

Southwest Florida Water Management District

N341 – Lake Manatee LiDAR Enhancement Project #: 12POSOW0457

Florida Minimum Technical Standards for Mapping Projects Survey and Map Report

Submitted to:

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Prepared by:

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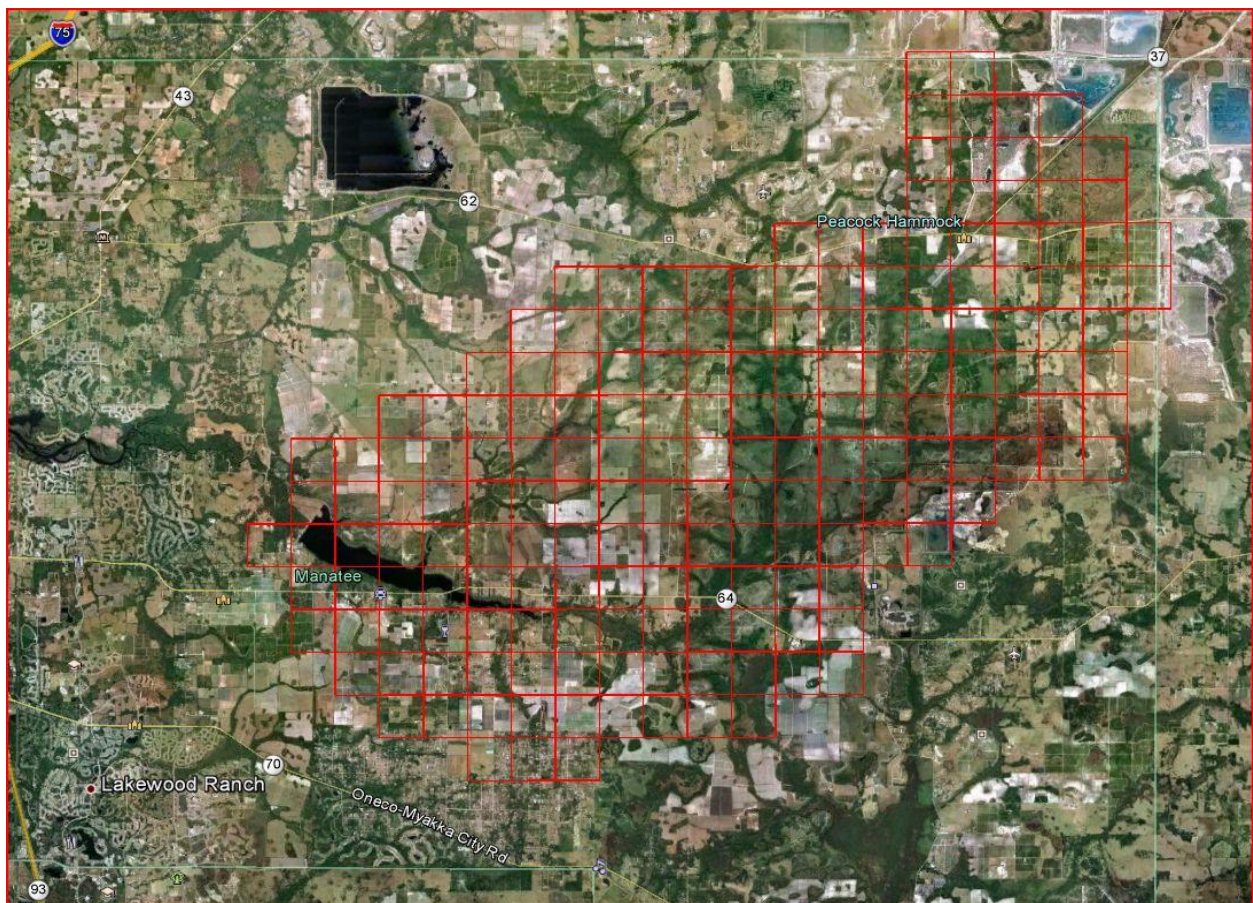


Florida Minimum Technical Standards for Mapping Projects

Survey and Map Report for the Lake Manatee LiDAR Enhancement Project performed for the Southwest Florida Water Management District.

Earth Eye job number: 10049

The Southwest Florida Water Management District (SWFWMD) contracted Earth Eye, LLC (EE) to acquire one-meter (1m) spacing ground LiDAR data over an area approximately one hundred eighty-six (186) square miles. The LiDAR data will be used to develop topography (i.e., Breaklines and one-foot (1ft) contours) for one hundred eighty-six (186) – 5000 ft by 5000 ft formatted tiles. See figure below for project area.



Project Area Image.

I, Mitchell R. Jarrells, a Professional Surveyor and Mapper (PSM) licensed in the state of Florida (LS 6438) do hereby state this Survey and Map Report is correct and accurate, to the best of my knowledge and belief. The data listed below was submitted to SWFWMD and is not valid without this sign Survey and Map Report.

The Certification is not valid without the original signature and raised seal of a Florida Licensed Surveyor and Mapper.

Mitchell R. Jarrells, PSM #6438

Date

Delivered data:

1 Hard Drive containing the following data Structure:

As_Flown_Flightlines	- Shape files contain actual flown flightlines
As_Planned_Flightlines	- Shape files of planned flightlines
Breaklines	- Shape files of Breaklines
Contour	- One (1) foot contours in ESRI format
Digital_Topographic_Database	- Geodatabase of data
EE_Breakline	- Earth Eye format Breaklines
HASH	- Project HASH
Image	- ECW format of digital ortho image of area
LAS_All_Points	- Project area LAS data
Metadata	- Project metadata
Survey_Report	- Signed and Sealed Survey Report pdf
Tile_Scheme	- Project area Tile Scheme

1 paper copy of sign and sealed Survey and Map Report.

Survey and Map Report for Lake Manatee LiDAR Enhancement Project

Project Title

FY 2012 LAKE MANATEE LiDAR ENHANCEMENT (2012-7)

Intended use

Geographic Information System (GIS). Southwest Florida Water Management District (SWFWMD) regularly uses digital topographic information to support regulatory, land management and acquisition, planning, engineering and habitat restoration projects. LiDAR data will support hydrologic modeling activities associated with the Federal Emergency Management Agency (FEMA), and in the creation of Digital Flood Insurance Rate Maps (DFIRM). the LiDAR data will support the creation of Federal Emergency Management Agency Flood Insurance Rate Maps (FEMA FIRM) and integrated ground and surface water model for the Lake Manatee Watershed.

Client

Southwest Florida Water Management District

Client contact information

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Responsible PSM for project

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Name of PSM Company

Earth Eye, LLC
3680 Avalon Park Blvd. East
Suite 200
Orlando, FL 32828
Phone: 407-382-6760
www.eartheye.com

LB Number of PSM Company

Earth Eye, LLC LB #7791

Date of LiDAR, Image and Survey Acquisition

May 21-23, 2012

Horizontal and Vertical Datum's

Horizontal Datum – North American Datum of 1983 (NAD 83), Florida State Plane Coordinate System, West Zone (902).

Vertical Datum – North American Vertical Datum of 1988 (NAVD 88) using GEOID 09 for converting the ellipsoidal heights to orthometric heights.

Units - U.S. Survey foot.

NGS Monuments and CORS Stations Used

EE utilized four (4) Continuing Operated Reference Stations (CORS) were used to control the horizontal and vertical values on the SWFWMD project. The CORS stations used were Bartow (BRTW), Zephyrhills (ZEFR), Mac Dill 6 (MCD6) and Wauchula (WACH). These stations were also used in determining the location values of the base stations used during the LiDAR and image acquisitions. See Appendix C for National Geodetic Survey (NGS) data sheets.

Accuracy Statement of Survey

The ground control survey was provided by SWFWMD and was used to check the overall accuracy of the LiDAR. See Appendix B.

Additional Base Stations used during Acquisition

The base stations set and used by EE were done in accordance with the standards set forth by the National Geodetic Survey (NGS) and Florida Minimum Technical Standards (FMTS). The base station coordinates were processed against one of the four (4) CORS stations previously mentioned. See appendix D for report.

Accuracy Statement of LiDAR

The fundamental Vertical Accuracy (FVA) of the LiDAR bare-earth was tested and meets a 0.60' fundamental accuracy at 95% confidence level using RMSEz x 1.9600 (where as $RMSEz \leq 0.30'$) as defined by the National Standard for Spatial Data Accuracy (NSSDA) in open well defined terrain. Then vertical accuracy testing for LiDAR data over well-defined surfaces will meet or exceed requirements as set forth in the Federal Geographic Data Committee's (FGDC) Geospatial Positioning Accuracy Standards, Part 3: National Standard for Spatial Data Accuracy (NSSDA).

The Calibration image at the end of report will demonstrate the calibration for the horizontal and vertical accuracies based on the 9.5cm flight line to flight line standard. Also at the end of this report is the vertical control report showing the survey to LiDAR comparisons. See Appendix A and E.

Metadata

The hard drive data that accompanies this report is inclusive of the XML formatted metadata template(s) used for topographic mapping deliverables.

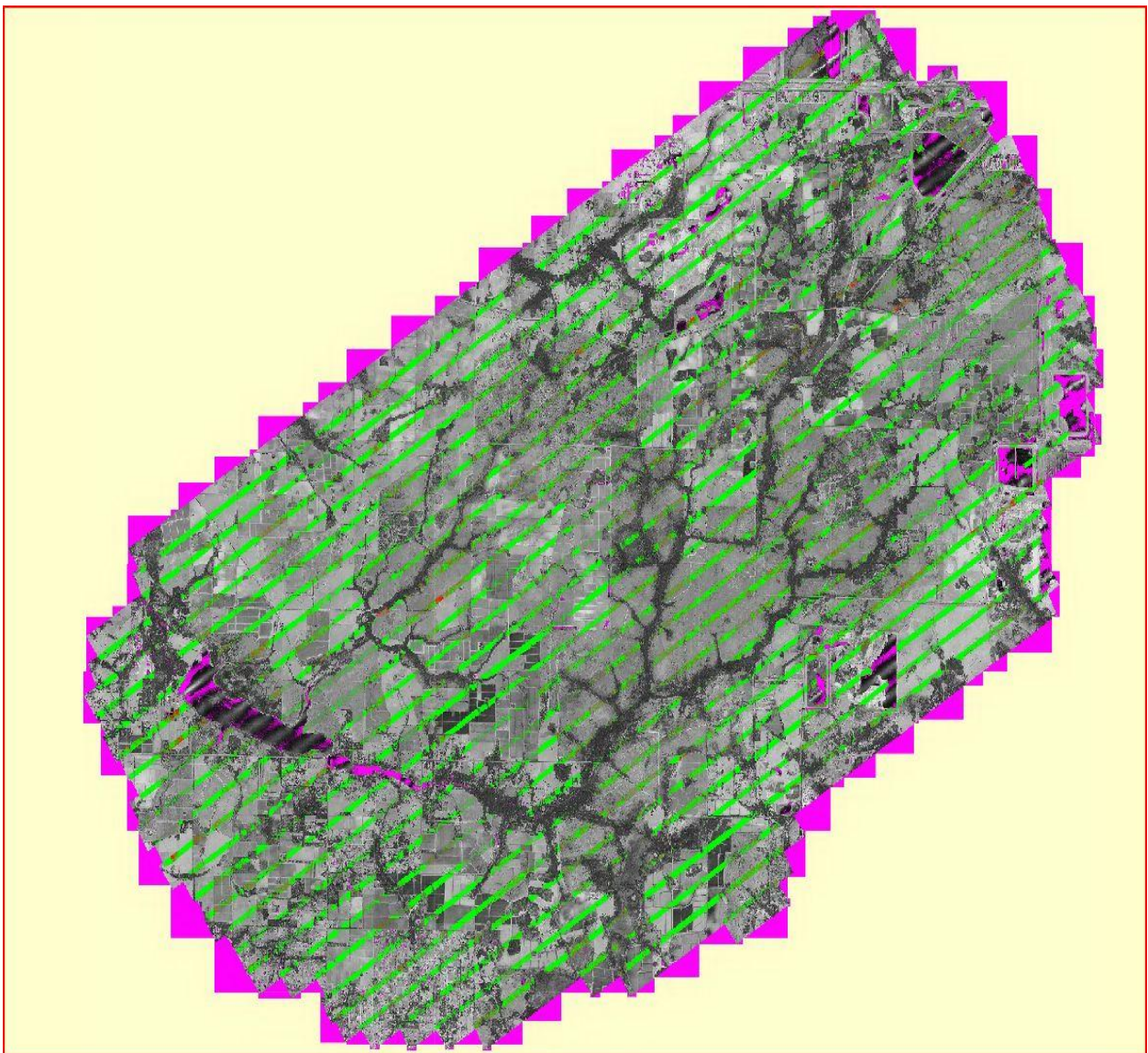
Type of Survey being done

Topographic Survey

Appendix A

Calibration Image

The calibration image is to show the relationship between flight lines. Criteria for the separation tolerance is set according to the project specifications. The criteria used in this calibration image were a vertical separation of 0.15'. The image will show green in the overlap for all areas that are equal to or better than half the tolerance, red if the overlap is out of tolerance.



Base Stations Coordinates utilized by EE

Basestation for Aerial Collection - Lake Manatee, FL				
ID	lat	long	ellip	date
CHN_R7	27 30 53.38664	-81 52 54.17517	6.836	5/21/2012
CHN_R8	27 30 53.97681	-81 52 55.02044	7.057	5/21/2012
Im_R7	27 25 57.46979	-82 23 43.97168	-11.949	5/22/2012
Im_R8	27 25 58.13847	-82 23 43.99106	-11.647	5/22/2012

Appendix B

Control Reports

Hard surface control for absolute position and accuracy.

Name	X	Y	Z	Z TIN	Delta
GPS032	621230.5	1169511	119.89	119.6867	0.2033
GPS035	614230.5	1164072	113.4	113.0511	0.3489
GPS038	613863.9	1157435	101.83	101.4146	0.4154
GPS042	608462.9	1151614	93.65	93.4403	0.2097
GPS004	593046.3	1179793	110.39	110.6218	-0.2318
GPS005	606450.7	1183131	117.21	117.3383	-0.1283
GPS007	610667.3	1203029	128.06	128.1007	-0.0407
GPS008	617388.3	1194368	126.21	126.4099	-0.1999
GPS012	622404.7	1169756	118.04	118.0358	0.0042
GPS013	632538.2	1156373	113.47	113.6621	-0.1921
GPS016	612993.4	1145728	100.29	100.343	-0.053
GPS020	600819.1	1144965	96.85	96.7788	0.0712
GPS023	582939.7	1159138	117.13	117.2523	-0.1223
GPS026	553123.9	1153192	73.32	73.3651	-0.0451
GPS028	571284.7	1121705	99.92	100.0482	-0.1282
GPS030	552327.1	1125585	75.04	74.7978	0.2422
GPS047	559108.8	1142618	50.63	50.7779	-0.1479
GPS051	562393.8	1133761	83.8	83.7095	0.0905
GPS052	536111	1146516	51.25	51.5544	-0.3044
GPS056	560977.1	1155611	75.82	75.822	-0.002
Mean	0.0005				
RMSE	0.1938				

All points Control Report.

Name	X	Y	Z	Z TIN	Delta
GPS001	574382.3	1172338	117.7	118.064	-0.364
GPS002	569614.8	1167947	94.74	95.1366	-0.3966
GPS003	569658.7	1168062	94.65	94.9891	-0.3391
GPS004	593046.3	1179793	110.39	110.6308	-0.2408
GPS005	606450.7	1183131	117.21	117.4069	-0.1969
GPS006	606386.7	1183319	116.41	116.6067	-0.1967
GPS007	610667.3	1203029	128.06	128.0965	-0.0365
GPS008	617388.3	1194368	126.21	126.4189	-0.2089
GPS009	626729.3	1192574	132.11	132.3618	-0.2518
GPS010	639328.9	1184440	127.04	127.0832	-0.0432
GPS011	639136.4	1184338	129.11	129.1798	-0.0698
GPS012	622404.7	1169756	118.04	118.0448	-0.0048
GPS013	632538.2	1156373	113.47	113.6708	-0.2008
GPS014	632593.2	1156107	113.75	114.1207	-0.3707
GPS016	612993.4	1145728	100.29	100.3519	-0.0619
GPS017	613003	1145593	98.93	99.1089	-0.1789
GPS018	613035.7	1145547	98.92	99.6953	-0.7753
GPS019	613099	1145803	99.24	99.2324	0.0076
GPS020	600819.1	1144965	96.85	96.7878	0.0622
GPS021	600999.3	1144920	96.35	96.4613	-0.1113
GPS022	582899.6	1159160	116.9	116.9898	-0.0898
GPS023	582939.7	1159138	117.13	117.2613	-0.1313
GPS024	584832.2	1165439	127.17	127.2859	-0.1159
GPS025	553066.7	1153218	72.16	72.3159	-0.1559
GPS026	553123.9	1153192	73.32	73.383	-0.063
GPS027	571288	1121662	98.67	98.7439	-0.0739
GPS028	571284.7	1121705	99.92	100.0572	-0.1372
GPS029	552309.9	1125579	74.67	74.6834	-0.0134
GPS030	552327.1	1125585	75.04	74.8076	0.2324
GPS032	621230.5	1169511	119.89	119.6958	0.1942
GPS033	621199.8	1169539	119.8	119.8098	-0.0098
GPS034	621168	1169738	119.59	119.5851	0.0049
GPS035	614230.5	1164072	113.4	113.0598	0.3402
GPS036	614305.6	1163989	113.47	113.4022	0.0678
GPS037	614134.2	1164088	112.92	113.1093	-0.1893
GPS038	613863.9	1157435	101.83	101.4544	0.3756
GPS039	613765.5	1157521	102.64	102.719	-0.079
GPS040	613837.1	1157524	102.64	102.7672	-0.1272
GPS042	608462.9	1151614	93.65	93.4493	0.2007
GPS043	608343	1151604	93.52	93.8078	-0.2878
GPS044	608490.6	1151546	93.36	93.7167	-0.3567
GPS045	602505.3	1149562	82.56	82.8076	-0.2476
GPS046	602420	1149407	85.27	85.3159	-0.0459
ROMP33	572792.3	1135691	73.7	73.7193	-0.0193
SID72575	586520	1133853	84.5	84.6941	-0.1941
Mean	0.1089				
RMSE	0.2281				

Appendix C

```
PROGRAM = datasheet95, VERSION = 7.89.6
1      National Geodetic Survey,  Retrieval Date = OCTOBER 26, 2012
DF7046
*****
DF7046  CORS          -  This is a GPS Continuously Operating Reference
Station.
DF7046  DESIGNATION -  BARTOW CORS ARP
DF7046  CORS_ID      -  BRTW
DF7046  PID          -  DF7046
DF7046  STATE/COUNTY-  FL/POLK
DF7046  COUNTRY      -  US
DF7046  USGS QUAD    -  BARTOW (1987)
DF7046
DF7046                      *CURRENT SURVEY CONTROL
DF7046

-----
DF7046* NAD 83(2011) POSITION- 27 56 58.64214(N) 081 46 58.20071(W)
ADJUSTED
DF7046* NAD 83(2011) ELLIP HT- 13.575 (meters) (08/??/11)
ADJUSTED
DF7046* NAD 83(2011) EPOCH - 2010.00
DF7046* NAVD 88 ORTHO HEIGHT - 39.844 (meters) 130.72 (feet)
ADJUSTED
DF7046

-----
DF7046 NAD 83(2011) X - 805,863.950 (meters) COMP
DF7046 NAD 83(2011) Y - -5,580,464.277 (meters) COMP
DF7046 NAD 83(2011) Z - 2,971,581.212 (meters) COMP
DF7046 GEOID HEIGHT - -26.26 (meters)
GEOID12A
DF7046 HORZ ORDER - SPECIAL (CORS)
DF7046 VERT ORDER - SECOND CLASS I
DF7046 ELLP ORDER - SPECIAL (CORS)
DF7046
DF7046.The coordinates were established by GPS observations
DF7046.and adjusted by the National Geodetic Survey in August 2011.
DF7046
DF7046.NAD 83(2011) refers to NAD 83 coordinates where the reference
DF7046.frame has been affixed to the stable North American Tectonic Plate.
DF7046
DF7046.The coordinates are valid at the epoch date displayed above
DF7046.which is a decimal equivalence of Year/Month/Day.
DF7046
DF7046.The orthometric height was determined by differential leveling and
DF7046.adjusted by the NATIONAL GEODETIC SURVEY
DF7046.in May 2010.
DF7046
DF7046.No vertical observational check was made to the station.
DF7046
DF7046.The PID for the CORS L1 Phase Center is DF7047.
DF7046
```

DF7046.The XYZ, and position/ellipsoidal ht. are equivalent.
DF7046
DF7046.The ellipsoidal height was determined by GPS observations
DF7046.and is referenced to NAD 83.
DF7046
DF7046. The following values were computed from the NAD 83(2011) position.
DF7046

DF7046;		North	East	Units	Scale	Factor
Converg.						
DF7046;SPC FL W	-	400,645.544	221,369.597	MT	0.99994681	+0 06
06.4						
DF7046;SPC FL W	-	1,314,451.26	726,276.75	sFT	0.99994681	+0 06
06.4						
DF7046						
DF7046!	-	Elev Factor	x	Scale Factor	=	Combined Factor
DF7046!SPC FL W	-	0.99999787	x	0.99994681	=	0.99994468
DF7046						
DF7046		SUPERSEDED SURVEY CONTROL				
DF7046						
DF7046	NAD 83(CORS)-	27 56 58.64223(N)	081 46 58.20127(W)	AD(2002.00)	c	
DF7046	ELLIP H (08/??/03)	13.575 (m)		GP(2002.00)	c	

c
DF7046
DF7046.Superseded values are not recommended for survey control.
DF7046
DF7046.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
DF7046.[See file dsdata.txt](#) to determine how the superseded data were derived.
DF7046
DF7046_U.S. NATIONAL GRID SPATIAL ADDRESS: 17RML2299291868(NAD 83)
DF7046
DF7046_MARKER: STATION IS THE ANTENNA REFERENCE POINT OF THE GPS ANTENNA
DF7046_MARK LOGO: NONE
DF7046_MAGNETIC: N = NO MAGNETIC MATERIAL
DF7046
DF7046

STATION DESCRIPTION

DF7046
DF7046'DESCRIBED BY NATIONAL GEODETIC SURVEY 2011
DF7046'STATION IS A GPS CORS. LATEST INFORMATION INCLUDING POSITIONS AND
DF7046'VELOCITIES ARE AVAILABLE IN THE COORDINATE AND LOG FILES ACCESSIBLE
DF7046'BY ANONYMOUS FTP OR THE WORLDWIDE WEB.
DF7046' ftp://cors.ngs.noaa.gov/cors/README.txt
DF7046' ftp://cors.ngs.noaa.gov/cors/coord/coord_08
DF7046' ftp://cors.ngs.noaa.gov/cors/station_log
DF7046' http://geodesy.noaa.gov/CORS

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PROGRAM = datasheet95, VERSION = 7.89.6
1      National Geodetic Survey,      Retrieval Date = OCTOBER 26, 2012
DI4161
*****
DI4161  CORS          -   This is a GPS Continuously Operating Reference
Station.
DI4161  DESIGNATION -   MAC DILL AFB 6 CORS ARP
DI4161  CORS_ID      -   MCD6
DI4161  PID          -   DI4161
DI4161  STATE/COUNTY-   FL/HILLSBOROUGH
DI4161  COUNTRY      -   US
DI4161  USGS QUAD    -   PORT TAMPA (1983)
DI4161
DI4161                                     *CURRENT SURVEY CONTROL
DI4161

-----
DI4161* NAD 83(2011) POSITION- 27 50 59.33773(N) 082 31 57.32001(W)
ADJUSTED
DI4161* NAD 83(2011) ELLIP HT-  -14.200 (meters)          (08/??/11)
ADJUSTED
DI4161* NAD 83(2011) EPOCH   - 2010.00
DI4161* NAVD 88 ORTHO HEIGHT -          *(meters)          *(feet)
DI4161

-----
DI4161  NAD 83(2011) X   -   733,442.180 (meters)          COMP
DI4161  NAD 83(2011) Y   -  -5,595,638.686 (meters)          COMP
DI4161  NAD 83(2011) Z   -   2,961,793.415 (meters)          COMP
DI4161  GEOID HEIGHT    -           -24.80 (meters)
GEOID12A
DI4161  HORZ ORDER      -   SPECIAL (CORS)
DI4161  ELLP ORDER      -   SPECIAL (CORS)
DI4161
DI4161.The coordinates were established by GPS observations
DI4161.and adjusted by the National Geodetic Survey in August 2011.
DI4161
DI4161.NAD 83(2011) refers to NAD 83 coordinates where the reference
DI4161.frame has been affixed to the stable North American Tectonic Plate.
DI4161
DI4161.The coordinates are valid at the epoch date displayed above
DI4161.which is a decimal equivalence of Year/Month/Day.
DI4161
DI4161.The PID for the CORS L1 Phase Center is DI4162.
DI4161
DI4161.The XYZ, and position/ellipsoidal ht. are equivalent.
DI4161
DI4161.The ellipsoidal height was determined by GPS observations
DI4161.and is referenced to NAD 83.
DI4161
DI4161. The following values were computed from the NAD 83(2011) position.
DI4161
DI4161;
           North          East          Units Scale Factor
Converg.
DI4161;SPC FL W      -   389,680.738   147,543.768   MT   0.99997513   -0 14
55.7

```



```

DI4161;SPC FL W      - 1,278,477.55      484,066.51      sFT  0.99997513      -0 14
55.7
DI4161
DI4161!              - Elev Factor x Scale Factor = Combined Factor
DI4161!SPC FL W      - 1.00000223 x 0.99997513 = 0.99997736
DI4161
DI4161
DI4161
DI4161
DI4161
DI4161
DI4161              SUPERSEDED SURVEY CONTROL
DI4161
DI4161              NAD 83(CORS)- 27 50 59.33773(N)      082 31 57.32056(W) AD(2002.00) c
DI4161              ELLIP H (04/??/07) -14.197 (m)      GP(2002.00) c
c
DI4161
DI4161.Superseded values are not recommended for survey control.
DI4161
DI4161.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
DI4161.See file dsdata.txt to determine how the superseded data were
derived.
DI4161
DI4161_U.S. NATIONAL GRID SPATIAL ADDRESS: 17RLL4909381508(NAD 83)
DI4161
DI4161_MARKER: STATION IS THE ANTENNA REFERENCE POINT OF THE GPS ANTENNA
DI4161
DI4161
DI4161              STATION DESCRIPTION
DI4161
DI4161'DESCRIBED BY NATIONAL GEODETIC SURVEY 2011
DI4161'STATION IS A GPS CORS. LATEST INFORMATION INCLUDING POSITIONS AND
DI4161'VELOCITIES ARE AVAILABLE IN THE COORDINATE AND LOG FILES ACCESSIBLE
DI4161'BY ANONYMOUS FTP OR THE WORLDWIDE WEB.
DI4161' ftp://cors.ngs.noaa.gov/cors/README.txt
DI4161' ftp://cors.ngs.noaa.gov/cors/coord/coord_08
DI4161' ftp://cors.ngs.noaa.gov/cors/station_log
DI4161' http://geodesy.noaa.gov/CORS

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PROGRAM = datasheet95, VERSION = 7.89.6
1      National Geodetic Survey,      Retrieval Date = OCTOBER 26, 2012
DH3757
*****
DH3757  CORS          -   This is a GPS Continuously Operating Reference
Station.
DH3757  DESIGNATION -   WAUCHULA CORS ARP
DH3757  CORS_ID     -   WACH
DH3757  PID         -   DH3757
DH3757  STATE/COUNTY-   FL/HARDEE
DH3757  COUNTRY     -   US
DH3757  USGS QUAD   -   FT GREEN (1987)
DH3757
DH3757                                     *CURRENT SURVEY CONTROL
DH3757

-----
DH3757* NAD 83(2011) POSITION- 27 30 51.04264(N) 081 52 56.61587(W)
ADJUSTED
DH3757* NAD 83(2011) ELLIP HT- 10.718 (meters) (08/??/11)
ADJUSTED
DH3757* NAD 83(2011) EPOCH - 2010.00
DH3757* NAVD 88 ORTHO HEIGHT - 35.734 (meters) 117.24 (feet)
ADJUSTED
DH3757

-----
DH3757 NAD 83(2011) X - 799,336.165 (meters) COMP
DH3757 NAD 83(2011) Y - -5,604,082.850 (meters) COMP
DH3757 NAD 83(2011) Z - 2,928,868.771 (meters) COMP
DH3757 GEOID HEIGHT - -25.01 (meters)
GEOID12A
DH3757 HORZ ORDER - SPECIAL (CORS)
DH3757 VERT ORDER - SECOND CLASS I
DH3757 ELLP ORDER - SPECIAL (CORS)
DH3757
DH3757.The coordinates were established by GPS observations
DH3757.and adjusted by the National Geodetic Survey in August 2011.
DH3757
DH3757.NAD 83(2011) refers to NAD 83 coordinates where the reference
DH3757.frame has been affixed to the stable North American Tectonic Plate.
DH3757
DH3757.The coordinates are valid at the epoch date displayed above
DH3757.which is a decimal equivalence of Year/Month/Day.
DH3757
DH3757.The orthometric height was determined by differential leveling and
DH3757.adjusted by the NATIONAL GEODETIC SURVEY
DH3757.in May 2010.
DH3757
DH3757.No vertical observational check was made to the station.
DH3757
DH3757.The PID for the CORS L1 Phase Center is DH3758.
DH3757
DH3757.The XYZ, and position/ellipsoidal ht. are equivalent.
DH3757

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PROGRAM = datasheet95, VERSION = 7.89.6
1 National Geodetic Survey, Retrieval Date = OCTOBER 26, 2012
DF7990

DF7990 CORS - This is a GPS Continuously Operating Reference Station.

DF7990 DESIGNATION - ZEPHYRHILLS CORS ARP

DF7990 CORS_ID - ZEFR

DF7990 PID - DF7990

DF7990 STATE/COUNTY- FL/PASCO

DF7990 COUNTRY - US

DF7990 USGS QUAD - ZEPHYRHILLS (1993)

DF7990

*CURRENT SURVEY CONTROL

DF7990

DF7990* NAD 83(2011) POSITION- 28 13 39.32218(N) 082 09 52.67160(W)
ADJUSTED

DF7990* NAD 83(2011) ELLIP HT- 0.025 (meters) (08/??/11)
ADJUSTED

DF7990* NAD 83(2011) EPOCH - 2010.00

DF7990* [NAVD 88](#) ORTHO HEIGHT - 26.251 (meters) 86.13 (feet)
ADJUSTED

DF7990

DF7990 NAD 83(2011) X - 766,681.321 (meters) COMP

DF7990 NAD 83(2011) Y - -5,571,329.992 (meters) COMP

DF7990 NAD 83(2011) Z - 2,998,751.207 (meters) COMP

DF7990 GEOID HEIGHT - -26.21 (meters)

GEOID12A

DF7990 HORZ ORDER - SPECIAL (CORS)

DF7990 VERT ORDER - FIRST CLASS II

DF7990 ELLP ORDER - SPECIAL (CORS)

DF7990

DF7990.The coordinates were established by GPS observations

DF7990.and adjusted by the National Geodetic Survey in August 2011.

DF7990

DF7990.NAD 83(2011) refers to NAD 83 coordinates where the reference

DF7990.frame has been affixed to the stable North American Tectonic Plate.

DF7990

DF7990.The coordinates are valid at the epoch date displayed above

DF7990.which is a decimal equivalence of Year/Month/Day.

DF7990

DF7990.The orthometric height was determined by differential leveling and

DF7990.adjusted by the NATIONAL GEODETIC SURVEY

DF7990.in May 2010.

DF7990

DF7990.No vertical observational check was made to the station.

DF7990

DF7990.The PID for the CORS L1 Phase Center is DF7991.

DF7990

DF7990.The XYZ, and position/ellipsoidal ht. are equivalent.
DF7990
DF7990.The ellipsoidal height was determined by GPS observations
DF7990.and is referenced to NAD 83.
DF7990
DF7990. The following values were computed from the NAD 83(2011) position.
DF7990

DF7990;		North	East	Units	Scale	Factor
Converg.						
DF7990;SPC FL W	-	431,440.243	183,841.676	MT	0.99994440	-0 04
40.3						
DF7990;SPC FL W	-	1,415,483.53	603,153.90	sFT	0.99994440	-0 04
40.3						
DF7990						
DF7990!	-	Elev Factor	x	Scale Factor	=	Combined Factor
DF7990!SPC FL W	-	1.00000000	x	0.99994440	=	0.99994440
DF7990						
DF7990		SUPERSEDED SURVEY CONTROL				
DF7990						
DF7990	NAD 83(CORS)-	28 13 39.32227(N)		082 09 52.67214(W)	AD(2002.00)	c
DF7990	ELLIP H (09/??/03)	0.029 (m)			GP(2002.00)	c

c
DF7990
DF7990.Superseded values are not recommended for survey control.
DF7990
DF7990.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
DF7990.[See file dsdata.txt](#) to determine how the superseded data were derived.
DF7990
DF7990_U.S. NATIONAL GRID SPATIAL ADDRESS: 17RLM8572722963(NAD 83)
DF7990
DF7990_MARKER: STATION IS THE ANTENNA REFERENCE POINT OF THE GPS ANTENNA
DF7990_MARK LOGO: NONE
DF7990_MAGNETIC: N = NO MAGNETIC MATERIAL
DF7990
DF7990
DF7990 STATION DESCRIPTION
DF7990
DF7990'DESCRIBED BY NATIONAL GEODETIC SURVEY 2011
DF7990'STATION IS A GPS CORS. LATEST INFORMATION INCLUDING POSITIONS AND
DF7990'VELOCITIES ARE AVAILABLE IN THE COORDINATE AND LOG FILES ACCESSIBLE
DF7990'BY ANONYMOUS FTP OR THE WORLDWIDE WEB.
DF7990' ftp://cors.ngs.noaa.gov/cors/README.txt
DF7990' ftp://cors.ngs.noaa.gov/cors/coord/coord_08
DF7990' ftp://cors.ngs.noaa.gov/cors/station_log
DF7990' http://geodesy.noaa.gov/CORS

Appendix D

Project Information	Coordinate System
Name:	Default
Size:	WGS 1984
Modified:	Zone: Default
Reference number:	Geoid:
Description:	Vertical datum:

Baseline Processing Report

Processing Summary

Observation	From	To	Solution Type	H. Prec. (Meter)	V. Prec. (Meter)	Geodetic Az.	Ellipsoid Dist. (Meter)	ΔHeight (Meter)
WACH --- r8-lm (B1)	WACH	r8-lm	Fixed	0.010	0.032	260°02'19"	51513.600	-22.375
r8-lm --- r7-lm (B3)	r8-lm	r7-lm	Fixed	0.002	0.003	178°31'05"	20.589	-0.301
WACH --- r7-lm (B2)	WACH	r7-lm	Fixed	0.011	0.032	260°00'58"	51516.719	-22.642

Acceptance Summary

Processed	Passed	Flag	Fail
3	3	0	0

Date: 10/26/2012 4:33:51 PM	Project:	Trimble Business Center
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Project Information	Coordinate System
Name:	Default
Size:	WGS 1984
Modified:	Zone: Default
Reference number:	Geoid:
Description:	Vertical datum:

Baseline Processing Report

Processing Summary

Observation	From	To	Solution Type	H. Prec. (Meter)	V. Prec. (Meter)	Geodetic Az.	Ellipsoid Dist. (Meter)	ΔHeight (Meter)
WACH --- chn_r7 (B2)	WACH	chn_r7	Fixed	0.001	0.003	42°52'54"	98.459	-3.892
chn_r7 --- chn_r8 (B1)	chn_r7	chn_r8	Fixed	0.001	0.002	308°03'52"	29.464	0.222
WACH --- chn_r8 (B3)	WACH	chn_r8	Fixed	0.001	0.003	25°52'26"	100.375	-3.678

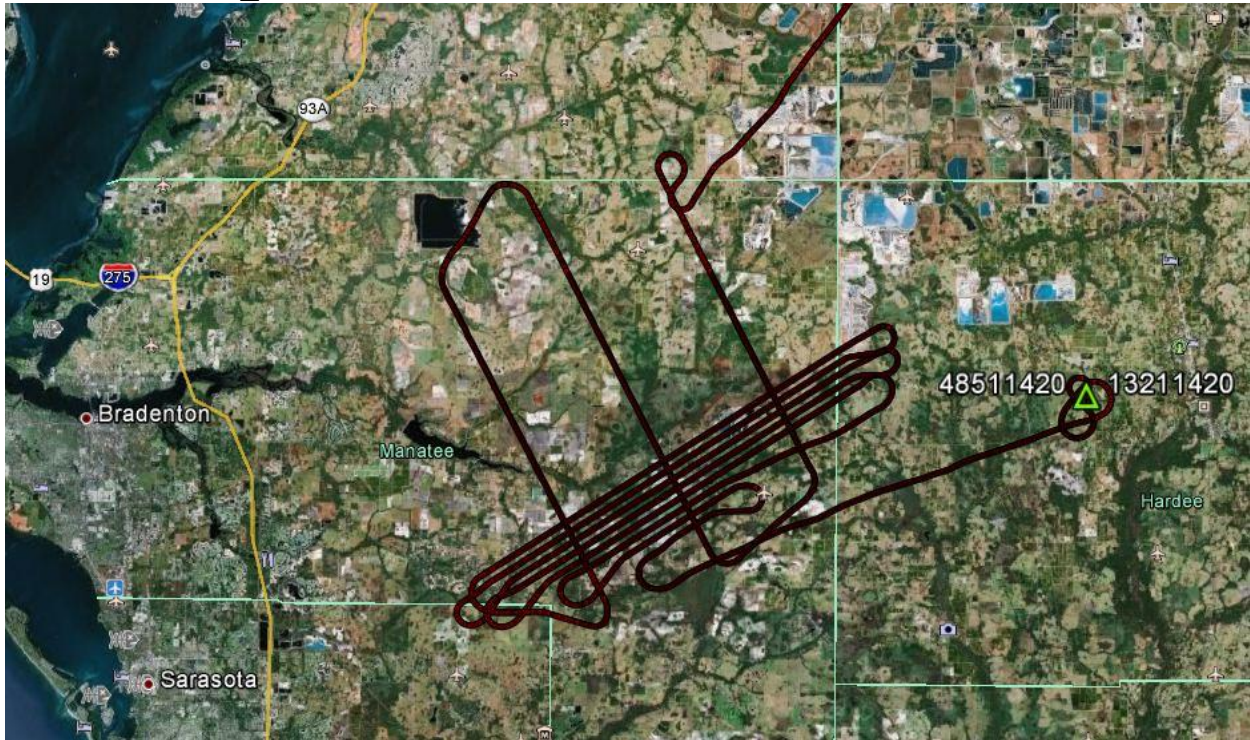
Acceptance Summary

Processed	Passed	Flag	Fail
3	3	0	0

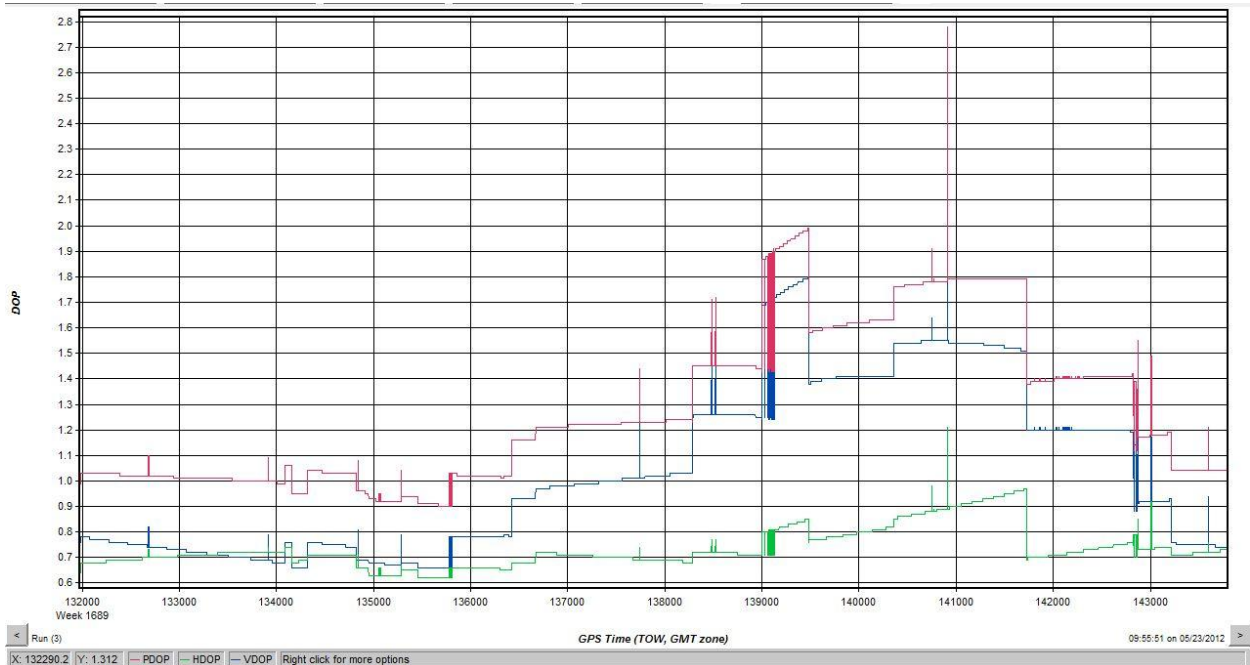
Date: 10/26/2012 4:14:53 PM	Project:	Trimble Business Center
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Appendix E

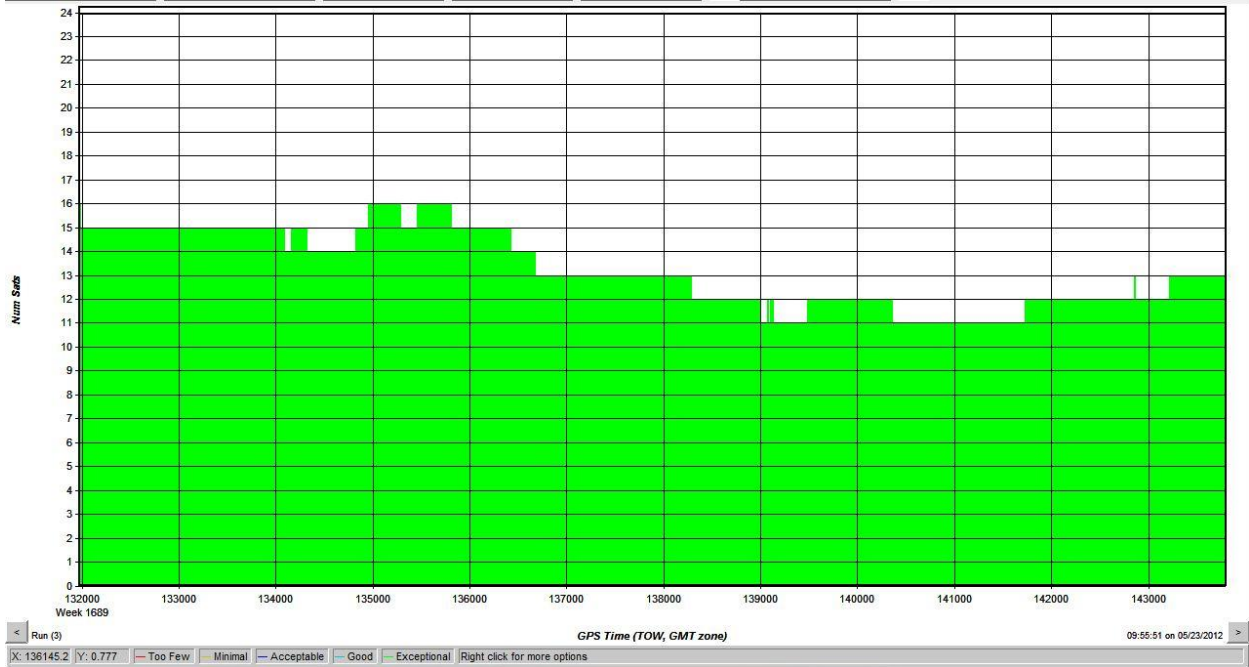
Mission 120521_A



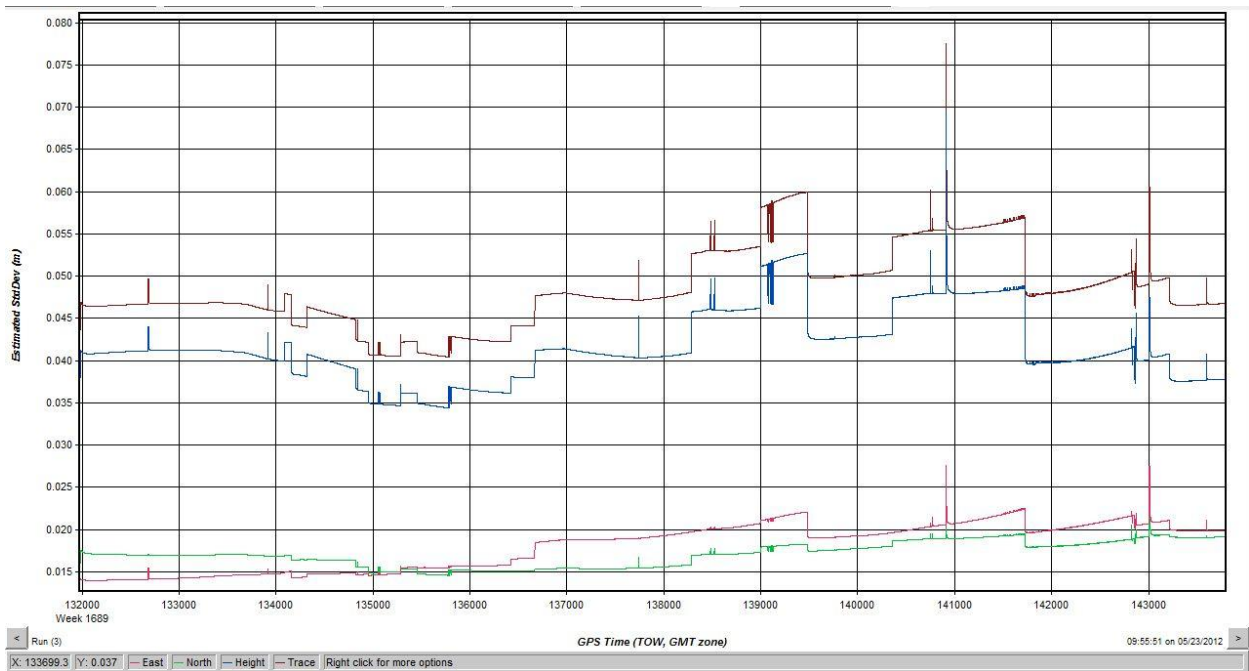
Trajectory Map



DOP Map



Number of Satellites

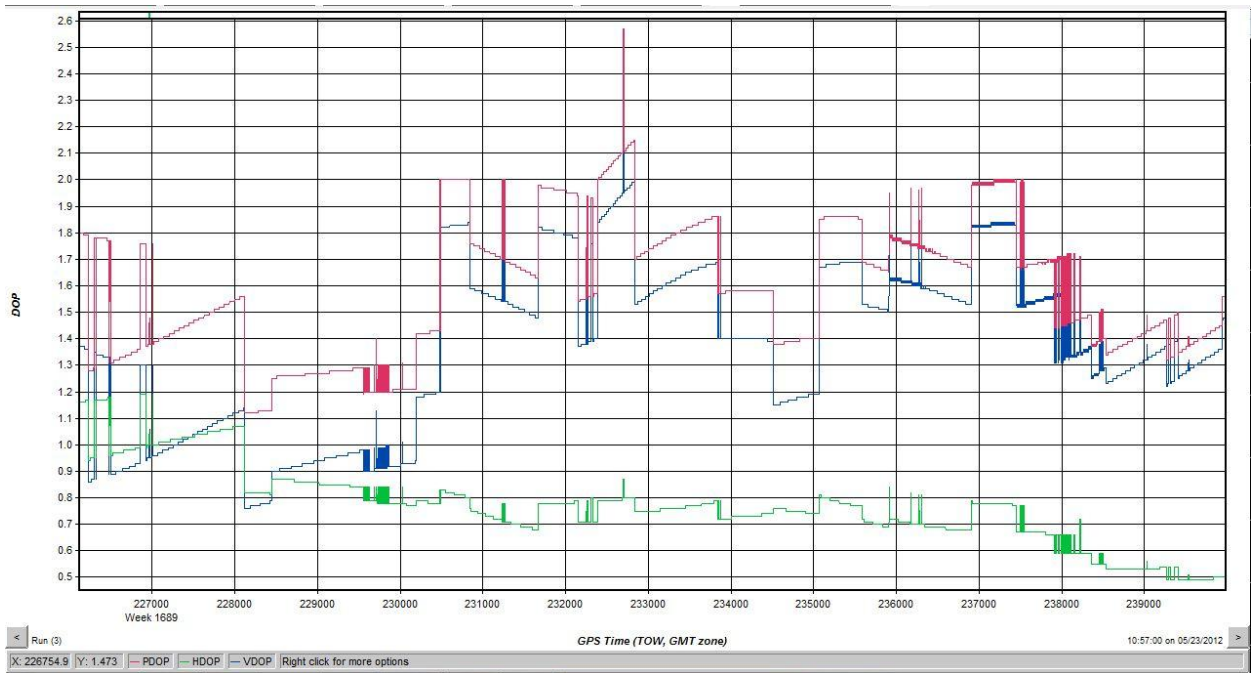


Positional Accuracy.

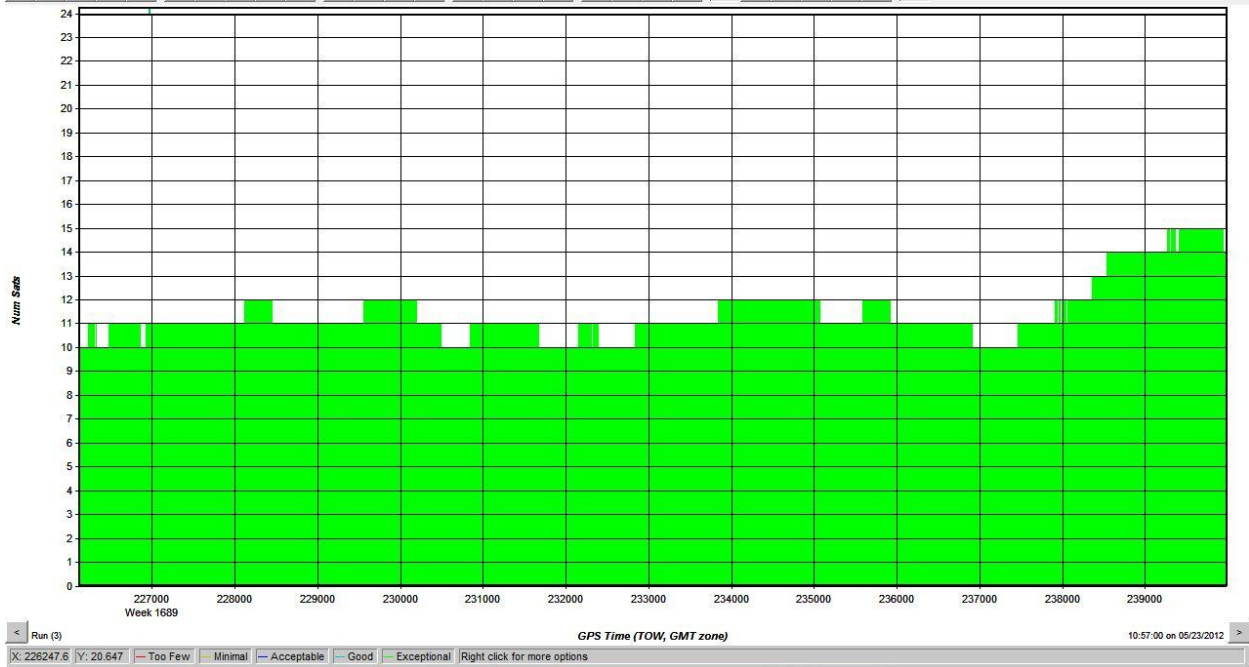
Mission 120522_A



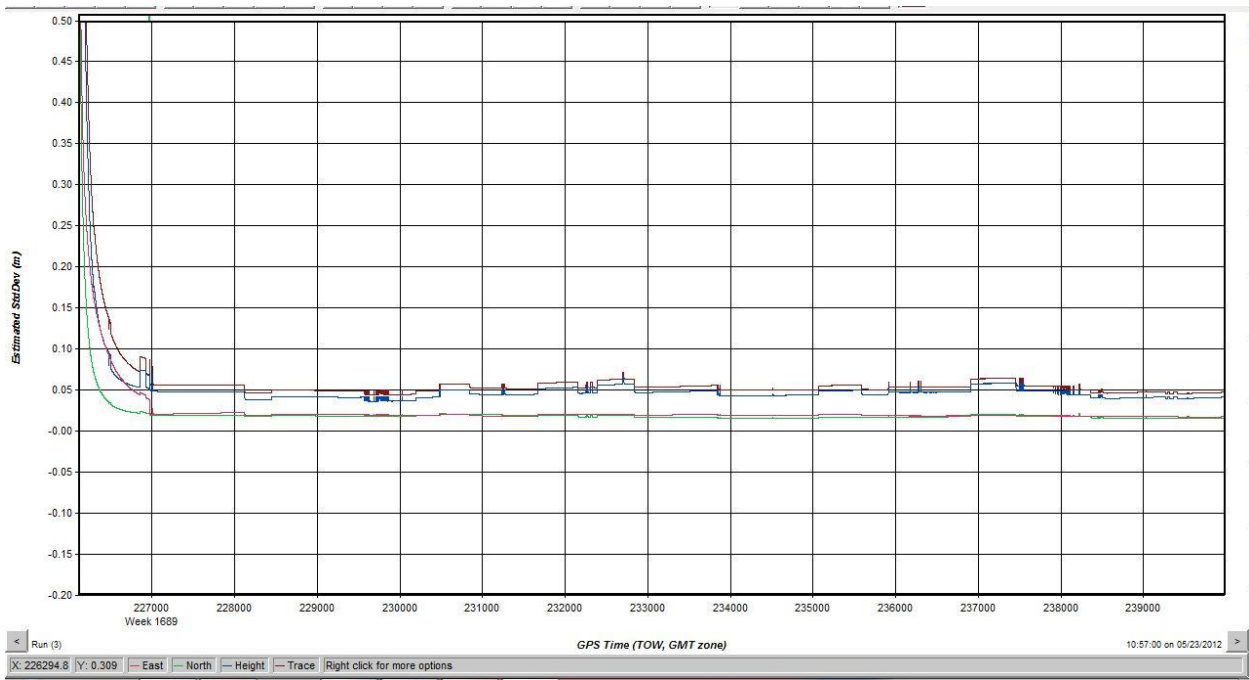
Trajectory Map



DOP Map

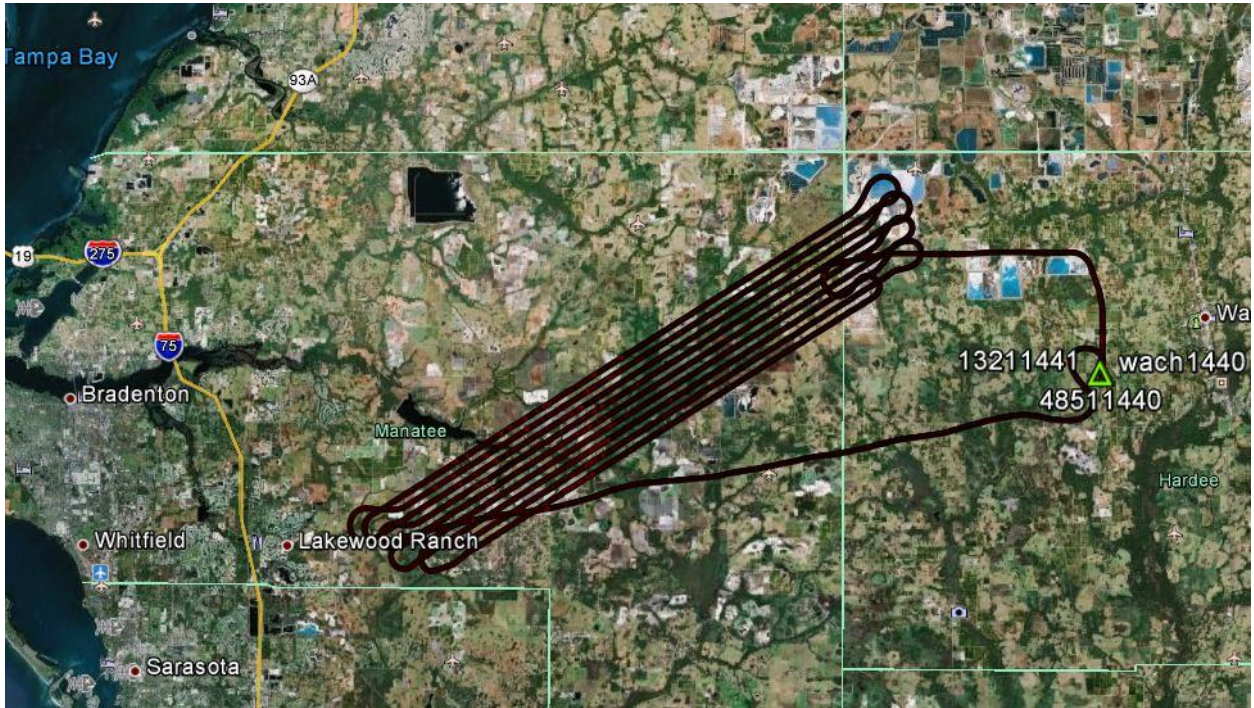


Number of Satellites

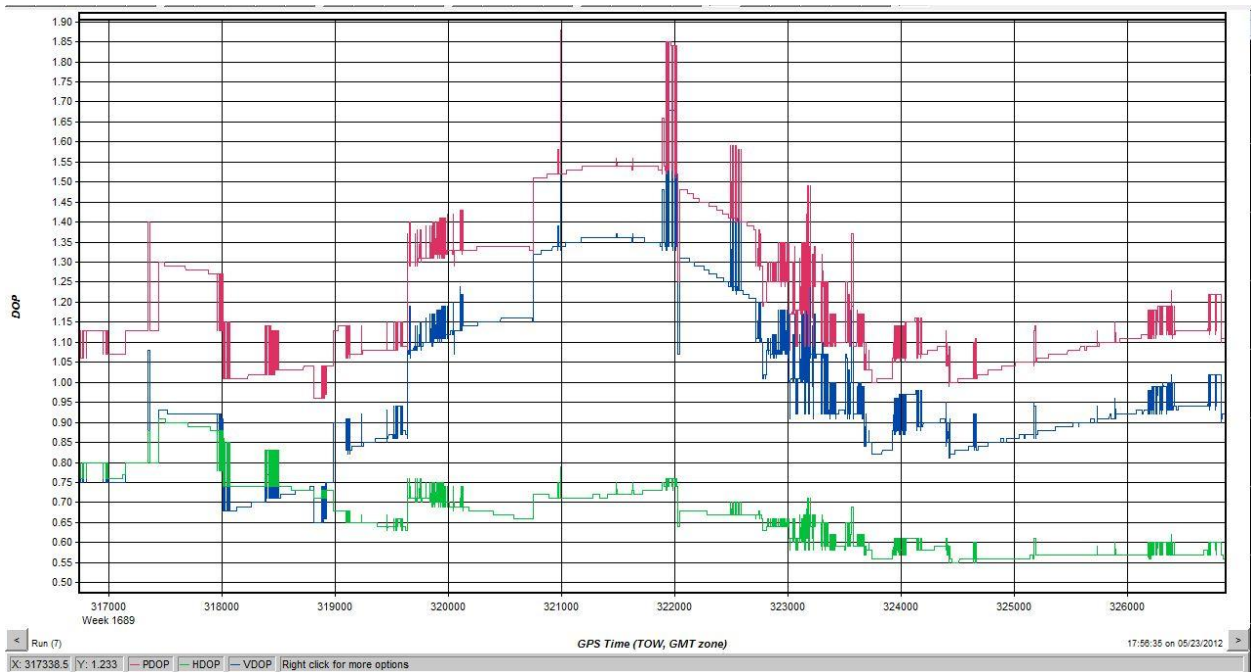


Positional Accuracy

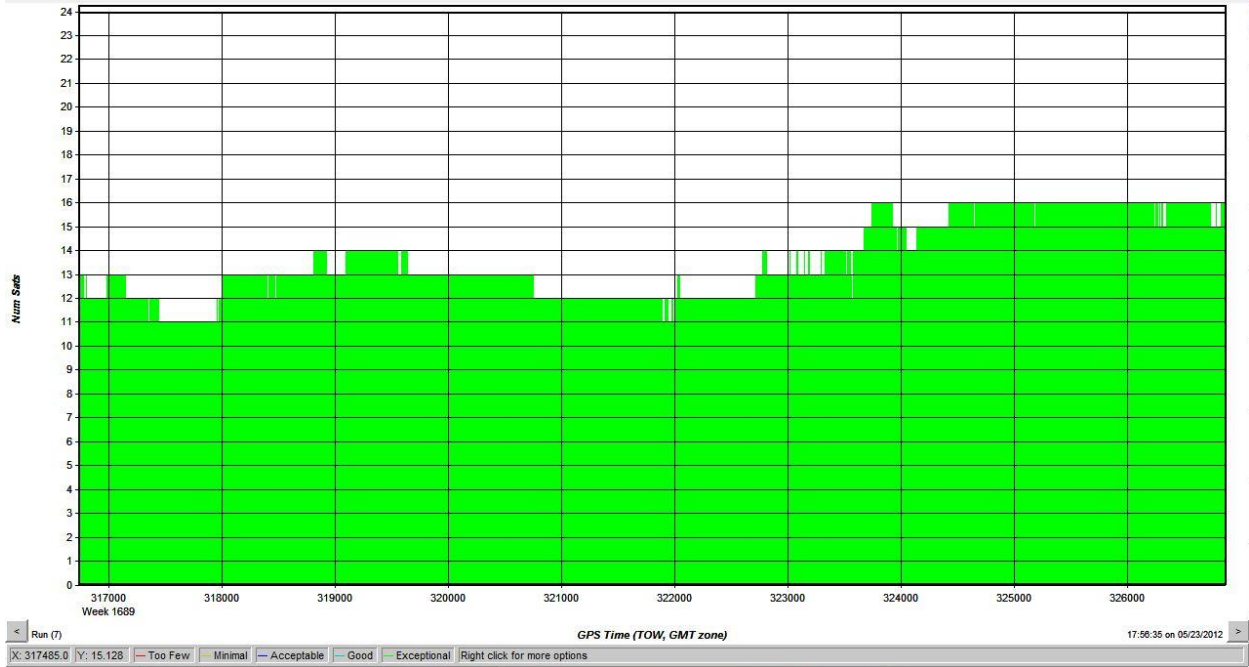
Mission 120523_B



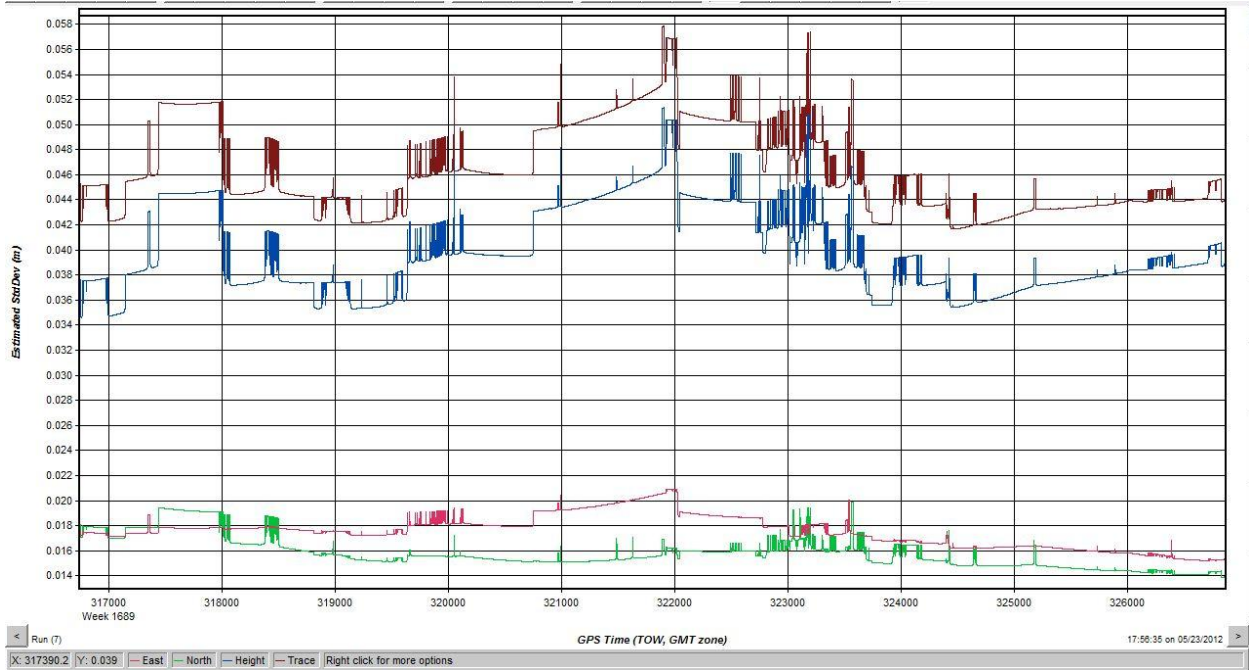
Trajectory Map



DOP Map



Number of Satellites



Positional Accuracy