

## OPUS solution : 018697\_14\_246\_A1.14O OP1410196061568

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

Mon 9/8/2014 11:11 AM

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

FILE: 018697\_14\_246\_A1.14O OP1410196061568

## NGS OPUS SOLUTION REPORT

=====

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: 0186246u.14oDATE: September 08, 2014  
TIME: 17:11:08 UTCSOFTWARE: page5 1209.04 master93.pl 022814 START: 2014/09/03 20:40:00  
EPHEMERIS: igr18083.eph [rapid] STOP: 2014/09/03 23:28:00  
NAV FILE: brdc2460.14n OBS USED: 5735 / 6253 : 92%  
ANT NAME: CHCX90D-OPUS NONE # FIXED AMB: 36 / 38 : 95%  
ARP HEIGHT: 1.800 OVERALL RMS: 0.017(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2014.6737)

X: -1361850.940(m) 0.014(m) -1361851.799(m) 0.014(m)  
Y: -4292756.917(m) 0.027(m) -4292755.663(m) 0.027(m)  
Z: 4502975.267(m) 0.023(m) 4502975.225(m) 0.023(m)LAT: 45 11 18.32019 0.025(m) 45 11 18.34072 0.025(m)  
E LON: 252 23 55.27496 0.014(m) 252 23 55.22009 0.014(m)  
W LON: 107 36 4.72504 0.014(m) 107 36 4.77991 0.014(m)  
EL HGT: 1190.227(m) 0.025(m) 1189.538(m) 0.025(m)  
ORTHO HGT: 1203.417(m) 0.043(m) [NAVD88 (Computed using GEOID12A)]

## UTM COORDINATES STATE PLANE COORDINATES

UTM (Zone 13) SPC (2500 MT )

Northing (Y) [meters] 5007174.167 106111.536  
Easting (X) [meters] 295650.238 749183.311  
Convergence [degrees] -1.84608111 1.38889788  
Point Scale 1.00011348 0.99989213  
Combined Factor 0.99992689 0.99970558

US NATIONAL GRID DESIGNATOR: 13TBL9565007174(NAD 83)

## BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DM7161	WYSH SHERIDAN CORS ARP	N444801.769	W1070035.715	63519.8
DL7728	P051 BILLINGSAPMT2005 CORS ARP	N454823.741	W1083246.070	100881.4
DI3062	BIL5 BILLINGS 5 CORS ARP	N455816.237	W1075947.298	92317.1

## NEAREST NGS PUBLISHED CONTROL POINT

QV0342	AIRWAY BCN 34 10 MI NW WYOLA	N451149.514	W1073456.179	1778.1
--------	------------------------------	-------------	--------------	--------

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.