

OPUS solution : 018772_14_251_A0.14O OP1410735756565

opus <opus@ngs.noaa.gov>

Sun 9/14/2014 5:05 PM

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

FILE: 018772_14_251_A0.14O OP1410735756565

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

DATE: September 14, 2014

RINEX FILE: 0187251r.14o

TIME: 23:05:18 UTC

SOFTWARE: page5 1209.04 master50.pl 022814 START: 2014/09/08 17:04:00

EPHEMERIS: igr18091.eph [rapid] STOP: 2014/09/08 19:18:00

NAV FILE: brdc2510.14n OBS USED: 4774 / 5466 : 87%

ANT NAME: CHCX90D-OPUS NONE # FIXED AMB: 32 / 38 : 84%

ARP HEIGHT: 1.8000 OVERALL RMS: 0.014(m)

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

IGS08 (EPOCH:2014.6870)

X: -1364398.699(m) 0.004(m) -1364399.557(m) 0.004(m)

Y: -4306509.639(m) 0.010(m) -4306508.383(m) 0.010(m)

Z: 4489393.515(m) 0.009(m) 4489393.471(m) 0.009(m)

LAT: 45 0 49.41608 0.006(m) 45 0 49.43657 0.006(m)

E LON: 252 25 14.27587 0.004(m) 252 25 14.22121 0.004(m)

W LON: 107 34 45.72413 0.004(m) 107 34 45.77879 0.004(m)

EL HGT: 1366.599(m) 0.011(m) 1365.905(m) 0.011(m)

ORTHO HGT: 1378.326(m) 0.021(m) [NAVD88 (Computed using GEOID12A)]

UTM COORDINATES STATE PLANE COORDINATES

UTM (Zone 13) SPC (2500 MT)

Northing (Y) [meters] 4987712.075 86745.976

Easting (X) [meters] 296754.846 751383.192

Convergence [degrees] -1.82494766 1.40495052

Point Scale 1.00010797 0.99999179

Combined Factor 0.99989373 0.99977757

US NATIONAL GRID DESIGNATOR: 13TBK9675487712(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI3062	BIL5 BILLINGS 5 CORS ARP	N455816.237	W1075947.298	111314.1
DL7728	P051 BILLINGSAPMT2005 CORS ARP	N454823.741	W1083246.070	116176.4
DG9745	MTEI ENGINC CORS ARP	N454447.035	W1083600.736	114138.9

NEAREST NGS PUBLISHED CONTROL POINT

QV0344	LH 52	N450419.736	W1073520.458	6547.7
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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.