Project Report Appendices

The following section contains the appendices as listed in the Prince of Wales Island 2017 QL1 LiDAR Project Report.

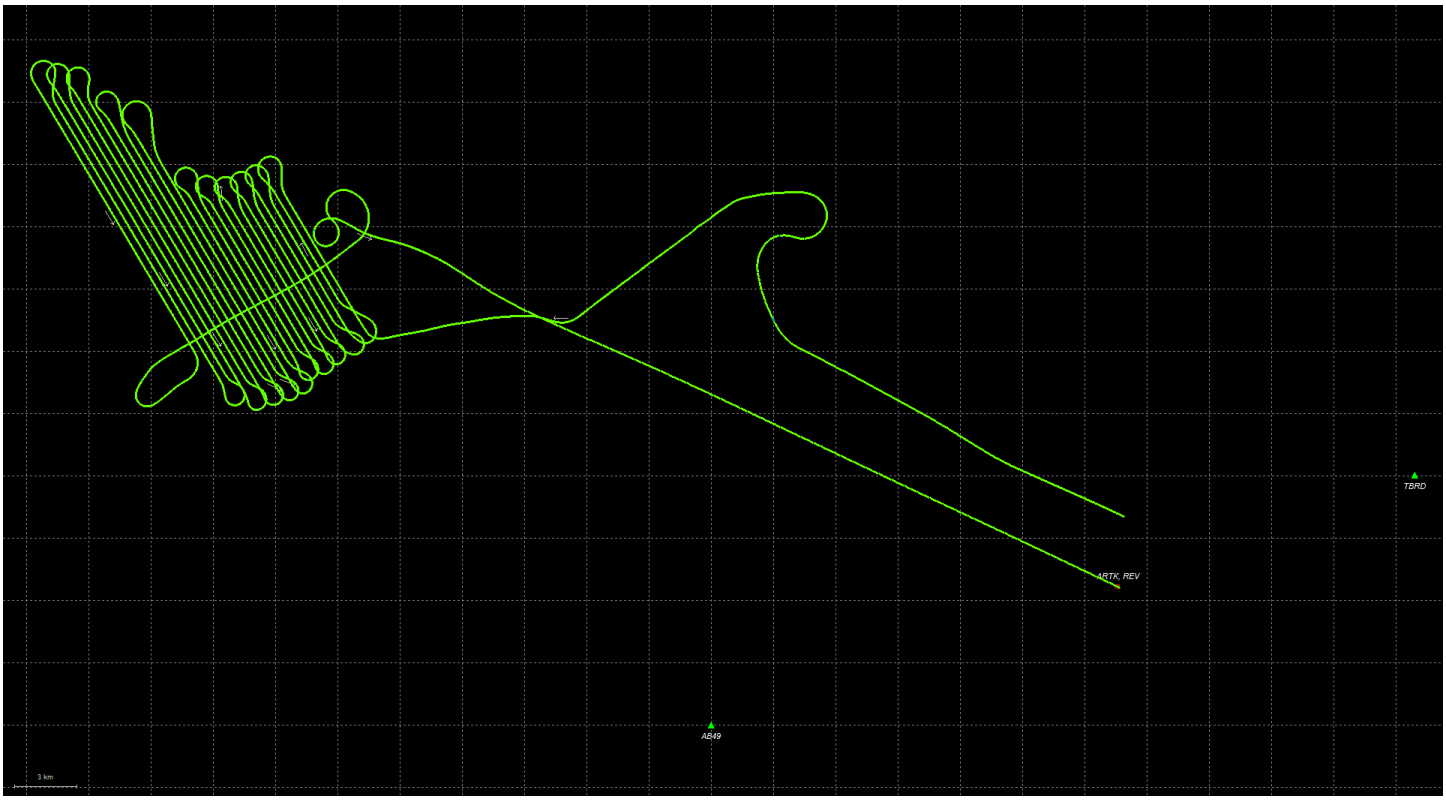
Appendix A

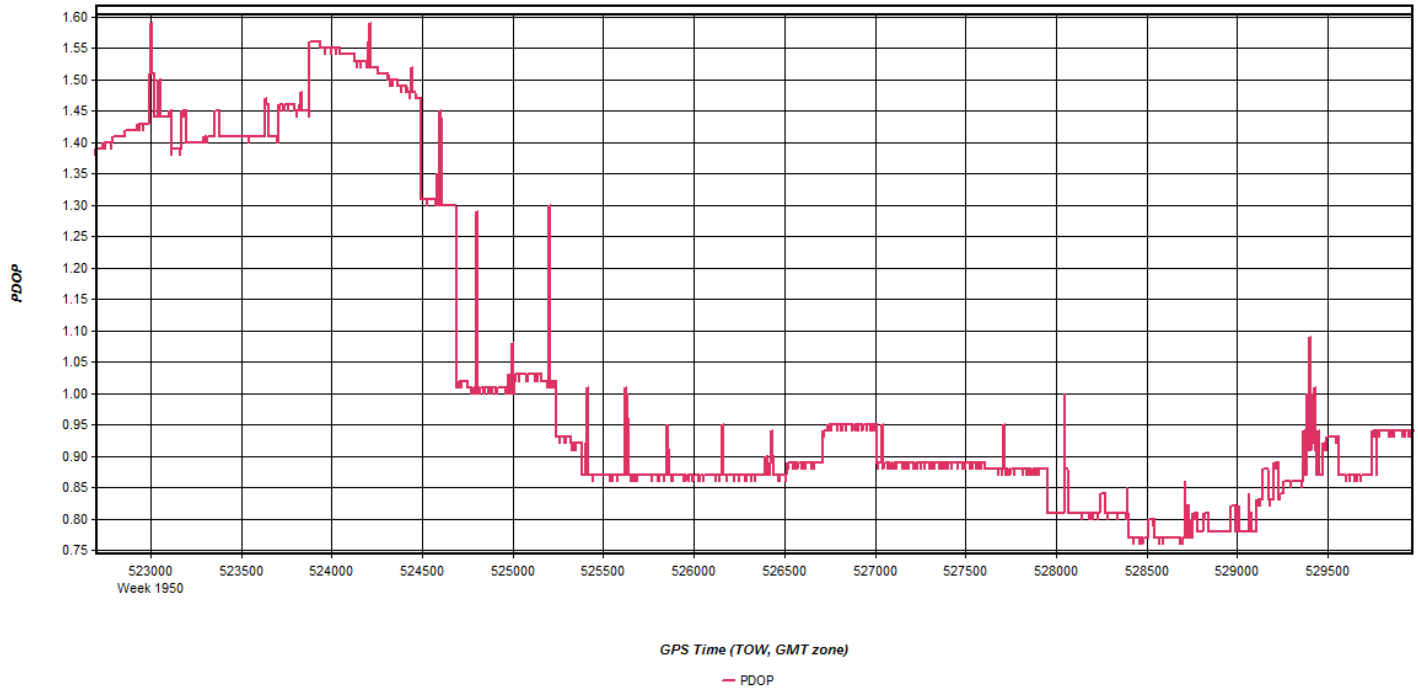
GPS/IMU Processing Statistics
Flight Logs
Base Station Logs

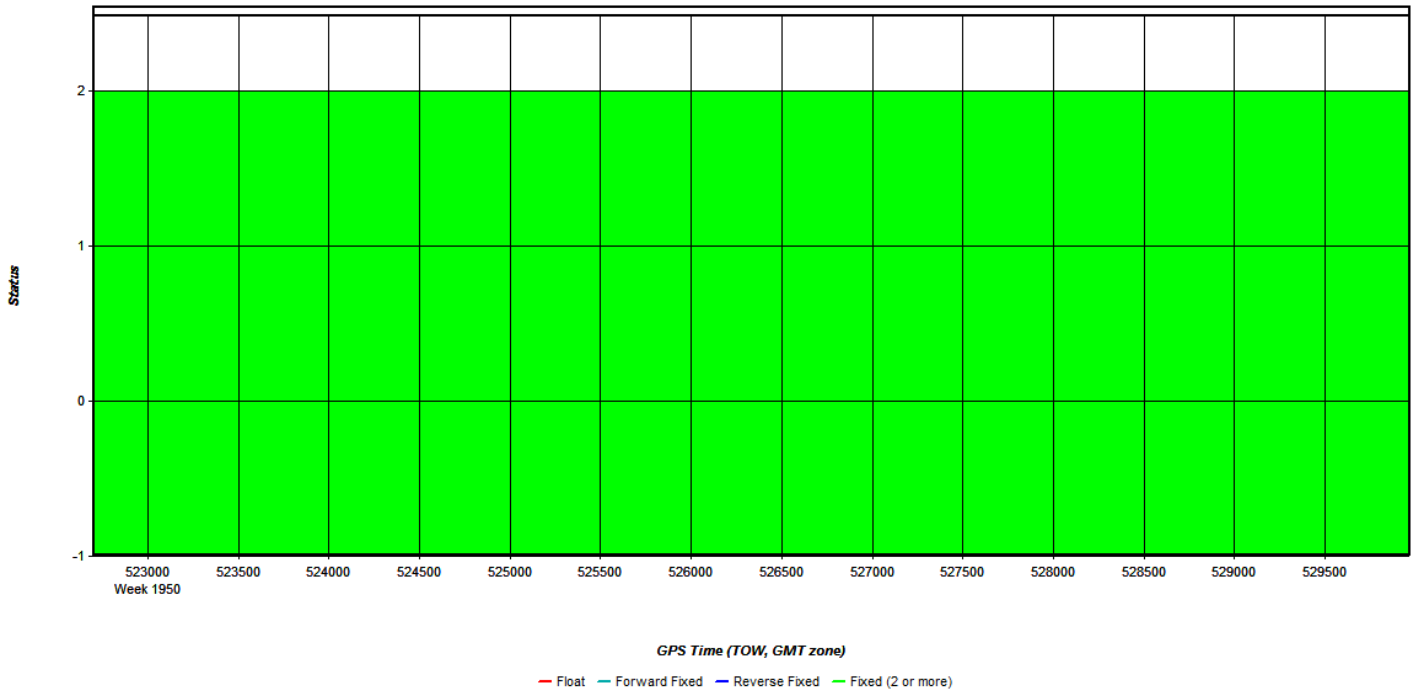
There were 30 total lifts. Flight-related data are found on the following pages.

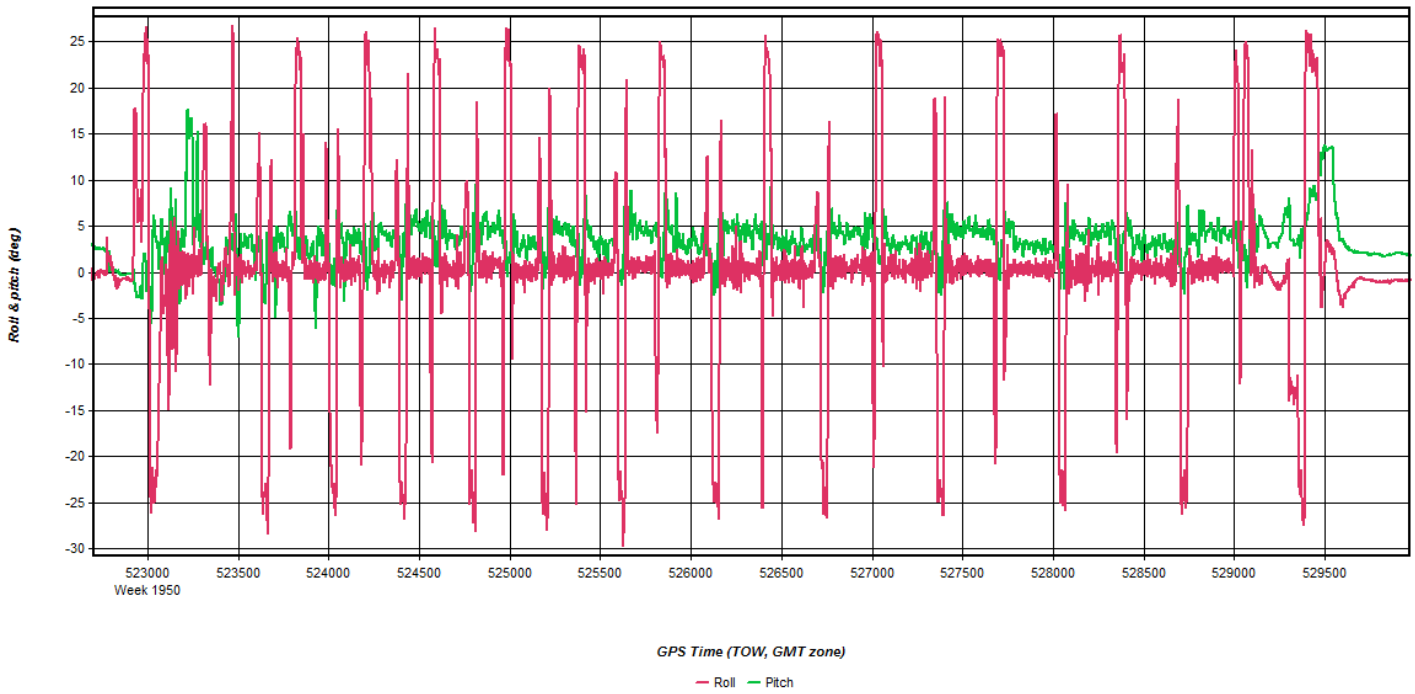
May 26, 2017-A (N208NR, SN8146) 1
May 27, 2017-A (N208NR, SN8146) 9
May 27, 2017-B (N208NR, SN8146) 17
August 1, 2017-A (N604MD, SN8146) 25
August 1, 2017-B (N604MD, SN8146) 33
August 2, 2017-A (N604MD, SN8146) 41
August 4, 2017-A (N604MD, SN8146) 49
August 4, 2017-B (N604MD, SN8146) 57
August 4, 2017-A (C-FFRY, SN2220754) 62
August 5, 2017-A (N604MD, SN8146) 70
August 5, 2017-B (N604MD, SN8146) 78
August 5, 2017-C (N604MD, SN8146) 83
August 5, 2017-A (C-FFRY, SN2220754) 91
August 7, 2017-A (C-FFRY, SN2220754) 99
August 8, 2017-A (N604MD, SN8146) 104
August 8, 2017-B (N604MD, SN8146) 112
August 8, 2017-A (C-FFRY, SN2220754) 116
August 9, 2017-A (N604MD, SN8146) 124
August 9, 2017-B (N604MD, SN8146) 131
August 9, 2017-A (C-FFRY, SN2220754) 136
August 10, 2017-A (N604MD, SN8146) 144
Sept. 3, 2017-A (N604MD, SN8146) 152
Sept. 3, 2017-B (N604MD, SN8146) 160
Sept. 3, 2017-A (N44RL, SN2222738) 164
Sept. 5, 2017-A (N604MD, SN8146) 172
Sept. 6, 2017-A (N604MD, SN8146) 180
Sept. 13, 2017-B (C-FFRY, SN2220754) 187
Sept. 14, 2017-A (C-FFRY, SN2220754) 191
Oct. 1, 2017-A (N44RL, SN2221238) 195
Oct. 2, 2017-A (N44RL, SN2222738) 200

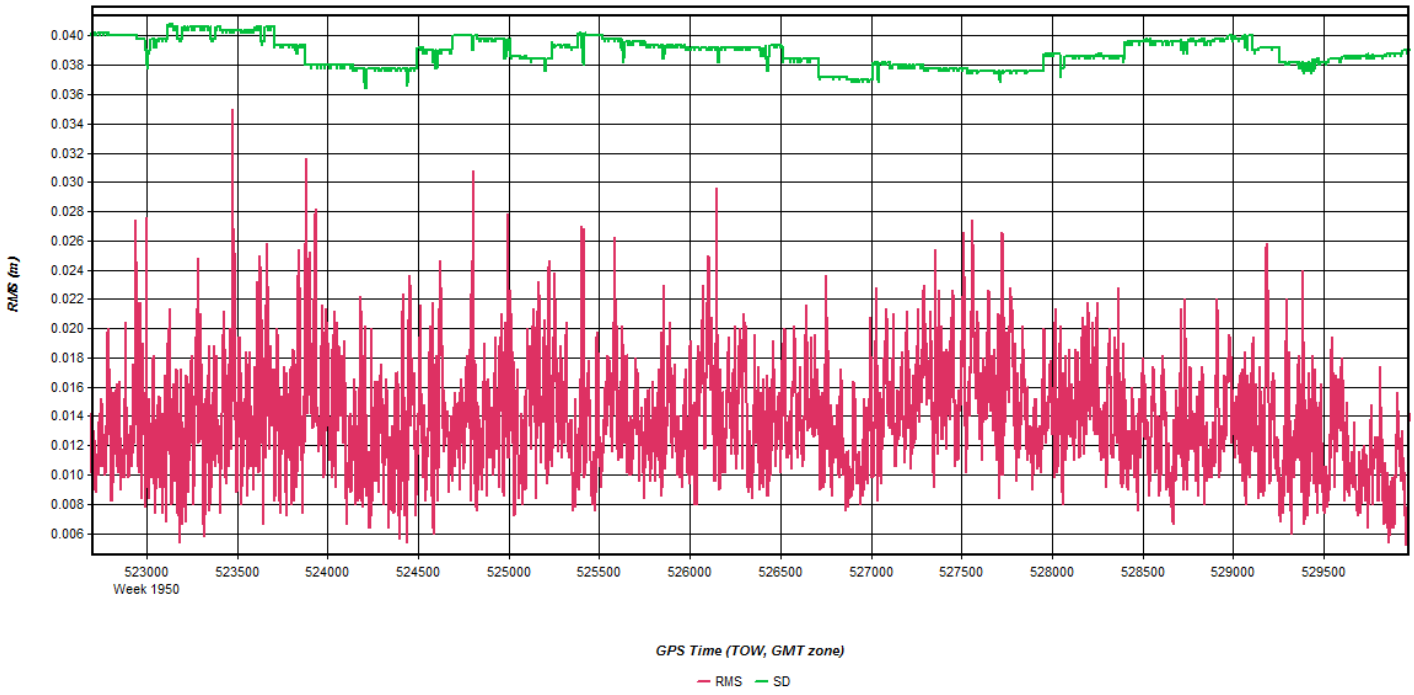
May 26, 2017-A (N208NR, SN8146)

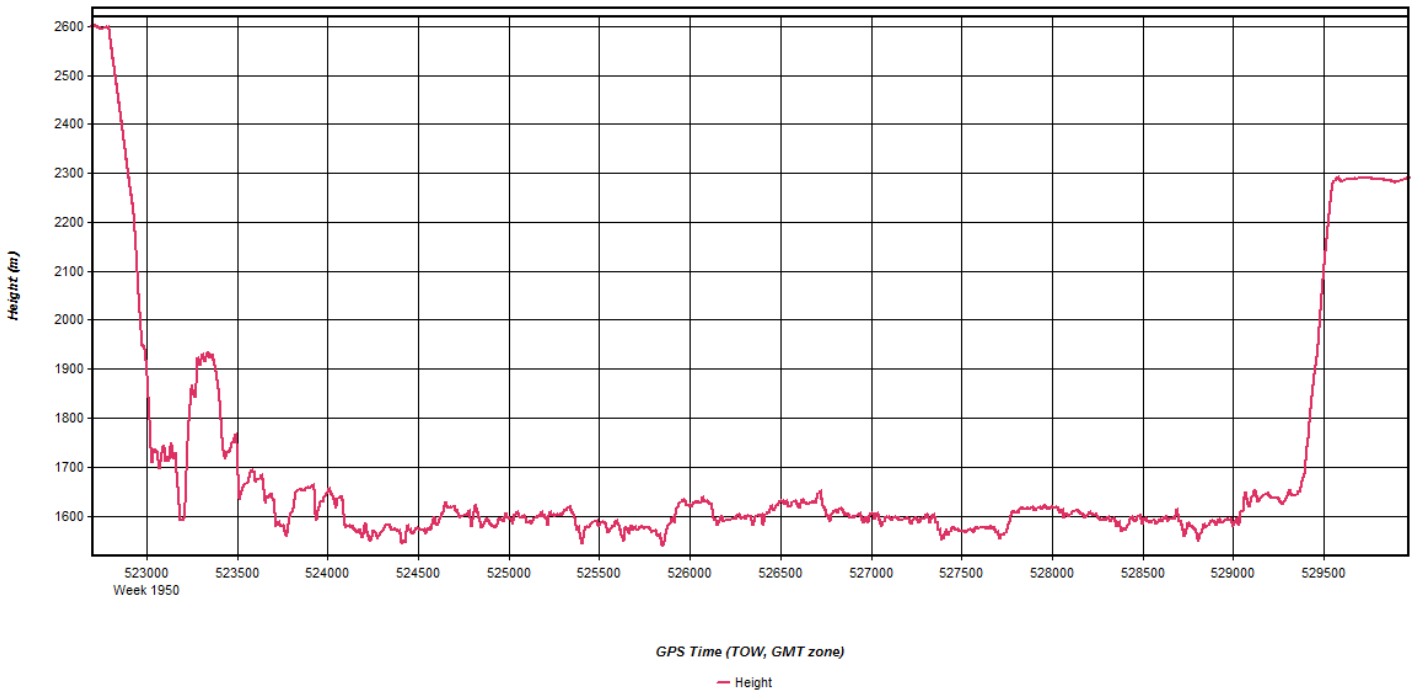

TBRD
ARTK_REV
AB49
3 km

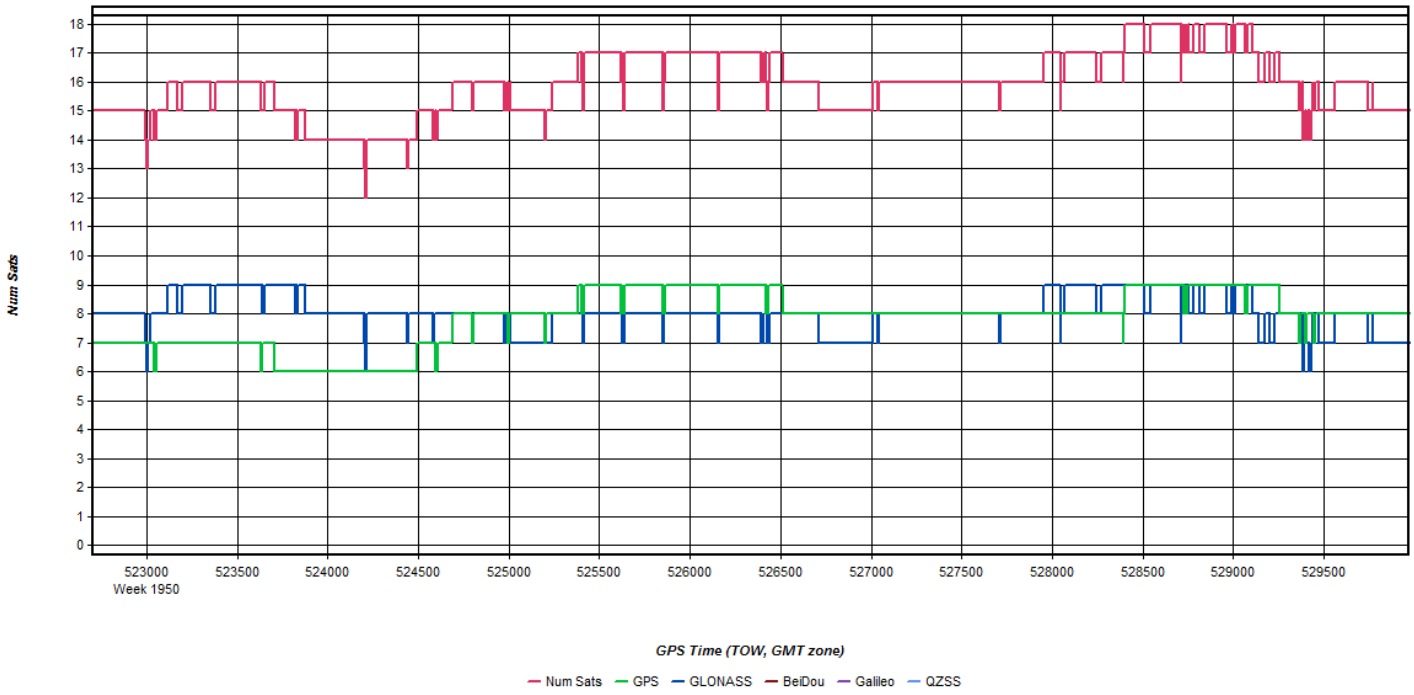

PDOP
1.60
1.55
1.50
1.45
1.40
1.35
1.30
1.25
1.20
1.15
1.10
1.05
1.00
0.95
0.90
0.85
0.80
0.75
523000
Week 1950
523500
524000
524500
525000
525500
526000
526500
527000
527500
528000
528500
529000
529500
GPS Time (TOW, GMT zone)
PDOP

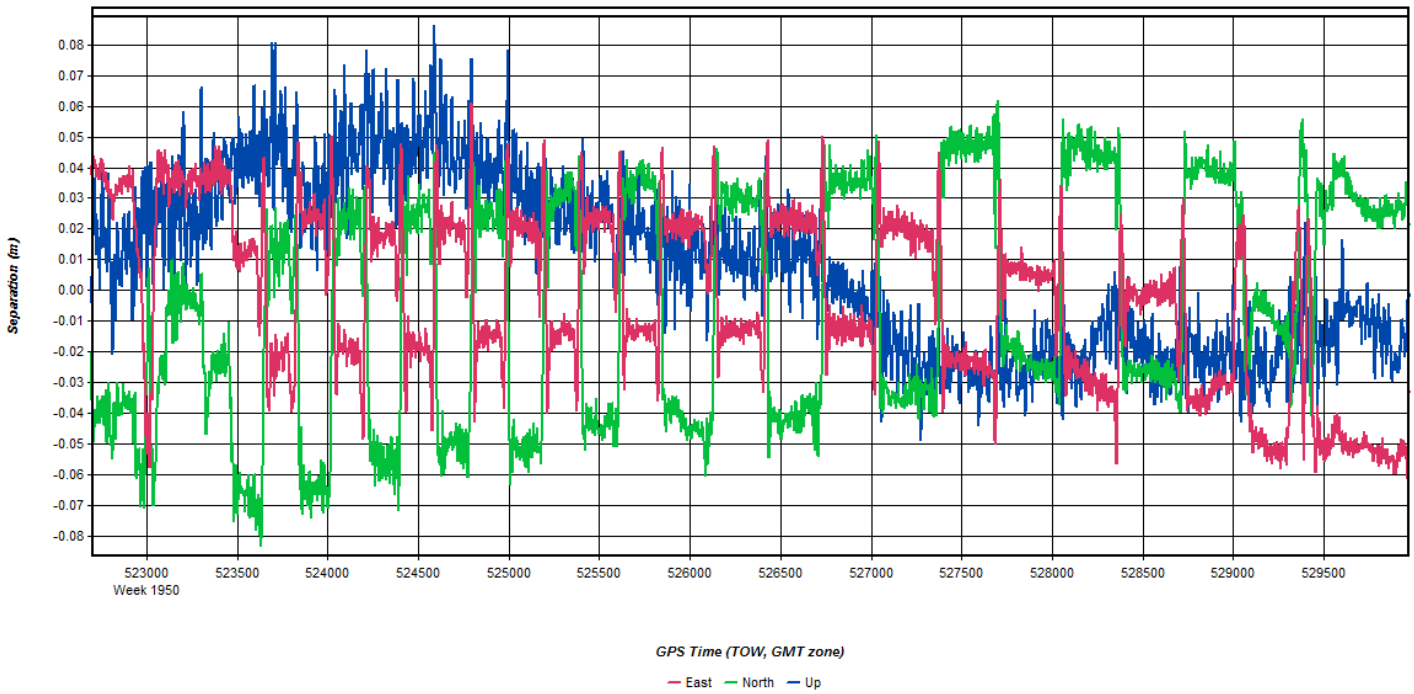

Status
2
1
0
-1
523000
Week 1950
523500
524000
524500
525000
525500
526000
526500
527000
527500
528000
528500
529000
529500
GPS Time (TOW, GMT zone)
Float
Forward Fixed
Reverse Fixed
Fixed (2 or more)

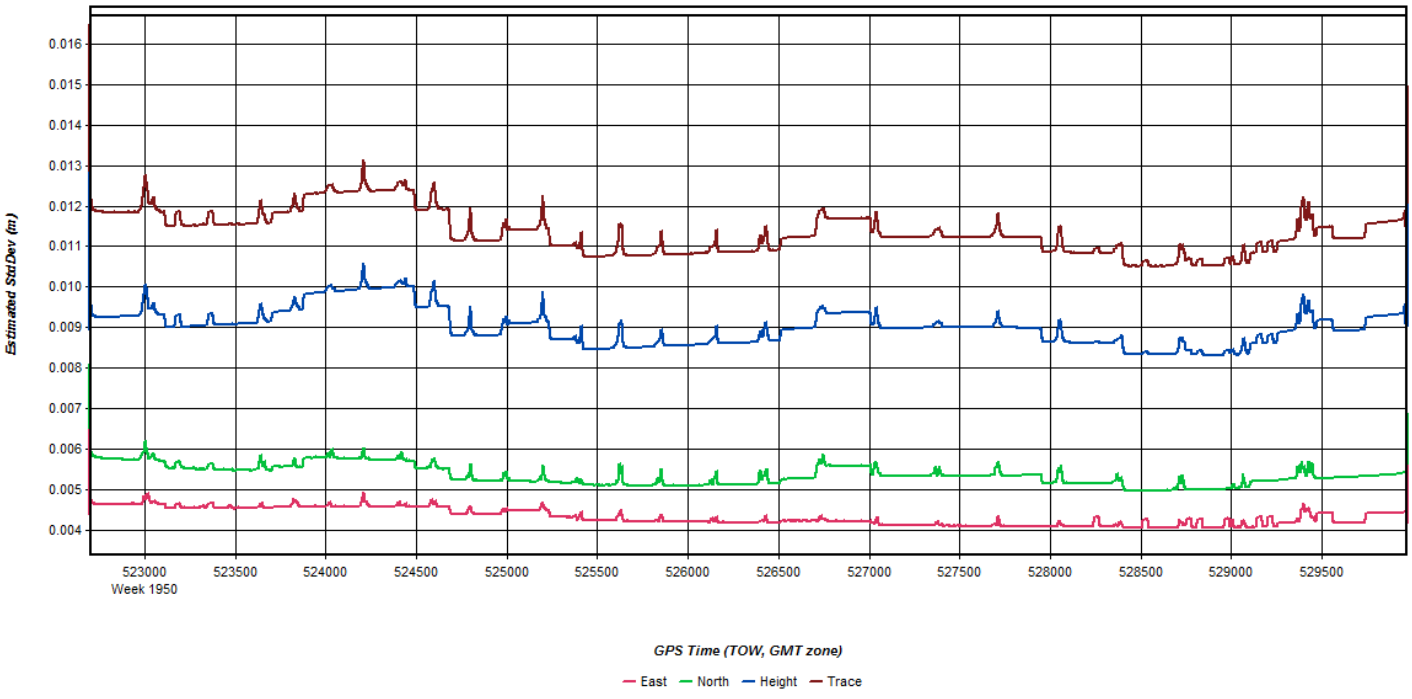

Roll & pitch (deg)
25
20
15
10
5
0
-5
-10
-15
-20
-25
-30
523000
Week 1950
523500
524000
524500
525000
525500
526000
526500
527000
527500
528000
528500
529000
529500
GPS Time (TOW, GMT zone)
Roll
Pitch

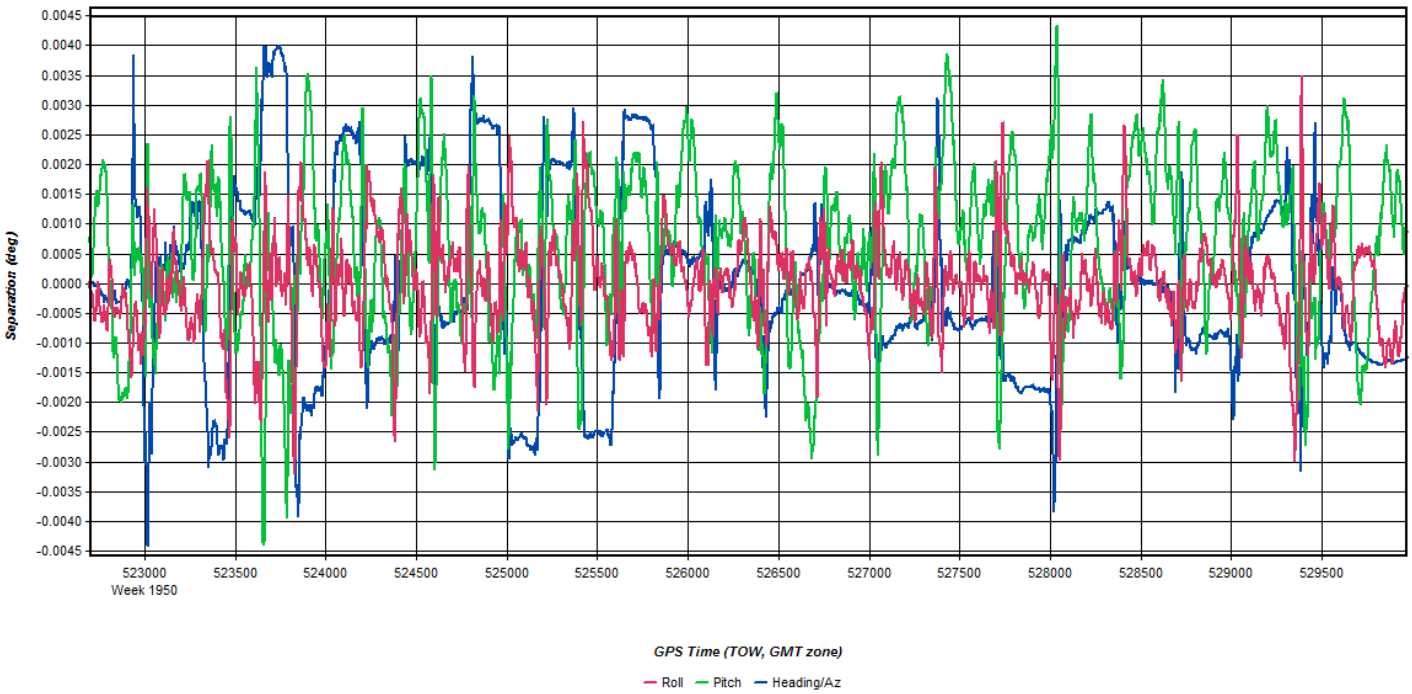

RMS (m)
0.040
0.038
0.036
0.034
0.032
0.030
0.028
0.026
0.024
0.022
0.020
0.018
0.016
0.014
0.012
0.010
0.008
0.006
523000
Week 1950
523500
524000
524500
525000
525500
526000
526500
527000
527500
528000
528500
529000
529500
GPS Time (TOW, GMT zone)
RMS
SD

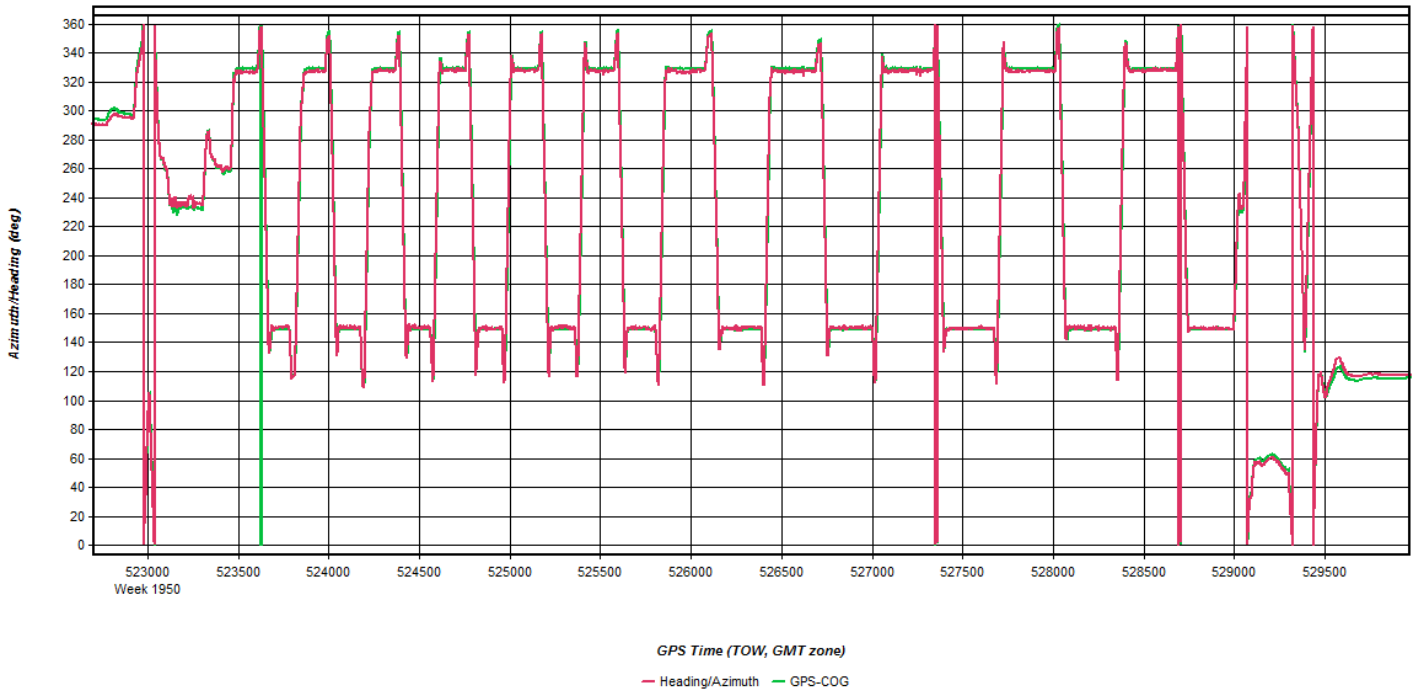

Height (m)
2600
2500
2400
2300
2200
2100
2000
1900
1800
1700
1600
523000
Week 1950
523500
524000
524500
525000
525500
526000
526500
527000
527500
528000
528500
529000
529500
GPS Time (TOW, GMT zone)
Height

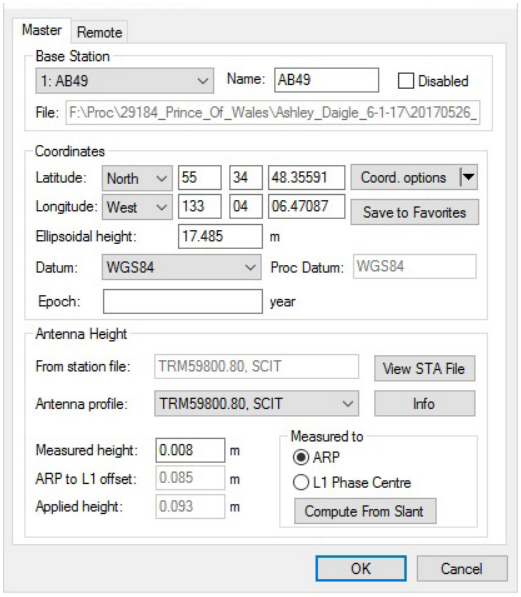

Num Sats
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
523000
Week 1950
523500
524000
524500
525000
525500
526000
526500
527000
527500
528000
528500
529000
529500
GPS Time (TOW, GMT zone)
Num Sats
GPS
GLONASS
BeiDou
Galileo
QZSS

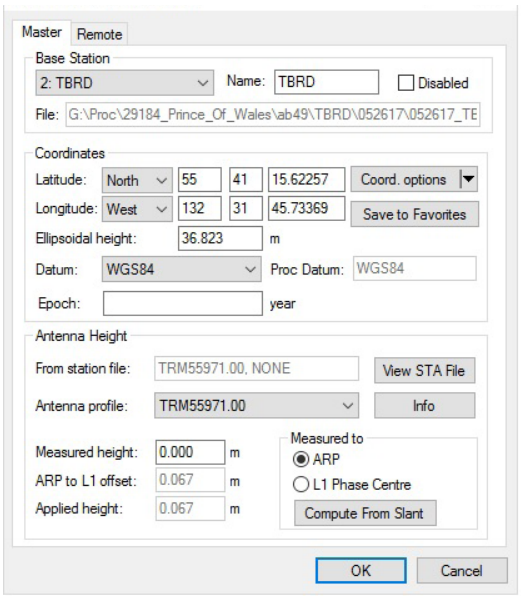

Separation (m)
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
-0.01
-0.02
-0.03
-0.04
-0.05
-0.06
-0.07
-0.08
523000
Week 1950
523500
524000
524500
525000
525500
526000
526500
527000
527500
528000
528500
529000
529500
GPS Time (TOW, GMT zone)
East
North
Up


Estimated StdDev (m)
0.016
0.015
0.014
0.013
0.012
0.011
0.010
0.009
0.008
0.007
0.006
0.005
0.004
523000
Week 1950
523500
524000
524500
525000
525500
526000
526500
527000
527500
528000
528500
529000
529500
GPS Time (TOW, GMT zone)
East
North
Height
Trace

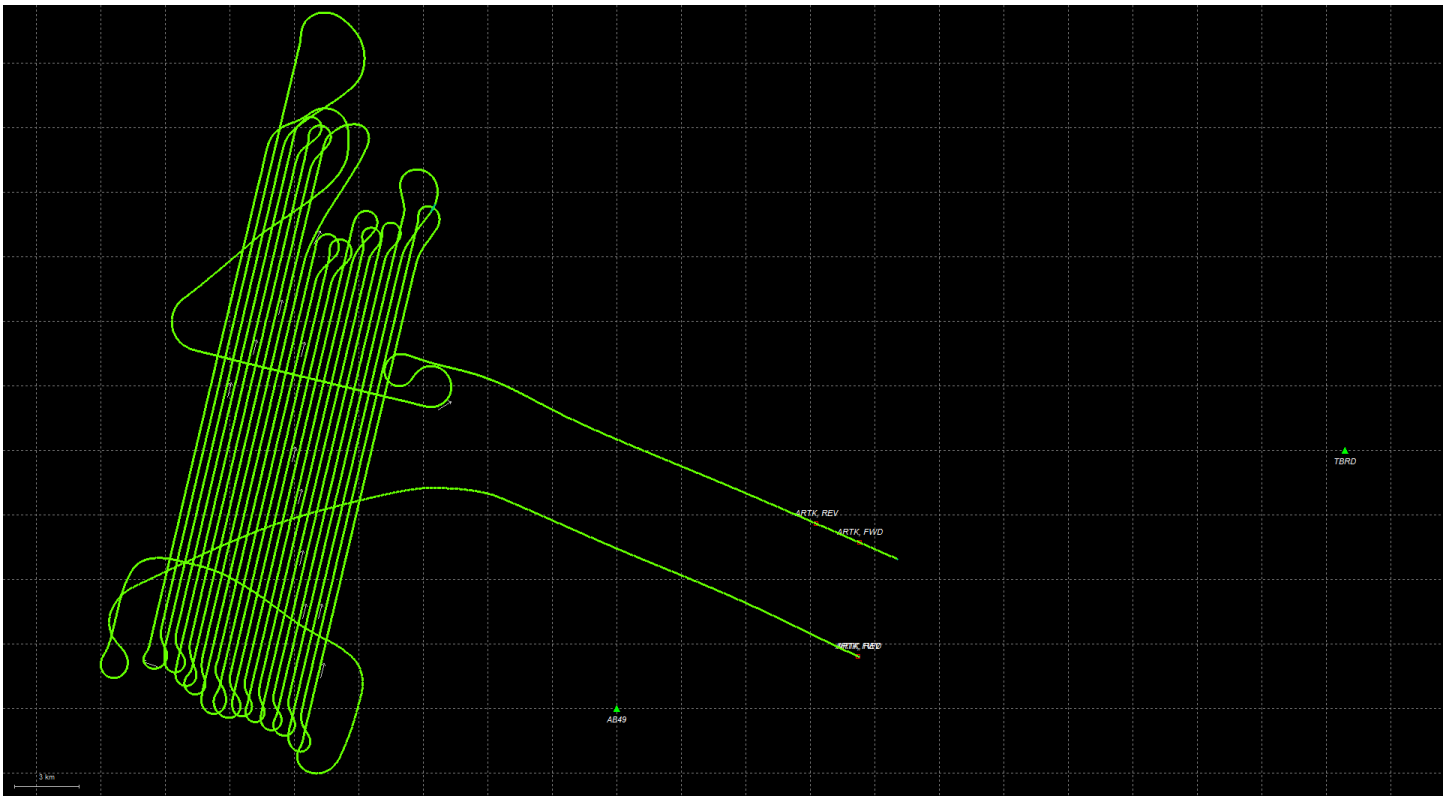

Separation (deg)
0.0045
0.0040
0.0035
0.0030
0.0025
0.0020
0.0015
0.0010
0.0005
0.0000
-0.0005
-0.0010
-0.0015
-0.0020
-0.0025
-0.0030
-0.0035
-0.0040
-0.0045
523000
Week 1950
523500
524000
524500
525000
525500
526000
526500
527000
527500
528000
528500
529000
529500
GPS Time (TOW, GMT zone)
Roll
Pitch
Heading/Az

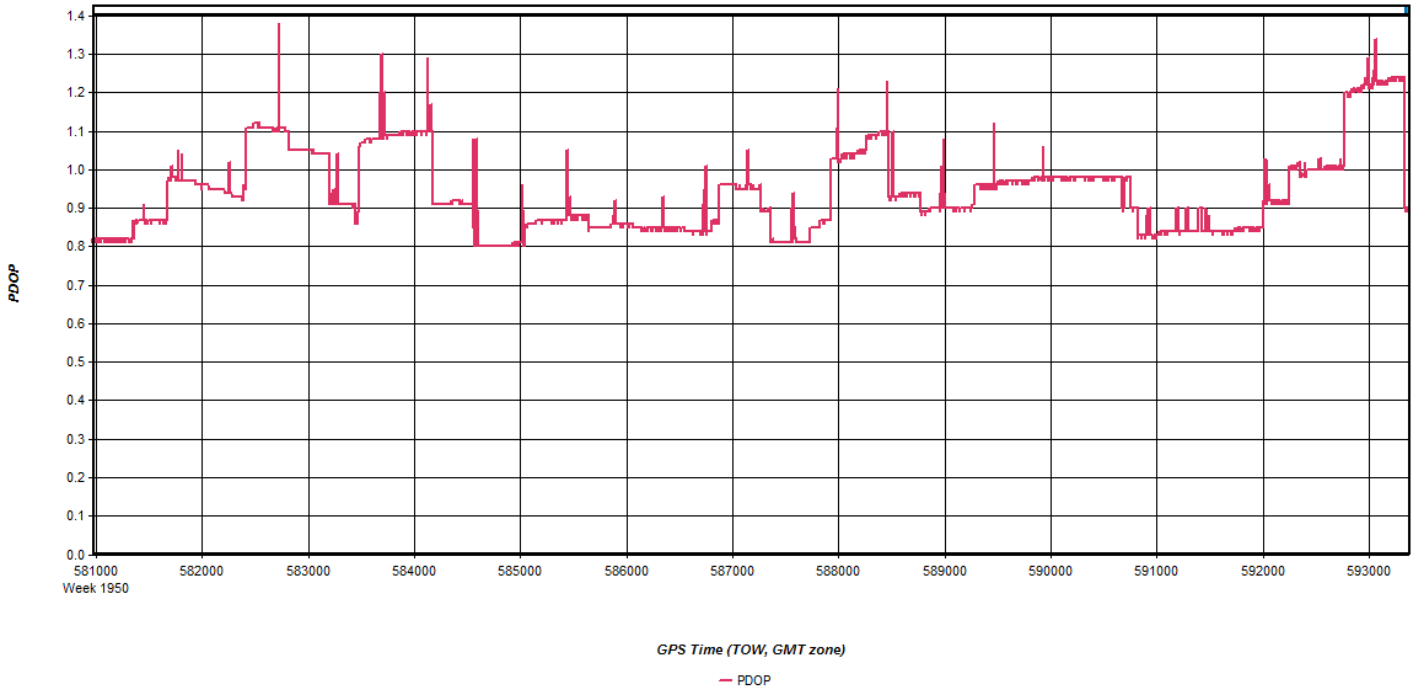

Azimuth/Heading (deg)
360
340
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
523000
Week 1950
523500
524000
524500
525000
525500
526000
526500
527000
527500
528000
528500
529000
529500
GPS Time (TOW, GMT zone)
Heading/Azimuth
GPS-COG

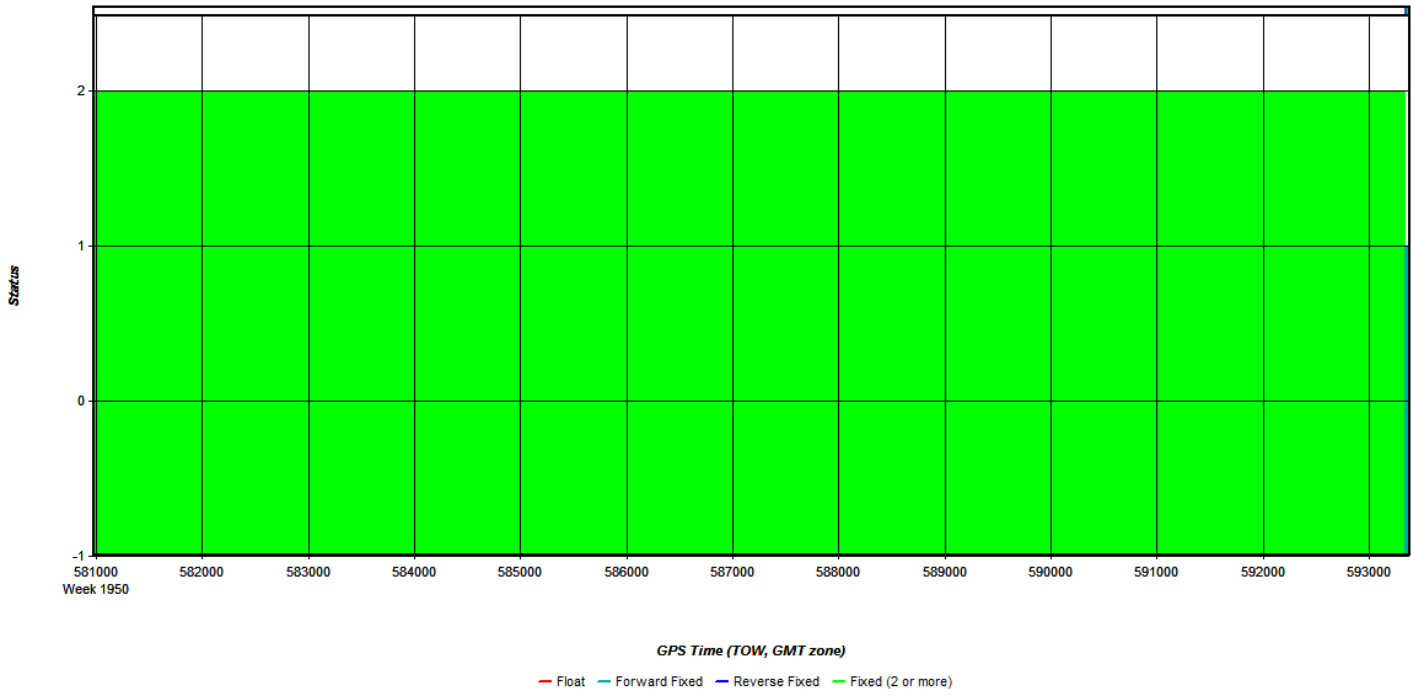

Master
Remote
Base Station
1: AB49
Name:
AB49
Disabled
File:
F:\Proc\29184_Prince_Of_Wales\Ashley_Daigle_6-1-17\20170526_
Coordinates
Latitude:
North
55
34
48.35591
Coord. options
Longitude:
West
133
04
06.47087
Save to Favorites
Ellipsoidal height:
17.485
m
Datum:
WGS84
Proc Datum:
WGS84
Epoch:
year
Antenna Height
From station file:
TRM59800.80, SCIT
View STA File
Antenna profile:
TRM59800.80, SCIT
Info
Measured height:
0.008
m
Measured to
ARP
ARP to L1 offset:
0.085
m
L1 Phase Centre
Applied height:
0.093
m
Compute From Slant
OK
Cancel

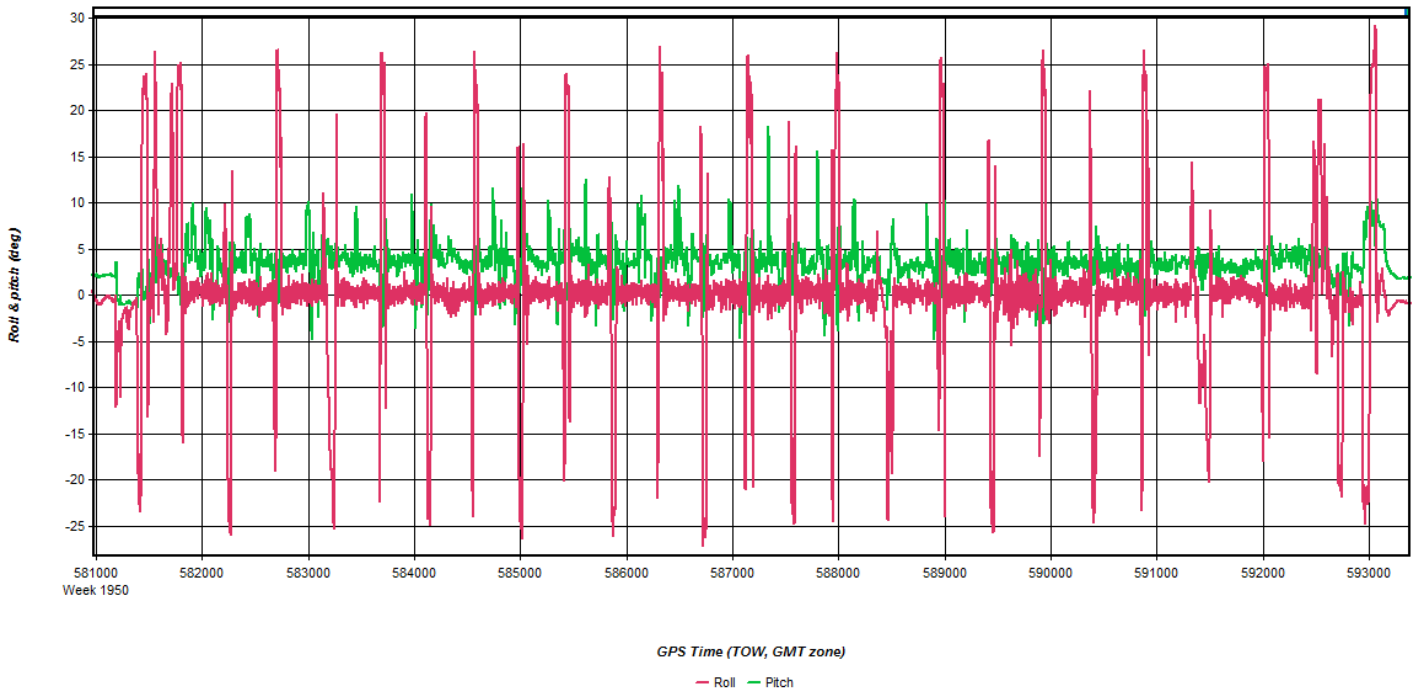

Master
Remote
Base Station
2: TBRD
Name:
TBRD
Disabled
File:
G:\Proc\29184_Prince_Of_Wales\ab49\TBRD\052617\052617_TE
Coordinates
Latitude:
North
55
41
15.62257
Coord. options
Longitude:
West
132
31
45.73369
Save to Favorites
Ellipsoidal height:
36.823
m
Datum:
WGS84
Proc Datum:
WGS84
Epoch:
year
Antenna Height
From station file:
TRM55971.00, NONE
View STA File
Antenna profile:
TRM55971.00
Info
Measured height:
0.000
m
Measured to
ARP
ARP to L1 offset:
0.067
m
L1 Phase Centre
Applied height:
0.067
m
Compute From Slant
OK
Cancel

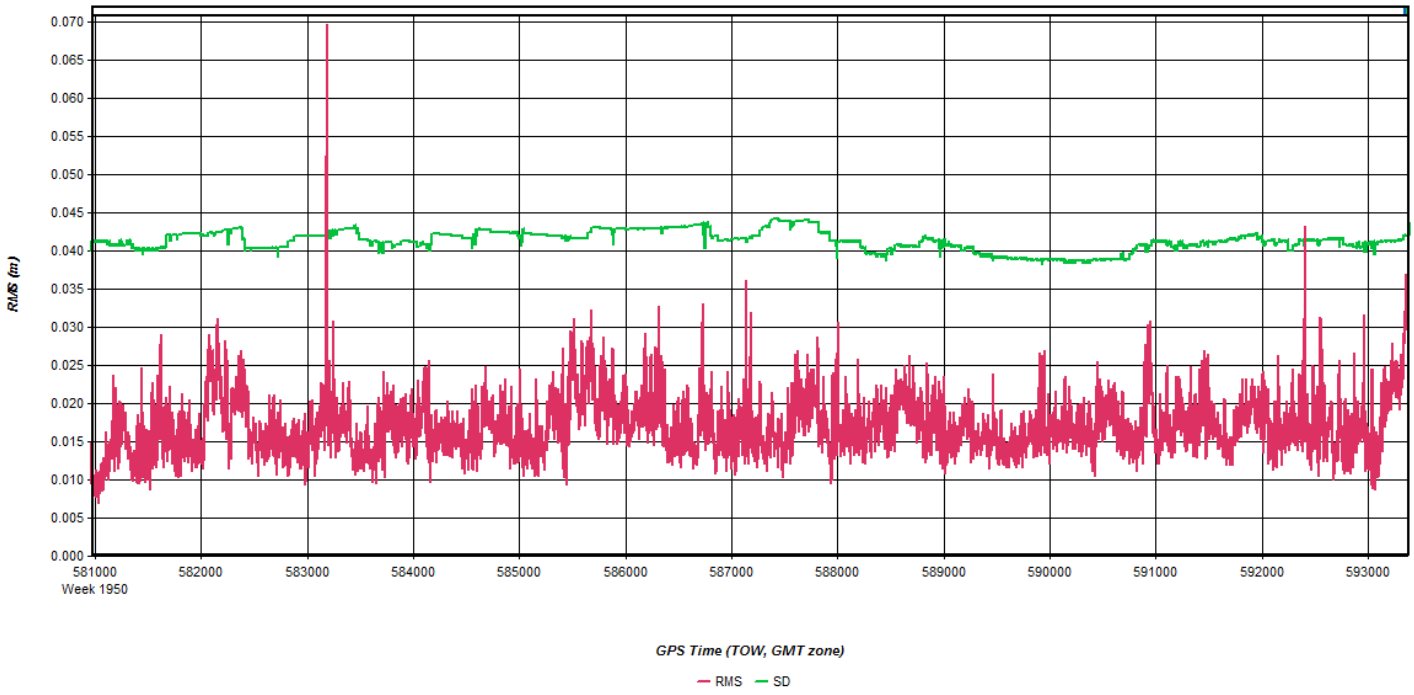
May 27, 2017-A (N208NR, SN8146)

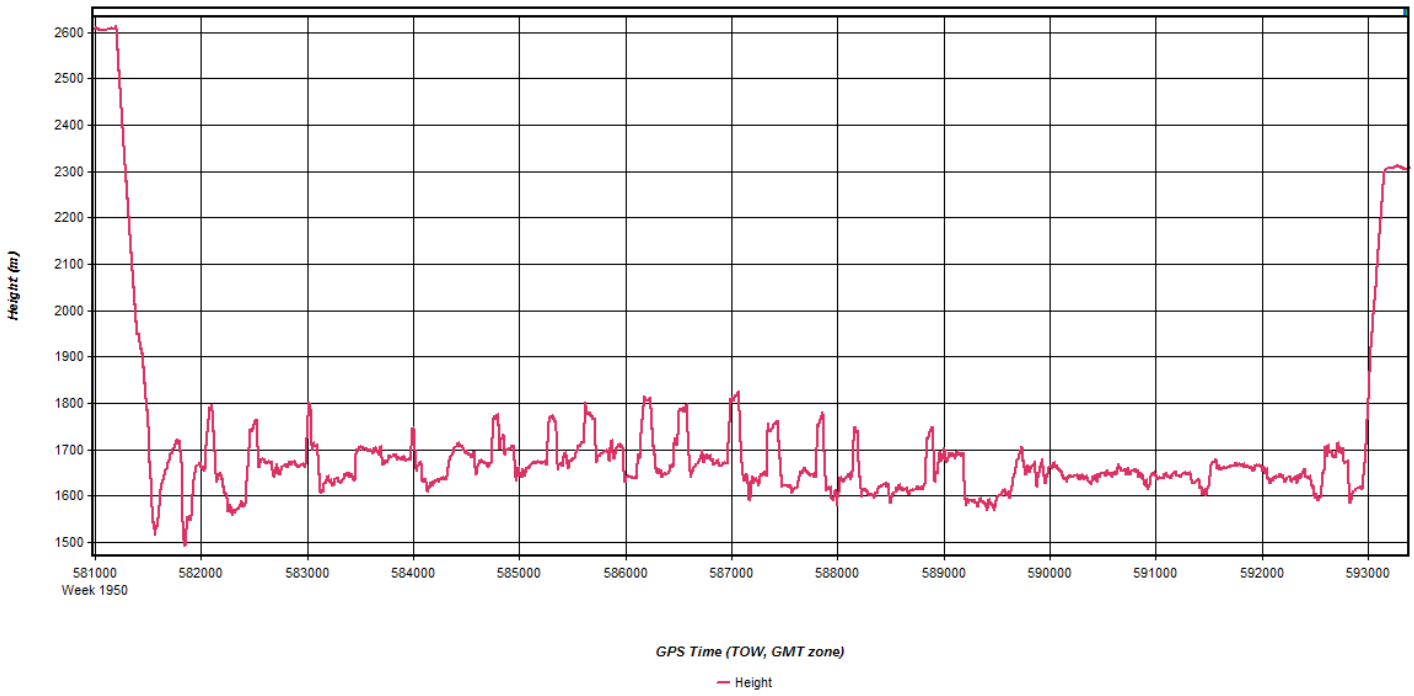

ARTK_REV
ARTK_FWD
TBRD
A849

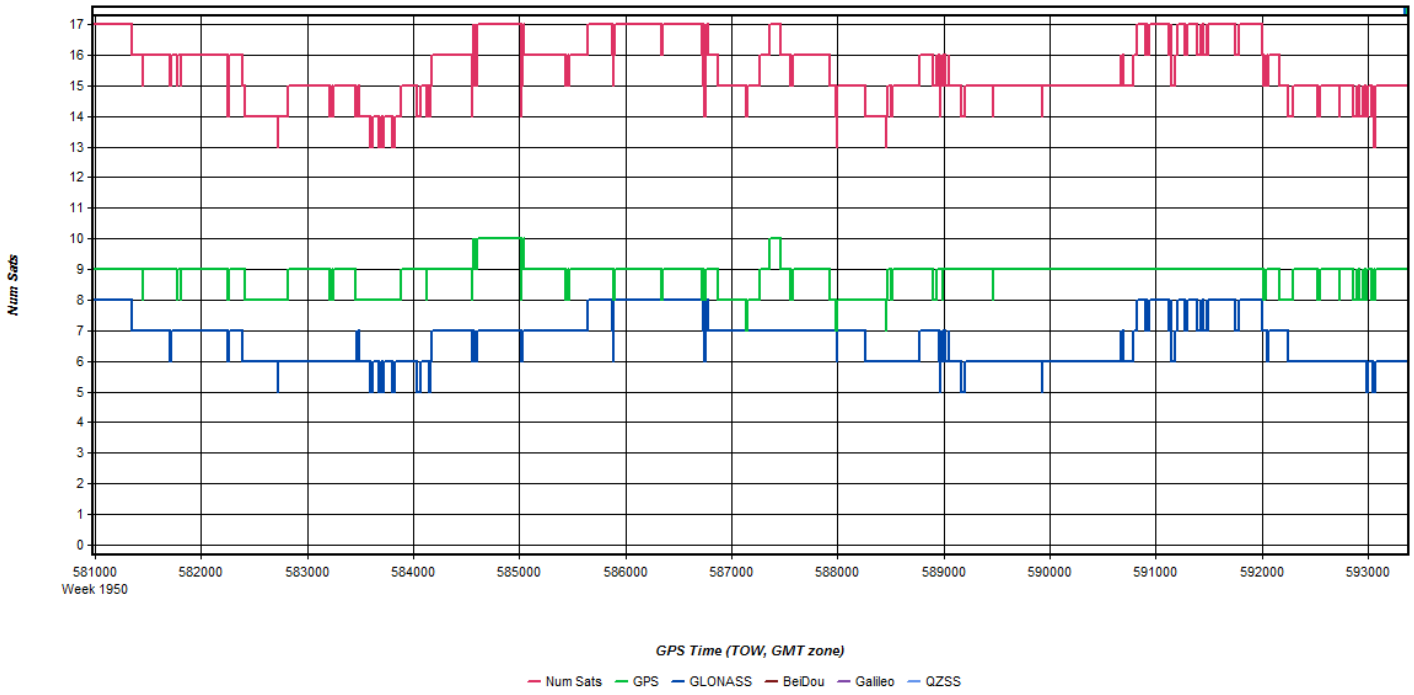

PDOP
1.4
1.3
1.2
1.1
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
581000
Week 1950
582000
583000
584000
585000
586000
587000
588000
589000
590000
591000
592000
593000
GPS Time (TOW, GMT zone)
PDOP

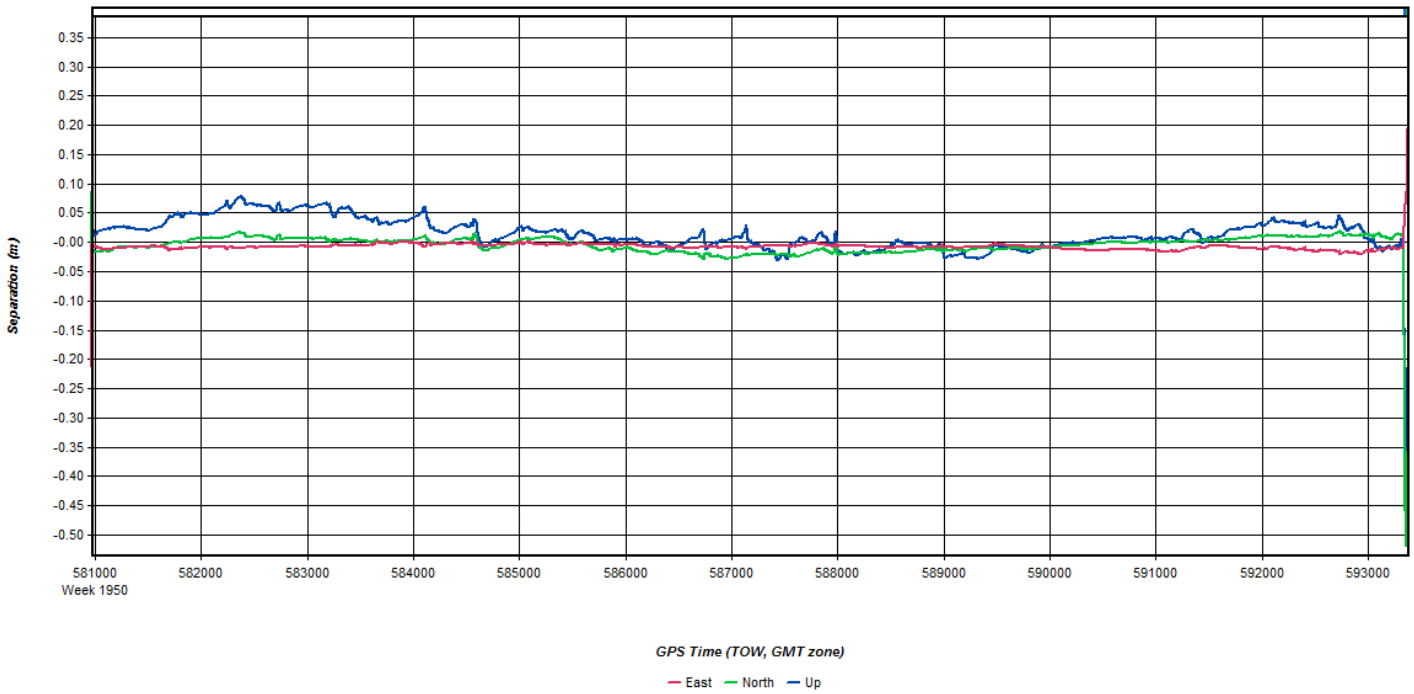

Status
2
1
0
-1
581000
Week 1950
582000
583000
584000
585000
586000
587000
588000
589000
590000
591000
592000
593000
GPS Time (TOW, GMT zone)
Float
Forward Fixed
Reverse Fixed
Fixed (2 or more)

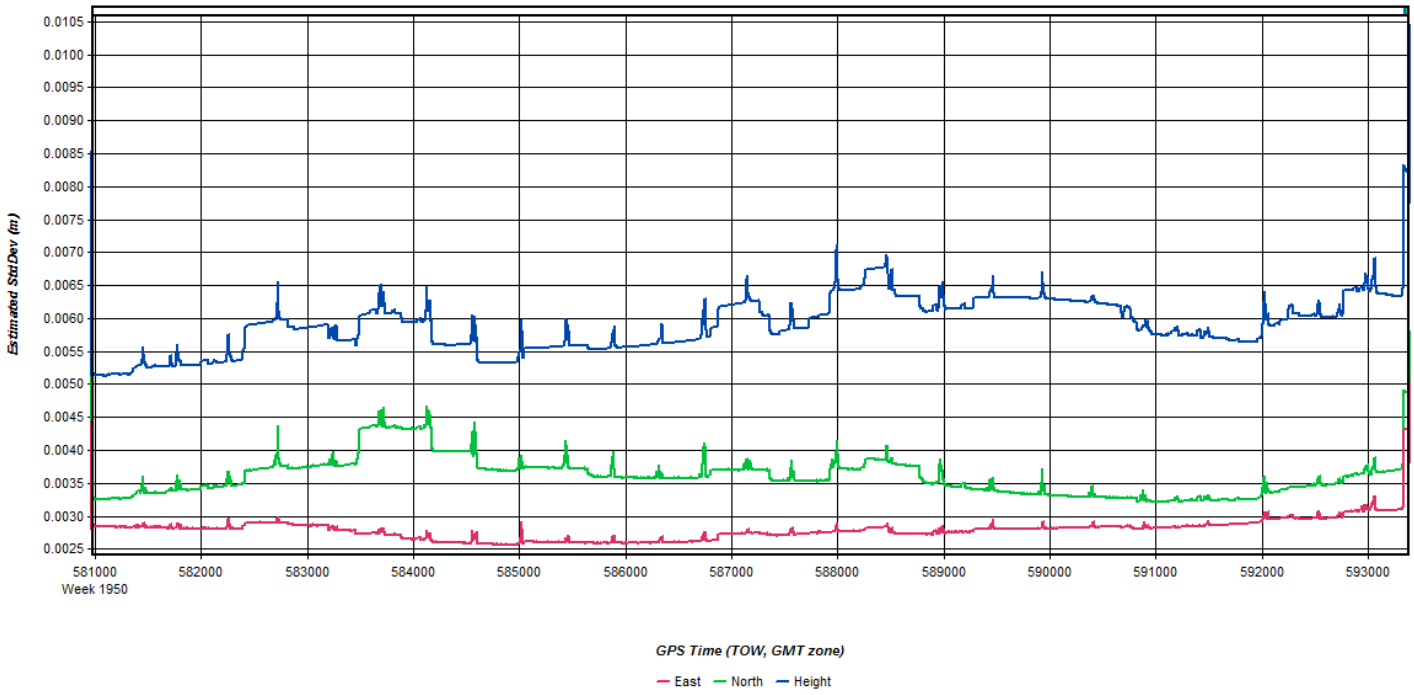

Roll & pitch (deg)
30
25
20
15
10
5
0
-5
-10
-15
-20
-25
581000
Week 1950
582000
583000
584000
585000
586000
587000
588000
589000
590000
591000
592000
593000
GPS Time (TOW, GMT zone)
Roll
Pitch

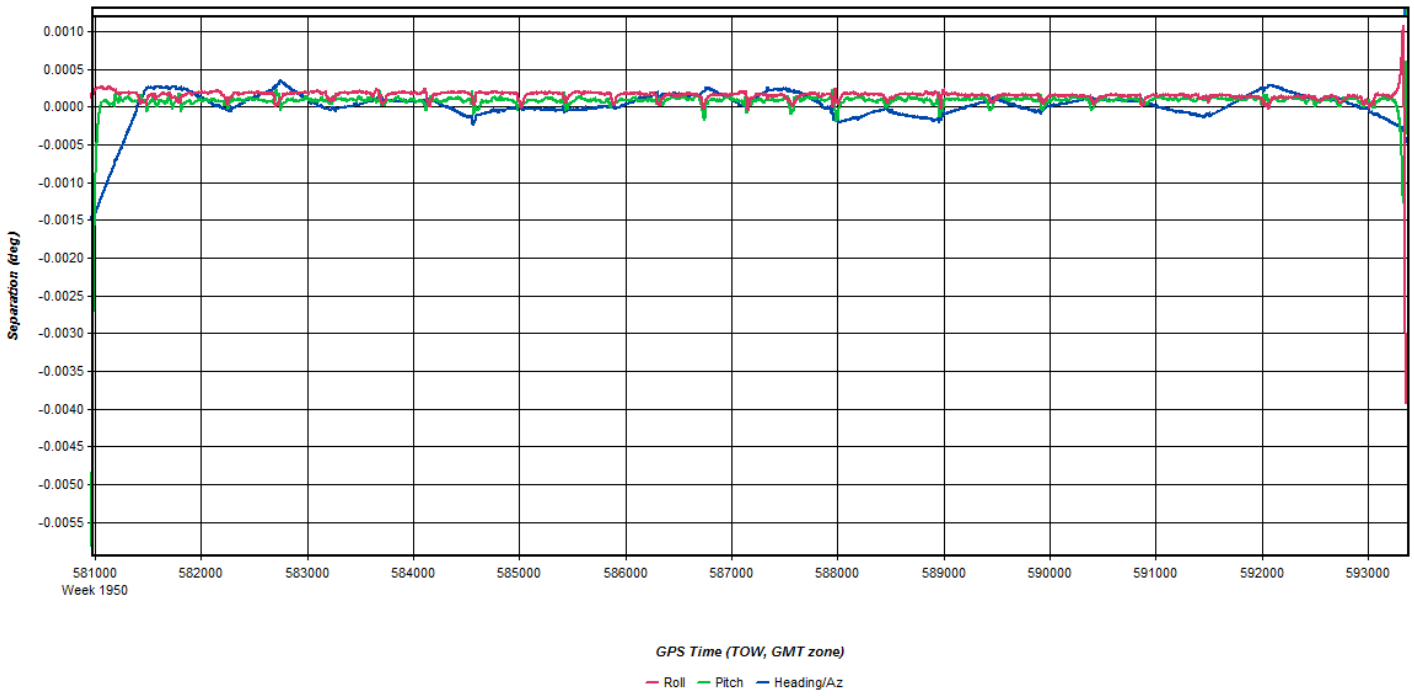

RMS (m)
0.070
0.065
0.060
0.055
0.050
0.045
0.040
0.035
0.030
0.025
0.020
0.015
0.010
0.005
0.000
581000
Week 1950
582000
583000
584000
585000
586000
587000
588000
589000
590000
591000
592000
593000
GPS Time (TOW, GMT zone)
RMS
SD

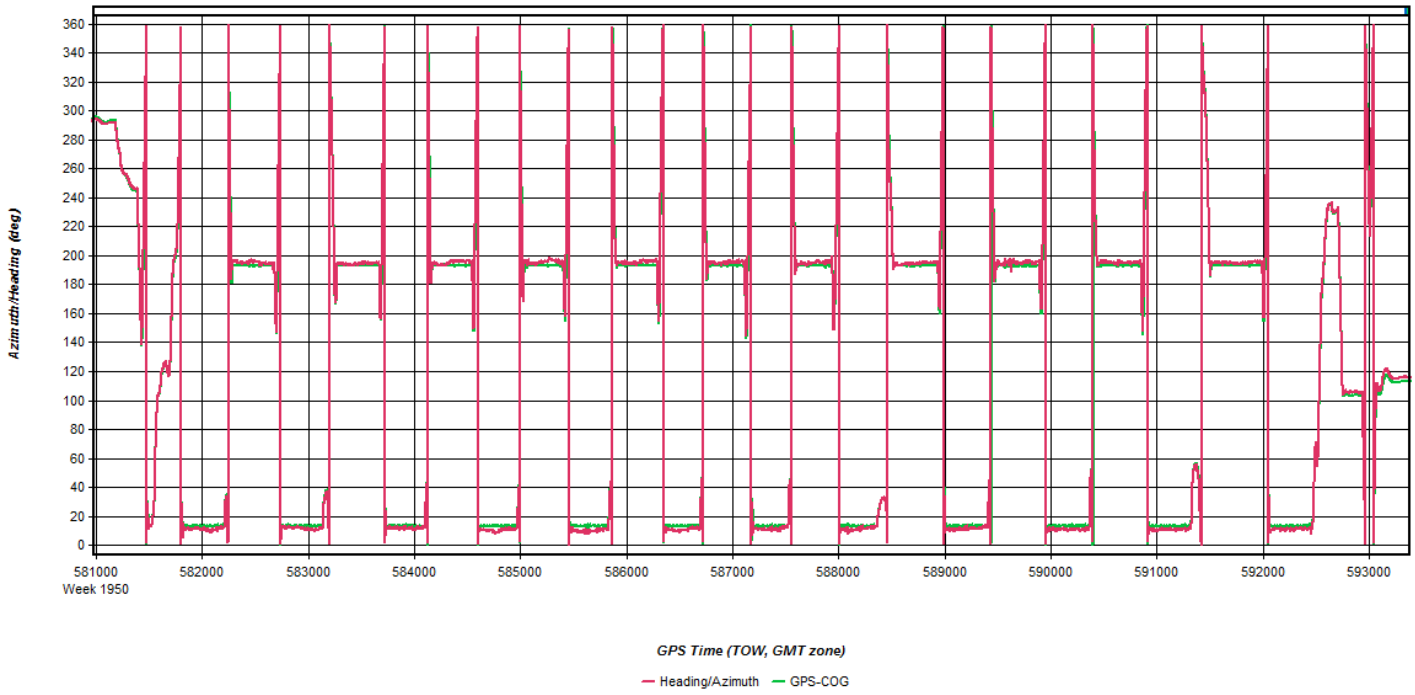

Height (m)
2600
2500
2400
2300
2200
2100
2000
1900
1800
1700
1600
1500
581000
Week 1950
582000
583000
584000
585000
586000
587000
588000
589000
590000
591000
592000
593000
GPS Time (TOW, GMT zone)
Height

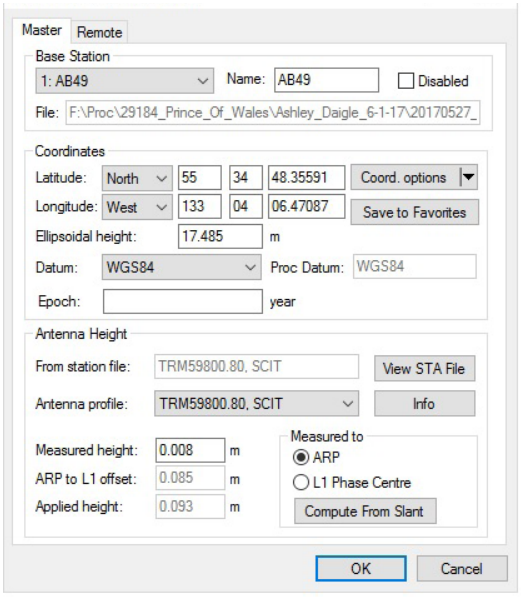

Num Sats
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
581000
Week 1950
582000
583000
584000
585000
586000
587000
588000
589000
590000
591000
592000
593000
GPS Time (TOW, GMT zone)
Num Sats
GPS
GLONASS
BeiDou
Galileo
QZSS

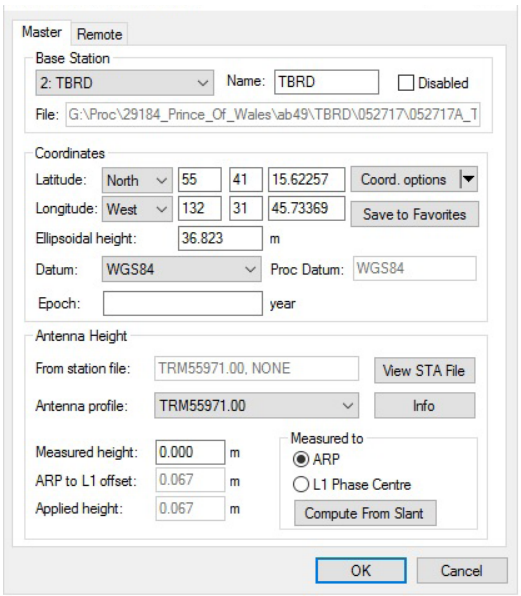

Separation (m)
0.35
0.30
0.25
0.20
0.15
0.10
0.05
-0.00
-0.05
-0.10
-0.15
-0.20
-0.25
-0.30
-0.35
-0.40
-0.45
-0.50
581000
Week 1950
582000
583000
584000
585000
586000
587000
588000
589000
590000
591000
592000
593000
GPS Time (TOW, GMT zone)
East
North
Up


Estimated StdDev (m)
0.0105
0.0100
0.0095
0.0090
0.0085
0.0080
0.0075
0.0070
0.0065
0.0060
0.0055
0.0050
0.0045
0.0040
0.0035
0.0030
0.0025
581000
Week 1950
582000
583000
584000
585000
586000
587000
588000
589000
590000
591000
592000
593000
GPS Time (TOW, GMT zone)
East
North
Height

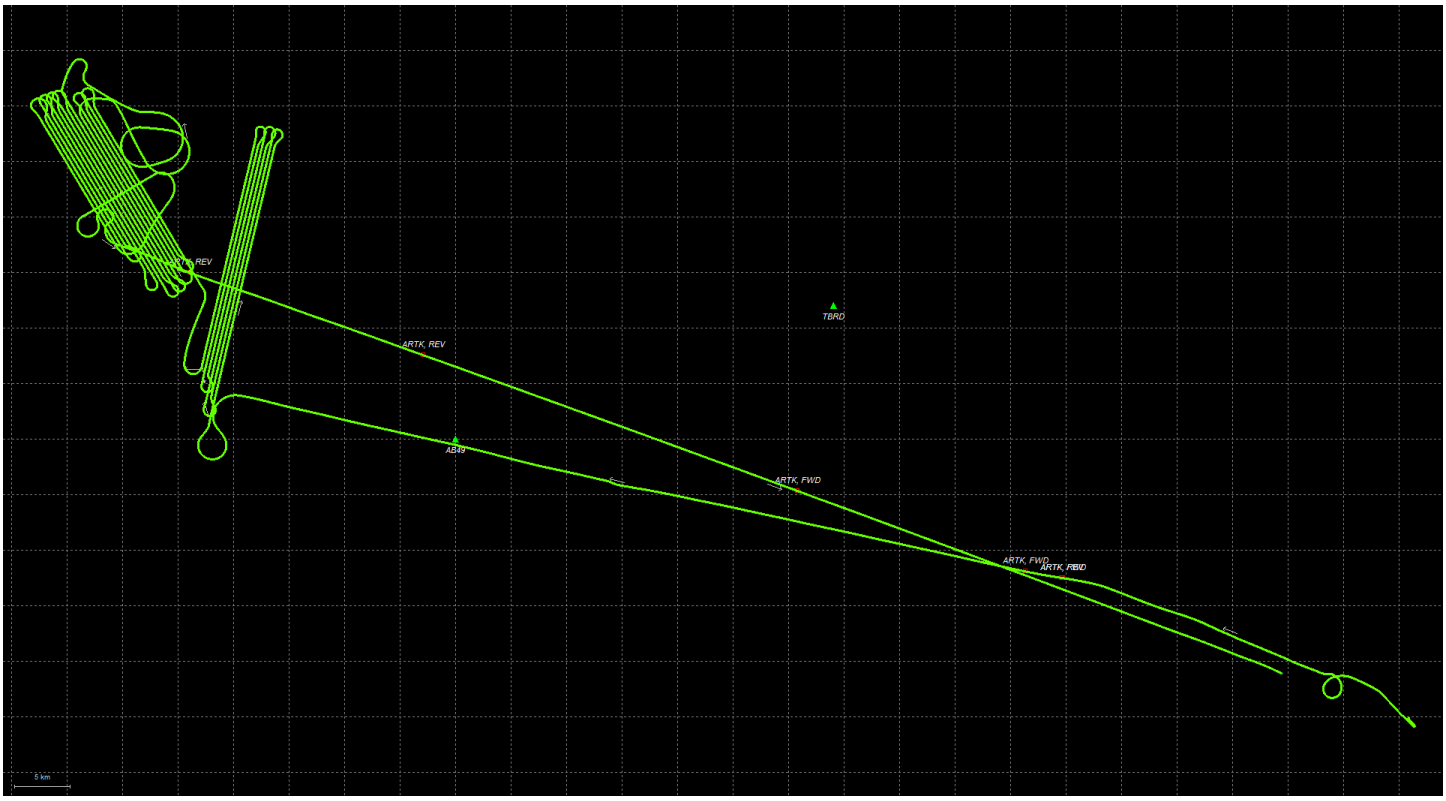

Separation (deg)
0.0010
0.0005
0.0000
-0.0005
-0.0010
-0.0015
-0.0020
-0.0025
-0.0030
-0.0035
-0.0040
-0.0045
-0.0050
-0.0055
581000
Week 1950
582000
583000
584000
585000
586000
587000
588000
589000
590000
591000
592000
593000
GPS Time (TOW, GMT zone)
Roll
Pitch
Heading/Az

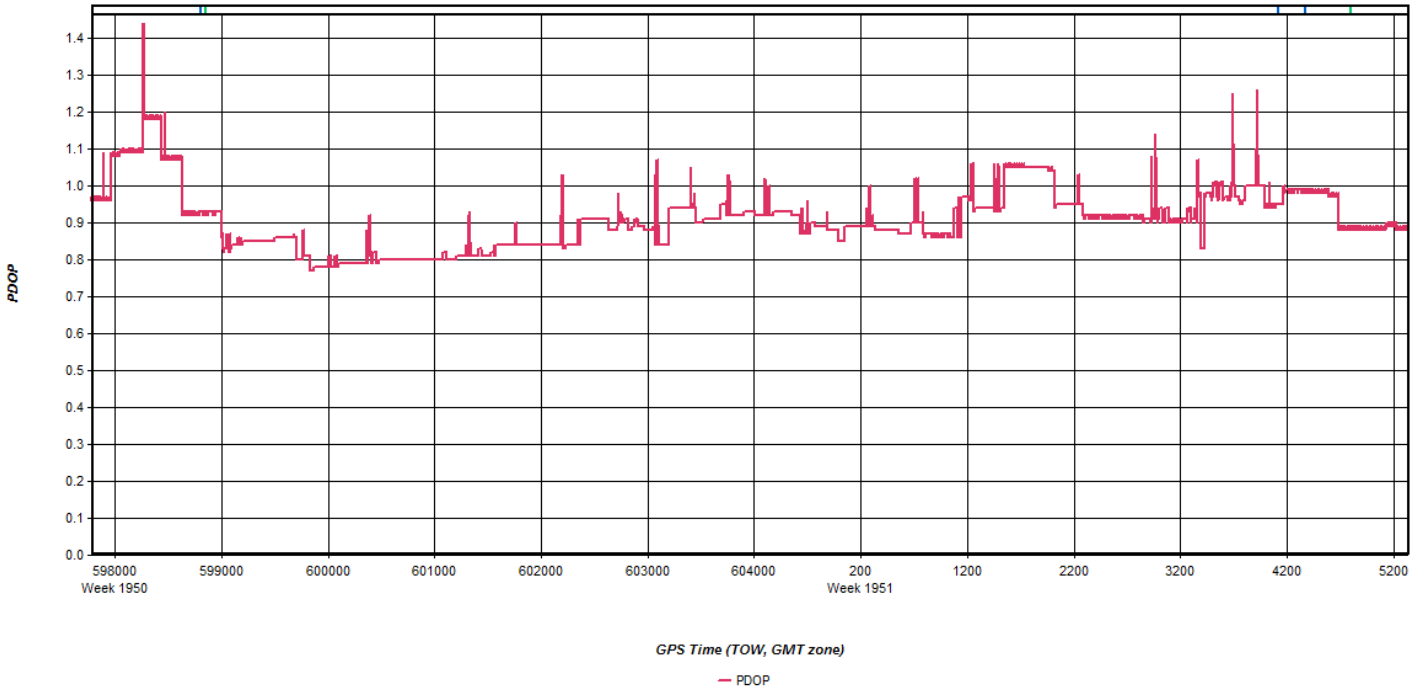

Azimuth/Heading (deg)
360
340
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
581000
Week 1950
582000
583000
584000
585000
586000
587000
588000
589000
590000
591000
592000
593000
GPS Time (TOW, GMT zone)
Heading/Azimuth
GPS-COG

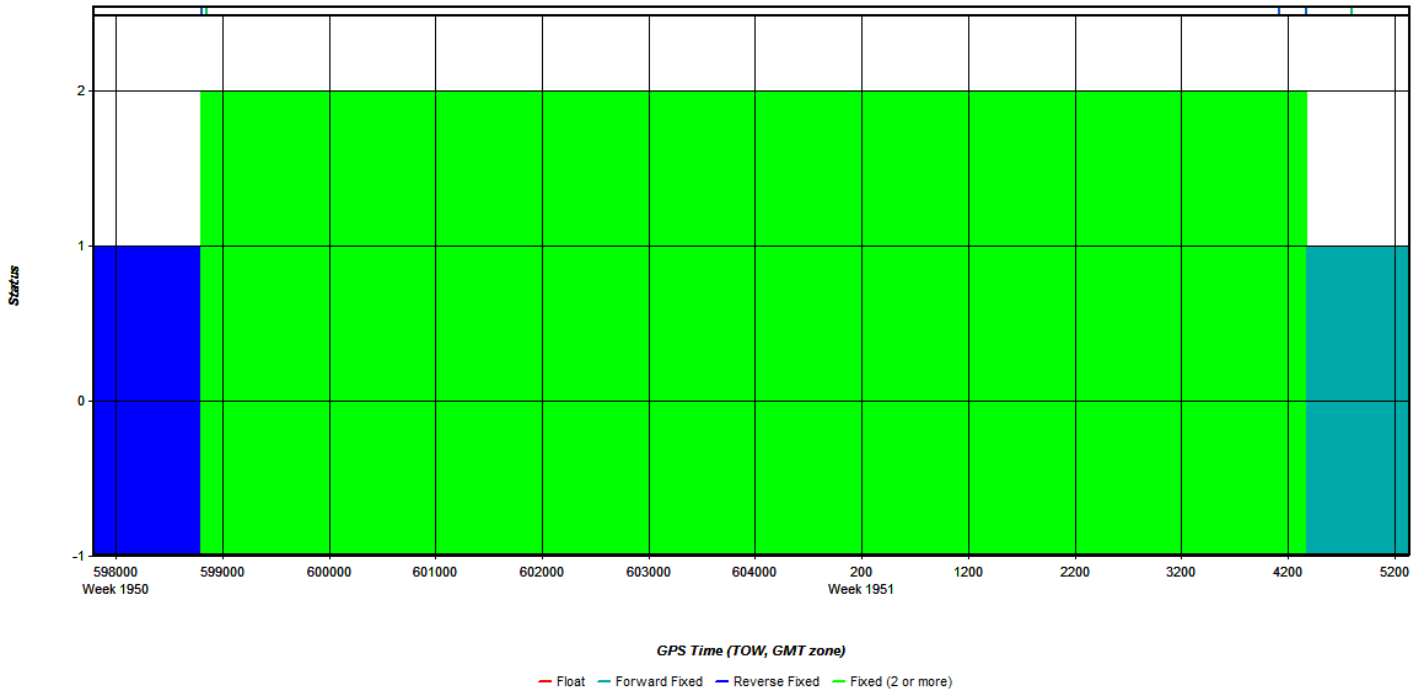

Master
Remote
Base Station
1: AB49
Name:
AB49
Disabled
File:
F:\Proc\29184_Prince_Of_Wales\Ashley_Daigle_6-1-17\20170527_
Coordinates
Latitude:
North
55
34
48.35591
Coord. options
Longitude:
West
133
04
06.47087
Save to Favorites
Ellipsoidal height:
17.485
m
Datum:
WGS84
Proc Datum:
WGS84
Epoch:
year
Antenna Height
From station file:
TRM59800.80, SCIT
View STA File
Antenna profile:
TRM59800.80, SCIT
Info
Measured height:
0.008
m
Measured to
ARP
ARP to L1 offset:
0.085
m
L1 Phase Centre
Applied height:
0.093
m
Compute From Slant
OK
Cancel

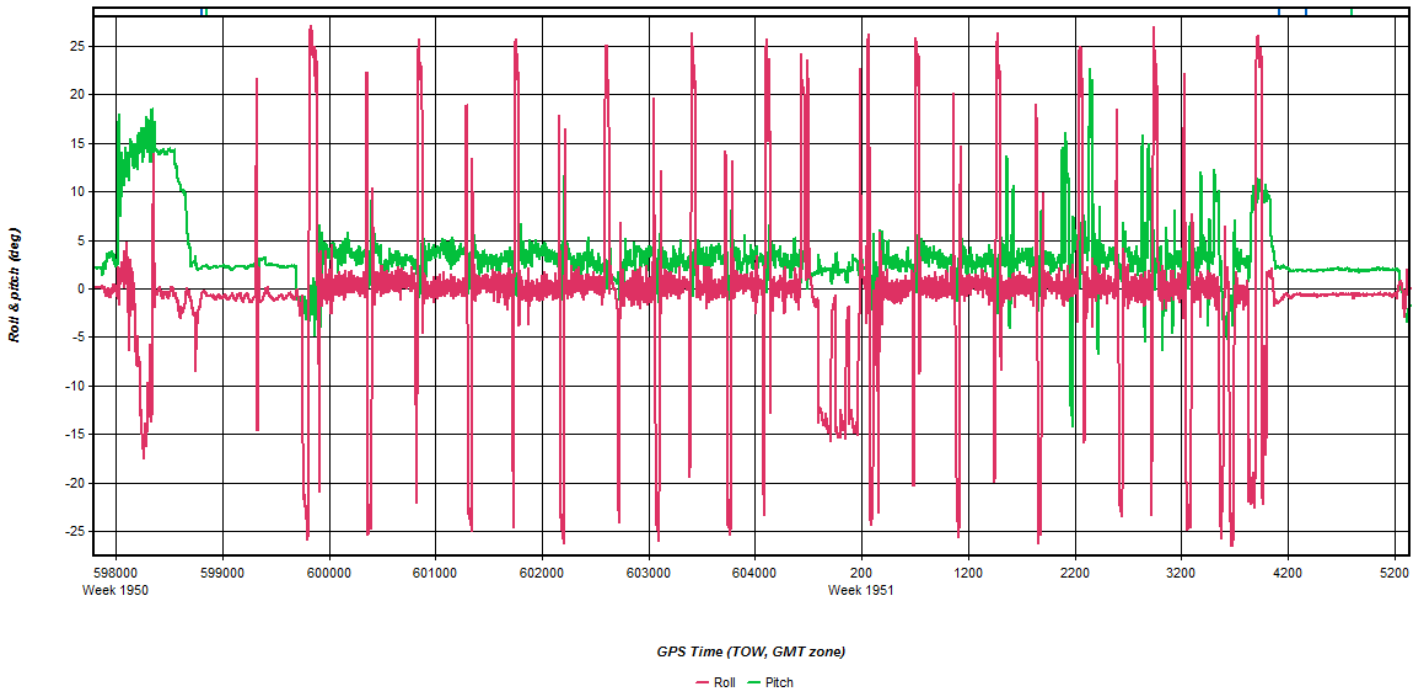

Master
Remote
Base Station
2: TBRD
Name:
TBRD
Disabled
File:
G:\Proc\29184_Prince_Of_Wales\ab49\TBRD\052717\052717A_T
Coordinates
Latitude:
North
55
41
15.62257
Coord. options
Longitude:
West
132
31
45.73369
Save to Favorites
Ellipsoidal height:
36.823
m
Datum:
WGS84
Proc Datum:
WGS84
Epoch:
year
Antenna Height
From station file:
TRM55971.00, NONE
View STA File
Antenna profile:
TRM55971.00
Info
Measured height:
0.000
m
Measured to
ARP
ARP to L1 offset:
0.067
m
L1 Phase Centre
Applied height:
0.067
m
Compute From Slant
OK
Cancel

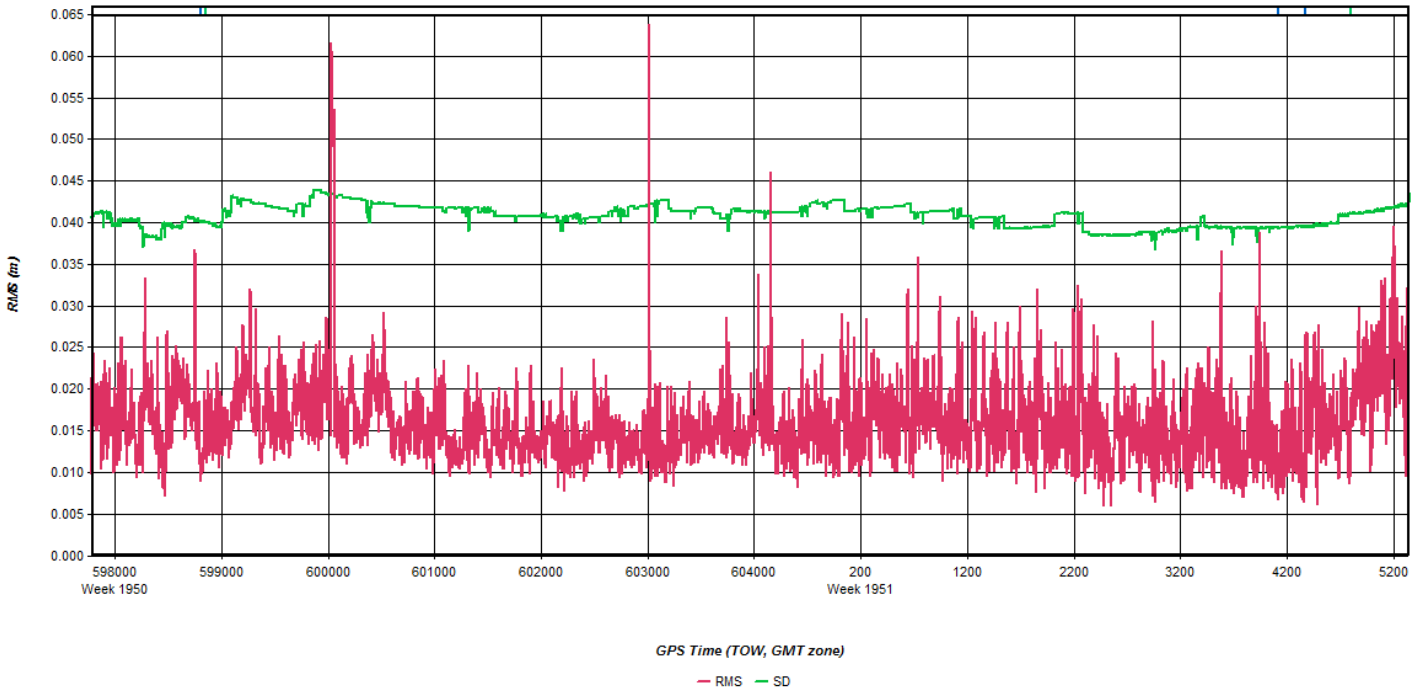
May 27, 2017-B (N208NR, SN8146)

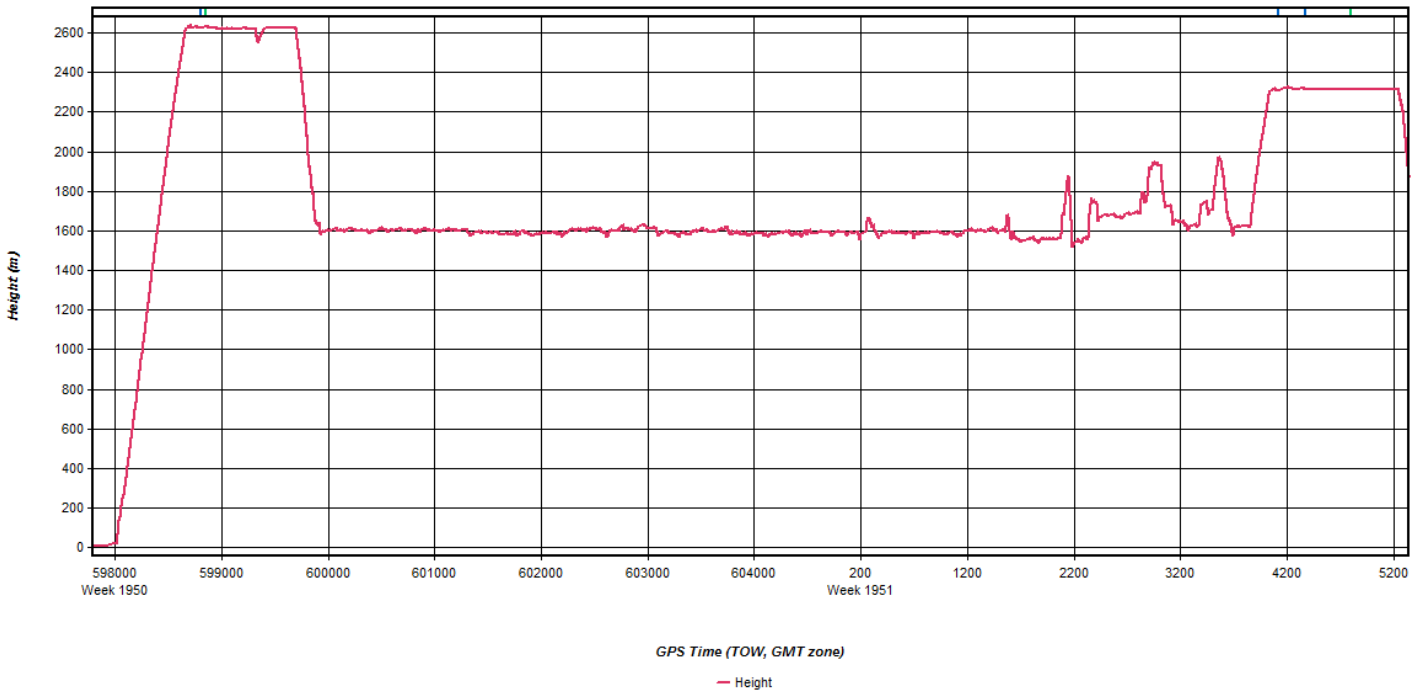

ARTK, REV
TBRD
ARTK, REV
ABAB
ARTK, FWD
ARTK, FWD
ARTK, FWD
5 km

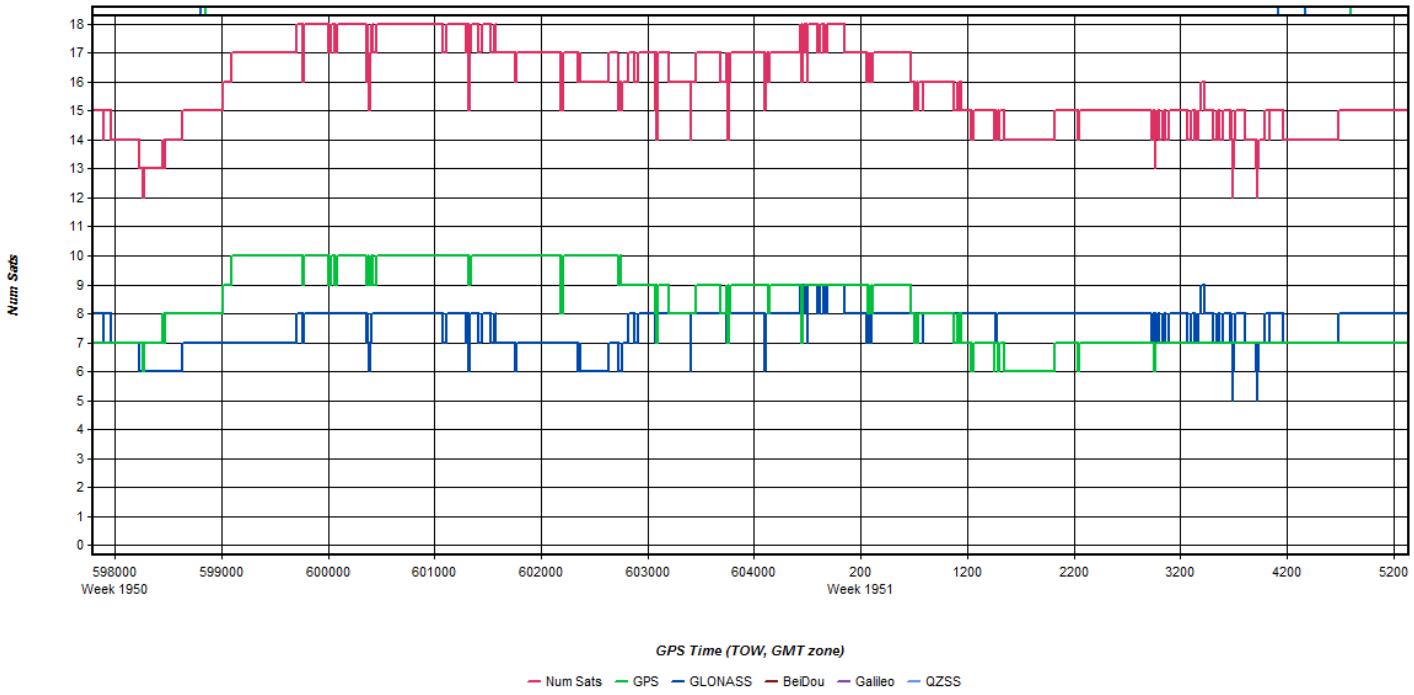

PDOP
1.4
1.3
1.2
1.1
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
598000
Week 1950
599000
600000
601000
602000
603000
604000
200
Week 1951
1200
2200
3200
4200
5200
GPS Time (TOW, GMT zone)
PDOP

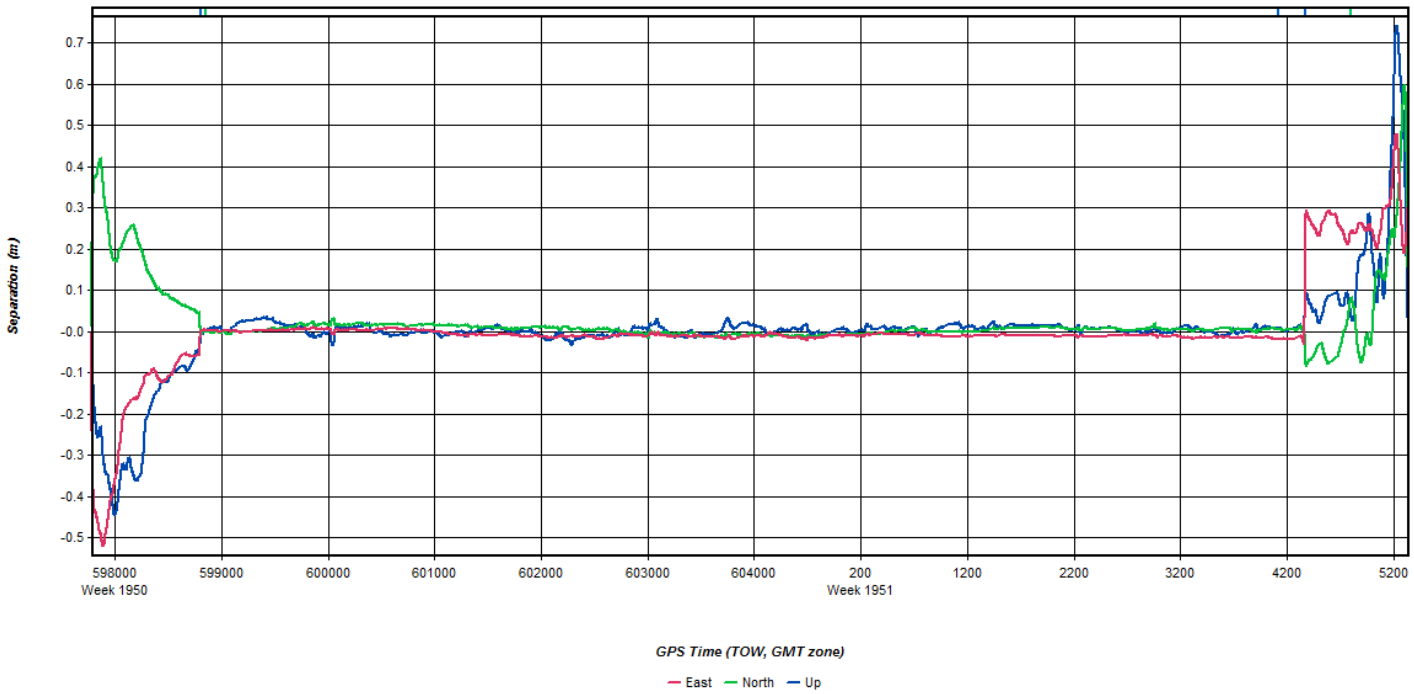

Status
2
1
0
-1
598000
Week 1950
599000
600000
601000
602000
603000
604000
200
Week 1951
1200
2200
3200
4200
5200
GPS Time (TOW, GMT zone)
Float
Forward Fixed
Reverse Fixed
Fixed (2 or more)

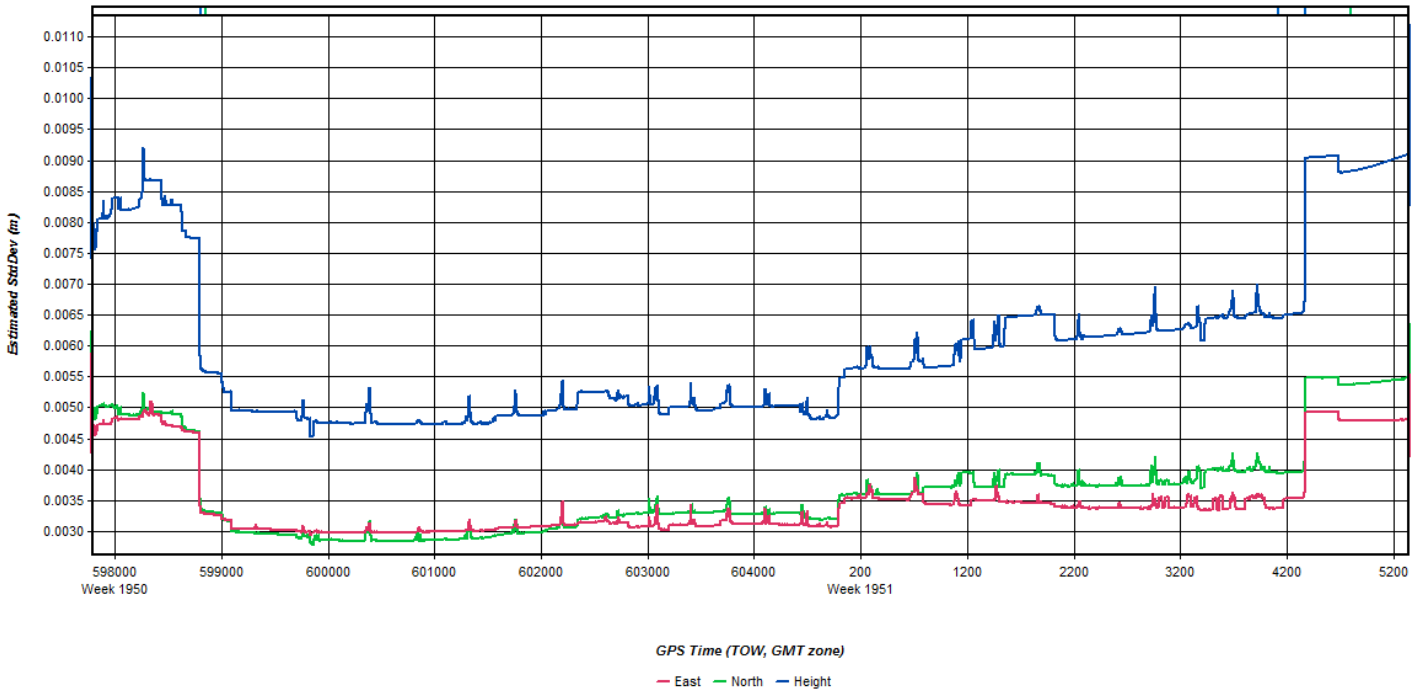

Roll & pitch (deg)
25
20
15
10
5
0
-5
-10
-15
-20
-25
598000
Week 1950
599000
600000
601000
602000
603000
604000
200
Week 1951
1200
2200
3200
4200
5200
GPS Time (TOW, GMT zone)
Roll
Pitch

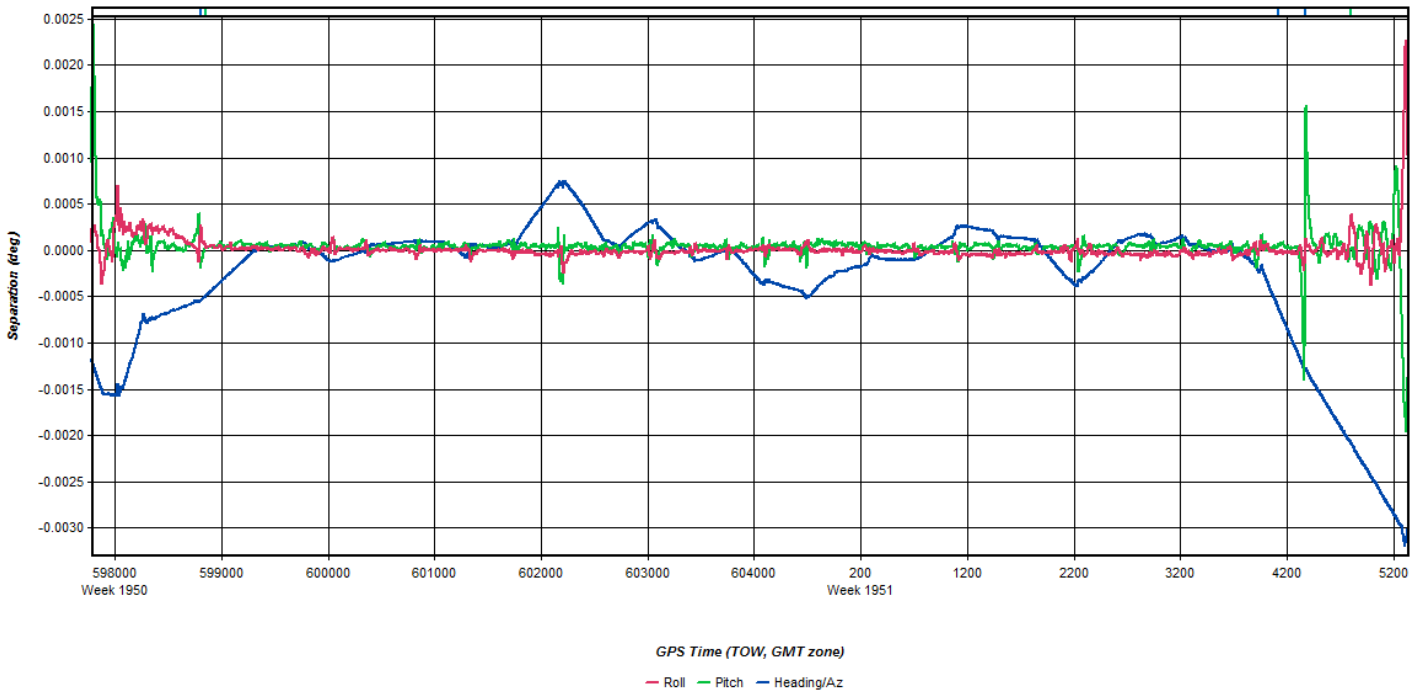

RMS (m)
0.065
0.060
0.055
0.050
0.045
0.040
0.035
0.030
0.025
0.020
0.015
0.010
0.005
0.000
598000
Week 1950
599000
600000
601000
602000
603000
604000
200
Week 1951
1200
2200
3200
4200
5200
GPS Time (TOW, GMT zone)
RMS
SD

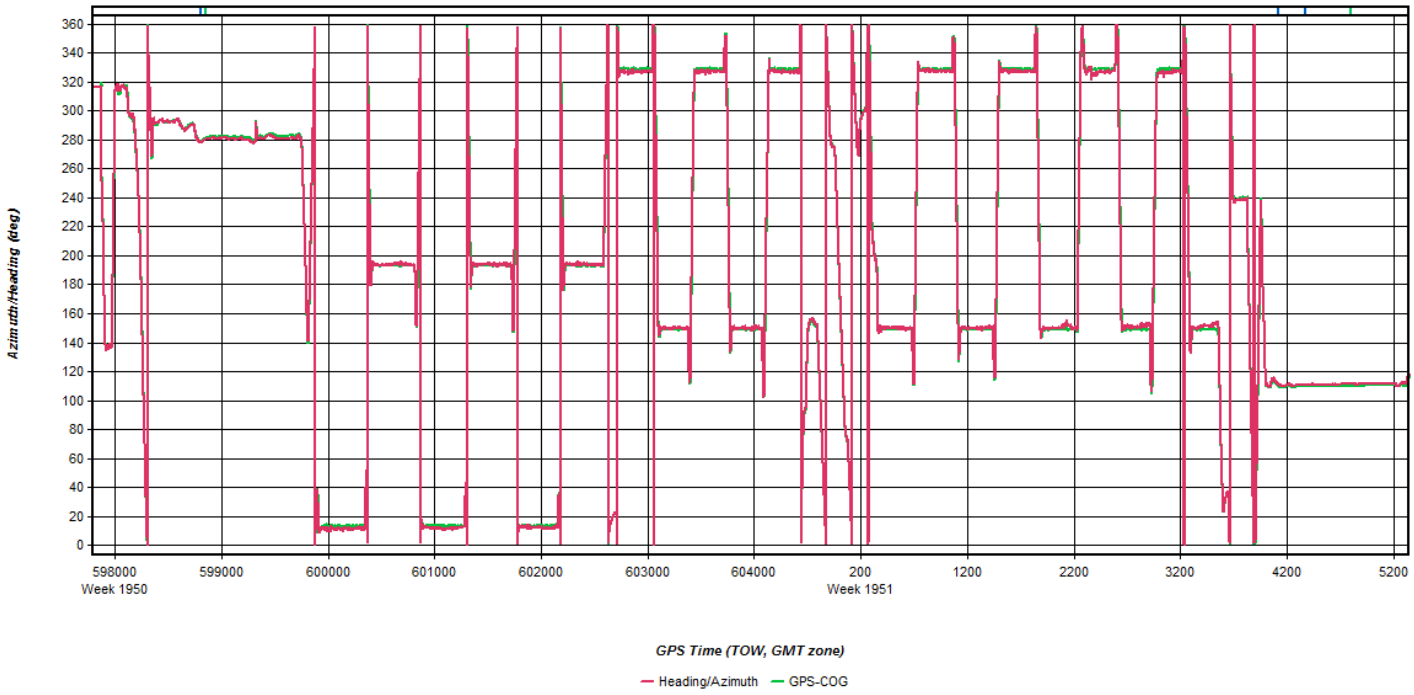

Height (m)
2600
2400
2200
2000
1800
1600
1400
1200
1000
800
600
400
200
0
598000
Week 1950
599000
600000
601000
602000
603000
604000
200
Week 1951
1200
2200
3200
4200
5200
GPS Time (TOW, GMT zone)
Height

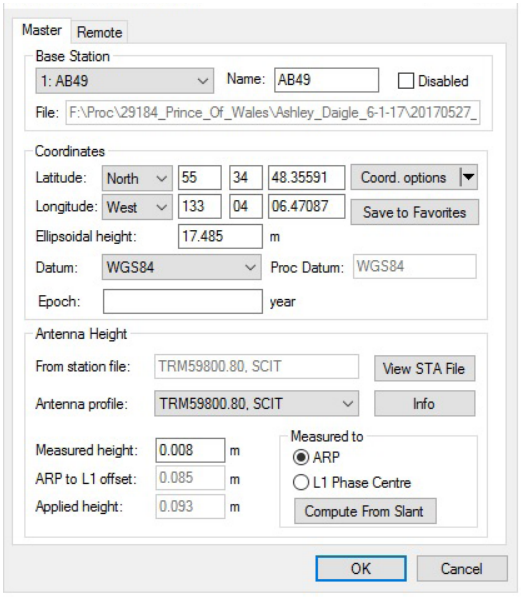

Num Sats
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
598000
Week 1950
599000
600000
601000
602000
603000
604000
200
Week 1951
1200
2200
3200
4200
5200
GPS Time (TOW, GMT zone)
Num Sats
GPS
GLONASS
BeiDou
Galileo
QZSS

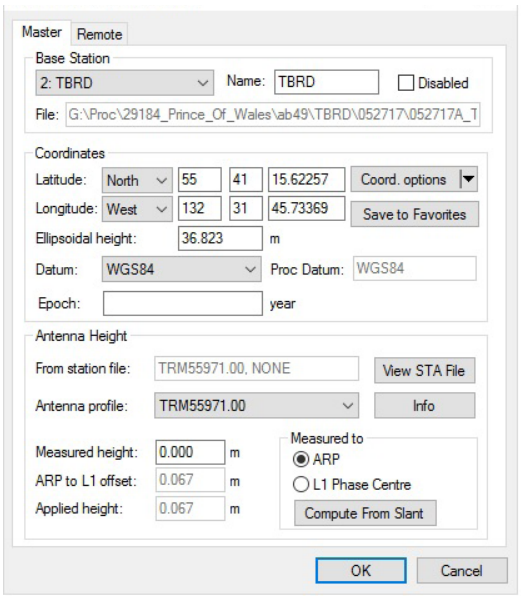

Separation (m)
0.7
0.6
0.5
0.4
0.3
0.2
0.1
-0.0
-0.1
-0.2
-0.3
-0.4
-0.5
598000
Week 1950
599000
600000
601000
602000
603000
604000
200
Week 1951
1200
2200
3200
4200
5200
GPS Time (TOW, GMT zone)
East
North
Up


Estimated StdDev (m)
0.0110
0.0105
0.0100
0.0095
0.0090
0.0085
0.0080
0.0075
0.0070
0.0065
0.0060
0.0055
0.0050
0.0045
0.0040
0.0035
0.0030
598000
Week 1950
599000
600000
601000
602000
603000
604000
200
Week 1951
1200
2200
3200
4200
5200
GPS Time (TOW, GMT zone)
East
North
Height

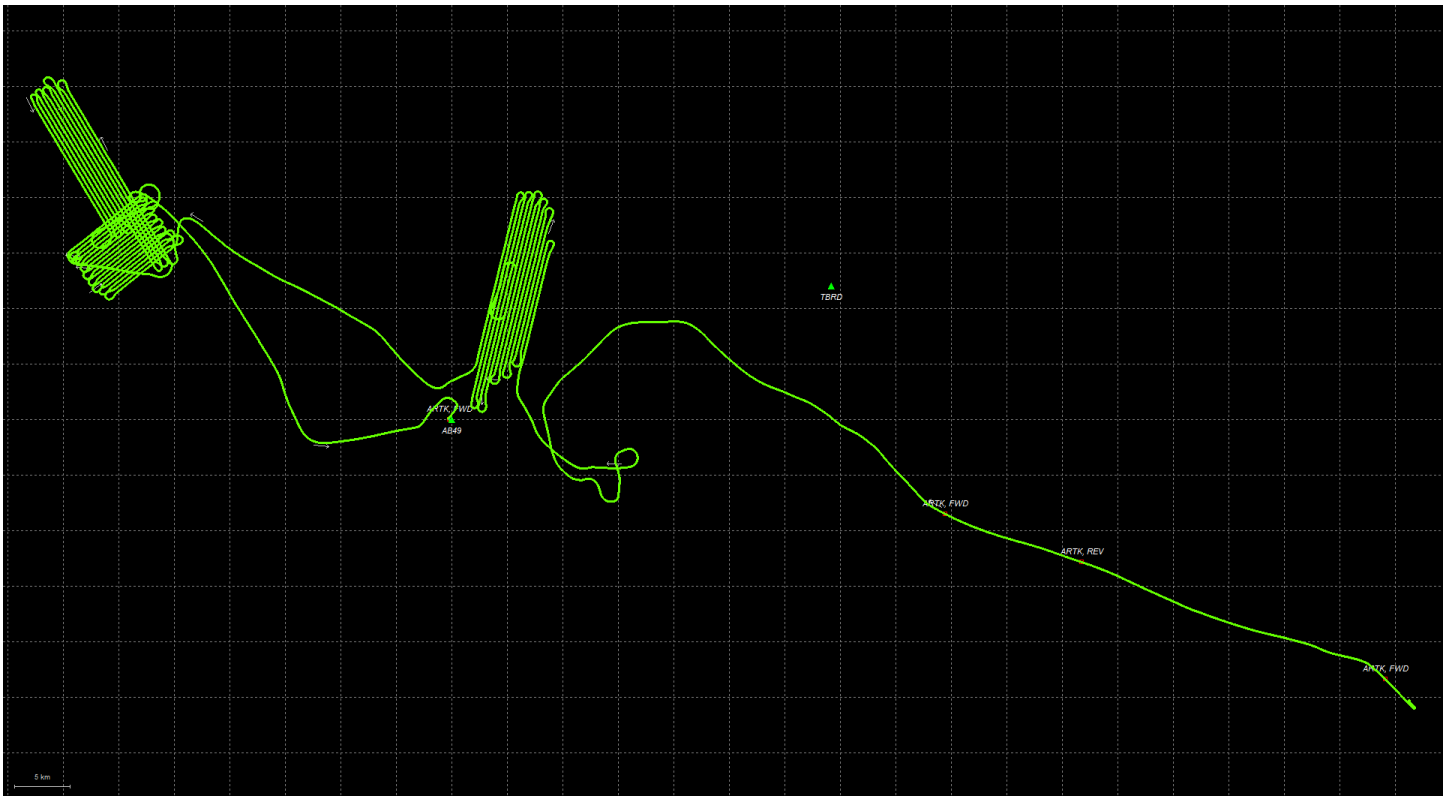

Separation (deg)
0.0025
0.0020
0.0015
0.0010
0.0005
0.0000
-0.0005
-0.0010
-0.0015
-0.0020
-0.0025
-0.0030
598000
Week 1950
599000
600000
601000
602000
603000
604000
200
Week 1951
1200
2200
3200
4200
5200
GPS Time (TOW, GMT zone)
Roll
Pitch
Heading/Az

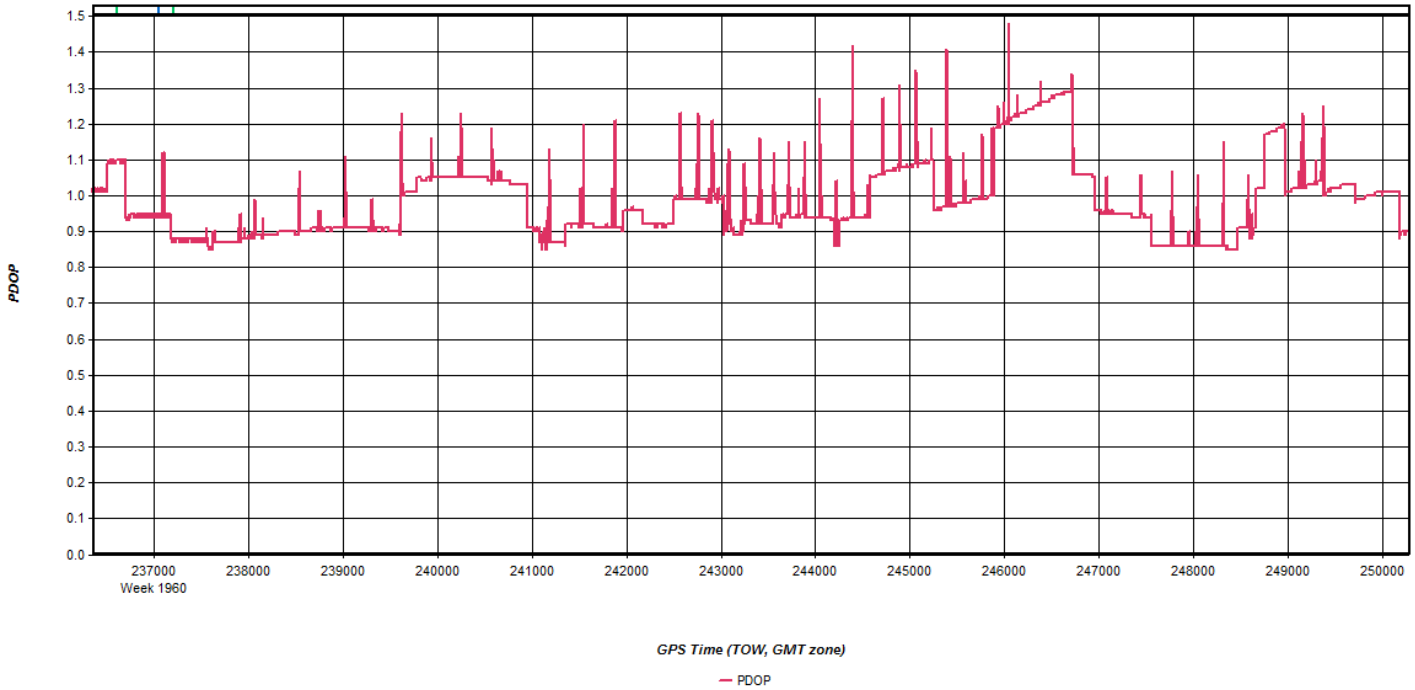

Azimuth/Heading (deg)
360
340
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
598000
Week 1950
599000
600000
601000
602000
603000
604000
200
Week 1951
1200
2200
3200
4200
5200
GPS Time (TOW, GMT zone)
Heading/Azimuth
GPS-COG

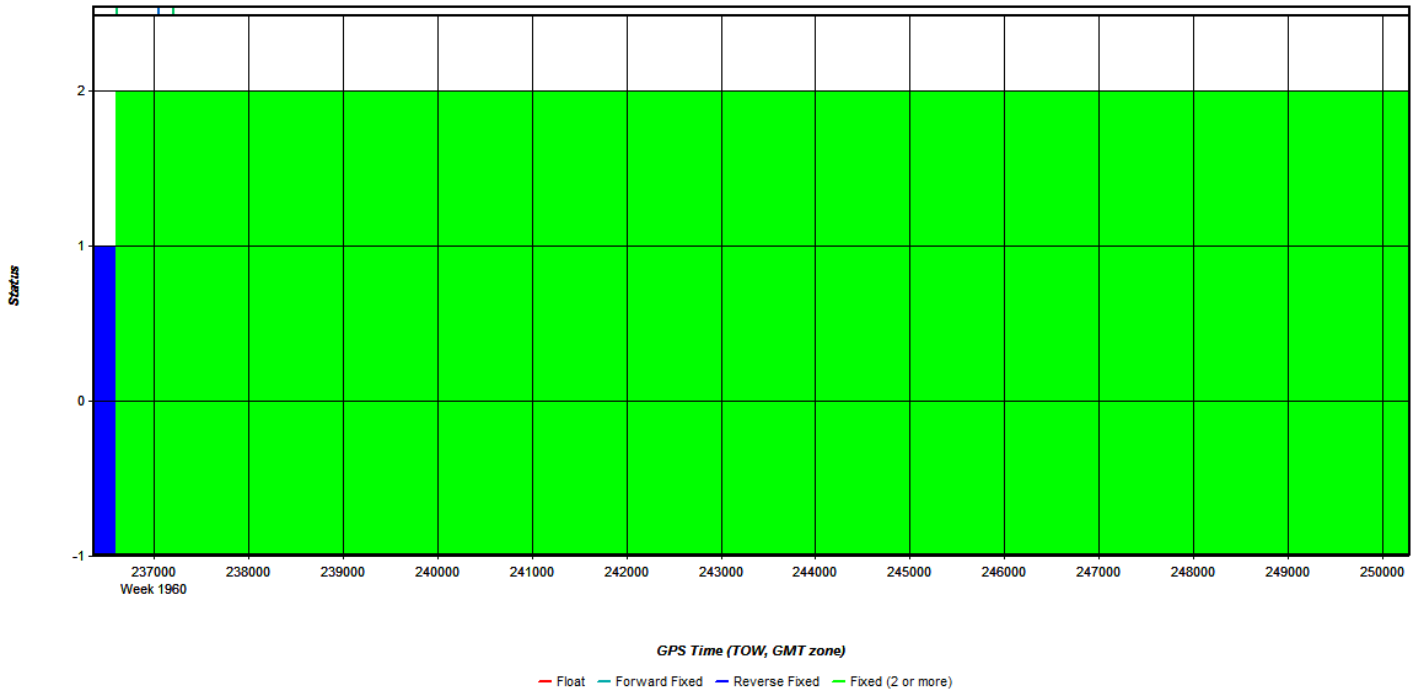

Master
Remote
Base Station
1: AB49
Name:
AB49
Disabled
File:
F:\Proc\29184_Prince_Of_Wales\Ashley_Daigle_6-1-17\20170527_
Coordinates
Latitude:
North
55
34
48.35591
Coord. options
Longitude:
West
133
04
06.47087
Save to Favorites
Ellipsoidal height:
17.485
m
Datum:
WGS84
Proc Datum:
WGS84
Epoch:
year
Antenna Height
From station file:
TRM59800.80, SCIT
View STA File
Antenna profile:
TRM59800.80, SCIT
Info
Measured height:
0.008
m
ARP to L1 offset:
0.085
m
Applied height:
0.093
m
Measured to
ARP
L1 Phase Centre
Compute From Slant
OK
Cancel

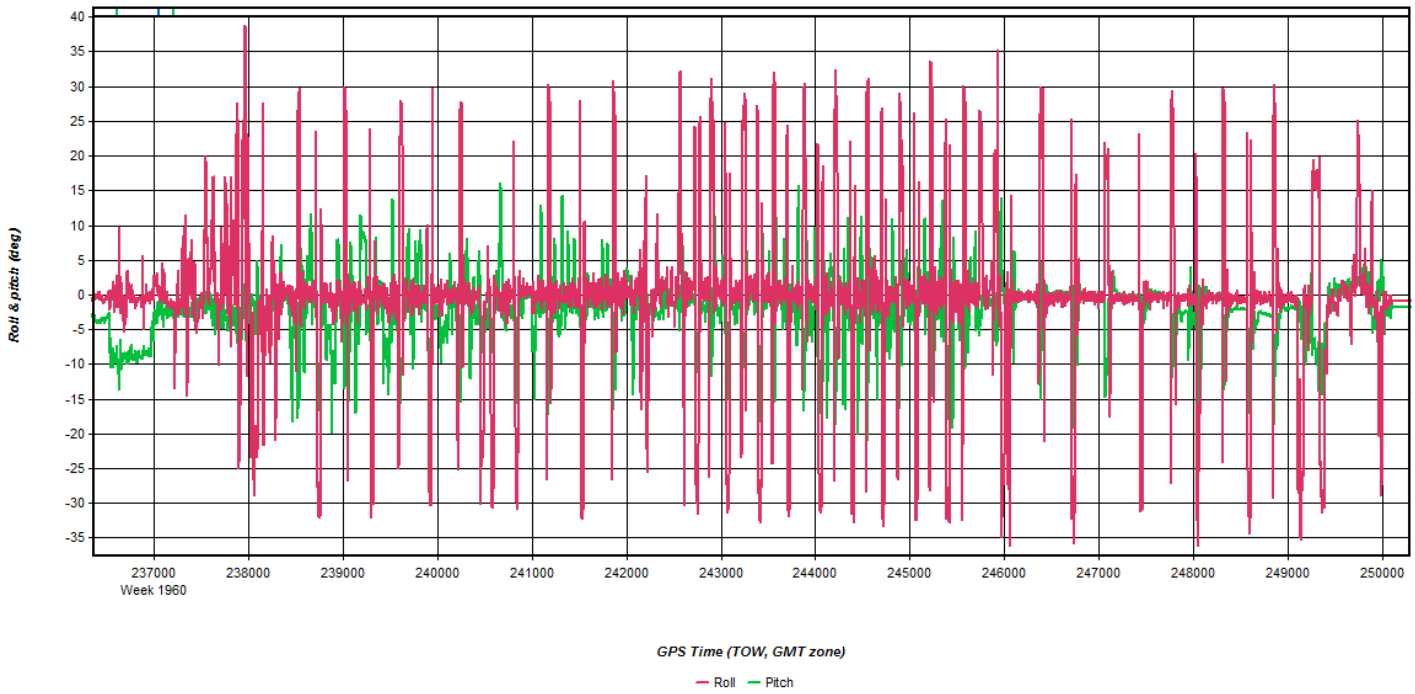

Master
Remote
Base Station
2: TBRD
Name:
TBRD
Disabled
File:
G:\Proc\29184_Prince_Of_Wales\ab49\TBRD\052717\052717A_T
Coordinates
Latitude:
North
55
41
15.62257
Coord. options
Longitude:
West
132
31
45.73369
Save to Favorites
Ellipsoidal height:
36.823
m
Datum:
WGS84
Proc Datum:
WGS84
Epoch:
year
Antenna 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

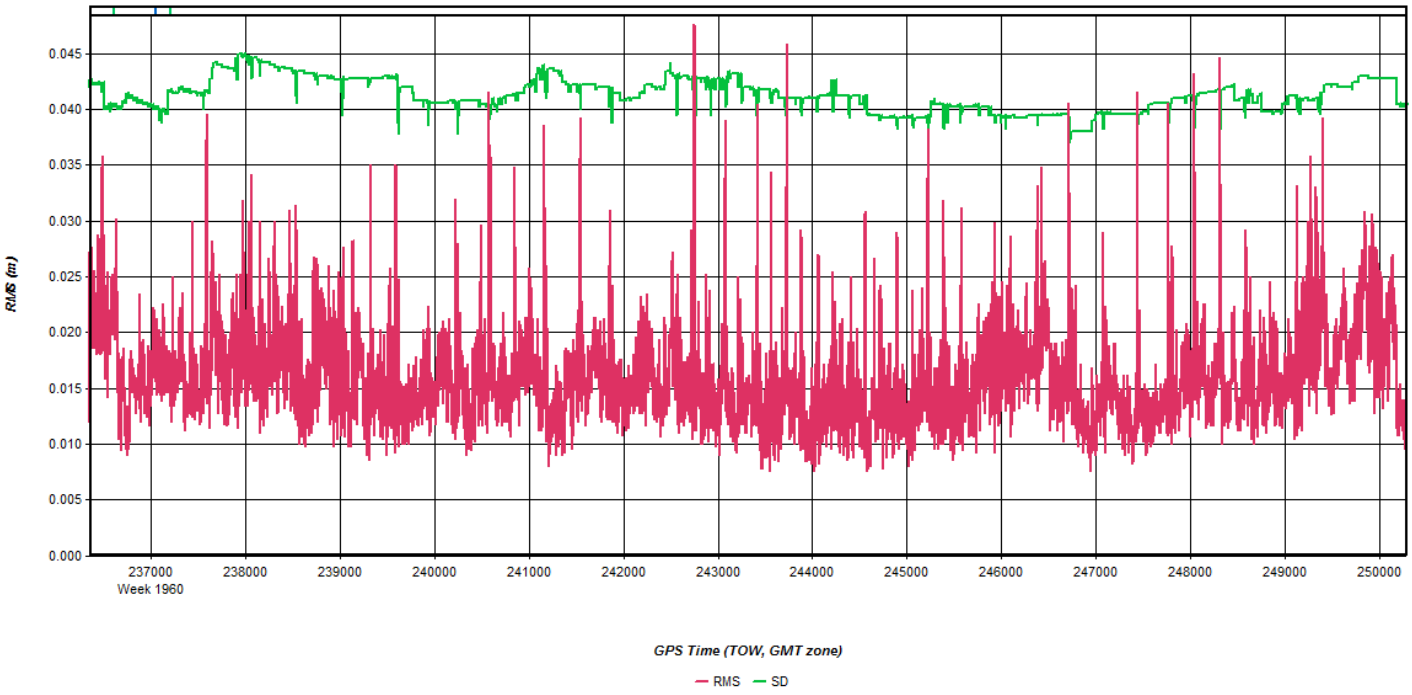
August 1, 2017-A (N604MD, SN8146)

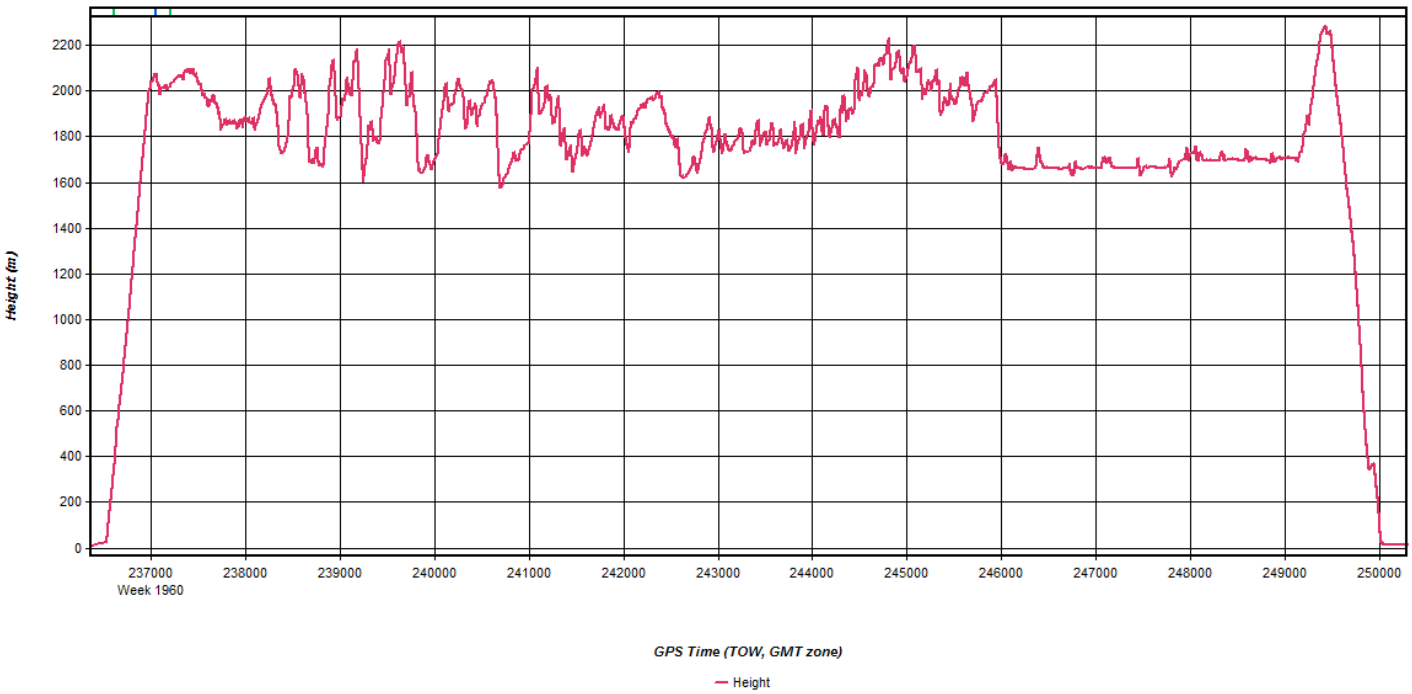

TBRD
ARTK, FWD
AB49
ARTK, FWD
ARTK, REV
ARTK, FWD
5 km

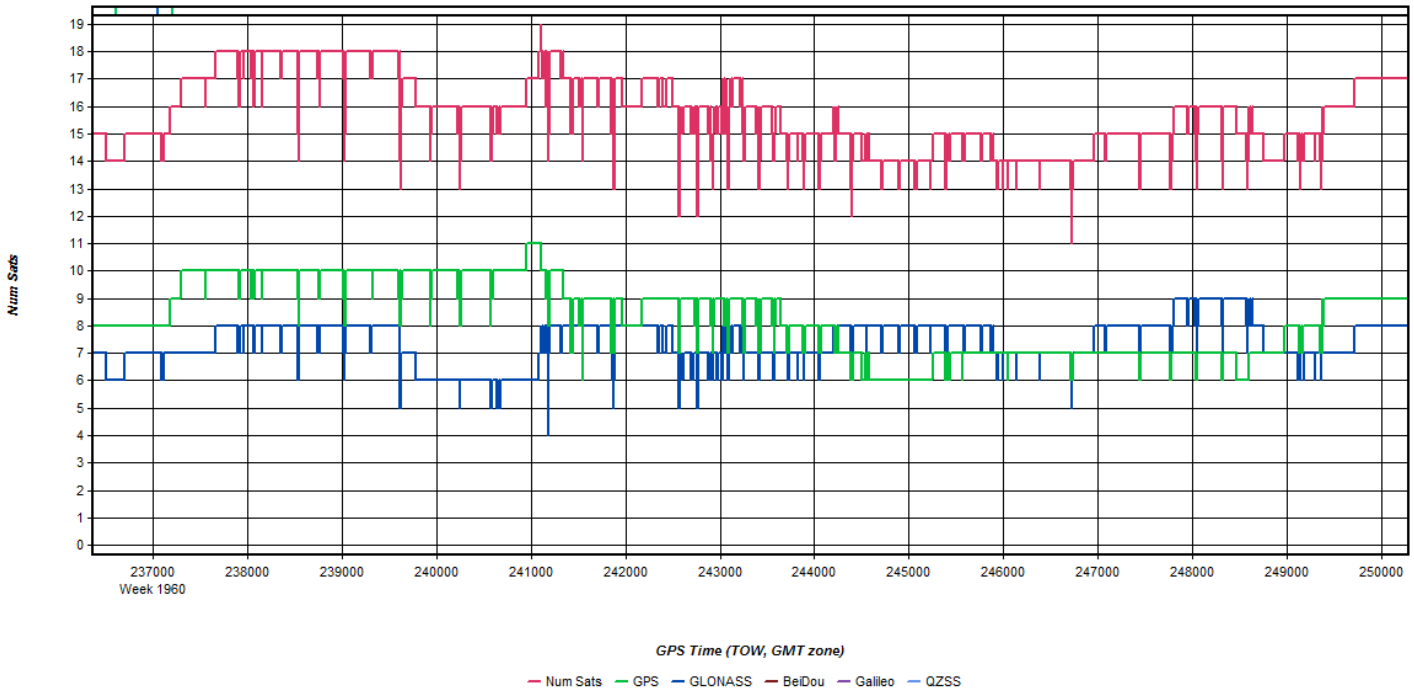

PDOP
1.5
1.4
1.3
1.2
1.1
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
237000
Week 1960
238000
239000
240000
241000
242000
243000
244000
245000
246000
247000
248000
249000
250000
GPS Time (TOW, GMT zone)
PDOP

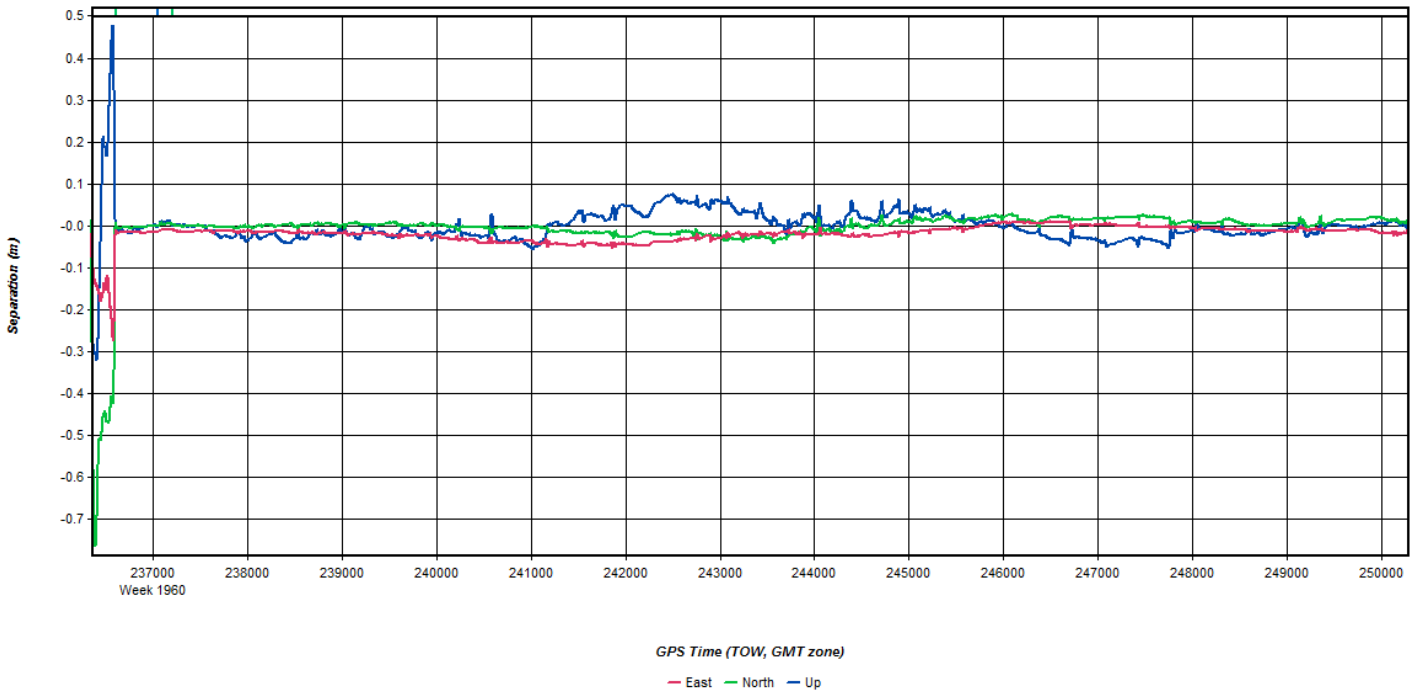

Status
2
1
0
-1
237000
Week 1960
238000
239000
240000
241000
242000
243000
244000
245000
246000
247000
248000
249000
250000
GPS Time (TOW, GMT zone)
Float
Forward Fixed
Reverse Fixed
Fixed (2 or more)

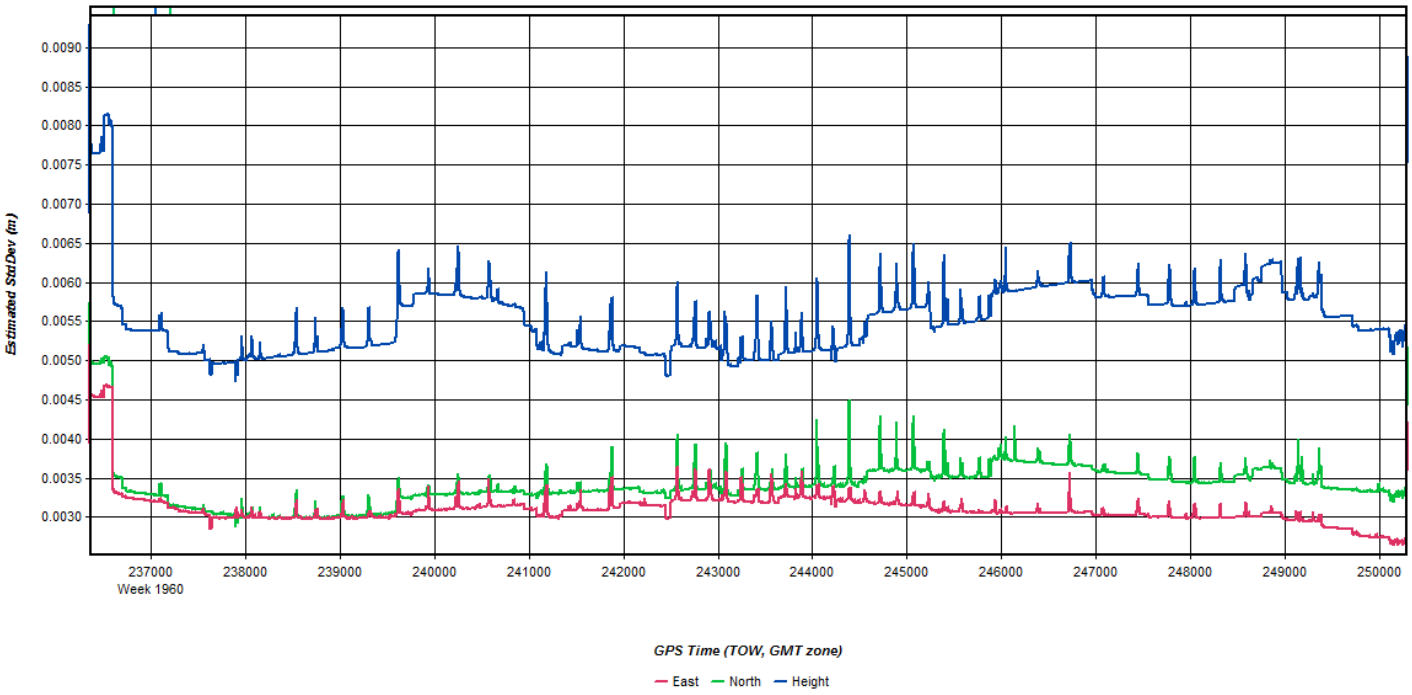

Roll & pitch (deg)
40
35
30
25
20
15
10
5
0
-5
-10
-15
-20
-25
-30
-35
237000
Week 1960
238000
239000
240000
241000
242000
243000
244000
245000
246000
247000
248000
249000
250000
GPS Time (TOW, GMT zone)
Roll
Pitch

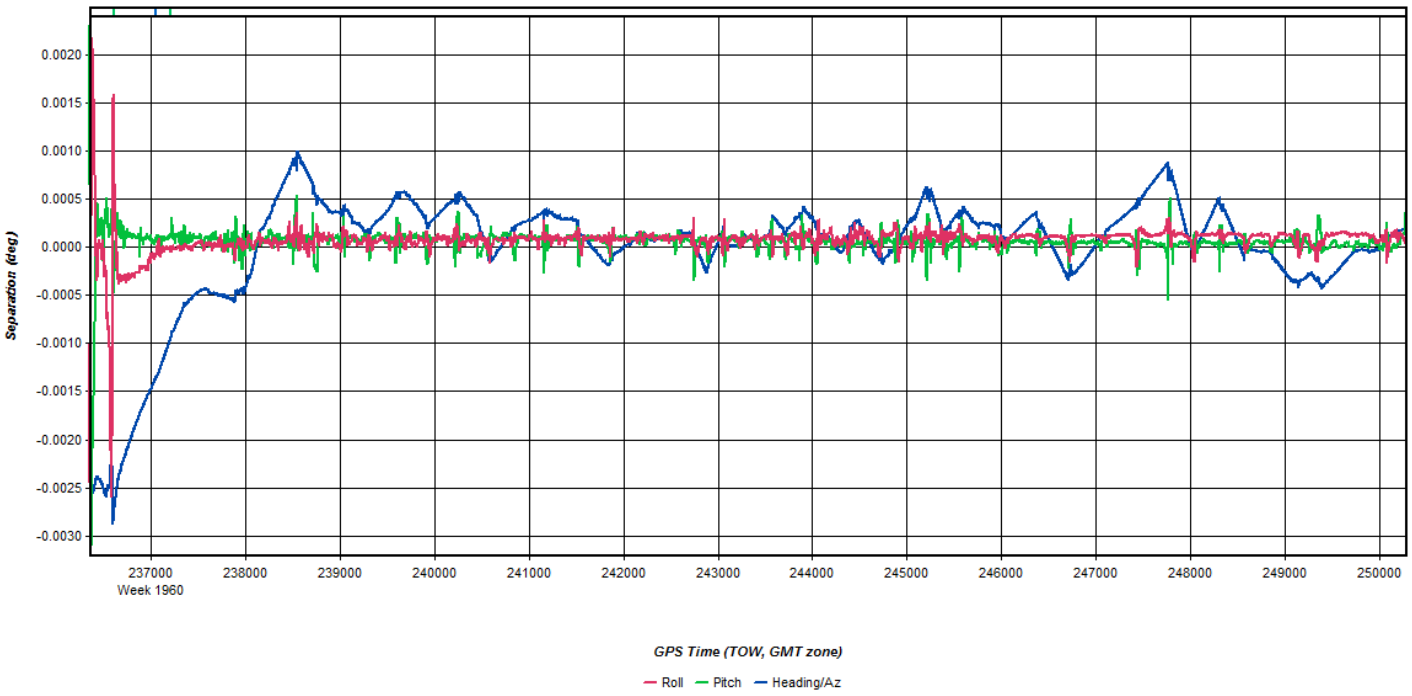

RMS (m)
0.045
0.040
0.035
0.030
0.025
0.020
0.015
0.010
0.005
0.000
237000
Week 1960
238000
239000
240000
241000
242000
243000
244000
245000
246000
247000
248000
249000
250000
GPS Time (TOW, GMT zone)
RMS
SD

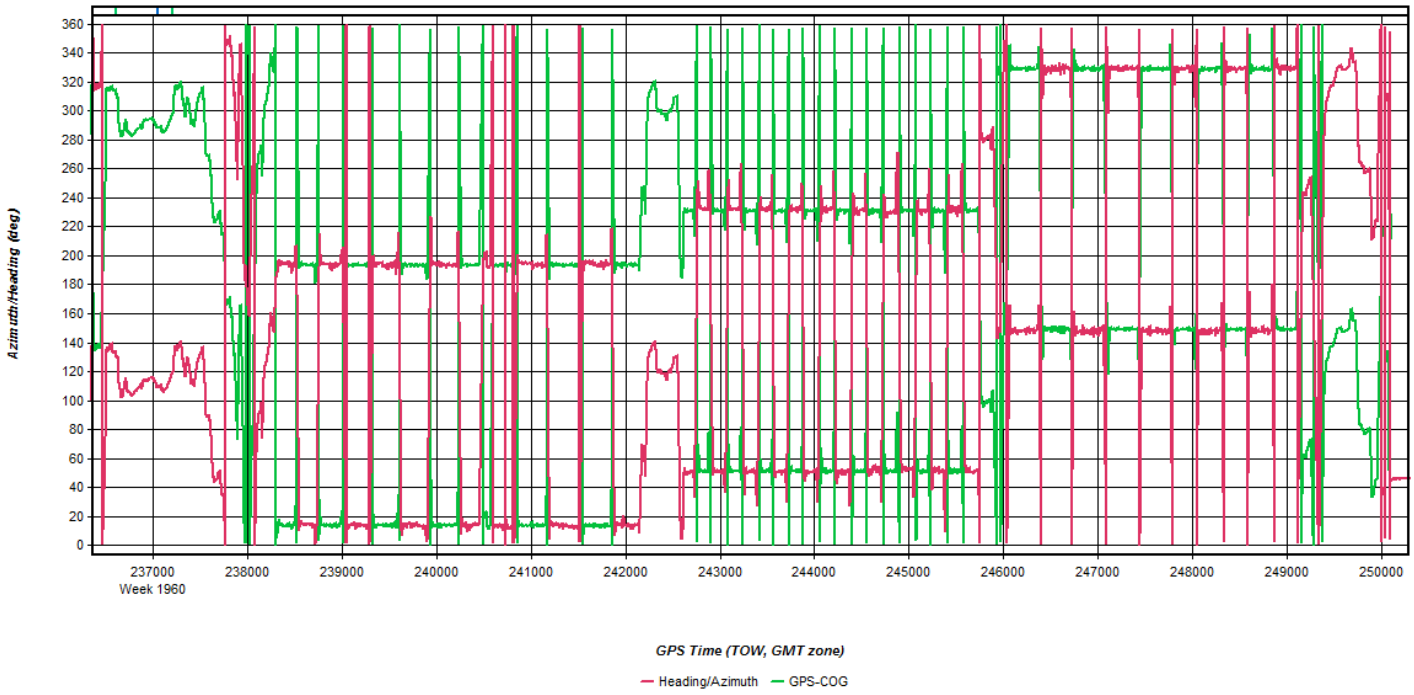

Height (m)
2200
2000
1800
1600
1400
1200
1000
800
600
400
200
0
237000
Week 1960
238000
239000
240000
241000
242000
243000
244000
245000
246000
247000
248000
249000
250000
GPS Time (TOW, GMT zone)
Height

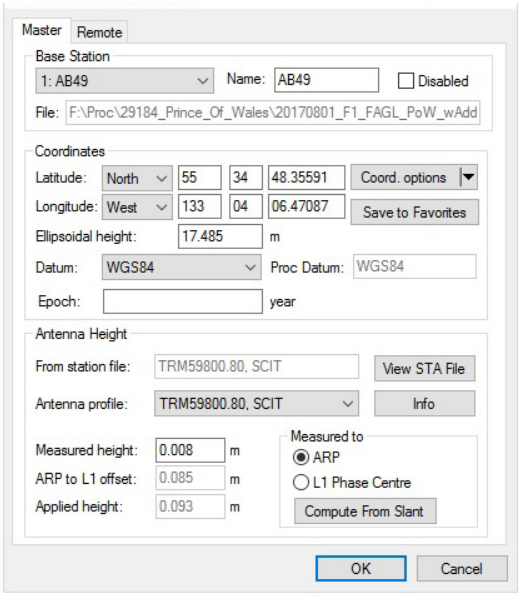

Num Sats
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
237000
Week 1960
238000
239000
240000
241000
242000
243000
244000
245000
246000
247000
248000
249000
250000
GPS Time (TOW, GMT zone)
Num Sats
GPS
GLONASS
BeiDou
Galileo
QZSS

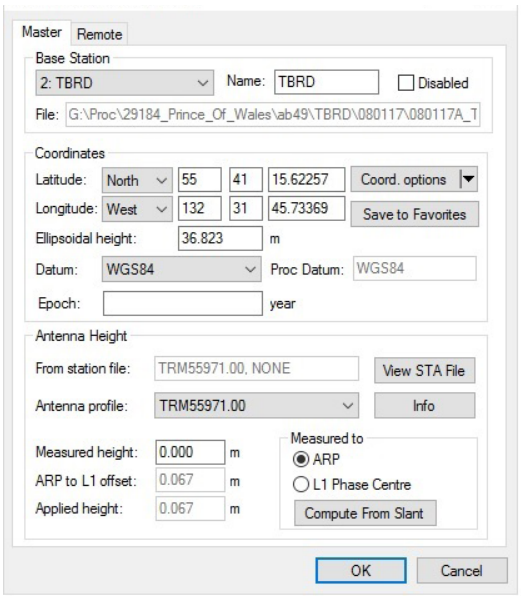

Separation (m)
0.5
0.4
0.3
0.2
0.1
-0.0
-0.1
-0.2
-0.3
-0.4
-0.5
-0.6
-0.7
237000
Week 1960
238000
239000
240000
241000
242000
243000
244000
245000
246000
247000
248000
249000
250000
GPS Time (TOW, GMT zone)
East
North
Up


Estimated StdDev (m)
0.0090
0.0085
0.0080
0.0075
0.0070
0.0065
0.0060
0.0055
0.0050
0.0045
0.0040
0.0035
0.0030
237000
Week 1960
238000
239000
240000
241000
242000
243000
244000
245000
246000
247000
248000
249000
250000
GPS Time (TOW, GMT zone)
East
North
Height

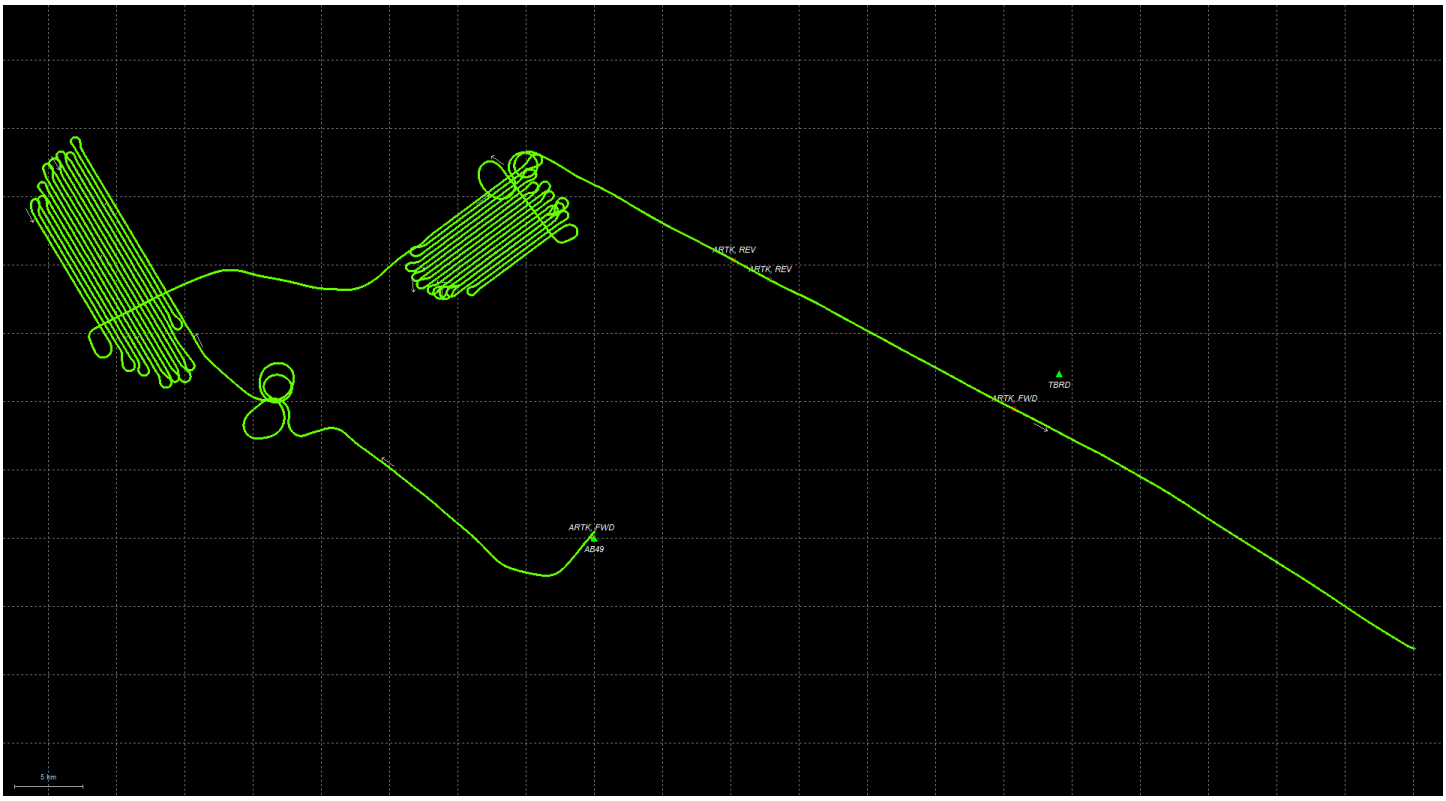

Separation (deg)
0.0020
0.0015
0.0010
0.0005
0.0000
-0.0005
-0.0010
-0.0015
-0.0020
-0.0025
-0.0030
237000
Week 1960
238000
239000
240000
241000
242000
243000
244000
245000
246000
247000
248000
249000
250000
GPS Time (TOW, GMT zone)
Roll
Pitch
Heading/Az

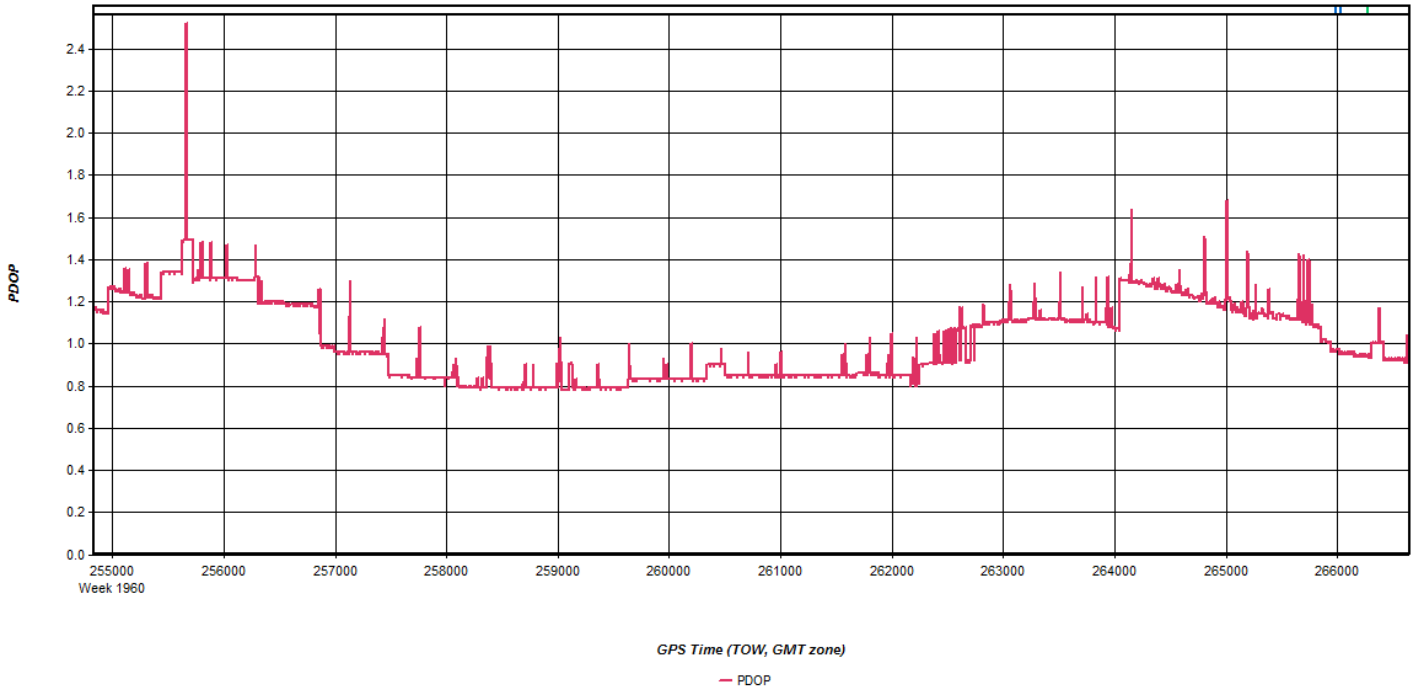

Azimuth/Heading (deg)
360
340
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
237000
Week 1960
238000
239000
240000
241000
242000
243000
244000
245000
246000
247000
248000
249000
250000
GPS Time (TOW, GMT zone)
Heading/Azimuth
GPS-COG

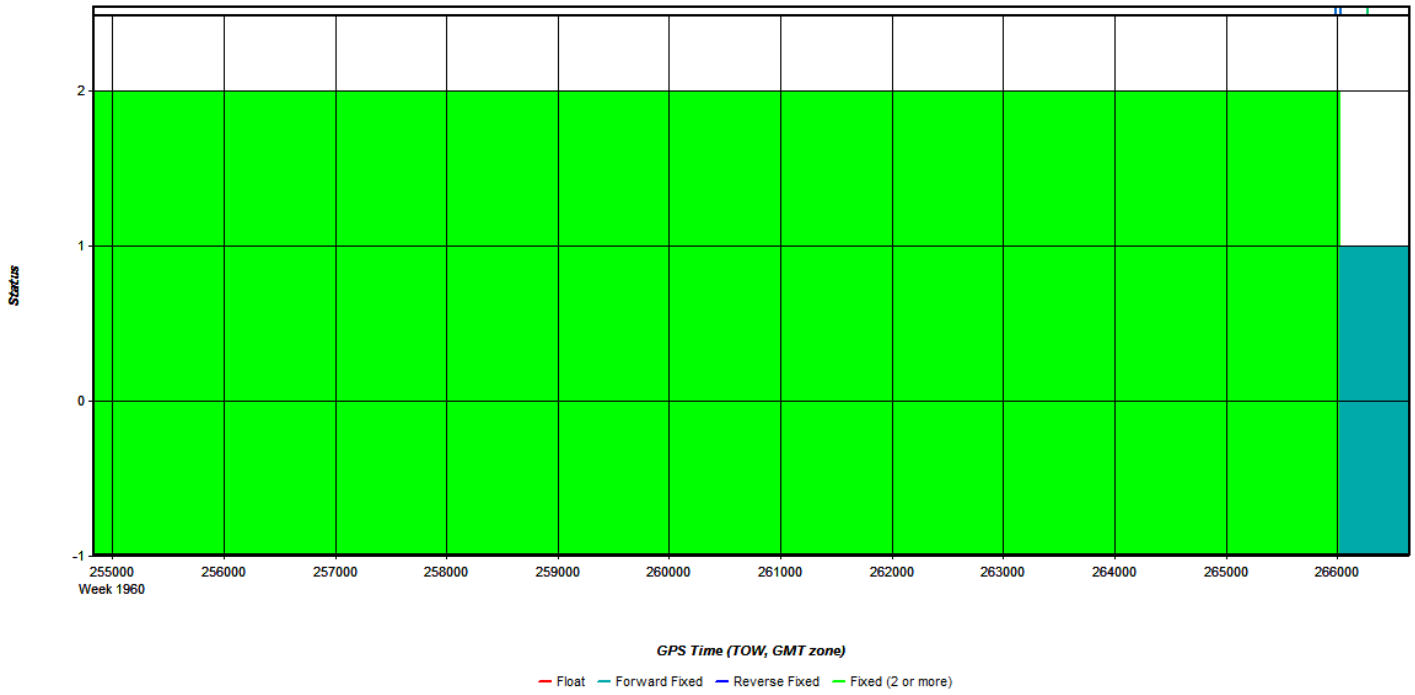

Master
Remote
Base Station
1: AB49
Name:
AB49
Disabled
File:
F:\Proc\29184_Prince_Of_Wales\20170801_F1_FAGL_PoW_wAdd
Coordinates
Latitude:
North
55
34
48.35591
Coord. options
Longitude:
West
133
04
06.47087
Save to Favorites
Ellipsoidal height:
17.485
m
Datum:
WGS84
Proc Datum:
WGS84
Epoch:
year
Antenna Height
From station file:
TRM59800.80, SCIT
View STA File
Antenna profile:
TRM59800.80, SCIT
Info
Measured height:
0.008
m
Measured to
ARP
ARP to L1 offset:
0.085
m
L1 Phase Centre
Applied height:
0.093
m
Compute From Slant
OK
Cancel

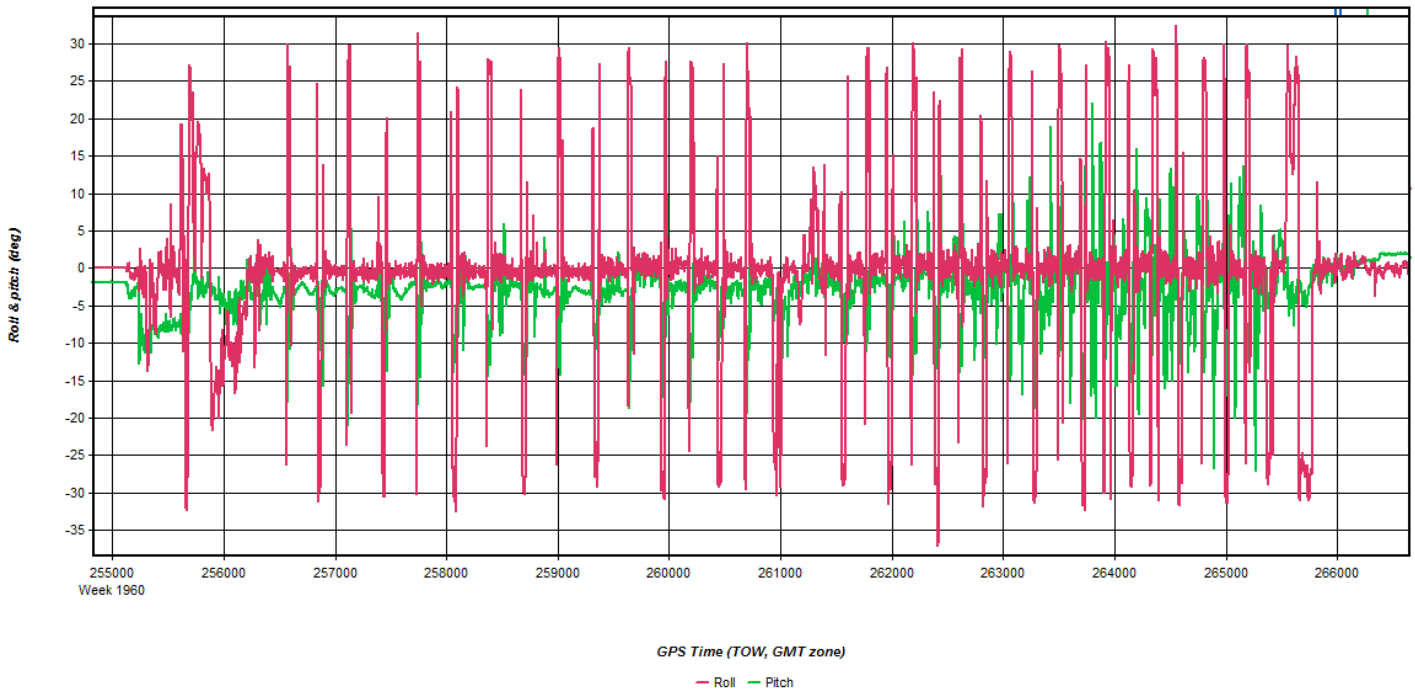

Master
Remote
Base Station
2: TBRD
Name:
TBRD
Disabled
File:
G:\Proc\29184_Prince_Of_Wales\ab49\TBRD\080117\080117A_T
Coordinates
Latitude:
North
55
41
15.62257
Coord. options
Longitude:
West
132
31
45.73369
Save to Favorites
Ellipsoidal height:
36.823
m
Datum:
WGS84
Proc Datum:
WGS84
Epoch:
year
Antenna Height
From station file:
TRM55971.00, NONE
View STA File
Antenna profile:
TRM55971.00
Info
Measured height:
0.000
m
Measured to
ARP
ARP to L1 offset:
0.067
m
L1 Phase Centre
Applied height:
0.067
m
Compute From Slant
OK
Cancel

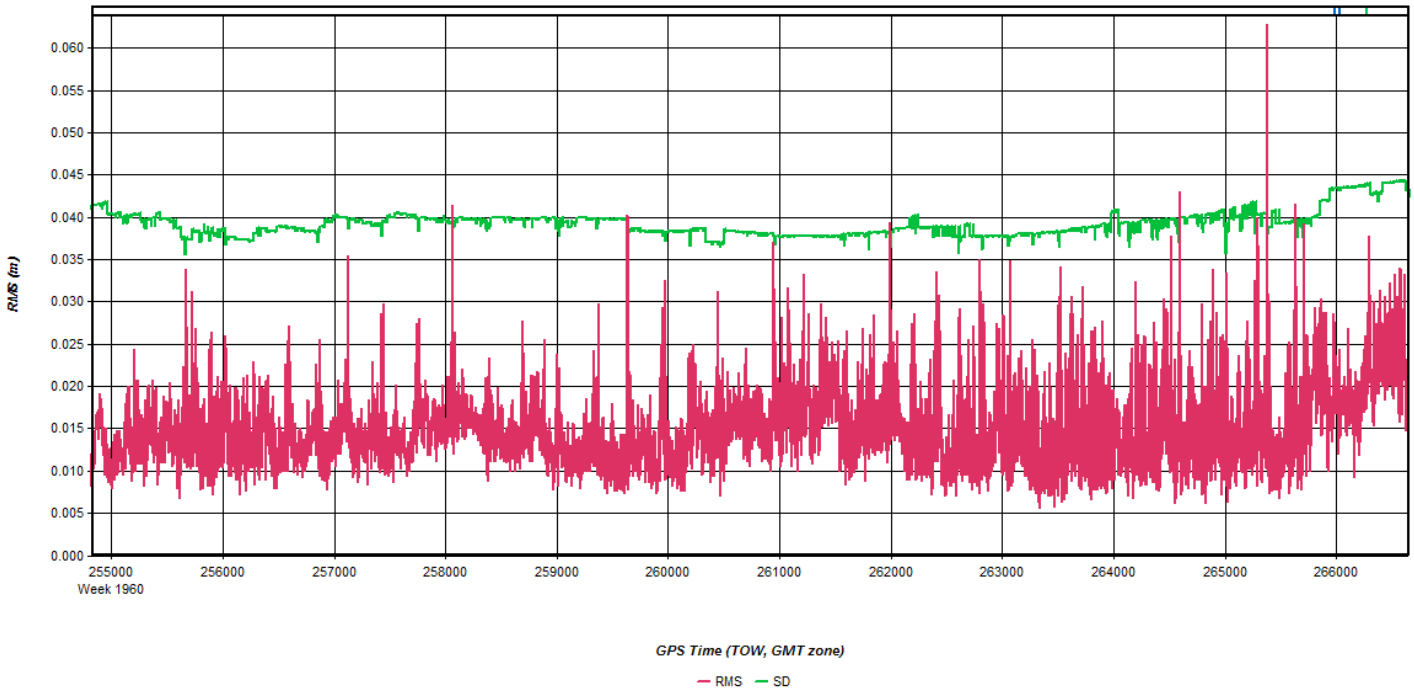
August 1, 2017-B (N604MD, SN8146)

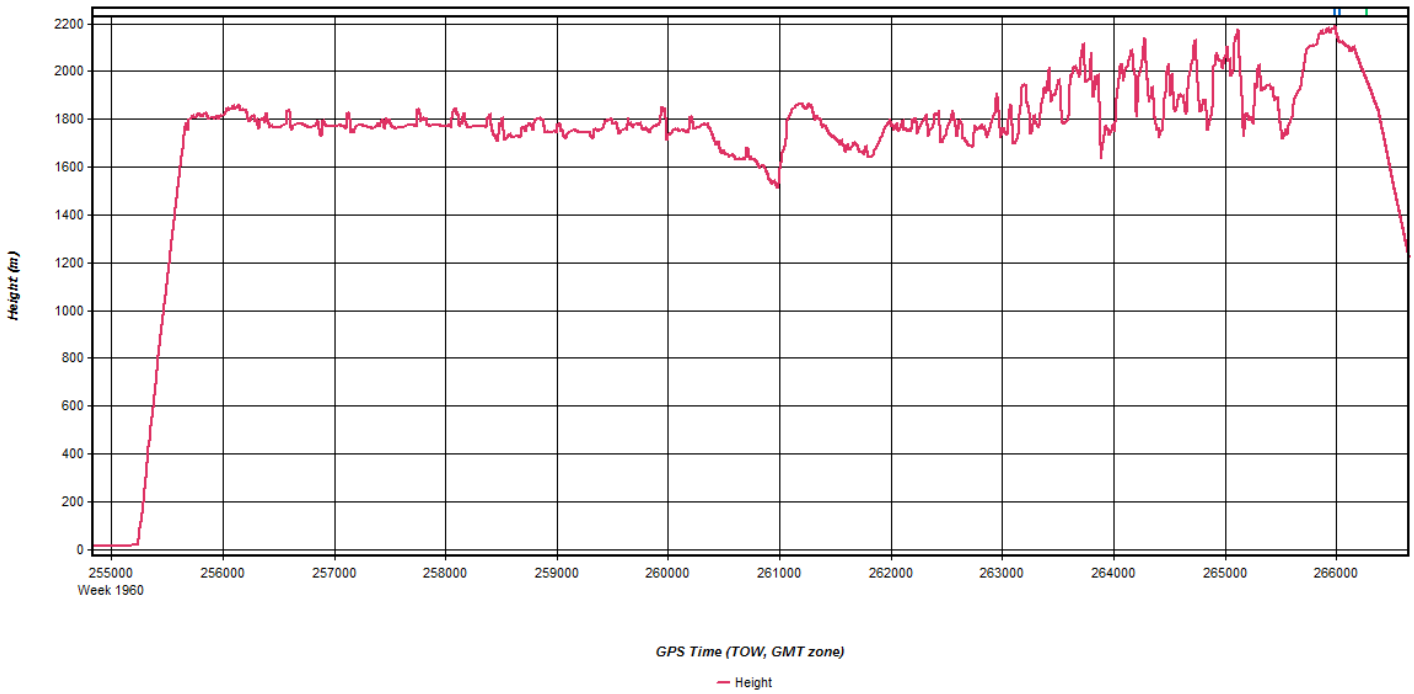

ARTK_REV
ARTK_REV
TBRD
ARTK_FWD
ARTK_FWD
AB49
5 km

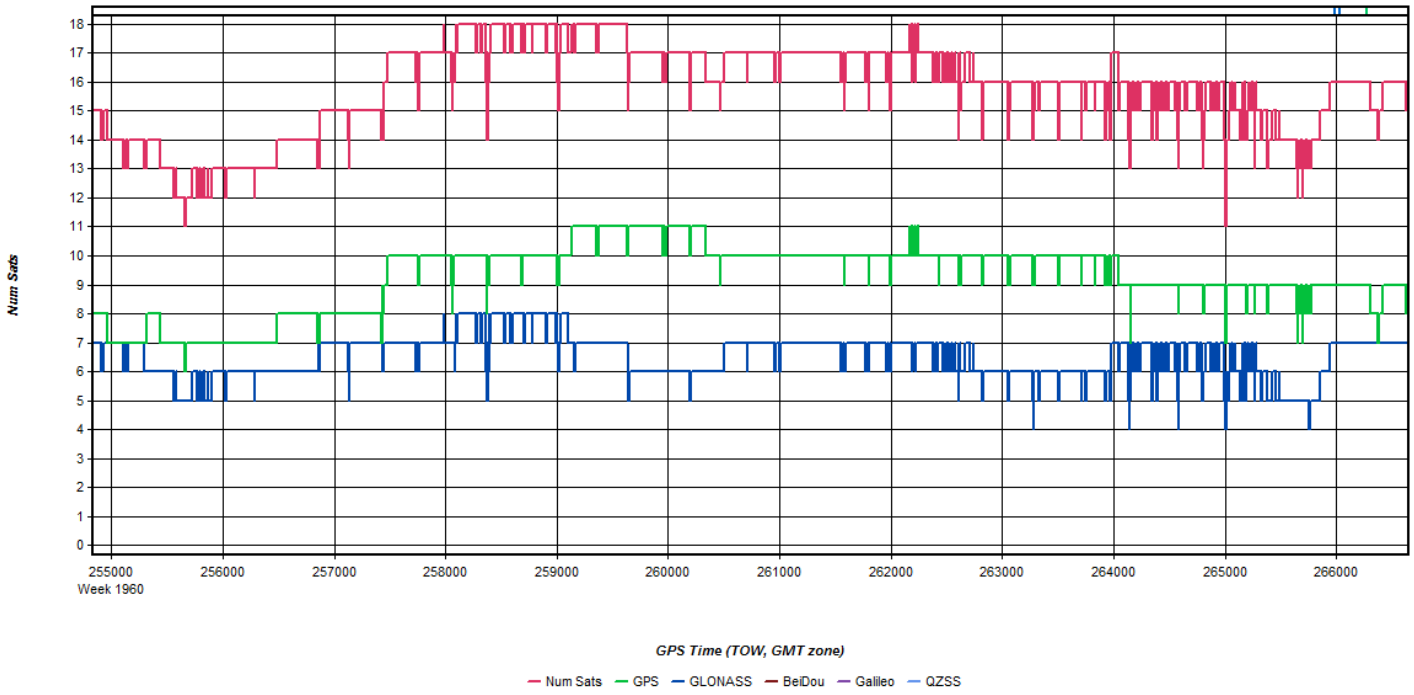

PDOP
2.4
2.2
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
255000
Week 1960
256000
257000
258000
259000
260000
261000
262000
263000
264000
265000
266000
GPS Time (TOW, GMT zone)
PDOP

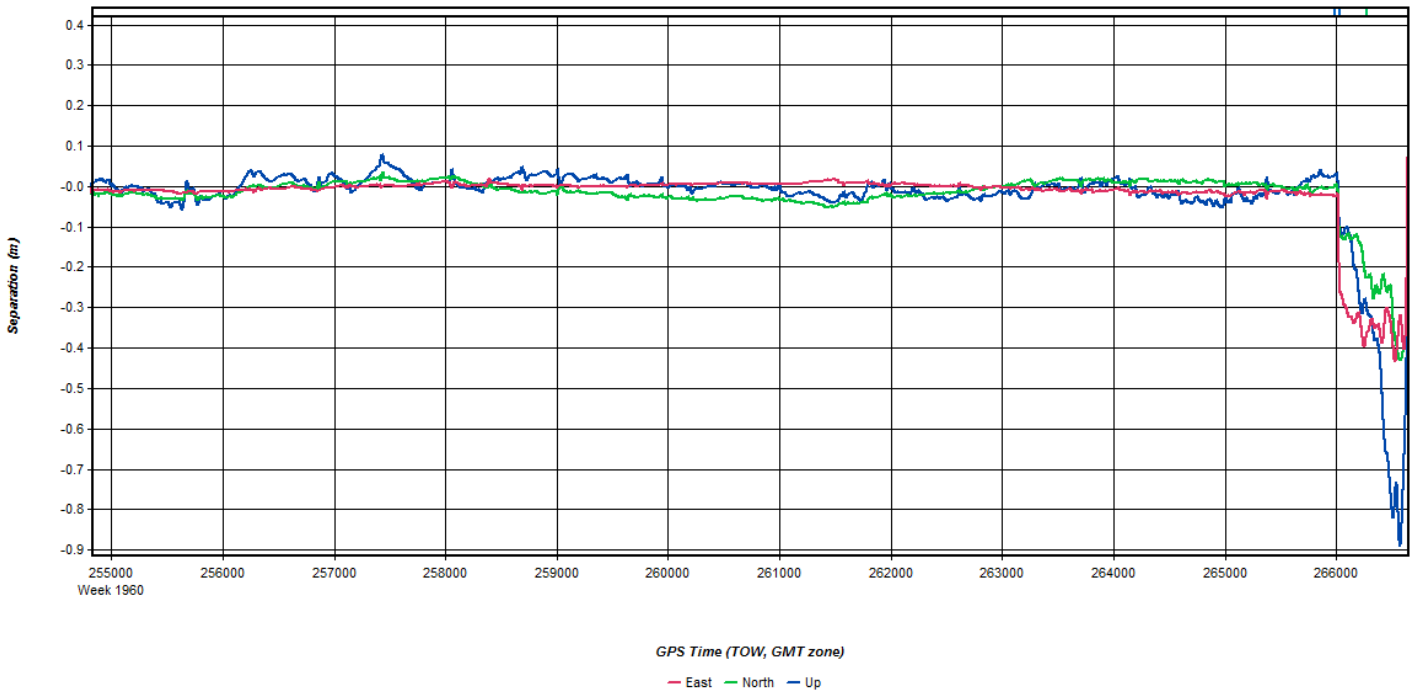

Status
2
1
0
-1
255000
Week 1960
256000
257000
258000
259000
260000
261000
262000
263000
264000
265000
266000
GPS Time (TOW, GMT zone)
Float
Forward Fixed
Reverse Fixed
Fixed (2 or more)

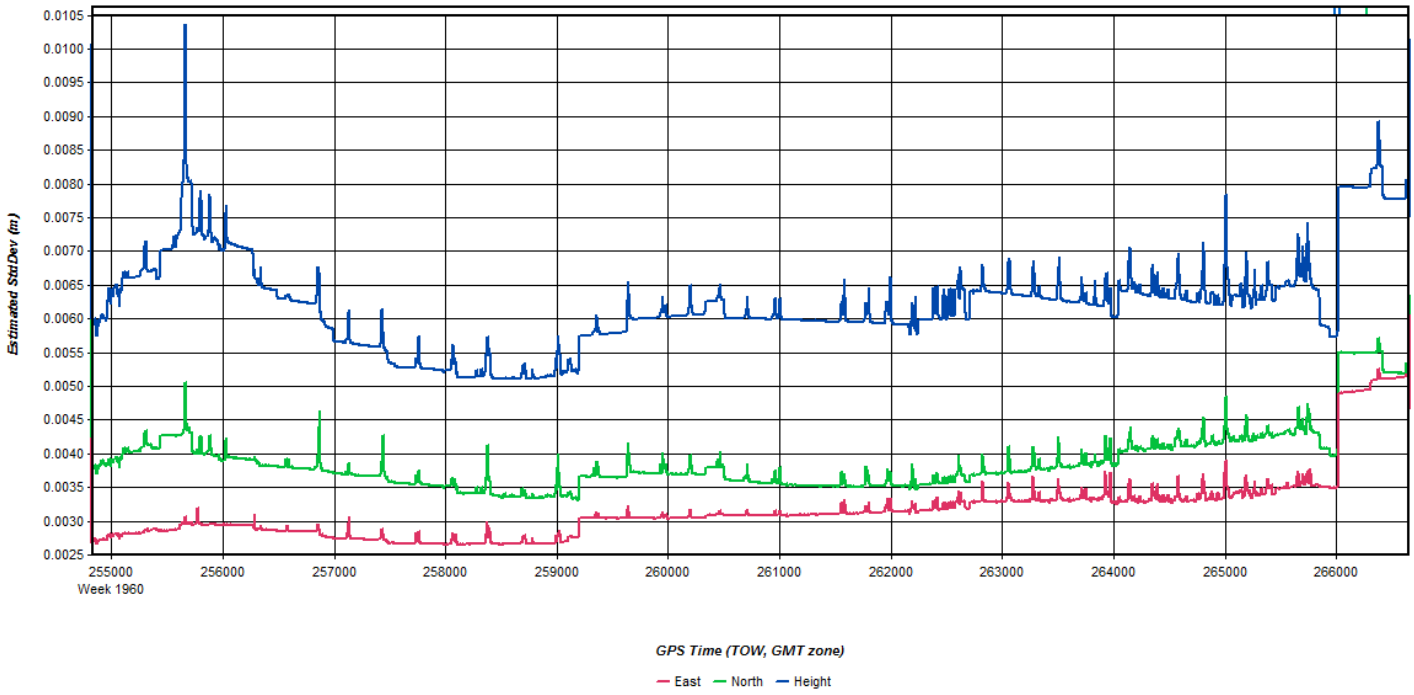

Roll & pitch (deg)
30
25
20
15
10
5
0
-5
-10
-15
-20
-25
-30
-35
255000
Week 1960
256000
257000
258000
259000
260000
261000
262000
263000
264000
265000
266000
GPS Time (TOW, GMT zone)
Roll
Pitch

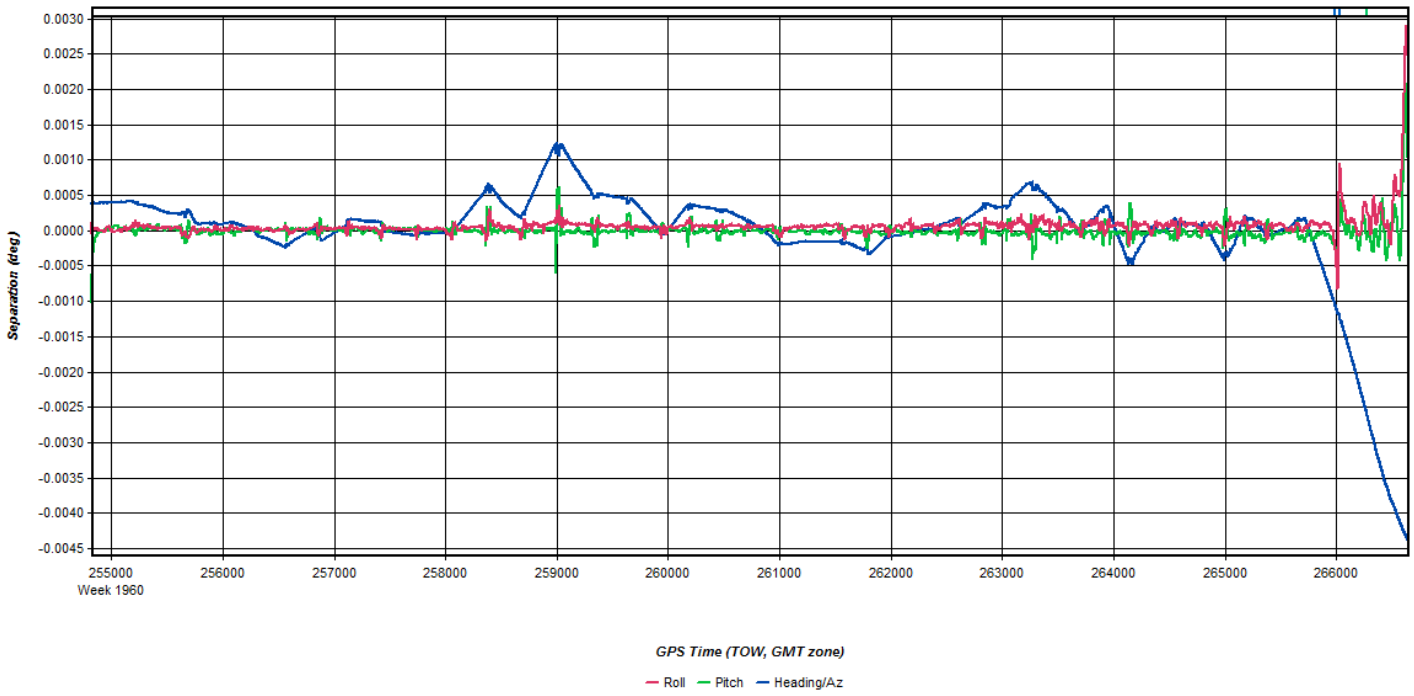

RMS (m)
0.060
0.055
0.050
0.045
0.040
0.035
0.030
0.025
0.020
0.015
0.010
0.005
0.000
255000
Week 1960
256000
257000
258000
259000
260000
261000
262000
263000
264000
265000
266000
GPS Time (TOW, GMT zone)
RMS
SD

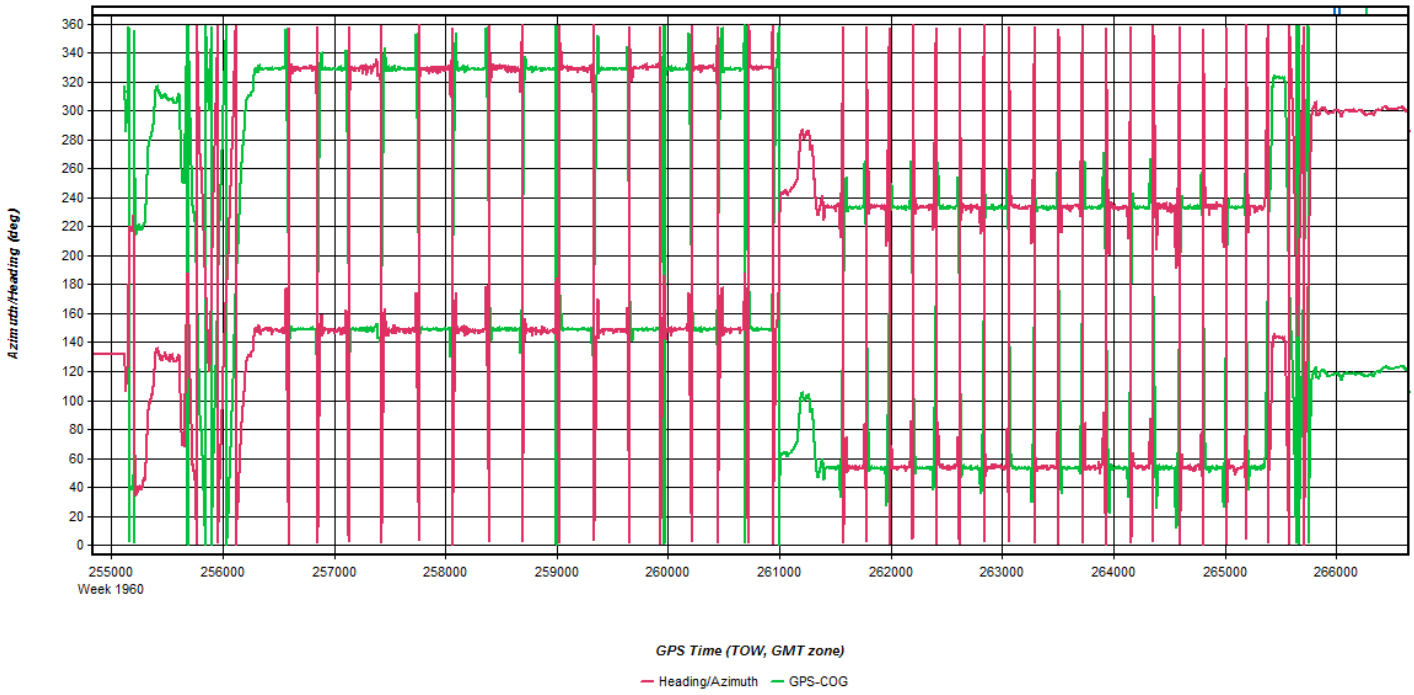

Height (m)
2200
2000
1800
1600
1400
1200
1000
800
600
400
200
0
255000
Week 1960
256000
257000
258000
259000
260000
261000
262000
263000
264000
265000
266000
GPS Time (TOW, GMT zone)
Height

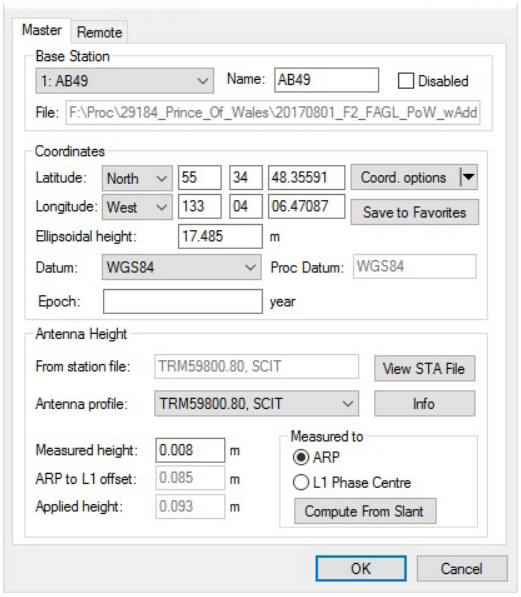

Num Sats
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
255000
Week 1960
256000
257000
258000
259000
260000
261000
262000
263000
264000
265000
266000
GPS Time (TOW, GMT zone)
Num Sats
GPS
GLONASS
BeiDou
Galileo
QZSS

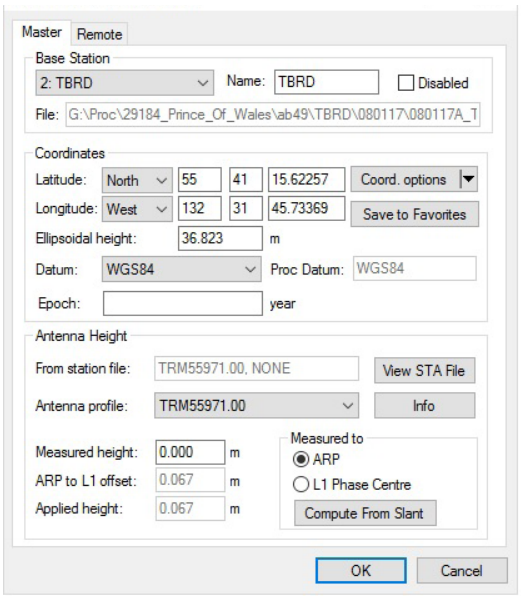

Separation (m)
0.4
0.3
0.2
0.1
-0.0
-0.1
-0.2
-0.3
-0.4
-0.5
-0.6
-0.7
-0.8
-0.9
255000
Week 1960
256000
257000
258000
259000
260000
261000
262000
263000
264000
265000
266000
GPS Time (TOW, GMT zone)
East
North
Up


Estimated StdDev (m)
0.0105
0.0100
0.0095
0.0090
0.0085
0.0080
0.0075
0.0070
0.0065
0.0060
0.0055
0.0050
0.0045
0.0040
0.0035
0.0030
0.0025
255000
Week 1960
256000
257000
258000
259000
260000
261000
262000
263000
264000
265000
266000
GPS Time (TOW, GMT zone)
East
North
Height

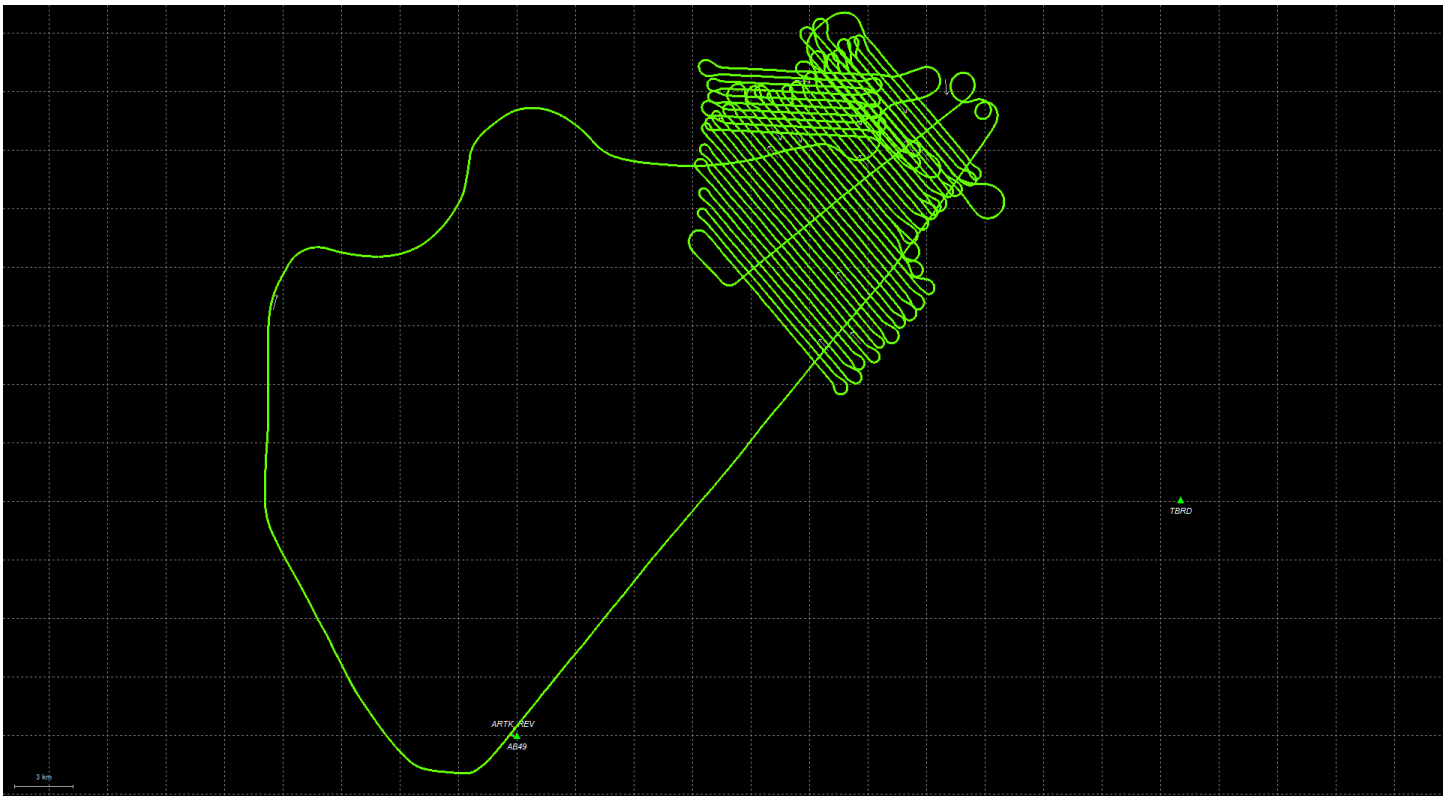

Separation (deg)
0.0030
0.0025
0.0020
0.0015
0.0010
0.0005
0.0000
-0.0005
-0.0010
-0.0015
-0.0020
-0.0025
-0.0030
-0.0035
-0.0040
-0.0045
255000
Week 1960
256000
257000
258000
259000
260000
261000
262000
263000
264000
265000
266000
GPS Time (TOW, GMT zone)
Roll
Pitch
Heading/Az

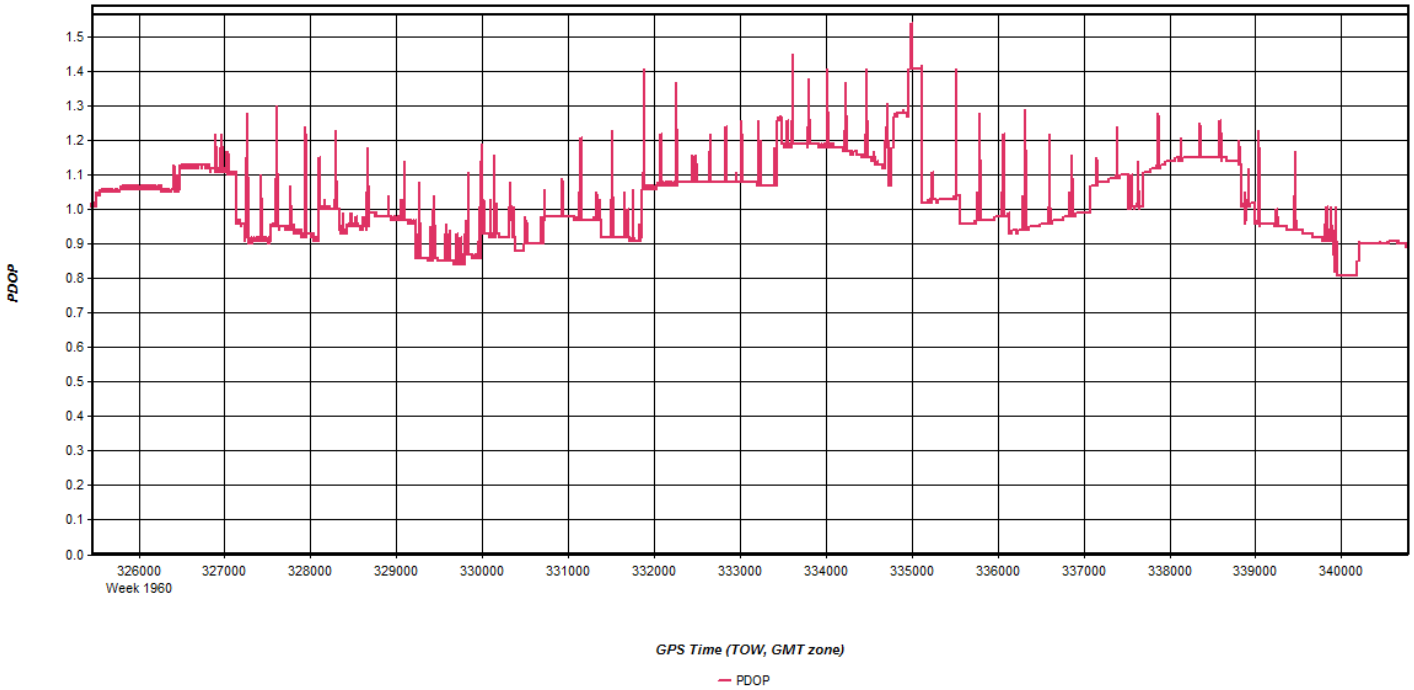

Azimuth/Heading (deg)
360
340
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
255000
Week 1960
256000
257000
258000
259000
260000
261000
262000
263000
264000
265000
266000
GPS Time (TOW, GMT zone)
Heading/Azimuth
GPS-COG

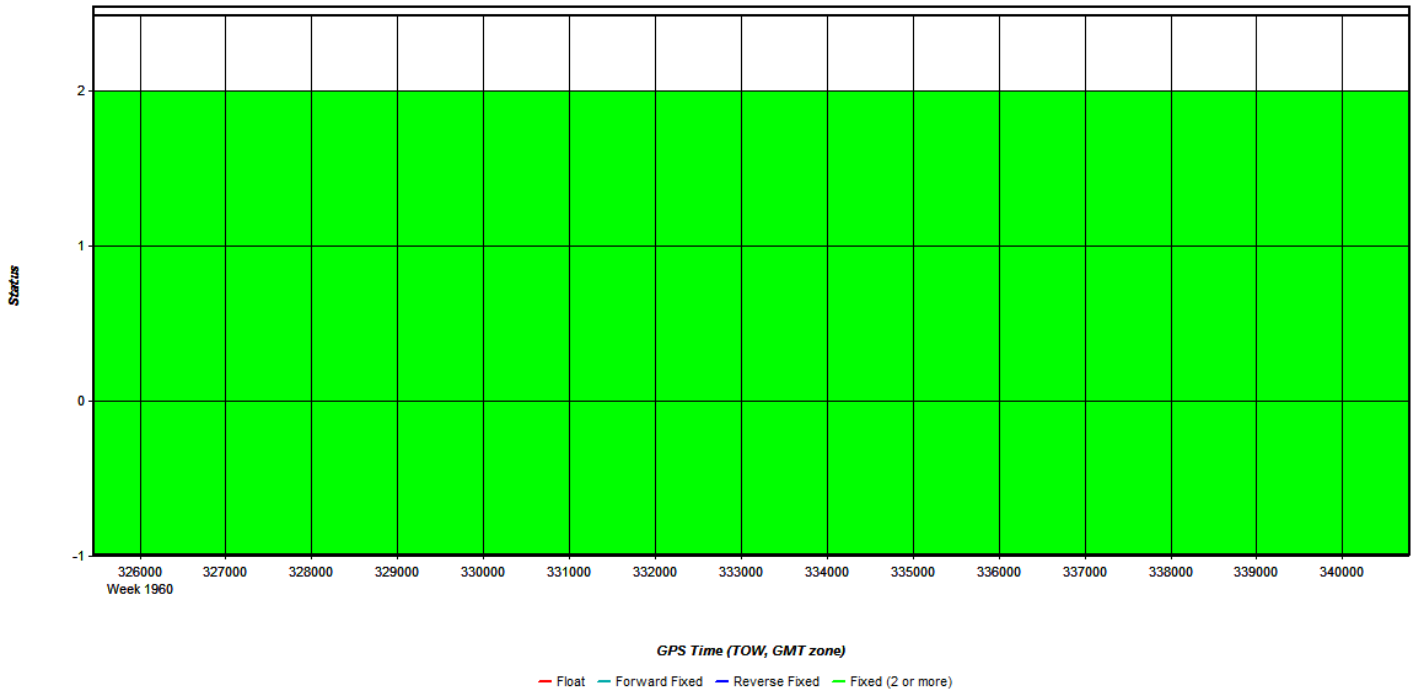

Master
Remote
Base Station
1: AB49
Name:
AB49
Disabled
File:
F:\Proc\29184_Prince_Of_Wales\20170801_F2_FAGL_PoW_wAdd
Coordinates
Latitude:
North
55
34
48.35591
Coord. options
Longitude:
West
133
04
06.47087
Save to Favorites
Ellipsoidal height:
17.485
m
Datum:
WGS84
Proc Datum:
WGS84
Epoch:
year
Antenna Height
From station file:
TRM59800.80, SCIT
View STA File
Antenna profile:
TRM59800.80, SCIT
Info
Measured height:
0.008
m
Measured to
ARP
ARP to L1 offset:
0.085
m
L1 Phase Centre
Applied height:
0.093
m
Compute From Slant
OK
Cancel

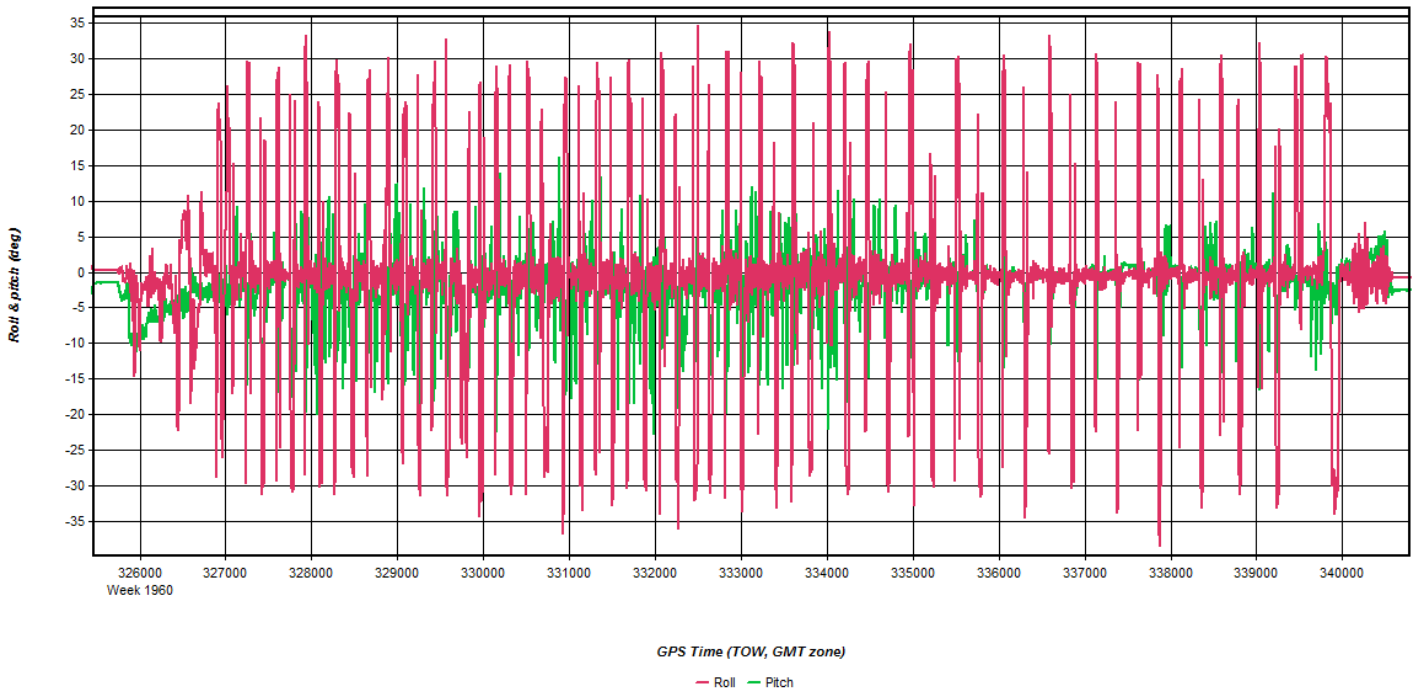

Master
Remote
Base Station
2: TBRD
Name:
TBRD
Disabled
File:
G:\Proc\29184_Prince_Of_Wales\ab49\TBRD\080117\080117A_T
Coordinates
Latitude:
North
55
41
15.62257
Coord. options
Longitude:
West
132
31
45.73369
Save to Favorites
Ellipsoidal height:
36.823
m
Datum:
WGS84
Proc Datum:
WGS84
Epoch:
year
Antenna Height
From station file:
TRM55971.00, NONE
View STA File
Antenna profile:
TRM55971.00
Info
Measured height:
0.000
m
Measured to
ARP
ARP to L1 offset:
0.067
m
L1 Phase Centre
Applied height:
0.067
m
Compute From Slant
OK
Cancel

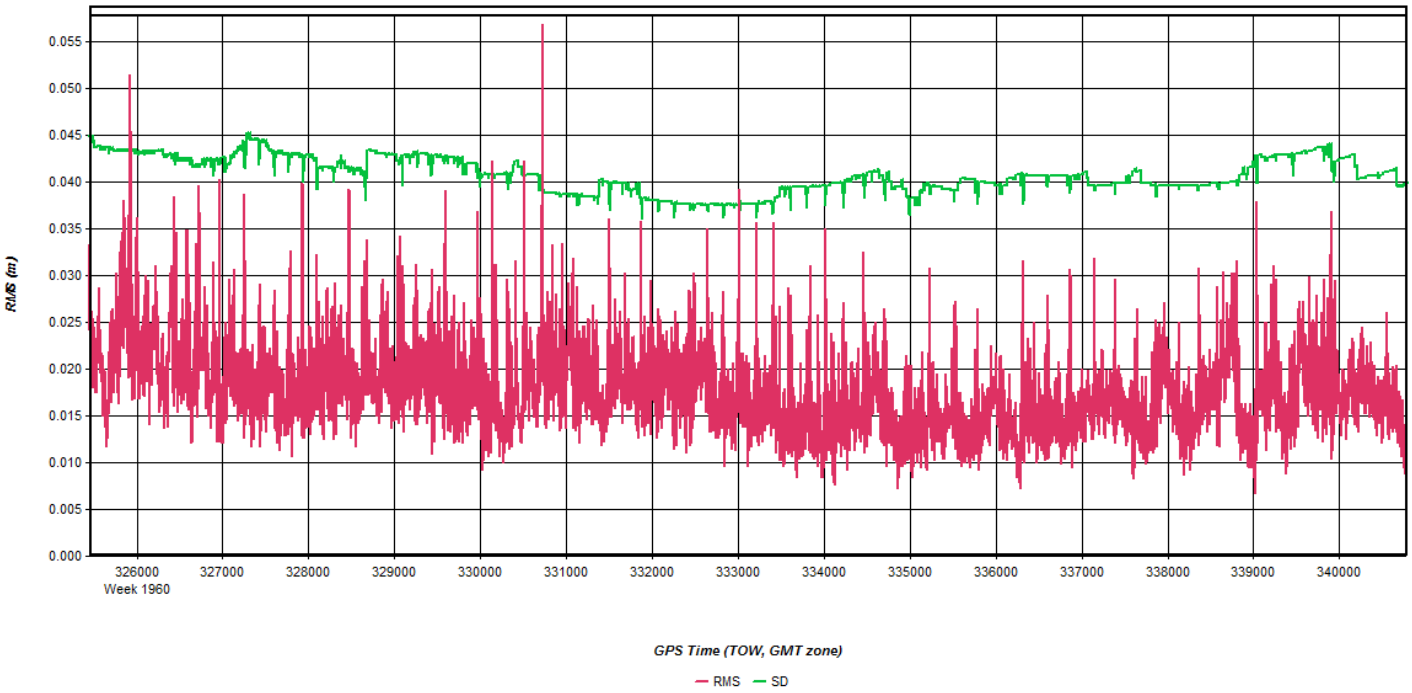
August 2, 2017-A (N604MD, SN8146)

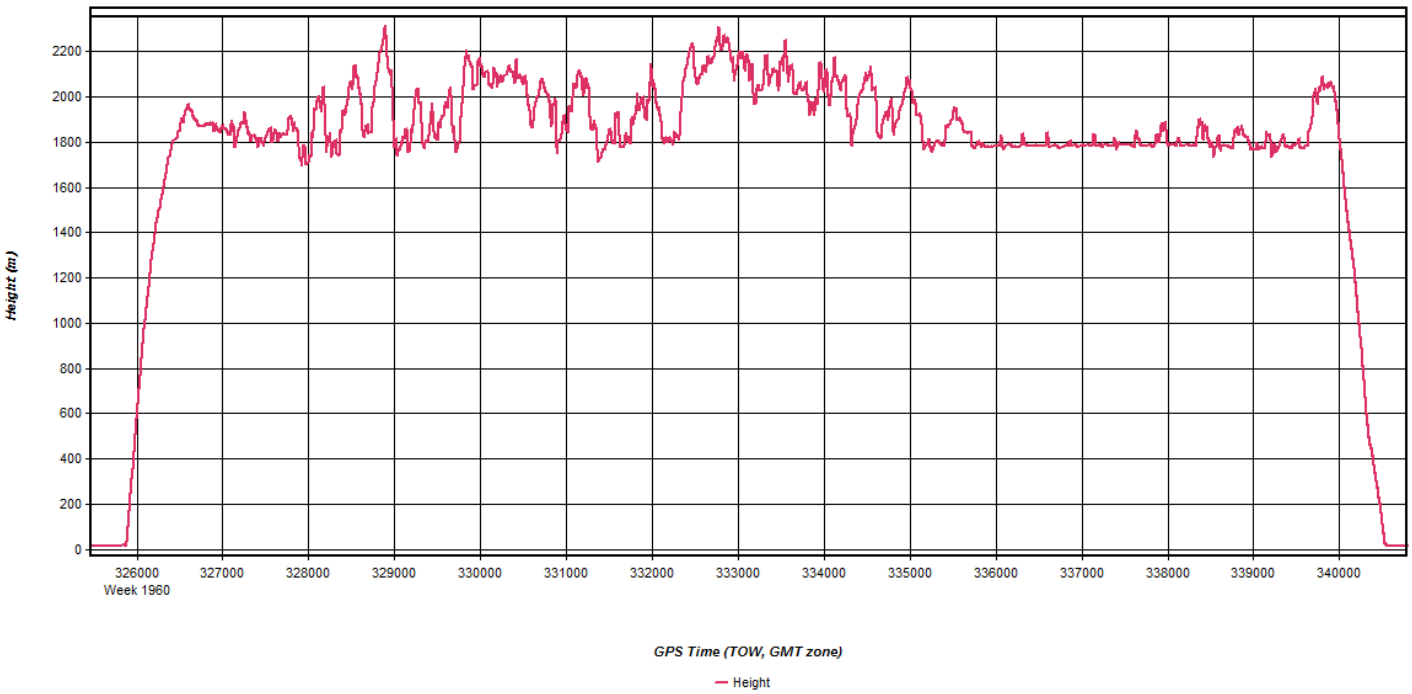

TBRD
ARTK_REV
AB49
3 km

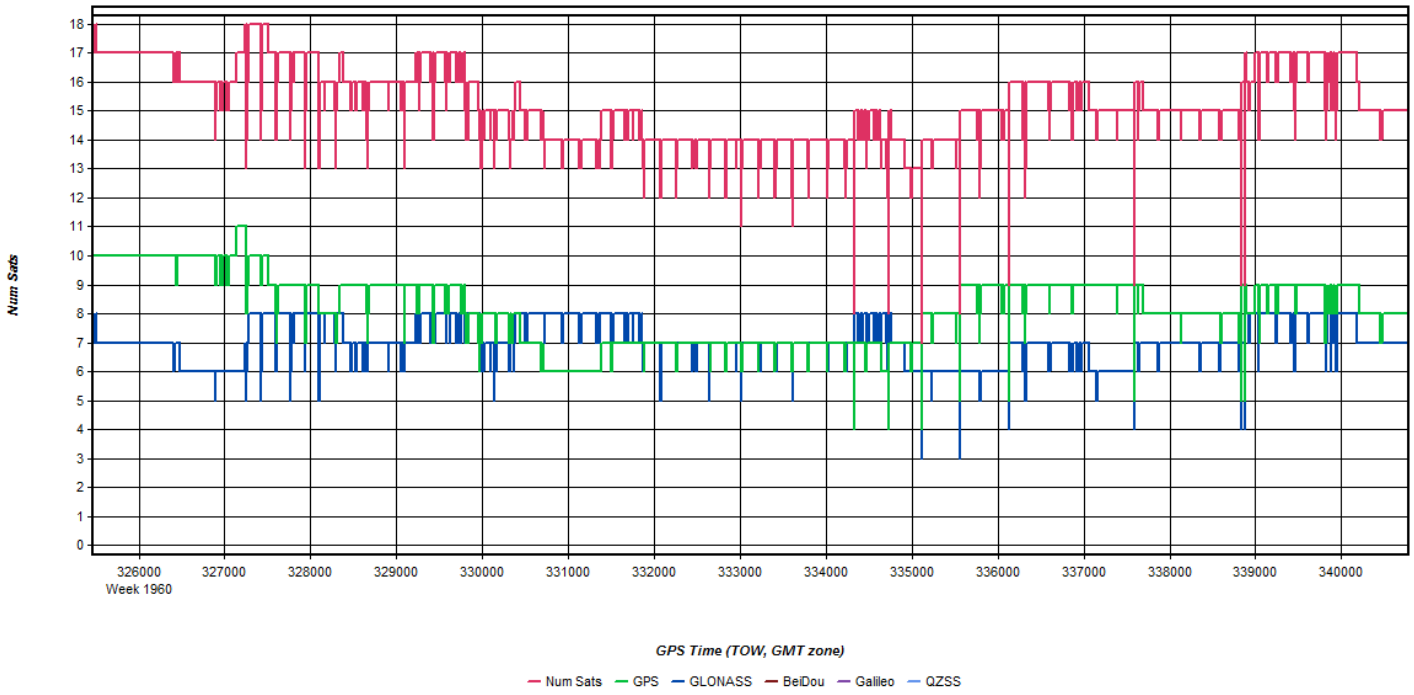

PDOP
1.5
1.4
1.3
1.2
1.1
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
326000
Week 1960
327000
328000
329000
330000
331000
332000
333000
334000
335000
336000
337000
338000
339000
340000
GPS Time (TOW, GMT zone)
PDOP

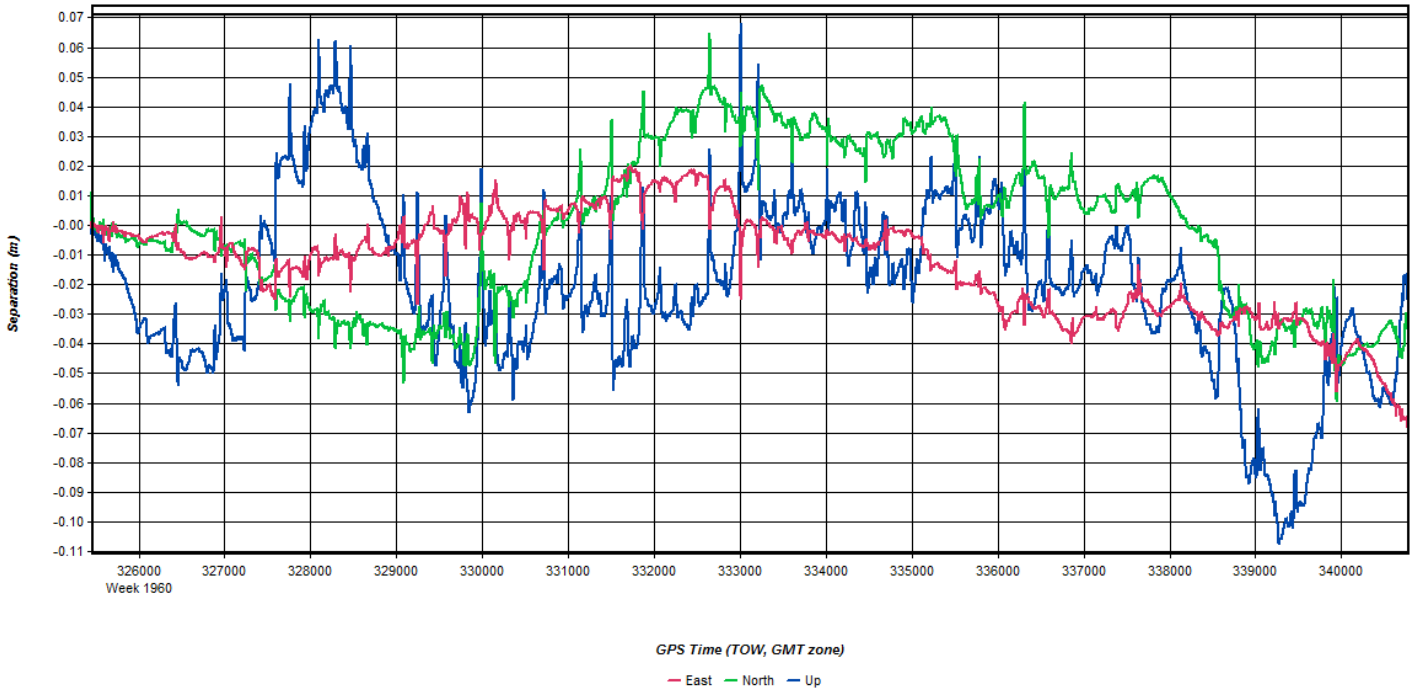

Status
2
1
0
-1
326000
Week 1960
327000
328000
329000
330000
331000
332000
333000
334000
335000
336000
337000
338000
339000
340000
GPS Time (TOW, GMT zone)
Float
Forward Fixed
Reverse Fixed
Fixed (2 or more)

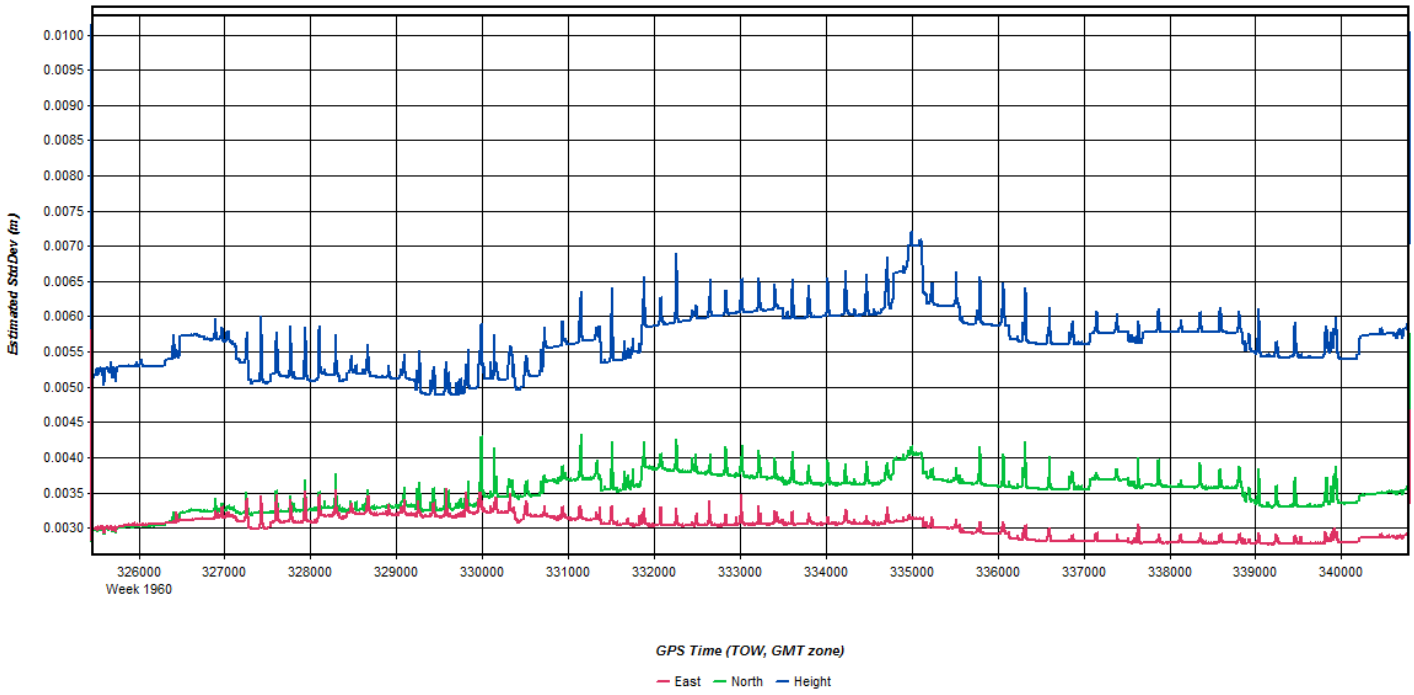

Roll & pitch (deg)
35
30
25
20
15
10
5
0
-5
-10
-15
-20
-25
-30
-35
326000
Week 1960
327000
328000
329000
330000
331000
332000
333000
334000
335000
336000
337000
338000
339000
340000
GPS Time (TOW, GMT zone)
Roll
Pitch

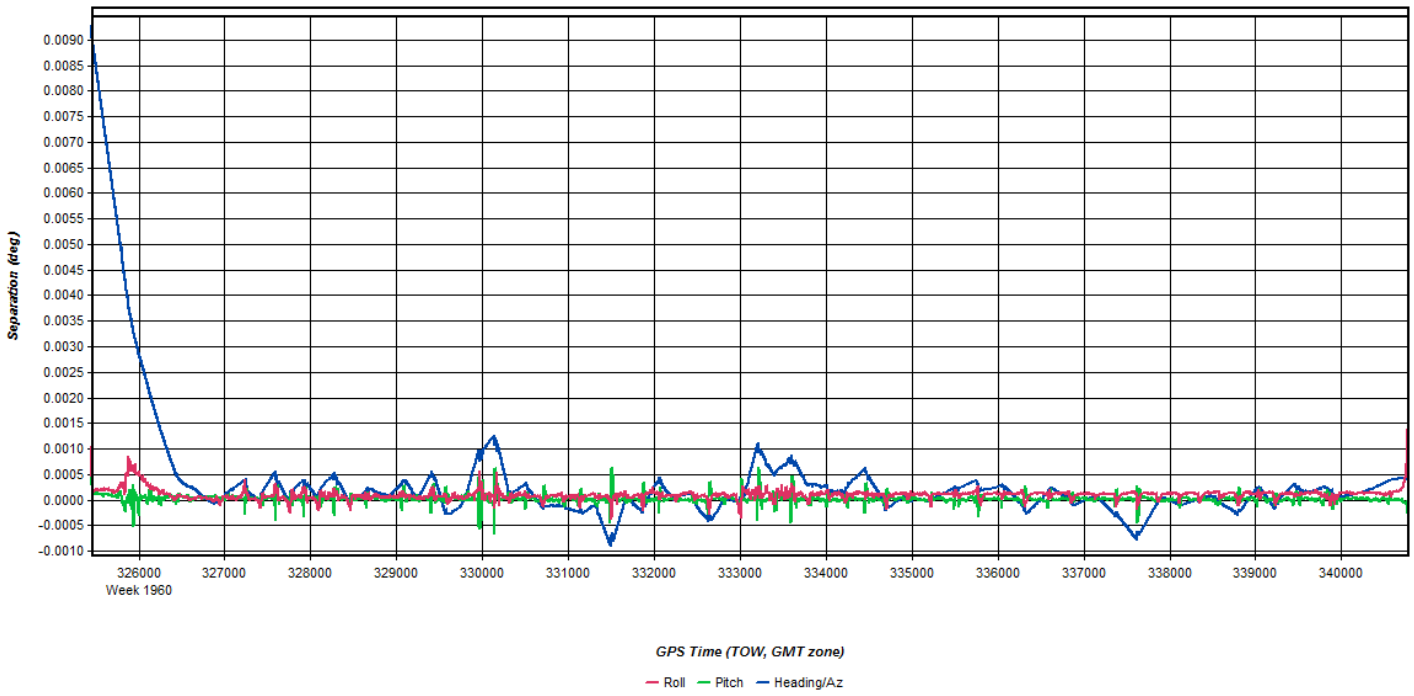

RMS (m)
0.055
0.050
0.045
0.040
0.035
0.030
0.025
0.020
0.015
0.010
0.005
0.000
326000
Week 1960
327000
328000
329000
330000
331000
332000
333000
334000
335000
336000
337000
338000
339000
340000
GPS Time (TOW, GMT zone)
RMS
SD

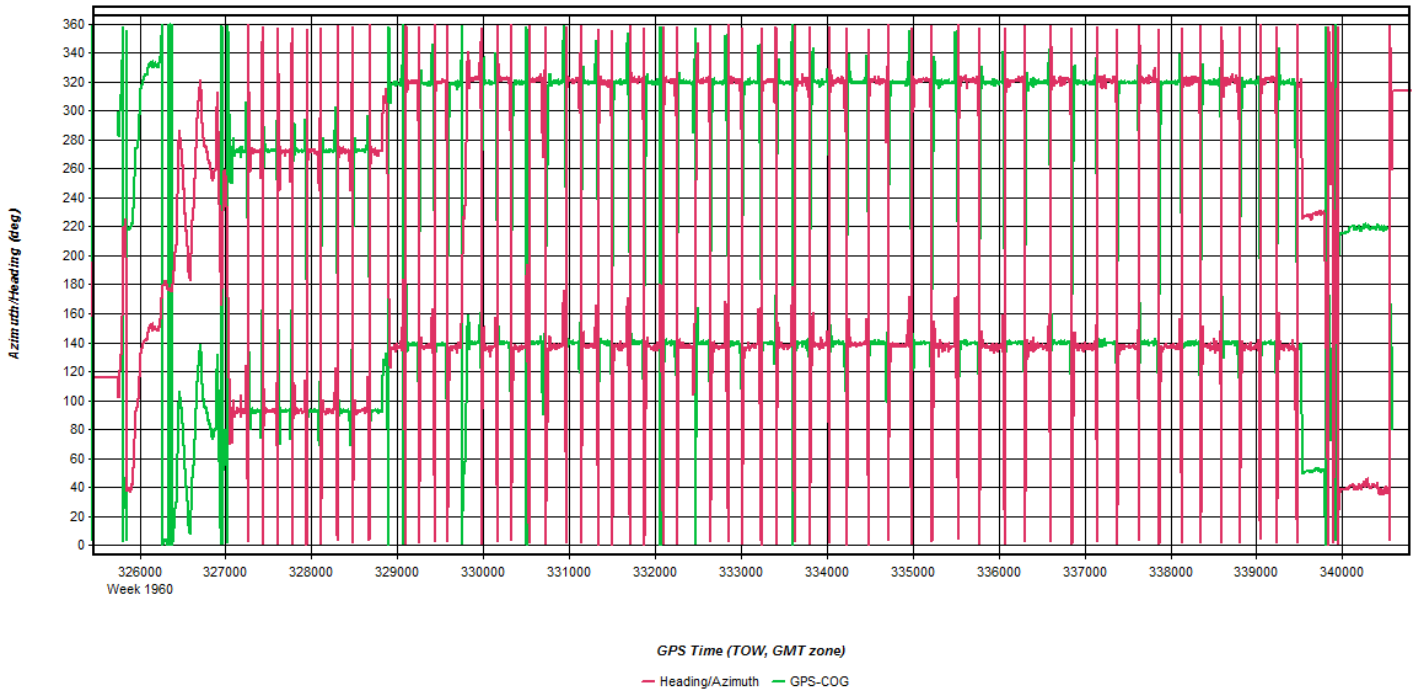

Height (m)
2200
2000
1800
1600
1400
1200
1000
800
600
400
200
0
326000
Week 1960
327000
328000
329000
330000
331000
332000
333000
334000
335000
336000
337000
338000
339000
340000
GPS Time (TOW, GMT zone)
Height

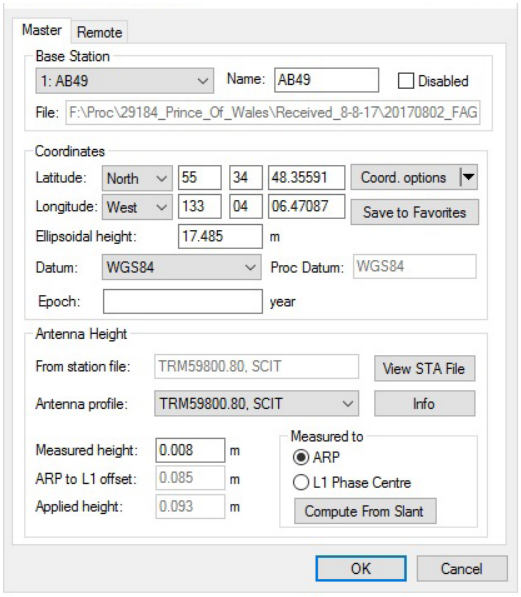

Num Sats
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
326000
Week 1960
327000
328000
329000
330000
331000
332000
333000
334000
335000
336000
337000
338000
339000
340000
GPS Time (TOW, GMT zone)
Num Sats
GPS
GLONASS
BeiDou
Galileo
QZSS

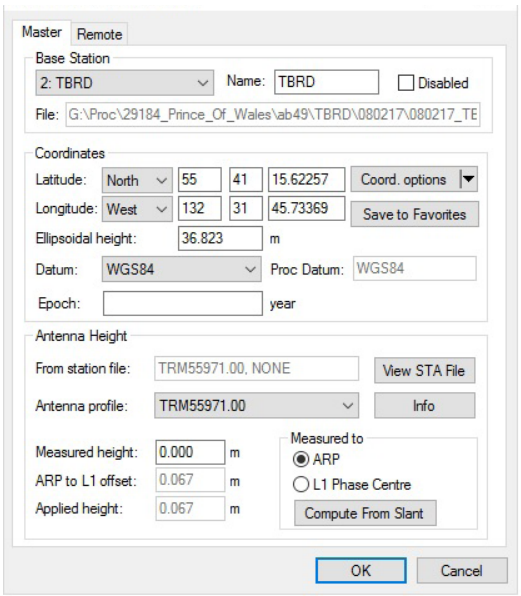

Separation (m)
0.07
0.06
0.05
0.04
0.03
0.02
0.01
-0.00
-0.01
-0.02
-0.03
-0.04
-0.05
-0.06
-0.07
-0.08
-0.09
-0.10
-0.11
326000
Week 1960
327000
328000
329000
330000
331000
332000
333000
334000
335000
336000
337000
338000
339000
340000
GPS Time (TOW, GMT zone)
East
North
Up


Estimated StdDev (m)
0.0100
0.0095
0.0090
0.0085
0.0080
0.0075
0.0070
0.0065
0.0060
0.0055
0.0050
0.0045
0.0040
0.0035
0.0030
326000
Week 1960
327000
328000
329000
330000
331000
332000
333000
334000
335000
336000
337000
338000
339000
340000
GPS Time (TOW, GMT zone)
East
North
Height

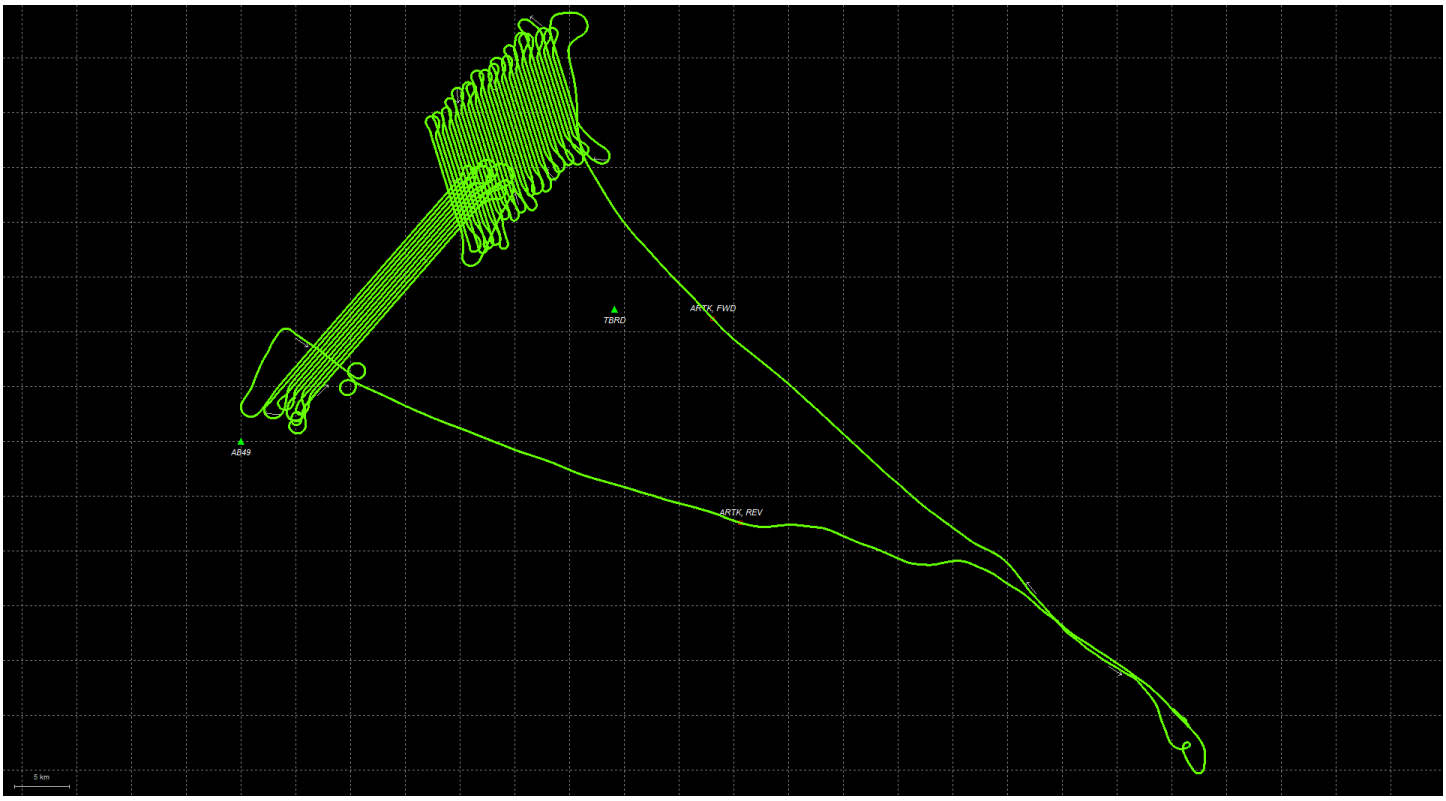

Separation (deg)
0.0090
0.0085
0.0080
0.0075
0.0070
0.0065
0.0060
0.0055
0.0050
0.0045
0.0040
0.0035
0.0030
0.0025
0.0020
0.0015
0.0010
0.0005
0.0000
-0.0005
-0.0010
326000
Week 1960
327000
328000
329000
330000
331000
332000
333000
334000
335000
336000
337000
338000
339000
340000
GPS Time (TOW, GMT zone)
Roll
Pitch
Heading/Az

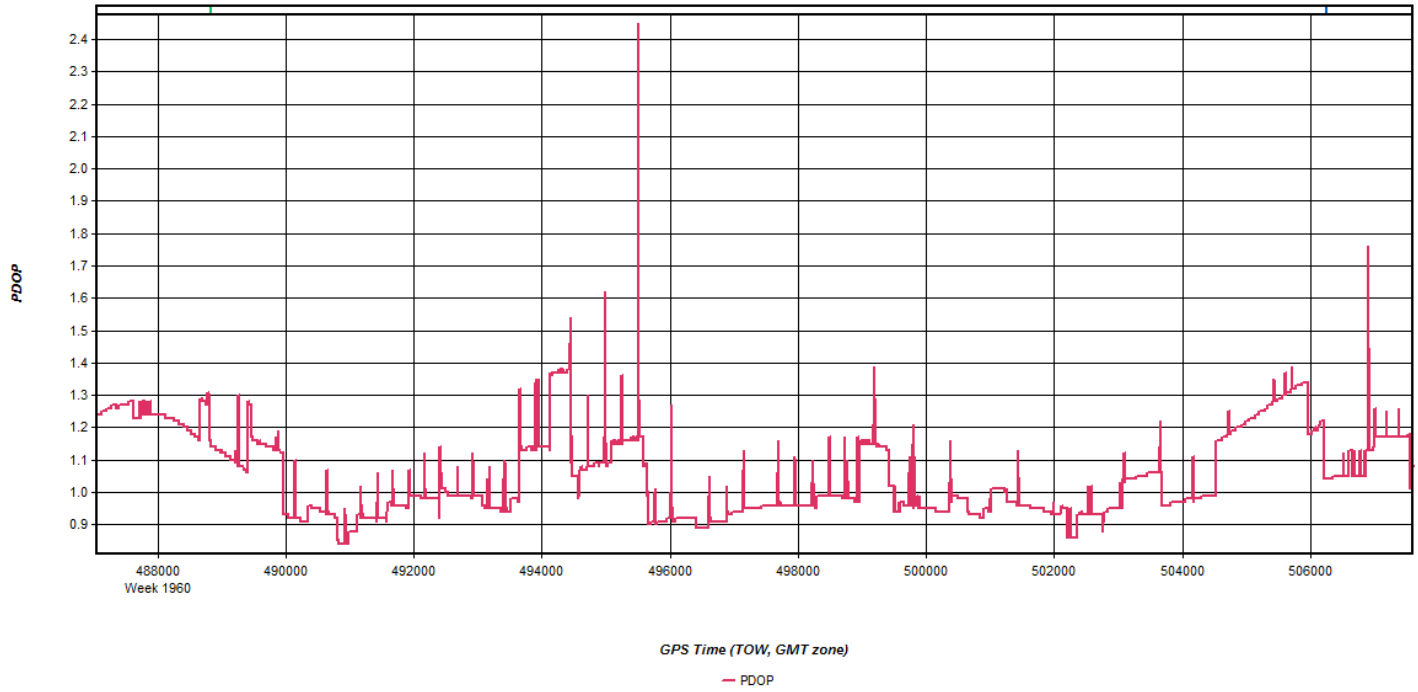

Azimuth/Heading (deg)
360
340
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
326000
Week 1960
327000
328000
329000
330000
331000
332000
333000
334000
335000
336000
337000
338000
339000
340000
GPS Time (TOW, GMT zone)
Heading/Azimuth
GPS-COG

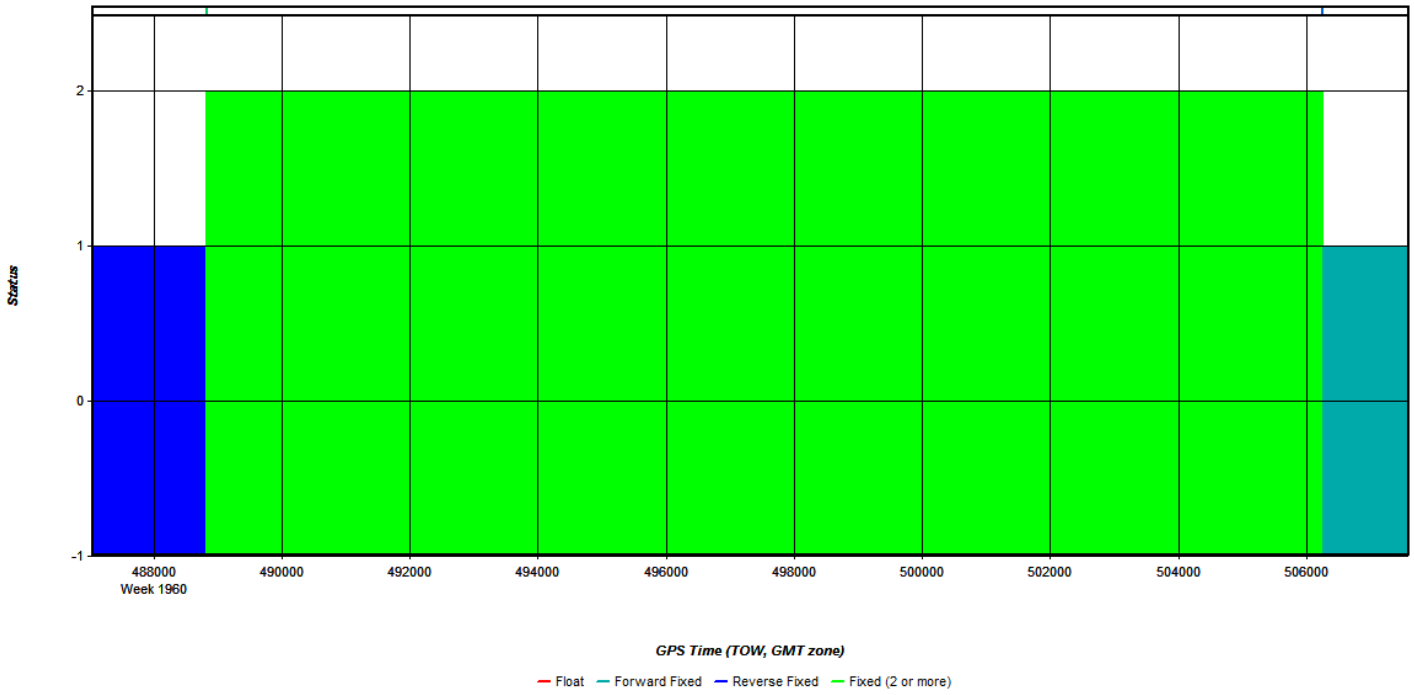

Master
Remote
Base Station
1: AB49
Name:
AB49
Disabled
File:
F:\Proc\29184_Prince_Of_Wales\Received_8-8-17\20170802_FAG
Coordinates
Latitude:
North
55
34
48.35591
Coord. options
Longitude:
West
133
04
06.47087
Save to Favorites
Ellipsoidal height:
17.485
m
Datum:
WGS84
Proc Datum:
WGS84
Epoch:
year
Antenna Height
From station file:
TRM59800.80, SCIT
View STA File
Antenna profile:
TRM59800.80, SCIT
Info
Measured height:
0.008
m
Measured to
ARP
ARP to L1 offset:
0.085
m
L1 Phase Centre
Applied height:
0.093
m
Compute From Slant
OK
Cancel

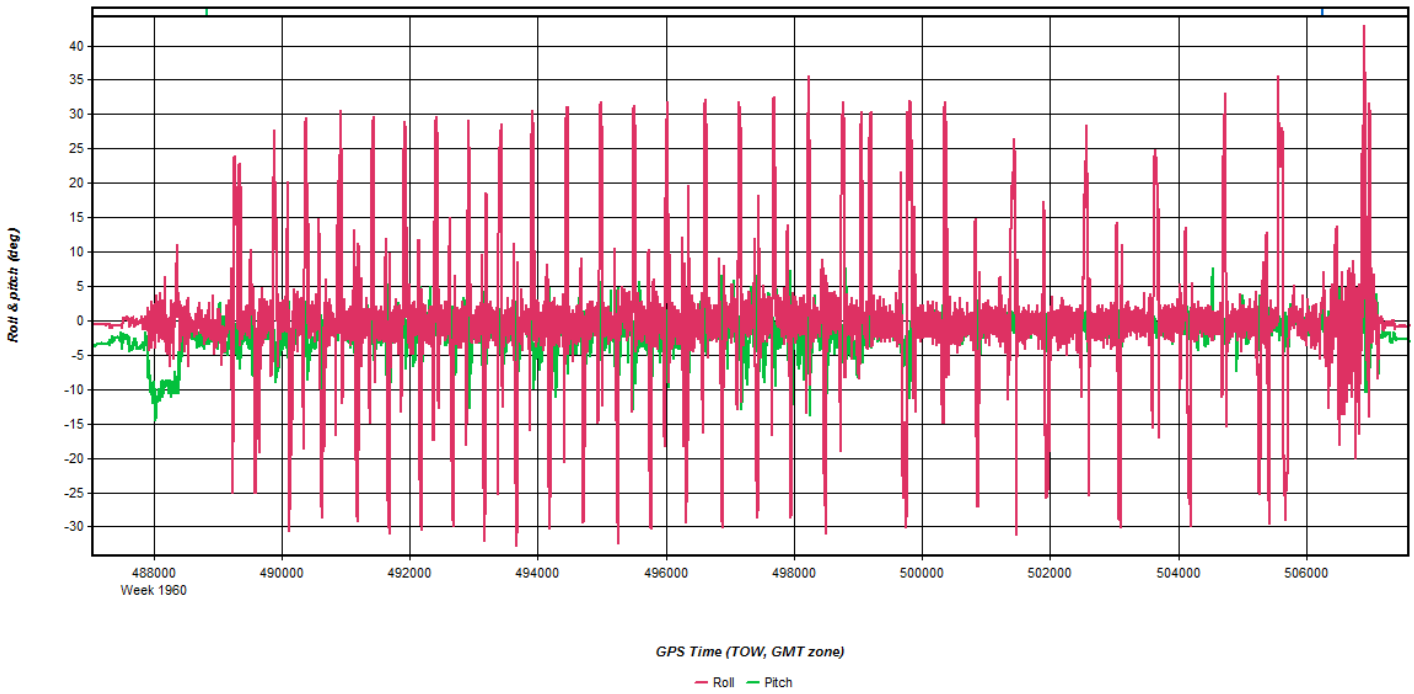

Master
Remote
Base Station
2: TBRD
Name:
TBRD
Disabled
File:
G:\Proc\29184_Prince_Of_Wales\ab49\TBRD\080217\080217_TE
Coordinates
Latitude:
North
55
41
15.62257
Coord. options
Longitude:
West
132
31
45.73369
Save to Favorites
Ellipsoidal height:
36.823
m
Datum:
WGS84
Proc Datum:
WGS84
Epoch:
year
Antenna Height
From station file:
TRM55971.00, NONE
View STA File
Antenna profile:
TRM55971.00
Info
Measured height:
0.000
m
Measured to
ARP
ARP to L1 offset:
0.067
m
L1 Phase Centre
Applied height:
0.067
m
Compute From Slant
OK
Cancel

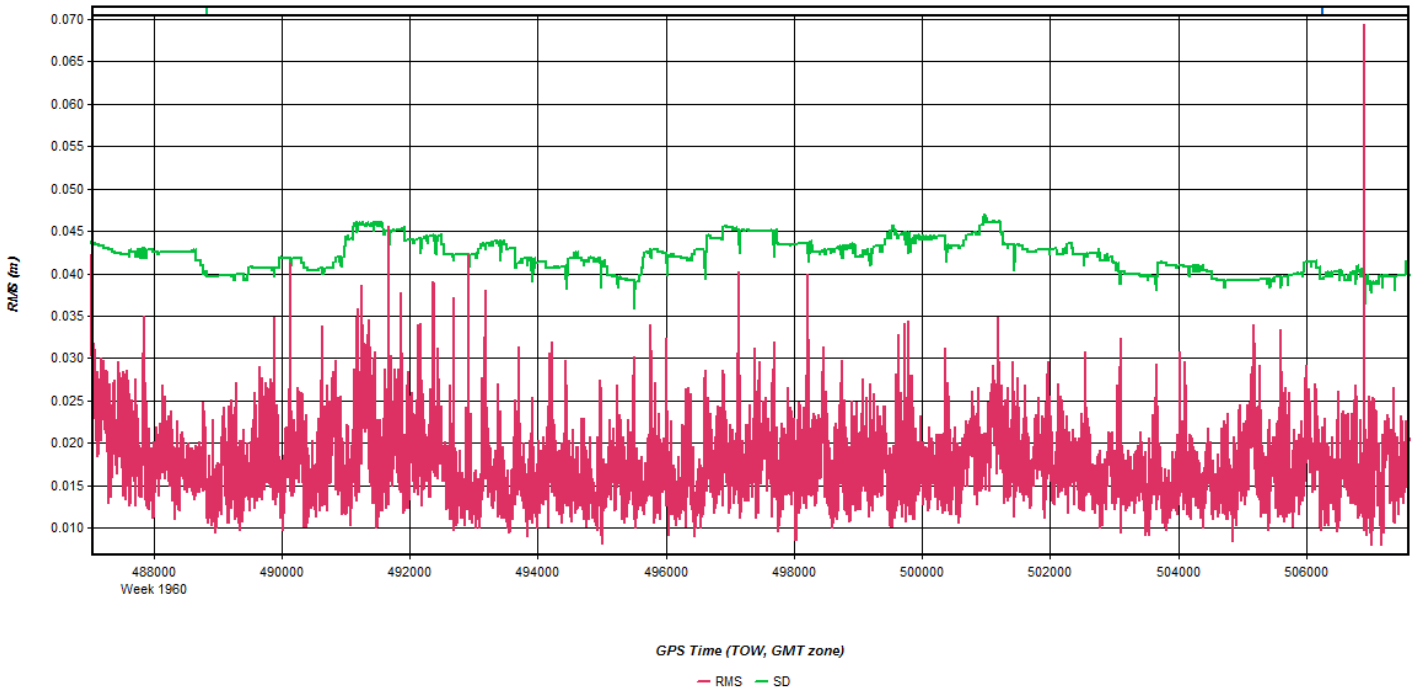
August 4, 2017-A (N604MD, SN8146)

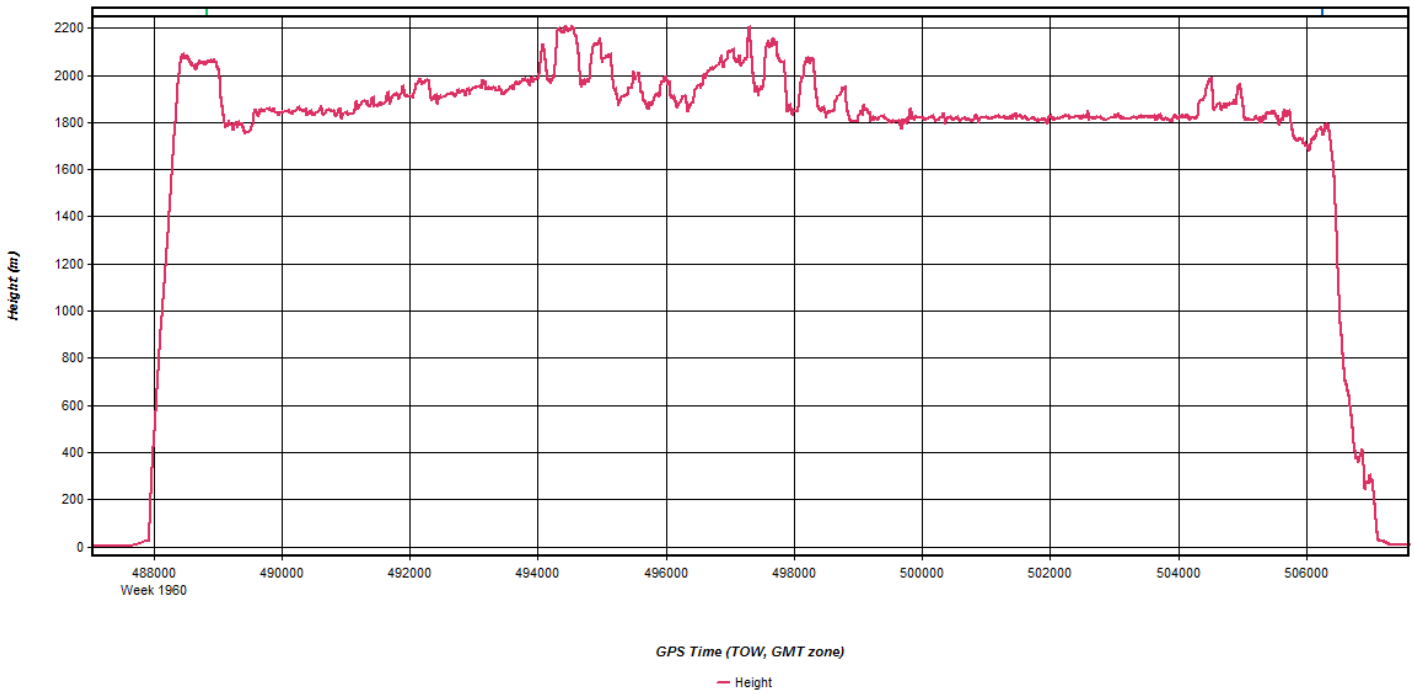

TBRD
ARTK_FWD
AB49
ARTK_REV
5 km

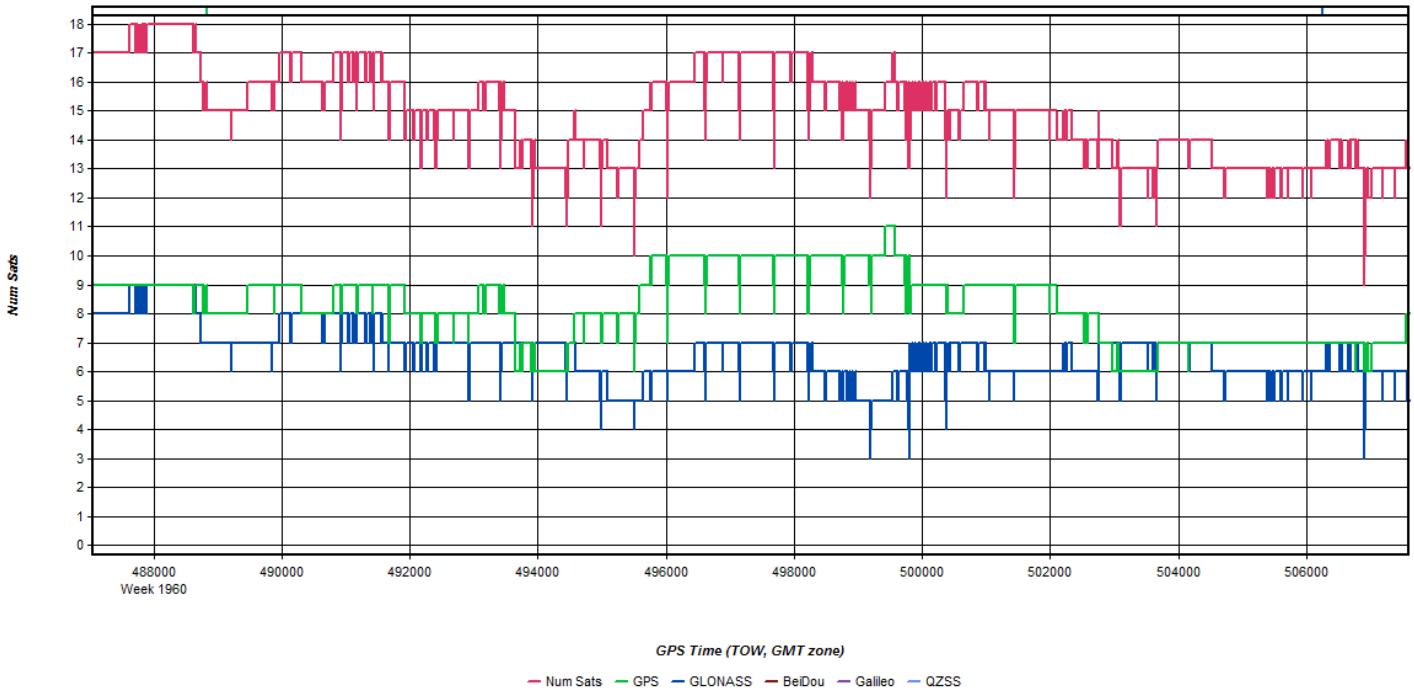

PDOP
2.4
2.3
2.2
2.1
2.0
1.9
1.8
1.7
1.6
1.5
1.4
1.3
1.2
1.1
1.0
0.9
488000
Week 1960
490000
492000
494000
496000
498000
500000
502000
504000
506000
GPS Time (TOW, GMT zone)
PDOP

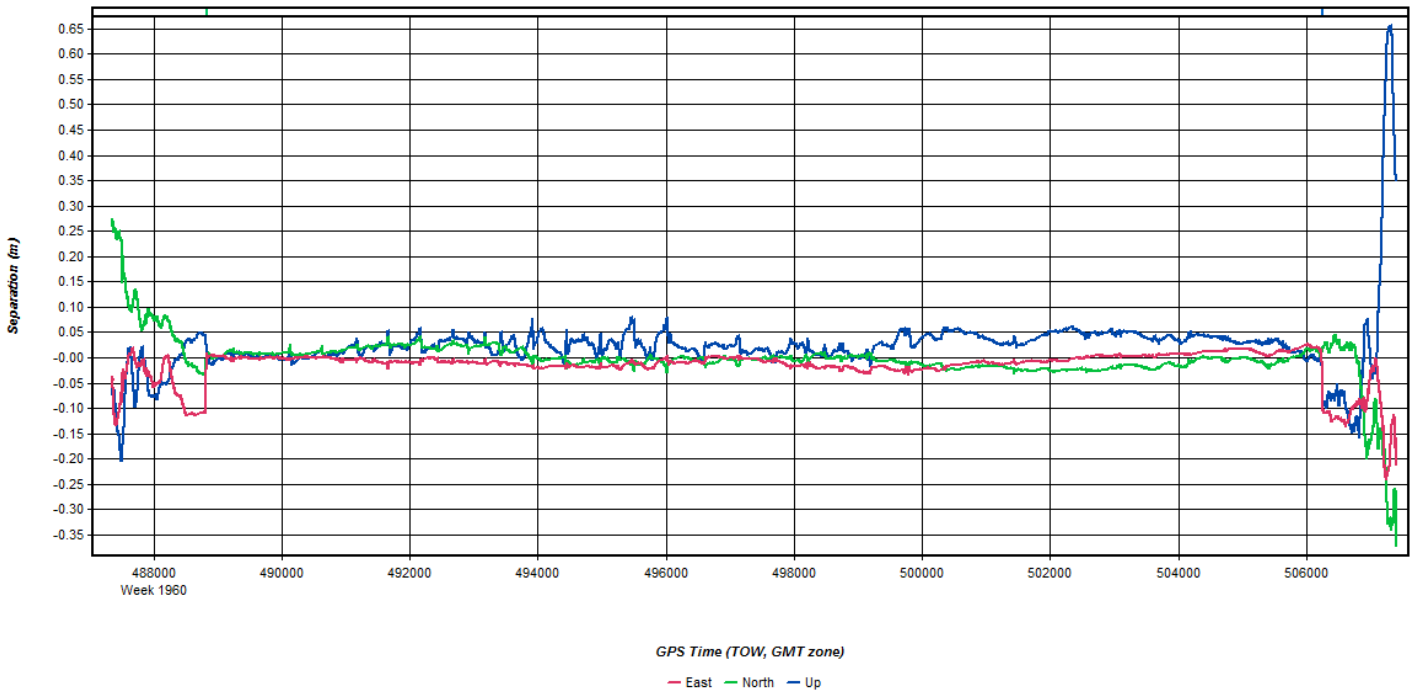

Status
2
1
0
-1
488000
Week 1960
490000
492000
494000
496000
498000
500000
502000
504000
506000
GPS Time (TOW, GMT zone)
Float
Forward Fixed
Reverse Fixed
Fixed (2 or more)

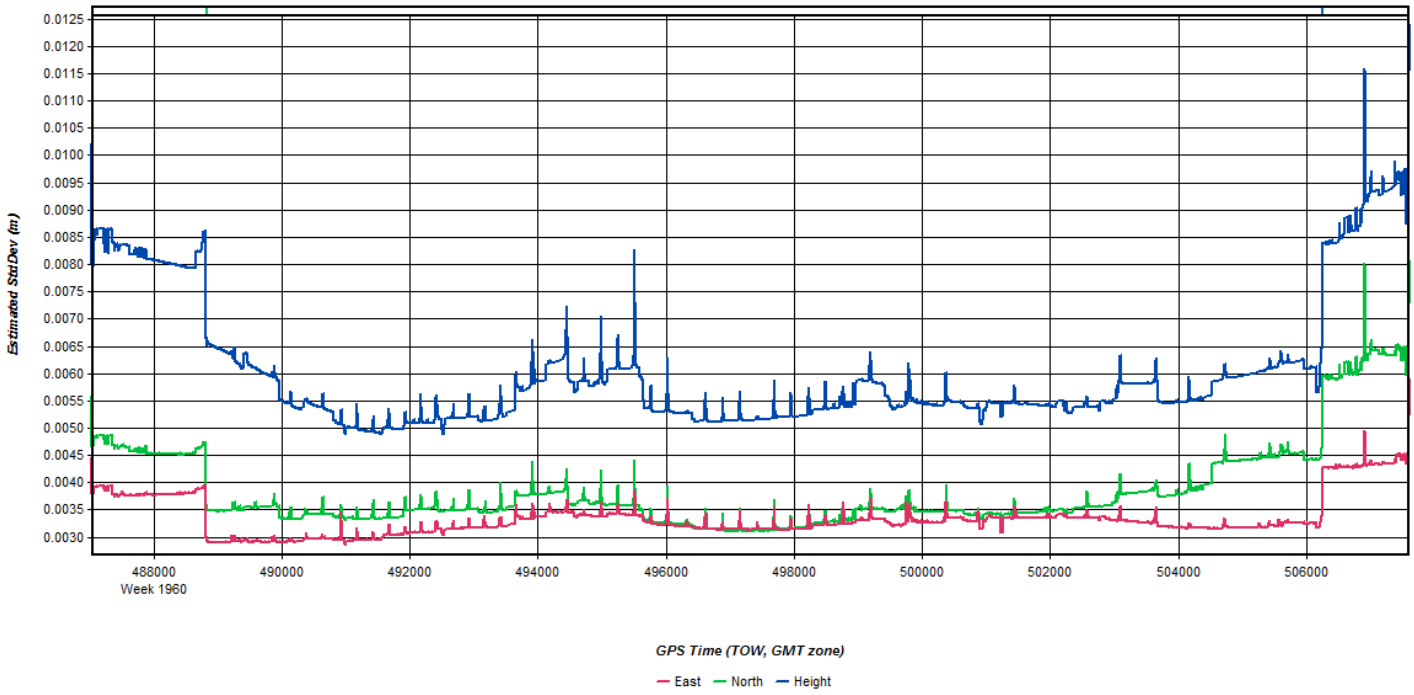

Roll & pitch (deg)
40
35
30
25
20
15
10
5
0
-5
-10
-15
-20
-25
-30
488000
Week 1960
490000
492000
494000
496000
498000
500000
502000
504000
506000
GPS Time (TOW, GMT zone)
Roll
Pitch

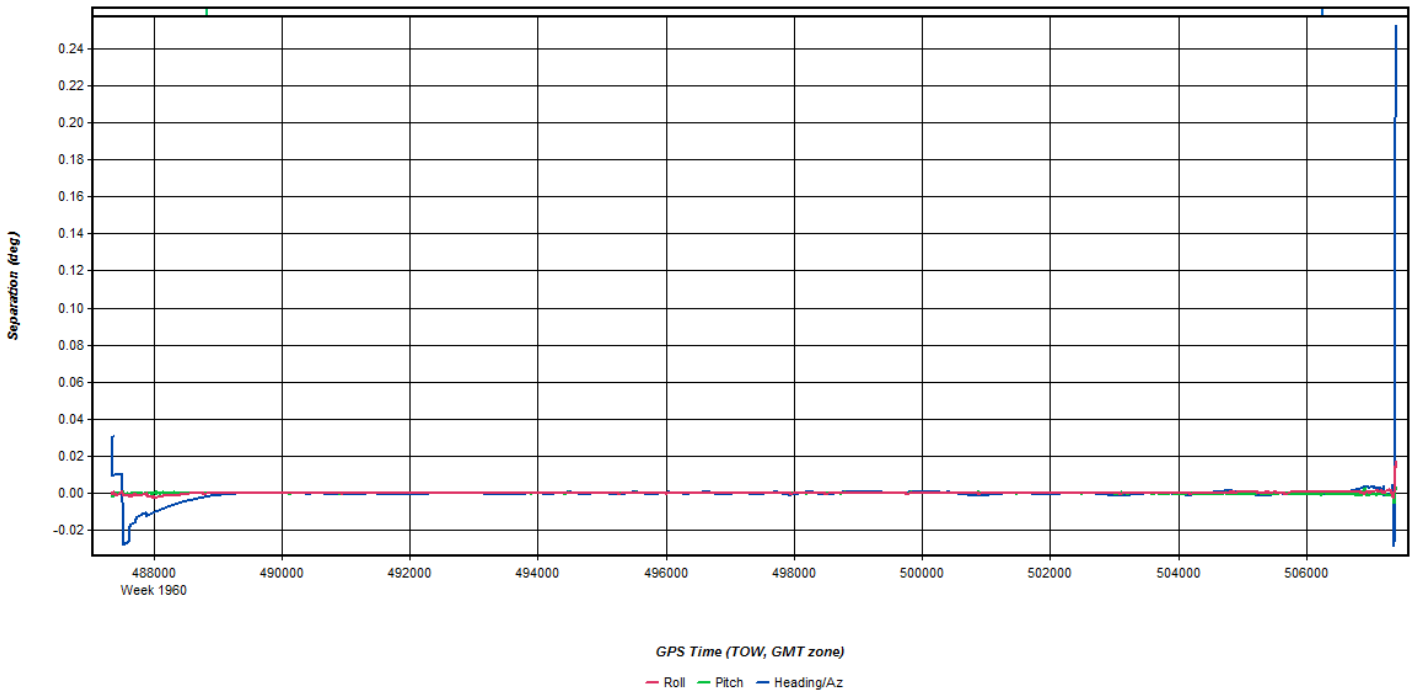

RMS (m)
0.070
0.065
0.060
0.055
0.050
0.045
0.040
0.035
0.030
0.025
0.020
0.015
0.010
488000
Week 1960
490000
492000
494000
496000
498000
500000
502000
504000
506000
GPS Time (TOW, GMT zone)
RMS
SD

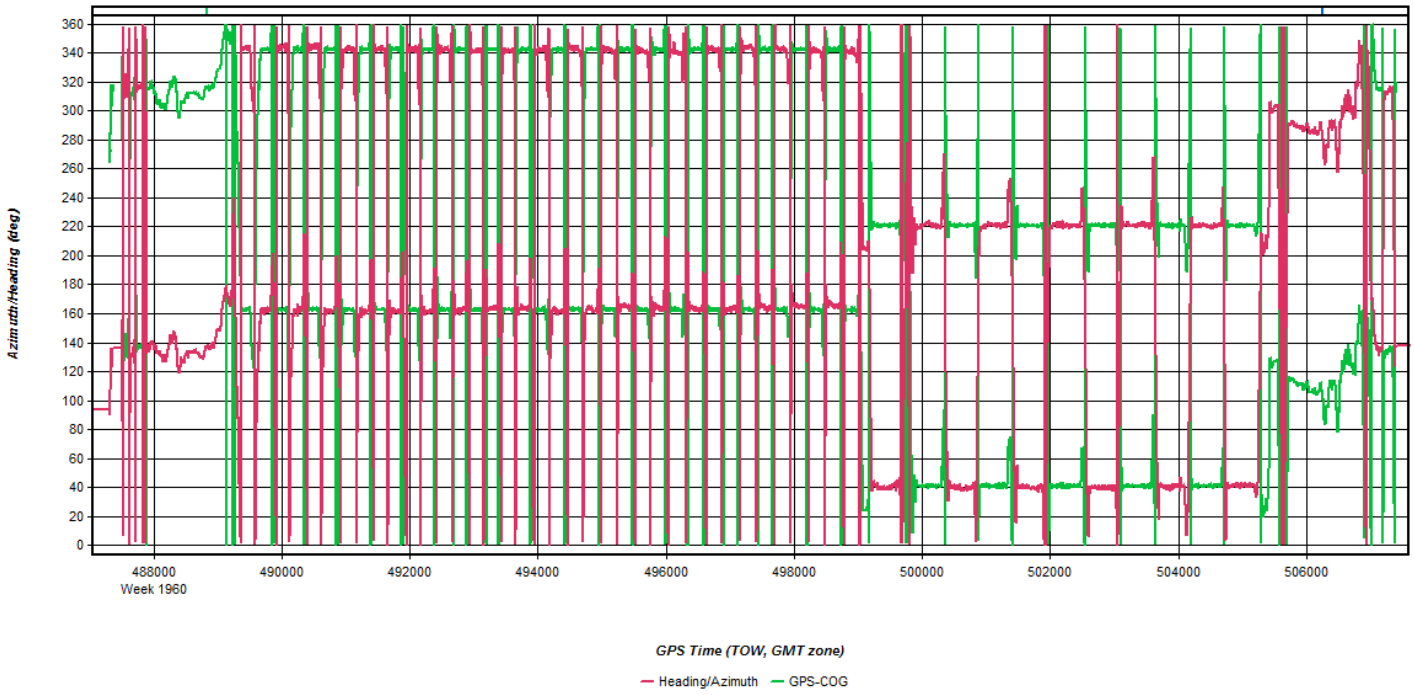

Height (m)
2200
2000
1800
1600
1400
1200
1000
800
600
400
200
0
488000
Week 1960
490000
492000
494000
496000
498000
500000
502000
504000
506000
GPS Time (TOW, GMT zone)
Height

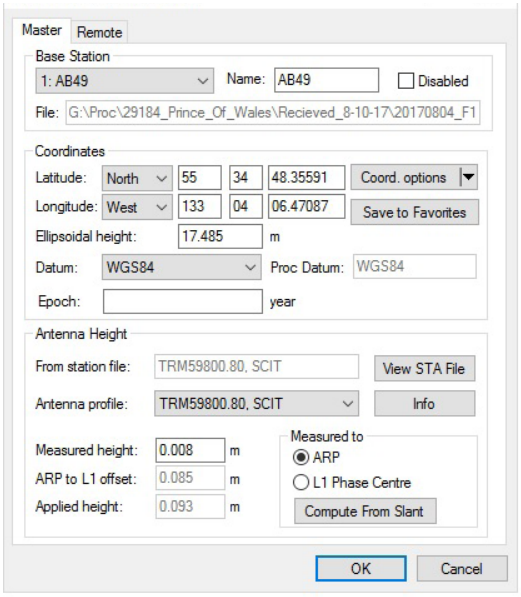

Num Sats
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
488000
Week 1960
490000
492000
494000
496000
498000
500000
502000
504000
506000
GPS Time (TOW, GMT zone)
Num Sats
GPS
GLONASS
BeiDou
Galileo
QZSS

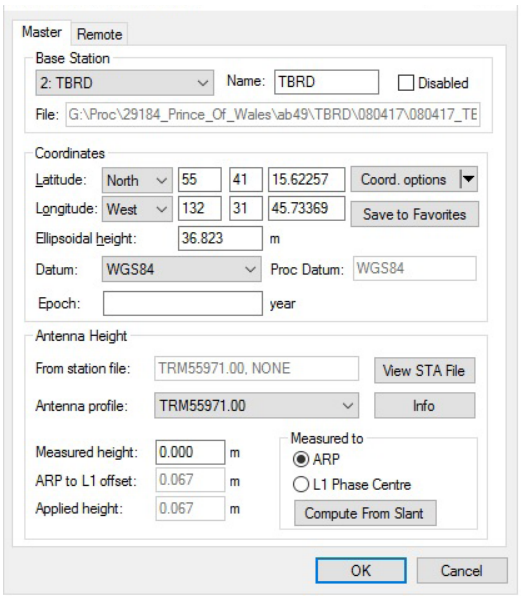

Separation (m)
0.65
0.60
0.55
0.50
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
-0.00
-0.05
-0.10
-0.15
-0.20
-0.25
-0.30
-0.35
488000
Week 1960
490000
492000
494000
496000
498000
500000
502000
504000
506000
GPS Time (TOW, GMT zone)
East
North
Up


Estimated StdDev (m)
0.0125
0.0120
0.0115
0.0110
0.0105
0.0100
0.0095
0.0090
0.0085
0.0080
0.0075
0.0070
0.0065
0.0060
0.0055
0.0050
0.0045
0.0040
0.0035
0.0030
488000
Week 1960
490000
492000
494000
496000
498000
500000
502000
504000
506000
GPS Time (TOW, GMT zone)
East
North
Height

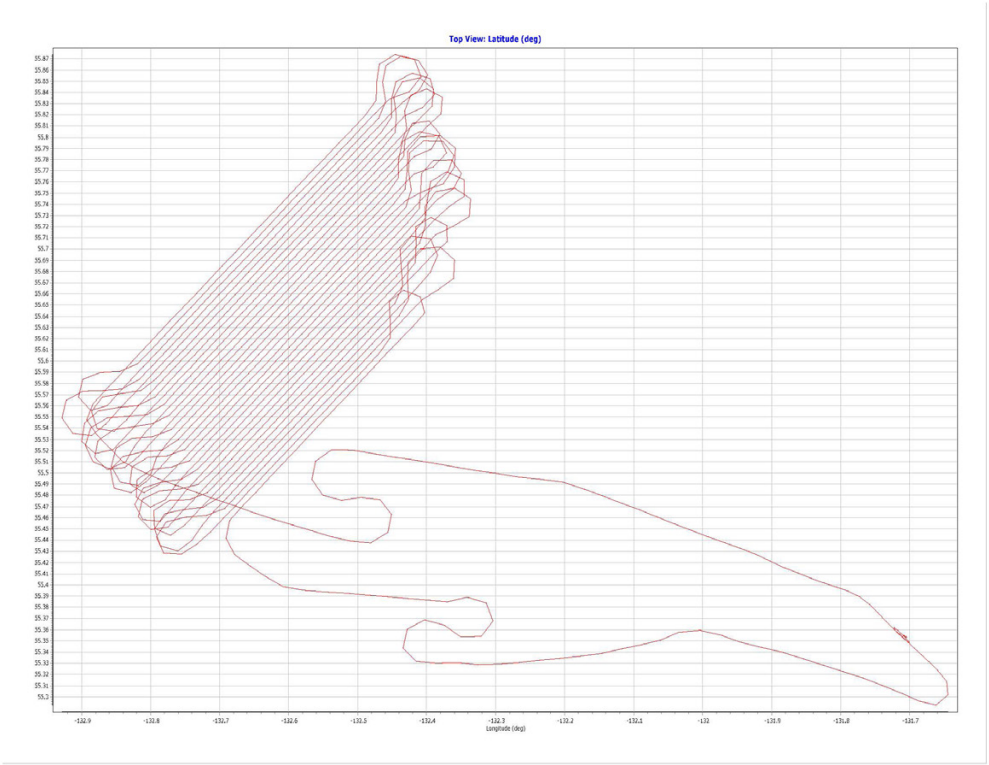

Separation (deg)
0.24
0.22
0.20
0.18
0.16
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
-0.02
488000
Week 1960
490000
492000
494000
496000
498000
500000
502000
504000
506000
GPS Time (TOW, GMT zone)
Roll
Pitch
Heading/Az

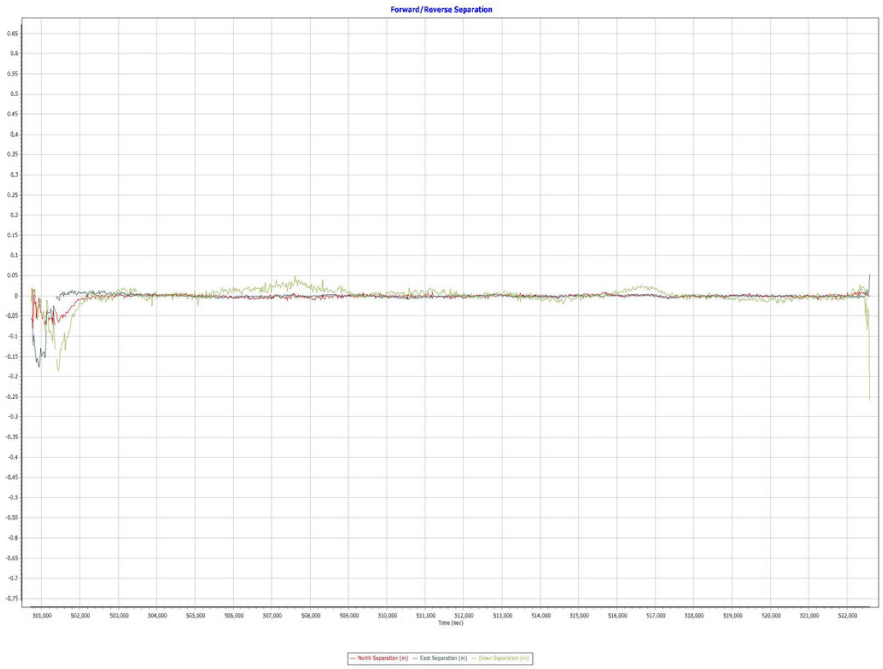

Azimuth/Heading (deg)
360
340
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
488000
Week 1960
490000
492000
494000
496000
498000
500000
502000
504000
506000
GPS Time (TOW, GMT zone)
Heading/Azimuth
GPS-COG


Master
Remote
Base Station
1: AB49
Name:
AB49
Disabled
File:
G:\Proc\29184_Prince_Of_Wales\Recieved_8-10-17\20170804_F1
Coordinates
Latitude:
North
55
34
48.35591
Coord. options
Longitude:
West
133
04
06.47087
Save to Favorites
Ellipsoidal height:
17.485
m
Datum:
WGS84
Proc Datum:
WGS84
Epoch:
year
Antenna Height
From station file:
TRM59800.80, SCIT
View STA File
Antenna profile:
TRM59800.80, SCIT
Info
Measured height:
0.008
m
Measured to
ARP
ARP to L1 offset:
0.085
m
L1 Phase Centre
Applied height:
0.093
m
Compute From Slant
OK
Cancel

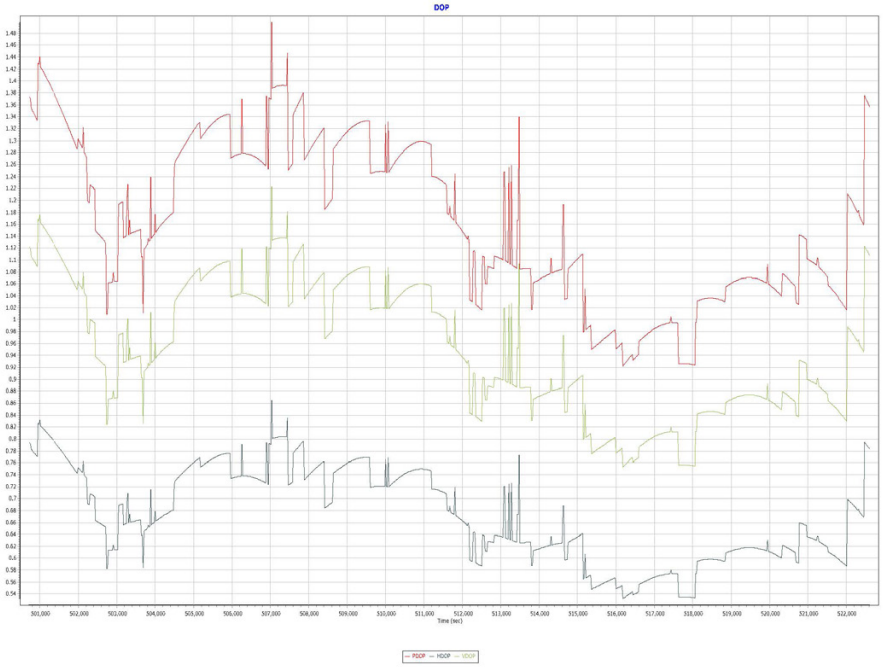

Master
Remote
Base Station
2: TBRD
Name:
TBRD
Disabled
File:
G:\Proc\29184_Prince_Of_Wales\ab49\TBRD\080417\080417_TE
Coordinates
Latitude:
North
55
41
15.62257
Coord. options
Longitude:
West
132
31
45.73369
Save to Favorites
Ellipsoidal height:
36.823
m
Datum:
WGS84
Proc Datum:
WGS84
Epoch:
year
Antenna Height
From station file:
TRM55971.00, NONE
View STA File
Antenna profile:
TRM55971.00
Info
Measured height:
0.000
m
Measured to
ARP
ARP to L1 offset:
0.067
m
L1 Phase Centre
Applied height:
0.067
m
Compute From Slant
OK
Cancel

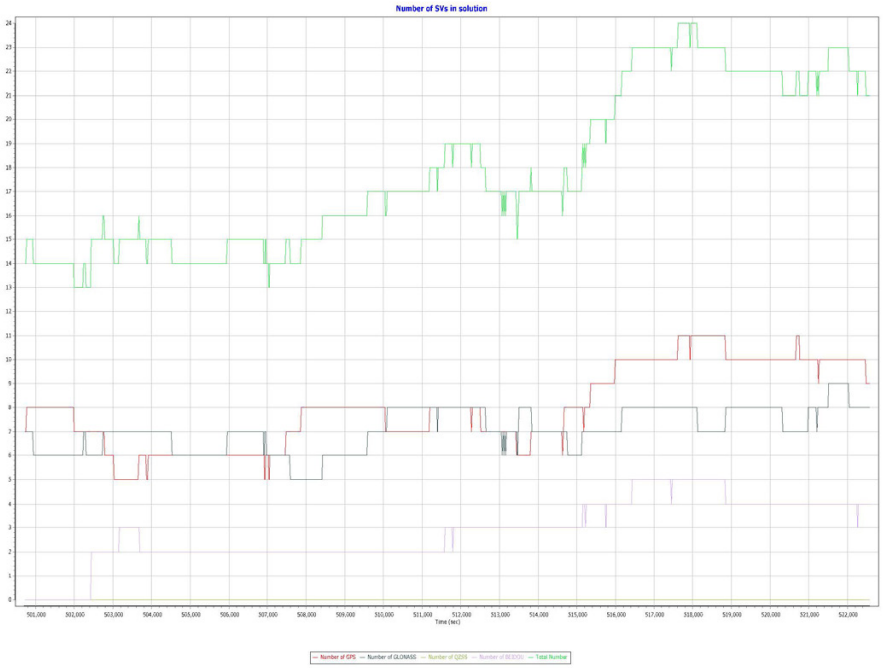
August 4, 2017-A (CFFRY, SN2220754)

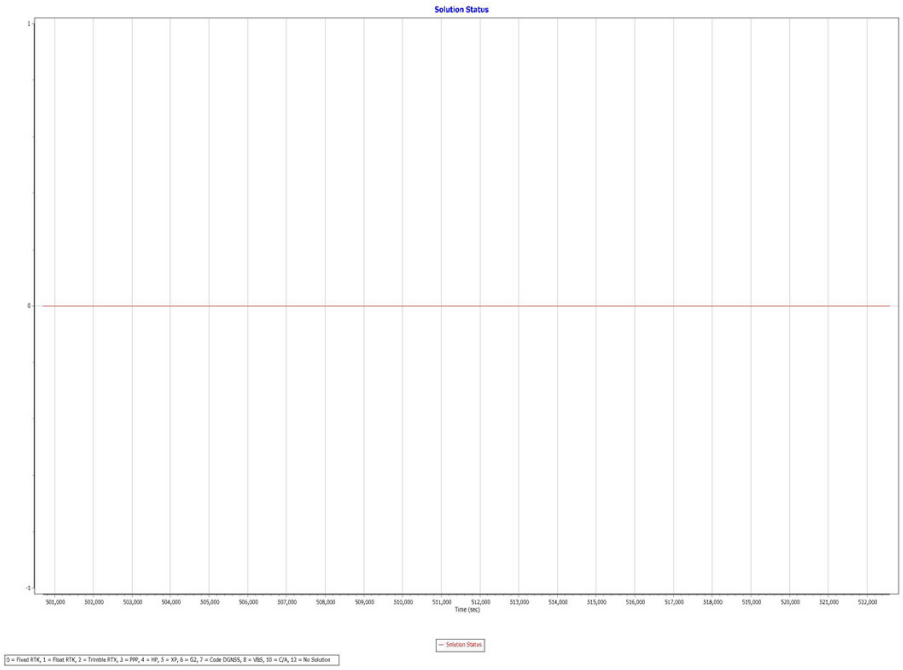

Top View: Latitude (deg)
Longitude (deg)


Forward/Reverse Separation
Time (sec)

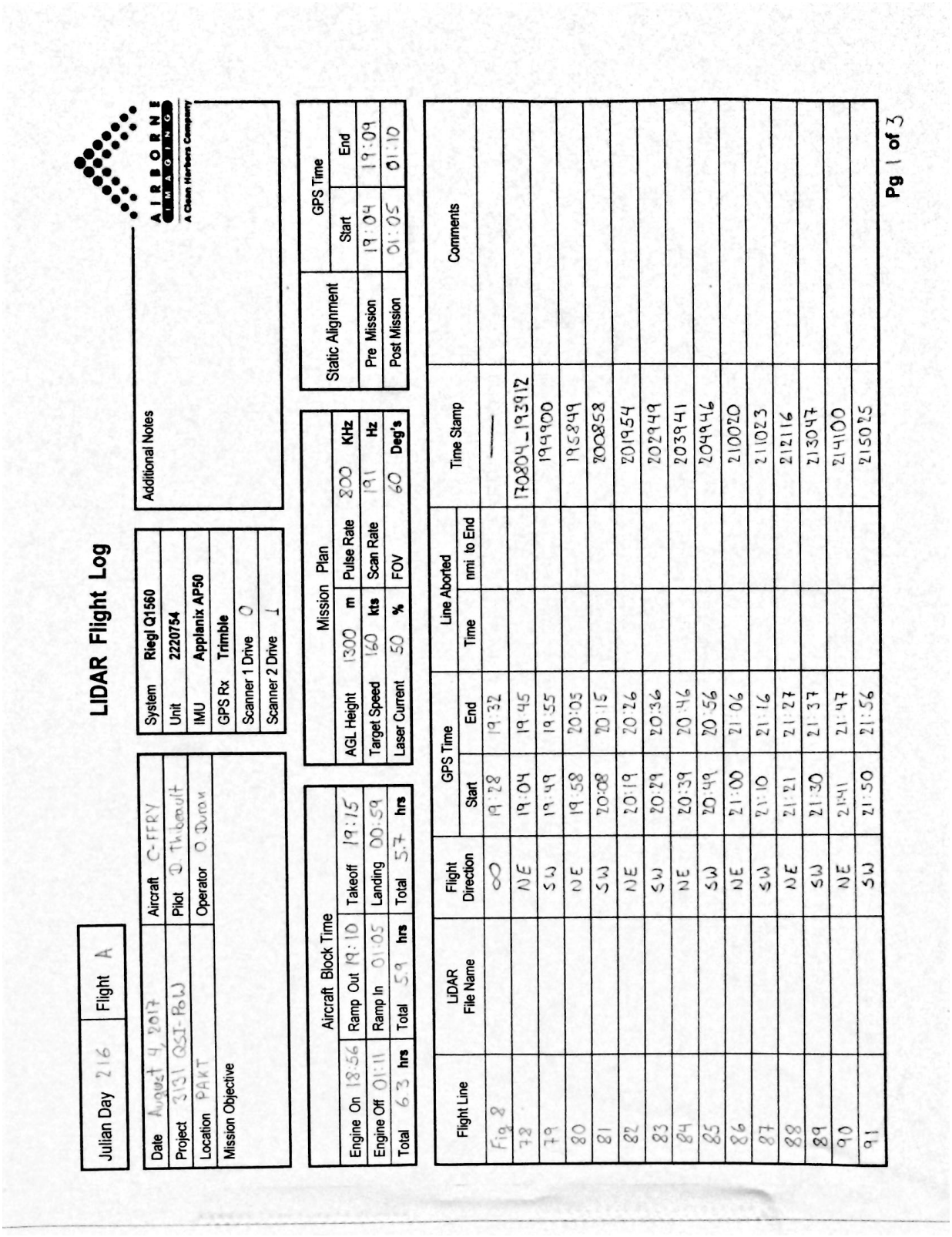

Estimated Position Accuracy
Time (sec)
North (m)
East (m)
Down (m)


DOP
Time (sec)
PDOP
HDOP
VDOP


Number of SVs in solution
Time (sec)
Number of GPS
Number of GLONASS
Number of QZSS
Number of BEIDOU
Total Number


Solution Status
Time (sec)
Solution Status
0 = Fixed RTK, 1 = Float RTK, 2 = Trimble RTX, 3 = PPP, 4 = HP, 5 = XP, 6 = G2, 7 = Code DGNSS, 8 = VBS, 10 = C/A, 12 = No Solution

Flight Log



LIDAR Flight Log

Julian Day 216 | Flight A

Date	August 4, 2017
Project	3191 QSI-PoW
Location	PAKT
Mission Objective	

Aircraft	C-FFRY
Pilot	D Thibeault
Operator	O Duron

System	Riegl Q1560
Unit	2220754
IMU	Applanix AP50
GPS Rx	Trimble
Scanner 1 Drive	0
Scanner 2 Drive	1

Additional Notes

AIRBORNE IMAGING — A Clean Harbors Company

Aircraft Block Time			
Engine On 18:56	Ramp Out 19:10	Takeoff	19:15
Engine Off 01:11	Ramp In 01:05	Landing	00:59
Total 6.3 hrs	Total 5.9 hrs	Total	5.7 hrs

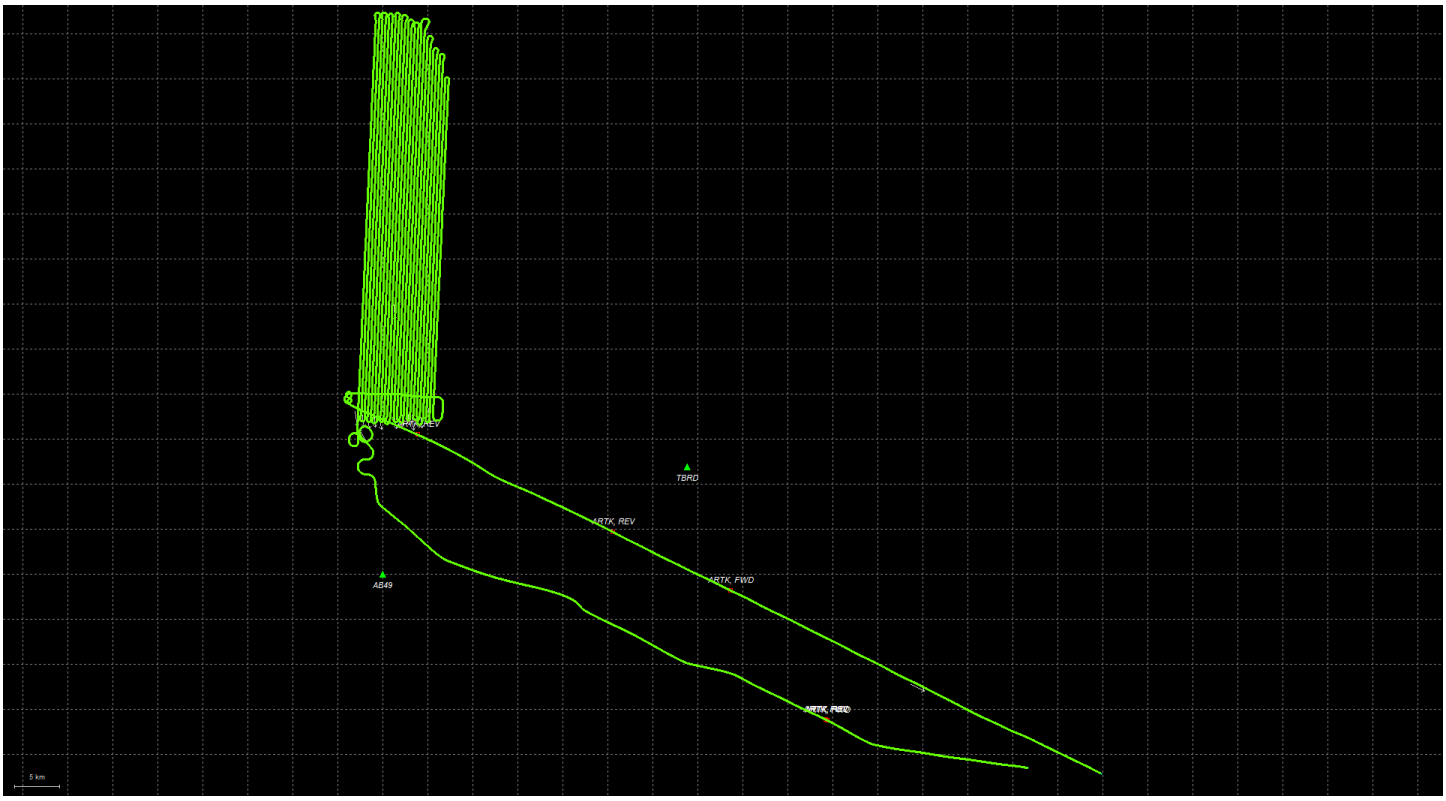
Mission Plan					
AGL Height	1300	m	Pulse Rate	200	KHz
Target Speed	160	kts	Scan Rate	191	Hz
Laser Current	50	%	FOV	60	Deg's

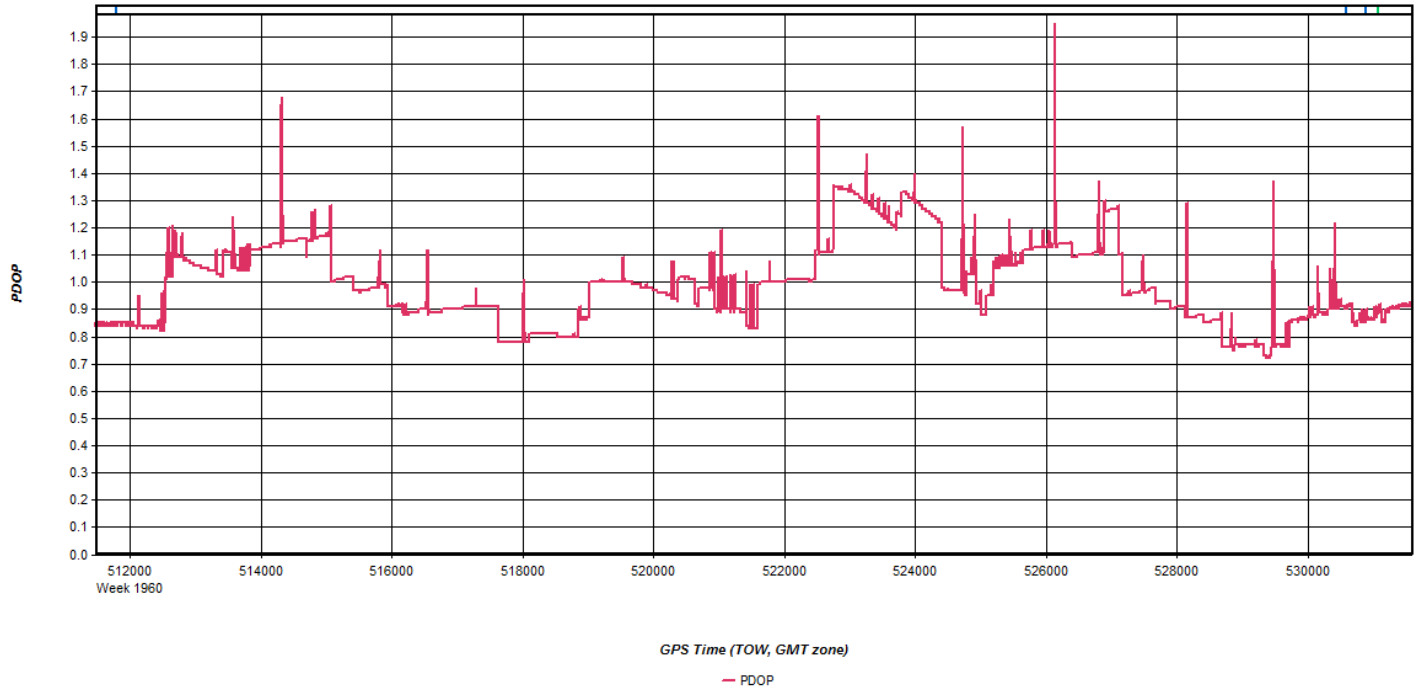
Static Alignment	GPS Time	
	Start	End
Pre Mission	19:04	19:09
Post Mission	01:05	01:10

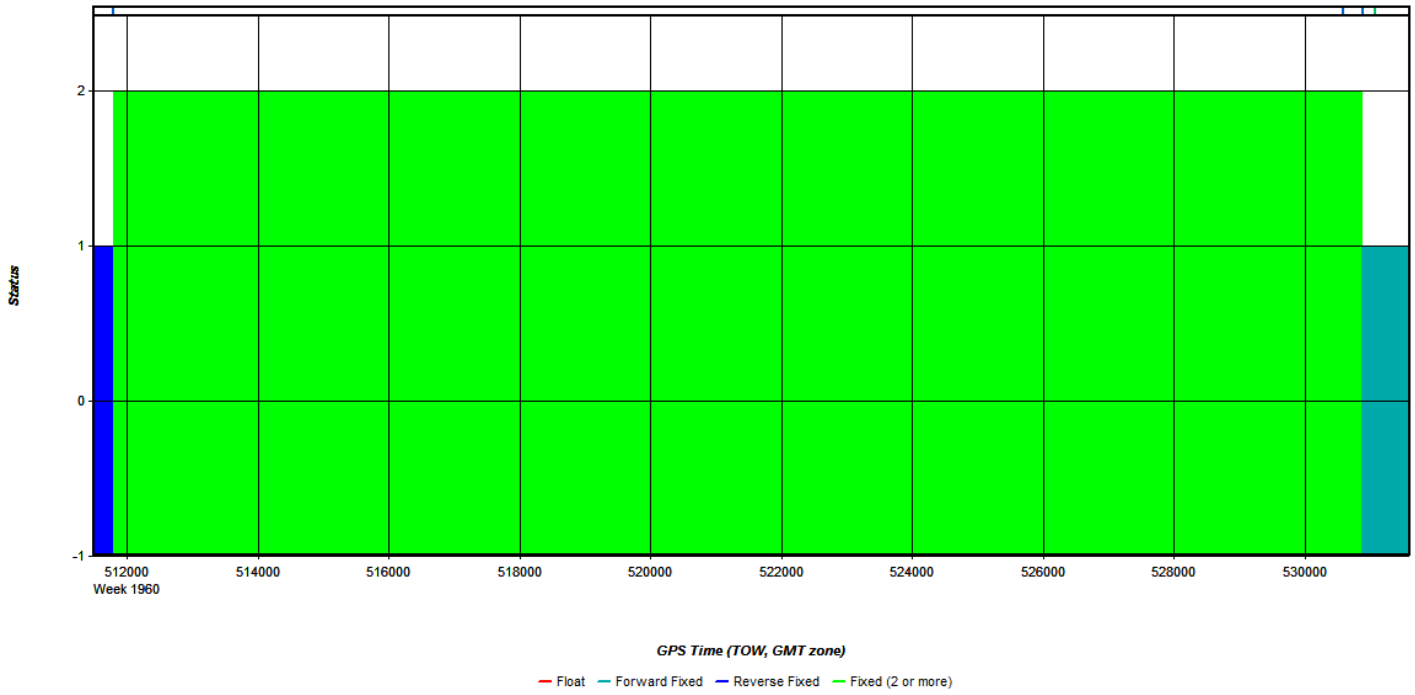
Flight Line	LiDAR File Name	Flight Direction	GPS Time		Line Aborted		Time Stamp	Comments
			Start	End	Time	nmi to End		
Fig 8		∞	19:28	19:32			———	
78		NE	19:04	19:45			170804_193912	
79		SW	19:49	19:55			194900	
80		NE	19:58	20:05			195849	
81		SW	20:08	20:15			200858	
82		NE	20:19	20:26			201954	
83		SW	20:29	20:36			202949	
84		NE	20:39	20:46			203941	
85		SW	20:49	20:56			204946	
86		NE	21:00	21:06			210020	
87		SW	21:10	21:16			211023	
88		NE	21:21	21:27			212116	
89		SW	21:30	21:37			213047	
90		NE	21:41	21:47			214100	
91		SW	21:50	21:56			215025	

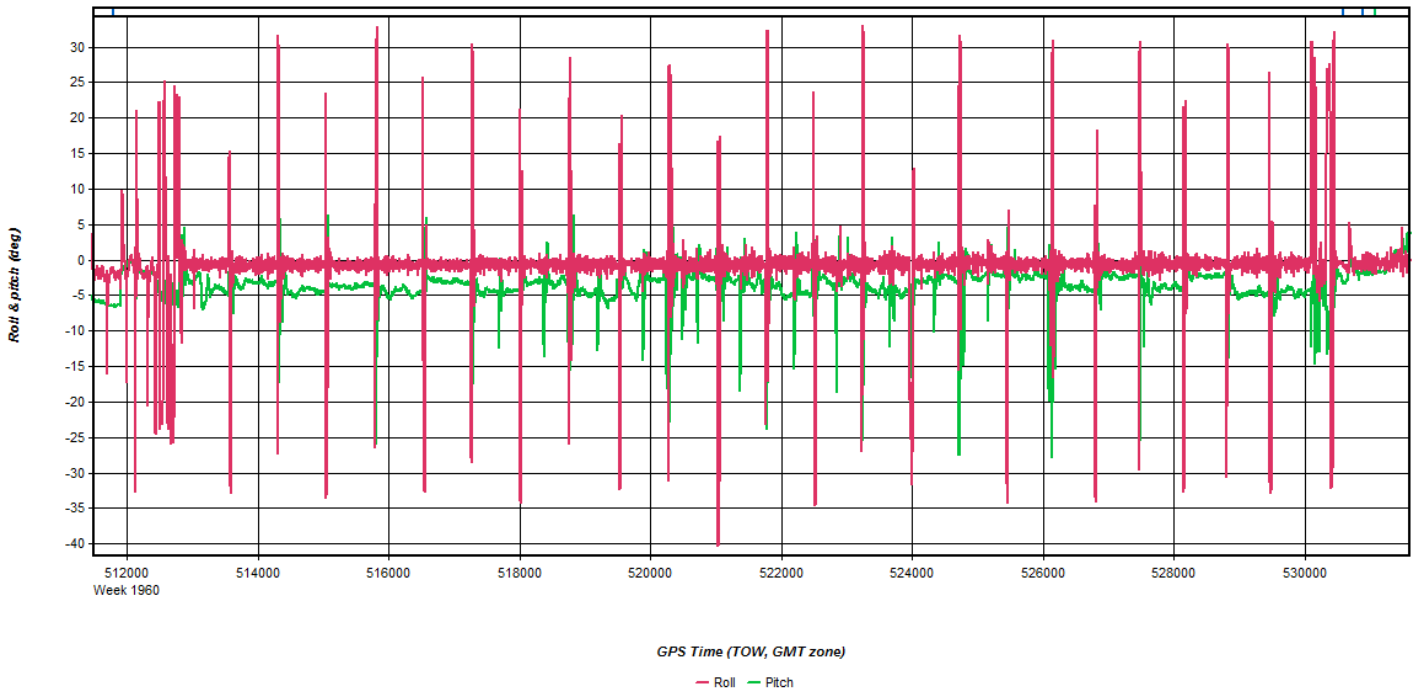
Pg 1 of 3

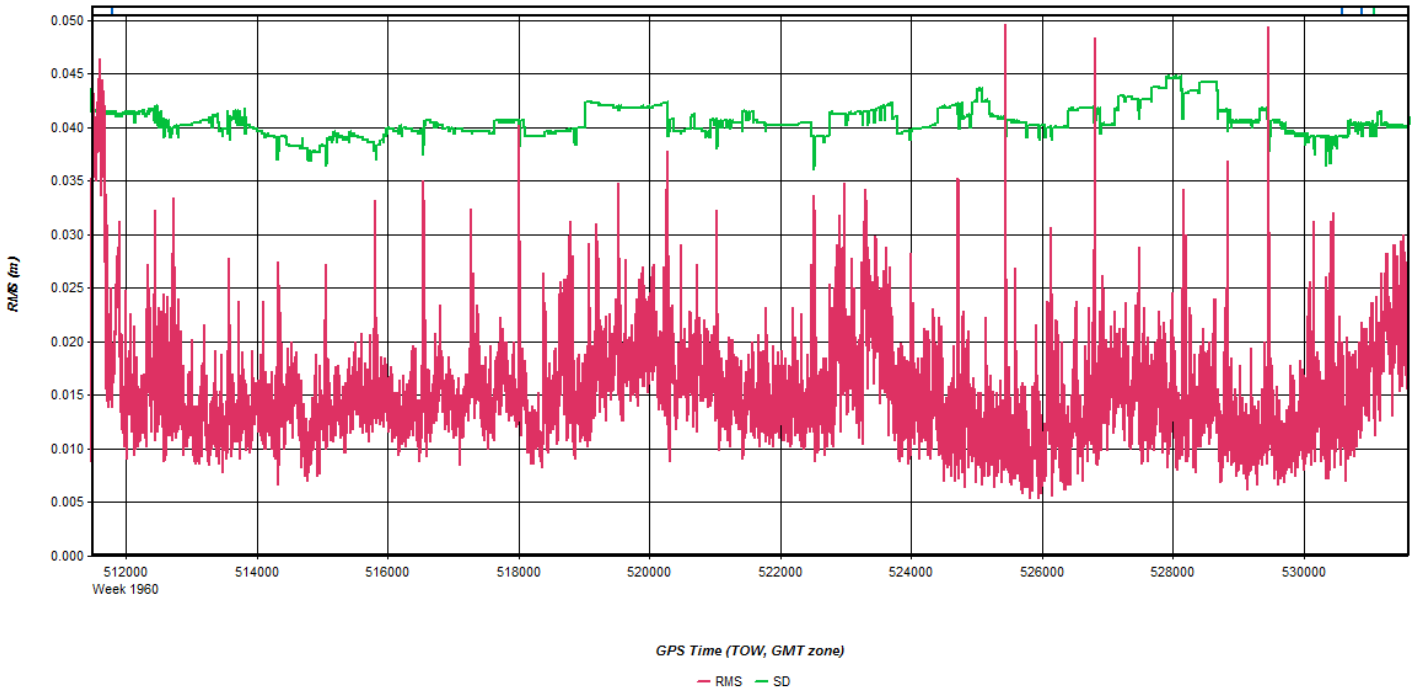
August 4, 2017-B (N604MD, SN8146)

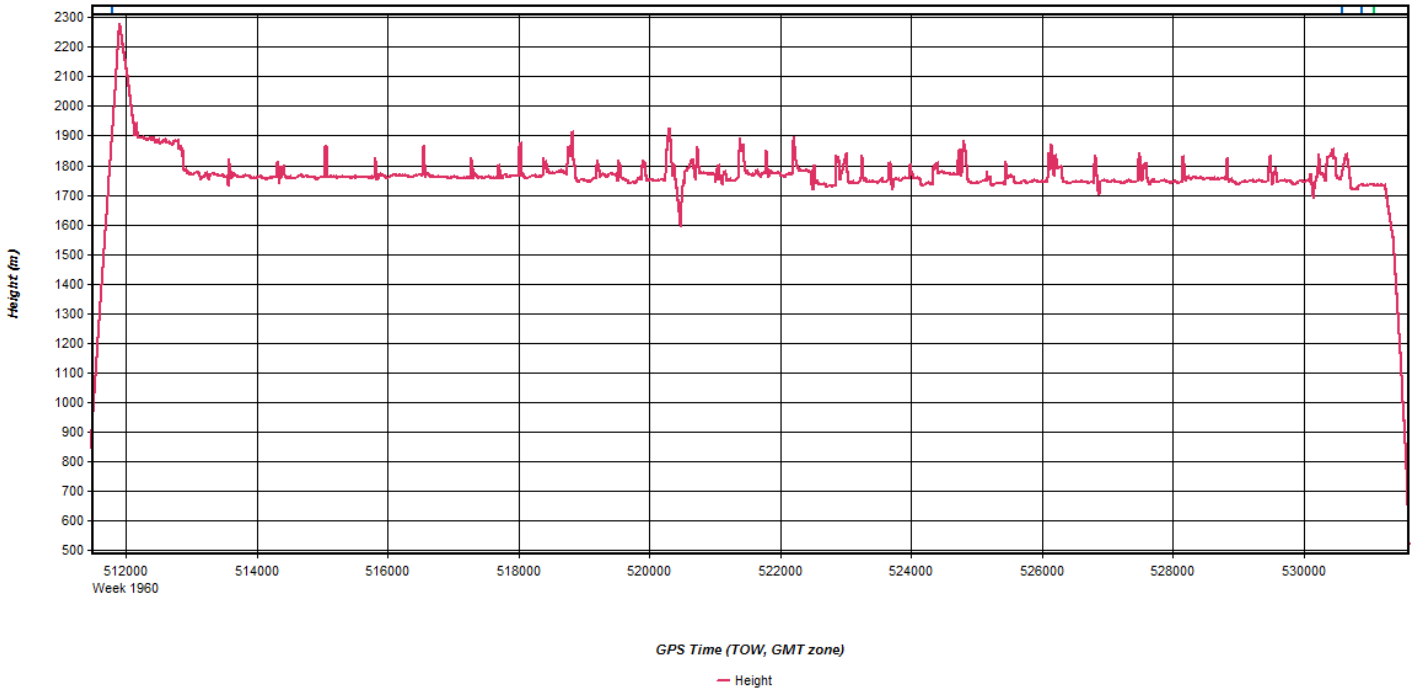

TBRD
ARTK, REV
AB49
ARTK, FWD
5 km

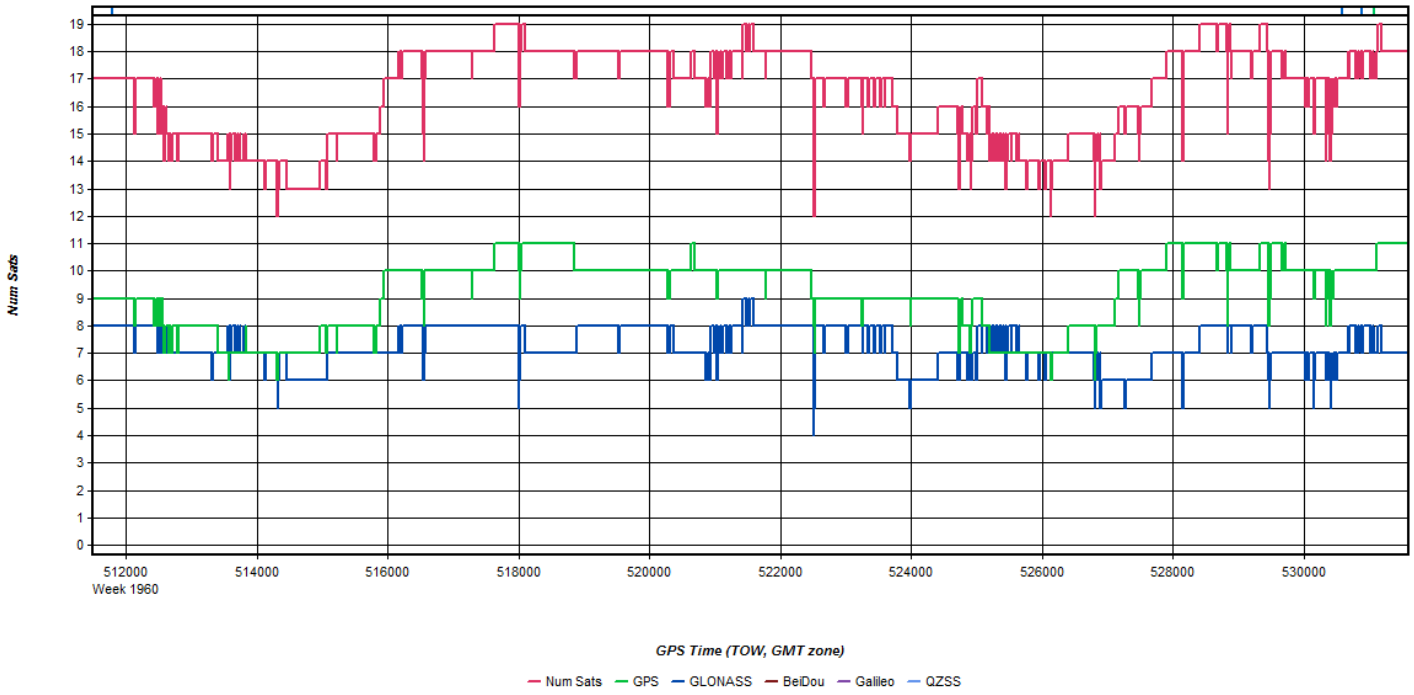

PDOP
1.9
1.8
1.7
1.6
1.5
1.4
1.3
1.2
1.1
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
512000
Week 1960
514000
516000
518000
520000
522000
524000
526000
528000
530000
GPS Time (TOW, GMT zone)
PDOP

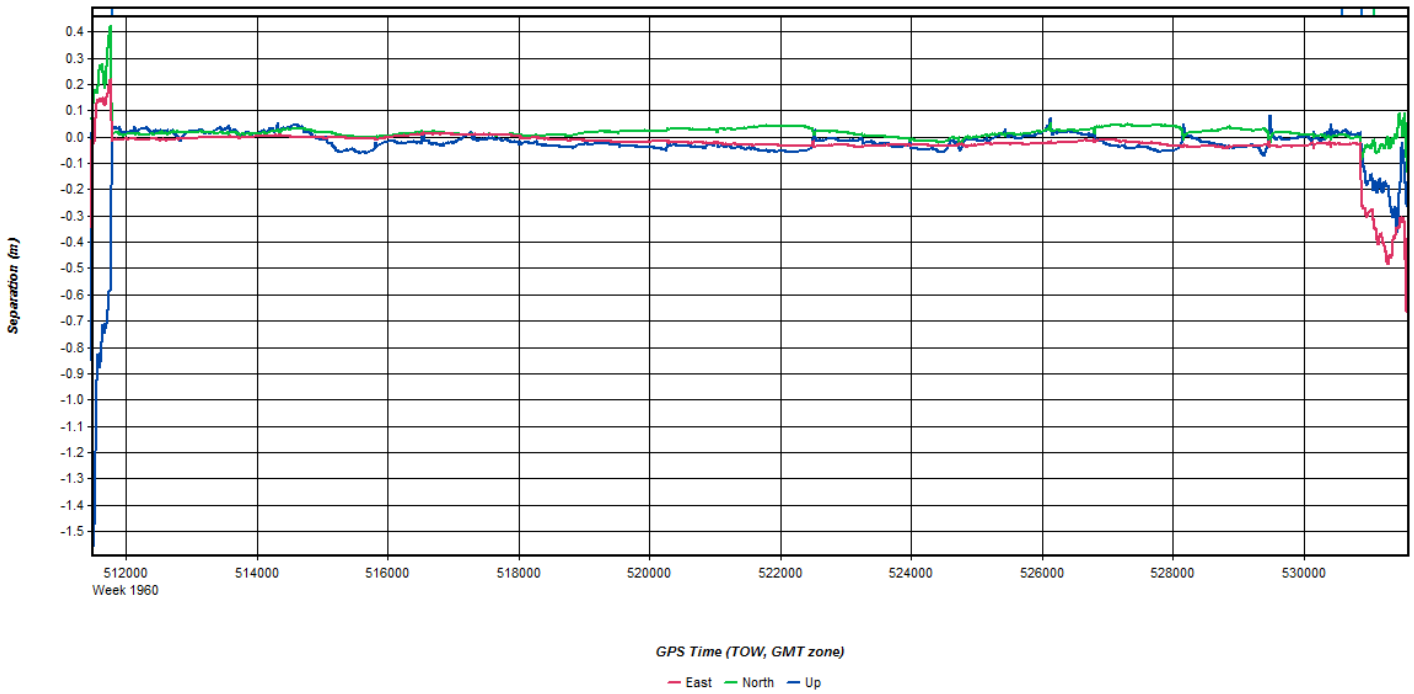

Status
2
1
0
-1
512000
Week 1960
514000
516000
518000
520000
522000
524000
526000
528000
530000
GPS Time (TOW, GMT zone)
Float
Forward Fixed
Reverse Fixed
Fixed (2 or more)

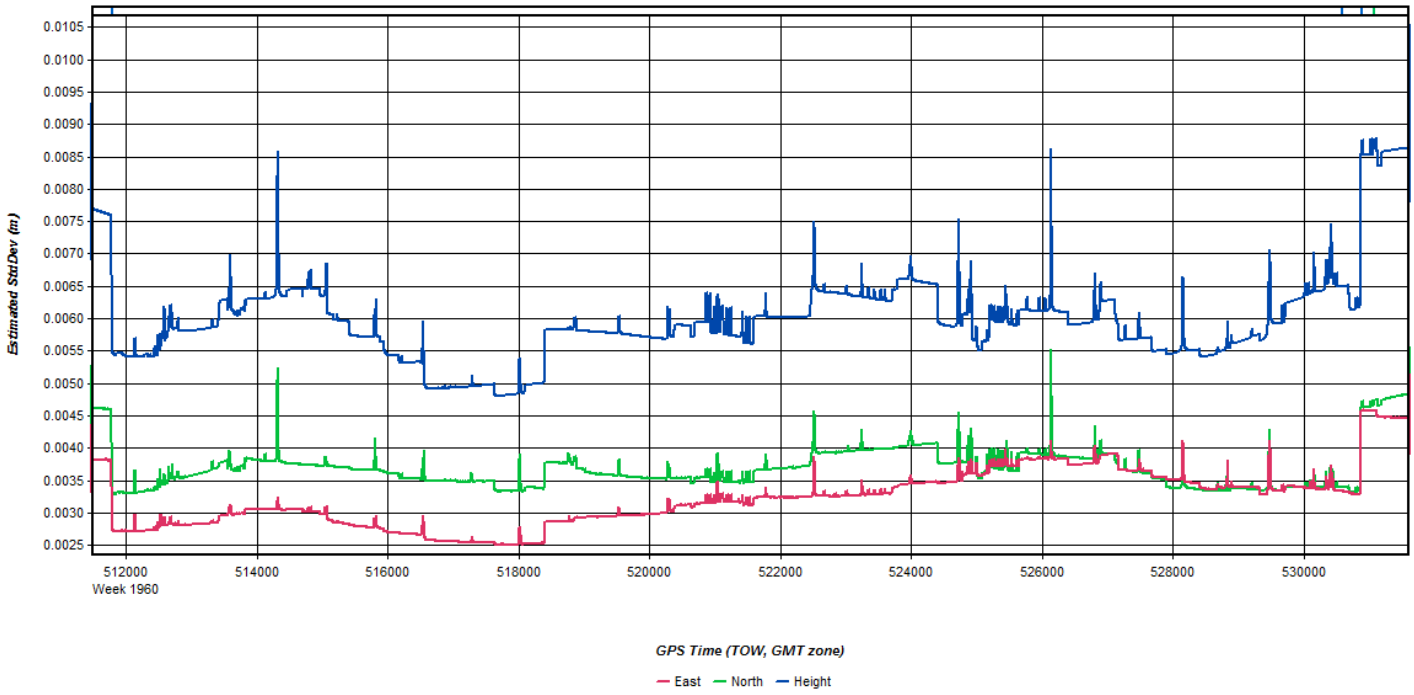

Roll & pitch (deg)
30
25
20
15
10
5
0
-5
-10
-15
-20
-25
-30
-35
-40
512000
Week 1960
514000
516000
518000
520000
522000
524000
526000
528000
530000
GPS Time (TOW, GMT zone)
Roll
Pitch

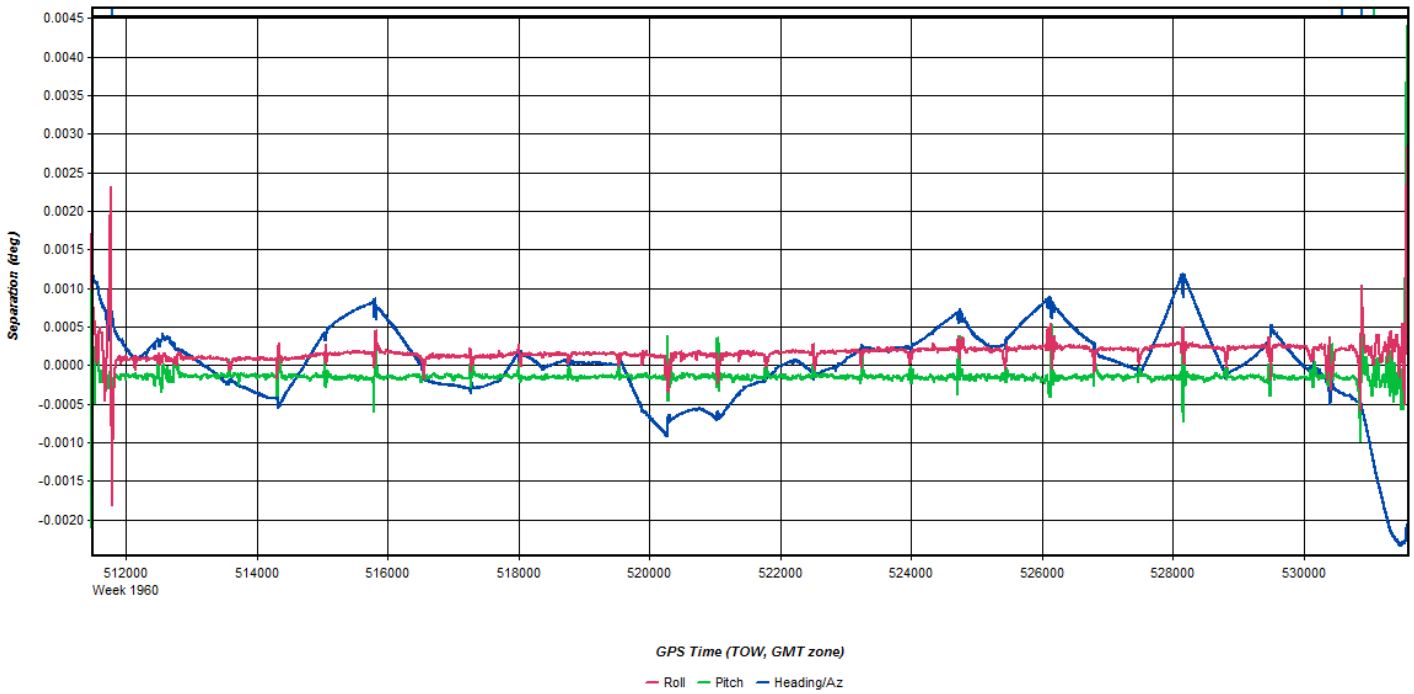

RMS (m)
0.050
0.045
0.040
0.035
0.030
0.025
0.020
0.015
0.010
0.005
0.000
512000
Week 1960
514000
516000
518000
520000
522000
524000
526000
528000
530000
GPS Time (TOW, GMT zone)
RMS
SD

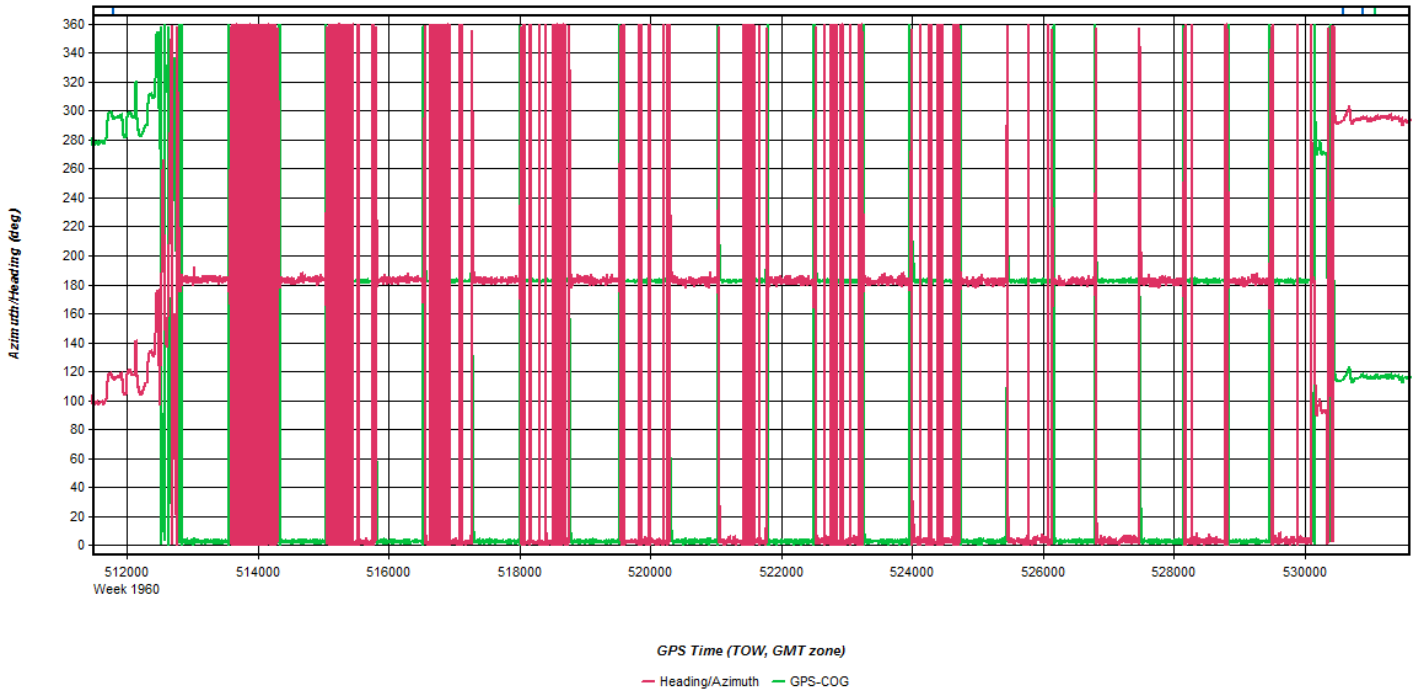

Height (m)
2300
2200
2100
2000
1900
1800
1700
1600
1500
1400
1300
1200
1100
1000
900
800
700
600
500
512000
Week 1960
514000
516000
518000
520000
522000
524000
526000
528000
530000
GPS Time (TOW, GMT zone)
Height

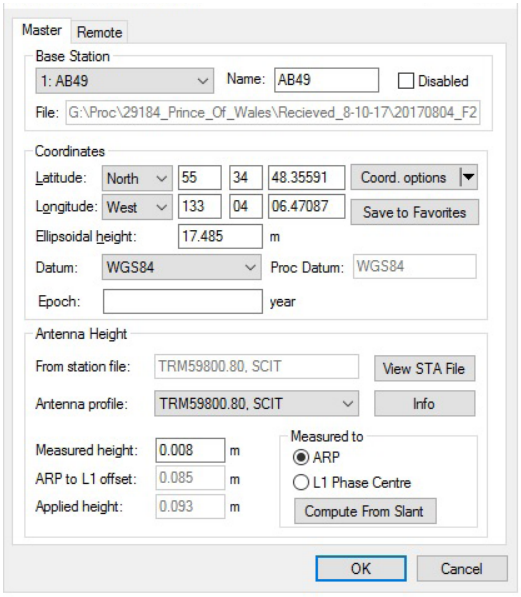

Num Sats
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
512000
Week 1960
514000
516000
518000
520000
522000
524000
526000
528000
530000
GPS Time (TOW, GMT zone)
Num Sats
GPS
GLONASS
BeiDou
Galileo
QZSS

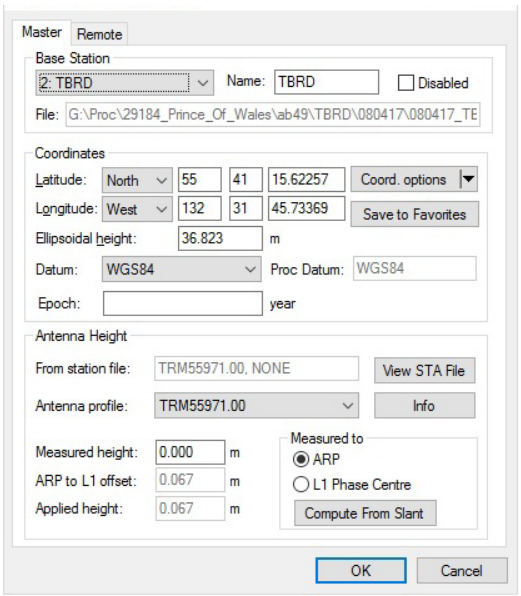

Separation (m)
0.4
0.3
0.2
0.1
0.0
-0.1
-0.2
-0.3
-0.4
-0.5
-0.6
-0.7
-0.8
-0.9
-1.0
-1.1
-1.2
-1.3
-1.4
-1.5
512000
Week 1960
514000
516000
518000
520000
522000
524000
526000
528000
530000
GPS Time (TOW, GMT zone)
East
North
Up


Estimated StdDev (m)
0.0105
0.0100
0.0095
0.0090
0.0085
0.0080
0.0075
0.0070
0.0065
0.0060
0.0055
0.0050
0.0045
0.0040
0.0035
0.0030
0.0025
512000
Week 1960
514000
516000
518000
520000
522000
524000
526000
528000
530000
GPS Time (TOW, GMT zone)
East
North
Height

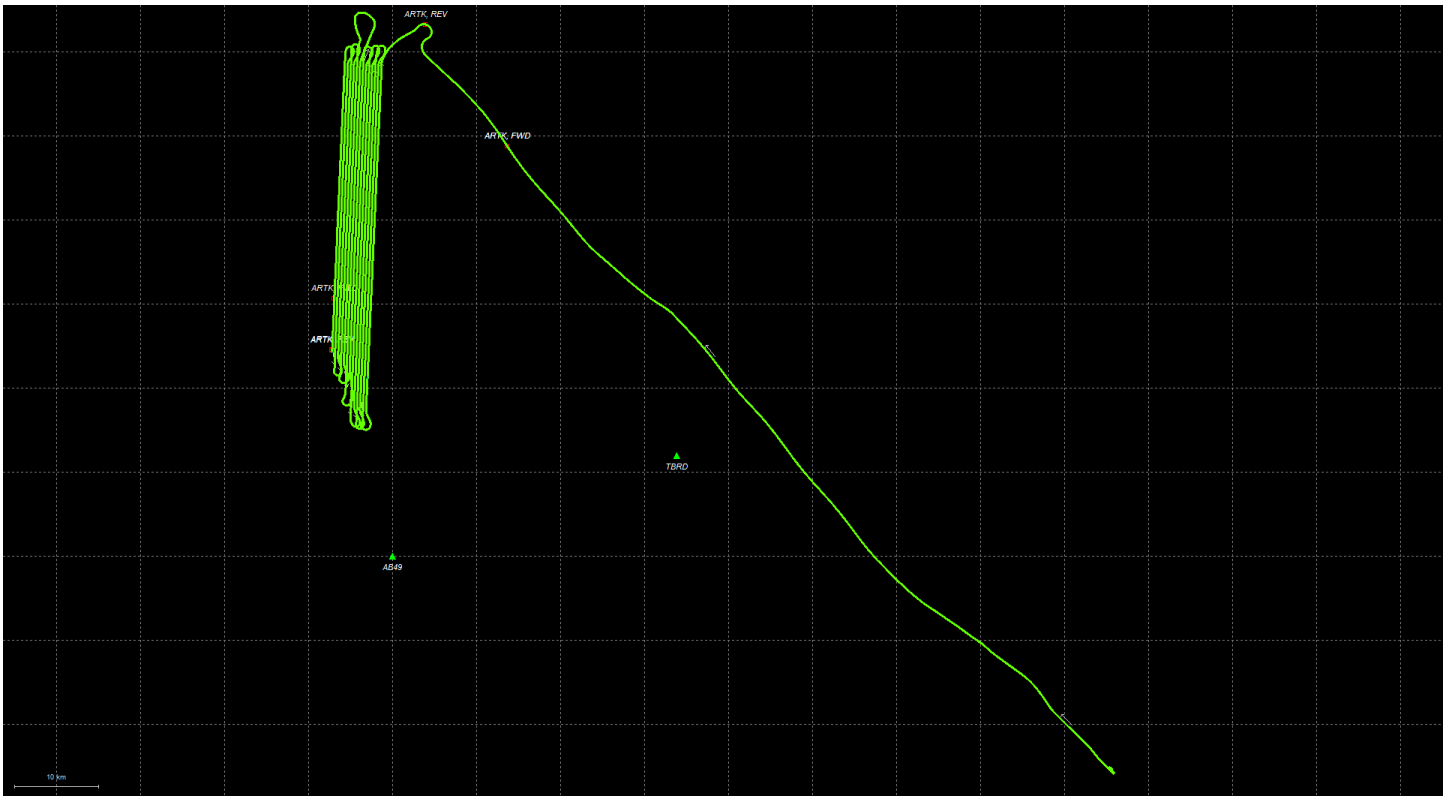

Separation (deg)
0.0045
0.0040
0.0035
0.0030
0.0025
0.0020
0.0015
0.0010
0.0005
0.0000
-0.0005
-0.0010
-0.0015
-0.0020
512000
Week 1960
514000
516000
518000
520000
522000
524000
526000
528000
530000
GPS Time (TOW, GMT zone)
Roll
Pitch
Heading/Az

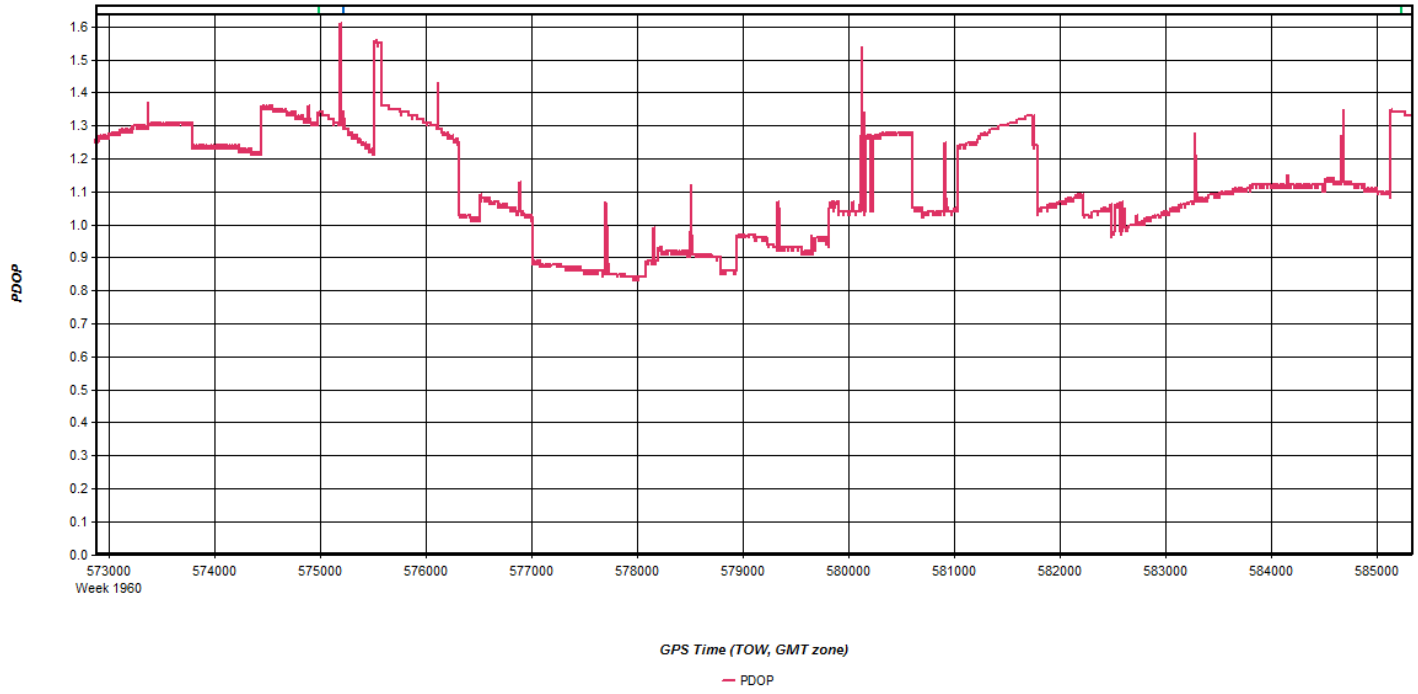

Azimuth/Heading (deg)
360
340
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
512000
Week 1960
514000
516000
518000
520000
522000
524000
526000
528000
530000
GPS Time (TOW, GMT zone)
Heading/Azimuth
GPS-COG

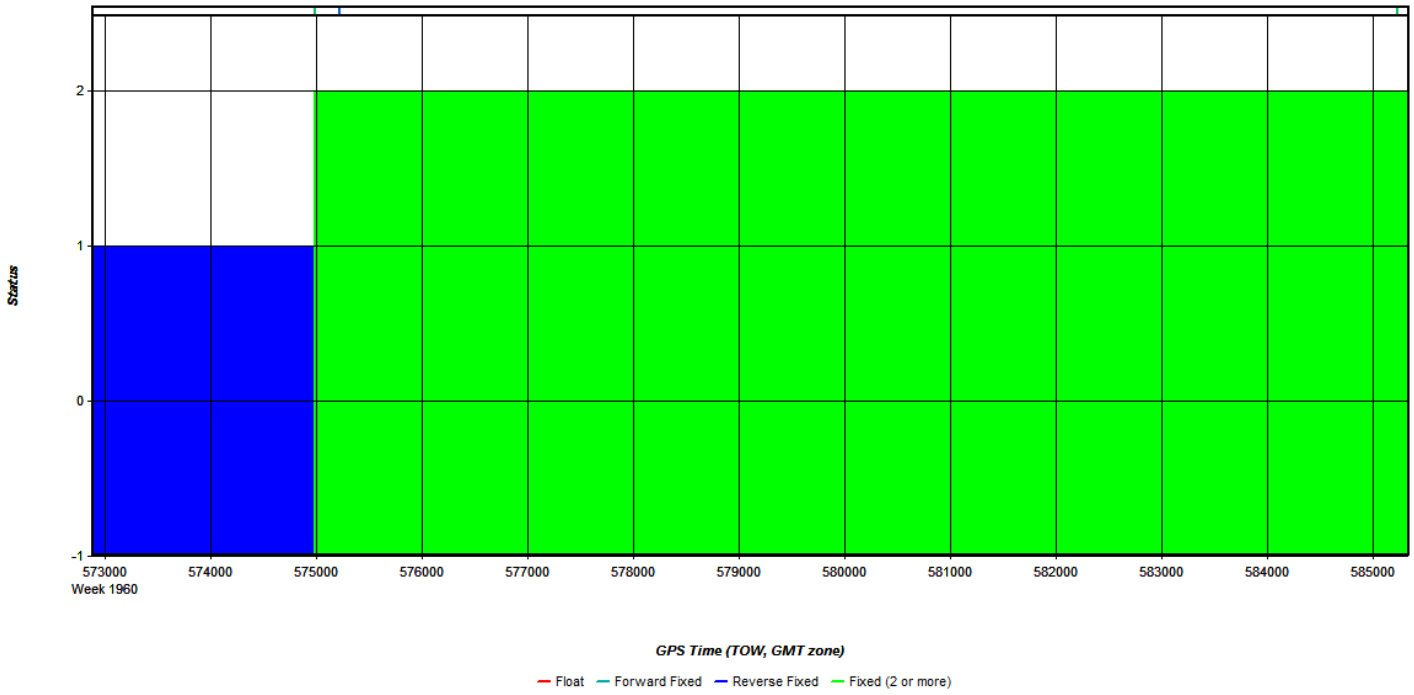

Master
Remote
Base Station
1: AB49
Name: AB49
Disabled
File: G:\Proc\29184_Prince_Of_Wales\Recieved_8-10-17\20170804_F2
Coordinates
Latitude: North 55 34 48.35591 Coord. options
Longitude: West 133 04 06.47087 Save to Favorites
Ellipsoidal height: 17.485 m
Datum: WGS84 Proc Datum: WGS84
Epoch: year
Antenna Height
From station file: TRM59800.80, SCIT View STA File
Antenna profile: TRM59800.80, SCIT Info
Measured height: 0.008 m
ARP to L1 offset: 0.085 m
Applied height: 0.093 m
Measured to
ARP
L1 Phase Centre
Compute From Slant
OK
Cancel

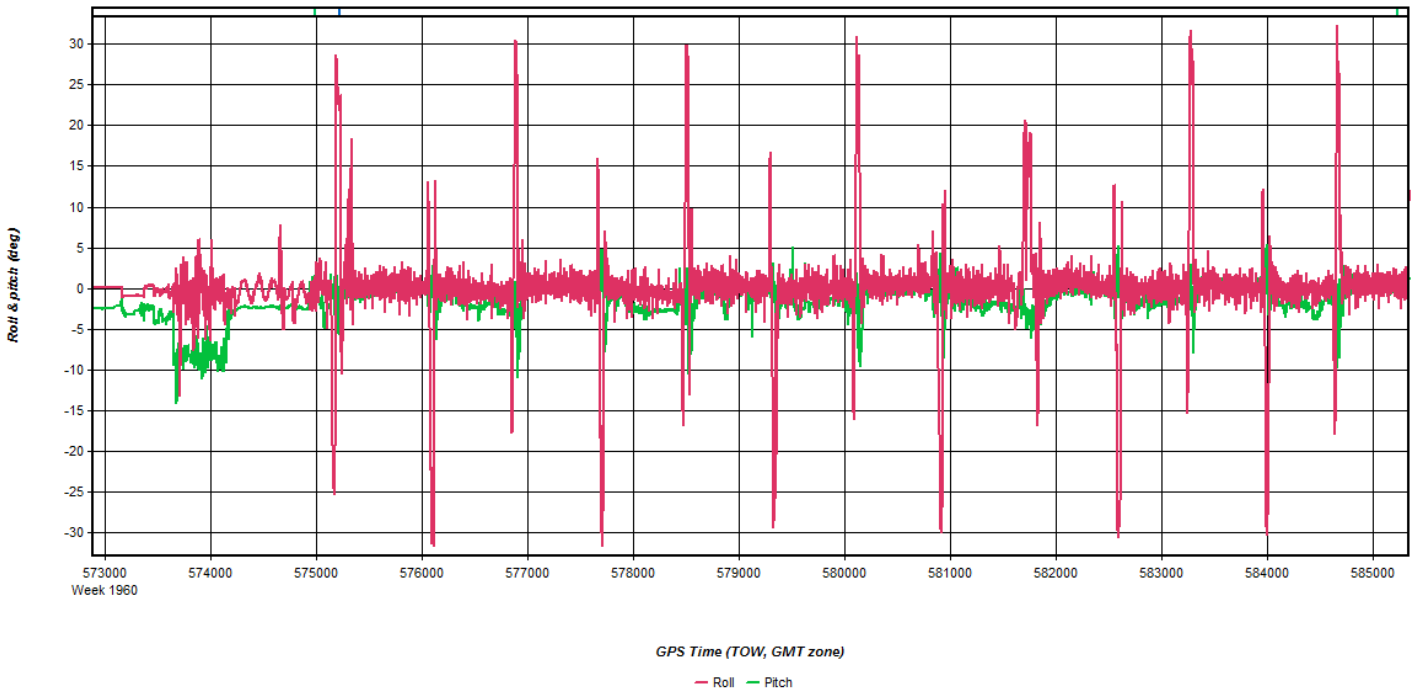

Master
Remote
Base Station
2: TBRD
Name: TBRD
Disabled
File: G:\Proc\29184_Prince_Of_Wales\ab49\TBRD\080417\080417_TE
Coordinates
Latitude: North 55 41 15.62257 Coord. options
Longitude: West 132 31 45.73369 Save to Favorites
Ellipsoidal height: 36.823 m
Datum: WGS84 Proc Datum: WGS84
Epoch: year
Antenna 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

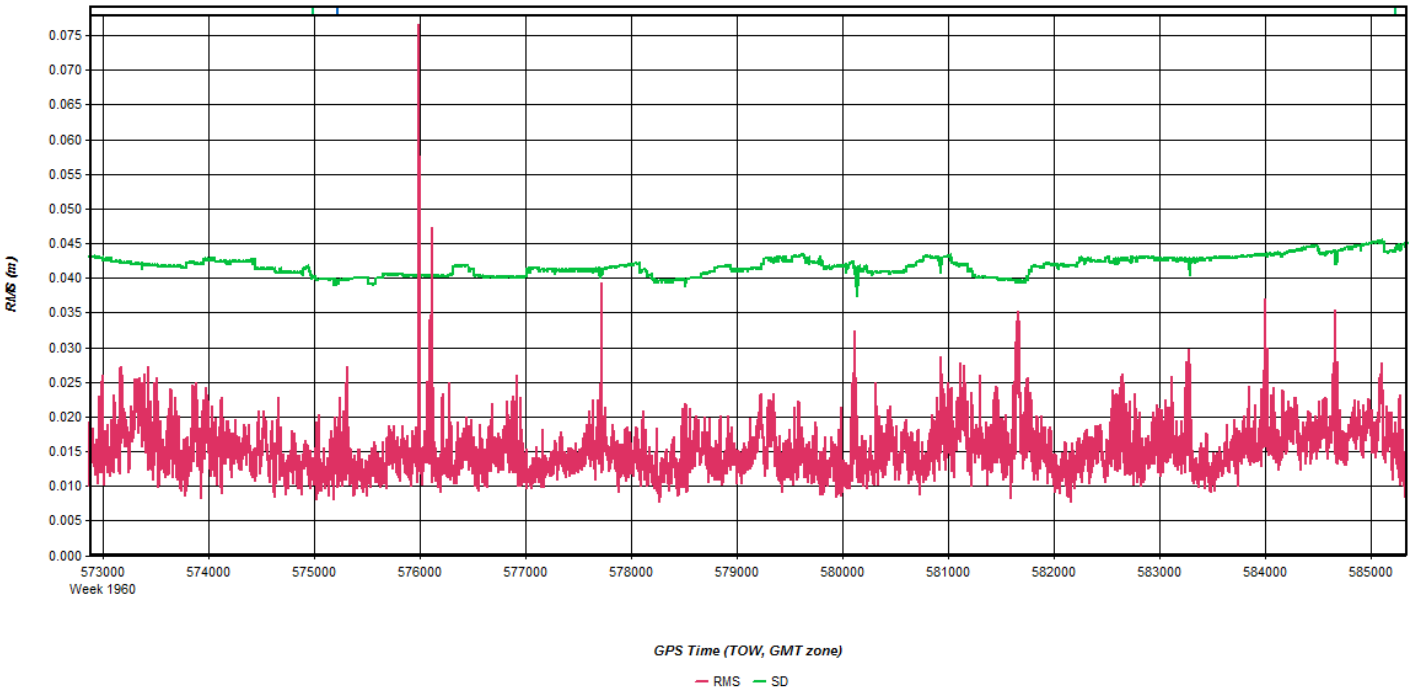
August 5, 2017-A (N604MD, SN8146)

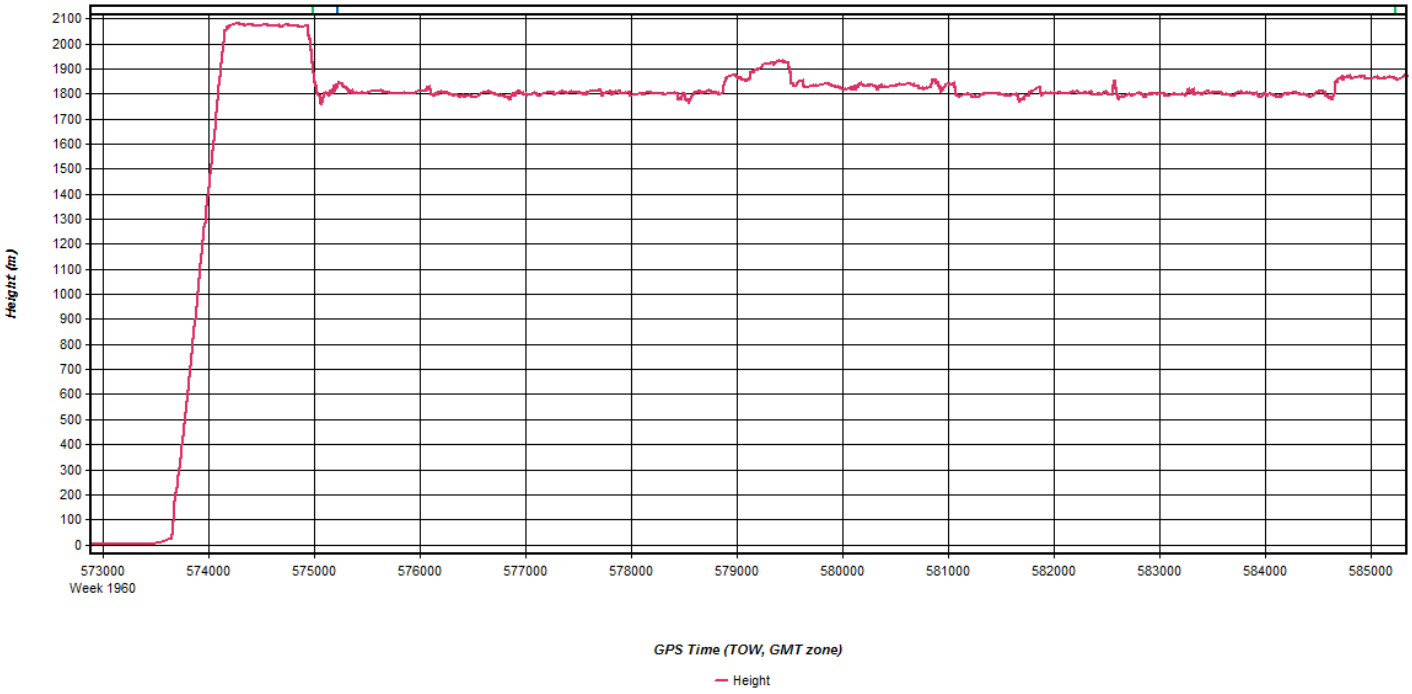

ARTK_REV
ARTK_FWD
TBRD
AB49
10 km

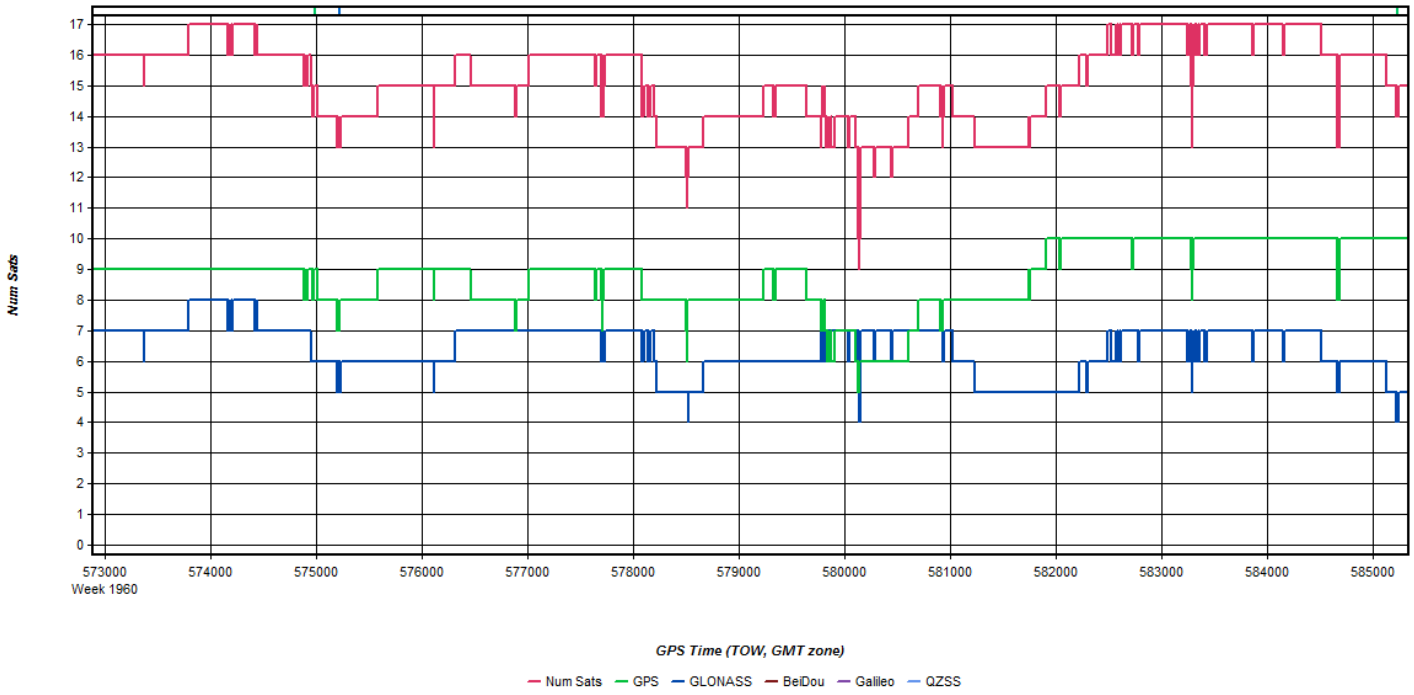

PDOP
1.6
1.5
1.4
1.3
1.2
1.1
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
573000
Week 1960
574000
575000
576000
577000
578000
579000
580000
581000
582000
583000
584000
585000
GPS Time (TOW, GMT zone)
PDOP

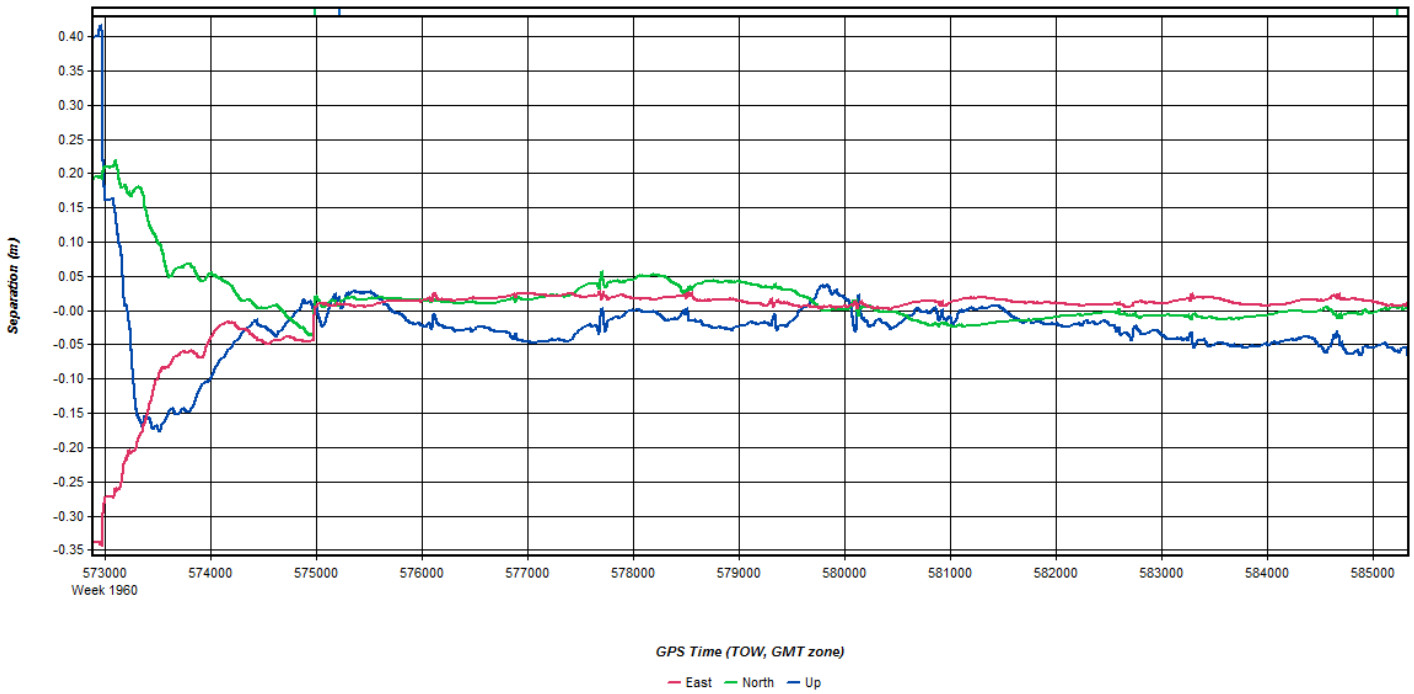

Status
2
1
0
-1
573000
Week 1960
574000
575000
576000
577000
578000
579000
580000
581000
582000
583000
584000
585000
GPS Time (TOW, GMT zone)
Float
Forward Fixed
Reverse Fixed
Fixed (2 or more)

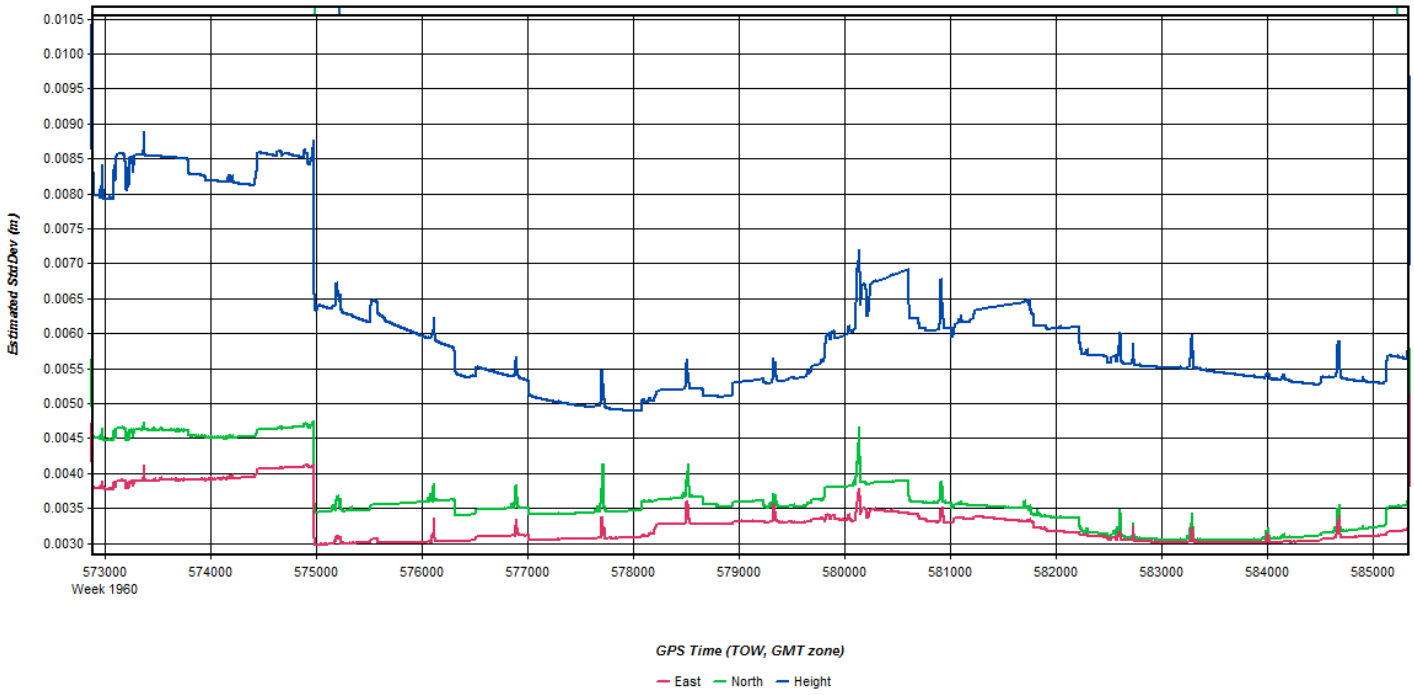

Roll & pitch (deg)
30
25
20
15
10
5
0
-5
-10
-15
-20
-25
-30
573000
Week 1960
574000
575000
576000
577000
578000
579000
580000
581000
582000
583000
584000
585000
GPS Time (TOW, GMT zone)
Roll
Pitch

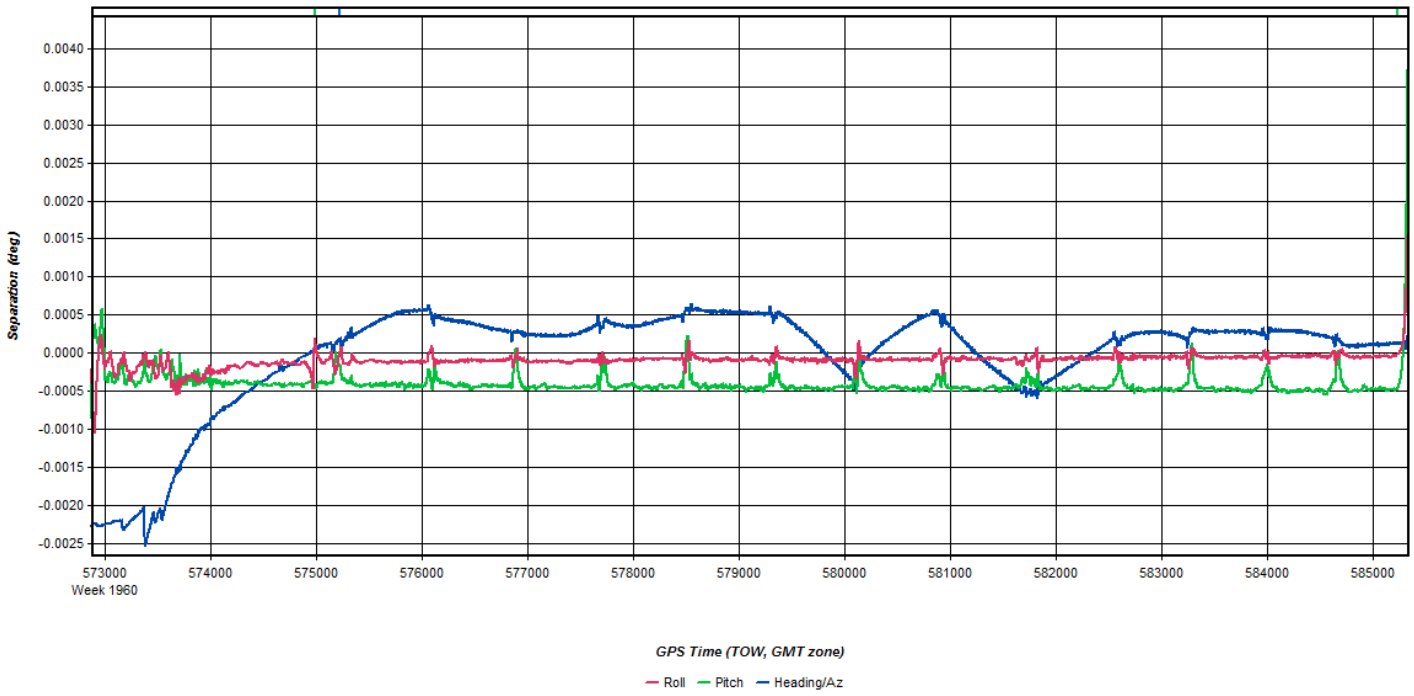

RMS (m)
0.075
0.070
0.065
0.060
0.055
0.050
0.045
0.040
0.035
0.030
0.025
0.020
0.015
0.010
0.005
0.000
573000
Week 1960
574000
575000
576000
577000
578000
579000
580000
581000
582000
583000
584000
585000
GPS Time (TOW, GMT zone)
RMS
SD

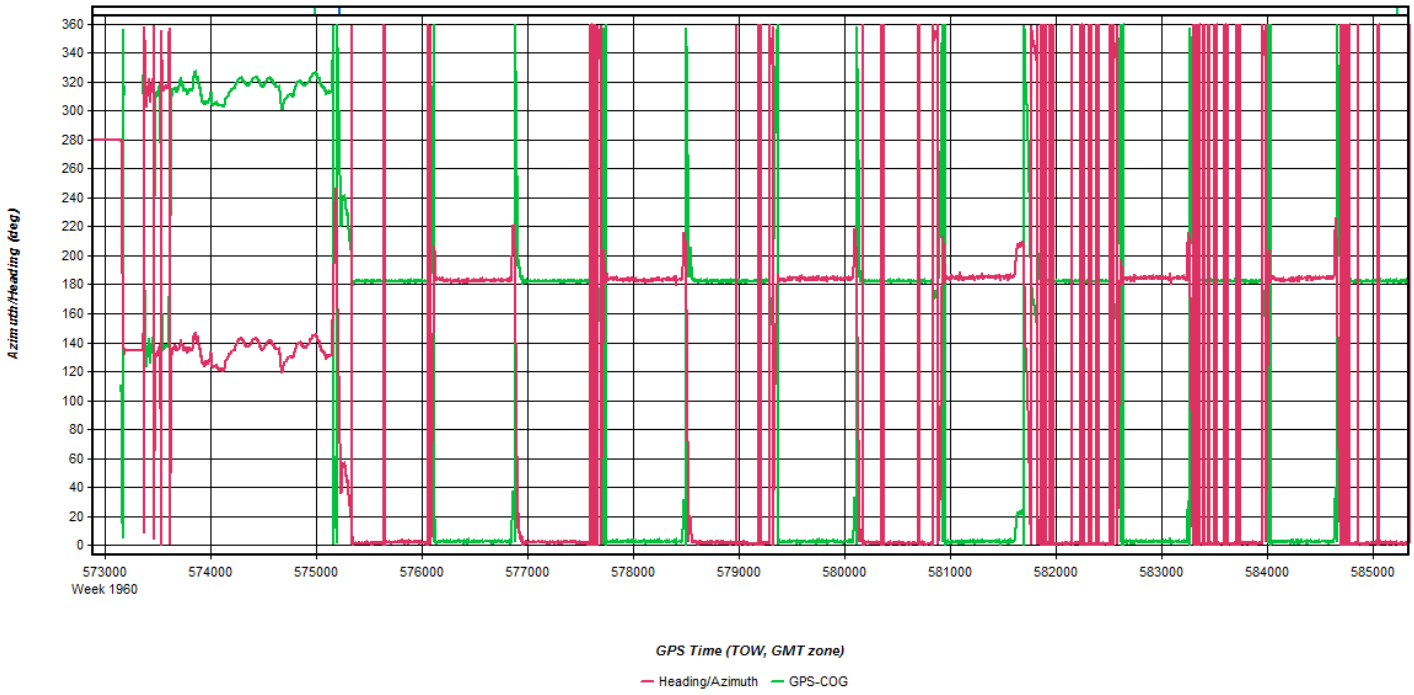

Height (m)
2100
2000
1900
1800
1700
1600
1500
1400
1300
1200
1100
1000
900
800
700
600
500
400
300
200
100
0
573000
Week 1960
574000
575000
576000
577000
578000
579000
580000
581000
582000
583000
584000
585000
GPS Time (TOW, GMT zone)
Height

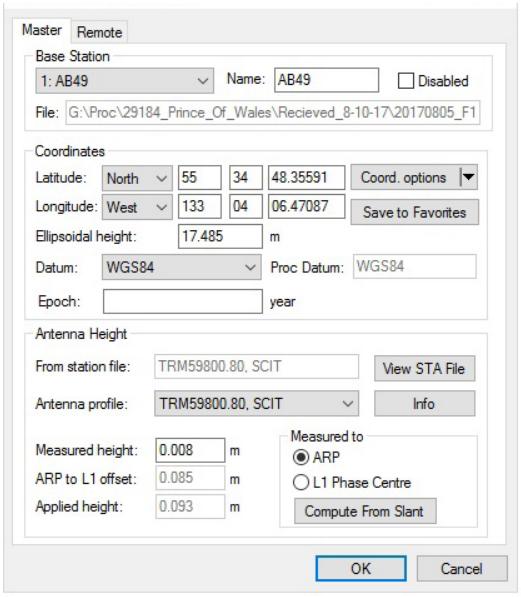

Num Sats
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
573000
Week 1960
574000
575000
576000
577000
578000
579000
580000
581000
582000
583000
584000
585000
GPS Time (TOW, GMT zone)
Num Sats
GPS
GLONASS
BeiDou
Galileo
QZSS

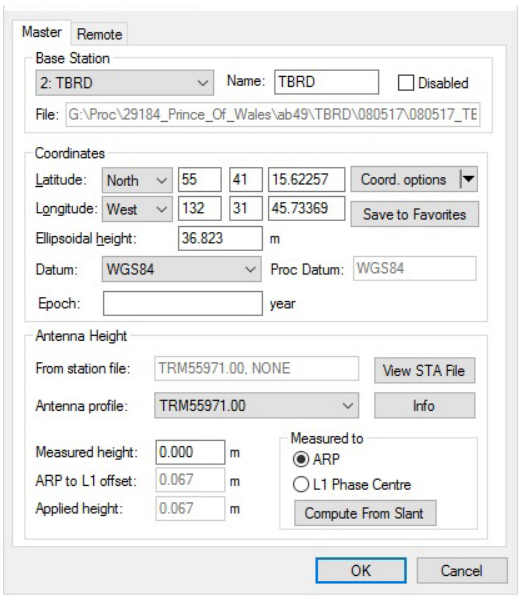

Separation (m)
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
-0.00
-0.05
-0.10
-0.15
-0.20
-0.25
-0.30
-0.35
573000
Week 1960
574000
575000
576000
577000
578000
579000
580000
581000
582000
583000
584000
585000
GPS Time (TOW, GMT zone)
East
North
Up


Estimated StdDev (m)
0.0105
0.0100
0.0095
0.0090
0.0085
0.0080
0.0075
0.0070
0.0065
0.0060
0.0055
0.0050
0.0045
0.0040
0.0035
0.0030
573000
Week 1960
574000
575000
576000
577000
578000
579000
580000
581000
582000
583000
584000
585000
GPS Time (TOW, GMT zone)
East
North
Height

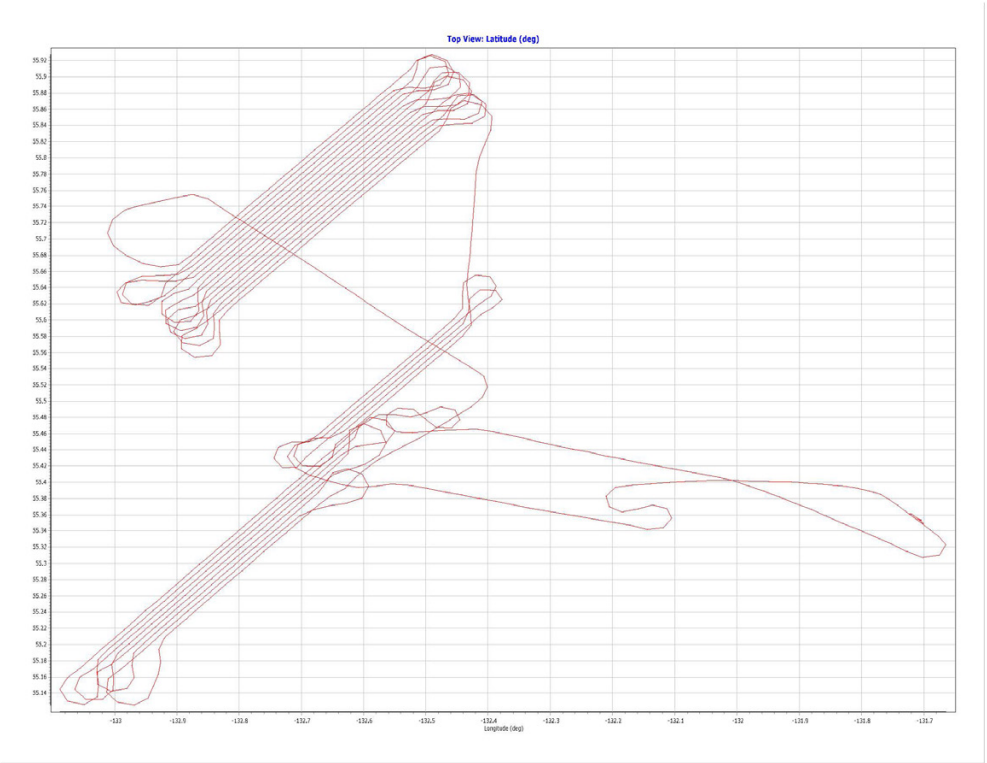

Separation (deg)
0.0040
0.0035
0.0030
0.0025
0.0020
0.0015
0.0010
0.0005
0.0000
-0.0005
-0.0010
-0.0015
-0.0020
-0.0025
573000
Week 1960
574000
575000
576000
577000
578000
579000
580000
581000
582000
583000
584000
585000
GPS Time (TOW, GMT zone)
Roll
Pitch
Heading/Az

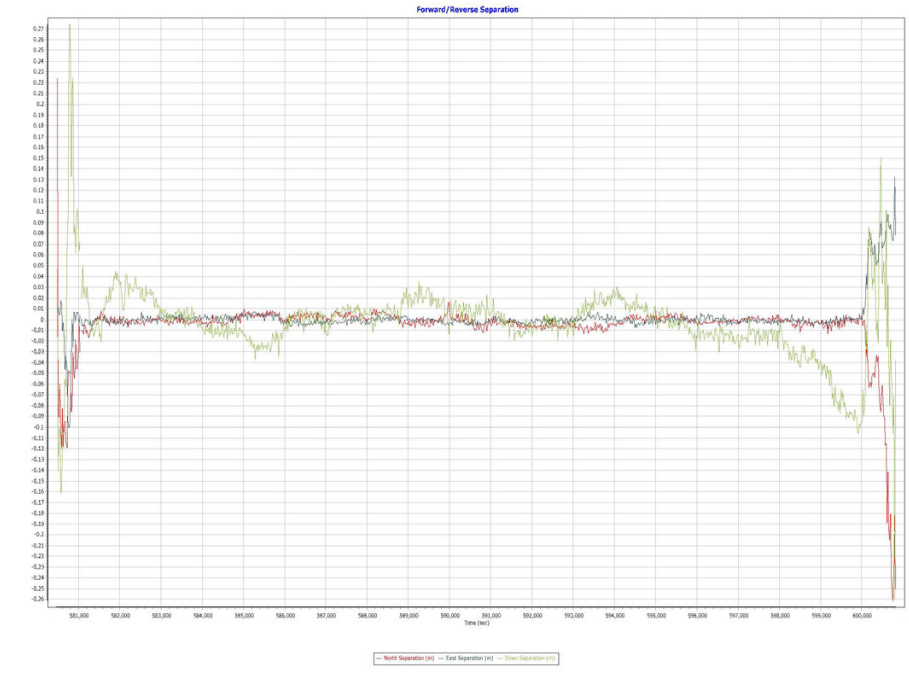

Azimuth/Heading (deg)
360
340
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
573000
Week 1960
574000
575000
576000
577000
578000
579000
580000
581000
582000
583000
584000
585000
GPS Time (TOW, GMT zone)
Heading/Azimuth
GPS-COG

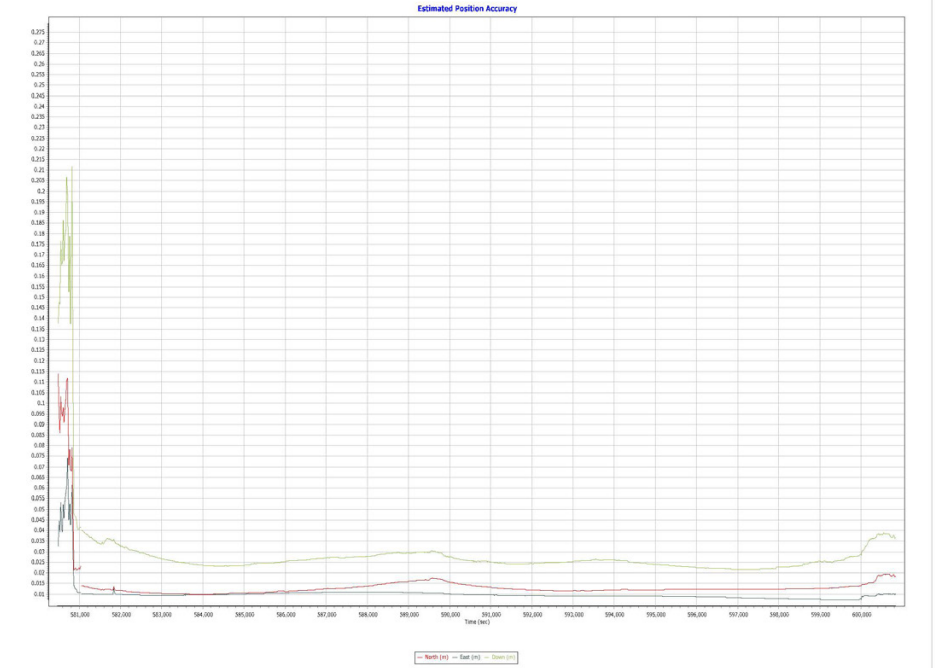

Master
Remote
Base Station
1: AB49
Name:
AB49
Disabled
File:
G:\Proc\29184_Prince_Of_Wales\Recieved_8-10-17\20170805_F1
Coordinates
Latitude:
North
55
34
48.35591
Coord. options
Longitude:
West
133
04
06.47087
Save to Favorites
Ellipsoidal height:
17.485
m
Datum:
WGS84
Proc Datum:
WGS84
Epoch:
year
Antenna Height
From station file:
TRM59800.80, SCIT
View STA File
Antenna profile:
TRM59800.80, SCIT
Info
Measured height:
0.008
m
Measured to
ARP
ARP to L1 offset:
0.085
m
L1 Phase Centre
Applied height:
0.093
m
Compute From Slant
OK
Cancel


Master
Remote
Base Station
2: TBRD
Name:
TBRD
Disabled
File:
G:\Proc\29184_Prince_Of_Wales\ab49\TBRD\080517\080517_TE
Coordinates
Latitude:
North
55
41
15.62257
Coord. options
Longitude:
West
132
31
45.73369
Save to Favorites
Ellipsoidal height:
36.823
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
Measured to
ARP
ARP to L1 offset:
0.067
m
L1 Phase Centre
Applied height:
0.067
m
Compute From Slant
OK
Cancel

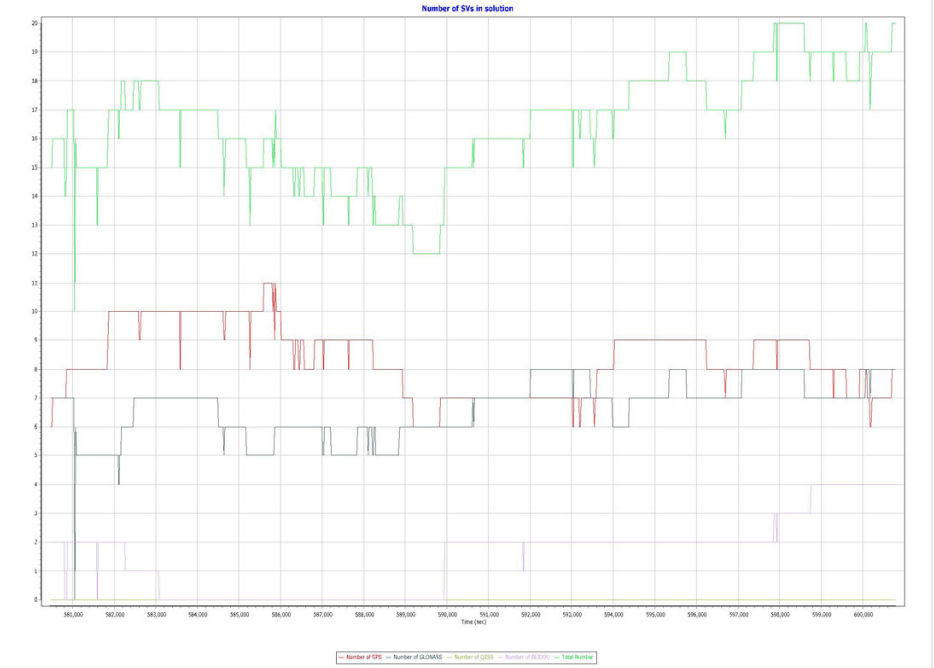
August 5, 2017-A (CFFRY, SN2220754)

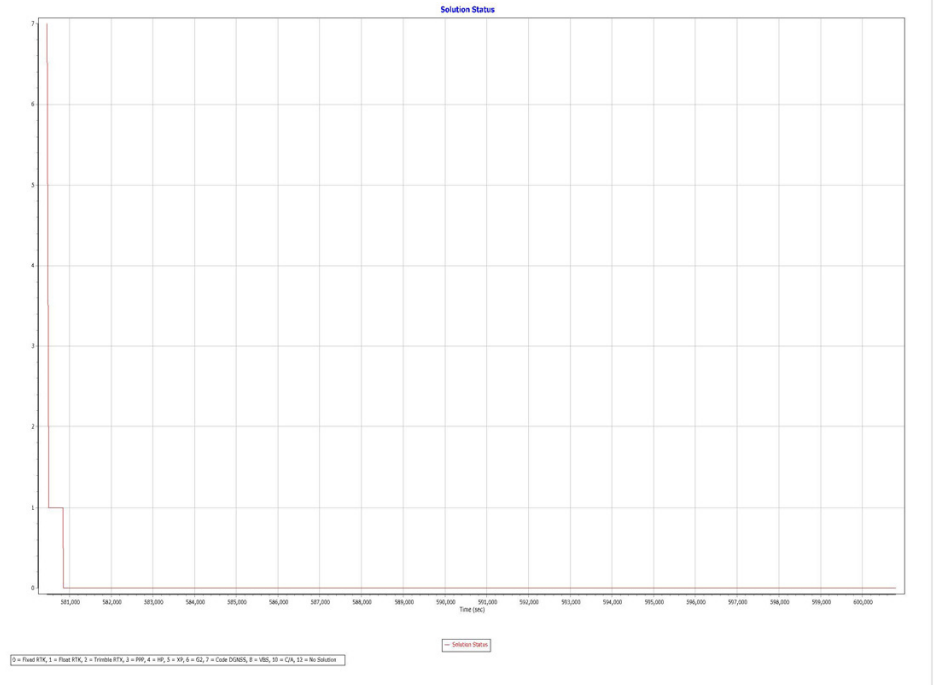

Top View: Latitude (deg)
Longitude (deg)


Forward/Reverse Separation
Time (sec)

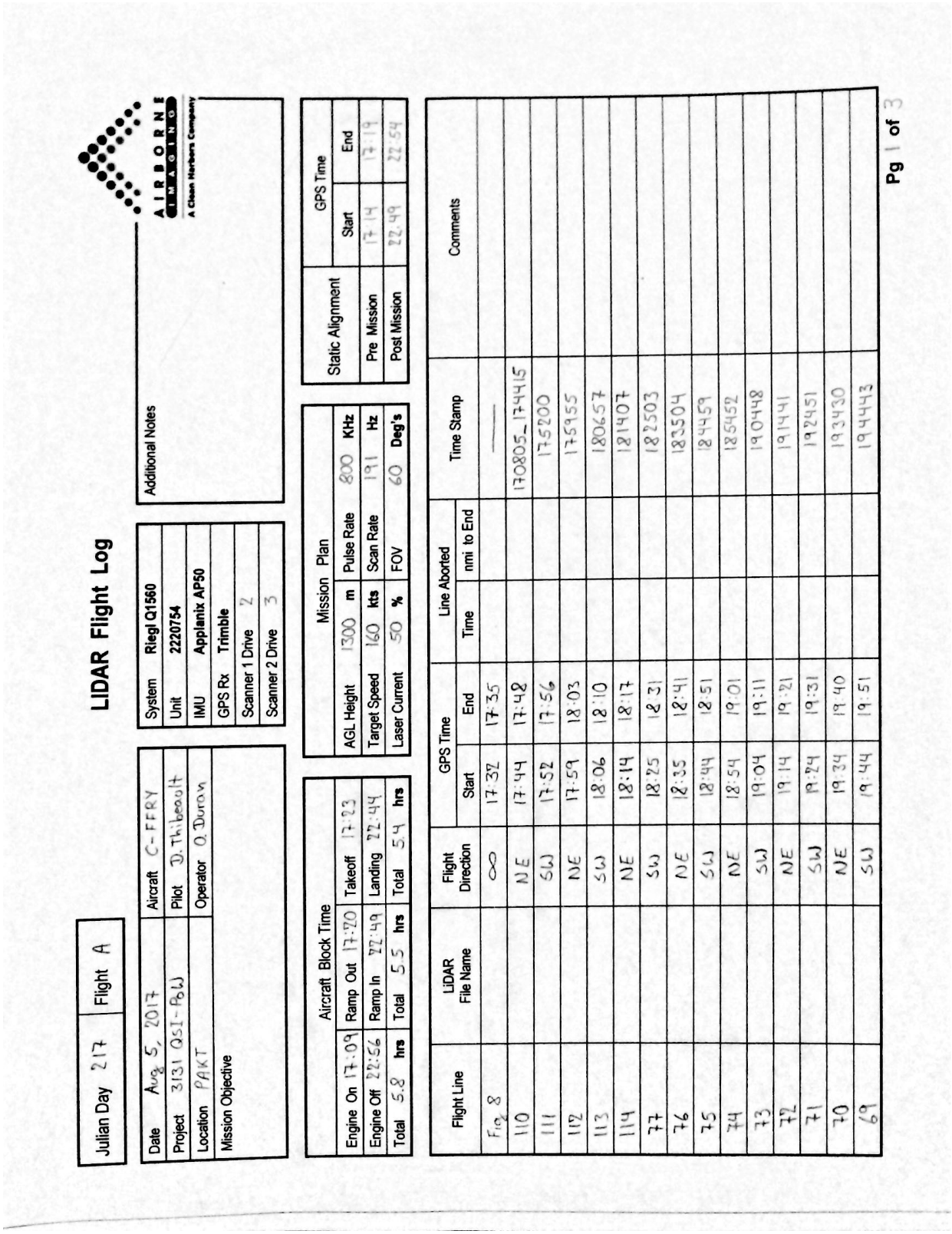

Estimated Position Accuracy
Time (sec)
North (m)
East (m)
Down (m)


DOP
Time (sec)
PDOP
HDOP
VDOP


Number of SVs in solution
Time (sec)
Number of GPS
Number of GLONASS
Number of QZSS
Number of BEIDOU
Total Number


Solution Status
Time (sec)
Solution Status
0 = Fixed RTK, 1 = Float RTK, 2 = Trimble RTX, 3 = PPP, 4 = HP, 5 = XP, 6 = G2, 7 = Code DGNSS, 8 = VBS, 10 = C/A, 12 = No Solution

Flight Log



LIDAR Flight Log

Julian Day 217 | Flight A

Date	Aug 5, 2017	Aircraft	C-FFRY
Project	3131 QSI-PBJ	Pilot	D. Thibeault
Location	PAKT	Operator	Q. Duran
Mission Objective			

System	Riegl Q1560
Unit	2220754
IMU	Applanix AP50
GPS Rx	Trimble
Scanner 1 Drive	2
Scanner 2 Drive	3

Additional Notes

AIRBORNE IMAGING — A Clean Harbors Company

Aircraft Block Time			
Engine On 17:09	Ramp Out 17:20	Takeoff 17:23	
Engine Off 22:56	Ramp In 22:49	Landing 22:44	
Total 5.8 hrs	Total 5.5 hrs	Total 5.4 hrs	

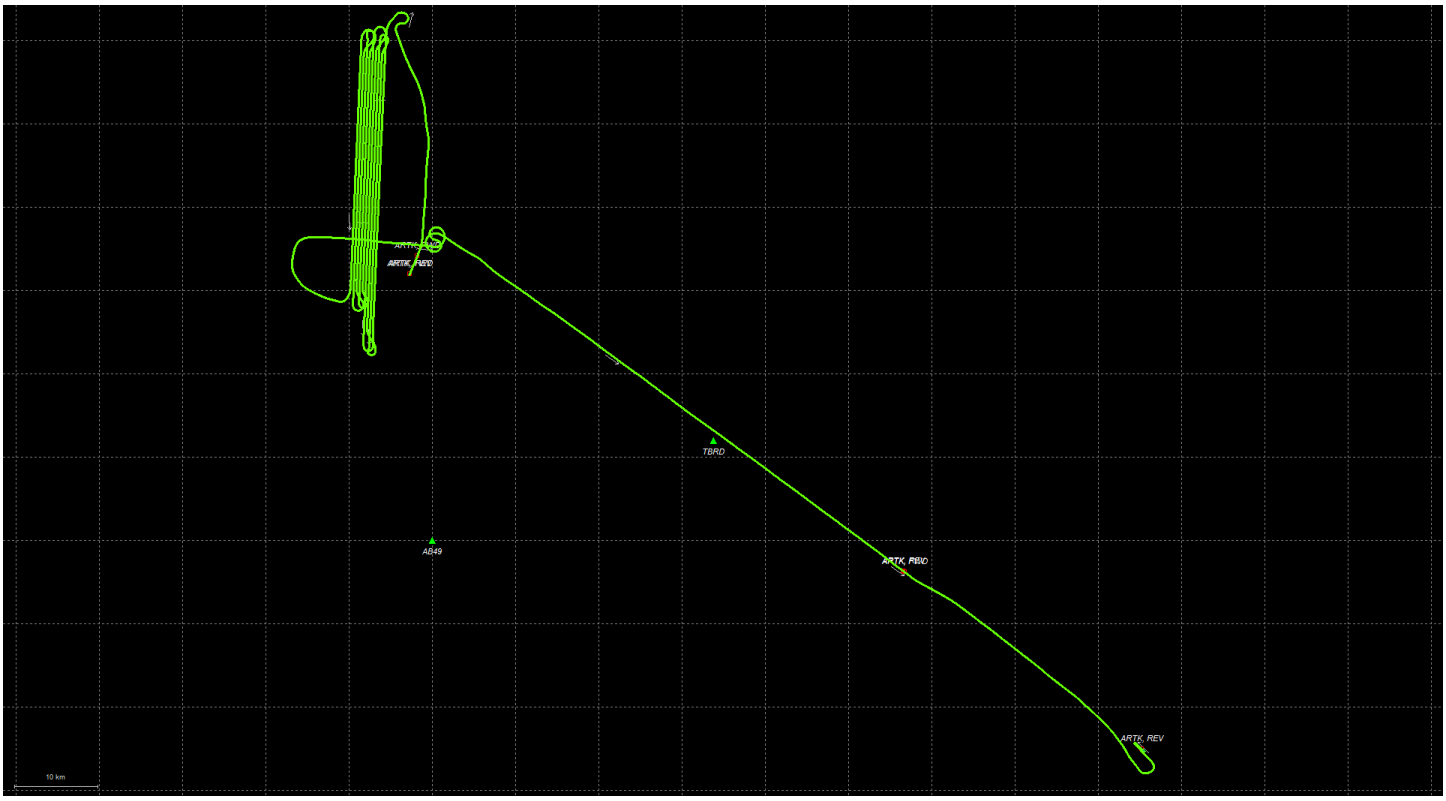
Mission Plan			
AGL Height	1300 m	Pulse Rate	800 KHz
Target Speed	160 kts	Scan Rate	191 Hz
Laser Current	50 %	FOV	60 Deg's

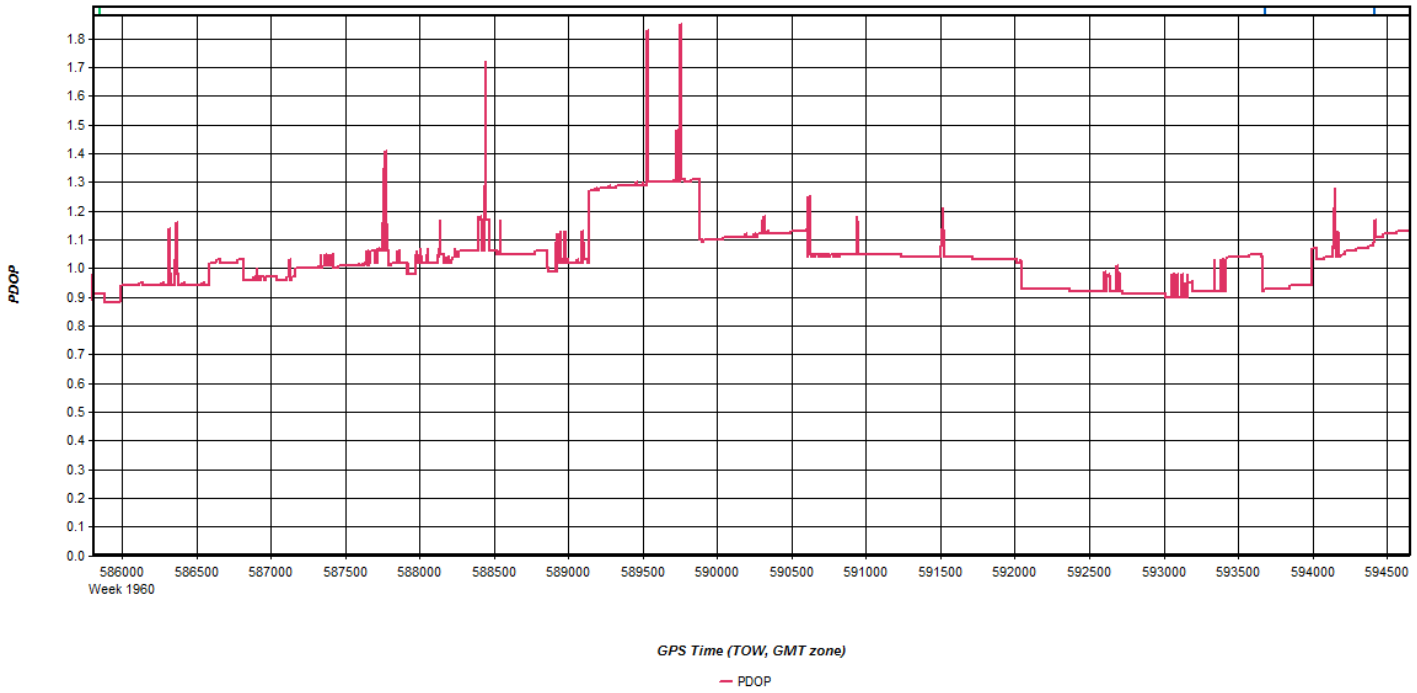
Static Alignment	GPS Time	
	Start	End
Pre Mission	17:14	17:19
Post Mission	22:49	22:54

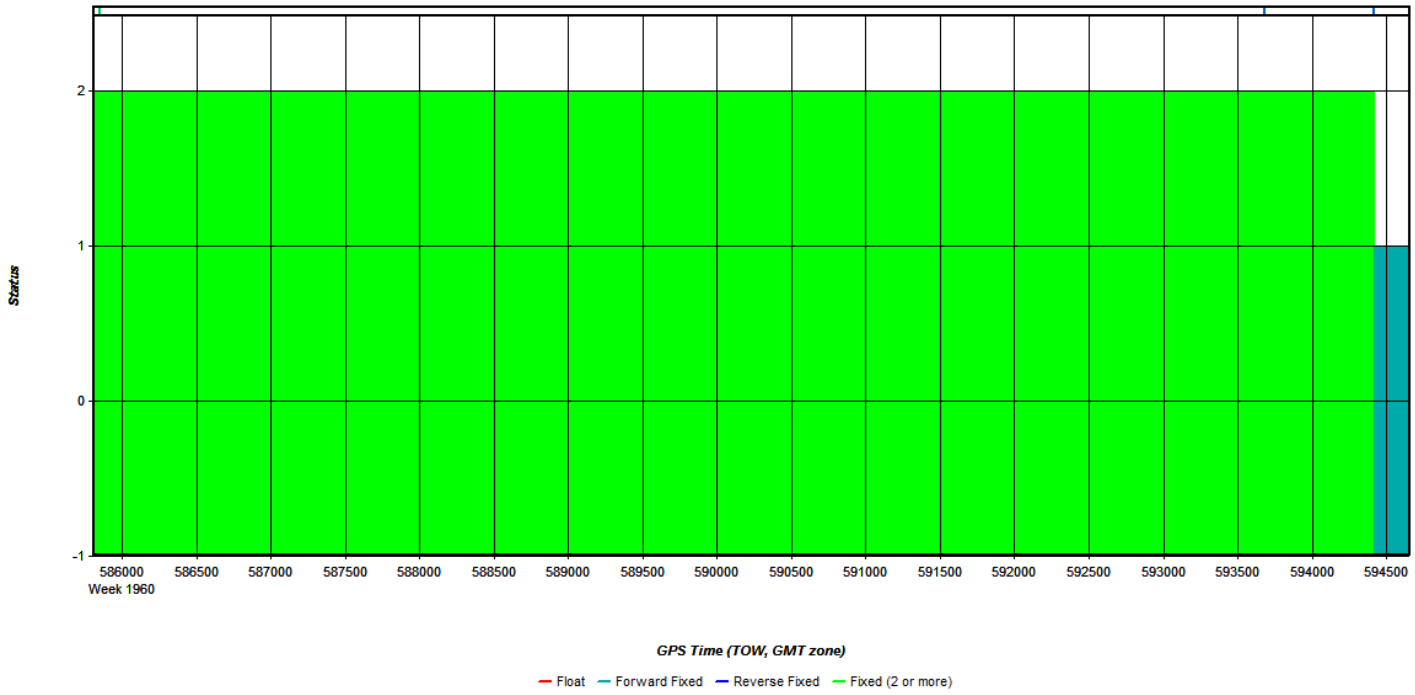
Flight Line	LiDAR File Name	Flight Direction	GPS Time		Line Aborted		Time Stamp	Comments
			Start	End	Time	nmi to End		
Fig 8		∞	17:32	17:35			———	
110		NE	17:44	17:48			170805_174415	
111		SW	17:52	17:56			175200	
112		NE	17:59	18:03			175955	
113		SW	18:06	18:10			180657	
114		NE	18:14	18:17			181407	
77		SW	18:25	18:31			182503	
76		NE	18:35	18:41			183504	
75		SW	18:44	18:51			184459	
74		NE	18:54	19:01			185452	
73		SW	19:04	19:11			190448	
72		NE	19:14	19:21			191441	
71		SW	19:24	19:31			192451	
70		NE	19:34	19:40			193430	
69		SW	19:44	19:51			194443	

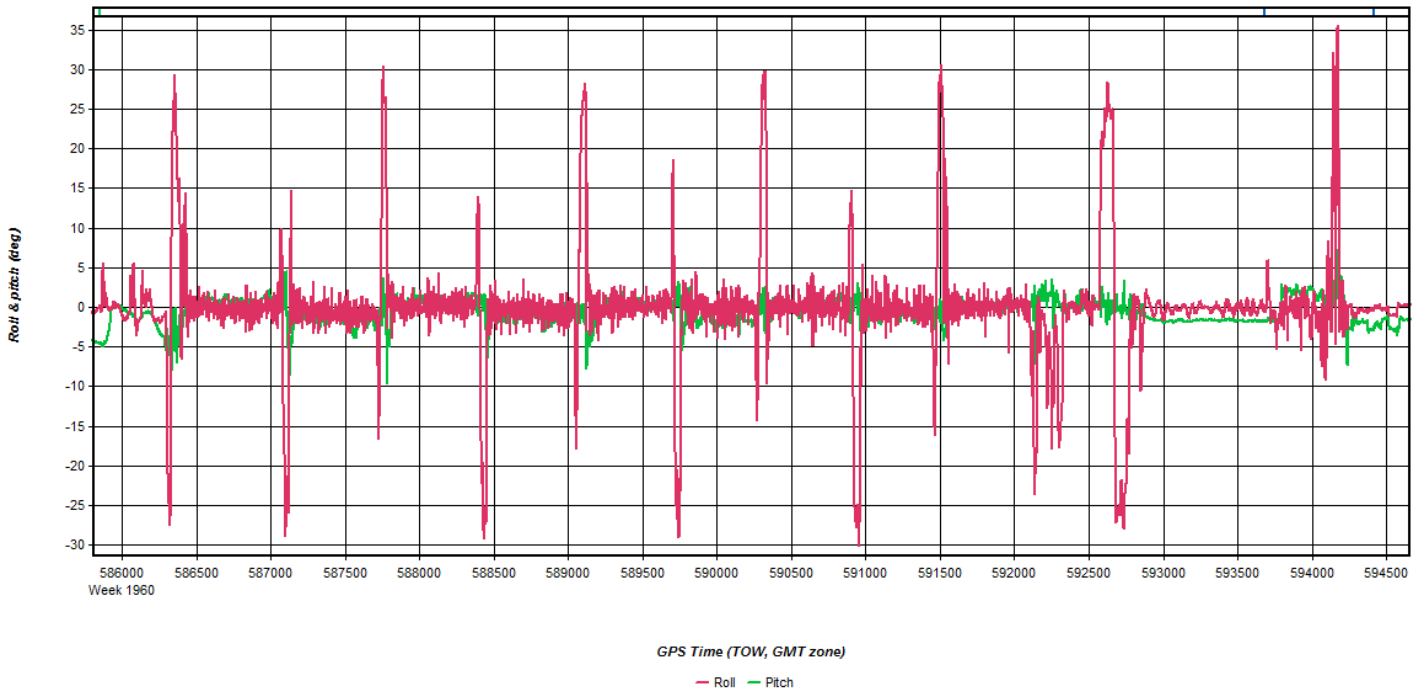
Pg 1 of 3

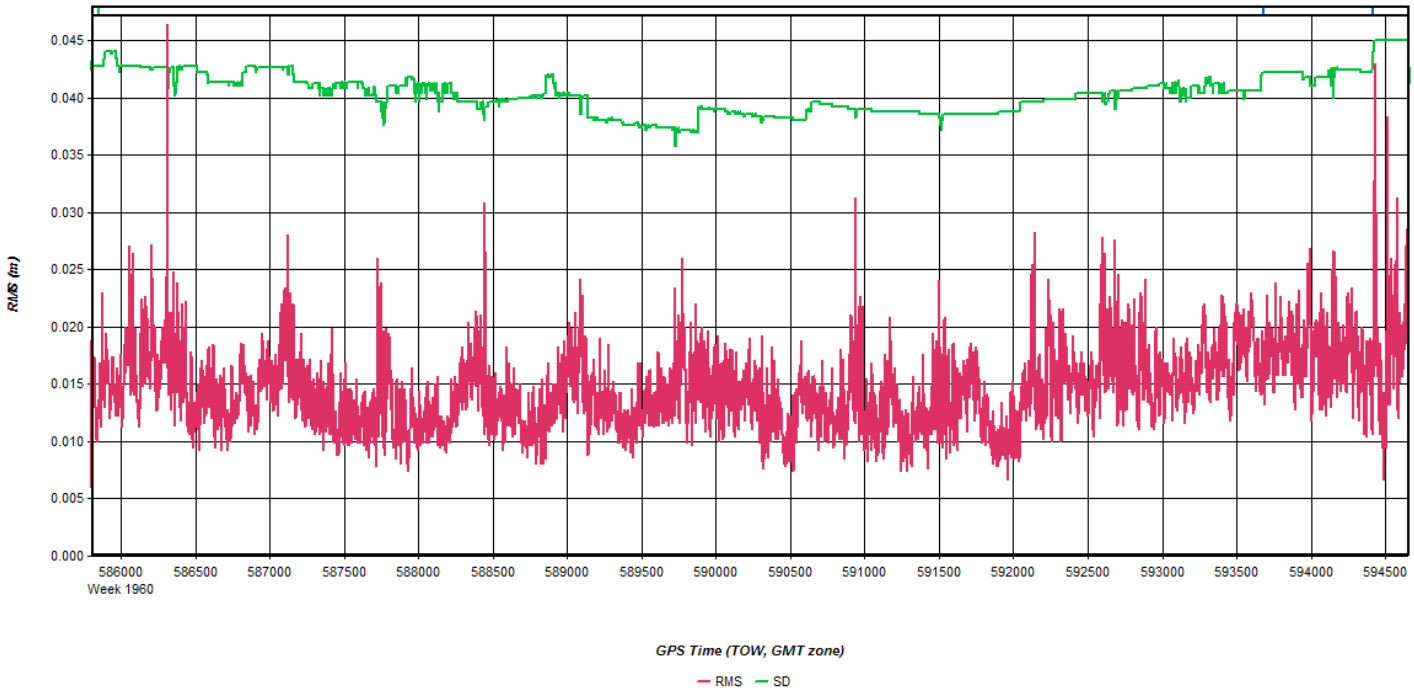
August 5, 2017-B (N604MD, SN8146)

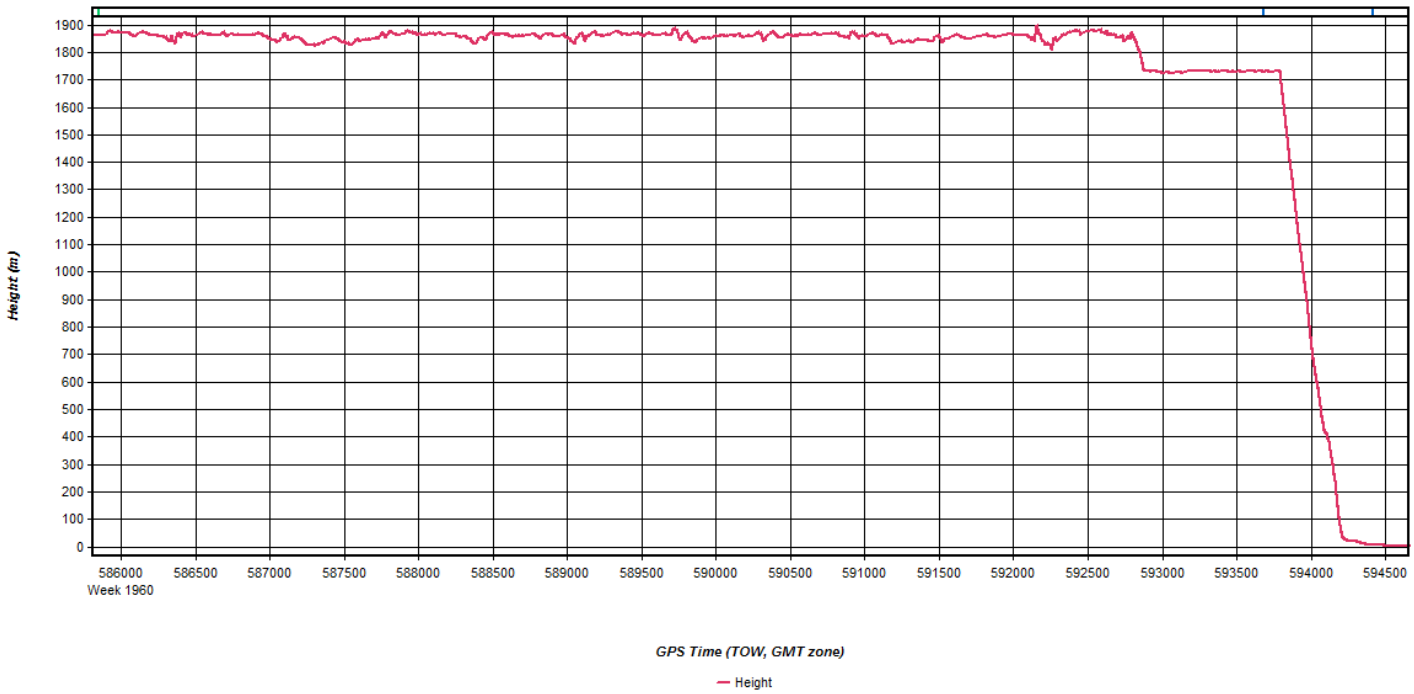

ARTK_FWD
TBRD
AB49
ARTK_FWD
ARTK_REV
10 km

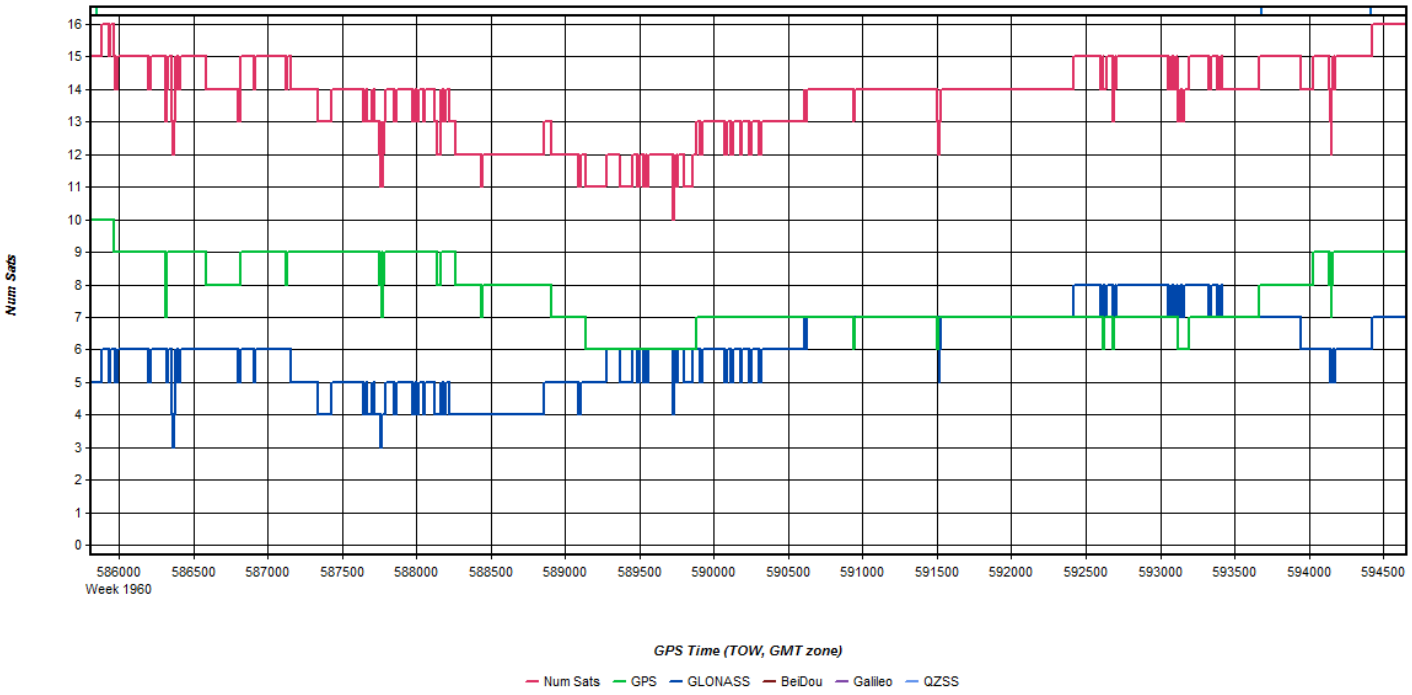

PDOP
1.8
1.7
1.6
1.5
1.4
1.3
1.2
1.1
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
586000
586500
587000
587500
588000
588500
589000
589500
590000
590500
591000
591500
592000
592500
593000
593500
594000
594500
Week 1960
GPS Time (TOW, GMT zone)
PDOP

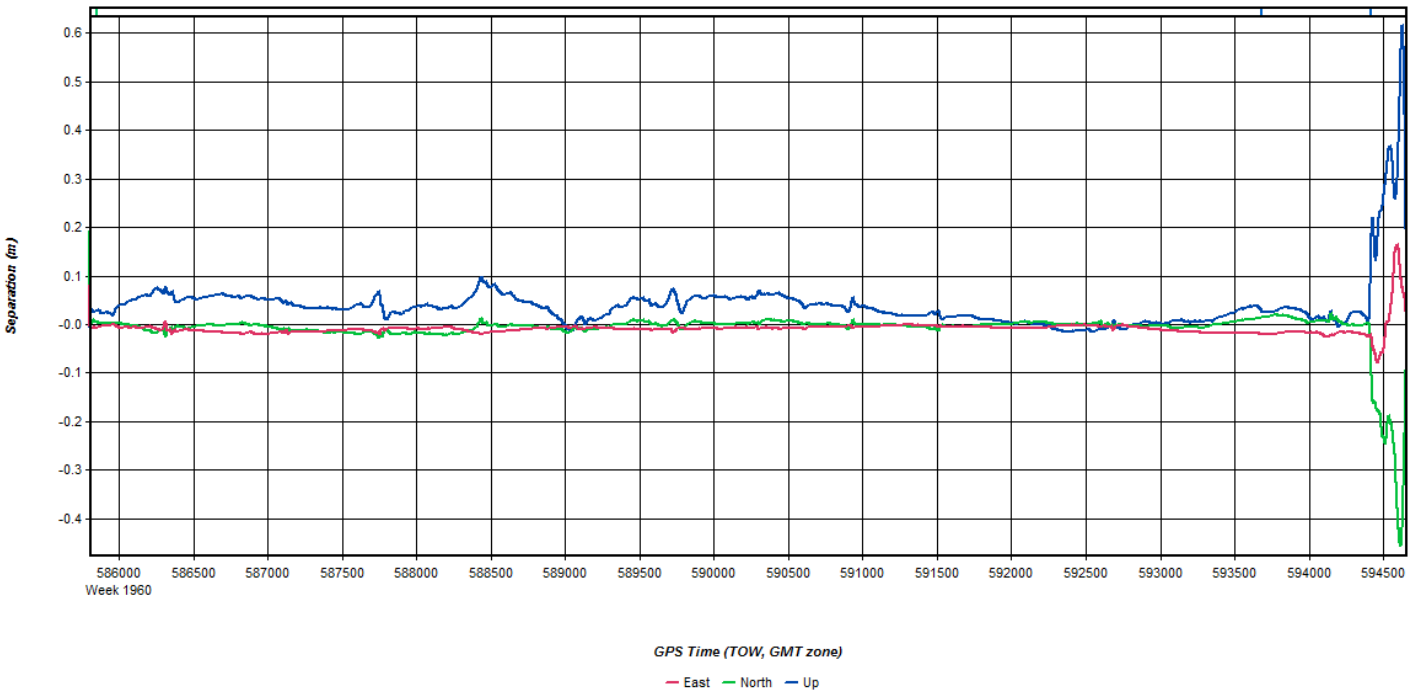

Status
2
1
0
-1
586000
Week 1960
586500
587000
587500
588000
588500
589000
589500
590000
590500
591000
591500
592000
592500
593000
593500
594000
594500
GPS Time (TOW, GMT zone)
Float
Forward Fixed
Reverse Fixed
Fixed (2 or more)

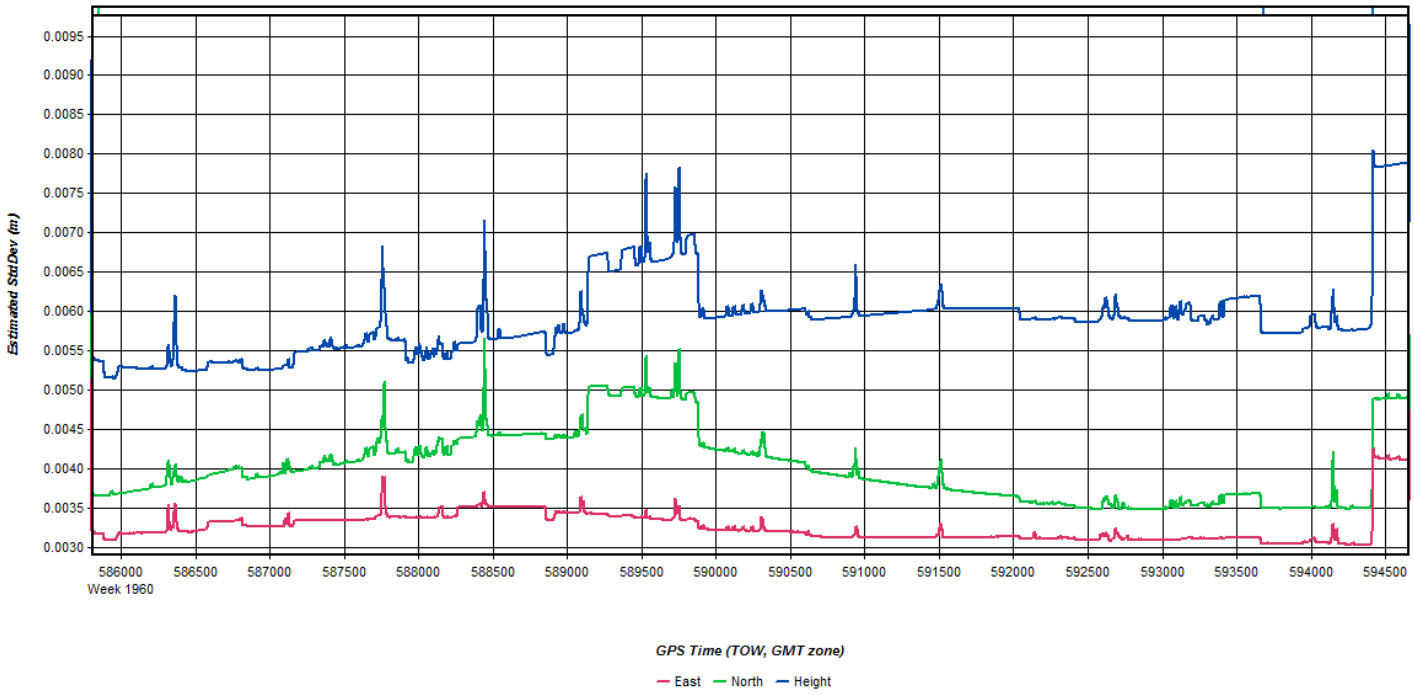

Roll & pitch (deg)
35
30
25
20
15
10
5
0
-5
-10
-15
-20
-25
-30
586000
Week 1960
586500
587000
587500
588000
588500
589000
589500
590000
590500
591000
591500
592000
592500
593000
593500
594000
594500
GPS Time (TOW, GMT zone)
Roll
Pitch

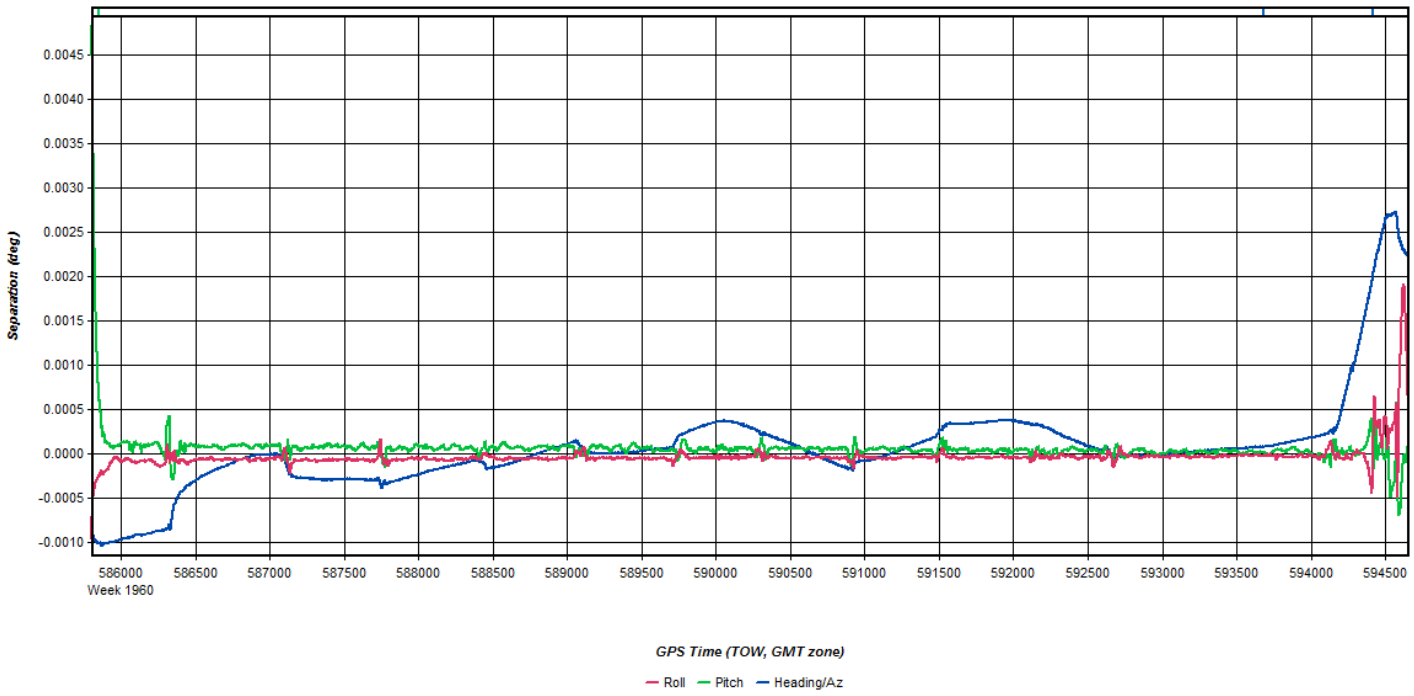

RMS (m)
0.045
0.040
0.035
0.030
0.025
0.020
0.015
0.010
0.005
0.000
586000
Week 1960
586500
587000
587500
588000
588500
589000
589500
590000
590500
591000
591500
592000
592500
593000
593500
594000
594500
GPS Time (TOW, GMT zone)
RMS
SD

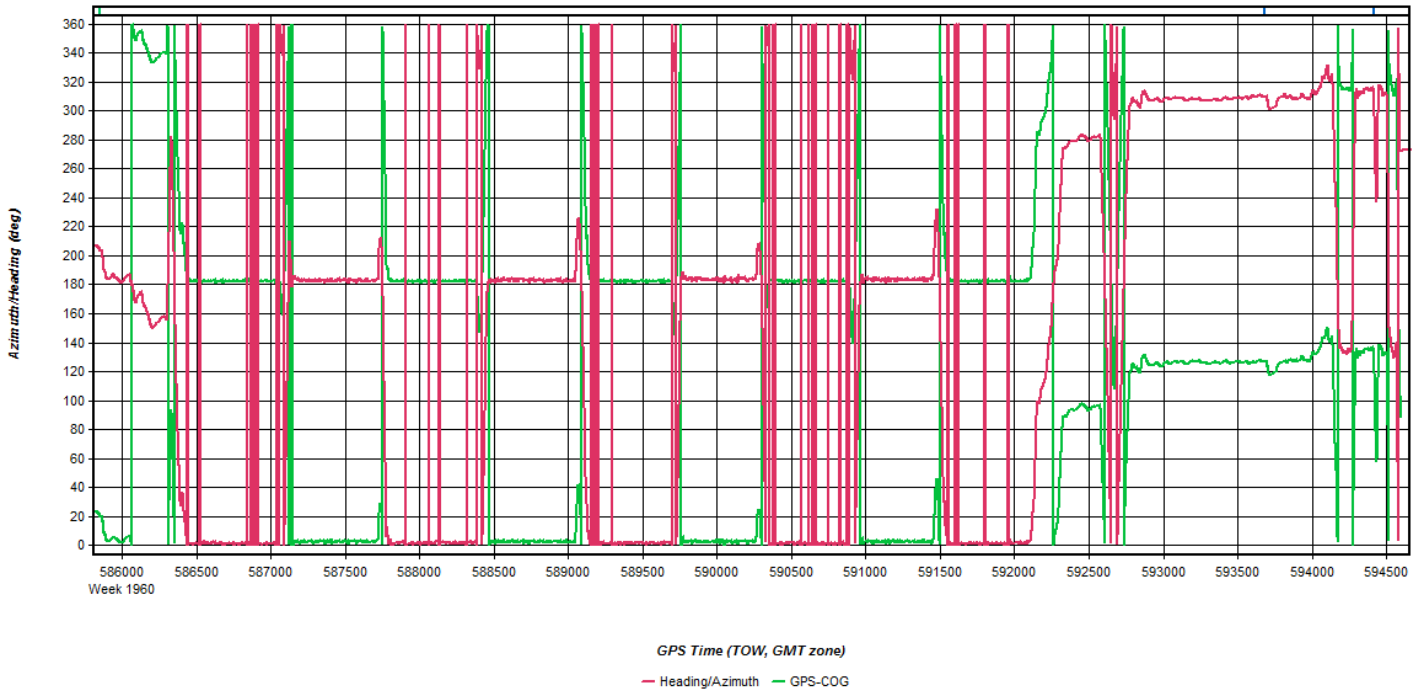

Height (m)
1900
1800
1700
1600
1500
1400
1300
1200
1100
1000
900
800
700
600
500
400
300
200
100
0
586000
Week 1960
586500
587000
587500
588000
588500
589000
589500
590000
590500
591000
591500
592000
592500
593000
593500
594000
594500
GPS Time (TOW, GMT zone)
Height

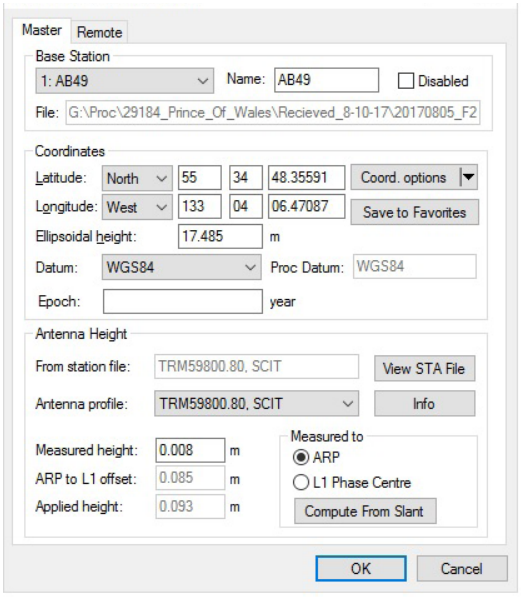

Num Sats
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
586000
Week 1960
586500
587000
587500
588000
588500
589000
589500
590000
590500
591000
591500
592000
592500
593000
593500
594000
594500
GPS Time (TOW, GMT zone)
Num Sats
GPS
GLONASS
BeiDou
Galileo
QZSS

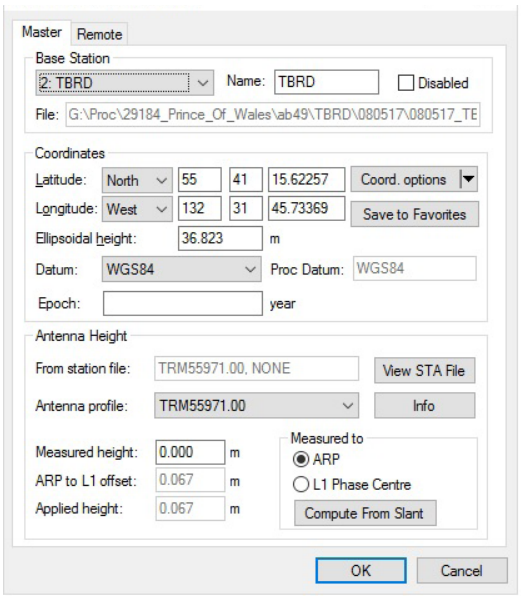

Separation (m)
0.6
0.5
0.4
0.3
0.2
0.1
-0.0
-0.1
-0.2
-0.3
-0.4
586000
Week 1960
586500
587000
587500
588000
588500
589000
589500
590000
590500
591000
591500
592000
592500
593000
593500
594000
594500
GPS Time (TOW, GMT zone)
East
North
Up


Estimated StdDev (m)
0.0095
0.0090
0.0085
0.0080
0.0075
0.0070
0.0065
0.0060
0.0055
0.0050
0.0045
0.0040
0.0035
0.0030
586000
Week 1960
586500
587000
587500
588000
588500
589000
589500
590000
590500
591000
591500
592000
592500
593000
593500
594000
594500
GPS Time (TOW, GMT zone)
East
North
Height

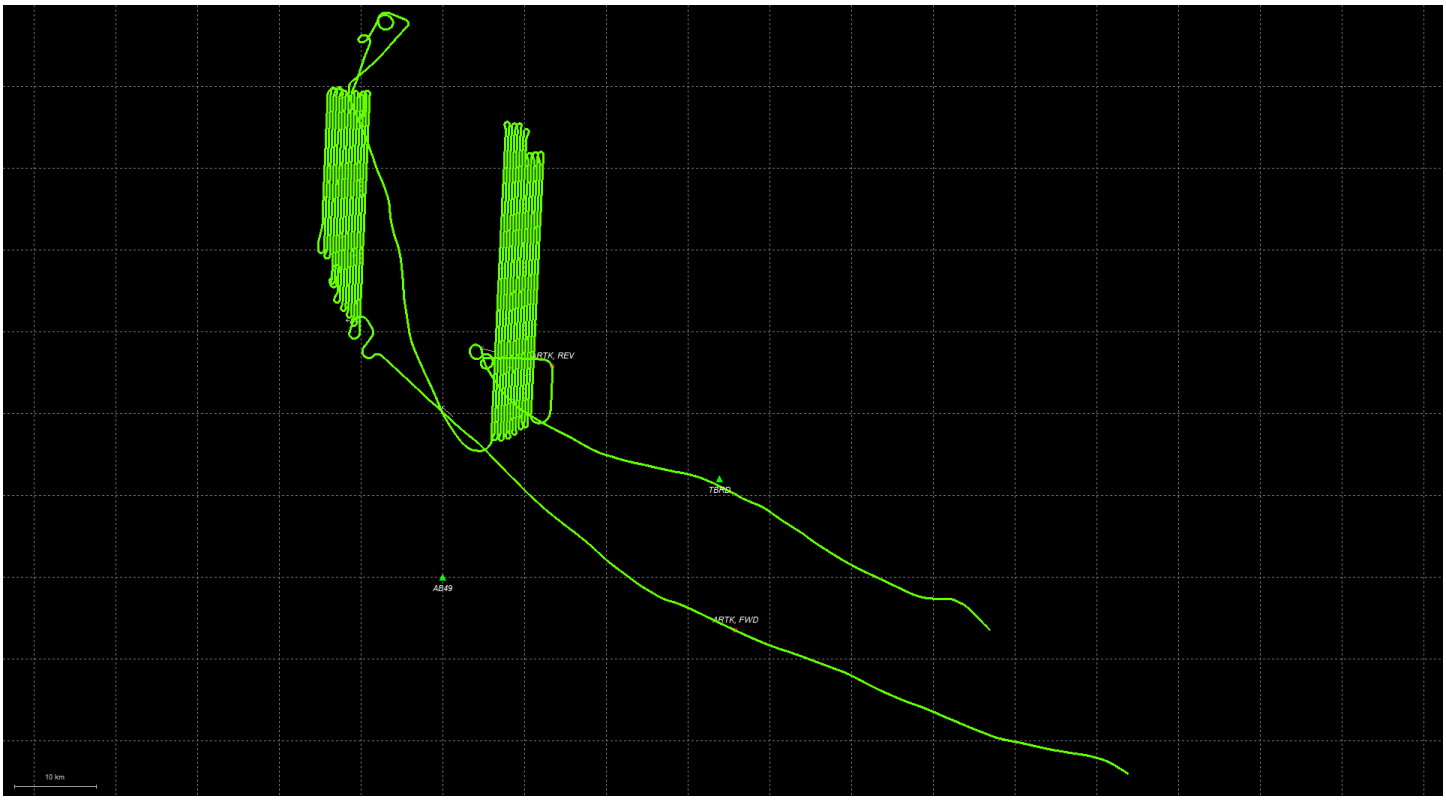

Separation (deg)
0.0045
0.0040
0.0035
0.0030
0.0025
0.0020
0.0015
0.0010
0.0005
0.0000
-0.0005
-0.0010
586000
Week 1960
586500
587000
587500
588000
588500
589000
589500
590000
590500
591000
591500
592000
592500
593000
593500
594000
594500
GPS Time (TOW, GMT zone)
Roll
Pitch
Heading/Az

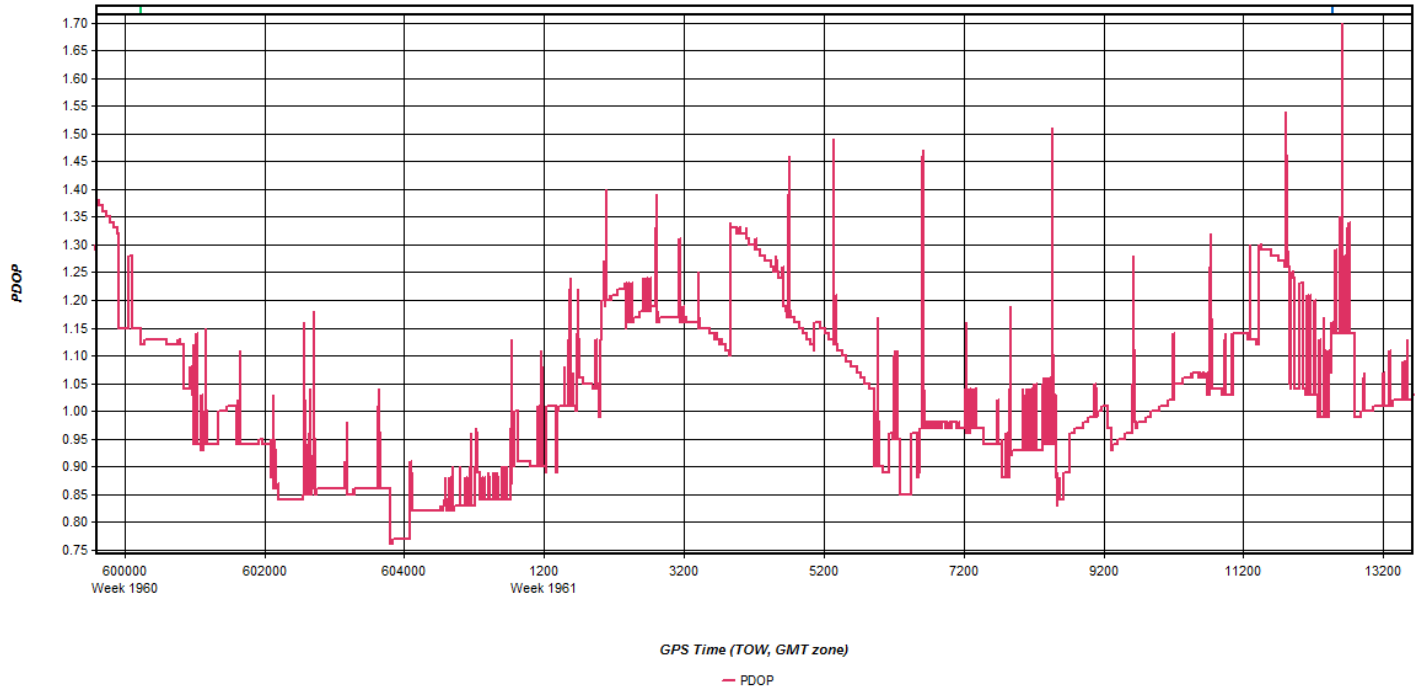

Azimuth/Heading (deg)
360
340
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
586000
Week 1960
586500
587000
587500
588000
588500
589000
589500
590000
590500
591000
591500
592000
592500
593000
593500
594000
594500
GPS Time (TOW, GMT zone)
Heading/Azimuth
GPS-COG

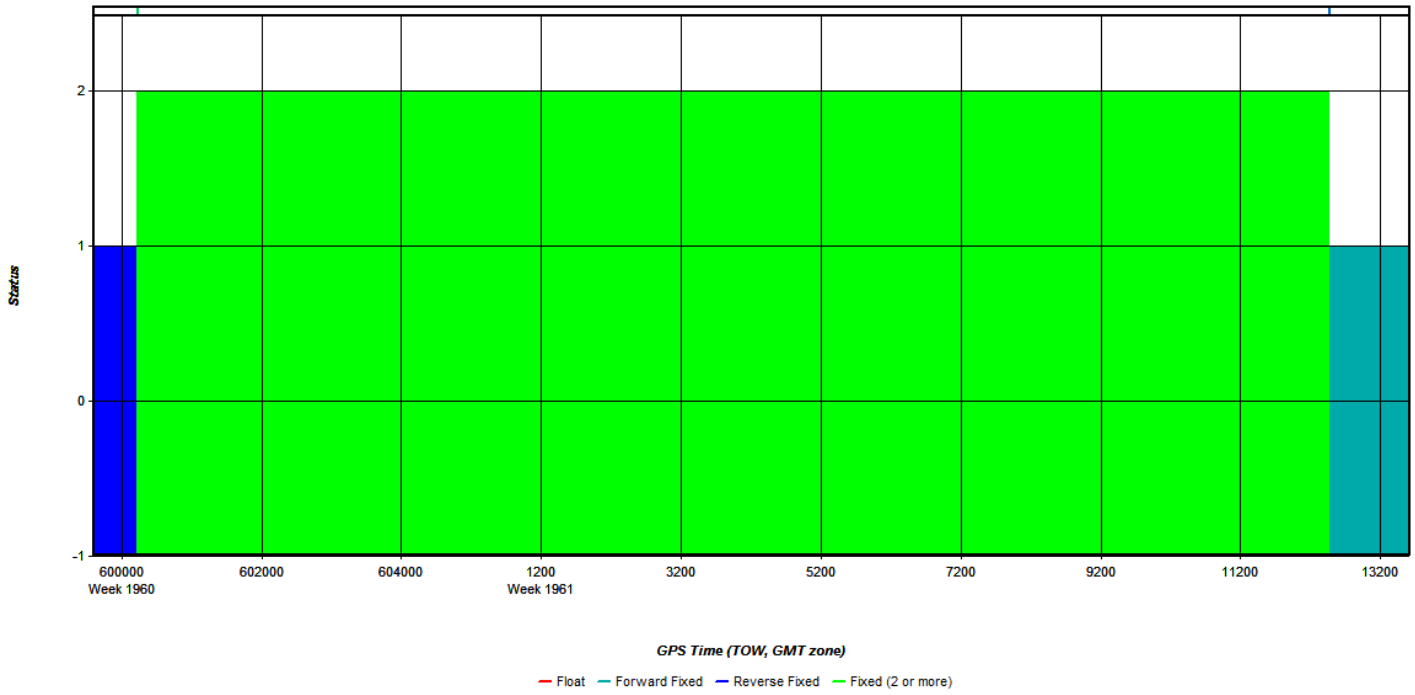

Master
Remote
Base Station
1: AB49
Name:
AB49
Disabled
File:
G:\Proc\29184_Prince_Of_Wales\Recieved_8-10-17\20170805_F2
Coordinates
Latitude:
North
55
34
48.35591
Coord. options
Longitude:
West
133
04
06.47087
Save to Favorites
Ellipsoidal height:
17.485
m
Datum:
WGS84
Proc Datum:
WGS84
Epoch:
year
Antenna Height
From station file:
TRM59800.80, SCIT
View STA File
Antenna profile:
TRM59800.80, SCIT
Info
Measured height:
0.008
m
Measured to
ARP
ARP to L1 offset:
0.085
m
L1 Phase Centre
Applied height:
0.093
m
Compute From Slant
OK
Cancel

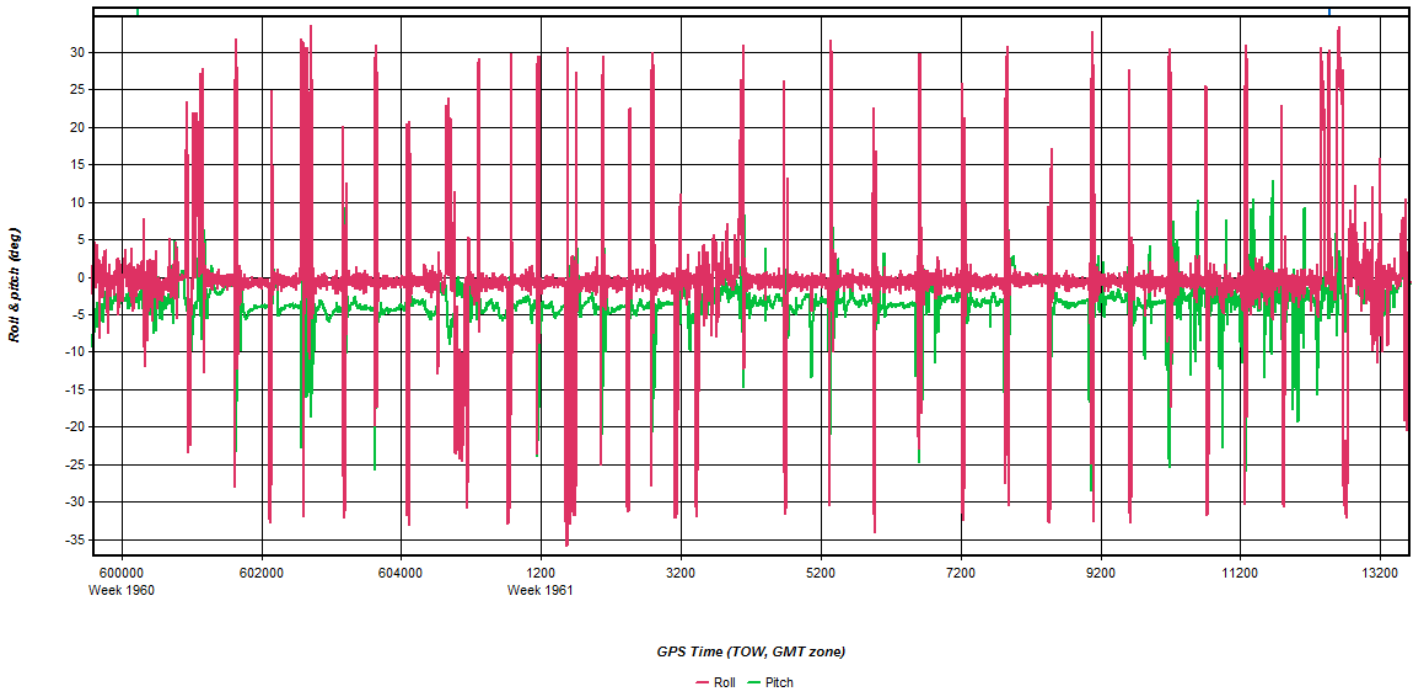

Master
Remote
Base Station
2: TBRD
Name:
TBRD
Disabled
File:
G:\Proc\29184_Prince_Of_Wales\ab49\TBRD\080517\080517_TE
Coordinates
Latitude:
North
55
41
15.62257
Coord. options
Longitude:
West
132
31
45.73369
Save to Favorites
Ellipsoidal height:
36.823
m
Datum:
WGS84
Proc Datum:
WGS84
Epoch:
year
Antenna Height
From station file:
TRM55971.00, NONE
View STA File
Antenna profile:
TRM55971.00
Info
Measured height:
0.000
m
Measured to
ARP
ARP to L1 offset:
0.067
m
L1 Phase Centre
Applied height:
0.067
m
Compute From Slant
OK
Cancel

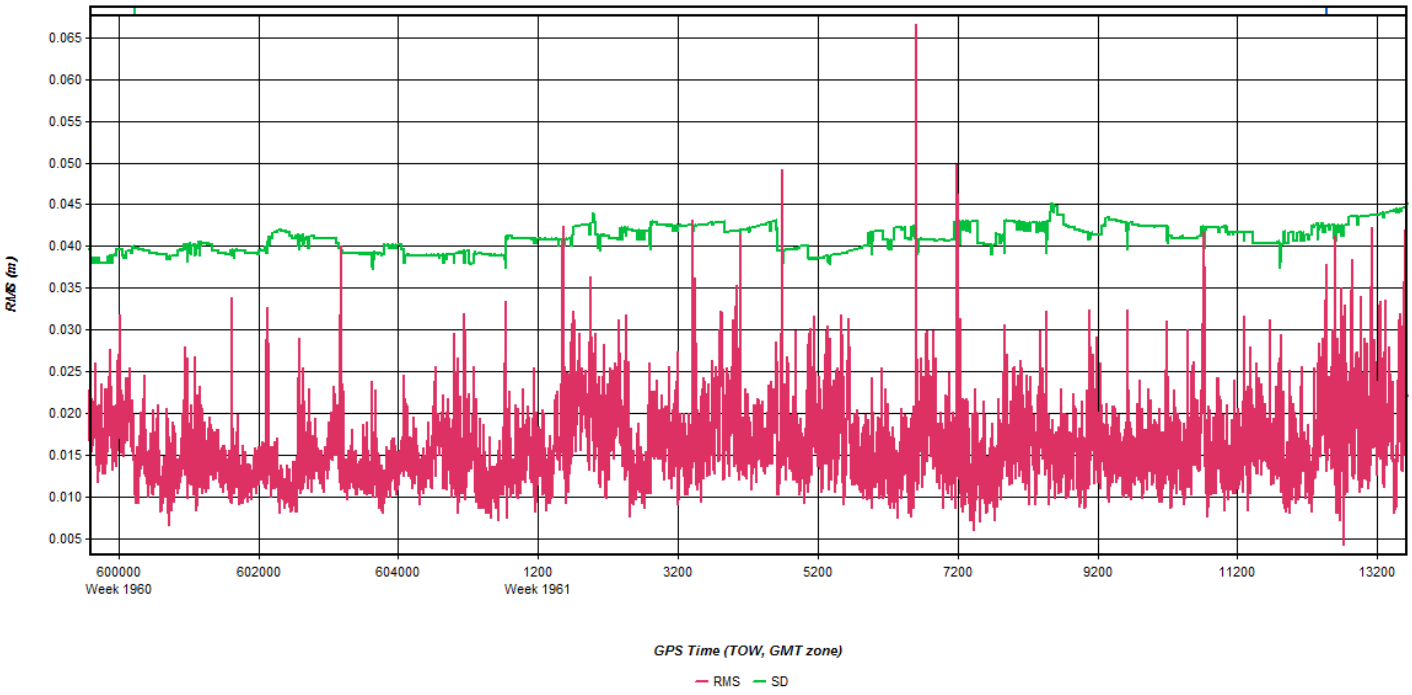
August 5, 2017-C (N604MD, SN8146)

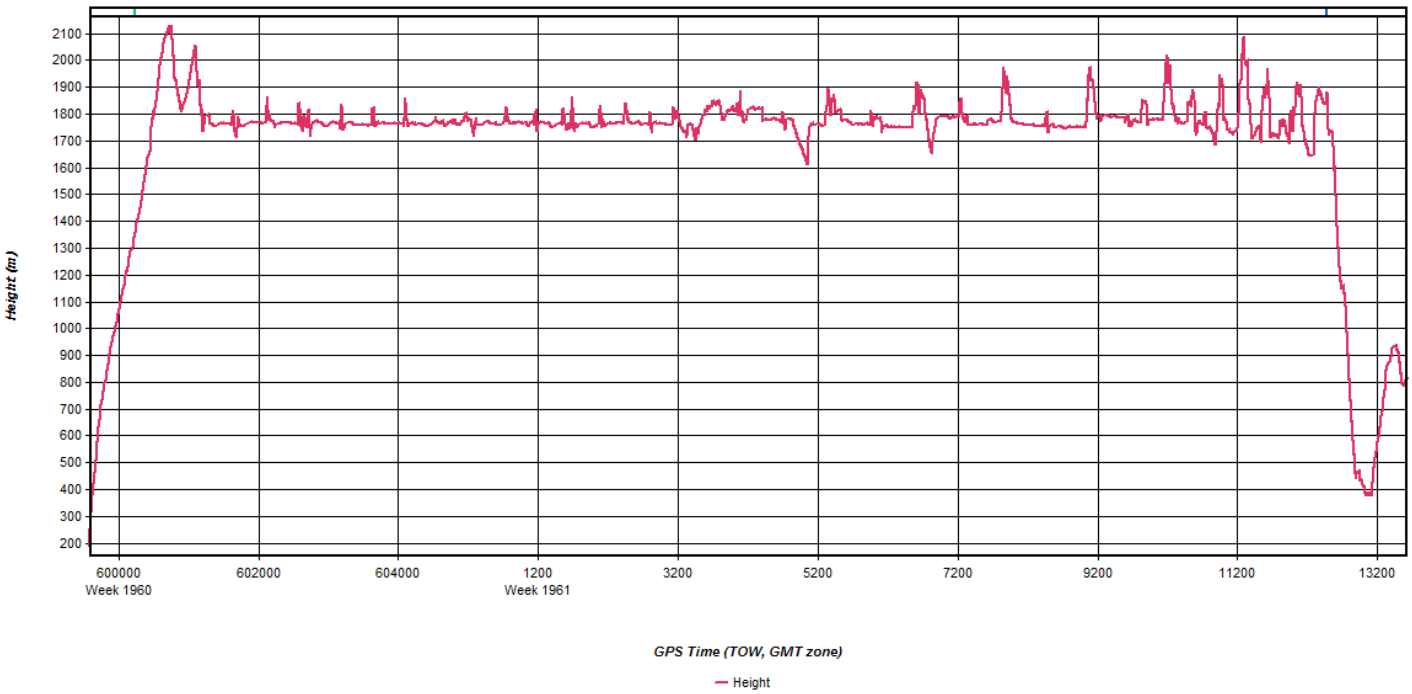

RTK, REV
TBRB
AB49
RTK, FWD
10 km

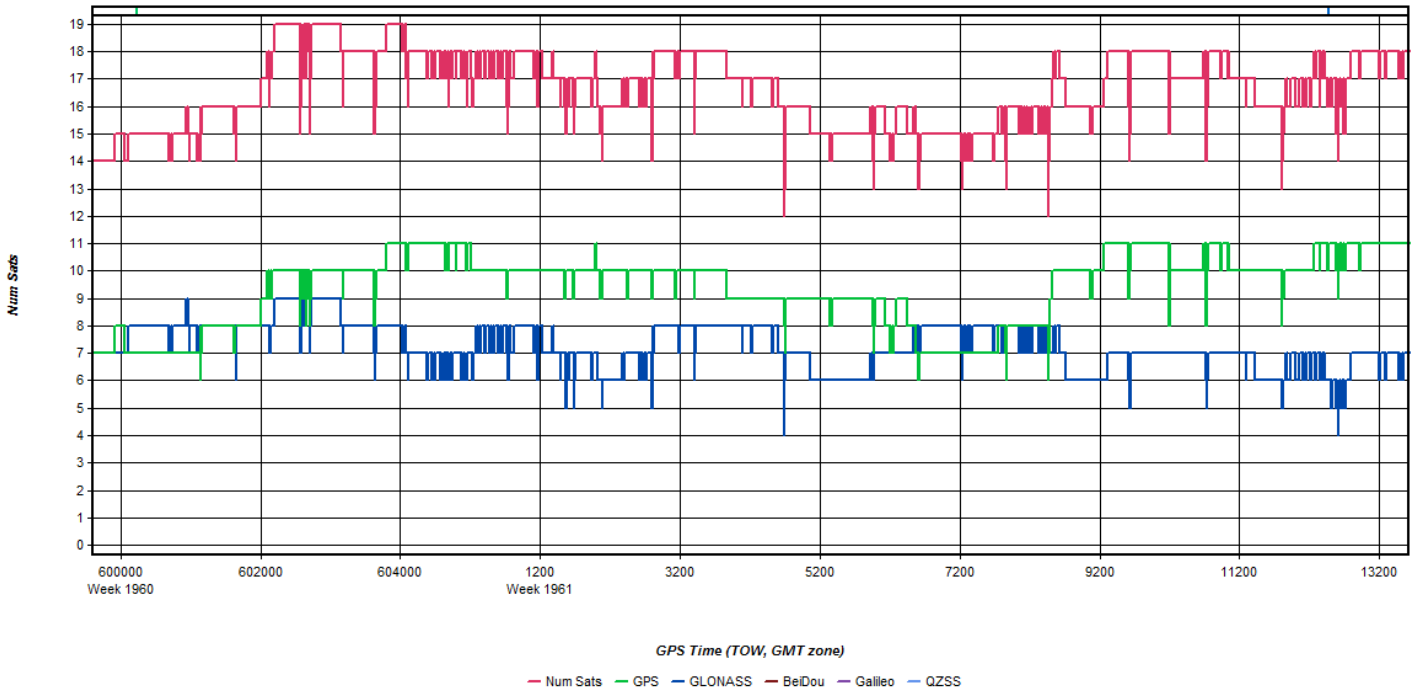

PDOP
1.70
1.65
1.60
1.55
1.50
1.45
1.40
1.35
1.30
1.25
1.20
1.15
1.10
1.05
1.00
0.95
0.90
0.85
0.80
0.75
600000
Week 1960
602000
604000
1200
Week 1961
3200
5200
7200
9200
11200
13200
GPS Time (TOW, GMT zone)
PDOP

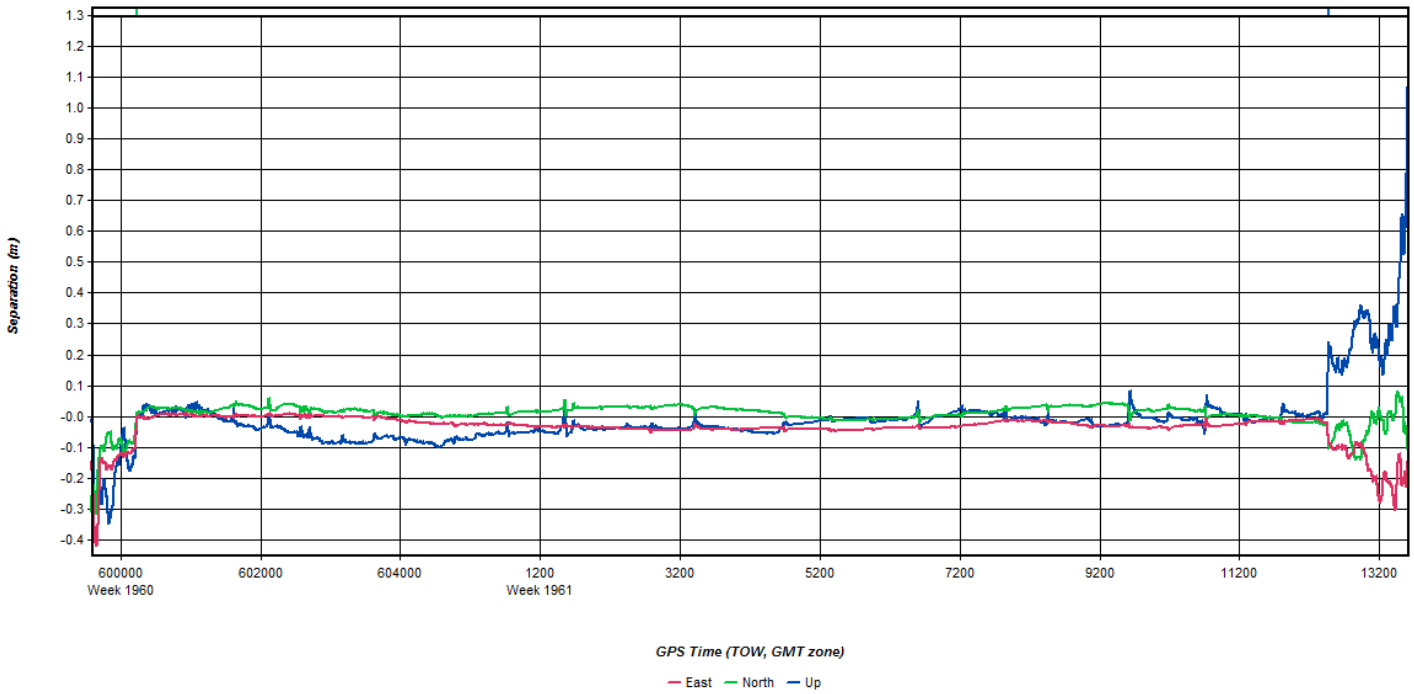

Status
2
1
0
-1
600000
Week 1960
602000
604000
1200
Week 1961
3200
5200
7200
9200
11200
13200
GPS Time (TOW, GMT zone)
Float
Forward Fixed
Reverse Fixed
Fixed (2 or more)

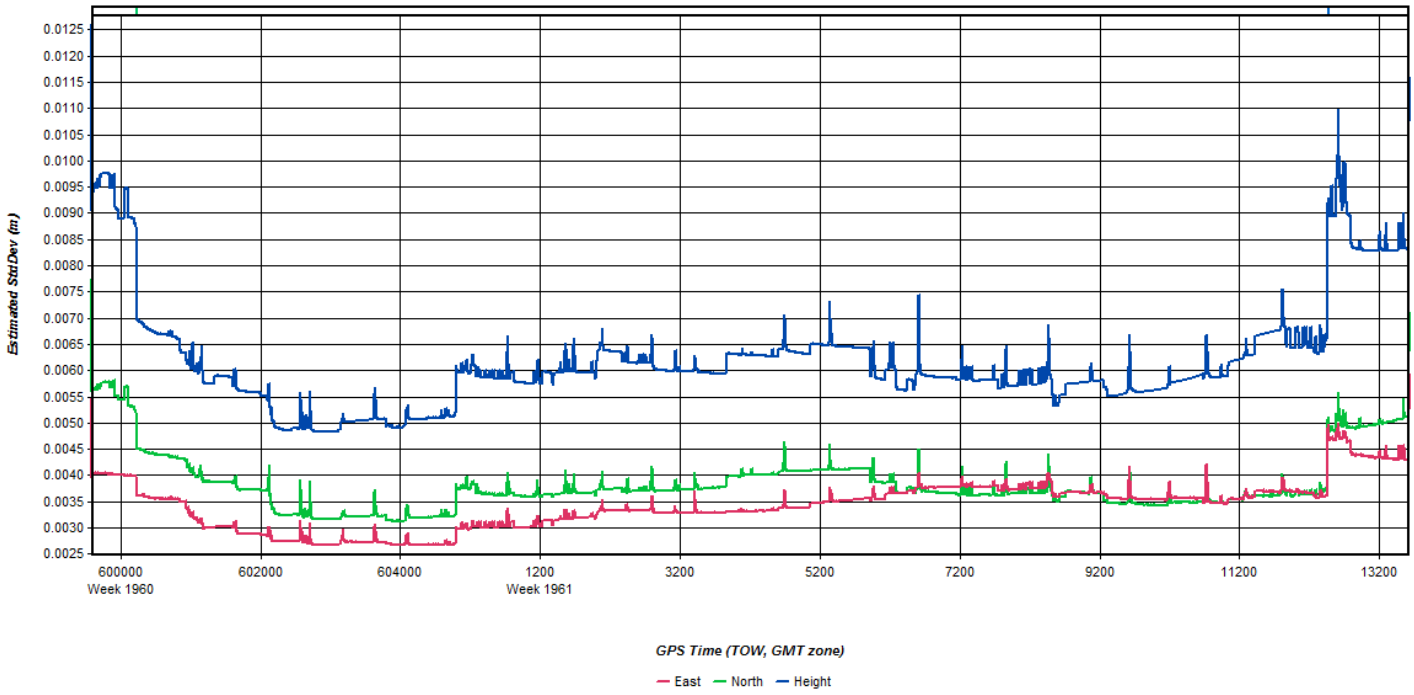

Roll & pitch (deg)
30
25
20
15
10
5
0
-5
-10
-15
-20
-25
-30
-35
600000
Week 1960
602000
604000
1200
Week 1961
3200
5200
7200
9200
11200
13200
GPS Time (TOW, GMT zone)
Roll
Pitch

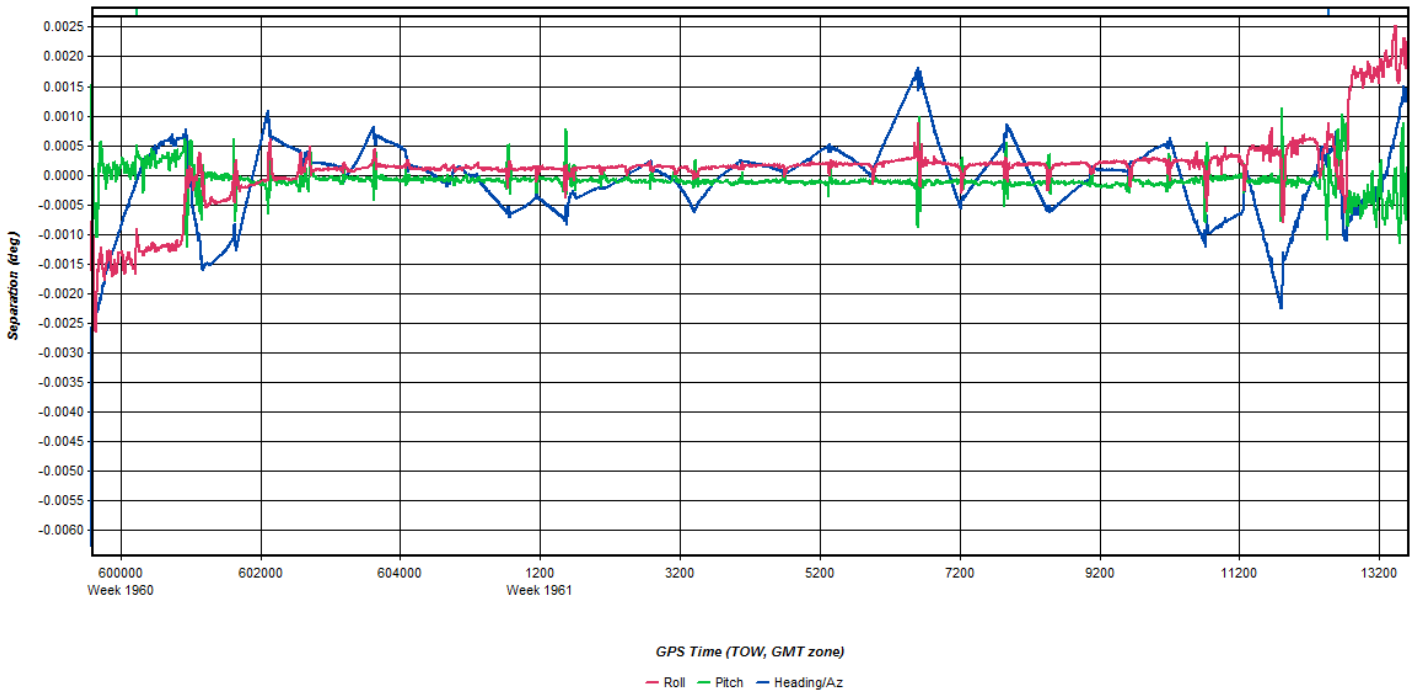

RMS (m)
0.065
0.060
0.055
0.050
0.045
0.040
0.035
0.030
0.025
0.020
0.015
0.010
0.005
600000
Week 1960
602000
604000
1200
Week 1961
3200
5200
7200
9200
11200
13200
GPS Time (TOW, GMT zone)
RMS
SD

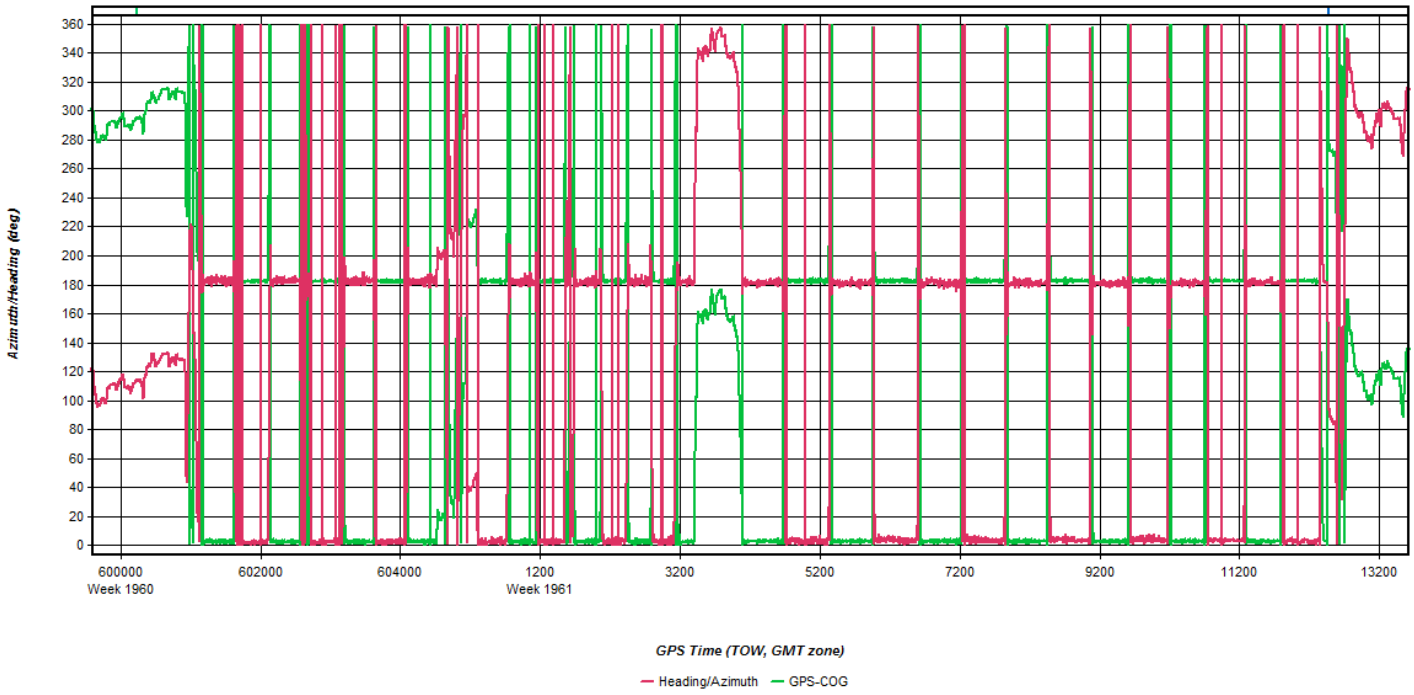

Height (m)
2100
2000
1900
1800
1700
1600
1500
1400
1300
1200
1100
1000
900
800
700
600
500
400
300
200
600000
Week 1960
602000
604000
1200
Week 1961
3200
5200
7200
9200
11200
13200
GPS Time (TOW, GMT zone)
Height

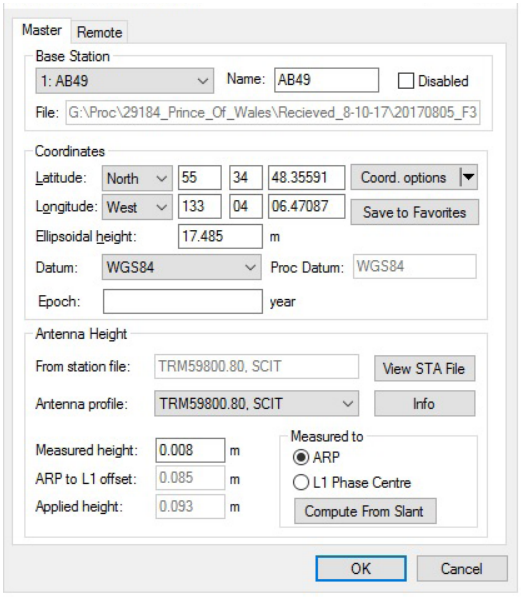

Num Sats
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
600000
Week 1960
602000
604000
1200
Week 1961
3200
5200
7200
9200
11200
13200
GPS Time (TOW, GMT zone)
Num Sats
GPS
GLONASS
BeiDou
Galileo
QZSS

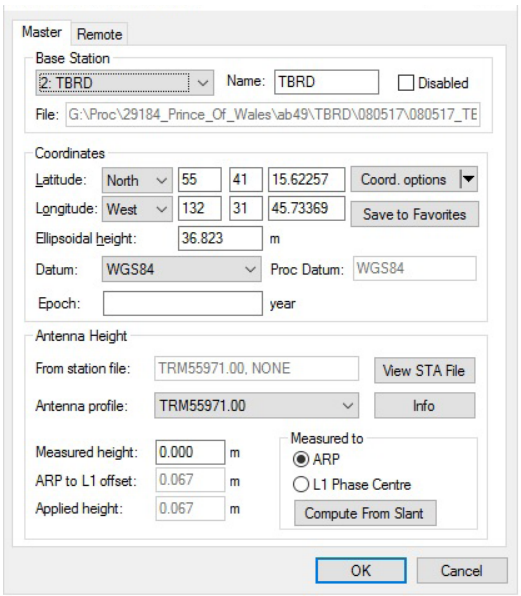

Separation (m)
1.3
1.2
1.1
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
-0.0
-0.1
-0.2
-0.3
-0.4
600000
Week 1960
602000
604000
1200
Week 1961
3200
5200
7200
9200
11200
13200
GPS Time (TOW, GMT zone)
East
North
Up


Estimated StdDev (m)
0.0125
0.0120
0.0115
0.0110
0.0105
0.0100
0.0095
0.0090
0.0085
0.0080
0.0075
0.0070
0.0065
0.0060
0.0055
0.0050
0.0045
0.0040
0.0035
0.0030
0.0025
600000
Week 1960
602000
604000
1200
Week 1961
3200
5200
7200
9200
11200
13200
GPS Time (TOW, GMT zone)
East
North
Height

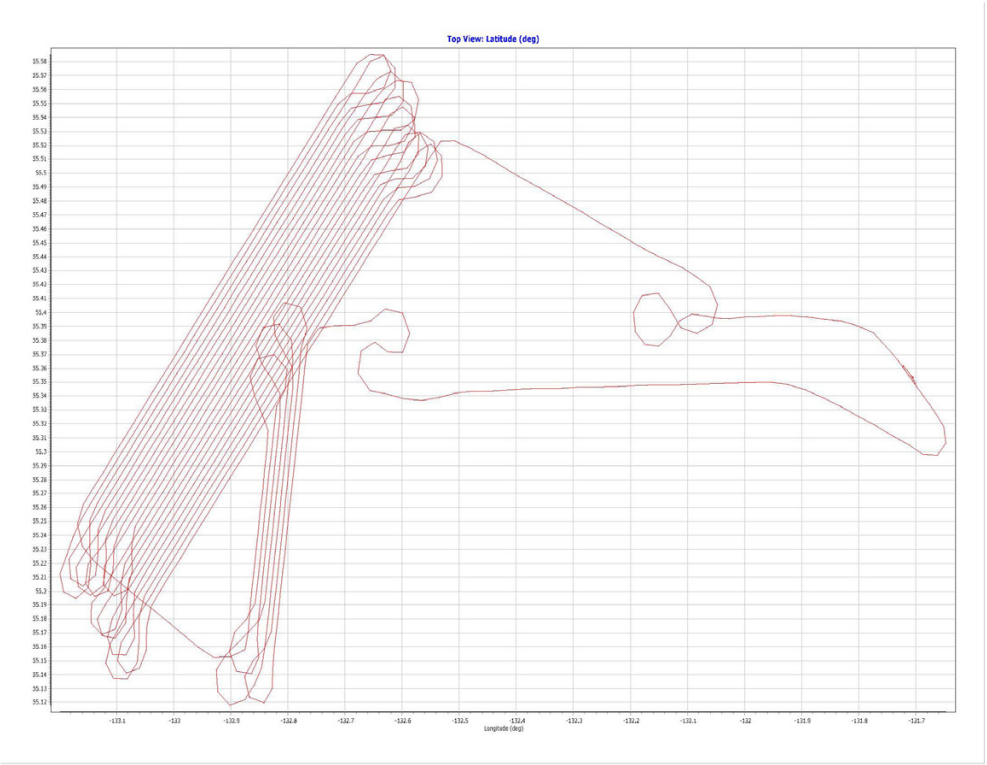

Separation (deg)
0.0025
0.0020
0.0015
0.0010
0.0005
0.0000
-0.0005
-0.0010
-0.0015
-0.0020
-0.0025
-0.0030
-0.0035
-0.0040
-0.0045
-0.0050
-0.0055
-0.0060
600000
Week 1960
602000
604000
1200
Week 1961
3200
5200
7200
9200
11200
13200
GPS Time (TOW, GMT zone)
Roll
Pitch
Heading/Az

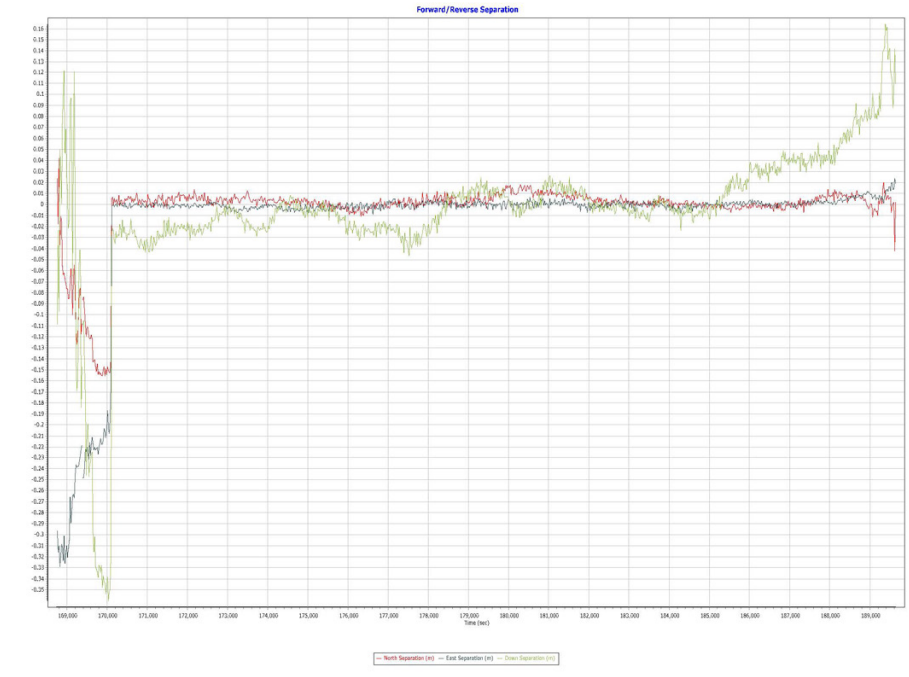

Azimuth/Heading (deg)
360
340
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
600000
Week 1960
602000
604000
1200
Week 1961
3200
5200
7200
9200
11200
13200
GPS Time (TOW, GMT zone)
Heading/Azimuth
GPS-COG

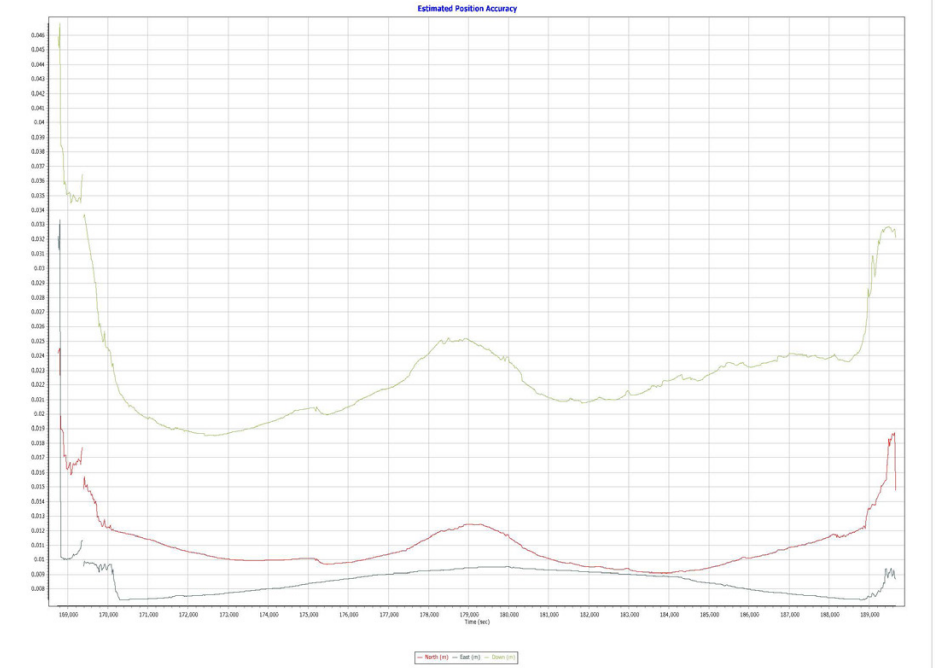

Master
Remote
Base Station
1: AB49
Name: AB49
Disabled
File: G:\Proc\29184_Prince_Of_Wales\Recieved_8-10-17\20170805_F3
Coordinates
Latitude: North 55 34 48.35591 Coord. options
Longitude: West 133 04 06.47087 Save to Favorites
Ellipsoidal height: 17.485 m
Datum: WGS84 Proc Datum: WGS84
Epoch: year
Antenna Height
From station file: TRM59800.80, SCIT View STA File
Antenna profile: TRM59800.80, SCIT Info
Measured height: 0.008 m
ARP to L1 offset: 0.085 m
Applied height: 0.093 m
Measured to
ARP
L1 Phase Centre
Compute From Slant
OK
Cancel


Master
Remote
Base Station
2: TBRD
Name: TBRD
Disabled
File: G:\Proc\29184_Prince_Of_Wales\ab49\TBRD\080517\080517_TE
Coordinates
Latitude: North 55 41 15.62257 Coord. options
Longitude: West 132 31 45.73369 Save to Favorites
Ellipsoidal height: 36.823 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

August 7, 2017-A (CFFRY, SN2220754)

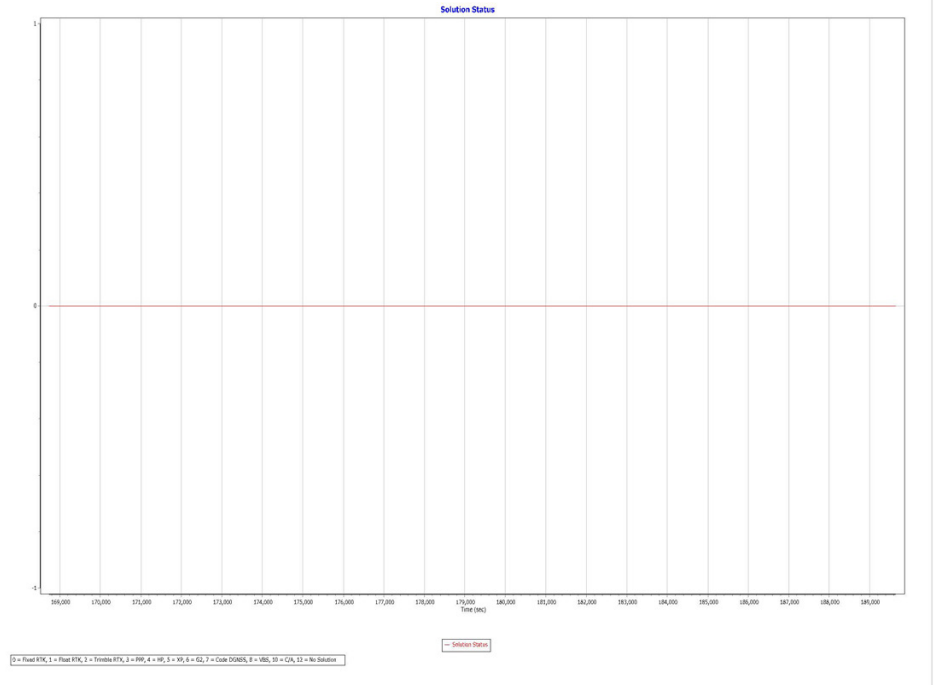

Top View: Latitude (deg)
Longitude (deg)


Forward/Reverse Separation
Time (sec)

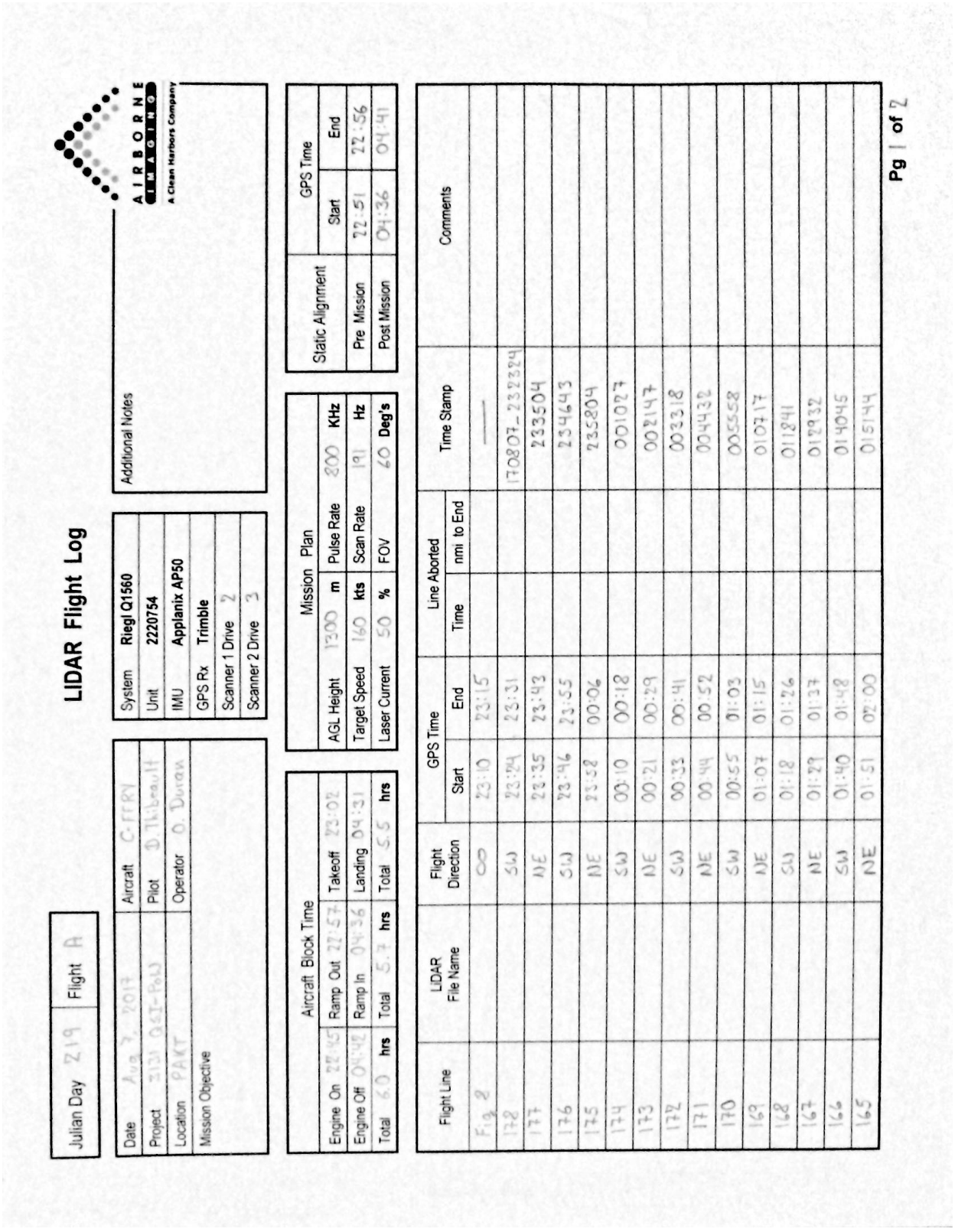

Estimated Position Accuracy
Time (sec)


DOP
Time (sec)


Number of SVs in solution
Time (sec)
Number of GPS
Number of GLONASS
Number of QZSS
Number of BEIDOU
Total Number


Solution Status
Time (sec)
Solution Status
0 = Fixed RTK, 1 = Float RTK, 2 = Trimble RTX, 3 = PPP, 4 = HP, 5 = XP, 6 = G2, 7 = Code DGNSS, 8 = VBS, 10 = C/A, 12 = No Solution

Flight Log



LIDAR Flight Log

Julian Day 219 | Flight A

Date Aug 7, 2017 | Aircraft C-FFBY
Project 2131 QSI-PoW | Pilot D. Thibeault
Location PAKT | Operator O. Duran
Mission Objective

System Riegl Q1560
Unit 2220754
IMU Applanix AP50
GPS Rx Trimble
Scanner 1 Drive 2
Scanner 2 Drive 3

Additional Notes

AIRBORNE IMAGING — A Clean Harbors Company

Aircraft Block Time

Engine On 22:45	Ramp Out 22:57	Takeoff 23:02	
Engine Off 04:42	Ramp In 04:56	Landing 04:31	
Total 6.0 hrs	Total 5.3 hrs	Total 5.5 hrs	

Mission Plan

AGL Height	1300	m	Pulse Rate	200	KHz
Target Speed	160	kts	Scan Rate	191	Hz
Laser Current	50	%	FOV	60	Deg's

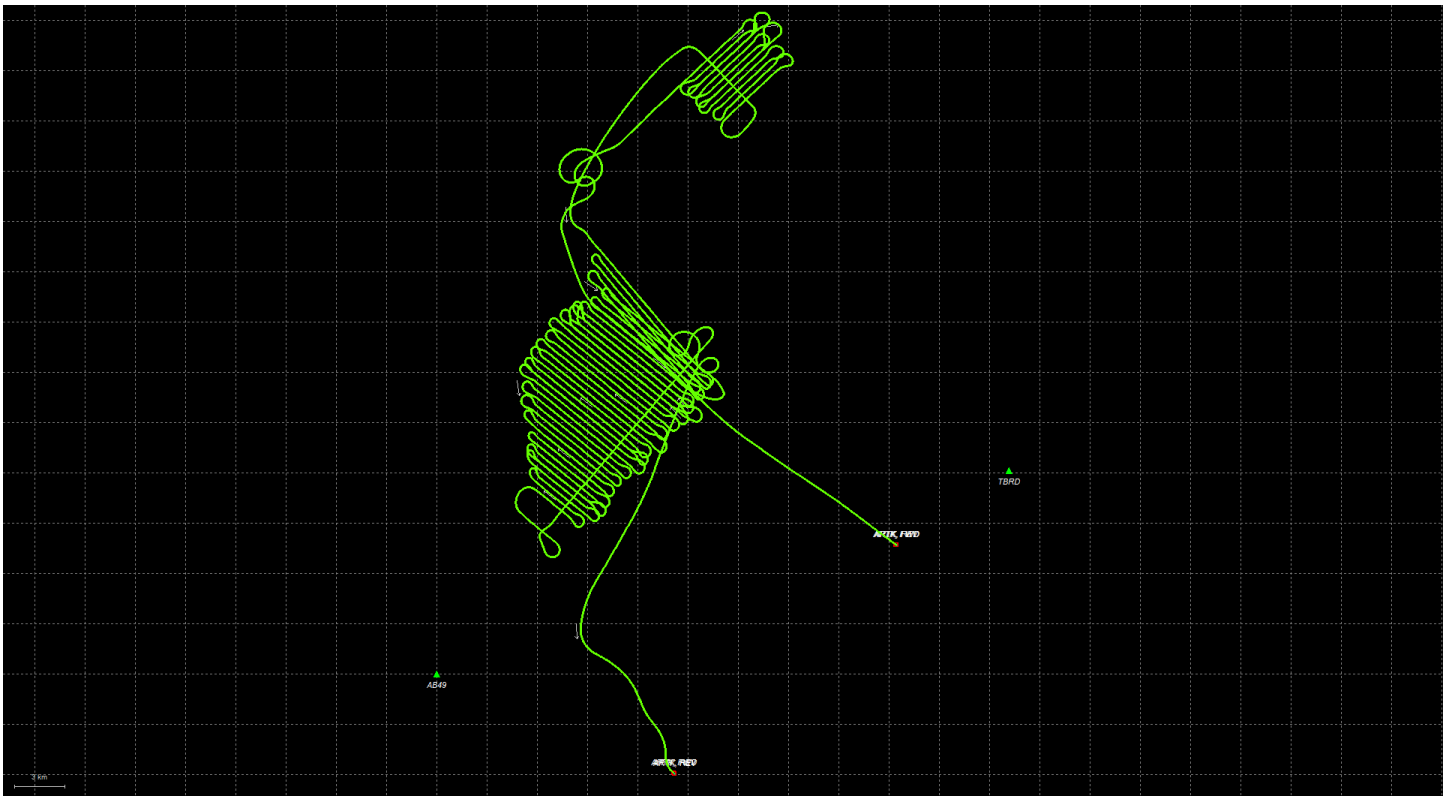
Static Alignment

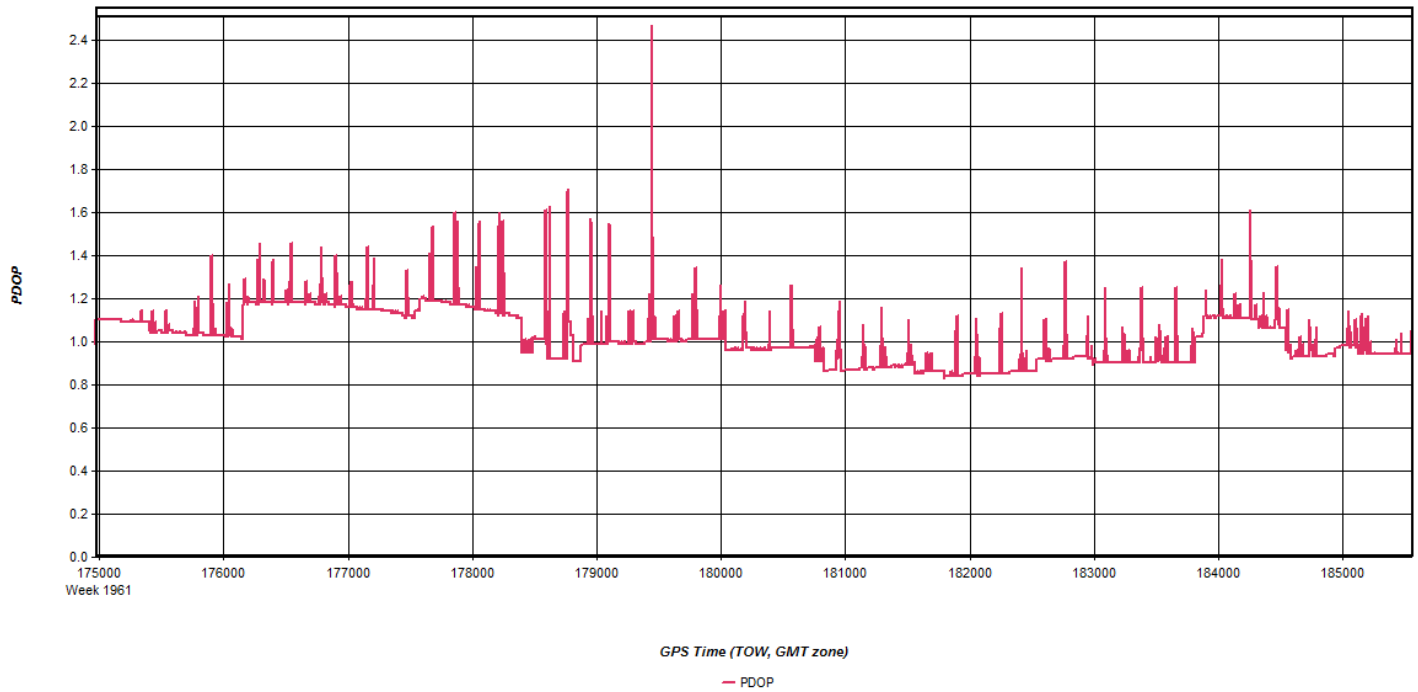
	GPS Time Start	GPS Time End
Pre Mission	22:51	22:56
Post Mission	04:36	04:41

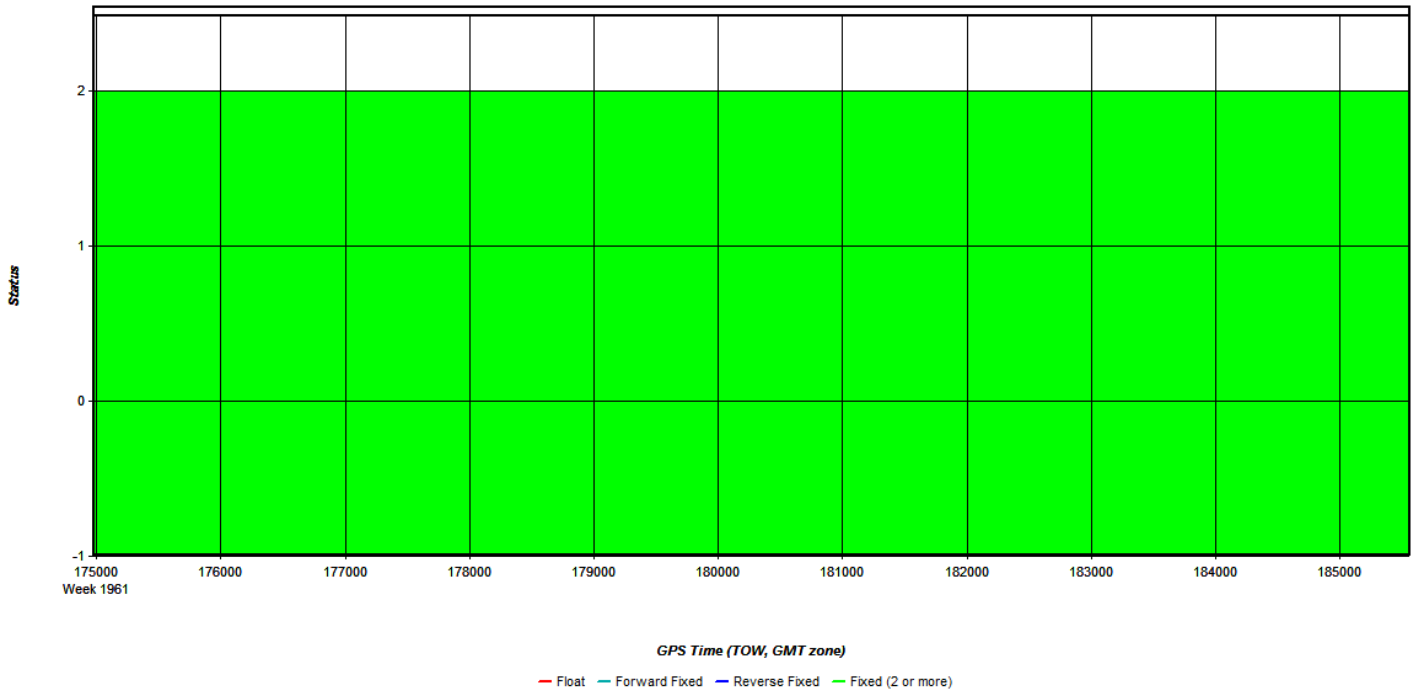
Flight Line	LIDAR File Name	Flight Direction	GPS Time Start	GPS Time End	Line Aborted Time	Line Aborted nmi to End	Time Stamp	Comments
Fig 8		∞	23:10	23:15			———	
178		SW	23:24	23:31			170807_232324	
177		NE	23:35	23:43			233504	
176		SW	23:46	23:55			234643	
175		NE	23:58	00:06			235804	
174		SW	00:10	00:18			001027	
173		NE	00:21	00:29			002147	
172		SW	00:33	00:41			003318	
171		NE	00:44	00:52			004432	
170		SW	00:55	01:03			005558	
169		NE	01:07	01:15			010717	
168		SW	01:18	01:26			011841	
167		NE	01:29	01:37			012932	
166		SW	01:40	01:48			014045	
165		NE	01:51	02:00			015144	

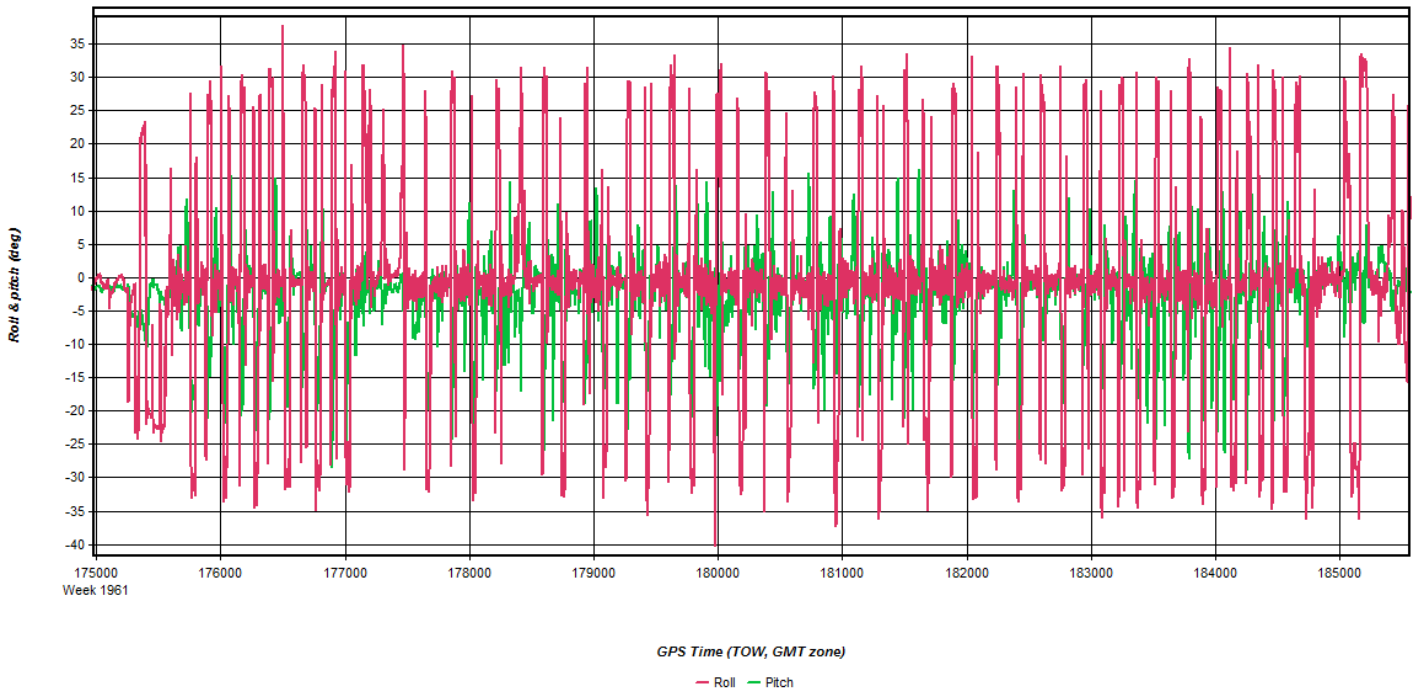
Pg 1 of 2

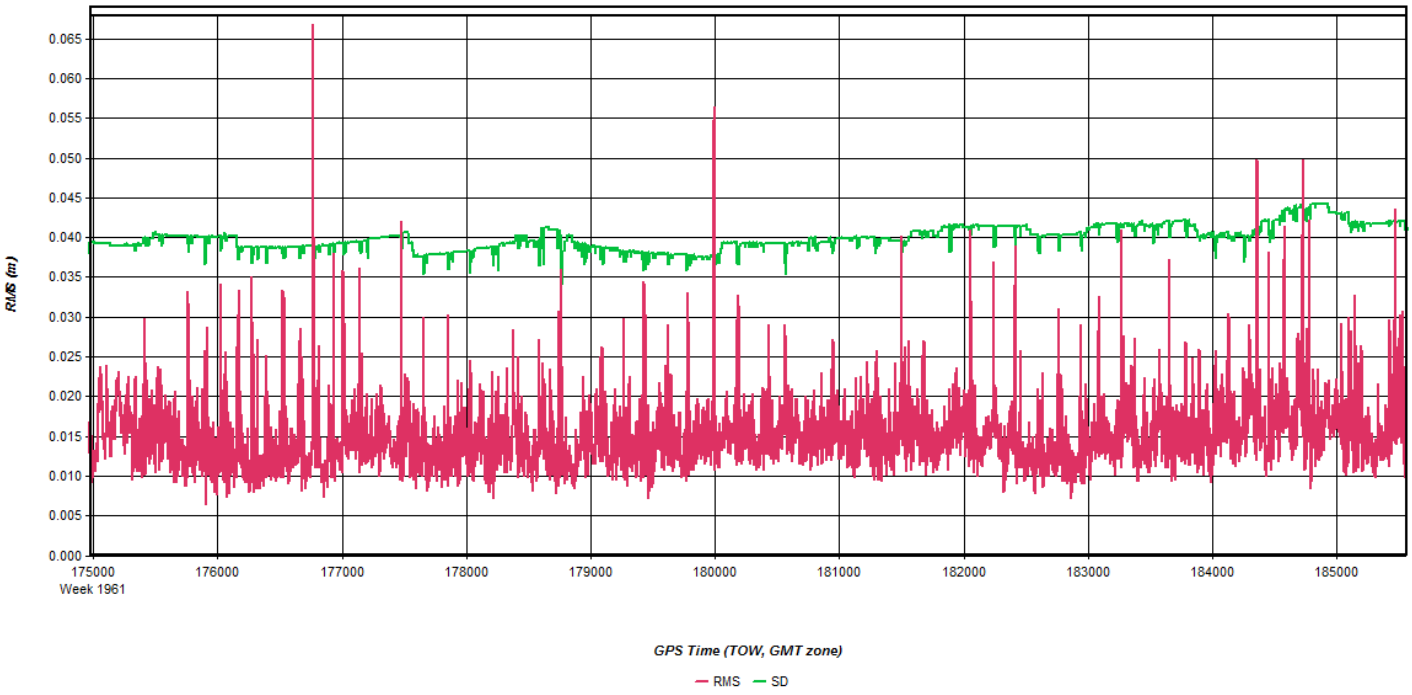
August 8, 2017-A (N604MD, SN8146)

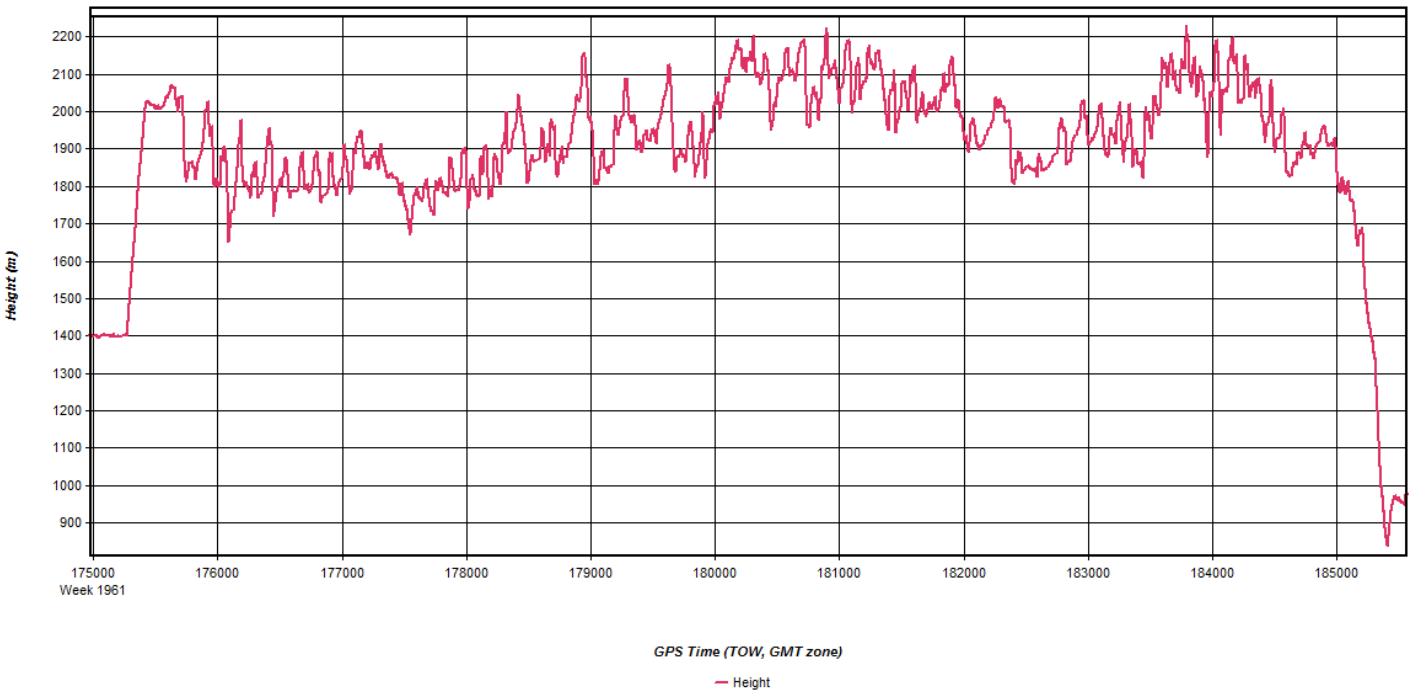

TBRD
AB49

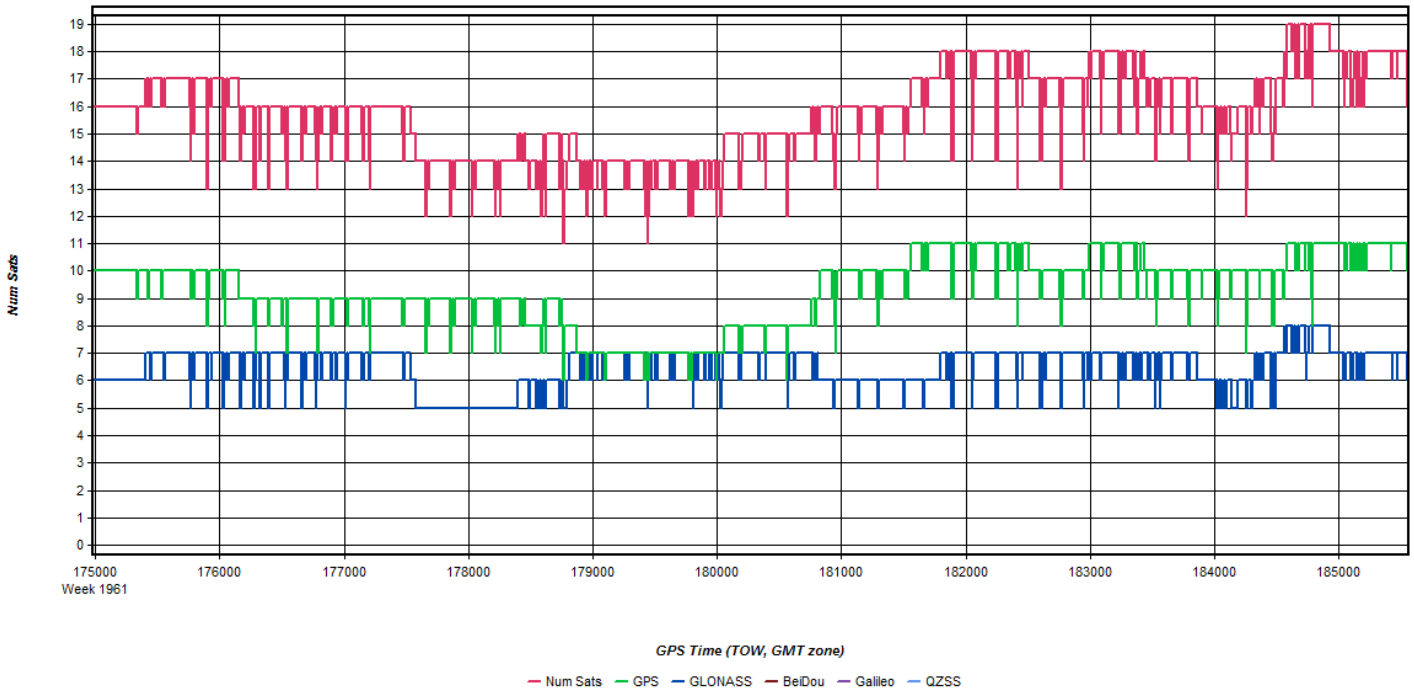

PDOP
2.4
2.2
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
175000
Week 1961
176000
177000
178000
179000
180000
181000
182000
183000
184000
185000
GPS Time (TOW, GMT zone)
PDOP

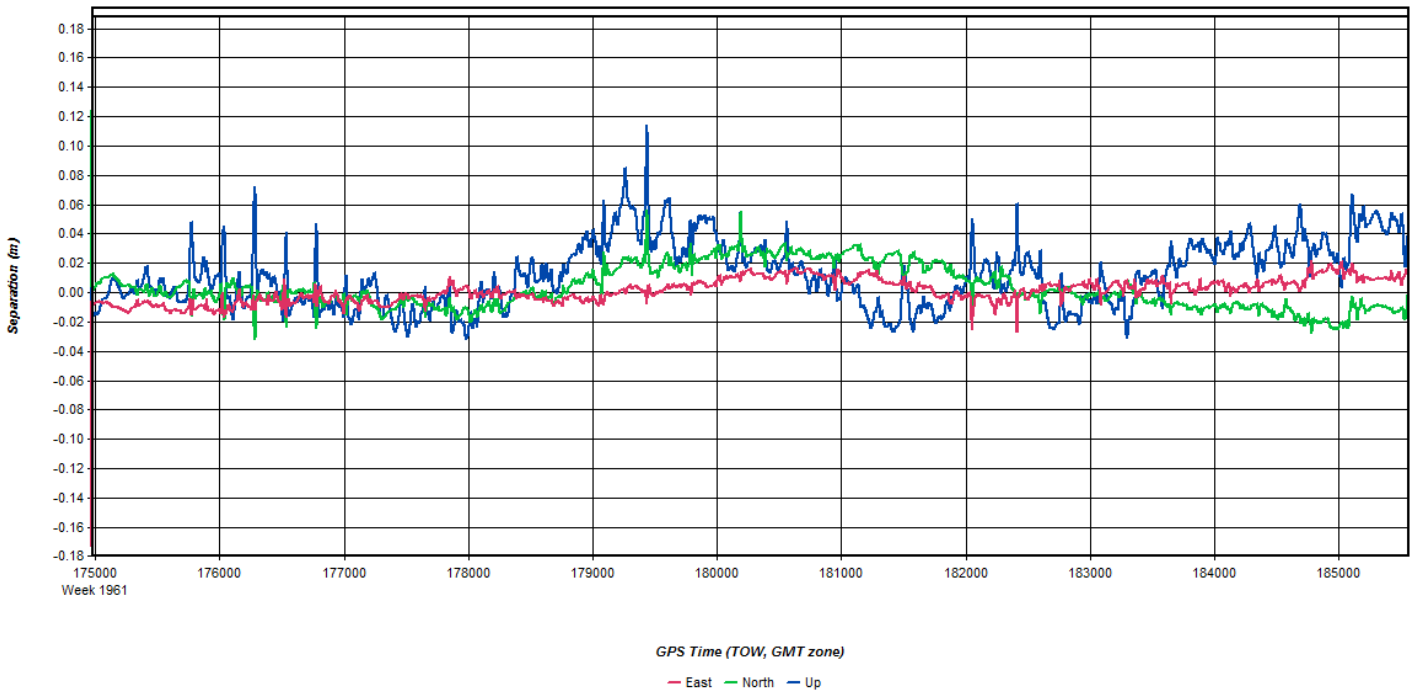

Status
2
1
0
-1
175000
Week 1961
176000
177000
178000
179000
180000
181000
182000
183000
184000
185000
GPS Time (TOW, GMT zone)
Float
Forward Fixed
Reverse Fixed
Fixed (2 or more)

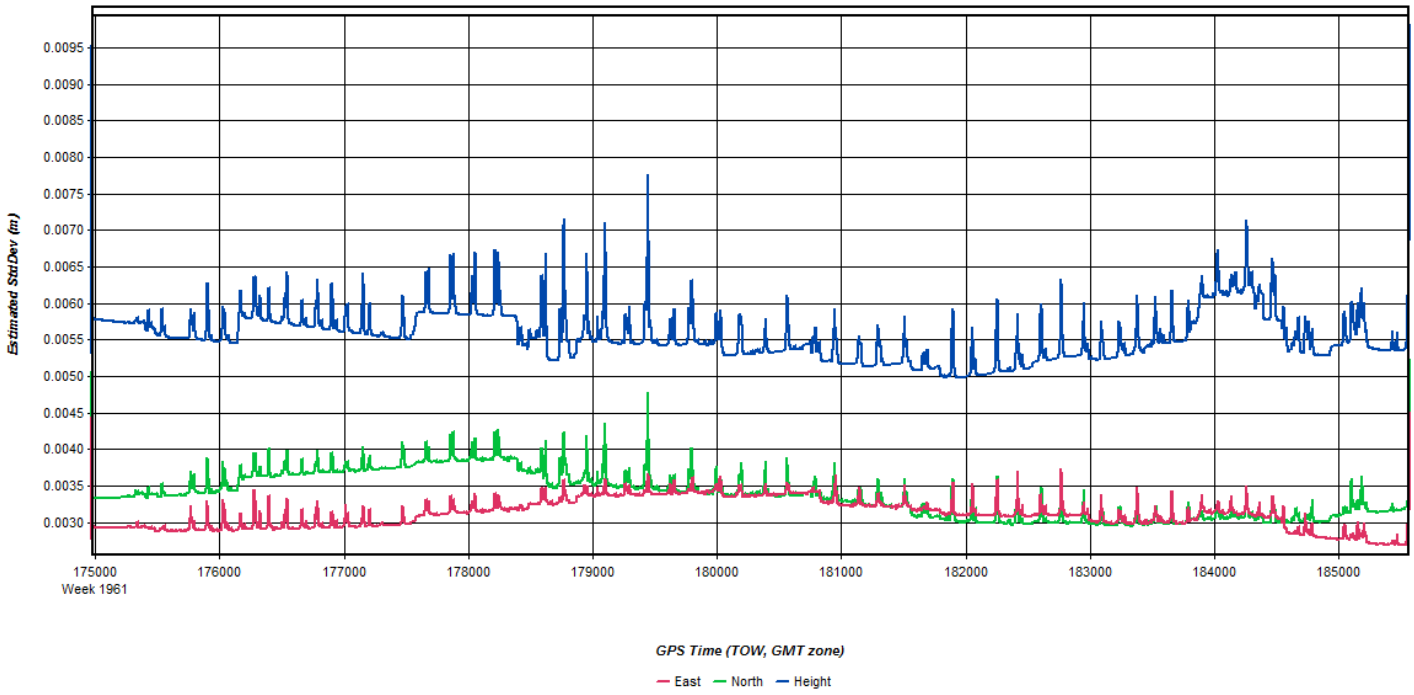

Roll & pitch (deg)
35
30
25
20
15
10
5
0
-5
-10
-15
-20
-25
-30
-35
-40
175000
Week 1961
176000
177000
178000
179000
180000
181000
182000
183000
184000
185000
GPS Time (TOW, GMT zone)
Roll
Pitch

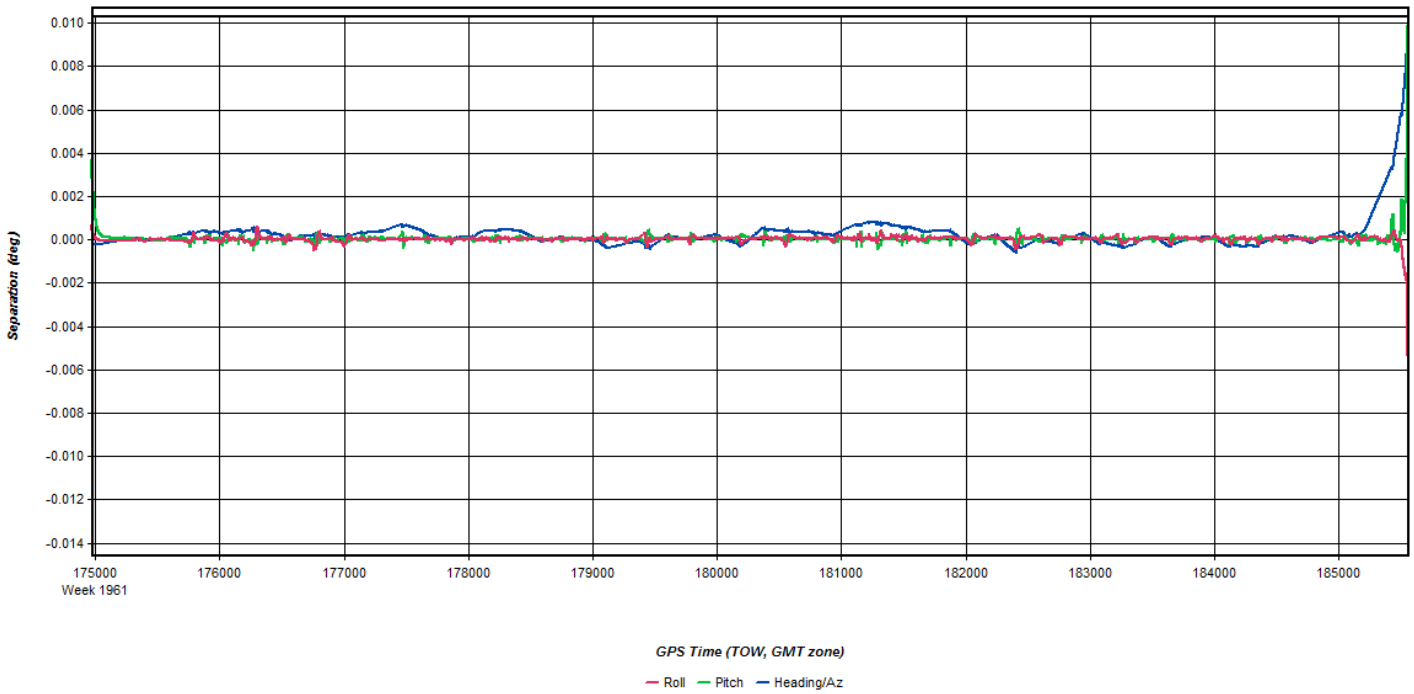

RMS (m)
0.065
0.060
0.055
0.050
0.045
0.040
0.035
0.030
0.025
0.020
0.015
0.010
0.005
0.000
175000
Week 1961
176000
177000
178000
179000
180000
181000
182000
183000
184000
185000
GPS Time (TOW, GMT zone)
RMS
SD

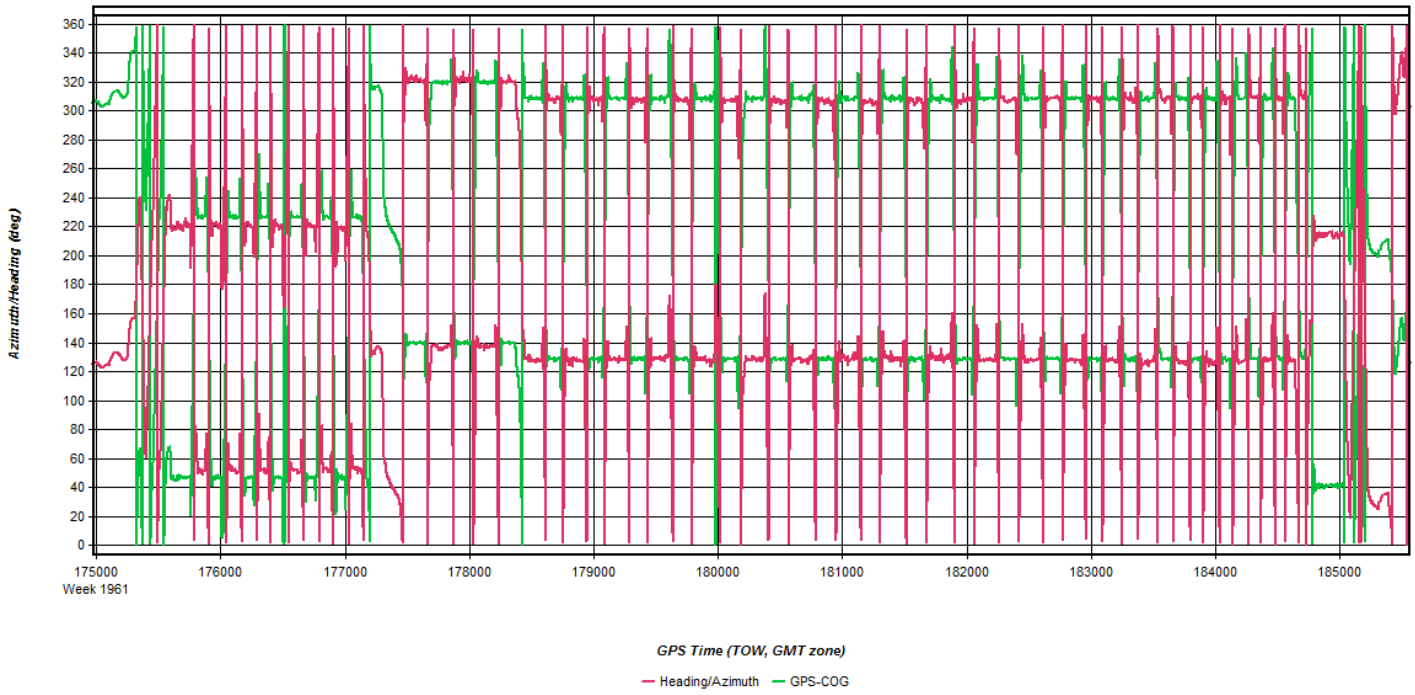

Height (m)
2200
2100
2000
1900
1800
1700
1600
1500
1400
1300
1200
1100
1000
900
175000
Week 1961
176000
177000
178000
179000
180000
181000
182000
183000
184000
185000
GPS Time (TOW, GMT zone)
Height

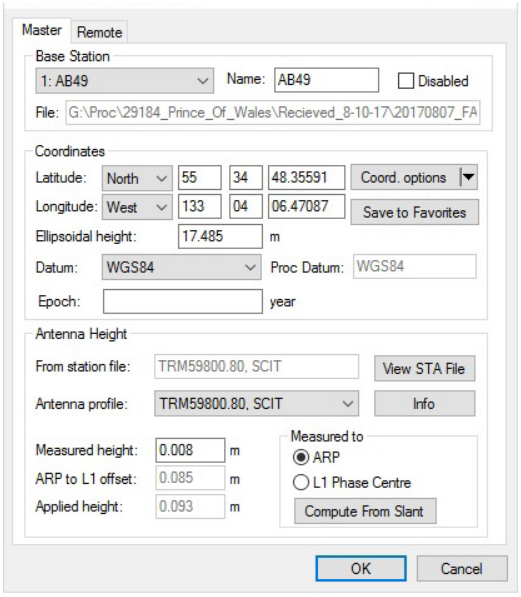

Num Sats
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
175000
Week 1961
176000
177000
178000
179000
180000
181000
182000
183000
184000
185000
GPS Time (TOW, GMT zone)
Num Sats
GPS
GLONASS
BeiDou
Galileo
QZSS

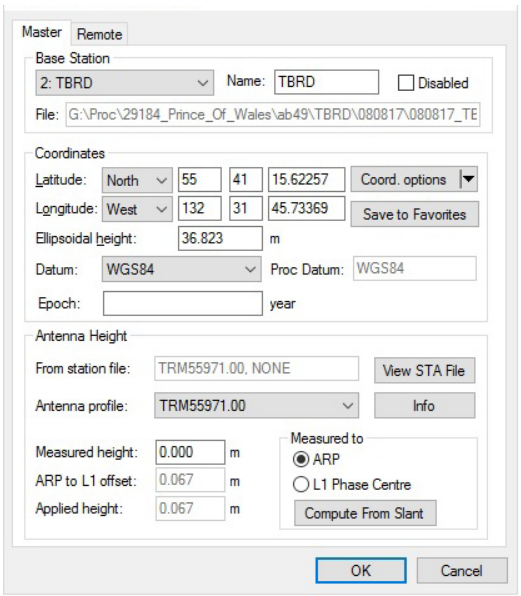

Separation (m)
0.18
0.16
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
-0.02
-0.04
-0.06
-0.08
-0.10
-0.12
-0.14
-0.16
-0.18
175000
Week 1961
176000
177000
178000
179000
180000
181000
182000
183000
184000
185000
GPS Time (TOW, GMT zone)
East
North
Up


Estimated StdDev (m)
0.0095
0.0090
0.0085
0.0080
0.0075
0.0070
0.0065
0.0060
0.0055
0.0050
0.0045
0.0040
0.0035
0.0030
175000
Week 1961
176000
177000
178000
179000
180000
181000
182000
183000
184000
185000
GPS Time (TOW, GMT zone)
East
North
Height


Separation (deg)
0.010
0.008
0.006
0.004
0.002
0.000
-0.002
-0.004
-0.006
-0.008
-0.010
-0.012
-0.014
175000
Week 1961
176000
177000
178000
179000
180000
181000
182000
183000
184000
185000
GPS Time (TOW, GMT zone)
Roll
Pitch
Heading/Az

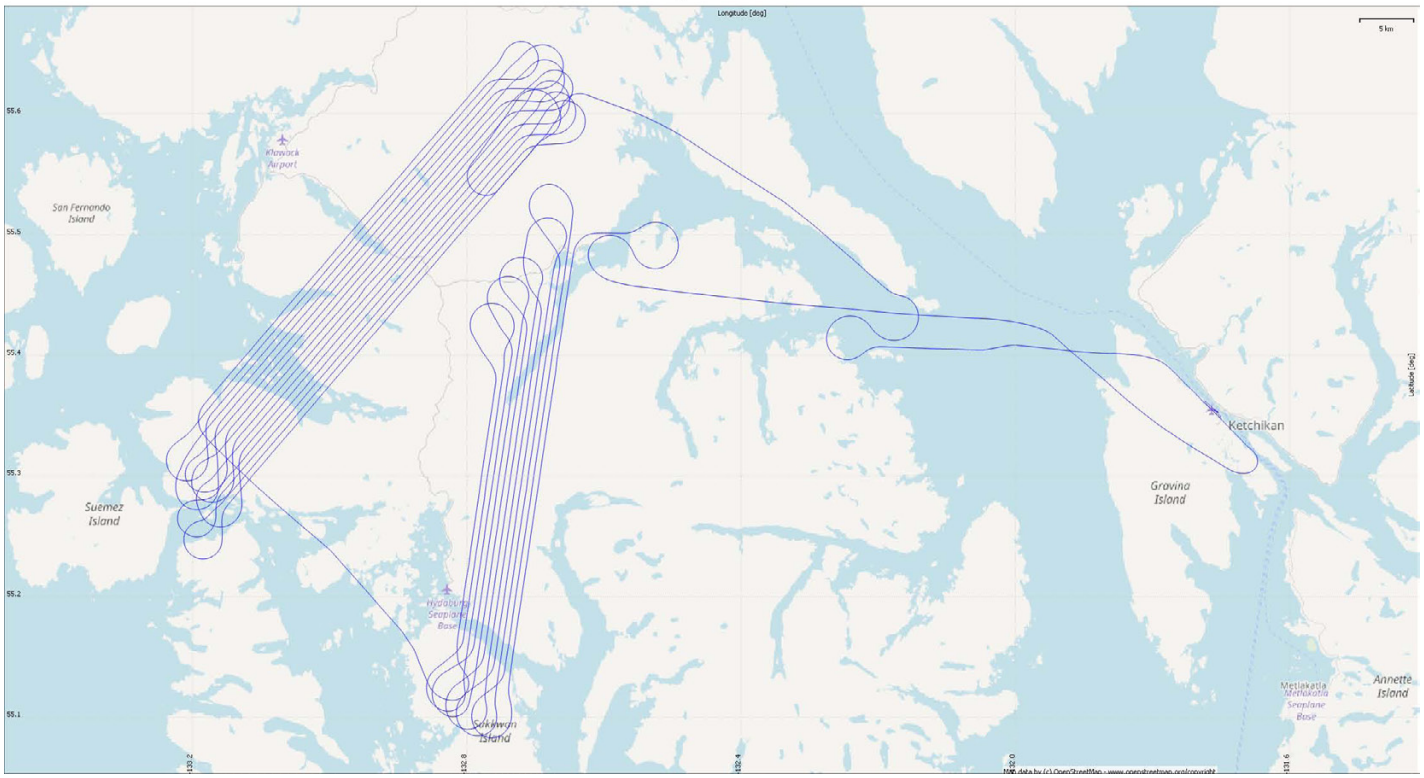

Azimuth/Heading (deg)
360
340
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
175000
Week 1961
176000
177000
178000
179000
180000
181000
182000
183000
184000
185000
GPS Time (TOW, GMT zone)
Heading/Azimuth
GPS-COG


Master
Remote
Base Station
1: AB49
Name:
AB49
Disabled
File:
G:\Proc\29184_Prince_Of_Wales\Recieved_8-10-17\20170807_FA
Coordinates
Latitude:
North
55
34
48.35591
Coord. options
Longitude:
West
133
04
06.47087
Save to Favorites
Ellipsoidal height:
17.485
m
Datum:
WGS84
Proc Datum:
WGS84
Epoch:
year
Antenna Height
From station file:
TRM59800.80, SCIT
View STA File
Antenna profile:
TRM59800.80, SCIT
Info
Measured height:
0.008
m
Measured to
ARP
ARP to L1 offset:
0.085
m
L1 Phase Centre
Applied height:
0.093
m
Compute From Slant
OK
Cancel

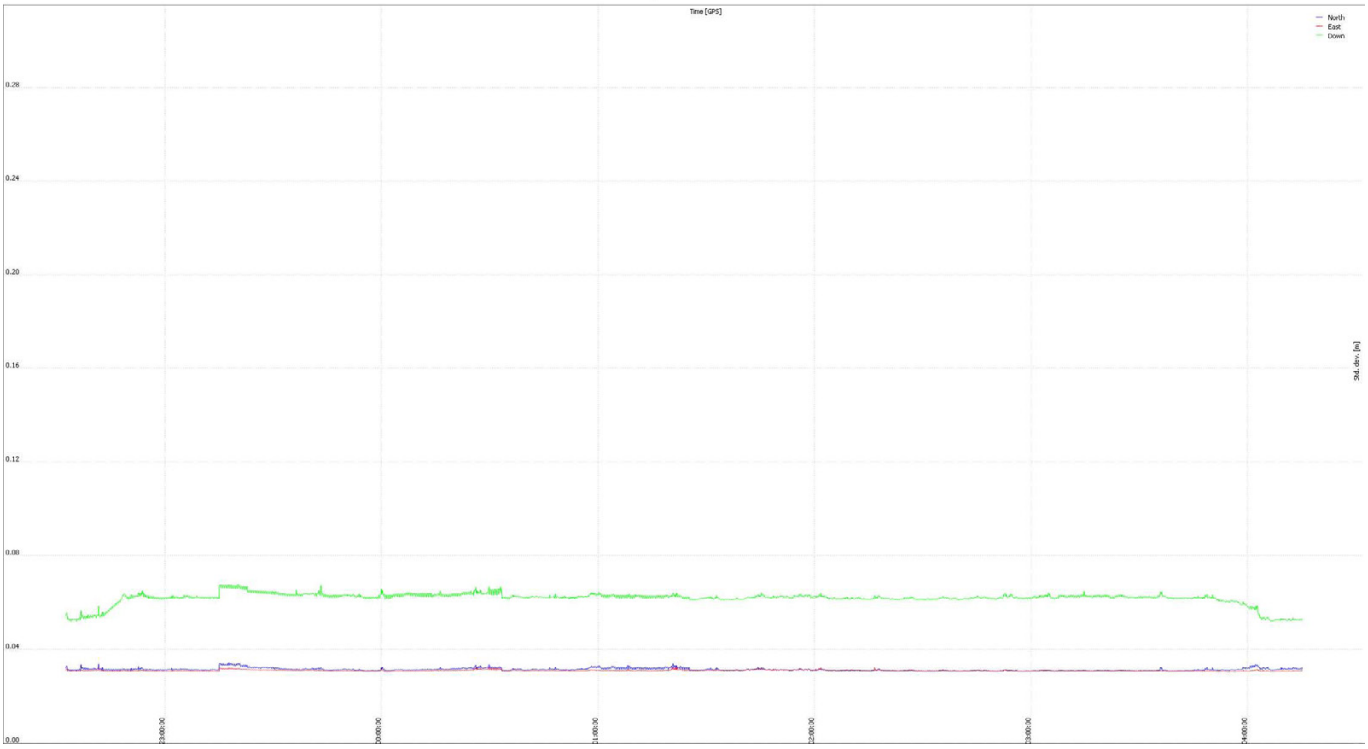

Master
Remote
Base Station
2: TBRD
Name:
TBRD
Disabled
File:
G:\Proc\29184_Prince_Of_Wales\ab49\TBRD\080817\080817_TE
Coordinates
Latitude:
North
55
41
15.62257
Coord. options
Longitude:
West
132
31
45.73369
Save to Favorites
Ellipsoidal height:
36.823
m
Datum:
WGS84
Proc Datum:
WGS84
Epoch:
year
Antenna Height
From station file:
TRM55971.00, NONE
View STA File
Antenna profile:
TRM55971.00
Info
Measured height:
0.000
m
Measured to
ARP
ARP to L1 offset:
0.067
m
L1 Phase Centre
Applied height:
0.067
m
Compute From Slant
OK
Cancel

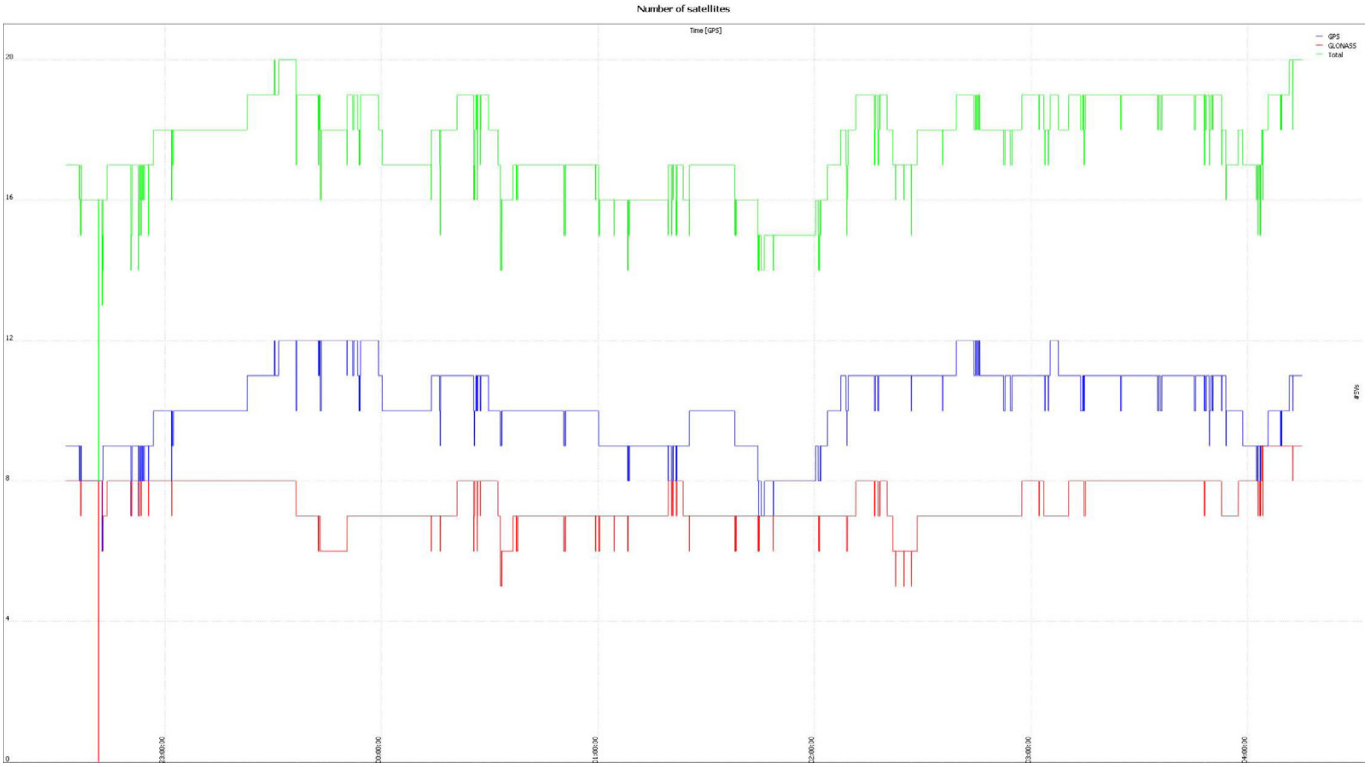
August 8, 2017-A (CFFRY, SN2220754)

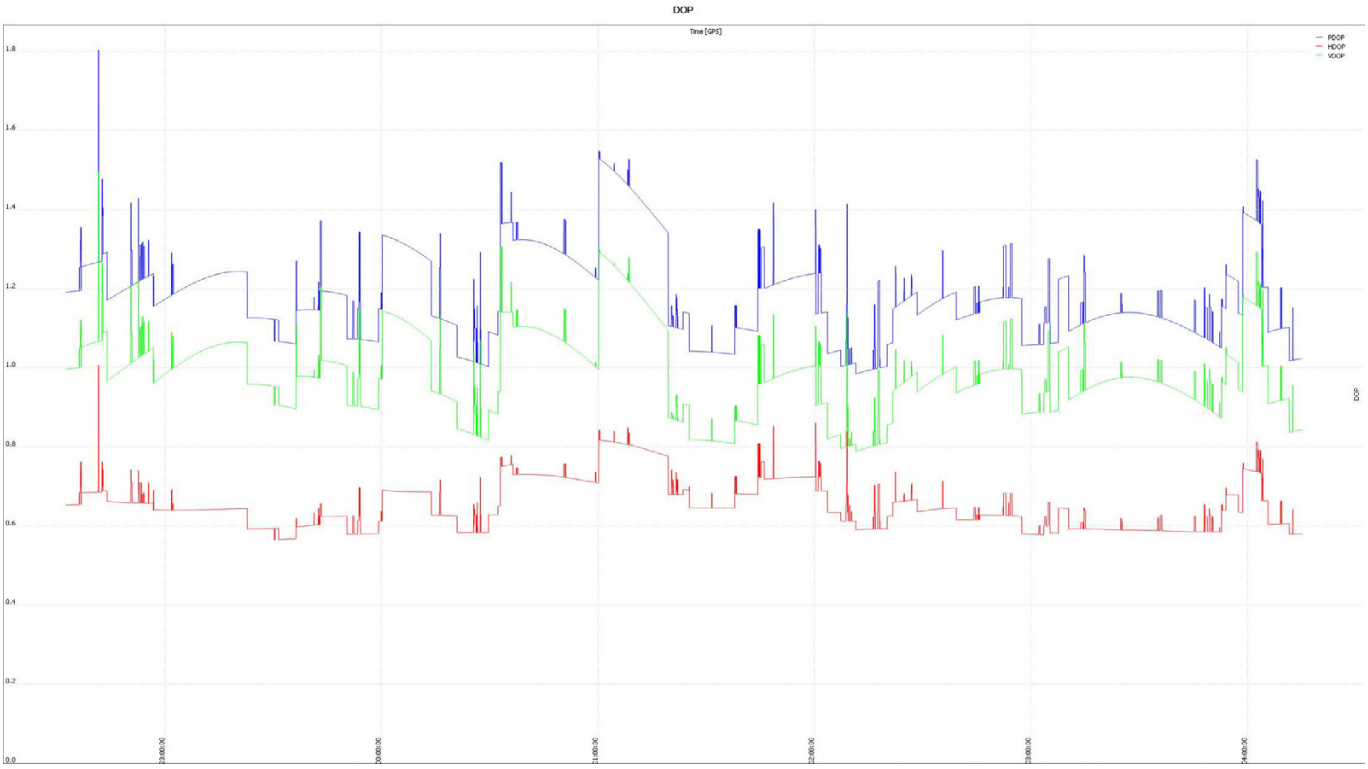
Longitude vs Latitude



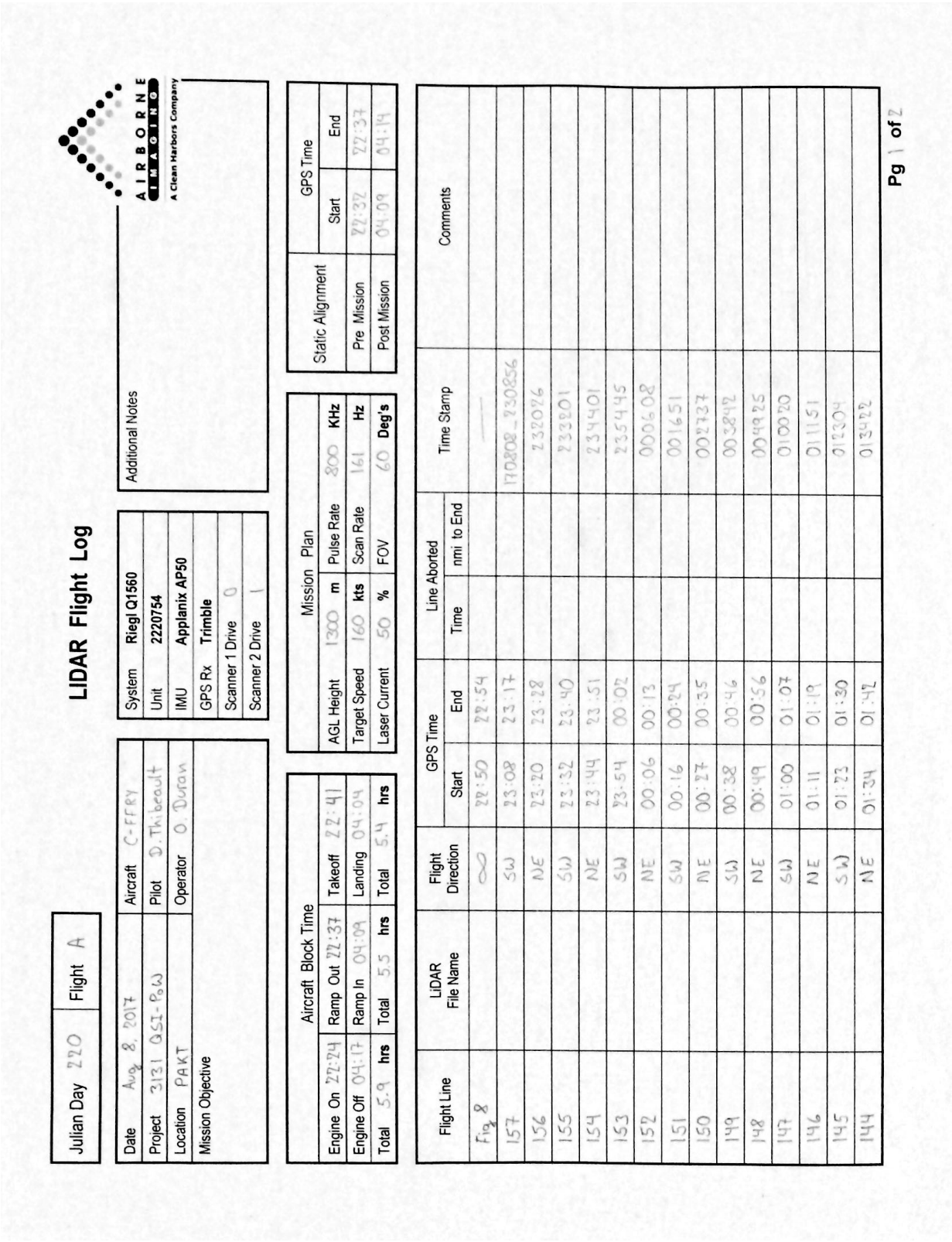
Pos. precision std. dev.




Number of satellites
Time [GPS]
GPS
GLONASS
Total
#SVs


DOP
Time [GPS]
PDOP
HDOP
VDOP
DOP

Flight Log



LIDAR Flight Log

Julian Day 220 | Flight A

Date Aug 8, 2017 | Aircraft C-FFRY
Project 2131 QSI-PoW | Pilot D. Thibeault
Location PAKT | Operator O. Duran
Mission Objective

System Riegl Q1560
Unit 2220754
IMU Applanix AP50
GPS Rx Trimble
Scanner 1 Drive 0
Scanner 2 Drive 1

Additional Notes

AIRBORNE IMAGING
A Clean Harbors Company

Aircraft Block Time

Engine On 22:24	Ramp Out 22:37	Takeoff 22:41	
Engine Off 04:17	Ramp In 04:09	Landing 04:04	
Total 5.9 hrs	Total 5.5 hrs	Total 5.4 hrs	

Mission Plan

AGL Height	1300 m	Pulse Rate	800	KHz	
Target Speed	160 kts	Scan Rate	161	Hz	
Laser Current	50 %	FOV	60	Deg's	

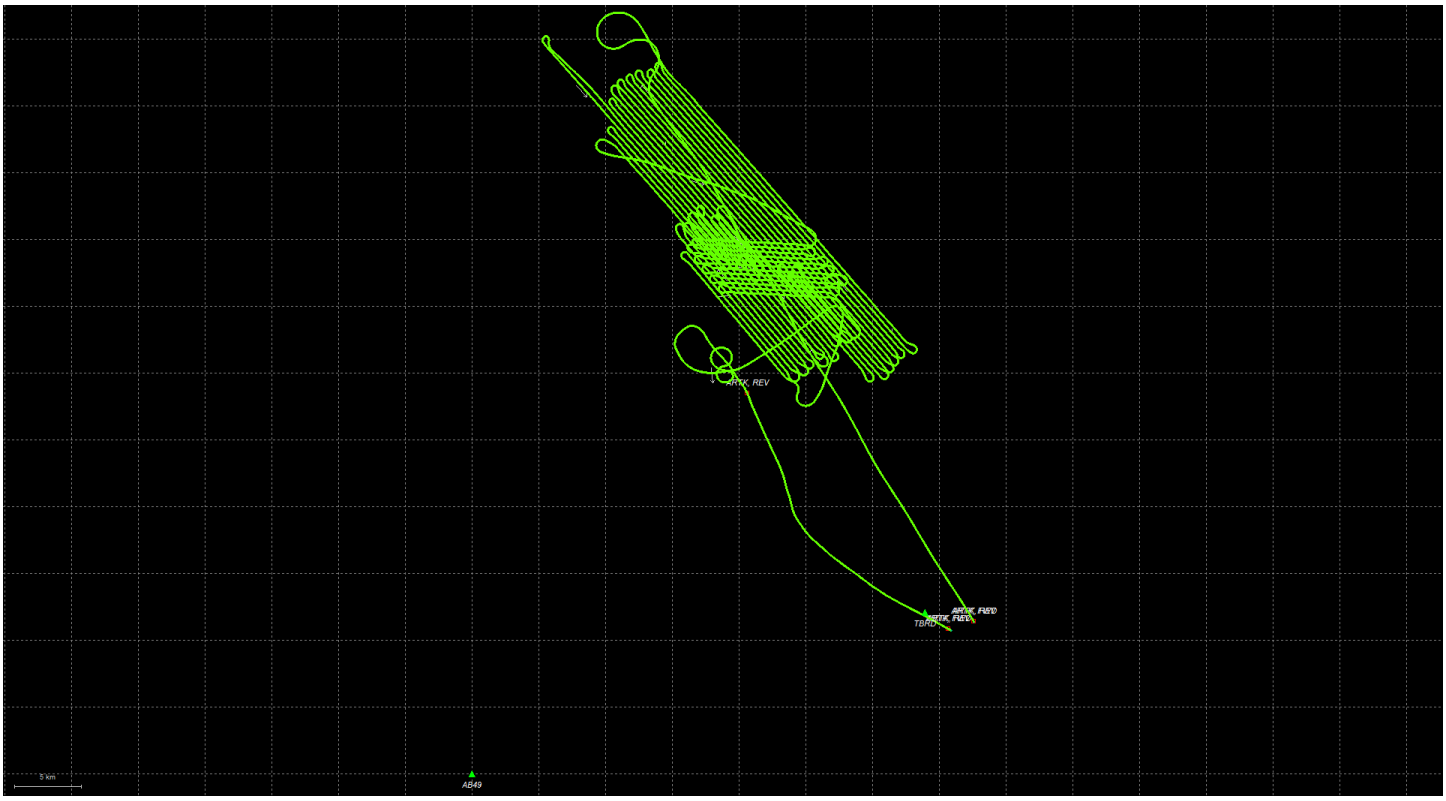
Static Alignment / GPS Time

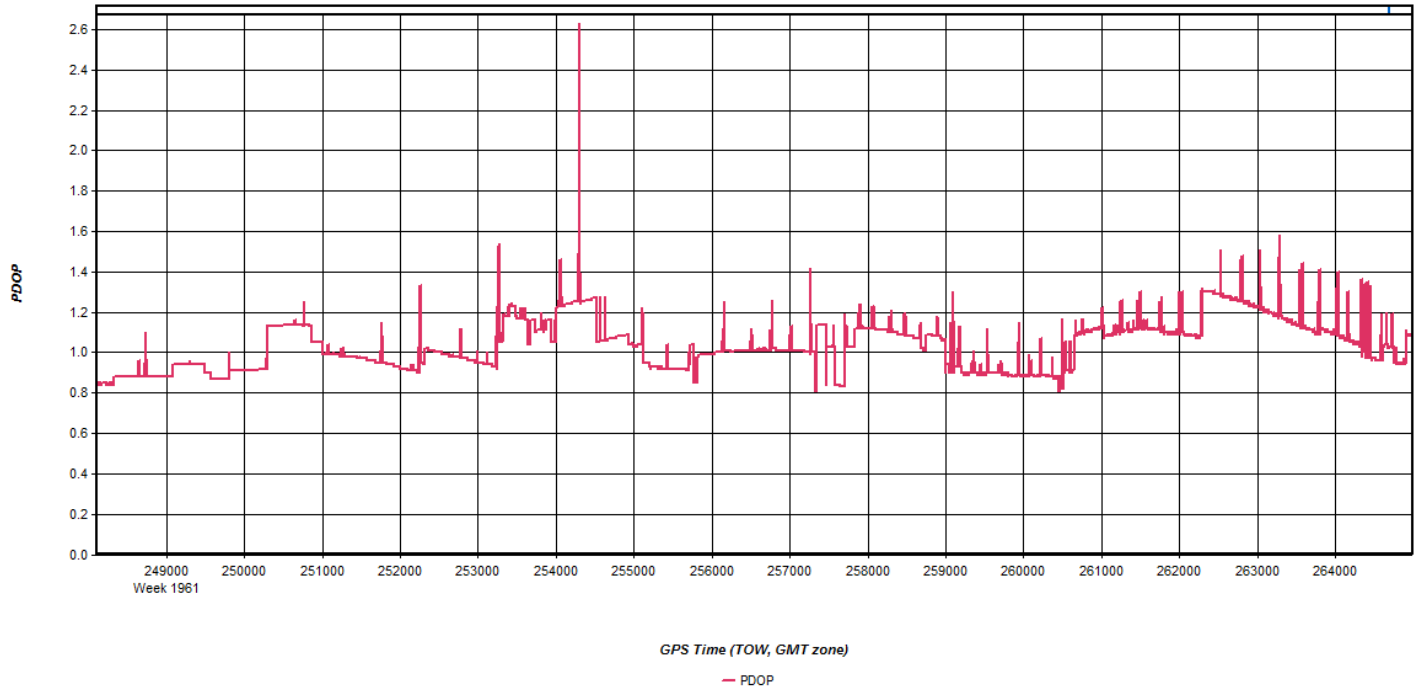
	Start	End
Pre Mission	22:32	22:37
Post Mission	04:09	04:14

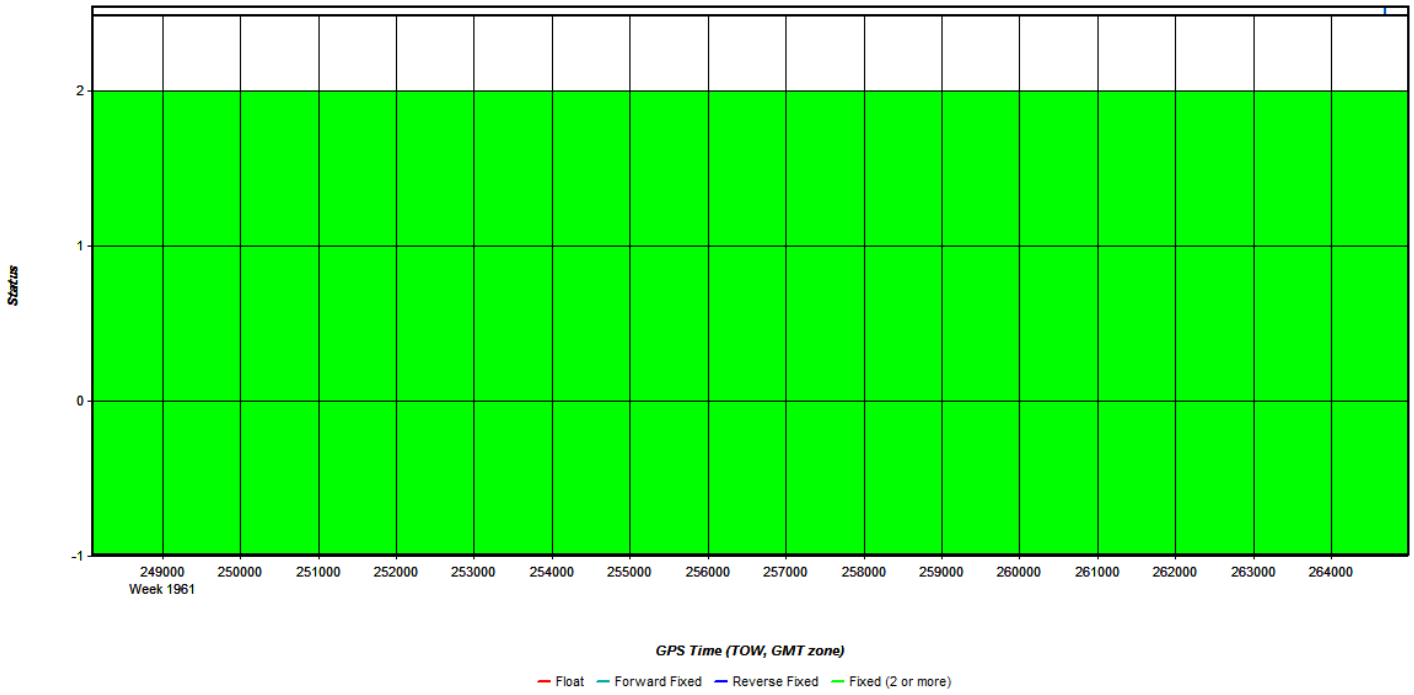
Flight Line	LiDAR File Name	Flight Direction	GPS Time Start	GPS Time End	Line Aborted Time	Line Aborted nmi to End	Time Stamp	Comments
Fig 8		∞	22:50	22:54				
157		SW	23:08	23:17			170808_230856	
156		NE	23:20	23:28			232026	
155		SW	23:32	23:40			233201	
154		NE	23:44	23:51			234401	
153		SW	23:54	00:02			235445	
152		NE	00:06	00:13			000608	
151		SW	00:16	00:24			001651	
150		NE	00:27	00:35			002737	
149		SW	00:38	00:46			003842	
148		NE	00:49	00:56			004925	
147		SW	01:00	01:07			010020	
146		NE	01:11	01:19			011151	
145		SW	01:23	01:30			012304	
144		NE	01:34	01:42			013428	

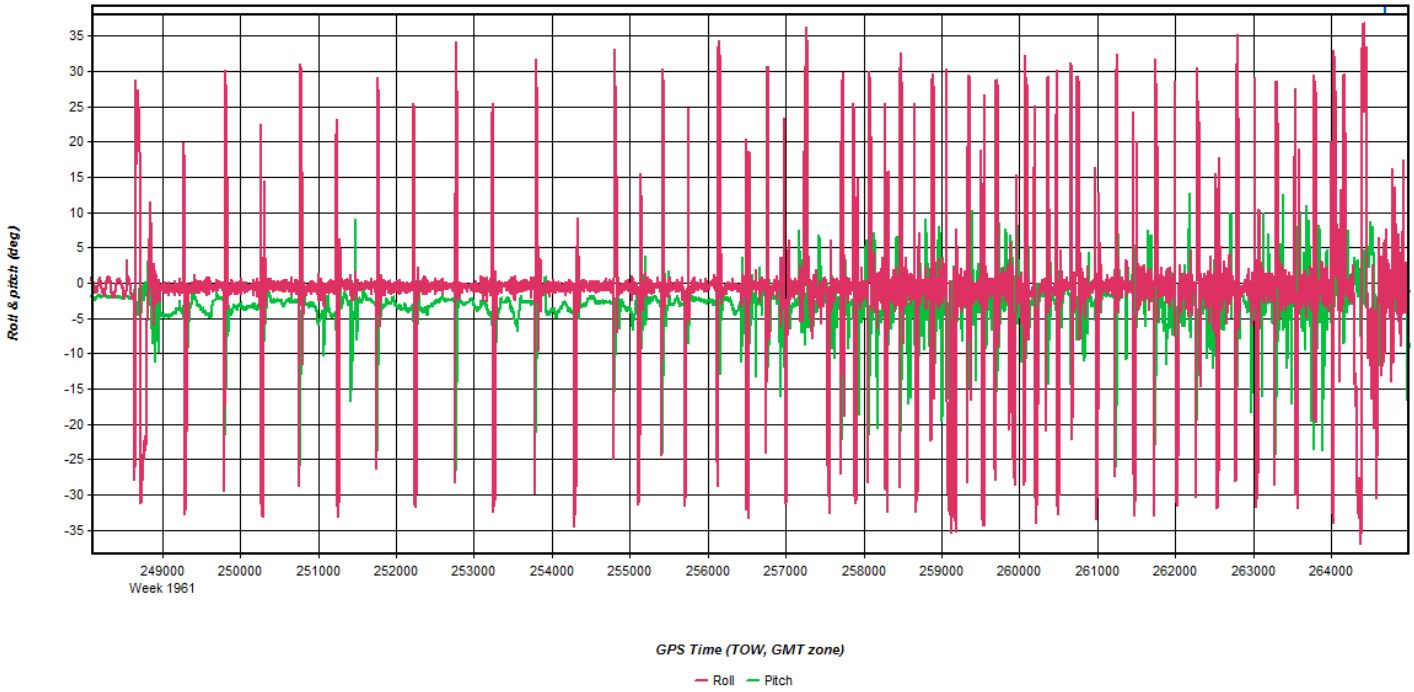
Pg 1 of 2

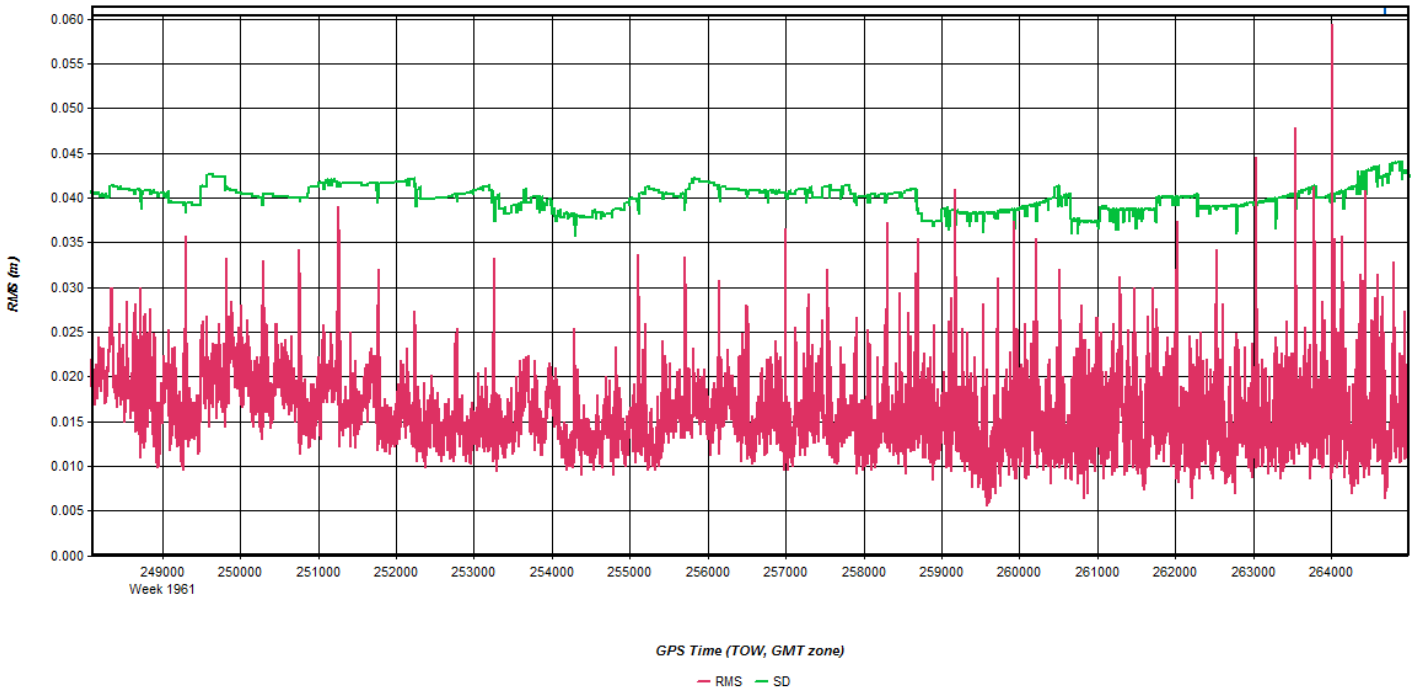
August 8, 2017-B (N604MD, SN8146)

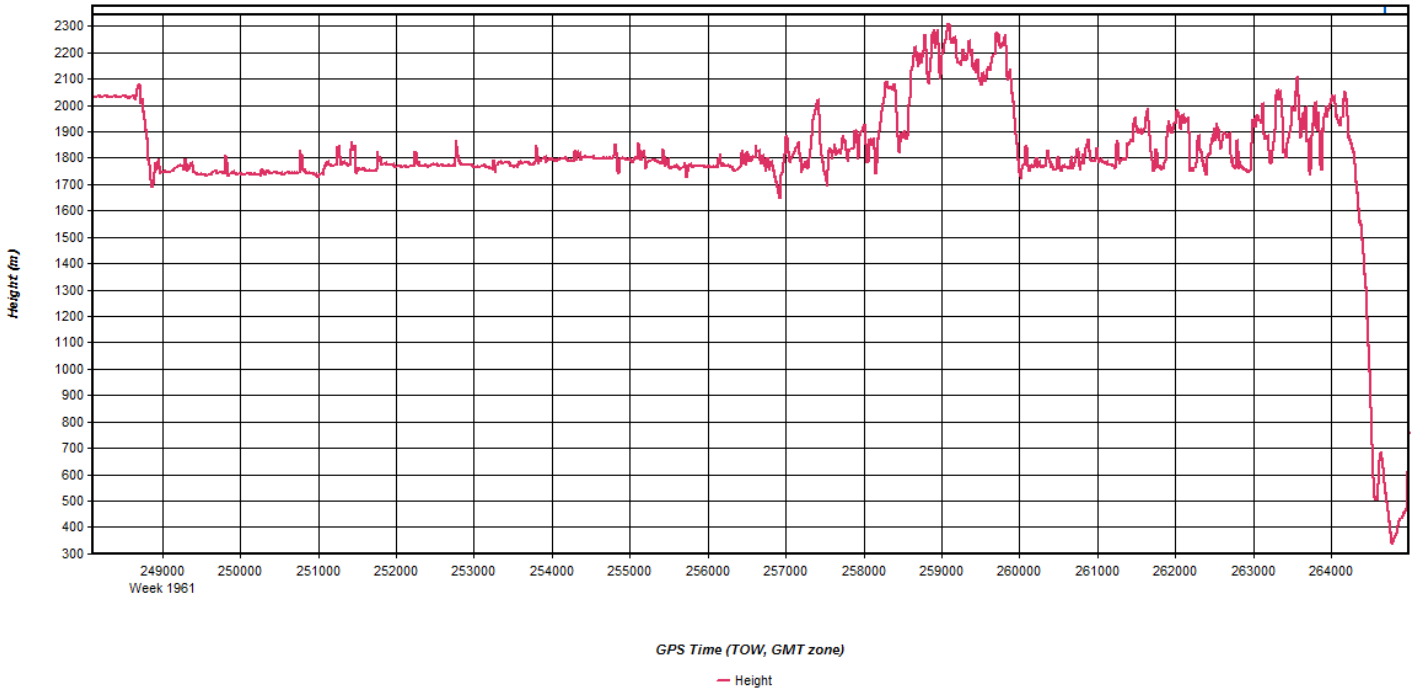

APPX. REV
APPX. FWD
TBRD
5 km
AB49

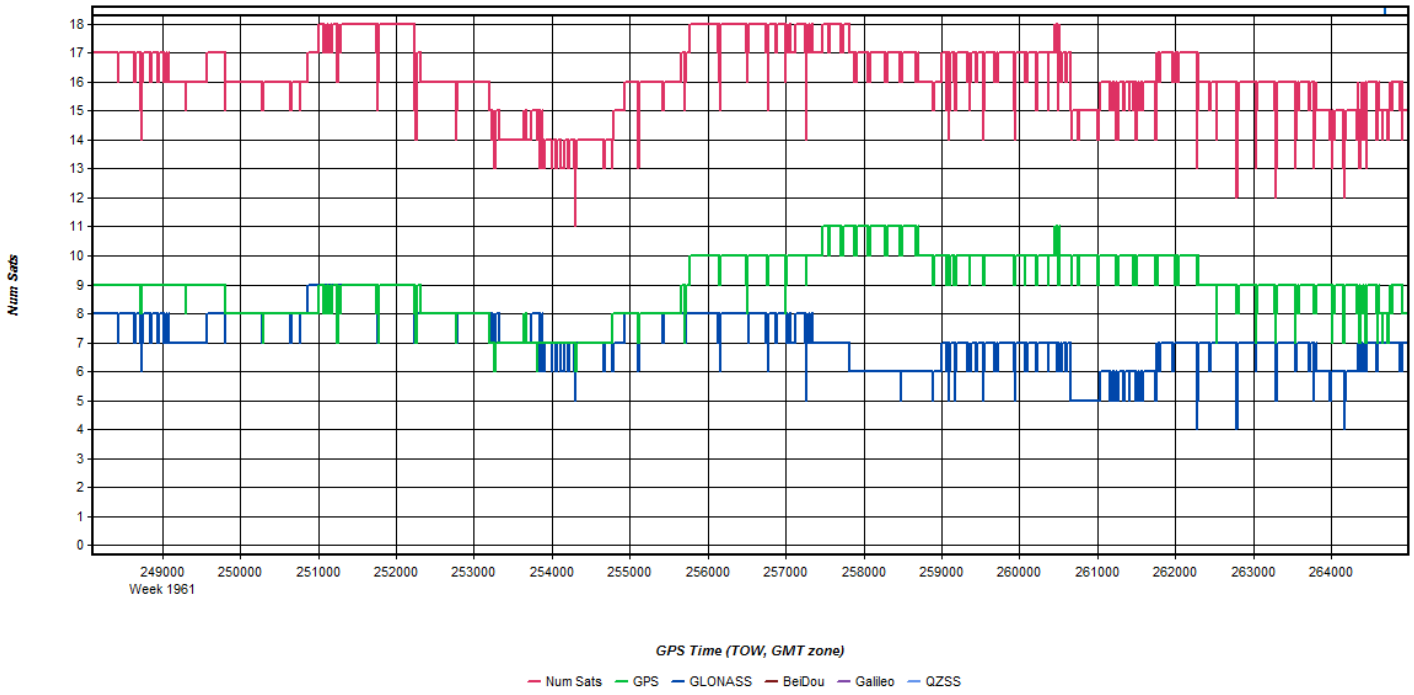

PDOP
2.6
2.4
2.2
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
249000
Week 1961
250000
251000
252000
253000
254000
255000
256000
257000
258000
259000
260000
261000
262000
263000
264000
GPS Time (TOW, GMT zone)
PDOP

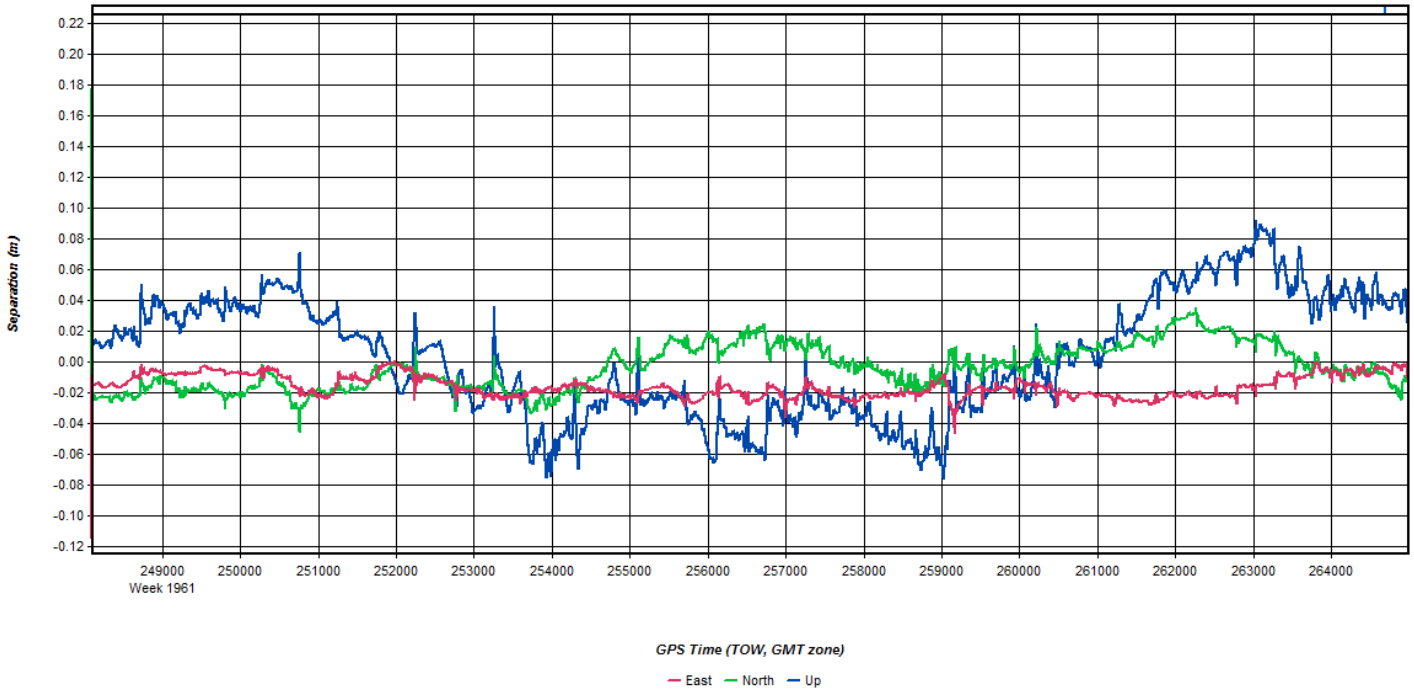

Status
2
1
0
-1
249000
Week 1961
250000
251000
252000
253000
254000
255000
256000
257000
258000
259000
260000
261000
262000
263000
264000
GPS Time (TOW, GMT zone)
Float
Forward Fixed
Reverse Fixed
Fixed (2 or more)

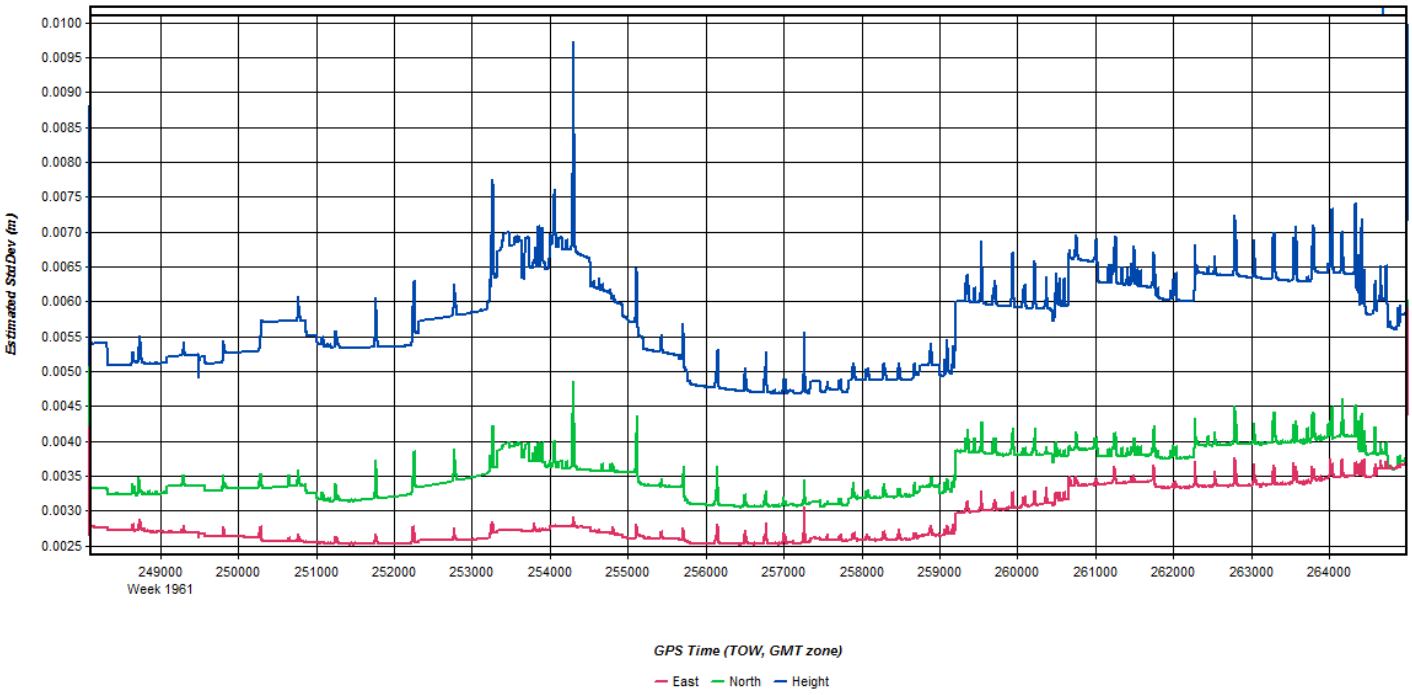

Roll & pitch (deg)
35
30
25
20
15
10
5
0
-5
-10
-15
-20
-25
-30
-35
249000
Week 1961
250000
251000
252000
253000
254000
255000
256000
257000
258000
259000
260000
261000
262000
263000
264000
GPS Time (TOW, GMT zone)
Roll
Pitch

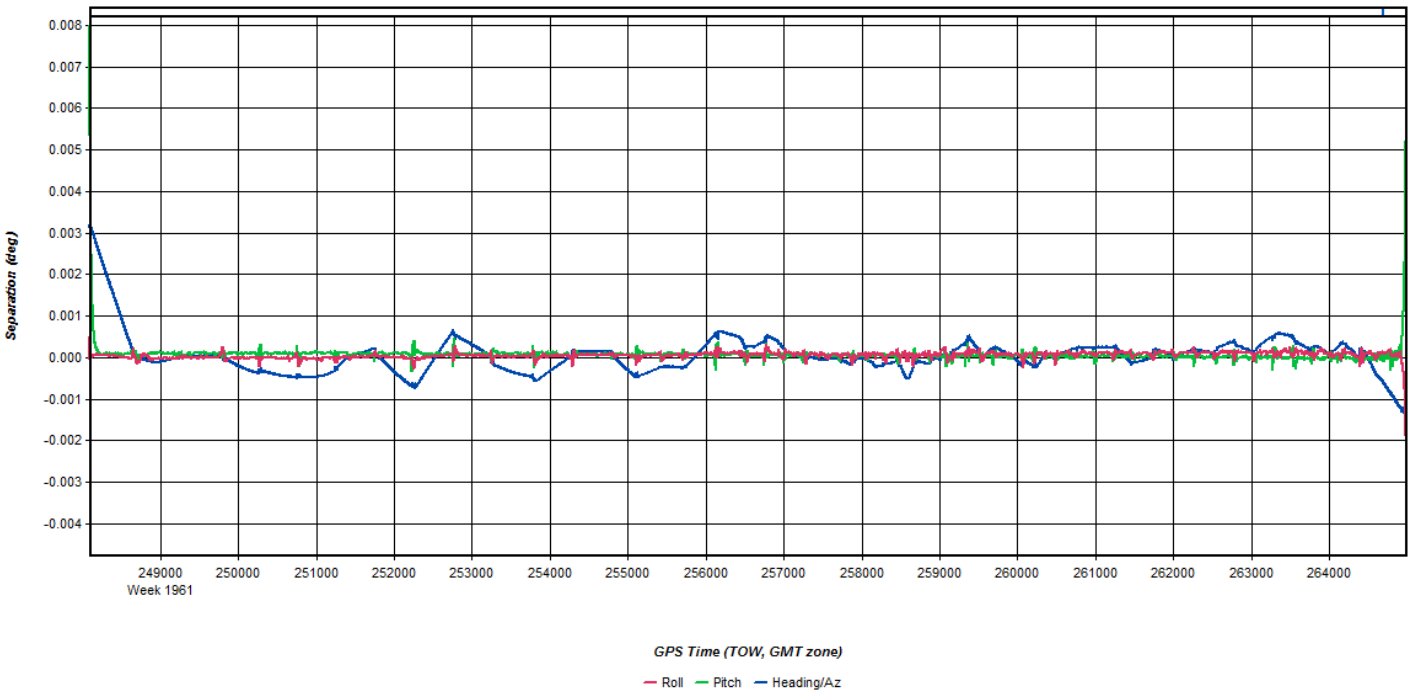

RMS (m)
0.060
0.055
0.050
0.045
0.040
0.035
0.030
0.025
0.020
0.015
0.010
0.005
0.000
249000
Week 1961
250000
251000
252000
253000
254000
255000
256000
257000
258000
259000
260000
261000
262000
263000
264000
GPS Time (TOW, GMT zone)
RMS
SD


Height (m)
2300
2200
2100
2000
1900
1800
1700
1600
1500
1400
1300
1200
1100
1000
900
800
700
600
500
400
300
249000
Week 1961
250000
251000
252000
253000
254000
255000
256000
257000
258000
259000
260000
261000
262000
263000
264000
GPS Time (TOW, GMT zone)
Height

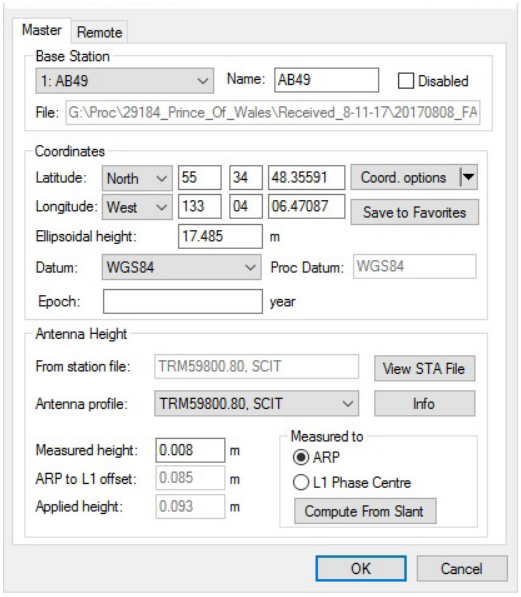

Num Sats
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
249000
Week 1961
250000
251000
252000
253000
254000
255000
256000
257000
258000
259000
260000
261000
262000
263000
264000
GPS Time (TOW, GMT zone)
Num Sats
GPS
GLONASS
BeiDou
Galileo
QZSS

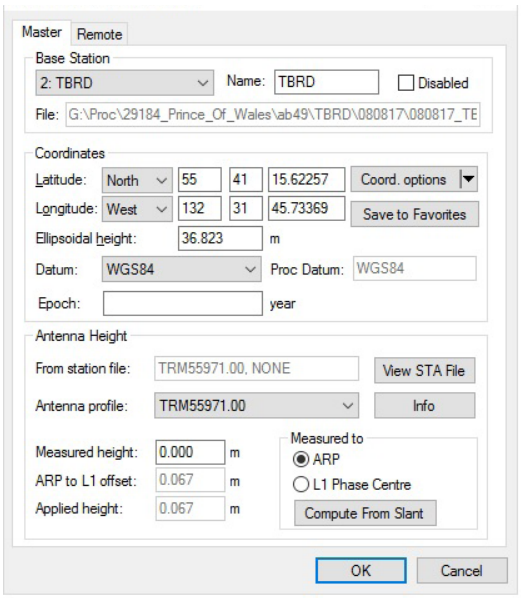

Separation (m)
0.22
0.20
0.18
0.16
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
-0.02
-0.04
-0.06
-0.08
-0.10
-0.12
249000
Week 1961
250000
251000
252000
253000
254000
255000
256000
257000
258000
259000
260000
261000
262000
263000
264000
GPS Time (TOW, GMT zone)
East
North
Up


Estimated StdDev (m)
0.0100
0.0095
0.0090
0.0085
0.0080
0.0075
0.0070
0.0065
0.0060
0.0055
0.0050
0.0045
0.0040
0.0035
0.0030
0.0025
249000
Week 1961
250000
251000
252000
253000
254000
255000
256000
257000
258000
259000
260000
261000
262000
263000
264000
GPS Time (TOW, GMT zone)
East
North
Height

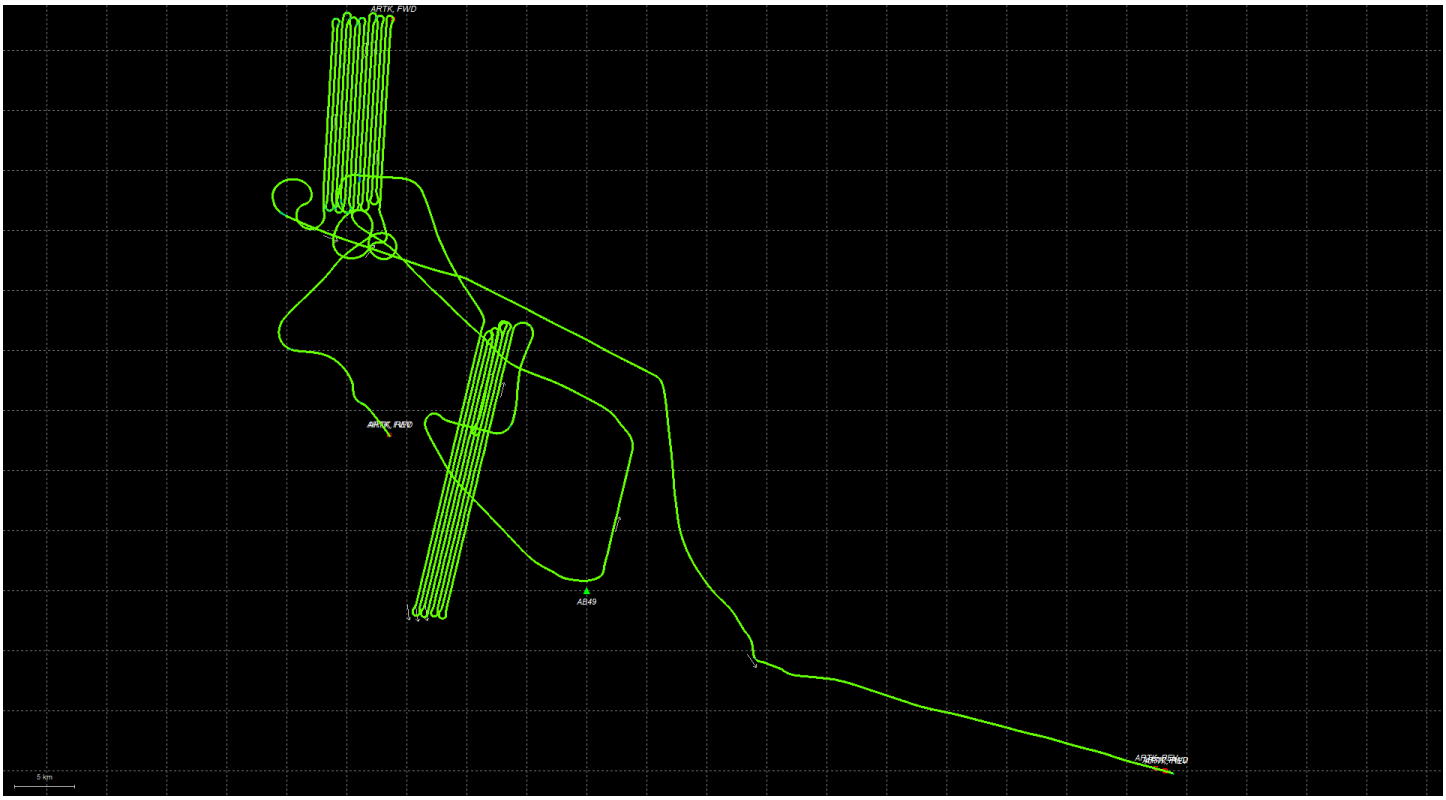

Separation (deg)
0.008
0.007
0.006
0.005
0.004
0.003
0.002
0.001
0.000
-0.001
-0.002
-0.003
-0.004
249000
Week 1961
250000
251000
252000
253000
254000
255000
256000
257000
258000
259000
260000
261000
262000
263000
264000
GPS Time (TOW, GMT zone)
Roll
Pitch
Heading/Az

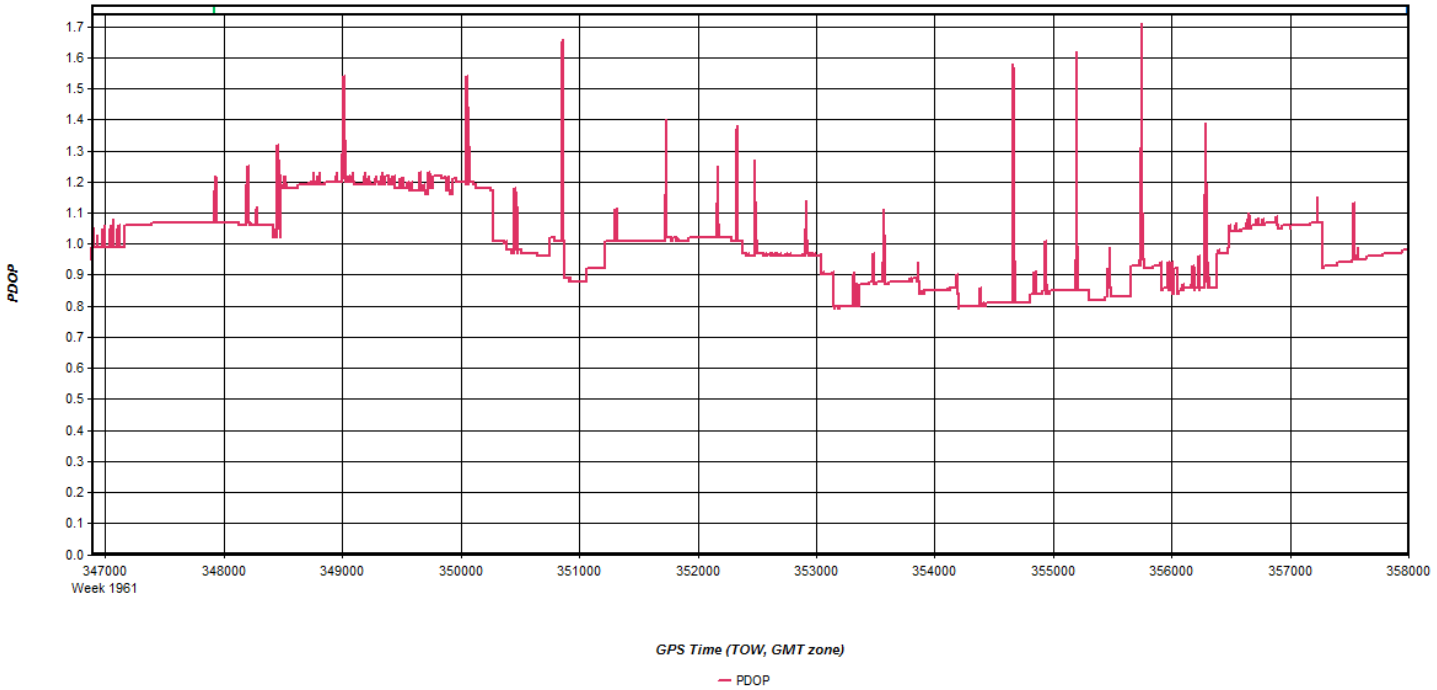

Azimuth/Heading (deg)
360
340
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
249000
Week 1961
250000
251000
252000
253000
254000
255000
256000
257000
258000
259000
260000
261000
262000
263000
264000
GPS Time (TOW, GMT zone)
Heading/Azimuth
GPS-COG

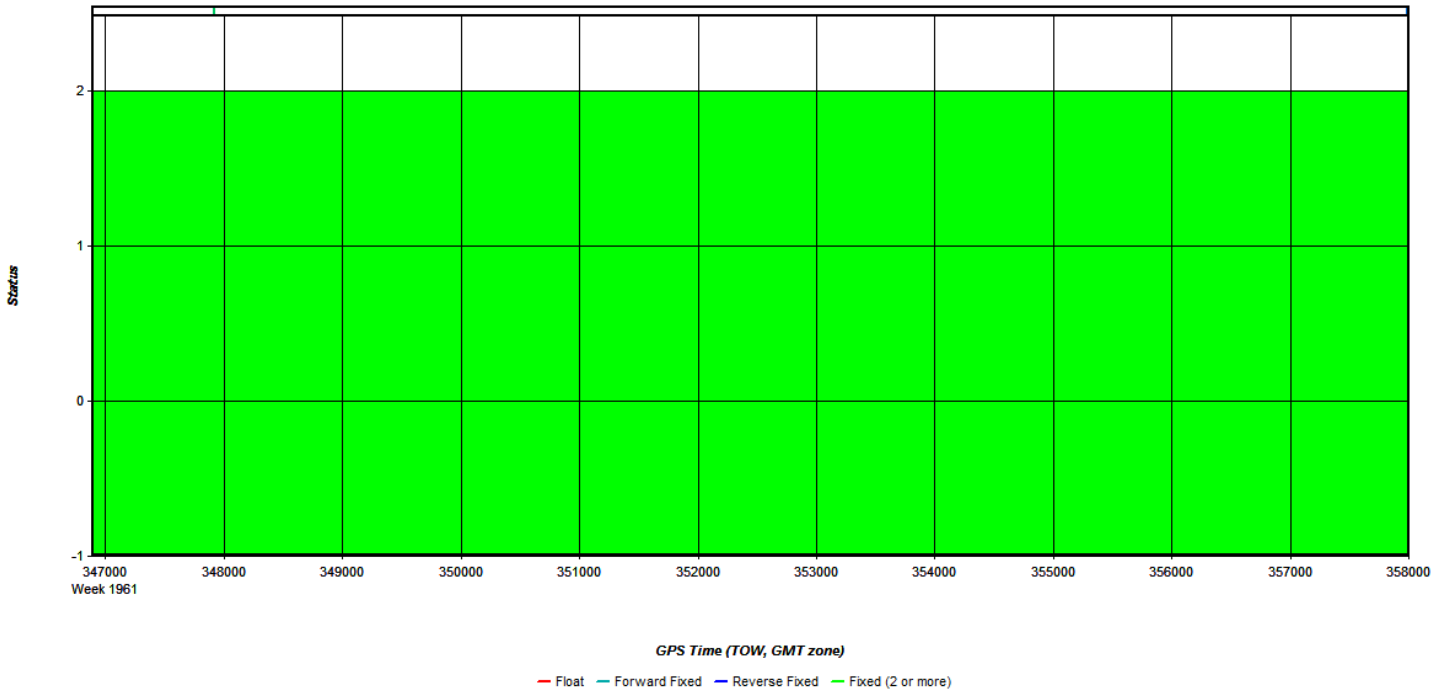

Master
Remote
Base Station
1: AB49
Name:
AB49
Disabled
File:
G:\Proc\29184_Prince_Of_Wales\Received_8-11-17\20170808_FA
Coordinates
Latitude:
North
55
34
48.35591
Coord. options
Longitude:
West
133
04
06.47087
Save to Favorites
Ellipsoidal height:
17.485
m
Datum:
WGS84
Proc Datum:
WGS84
Epoch:
year
Antenna Height
From station file:
TRM59800.80, SCIT
View STA File
Antenna profile:
TRM59800.80, SCIT
Info
Measured height:
0.008
m
Measured to
ARP
ARP to L1 offset:
0.085
m
L1 Phase Centre
Applied height:
0.093
m
Compute From Slant
OK
Cancel

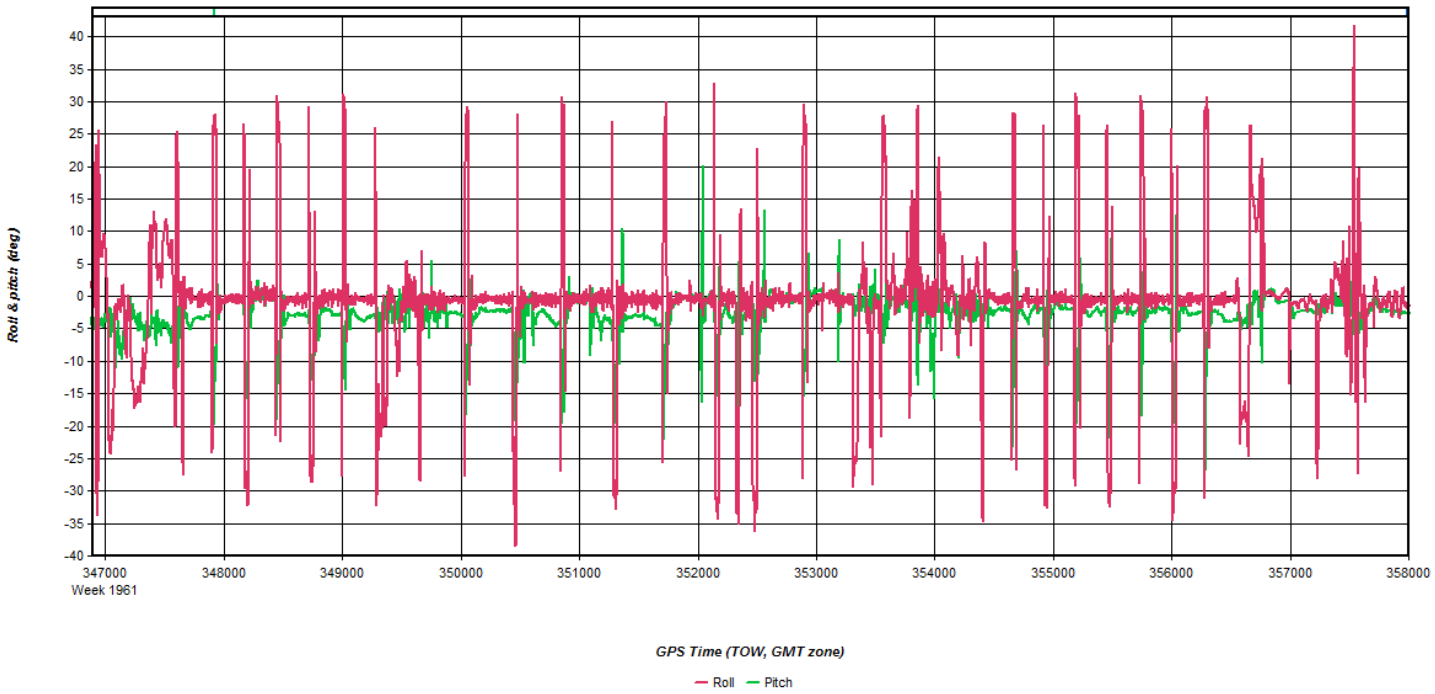

Master
Remote
Base Station
2: TBRD
Name:
TBRD
Disabled
File:
G:\Proc\29184_Prince_Of_Wales\ab49\TBRD\080817\080817_TE
Coordinates
Latitude:
North
55
41
15.62257
Coord. options
Longitude:
West
132
31
45.73369
Save to Favorites
Ellipsoidal height:
36.823
m
Datum:
WGS84
Proc Datum:
WGS84
Epoch:
year
Antenna Height
From station file:
TRM55971.00, NONE
View STA File
Antenna profile:
TRM55971.00
Info
Measured height:
0.000
m
Measured to
ARP
ARP to L1 offset:
0.067
m
L1 Phase Centre
Applied height:
0.067
m
Compute From Slant
OK
Cancel

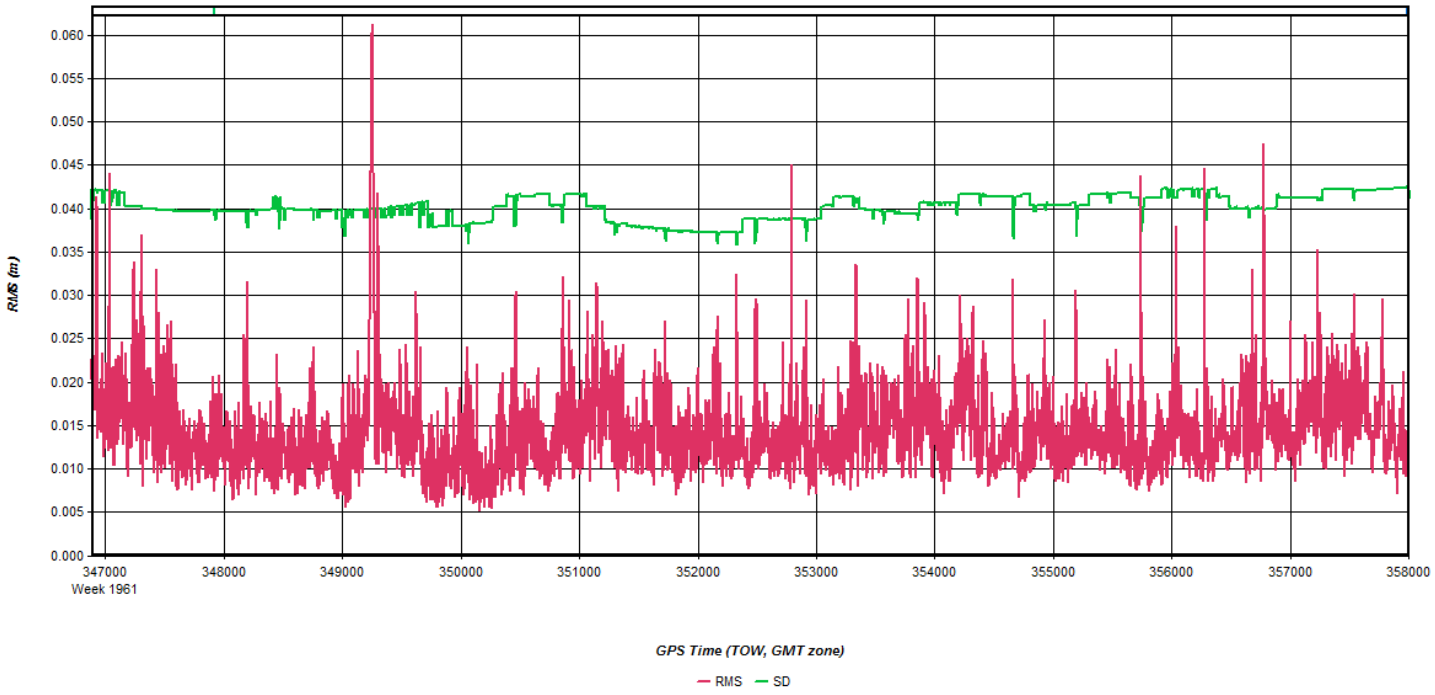
August 9, 2017-A (N604MD, SN8146)

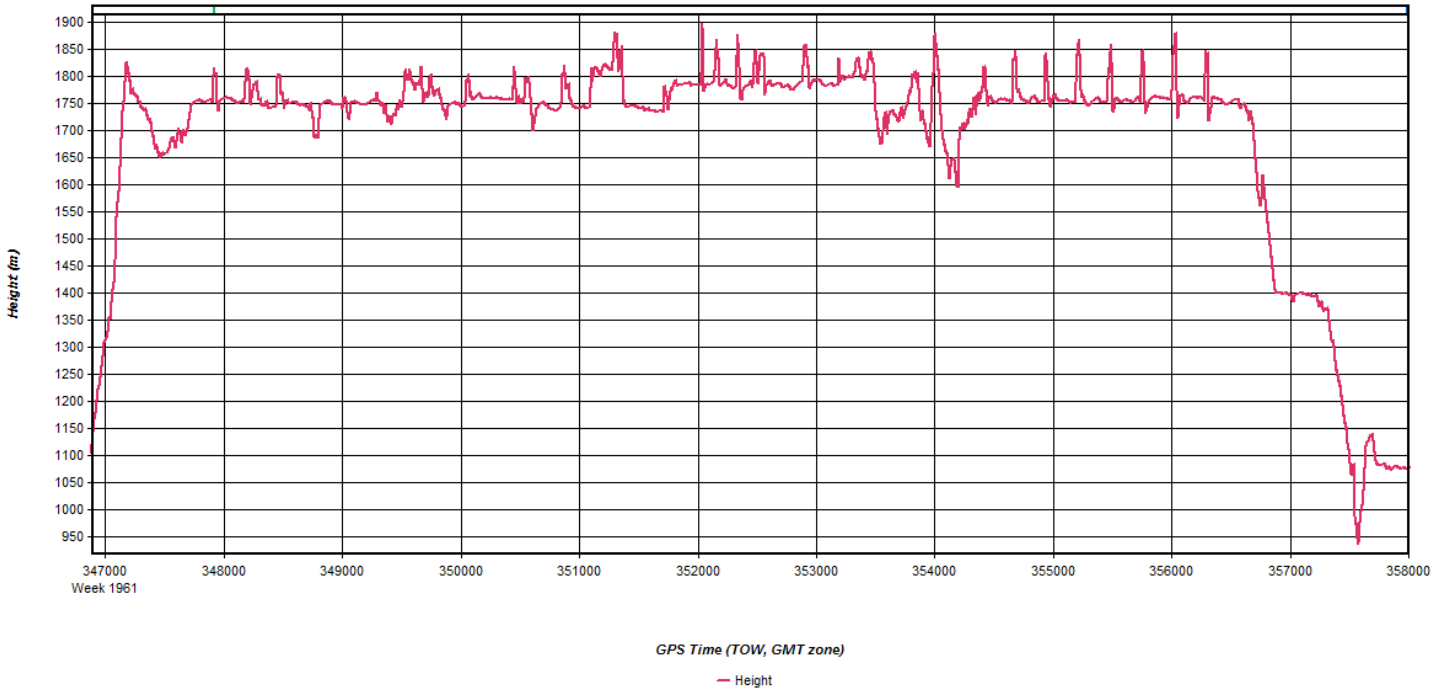

AB49
5 km

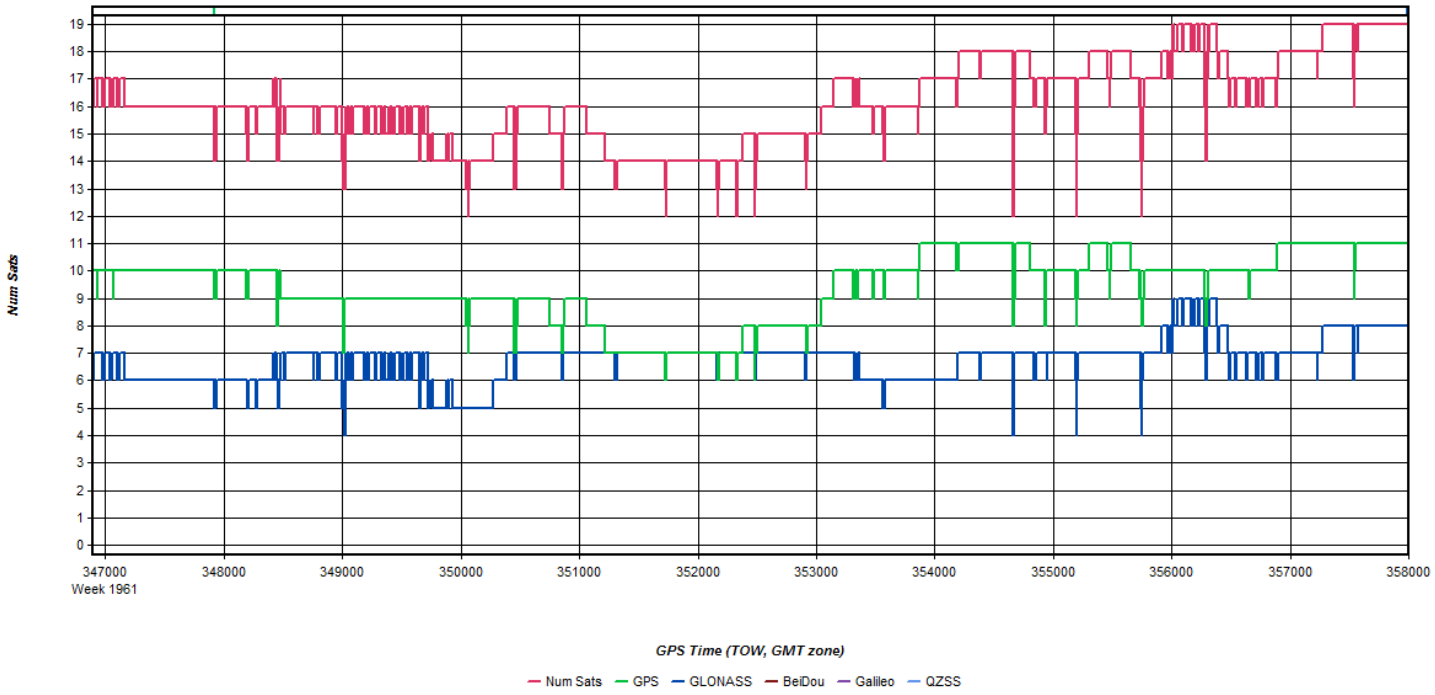

PDOP
1.7
1.6
1.5
1.4
1.3
1.2
1.1
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
347000
348000
349000
350000
351000
352000
353000
354000
355000
356000
357000
358000
Week 1961
GPS Time (TOW, GMT zone)
PDOP


Status
2
1
0
-1
347000
Week 1961
348000
349000
350000
351000
352000
353000
354000
355000
356000
357000
358000
GPS Time (TOW, GMT zone)
Float
Forward Fixed
Reverse Fixed
Fixed (2 or more)

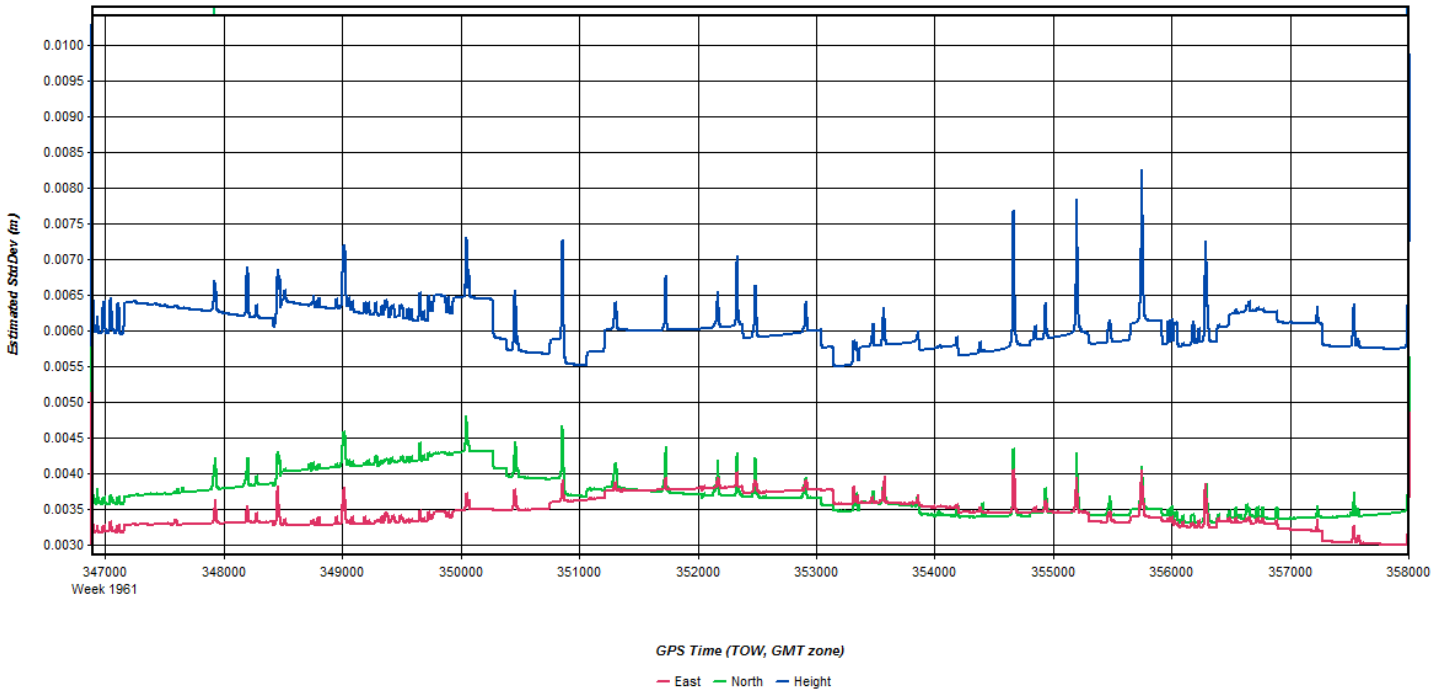

Roll & pitch (deg)
40
35
30
25
20
15
10
5
0
-5
-10
-15
-20
-25
-30
-35
-40
347000
Week 1961
348000
349000
350000
351000
352000
353000
354000
355000
356000
357000
358000
GPS Time (TOW, GMT zone)
Roll
Pitch

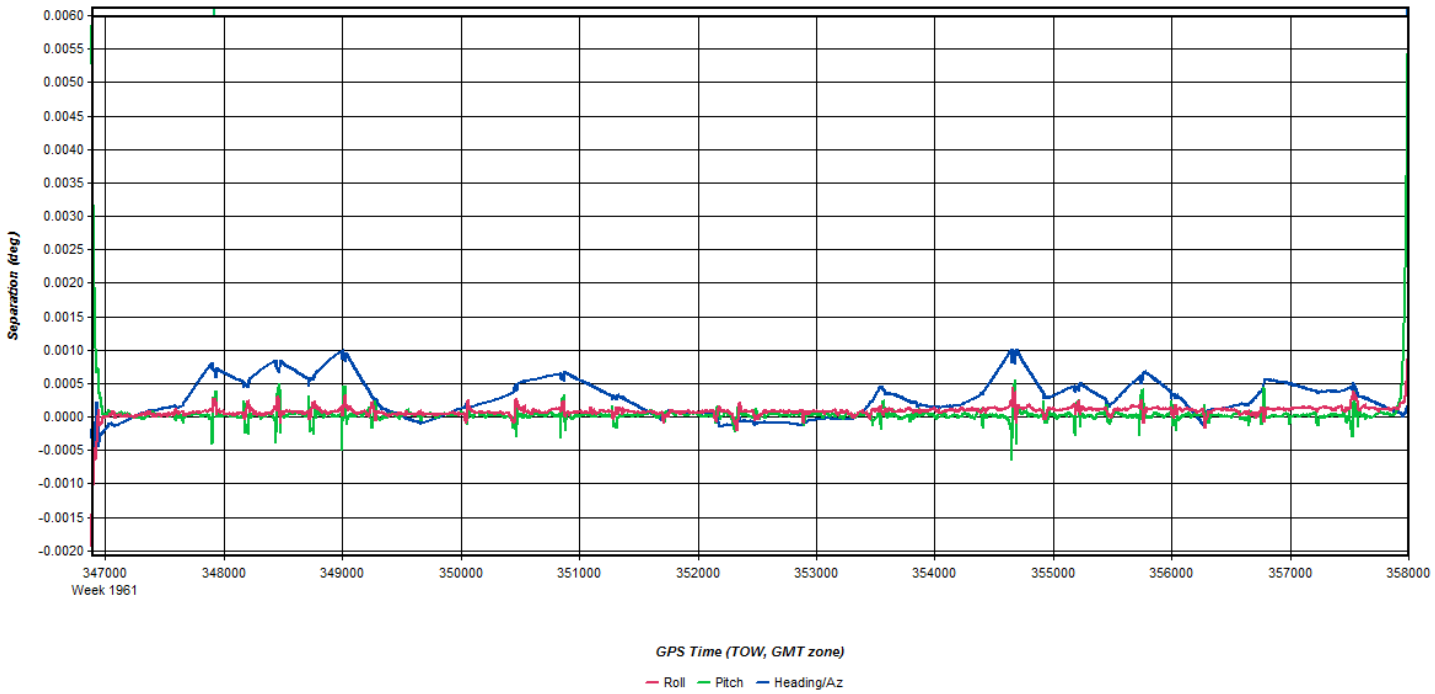

RMS (m)
0.060
0.055
0.050
0.045
0.040
0.035
0.030
0.025
0.020
0.015
0.010
0.005
0.000
347000
Week 1961
348000
349000
350000
351000
352000
353000
354000
355000
356000
357000
358000
GPS Time (TOW, GMT zone)
RMS
SD

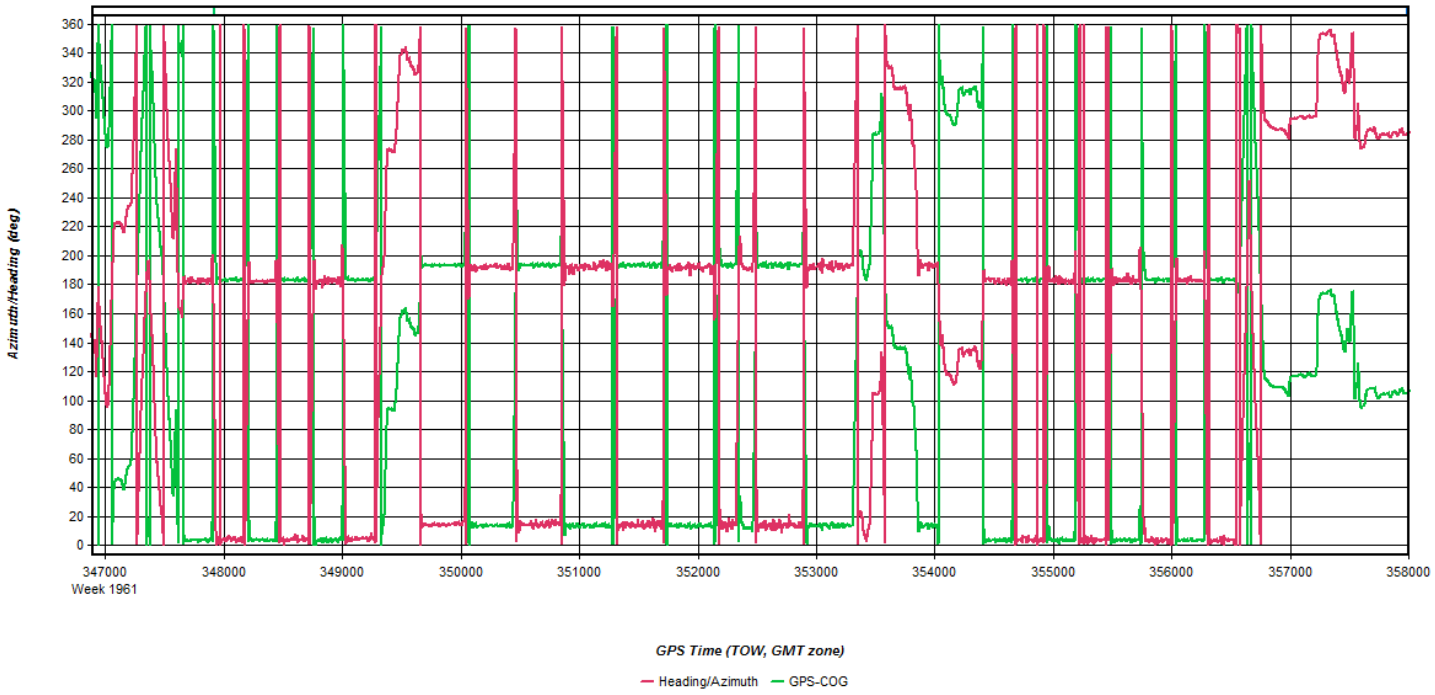

Height (m)
1900
1850
1800
1750
1700
1650
1600
1550
1500
1450
1400
1350
1300
1250
1200
1150
1100
1050
1000
950
347000
Week 1961
348000
349000
350000
351000
352000
353000
354000
355000
356000
357000
358000
GPS Time (TOW, GMT zone)
Height

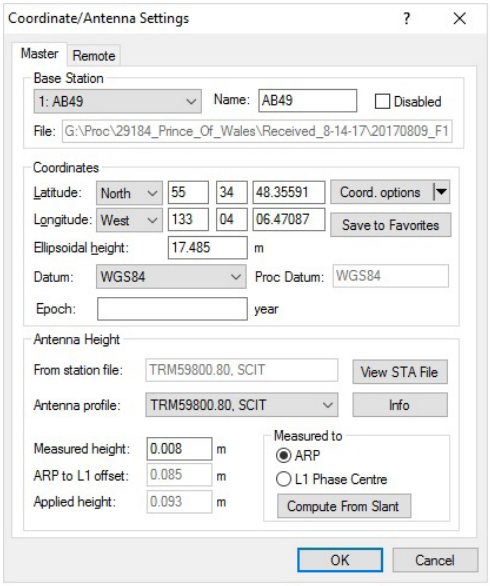

Num Sats
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
347000
Week 1961
348000
349000
350000
351000
352000
353000
354000
355000
356000
357000
358000
GPS Time (TOW, GMT zone)
Num Sats
GPS
GLONASS
BeiDou
Galileo
QZSS


Separation (m)
0.30
0.25
0.20
0.15
0.10
0.05
-0.00
-0.05
-0.10
-0.15
347000
Week 1961
348000
349000
350000
351000
352000
353000
354000
355000
356000
357000
358000
GPS Time (TOW, GMT zone)
East
North
Up

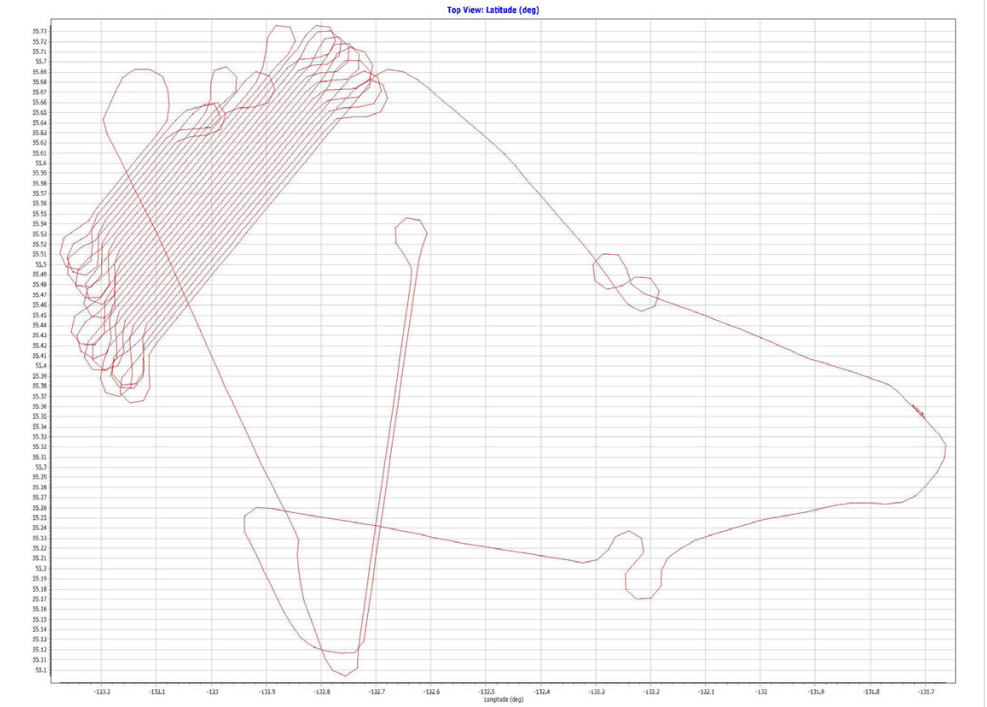

Estimated StdDev (m)
0.0100
0.0095
0.0090
0.0085
0.0080
0.0075
0.0070
0.0065
0.0060
0.0055
0.0050
0.0045
0.0040
0.0035
0.0030
347000
Week 1961
348000
349000
350000
351000
352000
353000
354000
355000
356000
357000
358000
GPS Time (TOW, GMT zone)
East
North
Height

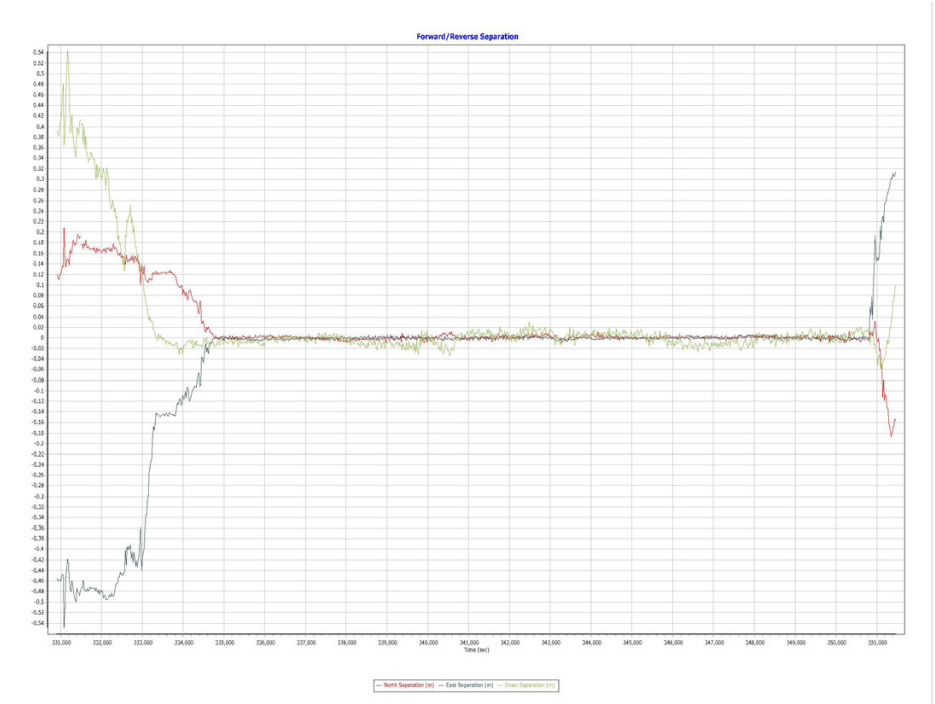

Separation (deg)
0.0060
0.0055
0.0050
0.0045
0.0040
0.0035
0.0030
0.0025
0.0020
0.0015
0.0010
0.0005
0.0000
-0.0005
-0.0010
-0.0015
-0.0020
347000
Week 1961
348000
349000
350000
351000
352000
353000
354000
355000
356000
357000
358000
GPS Time (TOW, GMT zone)
Roll
Pitch
Heading/Az

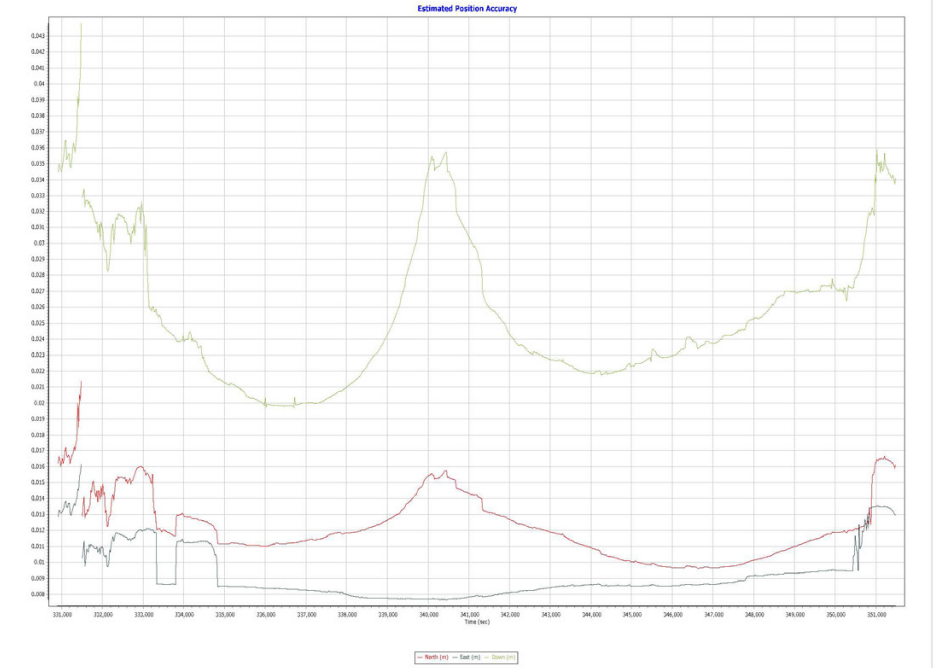

Azimuth/Heading (deg)
360
340
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
347000
Week 1961
348000
349000
350000
351000
352000
353000
354000
355000
356000
357000
358000
GPS Time (TOW, GMT zone)
Heading/Azimuth
GPS-COG

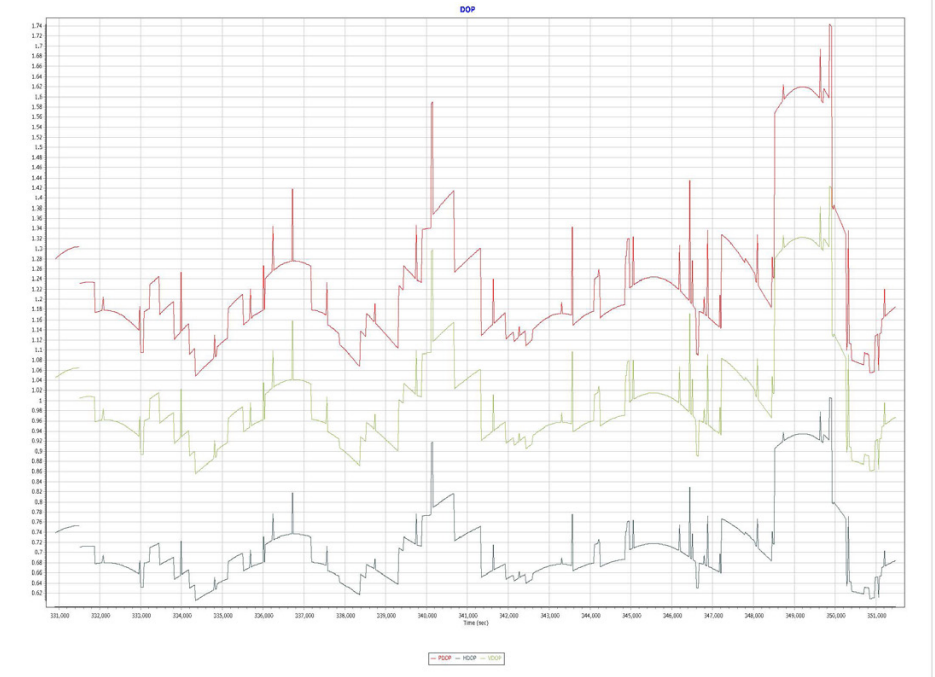

Coordinate/Antenna Settings
Master
Remote
Base Station
1: AB49
Name: AB49
Disabled
File: G:\Proc\29184_Prince_Of_Wales\Received_8-14-17\20170809_F1
Coordinates
Latitude: North 55 34 48.35591
Coord. options
Longitude: West 133 04 06.47087
Save to Favorites
Ellipsoidal height: 17.485 m
Datum: WGS84
Proc Datum: WGS84
Epoch: year
Antenna Height
From station file: TRM59800.80, SCIT
View STA File
Antenna profile: TRM59800.80, SCIT
Info
Measured height: 0.008 m
ARP to L1 offset: 0.085 m
Applied height: 0.093 m
Measured to
ARP
L1 Phase Centre
Compute From Slant
OK
Cancel

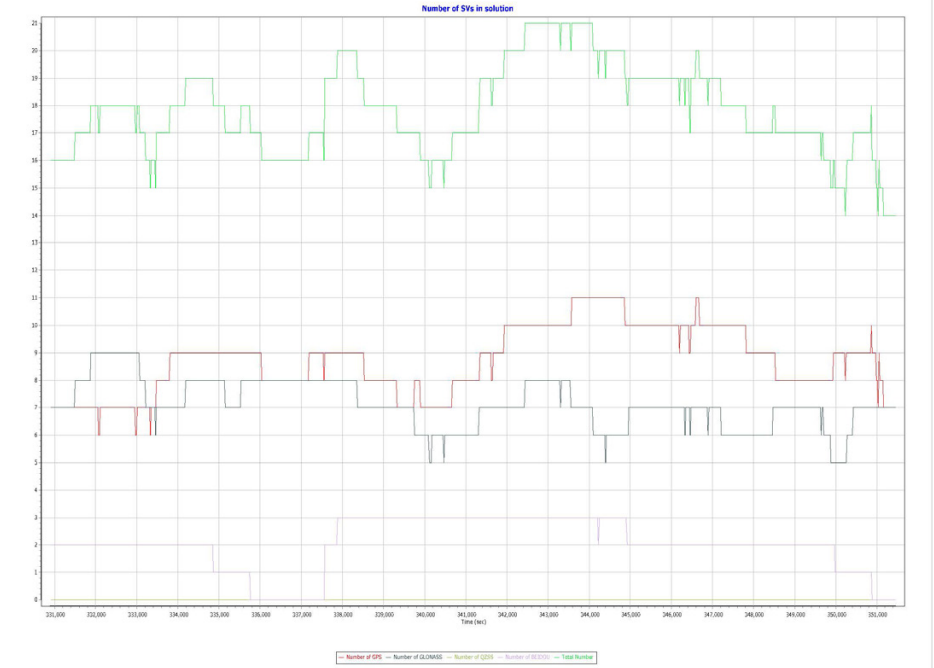
August 9, 2017-A (CFFRY, SN2220754)

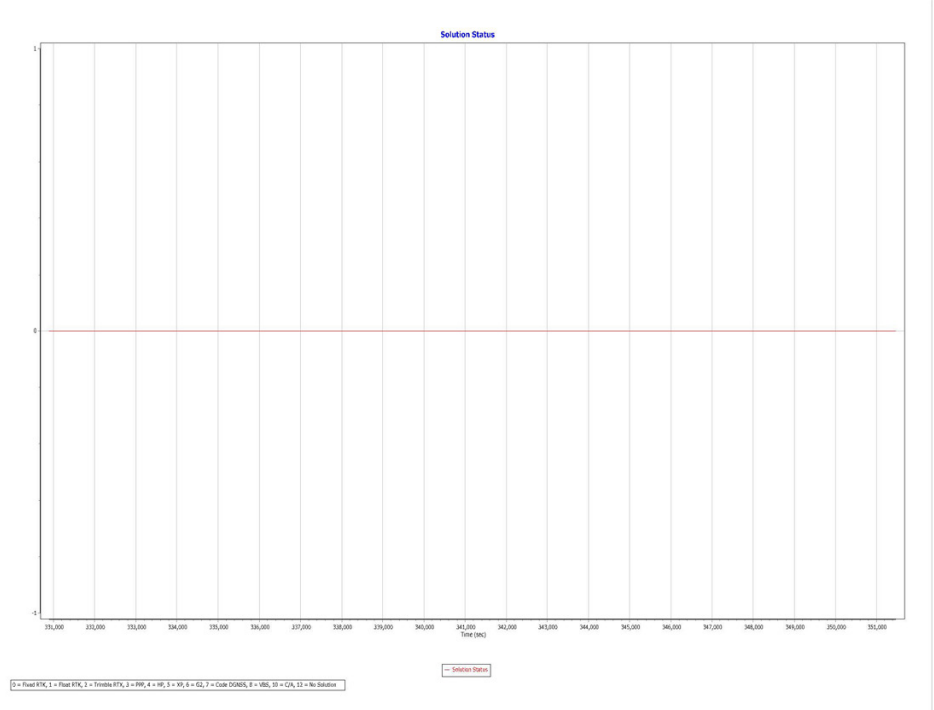

Top View: Latitude (deg)
Longitude (deg)


Forward/Reverse Separation
Time (sec)

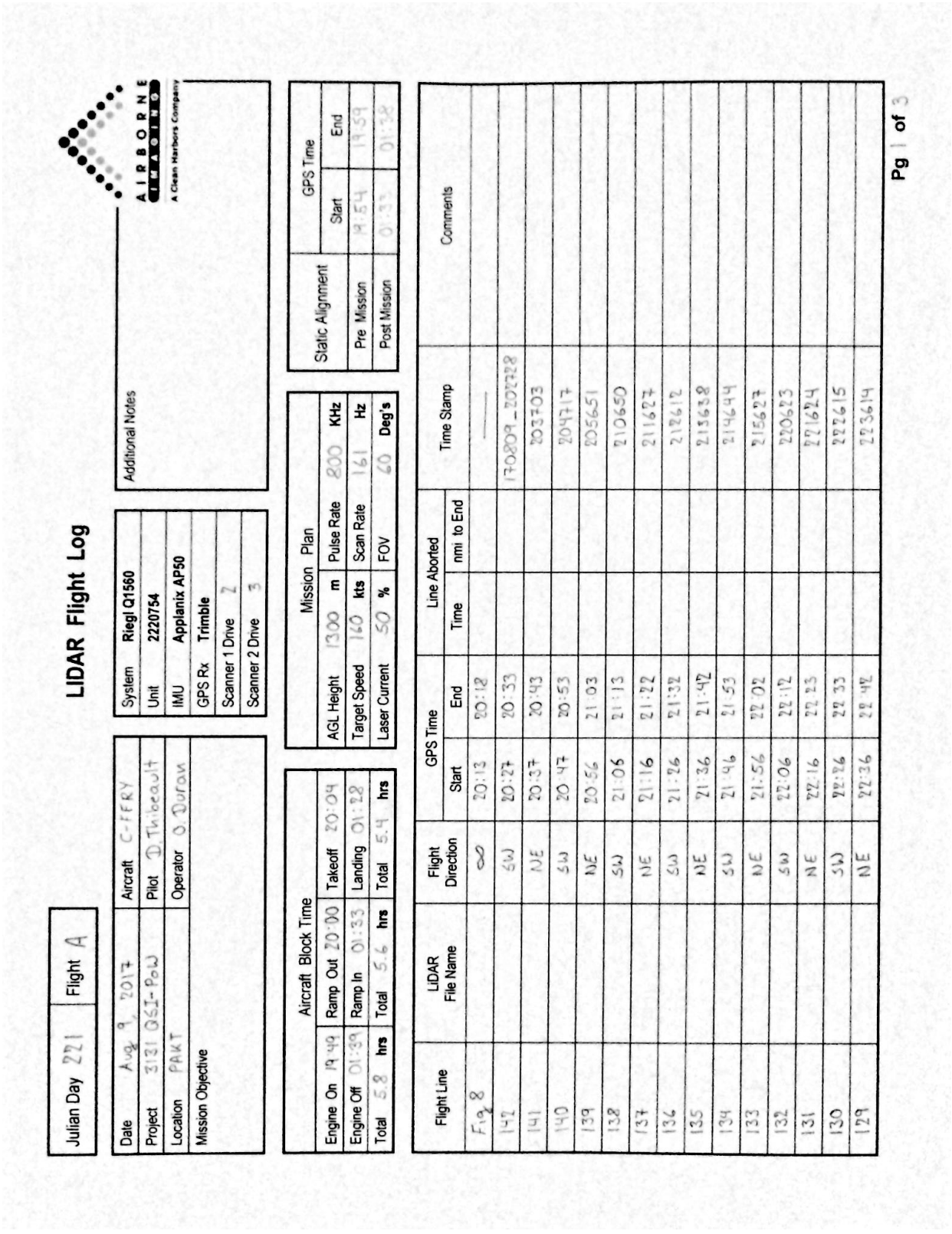

Estimated Position Accuracy
Time (sec)


DOP
Time (sec)


Number of SVs in solution
Time (sec)
Number of GPS
Number of GLONASS
Number of QZSS
Number of BEIDOU
Total Number


Solution Status
Time (sec)
Solution Status
0 = Fixed RTK, 1 = Float RTK, 2 = Trimble RTX, 3 = PPP, 4 = HP, 5 = XP, 6 = G2, 7 = Code DGNSS, 8 = VBS, 10 = C/A, 12 = No Solution

Flight Log



LIDAR Flight Log

Julian Day 221 | Flight A

Date	Aug 9, 2017
Project	3131 GSI-PoW
Location	PAKT
Mission Objective	

Aircraft	C-FFRY
Pilot	D. Thibeault
Operator	O. Duran

System	Riegl Q1560
Unit	2220754
IMU	Applanix AP50
GPS Rx	Trimble
Scanner 1 Drive	2
Scanner 2 Drive	3

Additional Notes

AIRBORNE MAPPING — A Clean Harbors Company

Aircraft Block Time

Engine On	19:49	Ramp Out	20:00
Engine Off	01:39	Ramp In	01:33
Total	5.8 hrs	Total	5.6 hrs

Takeoff	20:09		
Landing	01:28		
Total	5.4 hrs		

Mission Plan

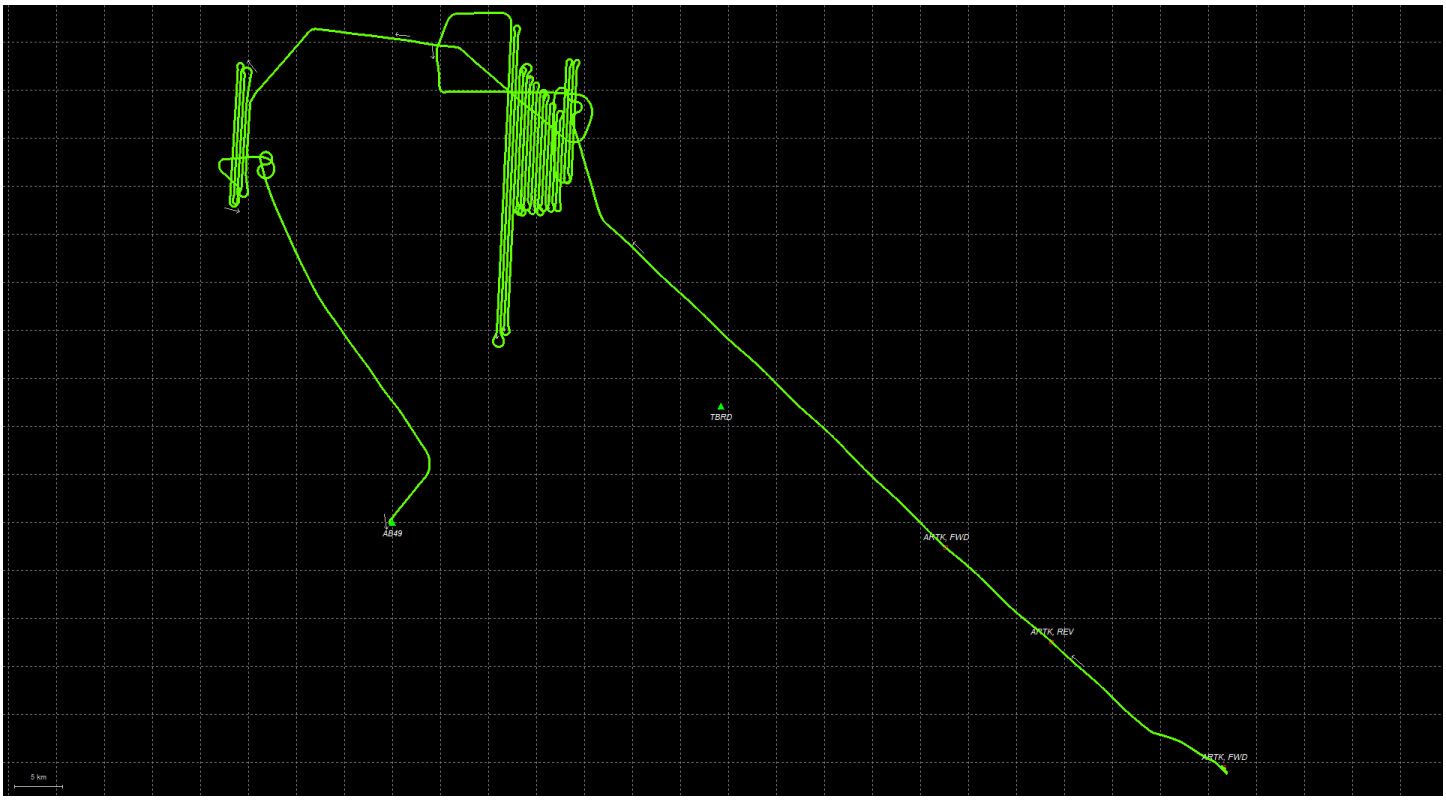
AGL Height	1300	m	Pulse Rate	800	KHz
Target Speed	160	kts	Scan Rate	161	Hz
Laser Current	50	%	FOV	60	Deg's

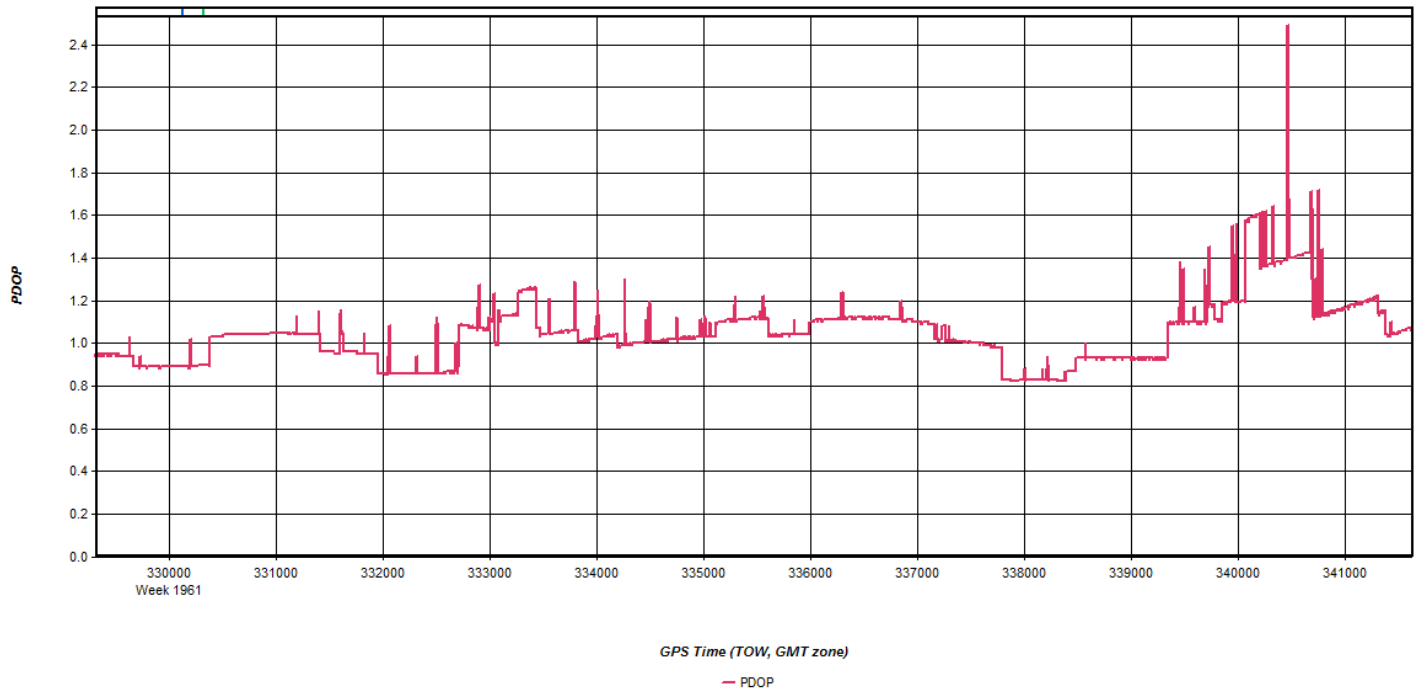
Static Alignment	GPS Time Start	GPS Time End
Pre Mission	19:54	19:59
Post Mission	01:33	01:38

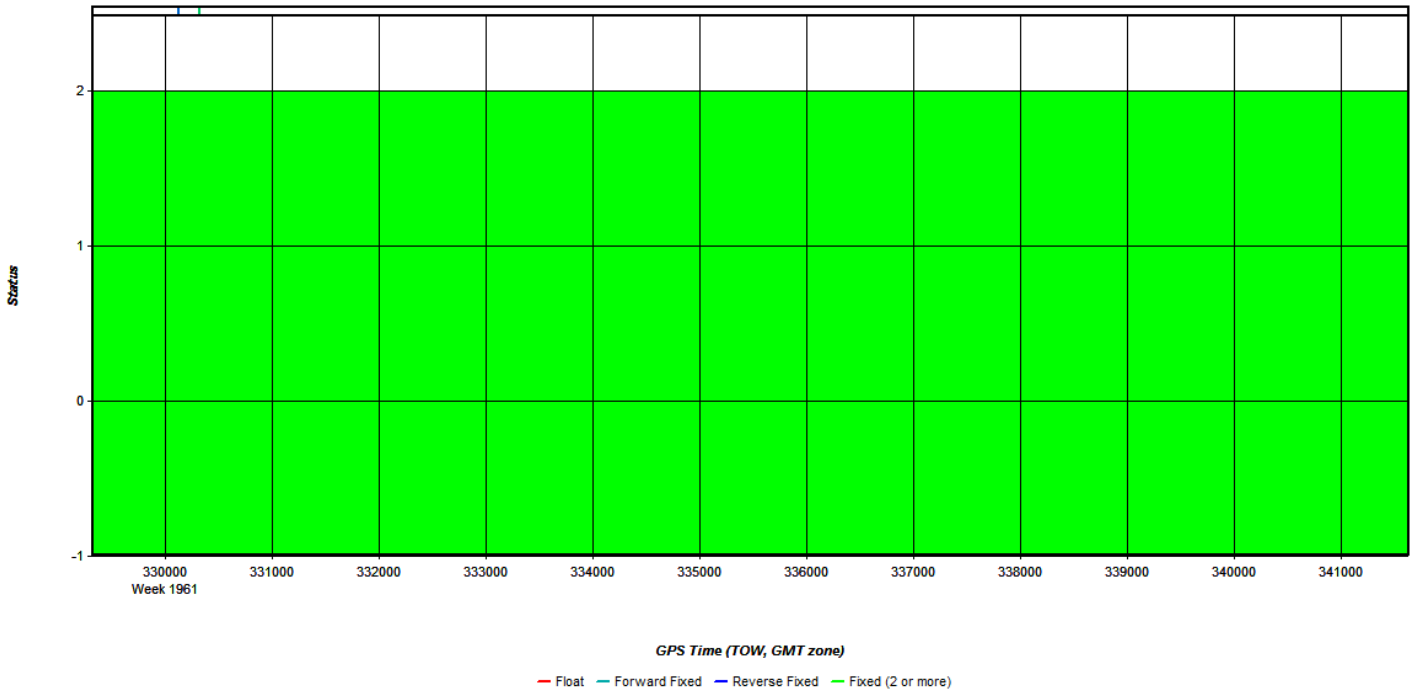
Flight Line	LIDAR File Name	Flight Direction	GPS Time Start	GPS Time End	Line Aborted Time	Line Aborted nmi to End	Time Stamp	Comments
F198		∞	20:13	20:18			———	
142		SW	20:27	20:33			170209_202328	
141		NE	20:37	20:43			203703	
140		SW	20:47	20:53			204717	
139		NE	20:56	21:03			205651	
138		SW	21:06	21:13			210650	
137		NE	21:16	21:22			211627	
136		SW	21:26	21:32			212612	
135		NE	21:36	21:42			213638	
134		SW	21:46	21:53			214644	
133		NE	21:56	22:02			215627	
132		SW	22:06	22:12			220623	
131		NE	22:16	22:23			221624	
130		SW	22:26	22:33			222615	
129		NE	22:36	22:42			223614	

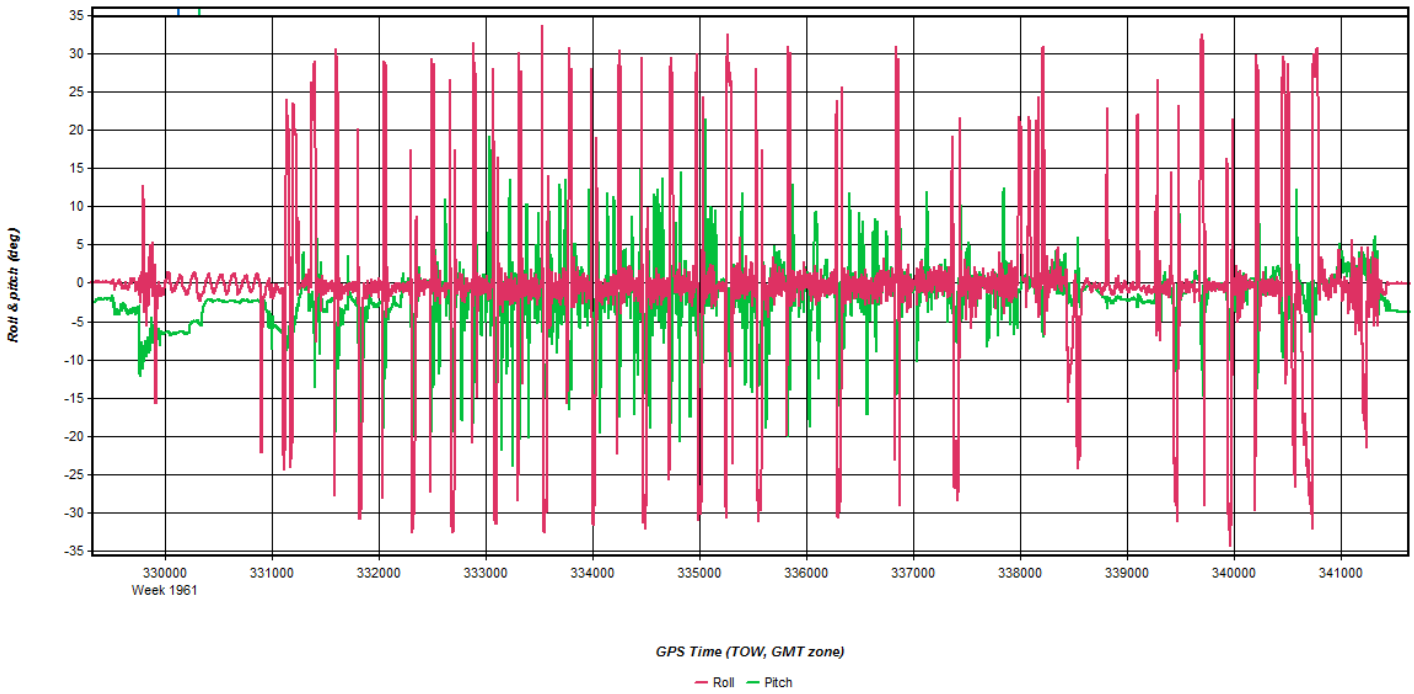
Pg 1 of 3

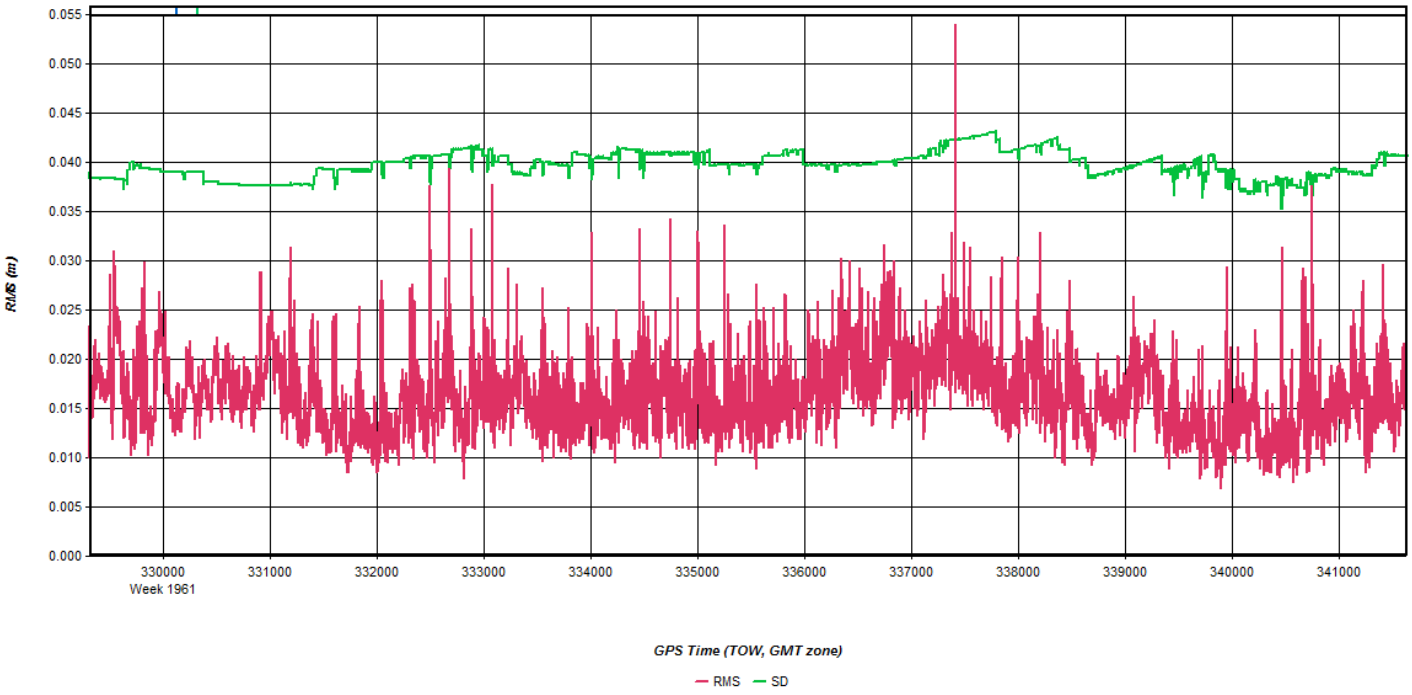
August 9, 2017-B (N604MD, SN8146)

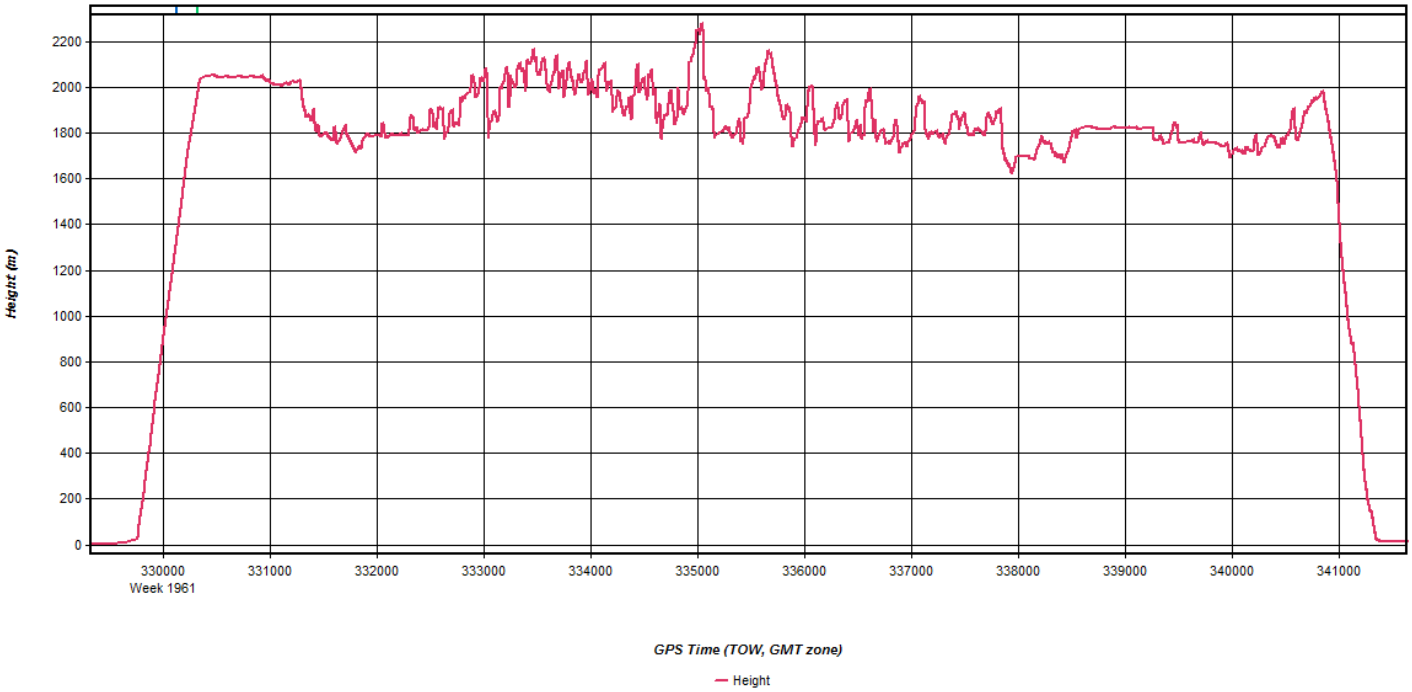

TBRD
AB49
ARTK_FWD
ARTK_REV
ARTK_FWD
5 km

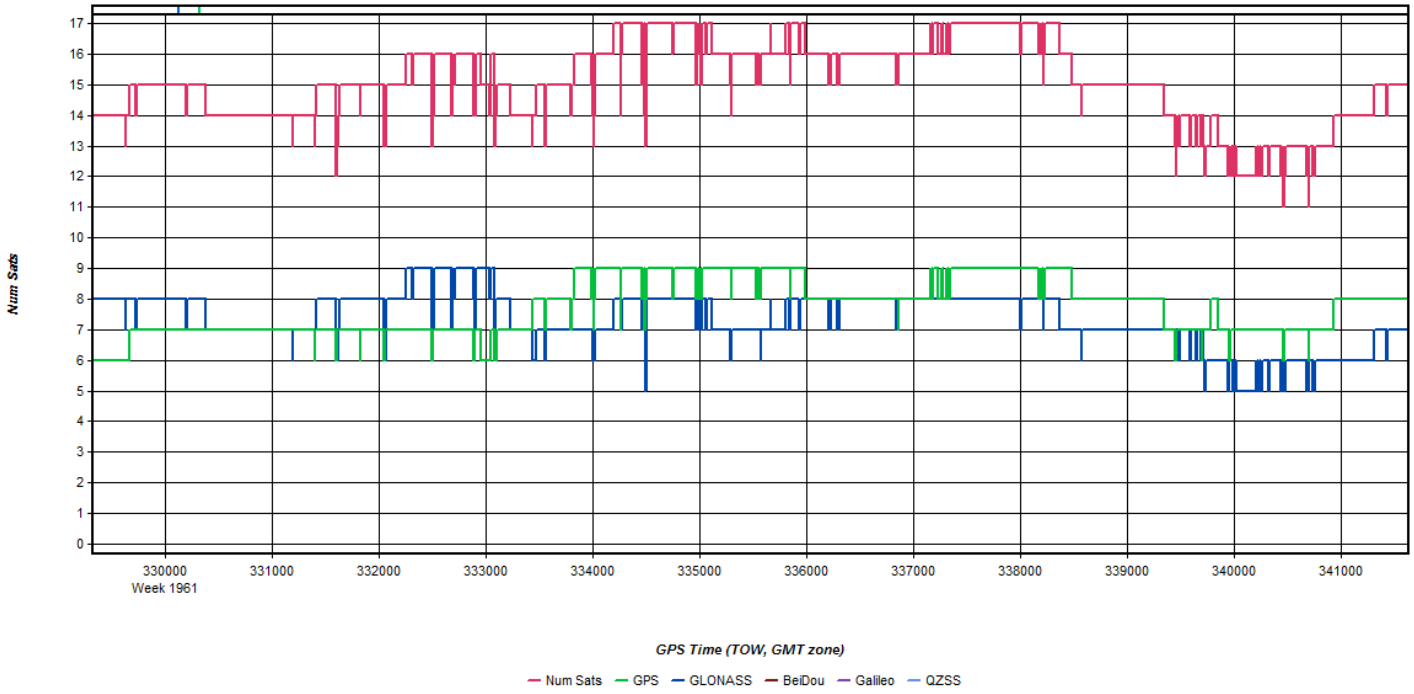

PDOP
2.4
2.2
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
330000
Week 1961
331000
332000
333000
334000
335000
336000
337000
338000
339000
340000
341000
GPS Time (TOW, GMT zone)
PDOP

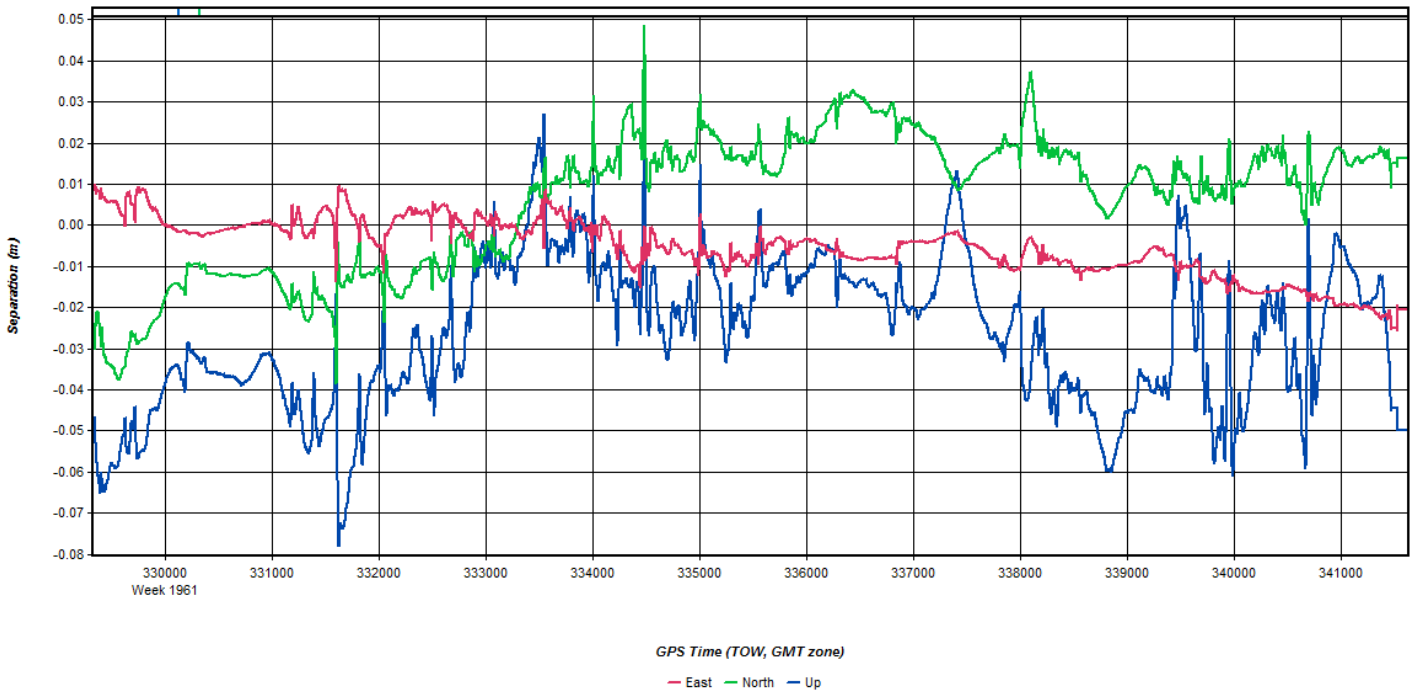

Status
2
1
0
-1
330000
Week 1961
331000
332000
333000
334000
335000
336000
337000
338000
339000
340000
341000
GPS Time (TOW, GMT zone)
Float
Forward Fixed
Reverse Fixed
Fixed (2 or more)

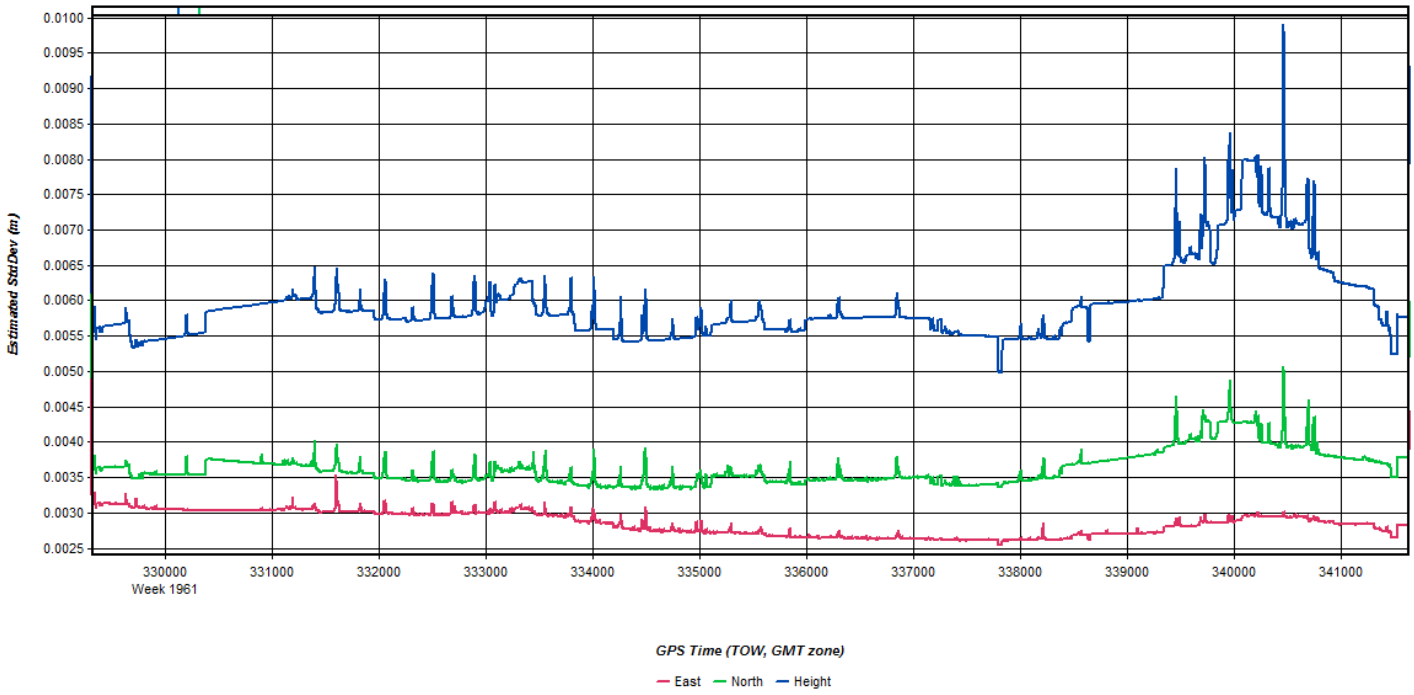

Roll & pitch (deg)
35
30
25
20
15
10
5
0
-5
-10
-15
-20
-25
-30
-35
330000
Week 1961
331000
332000
333000
334000
335000
336000
337000
338000
339000
340000
341000
GPS Time (TOW, GMT zone)
Roll
Pitch

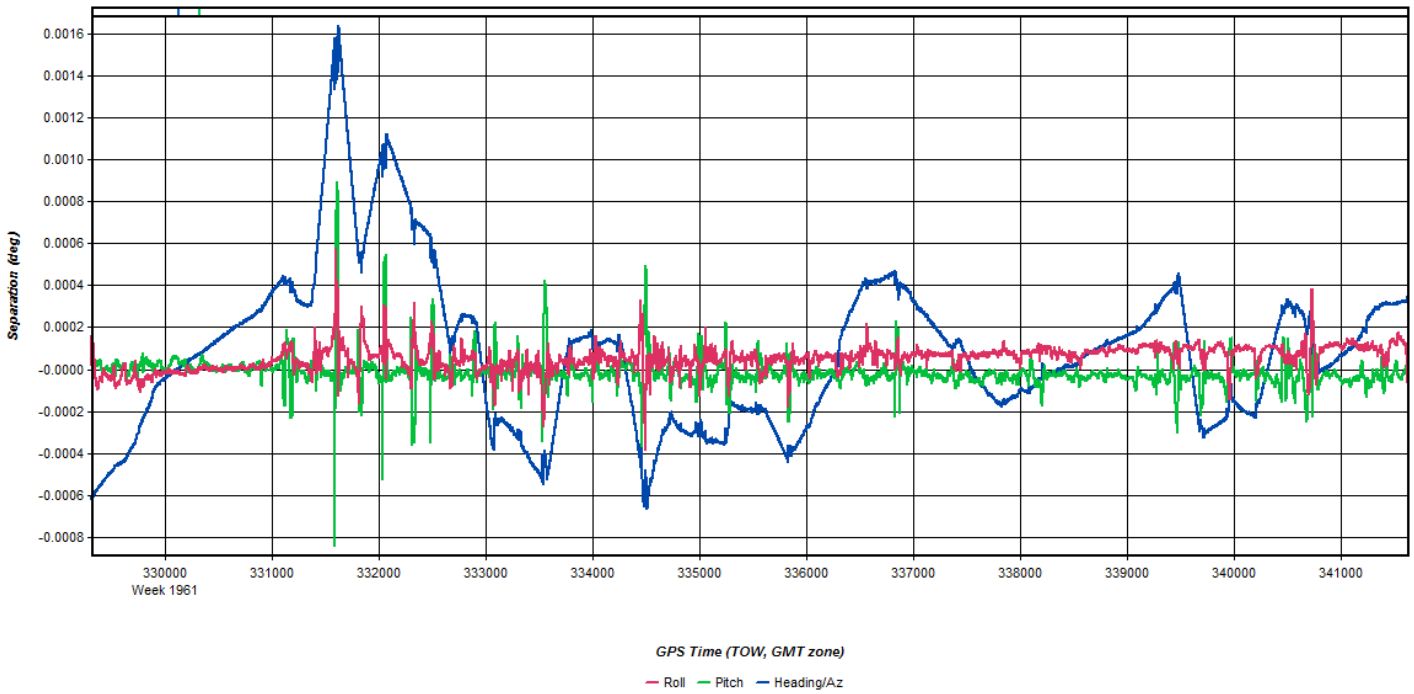

RMS (m)
0.055
0.050
0.045
0.040
0.035
0.030
0.025
0.020
0.015
0.010
0.005
0.000
330000
Week 1961
331000
332000
333000
334000
335000
336000
337000
338000
339000
340000
341000
GPS Time (TOW, GMT zone)
RMS
SD

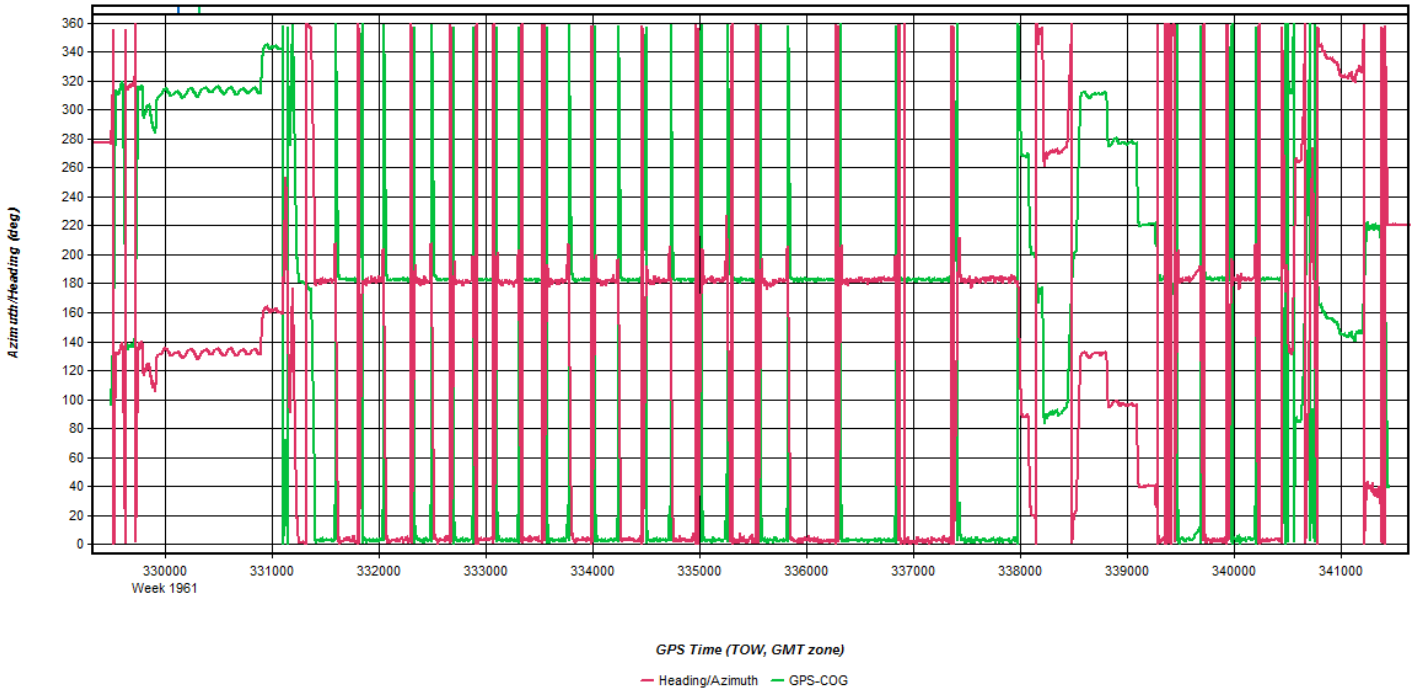

Height (m)
2200
2000
1800
1600
1400
1200
1000
800
600
400
200
0
330000
Week 1961
331000
332000
333000
334000
335000
336000
337000
338000
339000
340000
341000
GPS Time (TOW, GMT zone)
Height

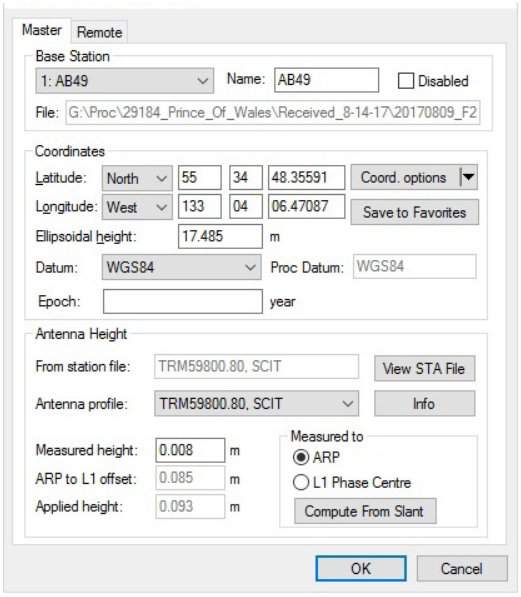

Num Sats
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
330000
Week 1961
331000
332000
333000
334000
335000
336000
337000
338000
339000
340000
341000
GPS Time (TOW, GMT zone)
Num Sats
GPS
GLONASS
BeiDou
Galileo
QZSS

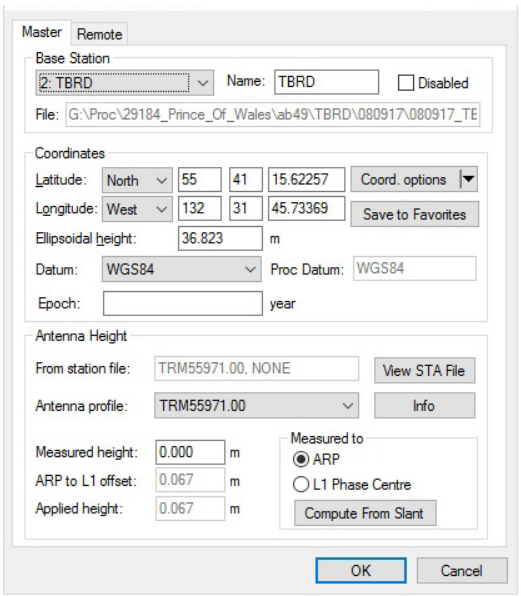

Separation (m)
0.05
0.04
0.03
0.02
0.01
0.00
-0.01
-0.02
-0.03
-0.04
-0.05
-0.06
-0.07
-0.08
330000
Week 1961
331000
332000
333000
334000
335000
336000
337000
338000
339000
340000
341000
GPS Time (TOW, GMT zone)
East
North
Up


Estimated StdDev (m)
0.0100
0.0095
0.0090
0.0085
0.0080
0.0075
0.0070
0.0065
0.0060
0.0055
0.0050
0.0045
0.0040
0.0035
0.0030
0.0025
330000
Week 1961
331000
332000
333000
334000
335000
336000
337000
338000
339000
340000
341000
GPS Time (TOW, GMT zone)
East
North
Height

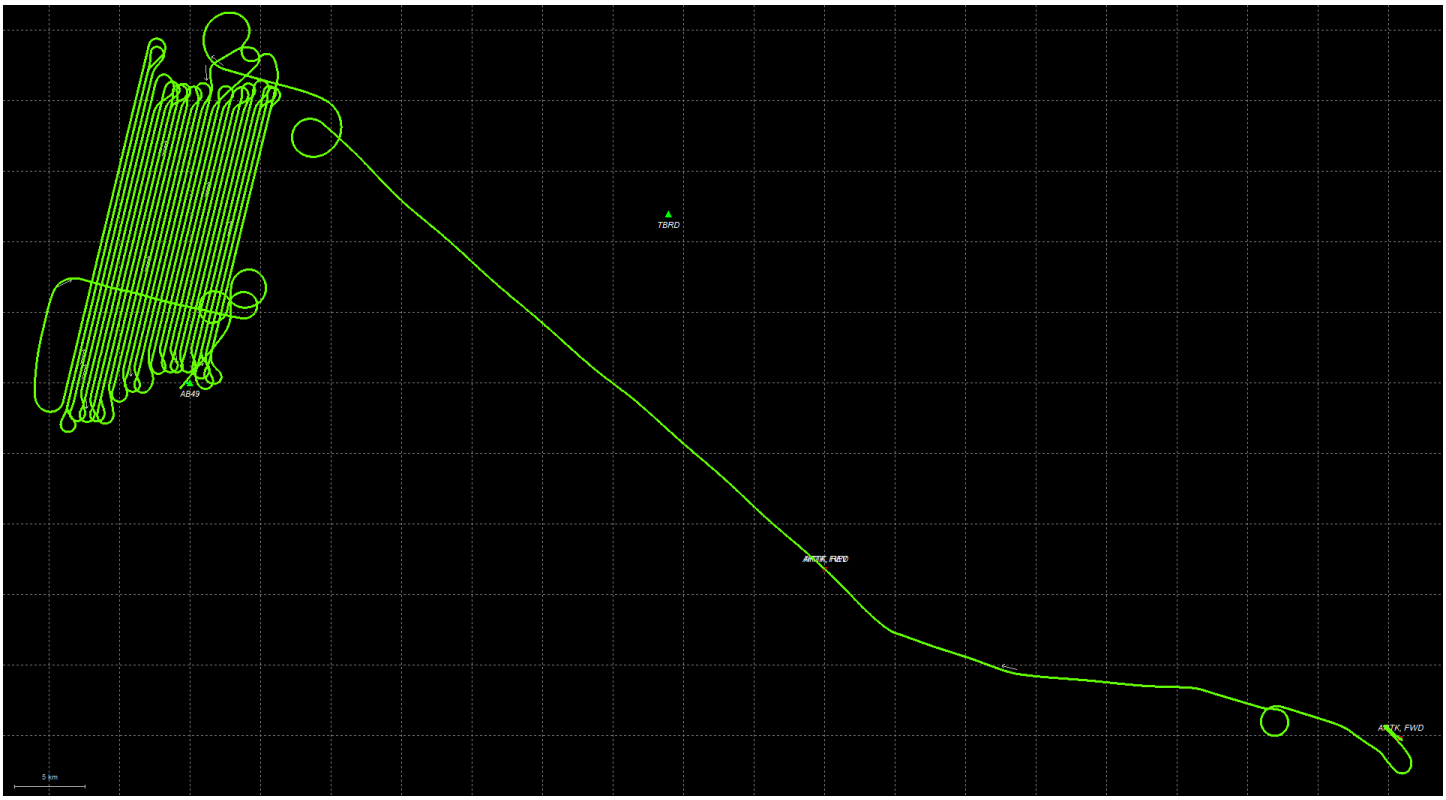

Separation (deg)
0.0016
0.0014
0.0012
0.0010
0.0008
0.0006
0.0004
0.0002
-0.0000
-0.0002
-0.0004
-0.0006
-0.0008
330000
Week 1961
331000
332000
333000
334000
335000
336000
337000
338000
339000
340000
341000
GPS Time (TOW, GMT zone)
Roll
Pitch
Heading/Az

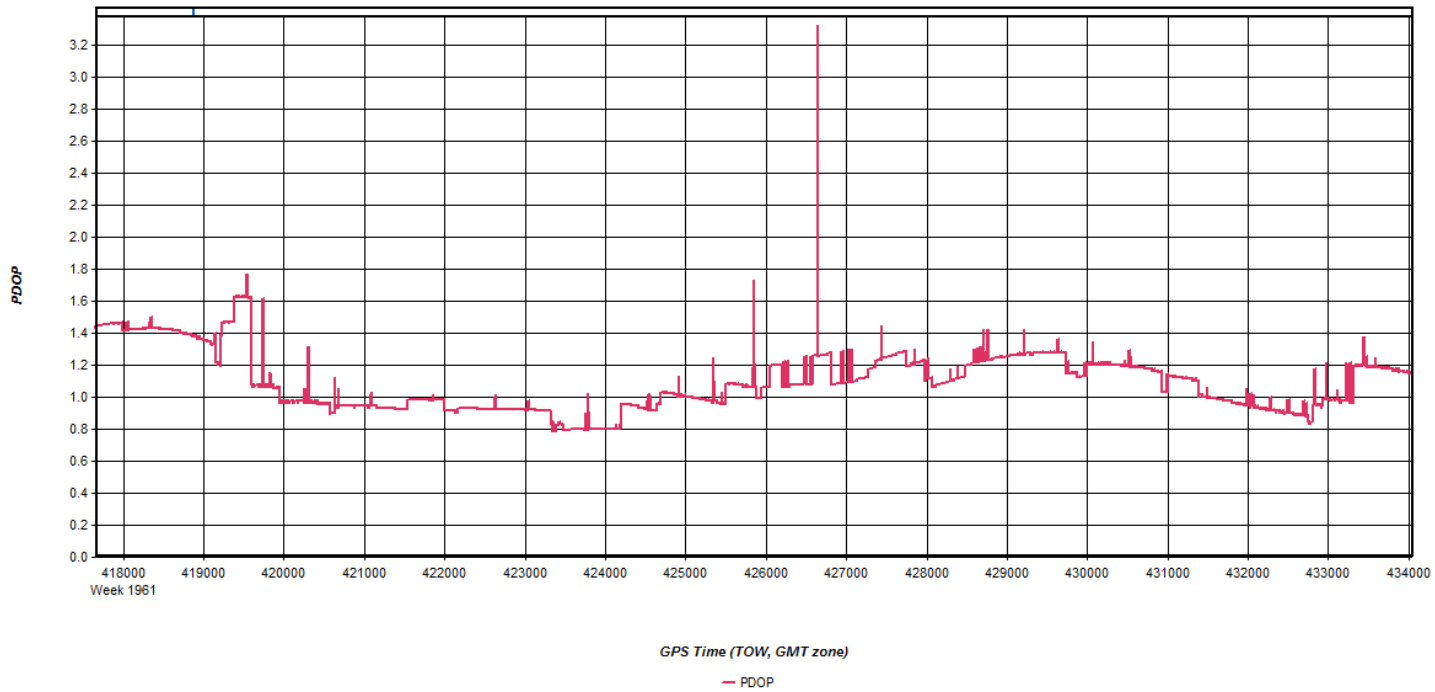

Azimuth/Heading (deg)
360
340
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
330000
Week 1961
331000
332000
333000
334000
335000
336000
337000
338000
339000
340000
341000
GPS Time (TOW, GMT zone)
Heading/Azimuth
GPS-COG

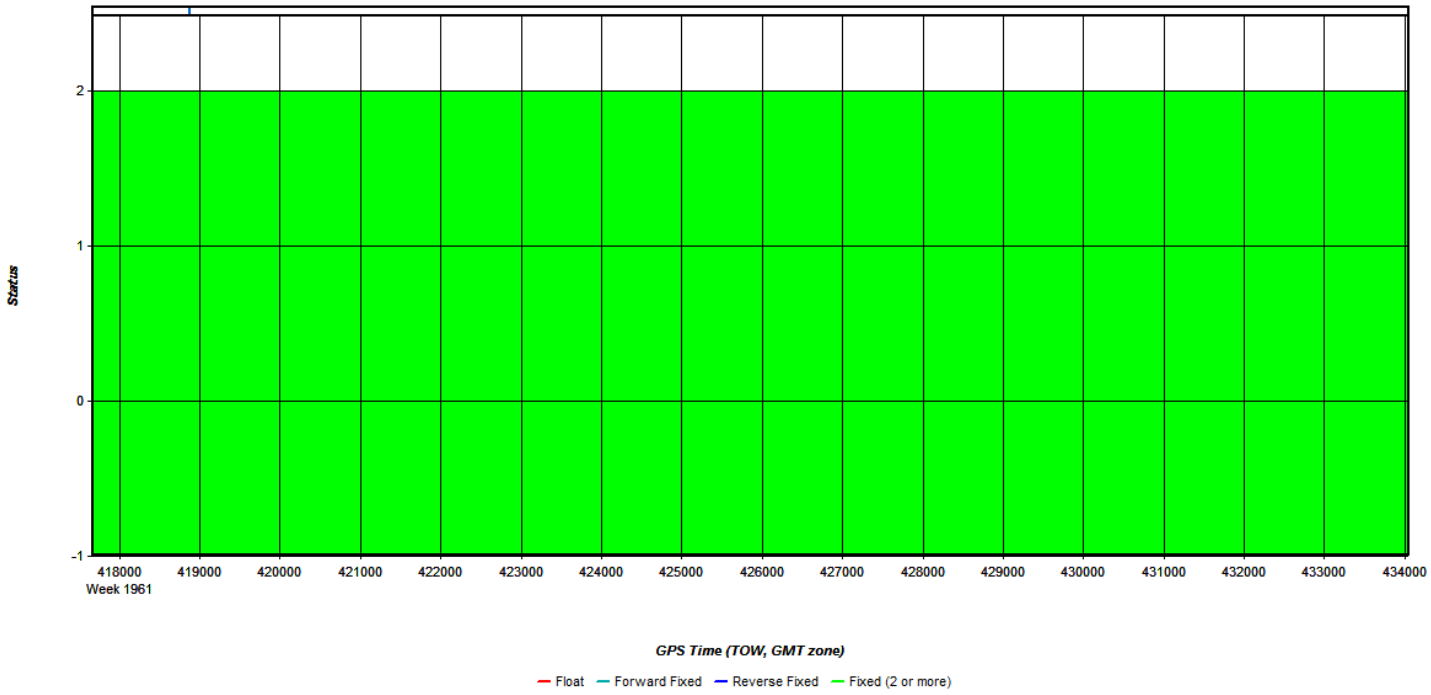

Master
Remote
Base Station
1: AB49
Name:
AB49
Disabled
File:
G:\Proc\29184_Prince_Of_Wales\Received_8-14-17\20170809_F2
Coordinates
Latitude:
North
55
34
48.35591
Coord. options
Longitude:
West
133
04
06.47087
Save to Favorites
Ellipsoidal height:
17.485
m
Datum:
WGS84
Proc Datum:
WGS84
Epoch:
year
Antenna Height
From station file:
TRM59800.80, SCIT
View STA File
Antenna profile:
TRM59800.80, SCIT
Info
Measured height:
0.008
m
Measured to
ARP
ARP to L1 offset:
0.085
m
L1 Phase Centre
Applied height:
0.093
m
Compute From Slant
OK
Cancel

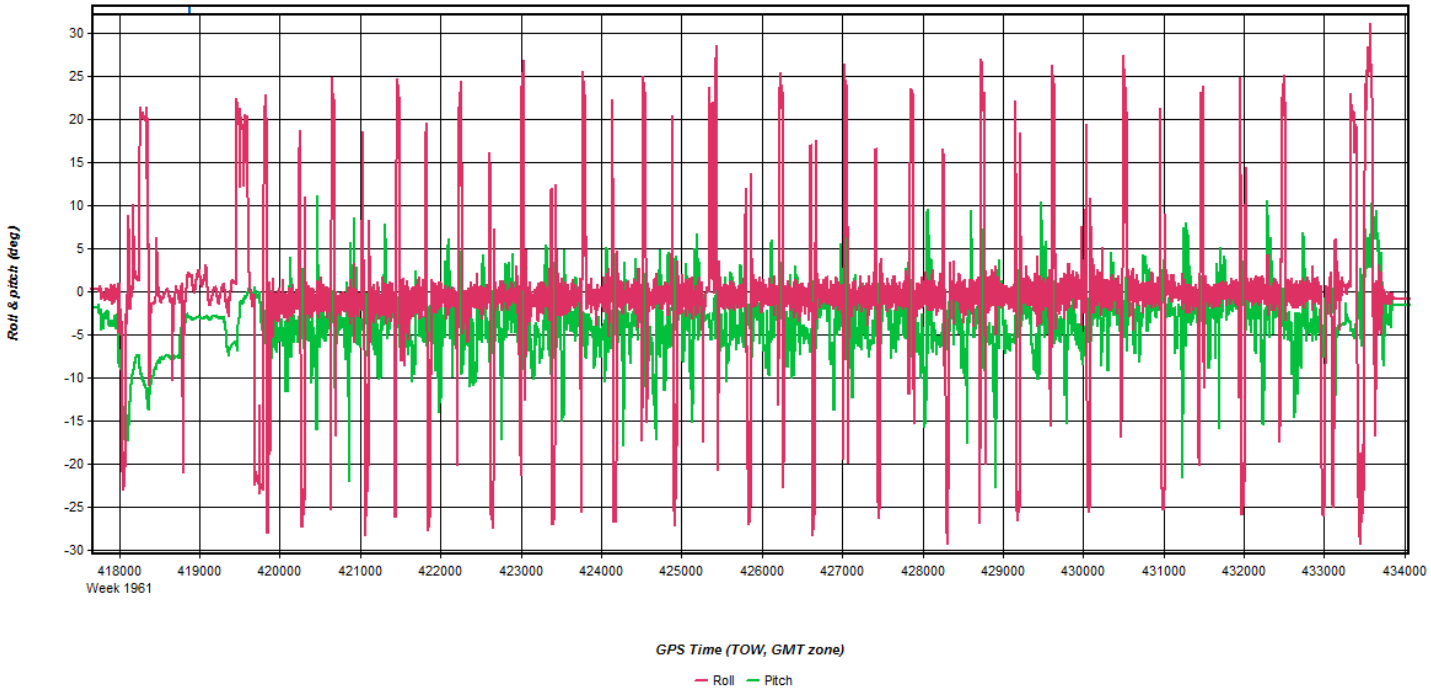

Master
Remote
Base Station
2: TBRD
Name:
TBRD
Disabled
File:
G:\Proc\29184_Prince_Of_Wales\ab49\TBRD\080917\080917_TE
Coordinates
Latitude:
North
55
41
15.62257
Coord. options
Longitude:
West
132
31
45.73369
Save to Favorites
Ellipsoidal height:
36.823
m
Datum:
WGS84
Proc Datum:
WGS84
Epoch:
year
Antenna Height
From station file:
TRM55971.00, NONE
View STA File
Antenna profile:
TRM55971.00
Info
Measured height:
0.000
m
Measured to
ARP
ARP to L1 offset:
0.067
m
L1 Phase Centre
Applied height:
0.067
m
Compute From Slant
OK
Cancel

August 10, 2017-A (N604MD, SN8146)

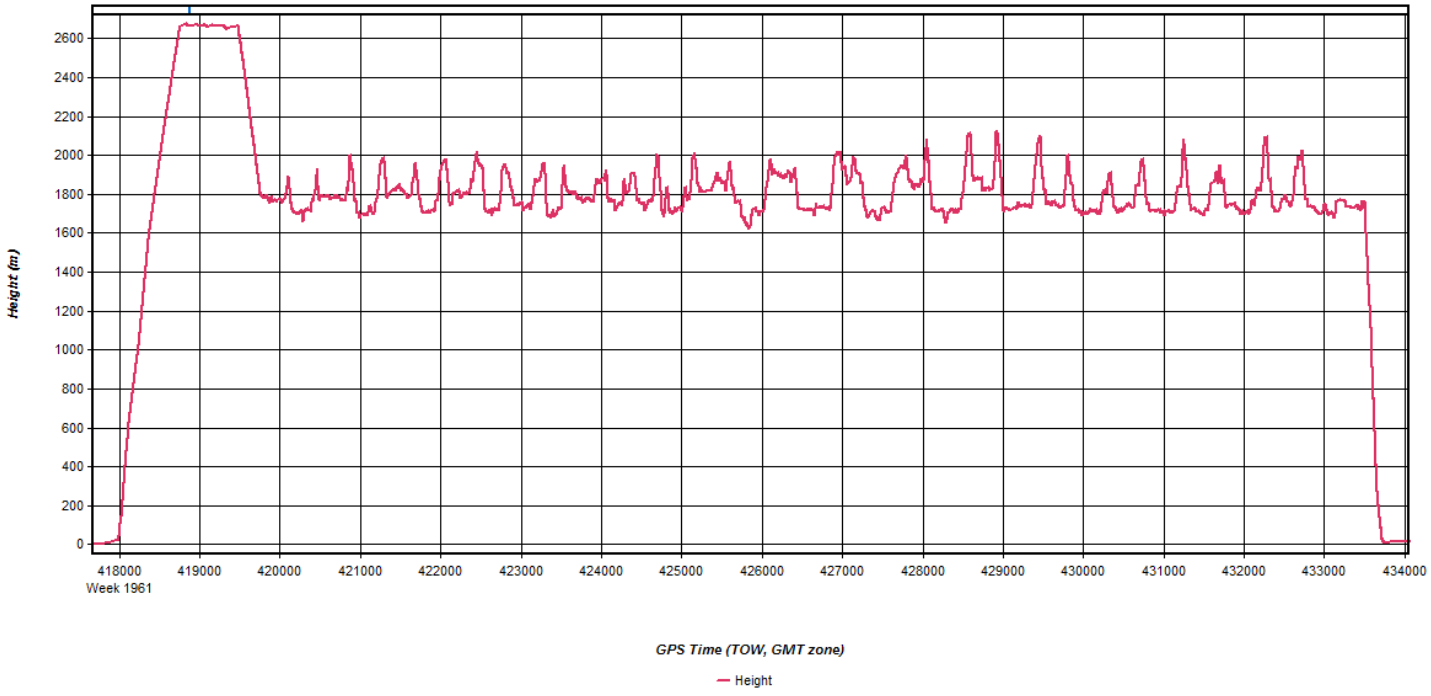

TBRD
AB49
ARCTIC_FWD
ARCTIC_FWD
5 km

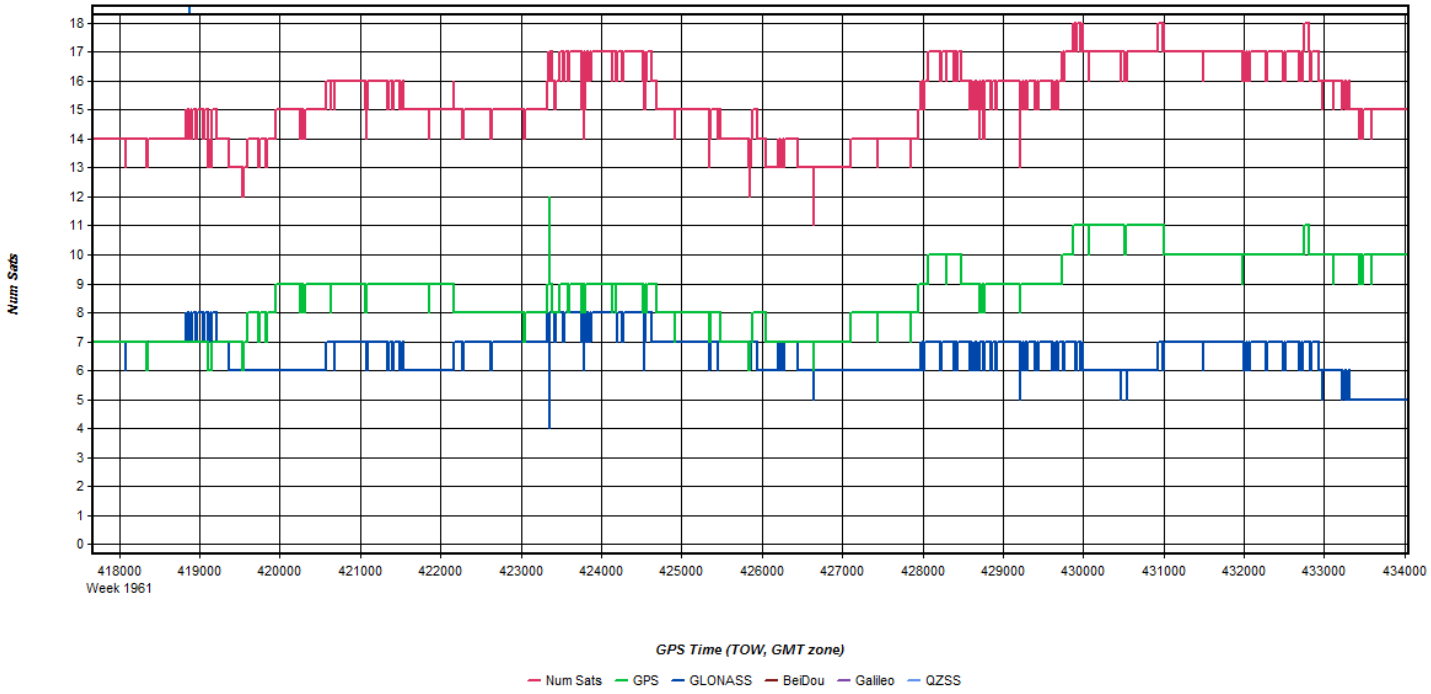

PDOP
3.2
3.0
2.8
2.6
2.4
2.2
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
418000
Week 1961
419000
420000
421000
422000
423000
424000
425000
426000
427000
428000
429000
430000
431000
432000
433000
434000
GPS Time (TOW, GMT zone)
PDOP

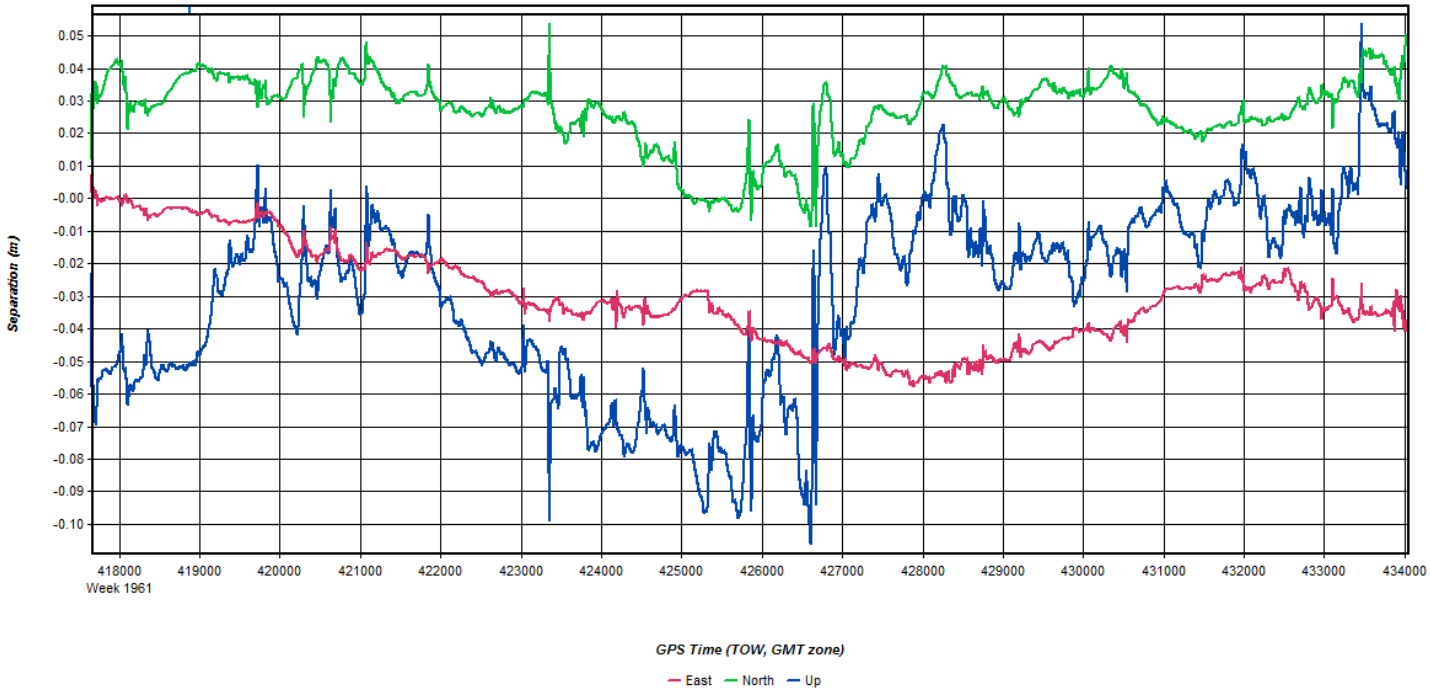

Status
2
1
0
-1
418000
Week 1961
419000
420000
421000
422000
423000
424000
425000
426000
427000
428000
429000
430000
431000
432000
433000
434000
GPS Time (TOW, GMT zone)
Float
Forward Fixed
Reverse Fixed
Fixed (2 or more)

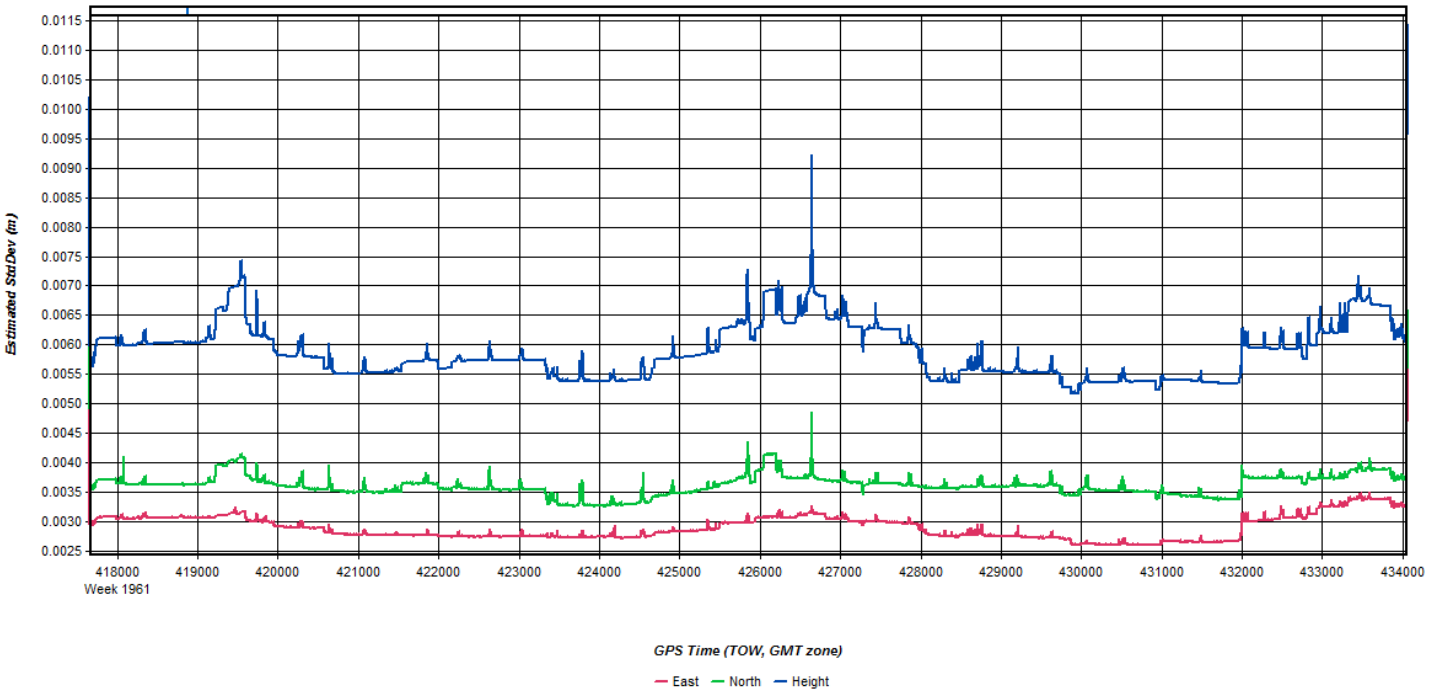

Roll & pitch (deg)
30
25
20
15
10
5
0
-5
-10
-15
-20
-25
-30
418000
Week 1961
419000
420000
421000
422000
423000
424000
425000
426000
427000
428000
429000
430000
431000
432000
433000
434000
GPS Time (TOW, GMT zone)
Roll
Pitch

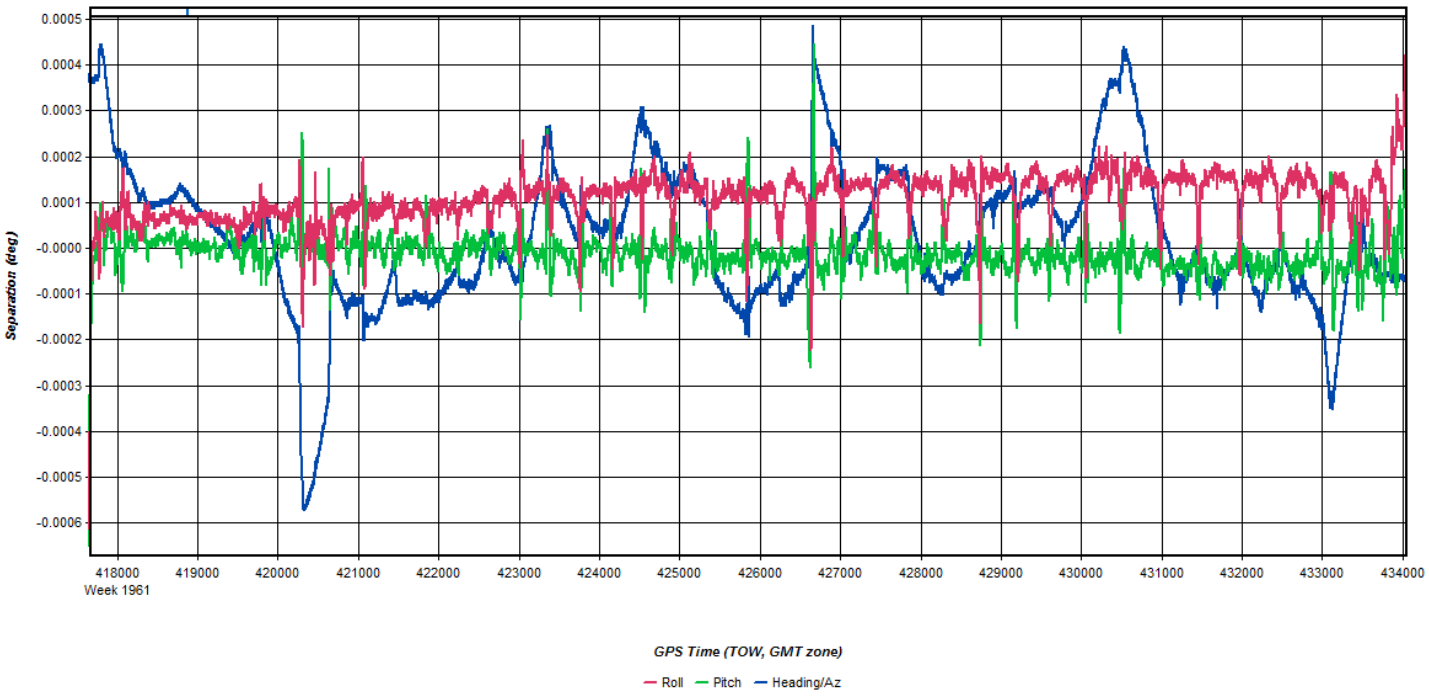

RMS (m)
0.060
0.055
0.050
0.045
0.040
0.035
0.030
0.025
0.020
0.015
0.010
0.005
0.000
418000
Week 1961
419000
420000
421000
422000
423000
424000
425000
426000
427000
428000
429000
430000
431000
432000
433000
434000
GPS Time (TOW, GMT zone)
RMS
SD

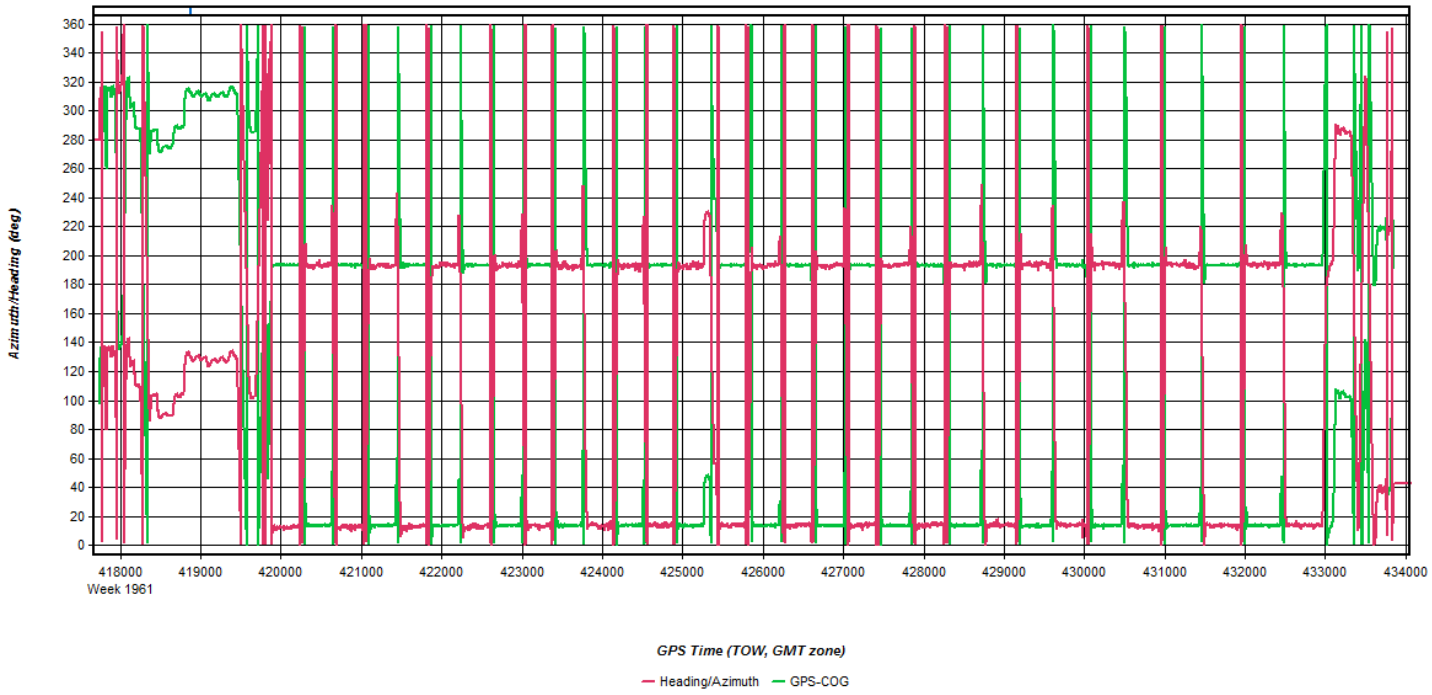

Height (m)
2600
2400
2200
2000
1800
1600
1400
1200
1000
800
600
400
200
0
418000
Week 1961
419000
420000
421000
422000
423000
424000
425000
426000
427000
428000
429000
430000
431000
432000
433000
434000
GPS Time (TOW, GMT zone)
Height

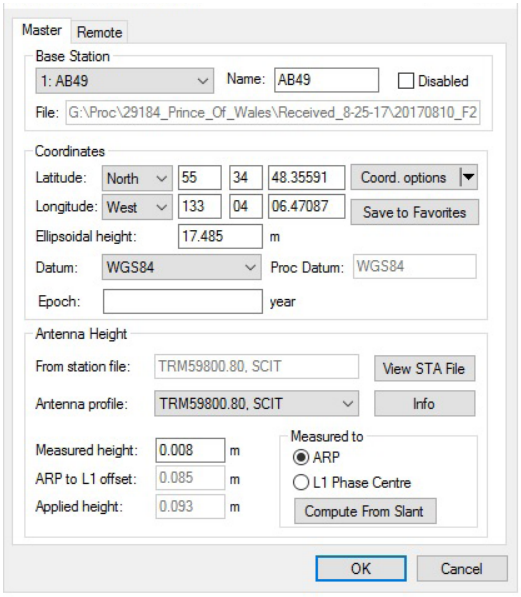

Num Sats
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
418000
Week 1961
419000
420000
421000
422000
423000
424000
425000
426000
427000
428000
429000
430000
431000
432000
433000
434000
GPS Time (TOW, GMT zone)
Num Sats
GPS
GLONASS
BeiDou
Galileo
QZSS

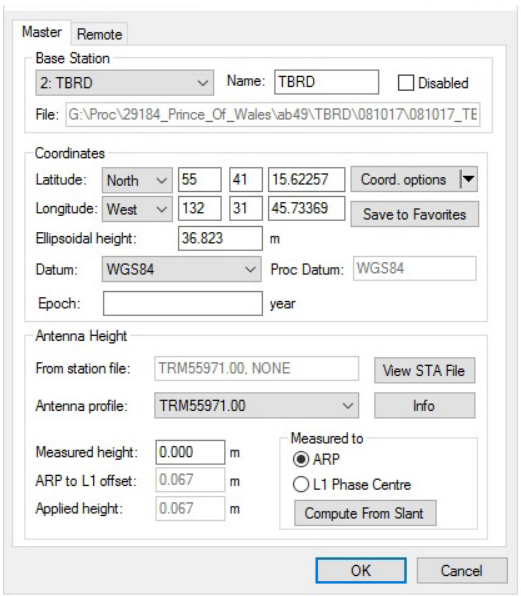

Separation (m)
0.05
0.04
0.03
0.02
0.01
-0.00
-0.01
-0.02
-0.03
-0.04
-0.05
-0.06
-0.07
-0.08
-0.09
-0.10
418000
Week 1961
419000
420000
421000
422000
423000
424000
425000
426000
427000
428000
429000
430000
431000
432000
433000
434000
GPS Time (TOW, GMT zone)
East
North
Up


Estimated StdDev (m)
0.0115
0.0110
0.0105
0.0100
0.0095
0.0090
0.0085
0.0080
0.0075
0.0070
0.0065
0.0060
0.0055
0.0050
0.0045
0.0040
0.0035
0.0030
0.0025
418000
Week 1961
419000
420000
421000
422000
423000
424000
425000
426000
427000
428000
429000
430000
431000
432000
433000
434000
GPS Time (TOW, GMT zone)
East
North
Height

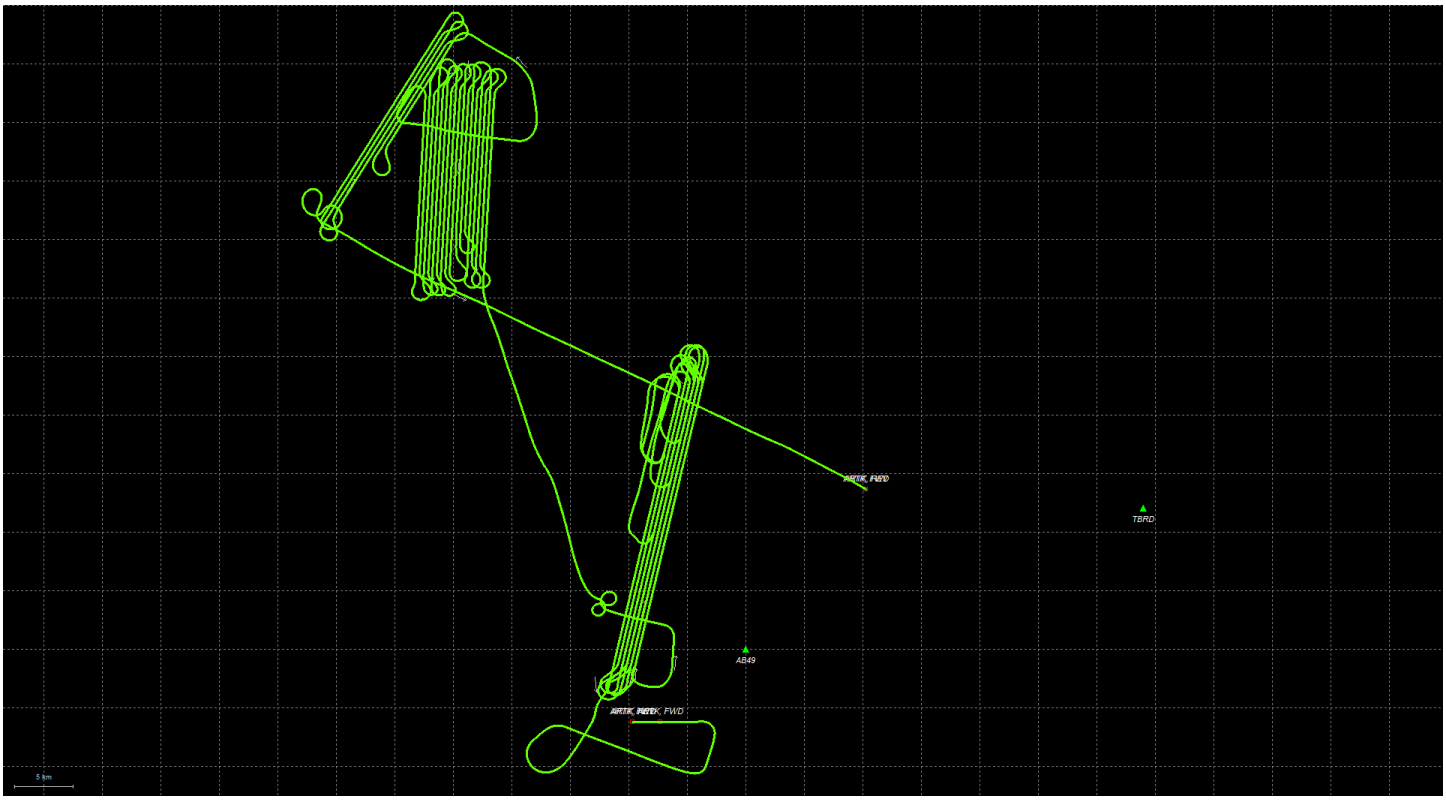

Separation (deg)
0.0005
0.0004
0.0003
0.0002
0.0001
-0.0000
-0.0001
-0.0002
-0.0003
-0.0004
-0.0005
-0.0006
418000
Week 1961
419000
420000
421000
422000
423000
424000
425000
426000
427000
428000
429000
430000
431000
432000
433000
434000
GPS Time (TOW, GMT zone)
Roll
Pitch
Heading/Az

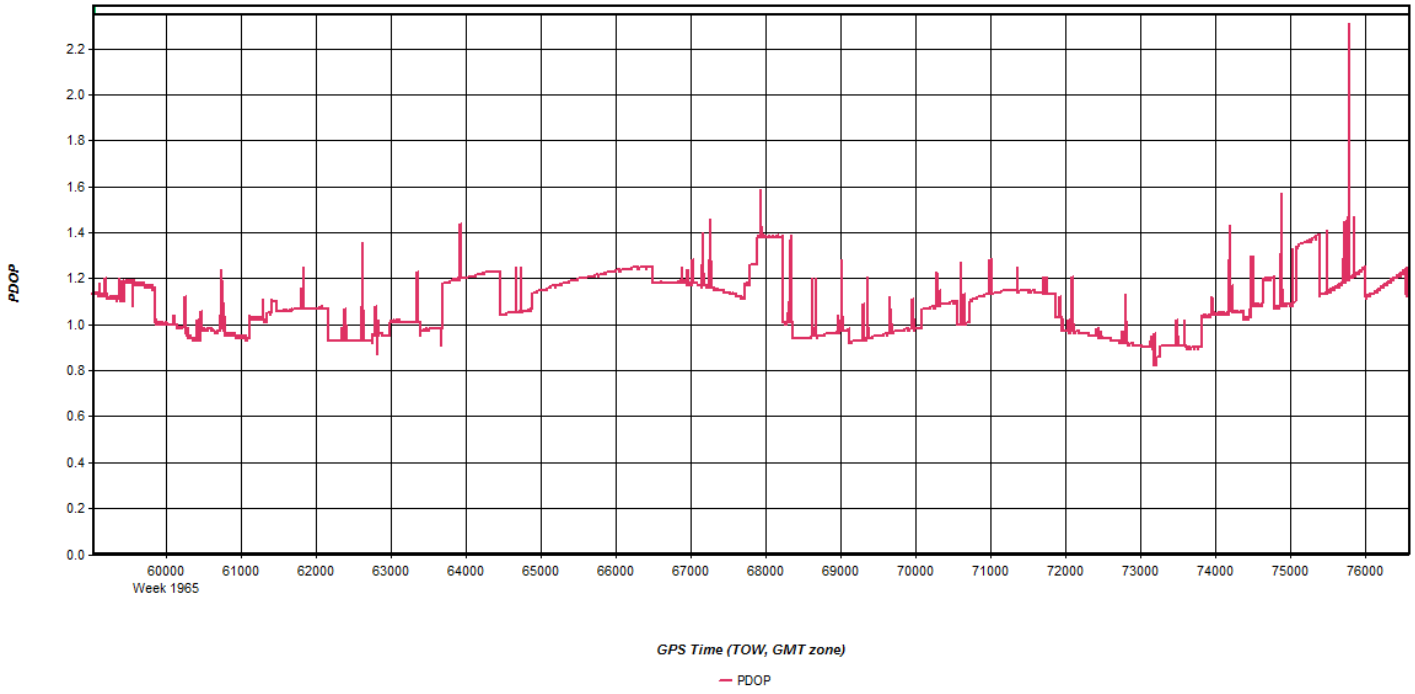

Azimuth/Heading (deg)
360
340
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
418000
Week 1961
419000
420000
421000
422000
423000
424000
425000
426000
427000
428000
429000
430000
431000
432000
433000
434000
GPS Time (TOW, GMT zone)
Heading/Azimuth
GPS-COG

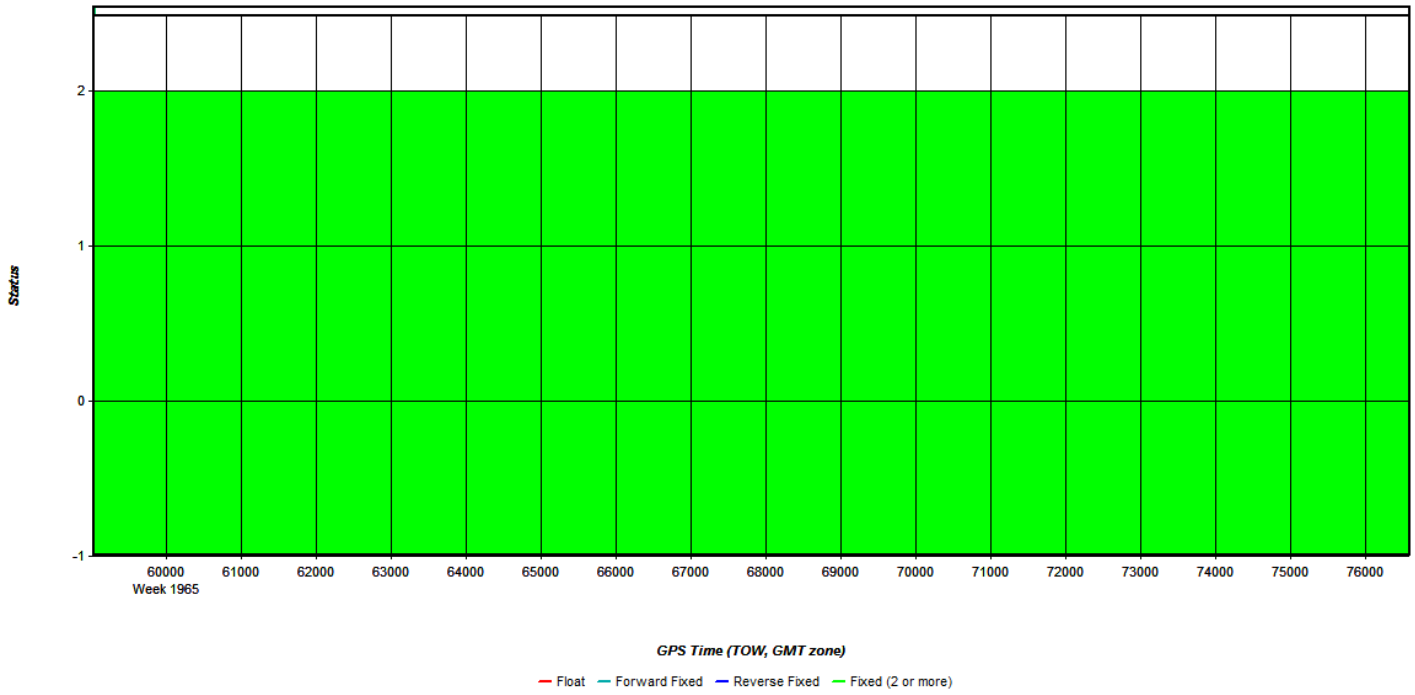

Master
Remote
Base Station
1: AB49
Name:
AB49
Disabled
File:
G:\Proc\29184_Prince_Of_Wales\Received_8-25-17\20170810_F2
Coordinates
Latitude:
North
55
34
48.35591
Coord. options
Longitude:
West
133
04
06.47087
Save to Favorites
Ellipsoidal height:
17.485
m
Datum:
WGS84
Proc Datum:
WGS84
Epoch:
year
Antenna Height
From station file:
TRM59800.80, SCIT
View STA File
Antenna profile:
TRM59800.80, SCIT
Info
Measured height:
0.008
m
Measured to
ARP
ARP to L1 offset:
0.085
m
L1 Phase Centre
Applied height:
0.093
m
Compute From Slant
OK
Cancel

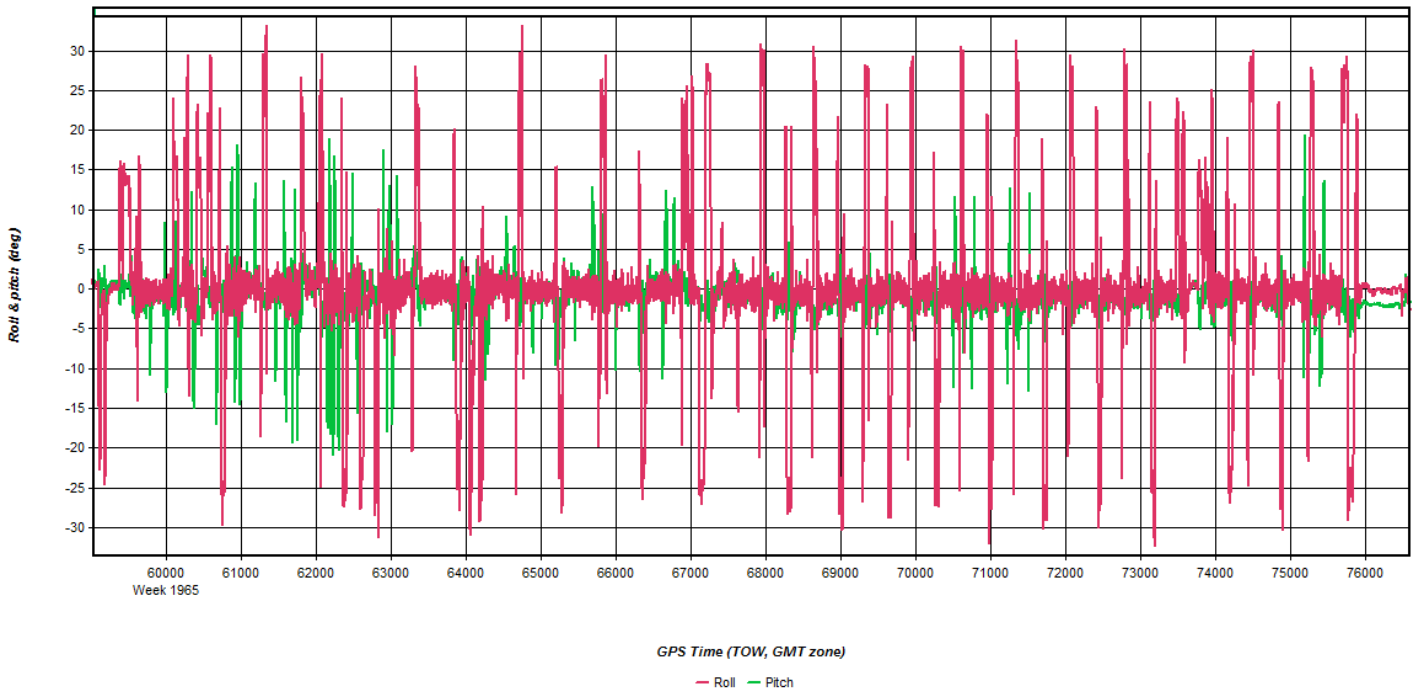

Master
Remote
Base Station
2: TBRD
Name:
TBRD
Disabled
File:
G:\Proc\29184_Prince_Of_Wales\ab49\TBRD\081017\081017_TE
Coordinates
Latitude:
North
55
41
15.62257
Coord. options
Longitude:
West
132
31
45.73369
Save to Favorites
Ellipsoidal height:
36.823
m
Datum:
WGS84
Proc Datum:
WGS84
Epoch:
year
Antenna Height
From station file:
TRM55971.00, NONE
View STA File
Antenna profile:
TRM55971.00
Info
Measured height:
0.000
m
Measured to
ARP
ARP to L1 offset:
0.067
m
L1 Phase Centre
Applied height:
0.067
m
Compute From Slant
OK
Cancel

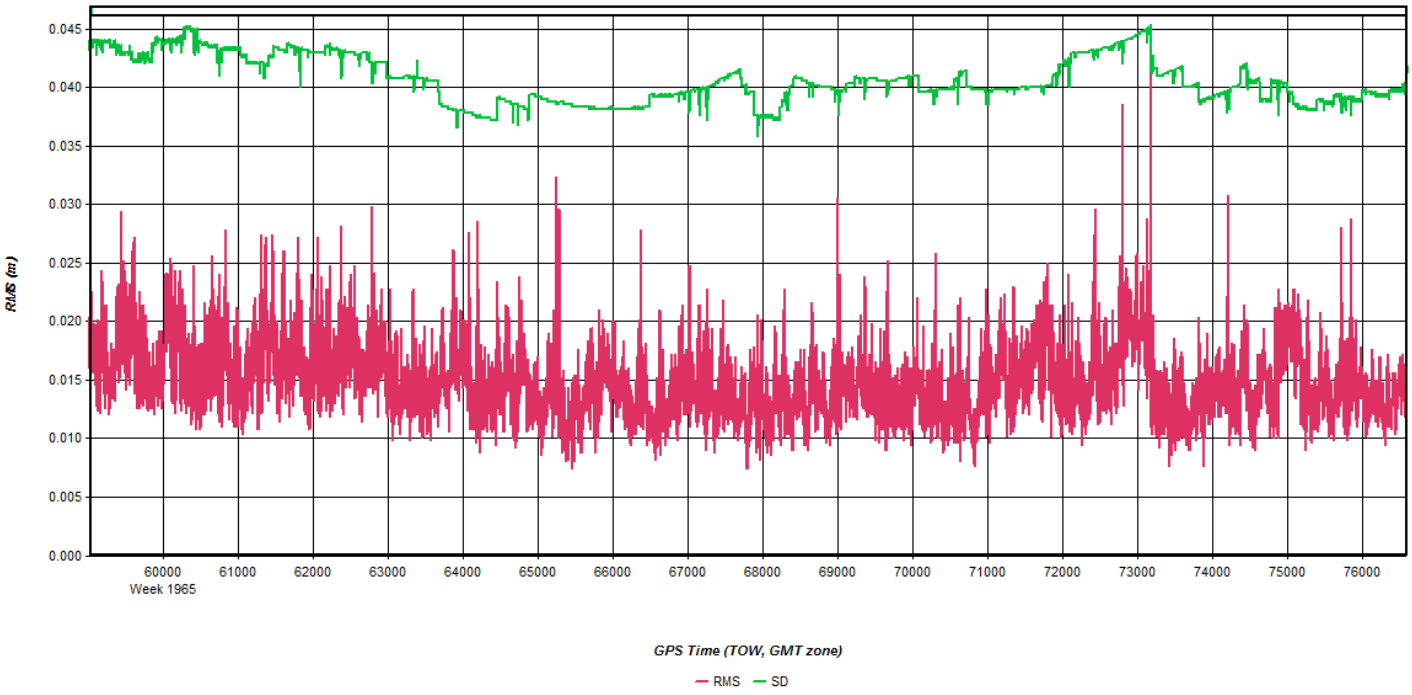
September 3, 2017-A (N604MD, SN8146)

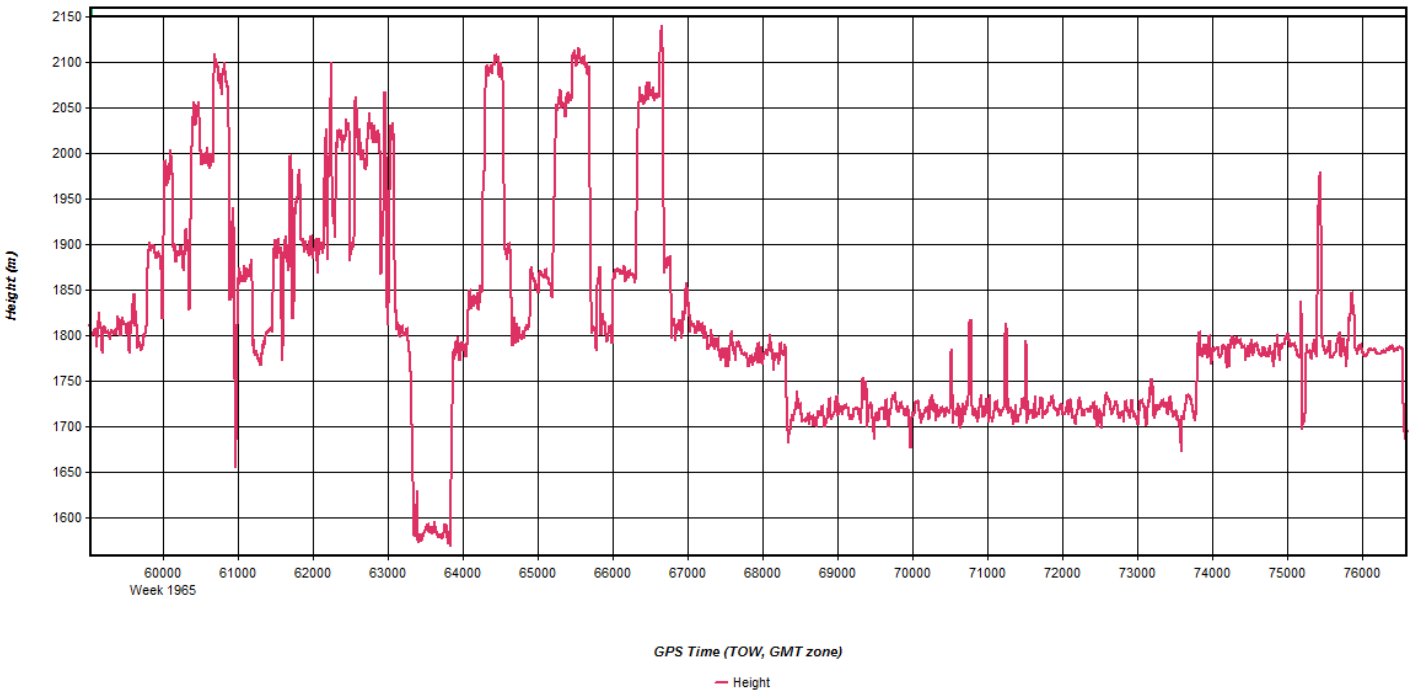

TBRD
AB49

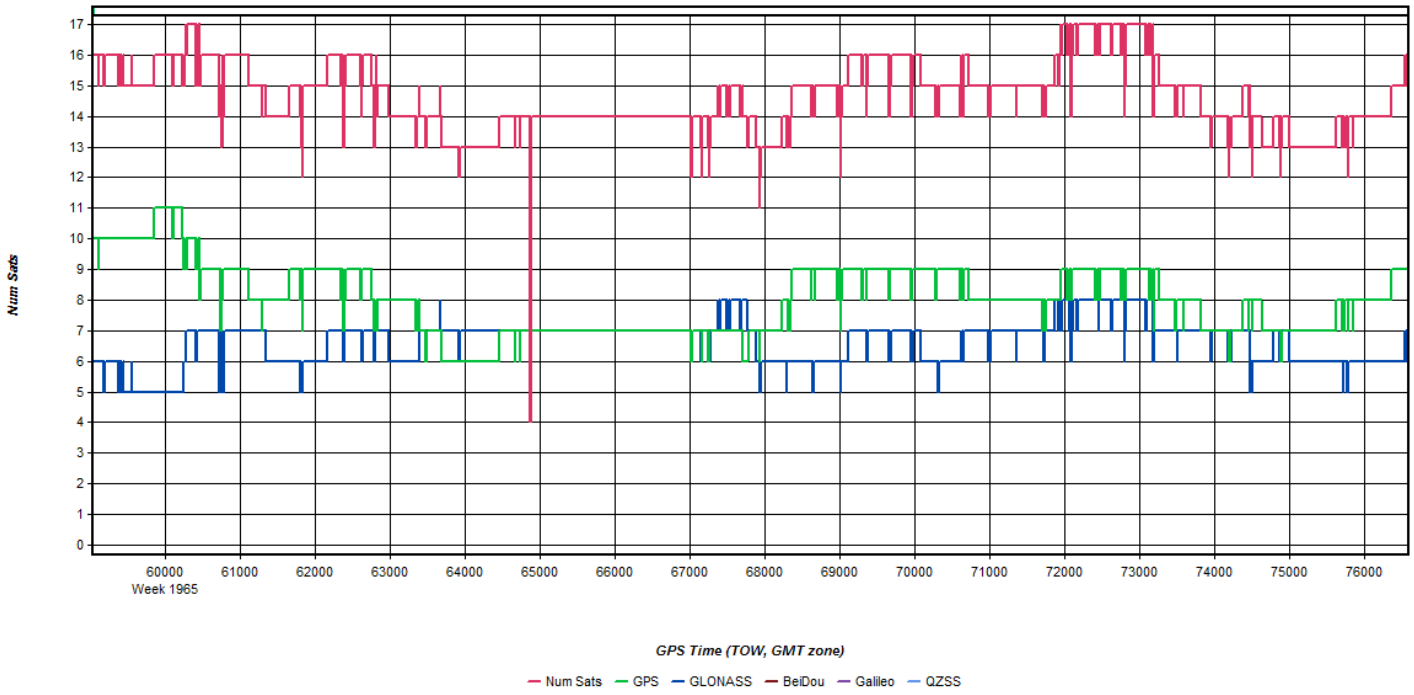

PDOP
2.2
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
60000
Week 1965
61000
62000
63000
64000
65000
66000
67000
68000
69000
70000
71000
72000
73000
74000
75000
76000
GPS Time (TOW, GMT zone)
PDOP


Status
2
1
0
-1
60000
Week 1965
61000
62000
63000
64000
65000
66000
67000
68000
69000
70000
71000
72000
73000
74000
75000
76000
GPS Time (TOW, GMT zone)
Float
Forward Fixed
Reverse Fixed
Fixed (2 or more)

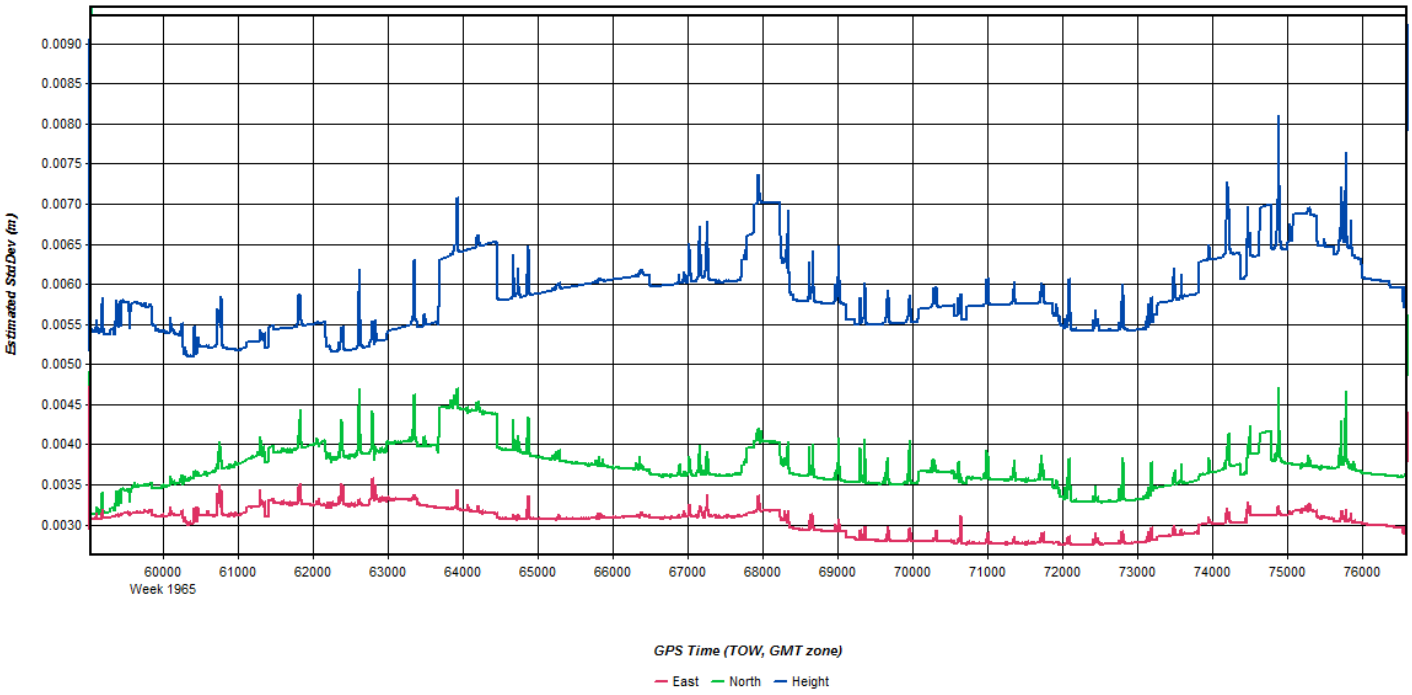

Roll & pitch (deg)
30
25
20
15
10
5
0
-5
-10
-15
-20
-25
-30
60000
Week 1965
61000
62000
63000
64000
65000
66000
67000
68000
69000
70000
71000
72000
73000
74000
75000
76000
GPS Time (TOW, GMT zone)
Roll
Pitch

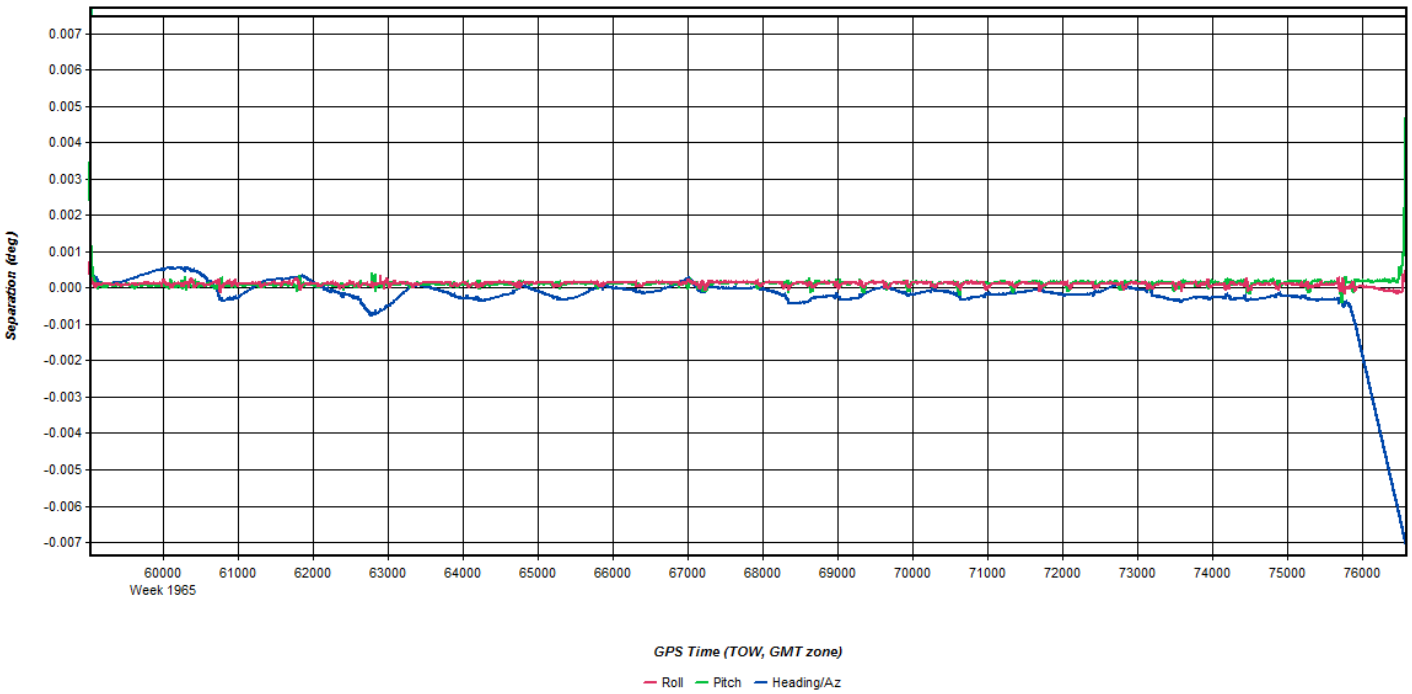

RMS (m)
0.045
0.040
0.035
0.030
0.025
0.020
0.015
0.010
0.005
0.000
60000
Week 1965
61000
62000
63000
64000
65000
66000
67000
68000
69000
70000
71000
72000
73000
74000
75000
76000
GPS Time (TOW, GMT zone)
RMS
SD

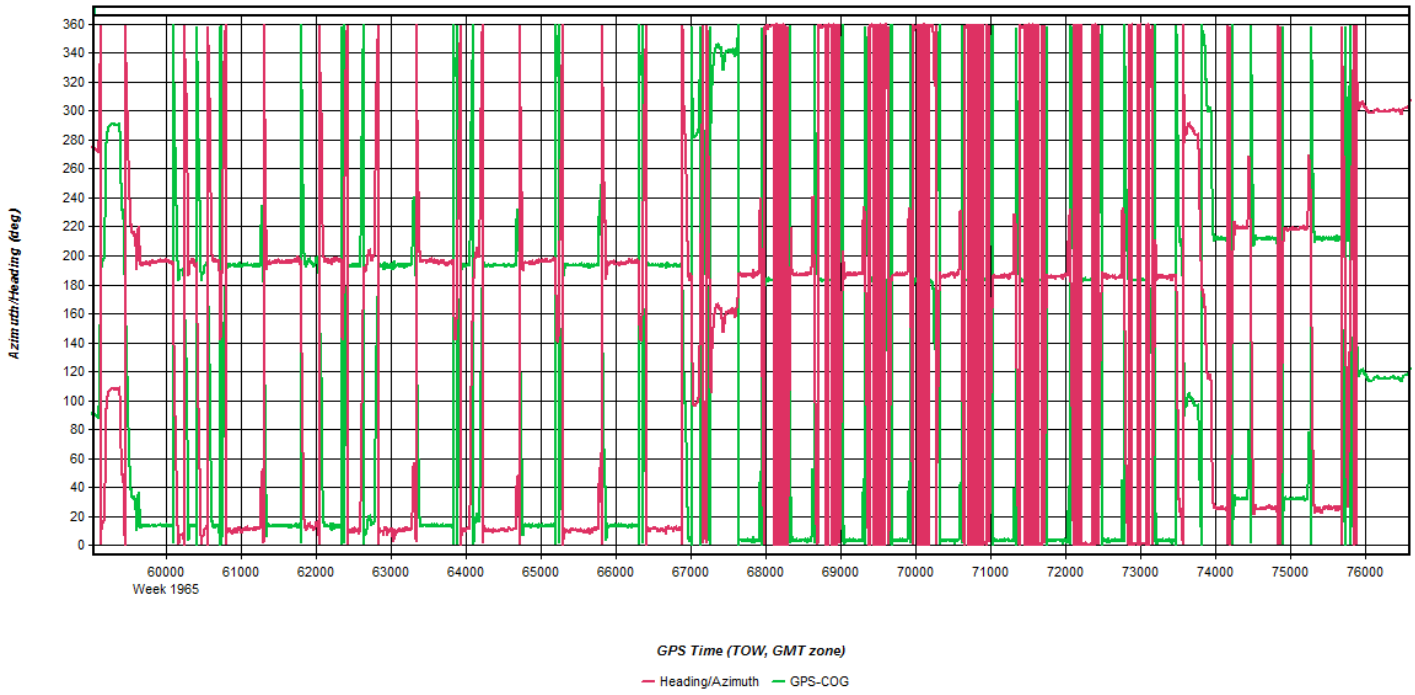

Height (m)
2150
2100
2050
2000
1950
1900
1850
1800
1750
1700
1650
1600
60000
Week 1965
61000
62000
63000
64000
65000
66000
67000
68000
69000
70000
71000
72000
73000
74000
75000
76000
GPS Time (TOW, GMT zone)
Height

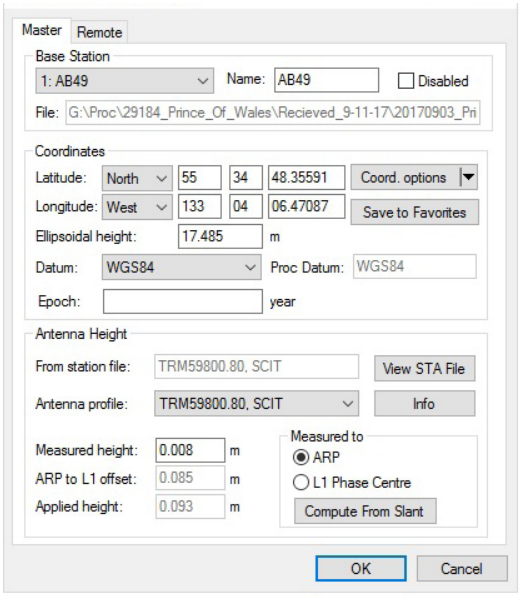

Num Sats
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
60000
Week 1965
61000
62000
63000
64000
65000
66000
67000
68000
69000
70000
71000
72000
73000
74000
75000
76000
GPS Time (TOW, GMT zone)
Num Sats
GPS
GLONASS
BeiDou
Galileo
QZSS

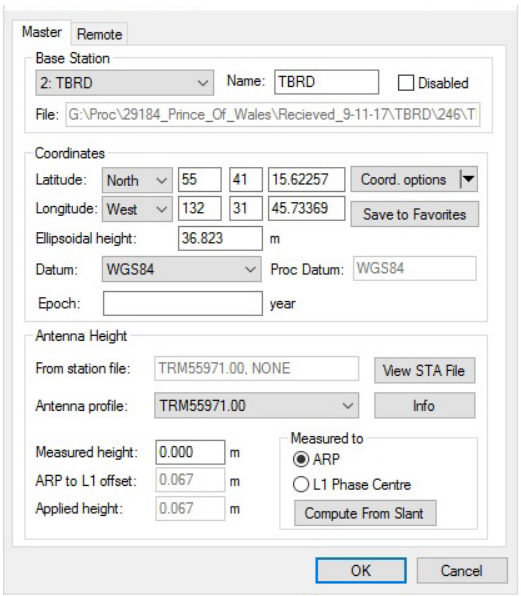

Separation (m)
0.18
0.16
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
-0.02
-0.04
-0.06
-0.08
-0.10
-0.12
60000
Week 1965
61000
62000
63000
64000
65000
66000
67000
68000
69000
70000
71000
72000
73000
74000
75000
76000
GPS Time (TOW, GMT zone)
East
North
Up


Estimated StdDev (m)
0.0090
0.0085
0.0080
0.0075
0.0070
0.0065
0.0060
0.0055
0.0050
0.0045
0.0040
0.0035
0.0030
60000
Week 1965
61000
62000
63000
64000
65000
66000
67000
68000
69000
70000
71000
72000
73000
74000
75000
76000
GPS Time (TOW, GMT zone)
East
North
Height

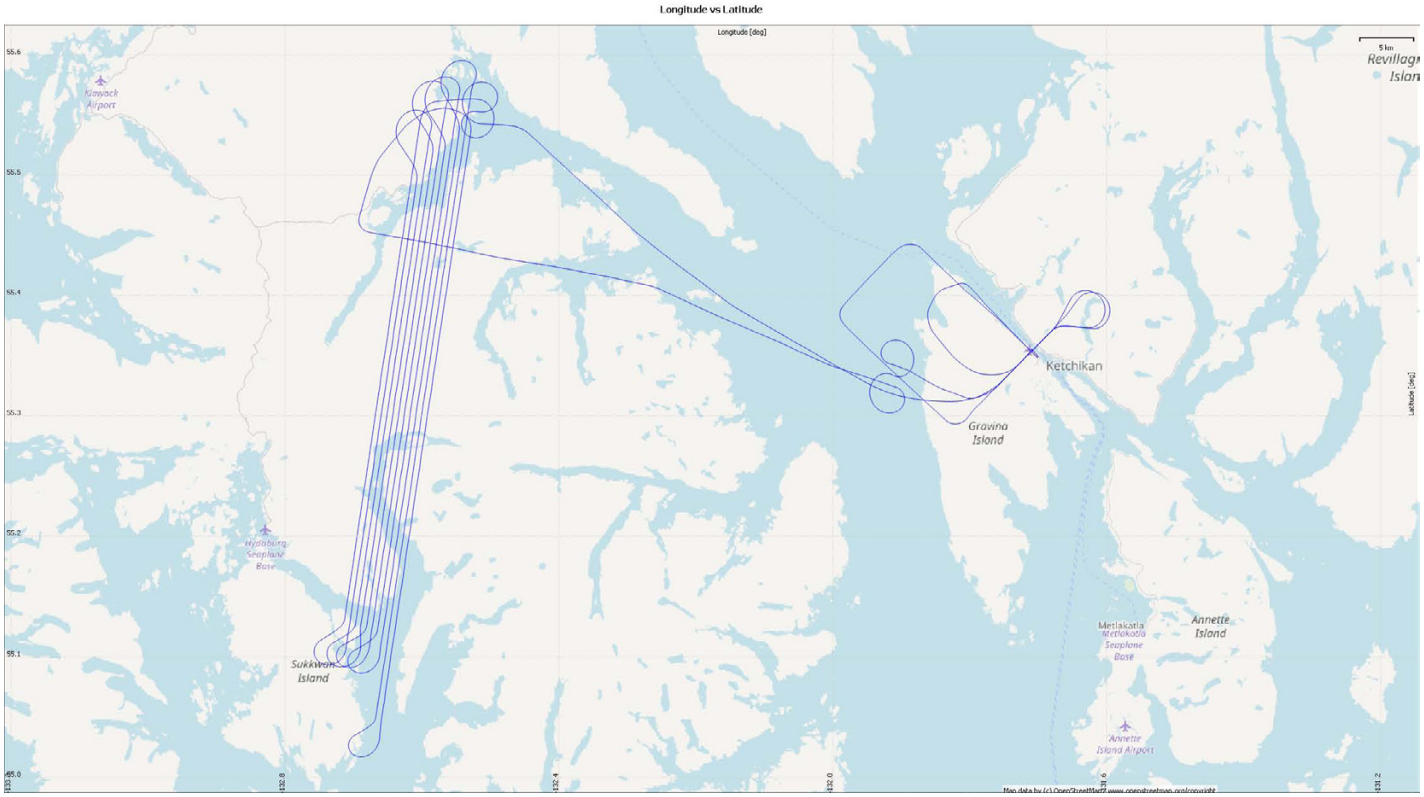

Separation (deg)
0.007
0.006
0.005
0.004
0.003
0.002
0.001
0.000
-0.001
-0.002
-0.003
-0.004
-0.005
-0.006
-0.007
60000
Week 1965
61000
62000
63000
64000
65000
66000
67000
68000
69000
70000
71000
72000
73000
74000
75000
76000
GPS Time (TOW, GMT zone)
Roll
Pitch
Heading/Az

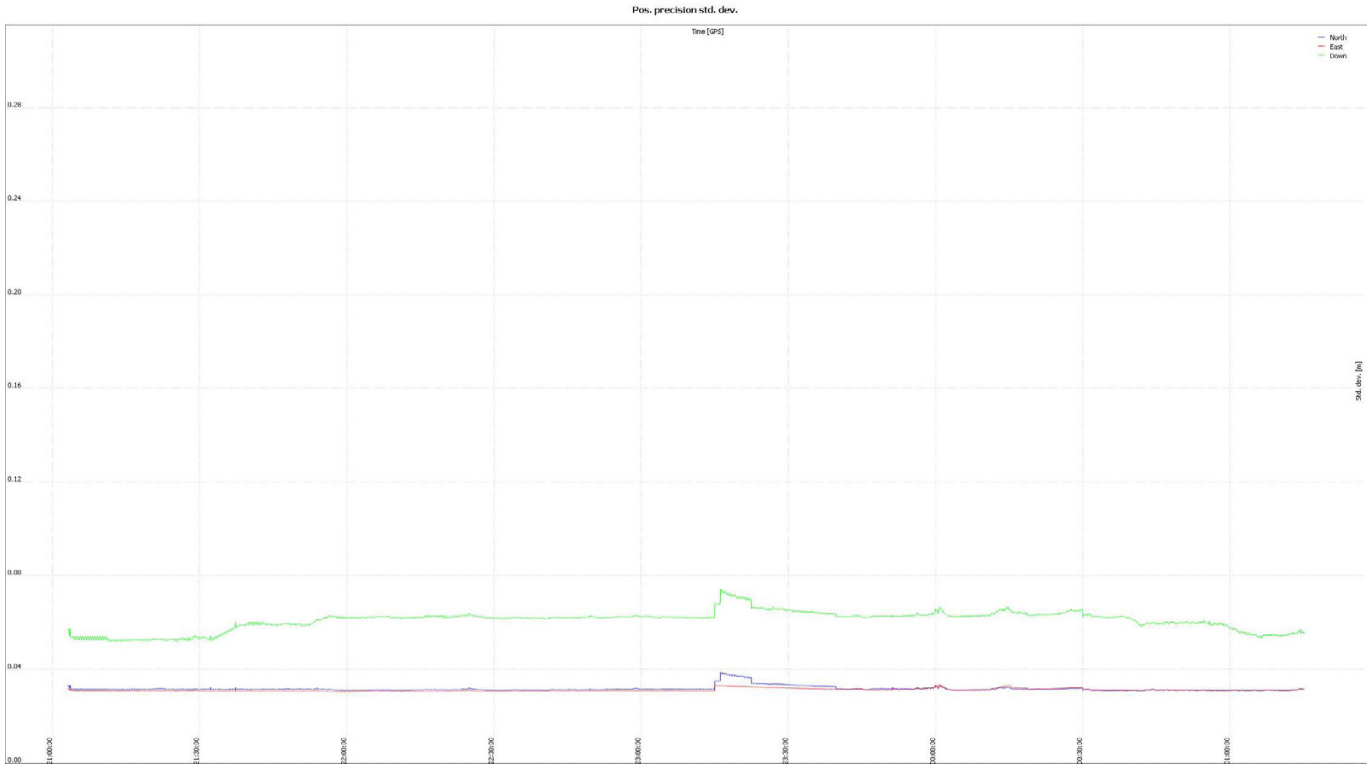

Azimuth/Heading (deg)
360
340
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
60000
Week 1965
61000
62000
63000
64000
65000
66000
67000
68000
69000
70000
71000
72000
73000
74000
75000
76000
GPS Time (TOW, GMT zone)
Heading/Azimuth
GPS-COG

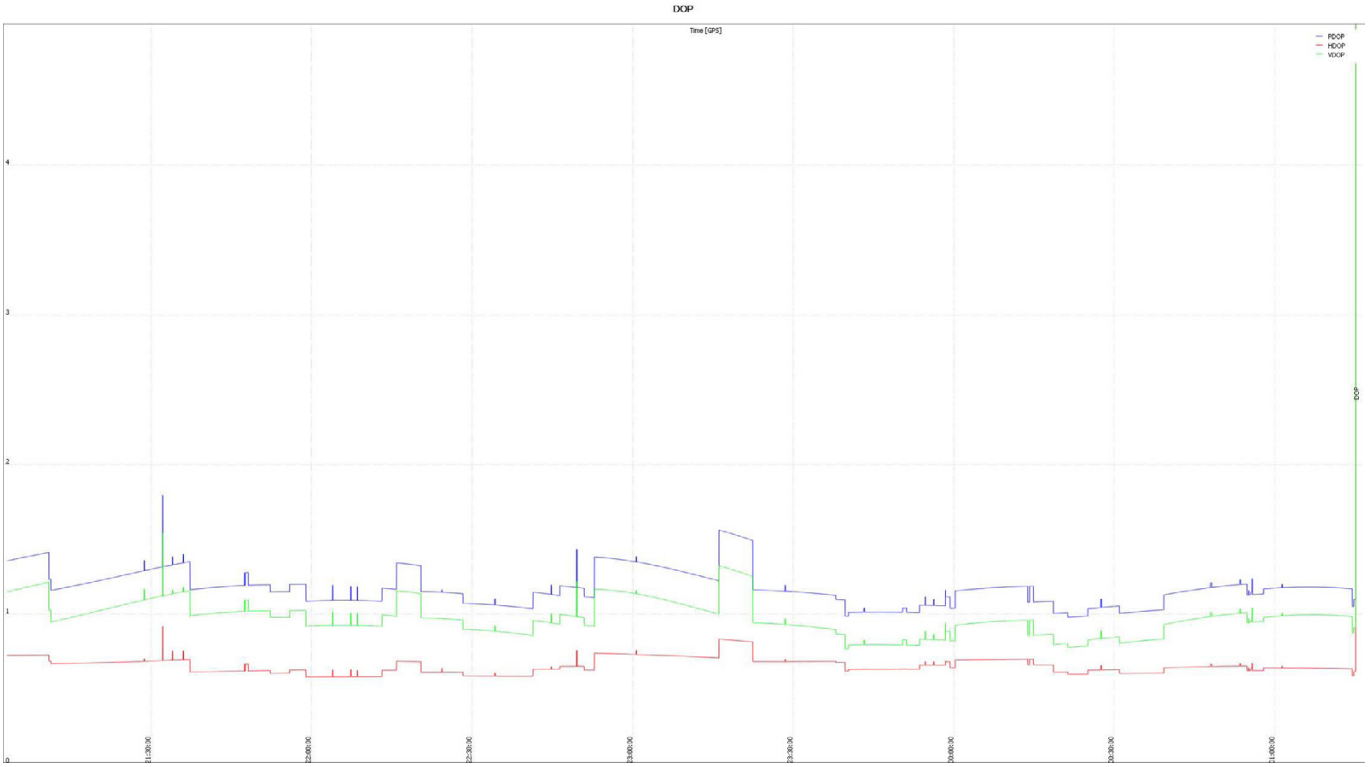

Master
Remote
Base Station
1: AB49
Name:
AB49
Disabled
File:
G:\Proc\29184_Prince_Of_Wales\Recieved_9-11-17\20170903_Pri
Coordinates
Latitude:
North
55
34
48.35591
Coord. options
Longitude:
West
133
04
06.47087
Save to Favorites
Ellipsoidal height:
17.485
m
Datum:
WGS84
Proc Datum:
WGS84
Epoch:
year
Antenna Height
From station file:
TRM59800.80, SCIT
View STA File
Antenna profile:
TRM59800.80, SCIT
Info
Measured height:
0.008
m
ARP to L1 offset:
0.085
m
Applied height:
0.093
m
Measured to
ARP
L1 Phase Centre
Compute From Slant
OK
Cancel

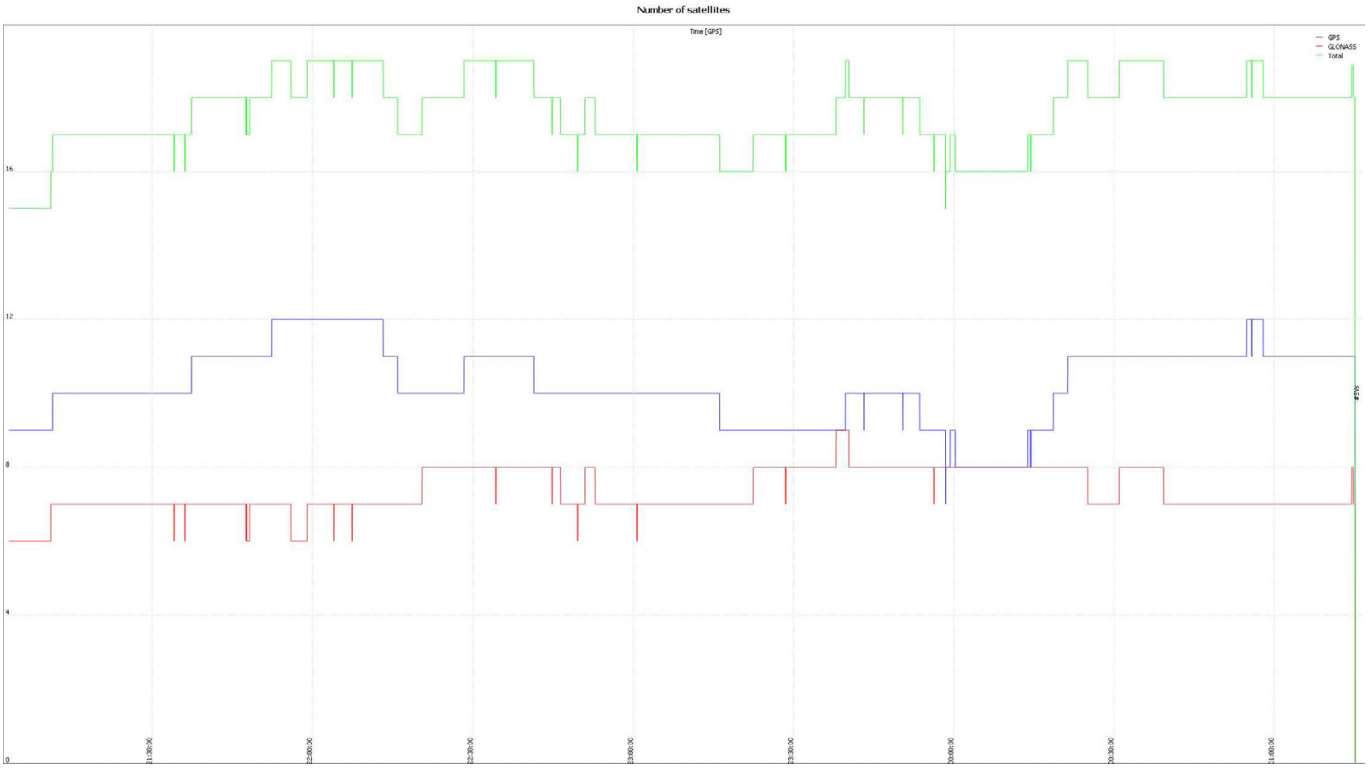

Master
Remote
Base Station
2: TBRD
Name:
TBRD
Disabled
File:
G:\Proc\29184_Prince_Of_Wales\Recieved_9-11-17\TBRD\246\T
Coordinates
Latitude:
North
55
41
15.62257
Coord. options
Longitude:
West
132
31
45.73369
Save to Favorites
Ellipsoidal height:
36.823
m
Datum:
WGS84
Proc Datum:
WGS84
Epoch:
year
Antenna 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

September 3, 2017-A (N44RL, SN2222738)

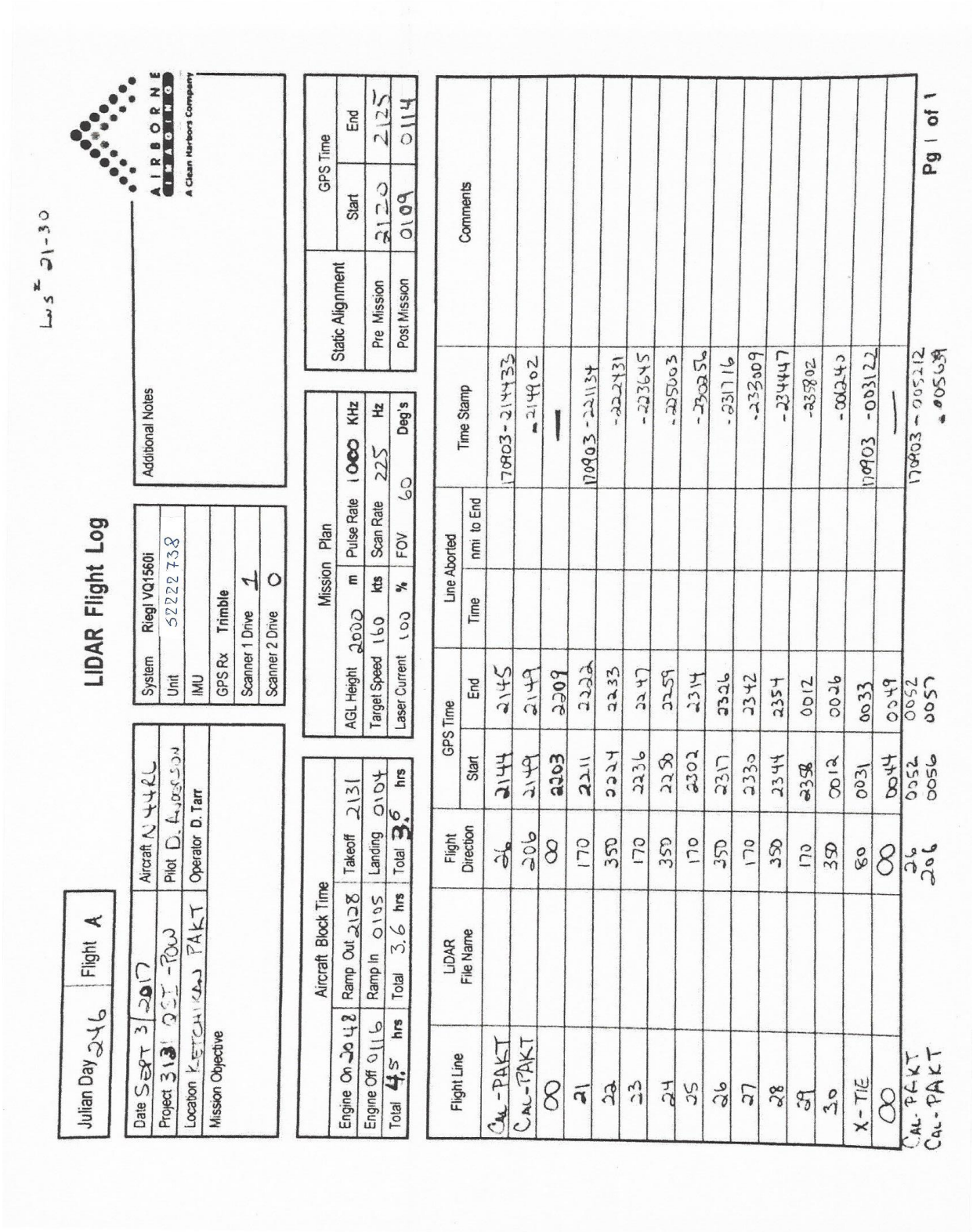

Longitude vs Latitude
Longitude [deg]
Latitude [deg]
Kiwauk Airport
Ketchikan
Gravina Island
Hydaburg Seaplane Base
Sukkwan Island
Metlakatla Metlakatla Seaplane Base
Annette Island
Annette Island Airport
5 km


Pos. precision std. dev.
Time [GPS]
North
East
Down
Std. dev. [m]
0.28
0.24
0.20
0.16
0.12
0.08
0.04
0.00


DOP
Time [GPS]
PDOP
HDOP
VDOP
4
3
2
1
0
DOP


Number of satellites
Time [GPS]
GPS
GLONASS
Total
16
12
8
4
0
#SV

Flight Log



LIDAR Flight Log

Julian Day 246 | Flight A

Date Sept 3 | 2017 | Aircraft N 448L
Project 318 | QCI-POW | Pilot D. Anderson
Location KETCHIKAN PAKT | Operator D. Tarr
Mission Objective

System Riegl VQ1560i
Unit 52222738
IMU
GPS Rx Trimble
Scanner 1 Drive 1
Scanner 2 Drive 0

Additional Notes

AIRBORNE IMAGING — A Clean Harbors Company

Aircraft Block Time

Engine On 2048	Ramp Out 2108	Takeoff 2131	
Engine Off 0116	Ramp In 0105	Landing 0104	
Total 4.5 hrs	Total 3.6 hrs	Total 3.6 hrs	

Mission Plan

AGL Height 2000 m	Pulse Rate 1000 KHz		
Target Speed 160 kts	Scan Rate 225 Hz		
Laser Current 100 %	FOV 60 Deg's		

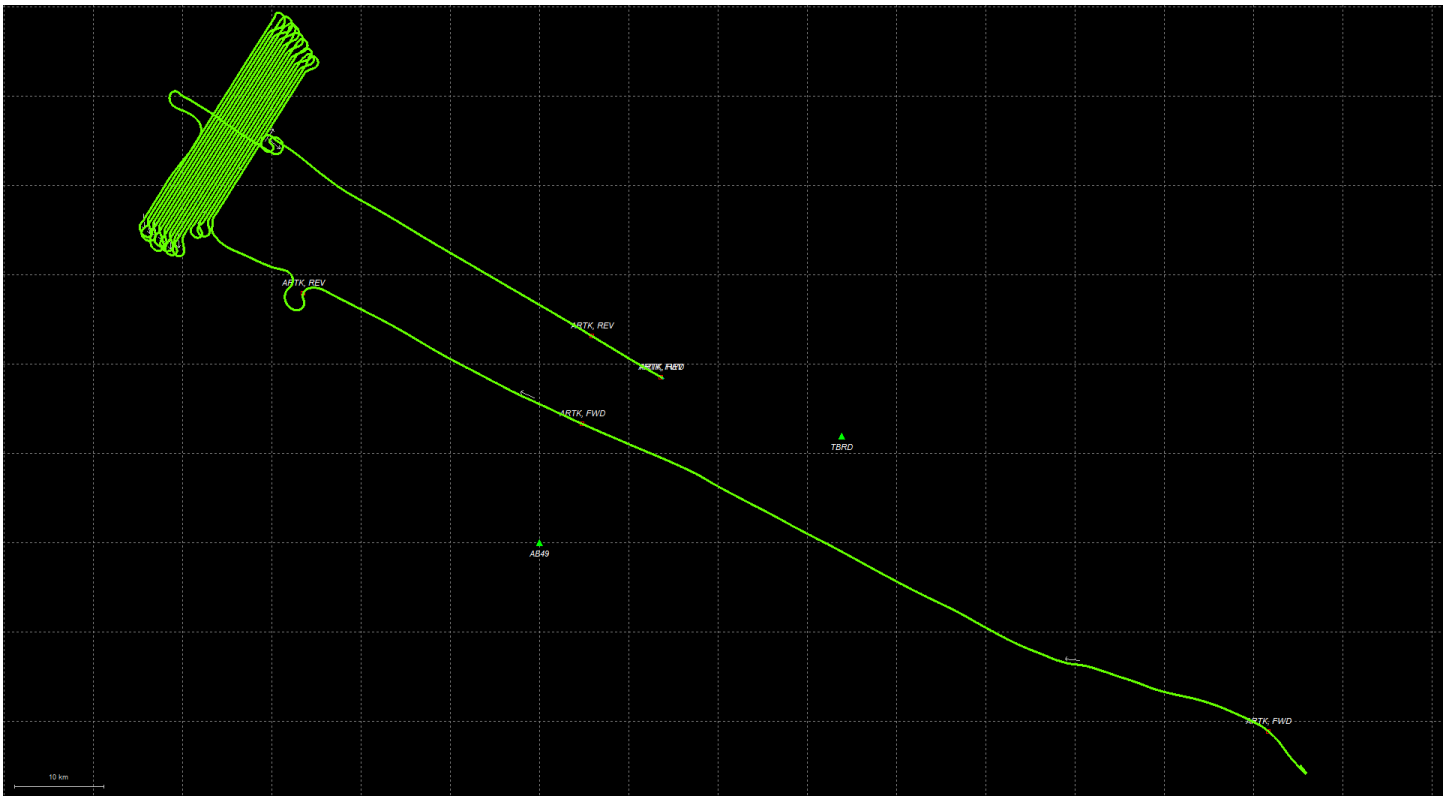
Static Alignment

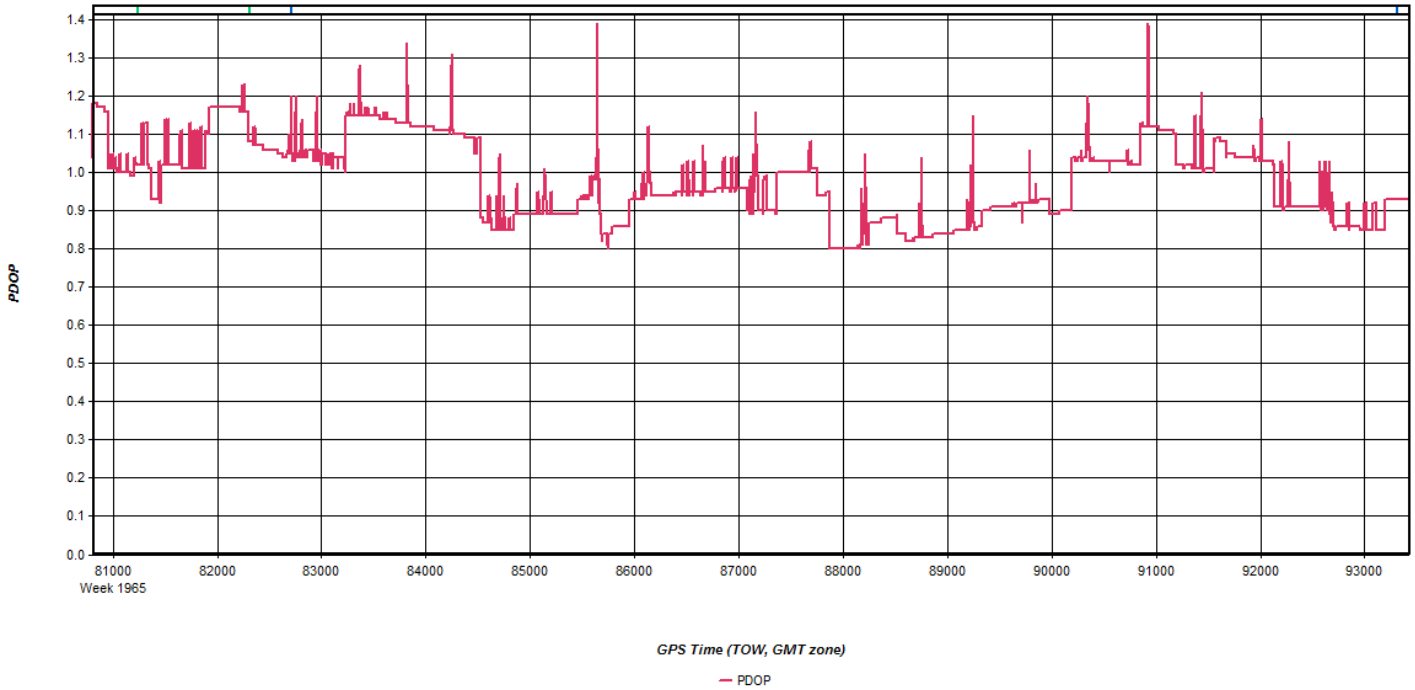
	GPS Time Start	GPS Time End
Pre Mission	2120	2125
Post Mission	0109	0114

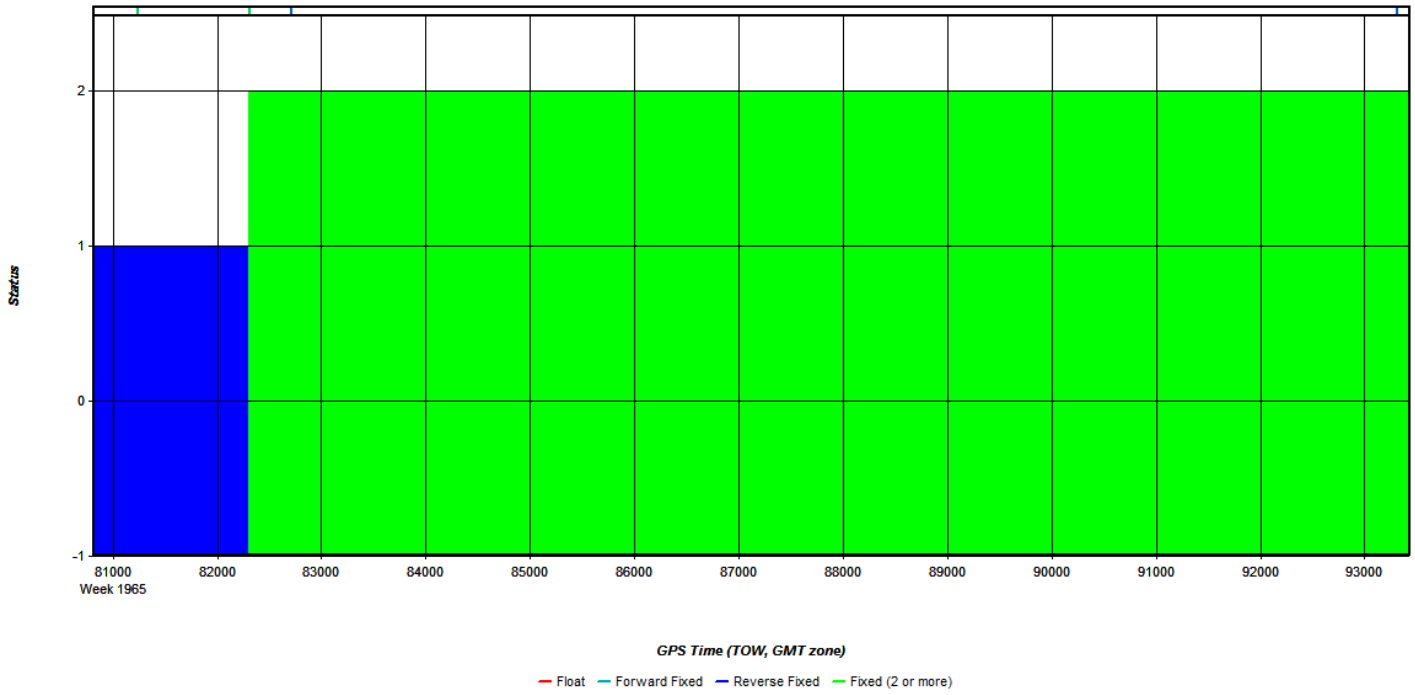
Flight Line	LiDAR File Name	Flight Direction	GPS Time Start	GPS Time End	Line Aborted Time	Line Aborted nmi to End	Time Stamp	Comments
Cal-PAKT		26	2144	2145			170903-214433	
CAL-PAKT		206	2149	2149			-214902	
20		20	2203	2209			—	
21		170	2211	2222			170903-221134	
22		350	2224	2233			-222431	
23		170	2236	2247			-223645	
24		350	2258	2259			-225003	
25		170	2302	2314			-230356	
26		350	2317	2326			-231116	
27		170	2330	2342			-233309	
28		350	2344	2354			-234447	
29		170	2358	0012			-235802	
30		350	0012	0026			-000240	
X-TIE		80	0031	0033			170903 -003122	
20		20	0044	0049			—	
CAL-PAKT		26	0052	0052			170903 - 005212	
CAL-PAKT		206	0056	0057			-005639	

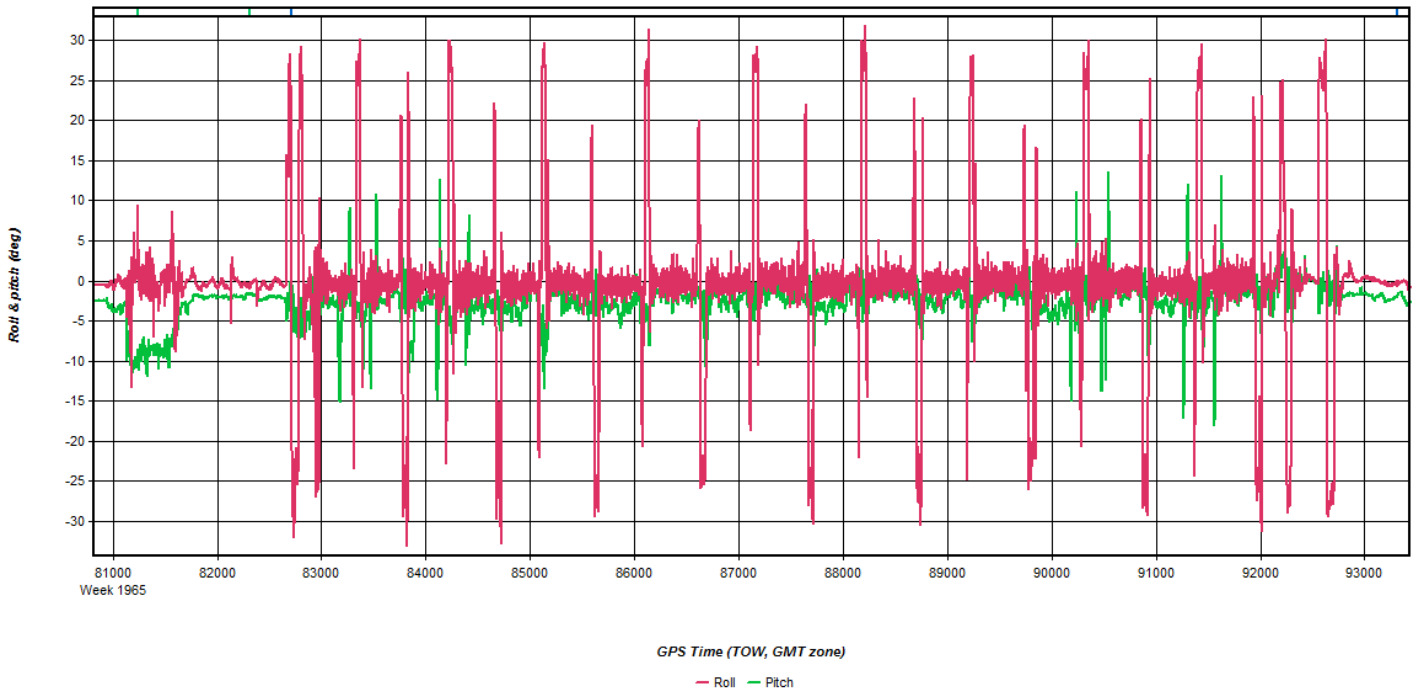
Pg 1 of 1

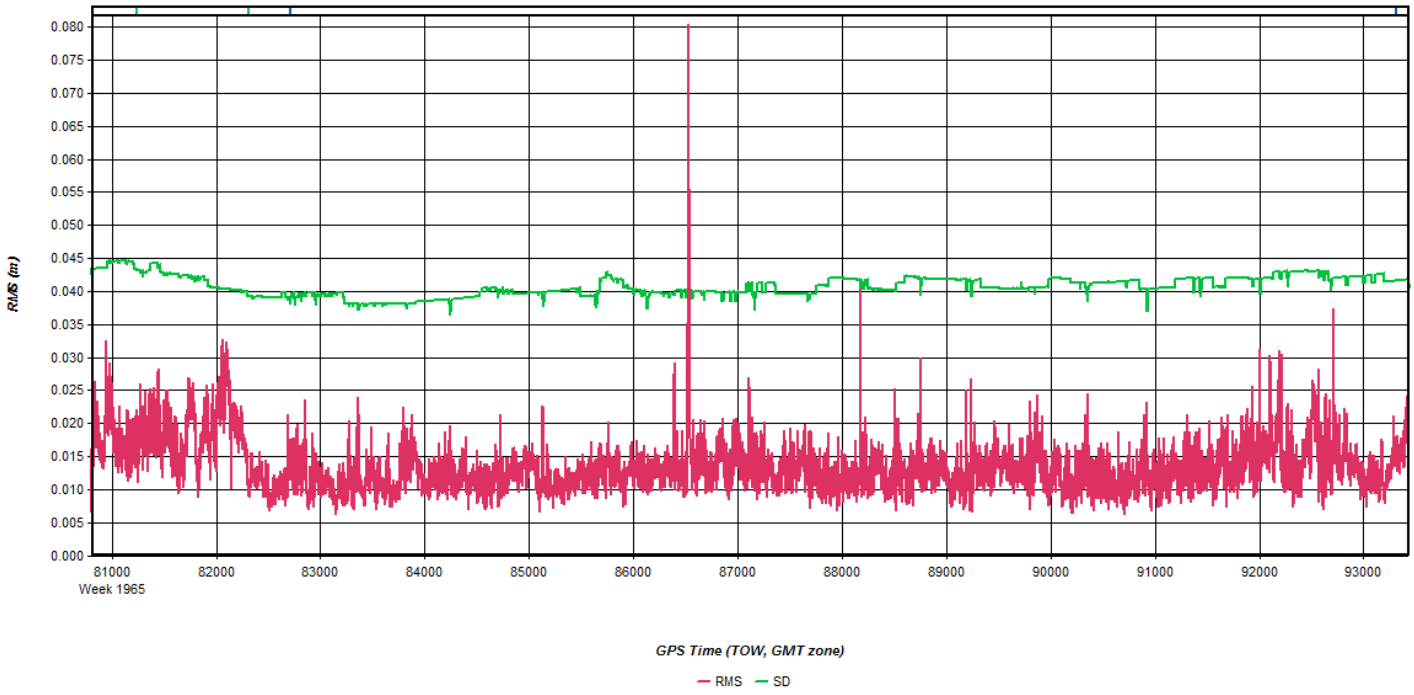
September 3, 2017-B (N604MD, SN8146)

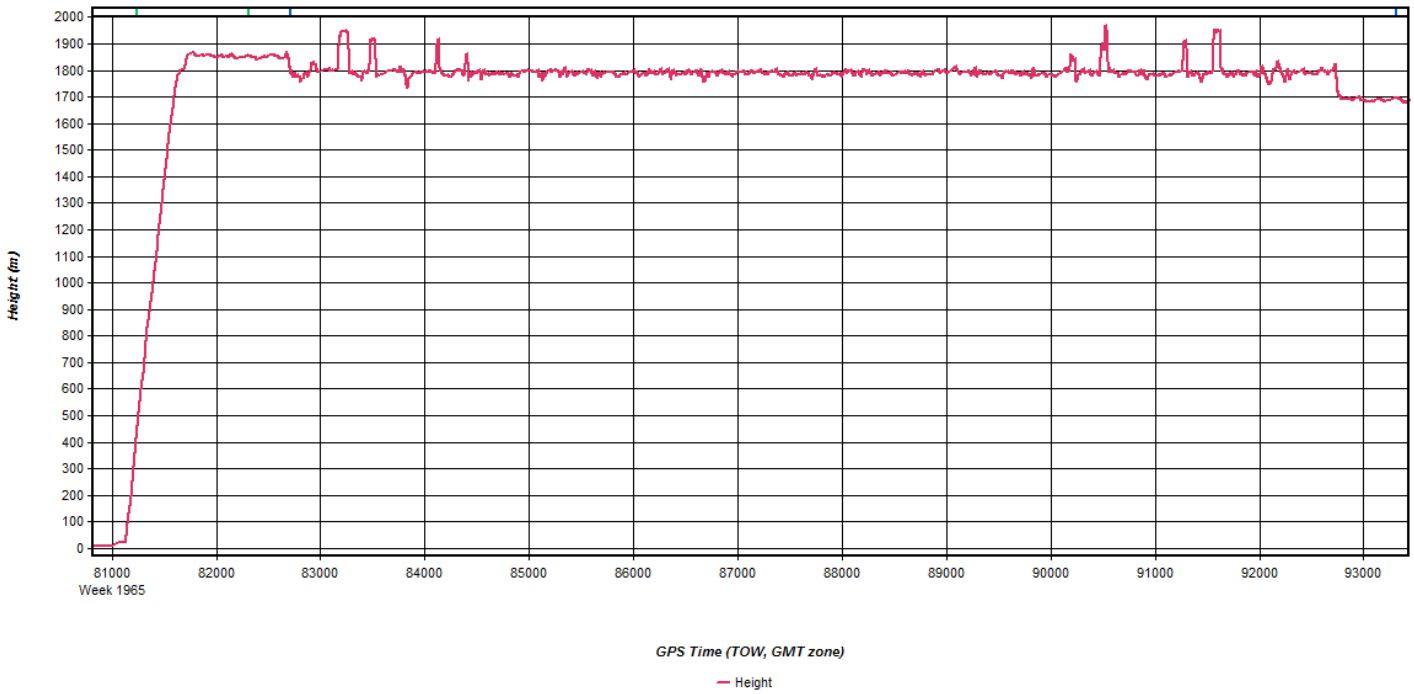

ABTK_REV
ABTK_REV
ABTK_FWD
TBRD
AB49
ABTK_FWD
10 km

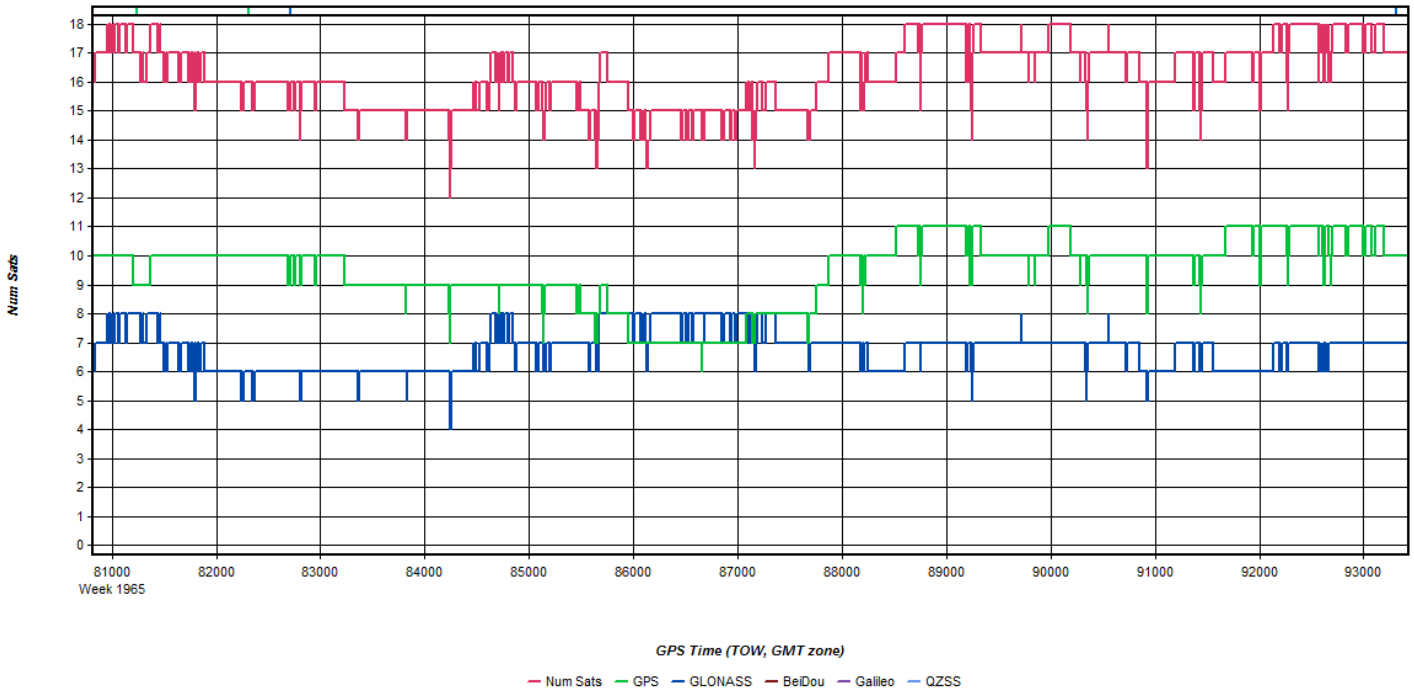

PDOP
1.4
1.3
1.2
1.1
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
81000
Week 1965
82000
83000
84000
85000
86000
87000
88000
89000
90000
91000
92000
93000
GPS Time (TOW, GMT zone)
PDOP

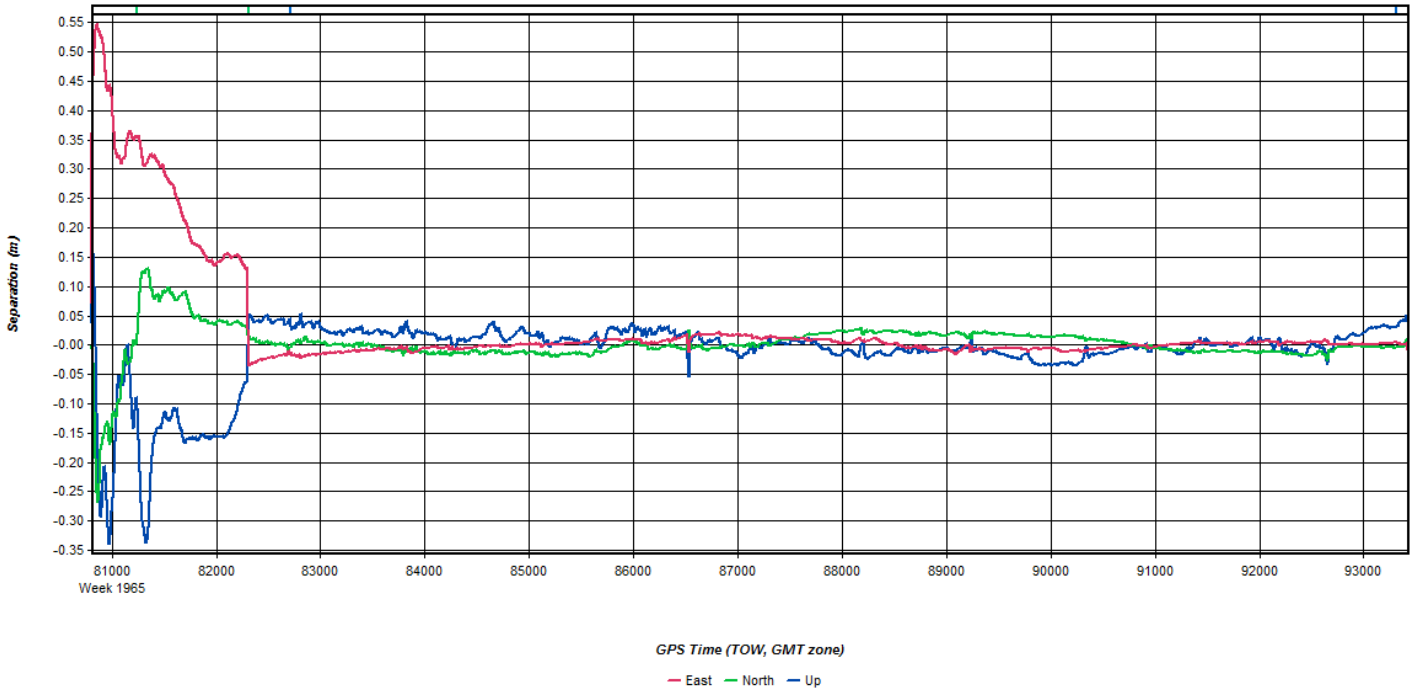

Status
2
1
0
-1
81000
Week 1965
82000
83000
84000
85000
86000
87000
88000
89000
90000
91000
92000
93000
GPS Time (TOW, GMT zone)
Float
Forward Fixed
Reverse Fixed
Fixed (2 or more)

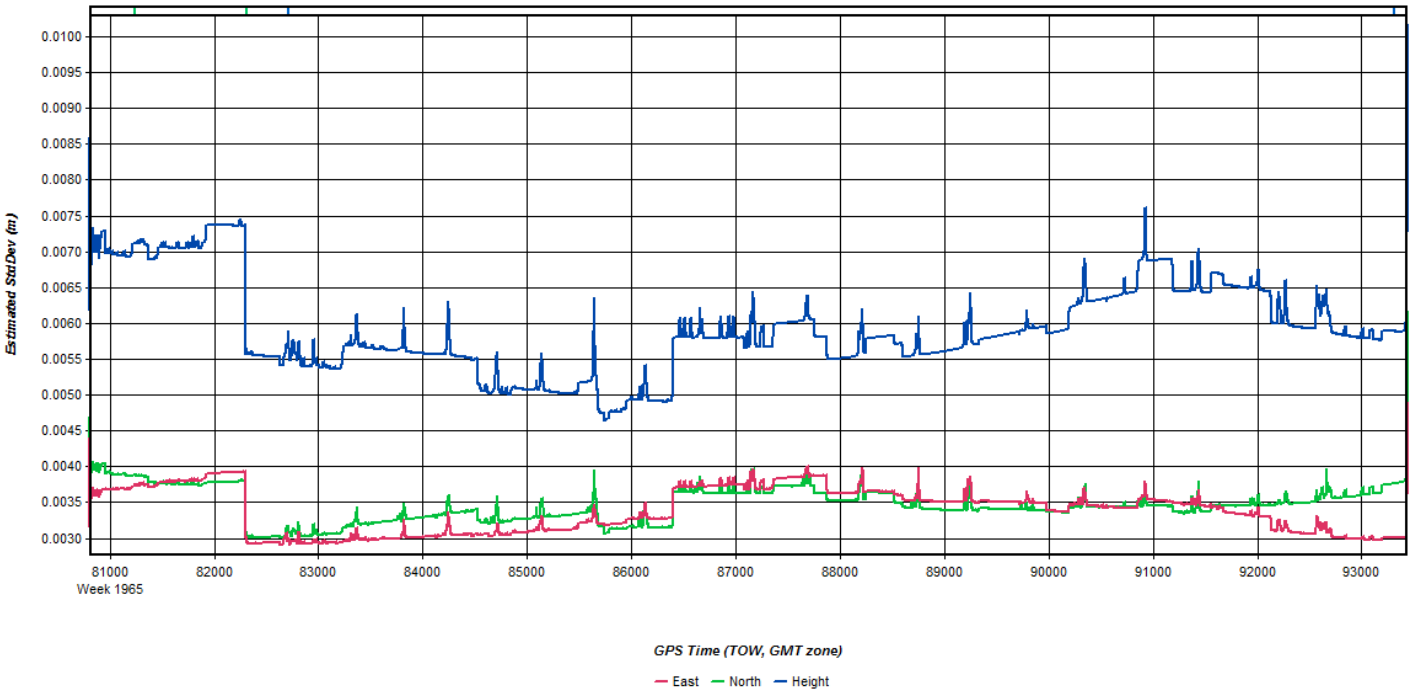

Roll & pitch (deg)
30
25
20
15
10
5
0
-5
-10
-15
-20
-25
-30
81000
Week 1965
82000
83000
84000
85000
86000
87000
88000
89000
90000
91000
92000
93000
GPS Time (TOW, GMT zone)
Roll
Pitch

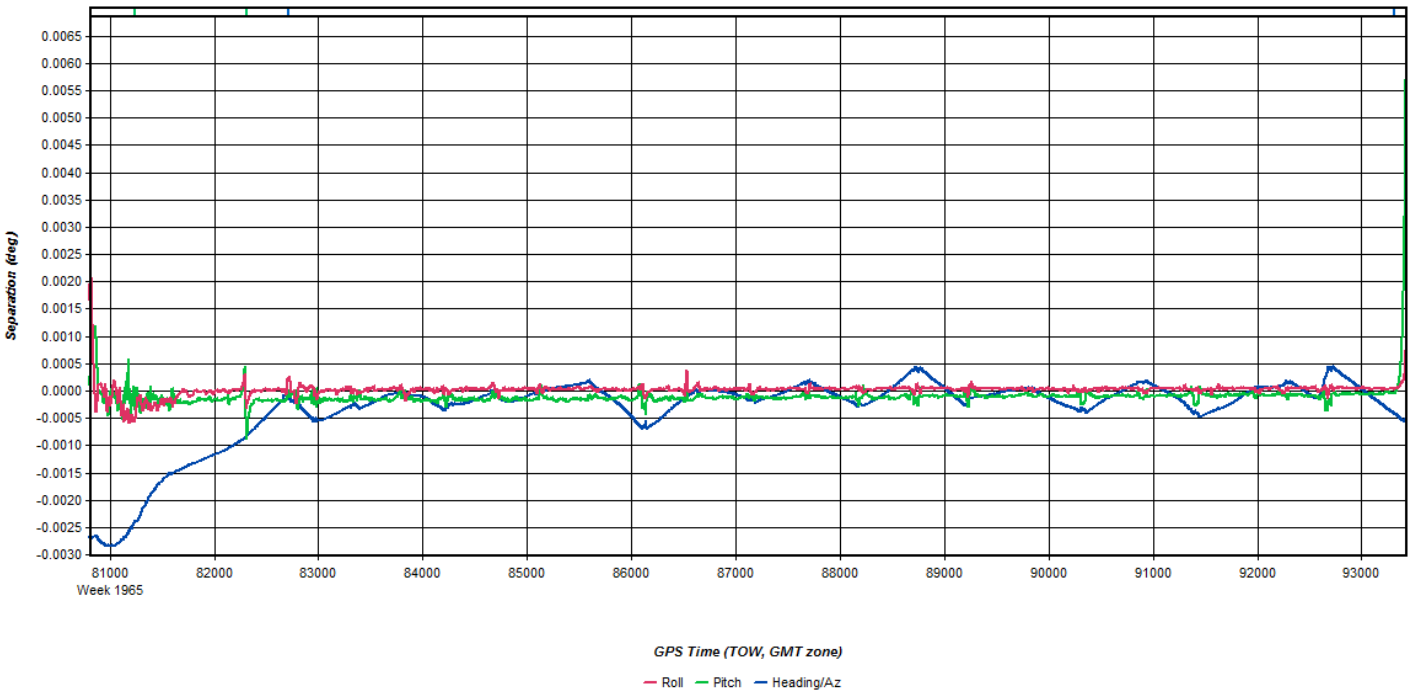

RMS (m)
0.080
0.075
0.070
0.065
0.060
0.055
0.050
0.045
0.040
0.035
0.030
0.025
0.020
0.015
0.010
0.005
0.000
81000
Week 1965
82000
83000
84000
85000
86000
87000
88000
89000
90000
91000
92000
93000
GPS Time (TOW, GMT zone)
RMS
SD

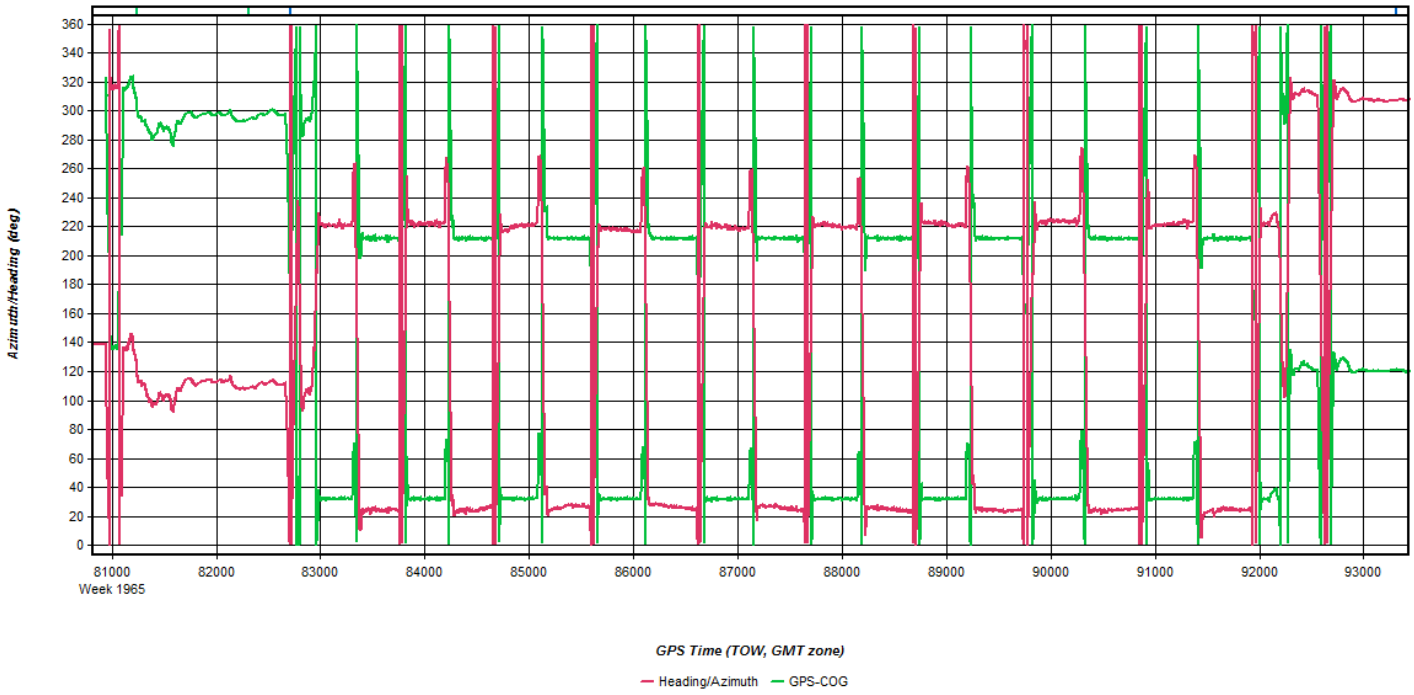

Height (m)
2000
1900
1800
1700
1600
1500
1400
1300
1200
1100
1000
900
800
700
600
500
400
300
200
100
0
81000
Week 1965
82000
83000
84000
85000
86000
87000
88000
89000
90000
91000
92000
93000
GPS Time (TOW, GMT zone)
Height

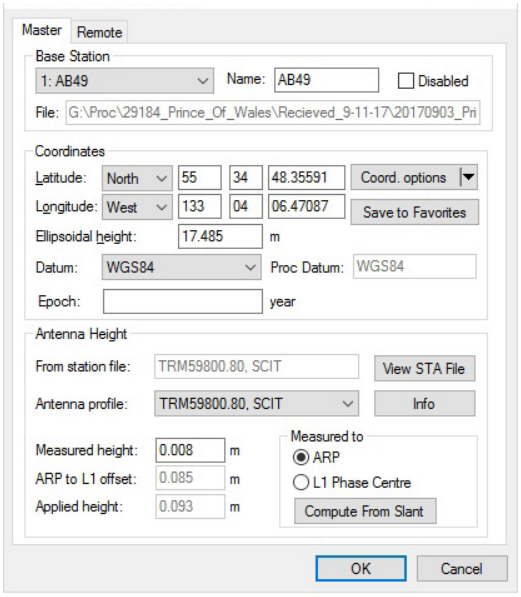

Num Sats
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
81000
Week 1965
82000
83000
84000
85000
86000
87000
88000
89000
90000
91000
92000
93000
GPS Time (TOW, GMT zone)
Num Sats
GPS
GLONASS
BeiDou
Galileo
QZSS

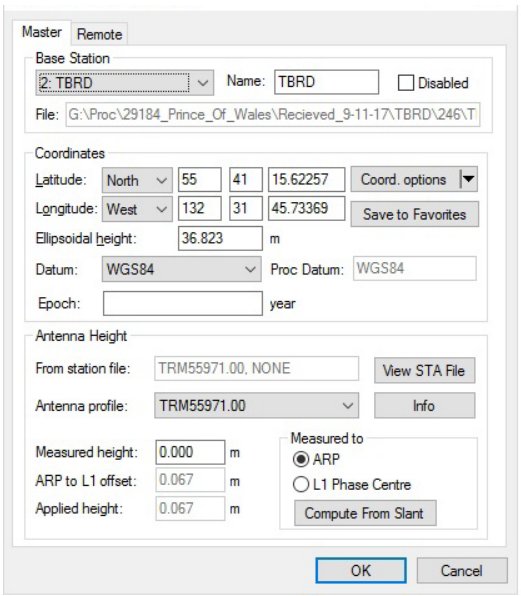

Separation (m)
0.55
0.50
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
-0.00
-0.05
-0.10
-0.15
-0.20
-0.25
-0.30
-0.35
81000
Week 1965
82000
83000
84000
85000
86000
87000
88000
89000
90000
91000
92000
93000
GPS Time (TOW, GMT zone)
East
North
Up


Estimated StdDev (m)
0.0100
0.0095
0.0090
0.0085
0.0080
0.0075
0.0070
0.0065
0.0060
0.0055
0.0050
0.0045
0.0040
0.0035
0.0030
81000
Week 1965
82000
83000
84000
85000
86000
87000
88000
89000
90000
91000
92000
93000
GPS Time (TOW, GMT zone)
East
North
Height

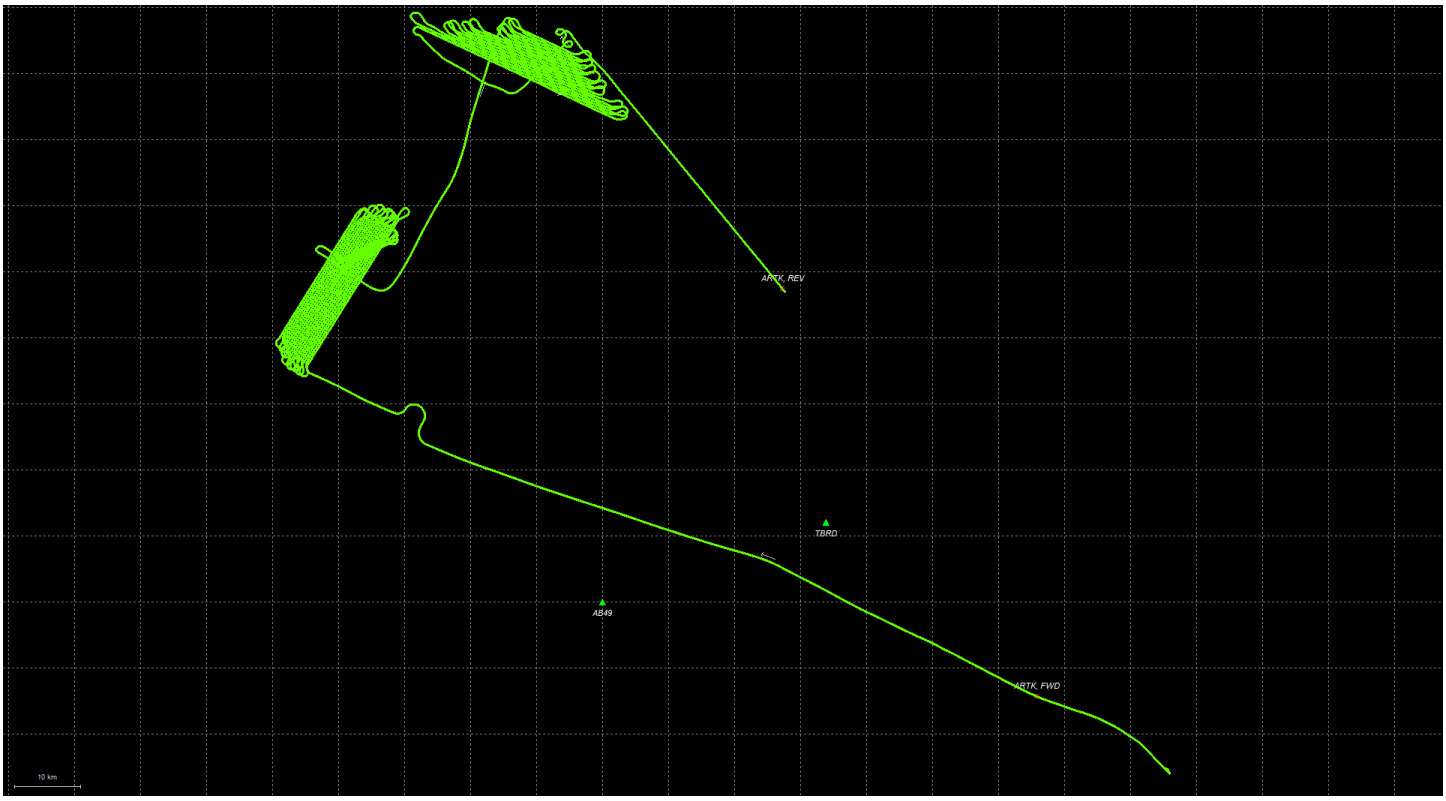

Separation (deg)
0.0065
0.0060
0.0055
0.0050
0.0045
0.0040
0.0035
0.0030
0.0025
0.0020
0.0015
0.0010
0.0005
0.0000
-0.0005
-0.0010
-0.0015
-0.0020
-0.0025
-0.0030
81000
Week 1965
82000
83000
84000
85000
86000
87000
88000
89000
90000
91000
92000
93000
GPS Time (TOW, GMT zone)
Roll
Pitch
Heading/Az

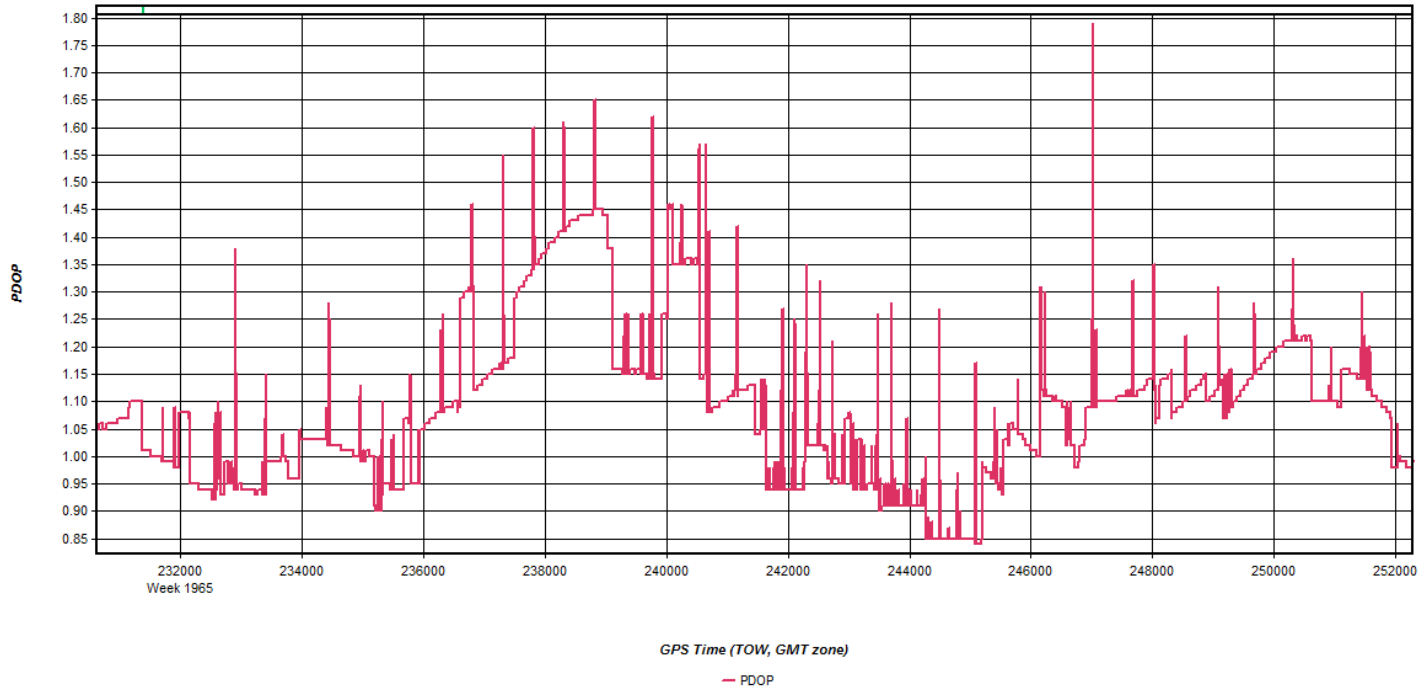

Azimuth/Heading (deg)
360
340
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
81000
Week 1965
82000
83000
84000
85000
86000
87000
88000
89000
90000
91000
92000
93000
GPS Time (TOW, GMT zone)
Heading/Azimuth
GPS-COG

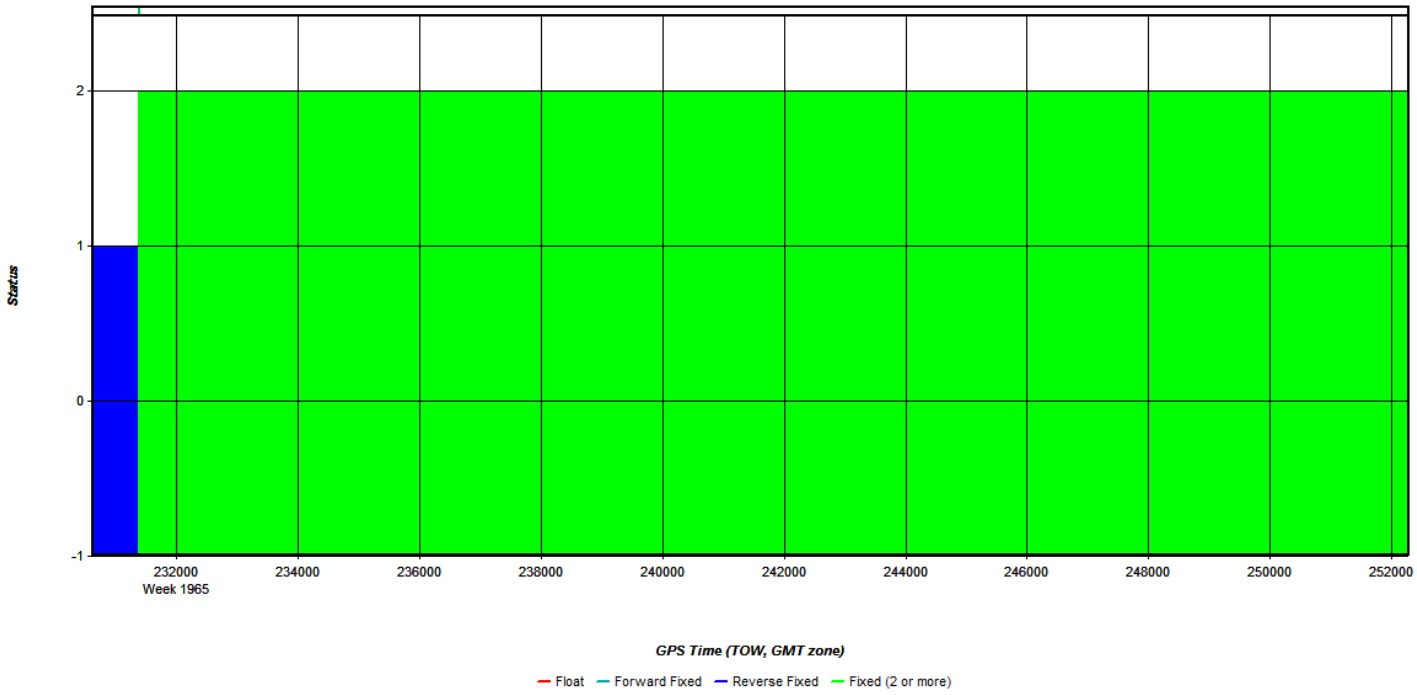

Master
Remote
Base Station
1: AB49
Name:
AB49
Disabled
File:
G:\Proc\29184_Prince_Of_Wales\Recieved_9-11-17\20170903_Pri
Coordinates
Latitude:
North
55
34
48.35591
Coord. options
Longitude:
West
133
04
06.47087
Save to Favorites
Ellipsoidal height:
17.485
m
Datum:
WGS84
Proc Datum:
WGS84
Epoch:
year
Antenna Height
From station file:
TRM59800.80, SCIT
View STA File
Antenna profile:
TRM59800.80, SCIT
Info
Measured height:
0.008
m
Measured to
ARP
ARP to L1 offset:
0.085
m
L1 Phase Centre
Applied height:
0.093
m
Compute From Slant
OK
Cancel

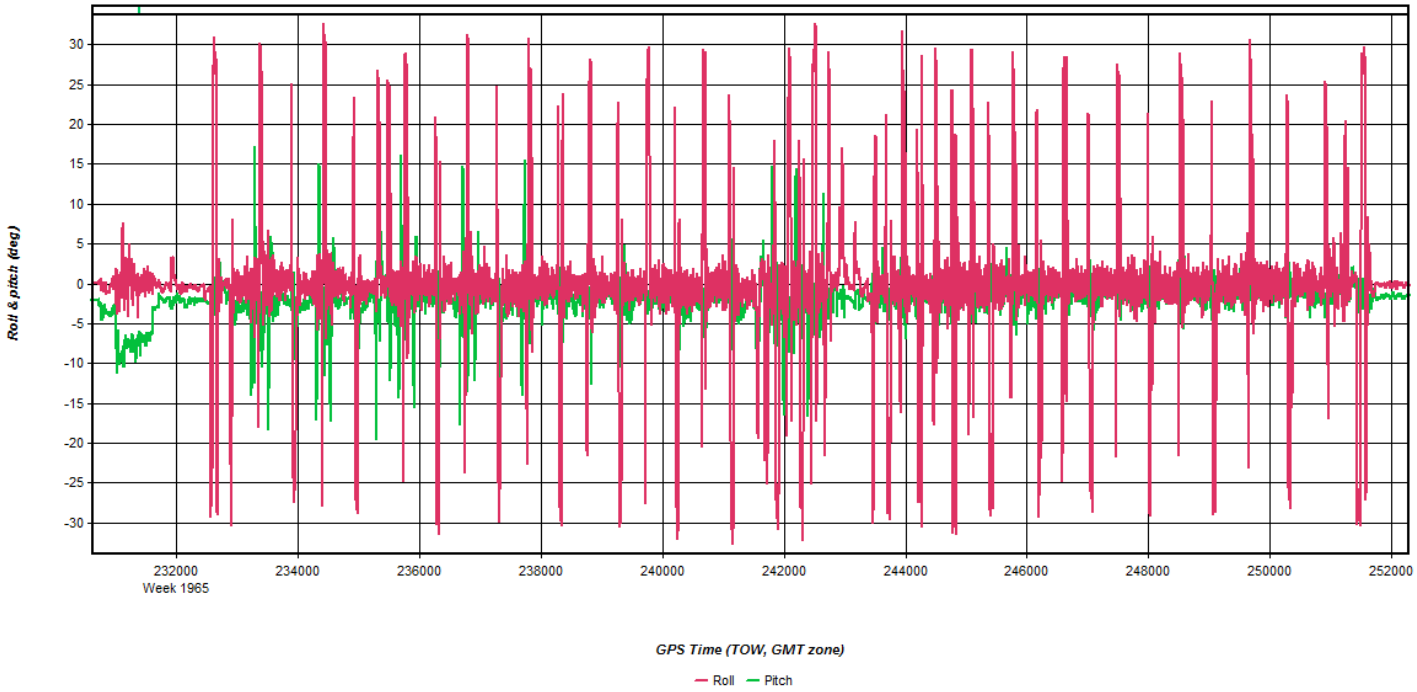

Master
Remote
Base Station
2: TBRD
Name:
TBRD
Disabled
File:
G:\Proc\29184_Prince_Of_Wales\Recieved_9-11-17\TBRD\246\T
Coordinates
Latitude:
North
55
41
15.62257
Coord. options
Longitude:
West
132
31
45.73369
Save to Favorites
Ellipsoidal height:
36.823
m
Datum:
WGS84
Proc Datum:
WGS84
Epoch:
year
Antenna Height
From station file:
TRM55971.00, NONE
View STA File
Antenna profile:
TRM55971.00
Info
Measured height:
0.000
m
Measured to
ARP
ARP to L1 offset:
0.067
m
L1 Phase Centre
Applied height:
0.067
m
Compute From Slant
OK
Cancel

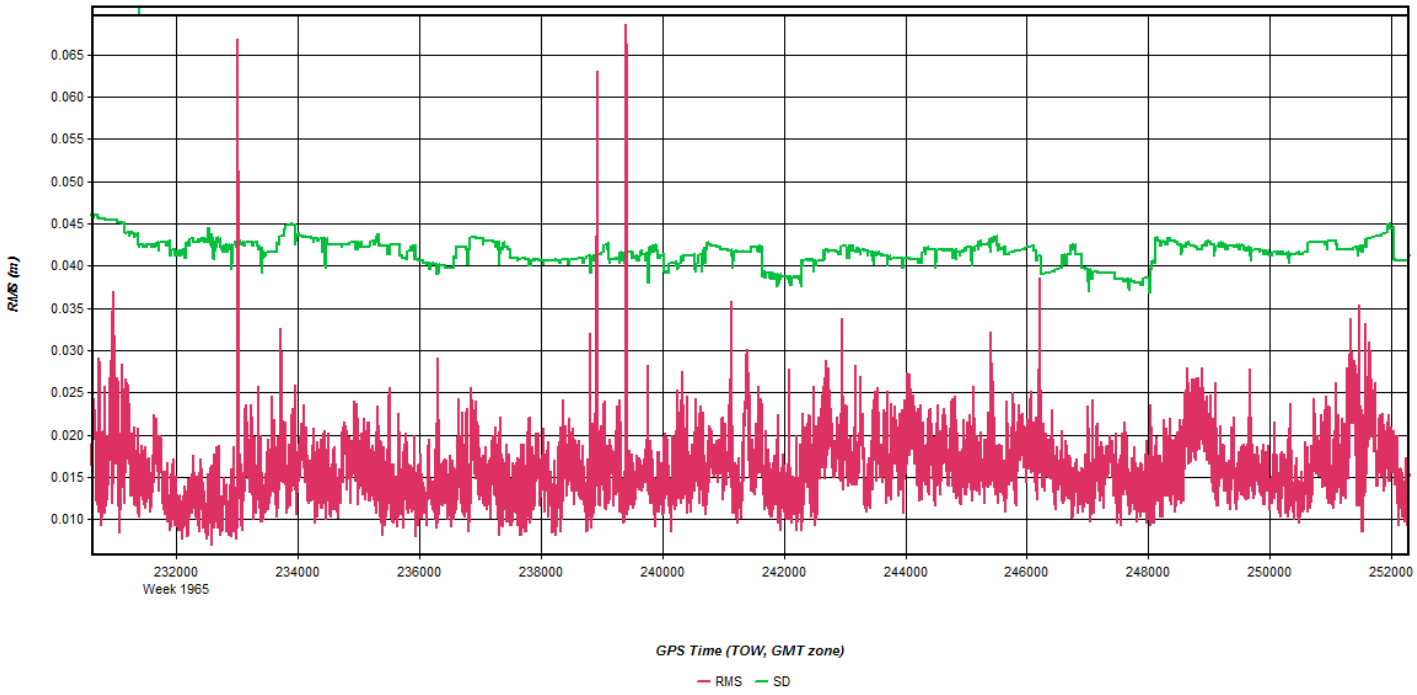
September 5, 2017-A (N604MD, SN8146)

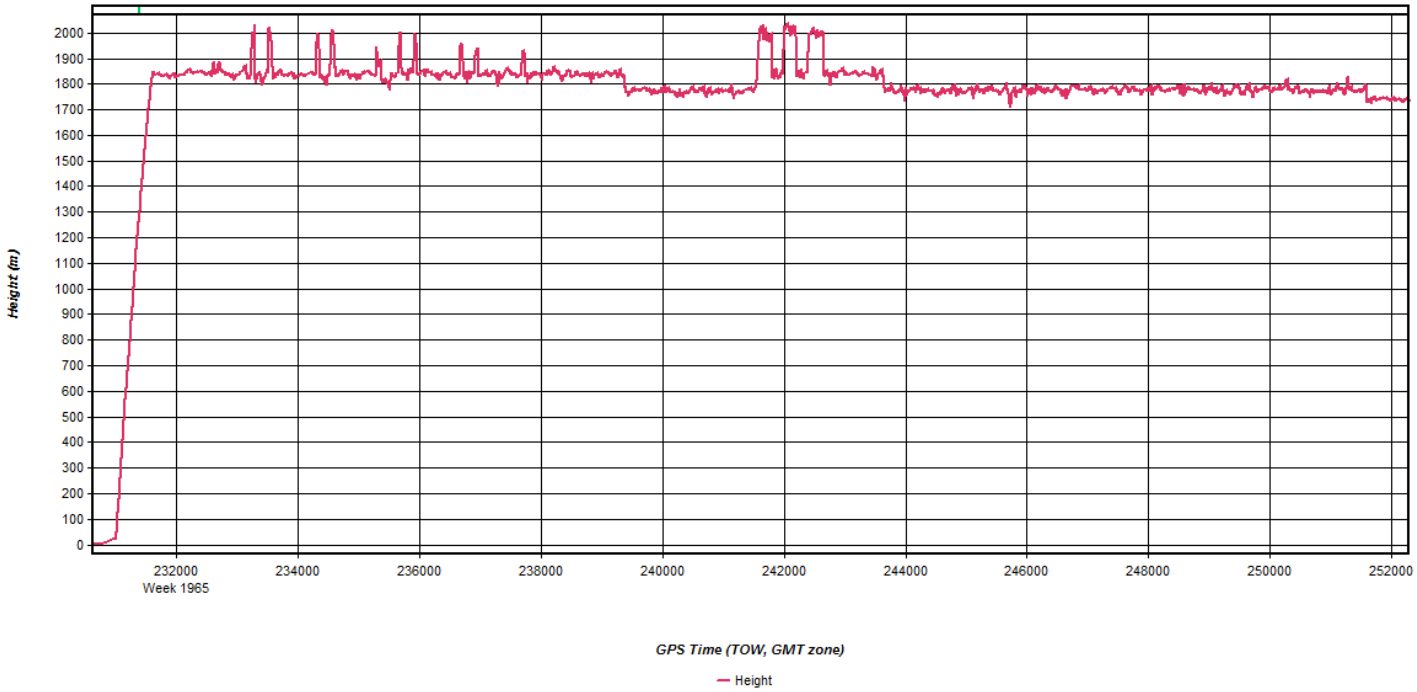

ARTK_REV
TBRD
AB49
ARTK_FWD
10 km

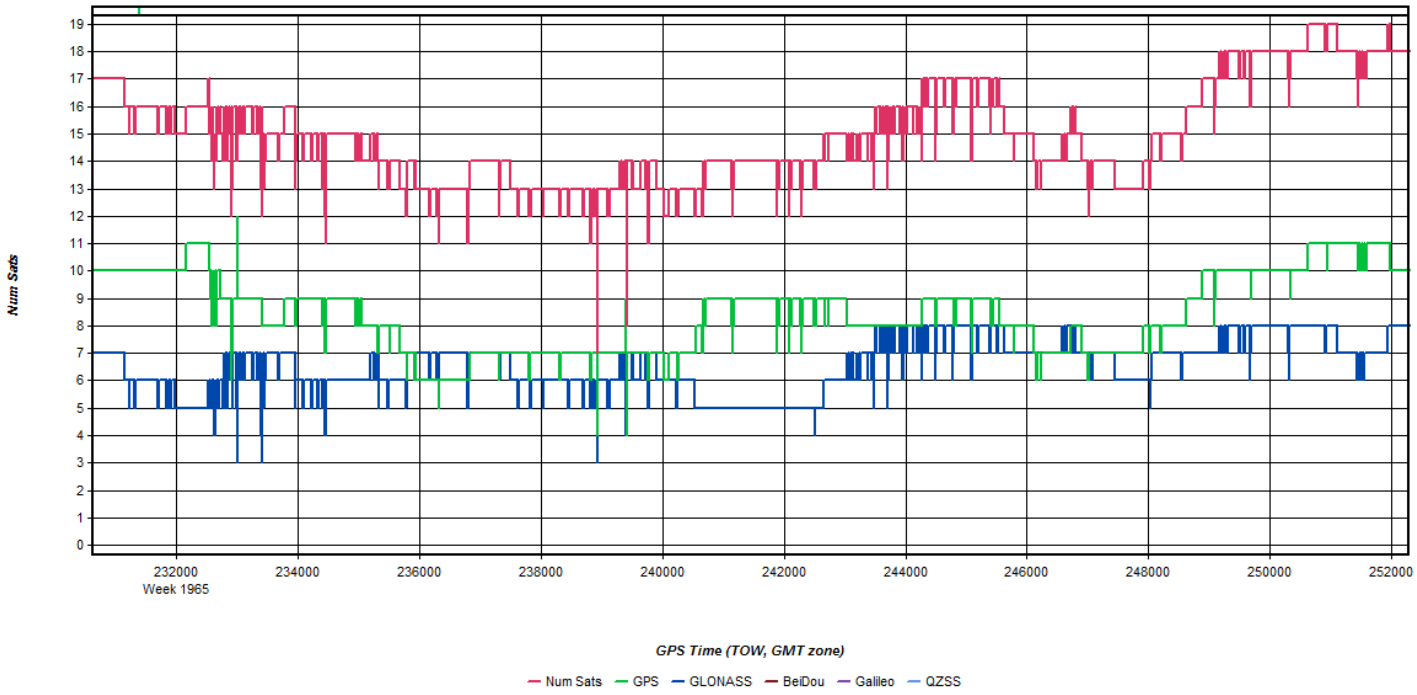

PDOP
1.80
1.75
1.70
1.65
1.60
1.55
1.50
1.45
1.40
1.35
1.30
1.25
1.20
1.15
1.10
1.05
1.00
0.95
0.90
0.85
232000
Week 1965
234000
236000
238000
240000
242000
244000
246000
248000
250000
252000
GPS Time (TOW, GMT zone)
PDOP

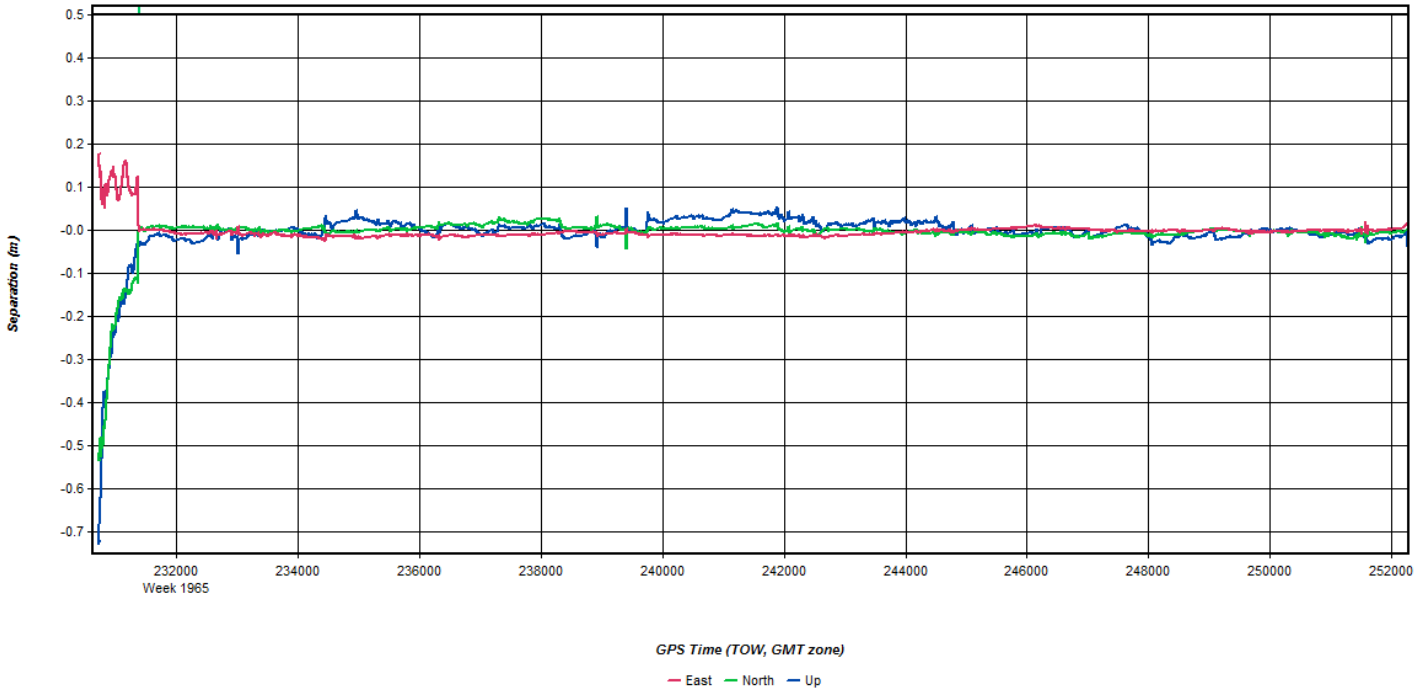

Status
2
1
0
-1
232000
Week 1965
234000
236000
238000
240000
242000
244000
246000
248000
250000
252000
GPS Time (TOW, GMT zone)
Float
Forward Fixed
Reverse Fixed
Fixed (2 or more)

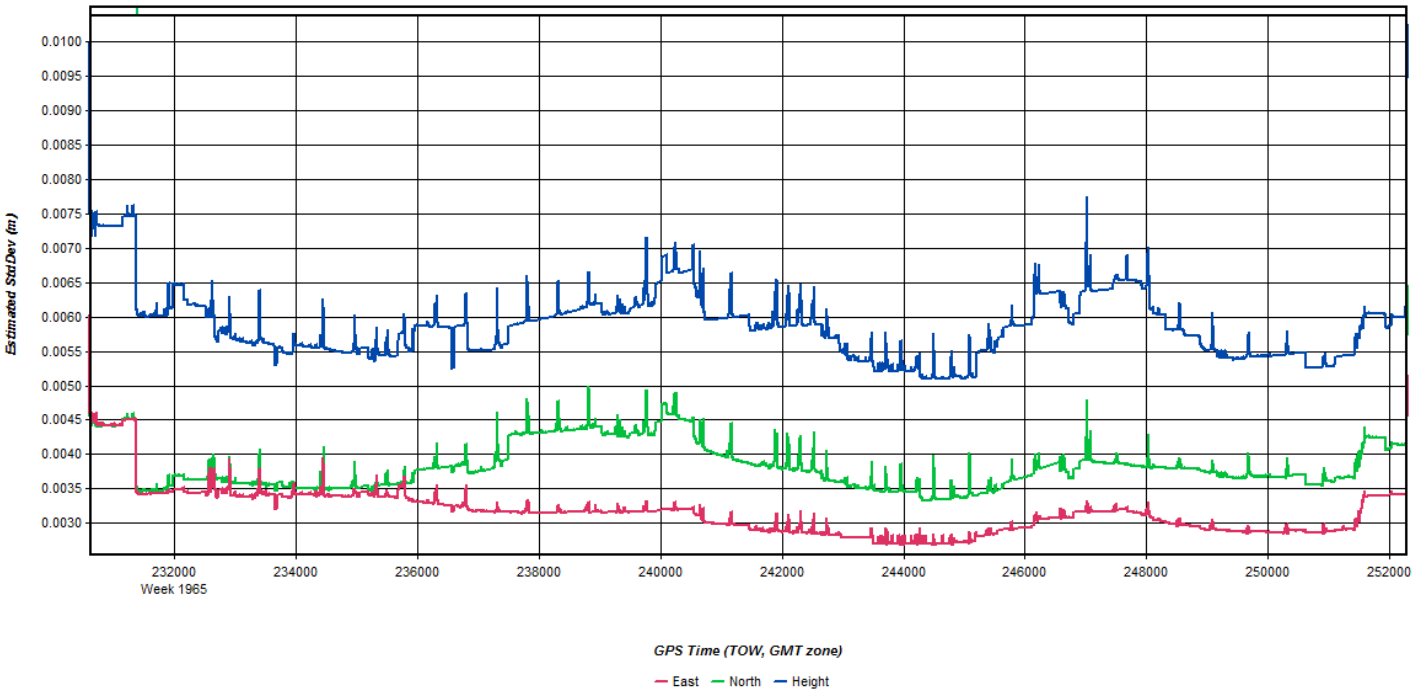

Roll & pitch (deg)
30
25
20
15
10
5
0
-5
-10
-15
-20
-25
-30
232000
Week 1965
234000
236000
238000
240000
242000
244000
246000
248000
250000
252000
GPS Time (TOW, GMT zone)
Roll
Pitch

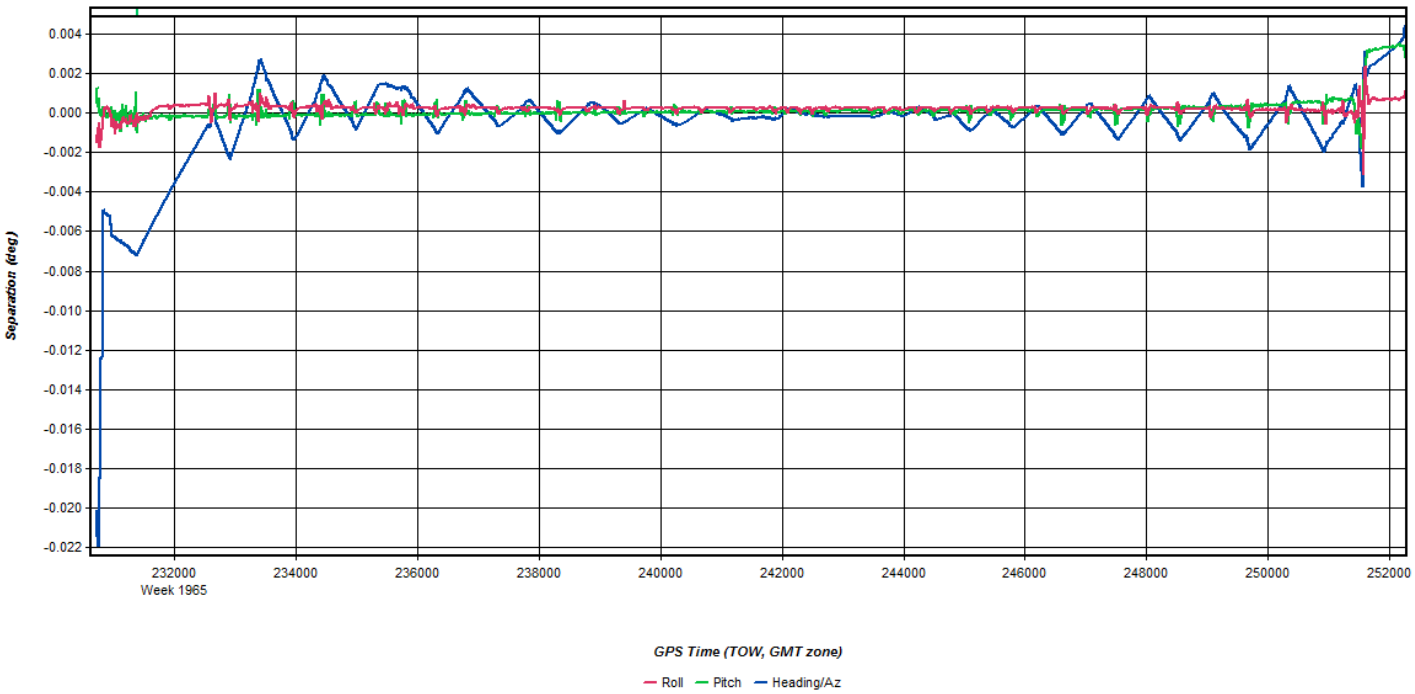

RMS (m)
0.065
0.060
0.055
0.050
0.045
0.040
0.035
0.030
0.025
0.020
0.015
0.010
232000
Week 1965
234000
236000
238000
240000
242000
244000
246000
248000
250000
252000
GPS Time (TOW, GMT zone)
RMS
SD


Height (m)
2000
1900
1800
1700
1600
1500
1400
1300
1200
1100
1000
900
800
700
600
500
400
300
200
100
0
232000
Week 1965
234000
236000
238000
240000
242000
244000
246000
248000
250000
252000
GPS Time (TOW, GMT zone)
Height

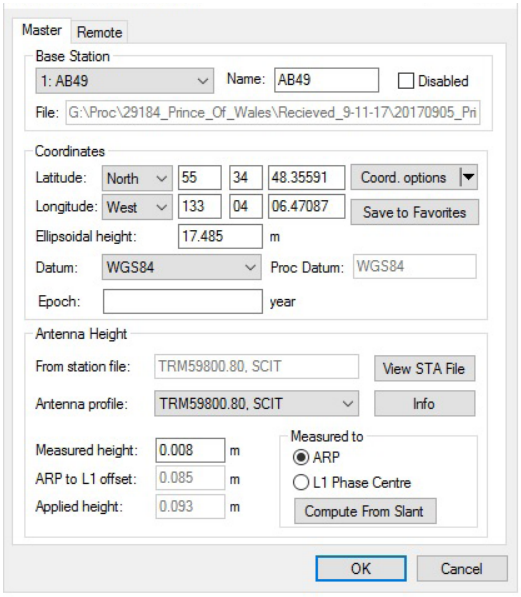

Num Sats
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
232000
Week 1965
234000
236000
238000
240000
242000
244000
246000
248000
250000
252000
GPS Time (TOW, GMT zone)
Num Sats
GPS
GLONASS
BeiDou
Galileo
QZSS

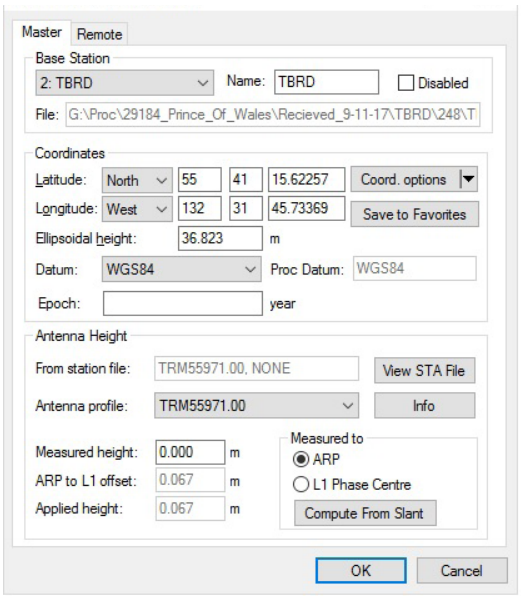

Separation (m)
0.5
0.4
0.3
0.2
0.1
-0.0
-0.1
-0.2
-0.3
-0.4
-0.5
-0.6
-0.7
232000
Week 1965
234000
236000
238000
240000
242000
244000
246000
248000
250000
252000
GPS Time (TOW, GMT zone)
East
North
Up


Estimated StdDev (m)
0.0100
0.0095
0.0090
0.0085
0.0080
0.0075
0.0070
0.0065
0.0060
0.0055
0.0050
0.0045
0.0040
0.0035
0.0030
232000
Week 1965
234000
236000
238000
240000
242000
244000
246000
248000
250000
252000
GPS Time (TOW, GMT zone)
East
North
Height


Separation (deg)
0.004
0.002
0.000
-0.002
-0.004
-0.006
-0.008
-0.010
-0.012
-0.014
-0.016
-0.018
-0.020
-0.022
232000
Week 1965
234000
236000
238000
240000
242000
244000
246000
248000
250000
252000
GPS Time (TOW, GMT zone)
Roll
Pitch
Heading/Az

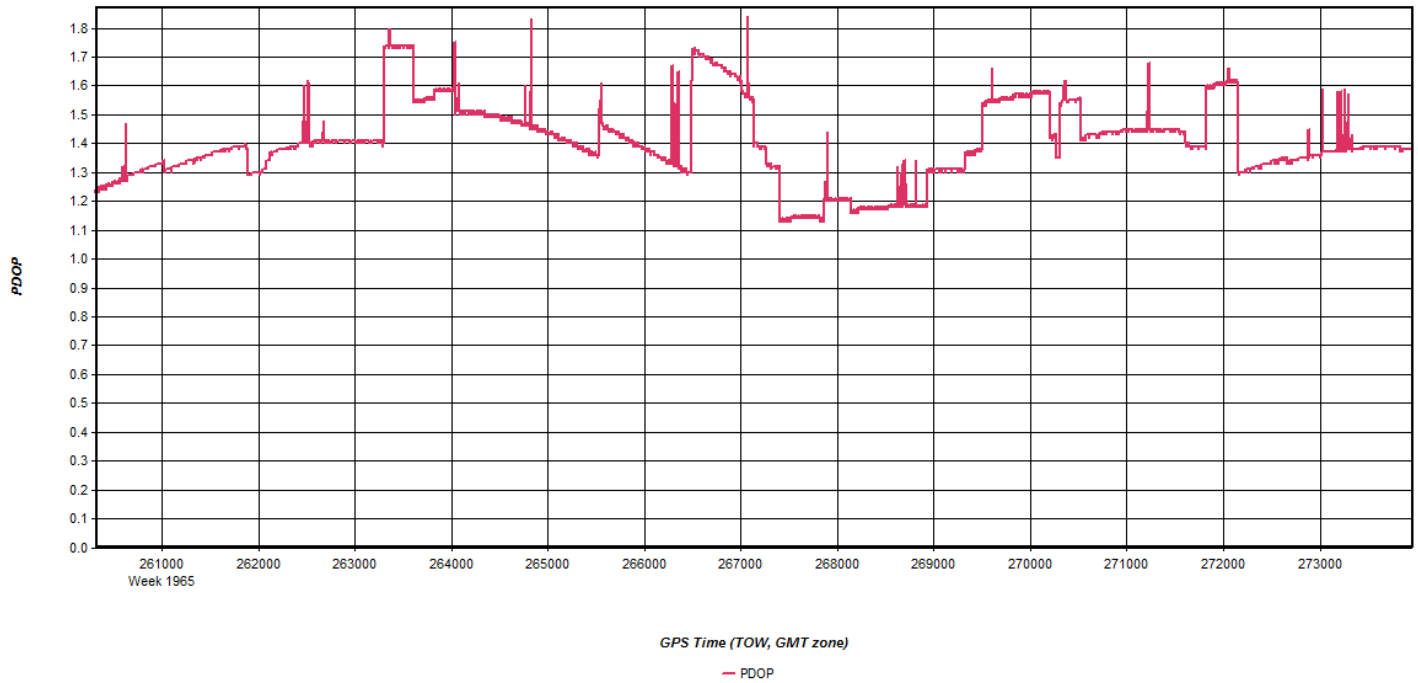

Azimuth/Heading (deg)
360
340
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
232000
Week 1965
234000
236000
238000
240000
242000
244000
246000
248000
250000
252000
GPS Time (TOW, GMT zone)
Heading/Azimuth
GPS-COG

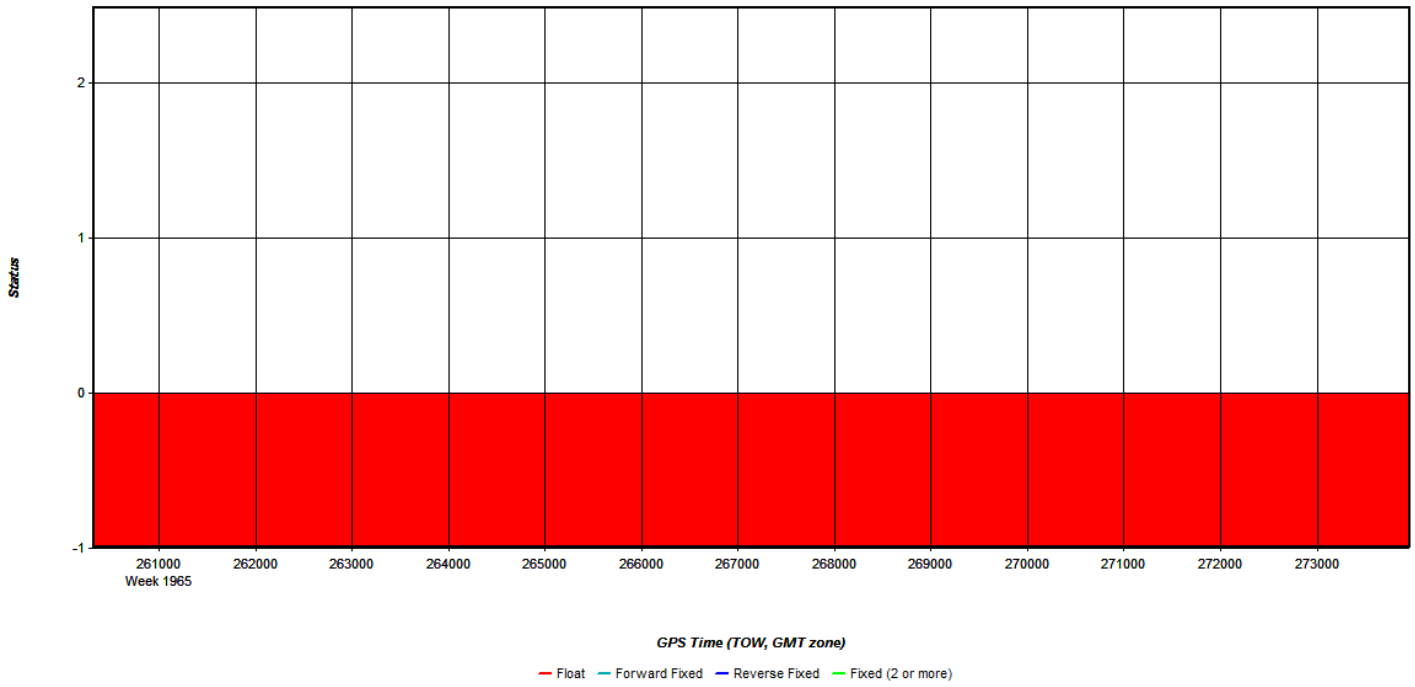

Master
Remote
Base Station
1: AB49
Name:
AB49
Disabled
File:
G:\Proc\29184_Prince_Of_Wales\Recieved_9-11-17\20170905_Pri
Coordinates
Latitude:
North
55
34
48.35591
Coord. options
Longitude:
West
133
04
06.47087
Save to Favorites
Ellipsoidal height:
17.485
m
Datum:
WGS84
Proc Datum:
WGS84
Epoch:
year
Antenna Height
From station file:
TRM59800.80, SCIT
View STA File
Antenna profile:
TRM59800.80, SCIT
Info
Measured height:
0.008
m
ARP to L1 offset:
0.085
m
Applied height:
0.093
m
Measured to
ARP
L1 Phase Centre
Compute From Slant
OK
Cancel


Master
Remote
Base Station
2: TBRD
Name:
TBRD
Disabled
File:
G:\Proc\29184_Prince_Of_Wales\Recieved_9-11-17\TBRD\248\T
Coordinates
Latitude:
North
55
41
15.62257
Coord. options
Longitude:
West
132
31
45.73369
Save to Favorites
Ellipsoidal height:
36.823
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

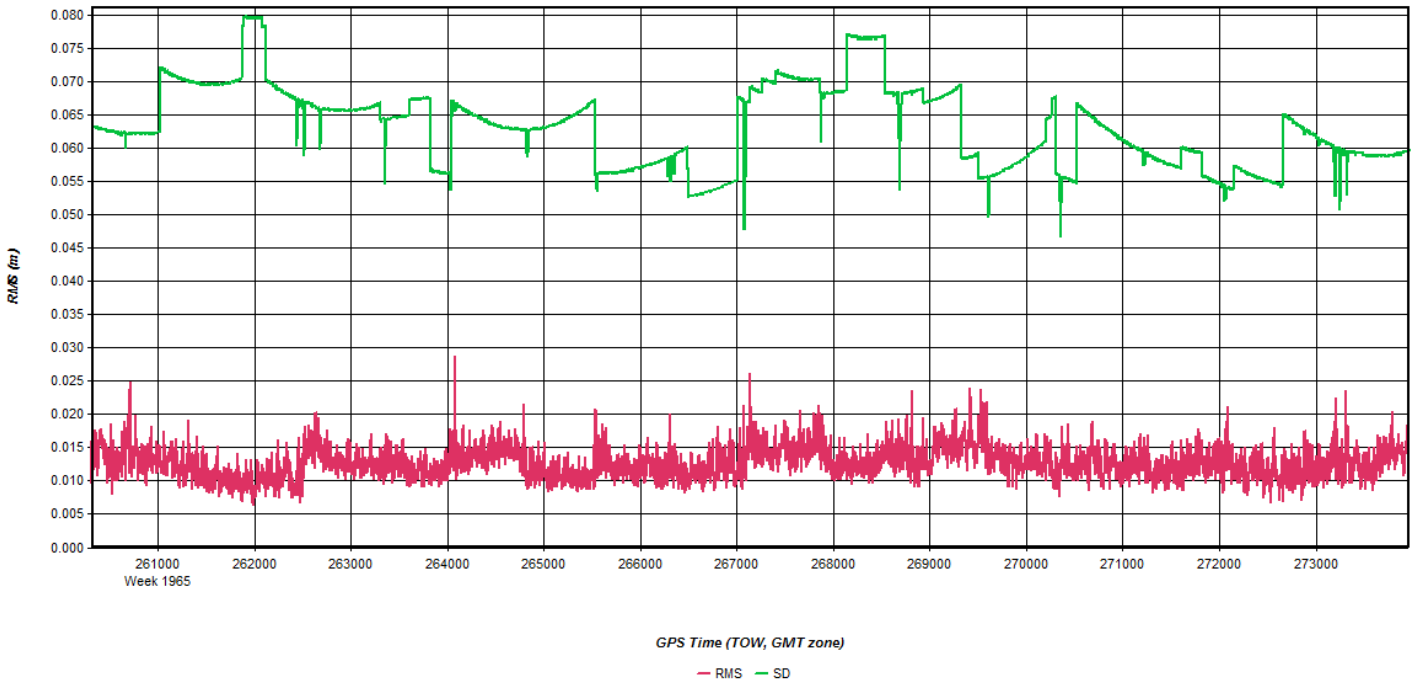
September 6, 2017-A (N604MD, SN8146)

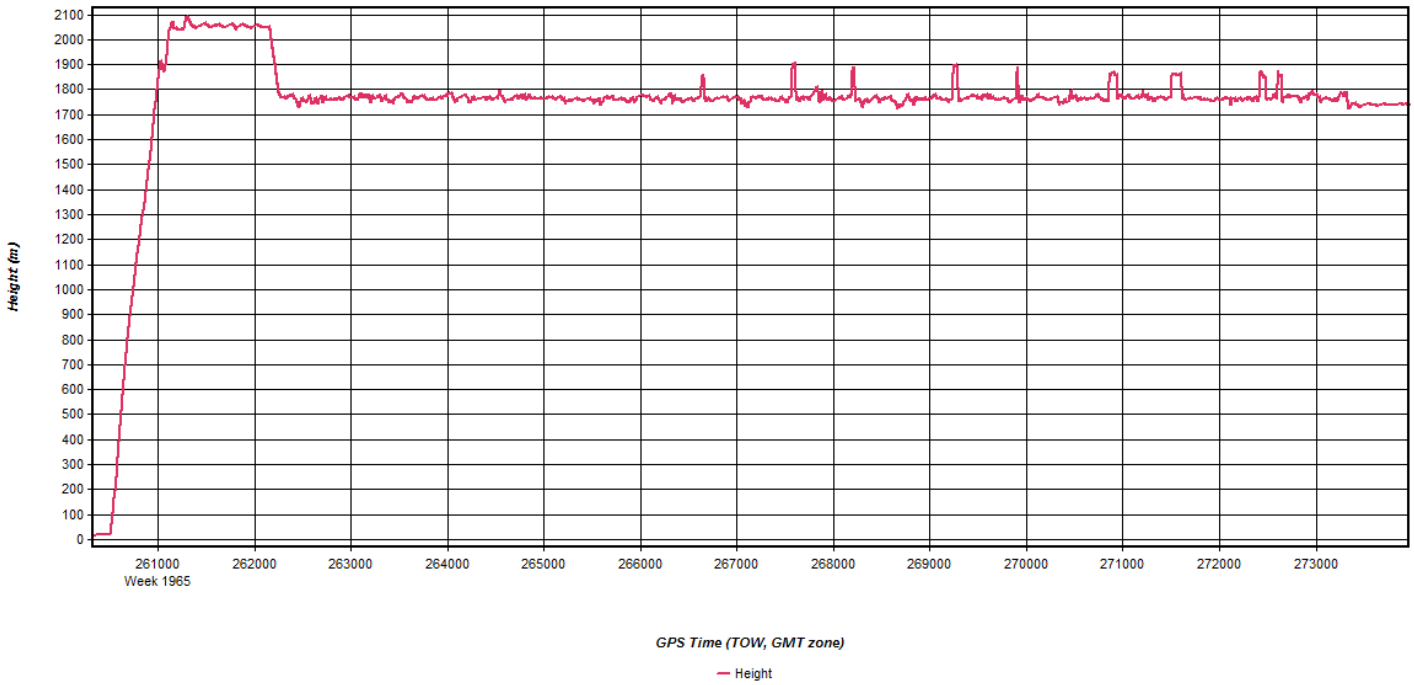

TBRD
AB49
10 km

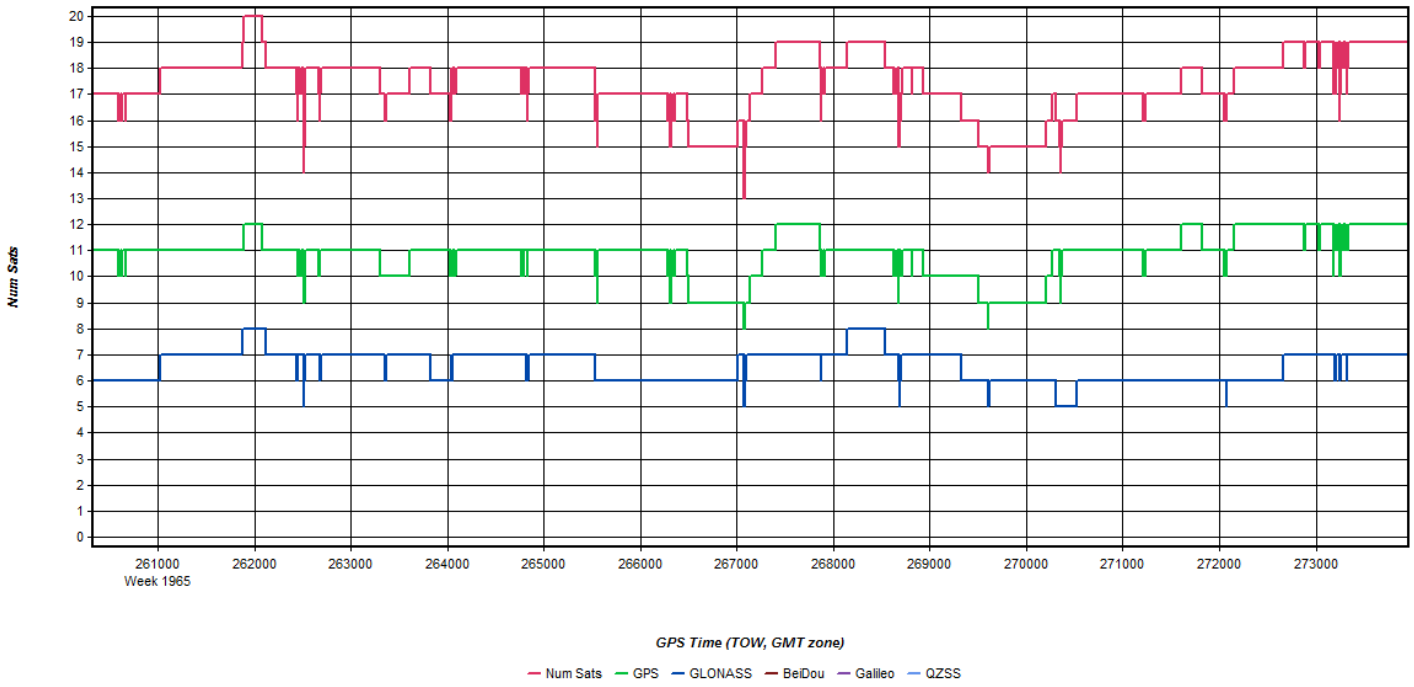

PDOP
1.8
1.7
1.6
1.5
1.4
1.3
1.2
1.1
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
261000
Week 1965
262000
263000
264000
265000
266000
267000
268000
269000
270000
271000
272000
273000
GPS Time (TOW, GMT zone)
PDOP

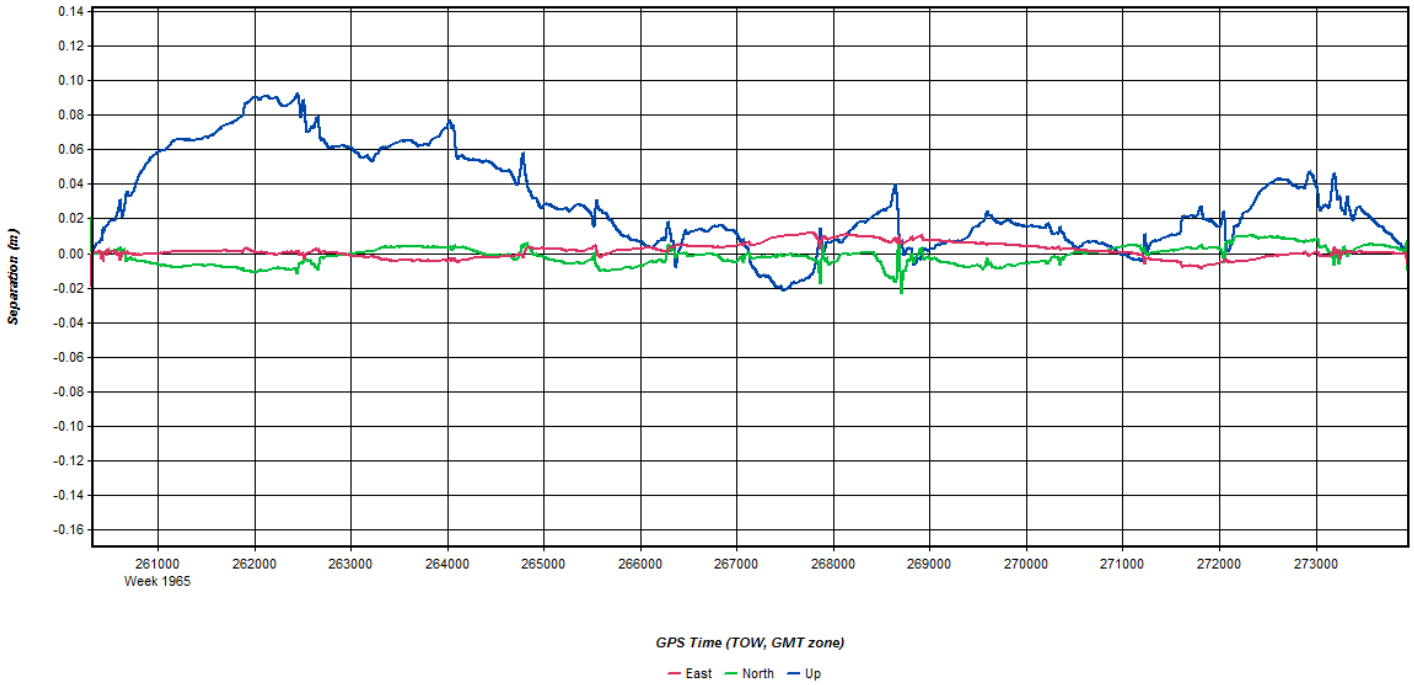

Status
2
1
0
-1
261000
Week 1965
262000
263000
264000
265000
266000
267000
268000
269000
270000
271000
272000
273000
GPS Time (TOW, GMT zone)
Float
Forward Fixed
Reverse Fixed
Fixed (2 or more)

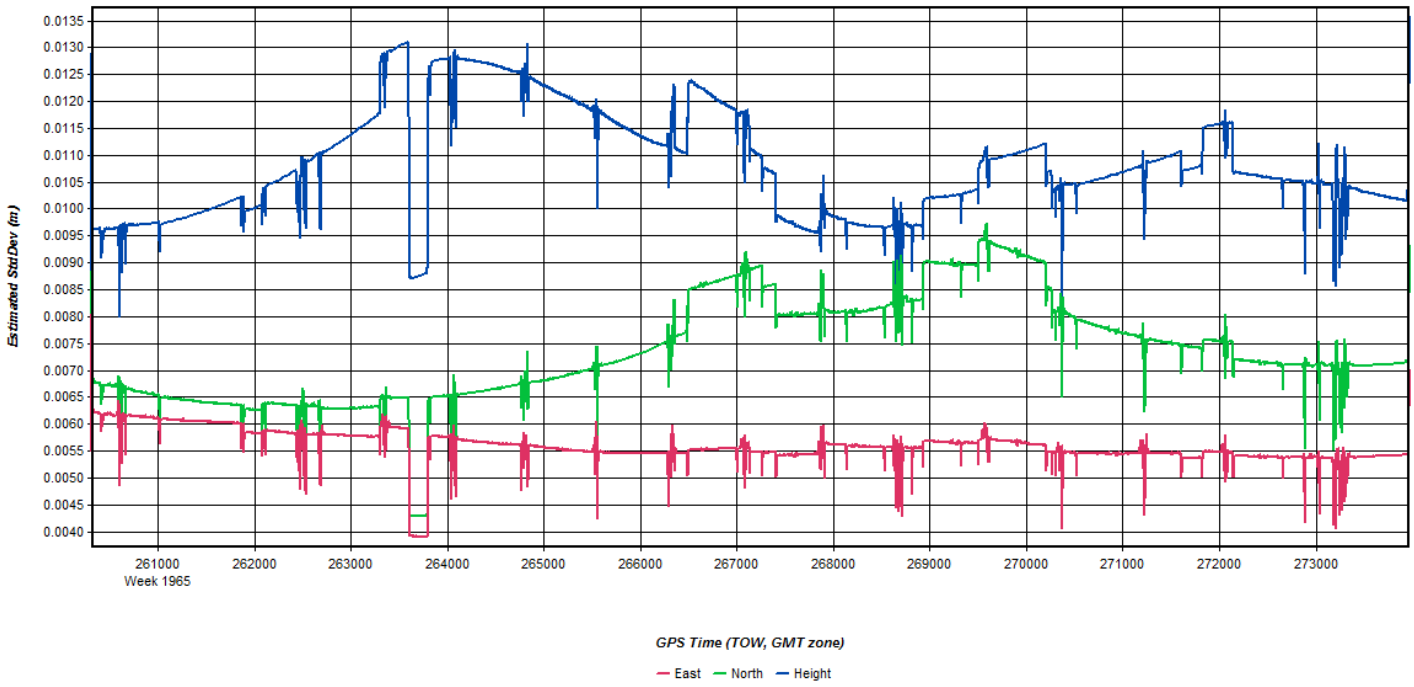

Roll & pitch (deg)
30
25
20
15
10
5
0
-5
-10
-15
-20
-25
-30
-35
261000
Week 1965
262000
263000
264000
265000
266000
267000
268000
269000
270000
271000
272000
273000
GPS Time (TOW, GMT zone)
Roll
Pitch

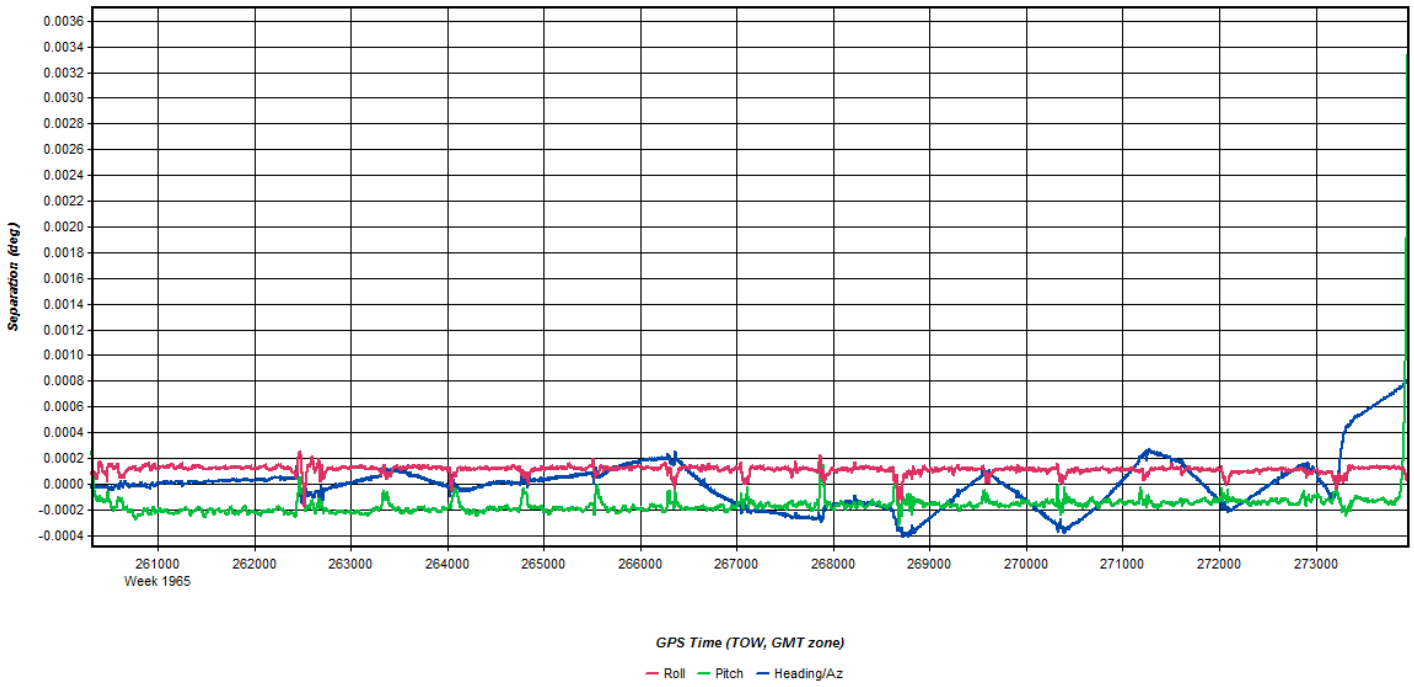

RMS (m)
0.080
0.075
0.070
0.065
0.060
0.055
0.050
0.045
0.040
0.035
0.030
0.025
0.020
0.015
0.010
0.005
0.000
261000
Week 1965
262000
263000
264000
265000
266000
267000
268000
269000
270000
271000
272000
273000
GPS Time (TOW, GMT zone)
RMS
SD

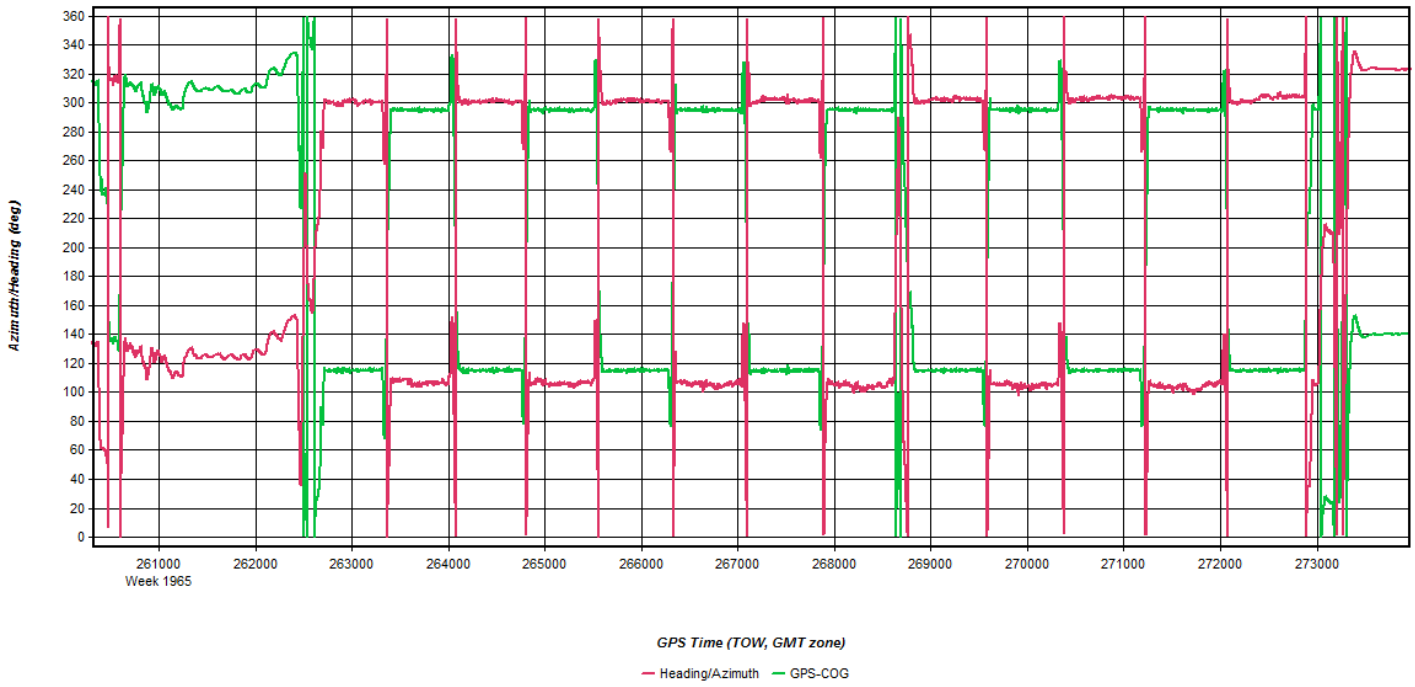

Height (m)
2100
2000
1900
1800
1700
1600
1500
1400
1300
1200
1100
1000
900
800
700
600
500
400
300
200
100
0
261000
Week 1965
262000
263000
264000
265000
266000
267000
268000
269000
270000
271000
272000
273000
GPS Time (TOW, GMT zone)
Height


Num Sats
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
261000
Week 1965
262000
263000
264000
265000
266000
267000
268000
269000
270000
271000
272000
273000
GPS Time (TOW, GMT zone)
Num Sats
GPS
GLONASS
BeiDou
Galileo
QZSS


Separation (m)
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
-0.02
-0.04
-0.06
-0.08
-0.10
-0.12
-0.14
-0.16
261000
Week 1965
262000
263000
264000
265000
266000
267000
268000
269000
270000
271000
272000
273000
GPS Time (TOW, GMT zone)
East
North
Up

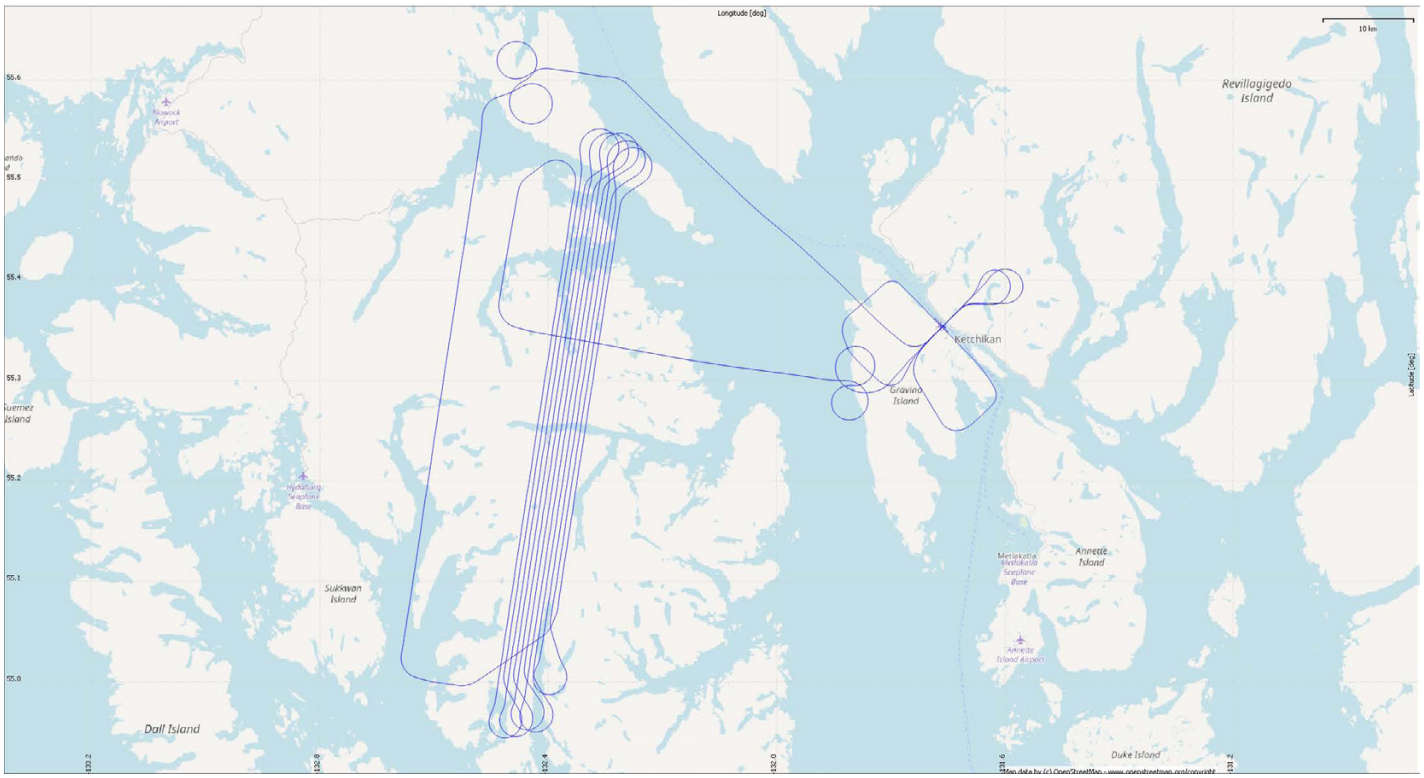

Estimated StdDev (m)
0.0135
0.0130
0.0125
0.0120
0.0115
0.0110
0.0105
0.0100
0.0095
0.0090
0.0085
0.0080
0.0075
0.0070
0.0065
0.0060
0.0055
0.0050
0.0045
0.0040
261000
Week 1965
262000
263000
264000
265000
266000
267000
268000
269000
270000
271000
272000
273000
GPS Time (TOW, GMT zone)
East
North
Height


Separation (deg)
0.0036
0.0034
0.0032
0.0030
0.0028
0.0026
0.0024
0.0022
0.0020
0.0018
0.0016
0.0014
0.0012
0.0010
0.0008
0.0006
0.0004
0.0002
0.0000
-0.0002
-0.0004
261000
Week 1965
262000
263000
264000
265000
266000
267000
268000
269000
270000
271000
272000
273000
GPS Time (TOW, GMT zone)
Roll
Pitch
Heading/Az

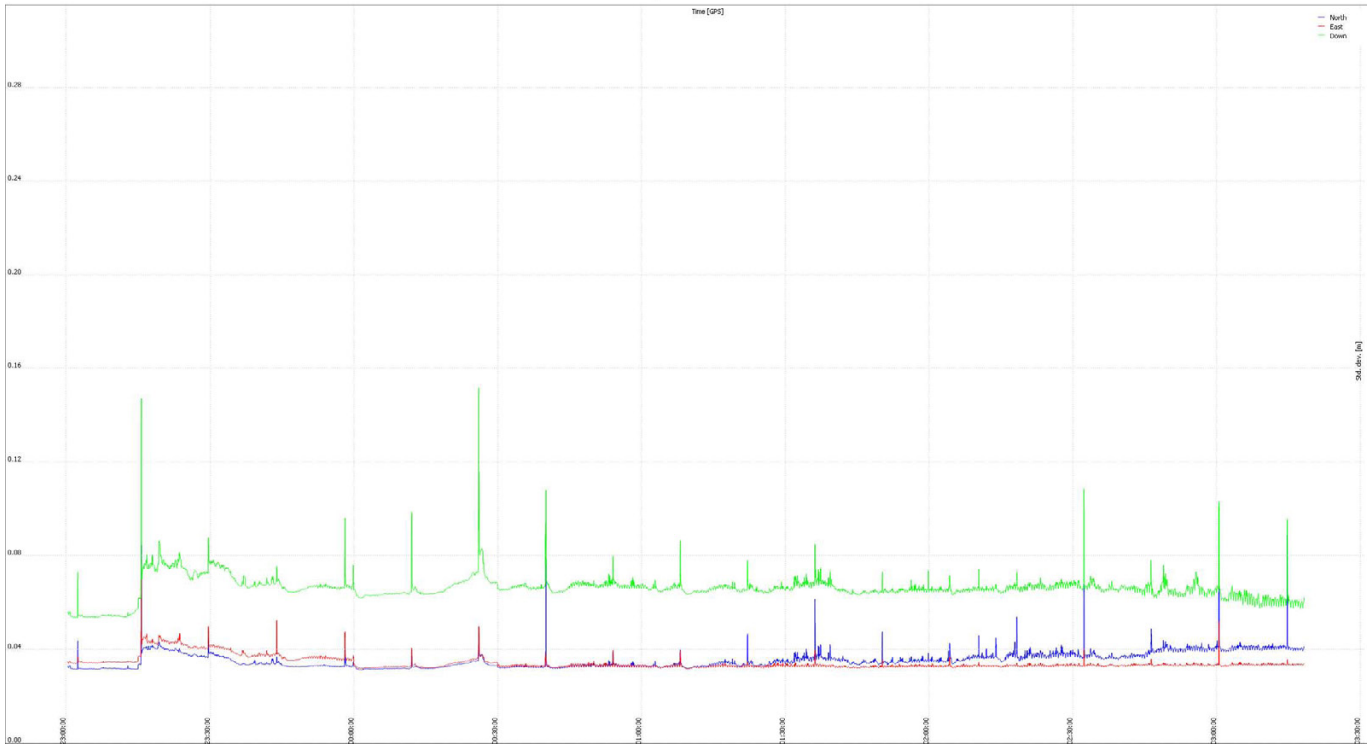

Azimuth/Heading (deg)
360
340
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
261000
Week 1965
262000
263000
264000
265000
266000
267000
268000
269000
270000
271000
272000
273000
GPS Time (TOW, GMT zone)
Heading/Azimuth
GPS-COG

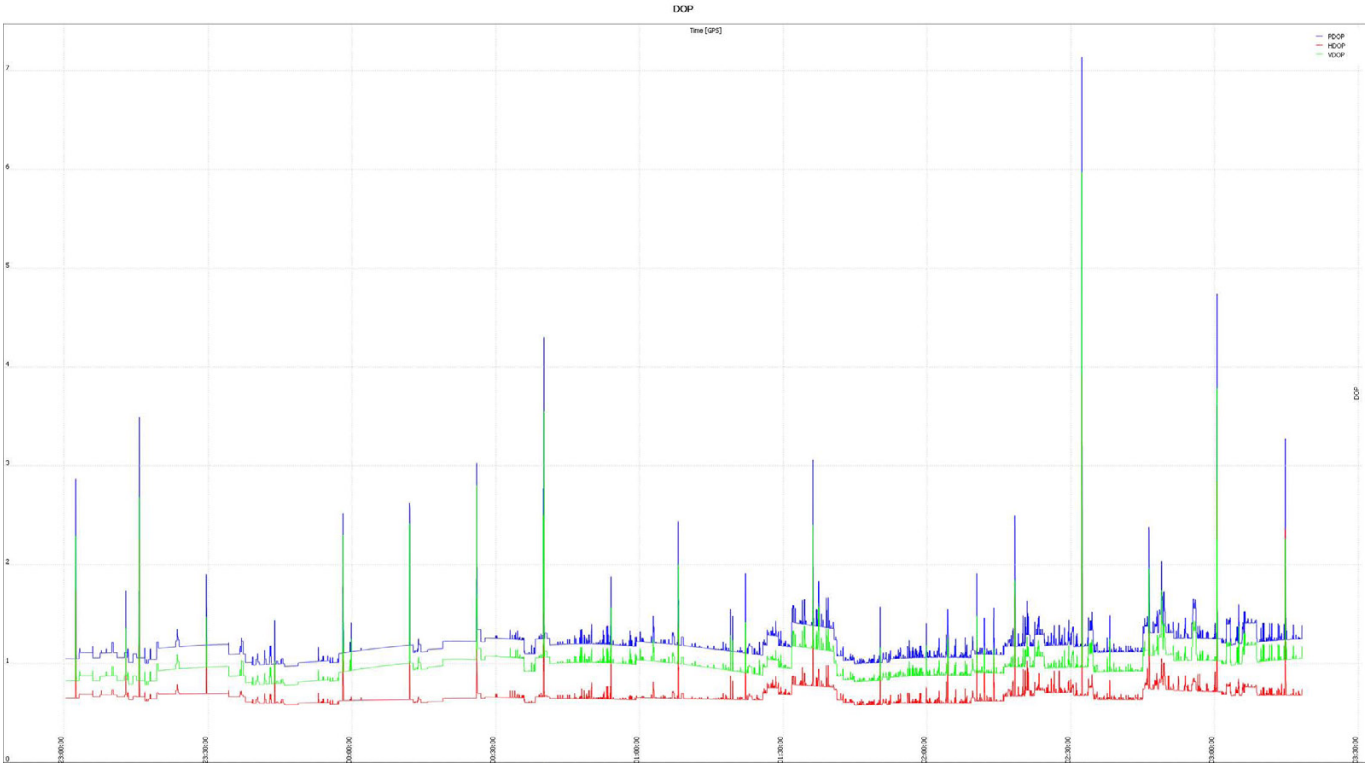
Sept. 13, 2017-B (CFFRY, SN2220754)

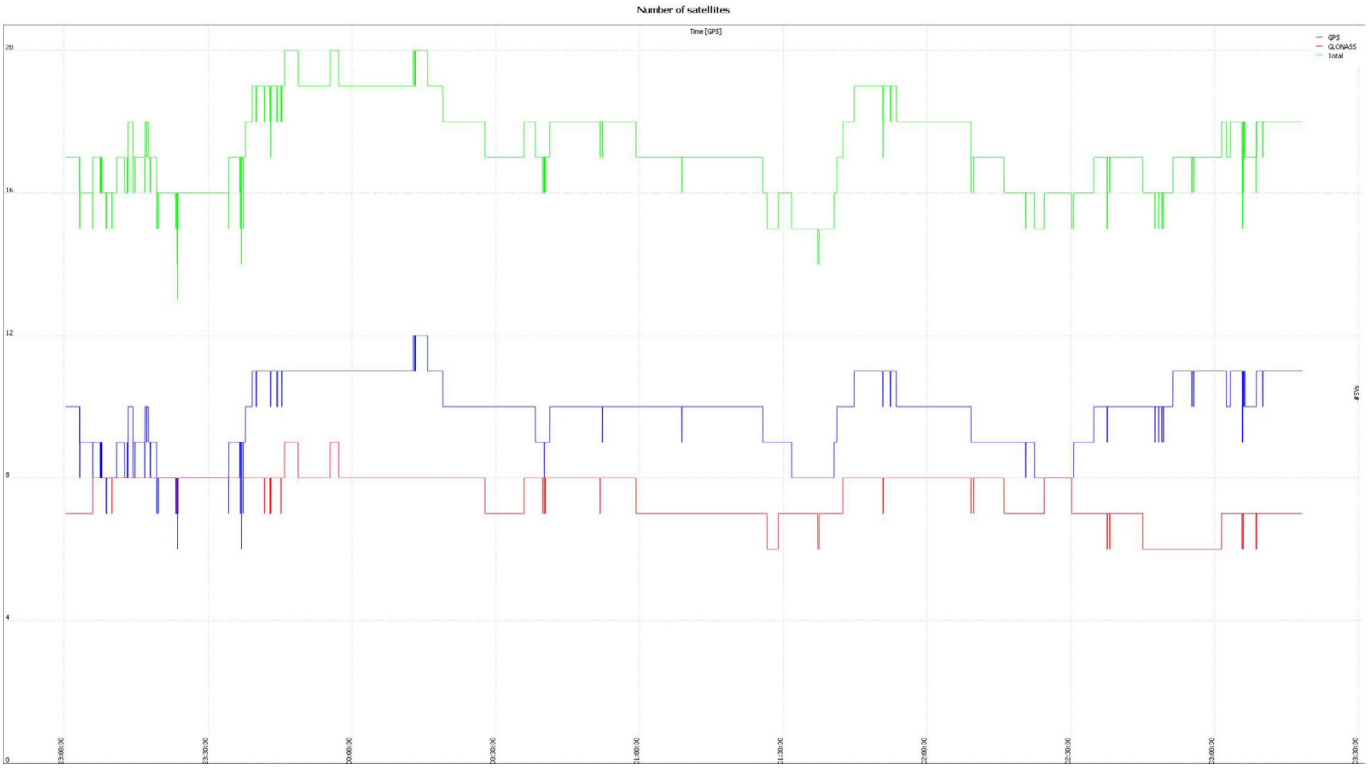
Longitude vs Latitude



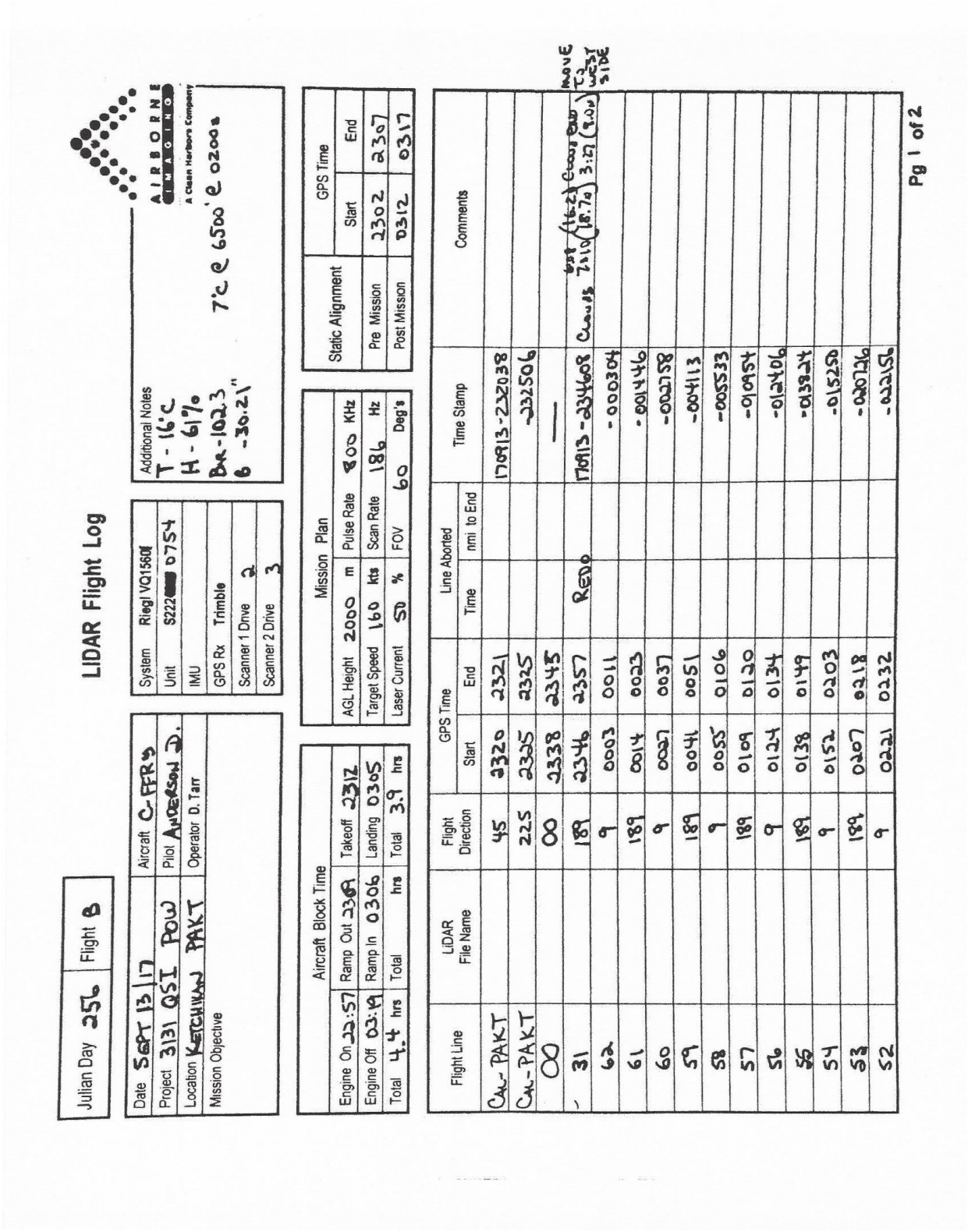
Pos. precision std. dev.




DOP
Time [GPS]
PDOP
HDOP
VDOP
DOP


Number of satellites
Time [GPS]
GPS
GLONASS
Total
#Sv

Flight Log



LIDAR Flight Log

Julian Day 256 | Flight 8

Date SEPT 13/17 | Aircraft C-FFRS
Project 3131 QSI POW | Pilot ANDERSON D.
Location KETCHIKAN PAKT | Operator D. Tarr
Mission Objective

System Riegl VQ1560i
Unit S222[redacted]0754
IMU
GPS Rx Trimble
Scanner 1 Drive 2
Scanner 2 Drive 3

Additional Notes
T - 16°C
H - 61%
Bar - 102.3
6 - 30.21"
7'c @ 6500' @ 0200z

AIRBORNE IMAGING
A Clean Harbors Company

Aircraft Block Time

Engine On 22:57	Ramp Out 2308	Takeoff 2312	
Engine Off 03:19	Ramp In 0306	Landing 0305	
Total 4.4 hrs	Total hrs	Total 3.9 hrs	

Mission Plan

AGL Height	2000 m	Pulse Rate	400 KHz		
Target Speed	160 kts	Scan Rate	186 Hz		
Laser Current	SD %	FOV	60 Degs		

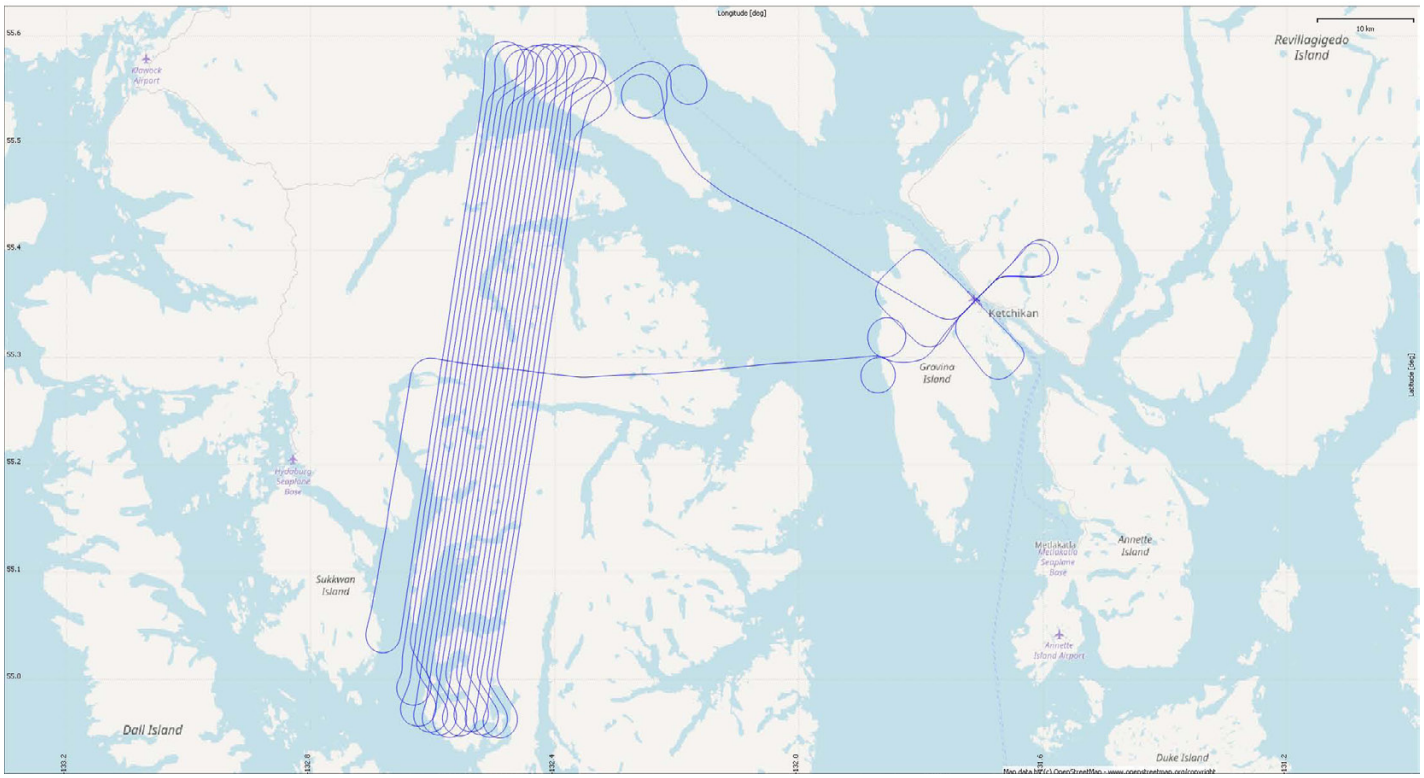
Static Alignment	GPS Time Start	GPS Time End
Pre Mission	2302	2307
Post Mission	0312	0317

Flight Line	LiDAR File Name	Flight Direction	GPS Time Start	GPS Time End	Line Aborted Time	Line Aborted nmi to End	Time Stamp	Comments
CAL-PAKT		45	2320	2321			170913-232038	
CAL-PAKT		225	2325	2325			-232506	
00		00	2338	2345			—	
31		189	2346	2357	REDO		170913-234608	Comms lost (16:21) Ecoast 7110 (18.7a) 3:21 (9.0a) MOVE TO WEST SIDE
62		9	0003	0011			-000304	
61		189	0014	0023			-001446	
60		9	0027	0037			-002158	
59		189	0041	0051			-004113	
58		9	0055	0106			-005533	
57		189	0109	0120			-010954	
56		9	0124	0134			-012406	
55		189	0138	0149			-013824	
54		9	0152	0203			-015250	
53		189	0207	0218			-020726	
52		9	0221	0232			-022156	

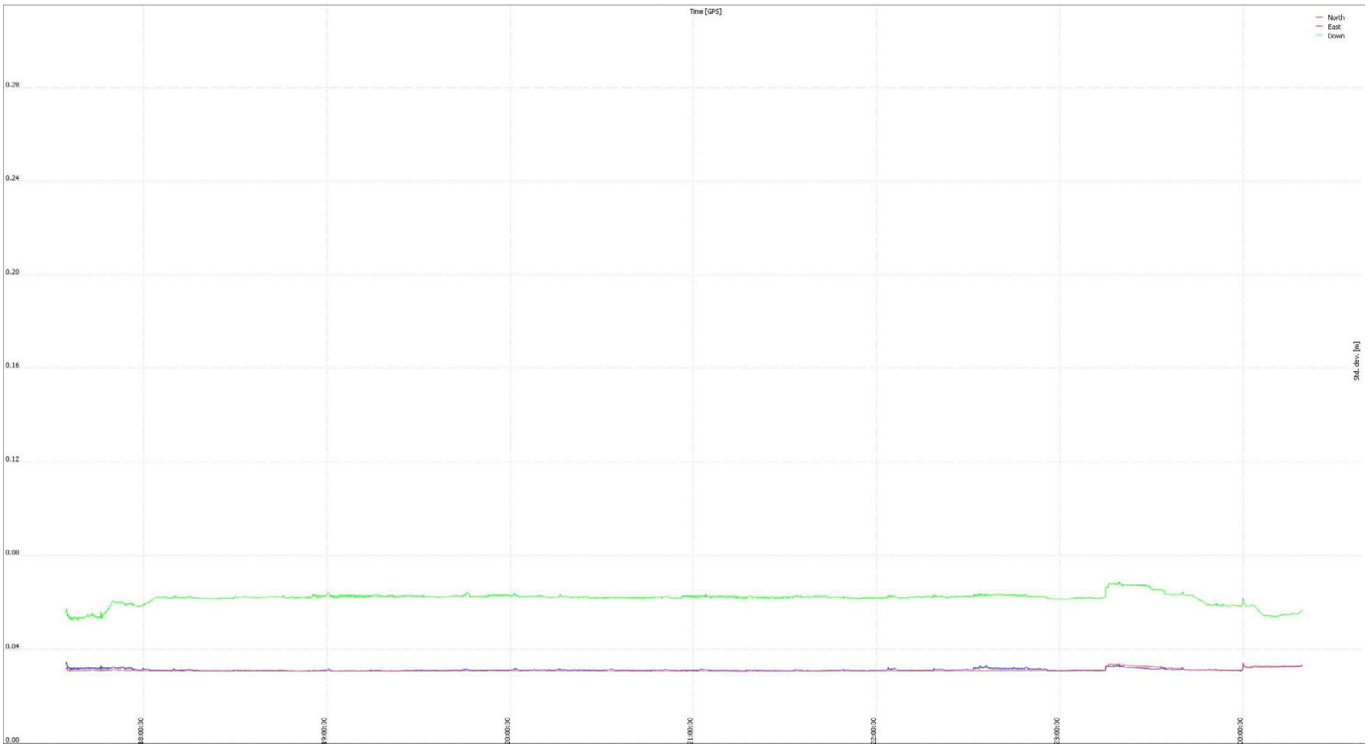
Pg 1 of 2

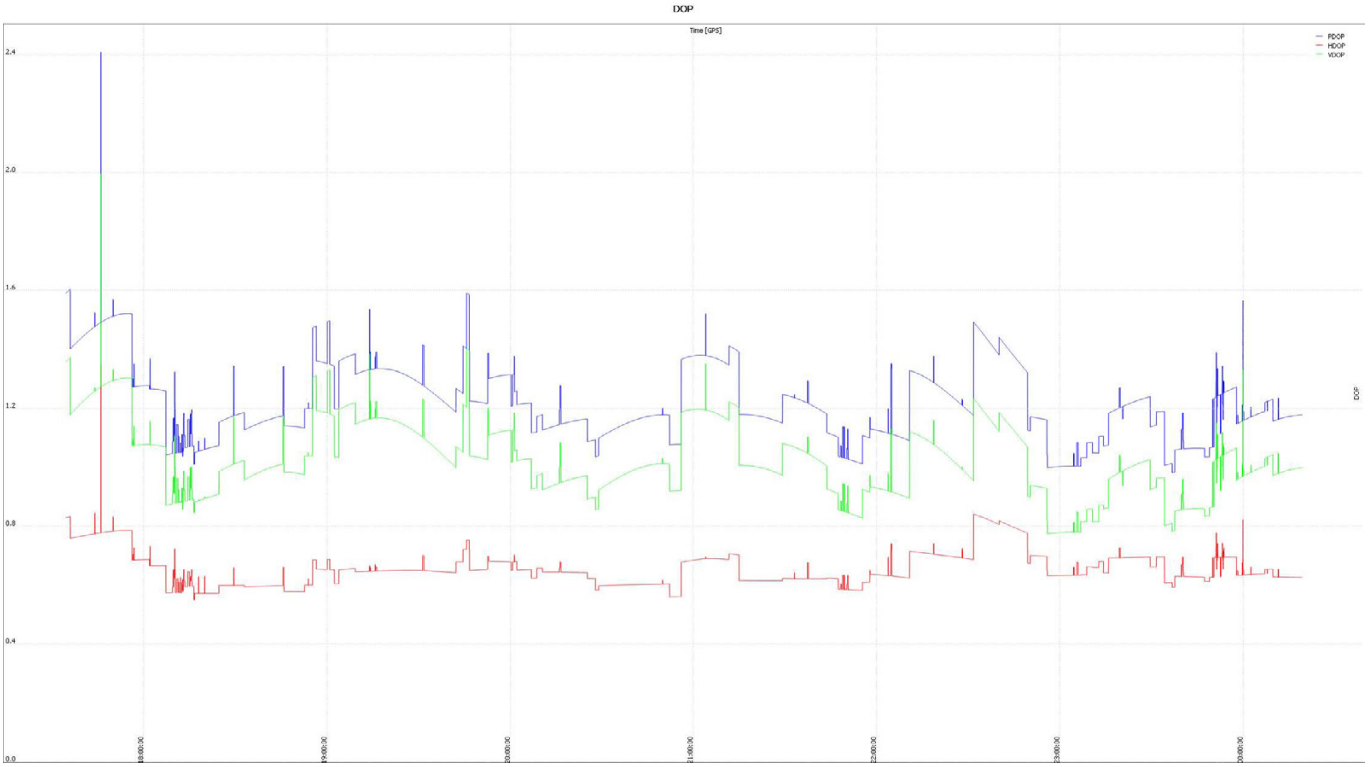
Sept. 14, 2017-A (CFFRY, SN2220754)

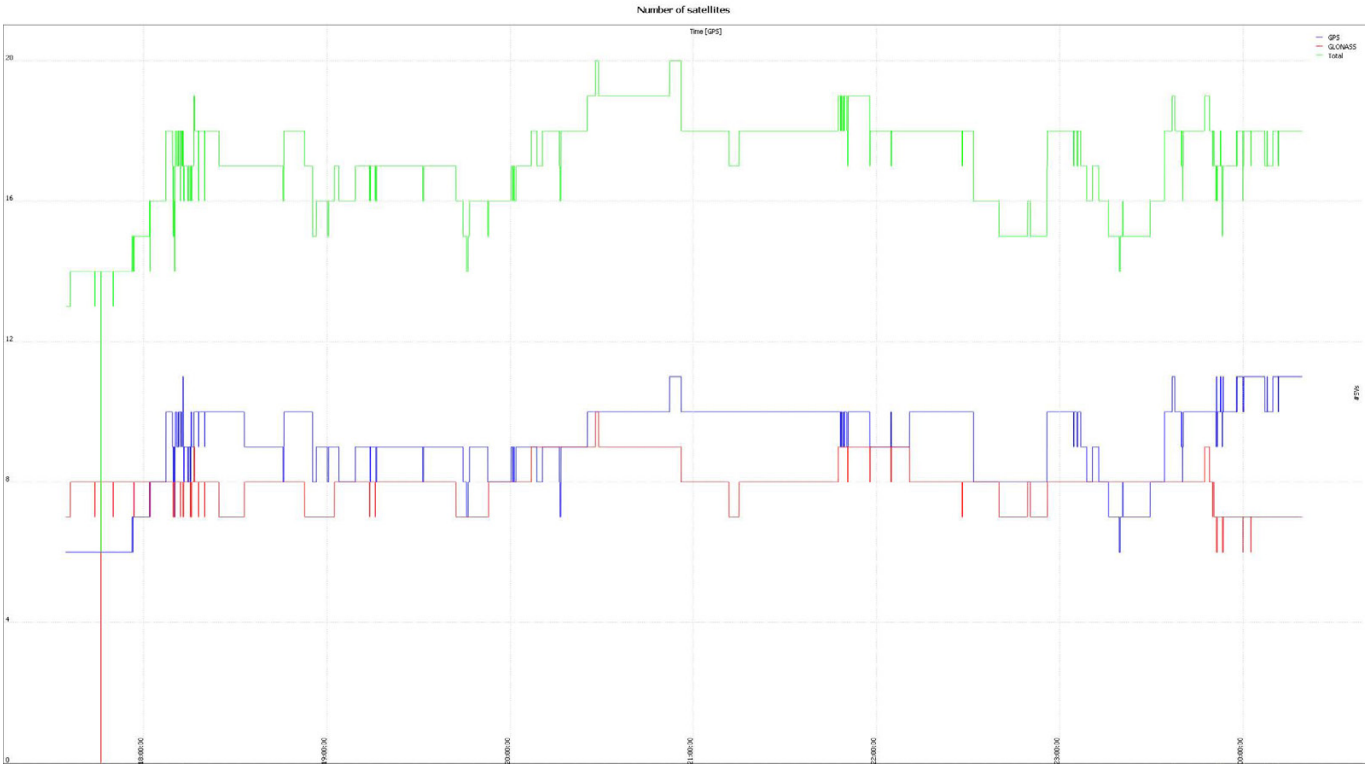
Longitude vs Latitude



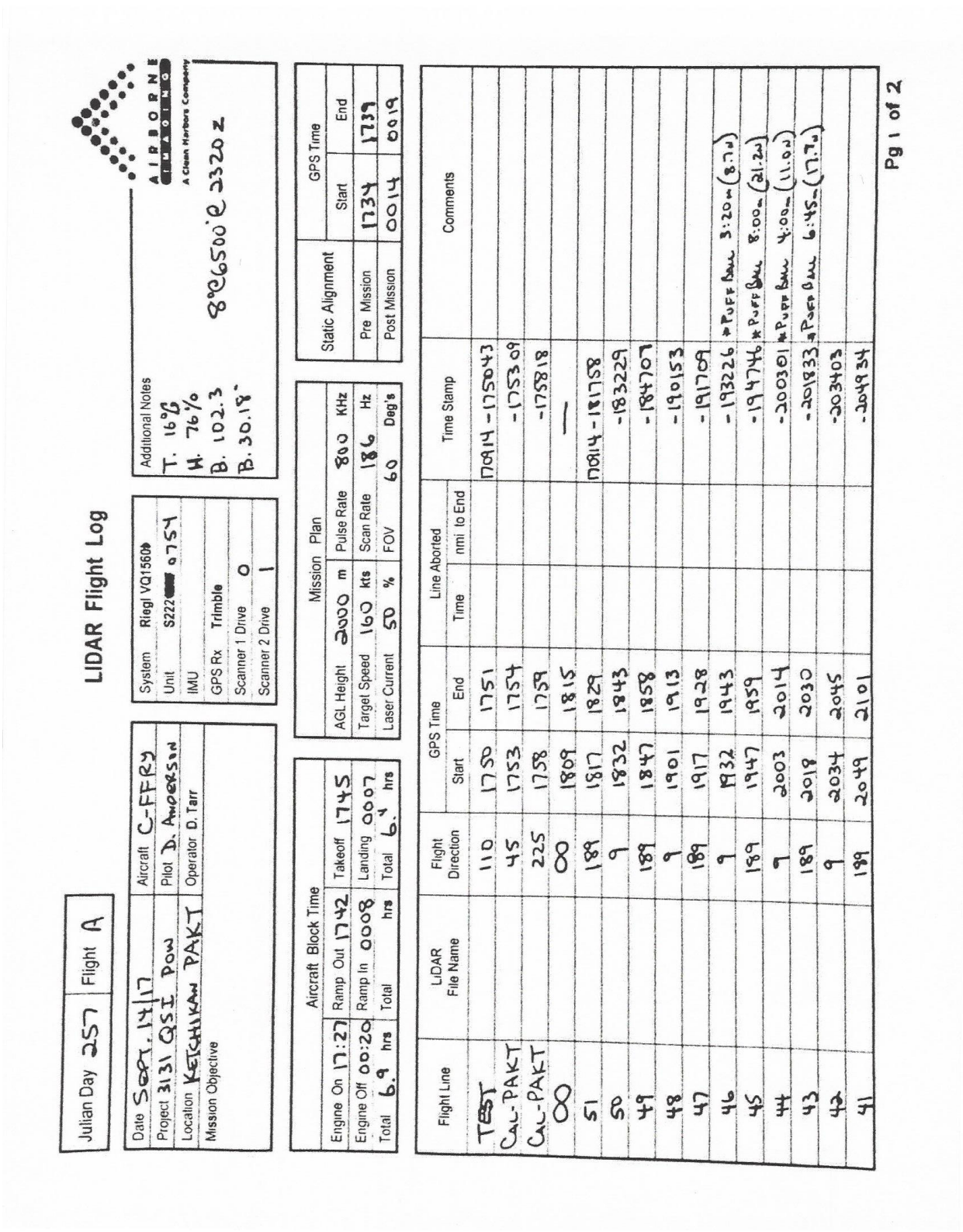
Pos. precision std. dev.




DOP
Time [GPS]
PDOP
HDOP
VDOP
2.4
2.0
1.6
1.2
0.8
0.4
0.0
DOP


Number of satellites
Time [GPS]
GPS
GLONASS
Total
20
16
12
8
4
0
#Sats

Flight Log



LIDAR Flight Log

Julian Day 257 | Flight A

Date Sept. 14/17 | Aircraft C-FFRY
Project 3131 QSI POW | Pilot D. Anderson
Location KETCHIKAN PAKT | Operator D. Tarr
Mission Objective

System Riegl VQ1560i
Unit S222 0754
IMU
GPS Rx Trimble
Scanner 1 Drive 0
Scanner 2 Drive 1

Additional Notes
T. 16°C
H. 76%
B. 102.3
B. 30.19"
8°26500'Q 2320 z

AIRBORNE TECHNOLOGY
A Clean Harbors Company

Aircraft Block Time
Engine On 17:27 | Ramp Out 1742 | Takeoff 1745
Engine Off 00:20 | Ramp In 0008 | Landing 0007
Total 6.9 hrs | Total hrs | Total 6.4 hrs

Mission Plan
AGL Height 2000 m | Pulse Rate 800 KHz
Target Speed 160 kts | Scan Rate 186 Hz
Laser Current 50 % | FOV 60 Deg's

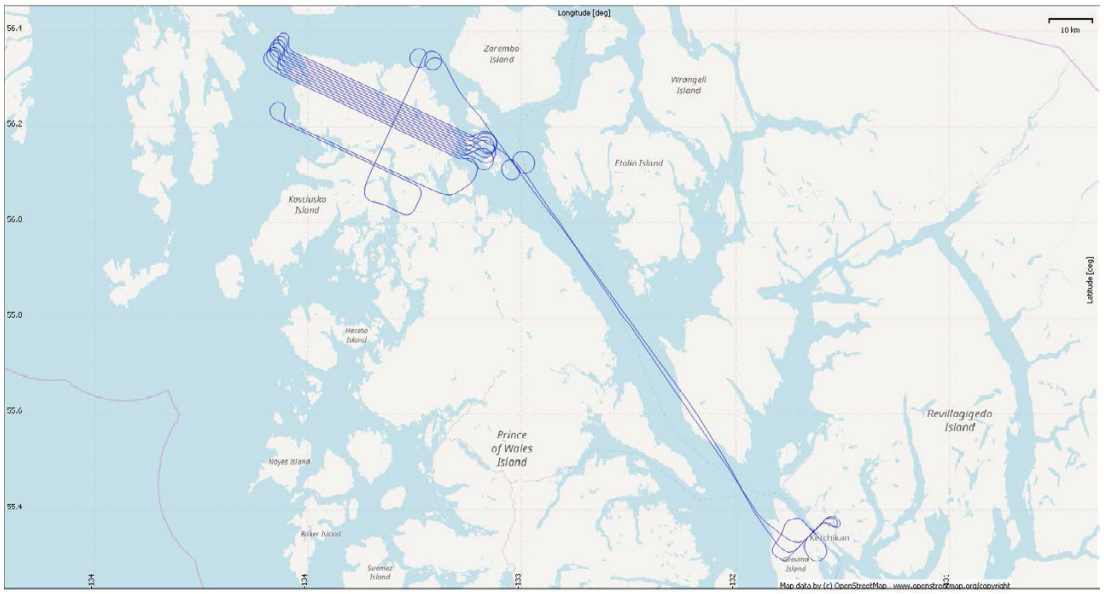
Static Alignment
Pre Mission | GPS Time Start 1734 | End 1739
Post Mission | GPS Time Start 0014 | End 0019

Flight Line	LiDAR File Name	Flight Direction	GPS Time Start	GPS Time End	Line Aborted Time	Line Aborted nmi to End	Time Stamp	Comments
TEST		110	1750	1751			170914 -175043	
CAL-PAKT		45	1753	1754			-175309	
CAL-PAKT		225	1758	1759			-175818	
00		00	1809	1815			—	
51		189	1817	1829			170814 - 181758	
50		9	1832	1843			-183229	
49		189	1847	1858			-184707	
48		9	1901	1913			-190153	
47		189	1917	1928			-191709	
46		9	1932	1943			-193226 *Puff Bmw 3:20m (8.7w)	
45		189	1947	1959			-194746 *Puff Bmw 8:00m (21.2w)	
44		9	2003	2014			-200301 *Puff Bmw 4:09m (11.0w)	
43		189	2018	2030			-201833 *Puff Bmw 6:45m (17.7w)	
42		9	2034	2045			-203403	
41		189	2049	2101			-204934	

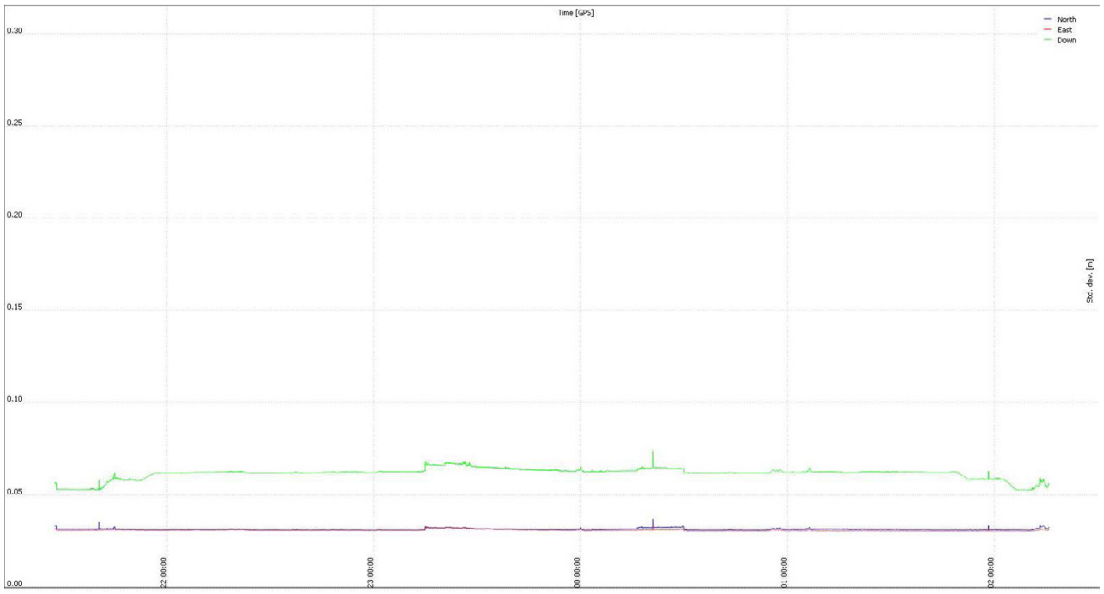
Pg 1 of 2

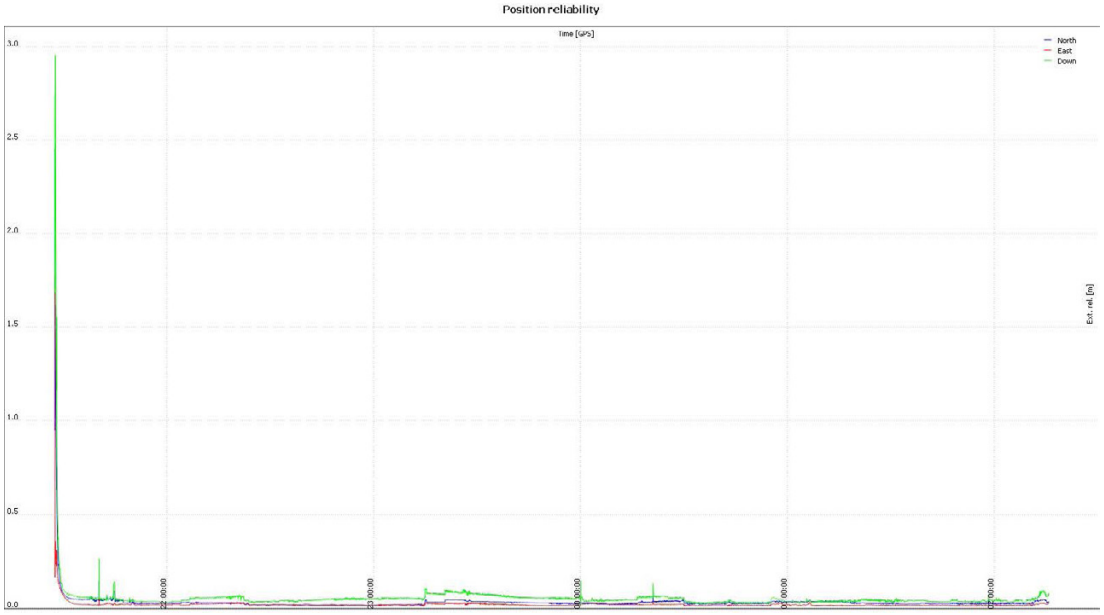
Oct. 1, 2017-A (N44RL, SN2221238)

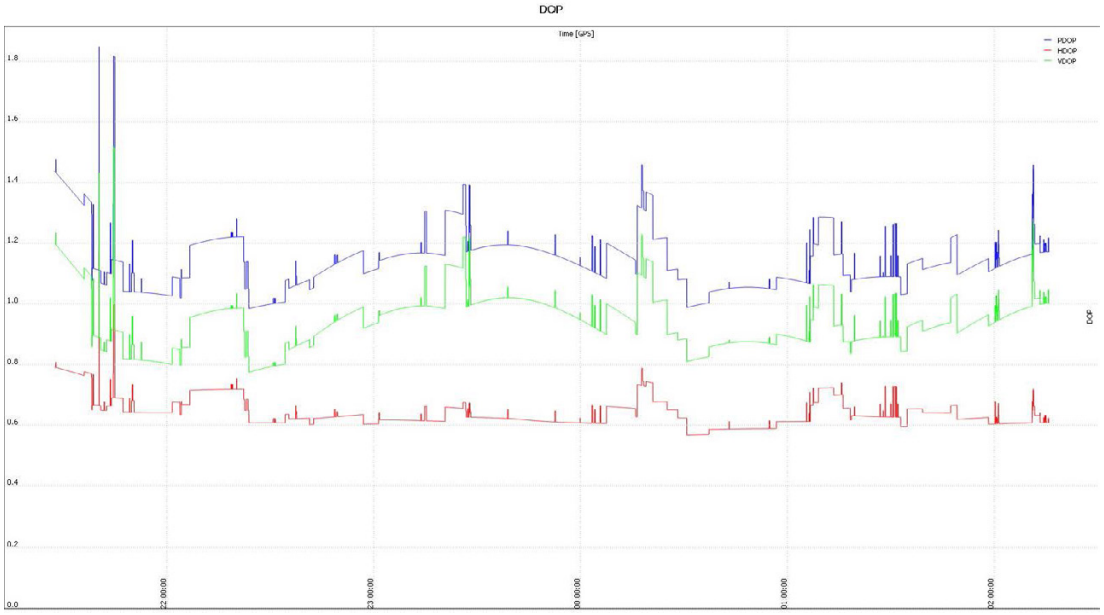
Longitude vs Latitude

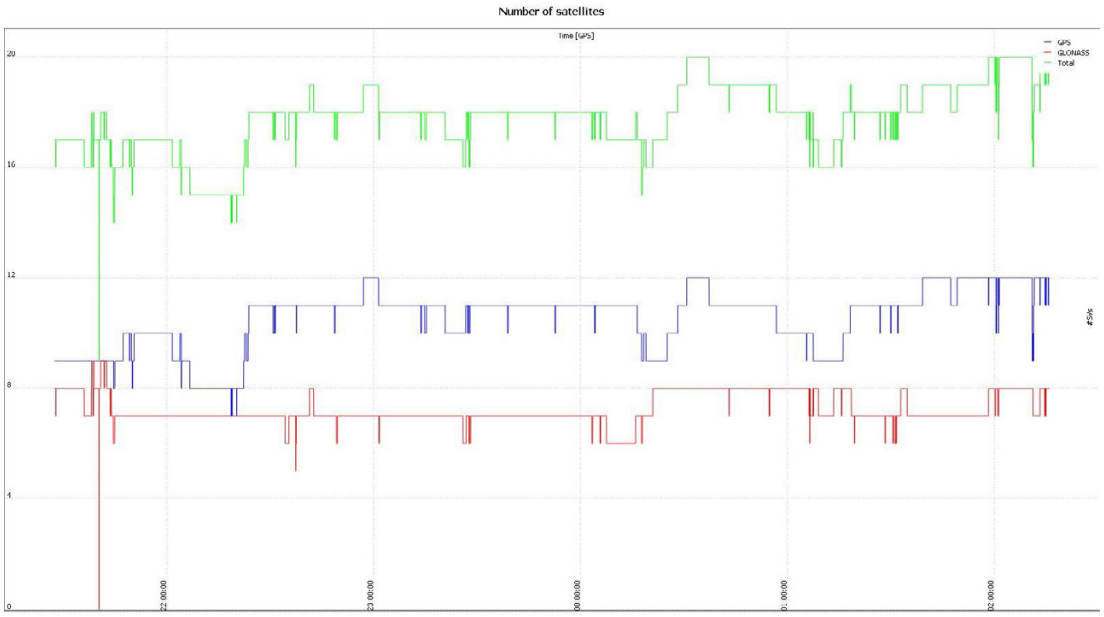


Pos. precision std. dev.

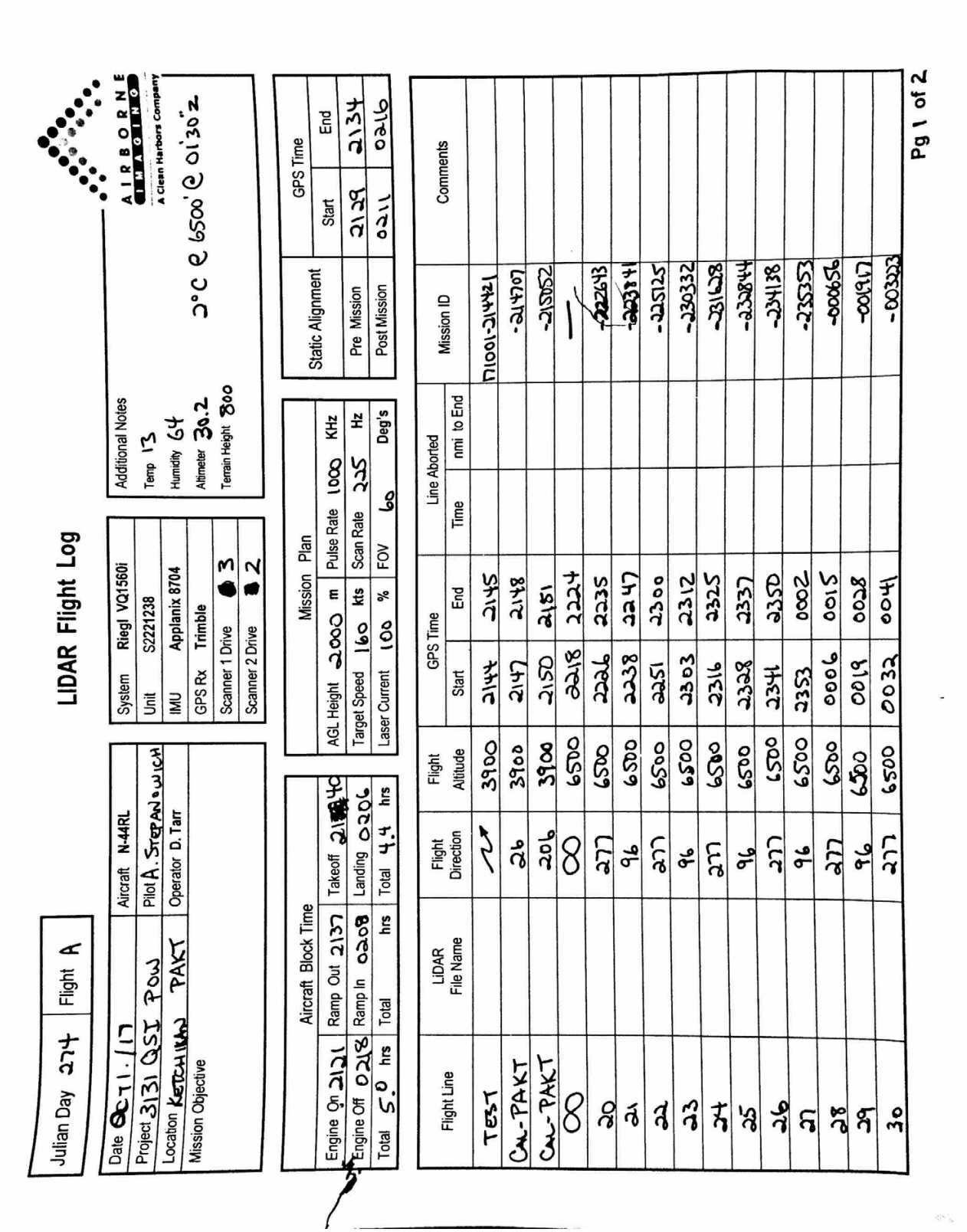



Position reliability
Time [GPS]
North
East
Down
Ext. rel. [m]


DOP
Time [GPS]
PDOP
HDOP
VDOP
DOP


Number of satellites
Time [GPS]
GPS
GLONASS
Total
#Sats
20
16
12
8
4
0
22 00:00
23 00:00
00 00:00
01 00:00
02 00:00

Flight Log



LIDAR Flight Log

Julian Day 274 | Flight A

Date Oct. 1 /17 | Aircraft N-44RL
Project 3131 QSI POW | Pilot A. Stepanowicz
Location Ketchikan PAKT | Operator D. Tarr
Mission Objective

Aircraft Block Time
Engine On 2121 | Ramp Out 2137 | Takeoff 2146
Engine Off 0248 | Ramp In 0308 | Landing 0206
Total 5.0 hrs | Total hrs | Total 4.4 hrs

Mission Plan
AGL Height 2000 m | Pulse Rate 1000 KHz
Target Speed 160 kts | Scan Rate 225 Hz
Laser Current 100 % | FOV 60 Deg's

System Riegl VQ1560i
Unit S2221238
IMU Applanix 8704
GPS Rx Trimble
Scanner 1 Drive 3
Scanner 2 Drive 2

Additional Notes
Temp 13
Humidity 64
Altimeter 30.2
Terrain Height 800

AIRBORNE IMAGING — A Clean Harbors Company

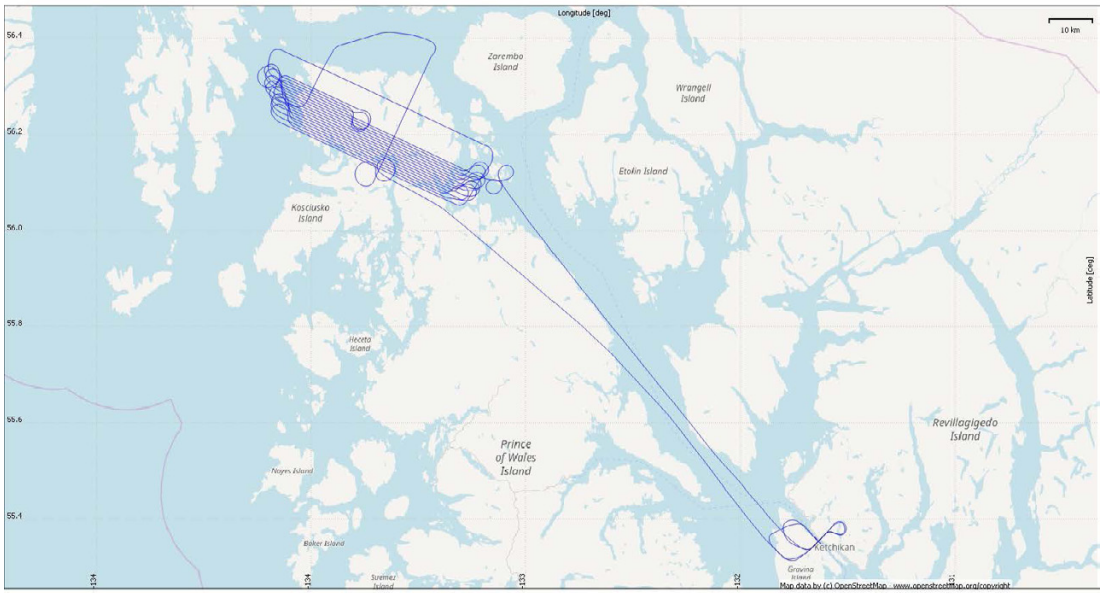
Static Alignment | GPS Time Start | GPS Time End
Pre Mission | 2129 | 2134
Post Mission | 0211 | 0216

Flight Line	LiDAR File Name	Flight Direction	Flight Altitude	GPS Time Start	GPS Time End	Line Aborted Time	Line Aborted nmi to End	Mission ID	Comments
TEST		NW	3900	2144	2145			211001-214421	
QL1-PAKT		26	3900	2147	2148			-214707	
QL1-PAKT		206	3900	2150	2151			-215052	
00		00	6500	2218	2224			—	
20		277	6500	2226	2235			-222643	
21		96	6500	2238	2247			-223941	
22		277	6500	2251	2300			-225125	
23		96	6500	2303	2312			-230332	
24		277	6500	2316	2325			-231628	
25		96	6500	2328	2337			-233044	
26		277	6500	2341	2350			-234138	
27		96	6500	2353	0002			-235353	
28		277	6500	0006	0015			-000656	
29		96	6500	0019	0028			-001917	
30		277	6500	0032	0041			-003223	

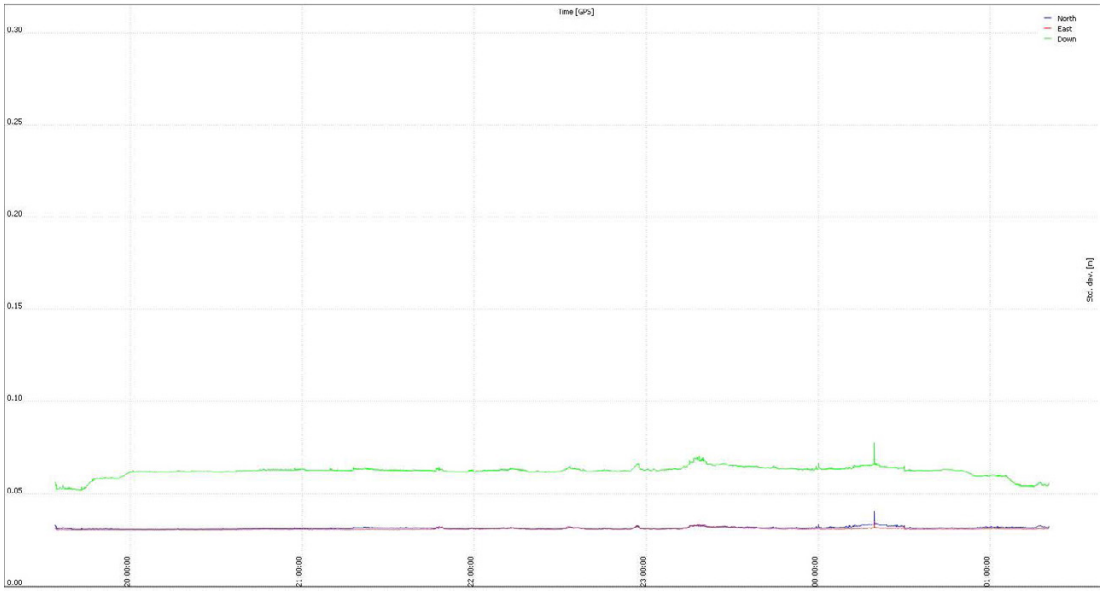
Pg 1 of 2

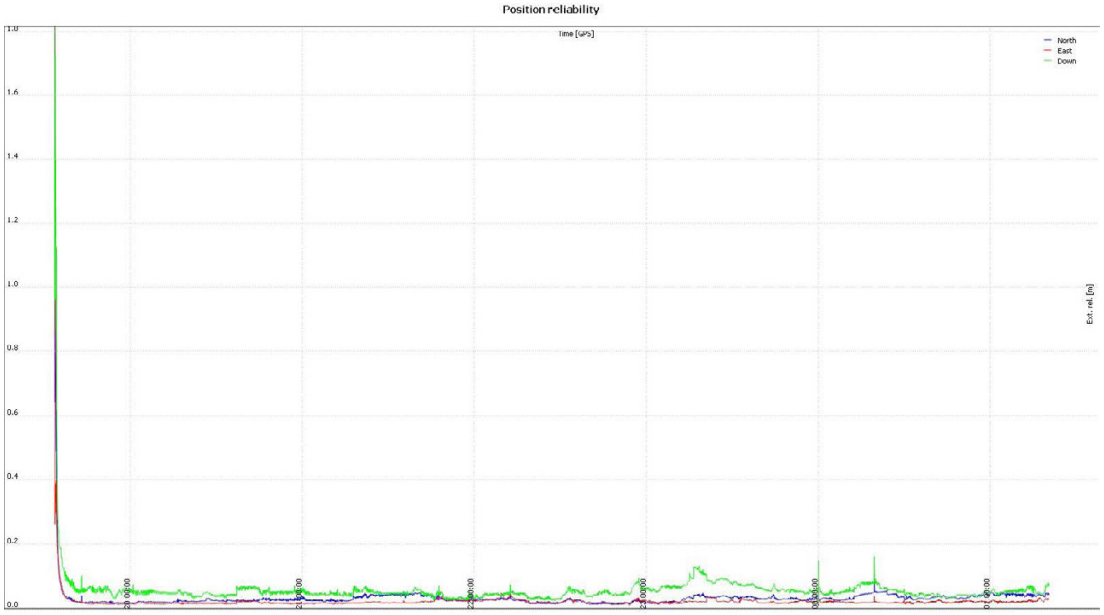
Oct. 2, 2017-A (N44RL, SN2222738)

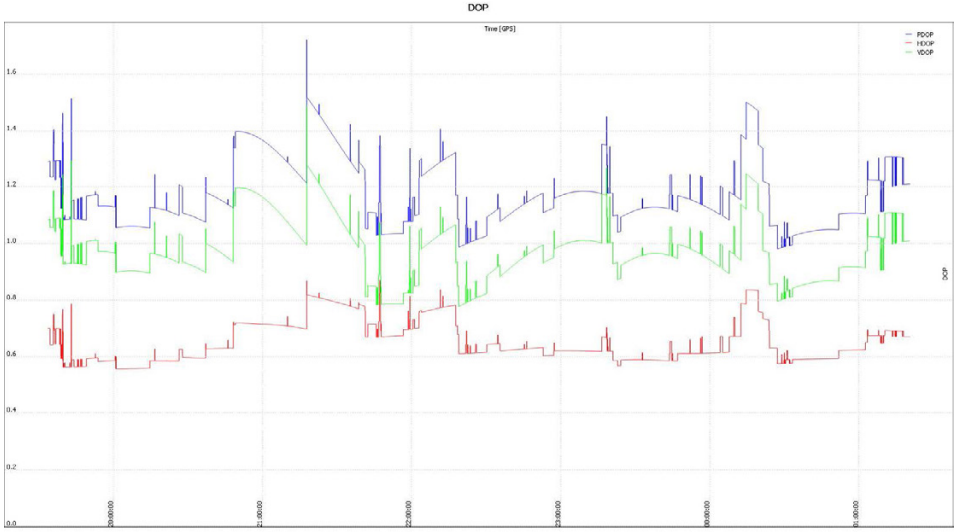
Longitude vs Latitude

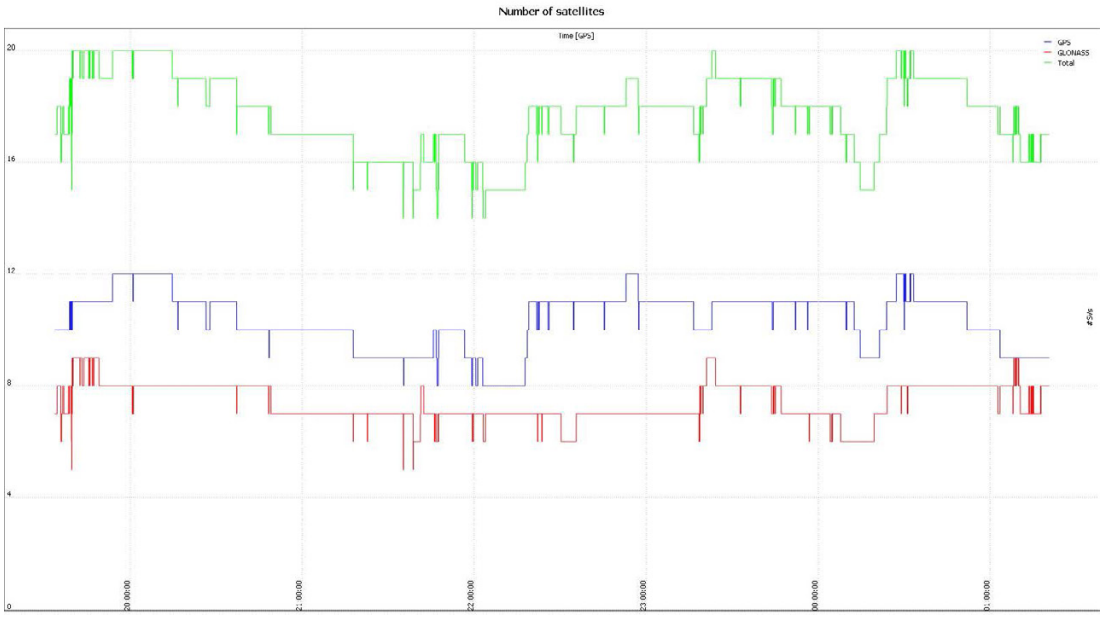


Pos. precision std. dev.

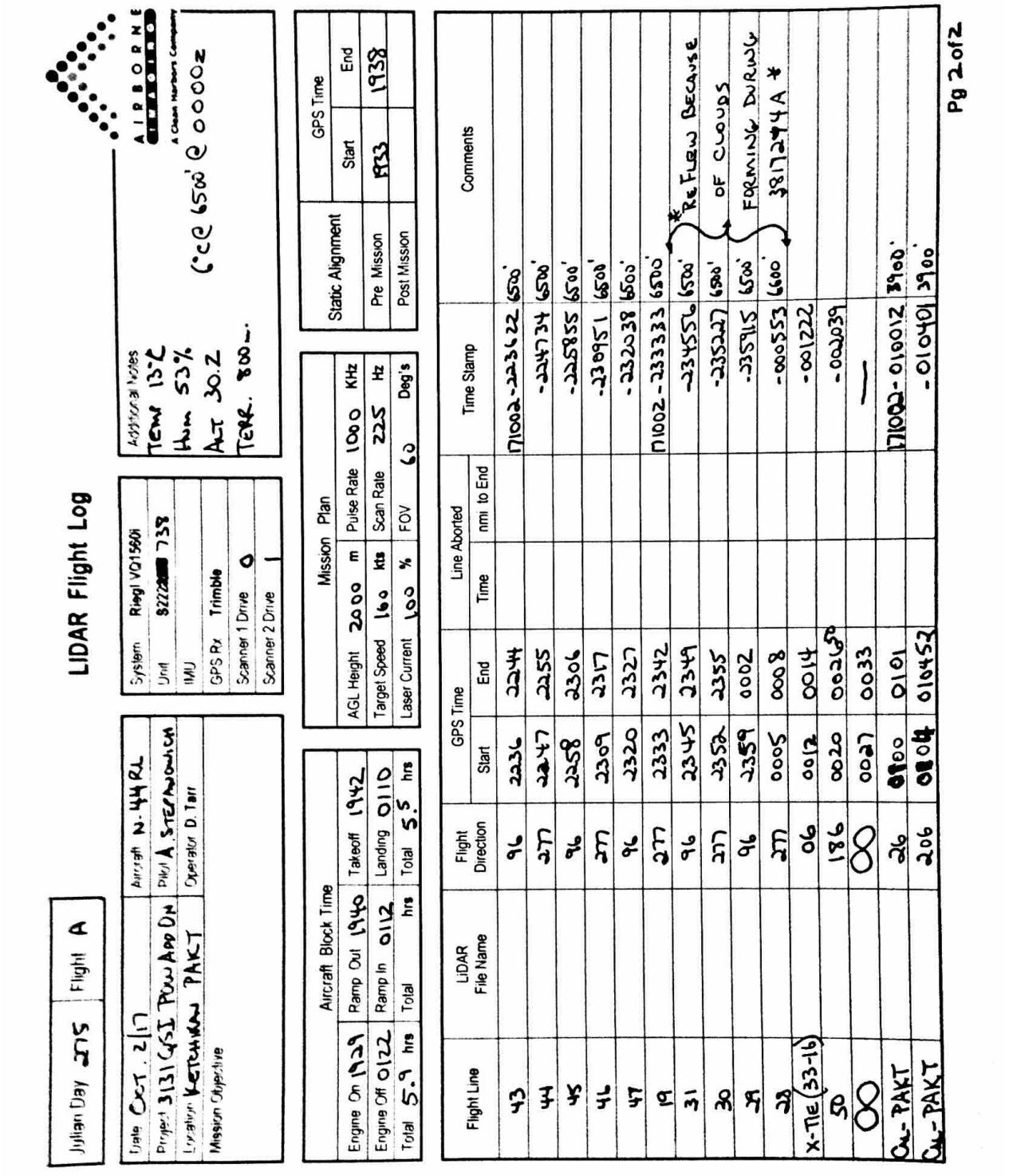



Position reliability
Time [GPS]
North
East
Down
Ext. rel. [m]


DOP
Time [GPS]
PDOP
HDOP
VDOP
DOP


Number of satellites
Time [GPS]
GPS
GLONASS
Total
#Sats
20
16
12
8
4
0
20 00:00
21 00:00
22 00:00
23 00:00
00 00:00
01 00:00

Flight Log



LIDAR Flight Log

Julian Day 275 | Flight A

Date Oct. 2/17 | Aircraft N-44RL
Project 3131 GSI Pow Add On | Pilot A. Stephenson
Location Ketchikan PAKT | Operator D. Tarr
Mission Objective

System Riegl VQ1560i
Unit 8222[redacted] 738
IMU
GPS Rx Trimble
Scanner 1 Drive 5
Scanner 2 Drive 1

Additional Notes
Temp 13°C
Hum 53%
Alt 30.2
Terr. 800'.
Ceil 6500' @ 0000z

AIRBORNE HYDROGRAPHIC

Aircraft Block Time			
Engine On 1939	Ramp Out 1940	Takeoff 1942	
Engine Off 0122	Ramp In 0112	Landing 0110	
Total 5.9 hrs	Total hrs	Total 5.5 hrs	

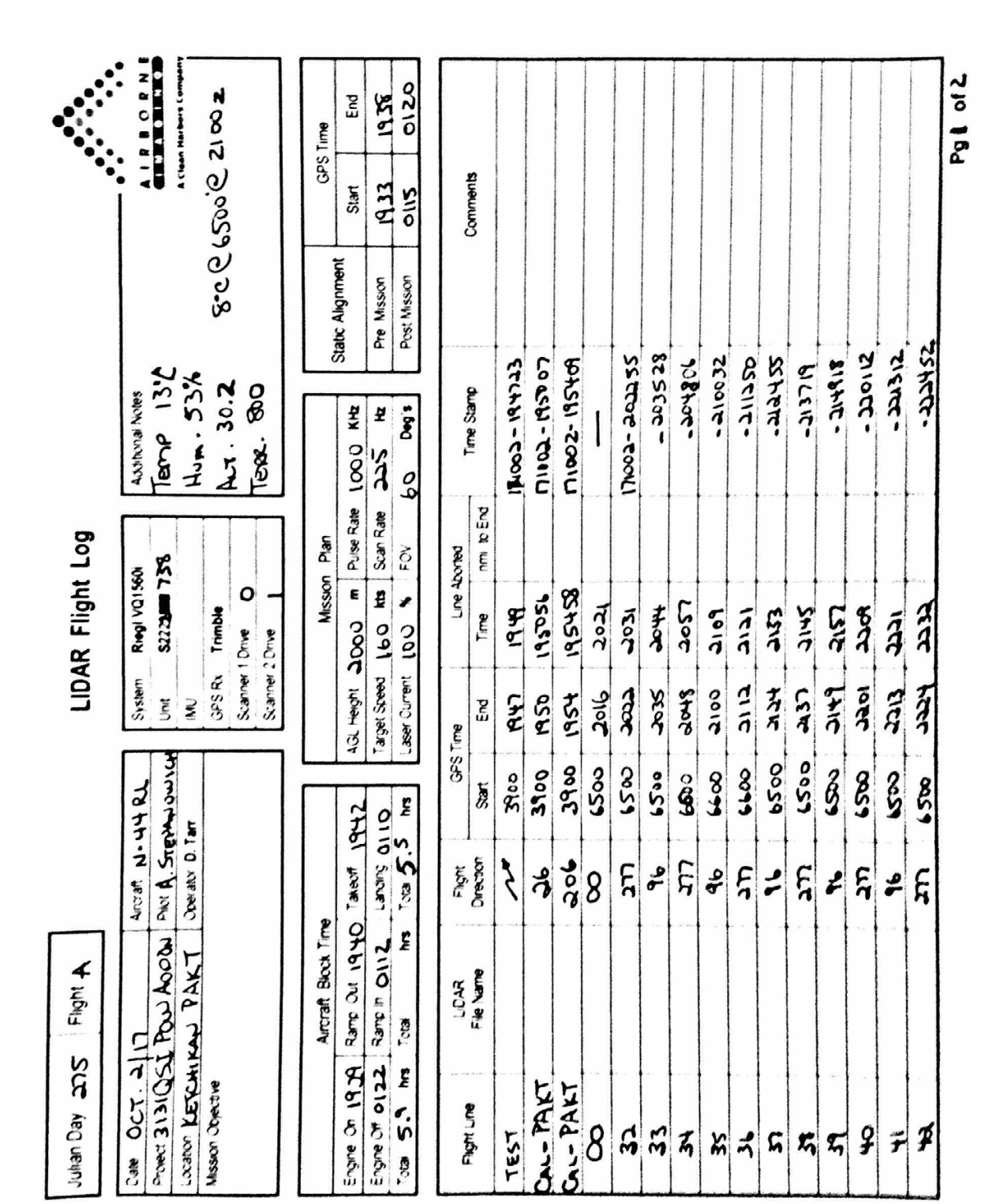
Mission Plan				
AGL Height	2000 m	Pulse Rate	1000 KHz	
Target Speed	160 kts	Scan Rate	225 Hz	
Laser Current	100 %	FOV	60 Deg's	

Static Alignment	GPS Time	
	Start	End
Pre Mission	1933	1938
Post Mission		

Flight Line	LiDAR File Name	Flight Direction	GPS Time		Line Aborted		Time Stamp	Comments
			Start	End	Time	nmi to End		
43		96	2236	2244			171002-223622 6500'	
44		277	2247	2255			-224734 6500'	
45		96	2258	2306			-225855 6500'	
46		277	2309	2317			-230951 6500'	
47		96	2320	2327			-232038 6500'	
19		277	2333	2342			171002-233333 6500'	
31		96	2345	2349			-234556 6500'	* Re Flew Because
30		277	2358	2355			-235247 6500'	of Clouds
29		96	2359	0002			-235915 6500'	Forming Bursts
28		277	0005	0008			-000553 6600'	3817294A *
X-Tie (33-16)		06	0012	0014			-001222	
50		186	0020	0026			-002039	
∞		∞	0027	0033			—	
Ou-PAKT		26	0100	0101			171002-010012 3900'	
Ou-PAKT		206	0104	010452			-010401 3900'	

Pg 2 of 2

Flight Log



LIDAR Flight Log

Julian Day 275 Flight A

Date OCT. 2/17 Aircraft N·44RL
Proect 3131QSI POW AOOM Pilot A. Stephenson
Location KETCHIKAN PAKT Operator D. Tarr
Mission Objective

System Riegl VQ1560i
Unit S222 735
IMU
GPS Rx Trimble
Scanner 1 Drive 0
Scanner 2 Drive 1

Additional Notes
Temp 13°C
Hum. 53%
Alt. 30.2
Temp. 80
8°C @ 6500' @ 2100z

AIRBORNE IMAGING
A Cogan Harbors Company

Aircraft Block Time
Engine On 1938 Ramp Out 1940 Takeoff 1942
Engine Off 0122 Ramp In 0112 Landing 0110
Total 5.9 hrs Total hrs Total 5.5 hrs

Mission Plan
AGL Height 3000 m Pulse Rate 1000 KHz
Target Speed 160 kts Scan Rate 235 Hz
Laser Current 100 % FOV 60 Degs

Static Alignment
Pre Mission GPS Time Start 1933 End 1956
Post Mission GPS Time Start 0115 End 0120

Flight Line	LiDAR File Name	Flight Direction	GPS Time Start	GPS Time End	Line Aborted Time	Line Aborted nmi to End	Time Stamp	Comments
TEST		NW	3900	1947	1949		1[illegible]003-194723	
CAL-PAKT		26	3900	1950	193056		011002-193907	
CAL-PAKT		206	3900	1954	195458		011002-195409	
00		00	6500	2016	2021		—	
32		27	6500	2023	2031		170002-202355	
33		96	6500	2035	2044		-203528	
34		27	6600	2048	2057		-204806	
35		96	6600	2100	2109		-210032	
36		27	6600	2112	2121		-211250	
37		96	6500	2124	2133		-212455	
38		27	6500	2137	2145		-213719	
39		96	6500	2149	2157		-214918	
40		27	6500	2201	2208		-220112	
41		96	6500	2213	2221		-221312	
42		27	6500	2224	2232		-222452	

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