

OPUS-RS solution : 033845_14_247_A2.14O OP1409949244933

opus <opus@ngs.noaa.gov>

Fri 9/5/2014 2:38 PM

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

FILE: 033845_14_247_A2.14O OP1409949244933

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: 0338247t.14oDATE: September 05, 2014
TIME: 20:38:37 UTCSOFTWARE: rsgps 1.37 RS94.prl 1.99.2 START: 2014/09/04 19:07:00
EPHEMERIS: igr18084.eph [rapid] STOP: 2014/09/04 20:09:15
NAV FILE: brdc2470.14n OBS USED: 5368 / 5656 : 95%
ANT NAME: CHCX90D-OPUS NONE QUALITY IND. 31.04/ 74.80
ARP HEIGHT: 1.8000 NORMALIZED RMS: 0.259

REF FRAME: NAD_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2014.67621)

X: -1315276.301(m) 0.008(m) -1315277.165(m) 0.008(m)
Y: -4228473.404(m) 0.013(m) -4228472.157(m) 0.013(m)
Z: 4576377.118(m) 0.014(m) 4576377.085(m) 0.014(m)LAT: 46 8 3.50740 0.005(m) 46 8 3.52847 0.005(m)
E LON: 252 43 17.66961 0.007(m) 252 43 17.61393 0.007(m)
W LON: 107 16 42.33039 0.007(m) 107 16 42.38607 0.007(m)
EL HGT: 1070.599(m) 0.019(m) 1069.928(m) 0.019(m)
ORTHO HGT: 1085.424(m) 0.021(m) [NAVD88 (Computed using GEOID12A)]

UTM COORDINATES STATE PLANE COORDINATES

UTM (Zone 13) SPC (2500 MT)

Northing (Y) [meters] 5111493.699 211832.875
Easting (X) [meters] 324005.398 771566.381
Convergence [degrees] -1.64308734 1.62509137
Point Scale 0.99998078 0.99950907
Combined Factor 0.99981298 0.99934135

US NATIONAL GRID DESIGNATOR: 13TCM2400511493(NAD 83)

BASE STATIONS USED

| PID | DESIGNATION | LATITUDE | LONGITUDE | DISTANCE(m) |
|--------|--------------------------------|--------------|--------------|-------------|
| DI3062 | BIL5 BILLINGS 5 CORS ARP | N455816.237 | W1075947.298 | 58461.6 |
| DG9745 | MTEI ENGINC CORS ARP | N454447.035 | W1083600.736 | 111213.1 |
| DI3425 | P052 LRRNCHJRDNMT2006 CORS ARP | N472229.026 | W1070107.185 | 139332.0 |
| DM7161 | WYSH SHERIDAN CORS ARP | N4444801.769 | W1070035.715 | 149744.6 |
| DL7758 | P722 YNPBASSRCHMT2005 CORS ARP | N452725.985 | W1093415.586 | 193500.1 |
| DM7133 | MTLW LEWISTOWN CORS ARP | N470314.929 | W1092633.764 | 194853.5 |
| DI2260 | P054 TEREKALAKAMT2006 CORS ARP | N455046.833 | W1042629.062 | 222135.4 |
| DI2263 | P055 GLENDIVEWTMT2006 CORS ARP | N470700.144 | W1044106.394 | 226657.2 |

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.

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.