OPUS-RS solution : 018772_14_231_A1.14O OP1408627642025

opus <opus@ngs.noaa.gov>

Thu 8/21/2014 7:30 AM

To:Chad Mozol <Chad.Mozol@neciusa.com>;

FILE: 018772_14_231_A1.14O OP1408627642025

NGS OPUS-RS SOLUTION REPORT
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All computed coordinate accuracies are listed as 1-sigma RMS values.
For additional information: http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy

USER: cmozol@neciusa.com DATE: August 21, 2014
RINEX FILE: 0187231r.14o TIME: 13:30:41 UTC

SOFTWARE: rsgps 1.37 RS51.prl 1.99.2 START: 2014/08/19 17:01:45
EPHEMERIS: igr18062.eph [rapid] STOP: 2014/08/19 18:19:30
NAV FILE: brdc2310.14n OBS USED: 4810 / 5455 : 88%
ANT NAME: CHCX90D-OPUS NONE QUALITY IND. 27.38/ 50.73
ARP HEIGHT: 1.8 NORMALIZED RMS: 0.372

REF FRAME: NAD_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2014.63216)

X:	-1378760.525(m)	0.006(m)	-1378761.401(m)	0.006(m)
Y:	-4029855.764(m)	0.011(m)	-4029854.541(m)	0.011(m)
Z:	4732966.907(m)	0.007(m)	4732966.899(m)	0.007(m)
LAT:	48 12 26.08895	0.005(m)	48 12 26.10986	0.005(m)
E LON:	251 6 44.32768	0.004(m)	251 6 44.26837	0.004(m)
W LON:	108 53 15.67232	0.004(m)	108 53 15.73163	0.004(m)
EL HGT:	941.515(m)	0.012(m)	940.927(m)	0.012(m)
ORTHO HGT:	957.049(m)	0.015(m)	[NAVD88 (Computed using GEOID12A)]	

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 12)	SPC (2500 MT)
Northing (Y) [meters]	5341492.506	439908.208
Easting (X) [meters]	656933.011	645492.607
Convergence [degrees]	1.57517667	0.44790971
Point Scale	0.99990261	0.99961088
Combined Factor	0.99975508	0.99946340

US NATIONAL GRID DESIGNATOR: 12UXU5693341492(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DG9749	MTMS MONTANA STATE UNI CORS ARP	N483227.426	W1094111.858	69867.6
DL7731	P053 WHITEWATERMT2007 CORS ARP	N484333.865	W1074331.456	103529.5
DM7133	MTLW LEWISTOWN CORS ARP	N470314.929	W1092633.764	134840.5
DI3425	P052 LRRNCHJRDNMT2006 CORS ARP	N472229.026	W1070107.185	167877.6
DI2257	P049 ARMINGTON_MT2006 CORS ARP	N472059.850	W1105422.382	178817.4

NEAREST NGS PUBLISHED CONTROL POINT

Information on nearest mark is not available due to database connectivity issues or has restrictions on when or how it can be published.

OPUS-RS Extended Output, Level 2

FINAL COORDINATES (ITRF at epoch of observations)

mtms	-1425435.580	-3984013.206	4757493.882
p053	-1283559.264	-4015770.341	4771131.621
mtlw	-1449333.477	-4105829.816	4646773.493
p052	-1266648.334	-4138194.566	4670709.490
p049	-1545099.841	-4044895.874	4669084.575
0187	-1378761.401	-4029854.541	4732966.899

Covariance matrix of the stations:

1 1.6150E-07 3.3750E-07 -3.7130E-07 1.0870E-08 -7.3140E-08 7.7690E-08 9.4820E-09 -9.1800E-08 1.0180E-07 1.0680E-08 -6.8180E-08 7.8590E-08 7.5990E-09 -1.0460E-07 1.1340E-07 3.8830E-08 -1.9420E-09 3.1210E-09

2 3.3750E-07 1.5050E-06 -1.4890E-06 -3.4760E-08 -2.5040E-07 3.5050E-07 -1.1890E-07 -3.7600E-07 3.9560E-07 -4.1950E-08 -4.0670E-07 4.1190E-07 -1.4120E-07 -2.7110E-07 3.3100E-07 2.2470E-08 1.6360E-07 -9.4870E-08

3 -3.7130E-07 -1.4890E-06 1.7430E-06 7.9610E-08 3.5590E-07 -3.8420E-07 1.0190E-07 3.8230E-07 -3.8840E-07 8.1520E-08 4.0410E-07 -4.0450E-07 1.0760E-07 3.4770E-07 -3.6600E-07 -3.2160E-09 -4.8930E-08 7.5860E-08

4 1.0870E-08 -3.4760E-08 7.9610E-08 1.6690E-07 3.2600E-07 -3.2020E-07 -4.9850E-09 -1.1900E-07 9.5700E-08 5.4290E-08 -9.6020E-08 6.3990E-08 -2.7490E-08 -7.5390E-08 8.0330E-08 5.9600E-08 6.7800E-08 -5.3120E-08

5 -7.3140E-08 -2.5040E-07 3.5590E-07 3.2600E-07 1.5550E-06 -1.5420E-06 -1.0150E-07 -3.9310E-07 4.1260E-07 -3.0150E-08 -4.0790E-07 4.1450E-07 -1.2260E-07 -3.0290E-07 3.5850E-07 2.8510E-08 1.0660E-07 -4.1910E-08

6 7.7690E-08 3.5050E-07 -3.8420E-07 -3.2020E-07 -1.5420E-06 1.7710E-06 8.8240E-08 4.0720E-07 -4.0280E-07 5.6610E-08 4.1320E-07 -4.0160E-07 9.8720E-08 3.7070E-07 -3.8310E-07 -1.5370E-08 -9.9580E-09 3.4400E-08

7 9.4820E-09 -1.1890E-07 1.0190E-07 -4.9850E-09 -1.0150E-07 8.8240E-08 1.8060E-07 4.0960E-07 -3.9870E-07 -4.8610E-09 -6.6410E-08 8.3660E-08 1.9900E-08 -1.2320E-07 1.2520E-07 2.7400E-08 -4.6630E-08 3.5910E-08

8 -9.1800E-08 -3.7600E-07 3.8230E-07 -1.1900E-07 -3.9310E-07 4.0720E-07 4.0960E-07 1.7220E-06 -1.6300E-06 -1.2510E-07 -3.8750E-07 4.4140E-07 -7.3140E-08 -3.6590E-07 3.9930E-07 -3.0150E-08 -5.7040E-08 7.0420E-08

9 1.0180E-07 3.9560E-07 -3.8840E-07 9.5700E-08 4.1260E-07 -4.0280E-07 -3.9870E-07 -1.6300E-06 1.7740E-06 9.5830E-08 4.3480E-07 -4.1080E-07 1.0510E-07 3.8670E-07 -3.7220E-07 1.5980E-08 4.1230E-08 1.5000E-08

10 1.0680E-08 -4.1950E-08 8.1520E-08 5.4290E-08 -3.0150E-08 5.6610E-08 -4.8610E-09 -1.2510E-07 9.5830E-08 1.6710E-07 2.7980E-07 -3.1550E-07 -2.7670E-08 -8.1610E-08 8.0870E-08 5.9790E-08 6.1570E-08 -5.2480E-08

11 -6.8180E-08 -4.0670E-07 4.0410E-07 -9.6020E-08 -4.0790E-07 4.1320E-07 -6.6410E-08 -3.8750E-07 4.3480E-07 2.7980E-07 1.8120E-06 -1.6900E-06 -5.0910E-08 -4.0970E-07 4.3810E-07 -7.5070E-09 -8.4970E-08 9.1360E-08

12 7.8590E-08 4.1190E-07 -4.0450E-07 6.3990E-08 4.1450E-07 -4.0160E-07 8.3660E-08 4.4140E-07 -4.1080E-07 -3.1550E-07 -1.6900E-06 1.8180E-06 9.0900E-08 4.2130E-07 -4.0120E-07 -1.1070E-08 5.0490E-08 9.9610E-09

13 7.5990E-09 -1.4120E-07 1.0760E-07 -2.7490E-08 -1.2260E-07 9.8720E-08 1.9900E-08 -7.3140E-08 1.0510E-07

-2.7670E-08 -5.0910E-08 9.0900E-08 2.2820E-07 3.8670E-07 -4.0150E-07 1.4280E-08 -8.1040E-08 6.6740E-08
14 -1.0460E-07 -2.7110E-07 3.4770E-07 -7.5390E-08 -3.0290E-07 3.7070E-07 -1.2320E-07 -3.6590E-07 3.8670E-07
-8.1610E-08 -4.0970E-07 4.2130E-07 3.8670E-07 1.5490E-06 -1.5260E-06 -1.3070E-08 7.2590E-08 -2.5410E-08
15 1.1340E-07 3.3100E-07 -3.6600E-07 8.0330E-08 3.5850E-07 -3.8310E-07 1.2520E-07 3.9930E-07 -3.7220E-07
8.0870E-08 4.3810E-07 -4.0120E-07 -4.0150E-07 -1.5260E-06 1.7230E-06 1.3550E-08 -3.3060E-08 6.4790E-08
16 3.8830E-08 2.2470E-08 -3.2160E-09 5.9600E-08 2.8510E-08 -1.5370E-08 2.7400E-08 -3.0150E-08 1.5980E-08
5.9790E-08 -7.5070E-09 -1.1070E-08 1.4280E-08 -1.3070E-08 1.3550E-08 1.4860E-06 4.4560E-06 -4.7240E-06
17 -1.9420E-09 1.6360E-07 -4.8930E-08 6.7800E-08 1.0660E-07 -9.9580E-09 -4.6630E-08 -5.7040E-08 4.1230E-08
6.1570E-08 -8.4970E-08 5.0490E-08 -8.1040E-08 7.2590E-08 -3.3060E-08 4.4560E-06 2.0020E-05 -2.0580E-05
18 3.1210E-09 -9.4870E-08 7.5860E-08 -5.3120E-08 -4.1910E-08 3.4400E-08 3.5910E-08 7.0420E-08 1.5000E-08
-5.2480E-08 9.1360E-08 9.9610E-09 6.6740E-08 -2.5410E-08 6.4790E-08 -4.7240E-06 -2.0580E-05 2.2970E-05

Covariance Matrix for the xyz OPUS Rover Position (meters^2).

0.0000014860	0.0000044560	-0.0000047240
0.0000044560	0.0000200200	-0.0000205800
-0.0000047240	-0.0000205800	0.0000229700

Covariance Matrix for the enu OPUS Position (meters^2).

0.0000006986	-0.0000001350	0.0000030709
-0.0000001350	0.0000008903	-0.0000011316
0.0000030709	-0.0000011316	0.0000428871

Horizontal network accuracy = 0.00219 meters.
Vertical network accuracy = 0.01284 meters.

Vectors

To	From	X	Y	Z
mtms	0187	-46674.179	45841.335	24526.982
p053	0187	95202.137	14084.201	38164.722
mtlw	0187	-70572.076	-75975.274	-86193.406
p052	0187	112113.067	-108340.025	-62257.409
p049	0187	-166338.440	-15041.333	-63882.324

Covariance matrix of the 5 vectors
1 1.5698E-06 4.7730E-06 -5.0952E-06 1.3984E-06 4.3563E-06 -4.6341E-06 1.4293E-06 4.3963E-06 -4.6413E-06
1.3981E-06 4.3973E-06 -4.6375E-06 1.4405E-06 4.3664E-06 -4.6273E-06
2 4.7730E-06 2.1198E-05 -2.1925E-05 4.3310E-06 1.9499E-05 -2.0125E-05 4.3613E-06 1.9537E-05 -2.0131E-05
4.3300E-06 1.9535E-05 -2.0124E-05 4.3734E-06 1.9513E-05 -2.0121E-05
3 -5.0952E-06 -2.1925E-05 2.4561E-05 -4.5881E-06 -2.0133E-05 2.2476E-05 -4.6548E-06 -2.0219E-05 2.2491E-05
-4.5868E-06 -2.0218E-05 2.2480E-05 -4.6799E-06 -2.0158E-05 2.2463E-05
4 1.3984E-06 4.3310E-06 -4.5881E-06 1.5337E-06 4.6857E-06 -4.9757E-06 1.3940E-06 4.2994E-06 -4.5912E-06
1.4209E-06 4.2997E-06 -4.5958E-06 1.3846E-06 4.3259E-06 -4.6041E-06
5 4.3563E-06 1.9499E-05 -2.0133E-05 4.6857E-06 2.1362E-05 -2.2070E-05 4.3726E-06 1.9577E-05 -2.0167E-05
4.3358E-06 1.9590E-05 -2.0174E-05 4.3859E-06 1.9538E-05 -2.0147E-05
6 -4.6341E-06 -2.0125E-05 2.2476E-05 -4.9757E-06 -2.2070E-05 2.4672E-05 -4.6563E-06 -2.0233E-05 2.2518E-05
-4.5995E-06 -2.0248E-05 2.2524E-05 -4.6767E-06 -2.0174E-05 2.2488E-05
7 1.4293E-06 4.3613E-06 -4.6548E-06 1.3940E-06 4.3726E-06 -4.6563E-06 1.6118E-06 4.9424E-06 -5.1746E-06
1.3939E-06 4.4437E-06 -4.6652E-06 1.4642E-06 4.3925E-06 -4.6483E-06
8 4.3963E-06 1.9537E-05 -2.0219E-05 4.2993E-06 1.9577E-05 -2.0233E-05 4.9424E-06 2.1856E-05 -2.2322E-05
4.2995E-06 1.9775E-05 -2.0260E-05 4.4940E-06 1.9639E-05 -2.0218E-05
9 -4.6413E-06 -2.0131E-05 2.2491E-05 -4.5912E-06 -2.0167E-05 2.2518E-05 -5.1746E-06 -2.2322E-05 2.4714E-05
-4.5917E-06 -2.0278E-05 2.2534E-05 -4.7016E-06 -2.0209E-05 2.2518E-05

10 1.3981E-06 4.3300E-06 -4.5868E-06 1.4209E-06 4.3358E-06 -4.5995E-06 1.3939E-06 4.2995E-06 -4.5917E-06
1.5335E-06 4.6817E-06 -4.9760E-06 1.3843E-06 4.3259E-06 -4.6042E-06
11 4.3973E-06 1.9535E-05 -2.0218E-05 4.2997E-06 1.9590E-05 -2.0248E-05 4.4437E-06 1.9775E-05 -2.0278E-05
4.6817E-06 2.2002E-05 -2.2412E-05 4.4936E-06 1.9623E-05 -2.0200E-05
12 -4.6375E-06 -2.0124E-05 2.2480E-05 -4.5958E-06 -2.0174E-05 2.2524E-05 -4.6652E-06 -2.0260E-05 2.2534E-05
-4.9760E-06 -2.2412E-05 2.4768E-05 -4.6888E-06 -2.0184E-05 2.2494E-05
13 1.4405E-06 4.3734E-06 -4.6799E-06 1.3846E-06 4.3859E-06 -4.6767E-06 1.4642E-06 4.4940E-06 -4.7016E-06
1.3843E-06 4.4936E-06 -4.6888E-06 1.6856E-06 4.9368E-06 -5.2058E-06
14 4.3664E-06 1.9513E-05 -2.0158E-05 4.3259E-06 1.9538E-05 -2.0174E-05 4.3925E-06 1.9639E-05 -2.0209E-05
4.3259E-06 1.9623E-05 -2.0184E-05 4.9368E-06 2.1424E-05 -2.2048E-05
15 -4.6273E-06 -2.0121E-05 2.2463E-05 -4.6041E-06 -2.0147E-05 2.2488E-05 -4.6483E-06 -2.0218E-05 2.2518E-05
-4.6042E-06 -2.0200E-05 2.2494E-05 -5.2058E-06 -2.2048E-05 2.4563E-05

Correlation matrix of the 5 vectors
1 1.0000E+00 8.2740E-01 -8.2056E-01 9.0125E-01 7.5226E-01 -7.4461E-01 8.9852E-01 7.5054E-01 -7.4514E-01
9.0106E-01 7.4821E-01 -7.4371E-01 8.8552E-01 7.5292E-01 -7.4517E-01
2 8.2740E-01 1.0000E+00 -9.6089E-01 7.5957E-01 9.1634E-01 -8.7999E-01 7.4612E-01 9.0769E-01 -8.7952E-01
7.5945E-01 9.0455E-01 -8.7825E-01 7.3162E-01 9.1564E-01 -8.8178E-01
3 -8.2056E-01 -9.6089E-01 1.0000E+00 -7.4754E-01 -8.7896E-01 9.1302E-01 -7.3981E-01 -8.7267E-01 9.1287E-01
-7.4737E-01 -8.6974E-01 9.1142E-01 -7.2733E-01 -8.7876E-01 9.1454E-01
4 9.0125E-01 7.5957E-01 -7.4754E-01 1.0000E+00 8.1862E-01 -8.0887E-01 8.8663E-01 7.4259E-01 -7.4573E-01
9.2651E-01 7.4018E-01 -7.4567E-01 8.6115E-01 7.5467E-01 -7.5012E-01
5 7.5226E-01 9.1634E-01 -8.7896E-01 8.1862E-01 1.0000E+00 -9.6135E-01 7.4519E-01 9.0604E-01 -8.7770E-01
7.5753E-01 9.0364E-01 -8.7706E-01 7.3090E-01 9.1329E-01 -8.7950E-01
6 -7.4461E-01 -8.7999E-01 9.1302E-01 -8.0887E-01 -9.6135E-01 1.0000E+00 -7.3838E-01 -8.7132E-01 9.1191E-01
-7.4777E-01 -8.6906E-01 9.1116E-01 -7.2518E-01 -8.7748E-01 9.1348E-01
7 8.9852E-01 7.4612E-01 -7.3981E-01 8.8663E-01 7.4519E-01 -7.3838E-01 1.0000E+00 8.3271E-01 -8.1988E-01
8.8664E-01 7.4621E-01 -7.3836E-01 8.8832E-01 7.4749E-01 -7.3874E-01
8 7.5054E-01 9.0769E-01 -8.7267E-01 7.4259E-01 9.0604E-01 -8.7132E-01 8.3271E-01 1.0000E+00 -9.6044E-01
7.4265E-01 9.0176E-01 -8.7076E-01 7.4041E-01 9.0756E-01 -8.7259E-01
9 -7.4514E-01 -8.7952E-01 9.1287E-01 -7.4573E-01 -8.7770E-01 9.1191E-01 -8.1988E-01 -9.6044E-01 1.0000E+00
-7.4586E-01 -8.6960E-01 9.1080E-01 -7.2844E-01 -8.7827E-01 9.1393E-01
10 9.0106E-01 7.5945E-01 -7.4737E-01 9.2651E-01 7.5753E-01 -7.4777E-01 8.8664E-01 7.4265E-01 -7.4586E-01
1.0000E+00 8.0599E-01 -8.0739E-01 8.6097E-01 7.5471E-01 -7.5018E-01
11 7.4821E-01 9.0455E-01 -8.6974E-01 7.4018E-01 9.0364E-01 -8.6906E-01 7.4621E-01 9.0176E-01 -8.6960E-01
8.0599E-01 1.0000E+00 -9.6007E-01 7.3788E-01 9.0381E-01 -8.6892E-01
12 -7.4371E-01 -8.7825E-01 9.1142E-01 -7.4567E-01 -8.7706E-01 9.1116E-01 -7.3836E-01 -8.7076E-01 9.1080E-01
-8.0739E-01 -9.6007E-01 1.0000E+00 -7.2566E-01 -8.7621E-01 9.1196E-01
13 8.8552E-01 7.3162E-01 -7.2733E-01 8.6115E-01 7.3090E-01 -7.2518E-01 8.8832E-01 7.4041E-01 -7.2844E-01
8.6097E-01 7.3788E-01 -7.2566E-01 1.0000E+00 8.2152E-01 -8.0902E-01
14 7.5292E-01 9.1564E-01 -8.7876E-01 7.5467E-01 9.1329E-01 -8.7748E-01 7.4749E-01 9.0756E-01 -8.7827E-01
7.5471E-01 9.0381E-01 -8.7621E-01 8.2152E-01 1.0000E+00 -9.6110E-01
15 -7.4517E-01 -8.8178E-01 9.1454E-01 -7.5012E-01 -8.7950E-01 9.1348E-01 -7.3874E-01 -8.7259E-01 9.1393E-01
-7.5018E-01 -8.6892E-01 9.1196E-01 -8.0902E-01 -9.6110E-01 1.0000E+00

G-FILE for the vectors

Axx2014 8192014 819
B20140819170020140819180 0 5 rsgps 1.37IGS
lant_info.003 NGS
C00060001 -466741788 12 458413354 46 245269824 49
C00060002 952021365 12 140842006 46 381647220 49

C00060003 -705720761 12 -759752744 46 -861934058 49
C00060004 1121130666 12-1083400245 46 -622574087 49
C00060005-1663384401 12 -150413330 46 -638823244 49
D 1 2 8274005 1 3 -8205564 1 4 9012513 1 5 7522641 1 6 -7446121
D 1 7 8985154 1 8 7505380 1 9 -7451445 1 10 9010593 1 11 7482123
D 1 12 -7437147 1 13 8855229 1 14 7529195 1 15 -7451656 2 3 -9608877
D 2 4 7595730 2 5 9163406 2 6 -8799935 2 7 7461239 2 8 9076870
D 2 9 -8795150 2 10 7594492 2 11 9045450 2 12 -8782470 2 13 7316247
D 2 14 9156378 2 15 -8817820 3 4 -7475372 3 5 -8789611 3 6 9130208
D 3 7 -7398086 3 8 -8726741 3 9 9128653 3 10 -7473741 3 11 -8697397
D 3 12 9114197 3 13 -7273289 3 14 -8787647 3 15 9145440 4 5 8186239
D 4 6 -8088740 4 7 8866284 4 8 7425854 4 9 -7457284 4 10 9265067
D 4 11 7401779 4 12 -7456699 4 13 8611545 4 14 7546677 4 15 -7501189
D 5 6 -9613511 5 7 7451903 5 8 9060426 5 9 -8776974 5 10 7575348
D 5 11 9036399 5 12 -8770587 5 13 7309040 5 14 9132942 5 15 -8795021
D 6 7 -7383825 6 8 -8713162 6 9 9119068 6 10 -7477660 6 11 -8690645
D 6 12 9111632 6 13 -7251845 6 14 -8774818 6 15 9134754 7 8 8327112
D 7 9 -8198772 7 10 8866385 7 11 7462104 7 12 -7383574 7 13 8883177
D 7 14 7474940 7 15 -7387379 8 9 -9604364 8 10 7426515 8 11 9017561
D 8 12 -8707563 8 13 7404050 8 14 9075589 8 15 -8725873 9 10 -7458550
D 9 11 -8695981 9 12 9108046 9 13 -7284396 9 14 -8782687 9 15 9139323
D 10 11 8059939 10 12 -8073932 10 13 8609749 10 14 7547138 10 15 -7501792
D 11 12 -9600659 11 13 7378788 11 14 9038146 11 15 -8689219 12 13 -7256552
D 12 14 -8762093 12 15 9119626 13 14 8215150 13 15 -8090210 14 15 -9610966

ITRF position of 0187 as determined by individual baselines

	X	Y	Z
mtms	-1378761.406	-4029854.553	4732966.900
p053	-1378761.392	-4029854.524	4732966.886
mtlw	-1378761.403	-4029854.536	4732966.897
p052	-1378761.407	-4029854.542	4732966.898
p049	-1378761.398	-4029854.541	4732966.899

Residuals of position determined by individual baselines from the final position

	X	Y	Z	East	North	Up
mtms	-0.005	-0.012	0.001	-0.001	-0.009	0.009
p053	0.009	0.017	-0.013	0.003	0.006	-0.022
mtlw	-0.003	0.006	-0.002	-0.004	0.002	-0.005
p052	-0.006	-0.000	-0.001	-0.006	-0.003	0.001
p049	0.003	0.000	0.000	0.002	0.001	-0.000

STATE PLANE COORDINATES - International Foot
SPC (2500 MT)

Northing (Y) [feet]	1443268.399
Easting (X) [feet]	2117757.897
Convergence [degrees]	0.44790971
Point Scale	0.99961088
Combined Factor	0.99946340

** Orthometric Heights Above Future Geopotential Datum.

Prototype orthometric heights are now being made available as a precursor to the completion of GRAV-D and the replacement of NAVD 88 with a new geopotential reference system. The following height reflects the current best estimate of the true orthometric height, based on the existing gravimetric geoid model. This height is subject to change as data and modeling for the gravimetric geoid change throughout the lifetime of the GRAV-D project, or as new realizations of the ITRF are adopted. However, at the completion of GRAV-D, these heights will supersede the NAVD 88 heights

APPROX ORTHO HGT: 956.048 (m) [PROTOTYPE (Computed using USGG2012,GRS80,IGS08)]

dop from interpolation is 0.516
scatter (mean square distance from rover) is 18786.057
average edop for rover is 0.620
average ndop for rover is 0.770
average hdop for rover is 0.989
average vdop for rover is 1.720
average gdop for rover is 2.250

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.