

OPUS-RS solution : 018772_14_225_A0.14O OP1408142682520

opus <opus@ngs.noaa.gov>

Fri 8/15/2014 4:47 PM

To:John Freetly <John.Freetly@neciusa.com>;

FILE: 018772_14_225_A0.14O OP1408142682520

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 15, 2014
 RINEX FILE: 0187225v.14o TIME: 22:47:32 UTC

SOFTWARE: rsgps 1.37 RS53.prl 1.99.2 START: 2014/08/13 21:24:15
 EPHEMERIS: igr18053.eph [rapid] STOP: 2014/08/13 22:42:30
 NAV FILE: brdc2250.14n OBS USED: 1440 / 5064 : 28%
 ANT NAME: CHCX91R NONE QUALITY IND. 23.34/ 24.44
 ARP HEIGHT: 1.8000 NORMALIZED RMS: 0.329

REF FRAME: NAD_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2014.61622)

X: -1390717.301(m) 0.017(m) -1390718.176(m) 0.017(m)
 Y: -4034946.896(m) 0.050(m) -4034945.673(m) 0.050(m)
 Z: 4725234.123(m) 0.064(m) 4725234.114(m) 0.064(m)

LAT: 48 6 9.33210 0.013(m) 48 6 9.35290 0.013(m)
 E LON: 250 58 57.22839 0.005(m) 250 58 57.16915 0.005(m)
 W LON: 109 1 2.77161 0.005(m) 109 1 2.83085 0.005(m)
 EL HGT: 983.913(m) 0.081(m) 983.325(m) 0.081(m)
 ORTHO HGT: 999.127(m) 0.082(m) [NAVD88 (Computed using GEOID12A)]

UTM COORDINATES STATE PLANE COORDINATES

UTM (Zone 12) SPC (2500 MT)

Northing (Y) [meters] 5329604.095 428208.895
 Easting (X) [meters] 647593.715 635924.480
 Convergence [degrees] 1.47596981 0.35299719
 Point Scale 0.99986767 0.99957419
 Combined Factor 0.99971351 0.99942007

US NATIONAL GRID DESIGNATOR: 12UXU4759329604(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DG9749	MTMS MONTANA STATE UNI CORS ARP	N483227.426	W1094111.858	69570.9
DL7731	P053 WHITEWATERMT2007 CORS ARP	N484333.865	W1074331.456	118141.1
DM7133	MTLW LEWISTOWN CORS ARP	N470314.929	W1092633.764	120898.2
DI2257	P049 ARMINGTON_MT2006 CORS ARP	N472059.850	W1105422.382	164576.7
DI3425	P052 LRRNCHJRDNMT2006 CORS ARP	N472229.026	W1070107.185	170371.9
DI3422	P050 WICKUMRNCHMT2006 CORS ARP	N484834.096	W1111454.296	182796.6

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	-1425435.588	-3984013.231	4757493.902
p053	-1283559.262	-4015770.330	4771131.606
mtlw	-1449333.473	-4105829.815	4646773.489
p049	-1545099.830	-4044895.854	4669084.569
p052	-1266648.346	-4138194.581	4670709.506
p050	-1525480.182	-3923083.425	4777585.182
0187	-1390718.176	-4034945.673	4725234.114

Covariance matrix of the stations:

1	6.8530E-07	1.6550E-06	-2.0990E-06	-9.2800E-08	-2.9350E-07	3.6750E-07	-1.0360E-07	-3.3600E-07	4.2510E-07
	-1.1580E-07	-3.7310E-07	4.7490E-07	-9.0600E-08	-2.8150E-07	3.5720E-07	-1.1580E-07	-3.7100E-07	4.7440E-07
	-4.5850E-08	-2.3380E-07	3.1990E-07						
2	1.6550E-06	5.4570E-06	-7.0850E-06	-2.7390E-07	-9.7350E-07	1.3050E-06	-3.5370E-07	-1.1460E-06	1.4810E-06
	-3.9780E-07	-1.1440E-06	1.5570E-06	-2.6250E-07	-1.0360E-06	1.2800E-06	-3.6670E-07	-9.9100E-07	1.4610E-06
	4.1290E-08	1.9570E-07	-1.7760E-07						
3	-2.0990E-06	-7.0850E-06	1.0070E-05	4.0690E-07	1.3610E-06	-1.8880E-06	4.1440E-07	1.4180E-06	-1.9800E-06
	4.3530E-07	1.4820E-06	-2.0790E-06	3.9690E-07	1.3320E-06	-1.8520E-06	4.4530E-07	1.4930E-06	-2.1040E-06
	2.9900E-07	9.1820E-07	-1.2240E-06						
4	-9.2800E-08	-2.7390E-07	4.0690E-07	6.4490E-07	1.5100E-06	-1.8420E-06	-9.7810E-08	-3.7730E-07	3.6140E-07
	-1.8670E-07	-4.2150E-07	5.3620E-07	6.2030E-08	-1.7530E-07	2.6890E-08	-1.6310E-07	-2.6130E-07	5.0960E-07
	4.2760E-07	1.2590E-06	-1.6560E-06						
5	-2.9350E-07	-9.7350E-07	1.3610E-06	1.5100E-06	5.3290E-06	-6.7230E-06	-3.1360E-07	-1.1540E-06	1.3770E-06
	-4.0910E-07	-1.1680E-06	1.5450E-06	-1.2830E-07	-9.4060E-07	9.9610E-07	-3.6580E-07	-9.2490E-07	1.4440E-06
	3.6490E-07	1.1140E-06	-1.4370E-06						
6	3.6750E-07	1.3050E-06	-1.8880E-06	-1.8420E-06	-6.7230E-06	9.2620E-06	3.6500E-07	1.4530E-06	-1.7880E-06
	5.1210E-07	1.5400E-06	-2.1030E-06	1.1040E-07	1.1190E-06	-1.2200E-06	4.8700E-07	1.3060E-06	-2.0970E-06
	-4.9240E-07	-1.4670E-06	1.9730E-06						
7	-1.0360E-07	-3.5370E-07	4.1440E-07	-9.7810E-08	-3.1360E-07	3.6500E-07	6.8970E-07	1.7430E-06	-2.0650E-06

-1.1090E-07 -3.8440E-07 4.6040E-07 -9.6110E-08 -2.9440E-07 3.5540E-07 -1.1450E-07 -3.9700E-07 4.7010E-07
 -7.2550E-08 -3.3140E-07 4.1670E-07
 8 -3.3600E-07 -1.1460E-06 1.4180E-06 -3.7730E-07 -1.1540E-06 1.4530E-06 1.7430E-06 5.9760E-06 -7.3120E-06
 -3.1540E-07 -1.1530E-06 1.4650E-06 -3.9820E-07 -1.1730E-06 1.5480E-06 -3.1630E-07 -1.1830E-06 1.4280E-06
 -4.3040E-07 -1.3810E-06 1.7960E-06
 9 4.2510E-07 1.4810E-06 -1.9800E-06 3.6140E-07 1.3770E-06 -1.7880E-06 -2.0650E-06 -7.3120E-06 9.8200E-06
 4.7070E-07 1.5750E-06 -2.0870E-06 3.2940E-07 1.3360E-06 -1.6620E-06 4.7890E-07 1.5420E-06 -2.1350E-06
 9.7330E-08 3.4820E-07 -3.6110E-07
 10 -1.1580E-07 -3.9780E-07 4.3530E-07 -1.8670E-07 -4.0910E-07 5.1210E-07 -1.1090E-07 -3.1540E-07 4.7070E-07
 8.7690E-07 1.9720E-06 -2.4790E-06 -2.1280E-07 -3.7580E-07 6.1060E-07 -8.3830E-08 -4.7490E-07 4.5130E-07
 -4.2380E-07 -1.4220E-06 1.8680E-06
 11 -3.7310E-07 -1.1440E-06 1.4820E-06 -4.2150E-07 -1.1680E-06 1.5400E-06 -3.8440E-07 -1.1530E-06 1.5750E-06
 1.9720E-06 5.9980E-06 -7.7190E-06 -4.4690E-07 -1.2010E-06 1.6560E-06 -3.4600E-07 -1.1660E-06 1.4670E-06
 -4.8060E-07 -1.4190E-06 1.9140E-06
 12 4.7490E-07 1.5570E-06 -2.0790E-06 5.3620E-07 1.5450E-06 -2.1030E-06 4.6040E-07 1.4650E-06 -2.0870E-06
 -2.4790E-06 -7.7190E-06 1.0750E-05 5.5100E-07 1.4940E-06 -2.1610E-06 4.5640E-07 1.6590E-06 -2.1540E-06
 6.8420E-07 2.0810E-06 -2.7240E-06
 13 -9.0600E-08 -2.6250E-07 3.9690E-07 6.2030E-08 -1.2830E-07 1.1040E-07 -9.6110E-08 -3.9820E-07 3.2940E-07
 -2.1280E-07 -4.4690E-07 5.5100E-07 6.8590E-07 1.4710E-06 -1.9080E-06 -1.8200E-07 -2.3420E-07 5.2010E-07
 5.9540E-07 1.7810E-06 -2.3640E-06
 14 -2.8150E-07 -1.0360E-06 1.3320E-06 -1.7530E-07 -9.4060E-07 1.1190E-06 -2.9440E-07 -1.1730E-06 1.3360E-06
 -3.7580E-07 -1.2010E-06 1.4940E-06 1.4710E-06 5.5320E-06 -6.7060E-06 -3.4510E-07 -1.0150E-06 1.4250E-06
 2.6480E-07 7.0560E-07 -9.9110E-07
 15 3.5720E-07 1.2800E-06 -1.8520E-06 2.6890E-08 9.9610E-07 -1.2200E-06 3.5540E-07 1.5480E-06 -1.6620E-06
 6.1060E-07 1.6560E-06 -2.1610E-06 -1.9080E-06 -6.7060E-06 9.2050E-06 5.5950E-07 1.2240E-06 -2.1450E-06
 -1.1420E-06 -3.4670E-06 4.7070E-06
 16 -1.1580E-07 -3.6670E-07 4.4530E-07 -1.6310E-07 -3.6580E-07 4.8700E-07 -1.1450E-07 -3.1630E-07 4.7890E-07
 -8.3830E-08 -3.4600E-07 4.5640E-07 -1.8200E-07 -3.4510E-07 5.5950E-07 8.2600E-07 1.7390E-06 -2.4270E-06
 -3.1400E-07 -1.0520E-06 1.4150E-06
 17 -3.7100E-07 -9.9100E-07 1.4930E-06 -2.6130E-07 -9.2490E-07 1.3060E-06 -3.9700E-07 -1.1830E-06 1.5420E-06
 -4.7490E-07 -1.1660E-06 1.6590E-06 -2.3420E-07 -1.0150E-06 1.2240E-06 1.7390E-06 5.4460E-06 -7.2240E-06
 2.4040E-07 9.5130E-07 -1.1060E-06
 18 4.7440E-07 1.4610E-06 -2.1040E-06 5.0960E-07 1.4440E-06 -2.0970E-06 4.7010E-07 1.4280E-06 -2.1350E-06
 4.5130E-07 1.4670E-06 -2.1540E-06 5.2010E-07 1.4250E-06 -2.1450E-06 -2.4270E-06 -7.2240E-06 1.0800E-05
 5.5390E-07 1.5860E-06 -2.2030E-06
 19 -4.5850E-08 4.1290E-08 2.9900E-07 4.2760E-07 3.6490E-07 -4.9240E-07 -7.2550E-08 -4.3040E-07 9.7330E-07
 -4.2380E-07 -4.8060E-07 6.8420E-07 5.9540E-07 2.6480E-07 -1.1420E-06 -3.1400E-07 2.4040E-07 5.5390E-07
 1.2700E-05 3.6760E-05 -4.6510E-05
 20 -2.3380E-07 1.9570E-07 9.1820E-07 1.2590E-06 1.1140E-06 -1.4670E-06 -3.3140E-07 -1.3810E-06 3.4820E-07
 -1.4220E-06 -1.4190E-06 2.0810E-06 1.7810E-06 7.0560E-07 -3.4670E-06 -1.0520E-06 9.5130E-07 1.5860E-06
 3.6760E-05 1.2390E-04 -1.5990E-04
 21 3.1990E-07 -1.7760E-07 -1.2240E-06 -1.6560E-06 -1.4370E-06 1.9730E-06 4.1670E-07 1.7960E-06 -3.6110E-07
 1.8680E-06 1.9140E-06 -2.7240E-06 -2.3640E-06 -9.9110E-07 4.7070E-06 1.4150E-06 -1.1060E-06 -2.2030E-06
 -4.6510E-05 -1.5990E-04 2.1500E-04

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

0.0000127000	0.0000367600	-0.0000465100
0.0000367600	0.0001239000	-0.0001599000
-0.0000465100	-0.0001599000	0.0002150000

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

```

0.0000018581  0.0000015152  0.0000095907
0.0000015152  0.0000053299  0.0000230485
0.0000095907  0.0000230485  0.0003444120
    
```

Horizontal network accuracy = 0.00492 meters.
 Vertical network accuracy = 0.03639 meters.

		Vectors		
To	From	X	Y	Z
mtms	0187	-34717.412	50932.443	32259.788
p053	0187	107158.914	19175.343	45897.491
mtlw	0187	-58615.297	-70884.142	-78460.625
p049	0187	-154381.654	-9950.181	-56149.545
p052	0187	124069.830	-103248.908	-54524.608
p050	0187	-134762.006	111862.248	52351.068

Covariance matrix of the 6 vectors

```

1  1.3477E-05  3.8608E-05 -4.9228E-05  1.2225E-05  3.6335E-05 -4.5970E-05  1.2715E-05  3.7088E-05 -4.6502E-05
1.3054E-05  3.7101E-05 -4.7039E-05  1.2060E-05  3.6447E-05 -4.5331E-05  1.2944E-05  3.6382E-05 -4.6909E-05
2  3.8608E-05  1.2897E-04 -1.6773E-04  3.5186E-05  1.2162E-04 -1.5695E-04  3.6696E-05  1.2394E-04 -1.5859E-04
3.7743E-05  1.2398E-04 -1.6025E-04  3.4675E-05  1.2196E-04 -1.5498E-04  3.7404E-05  1.2176E-04 -1.5985E-04
3  -4.9228E-05 -1.6773E-04  2.2752E-04 -4.4746E-05 -1.5802E-04  2.1236E-04 -4.6811E-05 -1.6120E-04  2.1461E-04
-4.8242E-05 -1.6125E-04  2.1687E-04 -4.4048E-05 -1.5850E-04  2.0966E-04 -4.7779E-05 -1.5822E-04  2.1632E-04
4  1.2225E-05  3.5186E-05 -4.4746E-05  1.2490E-05  3.6646E-05 -4.6204E-05  1.2247E-05  3.5554E-05 -4.4590E-05
1.2510E-05  3.5560E-05 -4.5002E-05  1.1739E-05  3.5061E-05 -4.3685E-05  1.2423E-05  3.4999E-05 -4.4898E-05
5  3.6335E-05  1.2162E-04 -1.5802E-04  3.6646E-05  1.2700E-04 -1.6372E-04  3.6413E-05  1.2301E-04 -1.5743E-04
3.7408E-05  1.2304E-04 -1.5900E-04  3.4486E-05  1.2114E-04 -1.5400E-04  3.7081E-05  1.2091E-04 -1.5861E-04
6  -4.5970E-05 -1.5695E-04  2.1236E-04 -4.6204E-05 -1.6372E-04  2.2032E-04 -4.6069E-05 -1.5878E-04  2.1160E-04
-4.7374E-05 -1.5881E-04  2.1365E-04 -4.3543E-05 -1.5632E-04  2.0710E-04 -4.6946E-05 -1.5602E-04  2.1313E-04
7  1.2715E-05  3.6696E-05 -4.6811E-05  1.2247E-05  3.6413E-05 -4.6069E-05  1.3535E-05  3.9265E-05 -4.9089E-05
1.3085E-05  3.7188E-05 -4.7151E-05  1.2081E-05  3.6532E-05 -4.5429E-05  1.2972E-05  3.6454E-05 -4.7010E-05
8  3.7088E-05  1.2394E-04 -1.6120E-04  3.5554E-05  1.2301E-04 -1.5878E-04  3.9265E-05  1.3264E-04 -1.6936E-04
3.8297E-05  1.2555E-04 -1.6231E-04  3.5011E-05  1.2340E-04 -1.5668E-04  3.7926E-05  1.2315E-04 -1.6185E-04
9  -4.6502E-05 -1.5859E-04  2.1461E-04 -4.4590E-05 -1.5743E-04  2.1160E-04 -4.9089E-05 -1.6936E-04  2.2554E-04
-4.8005E-05 -1.6059E-04  2.1600E-04 -4.3914E-05 -1.5792E-04  2.0899E-04 -4.7543E-05 -1.5760E-04  2.1543E-04
10  1.3054E-05  3.7743E-05 -4.8242E-05  1.2510E-05  3.7408E-05 -4.7374E-05  1.3085E-05  3.8297E-05 -4.8005E-05
1.4425E-05  4.0635E-05 -5.1541E-05  1.2316E-05  3.7541E-05 -4.6625E-05  1.3354E-05  3.7467E-05 -4.8481E-05
11  3.7101E-05  1.2398E-04 -1.6125E-04  3.5560E-05  1.2304E-04 -1.5881E-04  3.7188E-05  1.2555E-04 -1.6059E-04
4.0635E-05  1.3274E-04 -1.7161E-04  3.5013E-05  1.2341E-04 -1.5669E-04  3.7947E-05  1.2320E-04 -1.6193E-04
12  -4.7039E-05 -1.6025E-04  2.1687E-04 -4.5002E-05 -1.5900E-04  2.1365E-04 -4.7151E-05 -1.6231E-04  2.1600E-04
-5.1541E-05 -1.7161E-04  2.3120E-04 -4.4279E-05 -1.5950E-04  2.1086E-04 -4.8153E-05 -1.5922E-04  2.1777E-04
13  1.2060E-05  3.4675E-05 -4.4048E-05  1.1739E-05  3.4486E-05 -4.3543E-05  1.2081E-05  3.5011E-05 -4.3914E-05
1.2316E-05  3.5013E-05 -4.4279E-05  1.2195E-05  3.6185E-05 -4.4912E-05  1.2237E-05  3.4504E-05 -4.4180E-05
14  3.6447E-05  1.2196E-04 -1.5850E-04  3.5061E-05  1.2114E-04 -1.5632E-04  3.6532E-05  1.2340E-04 -1.5792E-04
3.7541E-05  1.2341E-04 -1.5950E-04  3.6185E-05  1.2802E-04 -1.6215E-04  3.7202E-05  1.2123E-04 -1.5907E-04
15  -4.5331E-05 -1.5498E-04  2.0966E-04 -4.3685E-05 -1.5400E-04  2.0710E-04 -4.5429E-05 -1.5668E-04  2.0899E-04
-4.6625E-05 -1.5669E-04  2.1086E-04 -4.4912E-05 -1.6215E-04  2.1479E-04 -4.6224E-05 -1.5410E-04  2.1035E-04
16  1.2944E-05  3.7404E-05 -4.7779E-05  1.2423E-05  3.7081E-05 -4.6946E-05  1.2972E-05  3.7926E-05 -4.7543E-05
1.3354E-05  3.7947E-05 -4.8153E-05  1.2237E-05  3.7202E-05 -4.6224E-05  1.4154E-05  3.9311E-05 -5.0906E-05
17  3.6382E-05  1.2176E-04 -1.5822E-04  3.4999E-05  1.2091E-04 -1.5602E-04  3.6454E-05  1.2315E-04 -1.5760E-04
    
```

3.7467E-05 1.2320E-04 -1.5922E-04 3.4504E-05 1.2123E-04 -1.5410E-04 3.9311E-05 1.2744E-04 -1.6760E-04
 18 -4.6909E-05 -1.5985E-04 2.1632E-04 -4.4898E-05 -1.5861E-04 2.1313E-04 -4.7010E-05 -1.6185E-04 2.1543E-04
 -4.8481E-05 -1.6193E-04 2.1777E-04 -4.4180E-05 -1.5907E-04 2.1035E-04 -5.0906E-05 -1.6760E-04 2.3021E-04

Correlation matrix of the 6 vectors

1 1.0000E+00 9.2606E-01 -8.8901E-01 9.4231E-01 8.7827E-01 -8.4364E-01 9.4143E-01 8.7721E-01 -8.4346E-01
 9.3625E-01 8.7720E-01 -8.4270E-01 9.4070E-01 8.7747E-01 -8.4253E-01 9.3720E-01 8.7788E-01 -8.4218E-01
 2 9.2606E-01 1.0000E+00 -9.7916E-01 8.7671E-01 9.5028E-01 -9.3111E-01 8.7834E-01 9.4763E-01 -9.2987E-01
 8.7508E-01 9.4758E-01 -9.2802E-01 8.7436E-01 9.4918E-01 -9.3115E-01 8.7547E-01 9.4976E-01 -9.2771E-01
 3 -8.8901E-01 -9.7916E-01 1.0000E+00 -8.3940E-01 -9.2961E-01 9.4852E-01 -8.4356E-01 -9.2793E-01 9.4737E-01
 -8.4210E-01 -9.2789E-01 9.4558E-01 -8.3623E-01 -9.2868E-01 9.4844E-01 -8.4195E-01 -9.2916E-01 9.4523E-01
 4 9.4231E-01 8.7671E-01 -8.3940E-01 1.0000E+00 9.2013E-01 -8.8080E-01 9.4196E-01 8.7353E-01 -8.4013E-01
 9.3199E-01 8.7336E-01 -8.3746E-01 9.5118E-01 8.7681E-01 -8.4343E-01 9.3438E-01 8.7725E-01 -8.3733E-01
 5 8.7827E-01 9.5028E-01 -9.2961E-01 9.2013E-01 1.0000E+00 -9.7875E-01 8.7827E-01 9.4779E-01 -9.3021E-01
 8.7400E-01 9.4763E-01 -9.2789E-01 8.7628E-01 9.5004E-01 -9.3241E-01 8.7460E-01 9.5038E-01 -9.2759E-01
 6 -8.4364E-01 -9.3111E-01 9.4852E-01 -8.8080E-01 -9.7875E-01 1.0000E+00 -8.4365E-01 -9.2881E-01 9.4925E-01
 -8.4035E-01 -9.2865E-01 9.4664E-01 -8.4005E-01 -9.3081E-01 9.5203E-01 -8.4068E-01 -9.3111E-01 9.4639E-01
 7 9.4143E-01 8.7834E-01 -8.4356E-01 9.4196E-01 8.7827E-01 -8.4365E-01 1.0000E+00 9.2671E-01 -8.8847E-01
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 8 8.7721E-01 9.4763E-01 -9.2793E-01 8.7353E-01 9.4779E-01 -9.2881E-01 9.2671E-01 1.0000E+00 -9.7916E-01
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 -8.4163E-01 -9.2812E-01 9.4590E-01 -8.3733E-01 -9.2936E-01 9.4953E-01 -8.4147E-01 -9.2957E-01 9.4544E-01
 10 9.3625E-01 8.7508E-01 -8.4210E-01 9.3199E-01 8.7400E-01 -8.4035E-01 9.3651E-01 8.7555E-01 -8.4163E-01
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 9.2865E-01 1.0000E+00 -9.7964E-01 8.7024E-01 9.4673E-01 -9.2799E-01 8.7547E-01 9.4725E-01 -9.2637E-01
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 9.2857E-01 8.7024E-01 -8.3390E-01 1.0000E+00 9.1579E-01 -8.7753E-01 9.3138E-01 8.7523E-01 -8.3382E-01
 14 8.7747E-01 9.4918E-01 -9.2868E-01 8.7681E-01 9.5004E-01 -9.3081E-01 8.7763E-01 9.4700E-01 -9.2936E-01
 8.7361E-01 9.4673E-01 -9.2708E-01 9.1579E-01 1.0000E+00 -9.7783E-01 8.7395E-01 9.4908E-01 -9.2659E-01
 15 -8.4253E-01 -9.3115E-01 9.4844E-01 -8.4343E-01 -9.3241E-01 9.5203E-01 -8.4256E-01 -9.2827E-01 9.4953E-01
 -8.3765E-01 -9.2799E-01 9.4621E-01 -8.7753E-01 -9.7783E-01 1.0000E+00 -8.3833E-01 -9.3142E-01 9.4597E-01
 16 9.3720E-01 8.7547E-01 -8.4195E-01 9.3438E-01 8.7460E-01 -8.4068E-01 9.3722E-01 8.7532E-01 -8.4147E-01
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 17 8.7788E-01 9.4976E-01 -9.2916E-01 8.7725E-01 9.5038E-01 -9.3111E-01 8.7773E-01 9.4717E-01 -9.2957E-01
 8.7385E-01 9.4725E-01 -9.2755E-01 8.7523E-01 9.4908E-01 -9.3142E-01 9.2557E-01 1.0000E+00 -9.7851E-01
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G-FILE for the vectors

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 D 14 17 9490833 14 18 -9265938 15 16 -8383303 15 17 -9314174 15 18 9459718
 D 16 17 9255745 16 18 -8918056 17 18 -9785147

ITRF position of 0187 as determined by individual baselines

	X	Y	Z
mtms	-1390718.182	-4034945.696	4725234.144
p053	-1390718.181	-4034945.709	4725234.178
mtlw	-1390718.193	-4034945.727	4725234.192
p049	-1390718.204	-4034945.739	4725234.164
p052	-1390718.186	-4034945.710	4725234.169
p050	-1390718.187	-4034945.718	4725234.176

Residuals of position determined by individual baselines from the final position

	X	Y	Z	East	North	Up
mtms	-0.006	-0.022	0.029	0.002	0.003	0.037
p053	-0.005	-0.036	0.064	0.007	0.017	0.072
mtlw	-0.017	-0.053	0.078	0.001	0.011	0.096
p049	-0.028	-0.066	0.050	-0.005	-0.019	0.085
p052	-0.011	-0.037	0.054	0.002	0.008	0.066

p050 -0.011 -0.045 0.062 0.004 0.008 0.077

STATE PLANE COORDINATES - International Foot

SPC (2500 MT)

Northing (Y) [feet] 1404884.826
Easting (X) [feet] 2086366.404
Convergence [degrees] 0.35299719
Point Scale 0.99957419
Combined Factor 0.99942007

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

dop from interpolation is 0.424
scatter (mean square distance from rover) is 20487.221
average edop for rover is 0.800
average ndop for rover is 1.120
average hdop for rover is 1.376
average vdop for rover is 2.010
average gdop for rover is 2.880

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.