

## OPUS-RS solution : 033845\_14\_247\_A0.14O OP1409945093543

opus &lt;opus@ngs.noaa.gov&gt;

Fri 9/5/2014 1:29 PM

To:John Freetly &lt;John.Freetly@neciusa.com&gt;;

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## 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: 0338247a.14oDATE: September 05, 2014  
TIME: 19:29:25 UTCSOFTWARE: rsgps 1.37 RS94.prl 1.99.2      START: 2014/09/04 00:40:00  
EPHEMERIS: igr18084.eph [rapid]      STOP: 2014/09/04 01:44:15  
NAV FILE: brdc2470.14n      OBS USED: 4506 / 4632 : 97%  
ANT NAME: CHCX90D-OPUS    NONE      QUALITY IND. 24.31/ 64.27  
ARP HEIGHT: 1.8000      NORMALIZED RMS:    0.289

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000)      IGS08 (EPOCH:2014.67411)

X: -1336040.214(m) 0.006(m)      -1336041.076(m) 0.006(m)  
Y: -4251339.798(m) 0.012(m)      -4251338.549(m) 0.012(m)  
Z: 4549182.392(m) 0.016(m)      4549182.356(m) 0.016(m)LAT: 45 46 59.01887    0.006(m)      45 46 59.03972    0.006(m)  
E LON: 252 33 14.32320    0.005(m)      252 33 14.26781    0.005(m)  
W LON: 107 26 45.67680    0.005(m)      107 26 45.73219    0.005(m)  
EL HGT:    1001.362(m) 0.019(m)      1000.685(m) 0.019(m)  
ORTHO HGT:    1016.011(m) 0.021(m) [NAVD88 (Computed using GEOID12A)]

## UTM COORDINATES    STATE PLANE COORDINATES

UTM (Zone 13)      SPC (2500 MT )

Northing (Y) [meters]    5072854.220      172468.881  
Easting (X) [meters]    309861.578      759649.685  
Convergence [degrees]    -1.75359755      1.50249403  
Point Scale      1.00004448      0.99962034  
Combined Factor      0.99988751      0.99946344

US NATIONAL GRID DESIGNATOR: 13TCL0986172854(NAD 83)

## BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DL7728	P051 BILLINGSAPMT2005 CORS ARP	N454823.741	W1083246.070	85585.2
DG9745	MTEI ENGINC CORS ARP	N454447.035	W1083600.736	89889.8
DM7161	WYSH SHERIDAN CORS ARP	N444801.769	W1070035.715	114451.7
DL7758	P722 YNPBASSRCHMT2005 CORS ARP	N452725.985	W1093415.586	169663.7
DI3425	P052 LRRNCHJRDNMT2006 CORS ARP	N472229.026	W1070107.185	179960.4
DM7133	MTLW LEWISTOWN CORS ARP	N470314.929	W1092633.764	208643.2

## 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.