

OPUS-RS solution : 940123225X.14O OP1408547913326

opus <opus@ngs.noaa.gov>

Wed 8/20/2014 9:23 AM

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

FILE: 940123225X.14O OP1408547913326

NGS OPUS-RS SOLUTION REPORT =====

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 20, 2014
RINEX FILE: 9401225x.14o TIME: 15:23:13 UTC

SOFTWARE: rsgps 1.37 RS91.prl 1.99.2 START: 2014/08/13 23:52:30
EPHEMERIS: igr18053.eph [rapid] STOP: 2014/08/14 00:50:00
NAV FILE: brdc2250.14n OBS USED: 2076 / 3192 : 65%
ANT NAME: CHCX91R NONE QUALITY IND. 10.57/ 35.27
ARP HEIGHT: 1.8 NORMALIZED RMS: 0.308

REF FRAME: NAD_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2014.61648)

X: -1393823.630(m) 0.008(m) -1393824.505(m) 0.008(m)
Y: -4041469.793(m) 0.031(m) -4041468.569(m) 0.031(m)
Z: 4718740.918(m) 0.025(m) 4718740.908(m) 0.025(m)

LAT: 48 0 55.97646 0.011(m) 48 0 55.99723 0.011(m)
E LON: 250 58 18.08651 0.005(m) 250 58 18.02735 0.005(m)
W LON: 109 1 41.91349 0.005(m) 109 1 41.97265 0.005(m)
EL HGT: 952.342(m) 0.039(m) 951.751(m) 0.039(m)
ORTHO HGT: 967.520(m) 0.040(m) [NAVD88 (Computed using GEOID12A)]

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 12)	SPC (2500 MT)
Northing (Y) [meters]	5319909.308	418529.933
Easting (X) [meters]	647032.043	635173.327
Convergence [degrees]	1.46587097	0.34504373
Point Scale	0.99986564	0.99954626
Combined Factor	0.99971642	0.99939709

US NATIONAL GRID DESIGNATOR: 12UXU4703219909(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DG9749	MTMS MONTANA STATE UNI CORS ARP	N483227.426	W1094111.858	76172.0
DM7133	MTLW LEWISTOWN CORS ARP	N470314.929	W1092633.764	111368.4
DL7731	P053 WHITEWATERMT2007 CORS ARP	N484333.865	W1074331.456	124754.2
DI2257	P049 ARMINGTON_MT2006 CORS ARP	N472059.850	W1105422.382	159253.6
DI3425	P052 LRRNCHJRDNMT2006 CORS ARP	N472229.026	W1070107.185	166843.4
DI3422	P050 WICKUMRNCHMT2006 CORS ARP	N484834.096	W1111454.296	186576.8

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	-1425435.571	-3984013.171	4757493.837
mtlw	-1449333.486	-4105829.845	4646773.514
p053	-1283559.259	-4015770.349	4771131.638
p049	-1545099.834	-4044895.860	4669084.560
p052	-1266648.344	-4138194.563	4670709.511
p050	-1525480.186	-3923083.449	4777585.195
9401	-1393824.505	-4041468.569	4718740.908

Covariance matrix of the stations:

1	6.2120E-07	1.6590E-06	-1.7560E-06	-9.8340E-08	-3.4980E-07	3.6320E-07	-8.2940E-08	-3.2570E-07	3.5360E-07
	-9.6880E-08	-3.2890E-07	3.4310E-07	-8.7500E-08	-3.4810E-07	3.6670E-07	-8.8890E-08	-3.0620E-07	3.2900E-07
	2.4990E-08	-2.3780E-09	9.6380E-09						
2	1.6590E-06	5.6190E-06	-5.4160E-06	-3.6190E-07	-1.1310E-06	1.0700E-06	-3.2790E-07	-1.2400E-06	1.3130E-06
	-3.2190E-07	-8.8360E-07	8.3510E-07	-3.5900E-07	-1.4210E-06	1.3980E-06	-2.8790E-07	-7.7750E-07	8.0030E-07
	3.9820E-08	1.8400E-07	-1.3800E-07						
3	-1.7560E-06	-5.4160E-06	6.0210E-06	3.5440E-07	1.0590E-06	-1.1160E-06	3.7840E-07	1.2480E-06	-1.3910E-06
	3.2050E-07	9.0620E-07	-9.6440E-07	3.8890E-07	1.3180E-06	-1.4050E-06	3.1380E-07	8.8490E-07	-9.7840E-07
	09	-1.1990E-08	2.1020E-08						
4	-9.8340E-08	-3.6190E-07	3.5440E-07	6.7330E-07	1.8100E-06	-1.7960E-06	-1.0220E-07	-3.3530E-07	3.2290E-07
	-1.0140E-07	-3.9120E-07	3.9870E-07	-1.0530E-07	-3.3230E-07	3.3950E-07	-9.9270E-08	-3.8950E-07	3.8040E-07
	-1.3270E-08	-1.1410E-07	1.0680E-07						
5	-3.4980E-07	-1.1310E-06	1.0590E-06	1.8100E-06	6.0560E-06	-5.5580E-06	-3.9010E-07	-1.2590E-06	1.1990E-06
	-3.3380E-07	-1.0910E-06	1.0270E-06	-4.1610E-07	-1.3520E-06	1.2970E-06	-3.1990E-07	-1.0570E-06	9.7660E-07
	08	-1.8900E-07	1.8470E-07						
6	3.6320E-07	1.0700E-06	-1.1160E-06	-1.7960E-06	-5.5580E-06	5.8580E-06	3.7710E-07	1.3270E-06	-1.4270E-06
	3.4050E-07	8.9100E-07	-8.4860E-07	3.8630E-07	1.4250E-06	-1.4200E-06	3.2770E-07	8.4470E-07	-8.8030E-07
	10	-3.5850E-08	1.1540E-07						
7	-8.2940E-08	-3.2790E-07	3.7840E-07	-1.0220E-07	-3.9010E-07	3.7710E-07	5.8940E-07	1.6680E-06	-1.7610E-06
	-1.0030E-07	-2.9630E-07	2.9170E-07	-5.5120E-08	-4.1450E-07	4.2360E-07	-8.2600E-08	-2.3850E-07	2.8910E-07
	7.1960E-08	9.4190E-08	-8.5590E-08						
8	-3.2570E-07	-1.2400E-06	1.2480E-06	-3.3530E-07	-1.2590E-06	1.3270E-06	1.6680E-06	6.4870E-06	-6.5140E-06
	-3.1860E-07	-1.2830E-06	1.3390E-06	-3.7990E-07	-1.2670E-06	1.3280E-06	-3.0980E-07	-1.2720E-06	1.2720E-06

-9.2420E-08 -3.7030E-07 4.6960E-07

9 3.5360E-07 1.3130E-06 -1.3910E-06 3.2290E-07 1.1990E-06 -1.4270E-06 -1.7610E-06 -6.5140E-06 7.4480E-06
3.1600E-07 1.3900E-06 -1.5870E-06 4.2750E-07 1.1200E-06 -1.3170E-06 3.4240E-07 1.4930E-06 -1.5580E-06 1.8250E-
07 6.7430E-07 -7.4880E-07

10 -9.6880E-08 -3.2190E-07 3.2050E-07 -1.0140E-07 -3.3380E-07 3.4050E-07 -1.0030E-07 -3.1860E-07 3.1600E-07
6.6580E-07 1.6300E-06 -1.6360E-06 -1.0510E-07 -3.3010E-07 3.3570E-07 -9.5110E-08 -3.2650E-07 3.2380E-07 -5.7810E-
09 -6.1350E-08 5.5110E-08

11 -3.2890E-07 -8.8360E-07 9.0620E-07 -3.9120E-07 -1.0910E-06 8.9100E-07 -2.9630E-07 -1.2830E-06 1.3900E-06
1.6300E-06 5.4330E-06 -5.0900E-06 -3.3260E-07 -1.5760E-06 1.4530E-06 -2.8000E-07 -4.3240E-07 4.5040E-07 1.2140E-
07 5.0940E-07 -5.3780E-07

12 3.4310E-07 8.3510E-07 -9.6440E-07 3.9870E-07 1.0270E-06 -8.4860E-07 2.9170E-07 1.3390E-06 -1.5870E-06
-1.6360E-06 -5.0900E-06 5.5090E-06 3.1070E-07 1.6190E-06 -1.5510E-06 2.9020E-07 2.6860E-07 -3.9130E-07 -1.8530E-
07 -6.7300E-07 7.7550E-07

13 -8.7500E-08 -3.5900E-07 3.8890E-07 -1.0530E-07 -4.1610E-07 3.8630E-07 -5.5120E-08 -3.7990E-07 4.2750E-07
-1.0510E-07 -3.3260E-07 3.1070E-07 6.0800E-07 1.7670E-06 -1.8240E-06 -8.8610E-08 -2.7900E-07 3.0930E-07
6.5250E-08 5.8570E-08 -6.8720E-08

14 -3.4810E-07 -1.4210E-06 1.3180E-06 -3.3230E-07 -1.3520E-06 1.4250E-06 -4.1450E-07 -1.2670E-06 1.1200E-06
-3.3010E-07 -1.5760E-06 1.6190E-06 1.7670E-06 7.4290E-06 -7.0160E-06 -3.4370E-07 -1.6470E-06 1.5340E-06 -2.0730E-
07 -7.7760E-07 8.2430E-07

15 3.6670E-07 1.3980E-06 -1.4050E-06 3.3950E-07 1.2970E-06 -1.4200E-06 4.2360E-07 1.3280E-06 -1.3170E-06
3.3570E-07 1.4530E-06 -1.5510E-06 -1.8240E-06 -7.0160E-06 7.3980E-06 3.5850E-07 1.5410E-06 -1.5370E-06 1.6510E-
07 6.8100E-07 -6.6790E-07

16 -8.8890E-08 -2.8790E-07 3.1380E-07 -9.9270E-08 -3.1990E-07 3.2770E-07 -8.2600E-08 -3.0980E-07 3.4240E-07
-9.5110E-08 -2.8000E-07 2.9020E-07 -8.8610E-08 -3.4370E-07 3.5850E-07 6.2130E-07 1.5410E-06 -1.6320E-06 2.3420E-
08 2.4700E-08 -1.6950E-08

17 -3.0620E-07 -7.7750E-07 8.8490E-07 -3.8950E-07 -1.0570E-06 8.4470E-07 -2.3850E-07 -1.2720E-06 1.4930E-06
-3.2650E-07 -4.3240E-07 2.6860E-07 -2.7900E-07 -1.6470E-06 1.5410E-06 1.5410E-06 5.3540E-06 -5.0330E-06
2.2340E-07 8.1110E-07 -8.0380E-07

18 3.2900E-07 8.0030E-07 -9.7840E-07 3.8040E-07 9.7660E-07 -8.8030E-07 2.8910E-07 1.2720E-06 -1.5580E-06
3.2380E-07 4.5040E-07 -3.9130E-07 3.0930E-07 1.5340E-06 -1.5370E-06 -1.6320E-06 -5.0330E-06 5.5120E-06 -1.7070E-
07 -6.3540E-07 6.7250E-07

19 2.4990E-08 3.9820E-08 7.8080E-09 -1.3270E-08 -8.4560E-08 1.9050E-10 7.1960E-08 -9.2420E-08 1.8250E-07
-5.7810E-09 1.2140E-07 -1.8530E-07 6.5250E-08 -2.0730E-07 1.6510E-07 2.3420E-08 2.2340E-07 -1.7070E-07 6.2080E-
06 1.7650E-05 -1.8360E-05

20 -2.3780E-09 1.8400E-07 -1.1990E-08 -1.1410E-07 -1.8900E-07 -3.5850E-08 9.4190E-08 -3.7030E-07 6.7430E-07
-6.1350E-08 5.0940E-07 -6.7300E-07 5.8570E-08 -7.7760E-07 6.8100E-07 2.4700E-08 8.1110E-07 -6.3540E-07
1.7650E-05 6.1280E-05 -5.8460E-05

21 9.6380E-09 -1.3800E-07 2.1020E-08 1.0680E-07 1.8470E-07 1.1540E-07 -8.5590E-08 4.6960E-07 -7.4880E-07
5.5110E-08 -5.3780E-07 7.7550E-07 -6.8720E-08 8.2430E-07 -6.6790E-07 -1.6950E-08 -8.0380E-07 6.7250E-07
-1.8360E-05 -5.8460E-05 6.3650E-05

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

0.0000062080	0.0000176500	-0.0000183600
0.0000176500	0.0000612800	-0.0000584600
-0.0000183600	-0.0000584600	0.0000636500

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

0.0000011819	-0.0000011365	0.0000033280
-0.0000011365	0.0000041545	-0.0000073501
0.0000033280	-0.0000073501	0.0001258015

Horizontal network accuracy = 0.00428 meters.

Vertical network accuracy = 0.02199 meters.

		Vectors		
To	From	X	Y	Z
mtms	9401	-31611.066	57455.398	38752.929
mtlw	9401	-55508.981	-64361.276	-71967.394
p053	9401	110265.246	25698.220	52390.730
p049	9401	-151275.328	-3427.292	-49656.348
p052	9401	127176.161	-96725.994	-48031.397
p050	9401	-131655.681	118385.120	58844.287

Covariance matrix of the 6 vectors

1	6.7792E-06	1.9272E-05	-2.0133E-05	6.0979E-06	1.7387E-05	-1.8007E-05	6.0281E-06	1.7419E-05	-1.8199E-05
2	1.9272E-05	6.6531E-05	-6.3726E-05	1.7362E-05	6.0154E-05	-5.7216E-05	1.7188E-05	6.0226E-05	-5.7683E-05
3	-2.0133E-05	-6.3726E-05	6.9629E-05	-1.8120E-05	-5.7574E-05	6.2398E-05	-1.7904E-05	-5.7670E-05	6.2987E-05
4	6.0979E-06	1.7362E-05	-1.8120E-05	6.9078E-06	1.9659E-05	-2.0263E-05	6.0471E-06	1.7521E-05	-1.8326E-05
5	1.7387E-05	6.0154E-05	-5.7574E-05	1.9659E-05	6.7714E-05	-6.4167E-05	1.7250E-05	6.0580E-05	-5.8120E-05
6	-1.8007E-05	-5.7216E-05	6.2398E-05	-2.0263E-05	-6.4167E-05	6.9277E-05	-1.7898E-05	-5.7567E-05	6.2856E-05
7	6.0281E-06	1.7188E-05	-1.7904E-05	6.0471E-06	1.7250E-05	-1.7898E-05	6.6535E-06	1.9316E-05	-2.0218E-05
8	1.7419E-05	6.0226E-05	-5.7670E-05	1.7521E-05	6.0580E-05	-5.7567E-05	1.9316E-05	6.8508E-05	-6.6118E-05
9	-1.8199E-05	-5.7683E-05	6.2987E-05	-1.8326E-05	-5.8120E-05	6.2856E-05	-2.0218E-05	-6.6118E-05	7.2596E-05
10	6.0919E-06	1.7350E-05	-1.8102E-05	6.1257E-06	1.7462E-05	-1.8075E-05	6.0415E-06	1.7485E-05	-1.8282E-05
11	1.7202E-05	5.9703E-05	-5.7004E-05	1.7251E-05	5.9869E-05	-5.6995E-05	1.7138E-05	5.9858E-05	-5.7207E-05
12	-1.7841E-05	-5.6814E-05	6.1889E-05	-1.7883E-05	-5.6945E-05	6.1911E-05	-1.7797E-05	-5.6918E-05	6.2036E-05
13	6.0303E-06	1.7193E-05	-1.7910E-05	6.0507E-06	1.7260E-05	-1.7905E-05	6.0157E-06	1.7304E-05	-1.8046E-05
14	1.7512E-05	6.0453E-05	-5.7954E-05	1.7639E-05	6.0895E-05	-5.7823E-05	1.7349E-05	6.1161E-05	-5.8839E-05
15	-1.8168E-05	-5.7605E-05	6.2892E-05	-1.8292E-05	-5.8029E-05	6.2783E-05	-1.8016E-05	-5.8283E-05	6.3750E-05
16	6.0707E-06	1.7298E-05	-1.8037E-05	6.0986E-06	1.7390E-05	-1.8016E-05	6.0300E-06	1.7408E-05	-1.8183E-05
17	1.7123E-05	5.9507E-05	-5.6759E-05	1.7151E-05	5.9601E-05	-5.6776E-05	1.7094E-05	5.9567E-05	-5.6837E-05
18	-1.7870E-05	-5.6886E-05	6.1978E-05	-1.7916E-05	-5.7033E-05	6.1982E-05	-1.7815E-05	-5.7022E-05	6.2168E-05

Correlation matrix of the 6 vectors

1	1.0000E+00	9.0743E-01	-9.2669E-01	8.9109E-01	8.1152E-01	-8.3090E-01	8.9757E-01	8.0829E-01	-8.2034E-01
2	9.0743E-01	1.0000E+00	-9.3629E-01	8.0989E-01	8.9622E-01	-8.4277E-01	8.1694E-01	8.9208E-01	-8.3001E-01

8.1062E-01 9.0307E-01 -8.4712E-01 8.1520E-01 8.8417E-01 -8.3009E-01 8.1429E-01 9.0482E-01 -8.4689E-01
 3 -9.2669E-01 -9.3629E-01 1.0000E+00 -8.2622E-01 -8.3847E-01 8.9842E-01 -8.3181E-01 -8.3499E-01 8.8593E-01
 -8.2676E-01 -8.4284E-01 9.0203E-01 -8.3011E-01 -8.2856E-01 8.8589E-01 -8.3000E-01 -8.4362E-01 9.0193E-01
 4 8.9109E-01 8.0989E-01 -8.2622E-01 1.0000E+00 9.0896E-01 -9.2627E-01 8.9197E-01 8.0542E-01 -8.1837E-01
 8.8821E-01 8.0983E-01 -8.2749E-01 8.9037E-01 8.0064E-01 -8.1805E-01 8.9097E-01 8.0933E-01 -8.2774E-01
 5 8.1152E-01 8.9622E-01 -8.3847E-01 9.0896E-01 1.0000E+00 -9.3686E-01 8.1270E-01 8.8945E-01 -8.2896E-01
 8.0871E-01 8.9763E-01 -8.4162E-01 8.1121E-01 8.8282E-01 -8.2886E-01 8.1146E-01 8.9829E-01 -8.4162E-01
 6 -8.3090E-01 -8.4277E-01 8.9842E-01 -9.2627E-01 -9.3686E-01 1.0000E+00 -8.3363E-01 -8.3562E-01 8.8634E-01
 -8.2759E-01 -8.4485E-01 9.0463E-01 -8.3199E-01 -8.2878E-01 8.8659E-01 -8.3111E-01 -8.4600E-01 9.0427E-01
 7 8.9757E-01 8.1694E-01 -8.3181E-01 8.9197E-01 8.1270E-01 -8.3363E-01 1.0000E+00 9.0475E-01 -9.1993E-01
 8.9260E-01 8.1974E-01 -8.3914E-01 9.0197E-01 8.0237E-01 -8.2094E-01 8.9764E-01 8.2190E-01 -8.3865E-01
 8 8.0829E-01 8.9208E-01 -8.3499E-01 8.0542E-01 8.8945E-01 -8.3562E-01 9.0475E-01 1.0000E+00 -9.3755E-01
 8.0508E-01 8.9225E-01 -8.3633E-01 8.0855E-01 8.8153E-01 -8.2765E-01 8.0758E-01 8.9257E-01 -8.3658E-01
 9 -8.2034E-01 -8.3001E-01 8.8593E-01 -8.1837E-01 -8.2896E-01 8.8634E-01 -9.1993E-01 -9.3755E-01 1.0000E+00
 -8.1770E-01 -8.2837E-01 8.8551E-01 -8.1915E-01 -8.2383E-01 8.7943E-01 -8.1945E-01 -8.2734E-01 8.8602E-01
 10 8.9166E-01 8.1062E-01 -8.2676E-01 8.8821E-01 8.0871E-01 -8.2759E-01 8.9260E-01 8.0508E-01 -8.1770E-01
 1.0000E+00 9.0370E-01 -9.2075E-01 8.9074E-01 7.9965E-01 -8.1724E-01 8.9194E-01 8.1114E-01 -8.2932E-01
 11 8.1513E-01 9.0307E-01 -8.4284E-01 8.0983E-01 8.9763E-01 -8.4485E-01 8.1974E-01 8.9225E-01 -8.2837E-01
 9.0370E-01 1.0000E+00 -9.3540E-01 8.1774E-01 8.8271E-01 -8.2877E-01 8.1597E-01 9.1087E-01 -8.5152E-01
 12 -8.3337E-01 -8.4712E-01 9.0203E-01 -8.2749E-01 -8.4162E-01 9.0463E-01 -8.3914E-01 -8.3633E-01 8.8551E-01
 -9.2075E-01 -9.3540E-01 1.0000E+00 -8.3703E-01 -8.2689E-01 8.8616E-01 -8.3440E-01 -8.5546E-01 9.1284E-01
 13 8.9573E-01 8.1520E-01 -8.3011E-01 8.9037E-01 8.1121E-01 -8.3199E-01 9.0197E-01 8.0855E-01 -8.1915E-01
 8.9074E-01 8.1774E-01 -8.3703E-01 1.0000E+00 9.0274E-01 -9.2191E-01 8.9559E-01 8.1970E-01 -8.3649E-01
 14 8.0236E-01 8.8417E-01 -8.2856E-01 8.0064E-01 8.8282E-01 -8.2878E-01 8.0237E-01 8.8153E-01 -8.2383E-01
 7.9965E-01 8.8271E-01 -8.2689E-01 9.0274E-01 1.0000E+00 -9.3922E-01 8.0113E-01 8.8182E-01 -8.2740E-01
 15 -8.2016E-01 -8.3009E-01 8.8589E-01 -8.1805E-01 -8.2886E-01 8.8659E-01 -8.2094E-01 -8.2765E-01 8.7943E-01
 -8.1724E-01 -8.2877E-01 8.8616E-01 -9.2191E-01 -9.3922E-01 1.0000E+00 -8.1913E-01 -8.2795E-01 8.8646E-01
 16 8.9527E-01 8.1429E-01 -8.3000E-01 8.9097E-01 8.1146E-01 -8.3111E-01 8.9764E-01 8.0758E-01 -8.1945E-01
 8.9194E-01 8.1597E-01 -8.3440E-01 8.9559E-01 8.0113E-01 -8.1913E-01 1.0000E+00 9.0210E-01 -9.2342E-01
 17 8.1562E-01 9.0482E-01 -8.4362E-01 8.0933E-01 8.9829E-01 -8.4600E-01 8.2190E-01 8.9257E-01 -8.2734E-01
 8.1114E-01 9.1087E-01 -8.5546E-01 8.1970E-01 8.8182E-01 -8.2795E-01 9.0210E-01 1.0000E+00 -9.3455E-01
 18 -8.3342E-01 -8.4689E-01 9.0193E-01 -8.2774E-01 -8.4162E-01 9.0427E-01 -8.3865E-01 -8.3658E-01 8.8602E-01
 -8.2932E-01 -8.5152E-01 9.1284E-01 -8.3649E-01 -8.2740E-01 8.8646E-01 -9.2342E-01 -9.3455E-01 1.0000E+00

G-FILE for the vectors

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 C00070002 -555089808 26 -643612757 82 -719673941 83
 C00070003 1102652462 25 256982200 82 523907296 85
 C00070004 -1512753284 26 -34272916 81 -496563482 82
 C00070005 1271761611 25 -967259940 83 -480313973 85
 C00070006 -1316556810 26 1183851199 80 588442867 82
 D 1 2 9074337 1 3 -9266874 1 4 8910911 1 5 8115195 1 6 -8308973
 D 1 7 8975669 1 8 8082885 1 9 -8203354 1 10 8916620 1 11 8151312
 D 1 12 -8333665 1 13 8957343 1 14 8023583 1 15 -8201579 1 16 8952725
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D 3 6 8984163 3 7 -8318140 3 8 -8349927 3 9 8859297 3 10 -8267576
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D 5 9 -8289555 5 10 8087123 5 11 8976279 5 12 -8416180 5 13 8112072
D 5 14 8828206 5 15 -8288633 5 16 8114574 5 17 8982919 5 18 -8416187
D 6 7 -8336289 6 8 -8356168 6 9 8863376 6 10 -8275894 6 11 -8448522
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D 9 17 -8273394 9 18 8860221 10 11 9037022 10 12 -9207544 10 13 8907446
D 10 14 7996493 10 15 -8172371 10 16 8919378 10 17 8111375 10 18 -8293161
D 11 12 -9354028 11 13 8177399 11 14 8827127 11 15 -8287691 11 16 8159703
D 11 17 9108673 11 18 -8515178 12 13 -8370257 12 14 -8268944 12 15 8861591
D 12 16 -8343962 12 17 -8554600 12 18 9128414 13 14 9027386 13 15 -9219098
D 13 16 8955886 13 17 8196989 13 18 -8364864 14 15 -9392167 14 16 8011278
D 14 17 8818190 14 18 -8273953 15 16 -8191320 15 17 -8279469 15 18 8864624
D 16 17 9021042 16 18 -9234166 17 18 -9345509

ITRF position of 9401 as determined by individual baselines

	X	Y	Z
mtms	-1393824.512	-4041468.598	4718740.939
mtlw	-1393824.492	-4041468.526	4718740.887
p053	-1393824.506	-4041468.550	4718740.890
p049	-1393824.497	-4041468.541	4718740.878
p052	-1393824.501	-4041468.579	4718740.895
p050	-1393824.500	-4041468.541	4718740.886

Residuals of position determined by individual baselines from the final position

	X	Y	Z	East	North	Up
mtms	-0.007	-0.029	0.031	0.003	-0.002	0.043
mtlw	0.013	0.042	-0.021	-0.002	0.019	-0.046
p053	-0.001	0.018	-0.018	-0.007	0.001	-0.024
p049	0.009	0.028	-0.030	-0.001	0.002	-0.041
p052	0.004	-0.010	-0.013	0.007	-0.014	-0.004
p050	0.005	0.028	-0.022	-0.004	0.006	-0.035

STATE PLANE COORDINATES - International Foot

SPC (2500 MT)

Northing (Y) [feet]	1373129.701
Easting (X) [feet]	2083901.991
Convergence [degrees]	0.34504373
Point Scale	0.99954626
Combined Factor	0.99939709

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

dop from interpolation is 0.417
scatter (mean square distance from rover) is 20293.463
average edop for rover is 0.800
average ndop for rover is 1.260
average hdop for rover is 1.493
average vdop for rover is 1.960
average gdop for rover is 2.810

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.