

OPUS-RS solution : 018506_14_239_A1.14O OP1409694725019

opus <opus@ngs.noaa.gov>

Tue 9/2/2014 3:59 PM

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

FILE: 018506_14_239_A1.14O OP1409694725019

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
RINEX FILE: 0185239p.14oDATE: September 02, 2014
TIME: 21:59:01 UTCSOFTWARE: rsgps 1.37 RS90.prl 1.99.2 START: 2014/08/27 15:47:30
EPHEMERIS: igr18073.eph [rapid] STOP: 2014/08/27 16:47:00
NAV FILE: brdc2390.14n OBS USED: 5214 / 5388 : 97%
ANT NAME: CHCX90D-OPUS NONE QUALITY IND. 11.52/ 94.35
ARP HEIGHT: 1.8000 NORMALIZED RMS: 0.234

REF FRAME: NAD_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2014.65391)

X: -1339831.969(m) 0.008(m) -1339832.829(m) 0.008(m)
Y: -4277997.698(m) 0.021(m) -4277996.446(m) 0.021(m)
Z: 4523178.831(m) 0.020(m) 4523178.791(m) 0.020(m)LAT: 45 26 55.00417 0.005(m) 45 26 55.02490 0.005(m)
E LON: 252 36 35.61850 0.006(m) 252 36 35.56352 0.006(m)
W LON: 107 23 24.38150 0.006(m) 107 23 24.43648 0.006(m)
EL HGT: 1002.699(m) 0.029(m) 1002.013(m) 0.029(m)
ORTHO HGT: 1017.196(m) 0.031(m) [NAVD88 (Computed using GEOID12A)]

UTM COORDINATES STATE PLANE COORDINATES

UTM (Zone 13) SPC (2500 MT)

Northing (Y) [meters] 5035566.315 135437.613
Easting (X) [meters] 313099.655 764995.662
Convergence [degrees] -1.70373215 1.54339635
Point Scale 1.00002950 0.99976035
Combined Factor 0.99987232 0.99960321

US NATIONAL GRID DESIGNATOR: 13TCL1309935566(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI3062	BIL5 BILLINGS 5 CORS ARP	N455816.237	W1075947.298	74861.6
DM7161	WYSH SHERIDAN CORS ARP	N444801.769	W1070035.715	78005.3
DL7728	P051 BILLINGSAPMT2005 CORS ARP	N454823.741	W1083246.070	98552.1
DL7758	P722 YNPBASSRCHMT2005 CORS ARP	N452725.985	W1093415.586	170621.9
DI3425	P052 LRRNCHJRDNMT2006 CORS ARP	N472229.026	W1070107.185	216022.8
DI2260	P054 TEREKALAKAMT2006 CORS ARP	N455046.833	W1042629.062	234085.0

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)

bil5	-1372156.894	-4223945.777	4563650.219
wysh	-1326396.423	-4335757.874	4472504.192
p051	-1416839.103	-4223178.944	4551064.076
p722	-1501537.054	-4223566.599	4524171.124
p052	-1266648.340	-4138194.568	4670709.503
p054	-1110122.548	-4310701.963	4554151.792
0185	-1339832.829	-4277996.446	4523178.791

Covariance matrix of the stations:

1	2.1490E-07	4.3940E-07	-4.1210E-07	-8.4360E-09	-7.9940E-08	8.1050E-08	-8.7780E-09	-9.6730E-08	8.8700E-08
	-9.7680E-09	-1.0580E-07	9.7280E-08	-9.8750E-09	-9.1830E-08	7.8570E-08	-1.1370E-08	-6.5210E-08	6.6660E-08
	2.7960E-08	4.4060E-09	9.9920E-10						
2	4.3940E-07	1.4180E-06	-1.2840E-06	-9.5350E-08	-2.9000E-07	2.7930E-07	-9.7150E-08	-2.4580E-07	2.5760E-07
	-1.0680E-07	-2.4880E-07	2.6040E-07	-7.2780E-08	-2.0180E-07	2.2740E-07	-6.6700E-08	-2.6480E-07	2.5960E-07
	5.6880E-09	5.7440E-08	-2.4230E-08						
3	-4.1210E-07	-1.2840E-06	1.3270E-06	8.4060E-08	2.6830E-07	-2.3770E-07	8.7040E-08	2.5800E-07	-2.3470E-07
	9.2090E-08	2.6190E-07	-2.3830E-07	7.6580E-08	2.4000E-07	-2.2180E-07	7.1820E-08	2.5590E-07	-2.2790E-07
	-3.2190E-09	-2.2730E-08	4.3040E-08						
4	-8.4360E-09	-9.5350E-08	8.4060E-08	2.0640E-07	4.6100E-07	-4.0630E-07	-1.0140E-08	-9.9970E-08	8.8440E-08
	-1.3740E-08	-1.0880E-07	9.6840E-08	-5.4780E-09	-8.6830E-08	7.5230E-08	-1.9090E-09	-7.0110E-08	6.1660E-08
	2.6880E-08	-7.6870E-09	4.7370E-09						
5	-7.9940E-08	-2.9000E-07	2.6830E-07	4.6100E-07	1.6610E-06	-1.3940E-06	-7.0980E-08	-2.9520E-07	2.7200E-07
	-5.5040E-08	-3.0600E-07	2.8150E-07	-1.0980E-07	-3.4740E-07	2.8400E-07	-1.4500E-07	-2.5690E-07	2.8800E-07
	-1.3210E-08	-1.6190E-08	5.0130E-08						
6	8.1050E-08	2.7930E-07	-2.3770E-07	-4.0630E-07	-1.3940E-06	1.3550E-06	8.2130E-08	2.8250E-07	-2.4060E-07
	8.4340E-08	2.8840E-07	-2.4600E-07	8.0140E-08	2.7830E-07	-2.3480E-07	7.8320E-08	2.6520E-07	-2.2840E-07
	3.6940E-09	2.3160E-08	1.2960E-08						
7	-8.7780E-09	-9.7150E-08	8.7040E-08	-1.0140E-08	-7.0980E-08	8.2130E-08	2.3280E-07	4.5570E-07	-4.3060E-07

-3.8630E-09 -1.1200E-07 1.0070E-07 -1.7450E-08 -1.1160E-07 8.7520E-08 -2.5700E-08 -6.4390E-08 7.3590E-08
 2.0460E-08 -1.1830E-08 1.9240E-08
 8 -9.6730E-08 -2.4580E-07 2.5800E-07 -9.9970E-08 -2.9520E-07 2.8250E-07 4.5570E-07 1.4280E-06 -1.2930E-06
 -1.1230E-07 -2.4930E-07 2.6160E-07 -7.6210E-08 -2.0100E-07 2.2870E-07 -6.9150E-08 -2.6970E-07 2.6280E-07
 -8.0970E-09 2.5250E-08 3.3940E-09
 9 8.8700E-08 2.5760E-07 -2.3470E-07 8.8440E-08 2.7200E-07 -2.4060E-07 -4.3060E-07 -1.2930E-06 1.3360E-06
 9.6690E-08 2.6280E-07 -2.3960E-07 8.0360E-08 2.4070E-07 -2.2360E-07 7.5290E-08 2.6000E-07 -2.3120E-07
 9.5980E-09 6.1530E-09 1.6930E-08
 10 -9.7680E-09 -1.0680E-07 9.2090E-08 -1.3740E-08 -5.5040E-08 8.4340E-08 -3.8630E-09 -1.1230E-07 9.6690E-08
 2.7850E-07 4.8460E-07 -4.6300E-07 -3.1760E-08 -1.4790E-07 1.0410E-07 -5.2320E-08 -6.3460E-08 8.6590E-08
 1.3030E-08 -2.2950E-08 3.6070E-08
 11 -1.0580E-07 -2.4880E-07 2.6190E-07 -1.0880E-07 -3.0600E-07 2.8840E-07 -1.1200E-07 -2.4930E-07 2.6280E-07
 4.8460E-07 1.4490E-06 -1.3110E-06 -8.2400E-08 -1.9830E-07 2.3040E-07 -7.2960E-08 -2.7950E-07 2.6840E-07
 -1.5880E-08 2.1450E-08 5.4760E-09
 12 9.7280E-08 2.6040E-07 -2.3830E-07 9.6840E-08 2.8150E-07 -2.4600E-07 1.0070E-07 2.6160E-07 -2.3960E-07
 -4.6300E-07 -1.3110E-06 1.3520E-06 8.6510E-08 2.3880E-07 -2.2540E-07 7.9500E-08 2.6880E-07 -2.3640E-07
 1.6900E-08 9.0950E-09 1.5360E-08
 13 -9.8750E-09 -7.2780E-08 7.6580E-08 -5.4780E-09 -1.0980E-07 8.0140E-08 -1.7450E-08 -7.6210E-08 8.0360E-08
 -3.1760E-08 -8.2400E-08 8.6510E-08 1.9690E-07 4.0980E-07 -3.7020E-07 3.4120E-08 -6.8070E-08 4.6410E-08
 3.4340E-08 1.4480E-08 -1.7960E-08
 14 -9.1830E-08 -2.0180E-07 2.4000E-07 -8.6830E-08 -3.4740E-07 2.7830E-07 -1.1160E-07 -2.0100E-07 2.4070E-07
 -1.4790E-07 -1.9830E-07 2.3880E-07 4.0980E-07 1.3840E-06 -1.2170E-06 2.7270E-08 -2.6730E-07 2.1930E-07
 1.8260E-08 6.9130E-08 -5.1950E-08
 15 7.8570E-08 2.2740E-07 -2.2180E-07 7.5230E-08 2.8400E-07 -2.3480E-07 8.7520E-08 2.2870E-07 -2.2360E-07
 1.0410E-07 2.3040E-07 -2.2540E-07 -3.7020E-07 -1.2170E-06 1.2790E-06 2.6170E-08 2.4690E-07 -2.0710E-07
 -8.5530E-09 -2.0750E-08 4.2620E-08
 16 -1.1370E-08 -6.6700E-08 7.1820E-08 -1.9090E-09 -1.4500E-07 7.8320E-08 -2.5700E-08 -6.9150E-08 7.5290E-08
 -5.2320E-08 -7.2960E-08 7.9500E-08 3.4120E-08 2.7270E-08 2.6170E-08 2.2340E-07 3.2770E-07 -3.3210E-07
 4.4030E-08 2.3900E-08 -4.3470E-08
 17 -6.5210E-08 -2.6480E-07 2.5590E-07 -7.0110E-08 -2.5690E-07 2.6520E-07 -6.4390E-08 -2.6970E-07 2.6000E-07
 -6.3460E-08 -2.7950E-07 2.6880E-07 -6.8070E-08 -2.6730E-07 2.4690E-07 3.2770E-07 1.5040E-06 -1.2980E-06
 1.3250E-08 9.4960E-09 1.6810E-08
 18 6.6660E-08 2.5960E-07 -2.2790E-07 6.1660E-08 2.8800E-07 -2.2840E-07 7.3590E-08 2.6280E-07 -2.3120E-07
 8.6590E-08 2.6840E-07 -2.3640E-07 4.6410E-08 2.1930E-07 -2.0710E-07 -3.3210E-07 -1.2980E-06 1.2990E-06
 -1.8440E-08 5.0380E-09 3.5960E-08
 19 2.7960E-08 5.6880E-09 -3.2190E-09 2.6880E-08 -1.3210E-08 3.6940E-09 2.0460E-08 -8.0970E-09 9.5980E-09
 1.3030E-08 -1.5880E-08 1.6900E-08 3.4340E-08 1.8260E-08 -8.5530E-09 4.4030E-08 1.3250E-08 -1.8440E-08
 2.1870E-06 5.4430E-06 -4.9670E-06
 20 4.4060E-09 5.7440E-08 -2.2730E-08 -7.6870E-09 -1.6190E-08 2.3160E-08 -1.1830E-08 2.5250E-08 6.1530E-09
 -2.2950E-08 2.1450E-08 9.0950E-09 1.4480E-08 6.9130E-08 -2.0750E-08 2.3900E-08 9.4960E-09 5.0380E-09
 5.4430E-06 1.8020E-05 -1.6340E-05
 21 9.9920E-10 -2.4230E-08 4.3040E-08 4.7370E-09 5.0130E-08 1.2960E-08 1.9240E-08 3.3940E-09 1.6930E-08
 3.6070E-08 5.4760E-09 1.5360E-08 -1.7960E-08 -5.1950E-08 4.2620E-08 -4.3470E-08 1.6810E-08 3.5960E-08
 -4.9670E-06 -1.6340E-05 1.6110E-05

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

0.0000021870	0.0000054430	-0.0000049670
0.0000054430	0.0000180200	-0.0000163400
-0.0000049670	-0.0000163400	0.0000161100

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

```

0.0000004965  0.0000000690  0.0000001339
0.0000000690  0.0000008494  -0.0000019529
0.0000001339  -0.0000019529  0.0000349711
    
```

Horizontal network accuracy = 0.00203 meters.
 Vertical network accuracy = 0.01160 meters.

		Vectors		
To	From	X	Y	Z
bil5	0185	-32324.065	54050.669	40471.429
wysh	0185	13436.406	-57761.428	-50674.598
p051	0185	-77006.273	54817.502	27885.285
p722	0185	-161704.224	54429.847	992.333
p052	0185	73184.490	139801.878	147530.713
p054	0185	229710.282	-32705.517	30973.001

Covariance matrix of the 6 vectors

```

1  2.3460E-06  5.8723E-06  -5.3769E-06  2.1237E-06  5.3719E-06  -4.8906E-06  2.1298E-06  5.3500E-06  -4.8889E-06
2.1362E-06  5.3487E-06  -4.8876E-06  2.1148E-06  5.3285E-06  -4.8809E-06  2.1036E-06  5.3601E-06  -4.8829E-06
2  5.8723E-06  1.9323E-05  -1.7577E-05  5.3496E-06  1.7689E-05  -1.6060E-05  5.3520E-06  1.7692E-05  -1.6064E-05
5.3535E-06  1.7692E-05  -1.6064E-05  5.3501E-06  1.7692E-05  -1.6068E-05  5.3467E-06  1.7688E-05  -1.6061E-05
3  -5.3769E-06  -1.7577E-05  1.7351E-05  -4.8845E-06  -1.6099E-05  1.5816E-05  -4.8960E-06  -1.6063E-05  1.5815E-05
-4.9078E-06  -1.6061E-05  1.5813E-05  -4.8692E-06  -1.6025E-05  1.5803E-05  -4.8485E-06  -1.6078E-05  1.5803E-05
4  2.1237E-06  5.3496E-06  -4.8845E-06  2.3396E-06  5.9249E-06  -5.3817E-06  2.1295E-06  5.3588E-06  -4.8929E-06
2.1334E-06  5.3578E-06  -4.8918E-06  2.1203E-06  5.3456E-06  -4.8880E-06  2.1142E-06  5.3673E-06  -4.8916E-06
5  5.3719E-06  1.7689E-05  -1.6099E-05  5.9249E-06  1.9713E-05  -1.7807E-05  5.3971E-06  1.7716E-05  -1.6124E-05
5.4241E-06  1.7709E-05  -1.6118E-05  5.3319E-06  1.7620E-05  -1.6085E-05  5.2873E-06  1.7770E-05  -1.6107E-05
6  -4.8906E-06  -1.6060E-05  1.5816E-05  -5.3817E-06  -1.7807E-05  1.7439E-05  -4.9078E-06  -1.6084E-05  1.5840E-05
-4.9224E-06  -1.6080E-05  1.5836E-05  -4.8726E-06  -1.6033E-05  1.5820E-05  -4.8489E-06  -1.6115E-05  1.5833E-05
7  2.1298E-06  5.3520E-06  -4.8960E-06  2.1295E-06  5.3971E-06  -4.9078E-06  2.3789E-06  5.9186E-06  -5.4264E-06
2.1496E-06  5.3587E-06  -4.9024E-06  2.1147E-06  5.3250E-06  -4.8902E-06  2.0968E-06  5.3772E-06  -4.8942E-06
8  5.3500E-06  1.7692E-05  -1.6063E-05  5.3588E-06  1.7716E-05  -1.6084E-05  5.9186E-06  1.9397E-05  -1.7643E-05
5.3617E-06  1.7724E-05  -1.6091E-05  5.3604E-06  1.7725E-05  -1.6094E-05  5.3580E-06  1.7716E-05  -1.6086E-05
9  -4.8889E-06  -1.6064E-05  1.5815E-05  -4.8929E-06  -1.6124E-05  1.5840E-05  -5.4264E-06  -1.7643E-05  1.7412E-05
-4.9160E-06  -1.6089E-05  1.5838E-05  -4.8783E-06  -1.6054E-05  1.5827E-05  -4.8578E-06  -1.6103E-05  1.5826E-05
10  2.1362E-06  5.3535E-06  -4.9078E-06  2.1334E-06  5.4241E-06  -4.9224E-06  2.1496E-06  5.3617E-06  -4.9160E-06
2.4394E-06  5.9664E-06  -5.4830E-06  2.1079E-06  5.2998E-06  -4.8904E-06  2.0776E-06  5.3892E-06  -4.8980E-06
11  5.3487E-06  1.7692E-05  -1.6061E-05  5.3578E-06  1.7709E-05  -1.6080E-05  5.3587E-06  1.7724E-05  -1.6089E-05
5.9664E-06  1.9426E-05  -1.7666E-05  5.3620E-06  1.7731E-05  -1.6094E-05  5.3620E-06  1.7710E-05  -1.6082E-05
12  -4.8876E-06  -1.6064E-05  1.5813E-05  -4.8918E-06  -1.6118E-05  1.5836E-05  -4.9024E-06  -1.6091E-05  1.5838E-05
-5.4830E-06  -1.7666E-05  1.7431E-05  -4.8794E-06  -1.6058E-05  1.5827E-05  -4.8609E-06  -1.6097E-05  1.5822E-05
13  2.1148E-06  5.3501E-06  -4.8692E-06  2.1203E-06  5.3319E-06  -4.8726E-06  2.1147E-06  5.3604E-06  -4.8783E-06
2.1079E-06  5.3620E-06  -4.8794E-06  2.3152E-06  5.8201E-06  -5.3107E-06  2.1427E-06  5.3472E-06  -4.8842E-06
14  5.3285E-06  1.7692E-05  -1.6025E-05  5.3456E-06  1.7620E-05  -1.6033E-05  5.3250E-06  1.7725E-05  -1.6054E-05
5.2998E-06  1.7731E-05  -1.6058E-05  5.8201E-06  1.9266E-05  -1.7484E-05  5.4281E-06  1.7674E-05  -1.6074E-05
15  -4.8809E-06  -1.6068E-05  1.5803E-05  -4.8880E-06  -1.6085E-05  1.5820E-05  -4.8902E-06  -1.6094E-05  1.5827E-05
-4.8904E-06  -1.6094E-05  1.5827E-05  -5.3107E-06  -1.7484E-05  1.7304E-05  -4.8888E-06  -1.6089E-05  1.5824E-05
16  2.1036E-06  5.3467E-06  -4.8485E-06  2.1142E-06  5.2873E-06  -4.8489E-06  2.0968E-06  5.3580E-06  -4.8578E-
06  2.0776E-06  5.3620E-06  -4.8609E-06  2.1427E-06  5.4281E-06  -4.8888E-06  2.3223E-06  5.7336E-06  -5.2372E-06
17  5.3601E-06  1.7688E-05  -1.6078E-05  5.3673E-06  1.7770E-05  -1.6115E-05  5.3772E-06  1.7716E-05  -1.6103E-05
    
```

5.3892E-06 1.7710E-05 -1.6097E-05 5.3472E-06 1.7674E-05 -1.6089E-05 5.7336E-06 1.9505E-05 -1.7660E-05
 18 -4.8829E-06 -1.6061E-05 1.5803E-05 -4.8916E-06 -1.6107E-05 1.5833E-05 -4.8942E-06 -1.6086E-05 1.5826E-05
 -4.8980E-06 -1.6082E-05 1.5822E-05 -4.8842E-06 -1.6074E-05 1.5824E-05 -5.2372E-06 -1.7660E-05 1.7337E-05

Correlation matrix of the 6 vectors

1 1.0000E+00 8.7218E-01 -8.4277E-01 9.0649E-01 7.8992E-01 -7.6461E-01 9.0155E-01 7.9308E-01 -7.6493E-01
 8.9298E-01 7.9230E-01 -7.6431E-01 9.0744E-01 7.9259E-01 -7.6606E-01 9.0125E-01 7.9239E-01 -7.6565E-01
 2 8.7218E-01 1.0000E+00 -9.5994E-01 7.9563E-01 9.0631E-01 -8.7485E-01 7.8939E-01 9.1380E-01 -8.7579E-01
 7.7974E-01 9.1317E-01 -8.7531E-01 7.9988E-01 9.1693E-01 -8.7870E-01 7.9815E-01 9.1112E-01 -8.7751E-01
 3 -8.4277E-01 -9.5994E-01 1.0000E+00 -7.6662E-01 -8.7048E-01 9.0925E-01 -7.6207E-01 -8.7556E-01 9.0989E-01
 -7.5436E-01 -8.7481E-01 9.0928E-01 -7.6825E-01 -8.7650E-01 9.1200E-01 -7.6380E-01 -8.7398E-01 9.1116E-01
 4 9.0649E-01 7.9563E-01 -7.6662E-01 1.0000E+00 8.7242E-01 -8.4253E-01 9.0265E-01 7.9547E-01 -7.6659E-01
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 5 7.8992E-01 9.0631E-01 -8.7048E-01 8.7242E-01 1.0000E+00 -9.6041E-01 7.8812E-01 9.0595E-01 -8.7031E-01
 7.8217E-01 9.0493E-01 -8.6948E-01 7.8924E-01 9.0412E-01 -8.7092E-01 7.8143E-01 9.0621E-01 -8.7127E-01
 6 -7.6461E-01 -8.7485E-01 9.0925E-01 -8.4253E-01 -9.6041E-01 1.0000E+00 -7.6197E-01 -8.7450E-01 9.0898E-01
 -7.5470E-01 -8.7365E-01 9.0826E-01 -7.6684E-01 -8.7470E-01 9.1068E-01 -7.6194E-01 -8.7375E-01 9.1055E-01
 7 9.0155E-01 7.8939E-01 -7.6207E-01 9.0265E-01 7.8812E-01 -7.6197E-01 1.0000E+00 8.7129E-01 -8.4315E-01
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 -7.5429E-01 -8.7479E-01 9.0910E-01 -7.6832E-01 -8.7650E-01 9.1180E-01 -7.6393E-01 -8.7379E-01 9.1087E-01
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 1.0000E+00 8.6672E-01 -8.4083E-01 8.8696E-01 7.7307E-01 -7.5272E-01 8.7289E-01 7.8128E-01 -7.5316E-01
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 8.6672E-01 1.0000E+00 -9.6000E-01 7.9954E-01 9.1654E-01 -8.7783E-01 7.9831E-01 9.0979E-01 -8.7632E-01
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 13 9.0744E-01 7.9988E-01 -7.6825E-01 9.1102E-01 7.8924E-01 -7.6684E-01 9.0111E-01 7.9989E-01 -7.6832E-01
 8.8696E-01 7.9954E-01 -7.6808E-01 1.0000E+00 8.7144E-01 -8.3904E-01 9.2409E-01 7.9571E-01 -7.7092E-01
 14 7.9259E-01 9.1693E-01 -8.7650E-01 7.9621E-01 9.0412E-01 -8.7470E-01 7.8657E-01 9.1688E-01 -8.7650E-01
 7.7307E-01 9.1654E-01 -8.7628E-01 8.7144E-01 1.0000E+00 -9.5760E-01 8.1151E-01 9.1174E-01 -8.7950E-01
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 -7.5272E-01 -8.7783E-01 9.1128E-01 -8.3904E-01 -9.5760E-01 1.0000E+00 -7.7120E-01 -8.7577E-01 9.1362E-01
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 7.8128E-01 9.0979E-01 -8.7299E-01 7.9571E-01 9.1174E-01 -8.7577E-01 8.5190E-01 1.0000E+00 -9.6034E-01
 18 -7.6565E-01 -8.7751E-01 9.1116E-01 -7.6805E-01 -8.7127E-01 9.1055E-01 -7.6209E-01 -8.7716E-01 9.1087E-01
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G-FILE for the vectors

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 D 13 16 9240861 13 17 7957144 13 18 -7709184 14 15 -9576022 14 16 8115081
 D 14 17 9117394 14 18 -8795031 15 16 -7712048 15 17 -8757699 15 18 9136226
 D 16 17 8518980 16 18 -8253676 17 18 -9603419

ITRF position of 0185 as determined by individual baselines

	X	Y	Z
bil5	-1339832.821	-4277996.452	4523178.792
wysh	-1339832.841	-4277996.468	4523178.818
p051	-1339832.831	-4277996.448	4523178.794
p722	-1339832.833	-4277996.455	4523178.804
p052	-1339832.835	-4277996.471	4523178.803
p054	-1339832.825	-4277996.415	4523178.760

Residuals of position determined by individual baselines from the final position

	X	Y	Z	East	North	Up
bil5	0.009	-0.006	0.001	0.010	-0.001	0.003
wysh	-0.012	-0.022	0.027	-0.005	0.002	0.037
p051	-0.001	-0.002	0.003	-0.001	0.001	0.004
p722	-0.004	-0.009	0.013	-0.001	0.002	0.016
p052	-0.006	-0.025	0.012	0.002	-0.010	0.027

p054 0.005 0.031 -0.030 -0.005 0.001 -0.043

STATE PLANE COORDINATES - International Foot

SPC (2500 MT)

Northing (Y) [feet] 444349.124
Easting (X) [feet] 2509828.287
Convergence [degrees] 1.54339635
Point Scale 0.99976035
Combined Factor 0.99960321

** 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: 1016.335 (m) [PROTOTYPE (Computed using USGG2012,GRS80,IGS08)]

dop from interpolation is 0.472
scatter (mean square distance from rover) is 25321.835
average edop for rover is 0.650
average ndop for rover is 0.840
average hdop for rover is 1.062
average vdop for rover is 1.680
average gdop for rover is 2.280

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.