

OPUS-RS solution : 018772_14_218_A0.14O OP1407514319737

opus <opus@ngs.noaa.gov>

Fri 8/8/2014 10:15 AM

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

FILE: 018772_14_218_A0.14O OP1407514319737

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 08, 2014
 RINEX FILE: 0187218t.14o TIME: 16:14:45 UTC

SOFTWARE: rsgps 1.37 RS93.prl 1.99.2 START: 2014/08/06 19:30:15
 EPHEMERIS: igr18043.eph [rapid] STOP: 2014/08/06 21:00:45
 NAV FILE: brdc2180.14n OBS USED: 5352 / 6228 : 86%
 ANT NAME: CHCX90D-OPUS NONE QUALITY IND. 27.30/ 58.06
 ARP HEIGHT: 2.1000 NORMALIZED RMS: 0.352

REF FRAME: NAD_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2014.59683)

X: -1367826.274(m) 0.007(m) -1367827.148(m) 0.007(m)
 Y: -4050366.385(m) 0.015(m) -4050365.160(m) 0.015(m)
 Z: 4718920.813(m) 0.016(m) 4718920.803(m) 0.016(m)

LAT: 48 0 59.32548 0.004(m) 48 0 59.34646 0.004(m)
 E LON: 251 20 23.82618 0.003(m) 251 20 23.76732 0.003(m)
 W LON: 108 39 36.17382 0.003(m) 108 39 36.23268 0.003(m)
 EL HGT: 1101.254(m) 0.023(m) 1100.657(m) 0.023(m)
 ORTHO HGT: 1116.656(m) 0.024(m) [NAVD88 (Computed using GEOID12A)]

UTM COORDINATES STATE PLANE COORDINATES

UTM (Zone 12) SPC (2500 MT)

Northing (Y) [meters] 5320781.088 418863.245
 Easting (X) [meters] 674489.234 662632.114
 Convergence [degrees] 1.73980994 0.61442821
 Point Scale 0.99997412 0.99954655
 Combined Factor 0.99980155 0.99937406

US NATIONAL GRID DESIGNATOR: 12UXU7448920781(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DG9749	MTMS MONTANA STATE UNI CORS ARP	N483227.426	W1094111.858	95964.6
DL7731	P053 WHITEWATERMT2007 CORS ARP	N484333.865	W1074331.456	104994.5
DM7133	MTLW LEWISTOWN CORS ARP	N470314.929	W1092633.764	122167.3
DI3425	P052 LRRNCHJRDNMT2006 CORS ARP	N472229.026	W1070107.185	142392.0
DI2257	P049 ARMINGTON_MT2006 CORS ARP	N472059.850	W1105422.382	184225.9
DI3422	P050 WICKUMRNCHMT2006 CORS ARP	N484834.096	W1111454.296	210942.2

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	-1425435.573	-3984013.200	4757493.867
p053	-1283559.257	-4015770.322	4771131.598
mtlw	-1449333.472	-4105829.805	4646773.488
p052	-1266648.336	-4138194.559	4670709.490
p049	-1545099.844	-4044895.892	4669084.601
p050	-1525480.197	-3923083.457	4777585.210
0187	-1367827.148	-4050365.160	4718920.803

Covariance matrix of the stations:

1	2.4450E-07	4.9800E-07	-6.0100E-07	-1.0980E-08	-8.6500E-08	1.0380E-07	-1.5600E-08	-1.0090E-07	1.2180E-07
	-1.0210E-08	-8.3210E-08	1.0140E-07	-2.0690E-08	-1.1420E-07	1.3740E-07	-2.0370E-08	-1.1310E-07	1.3660E-07
	2.8420E-08	4.5540E-09	-2.2150E-09						
2	4.9800E-07	1.3960E-06	-1.6070E-06	-7.1720E-08	-1.9990E-07	2.7490E-07	-1.0590E-07	-2.6550E-07	3.2910E-07
	-6.7640E-08	-2.0940E-07	2.5970E-07	-1.3070E-07	-2.9470E-07	3.7660E-07	-1.2160E-07	-2.5940E-07	3.6650E-07
	1.6690E-08	7.0660E-08	-4.4160E-08						
3	-6.0100E-07	-1.6070E-06	2.0480E-06	1.2310E-07	3.1660E-07	-3.6520E-07	1.1650E-07	3.1260E-07	-3.7230E-07
	1.2180E-07	3.0270E-07	-3.6210E-07	1.1680E-07	3.2820E-07	-3.8540E-07	1.2270E-07	3.4750E-07	-3.9640E-07
	8.1370E-09	2.8040E-09	1.3090E-08						
4	-1.0980E-08	-7.1720E-08	1.2310E-07	2.6740E-07	4.9900E-07	-5.7440E-07	-1.9760E-08	-1.2620E-07	9.4570E-08
	8.0190E-08	8.4200E-10	-6.3610E-08	-8.4160E-08	-1.9020E-07	2.0850E-07	-6.6490E-08	-1.1100E-07	2.1120E-07
	8.0460E-08	9.7550E-08	-1.2300E-07						
5	-8.6500E-08	-1.9990E-07	3.1660E-07	4.9900E-07	1.3740E-06	-1.5460E-06	-1.0090E-07	-2.8200E-07	2.8680E-07
	3.5570E-08	-1.1180E-07	7.3620E-08	-1.8760E-07	-3.6460E-07	4.3710E-07	-1.6080E-07	-2.4890E-07	4.3140E-07
	7.1850E-08	1.5500E-07	-1.5810E-07						
6	1.0380E-07	2.7490E-07	-3.6520E-07	-5.7440E-07	-1.5460E-06	1.9180E-06	1.1230E-07	3.3900E-07	-3.1650E-07
	-2.2180E-08	1.6680E-07	-1.0180E-07	2.0060E-07	4.3030E-07	-4.7570E-07	1.8110E-07	3.3460E-07	-4.9240E-07
	-7.0550E-08	-1.2220E-07	1.7850E-07						
7	-1.5600E-08	-1.0590E-07	1.1650E-07	-1.9760E-08	-1.0090E-07	1.1230E-07	2.4970E-07	5.2330E-07	-5.9330E-07

-2.0200E-08 -9.3470E-08 1.1530E-07 -1.2360E-08 -1.0620E-07 1.2380E-07 -1.5080E-08 -1.1700E-07 1.2560E-07
 1.6820E-08 -2.3000E-08 2.4960E-08
 8 -1.0090E-07 -2.6550E-07 3.1260E-07 -1.2620E-07 -2.8200E-07 3.3900E-07 5.2330E-07 1.4950E-06 -1.6230E-06
 -1.3180E-07 -2.7190E-07 3.6480E-07 -7.8760E-08 -2.3870E-07 3.0550E-07 -8.5670E-08 -2.7020E-07 3.0150E-07
 -3.5890E-08 -4.5550E-08 8.1480E-08
 9 1.2180E-07 3.2910E-07 -3.7230E-07 9.4570E-08 2.8680E-07 -3.1650E-07 -5.9330E-07 -1.6230E-06 1.9660E-06
 8.5130E-08 2.7410E-07 -2.8010E-07 1.4490E-07 3.6890E-07 -4.0420E-07 1.4660E-07 3.6350E-07 -4.2630E-07
 1.0420E-09 7.6770E-09 3.2210E-08
 10 -1.0210E-08 -6.7640E-08 1.2180E-07 8.0190E-08 3.5570E-08 -2.2180E-08 -2.0200E-08 -1.3180E-07 8.5130E-08
 2.9010E-07 4.8460E-07 -6.3150E-07 -9.7210E-08 -2.0700E-07 2.2030E-07 -7.6530E-08 -1.1310E-07 2.2570E-07
 9.2420E-08 1.1820E-07 -1.5380E-07
 11 -8.3210E-08 -2.0940E-07 3.0270E-07 8.4200E-10 -1.1180E-07 1.6680E-07 -9.3470E-08 -2.7190E-07 2.7410E-07
 4.8460E-07 1.3580E-06 -1.5460E-06 -1.6540E-07 -3.4360E-07 4.0140E-07 -1.4540E-07 -2.5430E-07 4.0200E-07
 6.1580E-08 1.2600E-07 -1.3680E-07
 12 1.0140E-07 2.5970E-07 -3.6210E-07 -6.3610E-08 7.3620E-08 -1.0180E-07 1.1530E-07 3.6480E-07 -2.8010E-07
 -6.3150E-07 -1.5460E-06 1.9930E-06 2.5620E-07 5.0270E-07 -5.2770E-07 2.2380E-07 3.4470E-07 -5.5510E-07
 -1.1990E-07 -2.0730E-07 3.0510E-07
 13 -2.0690E-08 -1.3070E-07 1.1680E-07 -8.4160E-08 -1.8760E-07 2.0060E-07 -1.2360E-08 -7.8760E-08 1.4490E-07
 -9.7210E-08 -1.6540E-07 2.5620E-07 3.5960E-07 6.8170E-07 -7.8360E-07 2.1900E-08 -1.1980E-07 6.5840E-08
 -3.2280E-08 -1.1240E-07 1.4070E-07
 14 -1.1420E-07 -2.9470E-07 3.2820E-07 -1.9020E-07 -3.6460E-07 4.3030E-07 -1.0620E-07 -2.3870E-07 3.6890E-07
 -2.0700E-07 -3.4360E-07 5.0270E-07 6.8170E-07 1.6870E-06 -1.8940E-06 -6.2660E-08 -2.7920E-07 2.6430E-07
 -8.6150E-08 -1.2840E-07 1.9360E-07
 15 1.3740E-07 3.7660E-07 -3.8540E-07 2.0850E-07 4.3710E-07 -4.7570E-07 1.2380E-07 3.0550E-07 -4.0420E-07
 2.2030E-07 4.0140E-07 -5.2770E-07 -7.8360E-07 -1.8940E-06 2.2980E-06 9.2310E-08 3.7350E-07 -3.3870E-07
 8.8930E-08 1.6050E-07 -1.6980E-07
 16 -2.0370E-08 -1.2160E-07 1.2270E-07 -6.6490E-08 -1.6080E-07 1.8110E-07 -1.5080E-08 -8.5670E-08 1.4660E-07
 -7.6530E-08 -1.4540E-07 2.2380E-07 2.1900E-08 -6.2660E-08 9.2310E-08 3.2360E-07 5.7560E-07 -7.6600E-07
 -1.9370E-08 -8.5510E-08 1.1390E-07
 17 -1.1310E-07 -2.5940E-07 3.4750E-07 -1.1100E-07 -2.4890E-07 3.3460E-07 -1.1700E-07 -2.7020E-07 3.6350E-07
 -1.1310E-07 -2.5430E-07 3.4470E-07 -1.1980E-07 -2.7920E-07 3.7350E-07 5.7560E-07 1.4790E-06 -1.7650E-06
 -2.7790E-08 -1.0790E-08 6.3650E-08
 18 1.3660E-07 3.6650E-07 -3.9640E-07 2.1120E-07 4.3140E-07 -4.9240E-07 1.2560E-07 3.0150E-07 -4.2630E-07
 2.2570E-07 4.0200E-07 -5.5510E-07 6.5840E-08 2.6430E-07 -3.3870E-07 -7.6600E-07 -1.7650E-06 2.3760E-06
 9.2050E-08 1.5850E-07 -1.9230E-07
 19 2.8420E-08 1.6690E-08 8.1370E-09 8.0460E-08 7.1850E-08 -7.0550E-08 1.6820E-08 -3.5890E-08 1.0420E-09
 9.2420E-08 6.1580E-08 -1.1990E-07 -3.2280E-08 -8.6150E-08 8.8930E-08 -1.9370E-08 -2.7790E-08 9.2050E-08
 2.3360E-06 5.4660E-06 -6.4360E-06
 20 4.5540E-09 7.0660E-08 2.8040E-09 9.7550E-08 1.5500E-07 -1.2220E-07 -2.3000E-08 -4.5550E-08 7.6770E-09
 09 1.1820E-07 1.2600E-07 -2.0730E-07 -1.1240E-07 -1.2840E-07 1.6050E-07 -8.5510E-08 -1.0790E-08 1.5850E-07
 5.4660E-06 1.5870E-05 -1.8240E-05
 21 -2.2150E-09 -4.4160E-08 1.3090E-08 -1.2300E-07 -1.5810E-07 1.7850E-07 2.4960E-08 8.1480E-08 3.2210E-08
 -1.5380E-07 -1.3680E-07 3.0510E-07 1.4070E-07 1.9360E-07 -1.6980E-07 1.1390E-07 6.3650E-08 -1.9230E-07
 -6.4360E-06 -1.8240E-05 2.2290E-05

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

0.0000023360	0.0000054660	-0.0000064360
0.0000054660	0.0000158700	-0.0000182400
-0.0000064360	-0.0000182400	0.0000222900

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

```

0.0000004076  0.0000000053  -0.0000003580
0.0000000053  0.0000005766  0.0000003307
-0.0000003580  0.0000003307  0.0000395117
    
```

Horizontal network accuracy = 0.00172 meters.
 Vertical network accuracy = 0.01233 meters.

		Vectors		
To	From	X	Y	Z
mtms	0187	-57608.426	66351.960	38573.064
p053	0187	84267.891	34594.838	52210.796
mtlw	0187	-81506.325	-55464.645	-72147.314
p052	0187	101178.811	-87829.399	-48211.312
p049	0187	-177272.696	5469.268	-49836.202
p050	0187	-157653.049	127281.703	58664.407

Covariance matrix of the 6 vectors

```

1  2.5237E-06  5.9428E-06 -7.0429E-06  2.2161E-06  5.3031E-06 -6.2594E-06  2.2752E-06  5.3964E-06 -6.3130E-06
2.2049E-06  5.3167E-06 -6.2125E-06  2.3192E-06  5.4334E-06 -6.3853E-06  2.3066E-06  5.3761E-06 -6.3892E-06
2  5.9428E-06  1.7125E-05 -1.9806E-05  5.2800E-06  1.5444E-05 -1.7799E-05  5.3664E-06  1.5579E-05 -1.7874E-05
5.2635E-06  1.5464E-05 -1.7729E-05  5.4310E-06  1.5633E-05 -1.7980E-05  5.4132E-06  1.5551E-05 -1.7988E-05
3  -7.0429E-06 -1.9806E-05  2.4312E-05 -6.1980E-06 -1.7768E-05  2.1733E-05 -6.3526E-06 -1.8012E-05  2.1872E-05
-6.1685E-06 -1.7803E-05  2.1610E-05 -6.4680E-06 -1.8108E-05  2.2061E-05 -6.4353E-06 -1.7959E-05  2.2073E-05
4  2.2161E-06  5.2800E-06 -6.1980E-06  2.4425E-06  5.7956E-06 -6.8168E-06  2.2190E-06  5.2781E-06 -6.2195E-06
2.2433E-06  5.3077E-06 -6.2567E-06  2.2037E-06  5.2644E-06 -6.1934E-06  2.2084E-06  5.2852E-06 -6.1938E-06
5  5.3031E-06  1.5444E-05 -1.7768E-05  5.7956E-06  1.6934E-05 -1.9506E-05  5.3163E-06  1.5479E-05 -1.7803E-05
5.3115E-06  1.5477E-05 -1.7801E-05  5.3190E-06  1.5479E-05 -1.7805E-05  5.3189E-06  1.5477E-05 -1.7809E-05
6  -6.2594E-06 -1.7799E-05  2.1733E-05 -6.8168E-06 -1.9506E-05  2.3851E-05 -6.2781E-06 -1.7860E-05  2.1763E-05
-6.2338E-06 -1.7814E-05  2.1705E-05 -6.3056E-06 -1.7881E-05  2.1806E-05 -6.2983E-06 -1.7847E-05  2.1811E-05
7  2.2752E-06  5.3664E-06 -6.3526E-06  2.2190E-06  5.3163E-06 -6.2781E-06  2.5521E-06  6.0482E-06 -7.0553E-06
2.2066E-06  5.3339E-06 -6.2258E-06  2.3391E-06  5.4689E-06 -6.4261E-06  2.3235E-06  5.3998E-06 -6.4274E-06
8  5.3964E-06  1.5579E-05 -1.8012E-05  5.2781E-06  1.5479E-05 -1.7860E-05  6.0482E-06  1.7456E-05 -1.9952E-05
5.2519E-06  1.5518E-05 -1.7749E-05  5.5355E-06  1.5805E-05 -1.8176E-05  5.5017E-06  1.5656E-05 -1.8178E-05
9  -6.3130E-06 -1.7874E-05  2.1872E-05 -6.2195E-06 -1.7803E-05  2.1763E-05 -7.0553E-06 -1.9952E-05  2.4192E-05
-6.1981E-06 -1.7837E-05  2.1673E-05 -6.4328E-06 -1.8072E-05  2.2023E-05 -6.4043E-06 -1.7948E-05  2.2024E-05
10  2.2049E-06  5.2635E-06 -6.1685E-06  2.2433E-06  5.3115E-06 -6.2338E-06  2.2066E-06  5.2519E-06 -6.1981E-06
2.4413E-06  5.7708E-06 -6.7938E-06  2.1787E-06  5.2269E-06 -6.1508E-06  2.1864E-06  5.2625E-06 -6.1485E-06
11  5.3167E-06  1.5464E-05 -1.7803E-05  5.3077E-06  1.5477E-05 -1.7814E-05  5.3339E-06  1.5518E-05 -1.7837E-05
5.7708E-06  1.6976E-05 -1.9442E-05  5.3514E-06  1.5529E-05 -1.7862E-05  5.3445E-06  1.5500E-05 -1.7860E-05
12  -6.2125E-06 -1.7729E-05  2.1610E-05 -6.2567E-06 -1.7801E-05  2.1705E-05 -6.2258E-06 -1.7749E-05  2.1673E-05
-6.7938E-06 -1.9442E-05  2.3673E-05 -6.2006E-06 -1.7724E-05  2.1627E-05 -6.2062E-06 -1.7752E-05  2.1622E-05
13  2.3192E-06  5.4310E-06 -6.4680E-06  2.2037E-06  5.3190E-06 -6.3056E-06  2.3391E-06  5.5355E-06 -6.4328E-06
2.1787E-06  5.3514E-06 -6.2006E-06  2.7602E-06  6.3462E-06 -7.4492E-06  2.4096E-06  5.4864E-06 -6.6029E-06
14  5.4334E-06  1.5633E-05 -1.8108E-05  5.2644E-06  1.5479E-05 -1.7881E-05  5.4689E-06  1.5805E-05 -1.8072E-05
5.2269E-06  1.5529E-05 -1.7724E-05  6.3462E-06  1.7814E-05 -2.0488E-05  5.5750E-06  1.5730E-05 -1.8328E-05
15  -6.3853E-06 -1.7980E-05  2.2061E-05 -6.1934E-06 -1.7805E-05  2.1806E-05 -6.4261E-06 -1.8176E-05  2.2023E-05
-6.1508E-06 -1.7862E-05  2.1627E-05 -7.4492E-06 -2.0488E-05  2.4928E-05 -6.5465E-06 -1.8091E-05  2.2313E-05
16  2.3066E-06  5.4132E-06 -6.4353E-06  2.2084E-06  5.3189E-06 -6.2983E-06  2.3235E-06  5.5017E-06 -6.4043E-06
2.1864E-06  5.3445E-06 -6.2062E-06  2.4096E-06  5.5750E-06 -6.5465E-06  2.6983E-06  6.1549E-06 -7.4079E-06
17  5.3761E-06  1.5551E-05 -1.7959E-05  5.2852E-06  1.5477E-05 -1.7847E-05  5.3998E-06  1.5656E-05 -1.7948E-05
    
```

5.2625E-06 1.5500E-05 -1.7752E-05 5.4864E-06 1.5730E-05 -1.8091E-05 6.1549E-06 1.7371E-05 -2.0227E-05
 18 -6.3892E-06 -1.7988E-05 2.2073E-05 -6.1938E-06 -1.7809E-05 2.1811E-05 -6.4274E-06 -1.8178E-05 2.2024E-05
 -6.1485E-06 -1.7860E-05 2.1622E-05 -6.6029E-06 -1.8328E-05 2.2313E-05 -7.4079E-06 -2.0227E-05 2.5051E-05

Correlation matrix of the 6 vectors

1 1.0000E+00 9.0399E-01 -8.9914E-01 8.9262E-01 8.1121E-01 -8.0680E-01 8.9650E-01 8.1305E-01 -8.0796E-01
 8.8833E-01 8.1228E-01 -8.0376E-01 8.7872E-01 8.1036E-01 -8.0506E-01 8.8390E-01 8.1198E-01 -8.0357E-01
 2 9.0399E-01 1.0000E+00 -9.7066E-01 8.1641E-01 9.0695E-01 -8.8069E-01 8.1176E-01 9.0108E-01 -8.7819E-01
 8.1406E-01 9.0697E-01 -8.8053E-01 7.8995E-01 8.9506E-01 -8.7023E-01 7.9634E-01 9.0164E-01 -8.6848E-01
 3 -8.9914E-01 -9.7066E-01 1.0000E+00 -8.0432E-01 -8.7569E-01 9.0253E-01 -8.0649E-01 -8.7432E-01 9.0189E-01
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 4 8.9262E-01 8.1641E-01 -8.0432E-01 1.0000E+00 9.0116E-01 -8.9313E-01 8.8877E-01 8.0834E-01 -8.0911E-01
 9.1869E-01 8.2428E-01 -8.2282E-01 8.4872E-01 7.9810E-01 -7.9373E-01 8.6024E-01 8.1141E-01 -7.9184E-01
 5 8.1121E-01 9.0695E-01 -8.7569E-01 9.0116E-01 1.0000E+00 -9.7057E-01 8.0869E-01 9.0028E-01 -8.7958E-01
 8.2610E-01 9.1284E-01 -8.8908E-01 7.7800E-01 8.9121E-01 -8.6662E-01 7.8685E-01 9.0240E-01 -8.6467E-01
 6 -8.0680E-01 -8.8069E-01 9.0253E-01 -8.9313E-01 -9.7057E-01 1.0000E+00 -8.0469E-01 -8.7531E-01 9.0600E-01
 -8.1695E-01 -8.8531E-01 9.1343E-01 -7.7715E-01 -8.6749E-01 8.9428E-01 -7.8509E-01 -8.7680E-01 8.9232E-01
 7 8.9650E-01 8.1176E-01 -8.0649E-01 8.8877E-01 8.0869E-01 -8.0469E-01 1.0000E+00 9.0616E-01 -8.9792E-01
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 -8.0653E-01 -8.8017E-01 9.0564E-01 -7.8723E-01 -8.7057E-01 8.9683E-01 -7.9267E-01 -8.7553E-01 8.9465E-01
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 11 8.1228E-01 9.0697E-01 -8.7634E-01 8.2428E-01 9.1284E-01 -8.8531E-01 8.1037E-01 9.0144E-01 -8.8017E-01
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 8.3929E-01 7.8178E-01 -7.6708E-01 1.0000E+00 9.0505E-01 -8.9806E-01 8.8292E-01 7.9234E-01 -7.9407E-01
 14 8.1036E-01 8.9506E-01 -8.7014E-01 7.9810E-01 8.9121E-01 -8.6749E-01 8.1111E-01 8.9629E-01 -8.7057E-01
 7.9262E-01 8.9298E-01 -8.6308E-01 9.0505E-01 1.0000E+00 -9.7226E-01 8.0412E-01 8.9422E-01 -8.6761E-01
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 -7.8847E-01 -8.6832E-01 8.9029E-01 -8.9806E-01 -9.7226E-01 1.0000E+00 -7.9822E-01 -8.6937E-01 8.9293E-01
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 8.0812E-01 9.0265E-01 -8.7540E-01 7.9234E-01 8.9422E-01 -8.6937E-01 8.9901E-01 1.0000E+00 -9.6966E-01
 18 -8.0357E-01 -8.6848E-01 8.9442E-01 -7.9184E-01 -8.6467E-01 8.9232E-01 -8.0386E-01 -8.6931E-01 8.9465E-01
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G-FILE for the vectors

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 D 14 17 8942171 14 18 -8676068 15 16 -7982187 15 17 -8693742 15 18 8929280
 D 16 17 8990120 16 18 -9010328 17 18 -9696577

ITRF position of 0187 as determined by individual baselines

	X	Y	Z
mtms	-1367827.157	-4050365.171	4718920.815
p053	-1367827.148	-4050365.166	4718920.815
mtlw	-1367827.149	-4050365.162	4718920.803
p052	-1367827.154	-4050365.178	4718920.817
p049	-1367827.143	-4050365.151	4718920.787
p050	-1367827.136	-4050365.135	4718920.781

Residuals of position determined by individual baselines from the final position

	X	Y	Z	East	North	Up
mtms	-0.009	-0.011	0.013	-0.005	-0.001	0.018
p053	-0.001	-0.006	0.012	0.001	0.004	0.013
mtlw	-0.001	-0.002	0.001	-0.000	-0.001	0.002
p052	-0.006	-0.018	0.014	-0.001	-0.004	0.023
p049	0.004	0.009	-0.016	0.001	-0.003	-0.018

p050 0.011 0.025 -0.022 0.003 0.005 -0.035

STATE PLANE COORDINATES - International Foot

SPC (2500 MT)

Northing (Y) [feet] 1374223.245
Easting (X) [feet] 2173989.875
Convergence [degrees] 0.61442821
Point Scale 0.99954655
Combined Factor 0.99937406

** 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: 1115.654 (m) [PROTOTYPE (Computed using USGG2012,GRS80,IGS08)]

dop from interpolation is 0.448
scatter (mean square distance from rover) is 22307.329
average edop for rover is 0.700
average ndop for rover is 0.890
average hdop for rover is 1.132
average vdop for rover is 2.040
average gdop for rover is 2.700

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.