

# Appendix A

## GPS / IMU Processing Statistics Flight Logs

There were seven total lifts. Graph reports generated from processing software and flight logs are found on the following pages.

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**April 29, 2017-A (N73TM, SN7178) ..... Page 45**  
     Flight Log ..... Page 52

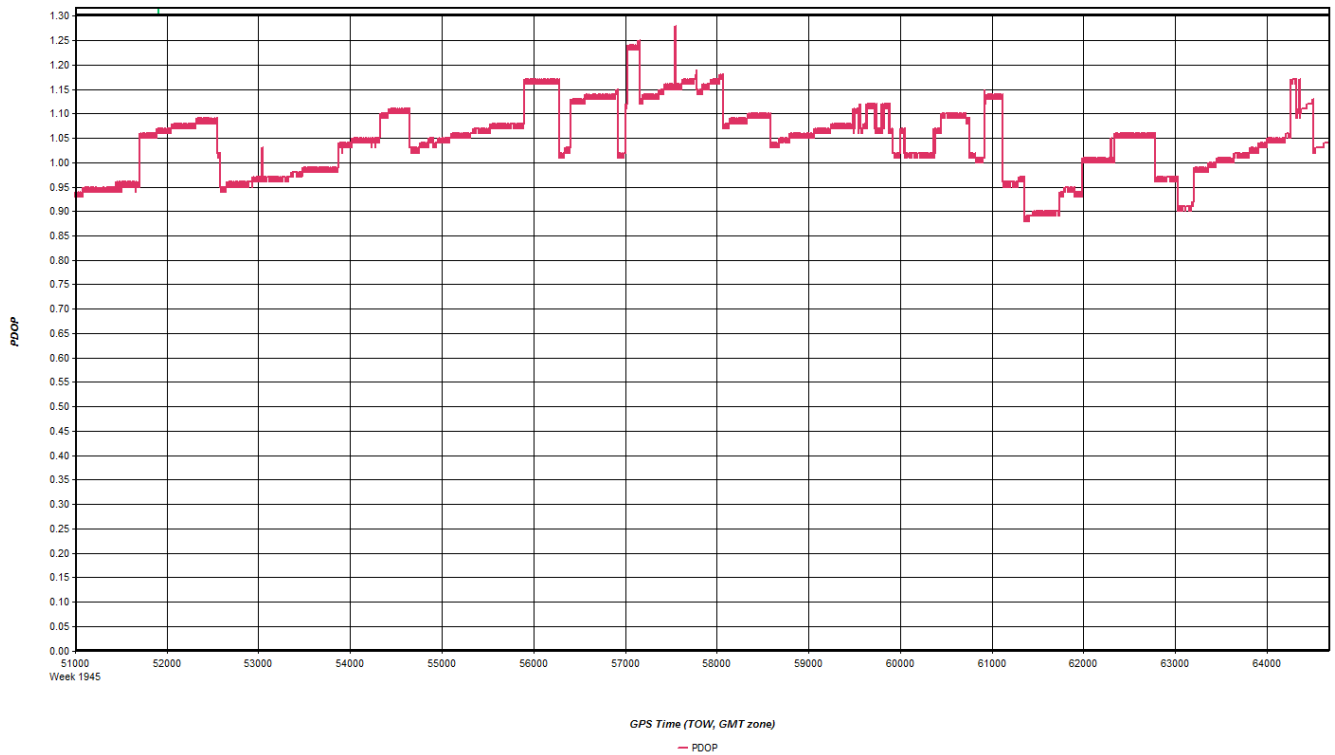
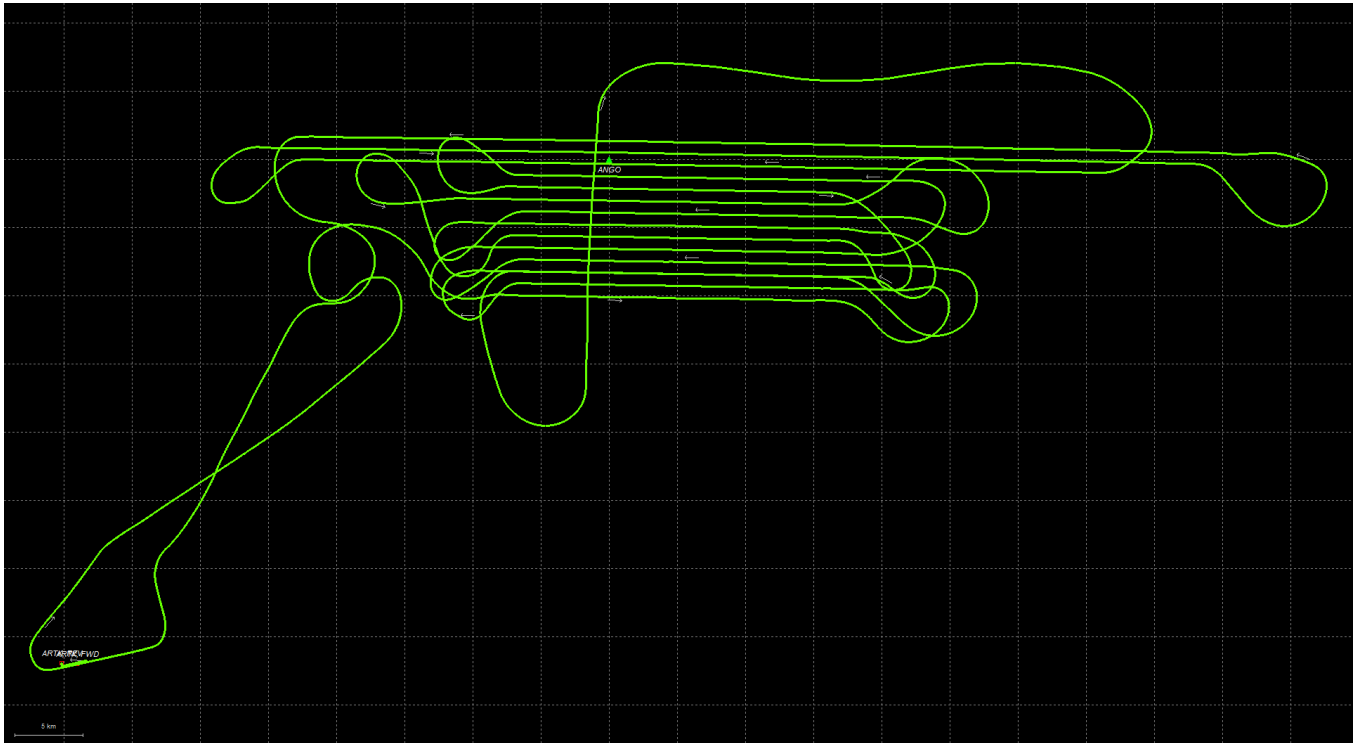
**April 29, 2017-B (N262AS, SN7161) ..... Page 53**  
     Flight Log ..... Page 61

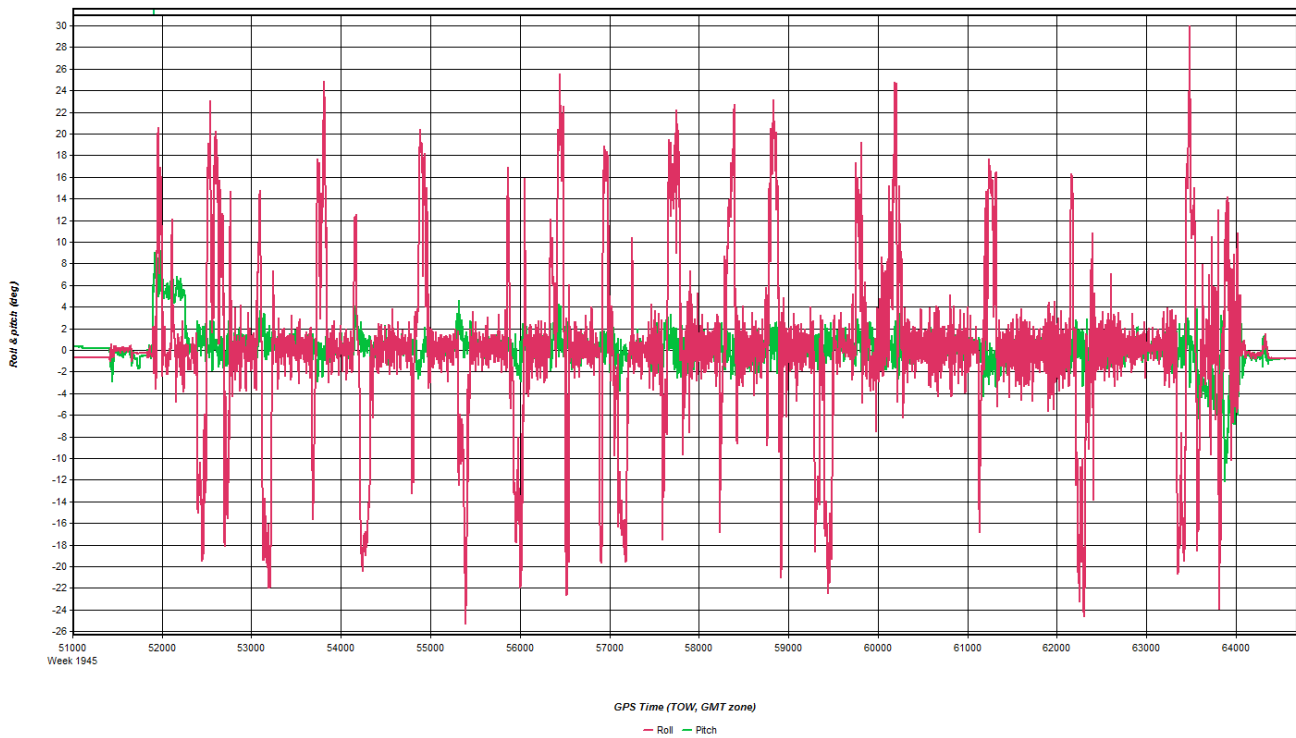
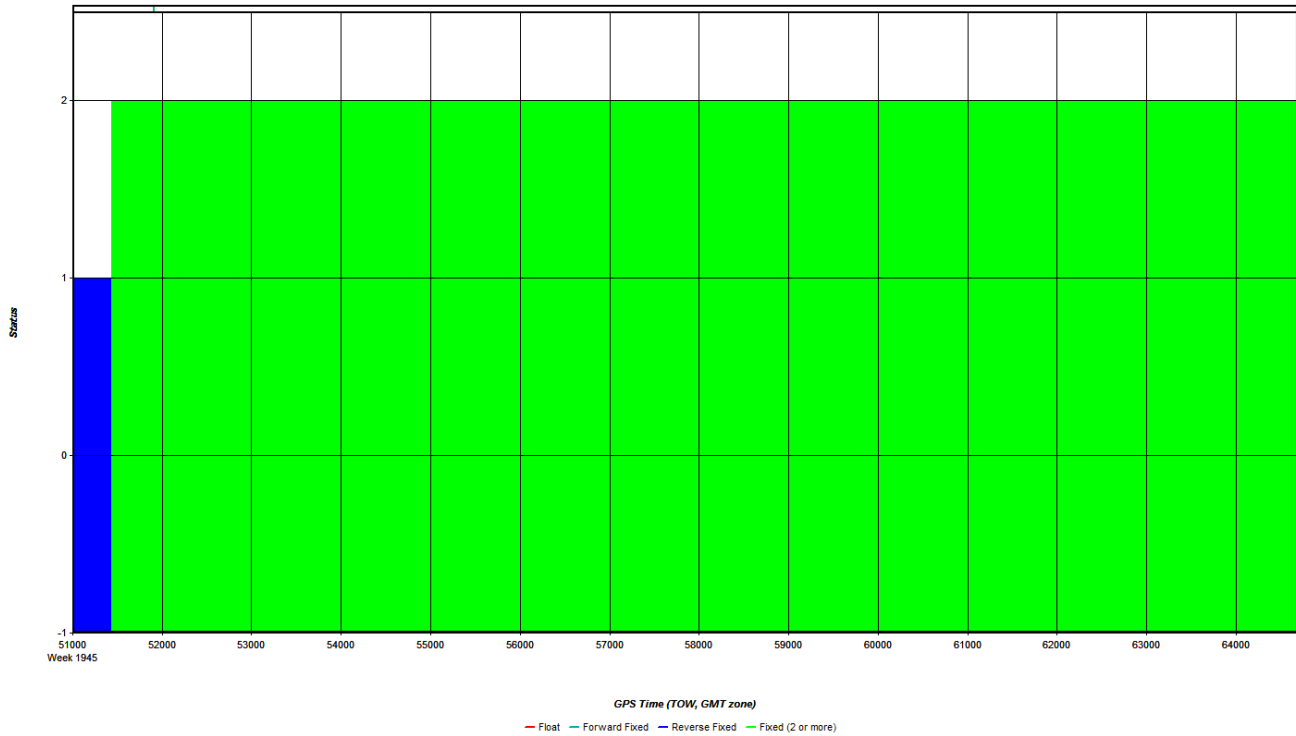
**April 29, 2017-B (N73TM, SN7178) ..... Page 62**  
     Flight Log ..... Page 69

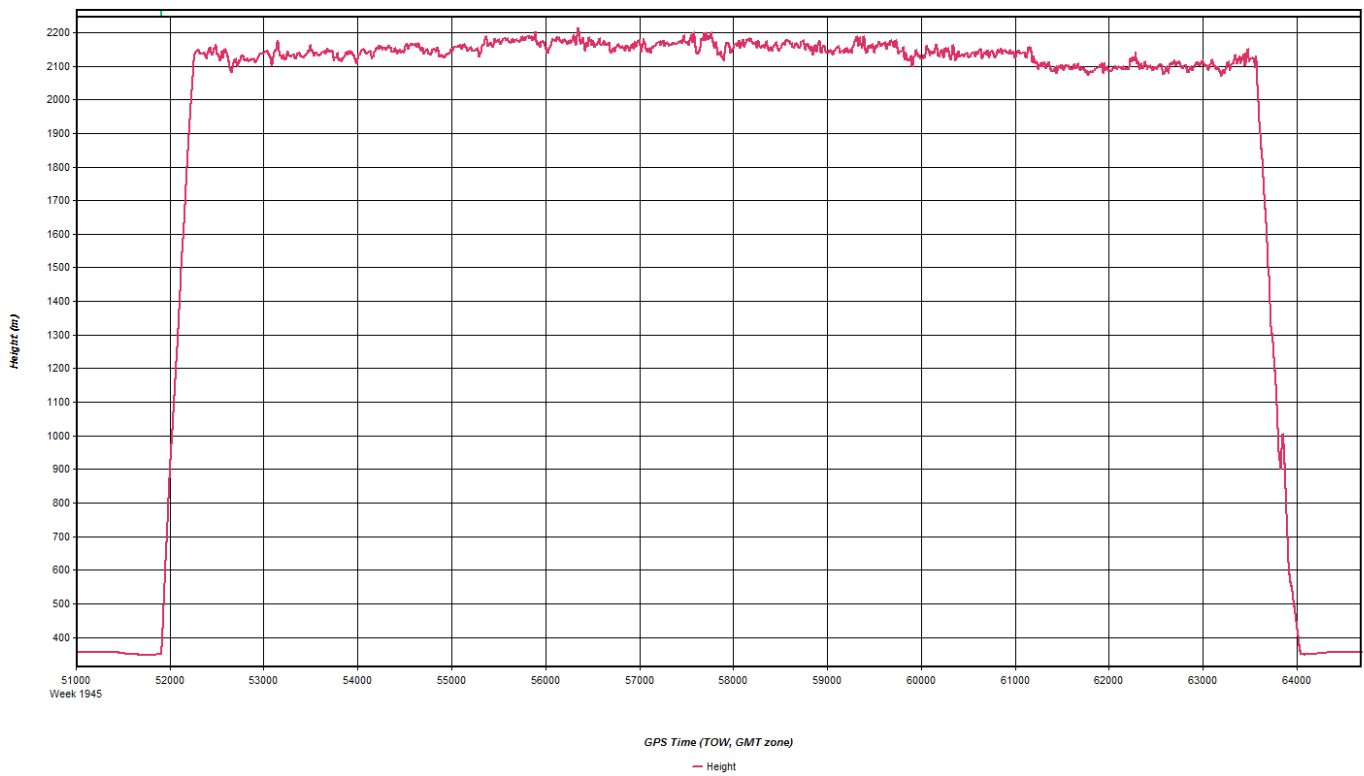
**April 29, 2017-C (N262AS, SN7161) ..... Page 70**  
     Flight Log ..... Page 78

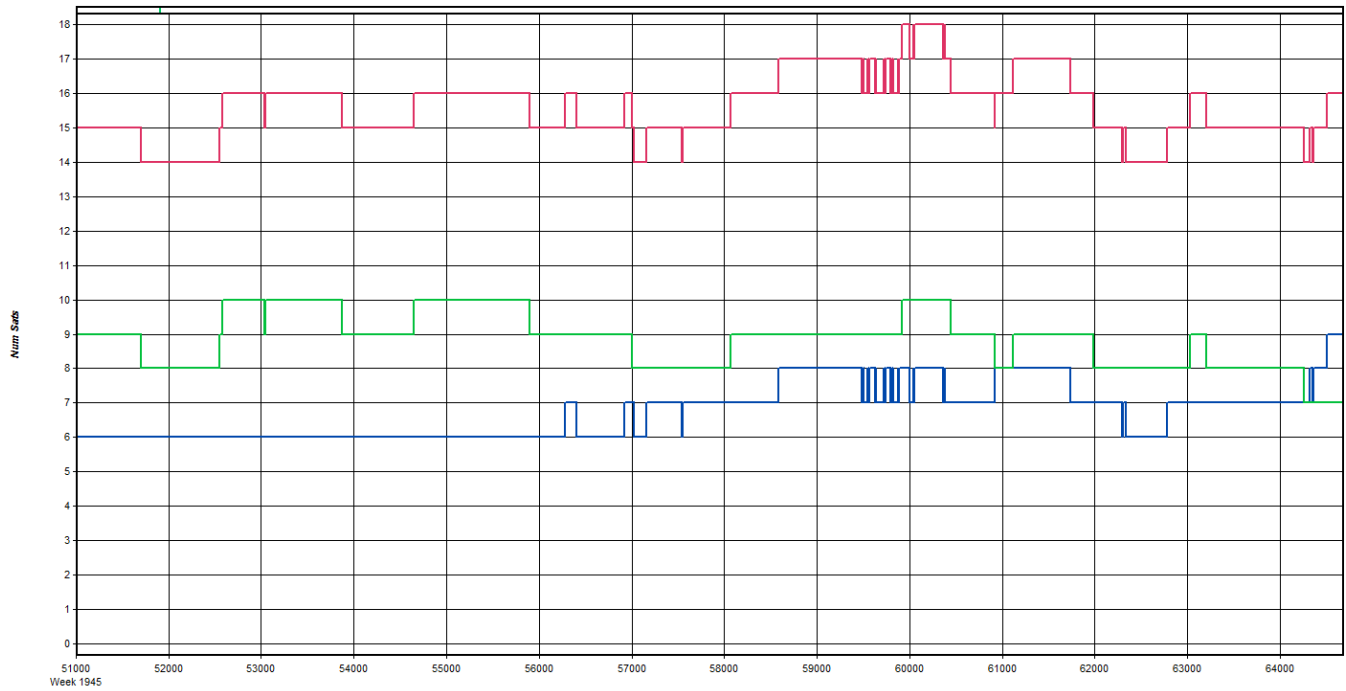


# Apr 16, 2017-A N262AS, SN7161)

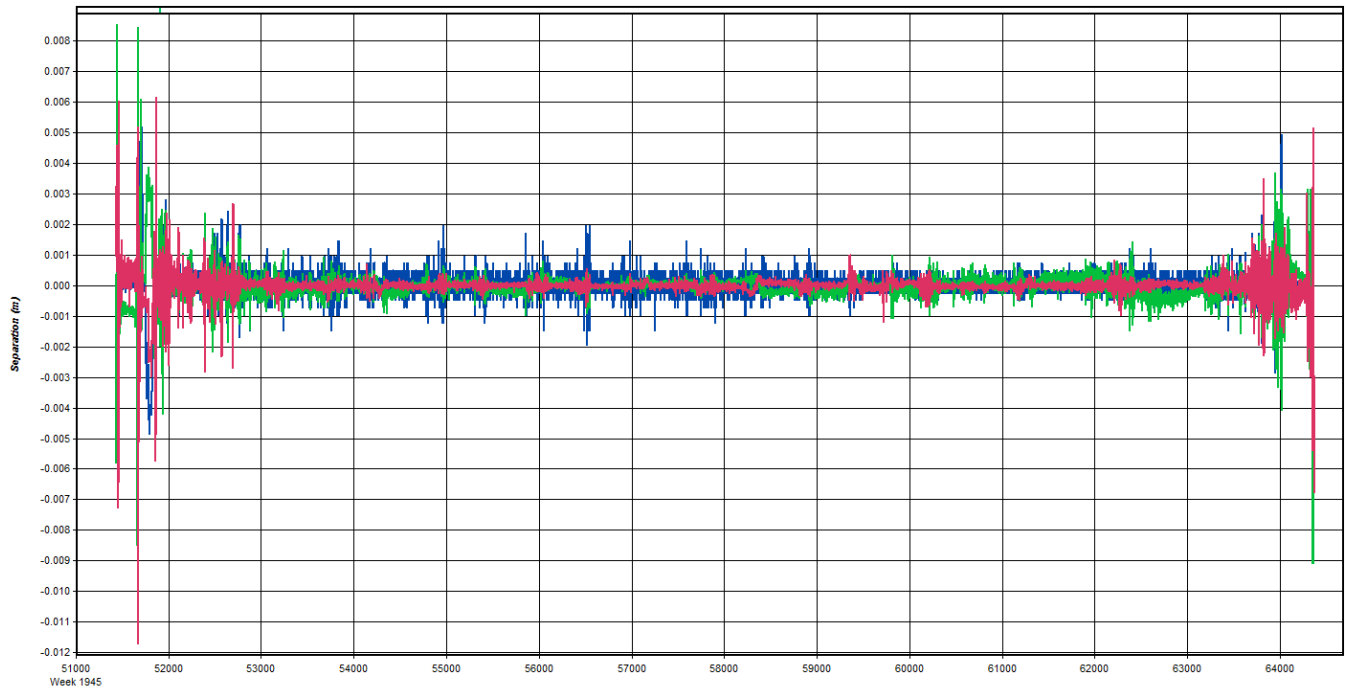




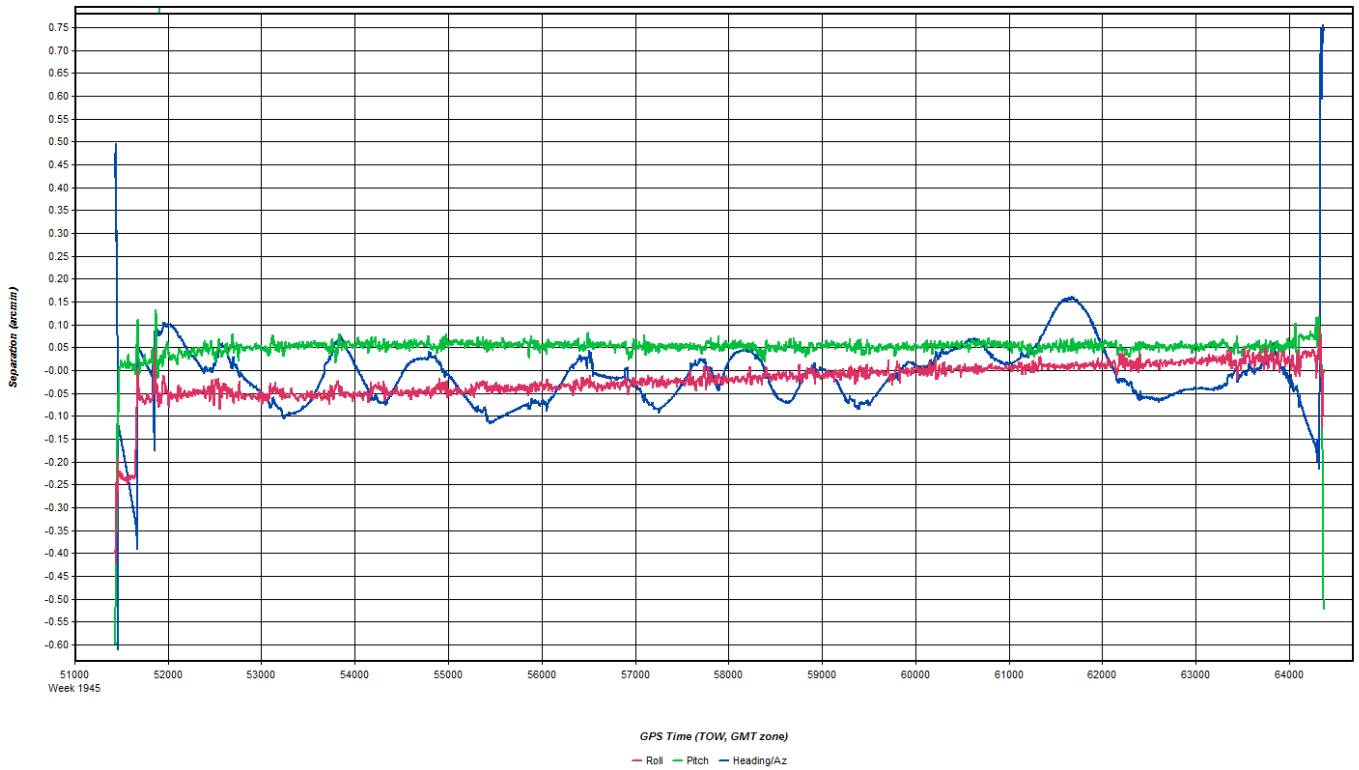
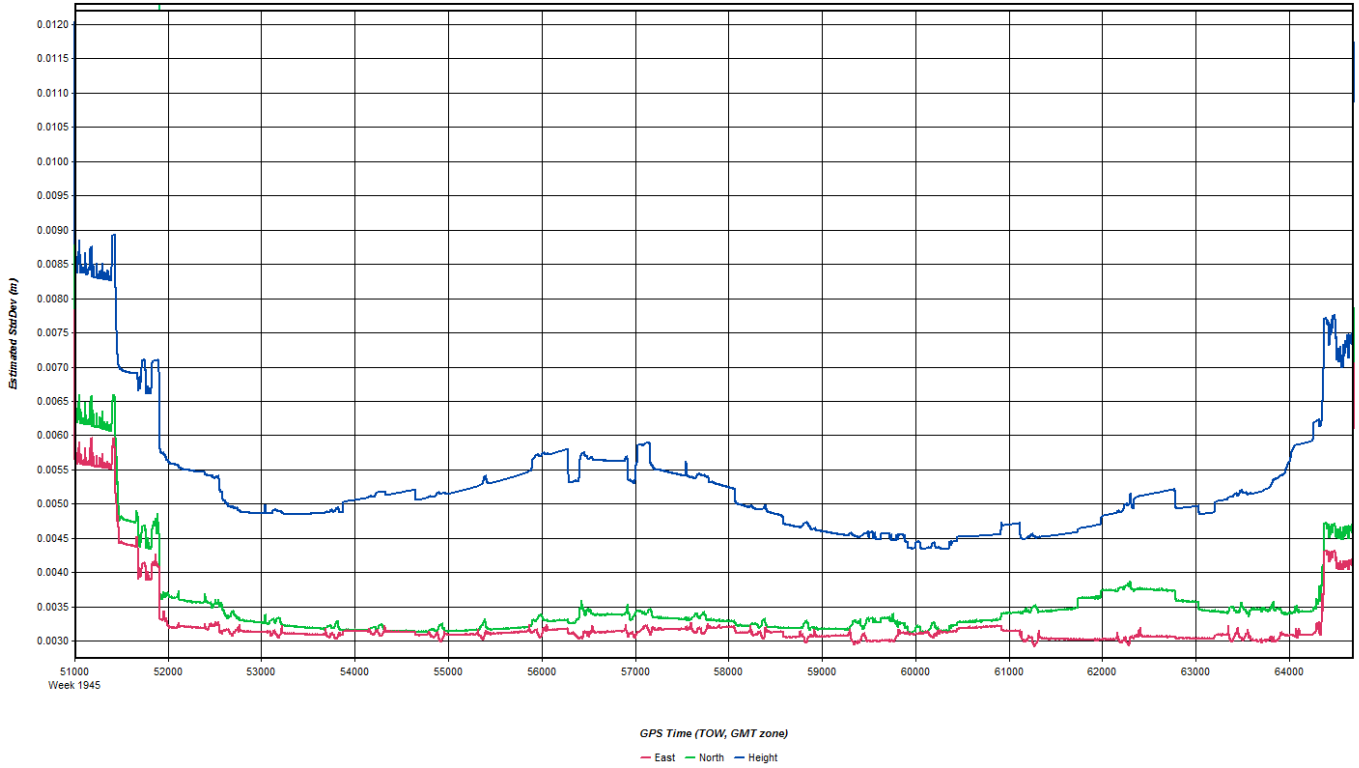




GPS Time (TOW, GMT zone)  
 - Num Sats - GPS - GLONASS - Beidou - Galileo - QZSS



GPS Time (TOW, GMT zone)  
 - East - North - Up



Coordinate/Antenna Settings ? X

Master Remote

Base Station

1: ANGO Name: ANGO  Disabled

File: F:\Proc\28571\_WROC\Langlade Co\20170416\_140858\Wiscors\1

Coordinates

Latitude: North 45 06 49.75009 Coord. options

Longitude: West 89 09 46.64586 Save to Favorites

Ellipsoidal height: 419.294 m

Datum: WGS84 Proc Datum: WGS84

Epoch: year

Antenna Height

From station file: TRM55971.00, NONE View STA File

Antenna profile: TRM55971.00 Info

Measured height: 0.000 m

ARP to L1 offset: 0.067 m

Applied height: 0.067 m

Measured to

ARP

L1 Phase Centre

Compute From Slant

OK Cancel

# Flight Log

EASTER  
Date: 4-16-17  
Pg. 1 of 1

**Airborne LIDAR Data Collection Log Sheet :: Quantum Spatial, Inc**  
(email Log daily to flight\_log\_distribution\_list@quantumspatial.com)

Project: WROC - LANGLADE Proj #: 28571 Flight Mgmt File: 20170416-140858  
 Aircraft: N262AS Begin Hobbs: 6535.8 End Hobbs: 6539.1 Total: 3.3 Pilot: Christopher Co-Pilot: Tech: CAREY  
 Dep Apt: KCWA Dep Time (Lcl): 926 (Z): 1426 Arr Apt: KCWA Arr Time (Local): 1249 (Z): 1749 Tot Time Aloft: 3.3  
 CORS: WIN Sta 1: WICR Sta 2: 45 34 35N Flyovers: Y/N IF Y, times: Sta1) Sta2)  
 GPS Unit: Y/N Sta 1: Sta 2: 88 53 30W Flyovers: Y/N IF Y, times: Sta1) Sta2)

Gd Temp beg:		°C		End:		°C		OAT beg:		°C		End:		°C		Altimeter begin:		end:		Avg Pt Spacing		Max Gdspd		Power		IFPSM		Avg Pt Spacing		Power		IFPSM		Storage Name	
Type	ALS-70	Serial #	7161	Alt AGL	5620	Alt AMSL	7024	Avg Terr. Ht	1404	Max Gdspd	150	IFPSM	100%	IFPSM	100%	IFPSM	IFPSM	IFPSM	IFPSM	IFPSM	IFPSM	IFPSM	IFPSM	IFPSM	IFPSM	IFPSM	IFPSM	IFPSM	IFPSM	IFPSM	IFPSM	IFPSM	IFPSM	IFPSM	
FOV	40	Scan Freq	53.4	Mpi	10	Radius In-Air	2	Radius In-Air	2	Power	100%	IFPSM	100%	IFPSM	100%	IFPSM	IFPSM	IFPSM	IFPSM	IFPSM	IFPSM	IFPSM	IFPSM	IFPSM	IFPSM	IFPSM	IFPSM	IFPSM	IFPSM	IFPSM	IFPSM	IFPSM	IFPSM	IFPSM	

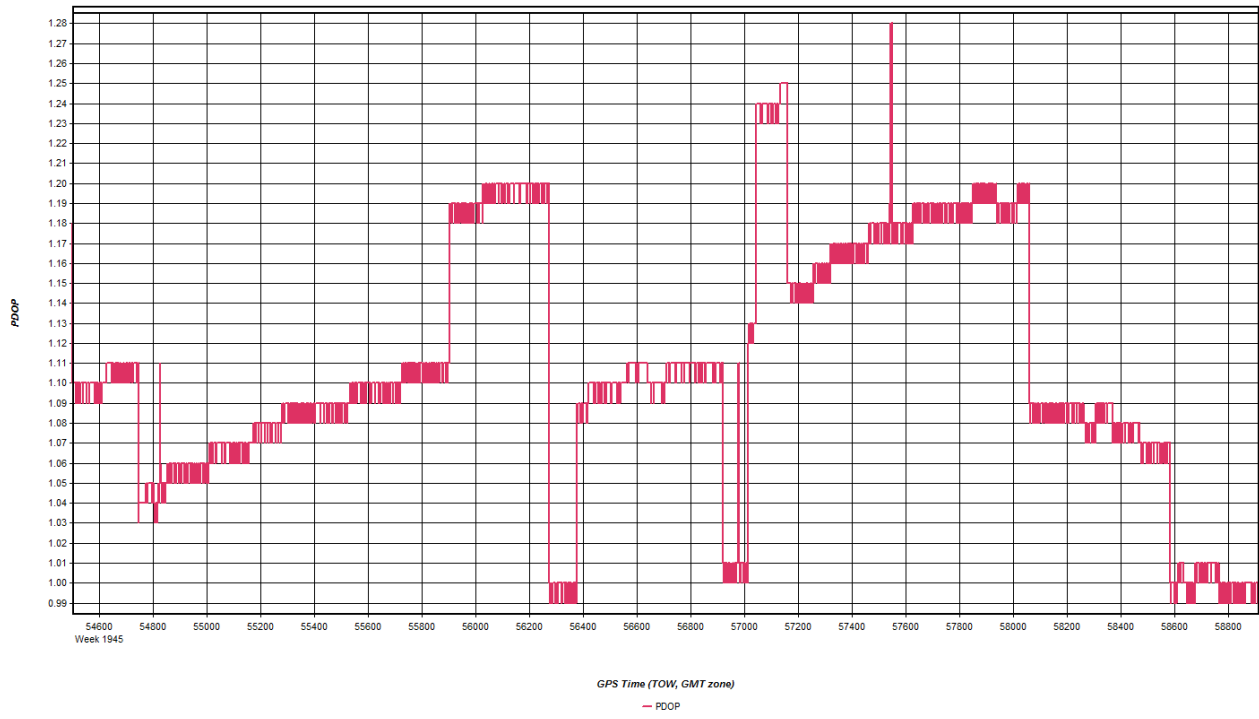
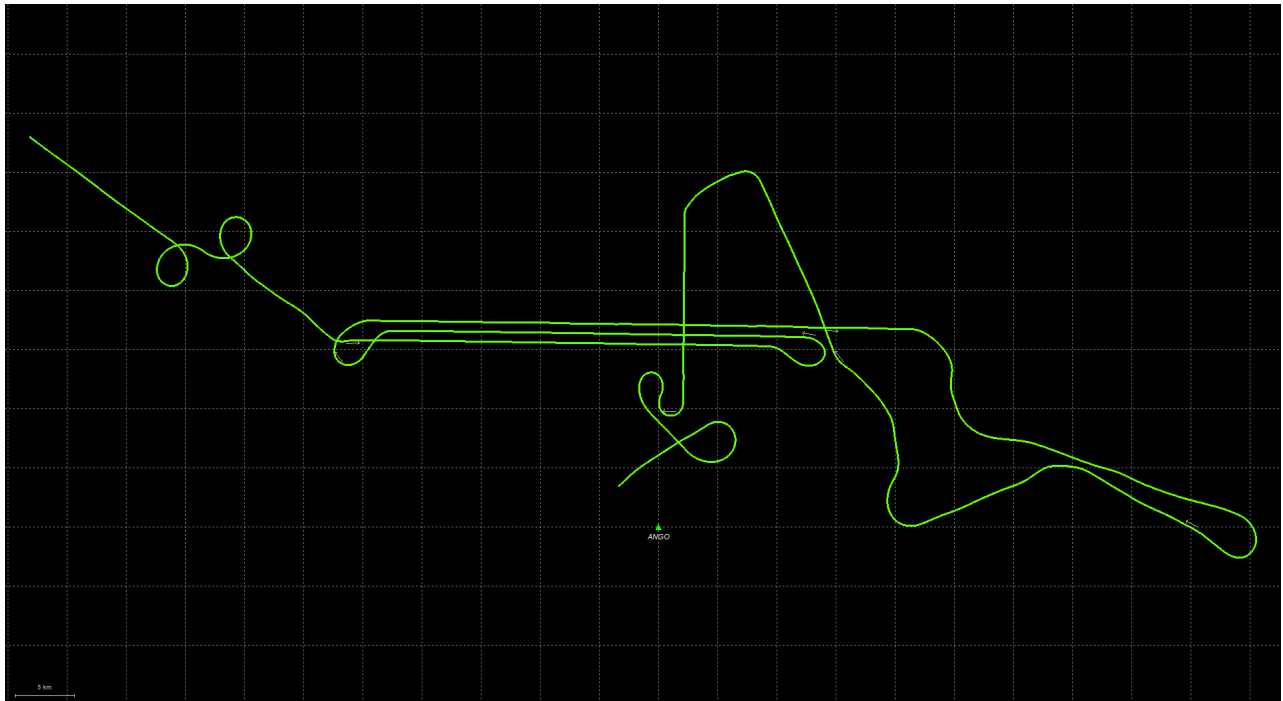
Line #	Hdg	Start (UTC)	End (UTC)	Gd Spd	poof/s	GPS Altitude	Crab	Turb (0-4)	Notes
59	94	1440	1444	155	1.3	7031	-0		KCWA → SITE → S/FIG
58	274	1448	1454	150	1.3	7031			CLR / Cu Worth of position / No standing water
57	94	1457	1502		1.1	7031			1 cloud 3.25 mi from East end / R. Flight
56	274	1507	1512		1.1	7031			
55	94	1516	1521		1.3	7057			
49	274	1525	1530		1.3	7142			
50	94	1534	1538		1.1	7125			Cu Forming over project
54	274	1542	1548		1.0	7070			
51	94	1555	1559	150	1.1	7122			1 cloud B.3 miles from East End 2.
52	274	1605	1610		1.1	7106			- cloud deck rising -
53	94	1613	1618		1.2	7080			
57	274	1622	1628		1.2	7031			USE this line
XFLT	02	1632	1635		1.1	7050			unplanned XFLT
48	274	1645	1658		1.1	7018			Chop
47	94	1702	1715		1.0	6847			- chop East end
46	275	1720	1736		1.0	6860			chop East End / West end chop Bumpy!

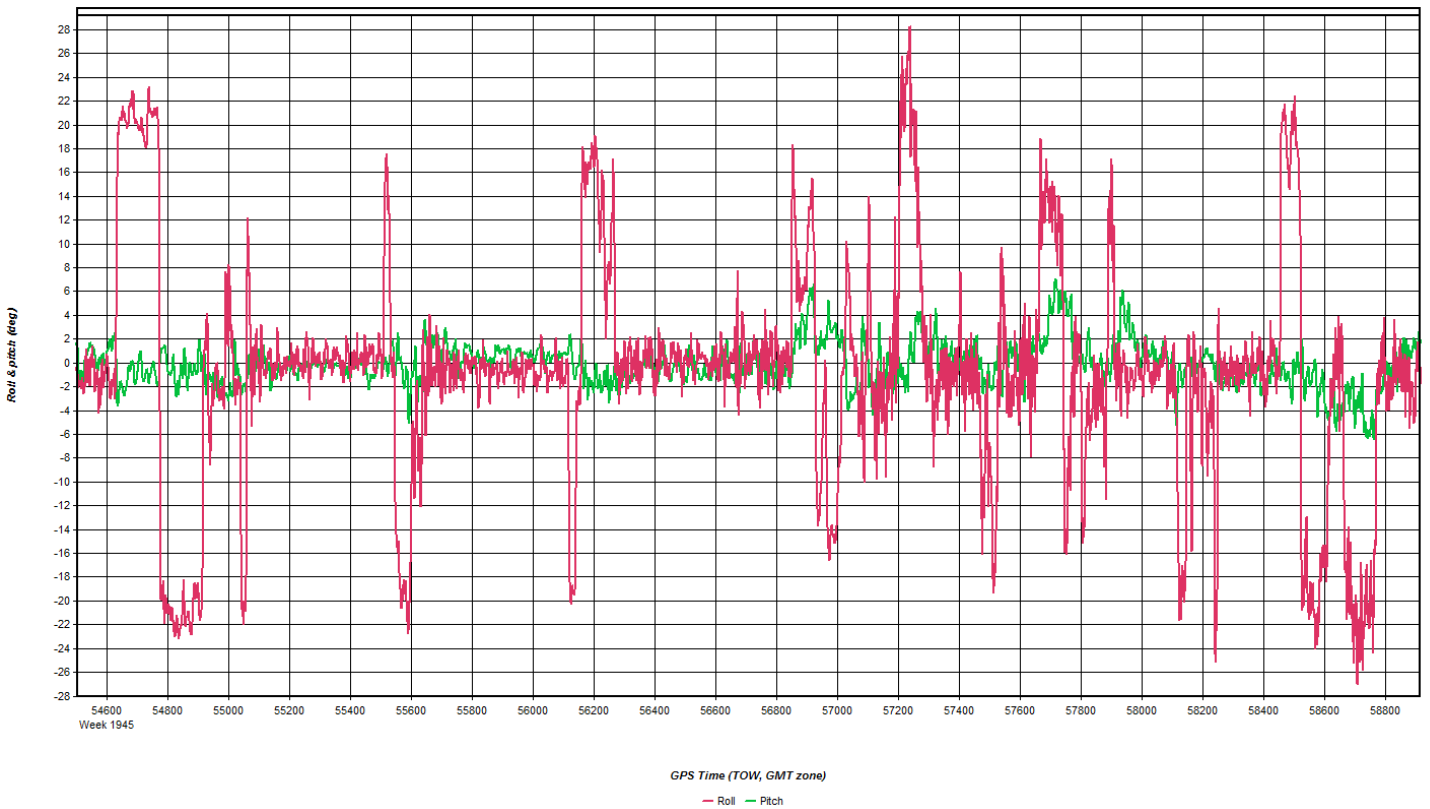
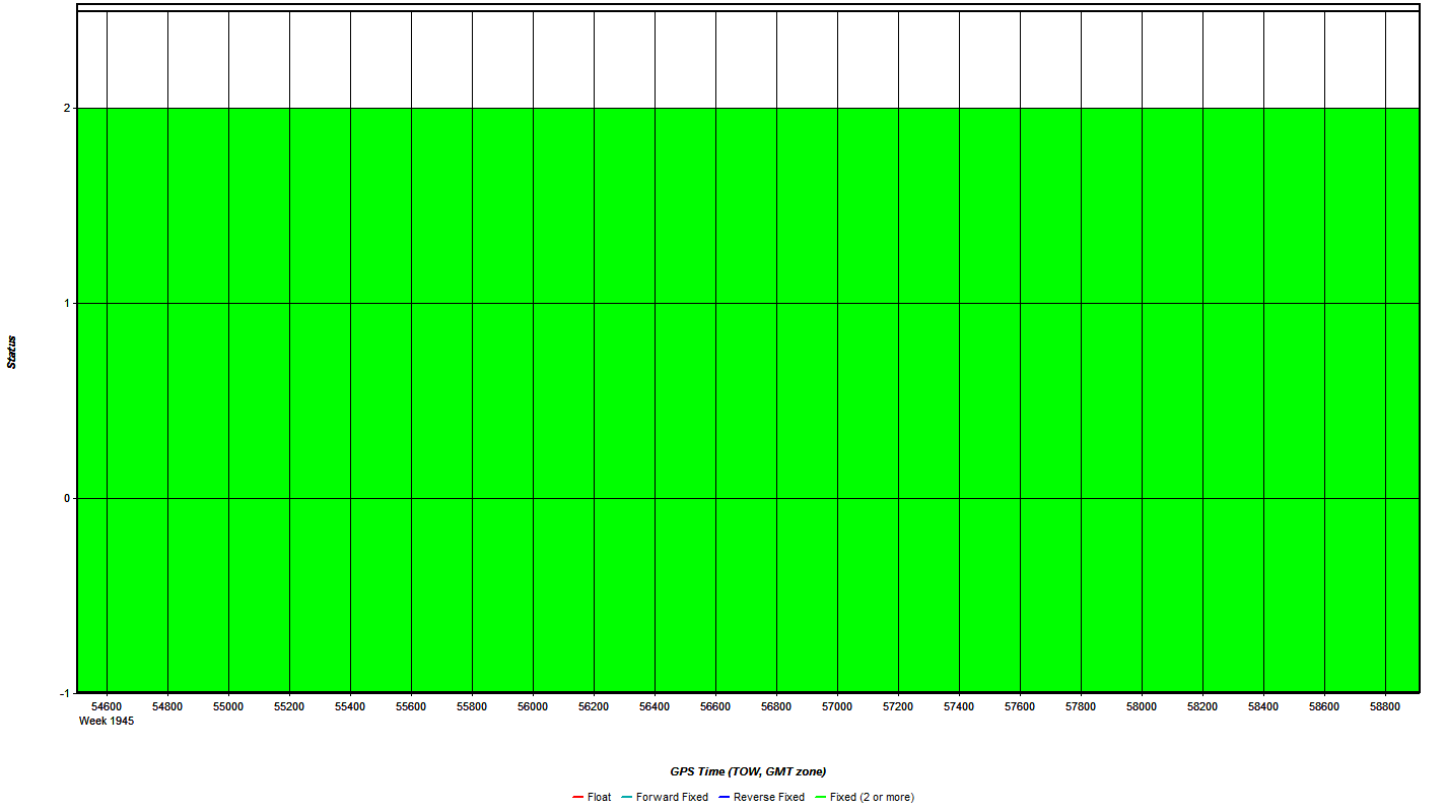
Total Proj Lines: 14 Lines Remain: 3 Lines Flow: 3.0 Mob Time: 3.3 Notes: KCWA

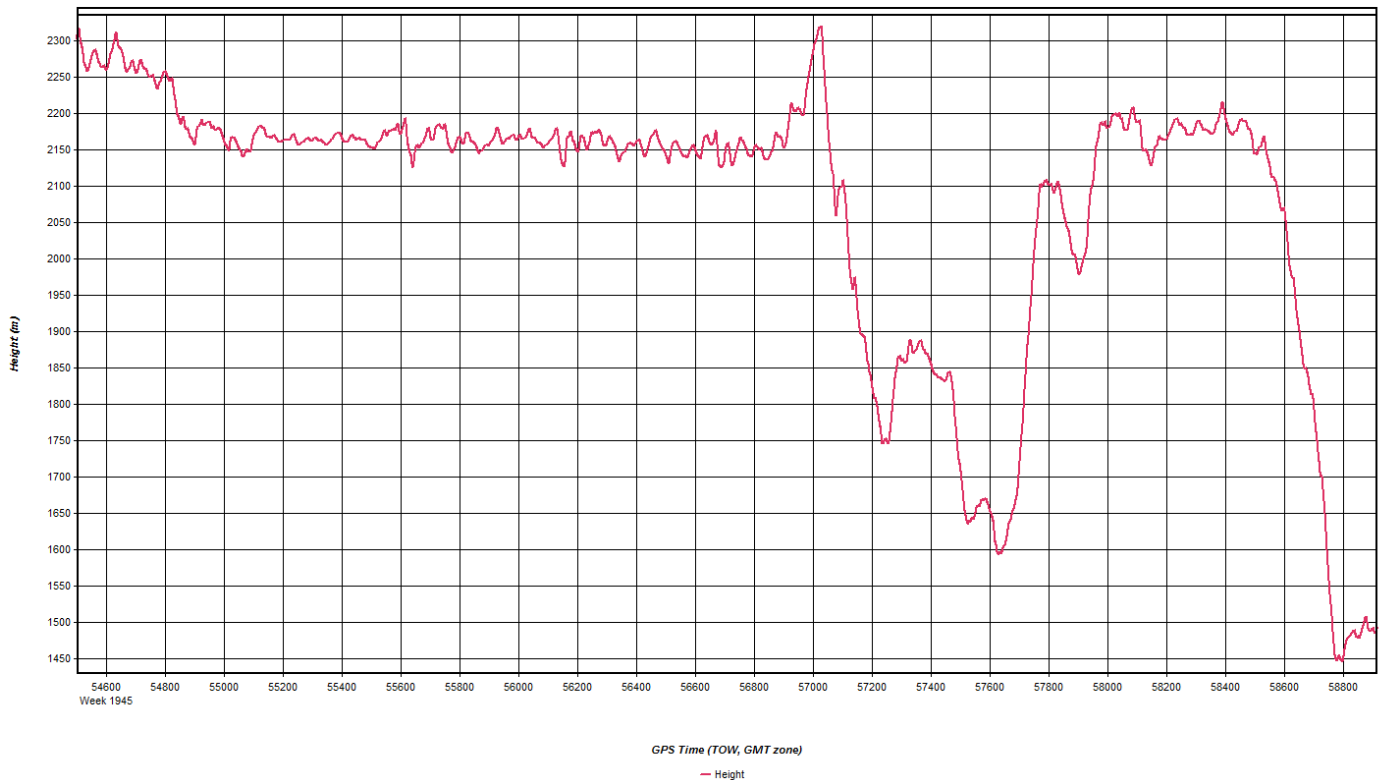
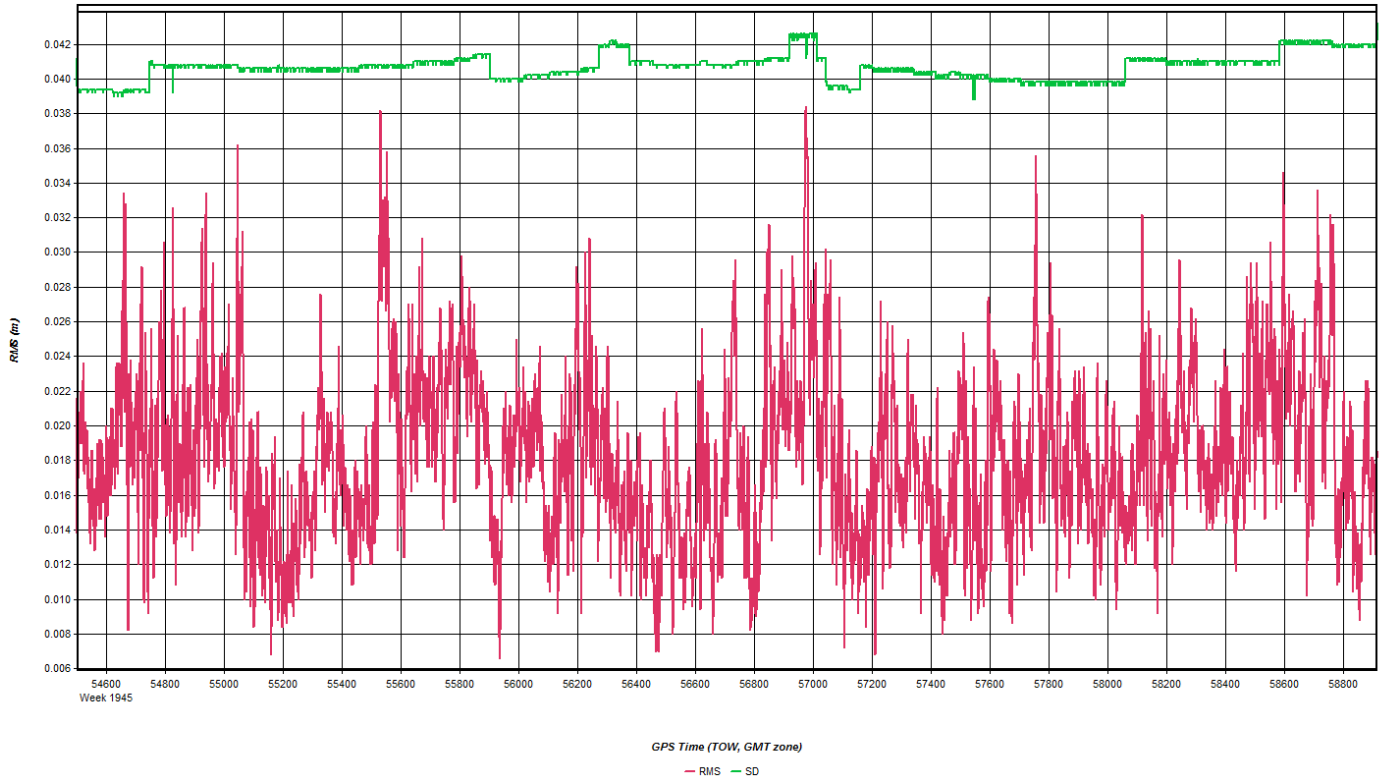
Generated by CamScanner from intsig.com

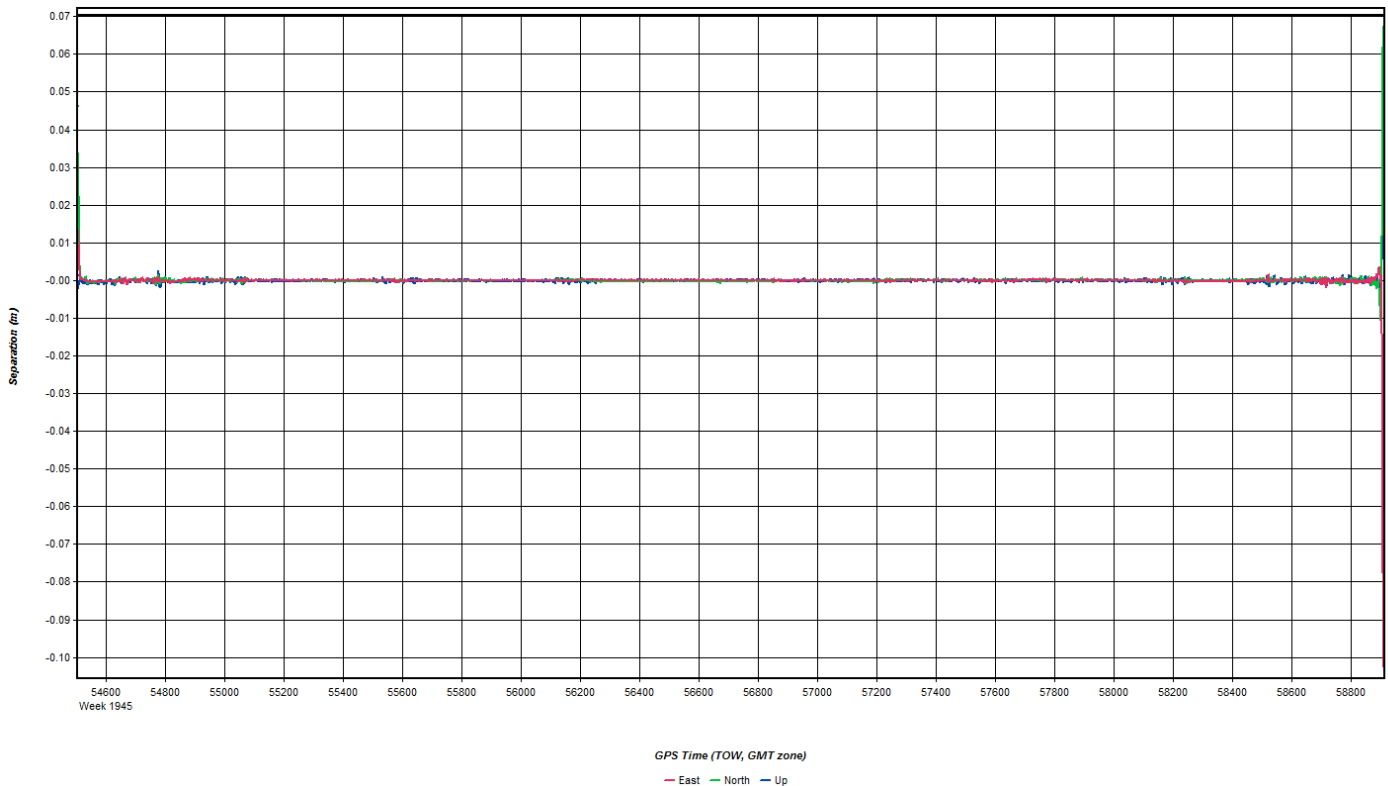
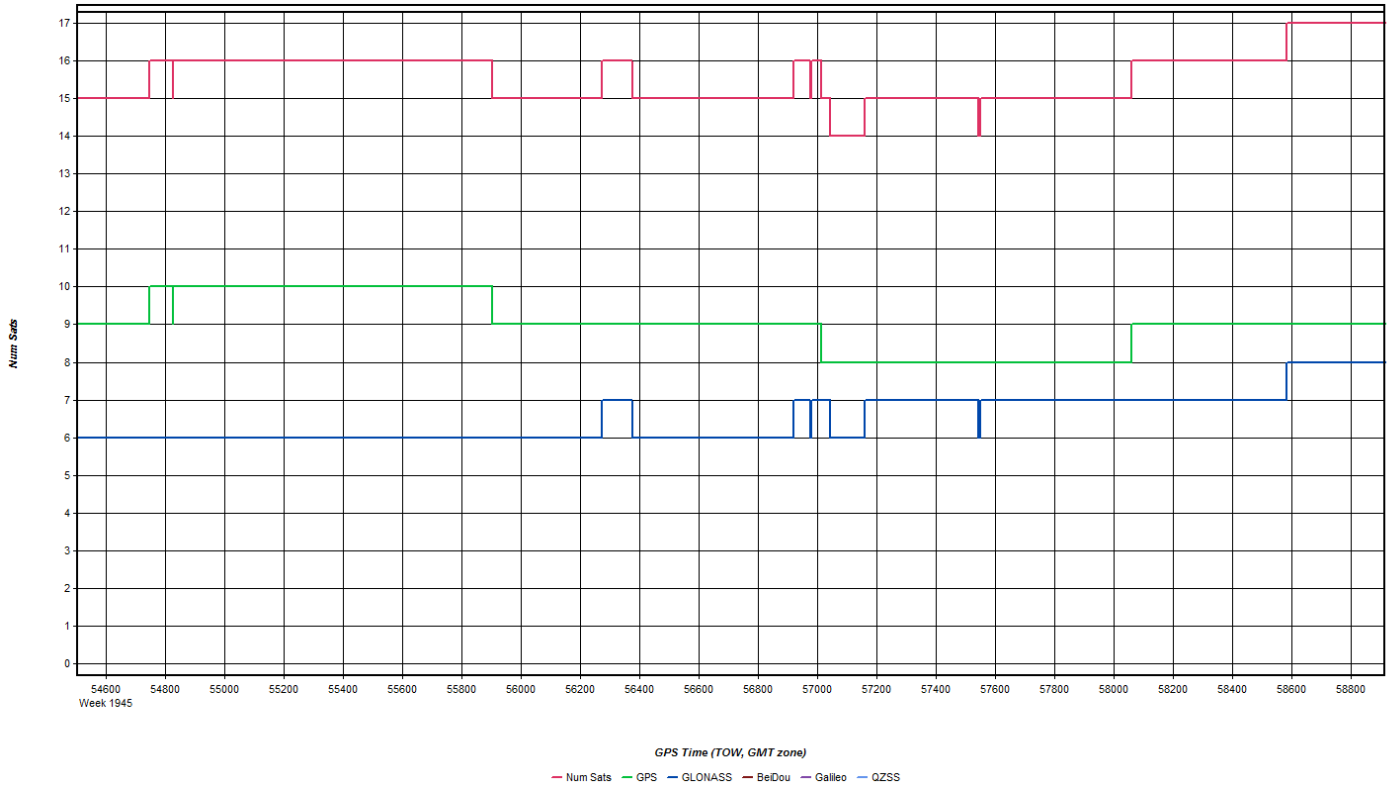


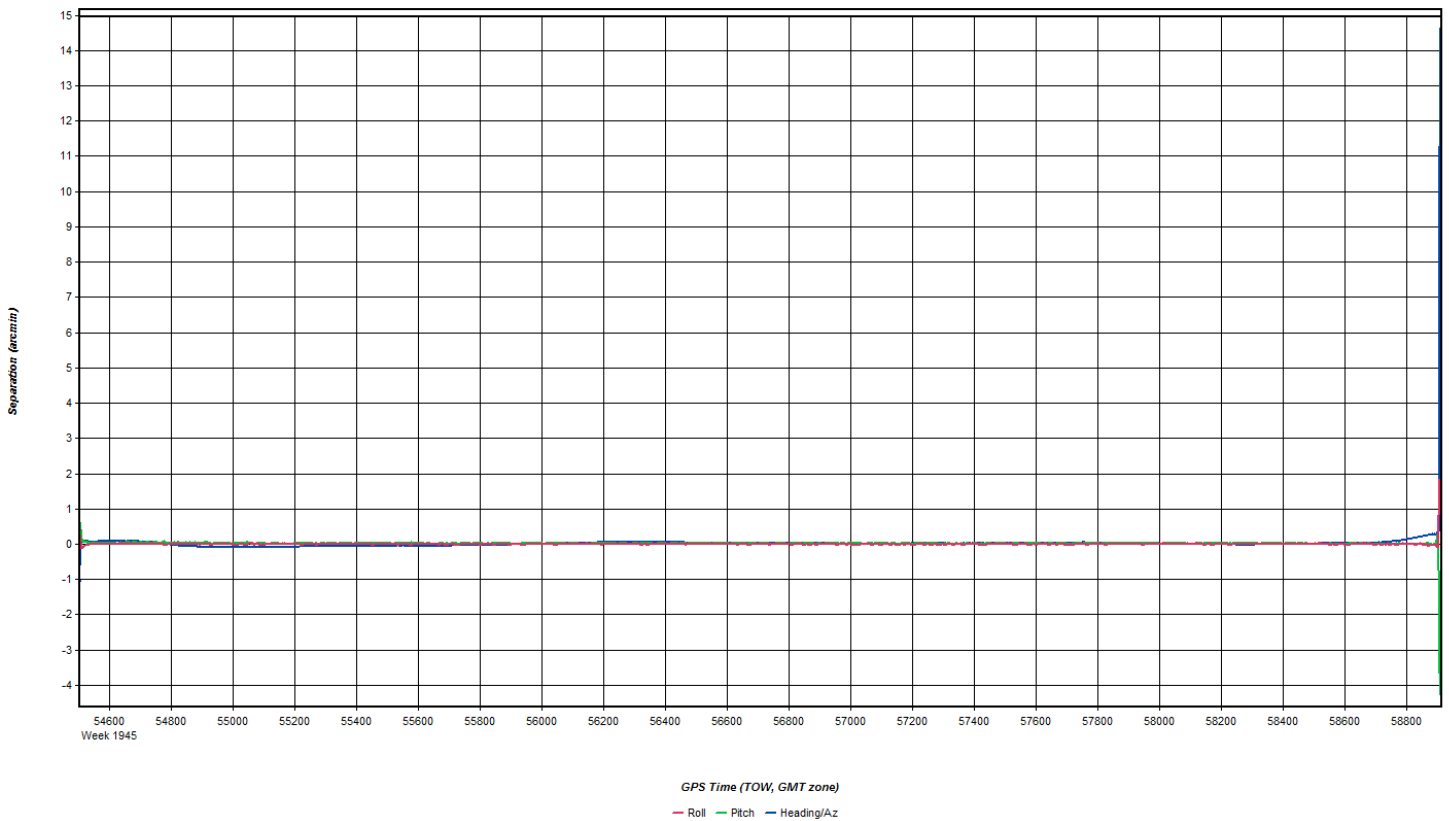
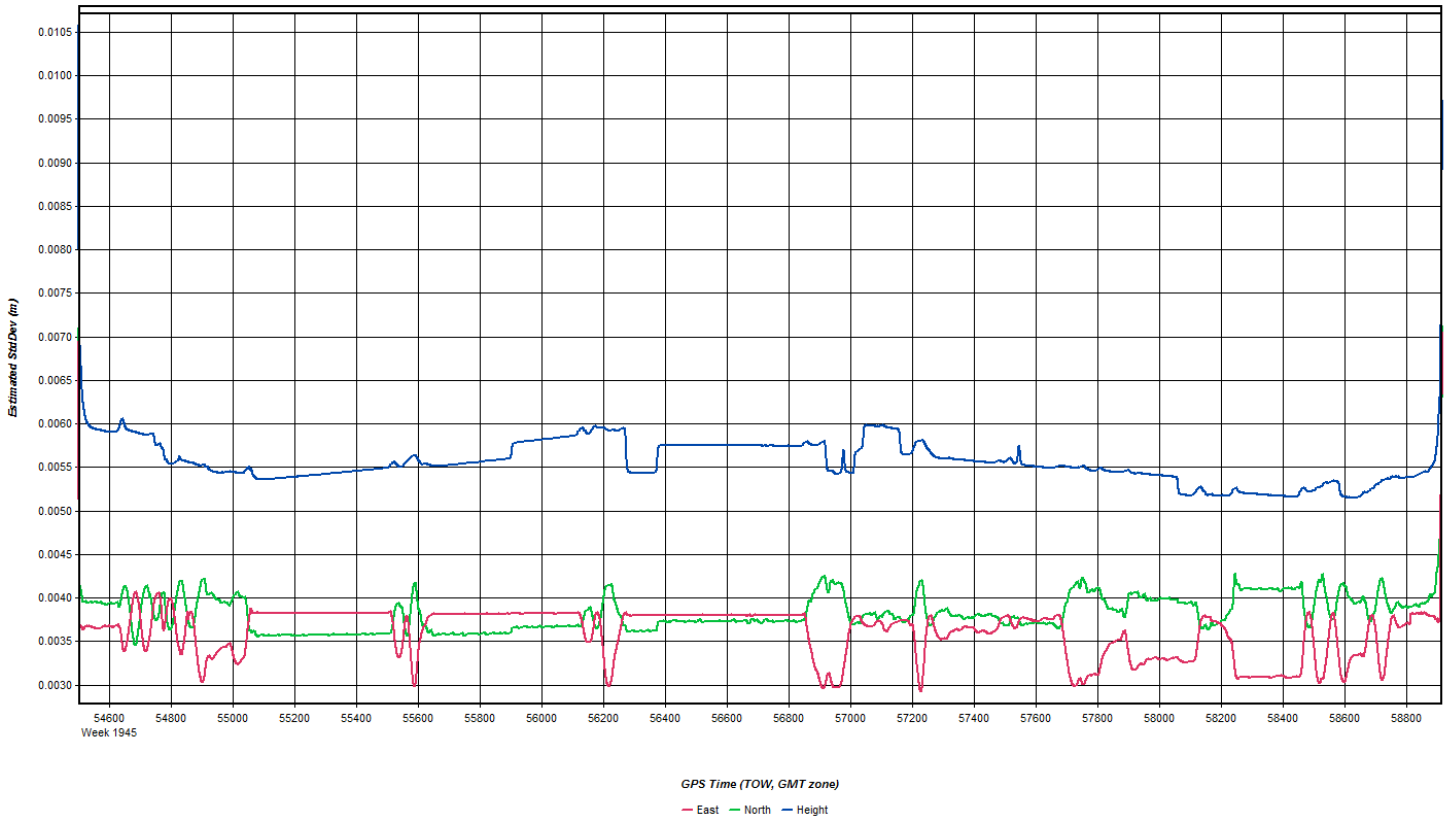
# Apr 16, 2017-A (N73TM, SN7178)











Coordinate/Antenna Settings ? X

Master Remote

Base Station

1: ANGO Name: ANGO  Disabled

File: F:\Proc\28571\_WROC\Langlade Co\Gary\_Tao\_4-18-17\20170416\

Coordinates

Latitude: North 45 06 49.75009 Coord. options

Longitude: West 89 09 46.64586 Save to Favorites

Ellipsoidal height: 419.294 m

Datum: WGS84 Proc Datum: WGS84

Epoch: year

Antenna Height

From station file: TRM55971.00, NONE View STA File

Antenna profile: TRM55971.00 Info

Measured height: 0.000 m

ARP to L1 offset: 0.067 m

Applied height: 0.067 m

Measured to

ARP

L1 Phase Centre

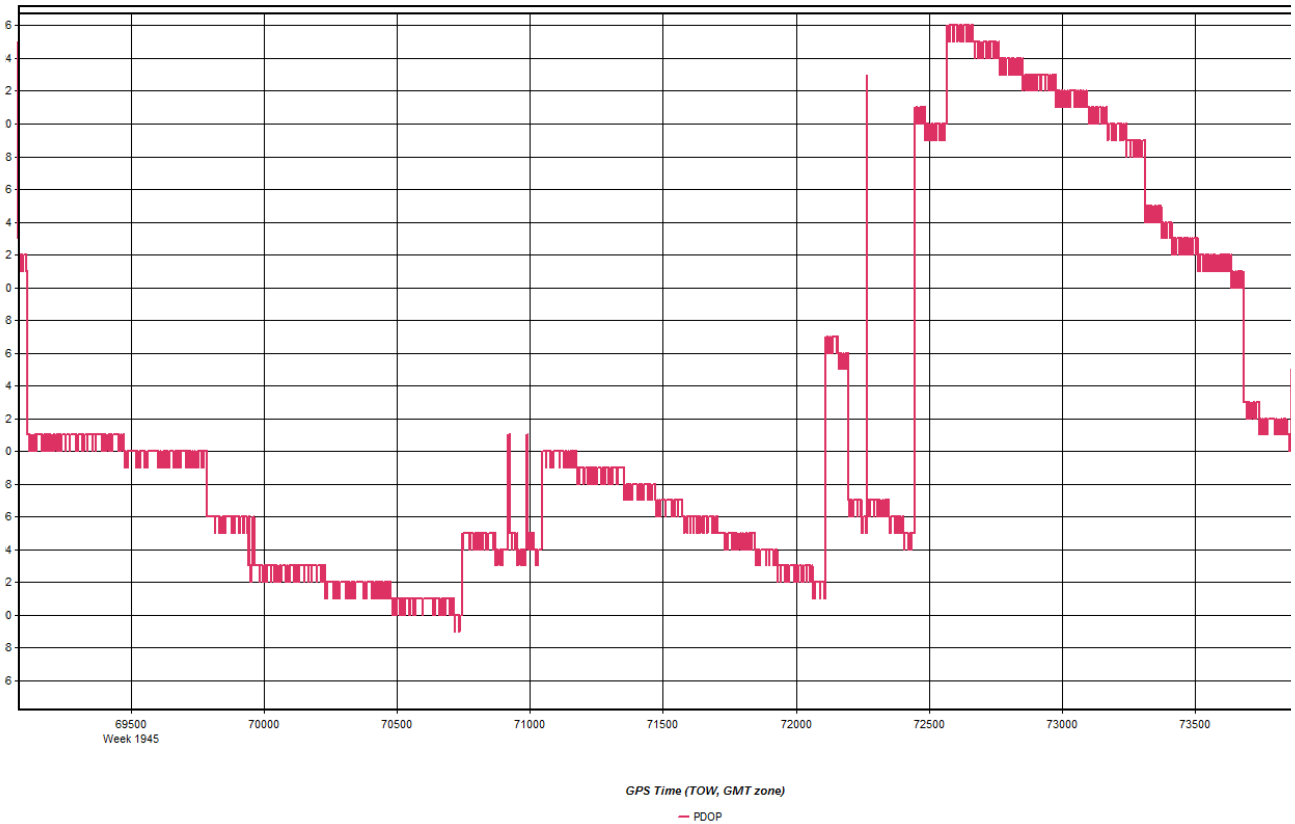
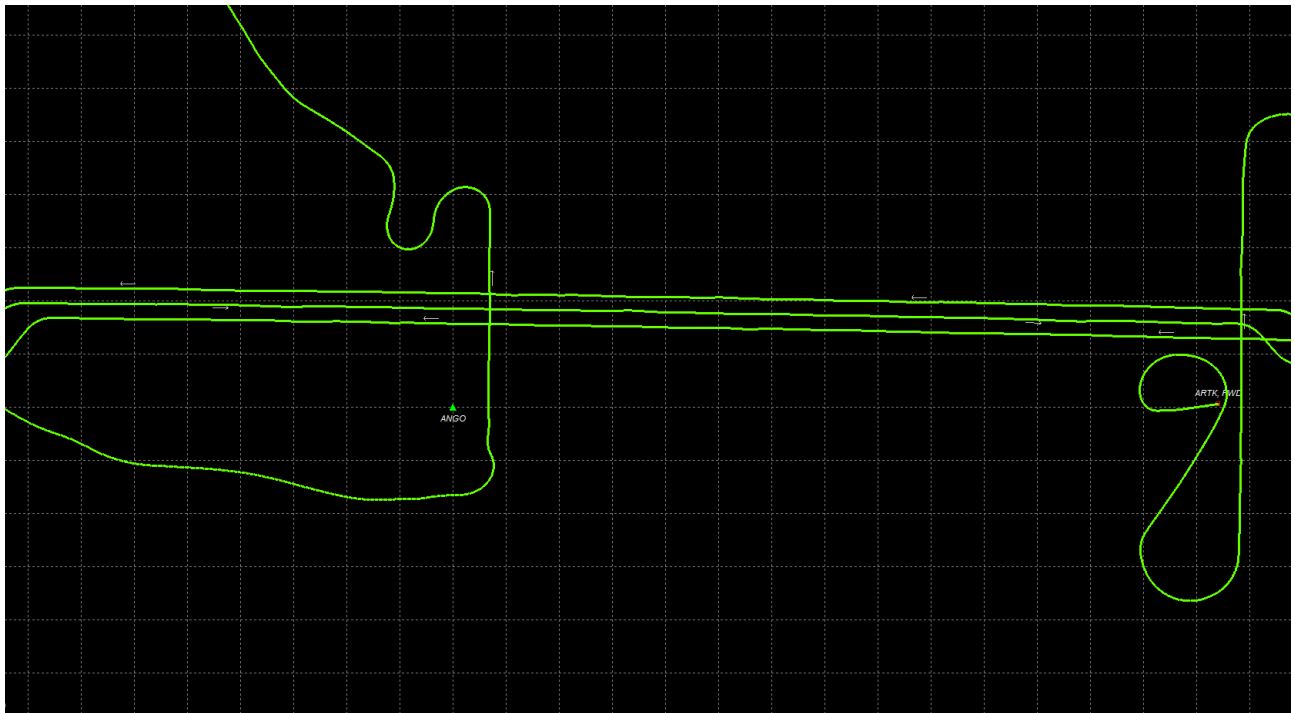
Compute From Slant

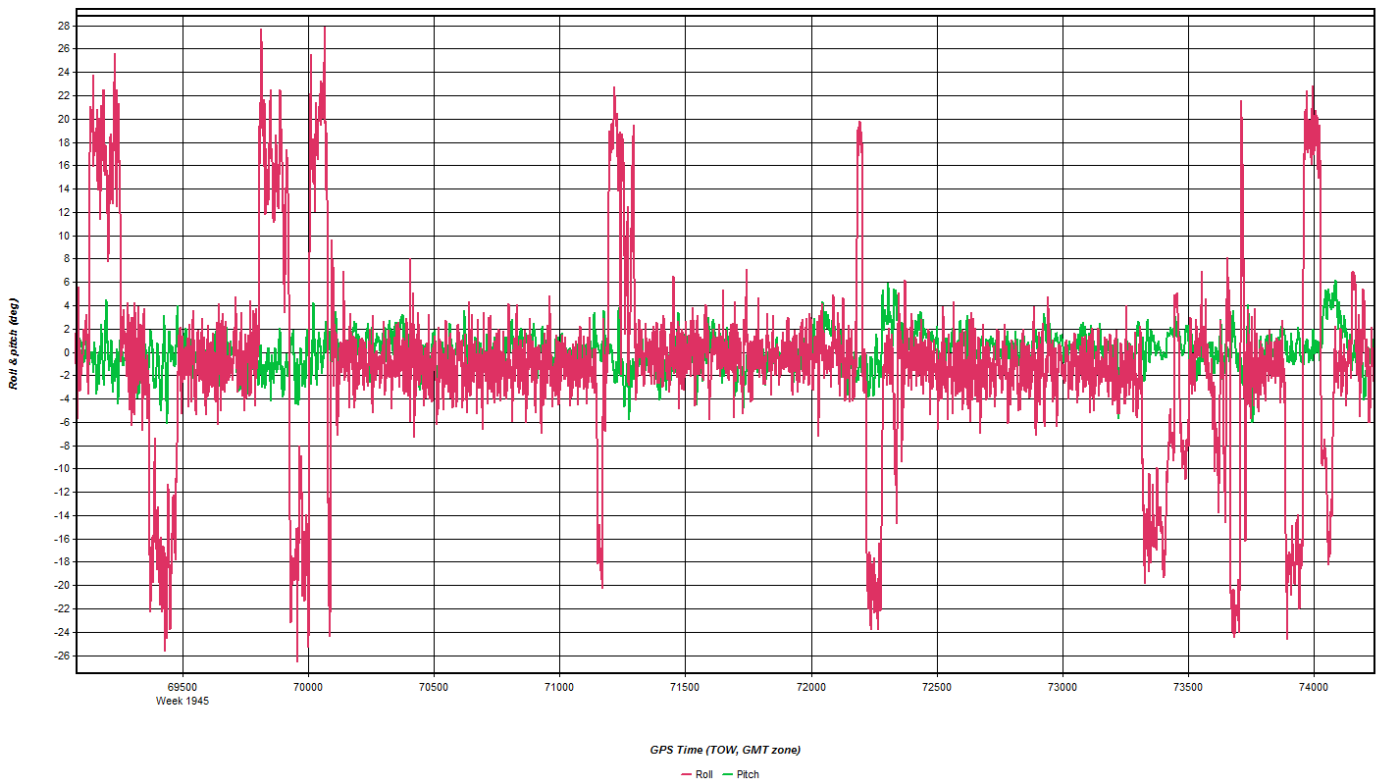
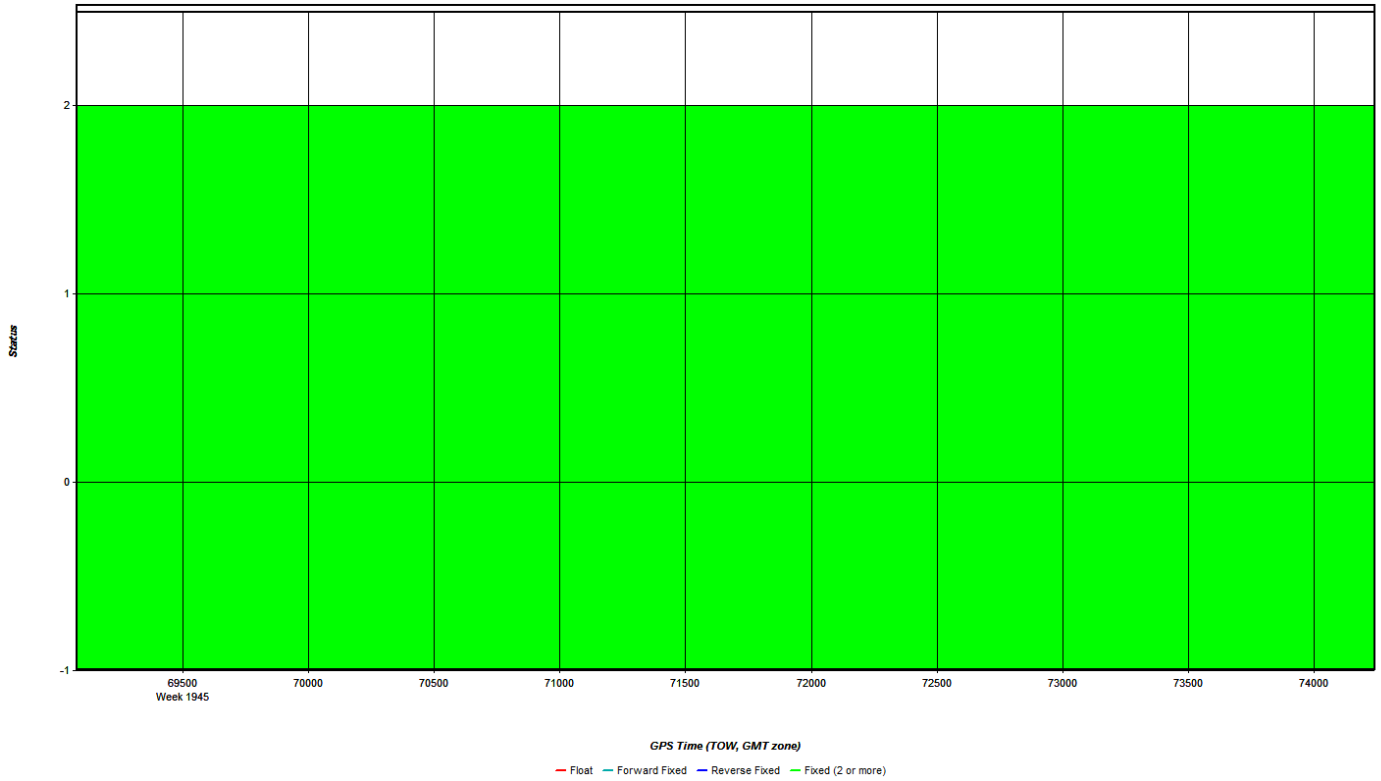
OK Cancel

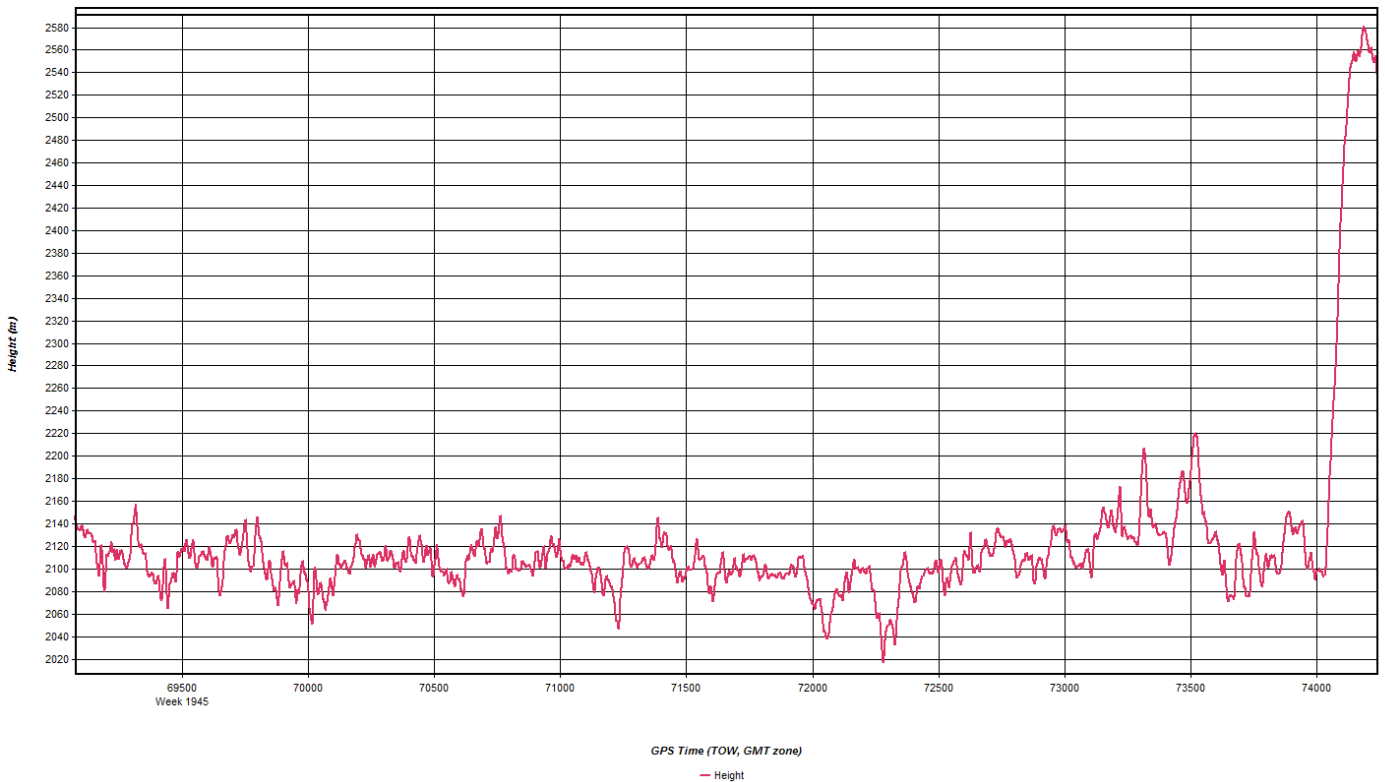
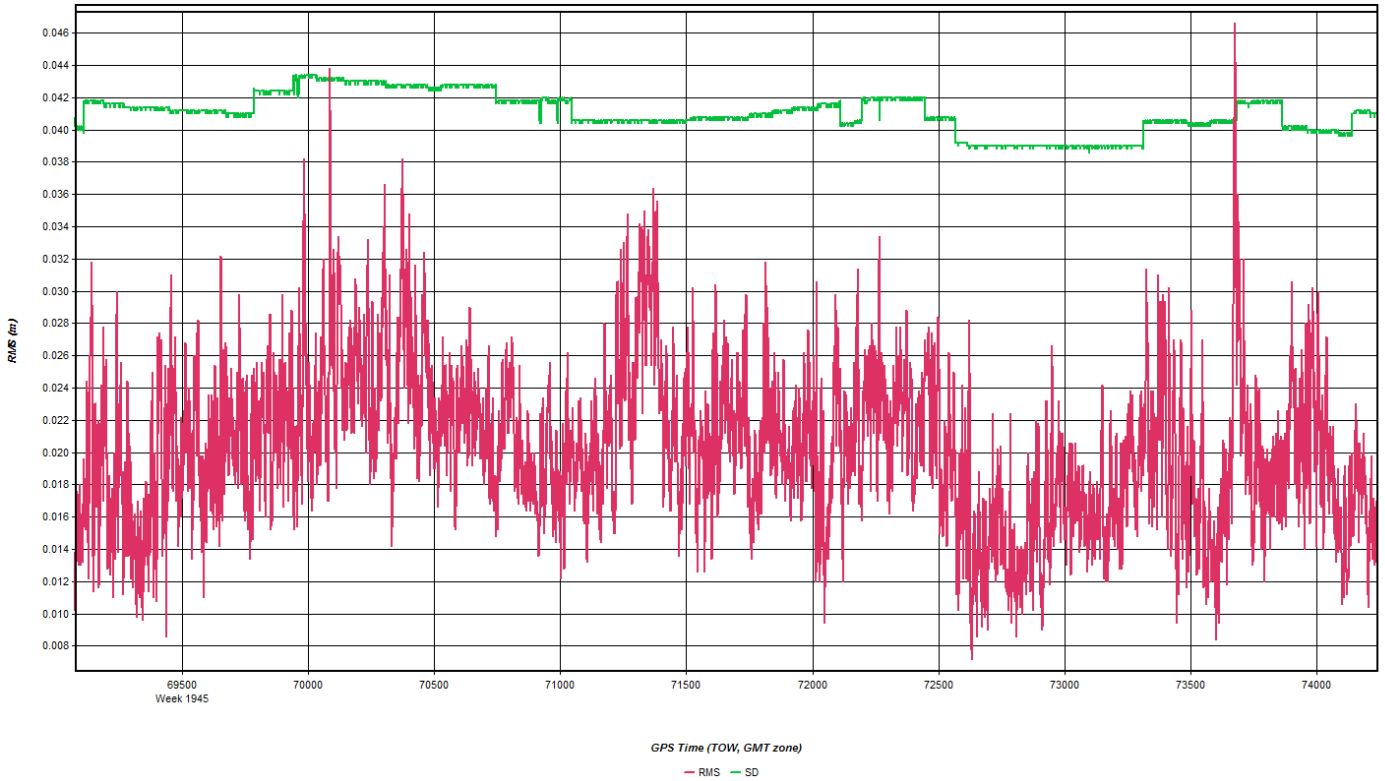


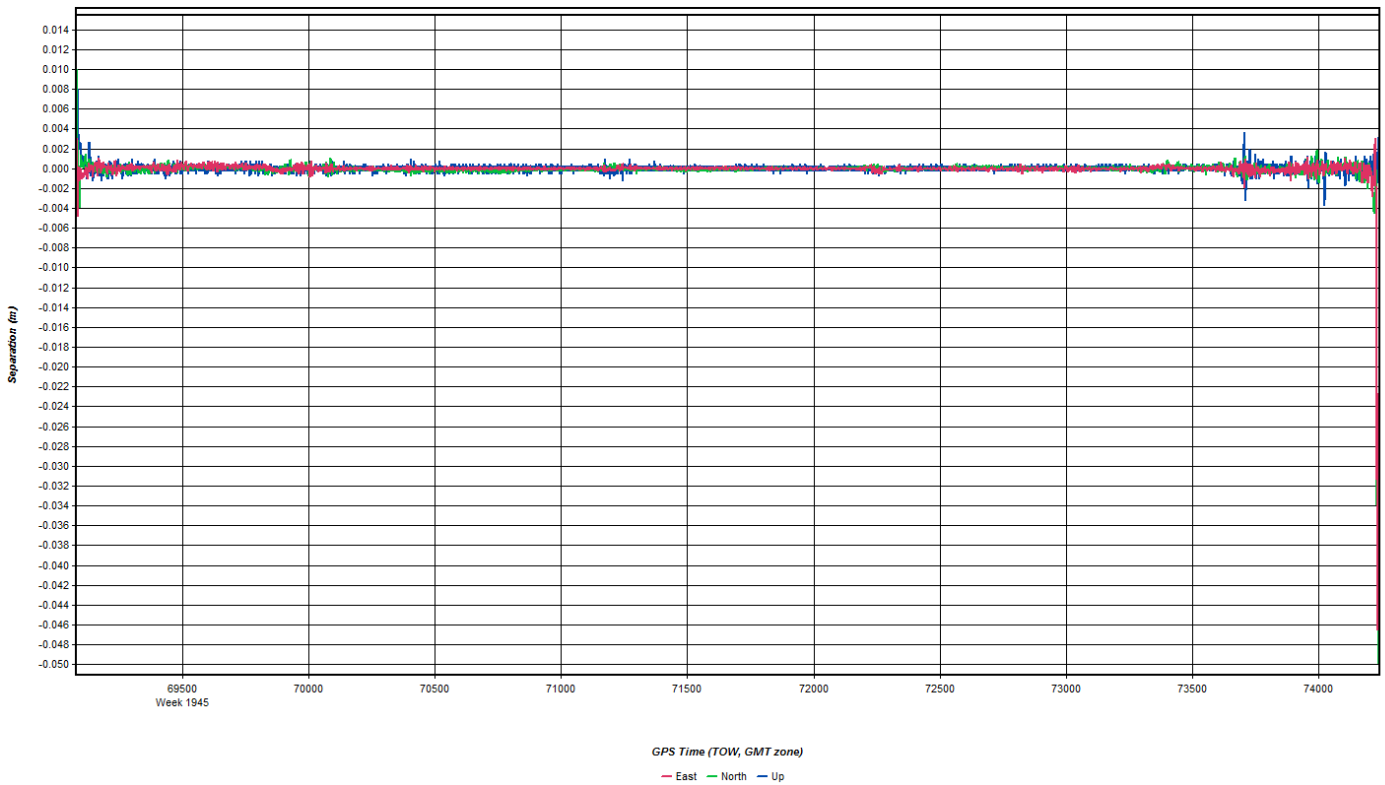
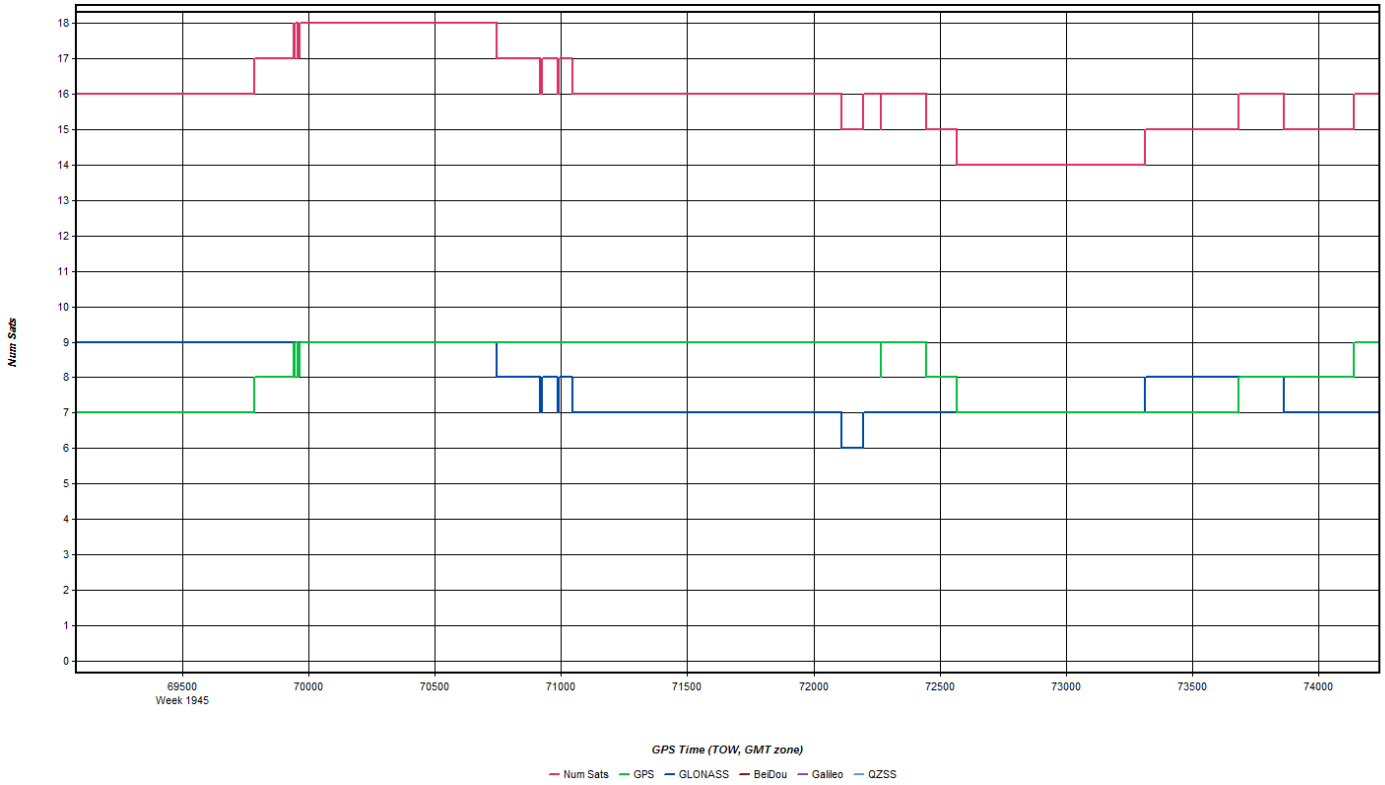


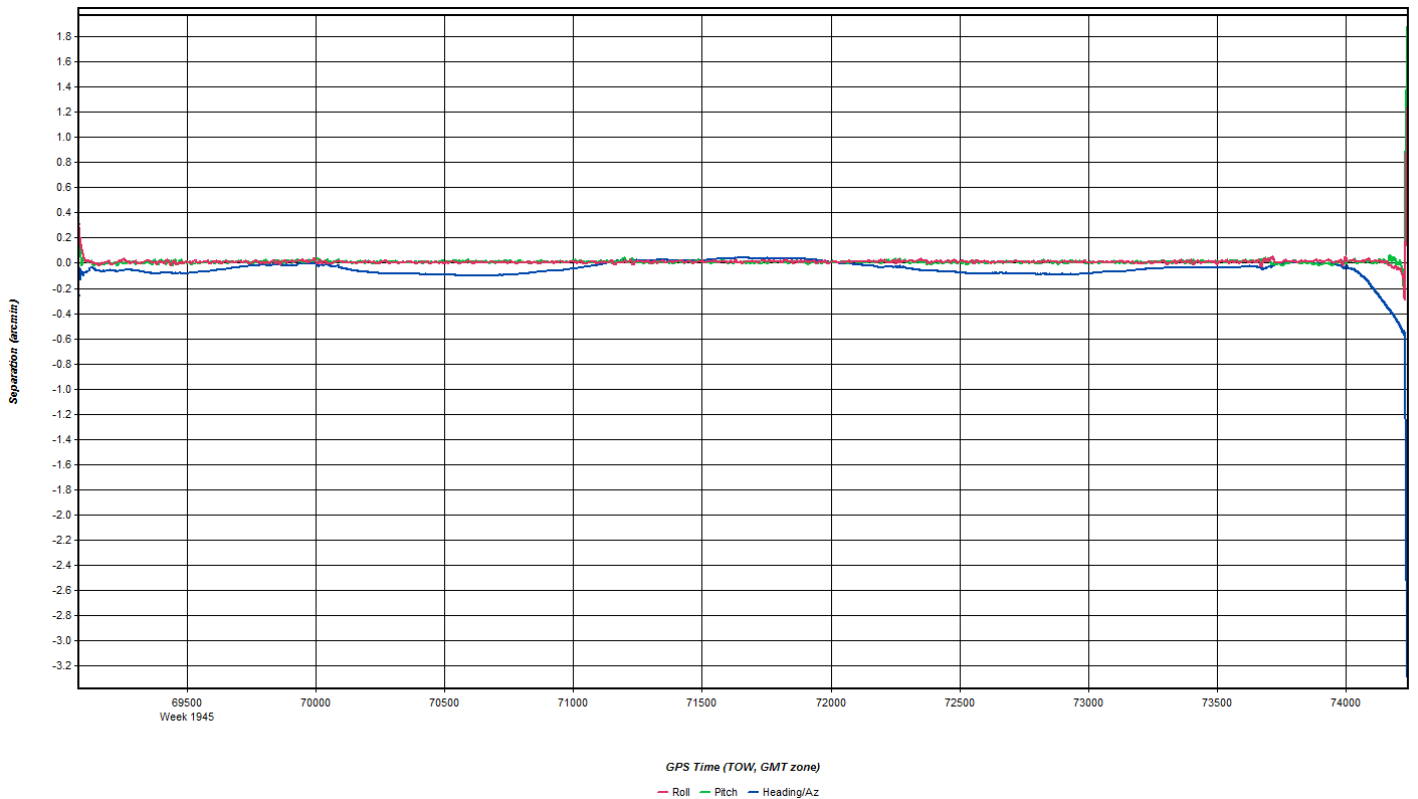
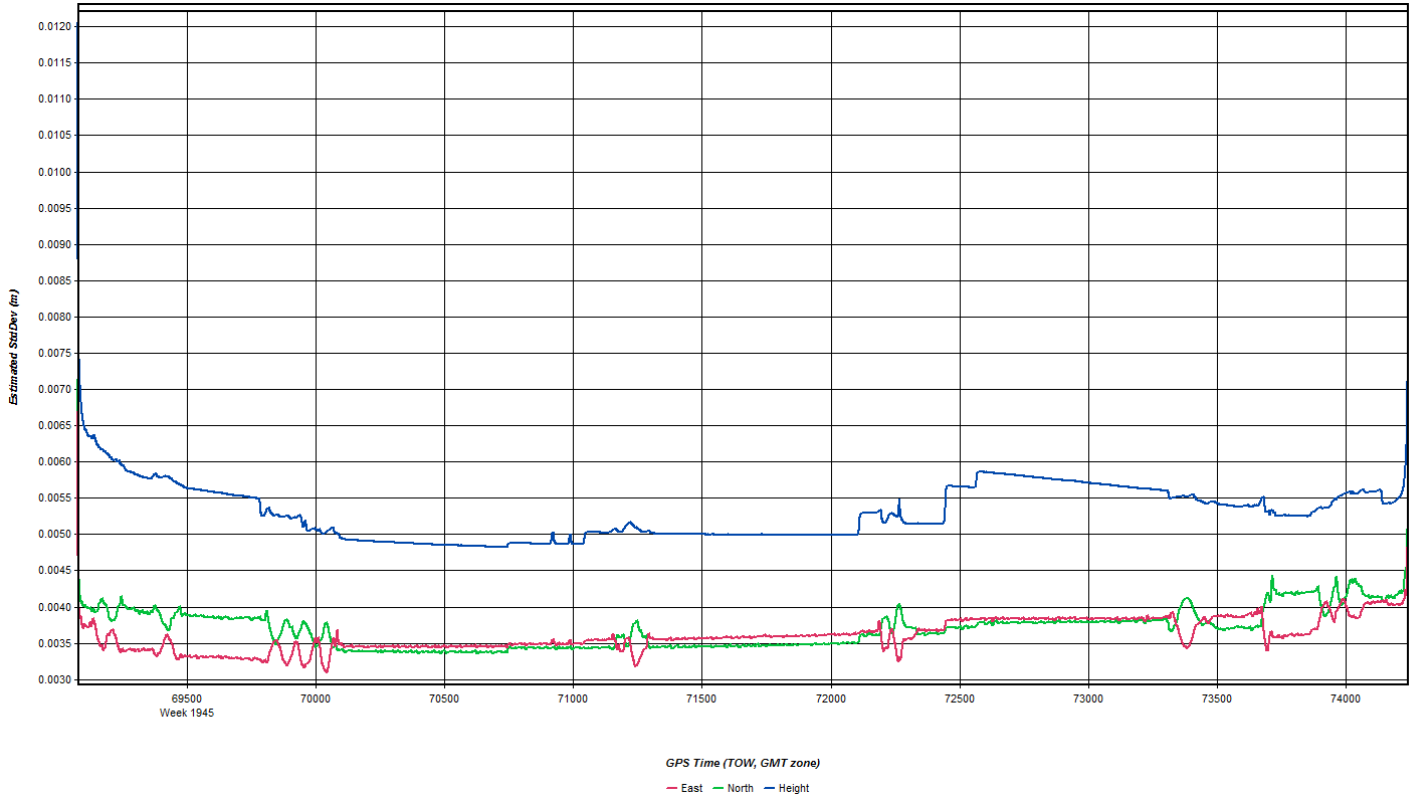
# Apr 16, 2017-B (N73TM, SN7178)











Coordinate/Antenna Settings

Master Remote

Base Station

1: ANGO Name: ANGO  Disabled

File: F:\Proc\28571\_WROC\Langlade Co\Gary\_Tao\_4-18-17\20170416f

Coordinates

Latitude: North 45 06 49.75009 Coord. options

Longitude: West 89 09 46.64586 Save to Favorites

Ellipsoidal height: 419.294 m

Datum: WGS84 Proc Datum: WGS84

Epoch: year

Antenna Height

From station file: TRM55971.00, NONE View STA File

Antenna profile: TRM55971.00 Info

Measured height: 0.000 m

ARP to L1 offset: 0.067 m

Applied height: 0.067 m

Measured to

ARP

L1 Phase Centre

Compute From Slant

OK Cancel





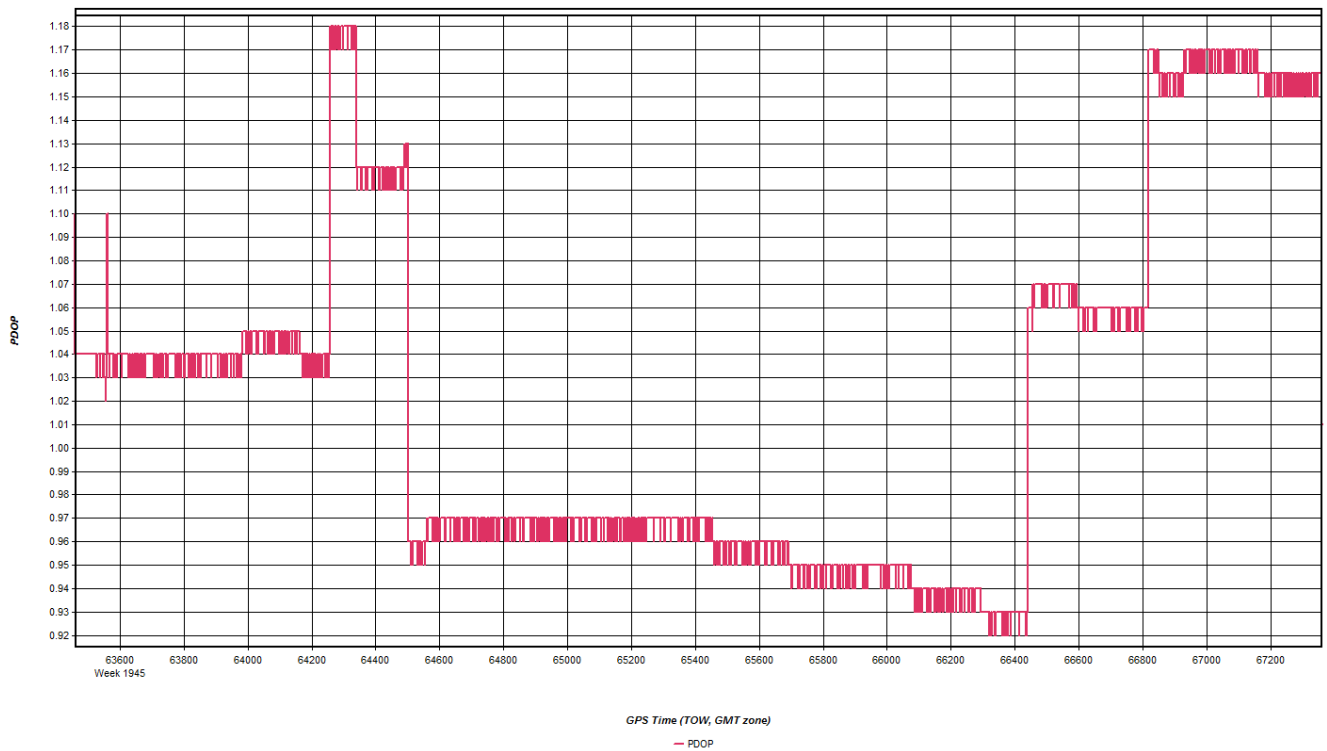
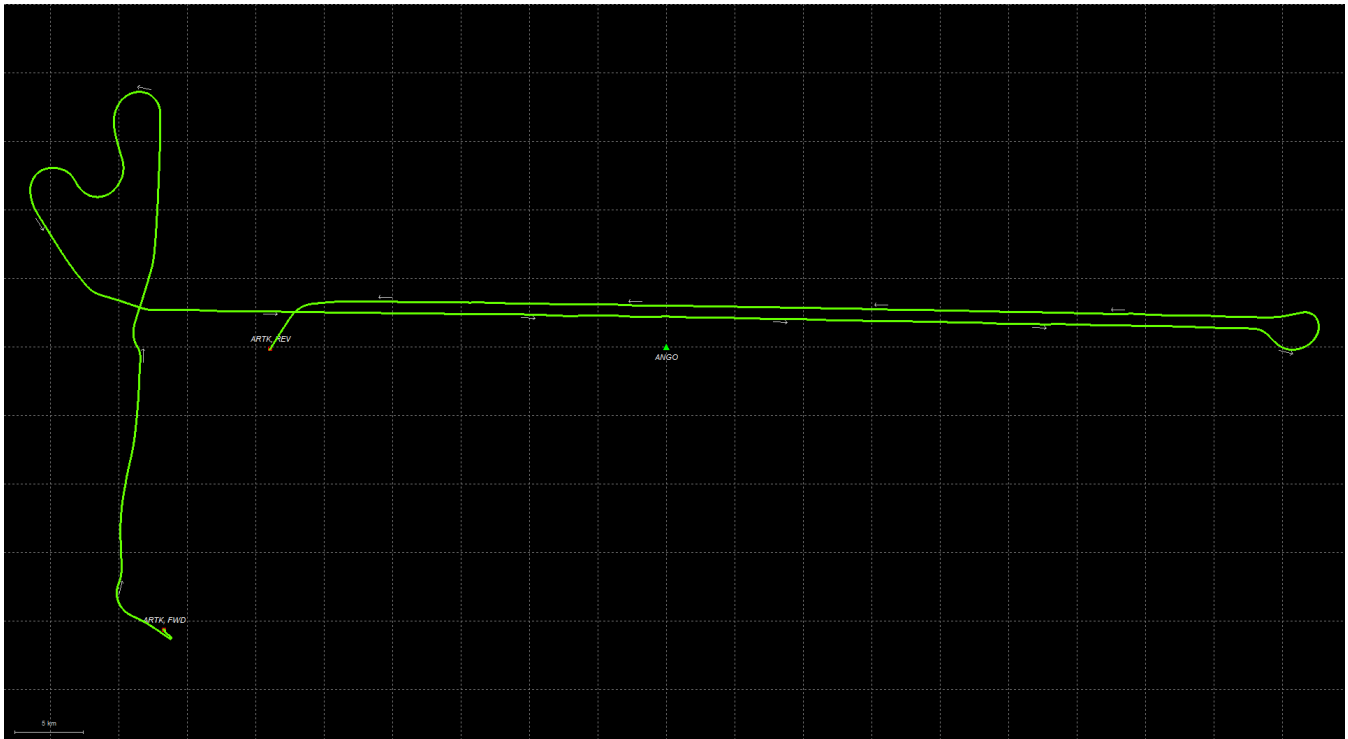
**Quantum Spatial** Airborne LIDAR Data Collection Log Sheet :: Quantum Spatial, Inc

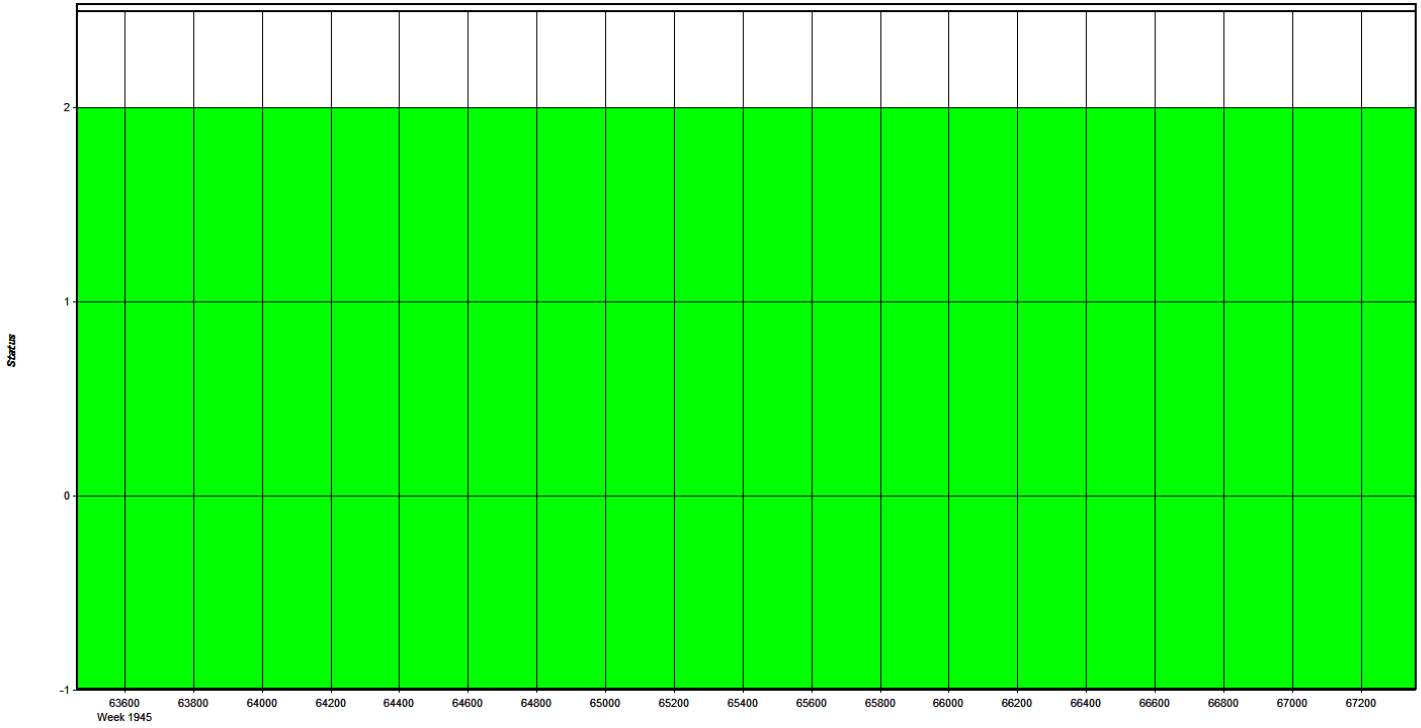
Date: 4/16/2017  
 Lift: A B C D E Pg: 2 of 2  
 Project: 2017-w6c-Langlade Flight Mgmt File: 2017-w6c-Langlade-Co-ALS70SP3-2.gpsm  
 Aircraft: N73TM Begin Hobbs: 646.1 End Hobbs: 6650.0 Total: 3.9 Pilot: John Barham Co-Pilot: Gary Lee  
 Dep Apt: KANW Dep Time (Local): 17:51 Z Arr Apt: KDLH Arr Time (Local): 4:41 Z Tot Time Aloft: 3:50  
 CORS: (Y) N Sta 1: IRMA Sta 2: DOTY Flyovers: (Y) N If Y, times: Sta 1) Sta 2) 19:22  
 GPS Unit: Y (N) Sta 1:            Sta 2:            Flyovers: Y / N If Y, times: Sta 1) Sta 2)  
 Gd Temp beg:            °C End:            °C OAT beg:            °C End: 29.91 Altimeter begin:            end: 29.91  
 LIDAR Type: ALS70 Serial #: 7178 Alt AGL: 5600' Alt AMSL: 6900' Avg Terr. HT: 1300' Max Gtspd: 150 kts Avg Pt Spacing:            Storage Number: 7178  
 FOV: 40° Scan Freq: 299 kHz Mpu: (Y) N Pulse Rate: 53 Hz Power: 900% PPM: 2 End CB: 42 Tot CB: 29

Line #	Hdg	Start (UTC)	End (UTC)	Gd Spd	Roll/Pitch	GPS Altitude	Crab	Turb (0..1)	FLIGHT LINE NOTES - visibility, clouds, smoke, partial, etc.
42	E	19:30	19:45	130 kts	1.2/18	6900'	2°	+	Following lines after in air reboot 20170416.170835
41	W	19:48	20:02	148	1.1/19	6700'	2°	+	no ranges in Flight Pro
40	E	20:06	20:21	140	1.2/17	6700'	1°	+	intermittent min range get warnings
									200' N of G @ 19 NM (FEE), Range turned on in Flight Pro.
60P	N	20:48	20:31	155	1.1/18	6900'	1°	+	CROSS TIE - Partial
		20:31	20:33						Closeout S-turn

Total Proj Lines: 4 Lines Remain:            Churn Time: 2.5 Mob Time: 1.4 Notes: Line 43 not recorded after post process QC  
 + 1P 43

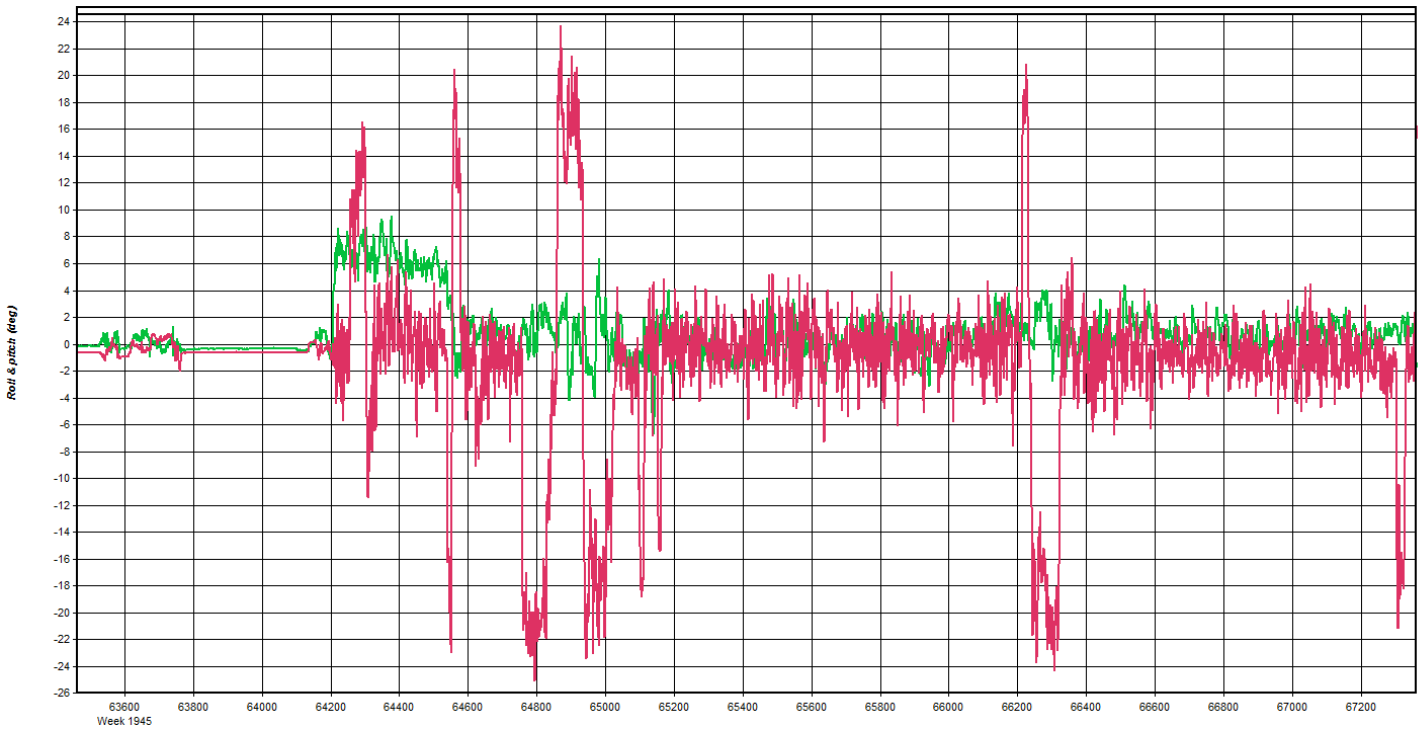
# Apr 16, 2017-B (N73TM, SN7178)





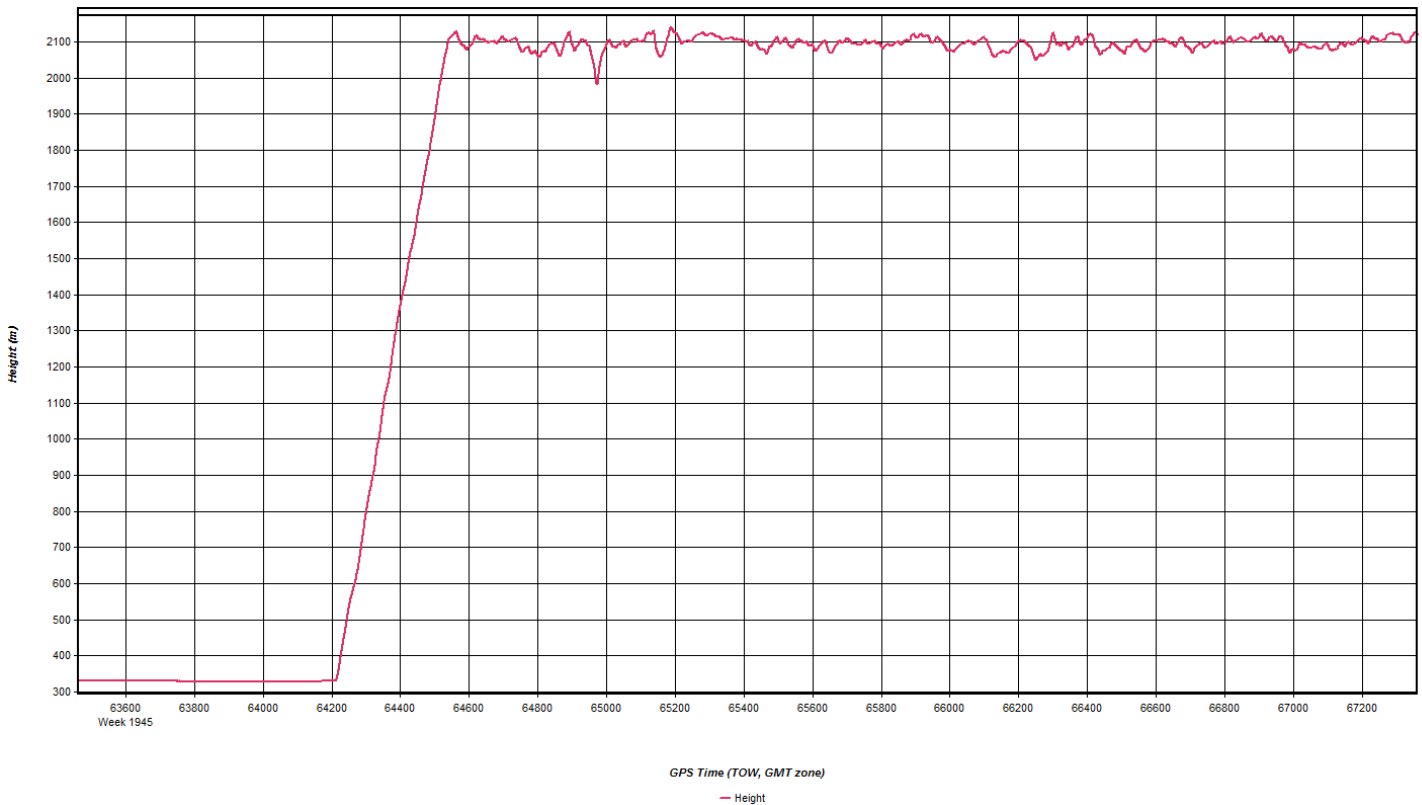
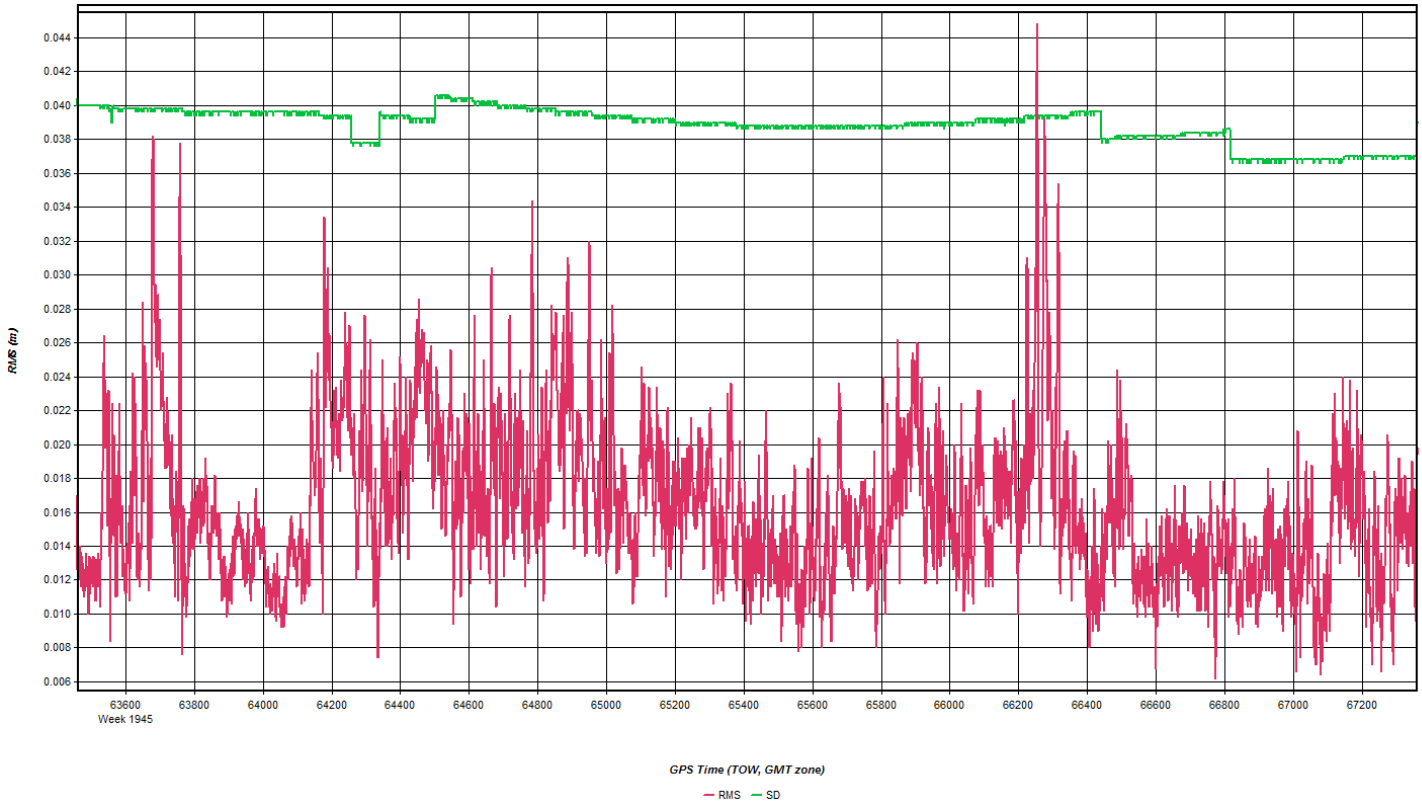
GPS Time (TOW, GMT zone)

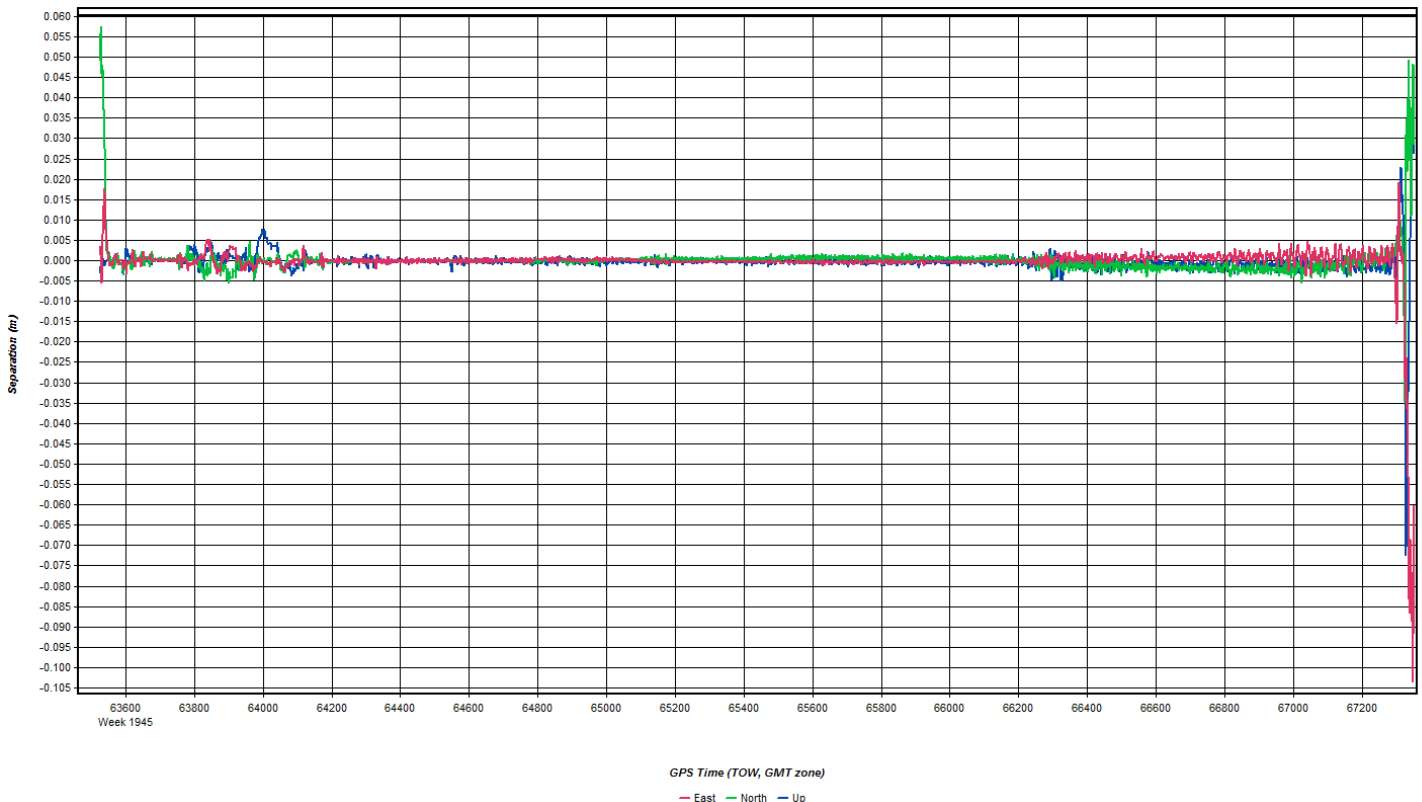
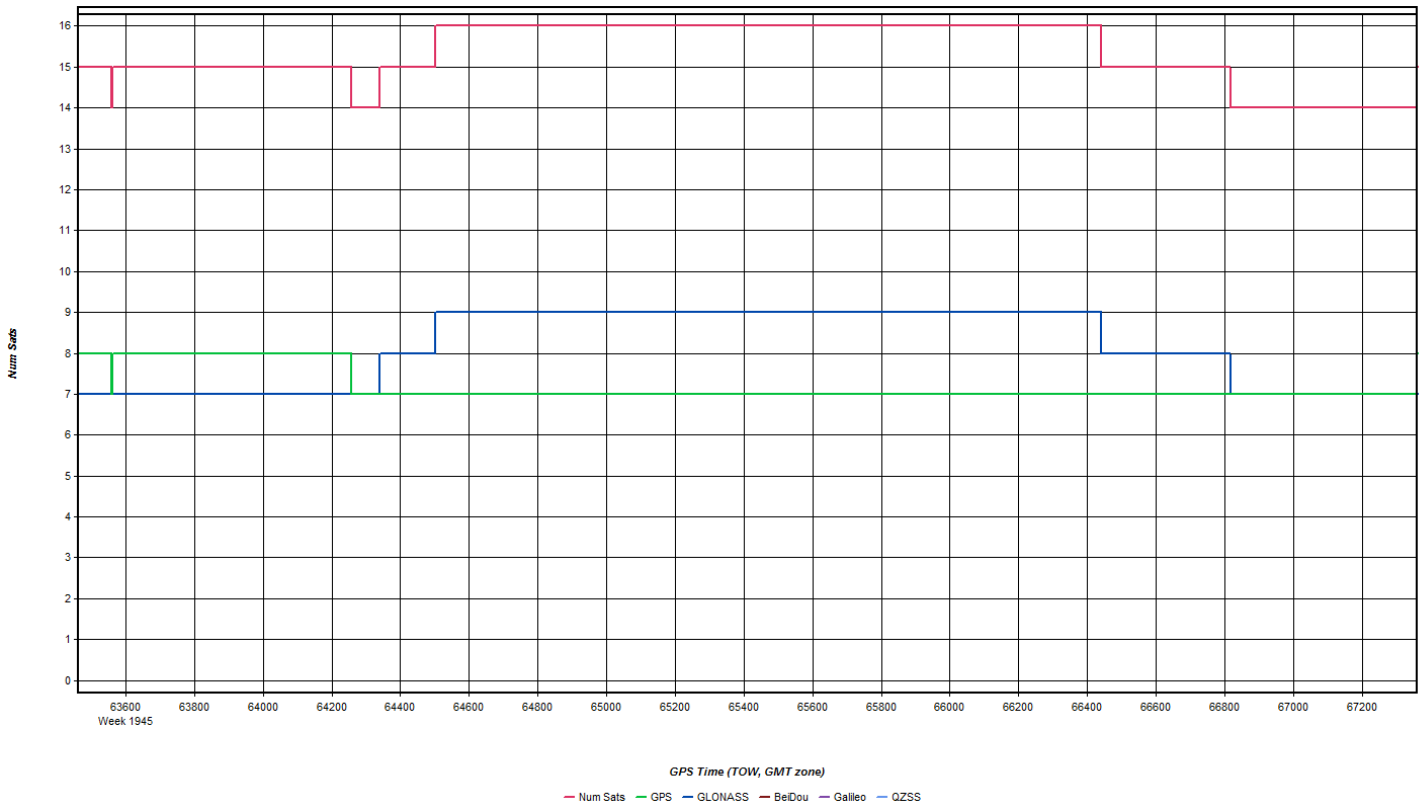
— Float — Forward Fixed — Reverse Fixed — Fixed (2 or more)

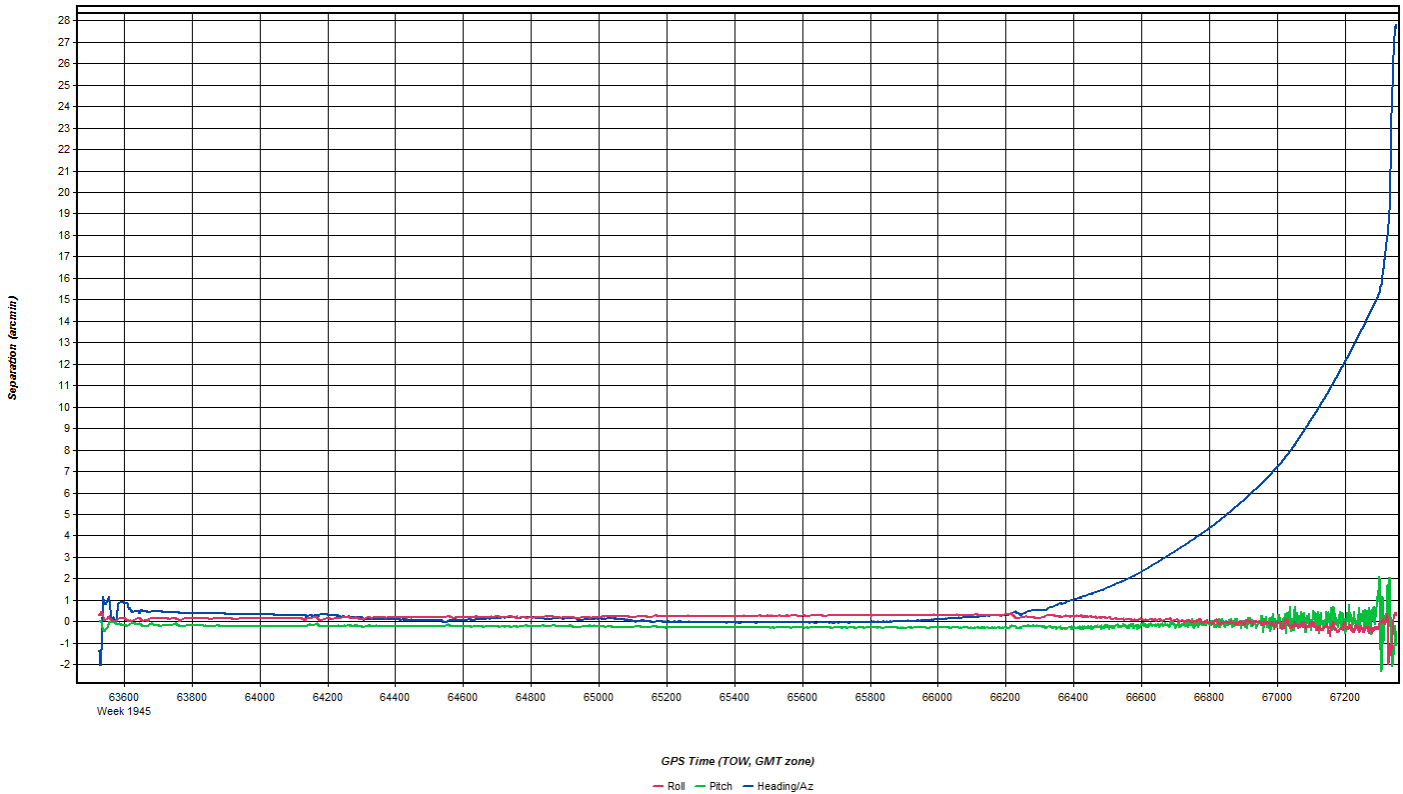
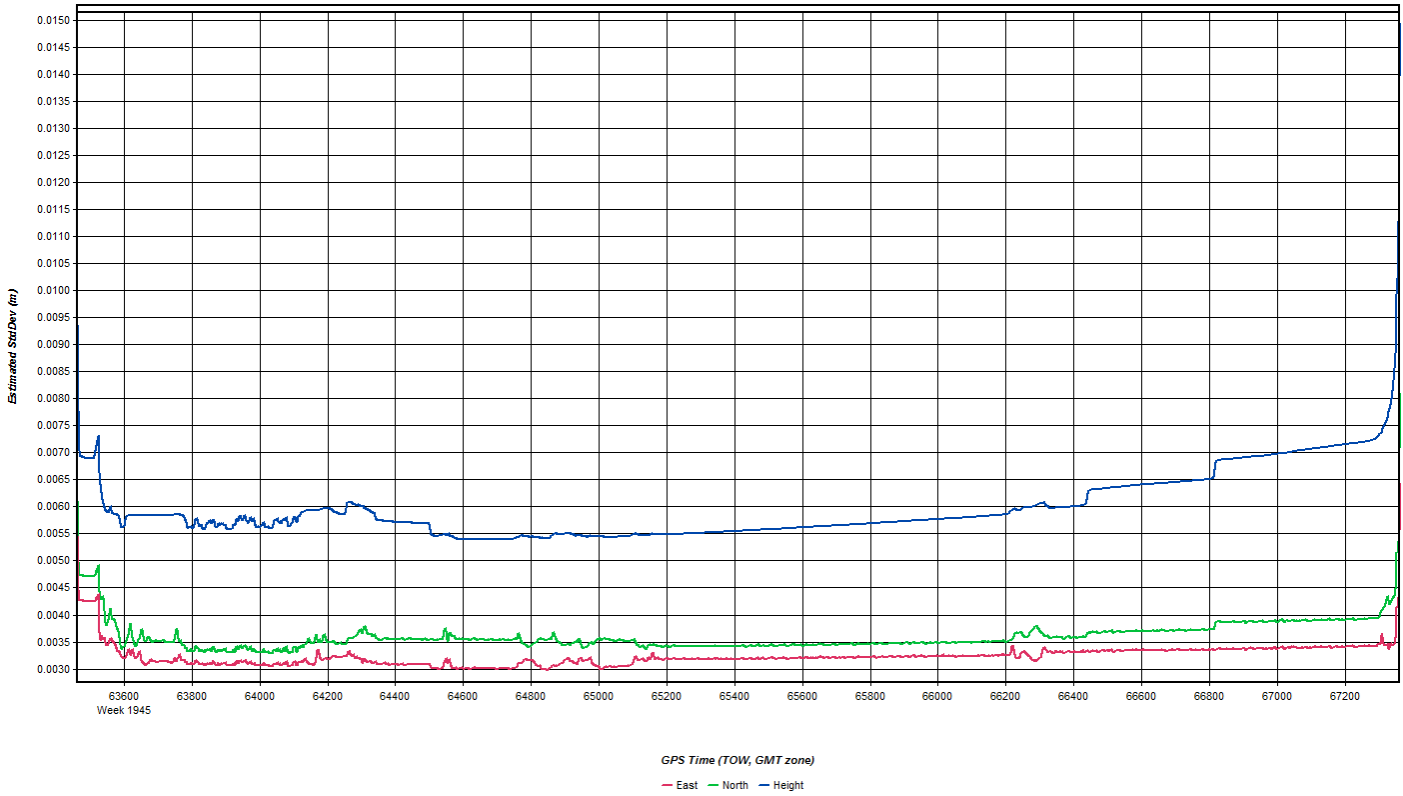


GPS Time (TOW, GMT zone)

— Roll — Pitch







Coordinate/Antenna Settings ? X

Master Remote

Base Station  
 1: ANGO Name: ANGO  Disabled  
 File: F:\Proc\28571\_WROC\Langlade Co\Gary\_Tao\_4-18-17\20170416{

Coordinates  
 Latitude: North 45 06 49.75009 Coord. options  
 Longitude: West 89 09 46.64586 Save to Favorites  
 Ellipsoidal height: 419.294 m  
 Datum: WGS84 Proc Datum: WGS84  
 Epoch: year

Antenna Height  
 From station file: TRM55971.00, NONE View STA File  
 Antenna profile: TRM55971.00 Info  
 Measured height: 0.000 m  
 ARP to L1 offset: 0.067 m  
 Applied height: 0.067 m  
 Measured to  
 ARP  
 L1 Phase Centre  
 Compute From Slant

OK Cancel



# Flight Log

**Airborne LIDAR Data Collection Log Sheet :: Quantum Spatial, Inc**

Date: 4/16/2017

Project: 2017-WRC-Langlade  
 Flight Mgmt File: 2017-WRC-Langlade-Co-ALSOSP3-2017-504  
 Proj #: 28571  
 Pilot: John Carlsson  
 Tech: Gary Jao

Aircraft: N7BTM  
 Begin Hobbs: 6646.1  
 End Hobbs: 6650.0  
 Total: 3.9  
 Arr Apt: KDLH  
 Arr Time (Local): 4:41 (Z: 21:41Z)  
 Tot Time Aloft: 19:22

Dep Apt: KANW  
 Dep Time (Lcl): 12:51 (Z: 17:51)  
 Flyovers: Y/N (IF Y, times: Sta1) Sta2) 19:22

CORS: Y/N Sta 1: IRMA Sta 2: DOTY

GPS Unit: Y/N Sta 1: Sta 2:

Gd Temp beg:		°C		OAT beg:		°C		End:		°C		Altimeter begin:		end:		°C		Storage Name:	
Type	ALS70	Scan	7178	Alt AGL	5600'	Alt AGL	6900'	Avg Terr Ht	1300'	Max Gdspd	15066'	Avg Pt Spacing	PPSM	PPSM	2	Reg CB	13	End CB	7178
FOV	40°	Scan Freq	299kHz	MPIA	Y/N	Pulses In Air	2	Pulse Rate	53 Hz	Power	100%	PPSM	2	Reg CB	13	End CB	42	Tot CB	29

FLIGHT LINE NOTES - visibility, clouds, smoke, partial, etc

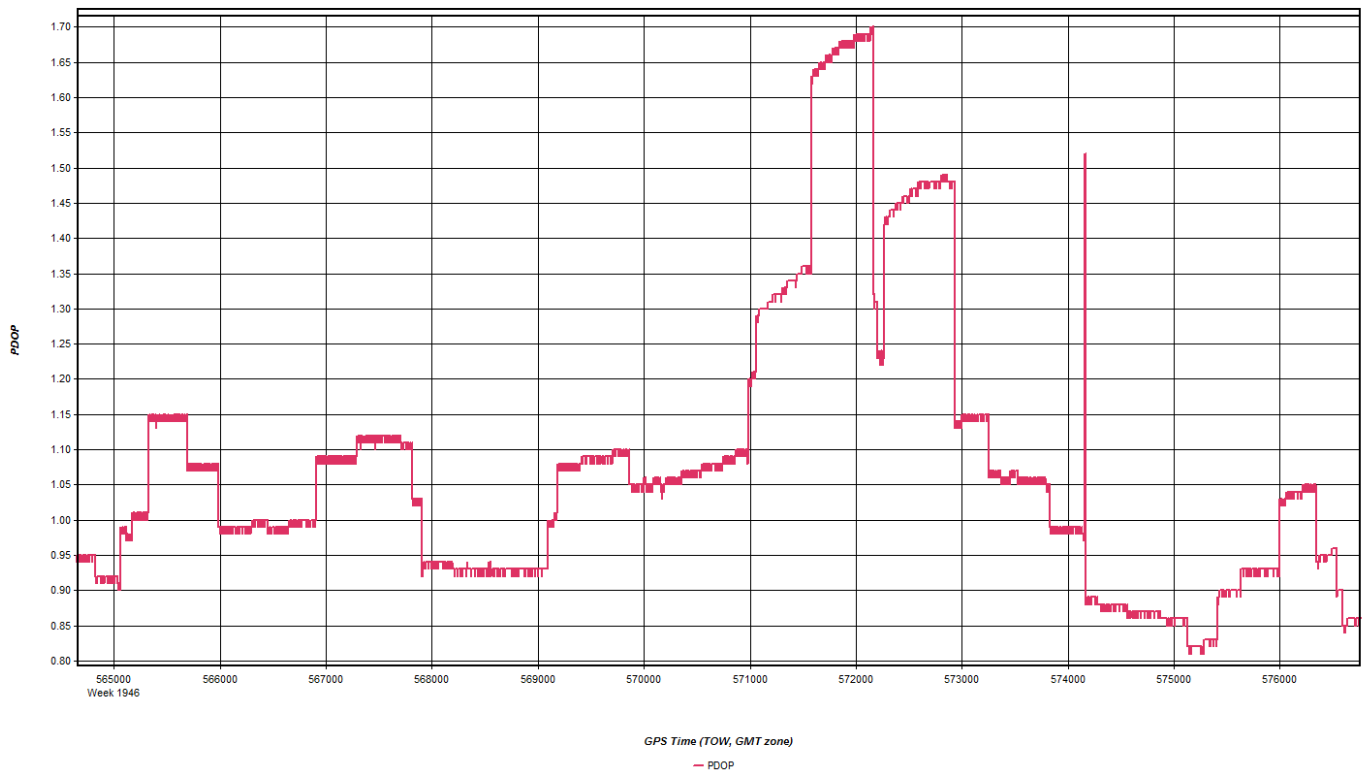
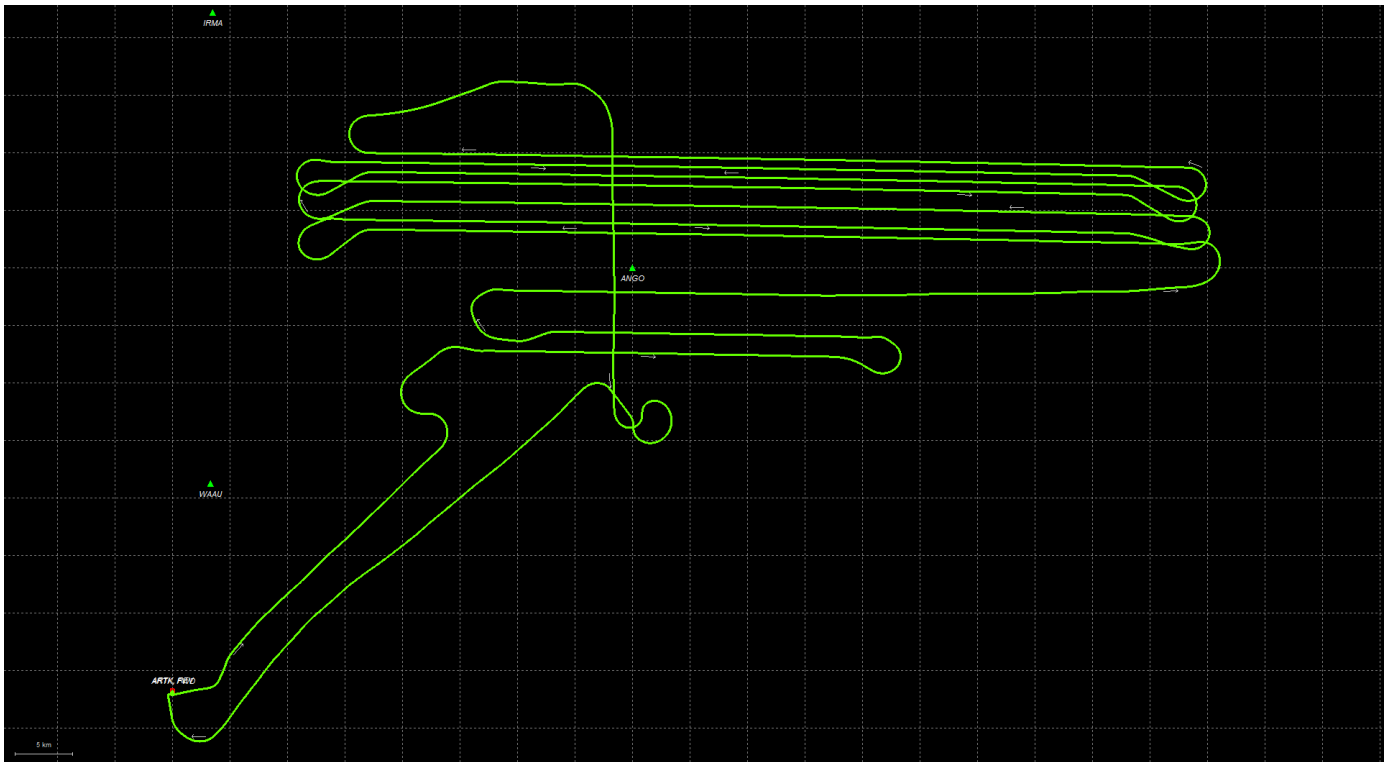
Line #	Hdg	Start (UTC)	End (UTC)	Gd Spd	POOP/Pass	GPS Altitude	Crab	Turb	Notes
43	E	18:46	19:00	150	1-1/18	6900'	2°	+	mission session 20170416_173459 Initial 5 turn 200' drift to N of G, turb very rough air, flipped upper range gate @ start ALS database connection near clicker 44 may require refl, sensor stopped early X ranges + registering in FMS now mirror not stopping rebooting and reinitialize over DOTY CORS
44	W	18:26	18:23	150	1-1/16	6900'	2°	+	
45	E	18:09	18:23	150	1-3/16	6900'	3°	+	
43	W	19:08	19:27						next page → 20170416_19835 session

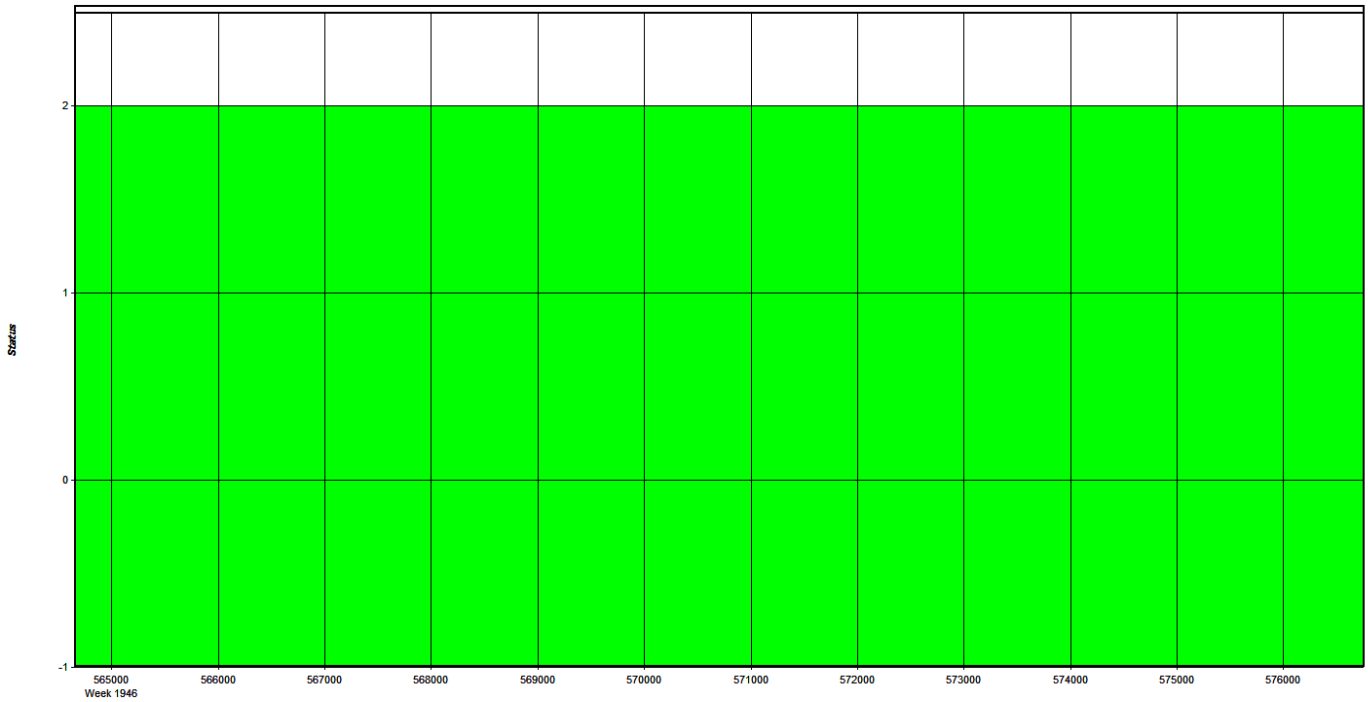
Total Proj Lines: 4 Lines Flow: 4 + 1P Lines Remain: 2.5 Mob Time: 1.4 Online Time: 2.5 Notes: Post Processing Revealed Line 43 not recording - Void !!!



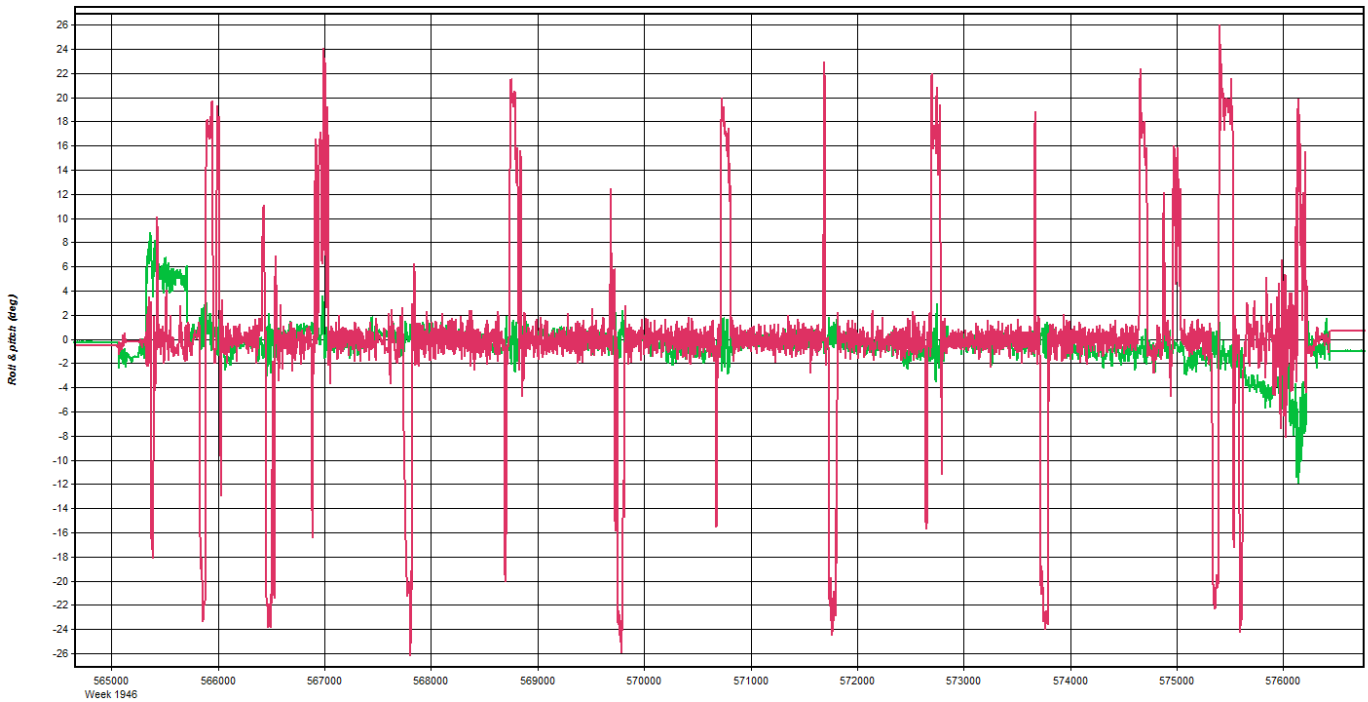


# Apr 29, 2017-A (N262AS, SN7161)

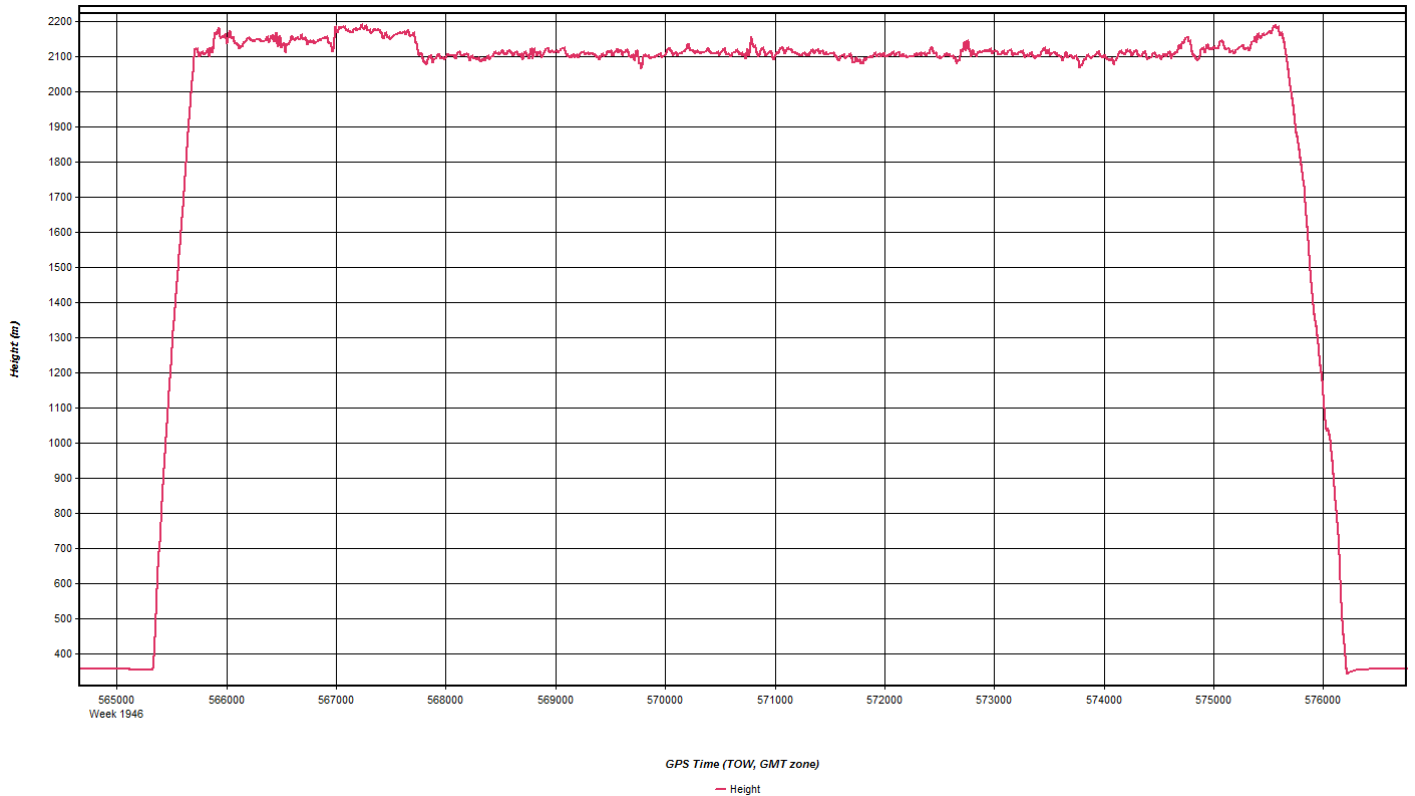
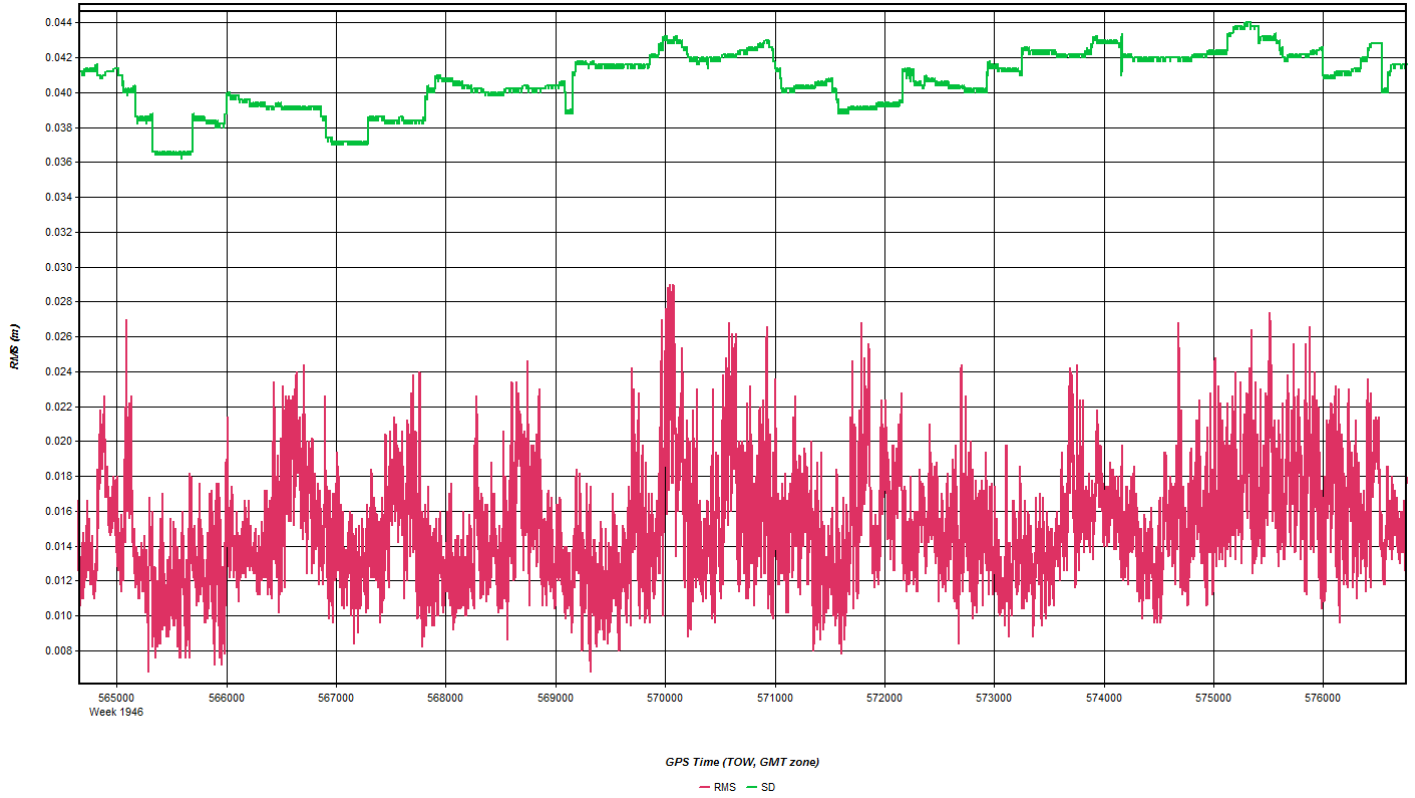


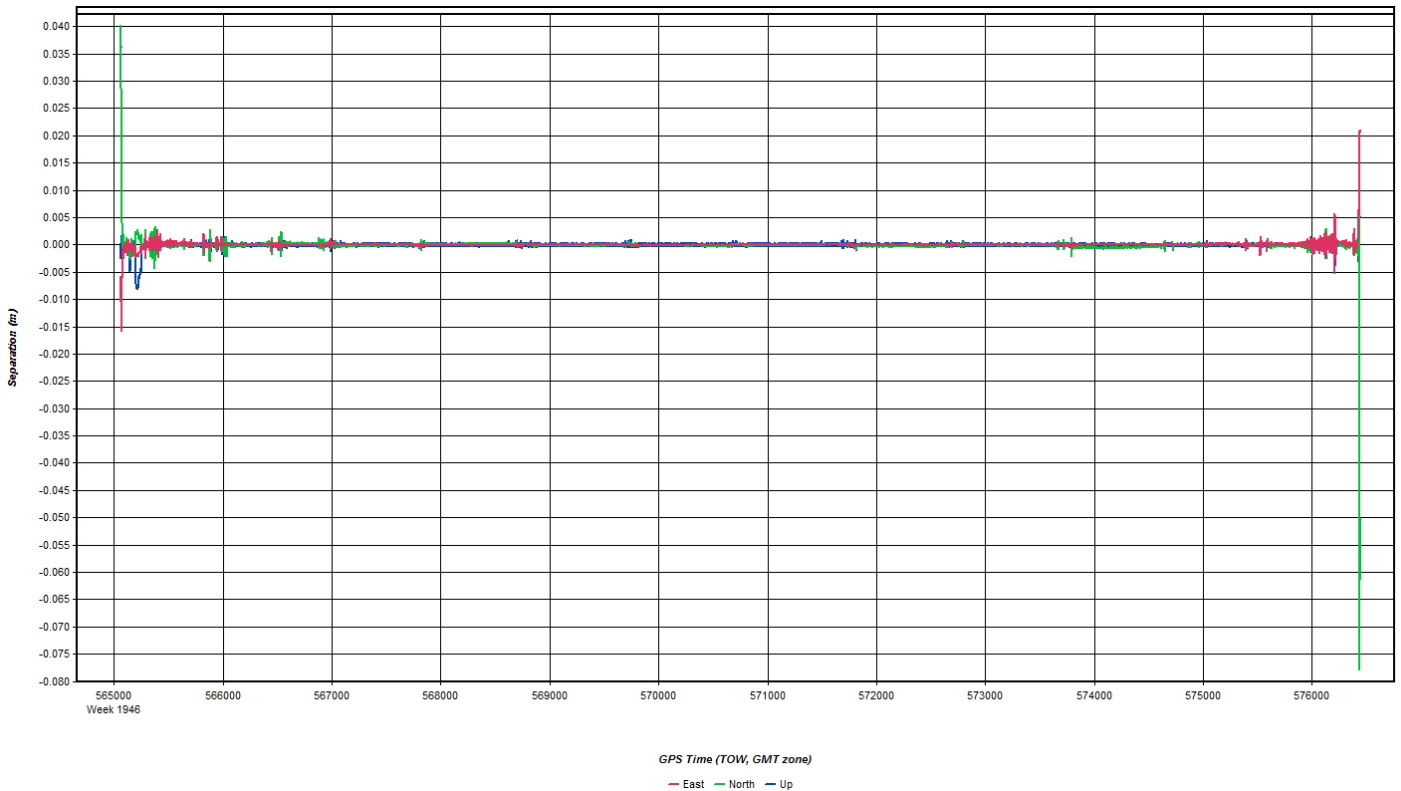
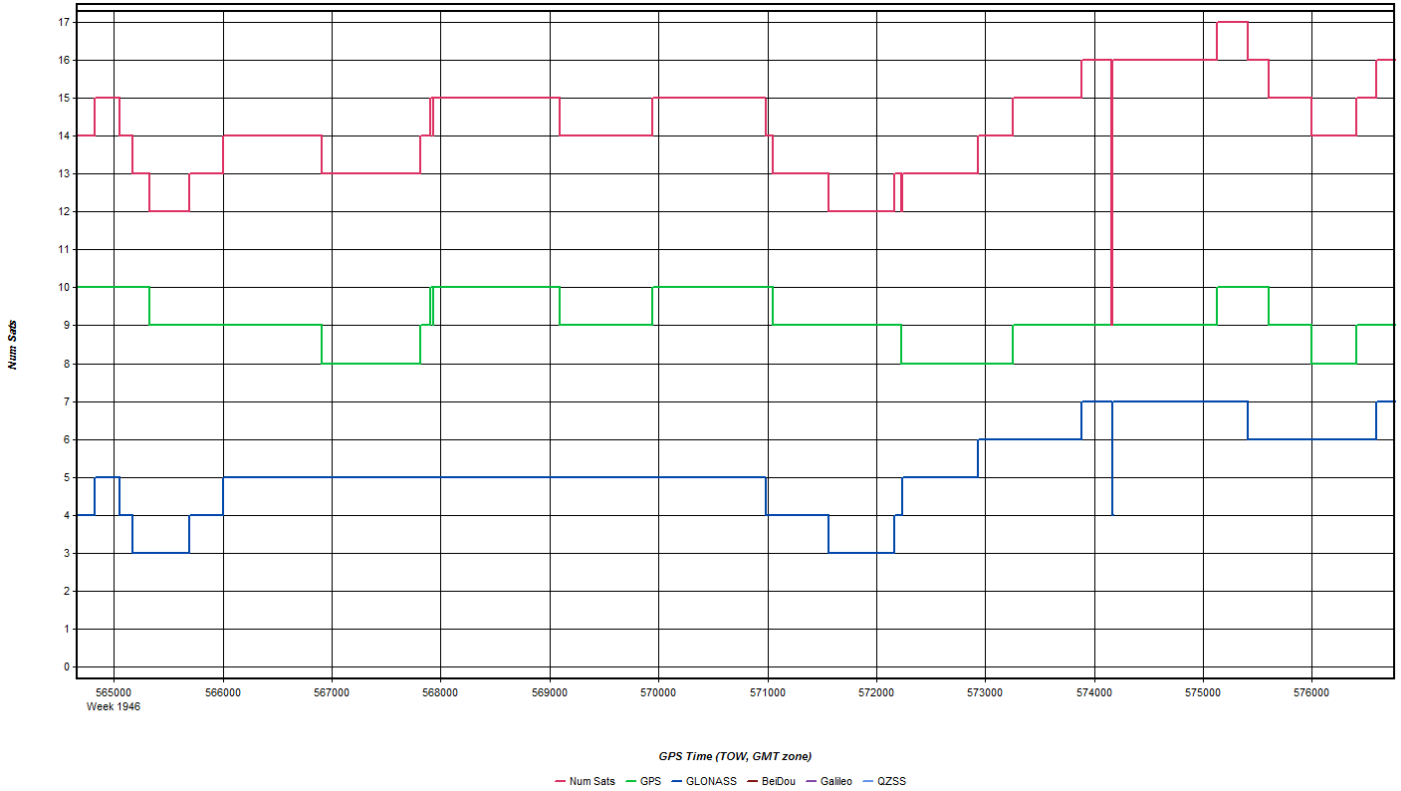


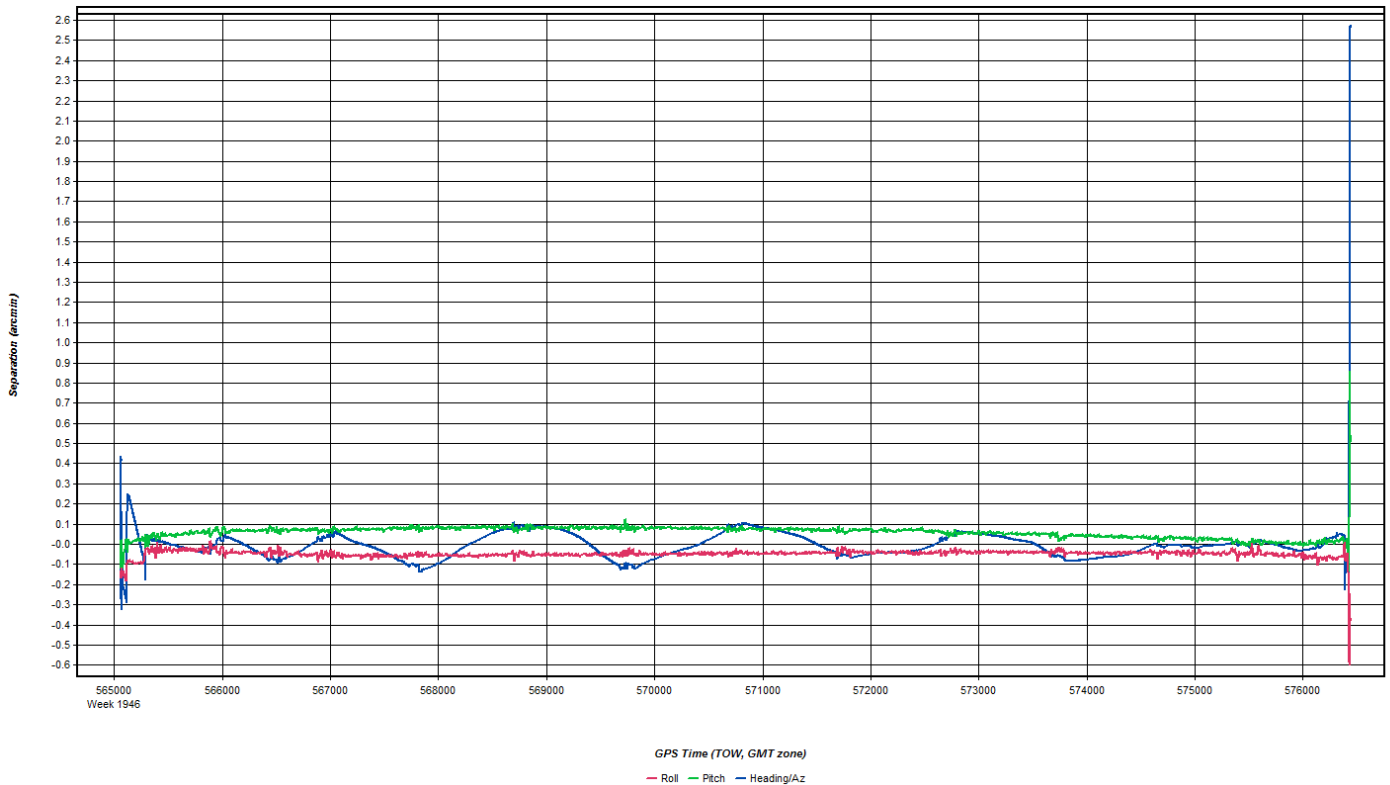
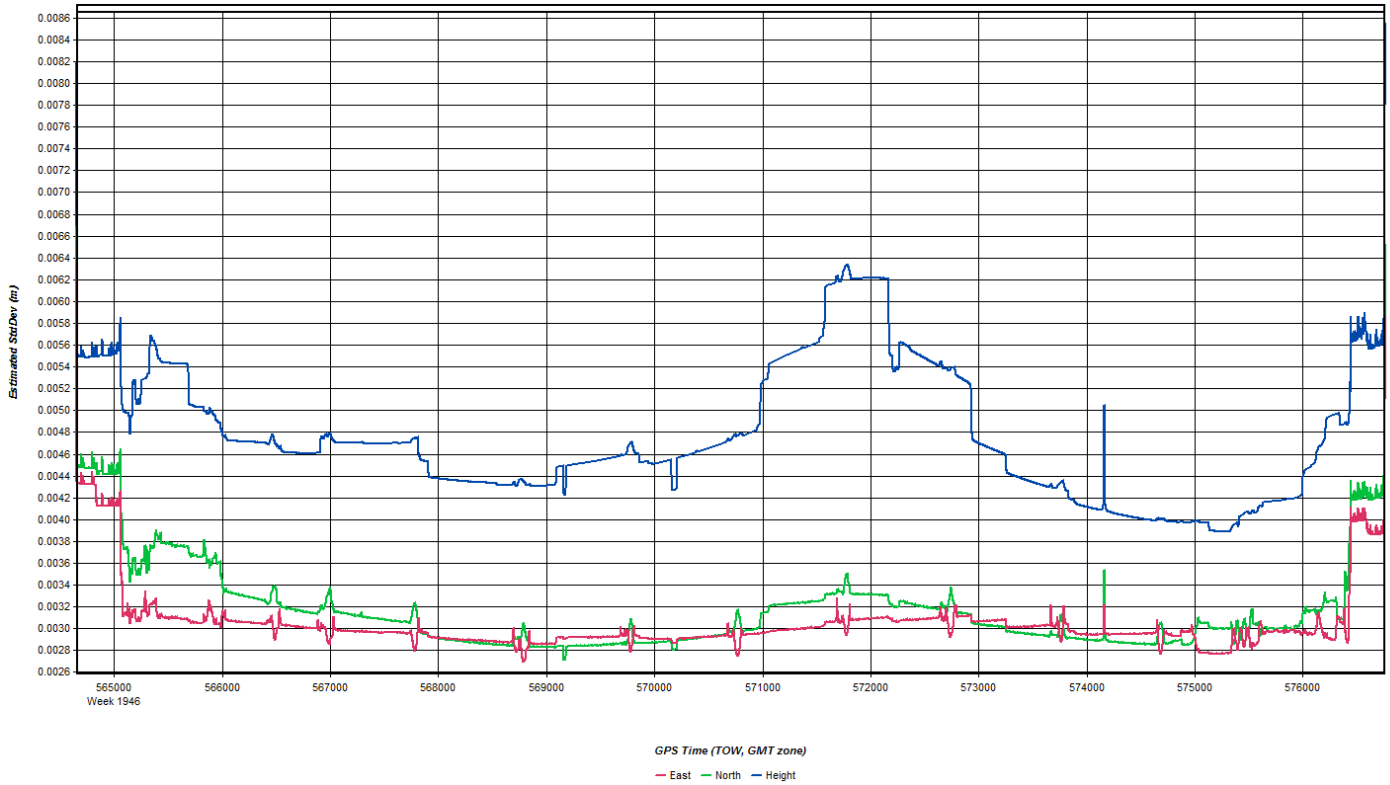
GPS Time (TOW, GMT zone)  
— Float — Forward Fixed — Reverse Fixed — Fixed (2 or more)



GPS Time (TOW, GMT zone)  
— Roll — Pitch









Coordinate/Antenna Settings ? X

Master Remote

Base Station  
 1: ANGO Name: ANGO  Disabled  
 File: F:\Proc\28571\_WROC\_Sawyer\_7178\Doug\_Carey\_5-2-17\Wiscors

Coordinates  
 Latitude: North 45 06 49.74988 Coord. options  
 Longitude: West 89 09 46.64567 Save to Favorites  
 Ellipsoidal height: 419.291 m  
 Datum: WGS84 Proc Datum: WGS84  
 Epoch: year

Antenna Height  
 From station file: TRM55971.00, NONE View STA File  
 Antenna profile: TRM55971.00 Info  
 Measured height: 0.000 m  
 ARP to L1 offset: 0.067 m  
 Applied height: 0.067 m  
 Measured to  
 ARP  
 L1 Phase Centre  
 Compute From Slant

OK Cancel

Coordinate/Antenna Settings ? X

Master Remote

Base Station  
 2: IRMA Name: IRMA  Disabled  
 File: F:\Proc\28571\_WROC\_Sawyer\_7178\Doug\_Carey\_5-2-17\Wiscors

Coordinates  
 Latitude: North 45 18 47.20444 Coord. options  
 Longitude: West 89 37 33.35010 Save to Favorites  
 Ellipsoidal height: 444.789 m  
 Datum: WGS84 Proc Datum: WGS84  
 Epoch: year

Antenna Height  
 From station file: TRM57971.00, NONE View STA File  
 Antenna profile: TRM57971.00 Info  
 Measured height: 0.000 m  
 ARP to L1 offset: 0.067 m  
 Applied height: 0.067 m  
 Measured to  
 ARP  
 L1 Phase Centre  
 Compute From Slant

OK Cancel

Coordinate/Antenna Settings ? X

Master Remote

Base Station  
 3: WAAU Name: WAAU  Disabled  
 File: F:\Proc\28571\_WROC\_Sawyer\_7178\Doug\_Carey\_5-2-17\Wiscors

Coordinates  
 Latitude: North 44 56 44.42642 Coord. options  
 Longitude: West 89 37 40.95169 Save to Favorites  
 Ellipsoidal height: 326.246 m  
 Datum: WGS84 Proc Datum: WGS84  
 Epoch: year

Antenna Height  
 From station file: TRM57971.00, NONE View STA File  
 Antenna profile: TRM57971.00 Info  
 Measured height: 0.000 m  
 ARP to L1 offset: 0.067 m  
 Applied height: 0.067 m  
 Measured to  
 ARP  
 L1 Phase Centre  
 Compute From Slant

OK Cancel

# Flight Log

**Quantum Spatial**  
 (email: log daily to flight\_log\_distribution\_Lite@quantumspatial.com)

**Project:** WROC - LANGLADE **Proj #:** 28571 **Flight Mgmt File:** 20170429-124922 **Date:** 4-29-17  
 LIFE: A B C D E Pg. 1 of 1

**Aircraft:** N262AS **Begin Hobbs:** 6578.7 **End Hobbs:** 6581.7 **Total:** **Pilot:** RAPTKE **Co-Pilot:** CAREY **Tech:** CAREY

**Dep Apt:** KCWA **Dep Time (Lcl):** 800 (Z): 1300 **Arr Apt:** K8LDA **Arr Time (Local):** 1115 (Z): 1615 **Tot Time Aloft:** 3:0

**CORS:** 01N **Sta 1:** Wisconsin **Sta 2:** **Flyovers:** Y/N IF Y, times: Sta1) **Sta2)**

**GPS Unit:** Y/N **Sta 1:** **Sta 2:** **Flyovers:** Y/N IF Y, times: Sta1) **Sta2)**

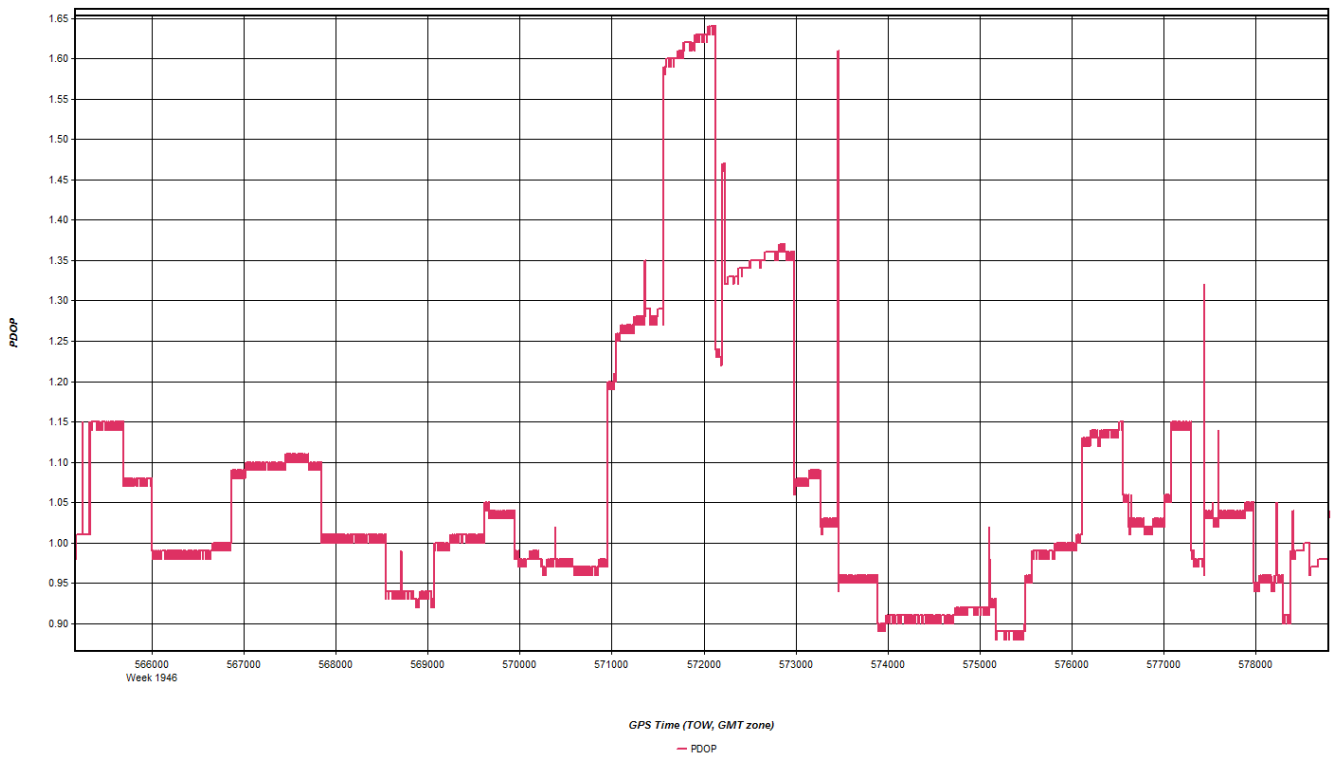
Type	Hdg	Start (UTC)	End (UTC)	Gd Spd	POD/ft/sec	GPS Altitude	Crab	Turb (0-4)	°C		end:	Avg Pt Spading	Max Glpd	PPSM	Bag CB	Score
									OAT beg:	End:						
LIDAR	FOV	40	Scan Freq	53.4	MPIA 01N	Alt AGL 5594	Alt AMSL 7031					150	100%	2.2	239	15
		7161	7161	7161	7161	7161	7161	7161	7161	7161	7161	7161	7161	7161	7161	7161
56	94	1315	1319	1150	1.2	7031		0								
54	274	1323	1327		1.2	7070										
50	94	1331	1336		1.1	7125										
44	274	1344	1357		1.1	6886										
43	94	1401	1414		1.1	6900										
41	275	1417	1431	1150	1.1	6902		0								
39	94	1434	1447		1.2	6919										
38	275	1450	1503		1.3	6896										
37	94	1507	1520		1.2	6886										
36	275	1524	1537		1.3	6896										
XFLT	182	1544	1548		1.2	7000										
KcWA → SITE → S/F IG R.F. SKC / snow free R.F. Lines flow as Refl. lghts R.F. per tracking Doc. R.F. ALL Lines flow in their entirety R.F. SCT / BKN 25k XFLT unplanned SITE → S/F IG → KRTHI cWA																

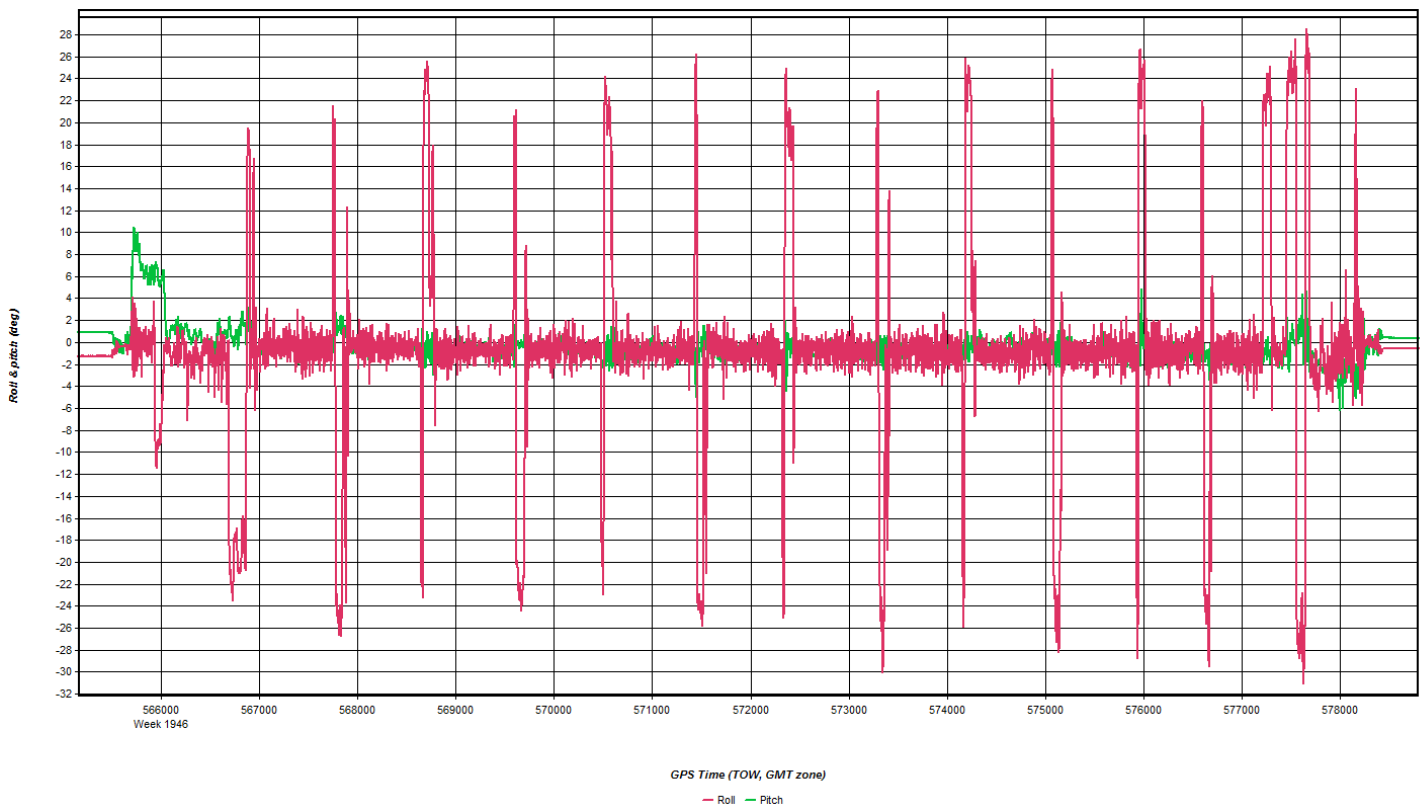
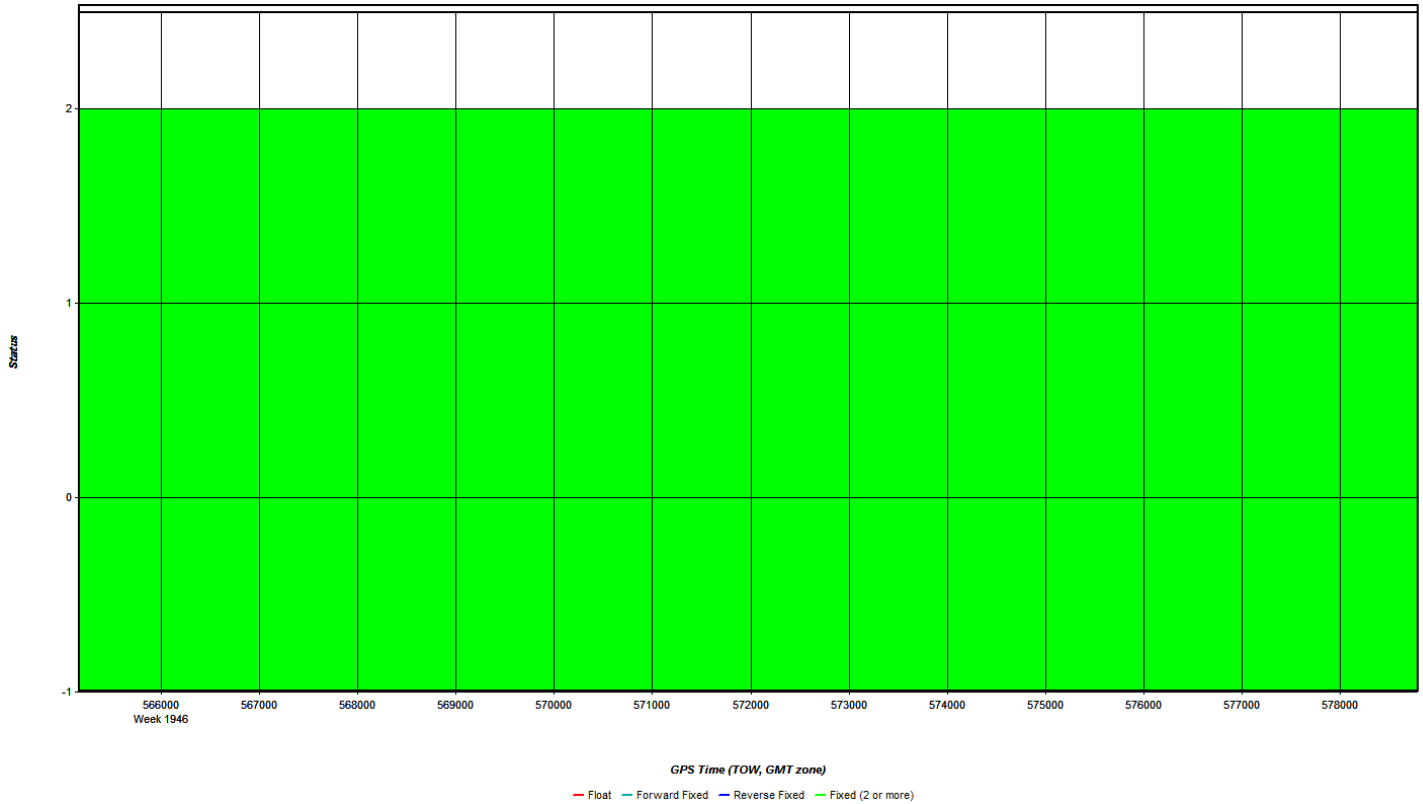
**FLIGHT LINE NOTES - visibility, clouds, smoke, partial, etc**

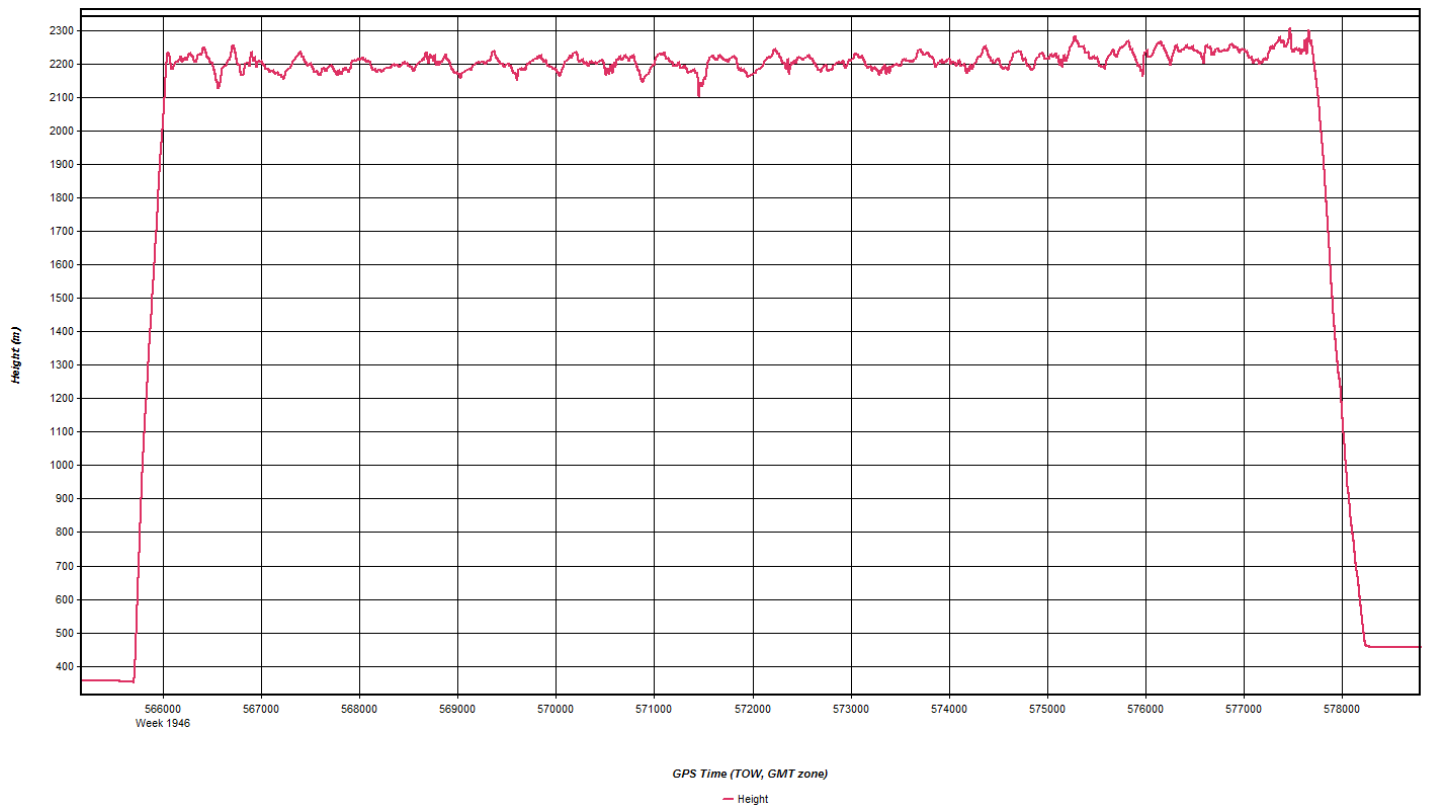
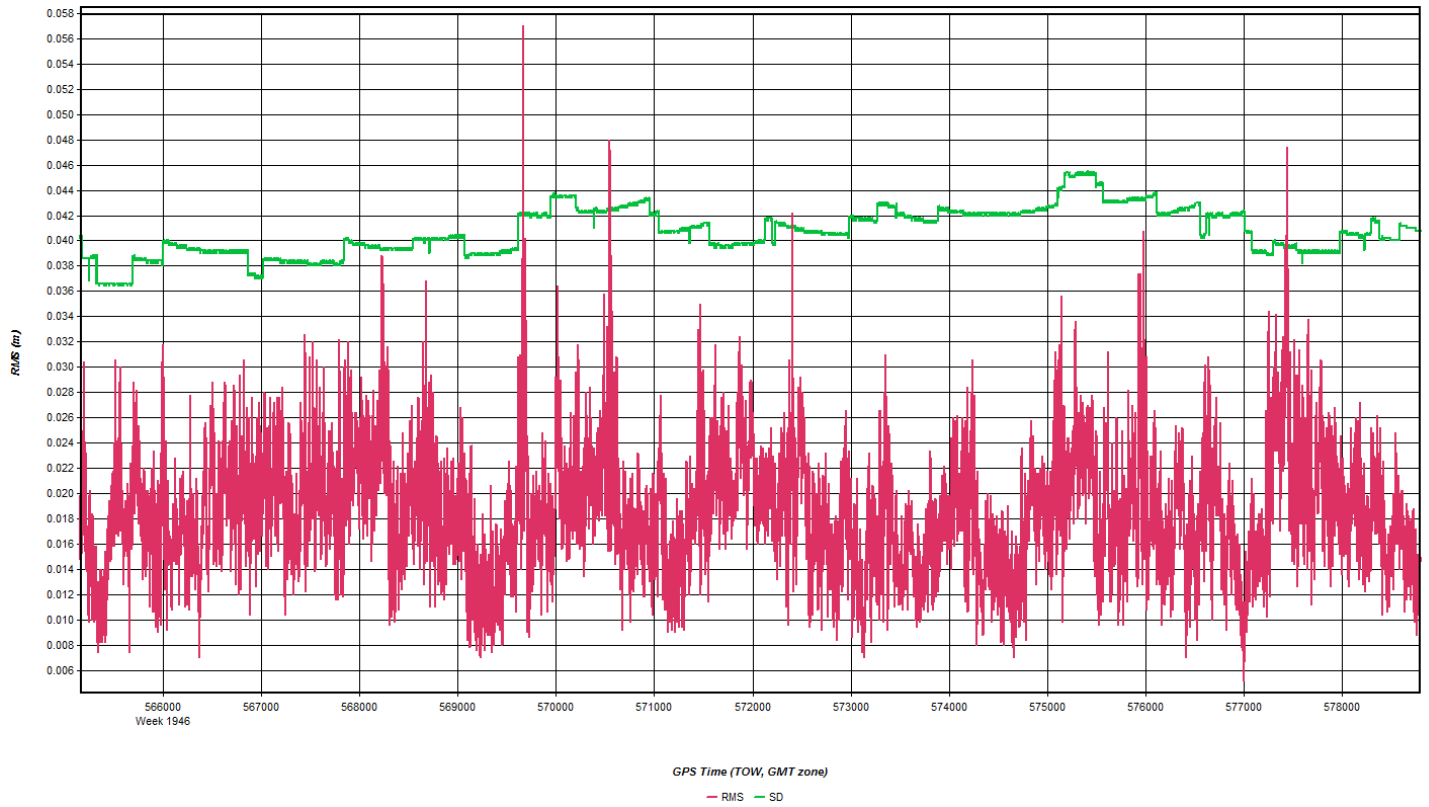
**Total Proj Lines:** 10 **Lines Flow:** 10 **Lines Remain:** 0 **Online Time:** 2:0 **Job Time:** 4 **Notes:**

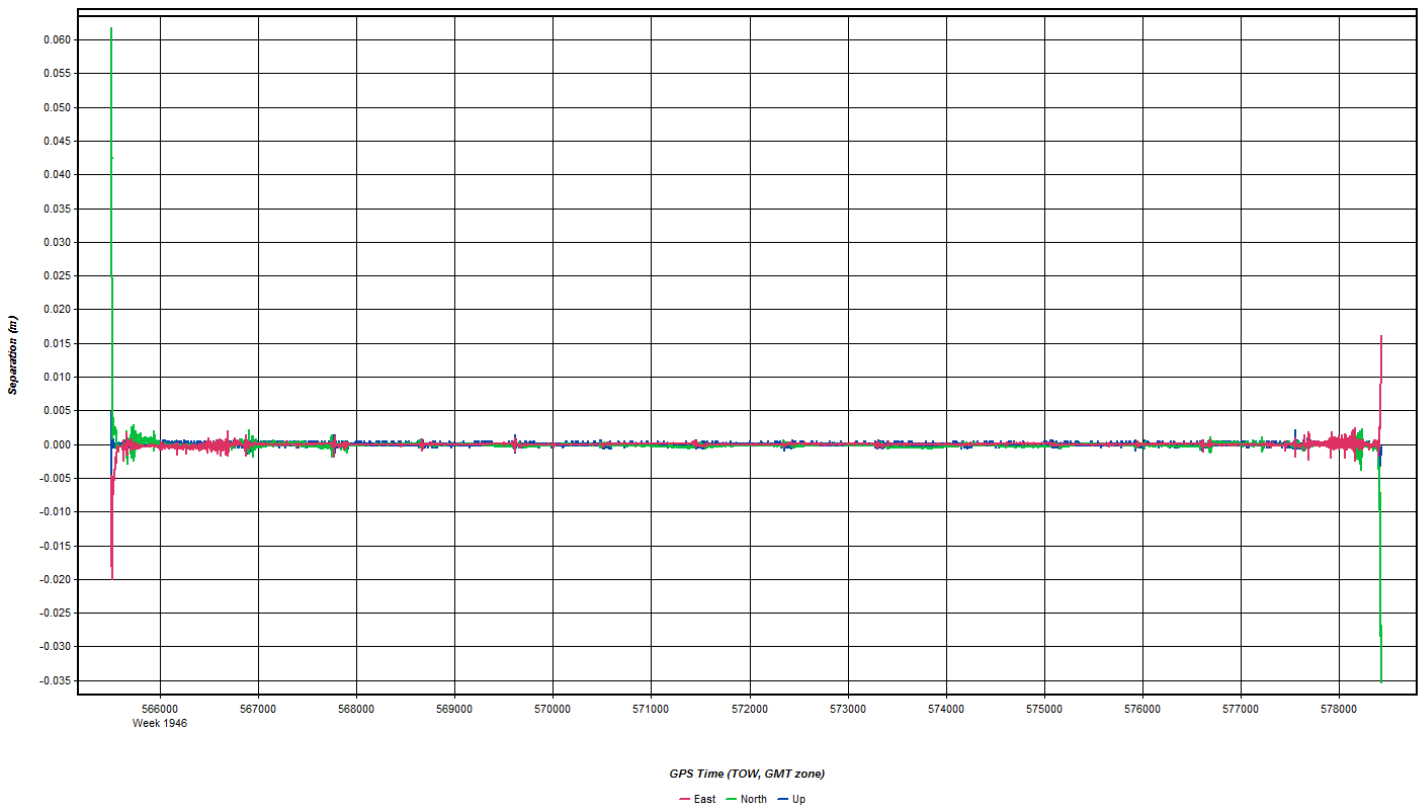
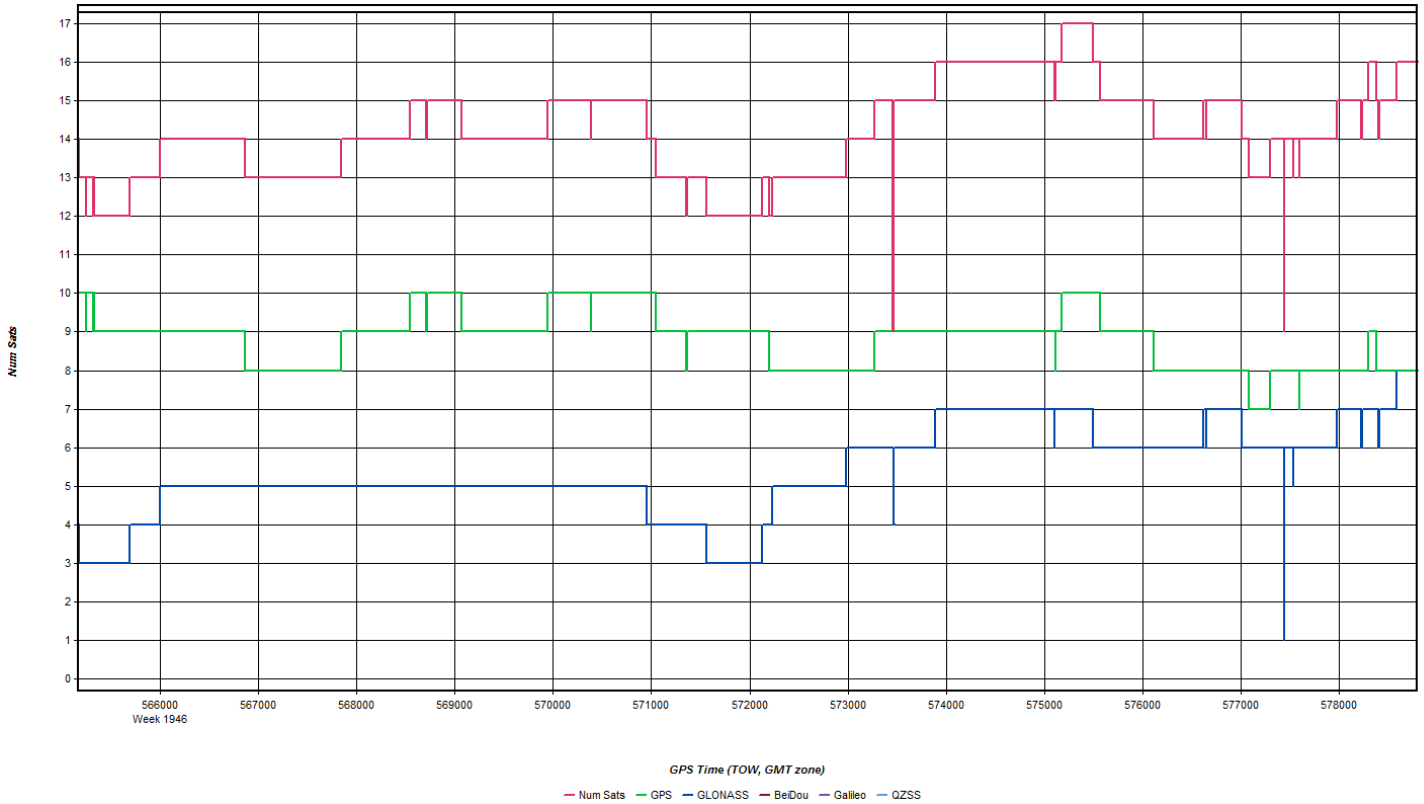
Generated by CamScanner from intsig.com

# Apr 29, 2017-A (N73TM, SN7178)

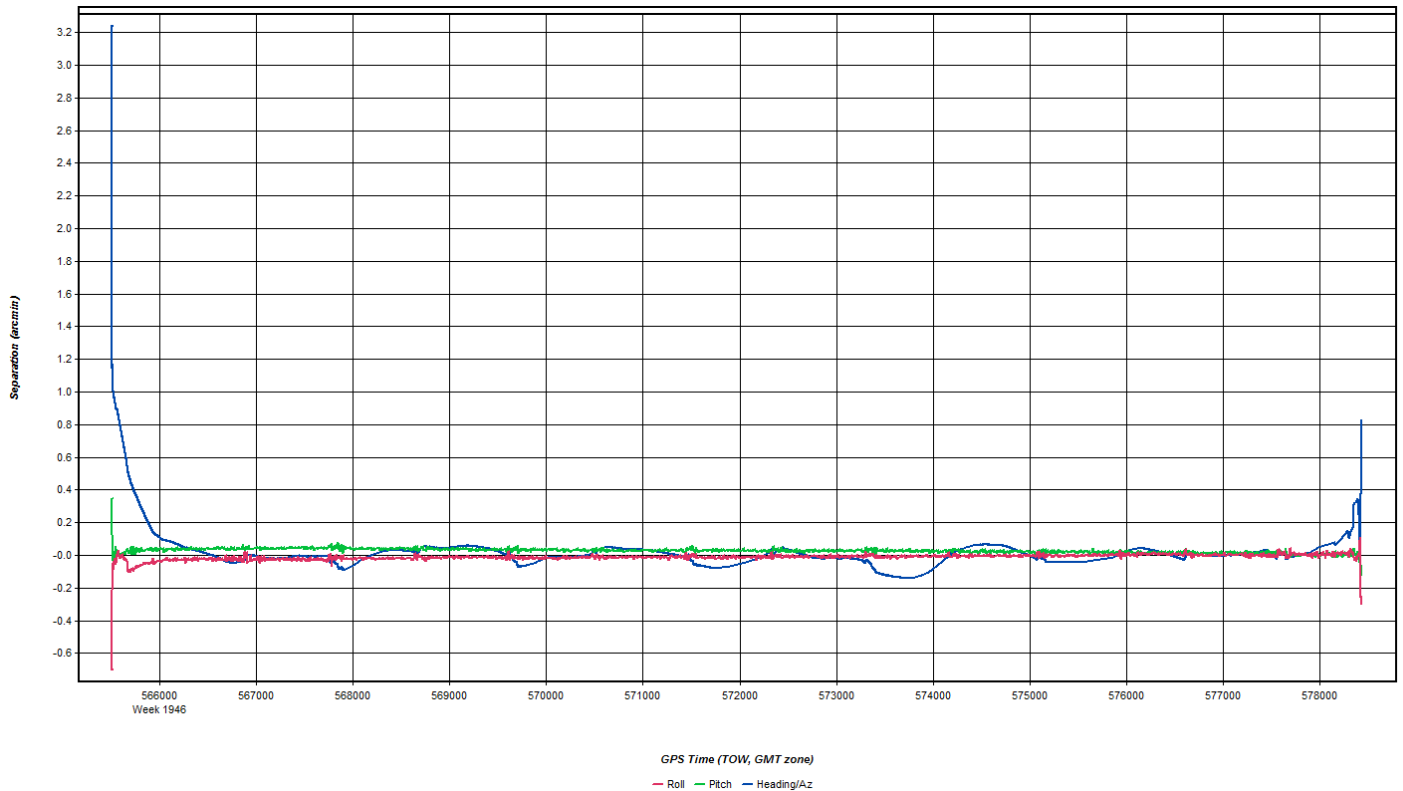
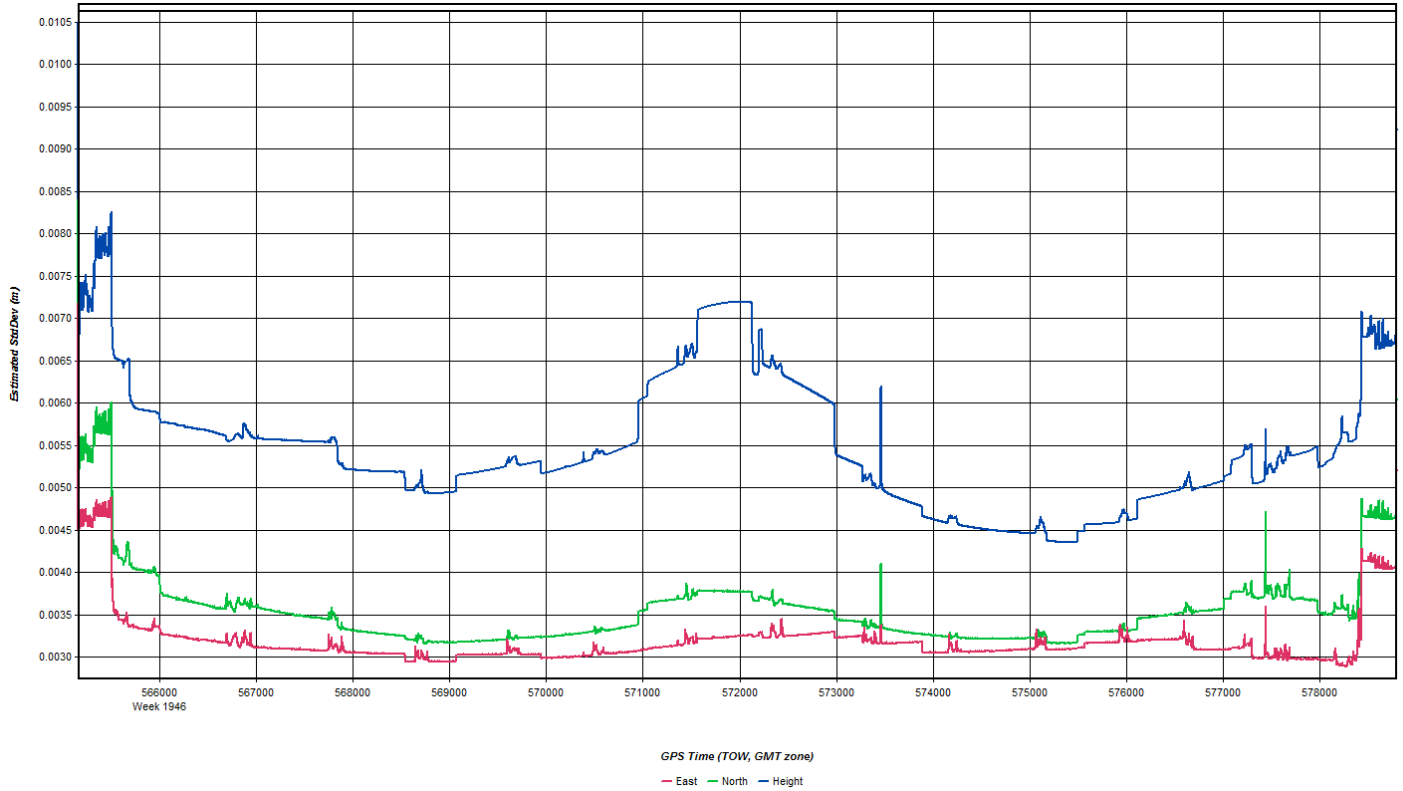












Coordinate/Antenna Settings ? X

Master Remote

Base Station

1: IRMA Name: IRMA  Disabled

File: F:\Proc\28571\_WROC\_Sawyer\_7178\Mike\_Cox\_5-2-17\20170429\_

Coordinates

Latitude: North 45 18 47.20444 Coord. options

Longitude: West 89 37 33.35010 Save to Favorites

Ellipsoidal height: 444.789 m

Datum: WGS84 Proc Datum: WGS84

Epoch: year

Antenna Height

From station file: TRM57971.00, NONE View STA File

Antenna profile: TRM57971.00 Info

Measured height: 0.000 m

ARP to L1 offset: 0.067 m

Applied height: 0.067 m

Measured to

ARP

L1 Phase Centre

Compute From Slant

OK Cancel

# Flight Log

**Airborne LIDAR Data Collection Log Sheet :: Quantum Spatial, Inc**  
(email log daily to flight\_log\_distribution\_quantumspatial.com)

Date: 4-29-2017  
 Site: WROC, Langlade

Project: WROC  
 Flight Mgmt File: 2017-WROC-Langlade  
 Tech: COX

Aircraft: 735M  
 Begin Hobbs: 6680.8  
 End Hobbs: 6844.3  
 Total: KRUE  
 Pilot: JOSELYN  
 Co-Pilot: [blank]

Dep Apt: KCWA  
 Dep Time (Local): 13:05  
 Arr Time (Local): 13:14  
 6:37  
 Tot Time Aloft: 3:30

CORS: [blank]  
 Station 1: IRMA  
 Station 2: [blank]

Flyovers: Y/N # Y, times: Sta1) [blank]  
 Station 1: [blank]  
 Station 2: [blank]

Alt: 70  
 OAT beg: 7 °C  
 End: 7 °C  
 OAT beg: -3 °C  
 End: -3 °C

Alt: 7178  
 Scan Freq: 53.4  
 Mpu: N  
 Alt: 7200  
 Pulse Rate: 299

Max G-load: 150  
 Avg % Spacing: 100%  
 Alt: 416  
 Alt: 358  
 Alt: 58

Alt: 70  
 Scan Freq: 53.4  
 Mpu: N  
 Alt: 7200  
 Pulse Rate: 299

Max G-load: 150  
 Avg % Spacing: 100%  
 Alt: 416  
 Alt: 358  
 Alt: 58

Line # | Hgt | Start/UTC | End/UTC | Gd Spd | Position | GPS Altitude | Crb | Tsb | B (S-A) | Notes

020	271	1329	1342	155	1177	7225	0	0	Test Fire 13:15
019	271	1345	1357	158	1177	7244	0	0	clear & smooth
018	270	1359	1412	151	1178	7265	0	0	Fig 8's 13:26
017	271	1415	1427	158	1178	7254	0	0	Less than 10% drops
016	270	1430	1443	146	1217	7245	0	0	
015	271	1446	1458	154	1179	7252	0	0	
014	270	1501	1514	146	1217	7255	0	0	
013	271	1516	1529	159	1177	7265	0	0	
012	270	1531	1544	149	1317	7300	0	0	
011	271	1546	1558	156	1218	7308	0	0	
010	270	1600	1609	156	1220	7292	0	0	
009	271	1611	1620	159	1219	7320	0	0	
0002	177	1621	1624	163	1219	7433	0	0	unplanned X line
									Fig 8's 16:25
									Static Stop
									16:38 - 16:43

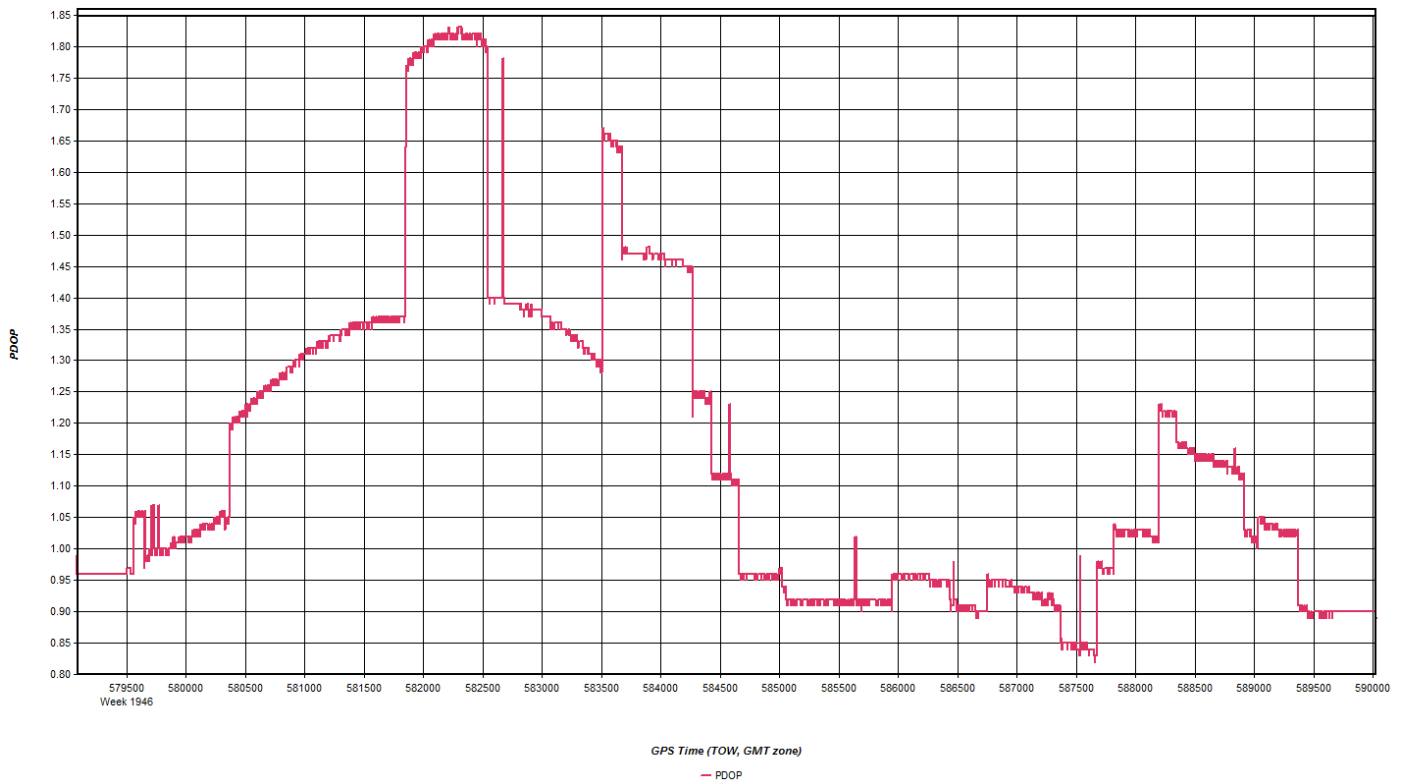
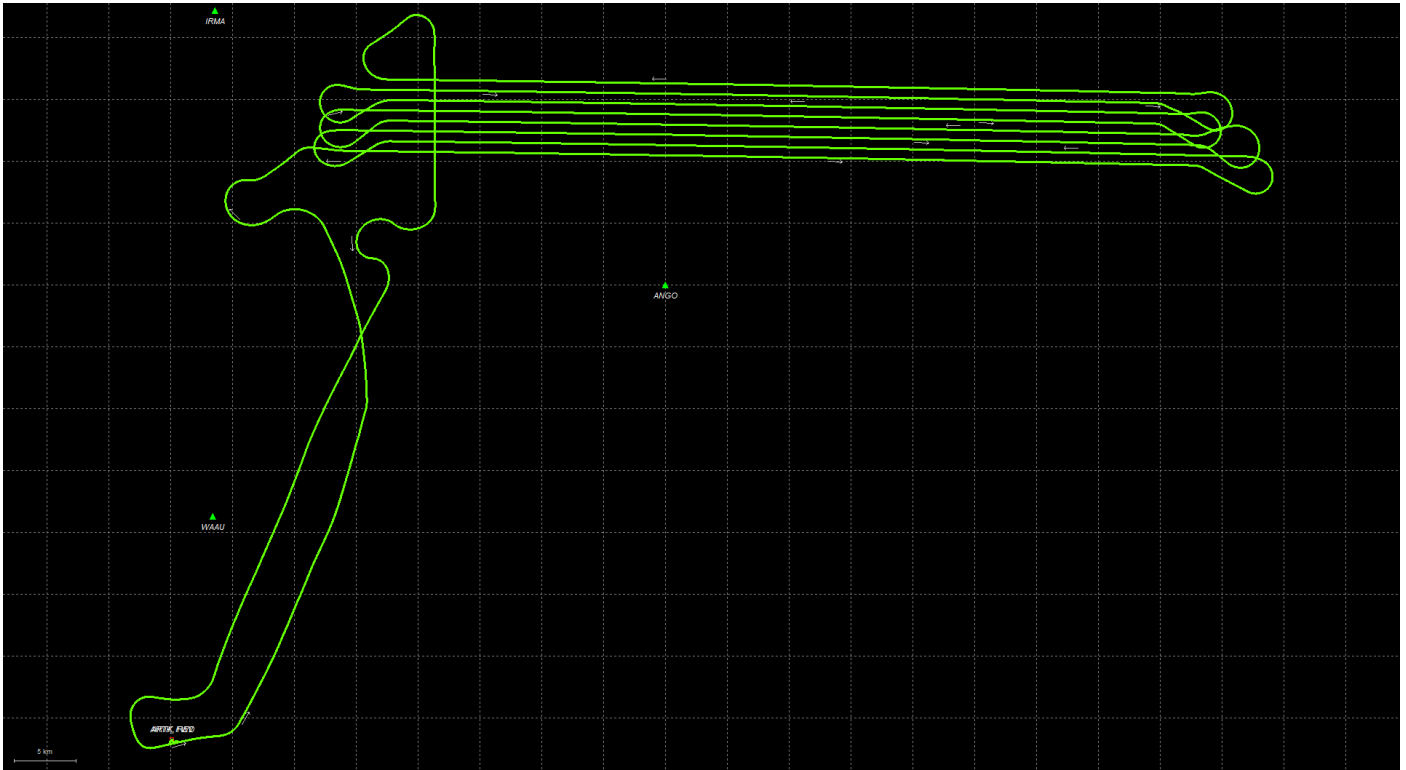
FLIGHT LINE NOTES - visibility, clouds, smoke, terrain, etc.

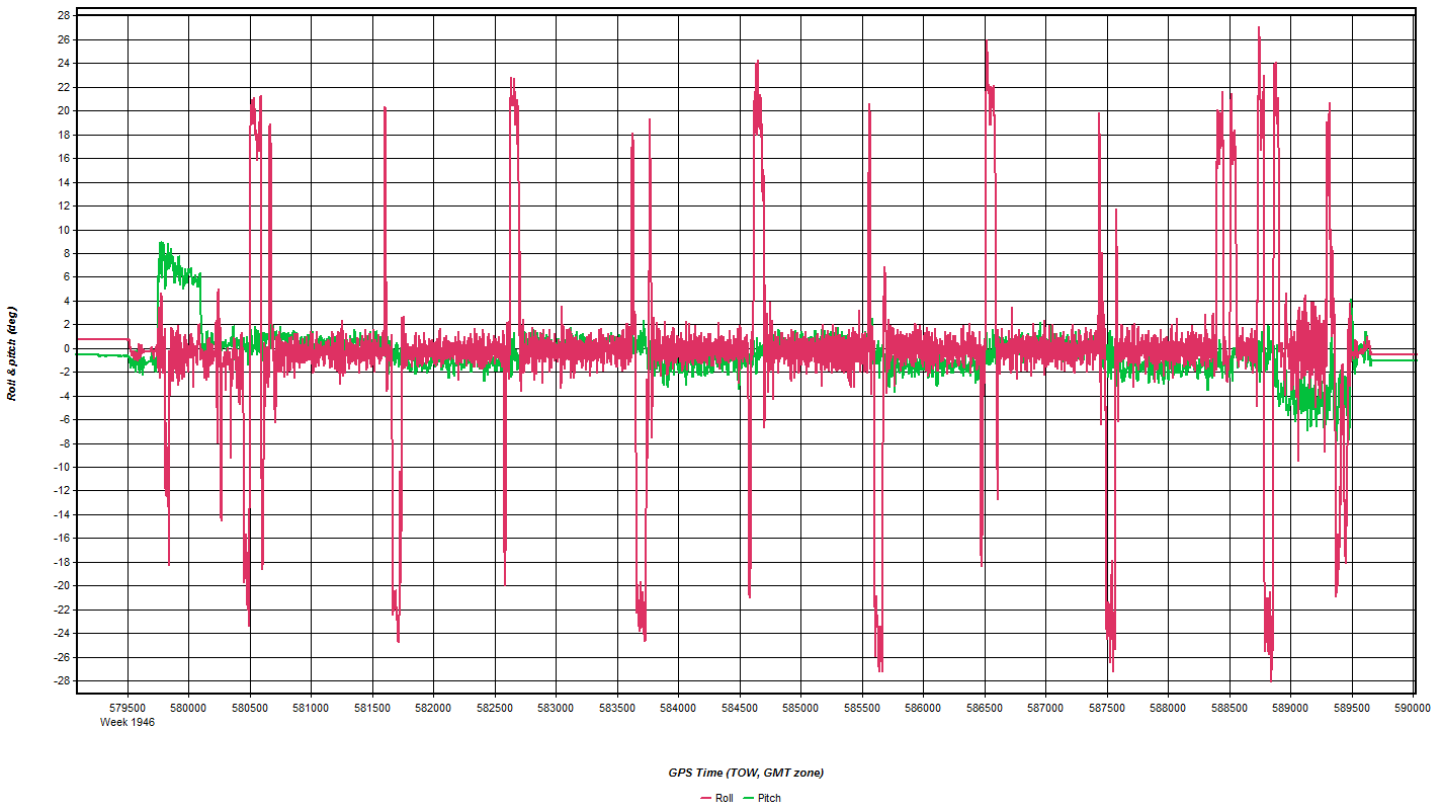
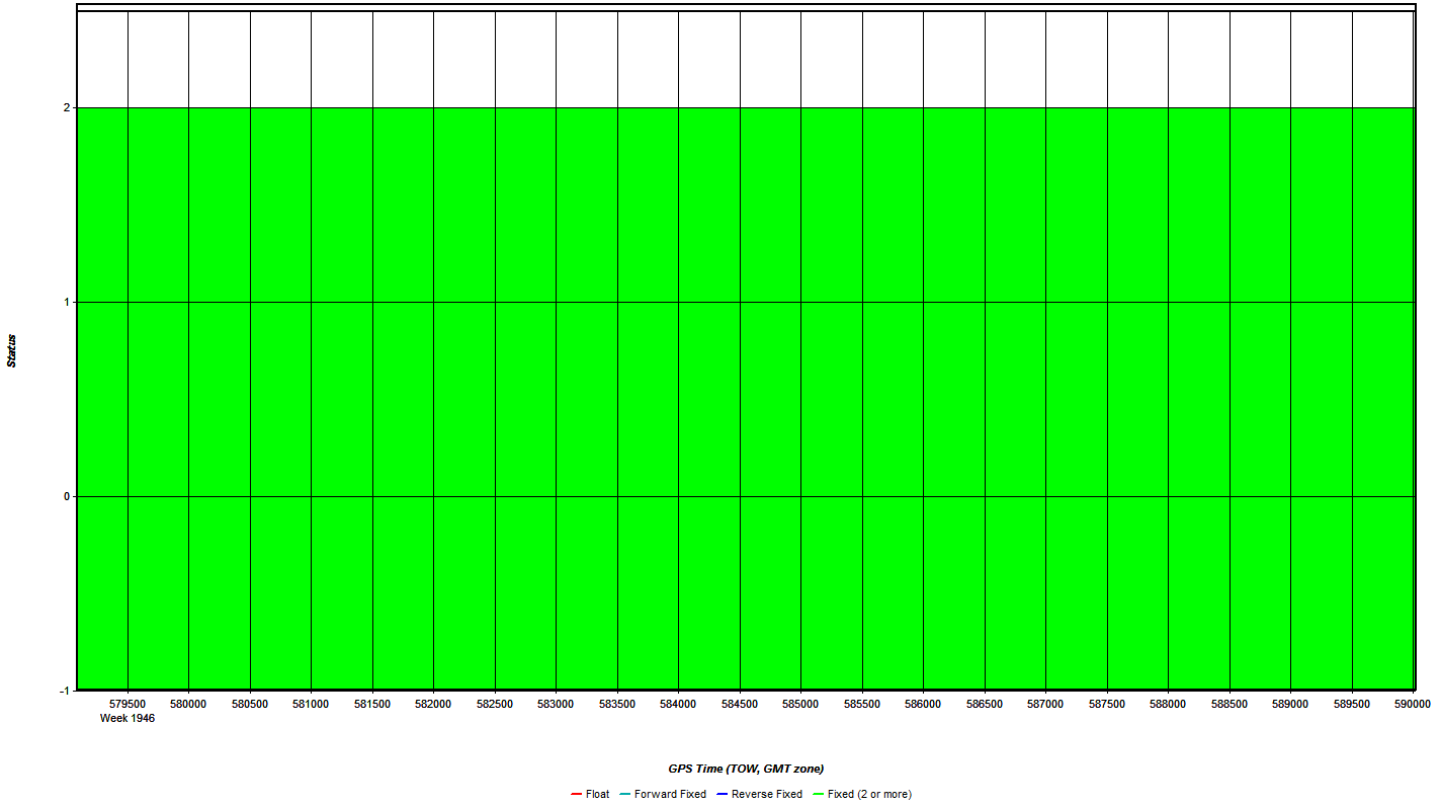
Test Fire 13:15  
 clear & smooth  
 Fig 8's 13:26  
 Less than 10% drops

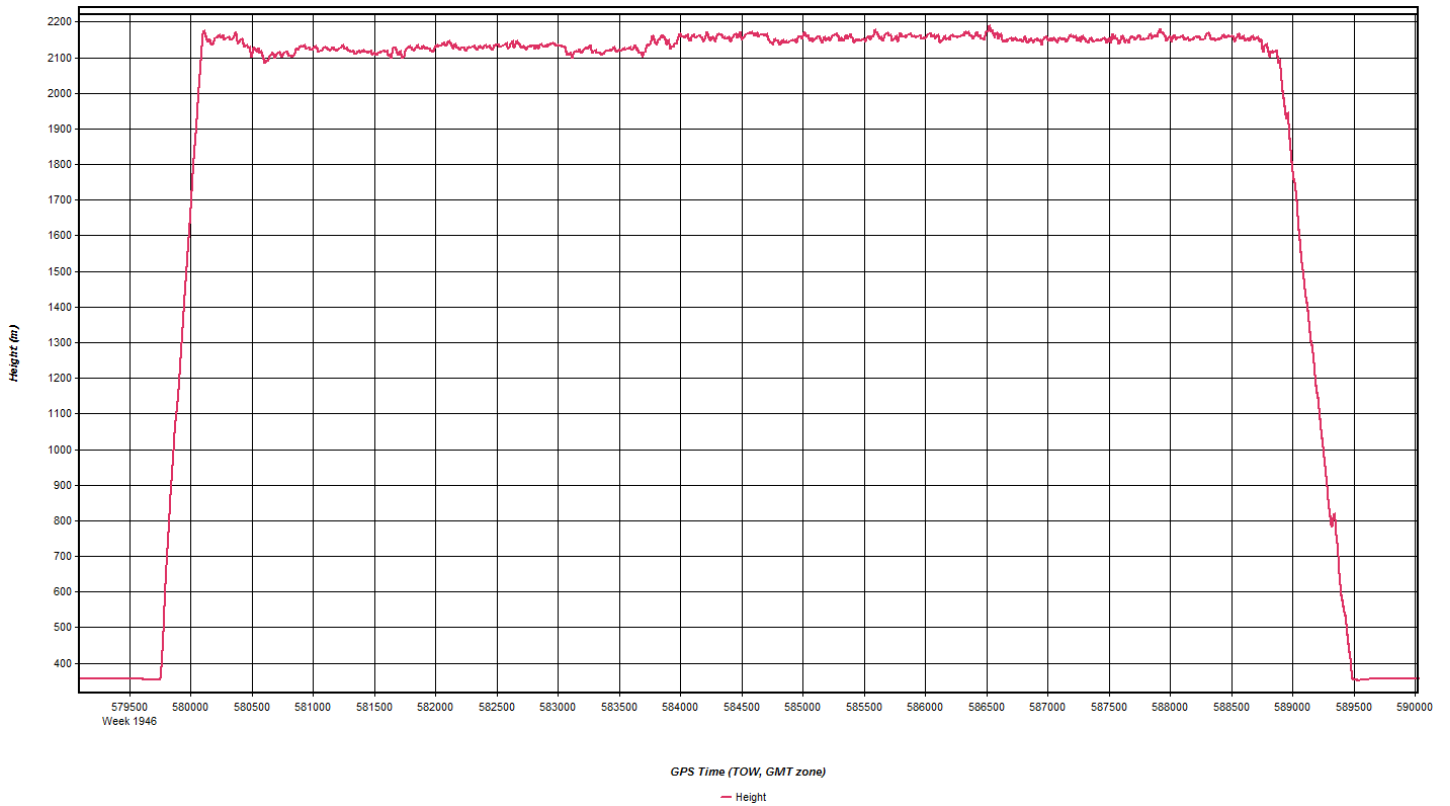
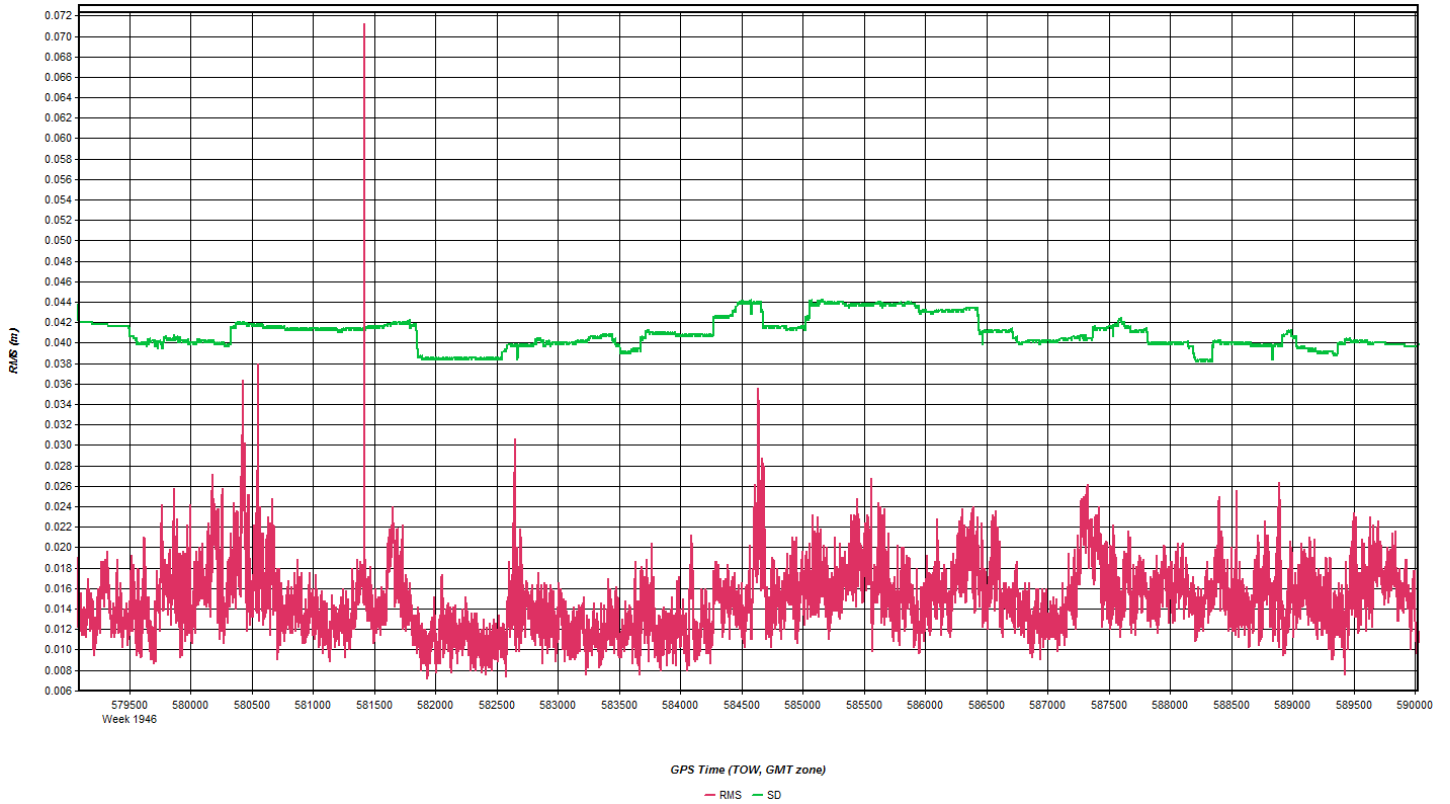
unplanned X line  
 Fig 8's 16:25  
 Static Stop  
 16:38 - 16:43

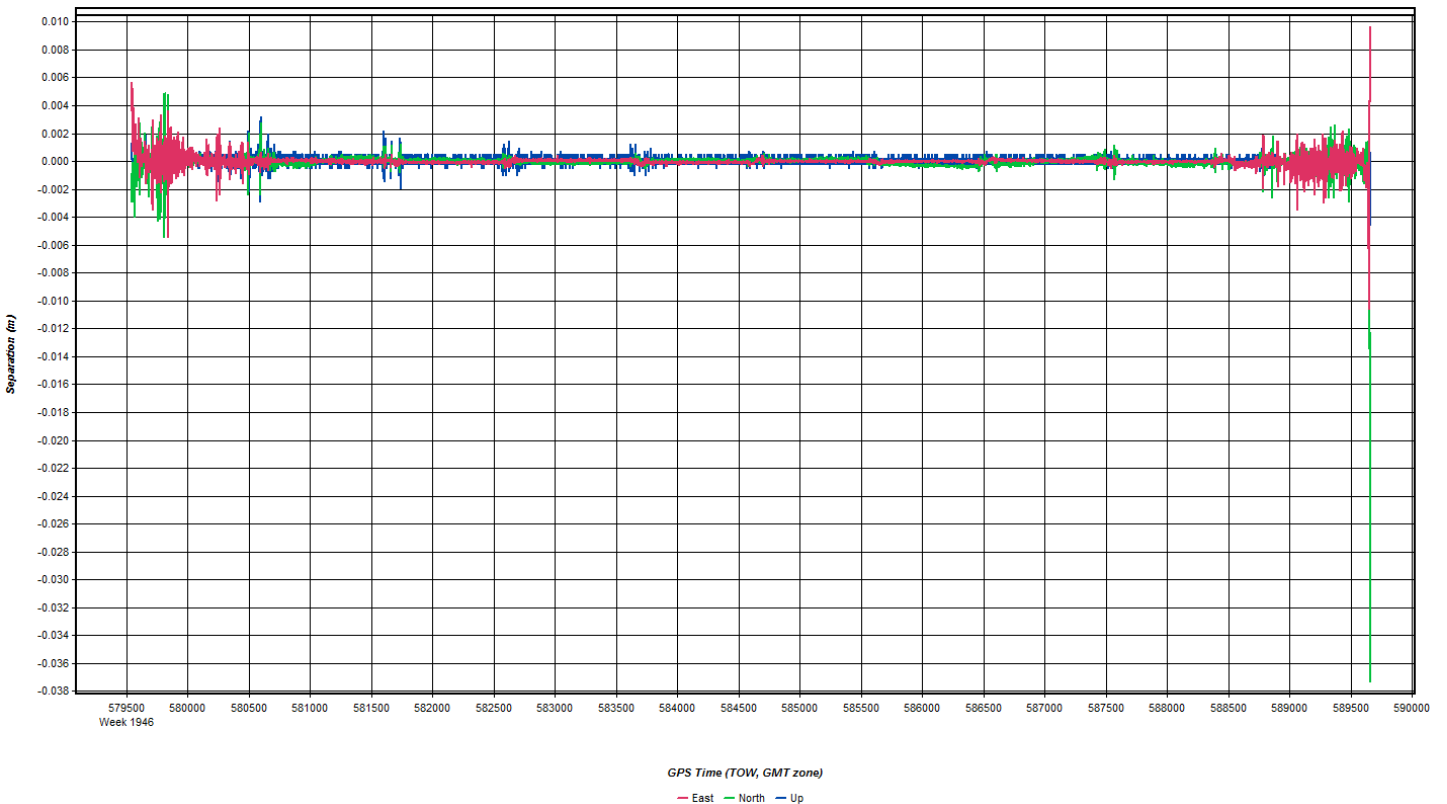
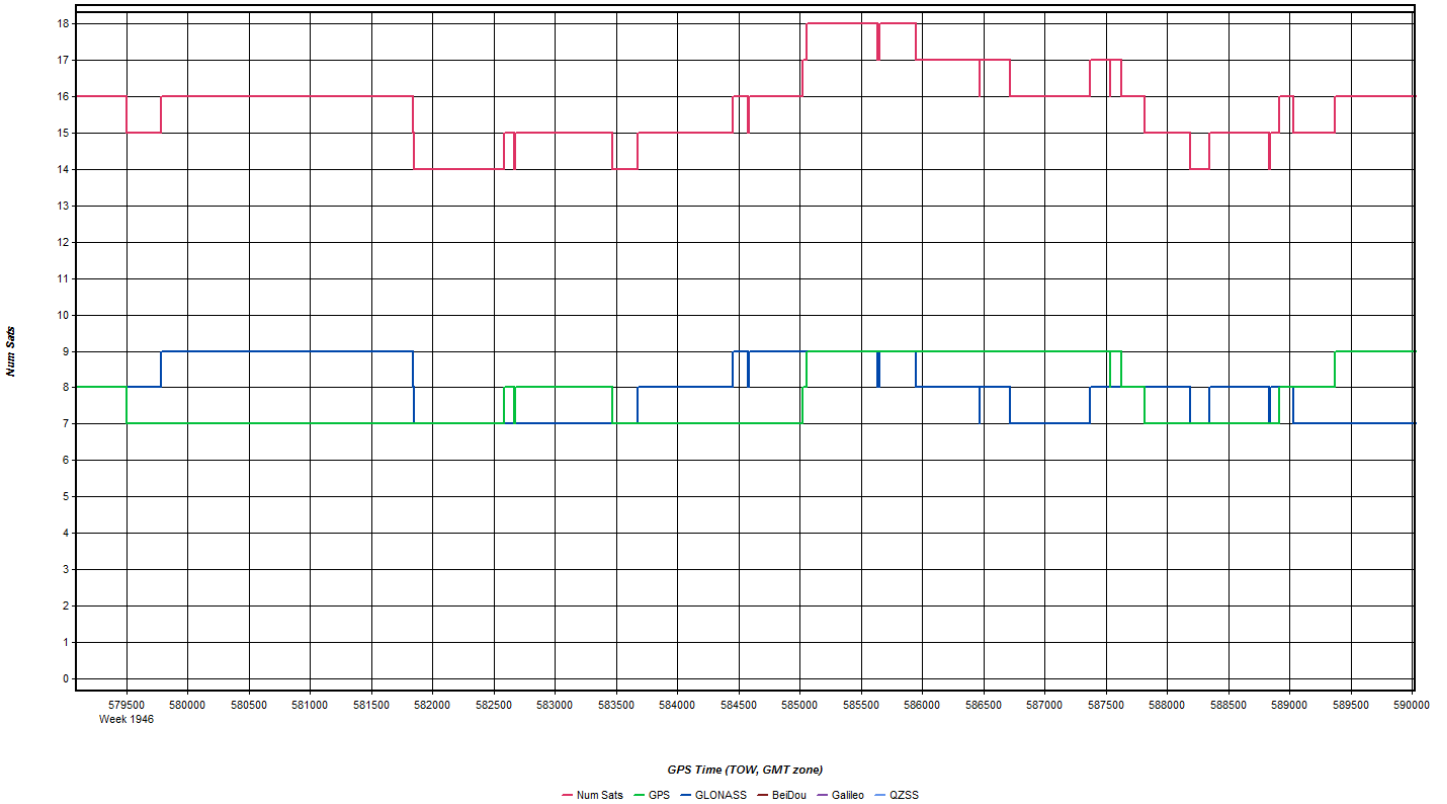
Total Proj Lines: 12  
 Lines Flown: 12  
 Online Time: 3:0  
 Mob Time: 1:30  
 Notes:

# Apr 29, 2017-B (N262AS, SN7161)

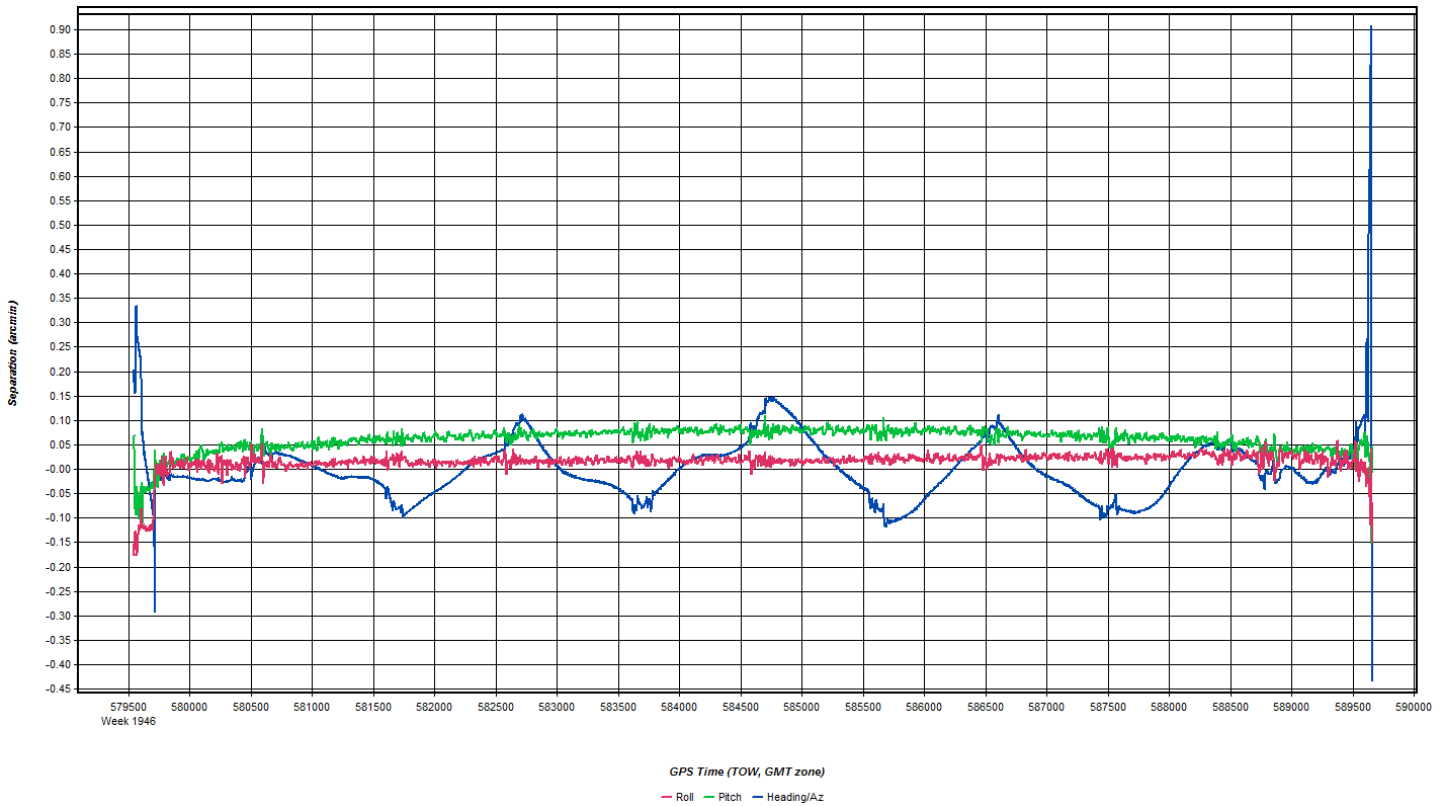
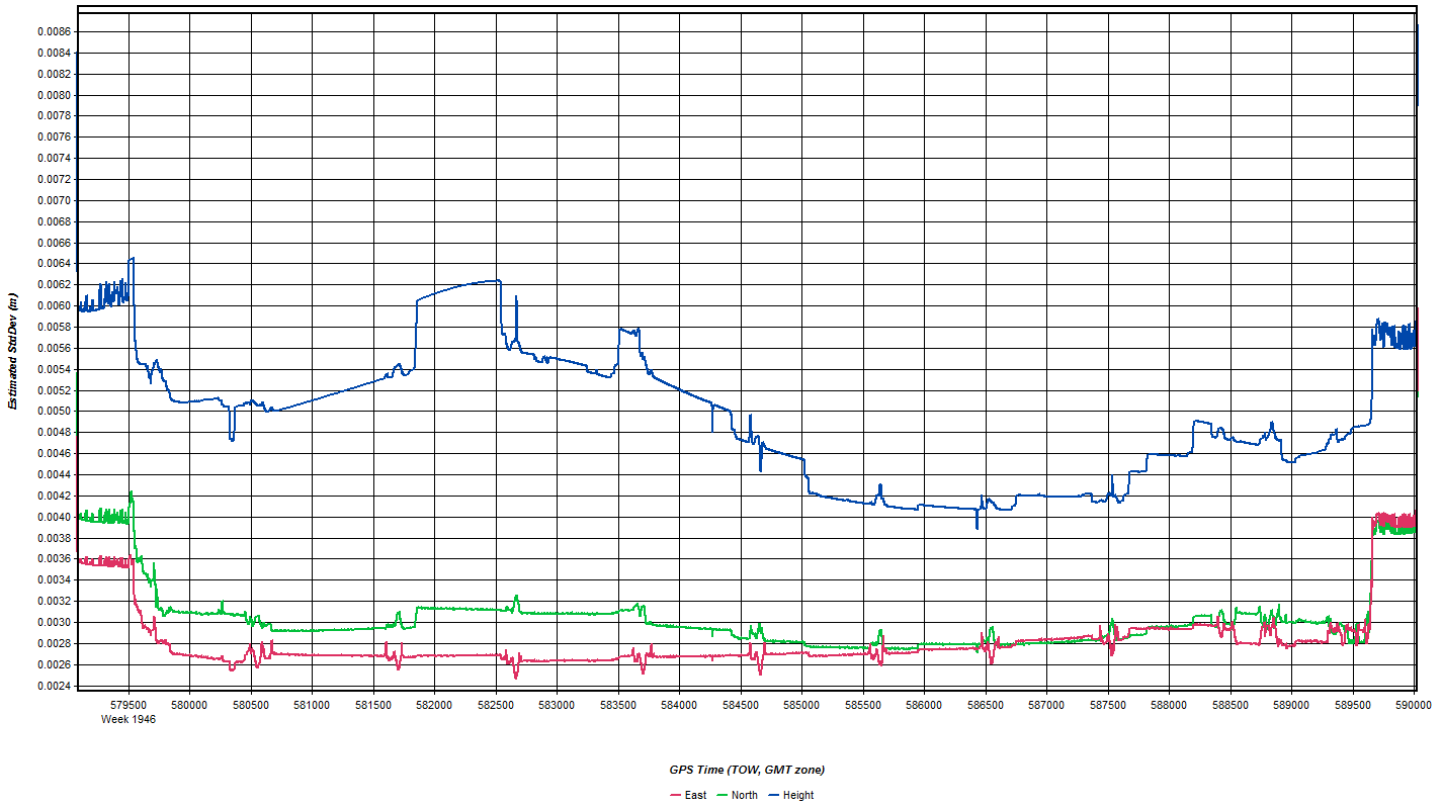












Coordinate/Antenna Settings ? X

Master Remote

Base Station  
 1: ANGO Name: ANGO  Disabled  
 File: F:\Proc\28571\_WROC\_Sawyer\_7178\Doug\_Carey\_5-2-17\Wiscors'

Coordinates  
 Latitude: North 45 06 49.74988 Coord. options  
 Longitude: West 89 09 46.64567 Save to Favorites  
 Ellipsoidal height: 419.291 m  
 Datum: WGS84 Proc Datum: WGS84  
 Epoch: year

Antenna Height  
 From station file: TRM55971.00, NONE View STA File  
 Antenna profile: TRM55971.00 Info  
 Measured height: 0.000 m  
 ARP to L1 offset: 0.067 m  
 Applied height: 0.067 m  
 Measured to  
 ARP  
 L1 Phase Centre  
 Compute From Slant

OK Cancel

Coordinate/Antenna Settings ? X

Master Remote

Base Station  
 2: IRMA Name: IRMA  Disabled  
 File: F:\Proc\28571\_WROC\_Sawyer\_7178\Doug\_Carey\_5-2-17\Wiscors'

Coordinates  
 Latitude: North 45 18 47.20444 Coord. options  
 Longitude: West 89 37 33.35010 Save to Favorites  
 Ellipsoidal height: 444.789 m  
 Datum: WGS84 Proc Datum: WGS84  
 Epoch: year

Antenna Height  
 From station file: TRM57971.00, NONE View STA File  
 Antenna profile: TRM57971.00 Info  
 Measured height: 0.000 m  
 ARP to L1 offset: 0.067 m  
 Applied height: 0.067 m  
 Measured to  
 ARP  
 L1 Phase Centre  
 Compute From Slant

OK Cancel

Coordinate/Antenna Settings ? X

Master Remote

Base Station  
 3: WAAU Name: WAAU  Disabled  
 File: F:\Proc\28571\_WROC\_Sawyer\_7178\Doug\_Carey\_5-2-17\Wiscors

Coordinates  
 Latitude: North 44 56 44.42642 Coord. options  
 Longitude: West 89 37 40.95169 Save to Favorites  
 Ellipsoidal height: 326.246 m  
 Datum: WGS84 Proc Datum: WGS84  
 Epoch: year

Antenna Height  
 From station file: TRM57971.00, NONE View STA File  
 Antenna profile: TRM57971.00 Info  
 Measured height: 0.000 m  
 ARP to L1 offset: 0.067 m  
 Applied height: 0.067 m  
 Measured to  
 ARP  
 L1 Phase Centre  
 Compute From Slant

OK Cancel

# Flight Log

Date: 4-29-17  
Pg. 1 of 1

Airborne LIDAR Data Collection Log Sheet :: Quantum Spatial, Inc  
(email: Log daily to flight\_log\_distribution\_list@quantumspatial.com)

Project: WROC - LANGLADE CO. Proj #: 28571 Flight Mgmt File: 20170429\_165000  
 Aircraft: N222AS Begin Hobbs: 6581.7 End Hobbs: 6584.4 Total: Pilot: RADTKE Co-Pilot: CAREY  
 Dep Apt: KCWA Dep Time (Lcl): 1200 [Z]: 1700 Arr Apt: KCWA Arr Time (Local): 248 [Z]: 1948 Tot Time Aloft: 2.7  
 CORS: O/N Sta 1: WisCons Sta 2:  
 GPS Unit: Y/N Sta 1: Sta 2:  
 Flyovers: Y/N IF Y, times: Sta 1) Sta 2)  
 Flyovers: Y/N IF Y, times: Sta 1) Sta 2)

Type	ALS	FOV	Scan Freq	Sent #	Start (UTC)	End (UTC)	Gd Spd	PPPP/s	GPS Altitude	Cob	Turb (0..4)	Alt			Pulse Rate	Power	PPSM	Avg Pt Spacing	Mag Co	End Co	Storage Name/ID
												AGL	MplA	Abnd.							
LIDAR	ALS	70	40	711	1718	1732	1.50	1.3	6955	7031	0	1437	150	100%	2.2	150	100%	150	B	284	15
35	94	1718	1732	711	1732	1750	1.3	6955	7031	0	1437	150	100%	2.2	150	100%	150	B	284	15	
34	275	1736	1749	711	1736	1749	1.3	6975	7031	0	1437	150	100%	2.2	150	100%	150	B	284	15	
33	94	1752	1806	711	1752	1806	1.6	6982	7031	0	1437	150	100%	2.2	150	100%	150	B	284	15	
32	275	1810	1822	711	1810	1822	1.4	7073	7031	0	1437	150	100%	2.2	150	100%	150	B	284	15	
31	94	1825	1838	711	1825	1838	1.1	7073	7031	0	1437	150	100%	2.2	150	100%	150	B	284	15	
30	275	1841	1854	711	1841	1854	1.2	7073	7031	0	1437	150	100%	2.2	150	100%	150	B	284	15	
29	94	1857	1910	711	1857	1910	1.1	7073	7031	0	1437	150	100%	2.2	150	100%	150	B	284	15	
28	275	1913	1926	711	1913	1926	1.1	7083	7031	0	1437	150	100%	2.2	150	100%	150	B	284	15	
XFLT	94	1922	1931	711	1922	1931	1.1	7070	7031	0	1437	150	100%	2.2	150	100%	150	B	284	15	

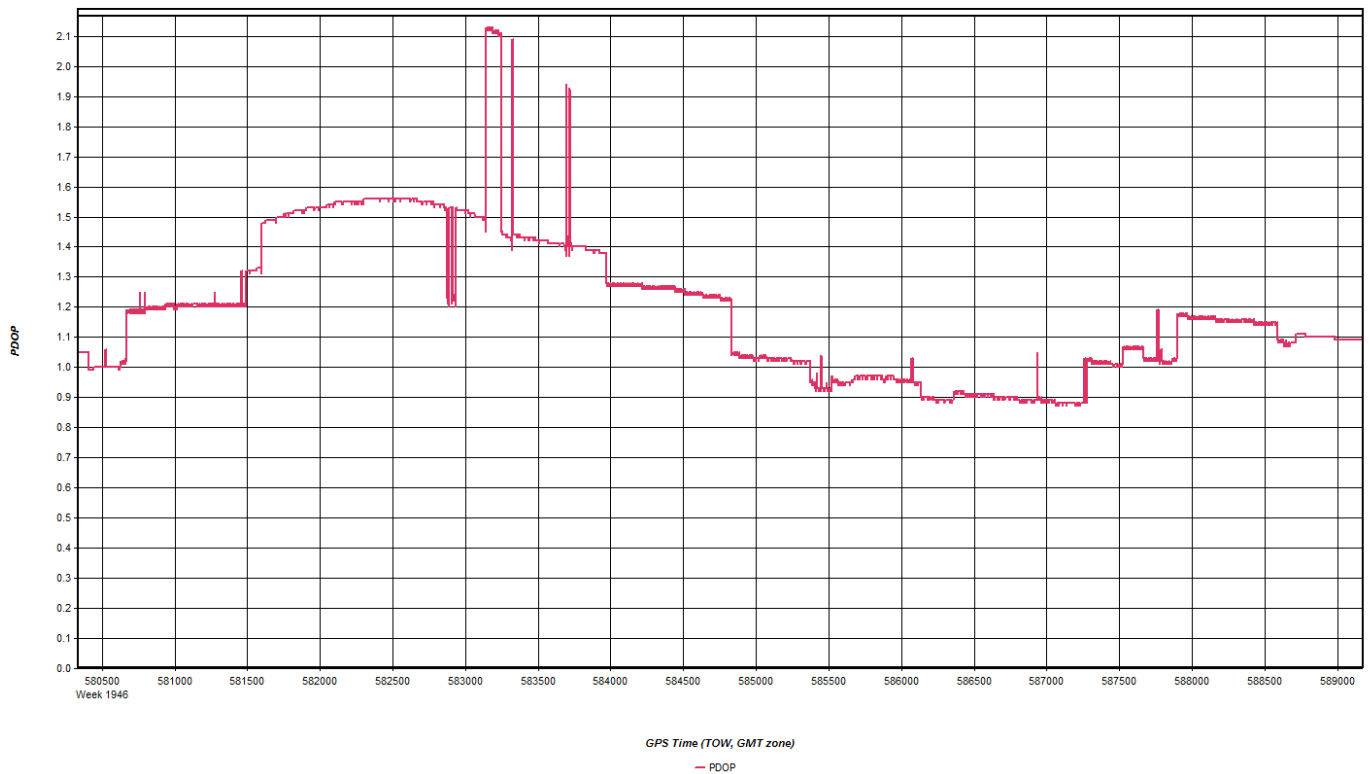
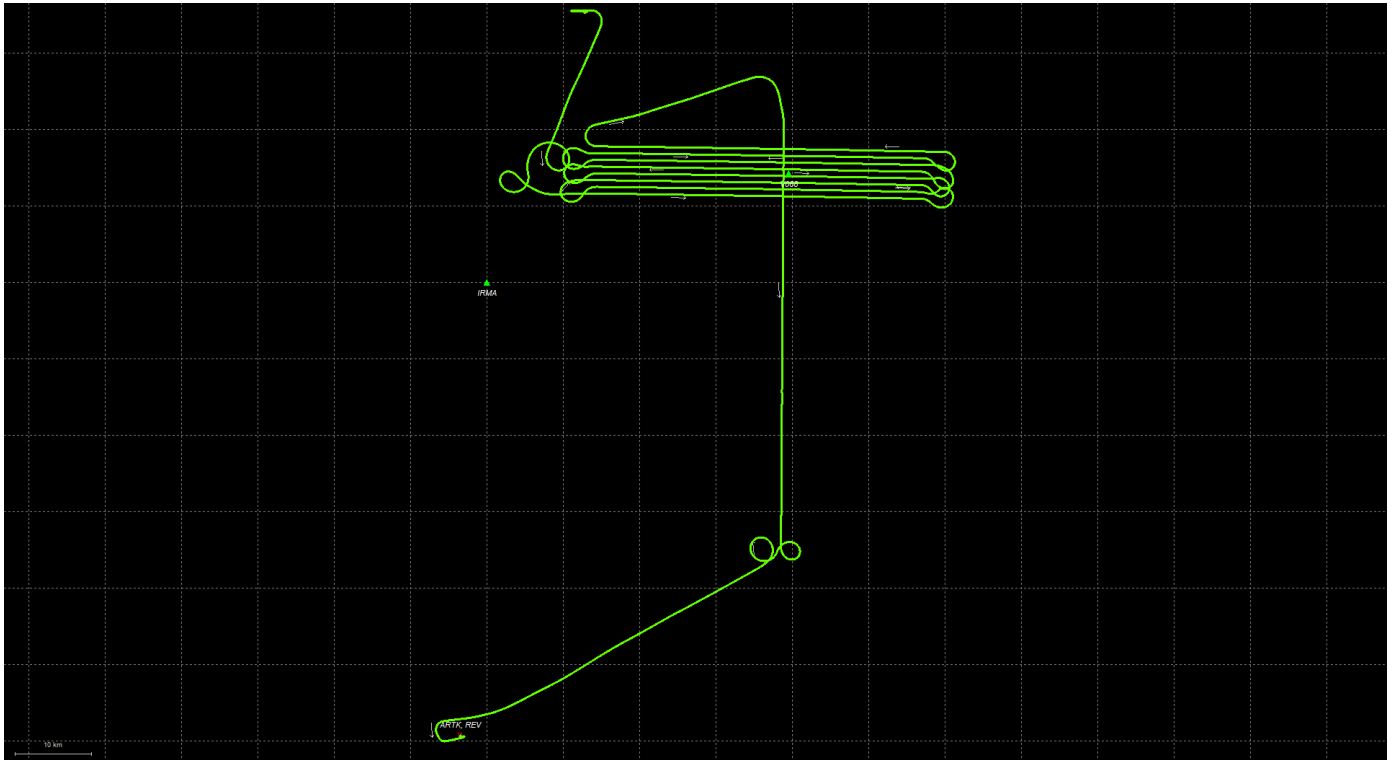
FLIGHT LINE NOTES - visibility, clouds, smoke, partial, etc

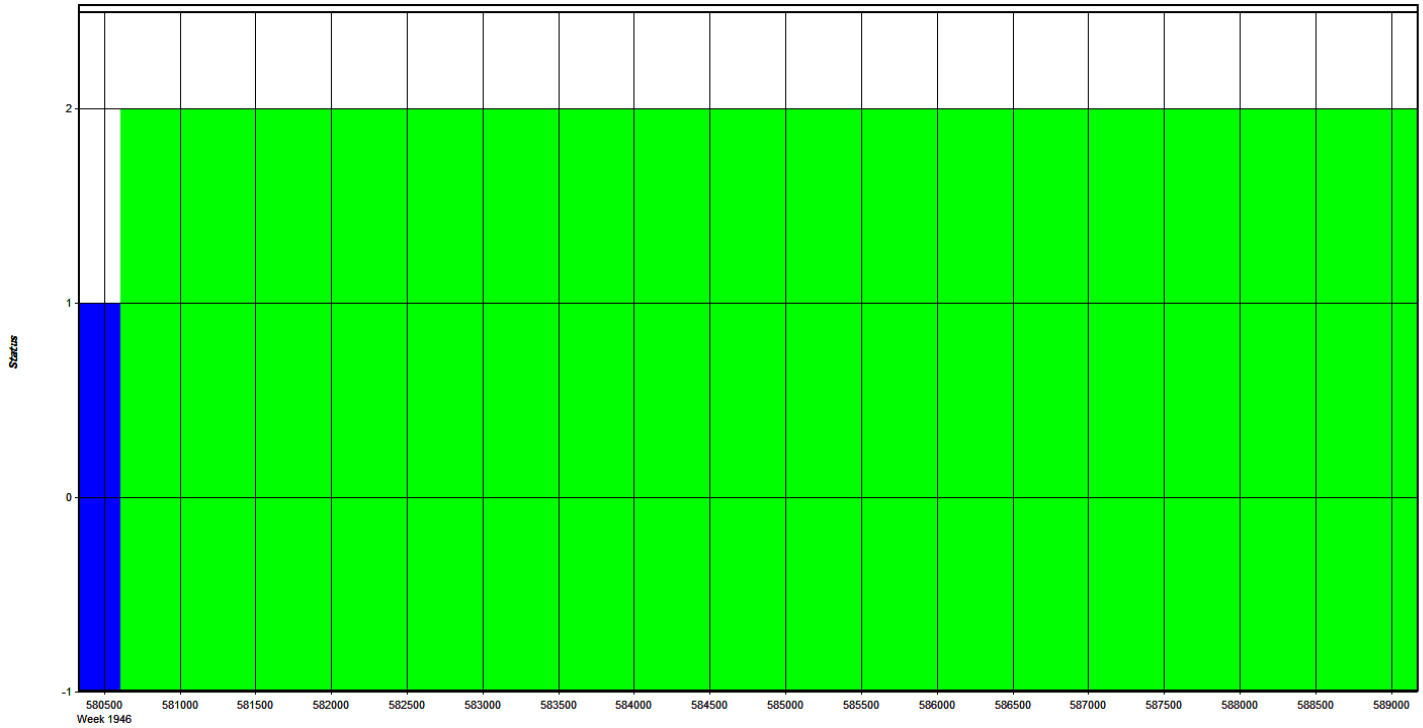
35 KCWA → SITE → S/FIG 1715  
 34 BKN / OVC 25K  
 33  
 32  
 31  
 30 OVC 25K / BKN 10K  
 29 R.F. → lines were found complete  
 28 R.F. as reflects on Tracking Doc.  
 XFLT unplanned  
 S/FIG 1933 → KCWA

Total Proj Lines: 8 Lines Flown: 8 Lines Remain: 0  
 Online Time: 2.2 Mob Time: 1.5 Notes:

Generated by CamScanner from intsig.com

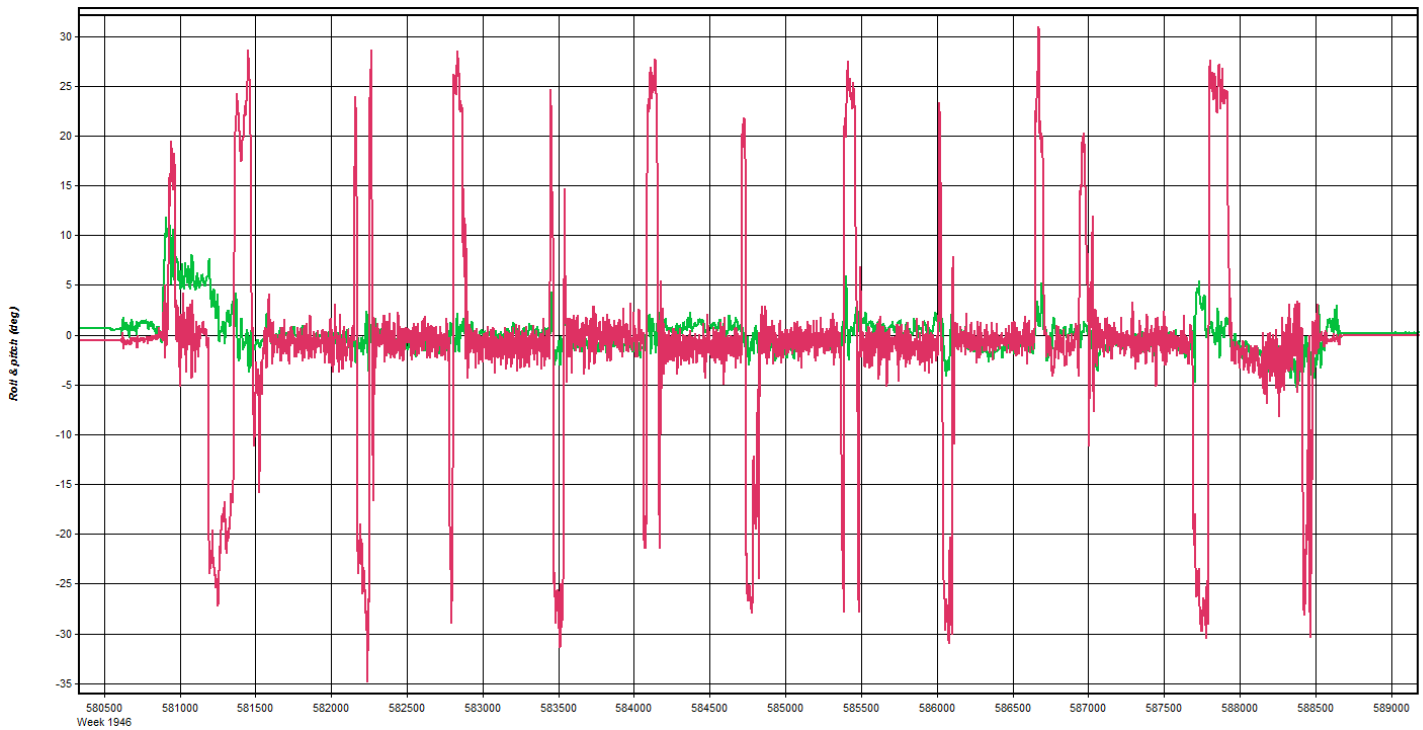
# Apr 29, 2017-B (N73TM, SN7178)





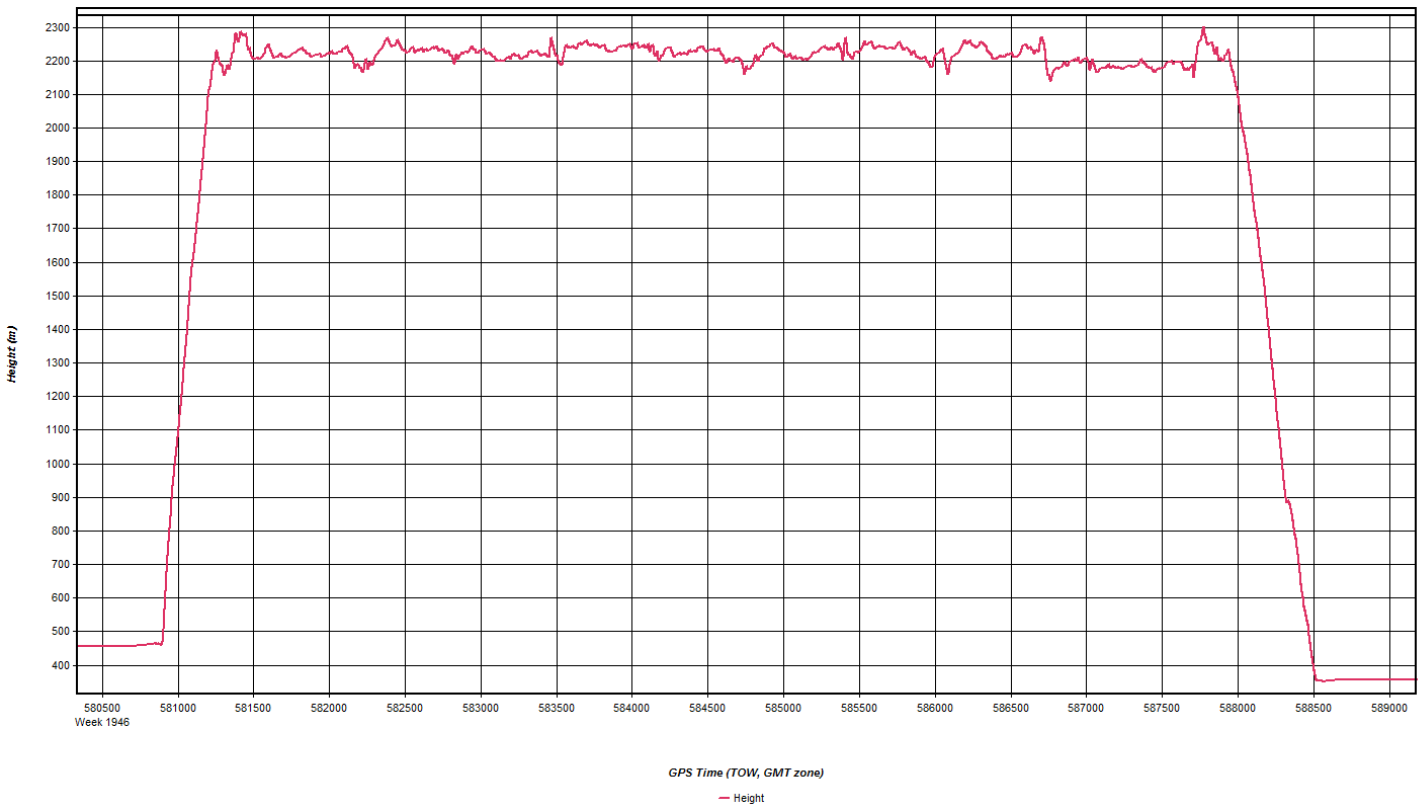
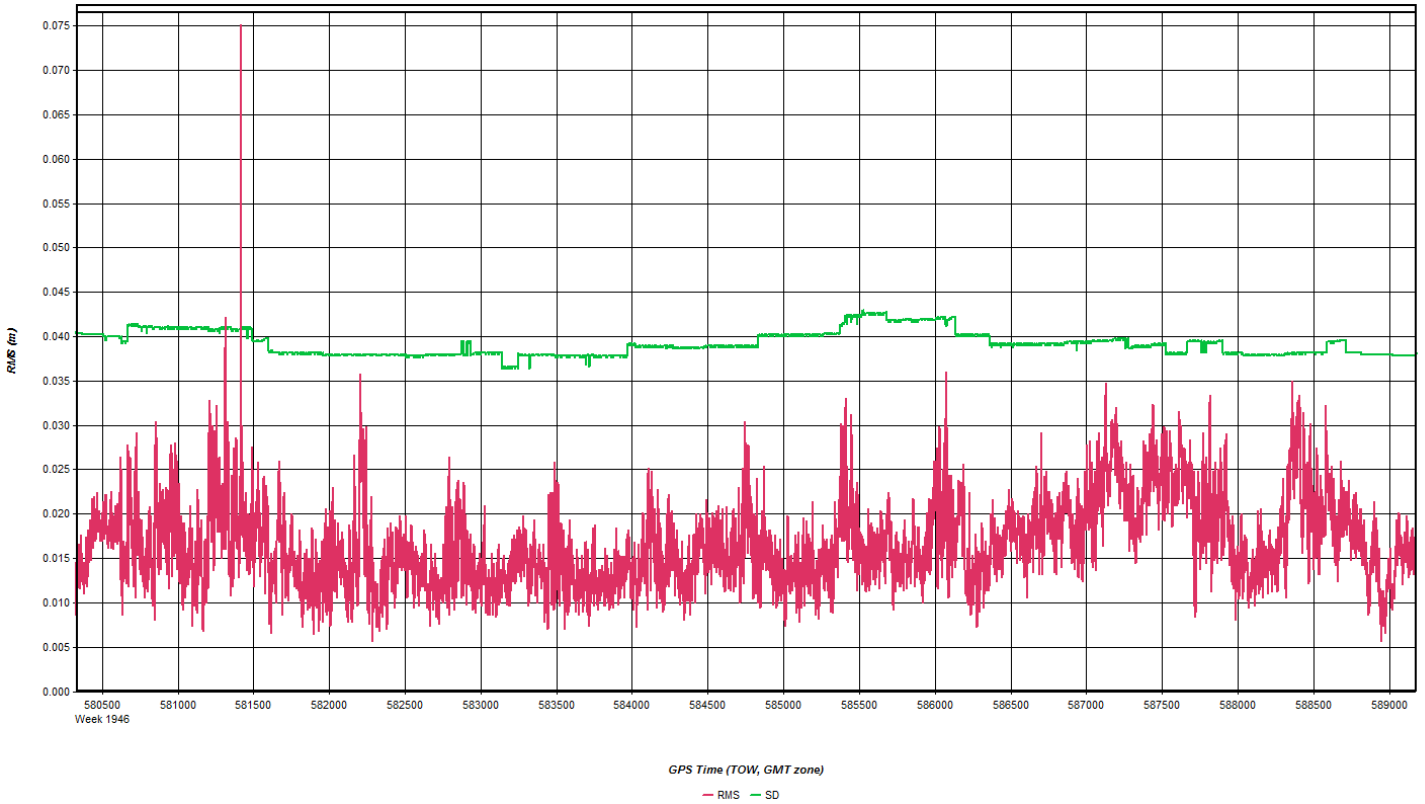
GPS Time (TOW, GMT zone)

— Float — Forward Fixed — Reverse Fixed — Fixed (2 or more)

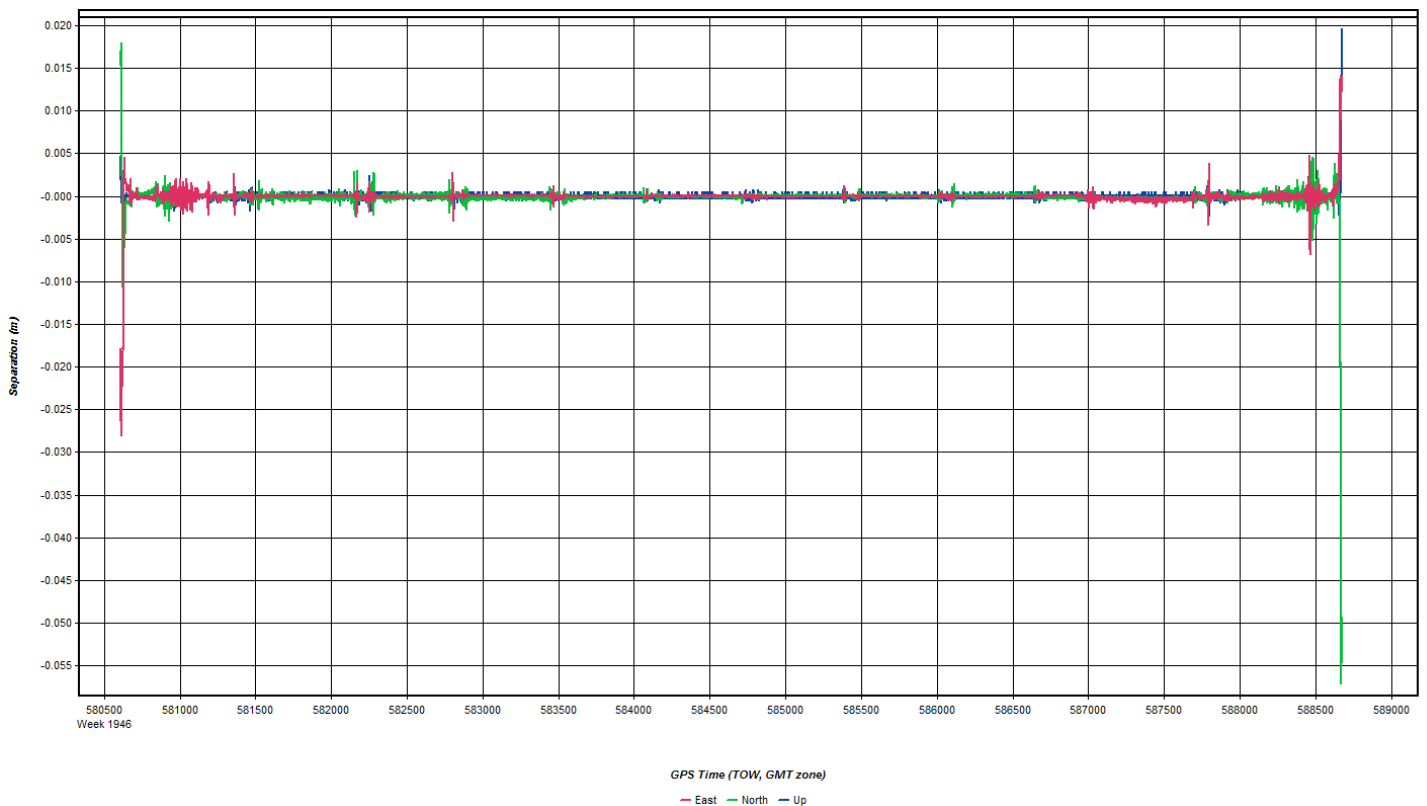
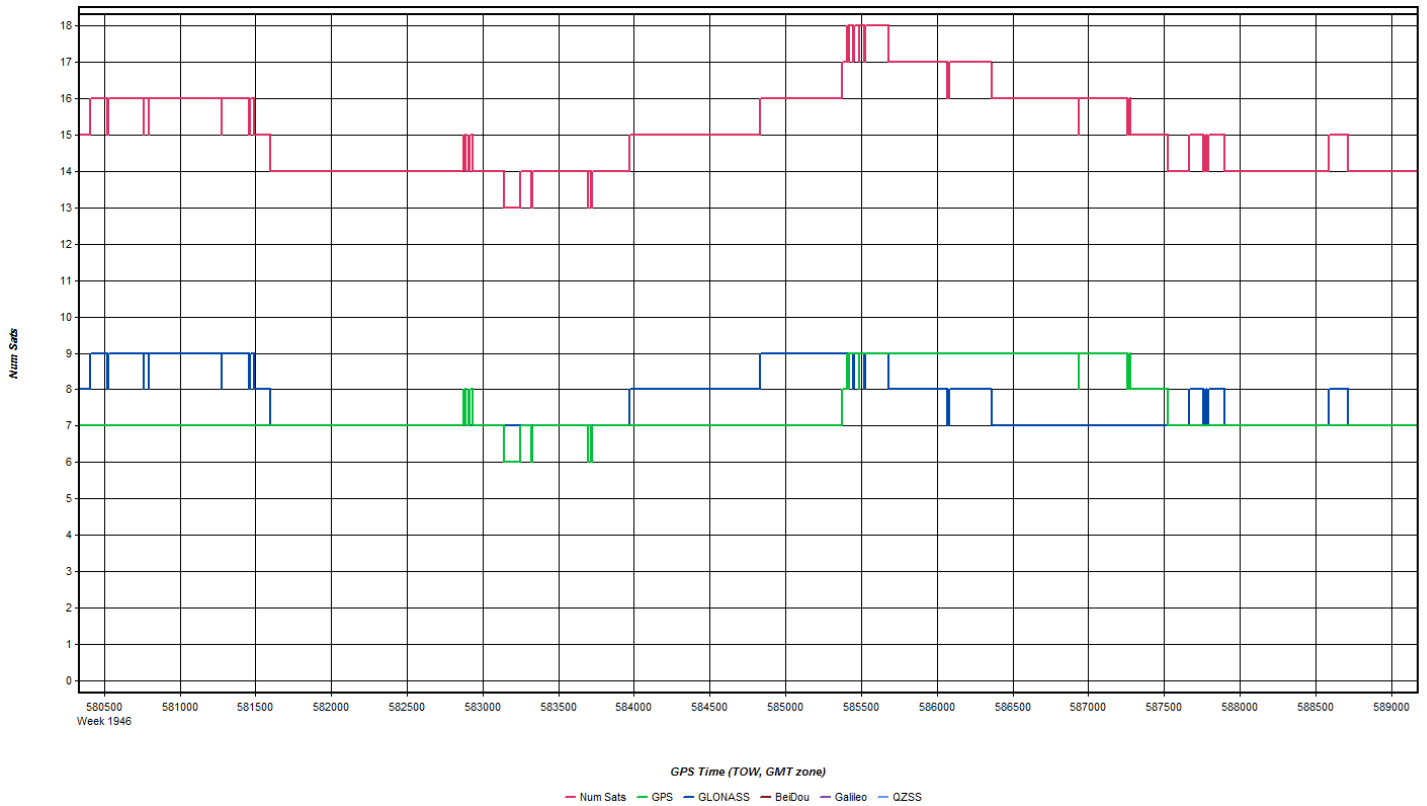


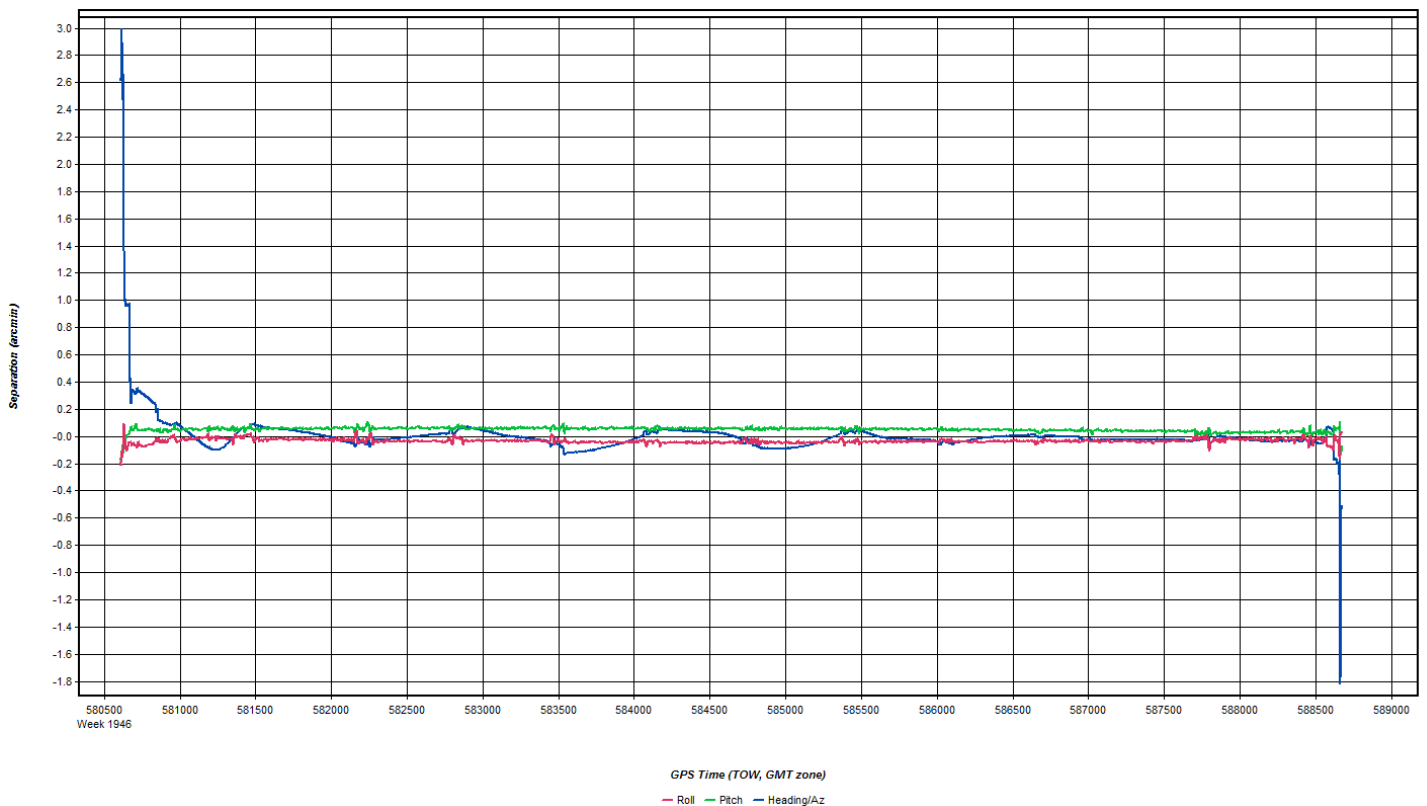
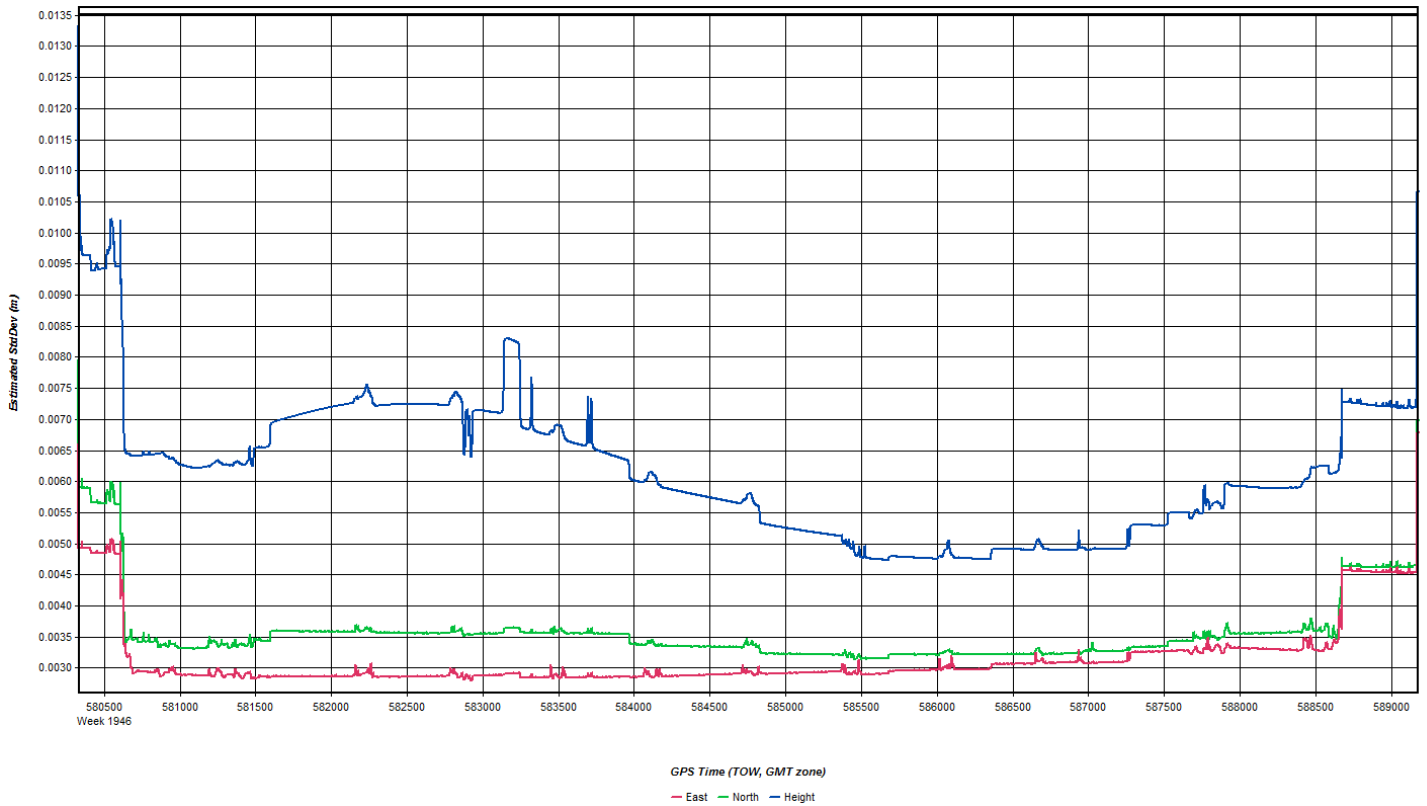
GPS Time (TOW, GMT zone)

— Roll — Pitch









Coordinate/Antenna Settings ? X

Master Remote

Base Station  
 1: IRMA Name: IRMA  Disabled  
 File: F:\Proc\28571\_WROC\_Sawyer\_7178\Mike\_Cox\_5-2-17\20170429\_

Coordinates  
 Latitude: North 45 18 47.20444 Coord. options  
 Longitude: West 89 37 33.35010 Save to Favorites  
 Ellipsoidal height: 444.789 m  
 Datum: WGS84 Proc Datum: WGS84  
 Epoch: year

Antenna Height  
 From station file: TRM57971.00, NONE View STA File  
 Antenna profile: TRM57971.00 Info  
 Measured height: 0.000 m  
 ARP to L1 offset: 0.067 m  
 Applied height: 0.067 m  
 Measured to  
 ARP  
 L1 Phase Centre  
 Compute From Slant

OK Cancel

Coordinate/Antenna Settings ? X

Master Remote

Base Station  
 2: V088 Name: V088  Disabled  
 File: F:\Proc\28571\_WROC\_Sawyer\_7178\Mike\_Cox\_5-2-17\20170429\_

Coordinates  
 Latitude: North 45 26 25.21000 Coord. options  
 Longitude: West 89 07 33.31999 Save to Favorites  
 Ellipsoidal height: 100.000 m  
 Datum: WGS84 Proc Datum: WGS84  
 Epoch: year

Antenna Height  
 From station file: TRM57971.00, NONE View STA File  
 Antenna profile: TRM57971.00 Info  
 Measured height: 0.000 m  
 ARP to L1 offset: 0.067 m  
 Applied height: 0.067 m  
 Measured to  
 ARP  
 L1 Phase Centre  
 Compute From Slant

OK Cancel

# Flight Log

Date: 4-29-2017  
Pg. 1 of 1

Airborne LIDAR Data Collection Log Sheet :: Quantum Spatial, Inc  
(email log data to flight\_log\_distribution\_list@quantumspatial.com)

Project: WROC      Proj #: 28571      Flight Mgmt File: 2017-WROC-Langlade      Techs: COX

Aircraft: 73TM      Begin Hobbs: 6684.3      End Hobbs: 6864.4      Total: 2.1      Pilot: Jossy      Co-Pilot:      Total Time Aloft: 2.0

Dep Apt: KRHI      Dep Time (Lcl): 12:20 (Z): 17:20      Arr Apt: KCWA      Arr Time (Local): 2:30 (Z): 17:30      Tot Time Aloft: 2.0

CORS: Y/N      Sta 1: IRMA      Sta 2:      Flyovers: Y/N      IF Y, times: Sta1)      Sta2)      Storage Name

GPS Unit: Y/N      Sta 1:      Sta 2:      Flyovers: Y/N      IF Y, times: Sta1)      Sta2)      End OB 358

Gid Temp beg: °C      End:      OAT beg: °C      End:      Alt AMSL 7200      Avg Pk Spd 150      End OB 325

LIDAR      Type ALS70      Serial # 1178      Alt AGL      MpiA/N      Pulse Rate 299      Power 100%      PFSM      Tot OB 32

Line #	Hdg	Start (UTC)	End (UTC)	Gid Spd	FOF/SSS	GPS Altitude	Crb	Turb (0, 5, 9)
008	090	1733	1742	144	1.2/16	7320	0	0
007	211	1744	1752	158	1.2/18	7320	0	0
006	090	1755	1803	157	1.4/16	7308	0	0
005	271	1805	1814	160	1.3/18	7355	0	0
004	090	1816	1824	151	1.0/21	7345	0	0
003	271	1826	1835	160	1.2/18	7355	0	0
002	090	1838	1846	155	1.3/18	7365	0	0
001	271	1848	1857	160	1.2/18	7395	0	0
060	180	1903	1914	160	1.1/18	7121	0	0

FLIGHT LINE NOTES - viability, clouds, smoke, partial, etc

Clear / smooth      Static Start 18.11-18.16  
Fig 8's 17:27

Planned X line

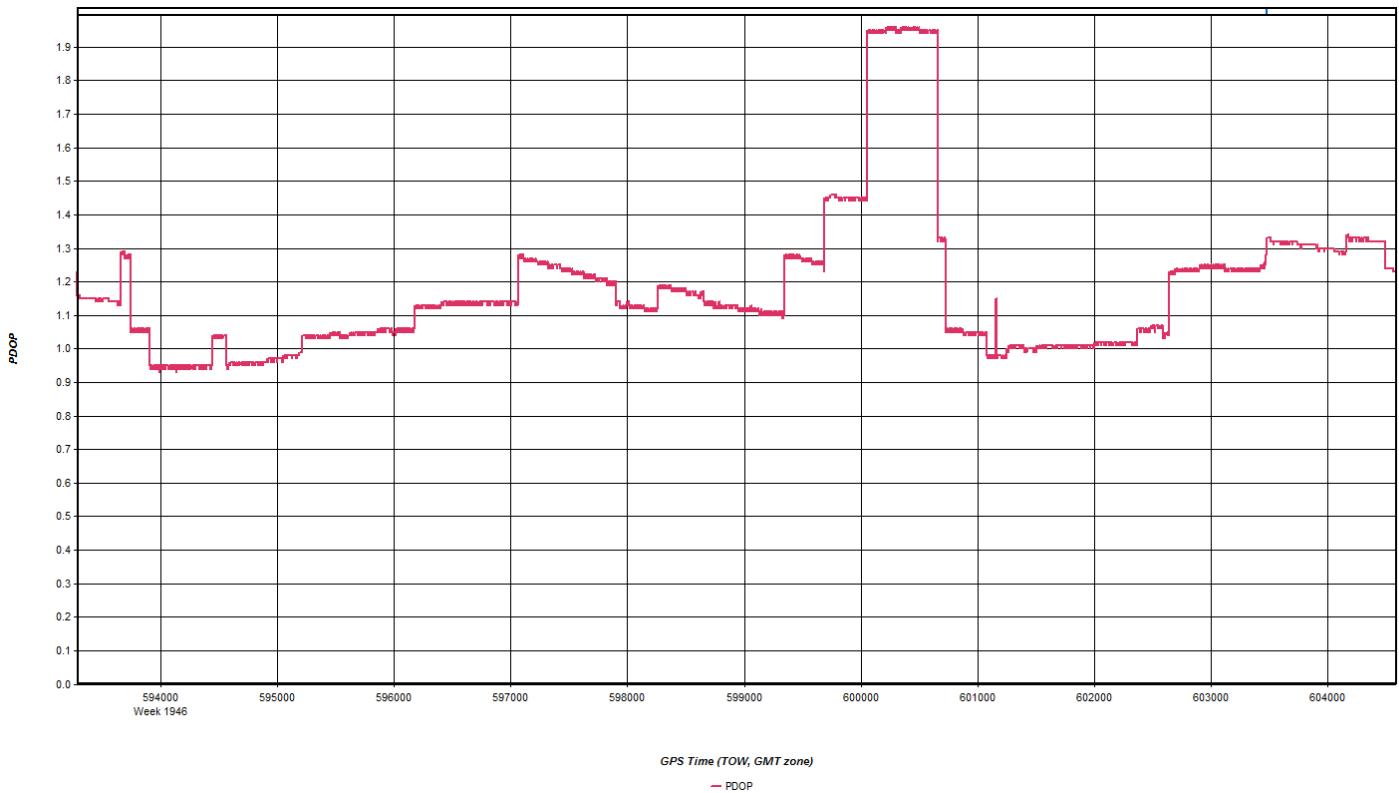
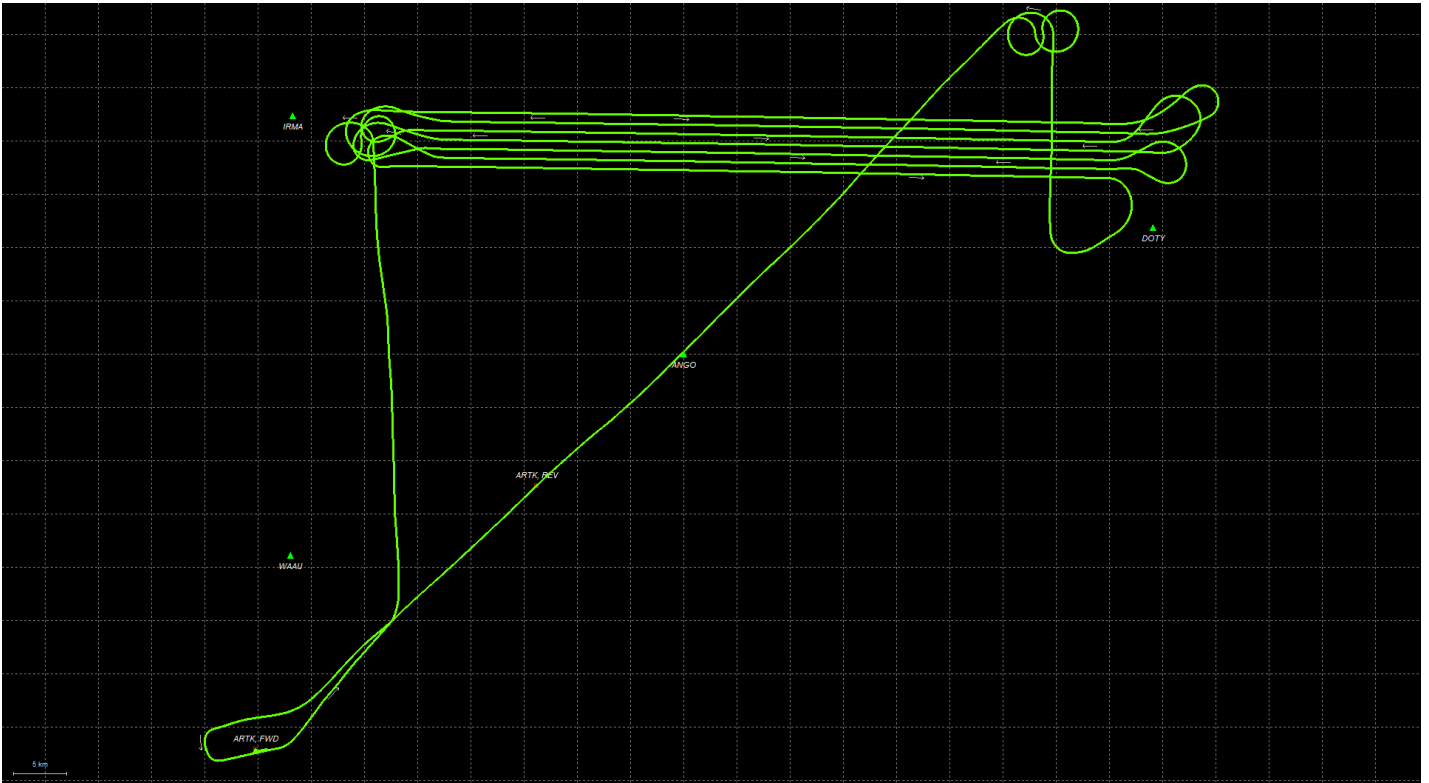
Fig 8's 19:16

Static Step 19:31-19:36

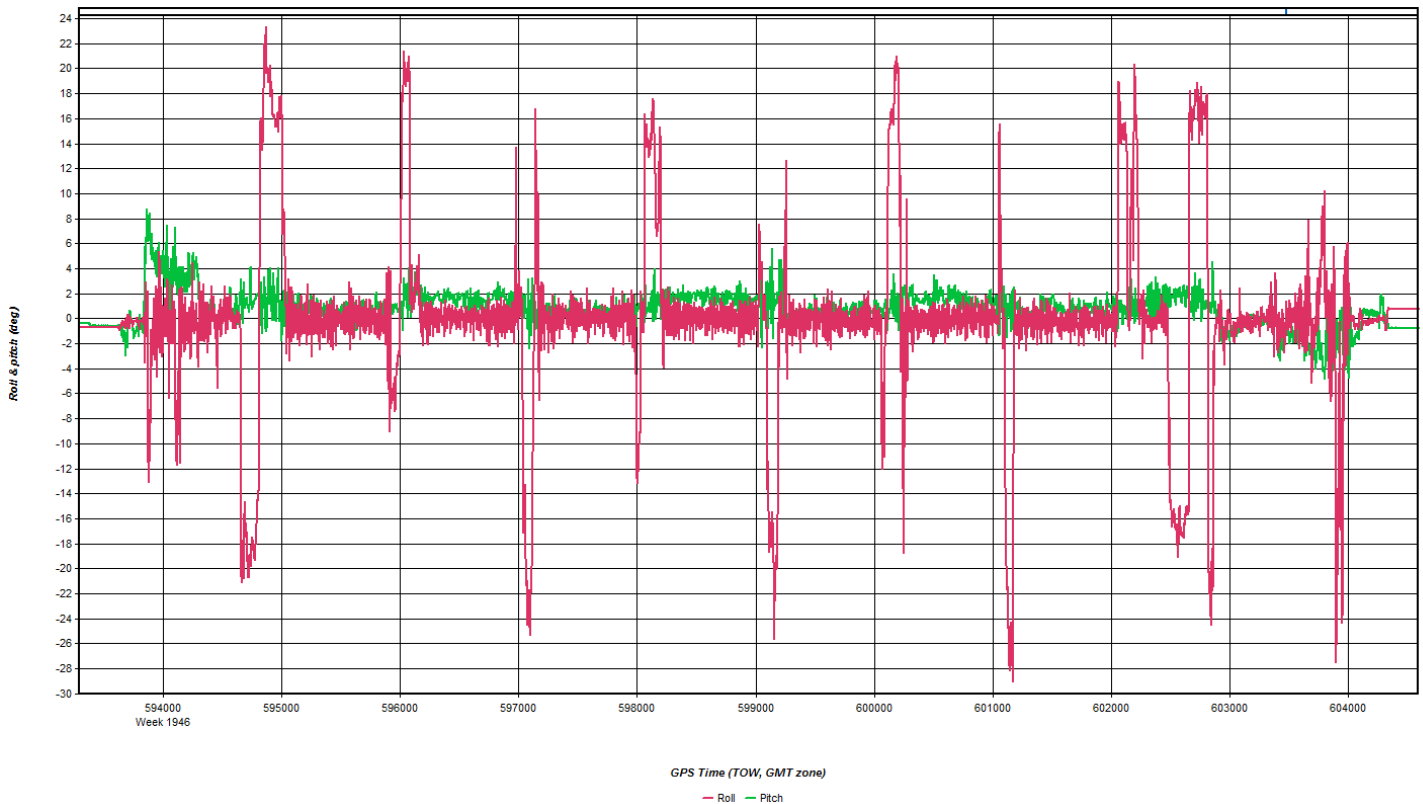
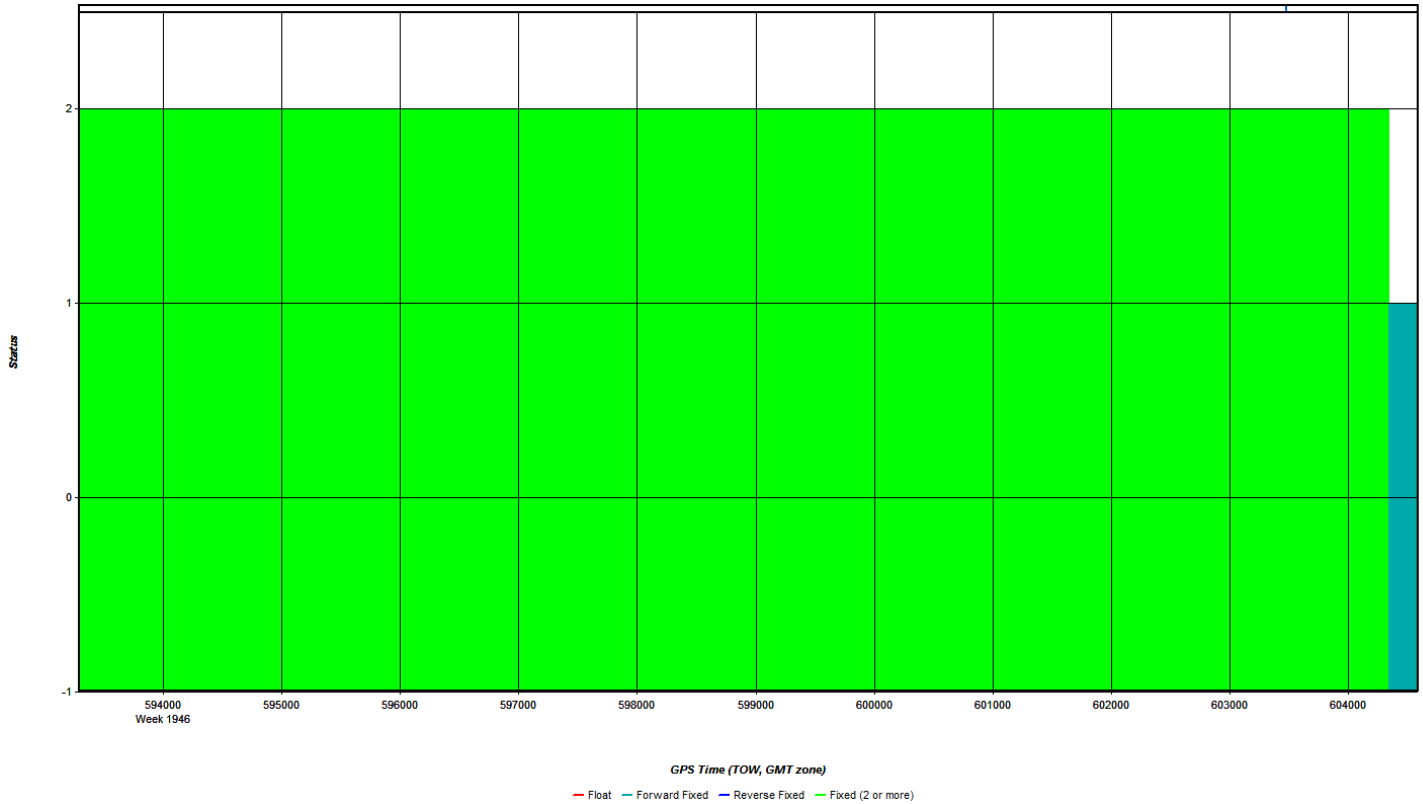
For Jossy KCWA KMBC - KSYR Hobbs  
63.45 - 67.10 - 68.15 6689.5

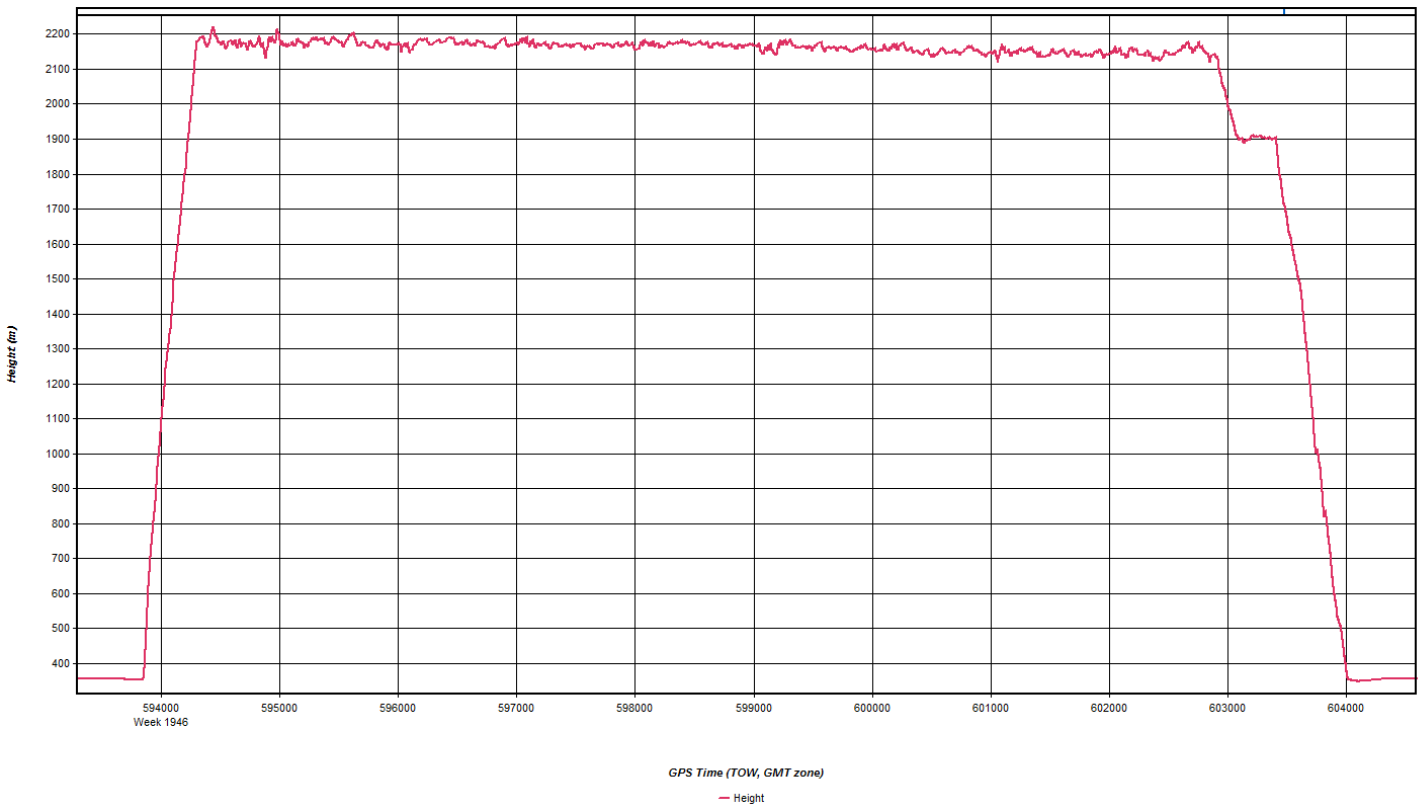
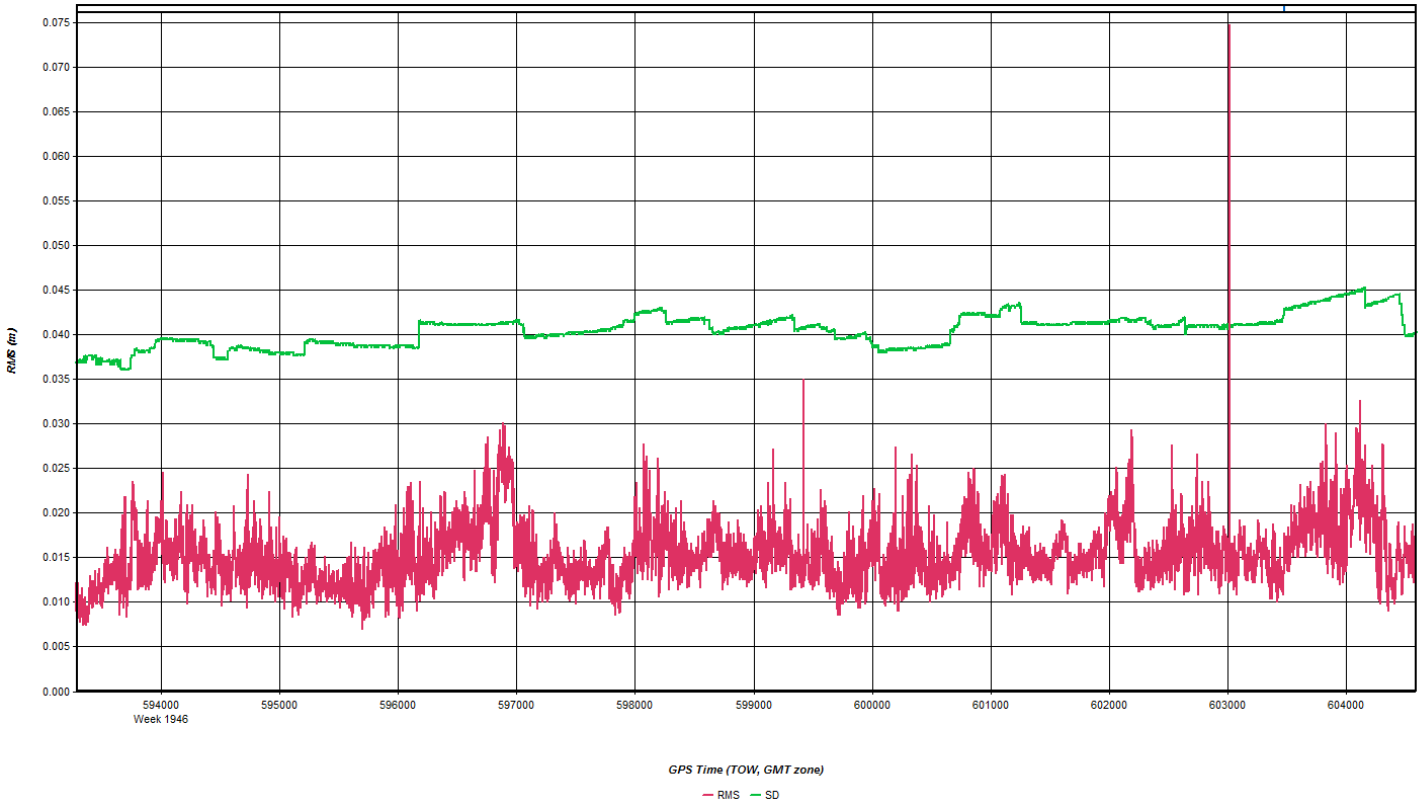
Total Proj Lines: 9      Lines Flown: 9      Online Time: 1:45      Mob Time: 2:10      Notes:

# Apr 29, 2017-C (N262AS, SN7161)

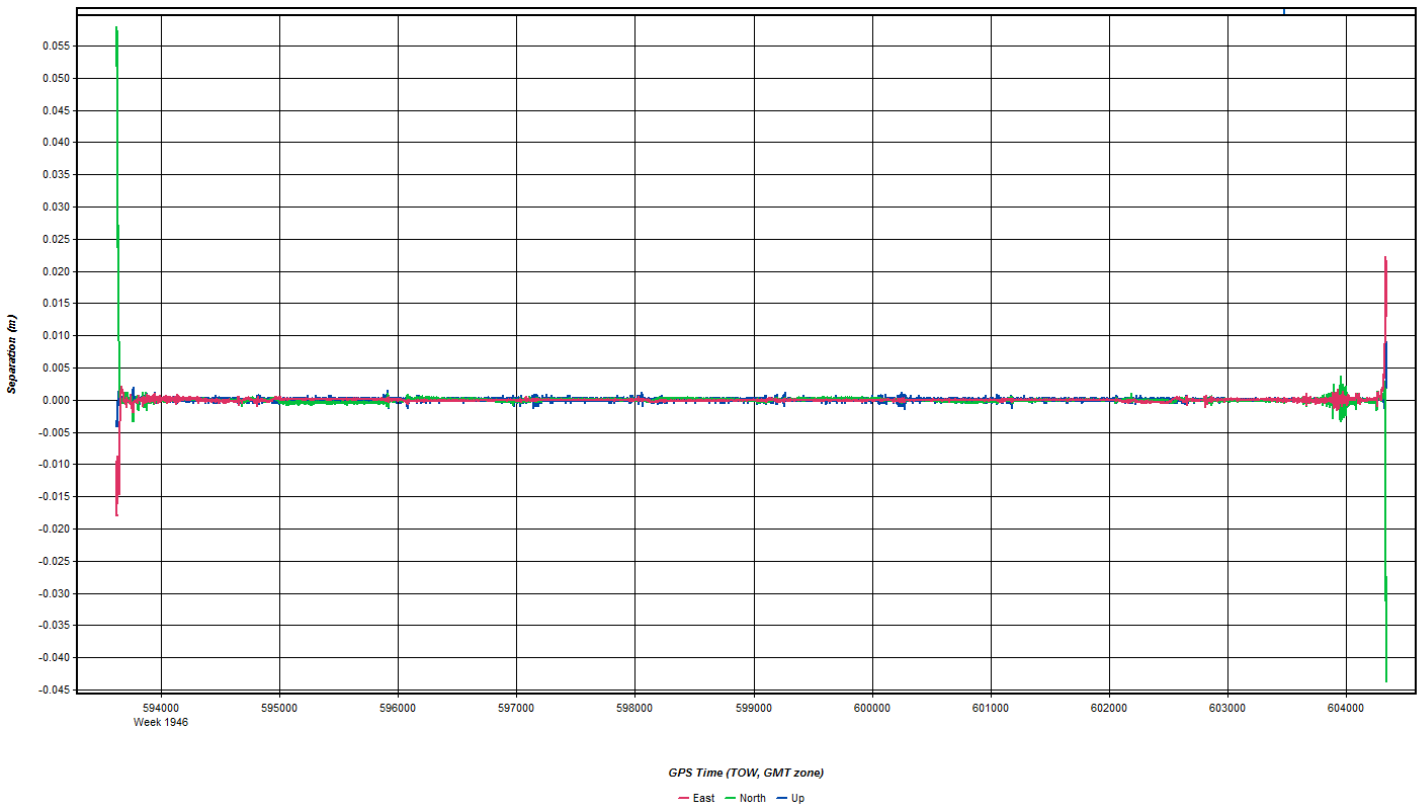
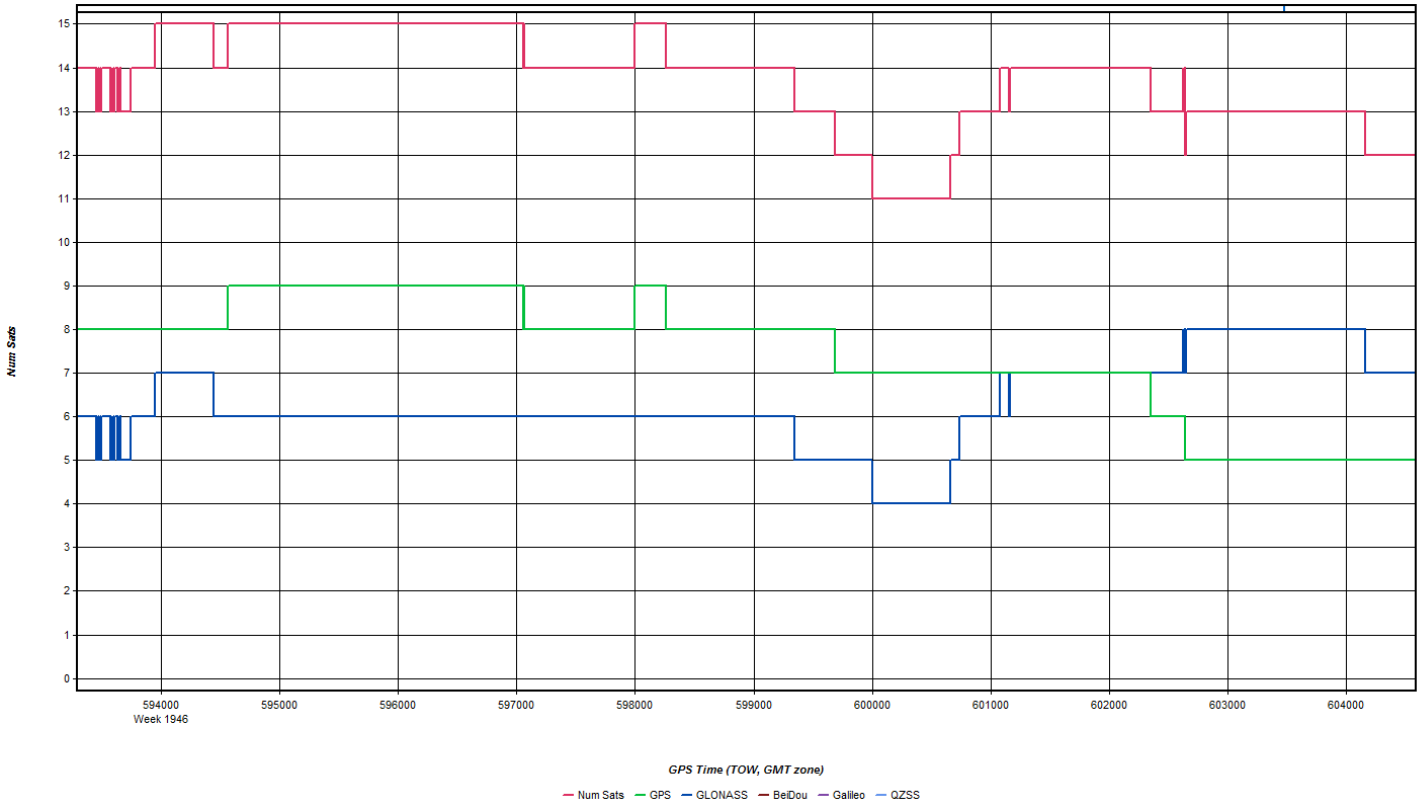


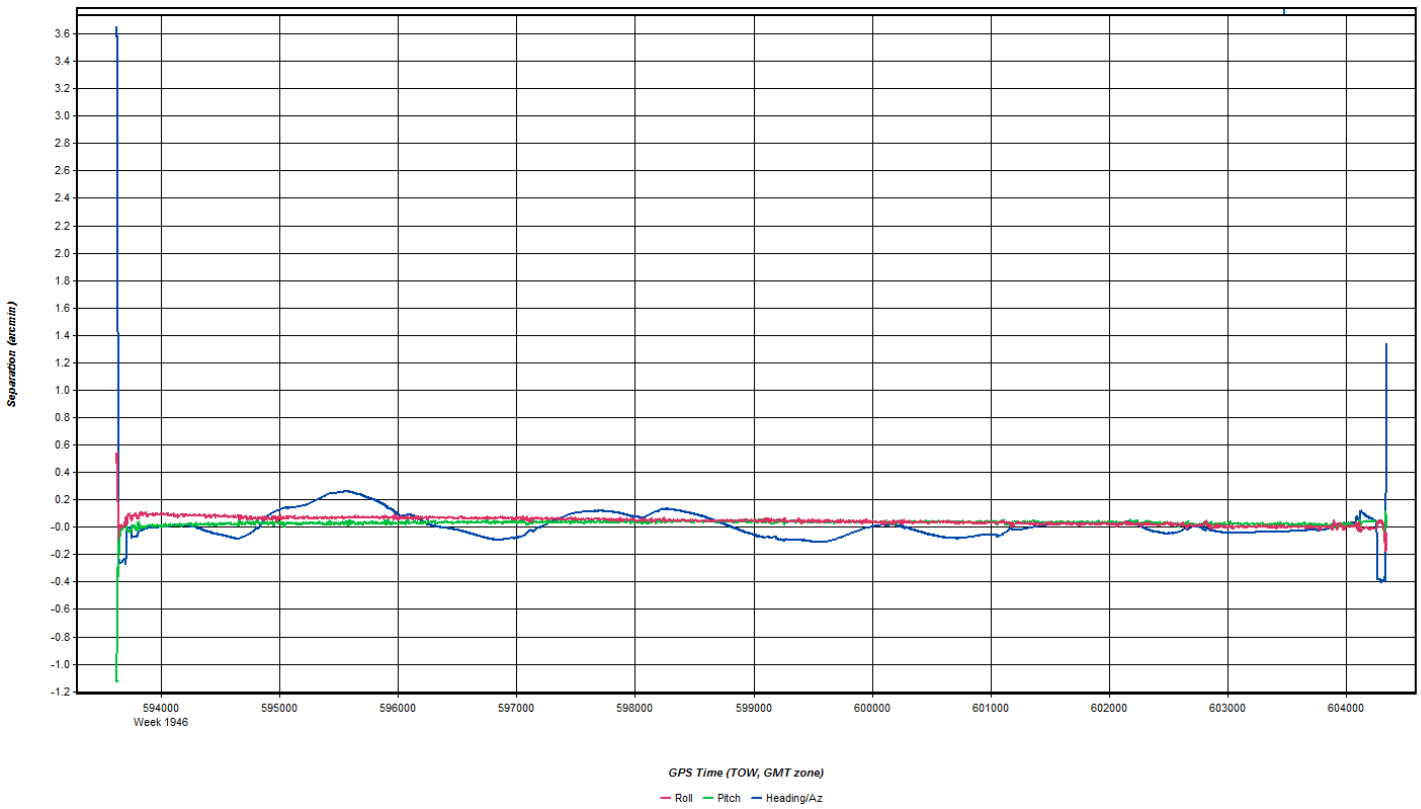
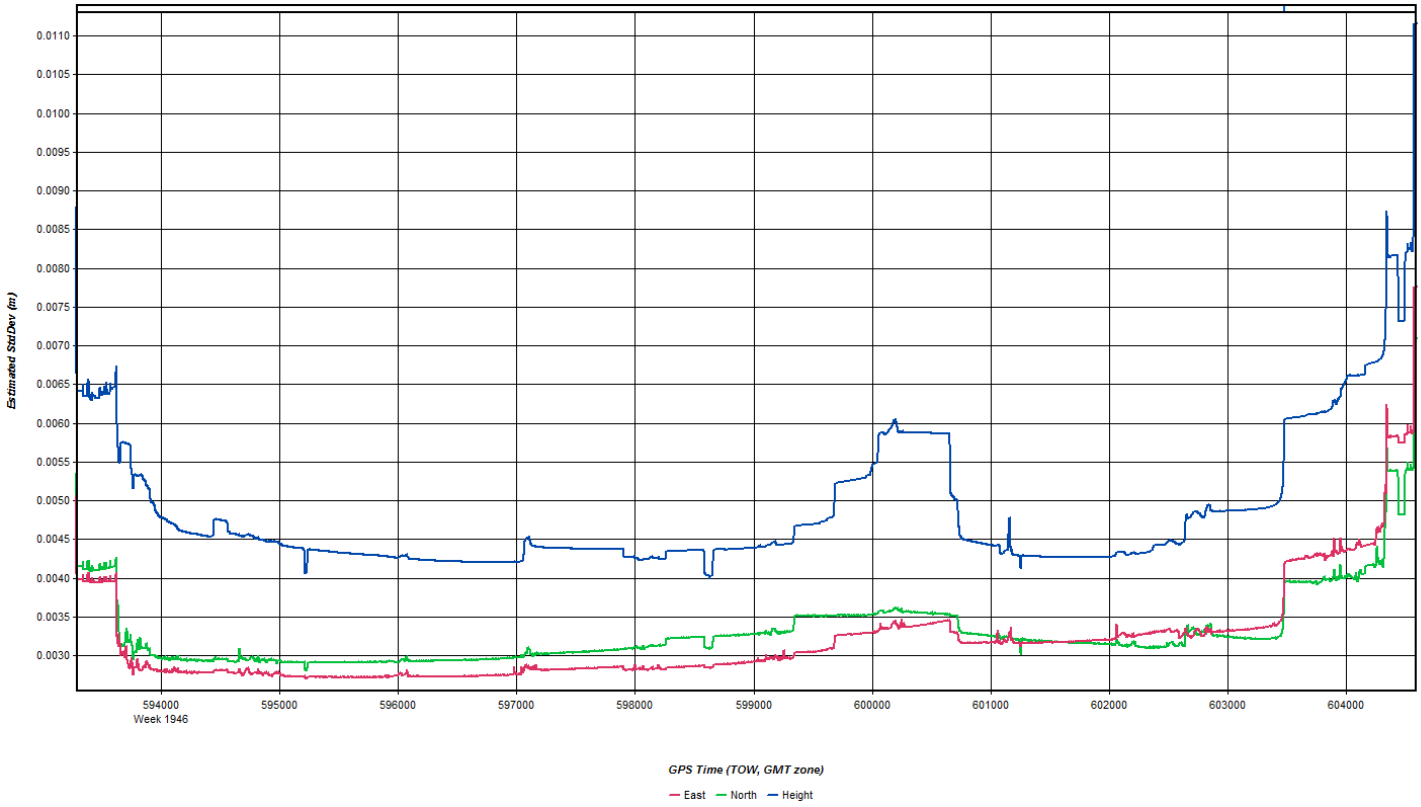












Coordinate/Antenna Settings ? X

Master Remote

Base Station  
 1: ANGO Name: ANGO  Disabled  
 File: F:\Proc\28571\_WROC\_Sawyer\_7178\20170429\_204638\Wiscors\

Coordinates  
 Latitude: North 45 06 49.74988 Coord. options  
 Longitude: West 89 09 46.64567 Save to Favorites  
 Ellipsoidal height: 419.291 m  
 Datum: WGS84 Proc Datum: WGS84  
 Epoch: year

Antenna Height  
 From station file: TRM55971.00, NONE View STA File  
 Antenna profile: TRM55971.00 Info  
 Measured height: 0.000 m  
 ARP to L1 offset: 0.067 m  
 Applied height: 0.067 m  
 Measured to  
 ARP  
 L1 Phase Centre  
 Compute From Slant

OK Cancel

Coordinate/Antenna Settings ? X

Master Remote

Base Station  
 4: DOTY Name: DOTY  Disabled  
 File: F:\Proc\28571\_WROC\_Sawyer\_7178\20170429\_204638\Wiscors\

Coordinates  
 Latitude: North 45 13 10.95151 Coord. options  
 Longitude: West 88 36 24.30725 Save to Favorites  
 Ellipsoidal height: 336.258 m  
 Datum: WGS84 Proc Datum: WGS84  
 Epoch: year

Antenna Height  
 From station file: TRM57971.00, NONE View STA File  
 Antenna profile: TRM57971.00 Info  
 Measured height: 0.000 m  
 ARP to L1 offset: 0.067 m  
 Applied height: 0.067 m  
 Measured to  
 ARP  
 L1 Phase Centre  
 Compute From Slant

OK Cancel

Coordinate/Antenna Settings ? X

Master Remote

Base Station  
 2: IRMA Name: IRMA  Disabled  
 File: F:\Proc\28571\_WROC\_Sawyer\_7178\20170429\_204638\Wiscors\

Coordinates  
 Latitude: North 45 18 47.20444 Coord. options  
 Longitude: West 89 37 33.35010 Save to Favorites  
 Ellipsoidal height: 444.789 m  
 Datum: WGS84 Proc Datum: WGS84  
 Epoch: year

Antenna Height  
 From station file: TRM57971.00, NONE View STA File  
 Antenna profile: TRM57971.00 Info  
 Measured height: 0.000 m  
 ARP to L1 offset: 0.067 m  
 Applied height: 0.067 m  
 Measured to  
 ARP  
 L1 Phase Centre  
 Compute From Slant

OK Cancel

Coordinate/Antenna Settings ? X

Master Remote

Base Station  
 3: WAAU Name: WAAU  Disabled  
 File: F:\Proc\28571\_WROC\_Sawyer\_7178\20170429\_204638\Wiscors\

Coordinates  
 Latitude: North 44 56 44.42642 Coord. options  
 Longitude: West 89 37 40.95169 Save to Favorites  
 Ellipsoidal height: 326.246 m  
 Datum: WGS84 Proc Datum: WGS84  
 Epoch: year

Antenna Height  
 From station file: TRM57971.00, NONE View STA File  
 Antenna profile: TRM57971.00 Info  
 Measured height: 0.000 m  
 ARP to L1 offset: 0.067 m  
 Applied height: 0.067 m  
 Measured to  
 ARP  
 L1 Phase Centre  
 Compute From Slant

OK Cancel

