

## OPUS-RS solution : 018772\_14\_227\_A2.14O OP1408379405920

opus &lt;opus@ngs.noaa.gov&gt;

Mon 8/18/2014 10:34 AM

To:John Freetly &lt;John.Freetly@neciusa.com&gt;;

FILE: 018772\_14\_227\_A2.14O OP1408379405920

## 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: john.freetly@neciusa.com                      DATE: August 18, 2014  
 RINEX FILE: 0187227t.14o                              TIME: 16:34:02 UTC

SOFTWARE: rsgps 1.37 RS51.prl 1.99.2              START: 2014/08/15 19:41:30  
 EPHEMERIS: igr18055.eph [rapid]                      STOP: 2014/08/15 21:23:45  
 NAV FILE: brdc2270.14n                              OBS USED: 4705 / 6190 : 76%  
 ANT NAME: CHCX90D-OPUS    NONE                      QUALITY IND. 23.26/ 38.25  
 ARP HEIGHT: 1.80000                                  NORMALIZED RMS:    0.462

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000)              IGS08 (EPOCH:2014.62152)

X: -1380701.382(m) 0.010(m)              -1380702.257(m) 0.010(m)  
 Y: -4035663.139(m) 0.032(m)              -4035661.916(m) 0.032(m)  
 Z: 4727557.612(m) 0.043(m)              4727557.603(m) 0.043(m)

LAT: 48 8 1.61874 0.006(m)              48 8 1.63962 0.006(m)  
 E LON: 251 6 46.43504 0.007(m)              251 6 46.37586 0.007(m)  
 W LON: 108 53 13.56496 0.007(m)              108 53 13.62414 0.007(m)  
 EL HGT: 994.371(m) 0.053(m)              993.781(m) 0.053(m)  
 ORTHO HGT: 1009.824(m) 0.054(m) [NAVD88 (Computed using GEOID12A)]

## UTM COORDINATES    STATE PLANE COORDINATES

UTM (Zone 12)              SPC (2500 MT )

Northing (Y) [meters]    5333328.854              431743.361  
 Easting (X) [meters]    657200.957              645599.991  
 Convergence [degrees]    1.57380716              0.44833792  
 Point Scale              0.99990365              0.99958477  
 Combined Factor              0.99974784              0.99942901

US NATIONAL GRID DESIGNATOR: 12UXU5720033328(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DG9749	MTMS MONTANA STATE UNI CORS ARP	N483227.426	W1094111.858	74597.9
DM7133	MTLW LEWISTOWN CORS ARP	N470314.929	W1092633.764	127121.4
DI3425	P052 LRRNCHJRDNMT2006 CORS ARP	N472229.026	W1070107.185	163563.3
DI2257	P049 ARMINGTON_MT2006 CORS ARP	N472059.850	W1105422.382	174731.0
DI3422	P050 WICKUMRNCHMT2006 CORS ARP	N484834.096	W1111454.296	190098.2

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	-1425435.587	-3984013.196	4757493.858
mtlw	-1449333.472	-4105829.792	4646773.458
p052	-1266648.332	-4138194.570	4670709.499
p049	-1545099.843	-4044895.905	4669084.623
p050	-1525480.192	-3923083.450	4777585.205
0187	-1380702.257	-4035661.916	4727557.603

Covariance matrix of the stations:

1	3.5780E-07	7.0920E-07	-9.0210E-07	-3.9980E-08	-1.7910E-07	2.2610E-07	-2.9180E-08	-1.5960E-07	2.0410E-07
	-4.4780E-08	-1.8540E-07	2.3410E-07	-4.4230E-08	-1.8500E-07	2.3750E-07	4.1260E-08	6.2150E-09	-3.1790E-09
2	7.0920E-07	1.8060E-06	-2.1740E-06	-1.7980E-07	-4.0610E-07	5.4530E-07	-1.7480E-07	-4.2080E-07	5.6580E-07
	-1.7830E-07	-3.9050E-07	5.2780E-07	-1.7680E-07	-3.8870E-07	5.3410E-07	2.3460E-09	5.7250E-08	-9.3420E-09
3	-9.0210E-07	-2.1740E-06	2.8650E-06	2.1910E-07	5.2320E-07	-6.5300E-07	2.4700E-07	5.2980E-07	-6.6470E-07
	2.1400E-07	5.4650E-07	-6.6990E-07	2.2320E-07	5.7450E-07	-6.7720E-07	2.9710E-08	3.3950E-08	-9.4290E-09
4	-3.9980E-08	-1.7980E-07	2.1910E-07	3.6010E-07	7.1270E-07	-8.6740E-07	-3.1860E-08	-1.5880E-07	1.9440E-07
	-4.3520E-08	-1.8550E-07	2.2460E-07	-4.4360E-08	-1.8870E-07	2.2960E-07	3.1180E-08	-1.6600E-08	1.3590E-08
5	-1.7910E-07	-4.0610E-07	5.2320E-07	7.1270E-07	1.8140E-06	-2.0840E-06	-1.8510E-07	-4.1410E-07	5.3910E-07
	-1.7300E-07	-3.9320E-07	5.0840E-07	-1.7510E-07	-4.0110E-07	5.1390E-07	-2.6200E-08	-6.5310E-09	4.0190E-08
6	2.2610E-07	5.4530E-07	-6.5300E-07	-8.6740E-07	-2.0840E-06	2.6330E-06	1.9240E-07	5.5230E-07	-6.2630E-07
	07	2.1820E-07	4.8070E-07	-5.4390E-07	2.2950E-07	5.0530E-07	-6.1030E-07	-2.2050E-09	-1.0390E-11
7	-2.9180E-08	-1.7480E-07	2.4700E-07	-3.1860E-08	-1.8510E-07	1.9240E-07	3.5390E-07	6.3420E-07	-8.1080E-07
	-4.7540E-08	-1.4250E-07	1.6020E-07	-4.5640E-08	-1.3140E-07	2.0970E-07	9.0730E-08	6.6490E-08	-7.7900E-08
8	-1.5960E-07	-4.2080E-07	5.2980E-07	-1.5880E-07	-4.1410E-07	5.5230E-07	6.3420E-07	1.9390E-06	-2.2310E-06
	-1.5860E-07	-4.4900E-07	5.8410E-07	-1.5920E-07	-4.5650E-07	5.6490E-07	-2.6430E-08	-5.2510E-08	9.4570E-08
9	2.0410E-07	5.6580E-07	-6.6470E-07	1.9440E-07	5.3910E-07	-6.2630E-07	-8.1080E-07	-2.2310E-06	2.8100E-06
	2.0210E-07	5.5160E-07	-6.4090E-07	2.1160E-07	5.7580E-07	-6.7670E-07	-5.1180E-11	5.8830E-08	-1.5550E-08
10	-4.4780E-08	-1.7830E-07	2.1400E-07	-4.3520E-08	-1.7300E-07	2.1820E-07	-4.7540E-08	-1.5860E-07	2.0210E-07
	3.8200E-07	7.0260E-07	-8.6200E-07	-4.5740E-08	-1.9300E-07	2.2870E-07	1.7230E-08	-3.0400E-08	3.1480E-08
11	-1.8540E-07	-3.9050E-07	5.4650E-07	-1.8550E-07	-3.9320E-07	4.8070E-07	-1.4250E-07	-4.4900E-07	5.5160E-07

```

7.0260E-07 1.7460E-06 -2.0430E-06 -1.8760E-07 -3.1250E-07 4.6430E-07 1.9270E-08 9.0550E-08 -6.2240E-08
 12 2.3410E-07 5.2780E-07 -6.6990E-07 2.2460E-07 5.0840E-07 -5.4390E-07 1.6020E-07 5.8410E-07 -6.4090E-07
-8.6200E-07 -2.0430E-06 2.6140E-06 2.4130E-07 4.2140E-07 -5.5990E-07 -3.7990E-08 -8.5570E-08 1.4360E-07
 13 -4.4230E-08 -1.7680E-07 2.2320E-07 -4.4360E-08 -1.7510E-07 2.2950E-07 -4.5640E-08 -1.5920E-07 2.1160E-07
-4.5740E-08 -1.8760E-07 2.4130E-07 3.7970E-07 6.9860E-07 -9.0500E-07 1.9340E-08 -2.6490E-08 3.6950E-08
 14 -1.8500E-07 -3.8870E-07 5.7450E-07 -1.8870E-07 -4.0110E-07 5.0530E-07 -1.3140E-07 -4.5650E-07 5.7580E-07
-1.9300E-07 -3.1250E-07 4.2140E-07 6.9860E-07 1.7600E-06 -2.0780E-06 3.1270E-08 1.1130E-07 -6.2920E-08
 15 2.3750E-07 5.3410E-07 -6.7720E-07 2.2960E-07 5.1390E-07 -6.1030E-07 2.0970E-07 5.6490E-07 -6.7670E-07
2.2870E-07 4.6430E-07 -5.5990E-07 -9.0500E-07 -2.0780E-06 2.7240E-06 9.7070E-09 -8.1690E-09 2.7780E-08
 16 4.1260E-08 2.3460E-09 2.9710E-08 3.1180E-08 -2.6200E-08 -2.2050E-09 9.0730E-08 -2.6430E-08 -5.1180E-11
1.7230E-08 1.9270E-08 -3.7990E-08 1.9340E-08 3.1270E-08 9.7070E-09 4.1520E-06 9.5030E-06 -1.1960E-05
 17 6.2150E-09 5.7250E-08 3.3950E-08 -1.6600E-08 -6.5310E-09 -1.0390E-11 6.6490E-08 -5.2510E-08 5.8830E-08
-3.0400E-08 9.0550E-08 -8.5570E-08 -2.6490E-08 1.1130E-07 -8.1690E-09 9.5030E-06 2.4500E-05 -2.9830E-05
 18 -3.1790E-09 -9.3420E-09 -9.4290E-09 1.3590E-08 4.0190E-08 5.4840E-08 -7.7900E-08 9.4570E-08 -1.5550E-08
08 3.1480E-08 -6.2240E-08 1.4360E-07 3.6950E-08 -6.2920E-08 2.7780E-08 -1.1960E-05 -2.9830E-05 3.8060E-05
    
```

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

```

0.0000041520 0.0000095030 -0.0000119600
0.0000095030 0.0000245000 -0.0000298300
-0.0000119600 -0.0000298300 0.0000380600
    
```

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

```

0.0000004631 -0.0000001621 -0.0000020895
-0.0000001621 0.0000006922 0.0000016187
-0.0000020895 0.0000016187 0.0000655568
    
```

Horizontal network accuracy = 0.00189 meters.

Vertical network accuracy = 0.01588 meters.

		Vectors		
To	From	X	Y	Z
mtms	0187	-44733.330	51648.720	29936.255
mtlw	0187	-68631.215	-70167.876	-80784.145
p052	0187	114053.925	-102532.654	-56848.104
p049	0187	-164397.586	-9233.990	-58472.980
p050	0187	-144777.935	112578.466	50027.602

Covariance matrix of the 5 vectors

```

 1 4.4273E-06 1.0204E-05 -1.2889E-05 4.0396E-06 9.3439E-06 -1.1729E-05 3.9908E-06 9.3636E-06 -1.1753E-05
4.0487E-06 9.2921E-06 -1.1685E-05 4.0472E-06 9.2805E-06 -1.1729E-05
 2 1.0204E-05 2.6191E-05 -3.2029E-05 9.3375E-06 2.4043E-05 -2.9275E-05 9.2594E-06 2.4074E-05 -2.9314E-05
9.3528E-06 2.3962E-05 -2.9207E-05 9.3503E-06 2.3943E-05 -2.9278E-05
 3 -1.2889E-05 -3.2029E-05 4.0944E-05 -1.1784E-05 -2.9381E-05 3.7362E-05 -1.1665E-05 -2.9429E-05 3.7420E-05
-1.1807E-05 -2.9255E-05 3.7256E-05 -1.1803E-05 -2.9227E-05 3.7364E-05
 4 4.0396E-06 9.3375E-06 -1.1784E-05 4.4497E-06 1.0259E-05 -1.2839E-05 3.9982E-06 9.3872E-06 -1.1779E-05
4.0601E-06 9.3148E-06 -1.1711E-05 4.0571E-06 9.2996E-06 -1.1754E-05
 5 9.3439E-06 2.4043E-05 -2.9381E-05 1.0259E-05 2.6327E-05 -3.1954E-05 9.2776E-06 2.4145E-05 -2.9390E-05
9.3866E-06 2.4023E-05 -2.9276E-05 9.3806E-06 2.3994E-05 -2.9348E-05
 6 -1.1729E-05 -2.9275E-05 3.7362E-05 -1.2839E-05 -3.1954E-05 4.0583E-05 -1.1687E-05 -2.9372E-05 3.7394E-05
-1.1771E-05 -2.9287E-05 3.7318E-05 -1.1765E-05 -2.9262E-05 3.7367E-05
    
```

7 3.9908E-06 9.2594E-06 -1.1665E-05 3.9982E-06 9.2776E-06 -1.1687E-05 4.3244E-06 1.0097E-05 -1.2693E-05  
 3.9965E-06 9.2747E-06 -1.1684E-05 3.9963E-06 9.2738E-06 -1.1682E-05  
 8 9.3636E-06 2.4074E-05 -2.9429E-05 9.3872E-06 2.4145E-05 -2.9372E-05 1.0097E-05 2.6544E-05 -3.2214E-05  
 9.4012E-06 2.4013E-05 -2.9255E-05 9.3967E-06 2.3985E-05 -2.9352E-05  
 9 -1.1753E-05 -2.9314E-05 3.7420E-05 -1.1779E-05 -2.9390E-05 3.7394E-05 -1.2693E-05 -3.2214E-05 4.0901E-05  
 -1.1789E-05 -2.9275E-05 3.7291E-05 -1.1785E-05 -2.9250E-05 3.7371E-05  
 10 4.0487E-06 9.3528E-06 -1.1807E-05 4.0601E-06 9.3866E-06 -1.1771E-05 3.9965E-06 9.4012E-06 -1.1789E-05  
 4.4995E-06 1.0217E-05 -1.2815E-05 4.0697E-06 9.3091E-06 -1.1772E-05  
 11 9.2921E-06 2.3962E-05 -2.9255E-05 9.3148E-06 2.4023E-05 -2.9287E-05 9.2747E-06 2.4013E-05 -2.9275E-05  
 1.0217E-05 2.6065E-05 -3.1725E-05 9.3226E-06 2.3986E-05 -2.9295E-05  
 12 -1.1685E-05 -2.9207E-05 3.7256E-05 -1.1711E-05 -2.9276E-05 3.7318E-05 -1.1684E-05 -2.9255E-05 3.7291E-05  
 -1.2815E-05 -3.1725E-05 4.0387E-05 -1.1718E-05 -2.9260E-05 3.7329E-05  
 13 4.0472E-06 9.3503E-06 -1.1803E-05 4.0571E-06 9.3806E-06 -1.1765E-05 3.9963E-06 9.3967E-06 -1.1785E-05  
 4.0697E-06 9.3226E-06 -1.1718E-05 4.4930E-06 1.0197E-05 -1.2912E-05  
 14 9.2805E-06 2.3943E-05 -2.9227E-05 9.2996E-06 2.3994E-05 -2.9262E-05 9.2738E-06 2.3985E-05 -2.9250E-05  
 9.3091E-06 2.3986E-05 -2.9260E-05 1.0197E-05 2.6037E-05 -3.1837E-05  
 15 -1.1729E-05 -2.9278E-05 3.7364E-05 -1.1754E-05 -2.9348E-05 3.7367E-05 -1.1682E-05 -2.9352E-05 3.7371E-05  
 -1.1772E-05 -2.9295E-05 3.7329E-05 -1.2912E-05 -3.1837E-05 4.0728E-05

Correlation matrix of the 5 vectors

1 1.0000E+00 9.4756E-01 -9.5729E-01 9.1012E-01 8.6548E-01 -8.7499E-01 9.1207E-01 8.6376E-01 -8.7337E-01  
 9.0712E-01 8.6500E-01 -8.7384E-01 9.0743E-01 8.6438E-01 -8.7346E-01  
 2 9.4756E-01 1.0000E+00 -9.7806E-01 8.6493E-01 9.1561E-01 -8.9794E-01 8.7003E-01 9.1305E-01 -8.9562E-01  
 8.6154E-01 9.1708E-01 -8.9803E-01 8.6194E-01 9.1684E-01 -8.9643E-01  
 3 -9.5729E-01 -9.7806E-01 1.0000E+00 -8.7305E-01 -8.9489E-01 9.1655E-01 -8.7663E-01 -8.9268E-01 9.1442E-01  
 -8.6990E-01 -8.9553E-01 9.1618E-01 -8.7025E-01 -8.9513E-01 9.1499E-01  
 4 9.1012E-01 8.6493E-01 -8.7305E-01 1.0000E+00 9.4780E-01 -9.5539E-01 9.1146E-01 8.6375E-01 -8.7313E-01  
 9.0737E-01 8.6493E-01 -8.7359E-01 9.0736E-01 8.6397E-01 -8.7309E-01  
 5 8.6548E-01 9.1561E-01 -8.9489E-01 9.4780E-01 1.0000E+00 -9.7758E-01 8.6950E-01 9.1336E-01 -8.9563E-01  
 8.6243E-01 9.1705E-01 -8.9783E-01 8.6250E-01 9.1644E-01 -8.9625E-01  
 6 -8.7499E-01 -8.9794E-01 9.1655E-01 -9.5539E-01 -9.7758E-01 1.0000E+00 -8.8223E-01 -8.9491E-01 9.1784E-01  
 -8.7108E-01 -9.0048E-01 9.2177E-01 -8.7128E-01 -9.0018E-01 9.1911E-01  
 7 9.1207E-01 8.7003E-01 -8.7663E-01 9.1146E-01 8.6950E-01 -8.8223E-01 1.0000E+00 9.4243E-01 -9.5439E-01  
 9.0601E-01 8.7359E-01 -8.8410E-01 9.0661E-01 8.7397E-01 -8.8025E-01  
 8 8.6376E-01 9.1305E-01 -8.9268E-01 8.6375E-01 9.1336E-01 -8.9491E-01 9.4243E-01 1.0000E+00 -9.7769E-01  
 8.6024E-01 9.1292E-01 -8.9350E-01 8.6045E-01 9.1233E-01 -8.9268E-01  
 9 -8.7337E-01 -8.9562E-01 9.1442E-01 -8.7313E-01 -8.9563E-01 9.1784E-01 -9.5439E-01 -9.7769E-01 1.0000E+00  
 -8.6904E-01 -8.9661E-01 9.1752E-01 -8.6937E-01 -8.9632E-01 9.1563E-01  
 10 9.0712E-01 8.6154E-01 -8.6990E-01 9.0737E-01 8.6243E-01 -8.7108E-01 9.0601E-01 8.6024E-01 -8.6904E-01  
 1.0000E+00 9.4341E-01 -9.5067E-01 9.0512E-01 8.6006E-01 -8.6963E-01  
 11 8.6500E-01 9.1708E-01 -8.9553E-01 8.6493E-01 9.1705E-01 -9.0048E-01 8.7359E-01 9.1292E-01 -8.9661E-01  
 9.4341E-01 1.0000E+00 -9.7781E-01 8.6147E-01 9.2071E-01 -8.9913E-01  
 12 -8.7384E-01 -8.9803E-01 9.1618E-01 -8.7359E-01 -8.9783E-01 9.2177E-01 -8.8410E-01 -8.9350E-01 9.1752E-01  
 -9.5067E-01 -9.7781E-01 1.0000E+00 -8.6987E-01 -9.0231E-01 9.2040E-01  
 13 9.0743E-01 8.6194E-01 -8.7025E-01 9.0736E-01 8.6250E-01 -8.7128E-01 9.0661E-01 8.6045E-01 -8.6937E-01  
 9.0512E-01 8.6147E-01 -8.6987E-01 1.0000E+00 9.4275E-01 -9.5447E-01  
 14 8.6438E-01 9.1684E-01 -8.9513E-01 8.6397E-01 9.1644E-01 -9.0018E-01 8.7397E-01 9.1233E-01 -8.9632E-01  
 8.6006E-01 9.2071E-01 -9.0231E-01 9.4275E-01 1.0000E+00 -9.7765E-01  
 15 -8.7346E-01 -8.9643E-01 9.1499E-01 -8.7309E-01 -8.9625E-01 9.1911E-01 -8.8025E-01 -8.9268E-01 9.1563E-01  
 -8.6963E-01 -8.9913E-01 9.2040E-01 -9.5447E-01 -9.7765E-01 1.0000E+00

G-FILE for the vectors

```

Axx2014 8152014 815
B201408151900201408152100 5 rsgps 1.37IGS
lant_info.003 NGS
C00060001 -447333299 21 516487199 51 299362550 63
C00060002 -686312150 21 -701678764 51 -807841451 63
C00060003 1140539253 20-1025326544 51 -568481040 63
C00060004 -1643975856 21 -92339895 51 -584729800 63
C00060005 -1447779352 21 1125784658 51 500276019 63
D 1 2 9475593 1 3 -9572908 1 4 9101236 1 5 8654815 1 6 -8749853
D 1 7 9120734 1 8 8637572 1 9 -8733745 1 10 9071231 1 11 8650038
D 1 12 -8738371 1 13 9074313 1 14 8643801 1 15 -8734632 2 3 -9780554
D 2 4 8649300 2 5 9156100 2 6 -8979415 2 7 8700336 2 8 9130467
D 2 9 -8956179 2 10 8615396 2 11 9170846 2 12 -8980309 2 13 8619423
D 2 14 9168431 2 15 -8964335 3 4 -8730485 3 5 -8948909 3 6 9165521
D 3 7 -8766340 3 8 -8926755 3 9 9144187 3 10 -8698975 3 11 -8955313
D 3 12 9161810 3 13 -8702534 3 14 -8951257 3 15 9149878 4 5 9477970
D 4 6 -9553946 4 7 9114556 4 8 8637474 4 9 -8731296 4 10 9073652
D 4 11 8649272 4 12 -8735885 4 13 9073636 4 14 8639717 4 15 -8730885
D 5 6 -9775808 5 7 8695007 5 8 9133591 5 9 -8956322 5 10 8624284
D 5 11 9170521 5 12 -8978299 5 13 8625013 5 14 9164420 5 15 -8962521
D 6 7 -8822318 6 8 -8949117 6 9 9178366 6 10 -8710804 6 11 -9004794
D 6 12 9217664 6 13 -8712805 6 14 -9001771 6 15 9191078 7 8 9424321
D 7 9 -9543917 7 10 9060054 7 11 8735922 7 12 -8841043 7 13 9066149
D 7 14 8739686 7 15 -8802526 8 9 -9776855 8 10 8602353 8 11 9129233
D 8 12 -8935020 8 13 8604462 8 14 9123307 8 15 -8926846 9 10 -8690355
D 9 11 -8966051 9 12 9175239 9 13 -8693685 9 14 -8963161 9 15 9156281
D 10 11 9434085 10 12 -9506736 10 13 9051240 10 14 8600550 10 15 -8696315
D 11 12 -9778145 11 13 8614712 11 14 9207138 11 15 -8991267 12 13 -8698652
D 12 14 -9023134 12 15 9203955 13 14 9427504 13 15 -9544735 14 15 -9776496
    
```

ITRF position of 0187 as determined by individual baselines

	X	Y	Z
mtms	-1380702.248	-4035661.923	4727557.616
mtlw	-1380702.272	-4035661.971	4727557.677
p052	-1380702.262	-4035661.916	4727557.599
p049	-1380702.254	-4035661.887	4727557.562
p050	-1380702.250	-4035661.905	4727557.594

Residuals of position determined by individual baselines from the final position

	X	Y	Z	East	North	Up
mtms	0.009	-0.007	0.013	0.011	0.006	0.012
mtlw	-0.015	-0.056	0.074	0.004	0.007	0.093
p052	-0.005	-0.001	-0.004	-0.005	-0.004	-0.001
p049	0.003	0.028	-0.041	-0.007	-0.007	-0.049
p050	0.007	0.010	-0.009	0.003	0.003	-0.015

STATE PLANE COORDINATES - International Foot

SPC (2500 MT )

Northing (Y) [feet] 1416480.843  
Easting (X) [feet] 2118110.207  
Convergence [degrees] 0.44833792  
Point Scale 0.99958477  
Combined Factor 0.99942901

\*\* 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: 1008.824 (m) [PROTOTYPE (Computed using USGG2012,GRS80,IGS08)]

dop from interpolation is 0.437  
scatter (mean square distance from rover) is 21143.127  
average edop for rover is 0.670  
average ndop for rover is 0.920  
average hdop for rover is 1.138  
average vdop for rover is 2.020  
average gdop for rover is 2.680

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.