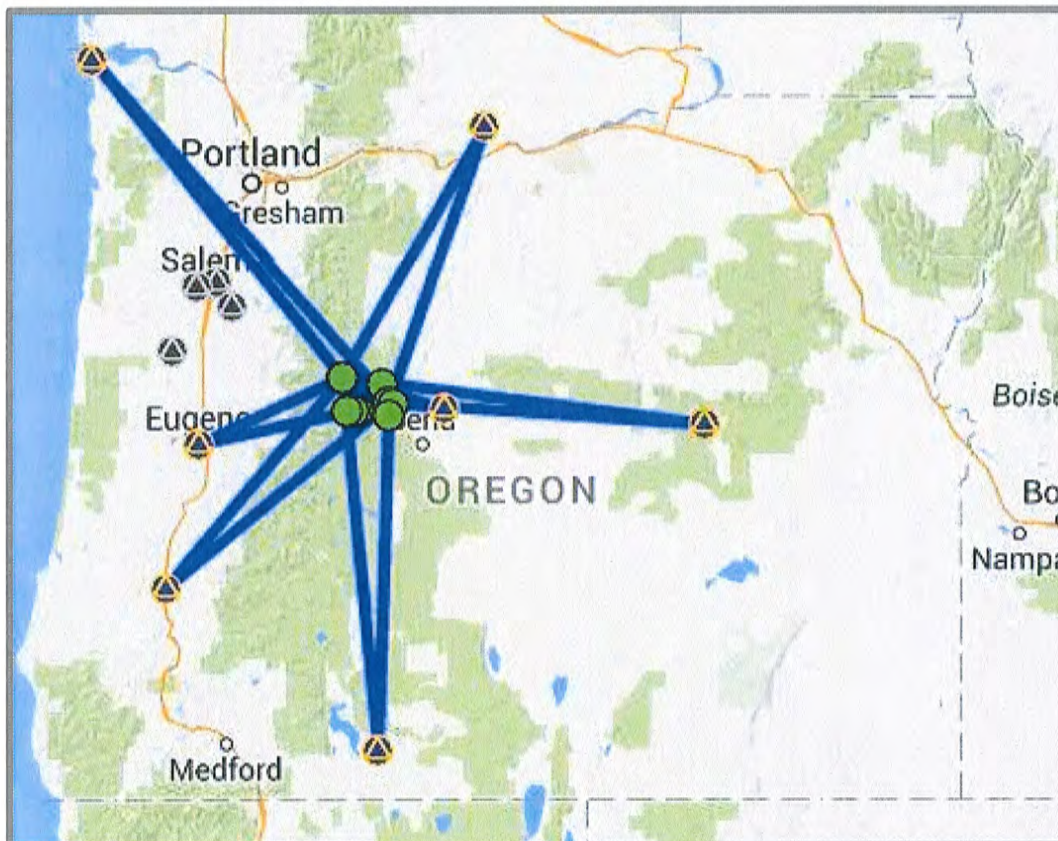


OPUS PROJECTS (OP) BASIC TRAINING HANDOUT

(ver. March 2016)

OREGON CASCADE VOLCANO PROJECT



The 'snip' below represents the beginning state of your OP basic training project. All data has been uploaded for you and you have been assigned a **Project ID** and **Manager Keyword**. Using your **registered email address** you will now have access to your training project. This handout contains the general information you need to process the baselines and adjust the project.

Results From: ALL OPUS SOLUTIONS

LEGEND: MARKS: ● meet preferences ● do not meet preferences ● are not included ● have error
 CORS: ● meet preferences ● do not meet preferences ● are not included

MARKS	Sessions & Solutions										MARKS
	2014-229	2014-229	2014-230	2014-230	2014-231	2014-231	2014-232	2014-232	2014-234		
	A	B	A	B	A	B	A	B	A		
bbr2				●						●	bbr2
c_15	●	●									c_15
c_16	●	●									c_16
h3_			●	●							h3_
p385	●	●	●	●	●	●	●	●	●	●	p385
p387	●	●	●	●	●	●	●	●	●	●	p387
sct2		●								●	sct2
v735					●	●		●			v735
x359					●	●	●				x359

Website Owner: National Geodetic Survey / Last modified by OPUS Projects team Apr 07 2015

The challenge of this project is to determine the State Plane Coordinate in NAD 83(2011)2010.00 and the orthometric height in NAVD88 (using GEOID12A) for the two peaks, Black Butte (mark "bbr2") and Scott Mtn. (mark "sct2") at 95% certainty. Each person can then compare their results with the rest of the class.

CORS SELECTED TO USE IN THE PROJECT

**FTS5
GOBS
LPSB
ORK5
ORS1
REDM
RSBG**

While any CORS are available to be added to the project these CORS have already been added. The CORS listed are considered to be of good quality and in locations around the State designed to provide short and long baseline solutions ideal for tropo de-correlation and for geographically represented repeatable coordinates.

BASE LINE PROCESSING METHODOLOGIES

<u>SESSION</u>	<u>HUB</u>	<u>MASK (Degrees)</u>
229A	P385	15
229B	P387	20
230A	P385	15
230B	P387	15
231A	P385	20
231B	P387	20
232A	P387	20
232B	P387	20
234A	P385	15

The NGS Data Sheet

See file [dsdata.txt](#) for more information about the datasheet.

PROGRAM = datasheet95, VERSION = 8.8

1 National Geodetic Survey, Retrieval Date = MARCH 9, 2016

QD1000 *****

QD1000 DESIGNATION - C 15

QD1000 PID - QD1000

QD1000 STATE/COUNTY- OR/LANE

QD1000 COUNTRY - US

QD1000 USGS QUAD - MT WASHINGTON (1988)

QD1000

QD1000 *CURRENT SURVEY CONTROL

QD1000

QD1000* NAD 83(1986) POSITION- 44 15 03.46 (N) 121 49 39.16 (W) HD_HELD1

QD1000* [NAVD 88](#) ORTHO HEIGHT - 1584.252 (meters) 5197.67 (feet) POSTED

QD1000

QD1000 GEOID HEIGHT - -20.889 (meters) GEOID12B

QD1000 DYNAMIC HEIGHT - 1583.54 (meters) 5195.3 (feet) COMP

QD1000 MODELED GRAVITY - 980,110.3 (mgal) NAVD 88

QD1000

QD1000 VERT ORDER - * POSTED, SEE BELOW

QD1000

QD1000.The horizontal coordinates were determined by differentially corrected

QD1000.hand held GPS observations or other comparable positioning techniques

QD1000.and have an estimated accuracy of +/- 3 meters.

QD1000.

QD1000.The orthometric height was determined by differential leveling

QD1000.and adjusted by the NATIONAL GEODETIC SURVEY in 1992.

QD1000

QD1000.* This is a POSTED BENCH MARK height.

QD1000

QD1000.Significant digits in the geoid height do not necessarily reflect accuracy.

QD1000.GEOID12B height accuracy estimate available [here](#).

QD1000

QD1000.The dynamic height is computed by dividing the NAVD 88

QD1000.geopotential number by the normal gravity value computed on the

QD1000.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45

QD1000.degrees latitude (g = 980.6199 gals.).

QD1000

QD1000.The modeled gravity was interpolated from observed gravity values.

QD1000

QD1000;

QD1000;SPC OR S - North East Units Estimated Accuracy
287,930.5 1,393,969.2 MT (+/- 3 meters HH1 GPS)

QD1000

QD1000 SUPERSEDED SURVEY CONTROL

QD1000

QD1000 NGVD 29 (??/??/92) 1582.983 (m) 5193.50 (f) ADJ UNCH 1 2

QD1000

QD1000.Superseded values are not recommended for survey control.

QD1000

QD1000.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.

QD1000.[See file dsdata.txt](#) to determine how the superseded data were derived.

QD1000

QD1000_U.S. NATIONAL GRID SPATIAL ADDRESS: 10TEQ9360300415(NAD 83)

QD1000

QD1000_MARKER: DD = SURVEY DISK

QD1000_SETTING: 66 = SET IN ROCK OUTCROP

QD1000_STAMPING: C 15 26

QD1000_MARK LOGO: USFS

QD1000_STABILITY: A = MOST RELIABLE AND EXPECTED TO HOLD

QD1000+STABILITY: POSITION/ELEVATION WELL

QD1000

QD1000	HISTORY	- Date	Condition	Report By
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QD1000	HISTORY	- UNK	MONUMENTED	USFS
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QD1000	HISTORY	- 1943	GOOD	CGS
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QD1000

QD1000 STATION DESCRIPTION

QD1000

QD1000'DESCRIBED BY COAST AND GEODETIC SURVEY 1943

QD1000'1.5 MI SW FROM MCKENZIE PASS.

QD1000'ABOUT 1.5 MILES SOUTHWEST ALONG U.S. HIGHWAY 28 FROM MCKENZIE PASS,

QD1000'DESCHUTES COUNTY, SET IN THE TOP OF A LAVA ROCK OUTCROP AT A SMALL

QD1000'PARKING SPACE, 23.0 FEET SOUTH OF THE CENTER LINE OF THE HIGHWAY, 2.0

QD1000'FEET NORTHEAST OF A WHITE REFERENCE POST. STAMPING C 15 26.

*** retrieval complete.

Elapsed Time = 00:00:02

The NGS Data Sheet

See file [dsdata.txt](#) for more information about the datasheet.

PROGRAM = datasheet95, VERSION = 8.8

1 National Geodetic Survey, Retrieval Date = MARCH 9, 2016

QD0998 *****

QD0998 DESIGNATION - C 16

QD0998 PID - QD0998

QD0998 STATE/COUNTY- OR/LANE

QD0998 COUNTRY - US

QD0998 USGS QUAD - NORTH SISTER (1988)

QD0998

QD0998 *CURRENT SURVEY CONTROL

QD0998

QD0998* NAD 83(1986) POSITION- 44 14 25.97 (N) 121 51 15.99 (W) HD_HELD1

QD0998* [NAVD 88](#) ORTHO HEIGHT - 1536.204 (meters) 5040.03 (feet) POSTED

QD0998

QD0998 GEOID HEIGHT - -20.936 (meters) GEOID12B

QD0998 DYNAMIC HEIGHT - 1535.53 (meters) 5037.8 (feet) COMP

QD0998 MODELED GRAVITY - 980,125.2 (mgal) NAVD 88

QD0998

QD0998 VERT ORDER - * POSTED, SEE BELOW

QD0998

QD0998.The horizontal coordinates were determined by differentially corrected

QD0998.hand held GPS observations or other comparable positioning techniques

QD0998.and have an estimated accuracy of +/- 3 meters.

QD0998.

QD0998.The orthometric height was determined by differential leveling

QD0998.and adjusted by the NATIONAL GEODETIC SURVEY in 1992.

QD0998

QD0998.* This is a POSTED BENCH MARK height.

QD0998

QD0998.Significant digits in the geoid height do not necessarily reflect accuracy.

QD0998.GEOID12B height accuracy estimate available [here](#).

QD0998

QD0998.[Photographs](#) are available for this station.

QD0998

QD0998.The dynamic height is computed by dividing the NAVD 88

QD0998.geopotential number by the normal gravity value computed on the

QD0998.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45

QD0998.degrees latitude (g = 980.6199 gals.).

QD0998

QD0998.The modeled gravity was interpolated from observed gravity values.

QD0998

QD0998;

	North	East	Units	Estimated Accuracy
SPC OR S -	286,807.8	1,391,802.4	MT	(+/- 3 meters HH1 GPS)

QD0998;

QD0998

QD0998 SUPERSEDED SURVEY CONTROL

QD0998

QD0998 NGVD 29 (??/??/92) 1534.956 (m) 5035.93 (f) ADJ UNCH 1 2

QD0998

QD0998.Superseded values are not recommended for survey control.

QD0998

QD0998.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.

QD0998.[See file dsdata.txt](#) to determine how the superseded data were derived.

QD0998

QD0998_U.S. NATIONAL GRID SPATIAL ADDRESS: 10TEP9147299228(NAD 83)

QD0998

QD0998_MARKER: DD = SURVEY DISK

QD0998_SETTING: 80 = SET IN A BOULDER

QD0998_STAMPING: 16 26

QD0998_MARK LOGO: USFS

QD0998_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO

QD0998+STABILITY: SURFACE MOTION

QD0998

QD0998 HISTORY - Date Condition Report By

QD0998 HISTORY - UNK MONUMENTED USFS

QD0998 HISTORY - 1943 GOOD CGS

QD0998

QD0998 STATION DESCRIPTION

QD0998

QD0998'DESCRIBED BY COAST AND GEODETIC SURVEY 1943

QD0998'3.15 MI SW FROM MCKENZIE PASS.

QD0998'ABOUT 3.15 MILES SOUTHWEST ALONG U.S. HIGHWAY 28 FROM MCKENZIE PASS,

QD0998'DESCHUTES COUNTY, 46.0 FEET NORTHWEST OF THE CENTER LINE OF THE

QD0998'HIGHWAY, SET IN THE TOP OF A LARGE LAVA BOULDER, 9.0 FEET NORTHWEST OF

QD0998'A WHITE REFERENCE POST. STAMPING 16 26.

*** retrieval complete.

Elapsed Time = 00:00:01

The NGS Data Sheet

See file [dsdata.txt](#) for more information about the datasheet.

PROGRAM = datasheet95, VERSION = 8.8

1 National Geodetic Survey, Retrieval Date = MARCH 9, 2016

QD1145 *****

QD1145 DESIGNATION - H 3

QD1145 PID - QD1145

QD1145 STATE/COUNTY- OR/LINN

QD1145 COUNTRY - US

QD1145 USGS QUAD - SANTIAM JUNCTION (1988)

QD1145

QD1145 *CURRENT SURVEY CONTROL

QD1145

QD1145* NAD 83(1986) POSITION- 44 26 10.65 (N) 121 56 38.17 (W) HD_HELD1

QD1145* [NAVD 88](#) ORTHO HEIGHT - 1139.847 (meters) 3739.65 (feet) ADJUSTED

QD1145

QD1145 GEOID HEIGHT - -21.374 (meters) GEOID12B

QD1145 DYNAMIC HEIGHT - 1139.442 (meters) 3738.32 (feet) COMP

QD1145 MODELED GRAVITY - 980,223.2 (mgal) NAVD 88

QD1145

QD1145 VERT ORDER - FIRST CLASS II

QD1145

QD1145.The horizontal coordinates were determined by differentially corrected

QD1145.hand held GPS observations or other comparable positioning techniques

QD1145.and have an estimated accuracy of +/- 3 meters.

QD1145.

QD1145.The orthometric height was determined by differential leveling and

QD1145.adjusted by the NATIONAL GEODETIC SURVEY

QD1145.in June 1991.

QD1145

QD1145.Significant digits in the geoid height do not necessarily reflect accuracy.

QD1145.GEOID12B height accuracy estimate available [here](#).

QD1145

QD1145.The dynamic height is computed by dividing the NAVD 88

QD1145.geopotential number by the normal gravity value computed on the

QD1145.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45

QD1145.degrees latitude (g = 980.6199 gals.).

QD1145

QD1145.The modeled gravity was interpolated from observed gravity values.

QD1145

QD1145; North East Units Estimated Accuracy

QD1145;SPC OR N - 86,550.5 2,385,048.3 MT (+/- 3 meters HH1 GPS)

QD1145

QD1145 SUPERSEDED SURVEY CONTROL

QD1145

QD1145 NGVD 29 (??/??/92) 1138.651 (m) 3735.72 (f) ADJ UNCH 1 2

QD1145

QD1145.Superseded values are not recommended for survey control.

QD1145

QD1145.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.

QD1145.[See file dsdata.txt](#) to determine how the superseded data were derived.

QD1145

QD1145_U.S. NATIONAL GRID SPATIAL ADDRESS: 10TEQ8404620874(NAD 83)

QD1145

QD1145_MARKER: DD = SURVEY DISK
QD1145_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
QD1145_STAMPING: 3736 23 H 3 1934
QD1145_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
QD1145+STABILITY: SURFACE MOTION

QD1145

QD1145	HISTORY	- Date	Condition	Report By
QD1145	HISTORY	- 1934	MONUMENTED	BPR
QD1145	HISTORY	- 1963	GOOD	CGS

QD1145

QD1145 STATION DESCRIPTION

QD1145

QD1145'DESCRIBED BY COAST AND GEODETIC SURVEY 1963

QD1145'0.35 MI SW FROM SANTIAM JUNCTION.

QD1145'0.35 MILE SOUTHWEST ALONG U.S. HIGHWAY 20 FROM THE MOBIL SERVICE

QD1145'STATION AND STORE AT SANTIAM JUNCTION, 110 FEET WEST OF A STOP SIGN,

QD1145'68 FEET NORTHWEST OF THE CENTER OF U.S. HIGHWAY 20 AND 1 FOOT SOUTH OF

QD1145'A WOODEN WITNESS POST. THE MONUMENT PROJECTS 8 INCHES.

*** retrieval complete.

Elapsed Time = 00:00:02

The NGS Data Sheet

See file [dsdata.txt](#) for more information about the datasheet.

PROGRAM = datasheet95, VERSION = 8.8

1 National Geodetic Survey, Retrieval Date = MARCH 9, 2016

QD1339 *****

QD1339 DESIGNATION - V 735

QD1339 PID - QD1339

QD1339 STATE/COUNTY- OR/DESCHUTES

QD1339 COUNTRY - US

QD1339 USGS QUAD - SISTERS (1988)

QD1339

QD1339 *CURRENT SURVEY CONTROL

QD1339

QD1339* NAD 83(1986) POSITION- 44 16 46.28 (N) 121 33 00.87 (W) HD_HELD1

QD1339* [NAVD 88](#) ORTHO HEIGHT - 980.511 (meters) 3216.89 (feet) ADJUSTED

QD1339

QD1339 GEOID HEIGHT - -21.349 (meters) GEOID12B

QD1339 DYNAMIC HEIGHT - 980.159 (meters) 3215.74 (feet) COMP

QD1339 MODELED GRAVITY - 980,226.6 (mgal) NAVD 88

QD1339

QD1339 VERT ORDER - FIRST CLASS II

QD1339

QD1339.The horizontal coordinates were determined by differentially corrected

QD1339.hand held GPS observations or other comparable positioning techniques

QD1339.and have an estimated accuracy of +/- 3 meters.

QD1339.

QD1339.The orthometric height was determined by differential leveling and

QD1339.adjusted by the NATIONAL GEODETIC SURVEY

QD1339.in June 1991.

QD1339

QD1339.Significant digits in the geoid height do not necessarily reflect accuracy.

QD1339.GEOID12B height accuracy estimate available [here](#).

QD1339

QD1339.The dynamic height is computed by dividing the NAVD 88

QD1339.geopotential number by the normal gravity value computed on the

QD1339.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45

QD1339.degrees latitude (g = 980.6199 gals.).

QD1339

QD1339.The modeled gravity was interpolated from observed gravity values.

QD1339

QD1339; North East Units Estimated Accuracy

QD1339;SPC OR S - 290,789.7 1,416,155.8 MT (+/- 3 meters HH1 GPS)

QD1339

QD1339 SUPERSEDED SURVEY CONTROL

QD1339

QD1339.No superseded survey control is available for this station.

QD1339

QD1339_U.S. NATIONAL GRID SPATIAL ADDRESS: 10TFQ1568603941(NAD 83)

QD1339

QD1339_MARKER: I = METAL ROD

QD1339_SETTING: 15 = METAL ROD DRIVEN INTO GROUND. SEE TEXT FOR ADDITIONAL

QD1339+WITH SETTING: INFORMATION.

QD1339_STAMPING: V 735 1987

QD1339_MARK LOGO: NGS

QD1339_PROJECTION: FLUSH

QD1339_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL

QD1339_ROD/PIPE-DEPTH: 1.7 meters

QD1339

QD1339	HISTORY	- Date	Condition	Report By
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QD1339	HISTORY	- 1987	MONUMENTED	NGS
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QD1339

QD1339 STATION DESCRIPTION

QD1339

QD1339'DESCRIBED BY NATIONAL GEODETIC SURVEY 1987

QD1339'1.4 KM (0.85 MI) SOUTH FROM SISTERS.

QD1339'0.1 KM (0.05 MI) WEST ALONG U.S. HIGHWAY 20 FROM ITS JUNCTION WITH FIR

QD1339'STREET IN SISTERS, THENCE 1.3 KM (0.80 MI) SOUTH ALONG ELM STREET

QD1339'(COUNTY ROAD 16), 14.5 M (47.6 FT) WEST OF THE CENTERLINE OF THE

QD1339'COUNTY ROAD, AND 7.4 M (24.3 FT) SOUTH OF THE CENTER OF A DIRT DRIVE

QD1339'LEADING WEST. NOTE--ACCESS TO DATUM POINT IS HAD THROUGH A 5-INCH

QD1339'LOGO CAP.

QD1339'THE MARK IS 0.2 METERS E FROM A WITNESS POST

QD1339'THE MARK IS ABOVE LEVEL WITH THE ROAD.

*** retrieval complete.

Elapsed Time = 00:00:01

The NGS Data Sheet

See file [dsdata.txt](#) for more information about the datasheet.

PROGRAM = datasheet95, VERSION = 8.8

1 National Geodetic Survey, Retrieval Date = MARCH 9, 2016

QD1039 *****

QD1039 DESIGNATION - X 359

QD1039 PID - QD1039

QD1039 STATE/COUNTY- OR/DESCHUTES

QD1039 COUNTRY - US

QD1039 USGS QUAD - THREE CREEK BUTTE (1988)

QD1039

QD1039 *CURRENT SURVEY CONTROL

QD1039

QD1039* NAD 83(1986) POSITION- 44 13 33.91 (N) 121 34 23.11 (W) HD_HELD1

QD1039* [NAVD 88](#) ORTHO HEIGHT - 1166.384 (meters) 3826.71 (feet) ADJUSTED

QD1039

QD1039 GEOID HEIGHT - -21.127 (meters) GEOID12B

QD1039 DYNAMIC HEIGHT - 1165.940 (meters) 3825.25 (feet) COMP

QD1039 MODELED GRAVITY - 980,197.7 (mgal) NAVD 88

QD1039

QD1039 VERT ORDER - SECOND CLASS 0

QD1039

QD1039.The horizontal coordinates were determined by differentially corrected

QD1039.hand held GPS observations or other comparable positioning techniques

QD1039.and have an estimated accuracy of +/- 3 meters.

QD1039.

QD1039.The orthometric height was determined by differential leveling and

QD1039.adjusted by the NATIONAL GEODETIC SURVEY

QD1039.in June 1991.

QD1039

QD1039.Significant digits in the geoid height do not necessarily reflect accuracy.

QD1039.GEOID12B height accuracy estimate available [here](#).

QD1039

QD1039.[Photographs](#) are available for this station.

QD1039

QD1039.The dynamic height is computed by dividing the NAVD 88

QD1039.geopotential number by the normal gravity value computed on the

QD1039.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45

QD1039.degrees latitude (g = 980.6199 gals.).

QD1039

QD1039.The modeled gravity was interpolated from observed gravity values.

QD1039

QD1039; North East Units Estimated Accuracy

QD1039;SPC OR S - 284,875.2 1,414,256.1 MT (+/- 3 meters HH1 GPS)

QD1039

QD1039 SUPERSEDED SURVEY CONTROL

QD1039

QD1039 NGVD 29 (??/??/92) 1165.202 (m) 3822.83 (f) ADJ UNCH 2 0

QD1039

QD1039.Superseded values are not recommended for survey control.

QD1039

QD1039.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.

QD1039.[See file dsdata.txt](#) to determine how the superseded data were derived.

QD1039

QD1039_U.S. NATIONAL GRID SPATIAL ADDRESS: 10TFP1396697974(NAD 83)

QD1039

QD1039_MARKER: DB = BENCH MARK DISK

QD1039_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT

QD1039_STAMPING: X 359 1942

QD1039_MARK LOGO: CGS

QD1039_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO

QD1039+STABILITY: SURFACE MOTION

QD1039

QD1039	HISTORY	- Date	Condition	Report By
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QD1039	HISTORY	- 1942	MONUMENTED	CGS
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QD1039

QD1039 STATION DESCRIPTION

QD1039

QD1039'DESCRIBED BY COAST AND GEODETIC SURVEY 1942

QD1039'5.6 MI S FROM SISTERS.

QD1039'5.6 MILE SOUTH OF POST OFFICE ALONG ELK LAKE ROAD, 3.0 MILES NORTH OF

QD1039'BLACK PINE SPRING, 100 FEET SOUTHWEST OF HILL WHERE ROAD BREAKS OVER

QD1039'TO GO INTO CANYON, 34 FEET WEST OF CENTER LINE OF ROAD. WITNESS POST

QD1039'SET.

*** retrieval complete.

Elapsed Time = 00:00:02

Shared Solution

PID: CS4129
Designation: BLACK BUTTE 2 RM 2
Stamping:
Stability:
Setting:
Mark G
Condition:
Description: Mark PID CS4129
 Designation: BLACK BUTTE 2 RM 2 found in good condition. Primary station Black Butte 2 (QD1848) has been destroyed. RM No. 1 has been destroyed as well (only the disk stem remains). RM No. 2 (CS4129) observed this survey. Located at the crest of the summit of Black Butte in a boulder and ~4 m right of the trail. Mark is suitable for GNSS observation. From the Black Butte trail head hike 2 miles up the trail to the summit.
 Stamping: No. 2 1958
 Ref Mark Disk
 80= In a boulder
Observed: 2014-08-22T16:23:00Z
Source: OPUS - page5 1209.04



Close-up View

See Also [1958](#)

REF_FRAME: NAD_83(2011)	EPOCH: 2010.0000	SOURCE: NAVD88 (Computed using GEOID12A)	UNITS: m	SET PROFILE	DETAILS
LAT: 44° 23' 59.13599" ± 0.004 m LON: -121° 38' 7.31330" ± 0.013 m ELL HT: 1941.081 ± 0.010 m X: -2394864.740 ± 0.009 m Y: -3887418.653 ± 0.011 m Z: 4441294.727 ± 0.009 m ORTHO HT: 1962.457 ± 0.023 m		UTM 10 SPC 3601(OR N) NORTHING: 4917180.404m 82099.444m EASTING: 608671.369m 2409554.795m CONVERGENCE: 0.95487425° -0.80518484° POINT SCALE: 0.99974523 0.99998394 COMBINED FACTOR: 0.99944104 0.99967968			

CONTRIBUTED BY

[mark.l.armstrong](#)
[National Geodetic Survey](#)



Horizon View



The numerical values for this position solution have satisfied the quality control criteria of the National Geodetic Survey. The contributor has verified that the information submitted is accurate and complete.

Shared Solution

PID: QD1000
Designation: C 15
Stamping: C 15 26
Stability: Most reliable; expected to hold position well
Setting: In rock outcrop or ledge
Mark Condition: G
Description: Mark found in good condition and is suitable for GNSS occupation. Disk is in protruding boulder in a lava flow ~5 m south of edge of pavement of hwy. 242 (Old McKenzie Hwy). Mark appears undisturbed.
Observed: 2014-08-17T13:57:00Z See Also [1943](#)
Source: OPUS - page5 1209.04



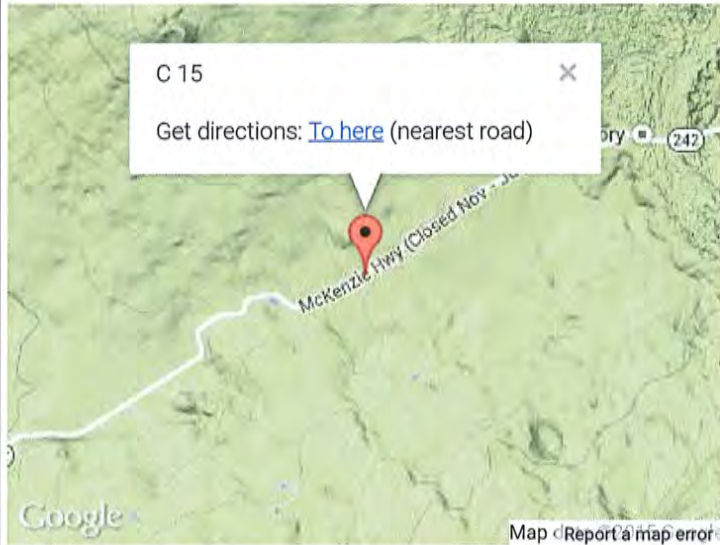
Close-up View

REF FRAME: NAD_83(2011)	EPOCH: 2010.0000	SOURCE: NAVD88 (Computed using GEOID12A)	UNITS: m	SET PROFILE	DETAILS
LAT: 44° 15' 3.48104" ± 0.017 m LON: -121° 49' 39.06537" ± 0.002 m ELL HT: 1563.288 ± 0.007 m X: -2413840.092 ± 0.006 m Y: -3888953.749 ± 0.006 m Z: 4429199.582 ± 0.016 m ORTHO HT: 1584.177 ± 0.018 m		UTM 10 SPC 3602(OR S) NORTHING: 4900416.176m 287931.148m EASTING: 593605.724m 1393971.312m CONVERGENCE: 0.81822002° -0.90821805° POINT SCALE: 0.99970776 1.00007349 COMBINED FACTOR: 0.99946277 0.99982841			

CONTRIBUTED BY
[mark.l.armstrong](#)
 National Geodetic Survey



Horizon View



The numerical values for this position solution have satisfied the quality control criteria of the National Geodetic Survey. The contributor has verified that the information submitted is accurate and complete.

Shared Solution

PID: QD0998
Designation: C 16
Stamping: 16 26
Stability: May hold commonly subject to ground movement
Setting: In a boulder
Mark
Condition: G
Description: Mark was found in good condition and suitable for GNSS occupation. Mark is located ~7 m north of hwy. 242 (Old McKenzie Hwy.) Mark is located in large lava flow ledge (not a boulder as orig described in IDB datasheet). Mark is level and appears undisturbed.
Observed: 2014-08-17T13:49:00Z See Also [1943](#)
Source: OPUS - page5 1209.04



Close-up View

REF_FRAME: NAD_83(2011)	EPOCH: 2010.0000	SOURCE: NAVD88 (Computed using GEOID12A)	UNITS: m	SET PROFILE	DETAILS
LAT: 44° 14' 25.90598" ± 0.012 m LON: -121° 51' 15.89655" ± 0.014 m ELL HT: 1515.190 ± 0.037 m X: -2416074.497 ± 0.023 m Y: -3888478.392 ± 0.014 m Z: 4428335.005 ± 0.028 m ORTHO HT: 1536.125 ± 0.065 m		UTM 10 SPC 3602(OR S) NORTHING: 4899226.531m 286805.830m EASTING: 591474.511m 1391804.437m CONVERGENCE: 0.79929738° -0.92661993° POINT SCALE: 0.99970291 1.00007005 COMBINED FACTOR: 0.99946545 0.99983251			

CONTRIBUTED BY

[mark.l.armstrong](#)
[National Geodetic Survey](#)



Horizon View



The numerical values for this position solution have satisfied the quality control criteria of the National Geodetic Survey. The contributor has verified that the information submitted is accurate and complete.

Shared Solution

PID: QD1145
Designation: H 3
Stamping: 3736 23 H 3 1934
Stability: May hold commonly subject to ground movement
Setting: Set in top of concrete monument
Mark Condition: G
Description: Mark found in good condition and suitable for GNSS occupation. Mark is located at Santiam Junction in the "Y" intersection of Hwy. 126 and Hwy. 20. On the north side of Hwy. 126 at the edge of small trees. A USBM sign is 0.3 m north of the mark.
Observed: 2014-08-18T14:00:00Z See Also [1963](#)
Source: OPUS - page5 1209.04



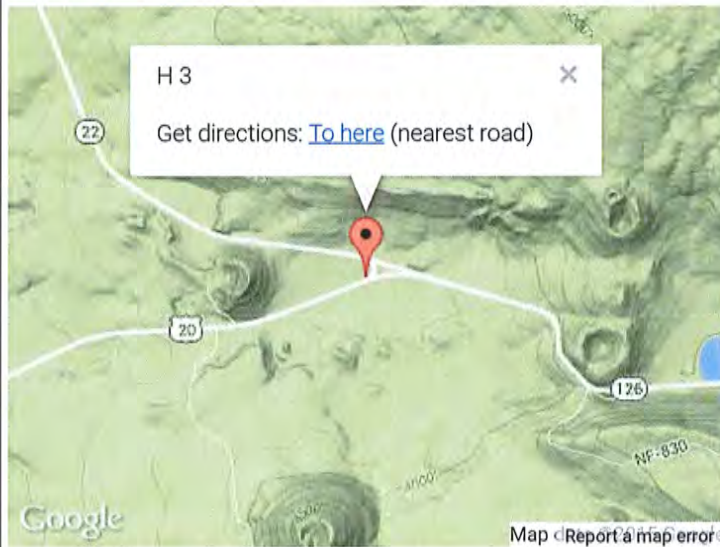
Close-up View

REF_FRAME: NAD_83(2011)	EPOCH: 2010.0000	SOURCE: NAVD88 (Computed using GEOID12A)	UNITS: m	SET PROFILE	DETAILS
LAT: 44° 26' 10.65449" ± 0.005 m LON: -121° 56' 38.16599" ± 0.008 m ELL HT: 1118.458 ± 0.017 m X: -2413951.359 ± 0.012 m Y: -3871554.501 ± 0.006 m Z: 4443619.226 ± 0.014 m ORTHO HT: 1139.832 ± 0.033 m		UTM 10 SPC 3601(OR N) NORTHING: 4920875.106m 86550.648m EASTING: 584046.262m 2385048.424m CONVERGENCE: 0.73941089° -1.02401851° POINT SCALE: 0.99968687 0.99997566 COMBINED FACTOR: 0.99951158 0.99980032			

CONTRIBUTED BY
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 National Geodetic Survey



Horizon View



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Shared Solution

PID: BBCL16
Designation: P385
Stamping: NONE
Stability: Most reliable; expected to hold position well
Setting: Unspecified setting
Description: P385 (santiamjctor2007) is a UNAVCO Plate Boundary Observatory active station that provides a data stream to the ORGN real-time network. For more information on this station see the following link:
<http://pbweb.unavco.org/shared/scripts/stations/?checkkey=P385>
Observed: 2011-07-05T00:00:00Z See Also [Original](#)
Source: OPUS - page5 1209.04



Close-up View

REF FRAME: NAD_83(2011)	EPOCH: 2010.0000	SOURCE: NAVD88 (Computed using GEOID12A)	UNITS: m	SET PROFILE	DETAILS
LAT: 44° 26' 5.43915" ± 0.001 m ELL HT: 1121.229 ± 0.006 m X: -2414139.265 ± 0.003 m Y: -3871572.509 ± 0.004 m Z: 4443506.199 ± 0.004 m ORTHO HT: 1142.610 ± 0.018 m		UTM 10 SPC 3601(OR N) NORTHING: 4920712.257m 86392.377m EASTING: 583898.501m 2384895.678m CONVERGENCE: 0.73807353° -1.02535369° POINT SCALE: 0.99968656 0.99997598 COMBINED FACTOR: 0.99951084 0.99980021			

CONTRIBUTED BY
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[National Geodetic Survey](#)



Horizon View



The numerical values for this position solution have satisfied the quality control criteria of the National Geodetic Survey. The contributor has verified that the information submitted is accurate and complete.

Shared Solution

PID: BBCL34
Designation: P387
Stamping: NONE
Stability: Most reliable; expected to hold position well
Setting: Unspecified setting
Description: P387 (sistershslor2006) is a UNAVCO Plate Boundary Observatory active station that provides a data stream to the ORGN real-time network. For more information please see the following link:
<http://pboweb.unavco.org/shared/scripts/stations/?checkkey=P387>
Observed: 2011-07-05T00:00:00Z See Also [Original](#)
Source: OPUS - page5 1209.04



Close-up View

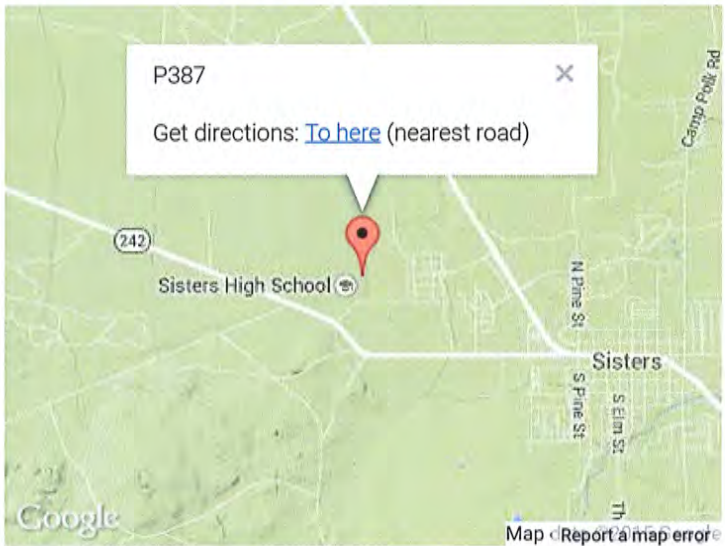
REF_FRAME: NAD_83(2011)	EPOCH: 2010.0000	SOURCE: NAVD88 (Computed using GEOID12A)	UNITS: m	SET PROFILE	DETAILS
LAT: 44° 17' 48.30676" ± 0.002 m LLN: -121° 34' 28.05875" ± 0.001 m ELL HT: 963.037 ± 0.005 m X: -2394555.309 ± 0.002 m Y: -3896184.427 ± 0.005 m Z: 4432423.991 ± 0.003 m ORTHO HT: 984.400 ± 0.017 m		UTM 10 SPC 3602(OR S) NORTHING: 4905821.374m 292728.804m EASTING: 613720.456m 1414247.006m CONVERGENCE: 0.99566689° -0.73508950° POINT SCALE: 0.99975905 1.00008900 COMBINED FACTOR: 0.99960811 0.99993801			

CONTRIBUTED BY

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Horizon View



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Shared Solution

PID: QD1869
Designation: SCOTT 2
Stamping:
Stability: May hold commonly subject to ground movement
Setting: In a boulder
Mark: G
Condition:
Description: Mark found in good condition and suitable for GNSS occupation. RM numbers 1 and 2 also found in fair condition as well. To reach mark hike 4 miles to the summit of Scott Mtn. Park at the trail head at the end of the gravel road at Scott Lake. Access is north off of hwy. 242. See sign on hwy. for Scott Lake turn off. Set up is fixed height 0.180 m spike mount.
Observed: 2014-08-22T16:33:00Z See Also [1958](#)
Source: OPUS - page5 1209.04



Close-up View

REF_FRAME: NAD_83(2011)	EPOCH: 2010.0000	SOURCE: NAVD88 (Computed using GEOID12A)	UNITS: m	SET PROFILE	DETAILS
LAT: 44° 14' 25.93494" ± 0.008 m LON: -121° 54' 54.46719" ± 0.008 m ELL HT: 1843.853 ± 0.012 m X: -2420317.755 ± 0.007 m Y: -3886115.327 ± 0.006 m Z: 4428564.944 ± 0.012 m ORTHO HT: 1864.964 ± 0.025 m		UTM 10 SPC 3602(OR S) NORTHING: 4899161.581m 286886.919m EASTING: 586626.485m 1386954.847m CONVERGENCE: 0.75693065° -0.96815730° POINT SCALE: 0.99969229 1.00007005 COMBINED FACTOR: 0.99940335 0.99978100			

CONTRIBUTED BY

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 National Geodetic Survey



Horizon View



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Shared Solution

PID: QD1339
Designation: V 735
Stamping: V 735 1987
Stability: Monument will probably hold position well
Setting: A metal rod driven into ground. Describe below.
Mark: G
Condition: G
Description: Mark found in good condition and suitable for GNSS observations. Mark is located 14.5 m west of the center line of NF Road 16 (also called Elm St and Three Creeks Rd.). Mark is in SW corner of intersection with ranch gravel road and a fiberglass marker post is 0.6 meter west of the mark.
Observed: 2014-08-19T13:58:00Z See Also [2012-10-04](#)
Source: OPUS - page5 1209.04



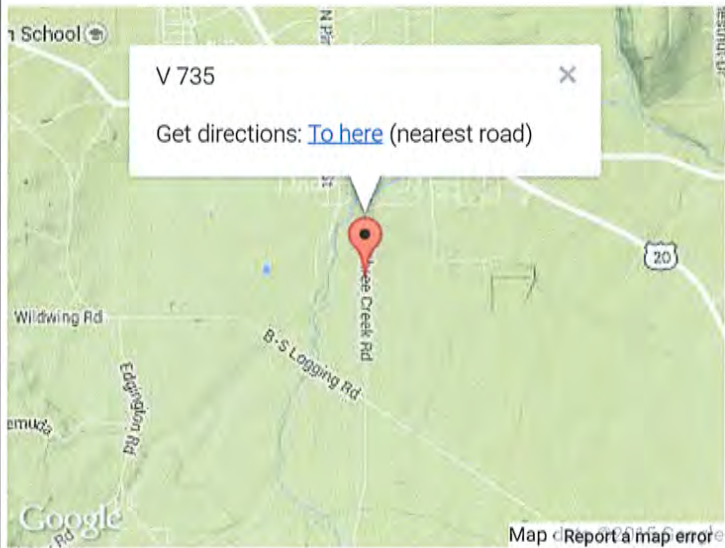
Close-up View

REF_FRAME:	EPOCH:	SOURCE:	UNITS:	SET	PROFILE	DETAILS
NAD_83(2011)	2010.0000	NAVD88 (Computed using GEOID12A)	m			
LAT: 44° 16' 46.11582" ± 0.009 m ELL HT: 959.120 ± 0.028 m X: -2393603.890 ± 0.011 m Y: -3898338.920 ± 0.017 m Z: 4431046.934 ± 0.023 m ORTHO HT: 980.469 ± 0.050 m		UTM 10 SPC 3602(OR S) NORTHING: 4903936.487m 290784.618m EASTING: 615691.427m 1416160.768m CONVERGENCE: 1.01231733° -0.71847716° POINT SCALE: 0.99976461 1.00008307 COMBINED FACTOR: 0.99961428 0.99993269				

CONTRIBUTED BY
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Horizon View



The numerical values for this position solution have satisfied the quality control criteria of the National Geodetic Survey. The contributor has verified that the information submitted is accurate and complete.

Shared Solution

PID: QD1039
Designation: X 359
Stamping: X 359 1942
Stability: May hold commonly subject to ground movement
Setting: Set in top of concrete monument
Mark: G
Condition: G
Description: Mark found in fair condition, with cracks in concrete monument holding the disk. Appears to be undisturbed and is suitable for GNSS observation. Mark is ~11 m west of the centerline of FS Road 16 and ~2 m higher than the road.
Observed: 2014-08-20T13:57:00Z See Also [2012-10-22](#)
Source: OPUS - page5 1209.04



Close-up View

REF_FRAME:	EPOCH:	SOURCE:	UNITS:	SET PROFILE	DETAILS
NAD_83(2011)	2010.0000	NAVD88 (Computed using GEOID12A)	m		
LAT: 44° 13' 33.91415" ± 0.002 m LON: -121° 34' 23.10725" ± 0.006 m ELL HT: 1145.238 ± 0.015 m X: -2397399.937 ± 0.008 m Y: -3901022.848 ± 0.012 m Z: 4426926.868 ± 0.008 m ORTHO HT: 1166.365 ± 0.029 m		UTM 10 SPC 3602(OR S) NORTHING: 4897974.291m 284875.372m EASTING: 613966.635m 1414256.156m CONVERGENCE: 0.99536753° -0.73414851° POINT SCALE: 0.99975974 1.00006534 COMBINED FACTOR: 0.99958024 0.99988579			

CONTRIBUTED BY

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Horizon View



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NGS OPUS-PROJECTS NETWORK ADJUSTMENT REPORT
=====

All coordinate accuracies reported here are 1 times the formal uncertainties from the solution. For additional information:
geodesy.noaa.gov/OPUS/Using_OPUS-Projects.html#accuracy

These positions were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

SUBMITTED BY: william.stone
 SOLUTION FILE NAME: network-final min geometric.sum
 SOLUTION SOFTWARE: GPSCOM(1504.23)
 SOLUTION DATE: 2016-03-07T15:09:17 UTC
 STANDARD ERROR OF UNIT WEIGHT: 0.617
 TOTAL NUMBER OF OBSERVATIONS: 1274326
 TOTAL NUMBER OF MARKS: 16
 NUMBER OF CONSTRAINED MARKS: 1

START TIME: 2014-08-17T00:00:00 GPS
 STOP TIME: 2014-08-22T23:59:30 GPS
 FREQUENCY: L1 -> ION-FREE (L6)
 OBSERVATION INTERVAL: 30 s
 ELEVATION CUTOFF: MIXED
 TROPO INTERVAL: 1800 s [STEP-OFFSET PARAMETERIZATION]
 DD CORRELATIONS: ON

INCLUDED SOLUTION	RMS	SOFTWARE	RUN DATE
1) 2014-229 A	1.5 cm	page5(1509.10)	2016-03-07T13:03 UTC
2) 2014-229 B	1.4 cm	page5(1509.10)	2016-03-07T13:16 UTC
3) 2014-230 A	1.5 cm	page5(1509.10)	2016-03-07T13:06 UTC
4) 2014-230 B	1.5 cm	page5(1509.10)	2016-03-07T13:11 UTC
5) 2014-231 A	1.4 cm	page5(1509.10)	2016-03-07T13:11 UTC
6) 2014-231 B	1.4 cm	page5(1509.10)	2016-03-07T13:15 UTC
7) 2014-232 A	1.4 cm	page5(1509.10)	2016-03-07T14:14 UTC
8) 2014-232 B	1.4 cm	page5(1509.10)	2016-03-07T13:17 UTC
9) 2014-234 A	1.3 cm	page5(1509.10)	2016-03-07T13:16 UTC

BASELINE	LENGTH	RMS	OBS	OMITTED	FIXED	IN SOLUTION(S)
h3__-p385	0.220 km	0.6 cm	3902	4.5%	95.2%	3
v735-p387	2.728 km	1.3 cm	3751	10.5%	93.6%	6, 8
x359-p387	7.856 km	1.4 cm	5055	9.5%	94.6%	6, 7
bbr2-p387	12.475 km	1.2 cm	2553	1.5%	100.0%	4
p387-c_15	20.847 km	2.6 cm	2588	0.7%	100.0%	2
sct2-p385	21.746 km	1.9 cm	2818	13.0%	97.3%	9
p385-c_15	22.514 km	1.4 cm	4006	3.5%	100.0%	1
c_16-p385	22.797 km	1.9 cm	2898	21.2%	94.5%	1
c_16-p387	23.220 km	2.0 cm	1502	17.3%	95.2%	2
bbr2-p385	25.050 km	1.4 cm	3710	0.9%	97.3%	9
sct2-p387	27.928 km	2.0 cm	1861	2.7%	96.0%	2
h3__-p387	33.289 km	1.6 cm	2098	3.1%	100.0%	4
p387-p385	33.348 km	1.3 cm	155315	1.4%	98.2%	1, 2, 3, ...
redm-p387	34.307 km	1.2 cm	83127	1.0%	99.1%	2, 4, 6, ...
v735-p385	35.964 km	1.8 cm	2994	10.6%	93.0%	5
x359-p385	37.715 km	1.8 cm	3444	4.2%	92.7%	5
redm-p385	66.544 km	1.2 cm	72717	0.5%	99.1%	1, 3, 5, 9
lpsb-p385	100.864 km	1.2 cm	71192	1.5%	99.4%	1, 3, 5, 9
lpsb-p387	124.247 km	1.2 cm	81471	1.3%	99.5%	2, 4, 6, ...

rsbg-p385	175.215 km	1.4 cm	71889	0.5%	98.6%	1, 3, 5, 9
gobs-p385	179.630 km	1.2 cm	72196	0.4%	97.9%	1, 3, 5, 9
gobs-p387	181.535 km	1.3 cm	82462	0.7%	96.1%	2, 4, 6, ...
rsbg-p387	185.940 km	1.3 cm	81237	0.9%	98.9%	2, 4, 6, ...
ors1-p387	201.554 km	1.2 cm	81775	1.1%	98.9%	2, 4, 6, ...
ork5-p387	223.240 km	1.3 cm	82091	1.1%	98.9%	2, 4, 6, ...
ors1-p385	232.369 km	1.2 cm	71322	0.9%	98.8%	1, 3, 5, 9
ork5-p385	239.505 km	1.3 cm	71624	1.1%	98.8%	1, 3, 5, 9
fts5-p385	252.064 km	1.2 cm	71519	0.3%	99.5%	1, 3, 5, 9
fts5-p387	282.683 km	1.3 cm	81209	0.8%	97.2%	2, 4, 6, ...

++++
UNCONSTRAINED MARKS
 ++++

MARK: bbr2 (bbr2 1)

REF FRAME:	NAD_83(2011) (2010.0000)		IGS08 (2014.6362)	
X:	-2394864.734 m	0.001 m	-2394865.599 m	0.001 m
Y:	-3887418.648 m	0.001 m	-3887417.430 m	0.001 m
Z:	4441294.725 m	0.001 m	4441294.733 m	0.001 m
LAT:	44 23 59.13611	0.000 m	44 23 59.14950	0.000 m
E LON:	238 21 52.68681	0.000 m	238 21 52.62468	0.000 m
W LON:	121 38 07.31319	0.000 m	121 38 07.37532	0.000 m
EL HGT:	1941.074 m	0.001 m	1940.663 m	0.001 m
ORTHO HGT:	1962.450 m	0.015 m	(H = h - N WHERE N = GEOID12B HGT)	

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 10)	SPC (3601 OR N)
NORTHING (Y)	4917180.407 m	82099.447 m
EASTING (X)	608671.371 m	2409554.797 m
CONVERGENCE	0.95487428 deg	-0.80518482 deg
POINT SCALE	0.99974523	0.99998394
COMBINED FACTOR	0.99944104	0.99967968

US NATIONAL GRID DESIGNATOR: 10TFQ0867117180 (NAD 83)

++++
 MARK: c_15 (c_15 1)

REF FRAME:	NAD_83(2011) (2010.0000)		IGS08 (2014.6268)	
X:	-2413840.092 m	0.001 m	-2413840.953 m	0.001 m
Y:	-3888953.740 m	0.001 m	-3888952.521 m	0.001 m
Z:	4429199.572 m	0.001 m	4429199.583 m	0.001 m
LAT:	44 15 03.48098	0.000 m	44 15 03.49439	0.000 m
E LON:	238 10 20.93441	0.000 m	238 10 20.87247	0.000 m
W LON:	121 49 39.06559	0.000 m	121 49 39.12753	0.000 m
EL HGT:	1563.275 m	0.001 m	1562.866 m	0.001 m
ORTHO HGT:	1584.164 m	0.015 m	(H = h - N WHERE N = GEOID12B HGT)	

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 10)	SPC (3602 OR S)
NORTHING (Y)	4900416.174 m	287931.147 m
EASTING (X)	593605.719 m	1393971.307 m
CONVERGENCE	0.81821998 deg	-0.90821809 deg
POINT SCALE	0.99970776	1.00007349
COMBINED FACTOR	0.99946277	0.99982841

US NATIONAL GRID DESIGNATOR: 10TEQ9360500416 (NAD 83)

+++++

MARK: c_16 (c_16 1)

REF FRAME:	NAD_83(2011) (2010.0000)	IGS08 (2014.6267)
X:	-2416074.541 m 0.001 m	-2416075.402 m 0.001 m
Y:	-3888478.425 m 0.001 m	-3888477.205 m 0.001 m
Z:	4428335.039 m 0.001 m	4428335.050 m 0.001 m
LAT:	44 14 25.90561 0.000 m	44 14 25.91902 0.000 m
E LON:	238 08 44.10255 0.000 m	238 08 44.04060 0.000 m
W LON:	121 51 15.89745 0.000 m	121 51 15.95940 0.000 m
EL HGT:	1515.251 m 0.002 m	1514.842 m 0.002 m
ORTHO HGT:	1536.186 m 0.015 m	(H = h - N WHERE N = GEOID12B HGT)

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 10)	SPC (3602 OR S)
NORTHING (Y)	4899226.519 m	286805.818 m
EASTING (X)	591474.491 m	1391804.417 m
CONVERGENCE	0.79929720 deg	-0.92662010 deg
POINT SCALE	0.99970291	1.00007005
COMBINED FACTOR	0.99946544	0.99983250

US NATIONAL GRID DESIGNATOR: 10TEP9147499226 (NAD 83)

+++++

MARK: fts5 (fts5 a 2)

REF FRAME:	NAD_83(2011) (2010.0000)	IGS08 (2014.6312)
X:	-2469884.456 m 0.000 m	-2469885.297 m 0.000 m
Y:	-3667816.258 m 0.000 m	-3667815.078 m 0.000 m
Z:	4581028.317 m 0.000 m	4581028.373 m 0.000 m
LAT:	46 12 17.58171 0.000 m	46 12 17.59486 0.000 m
E LON:	236 02 38.12167 0.000 m	236 02 38.05842 0.000 m
W LON:	123 57 21.87833 0.000 m	123 57 21.94158 0.000 m
EL HGT:	-13.456 m 0.000 m	-13.768 m 0.000 m
ORTHO HGT:	10.431 m 0.015 m	(H = h - N WHERE N = GEOID12B HGT)

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 10)	SPC (3601 OR N)
NORTHING (Y)	5117256.114 m	287773.425 m
EASTING (X)	426242.582 m	2233336.431 m
CONVERGENCE	-0.69014596 deg	-2.45100170 deg
POINT SCALE	0.99966687	1.00005858
COMBINED FACTOR	0.99966898	1.00006069

US NATIONAL GRID DESIGNATOR: 10TDS2624217256 (NAD 83)

+++++

MARK: gobs (gobs a 5)

REF FRAME:	NAD_83(2011) (2010.0000)	IGS08 (2014.6312)
X:	-2280400.264 m 0.000 m	-2280401.135 m 0.000 m
Y:	-3823182.589 m 0.000 m	-3823181.383 m 0.000 m
Z:	4553230.216 m 0.000 m	4553230.225 m 0.000 m
LAT:	45 50 19.73099 0.000 m	45 50 19.74490 0.000 m
E LON:	239 11 07.22427 0.000 m	239 11 07.16098 0.000 m
W LON:	120 48 52.77573 0.000 m	120 48 52.83902 0.000 m

EL HGT: 621.875 m 0.000 m 621.470 m 0.000 m
ORTHO HGT: 642.686 m 0.017 m (H = h - N WHERE N = GEOID12B HGT)

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 10)	SPC (4602 WA S)
NORTHING (Y)	5078461.190 m	56233.373 m
EASTING (X)	669705.473 m	475554.819 m
CONVERGENCE	1.56809788 deg	-0.22856764 deg
POINT SCALE	0.99995407	0.99999876
COMBINED FACTOR	0.99985659	0.99990128

US NATIONAL GRID DESIGNATOR: 10TFR6970578461 (NAD 83)

+++++

MARK: h3__ (h3__ 1)

	NAD_83(2011) (2010.0000)	IGS08 (2014.6295)
X:	-2413951.362 m 0.001 m	-2413952.223 m 0.001 m
Y:	-3871554.497 m 0.001 m	-3871553.280 m 0.001 m
Z:	4443619.227 m 0.001 m	4443619.240 m 0.001 m
LAT:	44 26 10.65456 0.000 m	44 26 10.66795 0.000 m
E LON:	238 03 21.83380 0.000 m	238 03 21.77168 0.000 m
W LON:	121 56 38.16620 0.000 m	121 56 38.22832 0.000 m
EL HGT:	1118.458 m 0.001 m	1118.055 m 0.001 m
ORTHO HGT:	1139.832 m 0.015 m	(H = h - N WHERE N = GEOID12B HGT)

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 10)	SPC (3601 OR N)
NORTHING (Y)	4920875.108 m	86550.650 m
EASTING (X)	584046.257 m	2385048.419 m
CONVERGENCE	0.73941085 deg	-1.02401855 deg
POINT SCALE	0.99968687	0.99997566
COMBINED FACTOR	0.99951158	0.99980032

US NATIONAL GRID DESIGNATOR: 10TEQ8404620875 (NAD 83)

+++++

MARK: lpsb (lpsb a 1)

	NAD_83(2011) (2010.0000)	IGS08 (2014.6312)
X:	-2506818.083 m 0.000 m	-2506818.940 m 0.000 m
Y:	-3846908.510 m 0.000 m	-3846907.289 m 0.000 m
Z:	4412266.229 m 0.000 m	4412266.252 m 0.000 m
LAT:	44 03 04.40889 0.000 m	44 03 04.42193 0.000 m
E LON:	236 54 35.75147 0.000 m	236 54 35.68925 0.000 m
W LON:	123 05 24.24853 0.000 m	123 05 24.31075 0.000 m
EL HGT:	118.088 m 0.000 m	117.705 m 0.000 m
ORTHO HGT:	141.363 m 0.015 m	(H = h - N WHERE N = GEOID12B HGT)

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 10)	SPC (3602 OR S)
NORTHING (Y)	4877566.223 m	268104.845 m
EASTING (X)	492785.011 m	1292469.539 m
CONVERGENCE	-0.06262514 deg	-1.77198890 deg
POINT SCALE	0.99960064	1.00001342
COMBINED FACTOR	0.99958213	0.99999490

US NATIONAL GRID DESIGNATOR: 10TDP9278577566 (NAD 83)

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MARK: ork5 (ork5 a 1)

REF FRAME:	NAD_83(2011) (2010.0000)	IGS08 (2014.6312)
X:	-2481437.756 m 0.000 m	-2481438.626 m 0.000 m
Y:	-4022606.895 m 0.000 m	-4022605.648 m 0.000 m
Z:	4270236.714 m 0.000 m	4270236.698 m 0.000 m
LAT:	42 17 19.71876 0.000 m	42 17 19.73157 0.000 m
E LON:	238 19 50.45860 0.000 m	238 19 50.39771 0.000 m
W LON:	121 40 09.54140 0.000 m	121 40 09.60229 0.000 m
EL HGT:	1258.815 m 0.000 m	1258.357 m 0.000 m
ORTHO HGT:	1281.283 m 0.015 m	(H = h - N WHERE N = GEOID12B HGT)

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 10)	SPC (3602 OR S)
NORTHING (Y)	4682700.639 m	69784.405 m
EASTING (X)	609705.218 m	1403562.521 m
CONVERGENCE	0.89546313 deg	-0.79998518 deg
POINT SCALE	0.99974808	1.00001151
COMBINED FACTOR	0.99955074	0.99981412

US NATIONAL GRID DESIGNATOR: 10TFM0970582700 (NAD 83)

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MARK: orsl (orsl a 1)

REF FRAME:	NAD_83(2011) (2010.0000)	IGS08 (2014.6312)
X:	-2226385.014 m 0.000 m	-2226385.884 m 0.000 m
Y:	-4006811.866 m 0.000 m	-4006810.638 m 0.000 m
Z:	4422203.069 m 0.000 m	4422203.056 m 0.000 m
LAT:	44 09 51.27394 0.000 m	44 09 51.28832 0.000 m
E LON:	240 56 28.53972 0.000 m	240 56 28.47868 0.000 m
W LON:	119 03 31.46028 0.000 m	119 03 31.52132 0.000 m
EL HGT:	1438.099 m 0.000 m	1437.624 m 0.000 m
ORTHO HGT:	1456.356 m 0.015 m	(H = h - N WHERE N = GEOID12B HGT)

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 11)	SPC (3601 OR N)
NORTHING (Y)	4892175.994 m	56321.675 m
EASTING (X)	335397.355 m	2615277.981 m
CONVERGENCE	-1.43468059 deg	1.02212217 deg
POINT SCALE	0.99993323	1.00004685
COMBINED FACTOR	0.99970780	0.99982139

US NATIONAL GRID DESIGNATOR: 11TLJ3539792175 (NAD 83)

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MARK: p385 (p385 1)

REF FRAME:	NAD_83(2011) (2010.0000)	IGS08 (2014.6315)
X:	-2414139.270 m 0.000 m	-2414140.131 m 0.000 m
Y:	-3871572.510 m 0.000 m	-3871571.294 m 0.000 m
Z:	4443506.200 m 0.000 m	4443506.214 m 0.000 m
LAT:	44 26 05.43910 0.000 m	44 26 05.45249 0.000 m
E LON:	238 03 15.05614 0.000 m	238 03 14.99402 0.000 m
W LON:	121 56 44.94386 0.000 m	121 56 45.00598 0.000 m

EL HGT: 1121.233 m 0.000 m 1120.830 m 0.000 m
ORTHO HGT: 1142.614 m 0.015 m (H = h - N WHERE N = GEOID12B HGT)

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 10)	SPC (3601 OR N)
NORTHING (Y)	4920712.255 m	86392.375 m
EASTING (X)	583898.498 m	2384895.674 m
CONVERGENCE	0.73807349 deg	-1.02535372 deg
POINT SCALE	0.99968656	0.99997598
COMBINED FACTOR	0.99951084	0.99980021

US NATIONAL GRID DESIGNATOR: 10TEQ8389820712 (NAD 83)

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MARK: p387 (p387 1)

REF FRAME:	NAD_83(2011) (2010.0000)	IGS08 (2014.6310)
X:	-2394555.310 m 0.000 m	-2394556.175 m 0.000 m
Y:	-3896184.423 m 0.000 m	-3896183.204 m 0.000 m
Z:	4432423.988 m 0.000 m	4432423.996 m 0.000 m
LAT:	44 17 48.30675 0.000 m	44 17 48.32018 0.000 m
E LON:	238 25 31.94112 0.000 m	238 25 31.87908 0.000 m
W LON:	121 34 28.05888 0.000 m	121 34 28.12092 0.000 m
EL HGT:	963.032 m 0.000 m	962.619 m 0.000 m
ORTHO HGT:	984.395 m 0.015 m	(H = h - N WHERE N = GEOID12B HGT)

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 10)	SPC (3602 OR S)
NORTHING (Y)	4905821.373 m	292728.804 m
EASTING (X)	613720.453 m	1414247.003 m
CONVERGENCE	0.99566686 deg	-0.73508952 deg
POINT SCALE	0.99975905	1.00008900
COMBINED FACTOR	0.99960811	0.99993801

US NATIONAL GRID DESIGNATOR: 10TFQ1372005821 (NAD 83)

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MARK: rsbg (rsbg a 1)

REF FRAME:	NAD_83(2011) (2010.0000)	IGS08 (2014.6312)
X:	-2559295.129 m 0.000 m	-2559295.989 m 0.000 m
Y:	-3887370.497 m 0.000 m	-3887369.265 m 0.000 m
Z:	4346652.907 m 0.000 m	4346652.926 m 0.000 m
LAT:	43 14 06.04988 0.000 m	43 14 06.06268 0.000 m
E LON:	236 38 26.27215 0.000 m	236 38 26.21029 0.000 m
W LON:	123 21 33.72785 0.000 m	123 21 33.78971 0.000 m
EL HGT:	135.623 m 0.000 m	135.231 m 0.000 m
ORTHO HGT:	159.324 m 0.015 m	(H = h - N WHERE N = GEOID12B HGT)

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 10)	SPC (3602 OR S)
NORTHING (Y)	4786975.907 m	178180.060 m
EASTING (X)	470820.310 m	1267804.317 m
CONVERGENCE	-0.24616668 deg	-1.95622965 deg
POINT SCALE	0.99961047	0.99989528
COMBINED FACTOR	0.99958921	0.99987401

US NATIONAL GRID DESIGNATOR: 10TDN7082086975 (NAD 83)

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MARK: sct2 (sct2 1)

REF FRAME: NAD_83(2011) (2010.0000) IGS08 (2014.6352)

X: -2420317.757 m 0.001 m -2420318.618 m 0.001 m

Y: -3886115.314 m 0.001 m -3886114.095 m 0.001 m

Z: 4428564.937 m 0.001 m 4428564.949 m 0.001 m

LAT: 44 14 25.93500 0.000 m 44 14 25.94837 0.000 m

E LON: 238 05 05.53242 0.000 m 238 05 05.47046 0.000 m

W LON: 121 54 54.46758 0.000 m 121 54 54.52954 0.000 m

EL HGT: 1843.841 m 0.002 m 1843.434 m 0.002 m

ORTHO HGT: 1864.952 m 0.015 m (H = h - N WHERE N = GEOID12B HGT)

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 10)	SPC (3602 OR S)
NORTHING (Y)	4899161.583 m	286886.921 m
EASTING (X)	586626.476 m	1386954.838 m
CONVERGENCE	0.75693058 deg	-0.96815737 deg
POINT SCALE	0.99969229	1.00007005
COMBINED FACTOR	0.99940335	0.99978100

US NATIONAL GRID DESIGNATOR: 10TEP8662699161 (NAD 83)

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MARK: v735 (v735 1)

REF FRAME: NAD_83(2011) (2010.0000) IGS08 (2014.6332)

X: -2393603.897 m 0.001 m -2393604.762 m 0.001 m

Y: -3898338.928 m 0.001 m -3898337.709 m 0.001 m

Z: 4431046.952 m 0.001 m 4431046.959 m 0.001 m

LAT: 44 16 46.11600 0.000 m 44 16 46.12942 0.000 m

E LON: 238 26 59.35568 0.000 m 238 26 59.29368 0.000 m

W LON: 121 33 00.64432 0.000 m 121 33 00.70632 0.000 m

EL HGT: 959.140 m 0.002 m 958.725 m 0.002 m

ORTHO HGT: 980.489 m 0.015 m (H = h - N WHERE N = GEOID12B HGT)

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 10)	SPC (3602 OR S)
NORTHING (Y)	4903936.493 m	290784.623 m
EASTING (X)	615691.425 m	1416160.766 m
CONVERGENCE	1.01231731 deg	-0.71847718 deg
POINT SCALE	0.99976461	1.00008307
COMBINED FACTOR	0.99961427	0.99993269

US NATIONAL GRID DESIGNATOR: 10TFQ1569103936 (NAD 83)

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MARK: x359 (x359 1)

REF FRAME: NAD_83(2011) (2010.0000) IGS08 (2014.6331)

X: -2397399.936 m 0.001 m -2397400.800 m 0.001 m

Y: -3901022.847 m 0.001 m -3901021.627 m 0.001 m

Z: 4426926.871 m 0.001 m 4426926.878 m 0.001 m

LAT: 44 13 33.91425 0.000 m 44 13 33.92768 0.000 m

E LON: 238 25 36.89276 0.000 m 238 25 36.83080 0.000 m

W LON: 121 34 23.10724 0.000 m 121 34 23.16920 0.000 m

EL HGT: 1145.239 m 0.002 m 1144.823 m 0.002 m
 ORTHO HGT: 1166.366 m 0.015 m (H = h - N WHERE N = GEOID12B HGT)

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 10)	SPC (3602 OR S)
NORTHING (Y)	4897974.295 m	284875.375 m
EASTING (X)	613966.635 m	1414256.156 m
CONVERGENCE	0.99536753 deg	-0.73414851 deg
POINT SCALE	0.99975974	1.00006534
COMBINED FACTOR	0.99958024	0.99988579

US NATIONAL GRID DESIGNATOR: 10TFP1396697974 (NAD 83)

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 CONSTRAINED MARKS
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MARK: redm (redm a 4)

CONSTRAIN: 3-D TIGHT

ADJUST X: -0.000m (0.000m) Y: -0.000m (0.000m) Z: 0.000m (0.000m)
 ADJUST N: 0.000m (0.000m) E: -0.000m (0.000m) H: 0.000m (0.000m)

REF FRAME:	NAD_83(2011) (2010.0000)	IGS08 (2014.6312)
X:	-2366948.785 m 0.000 m	-2366949.653 m 0.000 m
Y:	-3916334.857 m 0.000 m	-3916333.634 m 0.000 m
Z:	4429451.022 m 0.000 m	4429451.020 m 0.000 m
LAT:	44 15 35.14666 0.000 m	44 15 35.16014 0.000 m
E LON:	238 51 07.68489 0.000 m	238 51 07.62290 0.000 m
W LON:	121 08 52.31511 0.000 m	121 08 52.37710 0.000 m
EL HGT:	920.266 m 0.000 m	919.836 m 0.000 m
ORTH HGT:	941.389 m 0.015 m	(H = h - N WHERE N = GEOID12B HGT)

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 10)	SPC (3602 OR S)
NORTHING (Y)	4902392.827 m	288268.366 m
EASTING (X)	647844.557 m	1448261.000 m
CONVERGENCE	1.29286133 deg	-0.44323534 deg
POINT SCALE	0.99986882	1.00007642
COMBINED FACTOR	0.99972456	0.99993213

US NATIONAL GRID DESIGNATOR: 10TFQ4784402392 (NAD 83)

NGS OPUS-PROJECTS NETWORK ADJUSTMENT REPORT

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All coordinate accuracies reported here are 1 times the formal uncertainties from the solution. For additional information: geodesy.noaa.gov/OPUS/Using_OPUS-Projects.html#accuracy

These positions were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

SUBMITTED BY: william.stone
 SOLUTION FILE NAME: network-final full geometric.sum
 SOLUTION SOFTWARE: GPSCOM(1504.23)
 SOLUTION DATE: 2016-03-07T15:14:00 UTC
 STANDARD ERROR OF UNIT WEIGHT: 0.617
 TOTAL NUMBER OF OBSERVATIONS: 1274326
 TOTAL NUMBER OF MARKS: 16
 NUMBER OF CONSTRAINED MARKS: 7

START TIME: 2014-08-17T00:00:00 GPS
 STOP TIME: 2014-08-22T23:59:30 GPS
 FREQUENCY: L1 -> ION-FREE (L6)
 OBSERVATION INTERVAL: 30 s
 ELEVATION CUTOFF: MIXED
 TROPO INTERVAL: 1800 s [STEP-OFFSET PARAMETERIZATION]
 DD CORRELATIONS: ON

INCLUDED SOLUTION	RMS	SOFTWARE	RUN DATE
1) 2014-229 A	1.5 cm	page5(1509.10)	2016-03-07T13:03 UTC
2) 2014-229 B	1.4 cm	page5(1509.10)	2016-03-07T13:16 UTC
3) 2014-230 A	1.5 cm	page5(1509.10)	2016-03-07T13:06 UTC
4) 2014-230 B	1.5 cm	page5(1509.10)	2016-03-07T13:11 UTC
5) 2014-231 A	1.4 cm	page5(1509.10)	2016-03-07T13:11 UTC
6) 2014-231 B	1.4 cm	page5(1509.10)	2016-03-07T13:15 UTC
7) 2014-232 A	1.4 cm	page5(1509.10)	2016-03-07T14:14 UTC
8) 2014-232 B	1.4 cm	page5(1509.10)	2016-03-07T13:17 UTC
9) 2014-234 A	1.3 cm	page5(1509.10)	2016-03-07T13:16 UTC

BASELINE	LENGTH	RMS	OBS	OMITTED	FIXED	IN SOLUTION(S)
h3__-p385	0.220 km	0.6 cm	3902	4.5%	95.2%	3
v735-p387	2.728 km	1.3 cm	3751	10.5%	93.6%	6, 8
x359-p387	7.856 km	1.4 cm	5055	9.5%	94.6%	6, 7
bbr2-p387	12.475 km	1.2 cm	2553	1.5%	100.0%	4
p387-c_15	20.847 km	2.6 cm	2588	0.7%	100.0%	2
sct2-p385	21.746 km	1.9 cm	2818	13.0%	97.3%	9
p385-c_15	22.514 km	1.4 cm	4006	3.5%	100.0%	1
c_16-p385	22.797 km	1.9 cm	2898	21.2%	94.5%	1
c_16-p387	23.220 km	2.0 cm	1502	17.3%	95.2%	2
bbr2-p385	25.050 km	1.4 cm	3710	0.9%	97.3%	9
sct2-p387	27.928 km	2.0 cm	1861	2.7%	96.0%	2
h3__-p387	33.289 km	1.6 cm	2098	3.1%	100.0%	4
p387-p385	33.348 km	1.3 cm	155315	1.4%	98.2%	1, 2, 3, ...
redm-p387	34.307 km	1.2 cm	83127	1.0%	99.1%	2, 4, 6, ...
v735-p385	35.964 km	1.8 cm	2994	10.6%	93.0%	5
x359-p385	37.715 km	1.8 cm	3444	4.2%	92.7%	5
redm-p385	66.544 km	1.2 cm	72717	0.5%	99.1%	1, 3, 5, 9
lpsb-p385	100.864 km	1.2 cm	71192	1.5%	99.4%	1, 3, 5, 9
lpsb-p387	124.247 km	1.2 cm	81471	1.3%	99.5%	2, 4, 6, ...

rsbg-p385	175.215 km	1.4 cm	71889	0.5%	98.6%	1, 3, 5, 9
gobs-p385	179.630 km	1.2 cm	72196	0.4%	97.9%	1, 3, 5, 9
gobs-p387	181.535 km	1.3 cm	82462	0.7%	96.1%	2, 4, 6, ...
rsbg-p387	185.940 km	1.3 cm	81237	0.9%	98.9%	2, 4, 6, ...
ors1-p387	201.554 km	1.2 cm	81775	1.1%	98.9%	2, 4, 6, ...
ork5-p387	223.240 km	1.3 cm	82091	1.1%	98.9%	2, 4, 6, ...
ors1-p385	232.369 km	1.2 cm	71322	0.9%	98.8%	1, 3, 5, 9
ork5-p385	239.505 km	1.3 cm	71624	1.1%	98.8%	1, 3, 5, 9
fts5-p385	252.064 km	1.2 cm	71519	0.3%	99.5%	1, 3, 5, 9
fts5-p387	282.683 km	1.3 cm	81209	0.8%	97.2%	2, 4, 6, ...

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UNCONSTRAINED MARKS
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MARK: **bbr2** (bbr2 1)

REF FRAME:	NAD_83(2011) (2010.0000)		IGS08 (2014.6362)	
X:	-2394864.738 m	0.001 m	-2394865.604 m	0.001 m
Y:	-3887418.652 m	0.001 m	-3887417.434 m	0.001 m
Z:	4441294.731 m	0.001 m	4441294.740 m	0.001 m
LAT:	44 23 59.13612	0.000 m	44 23 59.14953	0.000 m
E LON:	238 21 52.68675	0.000 m	238 21 52.62459	0.000 m
W LON:	121 38 07.31325	0.000 m	121 38 07.37541	0.000 m
EL HGT:	1941.082 m	0.001 m	1940.672 m	0.001 m
ORTHO HGT:	1962.458 m	0.015 m	(H = h - N WHERE N = GEOID12B HGT)	

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 10)	SPC (3601 OR N)
NORTHING (Y)	4917180.408 m	82099.448 m
EASTING (X)	608671.370 m	2409554.796 m
CONVERGENCE	0.95487427 deg	-0.80518483 deg
POINT SCALE	0.99974523	0.99998394
COMBINED FACTOR	0.99944104	0.99967968

US NATIONAL GRID DESIGNATOR: 10TFQ0867117180 (NAD 83)

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 MARK: **c_15** (c_15 1)

REF FRAME:	NAD_83(2011) (2010.0000)		IGS08 (2014.6268)	
X:	-2413840.096 m	0.001 m	-2413840.957 m	0.001 m
Y:	-3888953.743 m	0.001 m	-3888952.524 m	0.001 m
Z:	4429199.579 m	0.001 m	4429199.590 m	0.001 m
LAT:	44 15 03.48104	0.000 m	44 15 03.49443	0.000 m
E LON:	238 10 20.93433	0.000 m	238 10 20.87239	0.000 m
W LON:	121 49 39.06567	0.000 m	121 49 39.12761	0.000 m
EL HGT:	1563.283 m	0.001 m	1562.874 m	0.001 m
ORTHO HGT:	1584.172 m	0.015 m	(H = h - N WHERE N = GEOID12B HGT)	

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 10)	SPC (3602 OR S)
NORTHING (Y)	4900416.176 m	287931.148 m
EASTING (X)	593605.717 m	1393971.305 m
CONVERGENCE	0.81821997 deg	-0.90821810 deg
POINT SCALE	0.99970776	1.00007349
COMBINED FACTOR	0.99946277	0.99982841

US NATIONAL GRID DESIGNATOR: 10TEQ9360500416 (NAD 83)

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MARK: c_16 (c_16 1)

REF FRAME: NAD_83(2011) (2010.0000) IGS08 (2014.6267)

X: -2416074.546 m 0.001 m -2416075.406 m 0.001 m

Y: -3888478.428 m 0.001 m -3888477.209 m 0.001 m

Z: 4428335.046 m 0.001 m 4428335.057 m 0.001 m

LAT: 44 14 25.90566 0.000 m 44 14 25.91905 0.000 m

E LON: 238 08 44.10243 0.000 m 238 08 44.04052 0.000 m

W LON: 121 51 15.89757 0.000 m 121 51 15.95948 0.000 m

EL HGT: 1515.259 m 0.002 m 1514.850 m 0.002 m

ORTHO HGT: 1536.194 m 0.015 m (H = h - N WHERE N = GEOID12B HGT)

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 10)	SPC (3602 OR S)
NORTHING (Y)	4899226.521 m	286805.820 m
EASTING (X)	591474.488 m	1391804.414 m
CONVERGENCE	0.79929718 deg	-0.92662013 deg
POINT SCALE	0.99970291	1.00007005
COMBINED FACTOR	0.99946544	0.99983250

US NATIONAL GRID DESIGNATOR: 10TEP9147499226 (NAD 83)

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MARK: h3__ (h3__ 1)

REF FRAME: NAD_83(2011) (2010.0000) IGS08 (2014.6295)

X: -2413951.366 m 0.001 m -2413952.227 m 0.001 m

Y: -3871554.501 m 0.001 m -3871553.284 m 0.001 m

Z: 4443619.233 m 0.001 m 4443619.247 m 0.001 m

LAT: 44 26 10.65457 0.000 m 44 26 10.66798 0.000 m

E LON: 238 03 21.83374 0.000 m 238 03 21.77159 0.000 m

W LON: 121 56 38.16626 0.000 m 121 56 38.22841 0.000 m

EL HGT: 1118.466 m 0.001 m 1118.063 m 0.001 m

ORTHO HGT: 1139.840 m 0.015 m (H = h - N WHERE N = GEOID12B HGT)

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 10)	SPC (3601 OR N)
NORTHING (Y)	4920875.108 m	86550.650 m
EASTING (X)	584046.256 m	2385048.418 m
CONVERGENCE	0.73941084 deg	-1.02401856 deg
POINT SCALE	0.99968687	0.99997566
COMBINED FACTOR	0.99951158	0.99980032

US NATIONAL GRID DESIGNATOR: 10TEQ8404620875 (NAD 83)

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MARK: p385 (p385 1)

REF FRAME: NAD_83(2011) (2010.0000) IGS08 (2014.6315)

X: -2414139.274 m 0.000 m -2414140.135 m 0.000 m

Y: -3871572.514 m 0.000 m -3871571.297 m 0.000 m

Z: 4443506.207 m 0.000 m 4443506.220 m 0.000 m

LAT: 44 26 05.43913 0.000 m 44 26 05.45253 0.000 m

E LON: 238 03 15.05608 0.000 m 238 03 14.99394 0.000 m

W LON: 121 56 44.94392 0.000 m 121 56 45.00606 0.000 m

EL HGT: 1121.241 m 0.000 m 1120.839 m 0.000 m
ORTHO HGT: 1142.622 m 0.015 m (H = h - N WHERE N = GEOID12B HGT)

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 10)	SPC (3601 OR N)
NORTHING (Y)	4920712.256 m	86392.376 m
EASTING (X)	583898.496 m	2384895.673 m
CONVERGENCE	0.73807348 deg	-1.02535373 deg
POINT SCALE	0.99968656	0.99997598
COMBINED FACTOR	0.99951084	0.99980021

US NATIONAL GRID DESIGNATOR: 10TEQ8389820712 (NAD 83)

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MARK: p387 (p387 1)

REF FRAME:	NAD_83(2011) (2010.0000)	IGS08 (2014.6310)
X:	-2394555.315 m 0.000 m	-2394556.180 m 0.000 m
Y:	-3896184.426 m 0.000 m	-3896183.207 m 0.000 m
Z:	4432423.995 m 0.000 m	4432424.002 m 0.000 m
LAT:	44 17 48.30680 0.000 m	44 17 48.32022 0.000 m
E LON:	238 25 31.94100 0.000 m	238 25 31.87899 0.000 m
W LON:	121 34 28.05900 0.000 m	121 34 28.12101 0.000 m
EL HGT:	963.041 m 0.000 m	962.627 m 0.000 m
ORTHO HGT:	984.404 m 0.015 m	(H = h - N WHERE N = GEOID12B HGT)

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 10)	SPC (3602 OR S)
NORTHING (Y)	4905821.375 m	292728.806 m
EASTING (X)	613720.451 m	1414247.000 m
CONVERGENCE	0.99566684 deg	-0.73508954 deg
POINT SCALE	0.99975905	1.00008900
COMBINED FACTOR	0.99960810	0.99993800

US NATIONAL GRID DESIGNATOR: 10TFQ1372005821 (NAD 83)

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MARK: sct2 (sct2 1)

REF FRAME:	NAD_83(2011) (2010.0000)	IGS08 (2014.6352)
X:	-2420317.762 m 0.001 m	-2420318.622 m 0.001 m
Y:	-3886115.318 m 0.001 m	-3886114.098 m 0.001 m
Z:	4428564.944 m 0.001 m	4428564.955 m 0.001 m
LAT:	44 14 25.93503 0.000 m	44 14 25.94841 0.000 m
E LON:	238 05 05.53233 0.000 m	238 05 05.47037 0.000 m
W LON:	121 54 54.46767 0.000 m	121 54 54.52963 0.000 m
EL HGT:	1843.850 m 0.002 m	1843.442 m 0.002 m
ORTHO HGT:	1864.961 m 0.015 m	(H = h - N WHERE N = GEOID12B HGT)

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 10)	SPC (3602 OR S)
NORTHING (Y)	4899161.584 m	286886.922 m
EASTING (X)	586626.474 m	1386954.836 m
CONVERGENCE	0.75693056 deg	-0.96815739 deg
POINT SCALE	0.99969229	1.00007005
COMBINED FACTOR	0.99940335	0.99978100

US NATIONAL GRID DESIGNATOR: 10TEP8662699161 (NAD 83)

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MARK: v735 (v735 1)

REF FRAME:	NAD_83(2011) (2010.0000)	IGS08 (2014.6332)
X:	-2393603.901 m 0.001 m	-2393604.767 m 0.001 m
Y:	-3898338.932 m 0.001 m	-3898337.712 m 0.001 m
Z:	4431046.959 m 0.001 m	4431046.966 m 0.001 m
LAT:	44 16 46.11604 0.000 m	44 16 46.12946 0.000 m
E LON:	238 26 59.35562 0.000 m	238 26 59.29359 0.000 m
W LON:	121 33 00.64438 0.000 m	121 33 00.70641 0.000 m
EL HGT:	959.149 m 0.002 m	958.734 m 0.002 m
ORTHO HGT:	980.498 m 0.015 m	(H = h - N WHERE N = GEOID12B HGT)

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 10)	SPC (3602 OR S)
NORTHING (Y)	4903936.494 m	290784.624 m
EASTING (X)	615691.424 m	1416160.765 m
CONVERGENCE	1.01231730 deg	-0.71847719 deg
POINT SCALE	0.99976461	1.00008307
COMBINED FACTOR	0.99961427	0.99993269

US NATIONAL GRID DESIGNATOR: 10TFQ1569103936 (NAD 83)

+++++

MARK: x359 (x359 1)

REF FRAME:	NAD_83(2011) (2010.0000)	IGS08 (2014.6331)
X:	-2397399.940 m 0.001 m	-2397400.805 m 0.001 m
Y:	-3901022.850 m 0.001 m	-3901021.630 m 0.001 m
Z:	4426926.878 m 0.001 m	4426926.885 m 0.001 m
LAT:	44 13 33.91431 0.000 m	44 13 33.92772 0.000 m
E LON:	238 25 36.89268 0.000 m	238 25 36.83071 0.000 m
W LON:	121 34 23.10732 0.000 m	121 34 23.16929 0.000 m
EL HGT:	1145.247 m 0.002 m	1144.832 m 0.002 m
ORTHO HGT:	1166.374 m 0.015 m	(H = h - N WHERE N = GEOID12B HGT)

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 10)	SPC (3602 OR S)
NORTHING (Y)	4897974.296 m	284875.377 m
EASTING (X)	613966.634 m	1414256.155 m
CONVERGENCE	0.99536752 deg	-0.73414852 deg
POINT SCALE	0.99975974	1.00006534
COMBINED FACTOR	0.99958024	0.99988578

US NATIONAL GRID DESIGNATOR: 10TFP1396697974 (NAD 83)

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CONSTRAINED MARKS

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MARK: fts5 (fts5 a 2)

CONSTRAIN: 3-D NORMAL

ADJUST X:	0.001m (0.000m)	Y:	0.003m (0.000m)	Z:	-0.002m (0.000m)
ADJUST N:	0.000m (0.000m)	E:	-0.001m (0.000m)	H:	-0.004m (0.000m)

REF FRAME:	NAD_83(2011) (2010.0000)	IGS08 (2014.6312)
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X:          -2469884.460 m    0.000 m          -2469885.301 m    0.000 m
Y:          -3667816.262 m    0.000 m          -3667815.082 m    0.000 m
Z:           4581028.323 m    0.000 m           4581028.380 m    0.000 m
LAT:         46 12 17.58171    0.000 m          46 12 17.59488    0.000 m
E LON:       236 02 38.12162    0.000 m          236 02 38.05834    0.000 m
W LON:       123 57 21.87838    0.000 m          123 57 21.94166    0.000 m
EL HGT:      -13.448 m         0.000 m          -13.759 m         0.000 m
ORTHO HGT:   10.439 m         0.015 m (H = h - N WHERE N = GEOID12B HGT)

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                UTM COORDINATES          STATE PLANE COORDINATES
                UTM (Zone 10)             SPC (3601 OR N)
NORTHING (Y)   5117256.114 m             287773.425 m
EASTING (X)    426242.581 m             2233336.430 m
CONVERGENCE    -0.69014597 deg          -2.45100171 deg
POINT SCALE    0.99966687              1.00005858
COMBINED FACTOR 0.99966898             1.00006069

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US NATIONAL GRID DESIGNATOR: 10TDS2624217256 (NAD 83)

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MARK:          gobs (gobs a 5)
CONSTRAIN: 3-D NORMAL
ADJUST X:      -0.003m (0.000m)   Y:   -0.006m (0.000m)   Z:    0.003m (0.000m)
ADJUST N:      -0.003m (0.000m)   E:    0.001m (0.000m)   H:    0.007m (0.000m)

```

```

REF FRAME:      NAD_83(2011) (2010.0000)          IGS08 (2014.6312)
X:              -2280400.268 m    0.000 m          -2280401.139 m    0.000 m
Y:              -3823182.592 m    0.000 m          -3823181.385 m    0.000 m
Z:              4553230.222 m    0.000 m           4553230.231 m    0.000 m
LAT:            45 50 19.73102    0.000 m          45 50 19.74493    0.000 m
E LON:          239 11 07.22418    0.000 m          239 11 07.16089    0.000 m
W LON:          120 48 52.77582    0.000 m          120 48 52.83911    0.000 m
EL HGT:         621.882 m         0.000 m           621.477 m         0.000 m
ORTHO HGT:      642.693 m         0.017 m (H = h - N WHERE N = GEOID12B HGT)

```

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                UTM COORDINATES          STATE PLANE COORDINATES
                UTM (Zone 10)             SPC (4602 WA S)
NORTHING (Y)   5078461.191 m             56233.374 m
EASTING (X)    669705.471 m             475554.817 m
CONVERGENCE    1.56809787 deg          -0.22856766 deg
POINT SCALE    0.99995407              0.99999876
COMBINED FACTOR 0.99985659             0.99990128

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US NATIONAL GRID DESIGNATOR: 10TFR6970578461 (NAD 83)

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MARK:          lpsb (lpsb a 1)
CONSTRAIN: 3-D NORMAL
ADJUST X:      -0.006m (0.000m)   Y:   -0.004m (0.000m)   Z:    0.001m (0.000m)
ADJUST N:      -0.004m (0.000m)   E:   -0.003m (0.000m)   H:    0.005m (0.000m)

```

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REF FRAME:      NAD_83(2011) (2010.0000)          IGS08 (2014.6312)
X:              -2506818.087 m    0.000 m          -2506818.944 m    0.000 m
Y:              -3846908.513 m    0.000 m          -3846907.291 m    0.000 m
Z:              4412266.235 m    0.000 m           4412266.258 m    0.000 m
LAT:            44 03 04.40892    0.000 m          44 03 04.42197    0.000 m
E LON:          236 54 35.75139    0.000 m          236 54 35.68917    0.000 m
W LON:          123 05 24.24861    0.000 m          123 05 24.31083    0.000 m

```

EL HGT: 118.096 m 0.000 m 117.712 m 0.000 m
ORTHO HGT: 141.371 m 0.015 m (H = h - N WHERE N = GEOID12B HGT)

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 10)	SPC (3602 OR S)
NORTHING (Y)	4877566.224 m	268104.846 m
EASTING (X)	492785.009 m	1292469.537 m
CONVERGENCE	-0.06262515 deg	-1.77198891 deg
POINT SCALE	0.99960064	1.00001342
COMBINED FACTOR	0.99958213	0.99999490

US NATIONAL GRID DESIGNATOR: 10TDP9278577566 (NAD 83)

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MARK: ork5 (ork5 a 1)
CONSTRAIN: 3-D NORMAL
ADJUST X: 0.011m (0.000m) Y: 0.018m (0.000m) Z: -0.004m (0.000m)
ADJUST N: 0.011m (0.000m) E: 0.000m (0.000m) H: -0.018m (0.000m)

REF FRAME:	NAD_83(2011) (2010.0000)	IGS08 (2014.6312)
X:	-2481437.761 m 0.000 m	-2481438.632 m 0.000 m
Y:	-4022606.900 m 0.000 m	-4022605.653 m 0.000 m
Z:	4270236.722 m 0.000 m	4270236.707 m 0.000 m
LAT:	42 17 19.71881 0.000 m	42 17 19.73162 0.000 m
E LON:	238 19 50.45853 0.000 m	238 19 50.39762 0.000 m
W LON:	121 40 09.54147 0.000 m	121 40 09.60238 0.000 m
EL HGT:	1258.825 m 0.000 m	1258.368 m 0.000 m
ORTHO HGT:	1281.293 m 0.015 m	(H = h - N WHERE N = GEOID12B HGT)

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 10)	SPC (3602 OR S)
NORTHING (Y)	4682700.640 m	69784.406 m
EASTING (X)	609705.216 m	1403562.519 m
CONVERGENCE	0.89546312 deg	-0.79998519 deg
POINT SCALE	0.99974808	1.00001151
COMBINED FACTOR	0.99955074	0.99981412

US NATIONAL GRID DESIGNATOR: 10TFM0970582700 (NAD 83)

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MARK: ors1 (ors1 a 1)
CONSTRAIN: 3-D NORMAL
ADJUST X: 0.006m (0.000m) Y: 0.005m (0.000m) Z: -0.007m (0.000m)
ADJUST N: -0.000m (0.000m) E: 0.003m (0.000m) H: -0.011m (0.000m)

REF FRAME:	NAD_83(2011) (2010.0000)	IGS08 (2014.6312)
X:	-2226385.019 m 0.000 m	-2226385.889 m 0.000 m
Y:	-4006811.870 m 0.000 m	-4006810.643 m 0.000 m
Z:	4422203.077 m 0.000 m	4422203.064 m 0.000 m
LAT:	44 09 51.27399 0.000 m	44 09 51.28836 0.000 m
E LON:	240 56 28.53961 0.000 m	240 56 28.47858 0.000 m
W LON:	119 03 31.46039 0.000 m	119 03 31.52142 0.000 m
EL HGT:	1438.109 m 0.000 m	1437.633 m 0.000 m
ORTHO HGT:	1456.366 m 0.015 m	(H = h - N WHERE N = GEOID12B HGT)

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 11)	SPC (3601 OR N)
NORTHING (Y)	4892175.996 m	56321.676 m

EASTING (X) 335397.352 m 2615277.978 m
 CONVERGENCE -1.43468061 deg 1.02212215 deg
 POINT SCALE 0.99993323 1.00004685
 COMBINED FACTOR 0.99970780 0.99982139

US NATIONAL GRID DESIGNATOR: 11TLJ3539792175 (NAD 83)

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MARK: redm (redm a 4)
 CONSTRAIN: 3-D NORMAL
 ADJUST X: -0.004m (0.000m) Y: -0.003m (0.000m) Z: 0.006m (0.000m)
 ADJUST N: 0.001m (0.000m) E: -0.002m (0.000m) H: 0.007m (0.000m)

REF FRAME: NAD_83(2011) (2010.0000) IGS08 (2014.6312)
 X: -2366948.789 m 0.000 m -2366949.657 m 0.000 m
 Y: -3916334.860 m 0.000 m -3916333.637 m 0.000 m
 Z: 4429451.028 m 0.000 m 4429451.026 m 0.000 m
 LAT: 44 15 35.14670 0.000 m 44 15 35.16018 0.000 m
 E LON: 238 51 07.68481 0.000 m 238 51 07.62281 0.000 m
 W LON: 121 08 52.31519 0.000 m 121 08 52.37719 0.000 m
 EL HGT: 920.273 m 0.000 m 919.844 m 0.000 m
 ORTHO HGT: 941.396 m 0.015 m (H = h - N WHERE N = GEOID12B HGT)

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 10)	SPC (3602 OR S)
NORTHING (Y)	4902392.828 m	288268.367 m
EASTING (X)	647844.555 m	1448260.998 m
CONVERGENCE	1.29286131 deg	-0.44323536 deg
POINT SCALE	0.99986882	1.00007642
COMBINED FACTOR	0.99972456	0.99993213

US NATIONAL GRID DESIGNATOR: 10TFQ4784402392 (NAD 83)

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MARK: rsbg (rsbg a 1)
 CONSTRAIN: 3-D NORMAL
 ADJUST X: -0.006m (0.000m) Y: -0.009m (0.000m) Z: 0.002m (0.000m)
 ADJUST N: -0.005m (0.000m) E: 0.000m (0.000m) H: 0.009m (0.000m)

REF FRAME: NAD_83(2011) (2010.0000) IGS08 (2014.6312)
 X: -2559295.133 m 0.000 m -2559295.992 m 0.000 m
 Y: -3887370.500 m 0.000 m -3887369.267 m 0.000 m
 Z: 4346652.913 m 0.000 m 4346652.931 m 0.000 m
 LAT: 43 14 06.04992 0.000 m 43 14 06.06272 0.000 m
 E LON: 236 38 26.27207 0.000 m 236 38 26.21022 0.000 m
 W LON: 123 21 33.72793 0.000 m 123 21 33.78978 0.000 m
 EL HGT: 135.631 m 0.000 m 135.238 m 0.000 m
 ORTHO HGT: 159.332 m 0.015 m (H = h - N WHERE N = GEOID12B HGT)

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 10)	SPC (3602 OR S)
NORTHING (Y)	4786975.908 m	178180.061 m
EASTING (X)	470820.308 m	1267804.315 m
CONVERGENCE	-0.24616670 deg	-1.95622967 deg
POINT SCALE	0.99961047	0.99989528
COMBINED FACTOR	0.99958921	0.99987401

US NATIONAL GRID DESIGNATOR: 10TDN7082086975 (NAD 83)

NGS OPUS-PROJECTS NETWORK ADJUSTMENT REPORT
=====

All coordinate accuracies reported here are 1 times the formal uncertainties from the solution. For additional information:
geodesy.noaa.gov/OPUS/Using_OPUS-Projects.html#accuracy

These positions were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

SUBMITTED BY: william.stone
 SOLUTION FILE NAME: network-final min vertical.sum
 SOLUTION SOFTWARE: GPSCOM(1504.23)
 SOLUTION DATE: 2016-03-07T15:18:10 UTC
 STANDARD ERROR OF UNIT WEIGHT: 0.617
 TOTAL NUMBER OF OBSERVATIONS: 1274326
 TOTAL NUMBER OF MARKS: 16
 NUMBER OF CONSTRAINED MARKS: 2

START TIME: 2014-08-17T00:00:00 GPS
 STOP TIME: 2014-08-22T23:59:30 GPS
 FREQUENCY: L1 -> ION-FREE (L6)
 OBSERVATION INTERVAL: 30 s
 ELEVATION CUTOFF: MIXED
 TROPO INTERVAL: 1800 s [STEP-OFFSET PARAMETERIZATION]
 DD CORRELATIONS: ON

INCLUDED SOLUTION	RMS	SOFTWARE	RUN DATE
1) 2014-229 A	1.5 cm	page5(1509.10)	2016-03-07T13:03 UTC
2) 2014-229 B	1.4 cm	page5(1509.10)	2016-03-07T13:16 UTC
3) 2014-230 A	1.5 cm	page5(1509.10)	2016-03-07T13:06 UTC
4) 2014-230 B	1.5 cm	page5(1509.10)	2016-03-07T13:11 UTC
5) 2014-231 A	1.4 cm	page5(1509.10)	2016-03-07T13:11 UTC
6) 2014-231 B	1.4 cm	page5(1509.10)	2016-03-07T13:15 UTC
7) 2014-232 A	1.4 cm	page5(1509.10)	2016-03-07T14:14 UTC
8) 2014-232 B	1.4 cm	page5(1509.10)	2016-03-07T13:17 UTC
9) 2014-234 A	1.3 cm	page5(1509.10)	2016-03-07T13:16 UTC

BASELINE	LENGTH	RMS	OBS	OMITTED	FIXED	IN SOLUTION(S)
h3__-p385	0.220 km	0.6 cm	3902	4.5%	95.2%	3
v735-p387	2.728 km	1.3 cm	3751	10.5%	93.6%	6, 8
x359-p387	7.856 km	1.4 cm	5055	9.5%	94.6%	6, 7
bbr2-p387	12.475 km	1.2 cm	2553	1.5%	100.0%	4
p387-c_15	20.847 km	2.6 cm	2588	0.7%	100.0%	2
sct2-p385	21.746 km	1.9 cm	2818	13.0%	97.3%	9
p385-c_15	22.514 km	1.4 cm	4006	3.5%	100.0%	1
c_16-p385	22.797 km	1.9 cm	2898	21.2%	94.5%	1
c_16-p387	23.220 km	2.0 cm	1502	17.3%	95.2%	2
bbr2-p385	25.050 km	1.4 cm	3710	0.9%	97.3%	9
sct2-p387	27.928 km	2.0 cm	1861	2.7%	96.0%	2
h3__-p387	33.289 km	1.6 cm	2098	3.1%	100.0%	4
p387-p385	33.348 km	1.3 cm	155315	1.4%	98.2%	1, 2, 3, ...
redm-p387	34.307 km	1.2 cm	83127	1.0%	99.1%	2, 4, 6, ...
v735-p385	35.964 km	1.8 cm	2994	10.6%	93.0%	5
x359-p385	37.715 km	1.8 cm	3444	4.2%	92.7%	5
redm-p385	66.544 km	1.2 cm	72717	0.5%	99.1%	1, 3, 5, 9
lpsb-p385	100.864 km	1.2 cm	71192	1.5%	99.4%	1, 3, 5, 9
lpsb-p387	124.247 km	1.2 cm	81471	1.3%	99.5%	2, 4, 6, ...

rsbg-p385	175.215 km	1.4 cm	71889	0.5%	98.6%	1, 3, 5, 9
gobs-p385	179.630 km	1.2 cm	72196	0.4%	97.9%	1, 3, 5, 9
gobs-p387	181.535 km	1.3 cm	82462	0.7%	96.1%	2, 4, 6, ...
rsbg-p387	185.940 km	1.3 cm	81237	0.9%	98.9%	2, 4, 6, ...
ors1-p387	201.554 km	1.2 cm	81775	1.1%	98.9%	2, 4, 6, ...
ork5-p387	223.240 km	1.3 cm	82091	1.1%	98.9%	2, 4, 6, ...
ors1-p385	232.369 km	1.2 cm	71322	0.9%	98.8%	1, 3, 5, 9
ork5-p385	239.505 km	1.3 cm	71624	1.1%	98.8%	1, 3, 5, 9
fts5-p385	252.064 km	1.2 cm	71519	0.3%	99.5%	1, 3, 5, 9
fts5-p387	282.683 km	1.3 cm	81209	0.8%	97.2%	2, 4, 6, ...

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UNCONSTRAINED MARKS
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MARK: bbr2 (bbr2 1)

REF FRAME:	NAD_83(2011) (2010.0000)		IGS08 (2014.6362)	
X:	-2394864.742 m	0.001 m	-2394865.607 m	0.001 m
Y:	-3887418.661 m	0.001 m	-3887417.443 m	0.001 m
Z:	4441294.739 m	0.002 m	4441294.747 m	0.002 m
LAT:	44 23 59.13609	0.000 m	44 23 59.14949	0.000 m
E LON:	238 21 52.68681	0.000 m	238 21 52.62469	0.000 m
W LON:	121 38 07.31319	0.000 m	121 38 07.37531	0.000 m
EL HGT:	1941.095 m	0.002 m	1940.684 m	0.002 m
ORTHO HGT:	1962.471 m	0.015 m	(H = h - N WHERE N = GEOID12B HGT)	

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 10)	SPC (3601 OR N)
NORTHING (Y)	4917180.407 m	82099.447 m
EASTING (X)	608671.371 m	2409554.797 m
CONVERGENCE	0.95487428 deg	-0.80518482 deg
POINT SCALE	0.99974523	0.99998394
COMBINED FACTOR	0.99944104	0.99967968

US NATIONAL GRID DESIGNATOR: 10TFQ0867117180 (NAD 83)

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 MARK: c_15 (c_15 1)

REF FRAME:	NAD_83(2011) (2010.0000)		IGS08 (2014.6268)	
X:	-2413840.100 m	0.001 m	-2413840.960 m	0.001 m
Y:	-3888953.753 m	0.001 m	-3888952.533 m	0.001 m
Z:	4429199.586 m	0.002 m	4429199.597 m	0.002 m
LAT:	44 15 03.48096	0.000 m	44 15 03.49439	0.000 m
E LON:	238 10 20.93441	0.000 m	238 10 20.87248	0.000 m
W LON:	121 49 39.06559	0.000 m	121 49 39.12752	0.000 m
EL HGT:	1563.296 m	0.002 m	1562.886 m	0.002 m
ORTHO HGT:	1584.185 m	0.015 m	(H = h - N WHERE N = GEOID12B HGT)	

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 10)	SPC (3602 OR S)
NORTHING (Y)	4900416.173 m	287931.146 m
EASTING (X)	593605.719 m	1393971.307 m
CONVERGENCE	0.81821998 deg	-0.90821809 deg
POINT SCALE	0.99970776	1.00007349
COMBINED FACTOR	0.99946277	0.99982841

US NATIONAL GRID DESIGNATOR: 10TEQ9360500416 (NAD 83)

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MARK: c_16 (c_16 1)

REF FRAME:	NAD_83(2011) (2010.0000)	IGS08 (2014.6267)
X:	-2416074.549 m 0.001 m	-2416075.409 m 0.001 m
Y:	-3888478.437 m 0.002 m	-3888477.218 m 0.002 m
Z:	4428335.053 m 0.002 m	4428335.065 m 0.002 m
LAT:	44 14 25.90561 0.000 m	44 14 25.91902 0.000 m
E LON:	238 08 44.10253 0.000 m	238 08 44.04062 0.000 m
W LON:	121 51 15.89747 0.000 m	121 51 15.95938 0.000 m
EL HGT:	1515.271 m 0.003 m	1514.863 m 0.003 m
ORTHO HGT:	1536.206 m 0.015 m	(H = h - N WHERE N = GEOID12B HGT)

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 10)	SPC (3602 OR S)
NORTHING (Y)	4899226.519 m	286805.818 m
EASTING (X)	591474.491 m	1391804.416 m
CONVERGENCE	0.79929720 deg	-0.92662011 deg
POINT SCALE	0.99970291	1.00007005
COMBINED FACTOR	0.99946544	0.99983249

US NATIONAL GRID DESIGNATOR: 10TEP9147499226 (NAD 83)

+++++

MARK: fts5 (fts5 a 2)

REF FRAME:	NAD_83(2011) (2010.0000)	IGS08 (2014.6312)
X:	-2469884.463 m 0.001 m	-2469885.304 m 0.001 m
Y:	-3667816.271 m 0.001 m	-3667815.091 m 0.001 m
Z:	4581028.331 m 0.001 m	4581028.387 m 0.001 m
LAT:	46 12 17.58168 0.000 m	46 12 17.59483 0.000 m
E LON:	236 02 38.12174 0.000 m	236 02 38.05846 0.000 m
W LON:	123 57 21.87826 0.000 m	123 57 21.94154 0.000 m
EL HGT:	-13.436 m 0.002 m	-13.748 m 0.002 m
ORTHO HGT:	10.451 m 0.015 m	(H = h - N WHERE N = GEOID12B HGT)

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 10)	SPC (3601 OR N)
NORTHING (Y)	5117256.113 m	287773.424 m
EASTING (X)	426242.583 m	2233336.433 m
CONVERGENCE	-0.69014595 deg	-2.45100169 deg
POINT SCALE	0.99966687	1.00005858
COMBINED FACTOR	0.99966898	1.00006069

US NATIONAL GRID DESIGNATOR: 10TDS2624217256 (NAD 83)

+++++

MARK: gobs (gobs a 5)

REF FRAME:	NAD_83(2011) (2010.0000)	IGS08 (2014.6312)
X:	-2280400.272 m 0.001 m	-2280401.143 m 0.001 m
Y:	-3823182.602 m 0.001 m	-3823181.395 m 0.001 m
Z:	4553230.230 m 0.001 m	4553230.239 m 0.001 m
LAT:	45 50 19.73096 0.000 m	45 50 19.74488 0.000 m
E LON:	239 11 07.22426 0.000 m	239 11 07.16098 0.000 m
W LON:	120 48 52.77574 0.000 m	120 48 52.83902 0.000 m

EL HGT: 621.895 m 0.002 m 621.491 m 0.002 m
 ORTHO HGT: 642.706 m 0.017 m (H = h - N WHERE N = GEOID12B HGT)

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 10)	SPC (4602 WA S)
NORTHING (Y)	5078461.189 m	56233.372 m
EASTING (X)	669705.473 m	475554.819 m
CONVERGENCE	1.56809788 deg	-0.22856764 deg
POINT SCALE	0.99995407	0.99999876
COMBINED FACTOR	0.99985659	0.99990127

US NATIONAL GRID DESIGNATOR: 10TFR6970578461 (NAD 83)

+++++

MARK: h3__ (h3__ 1)

REF FRAME:	NAD_83(2011) (2010.0000)	IGS08 (2014.6295)
X:	-2413951.369 m 0.001 m	-2413952.230 m 0.001 m
Y:	-3871554.510 m 0.001 m	-3871553.293 m 0.001 m
Z:	4443619.241 m 0.002 m	4443619.254 m 0.002 m
LAT:	44 26 10.65455 0.000 m	44 26 10.66795 0.000 m
E LON:	238 03 21.83384 0.000 m	238 03 21.77169 0.000 m
W LON:	121 56 38.16616 0.000 m	121 56 38.22831 0.000 m
EL HGT:	1118.478 m 0.002 m	1118.076 m 0.002 m
ORTHO HGT:	1139.852 m 0.015 m	(H = h - N WHERE N = GEOID12B HGT)

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 10)	SPC (3601 OR N)
NORTHING (Y)	4920875.108 m	86550.650 m
EASTING (X)	584046.258 m	2385048.420 m
CONVERGENCE	0.73941086 deg	-1.02401854 deg
POINT SCALE	0.99968687	0.99997566
COMBINED FACTOR	0.99951158	0.99980032

US NATIONAL GRID DESIGNATOR: 10TEQ8404620875 (NAD 83)

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MARK: lpsb (lpsb a 1)

REF FRAME:	NAD_83(2011) (2010.0000)	IGS08 (2014.6312)
X:	-2506818.090 m 0.001 m	-2506818.948 m 0.001 m
Y:	-3846908.523 m 0.001 m	-3846907.301 m 0.001 m
Z:	4412266.244 m 0.001 m	4412266.266 m 0.001 m
LAT:	44 03 04.40891 0.000 m	44 03 04.42193 0.000 m
E LON:	236 54 35.75152 0.000 m	236 54 35.68928 0.000 m
W LON:	123 05 24.24848 0.000 m	123 05 24.31072 0.000 m
EL HGT:	118.109 m 0.002 m	117.726 m 0.002 m
ORTHO HGT:	141.384 m 0.015 m	(H = h - N WHERE N = GEOID12B HGT)

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 10)	SPC (3602 OR S)
NORTHING (Y)	4877566.224 m	268104.846 m
EASTING (X)	492785.012 m	1292469.540 m
CONVERGENCE	-0.06262513 deg	-1.77198889 deg
POINT SCALE	0.99960064	1.00001342
COMBINED FACTOR	0.99958213	0.99999490

US NATIONAL GRID DESIGNATOR: 10TDP9278577566 (NAD 83)

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MARK: ork5 (ork5 a 1)

REF FRAME:	NAD_83(2011) (2010.0000)	IGS08 (2014.6312)
X:	-2481437.763 m 0.001 m	-2481438.634 m 0.001 m
Y:	-4022606.908 m 0.001 m	-4022605.660 m 0.001 m
Z:	4270236.728 m 0.001 m	4270236.713 m 0.001 m
LAT:	42 17 19.71878 0.000 m	42 17 19.73160 0.000 m
E LON:	238 19 50.45864 0.000 m	238 19 50.39771 0.000 m
W LON:	121 40 09.54136 0.000 m	121 40 09.60229 0.000 m
EL HGT:	1258.835 m 0.002 m	1258.377 m 0.002 m
ORTHO HGT:	1281.303 m 0.015 m	(H = h - N WHERE N = GEOID12B HGT)

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 10)	SPC (3602 OR S)
NORTHING (Y)	4682700.639 m	69784.405 m
EASTING (X)	609705.218 m	1403562.522 m
CONVERGENCE	0.89546314 deg	-0.79998517 deg
POINT SCALE	0.99974808	1.00001151
COMBINED FACTOR	0.99955074	0.99981412

US NATIONAL GRID DESIGNATOR: 10TFM0970582700 (NAD 83)

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MARK: orsl (orsl a 1)

REF FRAME:	NAD_83(2011) (2010.0000)	IGS08 (2014.6312)
X:	-2226385.022 m 0.001 m	-2226385.892 m 0.001 m
Y:	-4006811.878 m 0.001 m	-4006810.651 m 0.001 m
Z:	4422203.084 m 0.001 m	4422203.071 m 0.001 m
LAT:	44 09 51.27396 0.000 m	44 09 51.28832 0.000 m
E LON:	240 56 28.53967 0.000 m	240 56 28.47865 0.000 m
W LON:	119 03 31.46033 0.000 m	119 03 31.52135 0.000 m
EL HGT:	1438.120 m 0.002 m	1437.644 m 0.002 m
ORTHO HGT:	1456.377 m 0.015 m	(H = h - N WHERE N = GEOID12B HGT)

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 11)	SPC (3601 OR N)
NORTHING (Y)	4892175.995 m	56321.675 m
EASTING (X)	335397.353 m	2615277.979 m
CONVERGENCE	-1.43468060 deg	1.02212216 deg
POINT SCALE	0.99993323	1.00004685
COMBINED FACTOR	0.99970780	0.99982139

US NATIONAL GRID DESIGNATOR: 11TLJ3539792175 (NAD 83)

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MARK: p385 (p385 1)

REF FRAME:	NAD_83(2011) (2010.0000)	IGS08 (2014.6315)
X:	-2414139.277 m 0.001 m	-2414140.138 m 0.001 m
Y:	-3871572.523 m 0.001 m	-3871571.306 m 0.001 m
Z:	4443506.215 m 0.001 m	4443506.228 m 0.001 m
LAT:	44 26 05.43911 0.000 m	44 26 05.45249 0.000 m
E LON:	238 03 15.05618 0.000 m	238 03 14.99403 0.000 m
W LON:	121 56 44.94382 0.000 m	121 56 45.00597 0.000 m

EL HGT: 1121.254 m 0.002 m 1120.851 m 0.002 m
ORTHO HGT: 1142.635 m 0.015 m (H = h - N WHERE N = GEOID12B HGT)

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 10)	SPC (3601 OR N)
NORTHING (Y)	4920712.255 m	86392.375 m
EASTING (X)	583898.499 m	2384895.675 m
CONVERGENCE	0.73807350 deg	-1.02535371 deg
POINT SCALE	0.99968656	0.99997598
COMBINED FACTOR	0.99951084	0.99980021

US NATIONAL GRID DESIGNATOR: 10TEQ8389820712 (NAD 83)

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MARK: p387 (p387 1)

REF FRAME:	NAD_83(2011) (2010.0000)	IGS08 (2014.6310)
X:	-2394555.318 m 0.001 m	-2394556.183 m 0.001 m
Y:	-3896184.436 m 0.001 m	-3896183.217 m 0.001 m
Z:	4432424.003 m 0.001 m	4432424.010 m 0.001 m
LAT:	44 17 48.30675 0.000 m	44 17 48.32018 0.000 m
E LON:	238 25 31.94112 0.000 m	238 25 31.87909 0.000 m
W LON:	121 34 28.05888 0.000 m	121 34 28.12091 0.000 m
EL HGT:	963.054 m 0.002 m	962.639 m 0.002 m
ORTHO HGT:	984.417 m 0.015 m	(H = h - N WHERE N = GEOID12B HGT)

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 10)	SPC (3602 OR S)
NORTHING (Y)	4905821.374 m	292728.804 m
EASTING (X)	613720.453 m	1414247.003 m
CONVERGENCE	0.99566686 deg	-0.73508952 deg
POINT SCALE	0.99975905	1.00008900
COMBINED FACTOR	0.99960810	0.99993800

US NATIONAL GRID DESIGNATOR: 10TFQ1372005821 (NAD 83)

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MARK: rsbg (rsbg a 1)

REF FRAME:	NAD_83(2011) (2010.0000)	IGS08 (2014.6312)
X:	-2559295.136 m 0.001 m	-2559295.996 m 0.001 m
Y:	-3887370.510 m 0.001 m	-3887369.277 m 0.001 m
Z:	4346652.922 m 0.001 m	4346652.940 m 0.001 m
LAT:	43 14 06.04991 0.000 m	43 14 06.06269 0.000 m
E LON:	236 38 26.27220 0.000 m	236 38 26.21033 0.000 m
W LON:	123 21 33.72780 0.000 m	123 21 33.78967 0.000 m
EL HGT:	135.644 m 0.002 m	135.251 m 0.002 m
ORTHO HGT:	159.345 m 0.015 m	(H = h - N WHERE N = GEOID12B HGT)

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 10)	SPC (3602 OR S)
NORTHING (Y)	4786975.908 m	178180.060 m
EASTING (X)	470820.311 m	1267804.318 m
CONVERGENCE	-0.24616667 deg	-1.95622964 deg
POINT SCALE	0.99961047	0.99989528
COMBINED FACTOR	0.99958921	0.99987401

US NATIONAL GRID DESIGNATOR: 10TDN7082086975 (NAD 83)

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MARK: sct2 (sct2 1)

REF FRAME: NAD_83(2011) (2010.0000) IGS08 (2014.6352)

X: -2420317.765 m 0.001 m -2420318.626 m 0.001 m

Y: -3886115.327 m 0.002 m -3886114.107 m 0.002 m

Z: 4428564.952 m 0.002 m 4428564.963 m 0.002 m

LAT: 44 14 25.93500 0.000 m 44 14 25.94837 0.000 m

E LON: 238 05 05.53243 0.000 m 238 05 05.47047 0.000 m

W LON: 121 54 54.46757 0.000 m 121 54 54.52953 0.000 m

EL HGT: 1843.862 m 0.003 m 1843.454 m 0.003 m

ORTHO HGT: 1864.973 m 0.015 m (H = h - N WHERE N = GEOID12B HGT)

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 10)	SPC (3602 OR S)
NORTHING (Y)	4899161.583 m	286886.921 m
EASTING (X)	586626.476 m	1386954.839 m
CONVERGENCE	0.75693058 deg	-0.96815737 deg
POINT SCALE	0.99969229	1.00007005
COMBINED FACTOR	0.99940334	0.99978099

US NATIONAL GRID DESIGNATOR: 10TEP8662699161 (NAD 83)

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MARK: x359 (x359 1)

REF FRAME: NAD_83(2011) (2010.0000) IGS08 (2014.6331)

X: -2397399.943 m 0.001 m -2397400.808 m 0.001 m

Y: -3901022.859 m 0.001 m -3901021.639 m 0.001 m

Z: 4426926.886 m 0.002 m 4426926.893 m 0.002 m

LAT: 44 13 33.91429 0.000 m 44 13 33.92769 0.000 m

E LON: 238 25 36.89278 0.000 m 238 25 36.83081 0.000 m

W LON: 121 34 23.10722 0.000 m 121 34 23.16919 0.000 m

EL HGT: 1145.260 m 0.002 m 1144.844 m 0.002 m

ORTHO HGT: 1166.387 m 0.015 m (H = h - N WHERE N = GEOID12B HGT)

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 10)	SPC (3602 OR S)
NORTHING (Y)	4897974.296 m	284875.376 m
EASTING (X)	613966.636 m	1414256.157 m
CONVERGENCE	0.99536754 deg	-0.73414850 deg
POINT SCALE	0.99975974	1.00006534
COMBINED FACTOR	0.99958024	0.99988578

US NATIONAL GRID DESIGNATOR: 10TFP1396697974 (NAD 83)

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CONSTRAINED MARKS

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MARK: redm (redm a 4)

CONSTRAIN: HOR-ONLY TIGHT

ADJUST X: -0.008m (0.001m) Y: -0.013m (0.001m) Z: 0.015m (0.001m)

ADJUST N: 0.000m (0.000m) E: -0.000m (0.000m) H: 0.021m (0.002m)

REF FRAME: NAD_83(2011) (2010.0000) IGS08 (2014.6312)

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X:          -2366948.793 m    0.001 m    -2366949.660 m    0.001 m
Y:          -3916334.870 m    0.001 m    -3916333.646 m    0.001 m
Z:           4429451.037 m    0.001 m     4429451.035 m    0.001 m
LAT:        44 15 35.14666    0.000 m     44 15 35.16014    0.000 m
E LON:      238 51 07.68489    0.000 m     238 51 07.62290    0.000 m
W LON:      121 08 52.31511    0.000 m     121 08 52.37710    0.000 m
EL HGT:     920.287 m        0.002 m     919.857 m        0.002 m
ORTHO HGT:  941.410 m        0.015 m    (H = h - N WHERE N = GEOID12B HGT)

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                UTM COORDINATES          STATE PLANE COORDINATES
                UTM (Zone 10)             SPC (3602 OR S)
NORTHING (Y)   4902392.827 m             288268.366 m
EASTING (X)    647844.557 m             1448261.000 m
CONVERGENCE    1.29286133 deg           -0.44323534 deg
POINT SCALE    0.99986882              1.00007642
COMBINED FACTOR 0.99972456             0.99993213

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US NATIONAL GRID DESIGNATOR: 10TFQ4784402392 (NAD 83)

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MARK:         v735 (v735 1)
CONSTRAIN:    VER-ONLY TIGHT
ADJUST X:     -0.016m (0.000m)   Y:   -0.019m (0.000m)   Z:    0.030m (0.000m)
ADJUST N:     0.004m (0.000m)   E:   -0.004m (0.000m)   H:    0.039m (0.000m)

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REF FRAME:    NAD_83(2011) (2010.0000)          IGS08 (2014.6332)
X:           -2393603.905 m    0.000 m    -2393604.770 m    0.000 m
Y:           -3898338.942 m    0.000 m    -3898337.722 m    0.000 m
Z:           4431046.967 m    0.000 m     4431046.974 m    0.000 m
LAT:         44 16 46.11598    0.000 m     44 16 46.12942    0.000 m
E LON:       238 26 59.35571    0.000 m     238 26 59.29368    0.000 m
W LON:       121 33 00.64429    0.000 m     121 33 00.70632    0.000 m
EL HGT:      959.162 m        0.000 m     958.747 m        0.000 m
ORTHO HGT:   980.511 m        0.015 m    (H = h - N WHERE N = GEOID12B HGT)

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                UTM COORDINATES          STATE PLANE COORDINATES
                UTM (Zone 10)             SPC (3602 OR S)
NORTHING (Y)   4903936.492 m             290784.623 m
EASTING (X)    615691.425 m             1416160.767 m
CONVERGENCE    1.01231732 deg           -0.71847717 deg
POINT SCALE    0.99976461              1.00008307
COMBINED FACTOR 0.99961427             0.99993268

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US NATIONAL GRID DESIGNATOR: 10TFQ1569103936 (NAD 83)

NGS OPUS-PROJECTS NETWORK ADJUSTMENT REPORT
=====

All coordinate accuracies reported here are 1 times the formal uncertainties from the solution. For additional information:
geodesy.noaa.gov/OPUS/Using_OPUS-Projects.html#accuracy

These positions were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

SUBMITTED BY: william.stone
 SOLUTION FILE NAME: network-final full vertical.sum
 SOLUTION SOFTWARE: GPSCOM(1504.23)
 SOLUTION DATE: 2016-03-07T15:36:25 UTC
 STANDARD ERROR OF UNIT WEIGHT: 0.617
 TOTAL NUMBER OF OBSERVATIONS: 1274326
 TOTAL NUMBER OF MARKS: 16
 NUMBER OF CONSTRAINED MARKS: 5

START TIME: 2014-08-17T00:00:00 GPS
 STOP TIME: 2014-08-22T23:59:30 GPS
 FREQUENCY: L1 -> ION-FREE (L6)
 OBSERVATION INTERVAL: 30 s
 ELEVATION CUTOFF: MIXED
 TROPO INTERVAL: 1800 s [STEP-OFFSET PARAMETERIZATION]
 DD CORRELATIONS: ON

INCLUDED SOLUTION	RMS	SOFTWARE	RUN DATE
1) 2014-229 A	1.5 cm	page5(1509.10)	2016-03-07T13:03 UTC
2) 2014-229 B	1.4 cm	page5(1509.10)	2016-03-07T13:16 UTC
3) 2014-230 A	1.5 cm	page5(1509.10)	2016-03-07T13:06 UTC
4) 2014-230 B	1.5 cm	page5(1509.10)	2016-03-07T13:11 UTC
5) 2014-231 A	1.4 cm	page5(1509.10)	2016-03-07T13:11 UTC
6) 2014-231 B	1.4 cm	page5(1509.10)	2016-03-07T13:15 UTC
7) 2014-232 A	1.4 cm	page5(1509.10)	2016-03-07T14:14 UTC
8) 2014-232 B	1.4 cm	page5(1509.10)	2016-03-07T13:17 UTC
9) 2014-234 A	1.3 cm	page5(1509.10)	2016-03-07T13:16 UTC

BASELINE	LENGTH	RMS	OBS	OMITTED	FIXED	IN SOLUTION(S)
h3__-p385	0.220 km	0.6 cm	3902	4.5%	95.2%	3
v735-p387	2.728 km	1.3 cm	3751	10.5%	93.6%	6, 8
x359-p387	7.856 km	1.4 cm	5055	9.5%	94.6%	6, 7
bbr2-p387	12.475 km	1.2 cm	2553	1.5%	100.0%	4
p387-c_15	20.847 km	2.6 cm	2588	0.7%	100.0%	2
sct2-p385	21.746 km	1.9 cm	2818	13.0%	97.3%	9
p385-c_15	22.514 km	1.4 cm	4006	3.5%	100.0%	1
c_16-p385	22.797 km	1.9 cm	2898	21.2%	94.5%	1
c_16-p387	23.220 km	2.0 cm	1502	17.3%	95.2%	2
bbr2-p385	25.050 km	1.4 cm	3710	0.9%	97.3%	9
sct2-p387	27.928 km	2.0 cm	1861	2.7%	96.0%	2
h3__-p387	33.289 km	1.6 cm	2098	3.1%	100.0%	4
p387-p385	33.348 km	1.3 cm	155315	1.4%	98.2%	1, 2, 3, ...
redm-p387	34.307 km	1.2 cm	83127	1.0%	99.1%	2, 4, 6, ...
v735-p385	35.964 km	1.8 cm	2994	10.6%	93.0%	5
x359-p385	37.715 km	1.8 cm	3444	4.2%	92.7%	5
redm-p385	66.544 km	1.2 cm	72717	0.5%	99.1%	1, 3, 5, 9
lpsb-p385	100.864 km	1.2 cm	71192	1.5%	99.4%	1, 3, 5, 9
lpsb-p387	124.247 km	1.2 cm	81471	1.3%	99.5%	2, 4, 6, ...

rsbg-p385	175.215 km	1.4 cm	71889	0.5%	98.6%	1, 3, 5, 9
gobs-p385	179.630 km	1.2 cm	72196	0.4%	97.9%	1, 3, 5, 9
gobs-p387	181.535 km	1.3 cm	82462	0.7%	96.1%	2, 4, 6, ...
rsbg-p387	185.940 km	1.3 cm	81237	0.9%	98.9%	2, 4, 6, ...
ors1-p387	201.554 km	1.2 cm	81775	1.1%	98.9%	2, 4, 6, ...
ork5-p387	223.240 km	1.3 cm	82091	1.1%	98.9%	2, 4, 6, ...
ors1-p385	232.369 km	1.2 cm	71322	0.9%	98.8%	1, 3, 5, 9
ork5-p385	239.505 km	1.3 cm	71624	1.1%	98.8%	1, 3, 5, 9
fts5-p385	252.064 km	1.2 cm	71519	0.3%	99.5%	1, 3, 5, 9
fts5-p387	282.683 km	1.3 cm	81209	0.8%	97.2%	2, 4, 6, ...

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UNCONSTRAINED MARKS
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MARK: bbr2 (bbr2 1)

REF FRAME:	NAD_83(2011) (2010.0000)		IGS08 (2014.6362)	
X:	-2394864.741 m	0.001 m	-2394865.606 m	0.001 m
Y:	-3887418.659 m	0.001 m	-3887417.441 m	0.001 m
Z:	4441294.737 m	0.001 m	4441294.745 m	0.001 m
LAT:	44 23 59.13609	0.000 m	44 23 59.14950	0.000 m
E LON:	238 21 52.68680	0.000 m	238 21 52.62469	0.000 m
W LON:	121 38 07.31320	0.000 m	121 38 07.37531	0.000 m
EL HGT:	1941.092 m	0.002 m	1940.681 m	0.002 m
ORTHO HGT:	1962.468 m	0.015 m	(H = h - N WHERE N = GEOID12B HGT)	

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 10)	SPC (3601 OR N)
NORTHING (Y)	4917180.407 m	82099.447 m
EASTING (X)	608671.371 m	2409554.797 m
CONVERGENCE	0.95487427 deg	-0.80518482 deg
POINT SCALE	0.99974523	0.99998394
COMBINED FACTOR	0.99944104	0.99967968

US NATIONAL GRID DESIGNATOR: 10TFQ0867117180 (NAD 83)

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 MARK: c_15 (c_15 1)

REF FRAME:	NAD_83(2011) (2010.0000)		IGS08 (2014.6268)	
X:	-2413840.099 m	0.001 m	-2413840.959 m	0.001 m
Y:	-3888953.751 m	0.001 m	-3888952.532 m	0.001 m
Z:	4429199.584 m	0.001 m	4429199.595 m	0.001 m
LAT:	44 15 03.48096	0.000 m	44 15 03.49439	0.000 m
E LON:	238 10 20.93440	0.000 m	238 10 20.87249	0.000 m
W LON:	121 49 39.06560	0.000 m	121 49 39.12751	0.000 m
EL HGT:	1563.293 m	0.002 m	1562.884 m	0.002 m
ORTHO HGT:	1584.182 m	0.015 m	(H = h - N WHERE N = GEOID12B HGT)	

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 10)	SPC (3602 OR S)
NORTHING (Y)	4900416.174 m	287931.146 m
EASTING (X)	593605.719 m	1393971.307 m
CONVERGENCE	0.81821998 deg	-0.90821809 deg
POINT SCALE	0.99970776	1.00007349
COMBINED FACTOR	0.99946277	0.99982841

US NATIONAL GRID DESIGNATOR: 10TEQ9360500416 (NAD 83)

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MARK: fts5 (fts5 a 2)

REF FRAME:	NAD_83(2011) (2010.0000)	IGS08 (2014.6312)
X:	-2469884.462 m 0.000 m	-2469885.303 m 0.000 m
Y:	-3667816.269 m 0.001 m	-3667815.090 m 0.001 m
Z:	4581028.329 m 0.001 m	4581028.385 m 0.001 m
LAT:	46 12 17.58169 0.000 m	46 12 17.59483 0.000 m
E LON:	236 02 38.12173 0.000 m	236 02 38.05846 0.000 m
W LON:	123 57 21.87827 0.000 m	123 57 21.94154 0.000 m
EL HGT:	-13.439 m 0.001 m	-13.750 m 0.001 m
ORTHO HGT:	10.448 m 0.015 m	(H = h - N WHERE N = GEOID12B HGT)

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 10)	SPC (3601 OR N)
NORTHING (Y)	5117256.113 m	287773.424 m
EASTING (X)	426242.583 m	2233336.433 m
CONVERGENCE	-0.69014595 deg	-2.45100169 deg
POINT SCALE	0.99966687	1.00005858
COMBINED FACTOR	0.99966898	1.00006069

US NATIONAL GRID DESIGNATOR: 10TDS2624217256 (NAD 83)

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MARK: gobs (gobs a 5)

REF FRAME:	NAD_83(2011) (2010.0000)	IGS08 (2014.6312)
X:	-2280400.270 m 0.000 m	-2280401.141 m 0.000 m
Y:	-3823182.600 m 0.001 m	-3823181.393 m 0.001 m
Z:	4553230.228 m 0.001 m	4553230.237 m 0.001 m
LAT:	45 50 19.73097 0.000 m	45 50 19.74488 0.000 m
E LON:	239 11 07.22429 0.000 m	239 11 07.16098 0.000 m
W LON:	120 48 52.77571 0.000 m	120 48 52.83902 0.000 m
EL HGT:	621.892 m 0.001 m	621.488 m 0.001 m
ORTHO HGT:	642.703 m 0.017 m	(H = h - N WHERE N = GEOID12B HGT)

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 10)	SPC (4602 WA S)
NORTHING (Y)	5078461.189 m	56233.373 m
EASTING (X)	669705.474 m	475554.820 m
CONVERGENCE	1.56809789 deg	-0.22856764 deg
POINT SCALE	0.99995407	0.99999876
COMBINED FACTOR	0.99985659	0.99990127

US NATIONAL GRID DESIGNATOR: 10TFR6970578461 (NAD 83)

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MARK: lpsb (lpsb a 1)

REF FRAME:	NAD_83(2011) (2010.0000)	IGS08 (2014.6312)
X:	-2506818.089 m 0.000 m	-2506818.947 m 0.000 m
Y:	-3846908.521 m 0.001 m	-3846907.300 m 0.001 m
Z:	4412266.242 m 0.001 m	4412266.264 m 0.001 m
LAT:	44 03 04.40891 0.000 m	44 03 04.42193 0.000 m
E LON:	236 54 35.75151 0.000 m	236 54 35.68927 0.000 m
W LON:	123 05 24.24849 0.000 m	123 05 24.31073 0.000 m

EL HGT: 118.106 m 0.001 m 117.723 m 0.001 m
ORTHO HGT: 141.381 m 0.015 m (H = h - N WHERE N = GEOID12B HGT)

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 10)	SPC (3602 OR S)
NORTHING (Y)	4877566.224 m	268104.846 m
EASTING (X)	492785.012 m	1292469.540 m
CONVERGENCE	-0.06262513 deg	-1.77198889 deg
POINT SCALE	0.99960064	1.00001342
COMBINED FACTOR	0.99958213	0.99999490

US NATIONAL GRID DESIGNATOR: 10TDP9278577566 (NAD 83)

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MARK: ork5 (ork5 a 1)

	NAD_83(2011) (2010.0000)	IGS08 (2014.6312)
X:	-2481437.762 m 0.000 m	-2481438.633 m 0.000 m
Y:	-4022606.906 m 0.001 m	-4022605.658 m 0.001 m
Z:	4270236.726 m 0.001 m	4270236.711 m 0.001 m
LAT:	42 17 19.71878 0.000 m	42 17 19.73160 0.000 m
E LON:	238 19 50.45863 0.000 m	238 19 50.39771 0.000 m
W LON:	121 40 09.54137 0.000 m	121 40 09.60229 0.000 m
EL HGT:	1258.832 m 0.001 m	1258.375 m 0.001 m
ORTHO HGT:	1281.300 m 0.015 m	(H = h - N WHERE N = GEOID12B HGT)

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 10)	SPC (3602 OR S)
NORTHING (Y)	4682700.639 m	69784.405 m
EASTING (X)	609705.218 m	1403562.521 m
CONVERGENCE	0.89546314 deg	-0.79998517 deg
POINT SCALE	0.99974808	1.00001151
COMBINED FACTOR	0.99955074	0.99981412

US NATIONAL GRID DESIGNATOR: 10TFM0970582700 (NAD 83)

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MARK: ors1 (ors1 a 1)

	NAD_83(2011) (2010.0000)	IGS08 (2014.6312)
X:	-2226385.021 m 0.000 m	-2226385.891 m 0.000 m
Y:	-4006811.877 m 0.001 m	-4006810.649 m 0.001 m
Z:	4422203.082 m 0.001 m	4422203.069 m 0.001 m
LAT:	44 09 51.27395 0.000 m	44 09 51.28832 0.000 m
E LON:	240 56 28.53969 0.000 m	240 56 28.47865 0.000 m
W LON:	119 03 31.46031 0.000 m	119 03 31.52135 0.000 m
EL HGT:	1438.118 m 0.001 m	1437.641 m 0.001 m
ORTHO HGT:	1456.375 m 0.015 m	(H = h - N WHERE N = GEOID12B HGT)

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 11)	SPC (3601 OR N)
NORTHING (Y)	4892175.994 m	56321.675 m
EASTING (X)	335397.354 m	2615277.980 m
CONVERGENCE	-1.43468060 deg	1.02212217 deg
POINT SCALE	0.99993323	1.00004685
COMBINED FACTOR	0.99970780	0.99982139

US NATIONAL GRID DESIGNATOR: 11TLJ3539792175 (NAD 83)

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MARK: p385 (p385 1)

REF FRAME: NAD_83(2011) (2010.0000) IGS08 (2014.6315)

X: -2414139.276 m 0.000 m -2414140.137 m 0.000 m

Y: -3871572.521 m 0.001 m -3871571.304 m 0.001 m

Z: 4443506.213 m 0.001 m 4443506.226 m 0.001 m

LAT: 44 26 05.43911 0.000 m 44 26 05.45249 0.000 m

E LON: 238 03 15.05617 0.000 m 238 03 14.99404 0.000 m

W LON: 121 56 44.94383 0.000 m 121 56 45.00596 0.000 m

EL HGT: 1121.251 m 0.001 m 1120.848 m 0.001 m

ORTHO HGT: 1142.632 m 0.015 m (H = h - N WHERE N = GEOID12B HGT)

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 10)	SPC (3601 OR N)
NORTHING (Y)	4920712.255 m	86392.376 m
EASTING (X)	583898.498 m	2384895.675 m
CONVERGENCE	0.73807350 deg	-1.02535372 deg
POINT SCALE	0.99968656	0.99997598
COMBINED FACTOR	0.99951084	0.99980021

US NATIONAL GRID DESIGNATOR: 10TEQ8389820712 (NAD 83)

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MARK: p387 (p387 1)

REF FRAME: NAD_83(2011) (2010.0000) IGS08 (2014.6310)

X: -2394555.317 m 0.000 m -2394556.182 m 0.000 m

Y: -3896184.434 m 0.001 m -3896183.215 m 0.001 m

Z: 4432424.001 m 0.001 m 4432424.008 m 0.001 m

LAT: 44 17 48.30676 0.000 m 44 17 48.32018 0.000 m

E LON: 238 25 31.94111 0.000 m 238 25 31.87908 0.000 m

W LON: 121 34 28.05889 0.000 m 121 34 28.12092 0.000 m

EL HGT: 963.051 m 0.001 m 962.636 m 0.001 m

ORTHO HGT: 984.414 m 0.015 m (H = h - N WHERE N = GEOID12B HGT)

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 10)	SPC (3602 OR S)
NORTHING (Y)	4905821.374 m	292728.804 m
EASTING (X)	613720.453 m	1414247.003 m
CONVERGENCE	0.99566686 deg	-0.73508952 deg
POINT SCALE	0.99975905	1.00008900
COMBINED FACTOR	0.99960810	0.99993800

US NATIONAL GRID DESIGNATOR: 10TFQ1372005821 (NAD 83)

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MARK: rsbg (rsbg a 1)

REF FRAME: NAD_83(2011) (2010.0000) IGS08 (2014.6312)

X: -2559295.135 m 0.000 m -2559295.995 m 0.000 m

Y: -3887370.508 m 0.001 m -3887369.276 m 0.001 m

Z: 4346652.920 m 0.001 m 4346652.938 m 0.001 m

LAT: 43 14 06.04991 0.000 m 43 14 06.06268 0.000 m

E LON: 236 38 26.27219 0.000 m 236 38 26.21032 0.000 m

W LON: 123 21 33.72781 0.000 m 123 21 33.78968 0.000 m

EL HGT: 135.641 m 0.001 m 135.248 m 0.001 m
ORTHO HGT: 159.342 m 0.015 m (H = h - N WHERE N = GEOID12B HGT)

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 10)	SPC (3602 OR S)
NORTHING (Y)	4786975.908 m	178180.060 m
EASTING (X)	470820.311 m	1267804.318 m
CONVERGENCE	-0.24616667 deg	-1.95622964 deg
POINT SCALE	0.99961047	0.99989528
COMBINED FACTOR	0.99958921	0.99987401

US NATIONAL GRID DESIGNATOR: 10TDN7082086975 (NAD 83)

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MARK: **sct2** (sct2 1)

REF FRAME:	NAD_83(2011) (2010.0000)	IGS08 (2014.6352)
X:	-2420317.764 m 0.001 m	-2420318.624 m 0.001 m
Y:	-3886115.325 m 0.001 m	-3886114.106 m 0.001 m
Z:	4428564.950 m 0.001 m	4428564.961 m 0.001 m
LAT:	44 14 25.93501 0.000 m	44 14 25.94837 0.000 m
E LON:	238 05 05.53242 0.000 m	238 05 05.47047 0.000 m
W LON:	121 54 54.46758 0.000 m	121 54 54.52953 0.000 m
EL HGT:	1843.859 m 0.002 m	1843.451 m 0.002 m
ORTHO HGT:	1864.970 m 0.015 m	(H = h - N WHERE N = GEOID12B HGT)

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 10)	SPC (3602 OR S)
NORTHING (Y)	4899161.583 m	286886.921 m
EASTING (X)	586626.476 m	1386954.838 m
CONVERGENCE	0.75693058 deg	-0.96815738 deg
POINT SCALE	0.99969229	1.00007005
COMBINED FACTOR	0.99940334	0.99978099

US NATIONAL GRID DESIGNATOR: 10TEP8662699161 (NAD 83)

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CONSTRAINED MARKS
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MARK: **c_16** (c_16 1)

CONSTRAIN: **VER-ONLY TIGHT**

ADJUST X:	-0.041m (0.000m)	Y:	-0.042m (0.000m)	Z:	0.043m (0.000m)
ADJUST N:	-0.009m (0.000m)	E:	-0.013m (0.000m)	H:	0.071m (0.000m)

REF FRAME:	NAD_83(2011) (2010.0000)	IGS08 (2014.6267)
X:	-2416074.548 m 0.000 m	-2416075.409 m 0.000 m
Y:	-3888478.436 m 0.000 m	-3888477.217 m 0.000 m
Z:	4428335.052 m 0.000 m	4428335.064 m 0.000 m
LAT:	44 14 25.90562 0.000 m	44 14 25.91902 0.000 m
E LON:	238 08 44.10254 0.000 m	238 08 44.04062 0.000 m
W LON:	121 51 15.89746 0.000 m	121 51 15.95938 0.000 m
EL HGT:	1515.269 m 0.000 m	1514.861 m 0.000 m
ORTHO HGT:	1536.204 m 0.015 m	(H = h - N WHERE N = GEOID12B HGT)

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 10)	SPC (3602 OR S)
NORTHING (Y)	4899226.520 m	286805.819 m

EASTING (X) 591474.491 m 1391804.416 m
CONVERGENCE 0.79929720 deg -0.92662010 deg
POINT SCALE 0.99970291 1.00007005
COMBINED FACTOR 0.99946544 0.99983249

US NATIONAL GRID DESIGNATOR: 10TEP9147499226 (NAD 83)

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MARK: h3__ (h3__ 1)
CONSTRAIN: VER-ONLY TIGHT
ADJUST X: -0.006m (0.000m) Y: -0.013m (0.000m) Z: 0.018m (0.000m)
ADJUST N: 0.002m (0.000m) E: 0.002m (0.000m) H: 0.023m (0.000m)

REF FRAME: NAD_83(2011) (2010.0000) IGS08 (2014.6295)
X: -2413951.367 m 0.000 m -2413952.228 m 0.000 m
Y: -3871554.506 m 0.000 m -3871553.289 m 0.000 m
Z: 4443619.237 m 0.000 m 4443619.251 m 0.000 m
LAT: 44 26 10.65456 0.000 m 44 26 10.66795 0.000 m
E LON: 238 03 21.83382 0.000 m 238 03 21.77169 0.000 m
W LON: 121 56 38.16618 0.000 m 121 56 38.22831 0.000 m
EL HGT: 1118.472 m 0.000 m 1118.070 m 0.000 m
ORTHO HGT: 1139.846 m 0.015 m (H = h - N WHERE N = GEOID12B HGT)

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 10)	SPC (3601 OR N)
NORTHING (Y)	4920875.108 m	86550.650 m
EASTING (X)	584046.257 m	2385048.420 m
CONVERGENCE	0.73941086 deg	-1.02401855 deg
POINT SCALE	0.99968687	0.99997566
COMBINED FACTOR	0.99951158	0.99980032

US NATIONAL GRID DESIGNATOR: 10TEQ8404620875 (NAD 83)

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MARK: redm (redm a 4)
CONSTRAIN: HOR-ONLY TIGHT
ADJUST X: -0.007m (0.000m) Y: -0.011m (0.001m) Z: 0.013m (0.001m)
ADJUST N: 0.000m (0.000m) E: -0.000m (0.000m) H: 0.018m (0.001m)

REF FRAME: NAD_83(2011) (2010.0000) IGS08 (2014.6312)
X: -2366948.792 m 0.000 m -2366949.659 m 0.000 m
Y: -3916334.868 m 0.001 m -3916333.645 m 0.001 m
Z: 4429451.035 m 0.001 m 4429451.033 m 0.001 m
LAT: 44 15 35.14667 0.000 m 44 15 35.16014 0.000 m
E LON: 238 51 07.68488 0.000 m 238 51 07.62289 0.000 m
W LON: 121 08 52.31512 0.000 m 121 08 52.37711 0.000 m
EL HGT: 920.284 m 0.001 m 919.854 m 0.001 m
ORTHO HGT: 941.407 m 0.015 m (H = h - N WHERE N = GEOID12B HGT)

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 10)	SPC (3602 OR S)
NORTHING (Y)	4902392.827 m	288268.366 m
EASTING (X)	647844.557 m	1448261.000 m
CONVERGENCE	1.29286133 deg	-0.44323534 deg
POINT SCALE	0.99986882	1.00007642
COMBINED FACTOR	0.99972456	0.99993213

US NATIONAL GRID DESIGNATOR: 10TFQ4784402392 (NAD 83)

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MARK: v735 (v735 1)
CONSTRAIN: VER-ONLY TIGHT
ADJUST X: -0.016m (0.000m) Y: -0.019m (0.000m) Z: 0.030m (0.000m)
ADJUST N: 0.004m (0.000m) E: -0.004m (0.000m) H: 0.039m (0.000m)

REF FRAME: NAD_83(2011) (2010.0000) IGS08 (2014.6332)
X: -2393603.905 m 0.000 m -2393604.770 m 0.000 m
Y: -3898338.942 m 0.000 m -3898337.722 m 0.000 m
Z: 4431046.967 m 0.000 m 4431046.974 m 0.000 m
LAT: 44 16 46.11598 0.000 m 44 16 46.12942 0.000 m
E LON: 238 26 59.35571 0.000 m 238 26 59.29368 0.000 m
W LON: 121 33 00.64429 0.000 m 121 33 00.70632 0.000 m
EL HGT: 959.162 m 0.000 m 958.747 m 0.000 m
ORTHO HGT: 980.511 m 0.015 m (H = h - N WHERE N = GEOID12B HGT)

UTM COORDINATES STATE PLANE COORDINATES
UTM (Zone 10) SPC (3602 OR S)
NORTHING (Y) 4903936.492 m 290784.623 m
EASTING (X) 615691.425 m 1416160.767 m
CONVERGENCE 1.01231732 deg -0.71847717 deg
POINT SCALE 0.99976461 1.00008307
COMBINED FACTOR 0.99961427 0.99993268

US NATIONAL GRID DESIGNATOR: 10TFQ1569103936 (NAD 83)

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MARK: x359 (x359 1)
CONSTRAIN: VER-ONLY TIGHT
ADJUST X: -0.010m (0.000m) Y: -0.026m (0.000m) Z: 0.038m (0.000m)
ADJUST N: 0.008m (0.000m) E: 0.005m (0.000m) H: 0.046m (0.000m)

REF FRAME: NAD_83(2011) (2010.0000) IGS08 (2014.6331)
X: -2397399.943 m 0.000 m -2397400.807 m 0.000 m
Y: -3901022.858 m 0.000 m -3901021.638 m 0.000 m
Z: 4426926.884 m 0.000 m 4426926.891 m 0.000 m
LAT: 44 13 33.91426 0.000 m 44 13 33.92769 0.000 m
E LON: 238 25 36.89275 0.000 m 238 25 36.83081 0.000 m
W LON: 121 34 23.10725 0.000 m 121 34 23.16919 0.000 m
EL HGT: 1145.258 m 0.000 m 1144.842 m 0.000 m
ORTHO HGT: 1166.385 m 0.015 m (H = h - N WHERE N = GEOID12B HGT)

UTM COORDINATES STATE PLANE COORDINATES
UTM (Zone 10) SPC (3602 OR S)
NORTHING (Y) 4897974.295 m 284875.376 m
EASTING (X) 613966.635 m 1414256.156 m
CONVERGENCE 0.99536753 deg -0.73414851 deg
POINT SCALE 0.99975974 1.00006534
COMBINED FACTOR 0.99958024 0.99988578

US NATIONAL GRID DESIGNATOR: 10TFP1396697974 (NAD 83)

Mark	Adjustment Series												
	1				2				3				
	Lat	Long (W)	Height (h)	Delta	Lat	Long (W)	Height (h)	Delta	Lat	Long (W)	Height (h)	Delta	
bbr2	NSRS	44 23 59.13611	121 38 07.31319	1941.074	0.001	44 23 59.13612	121 38 07.31325	1941.082	0.008	44 23 59.13609	121 38 07.31319	1941.095	0.008
	SPCS	North	East	Ortho Height (H)	0.001	North	East	Ortho Height (H)	0.008	North	East	Ortho Height (H)	0.008
	Delta	82099.447	2409554.797	1962.450	0.001	82099.448	2409554.796	1962.458	0.008	82099.447	2409554.797	1962.471	0.008
c_15	NSRS	44 15 03.48098	121 49 39.06559	1563.275	0.001	44 15 03.48104	121 49 39.06567	1563.283	0.008	44 15 03.48096	121 49 39.06559	1563.296	0.008
	SPCS	North	East	Ortho Height (H)	0.001	North	East	Ortho Height (H)	0.008	North	East	Ortho Height (H)	0.008
	Delta	287931.147	1393971.307	1584.164	0.001	287931.148	1393971.305	1584.172	0.008	287931.146	1393971.307	1584.185	0.008
c_16	NSRS	44 14 25.90561	121 51 15.89745	1515.251	0.002	44 14 25.90566	121 51 15.89757	1515.259	0.008	44 14 25.90561	121 51 15.89747	1515.271	0.008
	SPCS	North	East	Ortho Height (H)	0.002	North	East	Ortho Height (H)	0.008	North	East	Ortho Height (H)	0.008
	IDB	286805.818	1391804.417	1536.186	0.002	286805.820	1391804.414	1536.194	0.008	286805.818	1391804.416	1536.206	0.008
h3_	NSRS	44 26 10.65456	121 56 38.16620	1118.458	0.001	44 26 10.65457	121 56 38.16626	1118.466	0.008	44 26 10.65455	121 56 38.16616	1118.478	0.008
	SPCS	North	East	Ortho Height (H)	0.001	North	East	Ortho Height (H)	0.008	North	East	Ortho Height (H)	0.008
	IDB	86550.650	2385048.419	1139.832	0.001	86550.650	2385048.418	1139.840	0.008	86550.650	2385048.420	1139.852	0.008
p385	NSRS	44 26 05.43910	121 56 44.94386	1121.233	0.001	44 26 05.43913	121 56 44.94392	1121.241	0.008	44 26 05.43911	121 56 44.94382	1121.254	0.008
	SPCS	North	East	Ortho Height (H)	0.001	North	East	Ortho Height (H)	0.008	North	East	Ortho Height (H)	0.008
	IDB	86392.375	2384895.674	1142.614	0.001	86392.376	2384895.673	1142.622	0.008	86392.375	2384895.675	1142.635	0.008
p387	NSRS	44 17 48.30675	121 34 28.05888	963.032	0.002	44 17 48.30680	121 34 28.05900	963.041	0.009	44 17 48.30675	121 34 28.05888	963.054	0.009
	SPCS	North	East	Ortho Height (H)	0.002	North	East	Ortho Height (H)	0.009	North	East	Ortho Height (H)	0.009
	IDB	292728.804	1414247.003	984.395	0.002	292728.806	1414247.000	984.404	0.009	292728.804	1414247.003	984.417	0.009
sct2	NSRS	44 14 25.93500	121 54 54.46758	1843.841	0.001	44 14 25.93503	121 54 54.46767	1843.850	0.009	44 14 25.93500	121 54 54.46757	1843.862	0.009
	SPCS	North	East	Ortho Height (H)	0.001	North	East	Ortho Height (H)	0.009	North	East	Ortho Height (H)	0.009
	IDB	286886.921	1386954.838	1864.952	0.001	286886.922	1386954.836	1864.961	0.009	286886.921	1386954.839	1864.973	0.009
v735	NSRS	44 16 46.11600	121 33 00.64432	959.140	0.001	44 16 46.11604	121 33 00.64438	959.149	0.009	44 16 46.11598	121 33 00.64429	959.162	0.009
	SPCS	North	East	Ortho Height (H)	0.001	North	East	Ortho Height (H)	0.009	North	East	Ortho Height (H)	0.009
	IDB	290784.623	1416160.766	980.489	0.001	290784.624	1416160.765	980.498	0.009	290784.623	1416160.767	980.511	0.009
x359	NSRS	44 13 33.91425	121 34 23.10724	1145.239	0.002	44 13 33.91431	121 34 23.10732	1145.247	0.008	44 13 33.91429	121 34 23.10722	1145.260	0.008
	SPCS	North	East	Ortho Height (H)	0.002	North	East	Ortho Height (H)	0.008	North	East	Ortho Height (H)	0.008
	IDB	284875.375	1414256.156	1166.366	0.002	284875.377	1414256.155	1166.374	0.008	284875.376	1414256.157	1166.387	0.008