Alaska service due to high GIVES caused by ionospheric activity. Kp = 4.
04/08/12	04/08/12	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV), PRN9, PRN18, PRN22, PRN27	LPV200_Alaska	UDRE increases on several satellites caused service outage in Alaska at 0319 GMT.

04/09/12	04/09/12	Washington DC (ZDC1), Washington DC (ZDC2), Washington DC (ZDC3)	Local	RFI event caused brief local loss of LPV and LPV200 service.
04/11/12	04/11/12	GEO138, Brewster (BRE-B)	LPV200_CONUS	GUS switchover, returning to Woodbine after maintenance complete. TOW 294334-294339.
04/12/12	04/12/12	PRN15	LPV_CONUS, LPV200_CONUS	NANU 2012022.
04/12/12	04/12/12	GEO138, Woodbine (QWE)	LPV200_Alaska	GUS switchover, Woodbine faulted. TOW 359667-359679. Elevated UDRE value to 12 increased VPL and caused short LPV200 outages in Alaska.
04/13/12	04/13/12	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Alaska, LPV200_Alaska	Increased GIVE values due to ionospheric activity (Kp = 6) caused loss of service in Alaska.
04/18/12	04/18/12	Washington DC (ZDC1), Washington DC (ZDC2), Washington DC (ZDC3)	Local	Short loss of local LPV/LPV200 service due to RFI.
04/20/12	04/23/12	Albuquerque (ZAB1), Albuquerque (ZAB2), Albuquerque (ZAB3)	Local	RFI caused local LPV & LPV 200 outages on April 20 th and April 23 rd .
04/22/12	04/22/12	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Alaska	Approximately 5 min LPV200 outage at 3:27 GMT was caused by elevated GIVE values caused by ionospheric activity. Several IGP's went to storm state. Around 7:54 GMT 26 min of LPV and LPV200 outages occurred due to elevated UDRE values on PRN 135.
04/23/12	04/24/12	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	CONUS, Alaska, Canada	Increased geomagnetic activity with Kp reaching 6 caused significant coverage loss in Alaska, Canada, CONUS. Increased position errors and ratios were also observed. (see figures in section 2)
04/24/12	04/25/12	PRN28	LPV_Alaska, LPV200_CONUS, LPV200_Alaska	NANU 2012027, planned satellite maintenance affected LPV & LPV200 coverage in Alaska as well as LPV200 in CONUS late April 24 th and into April 25 th .
04/27/12	04/28/12	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV), PRN133, PRN135, PRN138	LPV_Alaska, LPV_Canada, LPV200_CONUS, LPV200_Alaska, LPV200_Canada	PRN 133 and 138 data stream reported high UDRE values for PRN 135. PRN 135 data stream reported elevated UDRE value of Not Monitored for PRN 138 from 4:15 GMT April 27 th to 4:00 GMT April 28 th .
04/27/12	04/27/12	PRN12	LPV_Alaska, LPV_Canada, LPV200_CONUS, LPV200_Alaska	NANU 2012028.
04/27/12	04/27/12	PRN9	LPV_Alaska, LPV_Canada, LPV200_CONUS, LPV200_Alaska, LPV200_Canada	7 minute high carrier phase noise on GPS satellite SVN-39/PRN-9 cause all receivers temporarily lost track of PRN 9.
04/30/12	05/01/12	GEO135, Littleton (APA)	Alaska	GUS switchover, LTN to Napa after 4 missed messages caused by high carrier phase noise. C&V commanded GUS Switch. TOW 115257-115262.
05/01/12	05/01/12	PRN19	LPV_CONUS, LPV200_CONUS	NANU 2012029.

05/02/12	05/02/12	Washington DC (ZDC1), Washington DC (ZDC2), Washington DC (ZDC3)	Local	Brief RFI event caused local LPV200 outage.
05/07/12	05/07/12	GEO138, Brewster (BRE-B)	LPV_Alaska, LPV200_CONUS, LPV200_Alaska	GUS switchover, Brewster to Woodbine. Brewster faulted after a receiver SCAF. PRN-138 UDREi remained at 11 for approx. 36 hours impacting LPV200 coverage. TOW 149801-149814.
05/07/12	05/07/12	GEO135, NAPA (APC)	Alaska, LPV200_CONUS	GUS switchover from Napa to Littleton after Napa faulted due to a receiver SCAF. TOW 126202-126207. PRN-135 UDREi remained at 11 for greater than 48 hours impacting LPV200 coverage into May 9 th .
05/09/12	05/09/12	PRN15, PRN18, PRN21, PRN22, PRN27	LPV_Alaska, LPV200_Alaska, LPV200_Canada	At the time of SV Alert on 21, several other events coincide: UDRE values for other satellites increased, communication outages occurred in Alaska, GIVE values were elevated, and GEO UDRE values were elevated. Kp=4.
05/16/12	05/16/12	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Alaska, LPV200_Canada	Elevated ionospheric activity caused GIVE monitor trips for IGP's in the northern latitudes. Kp=4.
05/16/12	05/16/12	Washington DC (ZDC1), Washington DC (ZDC2), Washington DC (ZDC3)	Local	RFI event caused a local LPV200 service outage. Thread 2 and 3 lost track on all satellites and thread 1 tracking went down to 4 satellites. VPL increased to 135 m for threads 1 and 2. The RFI event lasted 117 seconds, longer than normal.
05/18/12	05/24/12	PRN30	LPV200_CONUS, LPV200_Alaska	NANU 201203.
05/20/12	05/20/12	GEO138	LPV200_CONUS, LPV200_Alaska	GUS manual switchover, Woodbine to Brewster. FTI Maintenance at Woodbine. TOW 28855-28860.
05/21/12	05/21/12	Washington DC (ZDC1), Washington DC (ZDC2), Washington DC (ZDC3)	Local	Brief RFI event caused local LPV and LPV200 outage.
05/22/12	05/23/12	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Alaska	High GIVE values due to ionospheric activity slightly affected northwest Alaska LPV200 coverage. PRN-30 outage coincided with the high GIVE values. KP=4 on May 22nd and KP=5 on May 23 rd .
05/29/12	05/29/12	Miami (ZMA1), Miami (ZMA2), Miami (ZMA3)	Local	Brief RFI event caused local LPV200 outage
05/30/12	05/30/12	Washington DC (ZDC1), Washington DC (ZDC2), Washington DC (ZDC3)	Local	Brief RFI event caused local LPV and LPV200 outage.
06/08/12	06/08/12	Washington DC (ZDC1), Washington DC (ZDC2), Washington DC (ZDC3)	Local	Brief RFI event. Threads 1 and 3 had a LPV and LPV200 outage and thread 2 had a LPV200 outage.
06/11/12	06/12/12	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Alaska, LPV200_Canada	Ionospheric activity, Kp=5, caused high GIVE values. LPV200 outage in Canada.
06/17/12	06/17/12	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_CONUS, LPV200_Alaska, LPV200_Canada	Ionospheric activity caused increased GIVE values which caused LPV200 outages in Alaska, Canada and CONUS. KP=6.

06/17/12	06/17/12	PRN19	None	NANU 2012039. PRN 19 set DNU by WAAS. Bad ephemeris was sent, health bits remained healthy. WAAS alarmed for PRN-19 because the long term correction necessary to correct the problem exceeded the range of the WAAS message structure. PRN-19 was setting over southern Europe/Northern Africa. Effect on coverage was negligible. See DR 109.
06/18/12	06/18/12	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Alaska	High GIVE values due to ionospheric activity (Kp = 5) caused LPV200 coverage outage.
06/19/12	06/20/12	PRN30	LPV200_CONUS	NANU 2012040
06/21/12	06/21/12	Washington DC (ZDC1), Washington DC (ZDC2), Washington DC (ZDC3)	Local	Brief RFI event cause local; LPV200 outage on thread 1, LPV and LPV200 outage on thread 2, and no outage on thread 3.
06/22/12	06/22/12	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Alaska	LPV200 coverage loss in Alaska due to elevated UDRE values of 11 on PRN135. VPL increased to 36-37 m

Table 1-6 WAAS Upgrades

Start Date	End Data	Location	Event Description
04/26/2012	04/26/2012	Atlanta (ZTL1), Atlanta (ZTL2), Atlanta (ZTL3)	SSM-WAAS-031 Modification performed. G-II WAAS Receiver Firmware Upgrade to Version 2.005/3.005
04/26/2012	04/26/2012	Los Angeles (ZLA1), Los Angeles (ZLA2), Los Angeles (ZLA3)	SSM-WAAS-031 Modification performed. G-II WAAS Receiver Firmware Upgrade to Version 2.005/3.005
04/28/2012	04/28/2012	Washington DC (ZDC1), Washington DC (ZDC2), Washington DC (ZDC3)	SSM-WAAS-031 Modification performed. G-II WAAS Receiver Firmware Upgrade to Version 2.005/3.005 for threads B and C. Thread A required further maintenance.
04/30/2012	04/30/2012	Cleveland (ZOB1), Cleveland (ZOB2), Cleveland (ZOB3)	SSM-WAAS-031 Modification performed. G-II WAAS Receiver Firmware Upgrade to Version 2.005/3.005
05/02/2012	05/04/2012	Winnipeg (YWG1), Winnipeg (YWG2), Winnipeg (YWG3)	SSM-WAAS-031 Modification performed. G-II WAAS Receiver Firmware Upgrade to Version 2.005/3.005. Site down until further notice for roof construction following this upgrade.
05/02/2012	05/02/2012	Chicago (ZAU1), Chicago (ZAU2), Chicago (ZAU3)	SSM-WAAS-031 Modification performed. G-II WAAS Receiver Firmware Upgrade to Version 2.005/3.005
05/03/2012	05/03/2012	Memphis (ZME1), Memphis (ZME2), Memphis (ZME3)	SSM-WAAS-031 Modification performed. G-II WAAS Receiver Firmware Upgrade to Version 2.005/3.005
05/03/2012	05/04/2012	Washington DC (ZDC1)	SSM-WAAS-031 Modification performed. G-II WAAS Receiver Firmware Upgrade to Version 2.005/3.005 for Thread A completed.
05/04/2012	05/04/2012	Denver (ZDV1), Denver (ZDV2), Denver (ZDV3)	SSM-WAAS-031 Modification performed. G-II WAAS Receiver Firmware Upgrade to Version 2.005/3.005

Start Date	End Data	Location	Event Description
05/07/2012	05/07/2012	Kansas City (ZKC1), Kansas City (ZKC2), Kansas City (ZKC3)	SSM-WAAS-031 Modification performed. G-II WAAS Receiver Firmware Upgrade to Version 2.005/3.005
05/08/2012	05/08/2012	Tapachula (Q9D1), Tapachula (Q9D2), Tapachula (Q9D3)	SSM-WAAS-031 Modification performed. G-II WAAS Receiver Firmware Upgrade to Version 2.005/3.005
05/08/2012	05/08/2012	Fairbanks (FAI1), Fairbanks (FAI2), Fairbanks (FAI3)	SSM-WAAS-031 Modification performed. G-II WAAS Receiver Firmware Upgrade to Version 2.005/3.005
05/09/2012	05/09/2012	Merida (Q9C1), Merida (Q9C2), Merida (Q9C3)	SSM-WAAS-031 Modification performed. G-II WAAS Receiver Firmware Upgrade to Version 2.005/3.005
05/11/2012	05/11/2012	Puerto Vallarta (Q9B1), Puerto Vallarta (Q9B2), Puerto Vallarta (Q9B3)	SSM-WAAS-031 Modification performed. G-II WAAS Receiver Firmware Upgrade to Version 2.005/3.005
05/15/2012	05/15/2012	Mexico City (Q9A1), Mexico City (Q9A2), Mexico City (Q9A3)	SSM-WAAS-031 Modification performed. G-II WAAS Receiver Firmware Upgrade to Version 2.005/3.005
05/16/2012	05/16/2012	Kotzebue (OTZ1), Kotzebue (OTZ2), Kotzebue (OTZ3)	SSM-WAAS-031 Modification performed. G-II WAAS Receiver Firmware Upgrade to Version 2.005/3.005
05/17/2012	05/17/2012	San Jose Del Cabo (Q9E1), San Jose Del Cabo (Q9E2), San Jose Del Cabo (Q9E3)	SSM-WAAS-031 Modification performed. G-II WAAS Receiver Firmware Upgrade to Version 2.005/3.005
05/21/2012	05/21/2012	Bethel (BET1), Bethel (BET2), Bethel (BET3)	SSM-WAAS-031 Modification performed. G-II WAAS Receiver Firmware Upgrade to Version 2.005/3.005
05/23/2012	05/30/2012	Honolulu (HNL1), Honolulu (HNL2), Honolulu (HNL3)	SSM-WAAS-031 Modification performed. G-II WAAS Receiver Firmware Upgrade to Version 2.005/3.005. Thread C was completed on May 23 2012, Thread B was on May 25, and Thread A was on May 30th.
05/28/2012	05/29/2012	Jacksonville (ZJX1), Jacksonville (ZJX2), Jacksonville (ZJX3)	SSM-WAAS-031 Modification performed. G-II WAAS Receiver Firmware Upgrade to Version 2.005/3.005. Thread A required additional maintenance on May 29.
05/29/2012	05/29/2012	Seattle (ZSE1), Seattle (ZSE2), Seattle (ZSE3)	SSM-WAAS-031 Modification performed. G-II WAAS Receiver Firmware Upgrade to Version 2.005/3.005 for thread A and B. ZSE ATSS (DMB) reports WRE-C receiver replaced 1/4/12 has current firmware.
05/30/2012	05/30/2012	Billings (BIL1), Billings (BIL2), Billings (BIL3)	SSM-WAAS-031 Modification performed. G-II WAAS Receiver Firmware Upgrade to Version 2.005/3.005
05/30/2012	05/30/2012	Houston (ZHU3)	SSM-WAAS-031 Modification performed. G-II WAAS Receiver Firmware Upgrade to Version 2.005/3.005 for thread C. ERAM testing and short staffing led to threads B and C being postponed until June 11 - June 12.
05/31/2012	06/01/2012	Miami (ZMA1), Miami (ZMA2), Miami (ZMA3)	SSM-WAAS-031 Modification performed. G-II WAAS Receiver Firmware Upgrade to Version 2.005/3.005

Start Date	End Data	Location	Event Description
05/31/2012	05/31/2012	Iqaluit (YFB1), Iqaluit (YFB2), Iqaluit (YFB3)	SSM-WAAS-031 Modification performed. G-II WAAS Receiver Firmware Upgrade to Version 2.005/3.005
06/03/2012	06/03/2012	Albuquerque (ZAB1), Albuquerque (ZAB2), Albuquerque (ZAB3)	SSM-WAAS-031 Modification performed. G-II WAAS Receiver Firmware Upgrade to Version 2.005/3.005
06/05/2012	06/05/2012	Salt Lake City (ZLC1), Salt Lake City (ZLC2), Salt Lake City (ZLC3)	SSM-WAAS-031 Modification performed. G-II WAAS Receiver Firmware Upgrade to Version 2.005/3.005
06/06/2012	06/06/2012	New York (ZNY1), New York (ZNY2), New York (ZNY3)	SSM-WAAS-031 Modification performed. G-II WAAS Receiver Firmware Upgrade to Version 2.005/3.005
06/07/2012	06/07/2012	Cold Bay (CDB1), Cold Bay (CDB2), Cold Bay (CDB3)	SSM-WAAS-031 Modification performed. G-II WAAS Receiver Firmware Upgrade to Version 2.005/3.005
06/08/2012	06/08/2012	Juneau (JNU1), Juneau (JNU2), Juneau (JNU3)	SSM-WAAS-031 Modification performed. G-II WAAS Receiver Firmware Upgrade to Version 2.005/3.005
06/11/2012	06/12/2012	Houston (ZHU2), Houston (ZHU3)	SSM-WAAS-031 Modification performed. G-II WAAS Receiver Firmware Upgrade to Version 2.005/3.005 for thread B and C
06/13/2012	06/13/2012	Anchorage (ZAN1), Anchorage (ZAN2), Anchorage (ZAN3)	SSM-WAAS-031 Modification performed. G-II WAAS Receiver Firmware Upgrade to Version 2.005/3.005
06/28/2012	06/28/2012	Barrow (BRW1), Barrow (BRW2), Barrow (BRW3)	SSM-WAAS-031 Modification performed. G-II WAAS Receiver Firmware Upgrade to Version 2.005/3.005

Table 1-7 GUS Switchovers

Start Date	End Date	GUS Switch	Location/Satellite	Service Affected	Event Description
04/10/12	04/10/12	Manual	GEO133, Paumalu (HDH)	None	GUS Switch. Caused by 8 missed messages because L5 SNR was low. This was an auto-switch. TOW 201618-201623
04/10/12	04/10/12	Faulted	GEO138, Woodbine (QWE)	None	Woodbine faulted. TOW 236869-236882
04/11/12	04/11/12	Manual	GEO133, Paumalu (HDH)	None	TOW 304768-304775
04/11/12	04/11/12	Manual	GEO138, Brewster (BRE-B)	LPV200_CONUS	Switching back to Woodbine after maintenance complete. TOW 294334-294339
04/12/12	04/12/12	Faulted	GEO138, Woodbine (QWE)	LPV200_Alaska	GUS switchover, Woodbine faulted TOW 359667-359679. Elevated UDRE value of 12 increased VPLs and caused short LPV200 outages in Alaska.
04/30/12	05/01/12	Manual	GEO135, Littleton	Alaska	GUS manual switchover, LTN to Napa after 4 missed messages. Phase Noise. CnV

Start Date	End Date	GUS Switch	Location/Satellite	Service Affected	Event Description
			(APA)		commanded GUS Switch. TOW 115257-115262
05/02/12	05/02/12	Faulted	GEO133, Santa Paula (SZP)	None	GUS switchover, SZP faulted. Receiver SCAF TOW 286085-286101
05/02/12	05/02/12	Manual	GEO133, Paumalu (HDH)	None	GUS manual switchover, HDH to SZP. Planned maintenance at HDH. TOW 292488-292494
05/07/12	05/07/12	Manual	GEO135, NAPA (APC)	Alaska, LPV200_CONUS	GUS manual switchover after receiver SCAF, Napa to Littleton TOW 126202-126207. UDREi value remained at 11 for greater than 48 hours and had lasting effects on coverage into May 9 th .
05/07/12	05/07/12	Manual	GEO138, Brewster (BRE-B)	LPV_Alaska, LPV200_CONUS, LPV200_Alaska	GUS switchover, Brewster faulted after receiver SCAF. UDREi value remained at 11 for approx. 36 hours and had lasting effects on coverage. TOW 149801-149814
05/20/12	05/20/12	Manual	GEO138	LPV200_CONUS, LPV200_Alaska	GUS manual switchover, Woodbine to Brewster. FTI Maintenance at Woodbine. TOW 28855-28860

1.2 Report Overview

Section 2 documents the LPV and NPA performance observed for the indicated receiver locations (see Tables 1-2 and 1-3). The 95% accuracy index and the maximum inaccuracy for the reporting period are tabulated. The daily 95% accuracy index is plotted for each receiver. Histograms of the vertical and horizontal error distribution using the data from all the evaluated receivers are provided..

Section 3 summarizes the WAAS instantaneous availability performance, at each receiver, for three operational service levels during the reporting period. Daily availability is also plotted for each receiver evaluated. The number of outages and outage rate for each site is reported.

Section 4 provides geographic plots of the availability of the WAAS services rolled up for the quarter. Plots of the percent of the CONUS and Alaska service areas covered by various levels of service availability are provided.

Section 5 summarizes the number of HMI events detected during the reporting period and presents a safety margin index for each receiver. The safety margin index reflects the amount of over bounding of position error by WAAS protection levels. This section also includes 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 WAAS LPV availability and outages at selected airports.

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

Section 10 provides the surveyed positions of all WREs and the difference between the WRE survey positions in the current operational software and the survey positions in this report.

Section 11 provides the daily and quarterly average of SQM PRN type biases and PRN biases.

2.0 WAAS POSITION ACCURACY

Navigation error data, collected from WAAS and NSTB reference stations, was processed to determine position accuracy at each location. This was accomplished by 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 for the quarter. The table also includes 95% SPS accuracy for certain locations. Figures 2.1 to 2.6 show the daily horizontal and vertical 95% accuracy for LPV operational service level for the period. Note that WAAS accuracy statistics presented are compiled only when all WAAS corrections (fast, long term, and ionospheric) for at least 4 satellites are available. This is referred to as PA navigation mode. The percentage of time that PA navigation mode was supported by WAAS at each receiver is also shown in Table 2.1. A user is considered to be in NPA navigation mode if only WAAS fast and long term corrections are available to a user (i.e. no ionospheric corrections). Table 2.2 shows NPA horizontal position accuracy for 95% and 99.999% of the time. This table also shows the maximum NPA horizontal position error for the quarter. Figures 2.7 to 2.8 show the daily horizontal 95% accuracy for NPA.

Table 2.3 shows the maximum LPV error statistics. The column marked 'Horizontal Error' shows the maximum position errors while the calculated HPL meets the LPV service level defined in Table 1.1. The column marked 'Vertical Error' shows the maximum position errors while the calculated VPL meets the LPV service level. The columns marked 'Horizontal Error/HPL' and 'Vertical Error/VPL' show the ratio of position error to protection level at the time the maximum error occurred. The columns marked 'Horizontal Maximum Ratio' and 'Vertical Maximum Ratio' show the maximum position error to protection level ratio for the quarter.

During this reporting period, the maximum 95% CONUS horizontal and vertical LPV errors are 1.628 meters and 1.98 meters both at Grand Forks, respectively. The minimum 95% CONUS horizontal and vertical LPV errors are 0.518 meters at Denver and 0.848 meters at Salt Lake City, respectively. The maximum 95% and 99.999% NPA horizontal errors are 5.392 meters at Honolulu and 12.29 meters both at Tapachula, respectively. The minimum 95% and 99.999% horizontal errors are 1.272 meters at Kansas City and 3.155 meters at Cold Bay, respectively.

The increases in 95% accuracy on 4/24/12 in Figure 2.1 to 2.8 are due to geomagnetic activity.

Figures 2.9 to 2.12 show the distributions of the vertical and horizontal errors at all 38 WAAS receiver locations combined in triangle charts and 2-D histogram plots for the quarter. The triangle charts in Figure 2.9 and 2.10 show the distributions of vertical position errors (VPE) versus vertical protection levels (VPL) and horizontal position errors (HPE) versus horizontal protection levels (HPL). The horizontal axis is the position error and the vertical axis is the WAAS protection levels. Lower protection levels equate to better availability. The diagonal line shows the point where error equals protection level. Above and to the left of the diagonal line in the chart, errors are bounded (WAAS is providing integrity in the position domain); below and to the right, errors are not bounded (HMI could be present). The 2-D histogram plots in Figure 2.11 and 2.12 show the distributions of vertical and horizontal position errors and normalized position errors. The blue trace shows the distributions of the actual vertical and horizontal errors. 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. The magenta trace show the distributions of the actual vertical and horizontal errors normalized by one-sigma value of the protection level; vertical - (VPL/5.33) and horizontal - (HPL/6.0). 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. Narrowness of the normalized error distributions shows very good observed 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	1.389	1.389	1.681	100	*	*
Grand Forks	1.628	1.629	1.980	100	*	*
Oklahoma City	0.684	0.684	1.397	100	*	*
Albuquerque	0.618	0.618	1.099	100	2.720	3.804
Anchorage	0.667	0.668	1.386	100	*	*
Atlanta	0.595	0.595	1.138	100	2.674	4.102
Barrow	0.602	0.602	1.355	99.99315	*	*
Bethel	0.581	0.581	1.056	100	2.900	3.614
Billings	0.833	0.833	0.866	100	2.010	3.556
Boston	0.810	0.810	1.048	100	2.294	3.726
Chicago	0.694	0.694	1.020	100	*	*
Cleveland	0.693	0.693	1.015	100	2.079	3.929
Cold Bay	0.636	0.637	1.102	100	*	*
Dallas	0.653	0.653	1.244	100	*	*
Denver	0.518	0.518	0.929	100	*	*
Fairbanks	0.720	0.721	1.621	100	3.018	3.725
Gander	0.805	0.805	1.218	100	*	*
Goose Bay	0.782	0.782	1.091	100	*	*
Houston	0.712	0.712	1.419	100	3.435	4.420
Iqaluit	0.733	0.734	1.368	100	*	*
Jacksonville	0.691	0.691	1.368	100	*	*
Juneau	0.684	0.686	1.104	100	*	*
Kansas City	0.550	0.550	0.883	100	2.105	3.903
Kotzebue	0.678	0.678	1.335	99.99315	3.001	3.774
Los Angeles	0.786	0.786	1.472	100	3.372	4.185
Memphis	0.620	0.620	1.084	100	*	*
Merida	0.825	0.825	1.652	100	*	*
Mexico City	0.785	0.785	2.056	100	*	*
Miami	0.846	0.846	1.607	100	3.813	5.164
Minneapolis	0.664	0.664	0.939	100	1.999	3.734
New York	0.792	0.792	1.085	100	*	*
Oakland	0.682	0.682	1.457	100	3.055	4.163
Puerto Vallarta	0.837	0.837	2.358	100	*	*
Salt Lake City	0.652	0.652	0.848	100	2.190	3.769
San Jose Del Cabo	0.879	0.879	2.407	100	*	*
Seattle	0.694	0.694	0.895	100	2.145	3.682
Washington DC	0.746	0.746	1.151	100	2.322	4.000
Winnipeg	0.666	0.667	1.102	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
Anchorage	2.680	4.300	100	4.429
Atlanta	1.750	4.561	100	4.894
Barrow	2.297	4.808	99.998	4.953
Bethel	2.491	4.080	100	4.265
Billings	1.593	3.735	100	3.851
Boston	1.772	6.192	100	6.305
Cleveland	1.324	6.229	100	6.340
Cold Bay	1.693	3.155	100	3.299
Fairbanks	3.095	5.275	100	5.431
Gander	1.919	5.057	100	5.245
Honolulu	5.392	11.267	100	11.666
Houston	2.581	5.025	100	5.153
Iqaluit	1.964	4.340	100	4.437
Juneau	2.467	4.039	100	5.383
Kansas City	1.272	4.324	100	4.509
Kotzebue	2.601	5.102	99.998	5.213
Los Angeles	2.479	5.963	100	6.212
Merida	3.239	8.564	100	8.771
Miami	2.801	5.533	100	5.696
Minneapolis	1.379	5.073	100	5.263
Oakland	1.917	5.666	100	6.099
Salt Lake City	1.420	3.665	100	3.811
San Jose Del Cabo	3.551	8.818	100	9.004
Seattle	1.404	4.131	100	4.351
Tapachula	3.586	12.290	100	12.552
Washington DC	1.737	5.498	100	5.620

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	3.319	0.229	0.262	4.845	0.139	0.187
Grand Forks	3.066	0.182	0.313	5.415	0.283	0.293
Oklahoma City	2.171	0.140	0.212	4.639	0.240	0.240
Albuquerque	1.571	0.162	0.162	3.004	0.143	0.169
Anchorage	2.133	0.180	0.240	3.749	0.077	0.190
Atlanta	1.604	0.166	0.170	3.597	0.238	0.241
Barrow	2.353	0.084	0.171	5.368	0.149	0.194
Bethel	2.214	0.073	0.154	3.063	0.154	0.154
Billings	2.778	0.211	0.213	4.830	0.239	0.239
Boston	2.468	0.153	0.163	3.956	0.194	0.205
Chicago	3.154	0.248	0.248	4.985	0.217	0.246
Cleveland	2.965	0.223	0.225	5.612	0.148	0.243
Cold Bay	2.135	0.078	0.109	3.214	0.114	0.124
Dallas	1.707	0.174	0.177	2.953	0.195	0.216
Denver	1.439	0.157	0.176	3.228	0.143	0.187
Fairbanks	2.637	0.173	0.184	5.603	0.153	0.221
Gander	2.516	0.120	0.139	4.099	0.120	0.160
Goose Bay	3.061	0.204	0.204	4.685	0.179	0.189
Houston	1.582	0.179	0.182	2.994	0.216	0.216
Iqaluit	2.434	0.084	0.129	5.046	0.165	0.167
Jacksonville	2.424	0.159	0.185	4.377	0.260	0.260
Juneau	3.217	0.134	0.150	4.125	0.154	0.182
Kansas City	2.120	0.231	0.236	4.337	0.208	0.228
Kotzebue	2.169	0.086	0.161	6.393	0.133	0.164
Los Angeles	2.722	0.171	0.173	3.603	0.145	0.160
Memphis	1.504	0.133	0.164	3.353	0.249	0.249
Merida	2.149	0.136	0.164	4.635	0.216	0.217
Mexico City	2.006	0.079	0.136	4.745	0.167	0.177
Miami	1.812	0.114	0.171	5.157	0.151	0.228
Minneapolis	2.488	0.179	0.185	3.963	0.164	0.238
New York	2.823	0.202	0.202	3.782	0.218	0.218
Oakland	2.246	0.199	0.200	3.880	0.137	0.198
Puerto Vallarta	2.193	0.062	0.113	4.828	0.150	0.200
Salt Lake City	1.692	0.164	0.164	2.809	0.161	0.161
San Jose Del Cabo	2.387	0.138	0.142	6.350	0.272	0.281
Seattle	2.310	0.127	0.182	3.993	0.149	0.172
Washington DC	5.102	0.154	0.235	7.561	0.175	0.212
Winnipeg	2.941	0.149	0.173	5.034	0.160	0.204

Figure 2-1 LPV 95% Horizontal Accuracy

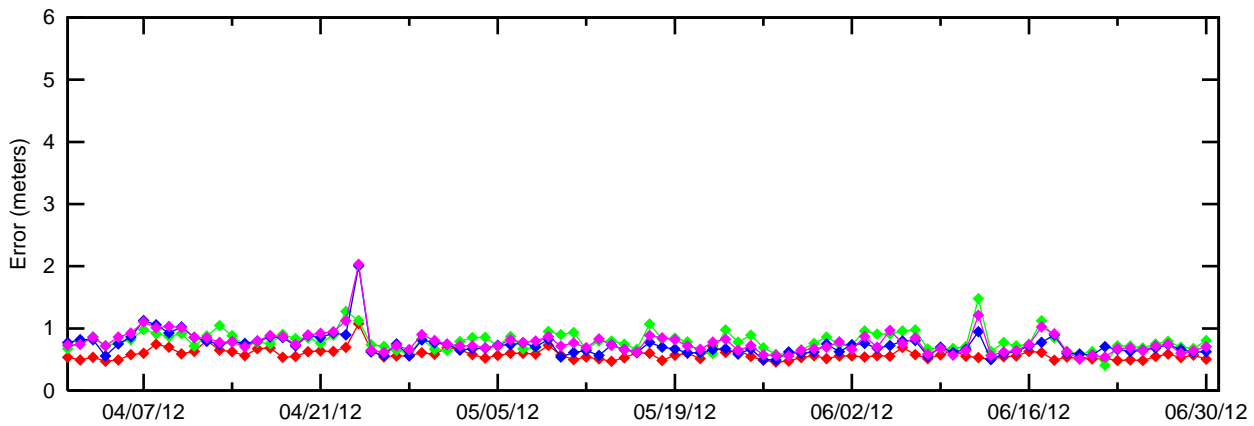
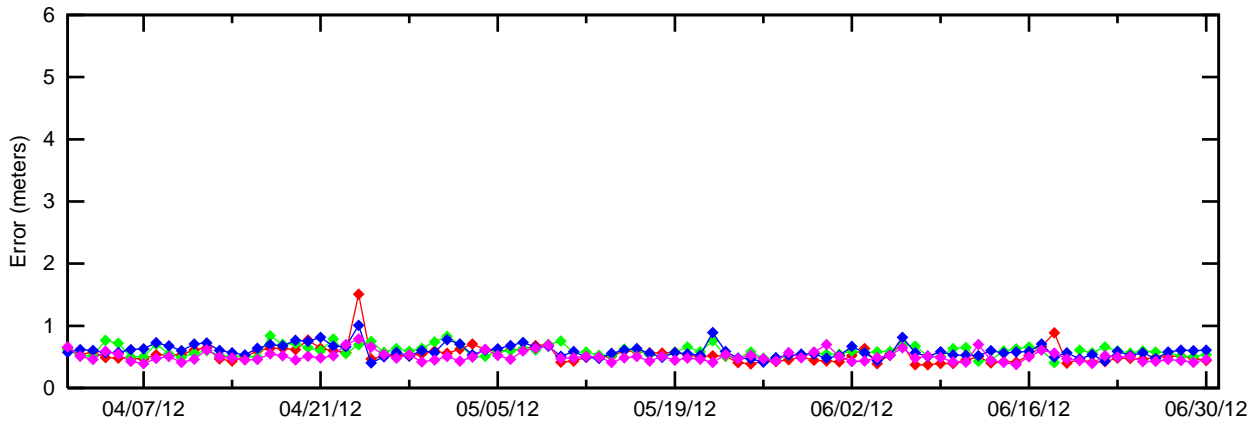
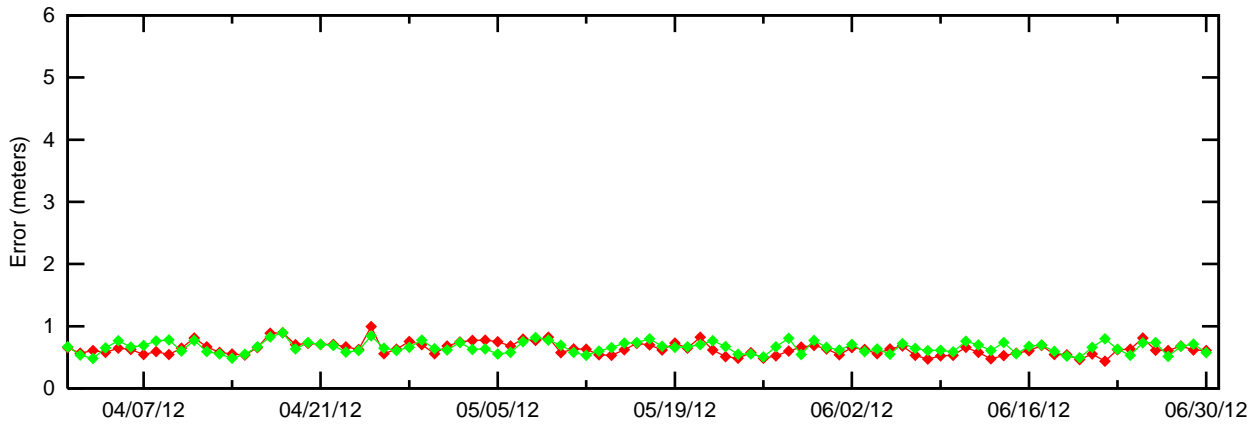
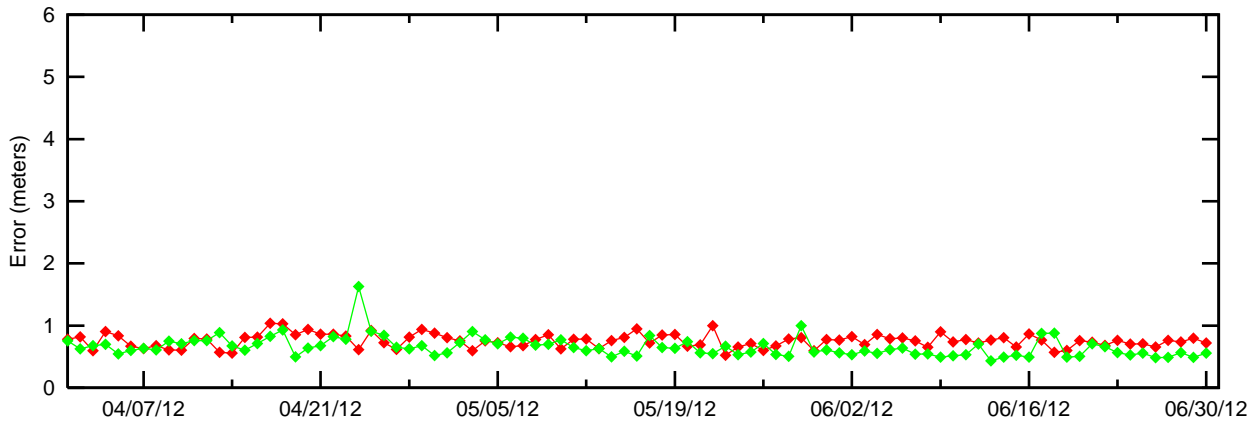


Figure 2-2 LPV 95% Horizontal Accuracy

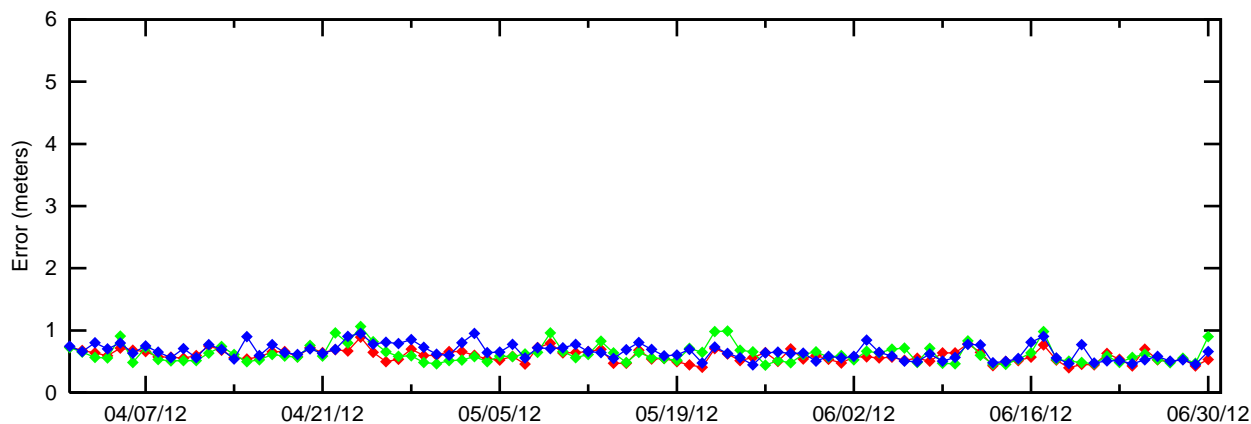
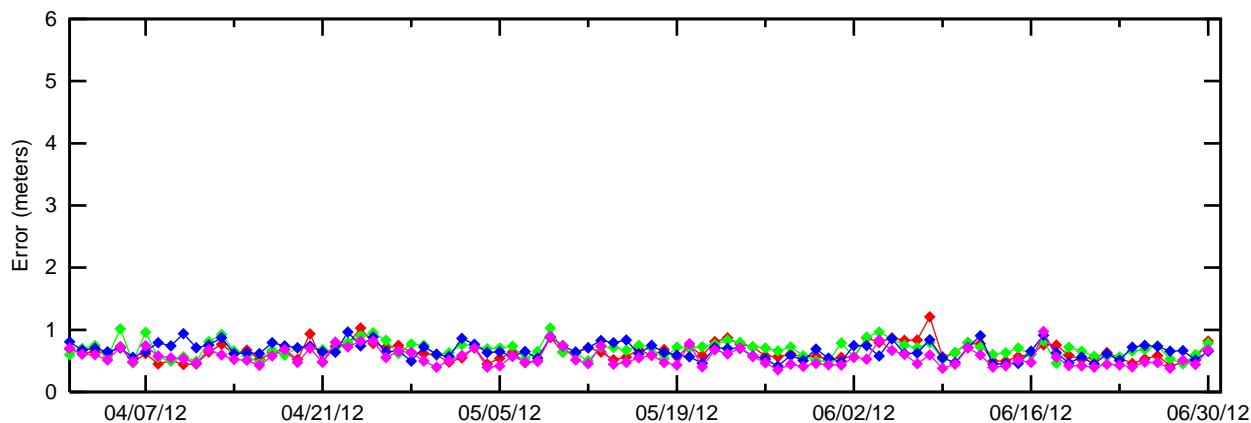
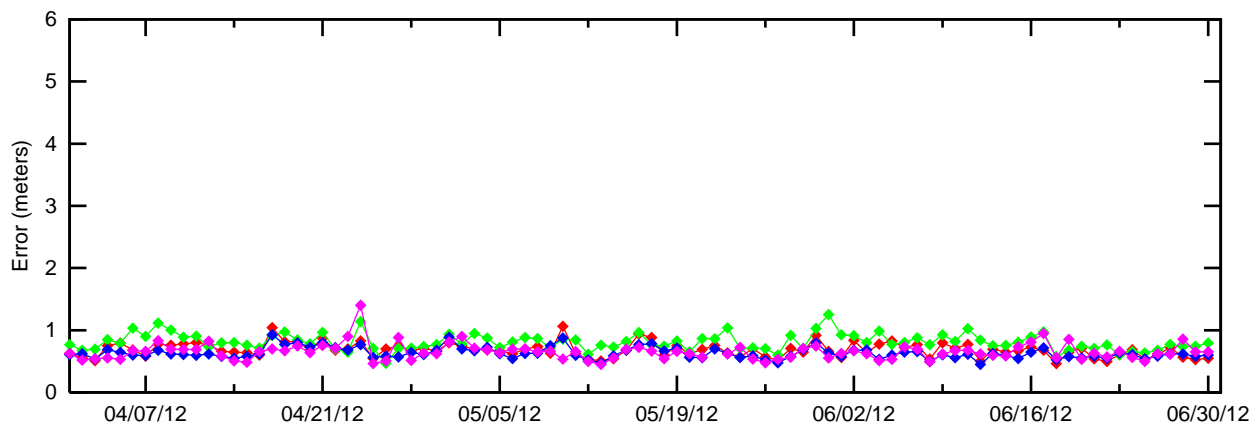
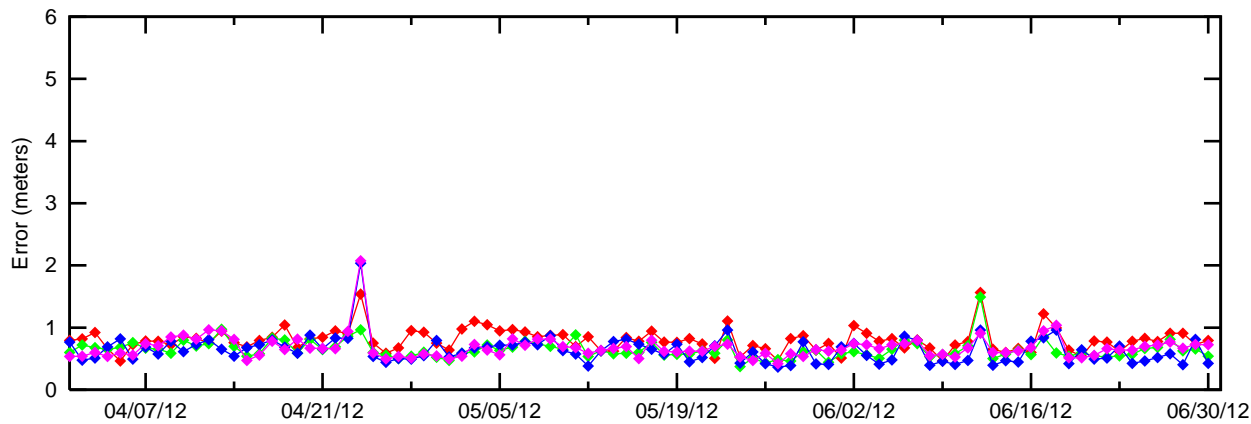


Figure 2-3 LPV 95% Horizontal Accuracy

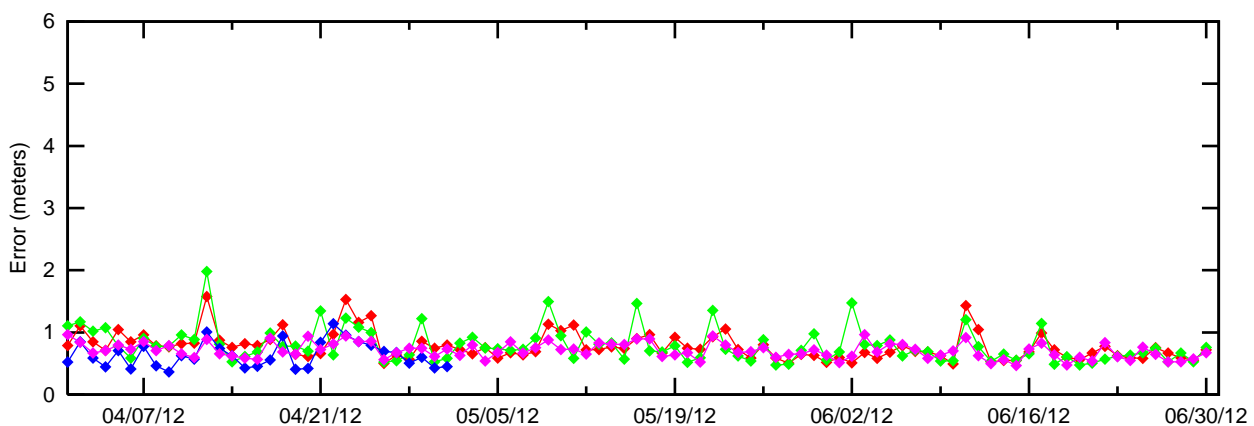
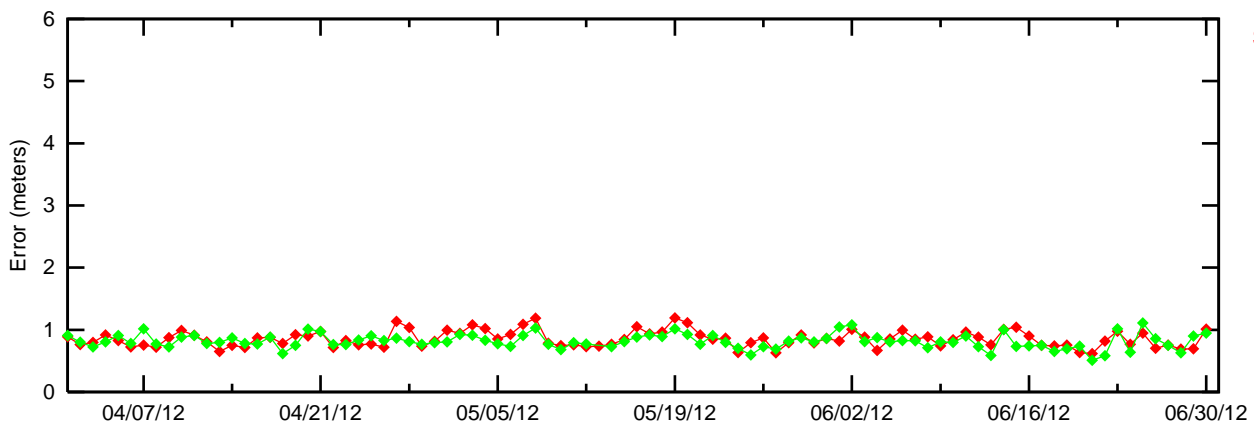
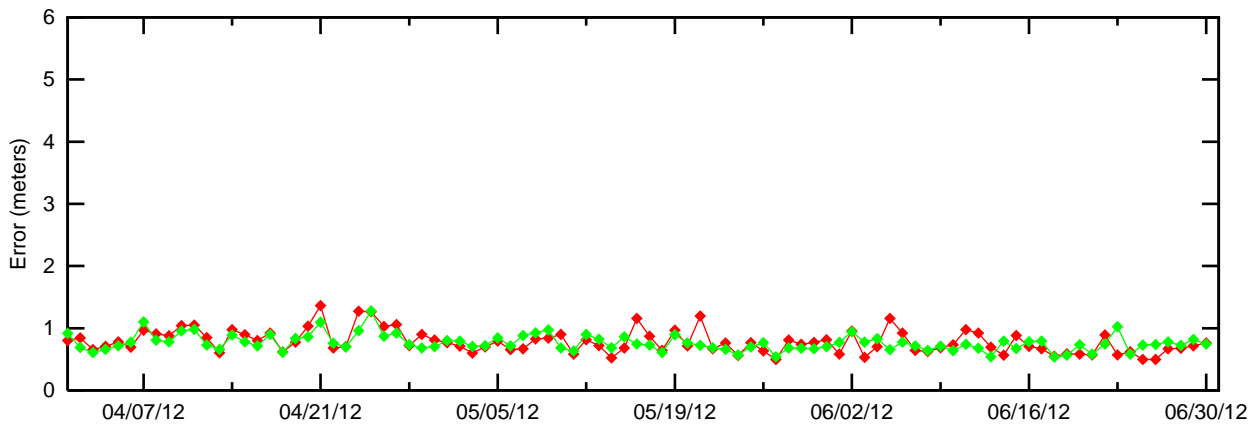
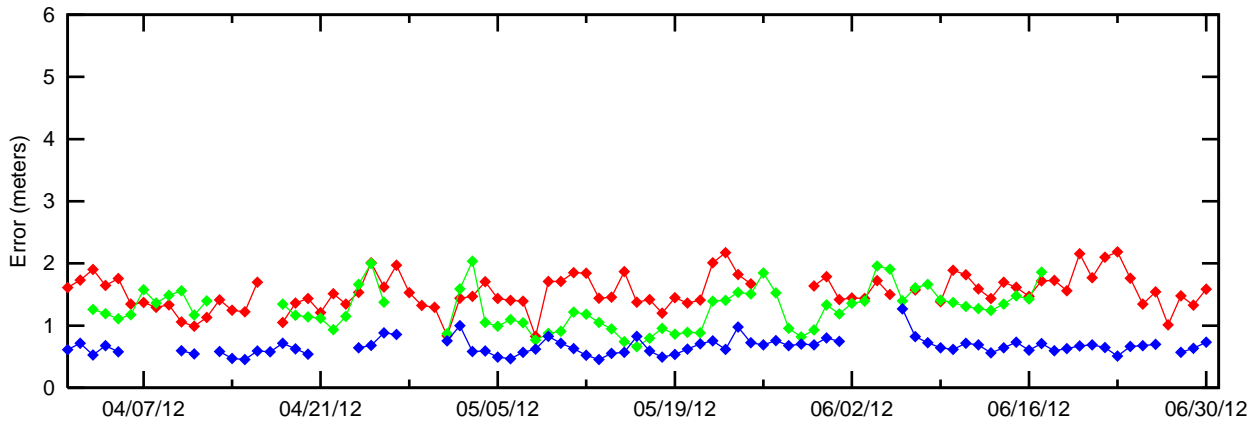


Figure 2-4 LPV 95% Vertical Accuracy

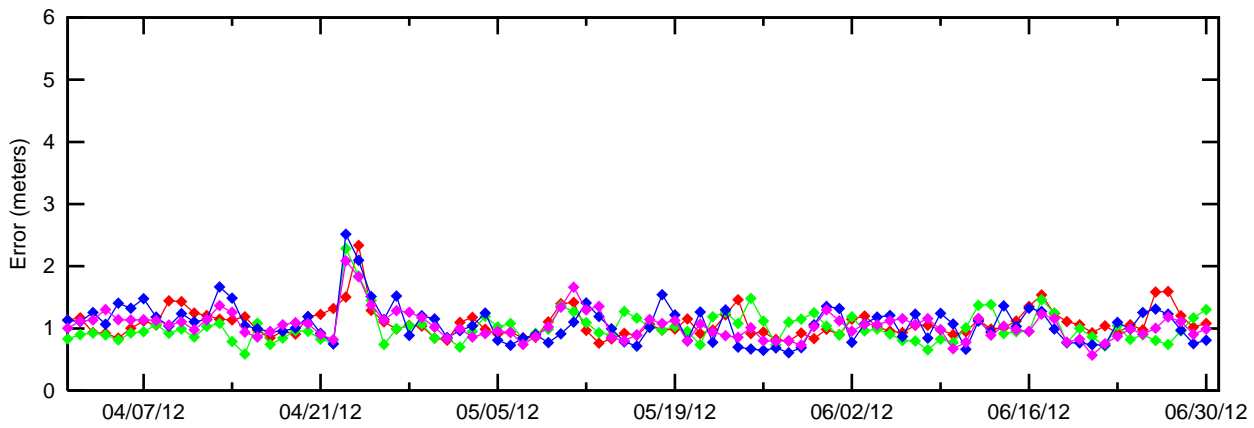
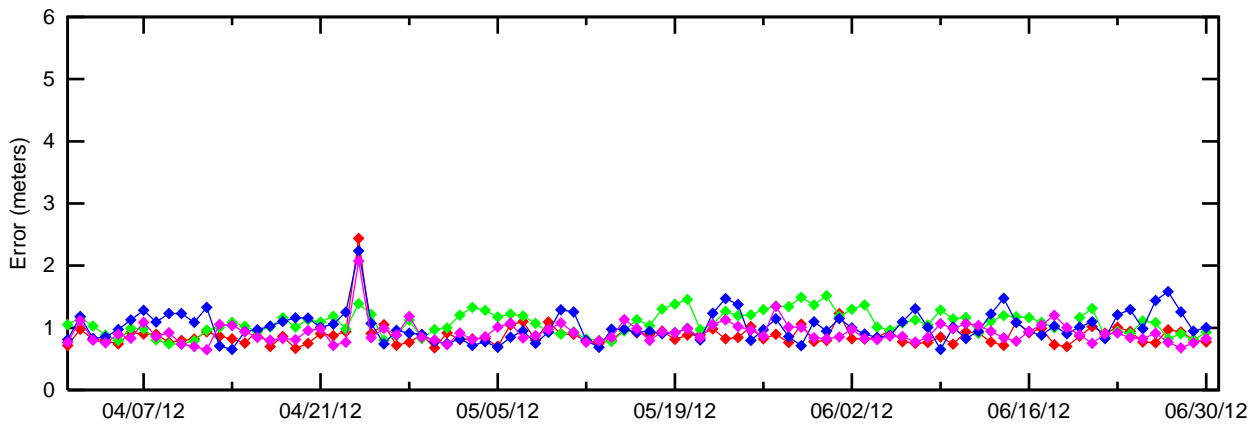
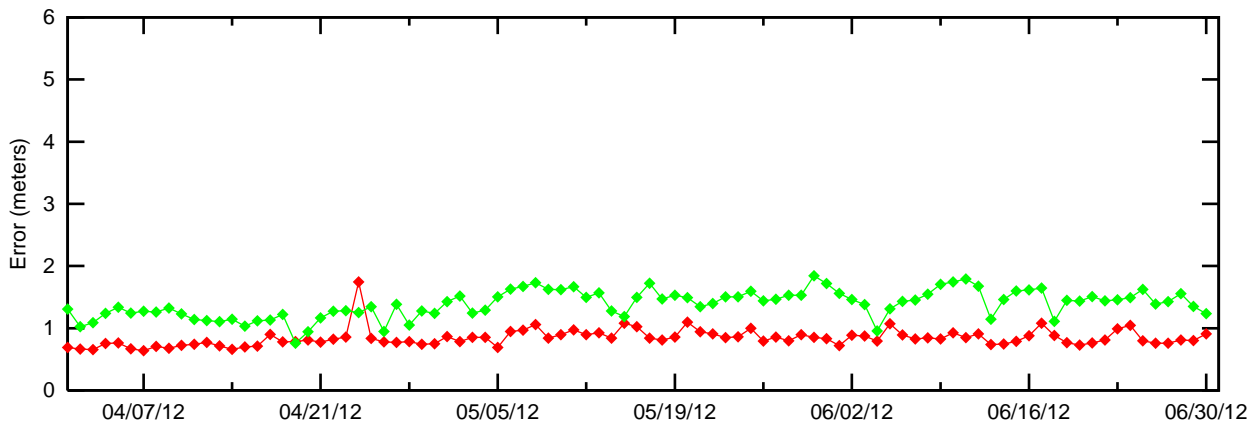
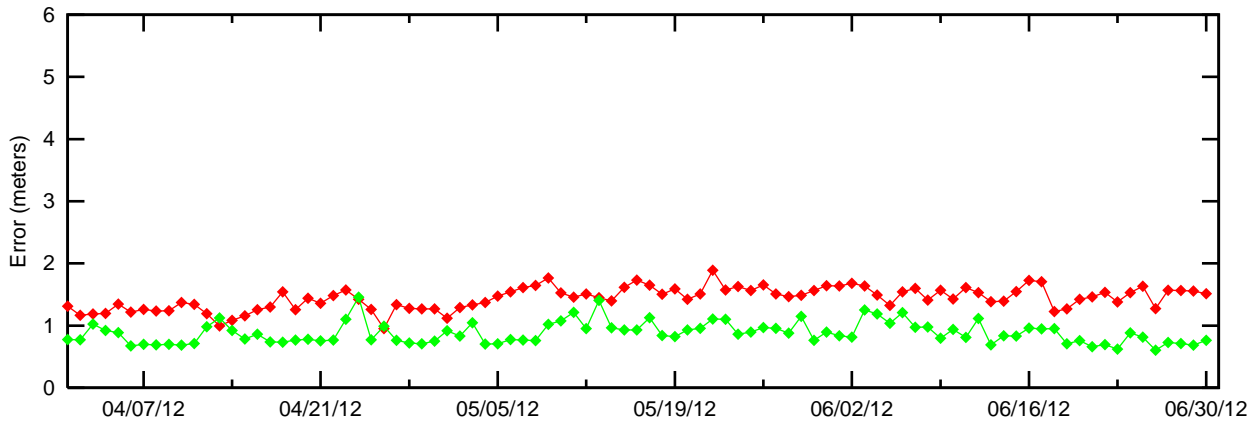


Figure 2-5 LPV 95% Vertical Accuracy

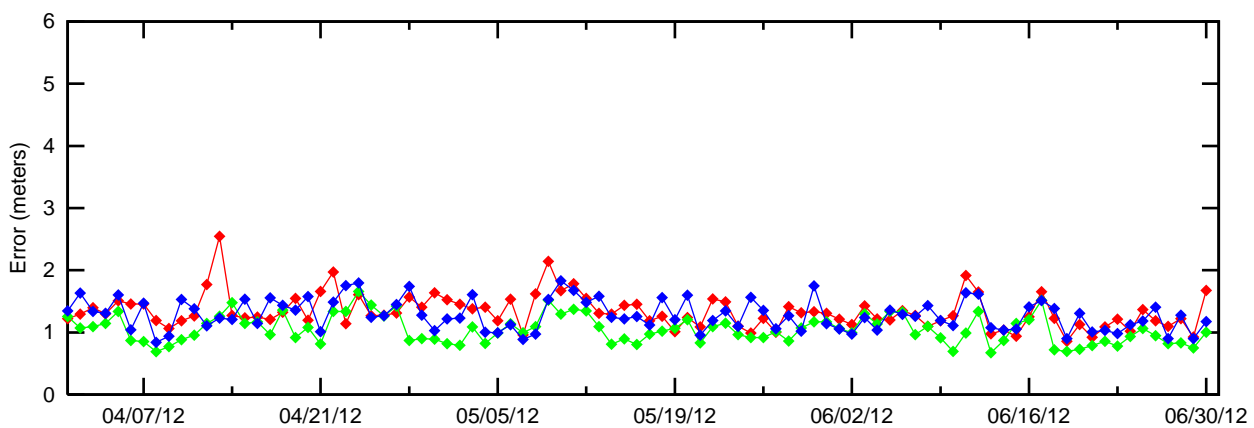
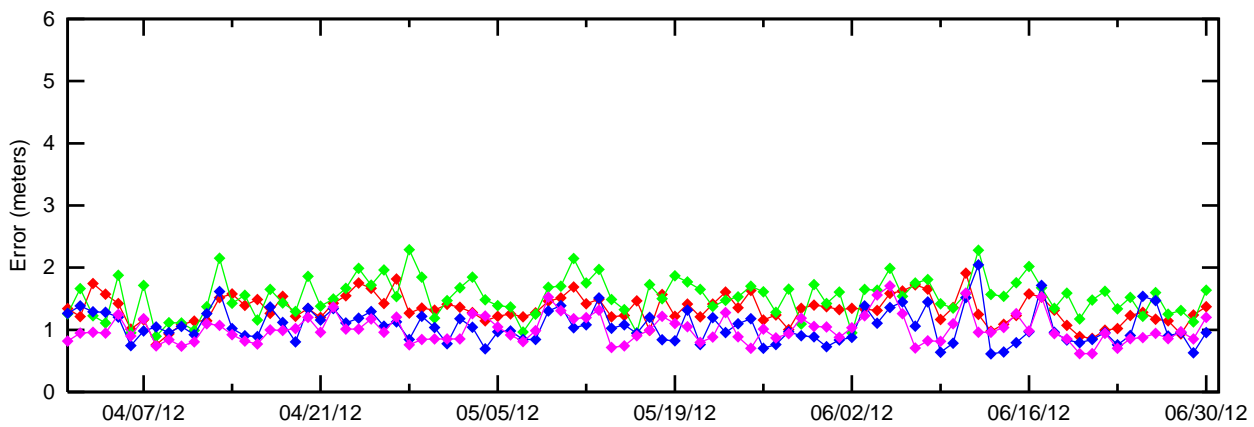
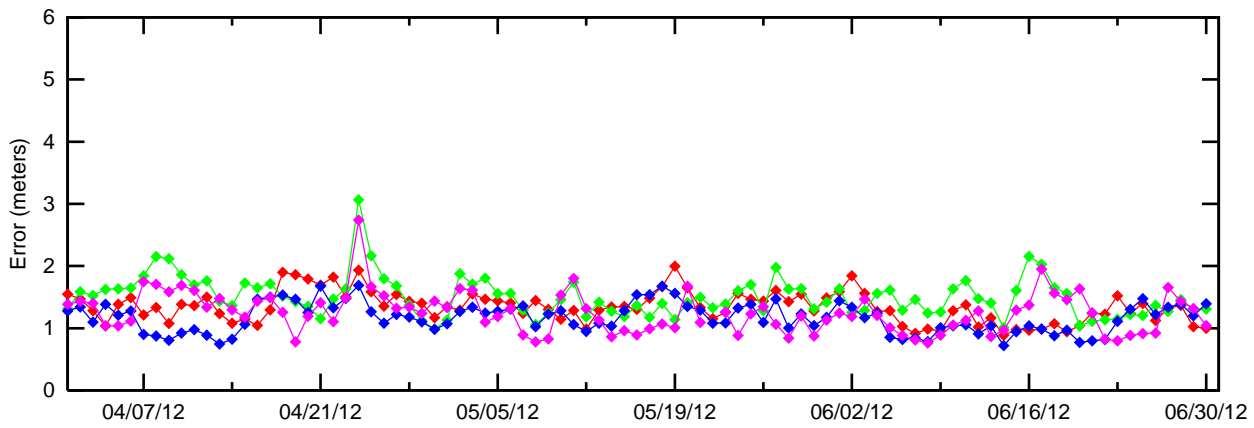
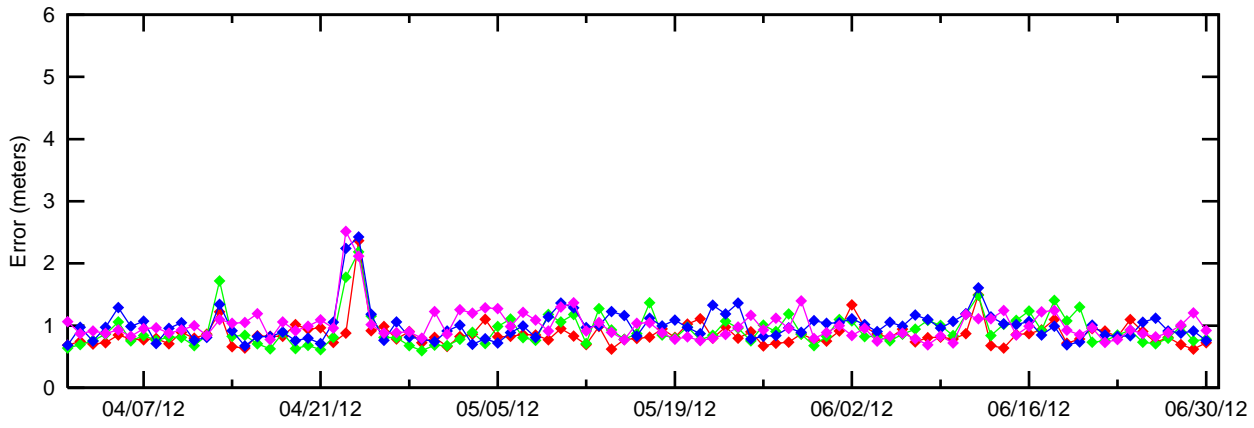


Figure 2-6 LPV 95% Vertical Accuracy

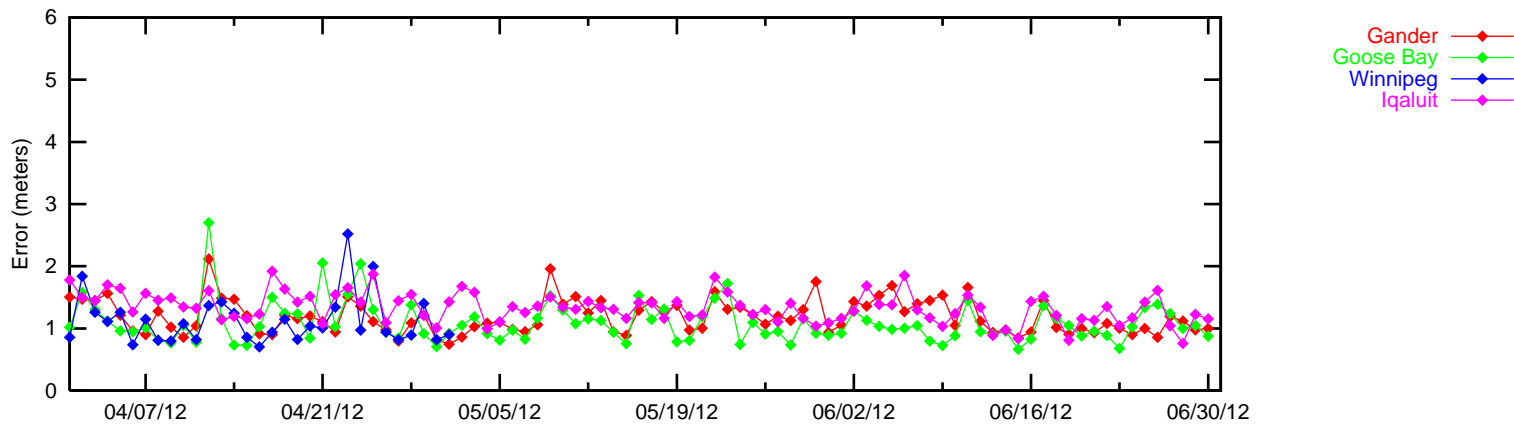
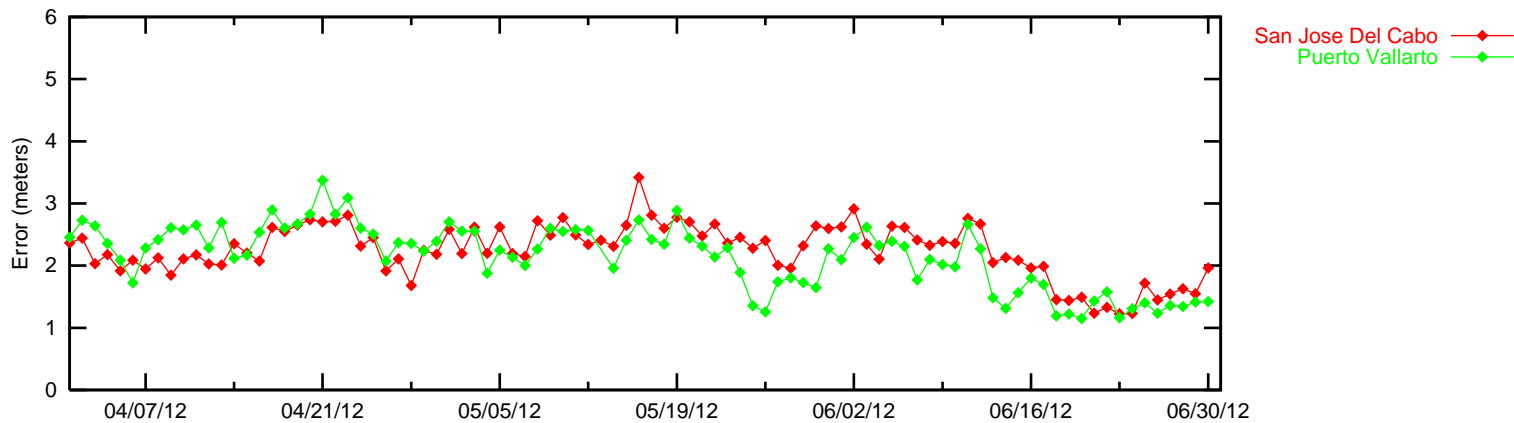
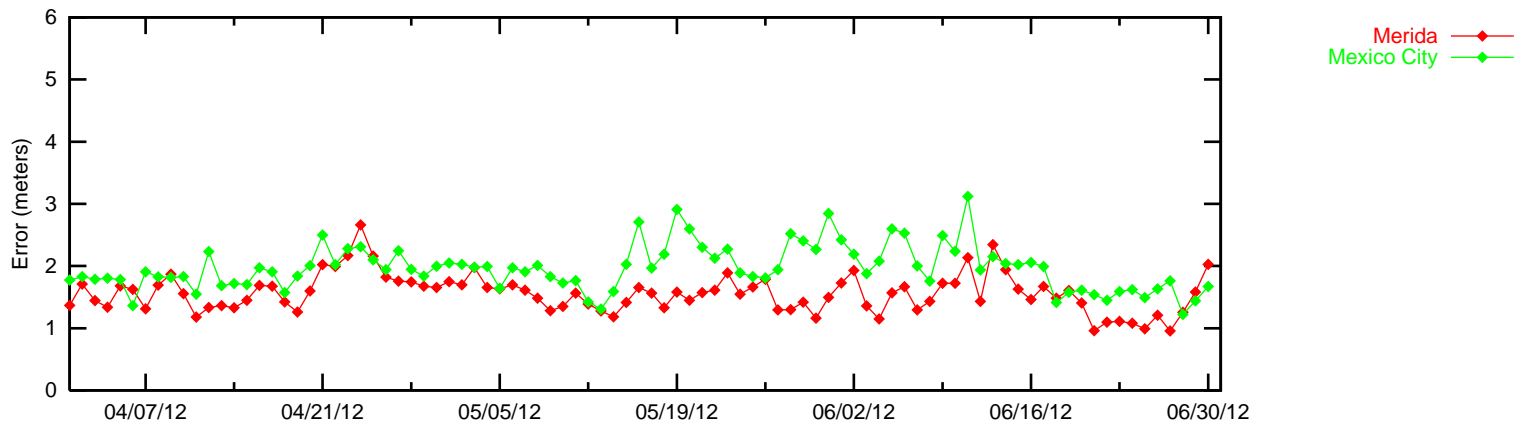
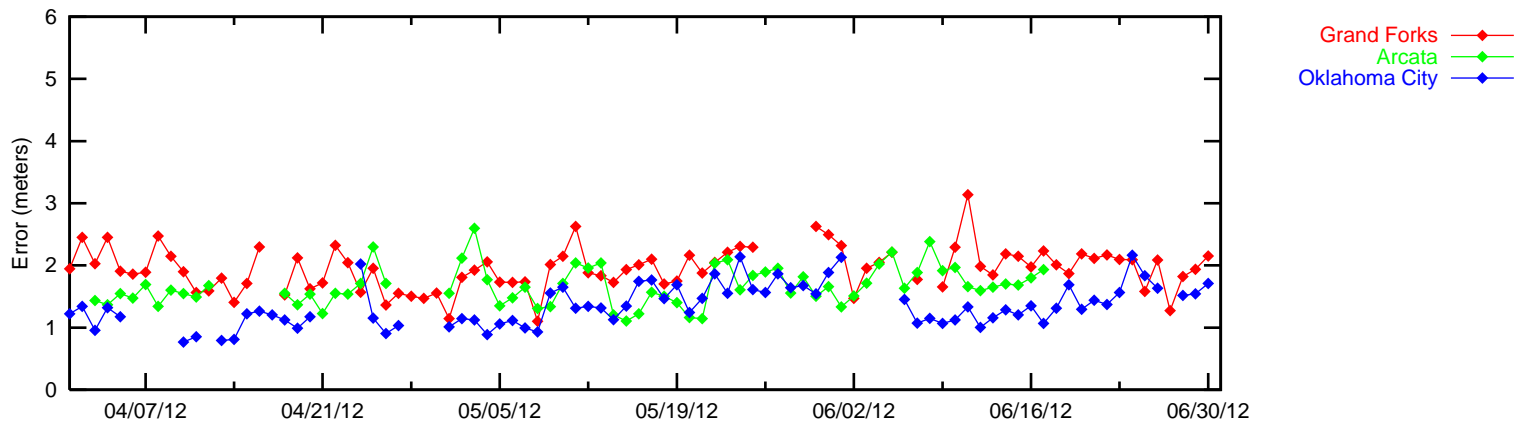


Figure 2-7 NPA 95% Horizontal Accuracy

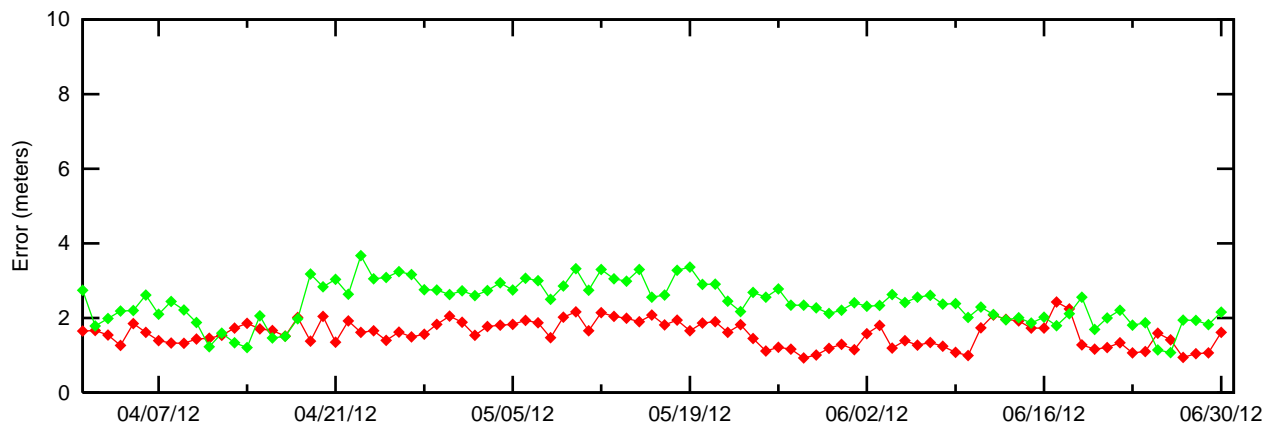
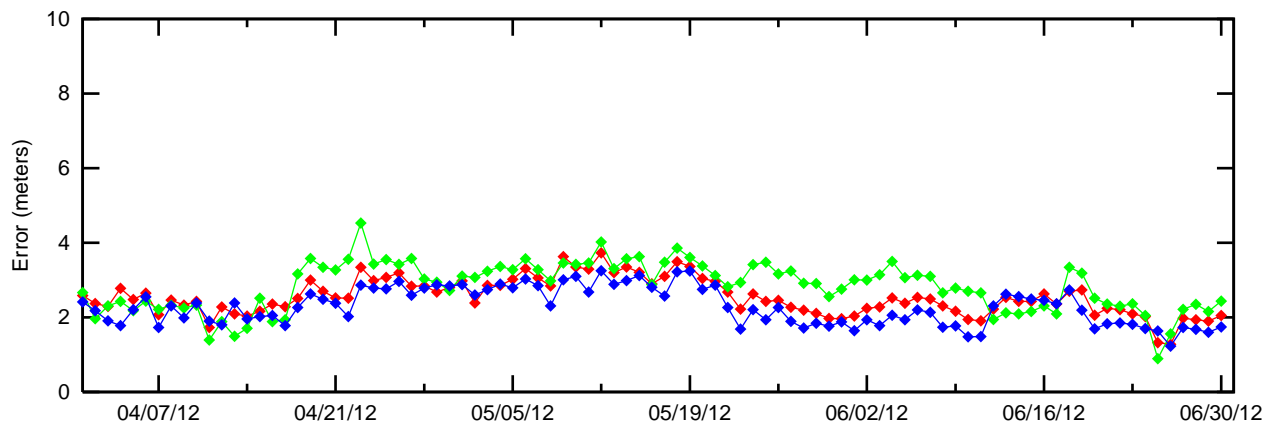
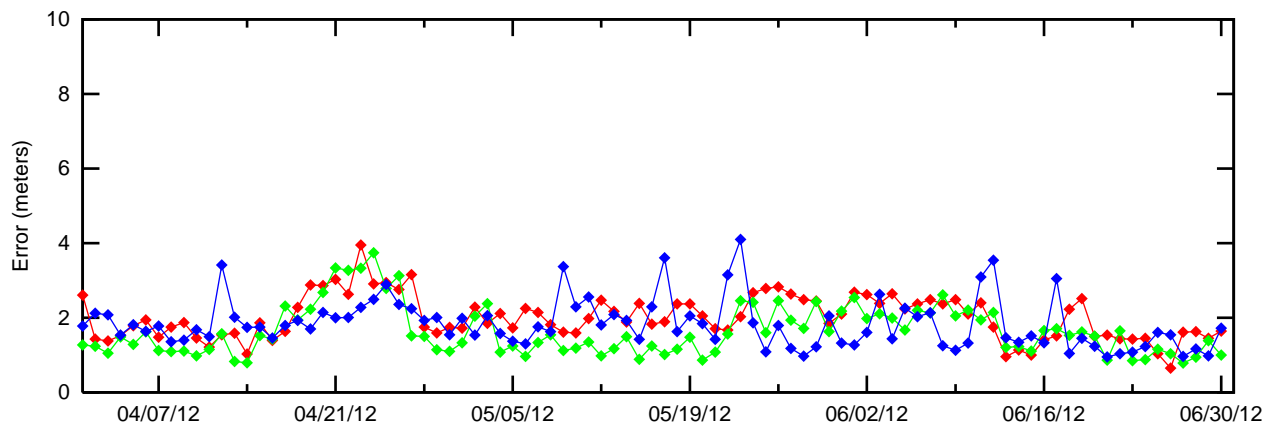
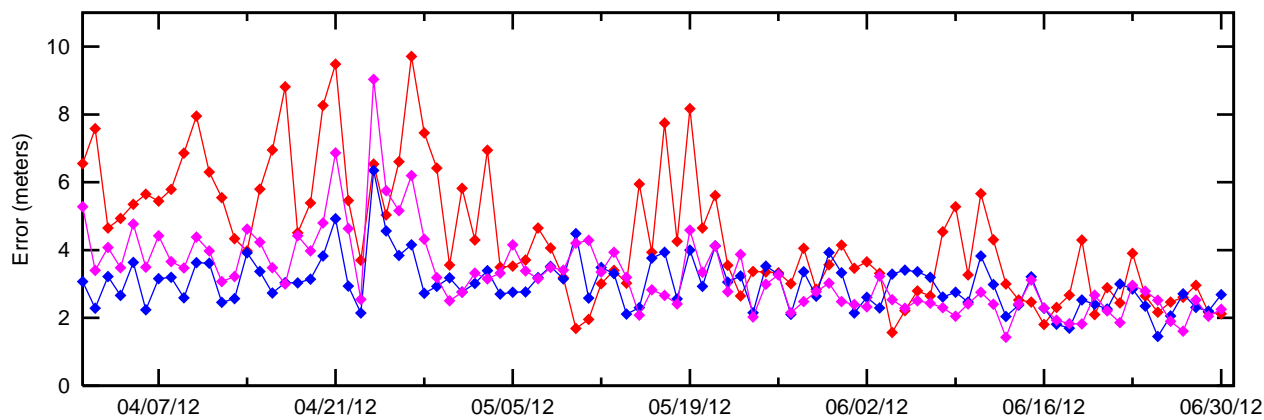
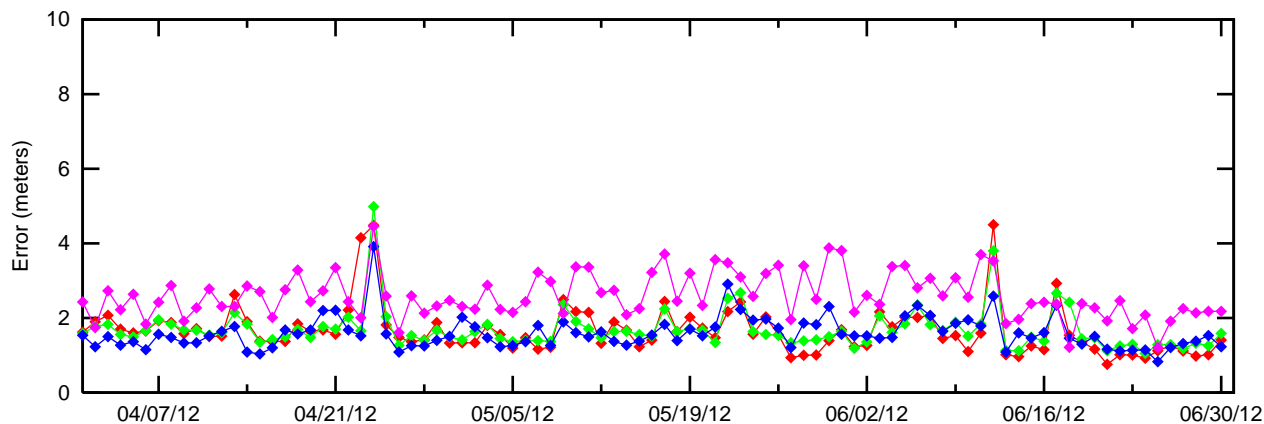
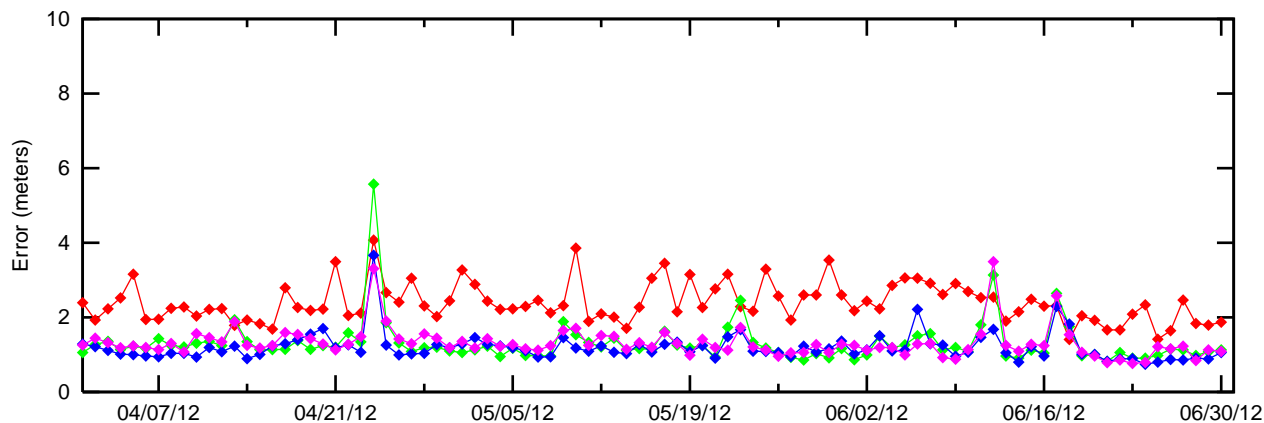
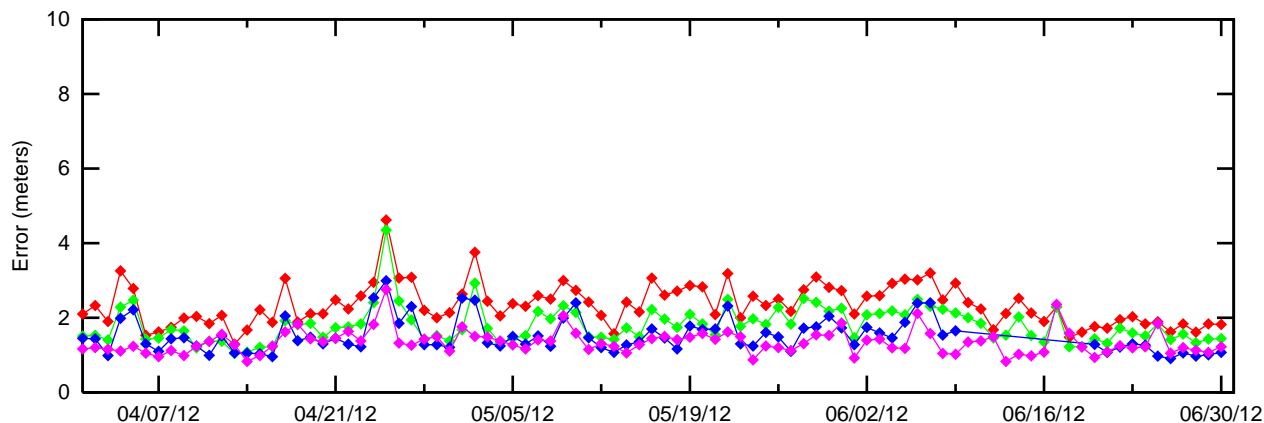
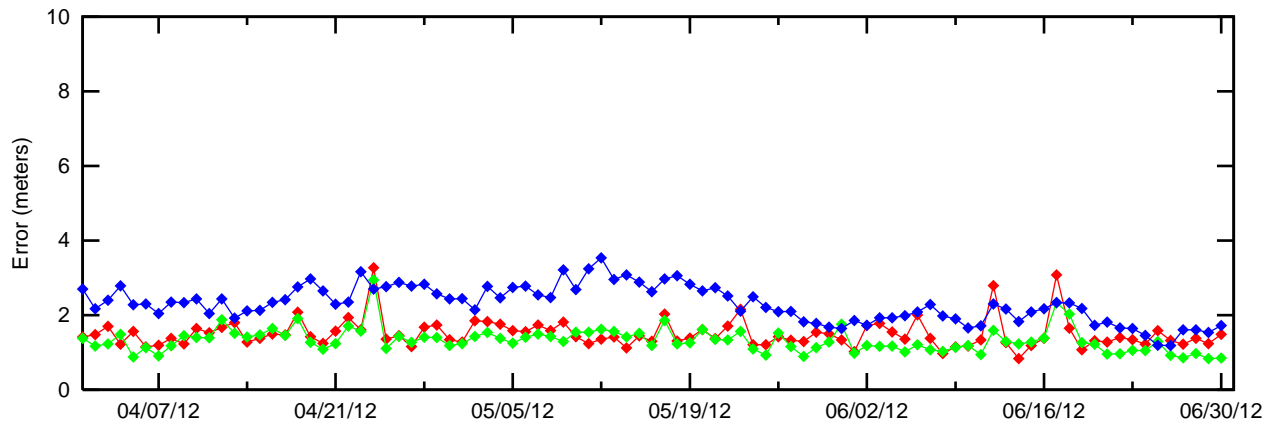


Figure 2-8 NPA 95% Horizontal Accuracy



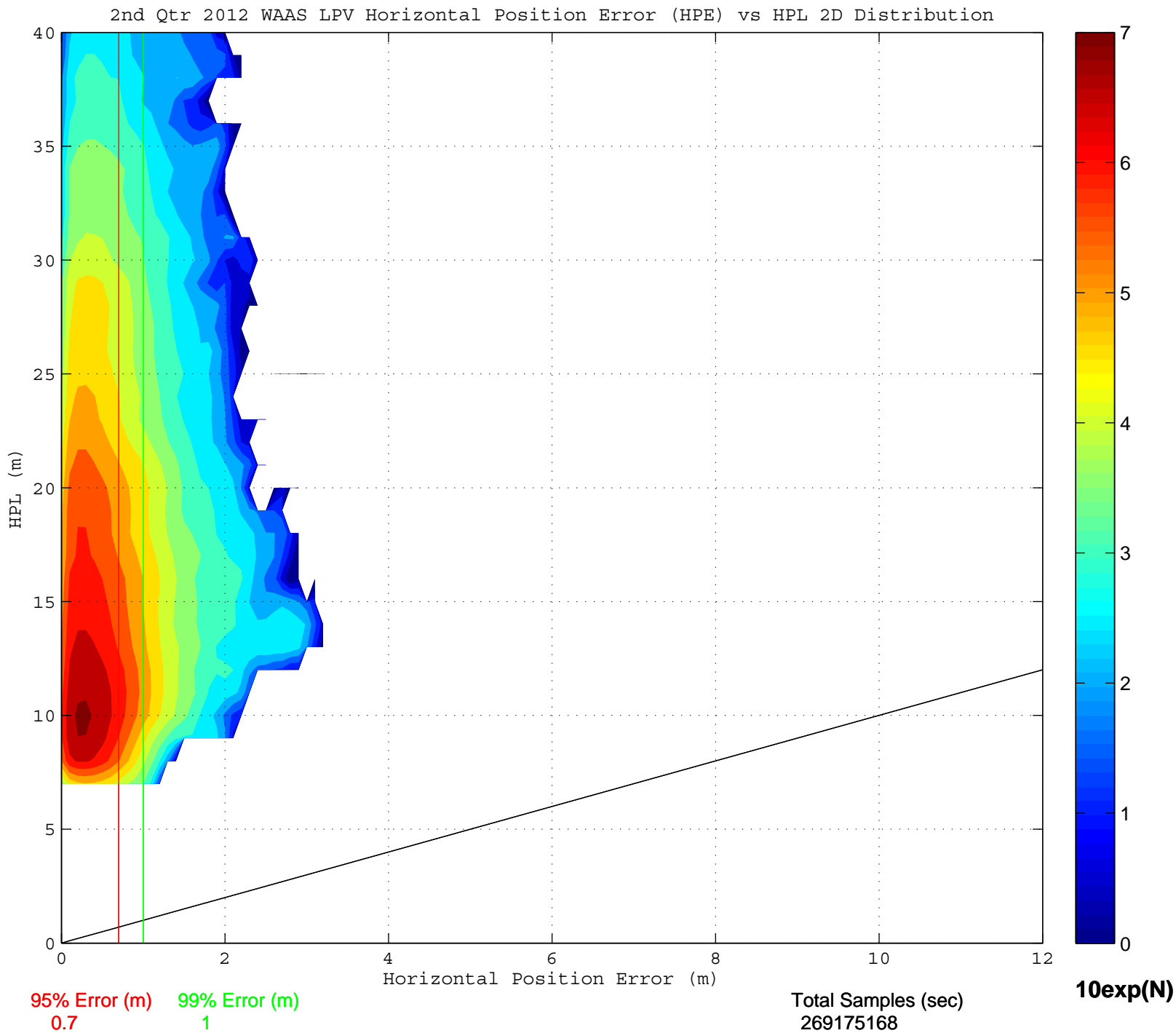
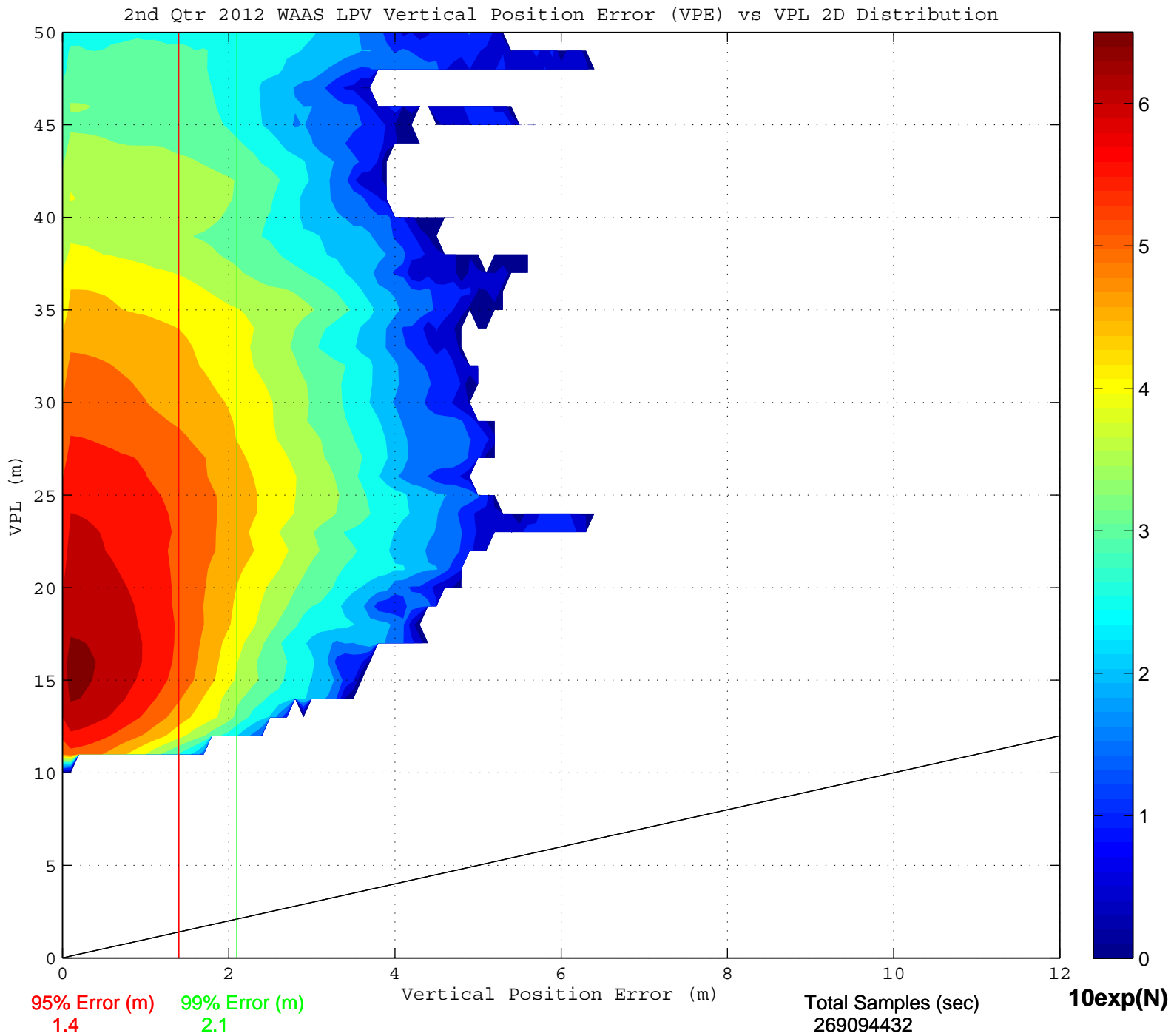
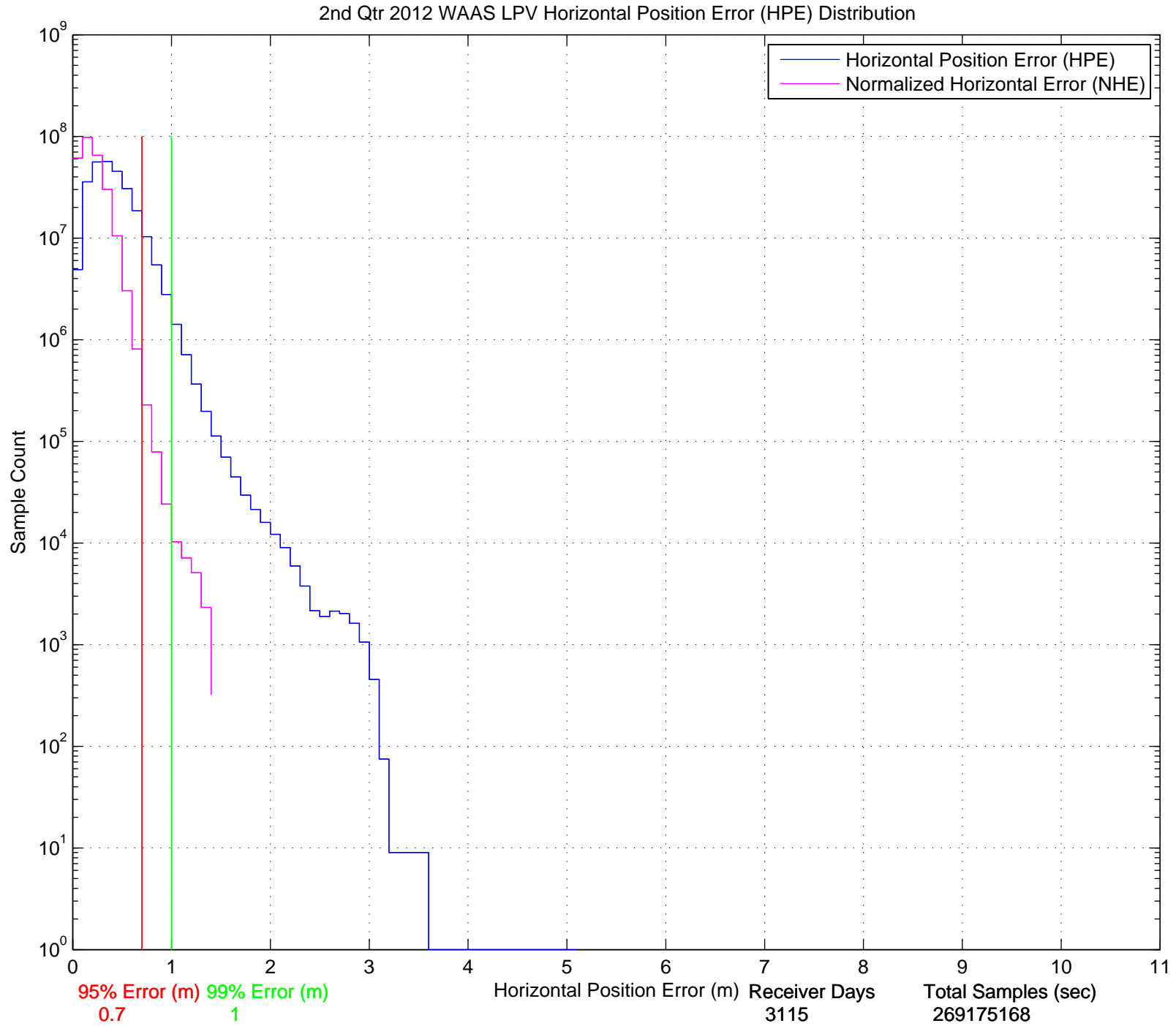
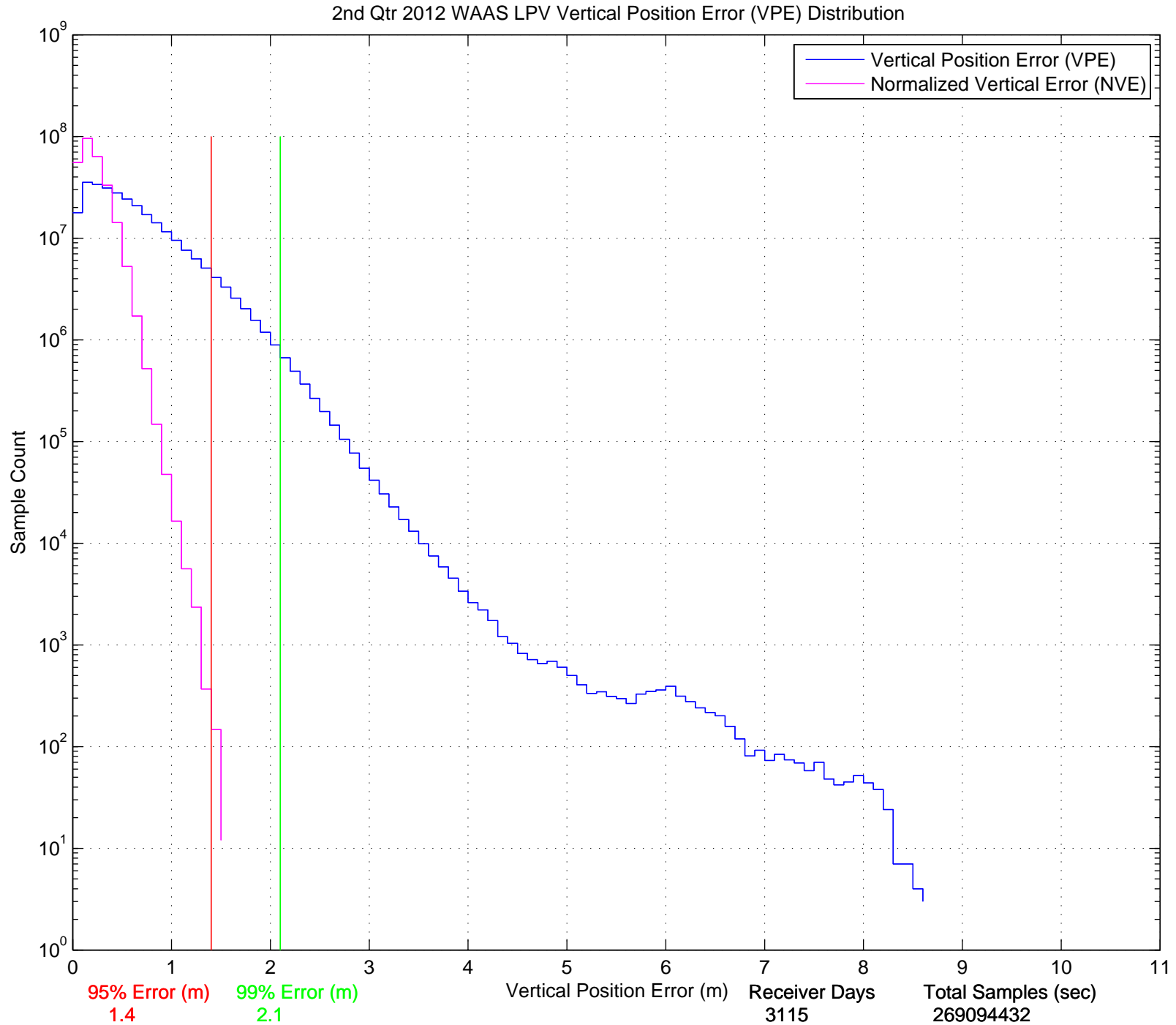


Figure 2-10 LPV Vertical Error Bounding Triangle Chart







3.0 AVAILABILITY

The WAAS availability evaluation documents the percentage of time that the WAAS provided service for the operational service levels defined in Table 1.1. RTCA DO-229D Vertical and Horizontal Protection Levels were computed for each receiver being evaluated. Table 3.1 shows the protection levels that were maintained for 99% of the time for each receiver location for the quarter. The table also included the percentage in PA mode as described in section 2.0.

For this reporting period, the maximum 99% CONUS HPL and VPL are 19.43 meters at Miami and 43.70 meters, at Oakland, respectively. The minimum 99% CONUS HPL and VPL are 10.91 meters at Denver and 19.52 meters at Chicago, respectively. The maximum 99% Alaska HPL and VPL are 27.98 meters and 36.63 meters, both at Cold Bay, respectively. The minimum 99% Alaska HPL and VPL are 13.43 meters at Fairbanks and 23.48 meters at Anchorage, respectively.

Availability of LP, LPV and LPV 200 service are evaluated by monitoring the WAAS protection levels at receiver locations throughout the test period. If both the vertical and horizontal protection levels are not greater than their respective alert limits (VAL and HAL) then the service is available. If either of the protection levels exceeds the required alert limit then the operational service at that location is considered unavailable and an outage in service is recorded with its duration. The operational service is not considered available again until the protection levels are both within the alert limits for at least 15 minutes. Although this will reduce operational service availability minimally, it substantially reduces the number of service outages and prevents excessive switching in and out of service availability. The percent of time that LP, LPV, and LPV 200 service is available using the fifteen-minute window criteria is presented in Table 3.2. The LP, LPV, and LPV 200 service outages and associated outage rate for the reporting period is presented in Table 3.4. The outage rate is the percent of approaches that theoretically would be interrupted by a loss of operational service once the approach had started. Figures 3.1 through 3.6 show the daily availability of LPV and LPV 200 service levels, and Figures 3.7 through 3.12 show the daily interruptions of LPV and LPV 200 service levels for the evaluation period.

Availability of NPA service is evaluated by monitoring the WAAS horizontal protection level at receiver locations throughout the test period. If the horizontal protection level is not greater than the horizontal alert limit (HAL = 556m) then the service is available. If the horizontal protection level exceeds the required alert level or if WAAS navigation message is not received then the NPA service at that location is considered unavailable and an outage in service is recorded with its duration. The NPA service is not considered available again until the horizontal protection level is within the alert limit for at least 15 minutes. The percent of time that NPA service is available using the fifteen-minute window criteria is presented in Table 3.3. The NPA service outages and associated outage rate for this period is presented in Table 3.5. The outage rate is the percent of NPA approaches that theoretically would be interrupted by a loss of operational service once the approach had started.

Low PA and NPA availability for this reporting period are due to GPS satellite outages, GUS switchovers, geomagnetic activity, and elevated GIVE and UDRE values. Please refer to Table 1.5 for the events that affected availability.

Geomagnetic activity on April 5th, April 24th, May 9th and June 18th elevated GIVE and UDRE values and reduced Alaska availability. Elevated UDRE value PRN 135 on June 22nd reduced Alaska availability.

Planned maintenance on PRN 28 on April 24th significantly reduced CONUS and Alaska availability. Planned maintenance on PRN 12 on April 27th reduced Alaska and RNP availability. Planned maintenance on PRN 19 on May 1st slightly reduced Alaska LPV 200 availability and planned maintenance on PRN 15 on April 12th slightly reduced CONUS PA availability. Maintenance on PRN 19 on June 17th with bad ephemeris update elevated UDRE value to Do Not Use briefly before going out of view of the WAAS system has negligible effect on availability, [see DR 109 PRN 19 Ephemeris Update Triggered RIM FDE to Exclude SV from Nav](#).

Manual GUS switchover on May 1st and May 20th reduced Alaska PA availability and manual GUS switchover on April 30th and May 7th reduced RNP availability.

Radio frequency interference (RFI) caused localized loss of availability at Washington DC, Boston, Miami, and Albuquerque on the dates listed in Table 1.5. The local RFI had no effect on WAAS service.

Table 3-1 99% Protection Level

Location	99% HPL (meters)	99% VPL (meters)	Percentage in PA mode
Arcata	15.189	40.832	100
Grand Forks	13.845	24.152	100
Oklahoma City	12.249	22.139	100
Albuquerque	12.328	26.337	100
Anchorage	14.062	23.481	100
Atlanta	12.510	20.089	100
Barrow	16.789	33.945	99.993150
Bethel	17.624	28.792	100
Billings	12.435	21.947	100
Boston	15.625	23.689	100
Chicago	11.866	19.529	100
Cleveland	12.939	20.915	100
Cold Bay	27.988	36.631	100
Dallas	13.106	23.849	100
Denver	10.914	22.098	100
Fairbanks	13.432	23.984	100
Gander	22.602	36.831	100
Goose Bay	18.481	28.535	100
Houston	12.042	23.734	100
Iqaluit	27.639	40.023	100
Jacksonville	14.555	21.332	100
Juneau	14.230	23.510	100
Kansas City	11.794	21.082	100
Kotzebue	16.232	31.593	99.993150
Los Angeles	15.068	27.527	100
Memphis	11.592	19.572	100
Merida	22.117	33.153	100
Mexico City	32.031	40.028	100
Miami	19.432	28.831	100
Minneapolis	12.279	21.833	100
New York	15.322	24.410	100
Oakland	14.797	43.708	100
Puerto Vallarta	29.994	43.018	100
Salt Lake City	11.480	21.876	100
San Jose Del Cabo	27.139	41.734	100
Seattle	15.043	29.659	100
Washington DC	13.478	21.645	100
Winnipeg	13.205	23.115	100

Table 3-2 Quarterly Availability Statistics

Location	LP WAAS With 15 minute window	LPV WAAS With 15 minute window	LPV 200 WAAS With 15 minute window
Arcata	1	0.999996	0.976175
Grand Forks	0.999988	0.999986	0.999723
Oklahoma City	1	1	1
Albuquerque	1	0.999991	0.999991
Anchorage	0.99948	0.999208	0.998635
Atlanta	1	1	0.999978
Barrow	0.999771	0.998751	0.991118
Bethel	0.999805	0.99926	0.998493
Billings	1	1	1
Boston	0.999993	0.999993	0.999993
Chicago	1	1	1
Cleveland	1	1	0.999854
Cold Bay	0.999546	0.999119	0.976059
Dallas	1	1	1
Denver	1	1	1
Fairbanks	0.99937	0.998964	0.998332
Gander	1	0.999924	0.967261
Goose Bay	1	0.99993	0.999362
Houston	1	1	1
Iqaluit	0.999633	0.998947	0.942628
Jacksonville	1	1	0.99985
Juneau	0.999009	0.998713	0.998369
Kansas City	1	1	1
Kotzebue	0.99982	0.999191	0.996195
Los Angeles	1	0.999946	0.997744
Memphis	1	1	1
Merida	1	0.999967	0.990782
Mexico City	0.999297	0.997238	0.953676
Miami	1	0.999877	0.999496
Minneapolis	1	0.999977	0.999697
New York	1	1	1
Oakland	1	0.998508	0.981218
Puerto Vallarta	0.99979	0.998083	0.938055
Salt Lake City	1	1	1
San Jose Del Cabo	1	0.997046	0.943238
Seattle	1	1	0.999744
Washington DC	0.999987	0.999971	0.99992
Winnipeg	0.999907	0.999247	0.998548

Table 3-3 NPA Availability

Location	NPA Availability (Excluding RAIM/FDE)
Albuquerque	1
Anchorage	1
Atlanta	1
Barrow	0.99998432
Bethel	1
Billings	1
Boston	1
Cleveland	1
Cold Bay	1
Fairbanks	1
Gander	1
Honolulu	1
Houston	1
Iqaluit	1
Juneau	1
Kansas City	1
Kotzebue	0.99998430
Los Angeles	1
Merida	1
Miami	1
Minneapolis	1
Oakland	1
Salt Lake City	1
San Jose Del Cabo	1
Seattle	1
Tapachula	1
Washington DC	1

Table 3-4 LPV and LPV 200 Outage Rate (Per 150 sec approach)

Location	LP Outages	LP Outage Rates	LPV Outages	LPV Outage Rates	LPV 200 Outages	LPV 200 Outage Rates
Arcata	0	0	2	0.000053	108	0.002921
Grand Forks	1	0.000021	1	0.000021	2	0.000042
Oklahoma City	0	0	0	0	0	0
Albuquerque	0	0	1	0.000019	2	0.000038
Anchorage	2	0.000038	2	0.000038	4	0.000077
Atlanta	0	0	0	0	1	0.000019
Barrow	5	0.000096	9	0.000172	79	0.001525
Bethel	3	0.000057	2	0.000038	6	0.000115
Billings	0	0	0	0	0	0
Boston	1	0.000019	1	0.000019	1	0.000019
Chicago	0	0	0	0	0	0
Cleveland	0	0	0	0	2	0.000038
Cold Bay	3	0.000057	6	0.000115	286	0.005608
Dallas	0	0	0	0	0	0
Denver	0	0	0	0	0	0
Fairbanks	2	0.000038	3	0.000057	5	0.000096
Gander	0	0	2	0.000038	232	0.004585
Goose Bay	0	0	1	0.000019	4	0.000077
Houston	0	0	0	0	0	0
Iqaluit	5	0.000096	22	0.000421	545	0.011058
Jacksonville	0	0	0	0	1	0.000019
Juneau	3	0.000058	2	0.000038	4	0.000077
Kansas City	0	0	0	0	0	0
Kotzebue	4	0.000077	4	0.000077	30	0.000577
Los Angeles	0	0	2	0.000038	92	0.001764
Memphis	0	0	0	0	0	0
Merida	0	0	3	0.000057	172	0.00332
Mexico City	45	0.000863	95	0.001826	458	0.009205
Miami	0	0	1	0.000019	8	0.000153
Minneapolis	0	0	1	0.000019	2	0.000038
New York	0	0	0	0	0	0
Oakland	0	0	61	0.001168	93	0.001812
Puerto Vallarta	9	0.000174	71	0.001377	580	0.01197
Salt Lake City	0	0	0	0	0	0
San Jose Del Cabo	0	0	72	0.001382	370	0.007506
Seattle	0	0	0	0	15	0.000287
Washington DC	1	0.000019	3	0.000057	10	0.000191
Winnipeg	2	0.000112	2	0.000112	4	0.000224

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	2	0.000038
Bethel	0	0
Billings	0	0
Boston	0	0
Cleveland	0	0
Cold Bay	0	0
Fairbanks	0	0
Gander	0	0
Houston	0	0
Iqaluit	0	0
Juneau	0	0
Kansas City	0	0
Kotzebue	2	0.000038
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
Seattle	0	0
Washington DC	0	0

Figure 3-1 LPV Instantaneous Availability

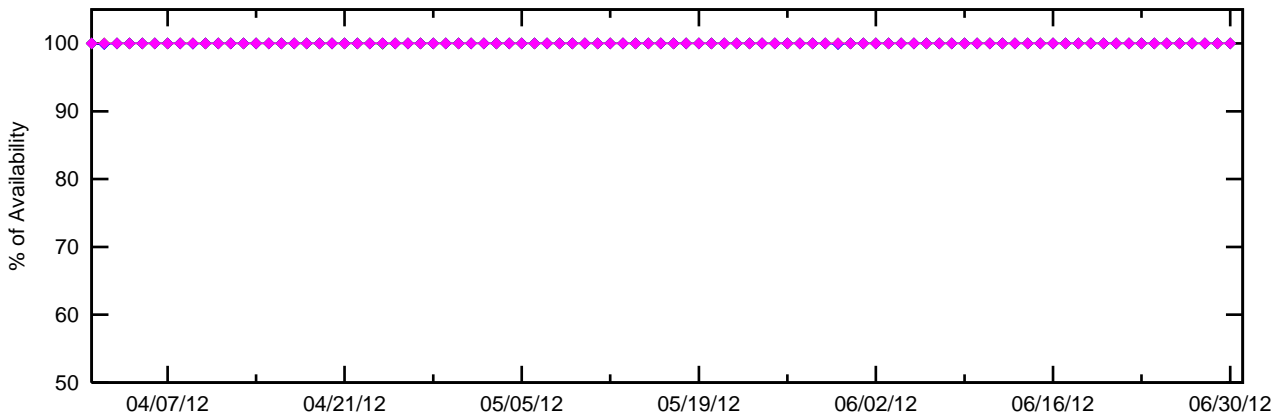
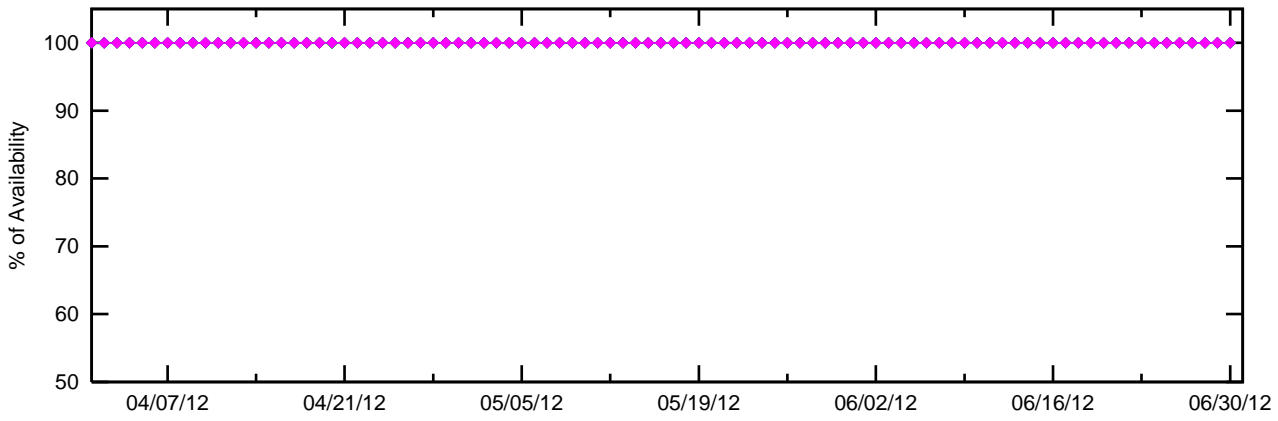
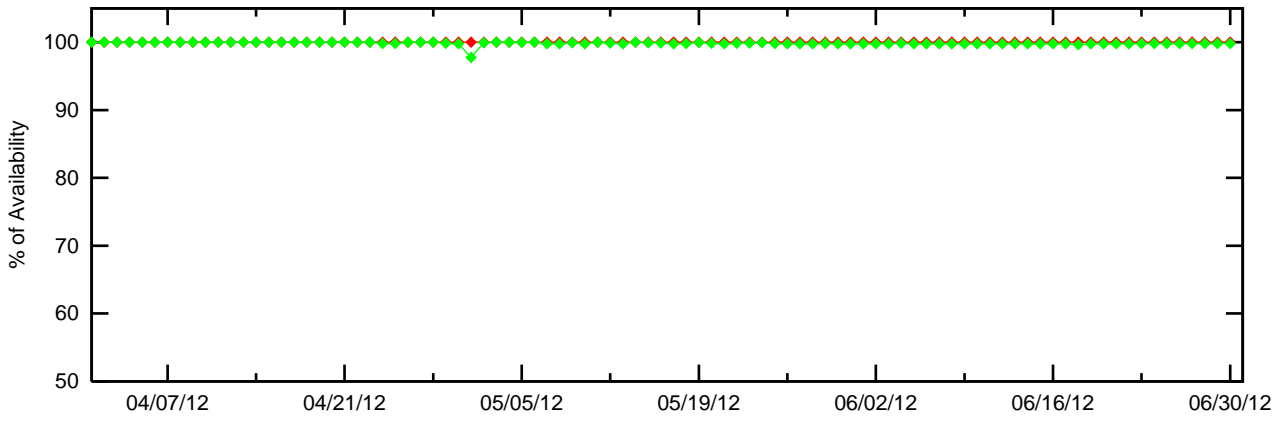
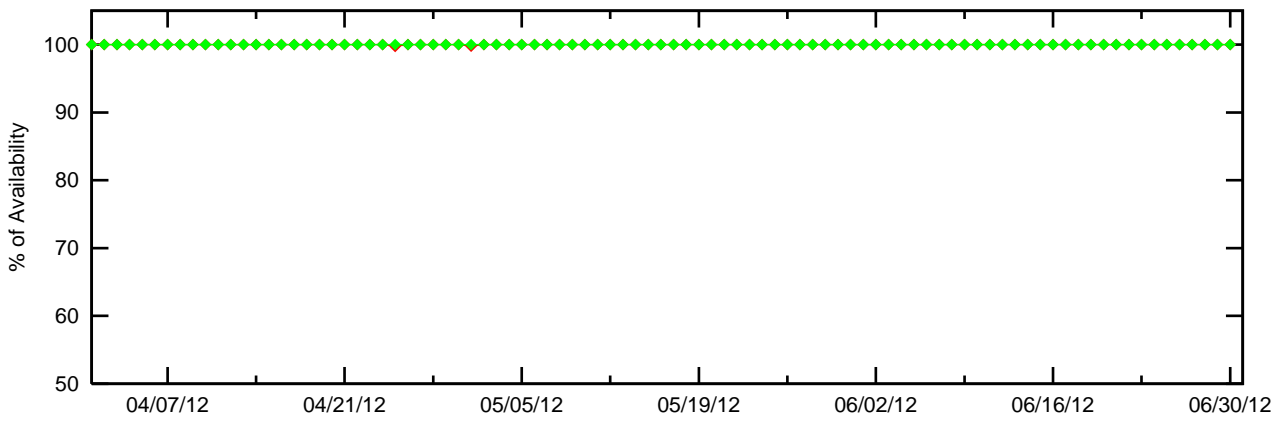


Figure 3-2 LPV Instantaneous Availability

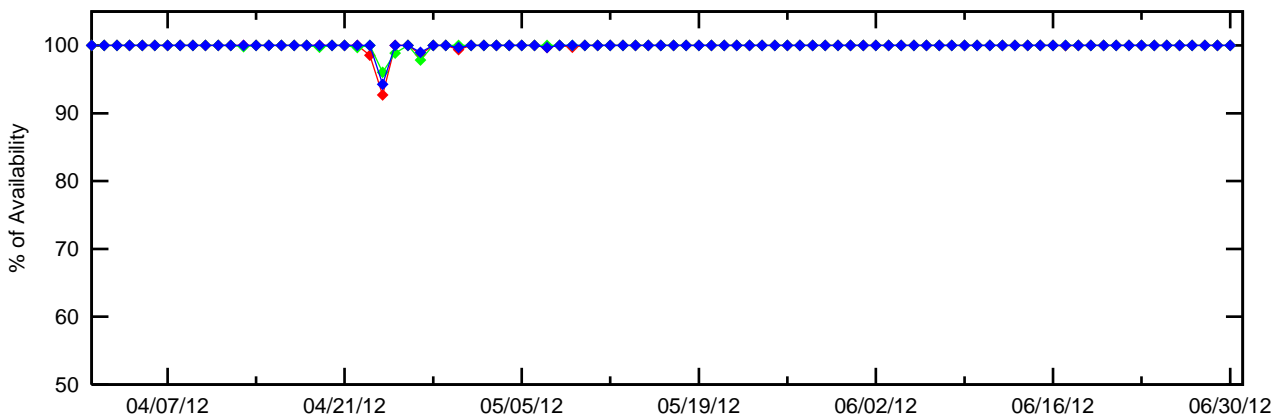
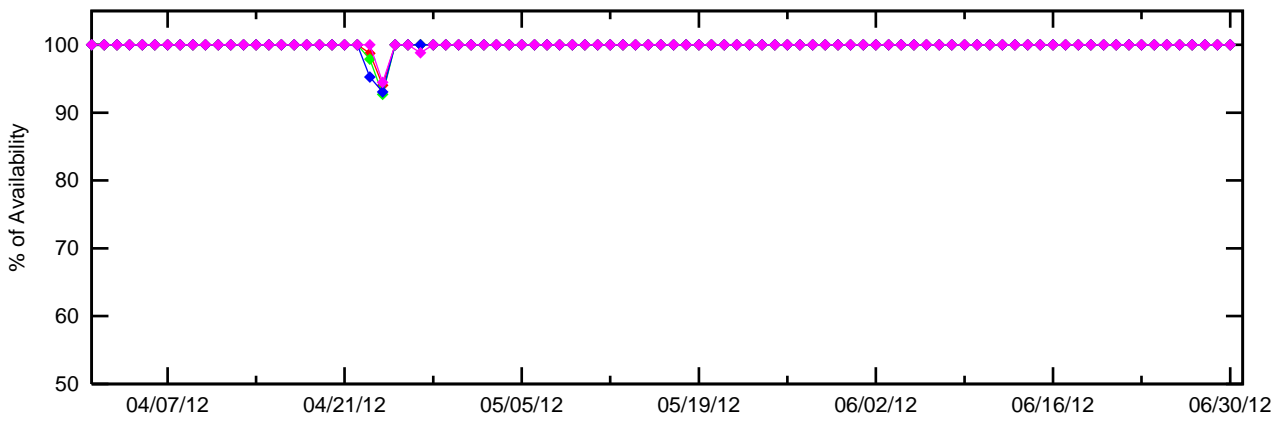
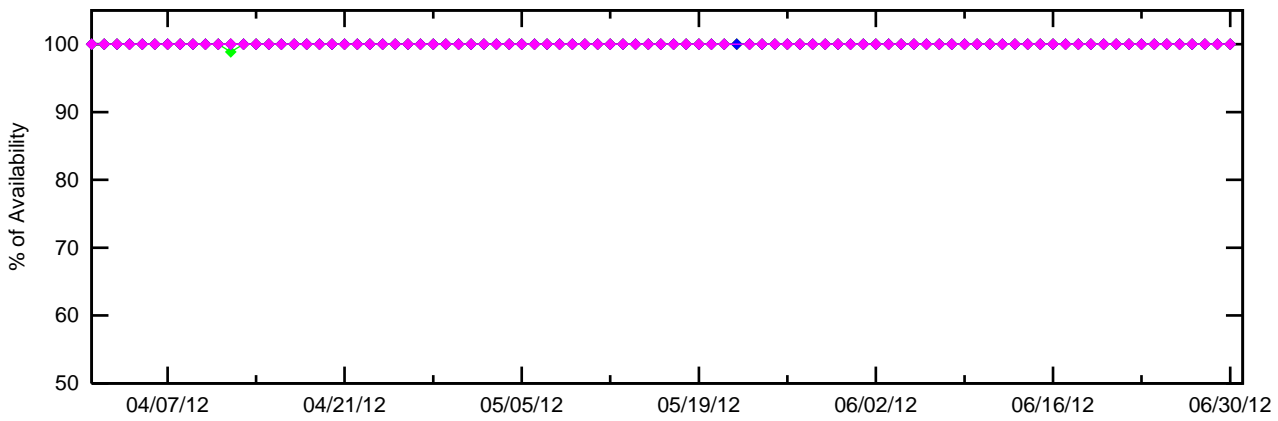
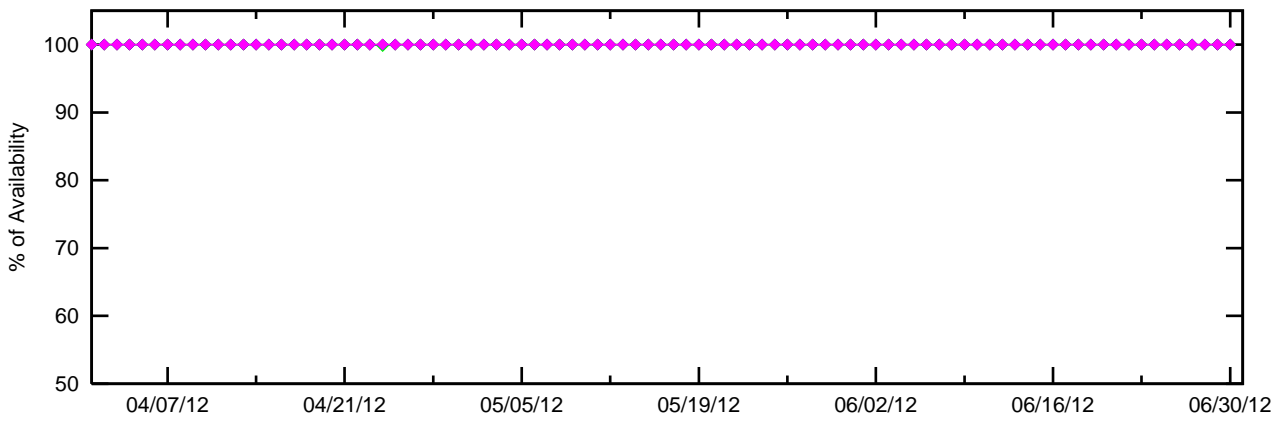


Figure 3-3 LPV Instantaneous Availability

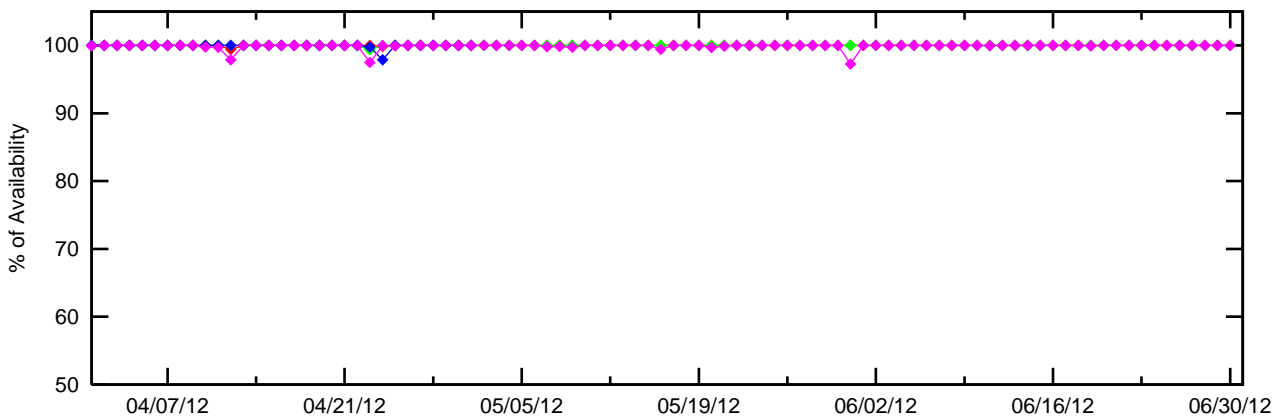
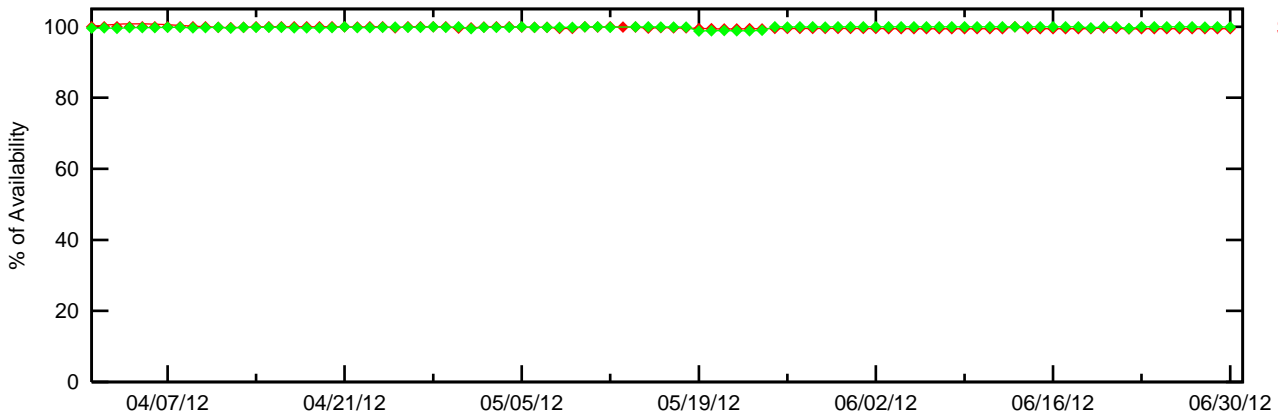
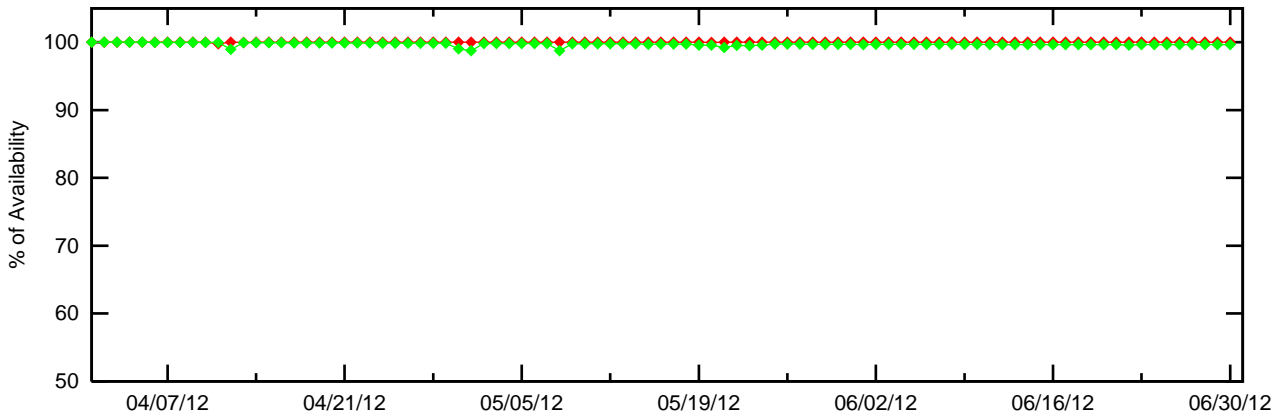
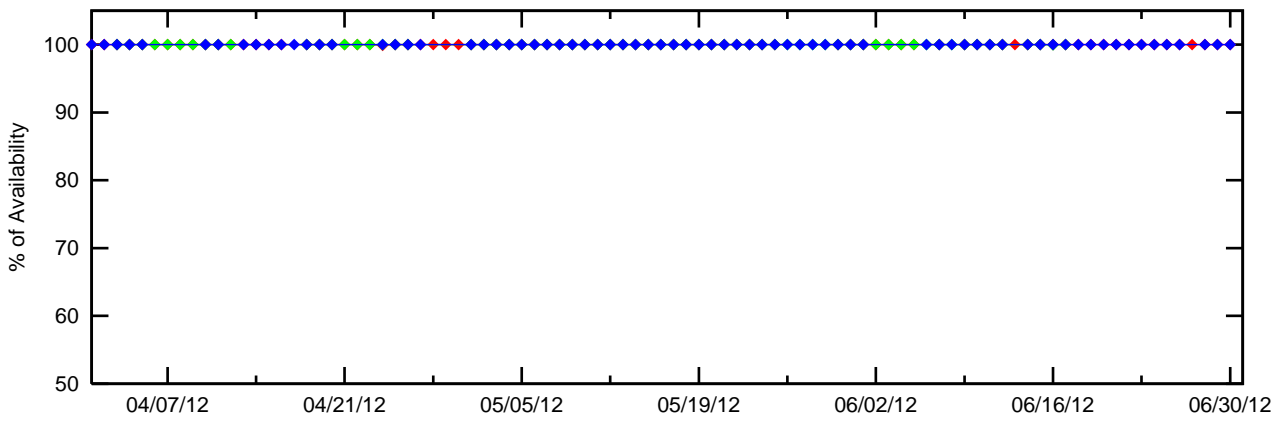


Figure 3-4 LPV 200 Instantaneous Availability

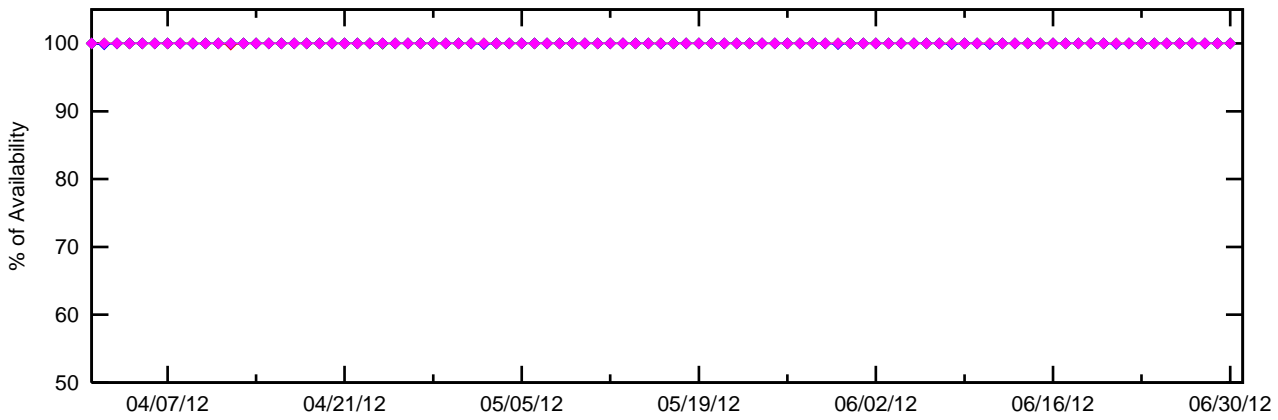
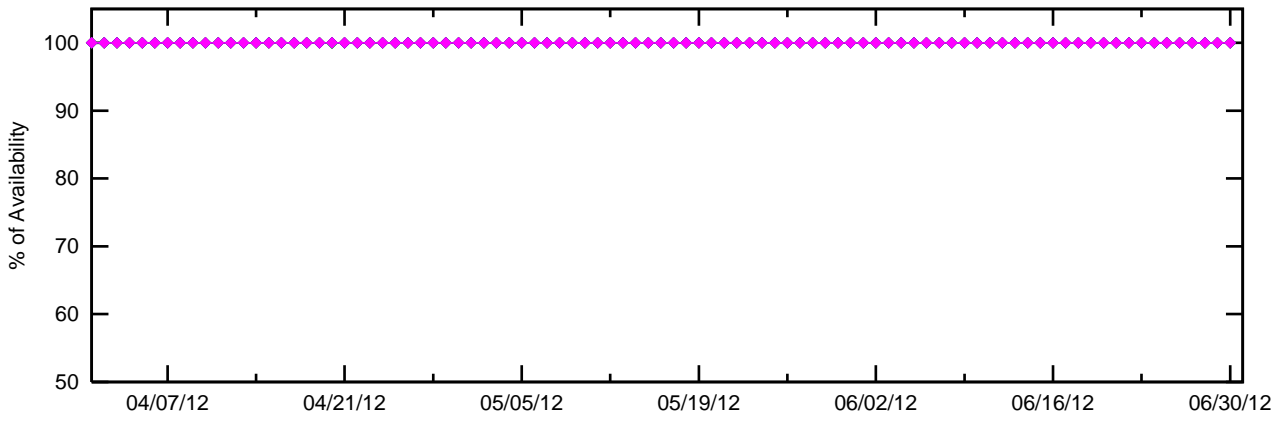
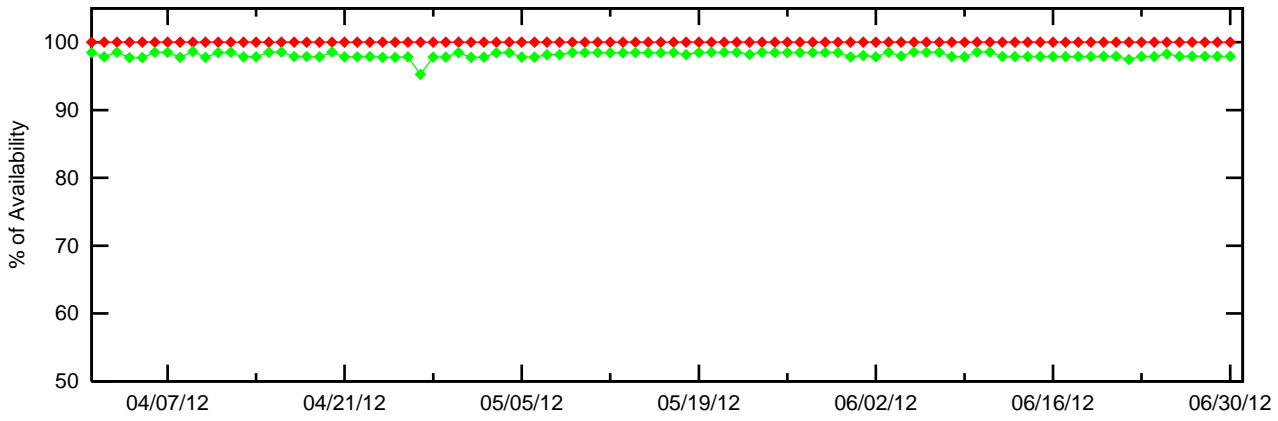
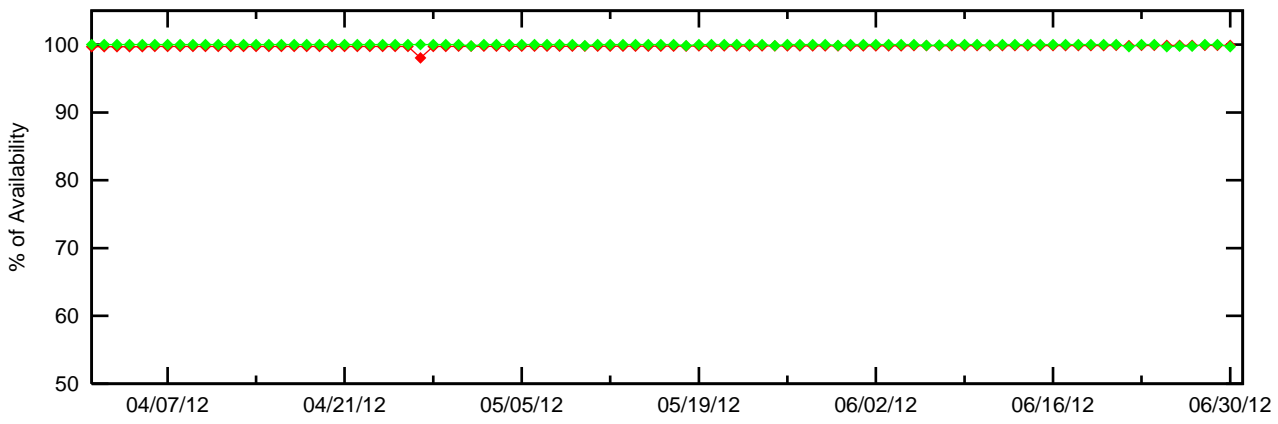


Figure 3-5 LPV 200 Instantaneous Availability

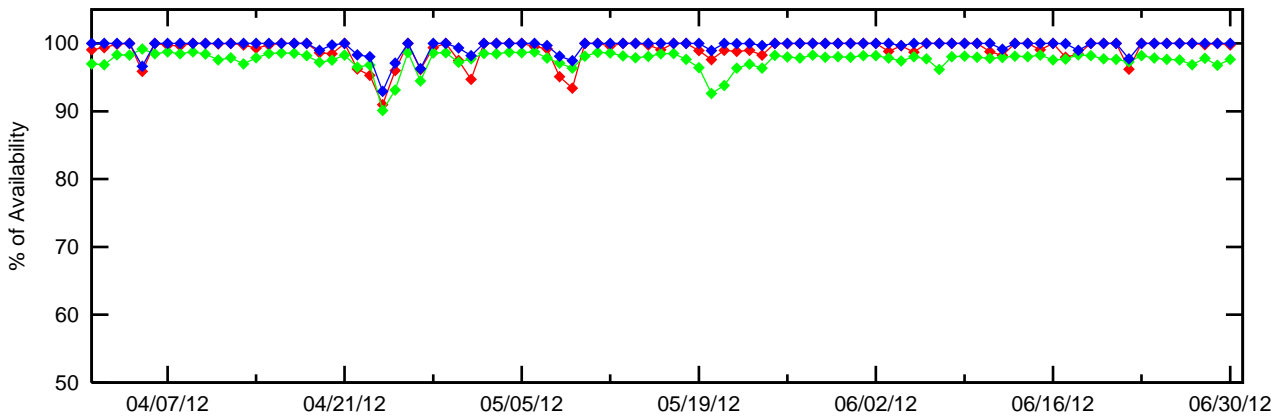
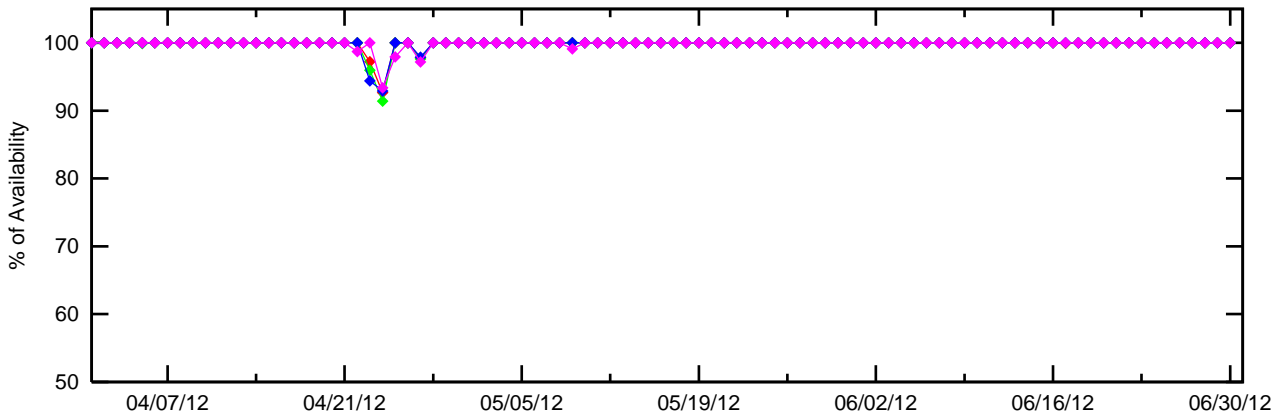
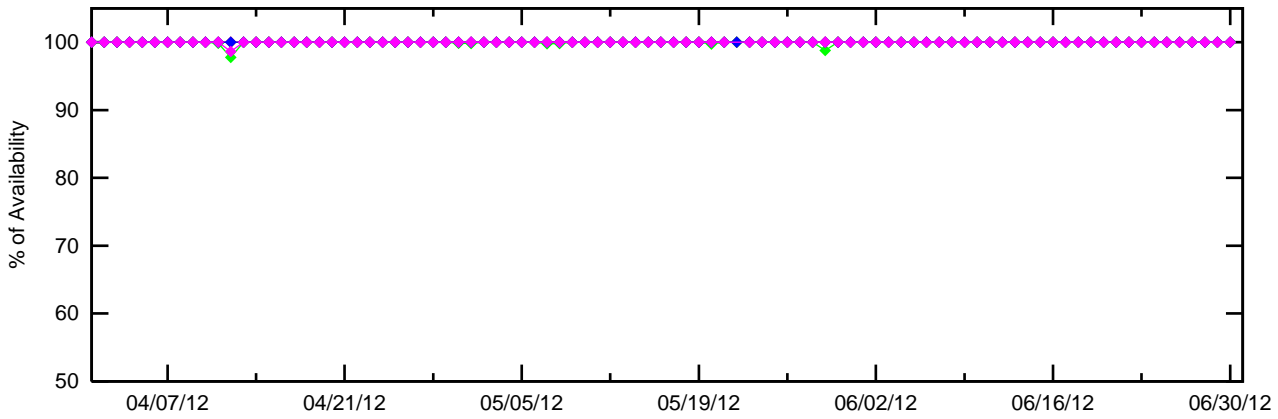
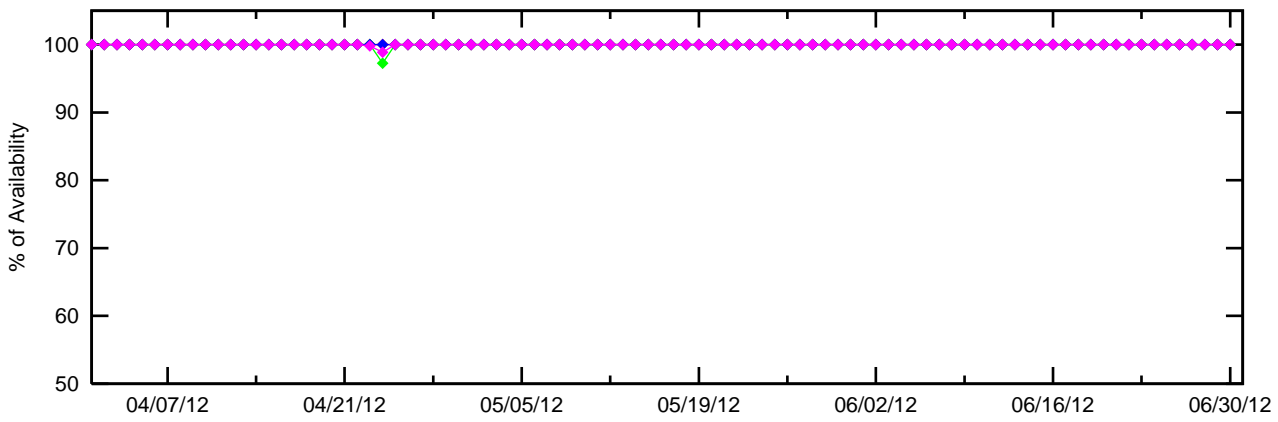


Figure 3-6 LPV 200 Instantaneous Availability

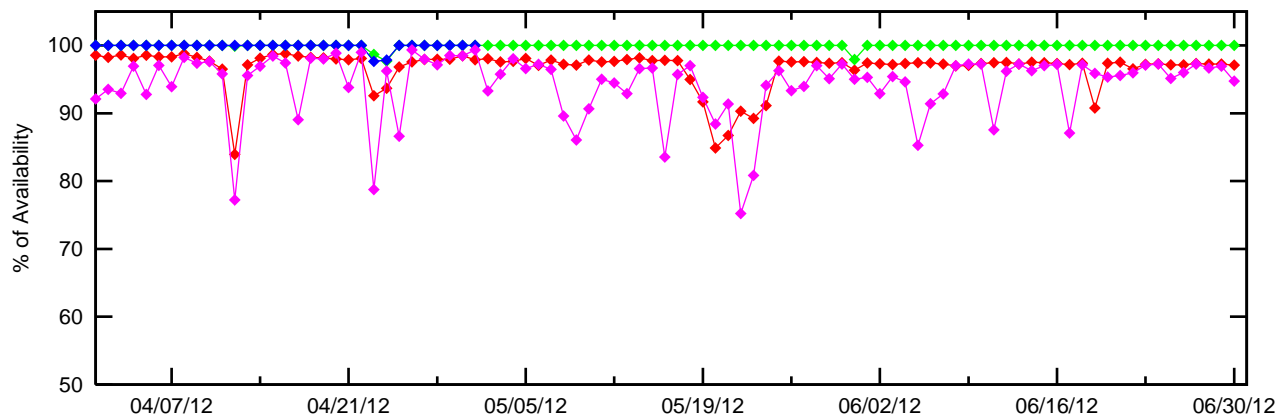
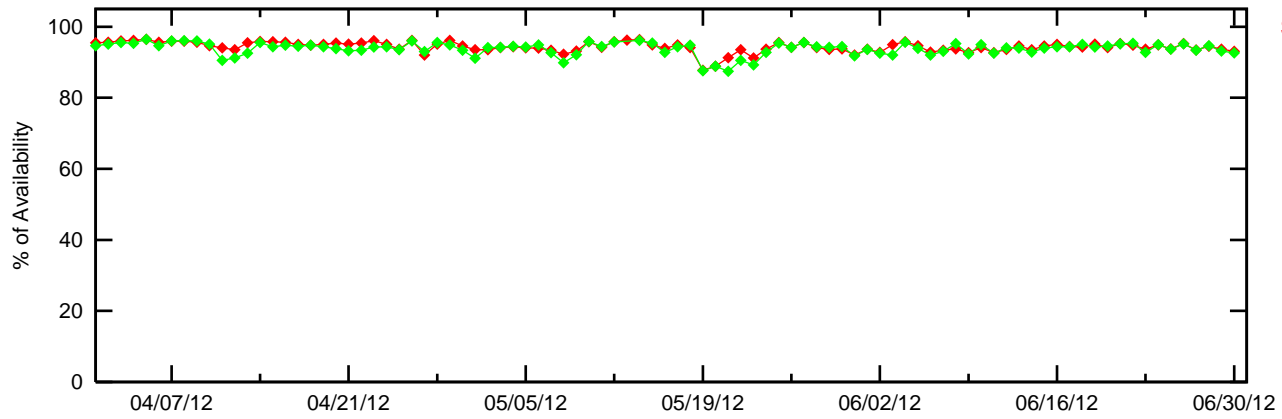
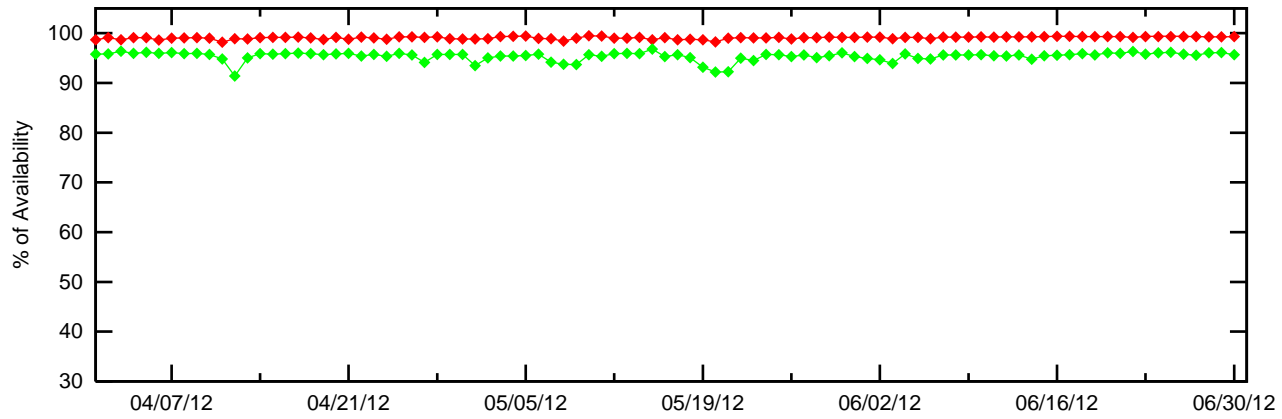
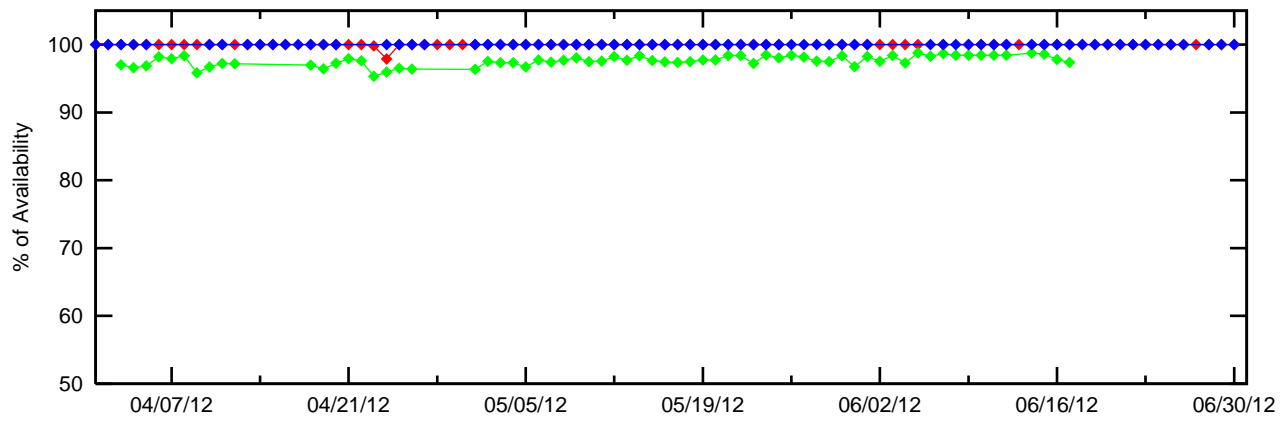


Figure 3-7 LPV Outages

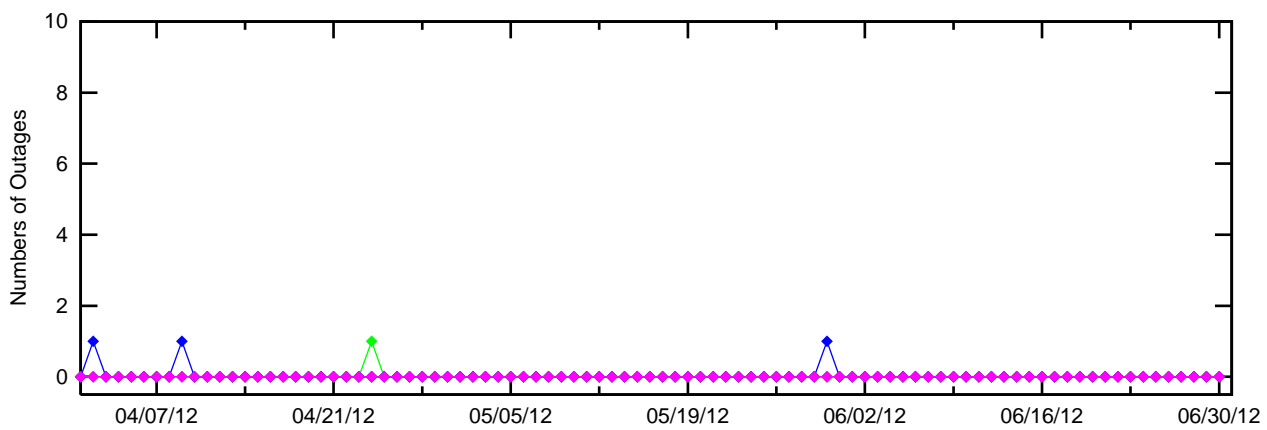
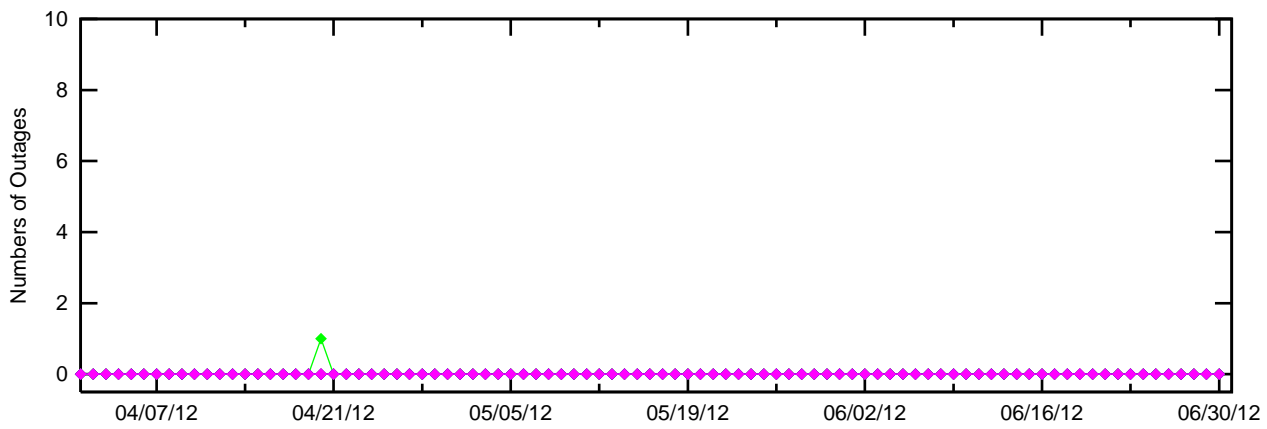
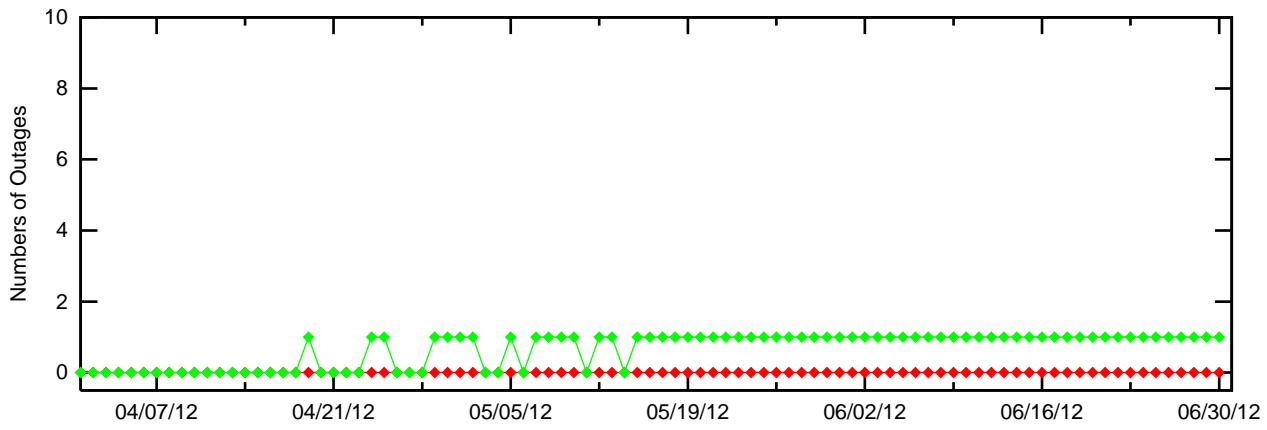
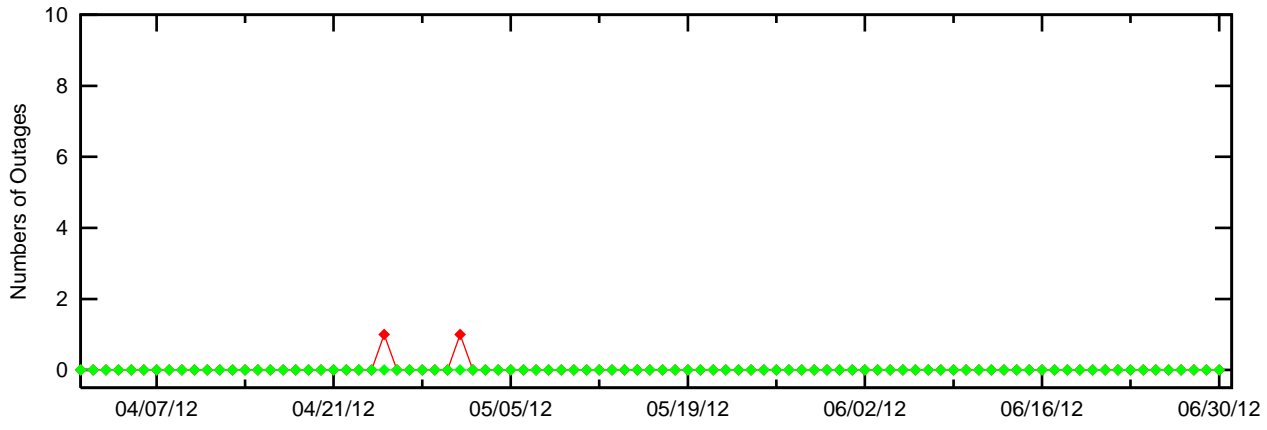


Figure 3-8 LPV Outages

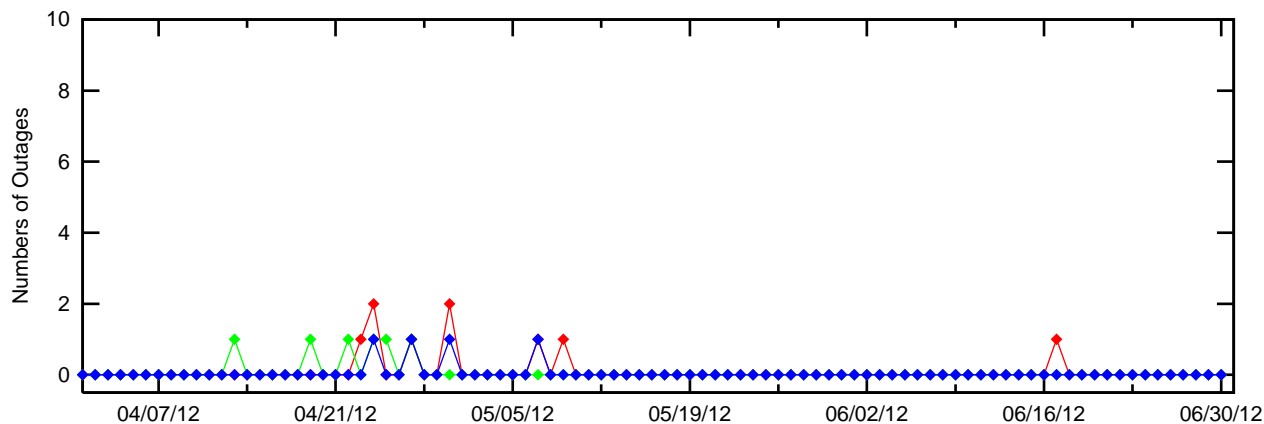
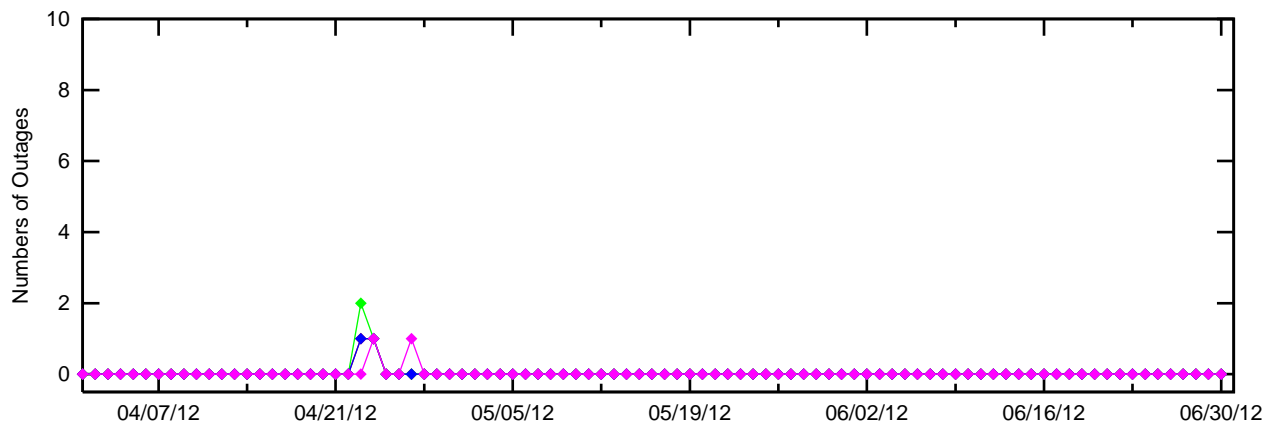
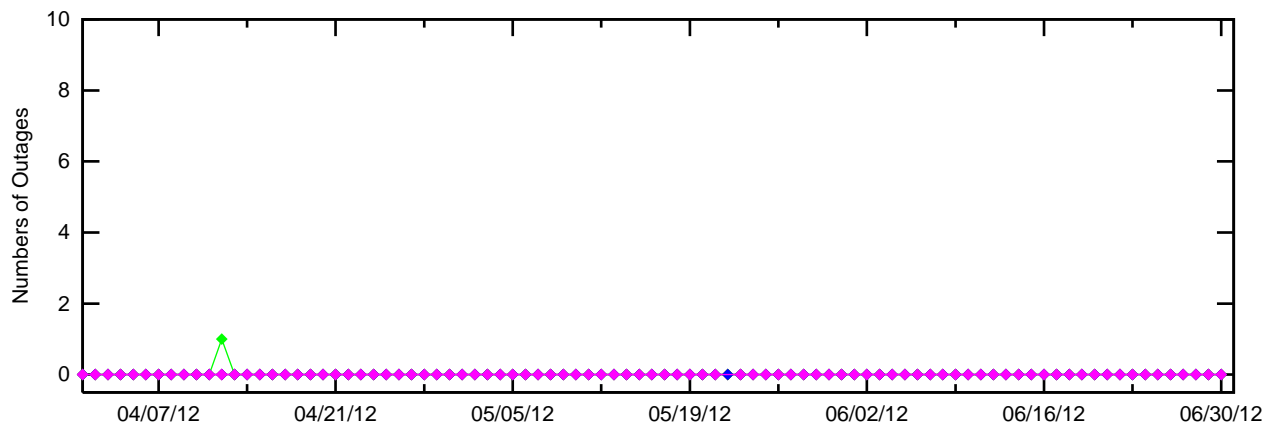
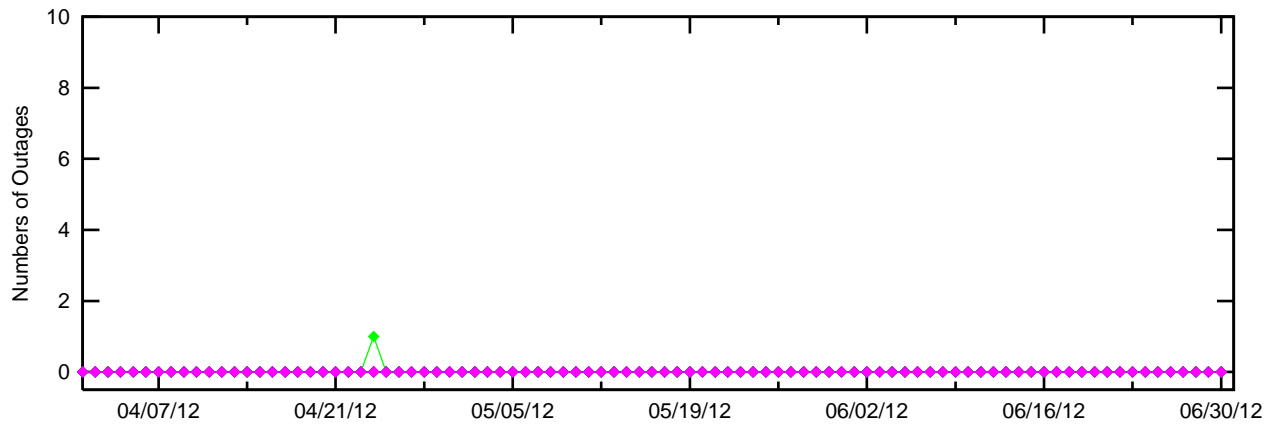


Figure 3-9 LPV Outages

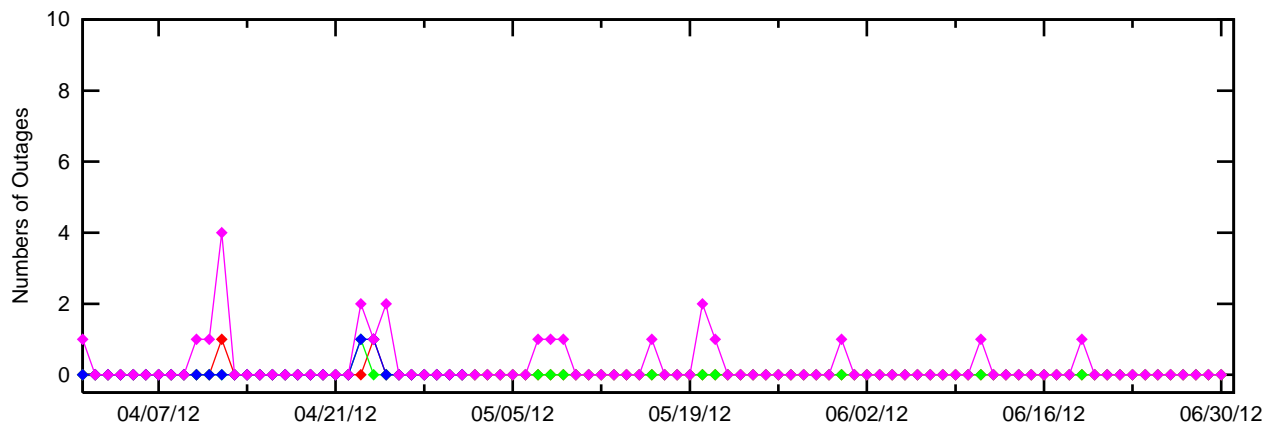
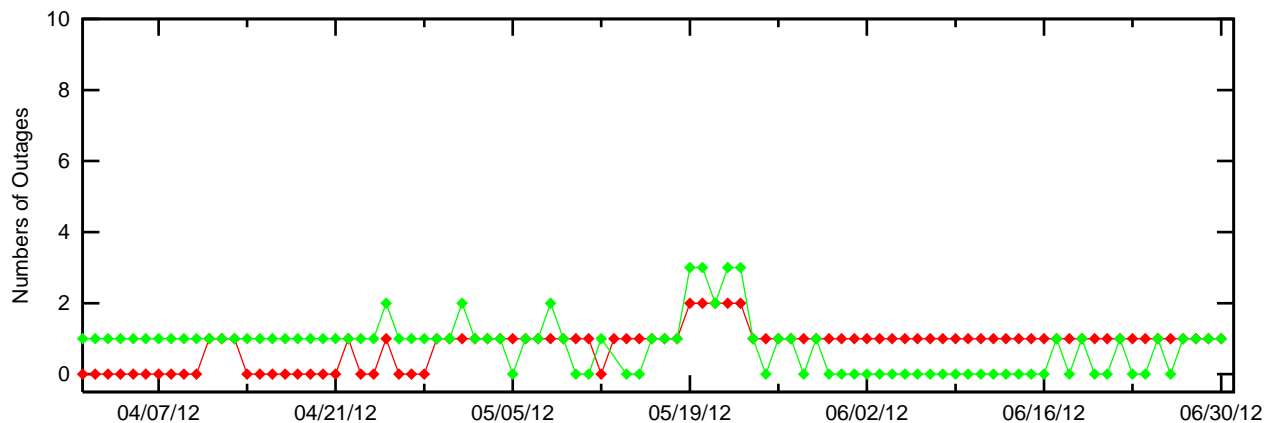
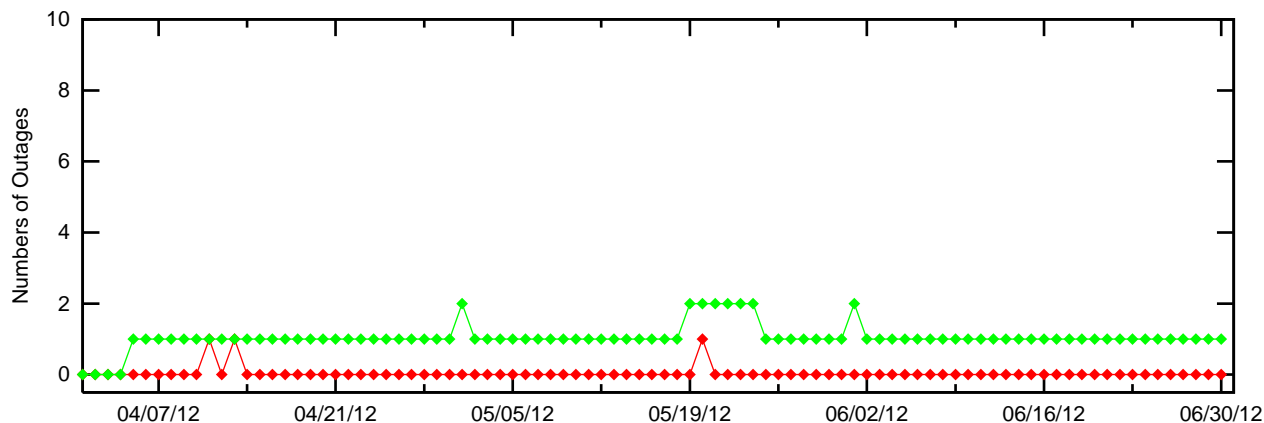
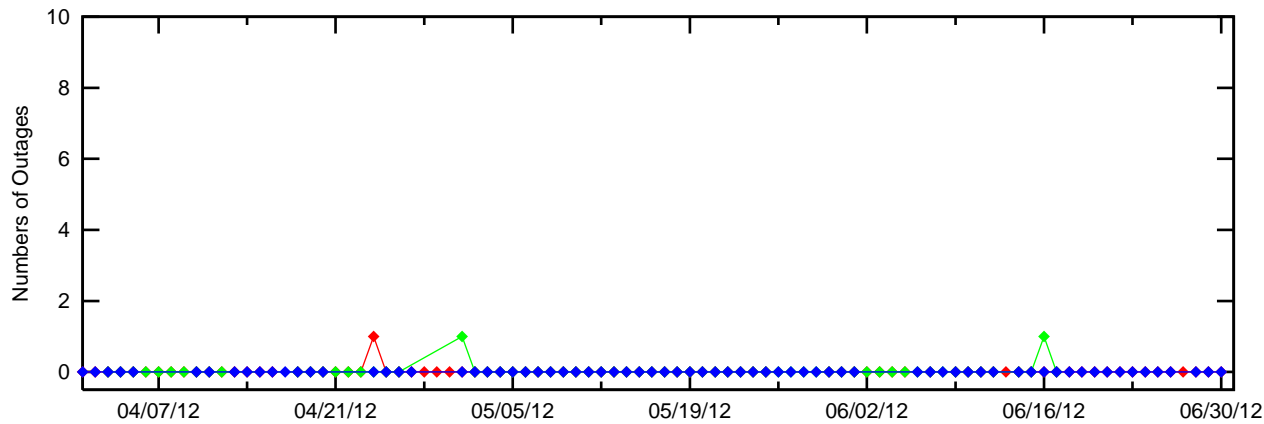


Figure 3-10 LPV 200 Outages

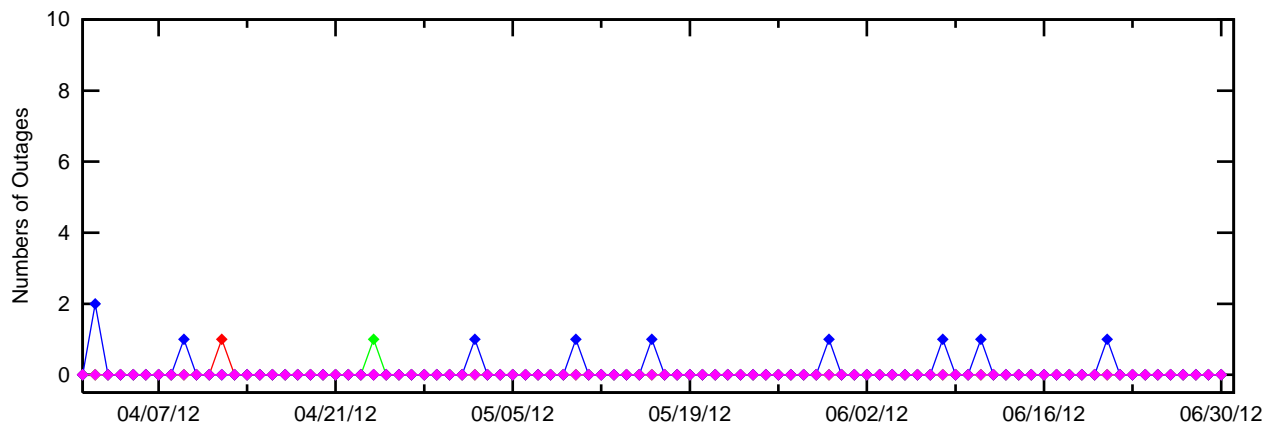
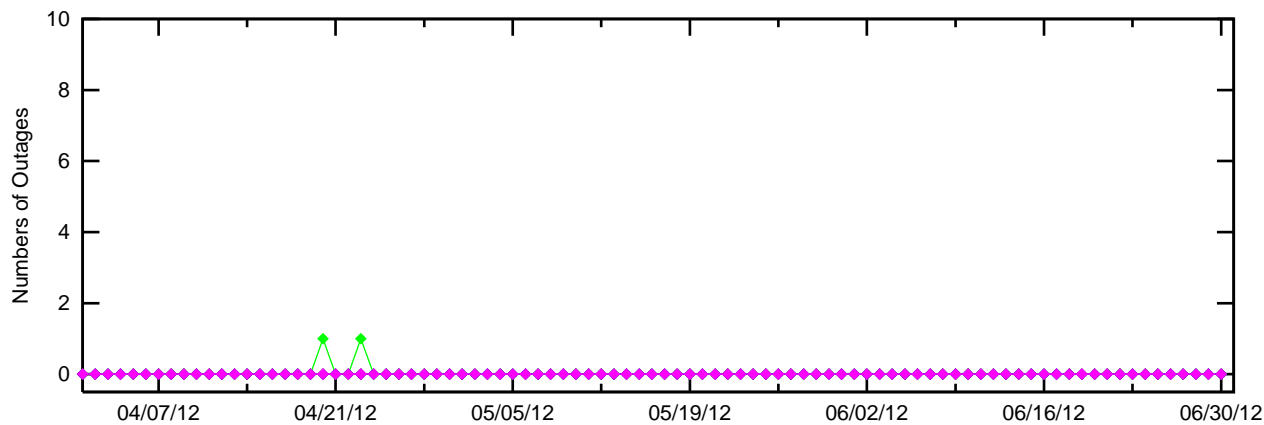
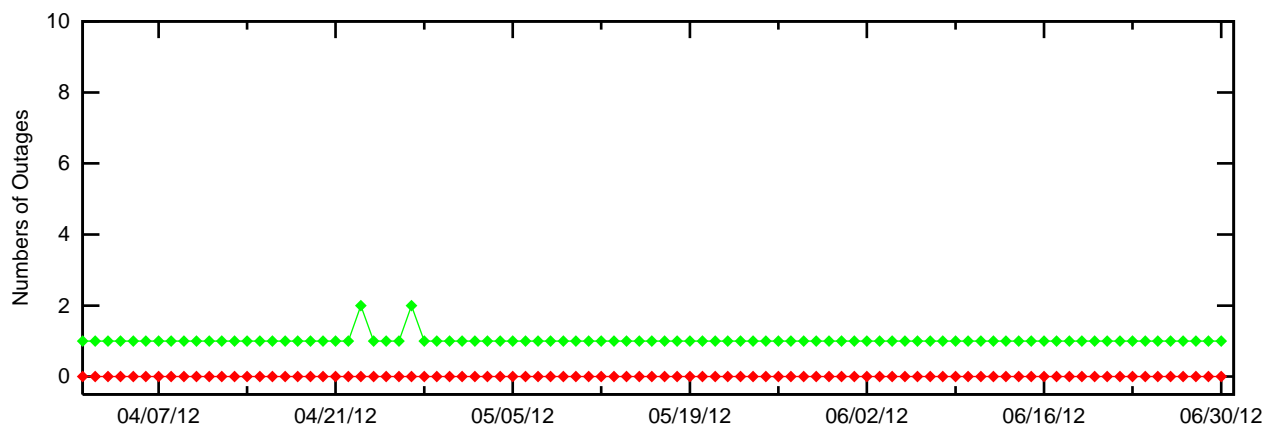
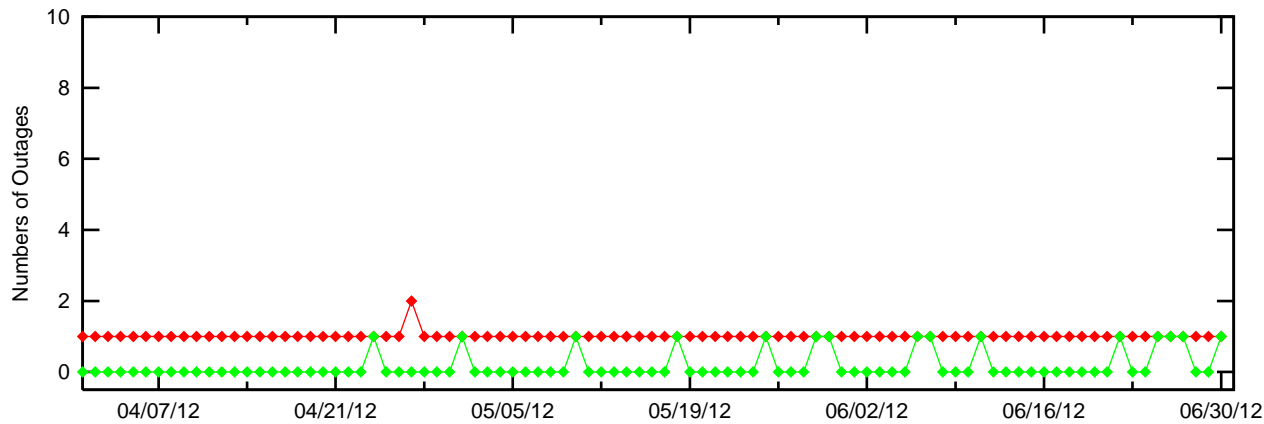


Figure 3-11 LPV 200 Outages

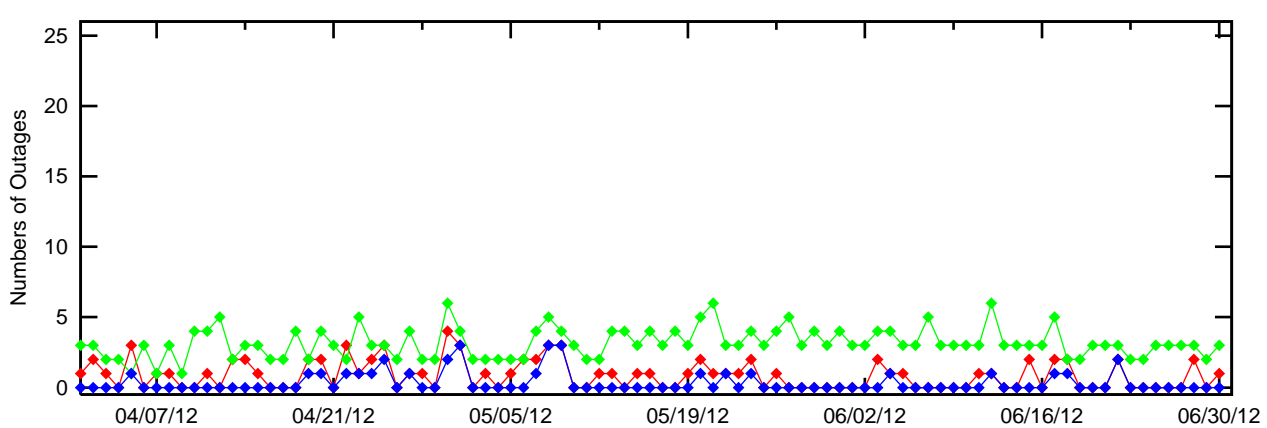
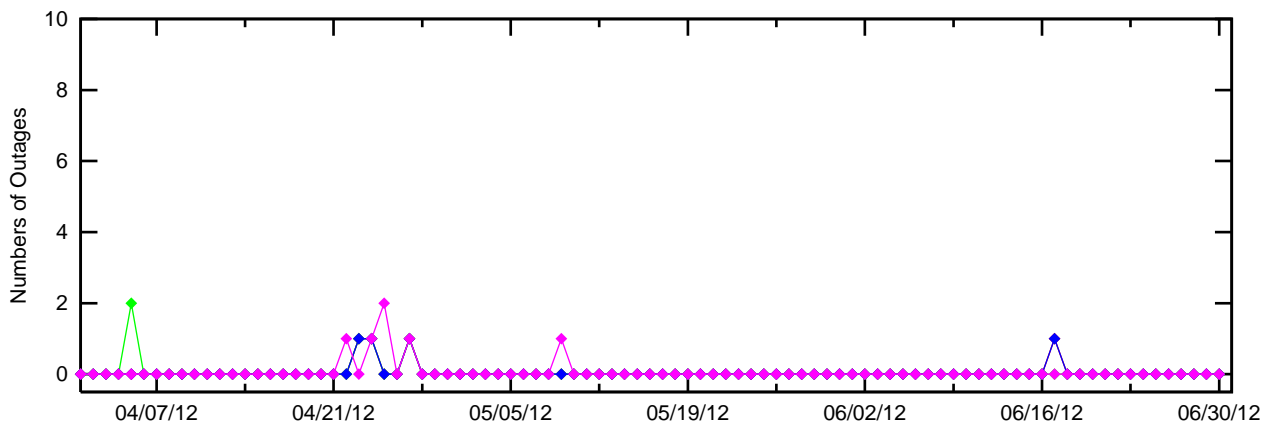
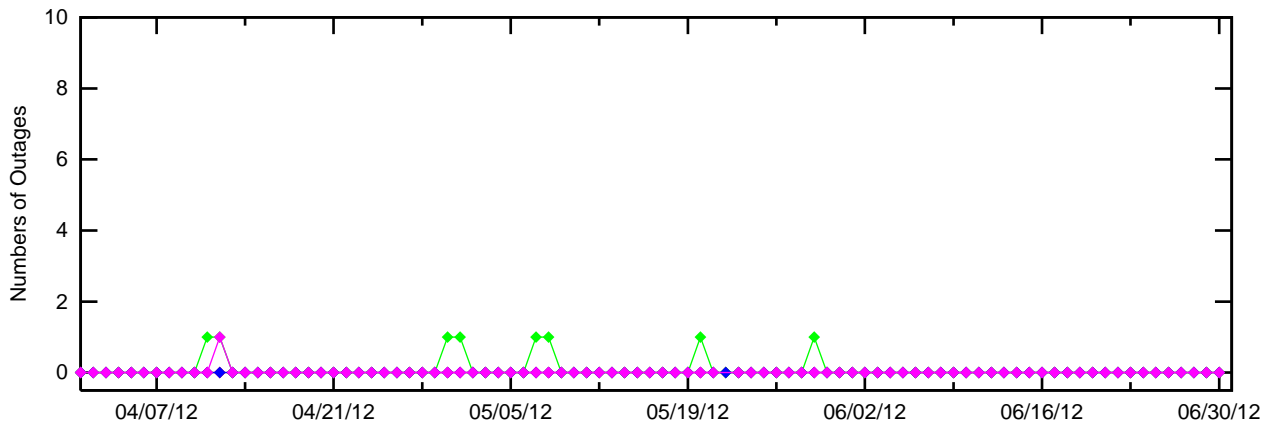
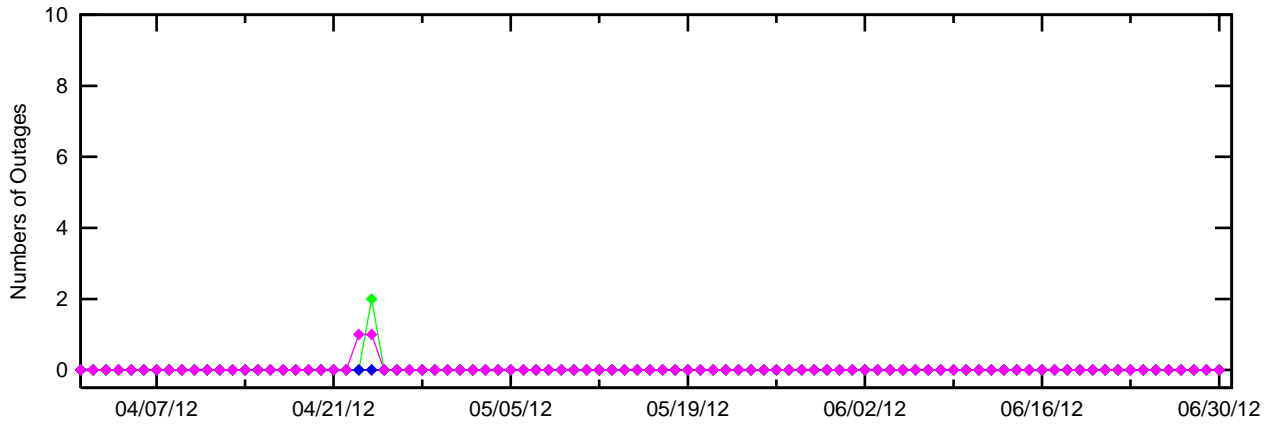
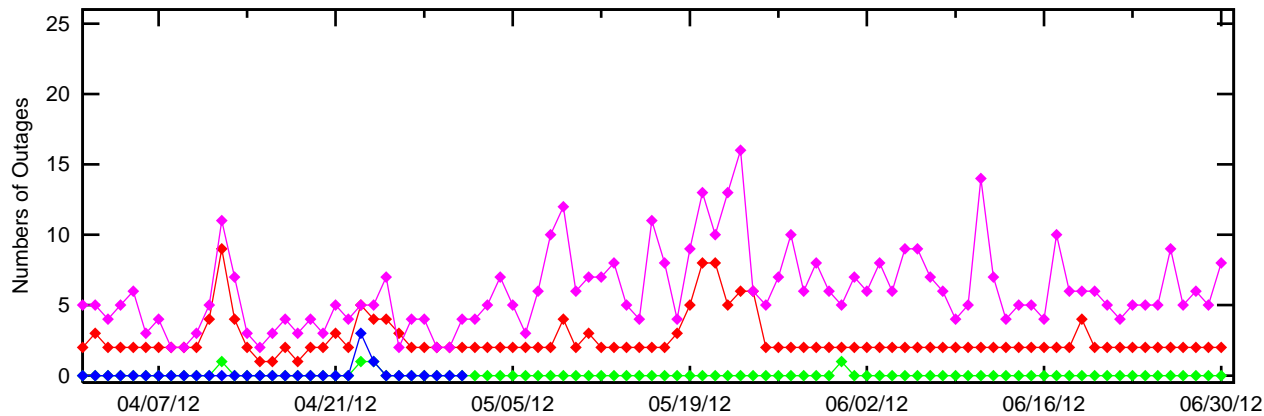
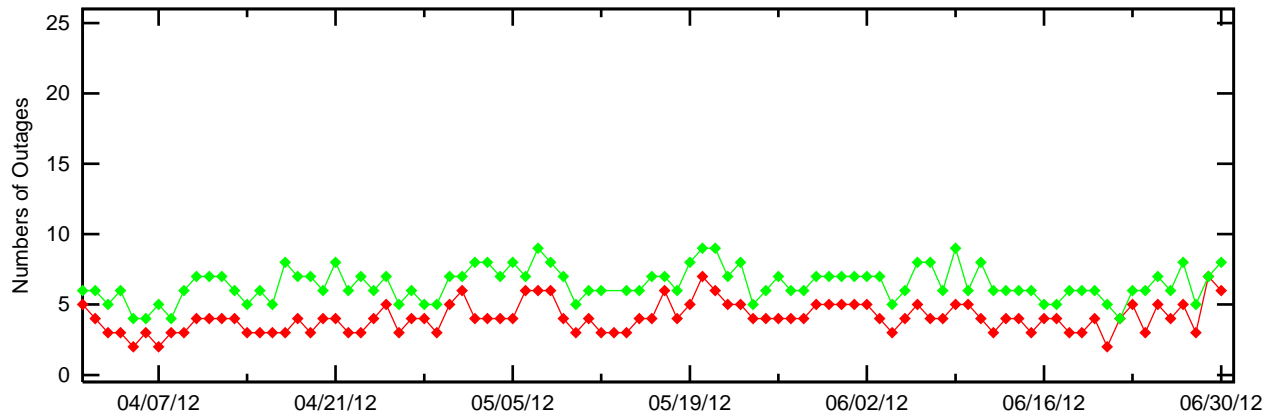
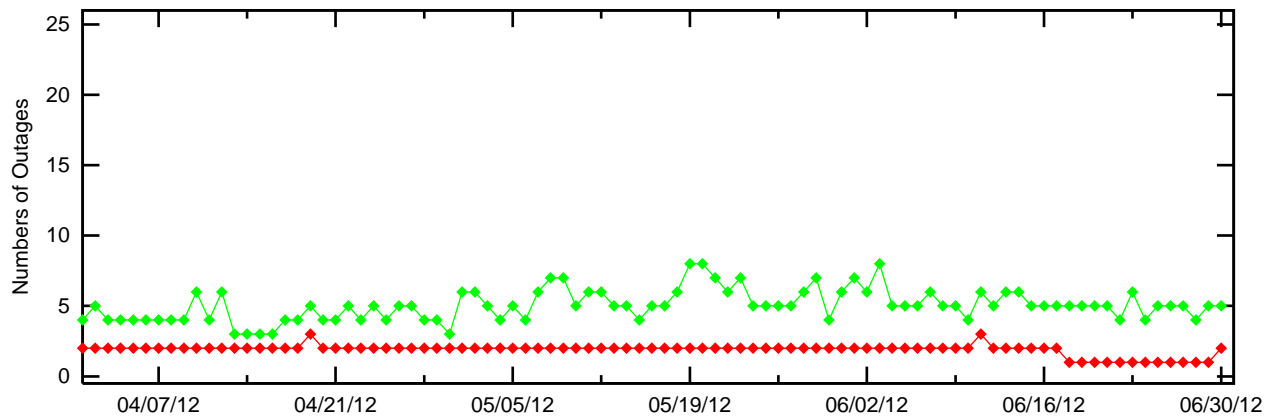
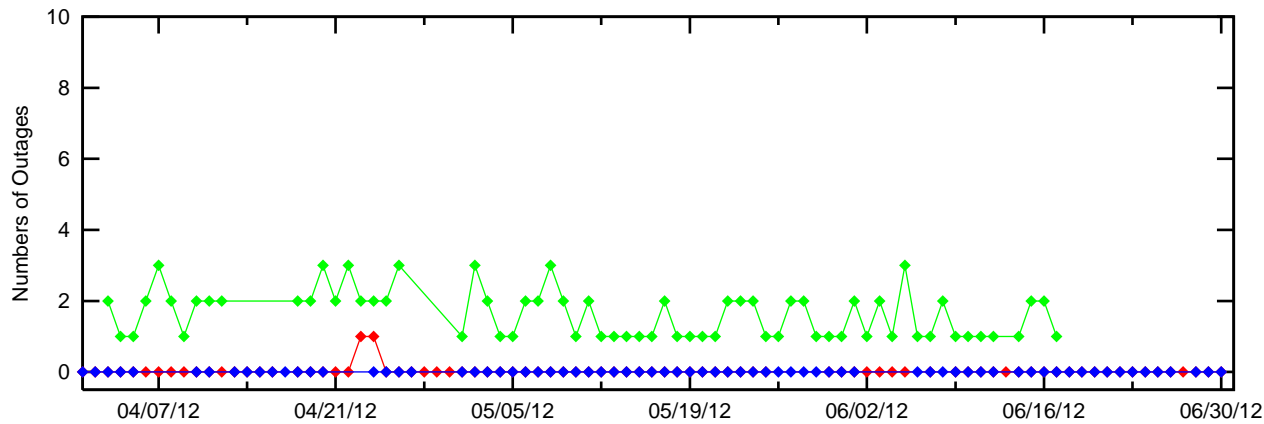


Figure 3-12 LPV 200 Outages



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 the GPS/GEO satellite status are used to determine WAAS availability across North America. For PA coverage, protection levels were calculated at 30-sec intervals at one degree spacing over the PA service volume, while NPA coverage were calculated at 30-sec intervals at five degree spacing over the NPA service volume.

Daily analysis for PA was conducted for LP, LPV and LPV 200 service levels. The 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 LPV 200 North America coverage. Figure 4.6 shows the daily LPV and LPV 200 CONUS coverage, and Figure 4.7 shows the daily LPV Alaska coverage at 99% availability and ionosphere Kp index values for this quarter. Please see Appendix B for coverage plots of 98% LP and LPV availability contour, and 99% LPV 200 availability contour. Kp quantifies the disturbance in the earth's magnetic field and is an indicator of solar storms causing geomagnetic disturbances that can cause the ionosphere to become unpredictable. WAAS increases GIVE values making PA service unavailable when WAAS detects that the ionosphere is disturbed.

Daily analysis for NPA was conducted for RNP 0.1 and RNP 0.3 service levels based on a 100% availability requirement. RNP 0.1 service is asserted to be available when HPL is less than 185 meters and RNP 0.3 service is asserted to be available when HPL is less than 556 meters. 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 4.8 shows the daily RNP coverage at 100% availability and ionosphere Kp index values for this quarter.

The coverage decreases for this quarter are due to GUS switchovers, satellite outages, geomagnetic activity, and elevated UDRE and GIVE values. Please refer to Table 1.5 for the events that affected coverage.

Geomagnetic activity on April 5th, April 24th, May 9th and June 18th elevated GIVE and UDRE values and reduced Alaska coverage. Elevated UDRE value PRN 135 on June 22nd reduced Alaska coverage.

Planned maintenance on PRN 28 on April 24th reduced CONUS and Alaska coverage. Planned maintenance on PRN 12 on April 27th reduced Alaska and RNP coverage. Planned maintenance on PRN 19 on May 1st slightly reduced Alaska LPV 200 coverage and planned maintenance on PRN 15 on April 12th slightly reduced CONUS PA coverage. Maintenance on PRN 19 on June 17th with bad ephemeris update elevated UDRE value to Do Not Use briefly before going out of view of the WAAS system has negligible effect on coverage, [see DR 109 PRN 19 Ephemeris Update Triggered RIM FDE to Exclude SV from Nav](#).

Manual GUS switchovers on May 1st and May 20th reduced Alaska PA coverage and manual GUS switchover on April 30th and May 7th reduced RNP coverage.

Radio frequency interference (RFI) caused localized loss of availability at Washington DC, Boston, Miami, and Albuquerque on the dates listed in Table 1.5 but had no effect on WAAS coverage.

WAAS LP Coverage Contours
 April 1 - June 30, 2012

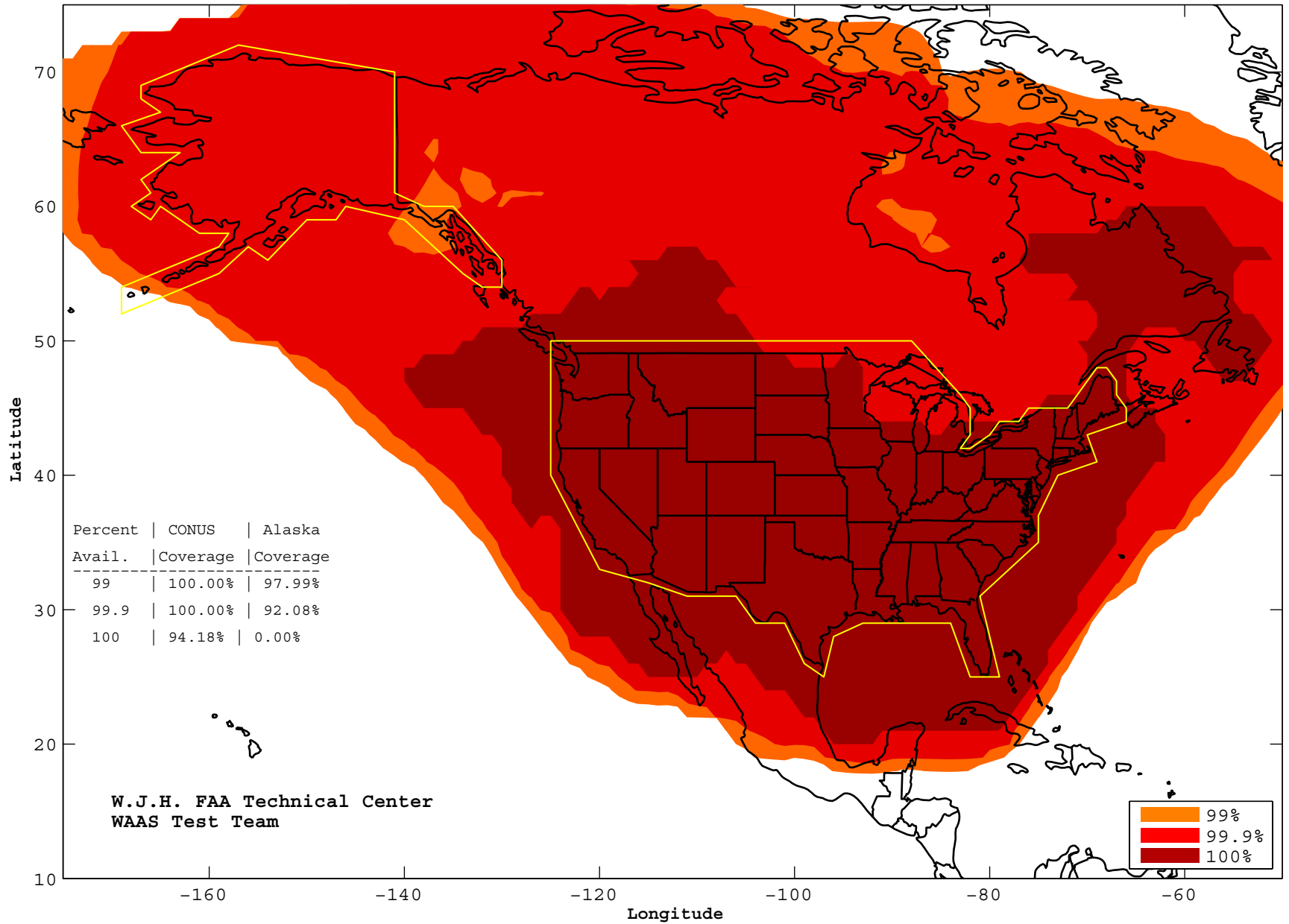
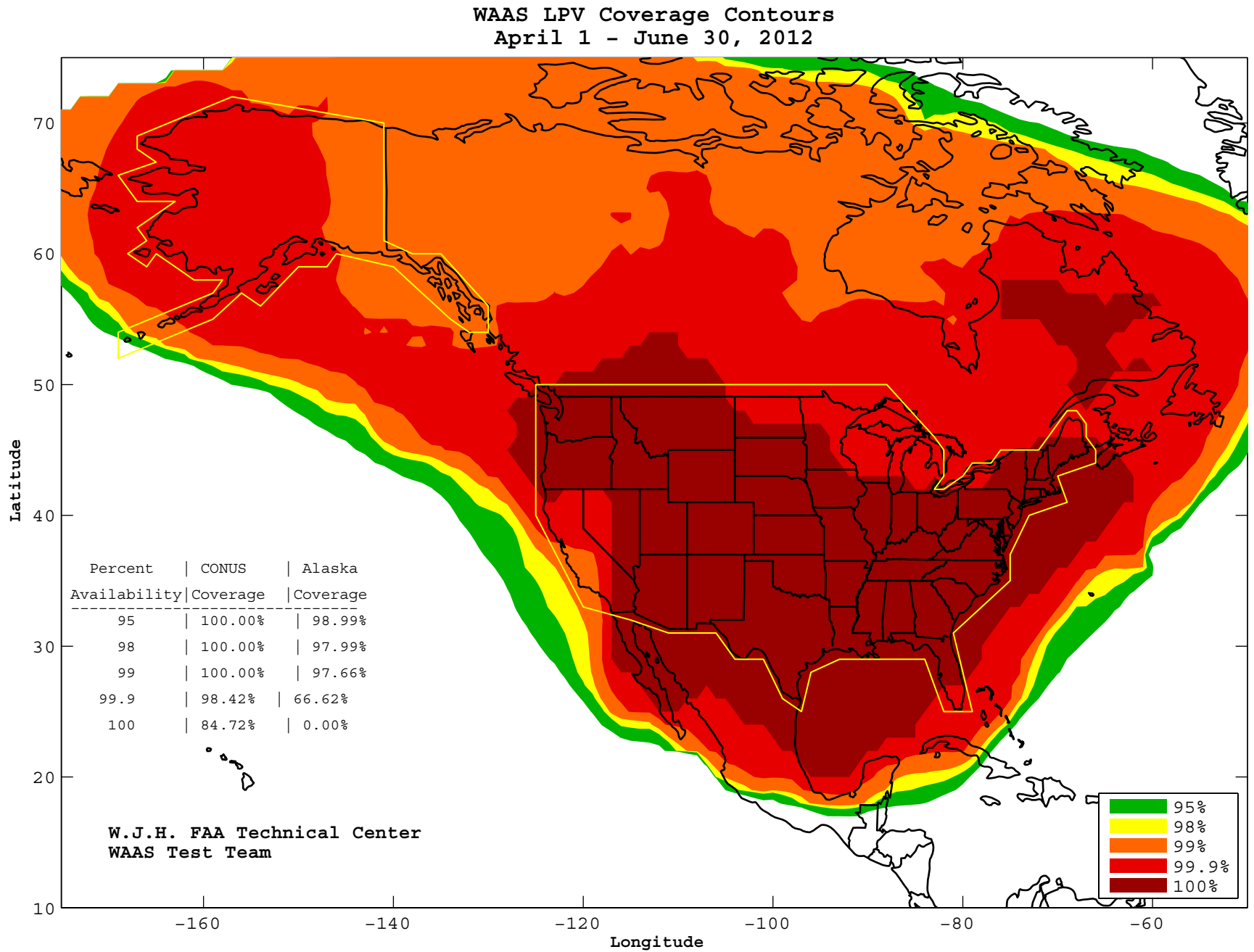


Figure 4-2 LPV North America Coverage for the Quarter



WAAS LPV200 Coverage Contours
April 1 - June 30, 2012

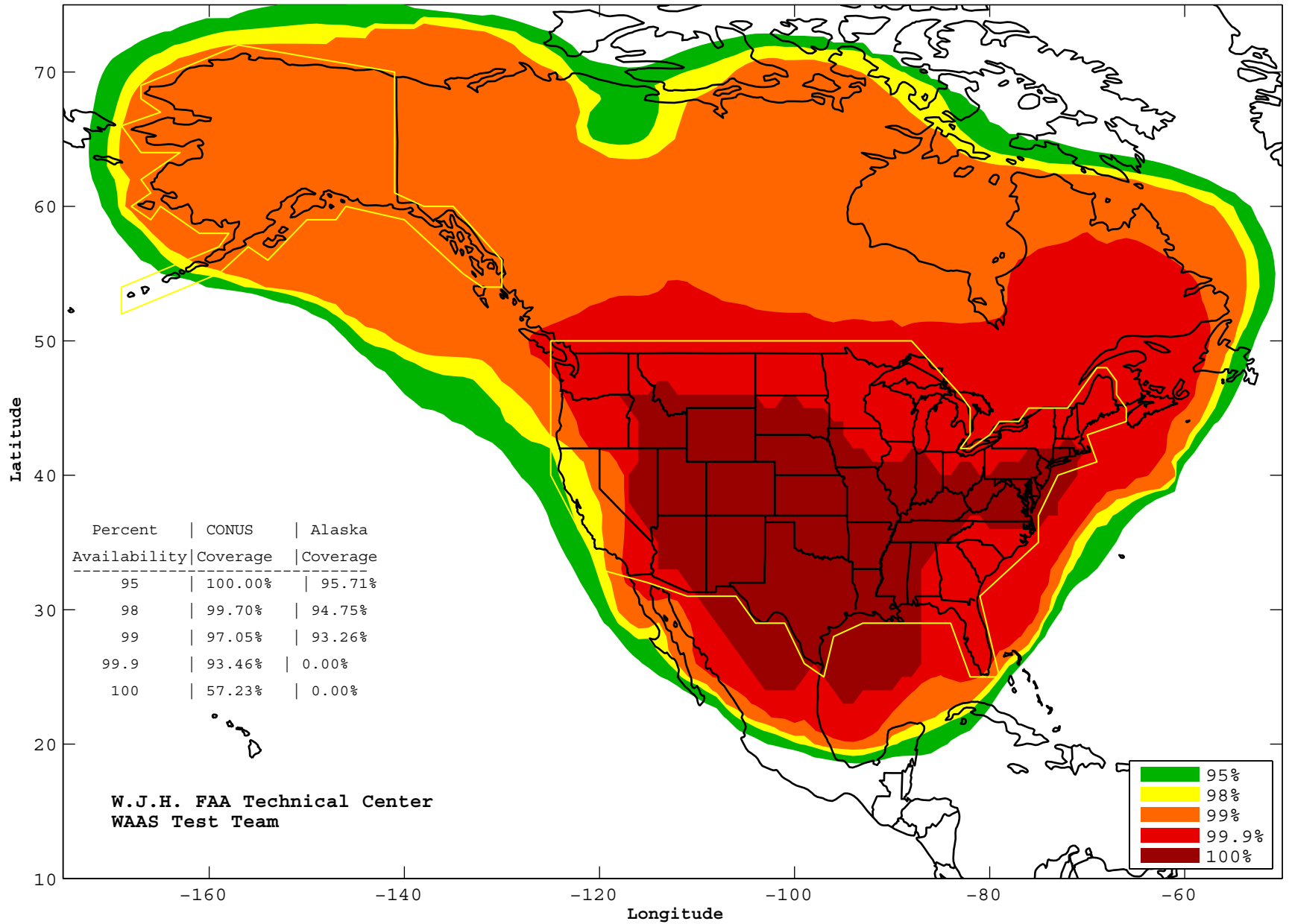
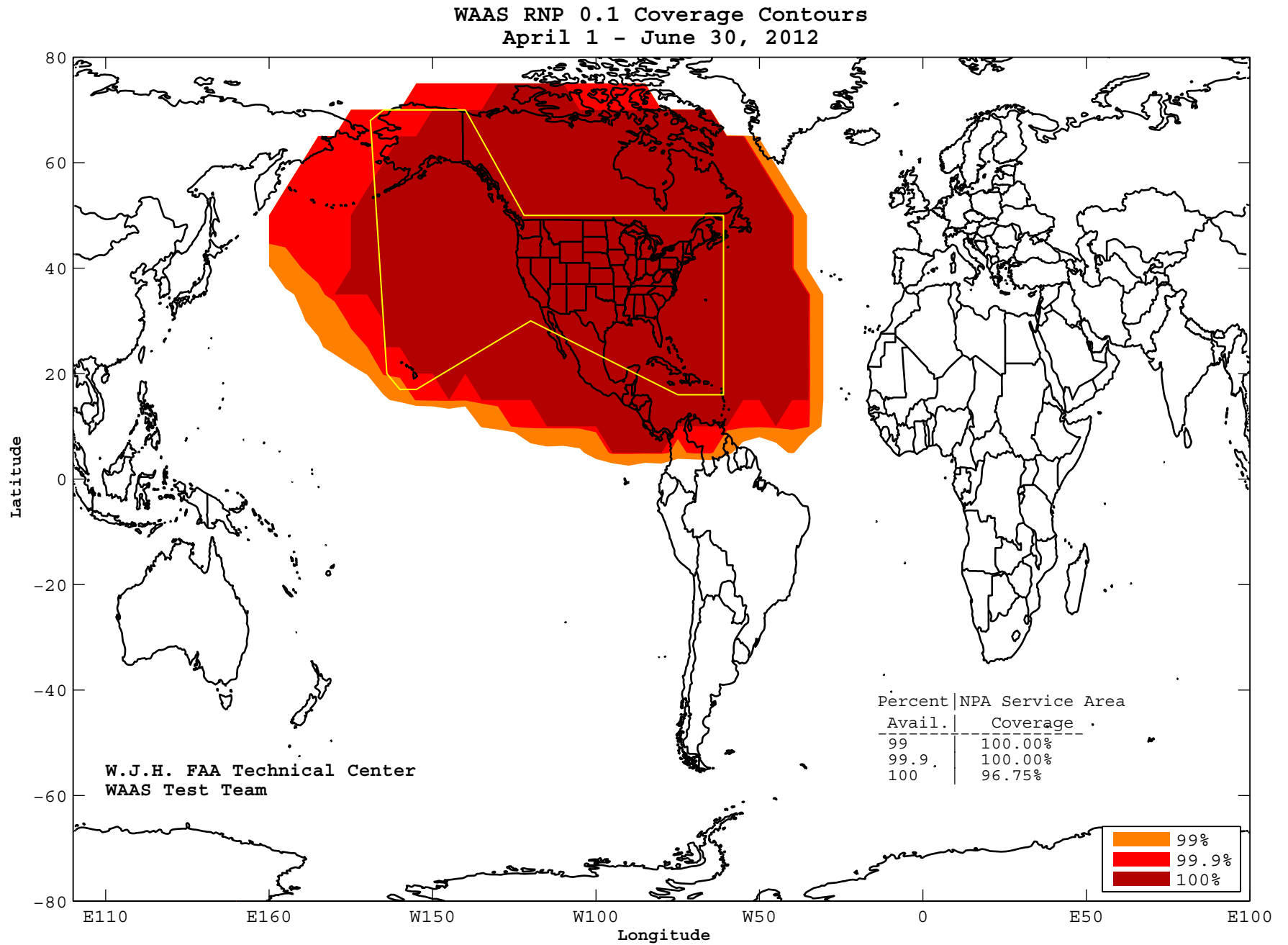


Figure 4-4 RNP 0.1 World Coverage for the Quarter



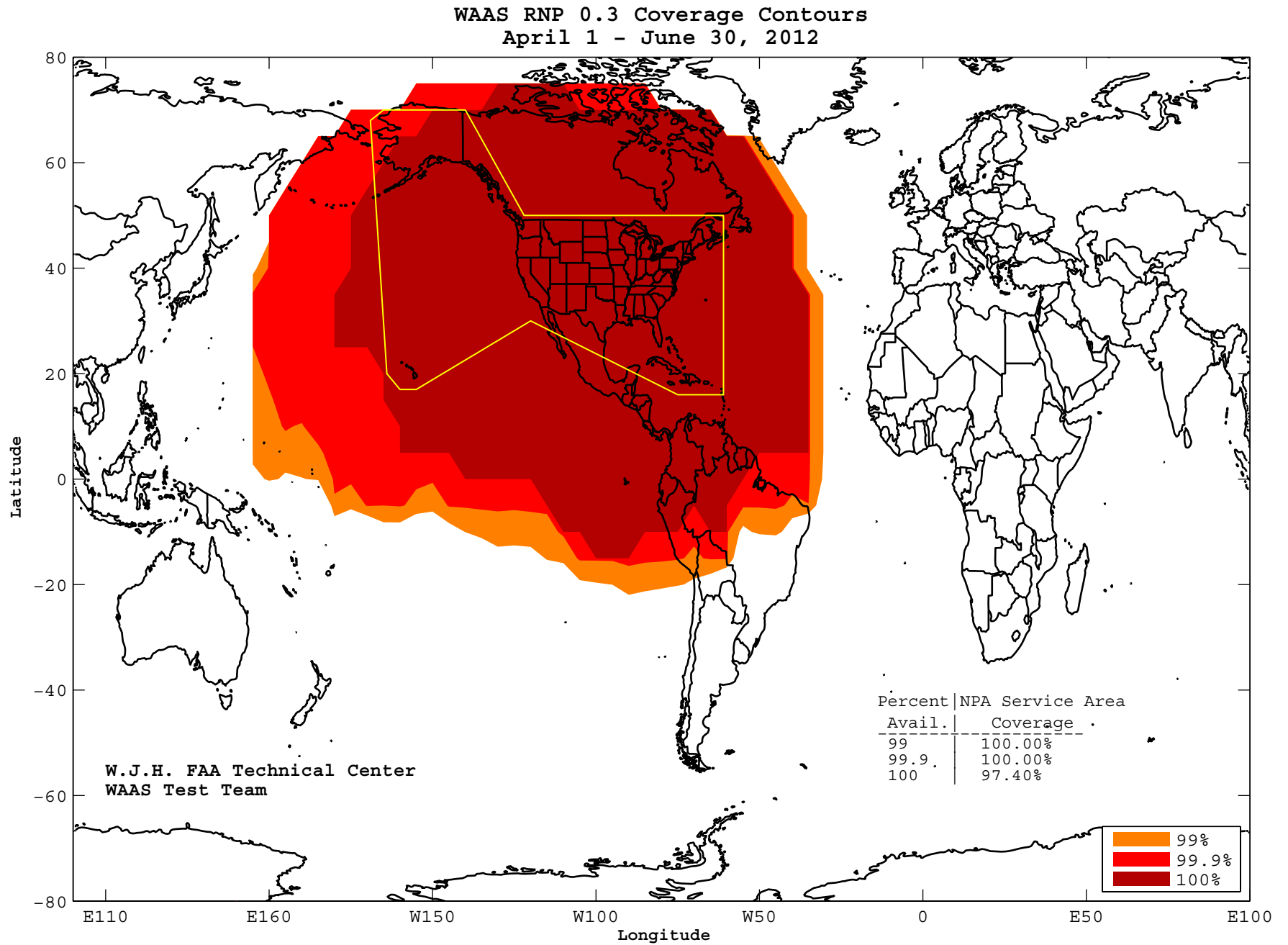


Figure 4-6 Daily LPV and LPV 200 CONUS Coverage

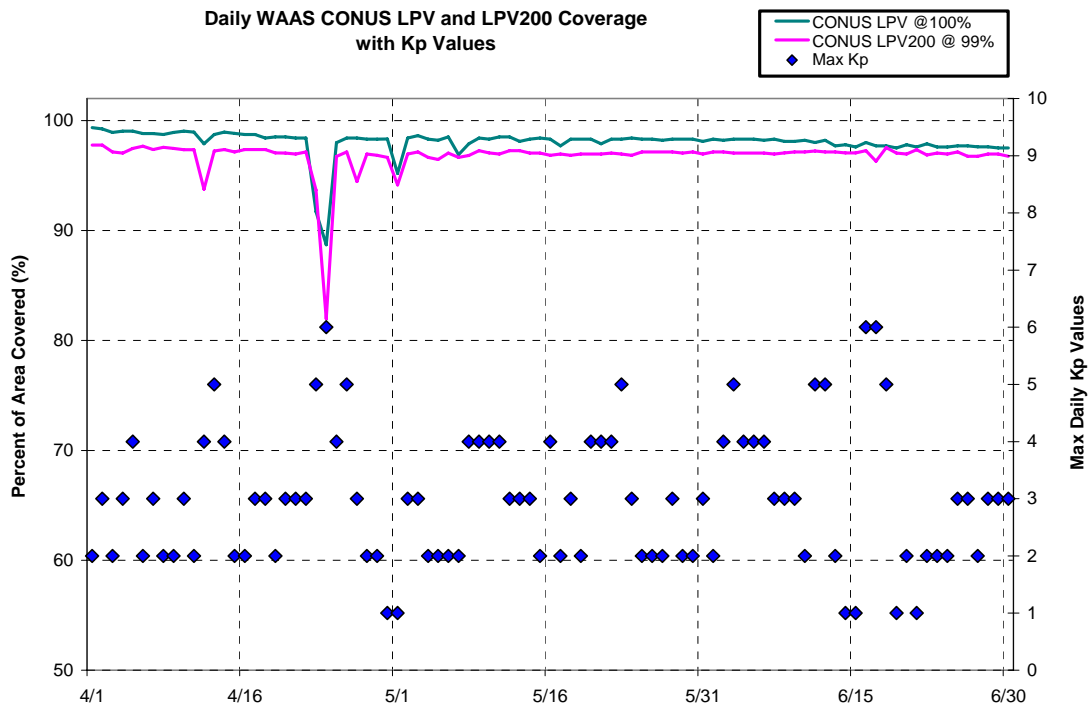


Figure 4-7 Daily LPV Alaska Coverage

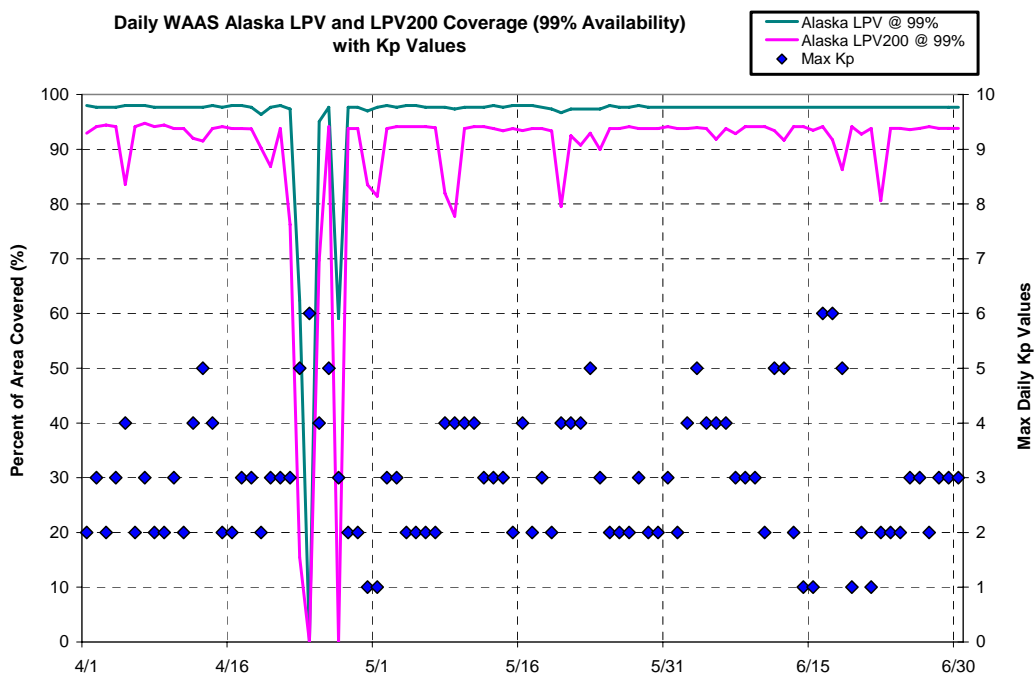
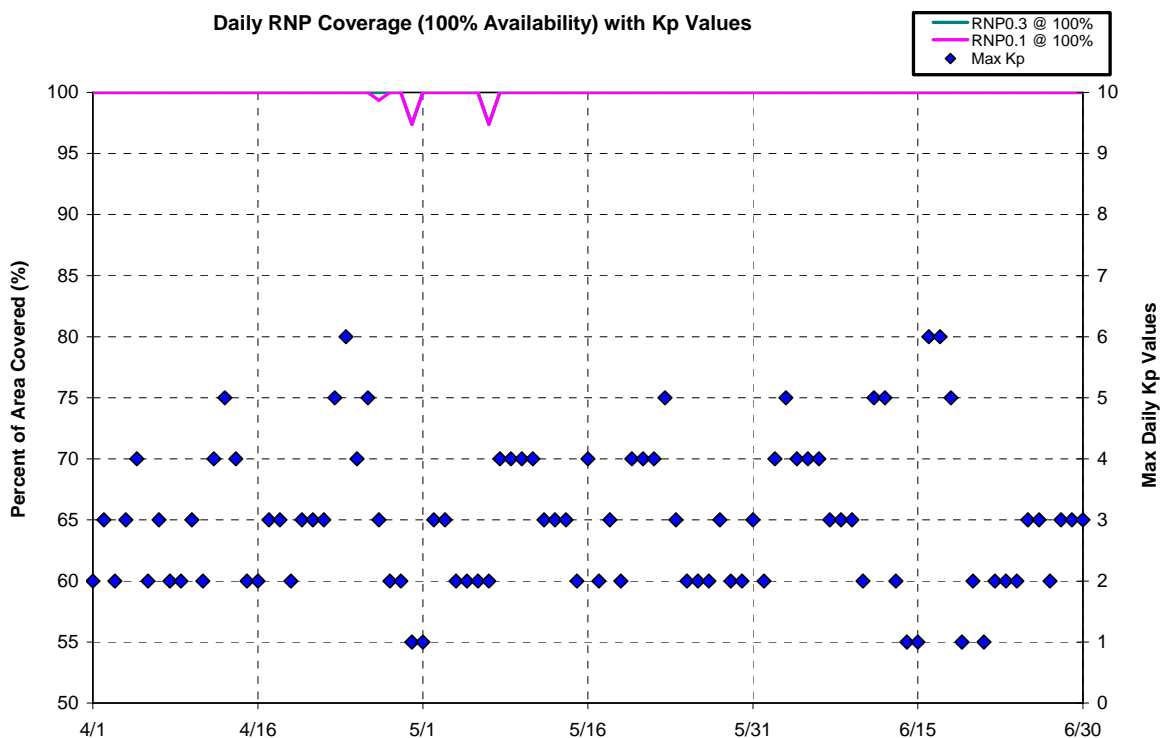


Figure 4-8 Daily RNP Coverage



5.0 INTEGRITY

5.1 HMI Analysis

Analysis of integrity includes the identification and evaluation of HMI (hazardously misleading information), as well as the generation of a safety index to illustrate the margin of safety that WAAS protection levels are providing. 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 process for determining this index involves dividing the protection limit observed by the maximum observed error. An observed safety 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 error was equal to the protection level. An HMI occurs if the position error exceeds the protection level in the vertical or horizontal dimensions at any time and 6.2 seconds or more passes before this event is corrected by WAAS.

Table 5.1 lists the safety index and the number of HMI events. For this evaluation period, the lowest safety margin index is 3.54 at Grand Forks. There was no HMI event. Since WAAS was made available to the public in August 2000 there has not been an HMI event. WAAS was commissioned by the FAA for safety of life services in July 2003.

Table 5-1 Safety Margin Index and HMI Statistics

Location	Safety Index		Number of HMIs
	Horizontal	Vertical	
Arcata	4.36	7.19	0
Grand Forks	5.48	3.54	0
Oklahoma City	7.14	4.17	0
Albuquerque	6.18	6.98	0
Anchorage	5.56	12.92	0
Atlanta	6.03	4.20	0
Barrow	11.85	6.71	0
Bethel	13.67	6.49	0
Billings	4.74	4.18	0
Boston	6.53	5.16	0
Chicago	4.03	4.62	0
Cleveland	4.48	6.74	0
Cold Bay	12.86	8.80	0
Dallas	5.73	5.13	0
Denver	6.36	7.00	0
Fairbanks	5.76	6.55	0
Gander	8.34	8.35	0
Goose Bay	4.91	5.59	0
Houston	5.59	4.63	0
Iqaluit	11.95	6.07	0
Jacksonville	6.28	3.84	0
Juneau	7.48	6.51	0
Kansas City	4.33	4.81	0
Kotzebue	11.69	7.49	0
Los Angeles	5.84	6.88	0
Memphis	7.52	4.02	0
Merida	7.37	4.64	0
Mexico City	12.59	5.99	0
Miami	8.76	6.63	0
Minneapolis	5.60	6.08	0
New York	4.94	4.59	0
Oakland	5.02	7.31	0
Puerto Vallarta	16.26	6.68	0
Salt Lake City	6.10	6.20	0
San Jose Del Cabo	7.25	3.67	0
Seattle	7.87	6.73	0
Washington DC	6.48	5.70	0
Winnipeg	6.71	6.26	0

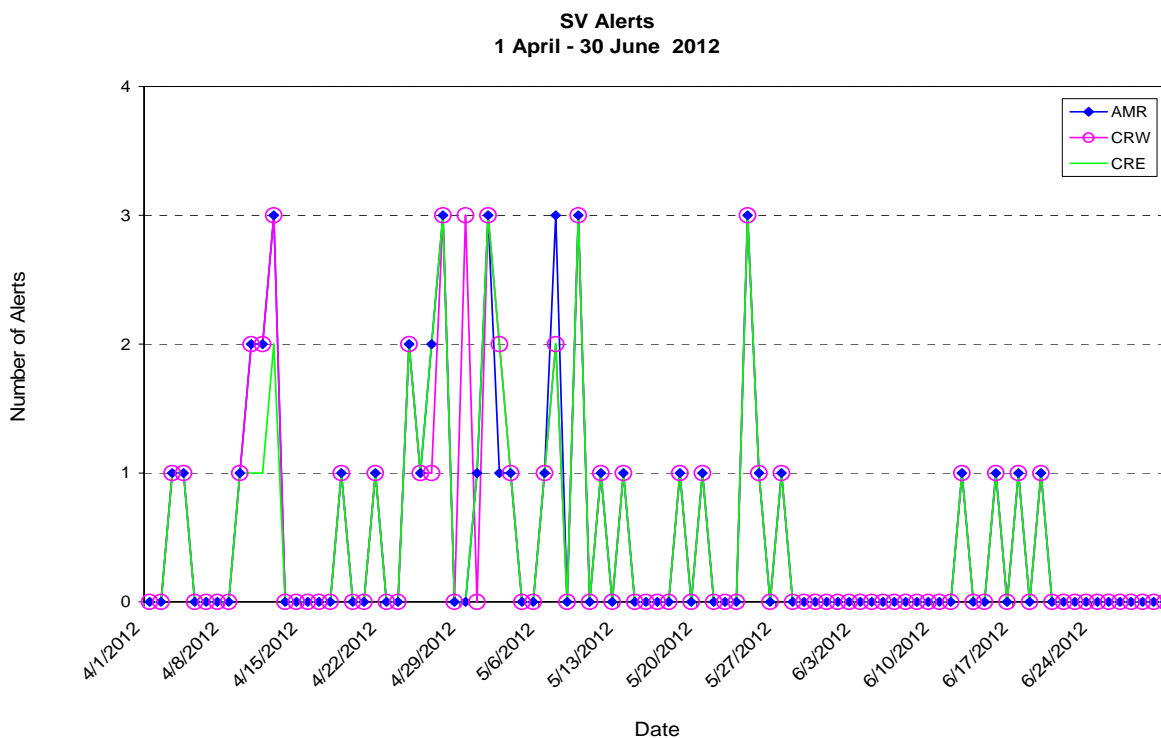
5.2 Broadcast Alerts

The WAAS transmits alert messages to protect the users if the active WAAS corrections are no longer bound by the UDREs. Alerts increase the User Differential Range Error (UDRE) for one or more PRNs, which can reduce the weighting of the satellite in the navigation solution, or completely exclude the satellite from the navigation solution. An increase in UDRE's 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, WAAS fast corrections can time out, causing 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 number of SV alerts that occurred daily during the reporting period. Often the number of alerts on one GEO is 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	9	9	9	0.0989	0.0989	0.0989
3	19	19	19	0.2088	0.2088	0.2088
4	18	19	15	0.1978	0.2088	0.1648
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	46	47	43	0.5055	0.5165	0.4725
Days in Service	91	91	91			

Figure 5-1 SV Daily Alert Trend



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

For an accurate and current user position to be calculated, the content of the WAAS message must be broadcast and received 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 an expected worst case broadcast interval. Table 5.3 lists the maximum intervals at which each message must broadcast to meet system requirements.

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

Late messages statistics reported during the quarter were mainly caused by GEO SIS outages, GUS switchovers and SV alerts except message type 7 and 10. Occasionally, message type 7 and 10 were late and they were not caused by GEO SIS outages, GUS switchovers or SV alerts. The lateness of type 7 and type 10 messages has little or no impact on user performance and safety.

Tables 5.4 to 5.8 show fast correction, long correction, ephemeris covariance, ionosphere correction, and ionospheric mask message rates statistics broadcasted on AMR. Table 5.9 to 5.13 show message rates statistics broadcasted on CRW. Table 5.14 to 5.18 show message rates statistics on CRE.

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	101118	2	130
2	1310362	39	32
3	1310399	34	29
4	1310403	32	26
7	93962	10	134
9	92137	0	0
10	93954	15	145
17	30878	0	0

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

SV	On Time	Late	Max Late Length (seconds)
1	49201	0	0
2	46773	0	0
3	48424	0	0
4	47136	1	169
5	47643	0	0
6	49576	0	0
7	47029	0	0
8	47281	0	0
9	47941	1	163
10	48268	1	270
11	49799	0	0
12	47022	2	184
13	46825	0	0
14	46679	1	166
15	47810	0	0
16	47947	0	0
17	46873	0	0
18	46276	0	0
19	48443	0	0
20	48509	0	0
21	46963	0	0
22	47076	0	0
23	46948	1	163
25	48814	1	270
26	48108	0	0
27	50064	1	174
28	47593	0	0
29	46895	1	166
30	44078	0	0
31	47663	1	168
32	47058	0	0

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

SV	On Time	Late	Max Late Length (seconds)
1	40415	2	128
2	38410	1	129
3	39742	3	150
4	38700	0	0
5	39052	1	125
6	40737	1	136
7	38587	2	208
8	38815	0	0
9	39349	0	0
10	39651	0	0
11	40965	2	184
12	38600	0	0
13	38452	1	126
14	38326	1	129
15	39205	1	122
16	39374	0	0
17	38492	1	129
18	38004	0	0
19	39788	0	0
20	39819	1	125
21	38573	6	208
22	38692	2	144
23	38524	1	312
25	40127	0	0
26	39430	1	127
27	41162	6	179
28	39090	7	210
29	38485	0	0
30	36139	1	127
31	39099	0	0
32	38606	0	0
133	75419	1	312
135	75505	1	126
138	75253	1	122

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

Band	Block	On Time	Late	Max Late Length (seconds)
0	0	27314	3	305
0	1	27286	8	306
0	2	27286	11	306
1	0	27307	9	306
1	1	27292	16	576
1	2	27297	11	576
1	3	27301	8	306
1	4	27295	6	306
2	0	27286	11	312
2	1	27298	11	311
2	2	27307	6	307
2	3	27294	7	307
2	4	27290	6	576
3	0	27292	8	576
3	1	27299	6	307
3	2	27301	12	306
9	0	27287	8	576
9	1	27295	10	306
9	2	27300	12	576
9	3	27288	8	576
9	4	27292	9	321
9	5	27300	9	309
9	6	27294	7	312

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

Band	On Time	Late	Max Late Length (seconds)
0	35040	0	0
1	35048	0	0
2	35048	1	462
3	35024	0	0
9	35016	0	0

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

Message Type	On Time	Late	Max Late Length (seconds)
1	107602	1	126
2	1310370	38	23
3	1310410	31	16
4	1310414	27	17
7	99859	9	136
9	92137	0	0
10	99732	10	133
17	31428	1	307

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

SV	On Time	Late	Max Late Length (seconds)
1	49198	0	0
2	46778	0	0
3	48419	1	180
4	47132	1	169
5	47650	1	158
6	49576	0	0
7	47038	0	0
8	47275	0	0
9	47954	0	0
10	48271	0	0
11	49794	0	0
12	47024	0	0
13	46820	0	0
14	46678	0	0
15	47805	0	0
16	47942	0	0
17	46873	0	0
18	46265	0	0
19	48448	0	0
20	48515	0	0
21	46959	0	0
22	47085	0	0
23	46943	0	0
25	48816	0	0
26	48102	0	0
27	50064	0	0
28	47589	0	0
29	46891	0	0
30	44065	0	0
31	47657	0	0
32	47055	0	0

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

SV	On Time	Late	Max Late Length (seconds)
1	40445	0	0
2	38419	0	0
3	39753	0	0
4	38711	0	0
5	39069	0	0
6	40739	0	0
7	38588	0	0
8	38811	0	0
9	39353	0	0
10	39672	0	0
11	40986	0	0
12	38600	0	0
13	38477	0	0
14	38322	0	0
15	39225	0	0
16	39374	0	0
17	38503	1	124
18	38007	0	0
19	39792	0	0
20	39803	0	0
21	38578	0	0
22	38696	0	0
23	38525	0	0
25	40119	0	0
26	39435	0	0
27	41174	0	0
28	39078	0	0
29	38478	0	0
30	36136	0	0
31	39101	0	0
32	38617	0	0
133	75083	0	0
135	75549	0	0
138	74456	0	0

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

Band	Block	On Time	Late	Max Late Length (seconds)
0	0	27273	13	314
0	1	27290	8	305
0	2	27303	11	306
1	0	27284	6	307
1	1	27296	10	307
1	2	27295	8	307
1	3	27300	7	311
1	4	27290	9	306
2	0	27301	6	306
2	1	27289	6	305
2	2	27298	9	307
2	3	27288	15	307
2	4	27297	10	306
3	0	27283	12	307
3	1	27289	14	306
3	2	27288	11	307
9	0	27303	15	307
9	1	27279	11	306
9	2	27288	6	311
9	3	27295	11	306
9	4	27298	8	306
9	5	27298	4	305
9	6	27307	7	312

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

Band	On Time	Late	Max Late Length (seconds)
0	35843	0	0
1	35847	0	0
2	35805	0	0
3	35854	0	0
9	35795	0	0

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

Message Type	On Time	Late	Max Late Length (seconds)
1	107630	3	156
2	1310360	38	32
3	1310394	35	29
4	1310390	35	23
7	100066	12	137
9	92137	0	0
10	99862	7	131
17	31435	2	440

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

SV	On Time	Late	Max Late Length (seconds)
1	49196	0	0
2	46771	0	0
3	48420	0	0
4	47129	0	0
5	47648	1	188
6	49582	0	0
7	47029	0	0
8	47278	0	0
9	47942	2	170
10	48268	1	187
11	49799	0	0
12	47021	1	179
13	46816	0	0
14	46678	0	0
15	47817	0	0
16	47951	0	0
17	46879	0	0
18	46268	0	0
19	48455	0	0
20	48498	2	188
21	46955	0	0
22	47071	0	0
23	46942	1	170
25	48813	2	187
26	48094	0	0
27	50065	1	179
28	47580	0	0
29	46887	0	0
30	44078	0	0
31	47662	1	172
32	47067	0	0

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

SV	On Time	Late	Max Late Length (seconds)
1	40435	1	122
2	38411	0	0
3	39768	0	0
4	38699	1	311
5	39068	0	0
6	40733	0	0
7	38592	1	128
8	38807	0	0
9	39354	0	0
10	39656	0	0
11	40970	1	206
12	38604	2	311
13	38466	0	0
14	38320	2	122
15	39213	0	0
16	39384	0	0
17	38493	2	206
18	38020	0	0
19	39788	0	0
20	39816	0	0
21	38576	0	0
22	38665	0	0
23	38538	0	0
25	40124	1	142
26	39437	0	0
27	41160	1	206
28	39089	0	0
29	38480	0	0
30	36141	1	206
31	39103	1	122
32	38617	1	142
133	75389	1	168
135	75387	1	168
138	75465	0	0

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

Band	Block	On Time	Late	Max Late Length (seconds)
0	0	27290	16	343
0	1	27295	15	320
0	2	27284	14	320
1	0	27291	11	320
1	1	27300	6	306
1	2	27288	6	326
1	3	27292	13	576
1	4	27272	18	306
2	0	27290	16	311
2	1	27284	17	307
2	2	27287	14	315
2	3	27281	13	310
2	4	27288	17	319
3	0	27303	15	308
3	1	27277	12	576
3	2	27293	9	386
9	0	27294	13	315
9	1	27284	21	576
9	2	27273	17	332
9	3	27284	23	332
9	4	27272	17	576
9	5	27294	15	576
9	6	27286	13	331

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

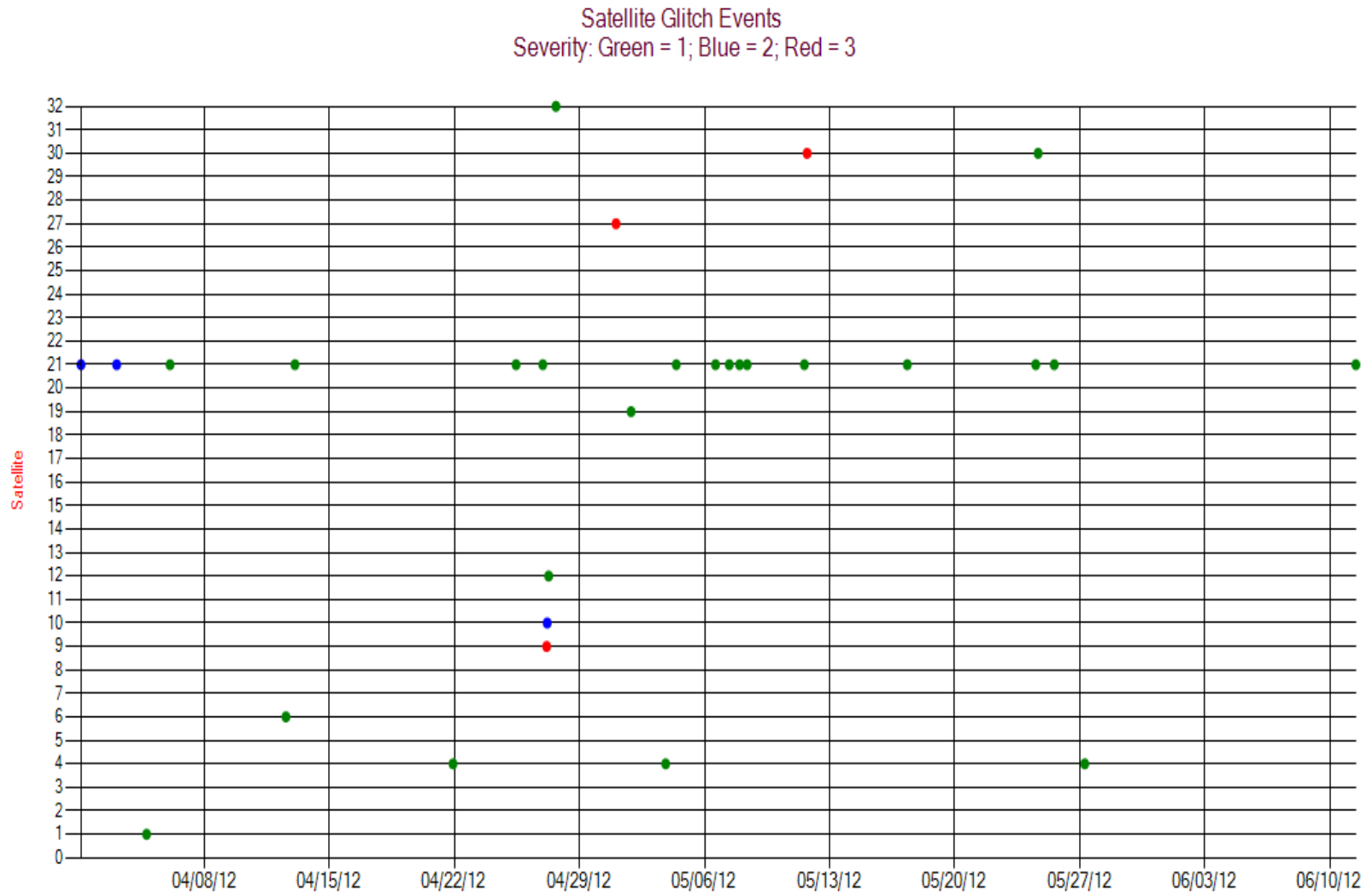
Band	On Time	Late	Max Late Length (seconds)
0	35839	1	463
1	35845	1	320
2	35839	1	345
3	35836	0	0
9	35893	0	0

5.4 Satellite Glitches

The GPS satellites occasionally have periods of signal carrier stability ‘glitches’ of varying magnitude. These are short degradations in the signal that in severe cases 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 spike to ‘Not Monitor’ and result in an alert.

Figure 5.2 shows the satellite glitches visible to WAAS for the quarter. Glitches are categorized into three severity levels. Severity one glitches cause a significant number of the receivers to simultaneously have bad subframe parity, but not all receivers. 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. Severity three glitches cause all of the receivers to lose track of both L1 and L2 data.

Figure 5-2 SV Glitch Trend



6.0 SV RANGE ACCURACY

Range accuracy evaluation computes the probability that the WAAS User Differential Range Error (UDRE) and Grid Ionospheric Vertical Error (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 satellite that is monitored by the system and the 99.9% bound (3.29 sigma) of the residual error on a pseudorange 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 (WAAS Fast Clock, WAAS Long-Term Clock, WAAS Ionospheric delay, Tropospheric delay, Receiver Clock Bias, and Multipath). Since the true ionospheric delay and multipath error are not precisely known, the estimated variance in these error sources are added to the UDRE before the comparing it to the residual error.

GPS satellite range residual errors were calculated for twelve WAAS receivers during the quarter. Table 6.1 and 6.2 show the range error 95% index and 99.9% (3.29 sigma) bounding statistics for each SV at the selected locations. Figures 6.1 and 6.2 show the range error for each SV as measured by the WAAS receivers at the Washington DC reference station.

A GIVE is broadcast by the WAAS for each IGP that is monitored by the system and the 99.9% (3.29 sigma) bound of the ionospheric error is checked. The WAAS broadcasts the ionospheric model using IGP's at predefined geographic locations. Each IGP contains the vertical ionospheric delay and the error in that delay 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 twelve WAAS receivers during the quarter. Table 6.3 and 6.4 show the ionospheric error 95% index and 99.9% (3.29 sigma) bounding statistics for each SV at the selected locations. Figures 6.3 and 6.4 show the ionospheric error for each SV as measured by the WAAS receiver at the Washington DC reference station.

For this reporting period, most satellites range errors were bounded 99.9% of the time by UDRE except for PRN 19 at Kansas City and PRN 25 at Juneau. The unbounded range errors occurred during LPV service outages caused by geomagnetic activity.

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

Site → SV ↓	Billings		Albuquerque		Boston		Washington DC		Houston		Kansas City	
	95% Range Error	3.29 Sigma Bounding(%)	95% Range Error	3.29 Sigma Bounding(%)	95% Range Error	3.29 Sigma Bounding(%)	95% Range Error	3.29 Sigma Bounding(%)	95% Range Error	3.29 Sigma Bounding(%)	95% Range Error	3.29 Sigma Bounding(%)
1	2.319	100	2.420	100	2.786	100	2.262	100	2.326	100	2.225	100
2	1.398	100	1.695	100	1.451	100	1.497	100	2.787	100	1.411	100
3	0.811	100	0.902	100	1.098	100	1.120	100	1.484	100	1.121	100
4	1.866	100	1.318	100	1.479	100	1.217	100	1.199	100	1.718	100
5	1.552	100	1.292	100	1.839	100	1.315	100	1.179	100	1.284	100
6	1.386	100	1.440	100	1.515	100	1.082	100	1.261	100	1.133	100
7	1.397	100	0.890	100	1.569	100	1.210	100	0.790	100	1.017	100
8	1.132	100	0.745	100	1.120	100	1.450	100	1.264	100	0.883	100
9	1.057	100	1.219	100	1.208	100	0.849	100	1.537	100	1.280	100
10	0.876	100	1.068	100	1.031	100	1.137	100	1.884	100	0.912	100
11	0.903	100	1.338	100	0.940	100	1.449	100	1.801	100	0.821	100
12	1.435	100	1.030	100	2.160	100	1.292	100	0.941	100	1.410	100
13	1.629	100	0.970	100	1.413	100	1.227	100	0.851	100	0.949	100
14	1.725	100	0.744	100	1.302	100	0.957	100	1.275	100	1.601	100
15	1.103	100	1.353	100	1.652	100	1.261	100	1.388	100	1.295	100
16	1.775	100	1.447	100	1.469	100	1.179	100	1.463	100	1.373	100
17	1.067	100	0.848	100	1.385	100	0.864	100	1.190	100	1.211	100
18	1.027	100	1.440	100	1.195	100	1.569	100	1.881	100	1.235	100
19	2.257	100	2.153	100	2.199	100	2.762	100	2.798	100	2.241	99.9953
20	0.730	100	1.248	100	0.998	100	1.327	100	1.166	100	1.246	100
21	1.229	100	1.427	100	1.373	100	1.573	100	1.762	100	1.268	100
22	2.315	100	2.145	100	2.229	100	2.483	100	2.535	100	2.027	100
23	1.360	100	1.879	100	2.257	100	2.050	100	2.477	100	1.872	100
24	-	-	-	-	-	-	-	-	-	-	-	-
25	2.612	100	2.496	100	2.285	100	2.164	100	2.848	100	2.385	100
26	1.438	100	1.302	100	1.753	100	1.312	100	1.357	100	1.278	100
27	1.491	100	1.217	100	1.798	100	1.009	100	1.223	100	1.489	100
28	1.137	100	1.280	100	1.004	100	1.482	100	1.787	100	1.298	100
29	1.733	100	1.353	100	1.663	100	1.859	100	1.103	100	1.562	100
30	0.891	100	0.944	100	1.064	100	0.948	100	1.029	100	0.767	100
31	1.311	100	1.190	100	0.722	100	0.706	100	1.053	100	1.166	100
32	1.064	100	0.956	100	1.141	100	0.899	100	1.004	100	1.157	100
135	2.004	100	1.716	100	3.026	100	1.908	100	1.931	100	1.216	100
138	1.679	100	1.347	100	1.557	100	1.784	100	1.631	100	1.412	100

Table 6-2 Range Error 95% index and 3.29 Sigma Bounding

Site → SV ↓	Los Angeles		Salt Lake City		Miami		Minneapolis		Atlanta		Juneau	
	95% Range Error	3.29 Sigma Bounding(%)	95% Range Error	3.29 Sigma Bounding(%)	95% Range Error	3.29 Sigma Bounding(%)	95% Range Error	3.29 Sigma Bounding(%)	95% Range Error	3.29 Sigma Bounding(%)	95% Range Error	3.29 Sigma Bounding(%)
1	1.861	100	2.670	100	1.949	100	3.424	100	2.052	100	2.513	100
2	2.093	100	1.390	100	2.852	100	1.424	100	1.788	100	1.328	100
3	0.783	100	0.905	100	1.194	100	1.269	100	0.953	100	1.392	100
4	1.568	100	1.666	100	1.953	100	1.458	100	1.088	100	1.635	100
5	1.100	100	1.531	100	1.223	100	1.565	100	1.105	100	1.672	100
6	0.827	100	1.658	100	1.005	100	1.174	100	1.059	100	1.417	100
7	0.956	100	1.209	100	1.901	100	1.401	100	0.688	100	1.575	100
8	0.975	100	0.671	100	1.515	100	0.987	100	0.812	100	1.295	100
9	0.978	100	1.056	100	0.940	100	1.558	100	0.908	100	1.547	100
10	1.183	100	0.789	100	1.578	100	1.082	100	1.273	100	0.894	100
11	1.614	100	1.245	100	2.163	100	1.082	100	1.421	100	1.086	100
12	0.869	100	1.115	100	1.080	100	1.551	100	1.159	100	1.500	100
13	0.898	100	2.733	100	1.142	100	1.205	100	0.823	100	1.376	100
14	1.231	100	1.007	100	1.354	100	0.733	100	0.892	100	0.888	100
15	1.231	100	1.406	100	1.121	100	1.533	100	1.140	100	1.515	100
16	1.681	100	1.041	100	1.375	100	0.886	100	1.269	100	0.935	100
17	1.015	100	1.153	100	0.950	100	1.181	100	0.827	100	1.159	100
18	1.506	100	1.337	100	1.752	100	1.140	100	1.518	100	1.257	100
19	2.829	100	2.036	100	3.102	100	2.294	100	2.740	100	2.215	100
20	1.251	100	1.073	100	1.924	100	1.068	100	1.390	100	1.012	100
21	1.239	100	0.982	100	2.261	100	1.268	100	1.372	100	1.162	100
22	2.556	100	2.055	100	2.804	100	2.146	100	2.396	100	2.248	100
23	1.944	100	1.568	100	2.315	100	1.645	100	1.989	100	1.618	100
24	-	-	-	-	-	-	-	-	-	-	-	-
25	1.887	100	1.988	100	2.062	100	2.269	100	1.998	100	2.574	99.9928
26	1.440	100	1.284	100	0.943	100	1.201	100	0.944	100	1.427	100
27	1.093	100	1.363	100	0.932	100	1.224	100	0.996	100	1.213	100
28	1.494	100	1.254	100	2.759	100	1.134	100	1.491	100	1.058	100
29	0.914	100	2.312	100	1.385	100	1.819	100	0.969	100	1.765	100
30	1.356	100	0.766	100	1.616	100	0.765	100	0.979	100	1.069	100
31	0.947	100	1.246	100	2.502	100	0.887	100	0.762	100	1.210	100
32	0.844	100	1.518	100	1.389	100	0.912	100	0.728	100	1.007	100
135	1.723	100	1.779	100	1.657	100	1.747	100	2.064	100	1.412	100
138	2.570	100	1.168	100	2.368	100	1.784	100	1.499	100	1.760	100

Table 6-3 Ionospheric Error 95% index and 3.29 Sigma Bounding

Site → SV ↓	Billings		Albuquerque		Boston		Washington DC		Houston		Kansas City	
	95% Iono Error	3.29 Sigma Bounding(%)	95% Iono Error	3.29 Sigma Bounding(%)	95% Iono Error	3.29 Sigma Bounding(%)	95% Iono Error	3.29 Sigma Bounding(%)	95% Iono Error	3.29 Sigma Bounding(%)	95% Iono Error	3.29 Sigma Bounding(%)
1	1.512	100	1.575	100	1.715	100	1.468	100	1.507	100	1.446	100
2	1.080	100	0.866	100	0.969	100	0.883	100	1.205	100	0.890	100
3	0.379	100	0.591	100	0.700	100	0.555	100	0.923	100	0.564	100
4	1.225	100	1.183	100	0.995	100	1.085	100	1.519	100	1.372	100
5	0.962	100	1.009	100	1.042	100	0.793	100	1.143	100	0.865	100
6	0.712	100	0.759	100	0.911	100	0.510	100	0.798	100	0.548	100
7	0.871	100	0.628	100	0.816	100	0.846	100	0.704	100	0.758	100
8	0.439	100	0.454	100	0.617	100	0.732	100	0.708	100	0.569	100
9	0.556	100	0.633	100	0.529	100	0.370	100	0.772	100	0.486	100
10	0.513	100	0.405	100	0.475	100	0.440	100	1.009	100	0.465	100
11	0.561	100	0.517	100	0.363	100	0.410	100	0.830	100	0.408	100
12	0.760	100	0.751	100	1.001	100	0.729	100	0.637	100	0.671	100
13	0.749	100	0.640	100	0.636	100	0.610	100	0.695	100	0.503	100
14	1.060	100	0.479	100	0.816	100	0.412	100	0.689	100	0.641	100
15	0.601	100	0.874	100	0.893	100	0.767	100	1.013	100	0.729	100
16	0.890	100	0.792	100	0.491	100	0.529	100	0.769	100	0.985	100
17	0.715	100	0.823	100	0.963	100	0.651	100	0.815	100	0.672	100
18	0.742	100	0.692	100	0.759	100	0.878	100	0.887	100	0.726	100
19	1.515	100	1.342	100	1.331	100	1.505	100	1.953	100	1.514	100
20	0.470	100	0.615	100	0.533	100	0.537	100	0.644	100	0.610	100
21	0.932	100	0.666	100	0.961	100	0.934	100	0.729	100	0.735	100
22	1.892	100	1.541	100	1.623	100	1.810	100	1.877	100	1.644	100
23	1.180	100	1.393	100	1.449	100	1.246	100	1.956	100	1.266	100
24	-	-	-	-	-	-	-	-	-	-	-	-
25	1.497	100	1.627	100	1.317	100	1.241	100	1.467	100	1.312	100
26	0.791	100	0.777	100	0.808	100	0.641	100	0.843	100	0.679	100
27	0.774	100	0.704	100	0.771	100	0.505	100	0.622	100	0.689	100
28	0.682	100	0.453	100	0.489	100	0.613	100	0.820	100	0.549	100
29	0.798	100	0.951	100	0.819	100	0.877	100	0.855	100	0.839	100
30	0.576	100	0.539	100	0.359	100	0.377	100	0.956	100	0.540	100
31	0.613	100	0.635	100	0.459	100	0.471	100	0.829	100	0.804	100
32	0.526	100	0.581	100	0.539	100	0.401	100	0.428	100	0.548	100

Table 6-4 Ionospheric Error 95% index and 3.29 Sigma Bounding

Site → SV ↓	Los Angeles		Salt Lake City		Miami		Minneapolis		Atlanta		Juneau	
	95% Iono Error	3.29 Sigma Bounding(%)	95% Iono Error	3.29 Sigma Bounding(%)	95% Iono Error	3.29 Sigma Bounding(%)	95% Iono Error	3.29 Sigma Bounding(%)	95% Iono Error	3.29 Sigma Bounding(%)	95% Iono Error	3.29 Sigma Bounding(%)
1	1.353	100	1.669	100	1.372	100	1.875	100	1.397	100	1.718	100
2	1.081	100	0.858	100	1.472	100	0.962	100	1.168	100	0.948	100
3	0.454	100	0.515	100	0.555	100	0.708	100	0.396	100	0.752	100
4	0.967	100	1.118	100	1.388	100	1.016	100	0.794	100	1.083	100
5	0.794	100	0.822	100	1.059	100	0.869	100	0.632	100	1.071	100
6	0.520	100	0.762	100	0.608	100	0.668	100	0.517	100	0.838	100
7	0.784	100	0.798	100	0.966	100	0.830	100	0.380	100	1.030	100
8	0.422	100	0.533	100	0.753	100	0.546	100	0.409	100	0.782	100
9	0.473	100	0.589	100	0.395	100	0.746	100	0.381	100	0.862	100
10	0.456	100	0.411	100	0.434	100	0.472	100	0.697	100	0.426	100
11	0.693	100	0.373	100	0.725	100	0.478	100	0.612	100	0.474	100
12	0.650	100	0.685	100	0.740	100	0.793	100	0.548	100	0.818	100
13	0.575	100	1.184	100	0.629	100	0.586	100	0.412	100	0.775	100
14	0.489	100	0.446	100	0.706	100	0.356	100	0.628	100	0.489	100
15	0.773	100	0.791	100	0.639	100	0.842	100	0.586	100	1.007	100
16	0.935	100	0.515	100	0.680	100	0.519	100	0.745	100	0.469	100
17	0.652	100	1.044	100	0.822	100	0.781	100	0.431	100	0.867	100
18	0.746	100	0.744	100	0.845	100	0.690	100	1.078	100	0.904	100
19	1.700	100	1.425	100	1.612	100	1.423	100	1.749	100	1.469	100
20	0.518	100	0.491	100	1.118	100	0.599	100	0.764	100	0.434	100
21	0.606	100	0.630	100	1.248	100	0.860	100	0.977	100	0.869	100
22	1.602	100	1.508	100	1.961	100	1.680	100	2.018	100	1.589	100
23	1.390	100	1.207	100	1.532	100	1.125	100	1.526	100	1.082	100
24	-	-	-	-	-	-	-	-	-	-	-	-
25	1.396	100	1.391	100	1.463	100	1.385	100	1.131	100	1.623	100
26	0.872	100	0.799	100	0.582	100	0.722	100	0.436	100	0.841	100
27	0.619	100	0.728	100	0.511	100	0.758	100	0.449	100	0.749	100
28	0.534	100	0.540	100	1.473	100	0.412	100	0.885	100	0.523	100
29	0.729	100	1.195	100	0.862	100	0.929	100	0.512	100	0.984	100
30	0.520	100	0.385	100	0.577	100	0.457	100	0.541	100	0.526	100
31	0.630	100	0.597	100	0.905	100	0.574	100	0.343	100	0.655	100
32	0.471	100	0.770	100	0.558	100	0.423	100	0.439	100	0.495	100

Figure 6-1 95% Range Error (PRN 1 - PRN 16) - Washington DC

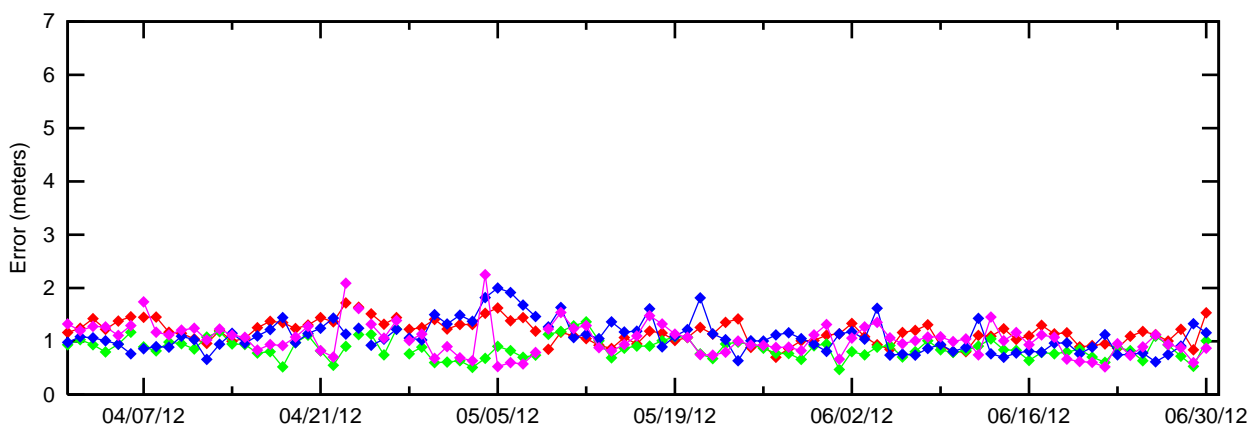
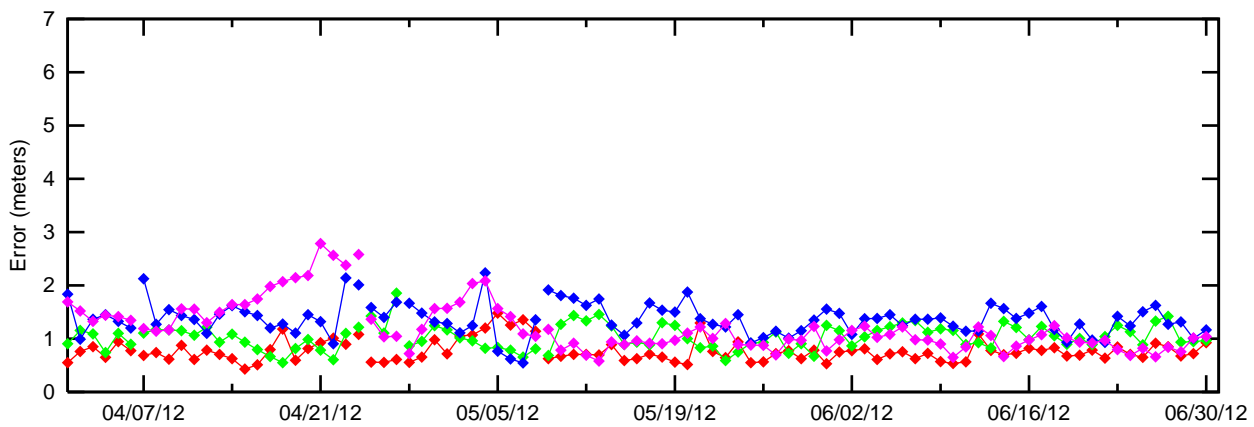
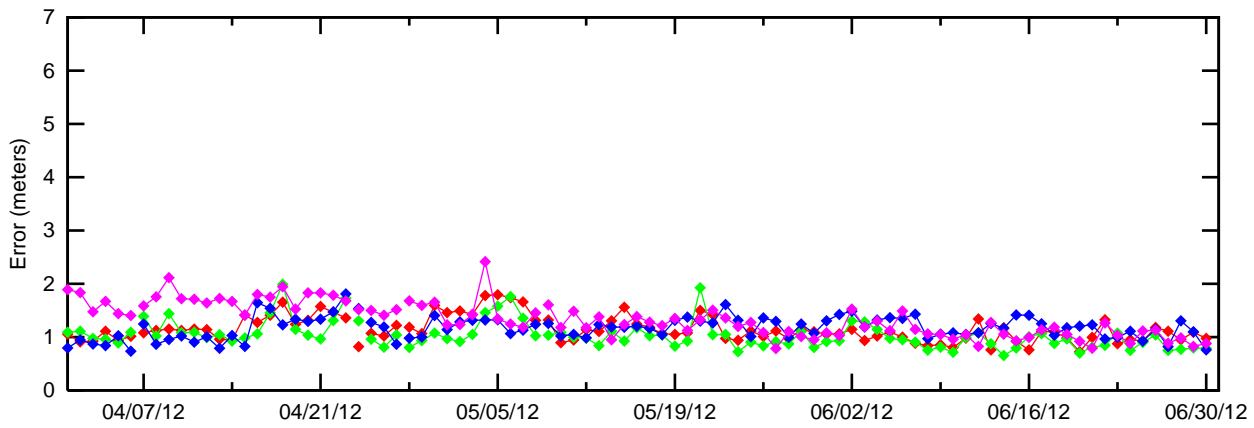
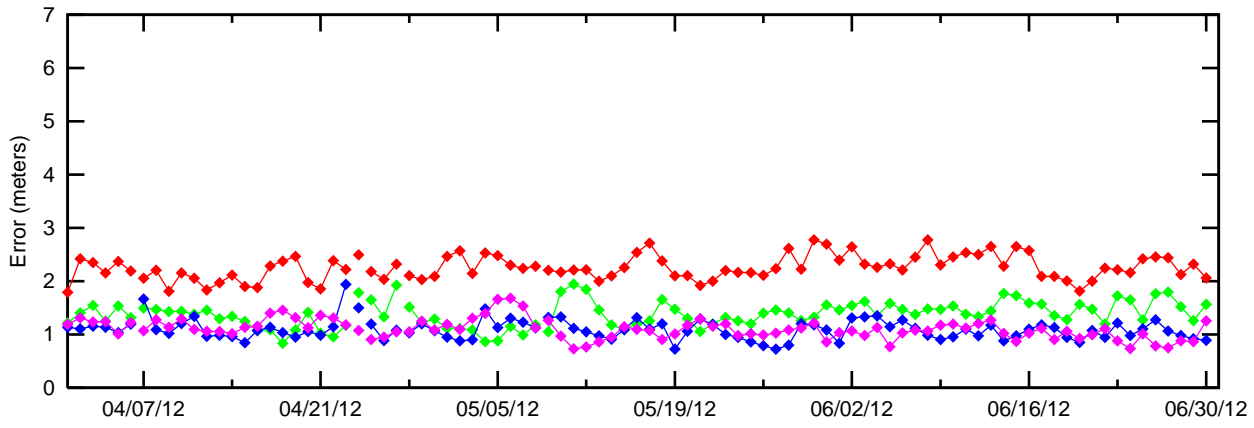


Figure 6-2 95% Range Error (PRN 17 - PRN 32) - Washington DC

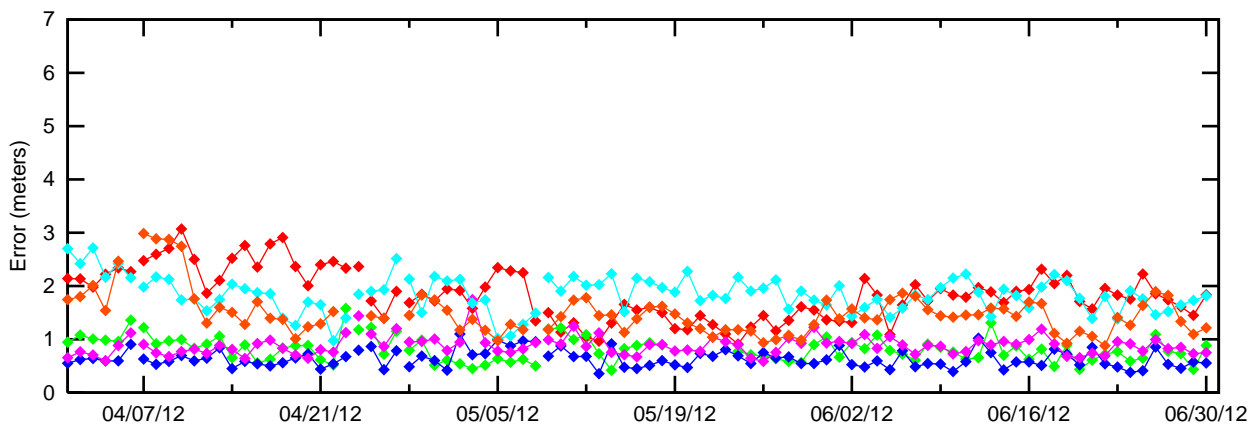
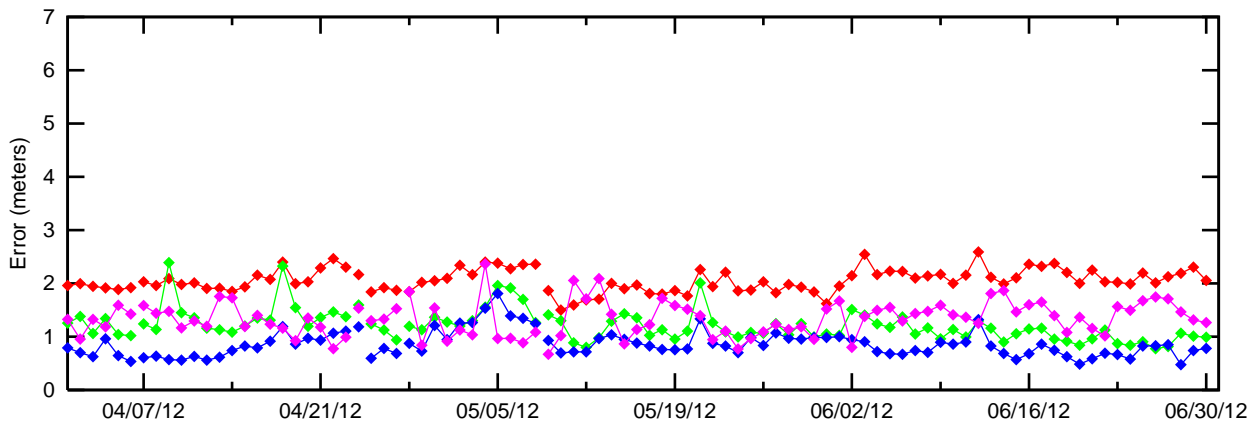
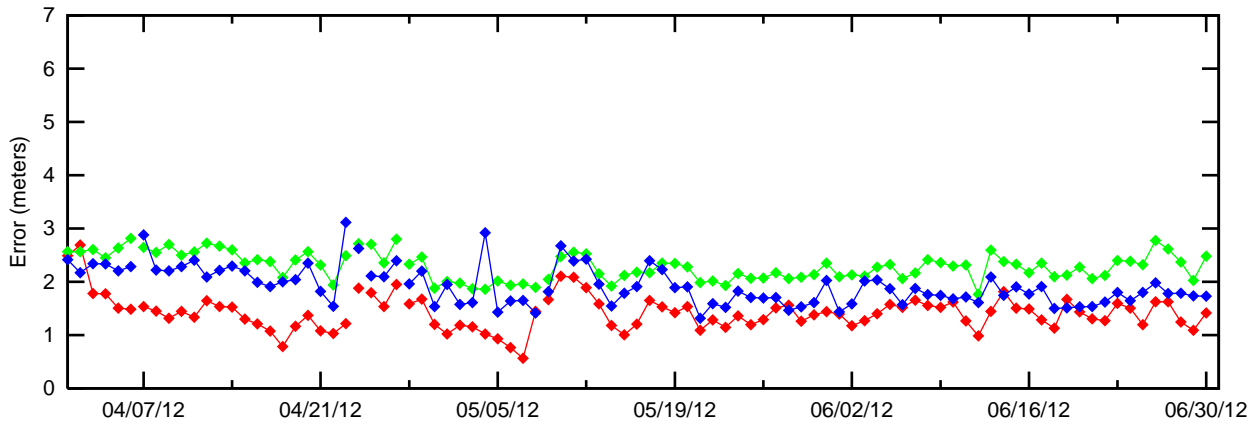
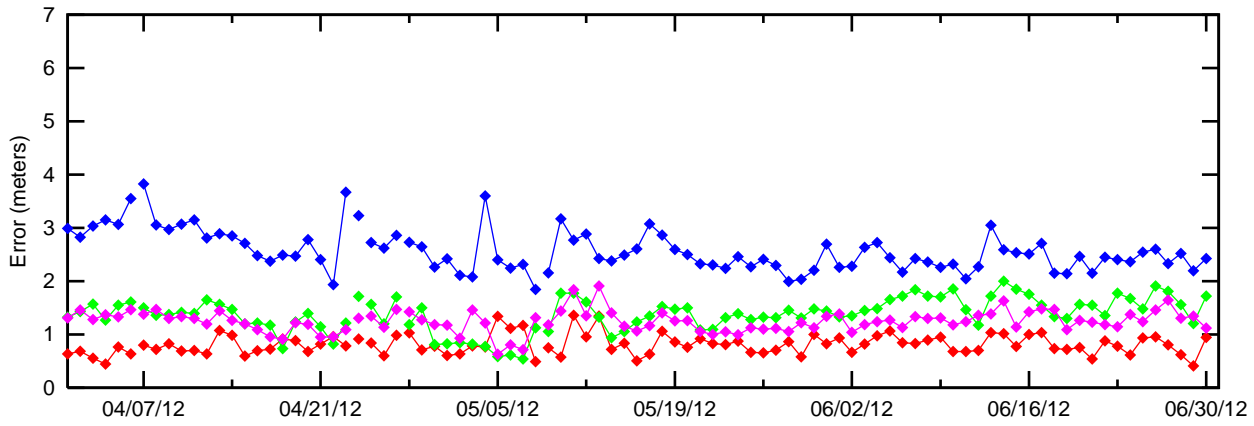


Figure 6-3 95% Ionospheric (PRN 1 - PRN 16) - Washington DC

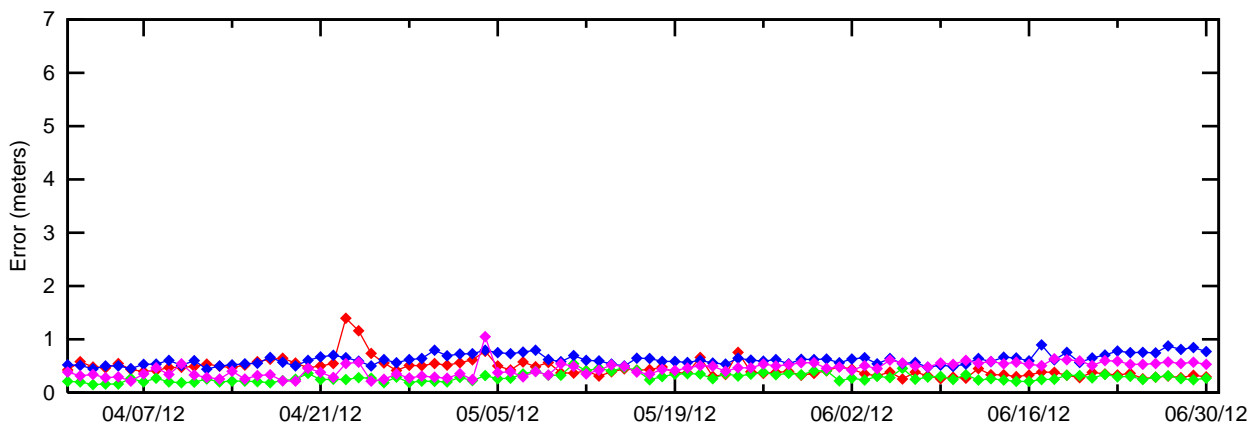
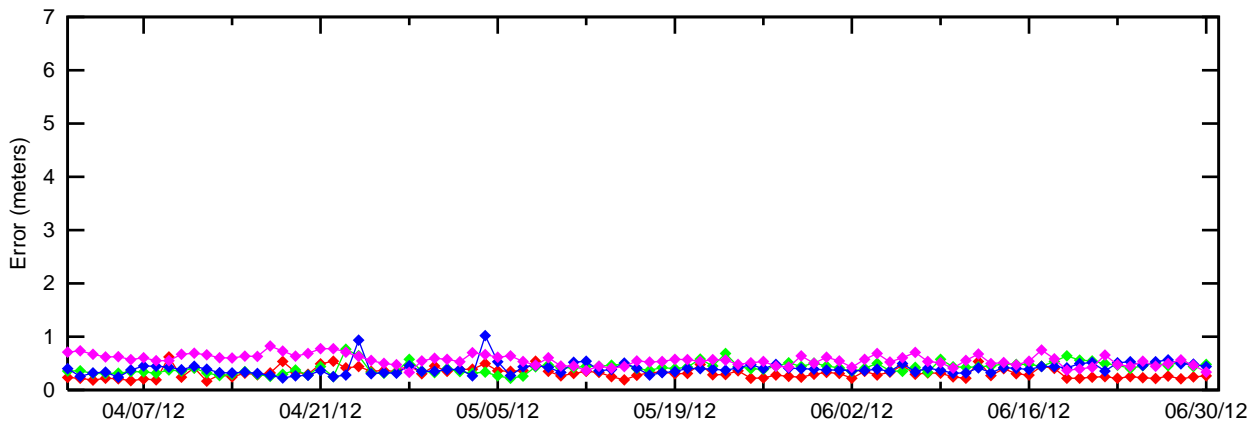
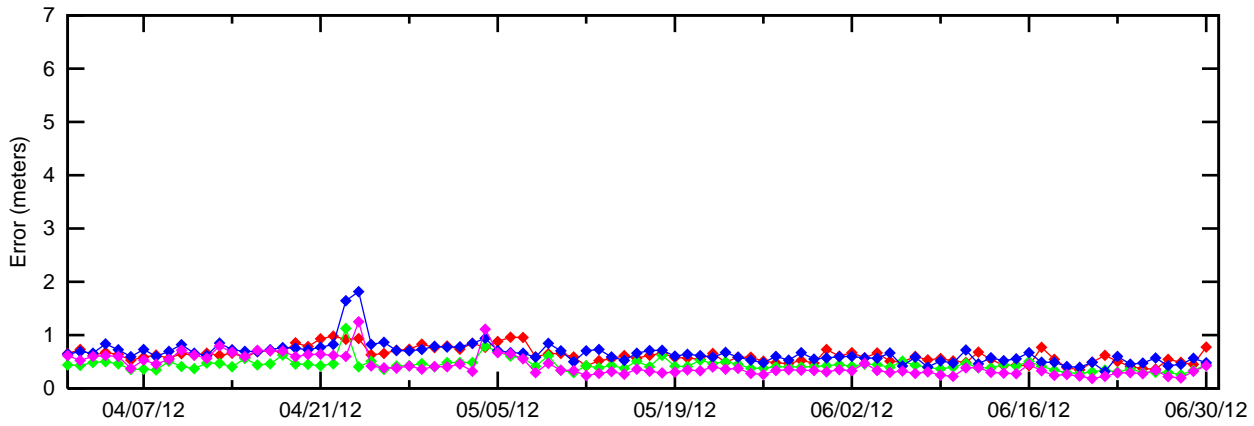
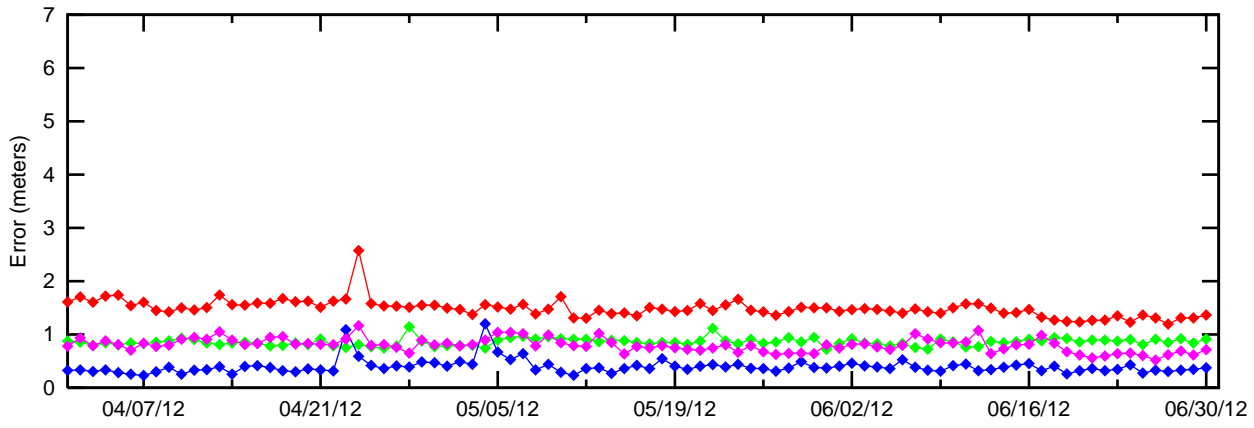
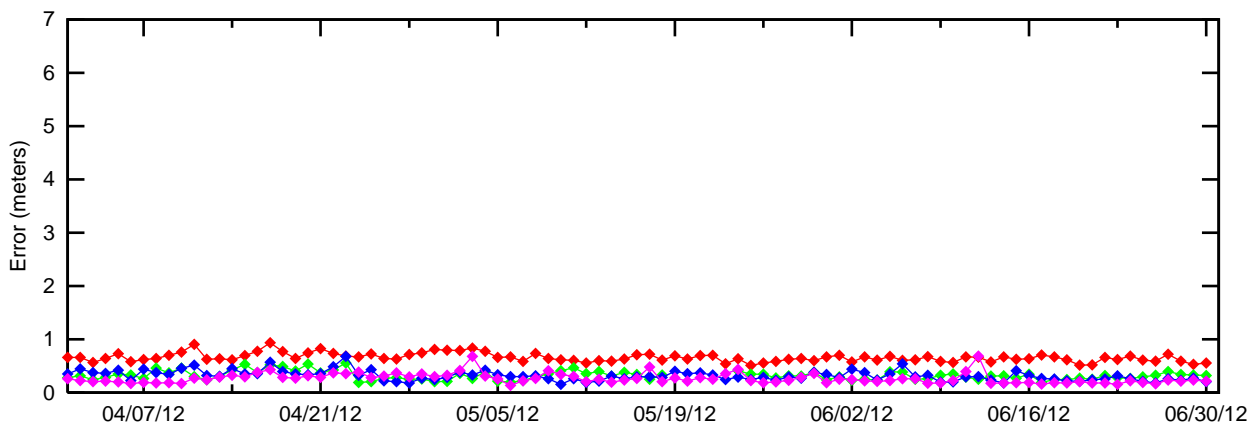
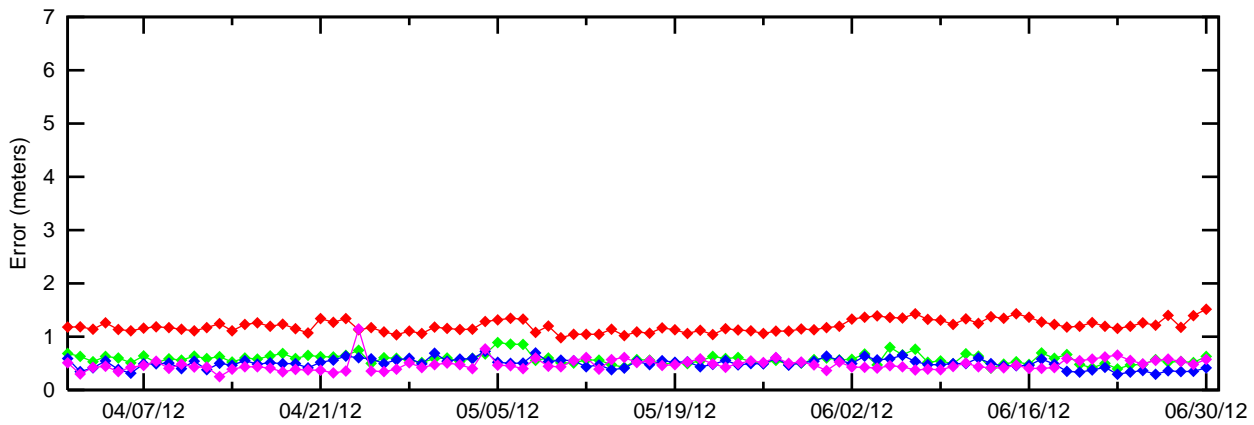
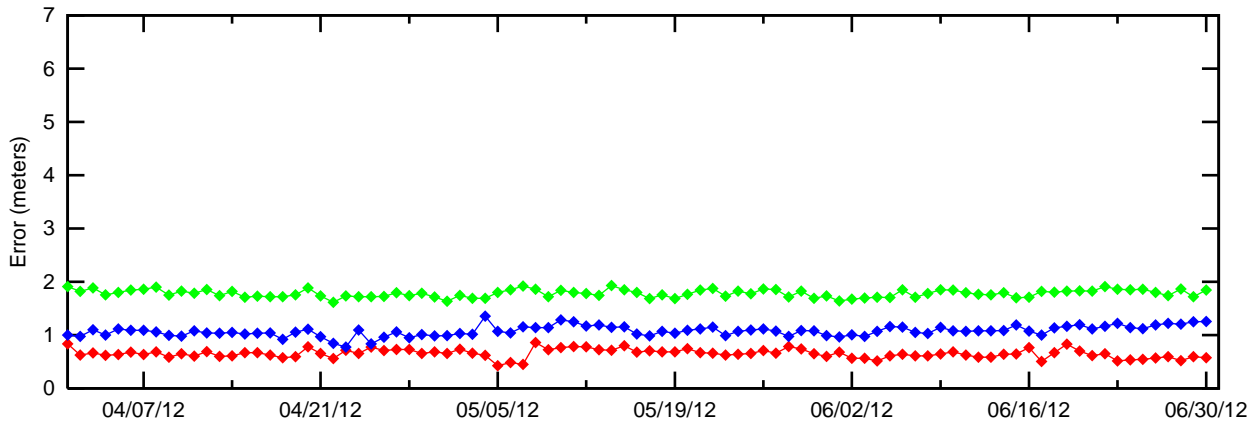
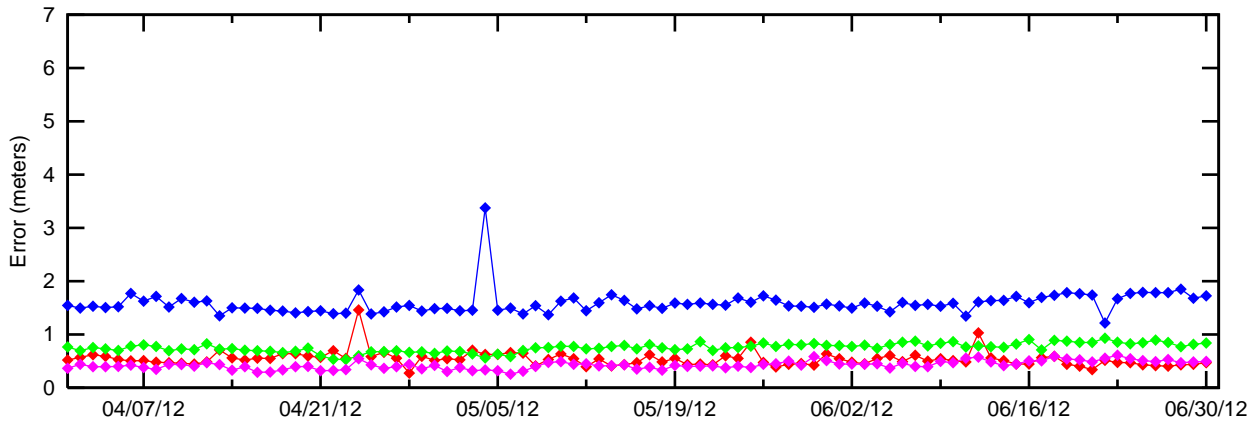


Figure 6-4 95% Ionospheric (PRN 17 - PRN 32) - Washington DC



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-Ranging performance. Figure 7.1 shows the trend of CRW GEO PA Ranging Availability. Figure 7.2 shows the trend of CRE GEO PA Ranging Availability. Figure 7.3 shows the trend of AMR GEO NPA Ranging Availability.

The low ranging availability observed for this reporting period was mainly due to orbit mismatch. An orbit mismatch occurs when the orbit of a GEO calculated by a C&V that is not the selected source C&V for that GEO may have a larger error than the selected source C&V. This issue is being fixed by an update to the WAAS software that is scheduled for July 2012.

The low CRW PA Ranging Availability reported by CRE on April 12th and by AMR on April 27th are due to orbit mismatch. The low CRE PA Ranging Availability for CRW reported by AMR on April 9th and by CRW on April 27th and April 28th are also due to orbit mismatch, and the low AMR NPA Ranging Availability reported only by CRW from April 28th to April 30th are due to orbit mismatch as well.

Table 7-1 GEO Ranging Availability

GEO Source	GEO	PA (%)	NPA (%)	Not Monitored (%)	Do Not Use (%)
AMR 133	CRW	99.33	0.45	0.22	0.00
AMR 133	CRE	98.34	1.07	0.59	0.00
AMR 133	AMR	0.00	99.70	0.26	0.04
CRW 135	CRW	99.43	0.45	0.12	0.00
CRW 135	CRE	97.27	1.07	1.65	0.00
CRW 135	AMR	0.00	99.25	0.71	0.04
CRE 138	CRW	99.13	0.45	0.42	0.00
CRE 138	CRE	98.63	1.07	0.30	0.00
CRE 138	AMR	0.00	99.70	0.26	0.04

Figure 7-1 Daily PA CRW GEO Ranging Availability Trend

CRW PA-Ranging Performance reported by AMR, CRW, and CRE
1 April - 30 June 2012

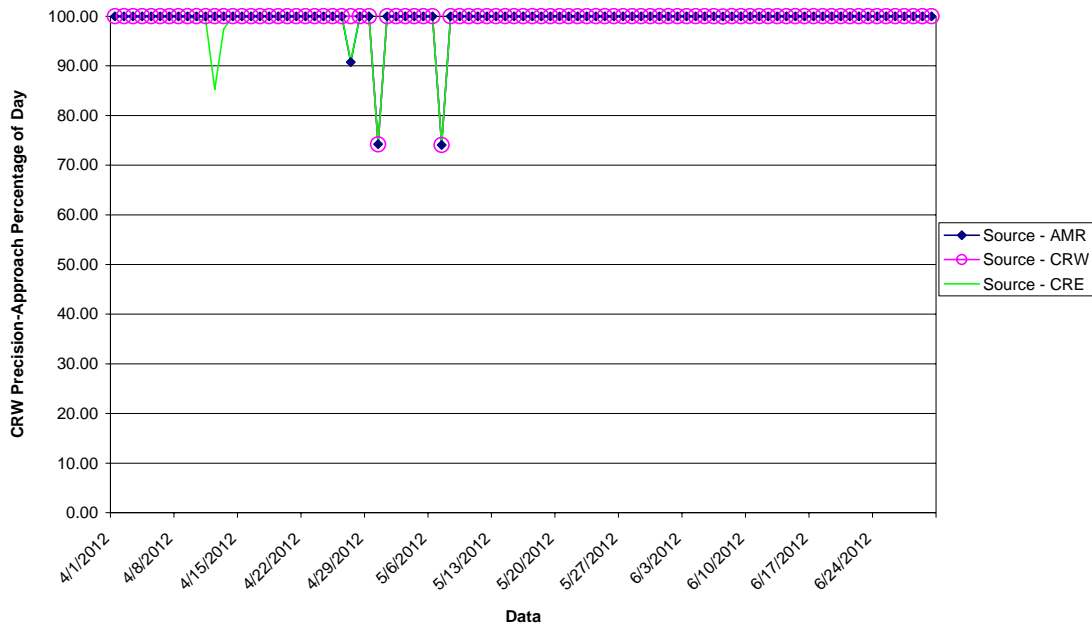


Figure 7-2 Daily PA CRE GEO Ranging Availability Trend

CRE PA-Ranging Performance reported by AMR, CRW, and CRE
1 April - 30 June 2012

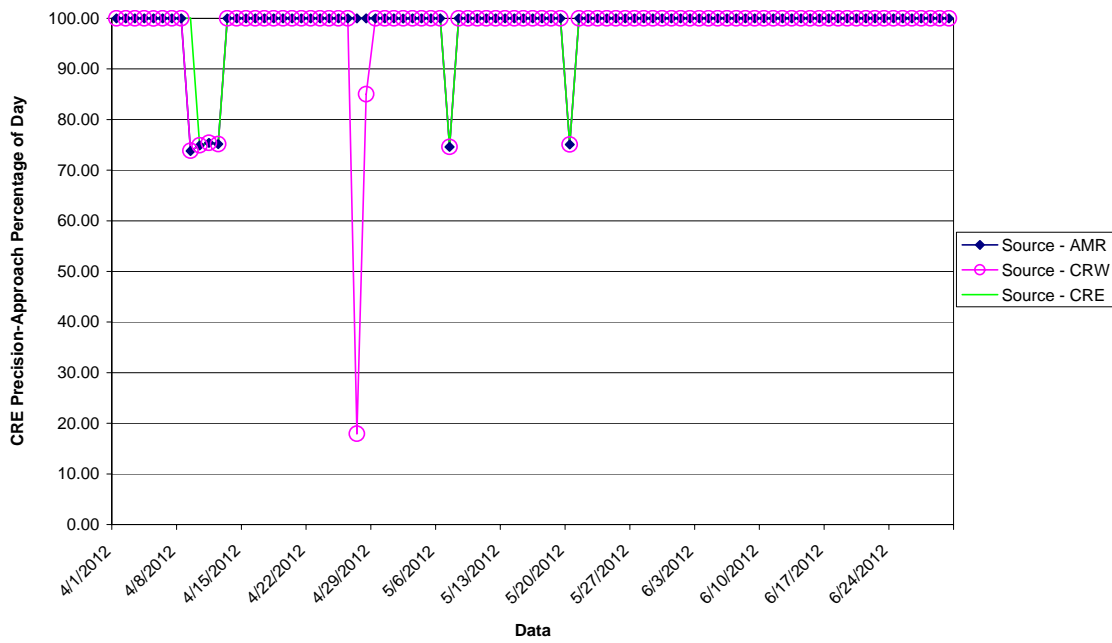
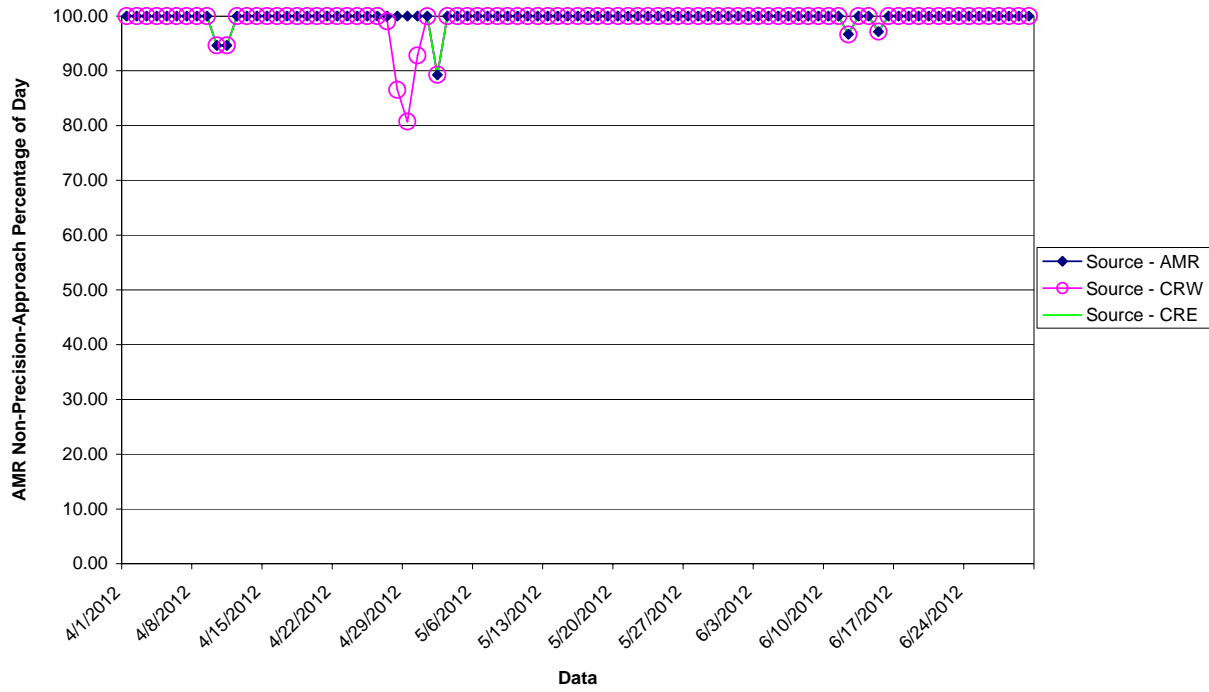


Figure 7-3 Daily NPA AMR GEO Ranging Availability Trend

AMR NPA-Ranging Performance reported by AMR, CRW, and CRE
1 April - 30 June 2012



8.0 WAAS AIRPORT AVAILABILITY

The WAAS airport availability evaluation determines the number and length LPV service outages at selected airports from 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 second in accordance with the RTCA DO-229D. Once the protection levels have been produced at each airport an LPV service evaluation is conducted to identify outages in service (i.e. when protection levels exceed alert limits). WAAS LPV service is available for a user when the vertical protection level (VPL) is less than or equal to vertical alert limit (VAL) of 50 meters and the horizontal protection level (HPL) is less than or equal to horizontal alert limit (HAL) of 40 meters. If both conditions are met at a specified airport location then WAAS LPV service is available at that airport. If either one of the conditions are not met at a specified airport location then WAAS LPV service at that airport is unavailable and an outage in LPV service is recorded with its duration. 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 reduce LPV service availability minimally, it substantially reduces the number of service outages and prevents excessive switching in and out of service availability. Similar service analysis is completed for LP and LPV 200 services in accordance with HAL and VAL shown in Table 1.1. The number of WAAS LPV service outages and the availability at selected airports for this evaluation period of WAAS operation is presented in Table 8-1. Figure 8-1 to 8-6 provide the graphical representation of the LP, LPV and LPV 200 availability and outage counts at all airports, including many that do not have published approaches. These results are depicted geographically on an interactive web page at <http://www.nstb.tc.faa.gov/AirportOutages/>.

The interactive web page can be accessed by entering the web address into an Internet browser and 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 8.2. Rolling over any airport with the cursor displays the LPV availability and number of LPV outages for the reporting period. The "WAAS Layer" menu in the upper right of the display allows the user to select WAAS LP or LPV 200 availability and the number of outage results as shown in Figure 8.3 to 8.6. The user can review WAAS availability performance for US airports with GPS RNAV instrument approach procedures by selecting "Show all Airports", or limit airports displayed to those with approved LPV approaches as provided in Table 8.1.

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

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
6A8	ALLAKAKET	AK	LP	1	0.9996	2	0.9993	3	0.9985
BET	BETHEL	AK	LPV	3	0.9998	2	0.9993	6	0.9985
9A3	CHUATHBALUK	AK	LPV	1	0.9995	2	0.9993	4	0.9989
CLP	CLARKS POINT	AK	LPV	1	0.9995	2	0.9992	9	0.9986
CDB	COLD BAY	AK	LPV	3	0.9995	7	0.9990	260	0.9773
SCC	DEADHORSE	AK	LPV	3	0.9997	3	0.9989	10	0.9978
DLG	DILLINGHAM	AK	LPV	1	0.9995	2	0.9992	6	0.9986
GAL	EDWARD G. PITKA SR	AK	LPV	1	0.9996	2	0.9992	3	0.9987
ELI	ELIM	AK	LPV	3	0.9999	3	0.9993	5	0.9986
ENM	EMMONAK	AK	LPV	2	1.0000	3	0.9993	9	0.9985
FAI	FAIRBANKS INTL	AK	LPV200	2	0.9995	3	0.9989	2	0.9983
GKN	GULKANA	AK	LPV	3	0.9992	1	0.9987	2	0.9983
HOM	HOMER	AK	LPV	1	0.9995	1	0.9994	4	0.9987
HPB	HOOPER BAY	AK	LP	2	0.9997	4	0.9995	14	0.9977
HLA	HUSLIA	AK	LPV	1	0.9996	2	0.9992	3	0.9987
ILI	ILIAMNA	AK	LPV	1	0.9995	1	0.9994	3	0.9988
KAL	KALTAG	AK	LPV	2	0.9998	2	0.9992	4	0.9987
ENA	KENAI MUNI	AK	LPV	1	0.9995	1	0.9994	4	0.9986
KTN	KETCHIKAN INTL	AK	LPV	2	0.9991	1	0.9988	2	0.9984
AKN	KING SALMON	AK	LPV	1	0.9995	2	0.9993	6	0.9987

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
KYU	KOYUKUK	AK	LPV	1	0.9996	2	0.9992	4	0.9987
KWT	KWETHLUK	AK	LPV	3	0.9998	2	0.9993	6	0.9986
MCG	MCGRATH	AK	LP	1	0.9996	2	0.9993	3	0.9987
WNA	NAPAKIAK	AK	LPV	3	0.9998	3	0.9994	7	0.9985
ORT	NORTHWAY	AK	LP	2	0.9991	1	0.9988	2	0.9982
AQT	NUIQSUT	AK	LPV	2	0.9998	3	0.9991	9	0.9978
PAQ	PALMER MUNI	AK	LP	2	0.9995	2	0.9992	3	0.9985
AQH	QUINHAGAK	AK	LPV	3	0.9998	3	0.9995	9	0.9984
OTZ	RALPH WIEN MEMORIAL	AK	LPV200	4	0.9998	5	0.9991	29	0.9966
D76	ROBERT/BOB/CURTIS MEMORIAL	AK	LPV	4	0.9998	5	0.9991	26	0.9971
RBV	RUBY	AK	LPV	1	0.9996	2	0.9992	3	0.9987
WLK	SELAWIK	AK	LPV	2	0.9999	3	0.9992	6	0.9986
SHX	SHAGELUK	AK	LPV	1	0.9996	2	0.9993	4	0.9989
2C7	SHAKTOOLIK	AK	LPV	3	0.9999	3	0.9992	5	0.9987
SHG	SHUNGNAK	AK	LP	2	0.9999	2	0.9992	4	0.9986
KSM	ST MARY'S	AK	LPV	3	0.9999	3	0.9993	7	0.9987
SMK	ST MICHAEL	AK	LPV	2	1.0000	3	0.9993	5	0.9987
ANC	TED STEVENS ANCHORAGE INTL	AK	LPV200	2	0.9995	2	0.9992	4	0.9986
OOK	TOKSOOK BAY	AK	LP	2	0.9997	4	0.9995	15	0.9979
UNK	UNALAKLEET	AK	LP	3	0.9998	3	0.9992	5	0.9988
BRW	WILEY POST-WILL ROGERS MEM	AK	LPV	6	0.9997	8	0.9988	66	0.9918
YAK	YAKUTAT	AK	LPV200	2	0.9989	1	0.9988	3	0.9983
8A0	ALBERTVILLE MUNI-T. J. BRUMLIK FIELD	AL	LPV	0	1	0	1	0	1
ANB	ANNISTON METROPOLITAN	AL	LPV	0	1	0	1	0	1
AUO	AUBURN-OPELIKA ROBERT G PITTS	AL	LPV	0	1	0	1	1	1.0000
1R8	BAY MINETTE MUNI	AL	LPV	0	1	0	1	0	1
EKY	BESSEMER	AL	LPV	0	1	0	1	0	1
BHM	BIRMINGHAM INTL	AL	LPV200	0	1	0	1	0	1
12J	BREWTON MUNI	AL	LPV	0	1	0	1	0	1
SEM	CRAIG FIELD	AL	LPV	0	1	0	1	0	1
DHN	DOTHAN REGIONAL	AL	LPV	0	1	0	1	1	1.0000
EDN	ENTERPRISE MUNI	AL	LPV	0	1	0	1	1	1.0000
5R4	FOLEY MUNI	AL	LPV	0	1	0	1	0	1
3A1	FOLSOM FIELD	AL	LPV	0	1	0	1	0	1
CQF	H L SONNY CALLAHAN	AL	LPV200	0	1	0	1	0	1
HSV	HUNTSVILLE INTL-CARL T JONES FLD	AL	LPV200	0	1	0	1	0	1
4A9	ISBELL FIELD	AL	LPV	0	1	0	1	0	1
JKA	JACK EDWARDS	AL	LPV200	0	1	0	1	0	1
MDQ	MADISON COUNTY EXECUTIVE/TOM SHARP JR FLD	AL	LPV	0	1	0	1	0	1
HAB	MARION COUNTY-RANKIN FITE	AL	LPV	0	1	0	1	0	1
SCD	MERKEL FIELD SYLACAUGA MUNI	AL	LPV	0	1	0	1	0	1
BFM	MOBILE DOWNTOWN	AL	LPV200	0	1	0	1	0	1

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
MOB	MOBILE REGIONAL	AL	LPV	0	1	0	1	0	1
MGM	MONTGOMERY REGIONAL (DANNELLY FIELD)	AL	LPV200	0	1	0	1	0	1
06A	MOTON FIELD MUNI	AL	LPV	0	1	0	1	1	1.0000
GAD	NORTHEAST ALABAMA REGIONAL	AL	LPV200	0	1	0	1	0	1
MSL	NORTHWEST ALABAMA REGIONAL	AL	LPV200	0	1	0	1	0	1
1M4	POSEY FIELD	AL	LPV	0	1	0	1	0	1
DCU	PRYOR FIELD REGIONAL	AL	LPV200	0	1	0	1	0	1
M95	RICHARD ARTHUR FIELD	AL	LPV	0	1	0	1	0	1
EET	SHELBY COUNTY	AL	LPV	0	1	0	1	0	1
79J	SOUTH ALABAMA RGNL AT BILL BENTON FIELD	AL	LPV	0	1	0	1	0	1
PLR	ST CLAIR COUNTY	AL	LPV	0	1	0	1	0	1
2R5	ST ELMO	AL	LPV	0	1	0	1	0	1
ASN	TALLADEGA MUNICIPAL	AL	LPV200	0	1	0	1	0	1
TOI	TROY MUNI	AL	LPV	0	1	0	1	1	1.0000
TCL	TUSCALOOSA REGIONAL	AL	LPV	0	1	0	1	0	1
EUF	WEEDON FIELD	AL	LPV	0	1	0	1	1	1.0000
LIT	ADAMS FIELD	AR	LPV200	0	1	0	1	0	1
BYH	ARKANSAS INTERNATIONAL	AR	LPV200	0	1	0	1	0	1
BVX	BATESVILLE REGIONAL	AR	LPV	0	1	0	1	0	1
HRO	BOONE COUNTY	AR	LPV	0	1	0	1	0	1
4M3	CARLISLE MUNI	AR	LPV	0	1	0	1	0	1
FSM	FORT SMITH RGNL	AR	LPV200	0	1	0	1	0	1
PBF	GRIDER FIELD	AR	LPV	0	1	0	1	0	1
JBR	JONESBORO MUNI	AR	LPV	0	1	0	1	0	1
7M1	MC GEHEE MUNI	AR	LP	0	1	0	1	0	1
M19	NEWPORT MUNI	AR	LPV	0	1	0	1	0	1
ORK	NORTH LITTLE ROCK MUNI	AR	LPV	0	1	0	1	0	1
XNA	NORTHWEST ARKANSAS REGIONAL	AR	LPV200	0	1	0	1	0	1
BPK	OZARK REGIONAL	AR	LPV	0	1	0	1	0	1
ROG	ROGERS MUNI-CARTER FIELD	AR	LPV	0	1	0	1	0	1
RUE	RUSSELLVILLE REGIONAL	AR	LPV	0	1	0	1	0	1
SUZ	SALINE COUNTY REGIONAL	AR	LPV	0	1	0	1	0	1
SRC	SEARCY MUNI	AR	LPV	0	1	0	1	0	1
SLG	SMITH FIELD	AR	LPV	0	1	0	1	0	1
ELD	SOUTH ARKANSAS REGIONAL AT GOODWIN FIELD	AR	LPV	0	1	0	1	0	1
ASG	SPRINGDALE MUNI	AR	LPV	0	1	0	1	0	1
SGT	STUTTGART MUNI	AR	LPV	0	1	0	1	0	1
TXK	TEXARKANA REGIONAL-WEBB FIELD	AR	LPV	0	1	0	1	0	1
ARG	WALNUT RIDGE REGIONAL	AR	LPV200	0	1	0	1	0	1
AWM	WEST MEMPHIS MUNI	AR	LPV200	0	1	0	1	0	1
P33	COCHISE COUNTY	AZ	LPV	0	1	0	1	0	1
PRC	ERNEST A. LOVE FIELD	AZ	LPV	0	1	0	1	0	1
FFZ	FALCON FLD	AZ	LP	0	1	0	1	0	1
FLG	FLAGSTAFF PULLIAM	AZ	LPV	0	1	0	1	0	1

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
GEU	GLENDALE MUNI	AZ	LPV	0	1	0	1	0	1
IGM	KINGMAN	AZ	LPV	0	1	0	1	0	1
HII	LAKE HAVASU CITY	AZ	LPV	0	1	0	1	0	1
IFP	LAUGHLIN/BULLHEAD INTL	AZ	LPV	0	1	0	1	0	1
AVQ	MARANA REGIONAL	AZ	LP	0	1	0	1	0	1
PGA	PAGE MUNI	AZ	LPV	0	1	0	1	0	1
DVT	PHOENIX DEER VALLEY	AZ	LPV	0	1	0	1	0	1
PHX	PHOENIX SKY HARBOR INTL	AZ	LPV	0	1	0	1	0	1
IWA	PHOENIX-MESA GATEWAY	AZ	LPV	0	1	0	1	0	1
SAD	SAFFORD REGIONAL	AZ	LPV	0	1	0	1	0	1
SOW	SHOW LOW REGIONAL	AZ	LPV	0	1	0	1	0	1
FHU	SIERRA VISTA MUNI-LIBBY AAF	AZ	LPV200	0	1	0	1	0	1
D68	SPRINGVILLE MUNI	AZ	LP	0	1	0	1	0	1
SJN	ST JOHNS INDUSTRIAL AIR PARK	AZ	LP	0	1	0	1	0	1
TUS	TUCSON INTL	AZ	LPV	0	1	0	1	0	1
RQE	WINDOW ROCK	AZ	LP	0	1	0	1	0	1
AAT	ALTURAS MUNI	CA	LPV	0	1	0	1	92	0.9948
APV	APPLE VALLEY	CA	LPV	0	1	0	1	1	0.9998
ACV	ARCATA	CA	LPV	0	1	0	1	129	0.9803
AUN	AUBURN MUNI	CA	LPV	0	1	3	0.9999	92	0.9891
DAG	BARSTOW-DAGGETT	CA	LPV	0	1	0	1	1	0.9998
BLH	BLYTHE	CA	LP	0	1	0	1	1	1.0000
POC	BRACKETT FIELD	CA	LPV	0	1	2	1.0000	56	0.9994
C83	BYRON	CA	LPV	0	1	35	0.9993	92	0.9849
CMA	CAMARILLO	CA	LPV	0	1	91	0.9967	92	0.9924
MER	CASTLE	CA	LPV200	0	1	51	0.9990	92	0.9872
STS	CHARLES M. SCHULZ-SONOMA COUNTY	CA	LPV	0	1	21	0.9995	97	0.9806
CIC	CHICO MUNI	CA	LPV	0	1	2	1.0000	92	0.9879
CNO	CHINO	CA	LPV	0	1	0	1	16	0.9998
FAT	FRESNO YOSEMITE INTL	CA	LPV	0	1	78	0.9983	92	0.9896
WJF	GENERAL WM J FOX AIRFIELD	CA	LPV	0	1	2	0.9999	92	0.9970
HAF	HALF MOON BAY	CA	LPV	0	1	63	0.9980	96	0.9775
HHR	HAWTHORNE JACK NORTHROP FIELD	CA	LPV	0	1	2	0.9999	92	0.9966
HWD	HAYWARD EXECUTIVE	CA	LPV	0	1	52	0.9988	95	0.9807
CVH	HOLLISTER MUNI	CA	LPV	0	1	71	0.9978	92	0.9855
CEC	JACK MC NAMARA FIELD	CA	LPV	0	1	0	1	113	0.9818
SNA	JOHN WAYNE-ORANGE COUNTY	CA	LPV	0	1	2	1.0000	69	0.9991
LHM	LINCOLN REGIONAL/KARL HARDER FIELD	CA	LPV200	0	1	4	0.9999	92	0.9885
LVK	LIVERMORE MUNI	CA	LPV	0	1	49	0.9991	92	0.9838
LGB	LONG BEACH/DAUGHERTY FIELD	CA	LPV	0	1	2	0.9999	92	0.9976
LAX	LOS ANGELES INTL	CA	LPV	0	1	3	0.9999	92	0.9962
LSN	LOS BANOS MUNI	CA	LPV	0	1	64	0.9985	92	0.9866
MAE	MADERA MUNI	CA	LPV	0	1	75	0.9985	92	0.9885
CRQ	MC CLELLAN-PALOMAR	CA	LPV	0	1	0	1	1	1.0000
BFL	MEADOWS FIELD	CA	LPV200	0	1	90	0.9975	92	0.9926

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
MCE	MERCED RGNL/MACREADY FIELD	CA	LPV	0	1	55	0.9989	92	0.9874
OAK	METROPOLITAN OAKLAND INTL	CA	LPV	0	1	49	0.9989	96	0.9806
MOD	MODESTO CITY-CO-HARRY SHAM FLD	CA	LPV	0	1	42	0.9993	92	0.9864
MRY	MONTEREY PENINSULA	CA	LPV	0	1	80	0.9955	93	0.9800
MYF	MONTGOMERY FIELD	CA	LPV200	0	1	0	1	1	1.0000
APC	NAPA COUNTY	CA	LPV	0	1	21	0.9995	94	0.9818
O02	NERVINO	CA	LPV	0	1	1	1.0000	92	0.9923
SJC	NORMAN Y. MINETA SAN JOSE INTERNATIONAL	CA	LPV	0	1	66	0.9984	92	0.9821
VCB	NUT TREE	CA	LPV	0	1	7	0.9998	92	0.9848
O27	OAKDALE	CA	LPV	0	1	33	0.9995	92	0.9868
ONT	ONTARIO INTL	CA	LPV	0	1	0	1	8	0.9998
OXR	OXNARD	CA	LPV	0	1	91	0.9966	92	0.9918
28J	PALATKA MUNI - LT. KAY LARKIN	CA	LPV	0	1	0	1	1	0.9998
PMD	PALMDALE REGIONAL/USAF PLANT 42	CA	LPV200	0	1	2	0.9999	92	0.9977
PRB	PASO ROBLES MUNICIPAL	CA	LPV200	0	1	90	0.9968	92	0.9876
O69	PETALUMA MUNI	CA	LPV	0	1	20	0.9994	96	0.9805
PVF	PLACERVILLE	CA	LPV	0	1	3	0.9999	92	0.9898
RBL	RED BLUFF MUNI	CA	LPV	0	1	1	1.0000	92	0.9871
RDD	REDDING MUNI	CA	LPV	0	1	1	1.0000	92	0.9873
RHV	REID-HILLVIEW OF SANTA CLARA	CA	LPV	0	1	64	0.9984	92	0.9831
O88	RIO VISTA MUNI	CA	LP	0	1	20	0.9996	92	0.9854
RAL	RIVERSIDE MUNI	CA	LPV	0	1	0	1	1	0.9999
SAC	SACRAMENTO EXECUTIVE	CA	LPV200	0	1	5	0.9999	92	0.9873
SMF	SACRAMENTO INTL	CA	LPV	0	1	4	0.9998	92	0.9876
MHR	SACRAMENTO MATHER	CA	LPV200	0	1	4	0.9999	92	0.9881
SNS	SALINAS MUNI	CA	LPV200	0	1	76	0.9968	92	0.9835
SFO	SAN FRANCISCO INTERNATIONAL	CA	LPV	0	1	59	0.9986	96	0.9789
SBA	SANTA BARBARA MUNI	CA	LPV	0	1	91	0.9966	92	0.9883
MIT	SHAFTER-MINTER FIELD	CA	LPV	0	1	91	0.9975	92	0.9920
VCV	SOUTHERN CALIFORNIA LOGISTICS	CA	LPV	0	1	0	1	1	0.9998
SCK	STOCKTON METROPOLITAN	CA	LPV	0	1	26	0.9995	92	0.9859
TCY	TRACY MUNI	CA	LPV	0	1	40	0.9992	92	0.9852
VIS	VISALIA MUNI	CA	LPV200	0	1	84	0.9979	92	0.9910
WLW	WILLOWS-GLENN COUNTY	CA	LPV	0	1	2	0.9999	92	0.9869
DWA	YOLO COUNTY-DAVIS/WOODLAND/WINTERS	CA	LPV	0	1	5	0.9998	92	0.9865
MYV	YUBA COUNTY	CA	LPV200	0	1	4	0.9999	92	0.9881
APA	CENTENNIAL	CO	LPV	0	1	0	1	0	1
COS	CITY OF COLORADO SPRINGS MUNI	CO	LPV200	0	1	0	1	0	1
CEZ	CORTEZ MUNI	CO	LPV	0	1	0	1	0	1
DEN	DENVER INTERNATIONAL	CO	LPV200	0	1	0	1	0	1

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
DRO	DURANGO-LA PLATA COUNTY	CO	LPV200	0	1	0	1	0	1
FNL	FORT COLLINS-LOVELAND MUNI	CO	LPV200	0	1	0	1	0	1
FTG	FRONT RANGE	CO	LPV	0	1	0	1	0	1
RIL	GARFIELD COUNTY REGIONAL	CO	LPV	0	1	0	1	0	1
GJT	GRAND JUNCTION RGNL	CO	LPV200	0	1	0	1	0	1
GXY	GREELEY-WELD COUNTY	CO	LPV	0	1	0	1	0	1
ITR	KIT CARSON COUNTY	CO	LPV	0	1	0	1	0	1
LHX	LA JUNTA MUNI	CO	LPV	0	1	0	1	0	1
LAA	LAMAR MUNI	CO	LPV	0	1	0	1	0	1
MTJ	MONTROSE REGIONAL	CO	LPV	0	1	0	1	0	1
PUB	PUEBLO MEMORIAL	CO	LPV200	0	1	0	1	0	1
BJC	ROCKY MOUNTAIN METROPOLITAN	CO	LPV200	0	1	0	1	0	1
ALS	SAN LUIS VALLEY REGIONAL/BERGMAN FIELD	CO	LPV200	0	1	0	1	0	1
TEX	TELLURIDE REGIONAL	CO	LP	0	1	0	1	0	1
HDN	YAMPA VALLEY	CO	LPV	0	1	0	1	0	1
BDL	BRADLEY INTL	CT	LPV200	0	1	0	1	0	1
GON	GROTON-NEW LONDON	CT	LPV	0	1	0	1	0	1
HVN	TWEED-NEW HAVEN	CT	LPV	0	1	0	1	0	1
OXC	WATERBURY-OXFORD	CT	LPV	0	1	0	1	0	1
IJD	WINDHAM	CT	LP	0	1	0	1	0	1
DCA	RONALD REAGAN WASHINGTON NATL	DC	LPV	0	1	0	1	0	1
IAD	WASHINGTON DULLES INTL	DC	LPV200	0	1	0	1	0	1
ILG	NEW CASTLE	DE	LPV	0	1	0	1	0	1
EVY	SUMMIT	DE	LPV	0	1	0	1	0	1
GED	SUSSEX COUNTY	DE	LPV	0	1	0	1	0	1
AAF	APALACHICOLA MUNI	FL	LPV	0	1	0	1	1	1.0000
AVO	AVON PARK EXECUTIVE	FL	LPV	0	1	0	1	1	0.9998
BOW	BARTOW MUNI	FL	LPV	0	1	0	1	1	0.9998
CEW	BOB SIKES	FL	LPV	0	1	0	1	0	1
BCT	BOCA RATON	FL	LPV	0	1	1	0.9999	3	0.9997
VQQ	CECIL FIELD	FL	LPV	0	1	0	1	1	0.9999
PGD	CHARLOTTE COUNTY	FL	LPV	0	1	0	1	2	0.9998
CRG	CRAIG MUNI	FL	LPV200	0	1	0	1	1	0.9998
CTY	CROSS CITY	FL	LPV	0	1	0	1	1	0.9999
DAB	DAYTONA BEACH INTL	FL	LPV200	0	1	0	1	1	0.9998
54J	DEFUNIAK SPRINGS	FL	LP	0	1	0	1	1	1.0000
DED	DELAND MUNI-SIDNEY H TAYLOR FLD	FL	LPV	0	1	0	1	1	0.9998
DTS	DESTIN-FORT WALTON BEACH	FL	LP	0	1	0	1	0	1
FHB	FERNANDINA BEACH MUNI	FL	LPV	0	1	0	1	1	0.9998
XFL	FLAGLER COUNTY	FL	LPV	0	1	0	1	1	0.9998
FLL	FORT LAUDERDALE/HOLLYWOOD INTL	FL	LPV	0	1	1	0.9999	6	0.9997
FXE	FT LAUDERDALE EXECUTIVE	FL	LPV200	0	1	1	0.9999	6	0.9997
GNV	GAINESVILLE RGNL	FL	LPV	0	1	0	1	1	0.9999
BKV	HERNANDO COUNTY	FL	LPV	0	1	0	1	1	0.9999

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
X51	HOMESTEAD GENERAL AVIATION	FL	LPV	0	1	1	0.9999	14	0.9996
IMM	IMMOKALEE RGNL	FL	LPV	0	1	1	1.0000	2	0.9998
JAX	JACKSONVILLE INTL	FL	LPV200	0	1	0	1	1	0.9998
TMB	KENDALL-TAMIAMI EXECUTIVE	FL	LPV200	0	1	1	0.9999	8	0.9996
EYW	KEY WEST INTL	FL	LPV	0	1	1	0.9999	50	0.9989
ISM	KISSIMMEE GATEWAY	FL	LPV200	0	1	0	1	1	0.9998
X14	LA BELLE MUNI	FL	LPV	0	1	0	1	2	0.9998
LCQ	LAKE CITY MUNI	FL	LPV	0	1	0	1	1	0.9999
X07	LAKE WALES MUNI	FL	LP	0	1	0	1	1	0.9998
LAL	LAKELAND LINDER REGIONAL	FL	LPV200	0	1	0	1	1	0.9998
LEE	LEESBURG INTL	FL	LPV	0	1	0	1	1	0.9998
MKY	MARCO ISLAND	FL	LPV	0	1	1	0.9999	2	0.9998
MLB	MELBOURNE INTL	FL	LPV	0	1	0	1	1	0.9998
COI	MERRITT ISLAND	FL	LPV	0	1	0	1	1	0.9998
MIA	MIAMI INTL	FL	LPV	0	1	1	0.9999	7	0.9996
APF	NAPLES MUNI	FL	LPV	0	1	1	1.0000	2	0.9998
EVB	NEW SMYRNA BEACH MUNI	FL	LPV	0	1	0	1	1	0.9998
F45	NORTH PALM BEACH COUNTY GENERAL AVIATION	FL	LPV	0	1	0	1	1	0.9998
ECP	NORTHWEST FLORIDA BEACHES INTL	FL	LPV200	0	1	0	1	1	1.0000
OCF	OCALA INTL-JIM TAYLOR FLD	FL	LPV200	0	1	0	1	1	0.9999
OBE	OKEECHOBEE COUNTY	FL	LPV	0	1	0	1	1	0.9998
OPF	OPA LOCKA	FL	LPV200	0	1	1	0.9999	7	0.9997
MCO	ORLANDO INTL	FL	LPV200	0	1	0	1	1	0.9998
SFB	ORLANDO SANFORD INTL	FL	LPV200	0	1	0	1	1	0.9998
FMY	PAGE FIELD	FL	LPV	0	1	0	1	2	0.9998
PHK	PALM BEACH COUNTY GLADES	FL	LPV	0	1	0	1	2	0.9998
PBI	PALM BEACH INTL	FL	LPV	0	1	1	1.0000	1	0.9997
PNS	PENSACOLA RGNL	FL	LPV	0	1	0	1	0	1
40J	PERRY-FOLEY	FL	LPV	0	1	0	1	1	0.9999
TPF	PETER O KNIGHT	FL	LP	0	1	0	1	1	0.9999
PCM	PLANT CITY MUNI	FL	LPV	0	1	0	1	1	0.9998
PMP	POMPANO BEACH AIRPARK	FL	LPV	0	1	1	0.9999	5	0.9997
SRQ	SARASOTA/BRADENTON INTL	FL	LPV200	0	1	0	1	1	0.9999
SEF	SEBRING REGIONAL	FL	LPV	0	1	0	1	2	0.9998
RSW	SOUTHWEST FLORIDA INTL	FL	LPV	0	1	0	1	2	0.9998
TIX	SPACE COAST REGIONAL	FL	LPV200	0	1	0	1	1	0.9998
SGJ	ST AUGUSTINE	FL	LPV	0	1	0	1	1	0.9998
FPR	ST LUCIE COUNTY INTL	FL	LPV	0	1	0	1	1	0.9998
PIE	ST PETERSBURG-CLEARWATER INTL	FL	LPV200	0	1	0	1	1	0.9999
TLH	TALLAHASSEE REGIONAL	FL	LPV	0	1	0	1	1	0.9999
VDF	TAMPA EXECUTIVE	FL	LPV	0	1	0	1	1	0.9998
TPA	TAMPA INTL	FL	LPV200	0	1	0	1	1	0.9999
MTH	THE FLORIDA KEYS MARATHON	FL	LPV	0	1	1	0.9999	62	0.9984
1J0	TRI-COUNTY	FL	LP	0	1	0	1	1	1.0000
VNC	VENICE MUNI	FL	LP	0	1	0	1	2	0.9998
VRB	VERO BEACH MUNI	FL	LPV	0	1	0	1	1	0.9998

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
GIF	WINTER HAVEN'S GILBERT	FL	LPV	0	1	0	1	1	0.9998
SUA	WITHAM FIELD	FL	LPV	0	1	0	1	1	0.9998
ZPH	ZEPHYRHILLS MUNI	FL	LPV	0	1	0	1	1	0.9998
AHN	ATHENS/BEN EPPS	GA	LPV	0	1	0	1	1	1.0000
AGS	AUGUSTA REGIONAL AT BUSH FIELD	GA	LPV	0	1	0	1	1	0.9999
MLJ	BALDWIN COUNTY	GA	LPV	0	1	0	1	1	0.9999
4J1	BRANTLEY COUNTY	GA	LPV	0	1	0	1	1	0.9999
BQK	BRUNSWICK GOLDEN ISLES	GA	LPV200	0	1	0	1	1	0.9998
70J	CAIRO-GRADY COUNTY	GA	LPV	0	1	0	1	1	0.9999
VPC	CARTERSVILLE	GA	LPV	0	1	0	1	1	1.0000
CNI	CHEROKEE COUNTY	GA	LPV	0	1	0	1	1	1.0000
CWV	CLAXTON-EVANS COUNTY	GA	LPV	0	1	0	1	1	0.9999
RYY	COBB COUNTY-MC COLLUM FIELD	GA	LPV200	0	1	0	1	1	1.0000
48A	COCHRAN	GA	LPV	0	1	0	1	1	0.9999
CSG	COLUMBUS METROPOLITAN	GA	LPV	0	1	0	1	1	1.0000
15J	COOK COUNTY	GA	LPV	0	1	0	1	1	0.9999
9A1	COVINGTON MUNI	GA	LPV	0	1	0	1	1	1.0000
CKF	CRISP COUNTY-CORDELE	GA	LPV	0	1	0	1	1	0.9999
DNN	DALTON MUNI	GA	LPV	0	1	0	1	0	1
BGE	DECATUR COUNTY INDUSTRIAL AIR PARK	GA	LPV200	0	1	0	1	1	1.0000
17J	DONALSONVILLE MUNI	GA	LPV	0	1	0	1	1	1.0000
DQH	DOUGLAS MUNI	GA	LPV200	0	1	0	1	1	0.9999
BIJ	EARLY COUNTY	GA	LPV	0	1	0	1	1	1.0000
SBO	EMANUEL COUNTY	GA	LPV	0	1	0	1	1	0.9999
18A	FRANKLIN COUNTY	GA	LPV	0	1	0	1	1	1.0000
FTY	FULTON COUNTY ARPT-BROWN FIELD	GA	LPV	0	1	0	1	1	1.0000
3J7	GREENE COUNTY REGIONAL	GA	LPV	0	1	0	1	1	1.0000
LZU	GWINNETT COUNTY-BRISCOE FIELD	GA	LPV200	0	1	0	1	1	1.0000
AJR	HABERSHAM COUNTY	GA	LPV	0	1	0	1	1	1.0000
PIM	HARRIS COUNTY	GA	LPV	0	1	0	1	1	1.0000
ATL	HARTSFIELD - JACKSON ATLANTA INTL	GA	LPV200	0	1	0	1	1	1.0000
EZM	HEART OF GEORGIA REGIONAL	GA	LPV	0	1	0	1	1	0.9999
TMA	HENRY TIFTON MYERS	GA	LPV	0	1	0	1	1	0.9999
HOE	HOMERVILLE	GA	LPV	0	1	0	1	1	0.9999
19A	JACKSON COUNTY	GA	LPV	0	1	0	1	1	1.0000
09J	JEKYLL ISLAND	GA	LPV200	0	1	0	1	1	0.9998
JES	JESUP-WAYNE COUNTY	GA	LPV	0	1	0	1	1	0.9999
ACJ	JIMMY CARTER RGNL	GA	LPV	0	1	0	1	1	0.9999
OKZ	KAOLIN FIELD	GA	LPV	0	1	0	1	1	0.9999
LGC	LAGRANGE-CALLAWAY	GA	LPV200	0	1	0	1	1	1.0000
GVL	LEE GILMER MEMORIAL	GA	LPV	0	1	0	1	1	1.0000
MAC	MACON DOWNTOWN	GA	LP	0	1	0	1	1	0.9999
52A	MADISON MUNI	GA	LP	0	1	0	1	1	1.0000
MCN	MIDDLE GEORGIA REGIONAL	GA	LPV	0	1	0	1	1	0.9999

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2J5	MILLEN	GA	LPV	0	1	0	1	1	0.9999
D73	MONROE-WALTON COUNTY	GA	LP	0	1	0	1	1	1.0000
MGR	MOULTRIE MUNI	GA	LPV	0	1	0	1	1	0.9999
CCO	NEWNAN COWETA COUNTY	GA	LPV	0	1	0	1	1	1.0000
PUJ	PAULDING NORTHWEST ATLANTA	GA	LPV200	0	1	0	1	1	1.0000
FFC	PEACHTREE CITY-FALCON FIELD	GA	LPV200	0	1	0	1	1	1.0000
PXE	PERRY-HOUSTON COUNTY	GA	LPV	0	1	0	1	1	0.9999
JZP	PICKENS COUNTY	GA	LPV	0	1	0	1	1	1.0000
JYL	PLANTATION ARPK	GA	LPV	0	1	0	1	1	0.9999
4A4	POLK COUNTY AIRPORT CORNELIUS MOORE FIELD	GA	LPV	0	1	0	1	0	1
RMG	RICHARD B RUSSELL	GA	LPV	0	1	0	1	0	1
SAV	SAVANNAH/HILTON HEAD INTL	GA	LPV200	0	1	0	1	1	0.9999
ABY	SOUTHWEST GEORGIA REGIONAL	GA	LPV200	0	1	0	1	1	0.9999
4J6	ST MARYS	GA	LPV	0	1	0	1	1	0.9998
TBR	STATESBORO-BULLOCH COUNTY	GA	LPV	0	1	0	1	1	0.9999
MQW	TELFAIR-WHEELER	GA	LPV	0	1	0	1	1	0.9999
OPN	THOMASTON-UPSON COUNTY	GA	LPV200	0	1	0	1	1	1.0000
TVI	THOMASVILLE REGIONAL	GA	LPV	0	1	0	1	1	0.9999
HQU	THOMSON-MCDUFFIE COUNTY	GA	LPV	0	1	0	1	1	0.9999
TOC	TOCCOA RG LETOURNEAU FIELD	GA	LPV	0	1	0	1	1	1.0000
VLD	VALDOSTA RGNL	GA	LPV	0	1	0	1	1	0.9999
VDI	VIDALIA RGNL	GA	LPV	0	1	0	1	1	0.9999
IYY	WASHINGTON-WILKES COUNTY	GA	LPV	0	1	0	1	1	0.9999
AYS	WAYCROSS-WARE COUNTY	GA	LPV	0	1	0	1	1	0.9999
CTJ	WEST GEORGIA REGIONAL-O V GRAY FIELD	GA	LPV	0	1	0	1	1	1.0000
WDR	WINDER-BARROW	GA	LPV	0	1	0	1	1	1.0000
AMW	AMES MUNI	IA	LPV	0	1	0	1	0	1
IKV	ANKENY REGIONAL	IA	LPV	0	1	0	1	0	1
TVK	CENTERVILLE MUNI	IA	LPV	0	1	0	1	0	1
CKP	CHEROKEE COUNTY RGNL	IA	LPV	0	1	0	1	0	1
CWI	CLINTON MUNI	IA	LPV200	0	1	0	1	1	0.9999
CBF	COUNCIL BLUFFS MUNI	IA	LPV200	0	1	0	1	0	1
CSQ	CRESTON MUNI	IA	LPV	0	1	0	1	0	1
DVN	DAVENPORT MUNI	IA	LPV200	0	1	0	1	0	1
DEH	DECORAH MUNI	IA	LPV	0	1	0	1	2	0.9997
DNS	DENISON MUNI	IA	LPV	0	1	0	1	0	1
DSM	DES MOINES INTL	IA	LPV	0	1	0	1	0	1
DBQ	DUBUQUE REGIONAL	IA	LPV200	0	1	0	1	2	0.9998
EST	ESTHERVILLE MUNI	IA	LPV	0	1	0	1	0	1
FFL	FAIRFIELD MUNI	IA	LPV	0	1	0	1	0	1
FXY	FOREST CITY MUNI	IA	LPV	0	1	0	1	1	0.9999
FOD	FORT DODGE REGIONAL	IA	LPV200	0	1	0	1	0	1
GGI	GRINNELL REGIONAL	IA	LPV	0	1	0	1	0	1

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
IOW	IOWA CITY MUNI	IA	LPV	0	1	0	1	0	1
EFW	JEFFERSON MUNI	IA	LPV	0	1	0	1	0	1
EOK	KEOKUK MUNI	IA	LPV	0	1	0	1	0	1
OXV	KNOXVILLE MUNI	IA	LPV	0	1	0	1	0	1
LRJ	LE MARS MUNI	IA	LPV	0	1	0	1	0	1
MCW	MASON CITY MUNI	IA	LPV200	0	1	0	1	1	0.9999
MXO	MONTICELLO REGIONAL	IA	LP	0	1	0	1	1	0.9999
MPZ	MOUNT PLEASANT MUNICIPAL	IA	LPV	0	1	0	1	0	1
MUT	MUSCATINE MUNI	IA	LPV	0	1	0	1	0	1
TNU	NEWTON MUNI	IA	LPV	0	1	0	1	0	1
OOA	OSKALOOSA MUNI	IA	LPV	0	1	0	1	0	1
OTM	OTTUMWA REGIONAL	IA	LPV	0	1	0	1	0	1
PEA	PELLA MUNI	IA	LPV	0	1	0	1	0	1
PRO	PERRY MUNI	IA	LPV	0	1	0	1	0	1
POH	POCAHONTAS MUNI	IA	LPV	0	1	0	1	0	1
ICL	SCHENCK FIELD	IA	LPV	0	1	0	1	0	1
SDA	SHENANDOAH MUNI	IA	LPV	0	1	0	1	0	1
SUX	SIOUX GATEWAY/COL BUD DAY FIELD	IA	LPV200	0	1	0	1	0	1
BRL	SOUTHEAST IOWA REGIONAL	IA	LPV200	0	1	0	1	0	1
SPW	SPENCER MUNI	IA	LPV200	0	1	0	1	0	1
SLB	STORM LAKE MUNI	IA	LPV	0	1	0	1	0	1
CID	THE EASTERN IOWA	IA	LPV200	0	1	0	1	1	1.0000
VTI	VINTON VETERANS MEML ARPK	IA	LPV	0	1	0	1	1	0.9999
AWG	WASHINGTON MUNI	IA	LPV200	0	1	0	1	0	1
ALO	WATERLOO REGIONAL	IA	LPV	0	1	0	1	1	0.9999
EBS	WEBSTER CITY MUNI	IA	LPV	0	1	0	1	0	1
BOI	BOISE AIR TERMINAL/GOWEN FLD	ID	LPV	0	1	0	1	0	1
EUL	CALDWELL INDUSTRIAL	ID	LPV	0	1	0	1	1	1.0000
DIJ	DRIGGS-REED MEMORIAL	ID	LP	0	1	0	1	0	1
GNG	GOODING MUNI	ID	LPV	0	1	0	1	0	1
IDA	IDAHO FALLS REGIONAL	ID	LPV200	0	1	0	1	0	1
JER	JEROME COUNTY	ID	LPV	0	1	0	1	0	1
TWF	JOSLIN FIELD-MAGIC VALLEY RGNL	ID	LPV200	0	1	0	1	0	1
LWS	LEWISTON-NEZ PERCE COUNTY	ID	LPV200	0	1	0	1	0	1
MYL	MC CALL MUNICIPAL	ID	LPV	0	1	0	1	0	1
U76	MOUNTAIN HOME MUNI	ID	LPV	0	1	0	1	0	1
MAN	NAMPA MUNI	ID	LPV	0	1	0	1	0	1
COE	PAPPY BOYINGTON FIELD	ID	LPV200	0	1	0	1	1	1.0000
PIH	POCATELLO REGIONAL	ID	LPV200	0	1	0	1	0	1
SPI	ABRAHAM LINCOLN CAPITAL	IL	LPV	0	1	0	1	0	1
FEP	ALBERTUS	IL	LPV	0	1	0	1	2	0.9999
ARR	AURORA MUNI	IL	LPV200	0	1	0	1	0	1
CUL	CARMI MUNI	IL	LP	0	1	0	1	0	1
BMI	CENTRAL IL REGL ARPT AT BLOOMINGTON-NORMAL	IL	LPV	0	1	0	1	0	1
MDW	CHICAGO MIDWAY INTL	IL	LPV	0	1	0	1	0	1

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
RFD	CHICAGO/ROCKFORD INTL	IL	LPV200	0	1	0	1	1	0.9999
ORD	CHICAGO-O'HARE INTL	IL	LPV200	0	1	0	1	0	1
MTO	COLES COUNTY MEMORIAL	IL	LPV	0	1	0	1	0	1
DKB	DE KALB TAYLOR MUNI	IL	LPV	0	1	0	1	1	1.0000
DEC	DECATUR	IL	LPV	0	1	0	1	0	1
C73	DIXON MUNI-CHARLES R. WALGREEN FLD	IL	LPV	0	1	0	1	1	1.0000
DPA	DUPAGE	IL	LPV200	0	1	0	1	0	1
IKK	GREATER KANKAKEE	IL	LPV	0	1	0	1	0	1
PIA	GREATER PEORIA REGIONAL	IL	LPV	0	1	0	1	0	1
HSB	HARRISBURG-RALEIGH	IL	LPV	0	1	0	1	0	1
IGQ	LANSING MUNI	IL	LPV	0	1	0	1	0	1
LOT	LEWIS UNIVERSITY	IL	LPV200	0	1	0	1	0	1
3LF	LITCHFIELD MUNI	IL	LPV	0	1	0	1	0	1
AJG	MOUNT CARMEL MUNI	IL	LPV	0	1	0	1	0	1
3MY	MOUNT HAWLEY AUXILIARY	IL	LPV	0	1	0	1	0	1
I63	MOUNT STERLING MUNI	IL	LPV	0	1	0	1	0	1
MVN	MOUNT VERNON	IL	LPV	0	1	0	1	0	1
C15	PEKIN MUNI	IL	LPV	0	1	0	1	0	1
PNT	PONTIAC MUNI	IL	LPV	0	1	0	1	0	1
MLI	QUAD CITY INTL	IL	LPV	0	1	0	1	0	1
UIN	QUINCY RGNL-BALDWIN FIELD	IL	LPV200	0	1	0	1	0	1
RSV	ROBINSON MUNI	IL	LPV	0	1	0	1	0	1
BLV	SCOTT AFB/MIDAMERICA	IL	LPV200	0	1	0	1	0	1
CPS	ST LOUIS DOWNTOWN	IL	LPV200	0	1	0	1	0	1
ALN	ST LOUIS REGIONAL	IL	LPV200	0	1	0	1	0	1
CMI	UNIVERSITY OF ILLINOIS-WILLARD	IL	LPV200	0	1	0	1	0	1
DNV	VERMILION COUNTY	IL	LPV	0	1	0	1	0	1
UGN	WAUKEGAN REGIONAL	IL	LPV	0	1	0	1	1	0.9999
SQI	WHITESIDE COUNTY-JOS J BITTORF FLD	IL	LPV	0	1	0	1	1	1.0000
MWA	WILLIAMSON COUNTY REGIONAL	IL	LPV	0	1	0	1	0	1
AID	ANDERSON MUNI-DARLINGTON FIELD	IN	LPV	0	1	0	1	0	1
BAK	COLUMBUS MUNI	IN	LPV	0	1	0	1	0	1
GWB	DE KALB COUNTY	IN	LPV	0	1	0	1	1	1.0000
MIE	DELAWARE COUNTY-JOHNSON FIELD	IN	LPV	0	1	0	1	0	1
EYE	EAGLE CREEK AIRPARK	IN	LPV	0	1	0	1	0	1
EKM	ELKHART MUNI	IN	LPV	0	1	0	1	1	1.0000
EVV	EVANSVILLE RGNL	IN	LPV200	0	1	0	1	0	1
FWA	FORT WAYNE INTERNATIONAL	IN	LPV200	0	1	0	1	0	1
SER	FREEMAN MUNI	IN	LPV	0	1	0	1	0	1
FRH	FRENCH LICK MUNI	IN	LPV	0	1	0	1	0	1
RCR	FULTON COUNTY	IN	LPV	0	1	0	1	0	1
GYG	GARY/CHICAGO INTERNATIONAL	IN	LPV200	0	1	0	1	0	1
GSH	GOSHEN MUNI	IN	LPV	0	1	0	1	1	1.0000
HFY	GREENWOOD MUNI	IN	LPV	0	1	0	1	0	1

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
HNB	HUNTINGBURG	IN	LPV	0	1	0	1	0	1
TYQ	INDIANAPOLIS EXECUTIVE	IN	LPV	0	1	0	1	0	1
IND	INDIANAPOLIS INTL	IN	LPV	0	1	0	1	0	1
OKK	KOKOMO MUNI	IN	LPV200	0	1	0	1	0	1
GGP	LOGANSPORT/CASS COUNTY	IN	LPV200	0	1	0	1	0	1
IMS	MADISON MUNI	IN	LPV	0	1	0	1	0	1
MZZ	MARION MUNI	IN	LPV	0	1	0	1	0	1
CEV	METTEL FIELD	IN	LPV	0	1	0	1	0	1
BMG	MONROE COUNTY	IN	LPV200	0	1	0	1	0	1
MQJ	MOUNT COMFORT	IN	LPV	0	1	0	1	0	1
OVO	NORTH VERNON	IN	LPV	0	1	0	1	0	1
TEL	PERRY COUNTY MUNI	IN	LP	0	1	0	1	0	1
VPZ	PORTER COUNTY MUNI	IN	LPV	0	1	0	1	0	1
PLD	PORTLAND MUNI	IN	LPV	0	1	0	1	0	1
LAF	PURDUE UNIVERSITY	IN	LPV	0	1	0	1	0	1
4I7	PUTNAM COUNTY	IN	LPV	0	1	0	1	0	1
I22	RANDOLPH COUNTY	IN	LPV	0	1	0	1	0	1
RID	RICHMOND MUNI	IN	LPV200	0	1	0	1	0	1
GEZ	SHELBYVILLE MUNI	IN	LPV	0	1	0	1	0	1
SMD	SMITH FIELD	IN	LPV	0	1	0	1	1	1.0000
SBN	SOUTH BEND REGIONAL	IN	LPV	0	1	0	1	0	1
OXI	STARKE COUNTY	IN	LPV	0	1	0	1	0	1
HUF	TERRE HAUTE INTERNATIONAL-HULMAN FIELD	IN	LPV200	0	1	0	1	0	1
BFR	VIRGIL I GRISSOM MUNI	IN	LP	0	1	0	1	0	1
ASW	WARSAW MUNICIPAL	IN	LPV	0	1	0	1	1	1.0000
PTS	ATKINSON MUNI	KS	LPV	0	1	0	1	0	1
ADT	ATWOOD-RAWLINS COUNTY CITY-COUNTY	KS	LPV	0	1	0	1	0	1
RPB	BELLEVILLE MUNI	KS	LPV	0	1	0	1	0	1
UKL	COFFEY COUNTY	KS	LPV	0	1	0	1	0	1
AAO	COLONEL JAMES JABARA	KS	LPV	0	1	0	1	0	1
DDC	DODGE CITY REGIONAL	KS	LPV	0	1	0	1	0	1
EHA	ELKHART-MORTON COUNTY	KS	LPV	0	1	0	1	0	1
EMP	EMPORIA MUNI	KS	LPV	0	1	0	1	0	1
FOE	FORBES FIELD	KS	LPV	0	1	0	1	0	1
FSK	FORT SCOTT MUNI	KS	LPV	0	1	0	1	0	1
GCK	GARDEN CITY REGIONAL	KS	LPV	0	1	0	1	0	1
GBD	GREAT BEND MUNI	KS	LPV200	0	1	0	1	0	1
HYS	HAYS REGIONAL	KS	LPV200	0	1	0	1	0	1
HQG	HUGOTON MUNI	KS	LPV	0	1	0	1	0	1
HUT	HUTCHINSON MUNI	KS	LPV	0	1	0	1	0	1
IDP	INDEPENDENCE MUNI	KS	LPV	0	1	0	1	0	1
OJC	JOHNSON COUNTY EXECUTIVE	KS	LPV	0	1	0	1	0	1
LQR	LARNED PAWNEE CO	KS	LPV	0	1	0	1	0	1
LWC	LAWRENCE MUNI	KS	LPV200	0	1	0	1	0	1
LBL	LIBERAL MID-AMERICA RGNL	KS	LPV	0	1	0	1	0	1
MHK	MANHATTAN REGIONAL	KS	LPV200	0	1	0	1	0	1
MYZ	MARYSVILLE MUNI	KS	LPV	0	1	0	1	0	1
MPR	MCPHERSON	KS	LPV	0	1	0	1	0	1

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
IXD	NEW CENTURY AIRCENTER	KS	LPV	0	1	0	1	0	1
EWK	NEWTON-CITY-COUNTY	KS	LPV	0	1	0	1	0	1
NRN	NORTON MUNI	KS	LPV	0	1	0	1	0	1
OEL	OAKLEY MUNI	KS	LPV	0	1	0	1	0	1
OWI	OTTAWA MUNI	KS	LP	0	1	0	1	0	1
PTT	PRATT INDUSTRIAL	KS	LPV	0	1	0	1	0	1
GLD	RENNER FLD/GOODLAND MUNI/	KS	LPV200	0	1	0	1	0	1
RSL	RUSSELL MUNI	KS	LPV	0	1	0	1	0	1
SLN	SALINA MUNI	KS	LPV	0	1	0	1	0	1
TQK	SCOTT CITY MUNI	KS	LPV	0	1	0	1	0	1
CBK	SHALZ FIELD	KS	LPV	0	1	0	1	0	1
3K3	SYRACUSE-HAMILTON COUNTY MUNICIPAL	KS	LPV	0	1	0	1	0	1
PPF	TRI-CITY	KS	LPV	0	1	0	1	0	1
ULS	ULYSSES	KS	LPV	0	1	0	1	0	1
EGT	WELLINGTON MUNI	KS	LPV	0	1	0	1	0	1
ICT	WICHITA MID-CONTINENT	KS	LPV200	0	1	0	1	0	1
EKX	ADDINGTON FIELD	KY	LPV	0	1	0	1	0	1
DWU	ASHLAND REGIONAL	KY	LP	0	1	0	1	0	1
PAH	BARKLEY REGIONAL	KY	LPV	0	1	0	1	0	1
K22	BIG SANDY REGIONAL	KY	LPV	0	1	0	1	0	1
LEX	BLUE GRASS	KY	LPV	0	1	0	1	0	1
BWG	BOWLING GREEN-WARREN CTY RGNL	KY	LPV	0	1	0	1	0	1
LOU	BOWMAN FIELD	KY	LP	0	1	0	1	0	1
CVG	CINCINNATI/NORTHERN KENTUCKY INTL	KY	LPV200	0	1	0	1	0	1
FGX	FLEMING-MASON	KY	LPV	0	1	0	1	0	1
27K	GEORGETOWN SCOTT CO-MARSHALL FLD	KY	LPV200	0	1	0	1	0	1
GLW	GLASGOW MUNI	KY	LPV	0	1	0	1	0	1
KY8	HANCOCK CO-RON LEWIS FIELD	KY	LPV	0	1	0	1	0	1
EHR	HENDERSON CITY-COUNTY	KY	LPV	0	1	0	1	0	1
HVC	HOPKINSVILLE-CHRISTIAN COUNTY	KY	LPV	0	1	0	1	0	1
CEY	KYLE-OAKLEY FIELD	KY	LPV	0	1	0	1	0	1
SME	LAKE CUMBERLAND REGIONAL	KY	LPV	0	1	0	1	0	1
6I2	LEBANON-SPRINGFIELD	KY	LP	0	1	0	1	0	1
LOZ	LONDON-CORBIN ARPT-MAGEE FLD	KY	LPV	0	1	0	1	0	1
SDF	LOUISVILLE INTL-STANDIFORD FLD	KY	LPV200	0	1	0	1	0	1
I39	MADISON	KY	LPV	0	1	0	1	0	1
2I0	MADISONVILLE MUNI	KY	LPV	0	1	0	1	0	1
M97	MOREHEAD-ROWAN COUNTY CLYDE A THOMAS RGNL	KY	LPV	0	1	0	1	0	1
OWB	OWENSBORO-DAVISS COUNTY	KY	LPV200	0	1	0	1	0	1
BRY	SAMUELS FIELD	KY	LPV	0	1	0	1	0	1

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
DVK	STUART POWELL FIELD	KY	LPV	0	1	0	1	0	1
TWT	STURGIS MUNI	KY	LPV	0	1	0	1	0	1
AAS	TAYLOR COUNTY	KY	LP	0	1	0	1	0	1
TZV	TOMPKINSVILLE-MONROE COUNTY	KY	LPV	0	1	0	1	0	1
K20	WENDELL H FORD	KY	LPV200	0	1	0	1	0	1
W38	WILLIAMSBURG-WHITLEY COUNTY	KY	LPV	0	1	0	1	0	1
IYA	ABBEVILLE CHRIS CRUSTA MEML	LA	LPV	0	1	0	1	0	1
ARA	ACADIANA REGIONAL	LA	LPV	0	1	0	1	0	1
AEX	ALEXANDRIA INTL	LA	LPV200	0	1	0	1	0	1
ACP	ALLEN PARISH	LA	LPV	0	1	0	1	0	1
BTR	BATON ROUGE METROPOLITAN` RYAN	LA	LPV200	0	1	0	1	0	1
CWF	CHENNAULT INTL	LA	LPV200	0	1	0	1	0	1
ESF	ESLER REGIONAL	LA	LPV200	0	1	0	1	0	1
HZR	FALSE RIVER RGNL	LA	LPV	0	1	0	1	0	1
BXA	GEORGE R CARR MEMORIAL AIR FIELD	LA	LPV	0	1	0	1	0	1
HDC	HAMMOND NORTHSORE RGNL	LA	LPV200	0	1	0	1	0	1
PTN	HARRY P WILLIAMS MEMORIAL	LA	LPV200	0	1	0	1	0	1
3R4	HART	LA	LPV	0	1	0	1	0	1
HUM	HOUMA-TERREBONNE	LA	LPV200	0	1	0	1	0	1
M79	JOHN H HOOKS JR MEMORIAL	LA	LPV	0	1	0	1	0	1
LFT	LAFAYETTE REGIONAL	LA	LPV	0	1	0	1	0	1
LCH	LAKE CHARLES REGIONAL	LA	LPV	0	1	0	1	0	1
NEW	LAKEFRONT	LA	LPV	0	1	0	1	0	1
L39	LEESVILLE	LA	LPV	0	1	0	1	0	1
MSY	LOUIS ARMSTRONG NEW ORLEANS INTL	LA	LPV200	0	1	0	1	0	1
MLU	MONROE REGIONAL	LA	LPV200	0	1	0	1	0	1
BQP	MOREHOUSE MEMORIAL	LA	LPV	0	1	0	1	0	1
IER	NATCHITOCHE REGIONAL	LA	LPV	0	1	0	1	0	1
RSN	RUSTON RGNL AIRPORT	LA	LPV	0	1	0	1	0	1
DTN	SHREVEPORT DOWNTOWN	LA	LPV	0	1	0	1	0	1
SHV	SHREVEPORT REGIONAL	LA	LPV200	0	1	0	1	0	1
GAO	SOUTH LAFOURCHE LEONARD MILLER JR	LA	LPV	0	1	0	1	0	1
UXL	SOUTHLAND FIELD	LA	LPV	0	1	0	1	0	1
SPH	SPRINGHILL	LA	LPV	0	1	0	1	0	1
1L0	ST JOHN THE BAPTIST PARISH	LA	LPV	0	1	0	1	0	1
TVR	VICKSBURG TALLULAH REGIONAL	LA	LPV	0	1	0	1	0	1
BAF	BARNES MUNI	MA	LPV	0	1	0	1	0	1
HYA	BARNSTABLE MUNI-BOARDMAN/POLANDO FIELD	MA	LPV200	0	1	0	1	0	1
BVY	BEVERLY MUNI	MA	LPV	0	1	0	1	0	1
BOS	GEN EDWARD LAWRENCE LOGAN INTL	MA	LPV200	0	1	0	1	0	1

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
BED	LAURENCE G HANSCOM FLD	MA	LPV200	0	1	0	1	0	1
LWM	LAWRENCE MUNI	MA	LPV200	0	1	0	1	0	1
MVY	MARTHAS VINEYARD	MA	LPV200	0	1	0	1	0	1
ACK	NANTUCKET MEMORIAL	MA	LPV200	0	1	0	1	0	1
OWD	NORWOOD MEMORIAL	MA	LPV	0	1	0	1	1	1.0000
PYM	PLYMOUTH MUNI	MA	LPV200	0	1	0	1	0	1
3B0	SOUTHBRIDGE MUNI	MA	LPV	0	1	0	1	0	1
GBR	WALTER J KOLADZA	MA	LP	0	1	0	1	0	1
ORH	WORCESTER REGIONAL	MA	LPV	0	1	0	1	1	1.0000
BWI	BALTIMORE-WASHINGTON INTL THURGOOD MARSHALL	MD	LPV200	0	1	0	1	0	1
DMW	CARROLL COUNTY REGNL/JACK B POAGE FIELD	MD	LPV200	0	1	0	1	0	1
ESN	EASTON/NEWNAM FIELD	MD	LPV	0	1	0	1	0	1
FDK	FREDERICK MUNI	MD	LPV	0	1	0	1	0	1
2G4	GARRETT COUNTY	MD	LPV	0	1	0	1	0	1
CBE	GREATER CUMBERLAND REGIONAL	MD	LP	0	1	0	1	0	1
HGR	HAGERSTOWN RGNL-RICHARD A HENSON FIELD	MD	LPV200	0	1	0	1	0	1
MTN	MARTIN STATE	MD	LPV	0	1	0	1	0	1
GAI	MONTGOMERY COUNTY AIRPARK	MD	LPV	0	1	0	1	0	1
OXB	OCEAN CITY MUNI	MD	LPV	0	1	0	1	0	1
SBY	SALISBURY-OCEAN CITY WICOMICO REGIONAL	MD	LPV200	0	1	0	1	0	1
2W6	ST. MARY'S COUNTY RGNL	MD	LPV	0	1	0	1	0	1
LEW	AUBURN/LEWISTON MUNI	ME	LPV200	0	1	0	1	1	0.9998
AUG	AUGUSTA STATE	ME	LPV200	0	1	0	1	1	0.9998
BGR	BANGOR INTL	ME	LPV	0	1	0	1	1	0.9997
BXM	BRUNSWICK EXECUTIVE	ME	LP	0	1	0	1	1	0.9998
1B0	DEXTER REGIONAL	ME	LP	0	1	0	1	1	0.9996
BHB	HANCOCK COUNTY-BAR HARBOR	ME	LPV200	0	1	0	1	1	0.9997
HUL	HOULTON INTL	ME	LP	0	1	0	1	2	0.9998
RKD	KNOX COUNTY REGIONAL	ME	LPV	0	1	0	1	1	0.9998
FVE	NORTHERN AROOSTOOK REGIONAL	ME	LPV	0	1	1	1.0000	1	0.9996
PQI	NORTHERN MAINE REGIONAL ARPT AT PRESQUE IS	ME	LPV200	0	1	1	1.0000	1	0.9996
PWM	PORTLAND INTL JETPORT	ME	LPV	0	1	0	1	1	0.9999
SFM	SANFORD REGIONAL	ME	LPV200	0	1	0	1	1	0.9999
WVL	WATERVILLE ROBERT LAFLEUR	ME	LPV200	0	1	0	1	1	0.9998
APN	ALPENA COUNTY REGIONAL	MI	LPV	1	0.9999	1	0.9998	1	0.9997
ARB	ANN ARBOR MUNI	MI	LPV	0	1	0	1	1	1.0000
ACB	ANTRIM COUNTY	MI	LPV	1	1.0000	1	0.9998	2	0.9997
FNT	BISHOP INTERNATIONAL	MI	LPV200	0	1	1	1.0000	1	0.9998
OEB	BRANCH COUNTY MEMORIAL	MI	LPV	0	1	0	1	1	1.0000
LAN	CAPITAL CITY	MI	LPV200	0	1	1	1.0000	1	0.9999
CVX	CHARLEVOIX MUNI	MI	LPV	1	1.0000	1	0.9998	2	0.9997

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
SLH	CHEBOYGAN COUNTY	MI	LP	2	0.9999	1	0.9998	2	0.9997
TVC	CHERRY CAPITAL	MI	LPV	1	1.0000	1	0.9998	2	0.9997
CIU	CHIPPEWA COUNTY INTL	MI	LPV	2	0.9999	1	0.9998	3	0.9997
DET	COLEMAN A YOUNG MUNI	MI	LPV	0	1	0	1	1	0.9999
TTF	CUSTER	MI	LPV	0	1	0	1	1	1.0000
ESC	DELTA COUNTY	MI	LPV200	1	0.9998	1	0.9998	2	0.9997
DTW	DETROIT METROPOLITAN WAYNE COUNTY	MI	LPV200	0	1	0	1	1	0.9999
IMT	FORD	MI	LPV	1	0.9998	1	0.9997	2	0.9996
FFX	FREMONT MUNI	MI	LPV	0	1	0	1	1	0.9998
GRR	GERALD R. FORD INTL	MI	LPV200	0	1	0	1	1	0.9998
GDW	GLADWIN ZETTEL MEMORIAL	MI	LP	0	1	1	1.0000	1	0.9998
IWD	GOGEBIC-IRON COUNTY	MI	LPV200	1	0.9998	1	0.9997	5	0.9996
9D9	HASTINGS	MI	LP	0	1	0	1	1	0.9999
CMX	HOUGHTON COUNTY MEMORIAL	MI	LPV	1	0.9998	1	0.9997	7	0.9995
BAX	HURON COUNTY MEMORIAL	MI	LPV	0	1	1	0.9999	1	0.9998
IKW	JACK BARSTOW	MI	LPV	0	1	1	1.0000	1	0.9998
JXN	JACKSON COUNTY-REYNOLDS FIELD	MI	LPV200	0	1	0	1	1	1.0000
AZO	KALAMAZOO/BATTLE CREEK INTERNATIONAL	MI	LPV	0	1	0	1	1	1.0000
IRS	KIRSCH MUNI	MI	LPV	0	1	0	1	1	1.0000
ADG	LENAWEE COUNTY	MI	LPV	0	1	0	1	1	1.0000
OZW	LIVINGSTON COUNTY SPENCER J HARDY	MI	LPV200	0	1	1	1.0000	1	1.0000
ERY	LUCE COUNTY	MI	LPV	1	0.9998	1	0.9998	3	0.9996
77G	MARLETTE	MI	LPV	0	1	1	0.9999	1	0.9998
LDM	MASON COUNTY	MI	LPV	0	1	0	1	2	0.9997
MBS	MBS INTL	MI	LPV200	0	1	1	1.0000	1	0.9998
MNM	MENOMINEE-MARINETTE TWIN COUNTY	MI	LPV200	1	1.0000	1	0.9998	2	0.9996
MOP	MOUNT PLEASANT MUNI	MI	LPV	0	1	1	1.0000	1	0.9998
MKG	MUSKEGON COUNTY	MI	LPV200	0	1	0	1	1	0.9998
PTK	OAKLAND COUNTY INTL	MI	LPV200	0	1	0	1	1	0.9999
OSC	OSCODA-WURTSMITH	MI	LPV200	1	0.9999	1	0.9998	1	0.9998
RNP	OWOSSO COMMUNITY	MI	LPV	0	1	1	1.0000	1	1.0000
PLN	PELLSTON RGNL ARPT OF EMMET COUNTY	MI	LPV200	2	0.9999	1	0.9998	2	0.9997
HYX	SAGINAW COUNTY H.W. BROWNE	MI	LPV	0	1	1	1.0000	1	0.9998
PHN	SAINT CLAIR COUNTY INTL	MI	LPV200	0	1	1	1.0000	1	0.9998
ANJ	SAULT STE MARIE MUNI - SANDERSON FIELD	MI	LPV	1	0.9998	1	0.9998	3	0.9997
SAW	SAWYER INTERNATIONAL	MI	LPV200	1	0.9998	1	0.9998	2	0.9997
LWA	SOUTH HAVEN AREA REGIONAL	MI	LP	0	1	0	1	1	1.0000
BEH	SOUTHWEST MICHIGAN RGNL	MI	LPV	0	1	0	1	0	1
BIV	TULIP CITY	MI	LPV	0	1	0	1	1	0.9998
BTL	W K KELLOGG	MI	LPV200	0	1	0	1	1	1.0000
CAD	WEXFORD COUNTY	MI	LPV200	1	1.0000	1	1.0000	2	0.9998

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
YIP	WILLOW RUN	MI	LPV	0	1	0	1	1	1.0000
LVN	AIRLAKE	MN	LPV	0	1	1	1.0000	2	0.9997
AEL	ALBERT LEA MUNI	MN	LPV	0	1	0	1	2	0.9998
ANE	ANOKA COUNTY-BLAINE ARPT (JANES FIELD)	MN	LPV	0	1	1	1.0000	2	0.9997
AUM	AUSTIN MUNI	MN	LPV	0	1	0	1	2	0.9997
BDE	BAUDETTE INTL	MN	LPV	0	1	1	0.9999	3	0.9995
BJI	BEMIDJI REGIONAL	MN	LPV200	0	1	1	1.0000	4	0.9996
BBB	BENSON MUNI	MN	LPV	0	1	0	1	1	0.9999
FOZ	BIGFORK MUNICIPAL	MN	LP	0	1	1	0.9999	9	0.9992
BRD	BRAINERD LAKES RGNL	MN	LPV200	0	1	0	1	1	0.9998
AXN	CHANDLER FIELD	MN	LPV	0	1	0	1	1	0.9999
HIB	CHISHOLM-HIBBING	MN	LPV200	0	1	1	0.9998	8	0.9991
CKN	CROOKSTON MUNI/KIRKWOOD FLD	MN	LPV	0	1	1	1.0000	1	0.9997
DTL	DETROIT LAKES-WETHING FIELD	MN	LPV	0	1	0	1	1	0.9999
DLH	DULUTH INTL	MN	LPV200	0	1	1	0.9998	7	0.9994
FRM	FAIRMONT MUNI	MN	LPV	0	1	0	1	1	1.0000
INL	FALLS INTL	MN	LPV	0	1	1	0.9998	6	0.9994
FFM	FERGUS FALLS MUNI-EINAR MICKELSON FLD	MN	LPV200	0	1	0	1	1	0.9999
FCM	FLYING CLOUD	MN	LPV200	0	1	0	1	2	0.9997
CKC	GRAND MARAIS/COOK COUNTY	MN	LPV	1	0.9998	1	0.9997	6	0.9994
GPZ	GRAND RAPIDS/ITASCA CO-GORDON NEWSTROM	MN	LPV	0	1	1	0.9999	7	0.9993
HCD	HUTCHINSON MUNI-BUTLER FIELD	MN	LPV	0	1	0	1	1	0.9999
LJF	LITCHFIELD MUNICIPAL	MN	LPV	0	1	0	1	1	0.9999
LXL	LITTLE FALLS/MORRISON CO-LINDBERGH FLD	MN	LPV	0	1	0	1	1	0.9999
MKT	MANKATO REGIONAL	MN	LPV200	0	1	0	1	1	0.9999
MGG	MAPLE LAKE MUNI	MN	LP	0	1	0	1	1	0.9999
MSP	MINNEAPOLIS-ST PAUL INTL/WOLD-CHAMBERLAIN	MN	LPV	0	1	1	1.0000	2	0.9997
CNB	MYERS FIELD	MN	LPV	0	1	0	1	0	1
ORB	ORR REGIONAL	MN	LP	1	0.9999	1	0.9998	9	0.9991
VVV	ORTONVILLE MUNI-MARTINSON FIELD	MN	LP	0	1	0	1	1	1.0000
PKD	PARK RAPIDS MUNI-KONSHOK FIELD	MN	LPV200	0	1	0	1	2	0.9998
LYV	QUENTIN AANENSON FIELD	MN	LPV200	0	1	0	1	0	1
RGK	RED WING RGNL	MN	LPV200	0	1	1	0.9999	2	0.9996
RWF	REDWOOD FALLS MUNI	MN	LPV	0	1	0	1	0	1
TWM	RICHARD B HELGESON	MN	LPV	1	0.9998	1	0.9997	8	0.9994
RST	ROCHESTER INTERNATIONAL	MN	LPV	0	1	1	1.0000	2	0.9997
ROX	ROSEAU MUNI/RUDY BILLBERG FIELD	MN	LPV	0	1	1	0.9998	3	0.9995
ROS	RUSH CITY REGIONAL	MN	LPV	0	1	1	0.9999	2	0.9996
D39	SAUK CENTRE MUNI	MN	LP	0	1	0	1	1	0.9999

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
MML	SOUTHWEST MINNESOTA RGNL MARSHALL/RYAN FIELD	MN	LPV	0	1	0	1	0	1
STC	ST CLOUD REGIONAL	MN	LPV200	0	1	0	1	1	0.9999
STP	ST PAUL DOWNTOWN HOLMAN FLD	MN	LPV	0	1	1	1.0000	2	0.9996
TVF	THIEF RIVER FALLS	MN	LPV	0	1	1	0.9999	3	0.9997
RRT	WARROAD INTL MEMORIAL	MN	LPV	0	1	1	0.9999	3	0.9995
BDH	WILLMAR MUNI-JOHN L RICE FIELD	MN	LPV	0	1	0	1	1	0.9999
M17	BOLIVAR MUNI	MO	LPV	0	1	0	1	0	1
BBG	BRANSON	MO	LPV200	0	1	0	1	0	1
H21	CAMDENTON MEMORIAL	MO	LPV	0	1	0	1	0	1
EZZ	CAMERON MEMORIAL	MO	LPV	0	1	0	1	0	1
CGI	CAPE GIRARDEAU RGNL	MO	LPV	0	1	0	1	0	1
M05	CARUTHERSVILLE MEM	MO	LPV	0	1	0	1	0	1
MKC	CHARLES B. WHEELER DOWNTOWN	MO	LPV	0	1	0	1	0	1
CHT	CHILLICOTHE MUNI	MO	LPV	0	1	0	1	0	1
COU	COLUMBIA REGIONAL	MO	LPV	0	1	0	1	0	1
EIW	COUNTY MEMORIAL	MO	LPV	0	1	0	1	0	1
1H0	CREVE COEUR	MO	LPV	0	1	0	1	0	1
UBX	CUBA MUNI	MO	LPV	0	1	0	1	0	1
DXE	DEXTER MUNI	MO	LPV	0	1	0	1	0	1
FTT	ELTON HENSLEY MEMORIAL	MO	LPV	0	1	0	1	0	1
FAM	FARMINGTON REGIONAL	MO	LPV	0	1	0	1	0	1
K57	GOULD PETERSON MUNI	MO	LPV	0	1	0	1	0	1
HAE	HANNIBAL RGNL	MO	LPV	0	1	0	1	0	1
HIG	HIGGINSVILLE INDUSTRIAL MUNI	MO	LPV	0	1	0	1	0	1
JEF	JEFFERSON CITY MEMORIAL	MO	LPV	0	1	0	1	0	1
VER	JESSE VIERTTEL MEMORIAL	MO	LPV	0	1	0	1	0	1
JLN	JOPLIN REGIONAL	MO	LPV	0	1	0	1	0	1
MCI	KANSAS CITY INTL	MO	LPV	0	1	0	1	0	1
IRK	KIRKSVILLE RGNL	MO	LPV200	0	1	0	1	0	1
STL	LAMBERT-ST LOUIS INTL	MO	LPV200	0	1	0	1	0	1
LRV	LAWRENCE SMITH MEMORIAL	MO	LPV	0	1	0	1	0	1
AIZ	LEE C FINE MEMORIAL	MO	LPV	0	1	0	1	0	1
LXT	LEE'S SUMMIT MUNI	MO	LPV	0	1	0	1	0	1
6M6	LEWIS COUNTY REGIONAL	MO	LPV	0	1	0	1	0	1
PLK	M. GRAHAM CLARK-TANEY COUNTY	MO	LPV200	0	1	0	1	0	1
MAW	MALDEN MUNI	MO	LPV	0	1	0	1	0	1
MHL	MARSHALL MEML MUNI	MO	LPV	0	1	0	1	0	1
MYJ	MEXICO MEMORIAL	MO	LPV	0	1	0	1	0	1
GPH	MIDWEST NATIONAL AIR CENTER	MO	LPV	0	1	0	1	0	1
HFJ	MONETT MUNI	MO	LPV	0	1	0	1	0	1
EOS	NEOSHO HUGH ROBINSON	MO	LPV	0	1	0	1	0	1
NVD	NEVADA MUNICIPAL	MO	LPV200	0	1	0	1	0	1
MO8	NORTH CENTRAL MISSOURI REGIONAL	MO	LPV	0	1	0	1	0	1

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
EVU	NORTHWEST MISSOURI RGNL	MO	LPV	0	1	0	1	0	1
MBY	OMAR N BRADLEY	MO	LPV	0	1	0	1	0	1
K02	PERRYVILLE MUNI	MO	LPV	0	1	0	1	0	1
POF	POPLAR BLUFF MUNI	MO	LPV	0	1	0	1	0	1
VIH	ROLLA NATIONAL	MO	LPV200	0	1	0	1	0	1
STJ	ROSECRANS MEMORIAL	MO	LPV200	0	1	0	1	0	1
DMO	SEDALIA MEMORIAL	MO	LPV	0	1	0	1	0	1
SIK	SIKESTON MEML MUNI	MO	LPV	0	1	0	1	0	1
RCM	SKYHAVEN	MO	LPV	0	1	0	1	0	1
SUS	SPIRIT OF ST LOUIS	MO	LPV200	0	1	0	1	0	1
SGF	SPRINGFIELD-BRANSON NATIONAL	MO	LPV	0	1	0	1	0	1
UUV	SULLIVAN REGIONAL	MO	LPV	0	1	0	1	0	1
8WC	WASHINGTON COUNTY AIRPORT	MO	LPV	0	1	0	1	0	1
FYG	WASHINGTON RGNL	MO	LPV	0	1	0	1	0	1
TBN	WAYNESVILLE-ST ROBERT RGNL/FORNEY AAF	MO	LPV	0	1	0	1	0	1
UNO	WEST PLAINS MUNI	MO	LPV	0	1	0	1	0	1
RNV	CLEVELAND MUNI	MS	LPV	0	1	0	1	0	1
CKM	FLETCHER FIELD	MS	LPV	0	1	0	1	0	1
STF	GEORGE M BRYAN	MS	LPV200	0	1	0	1	0	1
GTR	GOLDEN TRIANGLE RGNL	MS	LPV	0	1	0	1	0	1
GWO	GREENWOOD-LEFLORE	MS	LPV	0	1	0	1	0	1
GNF	GRENADA MUNI	MS	LPV	0	1	0	1	0	1
GPT	GULFPORT-BILOXI INTL	MS	LPV200	0	1	0	1	0	1
HEZ	HARDY-ANDERS FLD NATCHEZ-ADAMS COUNTY	MS	LPV	0	1	0	1	0	1
HBG	HATTIESBURG BOBBY L. CHAIN MUNI	MS	LPV200	0	1	0	1	0	1
PIB	HATTIESBURG-LAUREL REGIONAL	MS	LPV200	0	1	0	1	0	1
HKS	HAWKINS FIELD	MS	LPV200	0	1	0	1	0	1
LUL	HESLER-NOBLE FIELD	MS	LPV	0	1	0	1	0	1
IDL	INDIANOLA MUNI	MS	LPV	0	1	0	1	0	1
JAN	JACKSON-EVERS INTL	MS	LPV200	0	1	0	1	0	1
JVW	JOHN BELL WILLIAMS	MS	LPV200	0	1	0	1	0	1
MEI	KEY FIELD	MS	LPV200	0	1	0	1	0	1
MCB	MC COMB/PIKE COUNTY/JOHN E LEWIS FIELD	MS	LPV	0	1	0	1	0	1
GLH	MID DELTA REGIONAL	MS	LPV200	0	1	0	1	0	1
M40	MONROE COUNTY	MS	LPV	0	1	0	1	0	1
OLV	OLIVE BRANCH	MS	LPV	0	1	0	1	0	1
MPE	PHILADELPHIA MUNI	MS	LPV	0	1	0	1	0	1
MJD	PICAYUNE MUNI	MS	LPV	0	1	0	1	0	1
M43	PRENTISS-JEFFERSON DAVIS COUNTY	MS	LPV	0	1	0	1	0	1
CRX	ROSCOE TURNER	MS	LPV200	0	1	0	1	0	1
HSA	STENNIS INTL	MS	LPV200	0	1	0	1	0	1
PQL	TRENT LOTT INTL	MS	LPV200	0	1	0	1	0	1
UTA	TUNICA MUNI	MS	LPV200	0	1	0	1	0	1

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
TUP	TUPELO REGIONAL	MS	LPV200	0	1	0	1	0	1
UOX	UNIVERSITY-OXFORD	MS	LPV	0	1	0	1	0	1
BTM	BERT MOONEY	MT	LPV	0	1	0	1	0	1
BIL	BILLINGS LOGAN INTL	MT	LPV	0	1	0	1	0	1
GDV	DAWSON COMMUNITY	MT	LPV	0	1	0	1	2	0.9999
MLS	FRANK WILEY FIELD	MT	LPV	0	1	0	1	0	1
BZN	GALLATIN FIELD	MT	LPV	0	1	0	1	0	1
GPI	GLACIER PARK INTL	MT	LPV	0	1	0	1	1	0.9999
GTF	GREAT FALLS INTL	MT	LPV200	0	1	0	1	1	0.9999
HVR	HAVRE CITY-COUNTY	MT	LPV	0	1	0	1	1	0.9999
HLN	HELENA REGIONAL	MT	LPV	0	1	0	1	1	1.0000
LWT	LEWISTOWN MUNI	MT	LPV	0	1	0	1	1	1.0000
M75	MALTA	MT	LP	0	1	0	1	2	0.9999
LVM	MISSION FIELD	MT	LP	0	1	0	1	0	1
MSO	MISSOULA INTERNATIONAL	MT	LPV	0	1	0	1	0	1
7S0	RONAN	MT	LPV	0	1	0	1	1	1.0000
SBX	SHELBY	MT	LP	0	1	0	1	1	0.9999
SDY	SIDNEY-RICHLAND MUNI	MT	LPV	0	1	0	1	2	0.9999
1S3	TILLITT FIELD	MT	LPV	0	1	0	1	0	1
WYS	YELLOWSTONE	MT	LPV200	0	1	0	1	0	1
OAJ	ALBERT J ELLIS	NC	LPV	0	1	0	1	1	0.9999
AFP	ANSON COUNTY-JEFF CLOUD FLD	NC	LPV	0	1	0	1	1	0.9999
AVL	ASHEVILLE REGIONAL	NC	LPV	0	1	0	1	1	1.0000
BUY	BURLINGTON-ALAMANCE REGIONAL	NC	LPV200	0	1	0	1	0	1
SUT	CAPE FEAR RGNL JETPORT/HOWIE FRANKLIN FLD	NC	LPV	0	1	0	1	1	0.9999
CLT	CHARLOTTE/DOUGLAS INTL	NC	LPV200	0	1	0	1	1	0.9999
CTZ	CLINTON-SAMPSON COUNTY	NC	LPV200	0	1	0	1	1	1.0000
EWN	COASTAL CAROLINA REGIONAL	NC	LPV	0	1	0	1	1	1.0000
JQF	CONCORD RGNL	NC	LPV	0	1	0	1	1	1.0000
ONX	CURRITUCK COUNTY RGNL	NC	LPV	0	1	0	1	0	1
EYF	CURTIS L BROWN JR FIELD	NC	LPV200	0	1	0	1	1	0.9999
MQI	DARE COUNTY REGIONAL	NC	LPV	0	1	0	1	0	1
DPL	DUPLIN COUNTY	NC	LPV200	0	1	0	1	1	1.0000
ECG	ELIZABETH CITY CG AIR STATION/REGIONAL	NC	LPV	0	1	0	1	0	1
FAY	FAYETTEVILLE REGIONAL/GRANNIS FIELD	NC	LPV	0	1	0	1	1	0.9999
MRN	FOOTHILLS REGIONAL	NC	LPV200	0	1	0	1	1	1.0000
LHZ	FRANKLIN COUNTY	NC	LPV200	0	1	0	1	0	1
AKH	GASTONIA MUNI	NC	LPV	0	1	0	1	1	0.9999
GWW	GOLDSBORO-WAYNE MUNI	NC	LPV200	0	1	0	1	1	1.0000
IXA	HALIFAX-NORTHAMPTON REGIONAL	NC	LPV200	0	1	0	1	0	1
HRJ	HARNETT COUNTY	NC	LPV	0	1	0	1	1	1.0000
HNZ	HENDERSON-OXFORD	NC	LPV	0	1	0	1	0	1
HKY	HICKORY REGIONAL	NC	LPV200	0	1	0	1	1	1.0000

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
JNX	JOHNSTON COUNTY	NC	LPV200	0	1	0	1	1	1.0000
ISO	KINSTON REGL JETPORT AT STALLINGS FLD	NC	LPV	0	1	0	1	1	1.0000
MEB	LAURINBURG-MAXTON	NC	LPV200	0	1	0	1	1	0.9999
IPJ	LINCOLNTON-LINCOLN COUNTY REGIONAL	NC	LPV	0	1	0	1	1	1.0000
LBT	LUMBERTON MUNI	NC	LPV	0	1	0	1	1	0.9999
MRH	MICHAEL J. SMITH FIELD	NC	LPV	0	1	0	1	1	0.9999
EQY	MONROE REGIONAL	NC	LPV	0	1	0	1	1	0.9999
MWK	MOUNT AIRY/SURRY COUNTY	NC	LPV	0	1	0	1	0	1
EDE	NORTHEASTERN RGNL	NC	LPV200	0	1	0	1	0	1
TDF	PERSON COUNTY	NC	LPV200	0	1	0	1	0	1
GSO	PIEDMONT TRIAD INTL	NC	LPV200	0	1	0	1	0	1
PGV	PITT-GREENVILLE	NC	LPV	0	1	0	1	1	1.0000
PMZ	PLYMOUTH MUNI	NC	LP	0	1	0	1	0	1
RDU	RALEIGH-DURHAM INTL	NC	LPV200	0	1	0	1	0	1
RCZ	RICHMOND COUNTY	NC	LPV	0	1	0	1	1	0.9999
RWI	ROCKY MOUNT-WILSON REGIONAL	NC	LPV	0	1	0	1	0	1
RUQ	ROWAN COUNTY	NC	LPV200	0	1	0	1	1	1.0000
FQD	RUTHERFORD CO/MARCHMAN FIELD	NC	LPV	0	1	0	1	1	1.0000
TTA	SANFORD-LEE COUNTY REGIONAL	NC	LPV200	0	1	0	1	1	1.0000
EHO	SHELBY-CLEVELAND COUNTY RGNL	NC	LPV	0	1	0	1	1	1.0000
INT	SMITH REYNOLDS	NC	LPV200	0	1	0	1	0	1
VUJ	STANLY COUNTY	NC	LPV200	0	1	0	1	1	1.0000
SVH	STATESVILLE REGIONAL	NC	LPV	0	1	0	1	1	1.0000
OCW	WARREN FIELD	NC	LPV	0	1	0	1	1	1.0000
ILM	WILMINGTON INTL	NC	LPV200	0	1	0	1	1	0.9999
BAC	BARNES COUNTY MUNI	ND	LPV	0	1	0	1	1	0.9999
BIS	BISMARCK MUNI	ND	LPV200	0	1	0	1	2	1.0000
D09	BOTTINEAU MUNI	ND	LPV	0	1	2	0.9999	2	0.9996
5N8	CASSELTON ROBERT MILLER RGNL	ND	LPV	0	1	0	1	1	0.9999
DVL	DEVILS LAKE RGNL	ND	LPV	0	1	1	1.0000	2	0.9997
DIK	DICKINSON-THEODORE ROOSEVELT REGIONAL	ND	LPV200	0	1	0	1	2	1.0000
GFK	GRAND FORKS INTL	ND	LPV	0	1	1	1.0000	1	0.9997
GWR	GWINNER-ROGER MELROE FIELD	ND	LPV200	0	1	0	1	1	1.0000
FAR	HECTOR INTL	ND	LPV200	0	1	0	1	1	0.9999
GAF	HUTSON FIELD	ND	LPV	1	1.0000	2	0.9999	2	0.9996
JMS	JAMESTOWN REGIONAL	ND	LPV200	0	1	0	1	2	0.9999
HZE	MERCER COUNTY REGIONAL	ND	LPV	0	1	0	1	2	1.0000
MOT	MINOT INTL	ND	LPV	0	1	1	1.0000	1	0.9997
D55	ROBERTSON FIELD	ND	LPV	1	1.0000	1	0.9998	2	0.9996
RUG	RUGBY MUNI	ND	LP	0	1	1	1.0000	2	0.9997
ISN	SLOULIN FLD INTL	ND	LPV200	0	1	0	1	2	0.9999
S25	WATFORD CITY MUNI	ND	LPV	0	1	0	1	2	0.9999

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
ANW	AINSWORTH MUNI	NE	LPV200	0	1	0	1	0	1
BVN	ALBION MUNI	NE	LPV	0	1	0	1	0	1
AIA	ALLIANCE MUNI	NE	LPV200	0	1	0	1	0	1
4V9	ANTELOPE COUNTY	NE	LPV	0	1	0	1	0	1
AUH	AURORA MUNICIPAL - AL POTTER FIELD	NE	LPV	0	1	0	1	0	1
BIE	BEATRICE MUNI	NE	LPV200	0	1	0	1	0	1
FNB	BRENNER FIELD	NE	LPV	0	1	0	1	0	1
HDE	BREWSTER FIELD	NE	LPV	0	1	0	1	0	1
BBW	BROKEN BOW MUNI	NE	LPV	0	1	0	1	0	1
07K	CENTRAL CITY MUNI-LARRY REINEKE FIELD	NE	LPV	0	1	0	1	0	1
GRI	CENTRAL NEBRASKA REGIONAL	NE	LPV	0	1	0	1	0	1
CDR	CHADRON MUNI	NE	LPV	0	1	0	1	0	1
OLU	COLUMBUS MUNI	NE	LPV	0	1	0	1	0	1
CZD	COZAD MUNI	NE	LPV	0	1	0	1	0	1
6K3	CREIGHTON MUNI	NE	LPV	0	1	0	1	0	1
CEK	CRETE MUNICIPAL	NE	LPV	0	1	0	1	0	1
93Y	DAVID CITY MUNI	NE	LPV	0	1	0	1	0	1
OMA	EPPLEY AIRFIELD	NE	LPV	0	1	0	1	0	1
ODX	EVELYN SHARP FIELD	NE	LPV	0	1	0	1	0	1
FBY	FAIRBURY MUNI	NE	LPV	0	1	0	1	0	1
FMZ	FAIRMONT STATE AIRFIELD	NE	LPV	0	1	0	1	0	1
FET	FREMONT MUNI	NE	LPV	0	1	0	1	0	1
OKS	GARDEN COUNTY	NE	LPV	0	1	0	1	0	1
GRN	GORDON MUNI	NE	LPV	0	1	0	1	0	1
GGF	GRANT MUNI	NE	LPV	0	1	0	1	0	1
0B4	HARTINGTON MUNI	NE	LPV	0	1	0	1	0	1
HSI	HASTINGS MUNI	NE	LPV	0	1	0	1	0	1
IML	IMPERIAL MUNI	NE	LPV	0	1	0	1	0	1
LXN	JIM KELLY FIELD	NE	LPV	0	1	0	1	0	1
OFK	KARL STEFAN MEMORIAL	NE	LPV	0	1	0	1	0	1
EAR	KEARNEY RGNL	NE	LPV	0	1	0	1	0	1
IBM	KIMBALL MUNI/ROBERT E ARRAJ FI	NE	LPV	0	1	0	1	0	1
LNK	LINCOLN	NE	LPV	0	1	0	1	0	1
MCK	MCCOOK REGIONAL	NE	LPV	0	1	0	1	0	1
MLE	MILLARD	NE	LPV	0	1	0	1	0	1
VTN	MILLER FIELD	NE	LPV	0	1	0	1	0	1
9V5	MODISSETT	NE	LPV	0	1	0	1	0	1
AFK	NEBRASKA CITY MUNI	NE	LPV	0	1	0	1	0	1
LBF	NORTH PLATTE RGNL AIRPORT LEE BIRD FIELD	NE	LPV	0	1	0	1	0	1
0V3	PIONEER VILLAGE FIELD	NE	LPV	0	1	0	1	0	1
PMV	PLATTSMOUTH MUNI	NE	LPV	0	1	0	1	0	1
RBE	ROCK COUNTY	NE	LPV	0	1	0	1	0	1
OGA	SEARLE FIELD	NE	LPV	0	1	0	1	0	1
SWT	SEWARD MUNICIPAL	NE	LPV	0	1	0	1	0	1
SNY	SIDNEY MUNI/LLOYD W. CARR FIELD	NE	LPV	0	1	0	1	0	1

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
ONL	THE O'NEILL MUNI-JOHN L BAKER FIELD	NE	LPV	0	1	0	1	0	1
TIF	THOMAS COUNTY	NE	LPV	0	1	0	1	0	1
AHQ	WAHOO MUNI	NE	LPV	0	1	0	1	0	1
LCG	WAYNE MUNI	NE	LPV	0	1	0	1	0	1
BFF	WESTERN NEB. RGNL/WILLIAM B. HEILIG FIELD	NE	LPV	0	1	0	1	0	1
JYR	YORK MUNICIPAL	NE	LPV	0	1	0	1	0	1
CON	CONCORD MUNI	NH	LPV	0	1	0	1	1	1.0000
EEN	DILLANT-HOPKINS	NH	LPV	0	1	0	1	0	1
LCI	LACONIA MUNI	NH	LPV	0	1	0	1	1	0.9999
LEB	LEBANON MUNI	NH	LPV	0	1	0	1	1	1.0000
MHT	MANCHESTER	NH	LPV200	0	1	0	1	0	1
HIE	MOUNT WASHINGTON REGIONAL	NH	LPV	0	1	0	1	1	0.9999
PSM	PORTSMOUTH INTL AT PEASE	NH	LPV200	0	1	0	1	1	0.9999
DAW	SKYHAVEN	NH	LPV	0	1	0	1	1	0.9999
ACY	ATLANTIC CITY INTERNATIONAL	NJ	LPV200	0	1	0	1	0	1
WWD	CAPE MAY COUNTY	NJ	LPV	0	1	0	1	0	1
47N	CENTRAL JERSEY REGIONAL	NJ	LP	0	1	0	1	0	1
CDW	ESSEX COUNTY	NJ	LPV	0	1	0	1	0	1
MIV	MILLVILLE MUNI	NJ	LPV200	0	1	0	1	0	1
MMU	MORRISTOWN MUNI	NJ	LPV200	0	1	0	1	0	1
EWR	NEWARK LIBERTY INTL	NJ	LPV	0	1	0	1	0	1
39N	PRINCETON	NJ	LPV	0	1	0	1	0	1
VAY	SOUTH JERSEY REGIONAL	NJ	LP	0	1	0	1	0	1
TEB	TETERBORO	NJ	LPV	0	1	0	1	0	1
ABQ	ALBUQUERQUE INTL SUNPORT	NM	LPV	0	1	0	1	0	1
CNM	CAVERN CITY AIR TRML	NM	LP	0	1	0	1	0	1
CVN	CLOVIS MUNI	NM	LPV	0	1	0	1	0	1
DMN	DEMING MUNI	NM	LPV	0	1	0	1	0	1
FMN	FOUR CORNERS RGNL	NM	LPV200	0	1	0	1	0	1
SVC	GRANT COUNTY	NM	LPV	0	1	0	1	0	1
HOB	LEA COUNTY REGIONAL	NM	LPV200	0	1	0	1	0	1
ROW	ROSWELL INTERNATIONAL AIR CENTER	NM	LPV	0	1	0	1	0	1
SRR	SIERRA BLANCA REGIONAL	NM	LPV200	0	1	0	1	0	1
ELY	ELY ARPT-YELLAND FLD	NV	LPV	0	1	0	1	0	1
LAS	MC CARRAN INTL	NV	LPV	0	1	0	1	0	1
RTS	RENO/STEAD	NV	LPV	0	1	1	1.0000	92	0.9933
RNO	RENO/TAHOE INTL	NV	LPV	0	1	1	1.0000	92	0.9934
TPH	TONOPAH	NV	LP	0	1	0	1	0	1
WMC	WINNEMUCCA MUNI	NV	LPV	0	1	1	1.0000	65	0.9995
ALB	ALBANY INTL	NY	LPV200	0	1	0	1	1	1.0000
GVQ	BATAVIA	NY	LPV200	0	1	1	0.9999	1	0.9998
HWV	BROOKHAVEN	NY	LPV	0	1	0	1	0	1
9GO	BUFFALO AIRFIELD	NY	LP	0	1	1	0.9999	1	0.9998
BUF	BUFFALO NIAGARA INTL	NY	LPV	0	1	1	0.9999	1	0.9998
D38	CANANDAIGUA	NY	LP	0	1	1	1.0000	1	0.9998

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
OLE	CATTARAUGUS COUNTY-OLEAN	NY	LPV	0	1	0	1	1	0.9999
JHW	CHAUTAUQUA COUNTY/JAMESTOWN	NY	LPV200	0	1	0	1	1	0.9998
1B1	COLUMBIA COUNTY	NY	LPV	0	1	0	1	0	1
POU	DUTCHESS COUNTY	NY	LPV	0	1	0	1	0	1
HTO	EAST HAMPTON	NY	LPV	0	1	0	1	0	1
GFL	FLOYD BENNETT MEMORIAL	NY	LPV	0	1	0	1	1	0.9999
FOK	FRANCIS S. GABRESKI	NY	LPV	0	1	0	1	0	1
NY0	FULTON COUNTY	NY	LPV	0	1	0	1	1	1.0000
BGM	GREATER BINGHAMTON/EDWIN A LINK FIELD	NY	LPV200	0	1	0	1	1	0.9999
ROC	GREATER ROCHESTER INTL	NY	LPV200	0	1	1	1.0000	1	0.9998
RME	GRIFFISS INTL	NY	LPV200	0	1	0	1	1	1.0000
VGC	HAMILTON MUNI	NY	LPV	0	1	0	1	1	1.0000
ITH	ITHACA TOMPKINS RGNL	NY	LPV	0	1	0	1	1	0.9998
JFK	JOHN F KENNEDY INTL	NY	LPV	0	1	0	1	0	1
LGA	LA GUARDIA	NY	LPV	0	1	0	1	0	1
7G0	LEDGEDALE AIRPARK	NY	LPV	0	1	1	0.9999	1	0.9998
ISP	LONG ISLAND MAC ARTHUR	NY	LPV200	0	1	0	1	0	1
MSS	MASSENA INTL-RICHARDS FIELD	NY	LPV	0	1	0	1	1	0.9998
N66	ONEONTA MUNI	NY	LPV	0	1	0	1	0	1
MGJ	ORANGE COUNTY	NY	LPV	0	1	0	1	0	1
FZY	OSWEGO COUNTY	NY	LPV	0	1	0	1	1	0.9998
PEO	PENN YAN	NY	LPV	0	1	0	1	1	0.9998
PBG	PLATTSBURGH INTL	NY	LPV	0	1	0	1	1	0.9999
FRG	REPUBLIC	NY	LPV200	0	1	0	1	0	1
5B2	SARATOGA COUNTY	NY	LPV	0	1	0	1	1	0.9999
SCH	SCHENECTADY COUNTY	NY	LPV200	0	1	0	1	1	1.0000
44N	SKY ACRES	NY	LPV	0	1	0	1	0	1
SWF	STEWART INTERNATIONAL	NY	LPV200	0	1	0	1	0	1
MSV	SULLIVAN COUNTY INTL	NY	LPV	0	1	0	1	0	1
SYR	SYRACUSE HANCOCK INTL	NY	LPV200	0	1	0	1	1	0.9998
4B6	TICONDEROGA MUNI	NY	LPV	0	1	0	1	1	1.0000
ART	WATERTOWN INTL	NY	LPV200	0	1	0	1	1	0.9998
ELZ	WELLSVILLE MUNI ARPT TARANTINE	NY	LPV	0	1	0	1	1	0.9998
HPN	WESTCHESTER COUNTY	NY	LPV	0	1	0	1	0	1
SDC	WILLIAMSON-SODUS	NY	LPV	0	1	1	1.0000	1	0.9998
ILN	AIRBORNE AIRPARK	OH	LPV200	0	1	0	1	0	1
CAK	AKRON-CANTON RGNL	OH	LPV200	0	1	0	1	0	1
HZY	ASHTABULA COUNTY	OH	LPV	0	1	0	1	1	0.9999
TZR	BOLTON FIELD	OH	LPV200	0	1	0	1	0	1
BKL	BROOKHAVEN	OH	LPV	0	1	0	1	1	0.9999
HAO	BUTLER CO RGNL	OH	LPV	0	1	0	1	0	1
CXY	CAPITAL CITY	OH	LPV	0	1	0	1	0	1
PCW	CARL R KELLER FIELD	OH	LPV	0	1	0	1	1	0.9999
LUK	CINCINNATI MUNI AIRPORT-LUNKEN FIELD	OH	LPV	0	1	0	1	0	1

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
CLE	CLEVELAND-HOPKINS INTL	OH	LPV200	0	1	0	1	1	0.9999
I66	CLINTON FIELD	OH	LPV	0	1	0	1	0	1
MGY	DAYTON-WRIGHT BROTHERS	OH	LPV	0	1	0	1	0	1
DLZ	DELAWARE MUNI	OH	LPV	0	1	0	1	0	1
LHQ	FAIRFIELD COUNTY	OH	LPV	0	1	0	1	0	1
FDY	FINDLAY	OH	LPV	0	1	0	1	1	1.0000
FZI	FOSTORIA METROPOLITAN	OH	LPV	0	1	0	1	1	1.0000
GQQ	GALION MUNI	OH	LP	0	1	0	1	0	1
PMH	GREATER PORTSMOUTH REGIONAL	OH	LPV	0	1	0	1	0	1
I19	GREENE COUNTY-LEWIS A JACKSON REGIONAL	OH	LPV	0	1	0	1	0	1
I74	GRIMES FIELD	OH	LPV	0	1	0	1	0	1
PHD	HARRY CLEVER FIELD	OH	LP	0	1	0	1	0	1
DAY	JAMES M COX DAYTON INTL	OH	LPV200	0	1	0	1	0	1
1G3	KENT STATE UNIV	OH	LPV	0	1	0	1	1	1.0000
4I3	KNOX COUNTY	OH	LPV200	0	1	0	1	0	1
CQA	LAKEFIELD	OH	LPV	0	1	0	1	0	1
AOH	LIMA ALLEN COUNTY	OH	LPV	0	1	0	1	0	1
LPR	LORAIN COUNTY RGNL	OH	LPV200	0	1	0	1	1	0.9999
UYF	MADISON COUNTY	OH	LPV	0	1	0	1	0	1
MFD	MANSFIELD LAHM REGIONAL	OH	LPV200	0	1	0	1	0	1
MNN	MARION MUNI	OH	LPV	0	1	0	1	0	1
AXV	NEIL ARMSTRONG	OH	LPV	0	1	0	1	0	1
OSU	OHIO STATE UNIVERSITY	OH	LPV200	0	1	0	1	0	1
UNI	OHIO UNIVERSITY SNYDER FIELD	OH	LPV200	0	1	0	1	0	1
CMH	PORT COLUMBUS INTL	OH	LPV200	0	1	0	1	0	1
OWX	PUTNAM COUNTY	OH	LPV	0	1	0	1	1	1.0000
LCK	RICKENBACKER INTL	OH	LPV200	0	1	0	1	0	1
S24	SANDUSKY COUNTY REGIONAL	OH	LPV	0	1	0	1	1	0.9999
16G	SENECA COUNTY	OH	LPV	0	1	0	1	1	1.0000
SGH	SPRINGFIELD-BECKLEY MUNI	OH	LPV200	0	1	0	1	0	1
TDZ	TOLEDO EXECUTIVE	OH	LP	0	1	0	1	1	1.0000
TOL	TOLEDO EXPRESS	OH	LPV200	0	1	0	1	1	1.0000
BJJ	WAYNE COUNTY	OH	LPV	0	1	0	1	0	1
LNN	WILLOUGHBY	OH	LPV	0	1	0	1	1	0.9999
1G0	WOOD COUNTY	OH	LPV	0	1	0	1	1	1.0000
YNG	YOUNGSTOWN/WARREN RGNL	OH	LPV	0	1	0	1	1	0.9999
ADH	ADA MUNI	OK	LPV	0	1	0	1	0	1
AXS	ALTUS/QUARTZ MOUNTAIN REGIONAL	OK	LPV	0	1	0	1	0	1
1F0	ARDMORE DOWNTOWN EXECUTIVE	OK	LP	0	1	0	1	0	1
ADM	ARDMORE MUNI	OK	LPV200	0	1	0	1	0	1
BVO	BARTLESVILLE MUNI	OK	LPV	0	1	0	1	0	1
BKN	BLACKWELL-TONKAWA MUNI	OK	LPV	0	1	0	1	0	1
GCM	CLAREMORE RGNL	OK	LPV	0	1	0	1	0	1
RCE	CLARENCE E. PAGE MUNI	OK	LPV	0	1	0	1	0	1
CLK	CLINTON REGIONAL	OK	LPV200	0	1	0	1	0	1

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
CSM	CLINTON-SHERMAN	OK	LPV200	0	1	0	1	0	1
MKO	DAVIS FIELD	OK	LPV	0	1	0	1	0	1
DUA	EAKER FIELD	OK	LPV	0	1	0	1	0	1
ELK	ELK CITY RGNL BUSINESS	OK	LPV	0	1	0	1	0	1
WDG	ENID WOODRING REGIONAL	OK	LPV200	0	1	0	1	0	1
FDR	FREDERICK REGIONAL	OK	LPV200	0	1	0	1	0	1
GMJ	GROVE MUNI	OK	LPV	0	1	0	1	0	1
GOK	GUTHRIE-EDMOND RGNL	OK	LPV	0	1	0	1	0	1
GUY	GUYMON MUNI	OK	LPV	0	1	0	1	0	1
DUC	HALLIBURTON FIELD	OK	LPV	0	1	0	1	0	1
HBR	HOBART MUNI	OK	LPV	0	1	0	1	0	1
MLC	MC ALESTER REGIONAL	OK	LPV	0	1	0	1	0	1
OKM	OKMULGEE REGIONAL	OK	LPV	0	1	0	1	0	1
PVJ	PAULS VALLEY MUNI	OK	LPV200	0	1	0	1	0	1
F22	PERRY MUNI	OK	LPV	0	1	0	1	0	1
PNC	PONCA CITY REGIONAL	OK	LPV	0	1	0	1	0	1
RVS	RICHARD LLOYD JONES JR	OK	LPV	0	1	0	1	0	1
SNL	SHAWNEE REGIONAL	OK	LPV200	0	1	0	1	0	1
GZL	STIGLER REGIONAL	OK	LPV	0	1	0	1	0	1
SWO	STILLWATER REGIONAL	OK	LPV	0	1	0	1	0	1
HSD	SUNDANCE AIRPARK	OK	LPV	0	1	0	1	0	1
TQH	TAHLEQUAH MUNI	OK	LPV	0	1	0	1	0	1
TUL	TULSA INTL	OK	LPV200	0	1	0	1	0	1
OUN	UNIVERSITY OF OKLAHOMA WESTHEIMER	OK	LPV200	0	1	0	1	0	1
WWR	WEST WOODWARD	OK	LPV	0	1	0	1	0	1
PWA	WILEY POST	OK	LPV200	0	1	0	1	0	1
OKC	WILL ROGERS WORLD	OK	LPV200	0	1	0	1	0	1
OWP	WILLIAM R. POGUE MUNI	OK	LPV	0	1	0	1	0	1
AST	ASTORIA REGIONAL	OR	LPV	0	1	0	1	30	0.9989
UAO	AURORA STATE	OR	LPV	0	1	0	1	28	0.9992
BDN	BEND MUNI	OR	LPV	0	1	0	1	15	0.9996
CVO	CORVALLIS MUNI	OR	LPV200	0	1	0	1	39	0.9985
PDT	EASTERN OREGON RGNL AT PENDLETON	OR	LPV200	0	1	0	1	2	1.0000
GCD	GRANT CO RGNL/OGILVIE FIELD	OR	LPV	0	1	0	1	1	0.9999
LMT	KLAMATH FALLS	OR	LPV	0	1	0	1	77	0.9980
LGD	LA GRANDE/UNION COUNTY	OR	LPV	0	1	0	1	1	1.0000
S33	MADRAS MUNICIPAL	OR	LPV	0	1	0	1	12	0.9996
EUG	MAHLON SWEET FIELD	OR	LPV200	0	1	0	1	41	0.9983
MMV	MCMINNVILLE MUNI	OR	LPV	0	1	0	1	30	0.9990
SLE	MCNARY FLD	OR	LPV200	0	1	0	1	33	0.9989
ONO	ONTARIO MUNI	OR	LPV	0	1	0	1	1	1.0000
PDX	PORTLAND INTL	OR	LPV200	0	1	0	1	24	0.9993
HIO	PORTLAND-HILLSBORO	OR	LPV200	0	1	0	1	26	0.9992
RDM	ROBERTS FIELD	OR	LPV200	0	1	0	1	14	0.9996
SPB	SCAPPOOSE INDUSTRIAL AIRPARK	OR	LPV	0	1	0	1	24	0.9993
AGC	ALLEGHENY COUNTY	PA	LPV	0	1	0	1	0	1

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
XLL	ALLENTOWN-QUEEN CITY MUNI	PA	LP	0	1	0	1	0	1
AOO	ALTOONA-BLAIR COUNTY	PA	LPV	0	1	0	1	0	1
LBE	ARNOLD PALMER RGNL	PA	LPV	0	1	0	1	0	1
BVI	BEAVER FALLS MUNI	PA	LPV	0	1	0	1	0	1
HMZ	BEDFORD COUNTY	PA	LPV	0	1	0	1	0	1
BFD	BRADFORD REGIONAL	PA	LPV200	0	1	0	1	1	0.9999
BTP	BUTLER COUNTY/K W SCHOLTER FLD	PA	LPV	0	1	0	1	0	1
MQS	CHESTER COUNTY G O CARLSON	PA	LPV	0	1	0	1	0	1
AXQ	CLARION COUNTY	PA	LPV	0	1	0	1	1	0.9999
8G2	CORRY-LAWRENCE	PA	LPV	0	1	0	1	1	0.9999
9D4	DECK	PA	LPV	0	1	0	1	0	1
DUJ	DUBOIS RGNL	PA	LPV200	0	1	0	1	1	1.0000
ERI	ERIE INTL/TOM RIDGE FLD	PA	LPV	0	1	0	1	1	0.9998
WAY	GREENE COUNTY	PA	LPV	0	1	0	1	0	1
MDT	HARRISBURG INTL	PA	LPV	0	1	0	1	0	1
HZL	HAZLETON MUNI	PA	LPV	0	1	0	1	0	1
22N	JAKE ARNER MEMORIAL	PA	LP	0	1	0	1	0	1
JST	JOHN MURTHA JOHNSTOWN-CAMBRIA COUNTY	PA	LPV200	0	1	0	1	0	1
LNS	LANCASTER	PA	LPV	0	1	0	1	0	1
ABE	LEHIGH VALLEY INTL	PA	LPV	0	1	0	1	0	1
PSB	MID STATE	PA	LPV	0	1	0	1	0	1
RVL	MIFFLIN COUNTY	PA	LPV	0	1	0	1	0	1
UCP	NEW CASTLE MUNI	PA	LPV	0	1	0	1	1	1.0000
PNE	NORTHEAST PHILADELPHIA	PA	LPV	0	1	0	1	0	1
N79	NORTHUMBERLAND COUNTY	PA	LPV	0	1	0	1	0	1
PHL	PHILADELPHIA INTL	PA	LPV	0	1	0	1	0	1
PIT	PITTSBURGH INTERNATIONAL	PA	LPV200	0	1	0	1	0	1
MPO	POCONO MOUNTAINS MUNI	PA	LPV	0	1	0	1	0	1
GKJ	PORT MEADVILLE	PA	LP	0	1	0	1	1	0.9999
RDG	READING RGNL/CARL A SPAATZ FLD	PA	LPV	0	1	0	1	0	1
FWQ	ROSTRAVER	PA	LPV	0	1	0	1	0	1
ZER	SCHUYLKILL COUNTY/JOE ZERBEY	PA	LPV200	0	1	0	1	0	1
2G9	SOMERSET COUNTY	PA	LPV	0	1	0	1	0	1
OYM	ST MARYS MUNI	PA	LPV	0	1	0	1	1	0.9999
UNV	UNIVERSITY PARK	PA	LPV200	0	1	0	1	0	1
FKL	VENANGO REGIONAL	PA	LPV	0	1	0	1	1	0.9999
AFJ	WASHINGTON COUNTY	PA	LPV	0	1	0	1	0	1
AVP	WILKES-BARRE/SCRANTON INTL	PA	LPV	0	1	0	1	0	1
IPT	WILLIAMSPORT RGNL	PA	LPV	0	1	0	1	0	1
LOM	WINGS FIELD	PA	LPV	0	1	0	1	0	1
THV	YORK	PA	LP	0	1	0	1	0	1
BID	BLOCK ISLAND STATE	RI	LPV	0	1	0	1	0	1
OQU	QUONSET STATE	RI	LPV	0	1	0	1	0	1

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
PVD	THEODORE FRANCIS GREEN STATE	RI	LPV200	0	1	0	1	0	1
AIK	AIKEN MUNI	SC	LPV	0	1	0	1	1	0.9999
AND	ANDERSON RGNL	SC	LPV200	0	1	0	1	1	1.0000
BNL	BARNWELL RGNL	SC	LPV	0	1	0	1	1	0.9999
ARW	BEAUFORT CO	SC	LPV200	0	1	0	1	1	0.9999
MKS	BERKELEY COUNTY	SC	LPV	0	1	0	1	1	0.9999
CHS	CHARLESTON AFB/INTL	SC	LPV200	0	1	0	1	1	0.9999
JZI	CHARLESTON EXECUTIVE	SC	LPV200	0	1	0	1	1	0.9999
DCM	CHESTER CATAWBA REGIONAL	SC	LPV	0	1	0	1	1	0.9999
CAE	COLUMBIA METROPOLITAN	SC	LPV200	0	1	0	1	1	0.9999
HYW	CONWAY-HORRY COUNTY	SC	LPV	0	1	0	1	1	0.9999
UDG	DARLINGTON COUNTY JETPORT	SC	LPV	0	1	0	1	1	0.9999
GYH	DONALDSON CENTER	SC	LPV	0	1	0	1	1	1.0000
FLO	FLORENCE REGIONAL	SC	LPV	0	1	0	1	1	0.9999
GGE	GEORGETOWN COUNTY	SC	LPV200	0	1	0	1	1	0.9999
CRE	GRAND STRAND	SC	LPV200	0	1	0	1	1	0.9999
GMU	GREENVILLE DOWNTOWN	SC	LPV200	0	1	0	1	1	1.0000
GSP	GREENVILLE-SPARTANBURG INTL - ROGER MILLIKEN	SC	LPV200	0	1	0	1	1	1.0000
LKR	LANCASTER COUNTY-MC WHIRTER FIELD	SC	LPV200	0	1	0	1	1	0.9999
6J0	LEXINGTON COUNTY AT PELION	SC	LPV	0	1	0	1	1	0.9999
RBW	LOWCOUNTRY REGIONAL	SC	LPV200	0	1	0	1	1	0.9999
BBP	MARLBORO COUNTY JETPORT-H E AVENT FIELD	SC	LPV	0	1	0	1	1	0.9999
LRO	MT PLEASANT RGNL-FAISON FIELD	SC	LPV	0	1	0	1	1	0.9999
MYR	MYRTLE BEACH INTL	SC	LPV200	0	1	0	1	1	0.9999
CEU	OCONEE COUNTY RGNL	SC	LPV	0	1	0	1	1	1.0000
OGB	ORANGEBURG MUNI	SC	LPV200	0	1	0	1	1	0.9999
LQK	PICKENS COUNTY	SC	LPV	0	1	0	1	1	1.0000
UZA	ROCK HILL/YORK CO/BRYANT FIELD	SC	LPV200	0	1	0	1	1	0.9999
SPA	SPARTANBURG DOWNTOWN MEMORIAL	SC	LPV200	0	1	0	1	1	1.0000
DYB	SUMMERVILLE	SC	LPV200	0	1	0	1	1	0.9999
SMS	SUMTER	SC	LPV200	0	1	0	1	1	0.9999
CDN	WOODWARD FIELD	SC	LPV	0	1	0	1	1	0.9999
ABR	ABERDEEN REGIONAL	SD	LPV200	0	1	0	1	0	1
SPF	BLACK HILLS-CLYDE ICE FIELD	SD	LPV	0	1	0	1	0	1
BKX	BROOKINGS REGIONAL	SD	LPV	0	1	0	1	0	1
YKN	CHAN GURNEY MUNI	SD	LPV200	0	1	0	1	0	1
0D8	GETTYSBURG MUNI	SD	LPV200	0	1	0	1	0	1
VMR	HAROLD DAVIDSON FLD	SD	LPV	0	1	0	1	0	1
HON	HURON REGIONAL	SD	LPV200	0	1	0	1	0	1
FSD	JOE FOSS FIELD	SD	LPV200	0	1	0	1	0	1
MDS	MADISON MUNI	SD	LPV	0	1	0	1	0	1

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
MKA	MILLER MUNI	SD	LPV200	0	1	0	1	0	1
MHE	MITCHELL MUNI	SD	LPV	0	1	0	1	0	1
MBG	MOBRIDGE MUNI	SD	LPV	0	1	0	1	0	1
PIR	PIERRE REGIONAL	SD	LPV	0	1	0	1	0	1
RAP	RAPID CITY REGIONAL	SD	LPV200	0	1	0	1	0	1
49B	STURGIS MUNI	SD	LPV	0	1	0	1	0	1
ATY	WATERTOWN REGIONAL	SD	LPV200	0	1	0	1	0	1
ICR	WINNER RGNL	SD	LPV	0	1	0	1	0	1
GZS	ABERNATHY FIELD	TN	LPV	0	1	0	1	0	1
PVE	BEECH RIVER REGIONAL	TN	LPV	0	1	0	1	0	1
0M4	BENTON COUNTY	TN	LPV	0	1	0	1	0	1
SYI	BOMAR FIELD-SHELBYVILLE MUNI	TN	LPV	0	1	0	1	0	1
HZD	CARROLL COUNTY	TN	LPV	0	1	0	1	0	1
2M8	CHARLES W. BAKER	TN	LPV	0	1	0	1	0	1
CSV	CROSSVILLE MEMORIAL-WHITSON FIELD	TN	LPV200	0	1	0	1	0	1
DYR	DYERSBURG REGIONAL	TN	LPV	0	1	0	1	0	1
LUG	ELLINGTON	TN	LPV	0	1	0	1	0	1
UCY	EVERETT-STEWART	TN	LP	0	1	0	1	0	1
FYE	FAYETTE CO	TN	LPV	0	1	0	1	0	1
FYM	FAYETTEVILLE MUNI	TN	LPV	0	1	0	1	0	1
GKT	GATLINBURG-PIGEON FORGE	TN	LPV	0	1	0	1	0	1
M01	GENERAL DEWITT SPAIN	TN	LPV	0	1	0	1	0	1
PHT	HENRY COUNTY	TN	LPV200	0	1	0	1	0	1
0M5	HUMPHREYS COUNTY	TN	LP	0	1	0	1	0	1
DKX	KNOXVILLE DOWNTOWN ISLAND	TN	LPV	0	1	0	1	0	1
3M7	LAFAYETTE MUNI	TN	LPV	0	1	0	1	0	1
M54	LEBANON MUNI	TN	LPV	0	1	0	1	0	1
CHA	LOVELL FIELD	TN	LPV200	0	1	0	1	0	1
2A0	MARK ANTON	TN	LPV	0	1	0	1	0	1
1A3	MARTIN CAMPBELL FIELD	TN	LP	0	1	0	1	0	1
MRC	MAURY COUNTY	TN	LPV	0	1	0	1	0	1
MKL	MC KELLAR-SIPES REGIONAL	TN	LPV200	0	1	0	1	0	1
TYS	MCGHEE-TYSON	TN	LPV	0	1	0	1	0	1
MMI	MCMINN COUNTY	TN	LPV	0	1	0	1	0	1
MEM	MEMPHIS INTL	TN	LPV200	0	1	0	1	0	1
NQA	MILLINGTON REGIONAL JETPORT	TN	LPV	0	1	0	1	0	1
MOR	MOORE-MURRELL	TN	LPV	0	1	0	1	0	1
MBT	MURFREESBORO MUNI	TN	LPV	0	1	0	1	0	1
BNA	NASHVILLE INTL	TN	LPV200	0	1	0	1	0	1
CKV	OUTLAW FIELD	TN	LPV	0	1	0	1	0	1
1M5	PORTLAND MUNI	TN	LPV	0	1	0	1	0	1
SZY	ROBERT SIBLEY	TN	LPV	0	1	0	1	0	1
RKW	ROCKWOOD MUNI	TN	LPV	0	1	0	1	0	1
SNH	SAVANNAH-HARDIN COUNTY	TN	LPV	0	1	0	1	0	1
MQY	SMYRNA	TN	LPV	0	1	0	1	0	1
M33	SUMNER COUNTY REGIONAL	TN	LP	0	1	0	1	0	1

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
THA	TULLAHOMA REGIONAL/WM NORTHERN FLD	TN	LPV	0	1	0	1	0	1
SRB	UPPER CUMBERLAND REGIONAL	TN	LPV200	0	1	0	1	0	1
BGF	WINCHESTER MUNI	TN	LPV	0	1	0	1	0	1
ABI	ABILENE REGIONAL	TX	LPV200	0	1	0	1	0	1
ADS	ADDISON	TX	LPV	0	1	0	1	0	1
ALI	ALICE INTERNATIONAL	TX	LPV	0	1	0	1	0	1
E38	ALPINE-CASPARIS MUNICIPAL	TX	LP	0	1	0	1	0	1
E11	ANDREWS COUNTY	TX	LPV	0	1	0	1	0	1
LFK	ANGELINA COUNTY	TX	LPV	0	1	0	1	0	1
RKP	ARANSAS COUNTY	TX	LPV	0	1	0	1	0	1
GKY	ARLINGTON MUNI	TX	LPV200	0	1	0	1	0	1
EDC	AUSTIN EXECUTIVE	TX	LPV200	0	1	0	1	0	1
SWW	AVENGER FIELD	TX	LPV	0	1	0	1	0	1
BPG	BIG SPRING MC MAHON-WRINKLE	TX	LPV	0	1	0	1	0	1
LBX	BRAZORIA COUNTY	TX	LPV	0	1	0	1	0	1
11R	BRENHAM MUNI	TX	LPV	0	1	0	1	0	1
XBP	BRIDGEPORT MUNI	TX	LPV	0	1	0	1	0	1
BRO	BROWNSVILLE/SOUTH PADRE ISLAND INTL	TX	LP	0	1	0	1	0	1
BWD	BROWNWOOD RGNL	TX	LPV	0	1	0	1	0	1
E30	BRUCE FIELD	TX	LPV	0	1	0	1	0	1
6R3	CLEVELAND MUNI	TX	LPV	0	1	0	1	0	1
TKI	COLLIN COUNTY REGIONAL AT MC KINNEY	TX	LPV200	0	1	0	1	0	1
CRP	CORPUS CHRISTI INTL	TX	LPV200	0	1	0	1	0	1
CFD	COULTER FIELD	TX	LPV	0	1	0	1	0	1
PRX	COX FIELD	TX	LPV	0	1	0	1	0	1
8F3	CROSBYTON MUNICIPAL	TX	LP	0	1	0	1	0	1
BBD	CURTIS FIELD	TX	LPV	0	1	0	1	0	1
RBD	DALLAS EXECUTIVE	TX	LPV	0	1	0	1	0	1
DAL	DALLAS LOVE FIELD	TX	LPV200	0	1	0	1	0	1
DFW	DALLAS-FT WORTH INTL	TX	LPV200	0	1	0	1	0	1
DWH	DAVID WAYNE HOOKS MEMORIAL	TX	LPV	0	1	0	1	0	1
LUD	DECATUR MUNI	TX	LPV	0	1	0	1	0	1
DRT	DEL RIO INTL	TX	LPV	0	1	0	1	0	1
DTO	DENTON MUNI	TX	LPV	0	1	0	1	0	1
TPL	DRAUGHON-MILLER CENTRAL TEXAS REGIONAL	TX	LPV200	0	1	0	1	0	1
GGG	EAST TEXAS REGIONAL	TX	LPV	0	1	0	1	0	1
CLL	EASTERWOOD FIELD	TX	LPV200	0	1	0	1	0	1
ETN	EASTLAND MUNI	TX	LP	0	1	0	1	0	1
EBG	EDINBURG INTL	TX	LPV	0	1	0	1	0	1
EFD	ELLINGTON FIELD	TX	LPV	0	1	0	1	0	1
AFW	FORT WORTH ALLIANCE	TX	LPV200	0	1	0	1	0	1
FWS	FORT WORTH SPINKS	TX	LPV	0	1	0	1	0	1
FTW	FORT WORTH/MEACHAM	TX	LPV200	0	1	0	1	0	1

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
FST	FT. STOCKTON-PECOS COUNTY	TX	LPV	0	1	0	1	0	1
GNC	GAINES COUNTY	TX	LPV	0	1	0	1	0	1
GLE	GAINESVILLE MUNI	TX	LPV	0	1	0	1	0	1
IAH	GEORGE BUSH INTERCONTINENTAL/HOUSTON	TX	LPV	0	1	0	1	0	1
GDJ	GRANBURY RGNL	TX	LPV	0	1	0	1	0	1
E19	GRUVER MUNI	TX	LP	0	1	0	1	0	1
PVW	HALE COUNTY	TX	LPV	0	1	0	1	0	1
LHB	HEARNE MUNI	TX	LPV200	0	1	0	1	0	1
HRX	HEREFORD MUNI	TX	LPV200	0	1	0	1	0	1
INJ	HILLSBORO MUNI	TX	LPV	0	1	0	1	0	1
HDO	HONDO MUNI	TX	LPV	0	1	0	1	0	1
DKR	HOUSTON COUNTY	TX	LP	0	1	0	1	0	1
TME	HOUSTON EXECUTIVE	TX	LPV	0	1	0	1	0	1
AXH	HOUSTON-SOUTHWEST	TX	LPV	0	1	0	1	0	1
UTS	HUNTSVILLE MUNI	TX	LPV	0	1	0	1	0	1
JAS	JASPER COUNTY-BELL FIELD	TX	LPV	0	1	0	1	0	1
HBV	JIM HOGG COUNTY	TX	LPV	0	1	0	1	0	1
F00	JONES FIELD	TX	LPV	0	1	0	1	0	1
2R9	KARNES COUNTY	TX	LP	0	1	0	1	0	1
ERV	KERRVILLE MUNI/LOUIS SCHREINER FLD	TX	LPV	0	1	0	1	0	1
IKG	KLEBERG COUNTY	TX	LPV	0	1	0	1	0	1
2F5	LAMESA MUNI	TX	LP	0	1	0	1	0	1
LNC	LANCASTER	TX	LPV200	0	1	0	1	0	1
LRD	LAREDO INTL	TX	LPV200	0	1	0	1	0	1
LLN	LEVELLAND MUNI	TX	LPV	0	1	0	1	0	1
50R	LOCKHART MUNI	TX	LPV	0	1	0	1	0	1
CXO	LONE STAR EXECUTIVE	TX	LPV200	0	1	0	1	0	1
LBB	LUBBOCK PRESTON SMITH INTL	TX	LPV200	0	1	0	1	0	1
GVT	MAJORS	TX	LPV	0	1	0	1	0	1
5T9	MAVERICK COUNTY MEMORIAL INTL	TX	LPV	0	1	0	1	0	1
MFE	MC ALLEN MILLER INTL	TX	LPV	0	1	0	1	0	1
HQZ	MESQUITE METRO	TX	LPV	0	1	0	1	0	1
MDD	MIDLAND AIRPARK	TX	LPV	0	1	0	1	0	1
MAF	MIDLAND INTERNATIONAL	TX	LPV	0	1	0	1	0	1
JWY	MID-WAY RGNL	TX	LPV200	0	1	0	1	0	1
DUX	MOORE COUNTY	TX	LPV200	0	1	0	1	0	1
RAS	MUSTANG BEACH	TX	LPV	0	1	0	1	0	1
BAZ	NEW BRAUNFELS MUNI	TX	LPV	0	1	0	1	0	1
ODO	ODESSA-SCHLEMEYER FIELD	TX	LPV200	0	1	0	1	0	1
ORG	ORANGE COUNTY	TX	LPV	0	1	0	1	0	1
LVJ	PEARLAND RGNL	TX	LPV	0	1	0	1	0	1
PIL	PORT ISABEL-CAMERON COUNTY	TX	LPV	0	1	0	1	0	1
AMA	RICK HUSBAND AMARILLO INTL	TX	LPV200	0	1	0	1	0	1
GRK	ROBERT GRAY AAF	TX	LPV200	0	1	0	1	0	1

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
SJT	SAN ANGELO REGIONAL/MATHIS FLD	TX	LPV	0	1	0	1	0	1
SAT	SAN ANTONIO INTL	TX	LPV200	0	1	0	1	0	1
GLS	SCHOLES INTL AT GALVESTON	TX	LPV	0	1	0	1	0	1
BPT	SOUTHEAST TEXAS REGIONAL	TX	LPV200	0	1	0	1	0	1
SGR	SUGAR LAND RGNL	TX	LPV	0	1	0	1	0	1
SLR	SULPHUR SPRINGS MUNI	TX	LPV200	0	1	0	1	0	1
TFP	T P MC CAMPBELL	TX	LPV	0	1	0	1	0	1
TRL	TERRELL MUNI	TX	LPV	0	1	0	1	0	1
CNW	TSTC WACO	TX	LPV200	0	1	0	1	0	1
TYR	TYLER POUNDS RGNL	TX	LPV	0	1	0	1	0	1
VCT	VICTORIA	TX	LPV	0	1	0	1	0	1
ACT	WACO RGNL	TX	LPV200	0	1	0	1	0	1
ARM	WHARTON RGNL	TX	LPV	0	1	0	1	0	1
T59	WHEELER MUNI	TX	LP	0	1	0	1	0	1
F05	WILBARGER COUNTY	TX	LPV	0	1	0	1	0	1
HOU	WILLIAM P HOBBY	TX	LPV200	0	1	0	1	0	1
77F	WINTERS MUNI	TX	LP	0	1	0	1	0	1
BDG	BLANDING MUNI	UT	LPV	0	1	0	1	0	1
BMC	BRIGHAM CITY	UT	LP	0	1	0	1	0	1
BCE	BRYCE CANYON	UT	LPV	0	1	0	1	0	1
PUC	CARBON COUNTY REGIONAL/BUCK DAVIS FIELD	UT	LP	0	1	0	1	0	1
DTA	DELTA MUNI	UT	LP	0	1	0	1	0	1
FOM	FILLMORE MUNI	UT	LPV	0	1	0	1	0	1
LGU	LOGAN-CACHE	UT	LPV	0	1	0	1	0	1
U14	NEPHI MUNI	UT	LPV	0	1	0	1	0	1
OGD	OGDEN-HINCKLEY	UT	LPV	0	1	0	1	0	1
U55	PANGUITCH MUNI	UT	LPV200	0	1	0	1	0	1
PVU	PROVO MUNI	UT	LPV200	0	1	0	1	0	1
SLC	SALT LAKE CITY INTL	UT	LP	0	1	0	1	0	1
ENV	WENDOVER	UT	LPV	0	1	0	1	0	1
MFV	ACCOMACK COUNTY	VA	LPV	0	1	0	1	0	1
MTV	BLUE RIDGE	VA	LPV	0	1	0	1	0	1
CHO	CHARLOTTESVILLE-ALBEMARLE	VA	LPV	0	1	0	1	0	1
CPK	CHESAPEAKE REGIONAL	VA	LPV200	0	1	0	1	0	1
FCI	CHESTERFIELD COUNTY	VA	LPV	0	1	0	1	0	1
CJR	CULPEPER RGNL	VA	LPV	0	1	0	1	0	1
DAN	DANVILLE REGIONAL	VA	LPV200	0	1	0	1	0	1
PTB	DINWIDDIE COUNTY	VA	LPV	0	1	0	1	0	1
FVX	FARMVILLE REGIONAL	VA	LPV	0	1	0	1	0	1
OFP	HANOVER COUNTY MUNI	VA	LPV	0	1	0	1	0	1
HSP	INGALLS FIELD	VA	LPV	0	1	0	1	0	1
0VG	LEE COUNTY	VA	LPV	0	1	0	1	0	1
JYO	LEESBURG EXECUTIVE	VA	LPV	0	1	0	1	0	1
LNP	LONESOME PINE	VA	LPV	0	1	0	1	0	1
LKU	LOUISA COUNTY/FREEMAN FIELD	VA	LPV	0	1	0	1	0	1
LYH	LYNCHBURG RGNL/PRESTON GLENN FLD	VA	LPV	0	1	0	1	0	1

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
HEF	MANASSAS RGNL/HARRY P DAVIS FL	VA	LPV	0	1	0	1	0	1
AVC	MECKLENBURG-BRUNSWICK REGIONAL	VA	LPV	0	1	0	1	0	1
FYJ	MIDDLE PENINSULA RGNL	VA	LPV	0	1	0	1	0	1
MKJ	MOUNTAIN EMPIRE	VA	LPV	0	1	0	1	0	1
PSK	NEW RIVER VALLEY	VA	LPV200	0	1	0	1	0	1
PHF	NEWPORT NEWS/WILLIAMSBURG INTL	VA	LPV200	0	1	0	1	0	1
ORF	NORFOLK INTL	VA	LPV200	0	1	0	1	0	1
RIC	RICHMOND INTL	VA	LPV200	0	1	0	1	0	1
ROA	ROANOKE REGIONAL/WOODRUM FIELD	VA	LPV	0	1	0	1	0	1
SHD	SHENANDOAH VALLEY REGIONAL	VA	LPV200	0	1	0	1	0	1
RMN	STAFFORD REGIONAL	VA	LPV	0	1	0	1	0	1
SFQ	SUFFOLK EXECUTIVE	VA	LP	0	1	0	1	0	1
XSA	TAPPAHANNOCK-ESSEX COUNTY	VA	LPV	0	1	0	1	0	1
JFZ	TAZEWELL COUNTY	VA	LPV	0	1	0	1	0	1
VJI	VIRGINIA HIGHLANDS	VA	LPV	0	1	0	1	0	1
BCB	VIRGINIA TECH/MONTGOMERY EXECUTIVE	VA	LPV	0	1	0	1	0	1
W78	WILLIAM M TUCK	VA	LPV	0	1	0	1	0	1
OKV	WINCHESTER REGIONAL	VA	LPV200	0	1	0	1	0	1
BTV	BURLINGTON INTL	VT	LPV200	0	1	0	1	1	0.9999
MPV	EDWARD F KNAPP STATE	VT	LPV	0	1	0	1	1	1.0000
FSO	FRANKLIN COUNTY STATE	VT	LPV	0	1	0	1	1	0.9999
AWO	ARLINGTON MUNI	WA	LPV200	0	1	0	1	3	0.9999
BLI	BELLINGHAM INTL	WA	LPV	0	1	0	1	5	0.9999
HQM	BOWERMAN	WA	LPV200	0	1	0	1	34	0.9990
PWT	BREMERTON NATIONAL	WA	LPV	0	1	0	1	15	0.9997
DEW	DEER PARK	WA	LPV	0	1	0	1	1	1.0000
TDO	ED CARLSON MEMORIAL - SOUTH LEWIS CO	WA	LPV	0	1	0	1	21	0.9994
EPH	EPHRATA MUNI	WA	LPV	0	1	0	1	1	1.0000
FHR	FRIDAY HARBOR	WA	LPV	0	1	0	1	4	0.9999
MWH	GRANT COUNTY INTL	WA	LPV200	0	1	0	1	2	1.0000
OLM	OLYMPIA RGNL	WA	LPV	0	1	0	1	19	0.9995
PUW	PULLMAN/MOSCOW REGIONAL	WA	LPV	0	1	0	1	1	1.0000
RNT	RENTON MUNI	WA	LPV	0	1	0	1	11	0.9998
RLD	RICHLAND	WA	LPV	0	1	0	1	1	1.0000
SEA	SEATTLE-TACOMA INTL	WA	LPV200	0	1	0	1	11	0.9998
BVS	SKAGIT REGIONAL	WA	LPV	0	1	0	1	4	0.9999
PAE	SNOHOMISH COUNTY (PAINE FLD)	WA	LPV	0	1	0	1	6	0.9999
OTH	SOUTHWEST OREGON RGNL	WA	LPV	0	1	0	1	78	0.9940
GEG	SPOKANE INTL	WA	LPV200	0	1	0	1	1	1.0000
TIW	TACOMA NARROWS	WA	LPV	0	1	0	1	15	0.9996
PSC	TRI-CITIES	WA	LPV200	0	1	0	1	1	1.0000
ALW	WALLA WALLA REGIONAL	WA	LPV	0	1	0	1	1	1.0000

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
CLM	WILLIAM R FAIRCHILD INTL	WA	LPV	0	1	0	1	10	0.9998
YKM	YAKIMA AIR TERMINAL/MCALLISTER FIELD	WA	LPV200	0	1	0	1	0	1
GRB	AUSTIN STRAUBEL INTL	WI	LPV200	0	1	1	0.9998	2	0.9996
DLL	BARABOO WISCONSIN DELLS	WI	LPV	0	1	1	0.9999	2	0.9996
OVS	BOSCOBEL	WI	LPV	0	1	0	1	2	0.9996
CWA	CENTRAL WISCONSIN	WI	LPV200	0	1	1	0.9998	2	0.9996
EAU	CHIPPEWA VALLEY REGIONAL	WI	LPV200	1	0.9999	1	0.9998	2	0.9996
CLI	CLINTONVILLE MUNI	WI	LPV	0	1	1	0.9998	2	0.9996
MSN	DANE COUNTY REGIONAL-TRUAX FIELD	WI	LPV200	0	1	0	1	2	0.9996
UNU	DODGE COUNTY	WI	LPV	0	1	0	1	2	0.9997
SUE	DOOR COUNTY CHERRYLAND	WI	LPV	0	1	1	0.9999	2	0.9996
EGV	EAGLE RIVER UNION	WI	LPV	1	0.9999	1	0.9997	4	0.9996
57C	EAST TROY MUNI	WI	LPV	0	1	0	1	2	0.9997
FLD	FOND DU LAC COUNTY	WI	LPV	0	1	1	0.9999	2	0.9997
MKE	GENERAL MITCHELL INTERNATIONAL	WI	LPV200	0	1	0	1	2	0.9998
HXF	HARTFORD MUNI	WI	LPV	0	1	0	1	2	0.9997
ASX	JOHN F. KENNEDY MEMORIAL	WI	LPV	1	0.9998	1	0.9997	5	0.9995
RAC	JOHN H. BATTEN	WI	LPV	0	1	0	1	2	0.9998
ENW	KENOSHA RGNL	WI	LPV200	0	1	0	1	2	0.9998
LSE	LA CROSSE MUNI	WI	LPV	0	1	1	0.9999	2	0.9996
ARV	LAKELAND/NOBLE F. LEE MEMORIAL FIELD	WI	LPV	1	0.9999	1	0.9998	4	0.9996
MWC	LAWRENCE J TIMMERMAN	WI	LPV	0	1	0	1	2	0.9997
MTW	MANITOWOC COUNTY	WI	LPV200	0	1	1	0.9999	2	0.9996
MFI	MARSHFIELD MUNI	WI	LPV	0	1	1	0.9998	2	0.9996
LUM	MENOMONIE MUNICIPAL-SCORE FIELD	WI	LPV	1	1.0000	1	0.9998	2	0.9996
RRL	MERRILL MUNI	WI	LPV	1	0.9999	1	0.9998	2	0.9996
C29	MIDDLETON MUNI-MOREY FIELD	WI	LPV	0	1	0	1	2	0.9996
8D1	NEW HOLSTEIN MUNI	WI	LPV	0	1	1	0.9999	2	0.9996
RNH	NEW RICHMOND REGIONAL	WI	LPV	1	1.0000	1	0.9999	2	0.9996
ATW	OUTAGAMIE COUNTY REGIONAL	WI	LPV200	0	1	1	0.9998	2	0.9996
PVB	PLATTEVILLE MUNICIPAL	WI	LPV	0	1	0	1	2	0.9997
PBH	PRICE COUNTY	WI	LPV	1	0.9999	1	0.9998	2	0.9996
RHI	RHINELANDER-ONEIDA COUNTY	WI	LPV200	1	0.9999	1	0.9998	2	0.9996
RPD	RICE LAKE REGIONAL - CARL'S FIELD	WI	LPV	1	1.0000	1	0.9998	2	0.9996
RCX	RUSK COUNTY	WI	LPV	1	0.9999	1	0.9998	2	0.9996
HYR	SAWYER COUNTY	WI	LPV	1	1.0000	1	0.9998	4	0.9996
SBM	SHEBOYGAN COUNTY MEMORIAL	WI	LPV	0	1	1	0.9999	2	0.9996
JVL	SOUTHERN WISCONSIN REGIONAL	WI	LPV200	0	1	0	1	2	0.9997
CMY	SPARTA/FORT MC COY	WI	LPV	0	1	1	0.9999	2	0.9996
STE	STEVENS POINT MUNI	WI	LPV200	0	1	1	0.9998	2	0.9996

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
MDZ	TAYLOR COUNTY	WI	LPV	1	0.9999	1	0.9998	2	0.9996
TKV	TOMAHAWK RGNL	WI	LPV	1	0.9999	1	0.9998	2	0.9996
LNR	TRI-COUNTY REGIONAL	WI	LPV	0	1	0	1	2	0.9996
UES	WAUKESHA COUNTY	WI	LPV200	0	1	0	1	2	0.9997
PCZ	WAUPACA MUNI	WI	LPV	0	1	1	0.9998	2	0.9996
ETB	WEST BEND MUNI	WI	LPV	0	1	0	1	2	0.9997
OSH	WITTMAN RGNL	WI	LPV	0	1	1	0.9998	2	0.9996
MRB	EASTERN WV REGIONAL/SHEPHERD	WV	LPV	0	1	0	1	0	1
LWB	GREENBRIER VALLEY	WV	LPV	0	1	0	1	0	1
I18	JACKSON COUNTY	WV	LPV200	0	1	0	1	0	1
3I2	MASON COUNTY	WV	LPV	0	1	0	1	0	1
BLF	MERCER COUNTY	WV	LPV	0	1	0	1	0	1
PKB	MID-OHIO VALLEY REGIONAL	WV	LPV	0	1	0	1	0	1
MGW	MORGANTOWN MUNI-WLB HART FIELD	WV	LPV200	0	1	0	1	0	1
CKB	NORTH CENTRAL WEST VIRGINIA	WV	LPV200	0	1	0	1	0	1
BKW	RALEIGH COUNTY MEMORIAL	WV	LPV200	0	1	0	1	0	1
SXL	SUMMERSVILLE	WV	LP	0	1	0	1	0	1
HTS	TRI-STATE/MILTON J. FERGUSON	WV	LPV	0	1	0	1	0	1
W22	UPSHUR COUNTY REGIONAL	WV	LPV	0	1	0	1	0	1
HLG	WHEELING OHIO CO	WV	LPV200	0	1	0	1	0	1
CRW	YEAGER	WV	LPV200	0	1	0	1	0	1
CYS	CHEYENNE RGNL/JERRY OLSON FIELD	WY	LPV	0	1	0	1	0	1
DGW	DOUGLAS/CONVERSE COUNTY	WY	LPV200	0	1	0	1	0	1
EVW	EVANSTON-UINTA COUNTY BURNS FIELD	WY	LPV	0	1	0	1	0	1
GCC	GILLETTE-CAMPBELL COUNTY	WY	LPV	0	1	0	1	0	1
JAC	JACKSON HOLE	WY	LPV	0	1	0	1	0	1
LAR	LARAMIE REGIONAL	WY	LPV	0	1	0	1	0	1
ECS	MONDELL FIELD	WY	LPV	0	1	0	1	0	1
CPR	NATRONA COUNTY INTL	WY	LPV	0	1	0	1	0	1
RWL	RAWLINS MUNI/HARVEY FIELD	WY	LPV	0	1	0	1	0	1
RIW	RIVERTON REGIONAL	WY	LPV200	0	1	0	1	0	1
RKS	ROCK SPRINGS-SWEETWATER COUNTY	WY	LPV200	0	1	0	1	0	1
SHR	SHERIDAN COUNTY	WY	LPV	0	1	0	1	0	1
SAA	SHIVELY FIELD	WY	LPV	0	1	0	1	0	1
COD	YELLOWSTONE REGIONAL	WY	LPV	0	1	0	1	0	1
CKB	NORTH CENTRAL WEST VIRGINIA	WV	LPV200	0	1	0	1	0	1
BKW	RALEIGH COUNTY MEMORIAL	WV	LPV200	0	1	0	1	0	1
SXL	SUMMERSVILLE	WV	LP	0	1	0	1	0	1
HTS	TRI-STATE/MILTON J. FERGUSON	WV	LPV	0	1	0	1	0	1
W22	UPSHUR COUNTY REGIONAL	WV	LPV	0	1	0	1	0	1
HLG	WHEELING OHIO CO	WV	LPV200	0	1	0	1	0	1
CRW	YEAGER	WV	LPV200	0	1	0	1	0	1

Airport Id	Airport Name	State	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
CYS	CHEYENNE RGNL/JERRY OLSON FIELD	WY	LPV	0	1	0	1	0	1
DGW	DOUGLAS/CONVERSE COUNTY	WY	LPV200	0	1	0	1	0	1

Figure 8-1 WAAS LP Availability at US Airports with GPS RNAV Instrument Approach Procedures

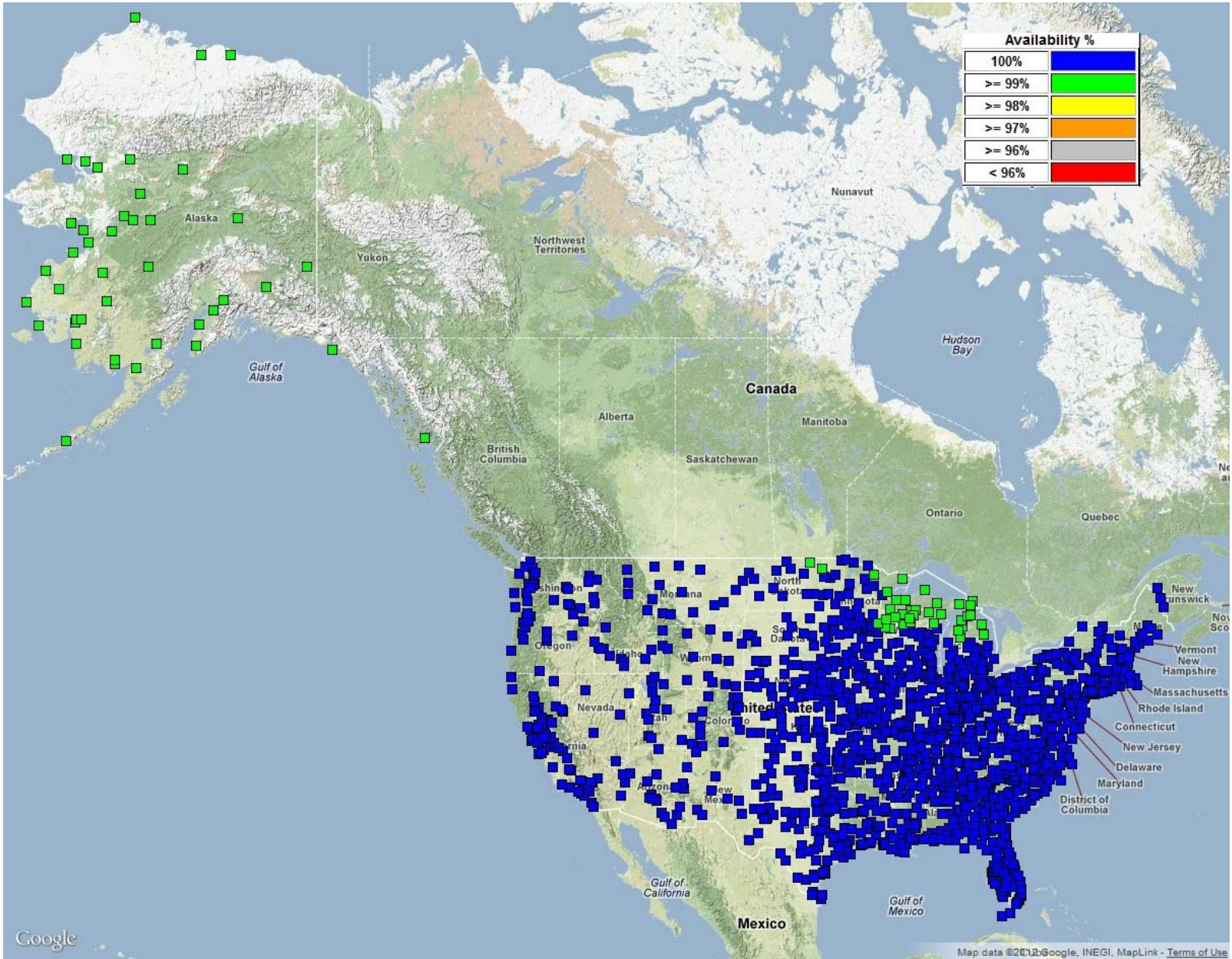


Figure 8-2 WAAS LP Outages at US Airports with GPS RNAV Instrument Approach Procedures

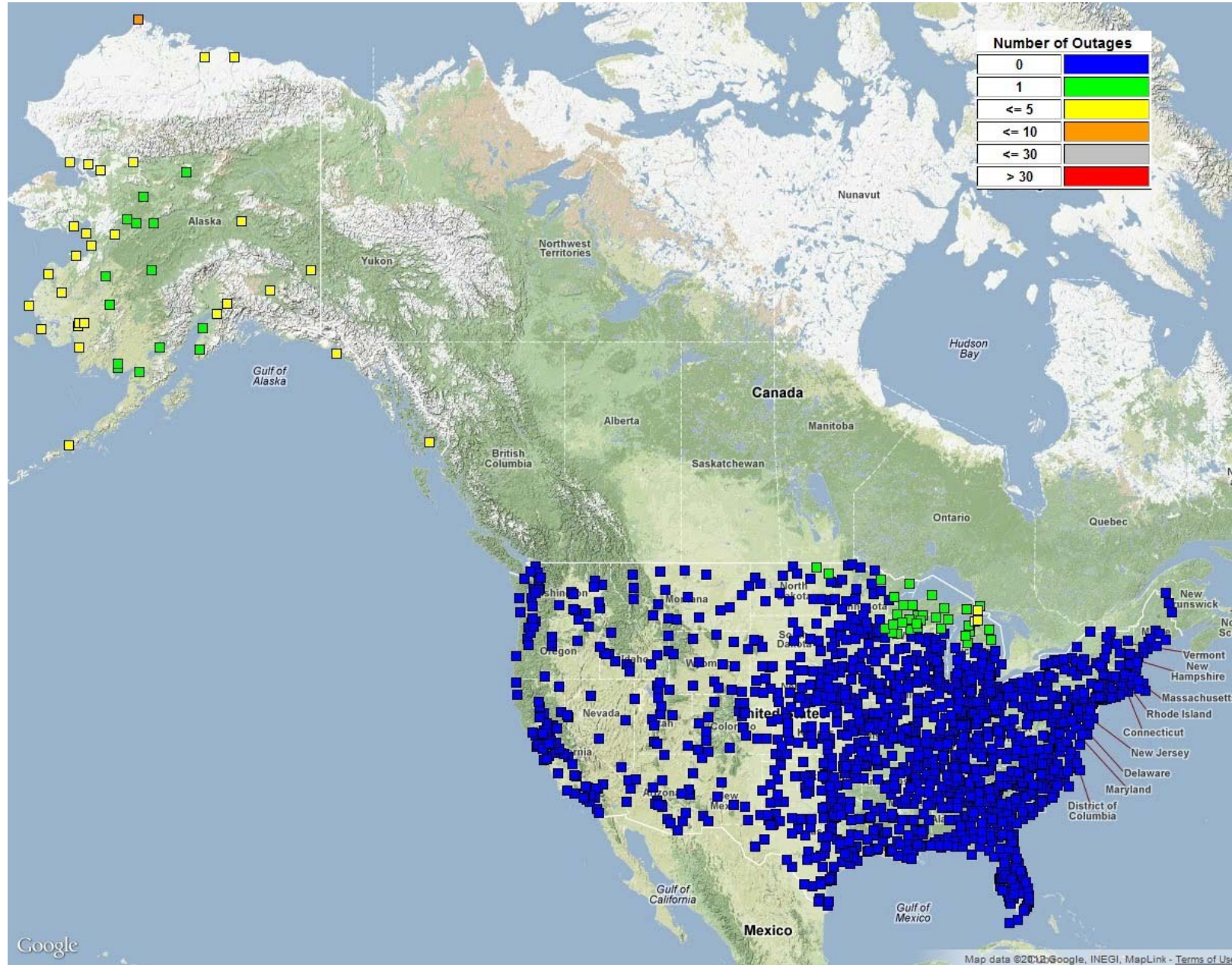


Figure 8-3 WAAS LPV Availability at US Airports with GPS RNAV Instrument Approach Procedures

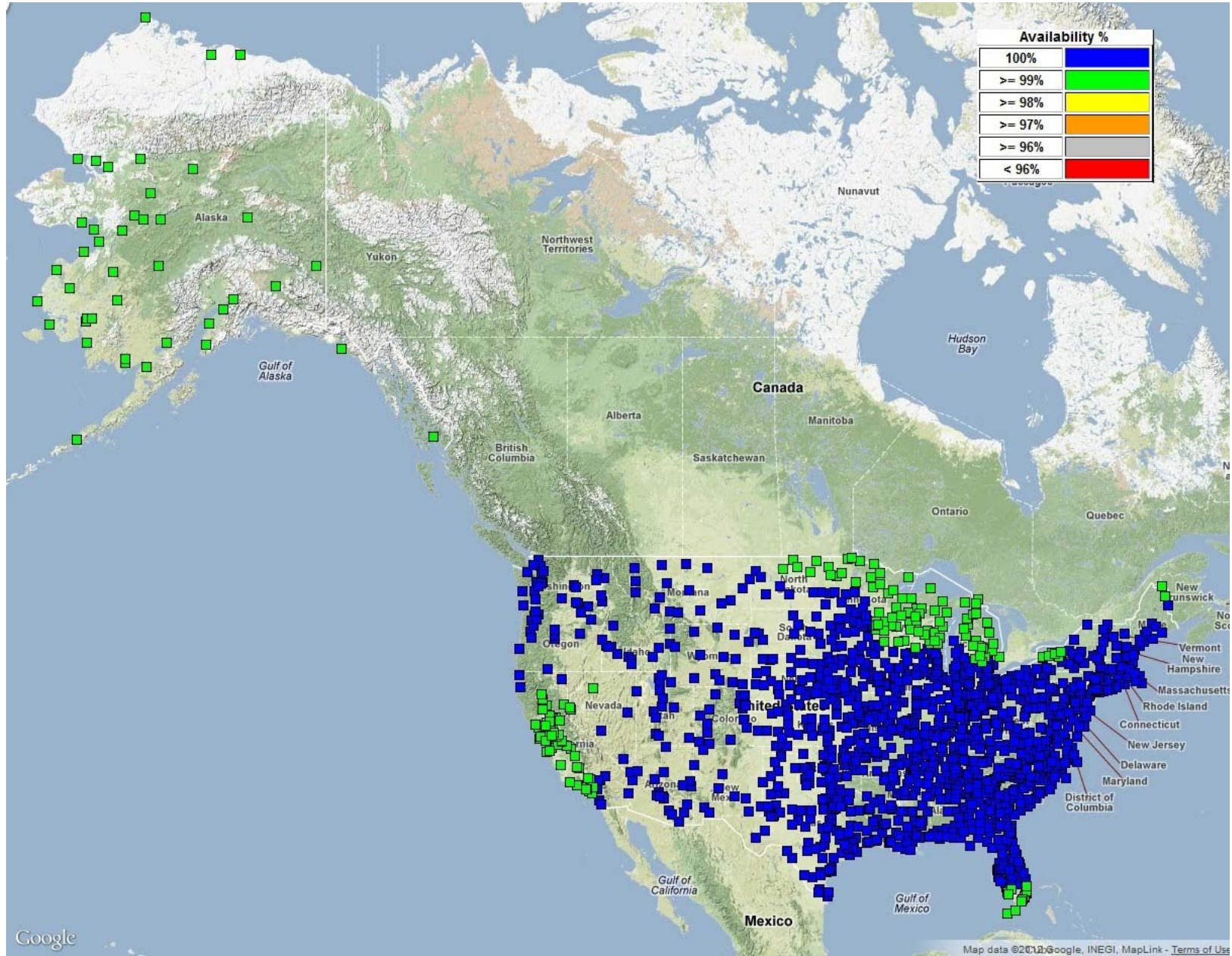


Figure 8-4 WAAS LPV Outages at US Airports with GPS RNAV Instrument Approach Procedures

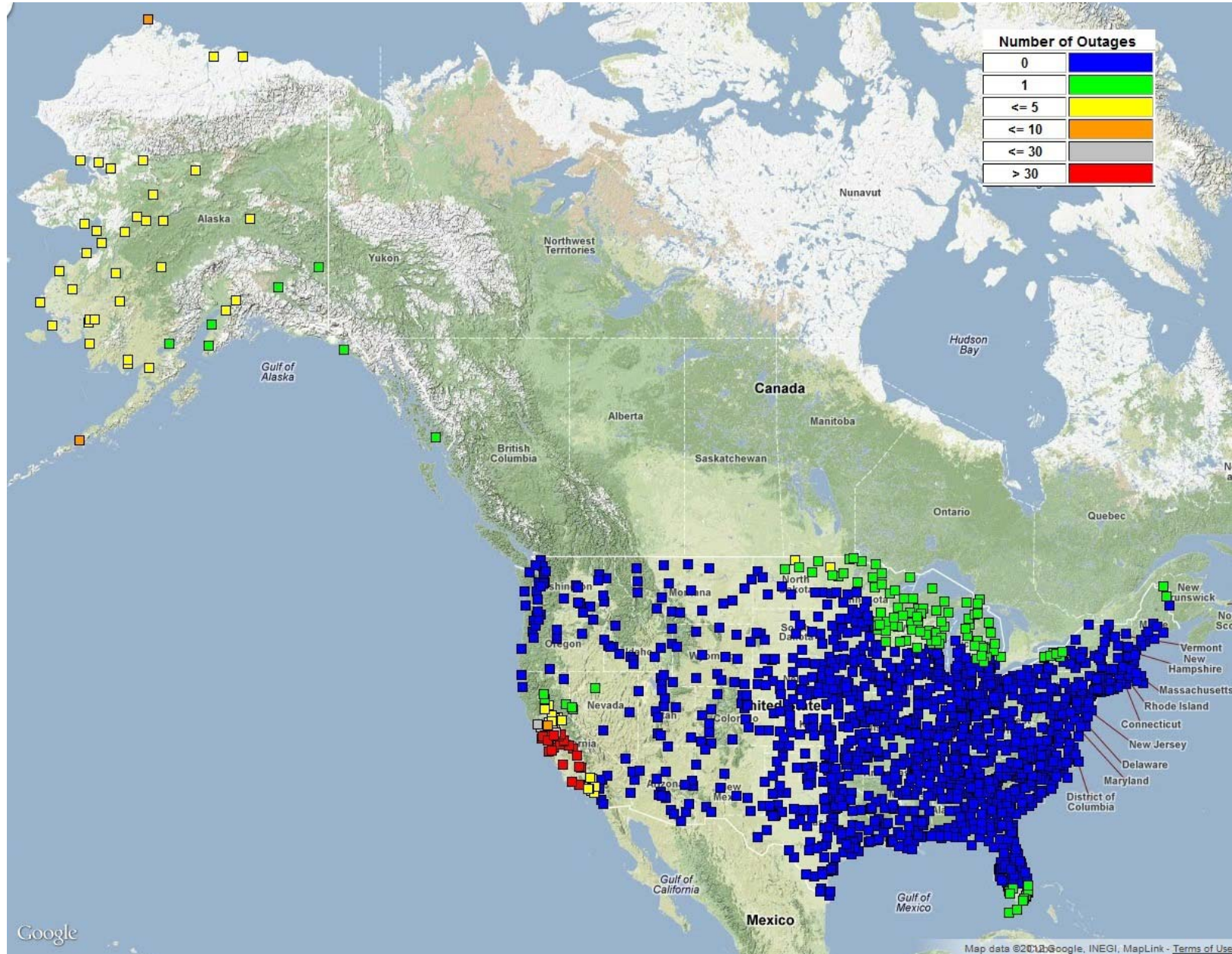


Figure 8-5 WAAS LPV 200 Availability at US Airports with GPS RNAV Instrument Approach Procedures

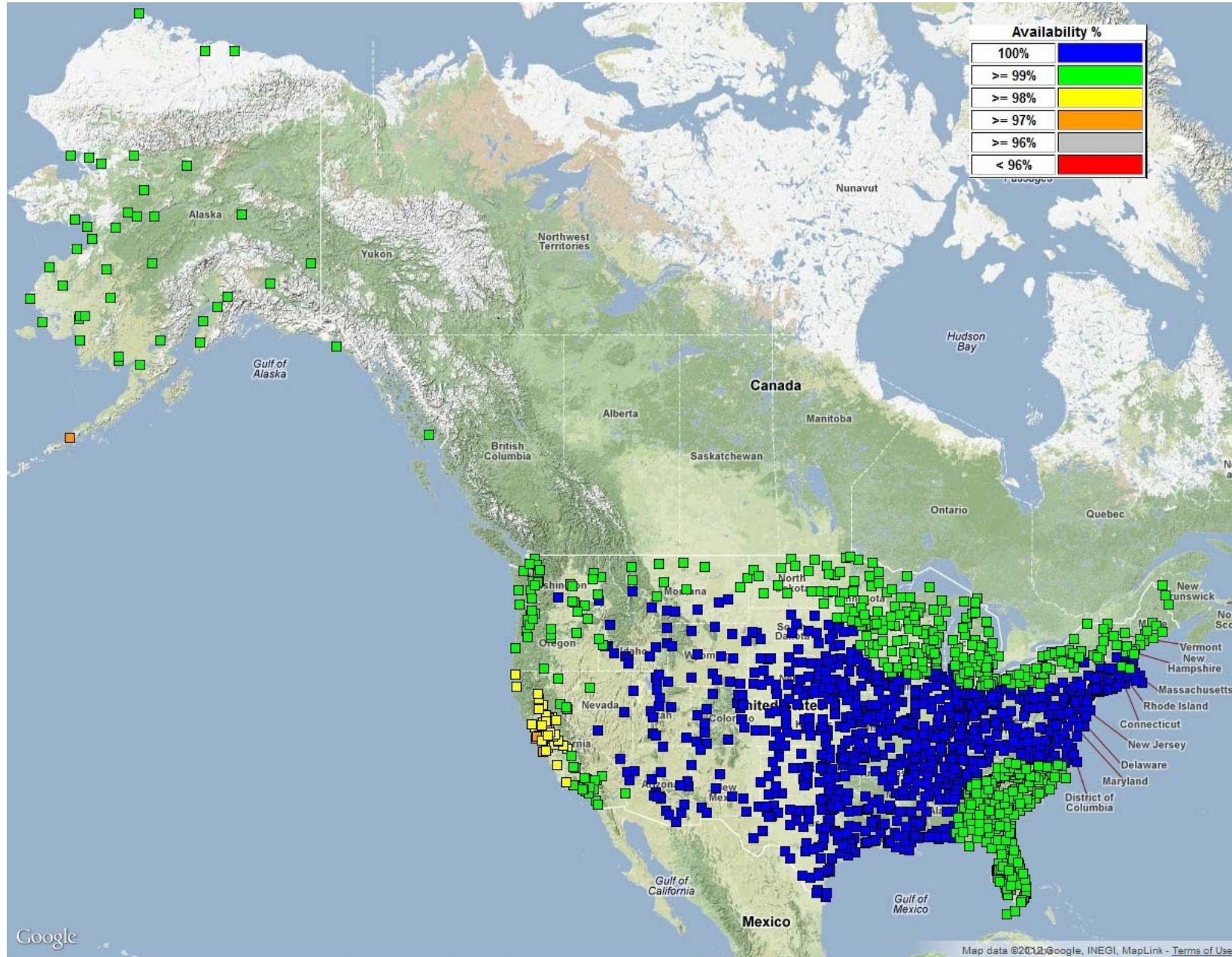
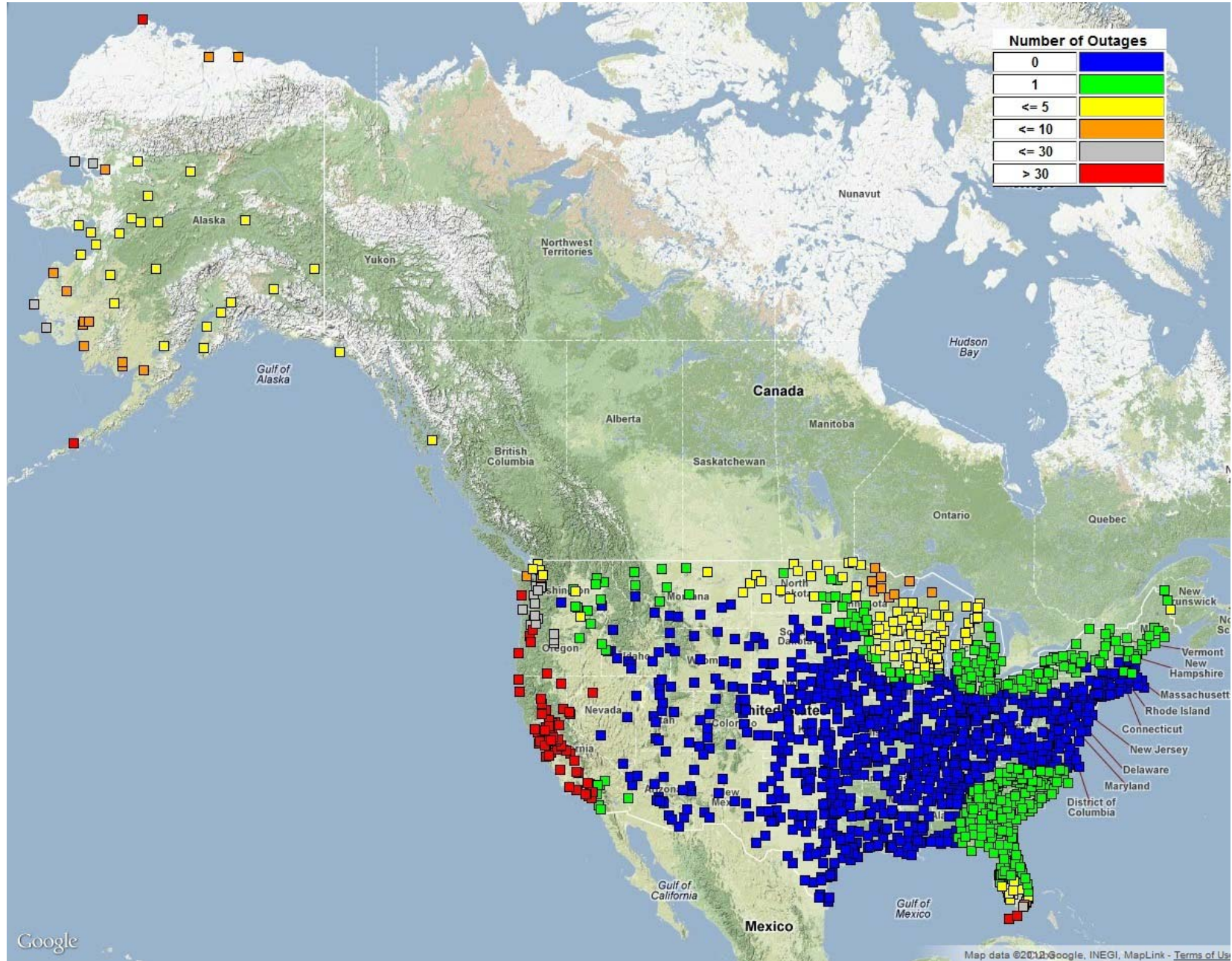


Figure 8-6 WAAS LPV 200 Outages at US Airports with GPS RNAV Instrument Approach Procedures



9.0 WAAS DETERMINISTIC CODE NOISE AND MULTIPATH (CNMP) BOUNDING ANALYSIS

WAAS utilizes a deterministic model to estimate the residual CNMP noise after the application of standard dual frequency carrier smoothing techniques to minimize the effects of multipath and code noise. This analysis performs an assessment of how well that deterministic model bounds the actual errors. This analysis is periodically performed as part of the WAAS Test Team's off-line monitoring to ensure that there are no drastic detrimental changes to the multipath environment at the WAAS Reference Stations (WRSs). This analysis also ensures that WAAS system is not indefinitely exposed to conspiring receiver failure symptoms that would invalidate the CNMP bounding estimate in a manner that would exceed the assumption that no more than one reference station is conspiring to deceive the WAAS monitors at any time by underestimating the residual measurement noise the safety monitors. Although some failures mechanisms that cause CNMP bounding issues are occasionally seen, no "conspiring" errors have ever been detected. That is, data has caused the safety monitors to trip unnecessarily versus missing a necessary trip.

The analysis post processes measurement data to estimate the pseudorange code to carrier ambiguity for each entire arc of measurements for each satellite pass. The ambiguity estimate is then used to level the carrier measurement. The leveled carrier is then used as a multipath free truth estimate. The WAAS real time deterministic CNMP smoothing algorithm is then applied to the original measurements. The difference between the smoothed measurements and the leveled truth measurements is compared to the deterministic noise estimates. Only arcs with continuous carrier phase greater in length than 7200 seconds are utilized for this analysis to minimize the impacts of non-zero mean multipath biasing the truth estimates. The WAAS dual frequency cycle slip detector algorithm is used to detect any discontinuities in the carrier phase.

Statistics are calculated on how well the 0.1 multiples of the deterministically estimated standard deviation bounds the difference between the leveled truth and the real time smoothed measurements. Those statistics are then compared to a theoretical Gaussian distribution and an extensive set of plots are generated and manually reviewed. Table 9.1 recaps the results of that manual analysis.

Table 9-1 CNMP Bounding Statistics

WAAS Site	WRE	Jul 11	Aug 11	Sep 11	Oct 11	Nov 11	Dec 11	Jan 12	Feb 12	Mar 12	Apr 12	May 12	Jun 12
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	Jul 11	Aug 11	Sep 11	Oct 11	Nov 11	Dec 11	Jan 12	Feb 12	Mar 12	Apr 12	May 12	Jun 12
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

Antenna L1 phase center position surveys were performed for the WAAS antennas using a 25 hour set of data from 23:00 on 6/29/12 to 23:59:30 on 6/30/12 for all of the WAAS receivers except the exceptions noted below.

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 was selected for the OPUS solutions.

The following are the data set exceptions:

1. ZSU (San Juan, Puerto Rico) was not processed because ZSU has been temporarily turned off because roof construction required the removal of its antennas. ZSU will need a completely new survey and an update to the WAAS software before it is reintroduced into WAAS when the construction is completed.
2. YWG (Winnipeg, Canada) was not processed because YWG has been temporarily turned off because of roof construction. YWG is expected to be restored during August 2012.
3. The following sites required having data removed before the OPUS surveys yielded overall RMS qualities of 0.03 m or better. CSRS had no problems with the full 25 hour data sets.
 - a. MMD1 and MMD2, Merida Mexico (first hour removed)
 - b. ZOB1, Cleveland ARTCC (first hour removed)
 - c. ZNY1, New York ARTCC (first hour removed)
 - d. ZMP3, Minneapolis ARTCC (first hour removed)
 - e. ZHU3, Houston ARTCC (first hour removed)
 - f. ZFW1, Fort Worth ARTCC (first hour removed)
 - g. ZDV2, Denver ARTCC (first hour removed)
 - h. ZDC1, Washington DC ARTCC (last hour removed)
 - i. ZJX3, Jacksonville ARTCC (first 4 hours removed)
 - j. ZHU2, Houston ARTCC (first 4 hours removed)
4. The OPUS was unable to obtain an overall RMS quality of 0.03 m or better for ZFW2 with the 6/29/12-6/30/12 data set, even though CSRS had no problems with the same data. Several other days / durations of data were attempted and eventually a 24 hour data set from 7/9/12 was successful.
5. ZKC2 and ZKC3 (Kansas City) threads 2 and 3 required manual selection of the OPUS reference stations in order to obtain an overall RMS quality of 0.03 m or better. CSRS did not have any problems with the Kansas City data.

The overall RMS quality metrics reported by OPUS were all ≤ 3.0 cm. The CSRS surveys' RSSs of the reported ECEF sigma's were all less than equal to 1.0 cm. The OPUS IGS08 and CSRS surveys agreed to an average of 1.4 cm, with a standard deviation of 7 mm. The maximum of difference was 4.3 cm for HNL3 (Honolulu Hawaii 3).

The OPUS IGS08 positions were compared to the positions in WAAS software release 3B which will be installed starting in July 2012. The positions in Release 3B are identical to the positions in the current fielded software, release 3A. The OPUS IGS08 surveys agree with the release 3B positions to better or equal to 8.9 cm (maximum was YYR3, Goose Bay 3). The average difference was 4.5 cm. 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.

Table 110.1 lists the WAAS antenna L1 phase center positions as of 6/30/12. The positions are the OPUS IGS08 estimated positions. The values for ZSU and YWG are the WAAS software release 3B positions.

Figure 10.1 to 10.3 show the RSS of the ECEF differences between the 6/30/12 OPUS survey antenna phase center locations and the locations in the WAAS release 3B software which will be fielded during July 2012. Each reference station has three independent strings of WAAS receiving equipment (WRE). A surveyed antenna phase center location is required for each WRE. All three strings of a reference station are shown in the three figures. For example, BET1 identifies the RSS delta for the Bethel WRE string 1(A). The next two bars in the chart are Bethel string 2(B) and Bethel string 3(C). Figure 10.4 to 10.6 show the OPUS surveys overall RMS quality indications.

Figure 10.7 to 10.9 show the RSS of the ECEF difference between the positions obtained from OPUS and the positions obtained from the Canadian Spatial Reference System (CSRS). Note that that 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.

Table 10-1 WAAS Antenna Positions (OPUS IGS08) as of 12/27/11

WRE	X(m)	Y(m)	Z(m)	Latitude	Longitude	H(m)
BET1	-2965385.03	-972576.616	5543892.928	60.78791575	-161.841725	52.2
BET2	-2965385.8	-972580.342	5543891.865	60.78789629	-161.8416644	52.195
BET3	-2965388.36	-972577.47	5543890.998	60.7878804	-161.8417291	52.191
BIL1	-1416445.86	-4223577.019	4550862.176	45.80370702	-108.5397229	1112.258
BIL2	-1416449.93	-4223574.884	4550862.902	45.80371629	-108.5397811	1112.268
BIL3	-1416441.56	-4223574.285	4550866.027	45.80375672	-108.5396815	1112.258
BRW1	-1886758.9	-809058.653	6018494.502	71.28276519	-156.7899248	15.589
BRW2	-1886756.31	-809055.908	6018495.677	71.28279795	-156.7899667	15.591
BRW3	-1886755.23	-809059.701	6018495.505	71.28279322	-156.7898575	15.588
CDB1	-3484099.03	-1084748.791	5213678.655	55.19237443	-162.7064044	49.706
CDB2	-3484105.67	-1084741.596	5213675.71	55.19232834	-162.7065433	49.687
CDB3	-3484111.94	-1084734.823	5213672.962	55.19228496	-162.7066741	49.697
FAI1	-2304741.79	-1448715.278	5748843.698	64.80963024	-147.8473406	149.937
FAI2	-2304741.31	-1448706.463	5748846.099	64.80968072	-147.8474924	149.944
FAI3	-2304732.78	-1448707.4	5748849.246	64.80974734	-147.8473801	149.928
HNL1	-5508637.13	-2234493.332	2303722.219	21.31299039	-157.9208274	24.708
HNL2	-5508656.29	-2234483.657	2303686.966	21.31264742	-157.9209832	25.05
HNL3	-5508647.71	-2234497.603	2303694.06	21.31271601	-157.9208276	25.104
JNU1	-2354254.87	-2388549.655	5407043.131	58.36257477	-134.5857067	16.109
JNU2	-2354252.78	-2388565.764	5407036.963	58.36246924	-134.5854881	16.107
JNU3	-2354239.57	-2388568.617	5407041.421	58.36254559	-134.5852932	16.103
MMD1	35070.421	-5959686.698	2264365.784	20.93190931	-89.66284068	29.154
MMD2	35065.497	-5959687.064	2264364.993	20.93190155	-89.66288804	29.187
MMD3	35065.158	-5959685.254	2264369.645	20.93194664	-89.66289119	29.156
MMX1	-948701.084	-5943935.586	2109212.708	19.43165362	-99.06838954	2235.575
MMX2	-948696.663	-5943935.408	2109215.126	19.43167683	-99.06834825	2235.557
MMX3	-948705.511	-5943935.77	2109210.277	19.43163027	-99.06843088	2235.596
MPR1	-1570142.21	-5759530.616	2238184.771	20.67900342	-105.2492031	10.992
MPR2	-1570139.4	-5759530.131	2238188.825	20.67904153	-105.2491783	11.293
MPR3	-1570143.5	-5759528.011	2238190.587	20.6790595	-105.2492216	11.012
MSD1	-1979519.74	-5523223.064	2493106.806	23.16044697	-109.7176482	104.307
MSD2	-1979521.3	-5523225.397	2493100.407	23.16038418	-109.7176549	104.294
MSD3	-1979525.76	-5523222.131	2493104.078	23.16042023	-109.7177066	104.293
MTP1	-254854.328	-6162909.197	1617805.111	14.79136633	-92.36799894	54.982
MTP2	-254850.73	-6162910.216	1617801.676	14.7913343	-92.36796515	54.946
MTP3	-254855.505	-6162910.345	1617800.149	14.79132021	-92.36800942	54.872
OTZ1	-2396056.01	-750356.161	5843502.541	66.88733232	-162.6113729	10.906
OTZ2	-2396052.84	-750354.335	5843504.071	66.88736721	-162.611391	10.909
OTZ3	-2396052.82	-750358.272	5843503.581	66.88735594	-162.6113051	10.913
YFB1	1035381.466	-2634289.661	5696539.548	63.73149034	-68.54318323	10.046
YFB2	1035372.253	-2634296.056	5696538.195	63.73146421	-68.54340415	9.975
YFB3	1035366.178	-2634306.806	5696534.405	63.73138655	-68.5435982	10.021

WRE	X(m)	Y(m)	Z(m)	Latitude	Longitude	H(m)
YQX1	2430424.647	-3419640.392	4788223.843	48.96649002	-54.59763201	146.891
YQX2	2430432.613	-3419639.048	4788220.794	48.96644815	-54.59753271	146.902
YQX3	2430440.517	-3419637.681	4788217.778	48.96640685	-54.5974339	146.901
YWG1	-520164.351	-4083475.883	4855842.956	49.90057427	-97.25939738	221.998
YWG2	-520150.49	-4083468.827	4855850.332	49.90067716	-97.2592184	222.003
YWG3	-520152.35	-4083477.945	4855842.513	49.90056806	-97.25922805	222
YYR1	1885341.45	-3321428.366	5091171.665	53.30864703	-60.41946801	37.865
YYR2	1885344.399	-3321419.881	5091176.075	53.30871338	-60.41936669	37.862
YYR3	1885340.122	-3321413.066	5091182.088	53.30880358	-60.41937203	37.881
ZAB1	-1488636.84	-5003946.568	3654557.731	35.17357543	-106.5673496	1620.16
ZAB2	-1488631.5	-5003948.237	3654557.694	35.17357476	-106.5672882	1620.201
ZAB3	-1488632.28	-5003950.835	3654553.852	35.17353237	-106.5672883	1620.206
ZAN1	-2659536.63	-1549114.781	5567750.775	61.22920196	-149.7802505	80.705
ZAN2	-2659548.38	-1549110.832	5567746.291	61.22911832	-149.7804242	80.707
ZAN3	-2659541.34	-1549106.704	5567750.761	61.22920188	-149.7804246	80.694
ZAU1	138704.115	-4761244.149	4227763.944	41.78265809	-88.3313367	195.902
ZAU2	138704.394	-4761248.763	4227758.782	41.78259572	-88.33133496	195.907
ZAU3	138711.097	-4761248.507	4227758.865	41.78259664	-88.33125428	195.918
ZBW1	1490299.241	-4448983.181	4306010.517	42.73572054	-71.48042566	39.141
ZBW2	1490304.35	-4448981.164	4306010.846	42.73572448	-71.48035868	39.151
ZBW3	1490306.061	-4448984.797	4306006.549	42.73567171	-71.48035296	39.164
ZDC1	1069125.788	-4839598.993	4001126.515	39.10159589	-77.54274626	80.077
ZDC2	1069128.179	-4839603.633	4001120.317	39.10152389	-77.54273084	80.084
ZDC3	1069124.087	-4839602.718	4001122.5	39.10154924	-77.54277475	80.083
ZDV1	-1273628.59	-4711375.586	4094890.138	40.18730342	-105.1272241	1541.378
ZDV2	-1273622.89	-4711377.099	4094890.15	40.18730366	-105.1271549	1541.365
ZDV3	-1273624.9	-4711380.293	4094885.855	40.18725317	-105.1271678	1541.348
ZFW1	-659983.181	-5324060.794	3438276.485	32.83064976	-97.06647158	155.638
ZFW2	-659988.442	-5324063.344	3438271.493	32.8305964	-97.06652399	155.602
ZFW3	-659983.476	-5324063.877	3438271.704	32.8305984	-97.06647065	155.648
ZHU1	-513864.45	-5506451.726	3166720.496	29.96189645	-95.33142603	10.877
ZHU2	-513867.116	-5506455.153	3166714.339	29.96183184	-95.33145023	10.973
ZHU3	-513873.381	-5506457.78	3166708.725	29.96177356	-95.33151233	10.94
ZJX1	772646.462	-5434462.237	3237231.772	30.69885965	-81.90818499	2.194
ZJX2	772649.79	-5434463.759	3237228.352	30.69882403	-81.90815284	2.147
ZJX3	772645.73	-5434466.198	3237225.254	30.69879151	-81.90819838	2.15
ZKC1	-415247.507	-4954556.398	3982161.141	38.88015954	-94.79083371	305.92
ZKC2	-415231.104	-4954557.722	3982161.193	38.88016019	-94.79064407	305.913
ZKC3	-415237.236	-4954561.064	3982155.998	38.88010204	-94.79071127	305.644
ZLA1	-2474409.93	-4637294.667	3602183.533	34.60351823	-118.0838952	763.522
ZLA2	-2474404.64	-4637297.462	3602183.542	34.60351842	-118.08383	763.507
ZLA3	-2474411.25	-4637297.149	3602179.557	34.60347435	-118.0838952	763.577

WRE	X(m)	Y(m)	Z(m)	Latitude	Longitude	H(m)
ZLC1	-1808273.21	-4486410.832	4145303.035	40.78604336	-111.9521774	1287.448
ZLC2	-1808274.61	-4486414.45	4145298.558	40.78599003	-111.9521768	1287.461
ZLC3	-1808270.39	-4486416.149	4145298.557	40.78599003	-111.9521229	1287.459
ZMA1	966042.319	-5662999.84	2761581.514	25.82461224	-80.31918964	-7.563
ZMA2	966029.345	-5662999.133	2761585.997	25.82465998	-80.31931601	-8.201
ZMA3	966037.428	-5662997.977	2761586.356	25.82466204	-80.3192346	-7.847
ZME1	4070.915	-5226189.304	3644028.432	35.06739414	-89.95536974	68.614
ZME2	4070.939	-5226186.774	3644032.556	35.06743767	-89.95536945	68.913
ZME3	4064.748	-5226186.638	3644032.708	35.06743952	-89.95543733	68.885
ZMP1	-249978.361	-4539297.519	4458955.079	44.63746333	-93.15208521	262.686
ZMP2	-249972.561	-4539297.875	4458955.083	44.63746312	-93.15201198	262.715
ZMP3	-249973.655	-4539302.142	4458950.598	44.63740708	-93.15202279	262.638
ZNY1	1406144.658	-4627343.994	4144322.067	40.78432856	-73.09716546	6.468
ZNY2	1406146.453	-4627347.024	4144317.275	40.78427576	-73.09715555	5.929
ZNY3	1406140.895	-4627348.684	4144317.32	40.78427623	-73.09722427	5.937
ZOA1	-2684436.85	-4293337.451	3865351.856	37.54305367	-122.0159473	-3.483
ZOA2	-2684433.84	-4293341.512	3865349.425	37.54302616	-122.0158941	-3.5
ZOA3	-2684438.21	-4293342.406	3865345.579	37.54298181	-122.0159306	-3.406
ZOB1	650770.209	-4754715.69	4187420.769	41.29715445	-82.20644446	223.71
ZOB2	650777.879	-4754714.857	4187422.782	41.29716679	-82.20635239	225.199
ZOB3	650776.218	-4754719.683	4187414.995	41.29708704	-82.20637985	223.483
ZSE1	-2308930.26	-3668169.683	4663526.508	47.28699343	-122.1883727	82.123
ZSE2	-2308934.65	-3668175.225	4663520.096	47.28690788	-122.1883827	82.178
ZSE3	-2308935.71	-3668179.505	4663516.157	47.28685616	-122.1883645	82.125
ZSU1	2462589.358	-5529371.53	2003724.621	18.43133866	-65.99347519	-28.594
ZSU2	2462587.27	-5529377.291	2003711.63	18.43121471	-65.99351543	-28.516
ZSU3	2462593.912	-5529375.081	2003709.572	18.43119511	-65.99344949	-28.518
ZTL1	529840.433	-5305248.827	3489342.86	33.37968857	-84.29672571	261.157
ZTL2	529846.8	-5305247.987	3489343.143	33.37969171	-84.29665673	261.143
ZTL3	529847.503	-5305251.43	3489337.902	33.37963491	-84.29665289	261.179

Figure 10-1 WAAS Release 3B Software Antenna Positions Deltas from 6/30/12 OPUS Survey

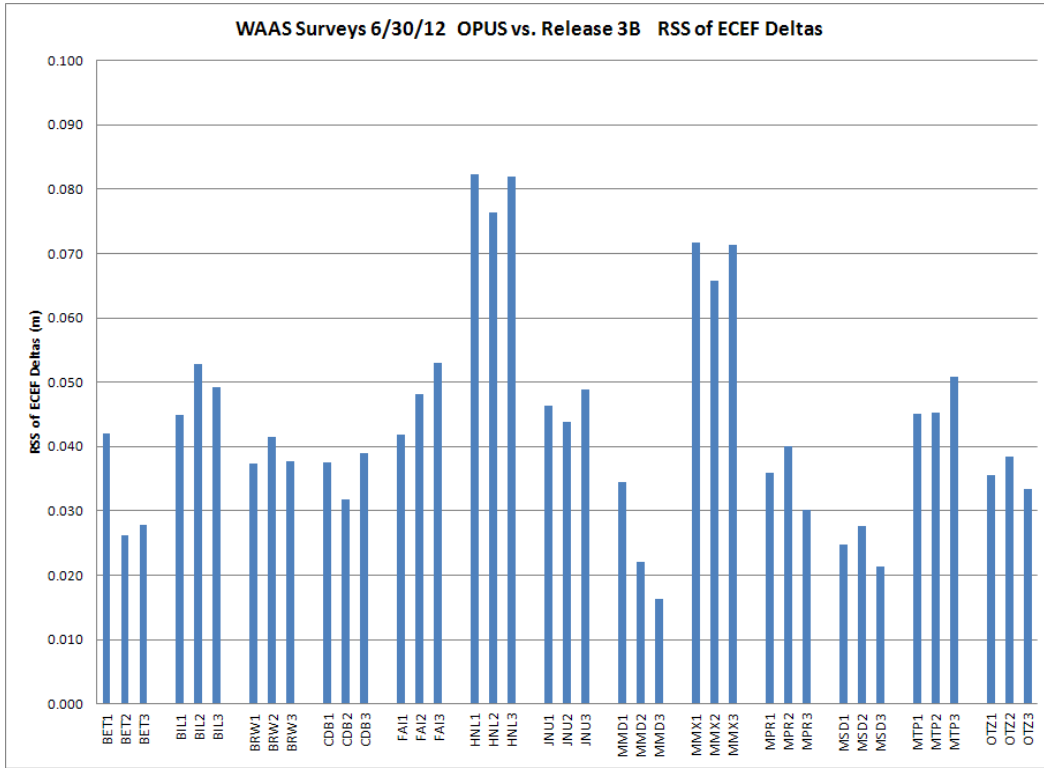


Figure 10-2 WAAS Release 3B Software Antenna Positions Deltas from 6/30/12 OPUS Survey

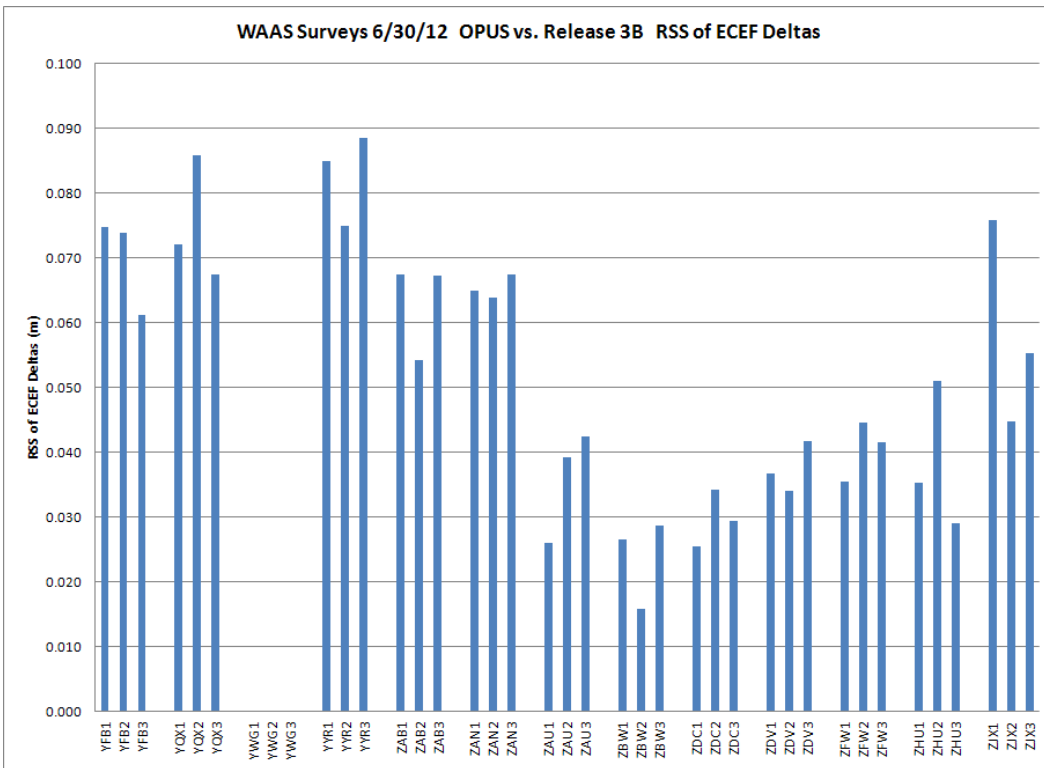


Figure 10-3 WAAS Release 3B Software Antenna Positions Deltas from 6/30/12 OPUS Survey

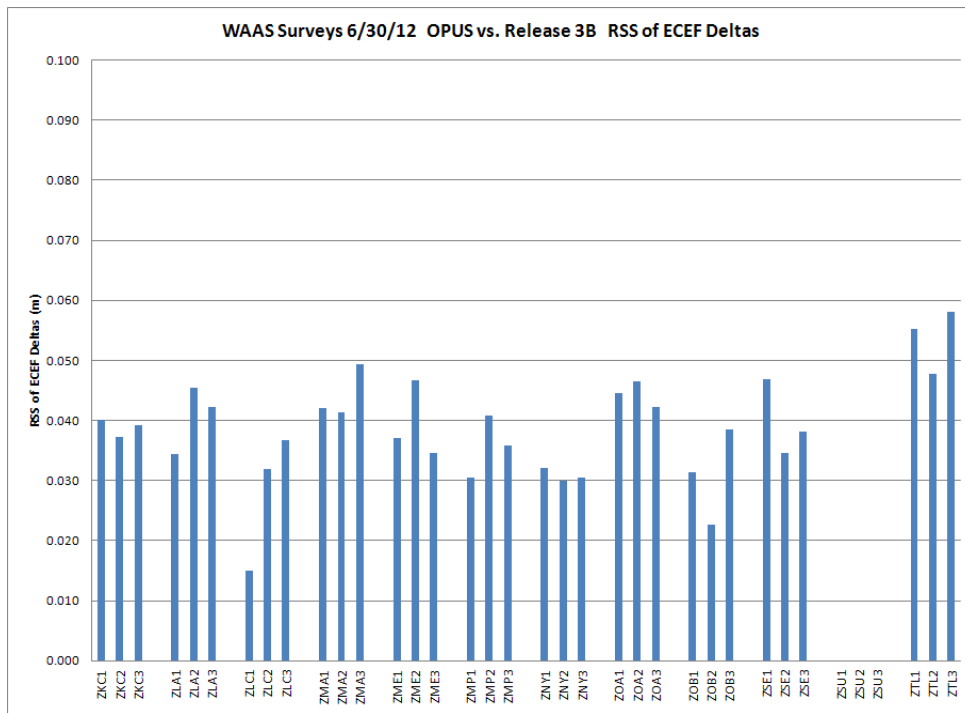


Figure 10-4 6/30/12 OPUS Survey Overall RMS Qualities

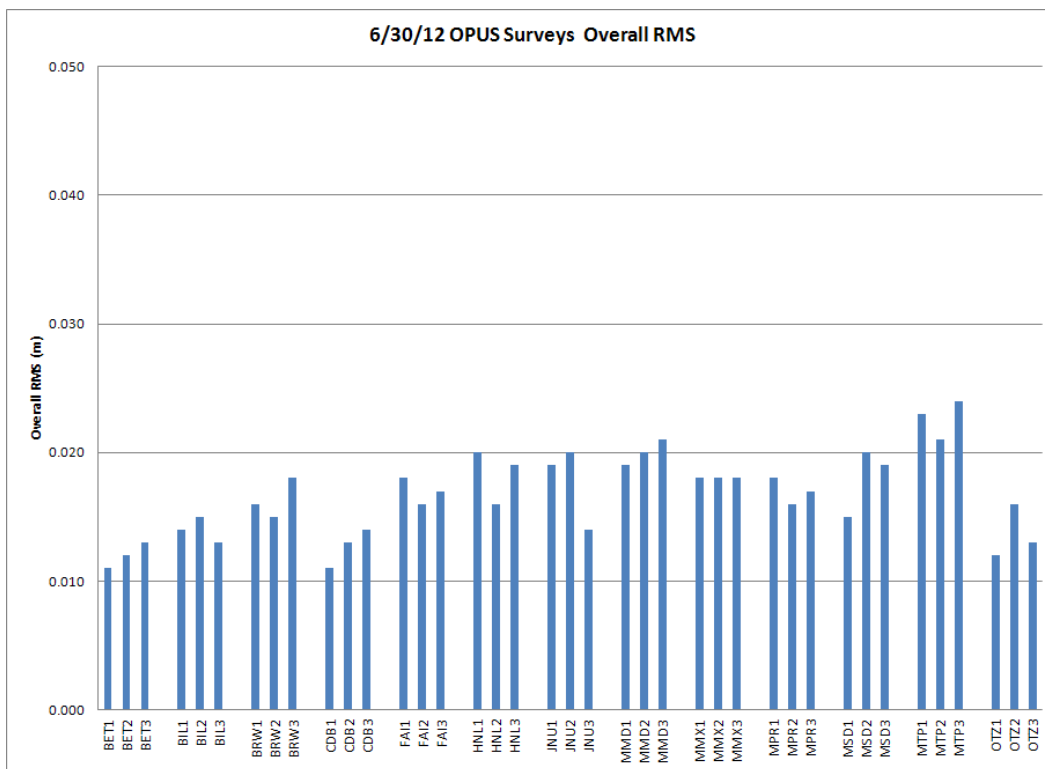


Figure 10-5 6/30/12 OPUS Survey Overall RMS Qualities

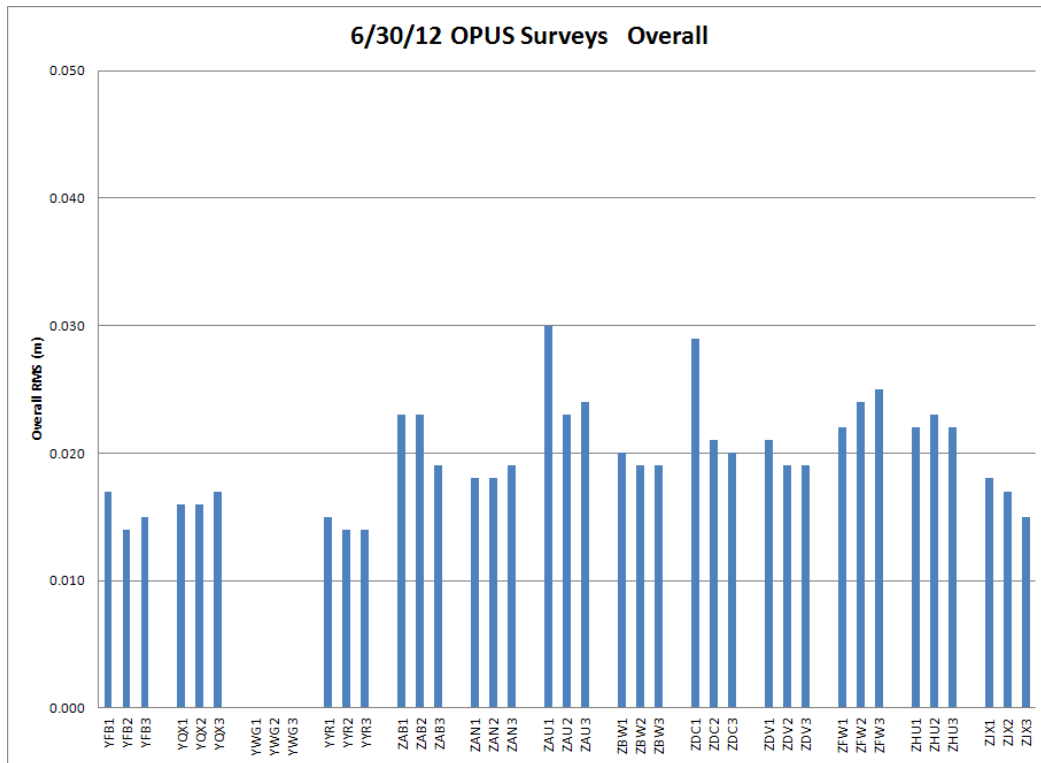


Figure 10-6 6/30/12 OPUS Survey Overall RMS Qualities

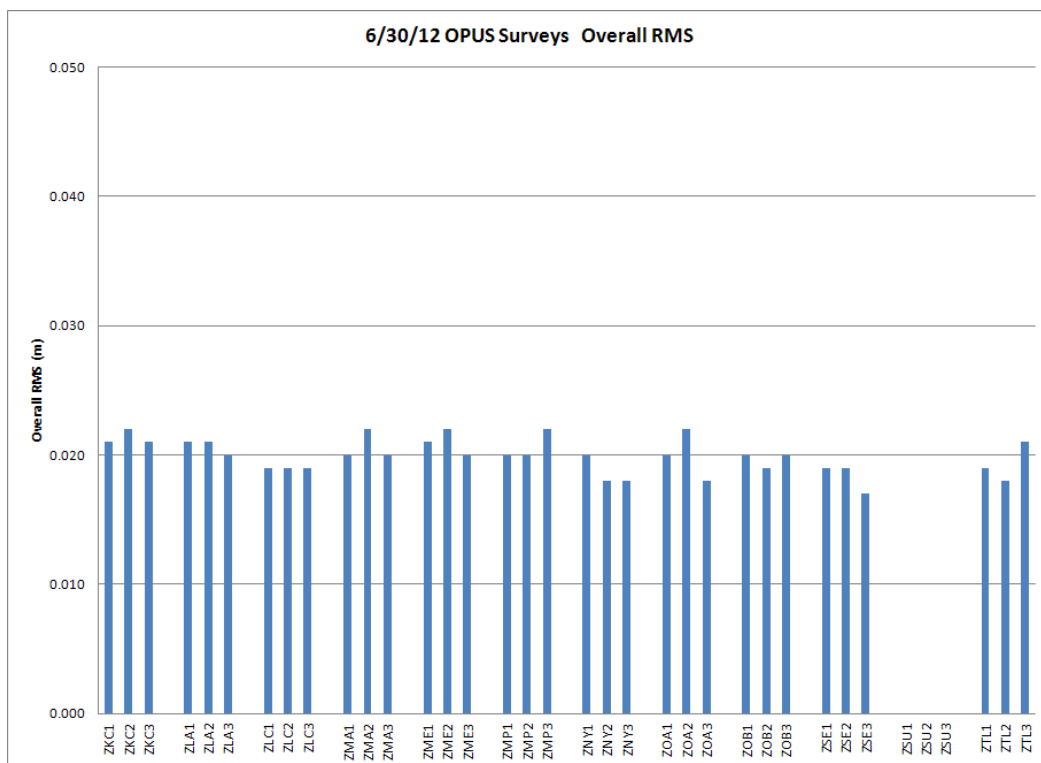


Figure 10-7 6/30/12 OPUS vs. CSRS RSS ECEF Deltas

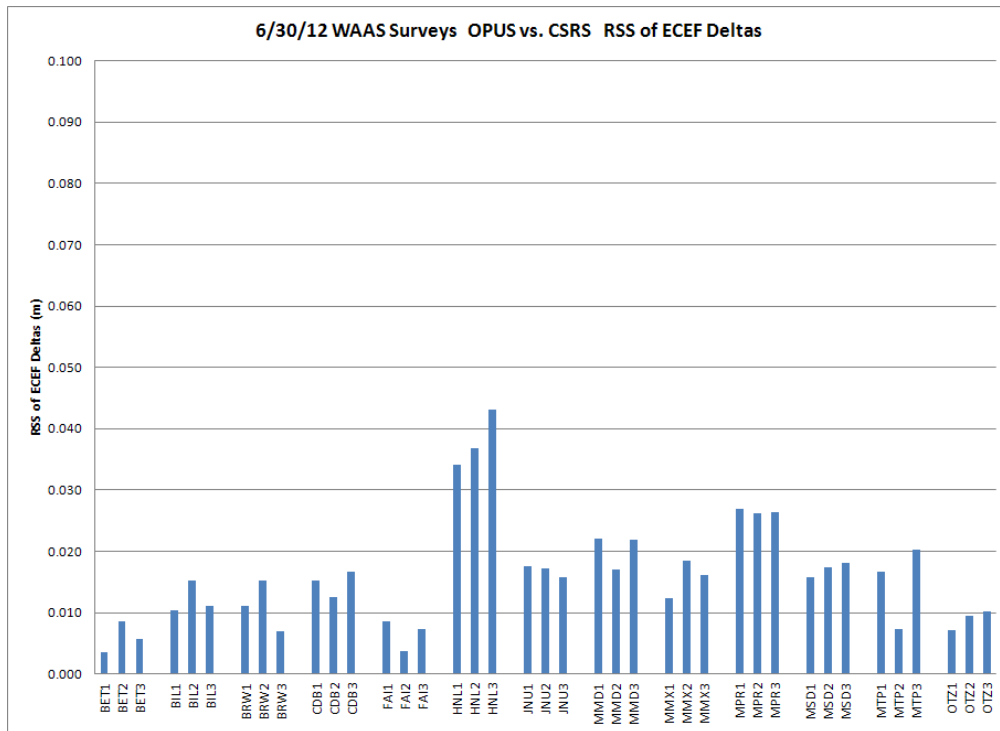


Figure 10-8 6/30/12 OPUS vs. CSRS RSS ECEF Deltas

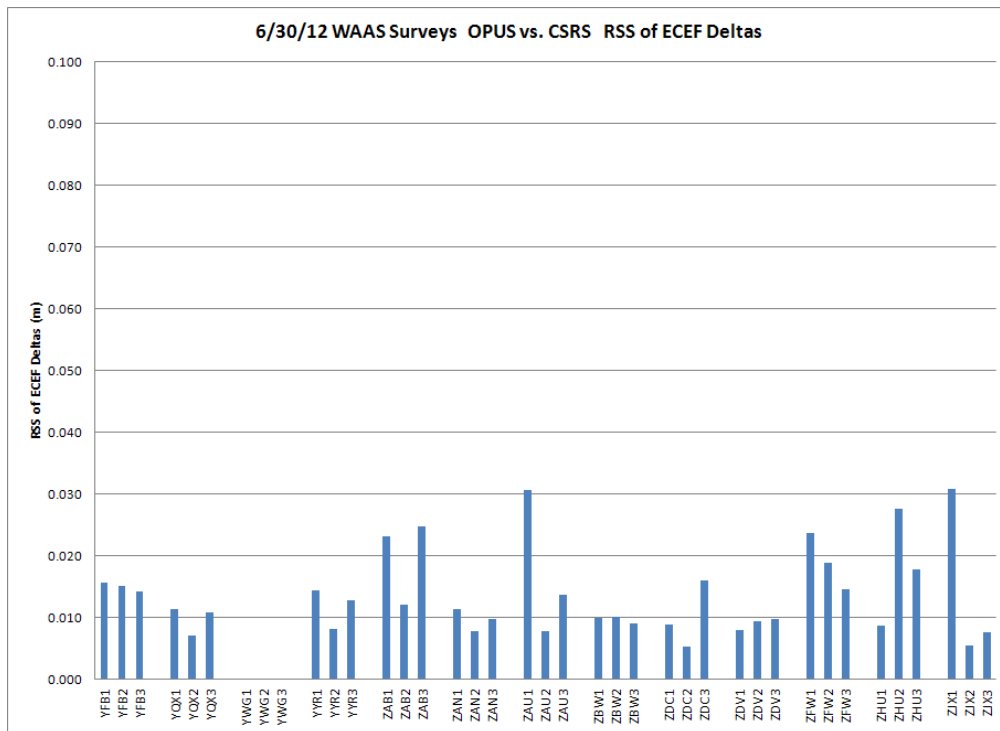


Figure 10-9 6/30/12 OPUS vs. CSRS RSS ECEF Deltas

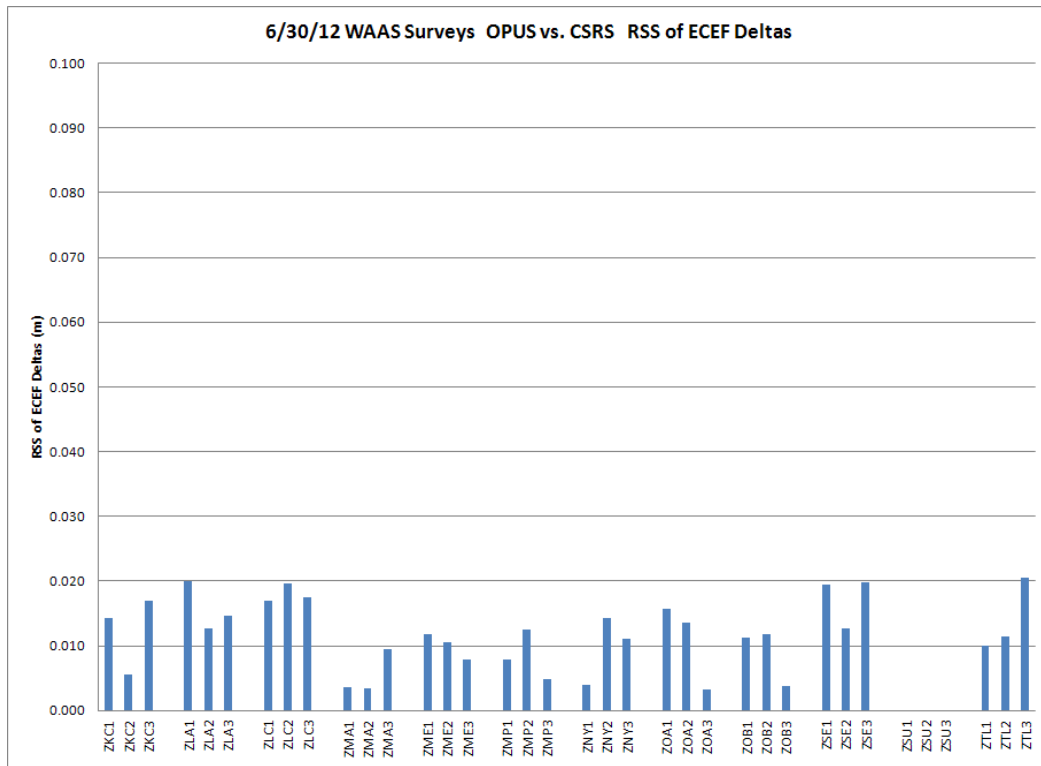


Figure 10-10 6/30/12 CSRS Survey Qualities

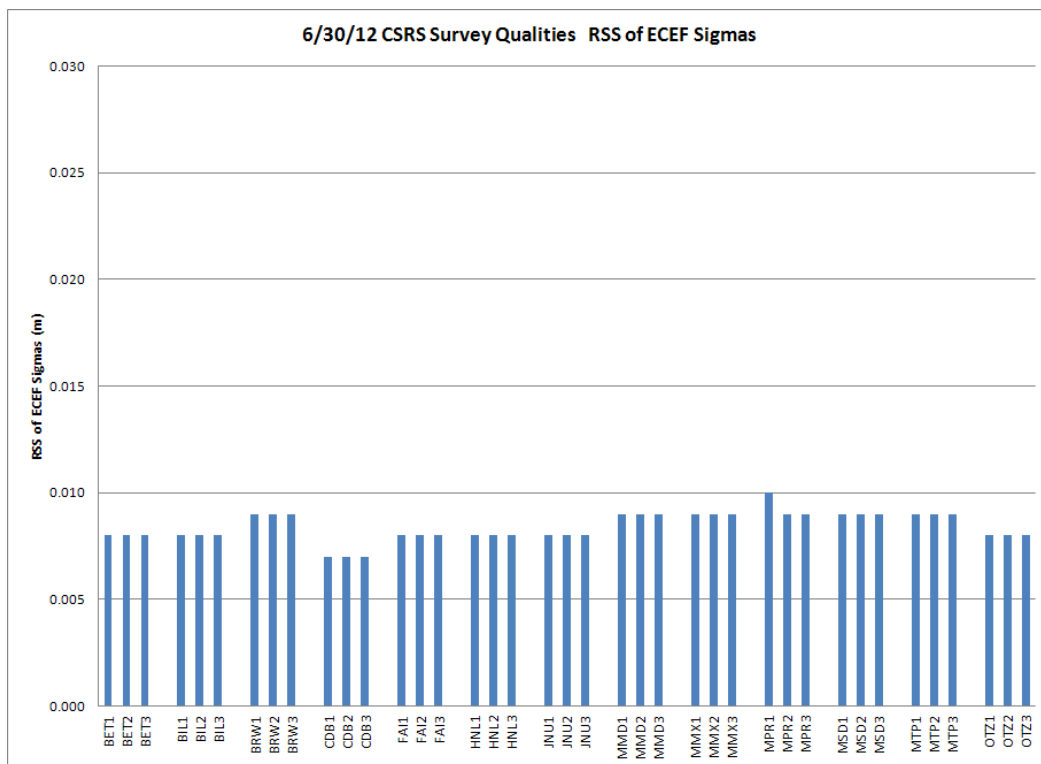


Figure 10-11 6/30/12 CSRS Survey Qualities

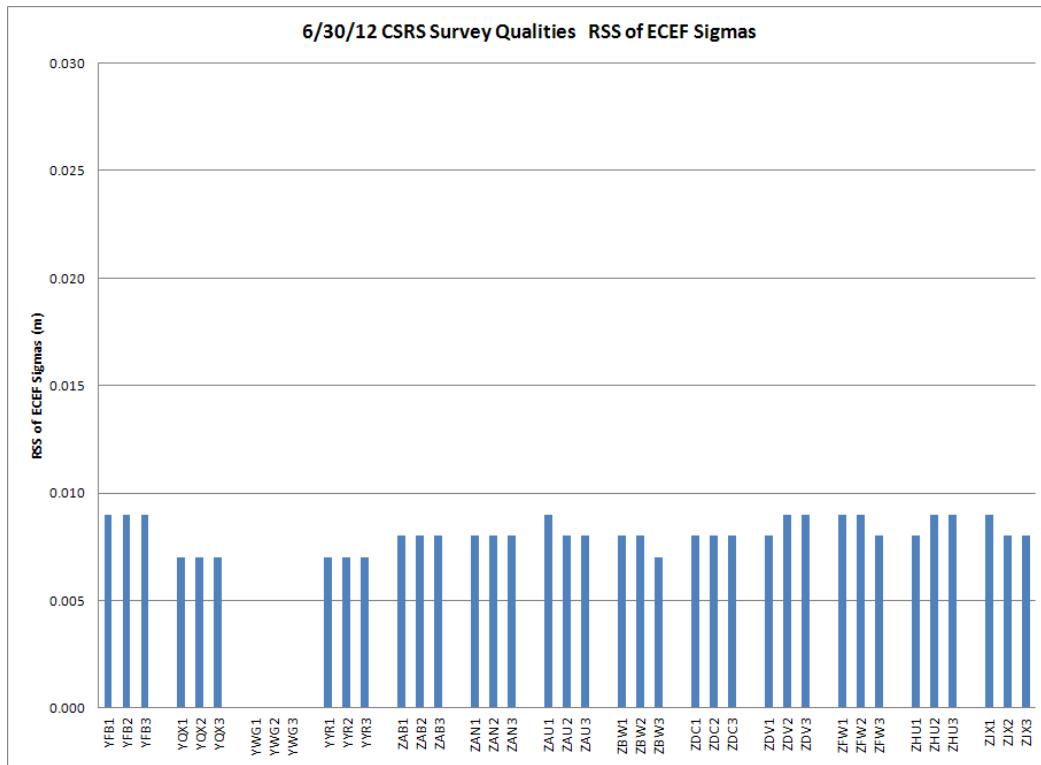
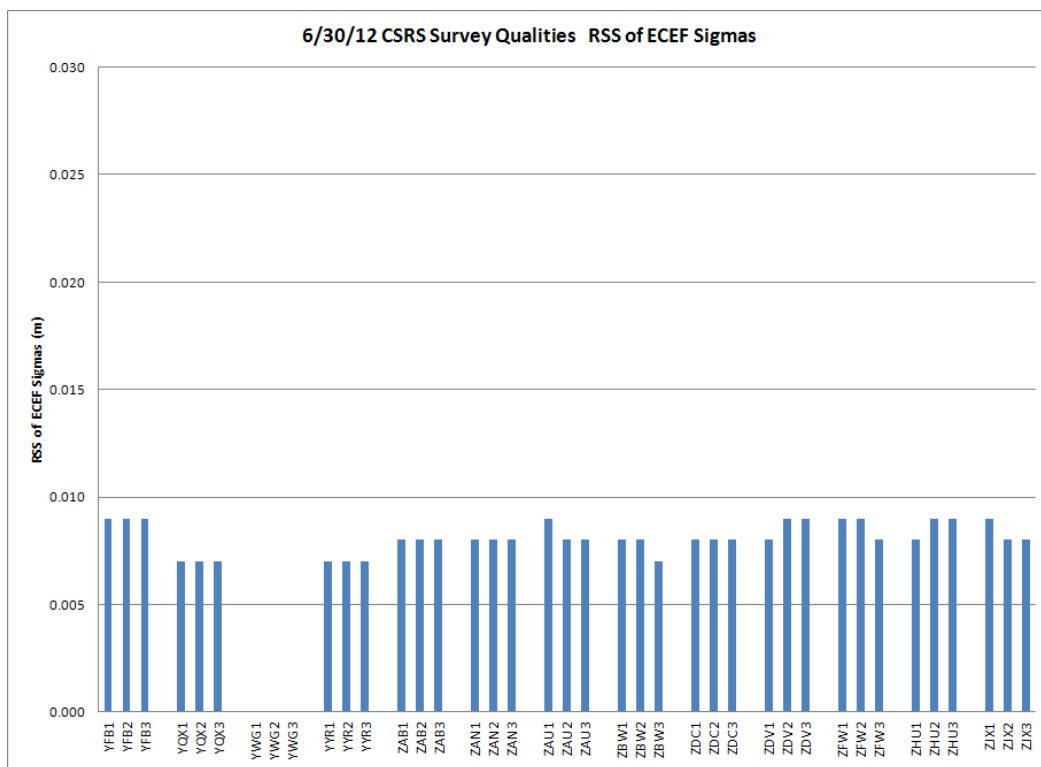


Figure 10-12 6/30/12 CSRS Survey Qualities



11.0 SIGNAL QUALITY MONITOR (SQM)

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

WAAS SQM offline monitoring effort includes the monitoring of the PRN type biases, trips, and the estimated deformation for each satellite that will be 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 4 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 satellite, it can be classified into three categories of correlation function shapes: skinny (Type 0), nominal (Type 1), and broad (Type 2). Wideband geostationary satellites are considered a different type (Type 3). PRN-type estimates are computed at each epoch and daily averages are computed for each type, for four detection metrics.

For this reporting period, geostationary satellites type biases are not evaluated. Table11.3 shows the rollup average for the quarter. Table 11.4 shows the rollup average since January 1, 2008. Figure 11.1 shows the daily average for the four detection metrics for the quarter.

Table 11-2 Type Bias Average for the Quarter

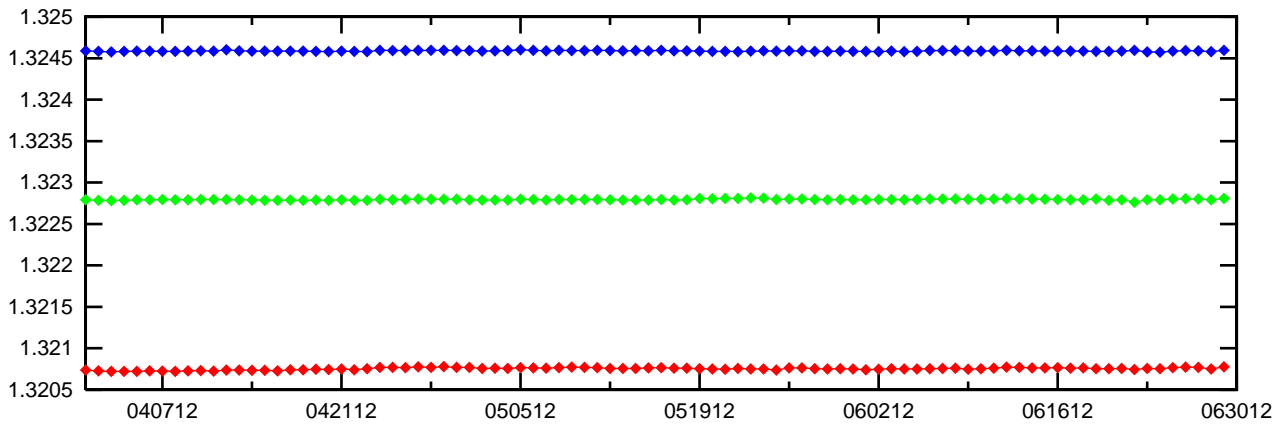
Detection Metric	Type 0	Type 1	Type 2
DM 1	1.320750	1.322790	1.324590
DM 2	0.240853	0.244068	0.247259
DM 3	0.973172	0.973700	0.974281
DM 4	-0.186309	-0.188093	-0.190107

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

Detection Metric	Type 0	Type 1	Type 2
DM 1	1.32095000	1.32289000	1.32461000
DM 2	0.24084600	0.24410000	0.24728100
DM 3	0.97317500	0.97371100	0.97427700
DM 4	-0.18618800	-0.18806200	-0.19009300

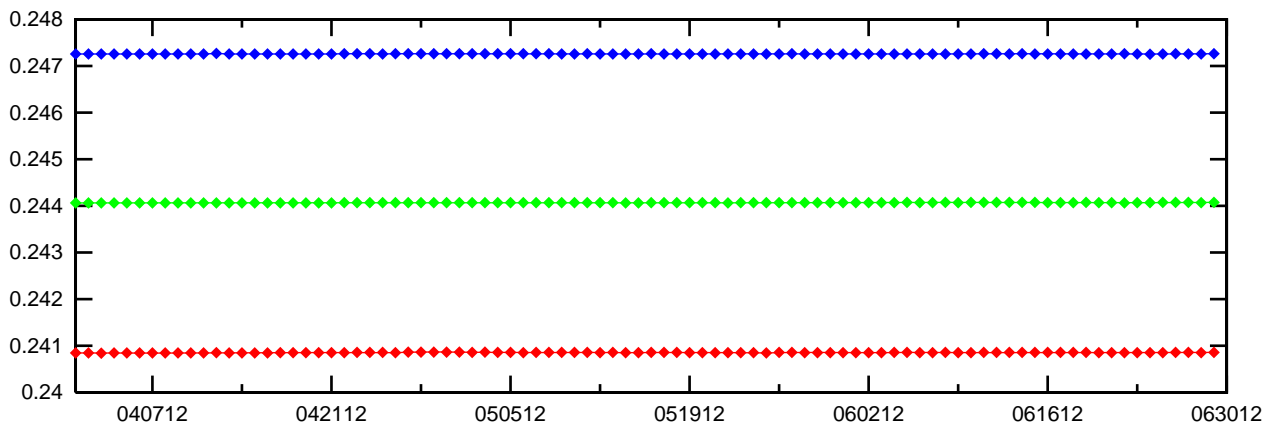
Figure 11-1 PRN Type Bias Average Trend

Type Bias Daily Average, Detection Metrics 1



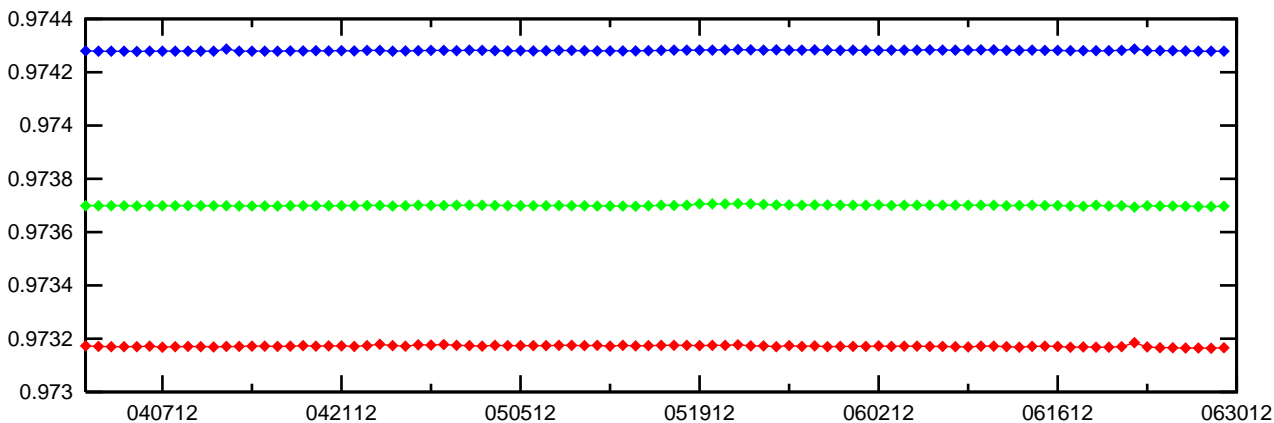
Type 0 —◆—
Type 1 —◆—
Type 2 —◆—

Type Bias Daily Average, Detection Metrics 2



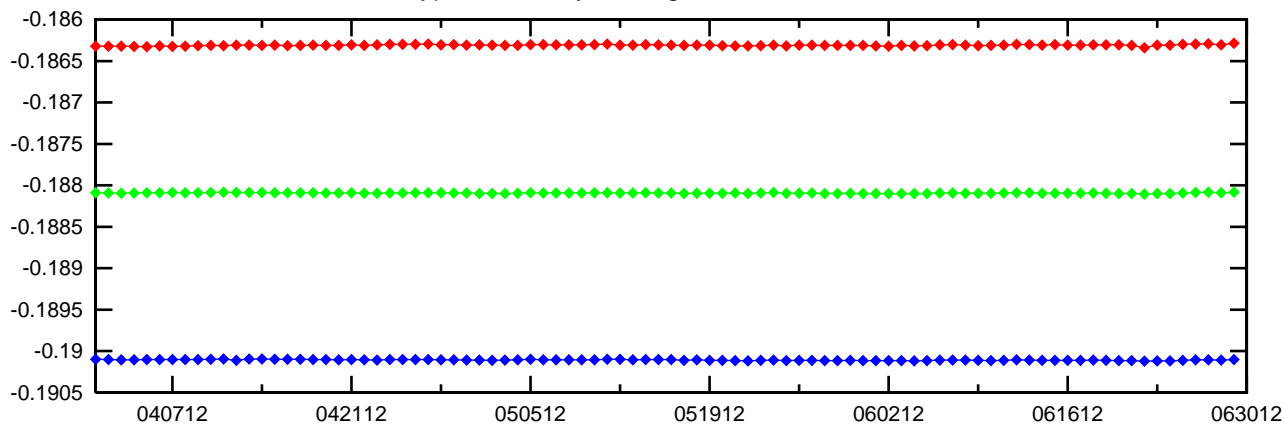
Type 0 —◆—
Type 1 —◆—
Type 2 —◆—

Type Bias Daily Average, Detection Metrics 3



Type 0 —◆—
Type 1 —◆—
Type 2 —◆—

Type Bias Daily Average, Detection Metrics 4



Type 0 —◆—
Type 1 —◆—
Type 2 —◆—

11.3 PRN Bias

PRN biases are evaluated as part of the WAAS SQM offline monitoring effort. 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 satellites on orbit resulting 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 average for the quarter. Figure 11.3 to 11.10 show the PRN bias average trend for each SV. The maximum average for DM1 for this quarter is PRN 23 at 0.00103306. The maximum average for DM2 is PRN 25 at 0.00023246. The maximum average for DM3 is PRN 10 at 0.00027362 and the maximum average for DM4 is PRN 23 at 0.00044859.

For this reporting period, geostationary satellite biases are not evaluated. Please refer to Table 1.5 for events that may have an impact on PRN bias statistics. The small spikes in PRN bias daily average are due to satellite outages. PRN 24 was offline for the entire reporting period. PRN 30 was offline from 5/19/12 to 5/24/12

Table 11-4 PRN Bias Average for the Quarter

PRN	SVN	DM1	DM2	DM3	DM4
1	63	0.00022966	0.00014150	0.00008538	0.00010188
2	61	0.00023651	0.00004648	0.00003179	0.00010056
3	33	0.00018790	0.00007091	0.00010220	0.00034820
4	34	0.00017153	0.00004414	0.00005859	0.00011932
5	50	0.00012319	0.00012004	0.00005458	0.00010861
6	36	0.00015876	0.00006057	0.00005606	0.00012533
7	34	0.00011551	0.00007847	0.00003257	0.00013318
8	38	0.00015506	0.00013667	0.00003829	0.00009824
9	39	0.00017032	0.00005179	0.00006357	0.00010543
10	40	0.00071673	0.00004596	0.00027362	0.00009968
11	46	0.00095190	0.00019566	0.00006067	0.00026528
12	58	0.00013869	0.00007876	0.00008781	0.00007647
13	43	0.00058536	0.00005076	0.00007847	0.00017650
14	41	0.00070476	0.00011876	0.00012262	0.00014152
15	55	0.00013528	0.00006387	0.00003052	0.00015563
16	56	0.00013199	0.00006845	0.00011987	0.00032262
17	53	0.00022518	0.00006614	0.00005115	0.00015216
18	54	0.00068343	0.00011269	0.00004880	0.00024162
19	59	0.00043230	0.00014629	0.00004233	0.00008839
20	51	0.00012149	0.00004505	0.00003699	0.00014172
21	45	0.00035138	0.00010676	0.00016349	0.00011134
22	47	0.00036966	0.00005674	0.00009272	0.00032042
23	60	0.00103306	0.00015777	0.00003857	0.00044859
24	24				
25	62	0.00034919	0.00023246	0.00006213	0.00012590
26	26	0.00022540	0.00007284	0.00013752	0.00010351
27	27	0.00043726	0.00009160	0.00005649	0.00033417
28	44	0.00028861	0.00005150	0.00003504	0.00009900
29	57	0.00029263	0.00005861	0.00009355	0.00031096
30	30	0.00038133	0.00006417	0.00013347	0.00011741
31	52	0.00037807	0.00014877	0.00004009	0.00023173
32	23	0.00018187	0.00005312	0.00009445	0.00008816

Table 11-5 PRN Bias Average Since January 1, 2008

PRN	SVN	DM1	DM2	DM3	DM4
1	32	0.00021507	0.00012199	0.00008366	0.00009532
2	61	0.00019782	0.00005412	0.00002533	0.00009445
3	33	0.00021100	0.00005968	0.00009329	0.00035237
4	34	0.00022059	0.00004463	0.00006982	0.00012905
5	35	0.0004283	0.0000655	0.0001190	0.0001572
5	50	0.00021632	0.00011114	0.00007633	0.00011543
6	36	0.00016145	0.00005847	0.00004915	0.00012609
7	34	0.00013034	0.00008731	0.00003474	0.00012422
8	38	0.00016292	0.00012895	0.00004355	0.00010113
9	39	0.00020644	0.00005280	0.00006716	0.00010960
10	40	0.00068065	0.00006173	0.00027019	0.00009689
11	46	0.00090945	0.00018463	0.00005690	0.00024328
12	58	0.00020747	0.00008416	0.00010107	0.00007978
13	43	0.00052729	0.00005451	0.00006466	0.00015908
14	41	0.00065848	0.00012008	0.00011385	0.00012624
15	55	0.00012595	0.00006609	0.00002786	0.00013612
16	56	0.00015881	0.00007281	0.00011244	0.00034004
17	53	0.00014936	0.00007383	0.00003846	0.00012819
18	54	0.00062573	0.00010541	0.00004252	0.00021822
19	59	0.00039327	0.00013917	0.00003739	0.00008529
20	51	0.00015020	0.00004770	0.00003855	0.00013842
21	45	0.00057023	0.00017213	0.00019496	0.00009395
22	47	0.00024048	0.00007965	0.00009656	0.00019368
23	60	0.00097424	0.00014894	0.00003611	0.00042609
24	24	0.00029732	0.00004919	0.00003560	0.00010768
25	25	0.00026323	0.00017124	0.00007525	0.00021140
25	62	0.00026167	0.00008491	0.00014895	0.00009112
26	26	0.00047089	0.00008427	0.00006285	0.00033020
27	27	0.00025262	0.00005304	0.00003365	0.00009227
28	44	0.00023798	0.00006413	0.00010285	0.00029210
29	57	0.00031540	0.00008881	0.00004860	0.00011654
30	30	0.00044518	0.00015391	0.00003844	0.00025169
31	52	0.00026121	0.00005071	0.00010648	0.00009546
32	23	0.00016145	0.00005847	0.00004915	0.00012609

Figure 11-2 PRN Bias Average for the Quarter

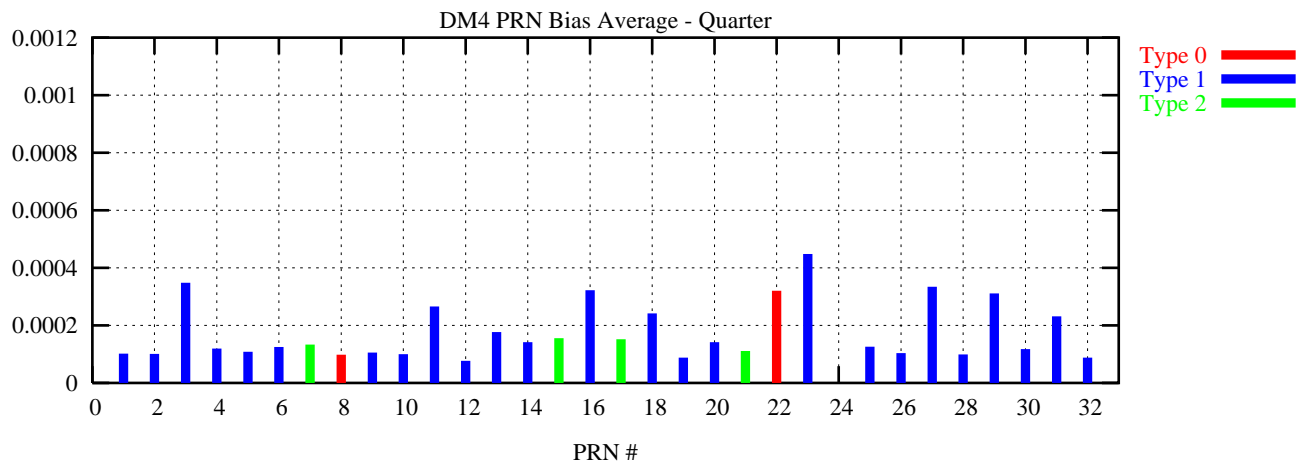
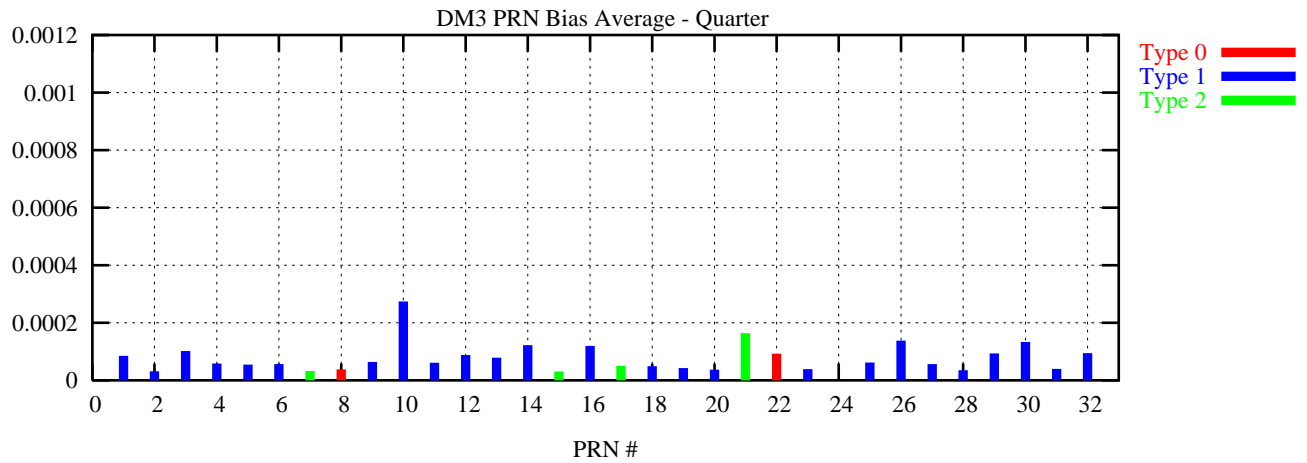
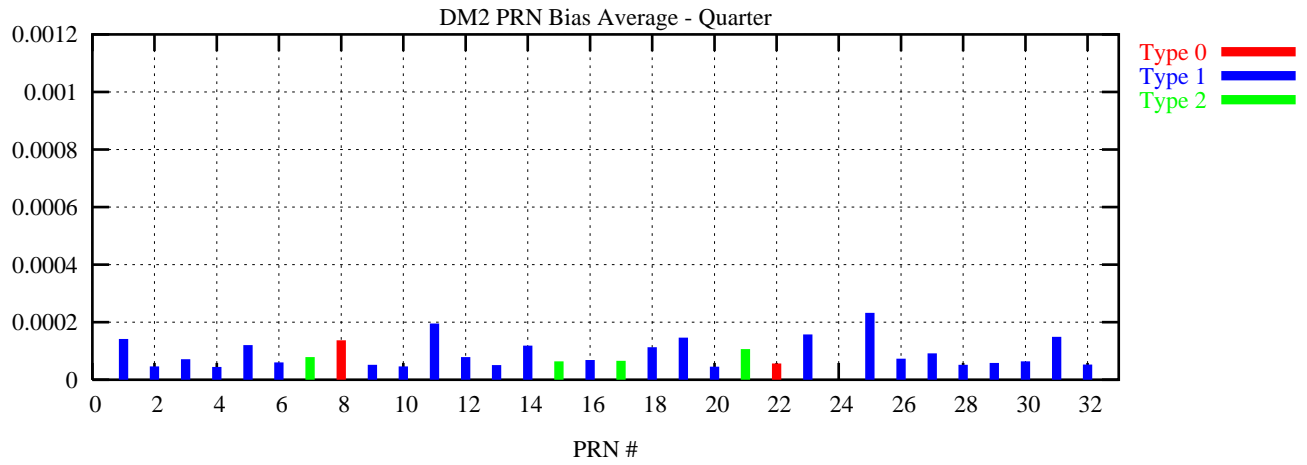
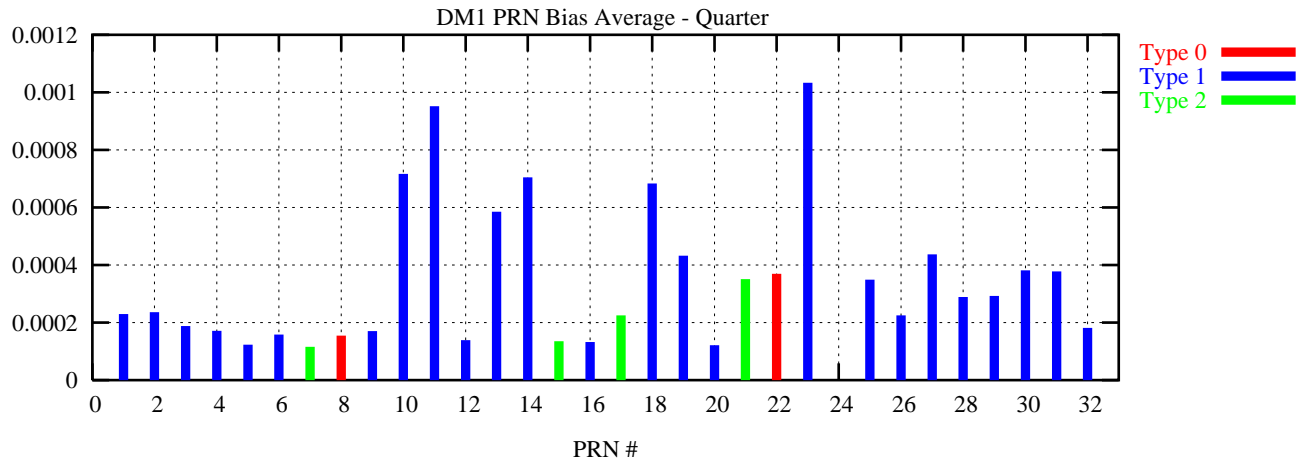
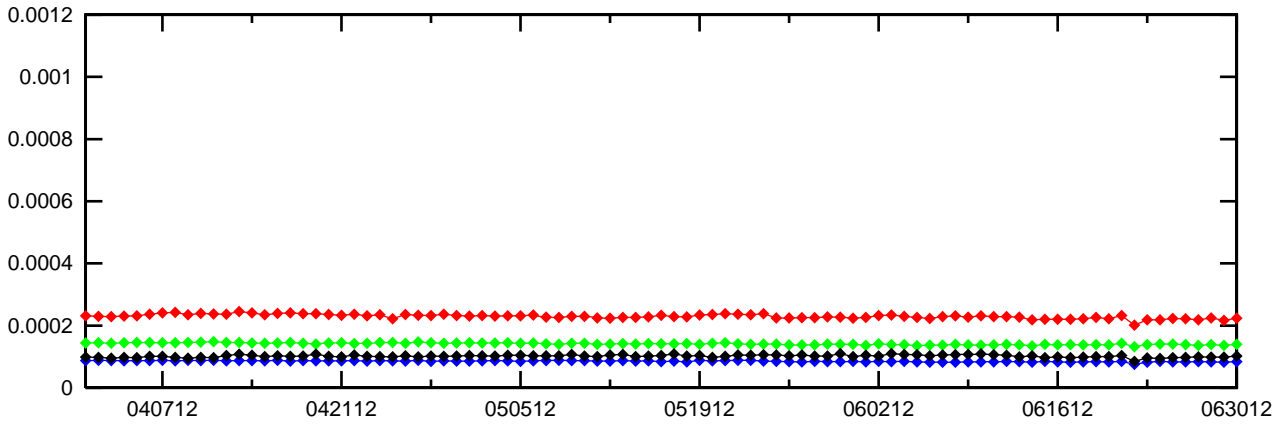
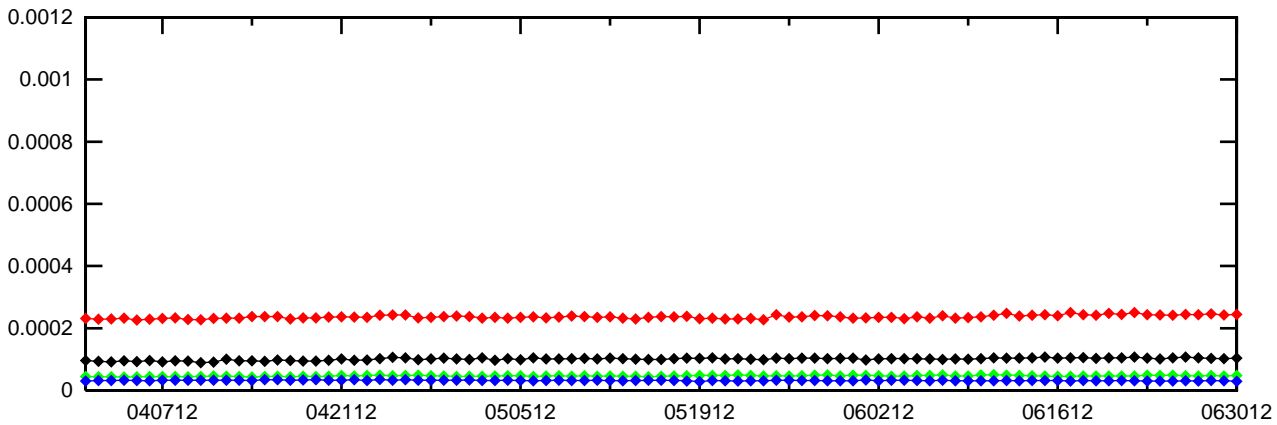


Figure 11-3 PRN Bias Average Trend (PRN 1 - PRN 4)

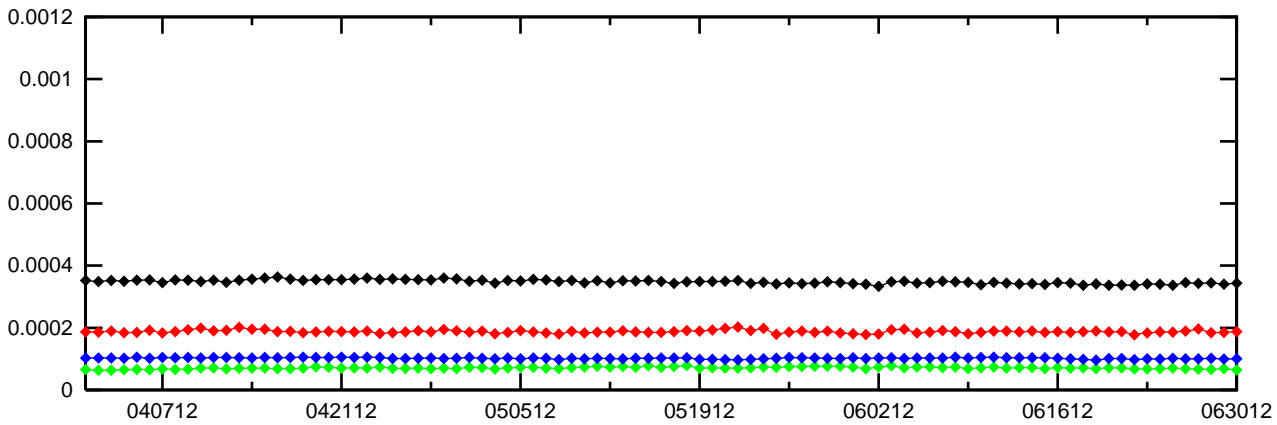
PRN 1 Bias (Daily average)



PRN 2 Bias (Daily average)



PRN 3 Bias (Daily average)



PRN 4 Bias (Daily average)

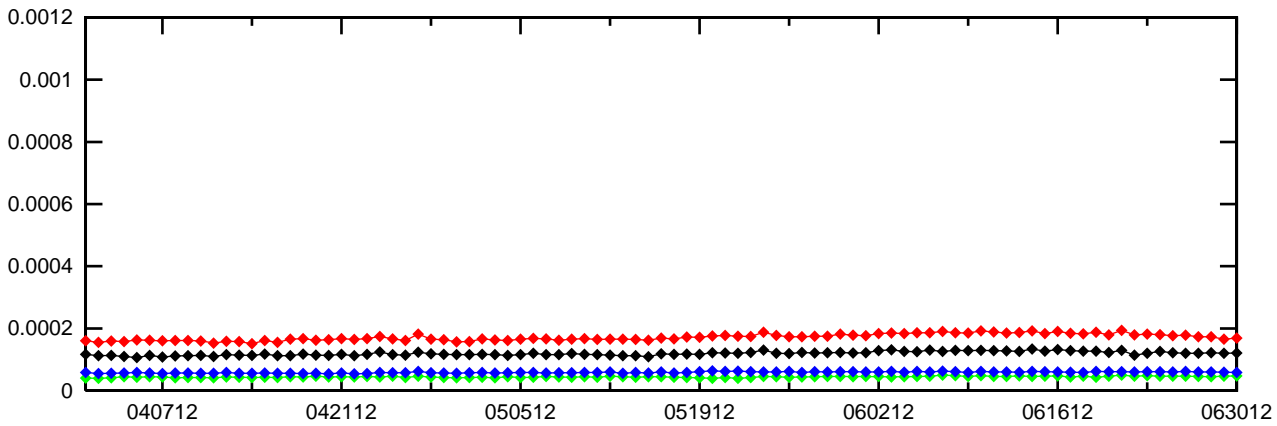
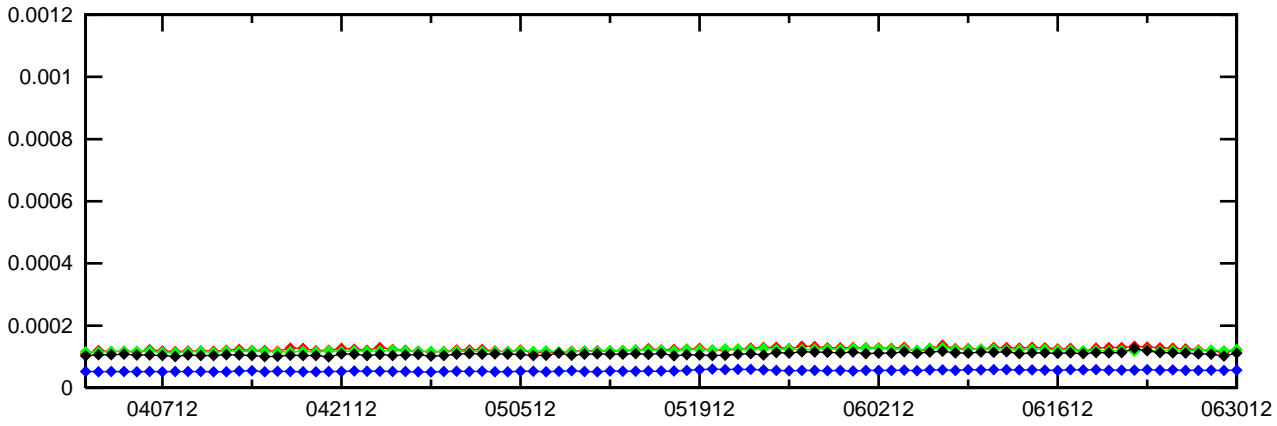
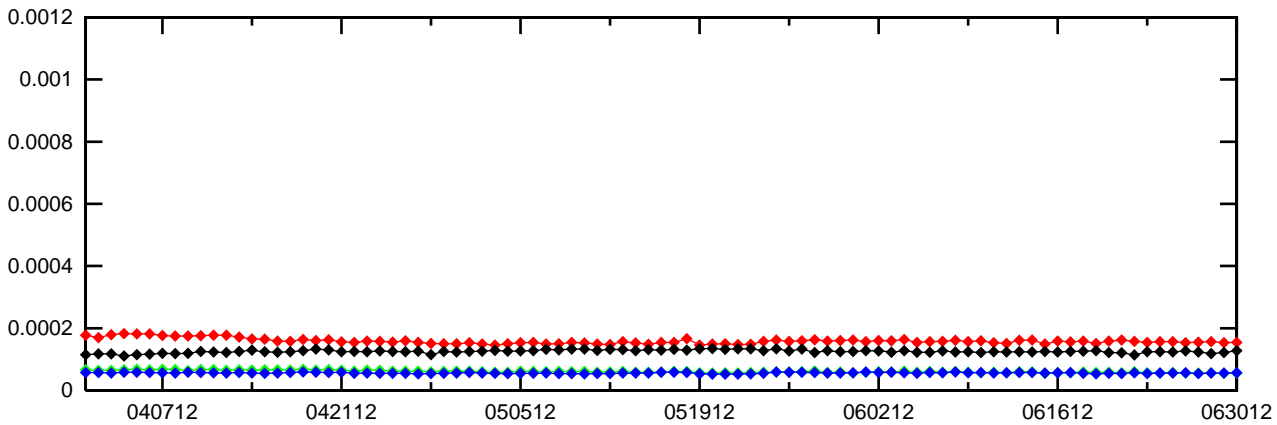


Figure 11-4 PRN Bias Average Trend (PRN 5 - PRN 8)

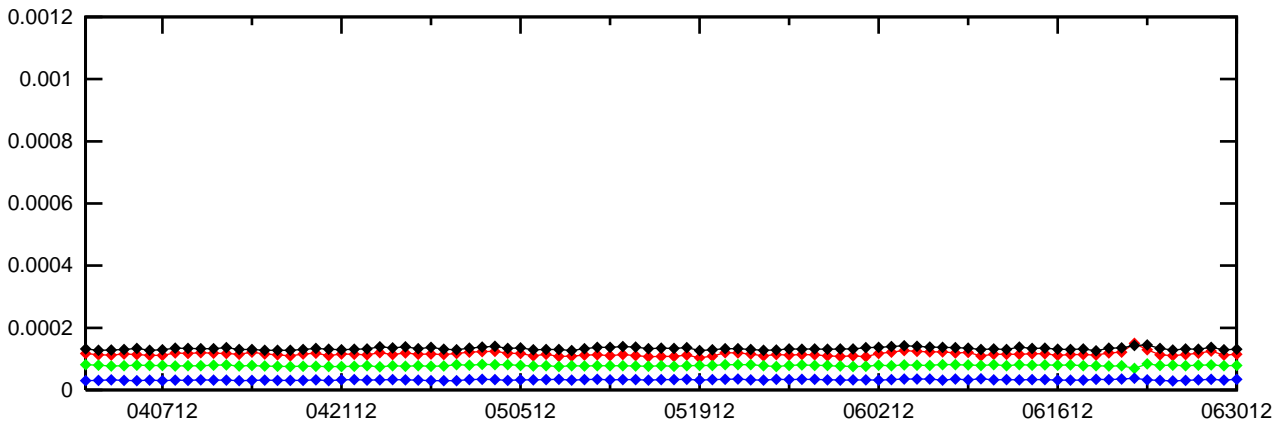
PRN 5 Bias (Daily average)



PRN 6 Bias (Daily average)



PRN 7 Bias (Daily average)



PRN 8 Bias (Daily average)

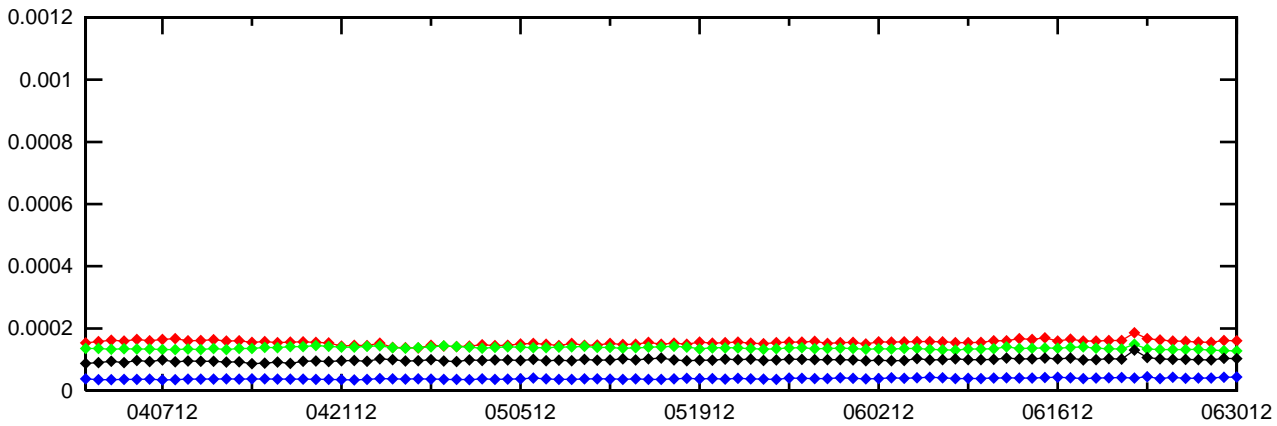
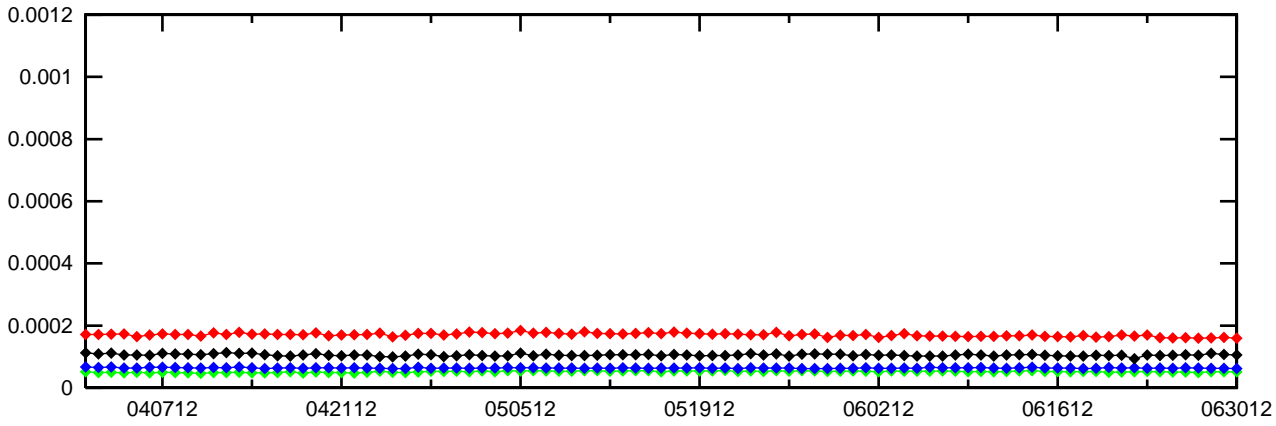
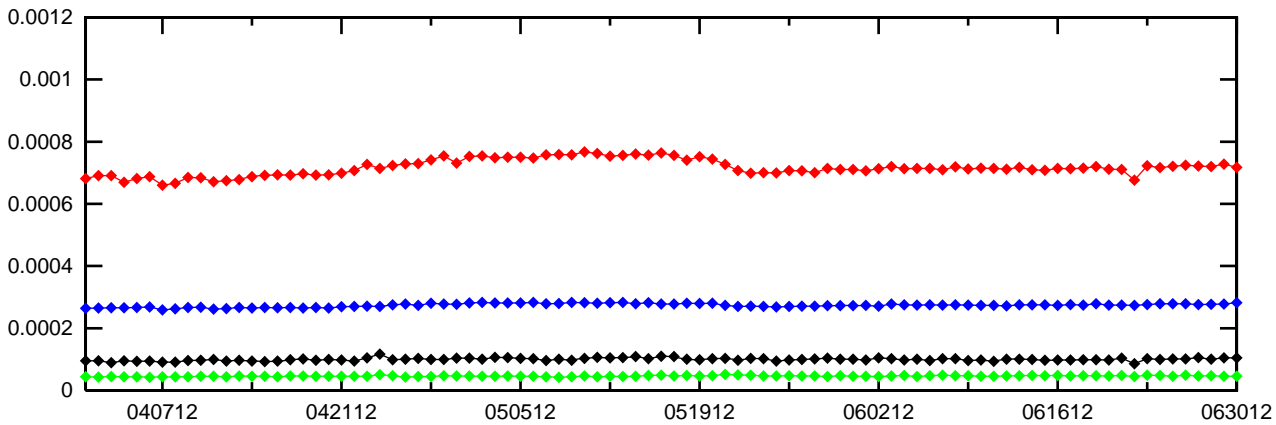


Figure 11-5 PRN Bias Average Trend (PRN 9 - PRN 12)

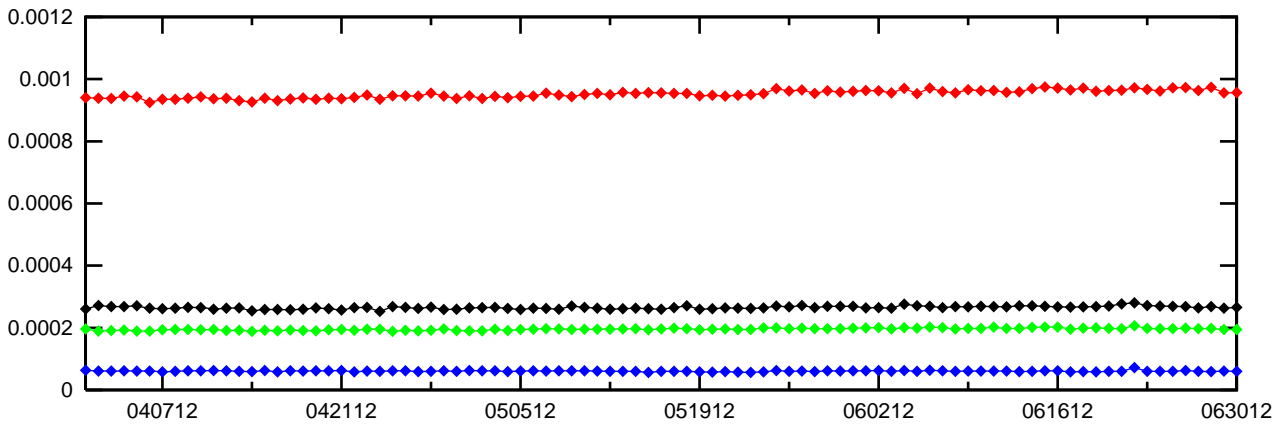
PRN 9 Bias (Daily average)



PRN 10 Bias (Daily average)



PRN 11 Bias (Daily average)



PRN 12 Bias (Daily average)

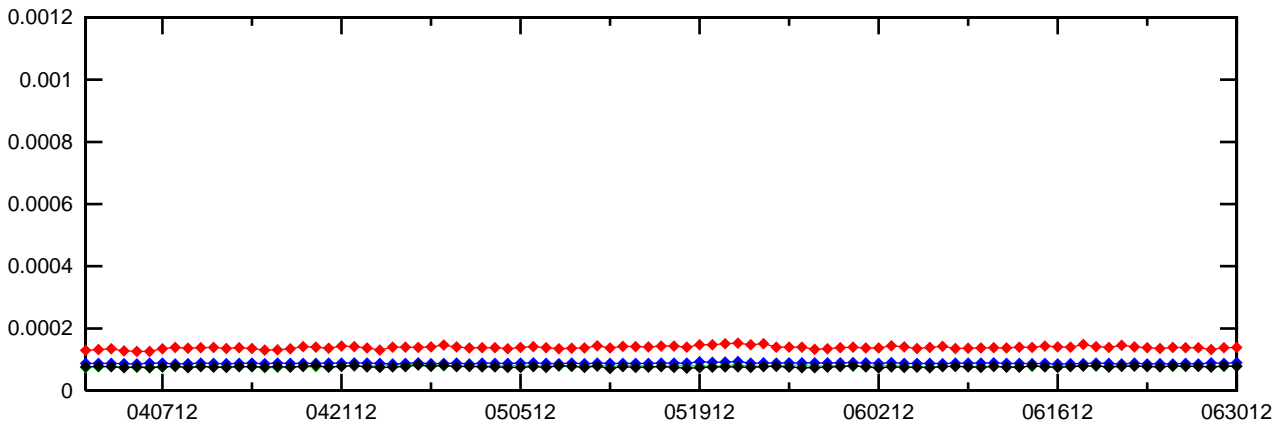
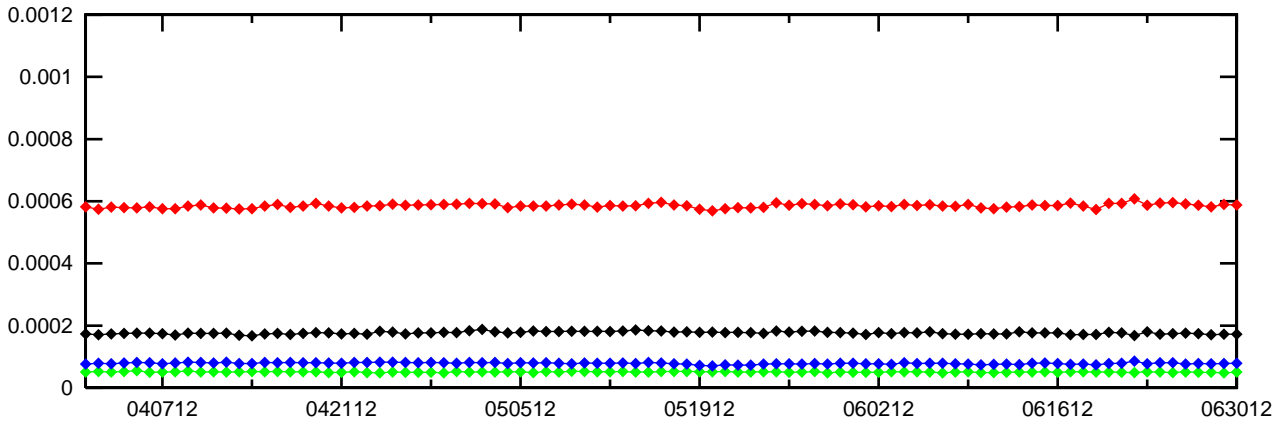


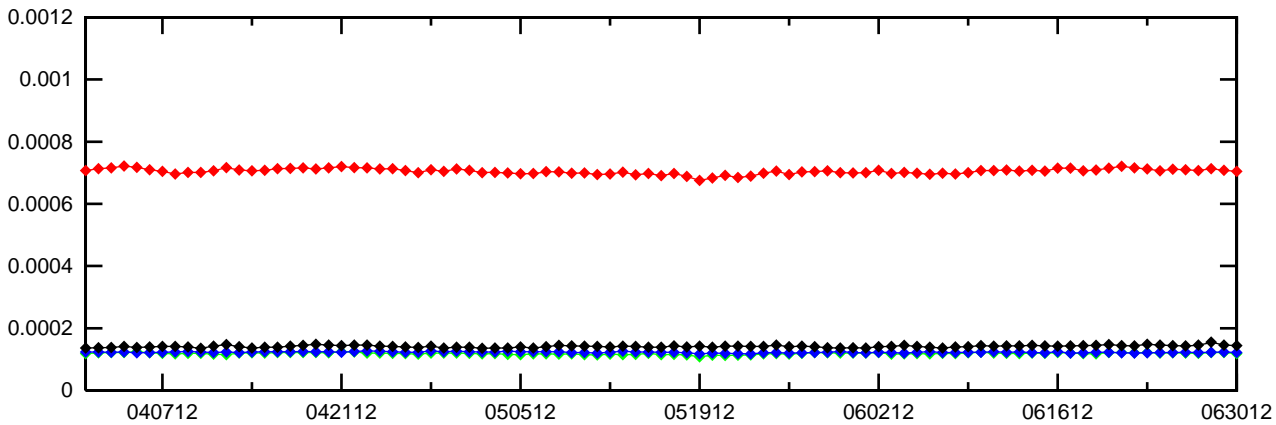
Figure 11-6 PRN Bias Average Trend (PRN 13 - PRN 16)

PRN 13 Bias (Daily average)



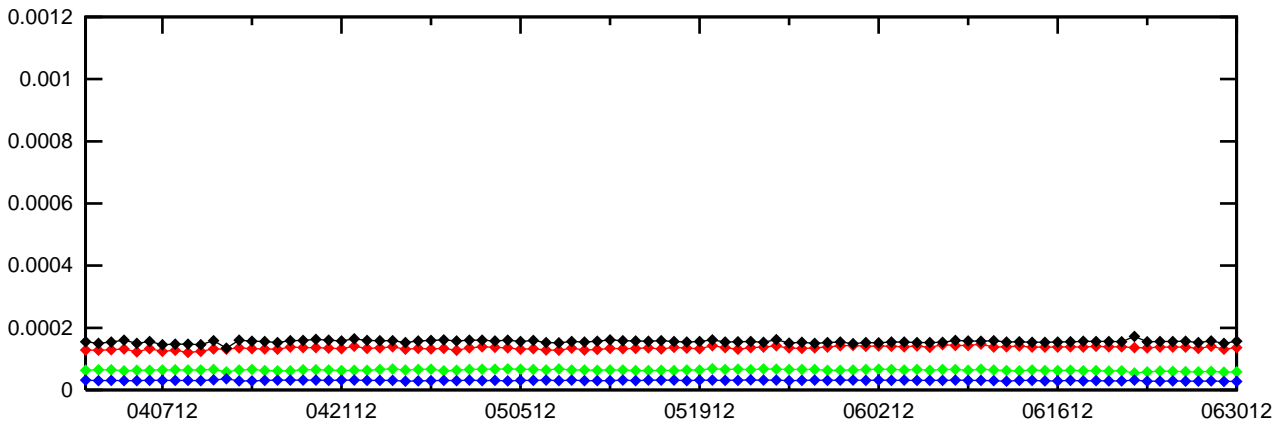
DM1 —◆—
DM2 —◆—
DM3 —◆—
DM4 —◆—

PRN 14 Bias (Daily average)



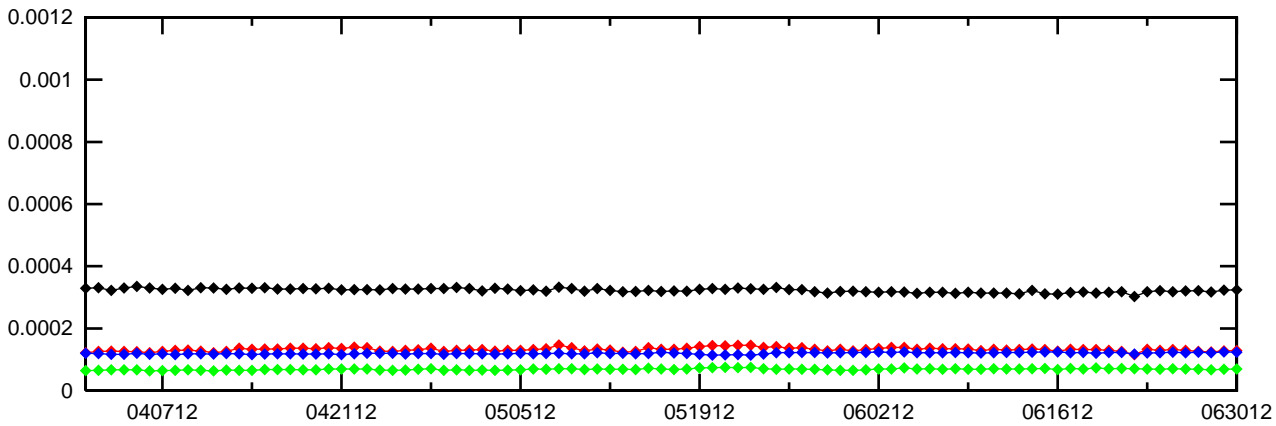
DM1 —◆—
DM2 —◆—
DM3 —◆—
DM4 —◆—

PRN 15 Bias (Daily average)



DM1 —◆—
DM2 —◆—
DM3 —◆—
DM4 —◆—

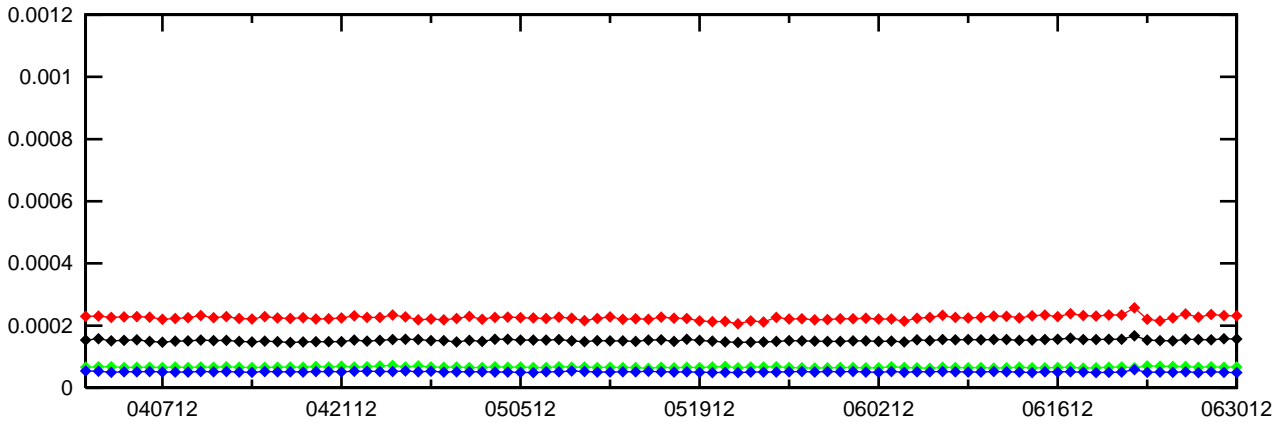
PRN 16 Bias (Daily average)



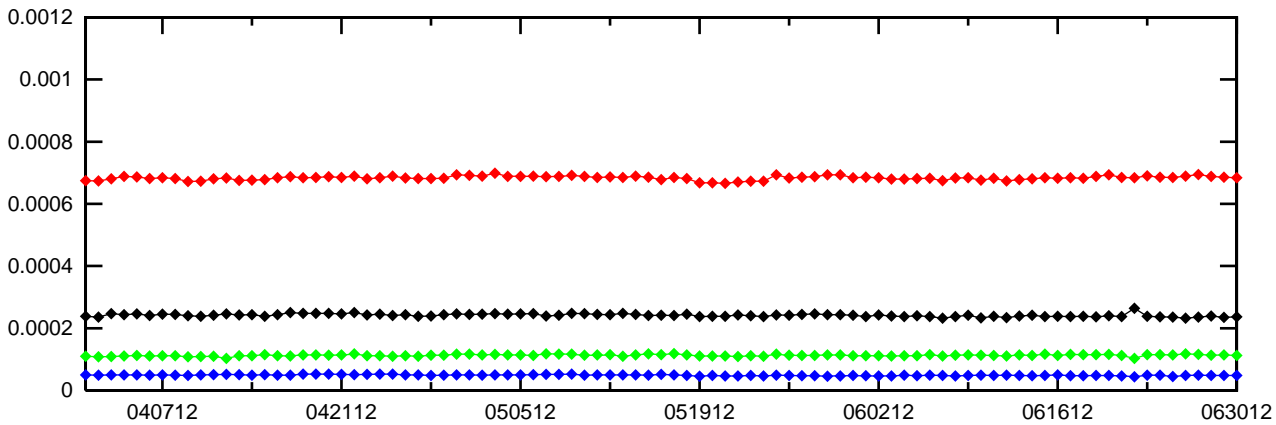
DM1 —◆—
DM2 —◆—
DM3 —◆—
DM4 —◆—

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

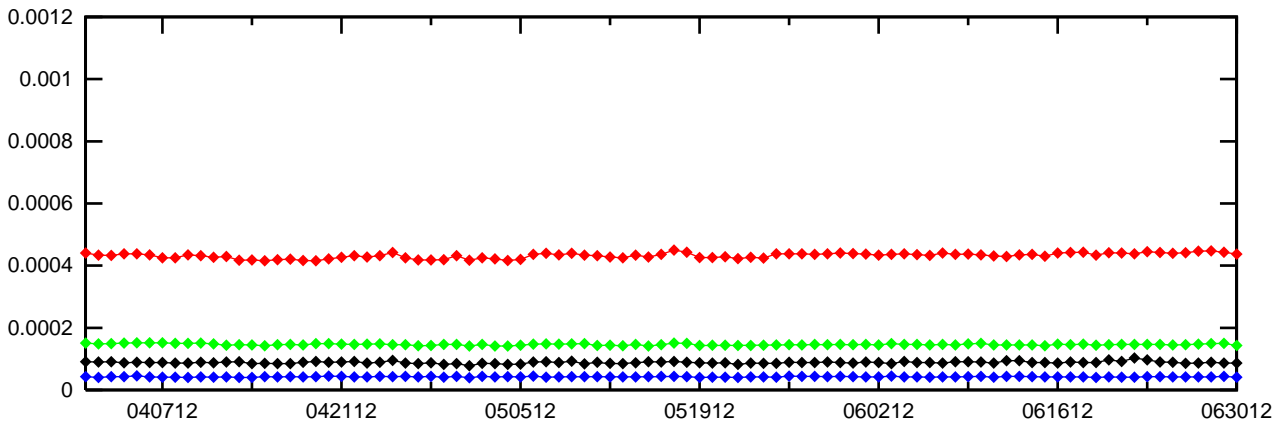
PRN 17 Bias (Daily average)



PRN 18 Bias (Daily average)



PRN 19 Bias (Daily average)



PRN 20 Bias (Daily average)

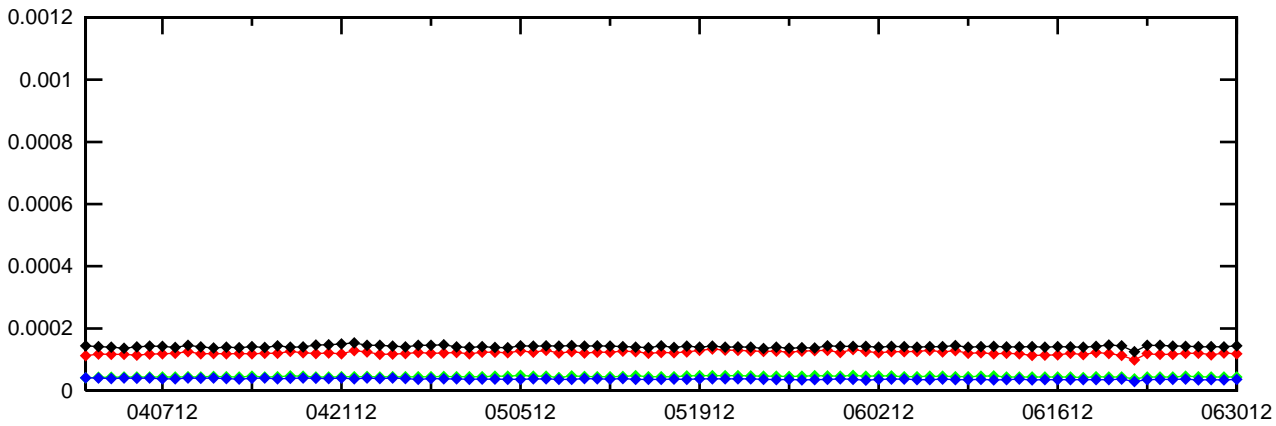
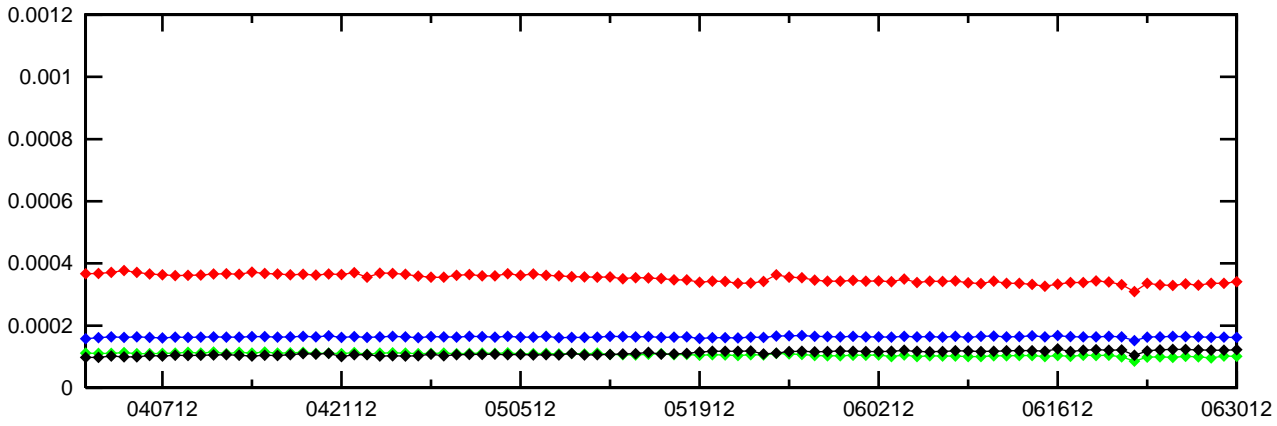


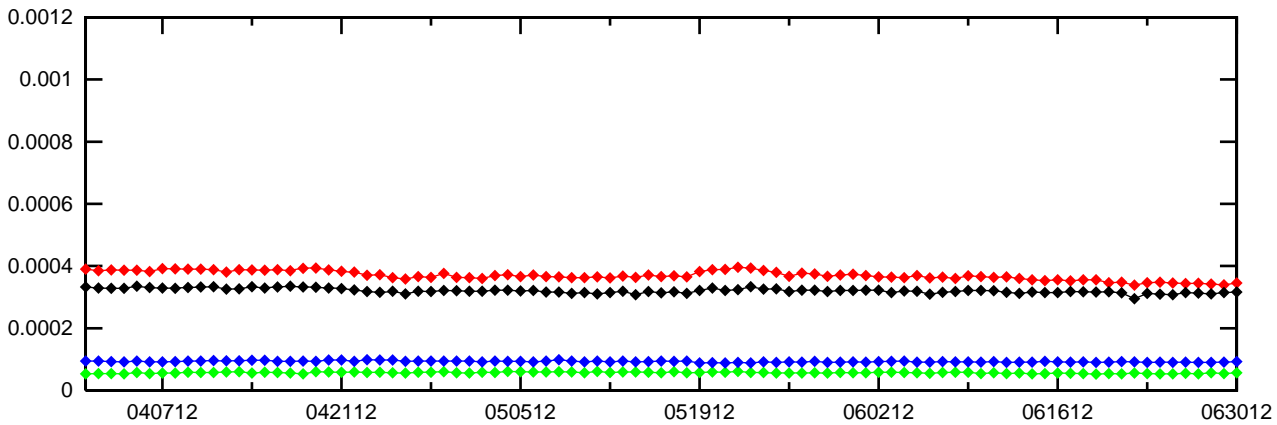
Figure 11-8 PRN Bias Average Trend (PRN 21 - PRN 24)

PRN 21 Bias (Daily average)



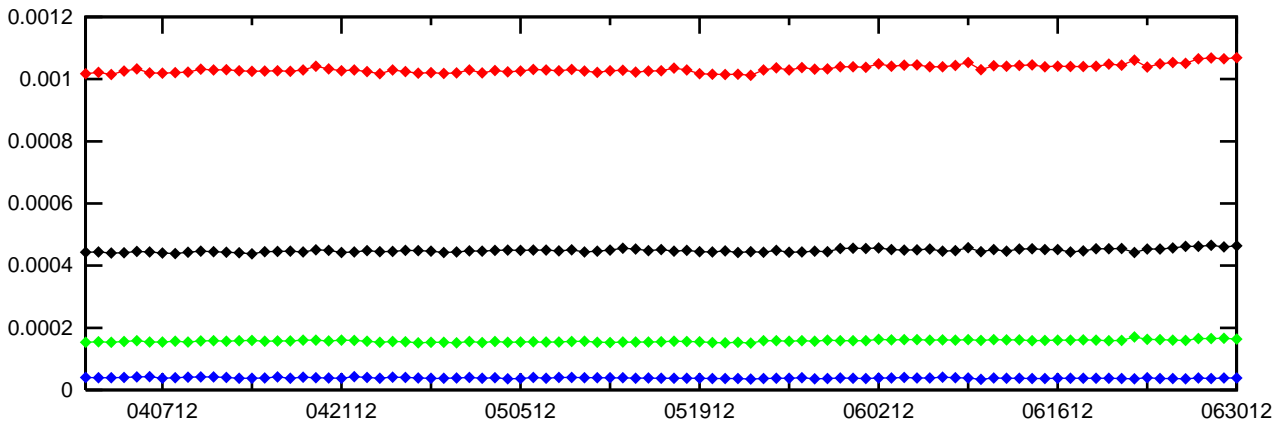
DM1 —◆—
DM2 —◆—
DM3 —◆—
DM4 —◆—

PRN 22 Bias (Daily average)



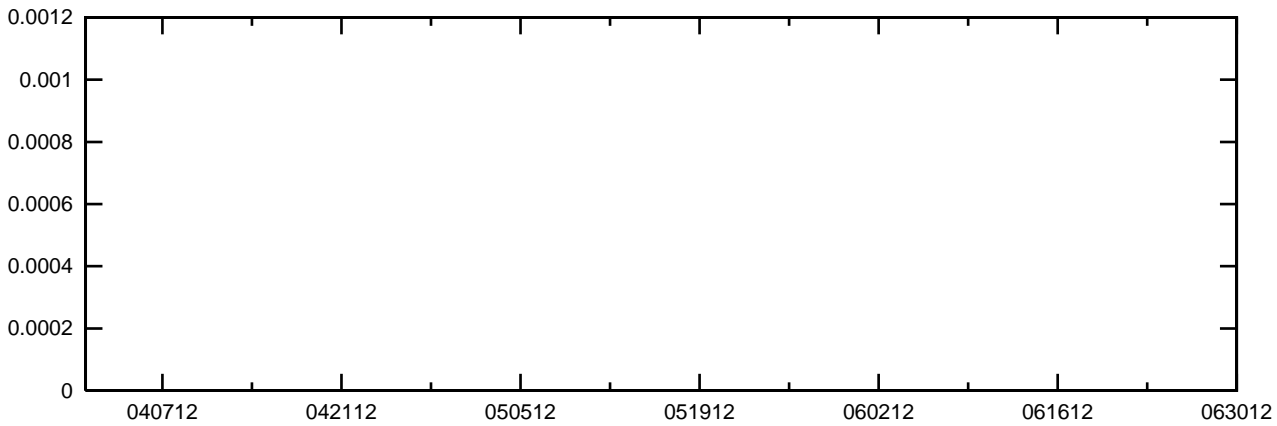
DM1 —◆—
DM2 —◆—
DM3 —◆—
DM4 —◆—

PRN 23 Bias (Daily average)



DM1 —◆—
DM2 —◆—
DM3 —◆—
DM4 —◆—

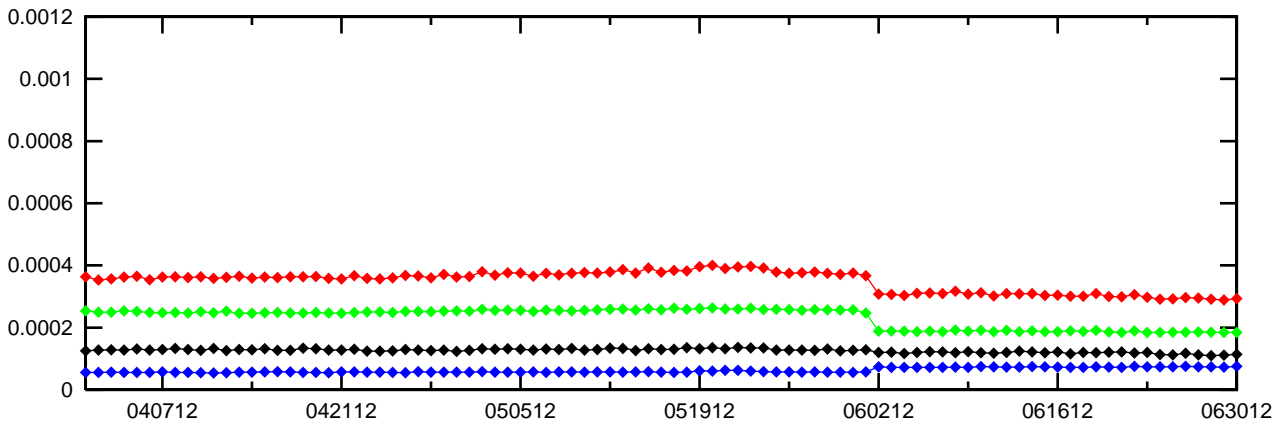
PRN 24 Bias (Daily average)



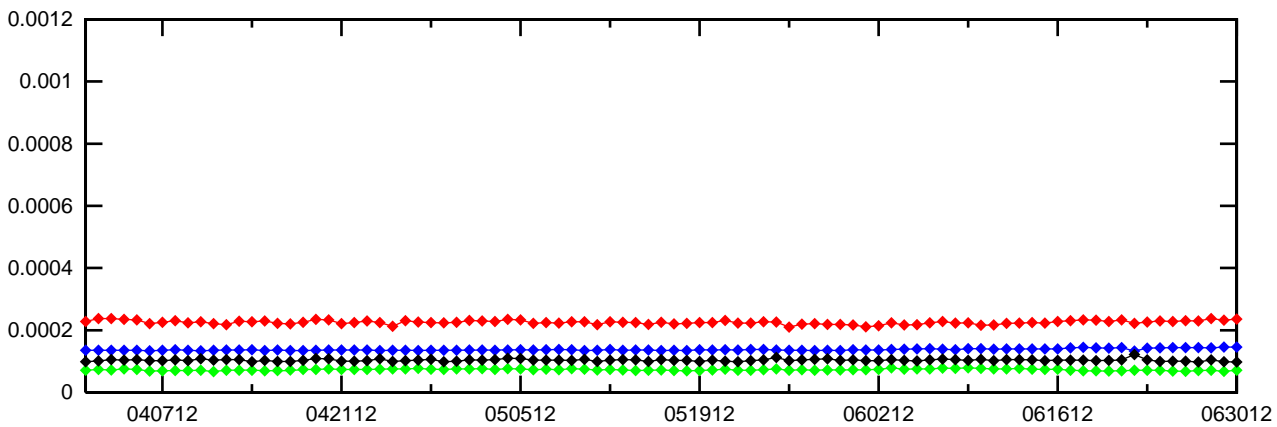
DM1 —◆—
DM2 —◆—
DM3 —◆—
DM4 —◆—

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

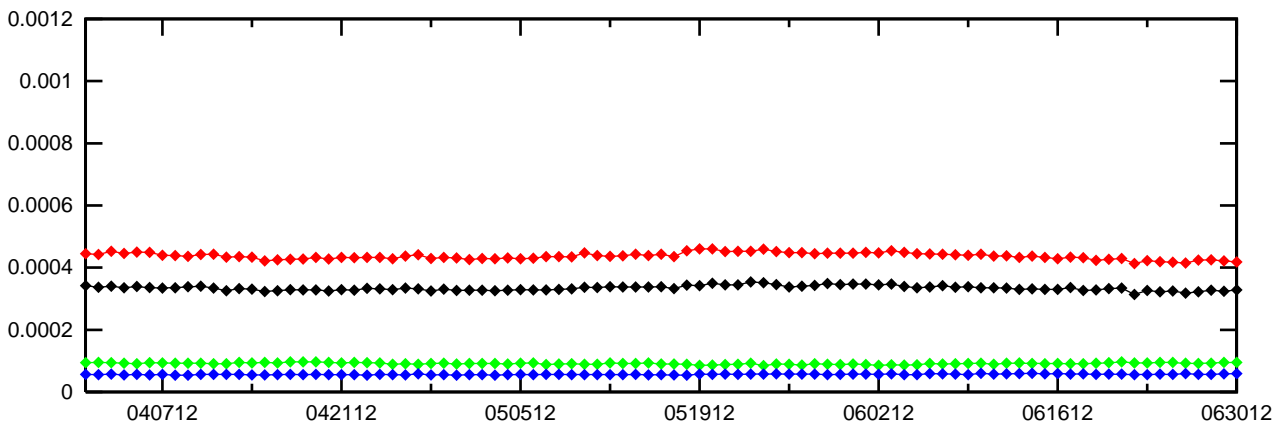
PRN 25 Bias (Daily average)



PRN 26 Bias (Daily average)



PRN 27 Bias (Daily average)



PRN 28 Bias (Daily average)

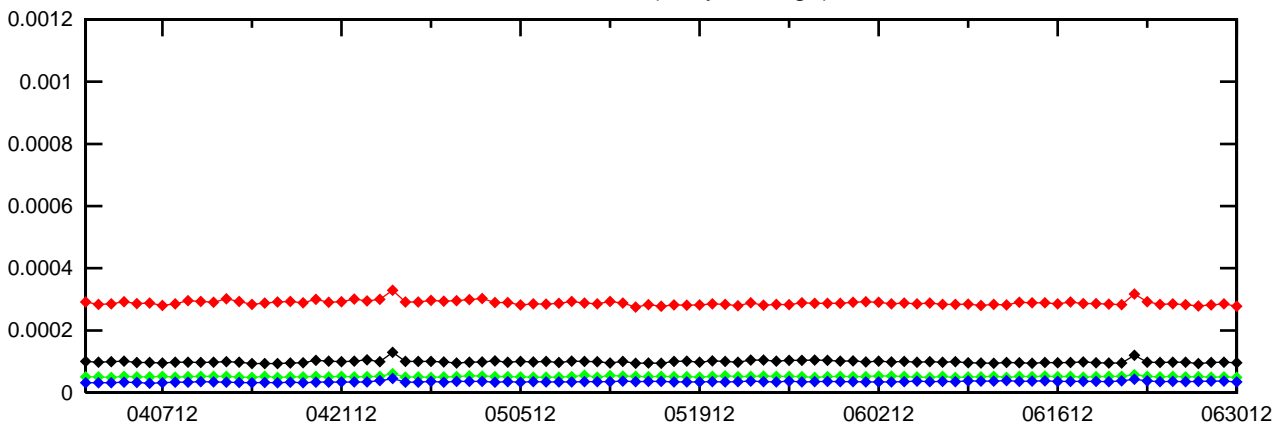
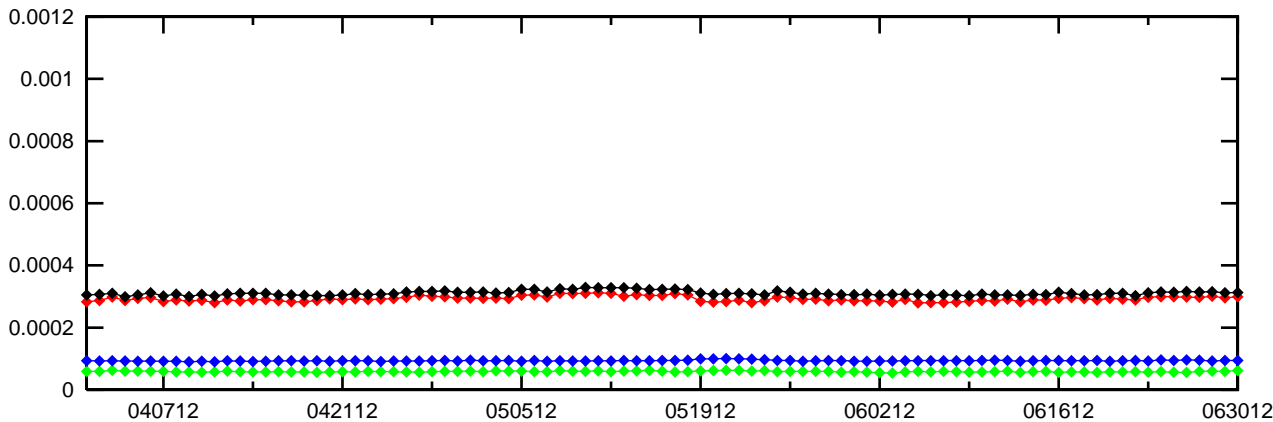
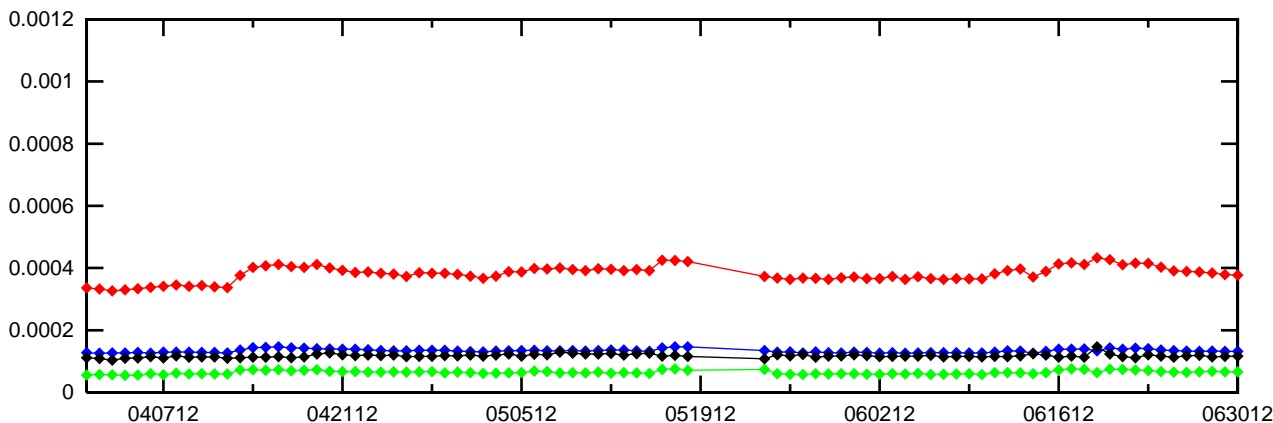


Figure 11-10 PRN Bias Average Trend (PRN 29 - PRN 32)

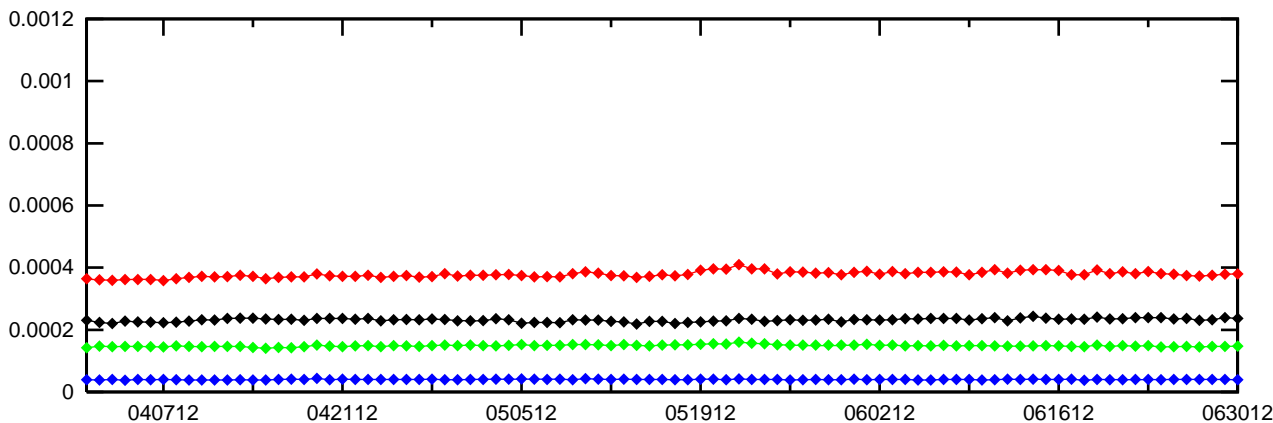
PRN 29 Bias (Daily average)



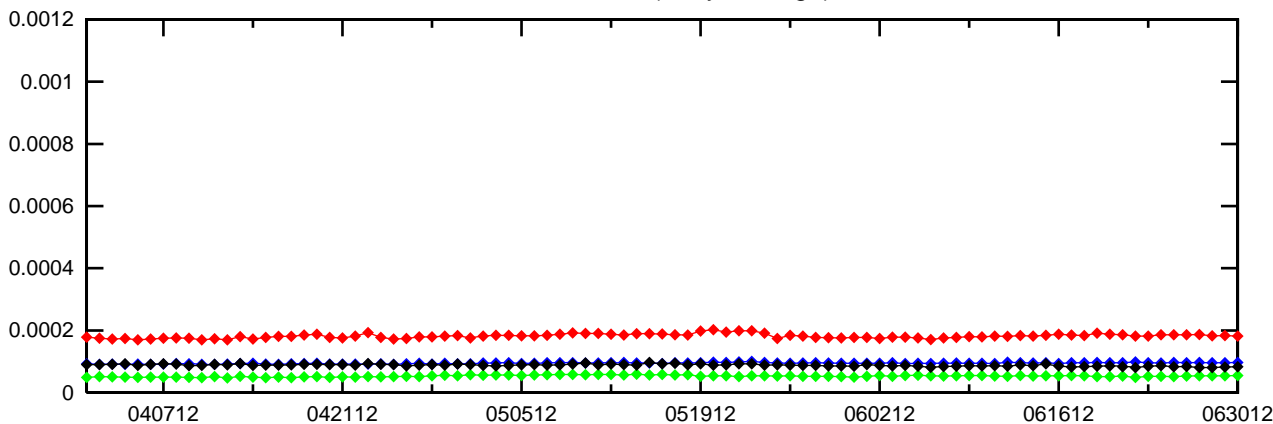
PRN 30 Bias (Daily average)



PRN 31 Bias (Daily average)



PRN 32 Bias (Daily average)



11.4 SQM Trips

SQM trip occurs when the estimated deformation exceeds threshold. There are 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.

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 $1-10^{-7}$ 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.

LPV 200. Localizer Precision with Vertical Guidance to 200 ft decision height. LPV 200 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.

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.

Signal 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 $1-10^{-7}$ 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.

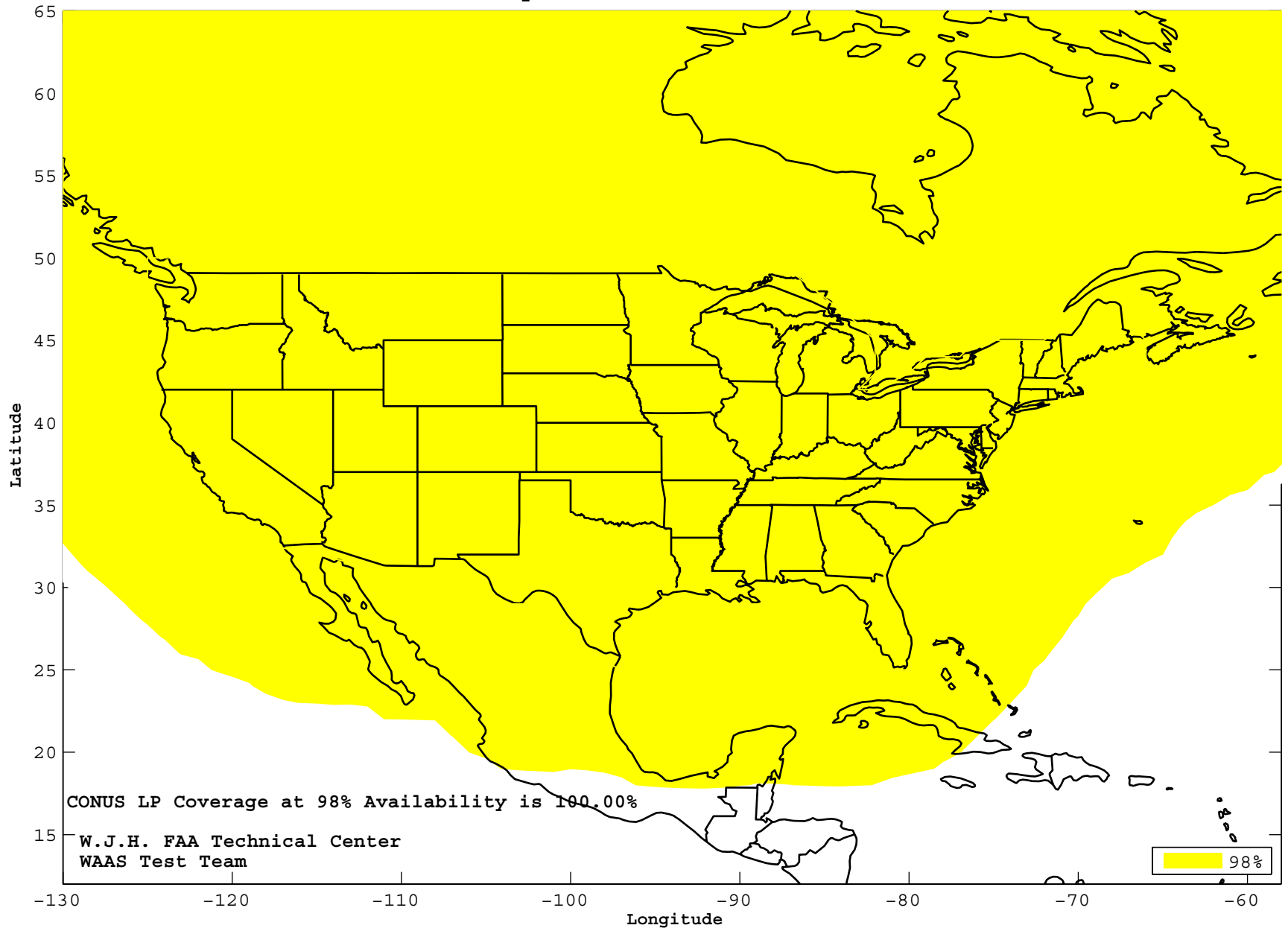
VNAV. Vertical Navigation.

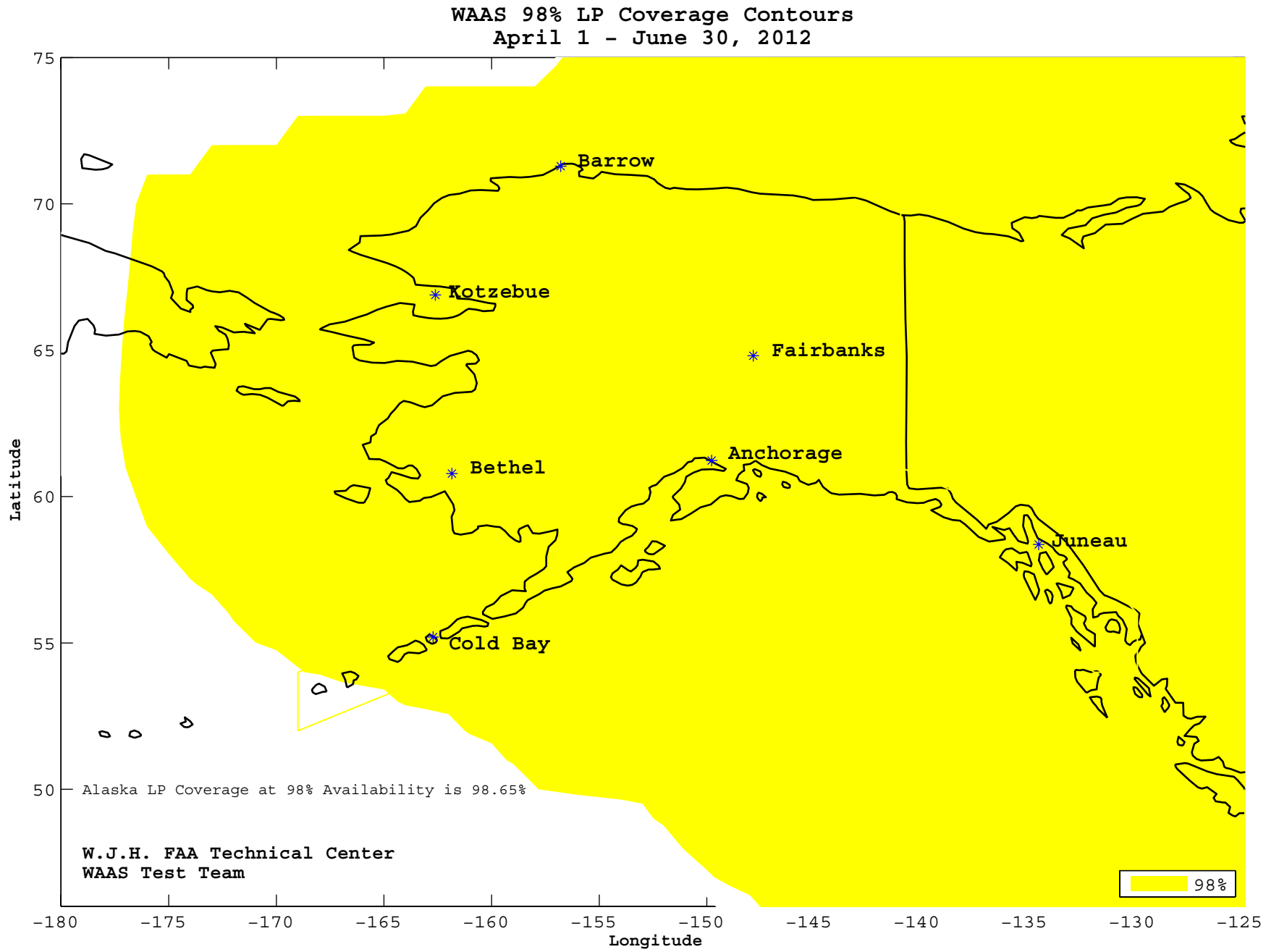
Wide Area Augmentation System (WAAS). The WAAS is made up of an integrity reference monitoring network, processing facilities, geostationary satellites, and control facilities. Wide area reference stations and integrity monitors are widely dispersed data collection sites that contain GPS/WAAS ranging 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% LPV 200 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% LPV 200 availability contour. Figure B-6 shows Alaska coverage with 99% LPV 200 availability contour.

WAAS 98% LP Coverage Contours
April 1 - June 30, 2012





WAAS 98% LPV Coverage Contours
April 1 - June 30, 2012

