

## OPUS solution : 018773\_14\_259\_A0.14O OP1411073531228

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

Thu 9/18/2014 2:55 PM

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

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## NGS OPUS SOLUTION REPORT

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All computed coordinate accuracies are listed as peak-to-peak values.

For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>USER: john.freetly@neciusa.com  
RINEX FILE: 0187259s.14oDATE: September 18, 2014  
TIME: 20:55:19 UTCSOFTWARE: page5 1209.04 master53.pl 022814 START: 2014/09/16 18:39:00  
EPHEMERIS: igr18102.eph [rapid] STOP: 2014/09/16 21:17:00  
NAV FILE: brdc2590.14n OBS USED: 5624 / 6039 : 93%  
ANT NAME: CHCX90D-OPUS NONE # FIXED AMB: 33 / 34 : 97%  
ARP HEIGHT: 1.800 OVERALL RMS: 0.011(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2014.7091)

X: -1376695.230(m) 0.014(m) -1376696.089(m) 0.014(m)  
Y: -4296805.979(m) 0.005(m) -4296804.725(m) 0.005(m)  
Z: 4495316.856(m) 0.018(m) 4495316.813(m) 0.018(m)LAT: 45 5 11.29986 0.007(m) 45 5 11.32026 0.007(m)  
E LON: 252 14 4.40995 0.013(m) 252 14 4.35506 0.013(m)  
W LON: 107 45 55.59005 0.013(m) 107 45 55.64494 0.013(m)  
EL HGT: 1663.952(m) 0.018(m) 1663.263(m) 0.018(m)  
ORTHO HGT: 1675.431(m) 0.031(m) [NAVD88 (Computed using GEOID12A)]

## UTM COORDINATES STATE PLANE COORDINATES

UTM (Zone 13) SPC (2500 MT )

Northing (Y) [meters] 4996277.279 94485.948  
Easting (X) [meters] 282369.132 736540.464  
Convergence [degrees] -1.95917750 1.26883670  
Point Scale 1.00018242 0.99994920  
Combined Factor 0.99992156 0.99968840

US NATIONAL GRID DESIGNATOR: 13TBK8236996277(NAD 83)

## BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DG9745	MTEI ENGINC CORS ARP	N454447.035	W1083600.736	98248.2
DM7161	WYSH SHERIDAN CORS ARP	N444801.769	W1070035.715	67585.6
DI3062	BIL5 BILLINGS 5 CORS ARP	N455816.237	W1075947.298	99992.4

## NEAREST NGS PUBLISHED CONTROL POINT

QV0349	SPRING	N450430.189	W1074418.593	2470.1
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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.