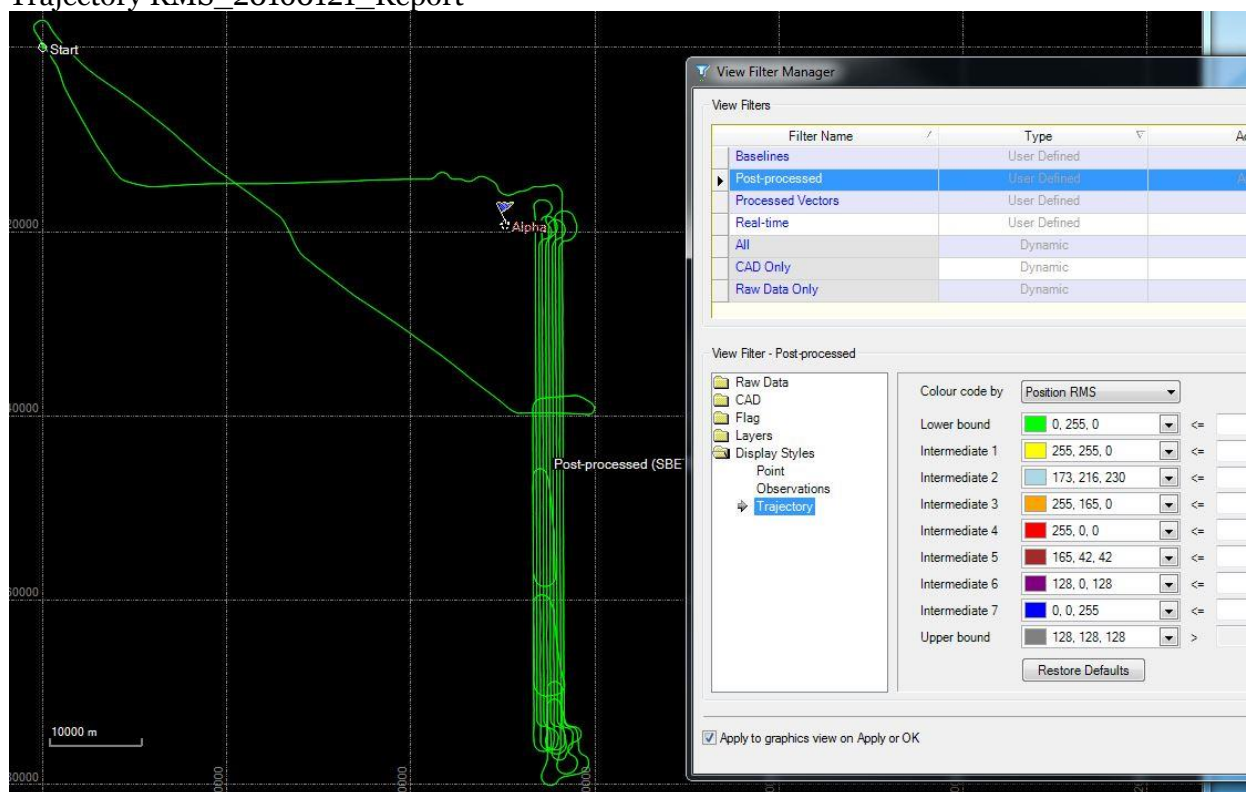


# Appendix D: GPS and IMU Processing Reports for Each Mission

Mission 20160121

## Trajectory RMS\_20160121\_Report



## OPUS solution\_ALPHA\_20160121

FILE: 6790021m40.16o OP1453470014758

2005 NOTE: The IGS precise and IGS rapid orbits were not available  
2005 at processing time. The IGS ultra-rapid orbit was/will be used to  
2005 process the data.  
2005

### NGS OPUS SOLUTION REPORT

=====

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

For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [RPEREZ@ACA-NET.COM](mailto:RPEREZ@ACA-NET.COM) DATE: January 22, 2016  
RINEX FILE: 6790021m.16o TIME: 13:41:09 UTC

SOFTWARE: page5 1209.04 master50.pl 022814 START: 2016/01/21 12:40:00  
EPHEMERIS: igu18804.eph [ultra-rapid] STOP: 2016/01/21 18:20:00  
NAV FILE: brdc0210.16n OBS USED: 11164 / 11733 : 95%  
ANT NAME: LEIGS14 NONE # FIXED AMB: 68 / 69 : 99%  
ARP HEIGHT: 2.00 OVERALL RMS: 0.013(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2016.0564)

X: 887472.575(m) 0.003(m) 887471.787(m) 0.003(m)  
Y: -5559221.288(m) 0.015(m) -5559219.720(m) 0.015(m)  
Z: 2987934.235(m) 0.018(m) 2987934.071(m) 0.018(m)

LAT: 28 7 0.93914 0.011(m) 28 7 0.96005 0.011(m)  
E LON: 279 4 12.53632 0.002(m) 279 4 12.51687 0.002(m)  
W LON: 80 55 47.46368 0.002(m) 80 55 47.48313 0.002(m)  
EL HGT: -12.780(m) 0.022(m) -14.333(m) 0.022(m)  
ORTHO HGT: 15.295(m) 0.039(m) [NAVD88 (Computed using GEOID12B)]

UTM COORDINATES STATE PLANE COORDINATES  
UTM (Zone 17) SPC (0901 FL E)  
Northing (Y) [meters] 3110157.131 419168.168  
Easting (X) [meters] 506889.766 206892.118  
Convergence [degrees] 0.03305930 0.03305930  
Point Scale 0.99960059 0.99994176  
Combined Factor 0.99960260 0.99994377

US NATIONAL GRID DESIGNATOR: 17RNM0688910157(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DG9757	DLND DELAND CORS ARP	N290322.897	W0811547.480	109101.7
DF7046	BRTW BARTOW CORS ARP	N275658.642	W0814658.200	85899.1
DF5773	ORMD ORMOND BEACH CORS ARP	N291753.469	W0810632.013	132080.9

NEAREST NGS PUBLISHED CONTROL POINT

AK6935	FLGPS 53 AZ MK	N280700.938	W0805547.464	0.0
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

## OPUS solution\_CHARLIE\_20160121

FILE: 6823021m46.16o OP1453469716820

2005 NOTE: The IGS precise and IGS rapid orbits were not available  
2005 at processing time. The IGS ultra-rapid orbit was/will be used to  
2005 process the data.  
2005

### NGS OPUS SOLUTION REPORT

=====

All computed coordinate accuracies are listed as peak-to-peak values.  
For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [RPEREZ@ACA-NET.COM](mailto:RPEREZ@ACA-NET.COM) DATE: January 22, 2016  
RINEX FILE: 6823021m.16o TIME: 13:36:06 UTC

SOFTWARE: page5 1209.04 master91.pl 022814 START: 2016/01/21 12:46:00  
EPHEMERIS: igu18804.eph [ultra-rapid] STOP: 2016/01/21 18:20:00  
NAV FILE: brdc0210.16n OBS USED: 14083 / 14673 : 96%  
ANT NAME: LEIGS14 NONE # FIXED AMB: 65 / 67 : 97%  
ARP HEIGHT: 2.00 OVERALL RMS: 0.014(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2016.0564)

X:	896643.018(m)	0.010(m)	896642.233(m)	0.010(m)
Y:	-5580537.399(m)	0.019(m)	-5580535.825(m)	0.019(m)
Z:	2945447.811(m)	0.017(m)	2945447.644(m)	0.017(m)

LAT:	27 40 59.16173	0.016(m)	27 40 59.18226	0.016(m)
E LON:	279 7 40.38192	0.007(m)	279 7 40.36275	0.007(m)
W LON:	80 52 19.61808	0.007(m)	80 52 19.63725	0.007(m)
EL HGT:	-10.405(m)	0.021(m)	-11.969(m)	0.021(m)
ORTHO HGT:	16.431(m)	0.037(m)	[NAVD88 (Computed using GEOID12B)]	

#### UTM COORDINATES STATE PLANE COORDINATES

UTM (Zone 17) SPC (0901 FL E)

Northing (Y) [meters]	3062105.133	371099.769
Easting (X) [meters]	512610.463	212614.767
Convergence [degrees]	0.05941248	0.05941248
Point Scale	0.99960196	0.99994314
Combined Factor	0.99960359	0.99994477

US NATIONAL GRID DESIGNATOR: 17RNL1261062105(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DG9757	DLND DELAND CORS ARP	N290322.897	W0811547.480	156941.3
DF7046	BRTW BARTOW CORS ARP	N275658.642	W0814658.200	94465.9
DI3564	CCV6 CAPE CANAVERAL 6 CORS ARP	N282735.827	W0803243.702	91882.5

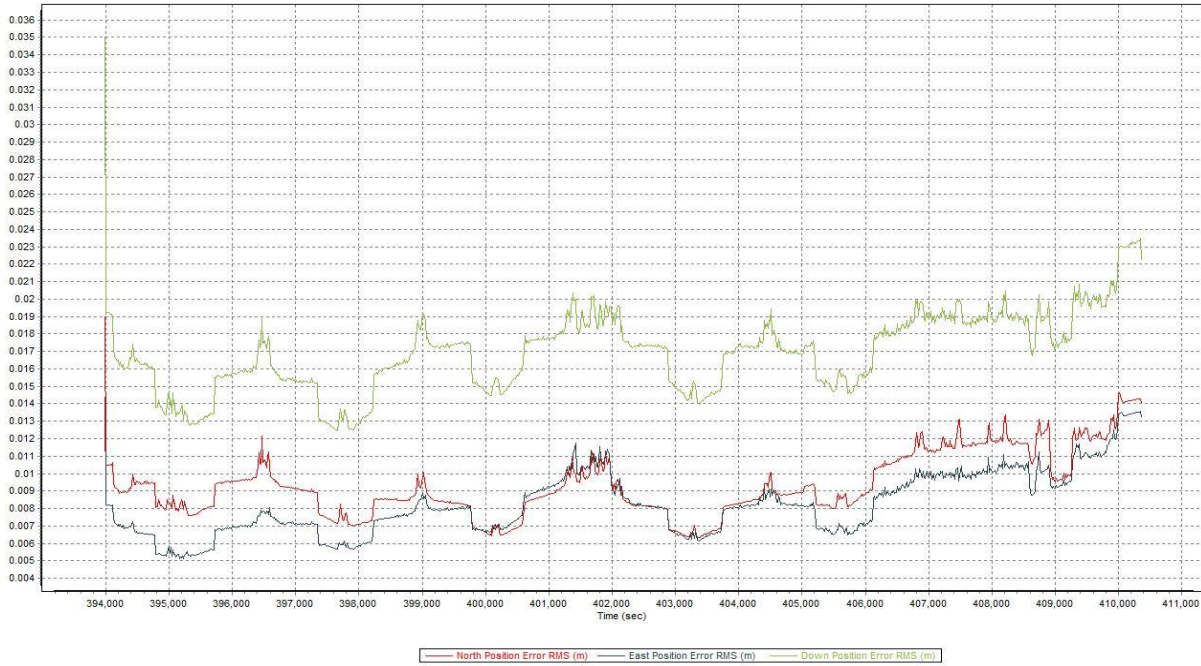
NEAREST NGS PUBLISHED CONTROL POINT

DJ8307	L 687	N274059.160	W0805219.618	0.0
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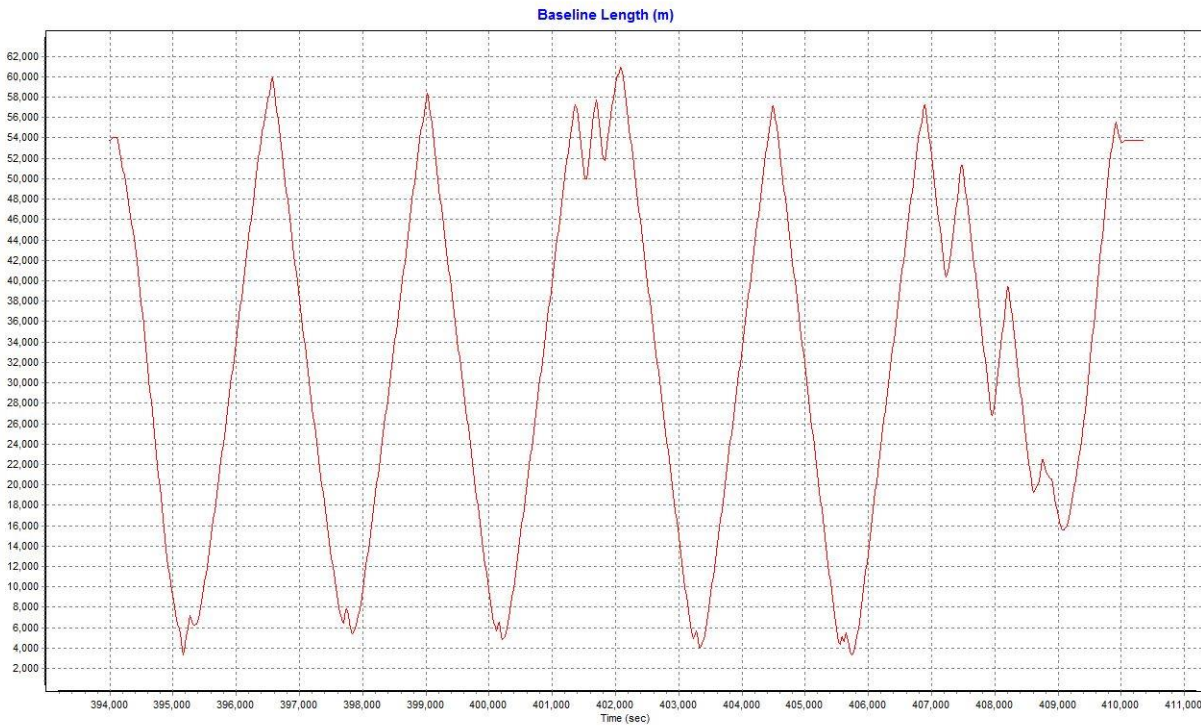
This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

8002 The Opus solution for your submitted RINEX file appears to be  
8002 quite close to an NGS published control point. This suggests that  
8002 you may have set your GPS receiver up over an NGS control point.  
8002 Furthermore, our files indicate that this control point has not  
8002 been recovered in the last five years.  
8002 If you did indeed recover an NGS control point, we would  
8002 appreciate receiving this information through our web based  
8002 Mark Recovery Form at  
8002 [http://www.ngs.noaa.gov/products\\_services.shtml#MarkRecoveryForm](http://www.ngs.noaa.gov/products_services.shtml#MarkRecoveryForm).  
8002

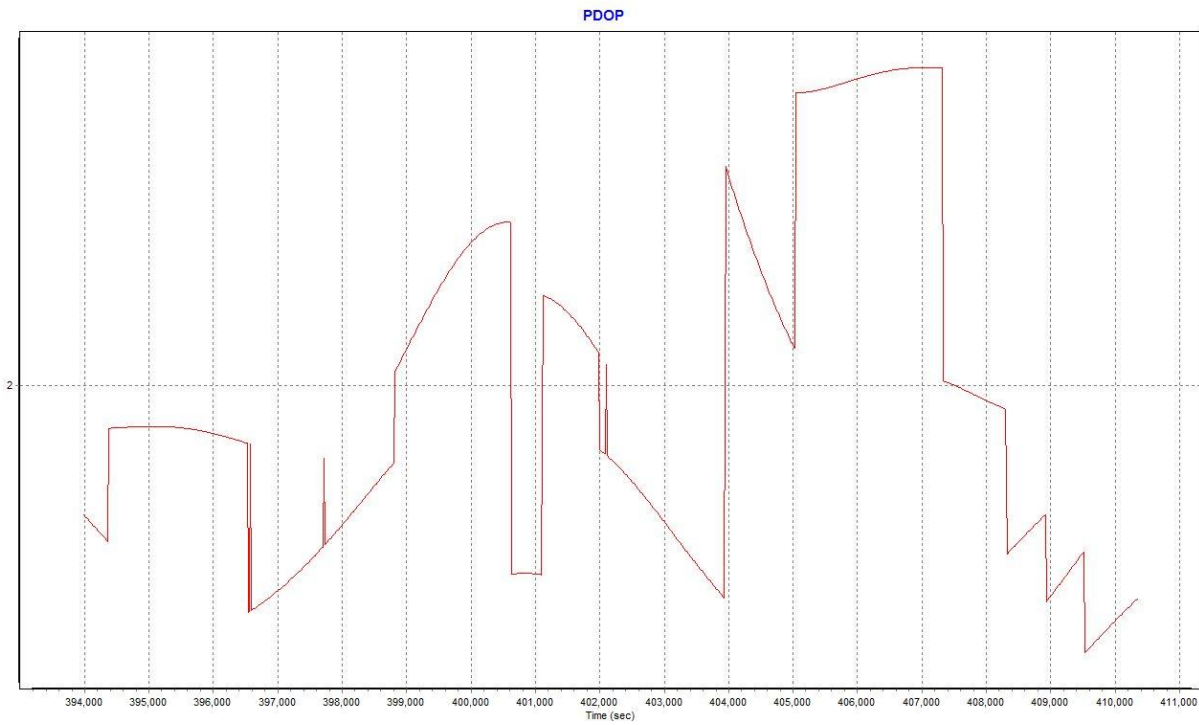
Smoothed Performance Metrics, Reference Frame\_20160121\_Report



### Baseline Length\_20160121\_Report

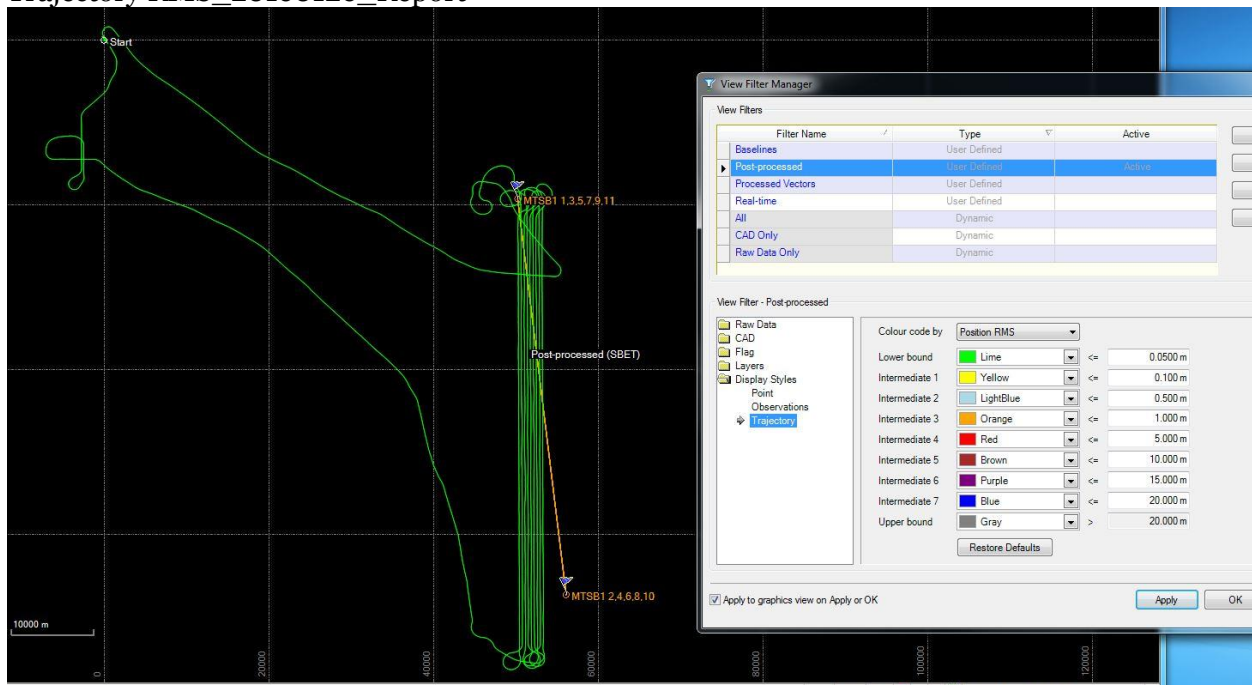


### PDOP\_20160121\_Report



Mission 20160126

Trajectory RMS 20160126\_Report



**OPUS solution BRAVO\_20160126**

FILE: 6829026n20.16o OP1453899685785

2005 NOTE: The IGS precise and IGS rapid orbits were not available  
2005 at processing time. The IGS ultra-rapid orbit was/will be used to  
2005 process the data.  
2005

NGS OPUS SOLUTION REPORT  
=====

All computed coordinate accuracies are listed as peak-to-peak values.  
For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [RPEREZ@ACA-NET.COM](mailto:RPEREZ@ACA-NET.COM) DATE: January 27, 2016  
RINEX FILE: 6829026n.16o TIME: 13:02:26 UTC

SOFTWARE: page5 1209.04 master50.pl 022814 START: 2016/01/26 13:20:00  
EPHEMERIS: igu18812.eph [ultra-rapid] STOP: 2016/01/26 17:25:00  
NAV FILE: brdc0260.16n OBS USED: 7312 / 7548 : 97%  
ANT NAME: LEIGS14 NONE # FIXED AMB: 38 / 39 : 97%  
ARP HEIGHT: 2.00 OVERALL RMS: 0.014(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2016.0701)

X: 896643.018(m) 0.003(m) 896642.233(m) 0.003(m)  
Y: -5580537.403(m) 0.026(m) -5580535.829(m) 0.026(m)  
Z: 2945447.798(m) 0.005(m) 2945447.631(m) 0.005(m)

LAT: 27 40 59.16130 0.014(m) 27 40 59.18183 0.014(m)  
E LON: 279 7 40.38190 0.001(m) 279 7 40.36273 0.001(m)  
W LON: 80 52 19.61810 0.001(m) 80 52 19.63727 0.001(m)  
EL HGT: -10.407(m) 0.023(m) -11.971(m) 0.023(m)  
ORTHO HGT: 16.429(m) 0.041(m) [NAVD88 (Computed using GEOID12B)]

UTM COORDINATES STATE PLANE COORDINATES  
UTM (Zone 17) SPC (0901 FL E)  
Northing (Y) [meters] 3062105.120 371099.756  
Easting (X) [meters] 512610.462 212614.766  
Convergence [degrees] 0.05941247 0.05941247  
Point Scale 0.99960196 0.99994314  
Combined Factor 0.99960359 0.99994477

US NATIONAL GRID DESIGNATOR: 17RNL1261062105(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI3564	CCV6 CAPE CANAVERAL 6 CORS ARP	N282735.827	W0803243.702	91882.5
DF7046	BRTW BARTOW CORS ARP	N275658.642	W0814658.200	94465.9
DG9757	DLND DELAND CORS ARP	N290322.897	W0811547.480	156941.3

NEAREST NGS PUBLISHED CONTROL POINT

DJ8307 L 687 N274059.160 W0805219.618 0.0

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

8002 The Opus solution for your submitted RINEX file appears to be  
8002 quite close to an NGS published control point. This suggests that  
8002 you may have set your GPS receiver up over an NGS control point.  
8002 Furthermore, our files indicate that this control point has not  
8002 been recovered in the last five years.  
8002 If you did indeed recover an NGS control point, we would  
8002 appreciate receiving this information through our web based  
8002 Mark Recovery Form at  
8002 [http://www.ngs.noaa.gov/products\\_services.shtml#MarkRecoveryForm](http://www.ngs.noaa.gov/products_services.shtml#MarkRecoveryForm).  
8002

**OPUS solution\_CHARLIE\_20160126**

FILE: 6823026n20.16o OP1453899732121

2005 NOTE: The IGS precise and IGS rapid orbits were not available  
2005 at processing time. The IGS ultra-rapid orbit was/will be used to  
2005 process the data.  
2005

NGS OPUS SOLUTION REPORT  
=====

All computed coordinate accuracies are listed as peak-to-peak values.  
For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [RPEREZ@ACA-NET.COM](mailto:RPEREZ@ACA-NET.COM) DATE: January 27, 2016  
RINEX FILE: 6823026n.16o TIME: 13:03:04 UTC

SOFTWARE: page5 1209.04 master93.pl 022814 START: 2016/01/26 13:20:00  
EPHEMERIS: igu18812.eph [ultra-rapid] STOP: 2016/01/26 18:10:00  
NAV FILE: brdc0260.16n OBS USED: 11637 / 12285 : 95%  
ANT NAME: LEIGS14 NONE # FIXED AMB: 56 / 59 : 95%



ARP HEIGHT: 2.00

OVERALL RMS: 0.012(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2016.0701)

X: 887472.581(m) 0.003(m) 887471.793(m) 0.003(m)  
Y: -5559221.268(m) 0.012(m) -5559219.700(m) 0.012(m)  
Z: 2987934.226(m) 0.009(m) 2987934.062(m) 0.009(m)

LAT: 28 7 0.93917 0.010(m) 28 7 0.96008 0.010(m)  
E LON: 279 4 12.53666 0.002(m) 279 4 12.51720 0.002(m)  
W LON: 80 55 47.46334 0.002(m) 80 55 47.48280 0.002(m)  
EL HGT: -12.801(m) 0.011(m) -14.354(m) 0.011(m)  
ORTHO HGT: 15.274(m) 0.024(m) [NAVD88 (Computed using GEOID12B)]

UTM COORDINATES STATE PLANE COORDINATES

	UTM (Zone 17)	SPC (0901 FL E)
Northing (Y) [meters]	3110157.132	419168.169
Easting (X) [meters]	506889.775	206892.127
Convergence [degrees]	0.03305934	0.03305934
Point Scale	0.99960059	0.99994176
Combined Factor	0.99960260	0.99994377

US NATIONAL GRID DESIGNATOR: 17RNM0688910157(NAD 83)

BASE STATIONS USED

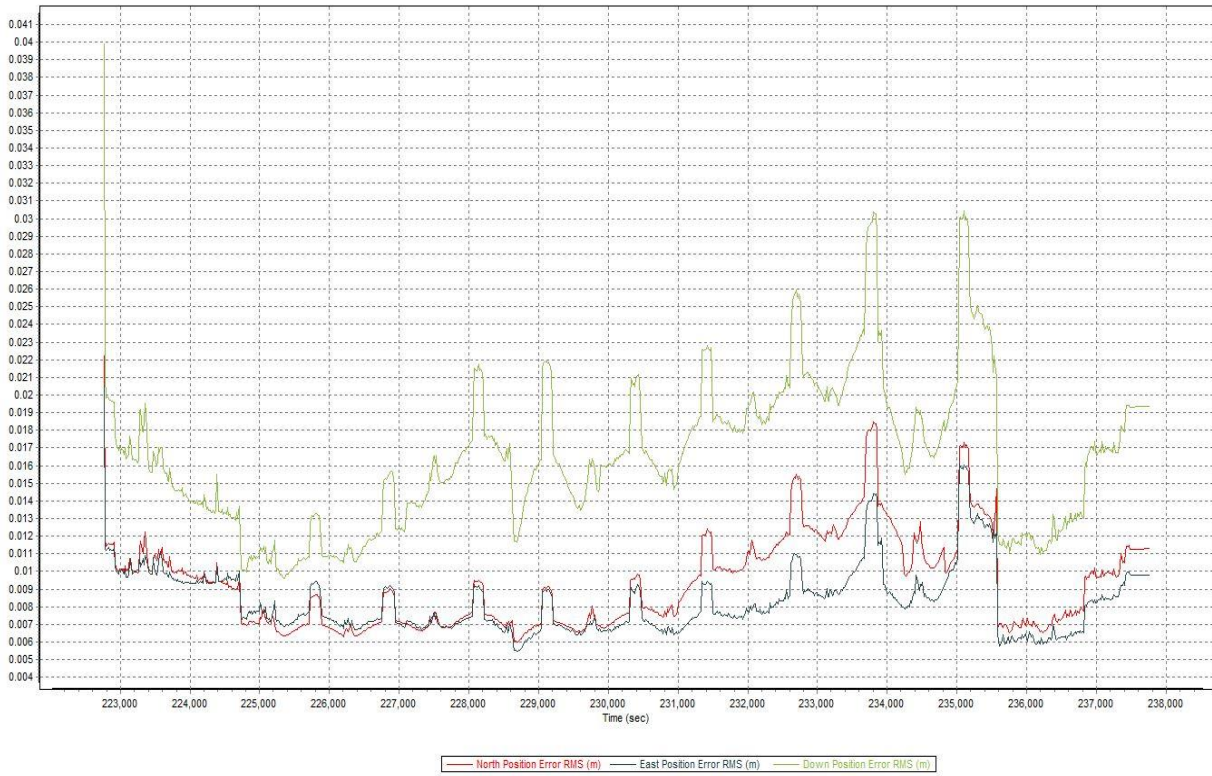
PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DG9757	DLND DELAND CORS ARP	N290322.897	W0811547.480	109101.7
DF7046	BRTW BARTOW CORS ARP	N275658.642	W0814658.200	85899.1
DF7990	ZEFR ZEPHYRHILLS CORS ARP	N281339.322	W0820952.671	121877.6

NEAREST NGS PUBLISHED CONTROL POINT

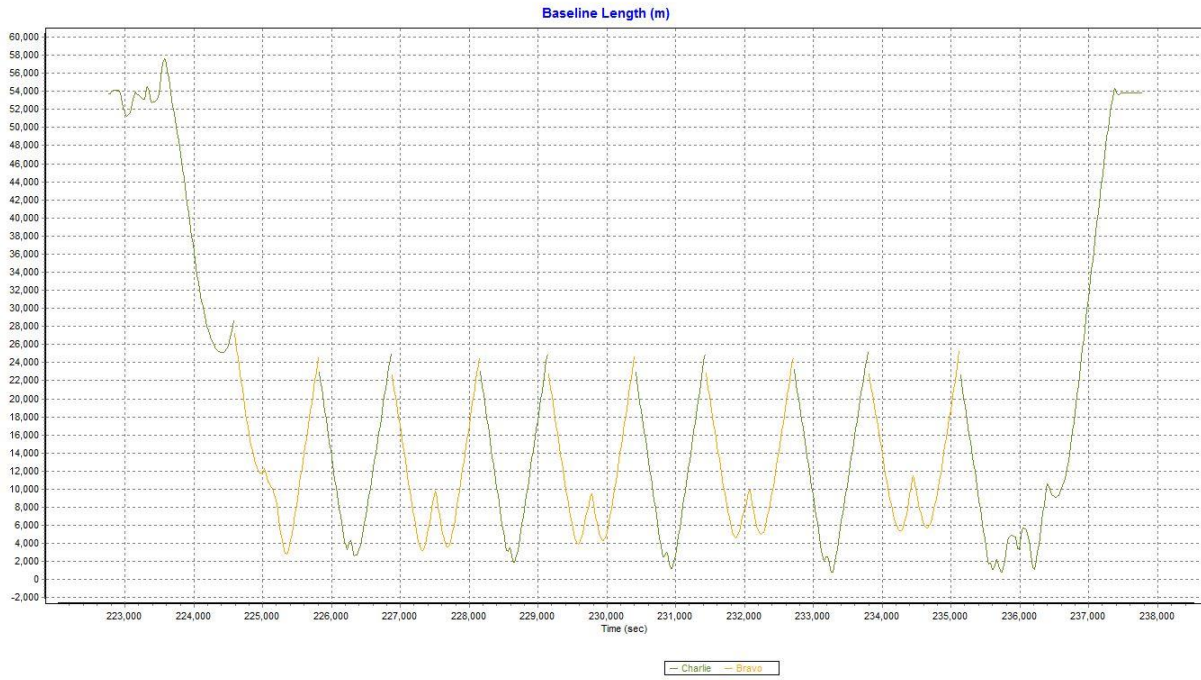
AK6935	FLGPS 53 AZ MK	N280700.938	W0805547.464	0.0
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

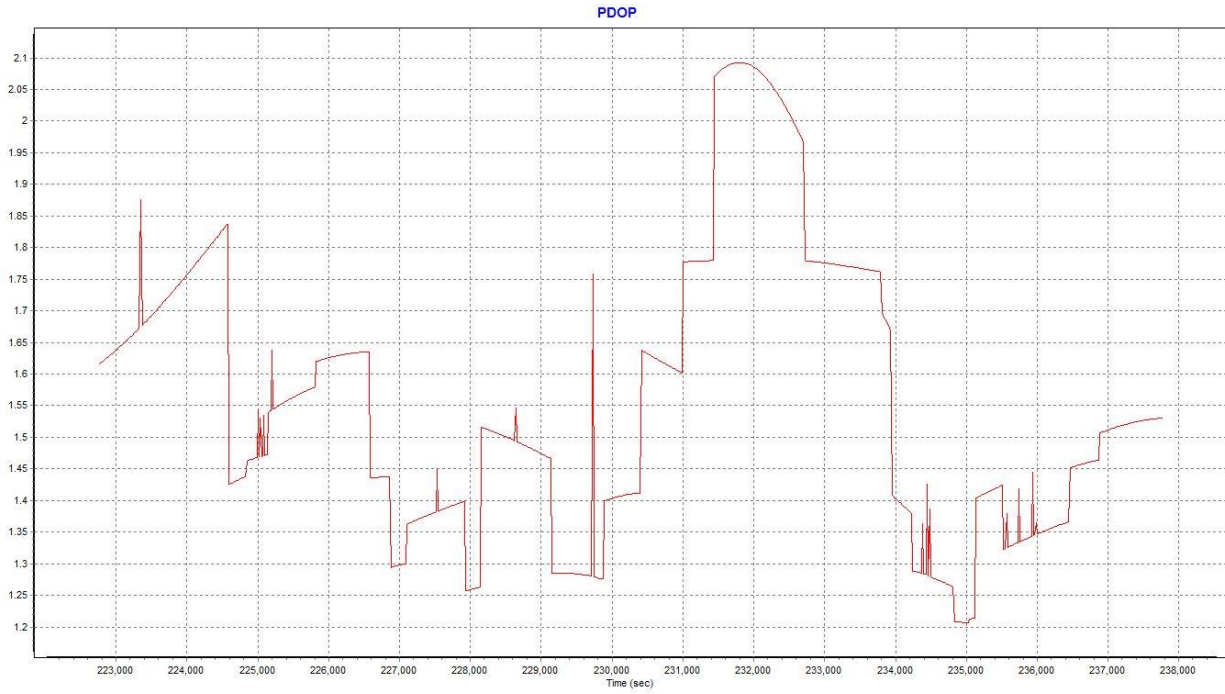
Smoothed Performance Metrics, Reference Frame\_20160126\_Report



### Baseline Length\_20160126\_Report

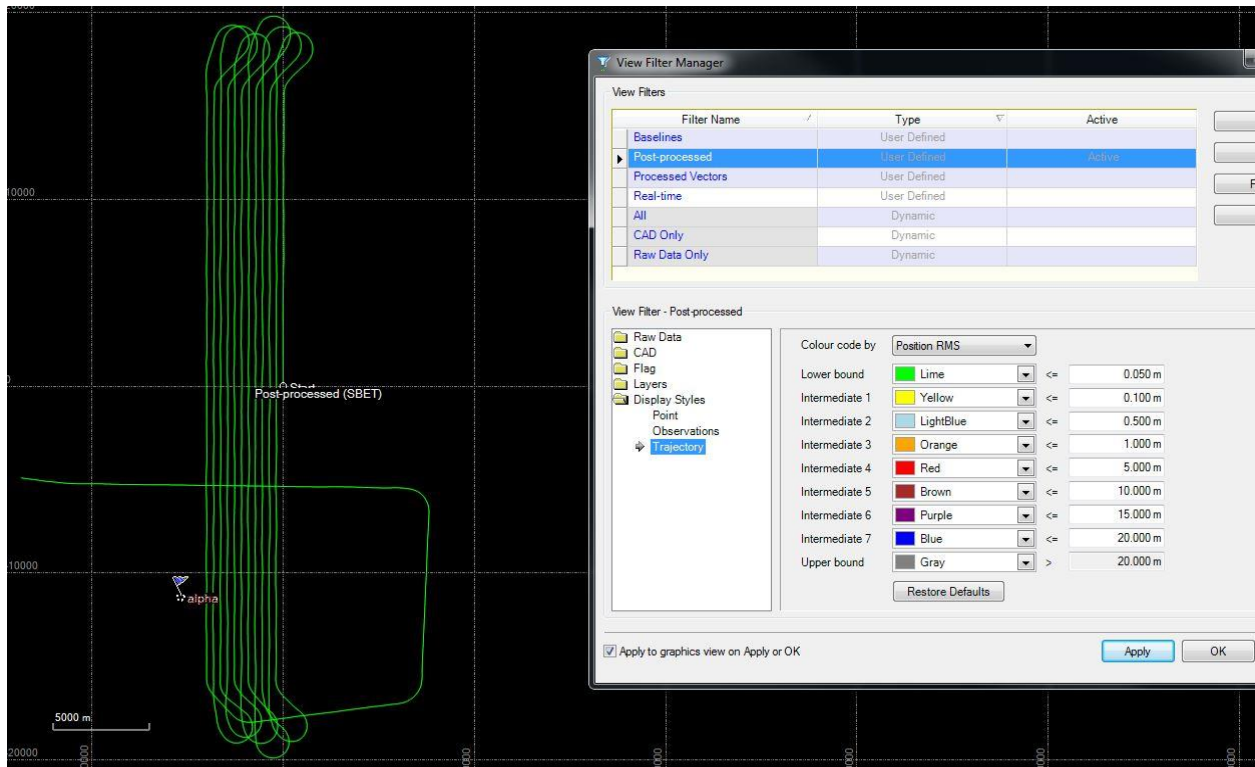
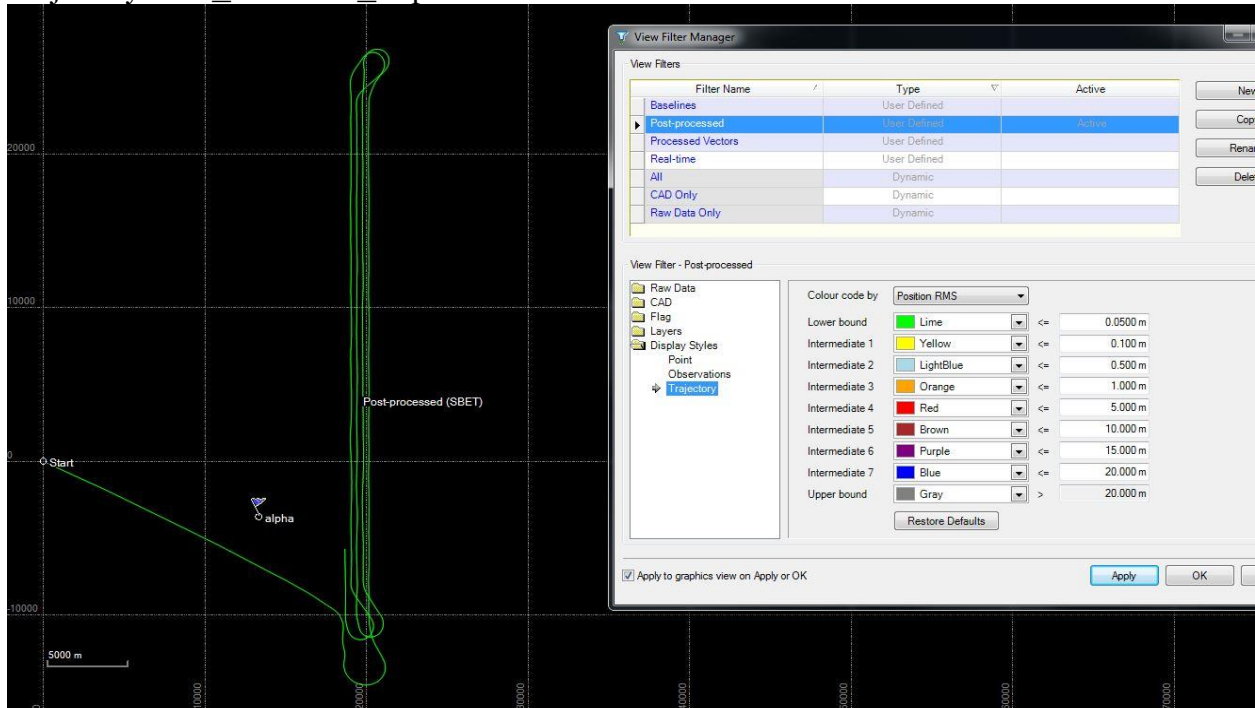


### PDOP\_20160126\_Report



Mission 20160212

Trajectory RMS\_20160212\_Report



## OPUS solution\_ALPHA\_20160212

FILE: 6790043o14.16o OP1455636231213

### NGS OPUS SOLUTION REPORT

=====

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

For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com)

DATE: February 16, 2016

RINEX FILE: 6790043o.16o

TIME: 15:24:38 UTC

SOFTWARE: page5 1209.04 master51.pl 022814    START: 2016/02/12 14:14:00  
EPHEMERIS: igr18835.eph [rapid]                    STOP: 2016/02/12 19:28:00  
NAV FILE: brdc0430.16n                    OBS USED: 12317 / 13472 : 91%  
ANT NAME: LEIGS14    NONE                # FIXED AMB: 77 / 79 : 97%  
ARP HEIGHT: 2.00                    OVERALL RMS: 0.014(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000)                IGS08 (EPOCH:2016.1167)

X:	887472.574(m)	0.004(m)	887471.786(m)	0.004(m)
Y:	-5559221.266(m)	0.025(m)	-5559219.698(m)	0.025(m)
Z:	2987934.236(m)	0.020(m)	2987934.072(m)	0.020(m)

LAT:	28 7 0.93951	0.007(m)	28 7 0.96041	0.007(m)
E LON:	279 4 12.53641	0.006(m)	279 4 12.51696	0.006(m)
W LON:	80 55 47.46359	0.006(m)	80 55 47.48304	0.006(m)
EL HGT:	-12.799(m)	0.031(m)	-14.352(m)	0.031(m)
ORTHO HGT:	15.276(m)	0.054(m)	[NAVD88 (Computed using GEOID12B)]	

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 17)	SPC (0901 FL E)
Northing (Y) [meters]	3110157.142	419168.179
Easting (X) [meters]	506889.769	206892.120
Convergence [degrees]	0.03305931	0.03305931
Point Scale	0.99960059	0.99994176
Combined Factor	0.99960260	0.99994377

US NATIONAL GRID DESIGNATOR: 17RNM0688910157(NAD 83)

BASE STATIONS USED				
PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)

DG9757 DLND DELAND CORS ARP            N290322.897 W0811547.480 109101.7  
DI3562 CCV5 CAPE CANAVERAL 5 CORS ARP    N282736.799 W0803242.818 53582.0  
DF5773 ORMD ORMOND BEACH CORS ARP        N291753.469 W0810632.013 132080.9

NEAREST NGS PUBLISHED CONTROL POINT(S)  
AK6935    FLGPS 53 AZ MK            N280700.938 W0805547.464    0.0

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

**OPUS solution\_DELTA\_20160212**

FILE: 6821043o07.16o OP1455635937768

NGS OPUS SOLUTION REPORT  
=====

All computed coordinate accuracies are listed as peak-to-peak values.  
For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com)            DATE: February 16, 2016  
RINEX FILE: 6821043o.16o            TIME: 15:19:59 UTC

SOFTWARE: page5 1209.04 master90.pl 022814    START: 2016/02/12 14:07:00  
EPHEMERIS: igr18835.eph [rapid]            STOP: 2016/02/12 19:30:00  
NAV FILE: brdc0430.16n            OBS USED: 12068 / 13712 : 88%  
ANT NAME: LEIGS14    NONE            # FIXED AMB: 62 / 67 : 93%  
ARP HEIGHT: 2.00            OVERALL RMS: 0.014(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000)            IGS08 (EPOCH:2016.1167)

X:    873271.153(m) 0.005(m)            873270.365(m) 0.005(m)  
Y:    -5561537.984(m) 0.019(m)            -5561536.417(m) 0.019(m)  
Z:    2987824.603(m) 0.012(m)            2987824.438(m) 0.012(m)

LAT: 28 6 56.76693    0.007(m)            28 6 56.78777    0.007(m)  
E LON: 278 55 25.33769    0.007(m)            278 55 25.31808    0.007(m)  
W LON: 81 4 34.66231    0.007(m)            81 4 34.68192    0.007(m)  
EL HGT:    -5.040(m) 0.021(m)            -6.591(m) 0.021(m)  
ORTHO HGT:    22.903(m) 0.039(m) [NAVD88 (Computed using GEOID12B)]

UTM COORDINATES    STATE PLANE COORDINATES  
UTM (Zone 17)        SPC (0901 FL E)  
Northing (Y) [meters]    3110029.110            419040.103  
Easting (X) [meters]    492506.506            192503.948

Convergence [degrees] -0.03595443 -0.03595443  
Point Scale 0.99960069 0.99994187  
Combined Factor 0.99960148 0.99994266

US NATIONAL GRID DESIGNATOR: 17RMM9250610029(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DF5773	ORMD ORMOND BEACH CORS ARP	N291753.469	W0810632.013	131084.6
DG9757	DLND DELAND CORS ARP	N290322.897	W0811547.480	105834.6
DI3562	CCV5 CAPE CANAVERAL 5 CORS ARP	N282736.799	W0803242.818	64585.5

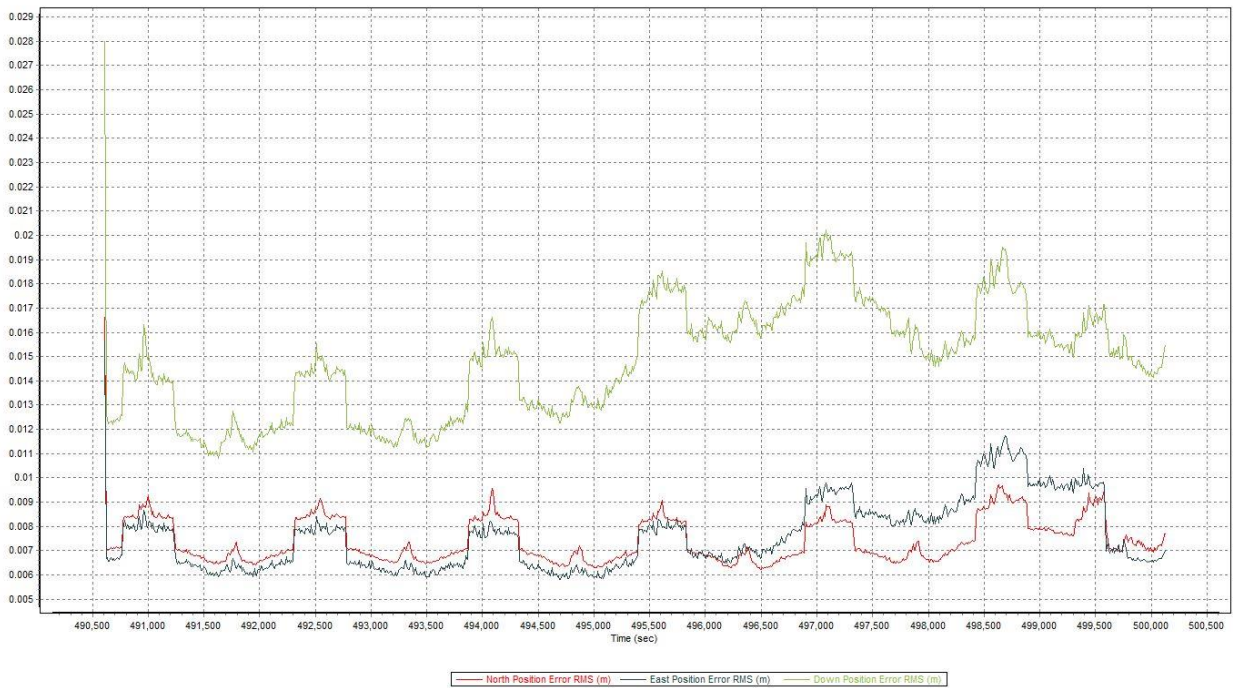
NEAREST NGS PUBLISHED CONTROL POINT(S)

AB5478	95 061A	N280656.766	W0810434.661	0.0
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

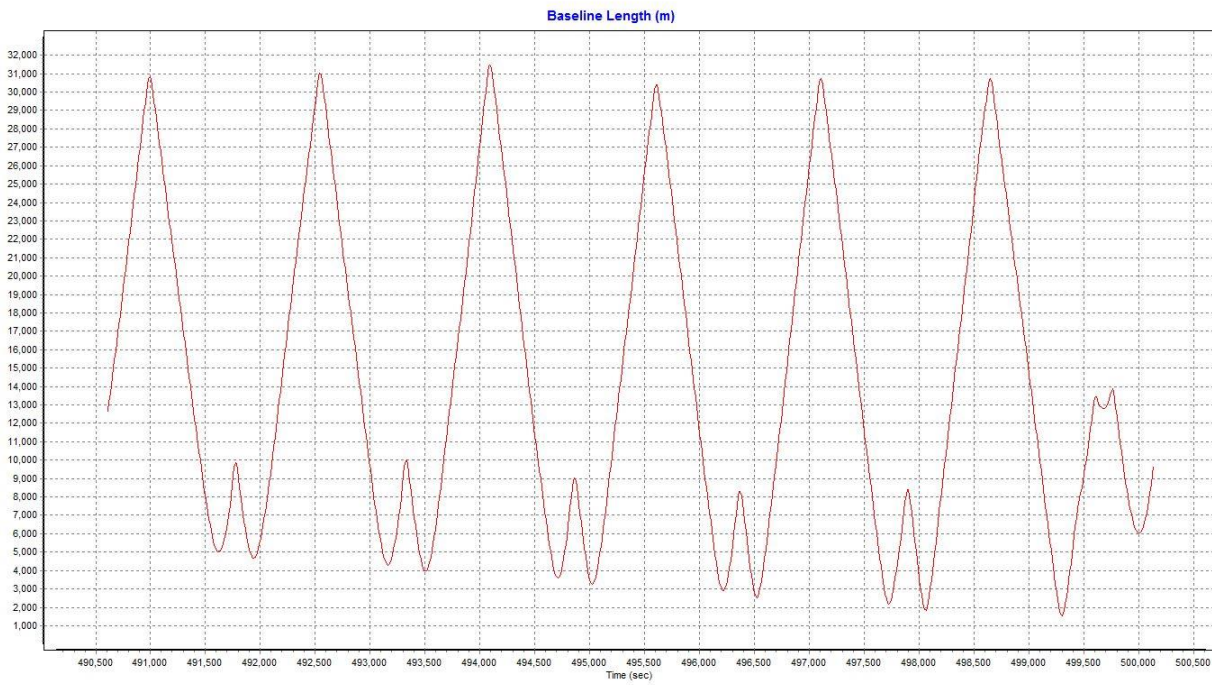
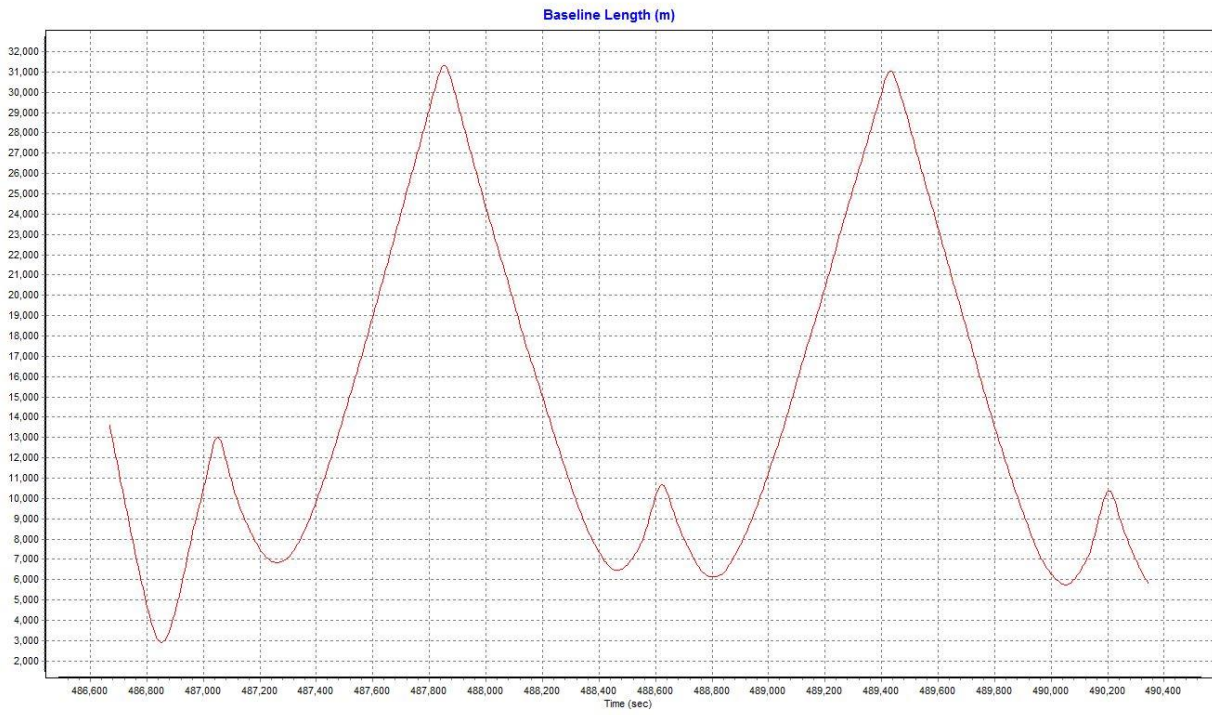
8002 The Opus solution for your submitted RINEX file appears to be  
8002 quite close to an NGS published control point. This suggests that  
8002 you may have set your GPS receiver up over an NGS control point.  
8002 Furthermore, our files indicate that this control point has not  
8002 been recovered in the last five years.  
8002 If you did indeed recover an NGS control point, we would  
8002 appreciate receiving this information through our web based  
8002 Mark Recovery Form at  
8002 [http://www.ngs.noaa.gov/products\\_services.shtml#MarkRecoveryForm](http://www.ngs.noaa.gov/products_services.shtml#MarkRecoveryForm).  
8002

### Smoothed Performance Metrics, Reference Frame\_20160212\_Report

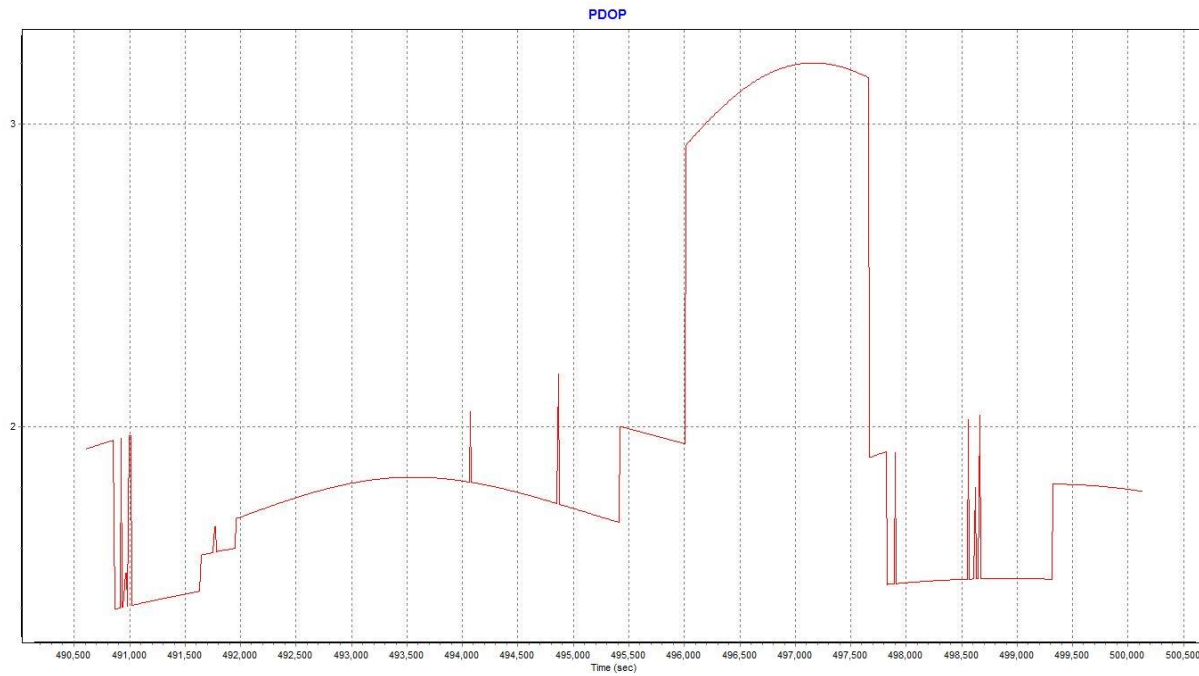
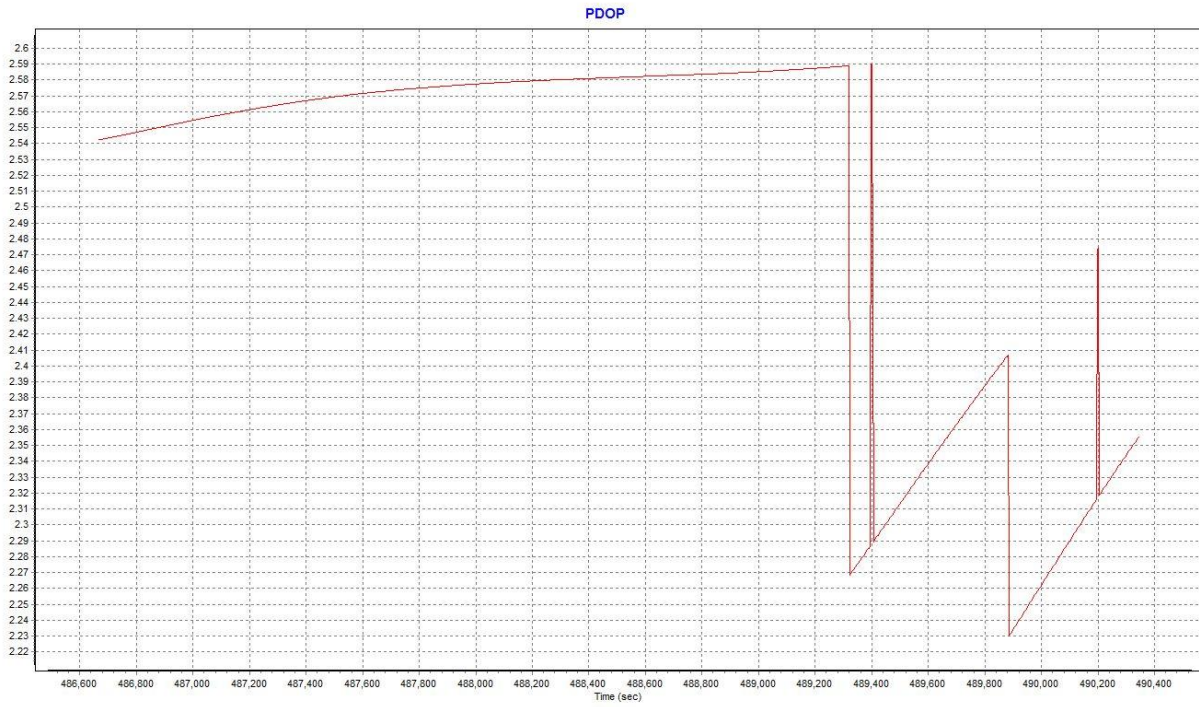




Baseline Length\_20160212\_Report

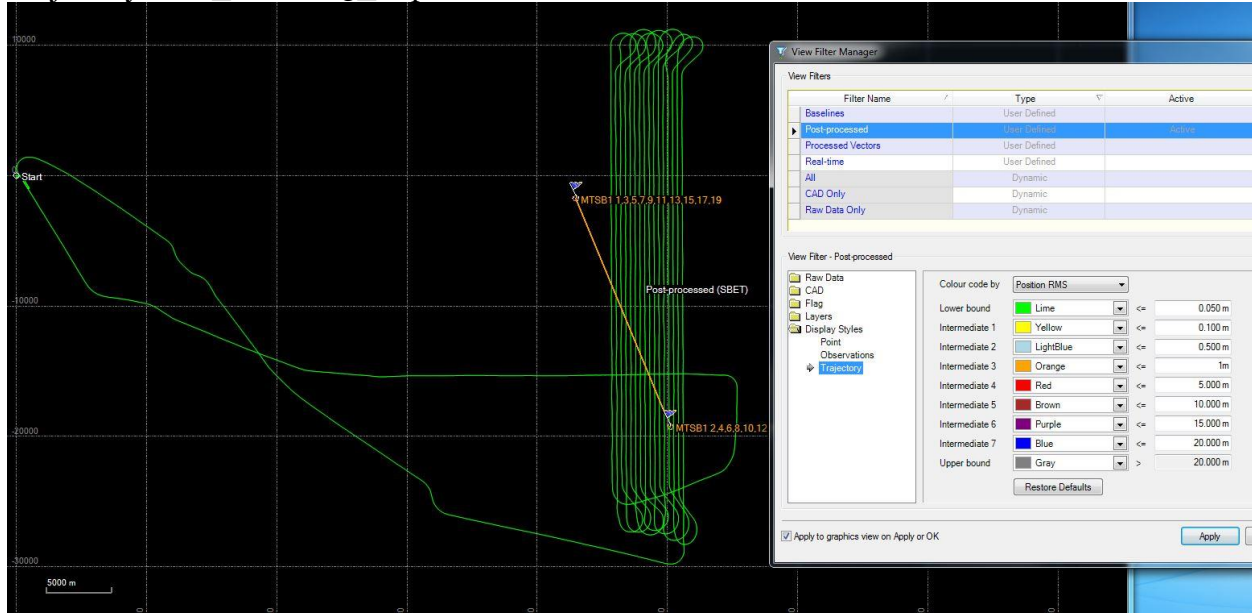


PDOP\_20160212\_Report



### Mission 20160213

### Trajectory RMS\_20160213\_Report



### OPUS solution BRAVO\_20160213

FILE: 6829044o03.16o OP1455799156993

### NGS OPUS SOLUTION REPORT =====

All computed coordinate accuracies are listed as peak-to-peak values.  
For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com)      DATE: February 18, 2016  
RINEX FILE: 6829044o.16o      TIME: 12:40:10 UTC

SOFTWARE: page5 1209.04 master51.pl 022814    START: 2016/02/13 14:03:00  
EPHEMERIS: igr18836.eph [rapid]            STOP: 2016/02/13 18:38:00  
NAV FILE: brdc0440.16n                    OBS USED: 10934 / 11935 : 92%  
ANT NAME: LEIGS14    NONE                # FIXED AMB: 60 / 68 : 88%  
ARP HEIGHT: 2.00                          OVERALL RMS: 0.013(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2016.1193)

X: 887472.568(m) 0.005(m) 887471.780(m) 0.005(m)  
Y: -5559221.272(m) 0.008(m) -5559219.704(m) 0.008(m)  
Z: 2987934.220(m) 0.010(m) 2987934.056(m) 0.010(m)

LAT: 28 7 0.93897 0.007(m) 28 7 0.95988 0.007(m)  
E LON: 279 4 12.53616 0.006(m) 279 4 12.51671 0.006(m)  
W LON: 80 55 47.46384 0.006(m) 80 55 47.48329 0.006(m)  
EL HGT: -12.802(m) 0.010(m) -14.355(m) 0.010(m)  
ORTHO HGT: 15.273(m) 0.022(m) [NAVD88 (Computed using GEOID12B)]

UTM COORDINATES STATE PLANE COORDINATES

UTM (Zone 17) SPC (0901 FL E)

Northing (Y) [meters]	3110157.126	419168.163
Easting (X) [meters]	506889.762	206892.113
Convergence [degrees]	0.03305927	0.03305927
Point Scale	0.99960059	0.99994176
Combined Factor	0.99960260	0.99994377

US NATIONAL GRID DESIGNATOR: 17RNM0688910157(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DG9757	DLND DELAND CORS ARP	N290322.897	W0811547.480	109101.7
DF5773	ORMD ORMOND BEACH CORS ARP	N291753.469	W0810632.013	132080.9
DI3562	CCV5 CAPE CANAVERAL 5 CORS ARP	N282736.799	W0803242.818	53582.0

NEAREST NGS PUBLISHED CONTROL POINT(S)

AK6935	FLGPS 53 AZ MK	N280700.938	W0805547.464	0.0
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

**OPUS solution\_CHARLIE\_20160213**

FILE: 6823044n04.16o OP1455635861736

NGS OPUS SOLUTION REPORT

=====

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

For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com)

DATE: February 16, 2016

RINEX FILE: 6823044n.16o

TIME: 15:18:29 UTC

SOFTWARE: page5 1209.04 master50.pl 022814 START: 2016/02/13 13:04:00  
EPHEMERIS: igr18836.eph [rapid] STOP: 2016/02/13 18:48:00  
NAV FILE: brdc0440.16n OBS USED: 14156 / 14953 : 95%  
ANT NAME: LEIGS14 NONE # FIXED AMB: 72 / 85 : 85%  
ARP HEIGHT: 2.00 OVERALL RMS: 0.015(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2016.1193)

X: 879058.830(m) 0.006(m) 879058.041(m) 0.006(m)  
Y: -5552178.809(m) 0.029(m) -5552177.244(m) 0.029(m)  
Z: 3003381.873(m) 0.010(m) 3003381.710(m) 0.010(m)

LAT: 28 16 30.22754 0.012(m) 28 16 30.24856 0.012(m)  
E LON: 278 59 48.40625 0.008(m) 278 59 48.38663 0.008(m)  
W LON: 81 0 11.59375 0.008(m) 81 0 11.61337 0.008(m)  
EL HGT: -8.042(m) 0.028(m) -9.589(m) 0.028(m)  
ORTHO HGT: 20.120(m) 0.050(m) [NAVD88 (Computed using GEOID12B)]

UTM COORDINATES STATE PLANE COORDINATES

UTM (Zone 17) SPC (0901 FL E)

Northing (Y) [meters]	3127673.146	436690.162
Easting (X) [meters]	499684.161	199684.053
Convergence [degrees]	-0.00152556	-0.00152556
Point Scale	0.99960000	0.99994118
Combined Factor	0.99960126	0.99994244

US NATIONAL GRID DESIGNATOR: 17RMM9968427673(NAD 83)

BASE STATIONS USED

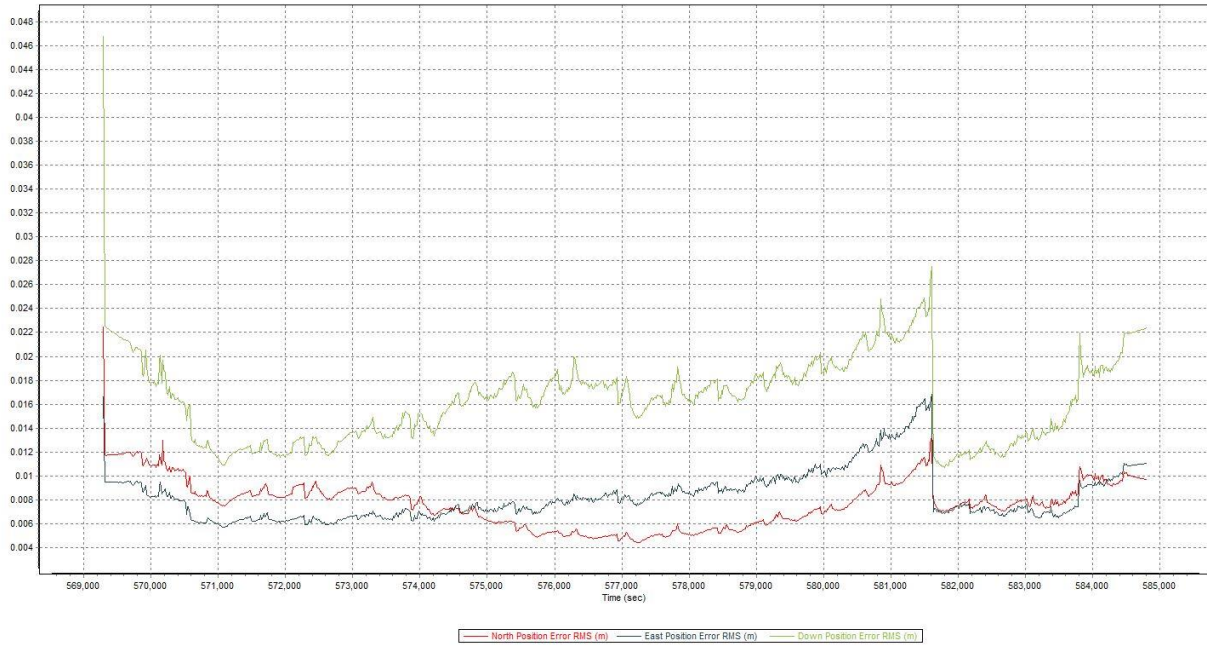
PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI3562	CCV5 CAPE CANAVERAL 5 CORS ARP	N282736.799	W0803242.818	49362.3
DF5773	ORMD ORMOND BEACH CORS ARP	N291753.469	W0810632.013	113861.7
DG9757	DLND DELAND CORS ARP	N290322.897	W0811547.480	90242.3

NEAREST NGS PUBLISHED CONTROL POINT(S)

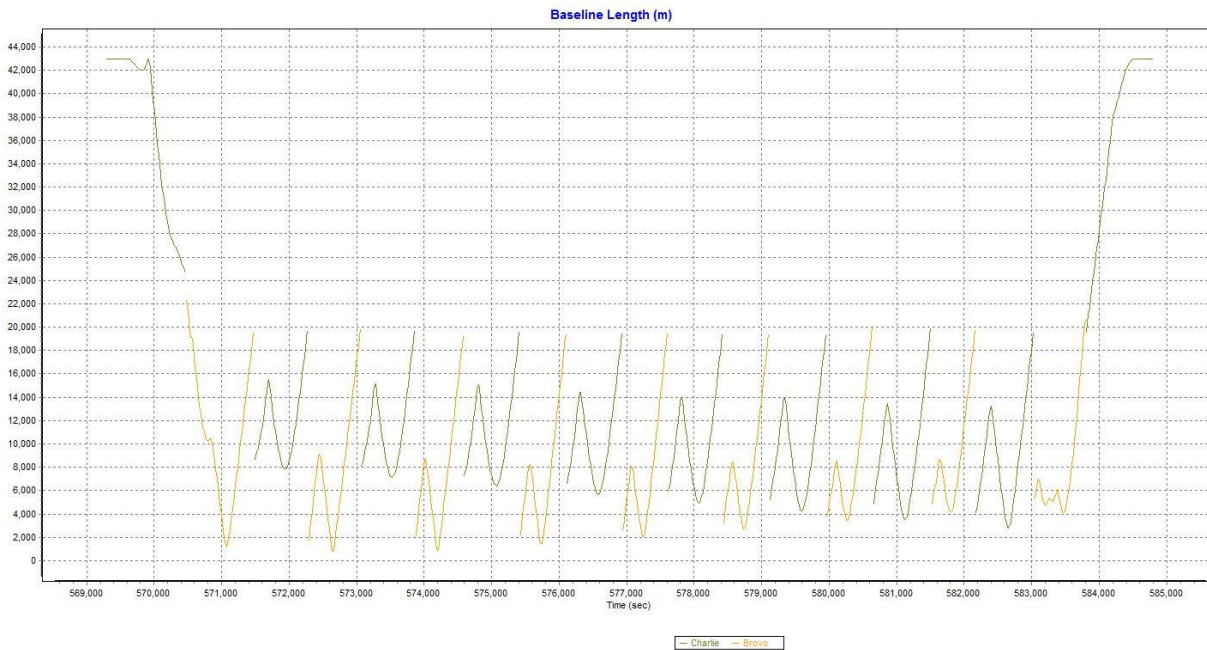
AK6933	FLGPS 44 AZ MK	N281630.227	W0810011.593	0.0
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

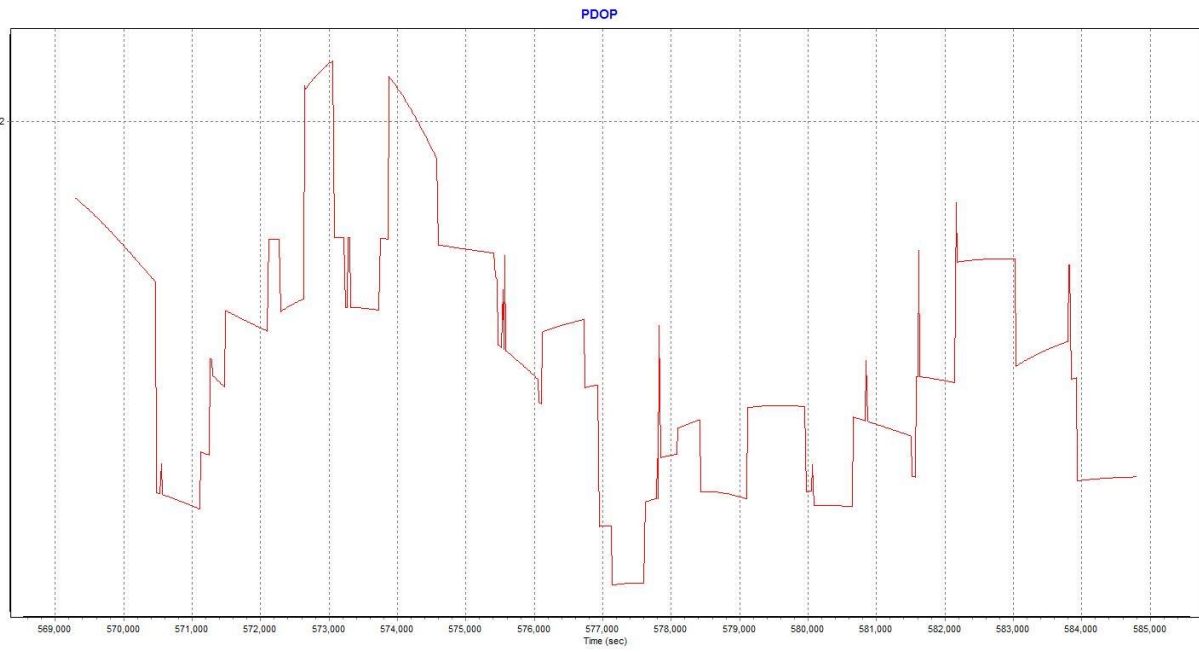
### Smoothed Performance Metrics, Reference Frame\_20160213\_Report



### Baseline Length\_20160213\_Report

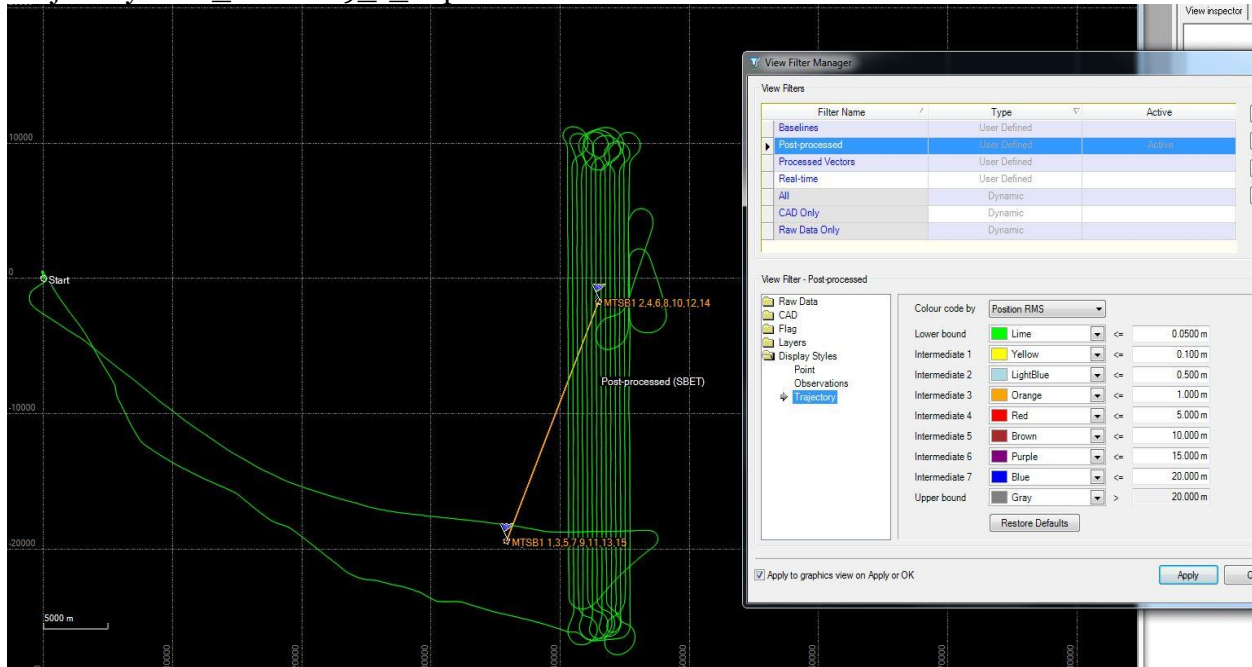


PDOP\_20160213\_Report



Mission 20160219\_1

Trajectory RMS\_20160219\_1\_Report



OPUS solution\_ALPHA\_20160219\_1

FILE: 6790050n31.16o OP1456147360738

NGS OPUS SOLUTION REPORT

=====

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

For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com)

DATE: February 22, 2016

RINEX FILE: 6790050n.16o

TIME: 13:23:47 UTC

SOFTWARE: page5 1209.04 master52.pl 022814 START: 2016/02/19 13:31:00

EPOCHS: igr18845.eph [rapid] STOP: 2016/02/19 23:23:00

NAV FILE: brdc0500.16n OBS USED: 22055 / 24463 : 90%

ANT NAME: LEIGS14 NONE # FIXED AMB: 120 / 129 : 93%

ARP HEIGHT: 2.00 OVERALL RMS: 0.014(m)



REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2016.1360)

X: 873271.155(m) 0.002(m) 873270.367(m) 0.002(m)  
Y: -5561537.981(m) 0.009(m) -5561536.414(m) 0.009(m)  
Z: 2987824.607(m) 0.014(m) 2987824.442(m) 0.014(m)

LAT: 28 6 56.76709 0.011(m) 28 6 56.78793 0.011(m)  
E LON: 278 55 25.33778 0.001(m) 278 55 25.31817 0.001(m)  
W LON: 81 4 34.66222 0.001(m) 81 4 34.68183 0.001(m)  
EL HGT: -5.041(m) 0.012(m) -6.592(m) 0.012(m)  
ORTHO HGT: 22.902(m) 0.025(m) [NAVD88 (Computed using GEOID12B)]

UTM COORDINATES STATE PLANE COORDINATES

UTM (Zone 17) SPC (0901 FL E)

Northing (Y) [meters]	3110029.115	419040.108
Easting (X) [meters]	492506.508	192503.951
Convergence [degrees]	-0.03595442	-0.03595442
Point Scale	0.99960069	0.99994187
Combined Factor	0.99960148	0.99994266

US NATIONAL GRID DESIGNATOR: 17RMM9250610029(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DF5773	ORMD ORMOND BEACH CORS ARP	N291753.469	W0810632.013	131084.6
DG9757	DLND DELAND CORS ARP	N290322.897	W0811547.480	105834.6
DF7046	BRTW BARTOW CORS ARP	N275658.642	W0814658.200	71873.4

NEAREST NGS PUBLISHED CONTROL POINT

AB5478	95 061A	N280656.766	W0810434.661	0.0
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

8002 The Opus solution for your submitted RINEX file appears to be  
8002 quite close to an NGS published control point. This suggests that  
8002 you may have set your GPS receiver up over an NGS control point.  
8002 Furthermore, our files indicate that this control point has not  
8002 been recovered in the last five years.  
8002 If you did indeed recover an NGS control point, we would  
8002 appreciate receiving this information through our web based  
8002 Mark Recovery Form at  
8002 [http://www.ngs.noaa.gov/products\\_services.shtml#MarkRecoveryForm](http://www.ngs.noaa.gov/products_services.shtml#MarkRecoveryForm).  
8002

**OPUS solution\_CHARLIE\_20160219\_1**

FILE: 6823050o52.16o OP1456147864398

NGS OPUS SOLUTION REPORT

=====

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

For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com)  
RINEX FILE: 6823050o.16o

DATE: February 22, 2016  
TIME: 13:32:05 UTC

SOFTWARE: page5 1209.04 master93.pl 022814    START: 2016/02/19 14:52:00  
EPHEMERIS: igr18845.eph [rapid]            STOP: 2016/02/19 23:23:00  
NAV FILE: brdc0500.16n                    OBS USED: 20195 / 21540 : 94%  
ANT NAME: LEIGS14    NONE                # FIXED AMB: 114 / 118 : 97%  
ARP HEIGHT: 2.00                        OVERALL RMS: 0.012(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000)            IGS08 (EPOCH:2016.1361)

X:	879058.819(m)	0.002(m)	879058.030(m)	0.002(m)
Y:	-5552178.798(m)	0.008(m)	-5552177.233(m)	0.008(m)
Z:	3003381.880(m)	0.009(m)	3003381.717(m)	0.009(m)

LAT:	28 16 30.22794	0.012(m)	28 16 30.24896	0.012(m)
E LON:	278 59 48.40591	0.001(m)	278 59 48.38630	0.001(m)
W LON:	81 0 11.59409	0.001(m)	81 0 11.61370	0.001(m)
EL HGT:	-8.050(m)	0.007(m)	-9.597(m)	0.007(m)
ORTHO HGT:	20.112(m)	0.019(m)	[NAVD88 (Computed using GEOID12B)]	

UTM COORDINATES    STATE PLANE COORDINATES

UTM (Zone 17)            SPC (0901 FL E)

Northing (Y) [meters]	3127673.158	436690.174
Easting (X) [meters]	499684.152	199684.044
Convergence [degrees]	-0.00152560	-0.00152560
Point Scale	0.99960000	0.99994118
Combined Factor	0.99960126	0.99994244

US NATIONAL GRID DESIGNATOR: 17RMM9968427673(NAD 83)

BASE STATIONS USED

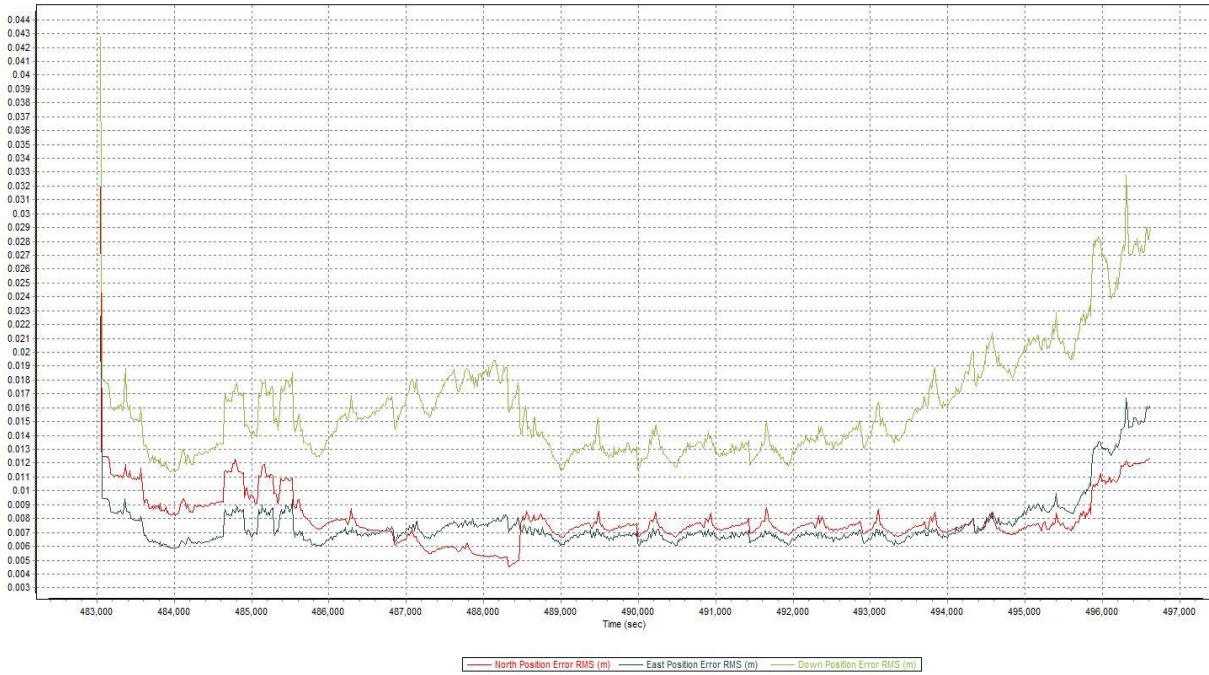
PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DF5773	ORMD ORMOND BEACH CORS ARP	N291753.469	W0810632.013	113861.6

DG9757 DLND DELAND CORS ARP      N290322.897 W0811547.480 90242.3  
DF7046 BRTW BARTOW CORS ARP      N275658.642 W0814658.200 84669.0

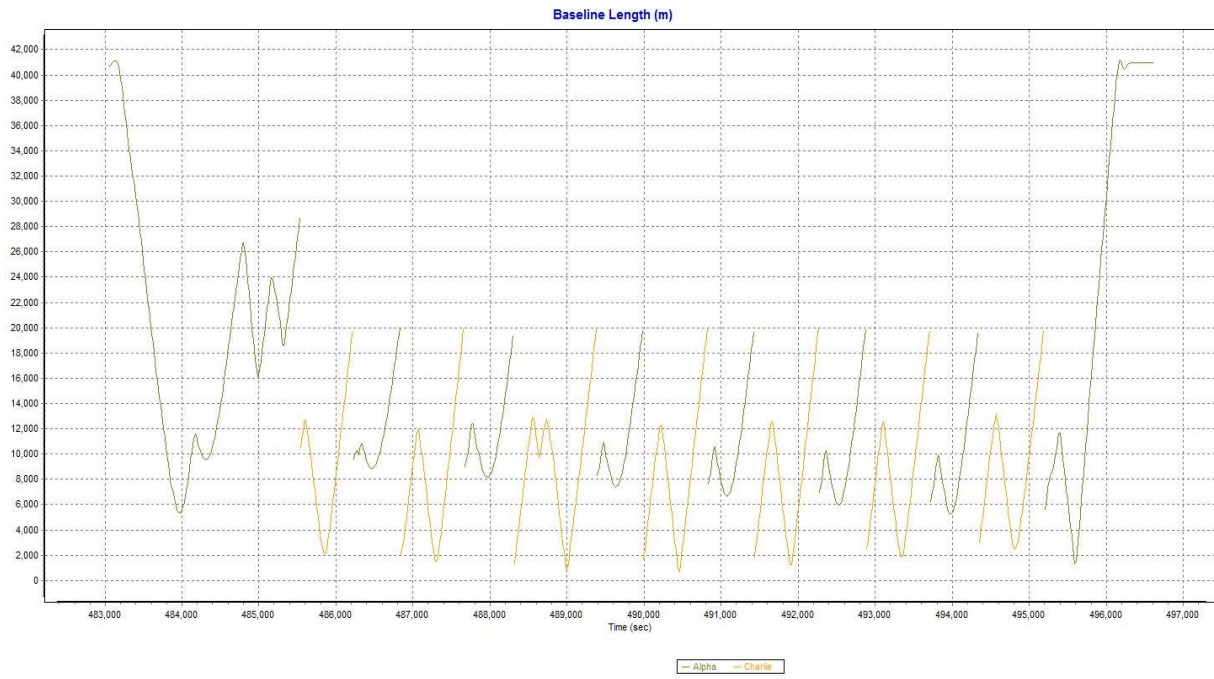
NEAREST NGS PUBLISHED CONTROL POINT  
AK6933    FLGPS 44 AZ MK      N281630.227 W0810011.593    0.0

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

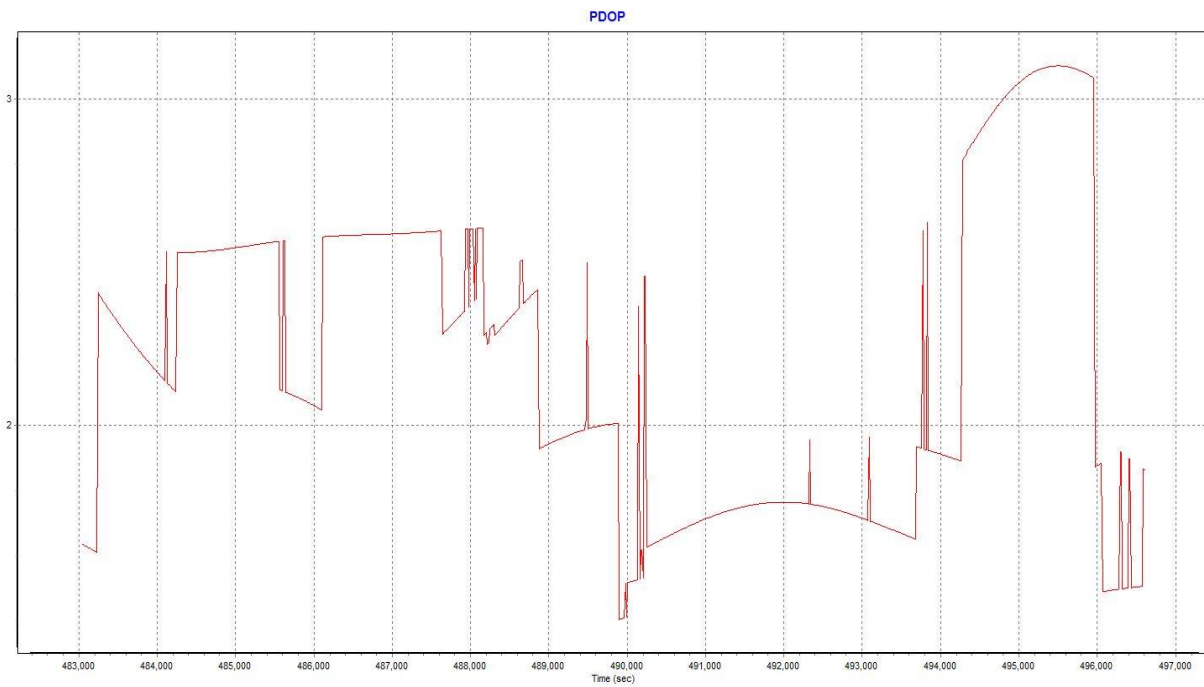
### Smoothed Performance Metrics, Reference Frame\_20160219\_1\_Report



### Baseline Length\_20160219\_1\_Report

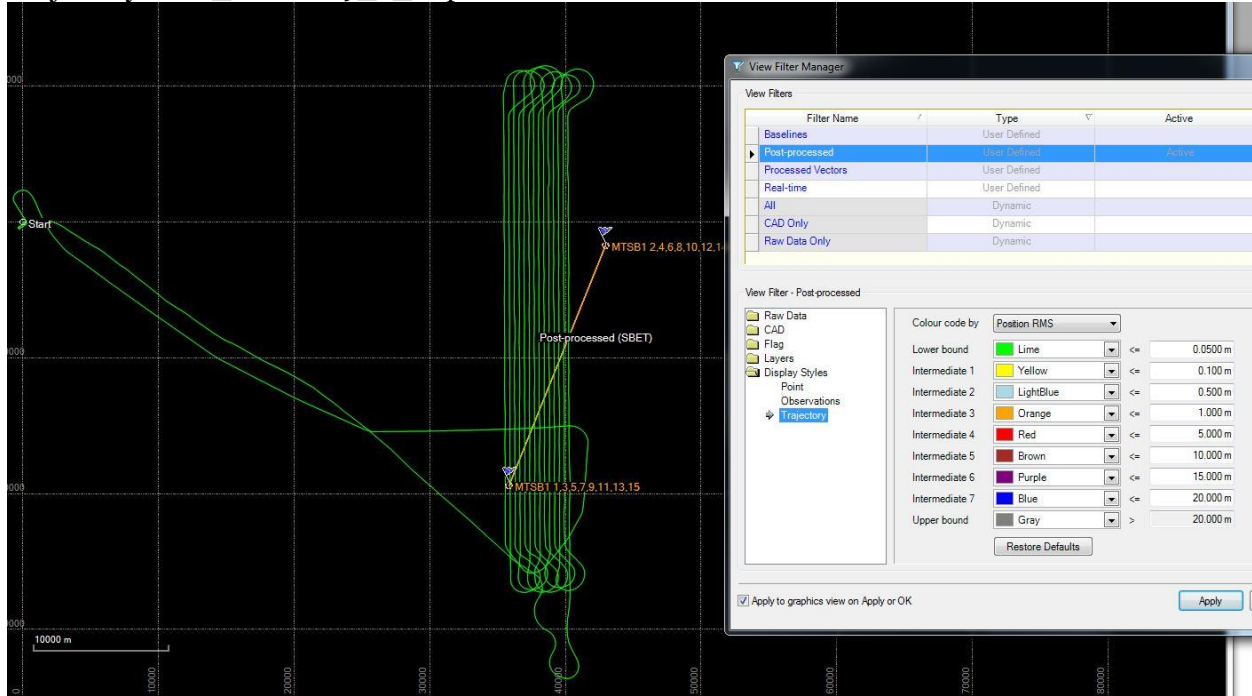


### PDOP\_20160219\_1\_Report



### Mission 20160219\_2

### Trajectory RMS\_20160219\_2\_Report



### OPUS solution\_ALPHA\_20160219\_2

FILE: 6790050n31.16o OP1456147360738

#### NGS OPUS SOLUTION REPORT

=====

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

For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com)  
RINEX FILE: 6790050n.16o

DATE: February 22, 2016  
TIME: 13:23:47 UTC

SOFTWARE: page5 1209.04 master52.pl 022814    START: 2016/02/19 13:31:00  
EPHEMERIS: igr18845.eph [rapid]            STOP: 2016/02/19 23:23:00  
NAV FILE: brdc0500.16n                    OBS USED: 22055 / 24463 : 90%  
ANT NAME: LEIGS14    NONE                # FIXED AMB: 120 / 129 : 93%  
ARP HEIGHT: 2.00                          OVERALL RMS: 0.014(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2016.1360)

X: 873271.155(m) 0.002(m) 873270.367(m) 0.002(m)  
Y: -5561537.981(m) 0.009(m) -5561536.414(m) 0.009(m)  
Z: 2987824.607(m) 0.014(m) 2987824.442(m) 0.014(m)

LAT: 28 6 56.76709 0.011(m) 28 6 56.78793 0.011(m)  
E LON: 278 55 25.33778 0.001(m) 278 55 25.31817 0.001(m)  
W LON: 81 4 34.66222 0.001(m) 81 4 34.68183 0.001(m)  
EL HGT: -5.041(m) 0.012(m) -6.592(m) 0.012(m)  
ORTHO HGT: 22.902(m) 0.025(m) [NAVD88 (Computed using GEOID12B)]

UTM COORDINATES STATE PLANE COORDINATES

UTM (Zone 17) SPC (0901 FL E)

Northing (Y) [meters]	3110029.115	419040.108
Easting (X) [meters]	492506.508	192503.951
Convergence [degrees]	-0.03595442	-0.03595442
Point Scale	0.99960069	0.99994187
Combined Factor	0.99960148	0.99994266

US NATIONAL GRID DESIGNATOR: 17RMM9250610029(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DF5773	ORMD ORMOND BEACH CORS ARP	N291753.469	W0810632.013	131084.6
DG9757	DLND DELAND CORS ARP	N290322.897	W0811547.480	105834.6
DF7046	BRTW BARTOW CORS ARP	N275658.642	W0814658.200	71873.4

NEAREST NGS PUBLISHED CONTROL POINT

AB5478	95 061A	N280656.766	W0810434.661	0.0
--------	---------	-------------	--------------	-----

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

8002 The Opus solution for your submitted RINEX file appears to be  
8002 quite close to an NGS published control point. This suggests that  
8002 you may have set your GPS receiver up over an NGS control point.  
8002 Furthermore, our files indicate that this control point has not  
8002 been recovered in the last five years.  
8002 If you did indeed recover an NGS control point, we would  
8002 appreciate receiving this information through our web based  
8002 Mark Recovery Form at  
8002 [http://www.ngs.noaa.gov/products\\_services.shtml#MarkRecoveryForm](http://www.ngs.noaa.gov/products_services.shtml#MarkRecoveryForm).  
8002

## OPUS solution\_CHARLIE\_20160219\_2

FILE: 6823050o52.16o OP1456147864398

### NGS OPUS SOLUTION REPORT

=====

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

For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com)

DATE: February 22, 2016

RINEX FILE: 6823050o.16o

TIME: 13:32:05 UTC

SOFTWARE: page5 1209.04 master93.pl 022814    START: 2016/02/19 14:52:00  
EPHEMERIS: igr18845.eph [rapid]            STOP: 2016/02/19 23:23:00  
NAV FILE: brdc0500.16n                    OBS USED: 20195 / 21540 : 94%  
ANT NAME: LEIGS14    NONE                # FIXED AMB: 114 / 118 : 97%  
ARP HEIGHT: 2.00                        OVERALL RMS: 0.012(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000)            IGS08 (EPOCH:2016.1361)

X:	879058.819(m)	0.002(m)	879058.030(m)	0.002(m)
Y:	-5552178.798(m)	0.008(m)	-5552177.233(m)	0.008(m)
Z:	3003381.880(m)	0.009(m)	3003381.717(m)	0.009(m)

LAT:	28 16 30.22794	0.012(m)	28 16 30.24896	0.012(m)
E LON:	278 59 48.40591	0.001(m)	278 59 48.38630	0.001(m)
W LON:	81 0 11.59409	0.001(m)	81 0 11.61370	0.001(m)
EL HGT:	-8.050(m)	0.007(m)	-9.597(m)	0.007(m)
ORTHO HGT:	20.112(m)	0.019(m)	[NAVD88 (Computed using GEOID12B)]	

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 17)	SPC (0901 FL E)
Northing (Y) [meters]	3127673.158	436690.174
Easting (X) [meters]	499684.152	199684.044
Convergence [degrees]	-0.00152560	-0.00152560
Point Scale	0.99960000	0.99994118
Combined Factor	0.99960126	0.99994244

US NATIONAL GRID DESIGNATOR: 17RMM9968427673(NAD 83)

### BASE STATIONS USED

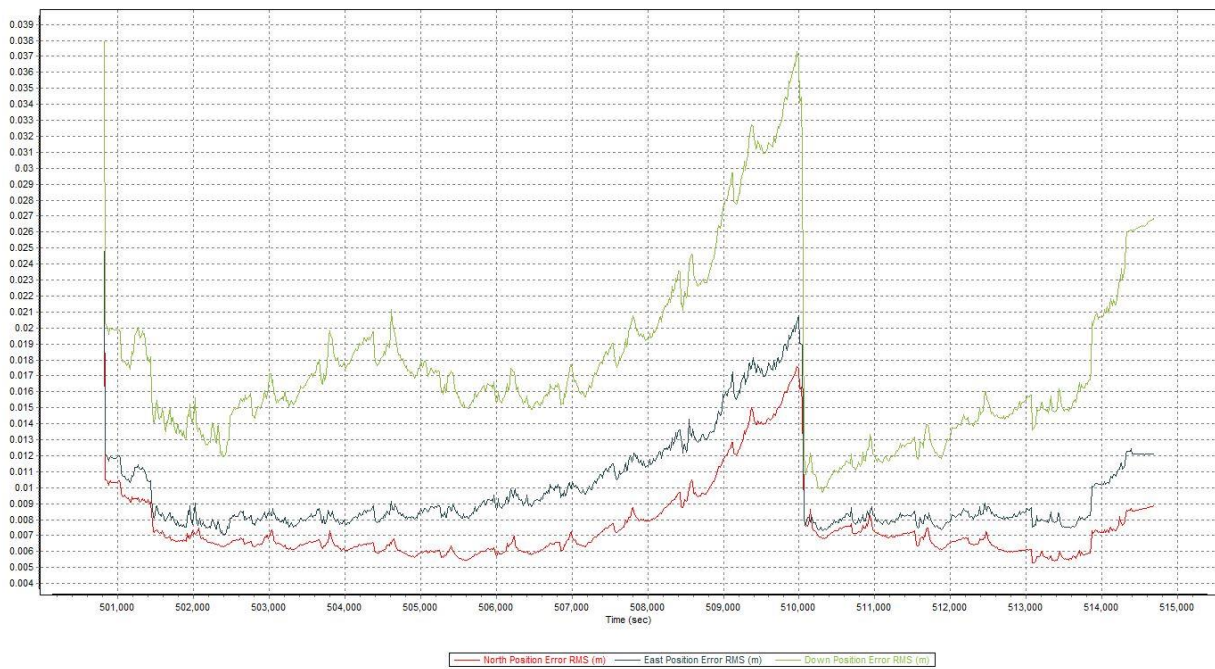
PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
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DF5773 ORMD ORMOND BEACH CORS ARP      N291753.469 W0810632.013 113861.6  
DG9757 DLND DELAND CORS ARP            N290322.897 W0811547.480 90242.3  
DF7046 BRTW BARTOW CORS ARP            N275658.642 W0814658.200 84669.0

NEAREST NGS PUBLISHED CONTROL POINT  
AK6933    FLGPS 44 AZ MK            N281630.227 W0810011.593    0.0

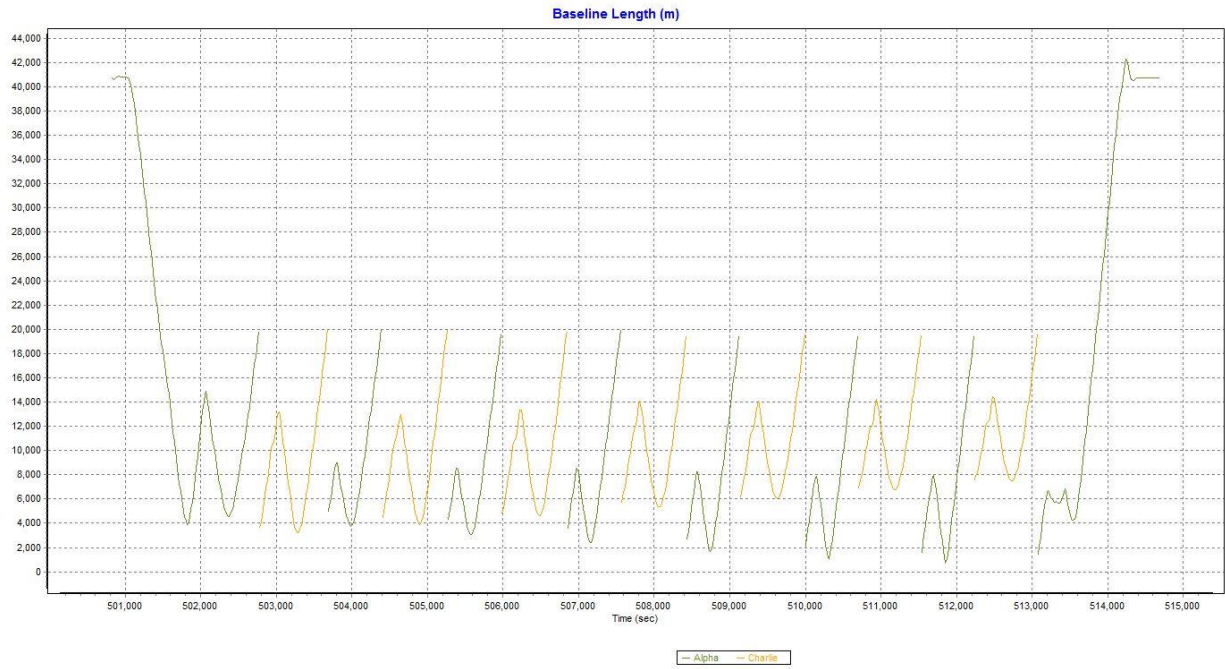
This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

### Smoothed Performance Metrics, Reference Frame\_20160219\_2\_Report

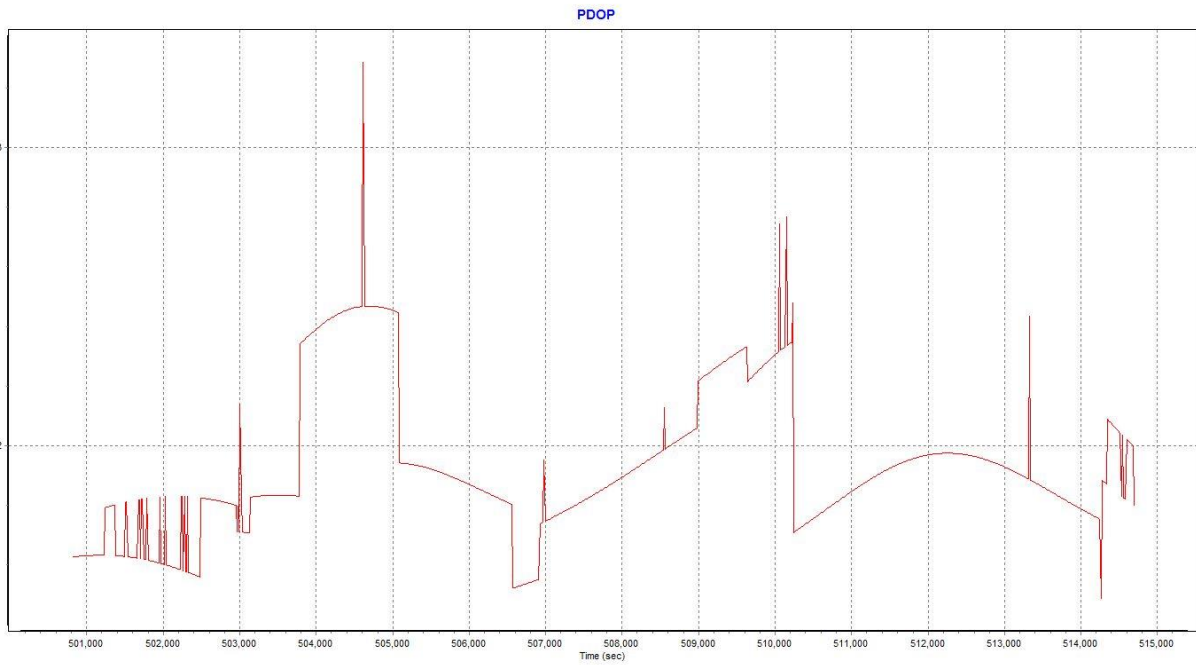




### Baseline Length\_20160219\_2\_Report

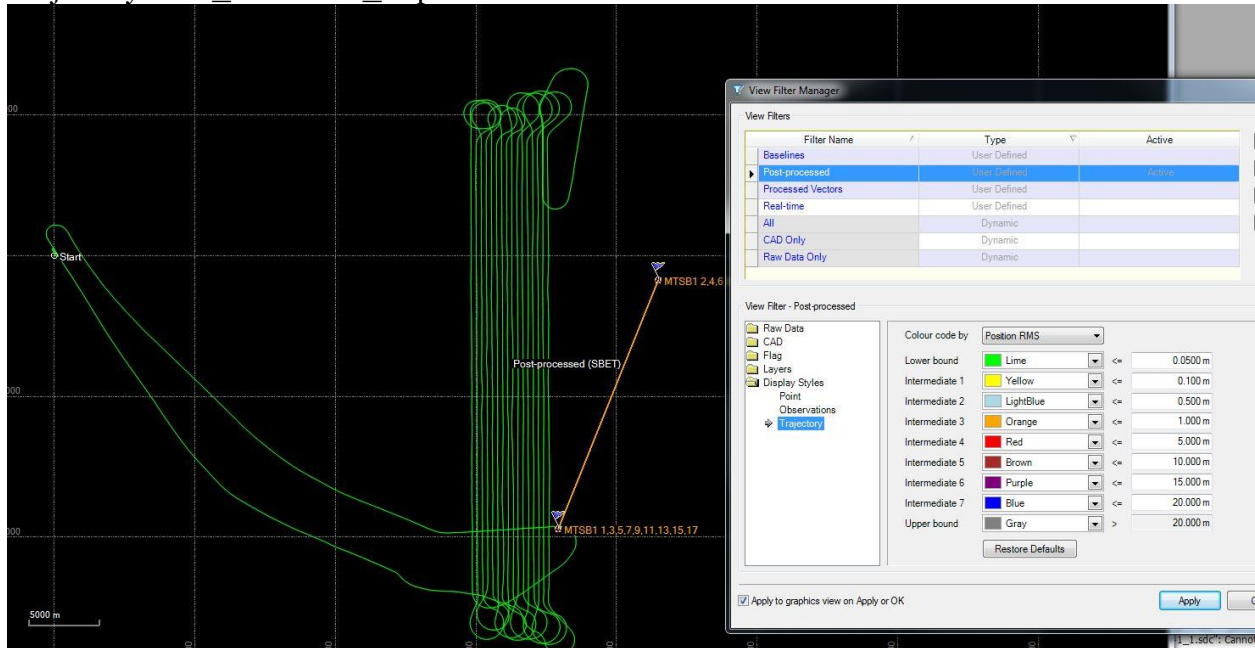


### PDOP\_20160219\_2\_Report



Mission 20160220

Trajectory RMS\_20160220\_Report



**OPUS solution\_ALPHA\_20160220**

FILE: 6790051n20.16o OP1456149915892

NGS OPUS SOLUTION REPORT

=====

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

For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com)

DATE: February 22, 2016

RINEX FILE: 6790051n.16o

TIME: 14:05:57 UTC

SOFTWARE: page5 1209.04 master50.pl 022814 START: 2016/02/20 13:20:00

EPHemeris: igr18846.eph [rapid] STOP: 2016/02/20 18:28:00

NAV FILE: brdc0510.16n OBS USED: 12101 / 13005 : 93%

ANT NAME: LEIGS14 NONE # FIXED AMB: 58 / 66 : 88%

ARP HEIGHT: 2.00 OVERALL RMS: 0.013(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2016.1384)

X: 873271.159(m) 0.005(m) 873270.371(m) 0.005(m)  
Y: -5561537.970(m) 0.004(m) -5561536.403(m) 0.004(m)  
Z: 2987824.608(m) 0.013(m) 2987824.443(m) 0.013(m)

LAT: 28 6 56.76727 0.012(m) 28 6 56.78811 0.012(m)  
E LON: 278 55 25.33799 0.005(m) 278 55 25.31838 0.005(m)  
W LON: 81 4 34.66201 0.005(m) 81 4 34.68162 0.005(m)  
EL HGT: -5.049(m) 0.005(m) -6.600(m) 0.005(m)  
ORTHO HGT: 22.894(m) 0.016(m) [NAVD88 (Computed using GEOID12B)]

UTM COORDINATES STATE PLANE COORDINATES

UTM (Zone 17) SPC (0901 FL E)

Northing (Y) [meters]	3110029.120	419040.114
Easting (X) [meters]	492506.514	192503.956
Convergence [degrees]	-0.03595439	-0.03595439
Point Scale	0.99960069	0.99994187
Combined Factor	0.99960148	0.99994266

US NATIONAL GRID DESIGNATOR: 17RMM9250610029(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DG9757	DLND DELAND CORS ARP	N290322.897	W0811547.480	105834.6
DF7990	ZEFR ZEPHYRHILLS CORS ARP	N281339.322	W0820952.671	107594.9
DF7046	BRTW BARTOW CORS ARP	N275658.642	W0814658.200	71873.4

NEAREST NGS PUBLISHED CONTROL POINT

AB5478 95 061A N280656.766 W0810434.661 0.0

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

8002 The Opus solution for your submitted RINEX file appears to be  
8002 quite close to an NGS published control point. This suggests that  
8002 you may have set your GPS receiver up over an NGS control point.  
8002 Furthermore, our files indicate that this control point has not  
8002 been recovered in the last five years.  
8002 If you did indeed recover an NGS control point, we would  
8002 appreciate receiving this information through our web based  
8002 Mark Recovery Form at  
8002 [http://www.ngs.noaa.gov/products\\_services.shtml#MarkRecoveryForm](http://www.ngs.noaa.gov/products_services.shtml#MarkRecoveryForm).  
8002

**OPUS solution\_CHARLIE\_20160220**

FILE: 6823051n19.16o OP1456150015718

NGS OPUS SOLUTION REPORT  
=====

All computed coordinate accuracies are listed as peak-to-peak values.  
For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com) DATE: February 22, 2016  
RINEX FILE: 6823051n.16o TIME: 14:07:38 UTC

SOFTWARE: page5 1209.04 master51.pl 022814 START: 2016/02/20 13:19:00  
EPHEMERIS: igr18846.eph [rapid] STOP: 2016/02/20 18:28:00  
NAV FILE: brdc0510.16n OBS USED: 12737 / 13313 : 96%  
ANT NAME: LEIGS14 NONE # FIXED AMB: 64 / 65 : 98%  
ARP HEIGHT: 2.00 OVERALL RMS: 0.011(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2016.1384)

X:	879058.817(m)	0.005(m)	879058.028(m)	0.005(m)
Y:	-5552178.787(m)	0.005(m)	-5552177.222(m)	0.005(m)
Z:	3003381.872(m)	0.016(m)	3003381.709(m)	0.016(m)

LAT:	28 16 30.22788	0.013(m)	28 16 30.24890	0.013(m)
E LON:	278 59 48.40590	0.004(m)	278 59 48.38629	0.004(m)
W LON:	81 0 11.59410	0.004(m)	81 0 11.61371	0.004(m)
EL HGT:	-8.063(m)	0.010(m)	-9.610(m)	0.010(m)
ORTHO HGT:	20.099(m)	0.022(m)	[NAVD88 (Computed using GEOID12B)]	

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 17)	SPC (0901 FL E)
Northing (Y) [meters]	3127673.157	436690.172
Easting (X) [meters]	499684.152	199684.044
Convergence [degrees]	-0.00152561	-0.00152561
Point Scale	0.99960000	0.99994118
Combined Factor	0.99960127	0.99994245

US NATIONAL GRID DESIGNATOR: 17RMM9968427673(NAD 83)

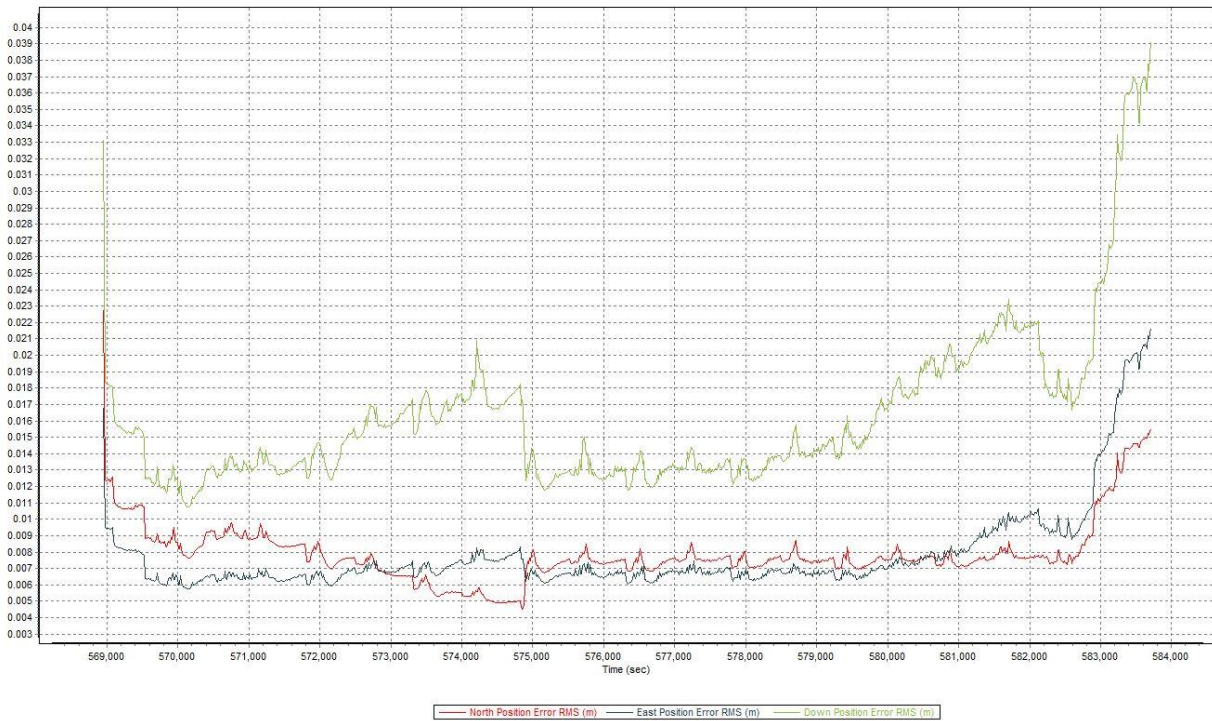
BASE STATIONS USED				
PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DG9757	DLND DELAND CORS ARP	N290322.897	W0811547.480	90242.3

DF7990 ZEFR ZEPHYRHILLS CORS ARP      N281339.322 W0820952.671 114091.7  
DF7046 BRTW BARTOW CORS ARP            N275658.642 W0814658.200 84669.0

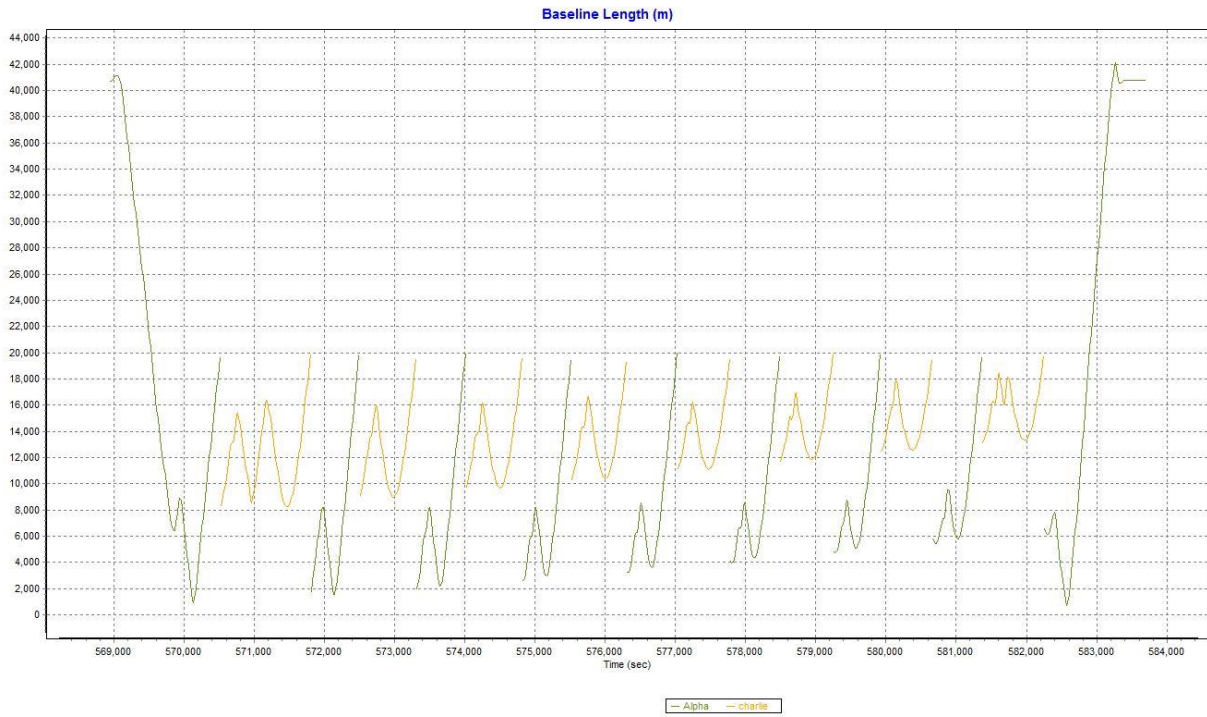
NEAREST NGS PUBLISHED CONTROL POINT  
AK6933    FLGPS 44 AZ MK            N281630.227 W0810011.593    0.0

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

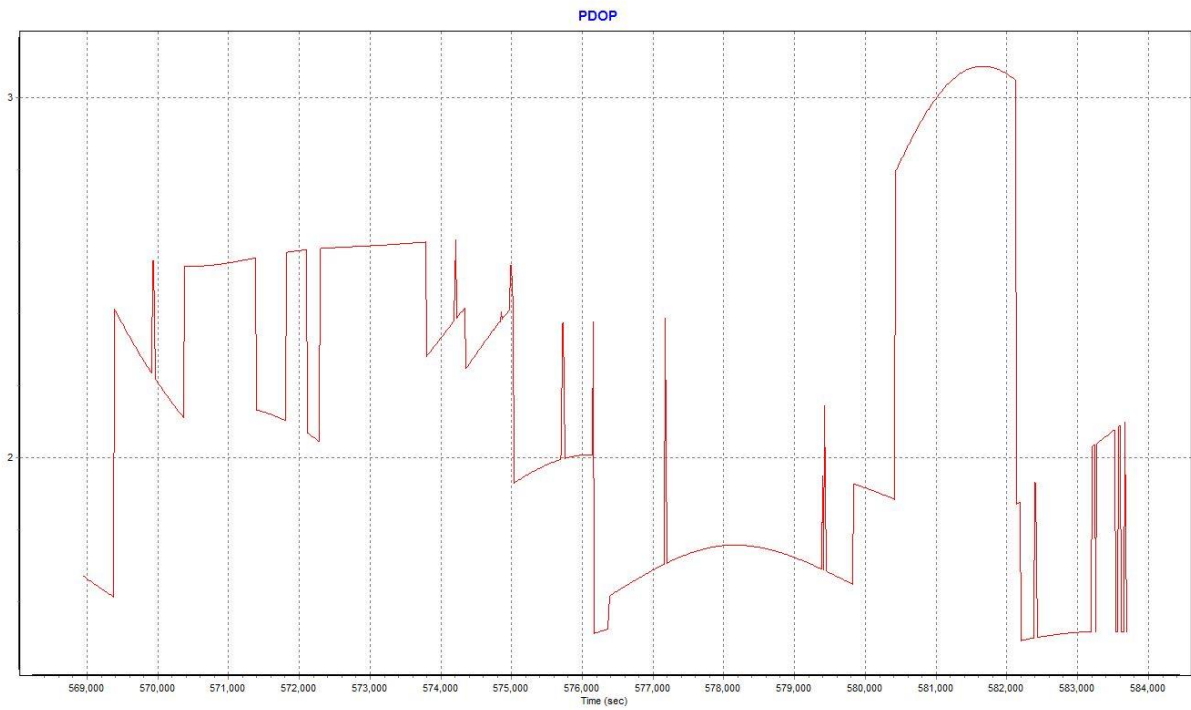
### Smoothed Performance Metrics, Reference Frame\_20160220\_Report



### Baseline Length\_20160220\_Report

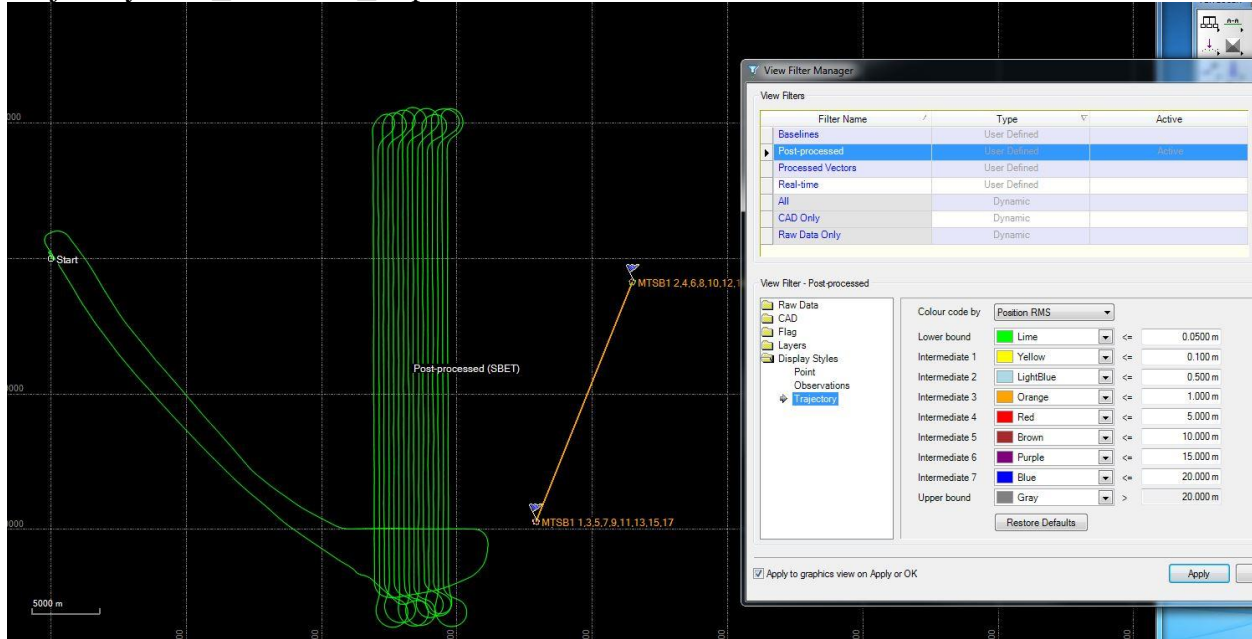


### PDOP\_20160220\_Report



Mission 20160221

Trajectory RMS\_20160221\_Report



OPUS solution\_ALPHA\_20160221

FILE: 6790052n26.16o OP1456150117001

2005 NOTE: The IGS precise and IGS rapid orbits were not available  
2005 at processing time. The IGS ultra-rapid orbit was/will be used to  
2005 process the data.  
2005

NGS OPUS SOLUTION REPORT  
=====

All computed coordinate accuracies are listed as peak-to-peak values.  
For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com)  
RINEX FILE: 6790052n.16o

DATE: February 22, 2016  
TIME: 14:09:20 UTC

SOFTWARE: page5 1209.04 master52.pl 022814 START: 2016/02/21 13:26:00  
EPHEMERIS: igu18850.eph [ultra-rapid] STOP: 2016/02/21 18:13:00

NAV FILE: brdc0520.16n                   OBS USED: 11132 / 12207 : 91%  
ANT NAME: LEIGS14    NONE           # FIXED AMB: 70 / 73 : 96%  
ARP HEIGHT: 2.00                   OVERALL RMS: 0.014(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000)           IGS08 (EPOCH:2016.1411)

X: 873271.168(m) 0.008(m)           873270.380(m) 0.008(m)  
Y: -5561537.993(m) 0.014(m)       -5561536.426(m) 0.014(m)  
Z: 2987824.610(m) 0.005(m)       2987824.445(m) 0.005(m)

LAT: 28 6 56.76696 0.011(m)   28 6 56.78780 0.011(m)  
E LON: 278 55 25.33819 0.006(m) 278 55 25.31857 0.006(m)  
W LON: 81 4 34.66181 0.006(m) 81 4 34.68143 0.006(m)  
EL HGT: -5.027(m) 0.011(m)       -6.578(m) 0.011(m)  
ORTHO HGT: 22.916(m) 0.023(m) [NAVD88 (Computed using GEOID12B)]

UTM COORDINATES   STATE PLANE COORDINATES

UTM (Zone 17)       SPC (0901 FL E)  
Northing (Y) [meters] 3110029.111   419040.104  
Easting (X) [meters] 492506.519   192503.962  
Convergence [degrees] -0.03595436   -0.03595436  
Point Scale       0.99960069   0.99994187  
Combined Factor   0.99960148   0.99994266

US NATIONAL GRID DESIGNATOR: 17RMM9250610029(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI3562	CCV5 CAPE CANAVERAL 5 CORS ARP	N282736.799	W0803242.818	64585.5
DG9757	DLND DELAND CORS ARP	N290322.897	W0811547.480	105834.6
DF5773	ORMD ORMOND BEACH CORS ARP	N291753.469	W0810632.013	131084.6

NEAREST NGS PUBLISHED CONTROL POINT

AB5478 95 061A                   N280656.766 W0810434.661   0.0

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

- 8002 The Opus solution for your submitted RINEX file appears to be
- 8002 quite close to an NGS published control point. This suggests that
- 8002 you may have set your GPS receiver up over an NGS control point.
- 8002 Furthermore, our files indicate that this control point has not
- 8002 been recovered in the last five years.
- 8002 If you did indeed recover an NGS control point, we would
- 8002 appreciate receiving this information through our web based
- 8002 Mark Recovery Form at



8002 [http://www.ngs.noaa.gov/products\\_services.shtml#MarkRecoveryForm](http://www.ngs.noaa.gov/products_services.shtml#MarkRecoveryForm).  
8002

### OPUS solution\_BRAVO\_20160221

FILE: 6829052n05.16o OP1456151258171

2005 NOTE: The IGS precise and IGS rapid orbits were not available  
2005 at processing time. The IGS ultra-rapid orbit was/will be used to  
2005 process the data.  
2005

#### NGS OPUS SOLUTION REPORT =====

All computed coordinate accuracies are listed as peak-to-peak values.  
For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com) DATE: February 22, 2016  
RINEX FILE: 6829052n.16o TIME: 14:28:42 UTC

SOFTWARE: page5 1209.04 master90.pl 022814 START: 2016/02/21 13:05:00  
EPHEMERIS: igu18850.eph [ultra-rapid] STOP: 2016/02/21 18:12:00  
NAV FILE: brdc0520.16n OBS USED: 12565 / 13335 : 94%  
ANT NAME: LEIGS14 NONE # FIXED AMB: 71 / 74 : 96%  
ARP HEIGHT: 2.00 OVERALL RMS: 0.012(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2016.1411)

X:	879058.835(m)	0.000(m)	879058.046(m)	0.000(m)
Y:	-5552178.803(m)	0.004(m)	-5552177.238(m)	0.004(m)
Z:	3003381.879(m)	0.012(m)	3003381.716(m)	0.012(m)

LAT:	28 16 30.22779	0.012(m)	28 16 30.24881	0.012(m)
E LON:	278 59 48.40646	0.001(m)	278 59 48.38685	0.001(m)
W LON:	81 0 11.59354	0.001(m)	81 0 11.61315	0.001(m)
EL HGT:	-8.044(m)	0.004(m)	-9.591(m)	0.004(m)
ORTHO HGT:	20.118(m)	0.015(m)	[NAVD88 (Computed using GEOID12B)]	

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 17)	SPC (0901 FL E)
Northing (Y) [meters]	3127673.154	436690.169
Easting (X) [meters]	499684.167	199684.059
Convergence [degrees]	-0.00152553	-0.00152553
Point Scale	0.99960000	0.99994118
Combined Factor	0.99960126	0.99994244

US NATIONAL GRID DESIGNATOR: 17RMM9968427673(NAD 83)

BASE STATIONS USED

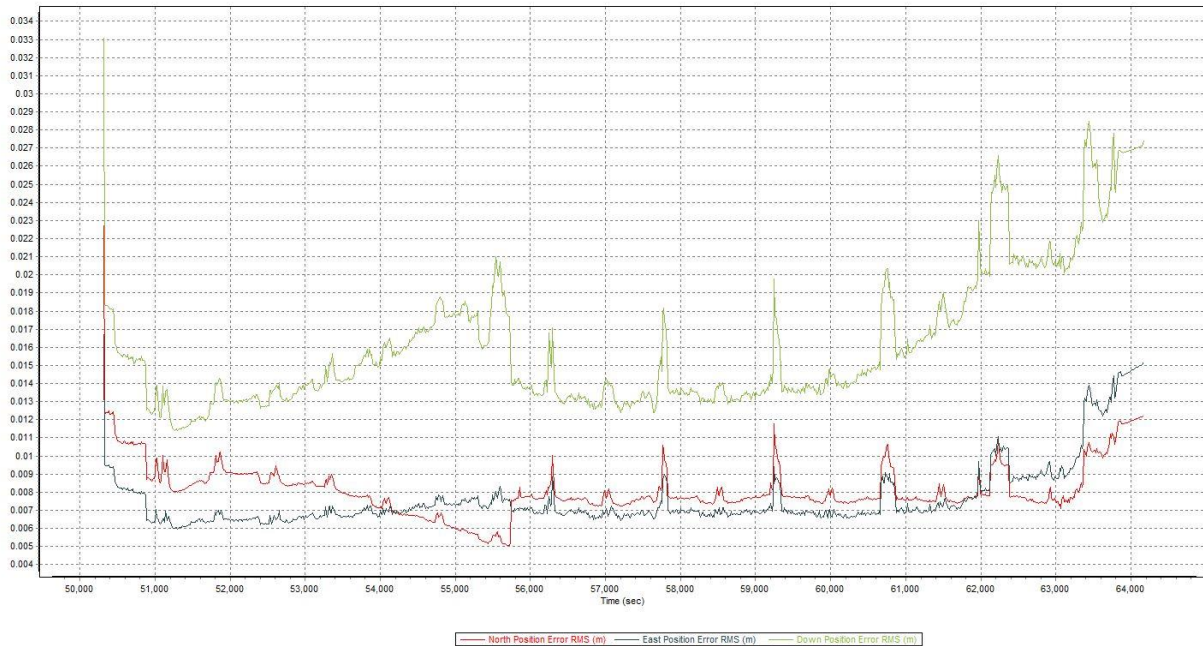
PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DF5773	ORMD ORMOND BEACH CORS ARP	N291753.469	W0810632.013	113861.6
DG9757	DLND DELAND CORS ARP	N290322.897	W0811547.480	90242.3
DF7046	BRTW BARTOW CORS ARP	N275658.642	W0814658.200	84669.0

NEAREST NGS PUBLISHED CONTROL POINT

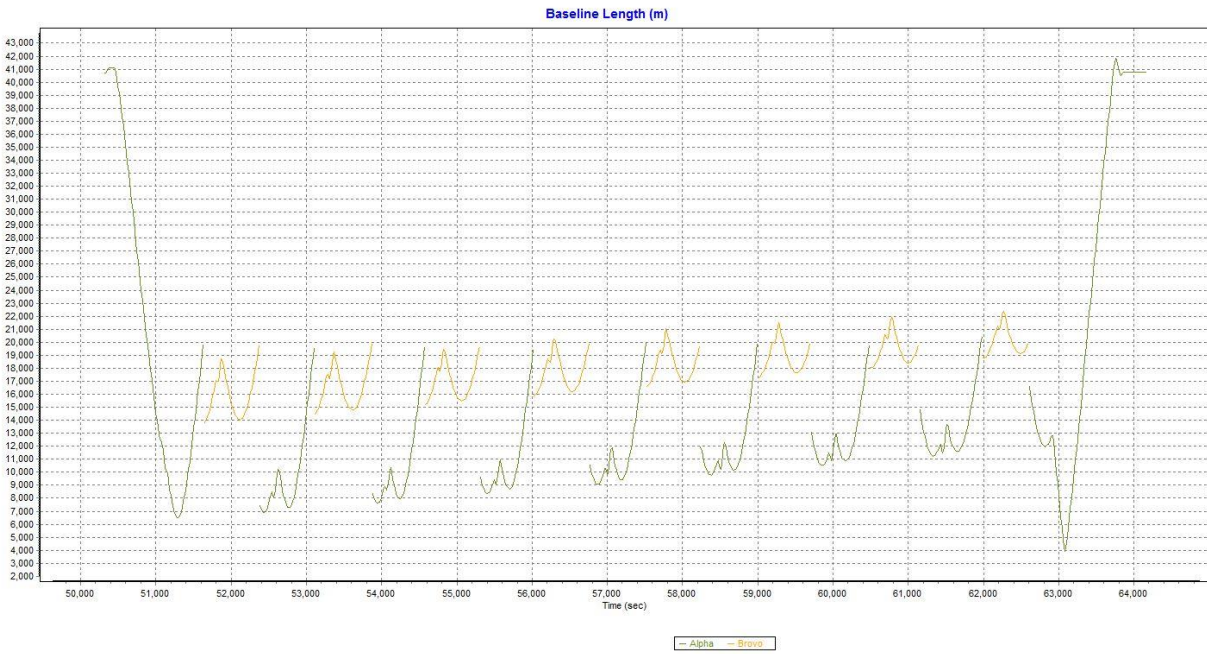
AK6933	FLGPS 44 AZ MK	N281630.227	W0810011.593	0.0
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

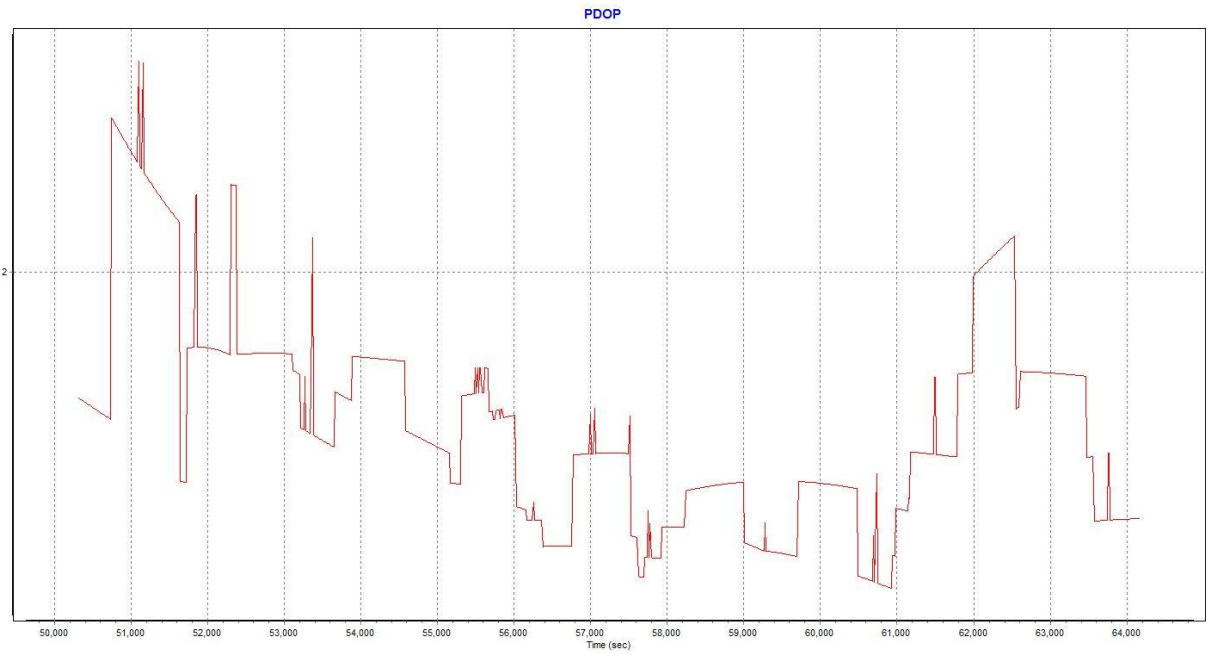
Smoothed Performance Metrics, Reference Frame\_20160221\_Report



### Baseline Length\_20160221\_Report

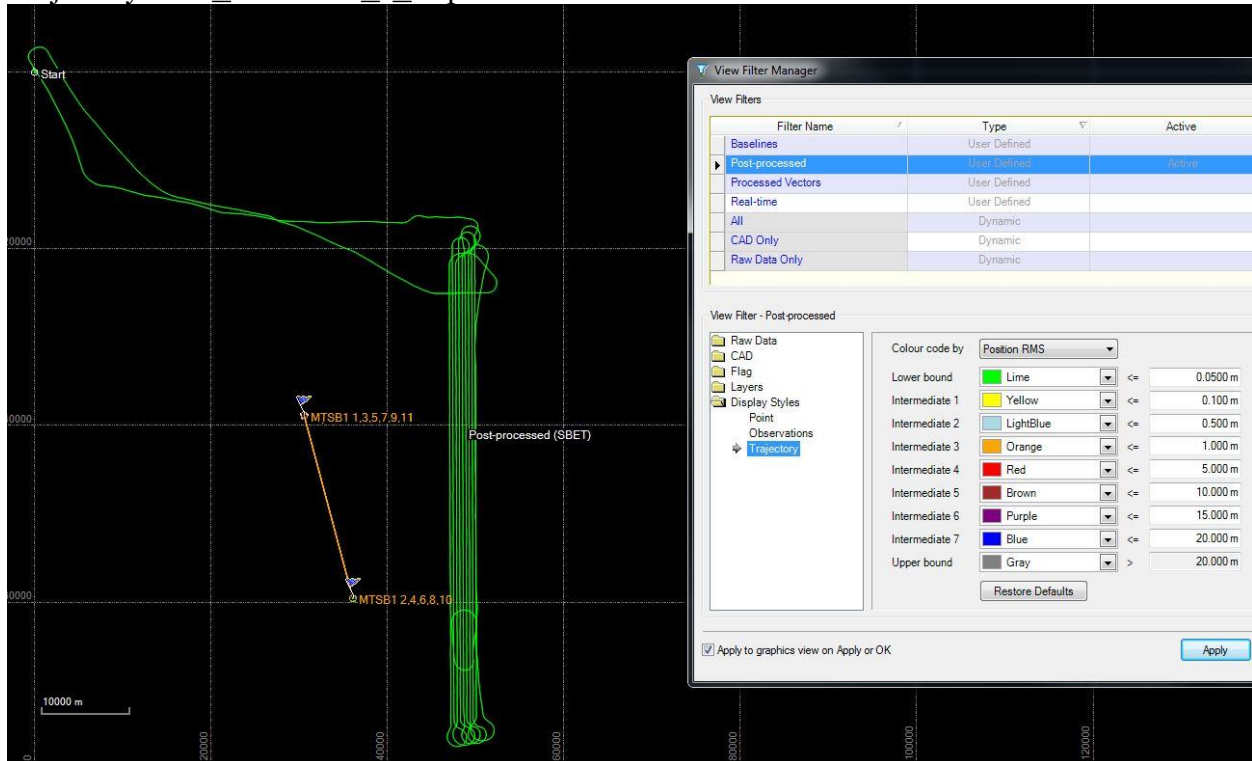


### PDOP\_20160221\_Report



Mission 20160222\_1

Trajectory RMS\_20160222\_1\_Report



OPUS solution\_ALPHA\_20160222\_1

FILE: 6790053n45.16o OP1456231830710

2005 NOTE: The IGS precise and IGS rapid orbits were not available  
 2005 at processing time. The IGS ultra-rapid orbit was/will be used to  
 2005 process the data.  
 2005

NGS OPUS SOLUTION REPORT  
 =====

All computed coordinate accuracies are listed as peak-to-peak values.  
 For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com)  
 RINEX FILE: 6790053n.16o

DATE: February 23, 2016  
 TIME: 12:51:41 UTC

SOFTWARE: page5 1209.04 master53.pl 022814 START: 2016/02/22 13:45:00  
EPHEMERIS: igu18851.eph [ultra-rapid] STOP: 2016/02/22 23:22:00  
NAV FILE: brdc0530.16n OBS USED: 22260 / 24202 : 92%  
ANT NAME: LEIGS14 NONE # FIXED AMB: 132 / 141 : 94%  
ARP HEIGHT: 2.00 OVERALL RMS: 0.015(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2016.1442)

X: 869407.234(m) 0.004(m) 869406.447(m) 0.004(m)  
Y: -5571381.935(m) 0.008(m) -5571380.366(m) 0.008(m)  
Z: 2970674.606(m) 0.013(m) 2970674.440(m) 0.013(m)

LAT: 27 56 25.64909 0.007(m) 27 56 25.66977 0.007(m)  
E LON: 278 52 9.85191 0.003(m) 278 52 9.83231 0.003(m)  
W LON: 81 7 50.14809 0.003(m) 81 7 50.16769 0.003(m)  
EL HGT: -6.497(m) 0.014(m) -8.051(m) 0.014(m)  
ORTHO HGT: 20.947(m) 0.027(m) [NAVD88 (Computed using GEOID12B)]

UTM COORDINATES STATE PLANE COORDINATES

UTM (Zone 17) SPC (0901 FL E)

Northing (Y) [meters]	3090613.496	399617.863
Easting (X) [meters]	487152.346	187147.961
Convergence [degrees]	-0.06119165	-0.06119165
Point Scale	0.99960204	0.99994321
Combined Factor	0.99960306	0.99994423

US NATIONAL GRID DESIGNATOR: 17RML8715290613(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DF5773	ORMD ORMOND BEACH CORS ARP	N291753.469	W0810632.013	150487.5
DF7990	ZEFR ZEPHYRHILLS CORS ARP	N281339.322	W0820952.671	106493.7
DG9757	DLND DELAND CORS ARP	N290322.897	W0811547.480	124350.1

NEAREST NGS PUBLISHED CONTROL POINT

AF6097	JACKSON	N275625.648	W0810750.148	0.0
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

8002 The Opus solution for your submitted RINEX file appears to be  
8002 quite close to an NGS published control point. This suggests that  
8002 you may have set your GPS receiver up over an NGS control point.  
8002 Furthermore, our files indicate that this control point has not  
8002 been recovered in the last five years.

8002 If you did indeed recover an NGS control point, we would  
8002 appreciate receiving this information through our web based  
8002 Mark Recovery Form at  
8002 [http://www.ngs.noaa.gov/products\\_services.shtml#MarkRecoveryForm](http://www.ngs.noaa.gov/products_services.shtml#MarkRecoveryForm).  
8002

**OPUS solution BRAVO\_20160222\_1**

FILE: 6829053o10.16o OP1456231902758

2005 NOTE: The IGS precise and IGS rapid orbits were not available  
2005 at processing time. The IGS ultra-rapid orbit was/will be used to  
2005 process the data.  
2005

NGS OPUS SOLUTION REPORT  
=====

All computed coordinate accuracies are listed as peak-to-peak values.  
For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com) DATE: February 23, 2016  
RINEX FILE: 6829053o.16o TIME: 12:53:11 UTC

SOFTWARE: page5 1209.04 master53.pl 022814 START: 2016/02/22 14:10:00  
EPHEMERIS: igu18851.eph [ultra-rapid] STOP: 2016/02/22 23:20:30  
NAV FILE: brdc0530.16n OBS USED: 21116 / 22764 : 93%  
ANT NAME: LEIGS14 NONE # FIXED AMB: 117 / 126 : 93%  
ARP HEIGHT: 2.00 OVERALL RMS: 0.015(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2016.1442)

X: 876310.584(m) 0.008(m) 876309.798(m) 0.008(m)  
Y: -5580100.615(m) 0.012(m) -5580099.043(m) 0.012(m)  
Z: 2952350.837(m) 0.009(m) 2952350.670(m) 0.009(m)

LAT: 27 45 12.40297 0.008(m) 27 45 12.42351 0.008(m)  
E LON: 278 55 29.83737 0.006(m) 278 55 29.81792 0.006(m)  
W LON: 81 4 30.16263 0.006(m) 81 4 30.18208 0.006(m)  
EL HGT: -5.407(m) 0.015(m) -6.967(m) 0.015(m)  
ORTHO HGT: 21.218(m) 0.029(m) [NAVD88 (Computed using GEOID12B)]

UTM COORDINATES STATE PLANE COORDINATES  
UTM (Zone 17) SPC (0901 FL E)  
Northing (Y) [meters] 3069892.984 378890.279  
Easting (X) [meters] 492604.642 192602.118

Convergence [degrees] -0.03494613 -0.03494613  
Point Scale 0.99960068 0.99994185  
Combined Factor 0.99960153 0.99994270

US NATIONAL GRID DESIGNATOR: 17RML9260469892(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DF5773	ORMD ORMOND BEACH CORS ARP	N291753.469	W0810632.013	171227.1
DG9757	DLND DELAND CORS ARP	N290322.897	W0811547.480	145565.8
DI3562	CCV5 CAPE CANAVERAL 5 CORS ARP	N282736.799	W0803242.818	94048.7

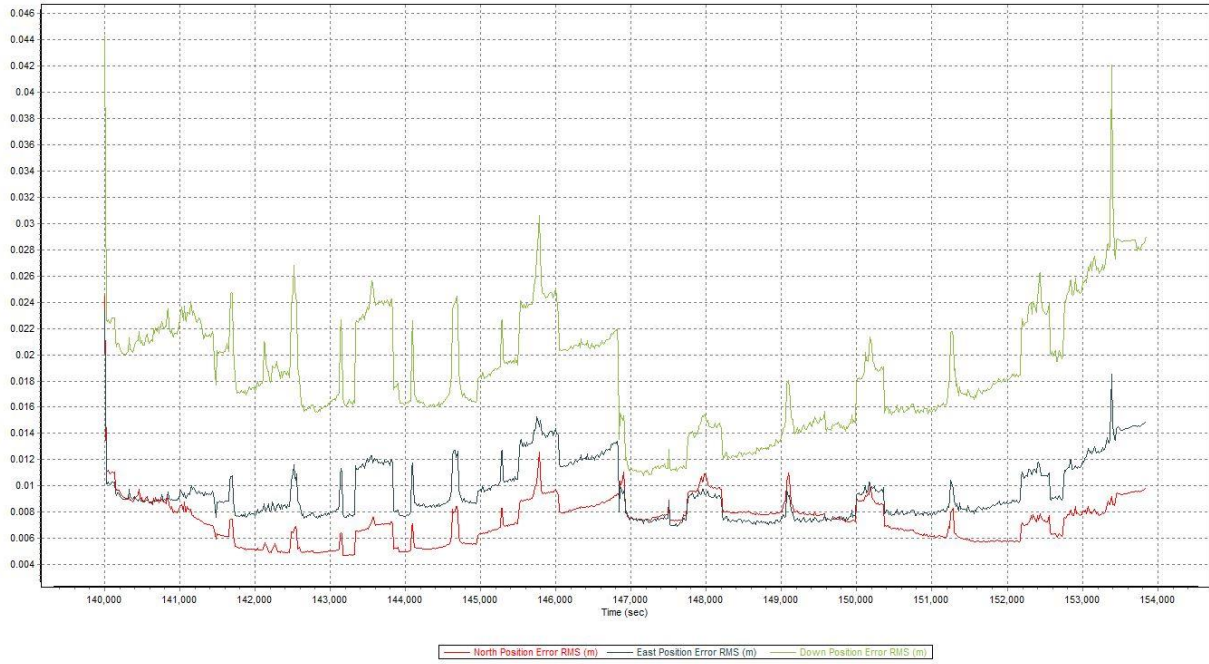
NEAREST NGS PUBLISHED CONTROL POINT

AF6134	COON	N274512.402	W0810430.162	0.0
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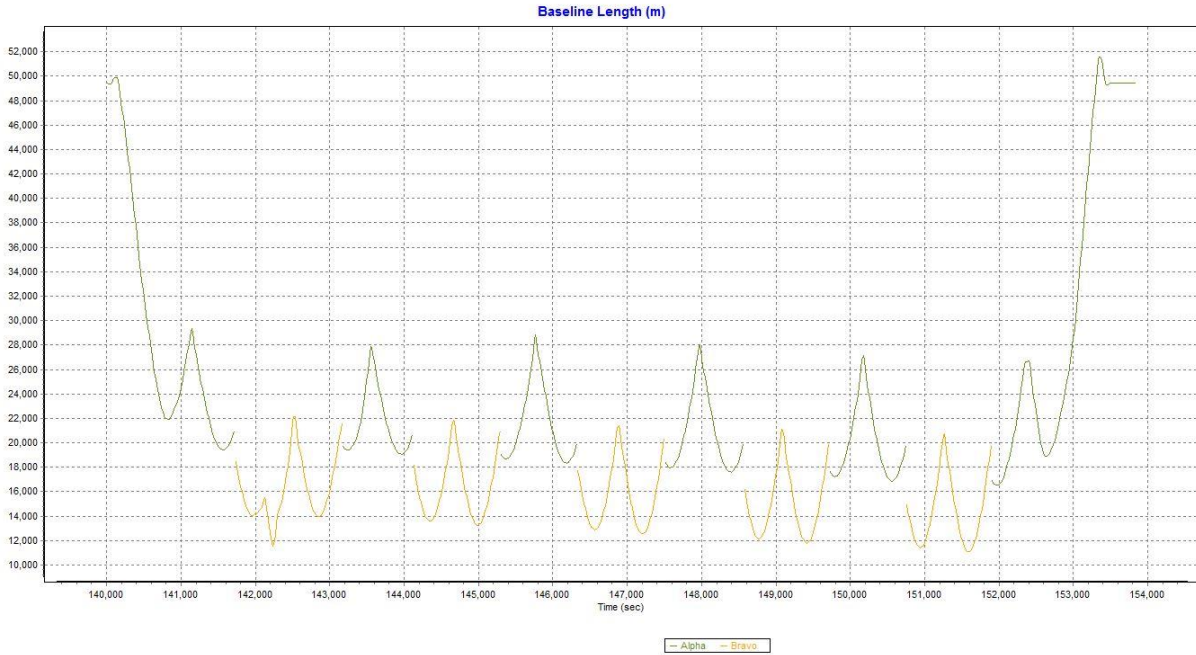
This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

8002 The Opus solution for your submitted RINEX file appears to be  
8002 quite close to an NGS published control point. This suggests that  
8002 you may have set your GPS receiver up over an NGS control point.  
8002 Furthermore, our files indicate that this control point has not  
8002 been recovered in the last five years.  
8002 If you did indeed recover an NGS control point, we would  
8002 appreciate receiving this information through our web based  
8002 Mark Recovery Form at  
8002 [http://www.ngs.noaa.gov/products\\_services.shtml#MarkRecoveryForm](http://www.ngs.noaa.gov/products_services.shtml#MarkRecoveryForm).  
8002

### Smoothed Performance Metrics, Reference Frame\_20160222\_1\_Report

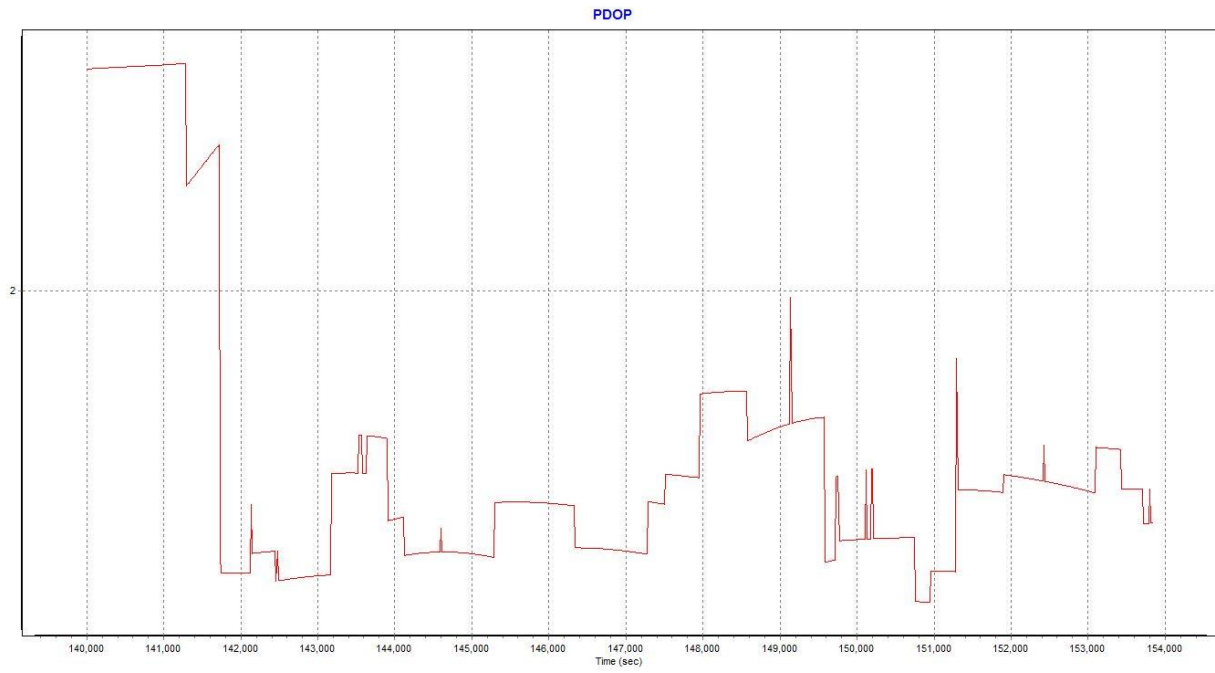


### Baseline Length\_20160222\_1\_Report



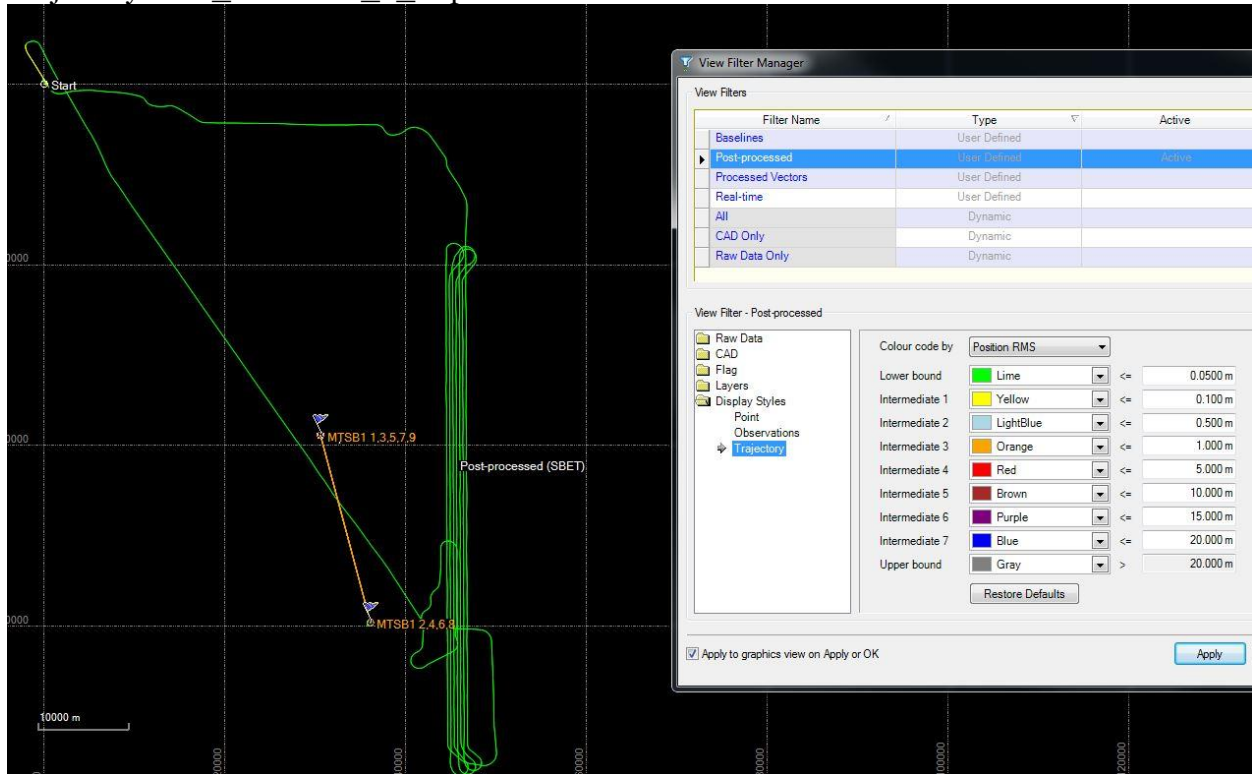


PDOP\_20160222\_1\_Report



### Mission 20160222\_2

### Trajectory RMS 20160222\_2\_Report



### OPUS solution\_ALPHA\_20160222\_2

FILE: 6790053n45.16o OP1456231830710

2005 NOTE: The IGS precise and IGS rapid orbits were not available  
2005 at processing time. The IGS ultra-rapid orbit was/will be used to  
2005 process the data.  
2005

#### NGS OPUS SOLUTION REPORT

=====

All computed coordinate accuracies are listed as peak-to-peak values.  
For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com)  
RINEX FILE: 6790053n.16o

DATE: February 23, 2016  
TIME: 12:51:41 UTC

SOFTWARE: page5 1209.04 master53.pl 022814 START: 2016/02/22 13:45:00  
EPHEMERIS: igu18851.eph [ultra-rapid] STOP: 2016/02/22 23:22:00  
NAV FILE: brdc0530.16n OBS USED: 22260 / 24202 : 92%  
ANT NAME: LEIGS14 NONE # FIXED AMB: 132 / 141 : 94%  
ARP HEIGHT: 2.00 OVERALL RMS: 0.015(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2016.1442)

X: 869407.234(m) 0.004(m) 869406.447(m) 0.004(m)  
Y: -5571381.935(m) 0.008(m) -5571380.366(m) 0.008(m)  
Z: 2970674.606(m) 0.013(m) 2970674.440(m) 0.013(m)

LAT: 27 56 25.64909 0.007(m) 27 56 25.66977 0.007(m)  
E LON: 278 52 9.85191 0.003(m) 278 52 9.83231 0.003(m)  
W LON: 81 7 50.14809 0.003(m) 81 7 50.16769 0.003(m)  
EL HGT: -6.497(m) 0.014(m) -8.051(m) 0.014(m)  
ORTHO HGT: 20.947(m) 0.027(m) [NAVD88 (Computed using GEOID12B)]

UTM COORDINATES STATE PLANE COORDINATES

UTM (Zone 17) SPC (0901 FL E)

Northing (Y) [meters]	3090613.496	399617.863
Easting (X) [meters]	487152.346	187147.961
Convergence [degrees]	-0.06119165	-0.06119165
Point Scale	0.99960204	0.99994321
Combined Factor	0.99960306	0.99994423

US NATIONAL GRID DESIGNATOR: 17RML8715290613(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DF5773	ORMD ORMOND BEACH CORS ARP	N291753.469	W0810632.013	150487.5
DF7990	ZEFR ZEPHYRHILLS CORS ARP	N281339.322	W0820952.671	106493.7
DG9757	DLND DELAND CORS ARP	N290322.897	W0811547.480	124350.1

NEAREST NGS PUBLISHED CONTROL POINT

AF6097 JACKSON N275625.648 W0810750.148 0.0

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

8002 The Opus solution for your submitted RINEX file appears to be  
8002 quite close to an NGS published control point. This suggests that  
8002 you may have set your GPS receiver up over an NGS control point.  
8002 Furthermore, our files indicate that this control point has not  
8002 been recovered in the last five years.

8002 If you did indeed recover an NGS control point, we would  
8002 appreciate receiving this information through our web based  
8002 Mark Recovery Form at  
8002 [http://www.ngs.noaa.gov/products\\_services.shtml#MarkRecoveryForm](http://www.ngs.noaa.gov/products_services.shtml#MarkRecoveryForm).  
8002

**OPUS solution BRAVO\_20160222\_2**

FILE: 6829053o10.16o OP1456231902758

2005 NOTE: The IGS precise and IGS rapid orbits were not available  
2005 at processing time. The IGS ultra-rapid orbit was/will be used to  
2005 process the data.  
2005

NGS OPUS SOLUTION REPORT  
=====

All computed coordinate accuracies are listed as peak-to-peak values.  
For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com) DATE: February 23, 2016  
RINEX FILE: 6829053o.16o TIME: 12:53:11 UTC

SOFTWARE: page5 1209.04 master53.pl 022814 START: 2016/02/22 14:10:00  
EPHEMERIS: igu18851.eph [ultra-rapid] STOP: 2016/02/22 23:20:30  
NAV FILE: brdc0530.16n OBS USED: 21116 / 22764 : 93%  
ANT NAME: LEIGS14 NONE # FIXED AMB: 117 / 126 : 93%  
ARP HEIGHT: 2.00 OVERALL RMS: 0.015(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2016.1442)

X:	876310.584(m)	0.008(m)	876309.798(m)	0.008(m)
Y:	-5580100.615(m)	0.012(m)	-5580099.043(m)	0.012(m)
Z:	2952350.837(m)	0.009(m)	2952350.670(m)	0.009(m)

LAT:	27 45 12.40297	0.008(m)	27 45 12.42351	0.008(m)
E LON:	278 55 29.83737	0.006(m)	278 55 29.81792	0.006(m)
W LON:	81 4 30.16263	0.006(m)	81 4 30.18208	0.006(m)
EL HGT:	-5.407(m)	0.015(m)	-6.967(m)	0.015(m)
ORTHO HGT:	21.218(m)	0.029(m)	[NAVD88 (Computed using GEOID12B)]	

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 17)	SPC (0901 FL E)
Northing (Y) [meters]	3069892.984	378890.279
Easting (X) [meters]	492604.642	192602.118

Convergence [degrees] -0.03494613 -0.03494613  
Point Scale 0.99960068 0.99994185  
Combined Factor 0.99960153 0.99994270

US NATIONAL GRID DESIGNATOR: 17RML9260469892(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DF5773	ORMD ORMOND BEACH CORS ARP	N291753.469	W0810632.013	171227.1
DG9757	DLND DELAND CORS ARP	N290322.897	W0811547.480	145565.8
DI3562	CCV5 CAPE CANAVERAL 5 CORS ARP	N282736.799	W0803242.818	94048.7

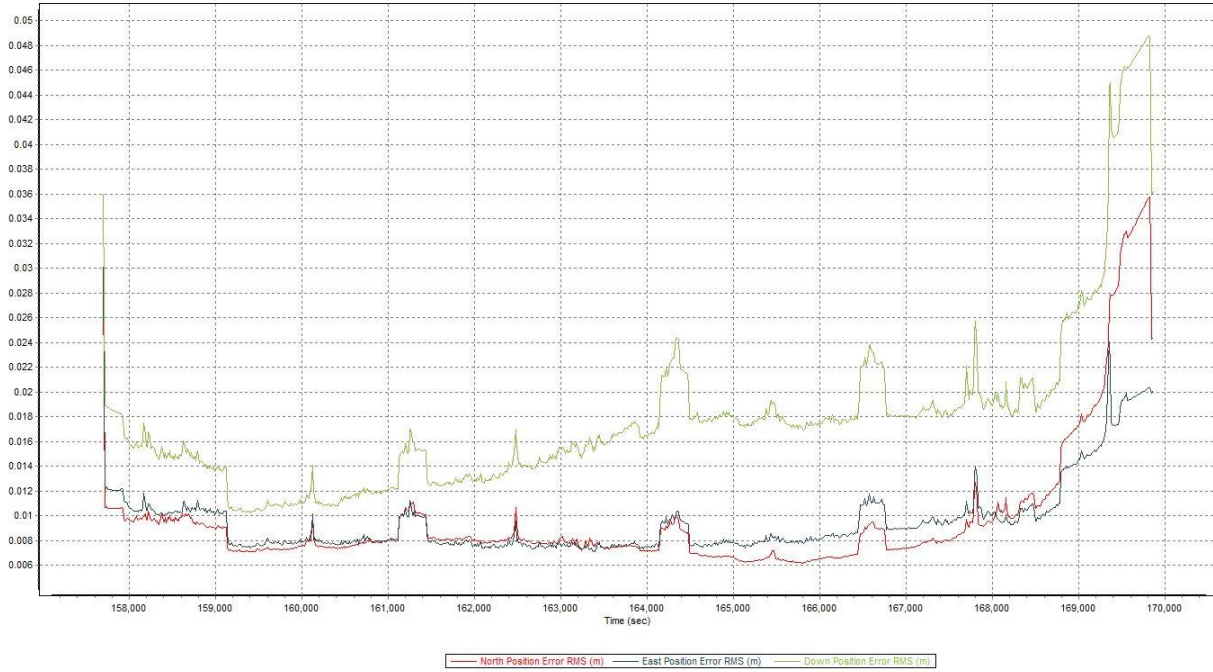
NEAREST NGS PUBLISHED CONTROL POINT

AF6134	COON	N274512.402	W0810430.162	0.0
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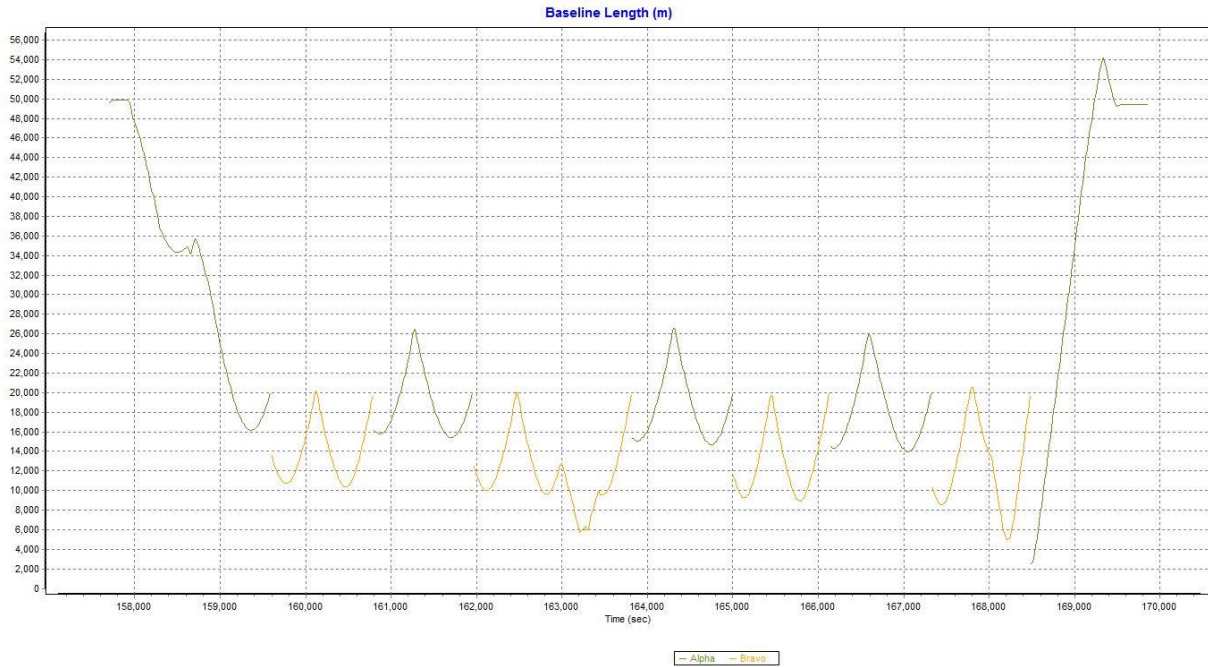
This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

8002 The Opus solution for your submitted RINEX file appears to be  
8002 quite close to an NGS published control point. This suggests that  
8002 you may have set your GPS receiver up over an NGS control point.  
8002 Furthermore, our files indicate that this control point has not  
8002 been recovered in the last five years.  
8002 If you did indeed recover an NGS control point, we would  
8002 appreciate receiving this information through our web based  
8002 Mark Recovery Form at  
8002 [http://www.ngs.noaa.gov/products\\_services.shtml#MarkRecoveryForm](http://www.ngs.noaa.gov/products_services.shtml#MarkRecoveryForm).  
8002

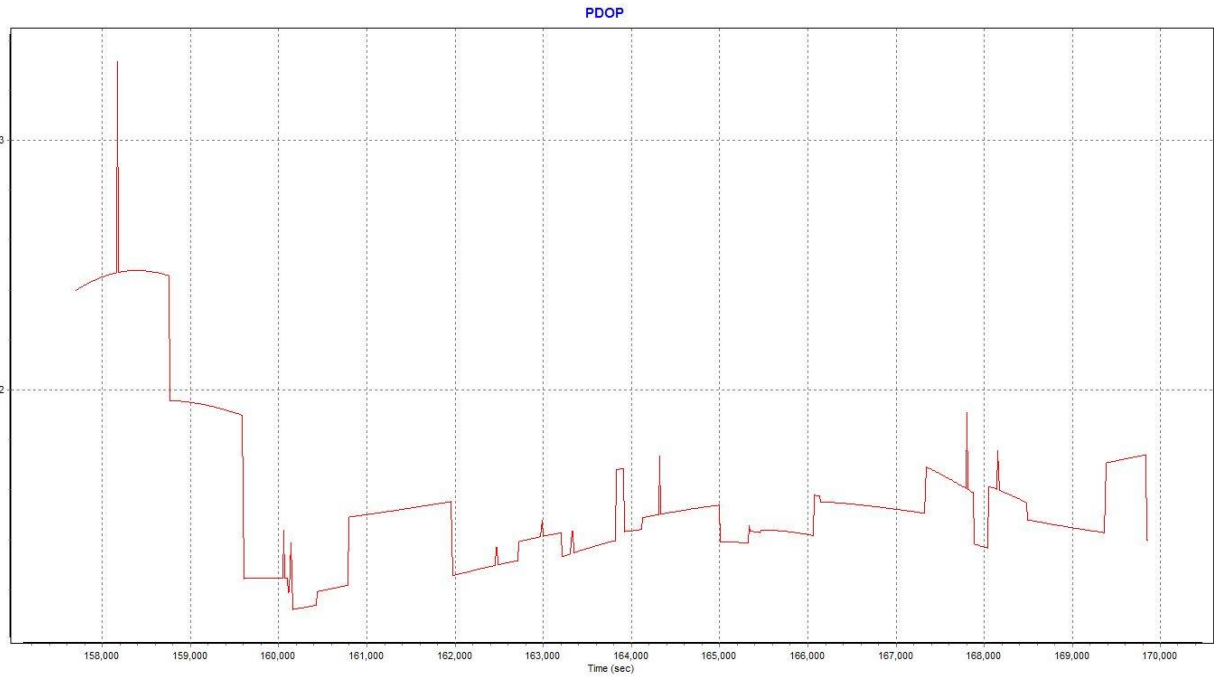
### Smoothed Performance Metrics, Reference Frame\_20160222\_2\_Report



### Baseline Length\_20160222\_2\_Report

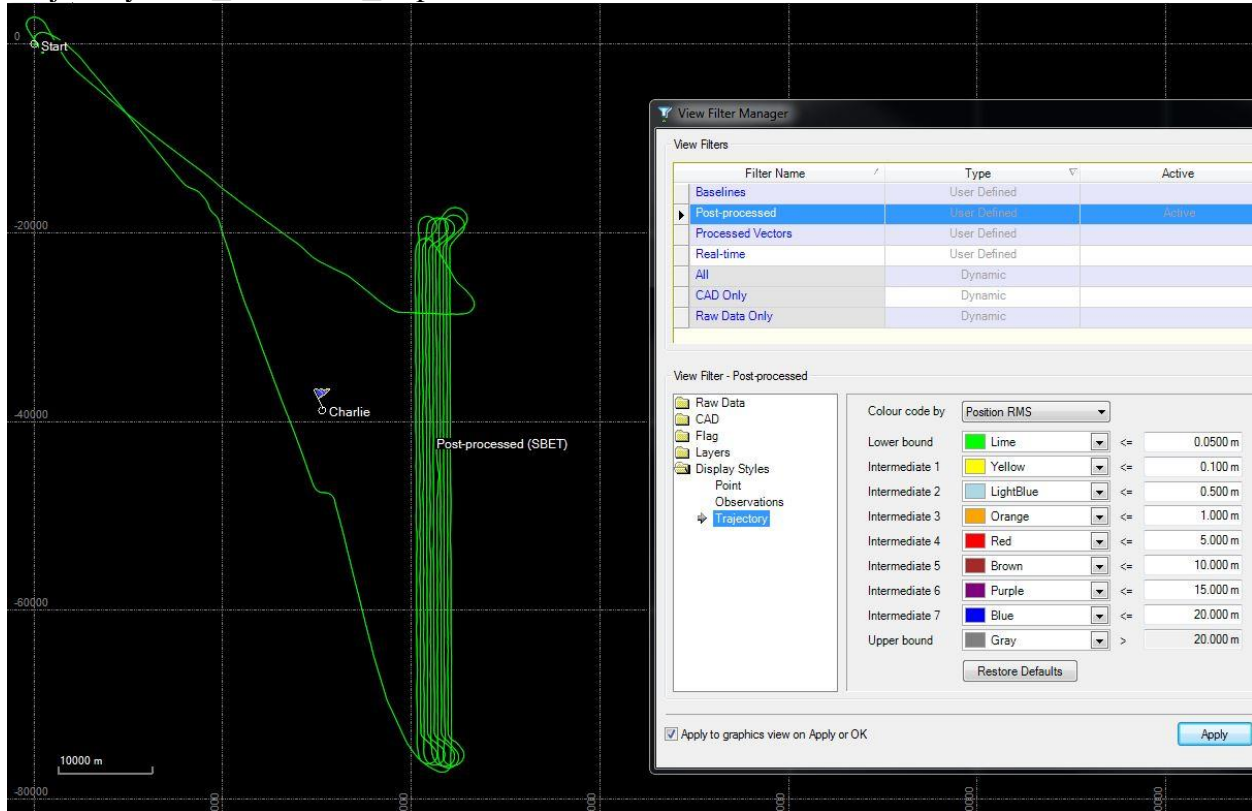


PDOP\_20160222\_2\_Report



### Mission 20160228

### Trajectory RMS\_20160228\_Report



### OPUS solution\_ALPHA\_20160228

FILE: 6790059o22.16o OP1456750961313

2005 NOTE: The IGS precise and IGS rapid orbits were not available  
2005 at processing time. The IGS ultra-rapid orbit was/will be used to  
2005 process the data.  
2005

#### NGS OPUS SOLUTION REPORT

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All computed coordinate accuracies are listed as peak-to-peak values.  
For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com)

DATE: February 29, 2016



RINEX FILE: 6790059o.16o

TIME: 13:03:32 UTC

SOFTWARE: page5 1209.04 master93.pl 022814 START: 2016/02/28 14:22:00  
EPHEMERIS: igu18860.eph [ultra-rapid] STOP: 2016/02/28 19:40:00  
NAV FILE: brdc0590.16n OBS USED: 12492 / 13507 : 92%  
ANT NAME: LEIGS14 NONE # FIXED AMB: 68 / 74 : 92%  
ARP HEIGHT: 2.00 OVERALL RMS: 0.014(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2016.1604)

X: 876310.573(m) 0.013(m) 876309.787(m) 0.013(m)  
Y: -5580100.618(m) 0.008(m) -5580099.046(m) 0.008(m)  
Z: 2952350.832(m) 0.009(m) 2952350.665(m) 0.009(m)

LAT: 27 45 12.40281 0.007(m) 27 45 12.42334 0.007(m)  
E LON: 278 55 29.83696 0.011(m) 278 55 29.81751 0.011(m)  
W LON: 81 4 30.16304 0.011(m) 81 4 30.18249 0.011(m)  
EL HGT: -5.409(m) 0.013(m) -6.969(m) 0.013(m)  
ORTHO HGT: 21.216(m) 0.025(m) [NAVD88 (Computed using GEOID12B)]

UTM COORDINATES STATE PLANE COORDINATES

UTM (Zone 17) SPC (0901 FL E)

Northing (Y) [meters]	3069892.979	378890.274
Easting (X) [meters]	492604.630	192602.106
Convergence [degrees]	-0.03494619	-0.03494619
Point Scale	0.99960068	0.99994185
Combined Factor	0.99960153	0.99994270

US NATIONAL GRID DESIGNATOR: 17RML9260469892(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DF5773	ORMD ORMOND BEACH CORS ARP	N291753.469	W0810632.013	171227.1
DG9757	DLND DELAND CORS ARP	N290322.897	W0811547.480	145565.8
DI3562	CCV5 CAPE CANAVERAL 5 CORS ARP	N282736.799	W0803242.818	94048.7

NEAREST NGS PUBLISHED CONTROL POINT

AF6134 COON N274512.402 W0810430.162 0.0

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

8002 The Opus solution for your submitted RINEX file appears to be  
8002 quite close to an NGS published control point. This suggests that  
8002 you may have set your GPS receiver up over an NGS control point.

8002 Furthermore, our files indicate that this control point has not  
8002 been recovered in the last five years.  
8002 If you did indeed recover an NGS control point, we would  
8002 appreciate receiving this information through our web based  
8002 Mark Recovery Form at  
8002 [http://www.ngs.noaa.gov/products\\_services.shtml#MarkRecoveryForm](http://www.ngs.noaa.gov/products_services.shtml#MarkRecoveryForm).  
8002

## OPUS solution\_CHARLIE\_20160228

FILE: 6823059o12.16o OP1456751542385

2005 NOTE: The IGS precise and IGS rapid orbits were not available  
2005 at processing time. The IGS ultra-rapid orbit was/will be used to  
2005 process the data.  
2005

### NGS OPUS SOLUTION REPORT =====

All computed coordinate accuracies are listed as peak-to-peak values.  
For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com) DATE: February 29, 2016  
RINEX FILE: 6823059o.16o TIME: 13:13:21 UTC

SOFTWARE: page5 1209.04 master53.pl 022814 START: 2016/02/28 14:12:00  
EPHEMERIS: igu18860.eph [ultra-rapid] STOP: 2016/02/28 19:47:00  
NAV FILE: brdc0590.16n OBS USED: 12162 / 13582 : 90%  
ANT NAME: LEIGS14 NONE # FIXED AMB: 61 / 64 : 95%  
ARP HEIGHT: 2.00 OVERALL RMS: 0.013(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2016.1604)

X:	869407.226(m)	0.003(m)	869406.439(m)	0.003(m)
Y:	-5571381.938(m)	0.010(m)	-5571380.369(m)	0.010(m)
Z:	2970674.587(m)	0.009(m)	2970674.421(m)	0.009(m)

LAT:	27 56 25.64852	0.007(m)	27 56 25.66920	0.007(m)
E LON:	278 52 9.85160	0.002(m)	278 52 9.83201	0.002(m)
W LON:	81 7 50.14840	0.002(m)	81 7 50.16799	0.002(m)
EL HGT:	-6.504(m)	0.011(m)	-8.059(m)	0.011(m)
ORTHO HGT:	20.940(m)	0.023(m)	[NAVD88 (Computed using GEOID12B)]	

UTM COORDINATES STATE PLANE COORDINATES  
UTM (Zone 17) SPC (0901 FL E)

Northing (Y) [meters]	3090613.479	399617.845
Easting (X) [meters]	487152.338	187147.953
Convergence [degrees]	-0.06119169	-0.06119169
Point Scale	0.99960204	0.99994321
Combined Factor	0.99960306	0.99994423

US NATIONAL GRID DESIGNATOR: 17RML8715290613(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DF5773	ORMD ORMOND BEACH CORS ARP	N291753.469	W0810632.013	150487.5
DF7046	BRTW BARTOW CORS ARP	N275658.642	W0814658.200	64195.5
DF7990	ZEFR ZEPHYRHILLS CORS ARP	N281339.322	W0820952.671	106493.7

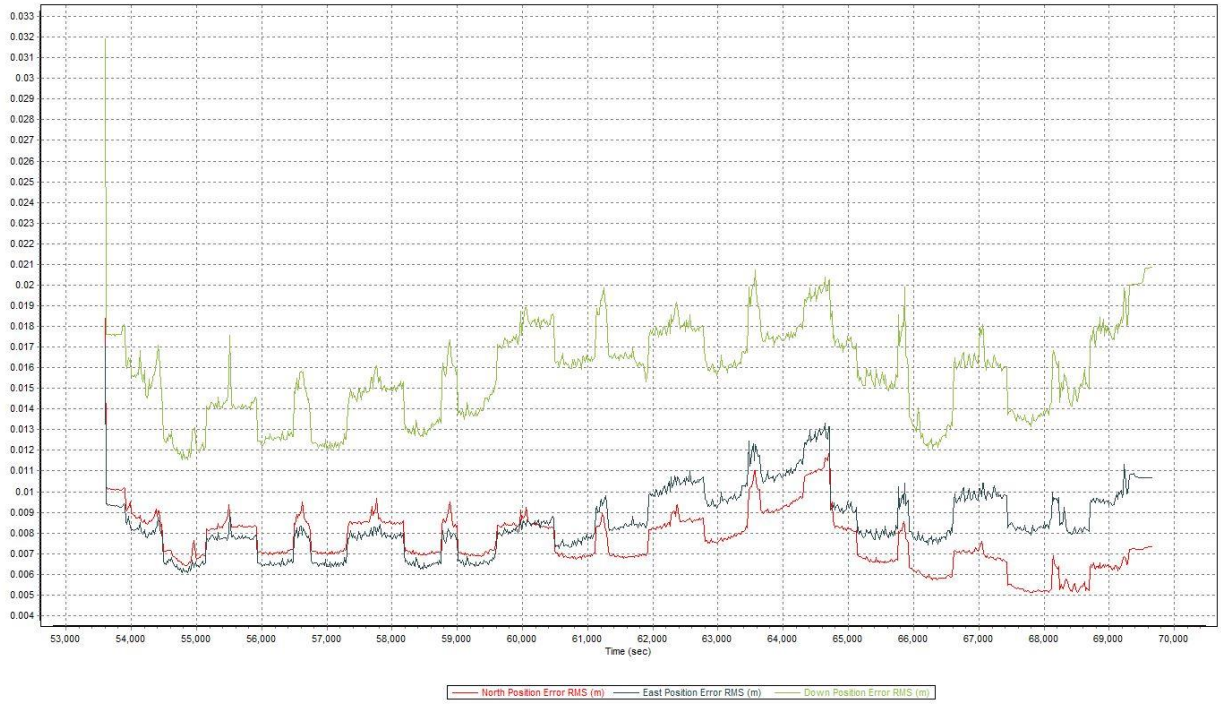
NEAREST NGS PUBLISHED CONTROL POINT

AF6097	JACKSON	N275625.648	W0810750.148	0.0
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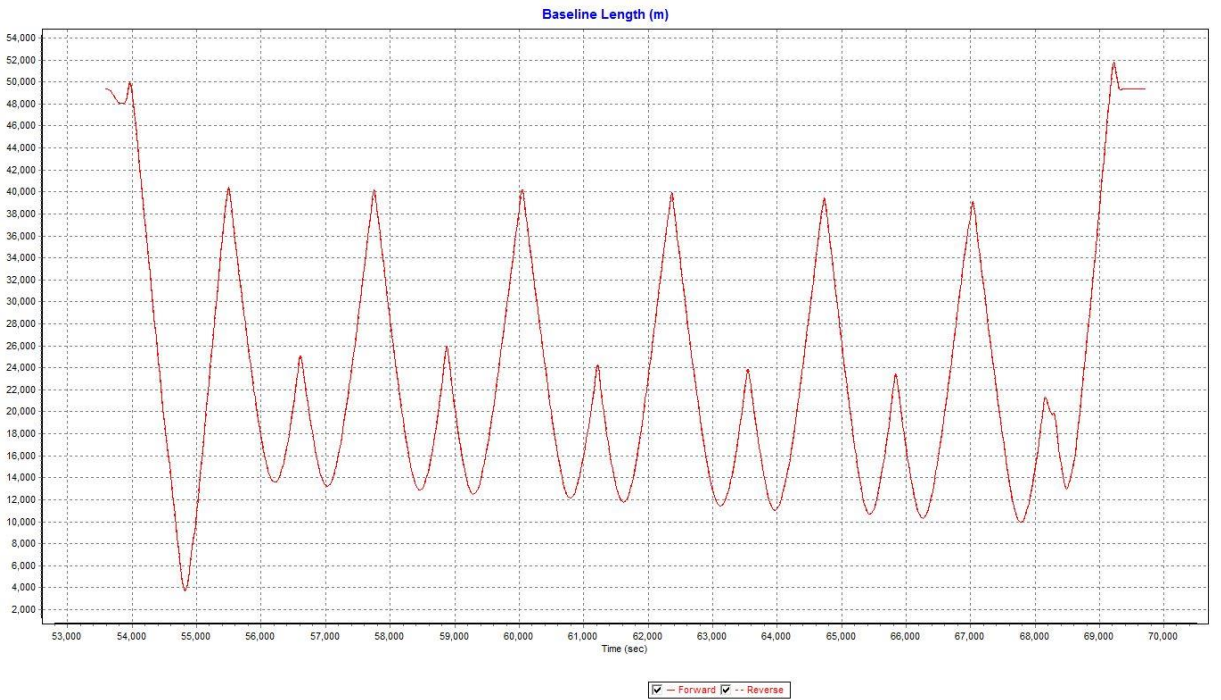
This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

8002 The Opus solution for your submitted RINEX file appears to be  
8002 quite close to an NGS published control point. This suggests that  
8002 you may have set your GPS receiver up over an NGS control point.  
8002 Furthermore, our files indicate that this control point has not  
8002 been recovered in the last five years.  
8002 If you did indeed recover an NGS control point, we would  
8002 appreciate receiving this information through our web based  
8002 Mark Recovery Form at  
8002 [http://www.ngs.noaa.gov/products\\_services.shtml#MarkRecoveryForm](http://www.ngs.noaa.gov/products_services.shtml#MarkRecoveryForm).  
8002

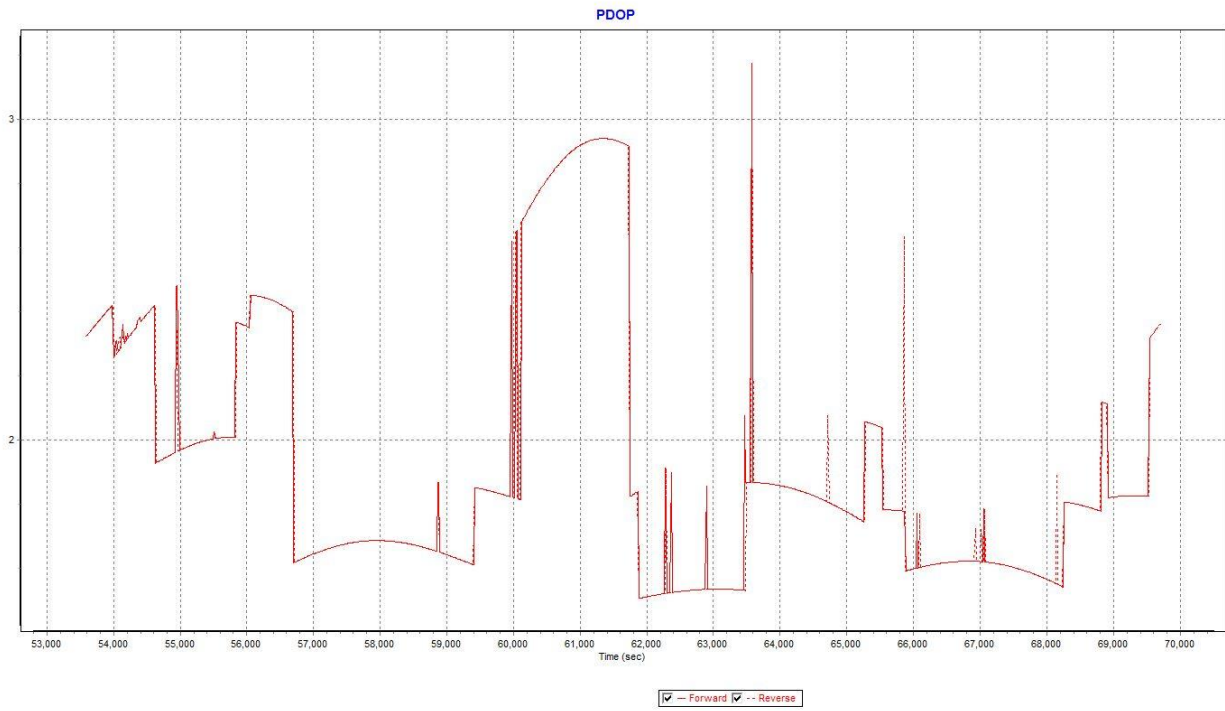
### Smoothed Performance Metrics, Reference Frame\_20160228\_Report



### Baseline Length\_20160228\_Report

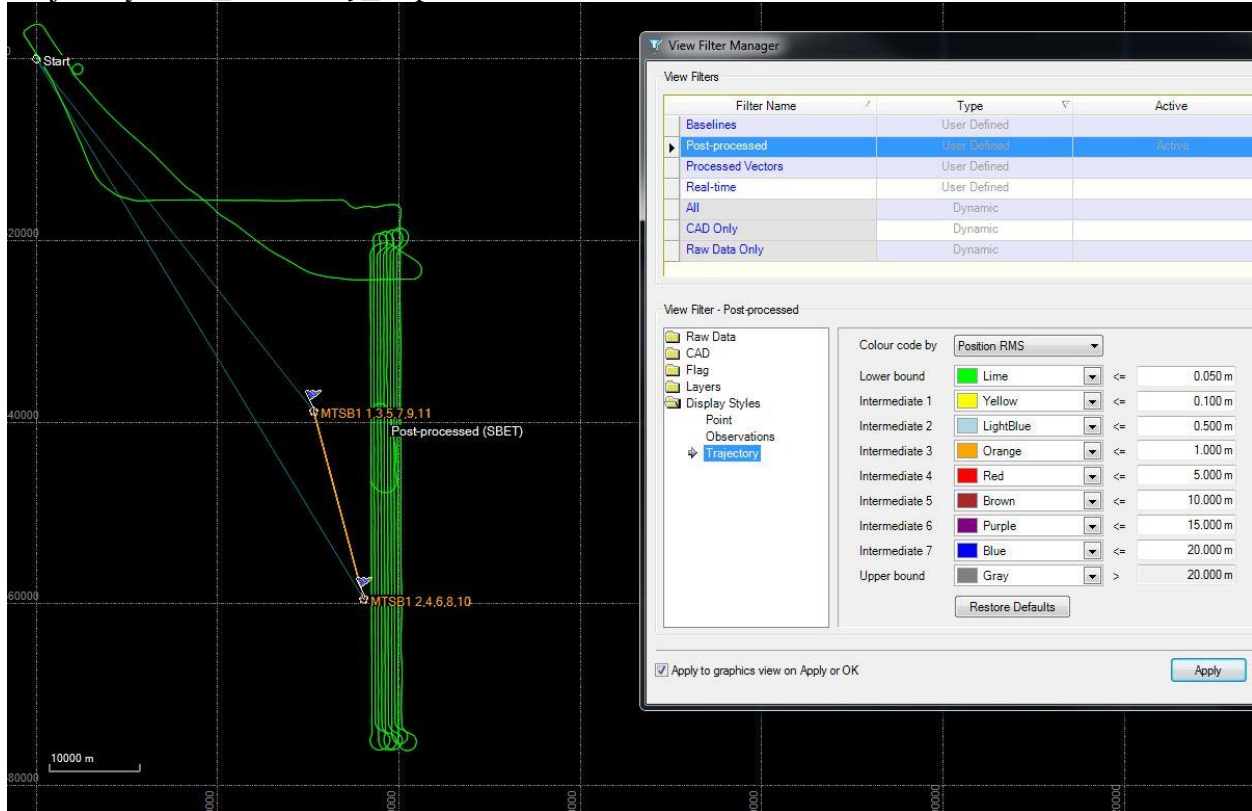


PDOP\_20160228\_Report



### Mission 20160229

### Trajectory RMS\_20160229\_Report



### OPUS solution\_ALPHA\_20160229

FILE: 6790060o05.16o OP1456846521205

2005 NOTE: The IGS precise and IGS rapid orbits were not available  
2005 at processing time. The IGS ultra-rapid orbit was/will be used to  
2005 process the data.  
2005

#### NGS OPUS SOLUTION REPORT

=====

All computed coordinate accuracies are listed as peak-to-peak values.  
For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com)  
RINEX FILE: 6790060o.16o

DATE: March 01, 2016  
TIME: 15:37:30 UTC

SOFTWARE: page5 1209.04 master50.pl 022814 START: 2016/02/29 14:05:00  
EPHEMERIS: igu18861.eph [ultra-rapid] STOP: 2016/02/29 19:26:00  
NAV FILE: brdc0600.16n OBS USED: 12646 / 13661 : 93%  
ANT NAME: LEIGS14 NONE # FIXED AMB: 67 / 73 : 92%  
ARP HEIGHT: 2.00 OVERALL RMS: 0.014(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2016.1631)

X: 869407.224(m) 0.005(m) 869406.437(m) 0.005(m)  
Y: -5571381.943(m) 0.006(m) -5571380.374(m) 0.006(m)  
Z: 2970674.612(m) 0.014(m) 2970674.446(m) 0.014(m)

LAT: 27 56 25.64917 0.013(m) 27 56 25.66985 0.013(m)  
E LON: 278 52 9.85150 0.005(m) 278 52 9.83191 0.005(m)  
W LON: 81 7 50.14850 0.005(m) 81 7 50.16809 0.005(m)  
EL HGT: -6.488(m) 0.010(m) -8.043(m) 0.010(m)  
ORTHO HGT: 20.956(m) 0.022(m) [NAVD88 (Computed using GEOID12B)]

UTM COORDINATES STATE PLANE COORDINATES

	UTM (Zone 17)	SPC (0901 FL E)
Northing (Y) [meters]	3090613.499	399617.865
Easting (X) [meters]	487152.335	187147.950
Convergence [degrees]	-0.06119171	-0.06119171
Point Scale	0.99960204	0.99994321
Combined Factor	0.99960306	0.99994423

US NATIONAL GRID DESIGNATOR: 17RML8715290613(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI3562	CCV5 CAPE CANAVERAL 5 CORS ARP	N282736.799	W0803242.818	81367.8
DG9757	DLND DELAND CORS ARP	N290322.897	W0811547.480	124350.1
DF5773	ORMD ORMOND BEACH CORS ARP	N291753.469	W0810632.013	150487.5

NEAREST NGS PUBLISHED CONTROL POINT

AF6097	JACKSON	N275625.648	W0810750.148	0.0
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

8002 The Opus solution for your submitted RINEX file appears to be  
8002 quite close to an NGS published control point. This suggests that  
8002 you may have set your GPS receiver up over an NGS control point.  
8002 Furthermore, our files indicate that this control point has not

8002 been recovered in the last five years.  
8002 If you did indeed recover an NGS control point, we would  
8002 appreciate receiving this information through our web based  
8002 Mark Recovery Form at  
8002 [http://www.ngs.noaa.gov/products\\_services.shtml#MarkRecoveryForm](http://www.ngs.noaa.gov/products_services.shtml#MarkRecoveryForm).  
8002

## OPUS solution\_CHARLIE\_20160229

FILE: 6823060o48.16o OP1456846648987

2005 NOTE: The IGS precise and IGS rapid orbits were not available  
2005 at processing time. The IGS ultra-rapid orbit was/will be used to  
2005 process the data.  
2005

### NGS OPUS SOLUTION REPORT =====

All computed coordinate accuracies are listed as peak-to-peak values.  
For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com) DATE: March 01, 2016  
RINEX FILE: 6823060o.16o TIME: 15:39:36 UTC

SOFTWARE: page5 1209.04 master53.pl 022814 START: 2016/02/29 14:48:00  
EPHEMERIS: igu18861.eph [ultra-rapid] STOP: 2016/02/29 19:20:00  
NAV FILE: brdc0600.16n OBS USED: 11067 / 11897 : 93%  
ANT NAME: LEIGS14 NONE # FIXED AMB: 54 / 60 : 90%  
ARP HEIGHT: 2.00 OVERALL RMS: 0.016(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2016.1631)

X:	876310.577(m)	0.009(m)	876309.790(m)	0.009(m)
Y:	-5580100.625(m)	0.015(m)	-5580099.053(m)	0.015(m)
Z:	2952350.844(m)	0.005(m)	2952350.677(m)	0.005(m)

LAT:	27 45 12.40304	0.004(m)	27 45 12.42358	0.004(m)
E LON:	278 55 29.83706	0.007(m)	278 55 29.81758	0.007(m)
W LON:	81 4 30.16294	0.007(m)	81 4 30.18242	0.007(m)
EL HGT:	-5.396(m)	0.017(m)	-6.957(m)	0.017(m)
ORTHO HGT:	21.229(m)	0.032(m)	[NAVD88 (Computed using GEOID12B)]	

UTM COORDINATES STATE PLANE COORDINATES  
UTM (Zone 17) SPC (0901 FL E)  
Northing (Y) [meters] 3069892.986 378890.281



Easting (X) [meters]	492604.633	192602.109
Convergence [degrees]	-0.03494617	-0.03494617
Point Scale	0.99960068	0.99994185
Combined Factor	0.99960153	0.99994270

US NATIONAL GRID DESIGNATOR: 17RML9260469892(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DG9757	DLND DELAND CORS ARP	N290322.897	W0811547.480	145565.8
DI3562	CCV5 CAPE CANAVERAL 5 CORS ARP	N282736.799	W0803242.818	94048.7
DF5773	ORMD ORMOND BEACH CORS ARP	N291753.469	W0810632.013	171227.1

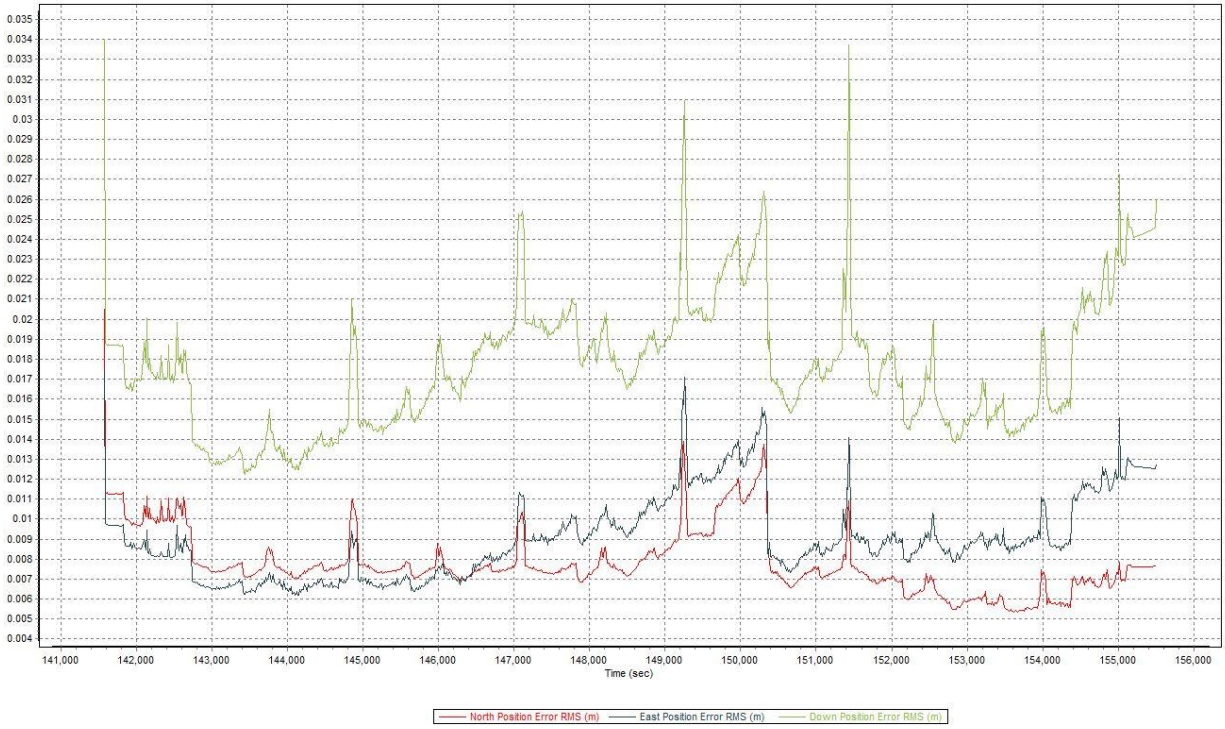
NEAREST NGS PUBLISHED CONTROL POINT

AF6134	COON	N274512.402	W0810430.162	0.0
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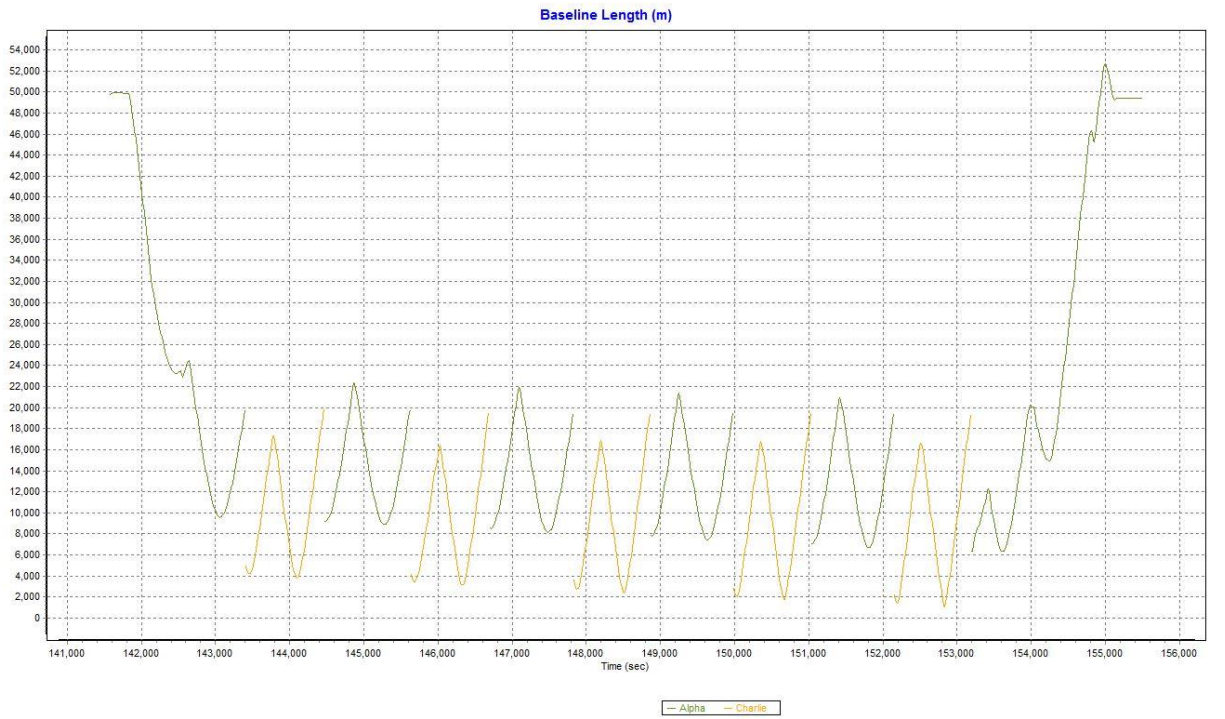
This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

8002 The Opus solution for your submitted RINEX file appears to be  
8002 quite close to an NGS published control point. This suggests that  
8002 you may have set your GPS receiver up over an NGS control point.  
8002 Furthermore, our files indicate that this control point has not  
8002 been recovered in the last five years.  
8002 If you did indeed recover an NGS control point, we would  
8002 appreciate receiving this information through our web based  
8002 Mark Recovery Form at  
8002 [http://www.ngs.noaa.gov/products\\_services.shtml#MarkRecoveryForm](http://www.ngs.noaa.gov/products_services.shtml#MarkRecoveryForm).  
8002

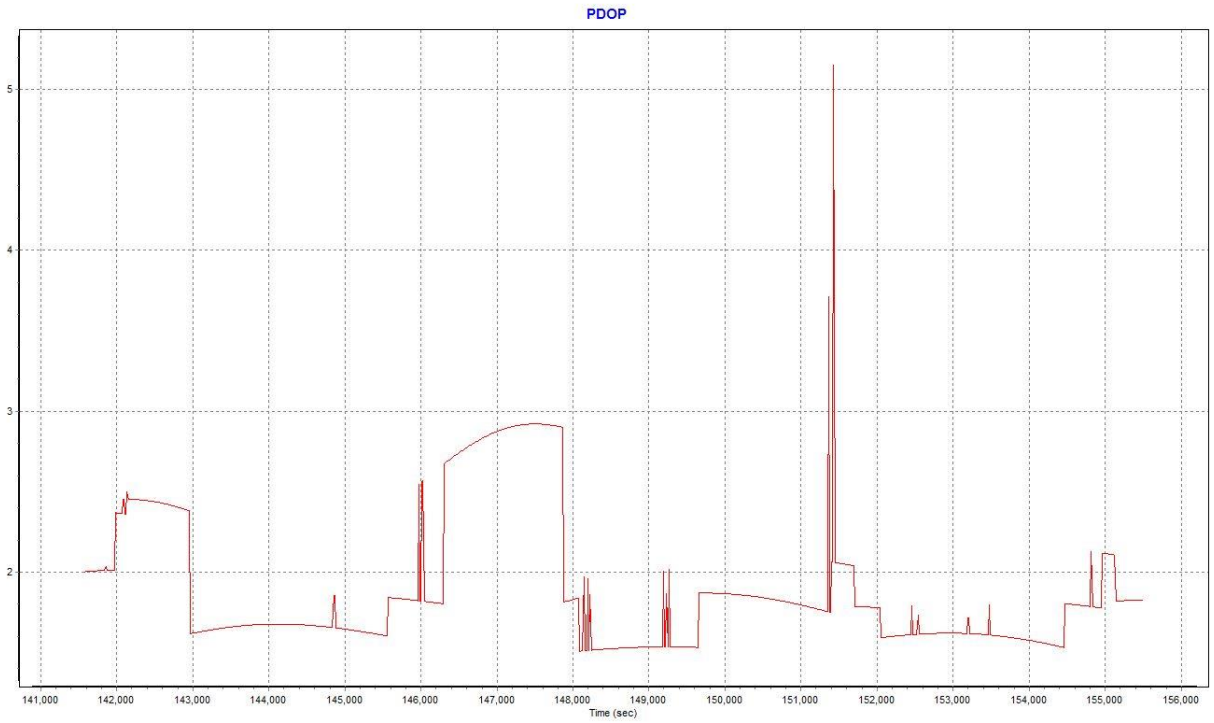
### Smoothed Performance Metrics, Reference Frame\_20160229\_Report



### Baseline Length\_20160229\_Report



PDOP\_20160229\_Report



## Mission 20160301

### Trajectory RMS\_20160301\_Report



### OPUS solution\_BRAVO\_20160301

FILE: 6829061n42.16o OP1456923668846

2005 NOTE: The IGS precise and IGS rapid orbits were not available  
2005 at processing time. The IGS ultra-rapid orbit was/will be used to  
2005 process the data.  
2005

#### NGS OPUS SOLUTION REPORT

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All computed coordinate accuracies are listed as peak-to-peak values.  
For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com)

DATE: March 02, 2016

RINEX FILE: 6829061n.16o

TIME: 13:02:26 UTC

SOFTWARE: page5 1209.04 master92.pl 022814 START: 2016/03/01 13:42:00  
EPHEMERIS: igu18862.eph [ultra-rapid] STOP: 2016/03/01 19:30:00  
NAV FILE: brdc0610.16n OBS USED: 13424 / 14611 : 92%  
ANT NAME: LEIGS14 NONE # FIXED AMB: 66 / 70 : 94%  
ARP HEIGHT: 2.00 OVERALL RMS: 0.013(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2016.1658)

X: 869407.229(m) 0.005(m) 869406.441(m) 0.005(m)  
Y: -5571381.937(m) 0.007(m) -5571380.368(m) 0.007(m)  
Z: 2970674.604(m) 0.005(m) 2970674.438(m) 0.005(m)

LAT: 27 56 25.64902 0.003(m) 27 56 25.66970 0.003(m)  
E LON: 278 52 9.85172 0.005(m) 278 52 9.83209 0.005(m)  
W LON: 81 7 50.14828 0.005(m) 81 7 50.16791 0.005(m)  
EL HGT: -6.497(m) 0.006(m) -8.051(m) 0.006(m)  
ORTHO HGT: 20.947(m) 0.017(m) [NAVD88 (Computed using GEOID12B)]

UTM COORDINATES STATE PLANE COORDINATES

UTM (Zone 17) SPC (0901 FL E)

Northing (Y) [meters]	3090613.494	399617.861
Easting (X) [meters]	487152.341	187147.956
Convergence [degrees]	-0.06119168	-0.06119168
Point Scale	0.99960204	0.99994321
Combined Factor	0.99960306	0.99994423

US NATIONAL GRID DESIGNATOR: 17RML8715290613(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI3562	CCV5 CAPE CANAVERAL 5 CORS ARP	N282736.799	W0803242.818	81367.8
DG9757	DLND DELAND CORS ARP	N290322.897	W0811547.480	124350.1
DF7990	ZEFR ZEPHYRHILLS CORS ARP	N281339.322	W0820952.671	106493.7

NEAREST NGS PUBLISHED CONTROL POINT

AF6097	JACKSON	N275625.648	W0810750.148	0.0
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

8002 The Opus solution for your submitted RINEX file appears to be  
8002 quite close to an NGS published control point. This suggests that  
8002 you may have set your GPS receiver up over an NGS control point.

8002 Furthermore, our files indicate that this control point has not  
8002 been recovered in the last five years.  
8002 If you did indeed recover an NGS control point, we would  
8002 appreciate receiving this information through our web based  
8002 Mark Recovery Form at  
8002 [http://www.ngs.noaa.gov/products\\_services.shtml#MarkRecoveryForm](http://www.ngs.noaa.gov/products_services.shtml#MarkRecoveryForm).  
8002

## OPUS solution DELTA 20160301

FILE: 6821061o11.16o OP1456923743249

2005 NOTE: The IGS precise and IGS rapid orbits were not available  
2005 at processing time. The IGS ultra-rapid orbit was/will be used to  
2005 process the data.  
2005

### NGS OPUS SOLUTION REPORT =====

All computed coordinate accuracies are listed as peak-to-peak values.  
For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com) DATE: March 02, 2016  
RINEX FILE: 6821061o.16o TIME: 13:03:29 UTC

SOFTWARE: page5 1209.04 master91.pl 022814 START: 2016/03/01 14:11:00  
EPHEMERIS: igu18862.eph [ultra-rapid] STOP: 2016/03/01 19:29:00  
NAV FILE: brdc0610.16n OBS USED: 11593 / 12587 : 92%  
ANT NAME: LEIGS14 NONE # FIXED AMB: 68 / 73 : 93%  
ARP HEIGHT: 2.00 OVERALL RMS: 0.015(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2016.1658)

X:	876310.569(m)	0.001(m)	876309.782(m)	0.001(m)
Y:	-5580100.611(m)	0.004(m)	-5580099.039(m)	0.004(m)
Z:	2952350.825(m)	0.008(m)	2952350.658(m)	0.008(m)

LAT:	27 45 12.40272	0.005(m)	27 45 12.42326	0.005(m)
E LON:	278 55 29.83685	0.001(m)	278 55 29.81737	0.001(m)
W LON:	81 4 30.16315	0.001(m)	81 4 30.18263	0.001(m)
EL HGT:	-5.419(m)	0.007(m)	-6.979(m)	0.007(m)
ORTHO HGT:	21.206(m)	0.019(m)	[NAVD88 (Computed using GEOID12B)]	

UTM COORDINATES STATE PLANE COORDINATES  
UTM (Zone 17) SPC (0901 FL E)

Northing (Y) [meters]	3069892.977	378890.271
Easting (X) [meters]	492604.628	192602.103
Convergence [degrees]	-0.03494620	-0.03494620
Point Scale	0.99960068	0.99994185
Combined Factor	0.99960153	0.99994270

US NATIONAL GRID DESIGNATOR: 17RML9260469892(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DF5773	ORMD ORMOND BEACH CORS ARP	N291753.469	W0810632.013	171227.1
DF7990	ZEFR ZEPHYRHILLS CORS ARP	N281339.322	W0820952.671	119367.0
DF7046	BRTW BARTOW CORS ARP	N275658.642	W0814658.200	73025.1

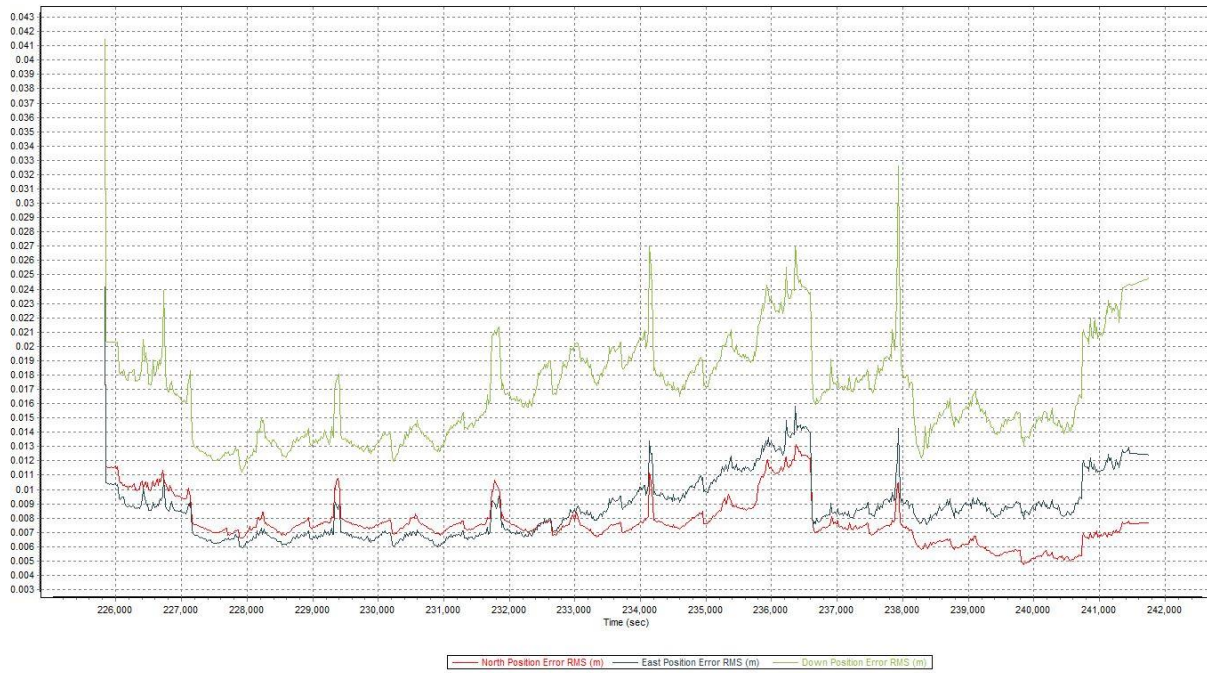
NEAREST NGS PUBLISHED CONTROL POINT

AF6134	COON	N274512.402	W0810430.162	0.0
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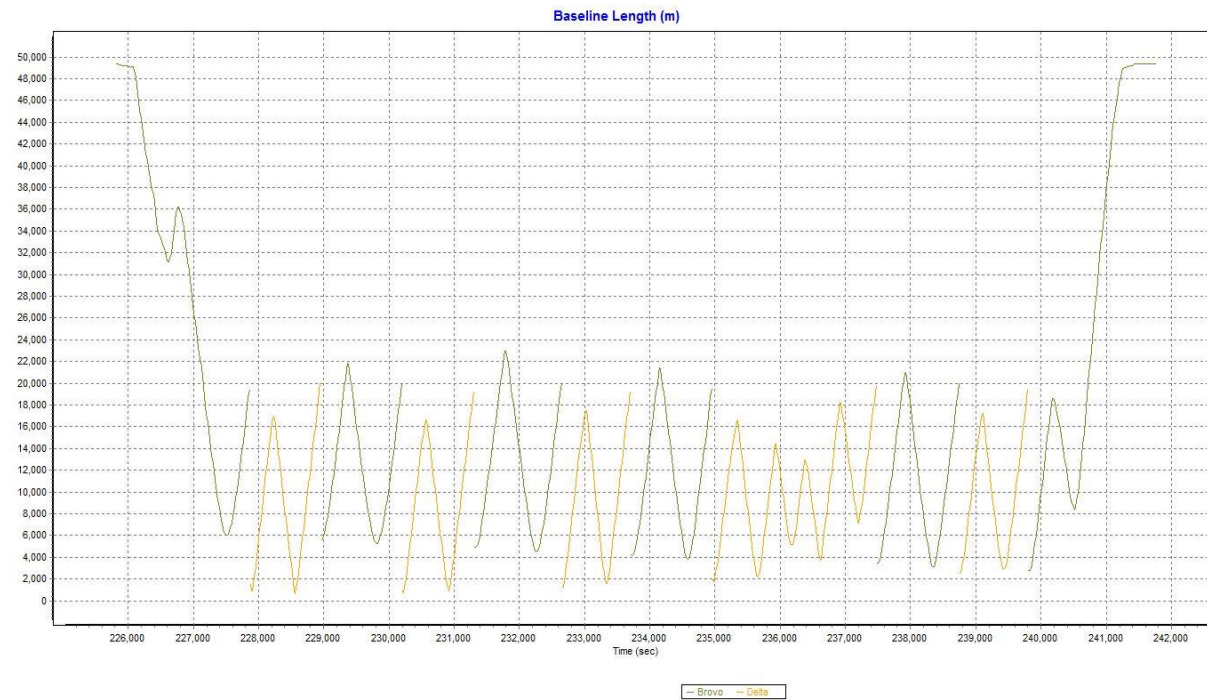
This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

8002 The Opus solution for your submitted RINEX file appears to be  
8002 quite close to an NGS published control point. This suggests that  
8002 you may have set your GPS receiver up over an NGS control point.  
8002 Furthermore, our files indicate that this control point has not  
8002 been recovered in the last five years.  
8002 If you did indeed recover an NGS control point, we would  
8002 appreciate receiving this information through our web based  
8002 Mark Recovery Form at  
8002 [http://www.ngs.noaa.gov/products\\_services.shtml#MarkRecoveryForm](http://www.ngs.noaa.gov/products_services.shtml#MarkRecoveryForm).  
8002

### Smoothed Performance Metrics, Reference Frame\_20160301\_Report

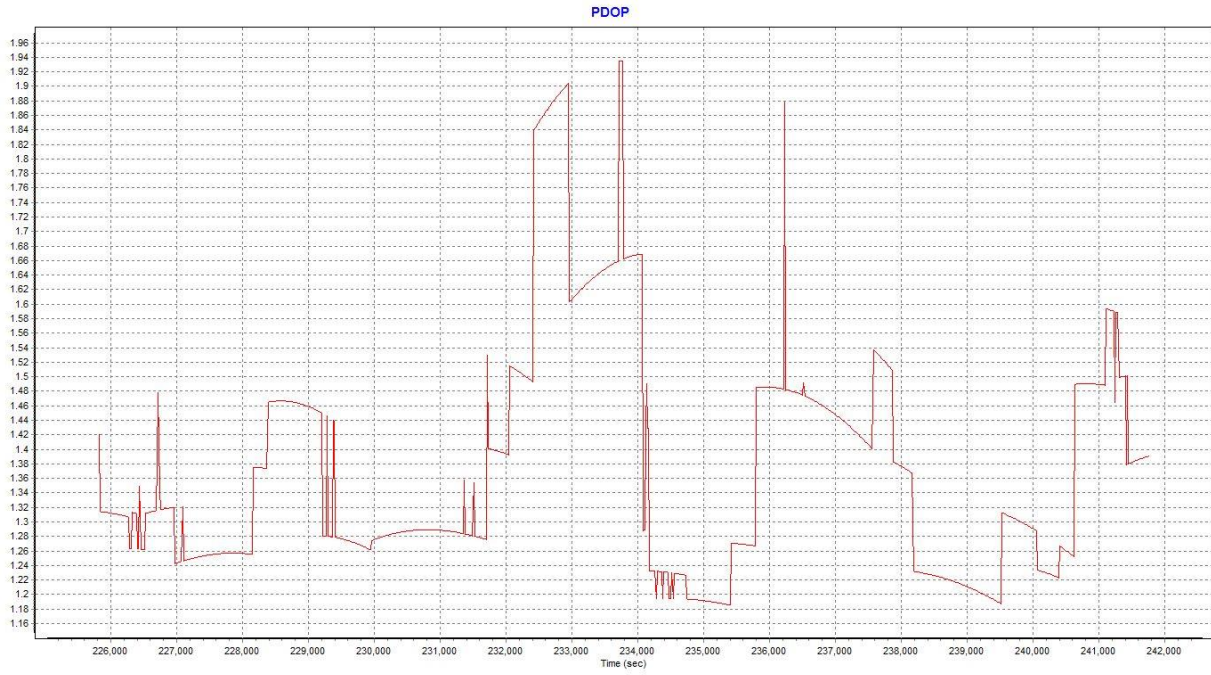


### Baseline Length\_20160301\_Report



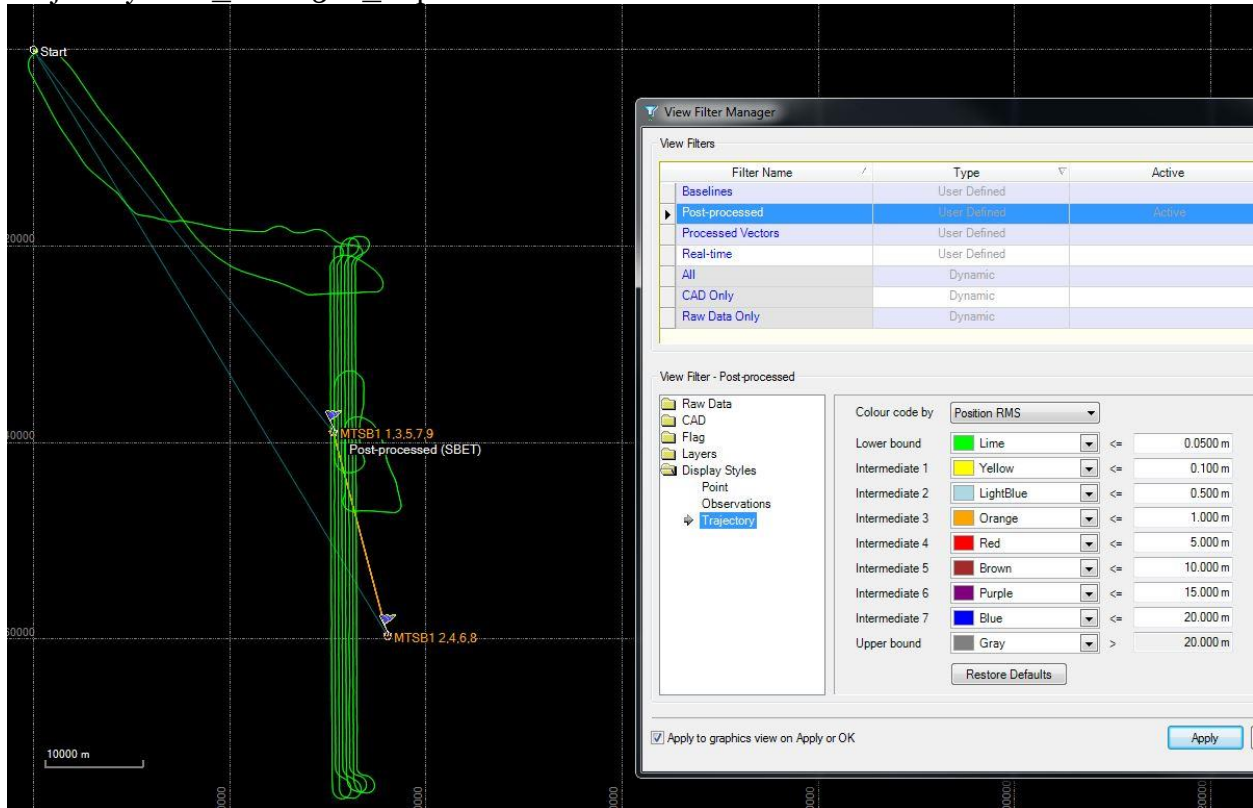


PDOP\_20160301\_Report



## Mission 20160302

### Trajectory RMS\_20160302\_Report



### OPUS solution\_ALPHA\_20160302

FILE: 6790062o50.16o OP1457008101100

2005 NOTE: The IGS precise and IGS rapid orbits were not available  
2005 at processing time. The IGS ultra-rapid orbit was/will be used to  
2005 process the data.  
2005

#### NGS OPUS SOLUTION REPORT

=====

All computed coordinate accuracies are listed as peak-to-peak values.  
For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com)

DATE: March 03, 2016

RINEX FILE: 6790062o.16o

TIME: 12:28:55 UTC

SOFTWARE: page5 1209.04 master53.pl 022814 START: 2016/03/02 14:50:00  
EPHEMERIS: igu18863.eph [ultra-rapid] STOP: 2016/03/02 20:15:00  
NAV FILE: brdc0620.16n OBS USED: 11869 / 13331 : 89%  
ANT NAME: LEIGS14 NONE # FIXED AMB: 74 / 80 : 93%  
ARP HEIGHT: 2.00 OVERALL RMS: 0.015(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2016.1687)

X: 869407.232(m) 0.003(m) 869406.444(m) 0.003(m)  
Y: -5571381.942(m) 0.012(m) -5571380.373(m) 0.012(m)  
Z: 2970674.603(m) 0.013(m) 2970674.437(m) 0.013(m)

LAT: 27 56 25.64890 0.008(m) 27 56 25.66959 0.008(m)  
E LON: 278 52 9.85180 0.003(m) 278 52 9.83217 0.003(m)  
W LON: 81 7 50.14820 0.003(m) 81 7 50.16783 0.003(m)  
EL HGT: -6.492(m) 0.013(m) -8.047(m) 0.013(m)  
ORTHO HGT: 20.952(m) 0.026(m) [NAVD88 (Computed using GEOID12B)]

UTM COORDINATES STATE PLANE COORDINATES

UTM (Zone 17) SPC (0901 FL E)

Northing (Y) [meters]	3090613.491	399617.857
Easting (X) [meters]	487152.343	187147.958
Convergence [degrees]	-0.06119167	-0.06119167
Point Scale	0.99960204	0.99994321
Combined Factor	0.99960306	0.99994423

US NATIONAL GRID DESIGNATOR: 17RML8715290613(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI3562	CCV5 CAPE CANAVERAL 5 CORS ARP	N282736.799	W0803242.818	81367.8
DF5773	ORMD ORMOND BEACH CORS ARP	N291753.469	W0810632.013	150487.5
DF7990	ZEFR ZEPHYRHILLS CORS ARP	N281339.322	W0820952.671	106493.7

NEAREST NGS PUBLISHED CONTROL POINT

AF6097 JACKSON N275625.648 W0810750.148 0.0

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

8002 The Opus solution for your submitted RINEX file appears to be  
8002 quite close to an NGS published control point. This suggests that  
8002 you may have set your GPS receiver up over an NGS control point.

8002 Furthermore, our files indicate that this control point has not  
8002 been recovered in the last five years.  
8002 If you did indeed recover an NGS control point, we would  
8002 appreciate receiving this information through our web based  
8002 Mark Recovery Form at  
8002 [http://www.ngs.noaa.gov/products\\_services.shtml#MarkRecoveryForm](http://www.ngs.noaa.gov/products_services.shtml#MarkRecoveryForm).  
8002

## OPUS solution\_CHARLIE\_20160302

FILE: 6823062p17.16o OP1457010305046

2005 NOTE: The IGS precise and IGS rapid orbits were not available  
2005 at processing time. The IGS ultra-rapid orbit was/will be used to  
2005 process the data.  
2005

### NGS OPUS SOLUTION REPORT =====

All computed coordinate accuracies are listed as peak-to-peak values.  
For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com) DATE: March 03, 2016  
RINEX FILE: 6823062p.16o TIME: 13:05:58 UTC

SOFTWARE: page5 1209.04 master92.pl 022814 START: 2016/03/02 15:17:00  
EPHEMERIS: igu18863.eph [ultra-rapid] STOP: 2016/03/02 20:15:00  
NAV FILE: brdc0620.16n OBS USED: 10904 / 12114 : 90%  
ANT NAME: LEIGS14 NONE # FIXED AMB: 68 / 68 : 100%  
ARP HEIGHT: 2.00 OVERALL RMS: 0.017(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2016.1687)

X:	876310.581(m)	0.010(m)	876309.794(m)	0.010(m)
Y:	-5580100.615(m)	0.010(m)	-5580099.043(m)	0.010(m)
Z:	2952350.830(m)	0.003(m)	2952350.663(m)	0.003(m)

LAT:	27 45 12.40278	0.008(m)	27 45 12.42332	0.008(m)
E LON:	278 55 29.83726	0.008(m)	278 55 29.81778	0.008(m)
W LON:	81 4 30.16274	0.008(m)	81 4 30.18222	0.008(m)
EL HGT:	-5.411(m)	0.009(m)	-6.971(m)	0.009(m)
ORTHO HGT:	21.214(m)	0.020(m)	[NAVD88 (Computed using GEOID12B)]	

UTM COORDINATES STATE PLANE COORDINATES  
UTM (Zone 17) SPC (0901 FL E)

Northing (Y) [meters]	3069892.978	378890.273
Easting (X) [meters]	492604.639	192602.115
Convergence [degrees]	-0.03494615	-0.03494615
Point Scale	0.99960068	0.99994185
Combined Factor	0.99960153	0.99994270

US NATIONAL GRID DESIGNATOR: 17RML9260469892(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DF7990	ZEFR ZEPHYRHILLS CORS ARP	N281339.322	W0820952.671	119367.1
DF5773	ORMD ORMOND BEACH CORS ARP	N291753.469	W0810632.013	171227.1
DI3562	CCV5 CAPE CANAVERAL 5 CORS ARP	N282736.799	W0803242.818	94048.7

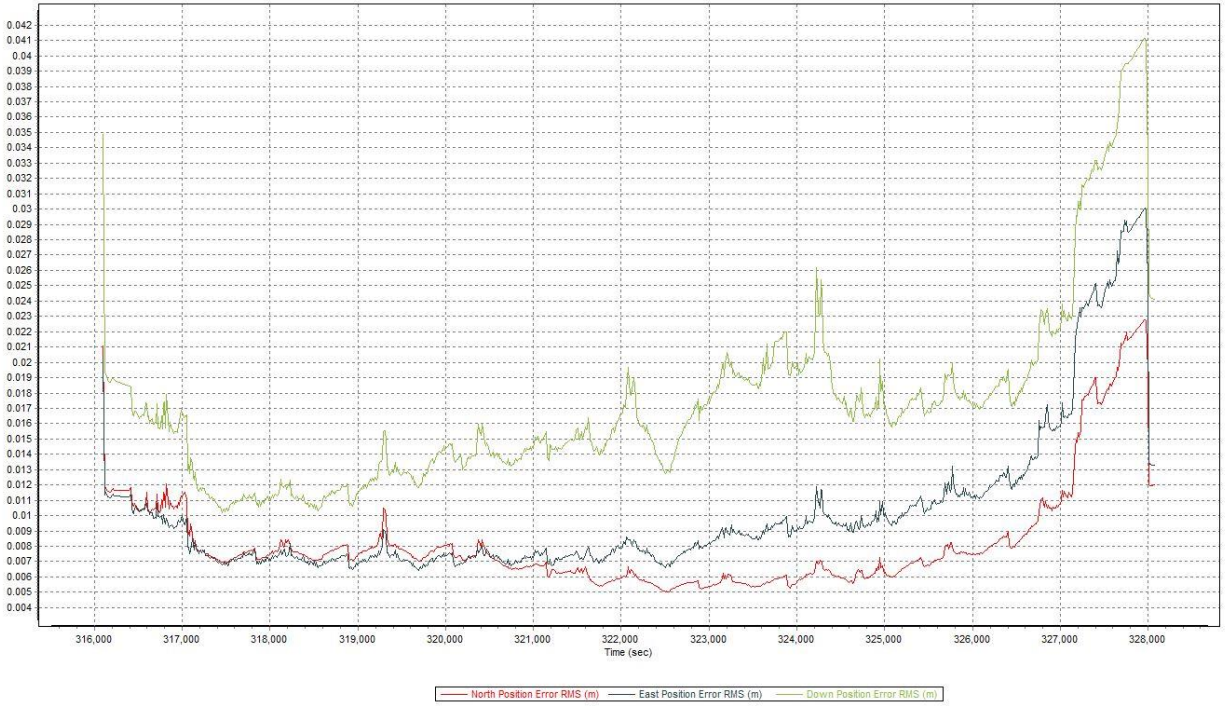
NEAREST NGS PUBLISHED CONTROL POINT

AF6134	COON	N274512.402	W0810430.162	0.0
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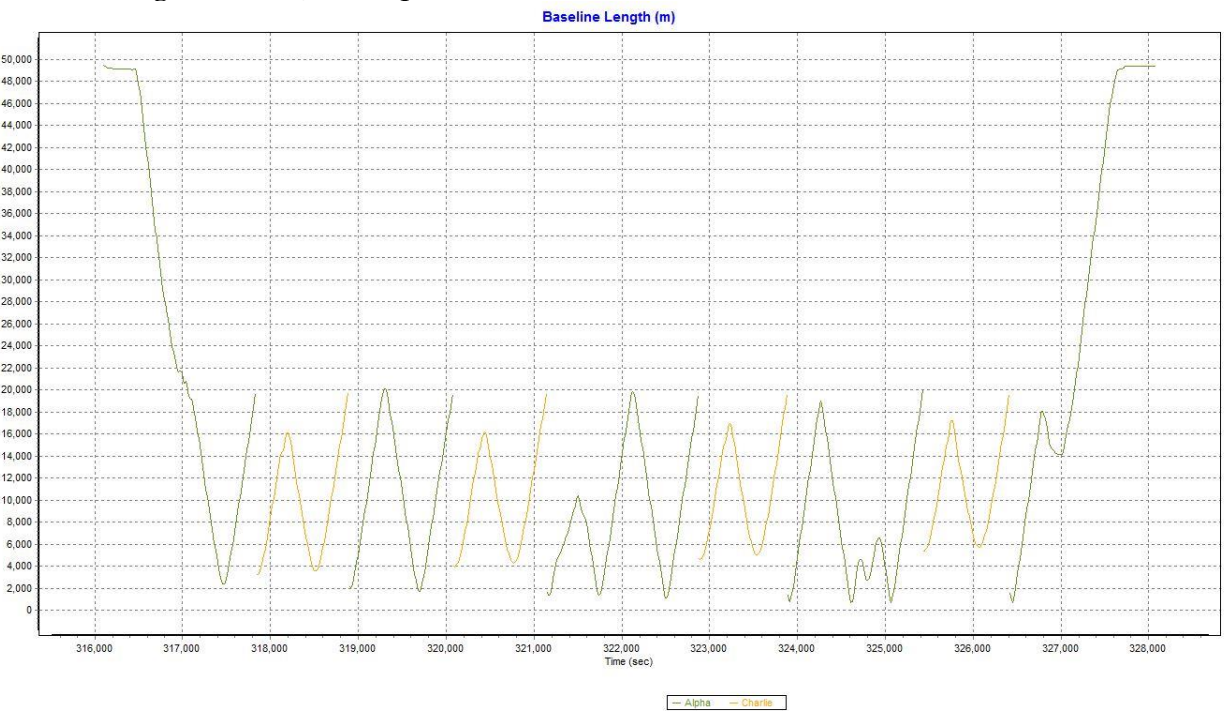
This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

8002 The Opus solution for your submitted RINEX file appears to be  
8002 quite close to an NGS published control point. This suggests that  
8002 you may have set your GPS receiver up over an NGS control point.  
8002 Furthermore, our files indicate that this control point has not  
8002 been recovered in the last five years.  
8002 If you did indeed recover an NGS control point, we would  
8002 appreciate receiving this information through our web based  
8002 Mark Recovery Form at  
8002 [http://www.ngs.noaa.gov/products\\_services.shtml#MarkRecoveryForm](http://www.ngs.noaa.gov/products_services.shtml#MarkRecoveryForm).  
8002

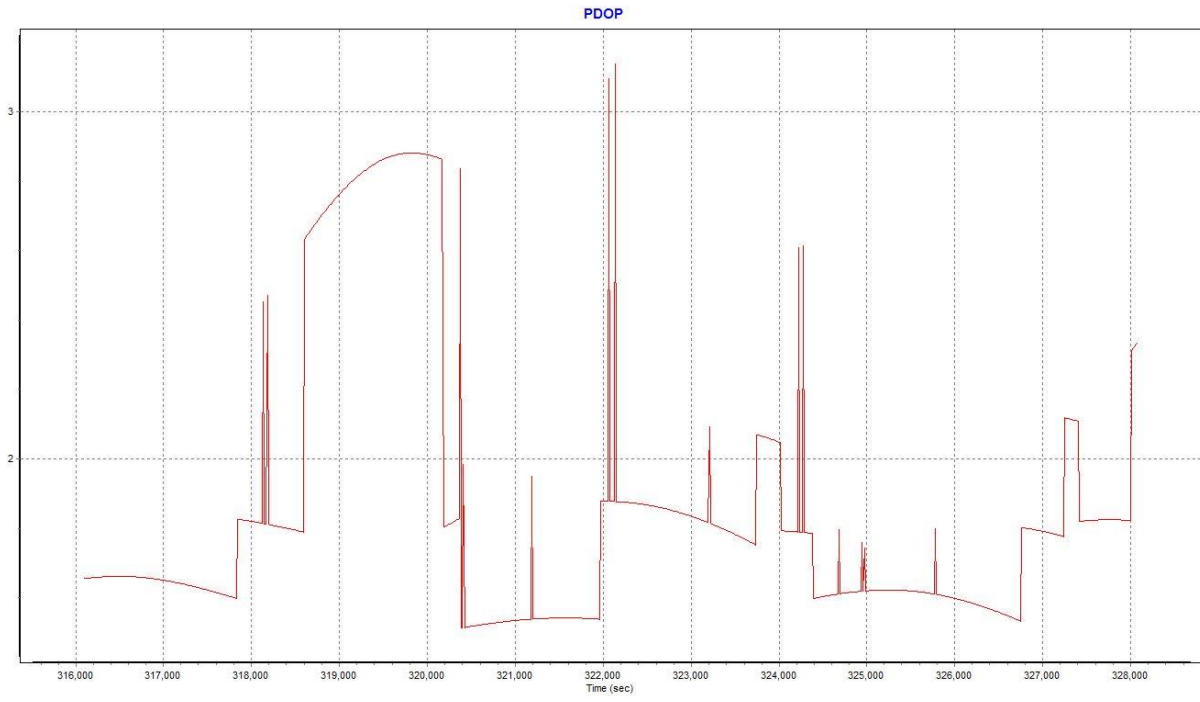
### Smoothed Performance Metrics, Reference Frame\_20160302\_Report



### Baseline Length\_20160302\_Report

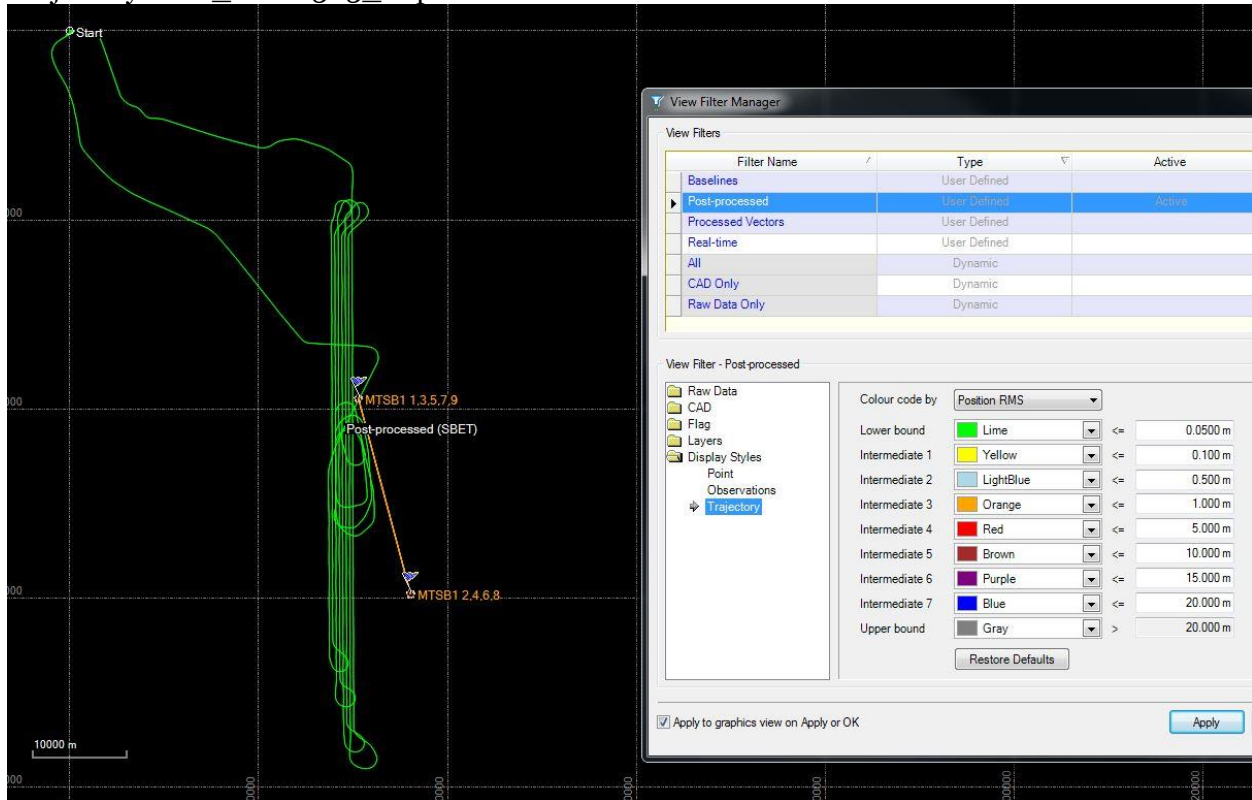


PDOP\_20160302\_Report



### Mission 20160303

### Trajectory RMS\_20160303\_Report



### OPUS solution\_ALPHA\_20160303

FILE: 6790063n43.16o OP1457544931272

### NGS OPUS SOLUTION REPORT

=====

All computed coordinate accuracies are listed as peak-to-peak values.  
For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com)  
RINEX FILE: 6790063n.16o

DATE: March 09, 2016  
TIME: 17:36:18 UTC

SOFTWARE: page5 1209.04 master51.pl 022814 START: 2016/03/03 13:43:00  
EPHEMERIS: igr18864.eph [rapid] STOP: 2016/03/03 19:05:00



NAV FILE: brdc0630.16n                   OBS USED: 12222 / 13187 : 93%  
ANT NAME: LEIGS14    NONE               # FIXED AMB: 64 / 70 : 91%  
ARP HEIGHT: 2.00                        OVERALL RMS: 0.015(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000)            IGS08 (EPOCH:2016.1713)

X: 869407.227(m) 0.006(m)           869406.439(m) 0.006(m)  
Y: -5571381.944(m) 0.004(m)       -5571380.375(m) 0.004(m)  
Z: 2970674.598(m) 0.009(m)       2970674.432(m) 0.009(m)

LAT: 27 56 25.64874 0.009(m)   27 56 25.66942 0.009(m)  
E LON: 278 52 9.85161 0.005(m) 278 52 9.83197 0.005(m)  
W LON: 81 7 50.14839 0.005(m) 81 7 50.16803 0.005(m)  
EL HGT: -6.494(m) 0.005(m)       -8.048(m) 0.005(m)  
ORTHO HGT: 20.950(m) 0.016(m) [NAVD88 (Computed using GEOID12B)]

UTM COORDINATES   STATE PLANE COORDINATES

UTM (Zone 17)        SPC (0901 FL E)  
Northing (Y) [meters] 3090613.486   399617.852  
Easting (X) [meters] 487152.338   187147.953  
Convergence [degrees] -0.06119169   -0.06119169  
Point Scale           0.99960204   0.99994321  
Combined Factor       0.99960306   0.99994423

US NATIONAL GRID DESIGNATOR: 17RML8715290613(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DG9757	DLND DELAND CORS ARP	N290322.897	W0811547.480	124350.1
DI3562	CCV5 CAPE CANAVERAL 5 CORS ARP	N282736.799	W0803242.818	81367.8
DF7990	ZEFR ZEPHYRHILLS CORS ARP	N281339.322	W0820952.671	106493.7

NEAREST NGS PUBLISHED CONTROL POINT

AF6097   JACKSON                    N275625.648 W0810750.148   0.0

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

- 8002 The Opus solution for your submitted RINEX file appears to be
- 8002 quite close to an NGS published control point. This suggests that
- 8002 you may have set your GPS receiver up over an NGS control point.
- 8002 Furthermore, our files indicate that this control point has not
- 8002 been recovered in the last five years.
- 8002 If you did indeed recover an NGS control point, we would
- 8002 appreciate receiving this information through our web based
- 8002 Mark Recovery Form at

8002 [http://www.ngs.noaa.gov/products\\_services.shtml#MarkRecoveryForm](http://www.ngs.noaa.gov/products_services.shtml#MarkRecoveryForm).  
8002

### OPUS solution\_CHARLIE\_20160303

FILE: 6823063o24.16o OP1457544972457

#### NGS OPUS SOLUTION REPORT =====

All computed coordinate accuracies are listed as peak-to-peak values.  
For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com) DATE: March 09, 2016  
RINEX FILE: 6823063o.16o TIME: 17:37:05 UTC

SOFTWARE: page5 1209.04 master91.pl 022814 START: 2016/03/03 14:24:00  
EPHEMERIS: igr18864.eph [rapid] STOP: 2016/03/03 19:05:00  
NAV FILE: brdc0630.16n OBS USED: 11095 / 11895 : 93%  
ANT NAME: LEIGS14 NONE # FIXED AMB: 51 / 59 : 86%  
ARP HEIGHT: 2.00 OVERALL RMS: 0.016(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2016.1713)

X:	876310.580(m)	0.010(m)	876309.793(m)	0.010(m)
Y:	-5580100.619(m)	0.014(m)	-5580099.047(m)	0.014(m)
Z:	2952350.831(m)	0.012(m)	2952350.664(m)	0.012(m)

LAT:	27 45 12.40275	0.011(m)	27 45 12.42329	0.011(m)
E LON:	278 55 29.83720	0.009(m)	278 55 29.81772	0.009(m)
W LON:	81 4 30.16280	0.009(m)	81 4 30.18228	0.009(m)
EL HGT:	-5.407(m)	0.018(m)	-6.967(m)	0.018(m)
ORTHO HGT:	21.218(m)	0.034(m)	[NAVD88 (Computed using GEOID12B)]	

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 17)	SPC (0901 FL E)
Northing (Y) [meters]	3069892.977	378890.272
Easting (X) [meters]	492604.637	192602.113
Convergence [degrees]	-0.03494615	-0.03494615
Point Scale	0.99960068	0.99994185
Combined Factor	0.99960153	0.99994270

US NATIONAL GRID DESIGNATOR: 17RML9260469892(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DG9757	DLND DELAND CORS ARP	N290322.897	W0811547.480	145565.8
DI3562	CCV5 CAPE CANAVERAL 5 CORS ARP	N282736.799	W0803242.818	94048.7
DF7990	ZEFR ZEPHYRHILLS CORS ARP	N281339.322	W0820952.671	119367.1

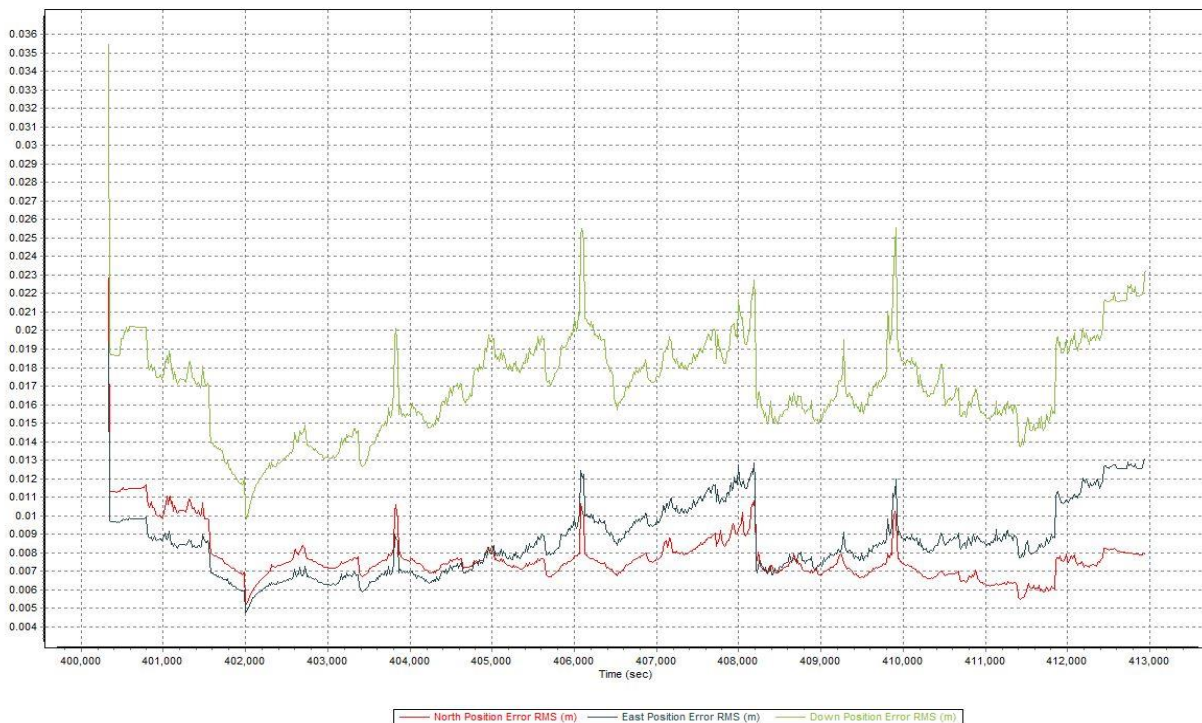
NEAREST NGS PUBLISHED CONTROL POINT

AF6134	COON	N274512.402	W0810430.162	0.0
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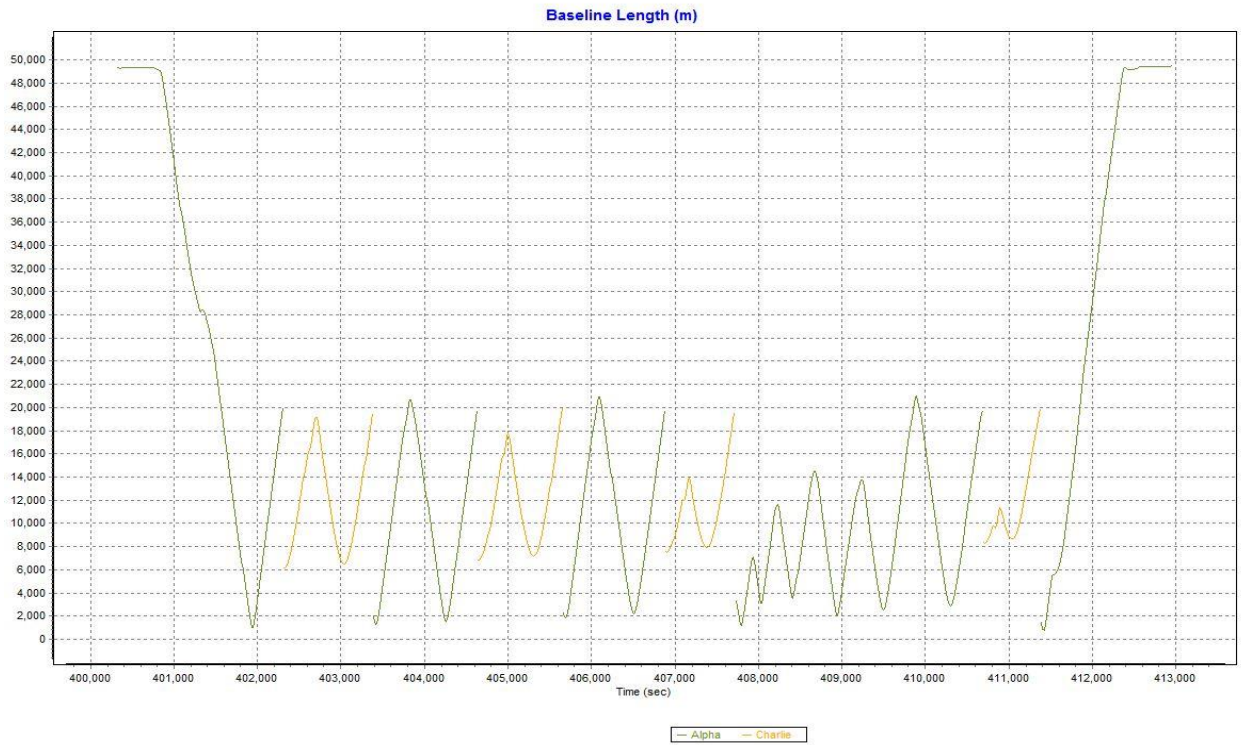
This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

8002 The Opus solution for your submitted RINEX file appears to be  
8002 quite close to an NGS published control point. This suggests that  
8002 you may have set your GPS receiver up over an NGS control point.  
8002 Furthermore, our files indicate that this control point has not  
8002 been recovered in the last five years.  
8002 If you did indeed recover an NGS control point, we would  
8002 appreciate receiving this information through our web based  
8002 Mark Recovery Form at  
8002 [http://www.ngs.noaa.gov/products\\_services.shtml#MarkRecoveryForm](http://www.ngs.noaa.gov/products_services.shtml#MarkRecoveryForm).  
8002

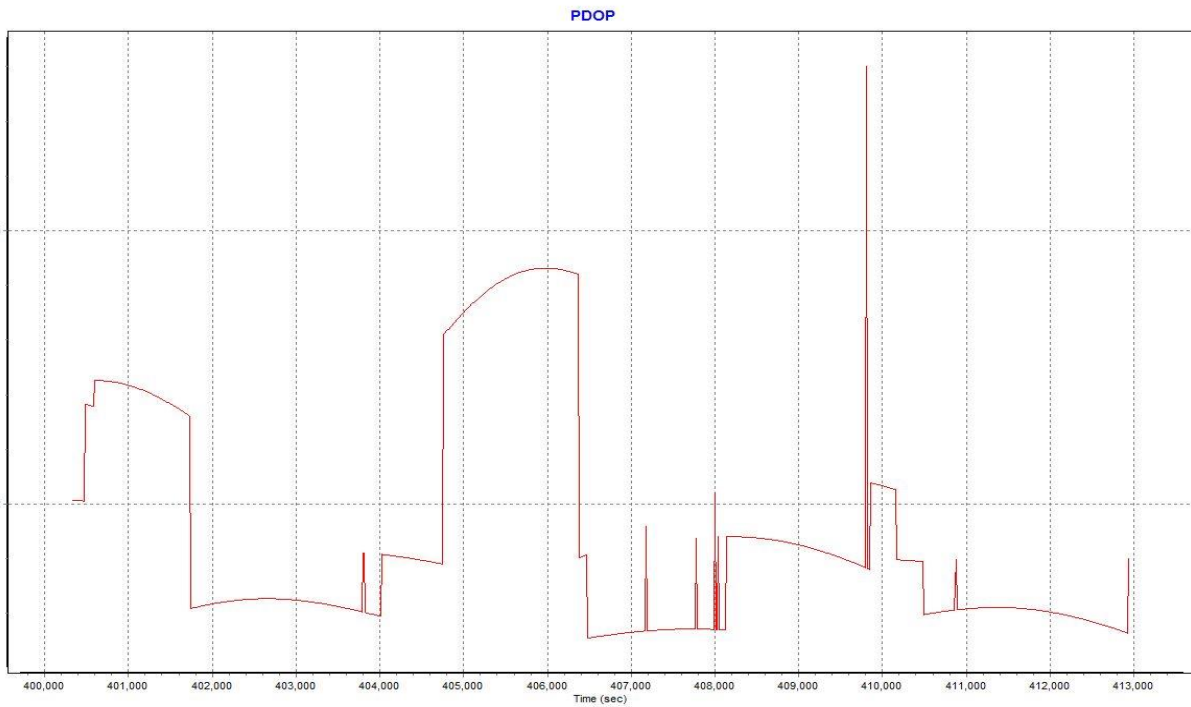
Smoothed Performance Metrics, Reference Frame\_20160303\_Report



### Baseline Length\_20160303\_Report

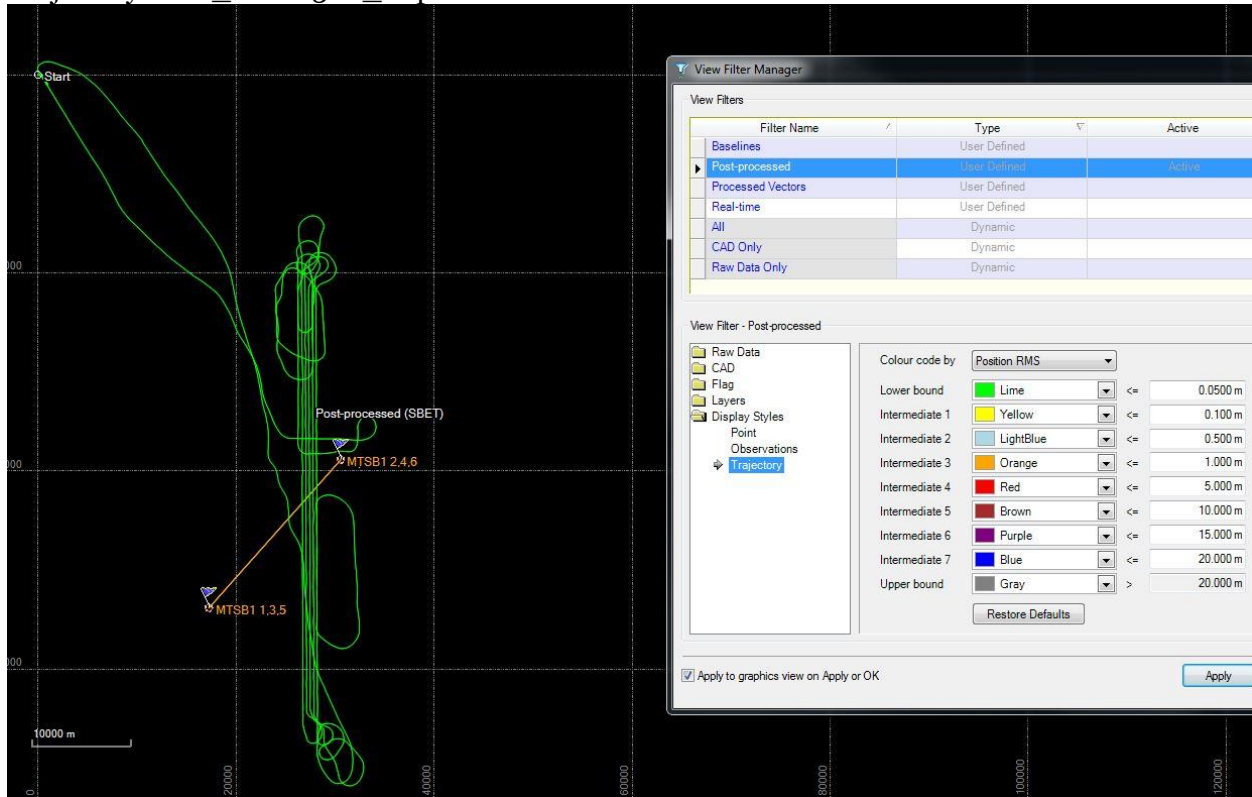


### PDOP\_20160303\_Report



### Mission 20160306

### Trajectory RMS\_20160306\_Report



### OPUS solution\_ALPHA\_20160306

FILE: 6790066p41.16o OP1457445683578

#### NGS OPUS SOLUTION REPORT

=====

All computed coordinate accuracies are listed as peak-to-peak values.  
For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com)  
RINEX FILE: 6790066p.16o

DATE: March 08, 2016  
TIME: 14:01:54 UTC

SOFTWARE: page5 1209.04 master92.pl 022814 START: 2016/03/06 15:41:00  
EPHEMERIS: igr18870.eph [rapid] STOP: 2016/03/06 18:16:00

NAV FILE: brdc0660.16n                   OBS USED: 5863 / 6550 : 90%  
ANT NAME: LEIGS14    NONE           # FIXED AMB: 34 / 42 : 81%  
ARP HEIGHT: 2.00                   OVERALL RMS: 0.012(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000)           IGS08 (EPOCH:2016.1795)

X: 869407.232(m) 0.005(m)           869406.444(m) 0.005(m)  
Y: -5571381.967(m) 0.017(m)       -5571380.398(m) 0.017(m)  
Z: 2970674.616(m) 0.017(m)       2970674.450(m) 0.017(m)

LAT: 27 56 25.64890 0.011(m)   27 56 25.66958 0.011(m)  
E LON: 278 52 9.85166 0.007(m)   278 52 9.83203 0.007(m)  
W LON: 81 7 50.14834 0.007(m)   81 7 50.16797 0.007(m)  
EL HGT: -6.464(m) 0.022(m)       -8.019(m) 0.022(m)  
ORTHO HGT: 20.980(m) 0.040(m) [NAVD88 (Computed using GEOID12B)]

UTM COORDINATES   STATE PLANE COORDINATES

UTM (Zone 17)       SPC (0901 FL E)  
Northing (Y) [meters] 3090613.491   399617.857  
Easting (X) [meters] 487152.339   187147.954  
Convergence [degrees] -0.06119169   -0.06119169  
Point Scale       0.99960204   0.99994321  
Combined Factor   0.99960306   0.99994423

US NATIONAL GRID DESIGNATOR: 17RML8715290613(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DF5773	ORMD ORMOND BEACH CORS ARP	N291753.469	W0810632.013	150487.5
DG9757	DLND DELAND CORS ARP	N290322.897	W0811547.480	124350.1
DI3562	CCV5 CAPE CANAVERAL 5 CORS ARP	N282736.799	W0803242.818	81367.8

NEAREST NGS PUBLISHED CONTROL POINT

AF6097   JACKSON                   N275625.648 W0810750.148   0.0

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

- 8002 The Opus solution for your submitted RINEX file appears to be
- 8002 quite close to an NGS published control point. This suggests that
- 8002 you may have set your GPS receiver up over an NGS control point.
- 8002 Furthermore, our files indicate that this control point has not
- 8002 been recovered in the last five years.
- 8002 If you did indeed recover an NGS control point, we would
- 8002 appreciate receiving this information through our web based
- 8002 Mark Recovery Form at

8002 [http://www.ngs.noaa.gov/products\\_services.shtml#MarkRecoveryForm](http://www.ngs.noaa.gov/products_services.shtml#MarkRecoveryForm).  
8002

## OPUS solution\_CHARLIE\_20160306

FILE: 6823066n59.16o OP1457445749182

### NGS OPUS SOLUTION REPORT =====

All computed coordinate accuracies are listed as peak-to-peak values.  
For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com) DATE: March 08, 2016  
RINEX FILE: 6823066n.16o TIME: 14:03:13 UTC

SOFTWARE: page5 1209.04 master50.pl 022814 START: 2016/03/06 13:59:00  
EPHEMERIS: igr18870.eph [rapid] STOP: 2016/03/06 18:13:00  
NAV FILE: brdc0660.16n OBS USED: 9354 / 10681 : 88%  
ANT NAME: LEIGS14 NONE # FIXED AMB: 47 / 51 : 92%  
ARP HEIGHT: 2.00 OVERALL RMS: 0.012(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2016.1794)

X:	857289.217(m)	0.010(m)	857288.430(m)	0.010(m)
Y:	-5580320.166(m)	0.014(m)	-5580318.596(m)	0.014(m)
Z:	2957475.604(m)	0.010(m)	2957475.436(m)	0.010(m)

LAT:	27 48 20.62167	0.002(m)	27 48 20.64217	0.002(m)
E LON:	278 44 2.07364	0.011(m)	278 44 2.05393	0.011(m)
W LON:	81 15 57.92636	0.011(m)	81 15 57.94607	0.011(m)
EL HGT:	-8.114(m)	0.017(m)	-9.671(m)	0.017(m)
ORTHO HGT:	18.800(m)	0.032(m)	[NAVD88 (Computed using GEOID12B)]	

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 17)	SPC (0902 FL W)
Northing (Y) [meters]	3075710.587	384897.519
Easting (X) [meters]	473790.471	272314.616
Convergence [degrees]	-0.12412537	0.34236530
Point Scale	0.99960848	1.00000570
Combined Factor	0.99960975	1.00000697

US NATIONAL GRID DESIGNATOR: 17RML7379075710(NAD 83)

BASE STATIONS USED

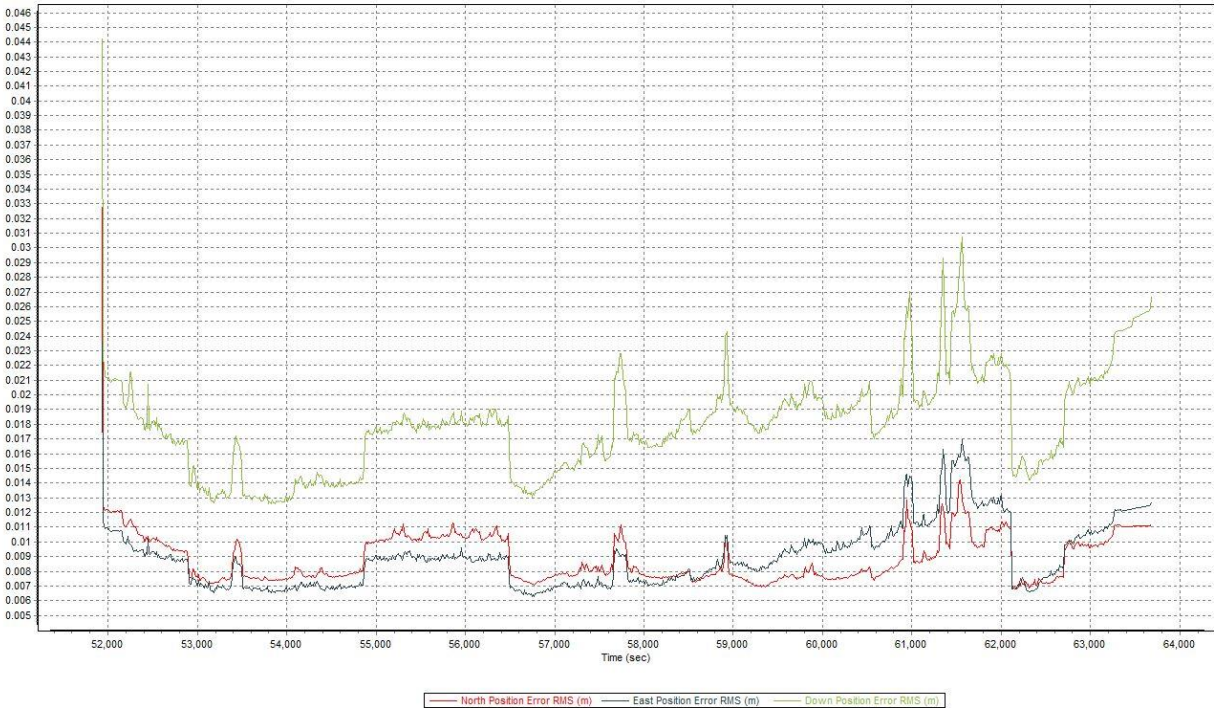
PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DG9757	DLND DELAND CORS ARP	N290322.897	W0811547.480	138600.6
DI3562	CCV5 CAPE CANAVERAL 5 CORS ARP	N282736.799	W0803242.818	101369.3
DF7990	ZEFR ZEPHYRHILLS CORS ARP	N281339.322	W0820952.671	99971.4

NEAREST NGS PUBLISHED CONTROL POINT

AF7643	K 113	N274820.621	W0811557.927	0.0
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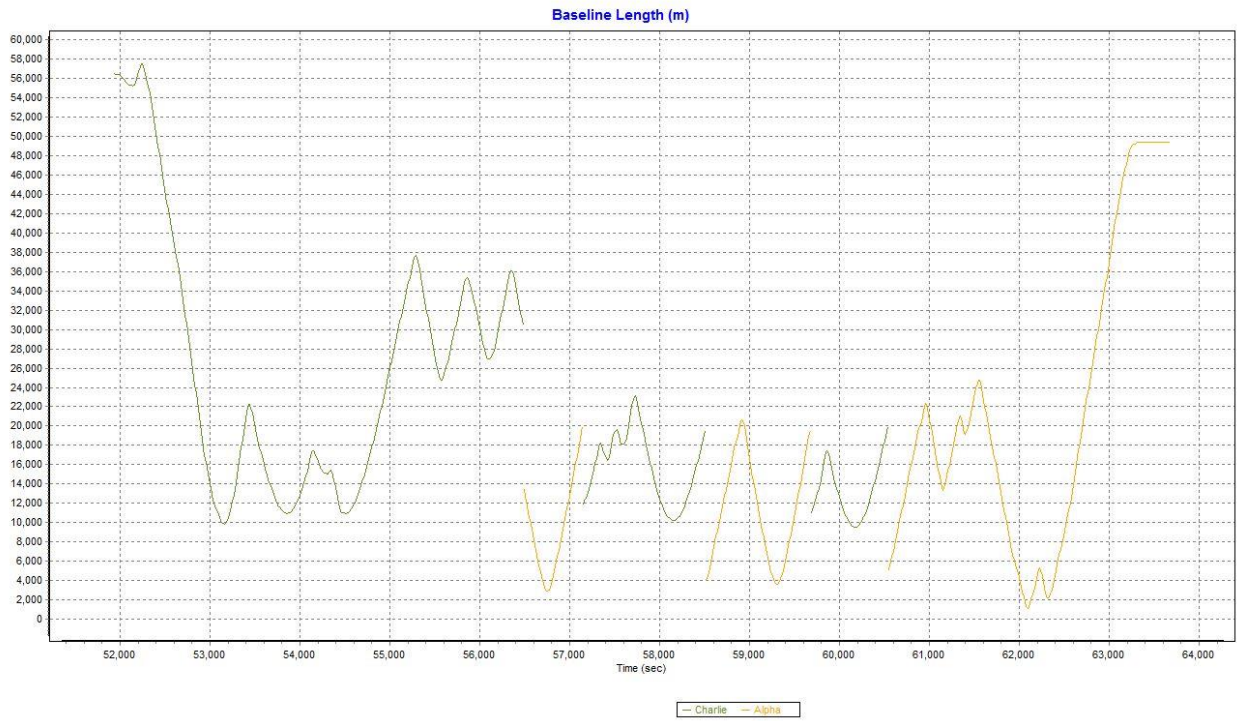
This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

Smoothed Performance Metrics, Reference Frame\_20160306\_Report

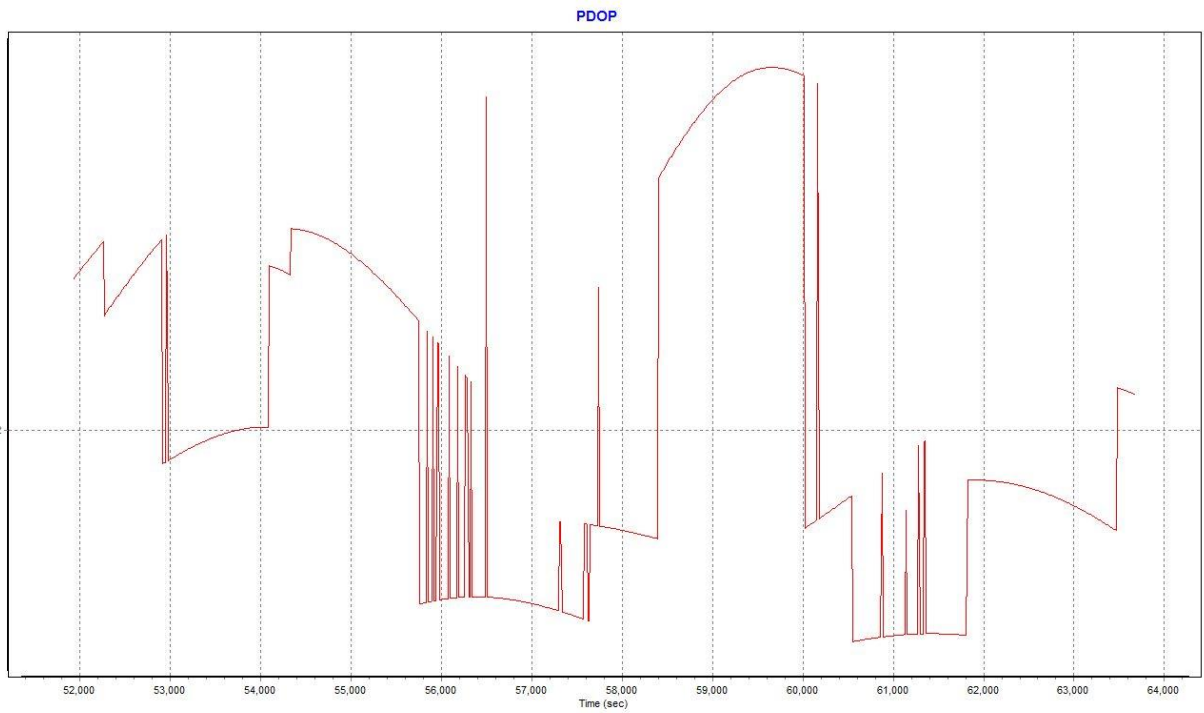




### Baseline Length\_20160306\_Report

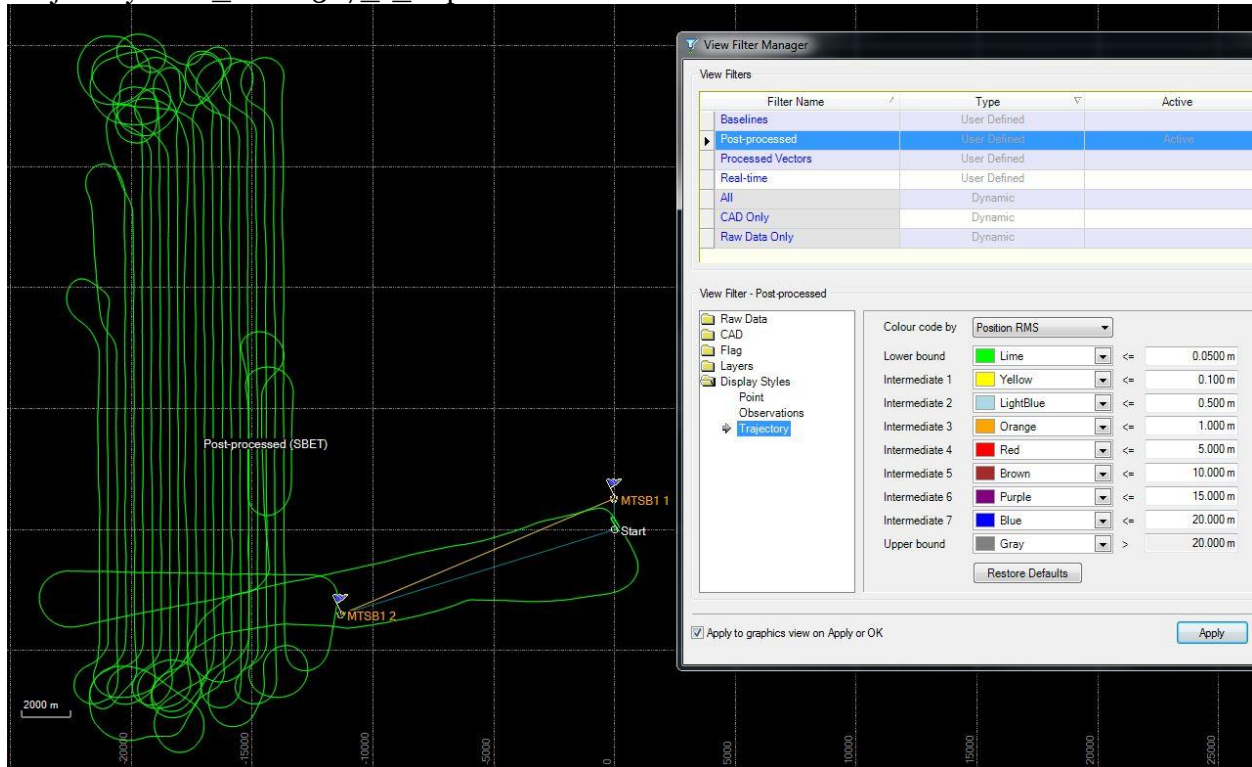


### PDOP\_20160306\_Report



### Mission 20160307\_1

### Trajectory RMS\_20160307\_1\_Report



### OPUS solution BRAVO\_20160307\_1

FILE: 6829067n39.16o OP1457445893372

2005 NOTE: The IGS precise and IGS rapid orbits were not available  
2005 at processing time. The IGS ultra-rapid orbit was/will be used to  
2005 process the data.  
2005

#### NGS OPUS SOLUTION REPORT

=====

All computed coordinate accuracies are listed as peak-to-peak values.  
For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com)  
RINEX FILE: 6829067n.16o

DATE: March 08, 2016  
TIME: 14:06:30 UTC

SOFTWARE: page5 1209.04 master91.pl 022814 START: 2016/03/07 13:39:00  
EPHEMERIS: igu18871.eph [ultra-rapid] STOP: 2016/03/07 22:24:00  
NAV FILE: brdc0670.16n OBS USED: 16409 / 17935 : 91%  
ANT NAME: LEIGS14 NONE # FIXED AMB: 105 / 109 : 96%  
ARP HEIGHT: 2.00 OVERALL RMS: 0.014(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2016.1824)

X: 825519.948(m) 0.004(m) 825519.160(m) 0.004(m)  
Y: -5561214.186(m) 0.007(m) -5561212.623(m) 0.007(m)  
Z: 3001882.375(m) 0.008(m) 3001882.209(m) 0.008(m)

LAT: 28 15 34.80365 0.010(m) 28 15 34.82446 0.010(m)  
E LON: 278 26 36.47507 0.003(m) 278 26 36.45489 0.003(m)  
W LON: 81 33 23.52493 0.003(m) 81 33 23.54511 0.003(m)  
EL HGT: -1.236(m) 0.004(m) -2.778(m) 0.004(m)  
ORTHO HGT: 26.348(m) 0.015(m) [NAVD88 (Computed using GEOID12B)]

UTM COORDINATES STATE PLANE COORDINATES

UTM (Zone 17) SPC (0901 FL E)

Northing (Y) [meters]	3126093.163	435109.639
Easting (X) [meters]	445411.359	145392.727
Convergence [degrees]	-0.26350807	-0.26350807
Point Scale	0.99963678	0.99997797
Combined Factor	0.99963697	0.99997816

US NATIONAL GRID DESIGNATOR: 17RMM4541126093(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI3562	CCV5 CAPE CANAVERAL 5 CORS ARP	N282736.799	W0803242.818	101600.9
DG9757	DLND DELAND CORS ARP	N290322.897	W0811547.480	92836.6
DF5773	ORMD ORMOND BEACH CORS ARP	N291753.469	W0810632.013	123118.9

NEAREST NGS PUBLISHED CONTROL POINT

AK7111	K081	N281534.803	W0813323.525	0.0
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

8002 The Opus solution for your submitted RINEX file appears to be  
8002 quite close to an NGS published control point. This suggests that  
8002 you may have set your GPS receiver up over an NGS control point.  
8002 Furthermore, our files indicate that this control point has not  
8002 been recovered in the last five years.

8002 If you did indeed recover an NGS control point, we would  
8002 appreciate receiving this information through our web based  
8002 Mark Recovery Form at  
8002 [http://www.ngs.noaa.gov/products\\_services.shtml#MarkRecoveryForm](http://www.ngs.noaa.gov/products_services.shtml#MarkRecoveryForm).  
8002

## OPUS solution\_CHARLIE\_20160307\_1

FILE: 6823067n50.16o OP1457445989513

2005 NOTE: The IGS precise and IGS rapid orbits were not available  
2005 at processing time. The IGS ultra-rapid orbit was/will be used to  
2005 process the data.  
2005

### NGS OPUS SOLUTION REPORT =====

All computed coordinate accuracies are listed as peak-to-peak values.  
For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com) DATE: March 08, 2016  
RINEX FILE: 6823067n.16o TIME: 14:07:55 UTC

SOFTWARE: page5 1209.04 master52.pl 022814 START: 2016/03/07 13:50:00  
EPHEMERIS: igu18871.eph [ultra-rapid] STOP: 2016/03/07 22:24:00  
NAV FILE: brdc0670.16n OBS USED: 15923 / 17473 : 91%  
ANT NAME: LEIGS14 NONE # FIXED AMB: 105 / 111 : 95%  
ARP HEIGHT: 2.00 OVERALL RMS: 0.013(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2016.1824)

X:	836360.474(m)	0.005(m)	836359.685(m)	0.005(m)
Y:	-5557292.799(m)	0.012(m)	-5557291.236(m)	0.012(m)
Z:	3006106.338(m)	0.005(m)	3006106.173(m)	0.005(m)

LAT:	28 18 10.66233	0.007(m)	28 18 10.68322	0.007(m)
E LON:	278 33 31.17290	0.004(m)	278 33 31.15280	0.004(m)
W LON:	81 26 28.82710	0.004(m)	81 26 28.84720	0.004(m)
EL HGT:	-4.037(m)	0.010(m)	-5.579(m)	0.010(m)
ORTHO HGT:	23.739(m)	0.022(m)	[NAVD88 (Computed using GEOID12B)]	

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 17)	SPC (0901 FL E)
Northing (Y) [meters]	3130842.758	439860.855
Easting (X) [meters]	456727.986	156713.216

Convergence [degrees] -0.20925784 -0.20925784  
Point Scale 0.99962311 0.99996429  
Combined Factor 0.99962374 0.99996492

US NATIONAL GRID DESIGNATOR: 17RMM5672730842(NAD 83)

BASE STATIONS USED

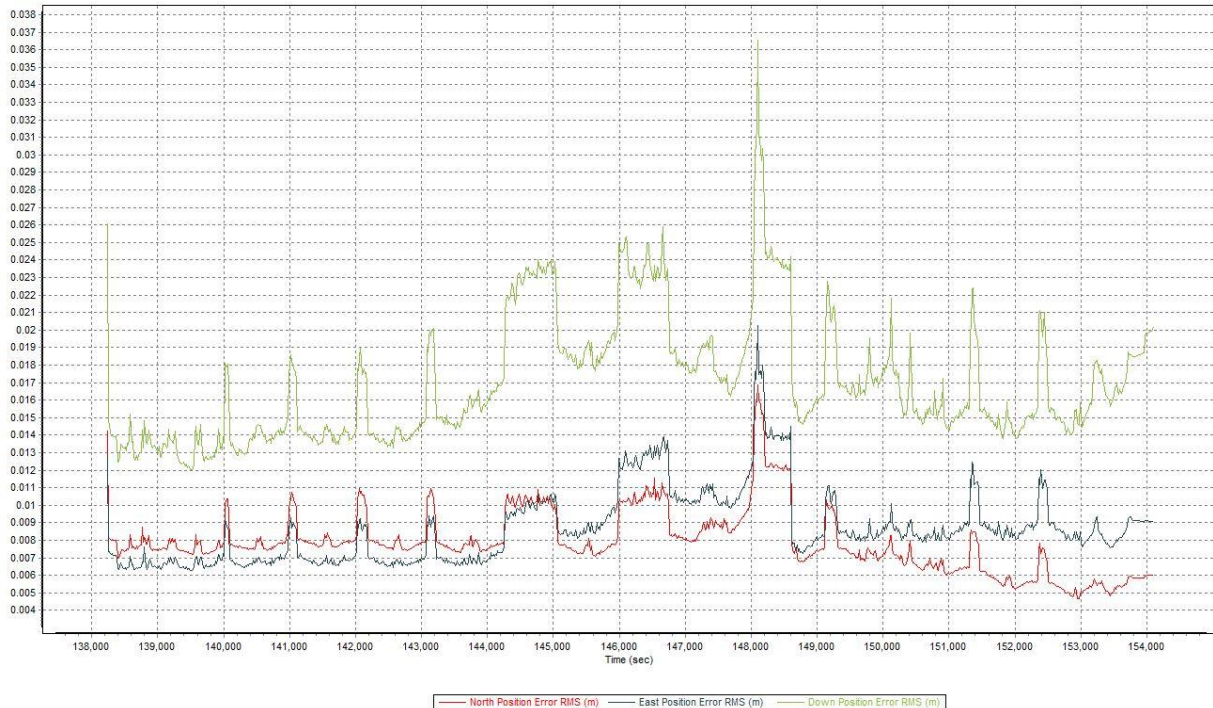
PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI3562	CCV5 CAPE CANAVERAL 5 CORS ARP	N282736.799	W0803242.818	89542.3
DG9757	DLND DELAND CORS ARP	N290322.897	W0811547.480	85295.0
DF5773	ORMD ORMOND BEACH CORS ARP	N291753.469	W0810632.013	114976.9

NEAREST NGS PUBLISHED CONTROL POINT

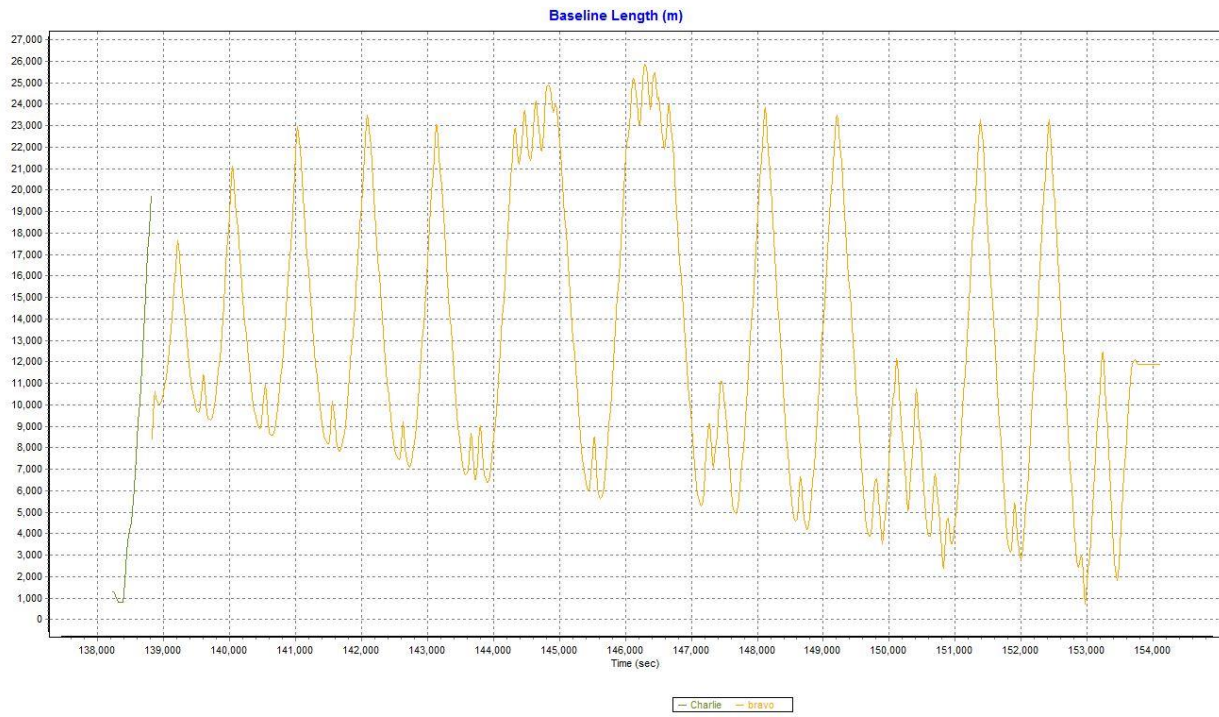
DL6644	R 733	N281810.661	W0812628.827	0.0
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

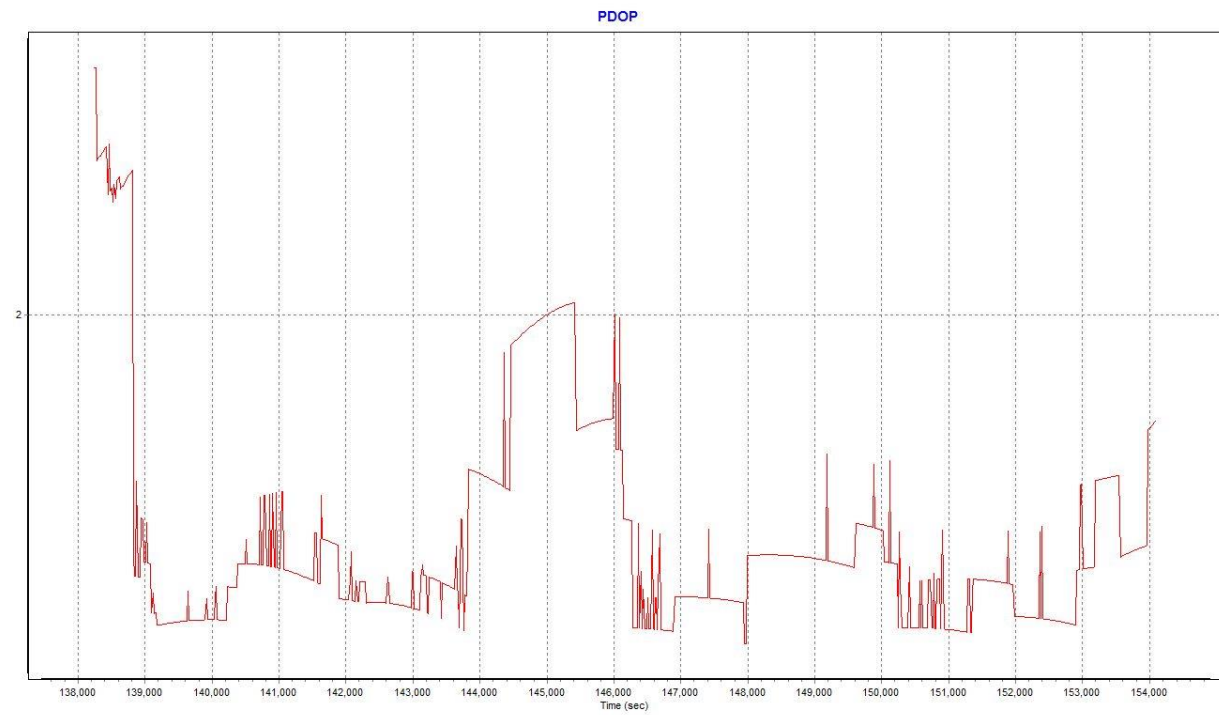
Smoothed Performance Metrics, Reference Frame\_20160307\_1\_Report



### Baseline Length\_20160307\_1\_Report

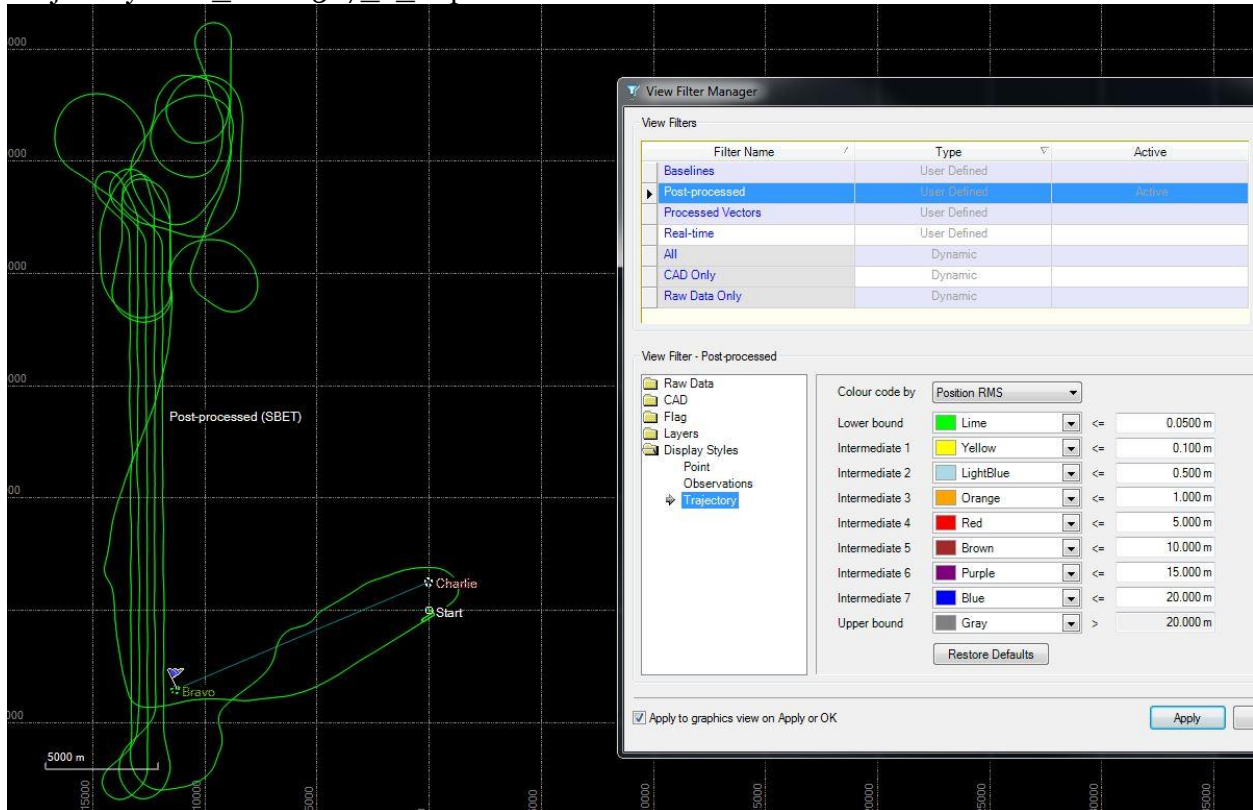


### PDOP\_20160307\_1\_Report



Mission 20160307\_2

Trajectory RMS\_20160307\_2\_Report



**OPUS solution BRAVO\_20160307\_2**

FILE: 6829067n39.16o OP1457445893372

2005 NOTE: The IGS precise and IGS rapid orbits were not available  
2005 at processing time. The IGS ultra-rapid orbit was/will be used to  
2005 process the data.  
2005

NGS OPUS SOLUTION REPORT

=====

All computed coordinate accuracies are listed as peak-to-peak values.  
For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com)

DATE: March 08, 2016

RINEX FILE: 6829067n.16o

TIME: 14:06:30 UTC

SOFTWARE: page5 1209.04 master91.pl 022814 START: 2016/03/07 13:39:00  
EPHEMERIS: igu18871.eph [ultra-rapid] STOP: 2016/03/07 22:24:00  
NAV FILE: brdc0670.16n OBS USED: 16409 / 17935 : 91%  
ANT NAME: LEIGS14 NONE # FIXED AMB: 105 / 109 : 96%  
ARP HEIGHT: 2.00 OVERALL RMS: 0.014(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2016.1824)

X: 825519.948(m) 0.004(m) 825519.160(m) 0.004(m)  
Y: -5561214.186(m) 0.007(m) -5561212.623(m) 0.007(m)  
Z: 3001882.375(m) 0.008(m) 3001882.209(m) 0.008(m)

LAT: 28 15 34.80365 0.010(m) 28 15 34.82446 0.010(m)  
E LON: 278 26 36.47507 0.003(m) 278 26 36.45489 0.003(m)  
W LON: 81 33 23.52493 0.003(m) 81 33 23.54511 0.003(m)  
EL HGT: -1.236(m) 0.004(m) -2.778(m) 0.004(m)  
ORTHO HGT: 26.348(m) 0.015(m) [NAVD88 (Computed using GEOID12B)]

UTM COORDINATES STATE PLANE COORDINATES

UTM (Zone 17) SPC (0901 FL E)

Northing (Y) [meters]	3126093.163	435109.639
Easting (X) [meters]	445411.359	145392.727
Convergence [degrees]	-0.26350807	-0.26350807
Point Scale	0.99963678	0.99997797
Combined Factor	0.99963697	0.99997816

US NATIONAL GRID DESIGNATOR: 17RMM4541126093(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI3562	CCV5 CAPE CANAVERAL 5 CORS ARP	N282736.799	W0803242.818	101600.9
DG9757	DLND DELAND CORS ARP	N290322.897	W0811547.480	92836.6
DF5773	ORMD ORMOND BEACH CORS ARP	N291753.469	W0810632.013	123118.9

NEAREST NGS PUBLISHED CONTROL POINT

AK7111	K081	N281534.803	W0813323.525	0.0
--------	------	-------------	--------------	-----

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

8002 The Opus solution for your submitted RINEX file appears to be  
8002 quite close to an NGS published control point. This suggests that  
8002 you may have set your GPS receiver up over an NGS control point.



8002 Furthermore, our files indicate that this control point has not  
8002 been recovered in the last five years.  
8002 If you did indeed recover an NGS control point, we would  
8002 appreciate receiving this information through our web based  
8002 Mark Recovery Form at  
8002 [http://www.ngs.noaa.gov/products\\_services.shtml#MarkRecoveryForm](http://www.ngs.noaa.gov/products_services.shtml#MarkRecoveryForm).  
8002

## OPUS solution\_CHARLIE\_20160307\_2

FILE: 6823067n50.16o OP1457445989513

2005 NOTE: The IGS precise and IGS rapid orbits were not available  
2005 at processing time. The IGS ultra-rapid orbit was/will be used to  
2005 process the data.  
2005

### NGS OPUS SOLUTION REPORT =====

All computed coordinate accuracies are listed as peak-to-peak values.  
For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com) DATE: March 08, 2016  
RINEX FILE: 6823067n.16o TIME: 14:07:55 UTC

SOFTWARE: page5 1209.04 master52.pl 022814 START: 2016/03/07 13:50:00  
EPHEMERIS: igu18871.eph [ultra-rapid] STOP: 2016/03/07 22:24:00  
NAV FILE: brdc0670.16n OBS USED: 15923 / 17473 : 91%  
ANT NAME: LEIGS14 NONE # FIXED AMB: 105 / 111 : 95%  
ARP HEIGHT: 2.00 OVERALL RMS: 0.013(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2016.1824)

X:	836360.474(m)	0.005(m)	836359.685(m)	0.005(m)
Y:	-5557292.799(m)	0.012(m)	-5557291.236(m)	0.012(m)
Z:	3006106.338(m)	0.005(m)	3006106.173(m)	0.005(m)

LAT:	28 18 10.66233	0.007(m)	28 18 10.68322	0.007(m)
E LON:	278 33 31.17290	0.004(m)	278 33 31.15280	0.004(m)
W LON:	81 26 28.82710	0.004(m)	81 26 28.84720	0.004(m)
EL HGT:	-4.037(m)	0.010(m)	-5.579(m)	0.010(m)
ORTHO HGT:	23.739(m)	0.022(m)	[NAVD88 (Computed using GEOID12B)]	

UTM COORDINATES STATE PLANE COORDINATES  
UTM (Zone 17) SPC (0901 FL E)

Northing (Y) [meters]	3130842.758	439860.855
Easting (X) [meters]	456727.986	156713.216
Convergence [degrees]	-0.20925784	-0.20925784
Point Scale	0.99962311	0.99996429
Combined Factor	0.99962374	0.99996492

US NATIONAL GRID DESIGNATOR: 17RMM5672730842(NAD 83)

BASE STATIONS USED

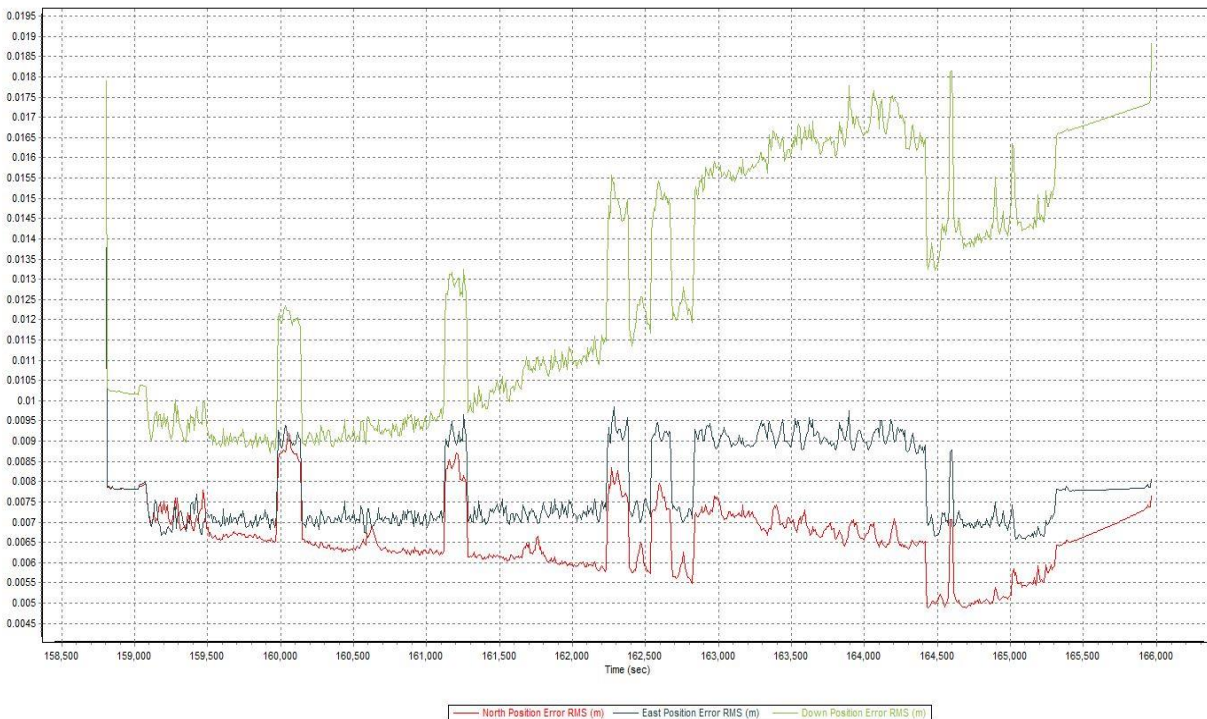
PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI3562	CCV5 CAPE CANAVERAL 5 CORS ARP	N282736.799	W0803242.818	89542.3
DG9757	DLND DELAND CORS ARP	N290322.897	W0811547.480	85295.0
DF5773	ORMD ORMOND BEACH CORS ARP	N291753.469	W0810632.013	114976.9

NEAREST NGS PUBLISHED CONTROL POINT

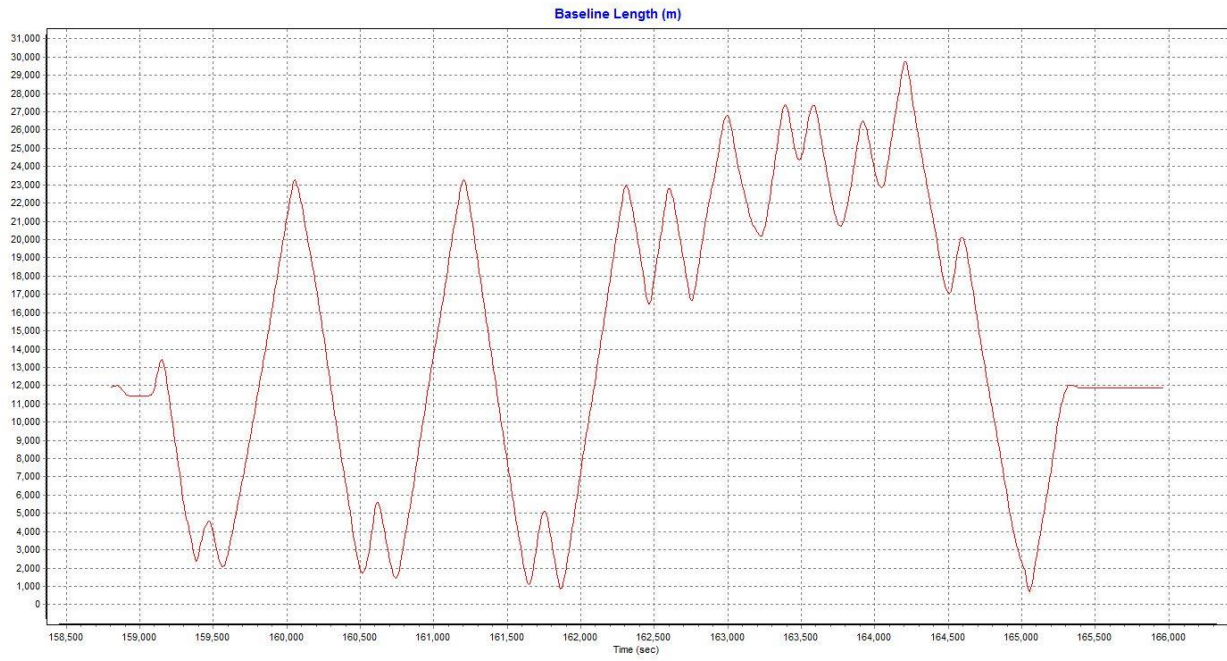
DL6644	R 733	N281810.661	W0812628.827	0.0
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

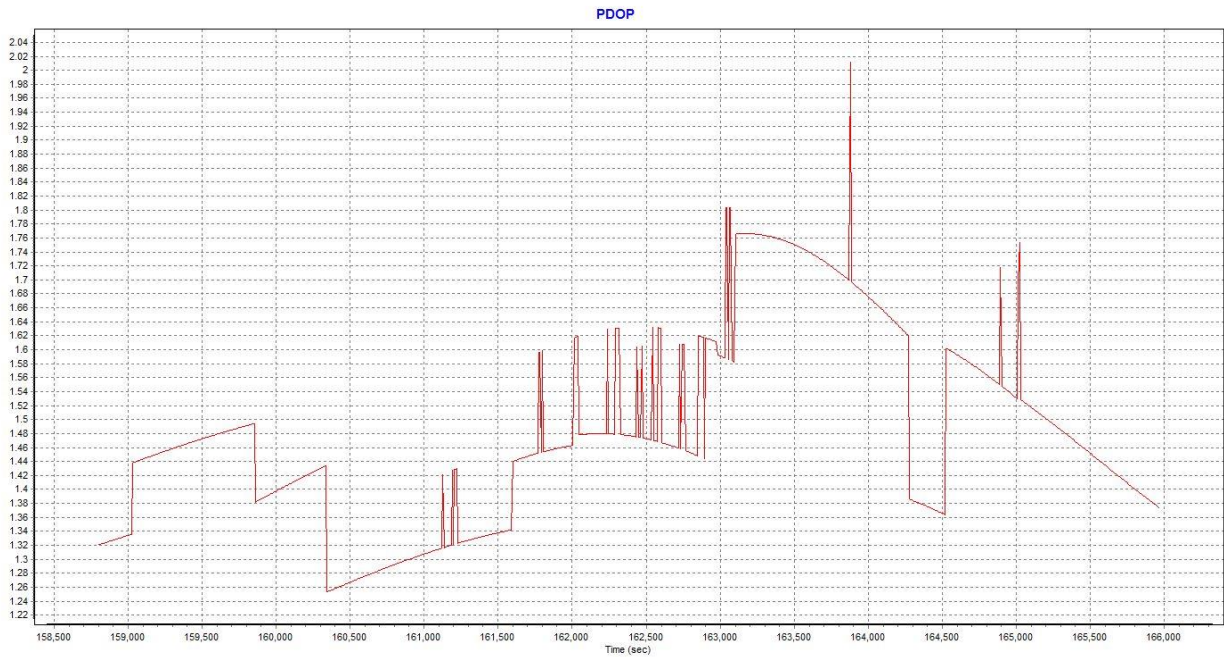
Smoothed Performance Metrics, Reference Frame\_20160307\_2\_Report



### Baseline Length\_20160307\_2\_Report

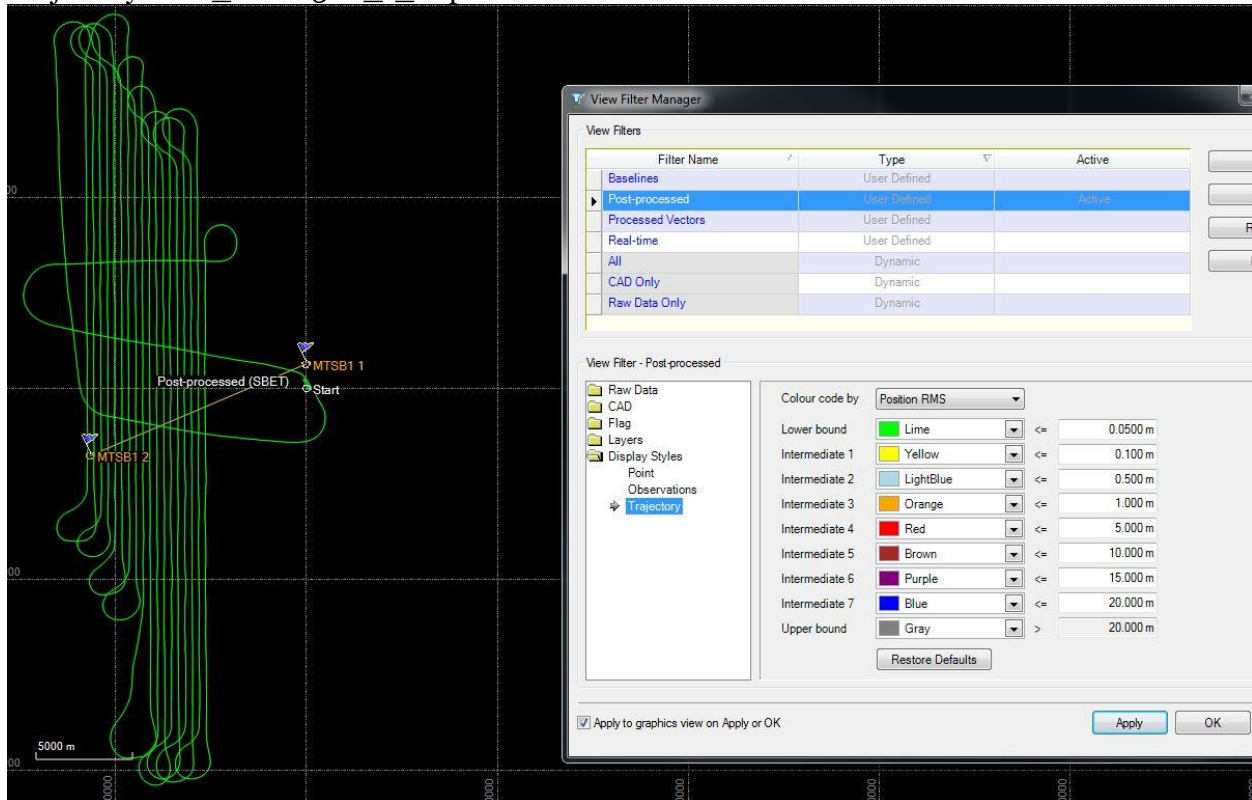


### PDOP\_20160307\_2\_Report



### Mission 20160308\_1

### Trajectory RMS\_20160308\_1\_Report



### OPUS solution BRAVO\_20160308\_1

FILE: 6829068n51.16o OP1457526572748

2005 NOTE: The IGS precise and IGS rapid orbits were not available  
2005 at processing time. The IGS ultra-rapid orbit was/will be used to  
2005 process the data.  
2005

#### NGS OPUS SOLUTION REPORT

=====

All computed coordinate accuracies are listed as peak-to-peak values.  
For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com)  
RINEX FILE: 6829068n.16o

DATE: March 09, 2016  
TIME: 12:31:11 UTC

SOFTWARE: page5 1209.04 master92.pl 022814 START: 2016/03/08 13:51:00  
EPHEMERIS: igu18872.eph [ultra-rapid] STOP: 2016/03/08 22:55:00  
NAV FILE: brdc0680.16n OBS USED: 19410 / 21090 : 92%  
ANT NAME: LEIGS14 NONE # FIXED AMB: 109 / 119 : 92%  
ARP HEIGHT: 2.00 OVERALL RMS: 0.015(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2016.1852)

X: 825519.942(m) 0.003(m) 825519.154(m) 0.003(m)  
Y: -5561214.199(m) 0.010(m) -5561212.636(m) 0.010(m)  
Z: 3001882.369(m) 0.007(m) 3001882.203(m) 0.007(m)

LAT: 28 15 34.80330 0.009(m) 28 15 34.82410 0.009(m)  
E LON: 278 26 36.47478 0.002(m) 278 26 36.45460 0.002(m)  
W LON: 81 33 23.52522 0.002(m) 81 33 23.54540 0.002(m)  
EL HGT: -1.228(m) 0.007(m) -2.771(m) 0.007(m)  
ORTHO HGT: 26.356(m) 0.018(m) [NAVD88 (Computed using GEOID12B)]

UTM COORDINATES STATE PLANE COORDINATES

UTM (Zone 17) SPC (0901 FL E)

Northing (Y) [meters]	3126093.152	435109.628
Easting (X) [meters]	445411.351	145392.719
Convergence [degrees]	-0.26350811	-0.26350811
Point Scale	0.99963678	0.99997797
Combined Factor	0.99963697	0.99997816

US NATIONAL GRID DESIGNATOR: 17RMM4541126093(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI3562	CCV5 CAPE CANAVERAL 5 CORS ARP	N282736.799	W0803242.818	101600.9
DG9757	DLND DELAND CORS ARP	N290322.897	W0811547.480	92836.7
DF5773	ORMD ORMOND BEACH CORS ARP	N291753.469	W0810632.013	123118.9

NEAREST NGS PUBLISHED CONTROL POINT

AK7111	K081	N281534.803	W0813323.525	0.0
--------	------	-------------	--------------	-----

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

8002 The Opus solution for your submitted RINEX file appears to be  
8002 quite close to an NGS published control point. This suggests that  
8002 you may have set your GPS receiver up over an NGS control point.  
8002 Furthermore, our files indicate that this control point has not

8002 been recovered in the last five years.  
8002 If you did indeed recover an NGS control point, we would  
8002 appreciate receiving this information through our web based  
8002 Mark Recovery Form at  
8002 [http://www.ngs.noaa.gov/products\\_services.shtml#MarkRecoveryForm](http://www.ngs.noaa.gov/products_services.shtml#MarkRecoveryForm).  
8002

## OPUS solution\_CHARLIE\_20160308\_1

FILE: 6823068n51.16o OP1457526668249

2005 NOTE: The IGS precise and IGS rapid orbits were not available  
2005 at processing time. The IGS ultra-rapid orbit was/will be used to  
2005 process the data.  
2005

### NGS OPUS SOLUTION REPORT =====

All computed coordinate accuracies are listed as peak-to-peak values.  
For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com) DATE: March 09, 2016  
RINEX FILE: 6823068n.16o TIME: 12:32:30 UTC

SOFTWARE: page5 1209.04 master53.pl 022814 START: 2016/03/08 13:51:00  
EPHEMERIS: igu18872.eph [ultra-rapid] STOP: 2016/03/08 22:55:00  
NAV FILE: brdc0680.16n OBS USED: 19227 / 20875 : 92%  
ANT NAME: LEIGS14 NONE # FIXED AMB: 93 / 96 : 97%  
ARP HEIGHT: 2.00 OVERALL RMS: 0.013(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2016.1852)

X:	836360.481(m)	0.004(m)	836359.692(m)	0.004(m)
Y:	-5557292.798(m)	0.016(m)	-5557291.235(m)	0.016(m)
Z:	3006106.333(m)	0.002(m)	3006106.168(m)	0.002(m)

LAT:	28 18 10.66218	0.008(m)	28 18 10.68308	0.008(m)
E LON:	278 33 31.17316	0.001(m)	278 33 31.15306	0.001(m)
W LON:	81 26 28.82684	0.001(m)	81 26 28.84694	0.001(m)
EL HGT:	-4.039(m)	0.015(m)	-5.582(m)	0.015(m)
ORTHO HGT:	23.737(m)	0.028(m)	[NAVD88 (Computed using GEOID12B)]	

UTM COORDINATES STATE PLANE COORDINATES  
UTM (Zone 17) SPC (0901 FL E)  
Northing (Y) [meters] 3130842.753 439860.850

Easting (X) [meters] 456727.993 156713.223  
Convergence [degrees] -0.20925781 -0.20925781  
Point Scale 0.99962311 0.99996429  
Combined Factor 0.99962374 0.99996492

US NATIONAL GRID DESIGNATOR: 17RMM5672730842(NAD 83)

BASE STATIONS USED

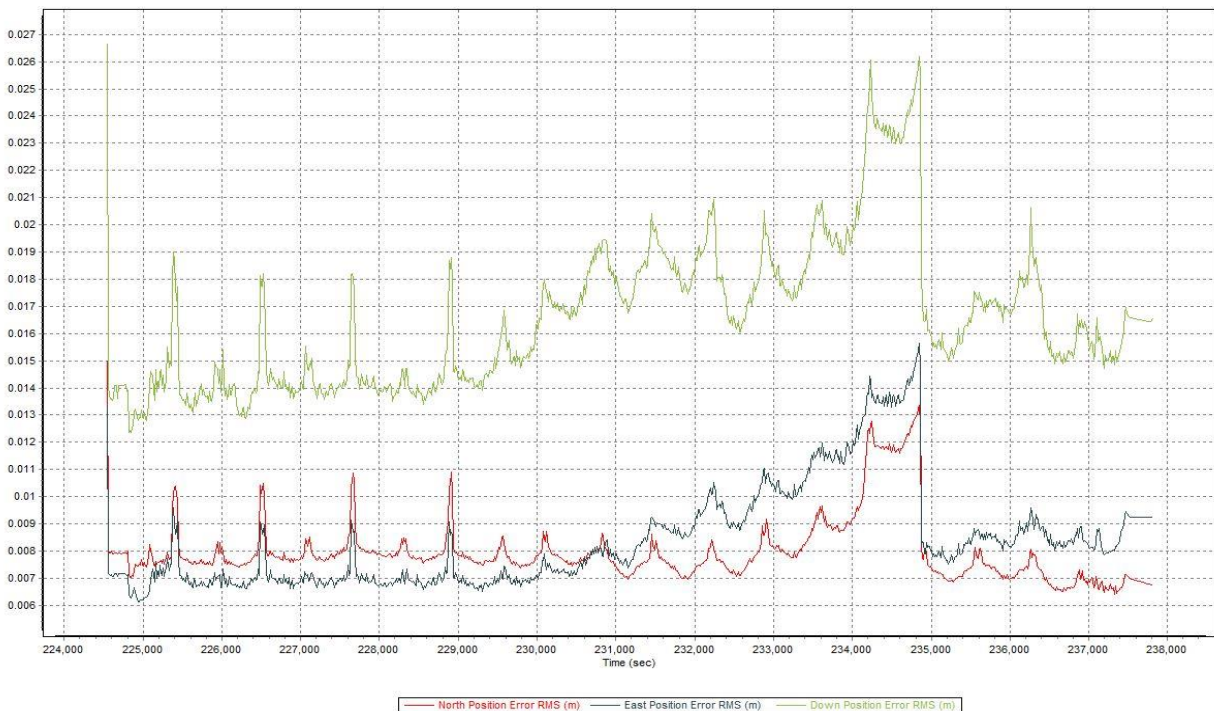
PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DG9757	DLND DELAND CORS ARP	N290322.897	W0811547.480	85295.0
DI3562	CCV5 CAPE CANAVERAL 5 CORS ARP	N282736.799	W0803242.818	89542.2
DF5773	ORMD ORMOND BEACH CORS ARP	N291753.469	W0810632.013	114976.9

NEAREST NGS PUBLISHED CONTROL POINT

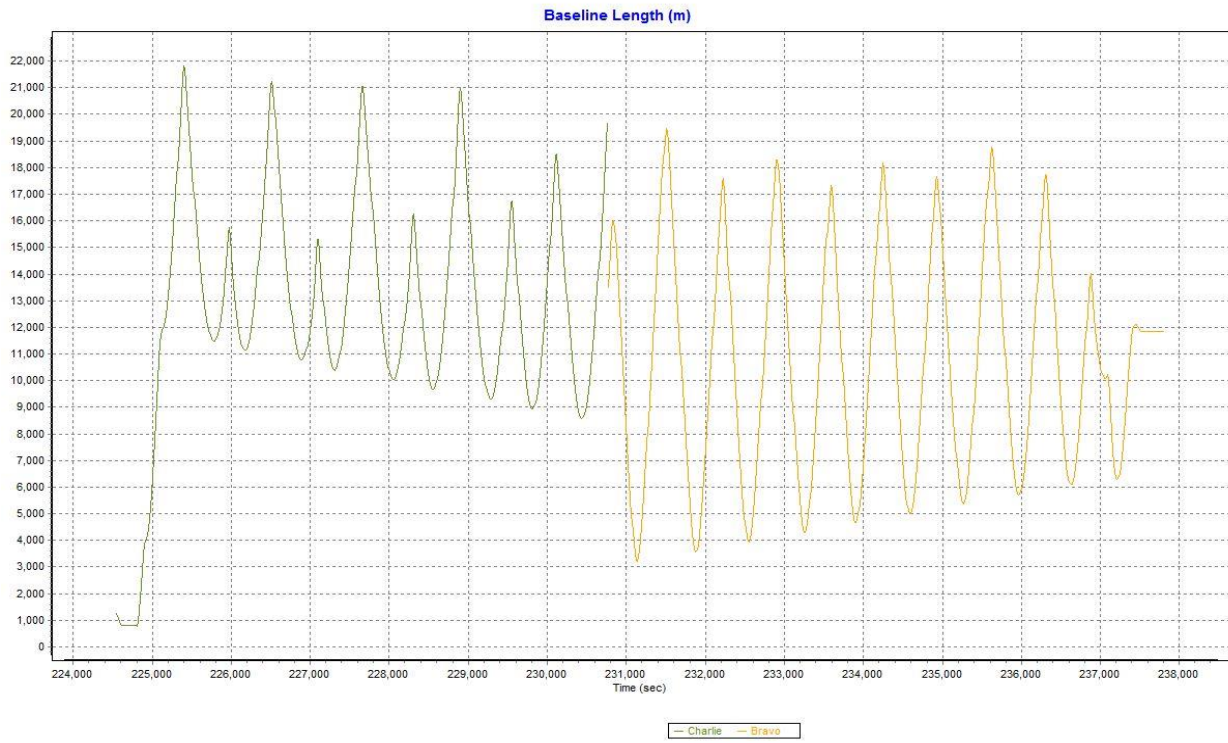
DL6644	R 733	N281810.661	W0812628.827	0.0
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

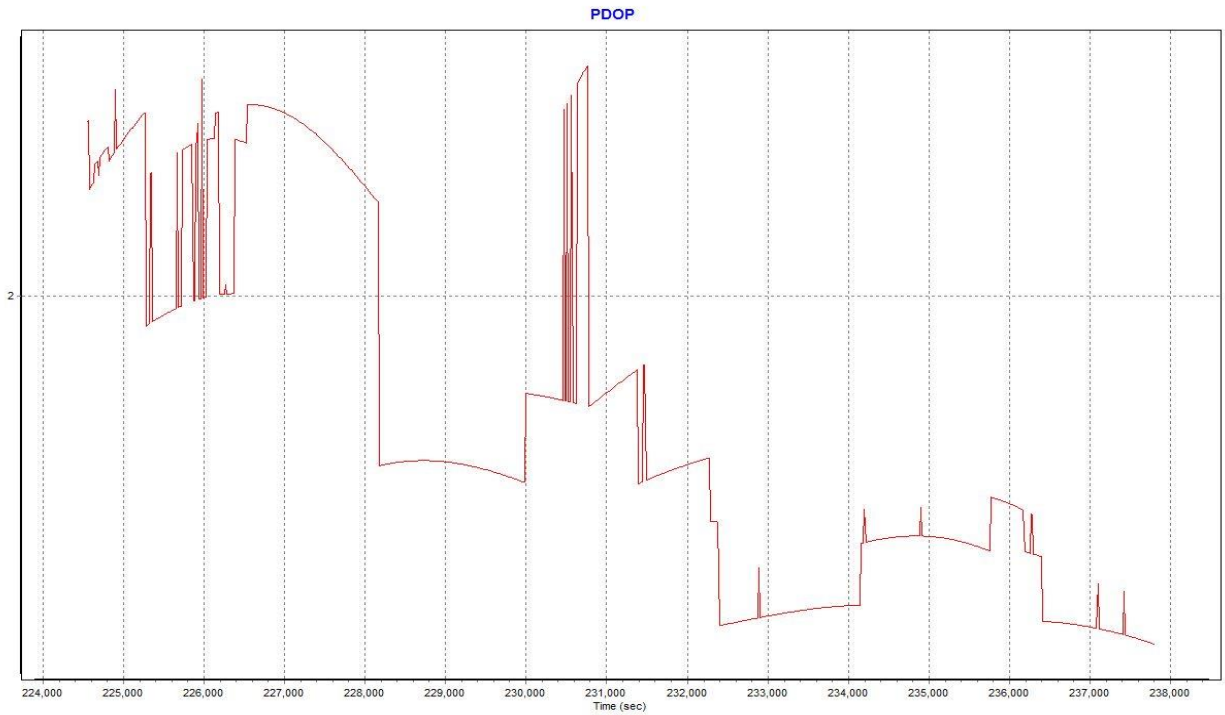
Smoothed Performance Metrics, Reference Frame\_20160308\_1\_Report



### Baseline Length\_20160308\_1\_Report



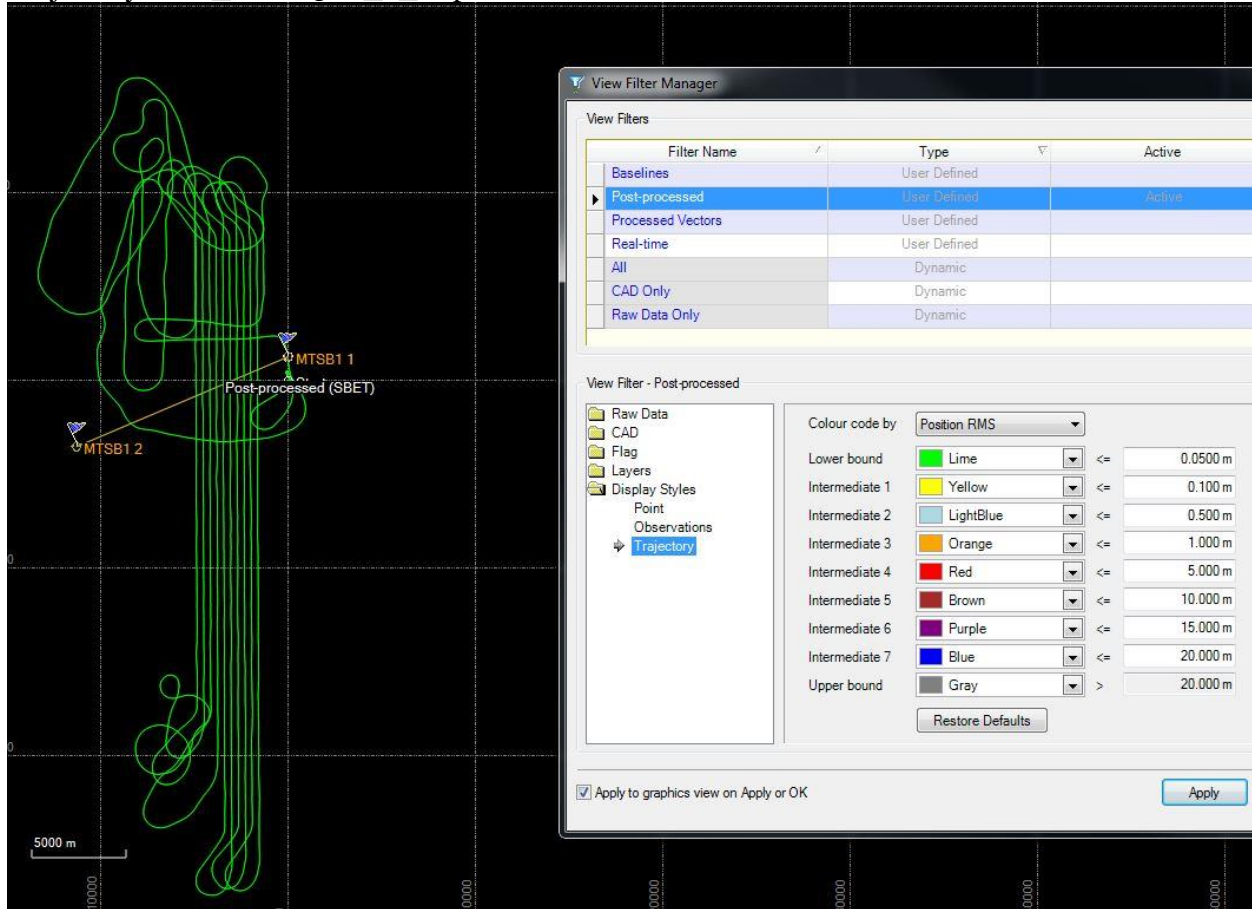
### PDOP\_20160308\_1\_Report





### Mission 20160308\_2

### Trajectory RMS 20160308\_2\_Report



### OPUS solution\_BRAVO\_20160308\_2

FILE: 6829068n51.16o OP1457526572748

2005 NOTE: The IGS precise and IGS rapid orbits were not available  
2005 at processing time. The IGS ultra-rapid orbit was/will be used to  
2005 process the data.  
2005

#### NGS OPUS SOLUTION REPORT

=====

All computed coordinate accuracies are listed as peak-to-peak values.  
For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com)  
RINEX FILE: 6829068n.16o

DATE: March 09, 2016  
TIME: 12:31:11 UTC

SOFTWARE: page5 1209.04 master92.pl 022814 START: 2016/03/08 13:51:00  
EPHEMERIS: igu18872.eph [ultra-rapid] STOP: 2016/03/08 22:55:00  
NAV FILE: brdc0680.16n OBS USED: 19410 / 21090 : 92%  
ANT NAME: LEIGS14 NONE # FIXED AMB: 109 / 119 : 92%  
ARP HEIGHT: 2.00 OVERALL RMS: 0.015(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2016.1852)

X:	825519.942(m)	0.003(m)	825519.154(m)	0.003(m)
Y:	-5561214.199(m)	0.010(m)	-5561212.636(m)	0.010(m)
Z:	3001882.369(m)	0.007(m)	3001882.203(m)	0.007(m)

LAT:	28 15 34.80330	0.009(m)	28 15 34.82410	0.009(m)
E LON:	278 26 36.47478	0.002(m)	278 26 36.45460	0.002(m)
W LON:	81 33 23.52522	0.002(m)	81 33 23.54540	0.002(m)
EL HGT:	-1.228(m)	0.007(m)	-2.771(m)	0.007(m)
ORTHO HGT:	26.356(m)	0.018(m)	[NAVD88 (Computed using GEOID12B)]	

UTM COORDINATES STATE PLANE COORDINATES

	UTM (Zone 17)	SPC (0901 FL E)
Northing (Y) [meters]	3126093.152	435109.628
Easting (X) [meters]	445411.351	145392.719
Convergence [degrees]	-0.26350811	-0.26350811
Point Scale	0.99963678	0.99997797
Combined Factor	0.99963697	0.99997816

US NATIONAL GRID DESIGNATOR: 17RMM4541126093(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI3562	CCV5 CAPE CANAVERAL 5 CORS ARP	N282736.799	W0803242.818	101600.9
DG9757	DLND DELAND CORS ARP	N290322.897	W0811547.480	92836.7
DF5773	ORMD ORMOND BEACH CORS ARP	N291753.469	W0810632.013	123118.9

NEAREST NGS PUBLISHED CONTROL POINT

AK7111	K081	N281534.803	W0813323.525	0.0
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

8002 The Opus solution for your submitted RINEX file appears to be

8002 quite close to an NGS published control point. This suggests that  
8002 you may have set your GPS receiver up over an NGS control point.  
8002 Furthermore, our files indicate that this control point has not  
8002 been recovered in the last five years.  
8002 If you did indeed recover an NGS control point, we would  
8002 appreciate receiving this information through our web based  
8002 Mark Recovery Form at  
8002 [http://www.ngs.noaa.gov/products\\_services.shtml#MarkRecoveryForm](http://www.ngs.noaa.gov/products_services.shtml#MarkRecoveryForm).  
8002

## OPUS solution\_CHARLIE\_20160308\_2

FILE: 6823068n51.16o OP1457526668249

2005 NOTE: The IGS precise and IGS rapid orbits were not available  
2005 at processing time. The IGS ultra-rapid orbit was/will be used to  
2005 process the data.  
2005

### NGS OPUS SOLUTION REPORT

=====

All computed coordinate accuracies are listed as peak-to-peak values.  
For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com) DATE: March 09, 2016  
RINEX FILE: 6823068n.16o TIME: 12:32:30 UTC

SOFTWARE: page5 1209.04 master53.pl 022814 START: 2016/03/08 13:51:00  
EPHEMERIS: igu18872.eph [ultra-rapid] STOP: 2016/03/08 22:55:00  
NAV FILE: brdc0680.16n OBS USED: 19227 / 20875 : 92%  
ANT NAME: LEIGS14 NONE # FIXED AMB: 93 / 96 : 97%  
ARP HEIGHT: 2.00 OVERALL RMS: 0.013(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2016.1852)

X:	836360.481(m)	0.004(m)	836359.692(m)	0.004(m)
Y:	-5557292.798(m)	0.016(m)	-5557291.235(m)	0.016(m)
Z:	3006106.333(m)	0.002(m)	3006106.168(m)	0.002(m)

LAT:	28 18 10.66218	0.008(m)	28 18 10.68308	0.008(m)
E LON:	278 33 31.17316	0.001(m)	278 33 31.15306	0.001(m)
W LON:	81 26 28.82684	0.001(m)	81 26 28.84694	0.001(m)
EL HGT:	-4.039(m)	0.015(m)	-5.582(m)	0.015(m)
ORTHO HGT:	23.737(m)	0.028(m)	[NAVD88 (Computed using GEOID12B)]	

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 17)	SPC (0901 FL E)
Northing (Y) [meters]	3130842.753	439860.850
Easting (X) [meters]	456727.993	156713.223
Convergence [degrees]	-0.20925781	-0.20925781
Point Scale	0.99962311	0.99996429
Combined Factor	0.99962374	0.99996492

US NATIONAL GRID DESIGNATOR: 17RMM5672730842(NAD 83)

#### BASE STATIONS USED

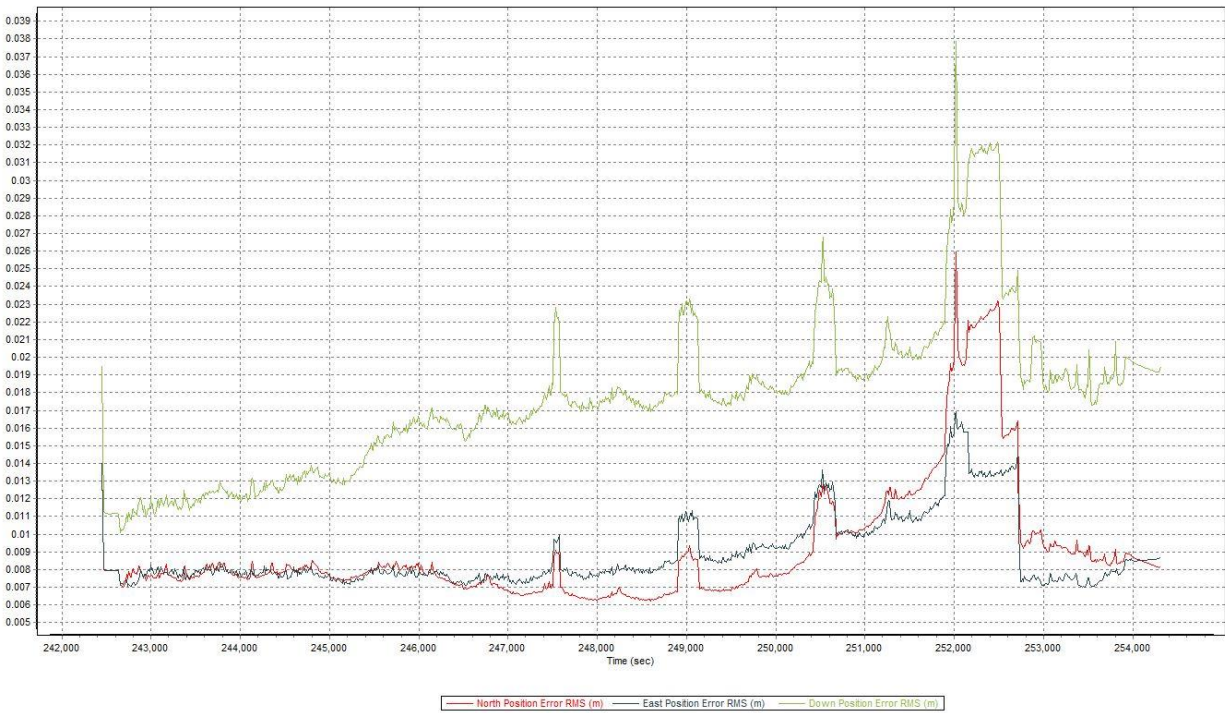
PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DG9757	DLND DELAND CORS ARP	N290322.897	W0811547.480	85295.0
DI3562	CCV5 CAPE CANAVERAL 5 CORS ARP	N282736.799	W0803242.818	89542.2
DF5773	ORMD ORMOND BEACH CORS ARP	N291753.469	W0810632.013	114976.9

#### NEAREST NGS PUBLISHED CONTROL POINT

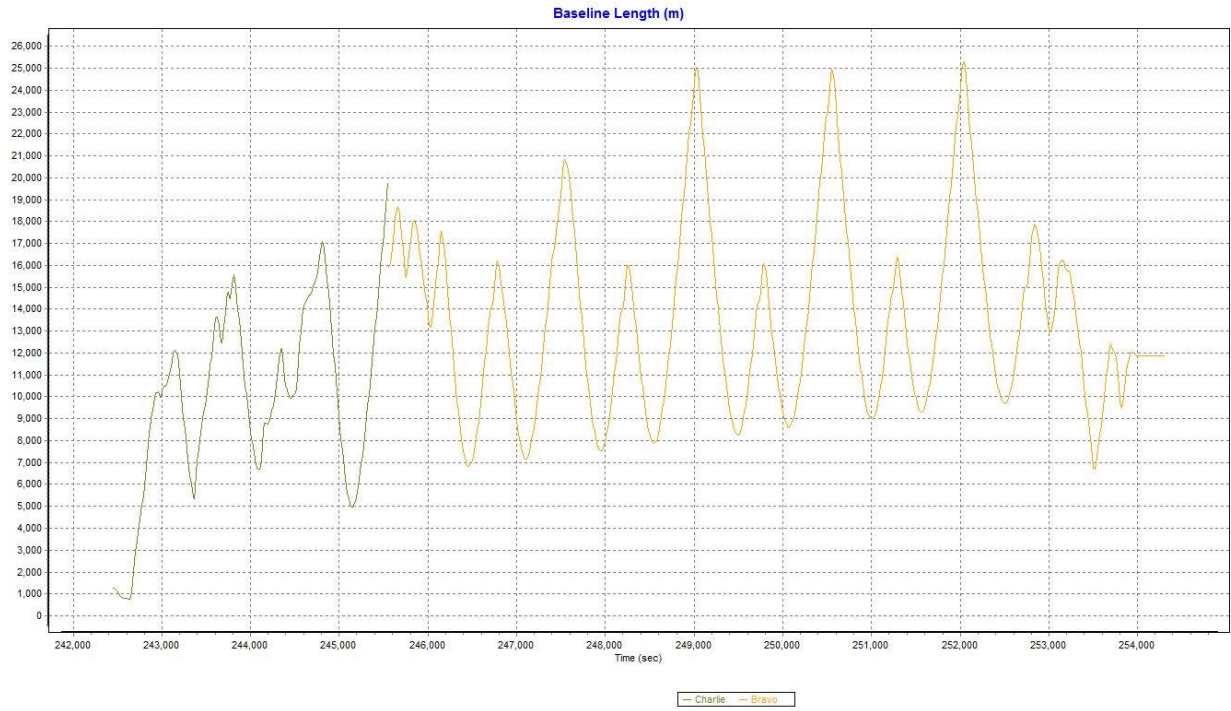
DL6644	R 733	N281810.661	W0812628.827	0.0
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

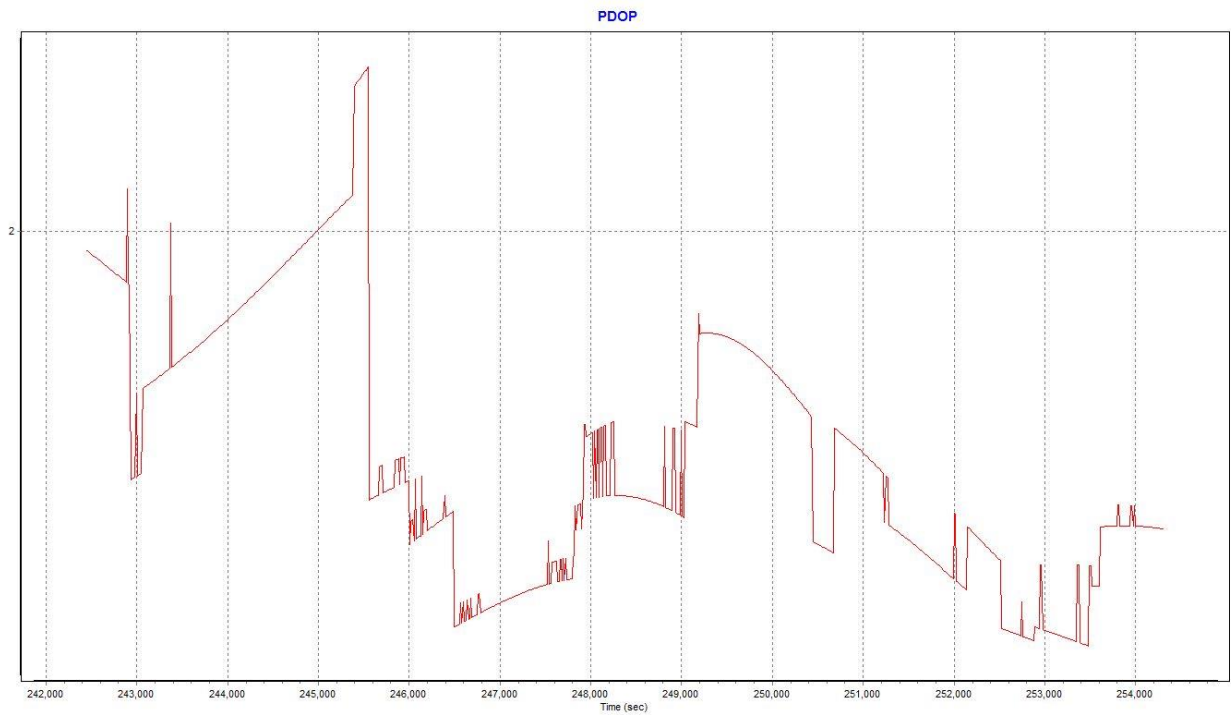
#### Smoothed Performance Metrics, Reference Frame\_20160308\_2\_Report



### Baseline Length\_20160308\_2\_Report

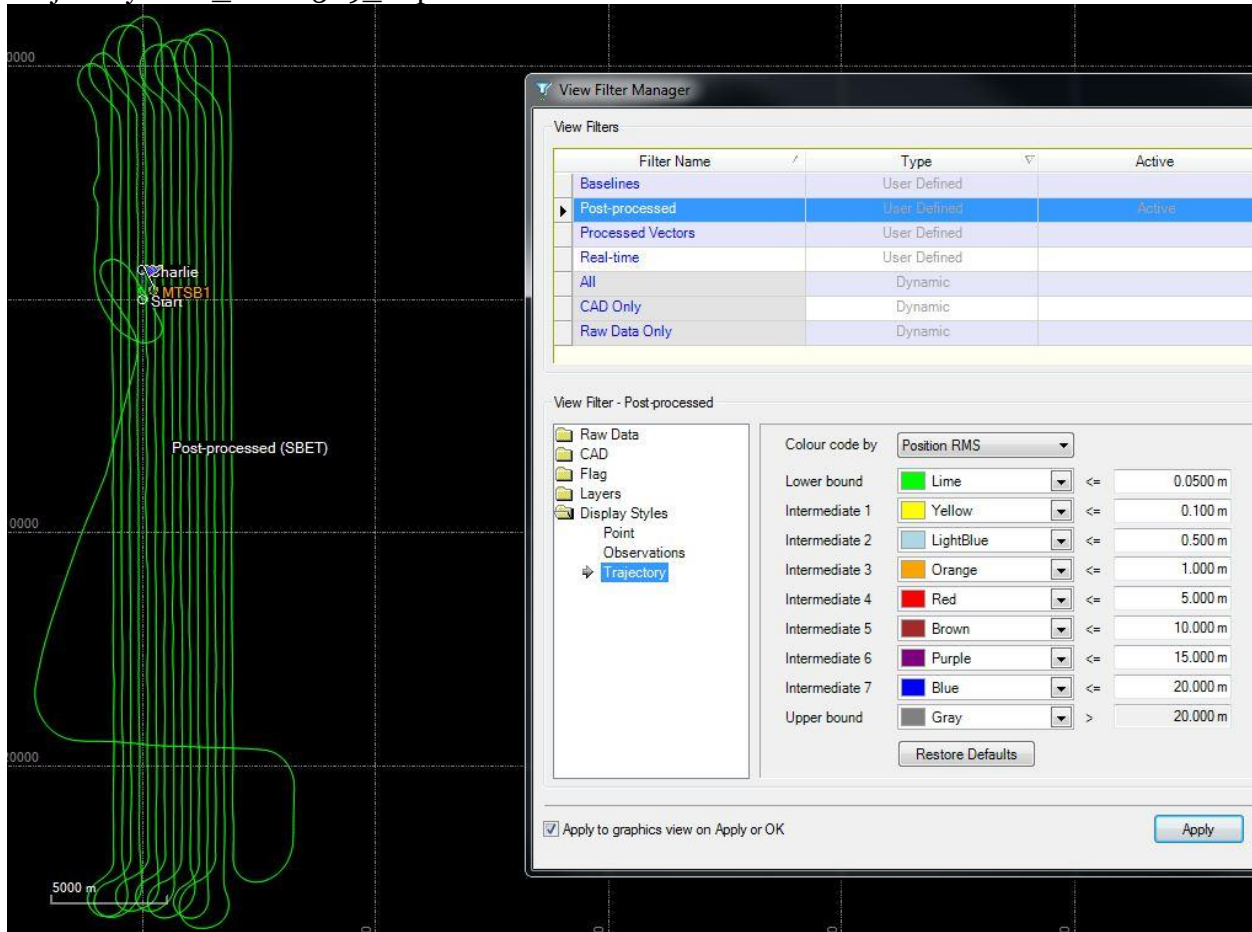


### PDOP\_20160308\_2\_Report



### Mission 20160309

### Trajectory RMS\_20160309\_Report



### OPUS solution BRAVO\_20160309

FILE: 6829070b31.16o OP1457634502765

2005 NOTE: The IGS precise and IGS rapid orbits were not available  
2005 at processing time. The IGS ultra-rapid orbit was/will be used to  
2005 process the data.  
2005

#### NGS OPUS SOLUTION REPORT

=====

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

For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com) DATE: March 10, 2016  
RINEX FILE: 6829070b.16o TIME: 18:30:07 UTC

SOFTWARE: page5 1209.04 master52.pl 022814 START: 2016/03/10 01:31:00  
EPHEMERIS: igu18874.eph [ultra-rapid] STOP: 2016/03/10 07:30:00  
NAV FILE: brdc0700.16n OBS USED: 14244 / 14997 : 95%  
ANT NAME: LEIGS14 NONE # FIXED AMB: 52 / 57 : 91%  
ARP HEIGHT: 2.00 OVERALL RMS: 0.011(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2016.1890)

X: 836918.572(m) 0.001(m) 836917.783(m) 0.001(m)  
Y: -5557630.104(m) 0.006(m) -5557628.541(m) 0.006(m)  
Z: 3005331.833(m) 0.002(m) 3005331.668(m) 0.002(m)

LAT: 28 17 42.09429 0.002(m) 28 17 42.11518 0.002(m)  
E LON: 278 33 49.58473 0.001(m) 278 33 49.56464 0.001(m)  
W LON: 81 26 10.41527 0.001(m) 81 26 10.43536 0.001(m)  
EL HGT: -4.373(m) 0.006(m) -5.916(m) 0.006(m)  
ORTHO HGT: 23.409(m) 0.017(m) [NAVD88 (Computed using GEOID12B)]

UTM COORDINATES STATE PLANE COORDINATES  
UTM (Zone 17) SPC (0901 FL E)  
Northing (Y) [meters] 3129961.821 438979.618  
Easting (X) [meters] 457226.268 157211.668  
Convergence [degrees] -0.20677963 -0.20677963  
Point Scale 0.99962258 0.99996376  
Combined Factor 0.99962327 0.99996445

US NATIONAL GRID DESIGNATOR: 17RMM5722629961(NAD 83)

BASE STATIONS USED  
PID DESIGNATION LATITUDE LONGITUDE DISTANCE(m)  
DG9757 DLND DELAND CORS ARP N290322.897 W0811547.480 86056.6  
DI3562 CCV5 CAPE CANAVERAL 5 CORS ARP N282736.799 W0803242.818 89230.1  
DH3757 WACH WAUCHULA CORS ARP N273051.042 W0815256.615 97040.7

NEAREST NGS PUBLISHED CONTROL POINT  
DL6642 Q 733 N281742.094 W0812610.416 0.0

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

**OPUS solution\_CHARLIE\_20160309**

FILE: 6823070b38.16o OP1457634645380

2005 NOTE: The IGS precise and IGS rapid orbits were not available  
2005 at processing time. The IGS ultra-rapid orbit was/will be used to  
2005 process the data.  
2005

NGS OPUS SOLUTION REPORT  
=====

All computed coordinate accuracies are listed as peak-to-peak values.  
For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com) DATE: March 10, 2016  
RINEX FILE: 6823070b.16o TIME: 18:32:04 UTC

SOFTWARE: page5 1209.04 master52.pl 022814 START: 2016/03/10 01:38:00  
EPHEMERIS: igu18874.eph [ultra-rapid] STOP: 2016/03/10 07:30:00  
NAV FILE: brdc0700.16n OBS USED: 13752 / 14798 : 93%  
ANT NAME: LEIGS14 NONE # FIXED AMB: 56 / 61 : 92%  
ARP HEIGHT: 2.00 OVERALL RMS: 0.012(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2016.1890)

X:	836360.483(m)	0.004(m)	836359.694(m)	0.004(m)
Y:	-5557292.804(m)	0.016(m)	-5557291.241(m)	0.016(m)
Z:	3006106.337(m)	0.005(m)	3006106.172(m)	0.005(m)

LAT:	28 18 10.66220	0.004(m)	28 18 10.68309	0.004(m)
E LON:	278 33 31.17320	0.002(m)	278 33 31.15310	0.002(m)
W LON:	81 26 28.82680	0.002(m)	81 26 28.84690	0.002(m)
EL HGT:	-4.032(m)	0.017(m)	-5.574(m)	0.017(m)
ORTHO HGT:	23.744(m)	0.032(m)	[NAVD88 (Computed using GEOID12B)]	

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 17)	SPC (0901 FL E)
Northing (Y) [meters]	3130842.754	439860.851
Easting (X) [meters]	456727.994	156713.224
Convergence [degrees]	-0.20925780	-0.20925780
Point Scale	0.99962311	0.99996429
Combined Factor	0.99962374	0.99996492

US NATIONAL GRID DESIGNATOR: 17RMM5672730842(NAD 83)



BASE STATIONS USED

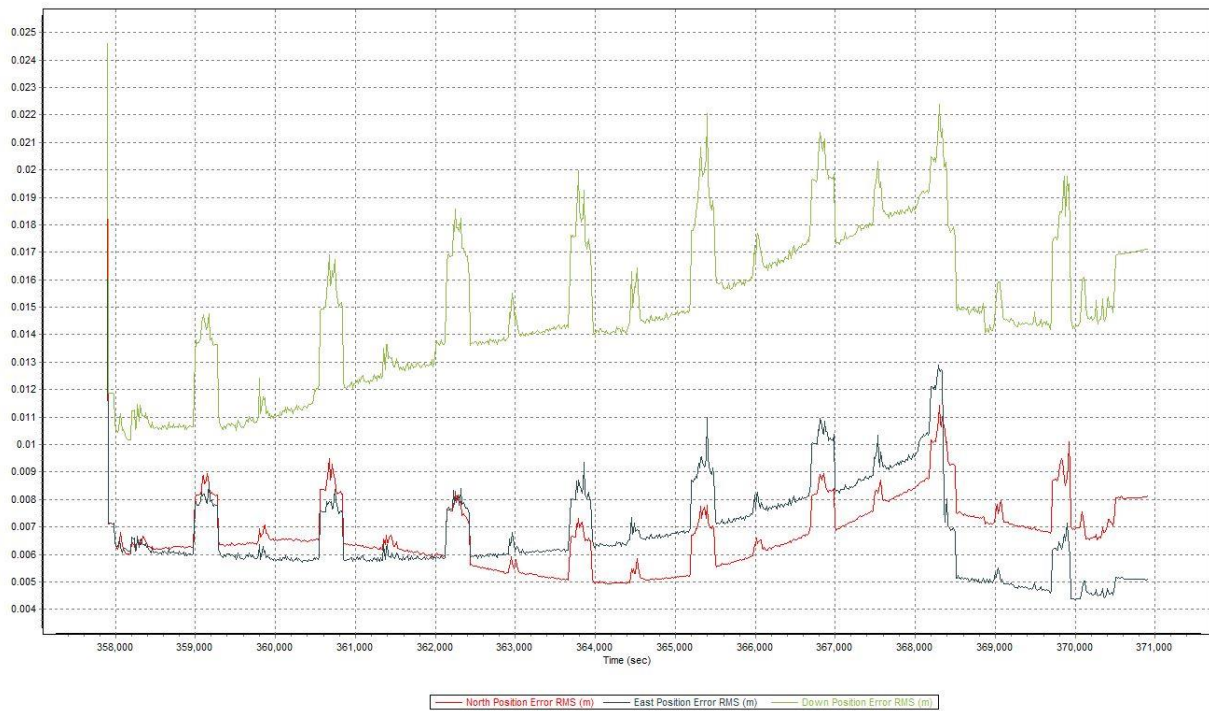
PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI3562	CCV5 CAPE CANAVERAL 5 CORS ARP	N282736.799	W0803242.818	89542.2
DG9757	DLND DELAND CORS ARP	N290322.897	W0811547.480	85295.0
DF5773	ORMD ORMOND BEACH CORS ARP	N291753.469	W0810632.013	114976.9

NEAREST NGS PUBLISHED CONTROL POINT

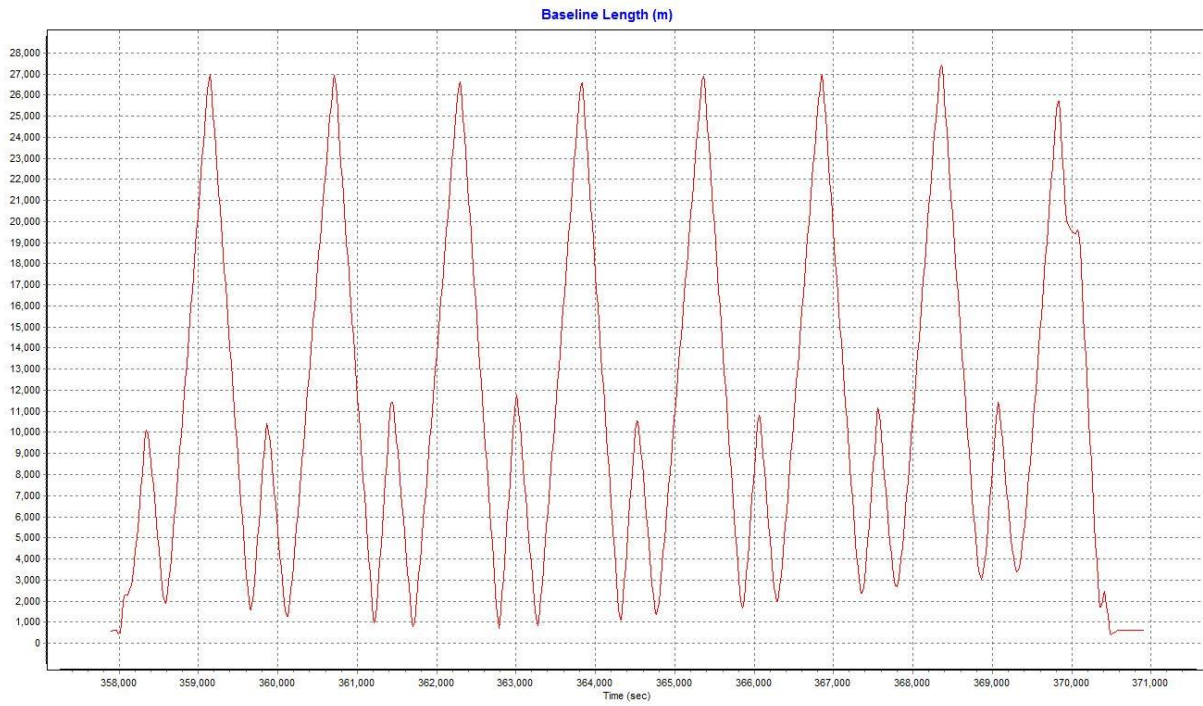
DL6644	R 733	N281810.661	W0812628.827	0.0
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

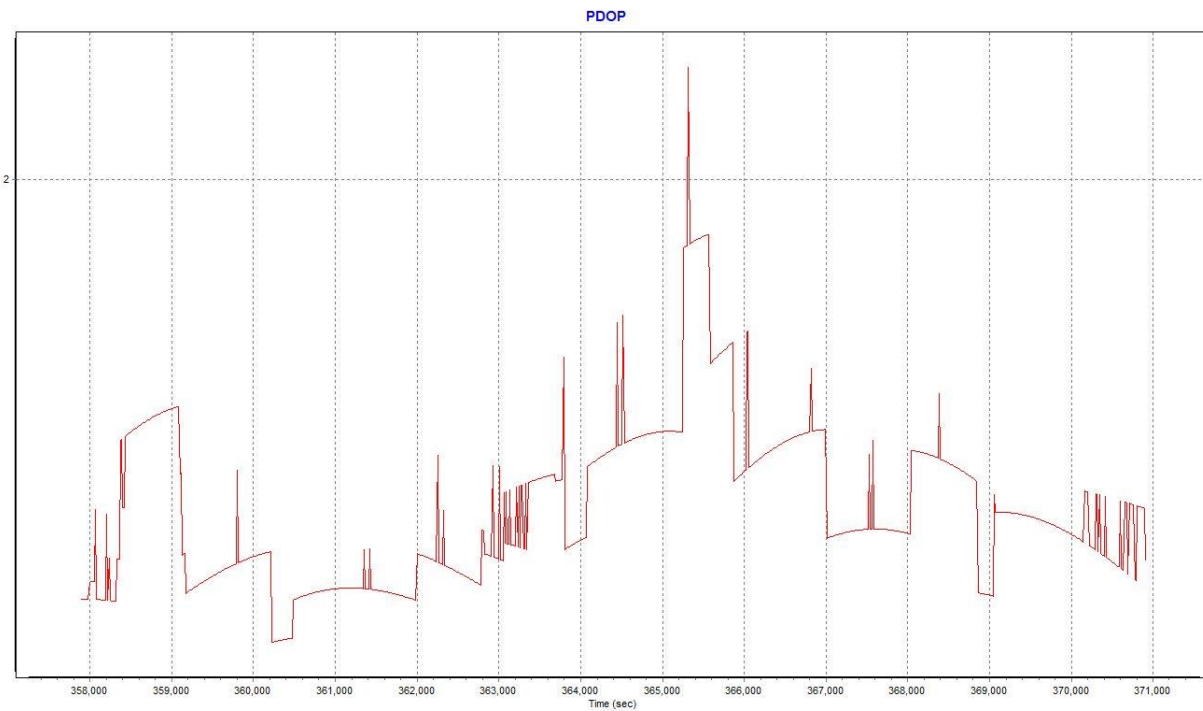
Smoothed Performance Metrics, Reference Frame\_20160309\_Report



### Baseline Length\_20160309\_Report

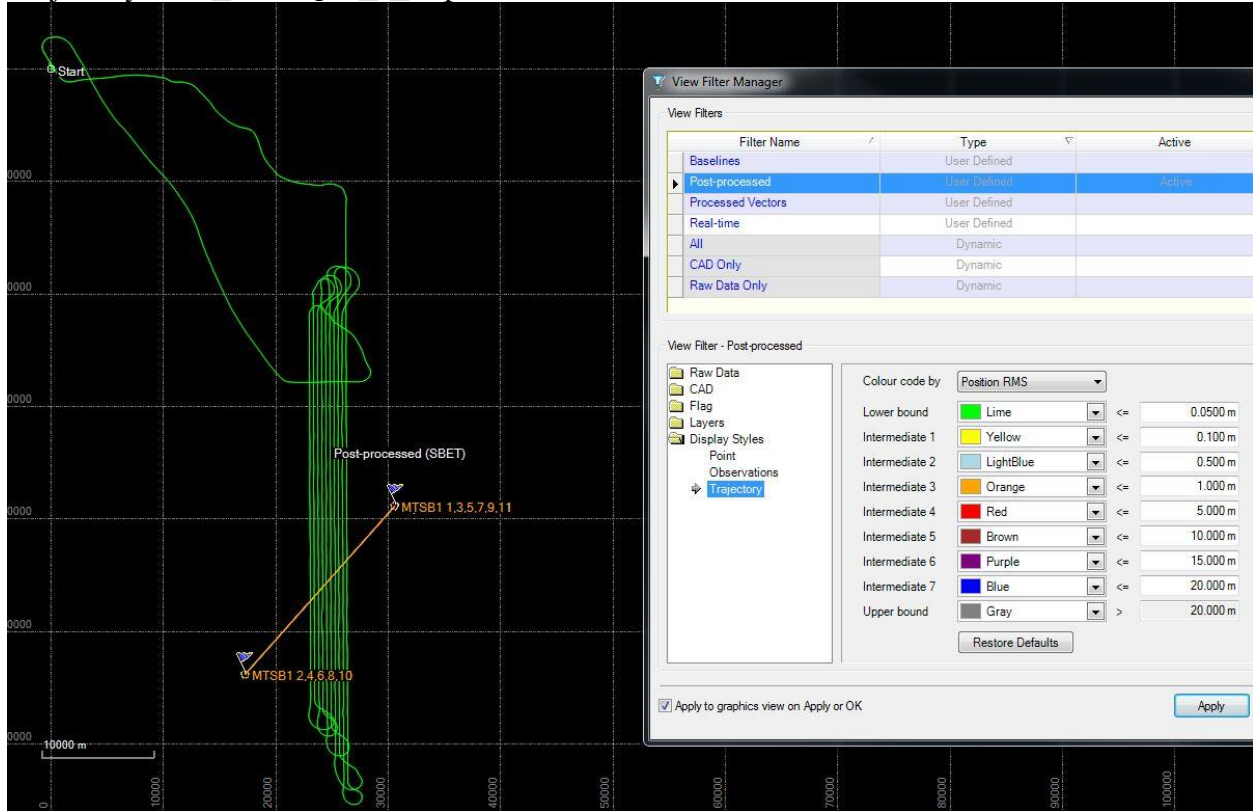


### PDOP\_20160309\_Report



Mission 20160310\_1

Trajectory RMS\_20160310\_1\_Report



**OPUS solution\_ALPHA\_20160310\_1**

FILE: 6790070q51.16o OP1457953945776

NGS OPUS SOLUTION REPORT  
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All computed coordinate accuracies are listed as peak-to-peak values.  
For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com)  
RINEX FILE: 6790070q.16o

DATE: March 14, 2016  
TIME: 11:13:17 UTC

SOFTWARE: page5 1209.04 master91.pl 022814    START: 2016/03/10 16:51:00

EPHEMERIS: igr18874.eph [rapid] STOP: 2016/03/10 21:37:00  
NAV FILE: brdc0700.16n OBS USED: 11851 / 13064 : 91%  
ANT NAME: LEIGS14 NONE # FIXED AMB: 71 / 75 : 95%  
ARP HEIGHT: 2.00 OVERALL RMS: 0.015(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2016.1907)

X: 869407.233(m) 0.005(m) 869406.445(m) 0.005(m)  
Y: -5571381.930(m) 0.006(m) -5571380.361(m) 0.006(m)  
Z: 2970674.599(m) 0.006(m) 2970674.433(m) 0.006(m)

LAT: 27 56 25.64897 0.008(m) 27 56 25.66965 0.008(m)  
E LON: 278 52 9.85190 0.004(m) 278 52 9.83227 0.004(m)  
W LON: 81 7 50.14810 0.004(m) 81 7 50.16773 0.004(m)  
EL HGT: -6.505(m) 0.004(m) -8.059(m) 0.004(m)  
ORTHO HGT: 20.939(m) 0.015(m) [NAVD88 (Computed using GEOID12B)]

UTM COORDINATES STATE PLANE COORDINATES

UTM (Zone 17) SPC (0901 FL E)

Northing (Y) [meters]	3090613.493	399617.859
Easting (X) [meters]	487152.346	187147.961
Convergence [degrees]	-0.06119165	-0.06119165
Point Scale	0.99960204	0.99994321
Combined Factor	0.99960306	0.99994423

US NATIONAL GRID DESIGNATOR: 17RML8715290613(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DF5773	ORMD ORMOND BEACH CORS ARP	N291753.469	W0810632.013	150487.5
DI3562	CCV5 CAPE CANAVERAL 5 CORS ARP	N282736.799	W0803242.818	81367.8
DG9757	DLND DELAND CORS ARP	N290322.897	W0811547.480	124350.1

NEAREST NGS PUBLISHED CONTROL POINT

AF6097 JACKSON N275625.648 W0810750.148 0.0

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

8002 The Opus solution for your submitted RINEX file appears to be  
8002 quite close to an NGS published control point. This suggests that  
8002 you may have set your GPS receiver up over an NGS control point.  
8002 Furthermore, our files indicate that this control point has not  
8002 been recovered in the last five years.  
8002 If you did indeed recover an NGS control point, we would  
8002 appreciate receiving this information through our web based

8002 Mark Recovery Form at  
8002 [http://www.ngs.noaa.gov/products\\_services.shtml#MarkRecoveryForm](http://www.ngs.noaa.gov/products_services.shtml#MarkRecoveryForm).  
8002

## OPUS solution BRAVO\_20160310\_1

FILE: 6829070r50.16o OP1457697076199

2005 NOTE: The IGS precise and IGS rapid orbits were not available  
2005 at processing time. The IGS ultra-rapid orbit was/will be used to  
2005 process the data.  
2005

### NGS OPUS SOLUTION REPORT

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All computed coordinate accuracies are listed as peak-to-peak values.  
For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com) DATE: March 11, 2016  
RINEX FILE: 6829070r.16o TIME: 11:51:57 UTC

SOFTWARE: page5 1209.04 master91.pl 022814 START: 2016/03/10 17:50:00  
EPHEMERIS: igu18874.eph [ultra-rapid] STOP: 2016/03/10 21:27:00  
NAV FILE: brdc0700.16n OBS USED: 7588 / 9004 : 84%  
ANT NAME: LEIGS14 NONE # FIXED AMB: 49 / 51 : 96%  
ARP HEIGHT: 2.00 OVERALL RMS: 0.013(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2016.1908)

X:	857289.200(m)	0.008(m)	857288.413(m)	0.008(m)
Y:	-5580320.187(m)	0.016(m)	-5580318.617(m)	0.016(m)
Z:	2957475.598(m)	0.010(m)	2957475.430(m)	0.010(m)

LAT:	27 48 20.62122	0.017(m)	27 48 20.64172	0.017(m)
E LON:	278 44 2.07291	0.005(m)	278 44 2.05320	0.005(m)
W LON:	81 15 57.92709	0.005(m)	81 15 57.94680	0.005(m)
EL HGT:	-8.101(m)	0.011(m)	-9.658(m)	0.011(m)
ORTHO HGT:	18.813(m)	0.023(m)	[NAVD88 (Computed using GEOID12B)]	

### UTM COORDINATES STATE PLANE COORDINATES

UTM (Zone 17) SPC (0902 FL W)

Northing (Y) [meters]	3075710.573	384897.505
Easting (X) [meters]	473790.451	272314.596
Convergence [degrees]	-0.12412546	0.34236520
Point Scale	0.99960848	1.00000570

Combined Factor      0.99960975      1.00000697

US NATIONAL GRID DESIGNATOR: 17RML7379075710(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI3562	CCV5 CAPE CANAVERAL 5 CORS ARP	N282736.799	W0803242.818	101369.3
DG9757	DLND DELAND CORS ARP	N290322.897	W0811547.480	138600.6
DF5773	ORMD ORMOND BEACH CORS ARP	N291753.469	W0810632.013	166115.4

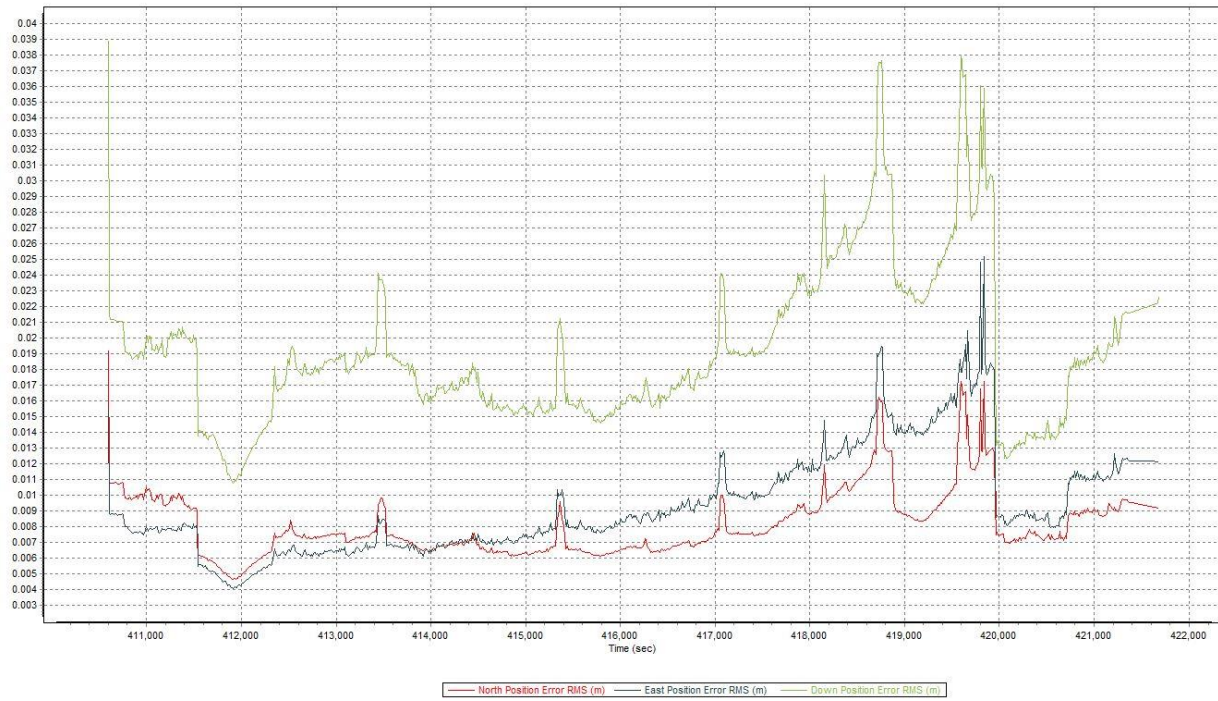
NEAREST NGS PUBLISHED CONTROL POINT

AF7643	K 113	N274820.621	W0811557.927	0.0
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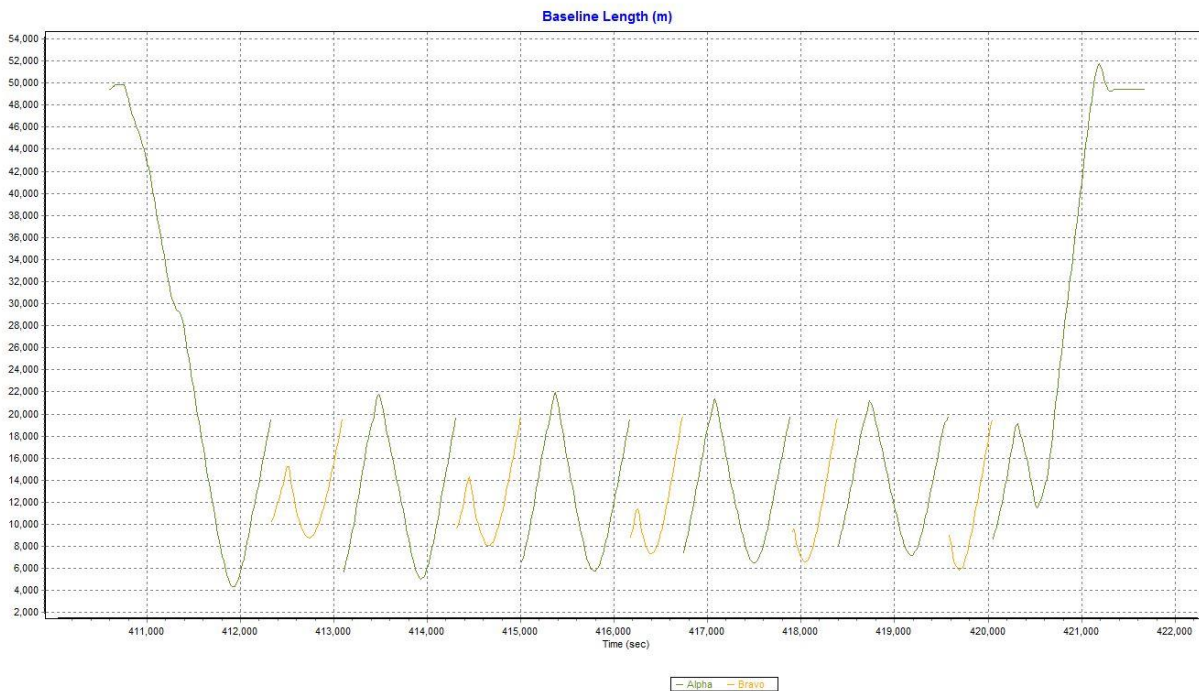
This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

8002 The Opus solution for your submitted RINEX file appears to be  
8002 quite close to an NGS published control point. This suggests that  
8002 you may have set your GPS receiver up over an NGS control point.  
8002 Furthermore, our files indicate that this control point has not  
8002 been recovered in the last five years.  
8002 If you did indeed recover an NGS control point, we would  
8002 appreciate receiving this information through our web based  
8002 Mark Recovery Form at  
8002 [http://www.ngs.noaa.gov/products\\_services.shtml#MarkRecoveryForm](http://www.ngs.noaa.gov/products_services.shtml#MarkRecoveryForm).  
8002

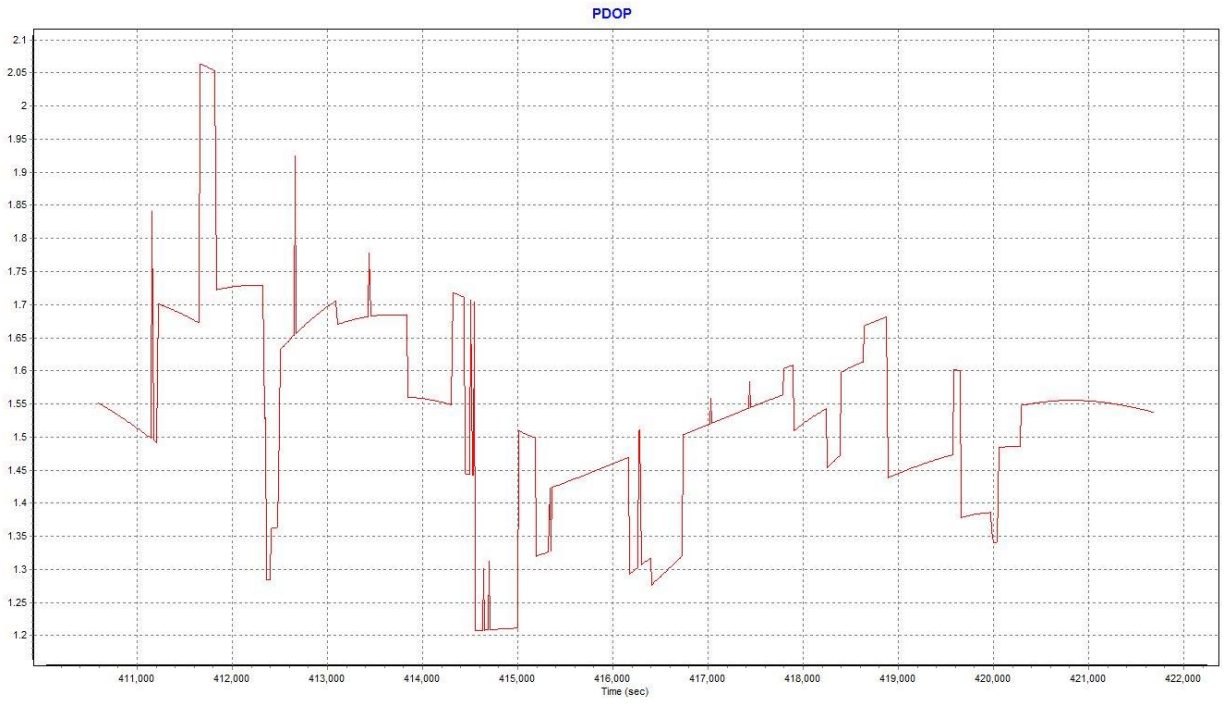
### Smoothed Performance Metrics, Reference Frame\_20160310\_1\_Report



### Baseline Length\_20160310\_1\_Report



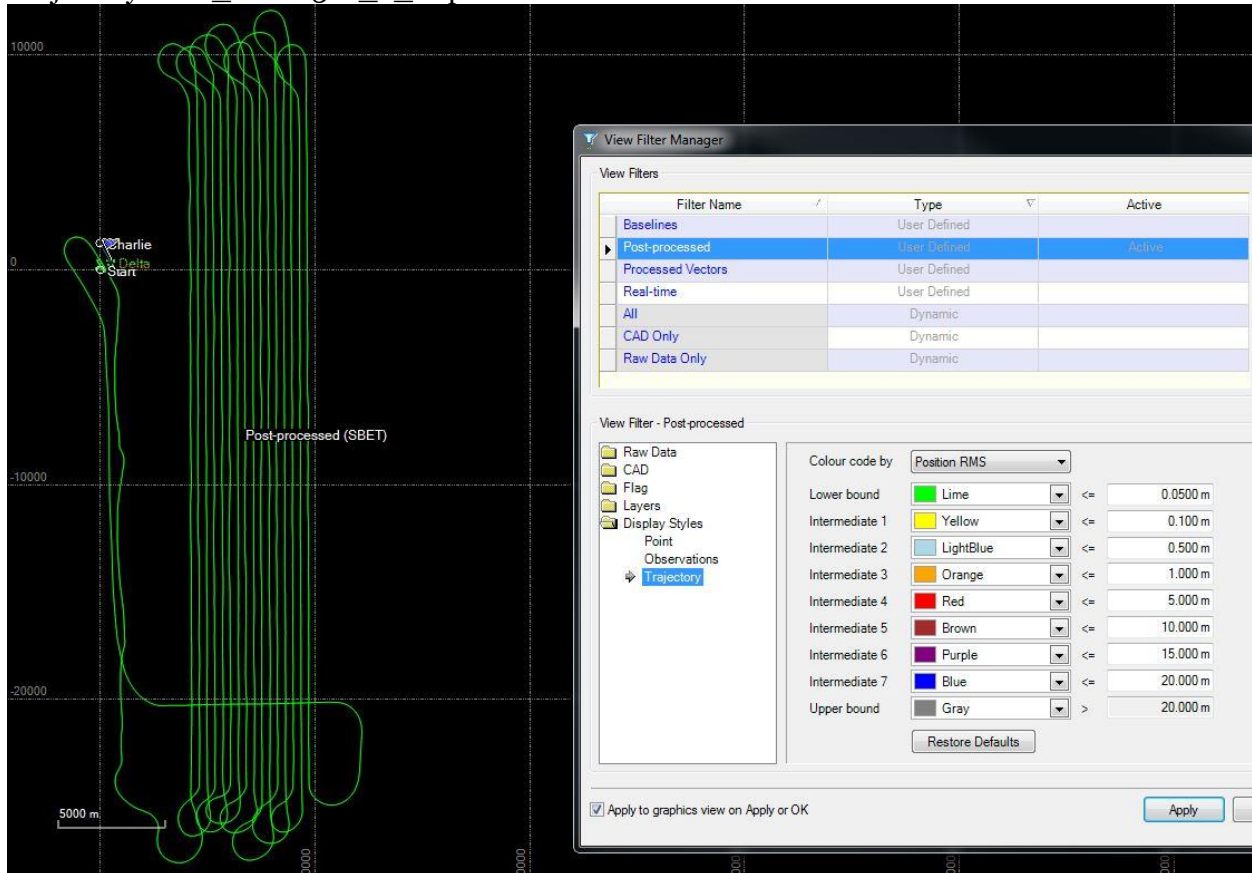
### PDOP\_20160310\_1\_Report





Mission 20160310\_2

Trajectory RMS\_20160310\_2\_Report



**OPUS solution\_CHARLIE\_20160310\_2**

FILE: 6823071a51.16o OP1457697124396

2005 NOTE: The IGS precise and IGS rapid orbits were not available  
2005 at processing time. The IGS ultra-rapid orbit was/will be used to  
2005 process the data.  
2005

NGS OPUS SOLUTION REPORT  
=====

All computed coordinate accuracies are listed as peak-to-peak values.  
For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com)  
RINEX FILE: 6823071a.16o

DATE: March 11, 2016  
TIME: 11:52:48 UTC

SOFTWARE: page5 1209.04 master51.pl 022814 START: 2016/03/11 00:51:00  
EPHEMERIS: igu18875.eph [ultra-rapid] STOP: 2016/03/11 06:15:00  
NAV FILE: brdc0710.16n OBS USED: 13102 / 13908 : 94%  
ANT NAME: LEIGS14 NONE # FIXED AMB: 67 / 71 : 94%  
ARP HEIGHT: 2.00 OVERALL RMS: 0.012(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2016.1917)

X:	836360.481(m)	0.005(m)	836359.692(m)	0.005(m)
Y:	-5557292.800(m)	0.017(m)	-5557291.237(m)	0.017(m)
Z:	3006106.338(m)	0.008(m)	3006106.173(m)	0.008(m)

LAT:	28 18 10.66229	0.003(m)	28 18 10.68319	0.003(m)
E LON:	278 33 31.17315	0.003(m)	278 33 31.15305	0.003(m)
W LON:	81 26 28.82685	0.003(m)	81 26 28.84695	0.003(m)
EL HGT:	-4.035(m)	0.019(m)	-5.578(m)	0.019(m)
ORTHO HGT:	23.741(m)	0.035(m)	[NAVD88 (Computed using GEOID12B)]	

UTM COORDINATES STATE PLANE COORDINATES

	UTM (Zone 17)	SPC (0901 FL E)
Northing (Y) [meters]	3130842.757	439860.854
Easting (X) [meters]	456727.992	156713.223
Convergence [degrees]	-0.20925781	-0.20925781
Point Scale	0.99962311	0.99996429
Combined Factor	0.99962374	0.99996492

US NATIONAL GRID DESIGNATOR: 17RMM5672730842(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DG9757	DLND DELAND CORS ARP	N290322.897	W0811547.480	85295.0
DI3562	CCV5 CAPE CANAVERAL 5 CORS ARP	N282736.799	W0803242.818	89542.2
DF5773	ORMD ORMOND BEACH CORS ARP	N291753.469	W0810632.013	114976.9

NEAREST NGS PUBLISHED CONTROL POINT

DL6644	R 733	N281810.661	W0812628.827	0.0
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

**OPUS solution\_DELTA\_20160310\_2**

FILE: 6821071a51.16o OP1457697280392

2005 NOTE: The IGS precise and IGS rapid orbits were not available  
2005 at processing time. The IGS ultra-rapid orbit was/will be used to  
2005 process the data.  
2005

NGS OPUS SOLUTION REPORT  
=====

All computed coordinate accuracies are listed as peak-to-peak values.  
For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com) DATE: March 11, 2016  
RINEX FILE: 6821071a.16o TIME: 11:55:43 UTC

SOFTWARE: page5 1209.04 master50.pl 022814 START: 2016/03/11 00:51:00  
EPHEMERIS: igu18875.eph [ultra-rapid] STOP: 2016/03/11 06:15:00  
NAV FILE: brdc0710.16n OBS USED: 13022 / 13842 : 94%  
ANT NAME: LEIGS14 NONE # FIXED AMB: 54 / 56 : 96%  
ARP HEIGHT: 2.00 OVERALL RMS: 0.010(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2016.1917)

X:	836918.567(m)	0.002(m)	836917.778(m)	0.002(m)
Y:	-5557630.102(m)	0.007(m)	-5557628.539(m)	0.007(m)
Z:	3005331.832(m)	0.004(m)	3005331.667(m)	0.004(m)

LAT:	28 17 42.09431	0.002(m)	28 17 42.11519	0.002(m)
E LON:	278 33 49.58456	0.002(m)	278 33 49.56447	0.002(m)
W LON:	81 26 10.41544	0.002(m)	81 26 10.43553	0.002(m)
EL HGT:	-4.376(m)	0.007(m)	-5.919(m)	0.007(m)
ORTHO HGT:	23.406(m)	0.018(m)	[NAVD88 (Computed using GEOID12B)]	

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 17)	SPC (0901 FL E)
Northing (Y) [meters]	3129961.822	438979.618
Easting (X) [meters]	457226.263	157211.664
Convergence [degrees]	-0.20677965	-0.20677965
Point Scale	0.99962258	0.99996376
Combined Factor	0.99962327	0.99996445

US NATIONAL GRID DESIGNATOR: 17RMM5722629961(NAD 83)

BASE STATIONS USED

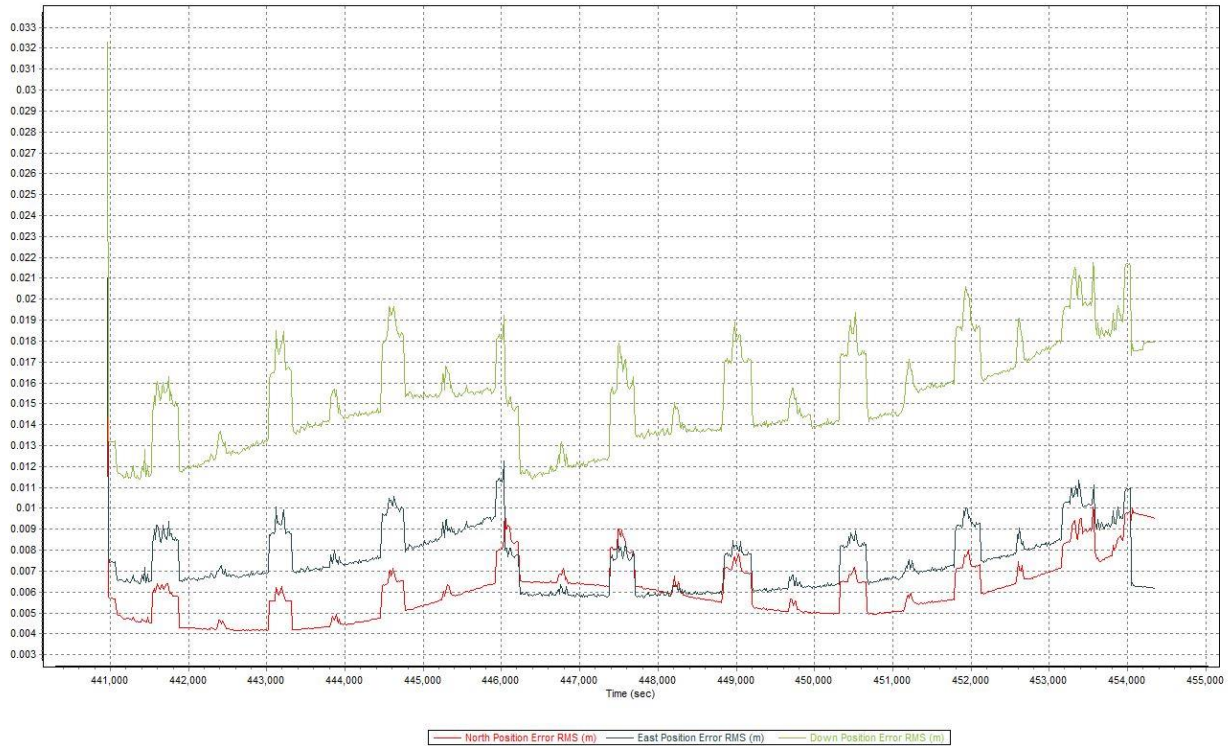
PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DG9757	DLND DELAND CORS ARP	N290322.897	W0811547.480	86056.6
DI3562	CCV5 CAPE CANAVERAL 5 CORS ARP	N282736.799	W0803242.818	89230.1
DH3757	WACH WAUCHULA CORS ARP	N273051.042	W0815256.615	97040.7

NEAREST NGS PUBLISHED CONTROL POINT

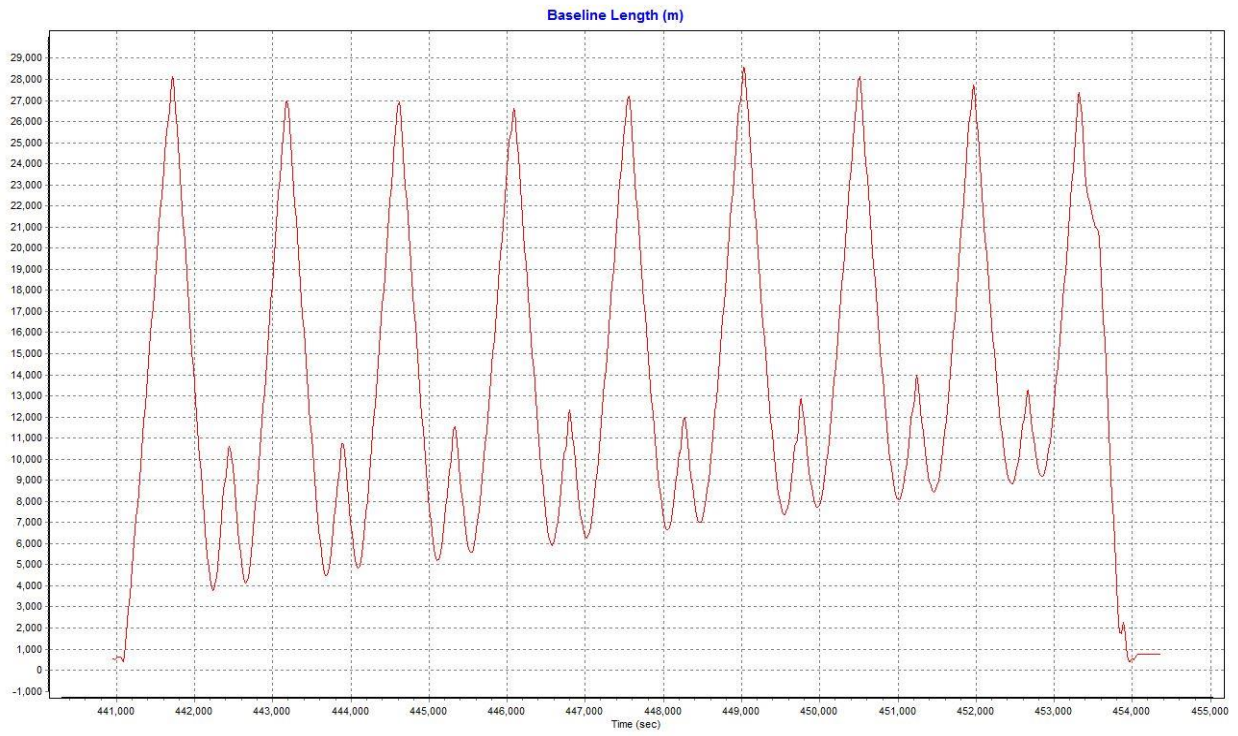
DL6642	Q 733	N281742.094	W0812610.416	0.0
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

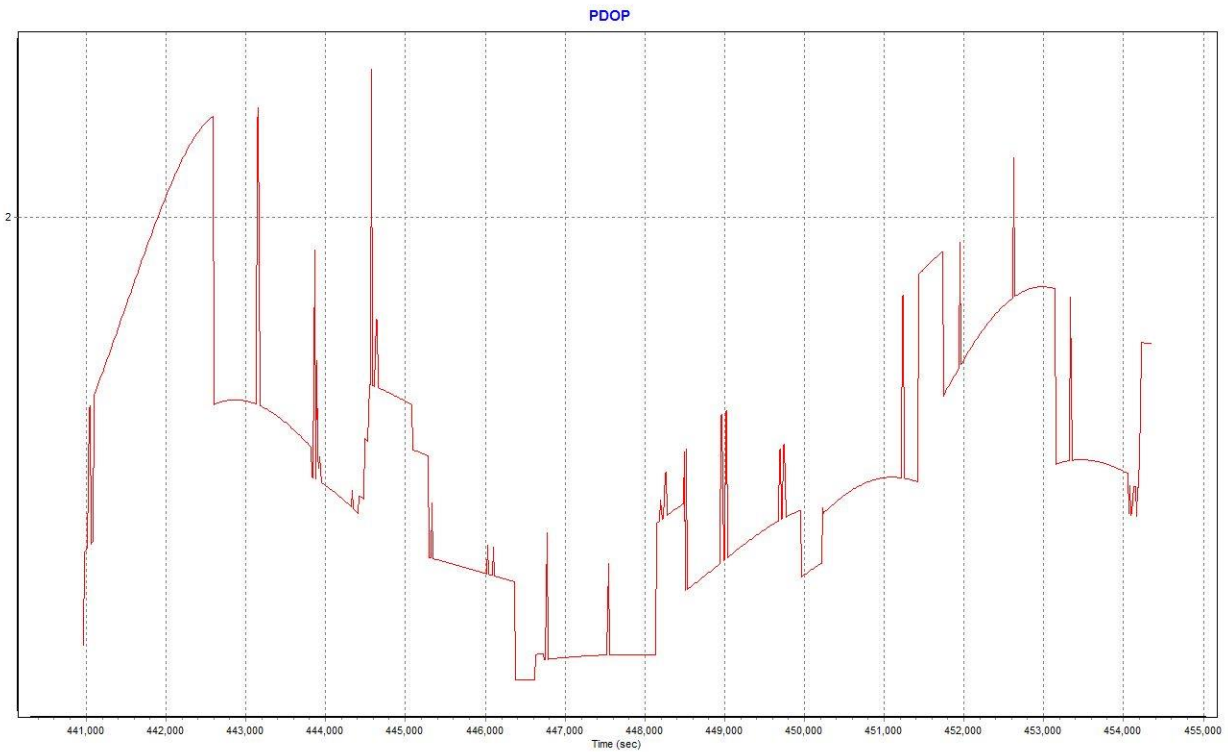
Smoothed Performance Metrics, Reference Frame\_20160310\_2\_Report



### Baseline Length\_20160310\_2\_Report

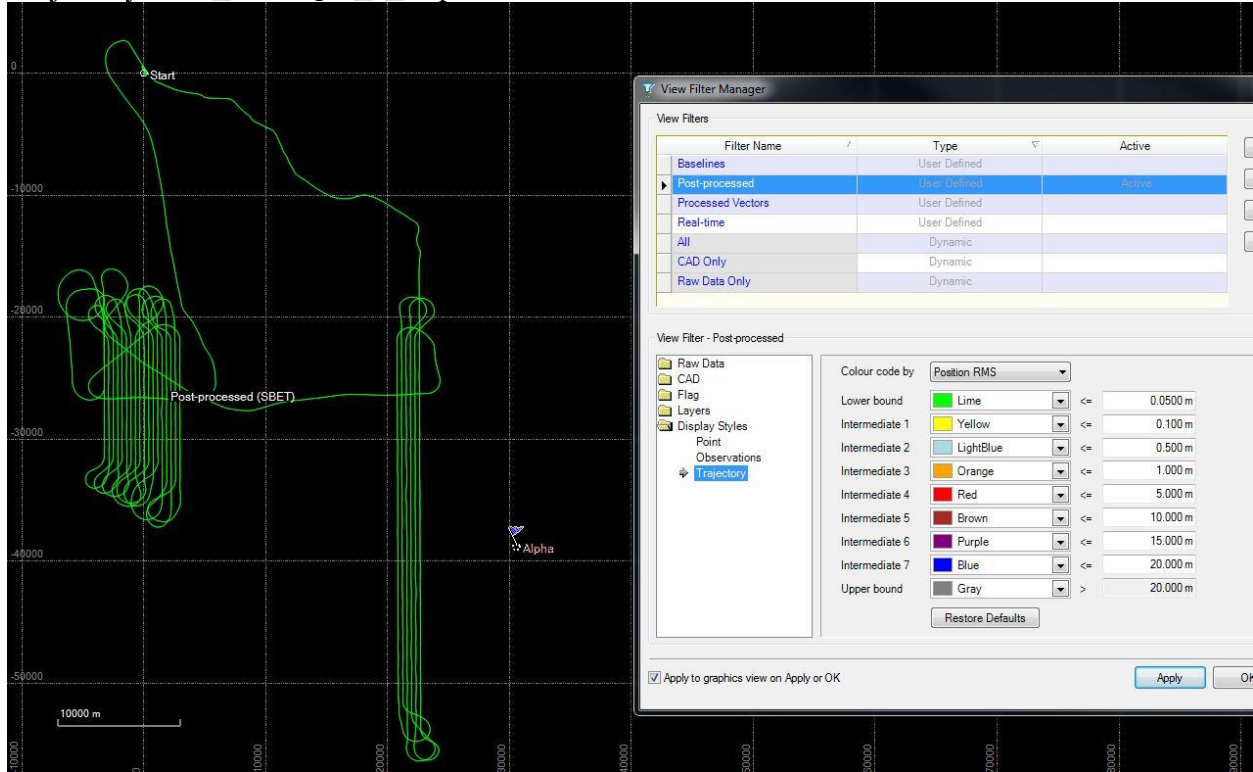


### PDOP\_20160310\_2\_Report



Mission 20160311\_1

Trajectory RMS\_20160311\_1\_Report



OPUS solution\_ALPHA\_20160311\_1

FILE: 6790071n57.16o OP1457955033243

NGS OPUS SOLUTION REPORT

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

For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com)  
RINEX FILE: 6790071n.16o

DATE: March 14, 2016  
TIME: 11:31:31 UTC

SOFTWARE: page5 1209.04 master50.pl 022814 START: 2016/03/11 13:57:00  
EPHEMERIS: igr18875.eph [rapid] STOP: 2016/03/11 19:15:30  
NAV FILE: brdc0710.16n OBS USED: 13727 / 15179 : 90%

ANT NAME: LEIGS14 NONE # FIXED AMB: 63 / 75 : 84%  
ARP HEIGHT: 2.00 OVERALL RMS: 0.014(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2016.1931)

X: 869407.228(m) 0.007(m) 869406.440(m) 0.007(m)  
Y: -5571381.949(m) 0.012(m) -5571380.380(m) 0.012(m)  
Z: 2970674.612(m) 0.013(m) 2970674.446(m) 0.013(m)

LAT: 27 56 25.64907 0.006(m) 27 56 25.66975 0.006(m)  
E LON: 278 52 9.85161 0.006(m) 278 52 9.83198 0.006(m)  
W LON: 81 7 50.14839 0.006(m) 81 7 50.16802 0.006(m)  
EL HGT: -6.483(m) 0.017(m) -8.037(m) 0.017(m)  
ORTHO HGT: 20.961(m) 0.032(m) [NAVD88 (Computed using GEOID12B)]

UTM COORDINATES STATE PLANE COORDINATES

	UTM (Zone 17)	SPC (0901 FL E)
Northing (Y) [meters]	3090613.496	399617.862
Easting (X) [meters]	487152.338	187147.953
Convergence [degrees]	-0.06119169	-0.06119169
Point Scale	0.99960204	0.99994321
Combined Factor	0.99960306	0.99994423

US NATIONAL GRID DESIGNATOR: 17RML8715290613(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI3562	CCV5 CAPE CANAVERAL 5 CORS ARP	N282736.799	W0803242.818	81367.8
DG9757	DLND DELAND CORS ARP	N290322.897	W0811547.480	124350.1
DF5773	ORMD ORMOND BEACH CORS ARP	N291753.469	W0810632.013	150487.5

NEAREST NGS PUBLISHED CONTROL POINT

AF6097 JACKSON N275625.648 W0810750.148 0.0

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

8002 The Opus solution for your submitted RINEX file appears to be  
8002 quite close to an NGS published control point. This suggests that  
8002 you may have set your GPS receiver up over an NGS control point.  
8002 Furthermore, our files indicate that this control point has not  
8002 been recovered in the last five years.  
8002 If you did indeed recover an NGS control point, we would  
8002 appreciate receiving this information through our web based  
8002 Mark Recovery Form at  
8002 [http://www.ngs.noaa.gov/products\\_services.shtml#MarkRecoveryForm](http://www.ngs.noaa.gov/products_services.shtml#MarkRecoveryForm).

8002

**OPUS solution\_BRAVO\_20160311\_1**

FILE: 6829071o44.16o OP1457955269136

NGS OPUS SOLUTION REPORT

=====

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

For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com)

DATE: March 14, 2016

RINEX FILE: 6829071o.16o

TIME: 11:35:33 UTC

SOFTWARE: page5 1209.04 master51.pl 022814 START: 2016/03/11 14:44:00  
EPHEMERIS: igr18875.eph [rapid] STOP: 2016/03/11 19:19:00  
NAV FILE: brdc0710.16n OBS USED: 10863 / 12674 : 86%  
ANT NAME: LEIGS14 NONE # FIXED AMB: 59 / 69 : 86%  
ARP HEIGHT: 2.00 OVERALL RMS: 0.020(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2016.1932)

X:	857289.202(m)	0.008(m)	857288.415(m)	0.008(m)
Y:	-5580320.192(m)	0.041(m)	-5580318.622(m)	0.041(m)
Z:	2957475.641(m)	0.003(m)	2957475.473(m)	0.003(m)

LAT:	27 48 20.62238	0.017(m)	27 48 20.64288	0.017(m)
E LON:	278 44 2.07296	0.006(m)	278 44 2.05325	0.006(m)
W LON:	81 15 57.92704	0.006(m)	81 15 57.94675	0.006(m)
EL HGT:	-8.076(m)	0.037(m)	-9.633(m)	0.037(m)
ORTHO HGT:	18.838(m)	0.065(m)	[NAVD88 (Computed using GEOID12B)]	

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 17)	SPC (0902 FL W)
Northing (Y) [meters]	3075710.608	384897.541
Easting (X) [meters]	473790.452	272314.597
Convergence [degrees]	-0.12412546	0.34236521
Point Scale	0.99960848	1.00000570
Combined Factor	0.99960975	1.00000697

US NATIONAL GRID DESIGNATOR: 17RML7379075710(NAD 83)

BASE STATIONS USED



PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DF7990	ZEFR ZEPHYRHILLS CORS ARP	N281339.322	W0820952.671	99971.4
DG9757	DLND DELAND CORS ARP	N290322.897	W0811547.480	138600.6
DF5773	ORMD ORMOND BEACH CORS ARP	N291753.469	W0810632.013	166115.3

NEAREST NGS PUBLISHED CONTROL POINT  
AF7643 K 113 N274820.621 W0811557.927 0.0

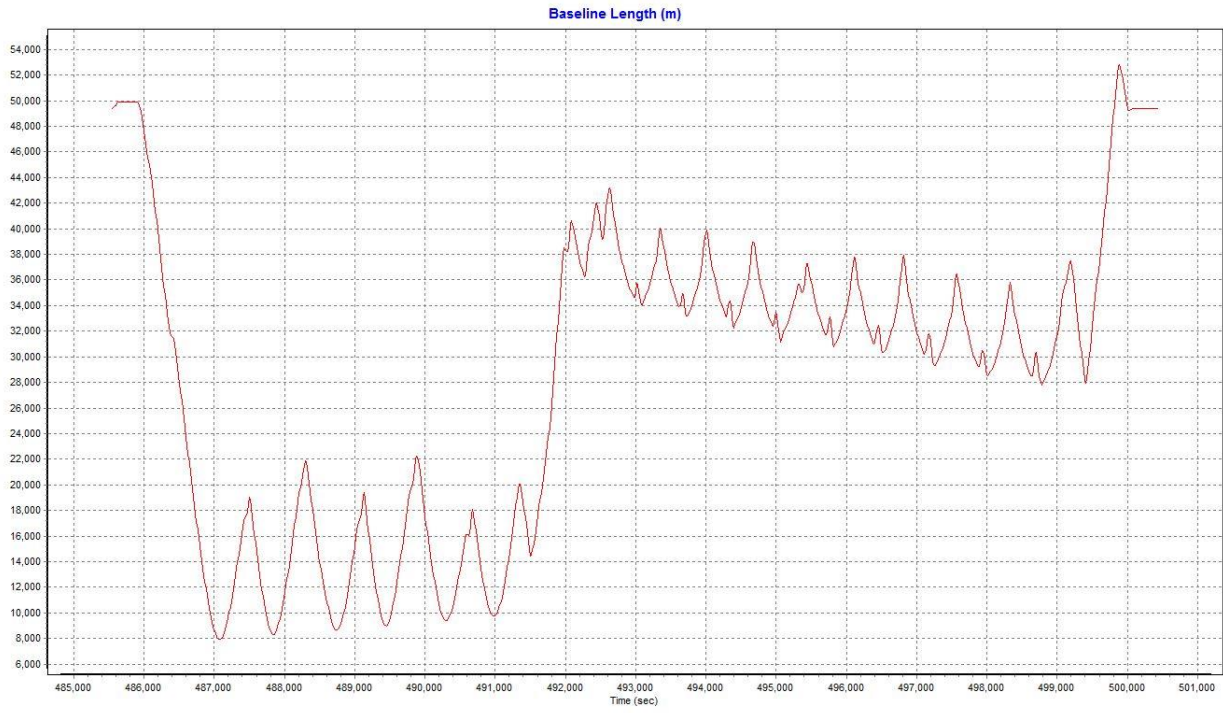
This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

8002 The Opus solution for your submitted RINEX file appears to be  
8002 quite close to an NGS published control point. This suggests that  
8002 you may have set your GPS receiver up over an NGS control point.  
8002 Furthermore, our files indicate that this control point has not  
8002 been recovered in the last five years.  
8002 If you did indeed recover an NGS control point, we would  
8002 appreciate receiving this information through our web based  
8002 Mark Recovery Form at  
8002 [http://www.ngs.noaa.gov/products\\_services.shtml#MarkRecoveryForm](http://www.ngs.noaa.gov/products_services.shtml#MarkRecoveryForm).  
8002

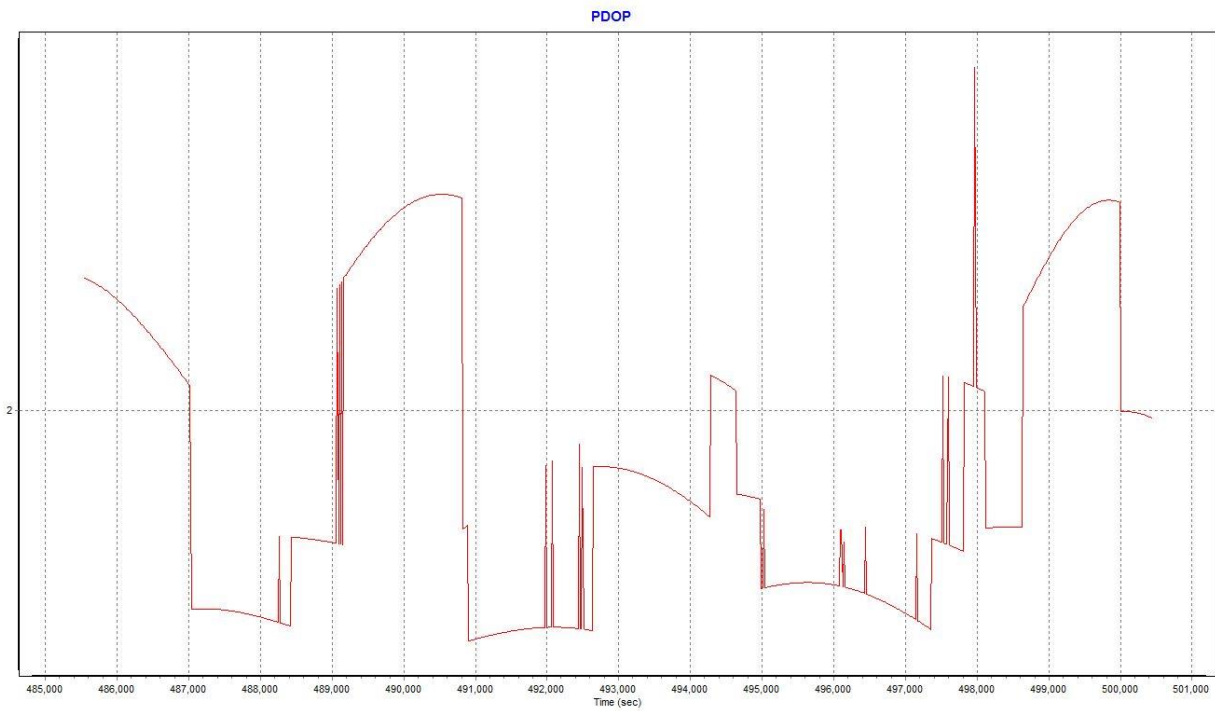
### Smoothed Performance Metrics, Reference Frame\_20160311\_1\_Report



### Baseline Length\_20160311\_1\_Report

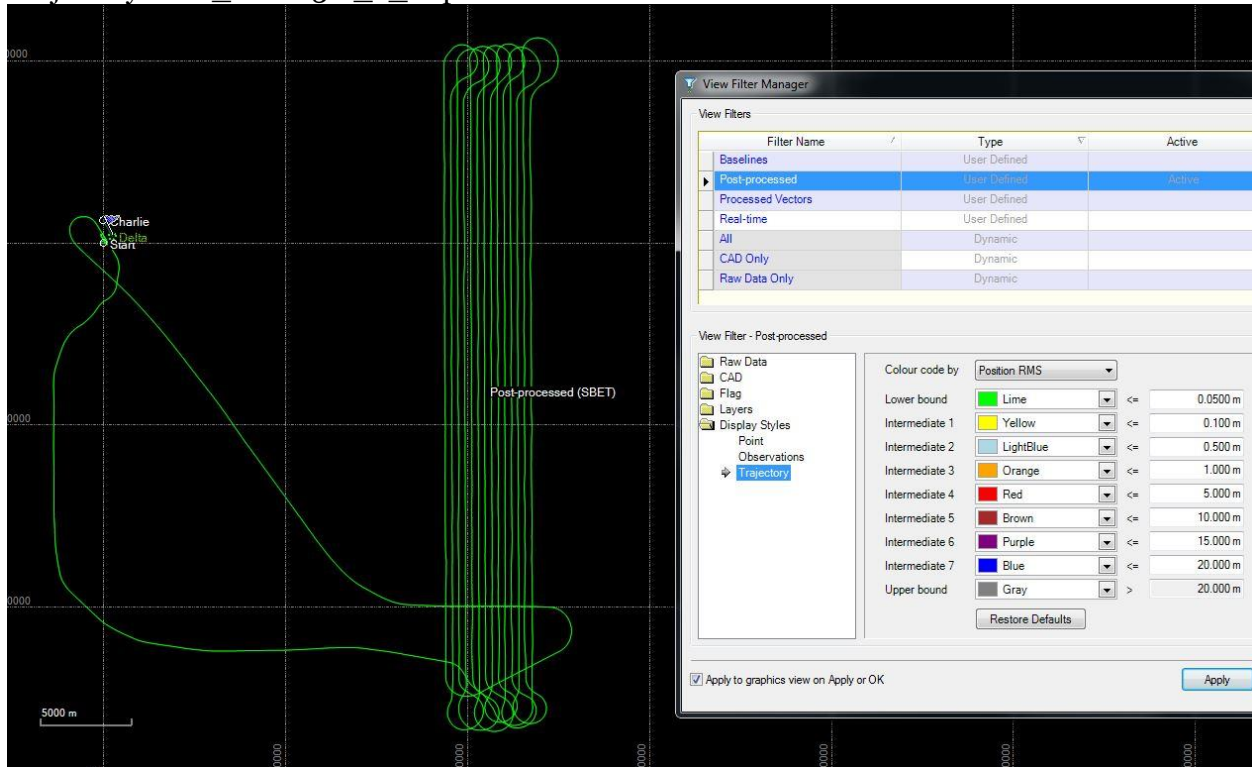


### PDOP\_20160311\_1\_Report



### Mission 20160311\_2

### Trajectory RMS\_20160311\_2\_Report



### OPUS solution\_CHARLIE\_20160311\_2

FILE: 6823072a51.16o OP1457955376577

### NGS OPUS SOLUTION REPORT =====

All computed coordinate accuracies are listed as peak-to-peak values.  
For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com)  
RINEX FILE: 6823072a.16o

DATE: March 14, 2016  
TIME: 11:37:12 UTC

SOFTWARE: page5 1209.04 master50.pl 022814    START: 2016/03/12 00:51:00  
EPHEMERIS: igr18876.eph [rapid]            STOP: 2016/03/12 06:00:00  
NAV FILE: brdc0720.16n                    OBS USED: 12368 / 13264 : 93%

ANT NAME: LEIGS14    NONE    # FIXED AMB: 60 / 61 : 98%  
ARP HEIGHT: 2.00    OVERALL RMS: 0.012(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000)    IGS08 (EPOCH:2016.1944)

X: 836360.489(m) 0.002(m)    836359.700(m) 0.002(m)  
Y: -5557292.810(m) 0.016(m)    -5557291.247(m) 0.016(m)  
Z: 3006106.337(m) 0.004(m)    3006106.172(m) 0.004(m)

LAT: 28 18 10.66209 0.004(m)    28 18 10.68299 0.004(m)  
E LON: 278 33 31.17338 0.002(m)    278 33 31.15329 0.002(m)  
W LON: 81 26 28.82662 0.002(m)    81 26 28.84671 0.002(m)  
EL HGT: -4.026(m) 0.016(m)    -5.568(m) 0.016(m)  
ORTHO HGT: 23.750(m) 0.030(m) [NAVD88 (Computed using GEOID12B)]

UTM COORDINATES    STATE PLANE COORDINATES

UTM (Zone 17)    SPC (0901 FL E)  
Northing (Y) [meters]    3130842.750    439860.848  
Easting (X) [meters]    456727.999    156713.229  
Convergence [degrees]    -0.20925778    -0.20925778  
Point Scale    0.99962311    0.99996429  
Combined Factor    0.99962374    0.99996492

US NATIONAL GRID DESIGNATOR: 17RMM5672730842(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI3562	CCV5 CAPE CANAVERAL 5 CORS ARP	N282736.799	W0803242.818	89542.2
DF5773	ORMD ORMOND BEACH CORS ARP	N291753.469	W0810632.013	114976.9
DG9757	DLND DELAND CORS ARP	N290322.897	W0811547.480	85295.0

NEAREST NGS PUBLISHED CONTROL POINT

DL6644    R 733    N281810.661 W0812628.827    0.0

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

**OPUS solution\_DELTA\_20160311\_2**

FILE: 6821072a51.16o OP1457955513265

NGS OPUS SOLUTION REPORT

=====

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

For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com) DATE: March 14, 2016  
RINEX FILE: 6821072a.16o TIME: 11:39:45 UTC

SOFTWARE: page5 1209.04 master53.pl 022814 START: 2016/03/12 00:51:00  
EPHEMERIS: igr18876.eph [rapid] STOP: 2016/03/12 06:00:00  
NAV FILE: brdc0720.16n OBS USED: 12401 / 13190 : 94%  
ANT NAME: LEIGS14 NONE # FIXED AMB: 53 / 57 : 93%  
ARP HEIGHT: 2.00 OVERALL RMS: 0.011(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2016.1944)

X: 836918.564(m) 0.003(m) 836917.775(m) 0.003(m)  
Y: -5557630.094(m) 0.009(m) -5557628.531(m) 0.009(m)  
Z: 3005331.851(m) 0.004(m) 3005331.686(m) 0.004(m)

LAT: 28 17 42.09498 0.002(m) 28 17 42.11587 0.002(m)  
E LON: 278 33 49.58450 0.002(m) 278 33 49.56441 0.002(m)  
W LON: 81 26 10.41550 0.002(m) 81 26 10.43559 0.002(m)  
EL HGT: -4.375(m) 0.010(m) -5.917(m) 0.010(m)  
ORTHO HGT: 23.407(m) 0.022(m) [NAVD88 (Computed using GEOID12B)]

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 17)	SPC (0901 FL E)
Northing (Y) [meters]	3129961.842	438979.639
Easting (X) [meters]	457226.261	157211.662
Convergence [degrees]	-0.20677966	-0.20677966
Point Scale	0.99962258	0.99996376
Combined Factor	0.99962327	0.99996445

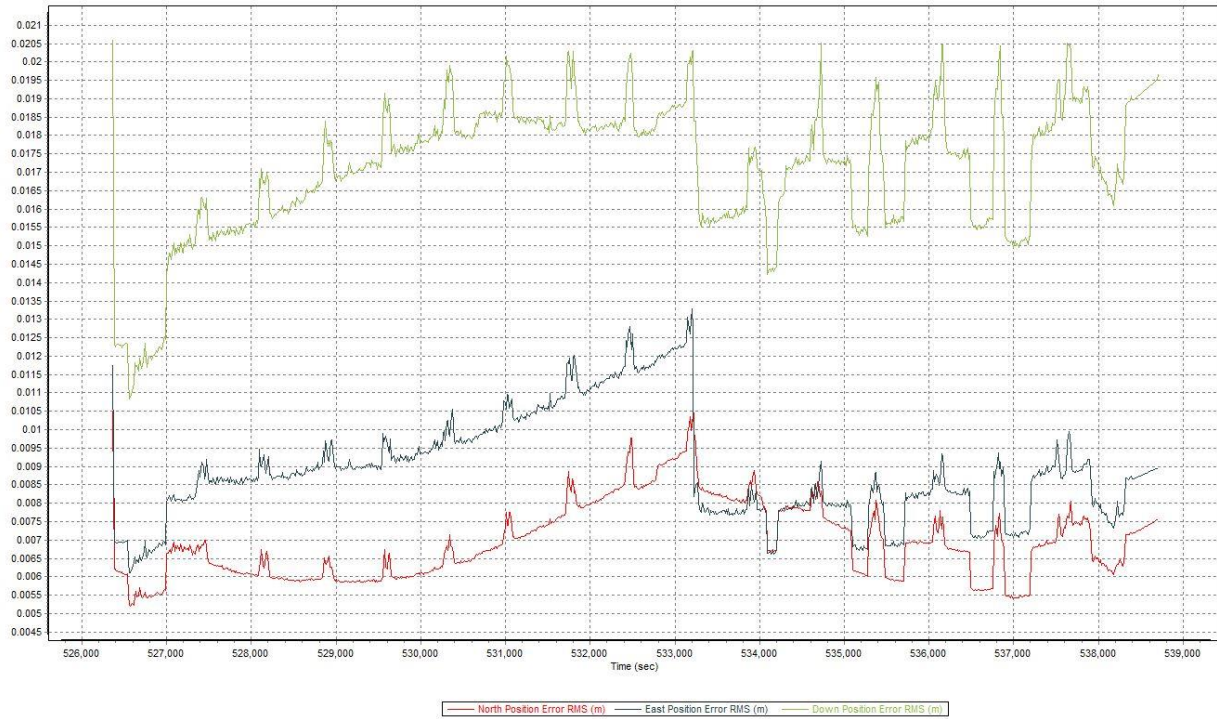
US NATIONAL GRID DESIGNATOR: 17RMM5722629961(NAD 83)

BASE STATIONS USED			
PID	DESIGNATION	LATITUDE	LONGITUDE DISTANCE(m)
DH3757	WACH WAUCHULA CORS ARP	N273051.042	W0815256.615 97040.7
DG9757	DLND DELAND CORS ARP	N290322.897	W0811547.480 86056.6
DI3562	CCV5 CAPE CANAVERAL 5 CORS ARP	N282736.799	W0803242.818 89230.1

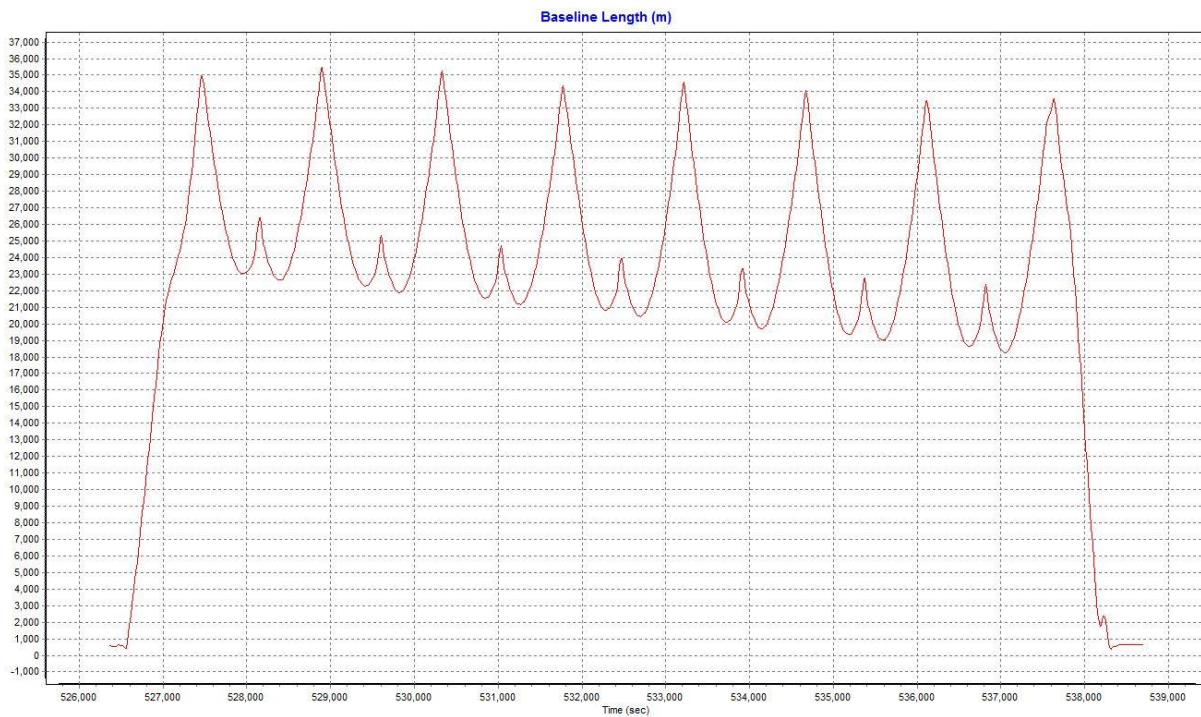
NEAREST NGS PUBLISHED CONTROL POINT			
DL6642	Q 733	N281742.094	W0812610.416 0.0

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

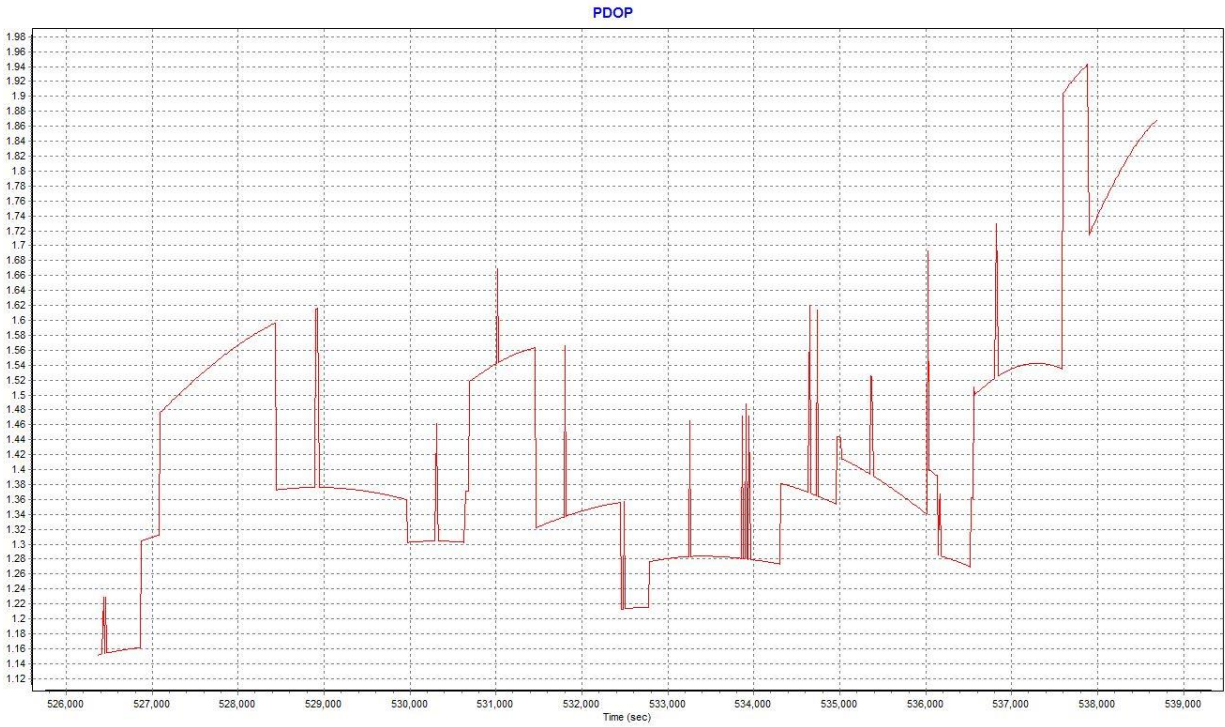
### Smoothed Performance Metrics, Reference Frame\_20160311\_2\_Report



### Baseline Length\_20160311\_2\_Report

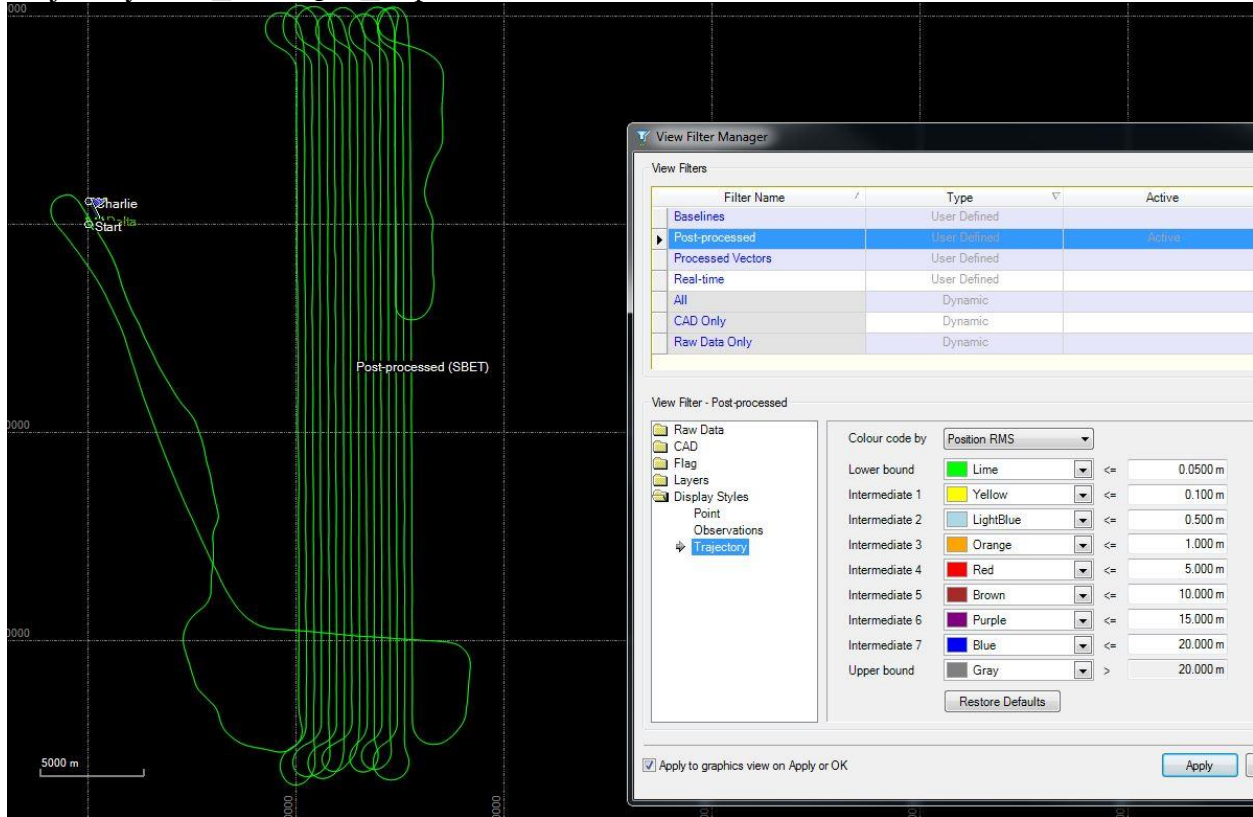


PDOP\_20160311\_2\_Report



Mission 20160322

Trajectory RMS\_20160322\_Report



**OPUS solution\_CHARLIE\_20160322**

FILE: 6823083b36.16o OP1460057791520

NGS OPUS SOLUTION REPORT

=====

All computed coordinate accuracies are listed as peak-to-peak values.  
For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com) DATE: April 07, 2016  
RINEX FILE: 6823083b.16o TIME: 19:37:26 UTC

SOFTWARE: page5 1209.04 master52.pl 160321 START: 2016/03/23 01:36:00



EPHEMERIS: igr18893.eph [rapid] STOP: 2016/03/23 06:35:00  
NAV FILE: brdc0830.16n OBS USED: 11897 / 12705 : 94%  
ANT NAME: LEIGS14 NONE # FIXED AMB: 51 / 56 : 91%  
ARP HEIGHT: 2.00 OVERALL RMS: 0.012(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2016.2245)

X: 836360.482(m) 0.003(m) 836359.693(m) 0.003(m)  
Y: -5557292.803(m) 0.013(m) -5557291.240(m) 0.013(m)  
Z: 3006106.340(m) 0.002(m) 3006106.175(m) 0.002(m)

LAT: 28 18 10.66230 0.005(m) 28 18 10.68320 0.005(m)  
E LON: 278 33 31.17317 0.001(m) 278 33 31.15307 0.001(m)  
W LON: 81 26 28.82683 0.001(m) 81 26 28.84693 0.001(m)  
EL HGT: -4.031(m) 0.013(m) -5.574(m) 0.013(m)  
ORTHO HGT: 23.745(m) 0.026(m) [NAVD88 (Computed using GEOID12B)]

UTM COORDINATES STATE PLANE COORDINATES

UTM (Zone 17) SPC (0901 FL E)

Northing (Y) [meters] 3130842.757 439860.854  
Easting (X) [meters] 456727.993 156713.224  
Convergence [degrees] -0.20925781 -0.20925781  
Point Scale 0.99962311 0.99996429  
Combined Factor 0.99962374 0.99996492

US NATIONAL GRID DESIGNATOR: 17RMM5672730842(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI3562	CCV5 CAPE CANAVERAL 5 CORS ARP	N282736.799	W0803242.818	89542.2
DG9757	DLND DELAND CORS ARP	N290322.897	W0811547.480	85295.0
DF5773	ORMD ORMOND BEACH CORS ARP	N291753.469	W0810632.013	114976.9

NEAREST NGS PUBLISHED CONTROL POINT

DL6644 R 733 N281810.661 W0812628.827 0.0

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used

**OPUS solution\_DELTA\_20160322**

FILE: 6821083b36.16o OP1460057862688

NGS OPUS SOLUTION REPORT

=====

All computed coordinate accuracies are listed as peak-to-peak values.  
For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com) DATE: April 07, 2016  
RINEX FILE: 6821083b.16o TIME: 19:39:03 UTC

SOFTWARE: page5 1209.04 master52.pl 160321 START: 2016/03/23 01:36:00  
EPHEMERIS: igr18893.eph [rapid] STOP: 2016/03/23 06:35:00  
NAV FILE: brdc0830.16n OBS USED: 12092 / 12677 : 95%  
ANT NAME: LEIGS14 NONE # FIXED AMB: 60 / 61 : 98%  
ARP HEIGHT: 2.00 OVERALL RMS: 0.011(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2016.2245)

X: 836918.561(m) 0.001(m) 836917.772(m) 0.001(m)  
Y: -5557630.093(m) 0.004(m) -5557628.530(m) 0.004(m)  
Z: 3005331.847(m) 0.003(m) 3005331.682(m) 0.003(m)

LAT: 28 17 42.09489 0.003(m) 28 17 42.11577 0.003(m)  
E LON: 278 33 49.58440 0.001(m) 278 33 49.56430 0.001(m)  
W LON: 81 26 10.41560 0.001(m) 81 26 10.43570 0.001(m)  
EL HGT: -4.378(m) 0.004(m) -5.920(m) 0.004(m)  
ORTHO HGT: 23.404(m) 0.015(m) [NAVD88 (Computed using GEOID12B)]

UTM COORDINATES STATE PLANE COORDINATES  
UTM (Zone 17) SPC (0901 FL E)  
Northing (Y) [meters] 3129961.839 438979.636  
Easting (X) [meters] 457226.259 157211.659  
Convergence [degrees] -0.20677967 -0.20677967  
Point Scale 0.99962258 0.99996376  
Combined Factor 0.99962327 0.99996445

US NATIONAL GRID DESIGNATOR: 17RMM5722629961(NAD 83)

BASE STATIONS USED

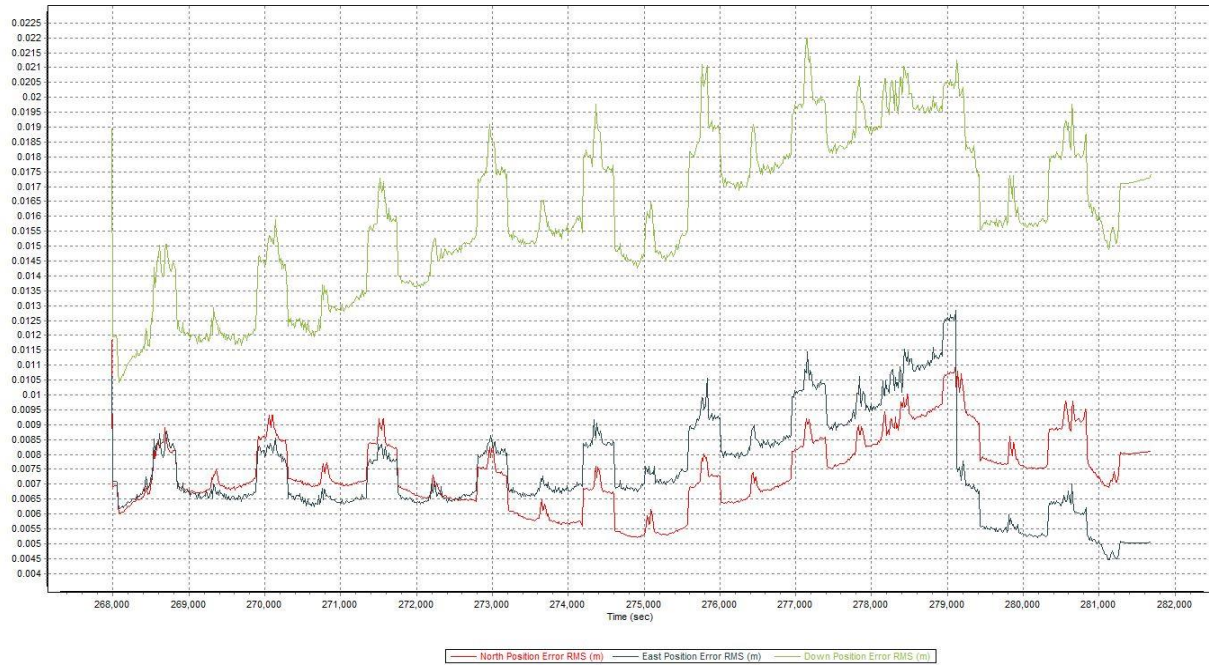
PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DG9757	DLND DELAND CORS ARP	N290322.897	W0811547.480	86056.6
DH3757	WACH WAUCHULA CORS ARP	N273051.042	W0815256.615	97040.7
DI3562	CCV5 CAPE CANAVERAL 5 CORS ARP	N282736.799	W0803242.818	89230.1

NEAREST NGS PUBLISHED CONTROL POINT

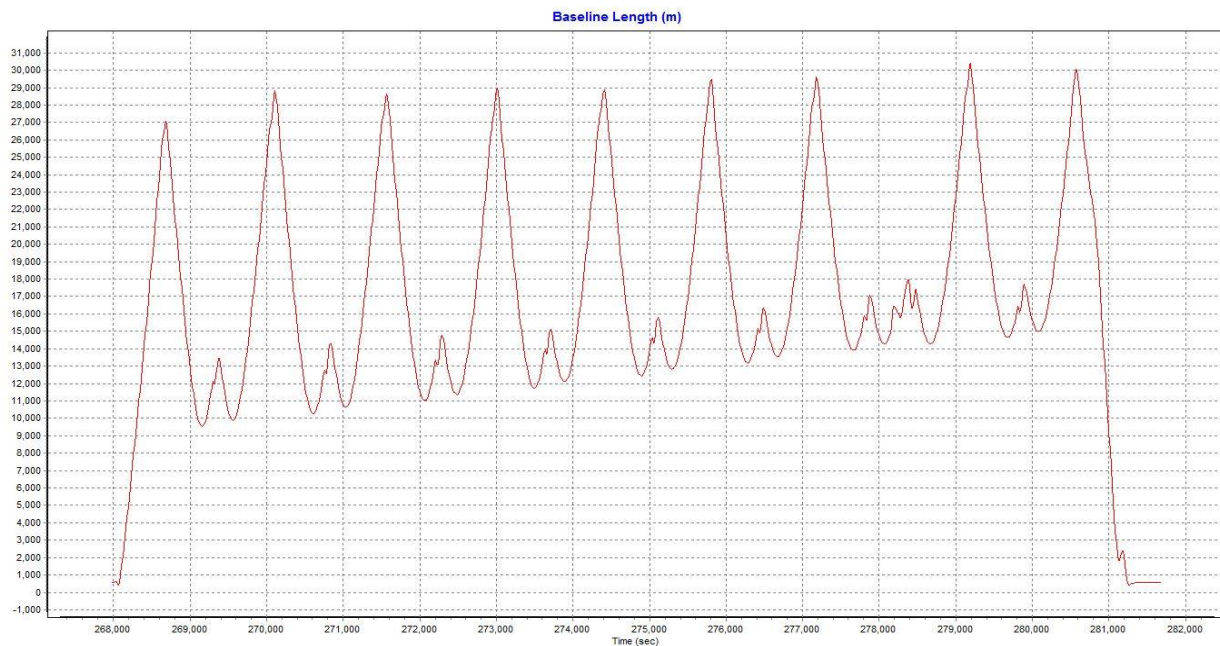
DL6642	Q 733	N281742.094	W0812610.416	0.0
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

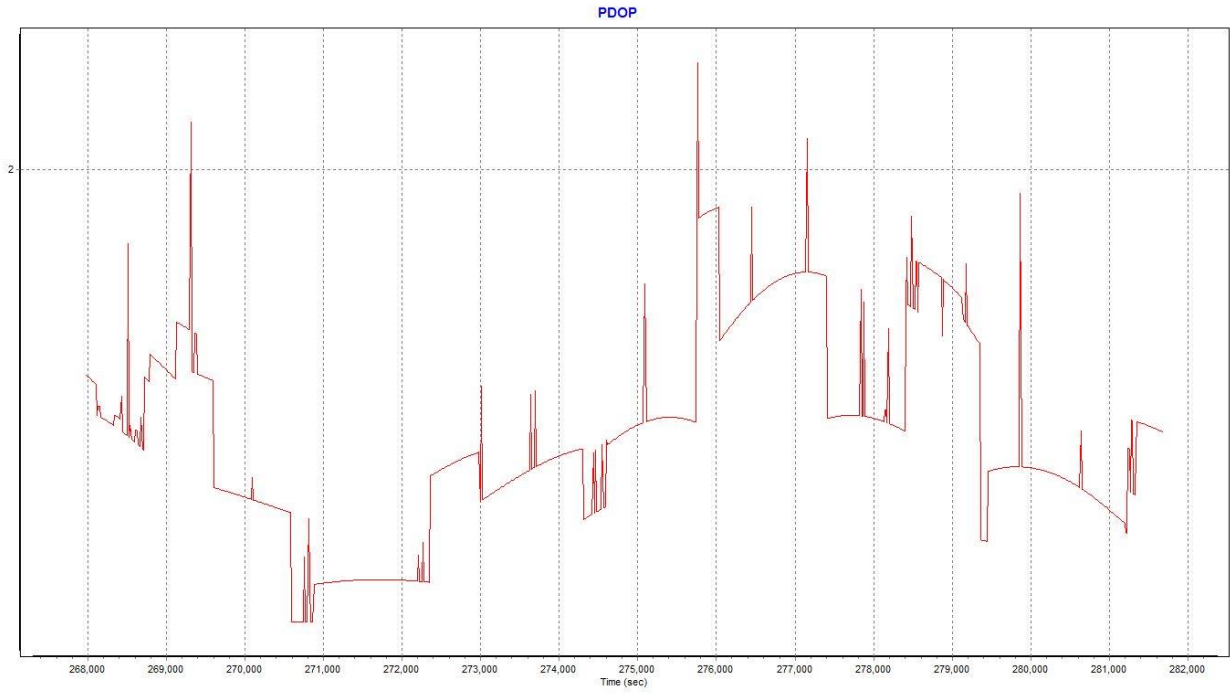
### Smoothed Performance Metrics, Reference Frame\_20160322\_Report



### Baseline Length\_20160322\_Report

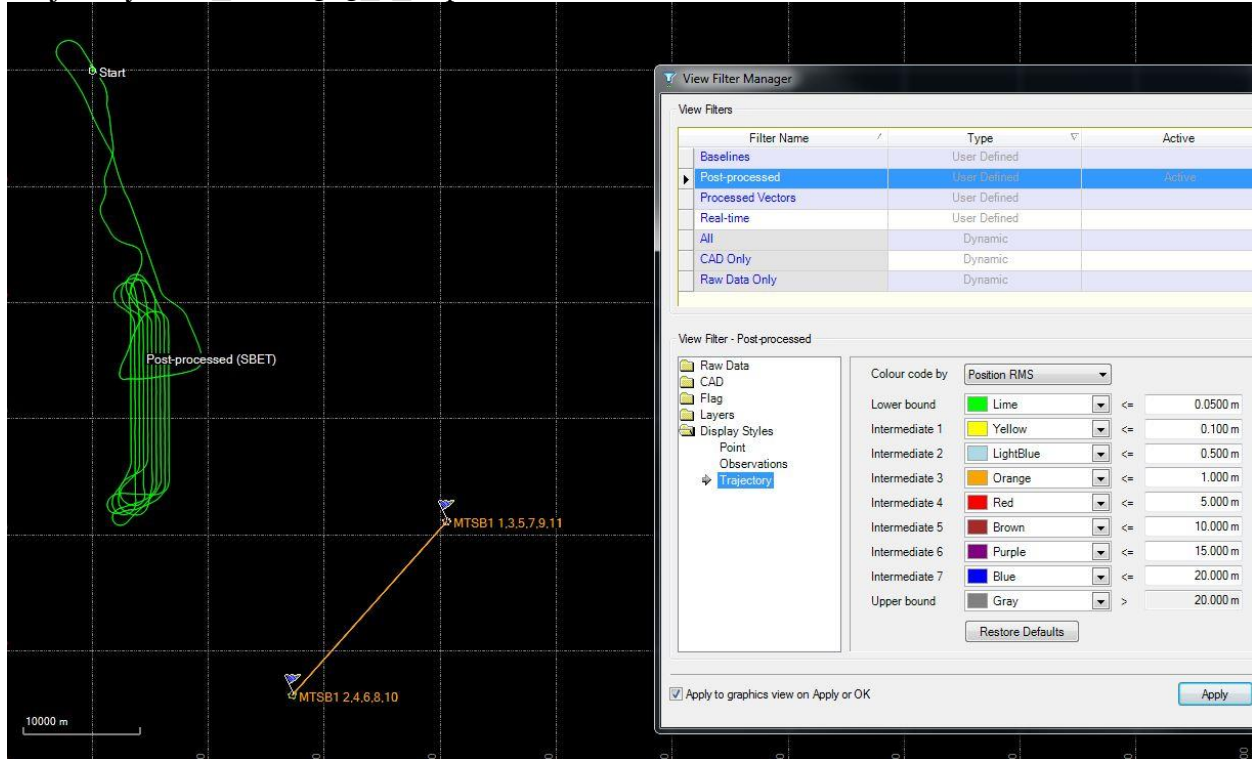


### PDOP\_20160322\_Report



Mission 20160323\_1

Trajectory RMS\_20160323\_1\_Report



OPUS solution\_CHARLIE\_20160323\_1

FILE: 6823083k46.16o OP1460058057683

NGS OPUS SOLUTION REPORT

=====

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

For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com)  
RINEX FILE: 6823083k.16o

DATE: April 07, 2016  
TIME: 19:41:41 UTC

SOFTWARE: page5 1209.04 master50.pl 160321 START: 2016/03/23 10:46:00  
EPHEMERIS: igr18893.eph [rapid] STOP: 2016/03/23 13:53:00  
NAV FILE: brdc0830.16n OBS USED: 8233 / 8772 : 94%

ANT NAME: LEIGS14 NONE # FIXED AMB: 43 / 47 : 91%  
ARP HEIGHT: 2.00 OVERALL RMS: 0.011(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2016.2254)

X: 869407.232(m) 0.006(m) 869406.444(m) 0.006(m)  
Y: -5571381.949(m) 0.001(m) -5571380.380(m) 0.001(m)  
Z: 2970674.599(m) 0.014(m) 2970674.433(m) 0.014(m)

LAT: 27 56 25.64868 0.012(m) 27 56 25.66937 0.012(m)  
E LON: 278 52 9.85176 0.006(m) 278 52 9.83213 0.006(m)  
W LON: 81 7 50.14824 0.006(m) 81 7 50.16787 0.006(m)  
EL HGT: -6.488(m) 0.007(m) -8.043(m) 0.007(m)  
ORTHO HGT: 20.956(m) 0.018(m) [NAVD88 (Computed using GEOID12B)]

UTM COORDINATES STATE PLANE COORDINATES

	UTM (Zone 17)	SPC (0901 FL E)
Northing (Y) [meters]	3090613.484	399617.850
Easting (X) [meters]	487152.342	187147.957
Convergence [degrees]	-0.06119167	-0.06119167
Point Scale	0.99960204	0.99994321
Combined Factor	0.99960306	0.99994423

US NATIONAL GRID DESIGNATOR: 17RML8715290613(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DG9757	DLND DELAND CORS ARP	N290322.897	W0811547.480	124350.1
DI3562	CCV5 CAPE CANAVERAL 5 CORS ARP	N282736.799	W0803242.818	81367.8
DF7046	BRTW BARTOW CORS ARP	N275658.642	W0814658.200	64195.5

NEAREST NGS PUBLISHED CONTROL POINT

AF6097	JACKSON	N275625.648	W0810750.148	0.0
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

8002 The Opus solution for your submitted RINEX file appears to be  
8002 quite close to an NGS published control point. This suggests that  
8002 you may have set your GPS receiver up over an NGS control point.  
8002 Furthermore, our files indicate that this control point has not  
8002 been recovered in the last five years.  
8002 If you did indeed recover an NGS control point, we would  
8002 appreciate receiving this information through our web based  
8002 Mark Recovery Form at  
8002 [http://www.ngs.noaa.gov/products\\_services.shtml#MarkRecoveryForm](http://www.ngs.noaa.gov/products_services.shtml#MarkRecoveryForm).

8002

**OPUS solution\_DELTA\_20160323\_1**

FILE: 6821083k47.16o OP1460058129219

NGS OPUS SOLUTION REPORT

=====

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

For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com) DATE: April 07, 2016  
RINEX FILE: 6821083k.16o TIME: 19:43:05 UTC

SOFTWARE: page5 1209.04 master51.pl 160321 START: 2016/03/23 10:47:00  
EPHEMERIS: igr18893.eph [rapid] STOP: 2016/03/23 13:53:00  
NAV FILE: brdc0830.16n OBS USED: 7856 / 8635 : 91%  
ANT NAME: LEIGS14 NONE # FIXED AMB: 36 / 37 : 97%  
ARP HEIGHT: 2.00 OVERALL RMS: 0.009(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2016.2255)

X:	857289.209(m)	0.005(m)	857288.422(m)	0.005(m)
Y:	-5580320.188(m)	0.009(m)	-5580318.618(m)	0.009(m)
Z:	2957475.592(m)	0.014(m)	2957475.424(m)	0.014(m)

LAT:	27 48 20.62101	0.012(m)	27 48 20.64151	0.012(m)
E LON:	278 44 2.07323	0.005(m)	278 44 2.05352	0.005(m)
W LON:	81 15 57.92677	0.005(m)	81 15 57.94648	0.005(m)
EL HGT:	-8.102(m)	0.009(m)	-9.659(m)	0.009(m)
ORTHO HGT:	18.812(m)	0.021(m)	[NAVD88 (Computed using GEOID12B)]	

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 17)	SPC (0902 FL W)
Northing (Y) [meters]	3075710.566	384897.499
Easting (X) [meters]	473790.460	272314.605
Convergence [degrees]	-0.12412542	0.34236524
Point Scale	0.99960848	1.00000570
Combined Factor	0.99960975	1.00000697

US NATIONAL GRID DESIGNATOR: 17RML7379075710(NAD 83)

BASE STATIONS USED

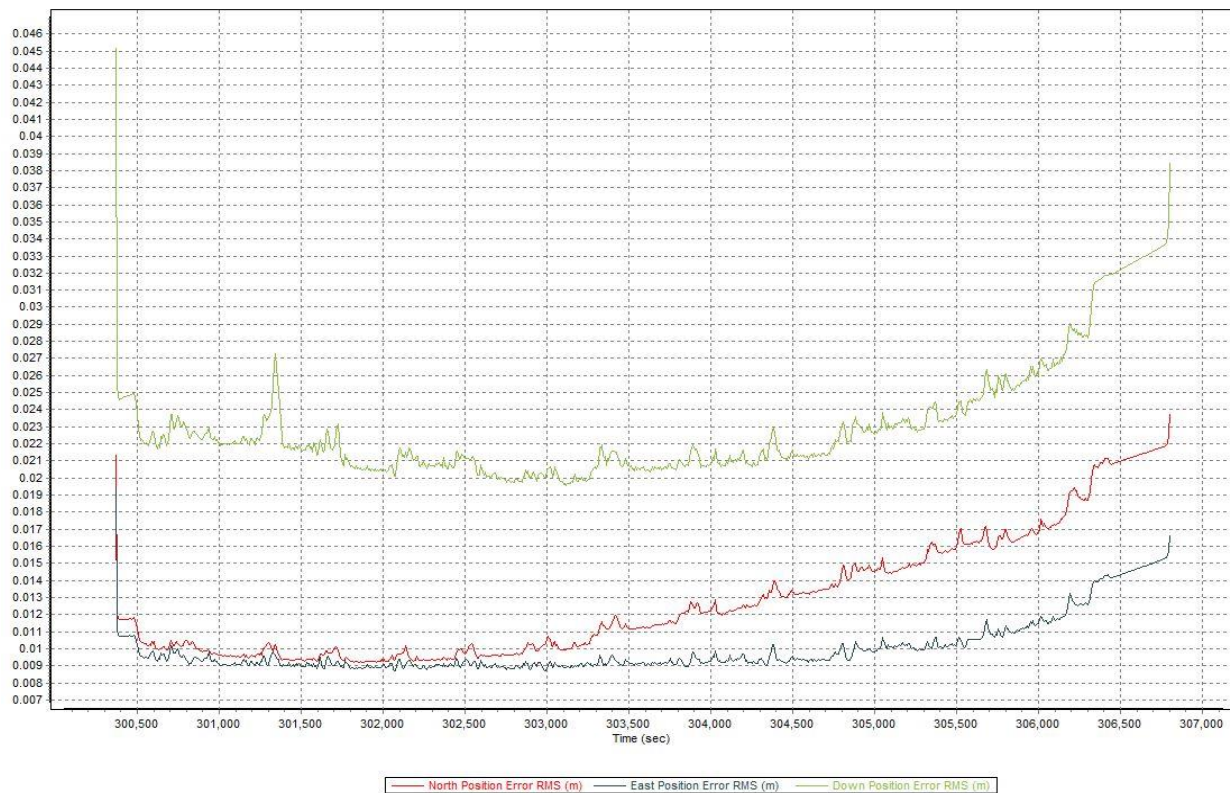
PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI3562	CCV5 CAPE CANAVERAL 5 CORS ARP	N282736.799	W0803242.818	101369.3
DG9757	DLND DELAND CORS ARP	N290322.897	W0811547.480	138600.6
DF7046	BRTW BARTOW CORS ARP	N275658.642	W0814658.200	53324.9

NEAREST NGS PUBLISHED CONTROL POINT  
AF7643 K 113 N274820.621 W0811557.927 0.0

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

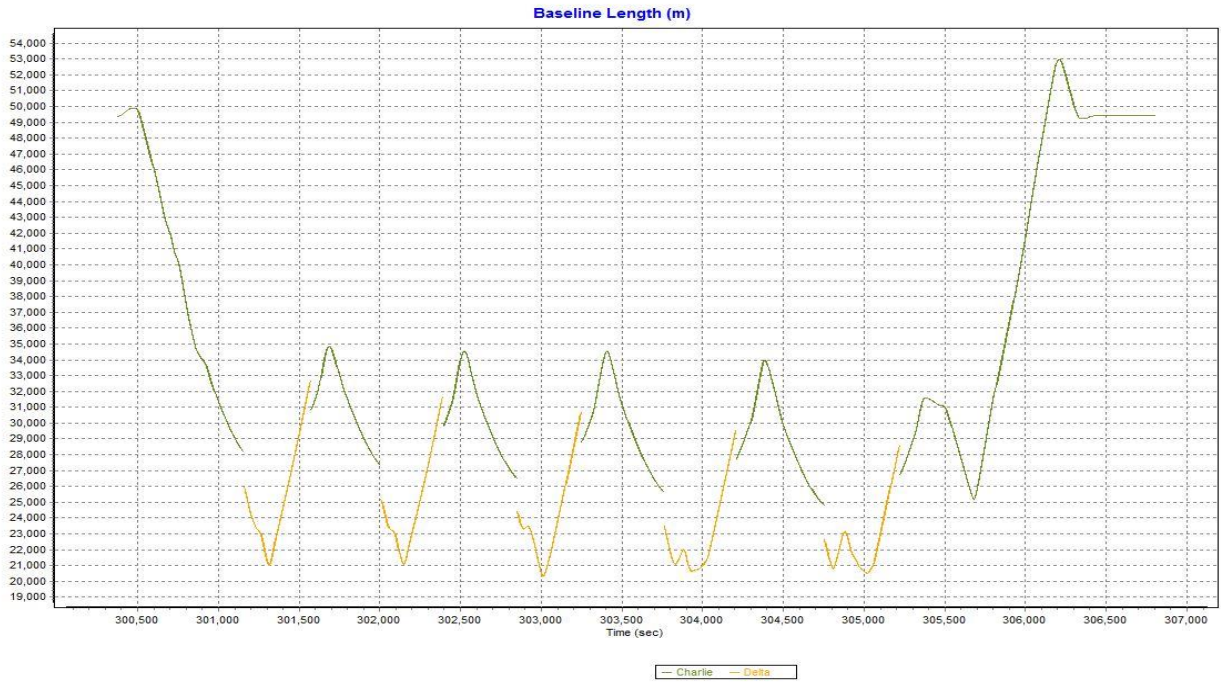
8002 The Opus solution for your submitted RINEX file appears to be  
8002 quite close to an NGS published control point. This suggests that  
8002 you may have set your GPS receiver up over an NGS control point.  
8002 Furthermore, our files indicate that this control point has not  
8002 been recovered in the last five years.  
8002 If you did indeed recover an NGS control point, we would  
8002 appreciate receiving this information through our web based  
8002 Mark Recovery Form at  
8002 [http://www.ngs.noaa.gov/products\\_services.shtml#MarkRecoveryForm](http://www.ngs.noaa.gov/products_services.shtml#MarkRecoveryForm).  
8002

### Smoothed Performance Metrics, Reference Frame\_20160323\_1\_Report

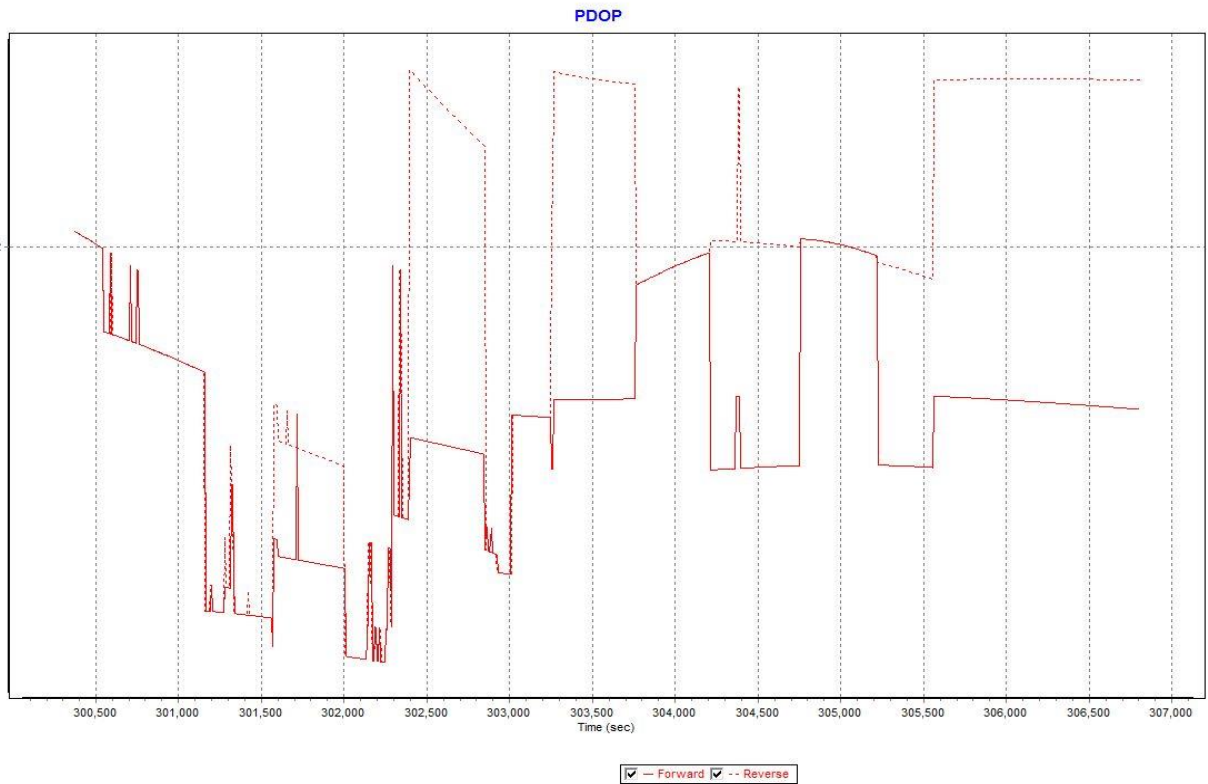




### Baseline Length\_20160323\_1\_Report

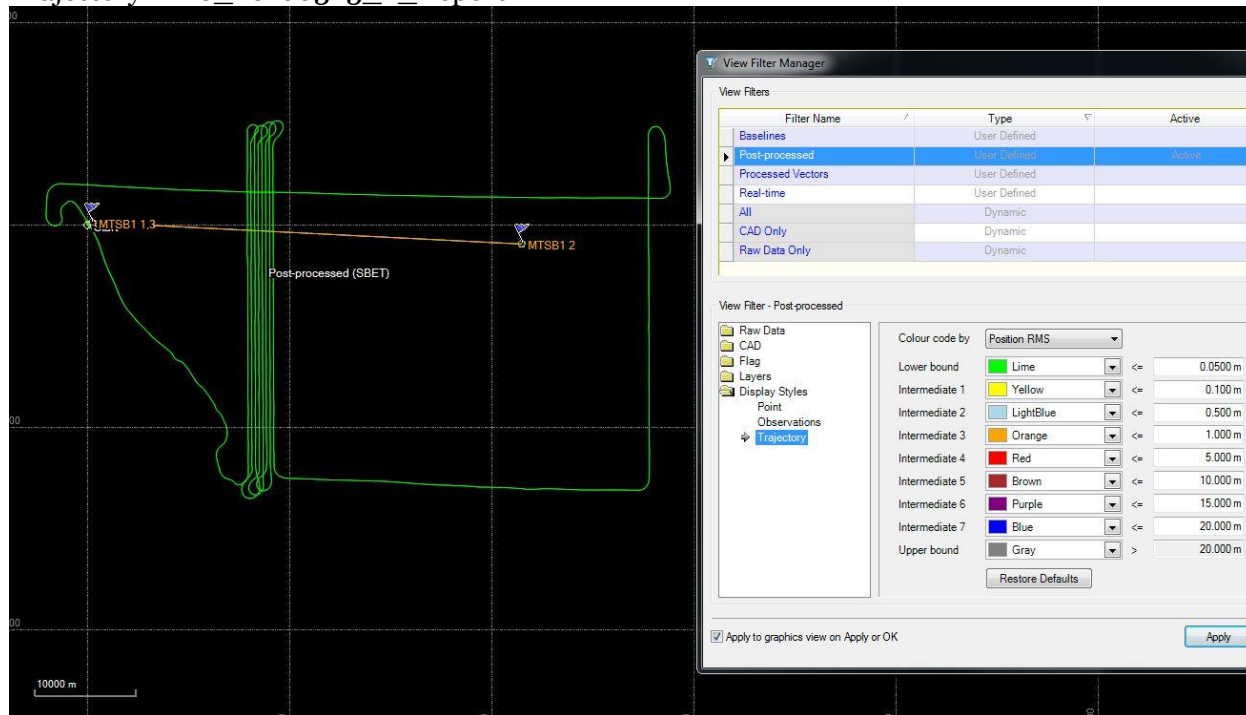


### PDOP\_20160323\_1\_Report



### Mission 20160323\_2

### Trajectory RMS\_20160323\_2\_Report



### OPUS solution\_CHARLIE\_20160323\_2

FILE: 6823084b41.16o OP1460058198715

#### NGS OPUS SOLUTION REPORT

=====

All computed coordinate accuracies are listed as peak-to-peak values.  
For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com)  
RINEX FILE: 6823084b.16o

DATE: April 07, 2016  
TIME: 19:44:09 UTC

SOFTWARE: page5 1209.04 master90.pl 160321 START: 2016/03/24 01:41:00  
EPHEMERIS: igr18894.eph [rapid] STOP: 2016/03/24 05:06:00  
NAV FILE: brdc0840.16n OBS USED: 8255 / 8615 : 96%  
ANT NAME: LEIGS14 NONE # FIXED AMB: 45 / 46 : 98%

ARP HEIGHT: 2.00

OVERALL RMS: 0.011(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2016.2272)

X: 836918.549(m) 0.002(m) 836917.760(m) 0.002(m)  
Y: -5557630.101(m) 0.006(m) -5557628.538(m) 0.006(m)  
Z: 3005331.833(m) 0.001(m) 3005331.668(m) 0.001(m)

LAT: 28 17 42.09439 0.002(m) 28 17 42.11528 0.002(m)  
E LON: 278 33 49.58392 0.001(m) 278 33 49.56382 0.001(m)  
W LON: 81 26 10.41608 0.001(m) 81 26 10.43618 0.001(m)  
EL HGT: -4.379(m) 0.006(m) -5.922(m) 0.006(m)  
ORTHO HGT: 23.403(m) 0.017(m) [NAVD88 (Computed using GEOID12B)]

UTM COORDINATES STATE PLANE COORDINATES

UTM (Zone 17) SPC (0901 FL E)

Northing (Y) [meters] 3129961.824 438979.621  
Easting (X) [meters] 457226.245 157211.646  
Convergence [degrees] -0.20677973 -0.20677973  
Point Scale 0.99962258 0.99996376  
Combined Factor 0.99962327 0.99996445

US NATIONAL GRID DESIGNATOR: 17RMM5722629961(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DG9757	DLND DELAND CORS ARP	N290322.897	W0811547.480	86056.6
DH3757	WACH WAUCHULA CORS ARP	N273051.042	W0815256.615	97040.7
DI3562	CCV5 CAPE CANAVERAL 5 CORS ARP	N282736.799	W0803242.818	89230.1

NEAREST NGS PUBLISHED CONTROL POINT

DL6642 Q 733 N281742.094 W0812610.416 0.0

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

**OPUS solution\_DELTA\_20160323\_2**

FILE: 6821084b41.16o OP1460058230474

NGS OPUS SOLUTION REPORT

=====

All computed coordinate accuracies are listed as peak-to-peak values.  
For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com)  
RINEX FILE: 6821084b.16o

DATE: April 07, 2016  
TIME: 19:44:46 UTC

SOFTWARE: page5 1209.04 master51.pl 160321 START: 2016/03/24 01:41:00  
EPHEMERIS: igr18894.eph [rapid] STOP: 2016/03/24 05:06:00  
NAV FILE: brdc0840.16n OBS USED: 8344 / 8772 : 95%  
ANT NAME: LEIGS14 NONE # FIXED AMB: 50 / 52 : 96%  
ARP HEIGHT: 2.00 OVERALL RMS: 0.012(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2016.2272)

X:	879058.815(m)	0.005(m)	879058.025(m)	0.005(m)
Y:	-5552178.804(m)	0.012(m)	-5552177.239(m)	0.012(m)
Z:	3003381.888(m)	0.006(m)	3003381.725(m)	0.006(m)

LAT:	28 16 30.22808	0.005(m)	28 16 30.24911	0.005(m)
E LON:	278 59 48.40573	0.003(m)	278 59 48.38608	0.003(m)
W LON:	81 0 11.59427	0.003(m)	81 0 11.61392	0.003(m)
EL HGT:	-8.041(m)	0.012(m)	-9.588(m)	0.012(m)
ORTHO HGT:	20.121(m)	0.025(m)	[NAVD88 (Computed using GEOID12B)]	

UTM COORDINATES STATE PLANE COORDINATES

	UTM (Zone 17)	SPC (0901 FL E)
Northing (Y) [meters]	3127673.163	436690.178
Easting (X) [meters]	499684.147	199684.039
Convergence [degrees]	-0.00152563	-0.00152563
Point Scale	0.99960000	0.99994118
Combined Factor	0.99960126	0.99994244

US NATIONAL GRID DESIGNATOR: 17RMM9968427673(NAD 83)

BASE STATIONS USED

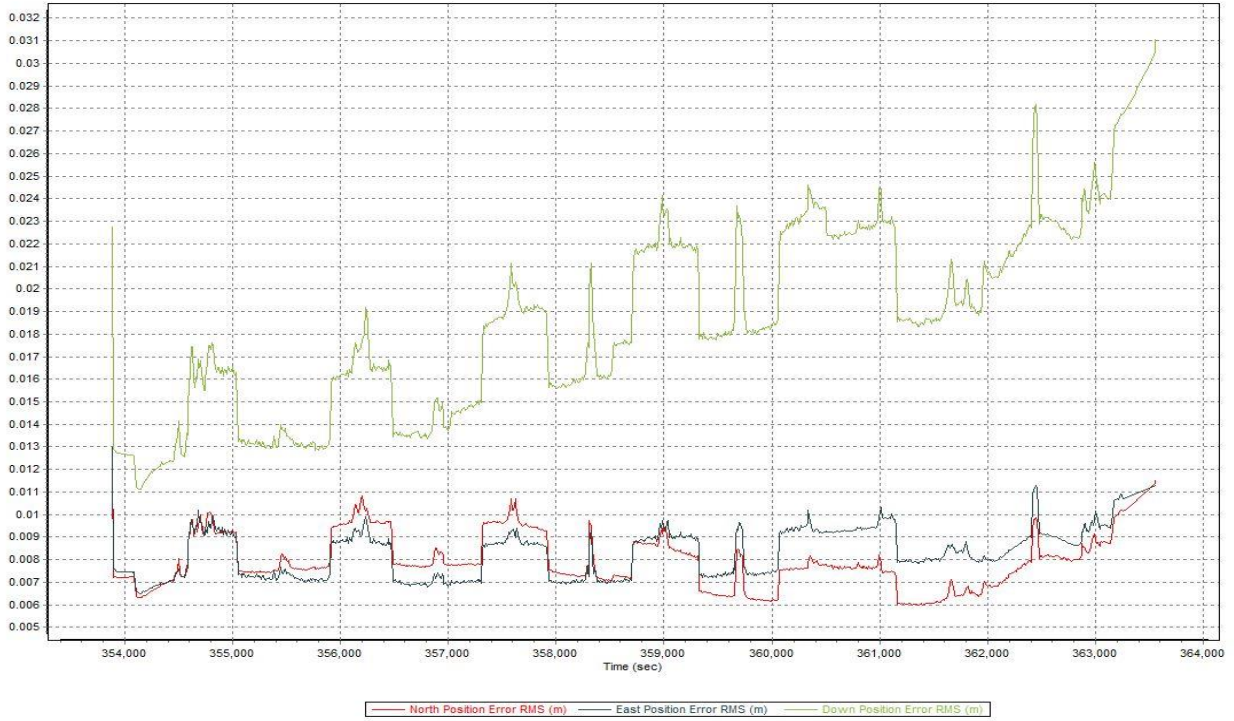
PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI3562	CCV5 CAPE CANAVERAL 5 CORS ARP	N282736.799	W0803242.818	49362.3
DF5773	ORMD ORMOND BEACH CORS ARP	N291753.469	W0810632.013	113861.6
DG9757	DLND DELAND CORS ARP	N290322.897	W0811547.480	90242.3

NEAREST NGS PUBLISHED CONTROL POINT

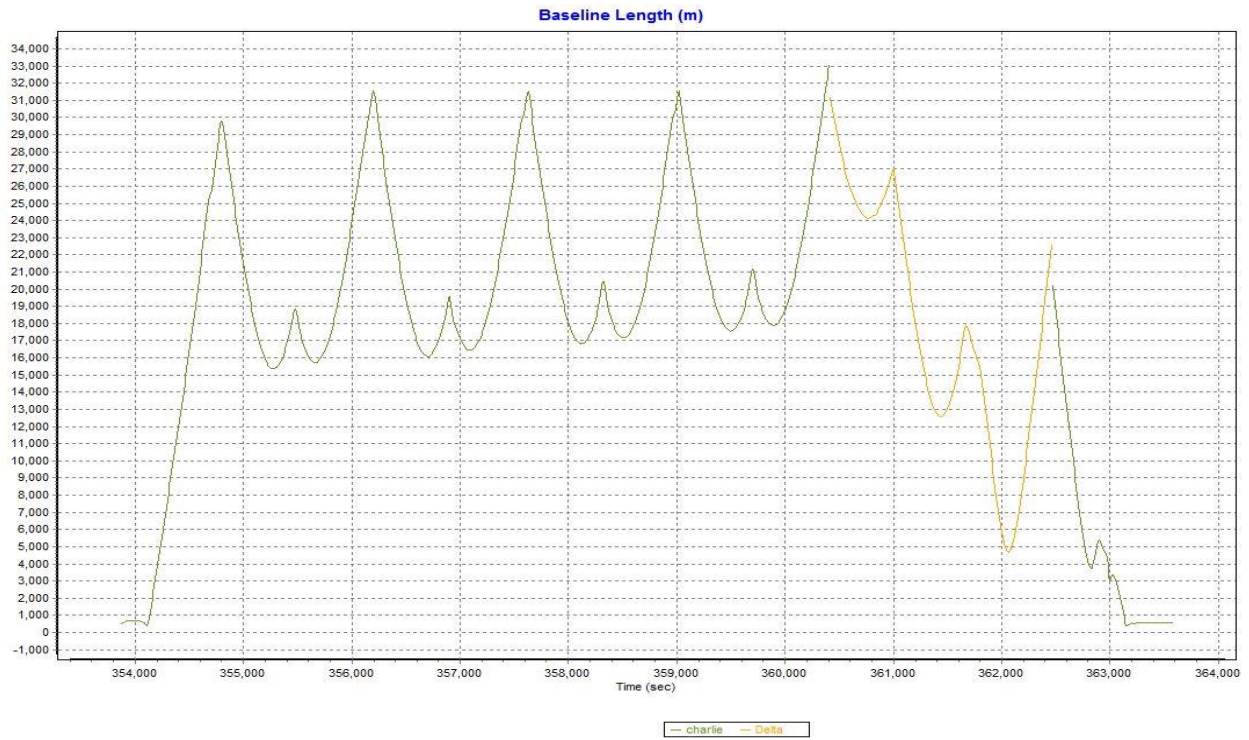
AK6933	FLGPS 44 AZ MK	N281630.227	W0810011.593	0.0
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

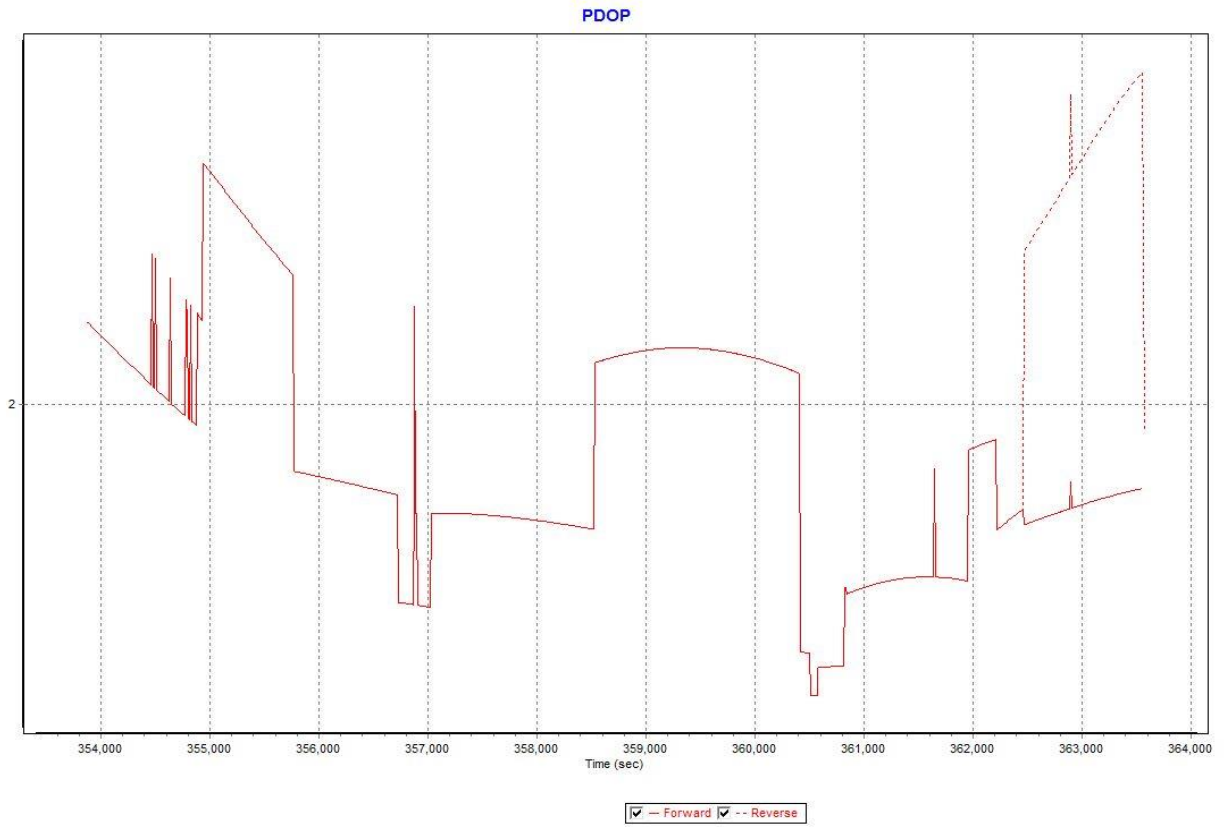
### Smoothed Performance Metrics, Reference Frame\_20160323\_2\_Report



### Baseline Length\_20160323\_2\_Report

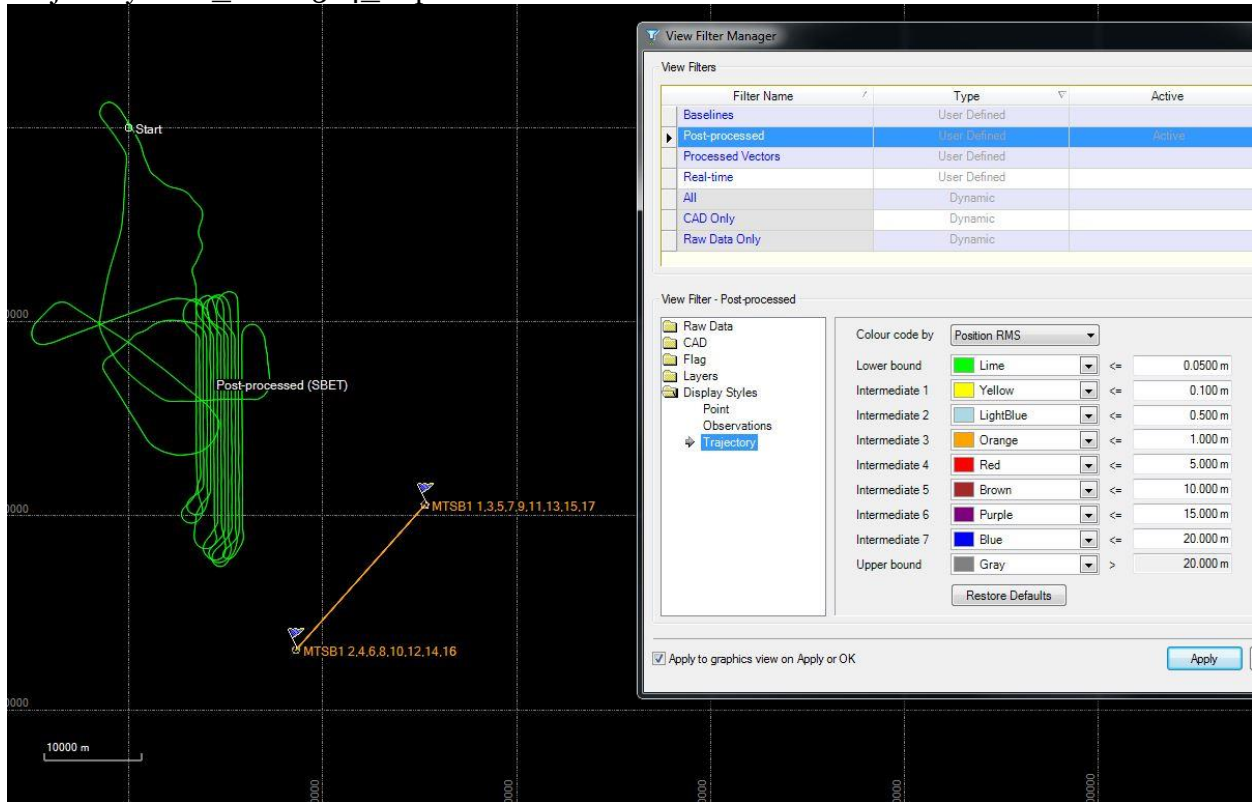


PDOP\_20160323\_2\_Report



### Mission 20160324

### Trajectory RMS\_20160324\_Report



### OPUS solution\_CHARLIE\_20160324

FILE: 6823084k41.16o OP1460058289708

#### NGS OPUS SOLUTION REPORT

=====

All computed coordinate accuracies are listed as peak-to-peak values.  
For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com)  
RINEX FILE: 6823084k.16o

DATE: April 07, 2016  
TIME: 19:45:43 UTC

SOFTWARE: page5 1209.04 master93.pl 160321 START: 2016/03/24 10:41:00  
EPHEMERIS: igr18894.eph [rapid] STOP: 2016/03/24 14:49:30

NAV FILE: brdc0840.16n                   OBS USED: 10916 / 11676 : 93%  
ANT NAME: LEIGS14    NONE               # FIXED AMB: 54 / 60 : 90%  
ARP HEIGHT: 2.00                        OVERALL RMS: 0.014(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000)            IGS08 (EPOCH:2016.2282)

X:   869407.234(m) 0.003(m)           869406.446(m) 0.003(m)  
Y:  -5571381.952(m) 0.017(m)       -5571380.383(m) 0.017(m)  
Z:   2970674.604(m) 0.016(m)       2970674.438(m) 0.016(m)

LAT:  27 56 25.64878   0.011(m)   27 56 25.66946   0.011(m)  
E LON: 278 52 9.85181   0.003(m)   278 52 9.83218   0.003(m)  
W LON:  81  7 50.14819   0.003(m)   81  7 50.16782   0.003(m)  
EL HGT:       -6.483(m) 0.023(m)       -8.038(m) 0.023(m)  
ORTHO HGT:       20.961(m) 0.041(m) [NAVD88 (Computed using GEOID12B)]

UTM COORDINATES   STATE PLANE COORDINATES

          UTM (Zone 17)        SPC (0901 FL E)  
Northing (Y) [meters]   3090613.487       399617.853  
Easting (X) [meters]    487152.344       187147.959  
Convergence [degrees]   -0.06119167       -0.06119167  
Point Scale            0.99960204       0.99994321  
Combined Factor         0.99960306       0.99994423

US NATIONAL GRID DESIGNATOR: 17RML8715290613(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DG9757	DLND DELAND CORS ARP	N290322.897	W0811547.480	124350.1
DF7046	BRTW BARTOW CORS ARP	N275658.642	W0814658.200	64195.5
DF5773	ORMD ORMOND BEACH CORS ARP	N291753.469	W0810632.013	150487.5

NEAREST NGS PUBLISHED CONTROL POINT

AF6097   JACKSON                    N275625.648 W0810750.148   0.0

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

- 8002 The Opus solution for your submitted RINEX file appears to be
- 8002 quite close to an NGS published control point. This suggests that
- 8002 you may have set your GPS receiver up over an NGS control point.
- 8002 Furthermore, our files indicate that this control point has not
- 8002 been recovered in the last five years.
- 8002 If you did indeed recover an NGS control point, we would
- 8002 appreciate receiving this information through our web based
- 8002 Mark Recovery Form at



8002 [http://www.ngs.noaa.gov/products\\_services.shtml#MarkRecoveryForm](http://www.ngs.noaa.gov/products_services.shtml#MarkRecoveryForm).  
8002

## OPUS solution\_DELTA\_20160324

FILE: 6821084k59.16o OP1460058456561

### NGS OPUS SOLUTION REPORT =====

All computed coordinate accuracies are listed as peak-to-peak values.  
For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com) DATE: April 07, 2016  
RINEX FILE: 6821084k.16o TIME: 19:48:48 UTC

SOFTWARE: page5 1209.04 master91.pl 160321 START: 2016/03/24 10:59:00  
EPHEMERIS: igr18894.eph [rapid] STOP: 2016/03/24 14:50:00  
NAV FILE: brdc0840.16n OBS USED: 9689 / 10748 : 90%  
ANT NAME: LEIGS14 NONE # FIXED AMB: 50 / 50 : 100%  
ARP HEIGHT: 2.00 OVERALL RMS: 0.013(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2016.2282)

X:	857289.203(m)	0.005(m)	857288.416(m)	0.005(m)
Y:	-5580320.192(m)	0.020(m)	-5580318.622(m)	0.020(m)
Z:	2957475.597(m)	0.019(m)	2957475.429(m)	0.019(m)

LAT:	27 48 20.62111	0.013(m)	27 48 20.64161	0.013(m)
E LON:	278 44 2.07299	0.002(m)	278 44 2.05328	0.002(m)
W LON:	81 15 57.92701	0.002(m)	81 15 57.94672	0.002(m)
EL HGT:	-8.097(m)	0.025(m)	-9.654(m)	0.025(m)
ORTHO HGT:	18.817(m)	0.044(m)	[NAVD88 (Computed using GEOID12B)]	

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 17)	SPC (0902 FL W)
Northing (Y) [meters]	3075710.569	384897.502
Easting (X) [meters]	473790.453	272314.598
Convergence [degrees]	-0.12412545	0.34236521
Point Scale	0.99960848	1.00000570
Combined Factor	0.99960975	1.00000697

US NATIONAL GRID DESIGNATOR: 17RML7379075710(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DG9757	DLND DELAND CORS ARP	N290322.897	W0811547.480	138600.6
DF5773	ORMD ORMOND BEACH CORS ARP	N291753.469	W0810632.013	166115.4
DF7046	BRTW BARTOW CORS ARP	N275658.642	W0814658.200	53324.9

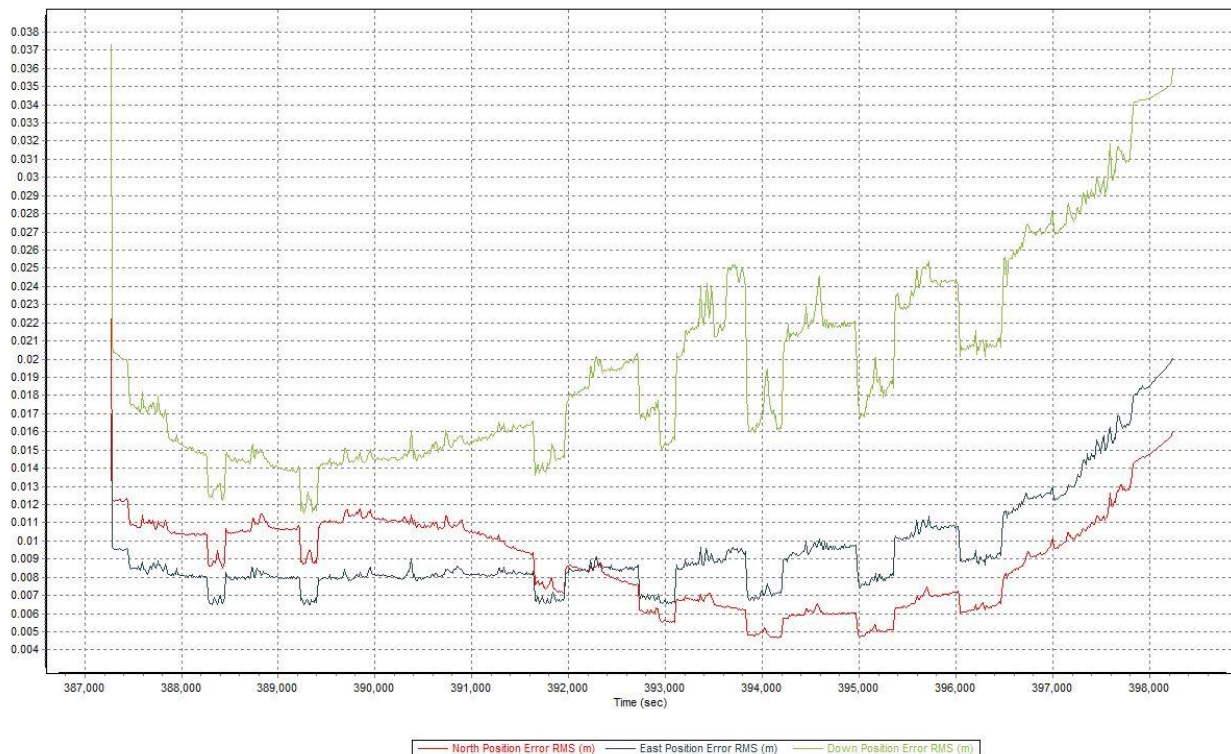
NEAREST NGS PUBLISHED CONTROL POINT

AF7643	K 113	N274820.621	W0811557.927	0.0
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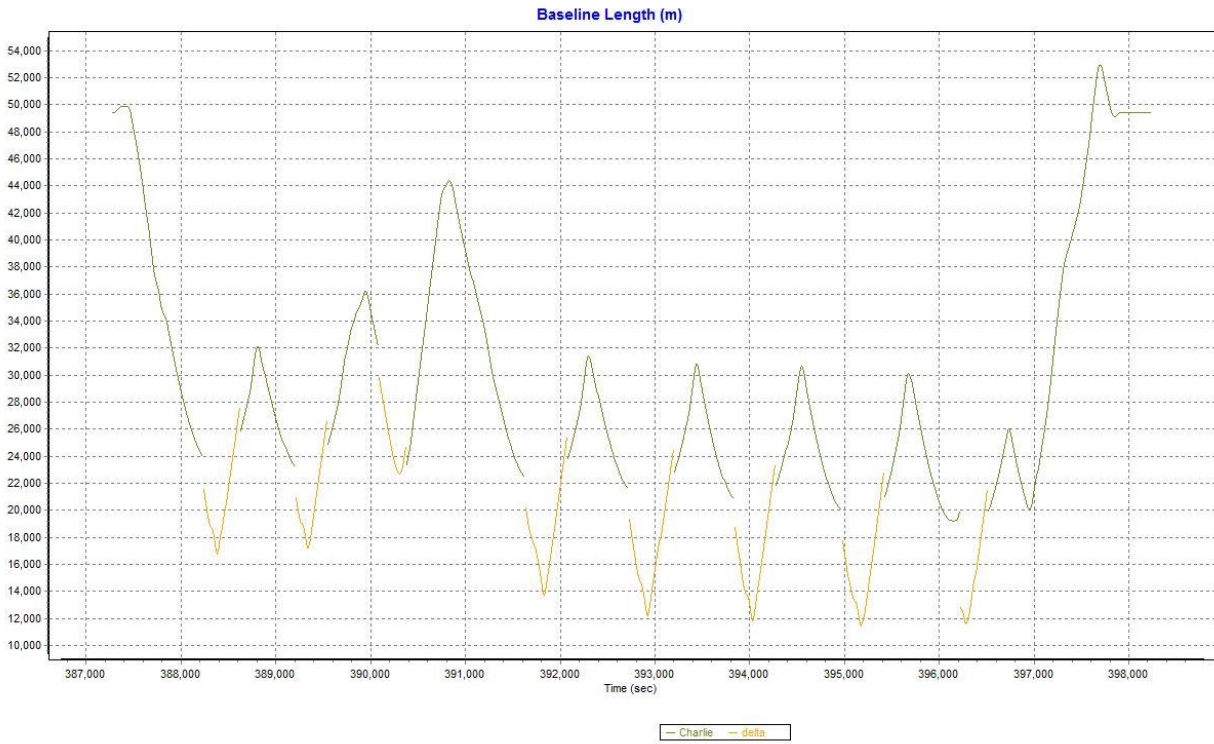
This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

8002 The Opus solution for your submitted RINEX file appears to be  
8002 quite close to an NGS published control point. This suggests that  
8002 you may have set your GPS receiver up over an NGS control point.  
8002 Furthermore, our files indicate that this control point has not  
8002 been recovered in the last five years.  
8002 If you did indeed recover an NGS control point, we would  
8002 appreciate receiving this information through our web based  
8002 Mark Recovery Form at  
8002 [http://www.ngs.noaa.gov/products\\_services.shtml#MarkRecoveryForm](http://www.ngs.noaa.gov/products_services.shtml#MarkRecoveryForm).  
8002

Smoothed Performance Metrics, Reference Frame\_20160324\_Report



### Baseline Length\_20160324\_Report

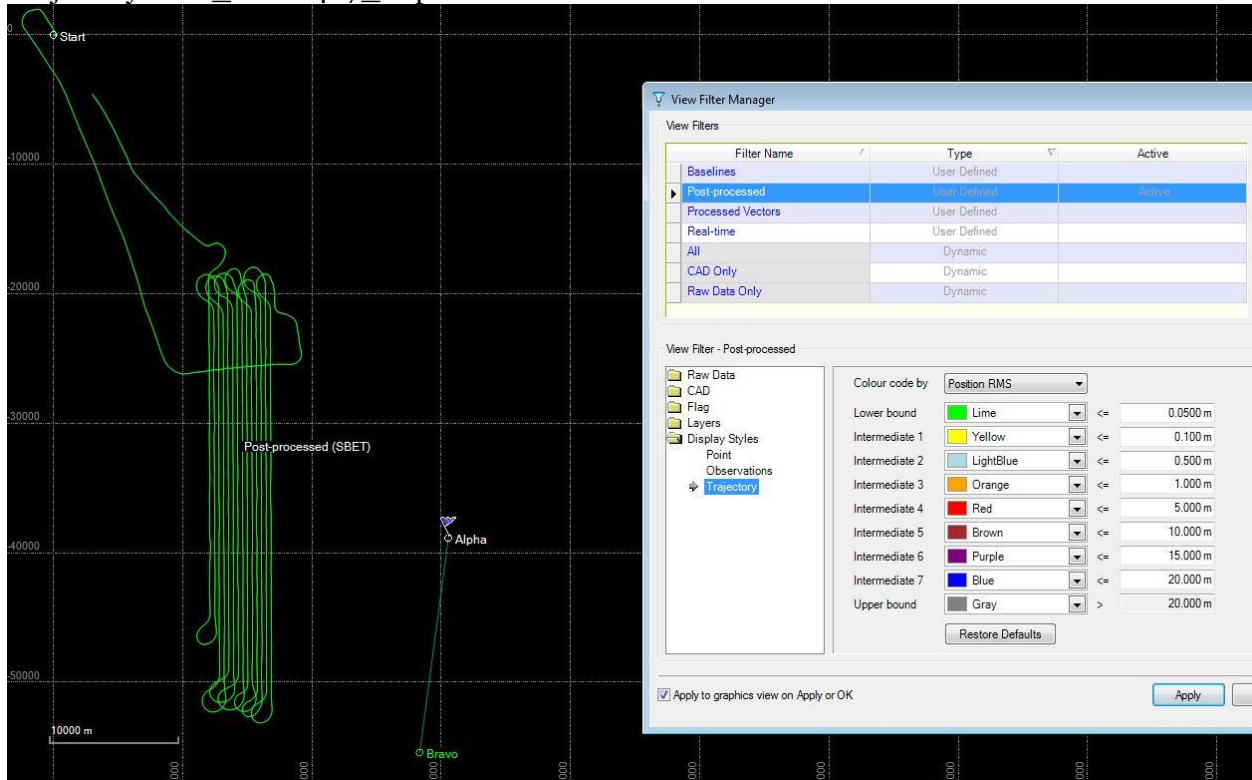


### PDOP\_20160324\_Report



### Mission 20160407

### Trajectory RMS\_20160407\_Report



### OPUS solution\_ALPHA\_20160407

FILE: 6790098a00.16o OP1460058566151

2005 NOTE: The IGS precise and IGS rapid orbits were not available  
2005 at processing time. The IGS ultra-rapid orbit was/will be used to  
2005 process the data.  
2005

#### NGS OPUS SOLUTION REPORT

=====

All computed coordinate accuracies are listed as peak-to-peak values.  
For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com)  
RINEX FILE: 6790098a.16o

DATE: April 07, 2016  
TIME: 19:50:40 UTC

SOFTWARE: page5 1209.04 master92.pl 160321 START: 2016/04/07 00:00:00  
EPHEMERIS: igu18914.eph [ultra-rapid] STOP: 2016/04/07 03:10:00  
NAV FILE: brdc0980.16n OBS USED: 7972 / 8871 : 90%  
ANT NAME: LEIGS14 NONE # FIXED AMB: 47 / 55 : 85%  
ARP HEIGHT: 2.00 OVERALL RMS: 0.015(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2016.2652)

X: 869407.238(m) 0.009(m) 869406.449(m) 0.009(m)  
Y: -5571381.949(m) 0.042(m) -5571380.380(m) 0.042(m)  
Z: 2970674.610(m) 0.016(m) 2970674.444(m) 0.016(m)

LAT: 27 56 25.64899 0.013(m) 27 56 25.66967 0.013(m)  
E LON: 278 52 9.85197 0.003(m) 278 52 9.83231 0.003(m)  
W LON: 81 7 50.14803 0.003(m) 81 7 50.16769 0.003(m)  
EL HGT: -6.482(m) 0.045(m) -8.037(m) 0.045(m)  
ORTHO HGT: 20.962(m) 0.078(m) [NAVD88 (Computed using GEOID12B)]

UTM COORDINATES STATE PLANE COORDINATES

UTM (Zone 17) SPC (0901 FL E)

Northing (Y) [meters]	3090613.493	399617.860
Easting (X) [meters]	487152.348	187147.963
Convergence [degrees]	-0.06119164	-0.06119164
Point Scale	0.99960204	0.99994321
Combined Factor	0.99960306	0.99994423

US NATIONAL GRID DESIGNATOR: 17RML8715290613(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DF7046	BRTW BARTOW CORS ARP	N275658.642	W0814658.200	64195.5
DF5773	ORMD ORMOND BEACH CORS ARP	N291753.469	W0810632.013	150487.5
DI3562	CCV5 CAPE CANAVERAL 5 CORS ARP	N282736.799	W0803242.818	81367.8

NEAREST NGS PUBLISHED CONTROL POINT

AF6097	JACKSON	N275625.648	W0810750.148	0.0
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This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

8002 The Opus solution for your submitted RINEX file appears to be  
8002 quite close to an NGS published control point. This suggests that  
8002 you may have set your GPS receiver up over an NGS control point.  
8002 Furthermore, our files indicate that this control point has not

8002 been recovered in the last five years.  
8002 If you did indeed recover an NGS control point, we would  
8002 appreciate receiving this information through our web based  
8002 Mark Recovery Form at  
8002 [http://www.ngs.noaa.gov/products\\_services.shtml#MarkRecoveryForm](http://www.ngs.noaa.gov/products_services.shtml#MarkRecoveryForm).  
8002

**OPUS solution BRAVO\_20160407**

FILE: 6829098a00.16o OP1460058625919

2005 NOTE: The IGS precise and IGS rapid orbits were not available  
2005 at processing time. The IGS ultra-rapid orbit was/will be used to  
2005 process the data.  
2005

NGS OPUS SOLUTION REPORT  
=====

All computed coordinate accuracies are listed as peak-to-peak values.  
For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com) DATE: April 07, 2016  
RINEX FILE: 6829098a.16o TIME: 19:51:51 UTC

SOFTWARE: page5 1209.04 master92.pl 160321 START: 2016/04/07 00:00:00  
EPHEMERIS: igu18914.eph [ultra-rapid] STOP: 2016/04/07 03:10:00  
NAV FILE: brdc0980.16n OBS USED: 8316 / 8913 : 93%  
ANT NAME: LEIGS14 NONE # FIXED AMB: 47 / 50 : 94%  
ARP HEIGHT: 2.00 OVERALL RMS: 0.014(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2016.2652)

X:	868363.486(m)	0.011(m)	868362.698(m)	0.011(m)
Y:	-5579377.594(m)	0.034(m)	-5579376.023(m)	0.034(m)
Z:	2956032.082(m)	0.014(m)	2956031.915(m)	0.014(m)

LAT:	27 47 27.61214	0.011(m)	27 47 27.63269	0.011(m)
E LON:	278 50 47.14724	0.008(m)	278 50 47.12762	0.008(m)
W LON:	81 9 12.85276	0.008(m)	81 9 12.87238	0.008(m)
EL HGT:	-8.293(m)	0.037(m)	-9.852(m)	0.037(m)
ORTHO HGT:	18.529(m)	0.064(m)	[NAVD88 (Computed using GEOID12B)]	

UTM COORDINATES STATE PLANE COORDINATES  
UTM (Zone 17) SPC (0901 FL E)  
Northing (Y) [meters] 3074060.548 383059.265

Easting (X) [meters]	484871.547	184866.384
Convergence [degrees]	-0.07160190	-0.07160190
Point Scale	0.99960282	0.99994400
Combined Factor	0.99960412	0.99994530

US NATIONAL GRID DESIGNATOR: 17RML8487174060(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DF7046	BRTW BARTOW CORS ARP	N275658.642	W0814658.200	64413.9
DF5773	ORMD ORMOND BEACH CORS ARP	N291753.469	W0810632.013	167090.6
DG9757	DLND DELAND CORS ARP	N290322.897	W0811547.480	140642.5

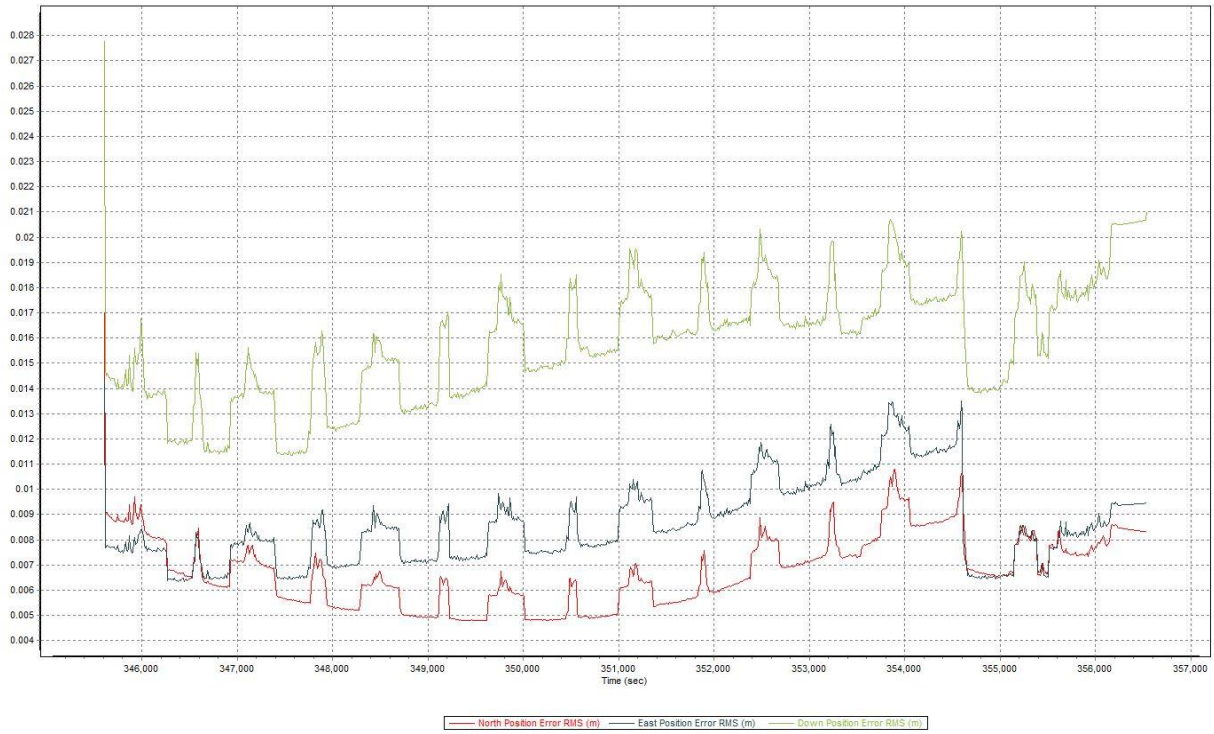
NEAREST NGS PUBLISHED CONTROL POINT

AF6121	S 197	N274727.611	W0810912.847	0.2
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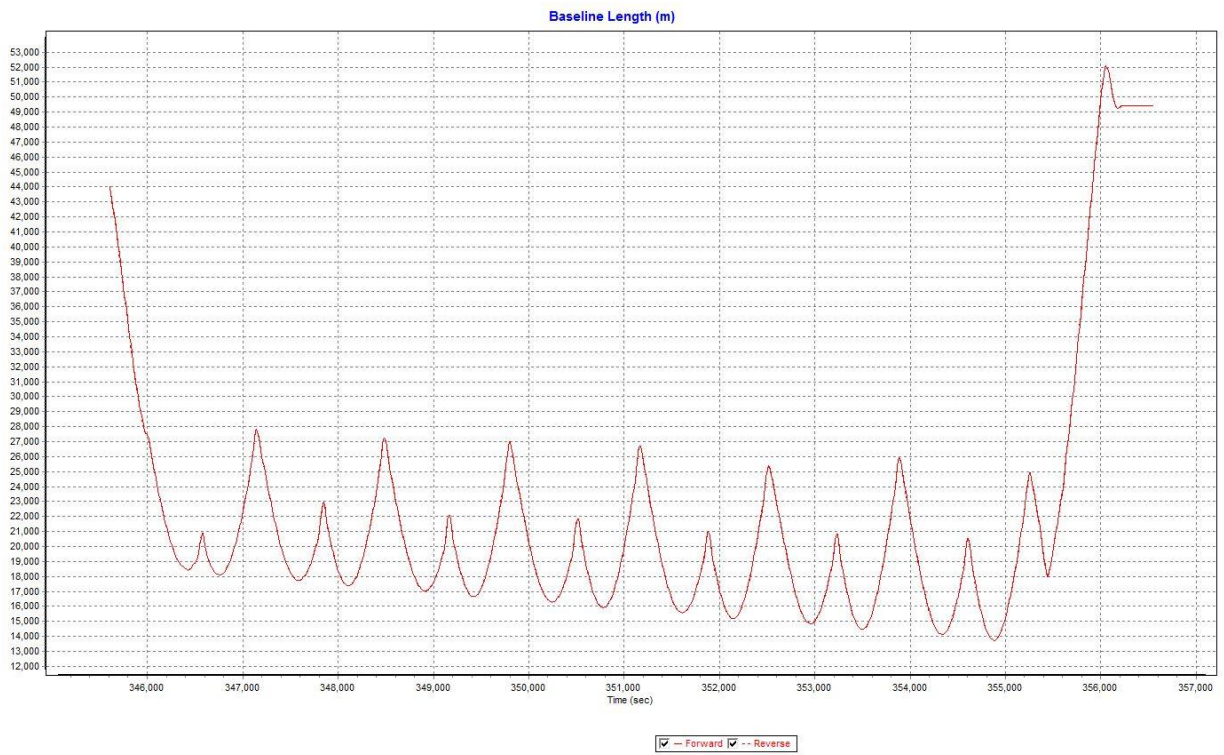
This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

8002 The Opus solution for your submitted RINEX file appears to be  
8002 quite close to an NGS published control point. This suggests that  
8002 you may have set your GPS receiver up over an NGS control point.  
8002 Furthermore, our files indicate that this control point has not  
8002 been recovered in the last five years.  
8002 If you did indeed recover an NGS control point, we would  
8002 appreciate receiving this information through our web based  
8002 Mark Recovery Form at  
8002 [http://www.ngs.noaa.gov/products\\_services.shtml#MarkRecoveryForm](http://www.ngs.noaa.gov/products_services.shtml#MarkRecoveryForm).  
8002

### Smoothed Performance Metrics, Reference Frame\_20160407\_Report

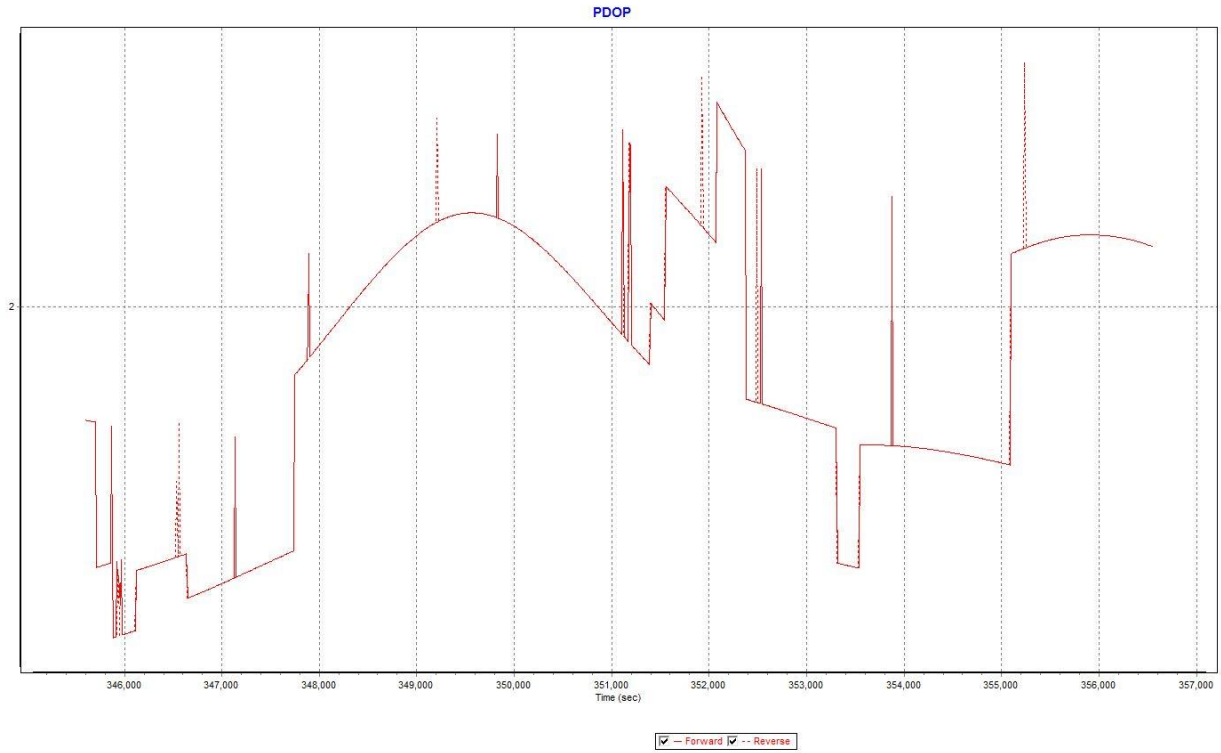


### Baseline Length\_20160407\_Report



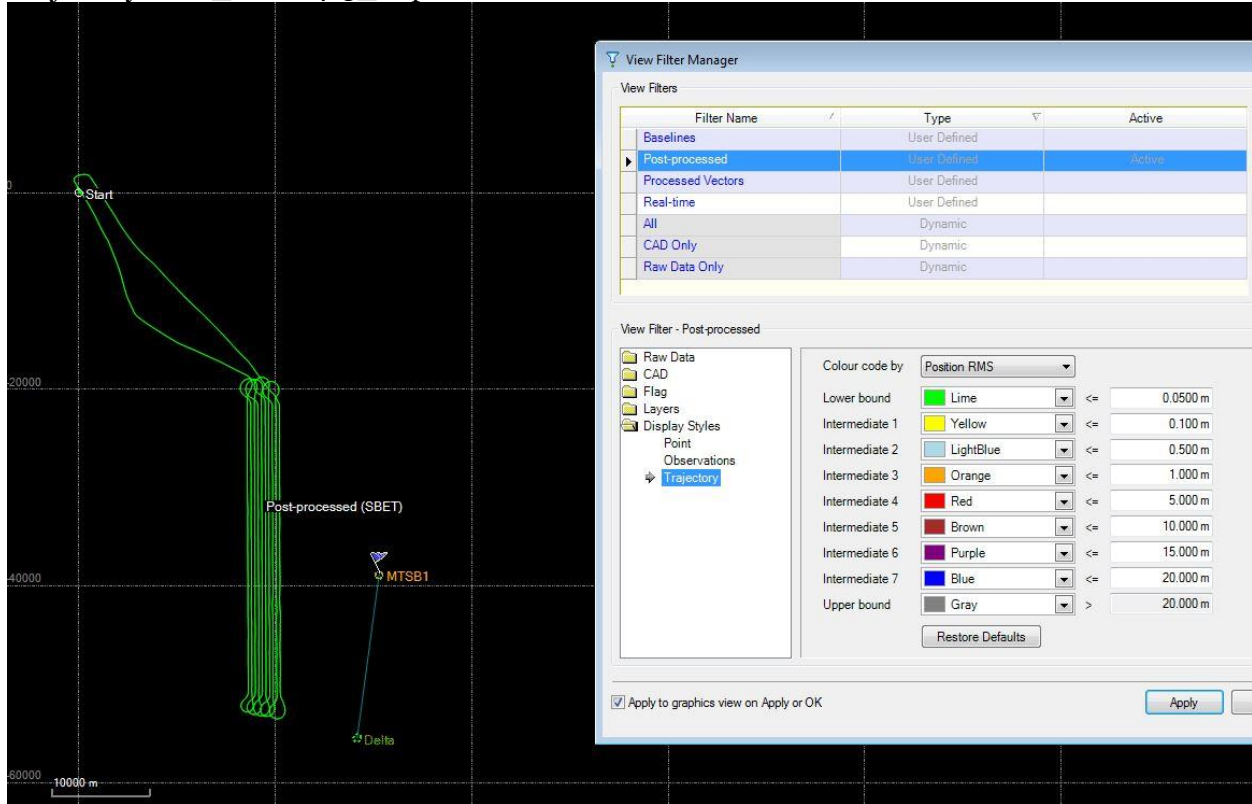


PDOP\_20160407\_Report



### Mission 20160413

### Trajectory RMS\_20160413\_Report



### OPUS solution BRAVO\_20160413

FILE: 6829104j36.16o OP1461066006321

### NGS OPUS SOLUTION REPORT

All computed coordinate accuracies are listed as peak-to-peak values.  
For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com)  
RINEX FILE: 6829104j.16o

DATE: April 19, 2016  
TIME: 11:41:17 UTC

SOFTWARE: page5 1209.04 master92.pl 160321 START: 2016/04/13 09:36:00  
EPHEMERIS: igr18923.eph [rapid] STOP: 2016/04/13 14:44:00

NAV FILE: brdc1040.16n                   OBS USED: 13528 / 14441 : 94%  
ANT NAME: LEIGS14    NONE           # FIXED AMB: 70 / 78 : 90%  
ARP HEIGHT: 2.00                   OVERALL RMS: 0.014(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000)           IGS08 (EPOCH:2016.2828)

X: 869407.229(m) 0.008(m)           869406.440(m) 0.008(m)  
Y: -5571381.945(m) 0.003(m)       -5571380.376(m) 0.003(m)  
Z: 2970674.608(m) 0.009(m)       2970674.442(m) 0.009(m)

LAT: 27 56 25.64901 0.007(m)   27 56 25.66969 0.007(m)  
E LON: 278 52 9.85167 0.008(m)  278 52 9.83200 0.008(m)  
W LON: 81 7 50.14833 0.008(m)   81 7 50.16800 0.008(m)  
EL HGT:       -6.488(m) 0.007(m)       -8.043(m) 0.007(m)  
ORTHO HGT:     20.956(m) 0.018(m) [NAVD88 (Computed using GEOID12B)]

UTM COORDINATES   STATE PLANE COORDINATES

UTM (Zone 17)       SPC (0901 FL E)  
Northing (Y) [meters] 3090613.494   399617.860  
Easting (X) [meters] 487152.340   187147.955  
Convergence [degrees] -0.06119168   -0.06119168  
Point Scale        0.99960204   0.99994321  
Combined Factor     0.99960306   0.99994423

US NATIONAL GRID DESIGNATOR: 17RML8715290613(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DF7990	ZEFR ZEPHYRHILLS CORS ARP	N281339.322	W0820952.671	106493.7
DF5773	ORMD ORMOND BEACH CORS ARP	N291753.469	W0810632.013	150487.5
DG9757	DLND DELAND CORS ARP	N290322.897	W0811547.480	124350.1

NEAREST NGS PUBLISHED CONTROL POINT

AF6097   JACKSON                   N275625.648 W0810750.148   0.0

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

- 8002 The Opus solution for your submitted RINEX file appears to be
- 8002 quite close to an NGS published control point. This suggests that
- 8002 you may have set your GPS receiver up over an NGS control point.
- 8002 Furthermore, our files indicate that this control point has not
- 8002 been recovered in the last five years.
- 8002 If you did indeed recover an NGS control point, we would
- 8002 appreciate receiving this information through our web based
- 8002 Mark Recovery Form at

8002 [http://www.ngs.noaa.gov/products\\_services.shtml#MarkRecoveryForm](http://www.ngs.noaa.gov/products_services.shtml#MarkRecoveryForm).  
8002

### OPUS solution\_DELTA\_20160413

FILE: 6821104j36.16o OP1461066075910

#### NGS OPUS SOLUTION REPORT =====

All computed coordinate accuracies are listed as peak-to-peak values.  
For additional information: <http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy>

USER: [rperez@aca-net.com](mailto:rperez@aca-net.com) DATE: April 19, 2016  
RINEX FILE: 6821104j.16o TIME: 11:42:22 UTC

SOFTWARE: page5 1209.04 master50.pl 160321 START: 2016/04/13 09:36:00  
EPHEMERIS: igr18923.eph [rapid] STOP: 2016/04/13 14:43:00  
NAV FILE: brdc1040.16n OBS USED: 13735 / 14395 : 95%  
ANT NAME: LEIGS14 NONE # FIXED AMB: 62 / 63 : 98%  
ARP HEIGHT: 2.00 OVERALL RMS: 0.011(m)

REF FRAME: NAD\_83(2011)(EPOCH:2010.0000) IGS08 (EPOCH:2016.2828)

X:	868363.473(m)	0.007(m)	868362.685(m)	0.007(m)
Y:	-5579377.572(m)	0.013(m)	-5579376.001(m)	0.013(m)
Z:	2956032.062(m)	0.005(m)	2956031.895(m)	0.005(m)

LAT:	27 47 27.61193	0.007(m)	27 47 27.63248	0.007(m)
E LON:	278 50 47.14689	0.006(m)	278 50 47.12727	0.006(m)
W LON:	81 9 12.85311	0.006(m)	81 9 12.87273	0.006(m)
EL HGT:	-8.324(m)	0.011(m)	-9.882(m)	0.011(m)
ORTHO HGT:	18.498(m)	0.023(m)	[NAVD88 (Computed using GEOID12B)]	

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 17)	SPC (0901 FL E)
Northing (Y) [meters]	3074060.541	383059.258
Easting (X) [meters]	484871.538	184866.374
Convergence [degrees]	-0.07160194	-0.07160194
Point Scale	0.99960282	0.99994400
Combined Factor	0.99960413	0.99994531

US NATIONAL GRID DESIGNATOR: 17RML8487174060(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DI3562	CCV5 CAPE CANAVERAL 5 CORS ARP	N282736.799	W0803242.818	95248.2
DF5773	ORMD ORMOND BEACH CORS ARP	N291753.469	W0810632.013	167090.6
DG9757	DLND DELAND CORS ARP	N290322.897	W0811547.480	140642.5

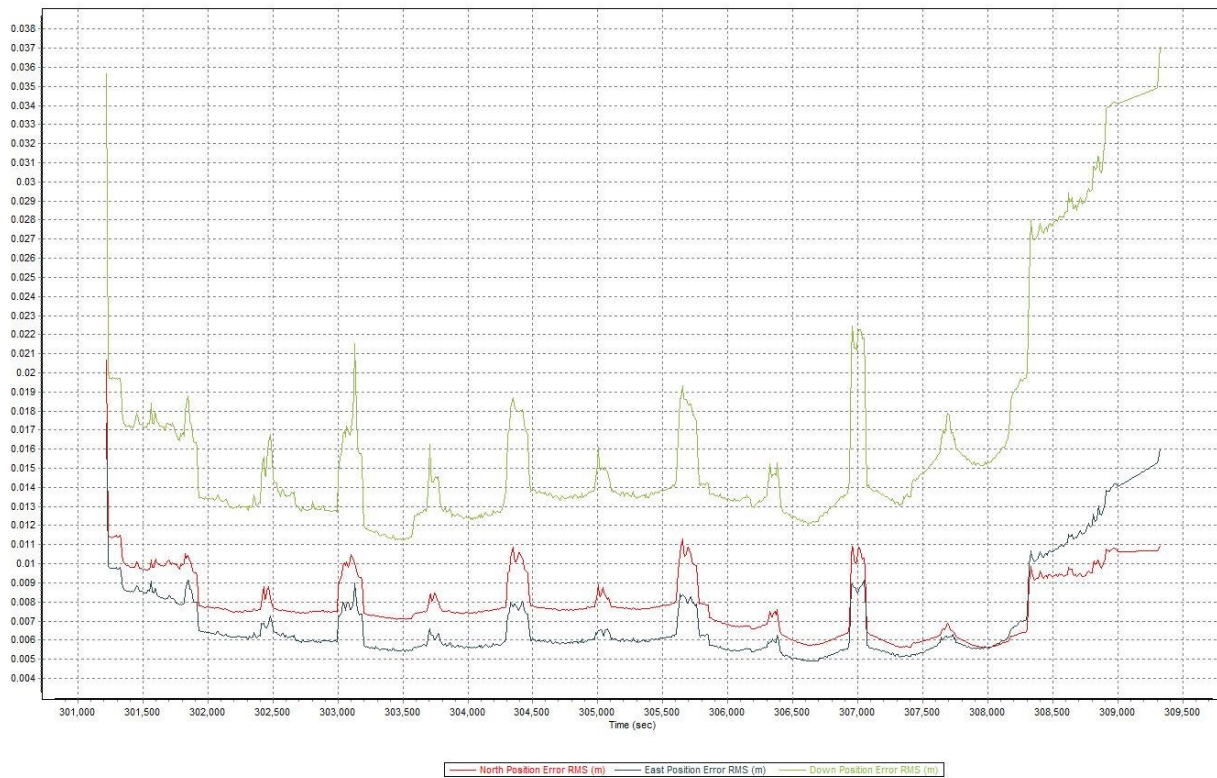
NEAREST NGS PUBLISHED CONTROL POINT

AF6121	S 197	N274727.611	W0810912.847	0.2
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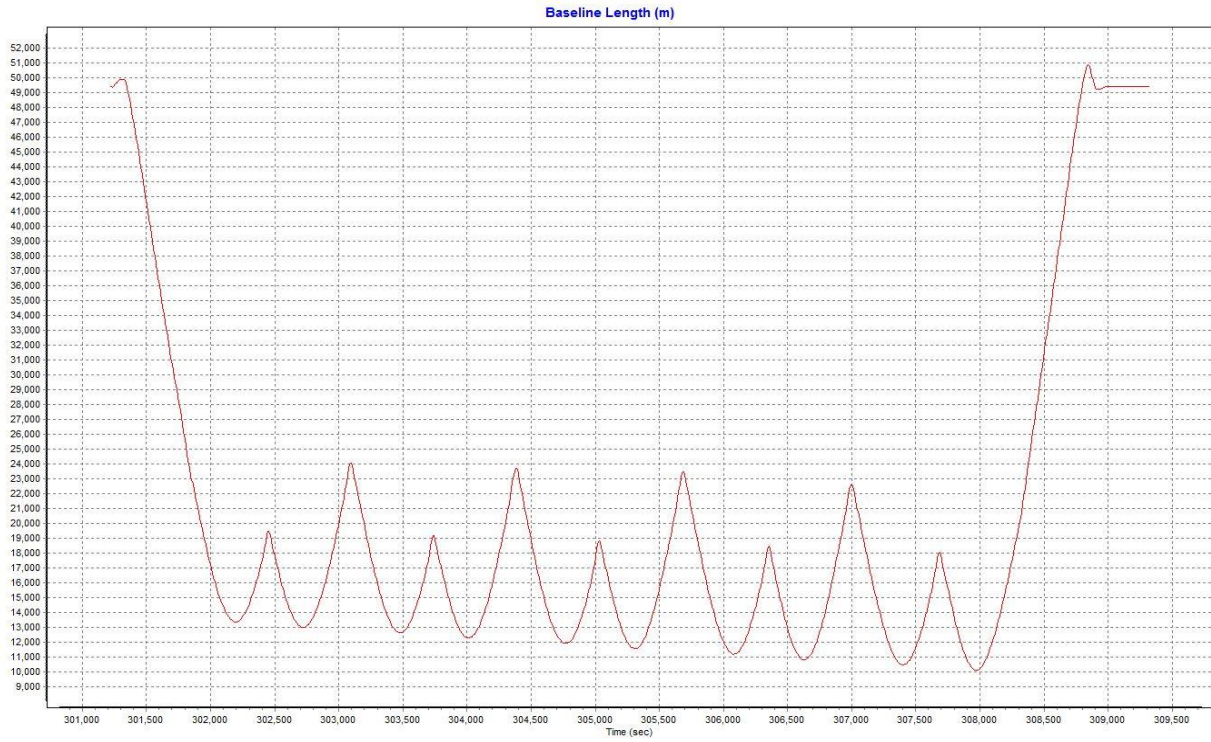
This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

8002 The Opus solution for your submitted RINEX file appears to be  
8002 quite close to an NGS published control point. This suggests that  
8002 you may have set your GPS receiver up over an NGS control point.  
8002 Furthermore, our files indicate that this control point has not  
8002 been recovered in the last five years.  
8002 If you did indeed recover an NGS control point, we would  
8002 appreciate receiving this information through our web based  
8002 Mark Recovery Form at  
8002 [http://www.ngs.noaa.gov/products\\_services.shtml#MarkRecoveryForm](http://www.ngs.noaa.gov/products_services.shtml#MarkRecoveryForm).  
8002

Smoothed Performance Metrics, Reference Frame\_20160413\_Report



### Baseline Length\_20160413\_Report



### PDOP\_20160413\_Report

