

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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 Flight Log Page 10

April 21, 2017-B (N262AS, SN7161) Page 11
 Flight Log Page 18

April 21, 2017-B (N73TM, SN7178) Page 20
 Flight Log Page 27

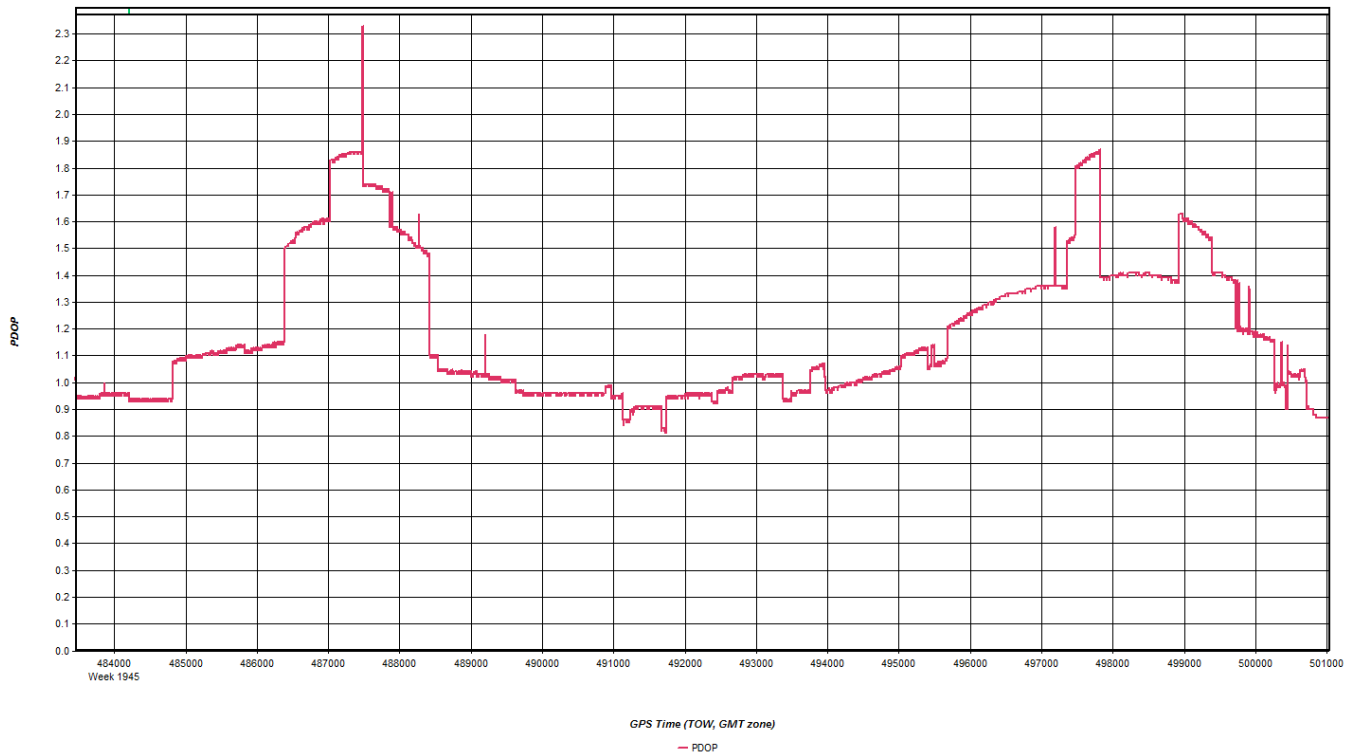
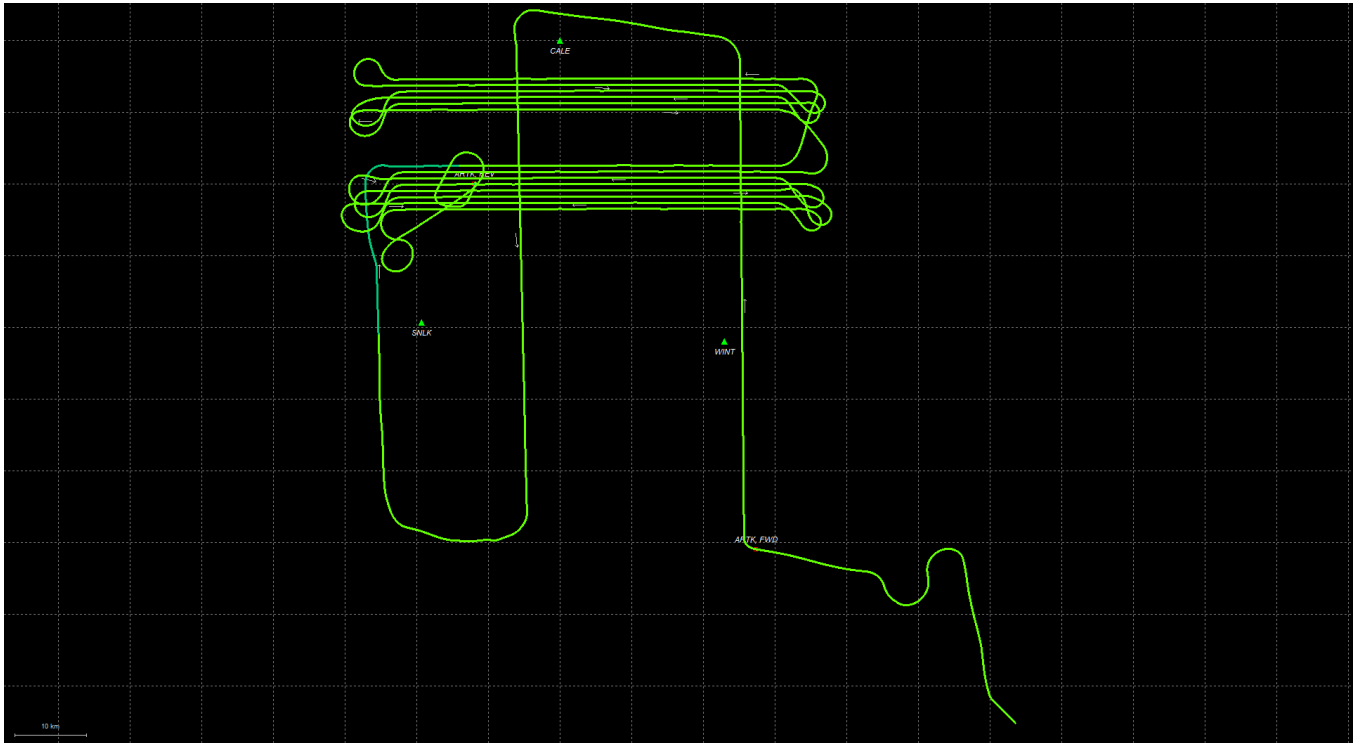
April 21, 2017-C (N262AS, SN7161) Page 28
 Flight Log Page 35

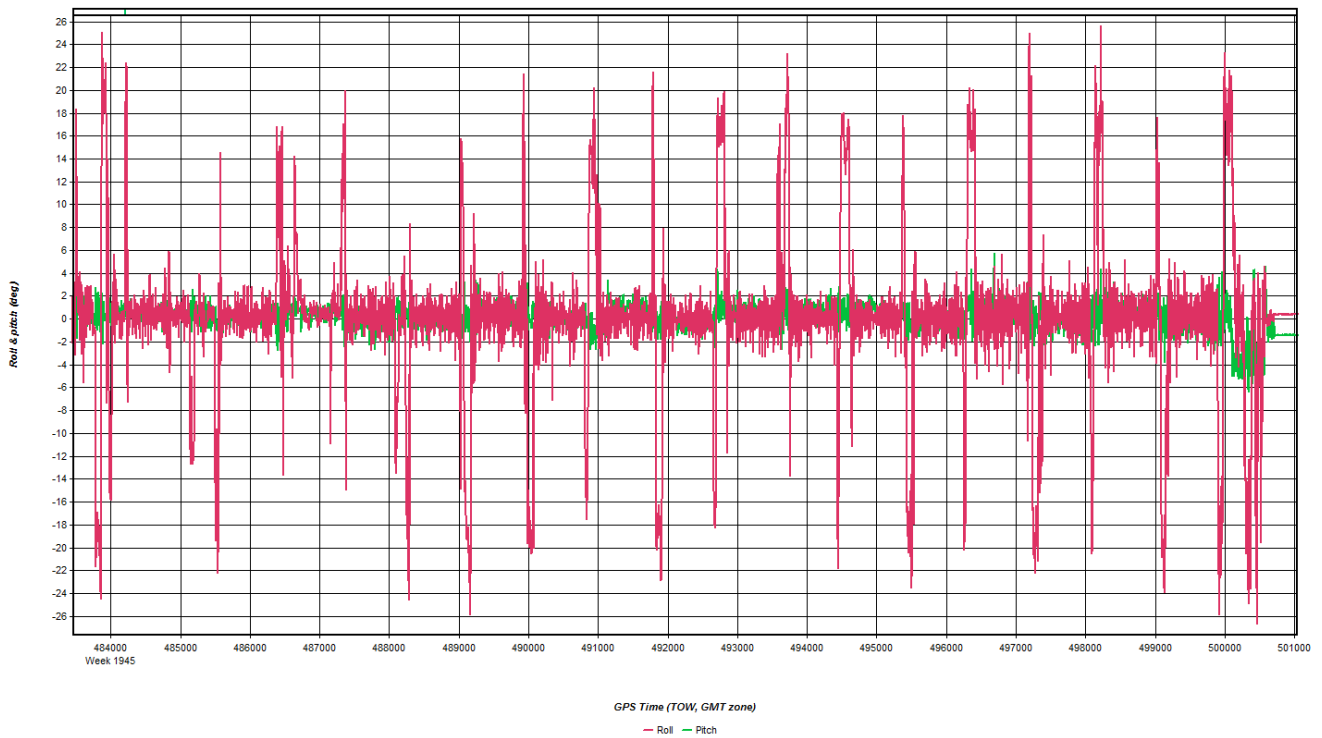
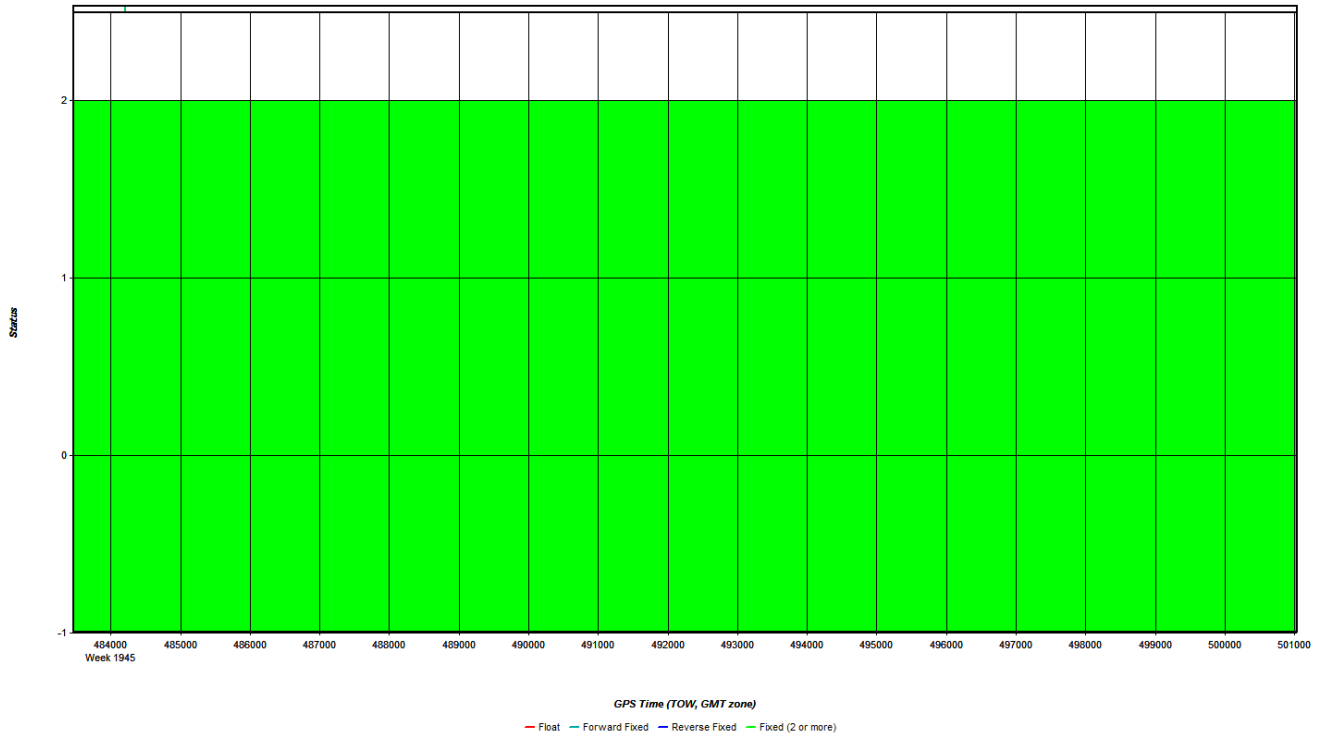
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 Flight Log Page 44

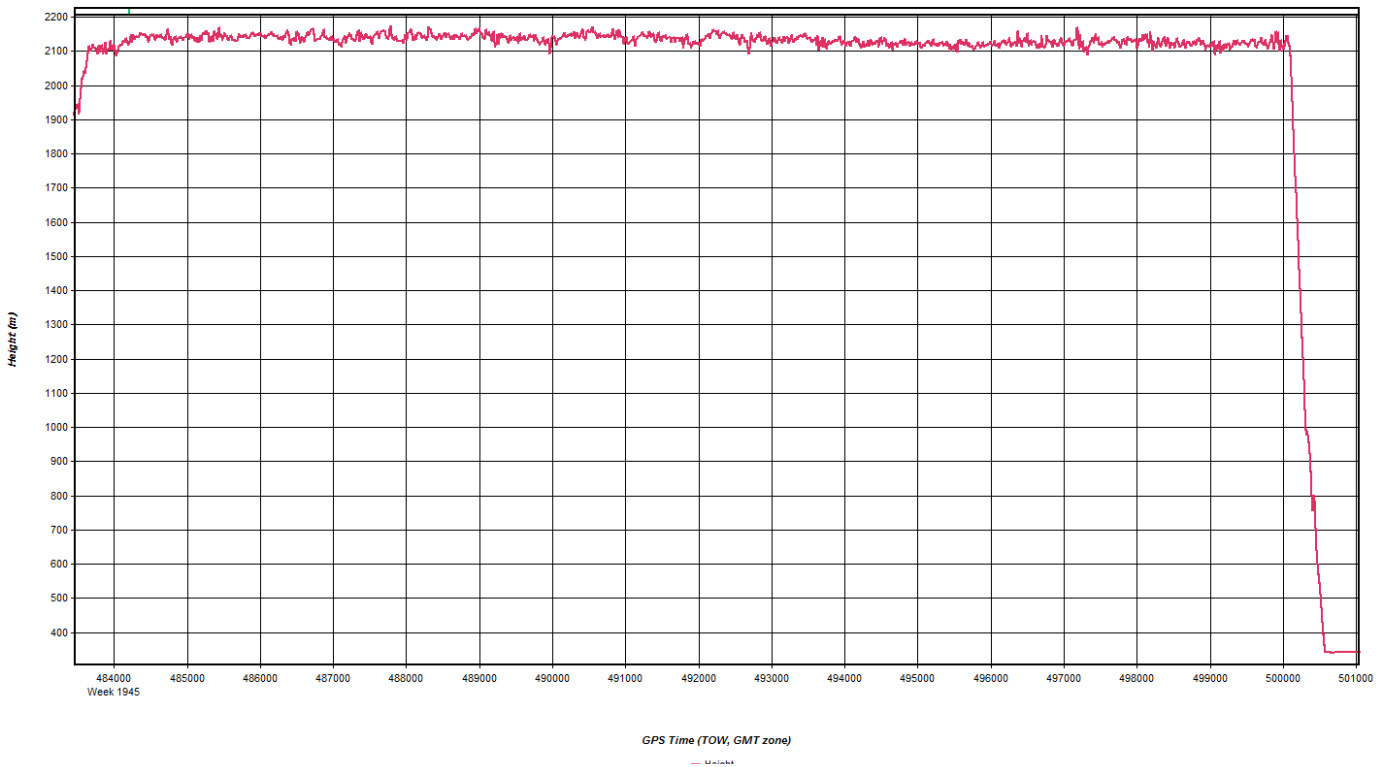
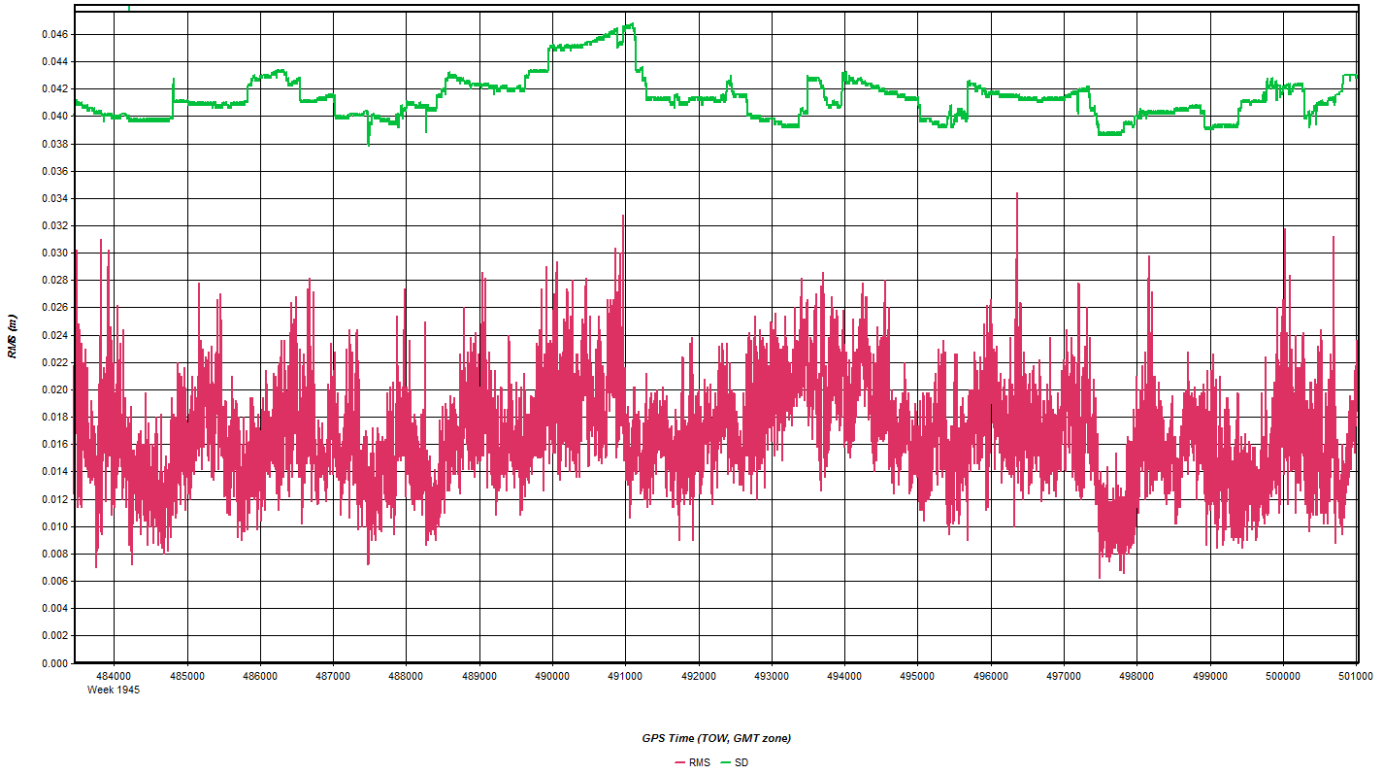
April 22, 2017-A (N73TM, SN7178) Page 45
 Flight Log Page 52

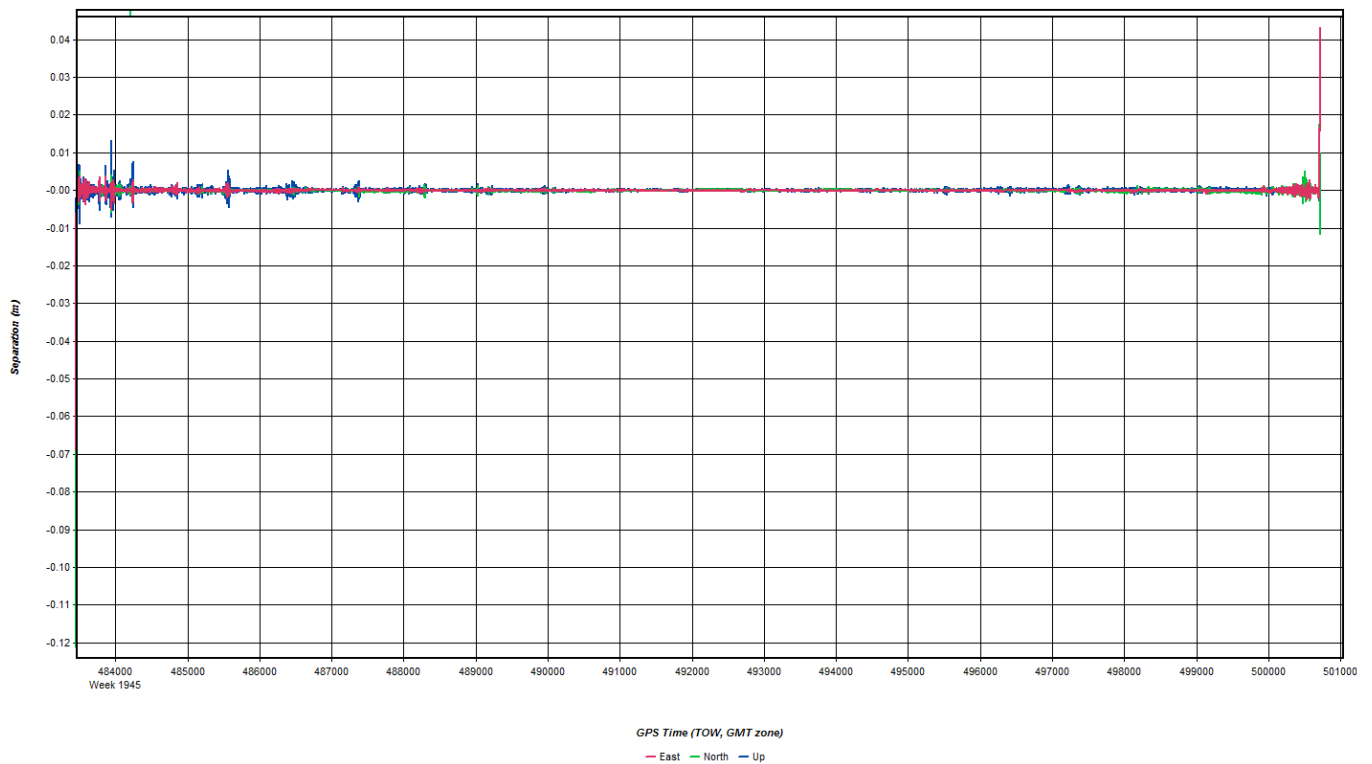
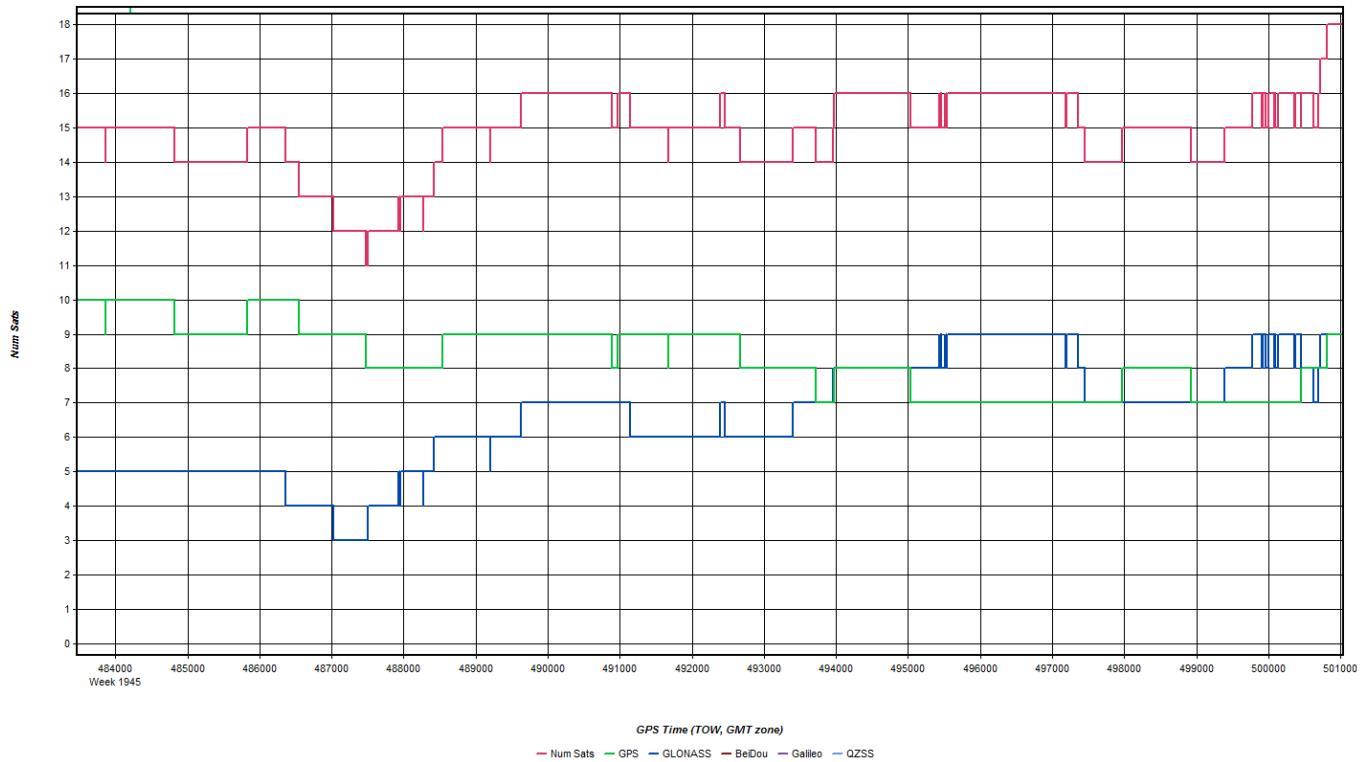
April 22, 2017-B (N73TM, SN7178) Page 53
 Flight Log Page 60

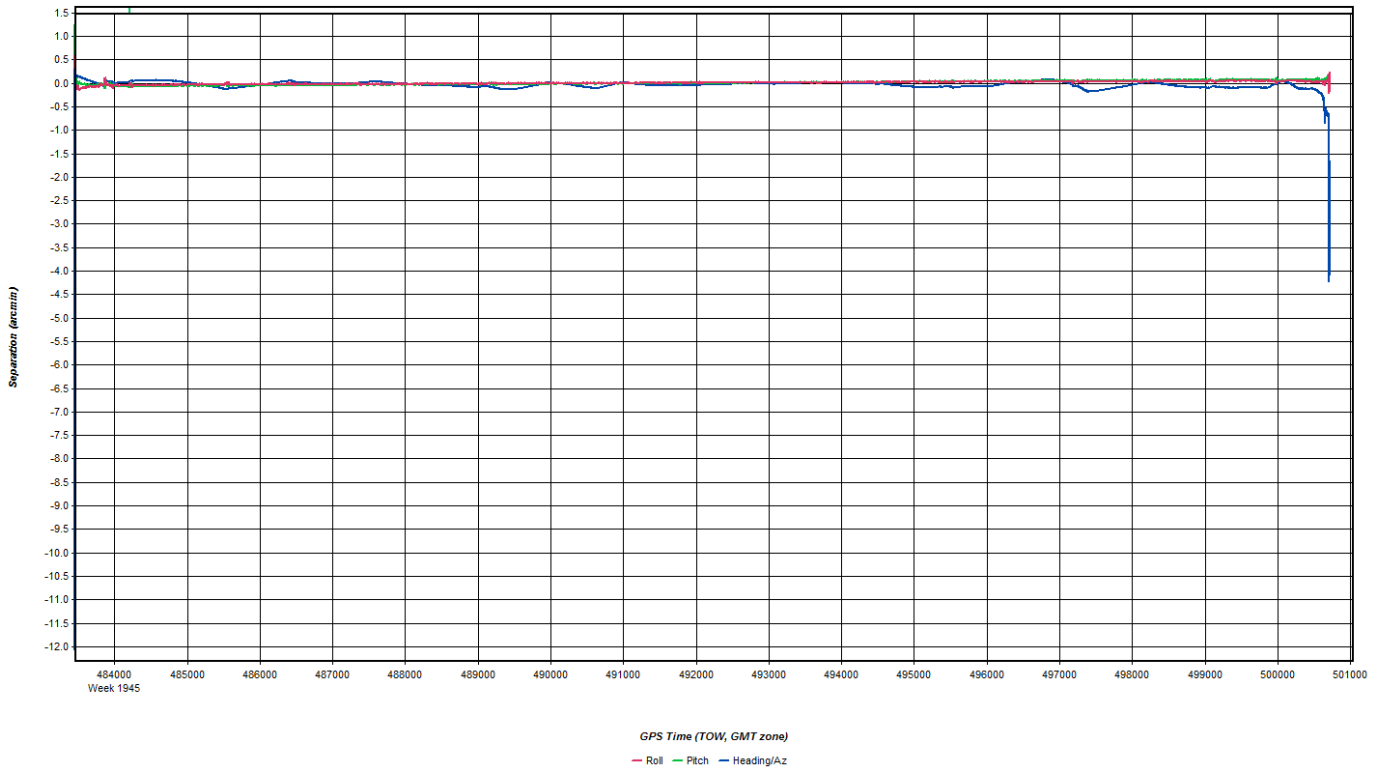
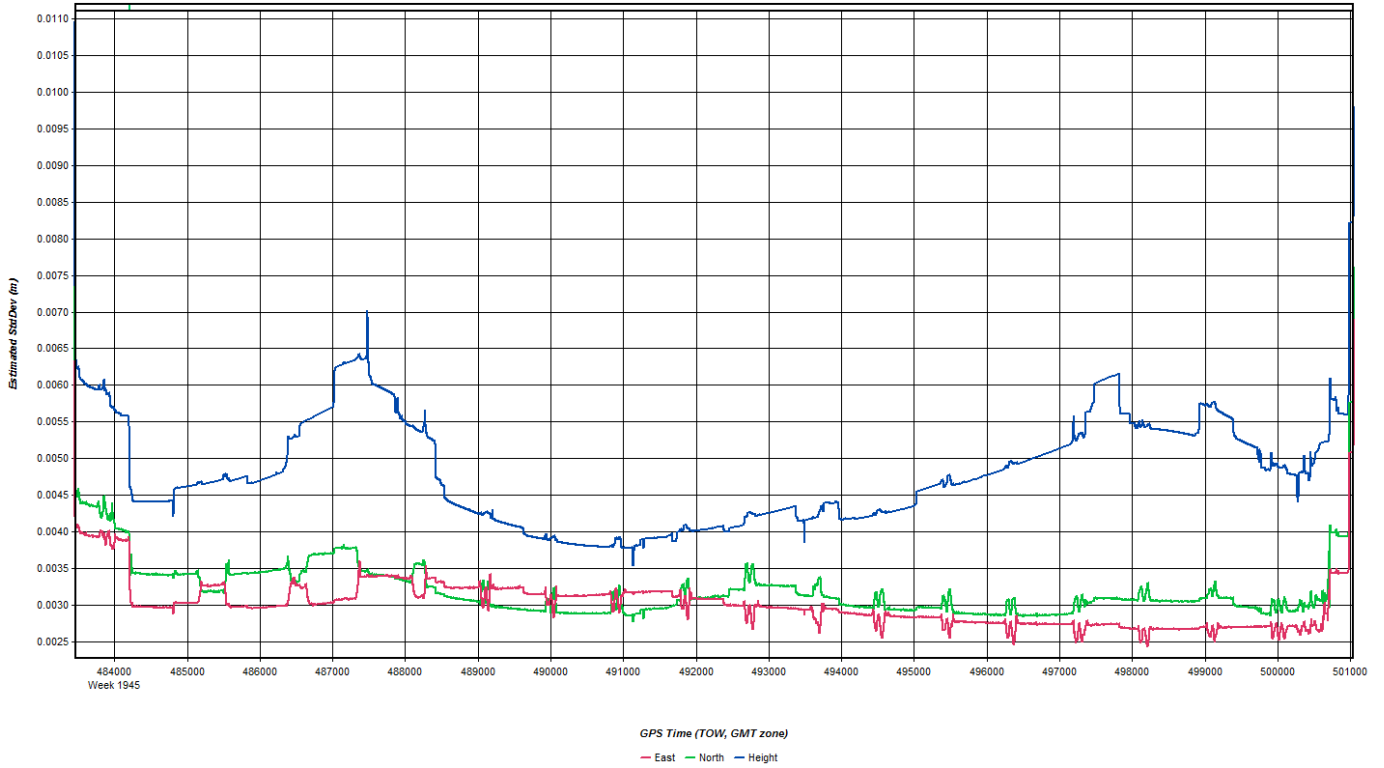
Apr 21, 2017-A N262AS, SN7161)











Coordinate/Antenna Settings ? X

Master Remote

Base Station
1: CALE Name: CALE Disabled
File: F:\Proc\28571_WROC_Sawyer_7178\Doug_Carey_4-26-17\Sawyer

Coordinates
Latitude: North 46 12 23.72860 Coord. options
Longitude: West 91 17 29.90351 Save to Favorites
Ellipsoidal height: 390.901 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: SNLK Name: SNLK Disabled
File: F:\Proc\28571_WROC_Sawyer_7178\Doug_Carey_4-26-17\Sawyer

Coordinates
Latitude: North 45 51 12.65510 Coord. options
Longitude: West 91 32 26.06716 Save to Favorites
Ellipsoidal height: 387.702 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: WINT Name: WINT Disabled
 File: F:\Proc\28571_WROC_Sawyer_7178\Doug_Carey_4-26-17\Sawyer

Coordinates
 Latitude: North 45 49 48.92889 Coord. options
 Longitude: West 90 59 46.00929 Save to Favorites
 Ellipsoidal height: 383.306 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_list@quantumspatial.com)

Date: 4-21-17 LID: A B C D E Pg. 1 of 1

Project: WROC - SAWYER Co. Proj #: 28571 Flight Mgmt File: 20170421-134045

Aircraft: N222AS Begin Hobbs: 6539.1 End Hobbs: 6545.0 Total: 5.9 Pilot: Christopher Co-Pilot: — Tech: CAREY

Dep Apt: KCWA Dep Time (Lcl): 9:00 (Z) Air Apt: KCWA Air Time (Local): 1532 (Z) 2032 Tot Time Aloft: —

CORS: ON Sta 1: WisCONS 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) —

Gd Temp beg: °C End: °C OAT beg: °C End: °C Altimeter begin: end: —

Type	Serial #	Alt AGL	Alt MSL	Avg Temp	Max Gdspd	Avg Pct Spacing
LIDAR	ALS-70	7161	5620	7024	1464	150
FOV	40	53.4	MPIA	2	299.4	Power 100%

Bag CB: 320 End CB: — Tot CB: — Storage Name: 16

Line #	Hdg	Start (UTC)	End (UTC)	Gd Spd	POF/Sns	GPS Altitude	Crsb	Turns (0-3)	Notes
70	143	1445	1445	140	1.1	7028	—	0	KCWA → SITE → S/FIG 1425
71	180	1453	1506	150	1.0	7054	—	—	CLR/SCT 4K over SITE / occ cu thru line
15	91	1523	1535	—	1.5	7014	—	—	SCT 4K over SITE / occ - cu thru XTIE
1	272	1538	1550	—	1.2	7054	—	—	Clearing from the North / -cu last 4mi EAST END
2	90	1554	1605	—	1.3	7011	—	—	CLR
3	272	1608	1620	150	1.3	7011	—	0	—
4	91	1623	1635	—	1.0	7031	—	—	—
5	272	1639	1650	—	1.0	7051	—	—	—
6	91	1654	1705	—	1.0	7047	—	—	—
16	272	1709	1726	—	1.1	6969	—	—	—
17	91	1724	1735	150	1.1	6969	—	0	CLR / SKC
18	272	1739	1750	—	1.3	6982	—	—	—
19	91	1754	1805	—	1.4	6991	—	—	—
20	272	1810	1820	—	1.3	6978	—	—	—
21	91	1825	1836	—	1.7	6969	—	—	—
22	272	1840	1851	—	1.2	6956	—	—	HYR 1448 → S/FIG → HYR (LAMP) 1410/1910

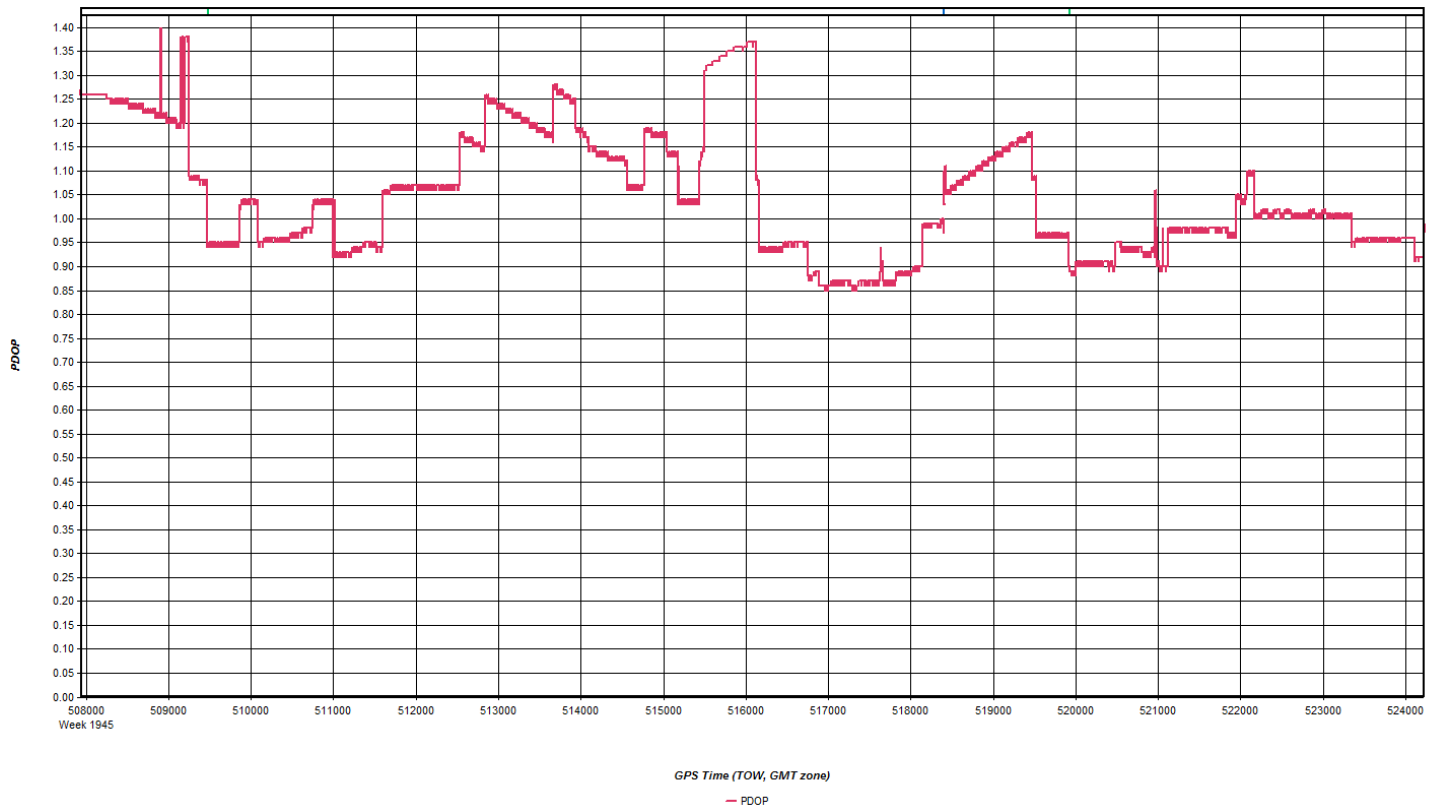
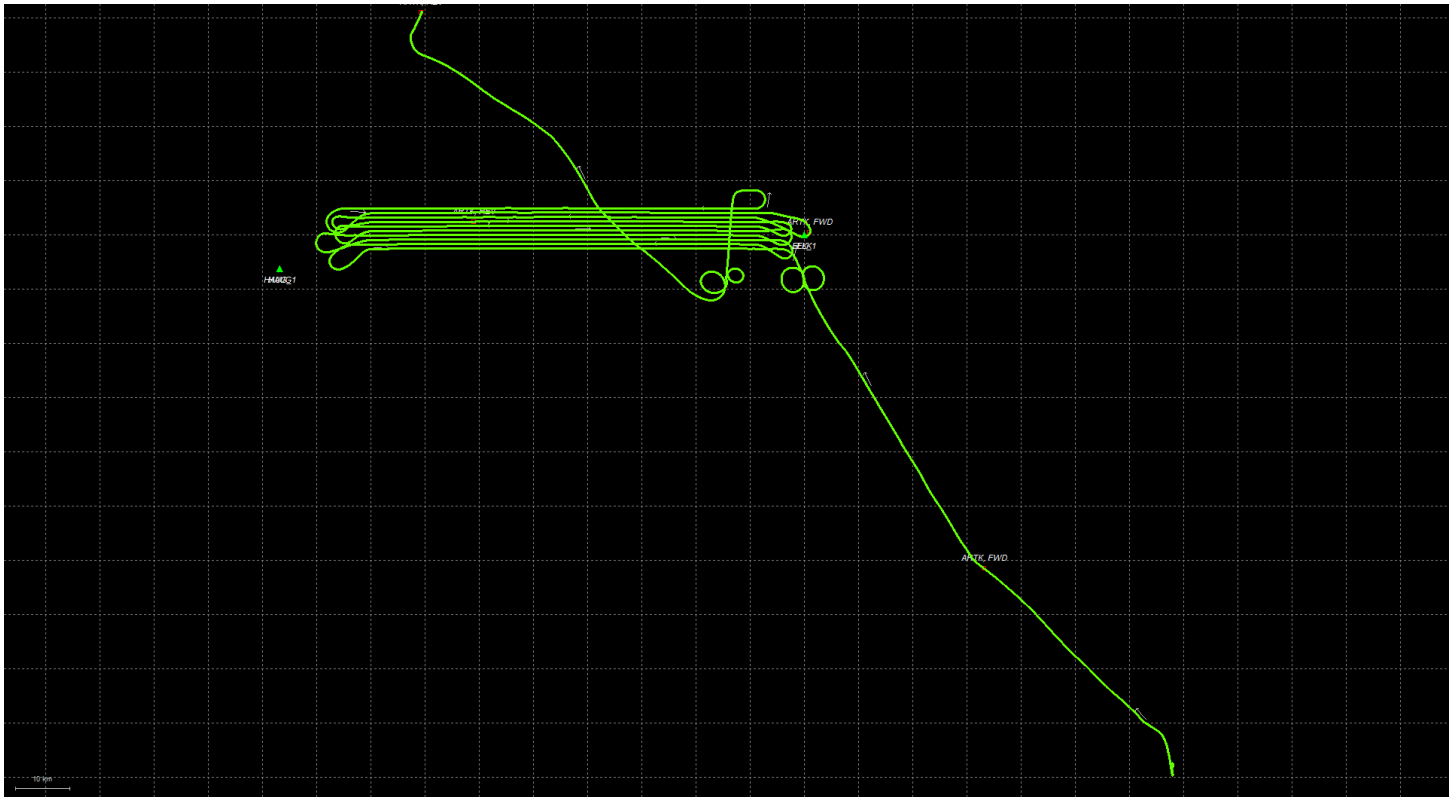
FLIGHT LINE NOTES - visibility, clouds, smoke, partial, etc.

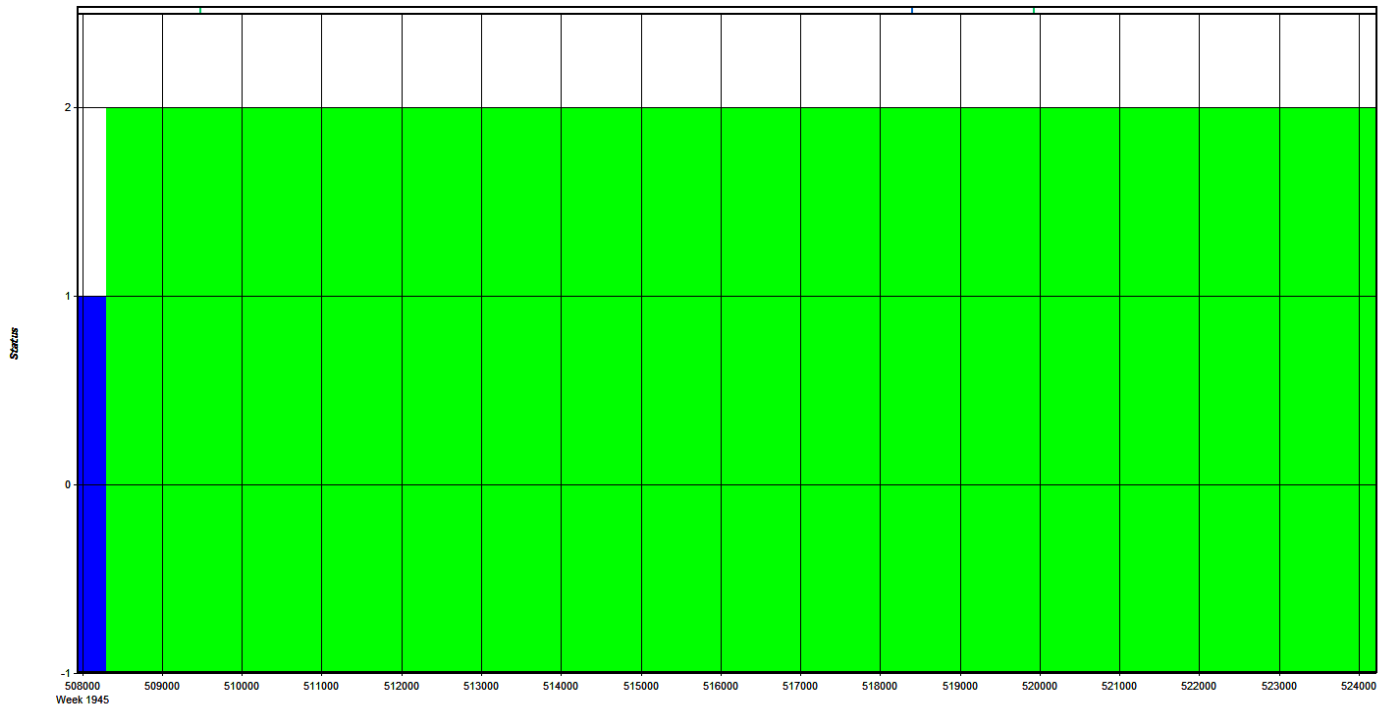
Total Proj Lines: 71 Lines Flown: 16 Lines Remain: 55 Online Time: 4:4 Job Time: 1:5 Notes: 2017 WROC - SAWYER

XTIE
XTIE

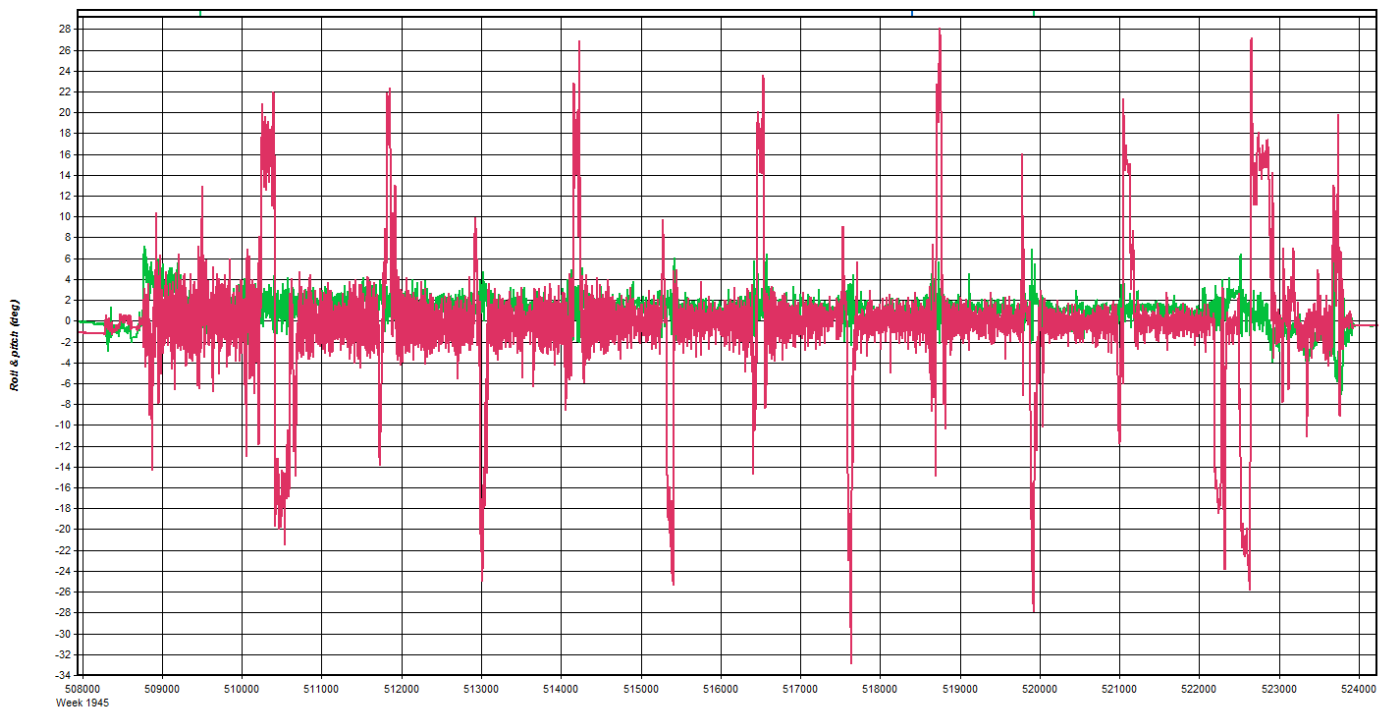
Generated by CamScanner from intsig.com

Apr 21, 2017-B (N262AS, SN7161)

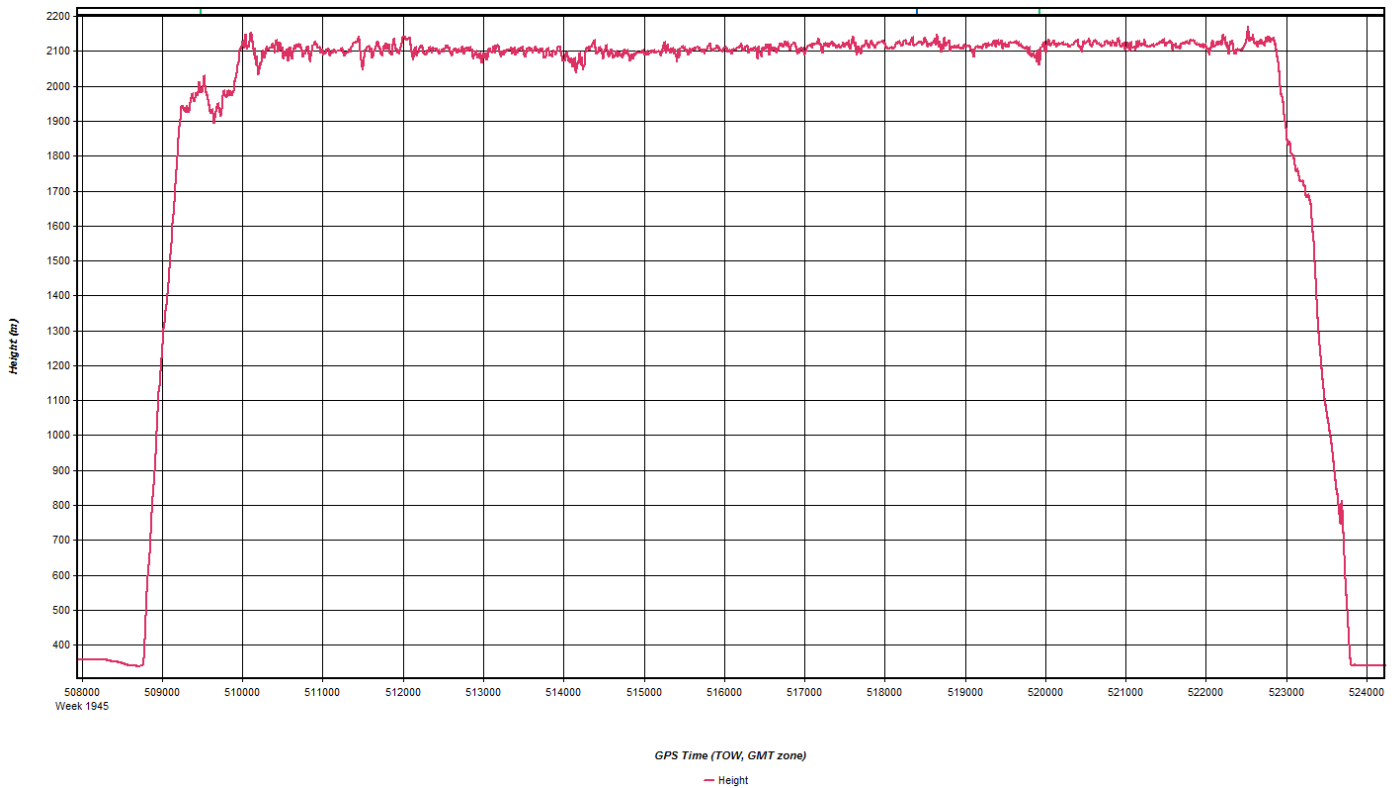
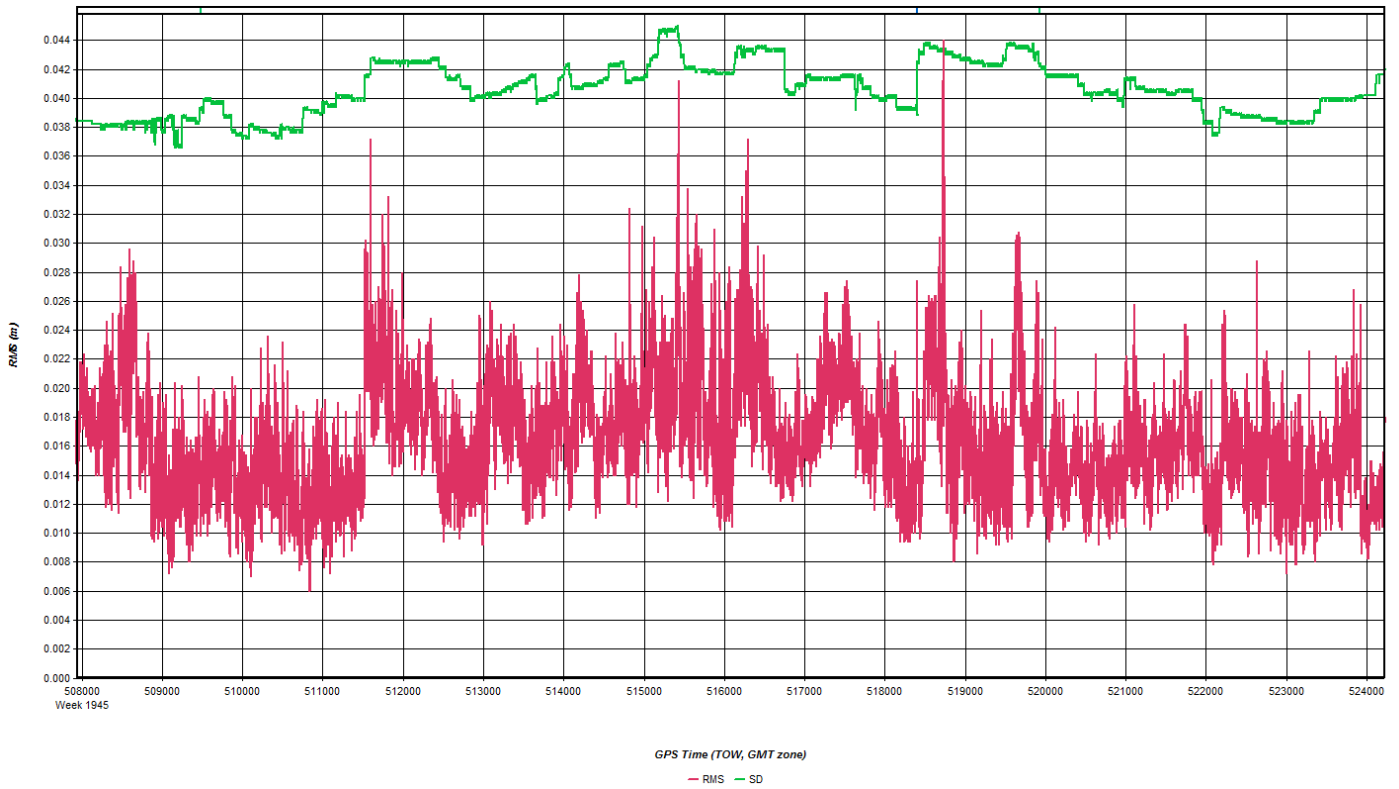


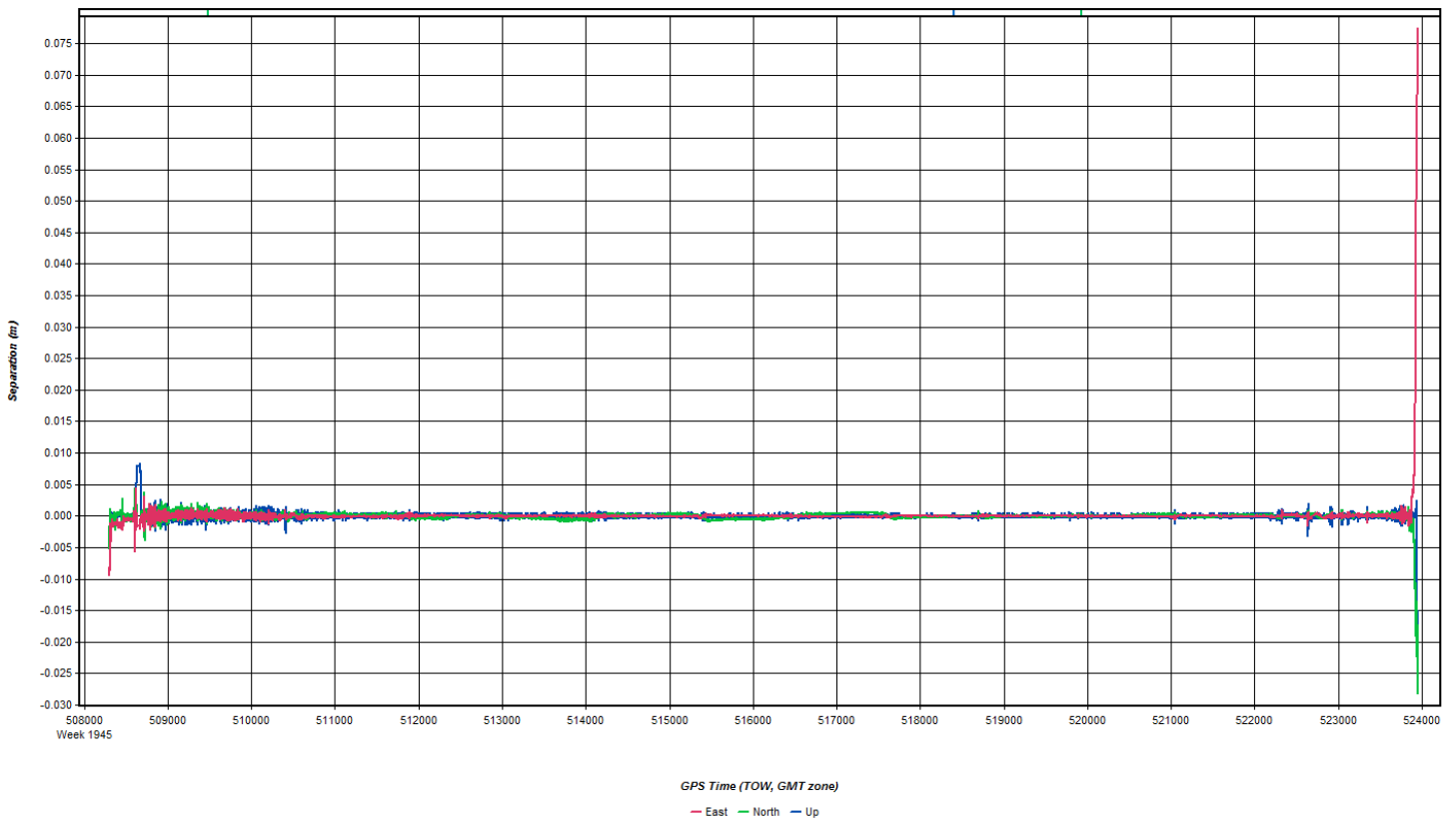
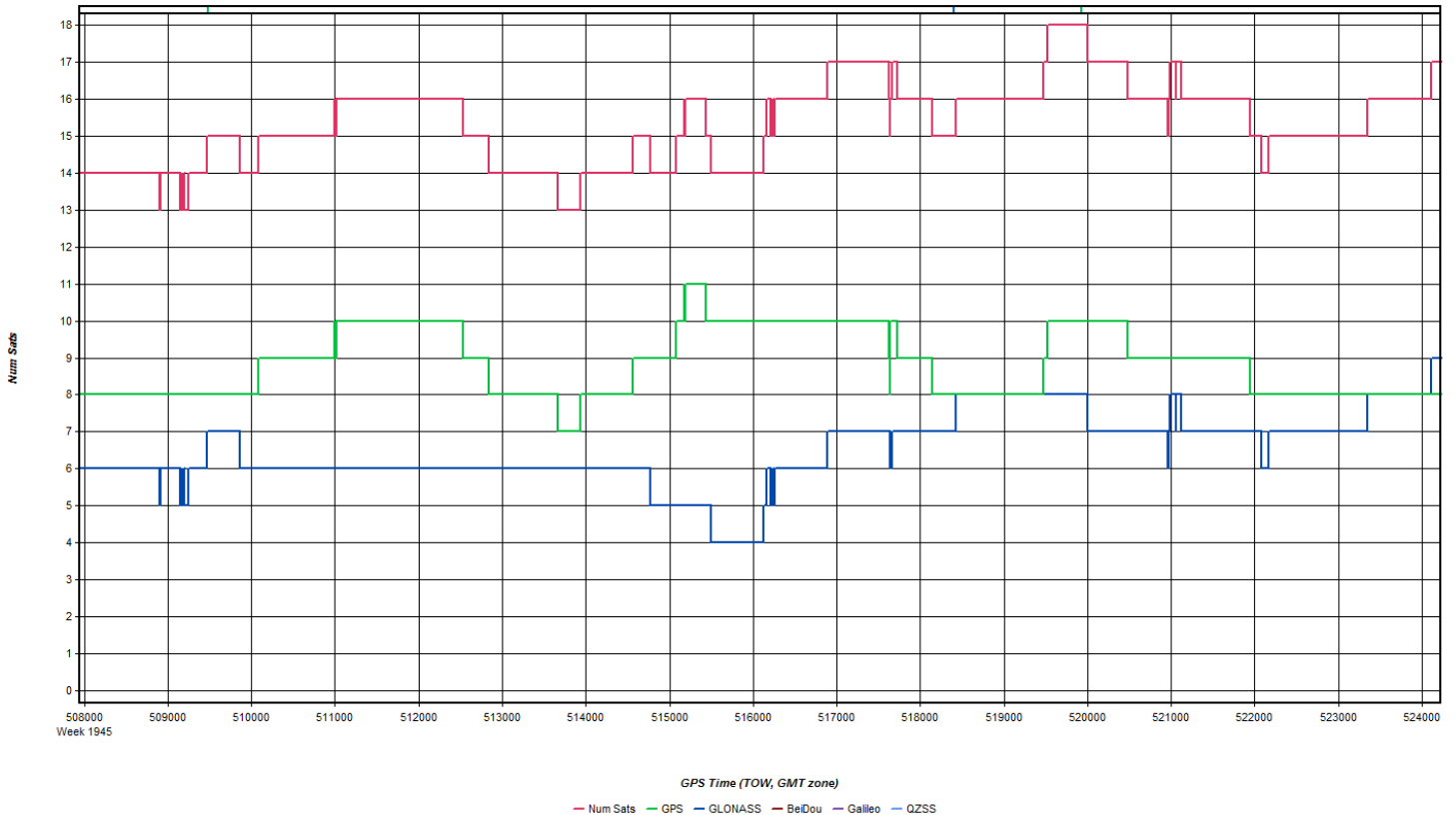


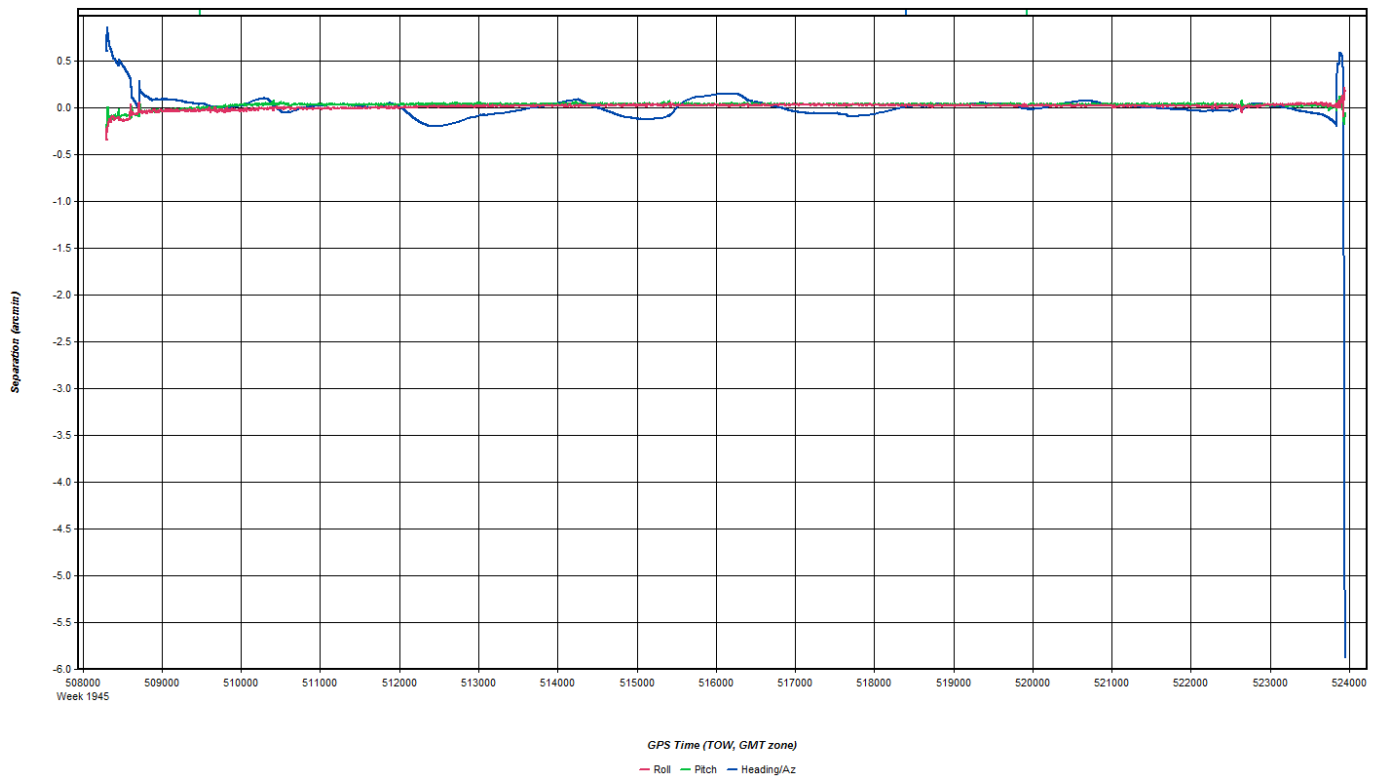
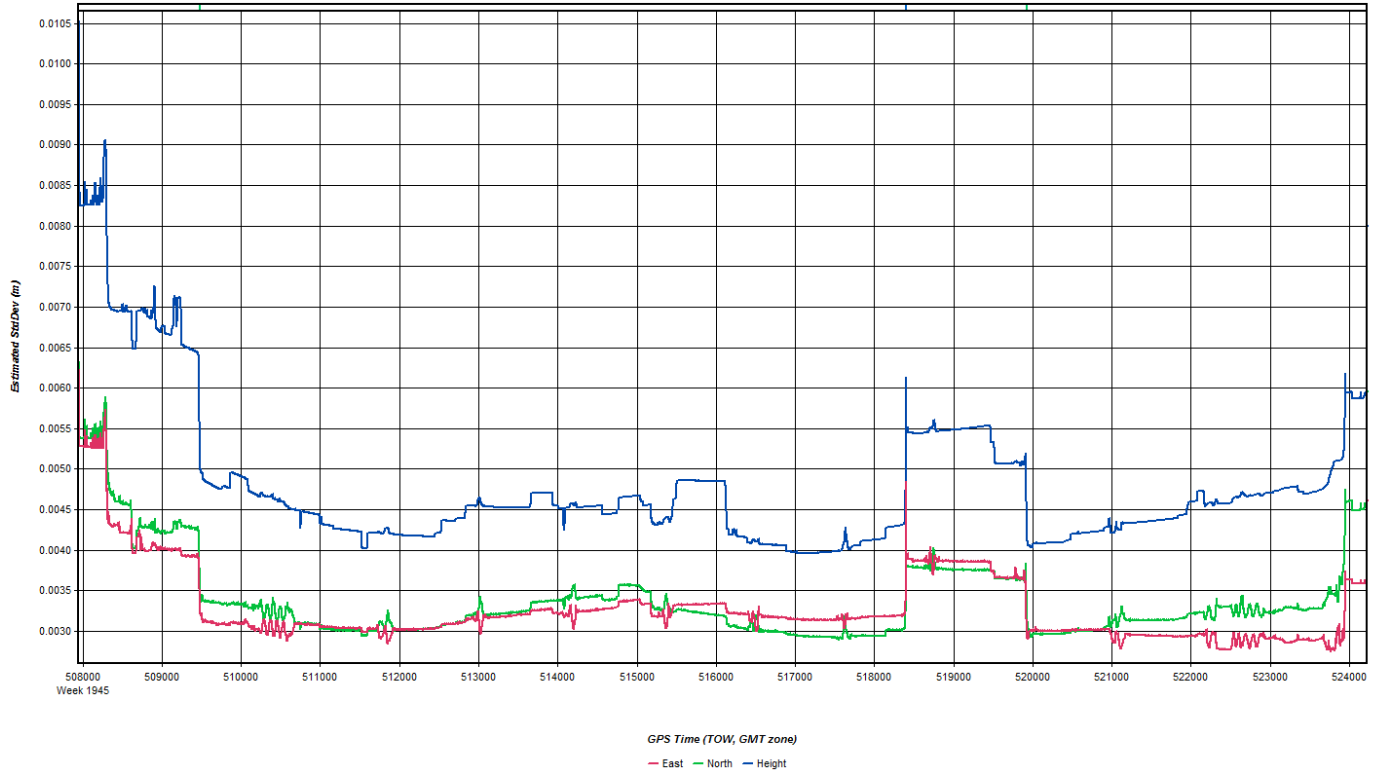
GPS Time (TOW, GMT zone)
 — Float — Forward Fixed — Reverse Fixed — Fixed (2 or more)



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







Coordinate/Antenna Settings ? X

Master Remote

Base Station
 3: ELK Name: ELK Disabled
 File: F:\Proc\28571_WROC_Sawyer_7178\Jonathoan_Swann_4-25-17\

Coordinates
 Latitude: North 45 39 31.13763 Coord. options
 Longitude: West 90 32 22.47381 Save to Favorites
 Ellipsoidal height: 419.362 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
 4: HAUG Name: HAUG Disabled
 File: F:\Proc\28571_WROC_Sawyer_7178\Jonathoan_Swann_4-25-17\

Coordinates
 Latitude: North 45 36 11.81386 Coord. options
 Longitude: West 91 46 43.73887 Save to Favorites
 Ellipsoidal height: 344.140 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

Date: 4-21-17c

Lift: A B C D E Pg 2 of 2

Project: WROC Sawyer **Proj #:** 28571 **Flight Mgmt File:** 20170422-020042

Aircraft: N262AS **Begin Hobbs:** 6549.1 **End Hobbs:** 6551.8 **Total:** 2.7 **Pilot:** C McDonald **Co-Pilot:** JSwan

Dep Apt: KHYR **Dep Time (Lcl):** 0700 **Arr Apt:** KCWA **Arr Time (Local):** 1205 **ZF:** 0505 **Tot Time Aloft:** 7.7

CORS: Y/N **Sta 1:** WISEORS **Sta 2:** **Flyovers:** Y/N **IF Y, times: Sta 1)** **Sta 2)**

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

Gd Temp beg: 7 °C **End:** 8 °C **OAT beg:** 5 °C **End:** 4 °C **Altimeter begin:** 3019 **end:** 3018

LIDAR	Type	Serial #	Alt AGL	Alt AMSL	Avg Terr Ht	Max Gdspd	Avg Pt Spacing	Power	PPSM	Log GB	End GB	Tot GB	Scan #	Scan Freq	MPIA	Pulses In Air	Pulses	Turb (0..3)	Crab	GPS Altitude	POOP/Stat	Gd Spd	End (UTC)	Start (UTC)	Hdg	Line #
	FOV	410	7171	50340	Y/N	299	100	2			233	199	34													
59		0237																								
58		0258	132	1118	7000																					
57		0303	144	1119	6997																					
56		0321	143	1120	6983																					
55		0349	144	1118	6987																					
54		0402	150	1118	7010																					
53		0422	141	1118	6970																					
<p>unplanned X tic</p> <p>Fig 8's (0424-0429)</p> <p>Return to KCWA (0505)</p> <p>Hobbs = 2.7 Btc Hobbs = 6.8</p> <p>Online = 1.7 Online = 4.9</p> <p>MOB = 1.0 MOB = 1.9</p>																										

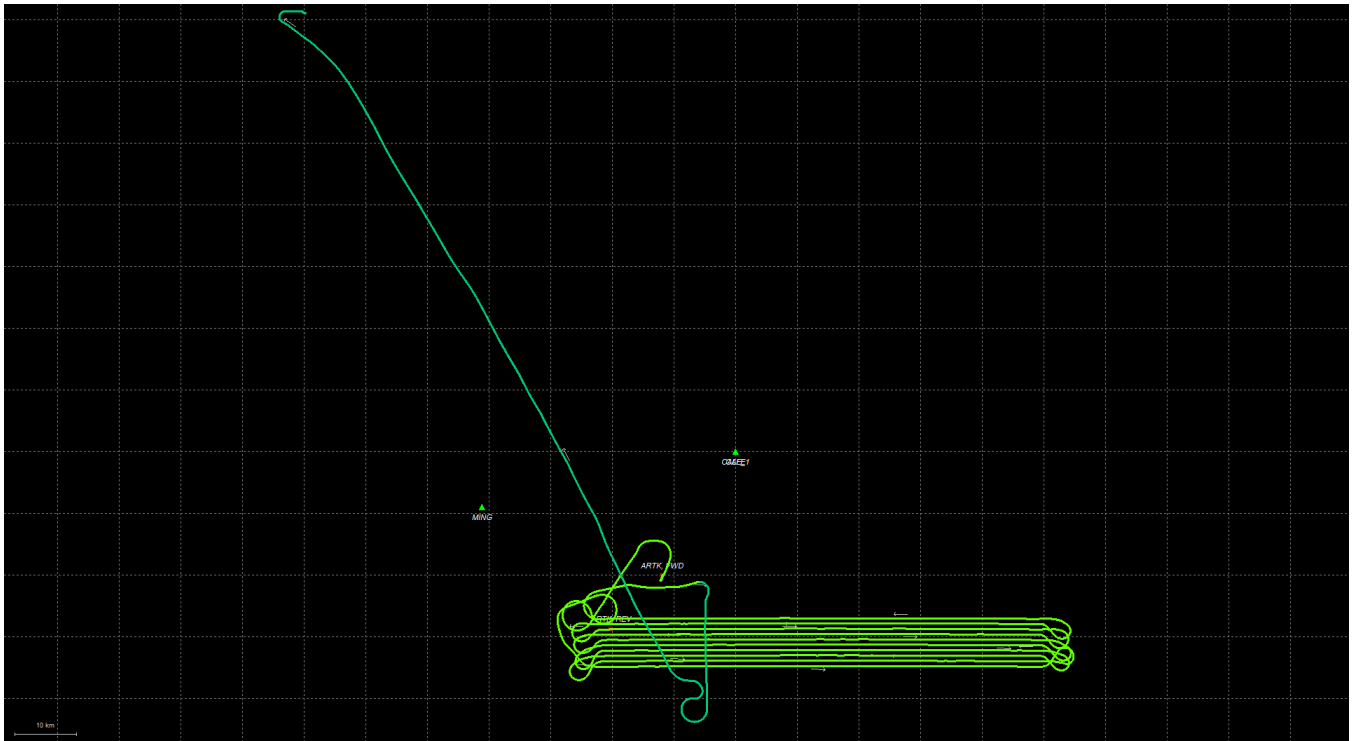
FLIGHT LINE NOTES - visibility, clouds, smoke, partial, etc

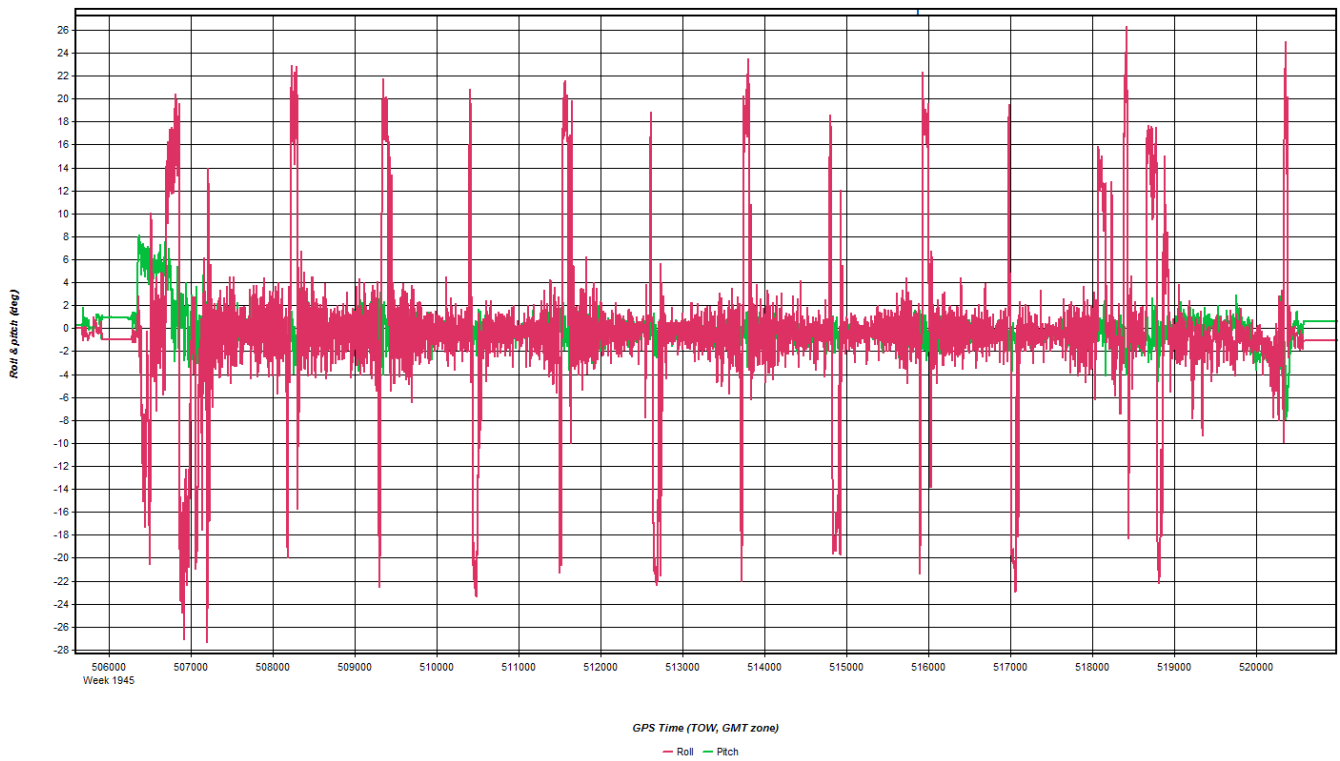
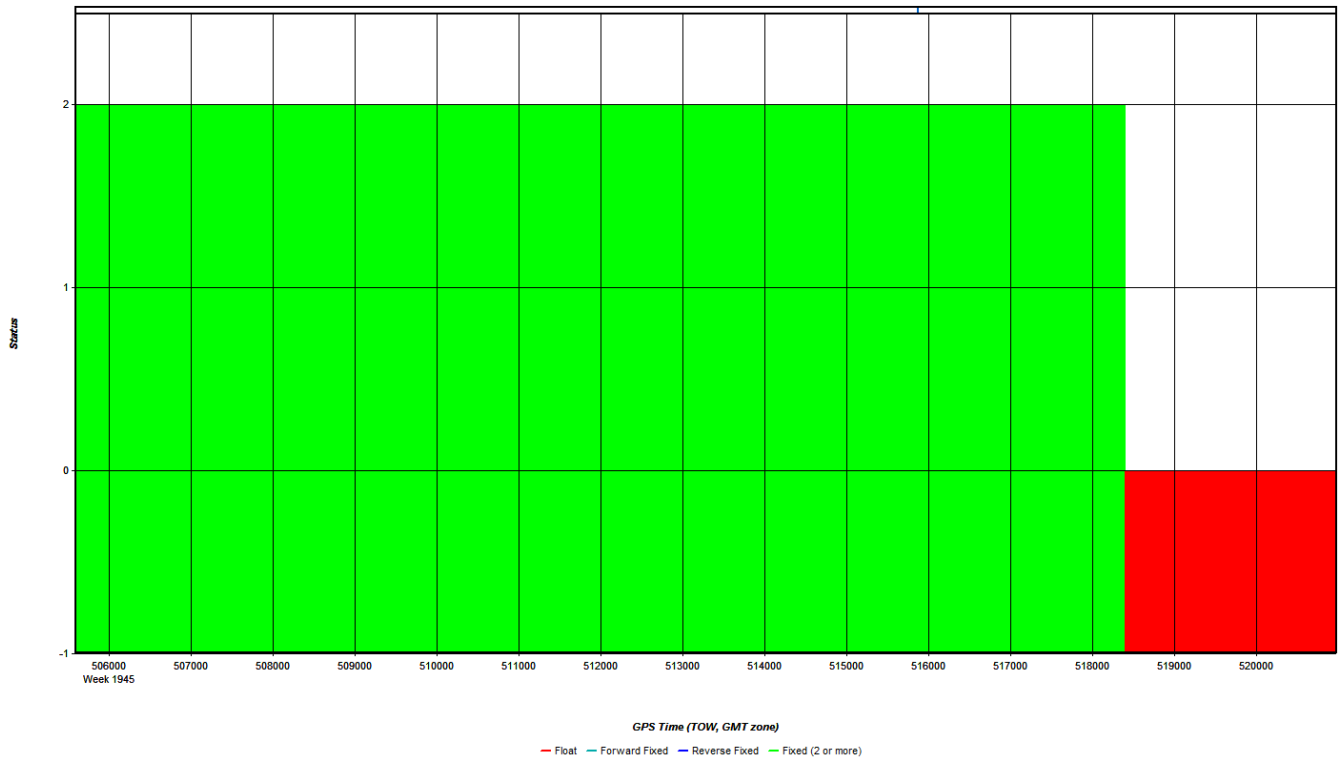
KHYR → Fig 8's (0227-0232)

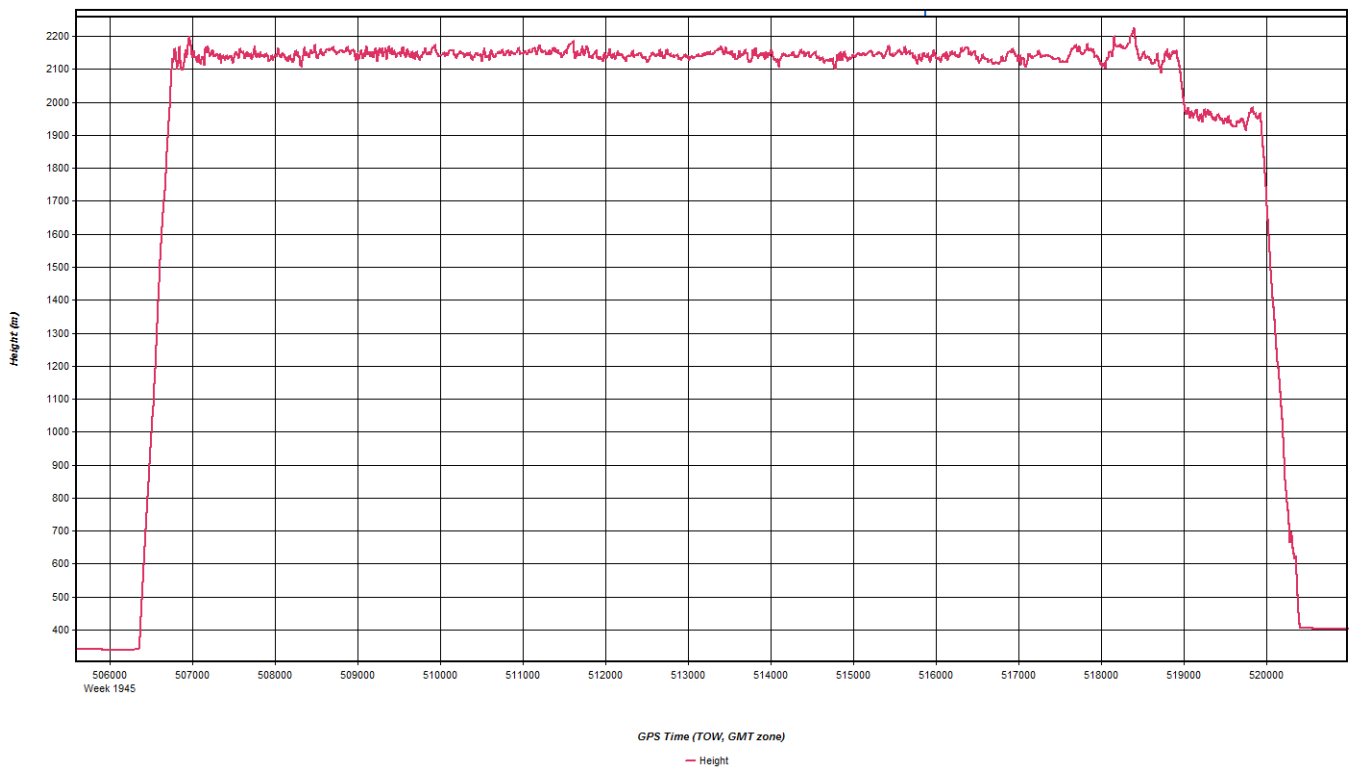
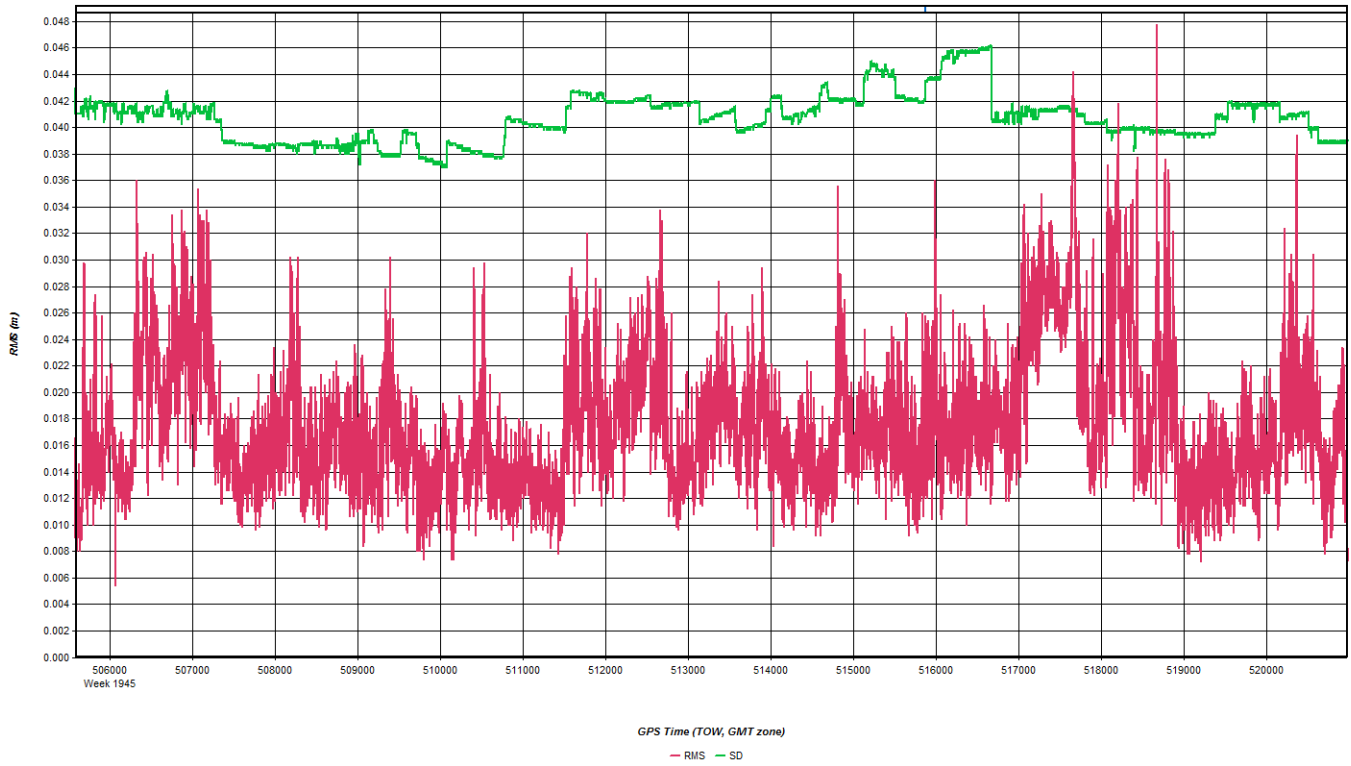
300 ft off 0.6 mi West End

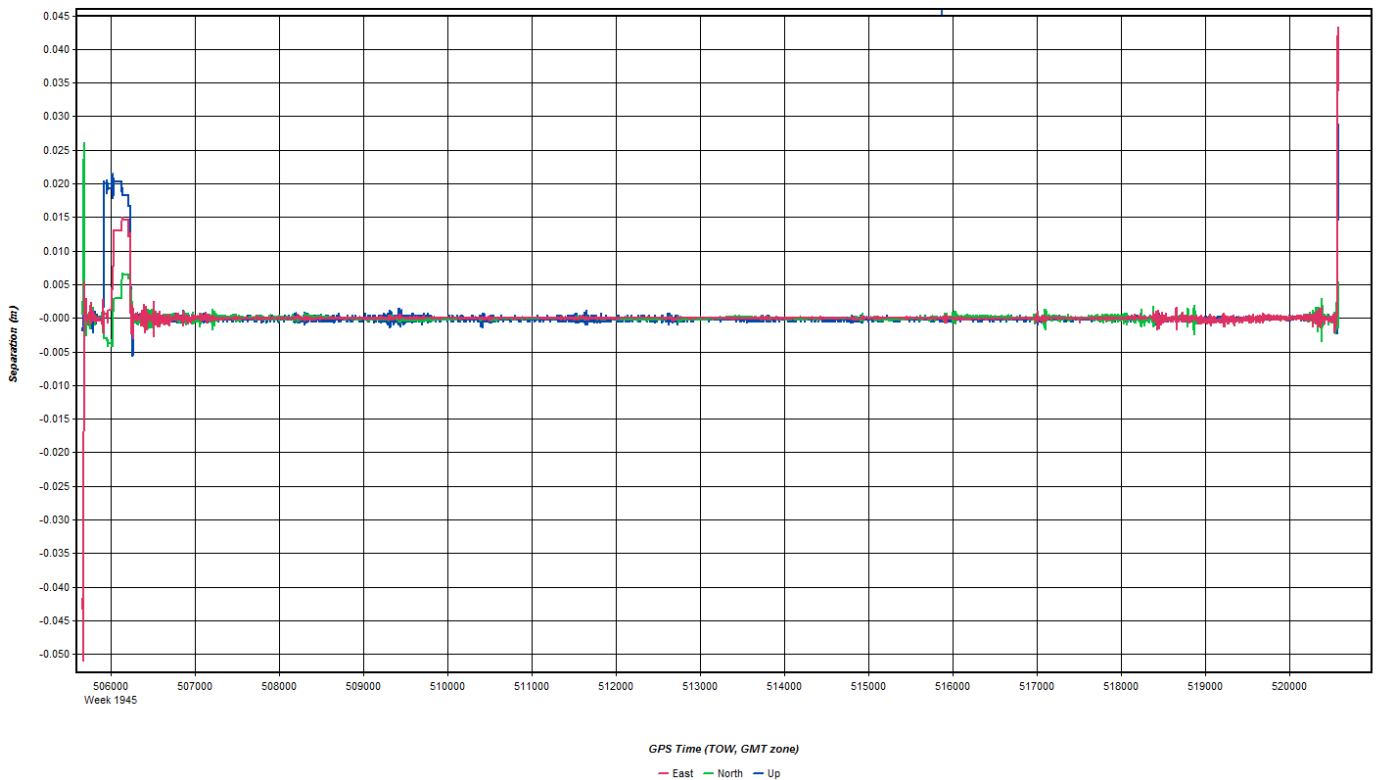
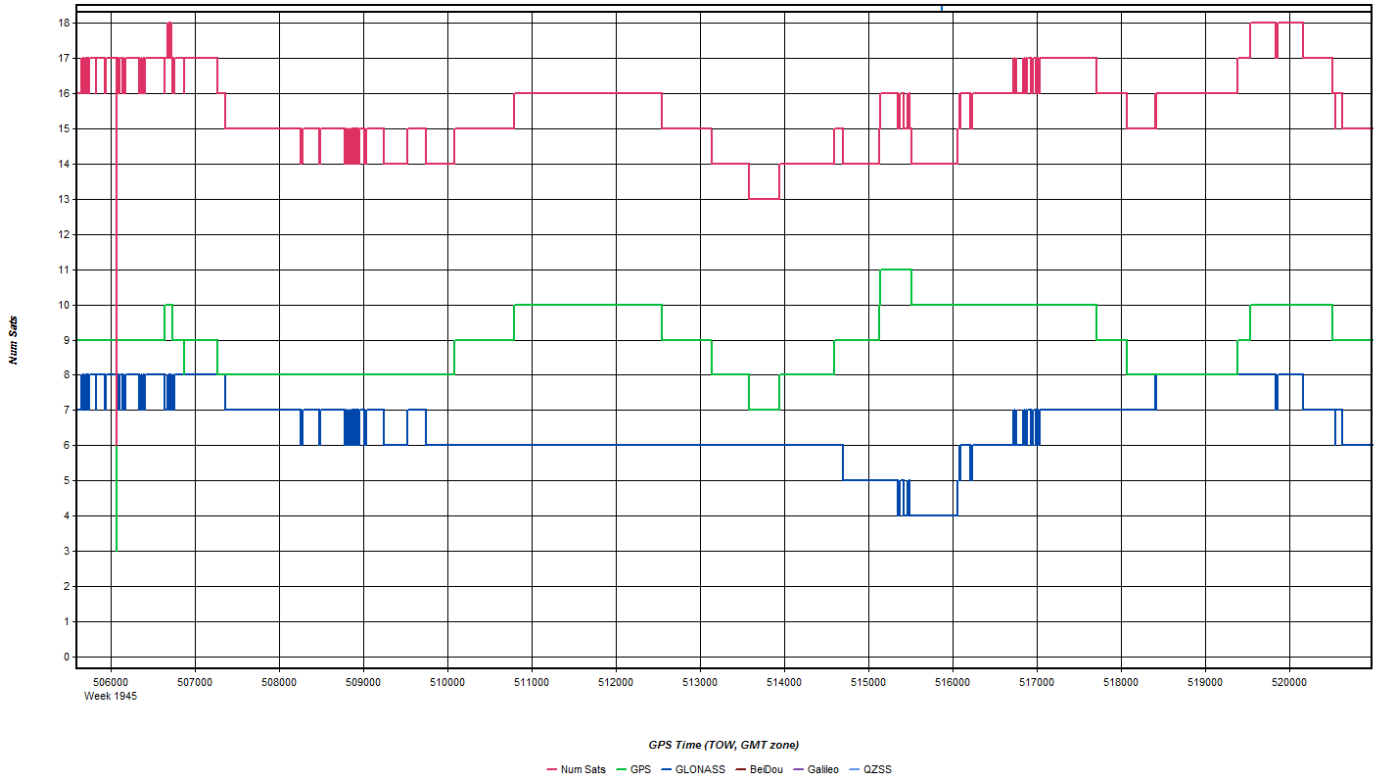
Total Proj Lines: **Lines Flown:** **Lines Remain:** **Online Time:** 7.7 **Mob Time:** 1.0 **Notes:**

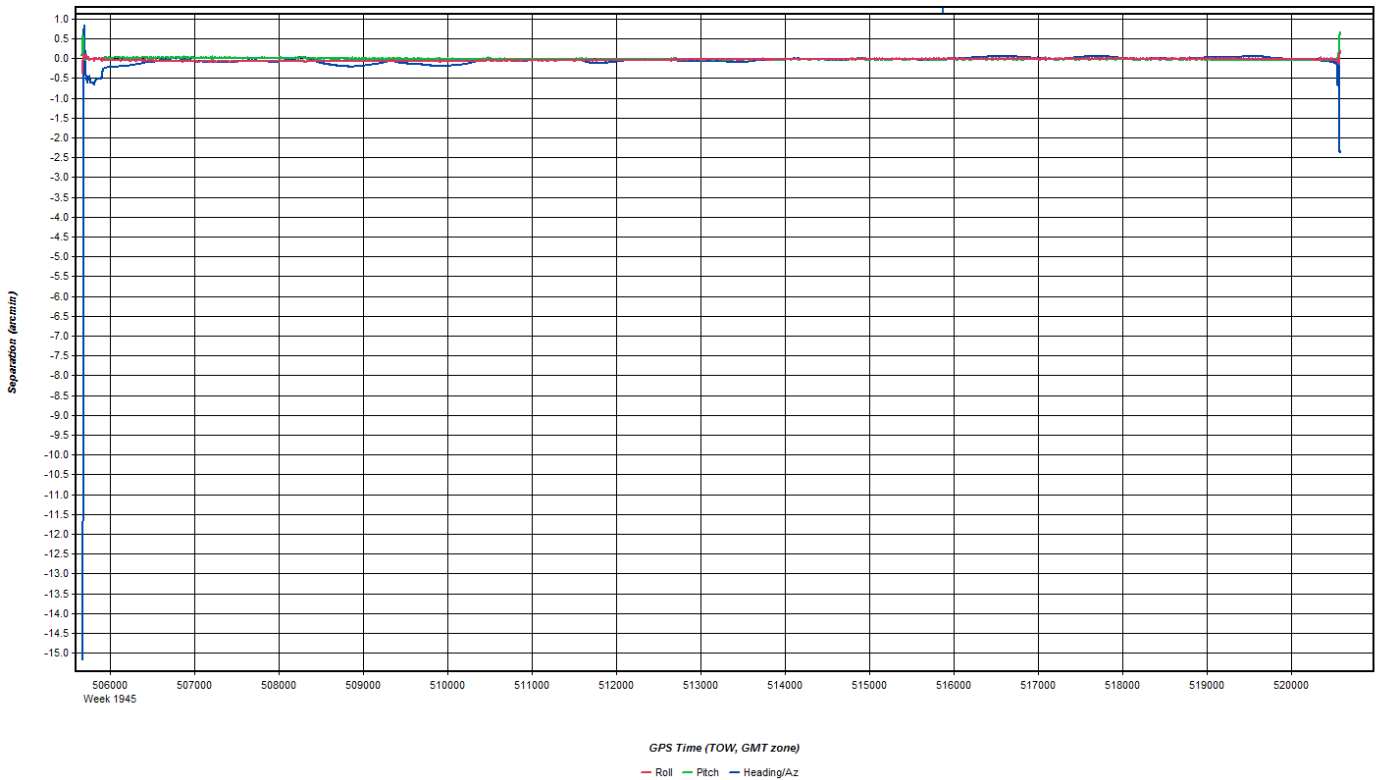
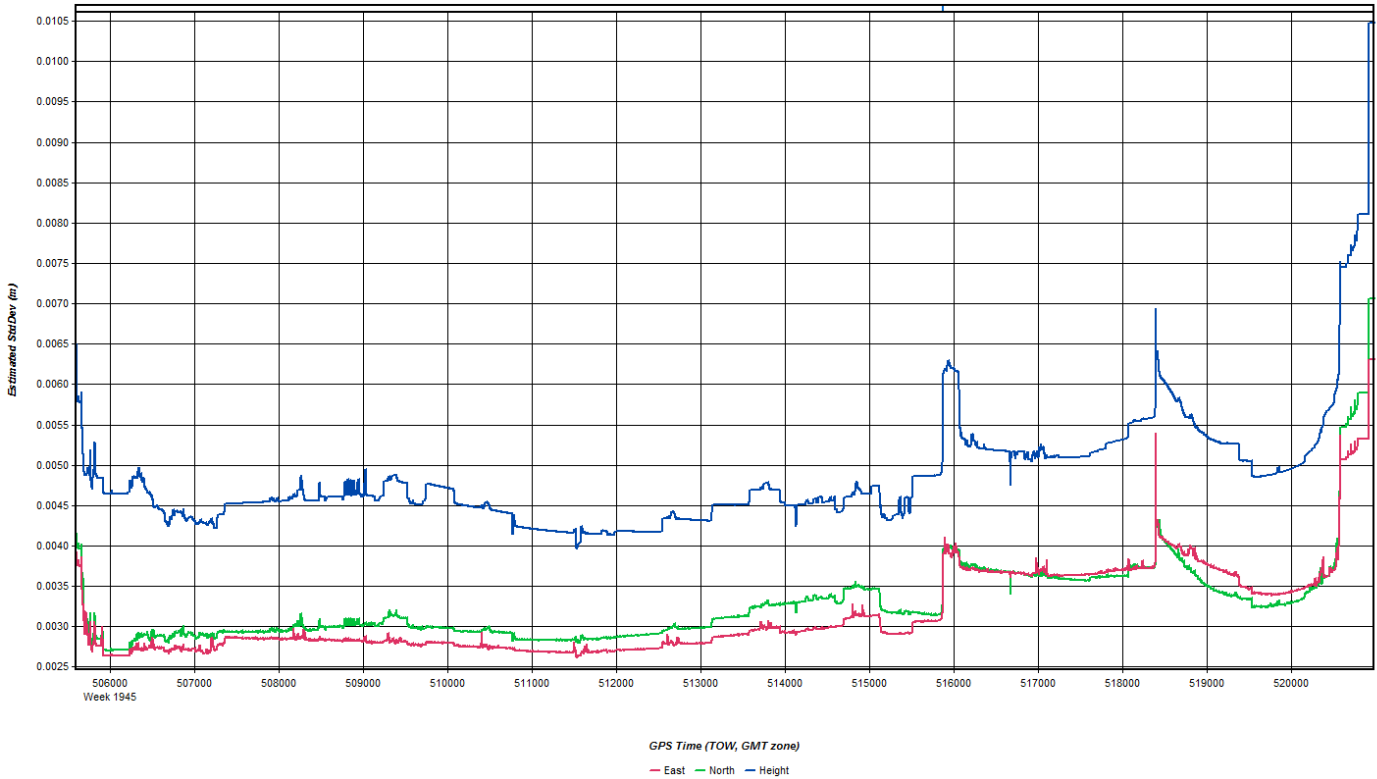
Apr 21, 2017-B (N73TM, SN7178)











Coordinate/Antenna Settings ? X

Master Remote

Base Station
 2: CALE Name: CALE Disabled
 File: F:\Proc\28571_WROC_Sawyer_7178\20170421_202122\WISCOR

Coordinates
 Latitude: North 46 12 23.72860 Coord. options
 Longitude: West 91 17 29.90357 Save to Favorites
 Ellipsoidal height: 390.894 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
 1: MING Name: MING Disabled
 File: F:\Proc\28571_WROC_Sawyer_7178\20170421_202122\WISCOR

Coordinates
 Latitude: North 46 07 35.14154 Coord. options
 Longitude: West 91 49 22.94857 Save to Favorites
 Ellipsoidal height: 299.827 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

Date: 4/12/2017 00:42 off

Project: WROC-AVRES-SAWYER Co. Proj #: 28571 pg 1 of 1

Flight Mgmt File: 2017 WROC-SAWYER-Co-AL57093-245 m

Aircraft: N73TM Pilot: John Durham

Begin Hobbs: 6660.3 Co-Pilot: Tech: Gary Jaro

Dep Apt: KYHR Total: 4.0

Dep Time (Lcl): 3:38 (Z): 20:38 Arr Time (Local): 7:34 (Z): 00:34

CORS: Y/N Sta 1: CALE (WIS METAR) Sta 2: WINT (WIS METAR)

GPS Unit: Y/N Flyovers: Y/N

Gd Temp beg: 16 °C End: °C OAT beg: °C End: °C

LIDAR	Type	Serial #	Alt AGL	Alt AMSL	Avg Temp	Max Gdspd	Avg Pt Spacing	Mag CB	Storage Name/No
	FOV	Scan Freq	MPIA	Pulses In Air	Pulse Rate	Power	PPSM	End CB	Tot CB
35	E	20:54	21:07	152	1-1/8	7000'	1°	+	357
34	W	21:12	21:28	145	1-5/8	7050'	1°	+	417
33	E	21:31	21:47	148	1-1/2	7040'	1°	+	606B
32	W	21:49	22:05	147	1-2/8	7050'	1°	+	170
31	E	22:08	22:23	148	1-2/8	7040'	1°	+	55803
30	W	22:26	22:42	141	1-1/8	7000'	1°	-	
29	E	22:44	23:00	148	1/8	7000'	1°	+	
28	W	23:02	23:18	146	9/19	7000'	2°	-	
27	E	23:21	23:36	146	1/9	7000'	1°	-	
26	W	23:39	23:54	145	1-2/8	7000'	1°	-	
146001	S	00:00	00:04	155	1-2/8	7000'			
		00:04	00:08						

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

20:37 static KYHR

20:51 opening Sta2

turb on west side; ranges appeared in EXMS @ end of line.

turb on west side

TITLELINE

close out S Turn

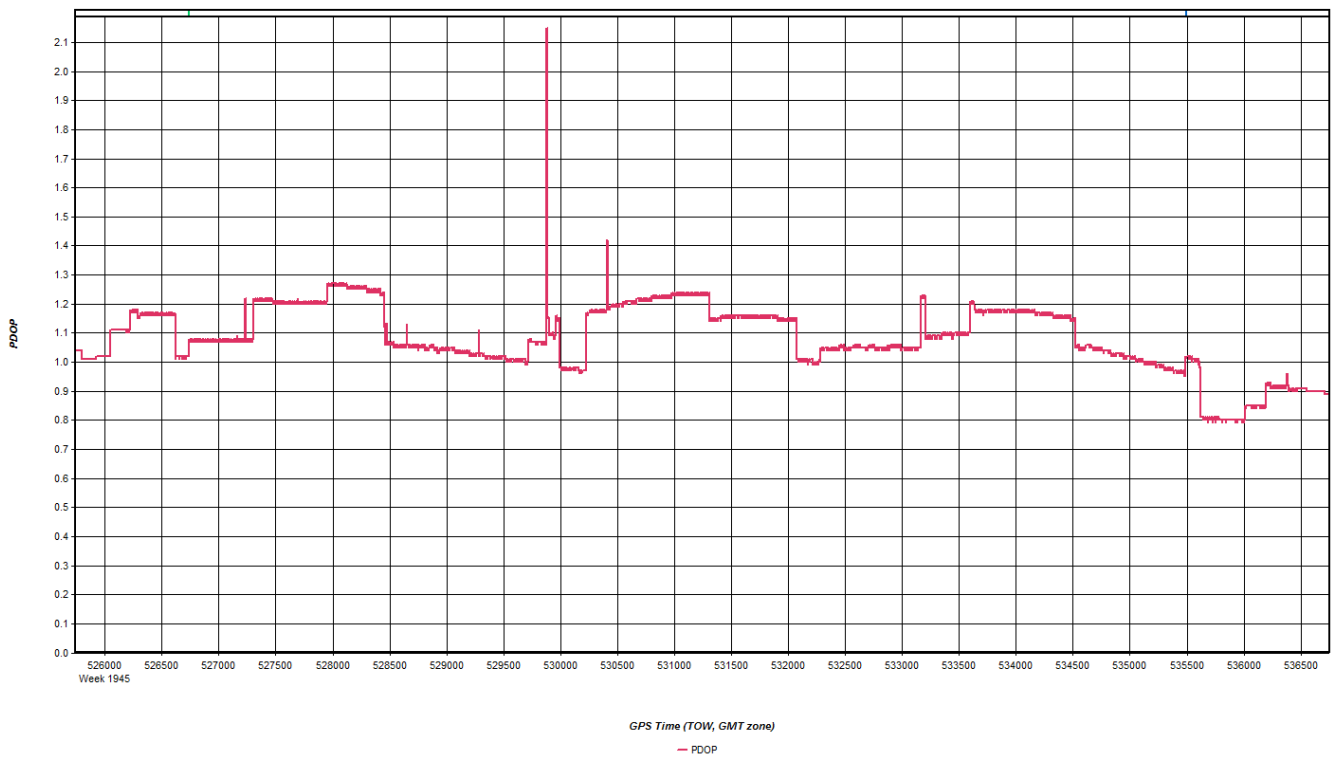
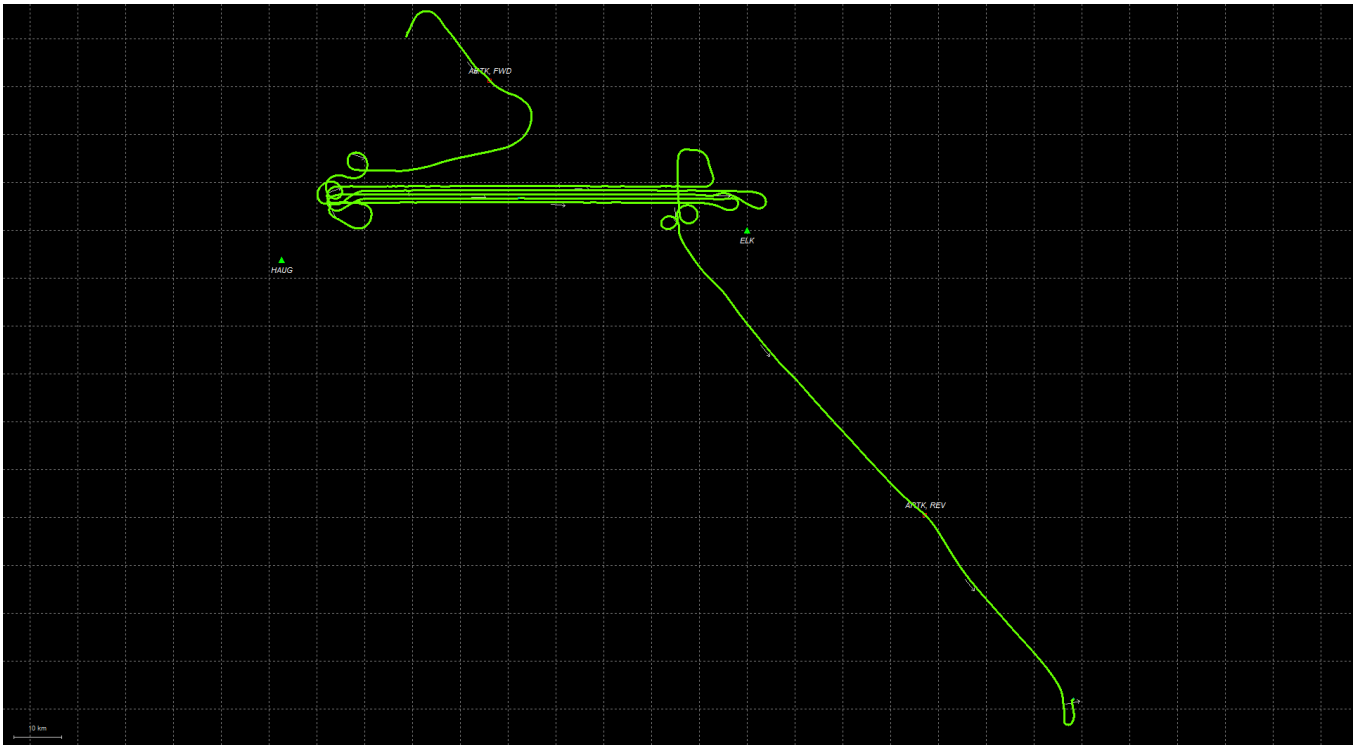
Total Proj Lines: 71 Lines Flown: 10

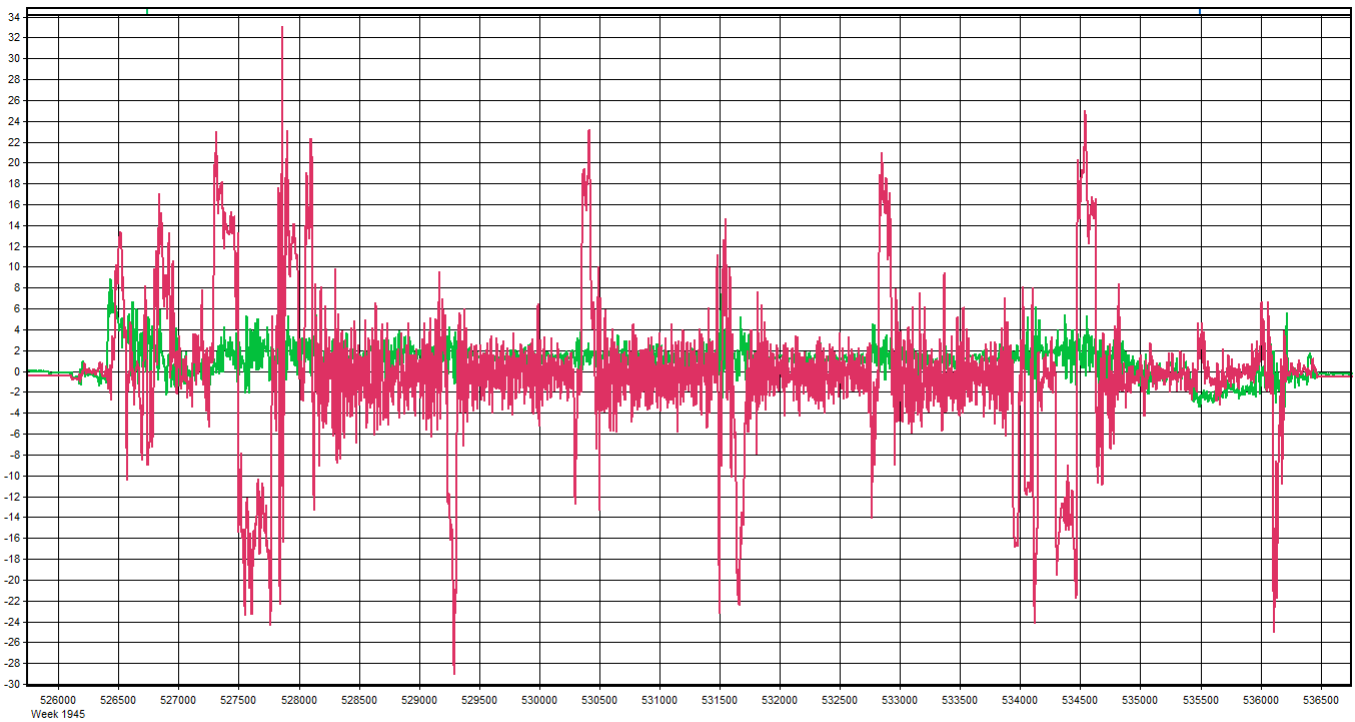
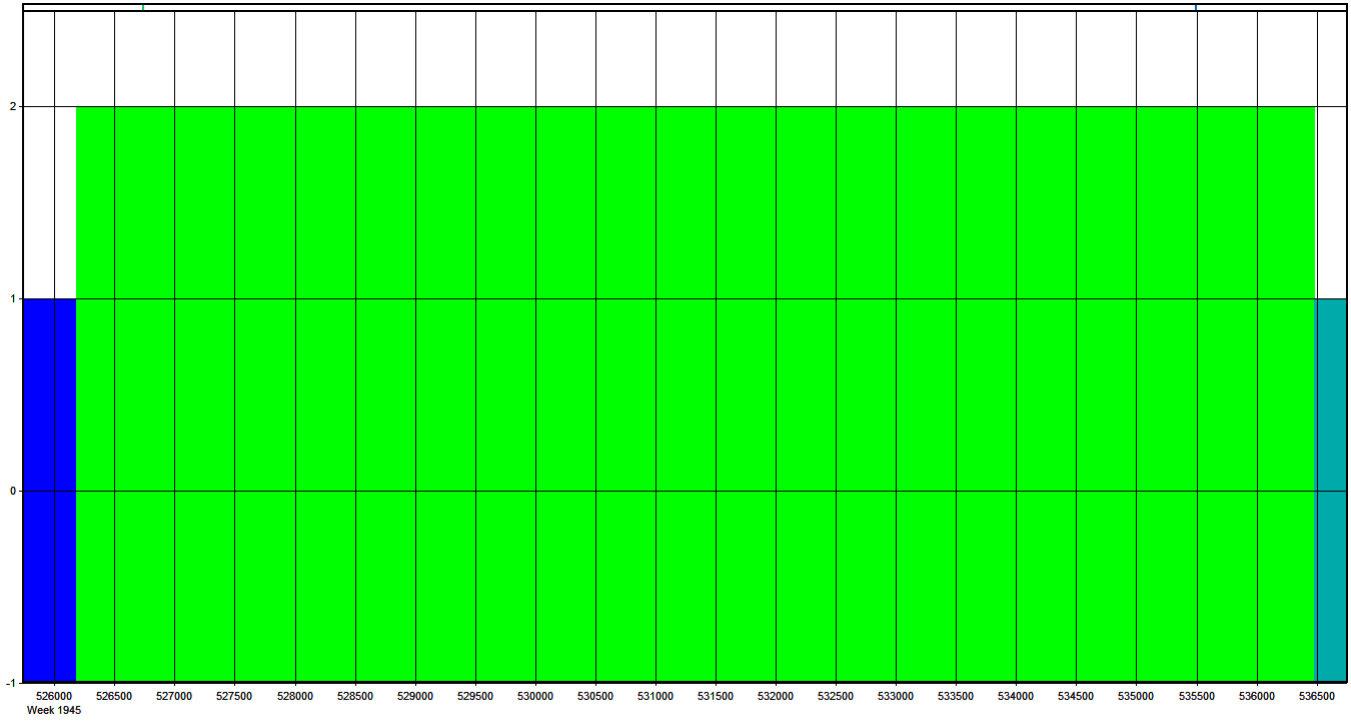
Lines Remain: 42 Online Time: 3.7

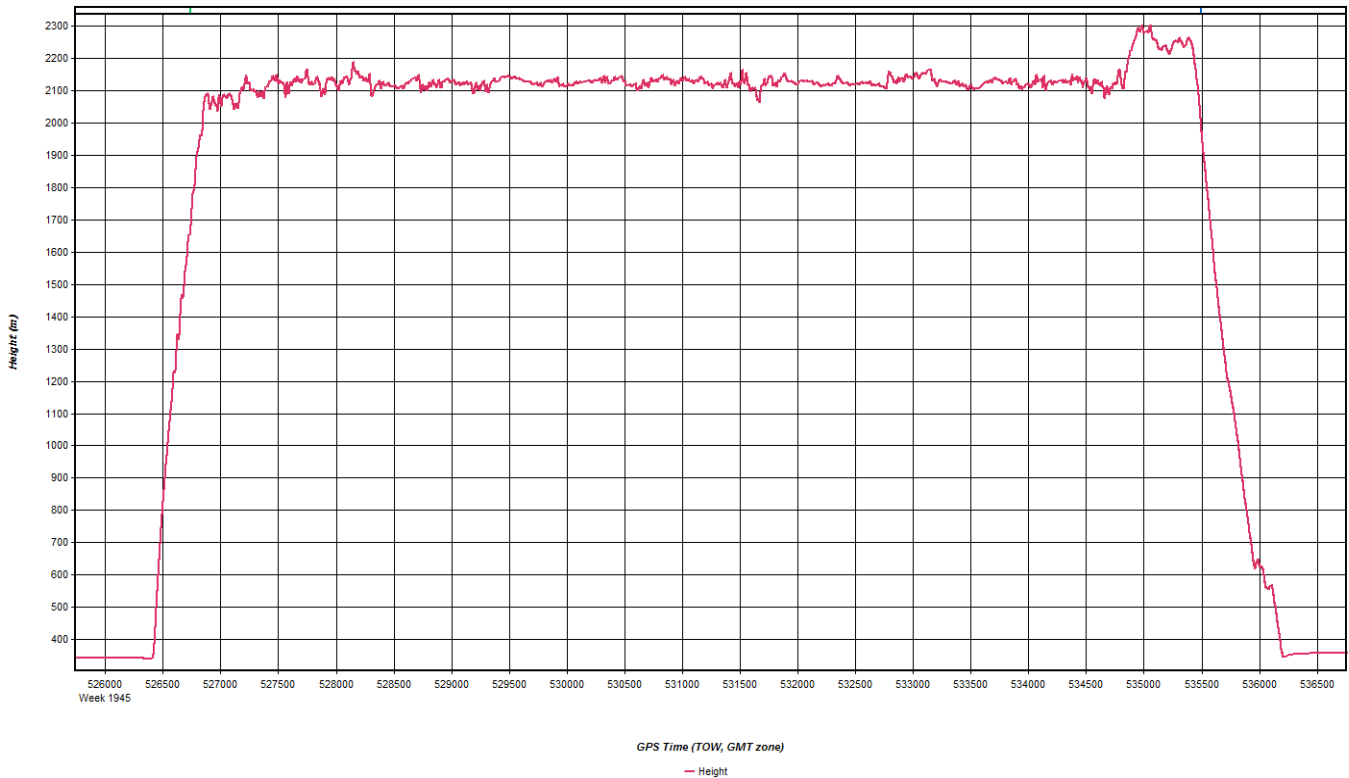
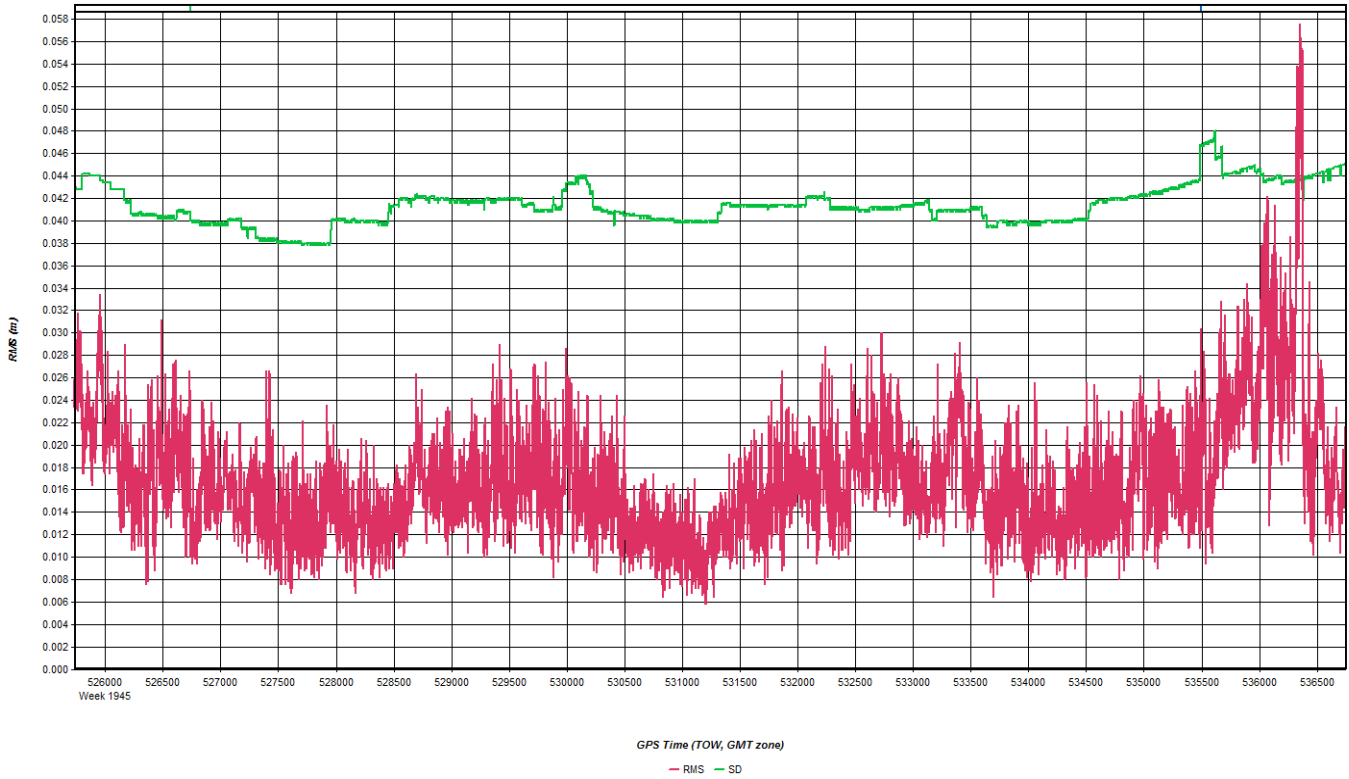
Job Time: 3 Notes: 262AS also working Sawyer Block

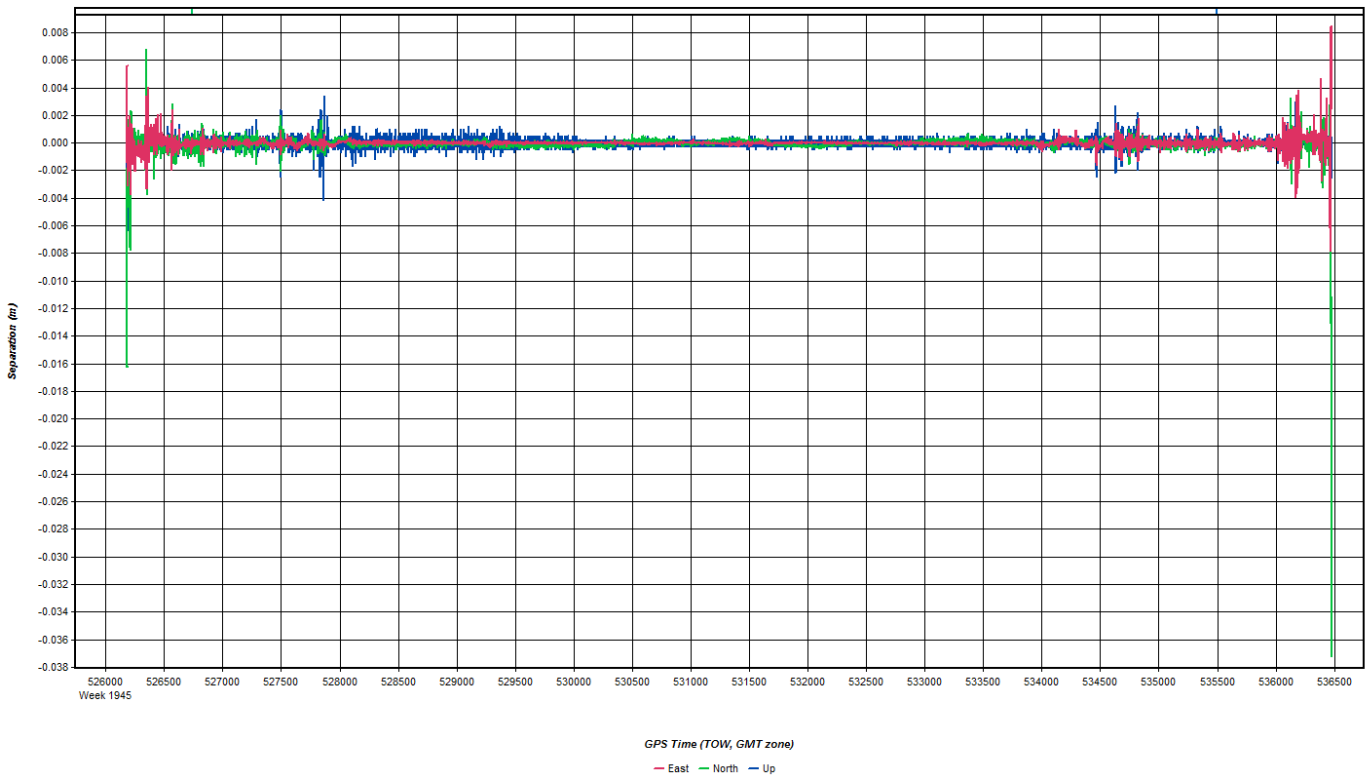
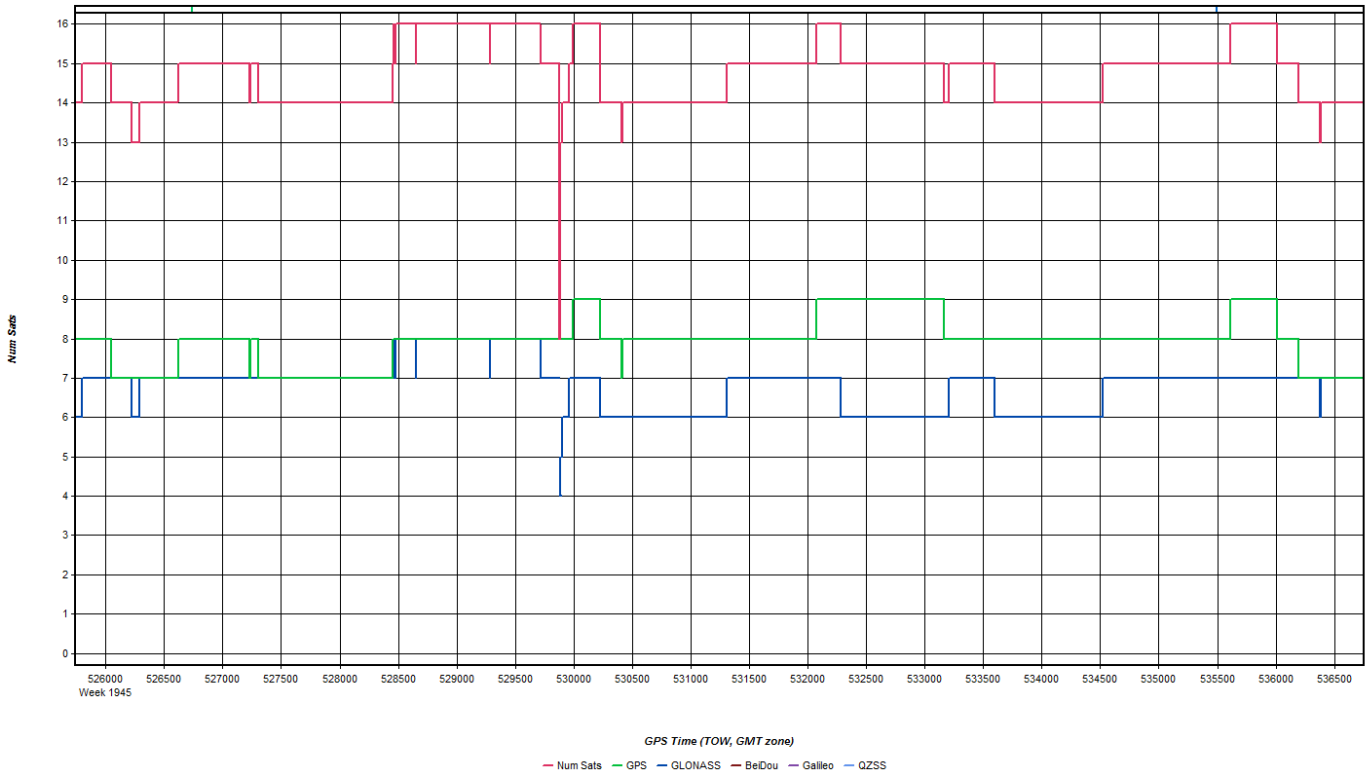
666262AS AM

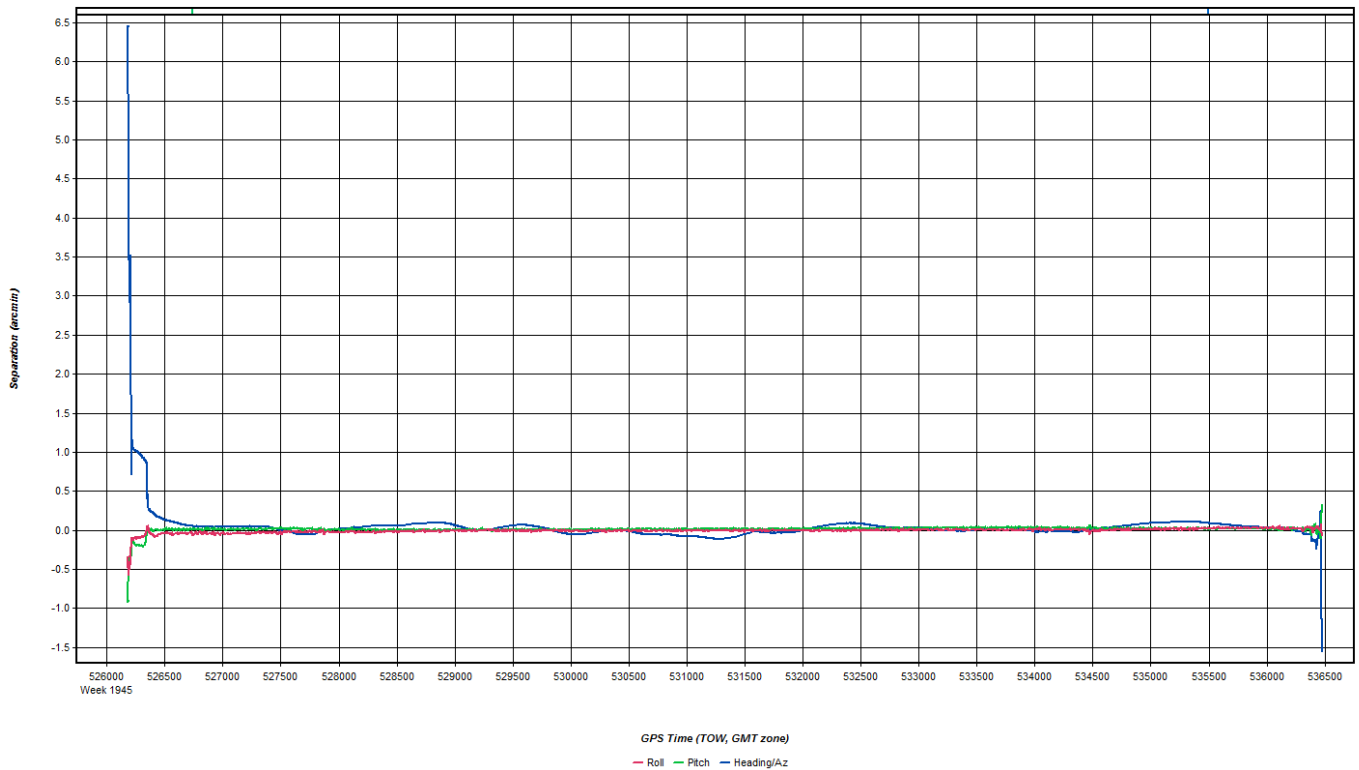
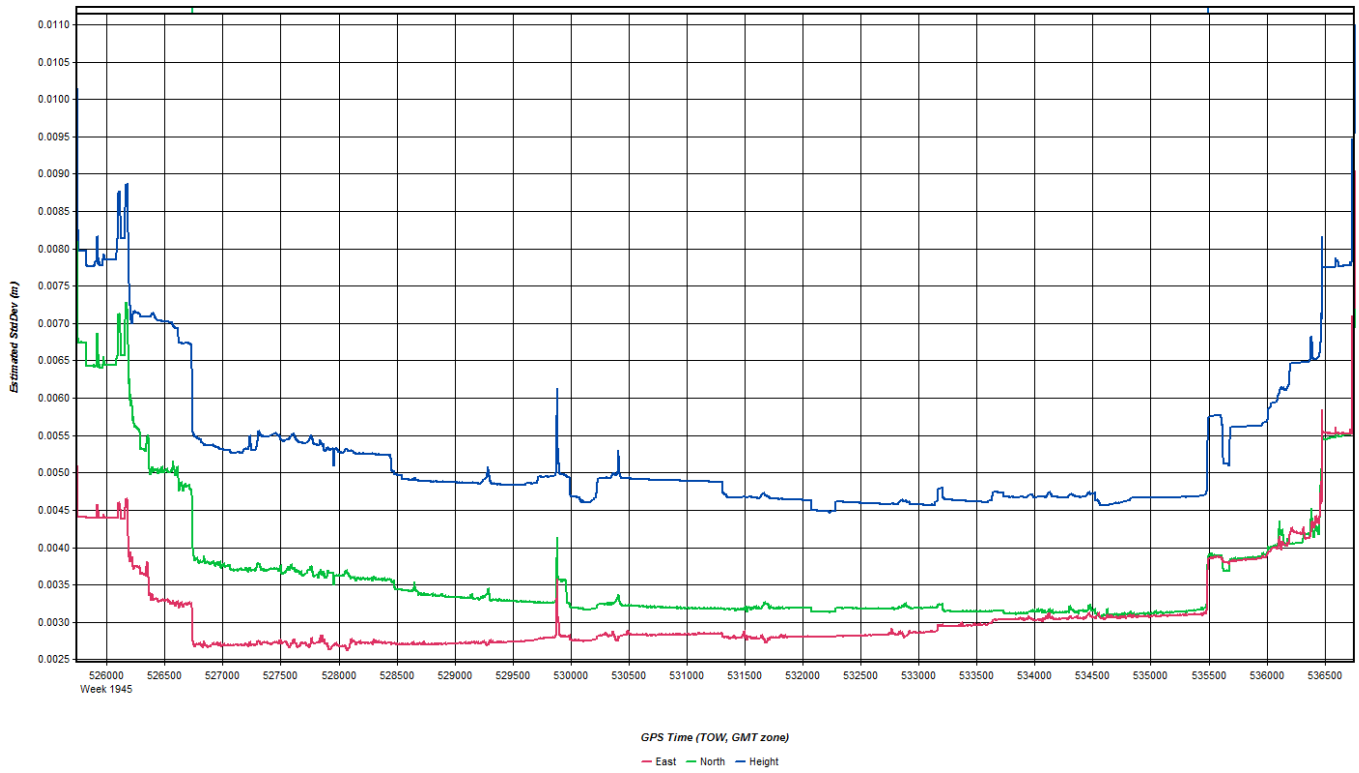
Apr 21, 2017-C (N262AS, SN7161)











Coordinate/Antenna Settings ? X

Master Remote

Base Station
 1: ELK Name: ELK Disabled
 File: F:\Proc\28571_WROC_Sawyer_7178\Jonathoan_Swann_4-25-17

Coordinates
 Latitude: North 45 39 31.13763 Coord. options
 Longitude: West 90 32 22.47381 Save to Favorites
 Ellipsoidal height: 419.362 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: HAUG Name: HAUG Disabled
 File: F:\Proc\28571_WROC_Sawyer_7178\Jonathoan_Swann_4-25-17

Coordinates
 Latitude: North 45 36 11.81386 Coord. options
 Longitude: West 91 46 43.73887 Save to Favorites
 Ellipsoidal height: 344.140 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_list@quantumspatial.com)

Date: 4-21-17 B
UIC: A 0 C D E
Page: 1 of 2

Project: WROC Sawyer
Proj #: 28571
Flight Mgmt File: 2017 0421-210411

Aircraft: N262AS
Begin Hobbs: 6545.0
End Hobbs: 6549.1
Total: 4.1
Pilot: McDonald
Co-Pilot: Tech: Swan

Dep Apt: KCWA
Dep Time (Local): 2113 ZF: 413
Arr Apt: KHYR
Arr Time (Local): 832 ZF: 0132
Tot Time Aloft: 4.1

COND: Y/N
Sta 1: Wiscors
Sta 2:
Flyovers: Y/N (N) IF Y, times: Sta1) Sta2)
Flyovers: Y/N IF Y, times: Sta1) Sta2)

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

Gd Temp beg: 16 °C
End: 08 °C
OAT beg: 0 °C
End: 05 °C
Altimeter begin: 3018
end: 3019

LIDAR	Type	Alt AGL	Alt AMSL	MpA	Y/N	Pulse Rate	Avg Pt Hit	Max Delay	Power	Avg Pt Spacing	PPM	Mag CB	Range Nominal
	FOV	40	53 Hz			299					2	298	18

Line #	Hdg	Start (UTC)	End (UTC)	Gd Spd	Alt AGL	Alt AMSL	MpA	Y/N	Pulse Rate	Avg Pt Hit	Max Delay	Power	Avg Pt Spacing	PPM	Mag CB	Range Nominal
69	272	2152	2208	149	12/17	6956										
68	91	2212	2229	145	11/17	6906										
67	272	2232	2247	147	11/17	6910										
66	91	2257	2307	145	10/19	6925										
65	272	2311	2326	150	09/20	6910										
64	91	2329	2344	144	11/18	6923										
63	272	2348	0003	149	13/18	6965										
62	91	0007	0022	147	11/19	6922										
61	272	0027	0042	145	11/18	6957										
60	91	0046	0102	150	11/19	6972										
59	188	0105	0107	156	12/17	6893										

FLIGHT LINE NOTES - visibility, clouds, smoke, partial, etc.
 CWA → Flights (2145-2149)

Flights (0108-0113)
 Landing KHYR for fuel (0132Z)
 Hobbs = 4.1
 Online = 3.2
 Mob = 0.9

Total Proj Lines: _____ **Lines Flown:** _____ **Lines Remain:** _____ **Online Time:** 3.2 **Job Time:** _____ **Notes:** _____

Project: WROC Sawyer

Aircraft: N762AS

Dep Apt: KHYR

CORS: Y/N

GPS Unit: Y/N

Gd Temp beg: 7 °C

Date: 4-21-17c

Flight Mgmt File: 20170422-020042

Pilot: C Medina

Co-Pilot: JSwan

Arr Time (Local): 1205 (Z: 0505)

Tot Time Aloft: 7.7

Flyovers: Y/N

Altimeter begin: 3019 end: 3018

Line #	Hdg	Start (UTC)	End (UTC)	Gd Spd	POOP#/Sta	GPS Altitude	Crab	Turb (0-3)	Notes
57	91	0242	0258	132	11/18	7000	0	0	KHYR → Fig 8's (0227-0232)
58	272	0303	0315	144	11/19	6997	0	0	300 ft off 0.6 mi West End
57	91	0321	0337	143	11/20	6988	0	0	
56	272	0344	0359	144	11/18	6987	0	0	
55	91	0402	0418	150	11/18	7010	0	0	
54	5	0422	0424	141	10/18	6970	0	0	unplanned X tic
									Fig 8's (0424-0429)
									Return to KCWA (0505)
									Hobbs = 2.7
									Btc Hobbs = 6.8
									ANline = 1.7
									Mob = 1.0
									Mob = 1.9

Total Proj Lines: _____

Lines Flown: _____

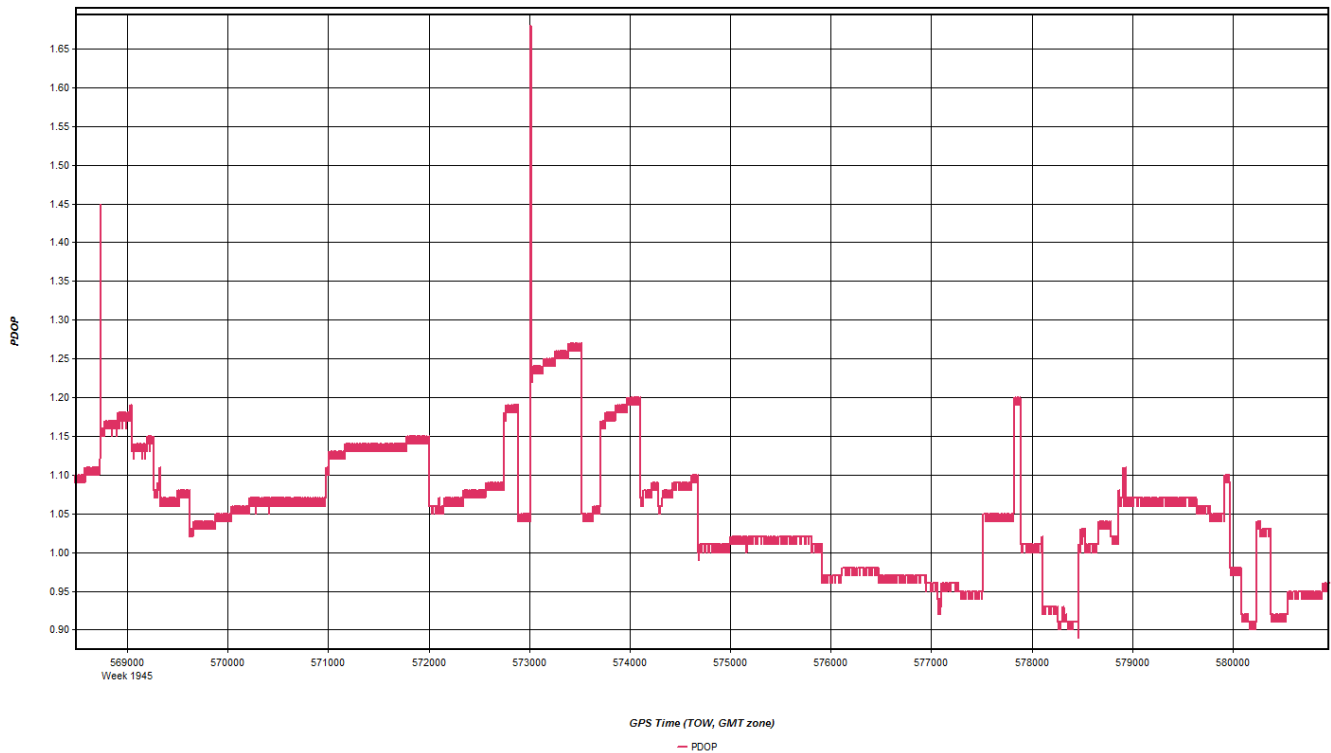
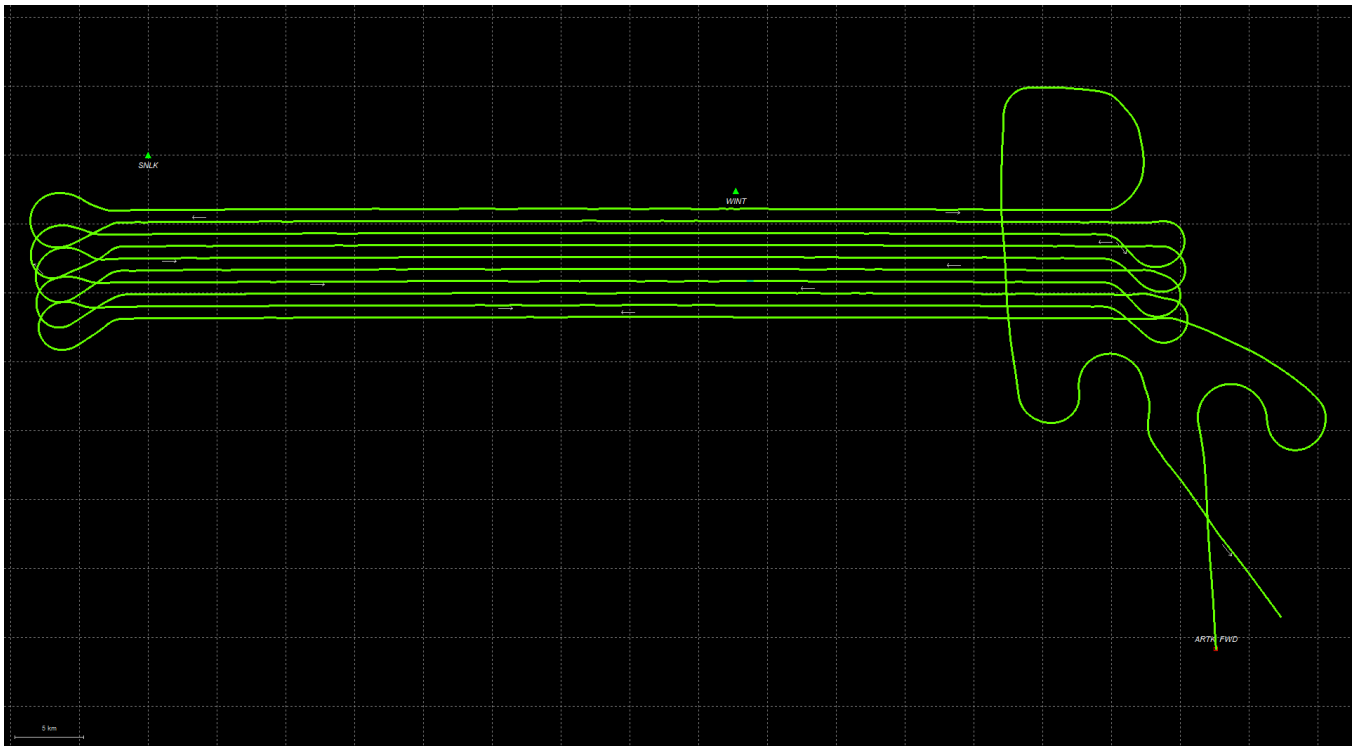
Lines Remain: _____

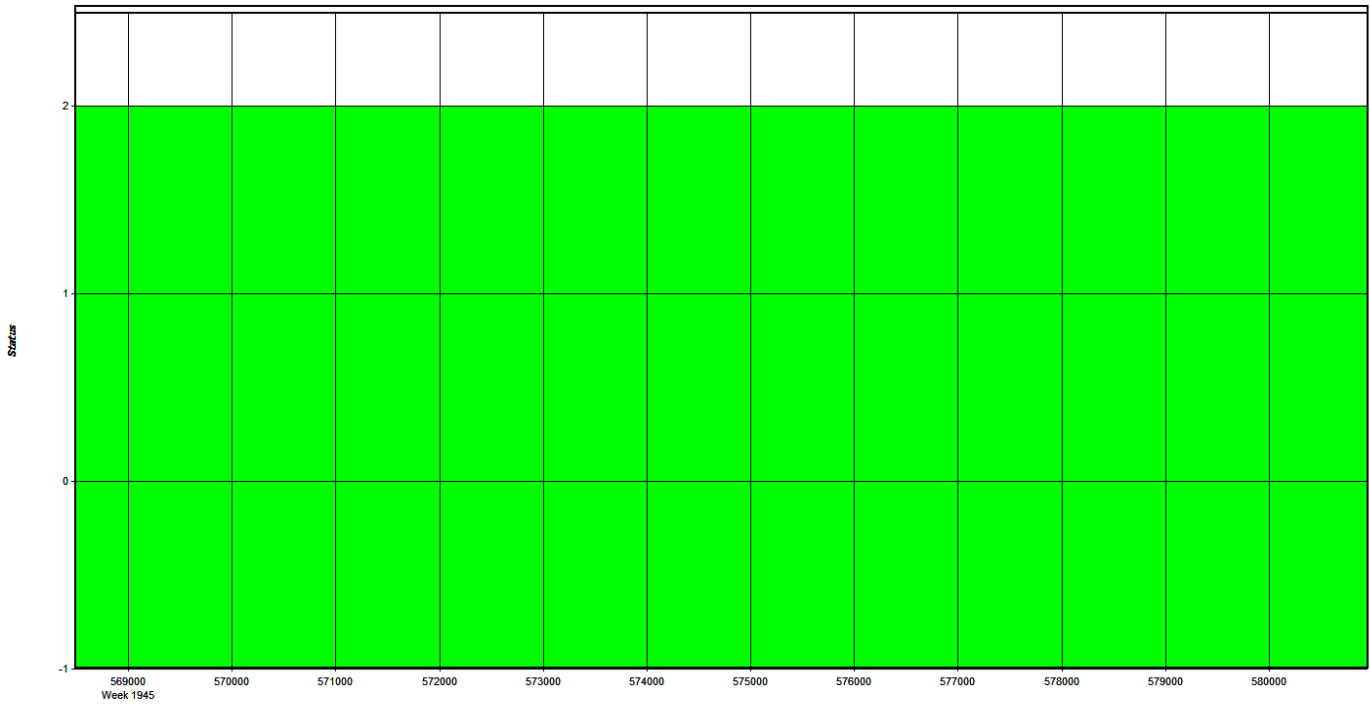
Online Time: 7.7

Mob Time: 1.0

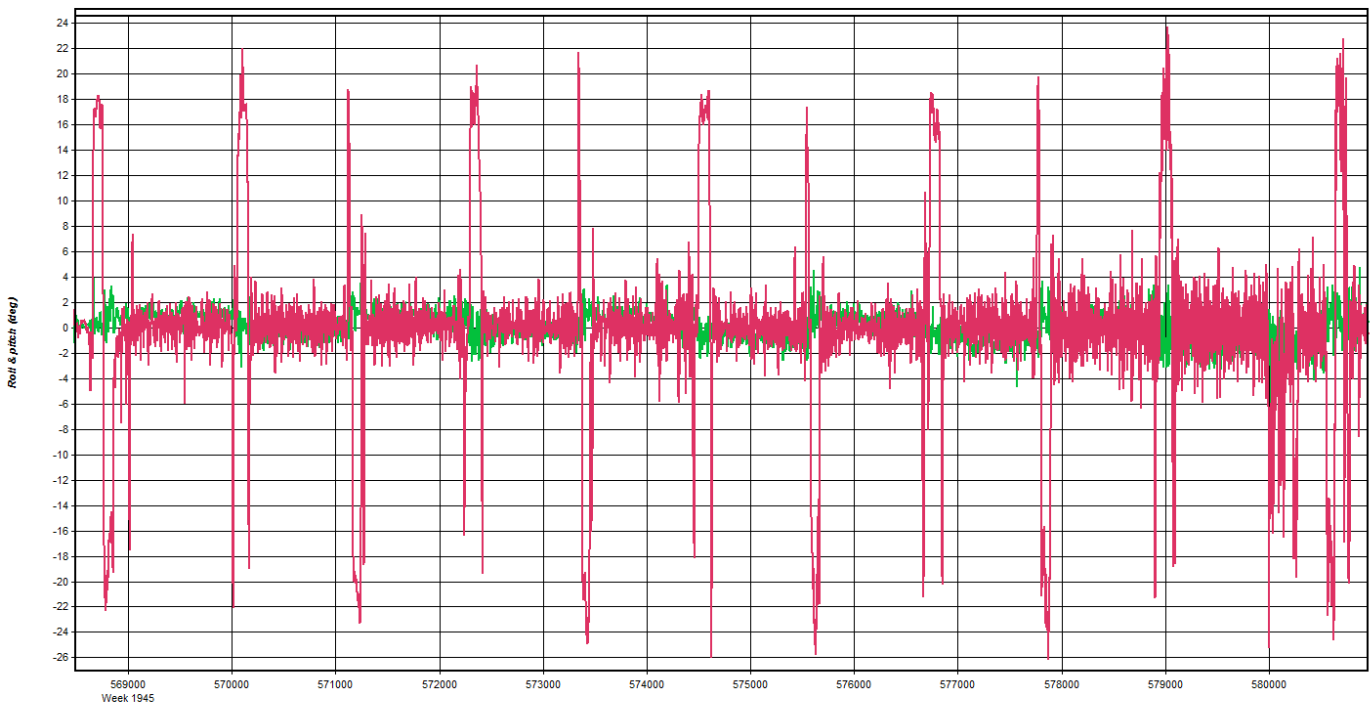
Notes: _____

Apr 22, 2017-A (N262AS, SN7161)

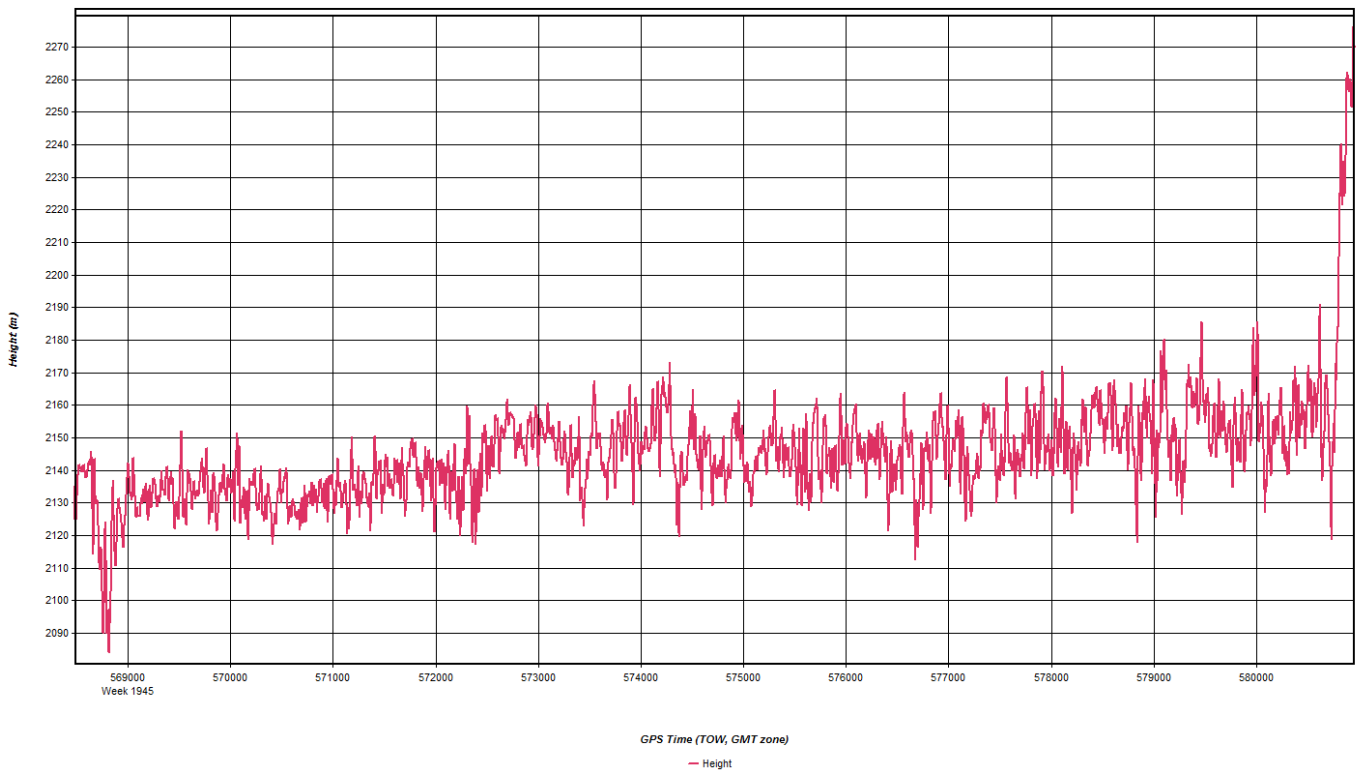
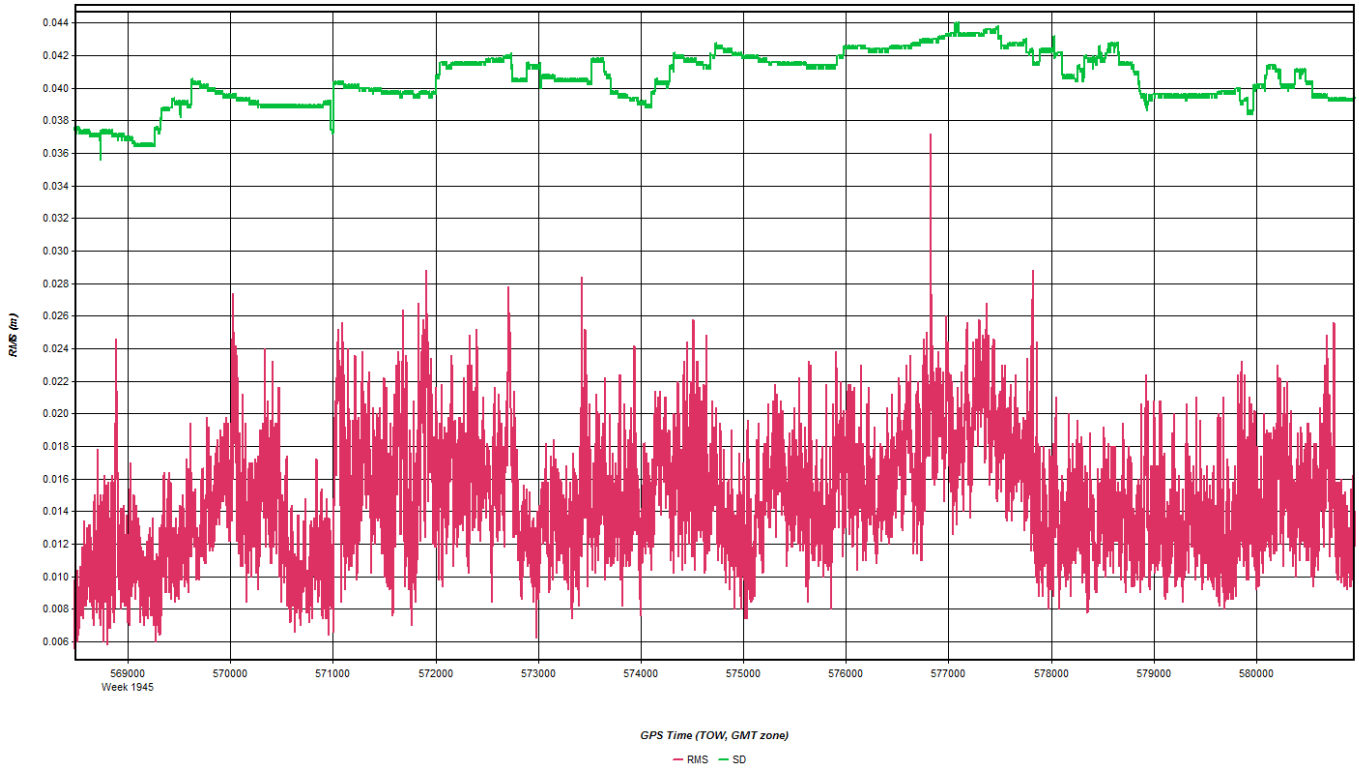


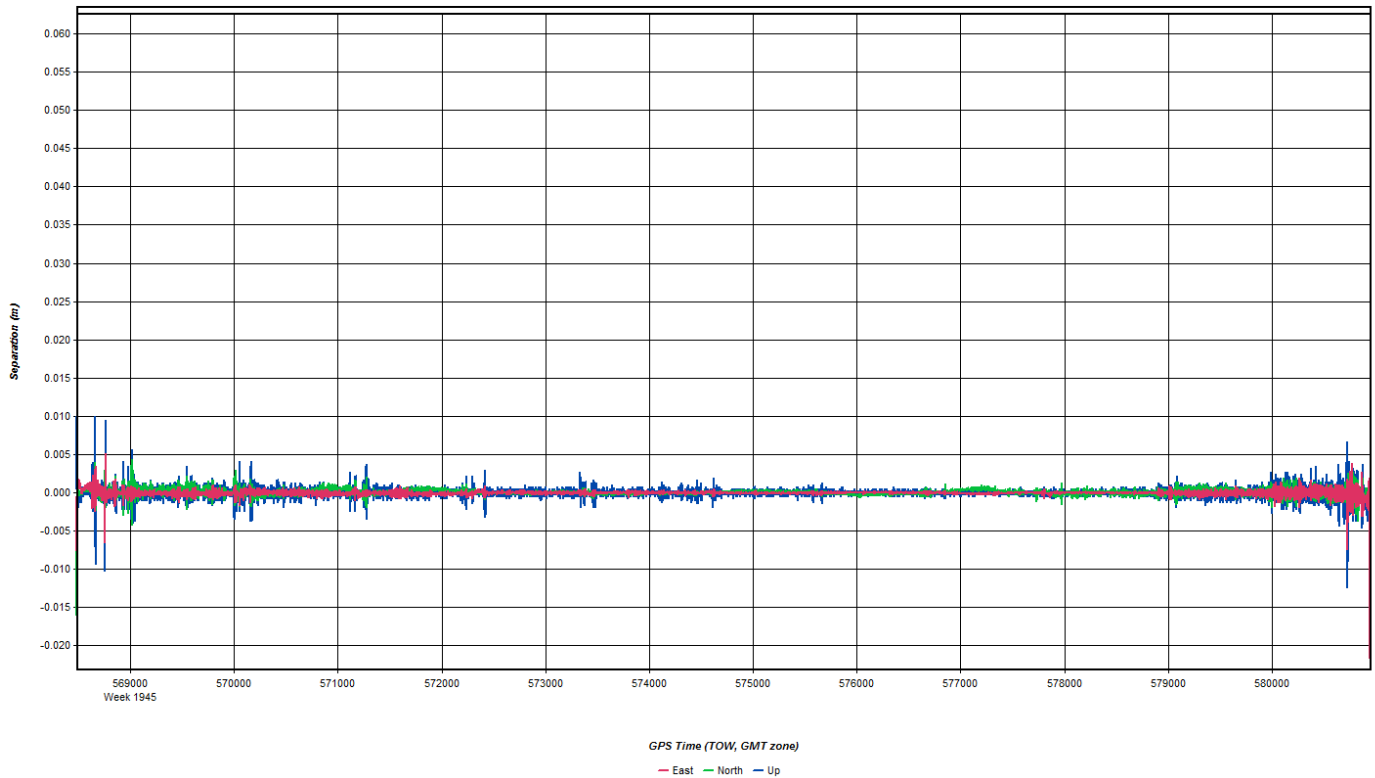
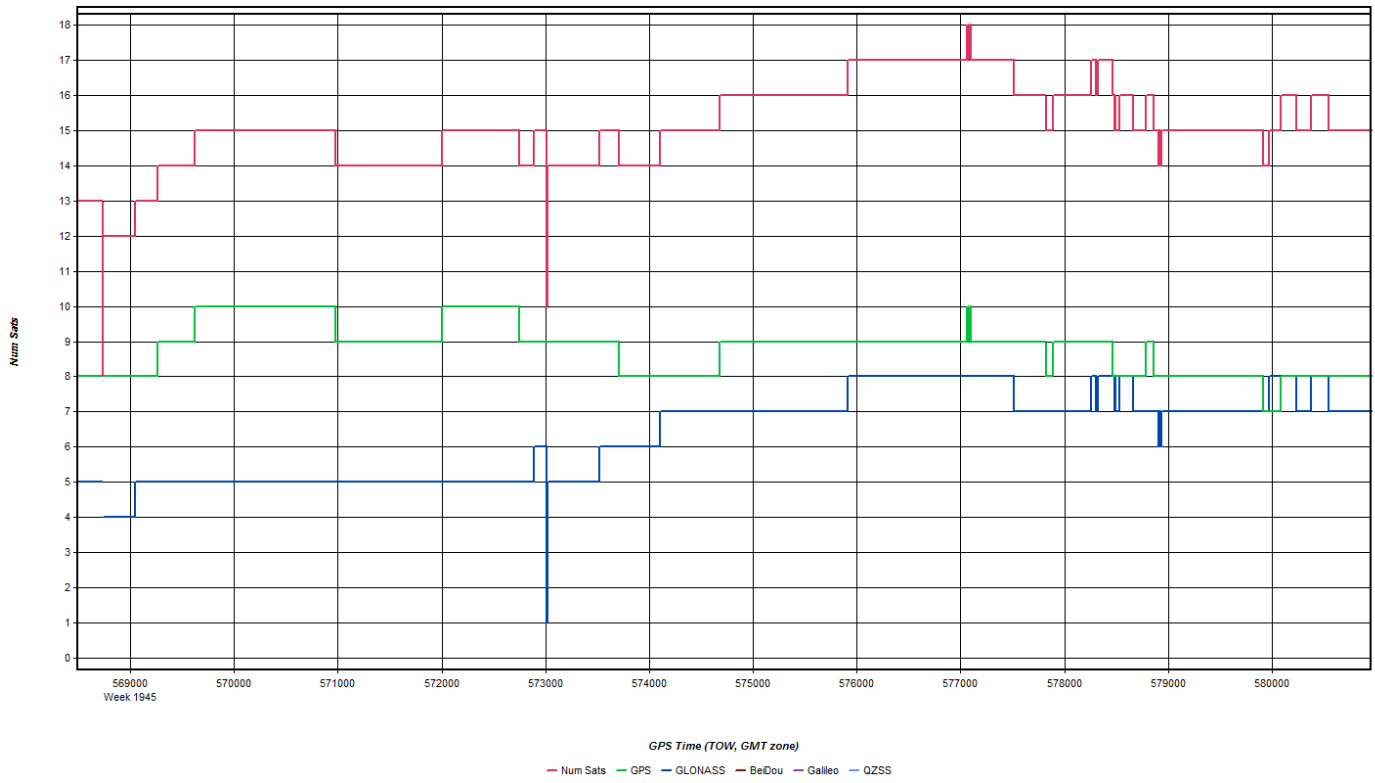


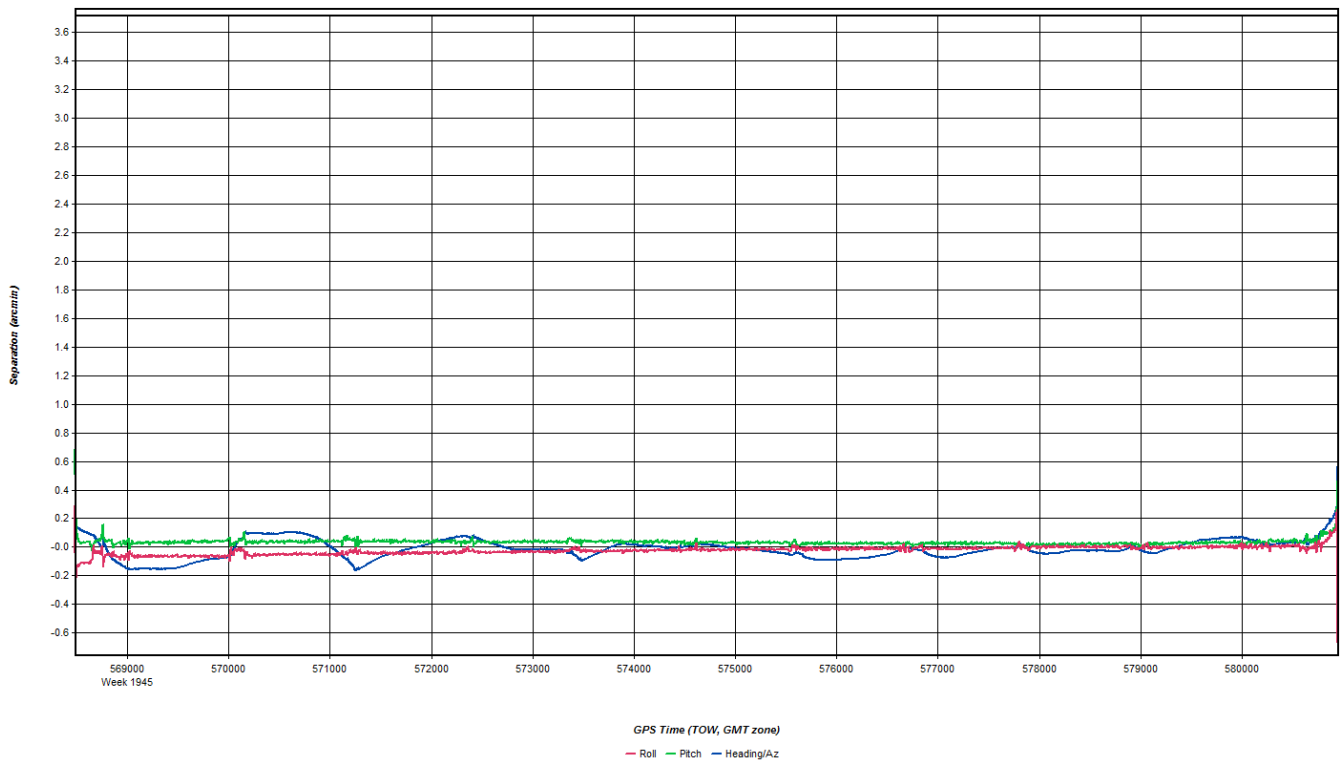
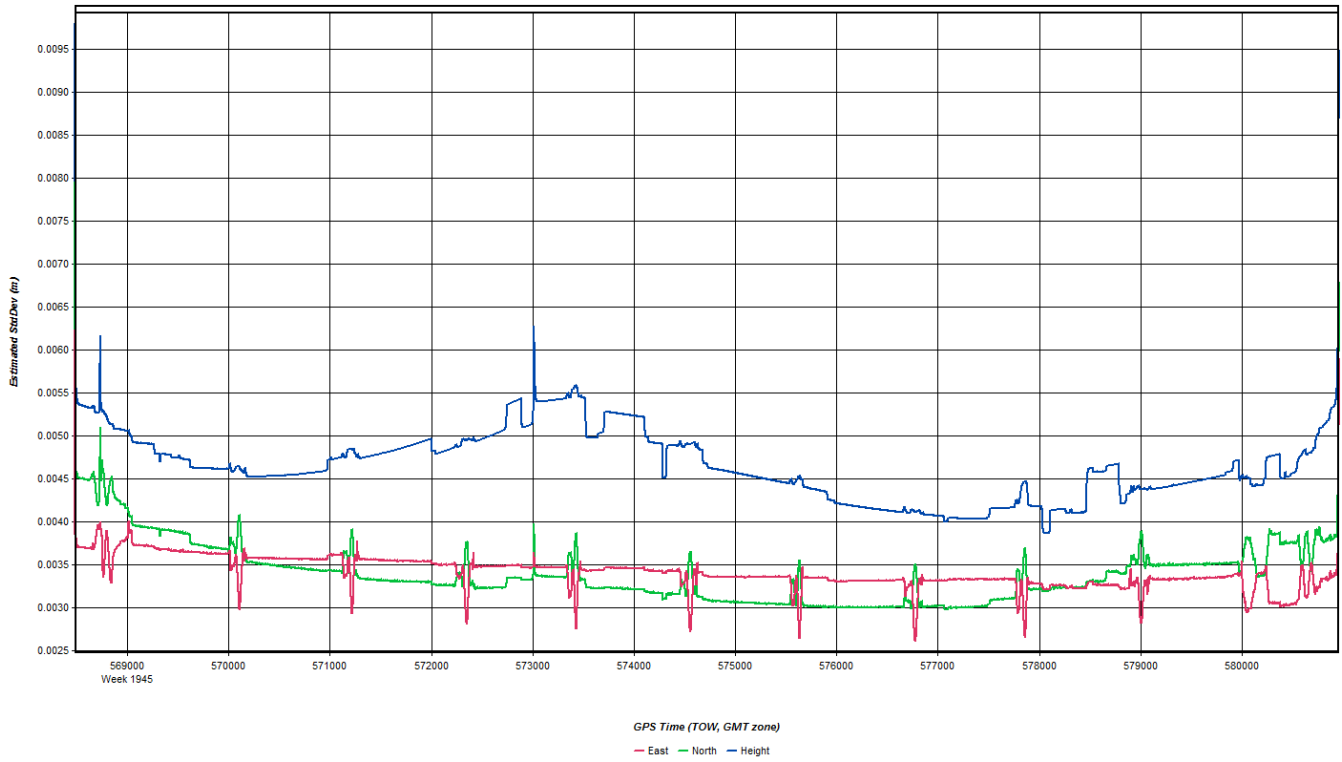
GPS Time (TOW, GMT zone)
 - Float - Forward Fixed - Reverse Fixed - Fixed (2 or more)



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







Coordinate/Antenna Settings ? X

Master Remote

Base Station
 1: SNLK Name: SNLK Disabled
 File: F:\Proc\28571_WROC_Sawyer_7178\Doug_Carey_4-26-17\Sawyer

Coordinates
 Latitude: North 45 51 12.65510 Coord. options
 Longitude: West 91 32 26.06716 Save to Favorites
 Ellipsoidal height: 387.702 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: WINT Name: WINT Disabled
 File: F:\Proc\28571_WROC_Sawyer_7178\Doug_Carey_4-26-17\Sawyer

Coordinates
 Latitude: North 45 49 48.92889 Coord. options
 Longitude: West 90 59 46.00929 Save to Favorites
 Ellipsoidal height: 383.306 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_list@quantumspatial.com)

Date: 4-22-17 **Page:** 1 of 1

Project: WROC - Sawyer Co. **Proj #:** 28571 **Flight Mgmt File:** 20170422-131527

Aircraft: N262AS **Begin Hobbs:** 6551.8 **End Hobbs:** 6556.0 **Total:** 4.2 **Pilot:** christopher **Co-Pilot:** CAREY

Dep Apt: KCWA **Dep Time (Lcl):** 830 **[Z]:** 1330 **Arr Apt:** KCWA **Arr Time (Local):** 1245 **[Z]:** 1745 **Tot Time Aloft:**

CORS: N Sta 1: WisCONS 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)

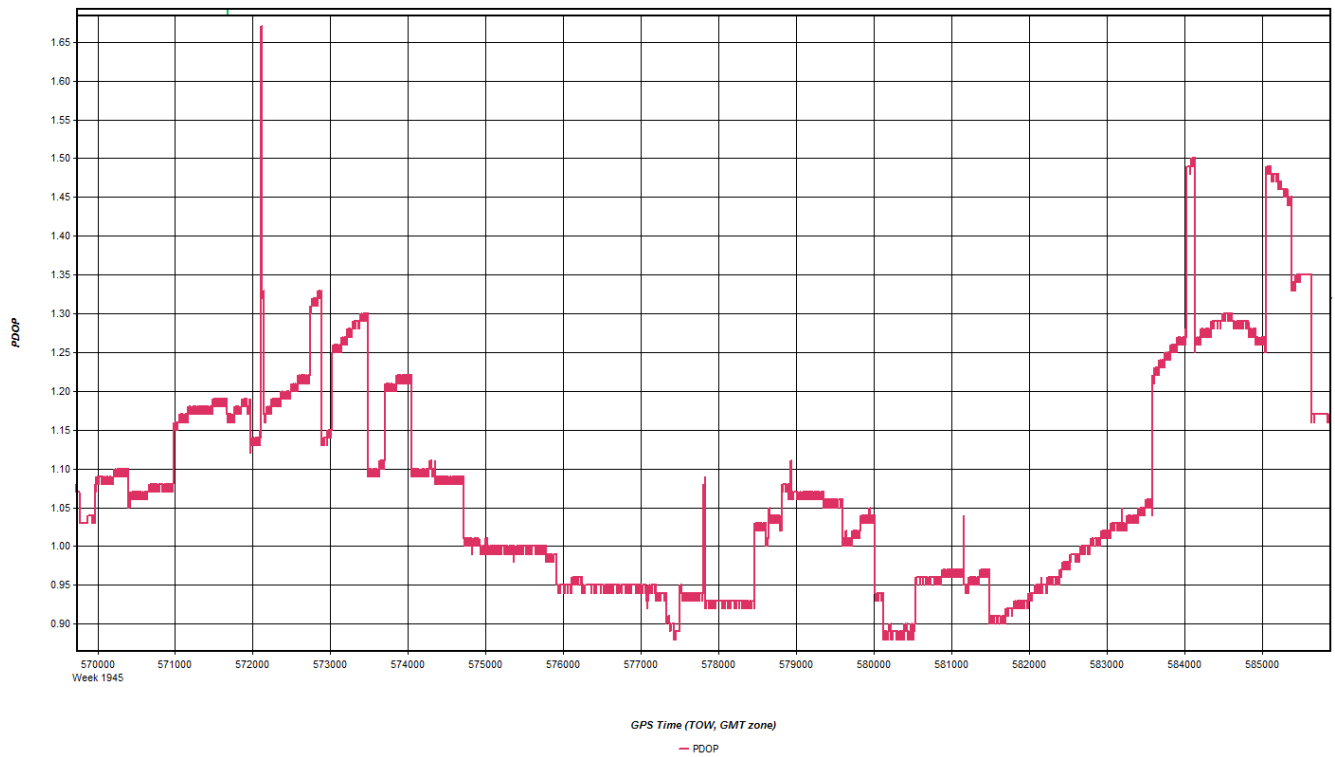
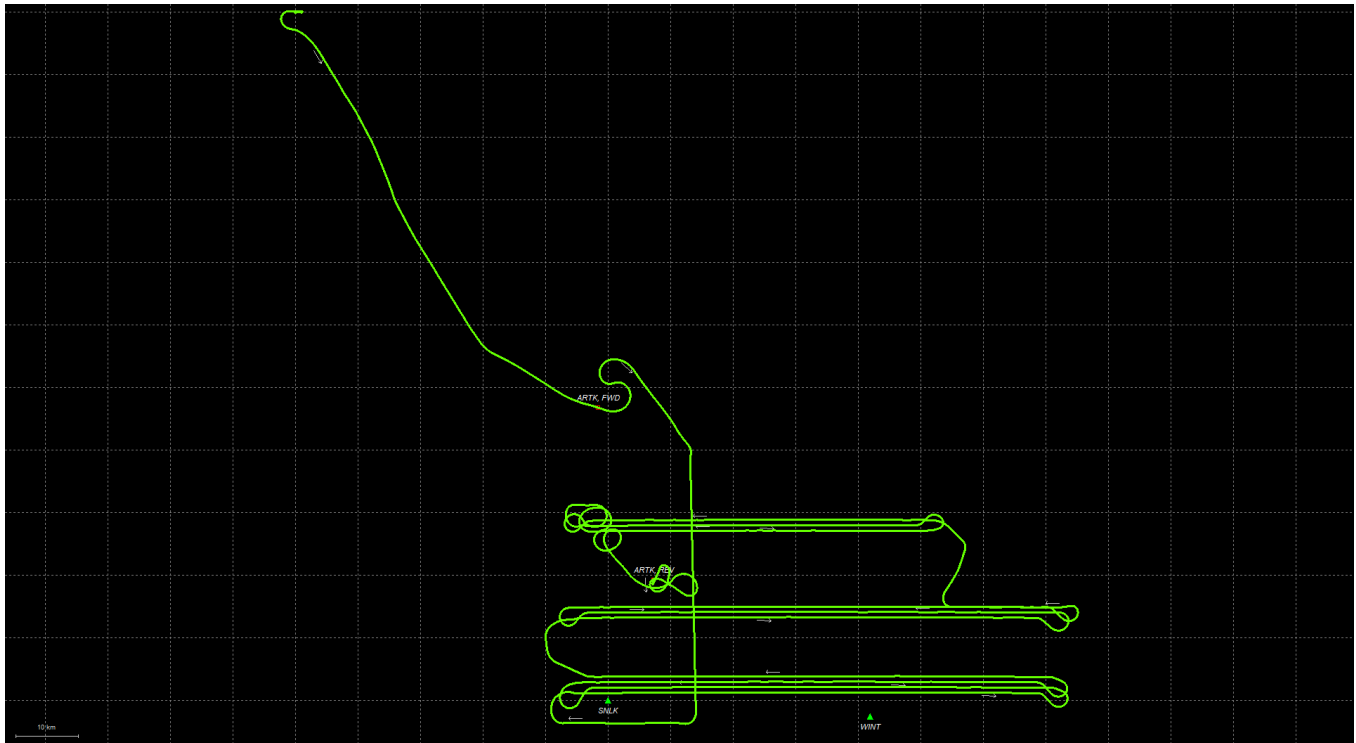
Type	FOV	Send #	Scan Freq	°C		Alt AGL	Alt AMSL	Planes in Air	Gd Spd	GPR/Sec	GPS Altitude	Cmb	Turb (0..+)	°C				Storage Num/ls
				OAT	beg									End	Altimeter	begin	end	
LIDAR		7161	40	53.4		1161	5518	2	7150	1.1	6998	0		150	100%	2.2	13	
		1404				1419	6998		7150	1.1	6998	0		150	100%	2.2	13	
		1423				1438	6998		7150	1.2	6998	0		150	100%	2.2	13	
		1441				1456	7011		7150	1.1	7011	0		150	100%	2.2	13	
		1500				1515	7028		7150	1.1	7028	0		150	100%	2.2	13	
		1518				1533	7028		7150	1.0	7028	0		150	100%	2.2	13	
		1537				1551	7028		7150	1.2	7028	0		150	100%	2.2	13	
		1555				1610	7041		7150	1.3	7041	0		150	100%	2.2	13	
		1614				1629	7047		7150	1.2	7047	0		150	100%	2.2	13	
		1632				1647	7054		7150	1.0	7054	0		150	100%	2.2	13	
		1651				1706	7060		7150	1.3	7060	0		150	100%	2.2	13	
		1710				1715	7060		7150	1.2	7060	0		150	100%	2.2	13	

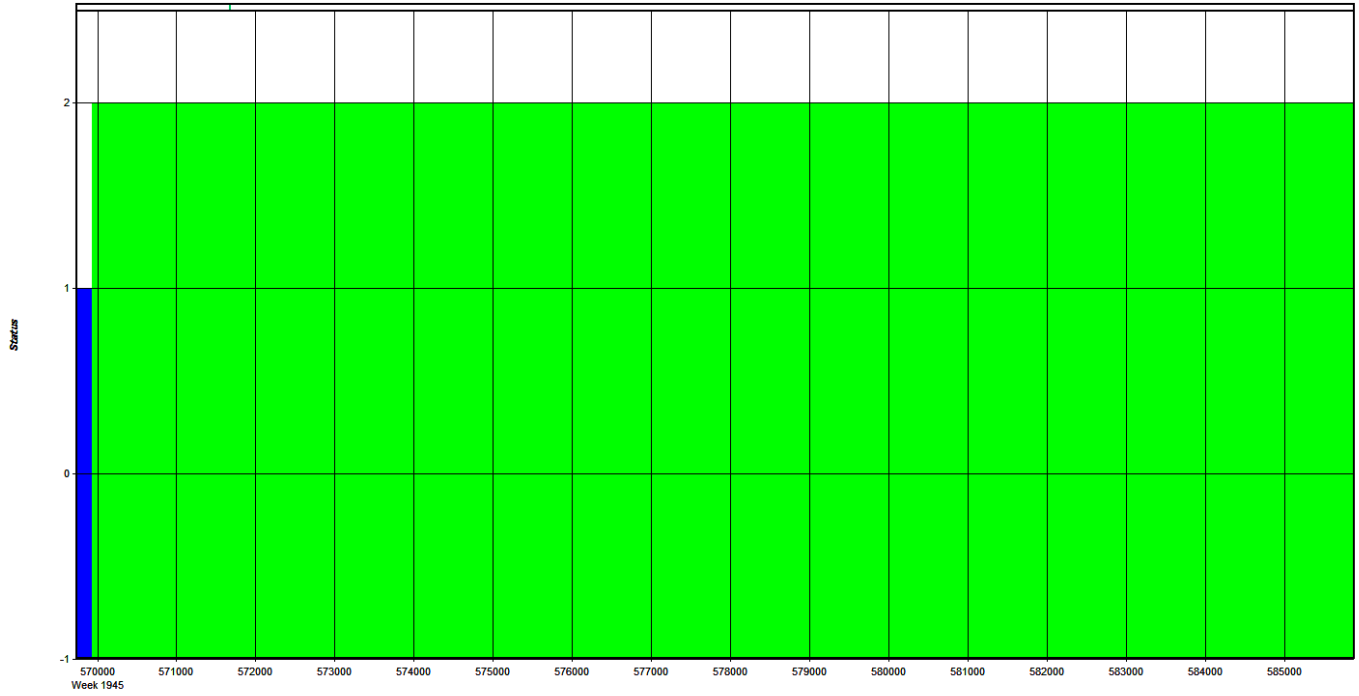
FLIGHT LINE NOTES - visibility, clouds, smoke, partic, etc.
 KCWA → SITE → S/FIG
 SKC!
 OVC 25K / cu Formed @ 8K
 - chop East end / occ - chop thru out
 + chop thru out line / Too turbulent / Updrafts @ 2000 ft
 + unplanned XFLT → R.T.B.
 S/FIG → KCWA

Total Proj Lines: 10 **Lines Flown:** 10 **Lines Remain:** 0 **Online Time:** 3:2 **Job Time:** 1:0 **Notes:**

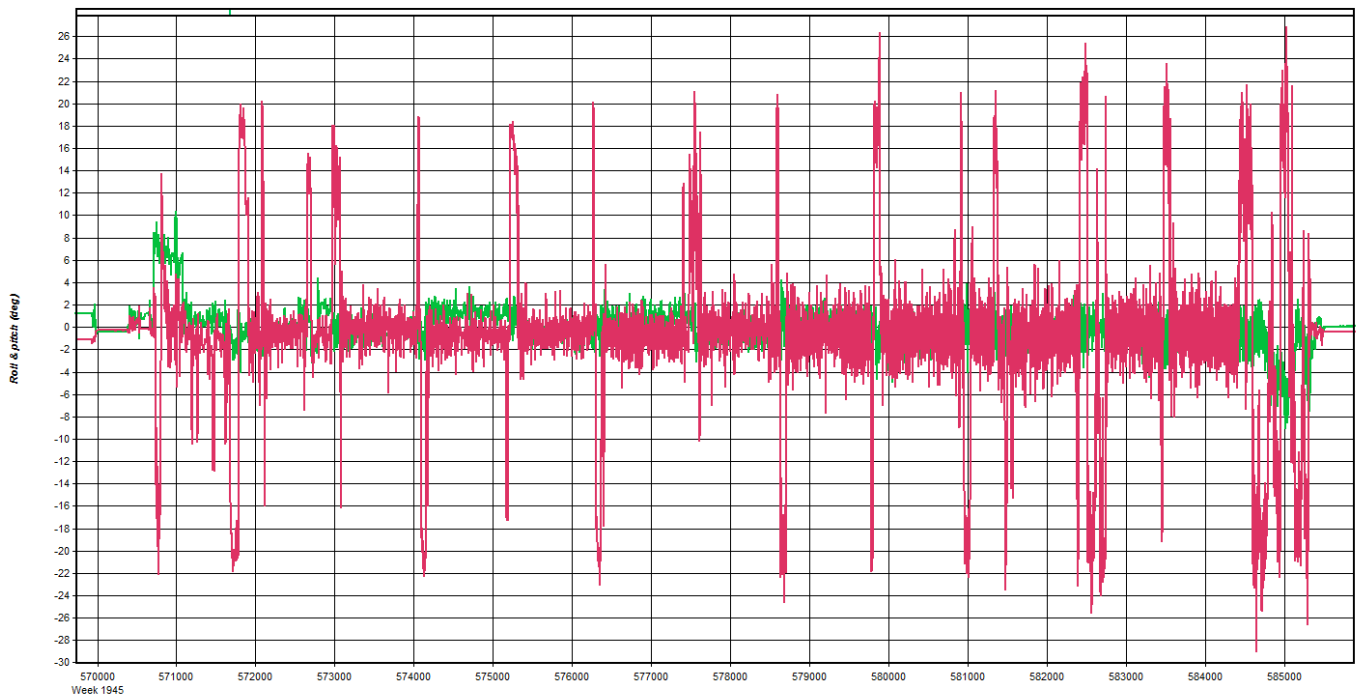
Generated by CamScanner from intsig.com

Apr 22, 2017-A (N73TM, SN7178)

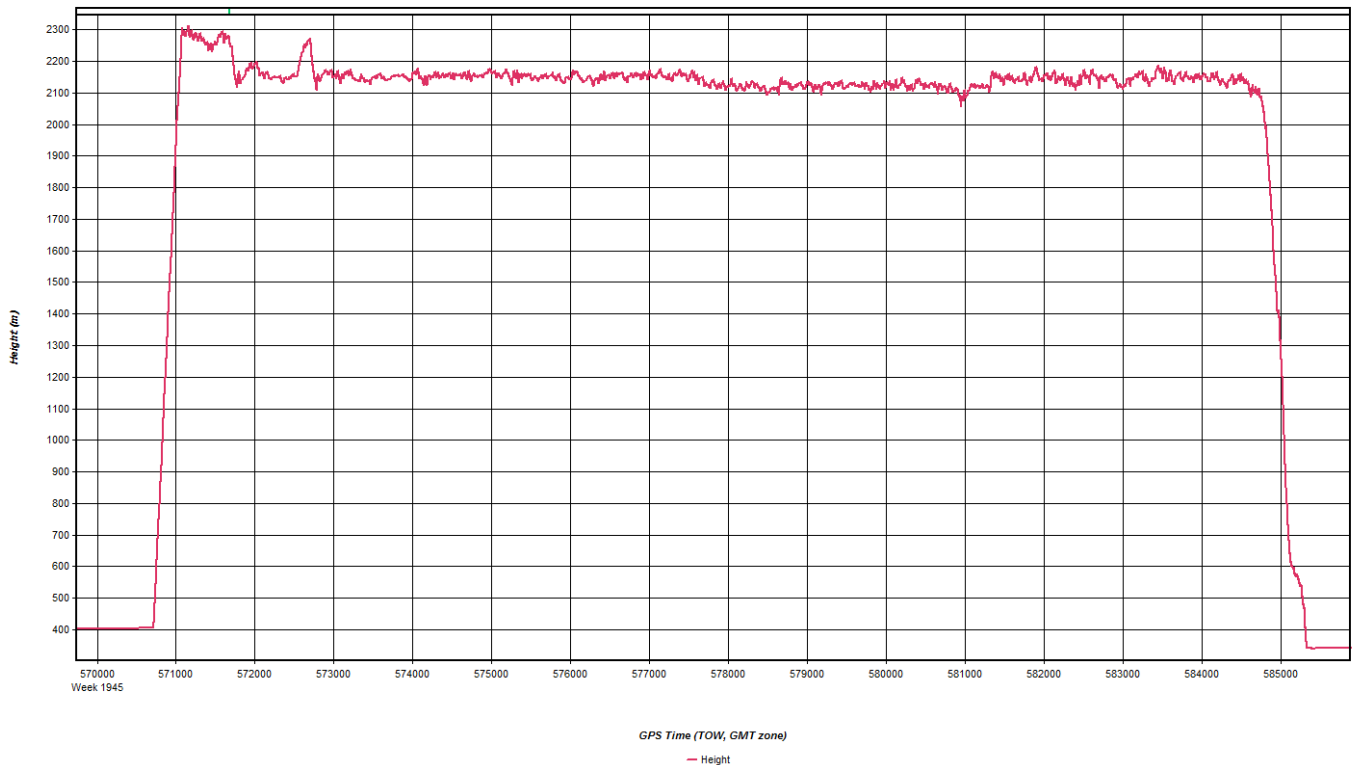
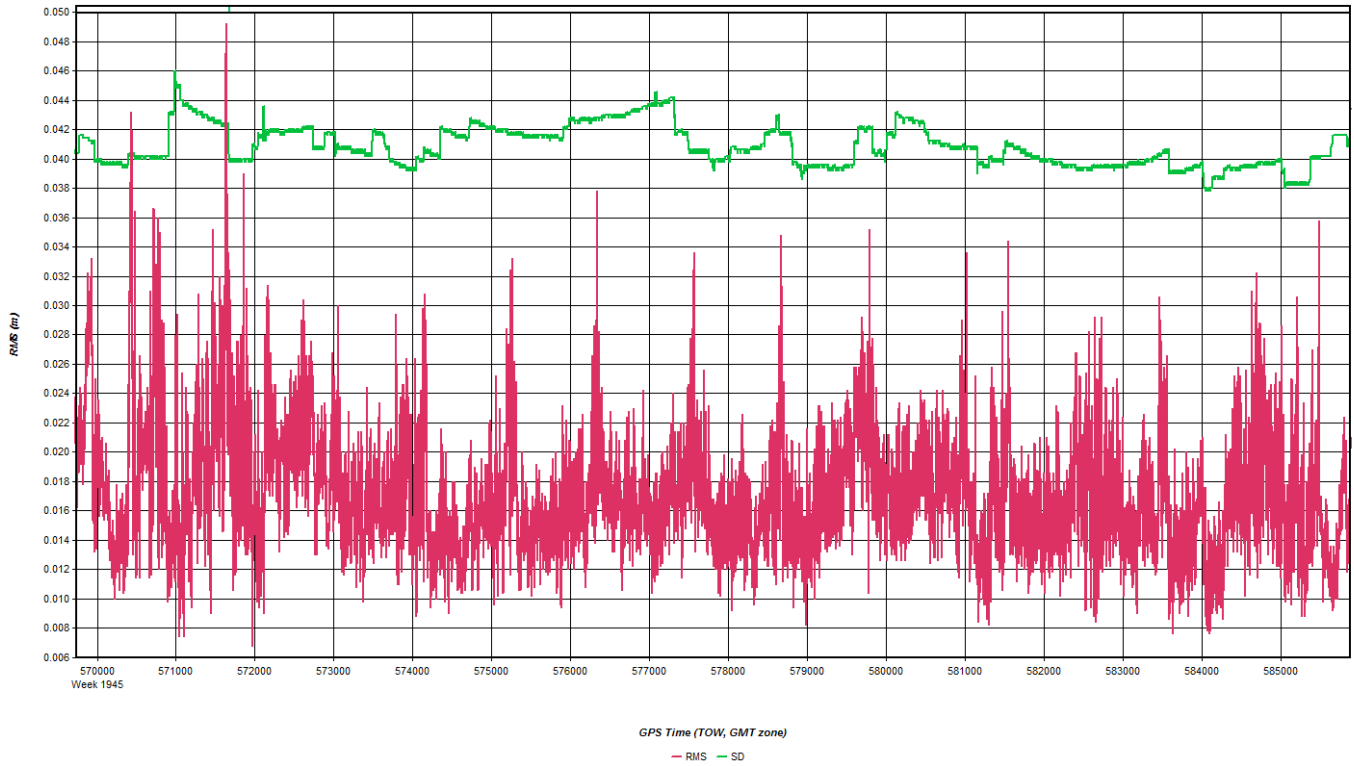


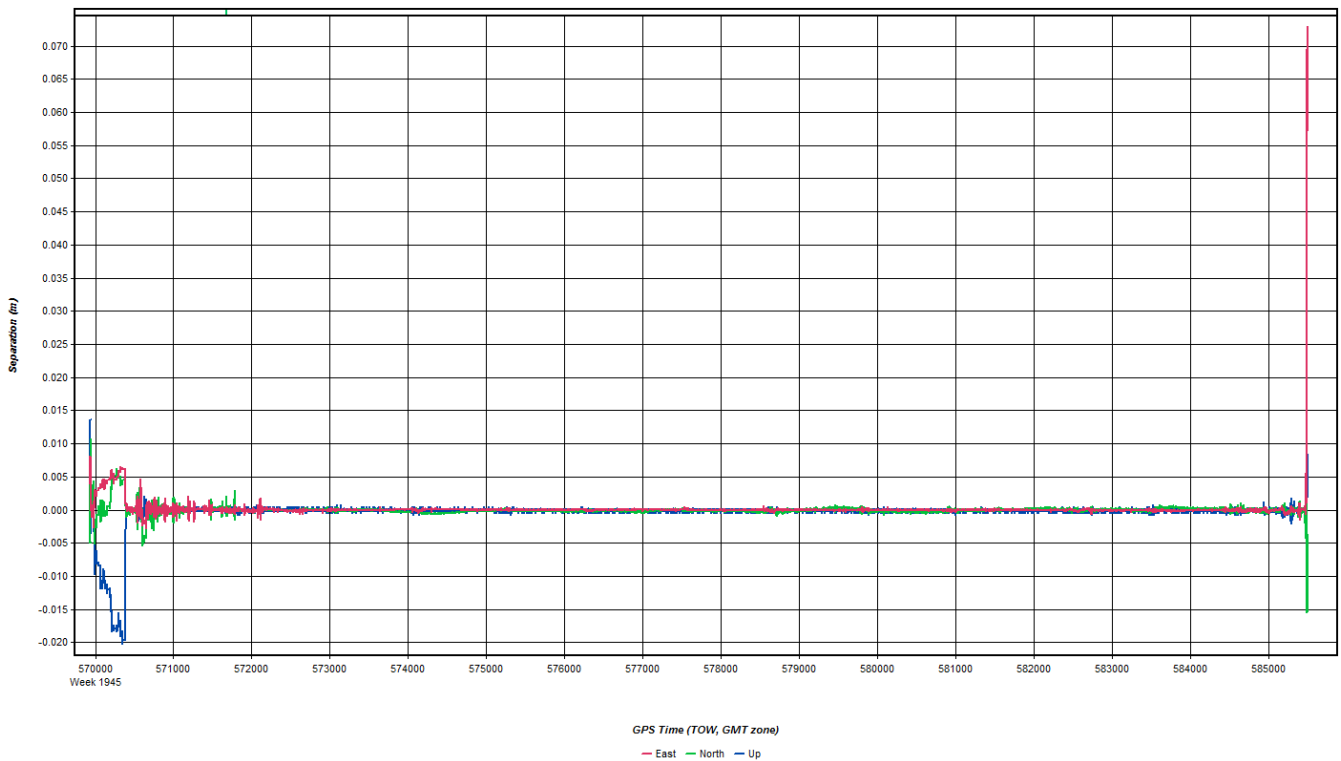
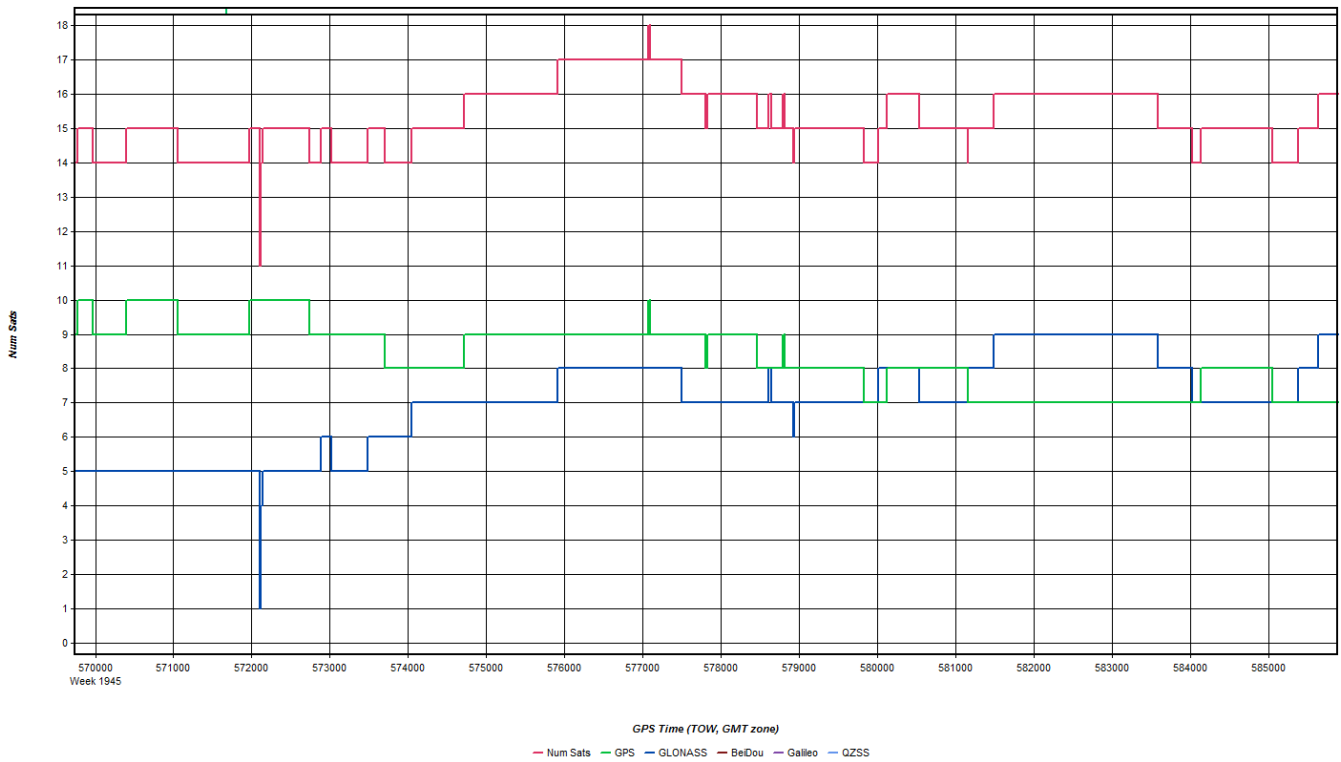


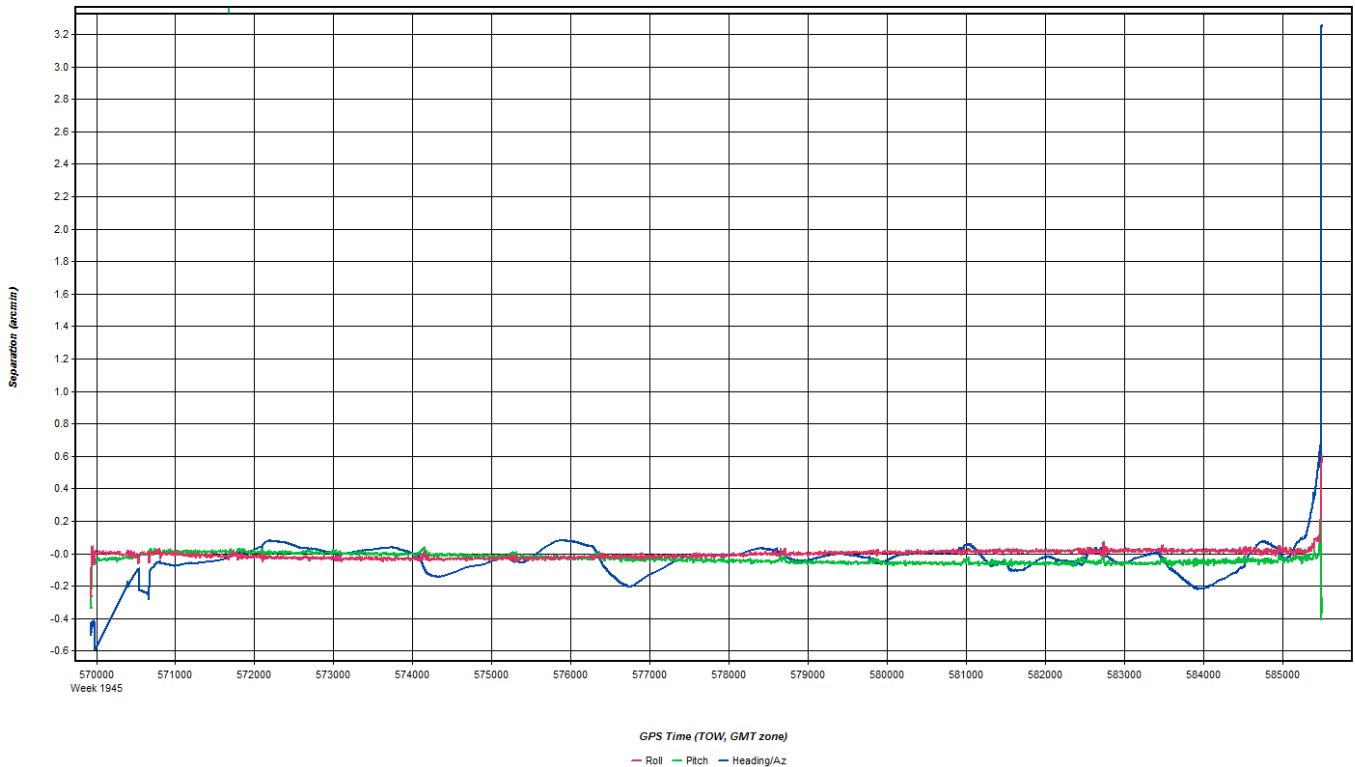
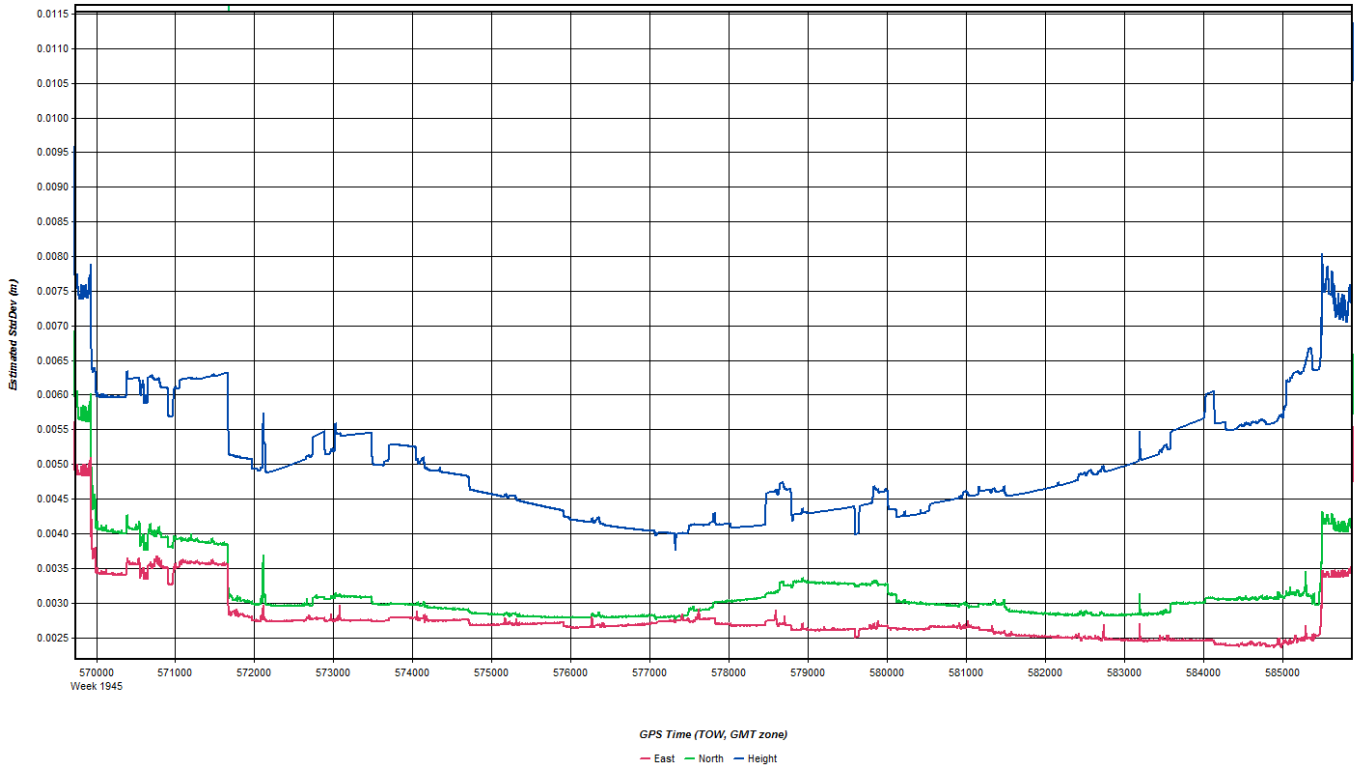
GPS Time (TOW, GMT zone)
— Float — Forward Fixed — Reverse Fixed — Fixed (2 or more)



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







Coordinate/Antenna Settings ? X

Master Remote

Base Station
 1: SNLK Name: SNLK Disabled
 File: F:\Proc\28571_WROC_Sawyer_7178\Gary_Tao_4-25-17\2017042;

Coordinates
 Latitude: North 45 51 12.65510 Coord. options
 Longitude: West 91 32 26.06716 Save to Favorites
 Ellipsoidal height: 387.700 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: WINT Name: WINT Disabled
 File: F:\Proc\28571_WROC_Sawyer_7178\Gary_Tao_4-25-17\2017042;

Coordinates
 Latitude: North 45 49 48.92886 Coord. options
 Longitude: West 90 59 46.00929 Save to Favorites
 Ellipsoidal height: 383.305 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

Project: WRC-Sawyer-LIDAR **Proj #:** 28571

Aircraft: N7BTM **Begin Hobbs:** 6664.3 **End Hobbs:** 6683.3 **Total:** 4.0 **Pilot:** John Barkum **Co-Pilot:** Tech: Gary Tao

Dep Apt: KDLH **Dep Time (Lcl):** 9:31 (Z: 14:31Z) **Arr Apt:** KHYR **Arr Time (Local):** 1:36 (Z: 18:36Z) **Tot Time Aloft:** 4:05

CORS: (Y) N **Sta 1:** CALE/SNLK **Sta 2:** WINT

GPS Unit: Y (N) **Sta 1:** **Sta 2:**

Date: 4/22/2017 **Page:** 1 of 1

Flight Mgmt File: 2017-WRC-Sawyer-Co-ALS70SP3-28571

Altimeter beg: **end:**

Flyovers: Y / (N) **IF Y, times:** Sta1 **Sta2**

Flyovers: Y / N **IF Y, times:** Sta1 **Sta2**

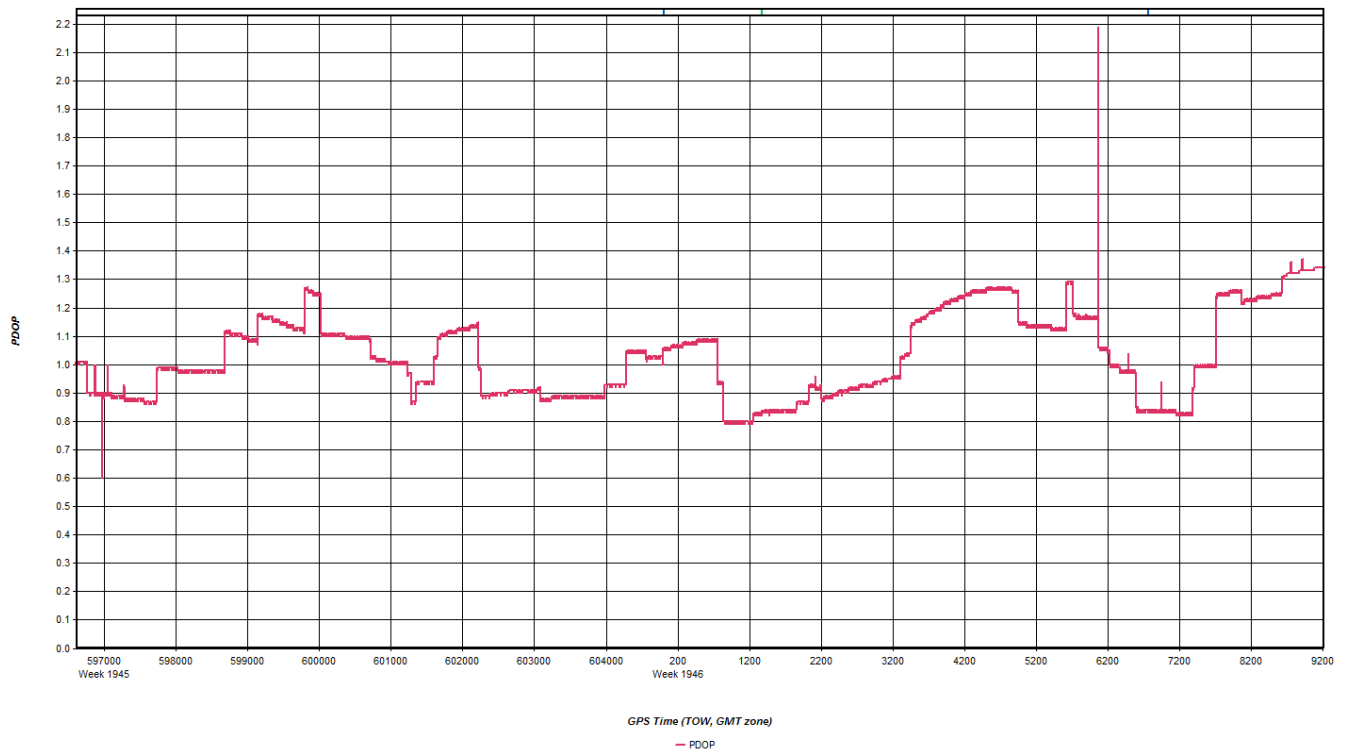
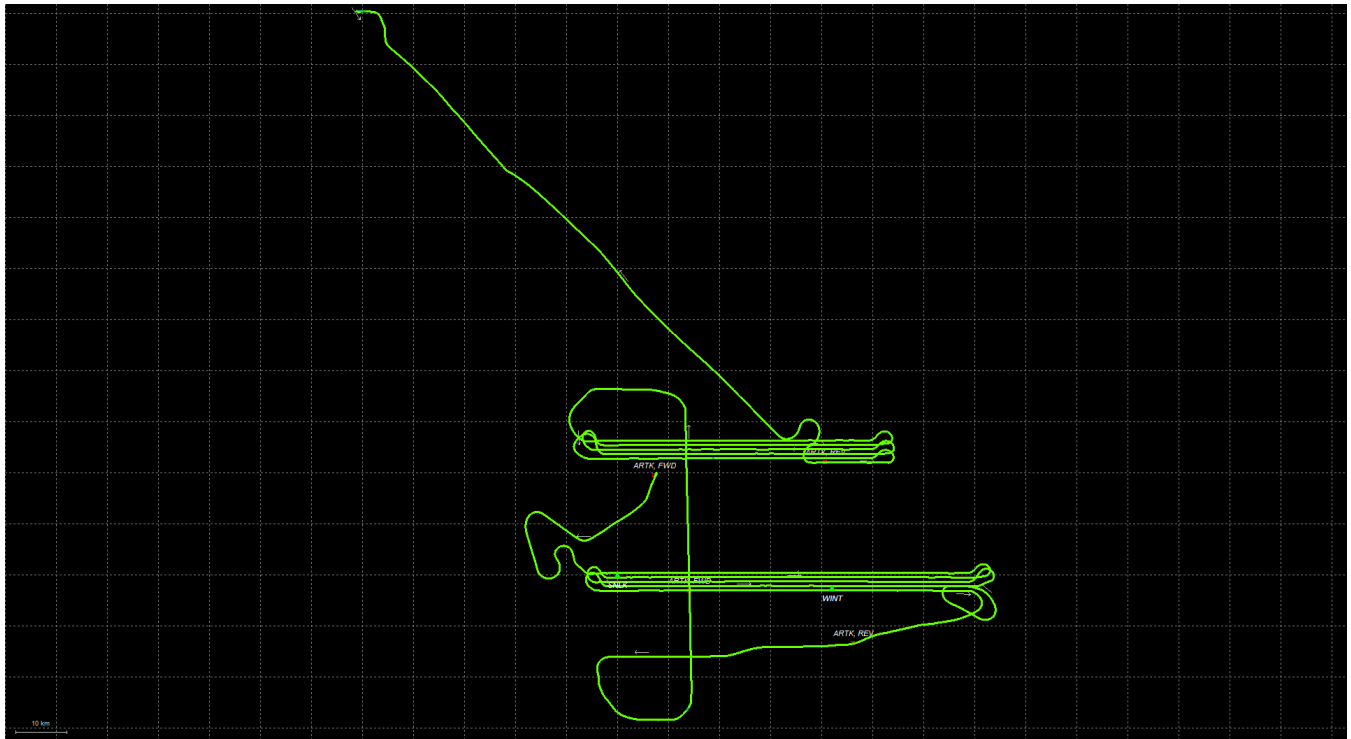
Line #	Hdg	Start UTC	End UTC	Gd Spd	GPS Altitude	Crab	Turb (0-3)	°C		Alt APL	Pulse In Air	Pulse Rate	Avg Terr. HT	Max Gdspd	Power	PPPM	Avg Pt Spd	PPPM	Mag CO	Storage Memo	
								beg	end												
LIDAR																					
71P	S	14:48	14:52							7050'										4/8	7170
39	E	14:55	15:04	144kt						7050'										482	55D03
38	N	15:12	15:27	150	120	1°	0			7100'											
37	E	15:30	15:46	145	121M	1°	0			7100'											
36	W	15:49	16:04	152	131M	2°	0			7100'											
		16:07	16:23	134	131M	1°	-			7050'											
25	E	16:28	16:43	152	120	1°	-			7000'											
24	W	16:46	17:02	134	119	2°	+			7000'											
23	E	17:05	17:21	150	131M	2°	+			7000'											
23R	W	17:25	17:29	130	118	2°	+			7000'											
7	W	17:32	17:46	138	121M	1°	+			7000'											
8	E	17:52	18:07	150	141M	1°	+			7000'											
9	W	18:06	18:20	125	121M	1°	+			7050'											
		18:20	18:23																		

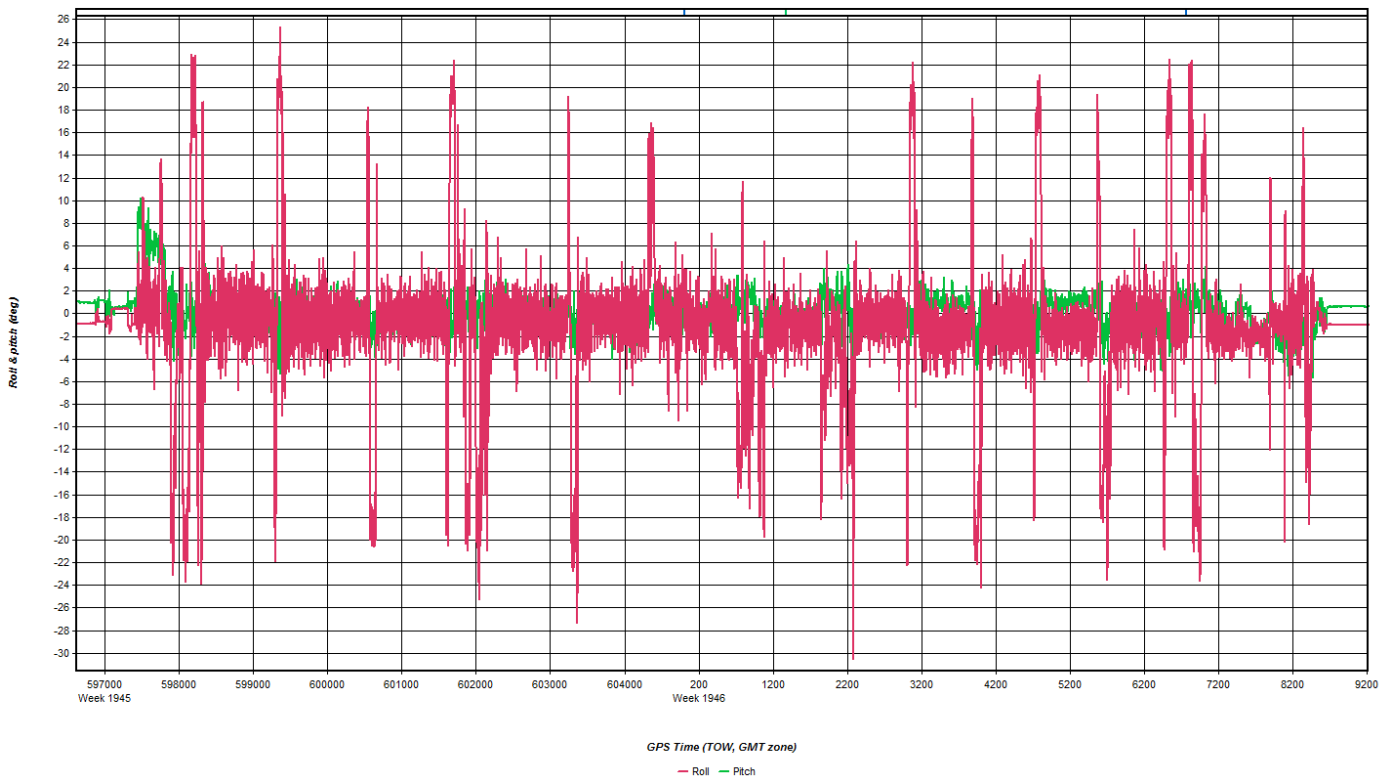
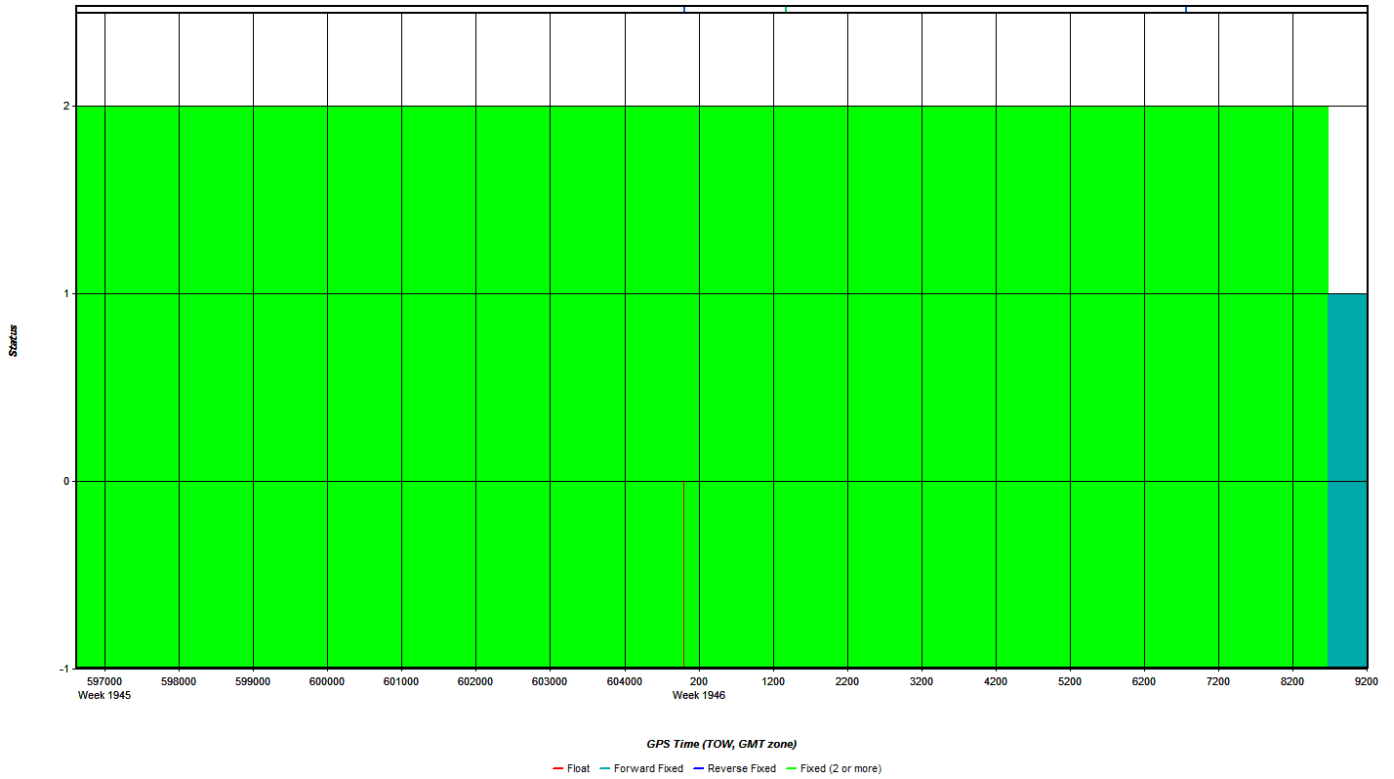
FLIGHT LINE NOTES - visibility, clouds, smoke, partial, etc.

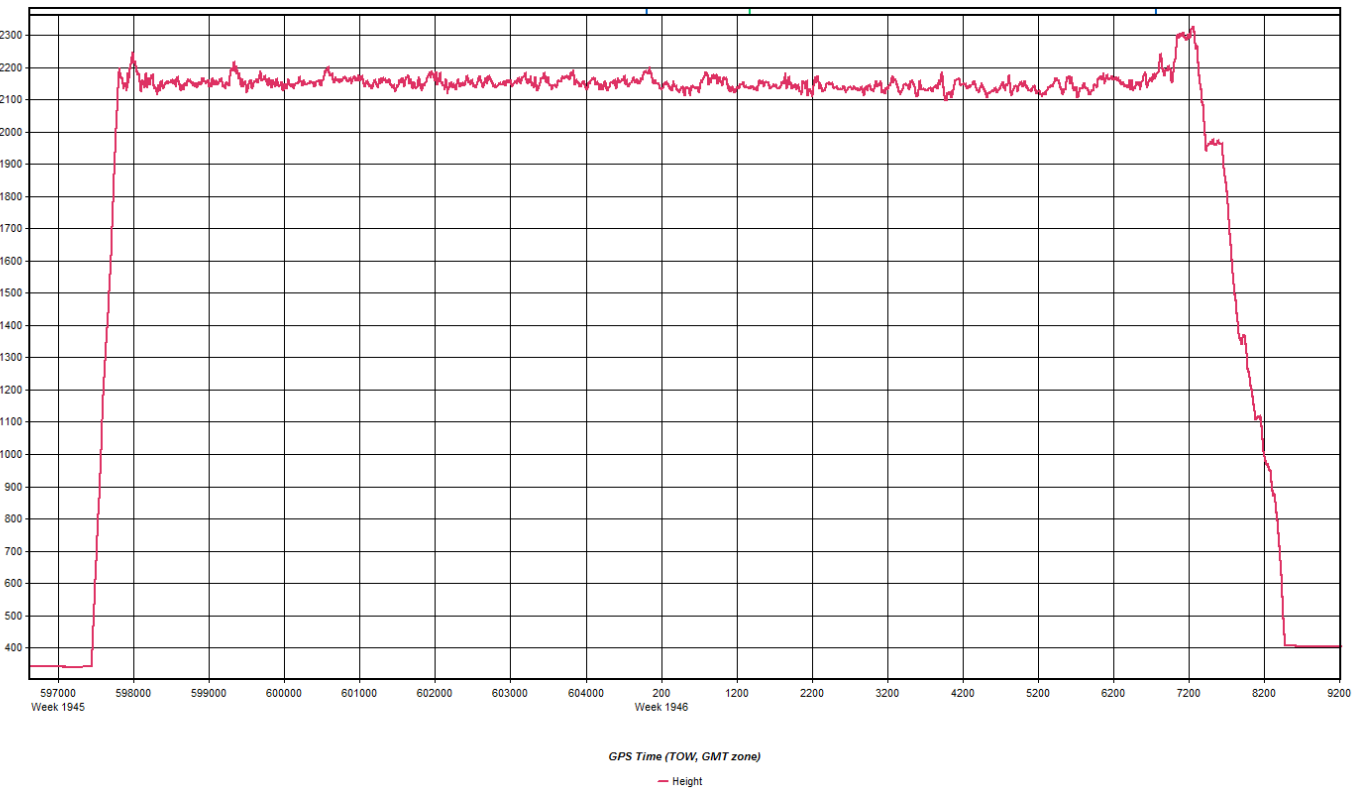
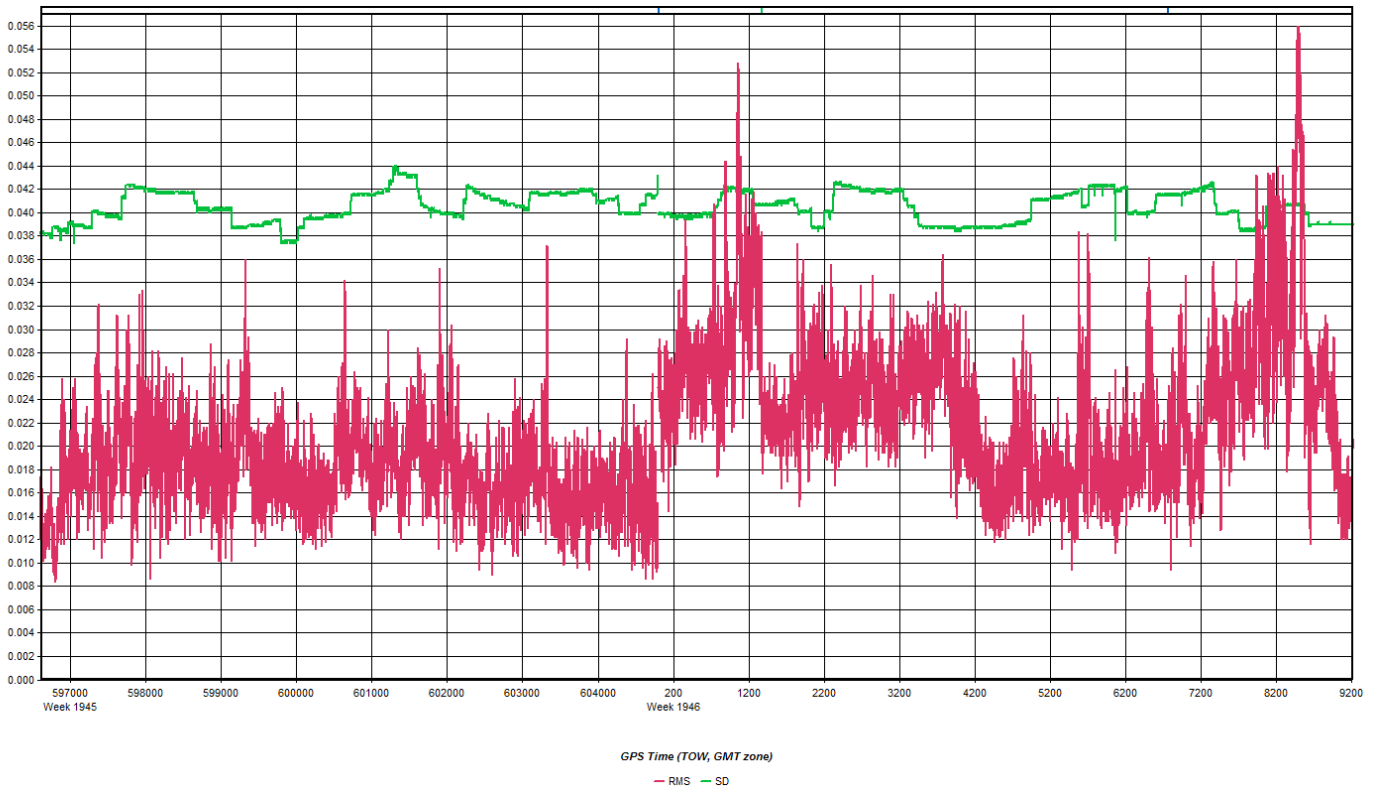
opening S-turn
cross TIE going south, ATC forced 500' climb near end
turbulence on western end
250' drift to north on east end
reflight of eastern 7.5 NM
turb.
Closeout S-Turn
Landed @ KHYR for fuel and wait out turbulence and incoming clouds

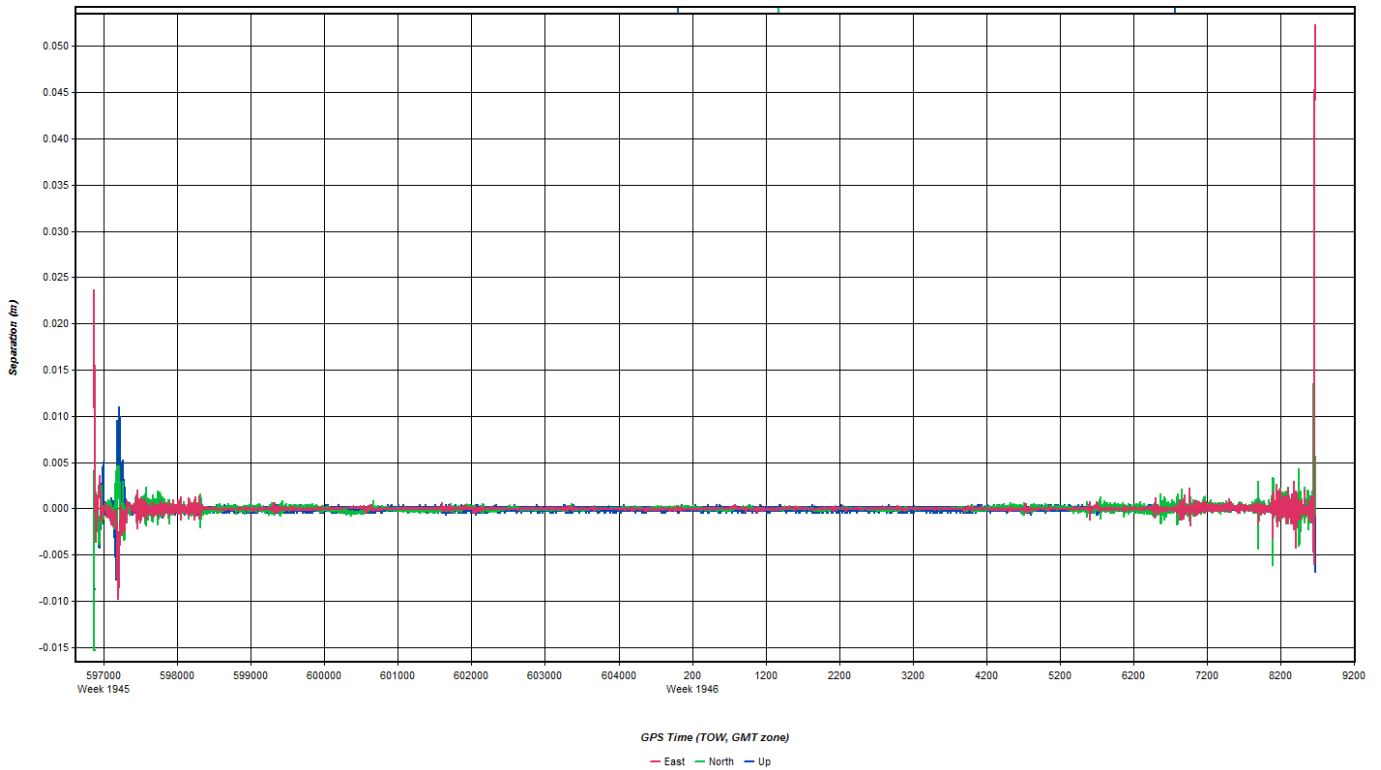
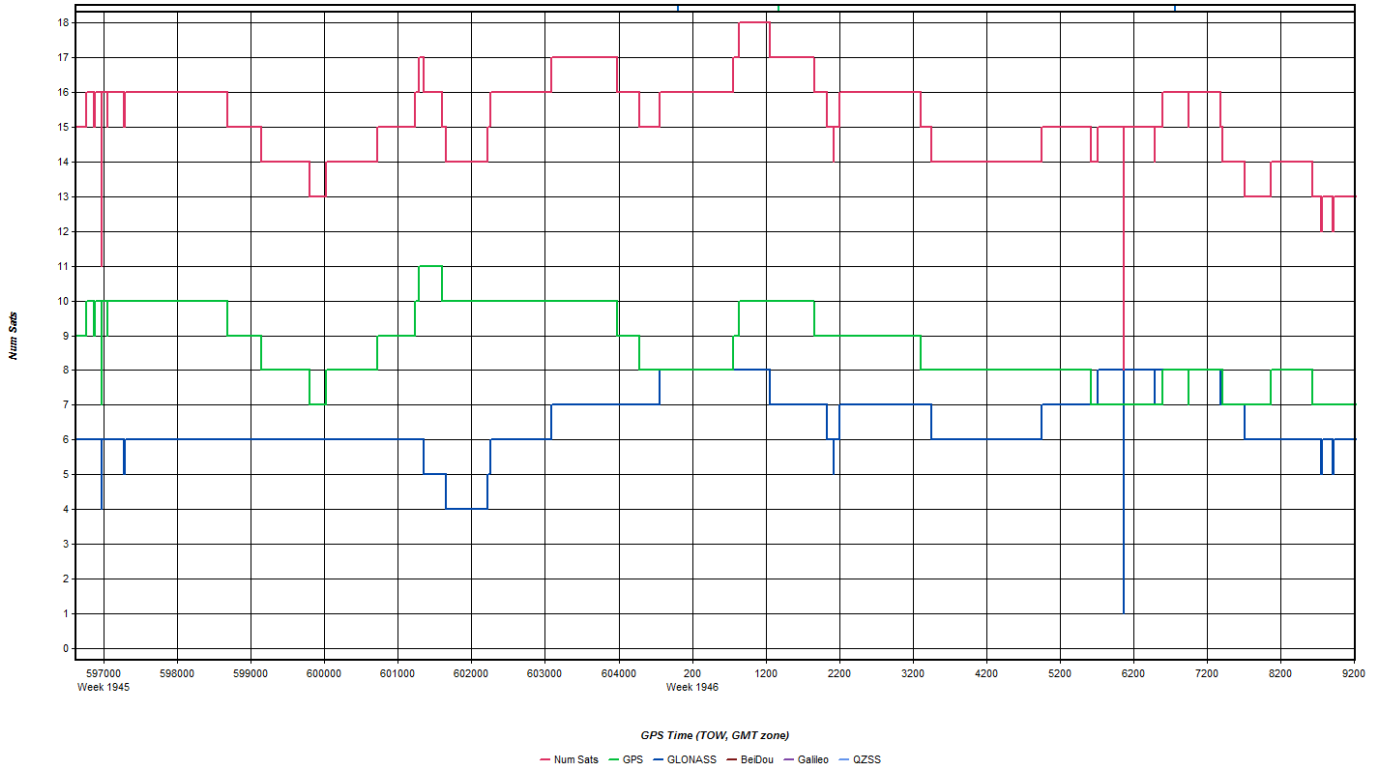
Total Proj Lines: 71	Lines Flown: 0	Lines Remain: N/A	Online Time: 3.6	Job Time: A	Notes:
-----------------------------	-----------------------	--------------------------	-------------------------	--------------------	---------------

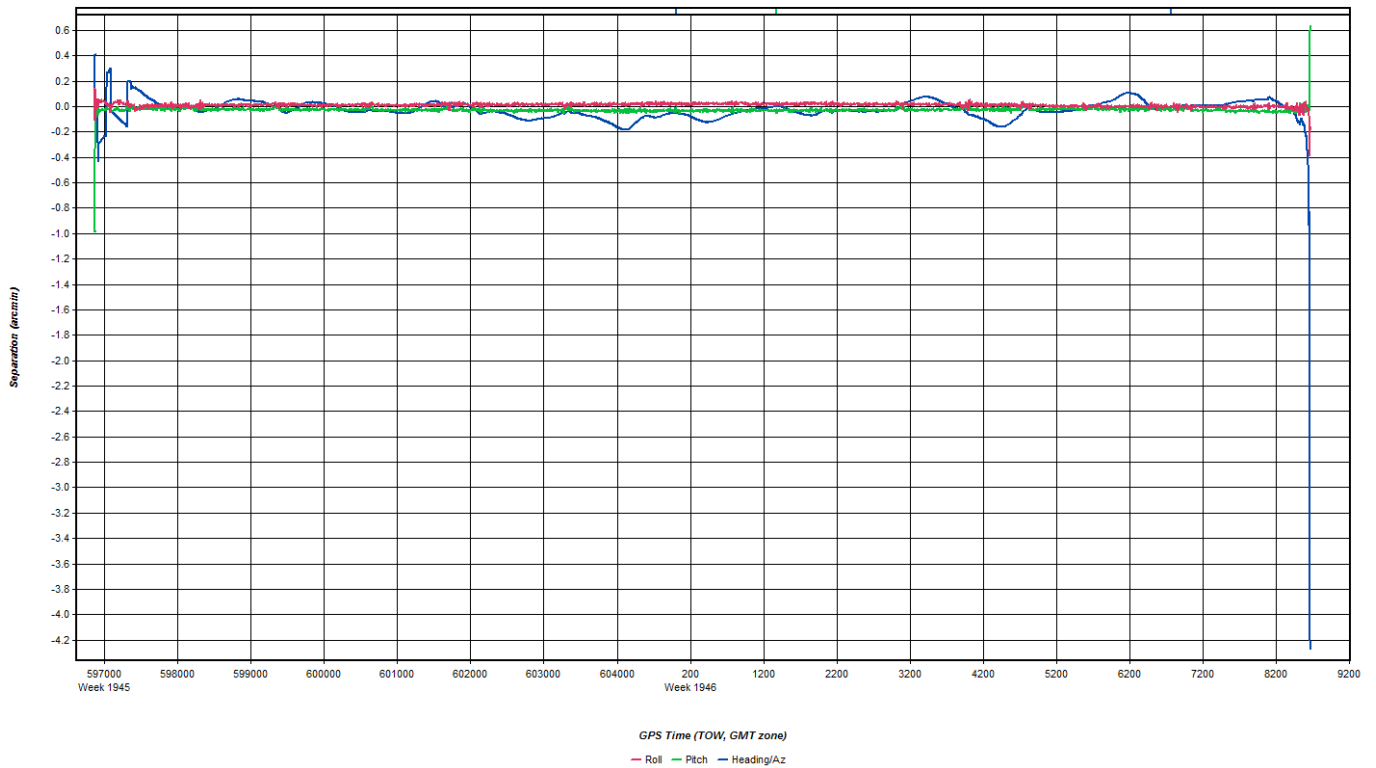
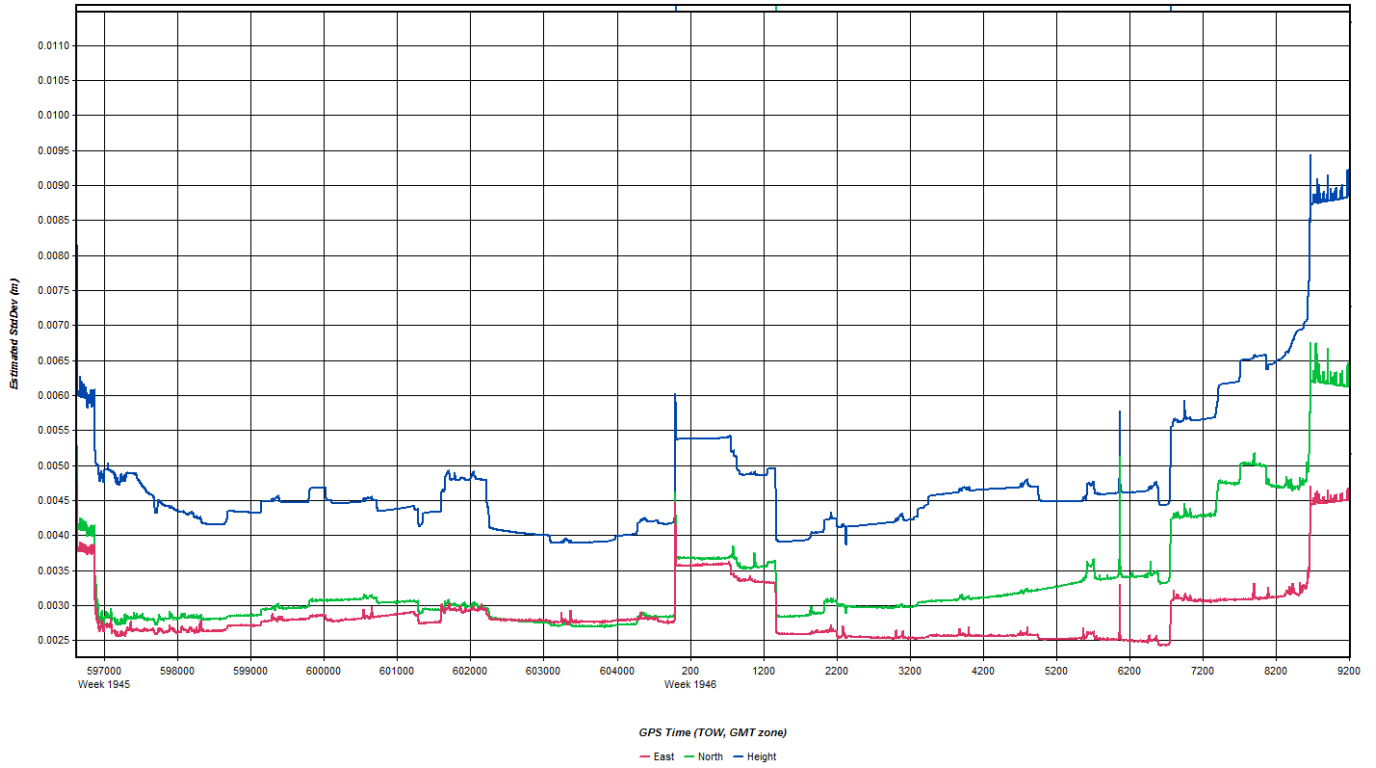
Apr 22, 2017-B (N73TM, SN7178)











Coordinate/Antenna Settings ? X

Master Remote

Base Station
1: SNLK Name: SNLK Disabled
File: F:\Proc\28571_WROC_Sawyer_7178\Gary_Tao_4-25-17\2017042

Coordinates
Latitude: North 45 51 12.65510 Coord. options
Longitude: West 91 32 26.06716 Save to Favorites
Ellipsoidal height: 387.700 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 Measured to
ARP ARP
L1 Phase Centre L1 Phase Centre
ARP to L1 offset: 0.067 m
Applied height: 0.067 m Compute From Slant

OK Cancel

Coordinate/Antenna Settings ? X

Master Remote

Base Station
2: WINT Name: WINT Disabled
File: F:\Proc\28571_WROC_Sawyer_7178\Gary_Tao_4-25-17\2017042

Coordinates
Latitude: North 45 49 48.92886 Coord. options
Longitude: West 90 59 46.00929 Save to Favorites
Ellipsoidal height: 383.305 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 Measured to
ARP ARP
L1 Phase Centre L1 Phase Centre
ARP to L1 offset: 0.067 m
Applied height: 0.067 m Compute From Slant

OK Cancel

Flight Log

Airborne LIDAR Data Collection Log Sheet :: Quantum Spatial, Inc
(email log daily to flight_log_distribution_list@quantumspatial.com)

Project: WROC-SAWYER-LIDAR **Proj #:** 28571 **Date:** 4/22/2017
Flight Mgmt File: 2017_WROC-Sawyer-Co_AL570SP3_28571

Aircraft: N73TM **Begin Hobbs:** 6683 **End Hobbs:** 6672 **Total:** 14 **Pilot:** John Bachman-Pilot **Tech:** Gary Tobo
Dep Apt: KHYR **Dep Time (Lcl):** 4:57 **Arr Apt:** KDLH **Arr Time (Local):** 9:21 **Alt:** 02:2 **Tot Time Aloft:** 4:24

CORS: (Y/N) **Sta 1:** SNLK **Sta 2:** WINT **Flyovers:** Y/N **IF Y, times: Sta1)** **Sta2)**
GPS Unit: Y/N **Sta 1:** CWE **Sta 2:** CORNETWORK

Gd Temp beg:		°C		End:		°C		OAT beg:		°C		End:		°C		Altimeter begin:		end:	
Type	AL570	Serial #	7178	Alt AGL	5900	Alt AMSL	7100	Avg Tern Ht	1200'	Max Glided	150kts	Avg Pt Spacing	PPSM	2	Power	100%	Storage Num/pt	482	7170
FOV	40	Scan Freq	299kHz	Mp/A	Y/N	Pulses In Air	2	Pulse Rate	5342	Power	100%	PPSM	2	End Cal	549	Tot Cal	67	55003	

Line #	Hdg	Start (UTC)	End (UTC)	Gd Spd	POF/pt-sec	GPS Altitude	Turb (0-1)	Crab	Notes
40	E	22:28	22:28	22:11		7000'	+	3°	Static @ KHYR
41	W	22:30	22:49	22:49		7000'	+	2°	Opening S turn
42	E	22:51	23:06	23:06		7100'	+	2°	turbulence going west
43	W	23:10	23:10			VOID			
43R	E	23:16	23:34	23:17		7100'	+	1°	offload start; excessive roll to correct about/refly Ranges start to appear in FCMS; 6° roll to starboard @ 23 NM from west end (FWE)
44	E	23:36	23:52	23:52		7100'	+	1°	roll to port @ 10 NM from east end (FEE)
59R	W	00:07	00:12	00:12		7000'	+	1°	reflight of western 11NM per tracking Doc
7	Port	00:19	00:30	00:30		7000'	0	0	CROSS TIE
10	E	00:39	00:50	00:50		7000'	0	0	
11	W	00:53	01:04	01:04		7000'	0	0	
12	E	01:07	01:18	01:18		7100'	0	0	
13	W	01:21	01:33	01:33		7000'	0	2°	Ranges not changing?; no intensities of range graphs updating in TRAC
14	E	01:35	01:47	01:47		7000'	0	2°	
15R	W	01:50	01:53	01:53		7100'	0	1°	stern 1:53-1:56; RTB

Total Prof Lines: 71 **Lines Flown:** 19 **Lines Remain:** 0 **Online Time:** 3.8 **Job Time:** -6 **Notes:**

2 reflys