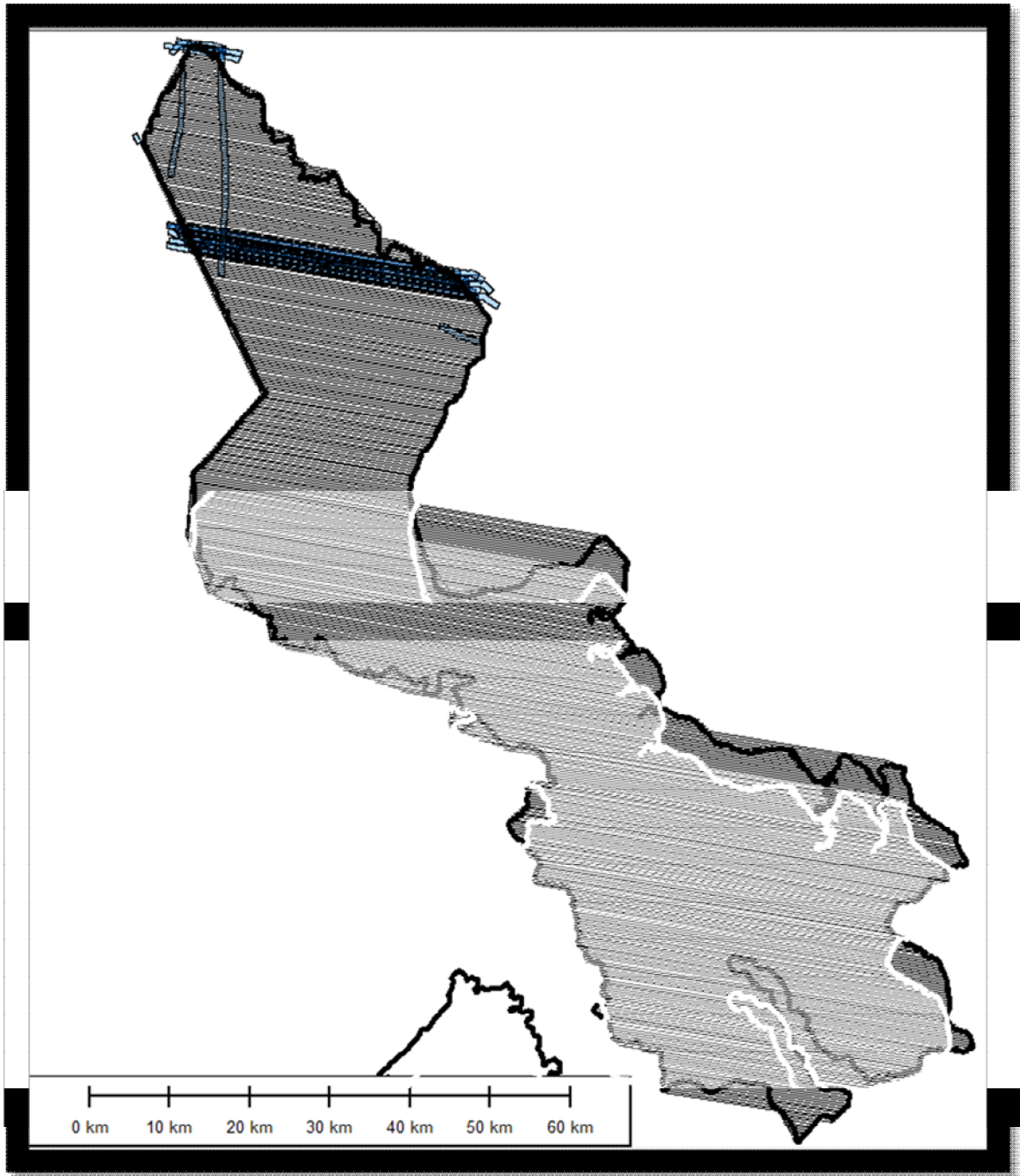
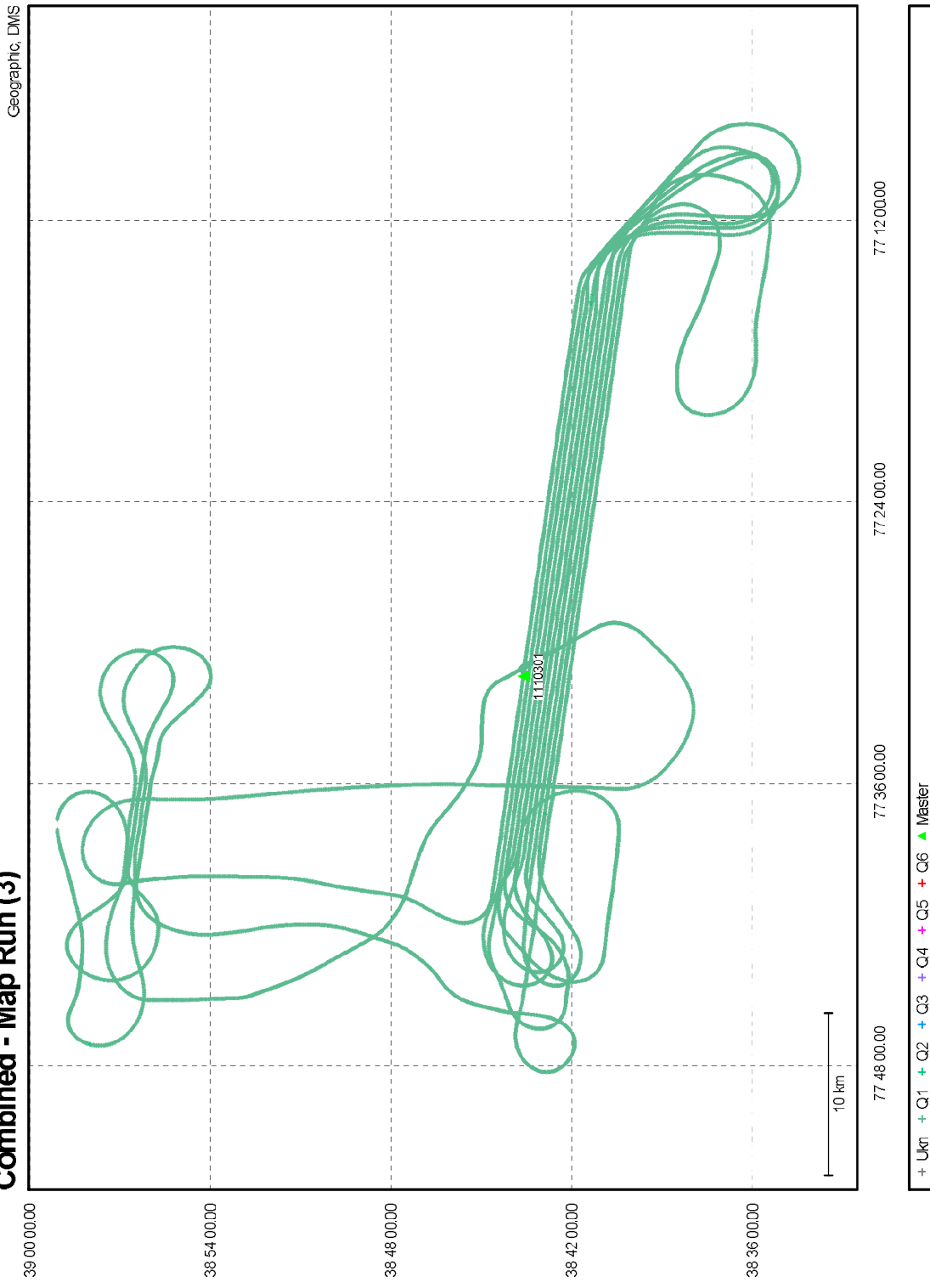


Mission: o111093a

2011 04 03



Combined - Map Run (3)



Processing Summary Information

Program: GrafNav
Version: 7.80.2517
Project: F:\11103U_VA\2_Operations\6_Missions\o111093a\3_Processed\GPS\o111093a.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:
Total in GPB file: 151504
No processed position: 136518
Missing Fwd or Rev: 4
With bad C/A code: 0
With bad L1 Phase: 0

Measurement RMS Values:
L1 Phase: 0.0158 (m)
C/A Code: 0.81 (m)
L1 Doppler: 0.028 (m/s)

Fwd/Rev Separation RMS Values:
East: 0.017 (m)
North: 0.009 (m)
Height: 0.019 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (14980 occurrences):
East: 0.017 (m)
North: 0.007 (m)
Height: 0.011 (m)

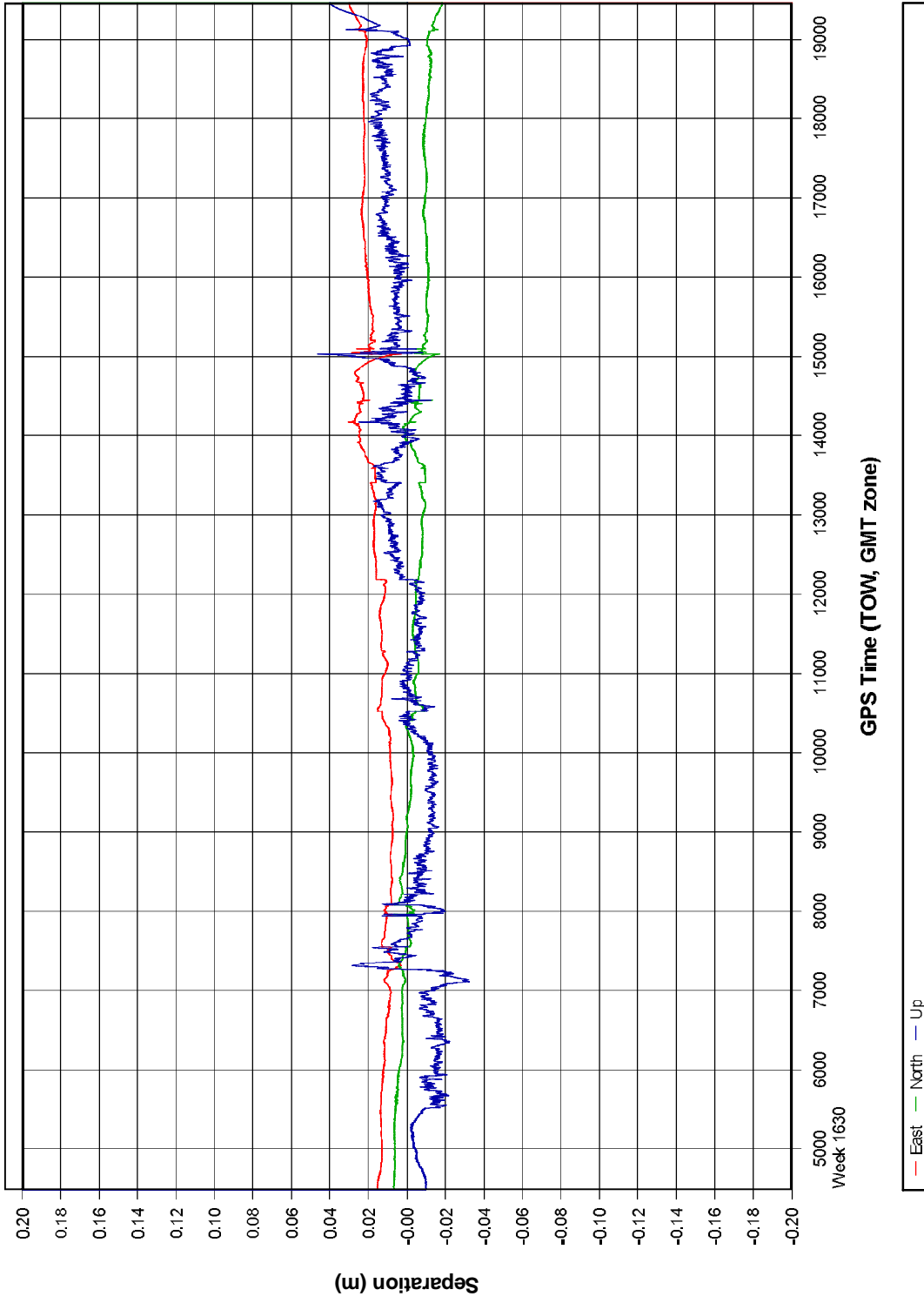
Quality Number Percentages:
Q 1: 99.9 %
Q 2: 0.1 %
Q 3: 0.0 %
Q 4: 0.0 %
Q 5: 0.0 %
Q 6: 0.0 %

Position Standard Deviation Percentages:
0.00 - 0.10 m: 100.0 %
0.10 - 0.30 m: 0.0 %
0.30 - 1.00 m: 0.0 %
1.00 - 5.00 m: 0.0 %
5.00 m + over: 0.0 %

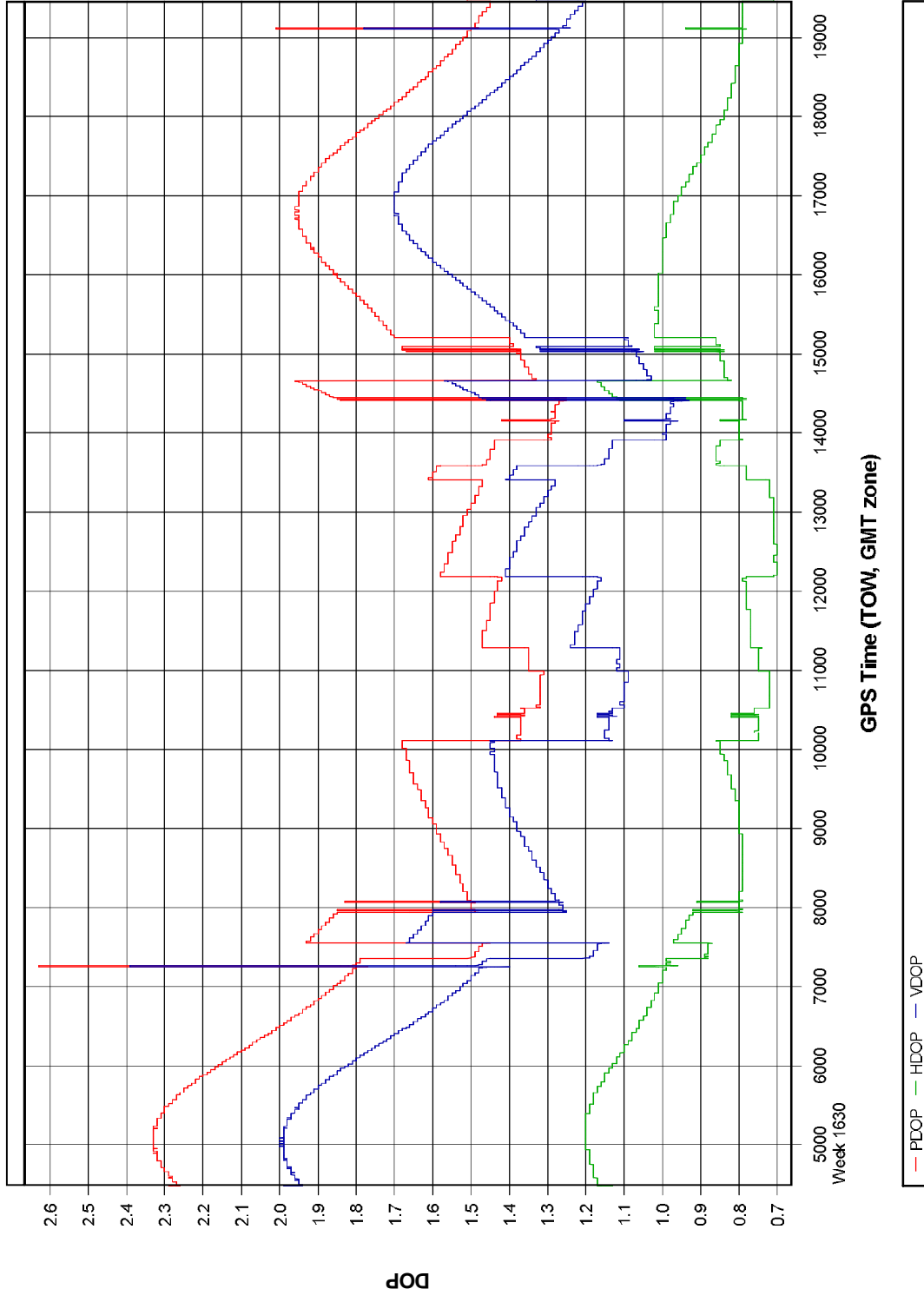
Percentages of epochs with DD_DOP over 10.00:
DOP over Tol: 0.0 %

Baseline Distances:
Maximum: 37.067 (km)
Minimum: 0.155 (km)
Average: 16.351 (km)
First Epoch: 0.259 (km)
Last Epoch: 0.272 (km)

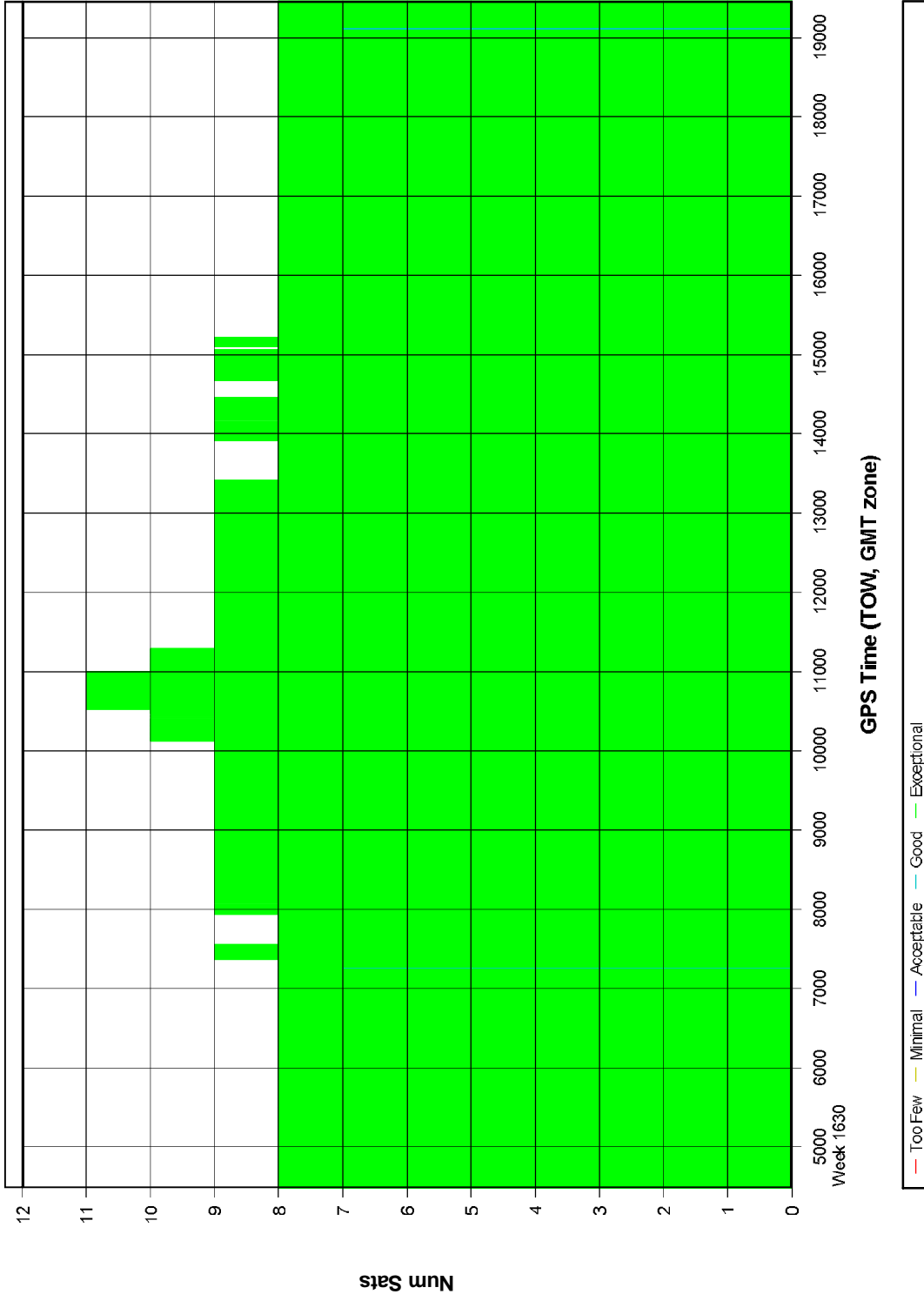
o111093a [Combined] - Forward/Reverse or Combined Separation Plot



o111093a [Combined] - PDOP, HDOP, VDOP Plots



o111093a [Combined] - Number of Satellites Bar Plot



```

                                o111093a.cfg
: PROJECT:
F:\11103U_VA\2_Operations\6_Missions\o111093a\3_Processed\GPS\o111093a.cfg
:
: DATE:      April 13/11 (date/time of processing)
: TIME:      14:12:20
: CREATED BY: GrafNav Version 7.80.2517
:
VERSION = 7.80.2517
PROCUSER = Unknown
PRODESC = Run*(4)
PROCTIME = 14:36:38 04/11/2011

: Master station # 1 information
MB_MASTER_INDEX = 0
MB_MASTER_NAME = 1110301
MB_MASTER_FILE =
F:\11103U_VA\2_Operations\6_Missions\o111093a\1_RawData\original-pdc\1110301_0020_09
30.gpb
MB_MASTER_POS = 38 43 34.05308 -77 31 24.33961 23.6231
MB_MASTER_ANT = 1.388 0.001 1.354 1 _TP_SOK600 0
MB_MASTER_DISABLE = OFF

: Remote station information
REMOTE_FILE =
F:\11103U_VA\2_Operations\6_Missions\o111093a\3_Processed\Extract\mgps_o111093a.gpb
REMOTE_POS = 38 43 28.20525 -77 31 17.27114 26.6559
REMOTE_ANT = 0.000

: General settings
PROCESS_MODE = 103 108 113 126 ; Processing modes (GrafNav only)

DATUM = NAD83 AUTO ; Processing Datum
INPDATUM = ON NAD83 AUTO ; Input Datum (ON=Use processing datum)
ELEV_MASK = 11.0 ; Elevation mask (deg)
GRID = UTM 15 31 ; Grid info

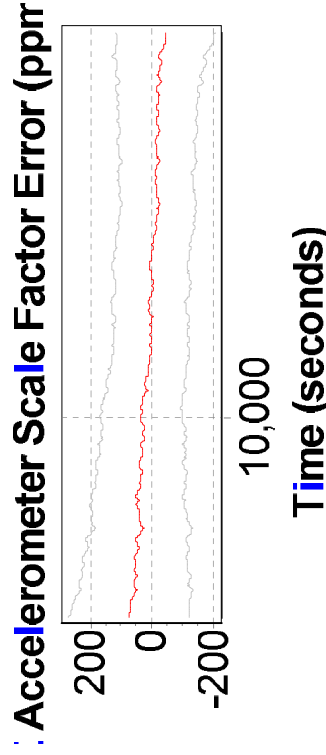
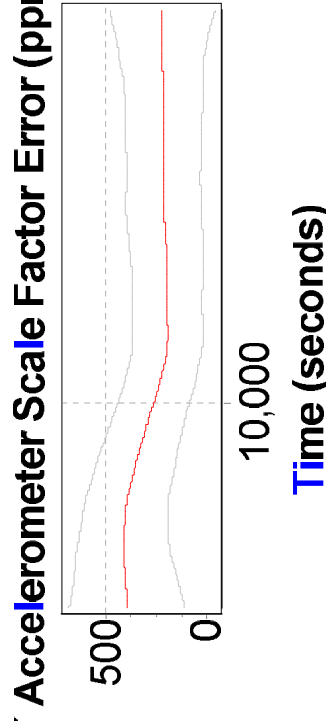
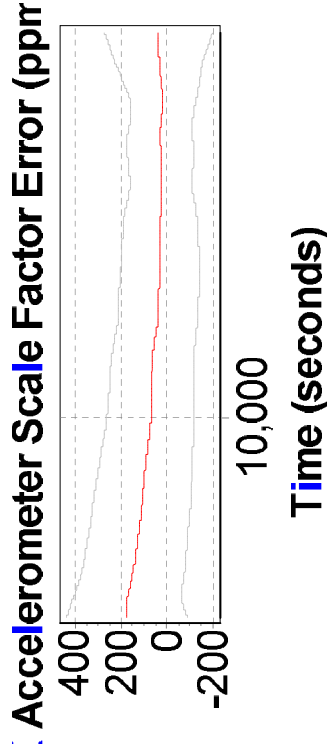
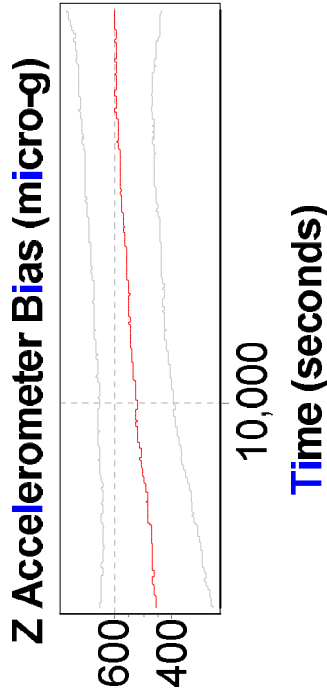
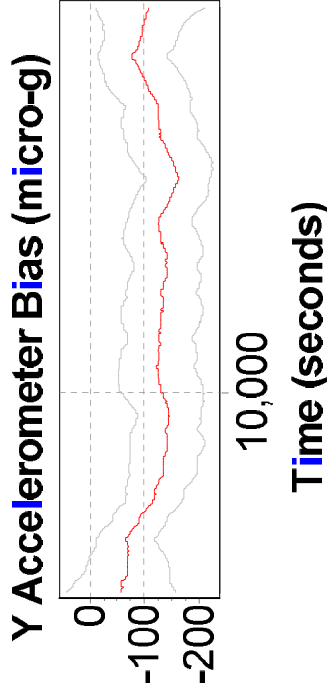
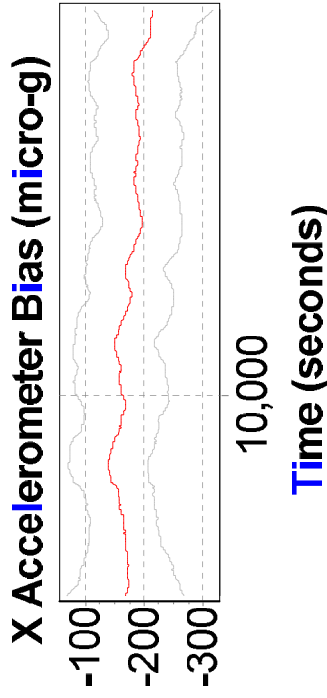
CYCLE_TEST = BOTH ; Cycle slip test method
STATIC_SLIP_TOL = 0.40 ; slip tolerance in static mode (cycles)
USE_DOPPLER = ON OFF ; Use doppler meas. for phase, for code-only

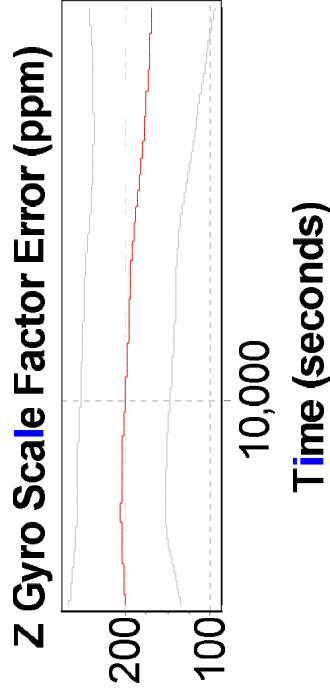
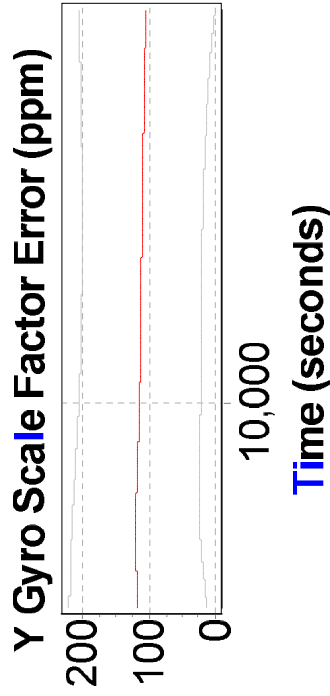
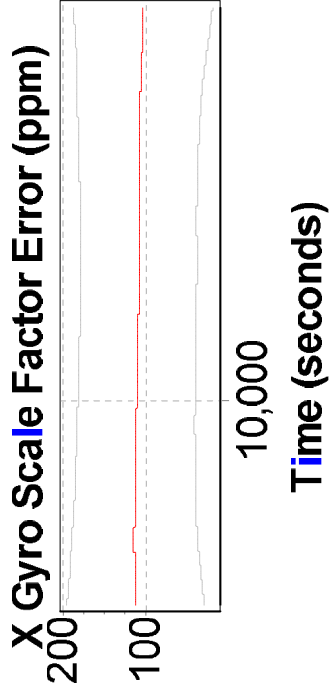
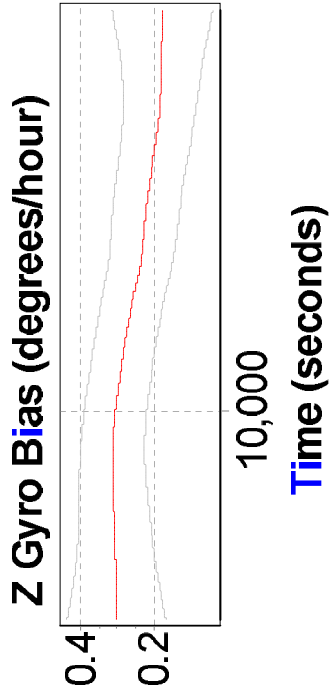
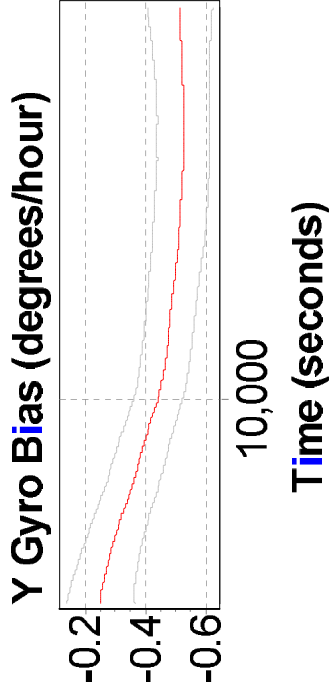
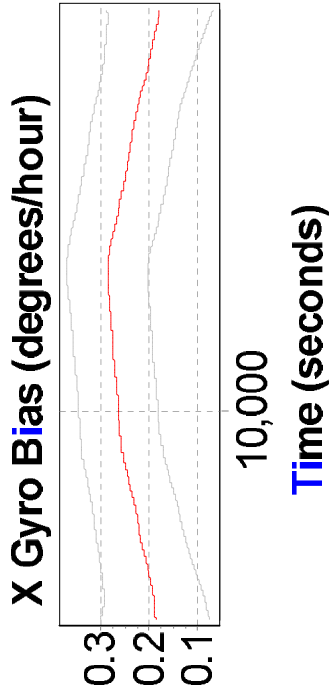
BASE_SAT = 99 ; Base satellite (99-default)

TIMERANGE = RANGE 985828476.0 985843461.8 2 0 ; Processing time range
INTERVAL = 0.10 ; Processing time interval (seconds)

PROCESS_DIR = FORWARD ; Process direction (FORWARD/REVERSE)
BOTH_DIR = ON ; True for processing both directions
WRITE_BAD_EPOCHS = OFF ; Save bad data to .fwd/rev file (ON/OFF)
NOWRITE_HIGH = OFF 6 20.000 ; Don't write epoch with high statistics (q, stdev-m)
OUTPUT_MODE = EXTENDED ; Format for .fwd/rev file
DETAILED_SUM = ON ; Detailed Static/KAR Summary header
WRITE_SLIP_MSG = ON ; Print cycle slips to message log
SAVE_AMB = ON ; Should ambiguities be saved

```





Project# 110304 **Session** 0110093a

Flight Log



Date	Apr. 2/11	Julian Day	093
Project	FEMA VA	Aircraft	Mooney
Staging		Call Sign	100930
Survey Block	Prince William	Pilot	Pace B
Lines Complete	395-398, 316-325	Operator	Adam E
		Observer	Alcott W
Mission Objective			

ALMIS/Optech	System #	1
Laser Scanner	Camera/Lens SN	
Shutter Speed	Prdlo Freq.	
IMU	GPS Rx	
Data Drive		

Additional Notes:

Outside Temp @ TO: _____ Outside Pressure @ TO: _____
 Outside Temp @ LA: _____ Outside Pressure @ LA: _____

Aircraft: Block Time <input type="checkbox"/> Times confirmed with pilot			
Engine On (Hobs)	Ramp Out	Takeoff	
21:26		21:27	
Engine Off (Hobs)	Ramp In	Landing	
1:28		1:15	
Total hrs (Hobs)	Total hrs	Total hrs	
4.3			

Mission Plan	
Flying Height AGL	Scan Angle (Optech)
950	
Ground Speed	Mirror Scan Rate
150	
First/Last/Alternating Return	Laser Pulse Rate

Static & KAR GPS // INS Alignment		
Time	Start	End
Pre Mission		
KAR Base		
KAR Base		
Post Mission		

Flight Plan Line #	LIDAR File Name	Flight Direction	GPS / UTC Time		Flight Aborted		Photo Events / Comments Please periodically record Cabin Temp: _____ Output (Watts): _____
			Start	End	Time	NM to End	
398		E					
397		W					
396		E	21:54	21:55	21:55		Not in line.
396		E	22:02	22:03			
395		W	22:09	22:11			
316		E	22:22	22:36			
317		W	22:43	22:45			
318		E	22:56	23:10			
319		W	23:15				
320		E	23:30	23:36			

GPS Base Log Sheet



Station ID: 1110301 Project #: 1110304 Missions: 0111093a/0211093a

Project Name: FEMA Virginia Calendar Date: April 12/11 Julian Day: 093
 Approx. Coordinates WGS 84 N 38 43 34.1 W 77 31 24.3

Description of Mark (Take Photos) 12" Nail in Grass.

Monument is: Flush with ground Above ground 2.5 cm Below ground ___ cm

Location & Access

Obstructions & Additional Notes

Backup: Approx. Coordinates WGS 84
 N
 W

GPS Observation - MAIN

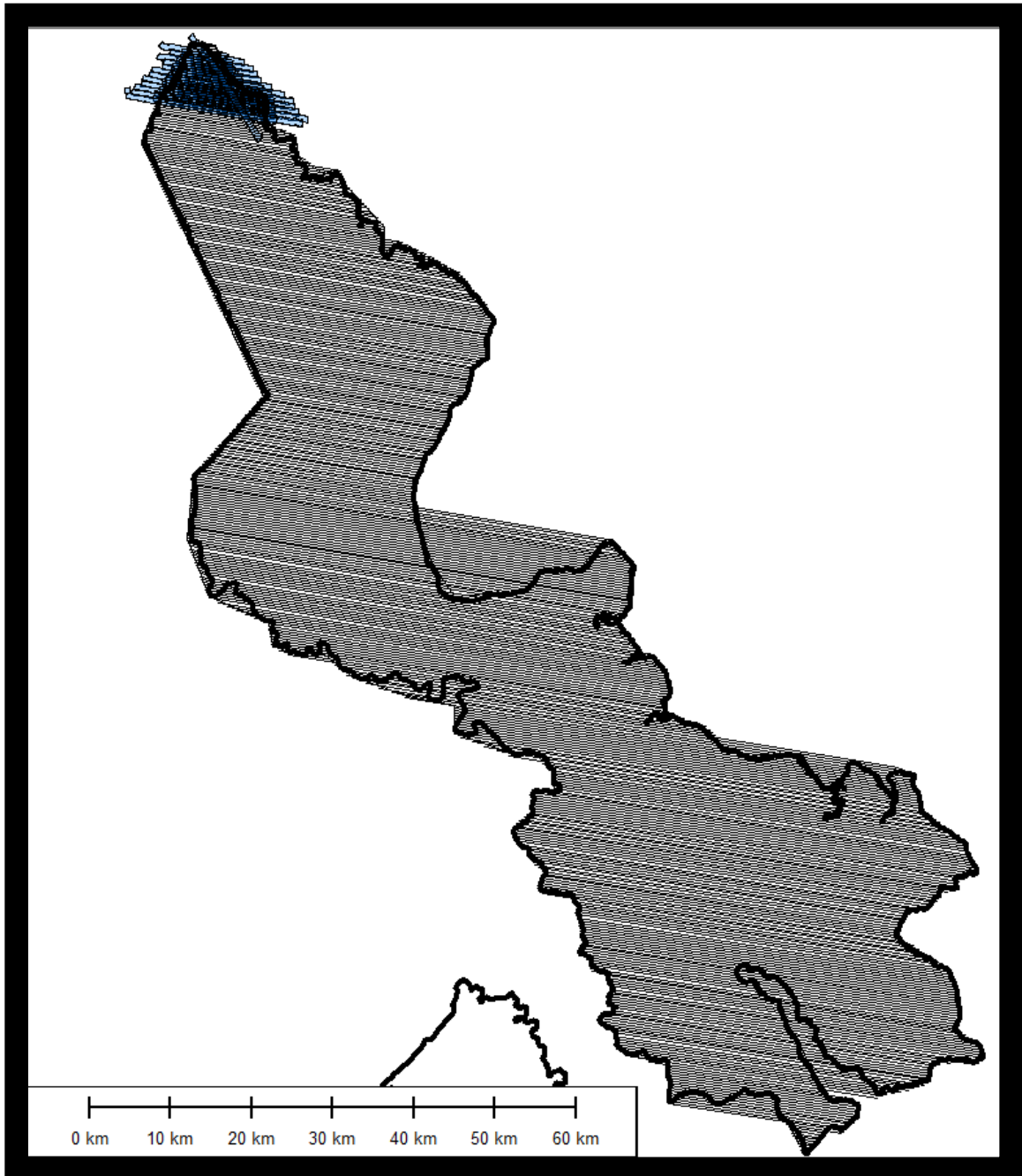
Rx Make / Model	GSR Sleed	Serial #	0030
Ant Make / Model	SK 600	Serial #	0010
Operator	Adam Eversole		
Session Time (GPS)	Start	End	
	0:40	6:15	
Slant HI Before:	A: 1.354	B: 1.354	
Slant HI After:	A: 1.354	B: 1.354	
Correction			
Phase Center	<input type="checkbox"/> m <input type="checkbox"/> in <input type="checkbox"/> use GranNav Profile		
Data File Name	02200930.pde		

GPS Observation - Back-Up

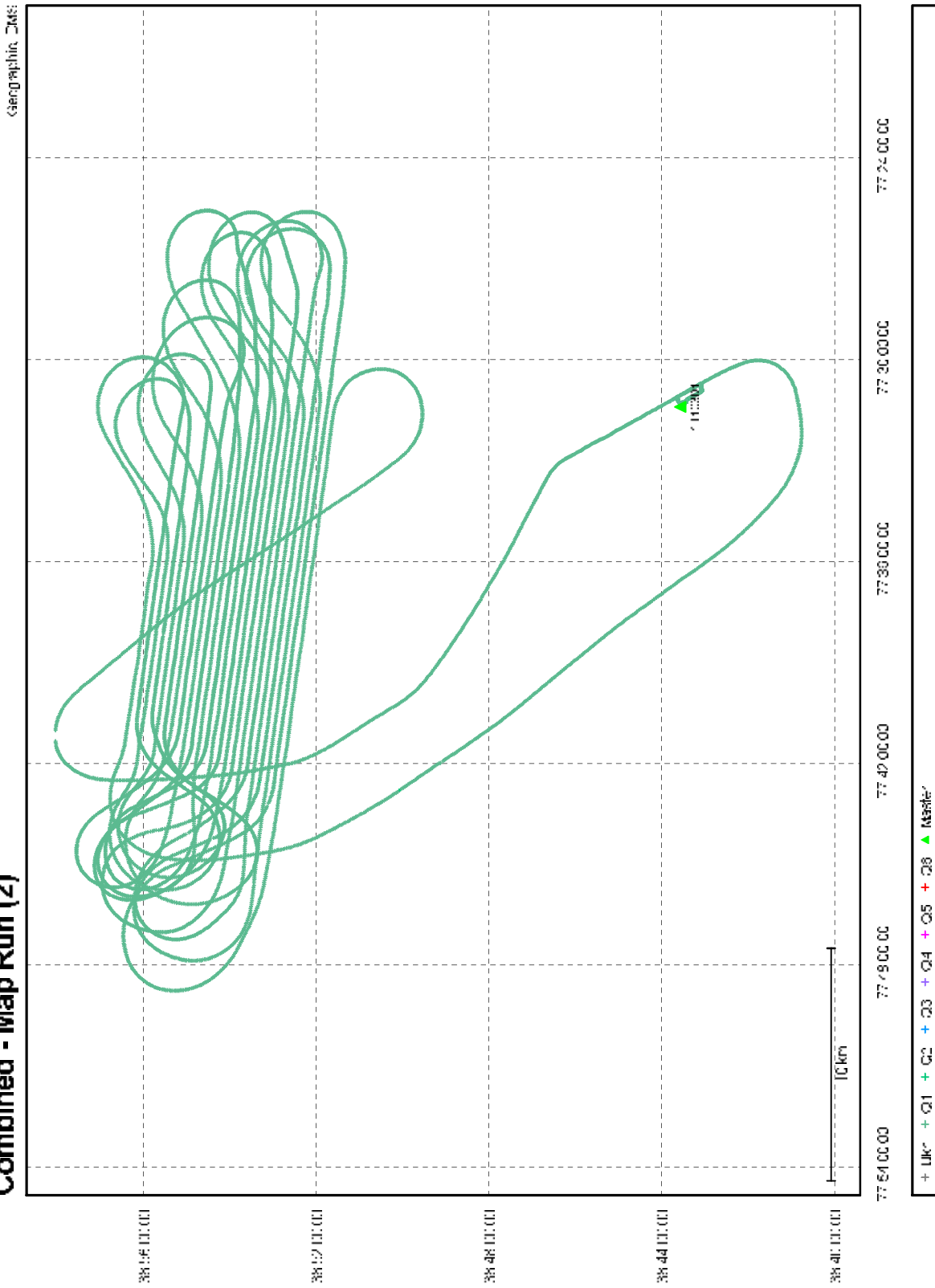
Rx Make / Model		Serial #	
Ant Make / Model		Serial #	
Operator			
Session Time (GPS)	Start	End	
Slant HI Before:	A:	B:	
Slant HI After:	A:	B:	
Correction			
Phase Center	<input type="checkbox"/> m <input type="checkbox"/> in <input type="checkbox"/> use GranNav Profile		
Data File Name			

Mission: o111094a

2011 04 04



Combined - Map Run (2)



Processing Summary Information

Program: GrafNav
Version: 7.80.2517
Project: F:\11103U_VA\2_Operations\6_Missions\o111094a\3_Processed\GPS\o111094a.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:
Total in GPB file: 129682
No processed position: 116893
Missing Fwd or Rev: 4
With bad C/A code: 0
With bad L1 Phase: 0

Measurement RMS Values:
L1 Phase: 0.0163 (m)
C/A Code: 0.81 (m)
L1 Doppler: 0.029 (m/s)

Fwd/Rev Separation RMS Values:
East: 0.012 (m)
North: 0.017 (m)
Height: 0.026 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (12783 occurrences):
East: 0.011 (m)
North: 0.017 (m)
Height: 0.025 (m)

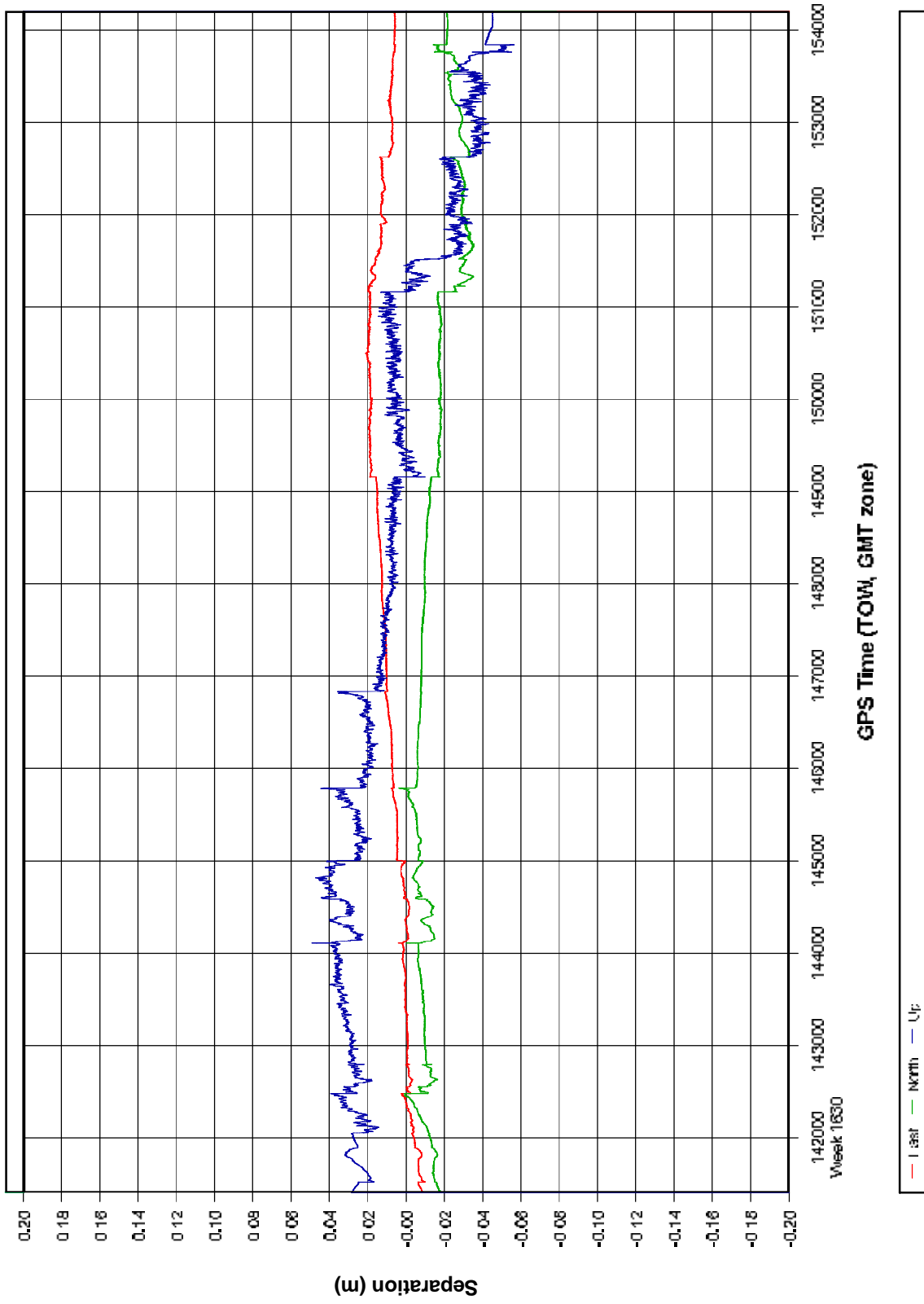
Quality Number Percentages:
Q 1: 100.0 %
Q 2: 0.0 %
Q 3: 0.0 %
Q 4: 0.0 %
Q 5: 0.0 %
Q 6: 0.0 %

Position Standard Deviation Percentages:
0.00 - 0.10 m: 100.0 %
0.10 - 0.30 m: 0.0 %
0.30 - 1.00 m: 0.0 %
1.00 - 5.00 m: 0.0 %
5.00 m + over: 0.0 %

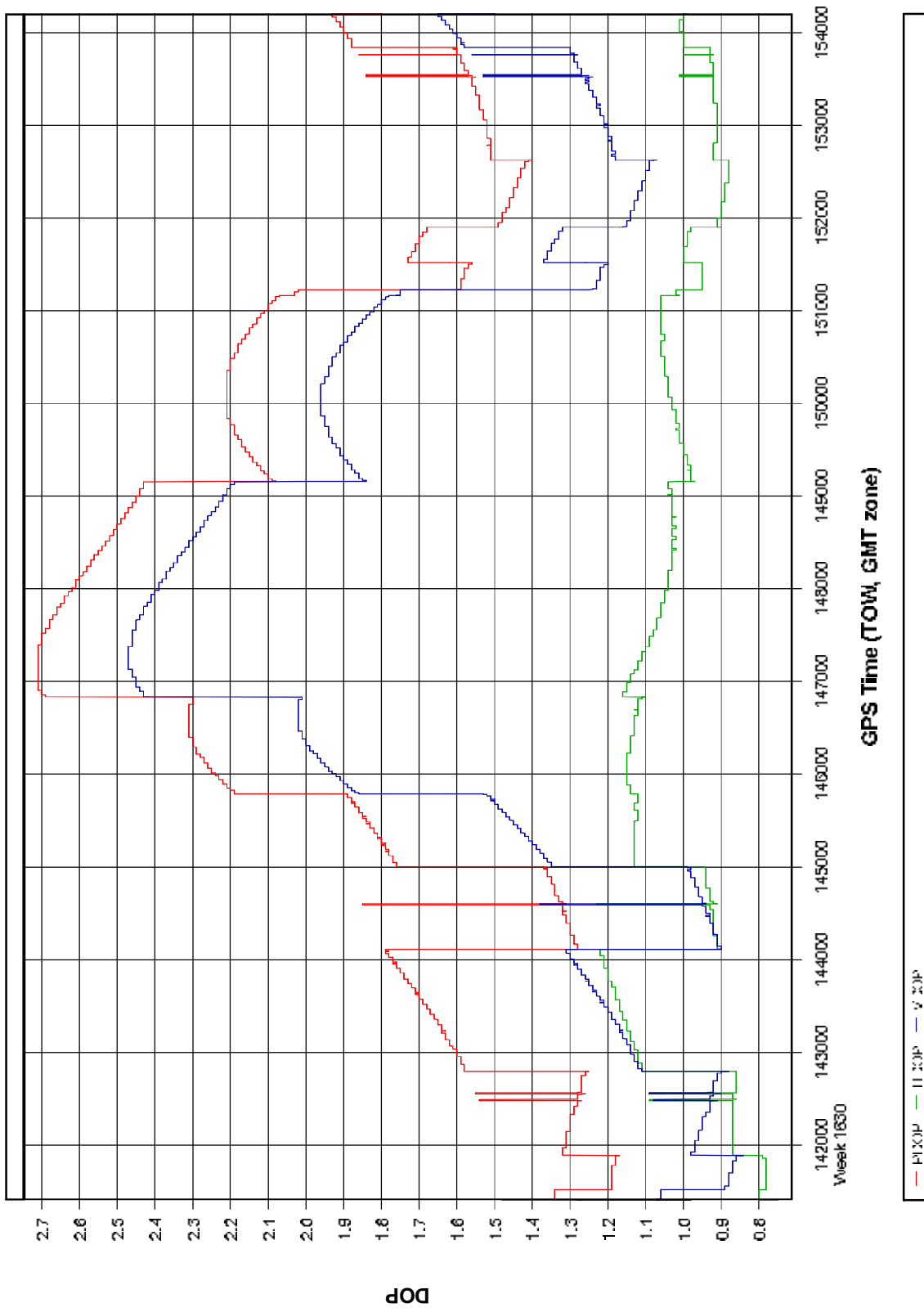
Percentages of epochs with DD_DOP over 10.00:
DOP over Tol: 0.0 %

Baseline Distances:
Maximum: 33.749 (km)
Minimum: 0.153 (km)
Average: 19.790 (km)
First Epoch: 0.272 (km)
Last Epoch: 0.285 (km)

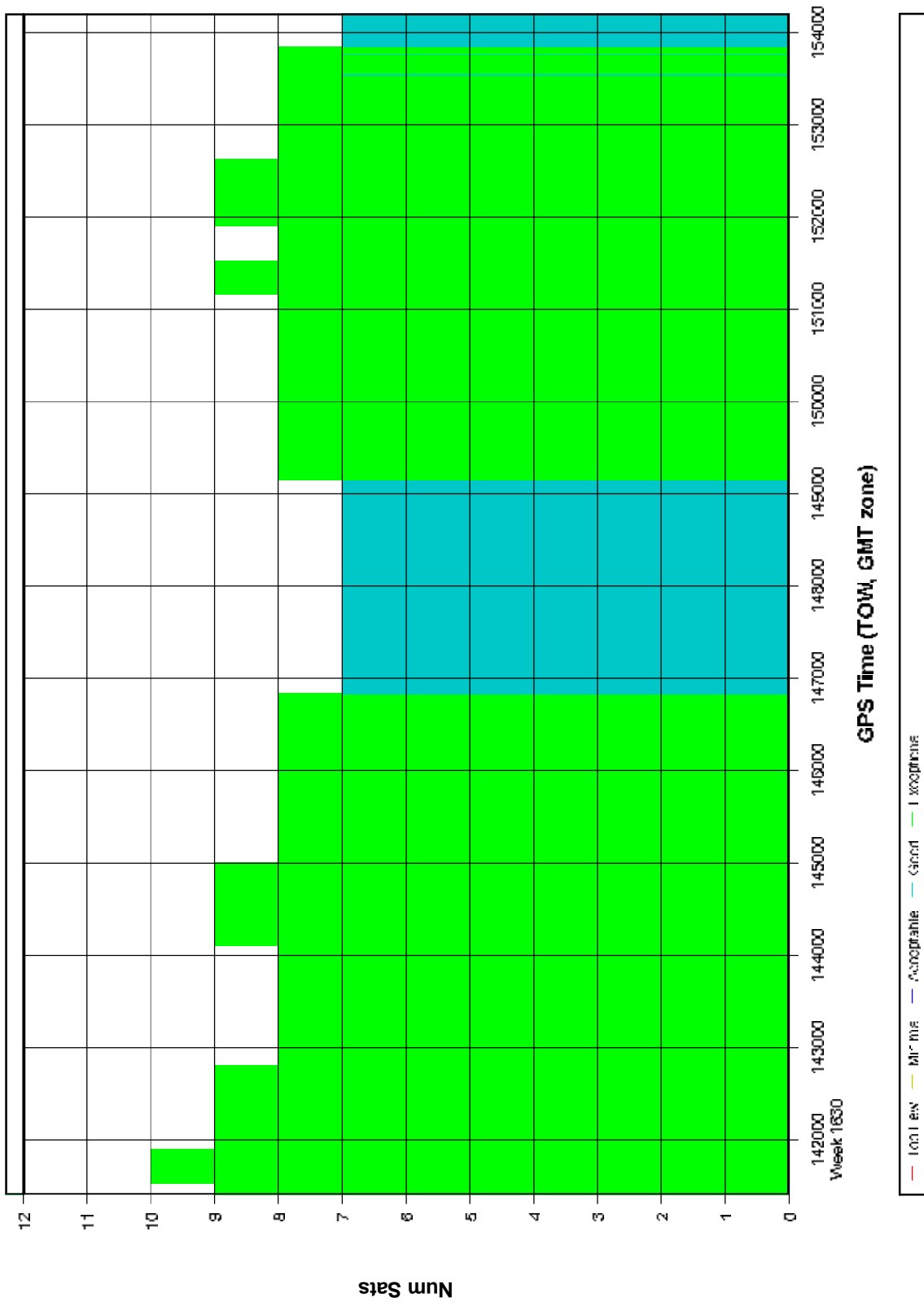
o111094a [Combined] - Forward/Reverse or Combined Separation Plot



o111094a [Combined] - PDOP, HDOP, VDOP Plots



o111094a [Combined] - Number of Satellites Bar Plot



o111094a.cfg

: PROJECT:
F:\11103U_VA\2_Operations\6_Missions\o111094a\3_Processed\GPS\o111094a.cfg

: DATE: April 12/11 (date/time of processing)
: TIME: 9:08:21
: CREATED BY: GrafNav Version 7.80.2517
:

VERSION = 7.80.2517
PROCUSER = Unknown
PROCDISC = Run*(3)
PROCTIME = 09:07:08 04/12/2011

: Master station # 1 information

MB_MASTER_INDEX = 0
MB_MASTER_NAME = 1110301
MB_MASTER_FILE =
F:\11103U_VA\2_Operations\6_Missions\o111094a\1_RawData\original-pdc\00200940.gpb
MB_MASTER_POS = 38 43 34.05308 -77 31 24.33961 23.6231
MB_MASTER_ANT = 1.478 0.001 1.444 1 _TP_SOK600 0
MB_MASTER_DISABLE = OFF

: Remote station information

REMOTE_FILE =
F:\11103U_VA\2_Operations\6_Missions\o111094a\3_Processed\Extract\mgps_o111094a.gpb
REMOTE_POS = 38 43 27.44470 -77 31 17.02763 27.3217
REMOTE_ANT = 0.000

: General settings

PROCESS_MODE = 103 108 113 126 ; Processing modes (GrafNav only)

DATUM = NAD83 AUTO ; Processing Datum
INPDATUM = ON NAD83 AUTO ; Input Datum (ON=Use processing datum)
ELEV_MASK = 11.0 ; Elevation mask (deg)
GRID = UTM 15 31 ; Grid info

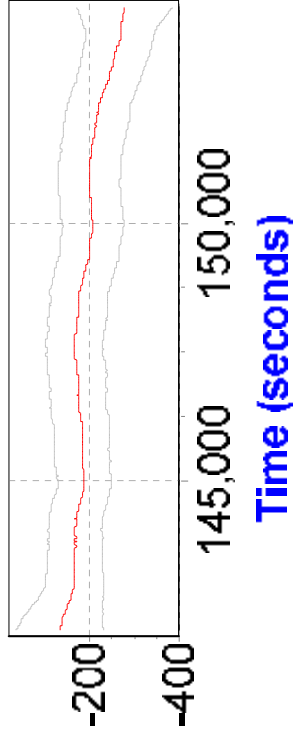
CYCLE_TEST = BOTH ; Cycle slip test method
STATIC_SLIP_TOL = 0.40 ; slip tolerance in static mode (cycles)
USE_DOPPLER = ON OFF ; Use doppler meas. for phase, for code-only

BASE_SAT = 99 ; Base satellite (99-default)

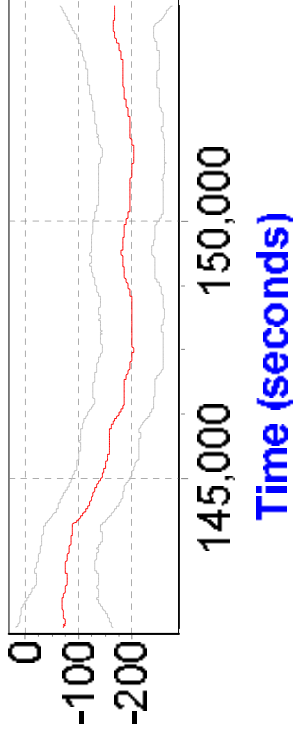
TIMERANGE = RANGE 985965403.0 985978204.5 2 0 ; Processing time range
INTERVAL = 0.10 ; Processing time interval (seconds)

PROCESS_DIR = FORWARD ; Process direction (FORWARD/REVERSE)
BOTH_DIR = ON ; True for processing both directions
WRITE_BAD_EPOCHS = OFF ; Save bad data to .fwd/rev file (ON/OFF)
NOWRITE_HIGH = OFF 6 20.000 ; Don't write epoch with high statistics (q, stdev-m)
OUTPUT_MODE = EXTENDED ; Format for .fwd/rev file
DETAILED_SUM = ON ; Detailed Static/KAR Summary header
WRITE_SLIP_MSG = ON ; Print cycle slips to message log
SAVE_AMB = ON ; Should ambiguities be saved

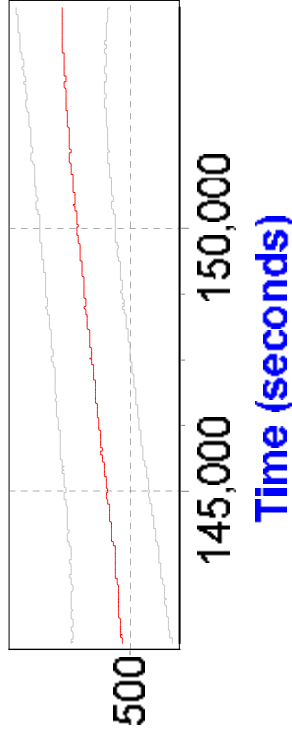
X Accelerometer Bias (micro-g)



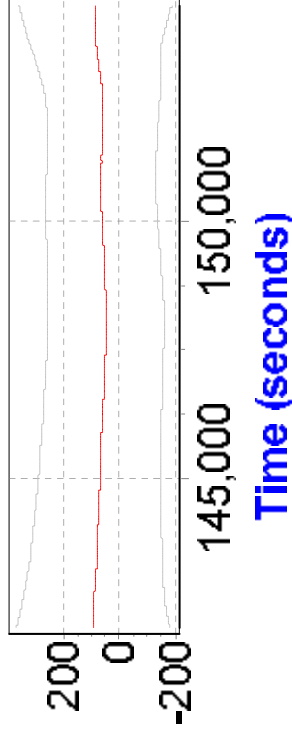
Y Accelerometer Bias (micro-g)



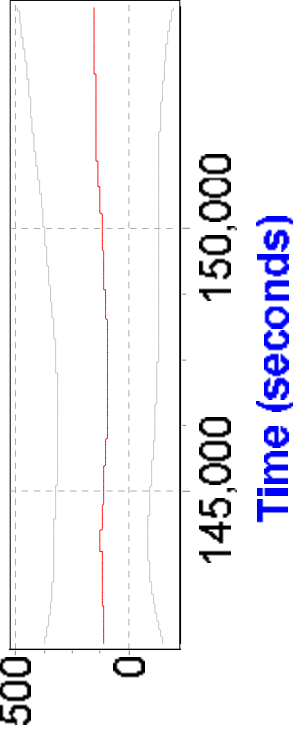
Z Accelerometer Bias (micro-g)



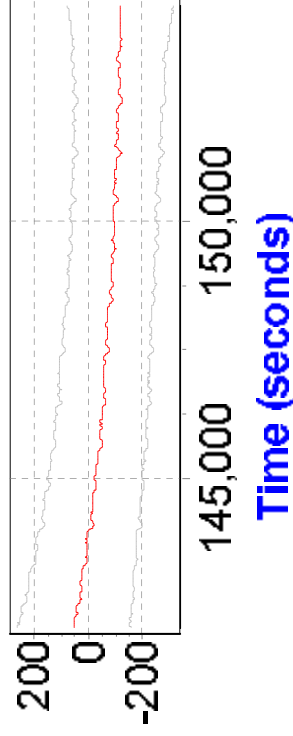
X Accelerometer Scale Factor Error (ppm)



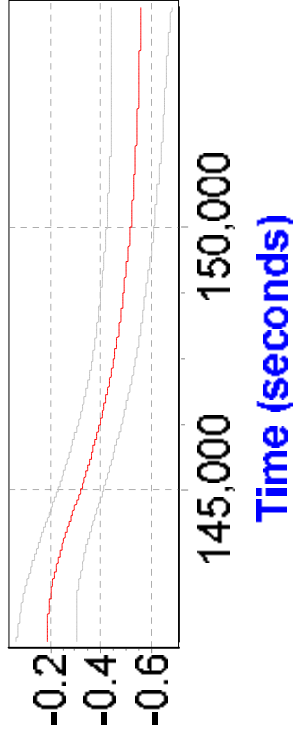
Y Accelerometer Scale Factor Error (ppm)



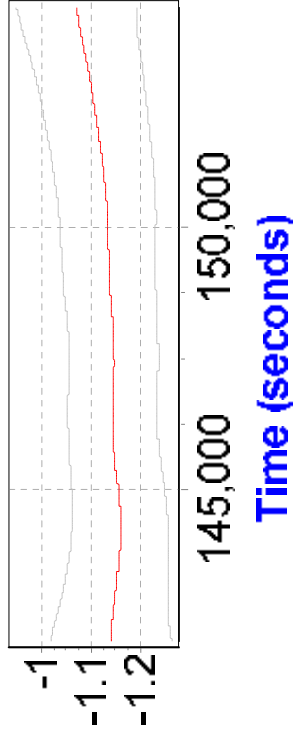
Z Accelerometer Scale Factor Error (ppm)



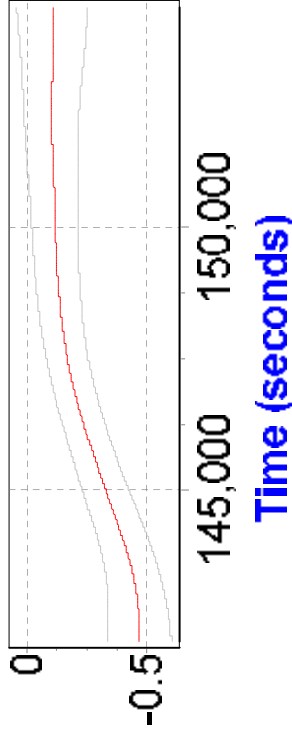
X Gyro Bias (degrees/hour)



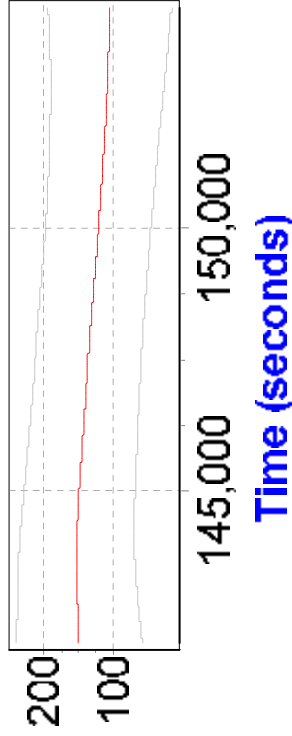
Y Gyro Bias (degrees/hour)



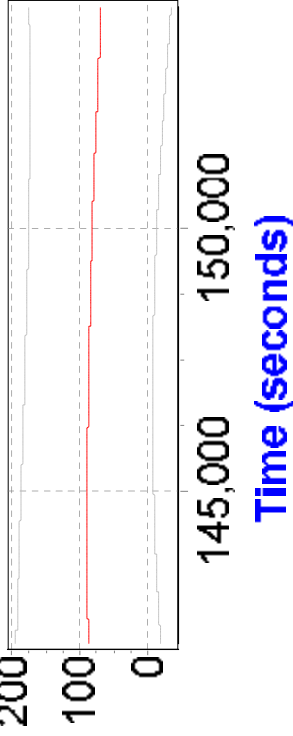
Z Gyro Bias (degrees/hour)



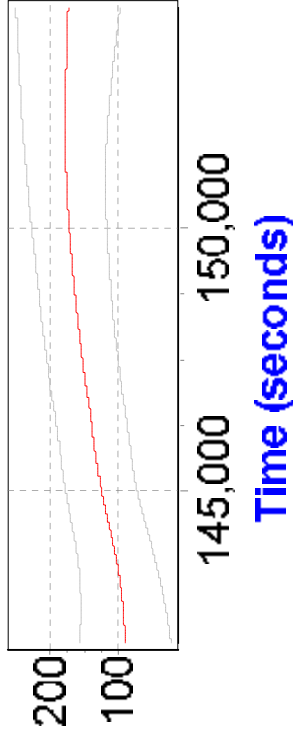
X Gyro Scale Factor Error (ppm)



Y Gyro Scale Factor Error (ppm)

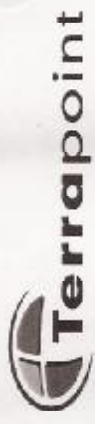


Z Gyro Scale Factor Error (ppm)



Project # 11030 Session 011094a

Flight Log



Date	Apr 4 2011	Julian Day	098094
Project	Dewberry	Aircraft	Navajo
Sighting	Mamasas	Call Sign	
Survey Block		Pilot	Peace Below
Lines Complete	370 thru 394	Operator	Eversoft
Mission Objective	03 lines		

ALMIS/OpTech	3100
System #	01
Laser Scanner	yes
Camera/lens SN	
Shutter Speed	
Photo Freq.	
IMU	
GPS Fix	
Date Drive	

Additional Notes: 326 - 394

Outside Temp @ TO: 18°C Outside Pressure @ TO: 2968
 Outside Temp @ LA: 29°C Outside Pressure @ LA: 2961

Aircraft Block Time <input type="checkbox"/> Times confirmed with pilot	
Engine On (Hobbs)	Ramp Out
1103	1114
Engine Off (Hobbs)	Ramp In
1140	1145
Total hrs (Hobbs)	Total hrs
	11 27
	14 40

Mission Plan	
Flying Height AGL	Scan Angle (Copter)
3000 ft	
Ground Speed	Mirror Scan Rate
1500 fpm	
First/Last/Alternating Return	Laser Pulse Rate

Static & KAR GPS // INS Alignment	
Time	Start
Pre Mission	
KAR Base	
KAR Base	
Post Mission	

Flight Plan Line #	LIDAR File Name	Flight Direction	GPS / UTC Time		Flight Aborted		Photo Events / Comments Please periodically record: Cabin Temp: Outside Temp: Laser Temp: Output (Watts):
			Start	End	Time	NM to End	
Test		N	15 30	15 31			
394		E	15 35	15 40			
398		W	15 43	15 46			Now Potu lost → ok
392		E	15 49	15 52			
391		W	15 55	15 59			
390		E	16 03	16 04			
389		W	16 09	16 11			
388		W	16 17	16 18			
387		W	16 23	16 25			
386		E	16 28	16 31			

Used for both missions optech 1 & 2



GPS Base Log Sheet

Station ID:	110301 Backup	Project #:	110300	Missions:	0211094a
-------------	---------------	------------	--------	-----------	----------

Project Name:	Dubois	Calendar Date:	Apr 4	Julian Day	094
Approx. Coordinates WGS 84	N 38° 43' 35.05 W	77° 31' 25.2			
Description of Mark (Take Photos)	- pin in grass by airport				
Morument is:	<input type="checkbox"/> Flush with ground <input checked="" type="checkbox"/> Above ground <u>3</u> cm <input type="checkbox"/> Below ground ___ cm				
Location & Access	Dubois Aviation FBO at Backup station * See description sheet for more details				

Obstructions & Additional Notes	279 to 250 note - this point is backup station for Dulles Aviation setup.
N	W
Backup: Approx. Coordinates WGS 84	

Rx Make / Model	GS R2600	Serial #	0002
Ant Make / Model	SK600	Serial #	0011
Operator	tin		
Session Time (GPS)	Start 14:46	End 21:42	
Slant H Before:	A: 1.44	B: 1.44	
Slant H After:	A: 1.44	B: 1.44	
Correction			
Phase Center	<input type="checkbox"/> m <input type="checkbox"/> in <input type="checkbox"/> use GrafNav Profile		
Data File Name	0002 0940 pdc		

Rx Make / Model		Serial #	
Ant Make / Model		Serial #	
Operator			
Session Time (GPS)	Start	End	
Slant H Before:	A:	B:	
Slant H After:	A:	B:	
Correction			
Phase Center	<input type="checkbox"/> m <input type="checkbox"/> in <input type="checkbox"/> use GrafNav Profile		
Data File Name			

* used for both flights with offset 1 & 2



GPS Base Log Sheet

Station ID:	1110301	Project #:	111030	Missions:	094
-------------	---------	------------	--------	-----------	-----

Project Name:	Dewbury	Calendar Date:	Apr 4	Julian Day	094
Approx. Coordinates	WGS 84	N	88 43 34.1	W	773124.3
Description of Mark (Take Photos)	- large rail in grass at FBO				
Monument is:	<input type="checkbox"/> Flush with ground <input type="checkbox"/> Above ground <input type="checkbox"/> Below ground cm				
Location & Access	* Dulles FBO aviation				

Obstructions & Additional Notes	* This is main GPS point for missions from Dulles aviation FBO
N	W
Backup: Approx. Coordinates WGS 84	

GPS Observation - MAIN	
Rx Make / Model	Serial #
Ant Make / Model	Serial #
Operator	
Session Time (GPS)	Start End
Slant HI Before:	A: 1.355 B: 1.355
Slant HI After:	A: 1.355 B: 1.355
Correction	
Phase Center	
Data File Name	00209450pdc

m in use GrafNav Profile

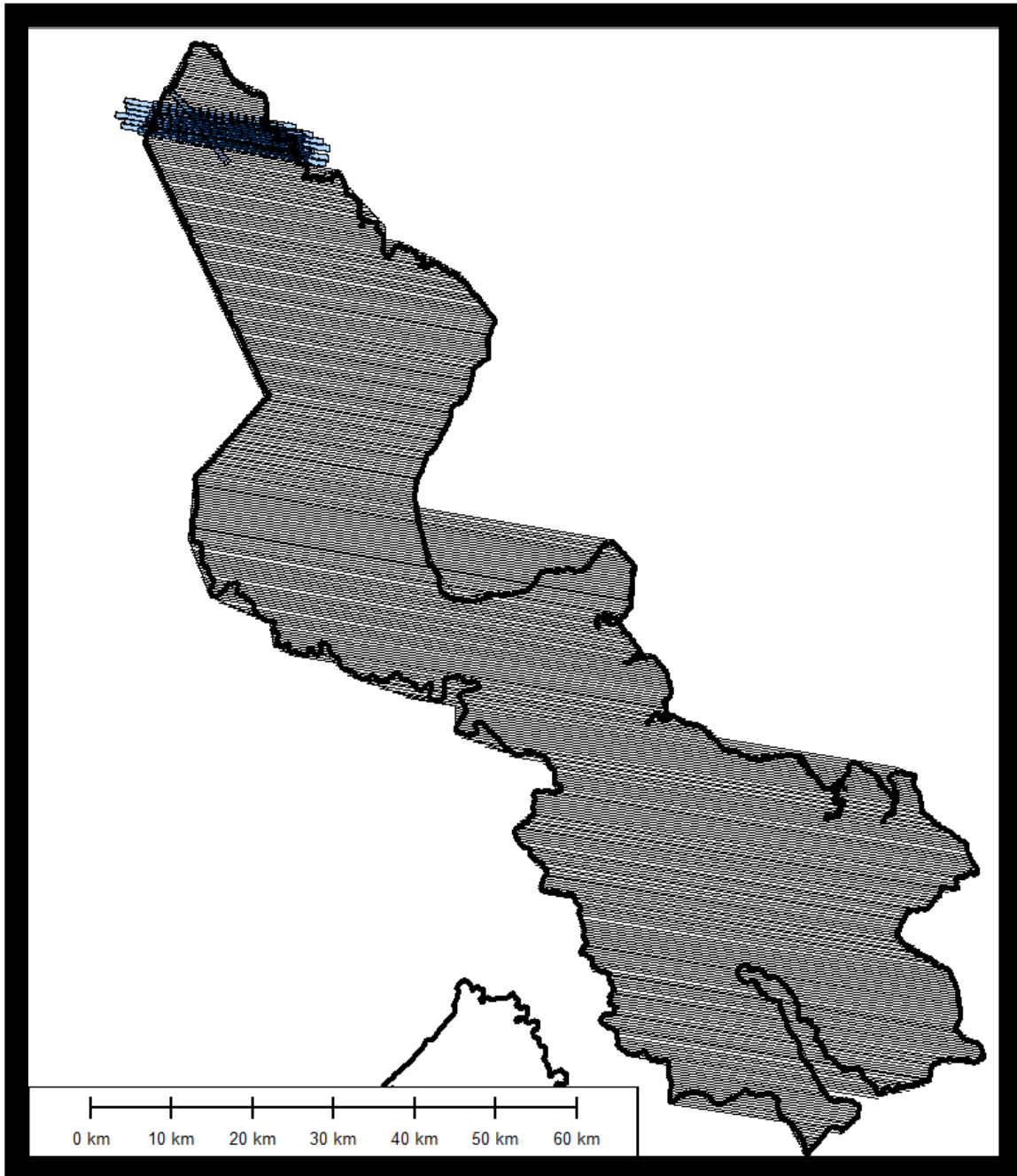
GPS Observation - Back-Up	
Rx Make / Model	Serial #
Ant Make / Model	Serial #
Operator	
Session Time (GPS)	Start End
Slant HI Before:	A: B:
Slant HI After:	A: B:
Correction	
Phase Center	
Data File Name	

m in use GrafNav Profile

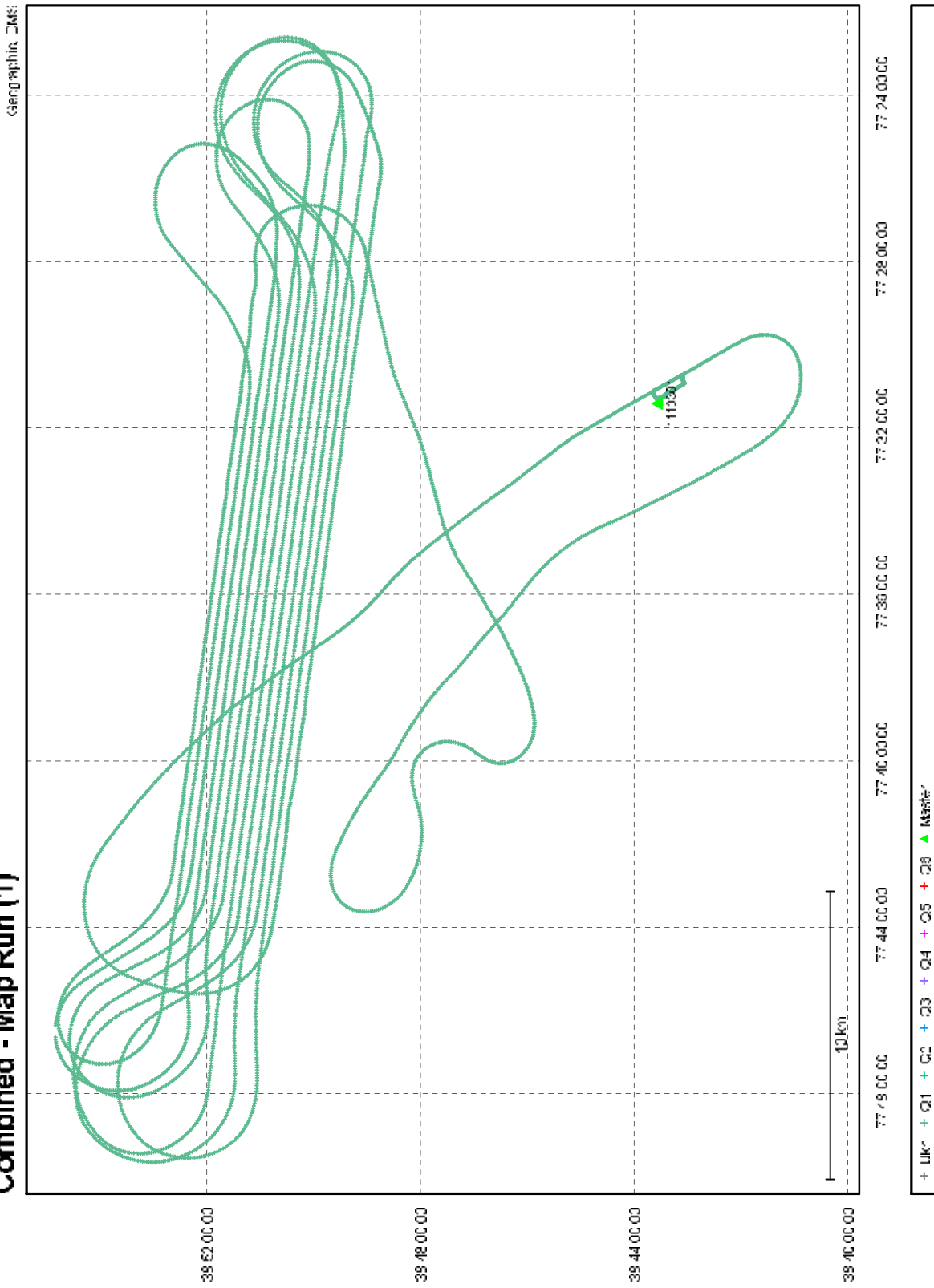
0020940pdc

Mission: o111096a

2011 04 06



Combined - Map Run (1)



Processing Summary Information

Program: GrafNav
Version: 7.80.2517
Project: F:\11103U_VA\2_Operations\6_Missions\o111096a\3_Processed\GPS\o111096a.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:
Total in GPB file: 98464
No processed position: 88630
Missing Fwd or Rev: 3
With bad C/A code: 0
With bad L1 Phase: 0

Measurement RMS Values:
L1 Phase: 0.0159 (m)
C/A Code: 0.83 (m)
L1 Doppler: 0.029 (m/s)

Fwd/Rev Separation RMS Values:
East: 0.008 (m)
North: 0.014 (m)
Height: 0.017 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (9829 occurrences):
East: 0.006 (m)
North: 0.012 (m)
Height: 0.012 (m)

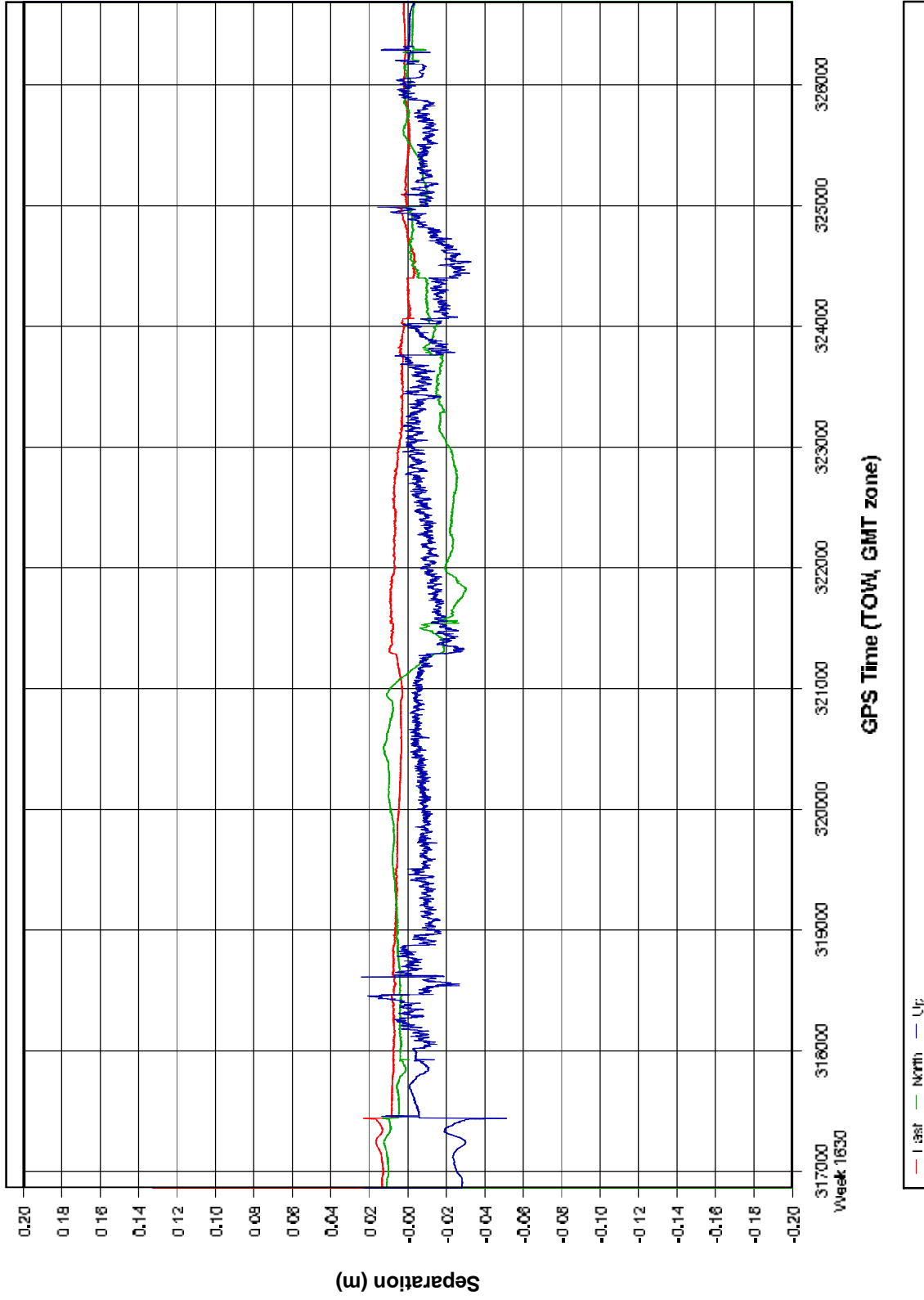
Quality Number Percentages:
Q 1: 99.9 %
Q 2: 0.1 %
Q 3: 0.0 %
Q 4: 0.0 %
Q 5: 0.0 %
Q 6: 0.0 %

Position Standard Deviation Percentages:
0.00 - 0.10 m: 100.0 %
0.10 - 0.30 m: 0.0 %
0.30 - 1.00 m: 0.0 %
1.00 - 5.00 m: 0.0 %
5.00 m + over: 0.0 %

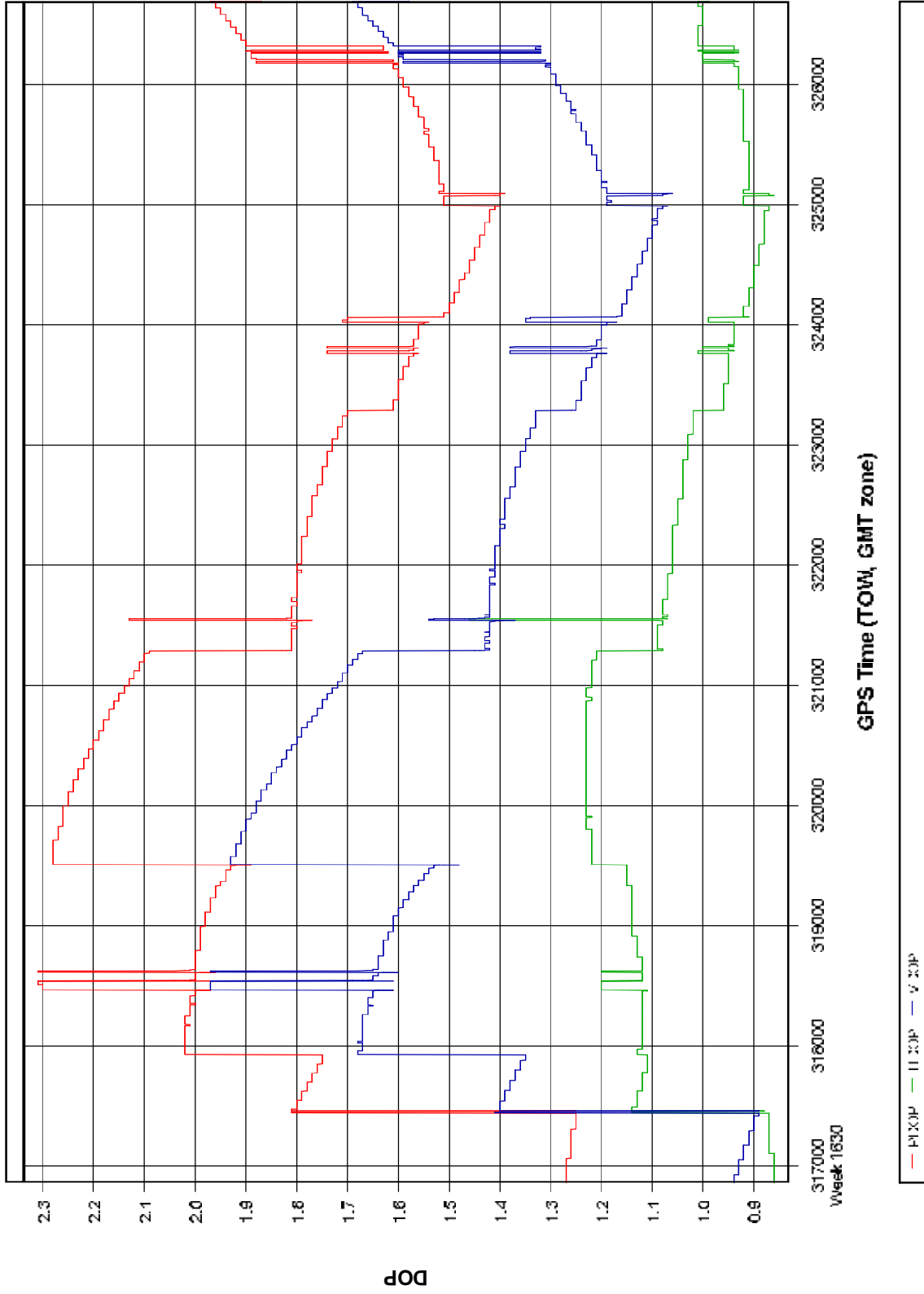
Percentages of epochs with DD_DOP over 10.00:
DOP over Tol: 0.0 %

Baseline Distances:
Maximum: 32.183 (km)
Minimum: 0.153 (km)
Average: 14.331 (km)
First Epoch: 0.253 (km)
Last Epoch: 0.402 (km)

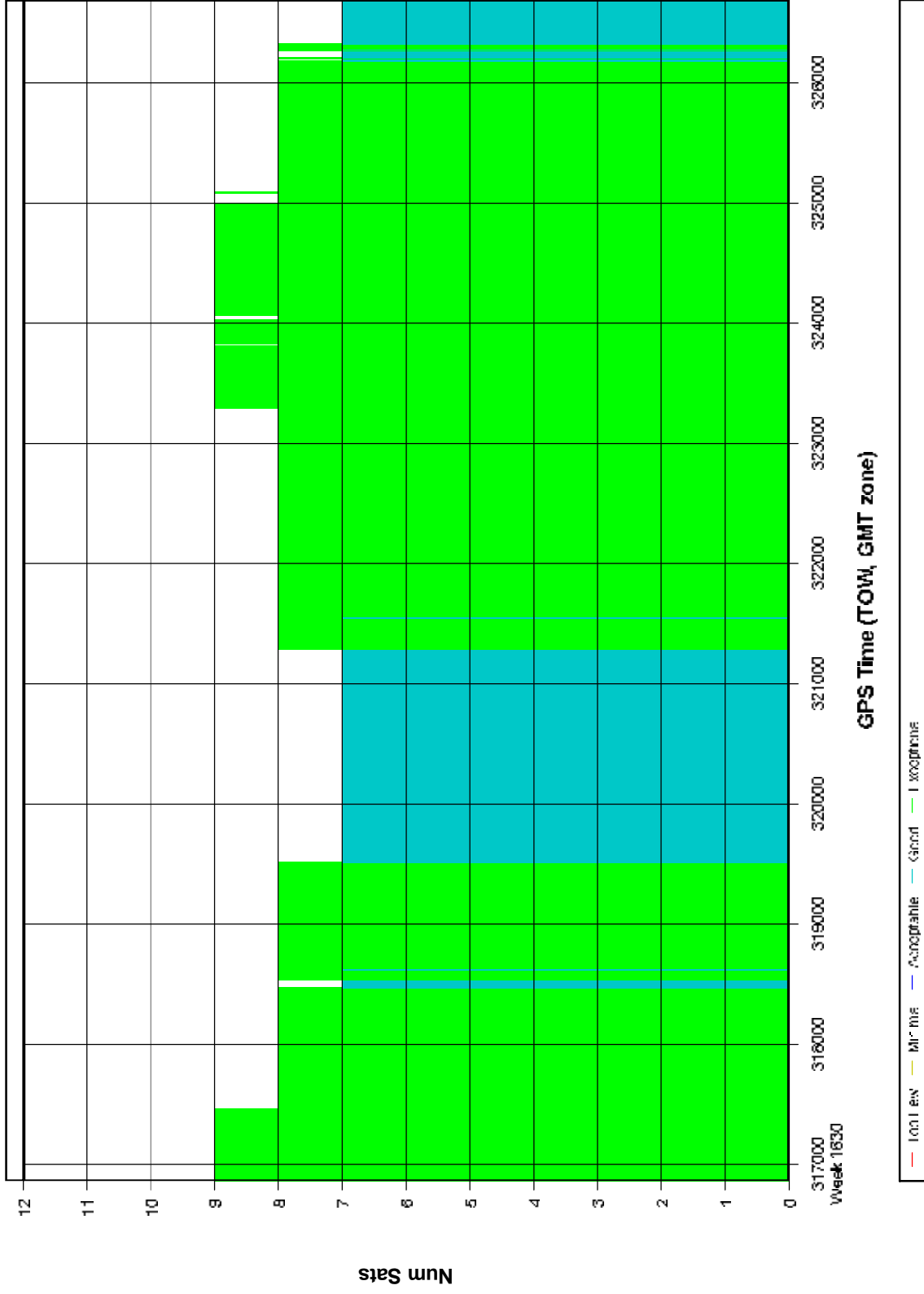
o111096a [Combined] - Forward/Reverse or Combined Separation Plot



o111096a [Combined] - PDOP, HDOP, VDOP Plots



o111096a [Combined] - Number of Satellites Bar Plot



```

                                o111096a.cfg
: PROJECT:
F:\11103U_VA\2_Operations\6_Missions\o111096a\3_Processed\GPS\o111096a.cfg
:
: DATE:      April 12/11 (date/time of processing)
: TIME:      9:44:13
: CREATED BY: GrafNav Version 7.80.2517
:
VERSION = 7.80.2517
PROCUSER = Unknown
PROCDISC = Run*(2)
PROCTIME = 09:38:18 04/12/2011

; Master station # 1 information
MB_MASTER_INDEX = 0
MB_MASTER_NAME = 1110301
MB_MASTER_FILE =
F:\11103U_VA\2_Operations\6_Missions\o111096a\1_RawData\original_PDC_files\00200960_
1110301.gpb
MB_MASTER_POS = 38 43 34.05308 -77 31 24.33961 23.6230
MB_MASTER_ANT = 1.475 0.001 1.441 1 _TP_SOK600 0
MB_MASTER_DISABLE = OFF

; Remote station information
REMOTE_FILE =
F:\11103U_VA\2_Operations\6_Missions\o111096a\3_Processed\Extract\mgps_o111096a.gpb
REMOTE_POS = 38 43 28.56937 -77 31 16.64418 28.3278
REMOTE_ANT = 0.000

; General settings
PROCESS_MODE = 103 108 113 126 ; Processing modes (GrafNav only)

DATUM = NAD83 AUTO ; Processing Datum
INPDATUM = ON NAD83 AUTO ; Input Datum (ON=Use processing datum)
ELEV_MASK = 10.0 ; Elevation mask (deg)
GRID = UTM 15 31 ; Grid info

CYCLE_TEST = BOTH ; Cycle slip test method
STATIC_SLIP_TOL = 0.40 ; slip tolerance in static mode (cycles)
USE_DOPPLER = ON OFF ; Use doppler meas. for phase, for code-only

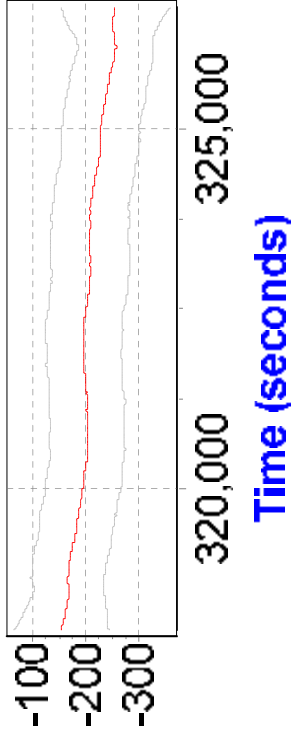
BASE_SAT = 99 ; Base satellite (99-default)

TIMERANGE = ALL 986140845.3 986150691.6 2 0 ; Processing time range
INTERVAL = 0.10 ; Processing time interval (seconds)

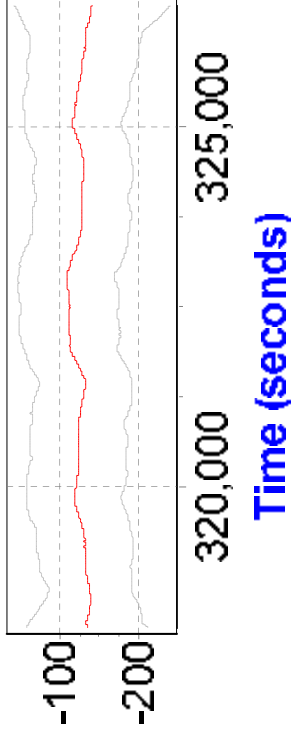
PROCESS_DIR = FORWARD ; Process direction (FORWARD/REVERSE)
BOTH_DIR = ON ; True for processing both directions
WRITE_BAD_EPOCHS = OFF ; Save bad data to .fwd/rev file (ON/OFF)
NOWRITE_HIGH = OFF 6 20.000 ; Don't write epoch with high statistics (q, stdev-m)
OUTPUT_MODE = EXTENDED ; Format for .fwd/rev file
DETAILED_SUM = ON ; Detailed Static/KAR Summary header
WRITE_SLIP_MSG = ON ; Print cycle slips to message log
SAVE_AMB = ON ; Should ambiguities be saved

```

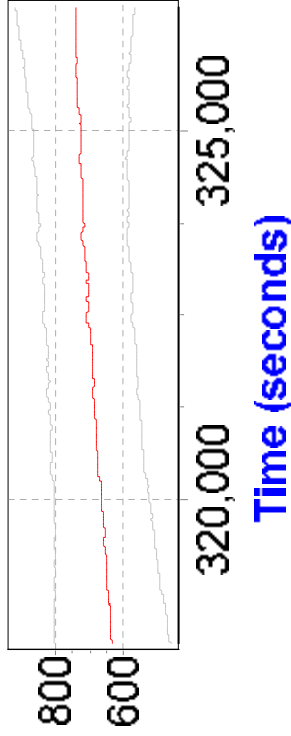
X Accelerometer Bias (micro-g)



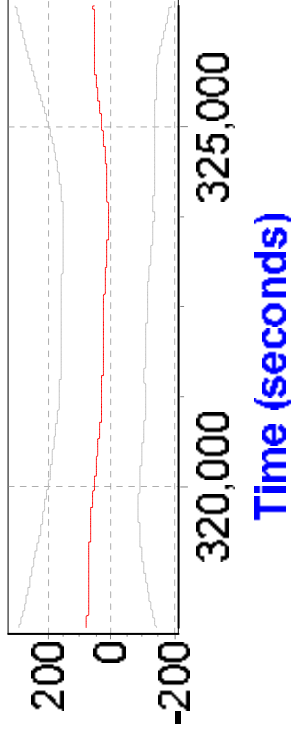
Y Accelerometer Bias (micro-g)



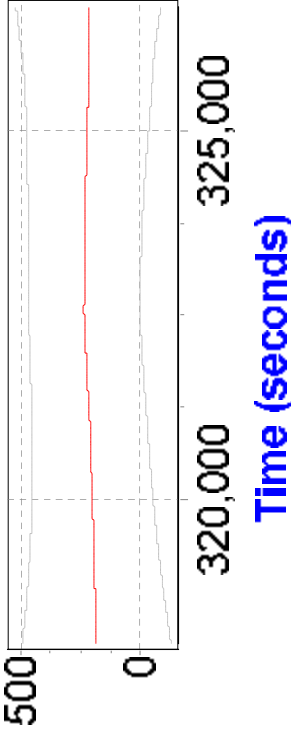
Z Accelerometer Bias (micro-g)



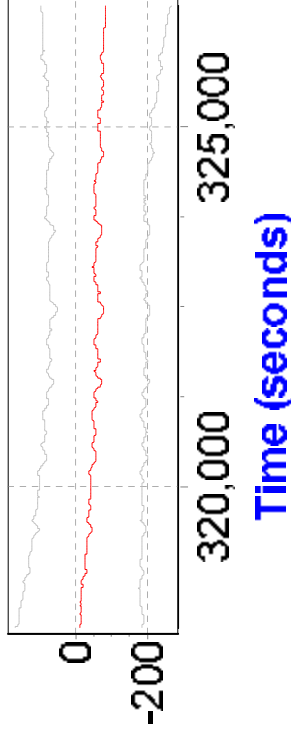
X Accelerometer Scale Factor Error (ppm)

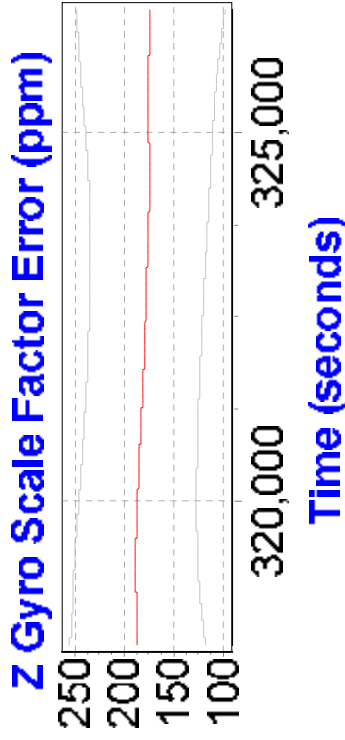
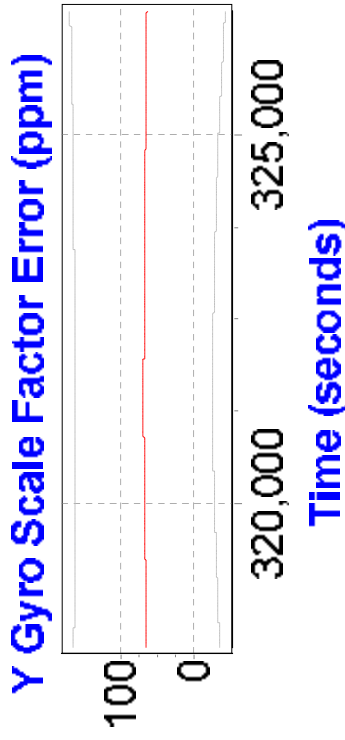
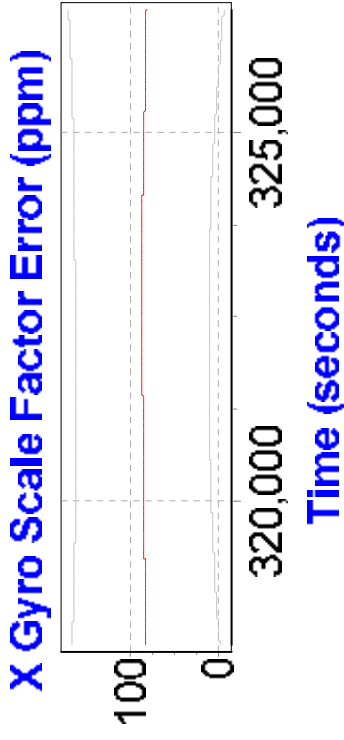
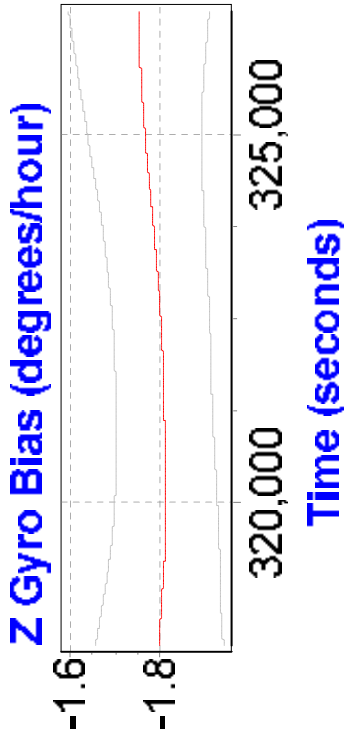
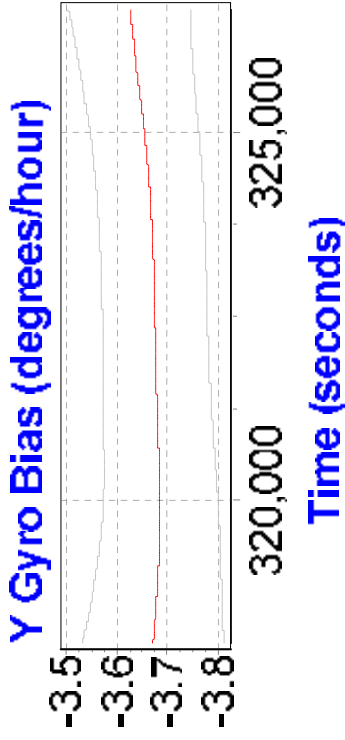
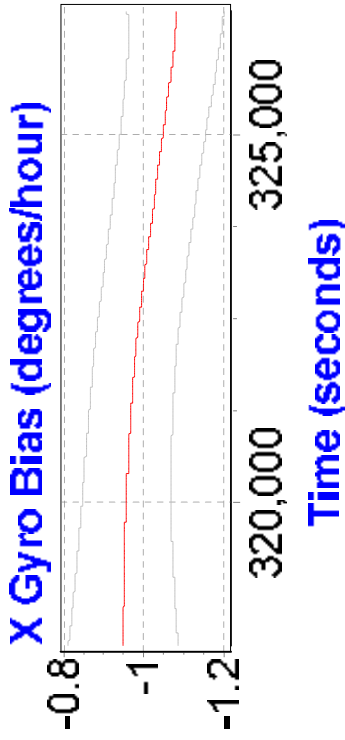


Y Accelerometer Scale Factor Error (ppm)



Z Accelerometer Scale Factor Error (ppm)





011096a
Project# 11030U **Session** 096a

Flight Log



Date	Apr 6	Julian Day	096
Project	DW-HMP	Aircraft	C95
Staging		Call Sign	
Survey Block		Pilot	Paul
Lines Complete	13 lines	Operator	John
Mission Objective	359 to 371	Observer	BUSBY

ALMIS/Clutch	096a
System #	
Laser Scanner	
Camera/Lens SN	
Shutter Speed	
Photo Freq.	
IMU	
GPS Rx	
Data Drive	

Additional Notes:

Outside Temp @ TO: Outside Pressure @ TO:
 Outside Temp @ LA: 16 Outside Pressure @ LA: 3004

Aircraft Block Time	<input type="checkbox"/> Times confirmed with pilot
Engine On (Hobbs)	Takeoff 11:55 / 120
Engine Off (Hobbs)	Landing 1939
Total hrs (Hobbs)	Total hrs Approx. Fuel Cost

Flying Height AGL	950
Ground Speed	150 kts
First/Last/Alternating Return	

Mission Plan	Scan Angle (Optical)
	Mirror Scan Rate
	Laser Pulse Rate

Static & KAR	GFS / INS
Time	Start
Pre Mission	
KAR Base	
KAR Base	
Post Mission	

Flight Plan Line #	LIDAR File Name	Flight Direction	GPS / UTC Time		Flight Aborted		Photo Events / Comment Please periodically record Calcn Temp Output (Watts)
			Start	End	Time	NM to End	
371		W	16 35	14			Any Data Lost 134 Lines
370			16 44	18			
369			16 53	57			
368			17 00	06			
367			17 10	14			
366			17 19	23			
365			17 27	32			
364			17 36	40			
363			17 44	49			

GPS Base Log Sheet

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MAIN Base

Station ID: 11301J Project #: 11300 Missions: 096a
 096b

Project Name: FEMA Calendar Date: Apr 6 Julian Day: 096

Approx. Coordinates: WGS 84 N W

Description of Mark: - Nail

Monument is: Flush with ground Above ground 5 cm Below ground cm

Location & Access: - Dulles Aviation FBO

Observations & Additional Notes

GPS Observation / MAIN

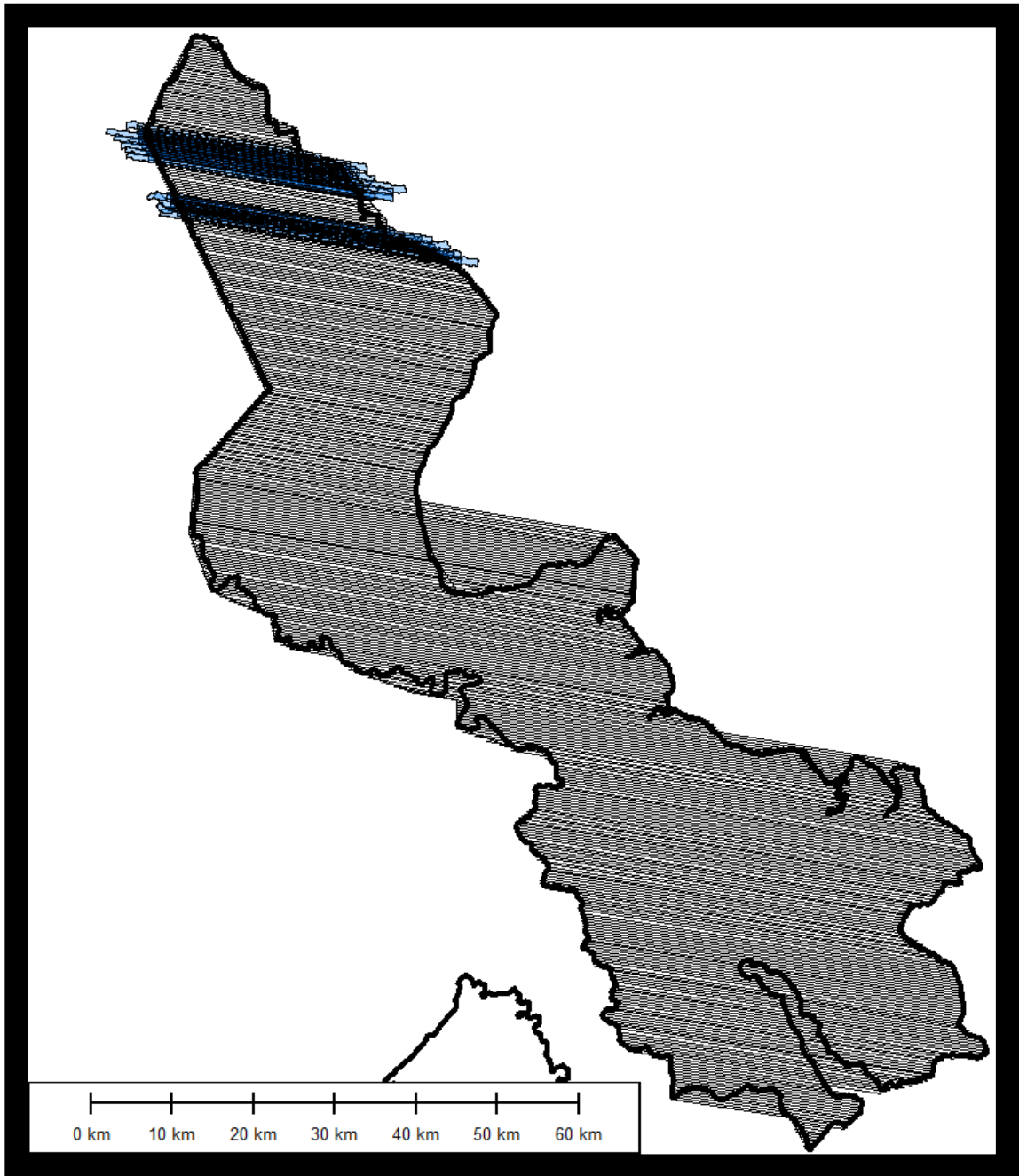
Rx Make / Model	Serial #	0020
Ant. Make / Model	Serial #	0010
Operator	Tr	
Session Time (GPS)	Start	End
	13:53	
Slant HI Before:	A: 1.441	B: 1.441
Slant HI After:	A: 1.441	B: 1.441
Correction	<input type="checkbox"/> m <input type="checkbox"/> in <input type="checkbox"/> use GrafNav Profile	
Phase Center		
Data File Name	00200960.pdc	

GPS Observation - Back-Up

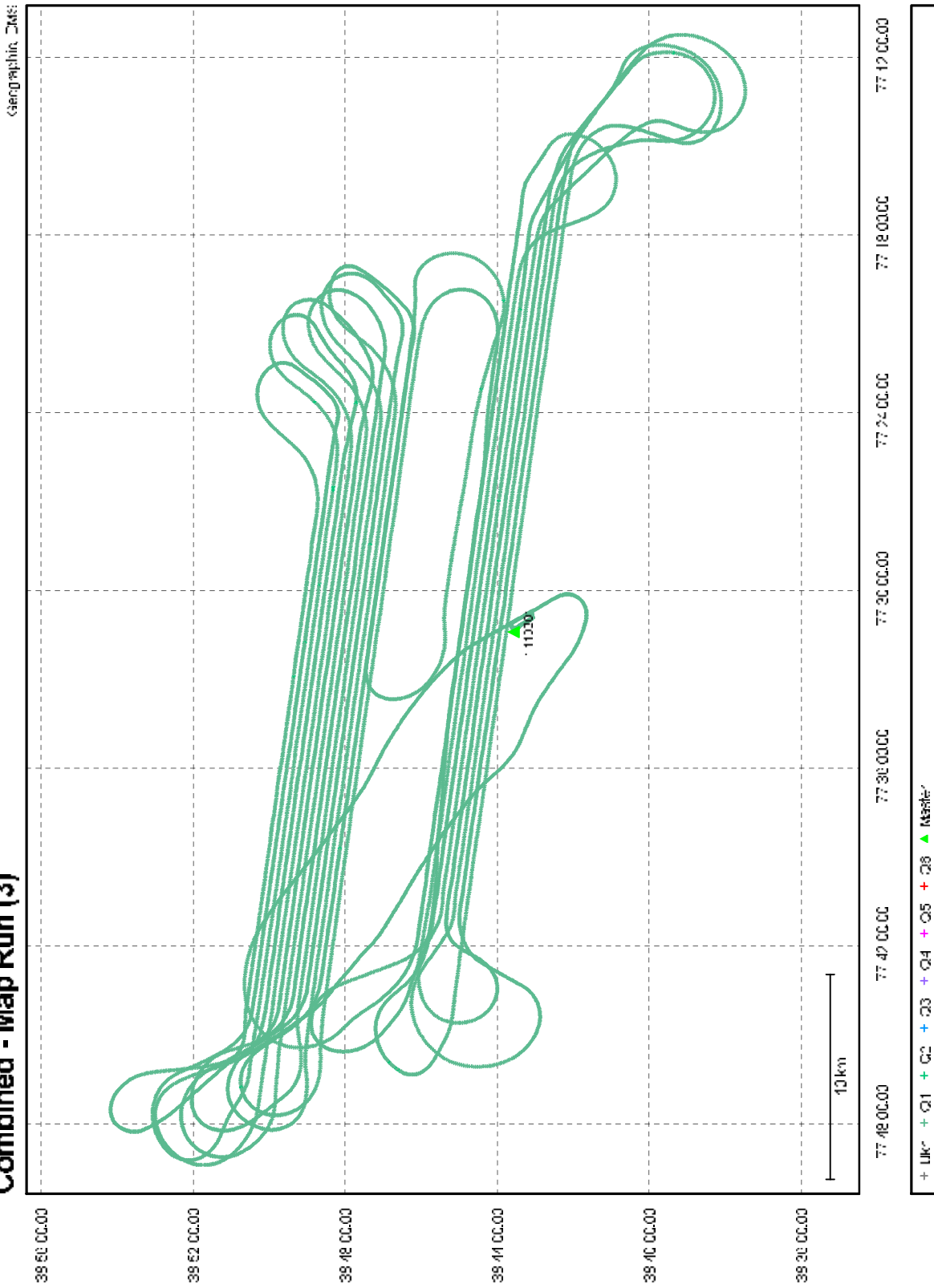
Rx Make / Model	Serial #	0000
Ant. Make / Model	Serial #	
Operator	Tr	
Session Time (GPS)	Start	End
	13:59	
Slant HI Before:	A: 1.376	B: 1.376
Slant HI After:	A: 1.376	B: 1.376
Correction	<input type="checkbox"/> m <input type="checkbox"/> in <input type="checkbox"/> use GrafNav Profile	
Phase Center		
Data File Name	00000960.pdc	

Mission: o111101a

2011 04 11



Combined - Map Run (3)



Processing Summary Information

Program: GrafNav
Version: 7.80.2517
Project: F:\11103U_VA\2_Operations\6_Missions\o111101a\3_Processed\GPS\o111101a.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:
Total in GPB file: 168904
No processed position: 152375
Missing Fwd or Rev: 4
With bad C/A code: 0
With bad L1 Phase: 0

Measurement RMS Values:
L1 Phase: 0.0200 (m)
C/A Code: 0.82 (m)
L1 Doppler: 0.033 (m/s)

Fwd/Rev Separation RMS Values:
East: 0.012 (m)
North: 0.010 (m)
Height: 0.033 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (16523 occurrences):
East: 0.012 (m)
North: 0.010 (m)
Height: 0.029 (m)

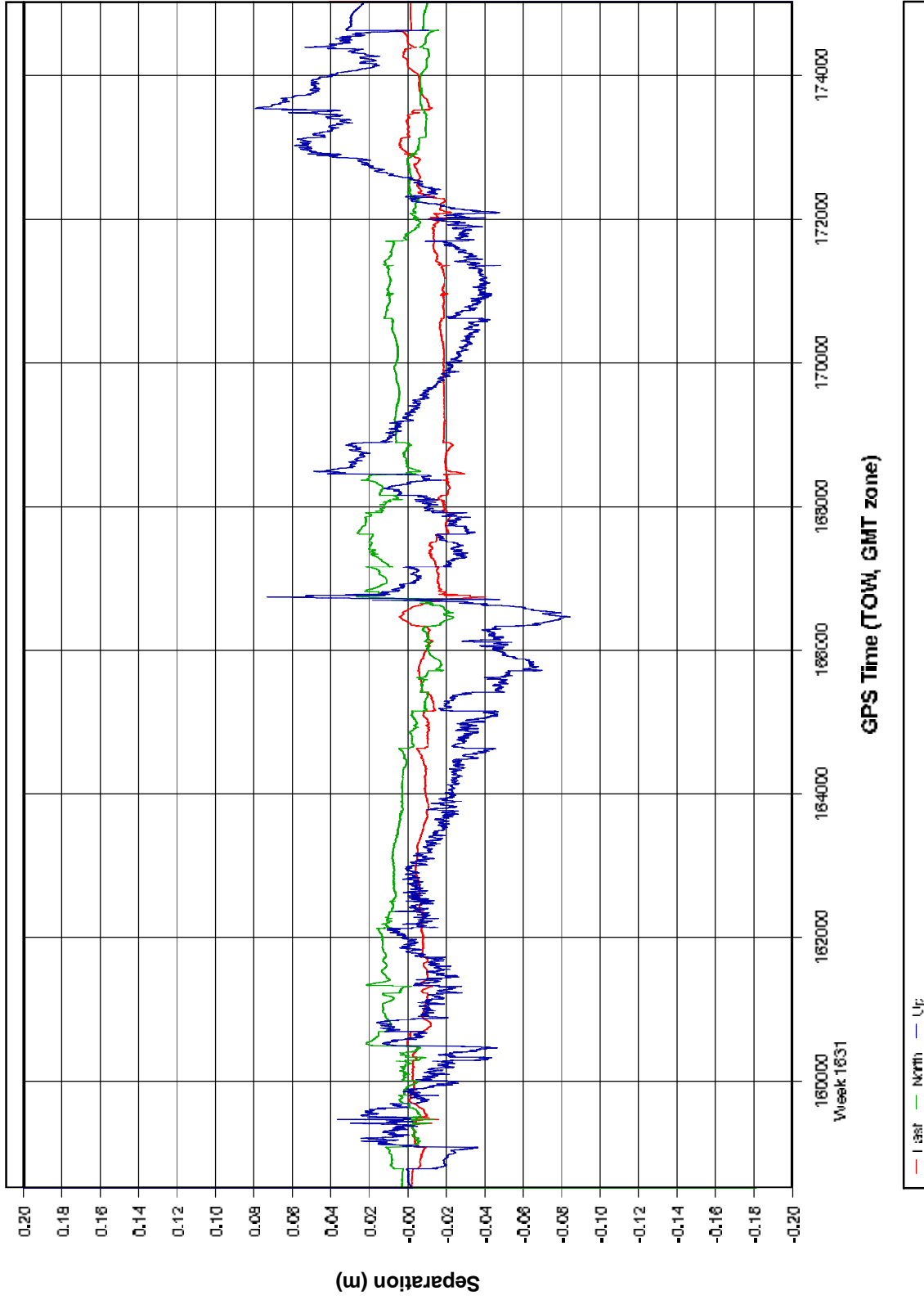
Quality Number Percentages:
Q 1: 99.9 %
Q 2: 0.1 %
Q 3: 0.0 %
Q 4: 0.0 %
Q 5: 0.0 %
Q 6: 0.0 %

Position Standard Deviation Percentages:
0.00 - 0.10 m: 100.0 %
0.10 - 0.30 m: 0.0 %
0.30 - 1.00 m: 0.0 %
1.00 - 5.00 m: 0.0 %
5.00 m + over: 0.0 %

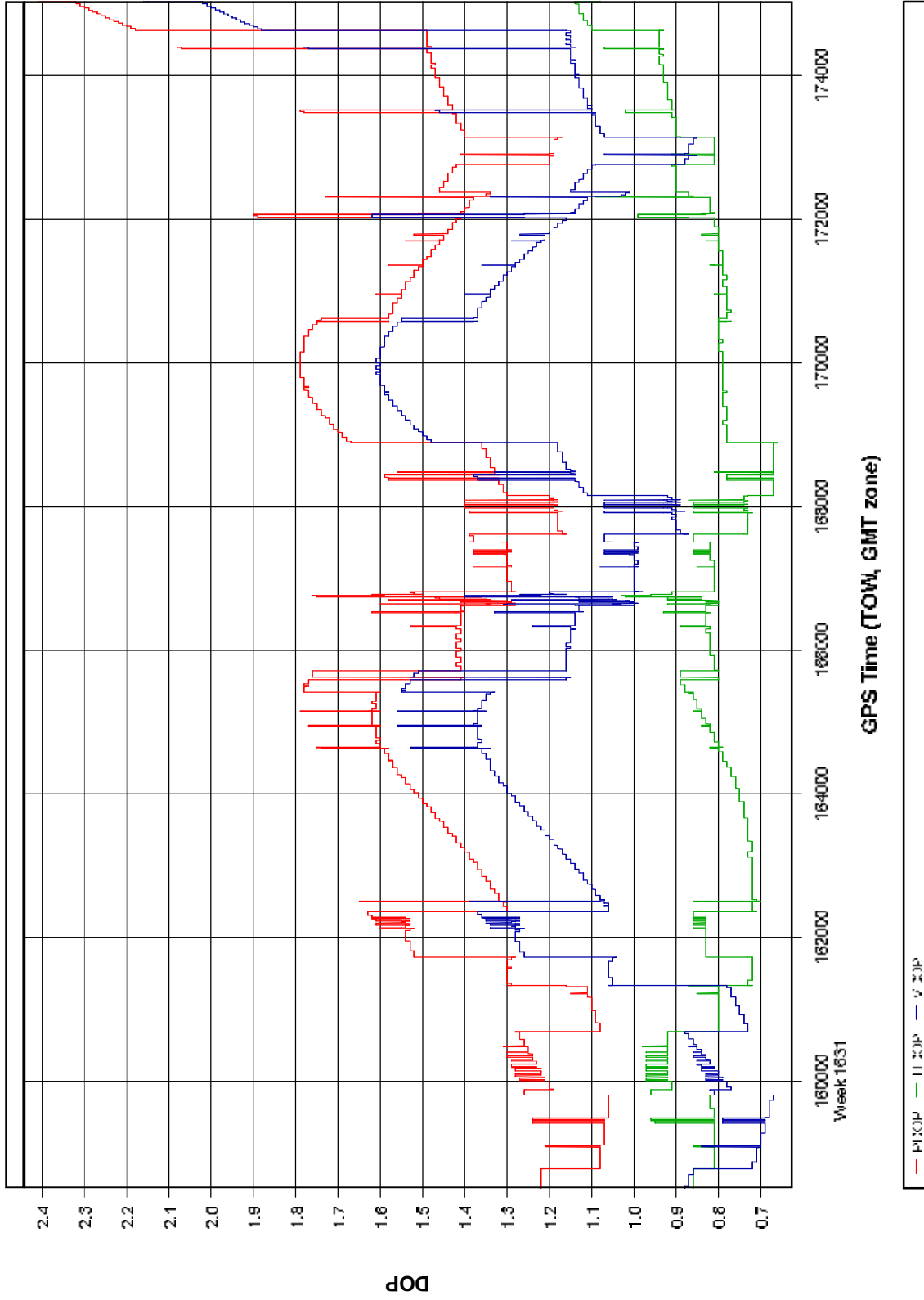
Percentages of epochs with DD_DOP over 10.00:
DOP over Tol: 0.0 %

Baseline Distances:
Maximum: 30.899 (km)
Minimum: 0.155 (km)
Average: 13.759 (km)
First Epoch: 0.303 (km)
Last Epoch: 0.319 (km)

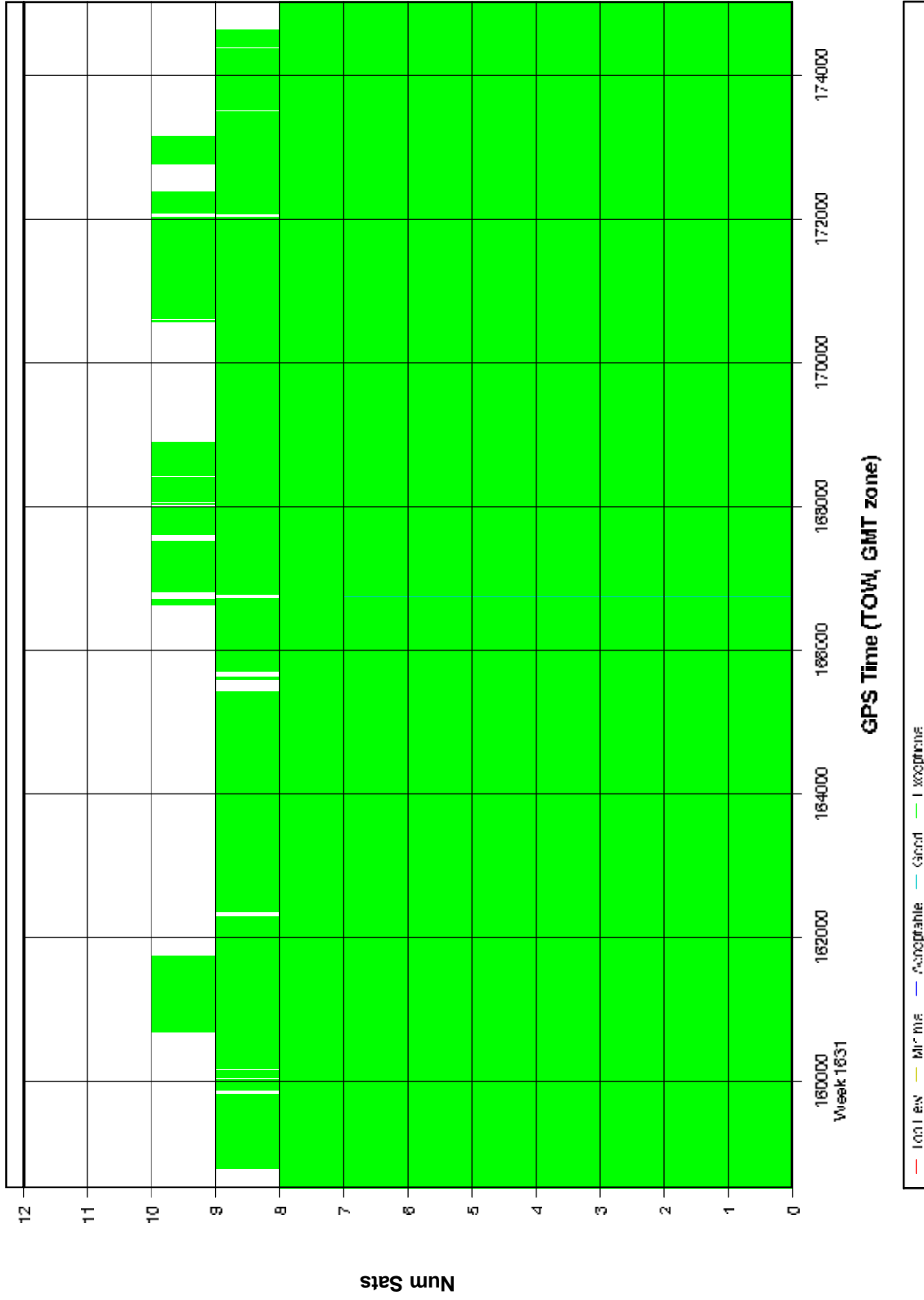
o111101a [Combined] - Forward/Reverse or Combined Separation Plot



o111101a [Combined] - PDOP, HDOP, VDOP Plots



o111101a [Combined] - Number of Satellites Bar Plot



```

                                o111101a.cfg
:   PROJECT:
F:\11103U_VA\2_Operations\6_Missions\o111101a\3_Processed\GPS\o111101a.cfg
:
:   DATE:      April 19/11 (date/time of processing)
:   TIME:      11:00:24
:   CREATED BY: GrafNav Version 7.80.2517
:
VERSION = 7.80.2517
PROCUSER = Unknown
PROCDISC = Run*(4)
PROCTIME = 10:56:17 04/19/2011

; Master station # 1 information
MB_MASTER_INDEX = 0
MB_MASTER_NAME = 1110301
MB_MASTER_FILE =
F:\11103U_VA\2_Operations\6_Missions\o111101a\1_RawData\original_PDC_files\00021010_
1110301.gpb
MB_MASTER_POS = 38 43 34.05308 -77 31 24.33961 23.6230
MB_MASTER_ANT = 1.476 0.001 1.442 1 _TP_SOK600 0
MB_MASTER_DISABLE = OFF

; Remote station information
REMOTE_FILE =
F:\11103U_VA\2_Operations\6_Missions\o111101a\3_Processed\Extract\mgps_o111101a.gpb
REMOTE_POS = 38 43 27.23306 -77 31 15.53497 26.9049
REMOTE_ANT = 0.000

; General settings
PROCESS_MODE = 105 108 113 126 ; Processing modes (GrafNav only)

DATUM = NAD83 AUTO ; Processing Datum
INPDATUM = ON NAD83 AUTO ; Input Datum (ON=Use processing datum)
ELEV_MASK = 9.0 ; Elevation mask (deg)
GRID = UTM 15 31 ; Grid info

CYCLE_TEST = BOTH ; Cycle slip test method
STATIC_SLIP_TOL = 0.40 ; slip tolerance in static mode (cycles)
USE_DOPPLER = ON OFF ; Use doppler meas. for phase, for code-only

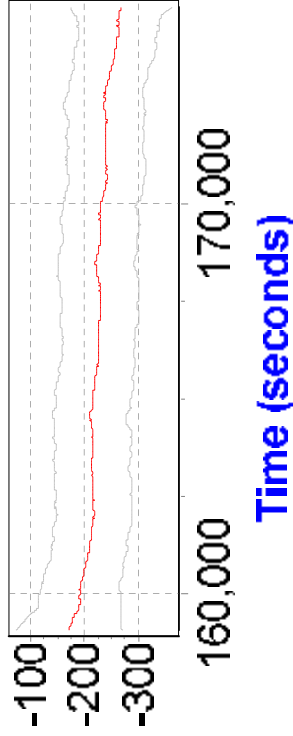
BASE_SAT = 99 ; Base satellite (99-default)

TIMERANGE = RANGE 986587306.0 986603834.0 2 0 ; Processing time range
INTERVAL = 0.10 ; Processing time interval (seconds)

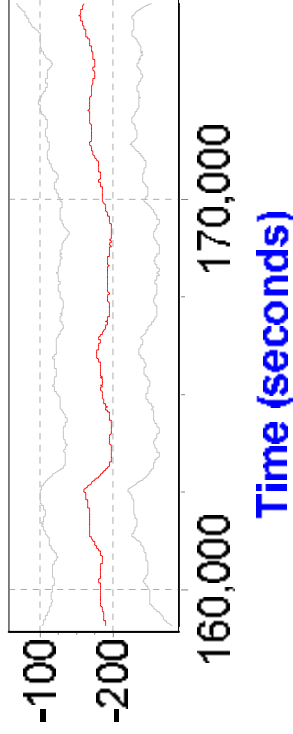
PROCESS_DIR = FORWARD ; Process direction (FORWARD/REVERSE)
BOTH_DIR = ON ; True for processing both directions
WRITE_BAD_EPOCHS = OFF ; Save bad data to .fwd/rev file (ON/OFF)
NOWRITE_HIGH = OFF 6 20.000 ; Don't write epoch with high statistics (q, stdev-m)
OUTPUT_MODE = EXTENDED ; Format for .fwd/rev file
DETAILED_SUM = ON ; Detailed Static/KAR Summary header
WRITE_SLIP_MSG = ON ; Print cycle slips to message log
SAVE_AMB = ON ; Should ambiguities be saved

```

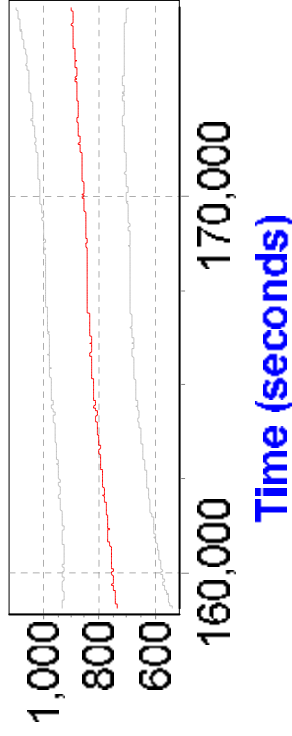
X Accelerometer Bias (micro-g)



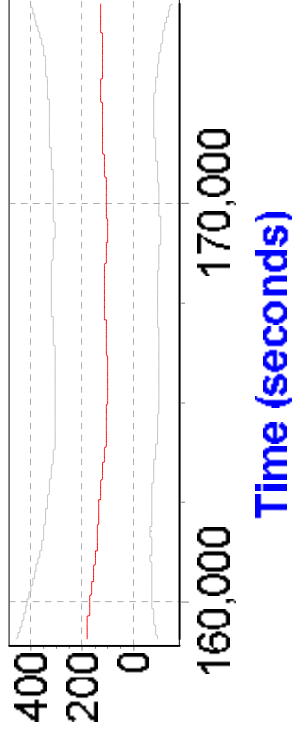
Y Accelerometer Bias (micro-g)



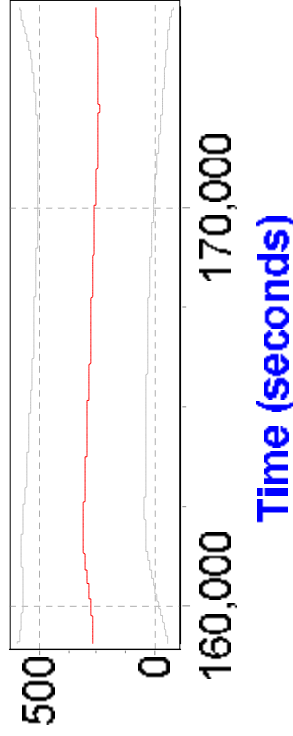
Z Accelerometer Bias (micro-g)



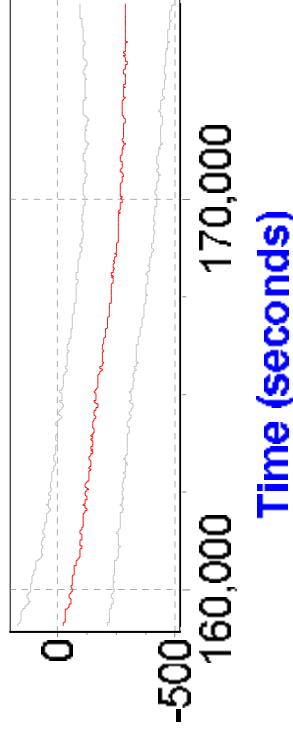
X Accelerometer Scale Factor Error (ppm)

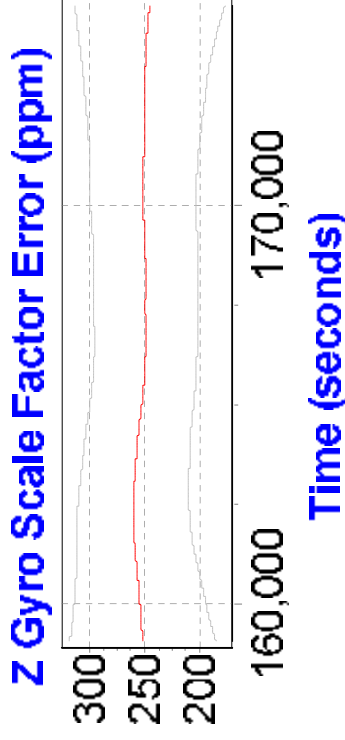
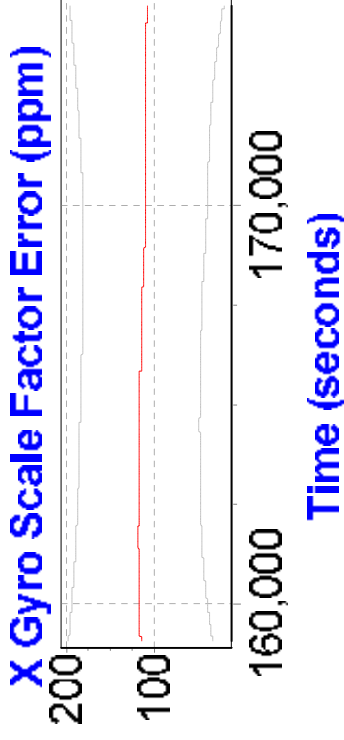
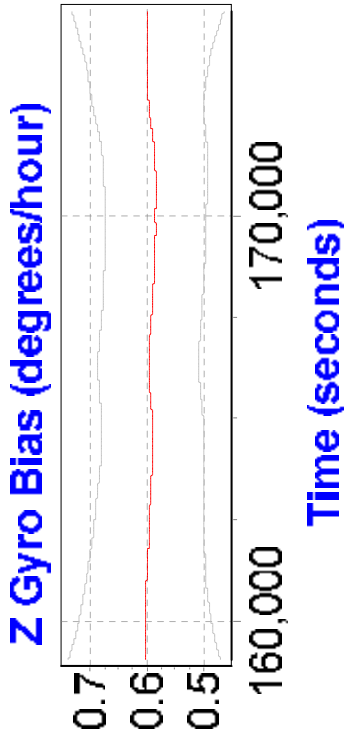
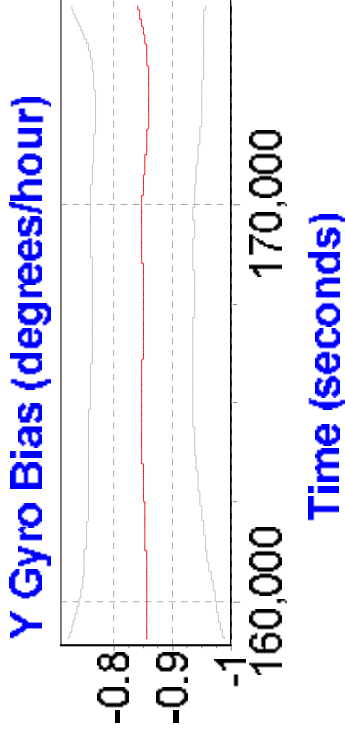
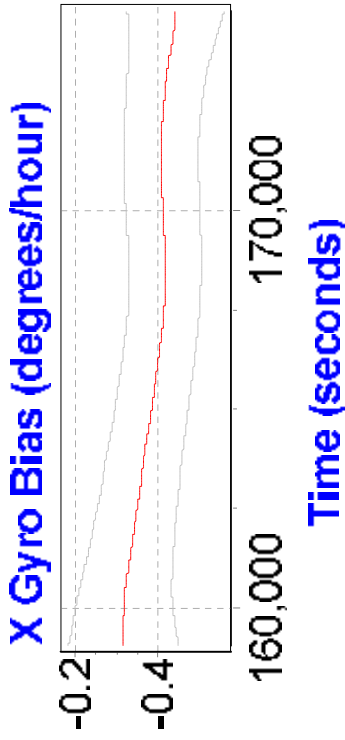


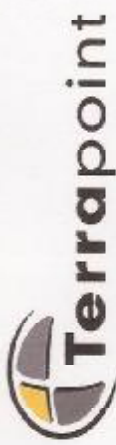
Y Accelerometer Scale Factor Error (ppm)



Z Accelerometer Scale Factor Error (ppm)







Flight Log

Project# 1300 Session 10/a

Date	Apr 11	Julien Day	10
Project	FEMA	Misc	043
Staging		Call Sign	
Survey Block	Manual	Pilot	
Lines Complete		Operator	
Mission Objective		Observer	

ALMIS/Op/Lech	
System #	opt
Laser Scanner	
Camera/Lens SN	
Shutter Speed	
Photo Freq	
IMU	
GPS Rx	
Data Drive	

Additional Notes:
Hazy, clear view of ground

Outside Temp @ TO: Outside Pressure @ TO
 Outside Temp @ LA: 27 Outside Pressure @ LA: 29.61

Aircraft	Block Time	<input type="checkbox"/> Times confirmed with pilot
Engine On (Hobbs)	Takeoff 1601	(120) x (Total ft hrs)
Engine Off (Hobbs)	Landing 1610	FBO \$/line
Total hrs (Hobbs)	29.34	Approx. Fuel Cost

Mission Plan	Scan Angle (Optect)
Flying Height AGL	Mirror Scan Rate
Ground Speed	Laser Pulse Rate
150 fts	
First/Last/Averaging Return	

Static & KAR	GPS #	INS
Time		Start
Pre Mission		
KAR Base		
KAR Base		
Post Mission		

Flight Plan Line #	LIDAR File Name	Flight Direction	GPS / UTC Time		Flight Aborted		Photo Events / Comment Please periodically record: Scan Temp: Output (Watts):
			Start	End	Time	NIM to End	
308		E	20:28	20:28			
317		W	20:48	20:38			
352		E	20:46	20:48			
348		W	20:52	20:38			
254		E	21:02	21:07			
353		W	21:11	21:18			
352		E	21:12	21:27			
351		W	21:31	21:38			
350		E	21:41	21:47			



Flight Log

Session

Project#

Flight Plan Line #	LIDAR File Name	Flight Direction	GPS / UTC Time		Flight: Aborted		Photo Events / Comment Please periodically record: Cabin Temp: Output (Watts)
			Start	End	Time	NM to End	
340		W	21 59	21 57			
341		E	22 01	22 07			
342		W	22 10		22 13	7.7	NAV Data Lost on W
343		W	22 20	22 27			Restart of Prev Attempt
344		E	22 30	22 37			
345		W	22 38	22 46			733 Nav Data lost at 2246
346		E	22 49	22 56			
347		W	23 00	23 09			
348		E	23 14	23 21			
349		W	23 26	23 34			
350		E	23 37	23 44			
351		W	23 50	23 59			
352		E	24 03	24 10			
353		W	24 09	24 22			

021110105
01110105
GT101



GPS Base Log Sheet

main

Station ID:	1130U	Project #:	1130U	Missions:	101
-------------	-------	------------	-------	-----------	-----

Project Name:	Fernales	Calendar Date:	11 April	Julian Day	101
Approx. Coordinates	WGS 84	N	W		
Description of Mark (Take Photos)	- nail				
Monument is:	<input type="checkbox"/> Flush with ground <input checked="" type="checkbox"/> Above ground 2.5 cm <input type="checkbox"/> Below ground ____ cm				
Location & Access					

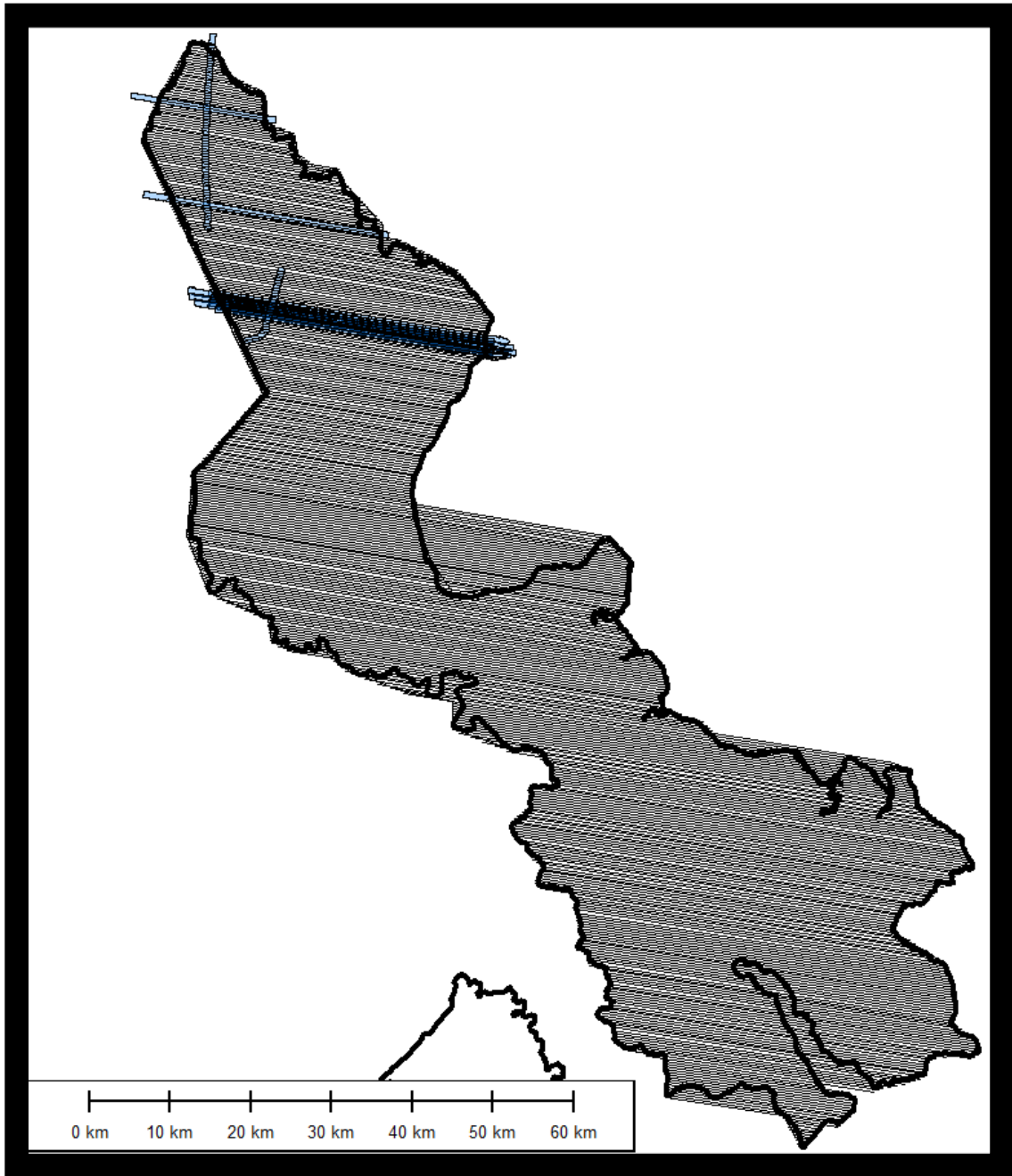
Obstructions & Additional Notes

GPS Observation - MAIN	
Rx Make / Model	Serial #
GSR2600	0002
Ant. Make / Model	Serial #
SK600	0010
Operator	dexbz
Start	1116 Local
Session Time (GPS) End	
Start HI Before:	A: 1.442
Start HI After:	B: 1.442
Correction	
Phase Center	
Data File Name	06021010.pdc

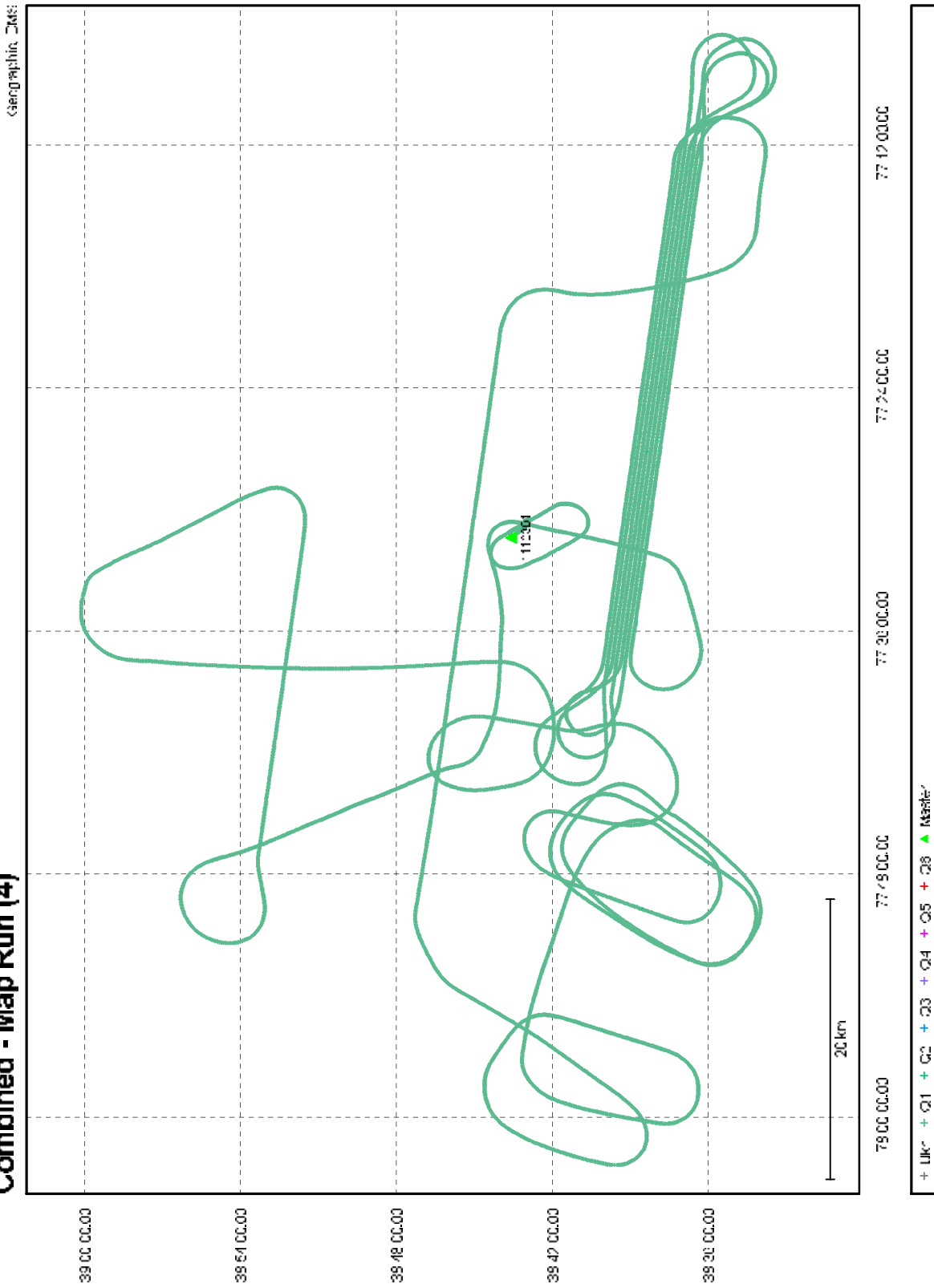
GPS Observation - Back-Up	
Rx Make / Model	Serial #
Ant. Make / Model	Serial #
Operator	
Start	
Session Time (GPS) End	
Start HI Before:	A: B:
Start HI After:	A: B:
Correction	
Phase Center	
Data File Name	

Mission: o111104a

2011 04 14



Combined - Map Run (4)



Processing Summary Information

Program: GrafNav
Version: 7.80.2517
Project: F:\11103U_VA\2_Operations\6_Missions\o111104a\3_Processed\GPS\o111104a.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:
Total in GPB file: 132312
No processed position: 119802
Missing Fwd or Rev: 322
With bad C/A code: 0
With bad L1 Phase: 0

Measurement RMS Values:
L1 Phase: 0.0160 (m)
C/A Code: 0.80 (m)
L1 Doppler: 0.029 (m/s)

Fwd/Rev Separation RMS Values:
East: 0.007 (m)
North: 0.012 (m)
Height: 0.016 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (12186 occurrences):
East: 0.007 (m)
North: 0.007 (m)
Height: 0.014 (m)

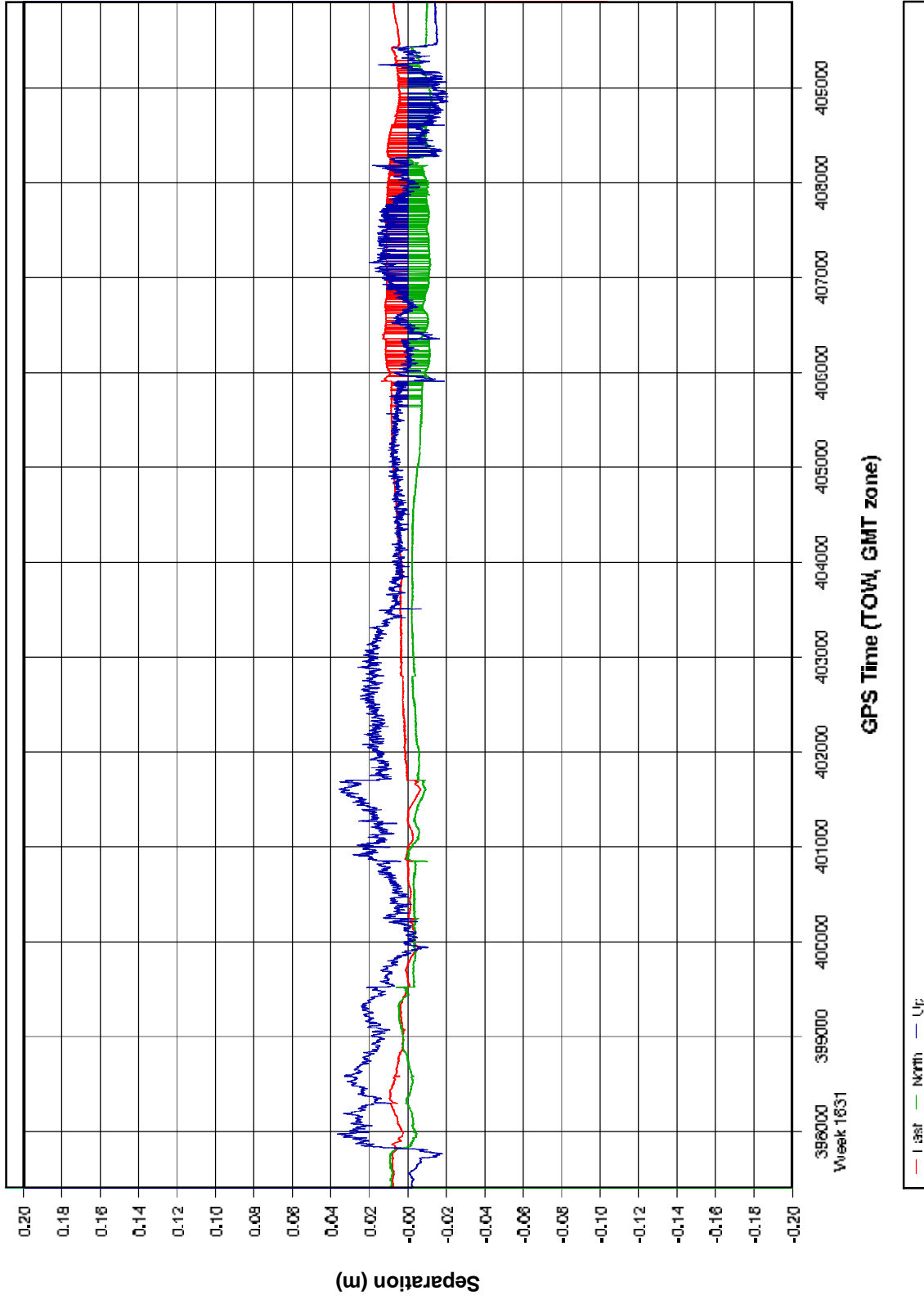
Quality Number Percentages:
Q 1: 100.0 %
Q 2: 0.0 %
Q 3: 0.0 %
Q 4: 0.0 %
Q 5: 0.0 %
Q 6: 0.0 %

Position Standard Deviation Percentages:
0.00 - 0.10 m: 100.0 %
0.10 - 0.30 m: 0.0 %
0.30 - 1.00 m: 0.0 %
1.00 - 5.00 m: 0.0 %
5.00 m + over: 0.0 %

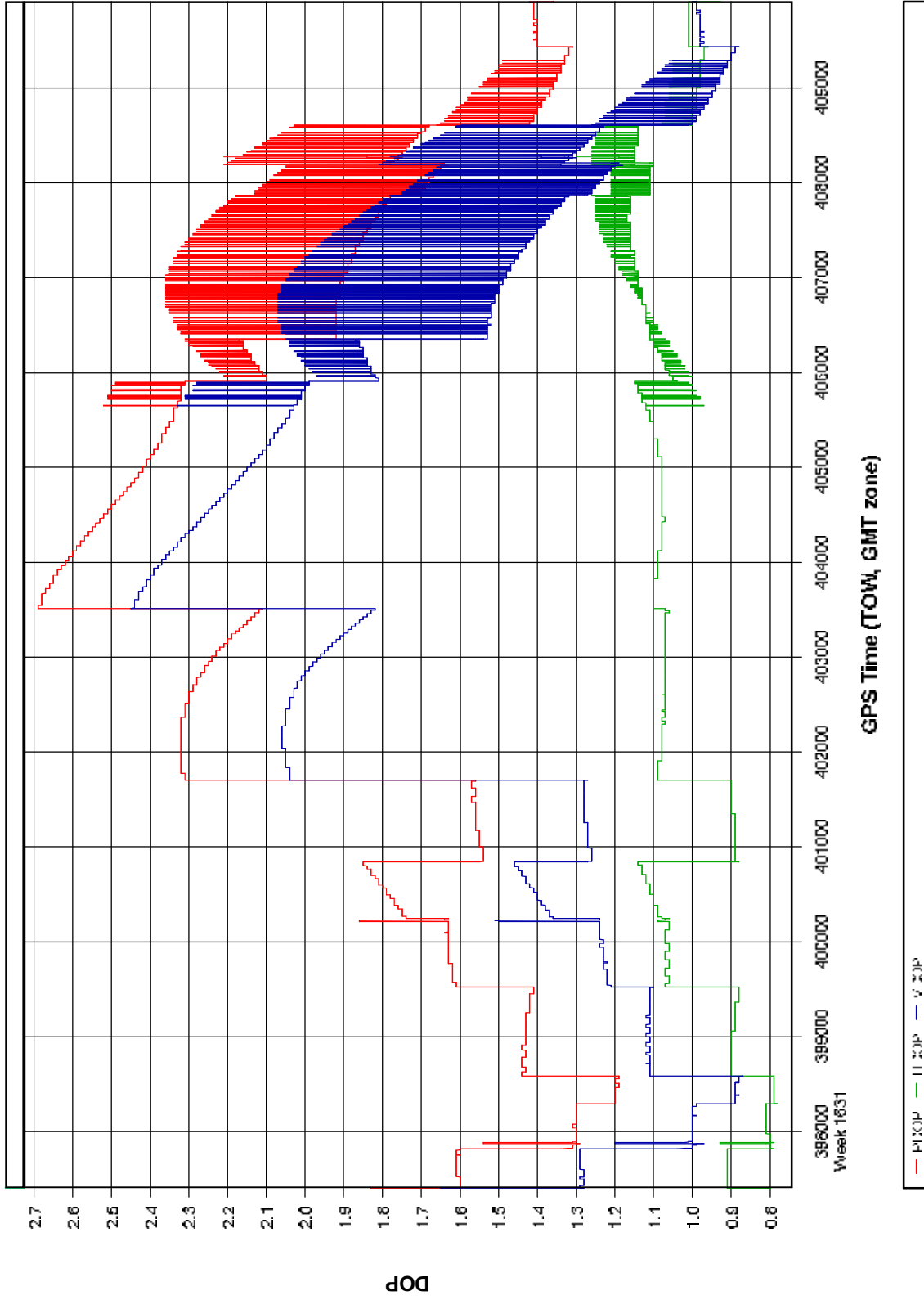
Percentages of epochs with DD_DOP over 10.00:
DOP over Tol: 0.0 %

Baseline Distances:
Maximum: 45.583 (km)
Minimum: 0.157 (km)
Average: 19.991 (km)
First Epoch: 0.517 (km)
Last Epoch: 0.266 (km)

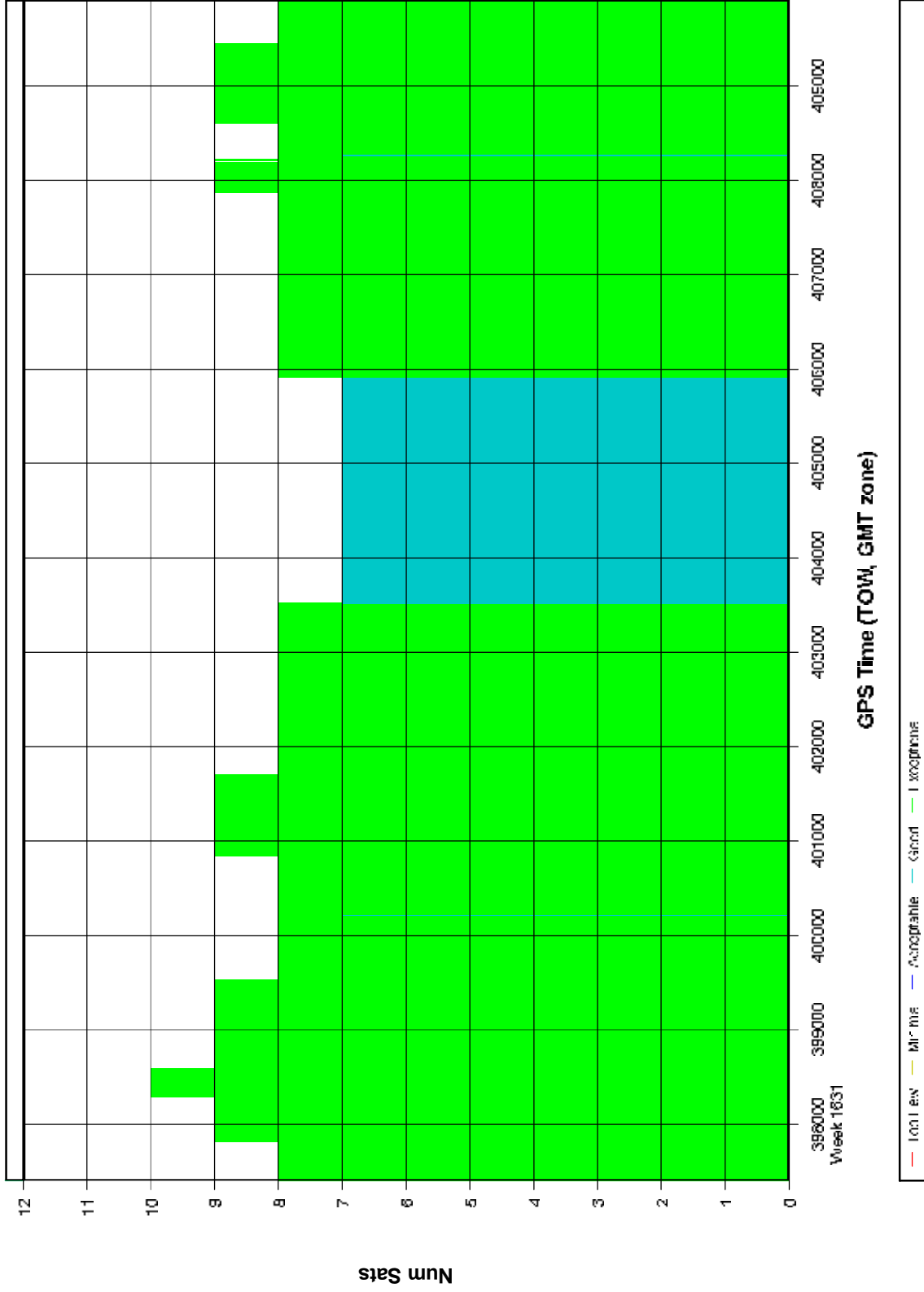
o111104a [Combined] - Forward/Reverse or Combined Separation Plot



o111104a [Combined] - PDOP, HDOP, VDOP Plots



o111104a [Combined] - Number of Satellites Bar Plot



```

                                o111104a.cfg
: PROJECT:
F:\11103U_VA\2_Operations\6_Missions\o111104a\3_Processed\GPS\o111104a.cfg
:
: DATE:      April 18/11 (date/time of processing)
: TIME:      10:30:14
: CREATED BY: GrafNav Version 7.80.2517
:
VERSION = 7.80.2517
PROCUSER = Unknown
PROCDISC = Run*(5)
PROCTIME = 10:25:36 04/18/2011

; Master station # 1 information
MB_MASTER_INDEX = 0
MB_MASTER_NAME = 1110301
MB_MASTER_FILE =
F:\11103U_VA\2_Operations\6_Missions\o111104a\1_RawData\original_PDC_files\00021040.gpb
MB_MASTER_POS = 38 43 34.05308 -77 31 24.33961 23.6230
MB_MASTER_ANT = 1.474 0.001 1.440 1 _TP_SOK600 0
MB_MASTER_DISABLE = OFF

; Remote station information
REMOTE_FILE =
F:\11103U_VA\2_Operations\6_Missions\o111104a\3_Processed\Extract\mgps_o111104a.gpb
REMOTE_POS = 38 43 26.40289 -77 31 15.14140 24.2709
REMOTE_ANT = 0.000

; General settings
PROCESS_MODE = 105 108 113 126 ; Processing modes (GrafNav only)

DATUM = NAD83 AUTO ; Processing Datum
INPDATUM = ON NAD83 AUTO ; Input Datum (ON=Use processing datum)
ELEV_MASK = 11.0 ; Elevation mask (deg)
GRID = UTM 15 31 ; Grid info

CYCLE_TEST = BOTH ; Cycle slip test method
STATIC_SLIP_TOL = 0.40 ; slip tolerance in static mode (cycles)
USE_DOPPLER = ON OFF ; Use doppler meas. for phase, for code-only

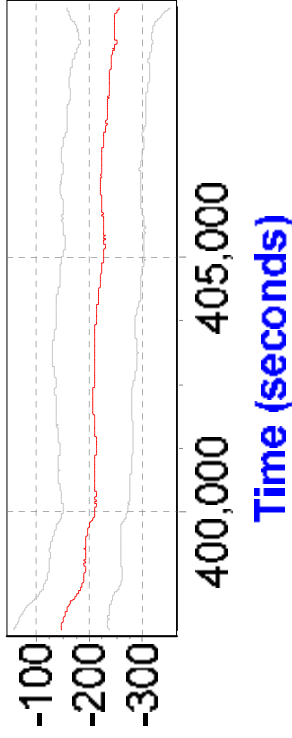
BASE_SAT = 99 ; Base satellite (99-default)

TIMERANGE = RANGE 986826198.0 986838713.0 2 0 ; Processing time range
INTERVAL = 0.10 ; Processing time interval (seconds)

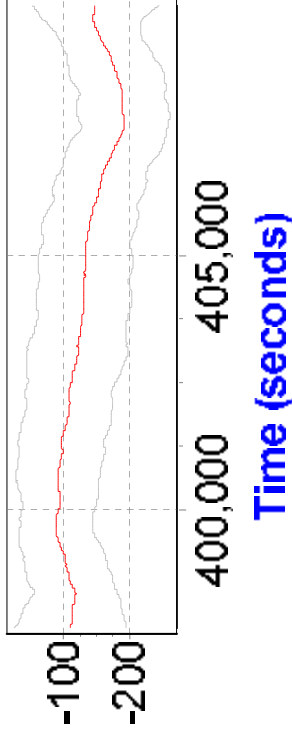
PROCESS_DIR = FORWARD ; Process direction (FORWARD/REVERSE)
BOTH_DIR = ON ; True for processing both directions
WRITE_BAD_EPOCHS = OFF ; Save bad data to .fwd/rev file (ON/OFF)
NOWRITE_HIGH = OFF 6 20.000 ; Don't write epoch with high statistics (q, stdev-m)
OUTPUT_MODE = EXTENDED ; Format for .fwd/rev file
DETAILED_SUM = ON ; Detailed Static/KAR Summary header
WRITE_SLIP_MSG = ON ; Print cycle slips to message log
SA

```

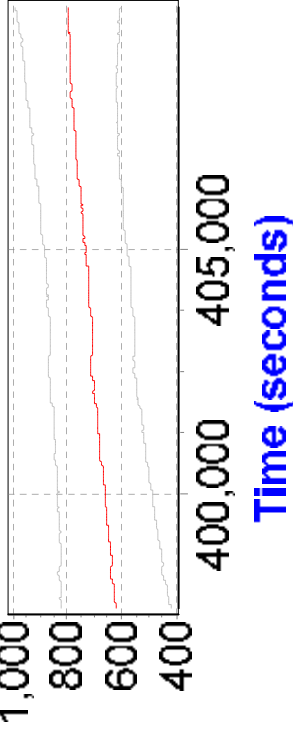
X Accelerometer Bias (micro-g)



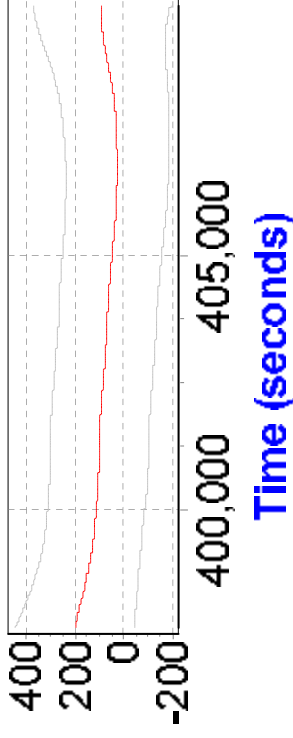
Y Accelerometer Bias (micro-g)



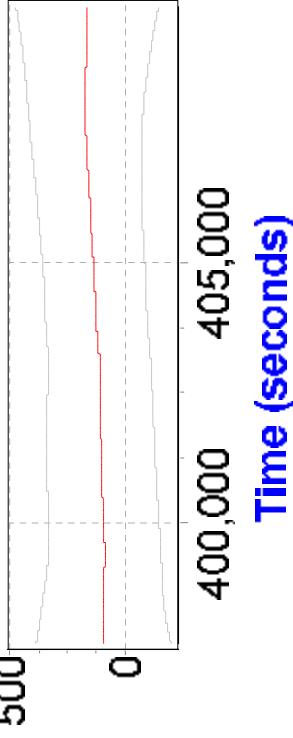
Z Accelerometer Bias (micro-g)



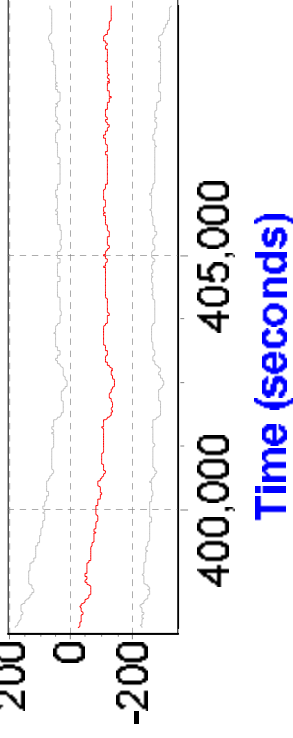
Accelerometer Scale Factor Error (ppm)

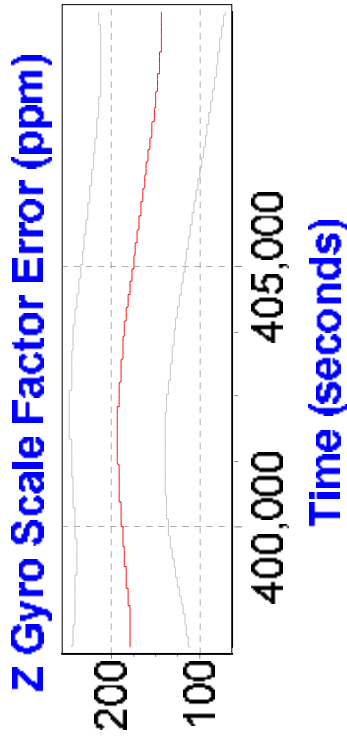
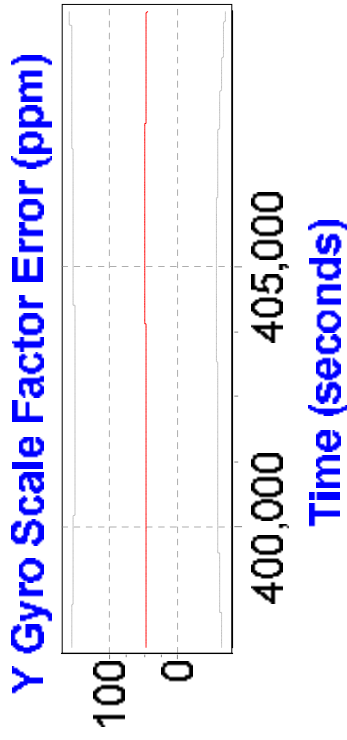
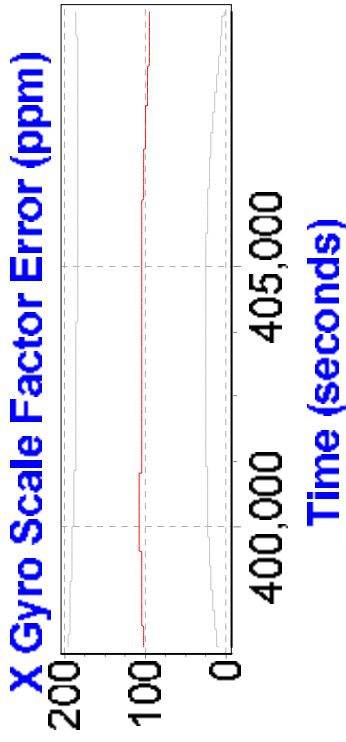
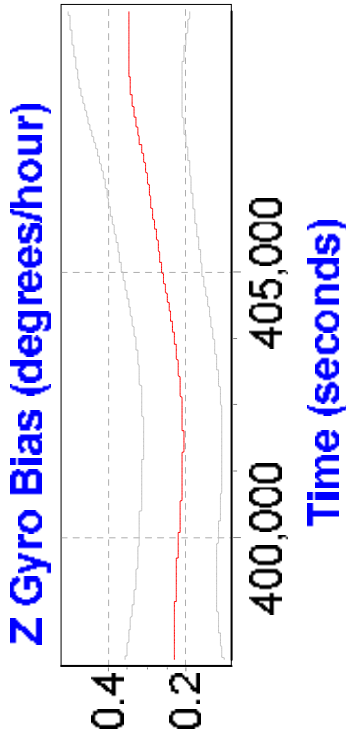
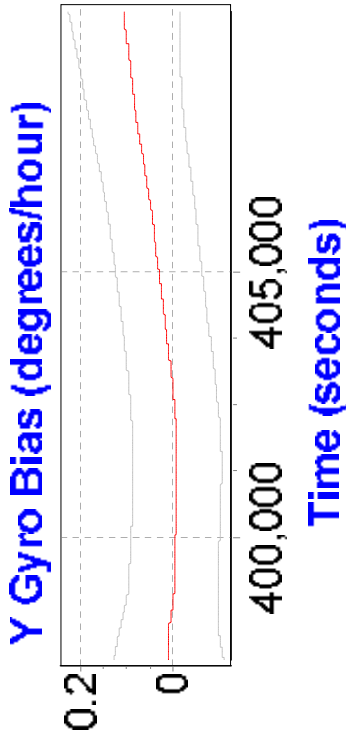
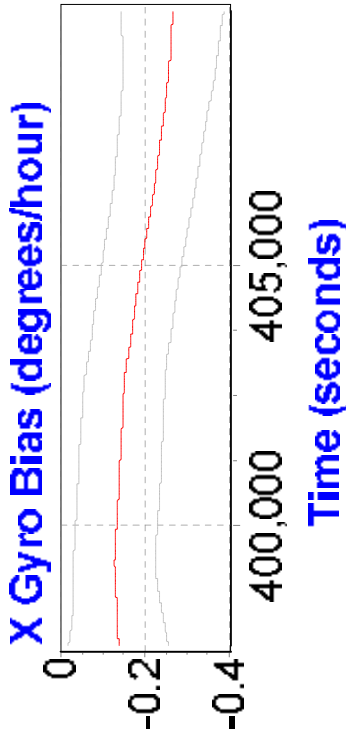


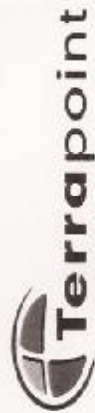
Accelerometer Scale Factor Error (ppm)



Accelerometer Scale Factor Error (ppm)







Flight Log

Project # 1300 Session 01110402

Date	<u>Apr 19</u>	Julian Day	<u>104</u>
Project		Aircraft	<u>095</u>
Slating		Call Sign	<u>095</u>
Survey Block		Pilot	<u>face</u>
Lines Complete		Operator	<u>Evercole</u>
Mission Objective			

ALMIS/Avch	
System #	<u>01</u>
Laser Scanner	
Camera/Lens SV	
Shutter Speed	
Photo Freq	
MU	
GPS Rx	
Data Drive	

Additional Notes:
372, 334, 294-300
 Outside Temp @ TC: 14 Outside Pressure @ TC: 3010
 Outside Temp @ LA: Outside Pressure @ LA:

Aircraft Block Time	<input type="checkbox"/> Times confirmed with pilot
Engine On (Hobbs)	Ramp Out <u>10 20</u> Takeoff <u>10 28</u>
Engine Off (Hobbs)	Ramp In <u>13 47</u> Landing <u>13 45</u>
Total hrs (Hobbs)	Total hrs

Mission Plan	
Flying Height AGL <u>3000 ft</u>	Scan Angle (Optect)
Ground Speed <u>180</u>	Minor Scan Rate
First/Last/Alternating Return	Laser Pulse Rate

Static & KAR	GPS // INS Alignment
Time <input type="checkbox"/> GPS	Scan
Pre Mission	End
KAR Base	
KAR Base	
Post Mission	

Flight Plan Line #	LIDAR File Name	Flight Direction	GPS/UTC Time		Flight Aborted		Photo Events / Comments Please periodically record: Cabin Temp: _____ Output/Water: _____
			Start	End	Time	NM to End	
<u>272</u>		<u>E</u>	<u>14 41</u>	<u>14 46</u>			
<u>283</u>		<u>S</u>	<u>14 50</u>	<u>14 57</u>			
<u>334</u>		<u>E</u>	<u>15 56</u>	<u>16 03</u>			
<u>302</u>		<u>W</u>	<u>16 19</u>	<u>16 20</u>			
<u>294</u>		<u>E</u>	<u>16 24</u>	<u>16 32</u>			
<u>298</u>		<u>W</u>	<u>16 36</u>	<u>16 45</u>			
<u>297</u>		<u>E</u>	<u>16 48</u>	<u>16 54</u>			
<u>296</u>		<u>W</u>	<u>17 02</u>	<u>17 10</u>			
<u>295</u>		<u>E</u>	<u>17 13</u>	<u>17 21</u>			
<u>294</u>		<u>W</u>	<u>17 25</u>	<u>17 32</u>			
<u>cross</u>		<u>N</u>	<u>17 36</u>	<u>17 37</u>			

GPS Base Log Sheet



Terrapoint

Station ID:	1300	Project #:	111300	Missions:	104
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Project Name:	Calendar Date:		Julian Day
Approx. Coordinates WGS 84	N 38° 43' 34" W	Apr 14	773124
Description of Mark (Take Photos)	Nail ground		
Monument is:	<input type="checkbox"/> Flush with ground	<input checked="" type="checkbox"/> Above ground	cm
Location & Access	Dulles Aviation FBO		

Obstructions & Additional Notes

GPS Observation - MAIN	
Rx Make/Model	Serial #
GSRC2600	0002
Ant Make/Model	Serial #
SK600	0010
Operator	Tr
Start	13:12
Session Time (GPS)	End
Slant HI Before:	A: 1.44 B: 1.44
Slant HI After:	A: B: 1.44
Correction	<input type="checkbox"/> m <input type="checkbox"/> in <input type="checkbox"/> use GrafNav Profile
Phase Center	
Data File Name	Good1040pdc

GPS Observation - Back-Up	
Rx Make/Model	Serial #
GSRC2600	0000
Ant Make/Model	Serial #
SK600	0011
Operator	Tr
Start	13:16
Session Time (GPS)	End
Slant HI Before:	A: 1.375 B: 1.375
Slant HI After:	A: B: 1.375
Correction	<input type="checkbox"/> m <input type="checkbox"/> in <input type="checkbox"/> use GrafNav Profile
Phase Center	
Data File Name	00201040pdc



GPS Base Log Sheet

Station ID:	130008	Project #:	1300	Missions:	104B
Project Name:	Dewburns	Calendar Date:	Apr 14	Julian Day	104
Approx. Coordinates	WGS 84	N	3817' 52"	W	77° 18' 35"
Description of Mark (Take Photos)	- nail in grass				
Monument is:	<input type="checkbox"/> Flush with ground <input checked="" type="checkbox"/> Above ground <input type="checkbox"/> Below ground <input type="checkbox"/> cm				
Location & Access	- North of Church - South of Road.				

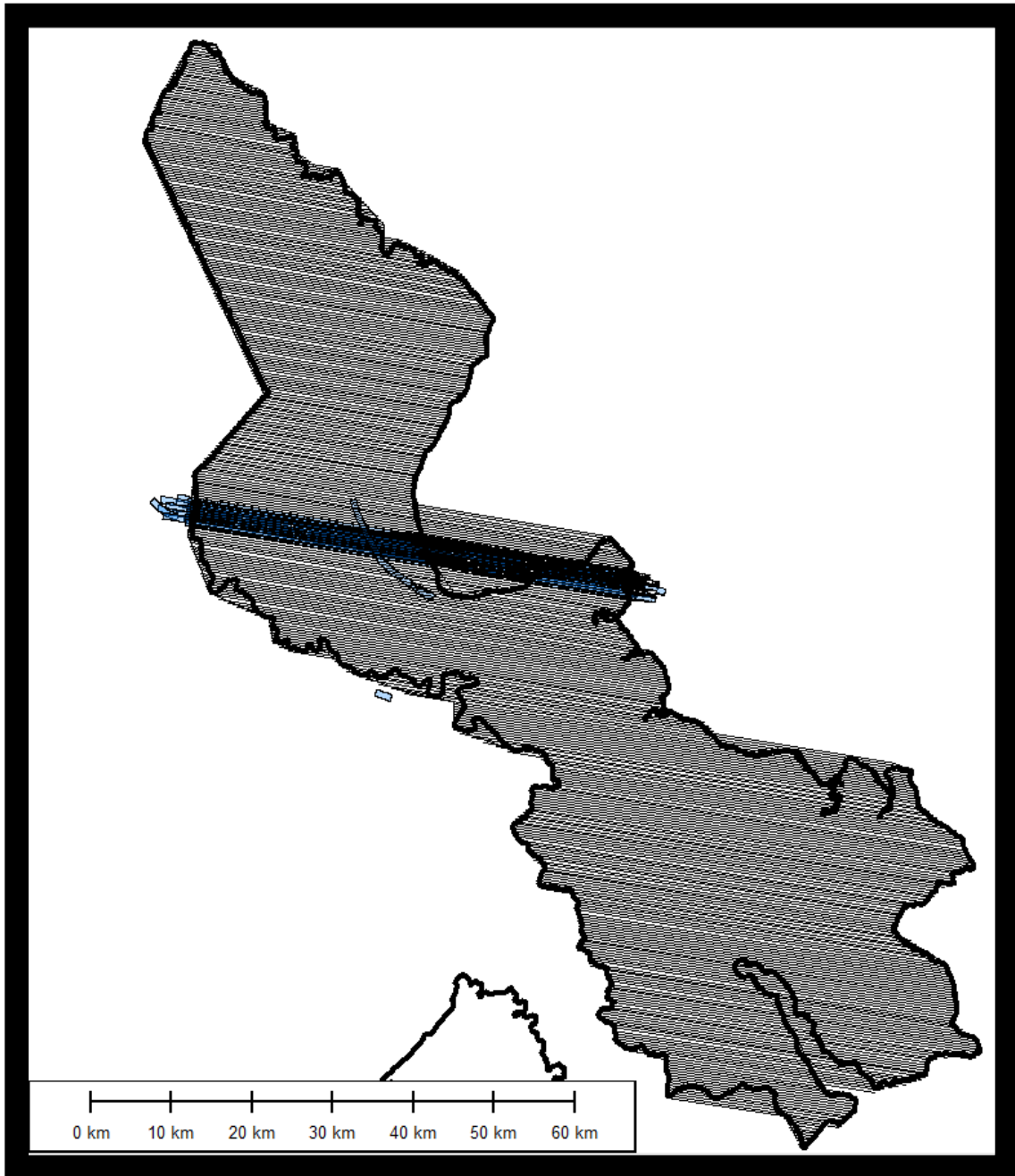
Obstructions & Additional Notes

GPS Observation - MAIN	
Rx Make / Model	GSR2600
Serial #	0016
Ant Make / Model	SK600
Serial #	005500
Operator	Tr
Session Time (GPS)	Start: 20:24 End: 13:26
Slant HI Before:	A: 1.448 B: 1.448
Slant HI After:	A: 1.448 B: 1.448
Correction	<input type="checkbox"/> m <input type="checkbox"/> in <input type="checkbox"/> use GrafNav Profile
Phase Center	
Data File Name	00161040pdc

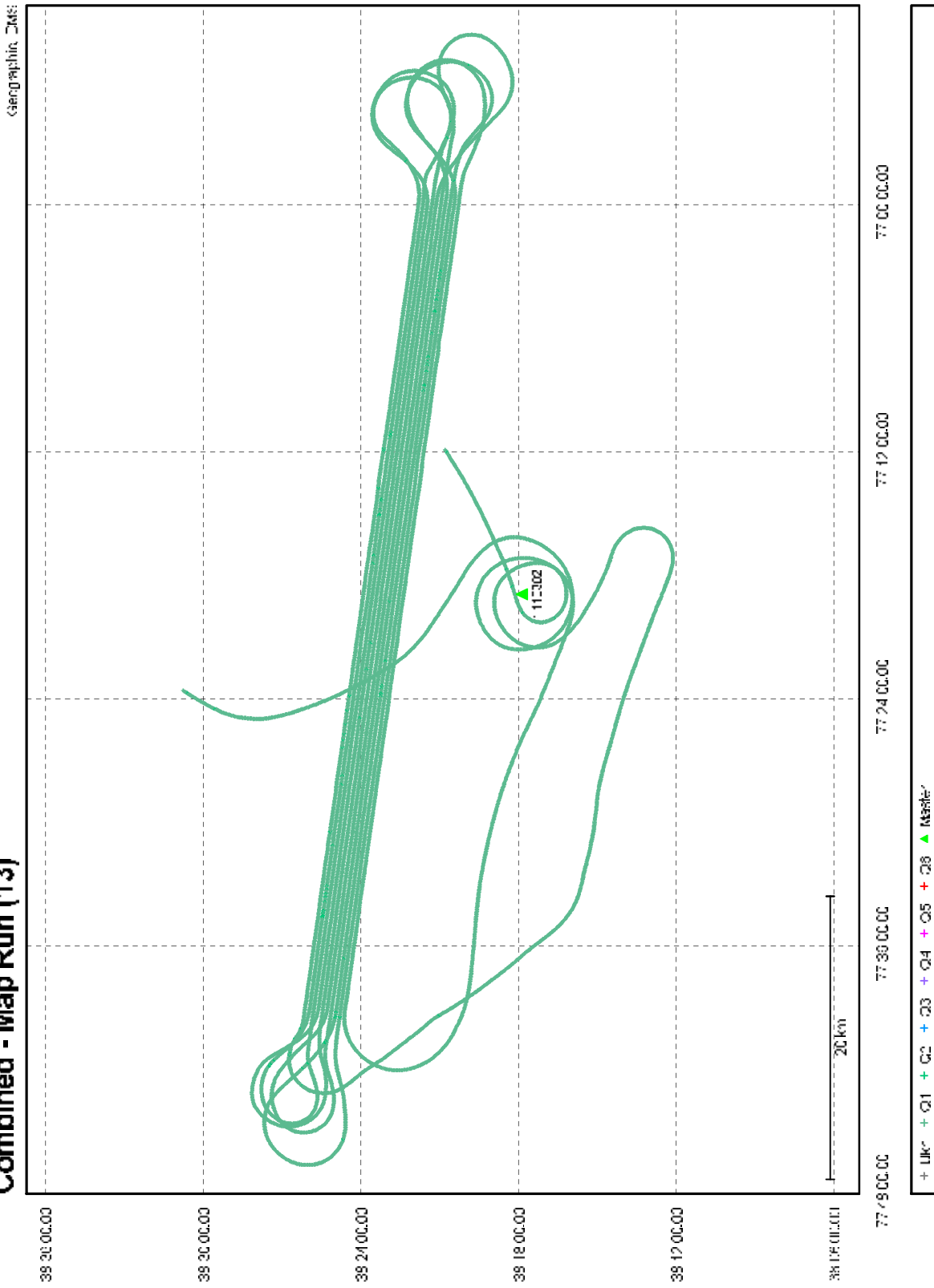
GPS Observation - Back-Up	
Rx Make / Model	
Serial #	
Ant Make / Model	
Serial #	
Operator	
Session Time (GPS)	Start: End:
Slant HI Before:	A: B:
Slant HI After:	A: B:
Correction	<input type="checkbox"/> m <input type="checkbox"/> in <input type="checkbox"/> use GrafNav Profile
Phase Center	
Data File Name	

Mission: o111104b

2011 04 14



Combined - Map Run (13)



Processing Summary Information

Program: GrafNav
Version: 7.80.2517
Project: F:\11103U_VA\2_Operations\6_Missions\o111104b\3_Processed\GPS\o111104b.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:
Total in GPB file: 155634
No processed position: 143471
Missing Fwd or Rev: 4
With bad C/A code: 0
With bad L1 Phase: 0

Measurement RMS Values:
L1 Phase: 0.0183 (m)
C/A Code: 0.94 (m)
L1 Doppler: 0.031 (m/s)

Fwd/Rev Separation RMS Values:
East: 0.015 (m)
North: 0.019 (m)
Height: 0.046 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (12157 occurrences):
East: 0.014 (m)
North: 0.014 (m)
Height: 0.040 (m)

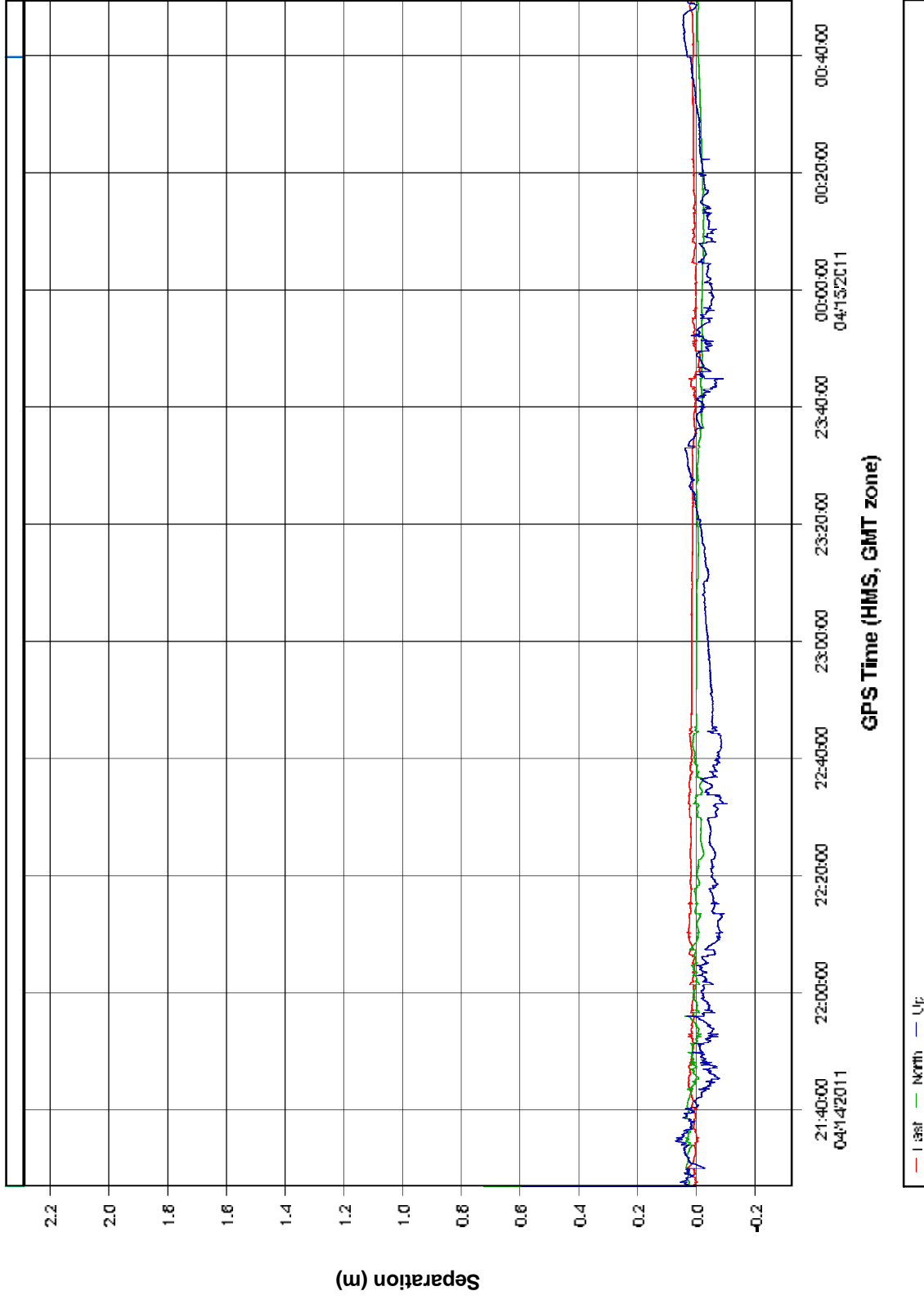
Quality Number Percentages:
Q 1: 99.2 %
Q 2: 0.8 %
Q 3: 0.0 %
Q 4: 0.0 %
Q 5: 0.0 %
Q 6: 0.0 %

Position Standard Deviation Percentages:
0.00 - 0.10 m: 100.0 %
0.10 - 0.30 m: 0.0 %
0.30 - 1.00 m: 0.0 %
1.00 - 5.00 m: 0.0 %
5.00 m + over: 0.0 %

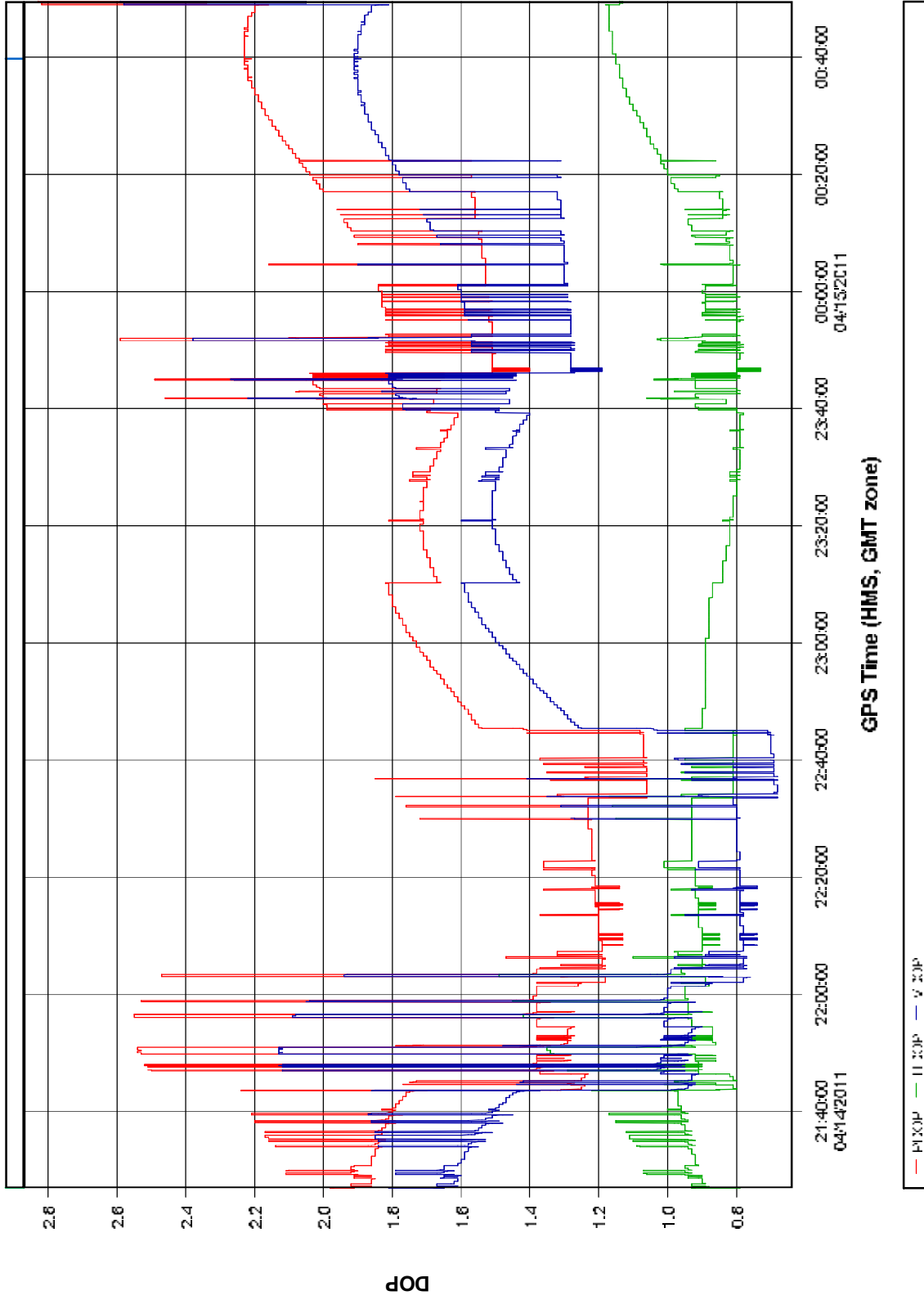
Percentages of epochs with DD_DOP over 10.00:
DOP over Tol: 0.0 %

Baseline Distances:
Maximum: 43.299 (km)
Minimum: 0.806 (km)
Average: 21.145 (km)
First Epoch: 11.581 (km)
Last Epoch: 24.845 (km)

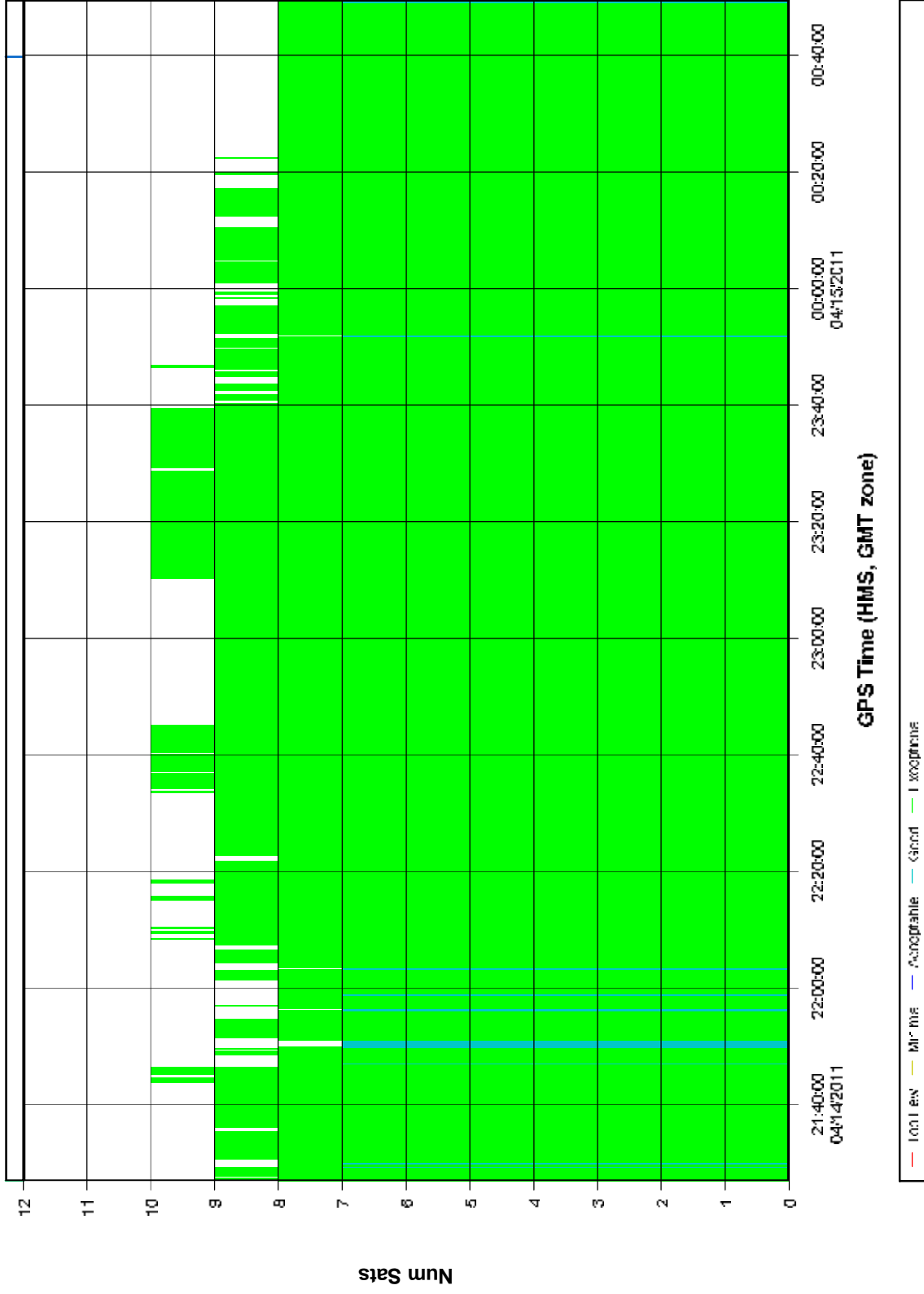
o111104b [Combined] - Forward/Reverse or Combined Separation Plot



o111104b [Combined] - PDOP, HDOP, VDOP Plots



o111104b [Combined] - Number of Satellites Bar Plot



```

                                o111104b. cfg
:   PROJECT:
F:\11103U_VA\2_Operations\6_Missions\o111104b\3_Processed\GPS\o111104b. cfg
:
:   DATE:      April 19/11 (date/time of processing)
:   TIME:      13:37:58
:   CREATED BY: GrafNav Version 7.80.2517
:
VERSION = 7.80.2517
PROCUSER = Unknown
PROCDISC = Run*(14)
PROCTIME = 13:33:27 04/19/2011

; Master station # 1 information
MB_MASTER_INDEX = 0
MB_MASTER_NAME = 1110302
MB_MASTER_FILE =
F:\11103U_VA\2_Operations\6_Missions\o111104b\1_RawData\original_PDC_files\00161040_
1110302.gpb
MB_MASTER_POS = 38 17 51.99406 -77 18 55.26399 29.0382
MB_MASTER_ANT = 1.482 0.001 1.448 1 _TP_SOK600 0
MB_MASTER_DISABLE = OFF

; Remote station information
REMOTE_FILE =
F:\11103U_VA\2_Operations\6_Missions\o111104b\3_Processed\Extract\mgps_o111104b.gpb
REMOTE_POS = 38 43 25.73440 -77 31 15.99392 22.5496
REMOTE_ANT = 0.000

; General settings
PROCESS_MODE = 105 108 113 126 ; Processing modes (GrafNav only)

DATUM = NAD83 AUTO ; Processing Datum
INPDATUM = ON NAD83 AUTO ; Input Datum (ON=Use processing datum)
ELEV_MASK = 8.0 ; Elevation mask (deg)
GRID = UTM 15 31 ; Grid info

CYCLE_TEST = BOTH ; Cycle slip test method
STATIC_SLIP_TOL = 0.40 ; slip tolerance in static mode (cycles)
USE_DOPPLER = ON OFF ; Use doppler meas. for phase, for code-only

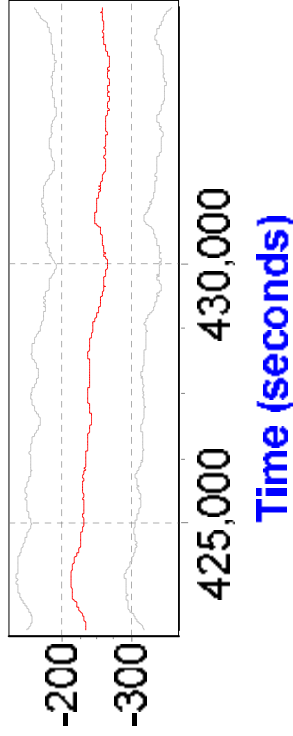
BASE_SAT = 99 ; Base satellite (99-default)

TIMERANGE = RANGE 986851612.0 986863774.0 2 0 ; Processing time range
INTERVAL = 0.10 ; Processing time interval (seconds)

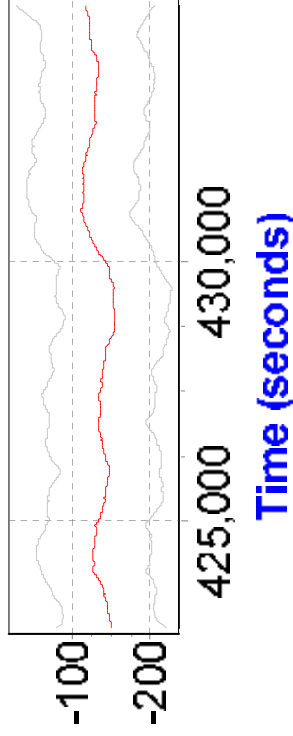
PROCESS_DIR = FORWARD ; Process direction (FORWARD/REVERSE)
BOTH_DIR = ON ; True for processing both directions
WRITE_BAD_EPOCHS = OFF ; Save bad data to .fwd/rev file (ON/OFF)
NOWRITE_HIGH = OFF 6 20.000 ; Don't write epoch with high statistics (q, stdev-m)
OUTPUT_MODE = EXTENDED ; Format for .fwd/rev file
DETAILED_SUM = ON ; Detailed Static/KAR Summary header
WRITE_SLIP_MSG = ON ; Print cycle slips to message log
SAVE_AMB = ON ; Should ambiguities be saved

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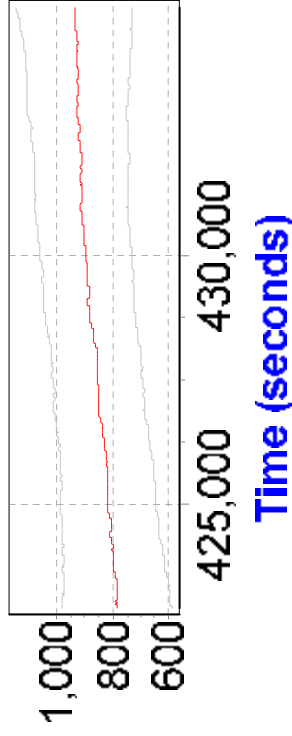

X Accelerometer Bias (micro-g)



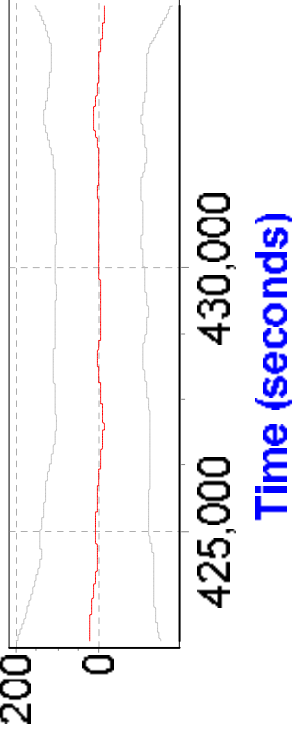
Y Accelerometer Bias (micro-g)



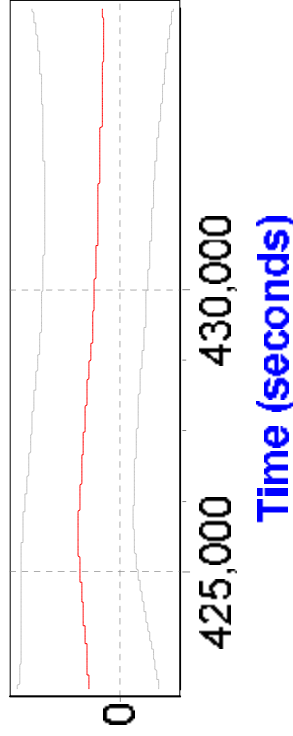
Z Accelerometer Bias (micro-g)



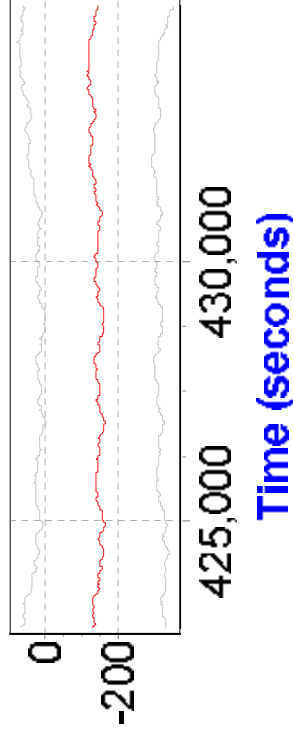
Accelerometer Scale Factor Error (ppm)

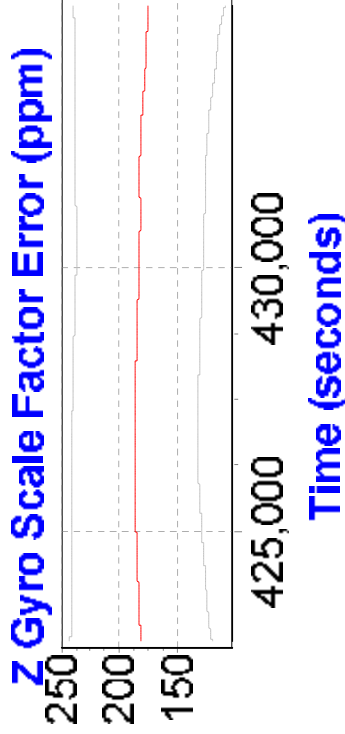
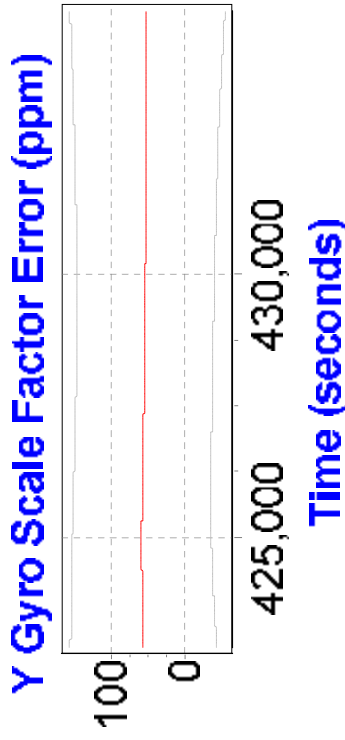
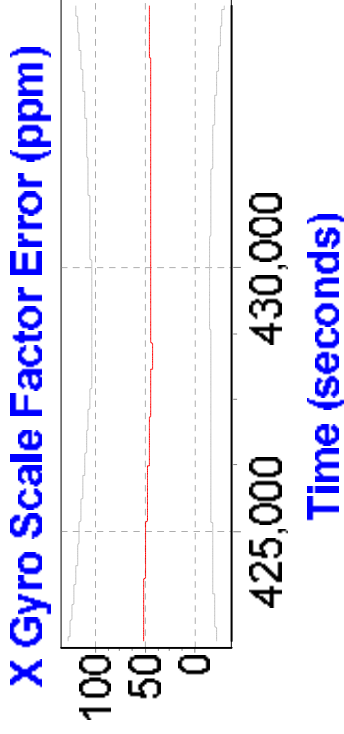
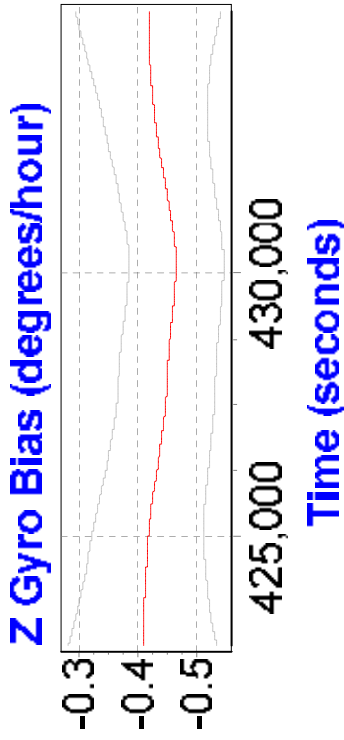
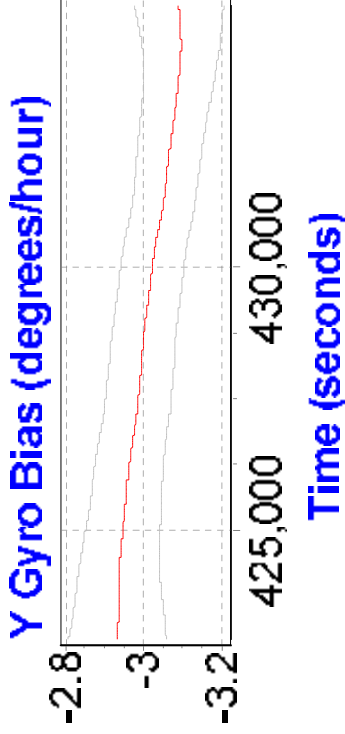
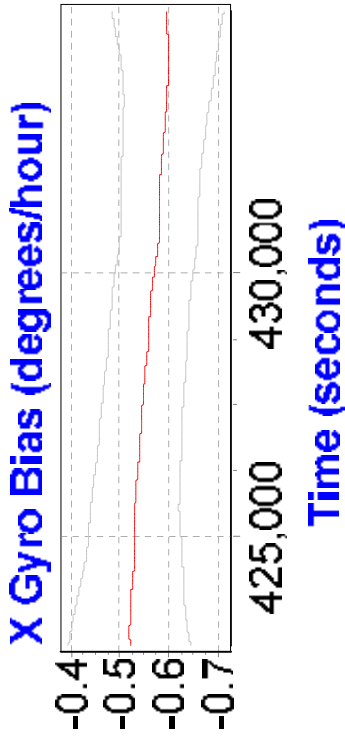


Accelerometer Scale Factor Error (ppm)



Accelerometer Scale Factor Error (ppm)





GPS Base Log Sheet



Terrapoint

Station ID:	1300	Project #:	111300	Missions:	104
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Project Name:	Calendar Date:	Julian Day
Approx. Coordinates WGS 84	Apr 14	104
N 38° 43' 34" W 7731' 24"		
Description of Mark (Take Photos)	Nail ground	
Monument is:	<input checked="" type="checkbox"/> Flush with ground	<input type="checkbox"/> Above ground _____ cm
Location & Access	<input type="checkbox"/> Below ground _____ cm	
Dulles Aviation FBO		

Obstructions & Additional Notes

GPS Observation - MAIN	
Rx Make/Model	Serial #
GSR2600	0002
Ant Make/Model	Serial #
SK600	0010
Operator	Tr
Start	13:12
Session Time (GPS) End	
Slant HI Before:	A: 1.44 B: B:
Slant HI After:	A: A: B: B:
Correction	
Phase Center	<input type="checkbox"/> m <input type="checkbox"/> in <input type="checkbox"/> Use GrafNav Profile
Data File Name	000104opdc

GPS Observation - Back-Up	
Rx Make/Model	Serial #
GSR2600	0000
Ant Make/Model	Serial #
SK600	0011
Operator	Tr
Start	13:16
Session Time (GPS) End	
Slant HI Before:	A: 1.375 B: B:
Slant HI After:	A: A: B: B:
Correction	
Phase Center	<input type="checkbox"/> m <input type="checkbox"/> in <input type="checkbox"/> Use GrafNav Profile
Data File Name	0000104opdc

GPS Base Log Sheet



Station ID:	130008	Project #:	1300	Missions:	1048
Project Name:	Dewbuns		Calendar Date:	Apr 14	
Approx. Coordinates WGS 84	N	3817' 52"	W	77° 18' 55"	
Description of Mark (Take Photos)	- nail in grass				
Monument is:	<input type="checkbox"/> Flush with ground <input checked="" type="checkbox"/> Above ground <input type="checkbox"/> Below ground _____ cm				
Location & Access	- North of Church - South of Road.				

Observations & Additional Notes

GPS Observation - MAIN					
Rx Make/Model	GR2600	Serial #	0016		
Ant Make/Model	SK600	Serial #	003500		
Operator	TM				
Session Time (GPS)	Start	20:24			
	End	13:26			
Slant HI Before:	A: 1.448	B: 1.448			
Slant HI After:	A: 1.448	B: 1.448			
Correction					
Phase Center	<input type="checkbox"/> m <input type="checkbox"/> in <input type="checkbox"/> use GrafNav Profile				
Data File Name	00161040pdc				

GPS Observation - Back-Up					
Rx Make/Model		Serial #			
Ant Make/Model		Serial #			
Operator					
Session Time (GPS)	Start				
	End				
Slant HI Before:	A:	B:			
Slant HI After:	A:	B:			
Correction					
Phase Center	<input type="checkbox"/> m <input type="checkbox"/> in <input type="checkbox"/> use GrafNav Profile				
Data File Name					



Flight Log

Project # 1300 Session 0111046

Date	Apr 14	Julian Day	104
Project		Aircraft	
Stacking		Call Sign	
Survey Block		Pilot	
Lines Complete		Operator	
Mission Objective		Observer	

ALM Si/OpTech	
System #	01
Laser Scanner	
Camera Lens SN	
Shutter Speed	
Photo Freq	
MLU	
GPS Rx	
Data Drive	

Additional Notes:
 38 17 51
 77 18 55
 Outside Temp @ TC: 22 Outside Pressure @ TC: 3007
 Outside Temp @ LA: Outside Pressure @ LA:

Aircraft: Block Time	<input type="checkbox"/> Times confirmed with pilot
Engine On (Hobbs)	Ramp Out 1659
Engine Off (Hobbs)	Ramp In 2501
Total hrs (Hobbs)	Total hrs
	Takesoff 1712
	Landing 2100

Mission Plan	
Flying Height (AGL)	Scan Angle (Optech)
Ground Speed	Mirror Scan Rate
First/Last/Alternating Return	Laser Pulse Rate

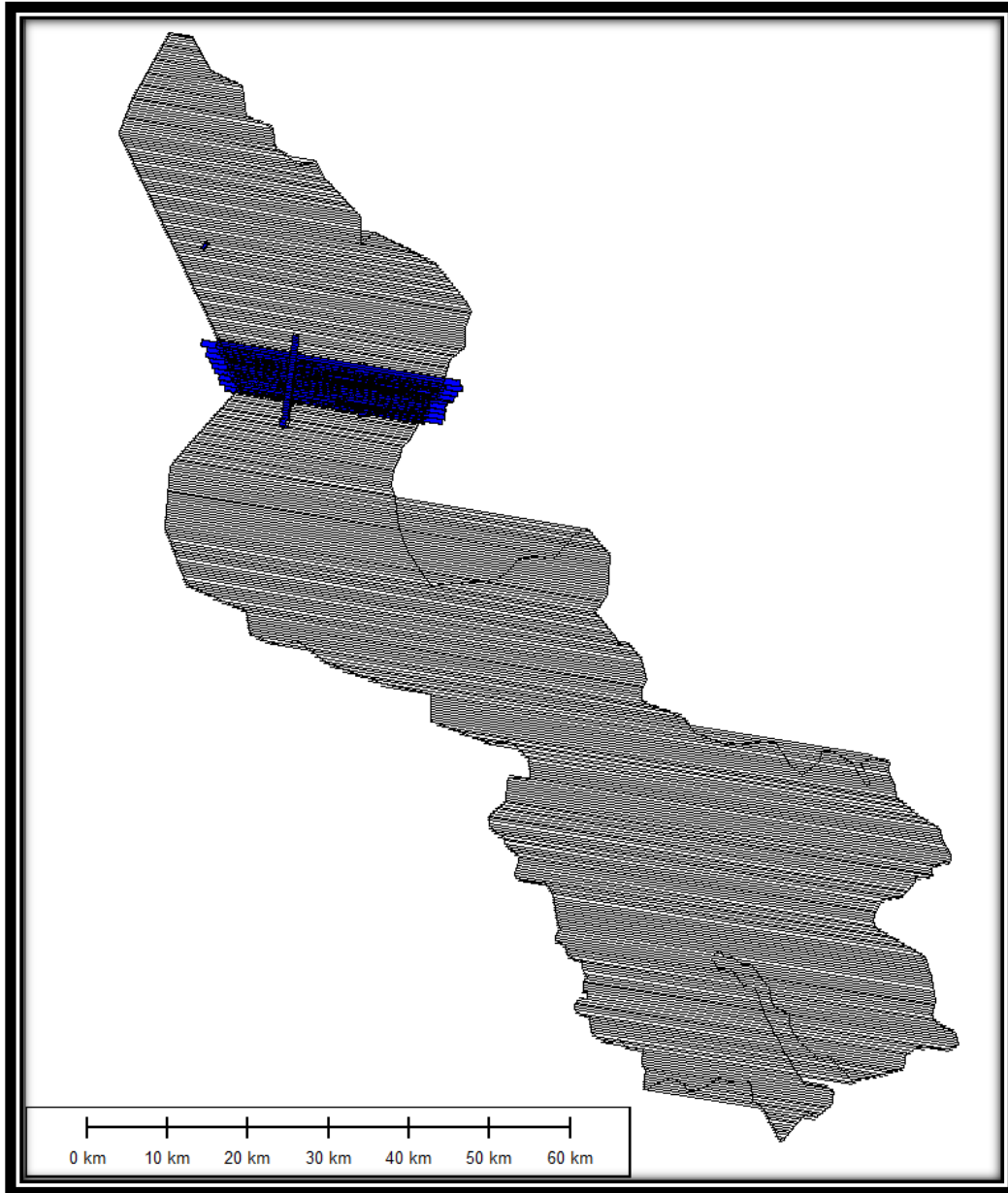
Static & KAR GPS // INS Alignment			
Time	<input type="checkbox"/> GPS	Start	End
Pre Mission			
KAR Base			
KAR Base			
Post Mission			

Flight Plan Line #	LIDAR File Name	Flight Direction	GPS / UTC Time		Flight Aborted		Photo Evers / Comments Please periodically record: Cabin Temp: _____ Cabin Pressure: _____
			Start	End	Time	NM to End	
217		E	21 48	22 00			
216		W	22 05	22 17			No Land @ Start
218		E	22 20	22 35			
219		W	22 36	22 49			
213		E	22 53	23 05			
212		W	23 10	23 23			
211		E	23 26	23 39			
210		W	23 43	23 56			
209		E	00 00	00 12			New Data Logt over 4201
208		W	00 17	00 29			

0044 00

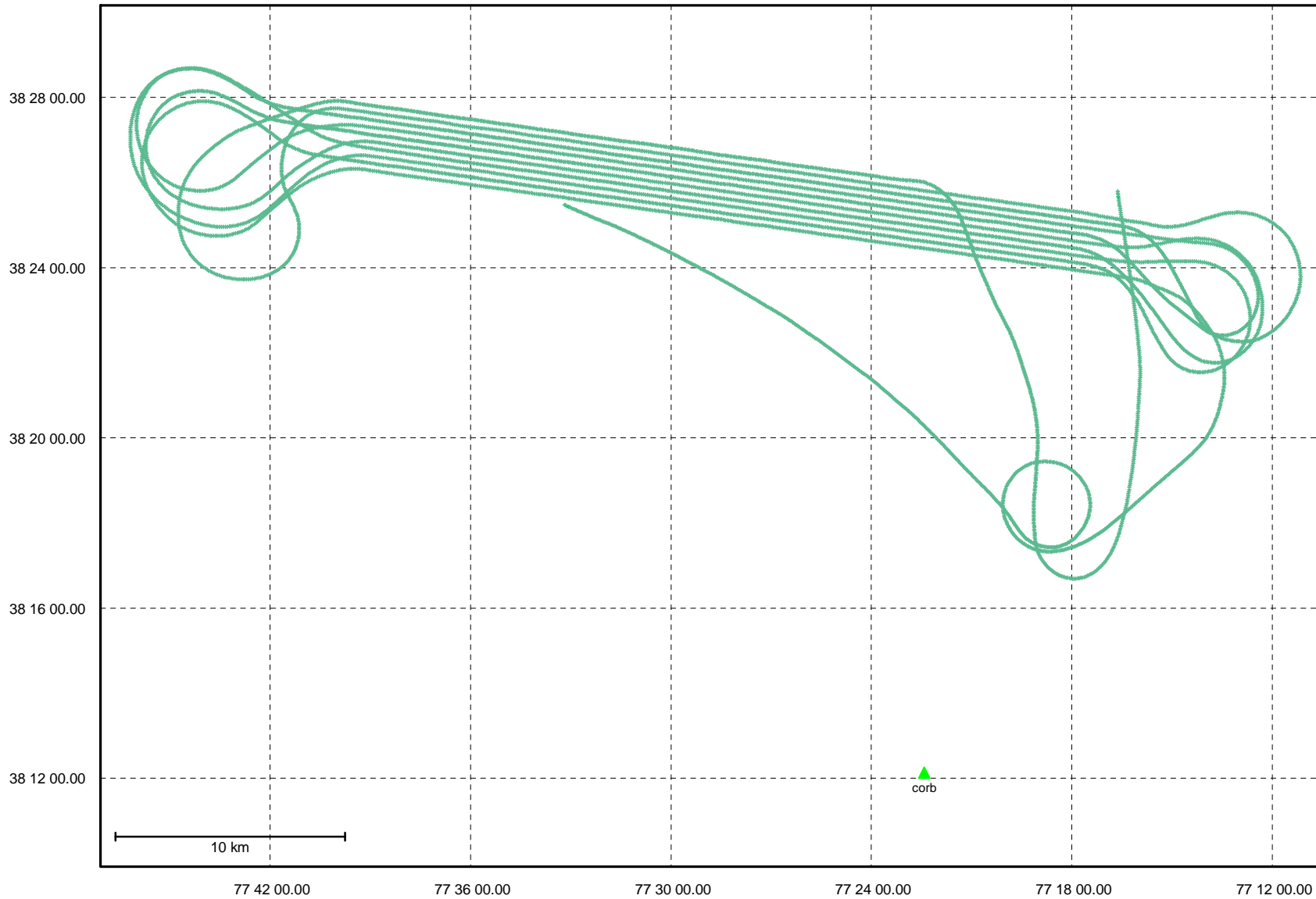
Mission: o111105a

2011 04 15



Combined - Map Run (7)

Geographic, DMS



+ Ukn + Q1 + Q2 + Q3 + Q4 + Q5 + Q6 ▲ Master

Processing Summary Information

Program: GrafNav
Version: 7.80.2517
Project: E:\Matt_Weller\o111105a_3_Processed\GPS\o111105a.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:
Total in GPB file: 106503
No processed position: 98716
Missing Fwd or Rev: 4
With bad C/A code: 0
With bad L1 Phase: 0

Measurement RMS Values:
L1 Phase: 0.0176 (m)
C/A Code: 0.83 (m)
L1 Doppler: 0.037 (m/s)

Fwd/Rev Separation RMS Values:
East: 0.007 (m)
North: 0.020 (m)
Height: 0.015 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (7781 occurrences):
East: 0.006 (m)
North: 0.017 (m)
Height: 0.011 (m)

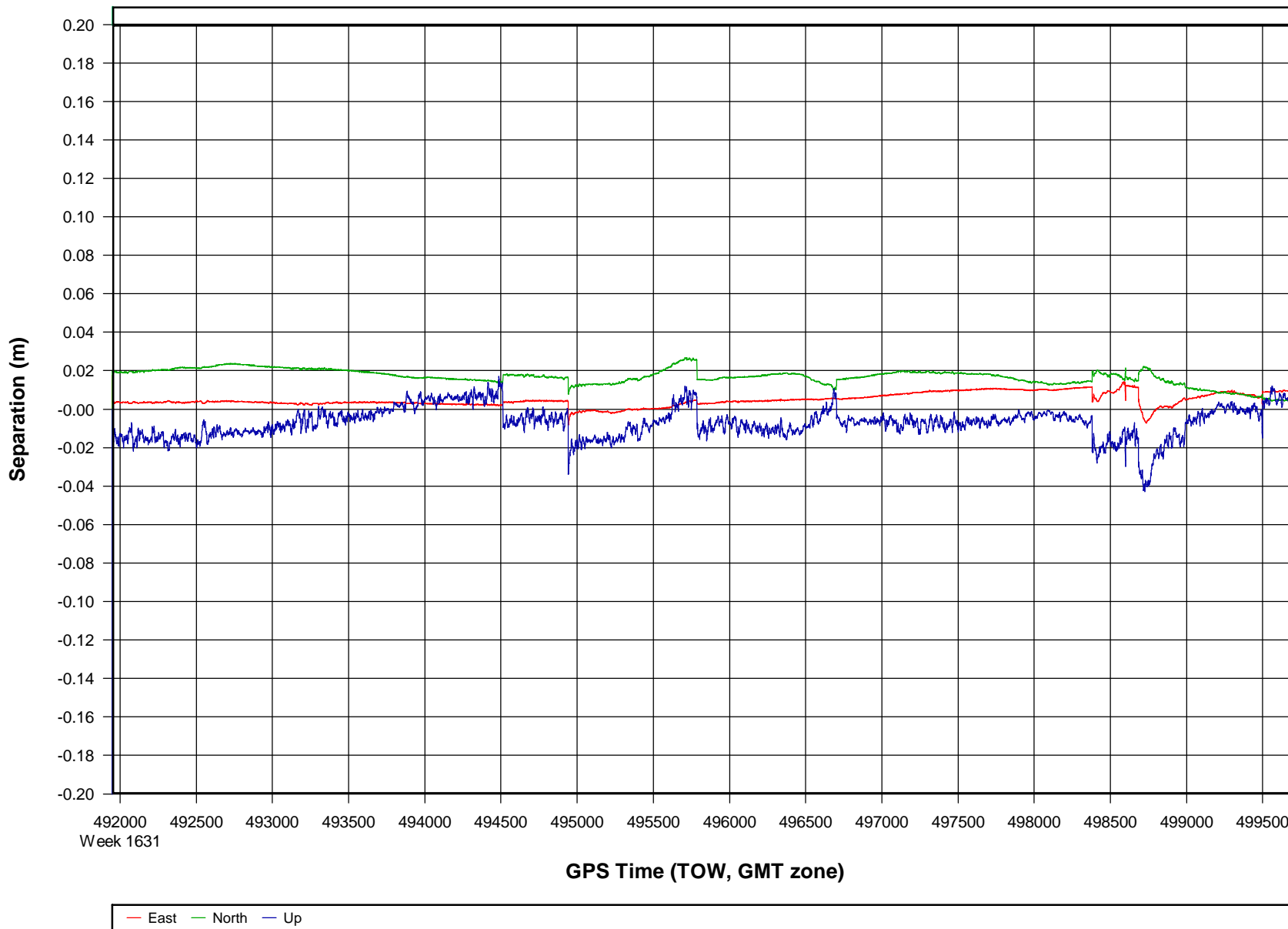
Quality Number Percentages:
Q 1: 100.0 %
Q 2: 0.0 %
Q 3: 0.0 %
Q 4: 0.0 %
Q 5: 0.0 %
Q 6: 0.0 %

Position Standard Deviation Percentages:
0.00 - 0.10 m: 100.0 %
0.10 - 0.30 m: 0.0 %
0.30 - 1.00 m: 0.0 %
1.00 - 5.00 m: 0.0 %
5.00 m + over: 0.0 %

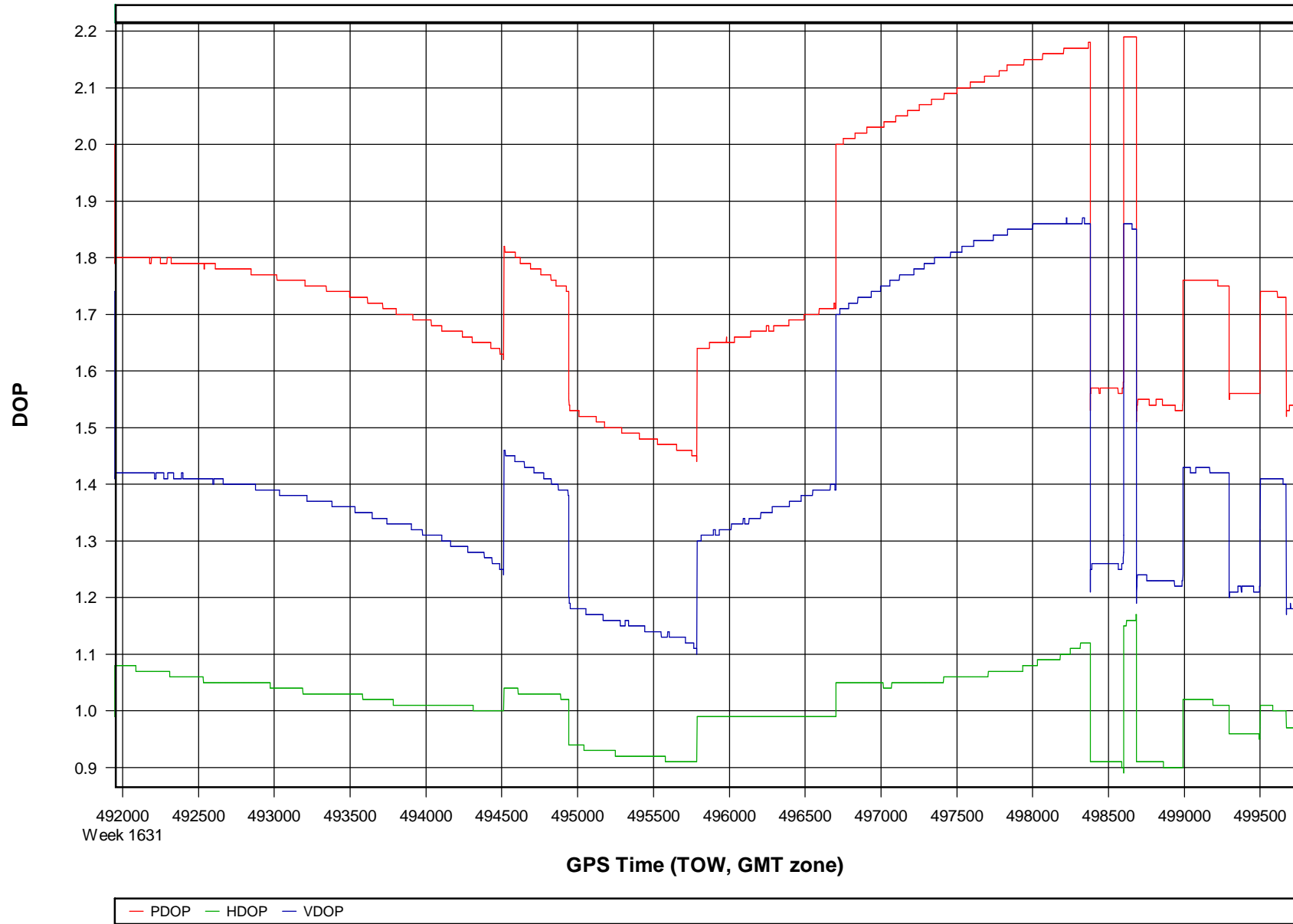
Percentages of epochs with DD_DOP over 10.00:
DOP over Tol: 0.0 %

Baseline Distances:
Maximum: 45.163 (km)
Minimum: 10.440 (km)
Average: 28.382 (km)
First Epoch: 29.284 (km)
Last Epoch: 26.670 (km)

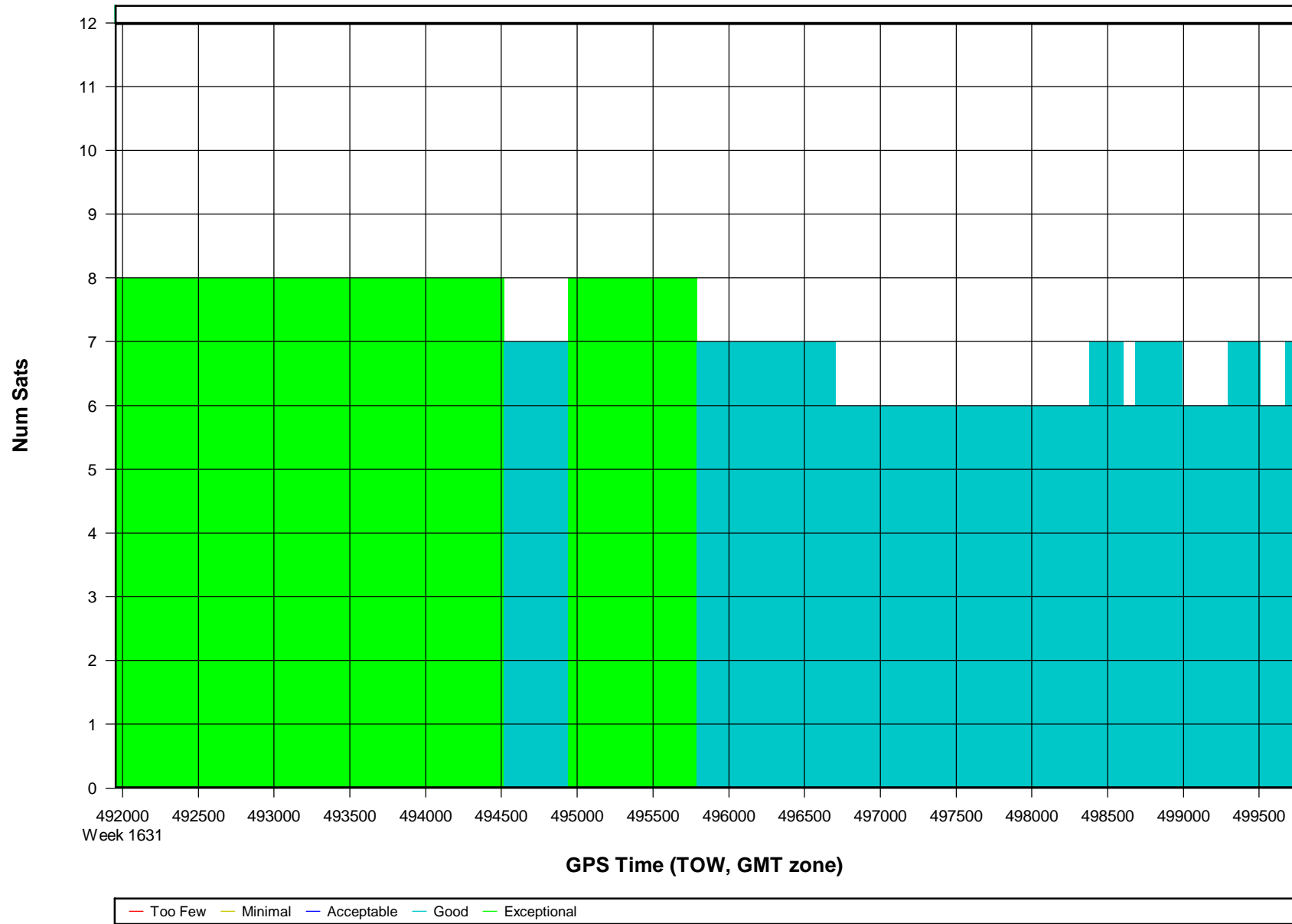
o111105a [Combined] - Forward/Reverse or Combined Separation Plot



o111105a [Combined] - PDOP, HDOP, VDOP Plots



o111105a [Combined] - Number of Satellites Bar Plot



```

                                o111105a
; PROJECT:      H:\range back va\o111105a\3_Processed\GPS\o111105a.cfg
;
; DATE:        May 11/11 (date/time of processing)
; TIME:        1:02:58
; CREATED BY:  GrafNav Version 7.80.2517
;
VERSION = 7.80.2517
PROCUSER = Unknown
PROCDESC = Run*(8)
PROCTIME = 01:00:20 05/11/2011

; Master station # 1 information
MB_MASTER_INDEX = 0
MB_MASTER_NAME = corb
MB_MASTER_FILE =
H:\range*back*va\o111105a\1_RawData\original_PDC_files\corb1050.gpb
MB_MASTER_POS = 38 12 07.82819 -77 22 24.57106 37.2520
MB_MASTER_ANT = 0.110 0.018 0.000 0 AOAD/M_T 0
MB_MASTER_DI_SABLE = OFF

; Remote station information
REMOTE_FILE = H:\range*back*va\o111105a\3_Processed\Extract\mgps_o111105a.gpb
REMOTE_POS = 38 43 26.40689 -77 31 16.33954 22.8772
REMOTE_ANT = 0.000

; General settings
PROCESS_MODE = 103 108 113 126 ; Processing modes (GrafNav only)

DATUM = NAD83 AUTO ; Processing Datum
INPDATUM = ON NAD83 AUTO ; Input Datum (ON=Use processing datum)
ELEV_MASK = 10.0 ; Elevation mask (deg)
GRID = UTM 15 31 ; Grid info

CYCLE_TEST = BOTH ; Cycle slip test method
STATIC_SLIP_TOL = 0.40 ; slip tolerance in static mode (cycles)
USE_DOPPLER = ON OFF ; Use doppler meas. for phase, for code-only

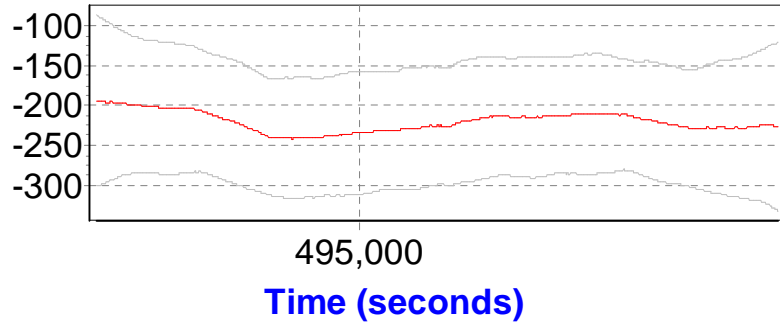
BASE_SAT = 99 ; Base satellite (99-default)

TIMERANGE = RANGE 986920747.0 986928533.0 2 0 ; Processing time range
INTERVAL = 0.10 ; Processing time interval (seconds)

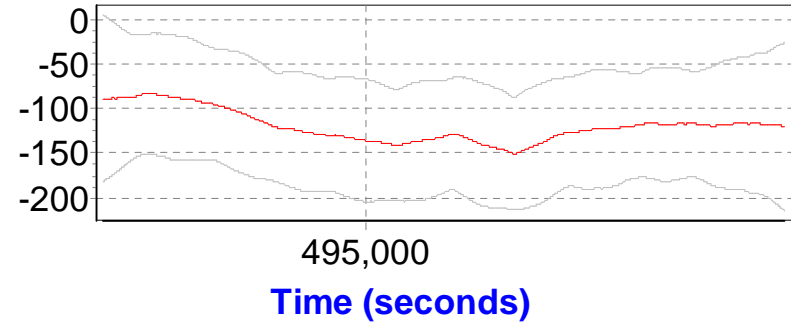
PROCESS_DIR = FORWARD ; Process direction (FORWARD/REVERSE)
BOTH_DIR = ON ; True for processing both directions
WRITE_BAD_EPOCHS = OFF ; Save bad data to .fwd/rev file (ON/OFF)
NOWRITE_HIGH = OFF 6 20.000 ; Don't write epoch with high statistics (q, stdev-m)
OUTPUT_MODE = EXTENDED ; Format for .fwd/rev file
DETAILED_SUM = ON ; Detailed Static/KAR Summary header
WRITE_SLIP_MSG = ON ; Print cycle slips to message log
SAVE_AMB = ON ; Should ambiguities be saved

```

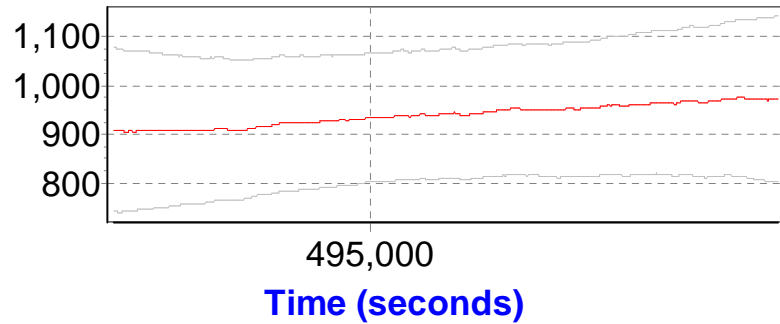
X Accelerometer Bias (micro-g)



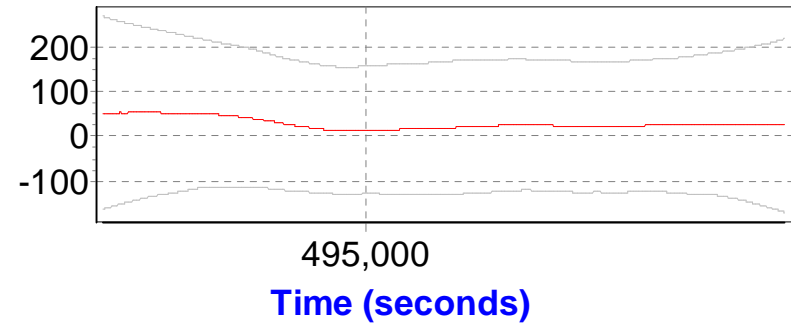
Y Accelerometer Bias (micro-g)



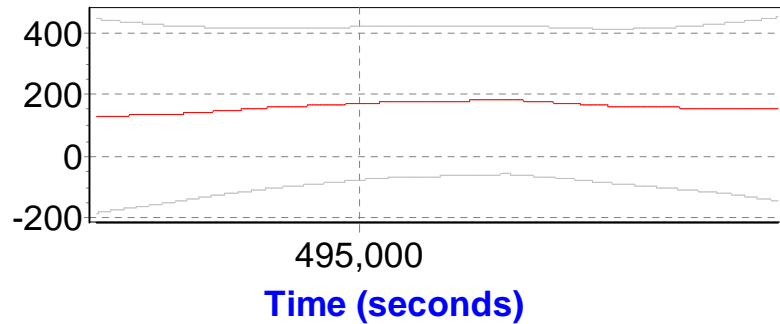
Z Accelerometer Bias (micro-g)



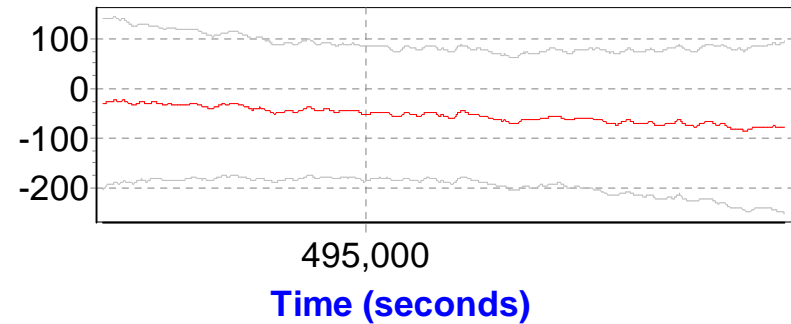
X Accelerometer Scale Factor Error (ppm)



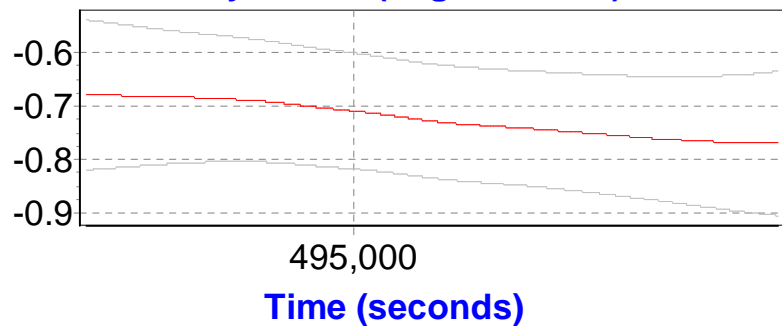
Y Accelerometer Scale Factor Error (ppm)



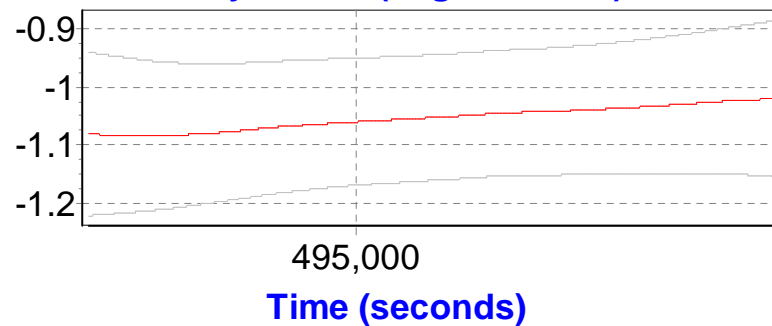
Z Accelerometer Scale Factor Error (ppm)



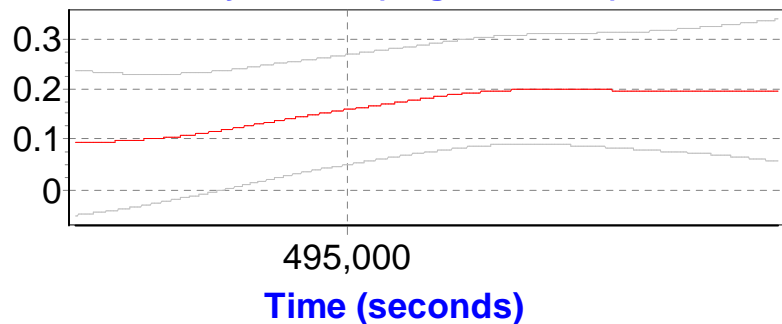
X Gyro Bias (degrees/hour)



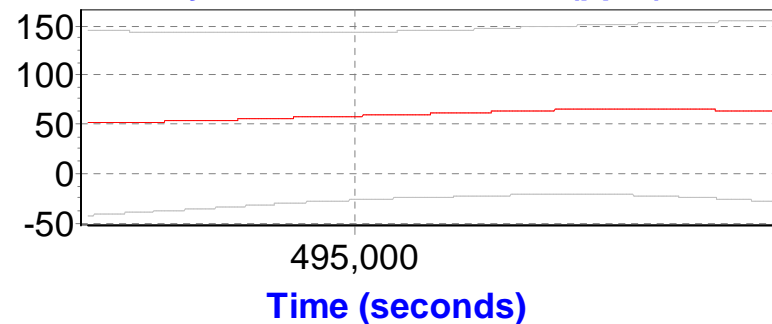
Y Gyro Bias (degrees/hour)



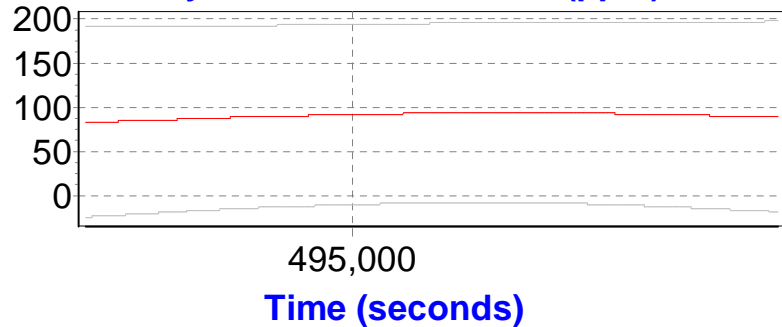
Z Gyro Bias (degrees/hour)



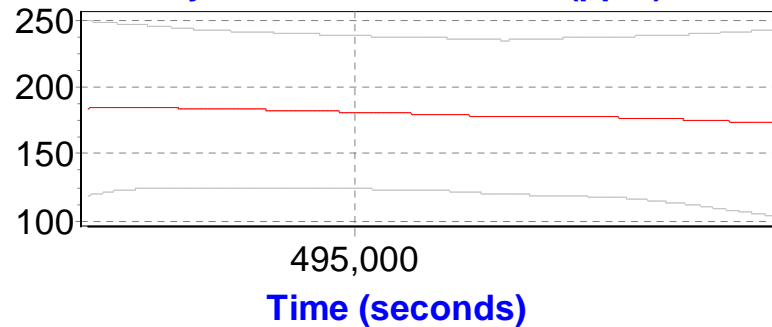
X Gyro Scale Factor Error (ppm)



Y Gyro Scale Factor Error (ppm)



Z Gyro Scale Factor Error (ppm)





Flight Log

Project#	Session
----------	---------

Date	APC 15	Julian Day	105
Project		Aircraft	OAS
Staging		Call Sign	OAS
Survey Block		Pilot	PAUL
Lines Complete		Operator	EVERSON
		Observer	
Mission Objective			

ALMIS/Oplech	
System #	
Laser Scanner	
Camera/Lens SN	
Shutter Speed	
Photo Freq.	
IMU	
GPS Rx	
Data Drive	

Additional Notes
226 → 218

Outside Temp @ TO: 18 Outside Pressure @ TO: 3029
 Outside Temp @ LA: Outside Pressure @ LA:

Aircraft: Block Time	<input type="checkbox"/> Times confirmed with pilot
Engine On (Hobbs)	Takeoff 12:20
Engine Off (Hobbs)	Landing 15:00
Total hrs (Hobbs)	Total hrs
	FBO \$ / Lite
	Approx. Fuel Cost

Flying Height AGL	Scan Angle (Oplech)
Ground Speed	Mirror Scan Rate
Firs/Las/Alternating Return	Laser Pulse Rate

Static & KAR	GPS // INS
Time	Stat
Pre Mission	
KAR Base	
KAR Base	
Post Mission	

Flight Plan Line #	LIDAR File Name	Flight Direction	GPS / UTC Time		Flight Aborted		Photo Events / Commer
			Start	End	Time	NM to End	
218		W	1651	1659			Outside Temp: West 1/2 Laser Temp: West 1/2
219		E	1703	1710			
220		W	1713	1720			
221		E	1723	1733			
222		W	1736	1743			
223		E	1747	1755			
224		W	1758	1806			
225		E	1810	1818			
226		W	1823	1830			



Photo Events / Comments
Please periodically record
Cabin Temp.
Outside Temp.
Laser Temp.
Output (Watts)

Flight Log

Project#	Session	LIDAR File Name	Flight Direction	GPS / JTC Time		Flight Aborted		Photo Events / Comments
				Start	End	Time	NM to End	
			E	18:25	18:44			west 1/2

GPS Base Log Sheet



Station ID:	130002	Project #:	11130w	Missions:	o/p/son
-------------	--------	------------	--------	-----------	---------

Project Name:	FEMA.D	Calendar Date:	April 105	Julian Day	105
Approx. Coordinates	WGS 84	N	38° 47' 50"	W	77° 18' 55"
Description of Mark (Take Photos)	- nail ground				
Monument is:	<input type="checkbox"/> Flush with ground <input type="checkbox"/> Above ground ____ cm <input type="checkbox"/> Below ground ____ cm				
Location & Access					

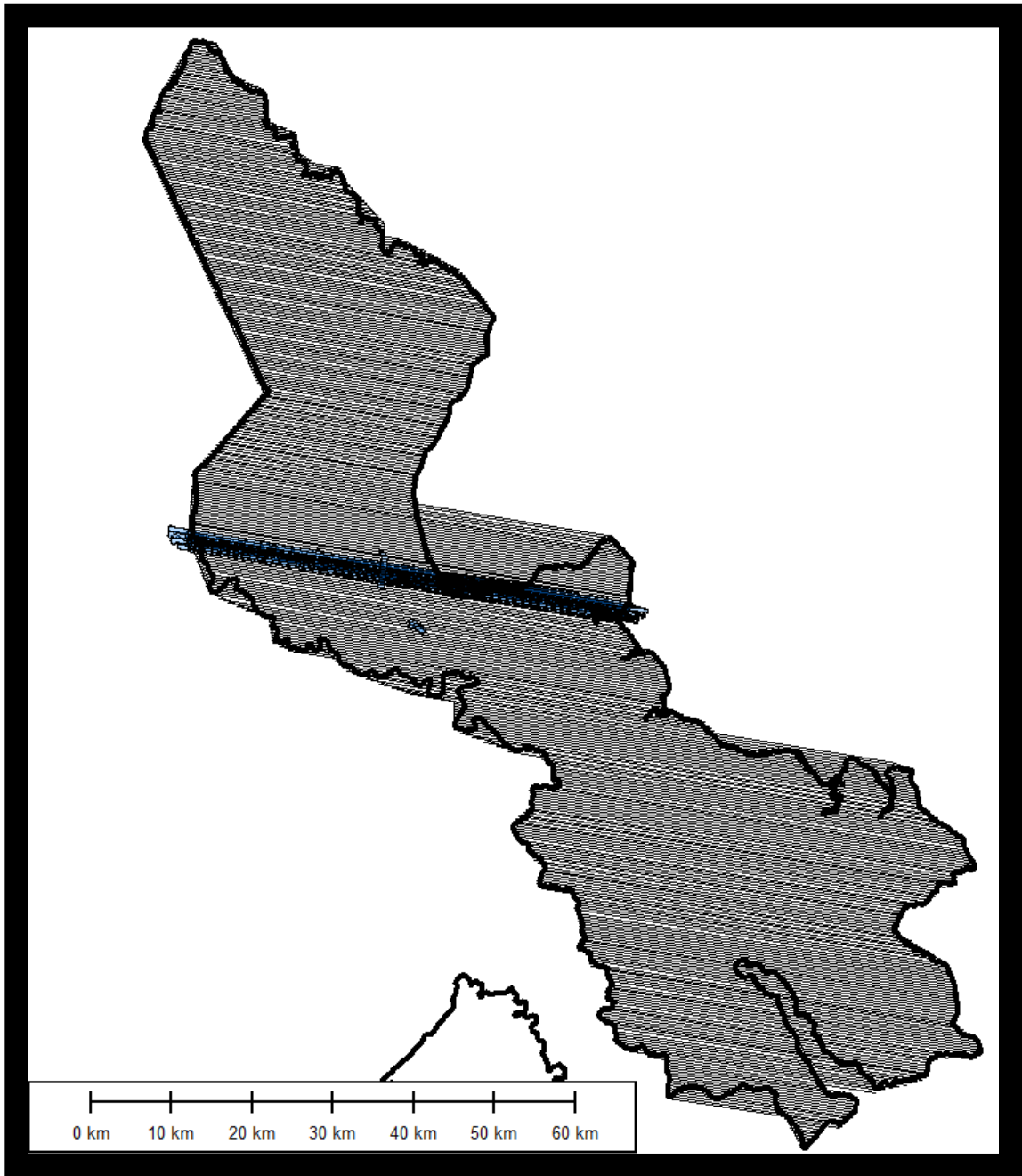
Obstructions & Additional Notes

GPS Observation - MAIN											
Rx Make / Model	5162600		Serial #	0016							
Ant Make / Model	516600		Serial #	0035							
Operator	Tom										
Session Time (GPS)	Start	13:29		End							
Slant HI Before:	A:	1.448	B:	1.449							
Slant HI After:	A:	1.448	B:	1.448							
Correction											
Phase Center	<input type="checkbox"/> m <input type="checkbox"/> in <input type="checkbox"/> use GrafNav Profile										
Data File Name	00161050 pdc										

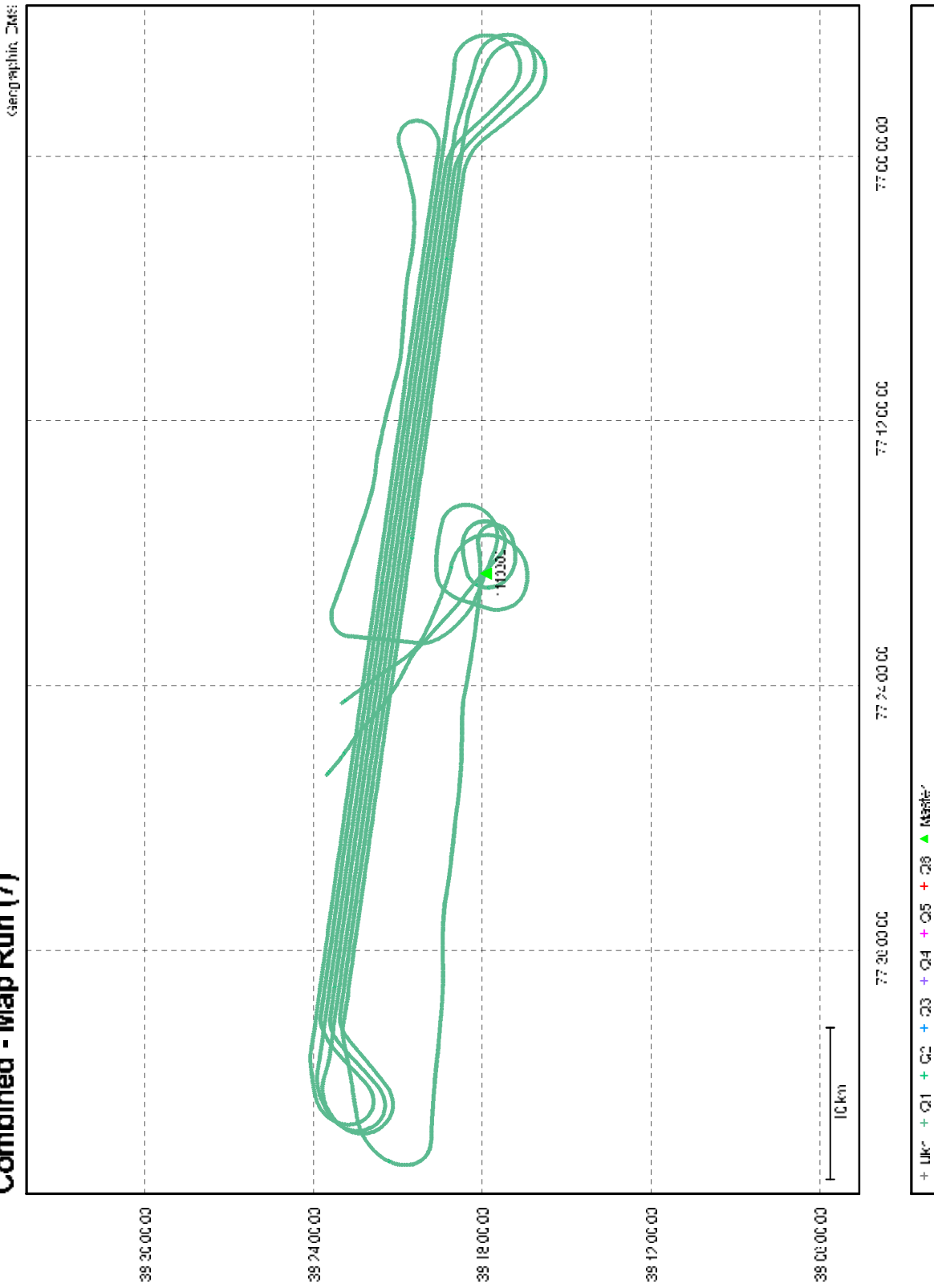
GPS Observation - Back-Up											
Rx Make / Model			Serial #								
Ant Make / Model			Serial #								
Operator											
Session Time (GPS)	Start										
Slant HI Before:	A:			B:							
Slant HI After:	A:			B:							
Correction											
Phase Center	<input type="checkbox"/> m <input type="checkbox"/> in <input type="checkbox"/> use GrafNav Profile										
Data File Name											

Mission: o11114a

2011 04 24



Combined - Map Run (7)



Processing Summary Information

Program: GrafNav
Version: 7.80.2517
Project: G:\11103U_VA\2_Operations\6_Missions\o111114a\3_Processed\GPS\o111114a.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:
Total in GPB file: 104692
No processed position: 95030
Missing Fwd or Rev: 4
With bad C/A code: 0
With bad L1 Phase: 0

Measurement RMS Values:
L1 Phase: 0.0194 (m)
C/A Code: 1.00 (m)
L1 Doppler: 0.029 (m/s)

Fwd/Rev Separation RMS Values:
East: 0.021 (m)
North: 0.012 (m)
Height: 0.042 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (9656 occurrences):
East: 0.019 (m)
North: 0.011 (m)
Height: 0.040 (m)

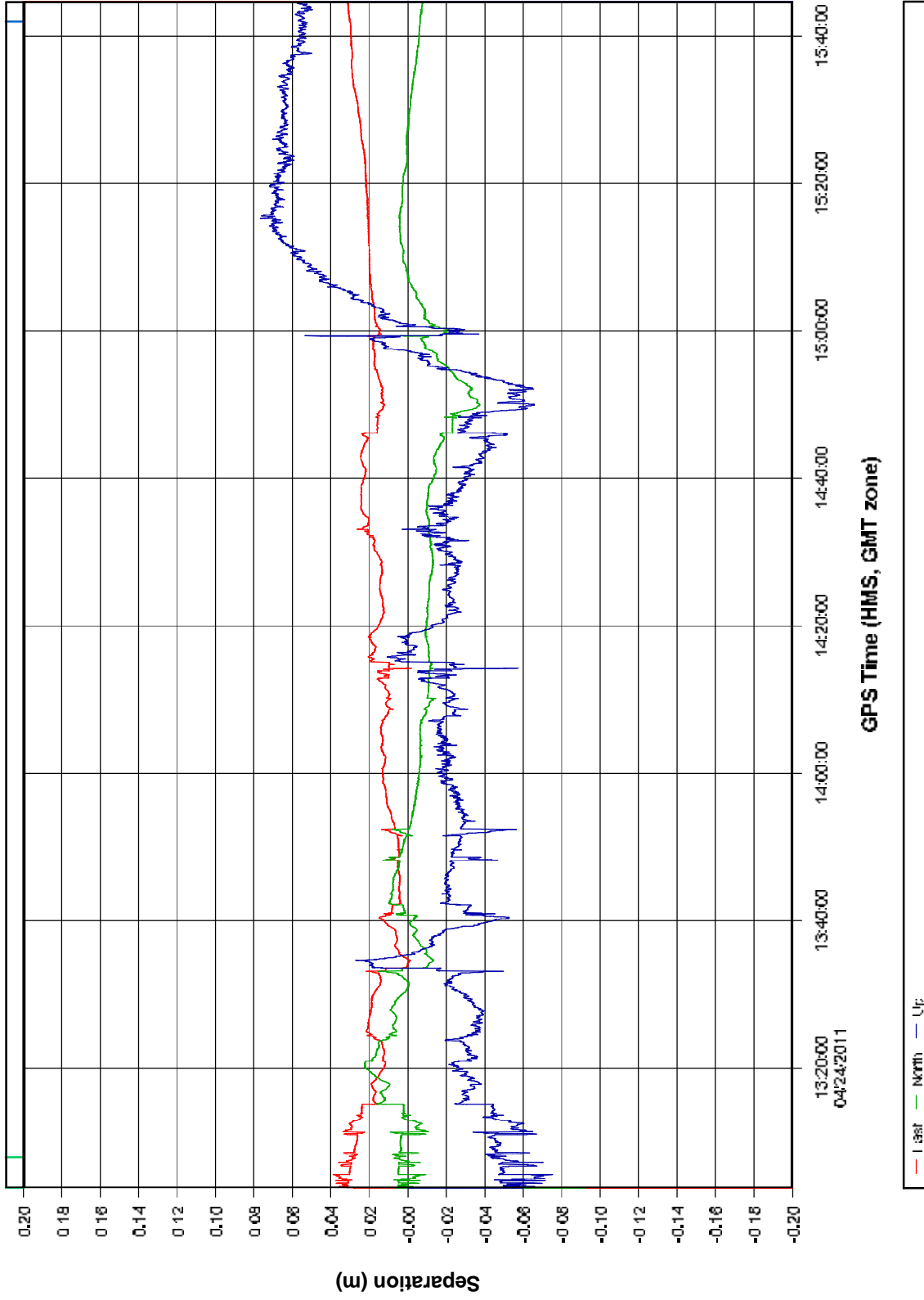
Quality Number Percentages:
Q 1: 99.8 %
Q 2: 0.2 %
Q 3: 0.0 %
Q 4: 0.0 %
Q 5: 0.0 %
Q 6: 0.0 %

Position Standard Deviation Percentages:
0.00 - 0.10 m: 99.8 %
0.10 - 0.30 m: 0.2 %
0.30 - 1.00 m: 0.0 %
1.00 - 5.00 m: 0.0 %
5.00 m + over: 0.0 %

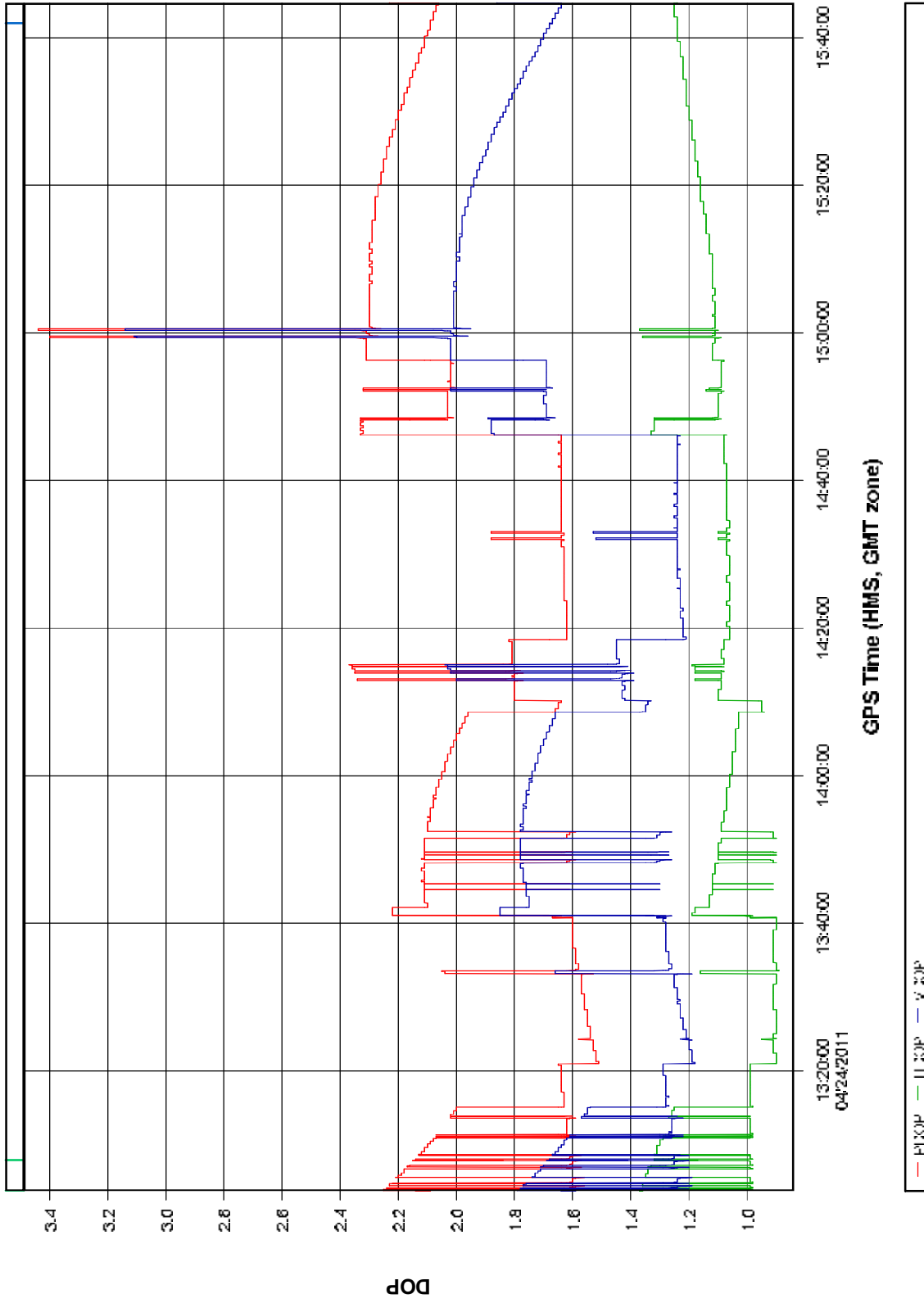
Percentages of epochs with DD_DOP over 10.00:
DOP over Tol: 0.0 %

Baseline Distances:
Maximum: 39.467 (km)
Minimum: 0.805 (km)
Average: 18.127 (km)
First Epoch: 16.941 (km)
Last Epoch: 12.779 (km)

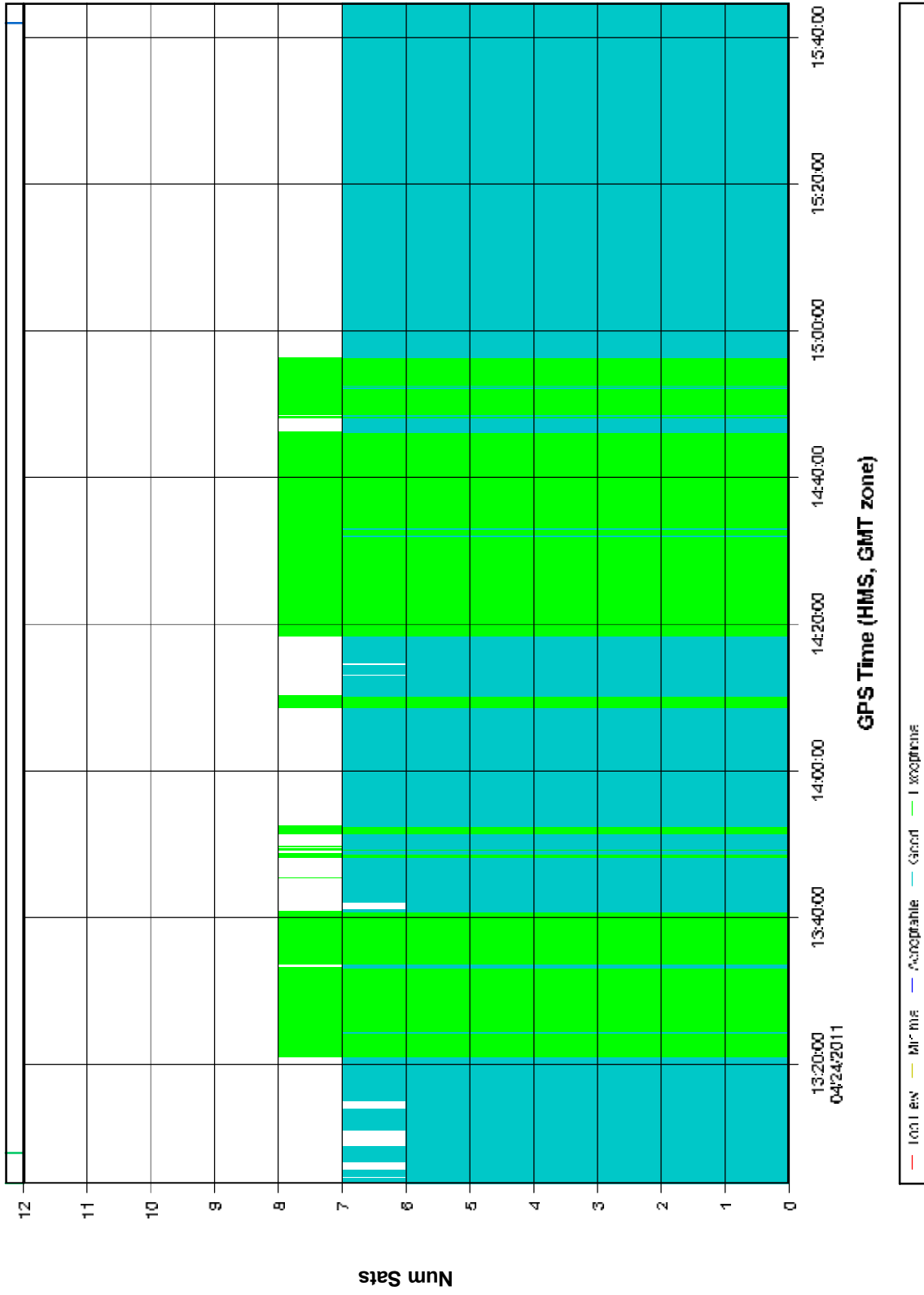
o111114a [Combined] - Forward/Reverse or Combined Separation Plot



o111114a [Combined] - PDOP, HDOP, VDOP Plots



o11114a [Combined] - Number of Satellites Bar Plot



```

                                o111114a. cfg
:   PROJECT:
G:\11103U_VA\2_Operations\6_Missions\o111114a\3_Processed\GPS\o111114a. cfg
:
:   DATE:      April 28/11 (date/time of processing)
:   TIME:      16:53:56
:   CREATED BY: GrafNav Version 7.80.2517
:
VERSION = 7.80.2517
PROCUSER = Unknown
PROCDISC = Run*(8)
PROCTIME = 16:48:26 04/28/2011

; Master station # 1 information
MB_MASTER_INDEX = 0
MB_MASTER_NAME = 1110302
MB_MASTER_FILE =
G:\11103U_VA\2_Operations\6_Missions\o111114a\1_RawData\original_PDC_files\1110302_0
0081140.gpb
MB_MASTER_POS = 38 17 51.99406 -77 18 55.26399 29.0380
MB_MASTER_ANT = 1.605 0.001 1.571 1 _TP_SOK600 0
MB_MASTER_DISABLE = OFF

; Remote station information
REMOTE_FILE =
G:\11103U_VA\2_Operations\6_Missions\o111114a\3_Processed\Extract\mgps_o111114a.gpb
REMOTE_POS = 38 23 46.62820 -77 26 58.65328 24.3056
REMOTE_ANT = 0.000

; General settings
PROCESS_MODE = 103 108 113 126 ; Processing modes (GrafNav only)

DATUM = NAD83 AUTO ; Processing Datum
INPDATUM = ON NAD83 AUTO ; Input Datum (ON=Use processing datum)
ELEV_MASK = 14.0 ; Elevation mask (deg)
GRID = UTM 15 31 ; Grid info

CYCLE_TEST = BOTH ; Cycle slip test method
STATIC_SLIP_TOL = 0.40 ; slip tolerance in static mode (cycles)
USE_DOPPLER = ON OFF ; Use doppler meas. for phase, for code-only

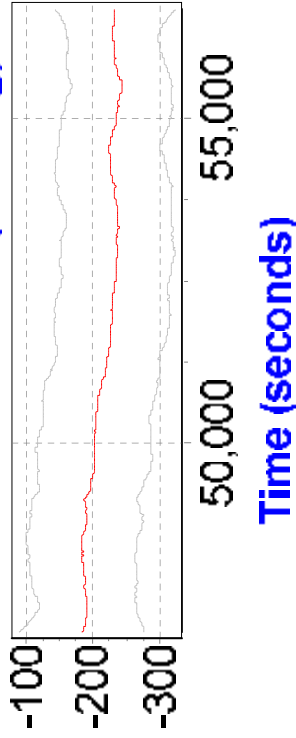
BASE_SAT = 99 ; Base satellite (99-default)

TIMERANGE = RANGE 987685421.0 987695082.0 2 0 ; Processing time range
INTERVAL = 0.10 ; Processing time interval (seconds)

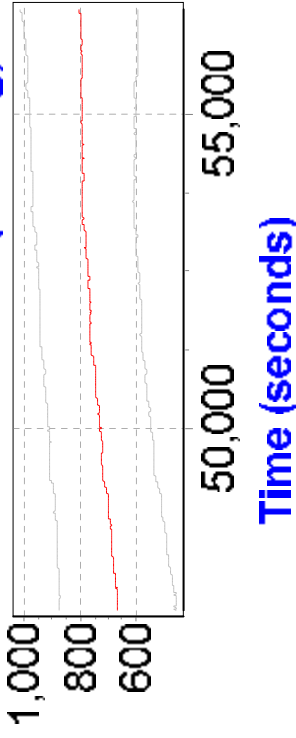
PROCESS_DIR = FORWARD ; Process direction (FORWARD/REVERSE)
BOTH_DIR = ON ; True for processing both directions
WRITE_BAD_EPOCHS = OFF ; Save bad data to .fwd/rev file (ON/OFF)
NOWRITE_HIGH = OFF 6 20.000 ; Don't write epoch with high statistics (q, stdev-m)
OUTPUT_MODE = EXTENDED ; Format for .fwd/rev file
DETAILED_SUM = ON ; Detailed Static/KAR Summary header
WRITE_SLIP_MSG = ON ; Print cycle slips to message log
SAVE_AMB = ON ; Should ambiguities be saved

```

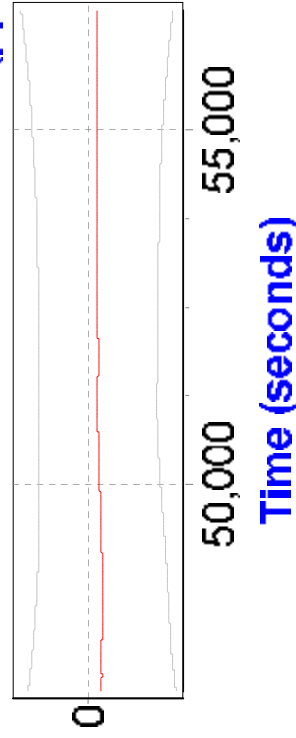
X Accelerometer Bias (micro-g)



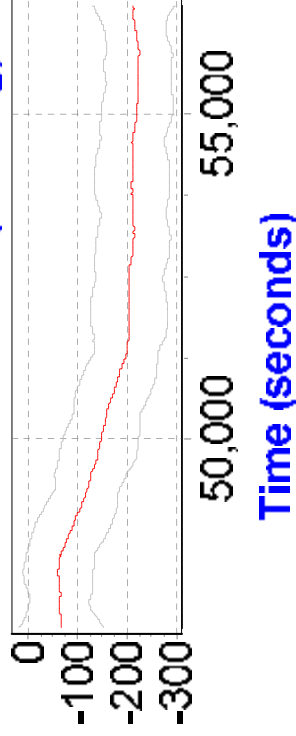
Z Accelerometer Bias (micro-g)



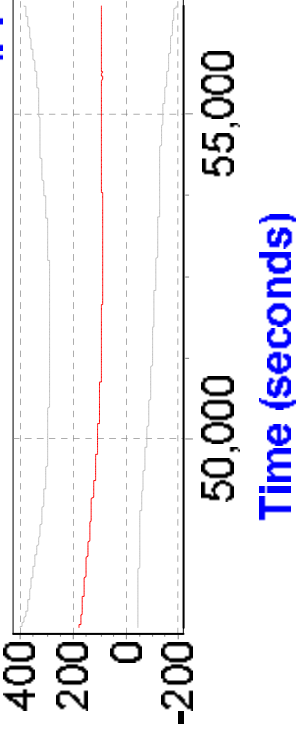
Accelerometer Scale Factor Error (ppm)



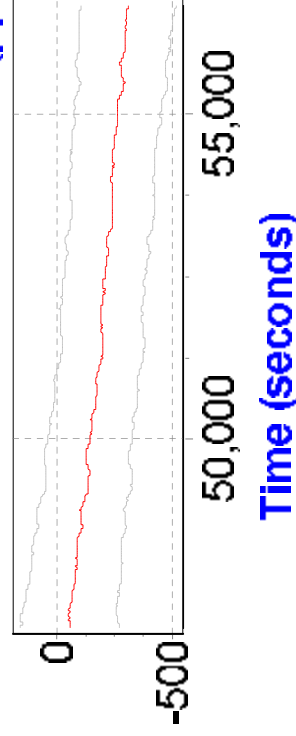
Y Accelerometer Bias (micro-g)

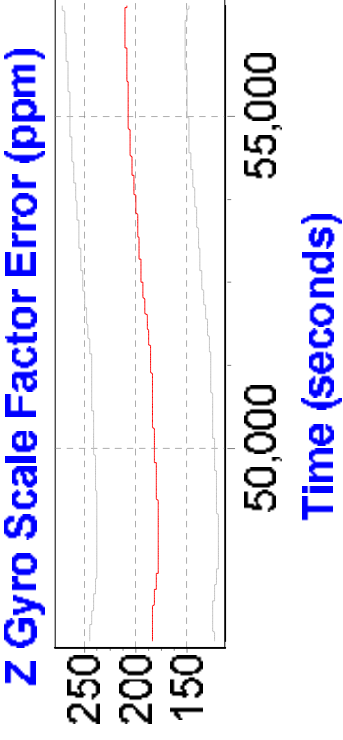
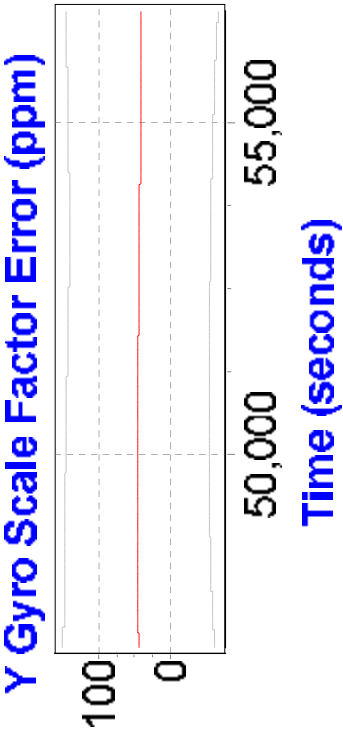
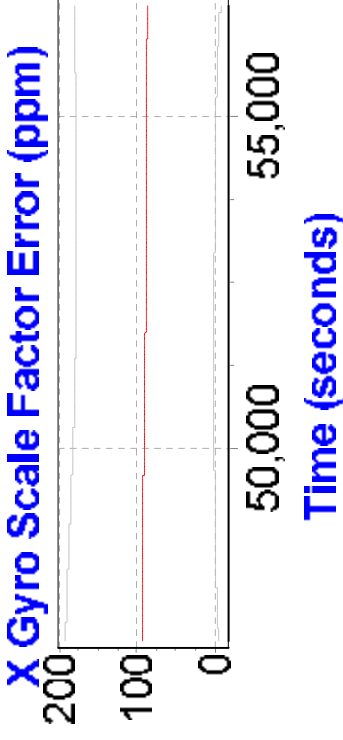
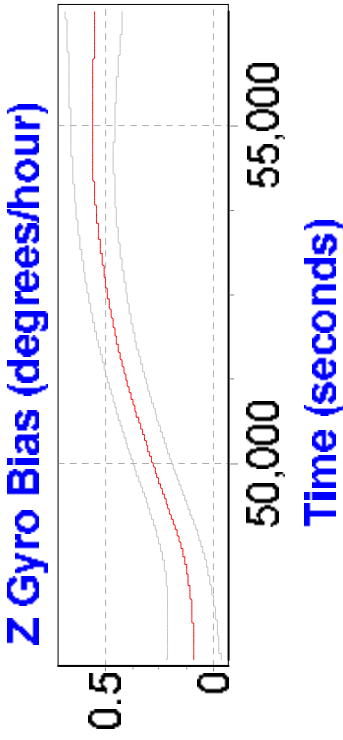
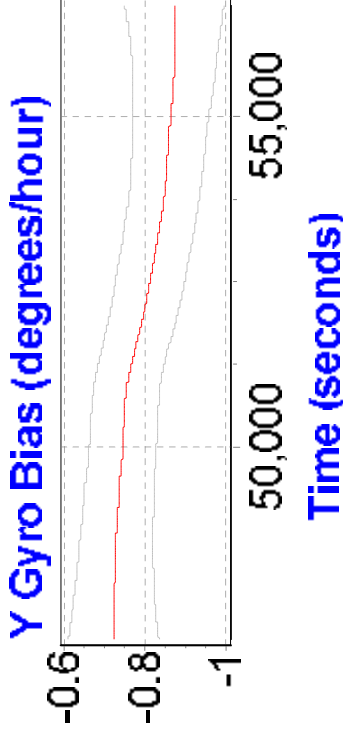
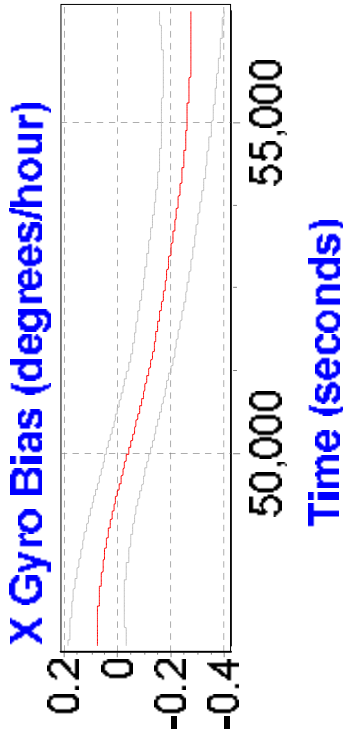


Accelerometer Scale Factor Error (ppn)



Accelerometer Scale Factor Error (ppn)







Flight Log

Project# 111034 Session 01114 A

Date	24 Apr 2011	Julian Day	114
Project	VING WING CASE/FORWARD	Aircraft	10095
Staging	Starboard	Cal Sign	
Survey Block		Pilot	TOOD
Lines Complete	7	Operator	DAUG
Observer			
Mission Objective			

ALMIS/Orbtech System #	01
Laser Scanner	01
Camera/Lens SN	
Shutter Speed	
Photo Freq	
IMU	
GPS Rx	
Data Drive	

Additional Notes:
 270 @03
 Outside Temp @ TO: 21c Outside Pressure @ TO: 30.13
 Outside Temp @ LA: Outside Pressure @ LA:

Aircraft Block Time	☑ Times confirmed with pilot	
Engine On (Hobbs)	Takeoff	(120) x (Total ft. hrs)
4.0		
Engine Off (Hobbs)	Landing	FBO \$/Litre
96.8		
Total hrs (Hobbs)	Total hrs	Approx. Fuel Cost
2.8		

Mission Plan	
Flying Height AGL	Scan Angle (Collect)
950 M	22
Ground Speed	Mirror Scan Rate
150 KTS	40
Fisrt/Alt/Alternating Return	Laser Pulse Rate
	70

Static & KAR GPS // INS	
Time	Stat
Pre Mission	
KAR Date	130804
KAR Base	153530
Post Mission	

off
 130804
 153602

Flight Plan Line #	LIDAR File Name	Flight Direction	GPS / UTC Time		Flight Aborted		Photo Events / Commer
			Start	End	Time	NM to End	
198		E	132629	133844			
199		W	134339	135713			
200		E	141027	141346			
201		W	141832	143231			
202		E	143629	144849			
203		W	145319	150739			
204		E	151121	152327			
205	Crossing	S	153306	153414			
206		E					

High Roll TO Avoid Restricted Areas
 Can not do -
 Restricted Not!

GPS Base Log Sheet



Station ID:	110302	Project #:	11030	Missions:	01114a/b/c
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Project Name:	Farm Virginia		Calendar Date:	24/9/2011	Julian Day	14
Approx. Coordinates	WGS 84	N		W		
Description of Mark (Take Photos)						
Monument is:	<input checked="" type="checkbox"/> Flush with ground	<input type="checkbox"/> Above ground	_____ cm	<input type="checkbox"/> Below ground	_____ cm	
Location & Access	Clarch					

Obstructions & Additional Notes

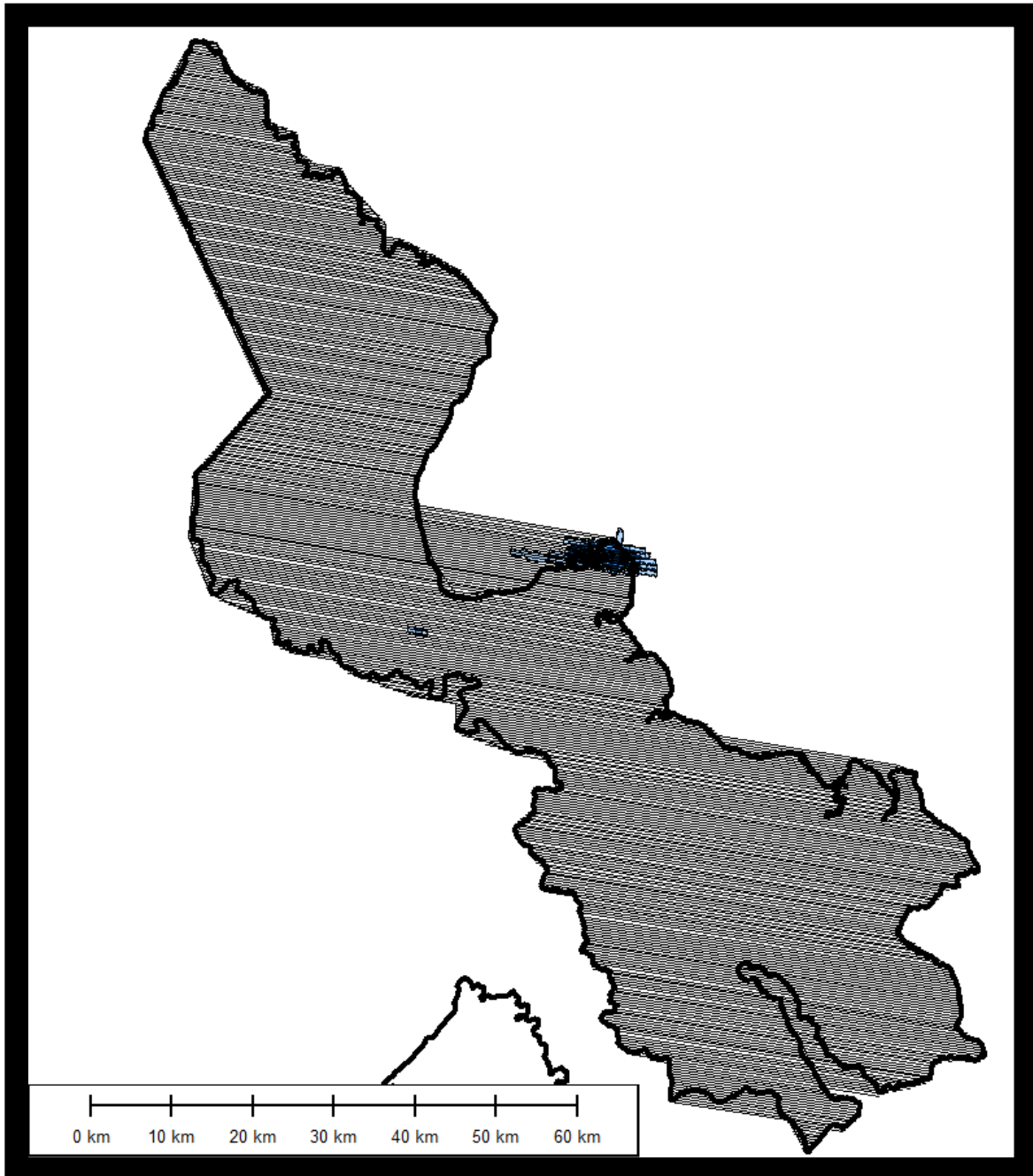
GPS Observation - MAIN					
Rx Make / Model	GS8-2600	Serial #	0008		
Ant Make / Model	SK600	Serial #	0007		
Operator	DW				
Session Time (GPS)	Start	1139	UTC	End	
Slant HI Before:	A:	1.571	B:	1.571	
Slant HI After:	A:	1.571	B:	1.571	
Correction					
Phase Center	<input checked="" type="checkbox"/> m <input type="checkbox"/> in <input type="checkbox"/> use GrafNav Profile				
Data File Name					

GPS Observation - Back-Up					
Rx Make / Model		Serial #			
Ant Make / Model		Serial #			
Operator					
Session Time (GPS)	Start		End		
Slant HI Before:	A:		B:		
Slant HI After:	A:		B:		
Correction					
Phase Center	<input type="checkbox"/> m <input type="checkbox"/> in <input type="checkbox"/> use GrafNav Profile				
Data File Name					

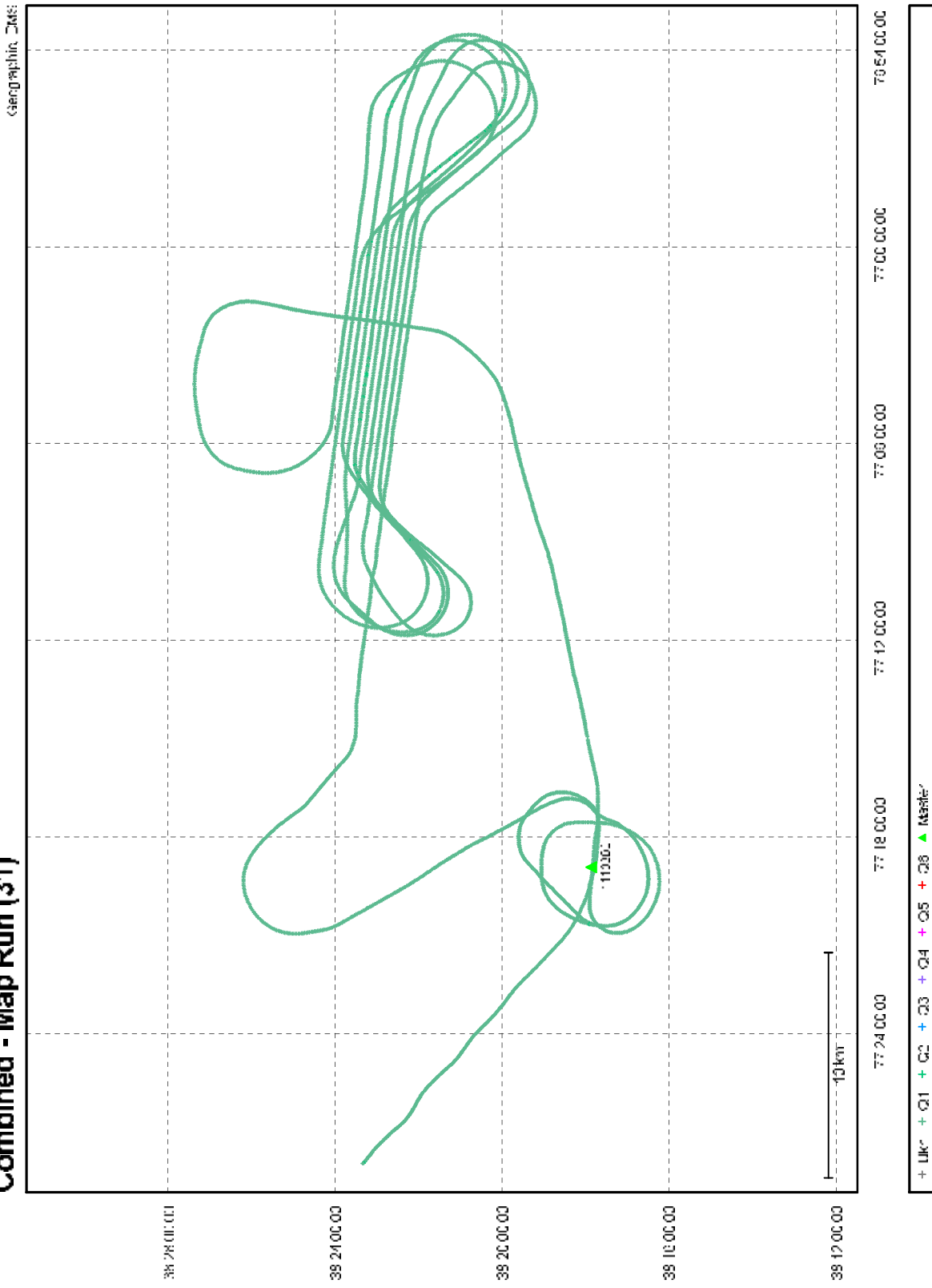


Mission: o11114b

2011 04 24



Combined - Map Run (31)



Processing Summary Information

Program: GrafNav
Version: 7.80.2517
Project: G:\11103U_VA\2_Operations\6_Missions\o111114b\3_Processed\GPS\o111114b.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:
Total in GPB file: 75967
No processed position: 69705
Missing Fwd or Rev: 4
With bad C/A code: 0
With bad L1 Phase: 0

Measurement RMS Values:
L1 Phase: 0.0211 (m)
C/A Code: 1.15 (m)
L1 Doppler: 0.027 (m/s)

Fwd/Rev Separation RMS Values:
East: 0.013 (m)
North: 0.016 (m)
Height: 0.046 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (6256 occurrences):
East: 0.009 (m)
North: 0.015 (m)
Height: 0.044 (m)

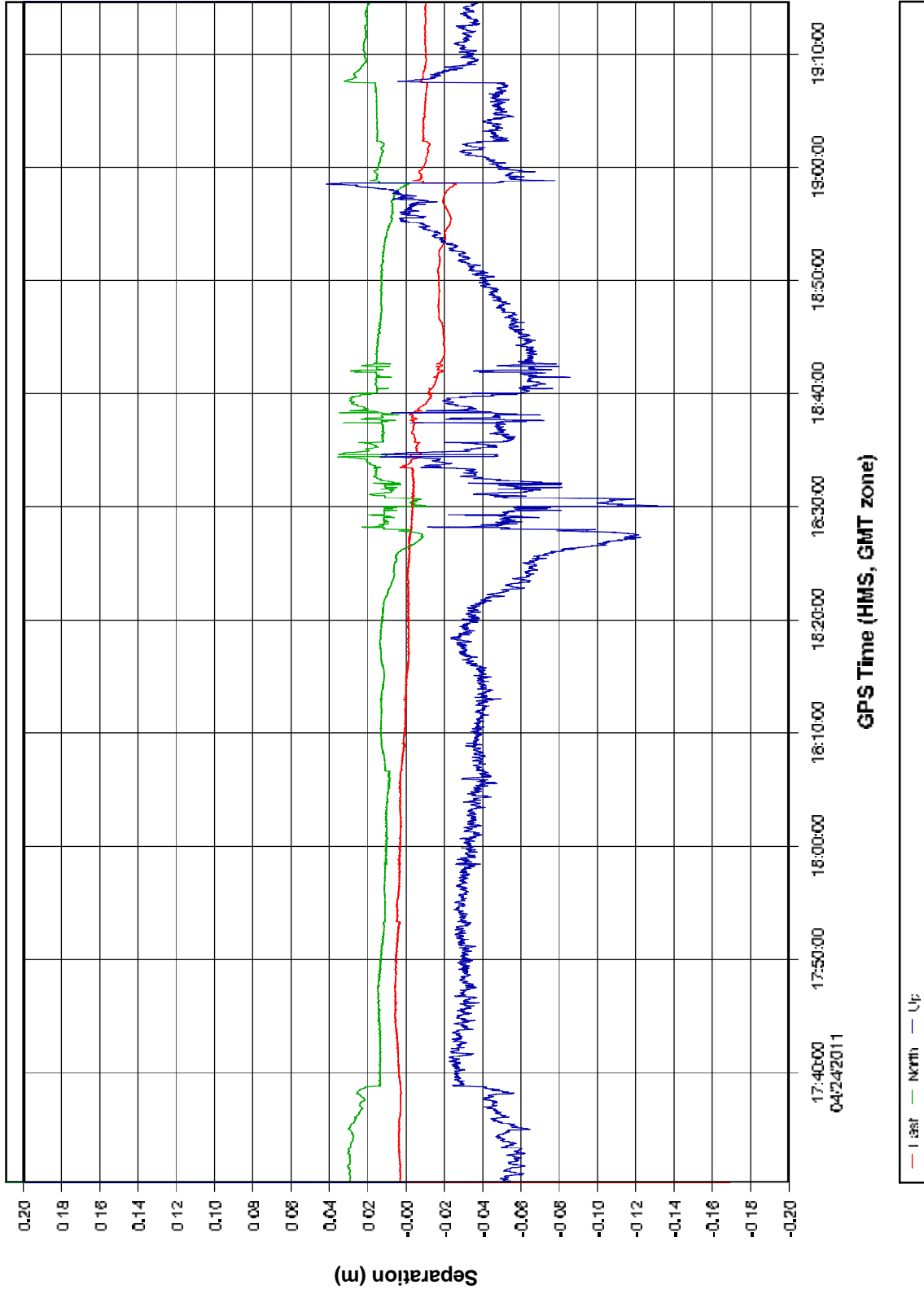
Quality Number Percentages:
Q 1: 99.4 %
Q 2: 0.6 %
Q 3: 0.0 %
Q 4: 0.0 %
Q 5: 0.0 %
Q 6: 0.0 %

Position Standard Deviation Percentages:
0.00 - 0.10 m: 98.5 %
0.10 - 0.30 m: 1.5 %
0.30 - 1.00 m: 0.0 %
1.00 - 5.00 m: 0.0 %
5.00 m + over: 0.0 %

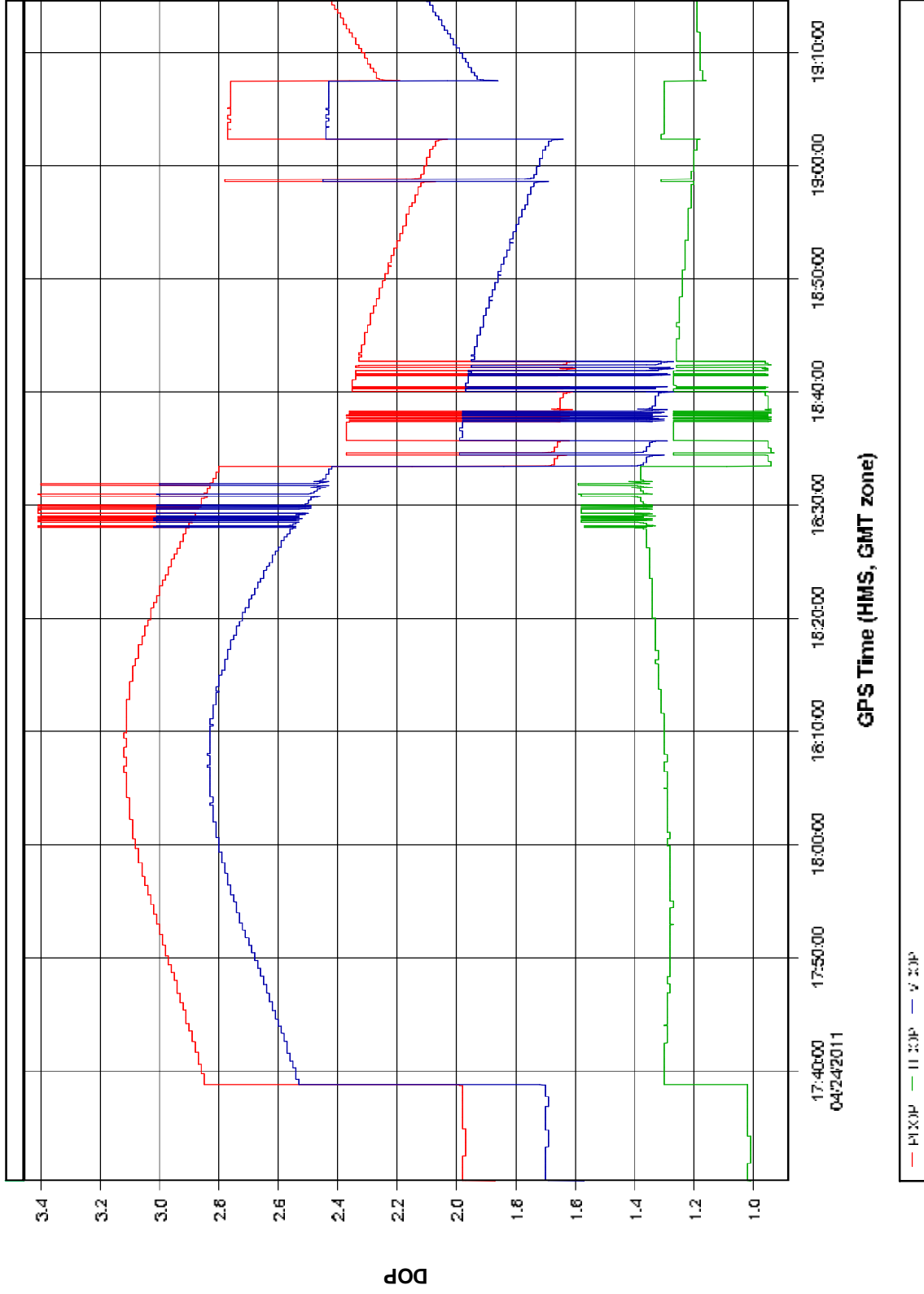
Percentages of epochs with DD_DOP over 10.00:
DOP over Tol: 0.0 %

Baseline Distances:
Maximum: 37.466 (km)
Minimum: 0.882 (km)
Average: 20.782 (km)
First Epoch: 16.631 (km)
Last Epoch: 2.701 (km)

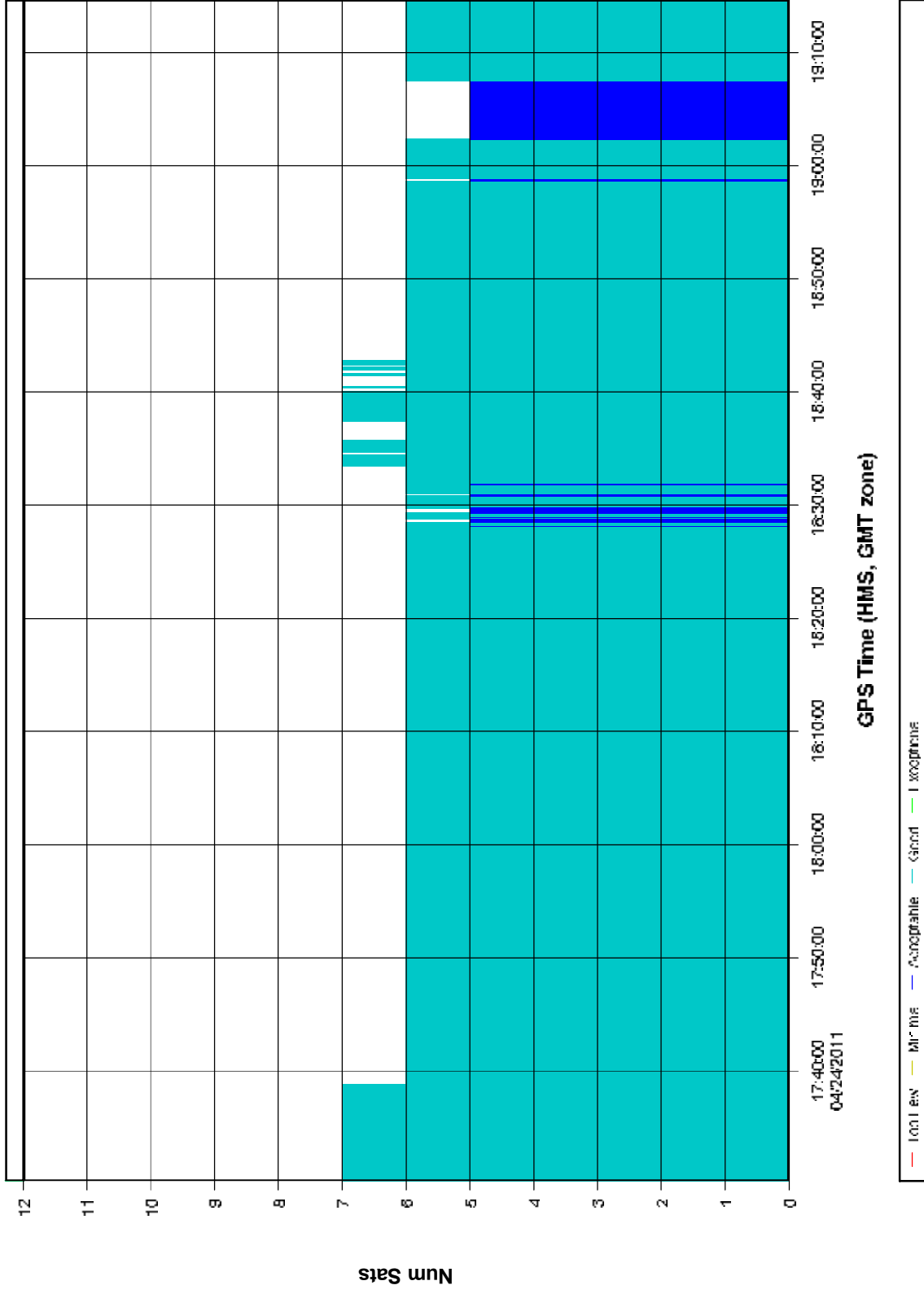
o111114b [Combined] - Forward/Reverse or Combined Separation Plot



o111114b [Combined] - PDOP, HDOP, VDOP Plots



o11114b [Combined] - Number of Satellites Bar Plot



```

                                o111114b. cfg
: PROJECT:
G:\11103U_VA\2_Operations\6_Missions\o111114b\3_Processed\GPS\o111114b. cfg
:
: DATE:      April 28/11 (date/time of processing)
: TIME:      13:51:50
: CREATED BY: GrafNav Version 7.80.2517
:
VERSION = 7.80.2517
PROCUSER = Unknown
PROCDISC = Run*(32)
PROCTIME = 17:44:52 04/27/2011

; Master station # 1 information
MB_MASTER_INDEX = 0
MB_MASTER_NAME = 1110302
MB_MASTER_FILE =
G:\11103U_VA\2_Operations\6_Missions\o111114b\1_RawData\original_PDC_files\1110302_0
0081140.gpb
MB_MASTER_POS = 38 17 51.99406 -77 18 55.26399 29.0380
MB_MASTER_ANT = 1.598 0.001 1.564 1 _TP_SOK600 0
MB_MASTER_DISABLE = OFF

; Remote station information
REMOTE_FILE =
G:\11103U_VA\2_Operations\6_Missions\o111114b\3_Processed\Extract\mgps_o111114b.gpb
REMOTE_POS = 38 23 46.59284 -77 26 58.52291 22.8638
REMOTE_ANT = 0.000

; General settings
PROCESS_MODE = 105 108 113 126 ; Processing modes (GrafNav only)

DATUM = NAD83 AUTO ; Processing Datum
INPDATUM = ON NAD83 AUTO ; Input Datum (ON=Use processing datum)
ELEV_MASK = 18.5 ; Elevation mask (deg)
GRID = UTM 15 31 ; Grid info

CYCLE_TEST = BOTH ; Cycle slip test method
STATIC_SLIP_TOL = 0.40 ; slip tolerance in static mode (cycles)
USE_DOPPLER = ON OFF ; Use doppler meas. for phase, for code-only

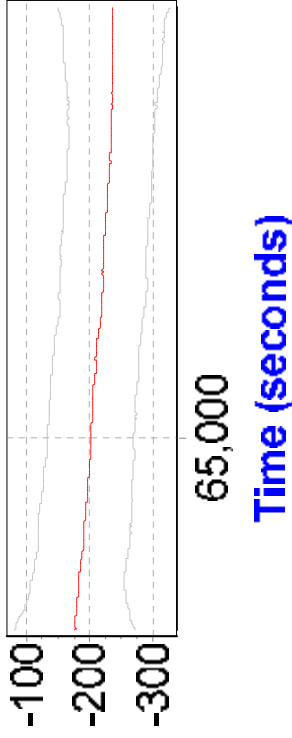
BASE_SAT = 99 ; Base satellite (99-default)

TIMERANGE = RANGE 987701415.0 987707679.0 2 1 ; Processing time range
INTERVAL = 0.10 ; Processing time interval (seconds)

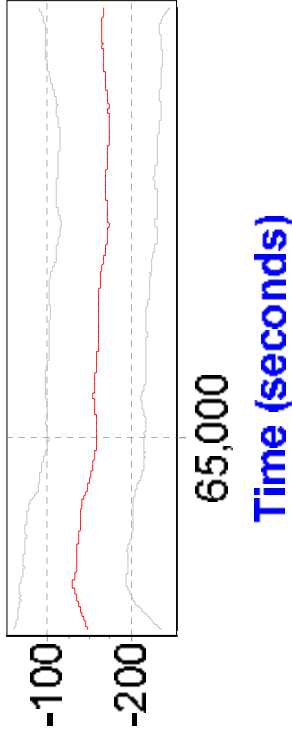
PROCESS_DIR = FORWARD ; Process direction (FORWARD/REVERSE)
BOTH_DIR = ON ; True for processing both directions
WRITE_BAD_EPOCHS = OFF ; Save bad data to .fwd/rev file (ON/OFF)
NOWRITE_HIGH = OFF 6 20.000 ; Don't write epoch with high statistics (q, stdev-m)
OUTPUT_MODE = EXTENDED ; Format for .fwd/rev file
DETAILED_SUM = ON ; Detailed Static/KAR Summary header
WRITE_SLIP_MSG = ON ; Print cycle slips to message log
SAVE_AMB = ON ; Should ambiguities be saved

```

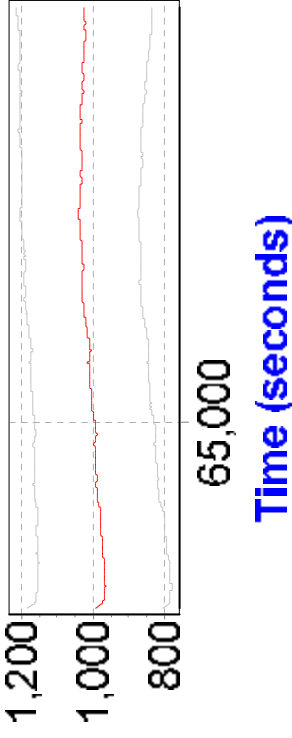

X Accelerometer Bias (micro-g)



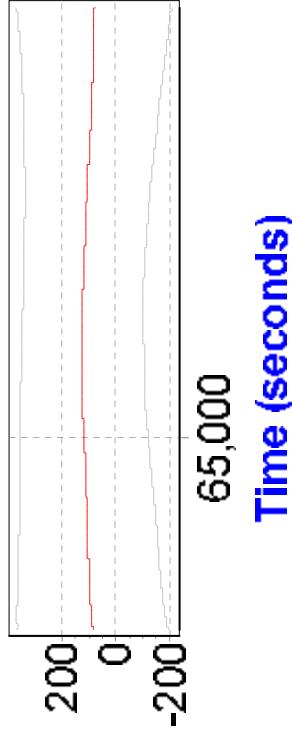
Y Accelerometer Bias (micro-g)



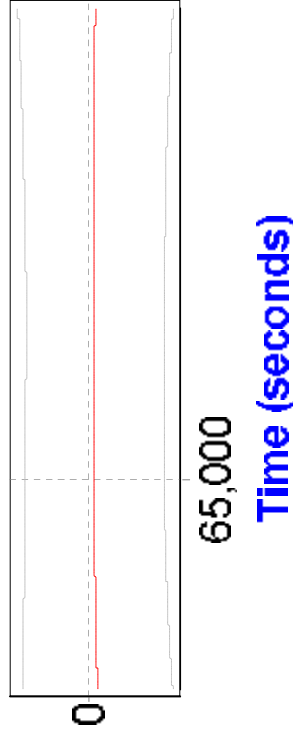
Z Accelerometer Bias (micro-g)



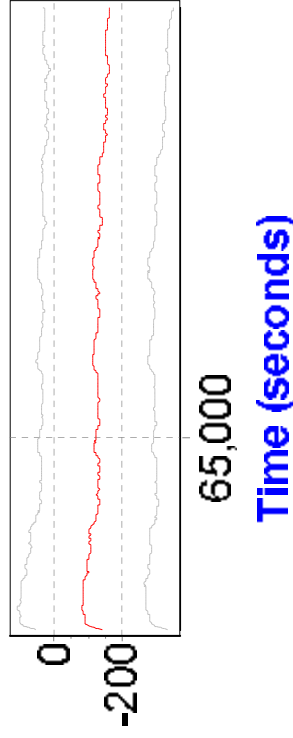
X Accelerometer Scale Factor Error (ppm)



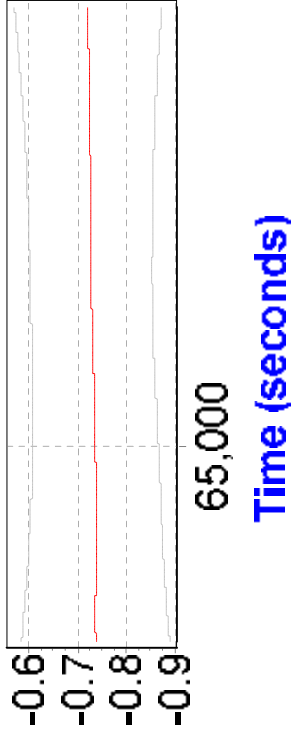
Y Accelerometer Scale Factor Error (ppm)



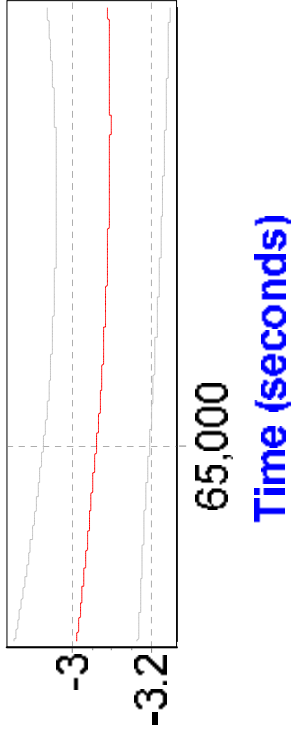
Z Accelerometer Scale Factor Error (ppm)



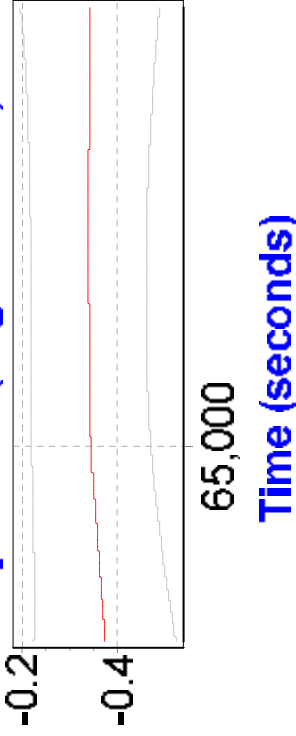
X Gyro Bias (degrees/hour)



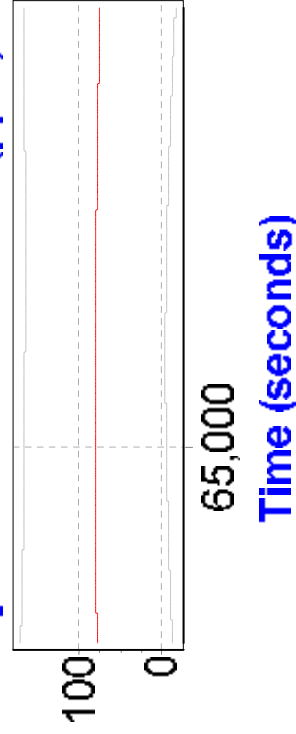
Y Gyro Bias (degrees/hour)



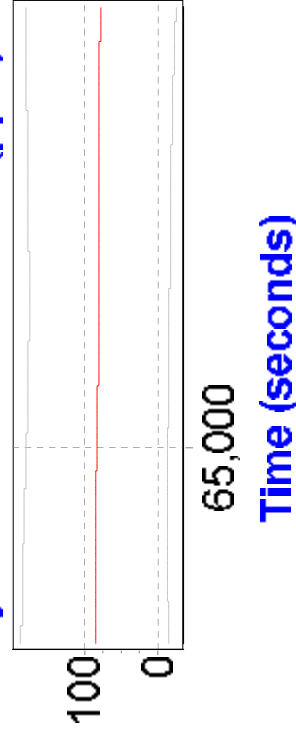
Z Gyro Bias (degrees/hour)



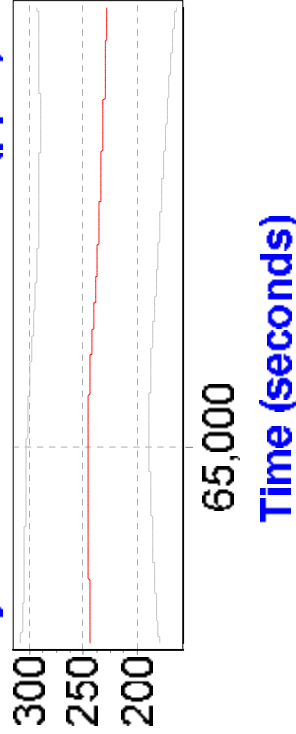
X Gyro Scale Factor Error (ppm)



Y Gyro Scale Factor Error (ppm)



Z Gyro Scale Factor Error (ppm)



GPS Base Log Sheet



Station ID:	110302	Project #:	11030	Missions:	01114a/b/c
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Project Name:	Farm Virginia		Calendar Date:	24/9/2011	Julian Day	114
Approx. Coordinates	WGS 84	N		W		
Description of Mark (Take Photos)						
Monument is:	<input checked="" type="checkbox"/> Flush with ground	<input type="checkbox"/> Above ground	_____ cm	<input type="checkbox"/> Below ground	_____ cm	
Location & Access	Clarch					

Obstructions & Additional Notes

GPS Observation - MAIN

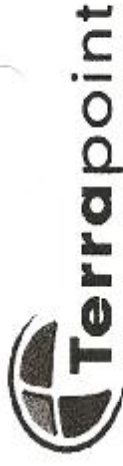
Rx Make / Model	GS8-2600	Serial #	0008
Ant Make / Model	SK600	Serial #	0007
Operator	DW		
Session Time (GPS)	Start	1139	UTC
	End		
Slant HI Before:	A: 1.571	B: 1.571	
Slant HI After:	A: 1.571	B: 1.571	
Correction			
Phase Center	<input checked="" type="checkbox"/> m <input type="checkbox"/> in <input type="checkbox"/> use GrafNav Profile		
Data File Name			

GPS Observation - Back-Up

Rx Make / Model		Serial #	
Ant Make / Model		Serial #	
Operator			
Session Time (GPS)	Start		
	End		
Slant HI Before:	A:	B:	
Slant HI After:	A:	B:	
Correction			
Phase Center	<input type="checkbox"/> m <input type="checkbox"/> in <input type="checkbox"/> use GrafNav Profile		
Data File Name			

Project# 111034 **Session** 011114B

Flight Log



Date	24 Aug 2011	Julian Day	114
Project	410 F100 GSS/Ferr	Aircraft	10095
Staging	Starboard	Cal Sign	
Survey Block *	9	Pilot	TAD/BIL
Lines Complete		Operator	Dobbs
Mission Objective			

ALMIS/Optech	01
System #	01
Laser Scanner	
Camera/Lens SN	
Shutter Speed	
Photo Freq.	
IMU	
GPS Rx	
Data Drive	

Additional Notes:
 Fuel 491.40
 210 @ 910
 10
 Outside Temp @ TO: 28c Outside Pressure @ TO: 30.04
 Outside Temp @ LA: Outside Pressure @ LA:

Aircraft Block Time	2 Times confirmed with pilot	
Engine On (Hobbs)	Takeoff	(120.) x (Total ft. hrs)
96.8		
Engine Off (Hobbs)	Landing	FBO S/Lite
2798.8		
Total hrs (Hobbs)	Total hrs	Approx. Fuel Cost
2.0		

Flying Height AGL	Scan Angle (Optech)
950M	22
Ground Speed	Mirror Scan Rate
150 kts	40
First/Last/Alternating Return	Laser Pulse Rate
	70

Static & KAR	GPS // INS
Time	Stat
Pre Mission	
KAR Base	173503
KAR Base	191004
Post Mission	

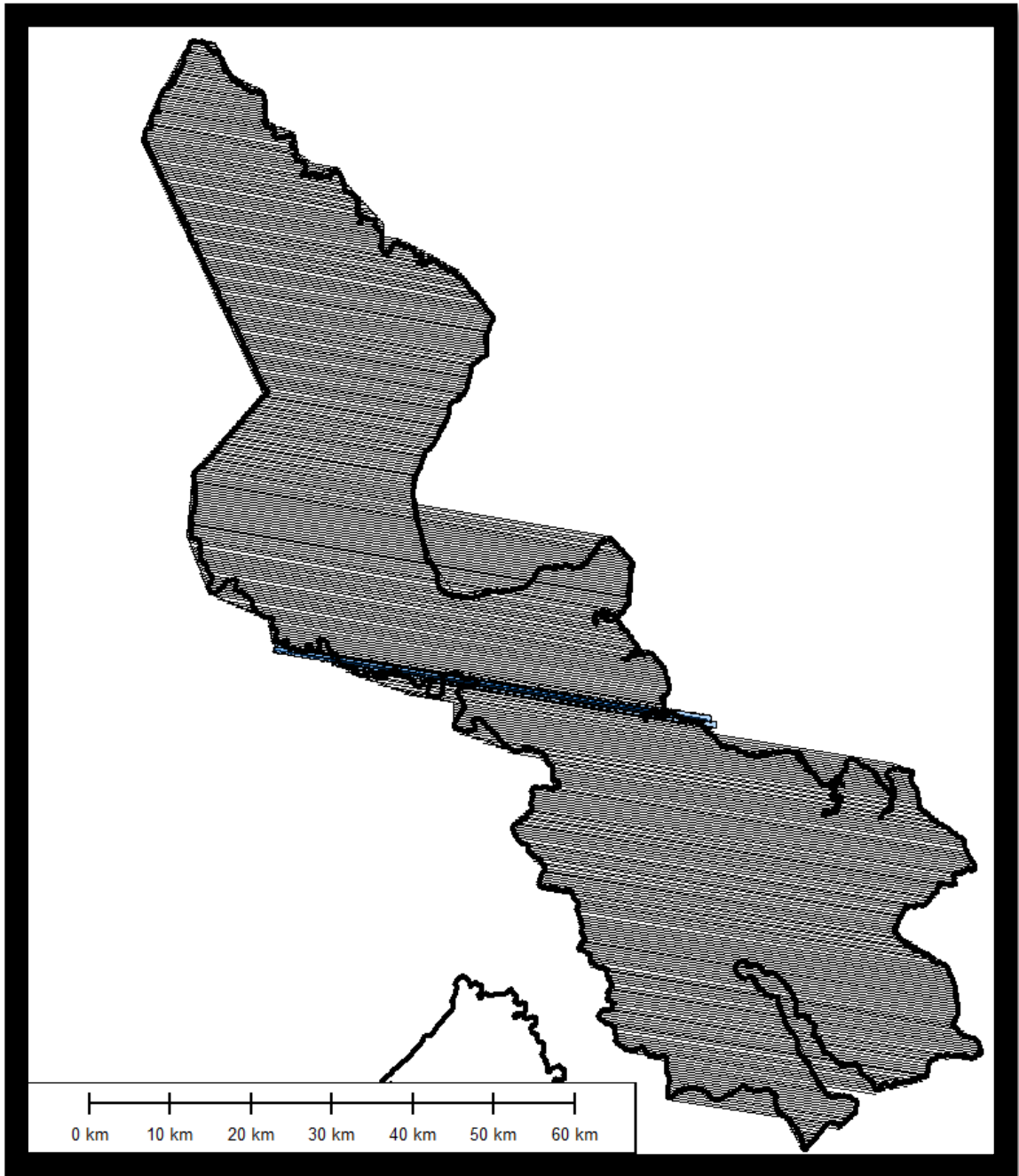
FF
 173528
 191034

Flight Plan Line #	L/DAR File Name	Flight Direction	GPS / UTC Time		Flight Aborted		Photo Events / Comment Please periodically record: Cabin Temp: Output (Meters)
			Start	End	Time	NM to End	
218	220 218	E	174831	175223			
219		W	175717	180016			
220		E	180425	180656			
221		W	181156	181451			
222		E	181936	182138			
223		W	182651	182930			
224		E	183430	183617			
225		W	184112	184355			
226		E	184838	185029			
227		W	185553	185743			
Fire Line		S	190150	190326			

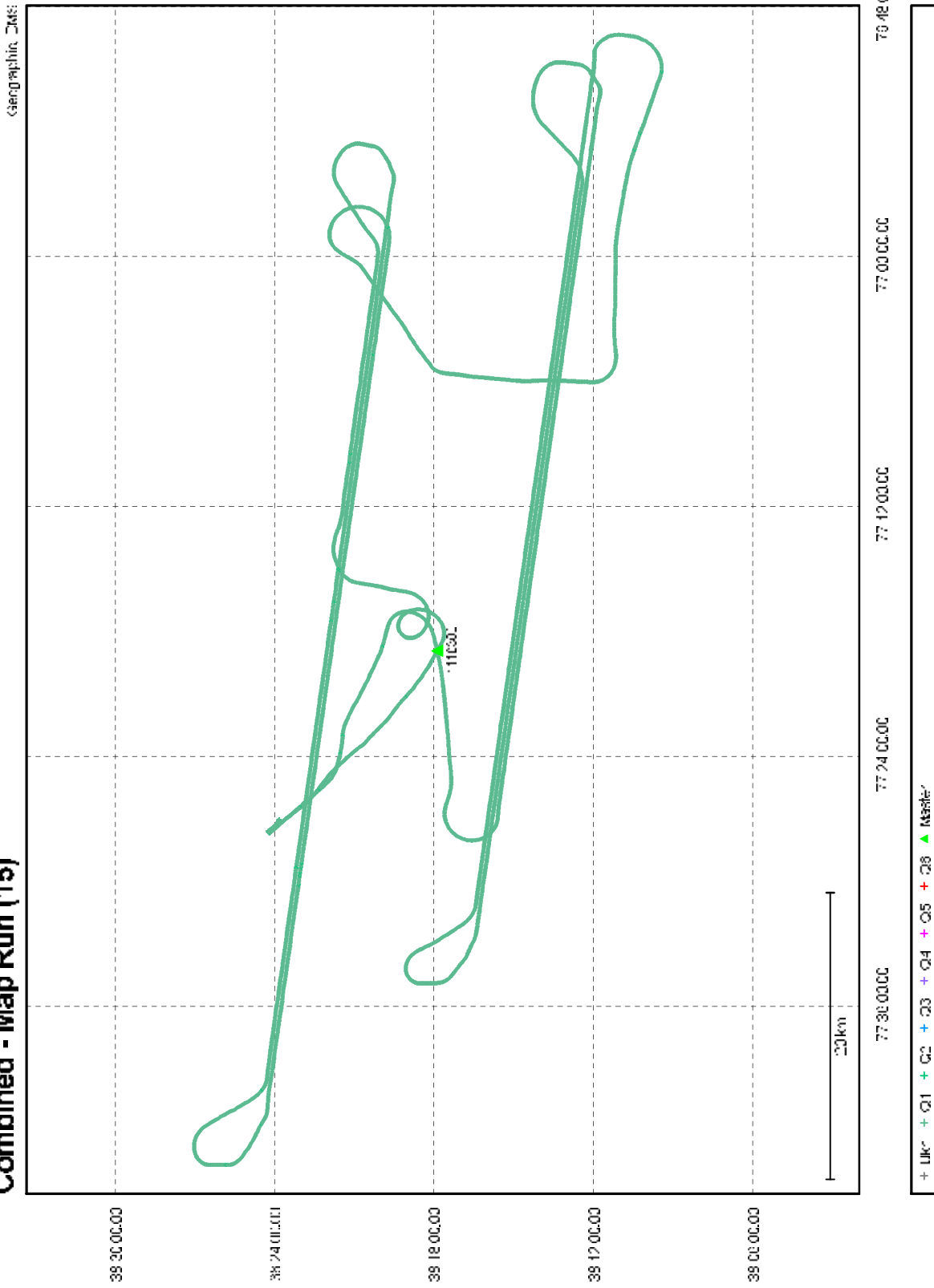


Mission: o111114c

2011 04 24



Combined - Map Run (15)



Processing Summary Information

Program: GrafNav
Version: 7.80.2517
Project: G:\11103U_VA\2_Operations\6_Missions\o111114c\3_Processed\GPS\o111114c.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:
Total in GPB file: 92451
No processed position: 83791
Missing Fwd or Rev: 4
With bad C/A code: 0
With bad L1 Phase: 0

Measurement RMS Values:
L1 Phase: 0.0236 (m)
C/A Code: 1.01 (m)
L1 Doppler: 0.033 (m/s)

Fwd/Rev Separation RMS Values:
East: 0.013 (m)
North: 0.011 (m)
Height: 0.031 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (8654 occurrences):
East: 0.011 (m)
North: 0.008 (m)
Height: 0.027 (m)

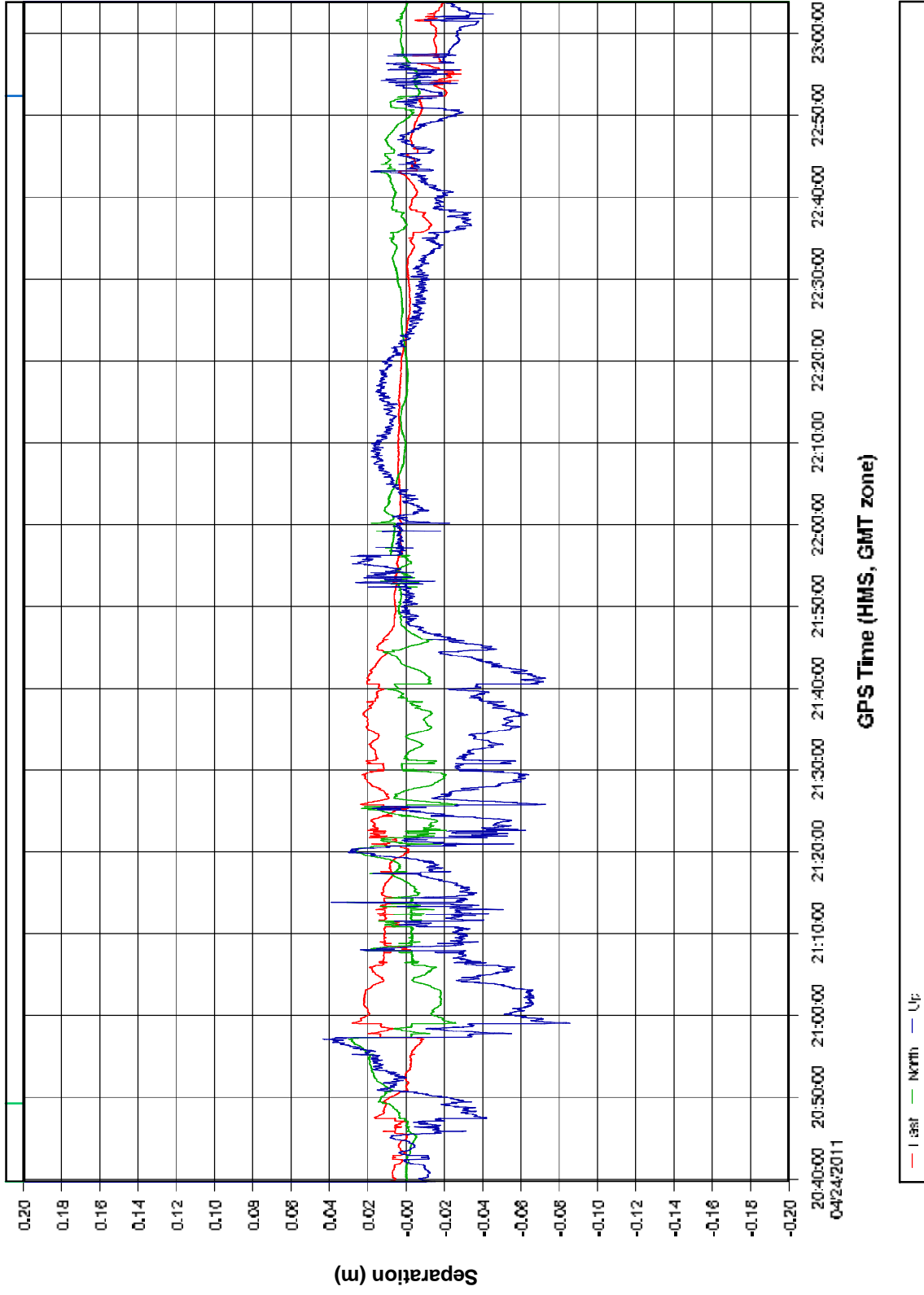
Quality Number Percentages:
Q 1: 99.5 %
Q 2: 0.5 %
Q 3: 0.0 %
Q 4: 0.0 %
Q 5: 0.0 %
Q 6: 0.0 %

Position Standard Deviation Percentages:
0.00 - 0.10 m: 100.0 %
0.10 - 0.30 m: 0.0 %
0.30 - 1.00 m: 0.0 %
1.00 - 5.00 m: 0.0 %
5.00 m + over: 0.0 %

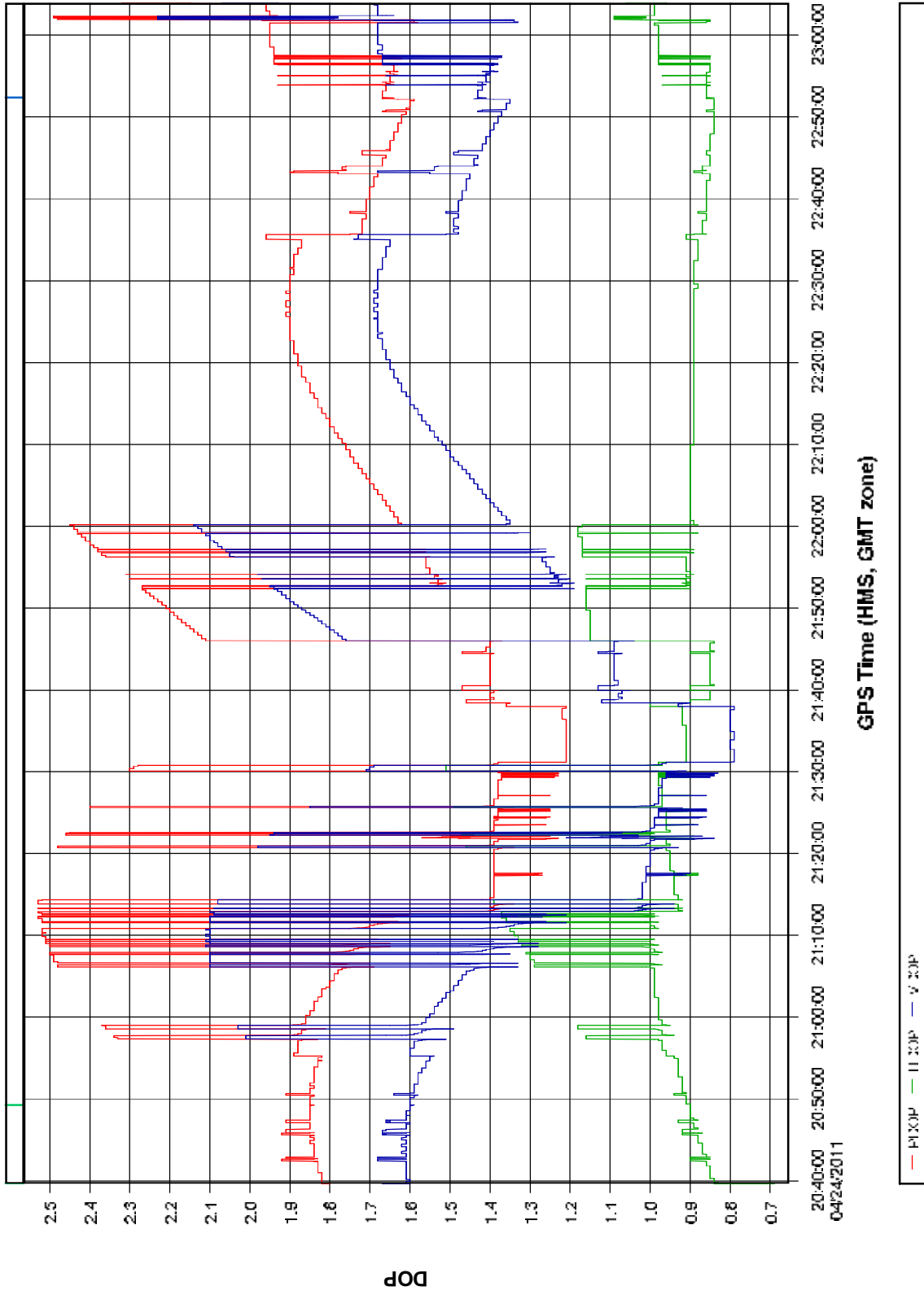
Percentages of epochs with DD_DOP over 10.00:
DOP over Tol: 0.0 %

Baseline Distances:
Maximum: 45.180 (km)
Minimum: 0.966 (km)
Average: 19.170 (km)
First Epoch: 16.225 (km)
Last Epoch: 16.173 (km)

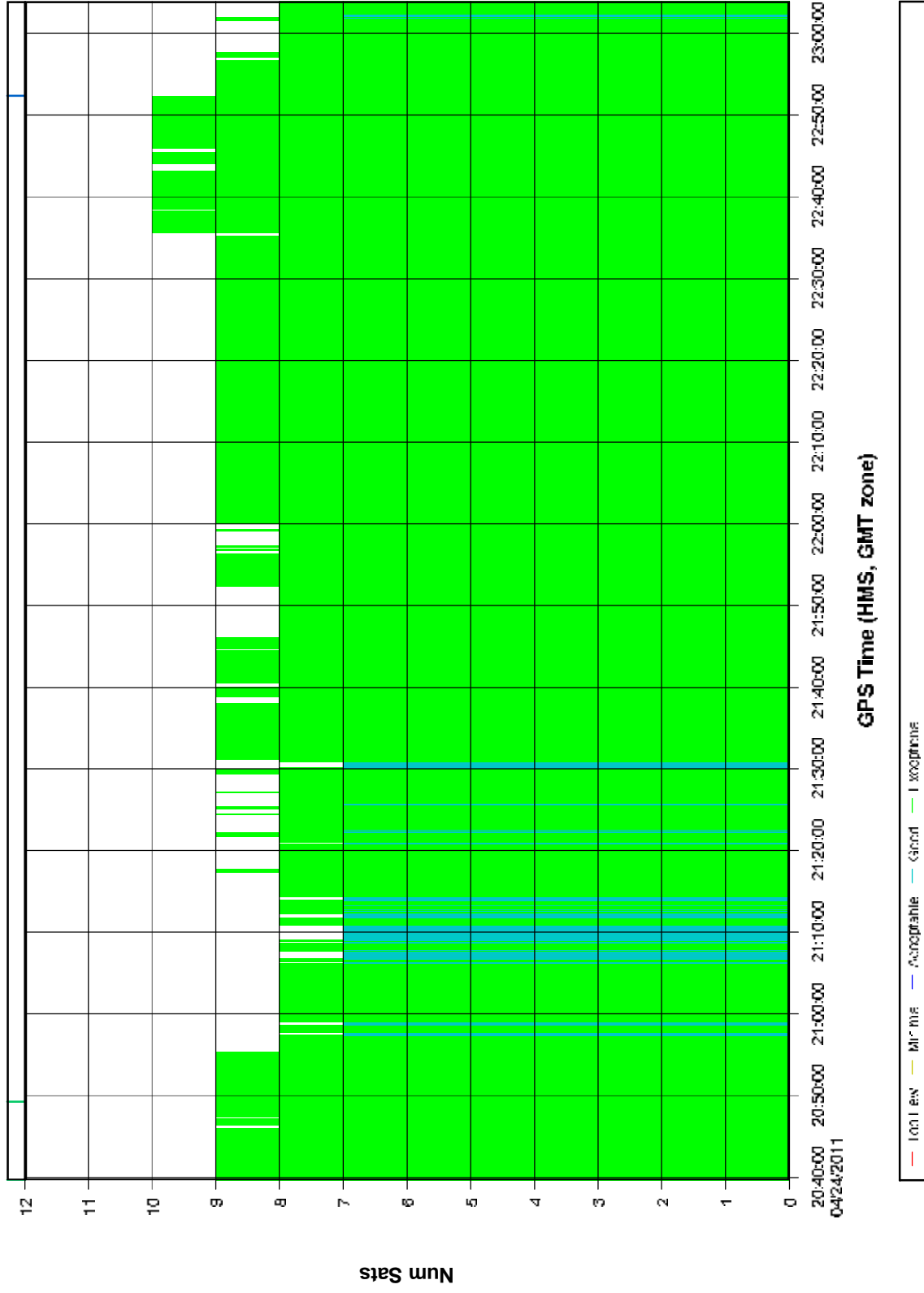
o111114c [Combined] - Forward/Reverse or Combined Separation Plot



o111114c [Combined] - PDOP, HDOP, VDOP Plots



o111114c [Combined] - Number of Satellites Bar Plot



```

                                o111114c. cfg
:   PROJECT:
G: \11103U_VA\2_Operations\6_Missions\o111114c\3_Processed\GPS\o111114c. cfg
:
:   DATE:      April 25/11 (date/time of processing)
:   TIME:      21:31:57
:   CREATED BY: GrafNav Version 7.80.2517
:
VERSION = 7.80.2517
PROCUSER = Unknown
PRODESC = Run*(16)
PROCTIME = 21:30:46 04/25/2011

; Master station # 1 information
MB_MASTER_INDEX = 0
MB_MASTER_NAME = 1110302
MB_MASTER_FILE =
G: \11103U_VA\2_Operations\6_Missions\o111114c\1_RawData\original_PDC_files\1110302_0
0081140.gpb
MB_MASTER_POS = 38 17 52.04529 -77 18 55.29326 35.1220
MB_MASTER_ANT = 1.605 0.001 1.571 1 _TP_SOK600 0
MB_MASTER_DISABLE = OFF

; Remote station information
REMOTE_FILE =
G: \11103U_VA\2_Operations\6_Missions\o111114c\3_Processed\Extract\mgps_o111114c.gpb
REMOTE_POS = 38 23 48.86308 -77 27 02.98168 23.9619
REMOTE_ANT = 0.000

; General settings
PROCESS_MODE = 105 108 111 127 ; Processing modes (GrafNav only)

DATUM = NAD83 AUTO ; Processing Datum
INPDATUM = ON NAD83 AUTO ; Input Datum (ON=Use processing datum)
ELEV_MASK = 12.0 ; Elevation mask (deg)
GRID = UTM 15 31 ; Grid info

CYCLE_TEST = BOTH ; Cycle slip test method
STATIC_SLIP_TOL = 0.40 ; slip tolerance in static mode (cycles)
USE_DOPPLER = ON OFF ; Use doppler meas. for phase, for code-only

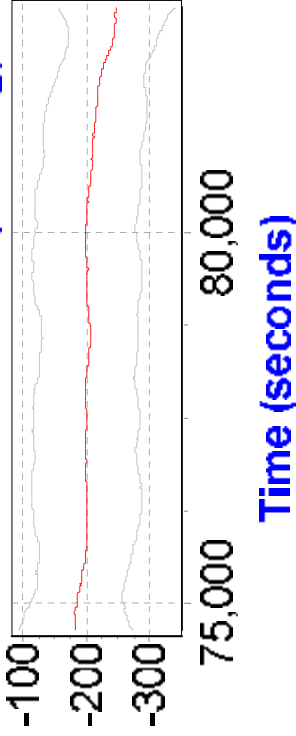
BASE_SAT = 99 ; Base satellite (99-default)

TIMERANGE = RANGE 987712777.0 987721436.0 2 0 ; Processing time range
INTERVAL = 0.10 ; Processing time interval (seconds)

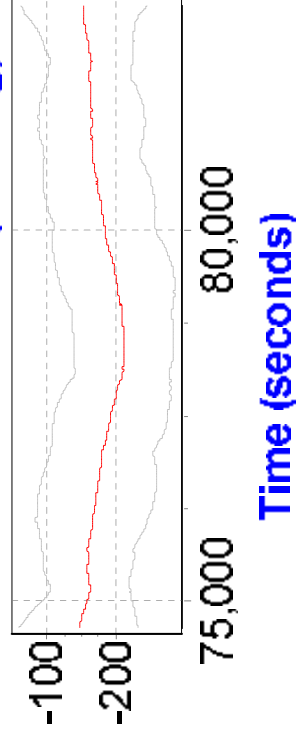
PROCESS_DIR = FORWARD ; Process direction (FORWARD/REVERSE)
BOTH_DIR = ON ; True for processing both directions
WRITE_BAD_EPOCHS = OFF ; Save bad data to .fwd/rev file (ON/OFF)
NOWRITE_HIGH = OFF 6 20.000 ; Don't write epoch with high statistics (q, stdev-m)
OUTPUT_MODE = EXTENDED ; Format for .fwd/rev file
DETAILED_SUM = ON ; Detailed Static/KAR Summary header
WRITE_SLIP_MSG = ON ; Print cycle slips to message log
SAVE_AMB = ON ; Should ambiguities be saved

```

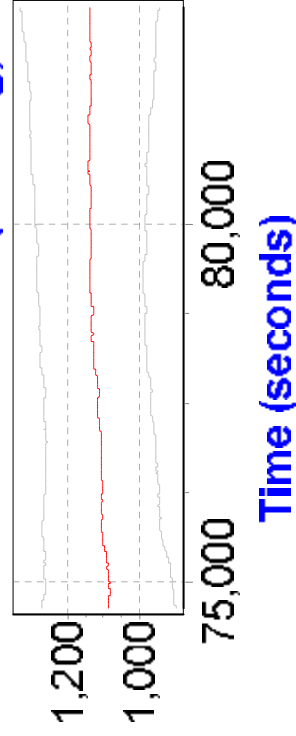
X Accelerometer Bias (micro-g)



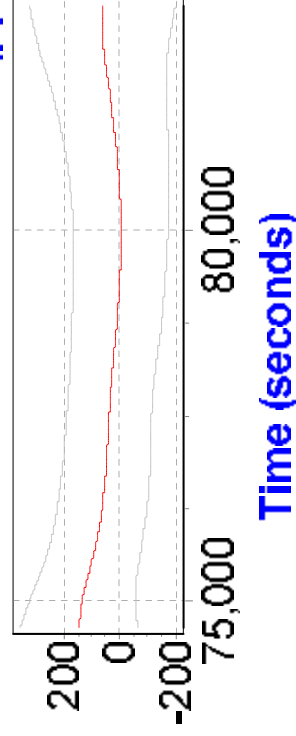
Y Accelerometer Bias (micro-g)



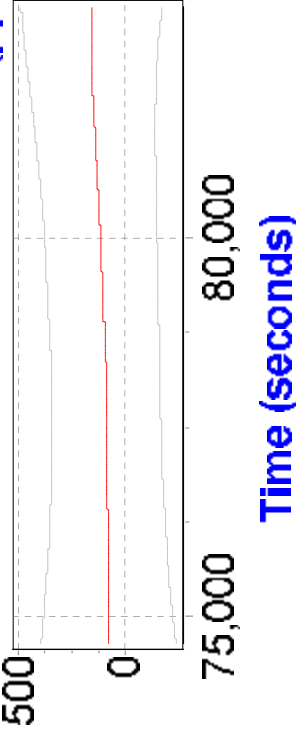
Z Accelerometer Bias (micro-g)



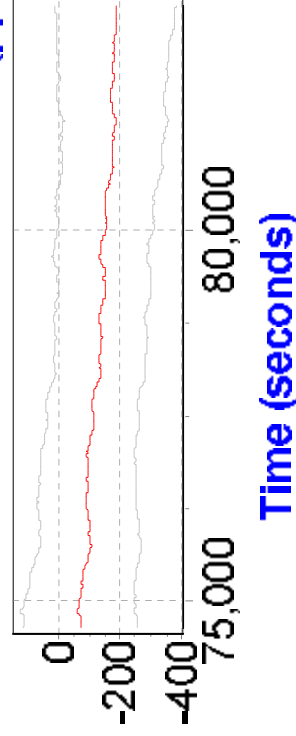
X Accelerometer Scale Factor Error (ppm)

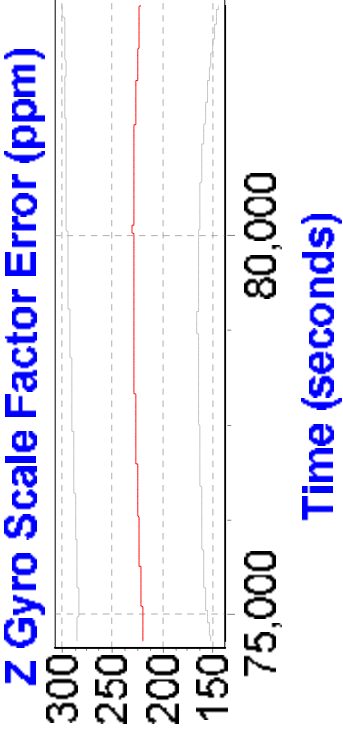
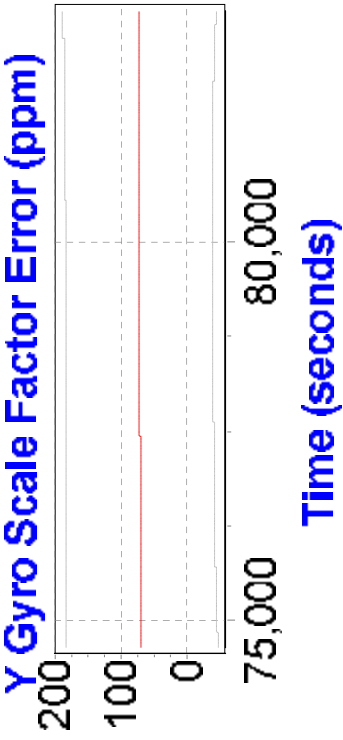
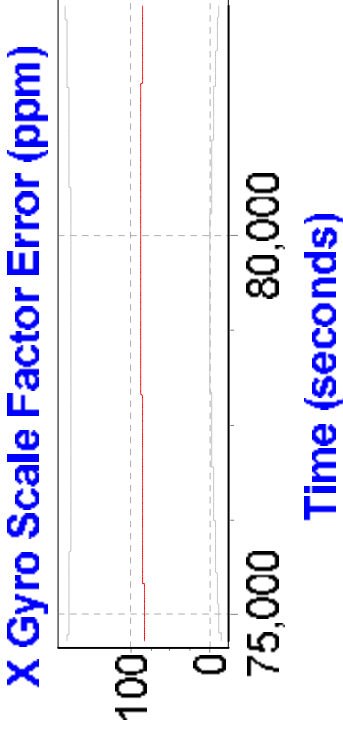
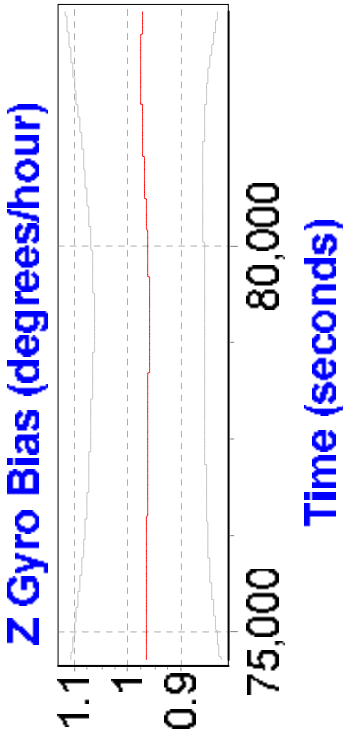
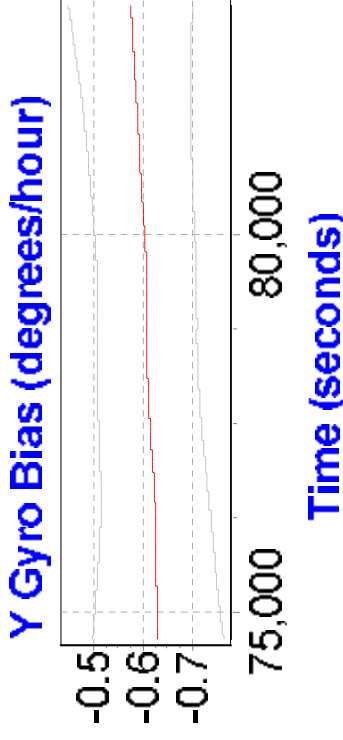
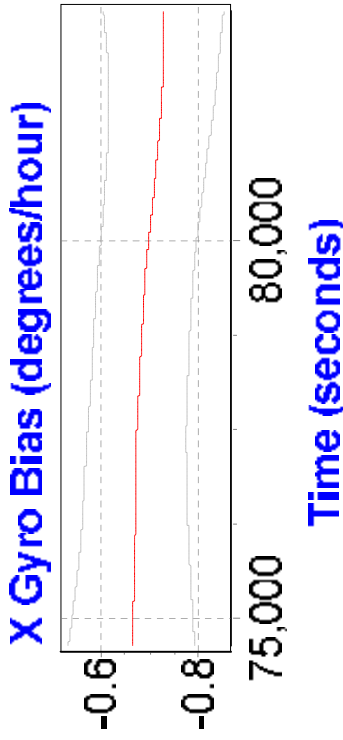


Y Accelerometer Scale Factor Error (ppm)



Z Accelerometer Scale Factor Error (ppm)





GPS Base Log Sheet



Station ID: 110302	Project #: 11030	Missions: 01114a/b/c
--------------------	------------------	----------------------

Project Name: Farm Virginia	Calendar Date: 24/9/2011	Julian Day: 14
Approx. Coordinates WGS 84	N	W
Description of Mark (Take Photos)		
Monument is: <input checked="" type="checkbox"/> Flush with ground <input type="checkbox"/> Above ground _____ cm <input type="checkbox"/> Below ground _____ cm		
Location & Access	Clarch	

Obstructions & Additional Notes

GPS Observation - MAIN			
Rx Make / Model	Serial #		
GS8-2600	0008		
Ant Make / Model	Serial #		
SK600	0007		
Operator	DW		
Session Start	1139 UTC		
Time (GPS) End			
Slant HI Before:	A: 1.571	B: 1.571	
Slant HI After:	A: 1.571	B: 1.571	
Correction			
Phase Center	m <input type="checkbox"/> in <input type="checkbox"/> use GrafNav Profile		
Data File Name			

GPS Observation - Back-Up			
Rx Make / Model	Serial #		
Ant Make / Model	Serial #		
Operator			
Session Start			
Time (GPS) End			
Slant HI Before:	A:	B:	
Slant HI After:	A:	B:	
Correction			
Phase Center	m <input type="checkbox"/> in <input type="checkbox"/> use GrafNav Profile		
Data File Name			

Project 11030 **Session** 011114C

Flight Log



Date	Apr 24	Julian Day	114
Project		Aircraft	095
Staging		Call Sign	095
Survey Block		Pilot	William
Lines Complete	2	Operator	Burson
Mission Objective			

ALMS/Optech	
System #	
Laser Scanner	
Camera/Lens SN	
Shutter Speed	
Photo Freq.	
IMU	
GPS Rx	
Data Drive	

Additional Notes:
 207
 1913
 -1626
 Outside Temp @ TO: 31
 Outside Pressure @ TO: 2906
 Outside Temp @ LA:
 Outside Pressure @ LA:

Aircraft Block Time	<input type="checkbox"/> Times confirmed with pilot
Engine On (Hobbs)	Takeoff 1632/
Engine Off (Hobbs)	Landing 1918
Total hrs (f-cbbs)	Total hrs 1918
	FBO \$/Litre
	Approx. Fuel Cost

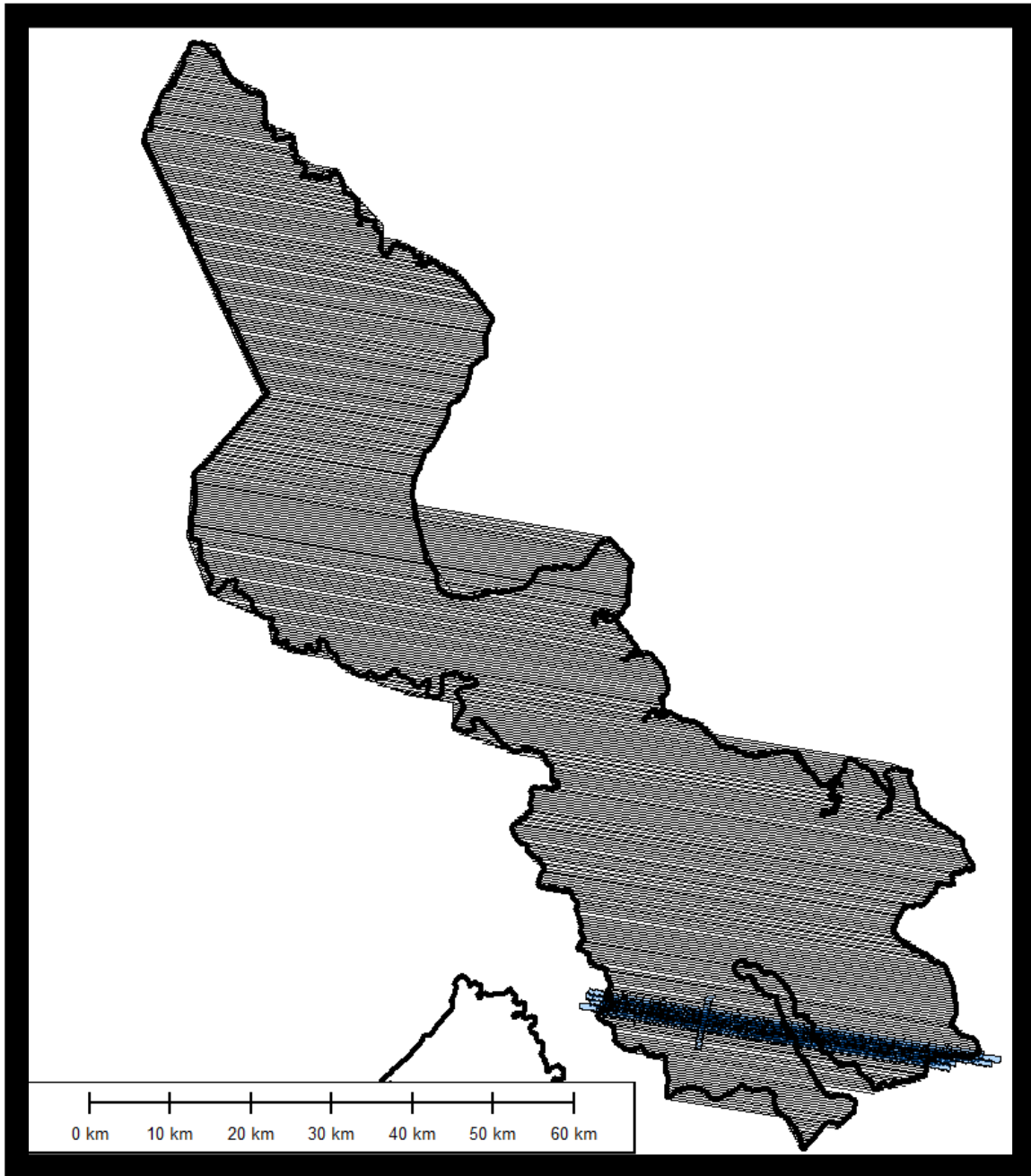
Flying Height AGL	Scan Angle (Optech)
5000 ft	40
Ground Speed	Mirror Scan Rate
150	22
First/Last/Alternating Return	Laser Pulse Rate
	20

Time	Static & KAR	GPS // INS Alignment
Pre Mission		
KAR Base		
KAR Base		
Post Mission		

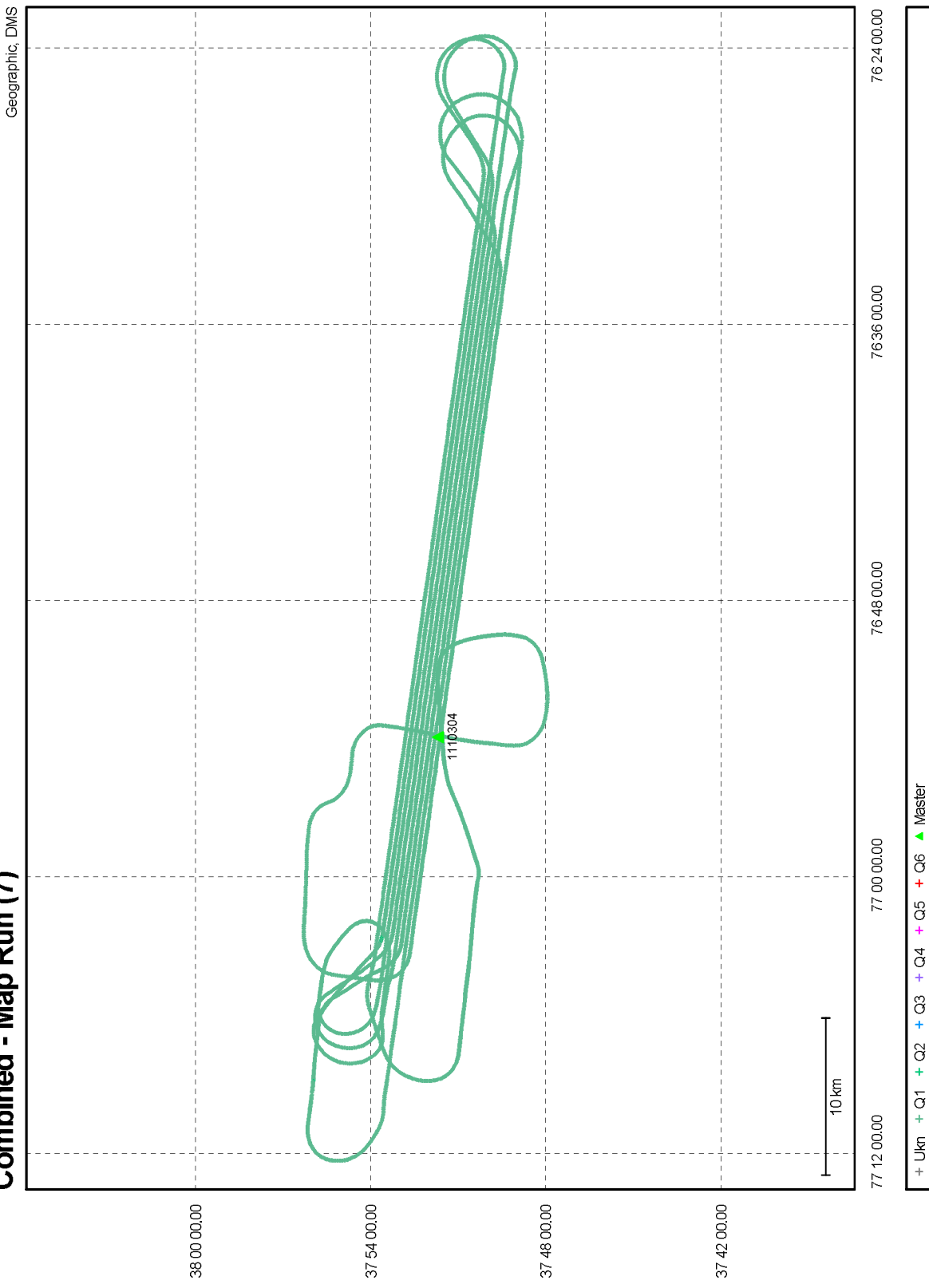
Flight Plan Line #	LIDAR File Name	Flight Direction	GPS / UTC Time		Flight Aborted		Photo Events / Comments Please periodically record: Cabin Temp: Laser Temp: Cabin W/Temp: Cabin W/Alt:
			Start	End	Time	NM to End	
207		E	20 57	21 00			E 400F
206		W	21 04	21 21			
208		E	21 26	21 59			Area Note log
crosshairs		S	21 43	21 48			
165		W	22 54	22 59			
164		W	22 17	22 22			No shift end.
163		W	22 39	22 46			
162		E					

Mission: o111119a

2011 04 29



Combined - Map Run (7)



Processing Summary Information

Program: GrafNav
Version: 7.80.2517
Project: E:\11103U_VA\2_Operations\6_Missions\o111119a\3_Processed\GPS\o111119a.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:
Total in GPB file: 101424
No processed position: 92198
Missing Fwd or Rev: 4
With bad C/A code: 0
With bad L1 Phase: 0

Measurement RMS Values:
L1 Phase: 0.0121 (m)
C/A Code: 0.83 (m)
L1 Doppler: 0.026 (m/s)

Fwd/Rev Separation RMS Values:
East: 0.015 (m)
North: 0.011 (m)
Height: 0.026 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (9214 occurrences):
East: 0.011 (m)
North: 0.007 (m)
Height: 0.026 (m)

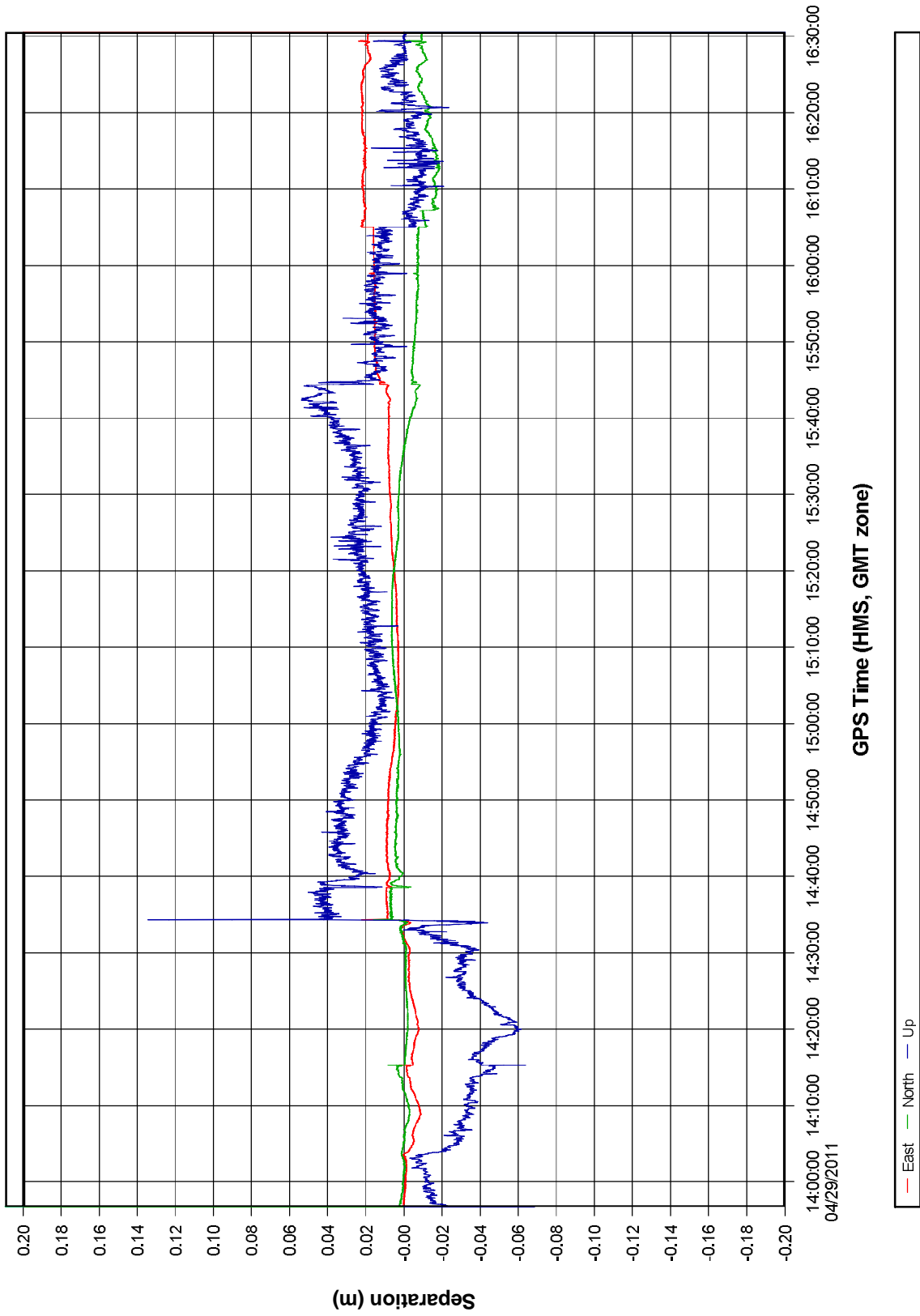
Quality Number Percentages:
Q 1: 99.9 %
Q 2: 0.1 %
Q 3: 0.0 %
Q 4: 0.0 %
Q 5: 0.0 %
Q 6: 0.0 %

Position Standard Deviation Percentages:
0.00 - 0.10 m: 96.5 %
0.10 - 0.30 m: 3.5 %
0.30 - 1.00 m: 0.0 %
1.00 - 5.00 m: 0.0 %
5.00 m + over: 0.0 %

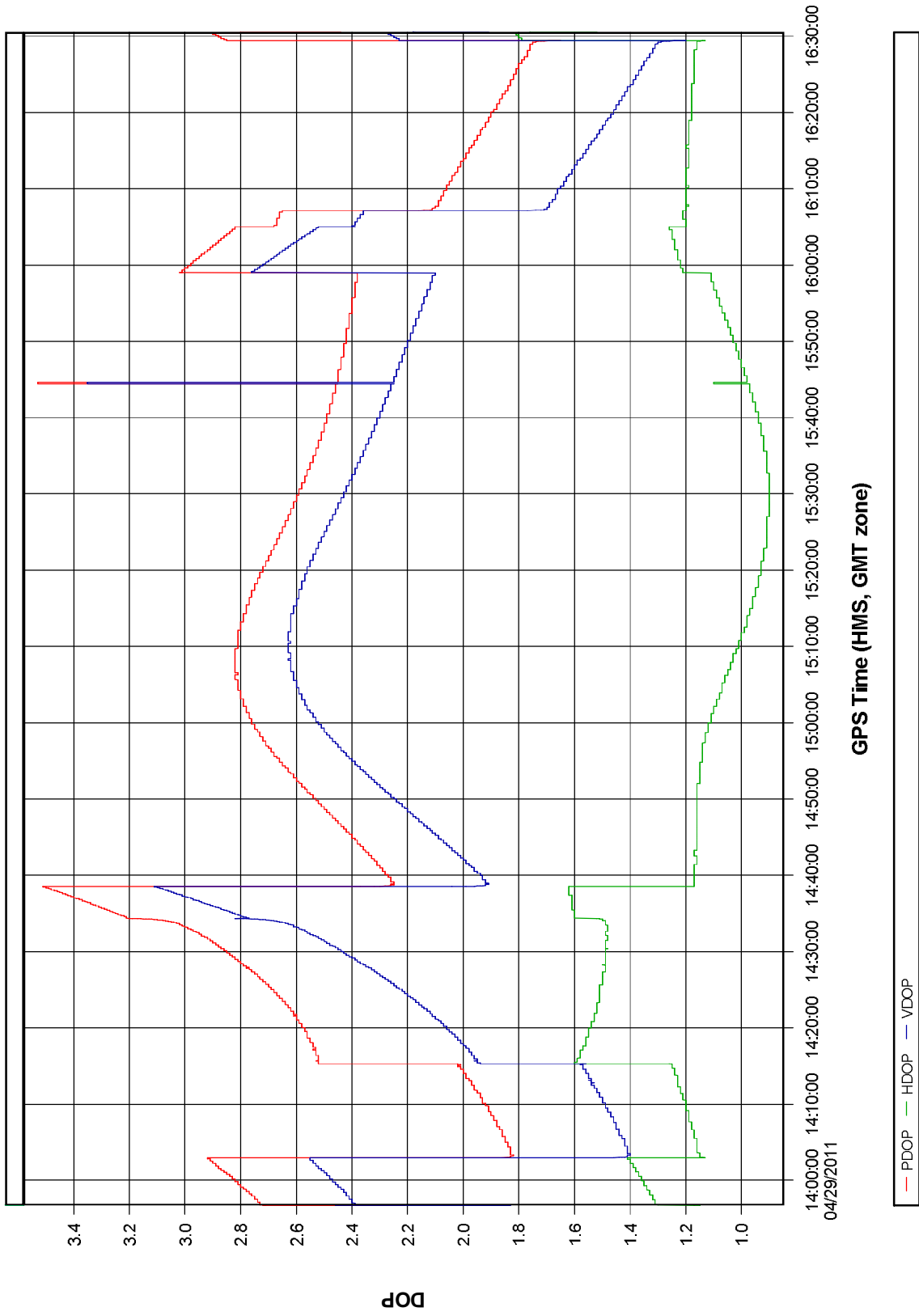
Percentages of epochs with DD_DOP over 10.00:
DOP over Tol: 0.0 %

Baseline Distances:
Maximum: 44.749 (km)
Minimum: 0.125 (km)
Average: 17.134 (km)
First Epoch: 0.342 (km)
Last Epoch: 0.139 (km)

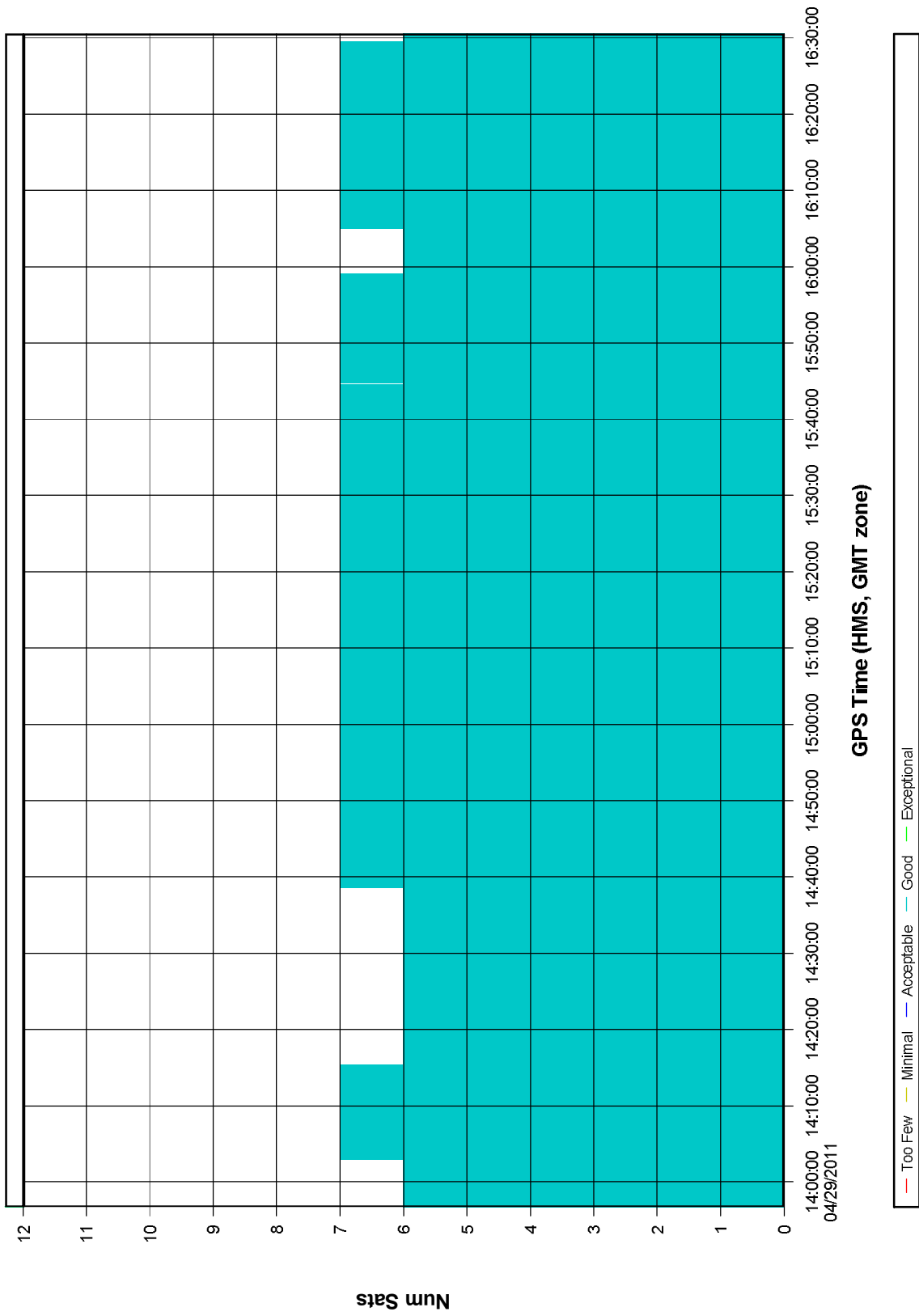
o111119a [Combined] - Forward/Reverse or Combined Separation Plot



o111119a [Combined] - PDOP, HDOP, VDOP Plots



o111119a [Combined] - Number of Satellites Bar Plot




```

                                o111119a. cfg
; PROJECT:
E:\11103U_VA\2_Operations\6_Missions\o111119a\3_Processed\GPS\o111119a. cfg
;
; DATE:      May 1/11  (date/time of processing)
; TIME:      14:28:46
; CREATED BY: POSGPS Versi on 4.30.4411
;
VERSION = 4.30.4411
PROCUSER = Unknown
PROCDISC = Run*(8)
PROCTIME = 14:24:43 14:24:43

; Master station # 1 information
MB_MASTER_INDEX = 0
MB_MASTER_NAME = 1110304
MB_MASTER_FILE =
E:\11103U_VA\2_Operations\6_Missions\o111119a\1_RawData\original_PDC_files\1110304_0
0161190.gpb
MB_MASTER_POS = 37 51 41.39611 -76 53 55.13346 5.1620
MB_MASTER_ANT = 1.246 0.001 1.213 1 _TP_SOK600 0
MB_MASTER_DISABLE = OFF

; Remote station information
REMOTE_FILE =
E:\11103U_VA\2_Operations\6_Missions\o111119a\3_Processed\Extract\mgps_o111119a.gpb
REMOTE_POS = 37 51 37.88500 -76 53 58.18447 7.4503
REMOTE_ANT = 0.000

; General settings
PROCESS_MODE = 103 108 113 126 ; Processing modes (POSGPS only)

DATUM = NAD83 AUTO ; Processing Datum
INPDATUM = ON NAD83 AUTO ; Input Datum (ON=Use processing datum)
ELEV_MASK = 18.0 ; Elevation mask (deg)
GRID = UTM 15 31 ; Grid info

CYCLE_TEST = BOTH ; Cycle slip test method
STATIC_SLIP_TOL = 0.40 ; slip tolerance in static mode (cycles)
USE_DOPPLER = ON OFF ; Use doppler meas. for phase, for code-only

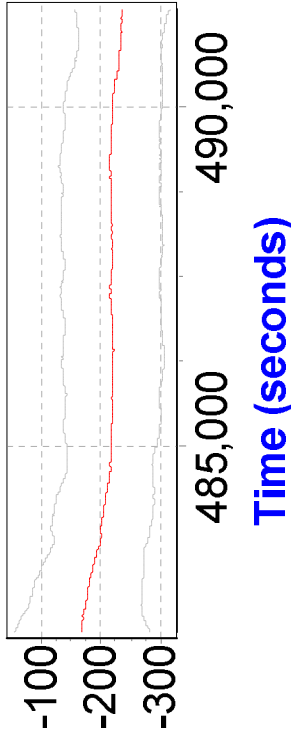
BASE_SAT = 99 ; Base satellite (99-default)

TIMERANGE = RANGE 988120600.0 988129833.0 2 0 ; Processing time range
INTERVAL = 0.10 ; Processing time interval (seconds)

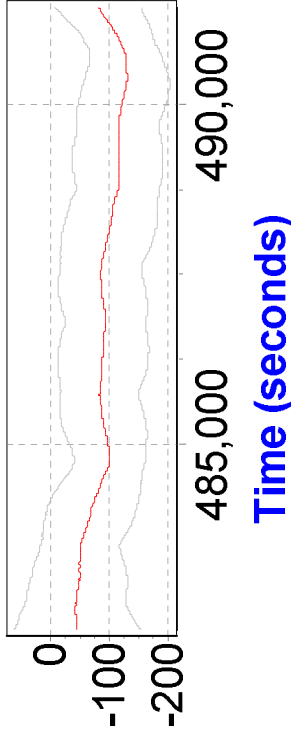
PROCESS_DIR = FORWARD ; Process direction (FORWARD/REVERSE)
BOTH_DIR = ON ; True for processing both directions
WRITE_BAD_EPOCHS = OFF ; Save bad data to .fwd/rev file (ON/OFF)
NOWRITE_HIGH = OFF 6 20.000 ; Don't write epoch with high statistics (q, stdev-m)
OUTPUT_MODE = EXTENDED ; Format for .fwd/rev file
DETAILED_SUM = ON ; Detailed Static/KAR Summary header
WRITE_SLIP_MSG = ON ; Print cycle slips to message log
SAVE_AMB = ON ; Should ambiguities be saved

```

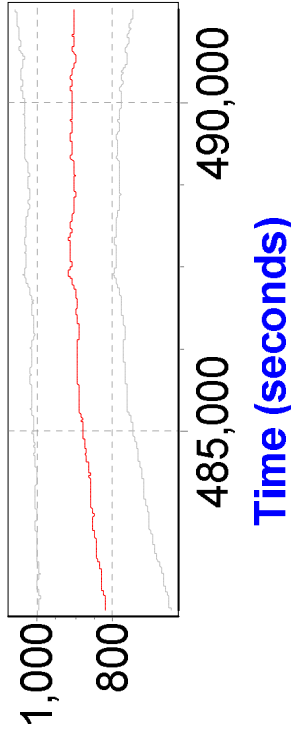
X Accelerometer Bias (micro-g)



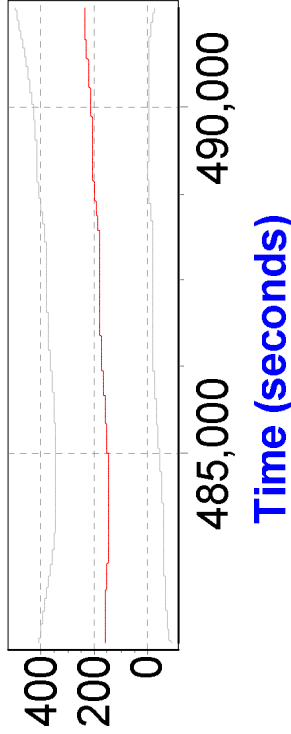
Y Accelerometer Bias (micro-g)



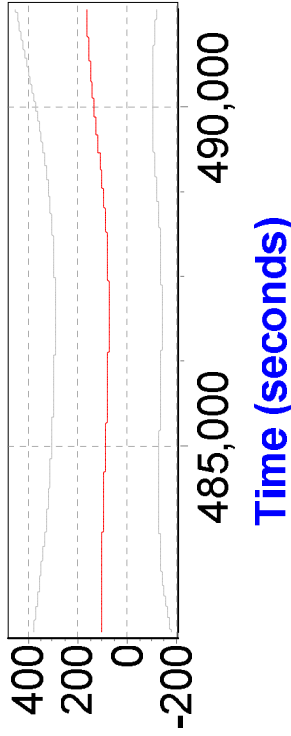
Z Accelerometer Bias (micro-g)



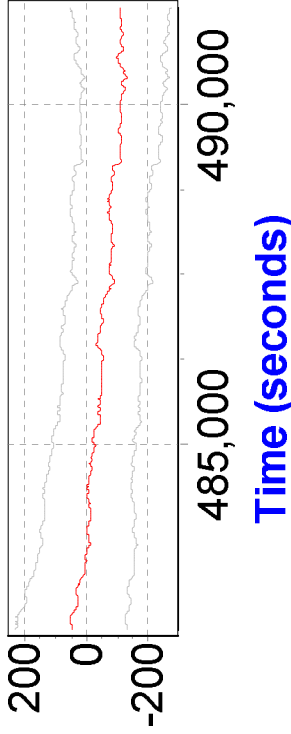
X Accelerometer Scale Factor Error (ppm)

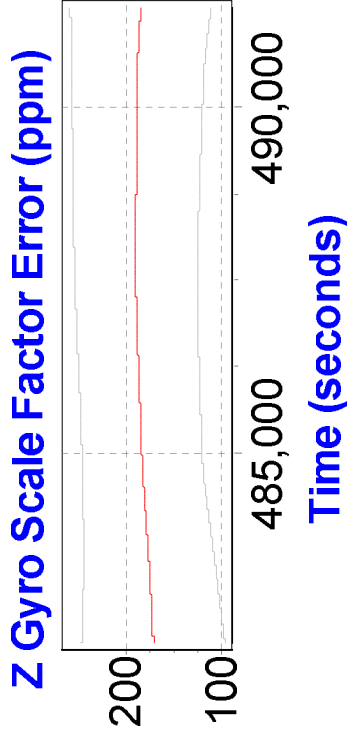
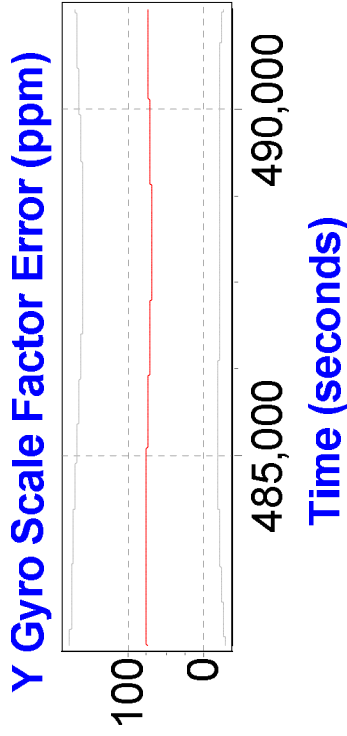
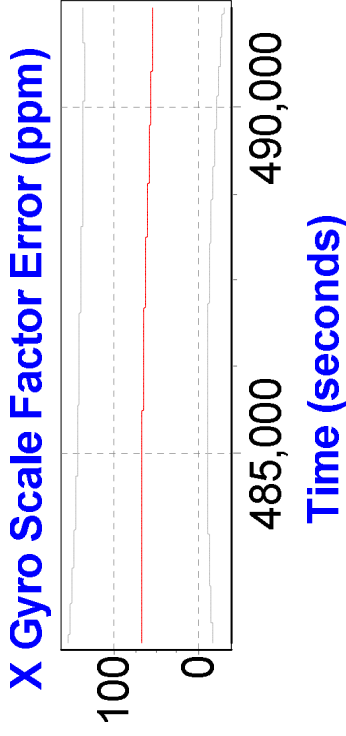
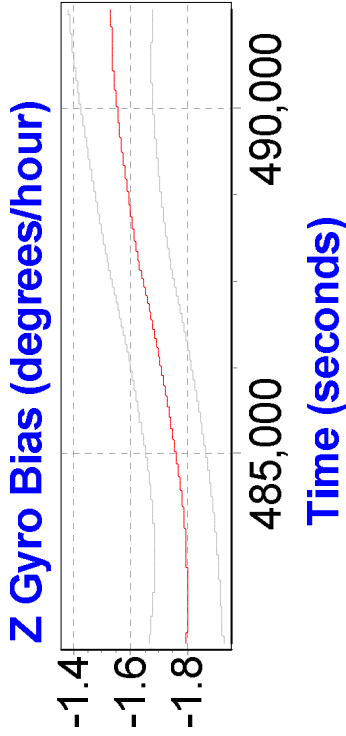
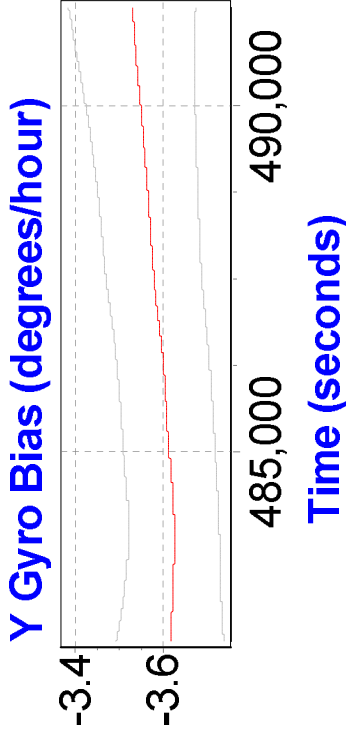
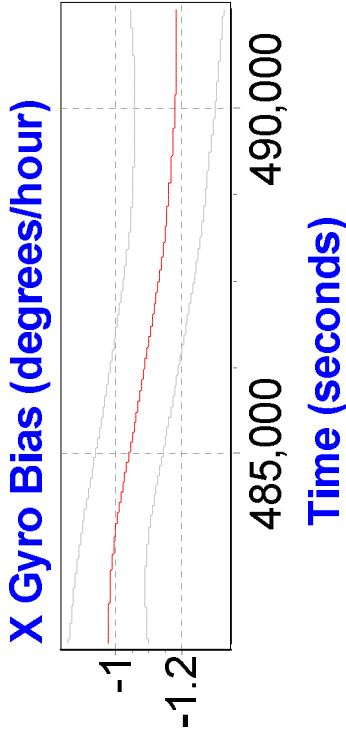


Y Accelerometer Scale Factor Error (ppm)



Z Accelerometer Scale Factor Error (ppm)







Flight Log

Project# 111030 Session 111119a

Date	7/11/2011	Julian Day	1119
Project	USGS/Fema 1111	Aircraft	10095
Staging	Terrapoint/CX AP	Call Sign	T000
Survey Block		Pilot	Dale B
Lines Complete		Operator	
Observer		Observer	
Miss on Objective	07.2 GALS @ 4.90/GAL		

ALMIS/Optech	01
System #	01
Laser Scanne	
Camera/Lens SN	
Shutter Speed	
Photo Freq.	
MU	
GPS Rx	
Data Drive	

Additional Notes
260 @ 11
10
Outside Temp @ TO: 19c Outside Pressure @ TO: 29.86
Outside Temp @ LA: Outside Pressure @ LA:

Aircraft Block Time	<input type="checkbox"/> Times confirmed with pilot
Engine On (Hobbs)	Takeoff
802.0	
Engine Off (Hobbs)	Landing
804.9	
Total hrs (F-cbbs)	Total hrs
2.9	
	Approx. Fuel Cost

Mission Plan	
Flying Height AGL	Scan Angle (Optech)
950	110
Ground Speed	Mirror Scan Rate
150	22
First/Last/Alternating Return	Laser Pulse Rate
	70

Static & KAR		GPS // INS
Time	Start	
Pre Mission	1345	
KAR Base		
KAR Base		
Post Mission	1630	

0ff
1350
1635

Flight Plan Line #	LIDAR File Name	Flight Direction	GPS / UTC Time		Flight Abortec		Photo Events / Comment Please periodically record: Scan Temp Output (Watts)
			Start	End	Time	NM to End	
50		E	140556	141631			
49		W	142111	143403			
48		E	144315	145339			
47		W	145842	151059			
46		E	151512	152443			
45		W	153005	154124			
44		E	154506	155258			
43		W	160417	161548			
42	Cross 72	W	160557	162734			

HAS TO 90 Around
Blump one tower - ~~1111~~
Big wide
Blimp very close -
Turn
Scanning too rough

GPS Base Log Sheet



TAPPANANNOCK AIRPORT

Station ID: 110304 Project #: 1110304 Missions: 01, 11, 19A, B

Project Name: WSSS/Fano VA Calendar Date: 21 April 11 Julian Day: 119?
 Approx. Coordinates: WGS 84 N W
 Description of Mark (Take Photos):
 Monument is: Flush with ground Above ground 3 cm Below ground _____ cm
 Location & Access:

Obstructions & Additional Notes

GPS Observation - MAIN

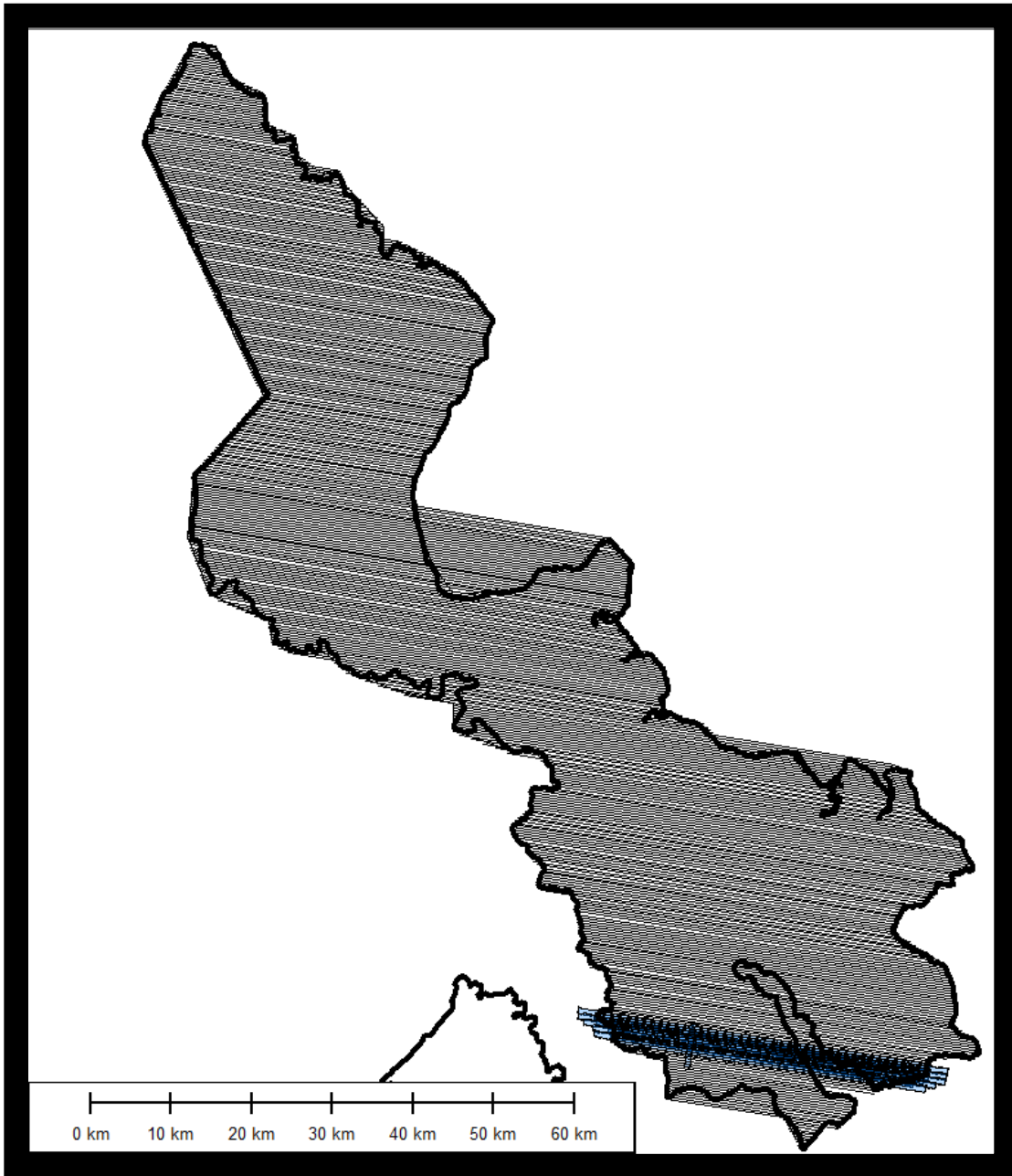
Rx Make / Model	Serial #	
Ant Make / Model	Serial #	
Operator	Doug AJ	
Session	Start	End
Time (GPS)	1247	07C
Slant HI Before:	A: 1.214	B: 1.214
Slant HI After:	A: 1.214	B: 1.214
Correction		
Phase Center	Xm <input type="checkbox"/> in <input type="checkbox"/> use GrafNav Profile	
Data File Name		

GPS Observation - Back-Up

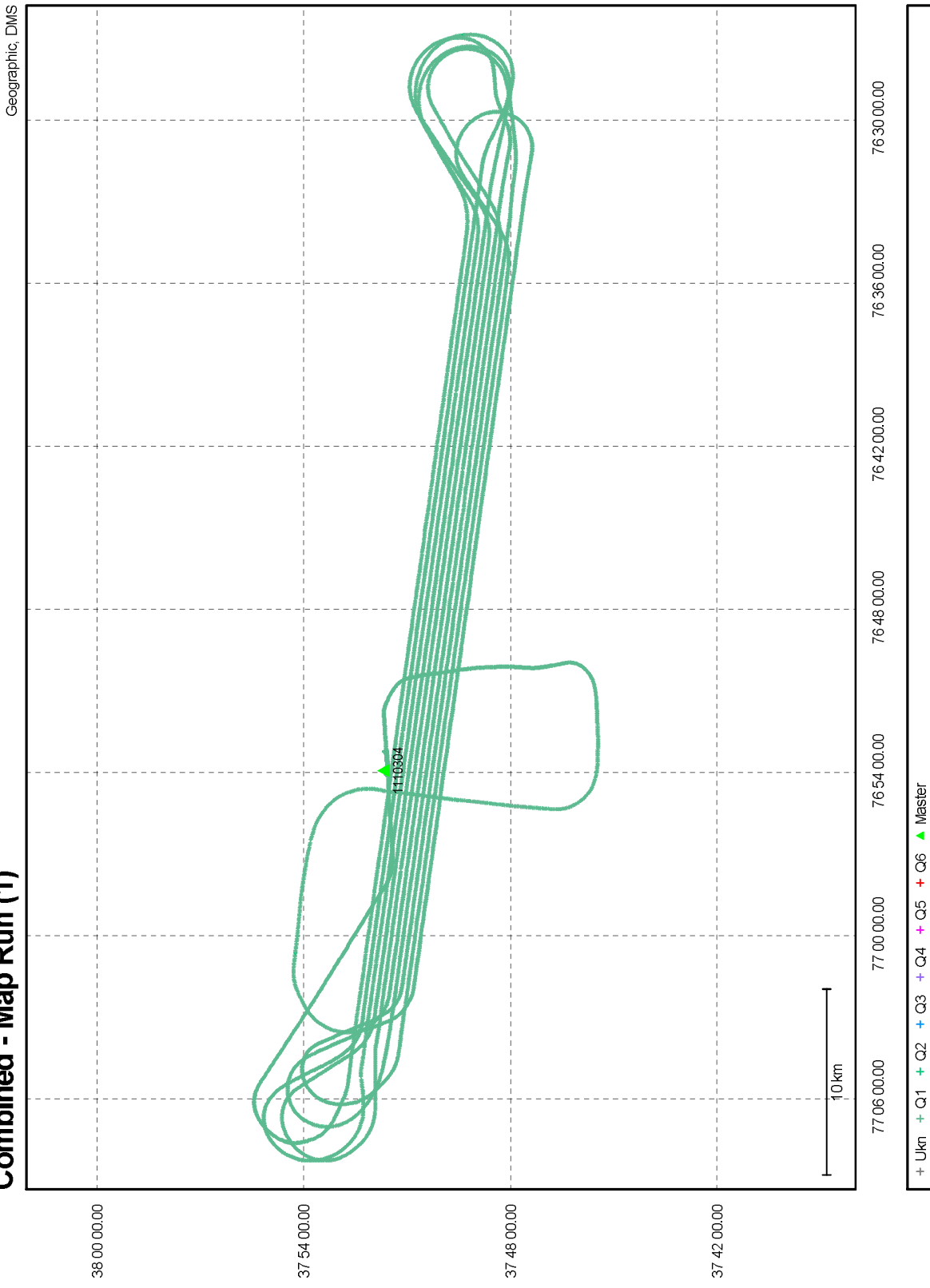
Rx Make / Model	Serial #	
Ant Make / Model	Serial #	
Operator		
Session	Start	End
Time (GPS)		
Slant HI Before:	A:	B:
Slant HI After:	A:	B:
Correction		
Phase Center	m in <input type="checkbox"/> use GrafNav Profile	
Data File Name		

Mission: o111119b

2011 04 29



Combined - Map Run (1)



Processing Summary Information

Program: GrafNav
Version: 7.80.2517
Project: E:\11103U_VA\2_Operations\6_Missions\o111119b\3_Processed\GPS\o111119b.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:
Total in GPB file: 107843
No processed position: 97081
Missing Fwd or Rev: 3
With bad C/A code: 0
With bad L1 Phase: 0

Measurement RMS Values:
L1 Phase: 0.0139 (m)
C/A Code: 0.77 (m)
L1 Doppler: 0.026 (m/s)

Fwd/Rev Separation RMS Values:
East: 0.011 (m)
North: 0.008 (m)
Height: 0.027 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (10757 occurrences):
East: 0.008 (m)
North: 0.007 (m)
Height: 0.027 (m)

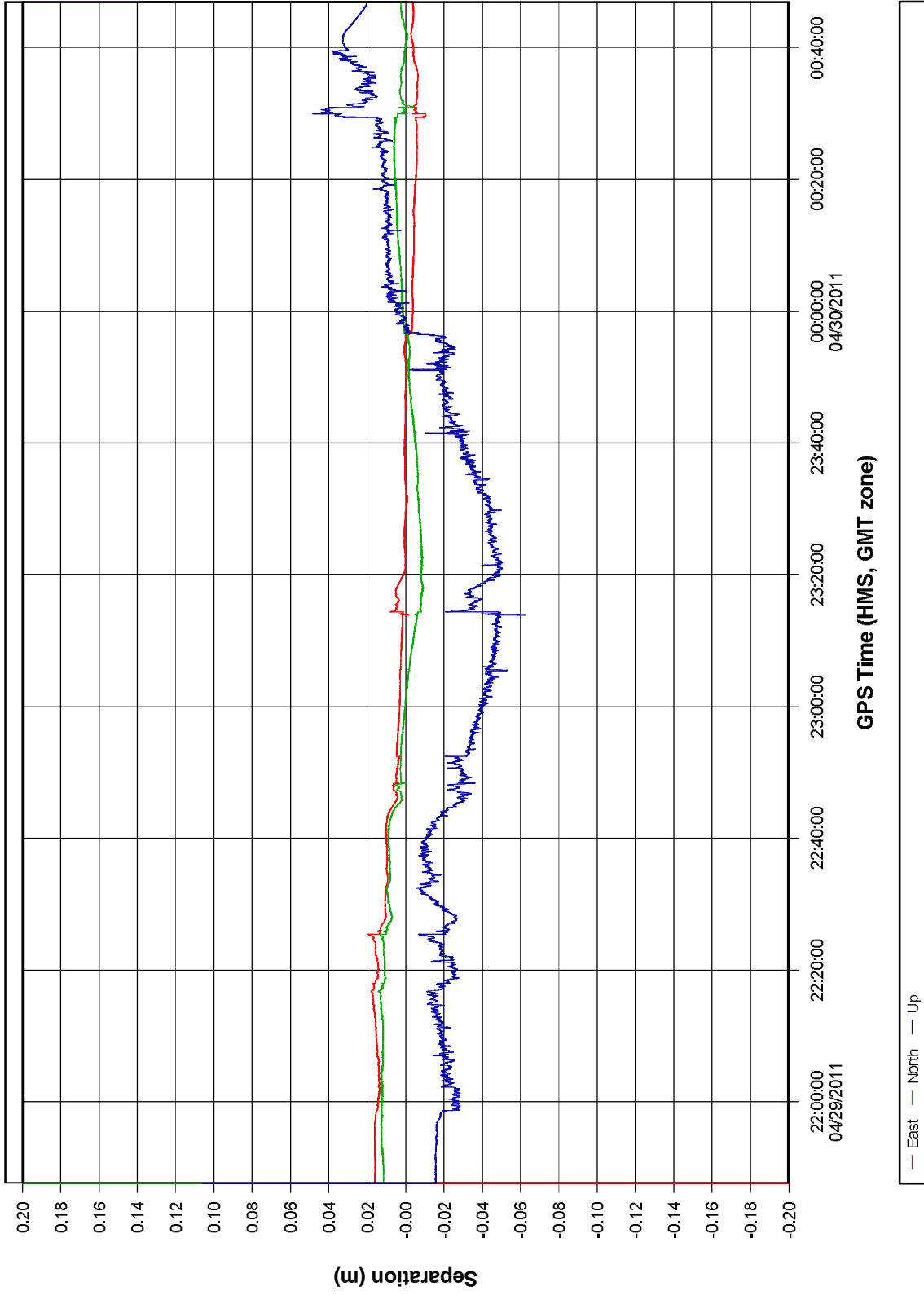
Quality Number Percentages:
Q 1: 100.0 %
Q 2: 0.0 %
Q 3: 0.0 %
Q 4: 0.0 %
Q 5: 0.0 %
Q 6: 0.0 %

Position Standard Deviation Percentages:
0.00 - 0.10 m: 100.0 %
0.10 - 0.30 m: 0.0 %
0.30 - 1.00 m: 0.0 %
1.00 - 5.00 m: 0.0 %
5.00 m + over: 0.0 %

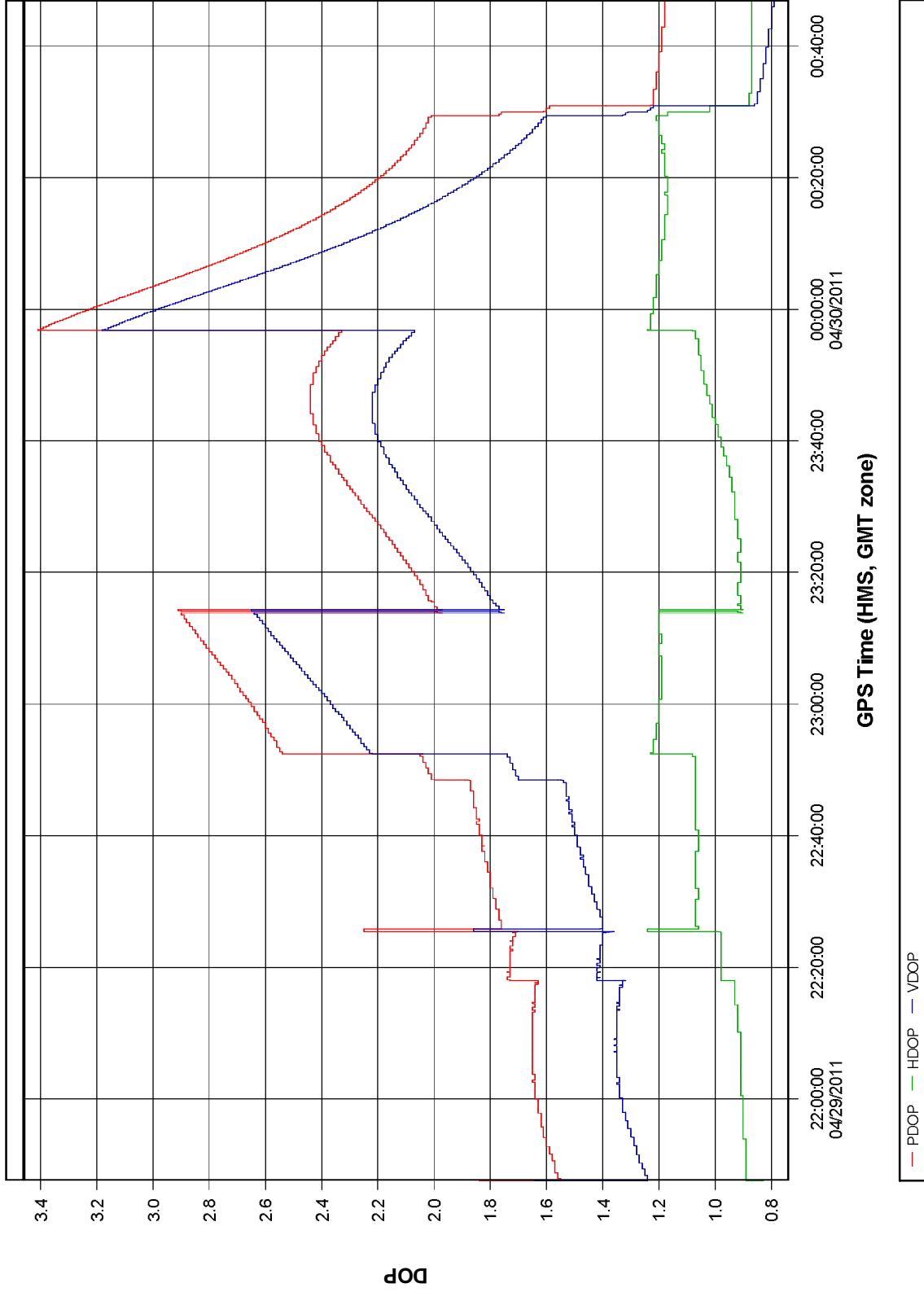
Percentages of epochs with DD_DOP over 10.00:
DOP over Tol: 0.0 %

Baseline Distances:
Maximum: 40.009 (km)
Minimum: 0.078 (km)
Average: 14.614 (km)
First Epoch: 0.136 (km)
Last Epoch: 0.091 (km)

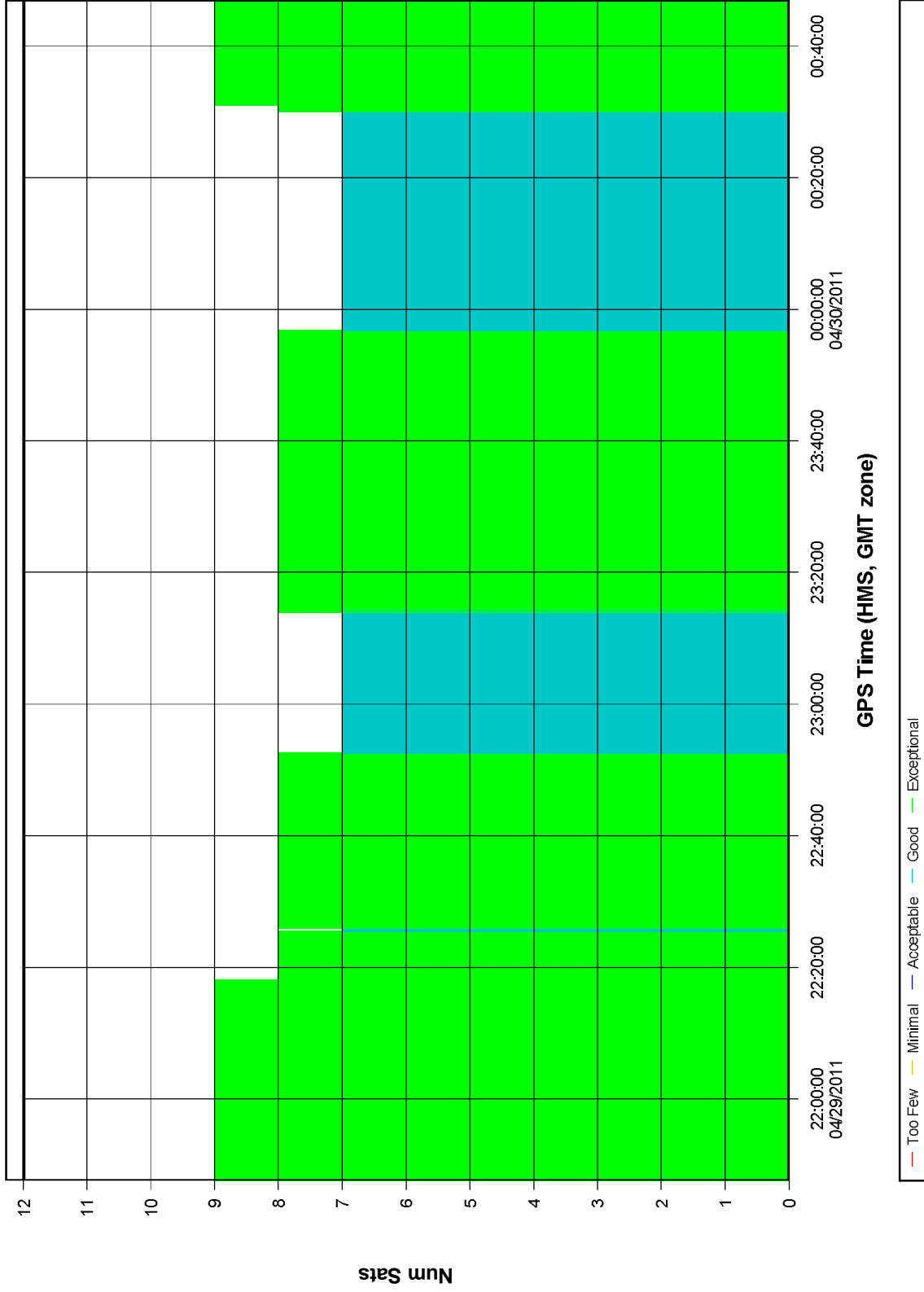
o111119b [Combined] - Forward/Reverse or Combined Separation Plot



o111119b [Combined] - PDOP, HDOP, VDOP Plots



o11119b [Combined] - Number of Satellites Bar Plot



```

                                o111119b. cfg
:   PROJECT:
E:\11103U_VA\2_Operations\6_Missions\o111119b\3_Processed\GPS\o111119b. cfg
:
:   DATE:           May 1/11  (date/time of processing)
:   TIME:           14:47:33
:   CREATED BY:    GrafNav Version 7.80.2517
:
VERSION = 7.80.2517
PROCUSER = Unknown
PROCDISC = Run*(2)
PROCTIME = 14:30:53 05/01/2011

; Master station # 1 information
MB_MASTER_INDEX = 0
MB_MASTER_NAME = 1110304
MB_MASTER_FILE =
E:\11103U_VA\2_Operations\6_Missions\o111119b\1_RawData\original_PDC_files\1110304_0
0161190.gpb
MB_MASTER_POS = 37 51 41.39611 -76 53 55.13346 5.1620
MB_MASTER_ANT = 1.247 0.001 1.214 1 _TP_SOK600 0
MB_MASTER_DISABLE = OFF

; Remote station information
REMOTE_FILE =
E:\11103U_VA\2_Operations\6_Missions\o111119b\3_Processed\Extract\mgps_o111119b.gpb
REMOTE_POS = 37 51 37.79565 -76 53 58.21872 7.5618
REMOTE_ANT = 0.000

; General settings
PROCESS_MODE = 103 108 113 126 ; Processing modes (GrafNav only)

DATUM = NAD83 AUTO ; Processing Datum
INPDATUM = ON NAD83 AUTO ; Input Datum (ON=Use processing datum)
ELEV_MASK = 17.0 ; Elevation mask (deg)
GRID = UTM 15 31 ; Grid info

CYCLE_TEST = BOTH ; Cycle slip test method
STATIC_SLIP_TOL = 0.40 ; slip tolerance in static mode (cycles)
USE_DOPPLER = ON OFF ; Use doppler meas. for phase, for code-only

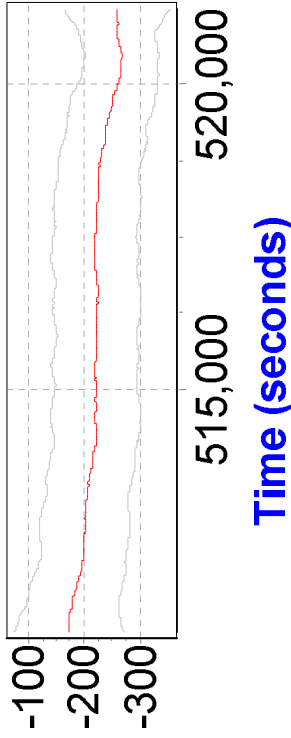
BASE_SAT = 99 ; Base satellite (99-default)

TIMERANGE = ALL 988148838.4 988159622.6 2 0 ; Processing time range
INTERVAL = 0.10 ; Processing time interval (seconds)

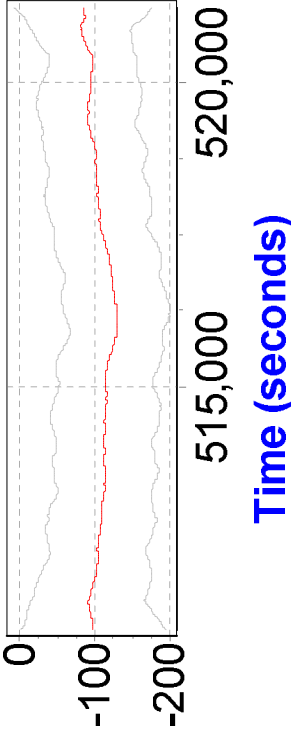
PROCESS_DIR = FORWARD ; Process direction (FORWARD/REVERSE)
BOTH_DIR = ON ; True for processing both directions
WRITE_BAD_EPOCHS = OFF ; Save bad data to .fwd/rev file (ON/OFF)
NOWRITE_HIGH = OFF 6 20.000 ; Don't write epoch with high statistics (q, stdev-m)
OUTPUT_MODE = EXTENDED ; Format for .fwd/rev file
DETAILED_SUM = ON ; Detailed Static/KAR Summary header
WRITE_SLIP_MSG = ON ; Print cycle slips to message log
SAVE_AMB = ON ; Should ambiguities be saved

```

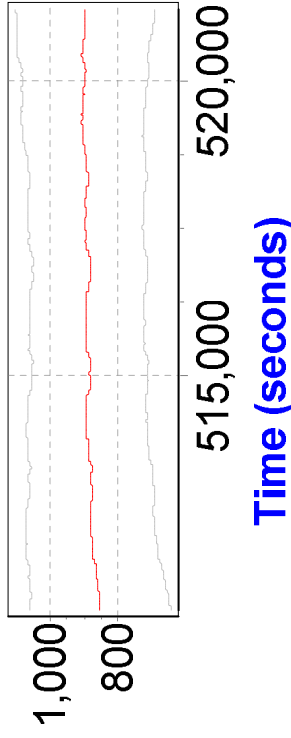
X Accelerometer Bias (micro-g)



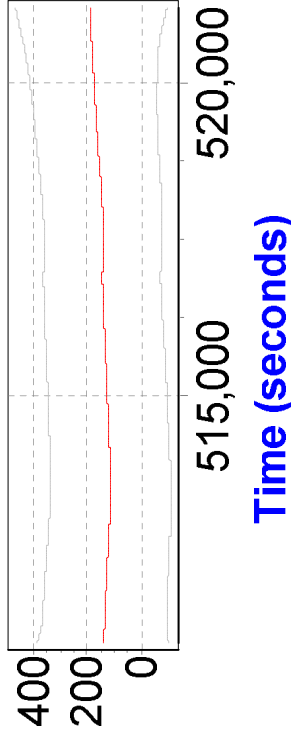
Y Accelerometer Bias (micro-g)



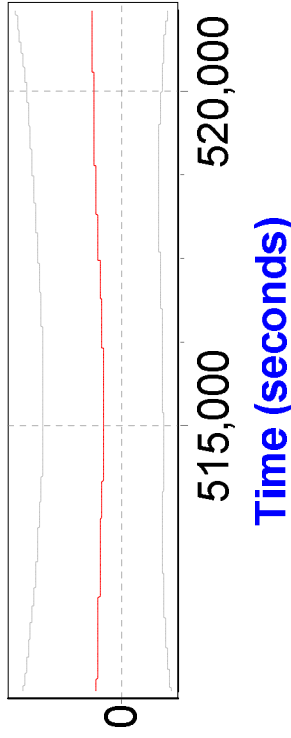
Z Accelerometer Bias (micro-g)



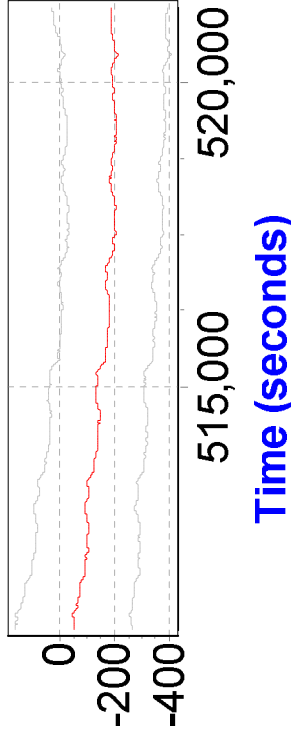
X Accelerometer Scale Factor Error (ppm)

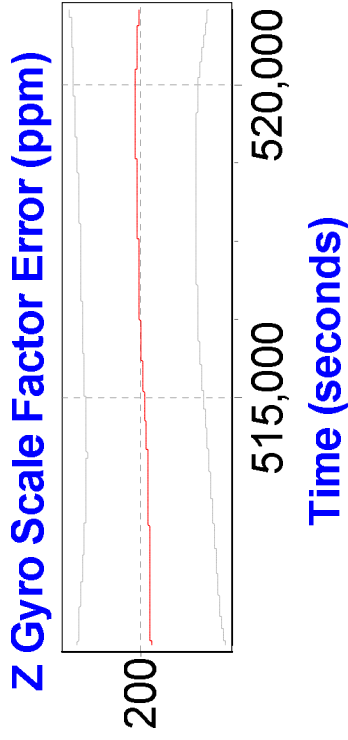
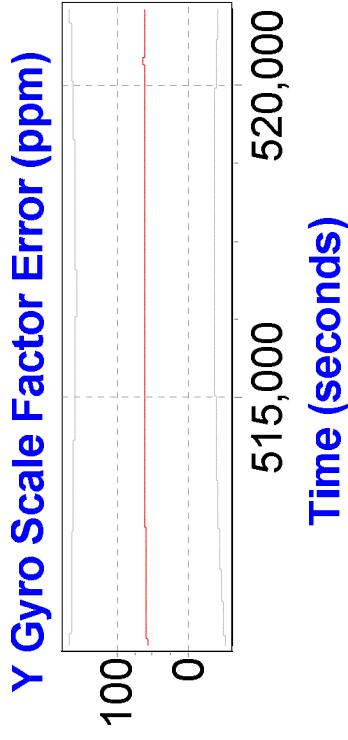
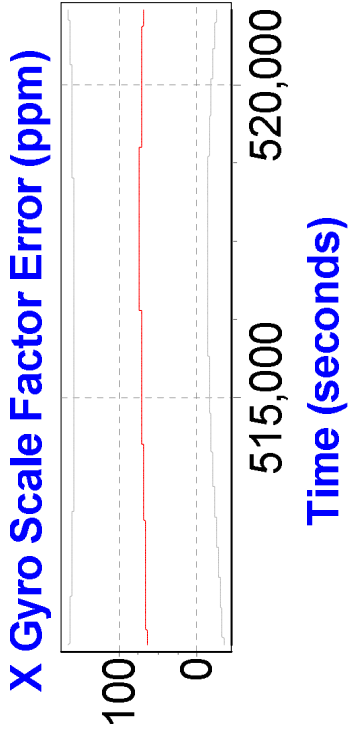
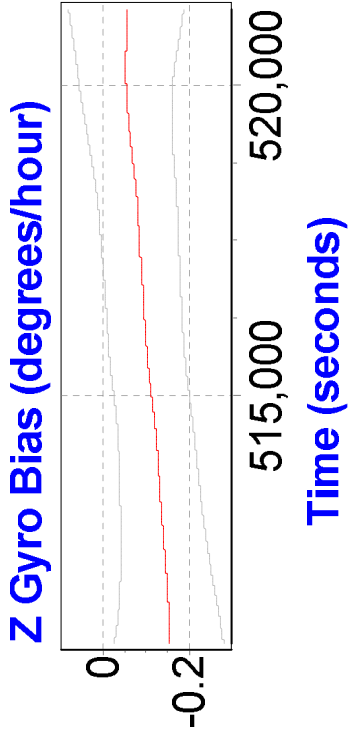
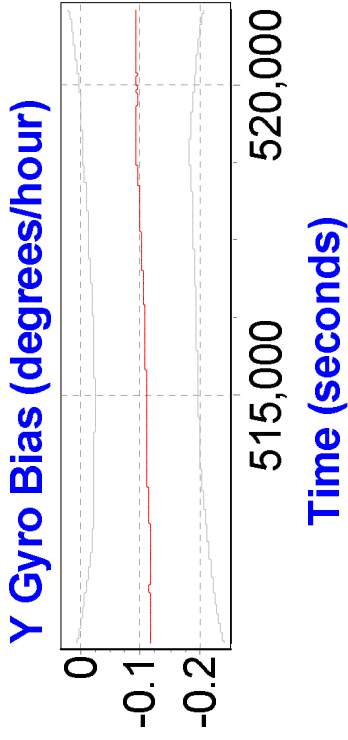
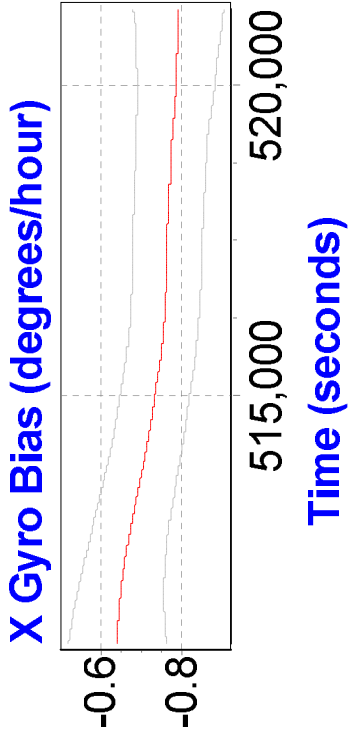


Y Accelerometer Scale Factor Error (ppm)



Z Accelerometer Scale Factor Error (ppm)







Flight Log

Project# 11103u Session 011119b

Date	29 April 11	Julian Day	119
Project	11103u	Aircraft	10095
Staging	Trip to Hobbs	Call Sign	
Survey Block		Pilot	TDD
Lines Complete		Operator	DUG
Observer			
Miss on Objective			

ALMIS Optech	d
System #	01
Laser Scanner	
Camera/Lens SN	
Shutter Speed	
Photo Freq	
IMU	
GPS Rx	
Data Drive	

Additional Notes:
26007 10
Outside Temp @ TO: 22c Outside Pressure @ TO: 29.85
Outside Temp @ LA: Outside Pressure @ LA:

Aircraft Block Time	<input type="checkbox"/> Times confirmed with pilot
Engine On (Hobbs)	(120.) x (Total ft. hrs)
604.9	
Engine Off (Hobbs)	FBO \$ / Litre
	Approx. Fuel Cost
Total hrs (Hobbs)	
3.1	

Mission Plan	
Flying Height (AGL)	Scan Angle (Copter)
950	40
Ground Speed	Mirror Scan Rate
150	22
First/Last/Alternating Return	Laser Pulse Rate
	70

Static & KAR GPS // INS	
Time	Start
Pre Mission	2147
KAR Base	
KAR Base	
Post Mission	0042

off
2152
0047

Flight Plan Line #	LIDAR File Name	Flight Direction	GPS / UTC Time		Flight Aborted	Photo Evens / Commer	
			Start	End		Time	NM to End
412		E	220652	221600			
411		W	222059	223152			
410		E	223400	224639			
39		W	225056	230141			
38		E	230603	231623			
37		W	232059	233112			
36		E	233529	234431			
35		W	234959	235947			
34		E	000349	001237			

SW 001720 002700
S 003126 003236

39
Cross line

GPS Base Log Sheet



TAPPANANNOCK AIRPORT

Station ID: 110304 Project #: 1110304 Missions: 01, 11, 19A, B

Project Name: WSSS/Femo VA Calendar Date: 21 April 11 Julian Day: 119?
 Approx. Coordinates: WGS 84 N W
 Description of Mark (Take Photos):
 Monument is: Flush with ground Above ground 3 cm Below ground _____ cm
 Location & Access:

Obstructions & Additional Notes

GPS Observation - MAIN

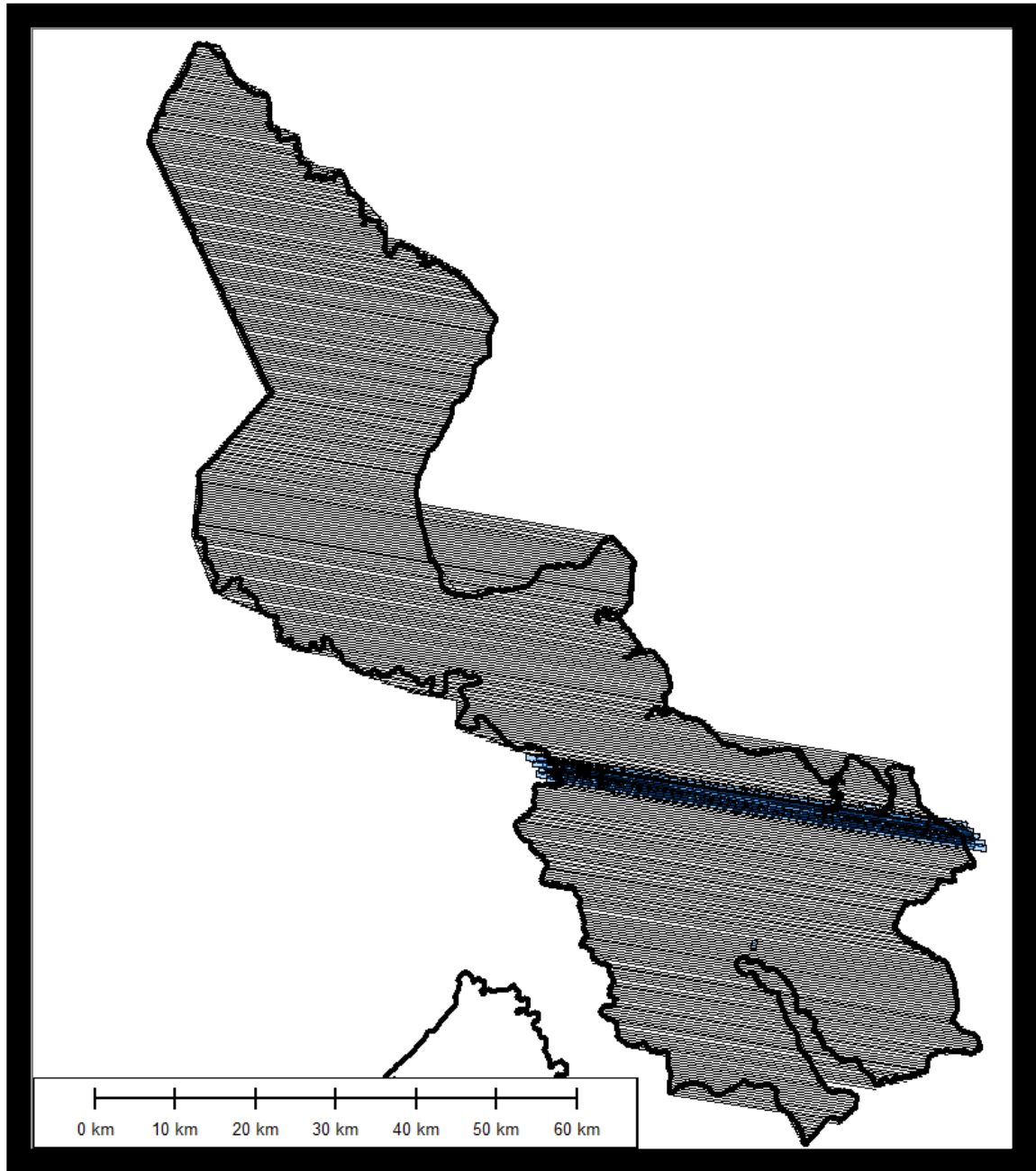
Rx Make / Model	Serial #	
Ant Make / Model	Serial #	
Operator	Doug AJ	
Session	Start	End
Time (GPS)	1247	0126
Slant HI Before:	A: 1.214	B: 1.214
Slant HI After:	A: 1.214	B: 1.214
Correction		
Phase Center	Xm <input type="checkbox"/> in <input type="checkbox"/> use GrafNav Profile	
Data File Name		

GPS Observation - Back-Up

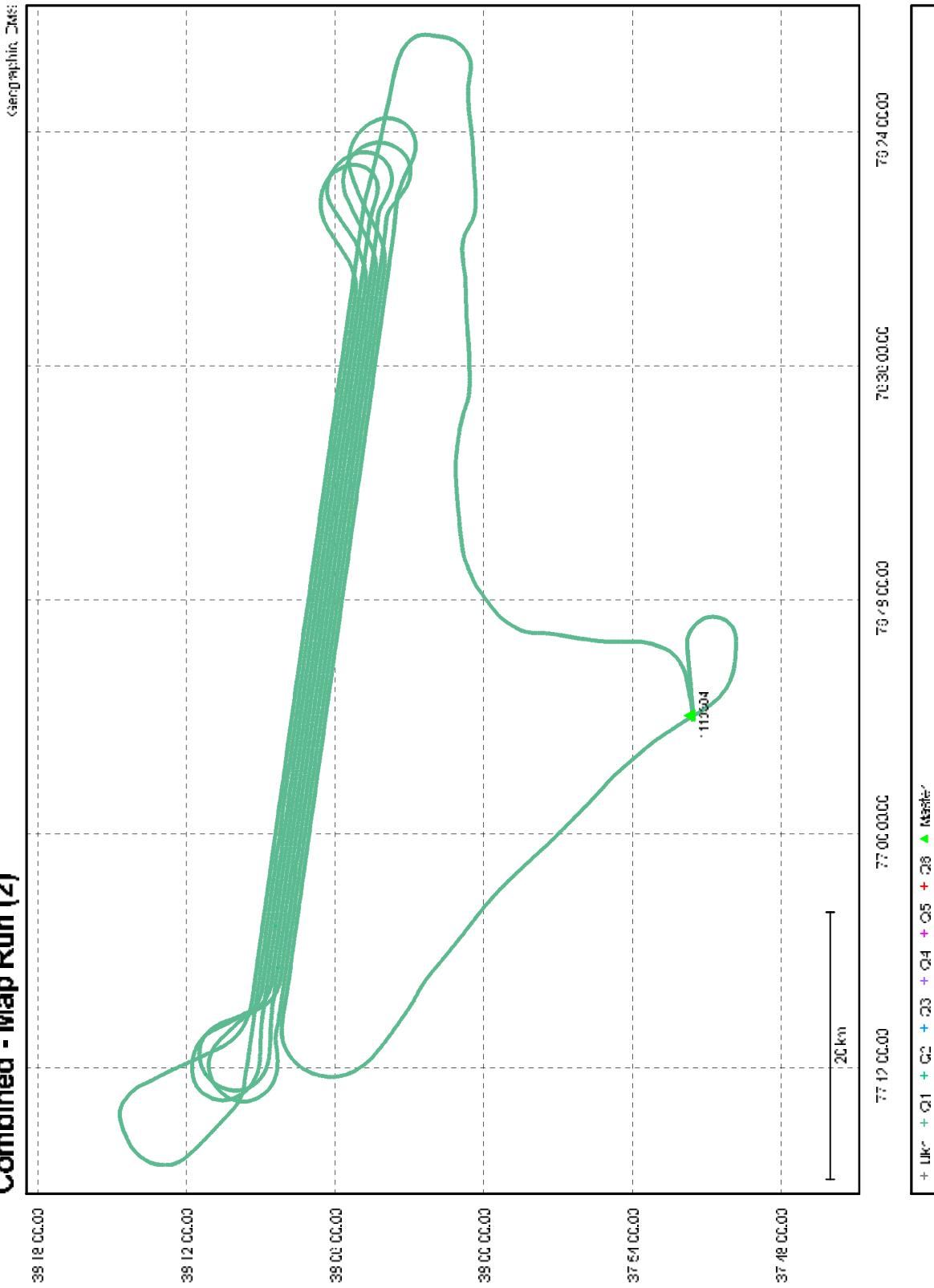
Rx Make / Model	Serial #	
Ant Make / Model	Serial #	
Operator		
Session	Start	End
Time (GPS)		
Slant HI Before:	A:	B:
Slant HI After:	A:	B:
Correction		
Phase Center	m in <input type="checkbox"/> use GrafNav Profile	
Data File Name		

Mission: o11125a

2011 05 05



Combined - Map Run (2)



Processing Summary Information

Program: GrafNav
Version: 7.80.2517
Project: H:\range back va\o111125a\3_Processed\GPS\o111125a.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:
Total in GPB file: 129094
No processed position: 116550
Missing Fwd or Rev: 4
With bad C/A code: 0
With bad L1 Phase: 0

Measurement RMS Values:
L1 Phase: 0.0159 (m)
C/A Code: 0.74 (m)
L1 Doppler: 0.029 (m/s)

Fwd/Rev Separation RMS Values:
East: 0.007 (m)
North: 0.007 (m)
Height: 0.017 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (12538 occurrences):
East: 0.005 (m)
North: 0.006 (m)
Height: 0.017 (m)

Quality Number Percentages:
Q 1: 100.0 %
Q 2: 0.0 %
Q 3: 0.0 %
Q 4: 0.0 %
Q 5: 0.0 %
Q 6: 0.0 %

Position Standard Deviation Percentages:
0.00 - 0.10 m: 88.1 %
0.10 - 0.30 m: 11.9 %
0.30 - 1.00 m: 0.0 %
1.00 - 5.00 m: 0.0 %
5.00 m + over: 0.0 %

Percentages of epochs with DD_DOP over 10.00:
DOP over Tol: 9.1 %

Baseline Distances:
Maximum: 54.937 (km)
Minimum: 0.064 (km)
Average: 30.669 (km)
First Epoch: 0.078 (km)
Last Epoch: 0.177 (km)

Processing Summary Information

Program: GrafNav
Version: 7.80.2517
Project: H:\range back va\o111125a\3_Processed\GPS\o111125a.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:
Total in GPB file: 129094
No processed position: 116550
Missing Fwd or Rev: 4
With bad C/A code: 0
With bad L1 Phase: 0

Measurement RMS Values:
L1 Phase: 0.0159 (m)
C/A Code: 0.74 (m)
L1 Doppler: 0.029 (m/s)

Fwd/Rev Separation RMS Values:
East: 0.007 (m)
North: 0.007 (m)
Height: 0.017 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (12538 occurrences):
East: 0.005 (m)
North: 0.006 (m)
Height: 0.017 (m)

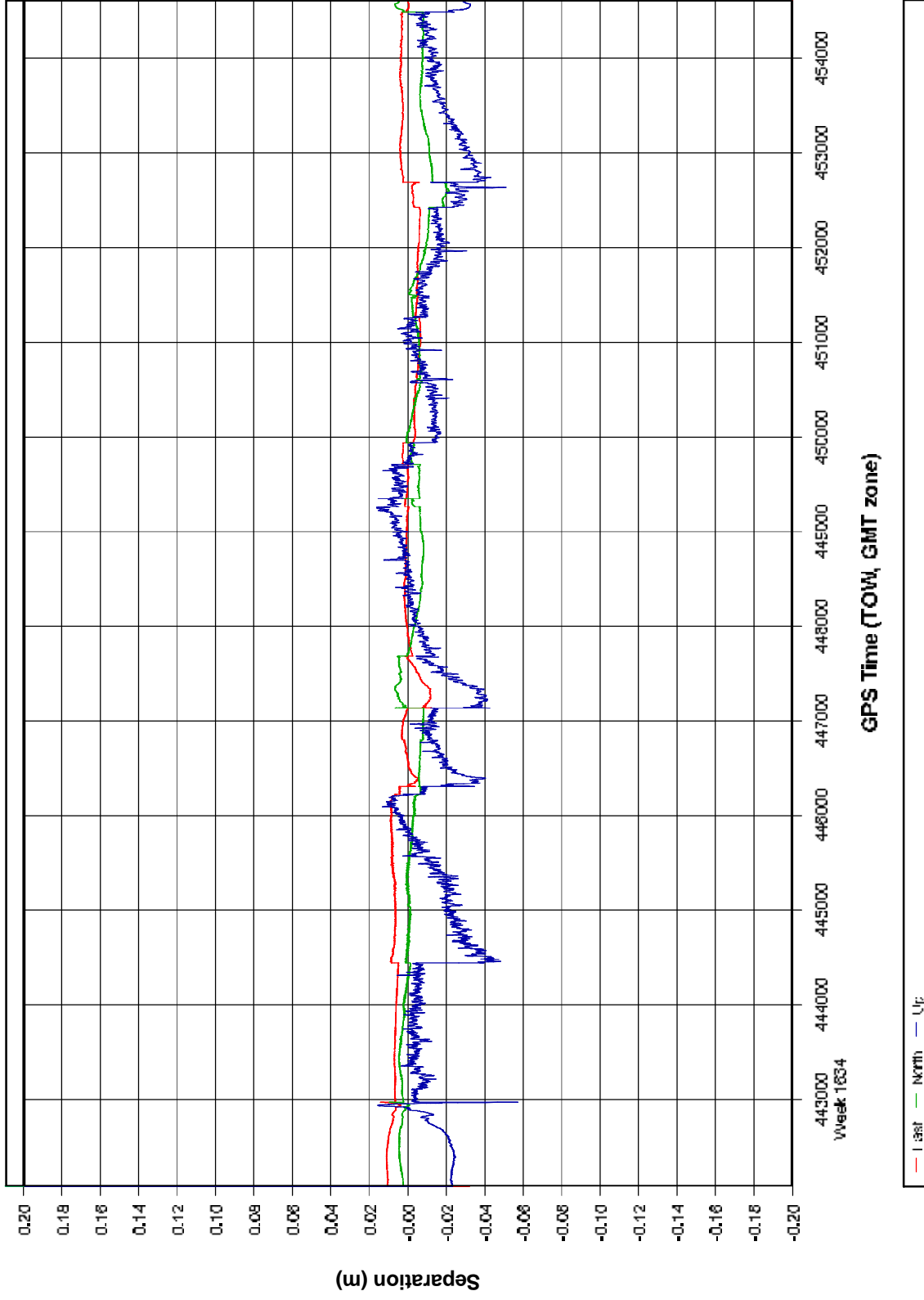
Quality Number Percentages:
Q 1: 100.0 %
Q 2: 0.0 %
Q 3: 0.0 %
Q 4: 0.0 %
Q 5: 0.0 %
Q 6: 0.0 %

Position Standard Deviation Percentages:
0.00 - 0.10 m: 88.1 %
0.10 - 0.30 m: 11.9 %
0.30 - 1.00 m: 0.0 %
1.00 - 5.00 m: 0.0 %
5.00 m + over: 0.0 %

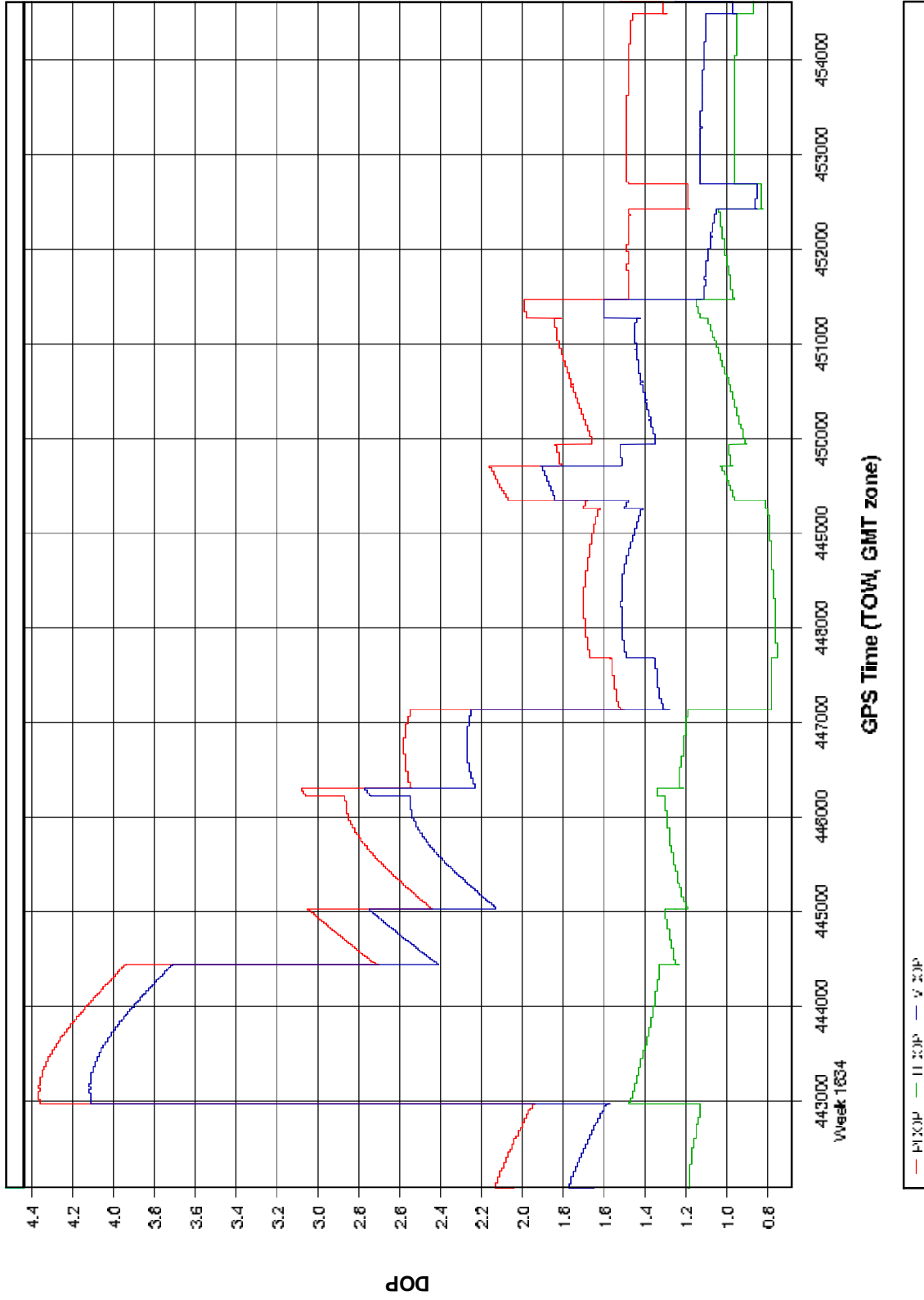
Percentages of epochs with DD_DOP over 10.00:
DOP over Tol: 9.1 %

Baseline Distances:
Maximum: 54.937 (km)
Minimum: 0.064 (km)
Average: 30.669 (km)
First Epoch: 0.078 (km)
Last Epoch: 0.177 (km)

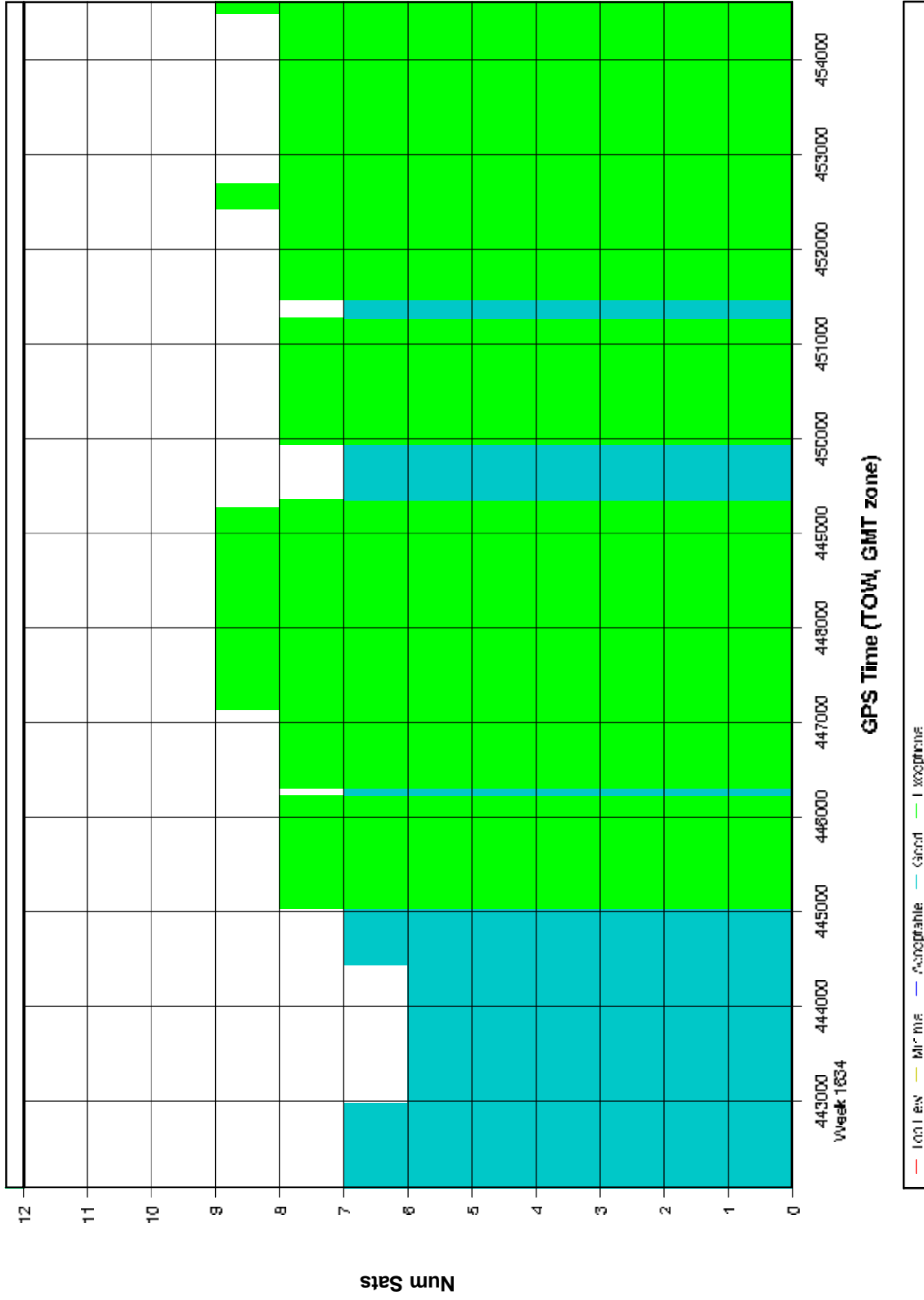
o111125a [Combined] - Forward/Reverse or Combined Separation Plot



o111125a [Combined] - PDOP, HDOP, VDOP Plots



o111125a [Combined] - Number of Satellites Bar Plot



```

                                o111125a.cfg
; PROJECT:      H:\range back va\o111125a\3_Processed\GPS\o111125a.cfg
;
; DATE:         May 6/11 (date/time of processing)
; TIME:         20:11:47
; CREATED BY:   GrafNav Version 7.80.2517
;
VERSION = 7.80.2517
PROCUSER = Unknown
PROCDISC = Run*(3)
PROCTIME = 20:07:59 05/06/2011

; Master station # 1 information
MB_MASTER_INDEX = 0
MB_MASTER_NAME = 1110304
MB_MASTER_FILE =
H:\range*back*va\o111125a\1_RawData\original_PDC_files\1110304_00161250.gpb
MB_MASTER_POS = 37 51 41.39611 -76 53 55.13346 5.1620
MB_MASTER_ANT = 1.248 0.001 1.215 1 _TP_SOK600 0
MB_MASTER_DISABLE = OFF

; Remote station information
REMOTE_FILE = H:\range*back*va\o111125a\3_Processed\Extract\mgps_o111125a.gpb
REMOTE_POS = 37 51 38.92120 -76 53 55.88739 4.7626
REMOTE_ANT = 0.000

; General settings
PROCESS_MODE = 105 108 113 126 ; Processing modes (GrafNav only)

DATUM = NAD83 AUTO ; Processing Datum
INPDATUM = ON NAD83 AUTO ; Input Datum (ON=Use processing datum)
ELEV_MASK = 15.0 ; Elevation mask (deg)
GRID = UTM 15 31 ; Grid info

CYCLE_TEST = BOTH ; Cycle slip test method
STATIC_SLIP_TOL = 0.40 ; slip tolerance in static mode (cycles)
USE_DOPPLER = ON OFF ; Use doppler meas. for phase, for code-only

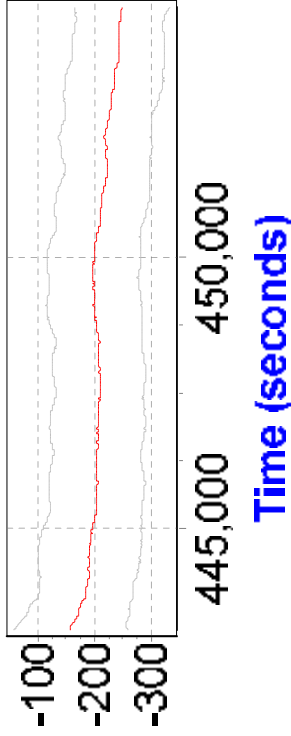
BASE_SAT = 99 ; Base satellite (99-default)

TIMERANGE = RANGE 988685276.0 988697819.0 2 0 ; Processing time range
INTERVAL = 0.10 ; Processing time interval (seconds)

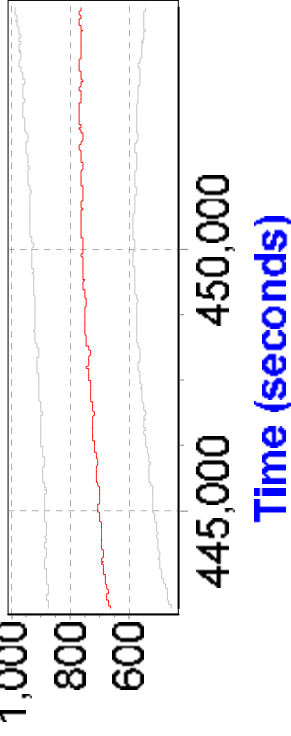
PROCESS_DIR = FORWARD ; Process direction (FORWARD/REVERSE)
BOTH_DIR = ON ; True for processing both directions
WRITE_BAD_EPOCHS = OFF ; Save bad data to .fwd/rev file (ON/OFF)
NOWRITE_HIGH = OFF 6 20.000 ; Don't write epoch with high statistics (q, stdev-m)
OUTPUT_MODE = EXTENDED ; Format for .fwd/rev file
DETAILED_SUM = ON ; Detailed Static/KAR Summary header
WRITE_SLIP_MSG = ON ; Print cycle slips to message log
SAVE_AMB = ON ; Should ambiguities be saved

```

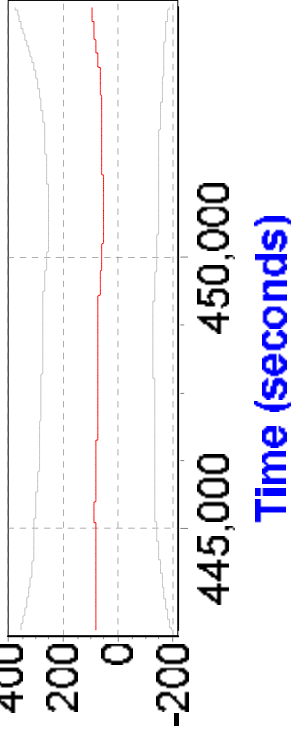
X Accelerometer Bias (micro-g)



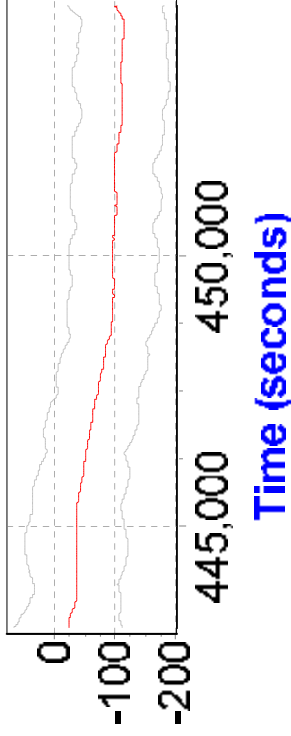
Z Accelerometer Bias (micro-g)



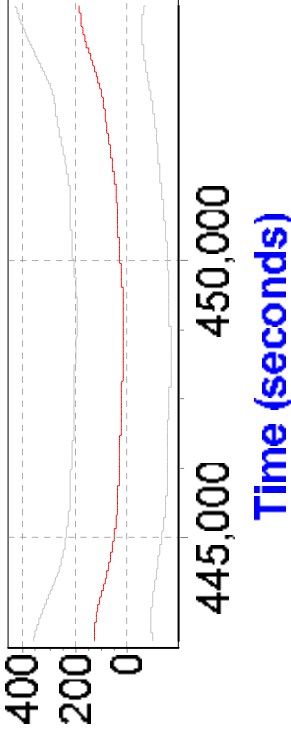
Accelerometer Scale Factor Error (ppm)



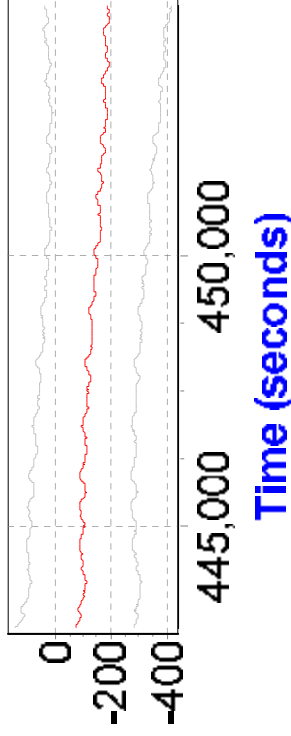
Y Accelerometer Bias (micro-g)

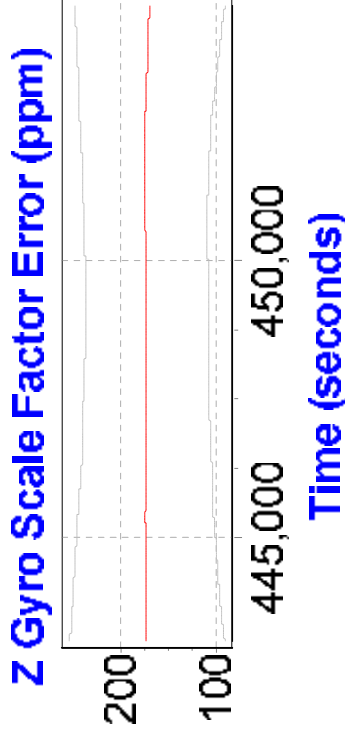
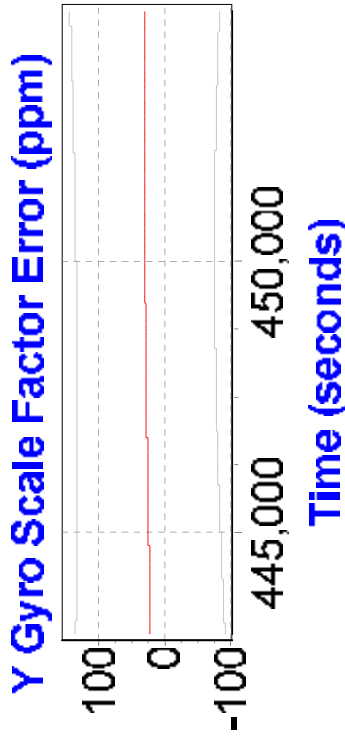
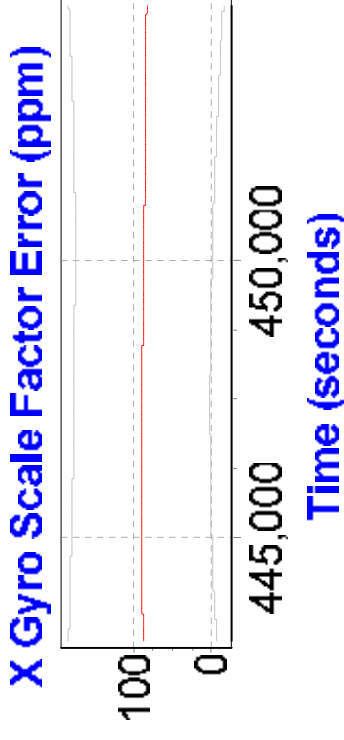
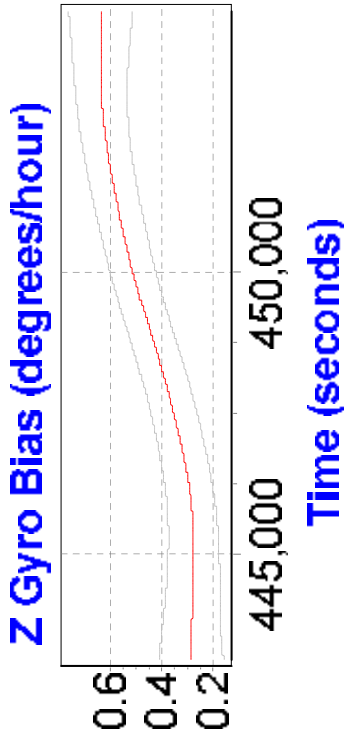
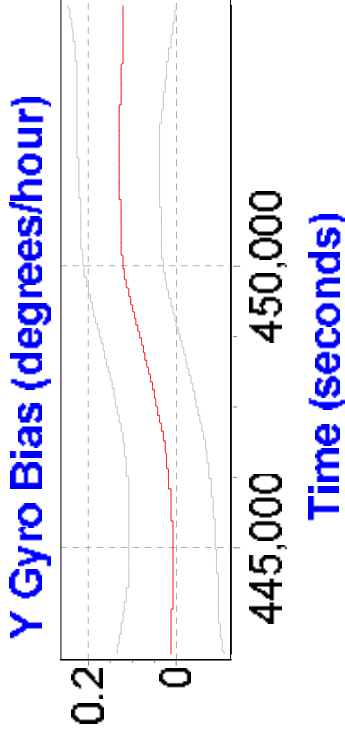
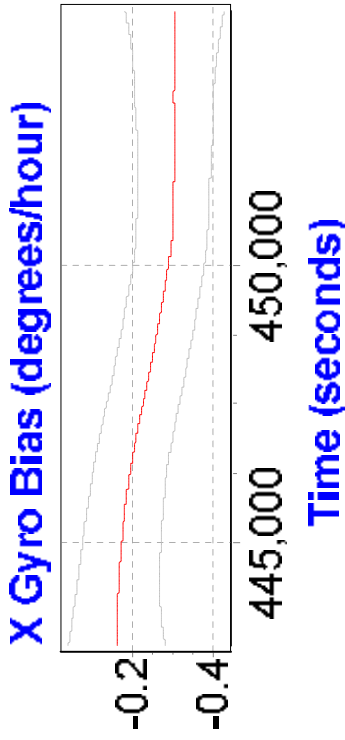


Accelerometer Scale Factor Error (ppm)



Accelerometer Scale Factor Error (ppm)







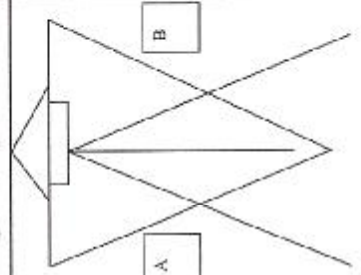
GPS Base Log Sheet

Station ID: 1110304	Project #: 111030	Missions: 02112501B 01112502
----------------------------	--------------------------	--

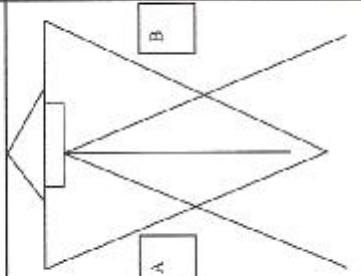
Project Name: KemaVA	Calendar Date: 6/5/2011	Julian Day: 125
Approx. Coordinates WGS 84	N	W
Description of Mark (Take Photos)		
Morument is: <input checked="" type="checkbox"/> Flush with ground <input checked="" type="checkbox"/> Above ground <input type="checkbox"/> Below ground	3 cm	
Location & Access		

Observations & Additional Notes

GPS Observation - MAIN	
Rx Make / Model	Serial #
GSR2600	0016
Ant Make / Model	Serial #
STE 600	0035
Operator	
AC	
Session Time (GPS)	
Start	11 15 00
End	
Slant HI Before:	B: 1.215
Slant HI After:	B: 1.215
Correction	
Phase Center	<input checked="" type="checkbox"/> m <input type="checkbox"/> n <input type="checkbox"/> use GrafNav Profile
Data File Name	



GPS Observation - Back-Up	
Rx Make / Model	Serial #
Ant Make / Model	Serial #
Operator	
Session Time (GPS)	
Start	
End	
Slant HI Before:	B:
Slant HI After:	B:
Correction	
Phase Center	<input type="checkbox"/> m <input type="checkbox"/> n <input type="checkbox"/> use GrafNav Profile
Data File Name	



Project 1103U Session 01/125a

Flight Log



Date	Nov 5/11	Julien Day	125
Project	USGS VA	Aircraft	Nivado
Surveying	Tappahannock	Cat Sign	100950
Survey Block		Pilot	Todd Jones
Lines Complete	138-130	Operator	Matthew
Mission Objective		Observer	Adrian C

ALMS/Option	0
System #	1
Laser Scanner	
Camera/Lens SN	
Shutter Speed	
Photo Freq.	
IMU	
GPS Rx	
Data Drive	

Additional Notes:

Outside Temp @ TO: 11°
 Outside Temp @ LA: 8°
 Outside Pressure @ TO: 3008
 Outside Pressure @ LA: 3026

Aircraft Block Time	<input type="checkbox"/> Times confirmed with pilot
Engine On (Hobbs)	Taxiout (120L) x (Total R. hrs)
10:31	11:06
Engine Off (Hobbs)	Landing
2:23	2:16
Total hrs (r-ctels)	Total hrs
3.8	3.1
	Approx Fuel Cost

Mission Plan	
Flying Height AGL	Scan Angle (Optech)
980 m	22°
Ground Speed	Mirror Scan Rate
150kt.	70kHz
First/Last/Alternating Return	Laser Pulse Rate
	40Hz

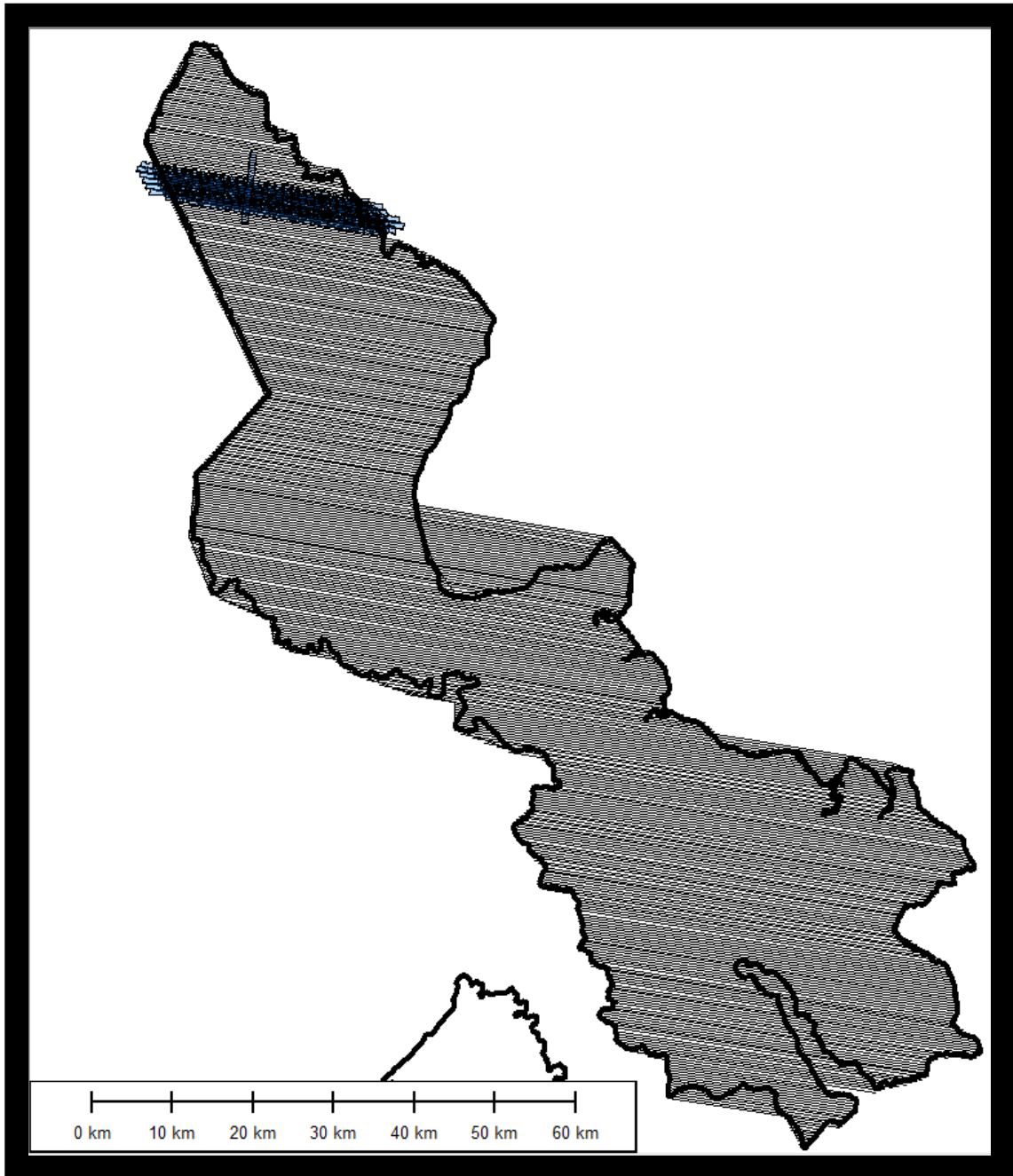
Static & KAR GPS // INS Alignment			
Time	<input type="checkbox"/> GPS	Start	End
Pre Mission		10:31	10:45
KAR Base		10:45	10:55
KAR Base		2:16	2:21
Post Mission		2:16	

Flight Plan Line #	LIDAR File Name	Flight Direction	GPS / UTC Time		Flight Aborted		Photo Events / Comments Please periodically record: Outside Temp: _____ Cabin Temp: _____ Outside Pressure: _____
			Start	End	Time	NM to End	
138		W	11:24	11:38			
137		E	11:45	11:57			
136		W	12:01	12:15			
135		E	12:19	12:31			
134		W	12:36	12:50			
133		E	12:54	1:06			
132		W	1:11	1:24			
131		E	1:29	1:41			
130		W	1:46	2:00			

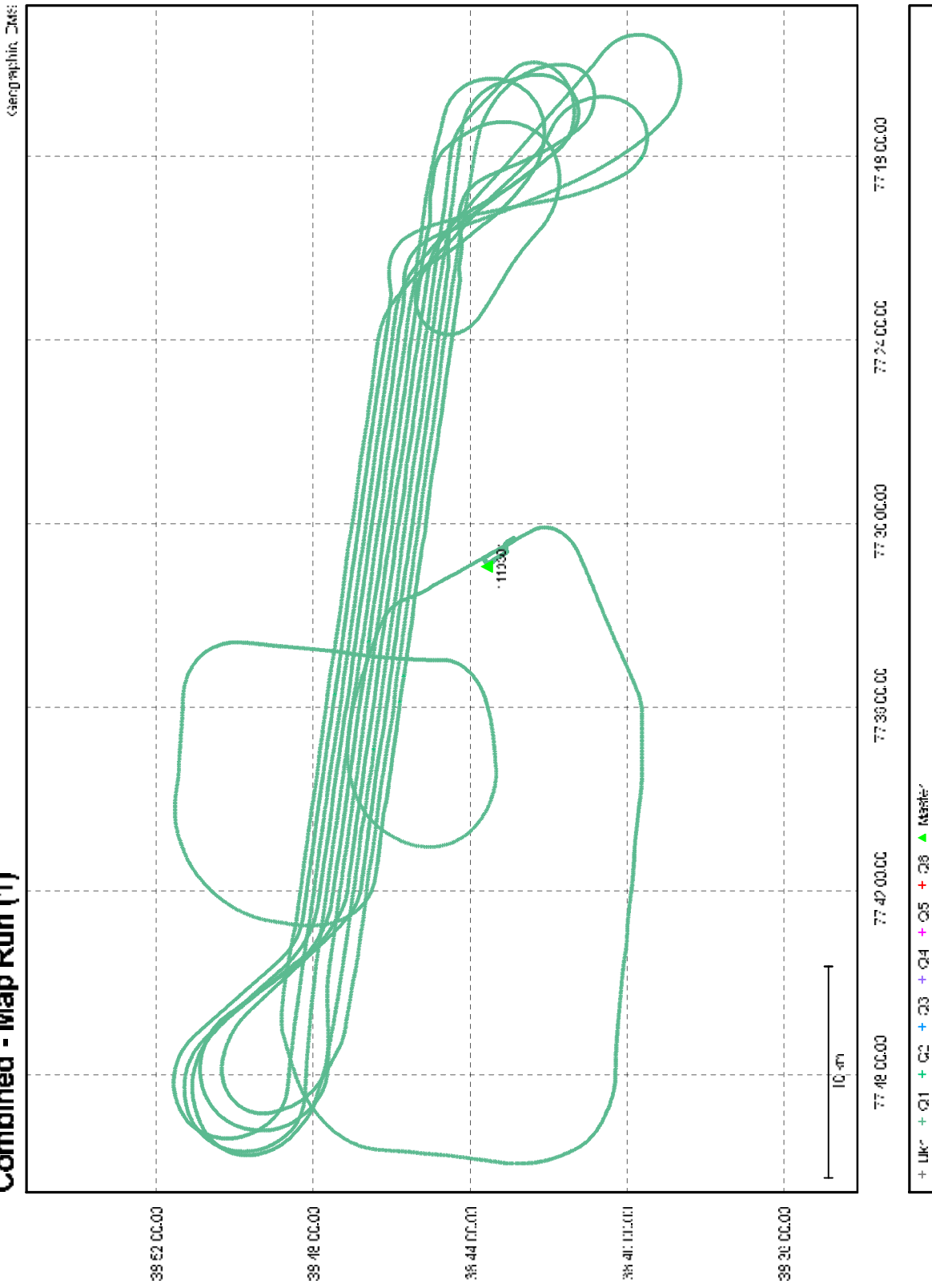


Mission: o211096a

2011 04 06



Combined - Map Run (1)



Processing Summary Information

Program: GrafNav
Version: 7.80.2517
Project: F:\11103U_VA\2_Operations\6_Missions\o211096a\3_Processed\GPS\o211096a.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:
Total in GPB file: 129452
No processed position: 116519
Missing Fwd or Rev: 3
With bad C/A code: 0
With bad L1 Phase: 0

Measurement RMS Values:
L1 Phase: 0.0143 (m)
C/A Code: 0.78 (m)
L1 Doppler: 0.029 (m/s)

Fwd/Rev Separation RMS Values:
East: 0.009 (m)
North: 0.017 (m)
Height: 0.021 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (12928 occurrences):
East: 0.007 (m)
North: 0.015 (m)
Height: 0.021 (m)

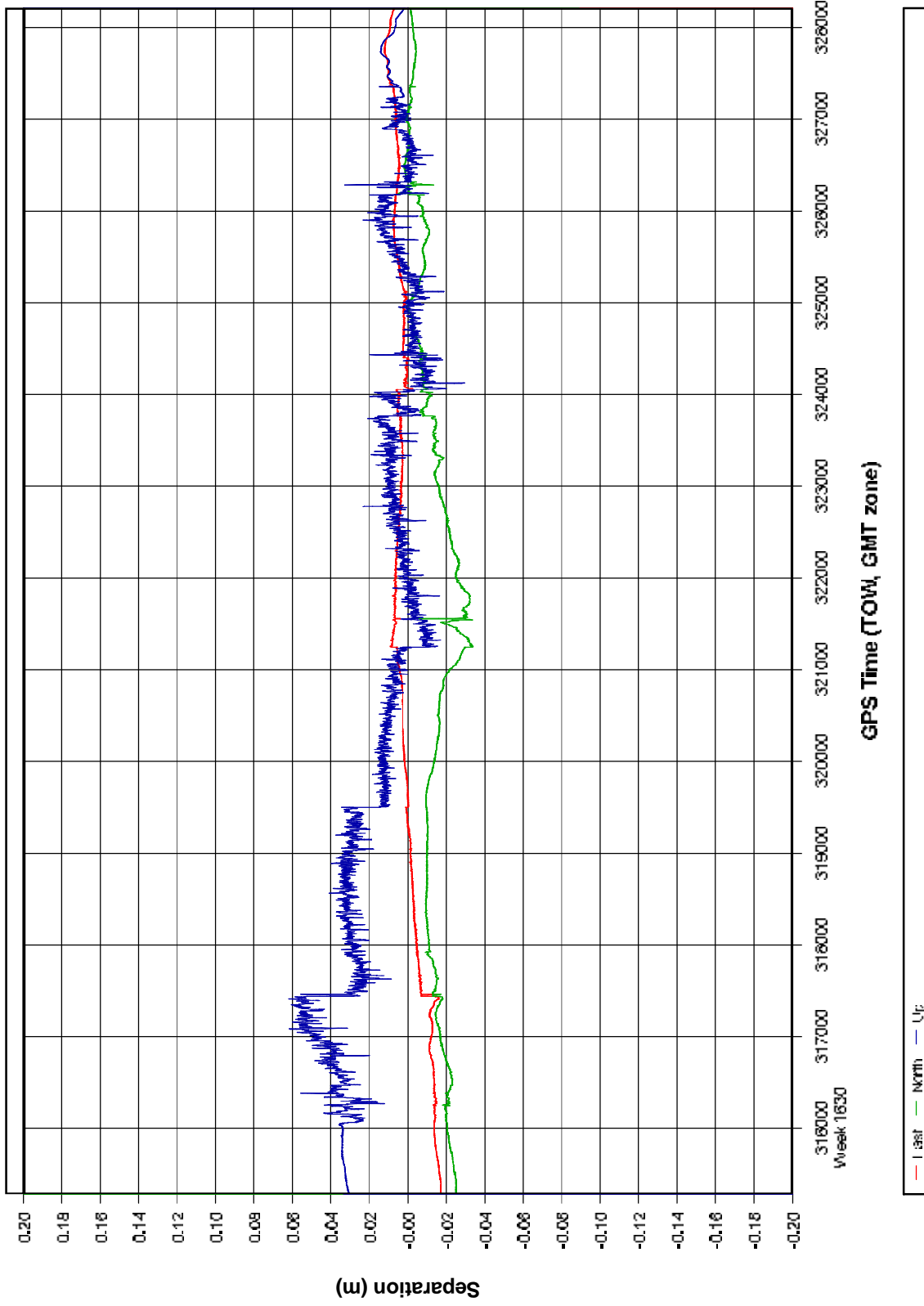
Quality Number Percentages:
Q 1: 99.9 %
Q 2: 0.1 %
Q 3: 0.0 %
Q 4: 0.0 %
Q 5: 0.0 %
Q 6: 0.0 %

Position Standard Deviation Percentages:
0.00 - 0.10 m: 100.0 %
0.10 - 0.30 m: 0.0 %
0.30 - 1.00 m: 0.0 %
1.00 - 5.00 m: 0.0 %
5.00 m + over: 0.0 %

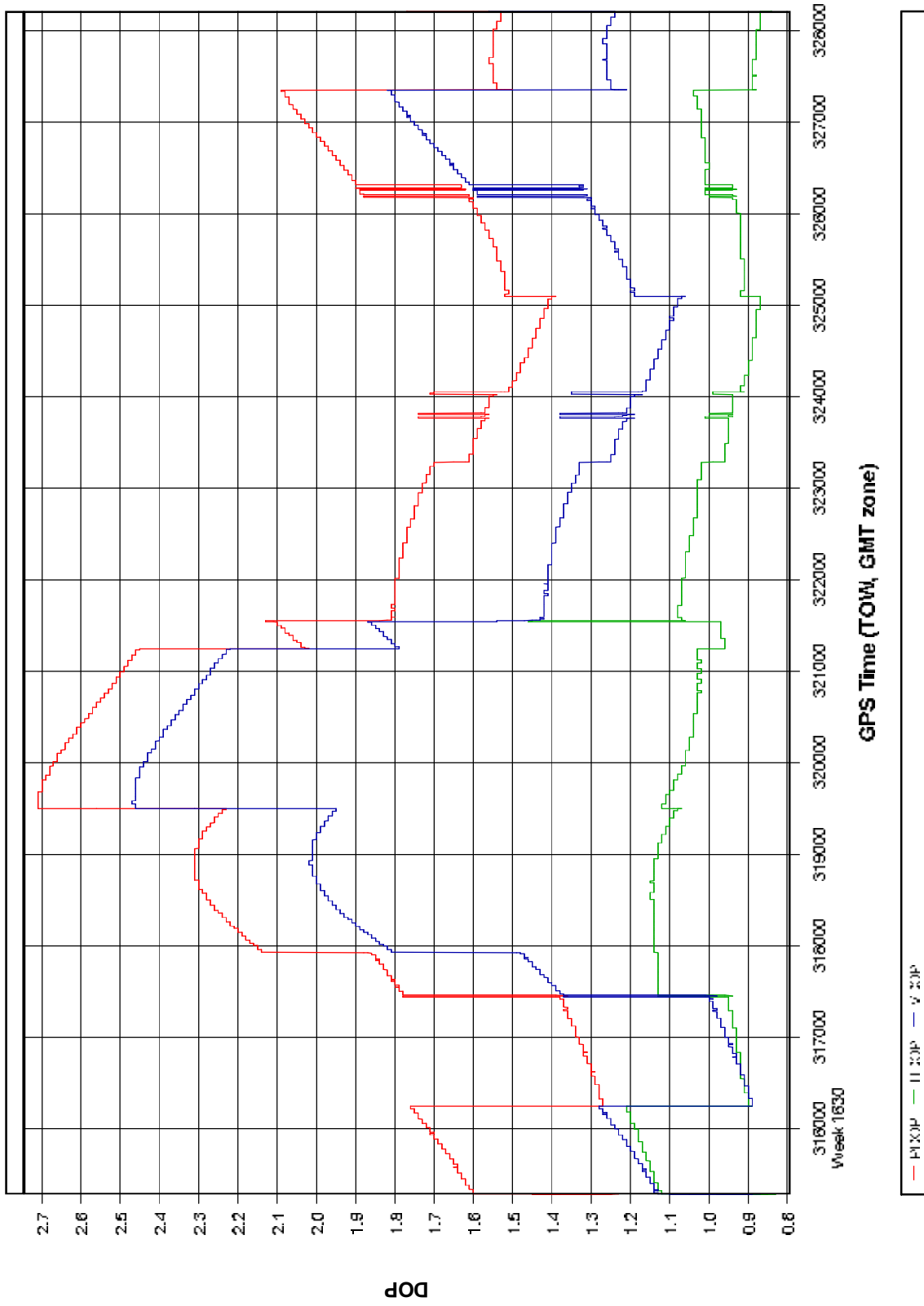
Percentages of epochs with DD_DOP over 10.00:
DOP over Tol: 0.0 %

Baseline Distances:
Maximum: 30.260 (km)
Minimum: 0.150 (km)
Average: 13.136 (km)
First Epoch: 0.272 (km)
Last Epoch: 0.415 (km)

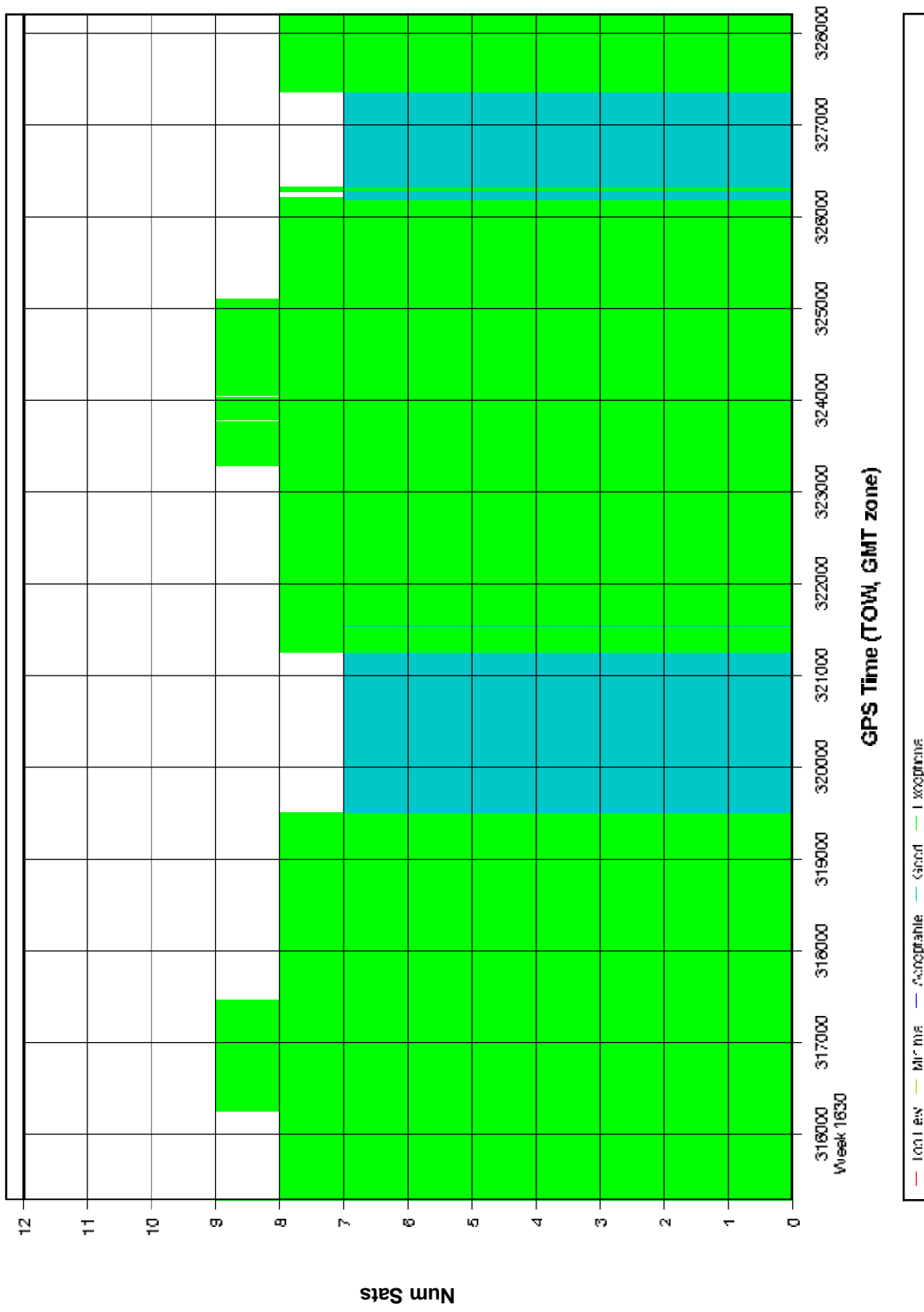
o211096a [Combined] - Forward/Reverse or Combined Separation Plot



o211096a [Combined] - PDOP, HDOP, VDOP Plots



o211096a [Combined] - Number of Satellites Bar Plot



o211096a.cfg

```
: PROJECT:
F:\11103U_VA\2_Operations\6_Missions\o211096a\3_Processed\GPS\o211096a.cfg
:
: DATE:      April 12/11 (date/time of processing)
: TIME:      10:00:08
: CREATED BY: GrafNav Version 7.80.2517
:
VERSION = 7.80.2517
PROCUSER = Unknown
PROCDISC = Run*(2)
PROCTIME = 09:59:06 04/12/2011

; Master station # 1 information
MB_MASTER_INDEX = 0
MB_MASTER_NAME = 1110301
MB_MASTER_FILE =
F:\11103U_VA\2_Operations\6_Missions\o211096a\1_RawData\original_PDC_files\00200960_
1110301.gpb
MB_MASTER_POS = 38 43 34.05308 -77 31 24.33961 23.6230
MB_MASTER_ANT = 1.475 0.001 1.441 1 _TP_SOK600 0
MB_MASTER_DISABLE = OFF

; Remote station information
REMOTE_FILE =
F:\11103U_VA\2_Operations\6_Missions\o211096a\3_Processed\Extract\mgps_o211096a.gpb
REMOTE_POS = 38 43 27.42630 -77 31 17.08456 25.4618
REMOTE_ANT = 0.000

; General settings
PROCESS_MODE = 103 108 113 126 ; Processing modes (GrafNav only)

DATUM = NAD83 AUTO ; Processing Datum
INPDATUM = ON NAD83 AUTO ; Input Datum (ON=Use processing datum)
ELEV_MASK = 10.0 ; Elevation mask (deg)
GRID = UTM 15 31 ; Grid info

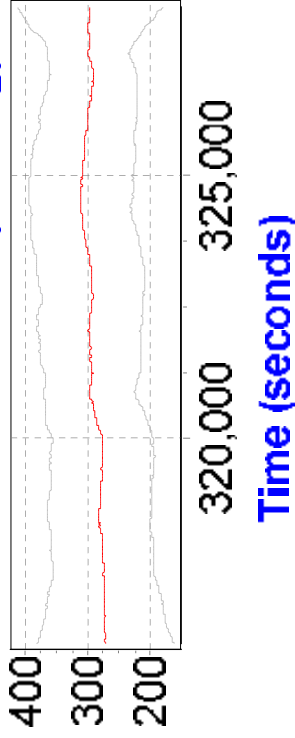
CYCLE_TEST = BOTH ; Cycle slip test method
STATIC_SLIP_TOL = 0.40 ; slip tolerance in static mode (cycles)
USE_DOPPLER = ON OFF ; Use doppler meas. for phase, for code-only

BASE_SAT = 99 ; Base satellite (99-default)

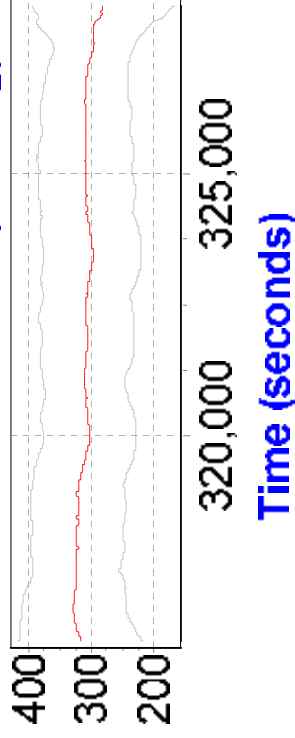
TIMERANGE = ALL 986139267.3 986152212.4 2 0 ; Processing time range
INTERVAL = 0.10 ; Processing time interval (seconds)

PROCESS_DIR = FORWARD ; Process direction (FORWARD/REVERSE)
BOTH_DIR = ON ; True for processing both directions
WRITE_BAD_EPOCHS = OFF ; Save bad data to .fwd/rev file (ON/OFF)
NOWRITE_HIGH = OFF 6 20.000 ; Don't write epoch with high statistics (q, stdev-m)
OUTPUT_MODE = EXTENDED ; Format for .fwd/rev file
DETAILED_SUM = ON ; Detailed Static/KAR Summary header
WRITE_SLIP_MSG = ON ; Print cycle slips to message log
SAVE_AMB = ON ; Should ambiguities be saved
```

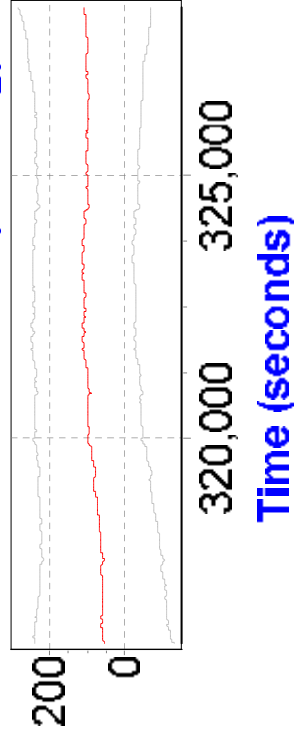
X Accelerometer Bias (micro-g)



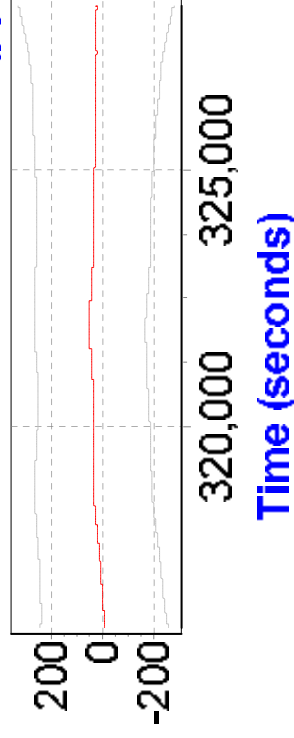
Y Accelerometer Bias (micro-g)



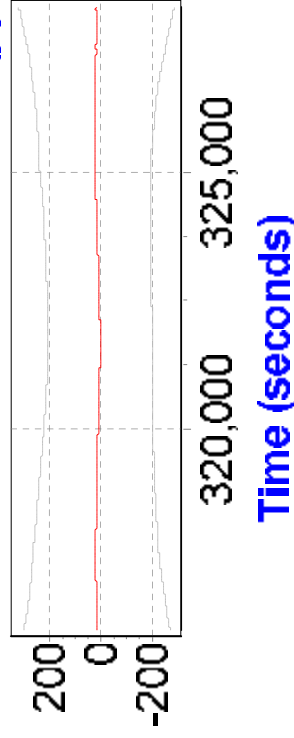
Z Accelerometer Bias (micro-g)



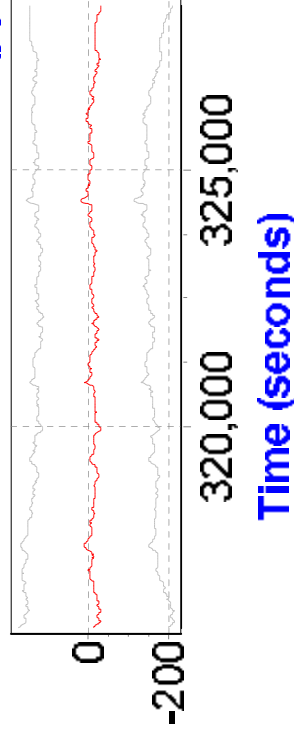
X Accelerometer Scale Factor Error (ppm)

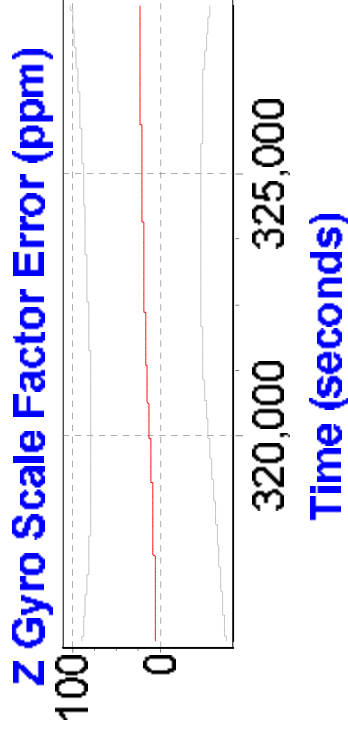
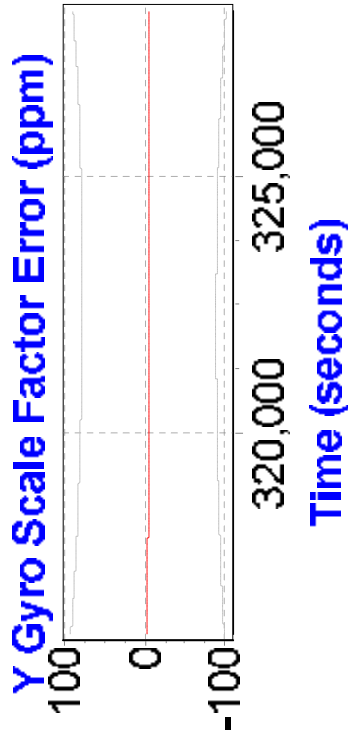
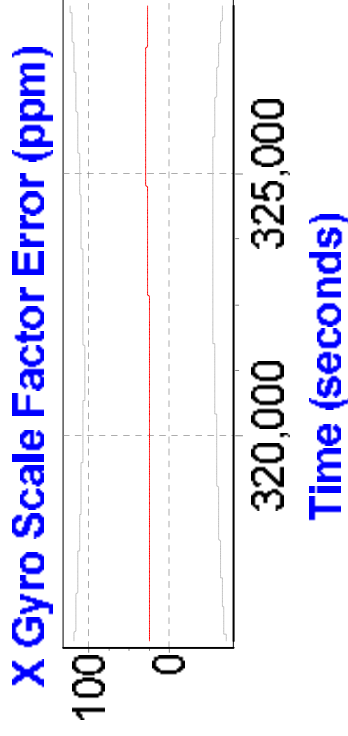
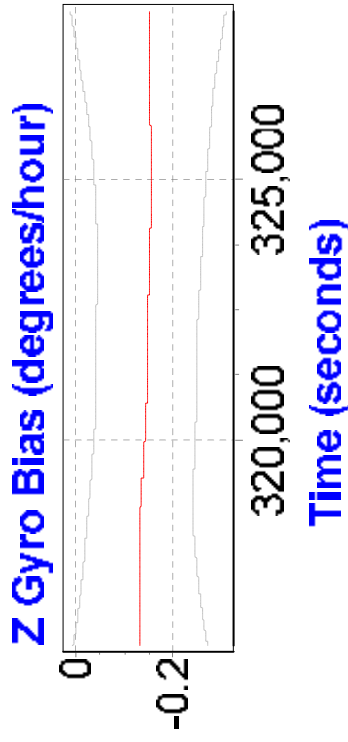
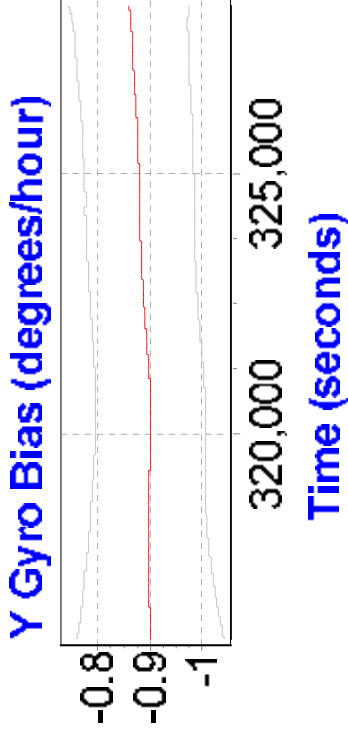
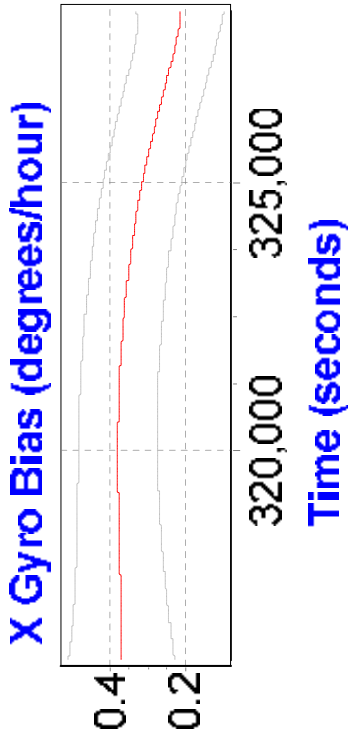


Y Accelerometer Scale Factor Error (ppm)



Z Accelerometer Scale Factor Error (ppm)







Flight Log

Project# 1103U Session 021096a

Date	16 April 2011	Julian Day	096
Project	Dewberry Flare	Aircraft	9315A
Staging	Wilmington	Call Sign	3315A
Survey Block		Pilot	TOD
Lines Complete		Operator	DEW021
Mission Objective		Observer	

ALMIS/Optech	
System #	00
Laser Scanner	
Camera/Lens SN	
Shutter Speed	
Photo Freq.	
M/J	
Data Rz	
Data Drive	

Additional Notes:
 3ub 15:33
 HC 3022
 Outside Temp @ TO: 11C
 Outside Pressure @ TO: 30.12
 Outside Temp @ LA:
 Outside Pressure @ LA:

Aircraft Block Time	<input type="checkbox"/> Times confirmed with pilot
Engine On (-hobs)	Taxioff 60:44
Engine Off (-hobs)	11:45
Total hrs (Hobs)	Landing 14:55
	Total hrs
	FBO \$ / Lite
	Approx Fuel Cost

Flying Height AGL	950m
Ground Speed	150kts
Fires/Las/W/Alerting Return	
Mission Plan	Scan Angle (Optech)
	Minor Scan Rate
	Laser Pulse Rate

Static & KAR	GPS // INS
Pre Mission	Time
KAF Base	15:33
KAF Base	
Post Mission	1500

END
 15:43
 1510 6045

Flight Plan Line #	LIDAR File Name	Flight Direction	GPS / UTC Time		Flight Aborted		Photo Evens / Corner Please periodically record: Scan Temp Output (Matrix)
			Start	End	Time	NM to End	
346		E	160009	160019			
345		W	160410	162110			
344		E	162658	163327			
343		W	164209	164917			
342		E	165527	170159			
341		W	171436	172159			ATC / AIRCRAFT ON TOWN
340		E	172755	173443			
339		W	174026	174746			
338		E	175434	180102			

GPS Base Log Sheet

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MAIN Base

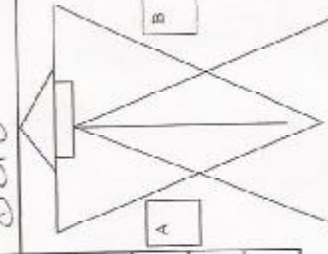
Station ID: 11301J Project #: 11300 Missions: 096
0966

Project Name: FEMA Calendar Date: Apr 6 Julian Day 096
Approx. Coordinates: WGS 84 N W
Description of Mark: - Nail
Monument is: Flush with ground Above ground 5 cm Below ground cm
Location & Access: - Dulles Aviation FBO

Observations & Additional Notes

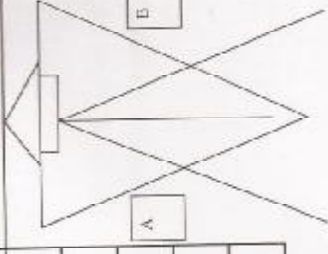
GPS Observation / MAIN

Rx Make / Model	Serial #	0020
Ant. Make / Model	Serial #	0010
Operator	Tr	
Session Time (GPS)	Start	End
	13:53	
Slant HI Before:	A: 1.441	B: 1.441
Slant HI After:	A: 1.441	B: 1.441
Correction	<input type="checkbox"/> m <input type="checkbox"/> in <input type="checkbox"/> use GrafNav Profile	
Phase Center		
Data File Name	00200960.pdc	



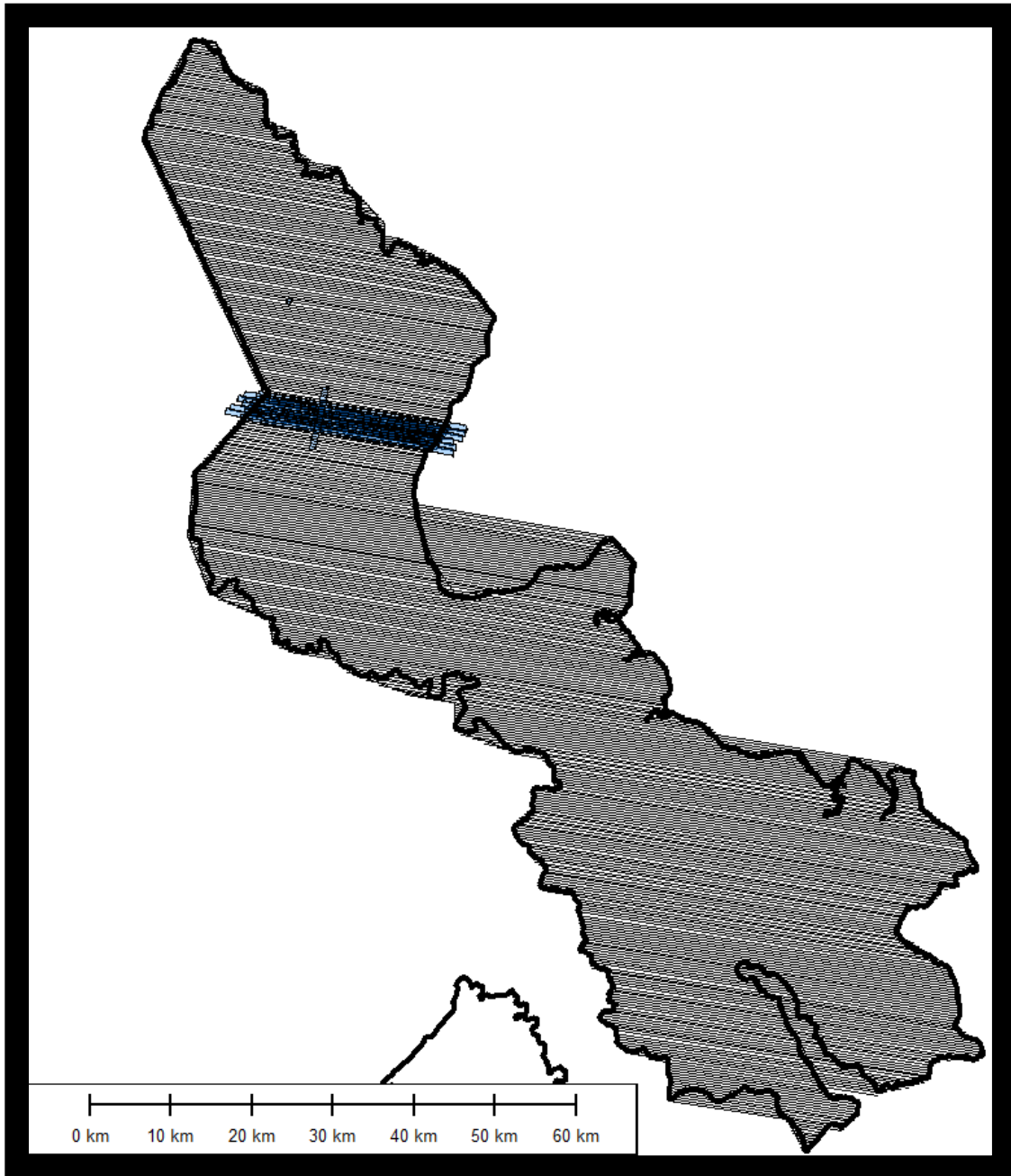
GPS Observation - Back-Up

Rx Make / Model	Serial #	0002
Ant. Make / Model	Serial #	SK600
Operator	Tr	
Session Time (GPS)	Start	End
	13:59	
Slant HI Before:	A: 1.376	B: 1.376
Slant HI After:	A: 1.376	B: 1.376
Correction	<input type="checkbox"/> m <input type="checkbox"/> in <input type="checkbox"/> use GrafNav Profile	
Phase Center		
Data File Name	00020960.pdc	

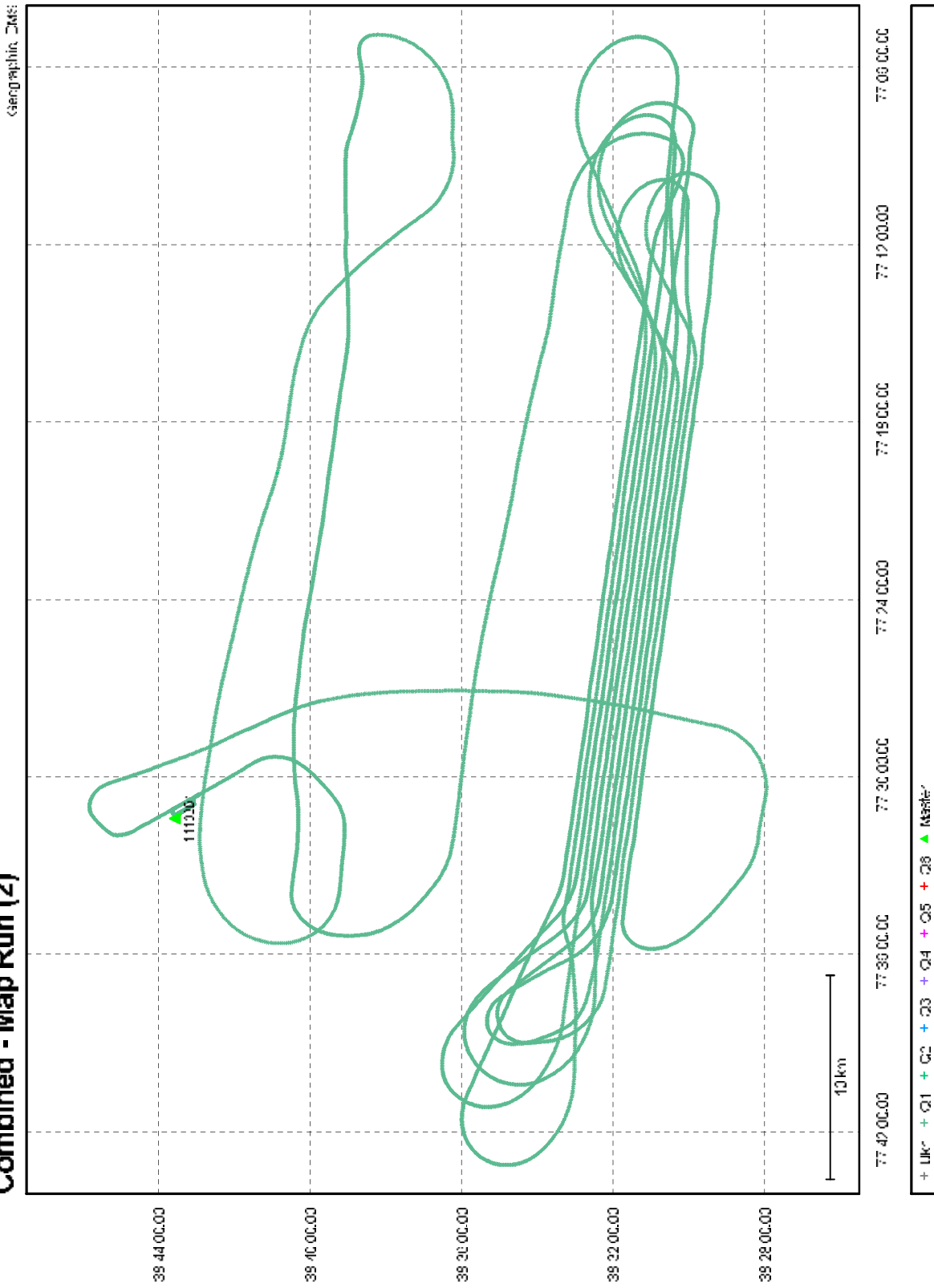


Mission: o211096b

2011 04 06



Combined - Map Run (2)



Processing Summary Information

Program: GrafNav
Version: 7.80.2517
Project: F:\11103U_VA\2_Operations\6_Missions\o211096b\3_Processed\GPS\o211096b.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:
Total in GPB file: 136098
No processed position: 122613
Missing Fwd or Rev: 4
With bad C/A code: 0
With bad L1 Phase: 0

Measurement RMS Values:
L1 Phase: 0.0143 (m)
C/A Code: 0.75 (m)
L1 Doppler: 0.028 (m/s)

Fwd/Rev Separation RMS Values:
East: 0.008 (m)
North: 0.008 (m)
Height: 0.016 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (13479 occurrences):
East: 0.008 (m)
North: 0.007 (m)
Height: 0.013 (m)

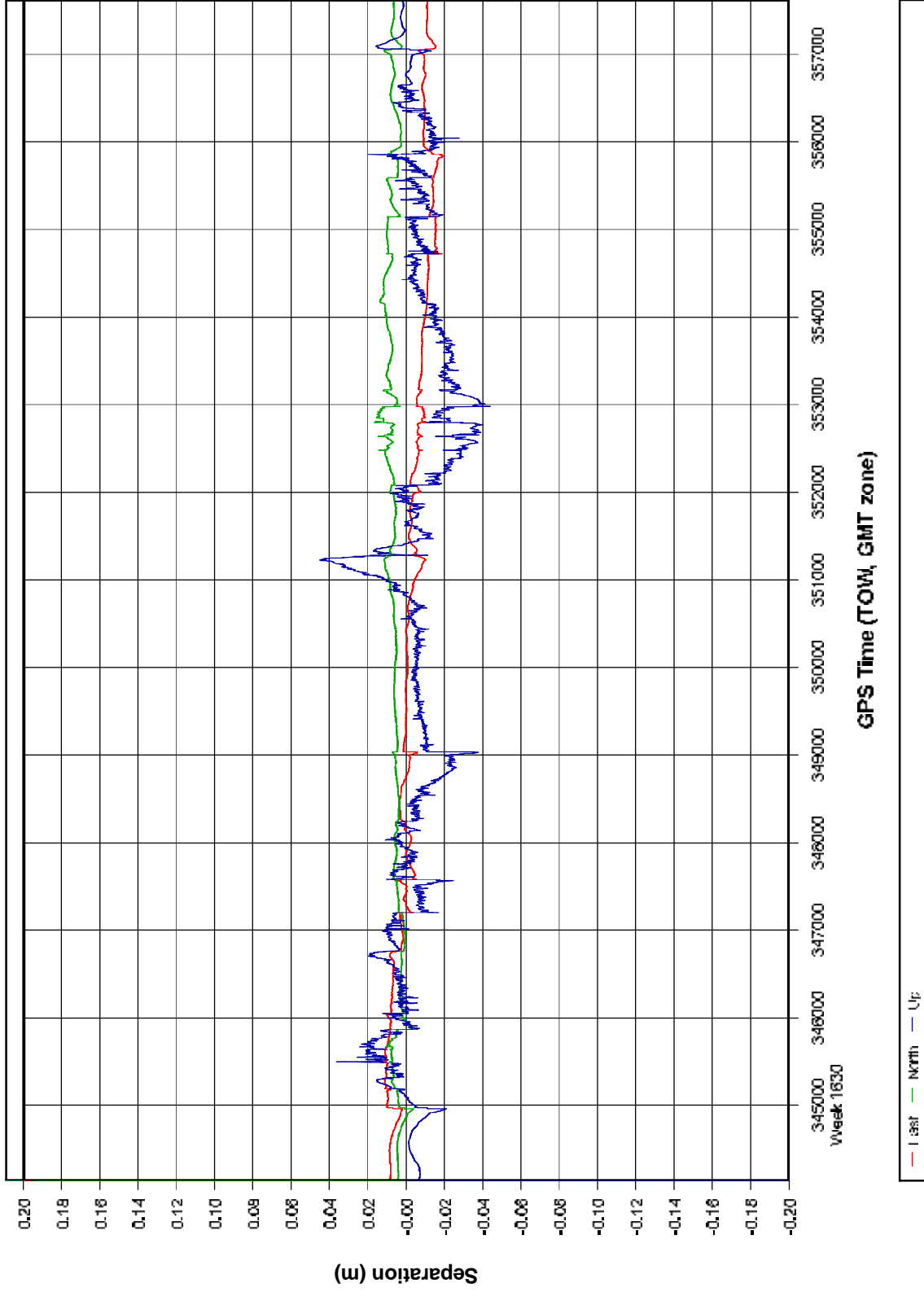
Quality Number Percentages:
Q 1: 100.0 %
Q 2: 0.0 %
Q 3: 0.0 %
Q 4: 0.0 %
Q 5: 0.0 %
Q 6: 0.0 %

Position Standard Deviation Percentages:
0.00 - 0.10 m: 100.0 %
0.10 - 0.30 m: 0.0 %
0.30 - 1.00 m: 0.0 %
1.00 - 5.00 m: 0.0 %
5.00 m + over: 0.0 %

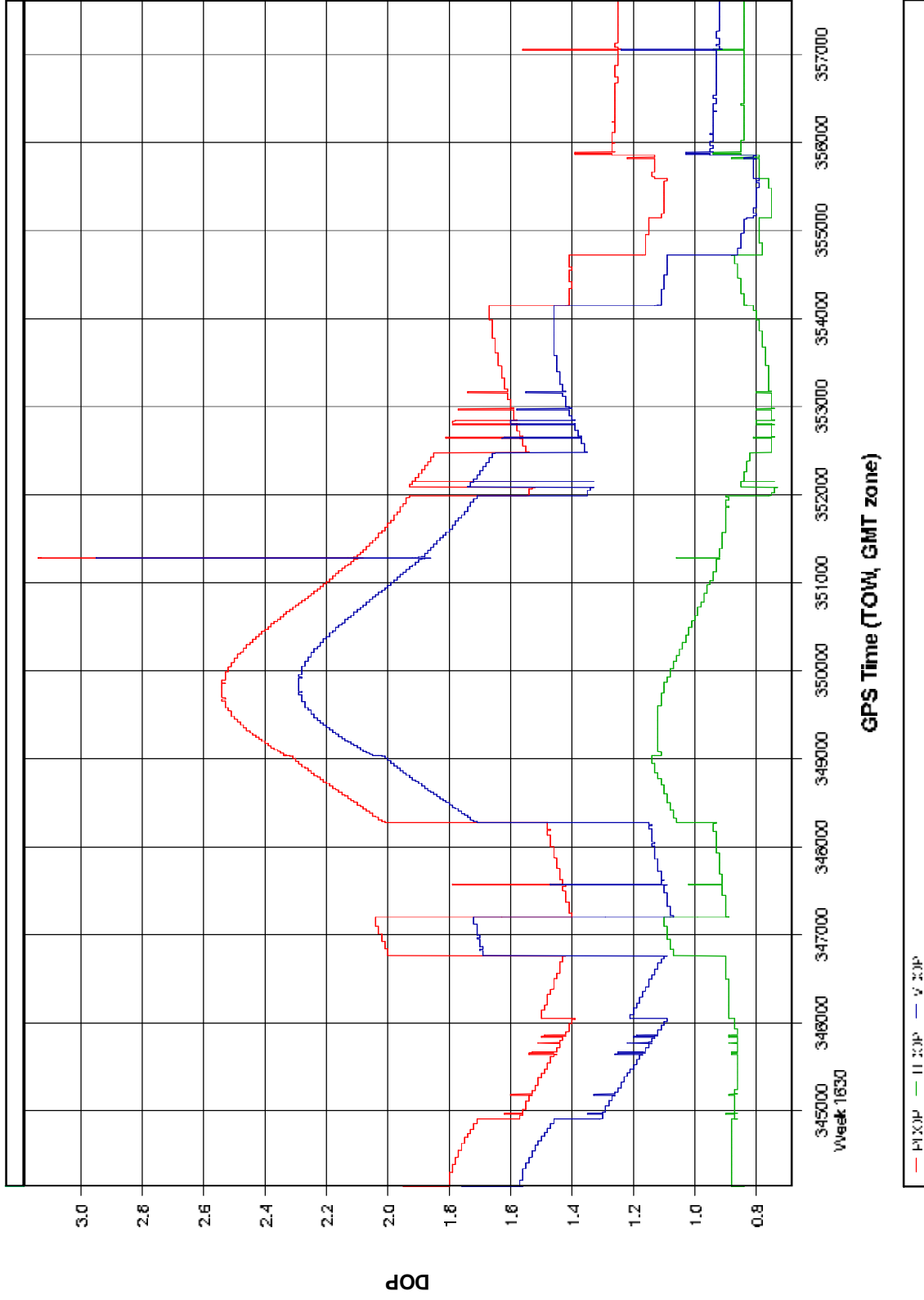
Percentages of epochs with DD_DOP over 10.00:
DOP over Tol: 0.0 %

Baseline Distances:
Maximum: 44.830 (km)
Minimum: 0.154 (km)
Average: 21.017 (km)
First Epoch: 0.415 (km)
Last Epoch: 0.270 (km)

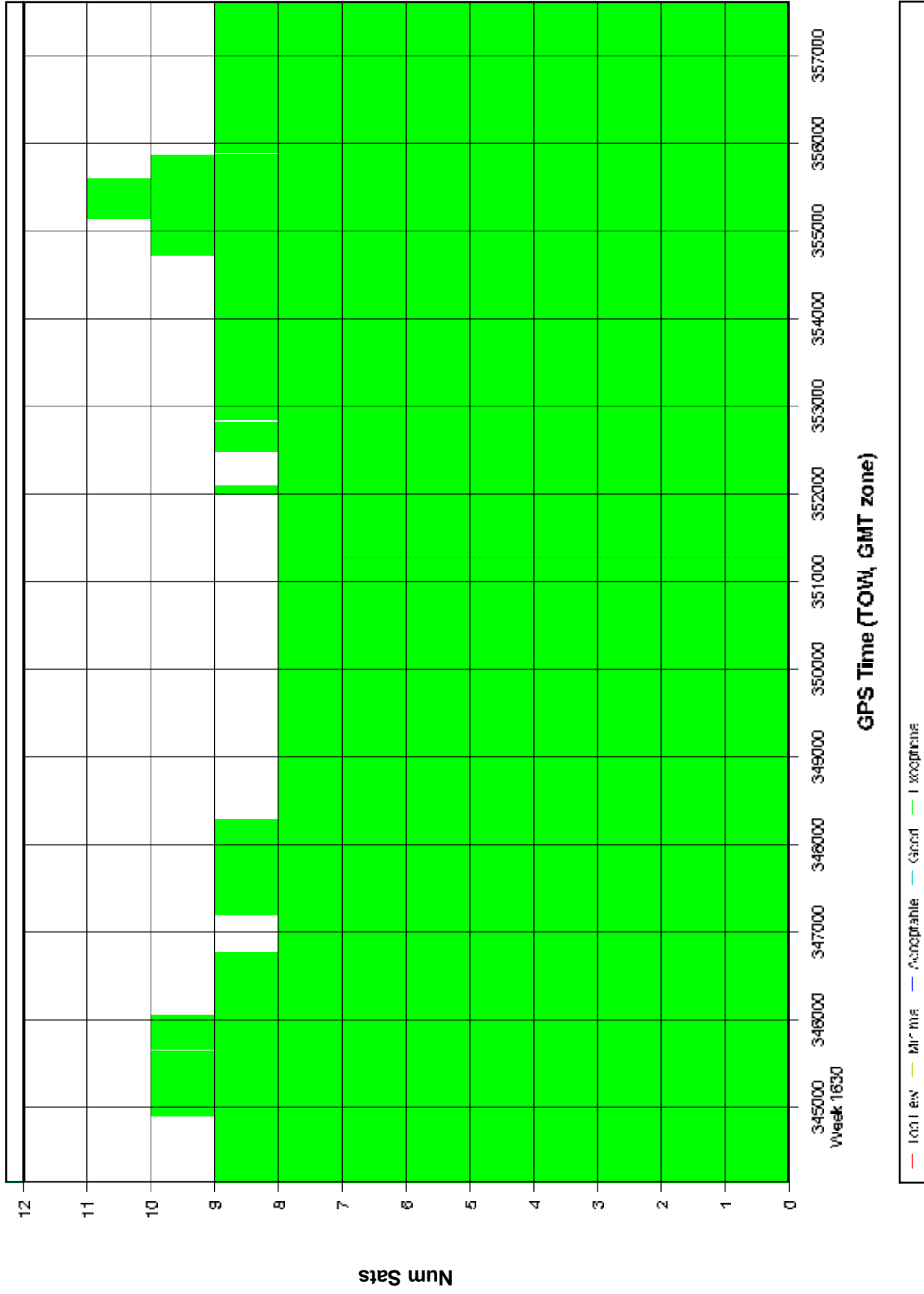
o211096b [Combined] - Forward/Reverse or Combined Separation Plot



o211096b [Combined] - PDOP, HDOP, VDOP Plots



o211096b [Combined] - Number of Satellites Bar Plot



o211096a.cfg

```
: PROJECT:
F:\11103U_VA\2_Operations\6_Missions\o211096a\3_Processed\GPS\o211096a.cfg
:
: DATE:      April 12/11 (date/time of processing)
: TIME:      10:00:08
: CREATED BY: GrafNav Version 7.80.2517
:
VERSION = 7.80.2517
PROCUSER = Unknown
PROCDISC = Run*(2)
PROCTIME = 09:59:06 04/12/2011

; Master station # 1 information
MB_MASTER_INDEX = 0
MB_MASTER_NAME = 1110301
MB_MASTER_FILE =
F:\11103U_VA\2_Operations\6_Missions\o211096a\1_RawData\original_PDC_files\00200960_
1110301.gpb
MB_MASTER_POS = 38 43 34.05308 -77 31 24.33961 23.6230
MB_MASTER_ANT = 1.475 0.001 1.441 1 _TP_SOK600 0
MB_MASTER_DISABLE = OFF

; Remote station information
REMOTE_FILE =
F:\11103U_VA\2_Operations\6_Missions\o211096a\3_Processed\Extract\mgps_o211096a.gpb
REMOTE_POS = 38 43 27.42630 -77 31 17.08456 25.4618
REMOTE_ANT = 0.000

; General settings
PROCESS_MODE = 103 108 113 126 ; Processing modes (GrafNav only)

DATUM = NAD83 AUTO ; Processing Datum
INPDATUM = ON NAD83 AUTO ; Input Datum (ON=Use processing datum)
ELEV_MASK = 10.0 ; Elevation mask (deg)
GRID = UTM 15 31 ; Grid info

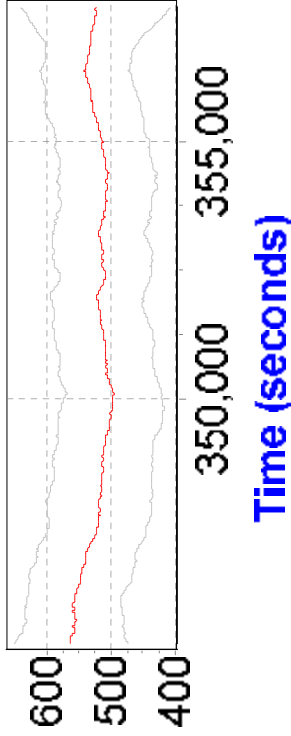
CYCLE_TEST = BOTH ; Cycle slip test method
STATIC_SLIP_TOL = 0.40 ; slip tolerance in static mode (cycles)
USE_DOPPLER = ON OFF ; Use doppler meas. for phase, for code-only

BASE_SAT = 99 ; Base satellite (99-default)

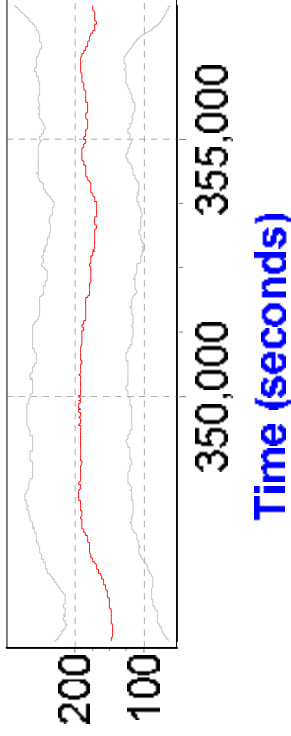
TIMERANGE = ALL 986139267.3 986152212.4 2 0 ; Processing time range
INTERVAL = 0.10 ; Processing time interval (seconds)

PROCESS_DIR = FORWARD ; Process direction (FORWARD/REVERSE)
BOTH_DIR = ON ; True for processing both directions
WRITE_BAD_EPOCHS = OFF ; Save bad data to .fwd/rev file (ON/OFF)
NOWRITE_HIGH = OFF 6 20.000 ; Don't write epoch with high statistics (q, stdev-m)
OUTPUT_MODE = EXTENDED ; Format for .fwd/rev file
DETAILED_SUM = ON ; Detailed Static/KAR Summary header
WRITE_SLIP_MSG = ON ; Print cycle slips to message log
SAVE_AMB = ON ; Should ambiguities be saved
```

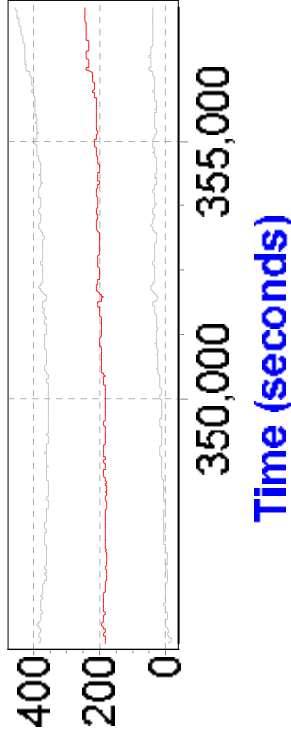
X Accelerometer Bias (micro-g)



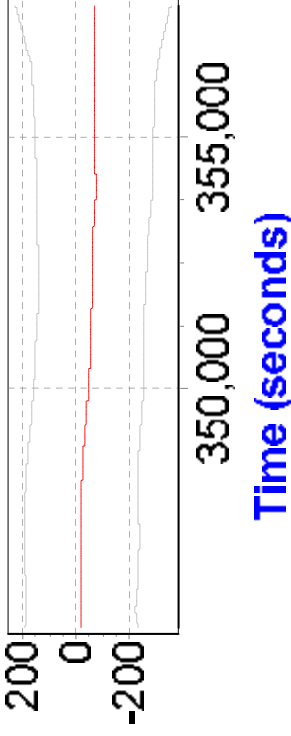
Y Accelerometer Bias (micro-g)



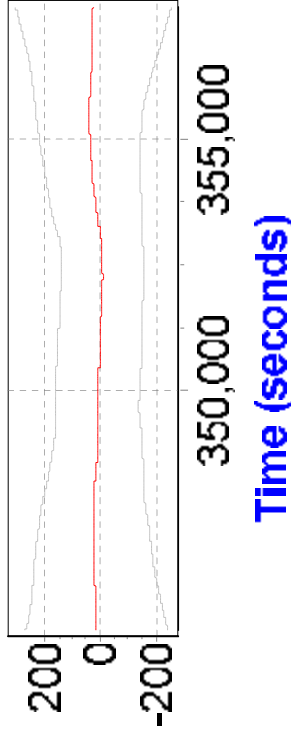
Z Accelerometer Bias (micro-g)



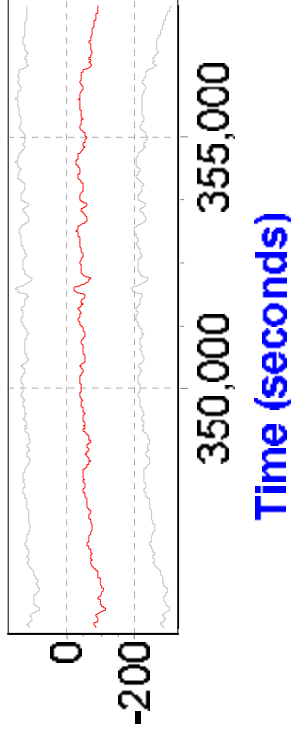
X Accelerometer Scale Factor Error (ppm)

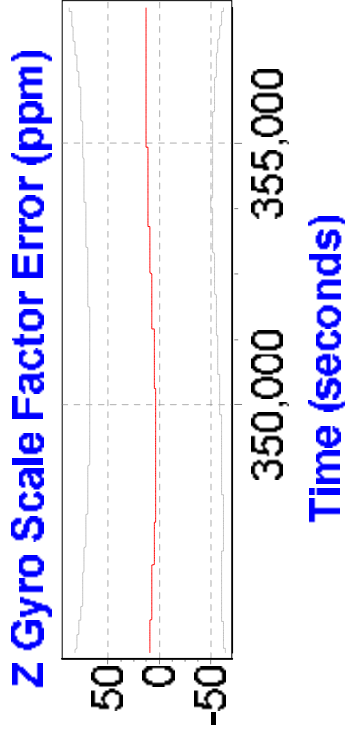
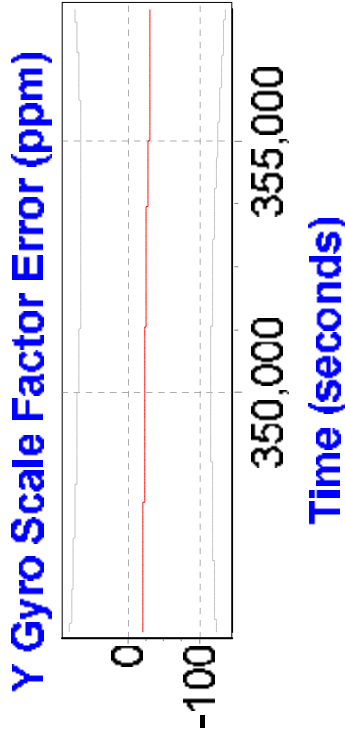
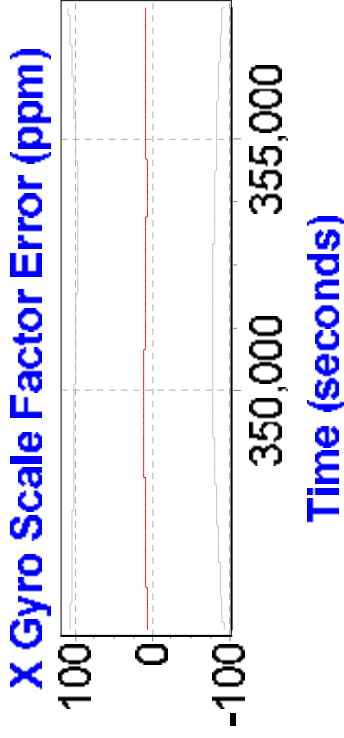
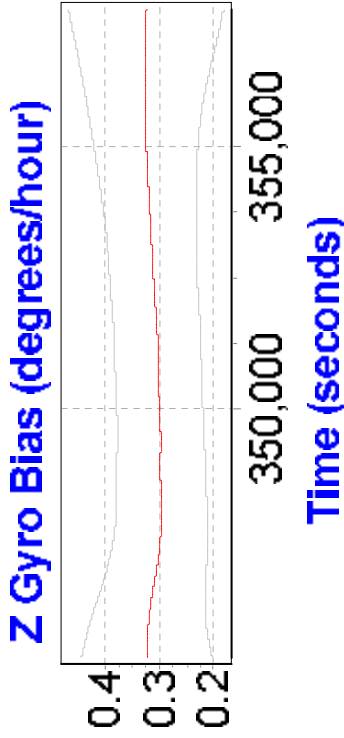
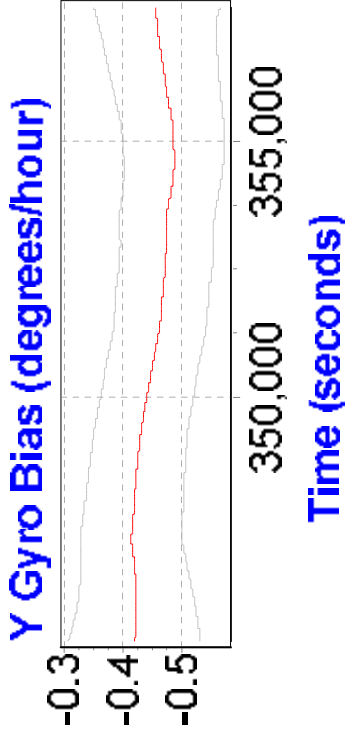
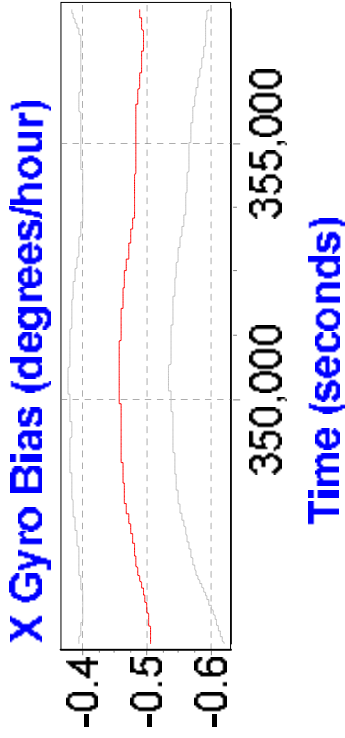


Y Accelerometer Scale Factor Error (ppm)



Z Accelerometer Scale Factor Error (ppm)







Flight Log

06 SEN 184

Project# 1103J Session 02110966

Date	6 April 11	Julian Day	096
Project	Skand	Aircraft	9315A
Staging	Mississauga Regional	Call Sign	
Survey Block		Pilot	TOD
Lines Complete		Operator	DEBOR
Mission Objective		Observer	

ALMIS/OpTech	
System #	
Laser Scanner	
Camera/Lens SN	
Shutter Speed	
Photo Freq	
IMU	
GPS Rx	
Data Drive	

Additional Notes:	325 210/9-17
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Outside Temp @ TC: 18C Outside Pressure @ TC: 29.89
 Outside Temp @ LA: Outside Pressure @ LA:

Aircraft: Block Time	<input type="checkbox"/> Times confirmed with pilot
Engine On (Hobbs)	3573.4
Engine Off (Hobbs)	3577.4
Takeoff	1955
Landing	2305
Total hrs	
FBO \$ / Lite	
Approx Fuel Cost	

Mission Plan	Scan Angle (Optech)
Flying Height AGL	950M
Ground Speed	150KT
Mirror Scan Rate	
Laser Pulse Rate	
First Laser/Alternating Return	

Static & KAR	GPS // INS
Time	Sec:
Pre Mission	1933
KAR Base	
KAR Base	
Post Mission	2310

END
1943
LOCAL
2320

Flight Plan Line #	LIDAR File Name	Flight Direction	GPS / UTC Time		Flight Aborted		Photo Events / Comment Please periodically record: Cabin Temp Output (Watts):
			Start	End	Time	NM to End	
257	TEST	W	235704	235719			
258	263	W	003511	004229	W		ATC RESTRICTIONS
259	262	W	005015	005548	E		150 QNH FINEA EASTERN
261		W	010424	01152			
260		E	011815	012350			
259		W	013045	013825			
258		E	014427	014952			
257		W	015705	020434			
256		E	020856	021436			

GPS Base Log Sheet

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MAIN Base

Station ID:	11301J	Project #:	11300	Missions:	096 0966
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Project Name:	FEMX	Calendar Date:	Apr 6	Julian Day	096
Approx. Coordinates WGS 84	N		W		
Description of Mark (Take Photos)	- Nail				
Monument is:	<input type="checkbox"/> Flush with ground <input checked="" type="checkbox"/> Above ground <u>5</u> cm <input type="checkbox"/> Below ground <u> </u> cm				
Location & Access	- Dulles Aviation FBO				

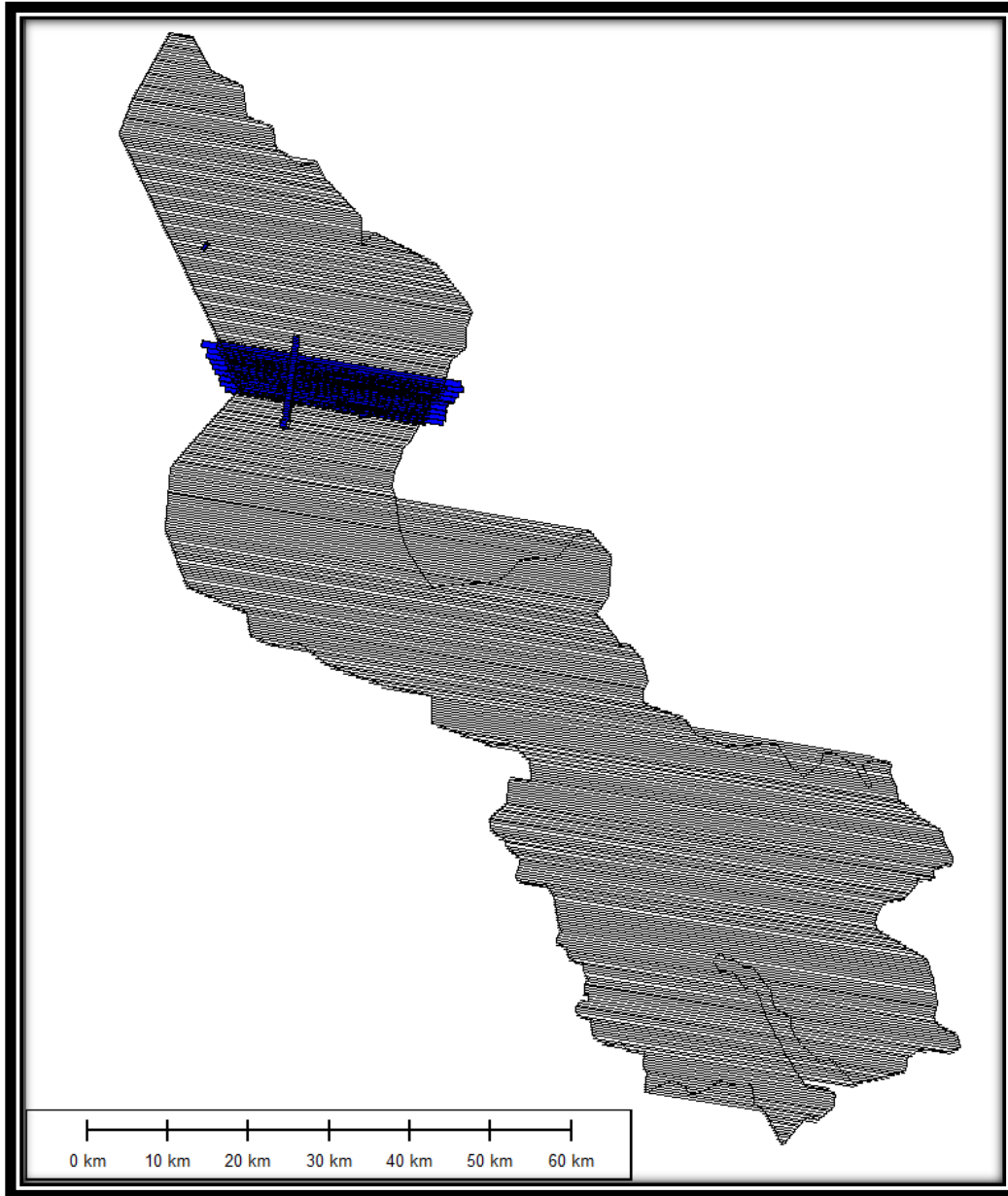
Observations & Additional Notes

GPS Observation / MAIN					
Rx Make / Model	SK600	Serial #	0020		
Ant. Make / Model	SK600	Serial #	0010		
Operator	Tr				
Session Time (GPS)	Start	End	13:53		
Slant H Before:	A: 1.441	B: 1.441			
Slant H After:	A: 1.441	B: 1.441			
Correction	<input type="checkbox"/> m <input type="checkbox"/> in <input type="checkbox"/> use GrafNav Profile				
Phase Center					
Data File Name	00200960.pdc				

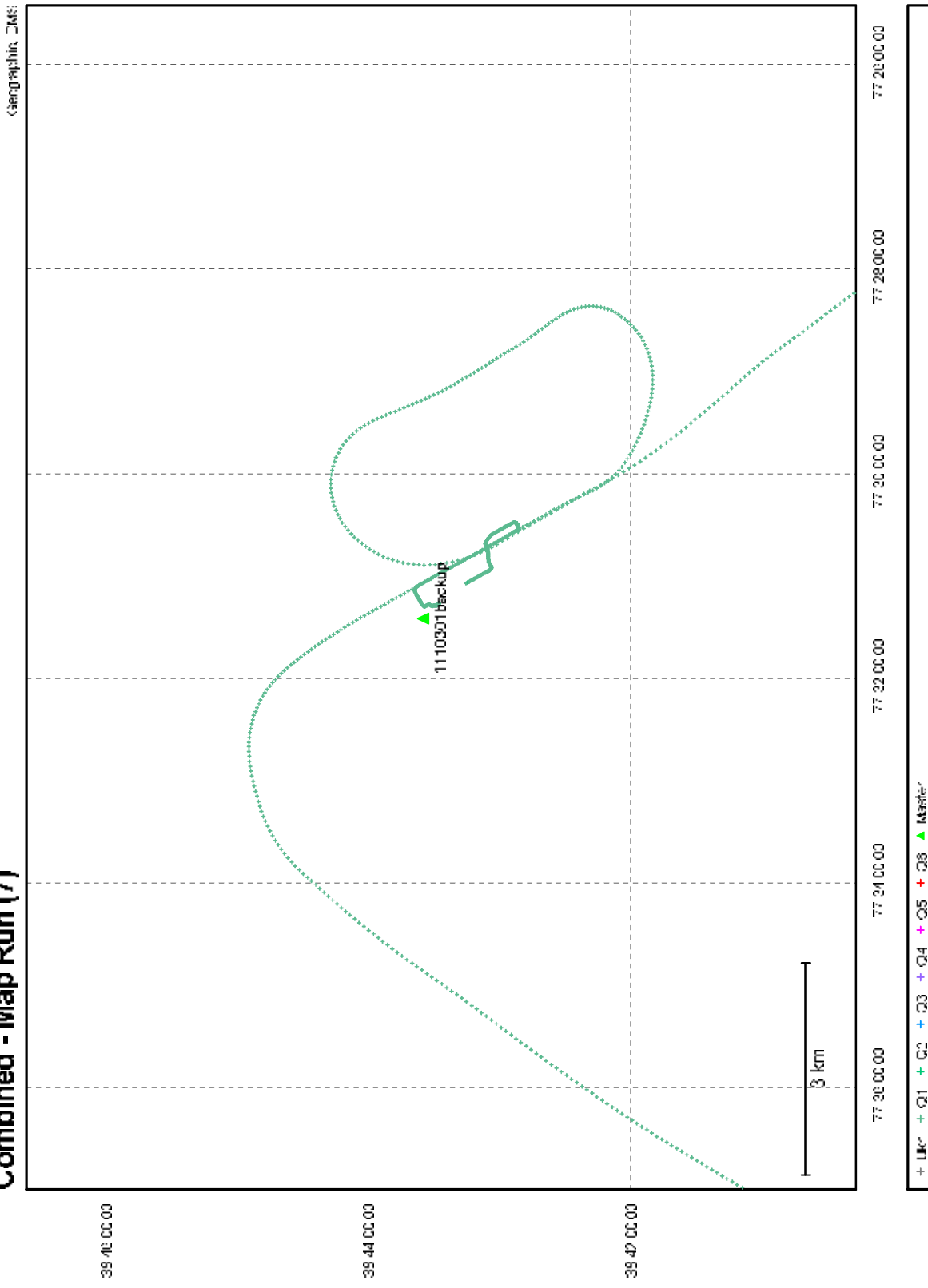
GPS Observation - Back-Up					
Rx Make / Model	SK600	Serial #	0002		
Ant. Make / Model	SK600	Serial #			
Operator	Tr				
Session Time (GPS)	Start	End	13:59		
Slant H Before:	A: 1.376	B: 1.376			
Slant H After:	A: 1.376	B: 1.376			
Correction	<input type="checkbox"/> m <input type="checkbox"/> in <input type="checkbox"/> use GrafNav Profile				
Phase Center					
Data File Name	00020960.pdc				

Mission: o211097a

2011 04 07



Combined - Map Run (7)



Processing Summary Information

Program: GrafNav
Version: 7.80.2517
Project: F:\11103U_VA\2_Operations\6_Missions\o211097a\3_Processed\GPS\o211097a.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:
Total in GPB file: 151894
No processed position: 137565
Missing Fwd or Rev: 4
With bad C/A code: 0
With bad L1 Phase: 0

Measurement RMS Values:
L1 Phase: 0.0149 (m)
C/A Code: 0.81 (m)
L1 Doppler: 0.034 (m/s)

Fwd/Rev Separation RMS Values:
East: 0.011 (m)
North: 0.007 (m)
Height: 0.020 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (14323 occurrences):
East: 0.009 (m)
North: 0.006 (m)
Height: 0.019 (m)

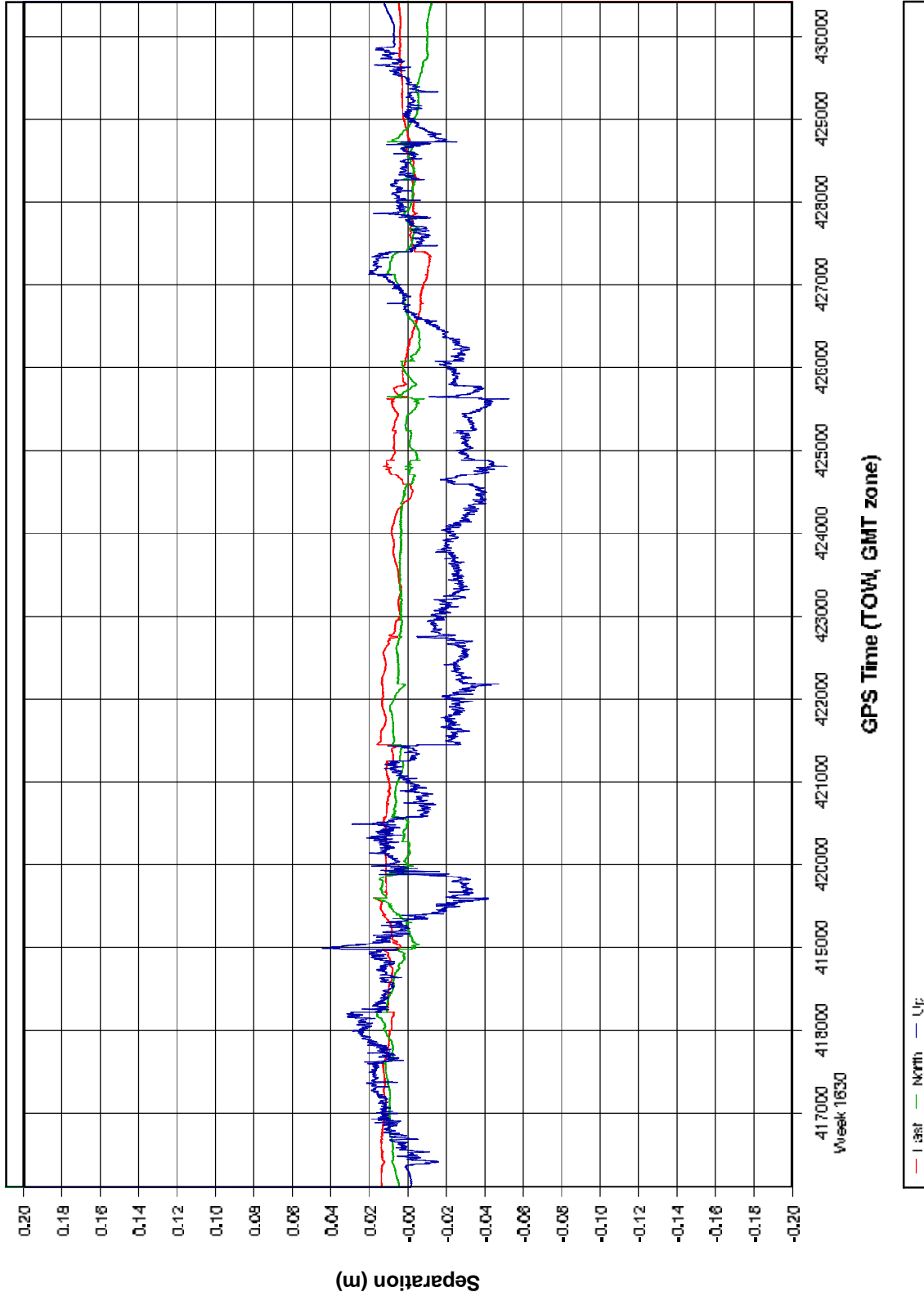
Quality Number Percentages:
Q 1: 99.9 %
Q 2: 0.1 %
Q 3: 0.0 %
Q 4: 0.0 %
Q 5: 0.0 %
Q 6: 0.0 %

Position Standard Deviation Percentages:
0.00 - 0.10 m: 100.0 %
0.10 - 0.30 m: 0.0 %
0.30 - 1.00 m: 0.0 %
1.00 - 5.00 m: 0.0 %
5.00 m + over: 0.0 %

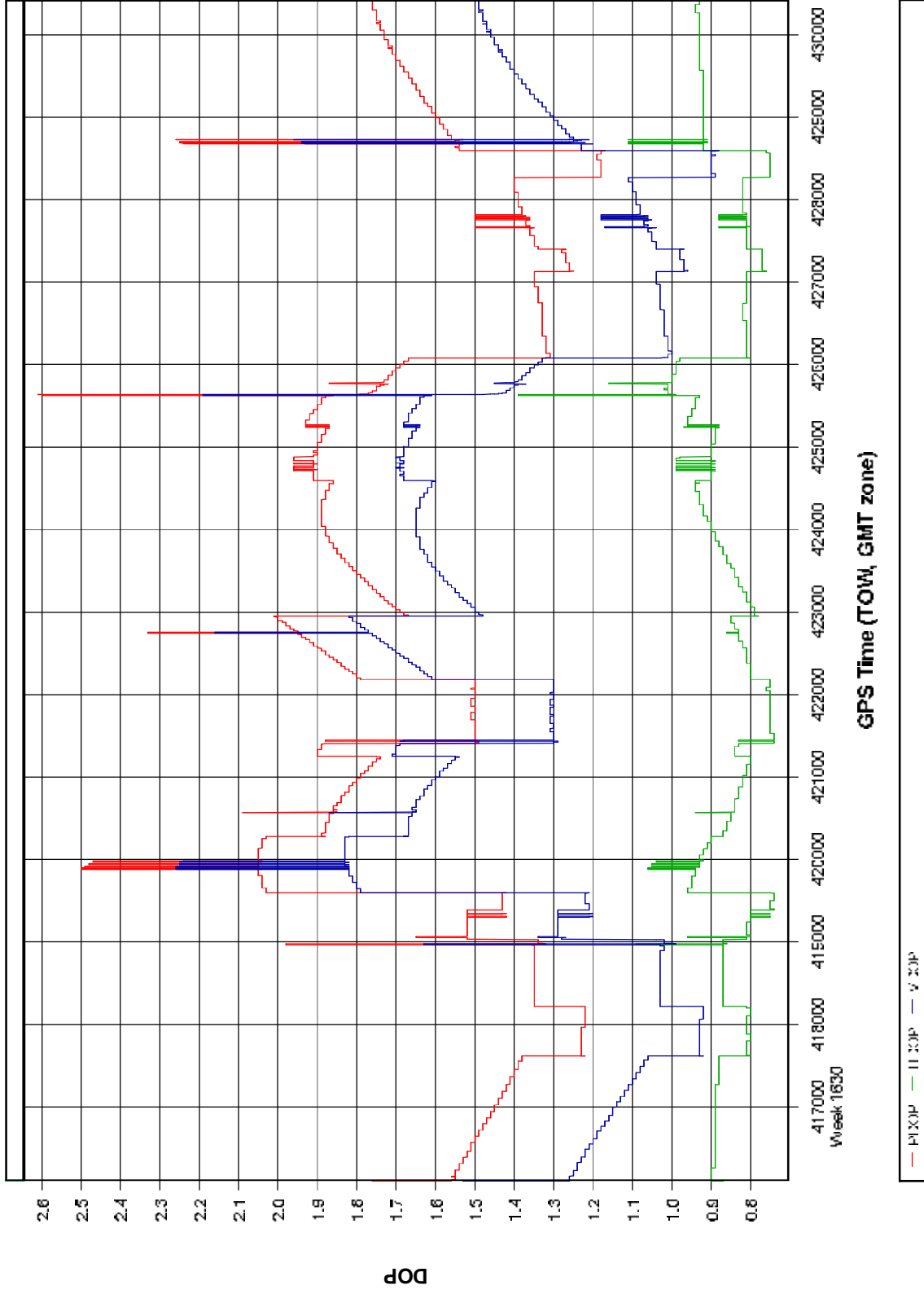
Percentages of epochs with DD_DOP over 10.00:
DOP over Tol: 0.0 %

Baseline Distances:
Maximum: 41.204 (km)
Minimum: 0.176 (km)
Average: 22.312 (km)
First Epoch: 0.791 (km)
Last Epoch: 0.314 (km)

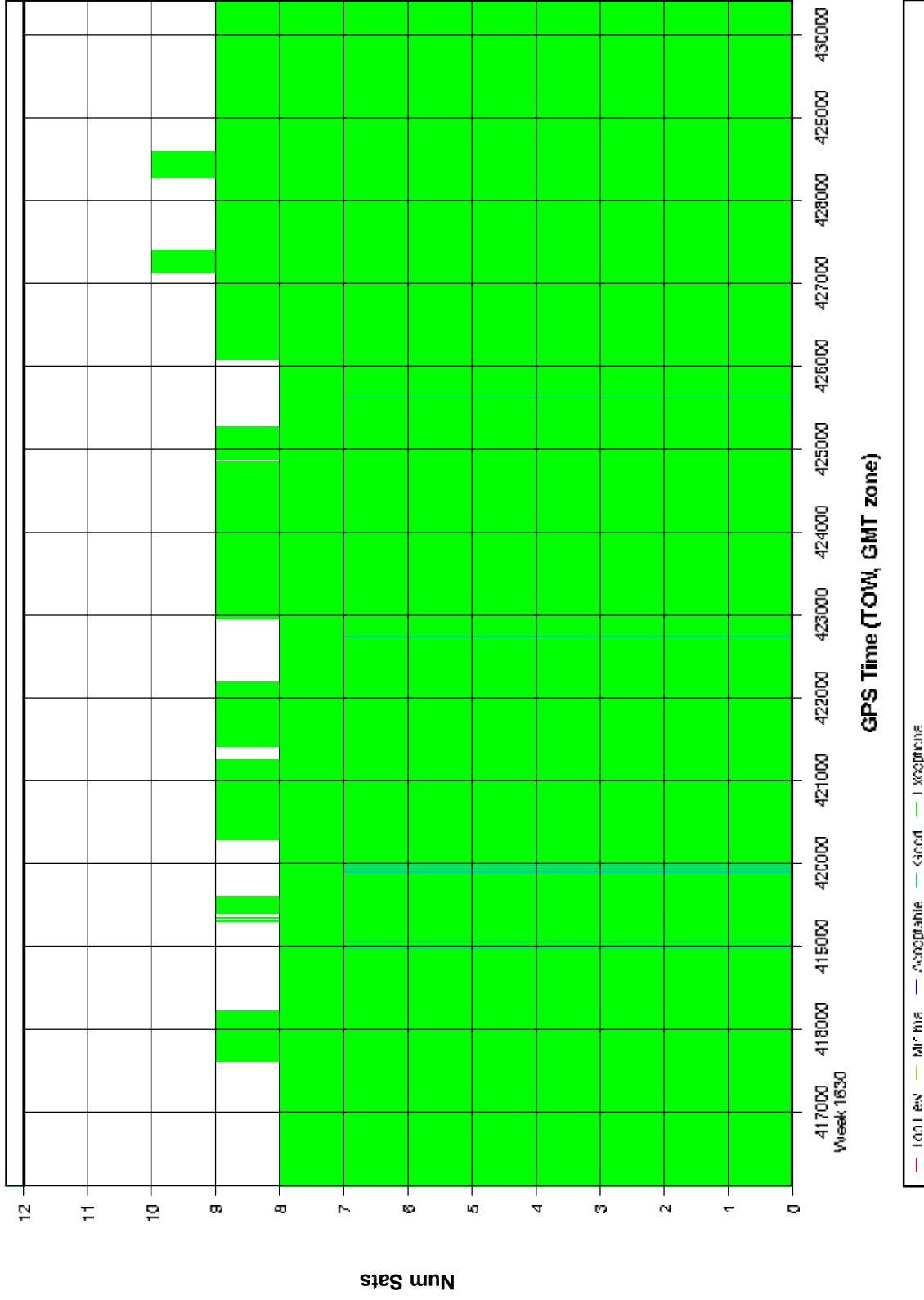
o211097a [Combined] - Forward/Reverse or Combined Separation Plot



o211097a [Combined] - PDOP, HDOP, VDOP Plots



o211097a [Combined] - Number of Satellites Bar Plot



```

                                o211097a. cfg
:   PROJECT:
F:\11103U_VA\2_Operations\6_Missions\o211097a\3_Processed\GPS\o211097a. cfg
:
:   DATE:      April 18/11 (date/time of processing)
:   TIME:      9:36:31
:   CREATED BY: GrafNav Version 7.80.2517
:
VERSION = 7.80.2517
PROCUSER = Unknown
PROCDISC = Run*(8)
PROCTIME = 09:33:06 04/18/2011

; Master station # 1 information
MB_MASTER_INDEX = 0
MB_MASTER_NAME = 1110301backup
MB_MASTER_FILE =
F:\11103U_VA\2_Operations\6_Missions\o211097a\1_RawData\original_PDC_files\00020970b
ackup.gpb
MB_MASTER_POS = 38 43 34.96223 -77 31 25.21449 24.1074
MB_MASTER_ANT = 1.411 0.001 1.377 1 _TP_SOK600 0
MB_MASTER_DISABLE = OFF

; Remote station information
REMOTE_FILE =
F:\11103U_VA\2_Operations\6_Missions\o211097a\3_Processed\Extract\mgps_o211097a.gpb
REMOTE_POS = 38 43 27.20534 -77 31 15.50992 23.0727
REMOTE_ANT = 0.000

; General settings
PROCESS_MODE = 105 108 113 126 ; Processing modes (GrafNav only)

DATUM = NAD83 AUTO ; Processing Datum
INPDATUM = ON NAD83 AUTO ; Input Datum (ON=Use processing datum)
ELEV_MASK = 11.0 ; Elevation mask (deg)
GRID = UTM 15 31 ; Grid info

CYCLE_TEST = BOTH ; Cycle slip test method
STATIC_SLIP_TOL = 0.40 ; slip tolerance in static mode (cycles)
USE_DOPPLER = ON OFF ; Use doppler meas. for phase, for code-only

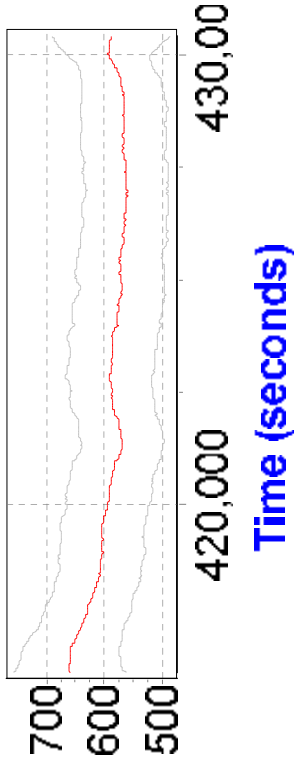
BASE_SAT = 99 ; Base satellite (99-default)

TIMERANGE = RANGE 986240097.0 986254425.0 2 0 ; Processing time range
INTERVAL = 0.10 ; Processing time interval (seconds)

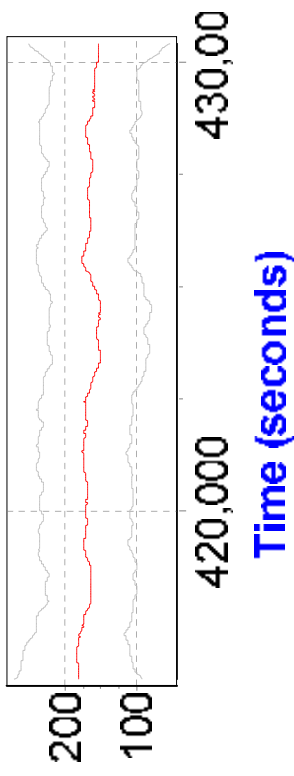
PROCESS_DIR = FORWARD ; Process direction (FORWARD/REVERSE)
BOTH_DIR = ON ; True for processing both directions
WRITE_BAD_EPOCHS = OFF ; Save bad data to .fwd/rev file (ON/OFF)
NOWRITE_HIGH = OFF 6 20.000 ; Don't write epoch with high statistics (q, stdev-m)
OUTPUT_MODE = EXTENDED ; Format for .fwd/rev file
DETAILED_SUM = ON ; Detailed Static/KAR Summary header
WRITE_SLIP_MSG = ON ; Print cycle slips to message log
SAVE_AMB = ON ; Should ambiguities be saved

```

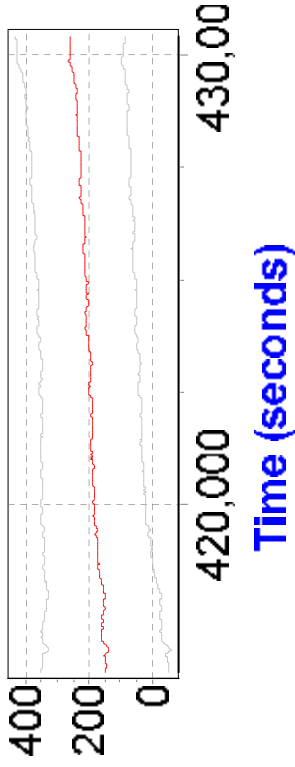
X Accelerometer Bias (micro-g)



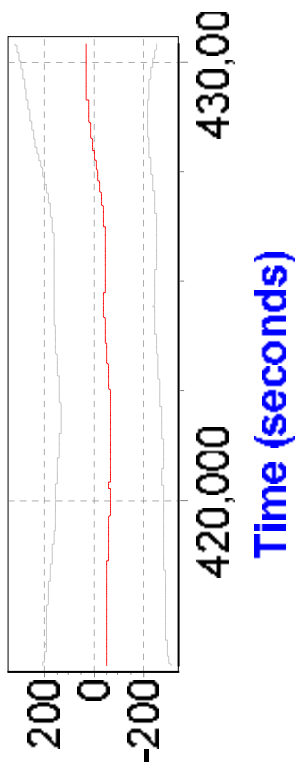
Y Accelerometer Bias (micro-g)



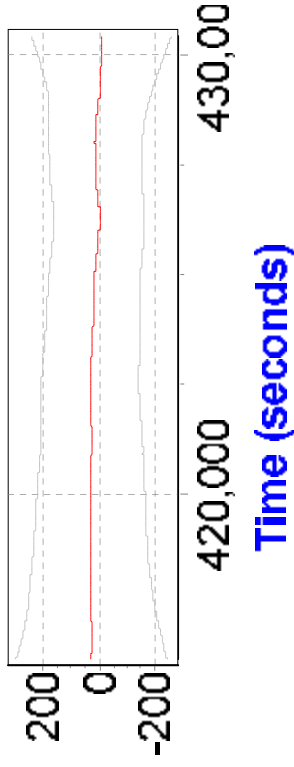
Z Accelerometer Bias (micro-g)



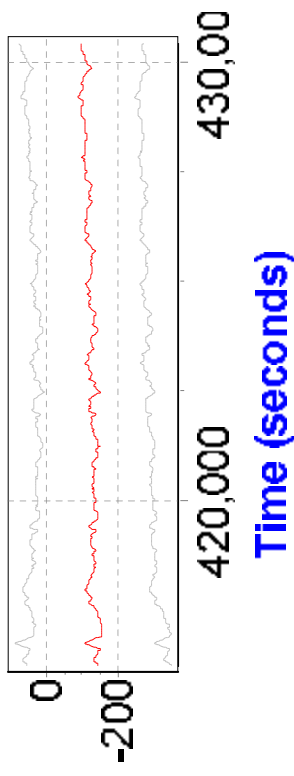
X Accelerometer Scale Factor Error (ppm)

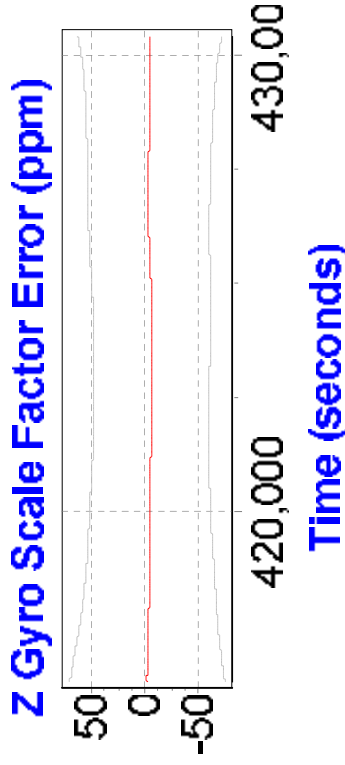
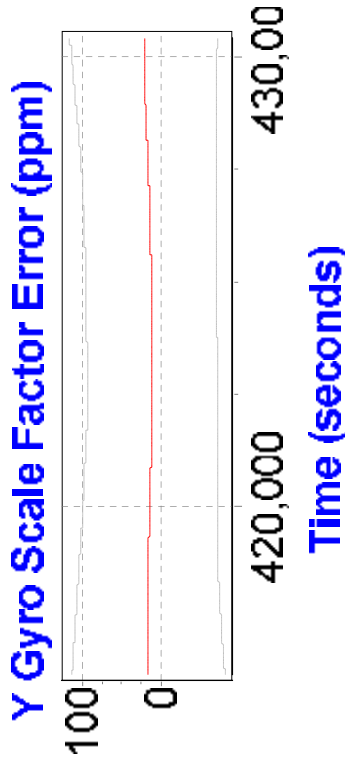
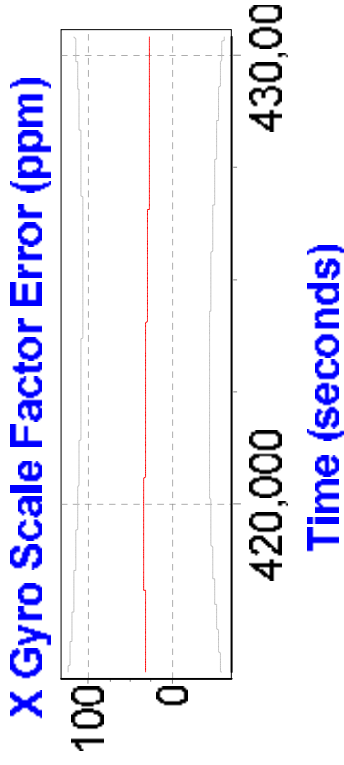
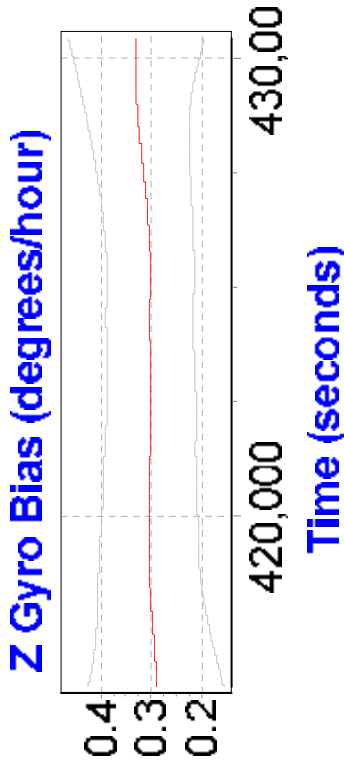
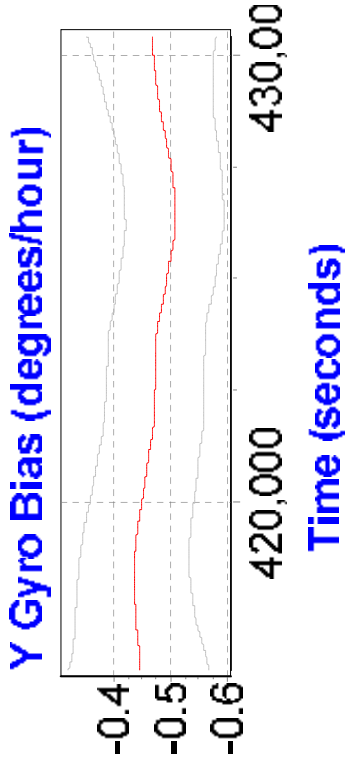
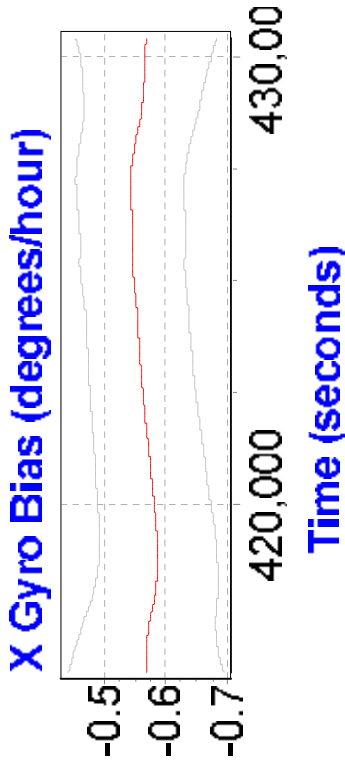


Y Accelerometer Scale Factor Error (ppm)



Z Accelerometer Scale Factor Error (ppm)







Flight Log

Project# 1110301 Session 0211097A

Date	7 April 11	Julian Day	097
Project	MANASSAS REGIONAL	Aircraft	9315A
Staging		Call Sign	
Survey Block		Pilot	TODD
Lines Complete		Operator	DAGG
Mission Objective		Observer	

ALMIST/Oplech	02
System #	
Laser Scanner	
Camera/Lens SN	
Shutter Speed	
Photo Freq.	
IMU	
GPS Rx	
Data Drive	

Additional Notes:
~~350 @ 4 hrs~~
 Outside Temp @ TO: 20c Outside Pressure @ TO: 30.01
 Outside Temp @ LA: Outside Pressure @ LA:

Aircraft: Block Time	<input type="checkbox"/> Times confirmed with pilot
Engine On (Hobbs)	3577.4
Engine Off (Hobbs)	3581.8
Total hrs (Hobbs)	4.4
Takeoff	
Landing	
Total hrs	
(120L) x (Total ft hrs)	
FBO \$/Line	
Approx. Fuel Cost	

Flying Height AGL	980
Ground Speed	150
First/Last/Alternating Return	
Mission Plan	
Scan Angle (Optical)	
Mirror Scan Rate	
Laser Pulse Rate	

Static & KAR	GPS // INS
Pre Mission	Bar
KAR Base	1923
KAR Base	
Post Mission	2327

END
1933

2337

Flight Plan Line #	LIDAR File Name	Flight Direction	GPS / JTC Time		Flight Acquired		Photo Events / Commer
			Start	End	Time	NM to End	
262	TEST 19415-194207	E	194650	195239			
263		W	195720	200340			
264		E	200811	201406			
265		W	201821	202451			
266		E	203004	203604			
267		W	204033	204649			
268		E	205200	205812			
269		W	210311	210918			
270		E	211406	212011			

Please periodically record:
 Outside Temp:
 Laser Temp:
 Cabin Temp:
 Output (Watts):



GPS Base Log Sheet
G-197

Station ID:	1130 main	Project #:	1130J	Missions:	0211097a 0211097b
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Project Name:	FEMA	Calendar Date:	Apr 7	Julian Day	097
Approx. Coordinates WGS 84	N 38°43'34" W 77°31'24"				
Description of Mark (Take Photos)	- Nail				
Monument is:	<input checked="" type="checkbox"/> Flush with ground <input type="checkbox"/> 5 cm Above ground <input type="checkbox"/> Below ground cm				

Location & Access
- Dulles Aviation FBO

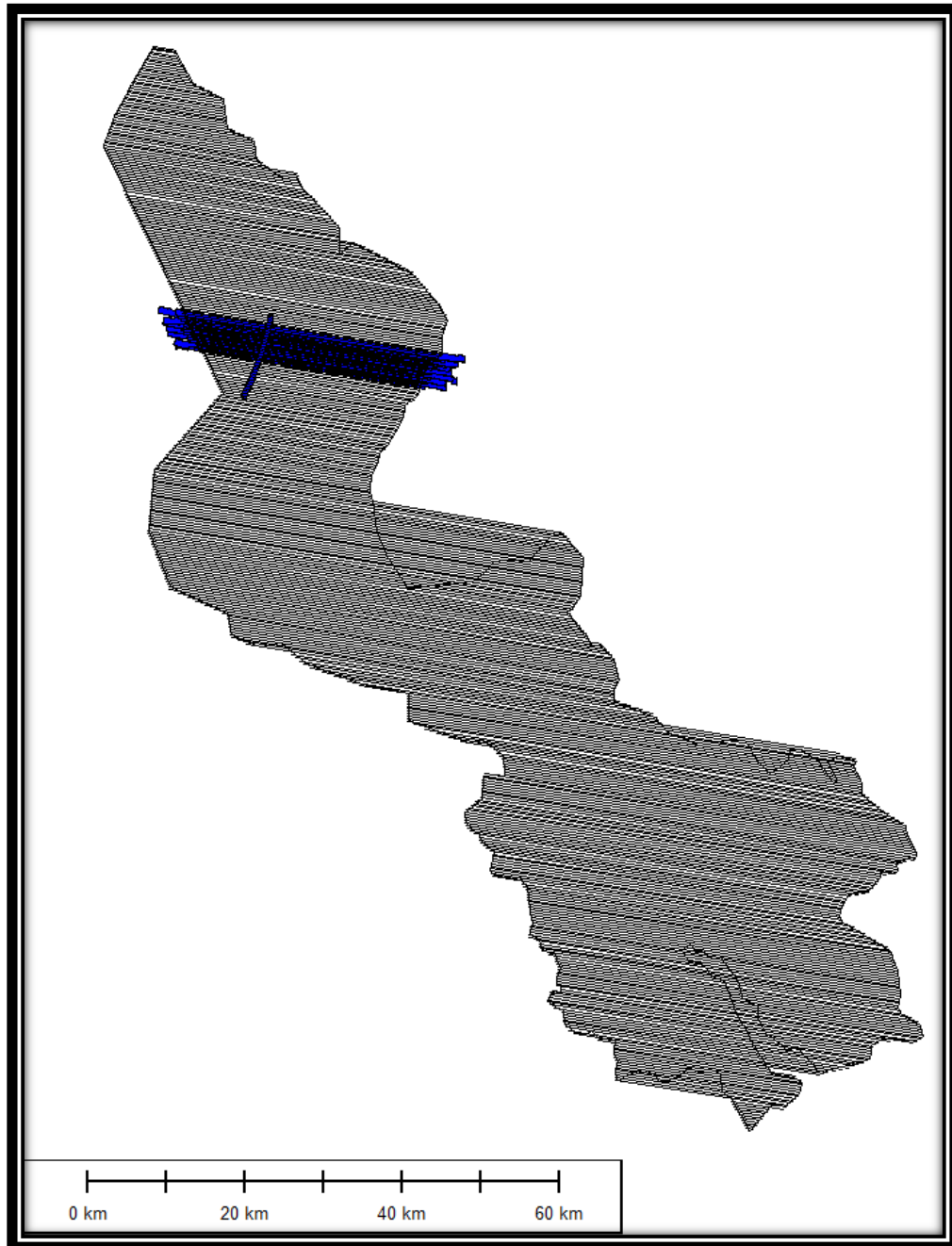
Obstructions & Additional Notes
Main base shut-off. Some time during first mission so will need to be backup.
58°43'35" 77°31'25"

GPS Observation - MAIN	
Rx Make / Model	GR2600
Ant Make / Model	SK600
Operator	Tr
Session Time (GPS)	Start: 15:56
Slant HI Before:	A: 1.440
Slant HI After:	A: B:
Correction	
Phase Center	<input type="checkbox"/> m <input type="checkbox"/> in <input type="checkbox"/> use GrafNav Profile
Data File Name	00200970pdc

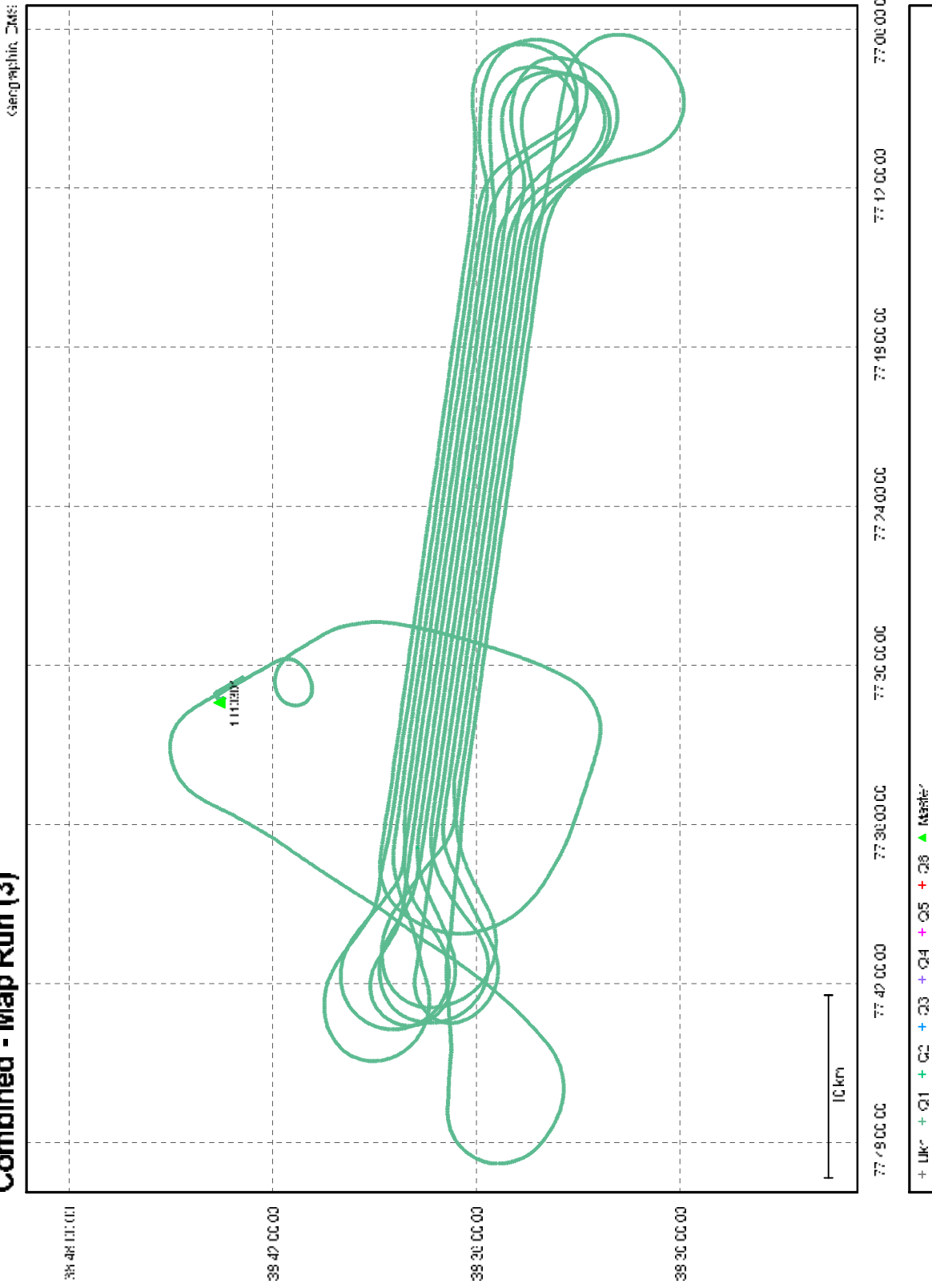
GPS Observation - Back-Up	
Rx Make / Model	GR2600
Ant Make / Model	SK600
Operator	Tr
Session Time (GPS)	Start: 16:01
Slant HI Before:	A: 1.377
Slant HI After:	A: B:
Correction	
Phase Center	<input type="checkbox"/> m <input type="checkbox"/> in <input type="checkbox"/> use GrafNav Profile
Data File Name	00200970pdc

Mission: o211097b

2011 04 07



Combined - Map Run (3)



Processing Summary Information

Program: GrafNav
Version: 7.80.2517
Project: F:\11103U_VA\2_Operations\6_Missions\o211097b\3_Processed\GPS\o211097b.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:
Total in GPB file: 131892
No processed position: 118917
Missing Fwd or Rev: 4
With bad C/A code: 0
With bad L1 Phase: 0

Measurement RMS Values:
L1 Phase: 0.0130 (m)
C/A Code: 0.73 (m)
L1 Doppler: 0.026 (m/s)

Fwd/Rev Separation RMS Values:
East: 0.008 (m)
North: 0.005 (m)
Height: 0.014 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (12969 occurrences):
East: 0.007 (m)
North: 0.005 (m)
Height: 0.013 (m)

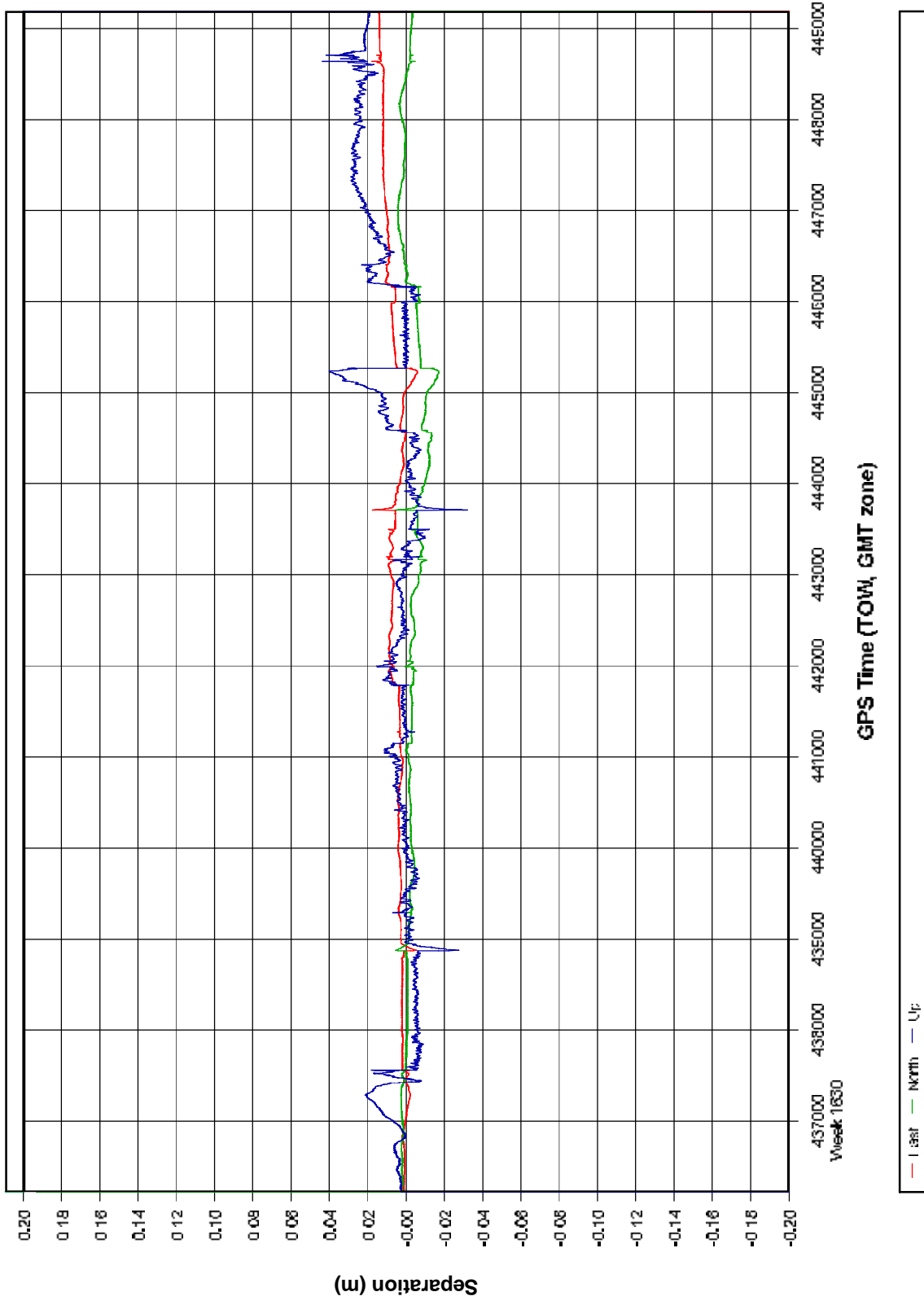
Quality Number Percentages:
Q 1: 100.0 %
Q 2: 0.0 %
Q 3: 0.0 %
Q 4: 0.0 %
Q 5: 0.0 %
Q 6: 0.0 %

Position Standard Deviation Percentages:
0.00 - 0.10 m: 99.7 %
0.10 - 0.30 m: 0.3 %
0.30 - 1.00 m: 0.0 %
1.00 - 5.00 m: 0.0 %
5.00 m + over: 0.0 %

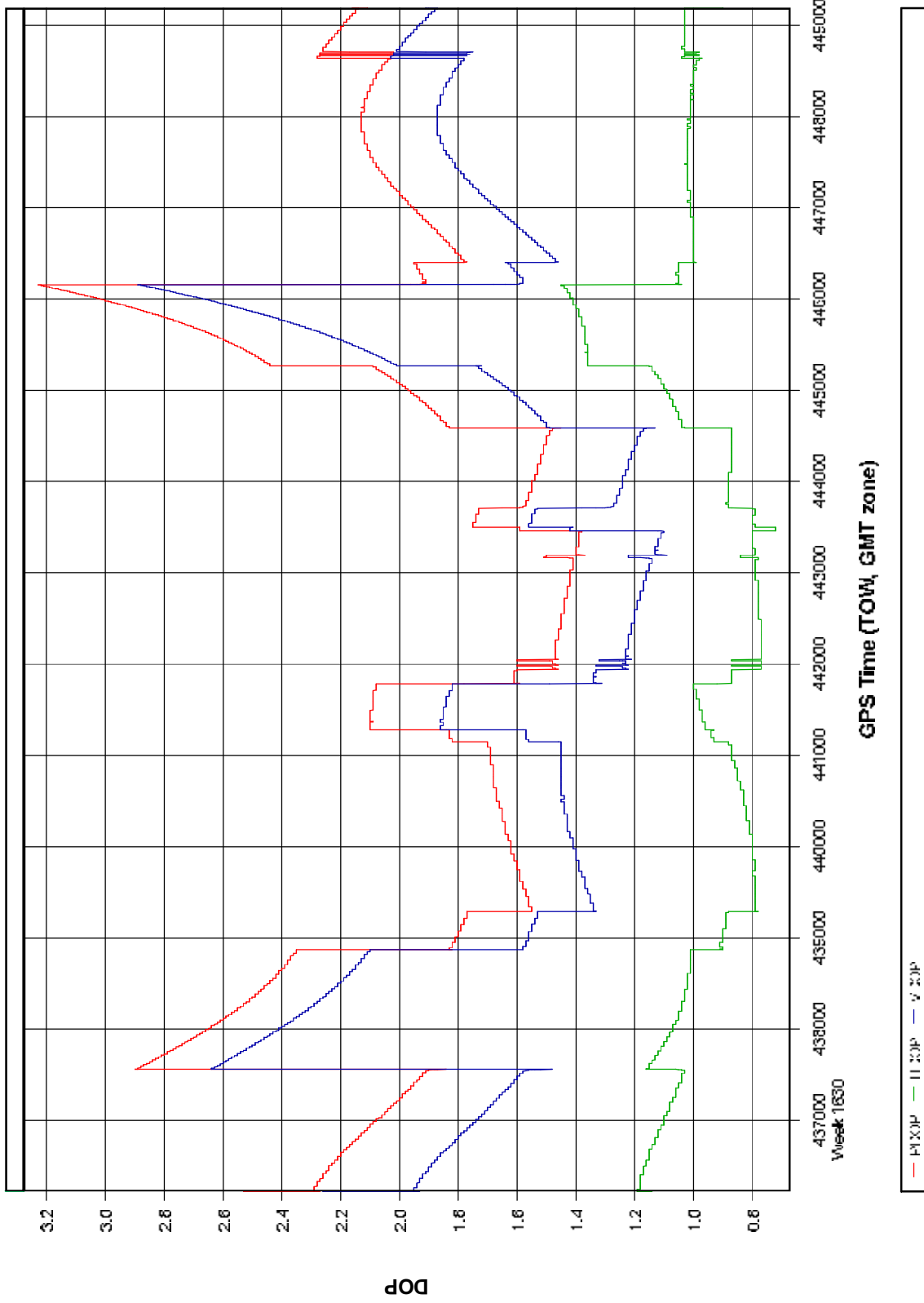
Percentages of epochs with DD_DOP over 10.00:
DOP over Tol: 0.0 %

Baseline Distances:
Maximum: 43.008 (km)
Minimum: 0.154 (km)
Average: 18.375 (km)
First Epoch: 0.280 (km)
Last Epoch: 0.319 (km)

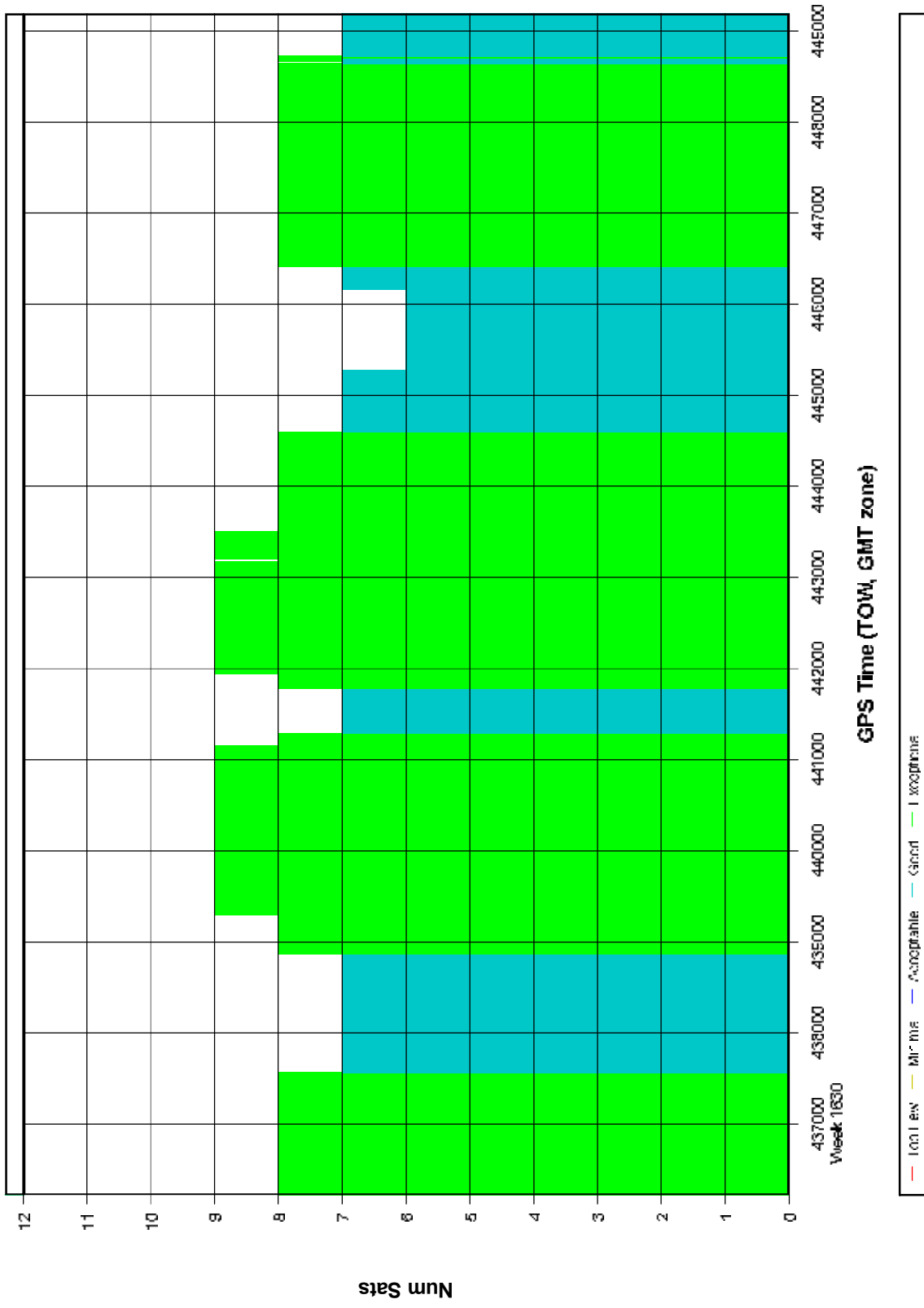
o211097b [Combined] - Forward/Reverse or Combined Separation Plot



o211097b [Combined] - PDOP, HDOP, VDOP Plots



o211097b [Combined] - Number of Satellites Bar Plot



```

                                o211097b. cfg
:   PROJECT:
F:\11103U_VA\2_Operations\6_Missions\o211097b\3_Processed\GPS\o211097b. cfg
:
:   DATE:      April 14/11 (date/time of processing)
:   TIME:      10:33:29
:   CREATED BY: GrafNav Version 7.80.2517
:
VERSION = 7.80.2517
PROCUSER = Unknown
PROCDISC = Run*(4)
PROCTIME = 10:31:36 04/14/2011

; Master station # 1 information
MB_MASTER_INDEX = 0
MB_MASTER_NAME = 1110301
MB_MASTER_FILE =
F:\11103U_VA\2_Operations\6_Missions\o211097b\1_RawData\original_PDC_files\00200980.
gpb
MB_MASTER_POS = 38 43 34.05308 -77 31 24.33961 23.6230
MB_MASTER_ANT = 1.474 0.001 1.440 1 _TP_SOK600 0
MB_MASTER_DISABLE = OFF

; Remote station information
REMOTE_FILE =
F:\11103U_VA\2_Operations\6_Missions\o211097b\3_Processed\Extract\mgps_o211097b. gpb
REMOTE_POS = 38 43 27.88320 -77 31 15.95706 21.2545
REMOTE_ANT = 0.000

; General settings
PROCESS_MODE = 105 108 113 126 ; Processing modes (GrafNav only)

DATUM = NAD83 AUTO ; Processing Datum
INPDATUM = ON NAD83 AUTO ; Input Datum (ON=Use processing datum)
ELEV_MASK = 15.0 ; Elevation mask (deg)
GRID = UTM 15 31 ; Grid info

CYCLE_TEST = BOTH ; Cycle slip test method
STATIC_SLIP_TOL = 0.40 ; slip tolerance in static mode (cycles)
USE_DOPPLER = ON OFF ; Use doppler meas. for phase, for code-only

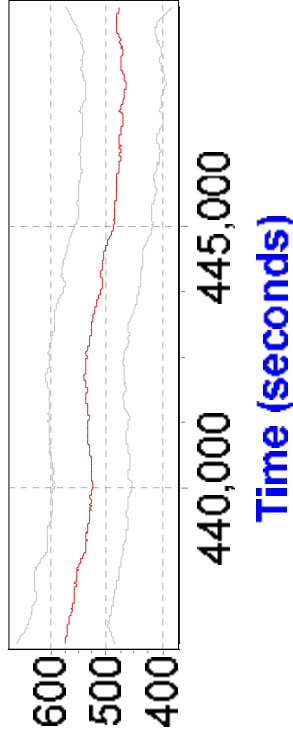
BASE_SAT = 99 ; Base satellite (99-default)

TIMERANGE = RANGE 986260217.0 986273191.0 2 0 ; Processing time range
INTERVAL = 0.10 ; Processing time interval (seconds)

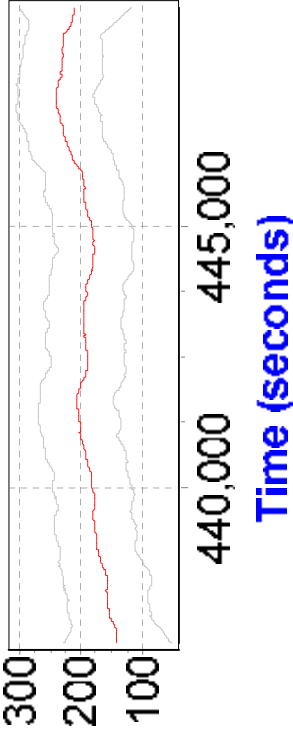
PROCESS_DIR = FORWARD ; Process direction (FORWARD/REVERSE)
BOTH_DIR = ON ; True for processing both directions
WRITE_BAD_EPOCHS = OFF ; Save bad data to .fwd/rev file (ON/OFF)
NOWRITE_HIGH = OFF 6 20.000 ; Don't write epoch with high statistics (q, stdev-m)
OUTPUT_MODE = EXTENDED ; Format for .fwd/rev file
DETAILED_SUM = ON ; Detailed Static/KAR Summary header
WRITE_SLIP_MSG = ON ; Print cycle slips to message log
SAVE_AMB = ON ; Should ambiguities be saved

```

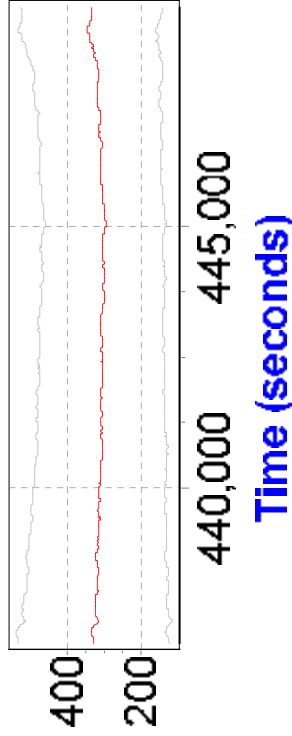
X Accelerometer Bias (micro-g)



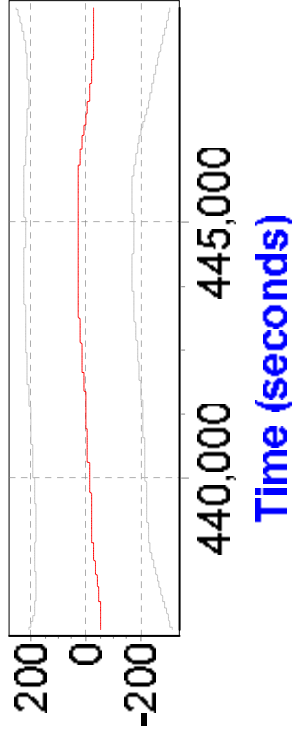
Y Accelerometer Bias (micro-g)



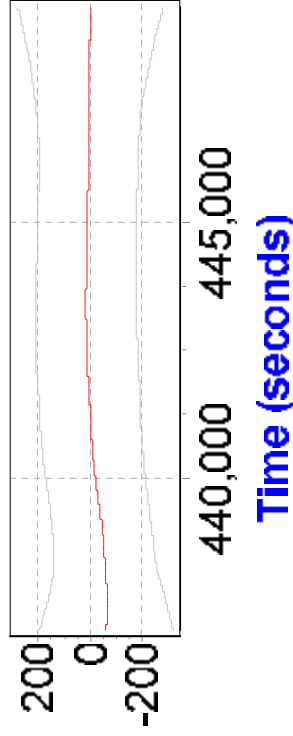
Z Accelerometer Bias (micro-g)



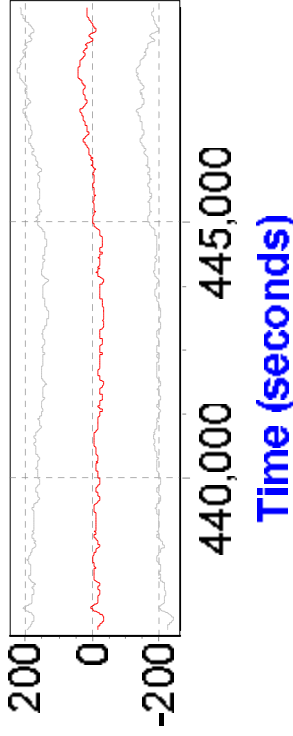
X Accelerometer Scale Factor Error (ppm)

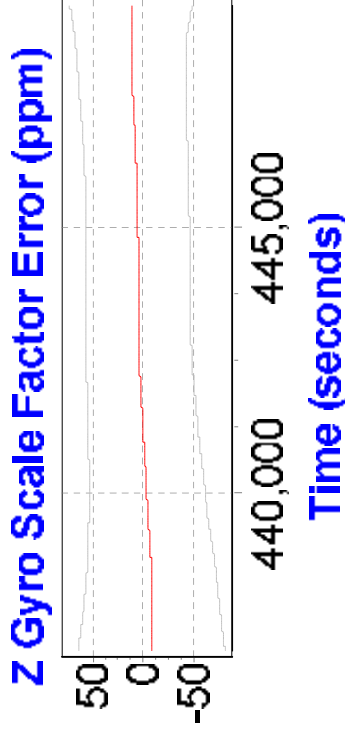
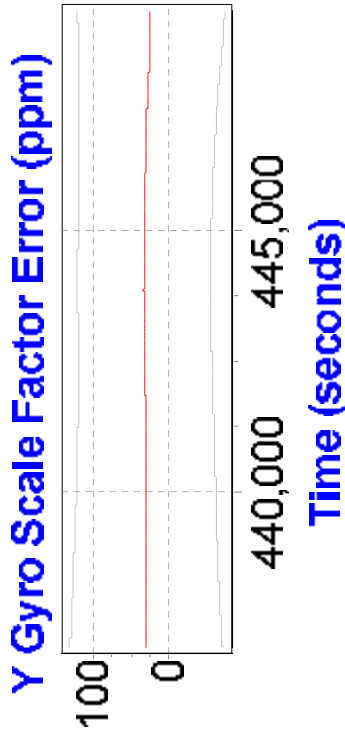
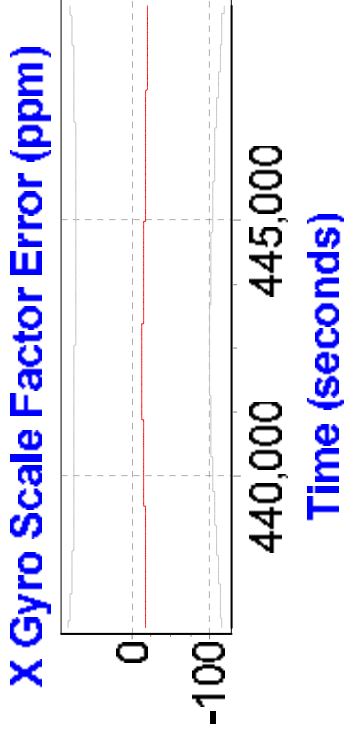
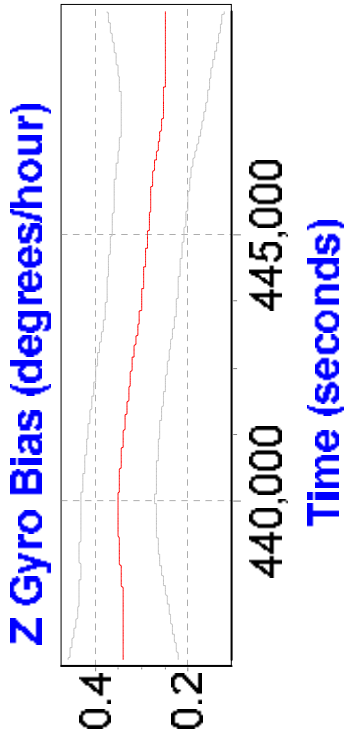
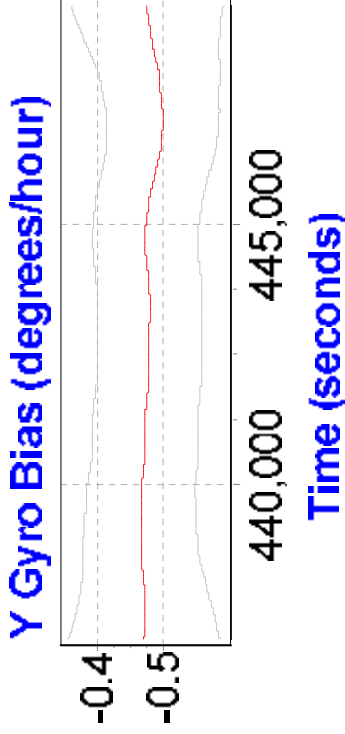
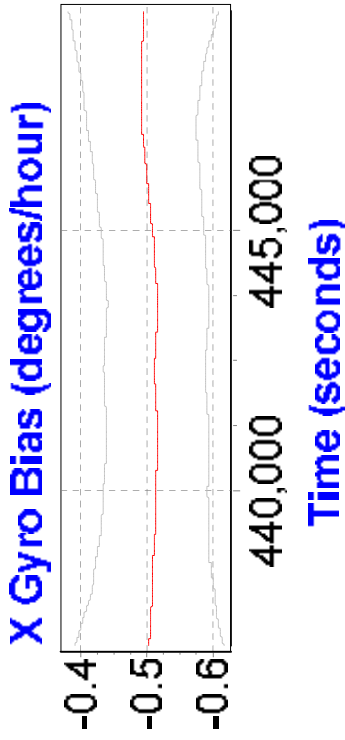


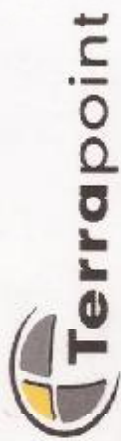
Y Accelerometer Scale Factor Error (ppm)



Z Accelerometer Scale Factor Error (ppm)







Flight Log

Project# 1110301 **Session** 0211097B

Date	Apr 6 11	Julian Day	096
Project	MANASSAS	Aircraft	
Staging		Call Sign	OAS
Survey Block		Pilot	Paul
Lines Complete		Operator	everette
Mission Objective			

ALM Su/Dptech	DR
System #	
Laser Scanner	
Camera/Lens S/N	
Shutter Speed	
Photo Freq	
IML	
GPS Rx	
Data Drive	

Additional Notes:
 Outside Temp @ TO: 18 Outside Pressure @ TO: 2189
 Outside Temp @ LA: Outside Pressure @ LA:

Aircraft Block Time	<input type="checkbox"/> Times confirmed with pilot
Engine Cr. (Hkbs)	Taskoff: 1100 2105
Engine Off (Hkbs)	Landing: 058 042
Total hrs (Hkbs)	Total hrs
	Approx. Fuel Cost

Flying Height AGL	3000	Scan Angle (Offset)	22
Ground Speed	180	Mirror Scan Rate	44
First/Last/Alternating Return		Laser Pulse Rate	20

Static & KAR	GPS // INS
Time	Start
Pre Mission	
KAR Base	
KAR Base	
Post Mission	

Flight Plan Line #	LIDAR File Name	Flight Direction	GPS / UTC Time		Flight Aborted		Photo Events / Commer	
			Start	End	Time	NM to End	Outside Temp	Please periodically record: Cabin Temp: Output (Watts)
280		E	01:44	150				
281		W	01:57	203				
282		E	02:08	218				
283		W	2:20	226				
284		E	2:31	238				
285		W	2:43	251				
286		E	2:56	303				
287		W	3:07	315				
288		E	3:19	327				



Flight Log

Project# 1103 | Session 0211097B

Flight Plan Line #	LIDAR File Name	Flight Direction	GPS / UTC Time		Flight Abort/ed		Photo Events / Commer		
			Start	End	Time	NM to End	Outside Temp Laser Temp	Cabin Temp	Please periodically record: Output (Watts)
289		W	331	339					
290		E	343	380					
291		W	386	402					
292		E	408	416					
293		W	420	427					
cross		N	434	438					



GPS Base Log Sheet

Station ID: 1130 main Project #: 1130J Missions: 097

Project Name: FEMA Calendar Date: Apr 7 Julian Day: 097

Approx. Coordinates WGS 84: N 38°43'34" W 77°31'24"

Description of Mark (Take Photos): - Nail

Monument is: Flush with ground Above ground Below ground cm

Location & Access: - Dulles Aviation FBO

Obstructions & Additional Notes:
 Main base shut-off. Some time during first mission so will need to be backup.
 58°43'35" 77°31'25"

GPS Observation - MAIN

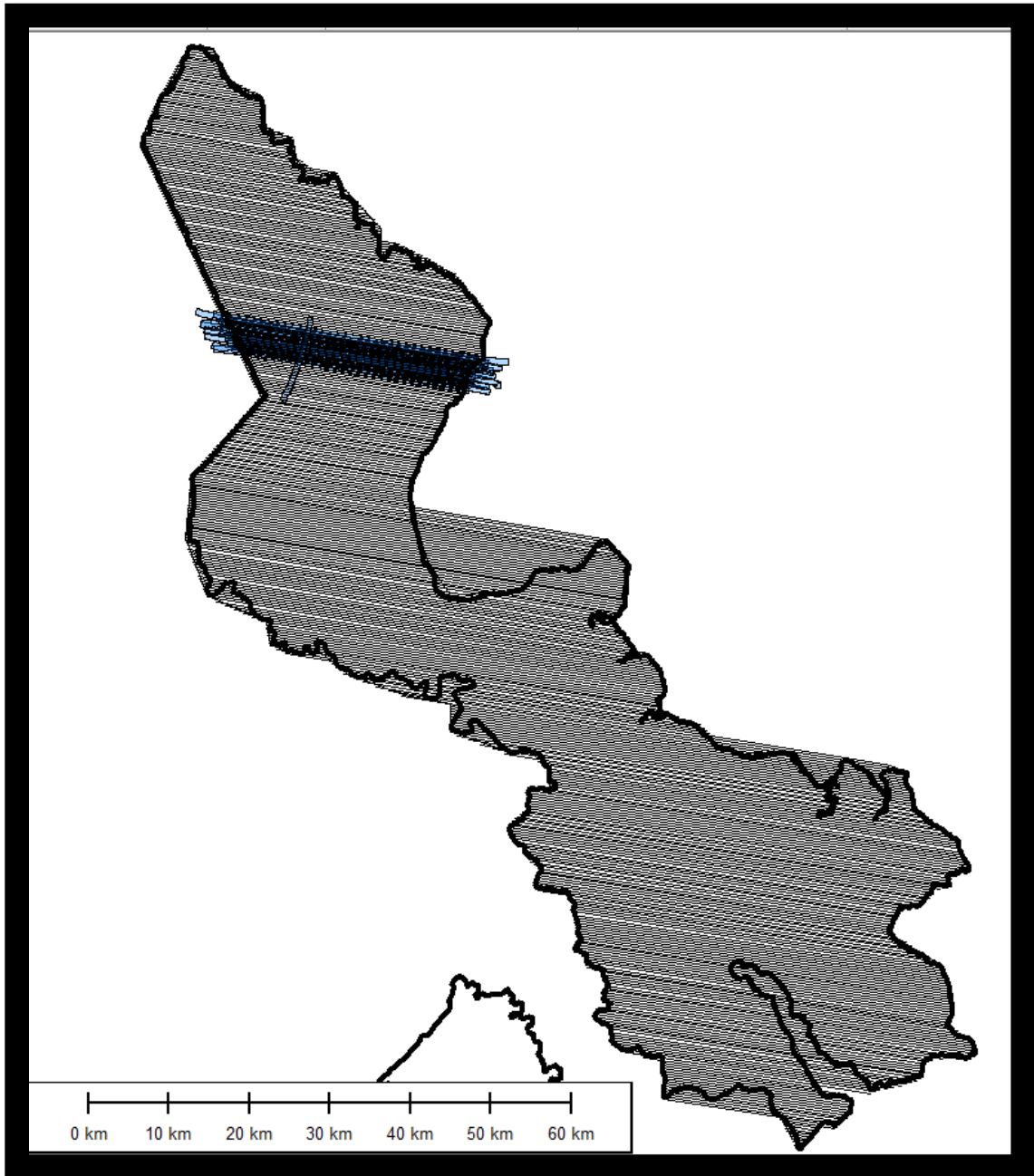
Rx Make / Model	GR2600	Serial #	0000
Ant Make / Model	SK600	Serial #	0010
Operator	Tr		
Session Time (GPS)	Start	End	
	15:56		
Slant HI Before:	A: 1.440	B: 1.440	
Slant HI After:	A:	B:	
Correction			
Phase Center			
Data File Name	00200970pdc		

GPS Observation - Back-Up

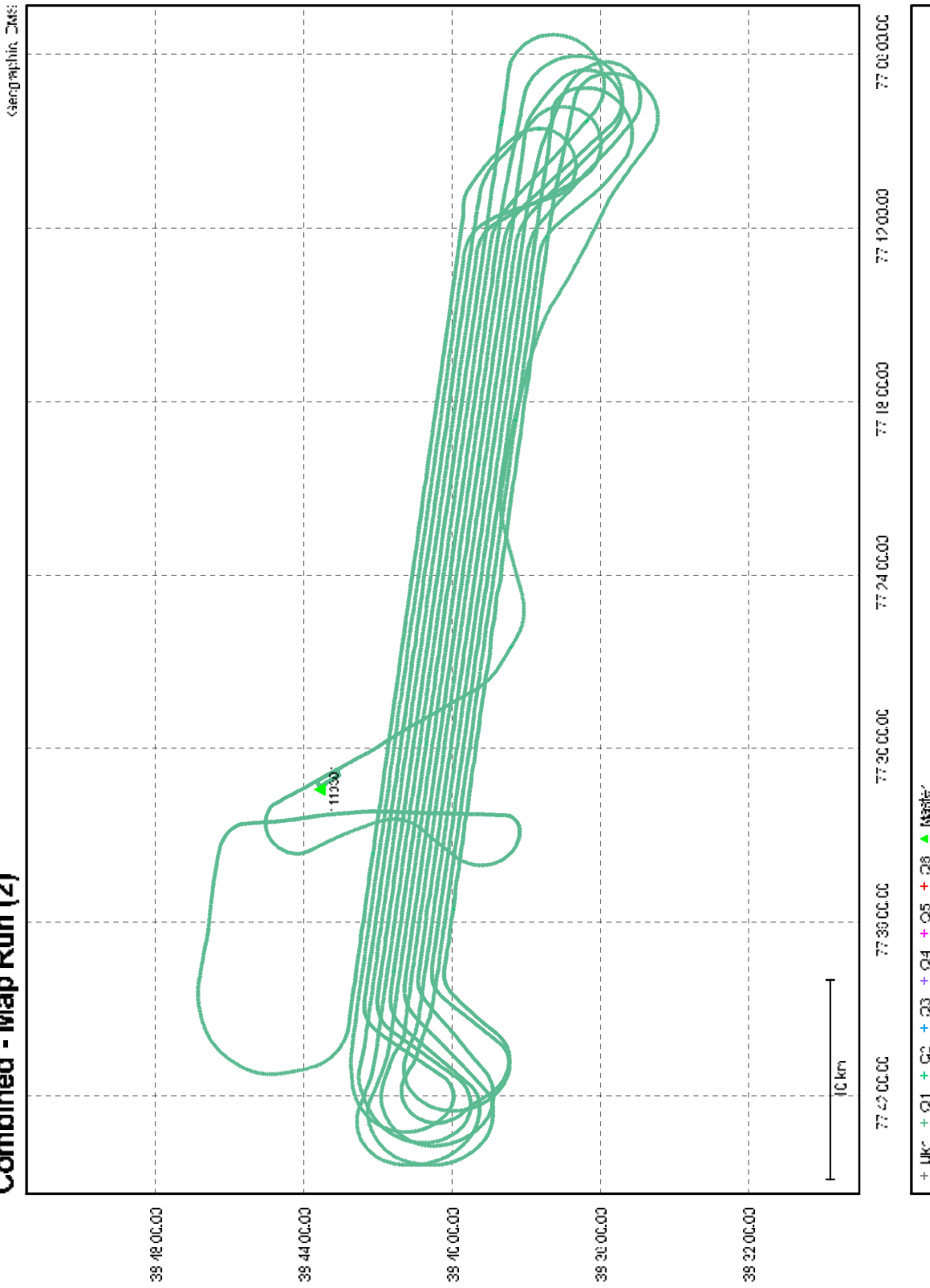
Rx Make / Model	GR2600	Serial #	0002
Ant Make / Model	SK600	Serial #	0011
Operator	Tr		
Session Time (GPS)	Start	End	
	16:01		
Slant HI Before:	A: 1.377	B: 1.377	
Slant HI After:	A:	B:	
Correction			
Phase Center			
Data File Name	00200970pdc		

Mission: o211101a

2011 04 11



Combined - Map Run (2)



Processing Summary Information

Program: GrafNav
Version: 7.80.2517
Project: F:\11103U_VA\2_Operations\6_Missions\o211101a\3_Processed\GPS\o211101a.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:
Total in GPB file: 156641
No processed position: 140997
Missing Fwd or Rev: 3
With bad C/A code: 0
With bad L1 Phase: 0

Measurement RMS Values:
L1 Phase: 0.0174 (m)
C/A Code: 0.79 (m)
L1 Doppler: 0.033 (m/s)

Fwd/Rev Separation RMS Values:
East: 0.011 (m)
North: 0.009 (m)
Height: 0.024 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (15639 occurrences):
East: 0.010 (m)
North: 0.009 (m)
Height: 0.020 (m)

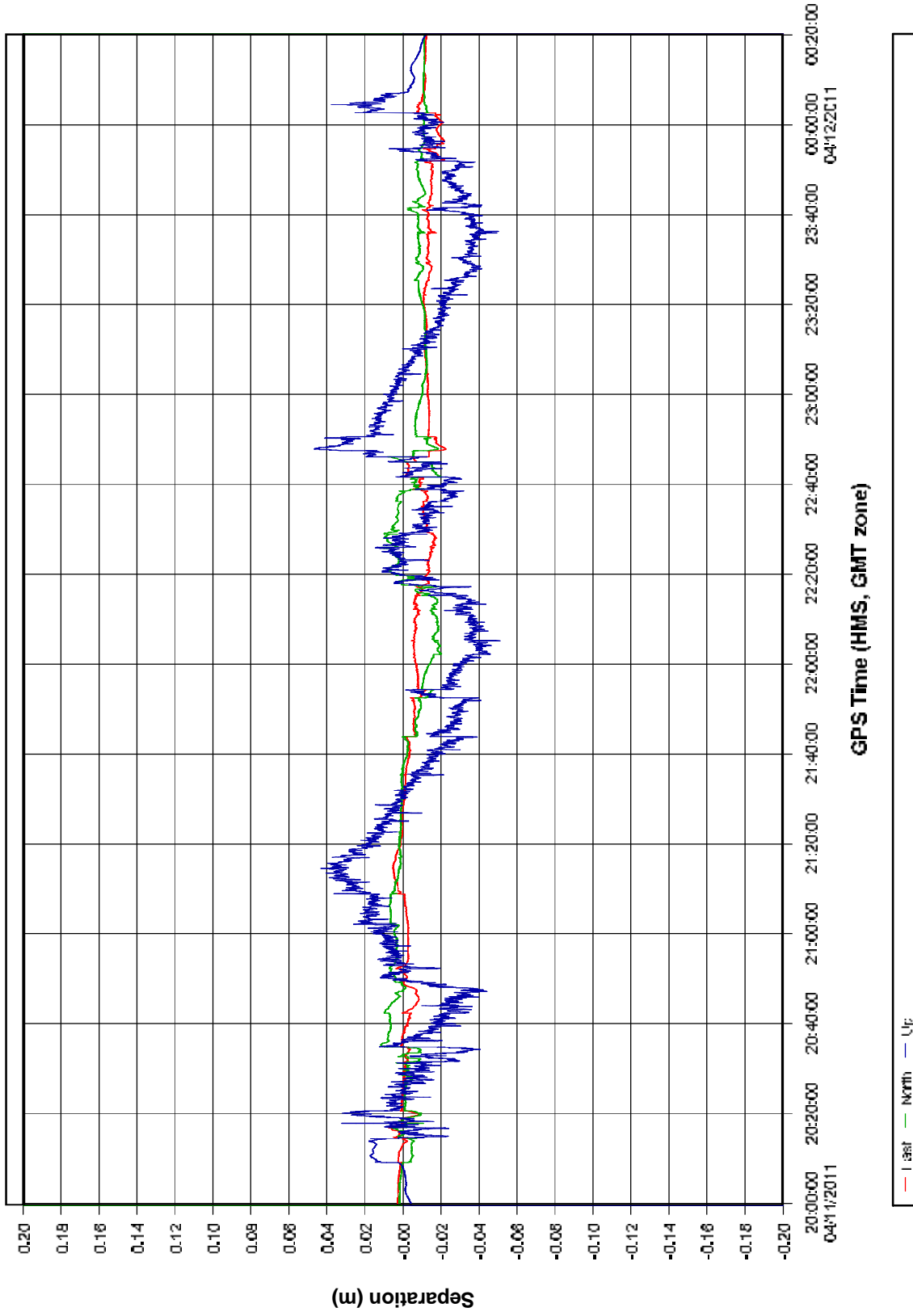
Quality Number Percentages:
Q 1: 99.9 %
Q 2: 0.1 %
Q 3: 0.0 %
Q 4: 0.0 %
Q 5: 0.0 %
Q 6: 0.0 %

Position Standard Deviation Percentages:
0.00 - 0.10 m: 100.0 %
0.10 - 0.30 m: 0.0 %
0.30 - 1.00 m: 0.0 %
1.00 - 5.00 m: 0.0 %
5.00 m + over: 0.0 %

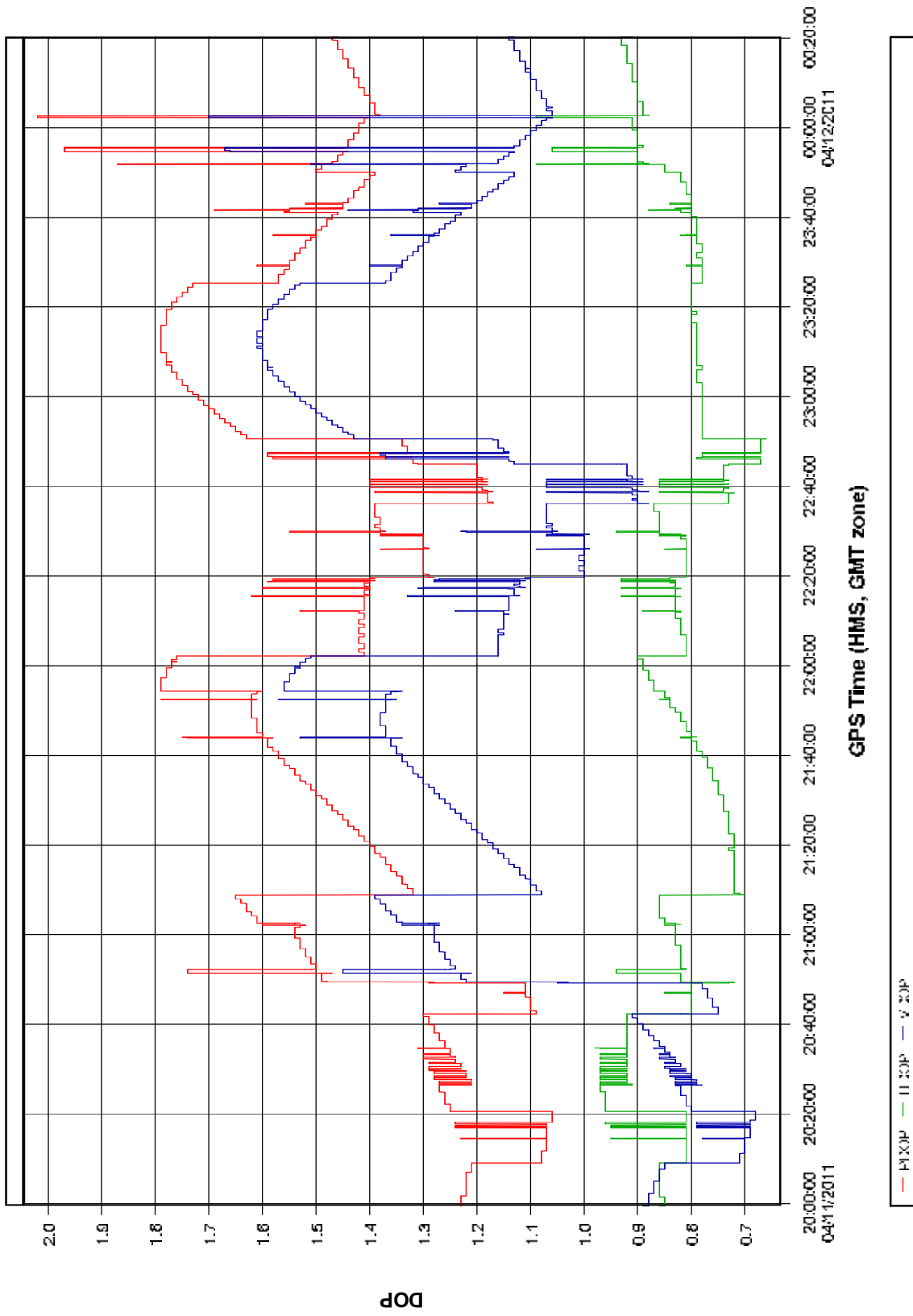
Percentages of epochs with DD_DOP over 10.00:
DOP over Tol: 0.0 %

Baseline Distances:
Maximum: 39.728 (km)
Minimum: 0.155 (km)
Average: 15.202 (km)
First Epoch: 0.319 (km)
Last Epoch: 0.343 (km)

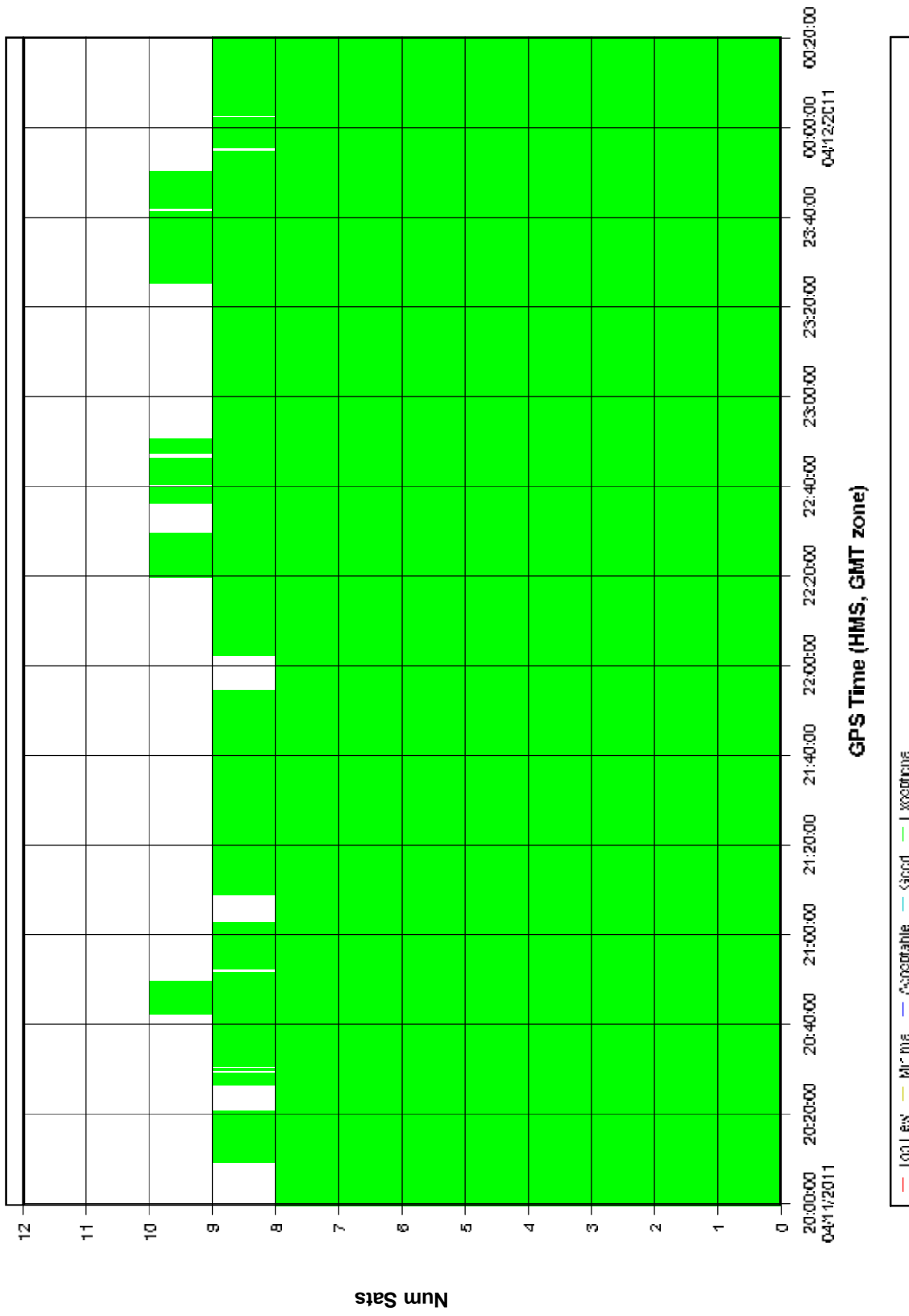
o211101a [Combined] - Forward/Reverse or Combined Separation Plot



o211101a [Combined] - PDOP, HDOP, VDOP Plots



o211101a [Combined] - Number of Satellites Bar Plot



o211101a. cfg

```
; PROJECT:
F:\11103U_VA\2_Operations\6_Missions\o211101a\3_Processed\GPS\o211101a. cfg
;
; DATE:      April 19/11 (date/time of processing)
; TIME:      12:57:01
; CREATED BY: GrafNav Version 7.80.2517
;
VERSION = 7.80.2517
PROCUSER = Unknown
PROCDISC = Run*(3)
PROCTIME = 12:53:32 04/19/2011

; Master station # 1 information
MB_MASTER_INDEX = 0
MB_MASTER_NAME = 1110301
MB_MASTER_FILE =
F:\11103U_VA\2_Operations\6_Missions\o211101a\1_RawData\original_PDC_files\00021010_
1110301.gpb
MB_MASTER_POS = 38 43 34.05308 -77 31 24.33961 23.6230
MB_MASTER_ANT = 1.476 0.001 1.442 1 _TP_SOK600 0
MB_MASTER_DISABLE = OFF

; Remote station information
REMOTE_FILE =
F:\11103U_VA\2_Operations\6_Missions\o211101a\3_Processed\Extract\mgps_o211101a.gpb
REMOTE_POS = 38 43 26.66084 -77 31 15.21246 26.6570
REMOTE_ANT = 0.000

; General settings
PROCESS_MODE = 103 108 113 126 ; Processing modes (GrafNav only)

DATUM = NAD83 AUTO ; Processing Datum
INPDATUM = ON NAD83 AUTO ; Input Datum (ON=Use processing datum)
ELEV_MASK = 10.0 ; Elevation mask (deg)
GRID = UTM 15 31 ; Grid info

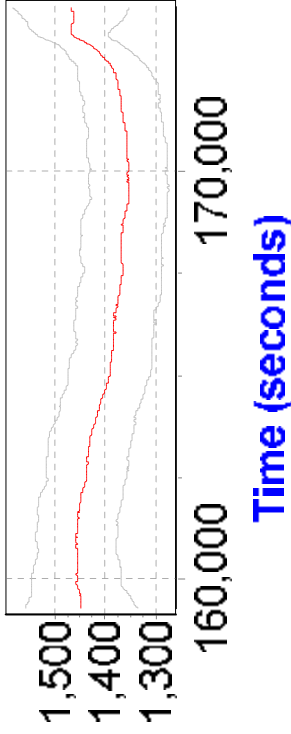
CYCLE_TEST = BOTH ; Cycle slip test method
STATIC_SLIP_TOL = 0.40 ; slip tolerance in static mode (cycles)
USE_DOPPLER = ON OFF ; Use doppler meas. for phase, for code-only

BASE_SAT = 99 ; Base satellite (99-default)

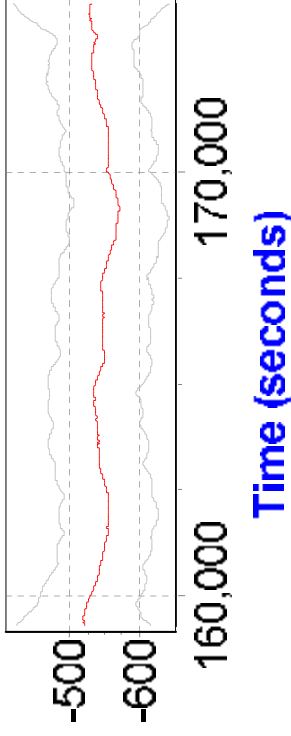
TIMERANGE = ALL 986587154.8 986602818.8 2 0 ; Processing time range
INTERVAL = 0.10 ; Processing time interval (seconds)

PROCESS_DIR = FORWARD ; Process direction (FORWARD/REVERSE)
BOTH_DIR = ON ; True for processing both directions
WRITE_BAD_EPOCHS = OFF ; Save bad data to .fwd/rev file (ON/OFF)
NOWRITE_HIGH = OFF 6 20.000 ; Don't write epoch with high statistics (q, stdev-m)
OUTPUT_MODE = EXTENDED ; Format for .fwd/rev file
DETAILED_SUM = ON ; Detailed Static/KAR Summary header
WRITE_SLIP_MSG = ON ; Print cycle slips to message log
SAVE_AMB = ON ; Should ambiguities be saved
```

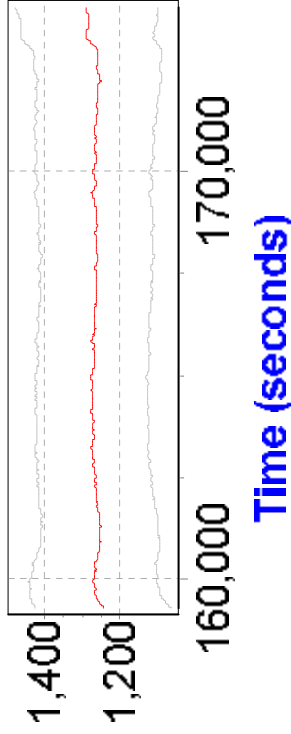
X Accelerometer Bias (micro-g)



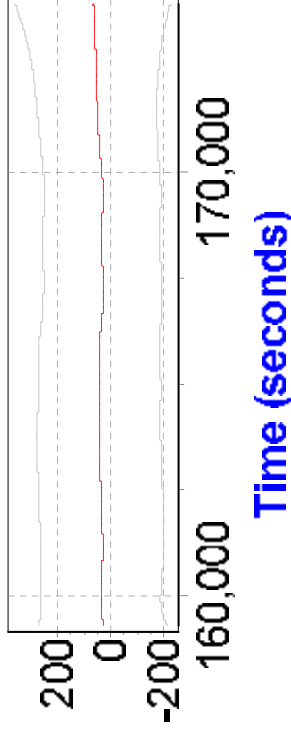
Y Accelerometer Bias (micro-g)



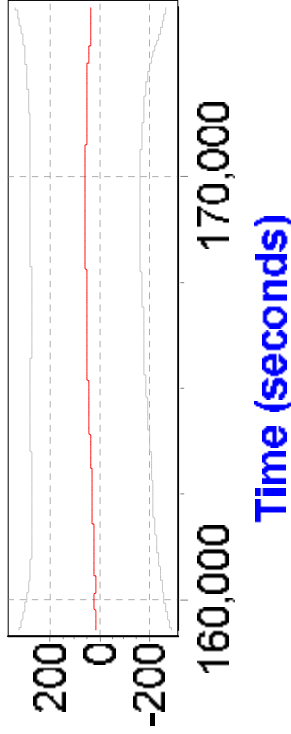
Z Accelerometer Bias (micro-g)



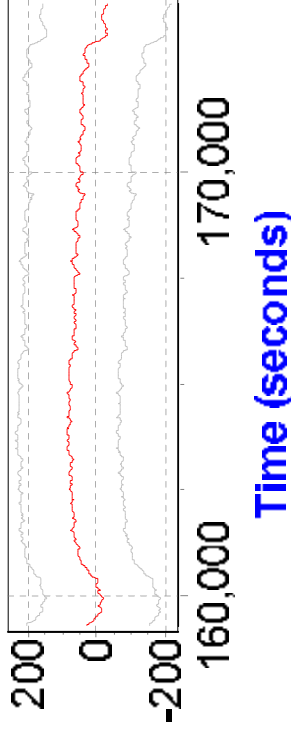
X Accelerometer Scale Factor Error (ppm)



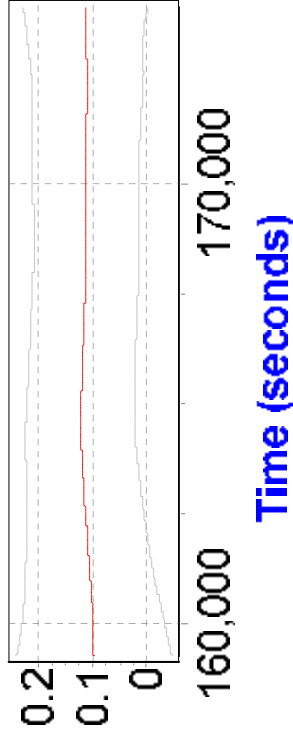
Y Accelerometer Scale Factor Error (ppm)



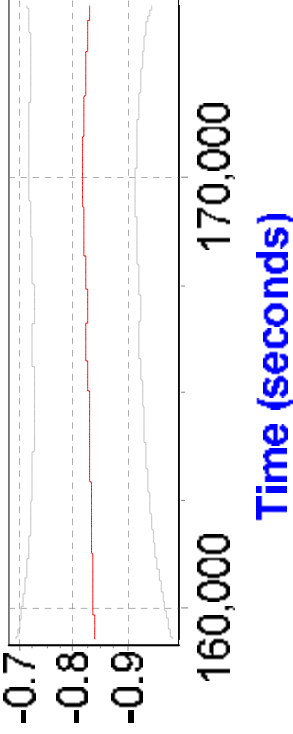
Z Accelerometer Scale Factor Error (ppm)



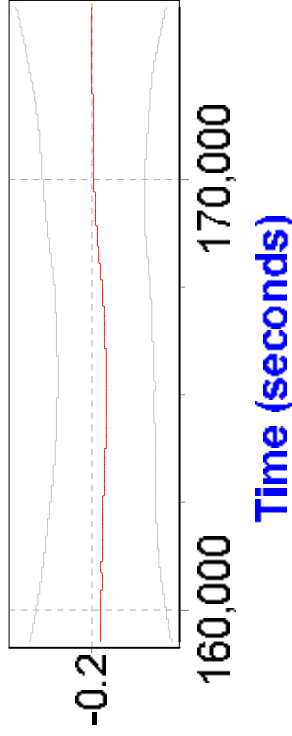
X Gyro Bias (degrees/hour)



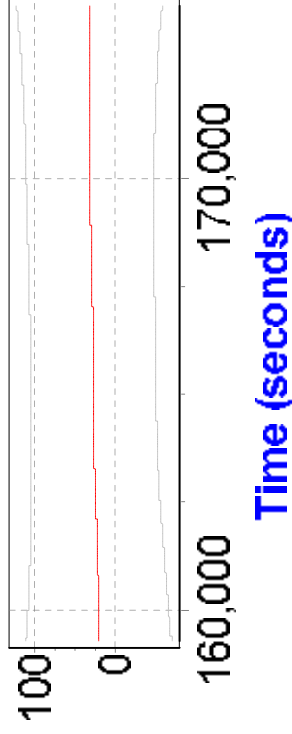
Y Gyro Bias (degrees/hour)



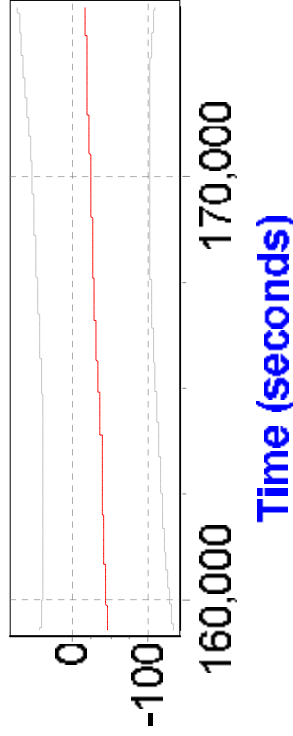
Z Gyro Bias (degrees/hour)



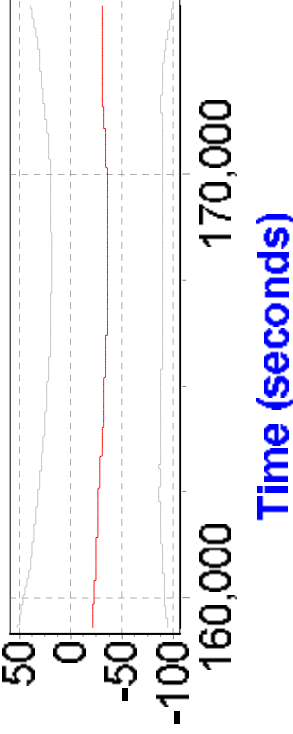
X Gyro Scale Factor Error (ppm)



Y Gyro Scale Factor Error (ppm)



Z Gyro Scale Factor Error (ppm)





Flight Log

Project# **130V** Session **DRILL01A**

Date	11/02/2011	Jillian Day	101
Project	MANASSAS REGIONAL	Aircraft	9315A
Staging	MANASSAS REGIONAL	Call Sign	
Survey Block		Pilot	TADD
Lines Complete		Operator	DRUB
Observer			
Mission Objective			

ALM S/Optch	02
System #	
Laser Scanner	
Camera Lens SN	
Shutter Speed	
Photo Freq	
IMU	
GPS Rx	
Beta Drive	

Additional Notes:
 Yellow Disk * ← ALEDS FORMAT
 1.07MM → 395'
 Winds
 Outside Temp @ TO 34c Outside Pressure @ TO 210 @ 12/22
 Outside Temp @ LA 29.64

Aircraft Block Time	Times confirmed with pilot	
Engine On (Hobbs)	Ramp Out	Takeoff
3585.7		
Engine Off (Hobbs)	Ramp In	Landing
3590.2		
Total hrs (Hobbs)	Total hrs	Total hrs
4.5		

Mission Plan	Scan Angle (Optch)
Flying Height AGL	Mirror Scan Rate
950 M	
Ground Speed	Laser Pulse Rate
150 K	
First/Last/Alternating Return	

Station & KAR	GPS // INS Alignment	
Time	Start	End
Pre Mission	COCAC	1610
KAR Base		
KAR Base		
Post Mission	2011	2021

Flight Plan Line #	LIDAR File Name	Flight Direction	GPS / UTC Time		Flight Aborted		Photo Events / Comments Please periodically record: Cash "err" Output (W/S)
			Start	End	Time	NM to End	
301	TEST 201004-201718	W	202549	205527			130' off line - Very Shaky possible Re-fly
302		E	204043	204854			
303		W	205325	210319			
304		E	210742	211601			
305		W	212059	213103			
306		E	213559	214417			
307		W	214900	215930			
308		E	220448	221321			
309		W	221837	222920			
310		E	223137	224150			



Ferrapoint

021110105
01110105
GT101

GPS Base Log Sheet

main

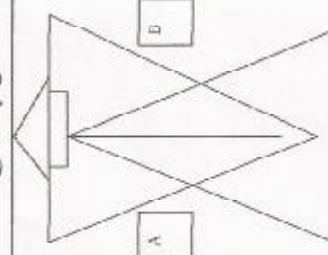
Station ID: 1130U	Project #: 1130U	Missions: #
-------------------	------------------	-------------

Project Name: Fern A usgs	Calendar Date: 11 April	Julien Day: 101
Approx. Coordinates: WGS 84	N	W
Description of Mark (Take Photos):	- nail	
Monument is:	<input type="checkbox"/> Flush with ground <input checked="" type="checkbox"/> Above ground 2.5 cm <input type="checkbox"/> Below ground ___ cm	
Location & Access		

Obstructions & Additional Notes

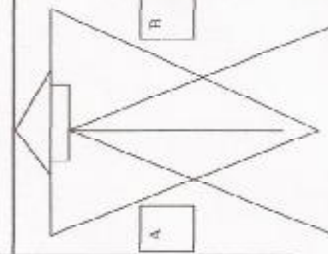
GPS Observation MAIN

Rx Make / Model: GSR2600	Serial #: 0002
Ant. Make / Model: SK600	Serial #: 0010
Operator: dexbz!	
Session Start: 1116 Local	
Time (GPS) End:	
Slant HI Before: A: 1.442	B: 1.442
Slant HI After: A:	B:
Correction:	
Phase Center:	
Data File Name:	05021010.pdc



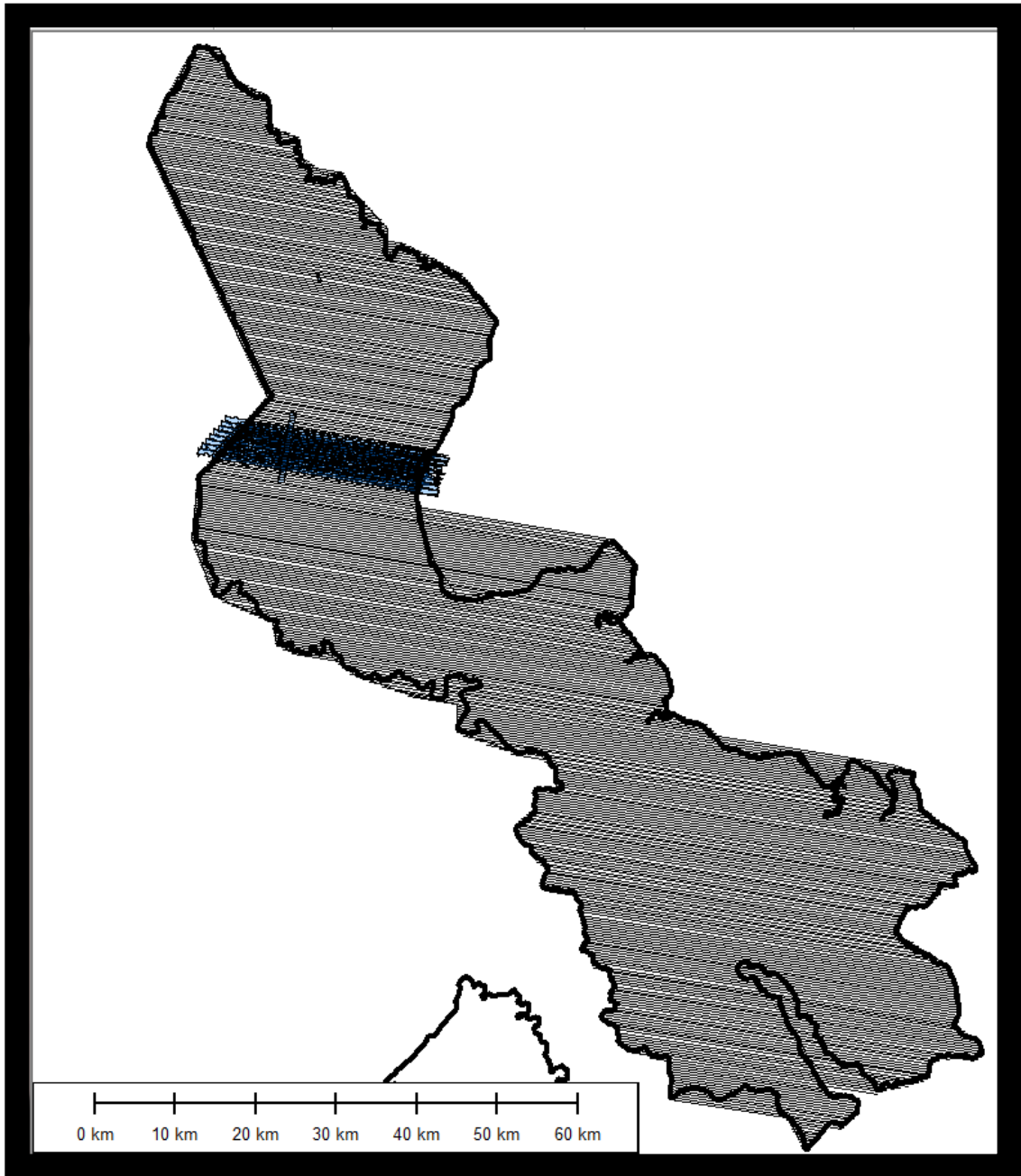
GPS Observation - Back-Up

Rx Make / Model:	Serial #:
Ant. Make / Model:	Serial #:
Operator:	
Session Start:	
Time (GPS) End:	
Slant HI Before: A:	B:
Slant HI After: A:	B:
Correction:	
Phase Center:	
Data File Name:	

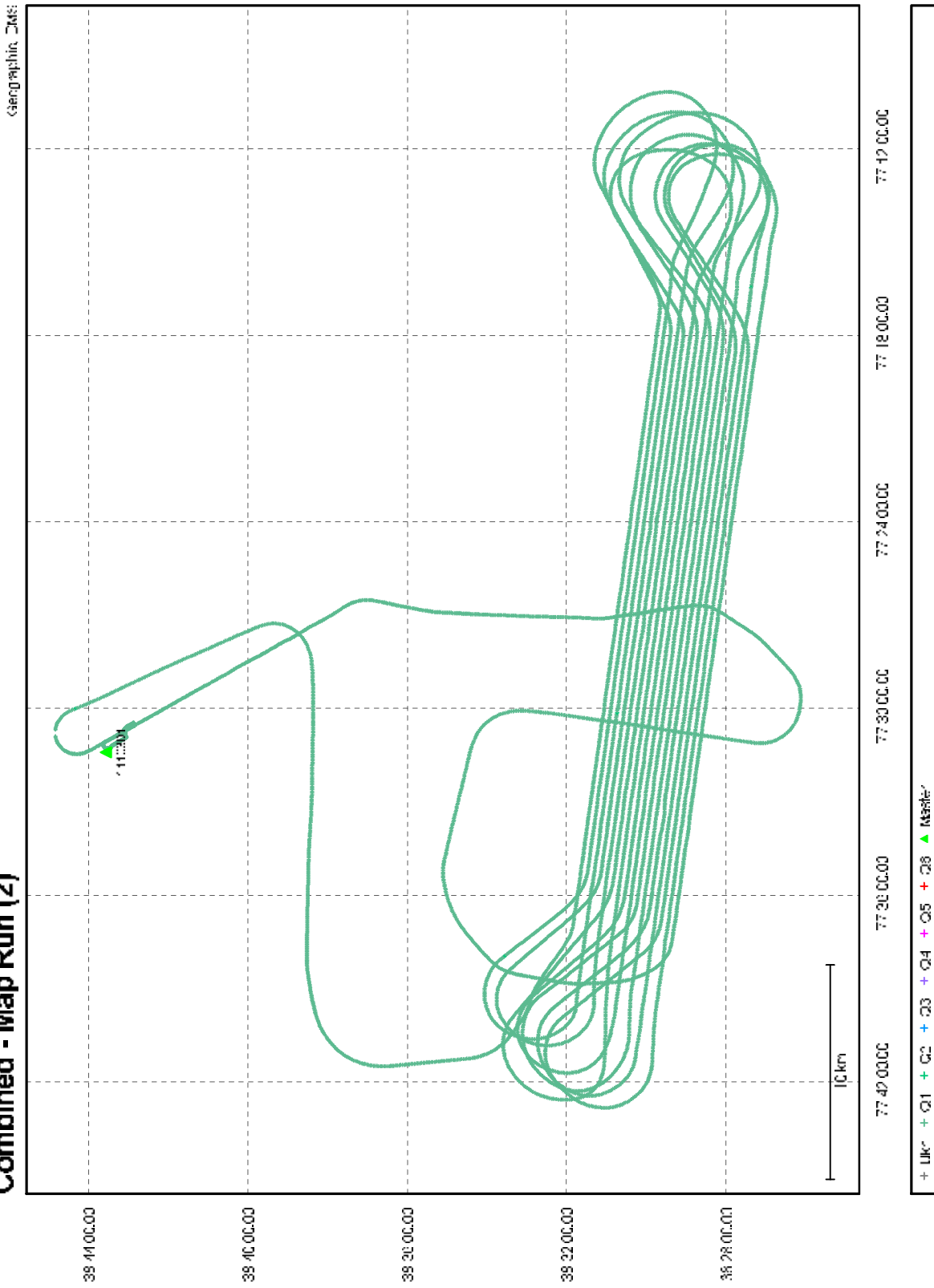


Mission: o211104a

2011 04 14



Combined - Map Run (2)



Processing Summary Information

Program: GrafNav
Version: 7.80.2517
Project: F:\11103U_VA\2_Operations\6_Missions\o211104a\3_Processed\GPS\o211104a.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:
Total in GPB file: 134383
No processed position: 121593
Missing Fwd or Rev: 286
With bad C/A code: 0
With bad L1 Phase: 0

Measurement RMS Values:
L1 Phase: 0.0152 (m)
C/A Code: 0.70 (m)
L1 Doppler: 0.030 (m/s)

Fwd/Rev Separation RMS Values:
East: 0.012 (m)
North: 0.018 (m)
Height: 0.033 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (12502 occurrences):
East: 0.011 (m)
North: 0.017 (m)
Height: 0.033 (m)

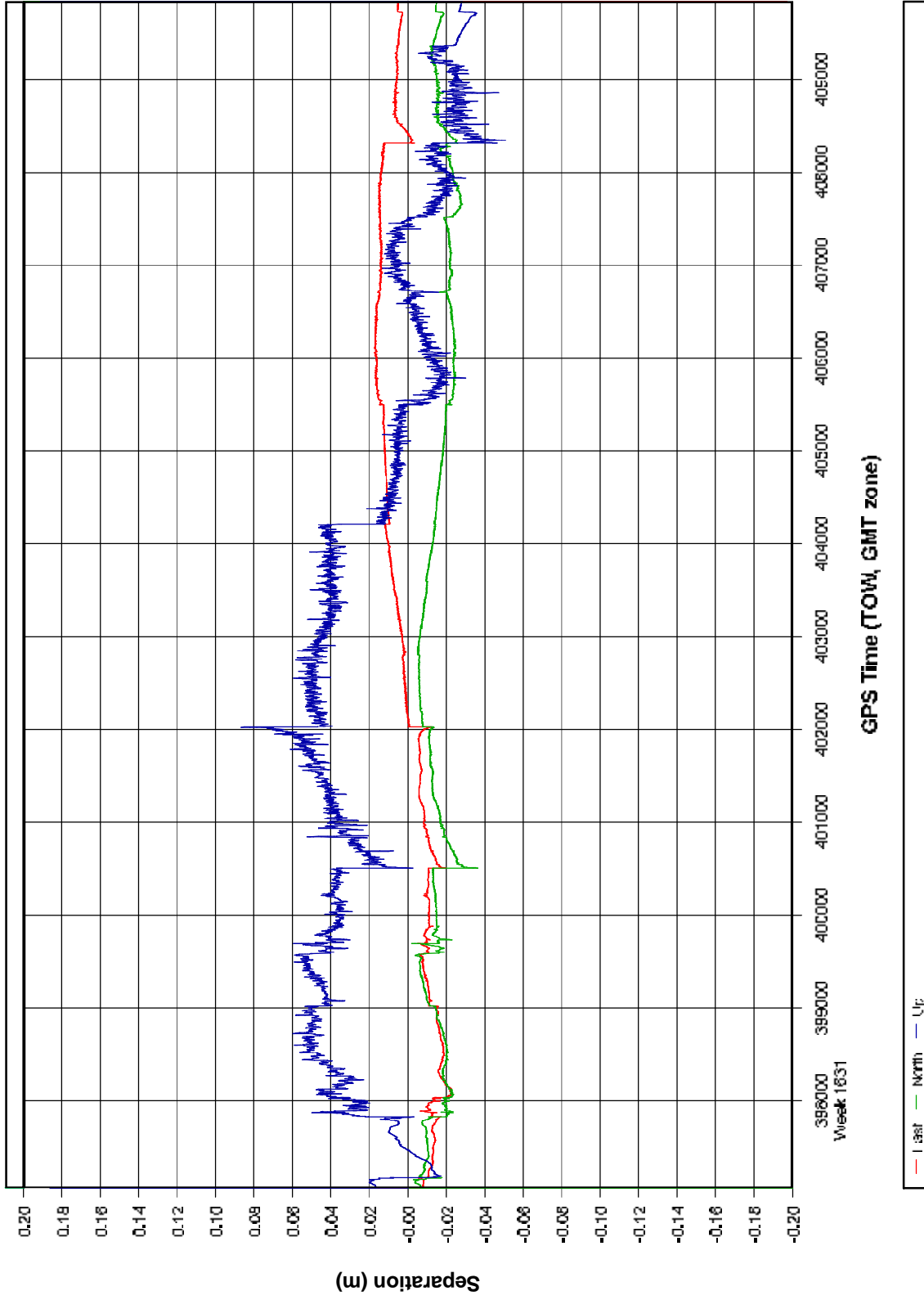
Quality Number Percentages:
Q 1: 99.9 %
Q 2: 0.1 %
Q 3: 0.0 %
Q 4: 0.0 %
Q 5: 0.0 %
Q 6: 0.0 %

Position Standard Deviation Percentages:
0.00 - 0.10 m: 100.0 %
0.10 - 0.30 m: 0.0 %
0.30 - 1.00 m: 0.0 %
1.00 - 5.00 m: 0.0 %
5.00 m + over: 0.0 %

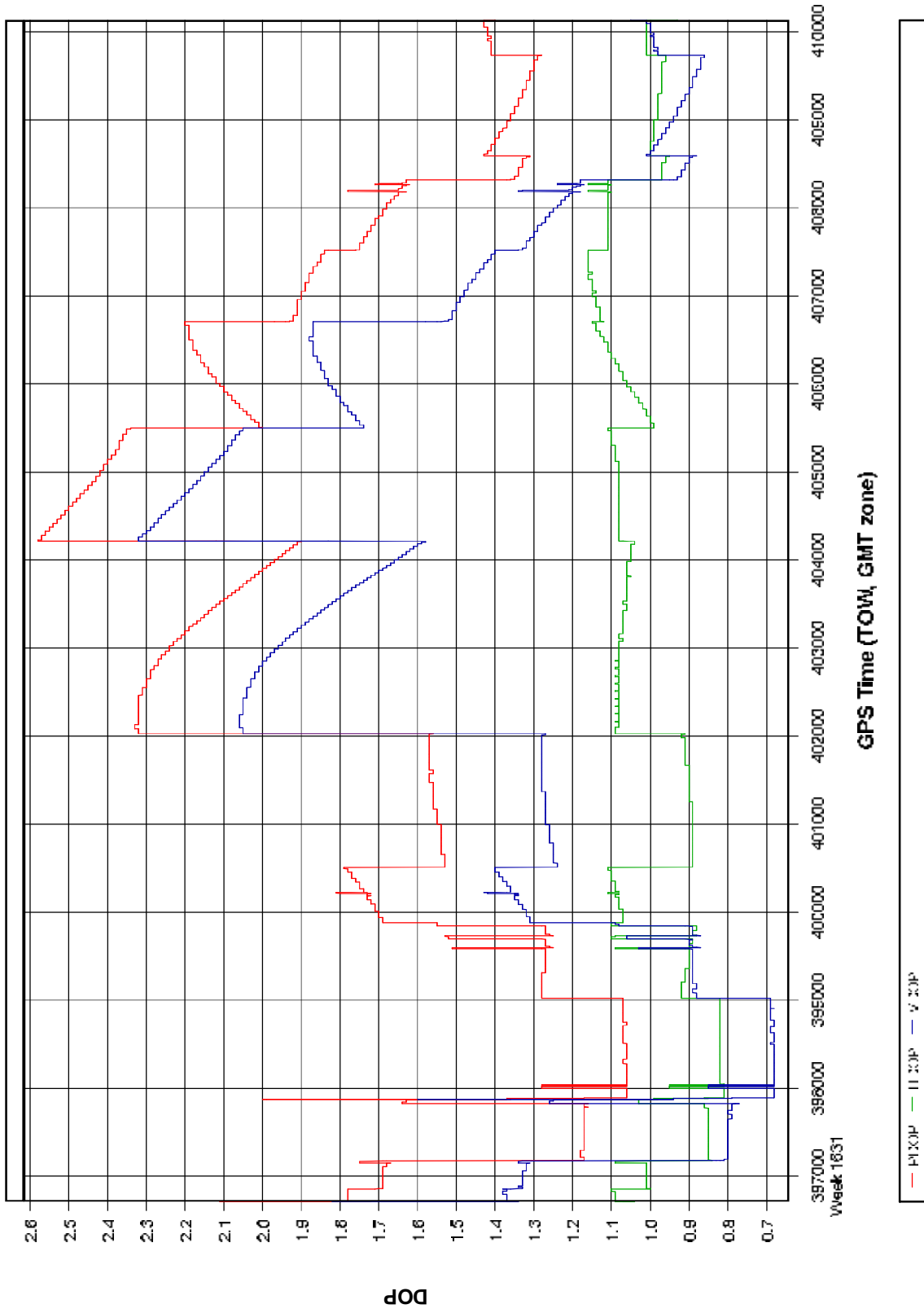
Percentages of epochs with DD_DOP over 10.00:
DOP over Tol: 0.0 %

Baseline Distances:
Maximum: 41.450 (km)
Minimum: 0.153 (km)
Average: 25.120 (km)
First Epoch: 0.306 (km)
Last Epoch: 0.306 (km)

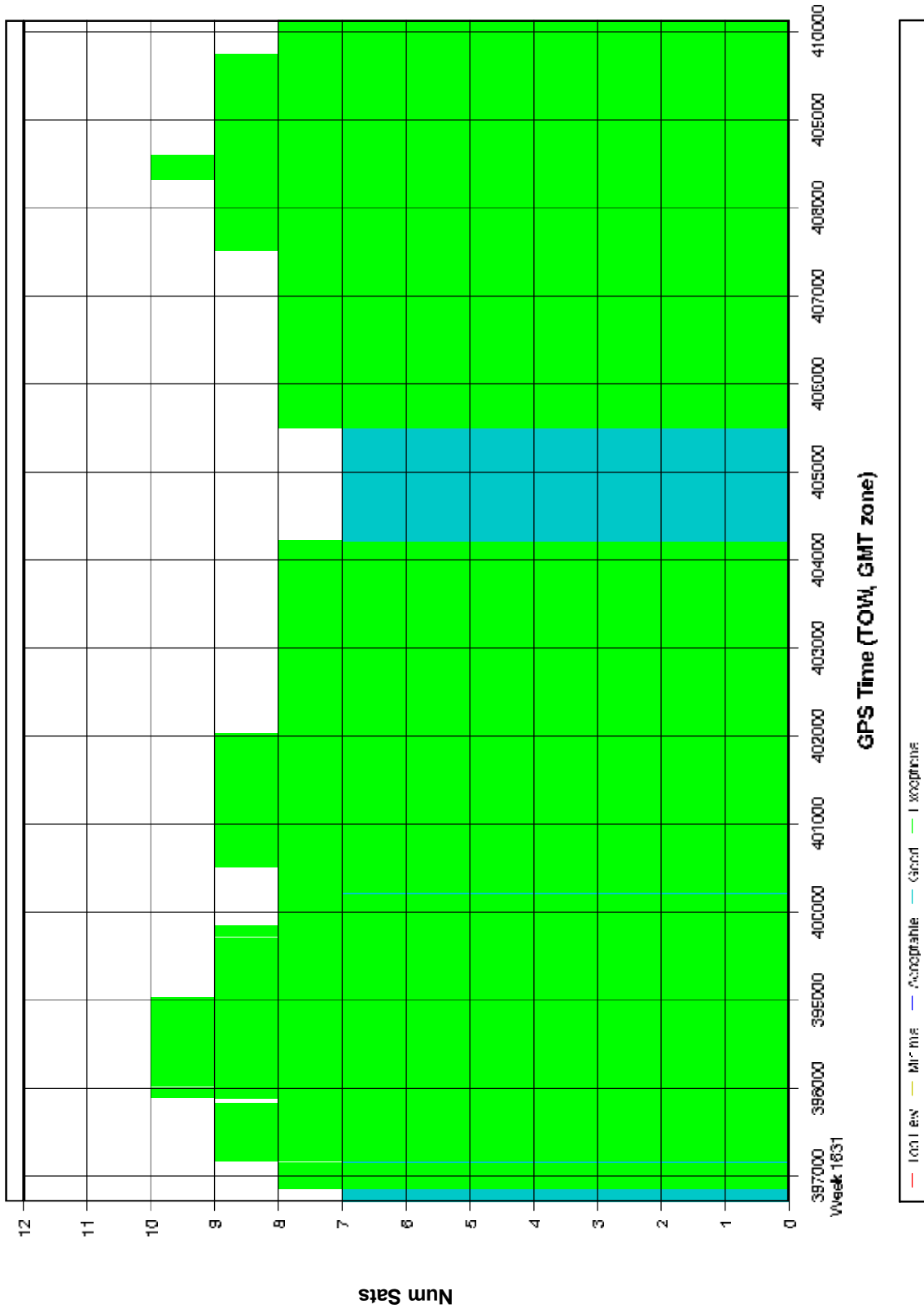
o211104a [Combined] - Forward/Reverse or Combined Separation Plot



o211104a [Combined] - PDOP, HDOP, VDOP Plots



o211104a [Combined] - Number of Satellites Bar Plot



```

                                o211104a. cfg
:   PROJECT:
F:\11103U_VA\2_Operations\6_Missions\o211104a\3_Processed\GPS\o211104a. cfg
:
:   DATE:      April 18/11 (date/time of processing)
:   TIME:      10:51:19
:   CREATED BY: GrafNav Version 7.80.2517
:
VERSION = 7.80.2517
PROCUSER = Unknown
PROCDISC = Run*(5)
PROCTIME = 10:49:56 04/18/2011

; Master station # 1 information
MB_MASTER_INDEX = 0
MB_MASTER_NAME = 1110301
MB_MASTER_FILE =
F:\11103U_VA\2_Operations\6_Missions\o211104a\1_RawData\original_PDC_files\00021040.
gpb
MB_MASTER_POS = 38 43 34.05308 -77 31 24.33961 23.6230
MB_MASTER_ANT = 1.474 0.001 1.440 1 _TP_SOK600 0
MB_MASTER_DISABLE = OFF

; Remote station information
REMOTE_FILE =
F:\11103U_VA\2_Operations\6_Missions\o211104a\3_Processed\Extract\mgps_o211104a. gpb
REMOTE_POS = 38 43 27.06202 -77 31 15.44523 24.7259
REMOTE_ANT = 0.000

; General settings
PROCESS_MODE = 105 108 113 126 ; Processing modes (GrafNav only)

DATUM = NAD83 AUTO ; Processing Datum
INPDATUM = ON NAD83 AUTO ; Input Datum (ON=Use processing datum)
ELEV_MASK = 9.0 ; Elevation mask (deg)
GRID = UTM 15 31 ; Grid info

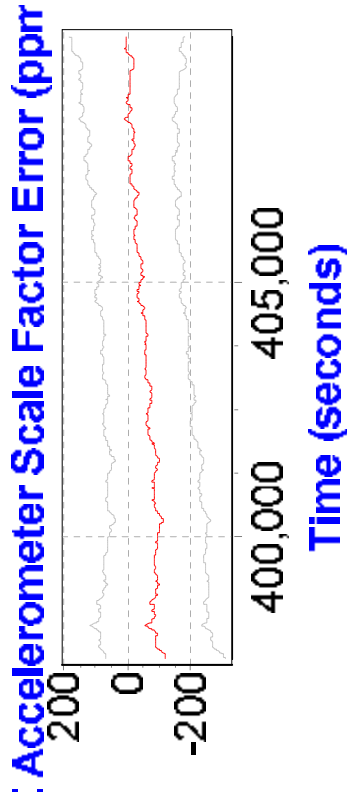
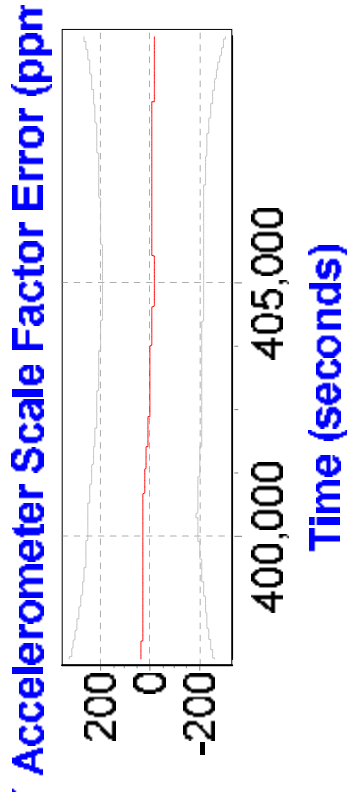
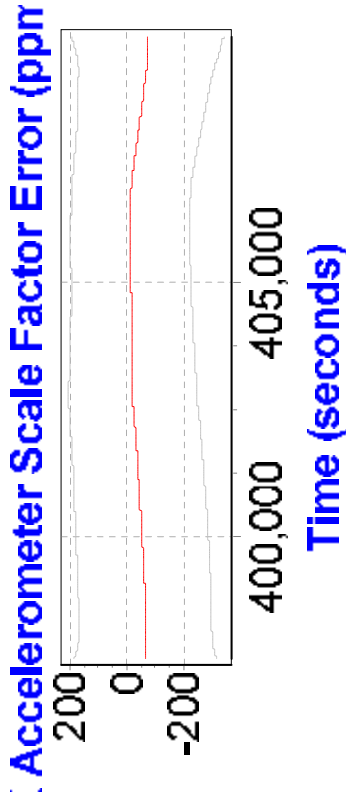
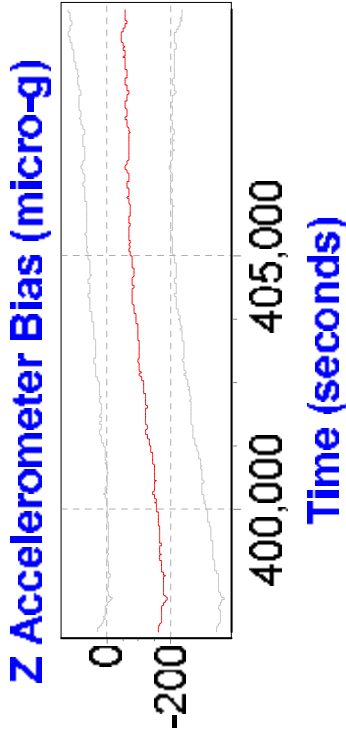
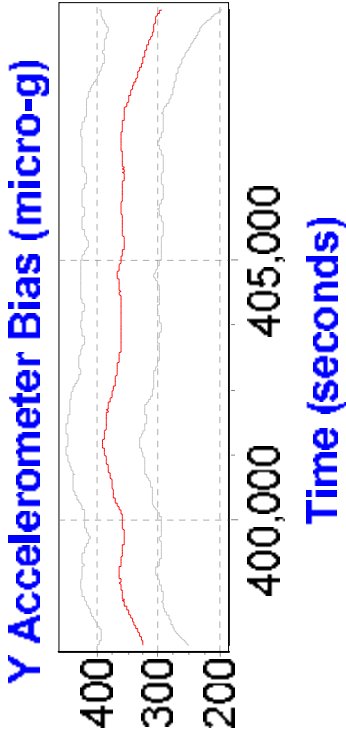
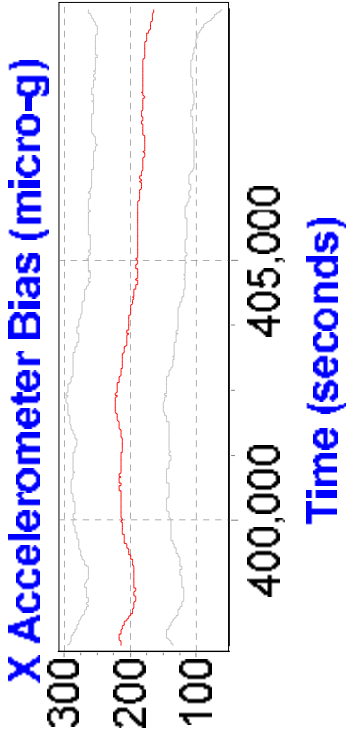
CYCLE_TEST = BOTH ; Cycle slip test method
STATIC_SLIP_TOL = 0.40 ; slip tolerance in static mode (cycles)
USE_DOPPLER = ON OFF ; Use doppler meas. for phase, for code-only

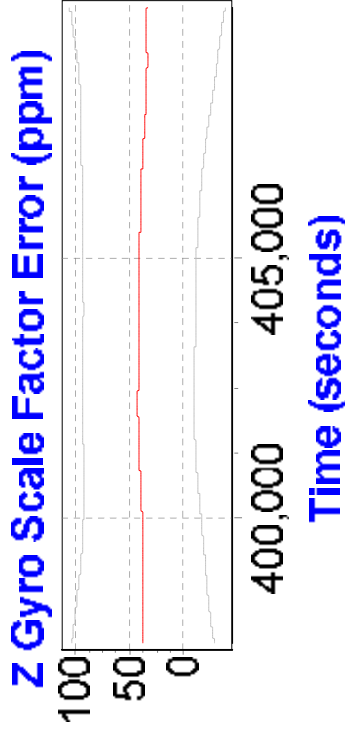
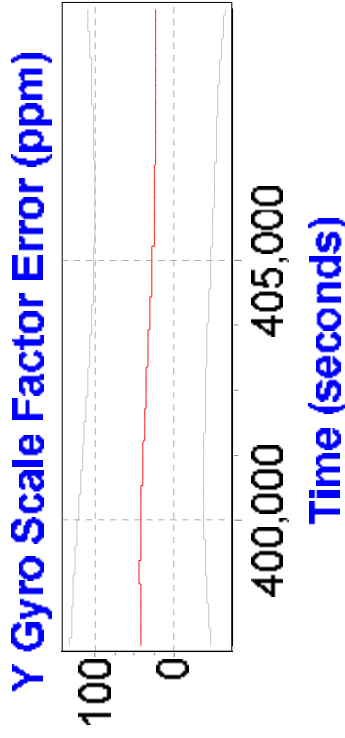
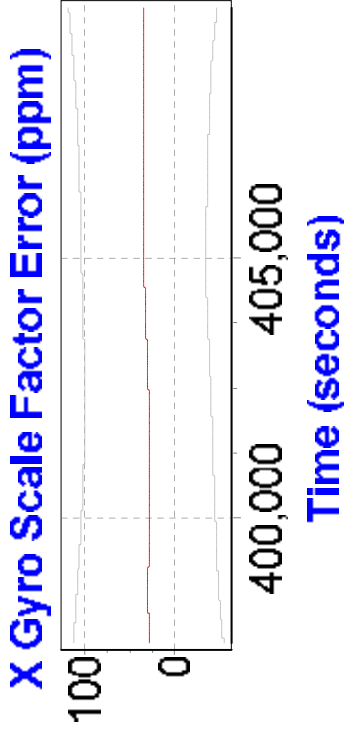
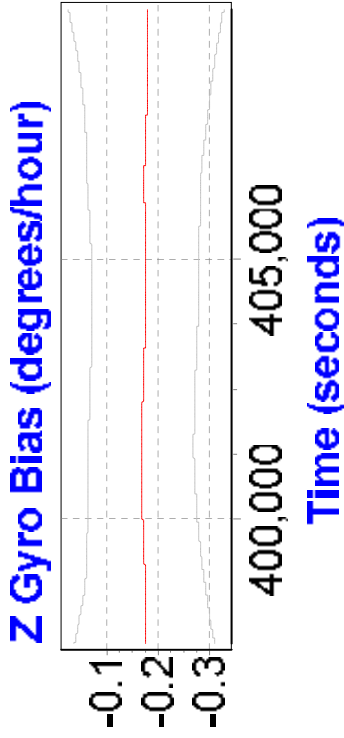
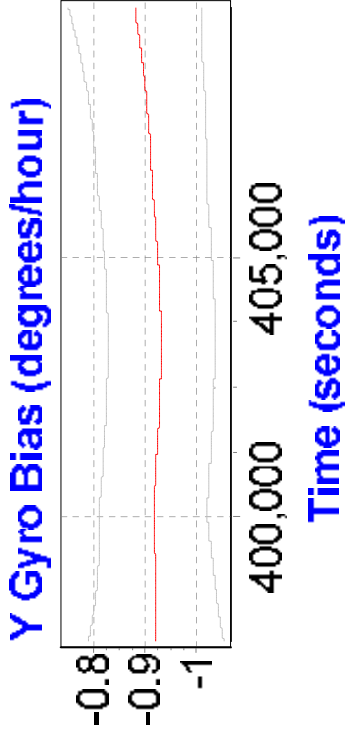
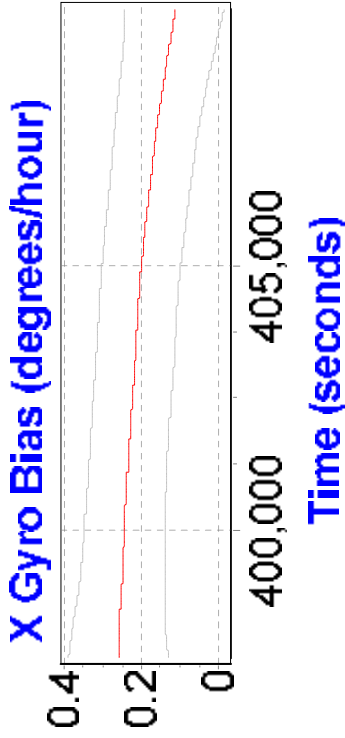
BASE_SAT = 99 ; Base satellite (99-default)

TIMERANGE = RANGE 986825855.0 986838644.0 2 0 ; Processing time range
INTERVAL = 0.10 ; Processing time interval (seconds)

PROCESS_DIR = FORWARD ; Process direction (FORWARD/REVERSE)
BOTH_DIR = ON ; True for processing both directions
WRITE_BAD_EPOCHS = OFF ; Save bad data to .fwd/rev file (ON/OFF)
NOWRITE_HIGH = OFF 6 20.000 ; Don't write epoch with high statistics (q, stdev-m)
OUTPUT_MODE = EXTENDED ; Format for .fwd/rev file
DETAILED_SUM = ON ; Detailed Static/KAR Summary header
WRITE_SLIP_MSG = ON ; Print cycle slips to message log
SAVE_AMB = ON ; Should ambiguities be saved

```





GPS Base Log Sheet



Terrapoint

Station ID:	1300	Project #:	111300	Missions:	104
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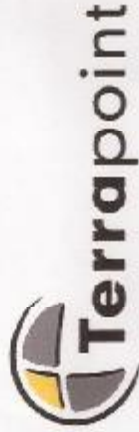
Project Name:	Calendar Date:	Julian Day
Approx. Coordinates WGS 84	Apr 14	104
N 38° 43' 34" W 7731' 24"		
Description of Mark (Take Photos)	Nail ground	
Monument is:	<input checked="" type="checkbox"/> Flush with ground	<input type="checkbox"/> Above ground
Location & Access	<input type="checkbox"/> cm	<input type="checkbox"/> Below ground
Dulles Aviation FBO		

Obstructions & Additional Notes

GPS Observation - MAIN	
Rx Make/Model	Serial #
GSR2600	0002
Ant Make/Model	Serial #
SK600	0010
Operator	Tr
Start	13:12
Session Time (GPS) End	
Slant HI Before:	A: 1.44 B: B:
Slant HI After:	A: A: B: B:
Correction	
Phase Center	<input type="checkbox"/> m <input type="checkbox"/> in <input type="checkbox"/> Use GrafNav Profile
Data File Name	000104opdc

GPS Observation - Back-Up	
Rx Make/Model	Serial #
GSR2600	0000
Ant Make/Model	Serial #
SK600	0011
Operator	Tr
Start	13:16
Session Time (GPS) End	
Slant HI Before:	A: 1.375 B: B:
Slant HI After:	A: A: B: B:
Correction	
Phase Center	<input type="checkbox"/> m <input type="checkbox"/> in <input type="checkbox"/> Use GrafNav Profile
Data File Name	0000104opdc

GPS Base Log Sheet



Station ID:	130008	Project #:	1300	Missions:	1048
Project Name:	Dewbuns	Calendar Date:	Apr 14	Julian Day:	104
Approx. Coordinates WGS 84	N 3817' 52" W		77° 18' 55"		
Description of Mark (Take Photos)	- nail in grass				
Monument is:	<input type="checkbox"/> Flush with ground <input checked="" type="checkbox"/> Above ground <input type="checkbox"/> Below ground <input type="checkbox"/> cm				
Location & Access	- north of church - south of road.				

Observations & Additional Notes

GPS Observation - MAIN

Rx Make/Model	GR2600	Serial #	0016
Ant Make/Model	SK600	Serial #	003500
Operator	TM		
Session Time (GPS)	Start: 20:24	End: 13:26	
Slant HI Before:	A: 1.448	B: 1.448	
Slant HI After:	A: 1.448	B: 1.448	
Correction			
Phase Center	<input type="checkbox"/> m <input type="checkbox"/> in <input type="checkbox"/> use GrafNav Profile		
Data File Name	00161040pdc		

GPS Observation - Back-Up

Rx Make/Model		Serial #	
Ant Make/Model		Serial #	
Operator			
Session Time (GPS)	Start:	End:	
Slant HI Before:	A:	B:	
Slant HI After:	A:	B:	
Correction			
Phase Center	<input type="checkbox"/> m <input type="checkbox"/> in <input type="checkbox"/> use GrafNav Profile		
Data File Name			



Flight Log

Project# 11130a Session 021104a

Date	14 Apr 11	Julian Day	109
Project	11130a	Aircraft	9315A
Staging	Wahweaville degarac	Call Sign	
Survey Block		Pilot	TADD
Lines Complete		Operator	DMS
Observer			
Mission Objective			

ALMS/Cplech	02
System #	
Laser Scanner	
Camera/Lens SN	
Shutter Speed	
Photo File	
IMU	
GPS RX	
Data Drive	

Additional Notes:
 SCNF = 22
 SCNF = 40
 010@8

Outside Temp @ TO: 14C Outside Pressure @ TO: 30.10
 Outside Temp @ LA: Outside Pressure @ LA:

Aircraft Block Time	Times confirmed with pilot	
Engine On (Hoops)	Ramp Out	Takeoff
350.2		
Engine Off (Hoops)	Ramp In	Landing
3594.2		
Total hrs (Hoops)	Total hrs	Total hrs
4.0		

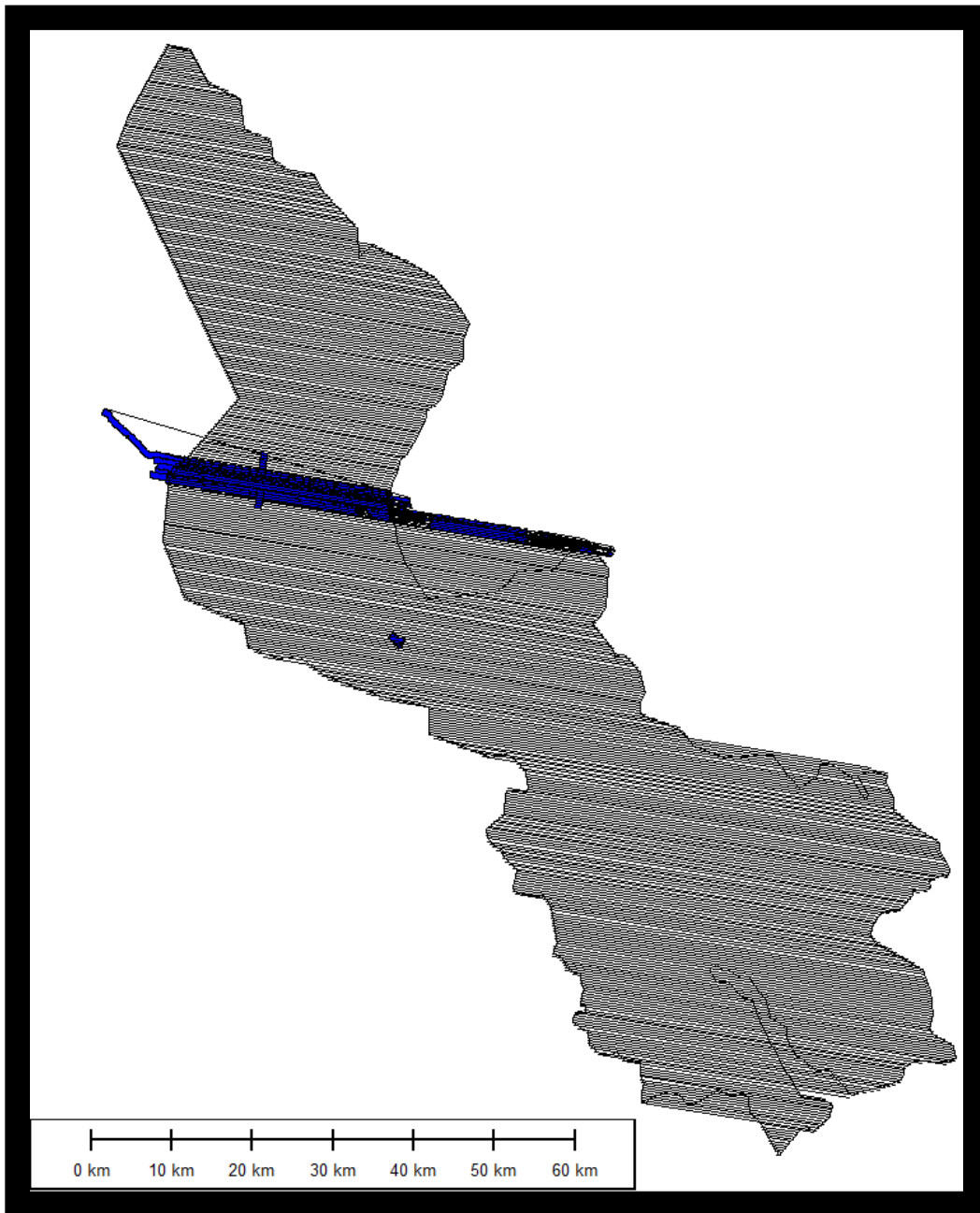
Mission Plan	
Flying Height AGL	Scan Angle (Optech)
950	
Ground Speed	Mirror Scan Rate
150	
First/Last/Mirroring Return	Laser Pulse Rate

Static & KAR		GPS // INS Alignment	
Time	Start	Start	End
Pre Mission	1011	1021	
KAR Base			
KAR Base			
Post Mission	1345	1355	

Flight Plan Line #	LIDAR File Name	Flight Direction	GPS/UTC Time		Flight/Aborted		Photo Evens / Comments Please periodically record Cabin Temp: Outside Temp: Laser Temp: Output (Watts):
			Start	End	Time	NIM to End	
252	Test 143723-37	E	141134	141730			
251		W	145248	145832			
250		E	150241	150821			
249		W	151333	151929			
248		E	152334	152921			
247		W	153400	153950			
246		E	154440	155035			
245		W	155856	160200			
244		E	160611	161203			
243		W	161649	162249			

Mission: o211104b

2011 04 14



Processing Summary Information

Program: GrafNav
Version: 7.80.2517
Project: F:\11103U_VA\2_Operations\6_Missions\o211104b\3_Processed\GPS\o211104b.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:
Total in GPB file: 136427
No processed position: 125436
Missing Fwd or Rev: 129
With bad C/A code: 0
With bad L1 Phase: 0

Measurement RMS Values:
L1 Phase: 0.0189 (m)
C/A Code: 0.92 (m)
L1 Doppler: 0.033 (m/s)

Fwd/Rev Separation RMS Values:
East: 0.010 (m)
North: 0.014 (m)
Height: 0.043 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (10860 occurrences):
East: 0.010 (m)
North: 0.013 (m)
Height: 0.043 (m)

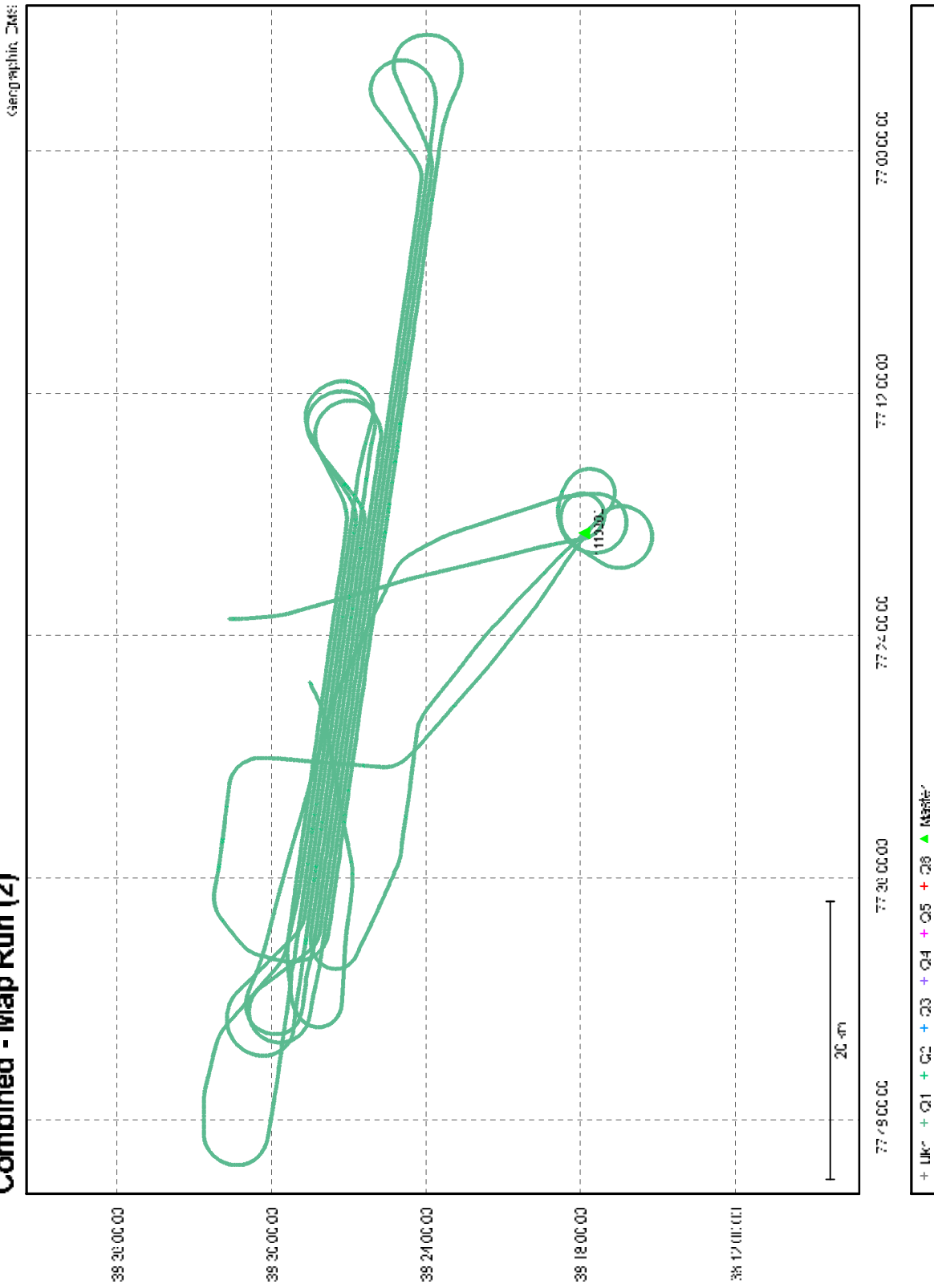
Quality Number Percentages:
Q 1: 99.2 %
Q 2: 0.8 %
Q 3: 0.0 %
Q 4: 0.0 %
Q 5: 0.0 %
Q 6: 0.0 %

Position Standard Deviation Percentages:
0.00 - 0.10 m: 100.0 %
0.10 - 0.30 m: 0.0 %
0.30 - 1.00 m: 0.0 %
1.00 - 5.00 m: 0.0 %
5.00 m + over: 0.0 %

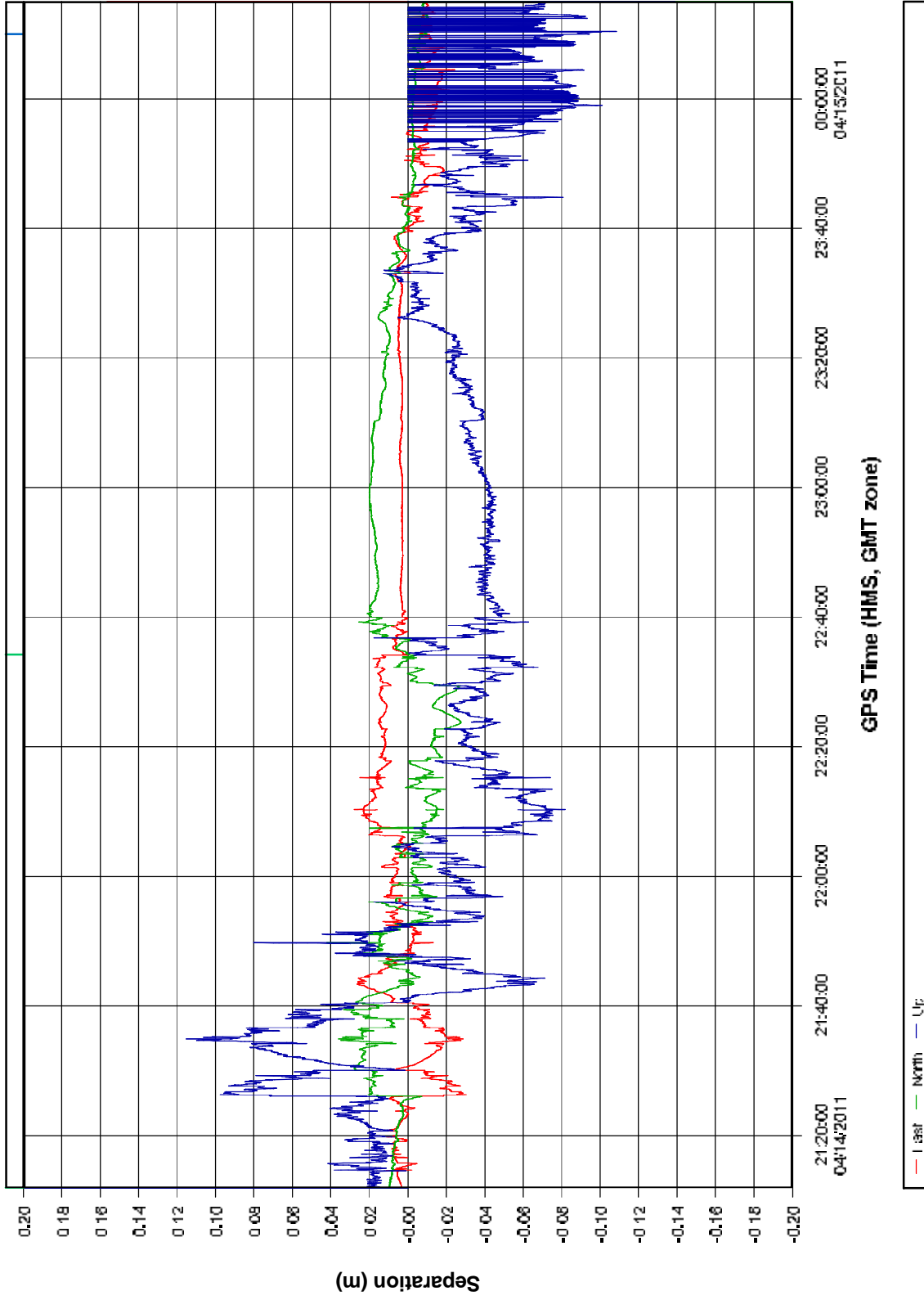
Percentages of epochs with DD_DOP over 10.00:
DOP over Tol: 0.0 %

Baseline Distances:
Maximum: 52.269 (km)
Minimum: 1.013 (km)
Average: 23.751 (km)
First Epoch: 22.471 (km)
Last Epoch: 26.204 (km)

Combined - Map Run (2)

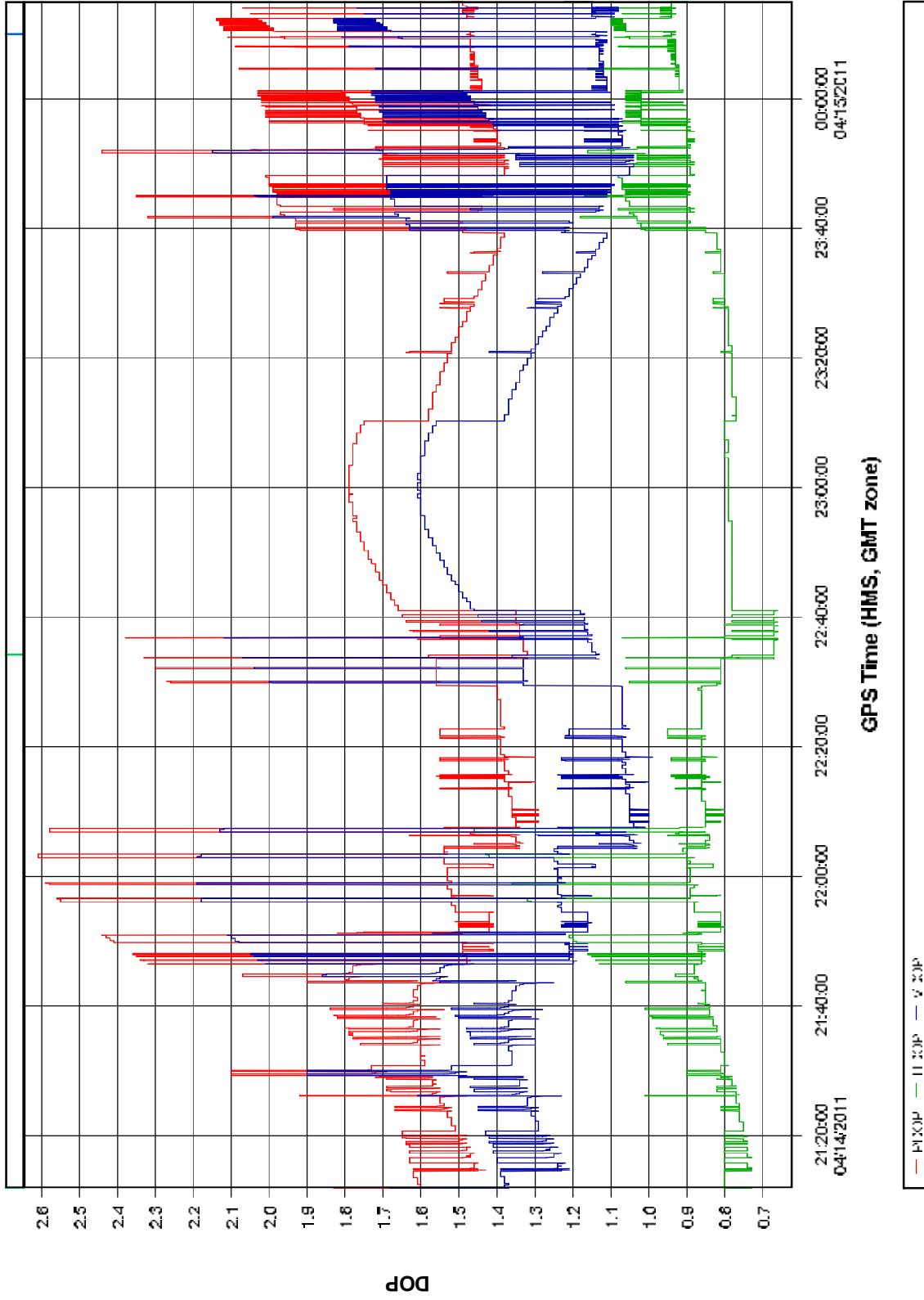


o211104b [Combined] - Forward/Reverse or Combined Separation Plot

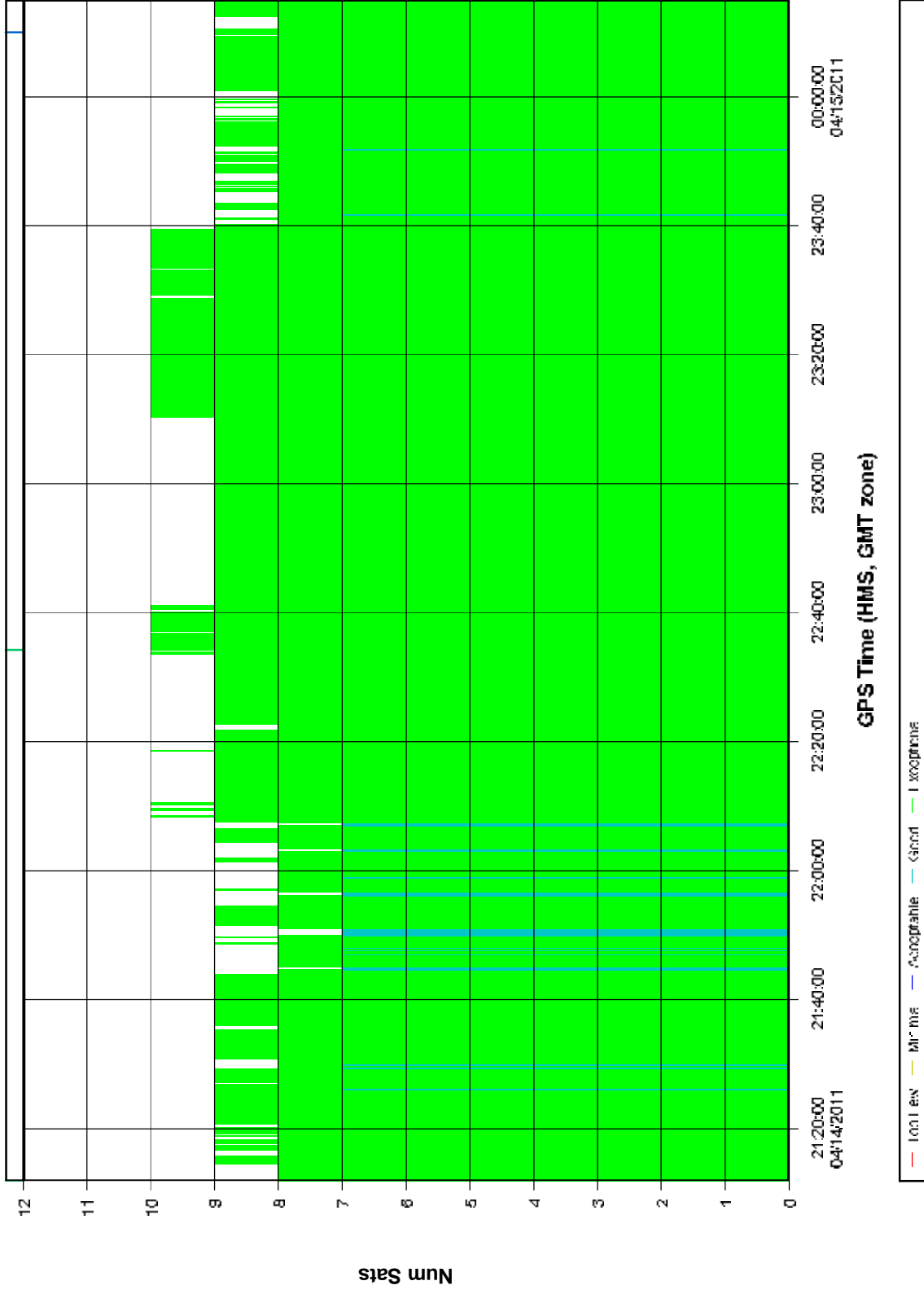




o211104b [Combined] - PDOP, HDOP, VDOP Plots



o211104b [Combined] - Number of Satellites Bar Plot



```

                                o211104b. cfg
:   PROJECT:
F:\11103U_VA\2_Operations\6_Missions\o211104b\3_Processed\GPS\o211104b. cfg
:
:   DATE:      April 19/11 (date/time of processing)
:   TIME:      14:02:05
:   CREATED BY: GrafNav Version 7.80.2517
:
VERSION = 7.80.2517
PROCUSER = Unknown
PROCDISC = Run*(3)
PROCTIME = 13:54:37 04/19/2011

; Master station # 1 information
MB_MASTER_INDEX = 0
MB_MASTER_NAME = 1110302
MB_MASTER_FILE =
F:\11103U_VA\2_Operations\6_Missions\o211104b\1_RawData\original_PDC_files\00161040_
1110302.gpb
MB_MASTER_POS = 38 17 51.99406 -77 18 55.26399 29.0382
MB_MASTER_ANT = 1.482 0.001 1.448 1 _TP_SOK600 0
MB_MASTER_DISABLE = OFF

; Remote station information
REMOTE_FILE =
F:\11103U_VA\2_Operations\6_Missions\o211104b\3_Processed\Extract\mgps_o211104b.gpb
REMOTE_POS = 38 43 27.01688 -77 31 15.46978 25.6753
REMOTE_ANT = 0.000

; General settings
PROCESS_MODE = 105 108 113 126 ; Processing modes (GrafNav only)

DATUM = NAD83 AUTO ; Processing Datum
INPDATUM = ON NAD83 AUTO ; Input Datum (ON=Use processing datum)
ELEV_MASK = 9.0 ; Elevation mask (deg)
GRID = UTM 15 31 ; Grid info

CYCLE_TEST = BOTH ; Cycle slip test method
STATIC_SLIP_TOL = 0.40 ; slip tolerance in static mode (cycles)
USE_DOPPLER = ON OFF ; Use doppler meas. for phase, for code-only

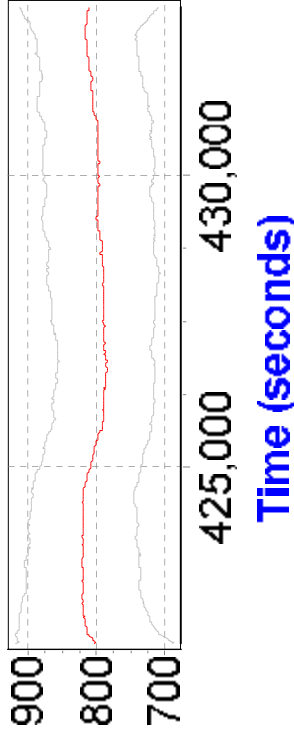
BASE_SAT = 99 ; Base satellite (99-default)

TIMERANGE = RANGE 986850709.0 986861704.0 2 0 ; Processing time range
INTERVAL = 0.10 ; Processing time interval (seconds)

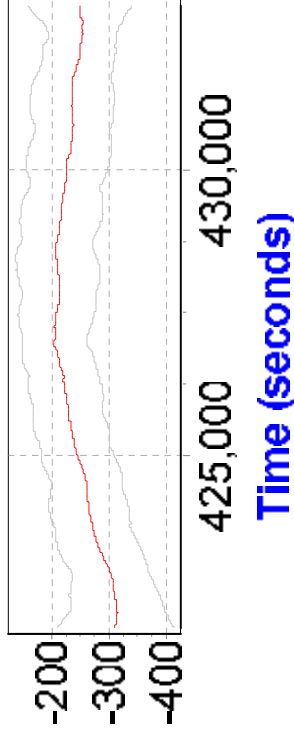
PROCESS_DIR = FORWARD ; Process direction (FORWARD/REVERSE)
BOTH_DIR = ON ; True for processing both directions
WRITE_BAD_EPOCHS = OFF ; Save bad data to .fwd/rev file (ON/OFF)
NOWRITE_HIGH = OFF 6 20.000 ; Don't write epoch with high statistics (q, stdev-m)
OUTPUT_MODE = EXTENDED ; Format for .fwd/rev file
DETAILED_SUM = ON ; Detailed Static/KAR Summary header
WRITE_SLIP_MSG = ON ; Print cycle slips to message log
SAVE_AMB = ON ; Should ambiguities be saved

```

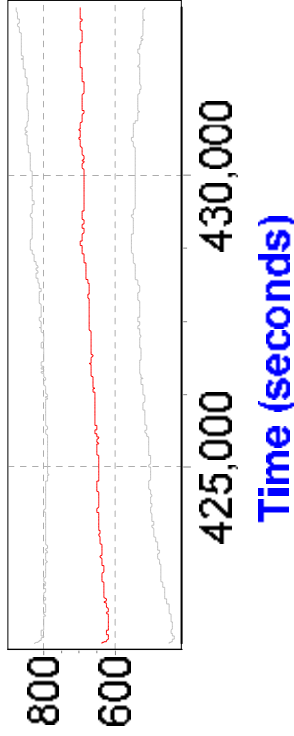
X Accelerometer Bias (micro-g)



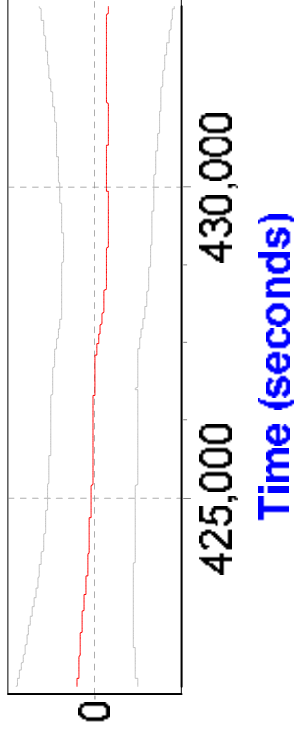
Y Accelerometer Bias (micro-g)



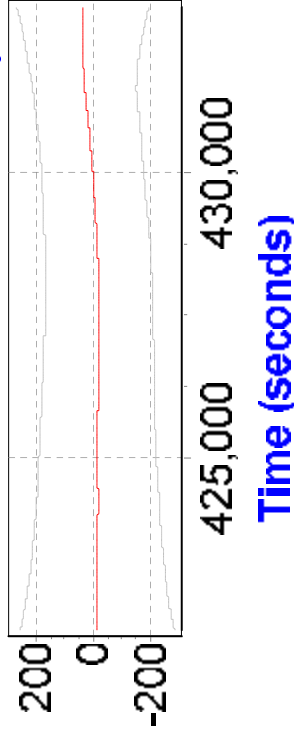
Z Accelerometer Bias (micro-g)



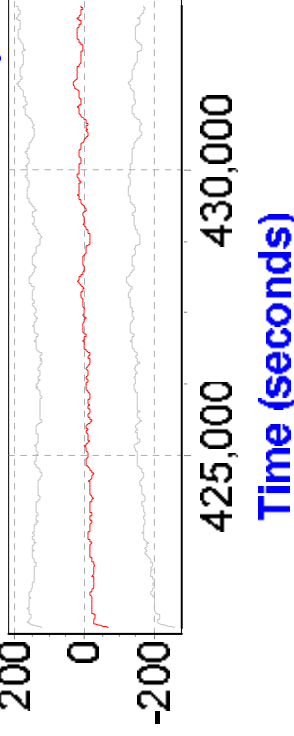
X Accelerometer Scale Factor Error (ppm)

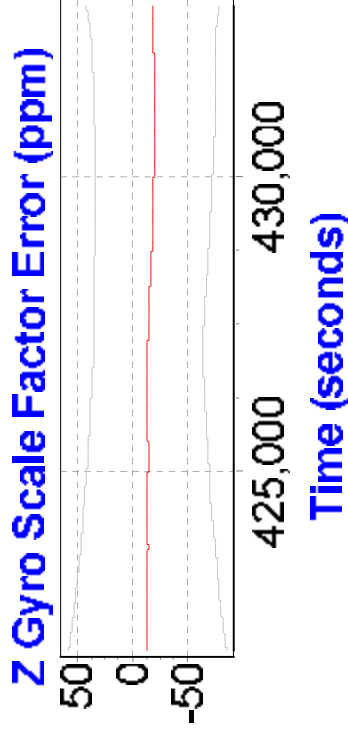
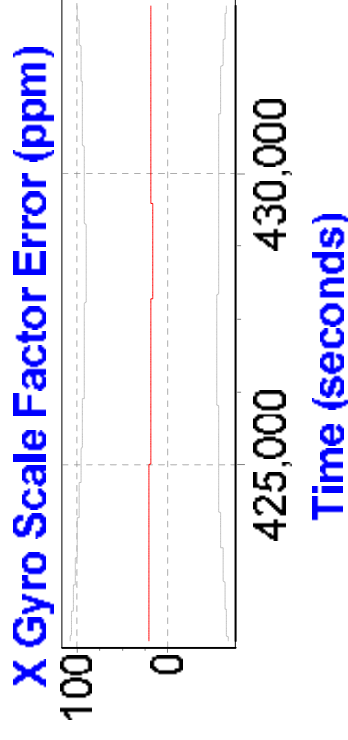
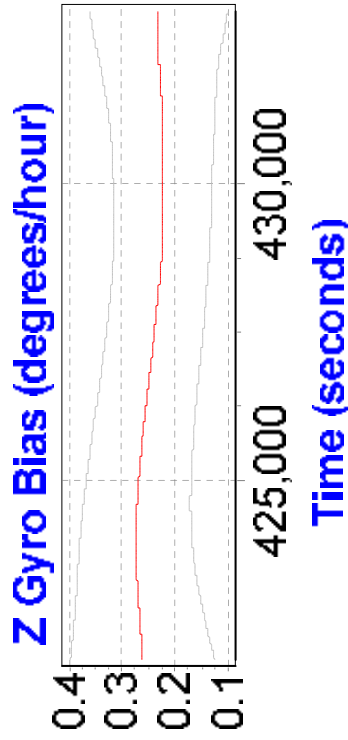
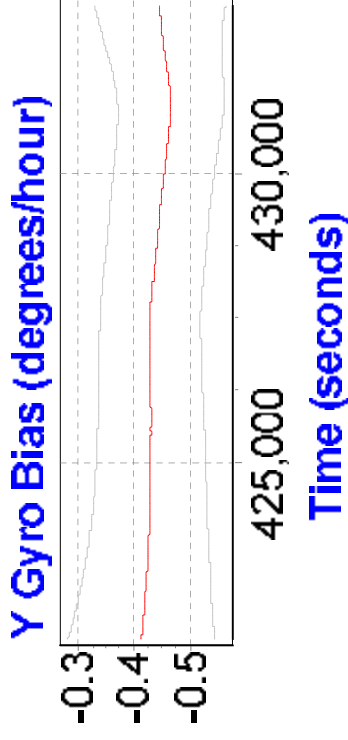
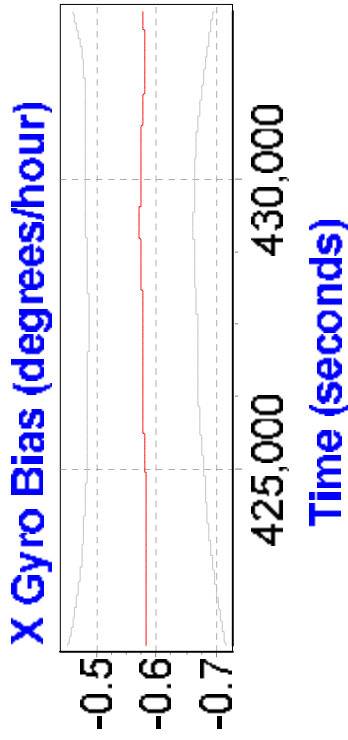


Y Accelerometer Scale Factor Error (ppm)



Z Accelerometer Scale Factor Error (ppm)





GPS Base Log Sheet



Terrapoint

Station ID:	1300	Project #:	111300	Missions:	104
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Project Name:	Calendar Date:	Julian Day
Approx. Coordinates WGS 84	Apr 14	104
Description of Mark (Take Photos)	N 38° 43' 34" W	773124
Monument is:	Nail ground	
Location & Access	Dulles Aviation FBO	

Obstructions & Additional Notes

GPS Observation - MAIN	
Rx Make/Model	Serial #
GSR2600	0002
Ant Make/Model	Serial #
SK600	0010
Operator	Tr
Start	13:12
Session Time (GPS) End	
Slant HI Before:	A: 1.44 B: B:
Slant HI After:	A: A: B: B:
Correction	
Phase Center	<input type="checkbox"/> m <input type="checkbox"/> in <input type="checkbox"/> use GrafNav Profile
Data File Name	000104opdc

GPS Observation - Back-Up	
Rx Make/Model	Serial #
GSR2600	0000
Ant Make/Model	Serial #
SK600	0011
Operator	Tr
Start	13:16
Session Time (GPS) End	
Slant HI Before:	A: 1.375 B: B:
Slant HI After:	A: A: B: B:
Correction	
Phase Center	<input type="checkbox"/> m <input type="checkbox"/> in <input type="checkbox"/> use GrafNav Profile
Data File Name	0000104opdc

GPS Base Log Sheet



Station ID:	130008	Project #:	1300	Missions:	1048
Project Name:	Dewbuns	Calendar Date:	Apr 14	Julian Day:	104
Approx. Coordinates WGS 84	N 3817' 52" W		77° 18' 55"		
Description of Mark (Take Photos)	- nail in grass				
Monument is:	<input type="checkbox"/> Flush with ground <input checked="" type="checkbox"/> Above ground <input type="checkbox"/> Below ground <input type="checkbox"/> cm				
Location & Access	- north of church - south of road.				

Observations & Additional Notes

GPS Observation - MAIN	
Rx Make/Model	GR2600
Serial #	0016
Ant Make/Model	SK600
Serial #	003500
Operator	Tr
Session Time (GPS)	Start: 20:24 End: 13:26
Slant HI Before:	A: 1.448 B: 1.448
Slant HI After:	A: 1.448 B: 1.448
Correction	
Phase Center	<input type="checkbox"/> m <input type="checkbox"/> in <input type="checkbox"/> use GrafNav Profile
Data File Name	00161040pdc

GPS Observation - Back-Up	
Rx Make/Model	
Serial #	
Ant Make/Model	
Serial #	
Operator	
Session Time (GPS)	Start: End:
Slant HI Before:	A: B:
Slant HI After:	A: B:
Correction	
Phase Center	<input type="checkbox"/> m <input type="checkbox"/> in <input type="checkbox"/> use GrafNav Profile
Data File Name	

4 Day Start on 220



Flight Log

Project# 111300 Session 021104B

Date	14 April 11	Julian Day	104
Project	111300	Aircraft	93150
Staging	MANASSAS REGIONAL	Call Sign	
Survey Block		Pilot	TRDD
Lines Complete		Operator	JOCOS
Observer			
Mission Objective	will circle the base before starting		
	# 230 South		

ALMS/Optech	OL
System #	
Laser Scanner	
Camera/Lens SN	
Shutter Speed	
Photo Freq.	
IMU	
GPS RX	
Data Drive	

Additional Notes:
 PT. 1009
 Base N 38 17 51
 W 077 18 55
 310 @ 3

Outside Temp @ TC: 21c Outside Pressure @ TO: 30.07
 Outside Temp @ LA: Outside Pressure @ LA:

Aircraft Block Time	<input type="checkbox"/> Times confirmed with pilot	
Engine On (Hobbs)	Takeoff	(120L) x (Total flt hrs)
3594.2		
Engine Off (Hobbs)	Landing	FBO \$ / Ltr
3598.1		
Total hrs (Hobbs)	Total hrs	Approx. Fuel Cost
3.9		

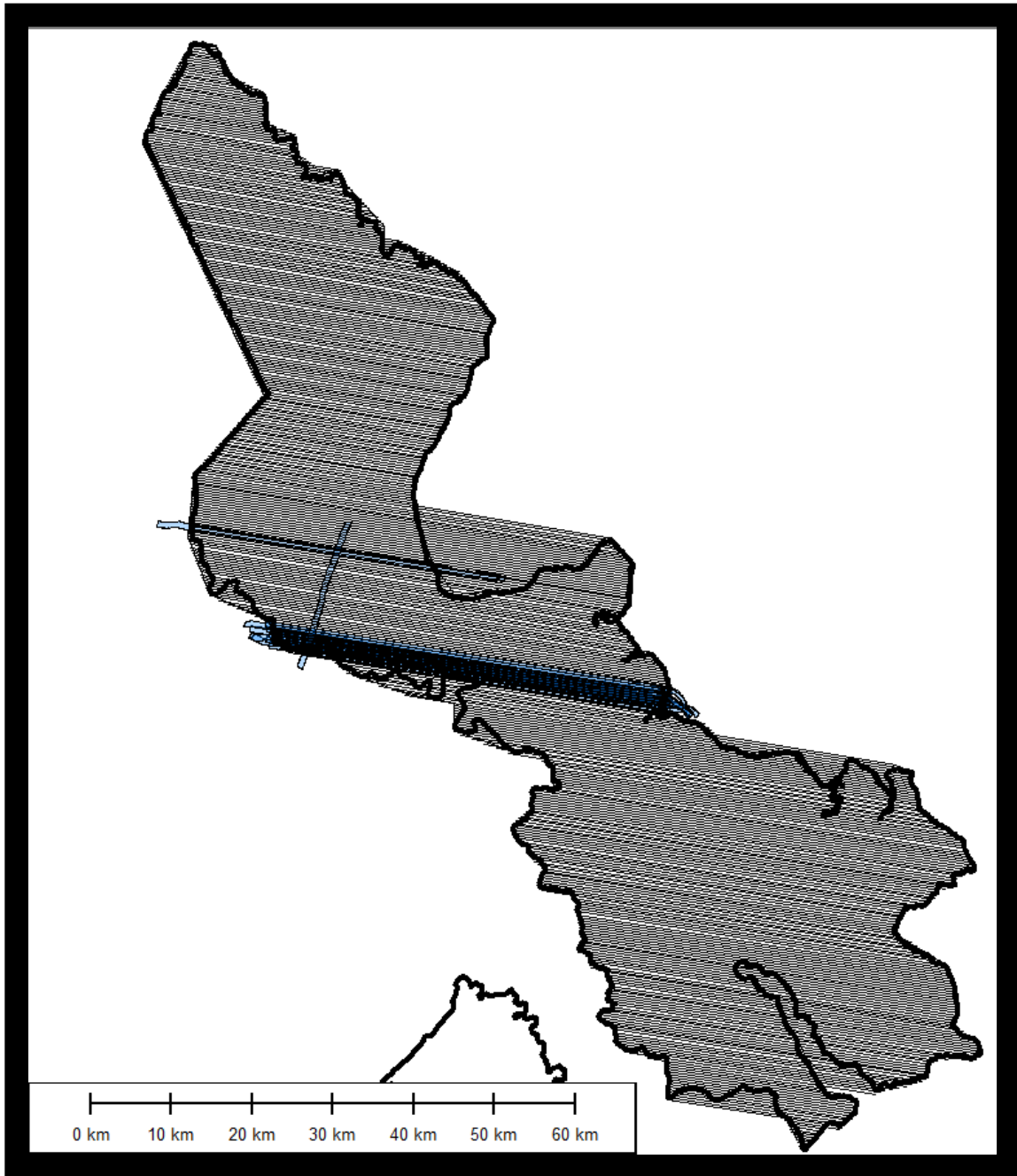
Mission Plan	
Flying Height AGL	Scan Angle (Opract)
950	
Ground Speed	Mirror Scan Rate
150	
First/Last/Intermeting Return	Laser Pulse Rate

Static & KAR		GPS // INS Alignment	
Time	LGPS	Start	End
Pre Mission		1645	1655
K/R Base		233435	223503
K/R Base		200424	200449
Post Mission		2023	2023

Flight Plan Line #	LIDAR File Name	Flight Direction	GPS / UTC Time		Flight Aborted		Photo Events / Comments
			Start	End	Time	NM to End	
236	TEST 20681-43	E	21937	212583			
235	*	W	213059	213952	*	*	Laptop died - power cord pulled out - restarted IT system still running. Switched screen off. ALTM Flight plan = default but appears to be correct. LINE STOPPED WAY CARE. 235
234	*	E	214545	215215			
233	*	W	215657	220323			
232	*	E	220022	221449			
231	*	W	221903	222539			
230	*	E	225217	230357			Long Line - Circle base before 230
229	*	W	230006	230007			Passed over point, turned on system as prescribed - 23435 - 223503
228	*	E	232414	233602			
227	*	W	234051	235256			overfly base when circle fr. 230434-49

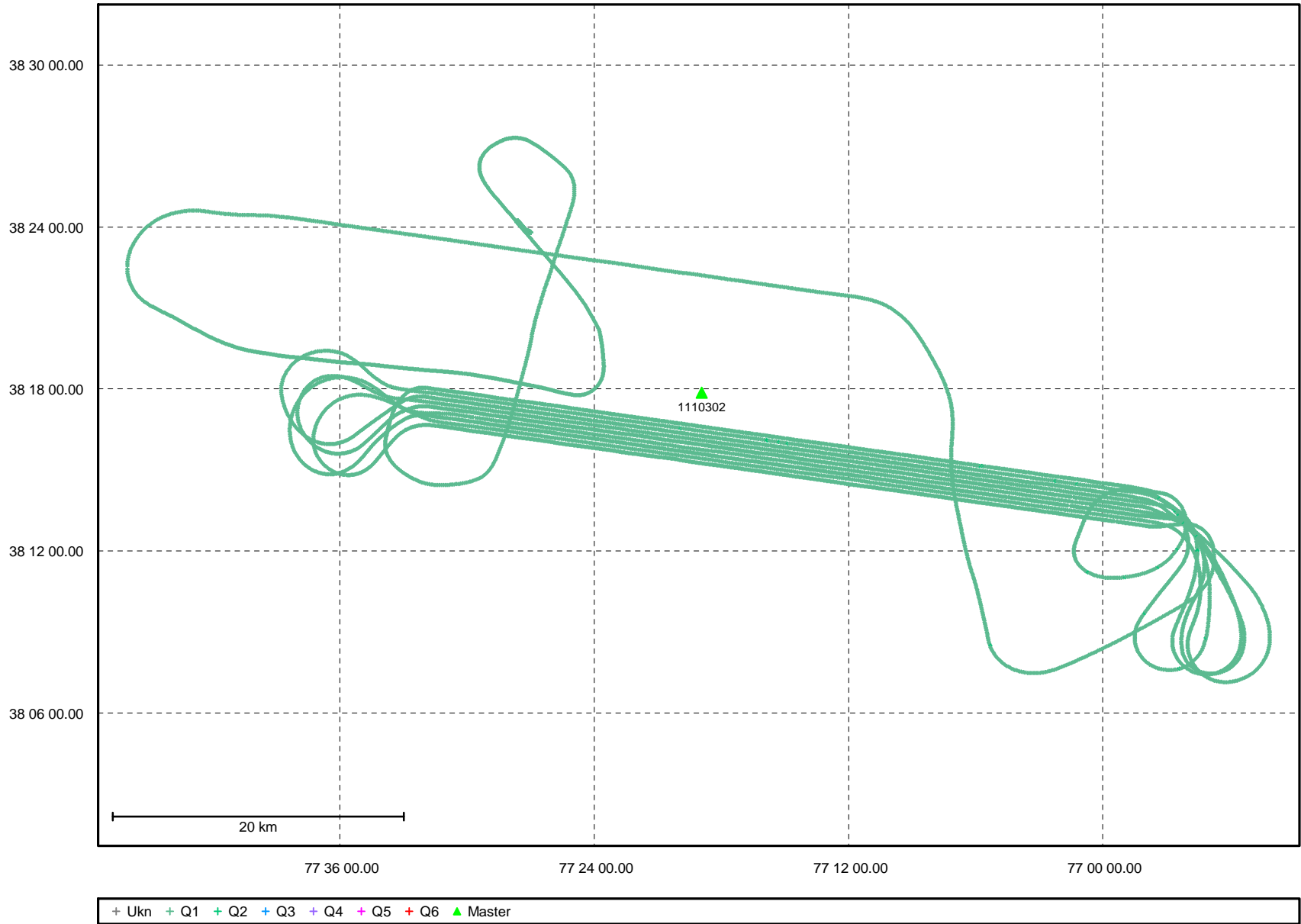
Mission: o211108a

2011 04 18



Combined - Map Run (9)

Geographic, DMS



Processing Summary Information

Program: GrafNav
Version: 7.80.2517
Project: E:\Matt_Weller\o211108a_3_Processed\GPS\o211108a.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:
Total in GPB file: 132362
No processed position: 119434
Missing Fwd or Rev: 4
With bad C/A code: 0
With bad L1 Phase: 0

Measurement RMS Values:
L1 Phase: 0.0163 (m)
C/A Code: 0.90 (m)
L1 Doppler: 0.026 (m/s)

Fwd/Rev Separation RMS Values:
East: 0.012 (m)
North: 0.010 (m)
Height: 0.023 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (12916 occurrences):
East: 0.006 (m)
North: 0.008 (m)
Height: 0.020 (m)

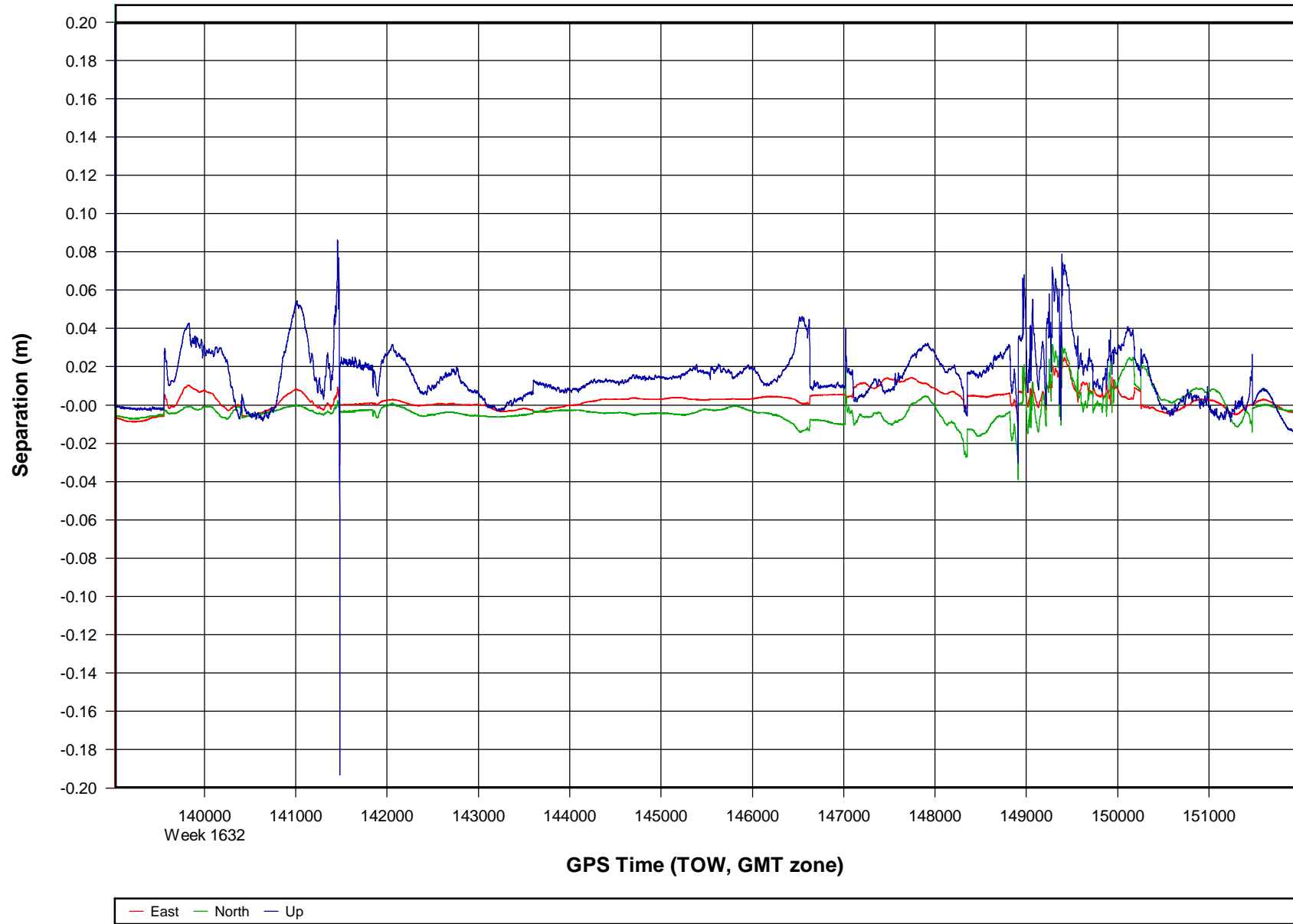
Quality Number Percentages:
Q 1: 99.8 %
Q 2: 0.2 %
Q 3: 0.0 %
Q 4: 0.0 %
Q 5: 0.0 %
Q 6: 0.0 %

Position Standard Deviation Percentages:
0.00 - 0.10 m: 95.4 %
0.10 - 0.30 m: 4.6 %
0.30 - 1.00 m: 0.0 %
1.00 - 5.00 m: 0.0 %
5.00 m + over: 0.0 %

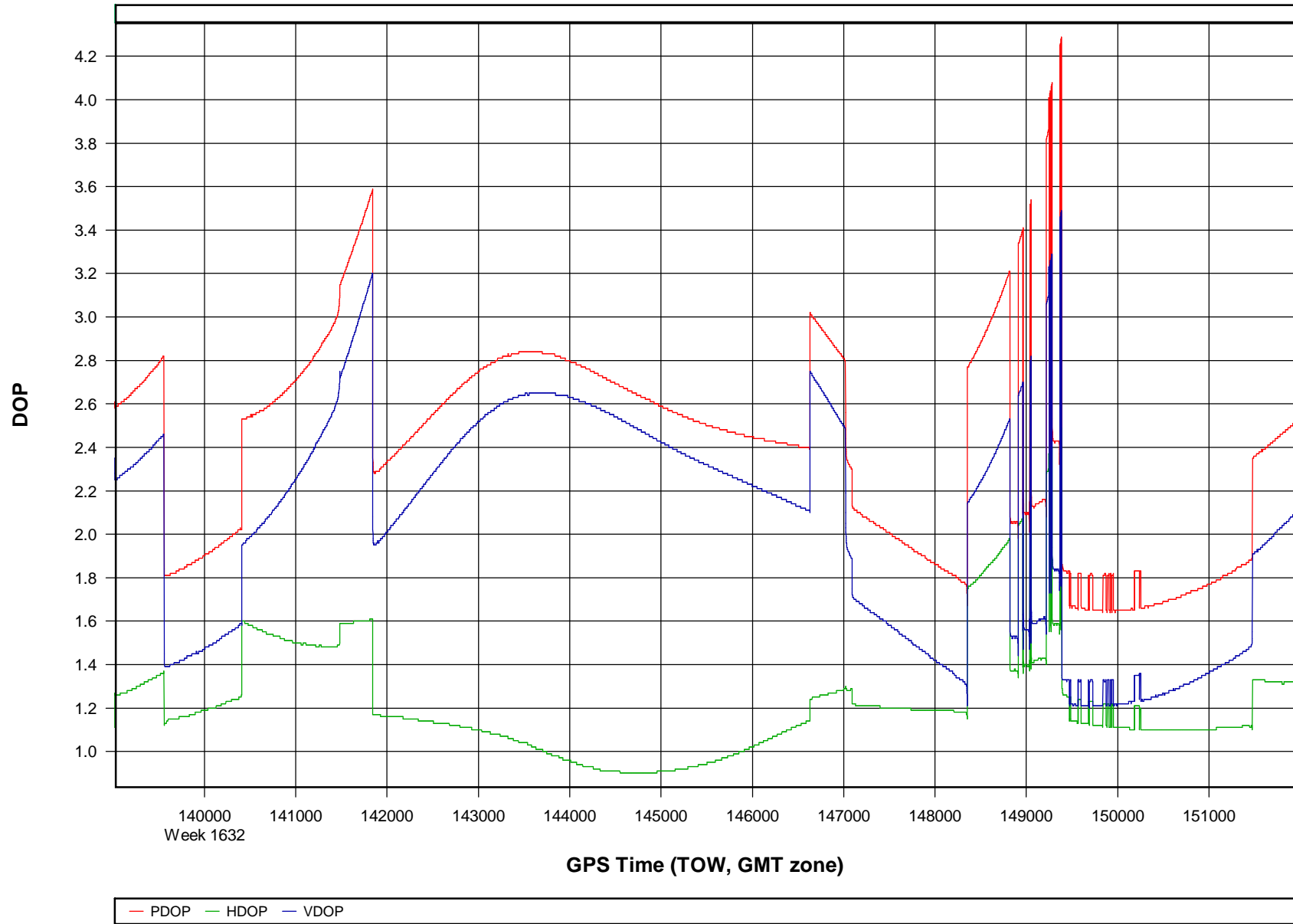
Percentages of epochs with DD_DOP over 10.00:
DOP over Tol: 0.3 %

Baseline Distances:
Maximum: 42.879 (km)
Minimum: 2.507 (km)
Average: 19.919 (km)
First Epoch: 16.227 (km)
Last Epoch: 16.097 (km)

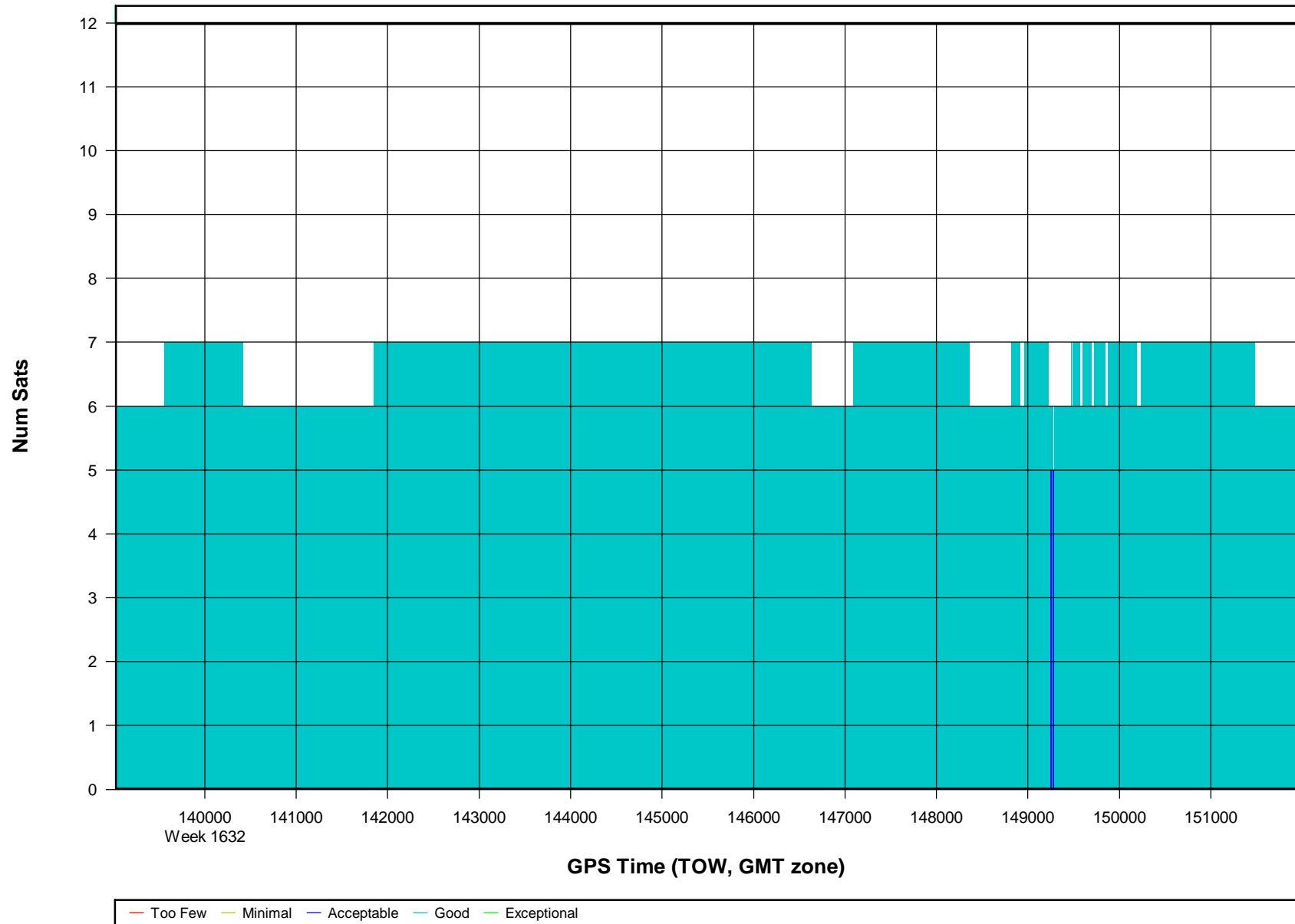
o211108a [Combined] - Forward/Reverse or Combined Separation Plot



o211108a [Combined] - PDOP, HDOP, VDOP Plots



o211108a [Combined] - Number of Satellites Bar Plot



o211108a

```
; PROJECT:
G: \11103U_VA\2_Operations\6_Missions\o211108a\3_Processed\GPS\o211108a. cfg
;
; DATE:      April 29/11 (date/time of processing)
; TIME:      12: 58: 32
; CREATED BY: GrafNav Version 7. 80. 2517
;
```

```
VERSION = 7. 80. 2517
PROCUSER = Unknown
PROCDESC = Run*(10)
PROCTIME = 12: 44: 37 04/29/2011
```

```
; Master station # 1 information
```

```
MB_MASTER_INDEX = 0
MB_MASTER_NAME = 1110302
MB_MASTER_FILE = G: \11103u_va\2_Operations\6_Missions\o211108a\00081080_1110302. gpb
MB_MASTER_POS = 38 17 51.99406 -77 18 55.26399 29.0380
MB_MASTER_ANT = 1.483 0.001 1.449 1 _TP_SOK600 0
MB_MASTER_DI_SABLE = OFF
```

```
; Remote station information
```

```
REMOTE_FILE =
G: \11103u_va\2_Operations\6_Missions\o211108a\3_Processed\Extract\mgps_o211108a. gpb
REMOTE_POS = 38 23 50.28965 -77 27 04.76644 26.8076
REMOTE_ANT = 0.000
```

```
; General settings
```

```
PROCESS_MODE = 103 108 113 126 ; Processing modes (GrafNav only)
```

```
DATUM = NAD83 AUTO ; Processing Datum
INPDATUM = ON NAD83 AUTO ; Input Datum (ON=Use processing datum)
ELEV_MASK = 18.0 ; Elevation mask (deg)
GRID = UTM 15 31 ; Grid info
```

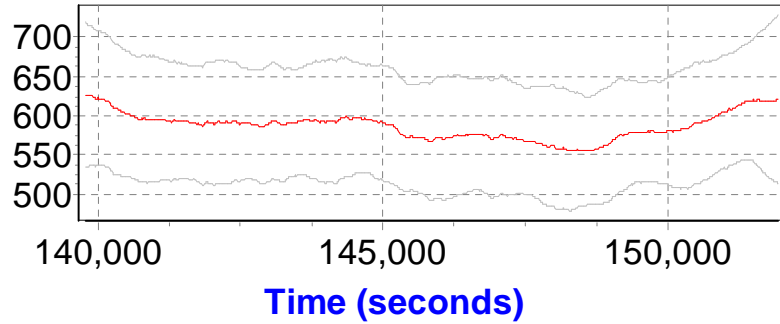
```
CYCLE_TEST = BOTH ; Cycle slip test method
STATIC_SLIP_TOL = 0.40 ; slip tolerance in static mode (cycles)
USE_DOPPLER = ON OFF ; Use doppler meas. for phase, for code-only
```

```
BASE_SAT = 99 ; Base satellite (99-default)
```

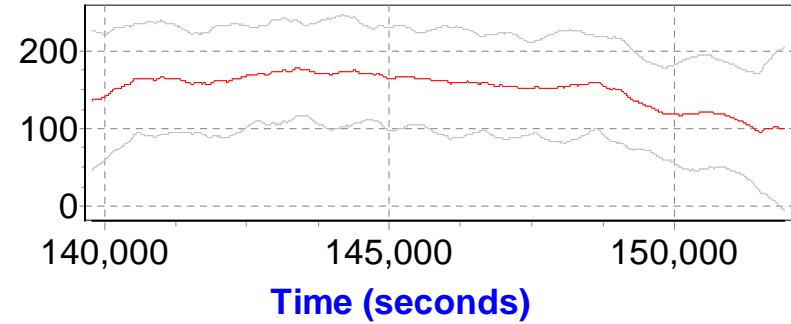
```
TIMERANGE = RANGE 987172616.0 987185547.0 2 0 ; Processing time range
INTERVAL = 0.10 ; Processing time interval (seconds)
```

```
PROCESS_DIR = FORWARD ; Process direction (FORWARD/REVERSE)
BOTH_DIR = ON ; True for processing both directions
WRITE_BAD_EPOCHS = OFF ; Save bad data to .fwd/rev file (ON/OFF)
NOWRITE_HIGH = OFF 6 20.000 ; Don't write epoch with high statistics (q, stdev-m)
OUTPUT_MODE = EXTENDED ; Format for .fwd/rev file
DETAILED_SUM = ON ; Detailed Static/KAR Summary header
WRITE_SLIP_MSG = ON ; Print cycle slips to message log
SAVE_AMB = ON ; Should ambiguities be saved
```

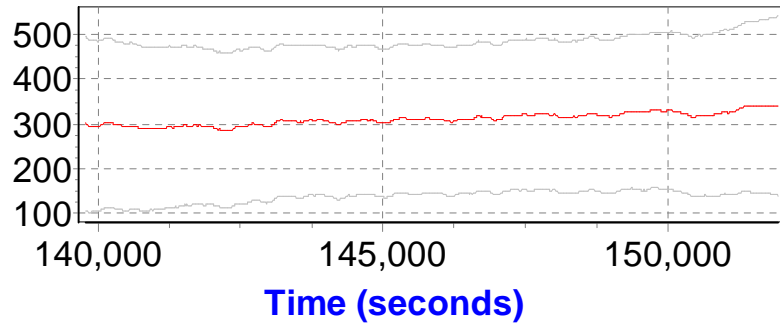
X Accelerometer Bias (micro-g)



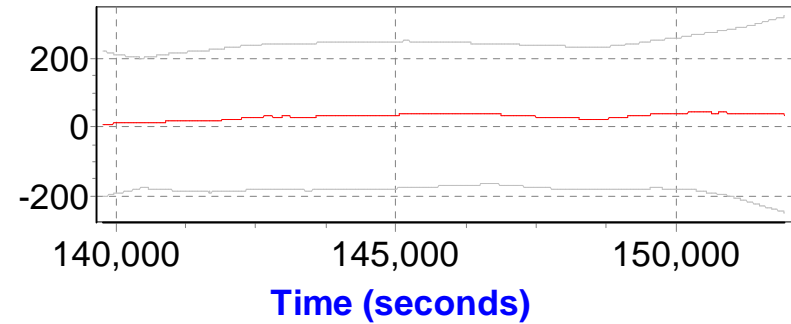
Y Accelerometer Bias (micro-g)



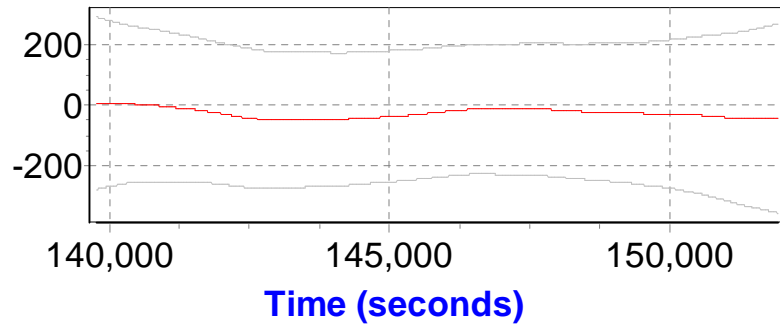
Z Accelerometer Bias (micro-g)



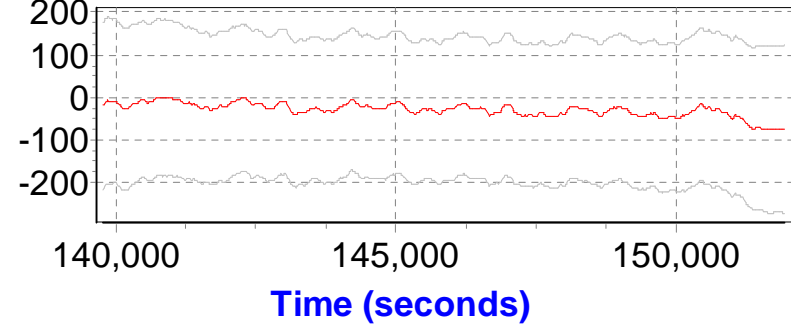
X Accelerometer Scale Factor Error (ppm)



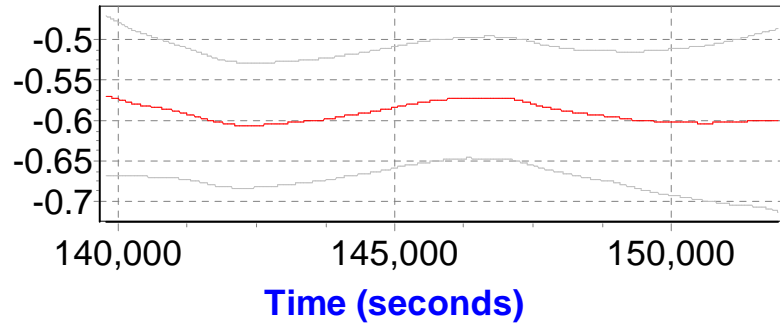
Y Accelerometer Scale Factor Error (ppm)



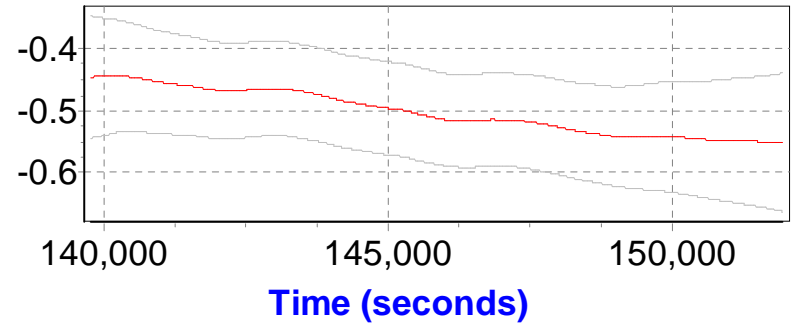
Z Accelerometer Scale Factor Error (ppm)



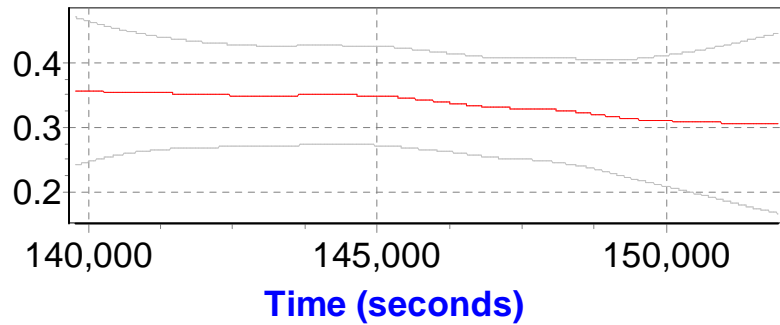
X Gyro Bias (degrees/hour)



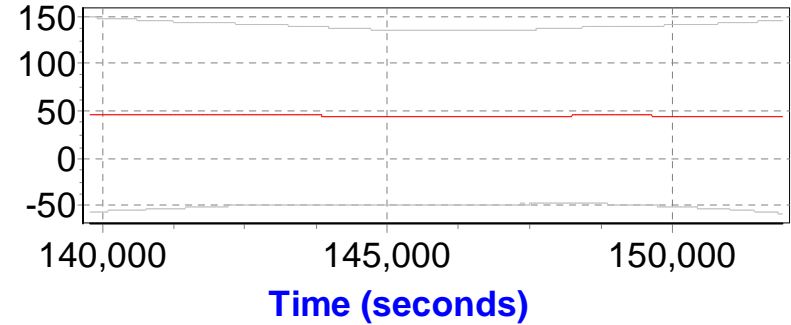
Y Gyro Bias (degrees/hour)



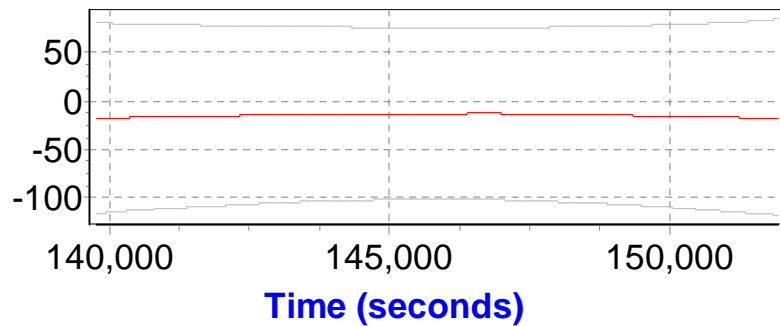
Z Gyro Bias (degrees/hour)



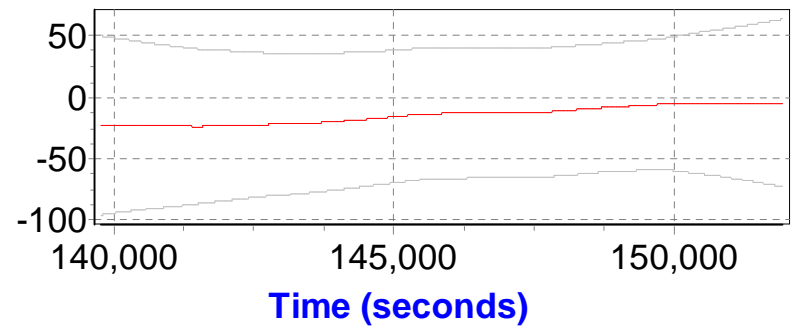
X Gyro Scale Factor Error (ppm)



Y Gyro Scale Factor Error (ppm)



Z Gyro Scale Factor Error (ppm)



Light Log

Proj. # 111030 Session # 02111080

Date: 10/28/08
 Mission Objective:
 Mission Complete:
 Survey Block:
 Staging:
 Operator:
 Pilot:
 Call Sign:
 Aircraft:
 Mission Day:
 Additional:
 Mission Plan:
 Mission #
 Laser Scanner
 Camera/Lens (S)
 Stuller Speed
 Photo Frap.
 MU
 GPS Rx
 Laser Drive
 Outside Pressure @ LA:
 Outside Pressure @ TO:
 Temp @ TO:
 Temp @ LA:
 GPS/UTC Time

Additional:
 Mission Plan:
 Mission #
 Laser Scanner
 Camera/Lens (S)
 Stuller Speed
 Photo Frap.
 MU
 GPS Rx
 Laser Drive
 Outside Pressure @ LA:
 Outside Pressure @ TO:
 Temp @ TO:
 Temp @ LA:
 GPS/UTC Time

Altitude:
 Brook Time:
 Times confirmed with pilot:
 Engine On (Hobs):
 Landing:
 FBO \$ / Litre:
 Total hrs (Hobs):
 Total Pre:
 Approx Fuel Cons:
 Flight Direction:
 UBAR File Name:
 GPS/UTC Time

Scan Angle (x/y/z):
 Flying Height AGL:
 Ground Speed:
 First Last/Alternating Return:
 Mirror Scan Rate:
 Laser Pulse Rate:
 GPS/UTC Time

Flight Plan Time #	UBAR File Name	Start	End	Time	Photo Events
207		15:00	15:32	15:12	A
166		15:34	15:44	15:34	Outside Laser Temp
167		15:50	16:06	15:58	1/2 span
168		16:10	16:20	16:15	End opening
169		16:22	16:55	16:38	
170		16:45	17:13	17:00	
171		17:13			
172					
173					

GPS Base Log Sheet



1110302

Station ID: 132002 Project #: 111030 Missions: 10 Feb 16

Project: William-Byrd
 Name: Apr 18
 Approx. Coordinates: WGS 84 N 38 17 52 W 77 18 55
 Description of Mark (Take Photos): Small hole in ground
 Monument is: Flies with ground Above ground cm Below ground cm
 Location & Access: Church cemetery

Obstructions & Additional Notes:
2nd Base At Airport
had 2 Sessions

GPS Observation - MAIN

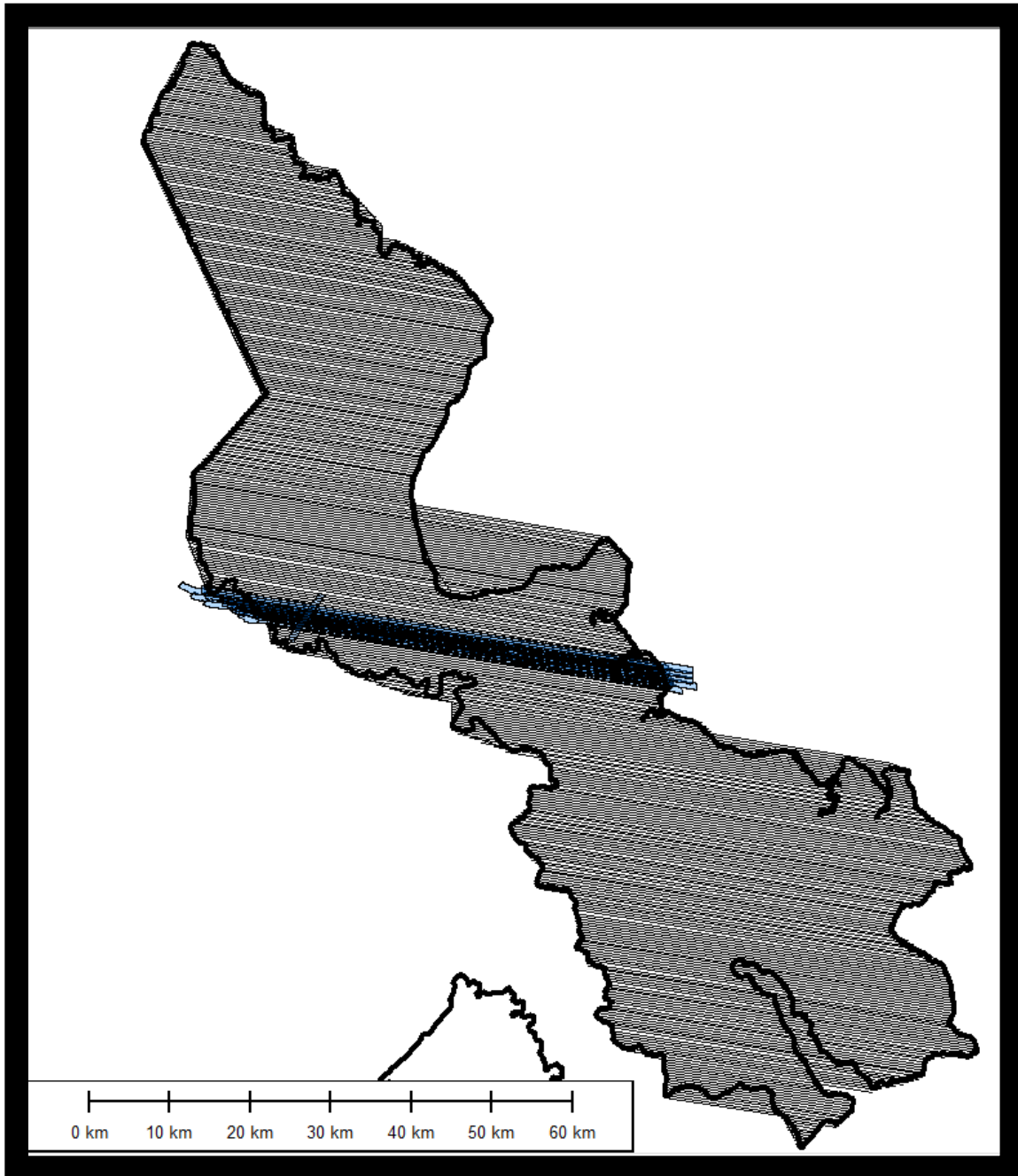
Rec-Make! Model: GPS 2600 Serial #: 0008
 Ant. Make! Model: Star 600 Serial #: 2007
 Operator: Evans
 Session Start: 11:56
 Time (GPS) End: 2:00
 Slant HI: A: 144.9 B: 144.9
 Before: C: 144.9
 Slant HI: A: 144.9 B: 144.9
 After: C: 144.9
 Connection: 14
 Phase Center: 1m use GrafNav Profile
 Data File Name: GPS 2600 08

GPS Back-Up

Rec-Make! Model: GPS 2600 Serial #: 0020
 Ant. Make! Model: Star 600 Serial #: 2007
 Operator: Evans
 Session Start: 14:00
 Time (GPS) End: 2:00
 Slant HI: A: 144.9 B: 144.9
 Before: C: 144.9
 Slant HI: A: 144.9 B: 144.9
 After: C: 144.9
 Connection: 14
 Phase Center: 1m use GrafNav Profile
 Data File Name: GPS 2600 20

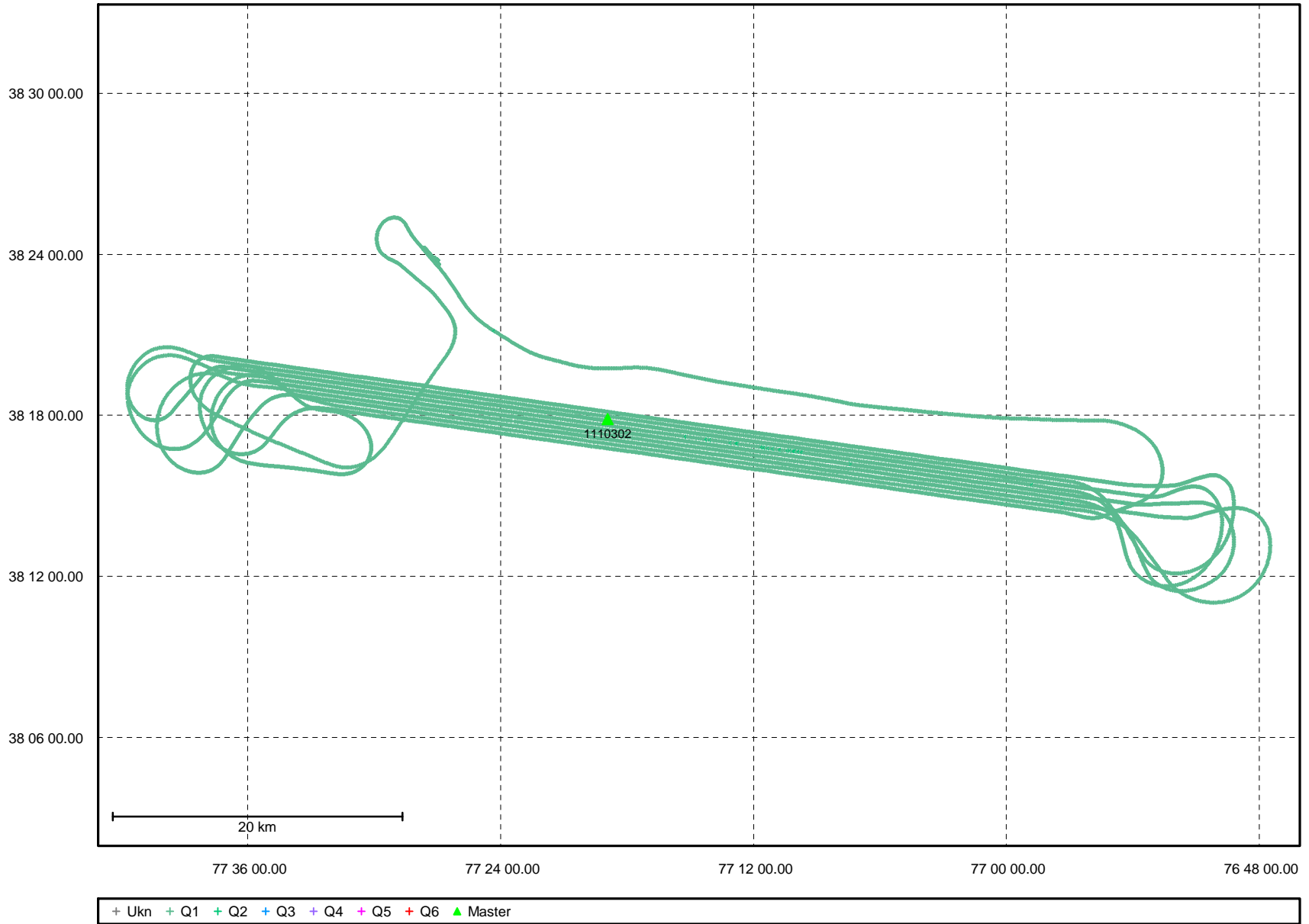
Mission: o211108b

2011 04 18



Combined - Map Run (11)

Geographic, DMS



Processing Summary Information

Program: GrafNav
Version: 7.80.2517
Project: E:\Matt_Weller\o211108b_3_Processed\GPS\o211108b.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:
Total in GPB file: 129100
No processed position: 116206
Missing Fwd or Rev: 3
With bad C/A code: 0
With bad L1 Phase: 0

Measurement RMS Values:
L1 Phase: 0.0149 (m)
C/A Code: 0.86 (m)
L1 Doppler: 0.024 (m/s)

Fwd/Rev Separation RMS Values:
East: 0.008 (m)
North: 0.006 (m)
Height: 0.026 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (12889 occurrences):
East: 0.006 (m)
North: 0.005 (m)
Height: 0.019 (m)

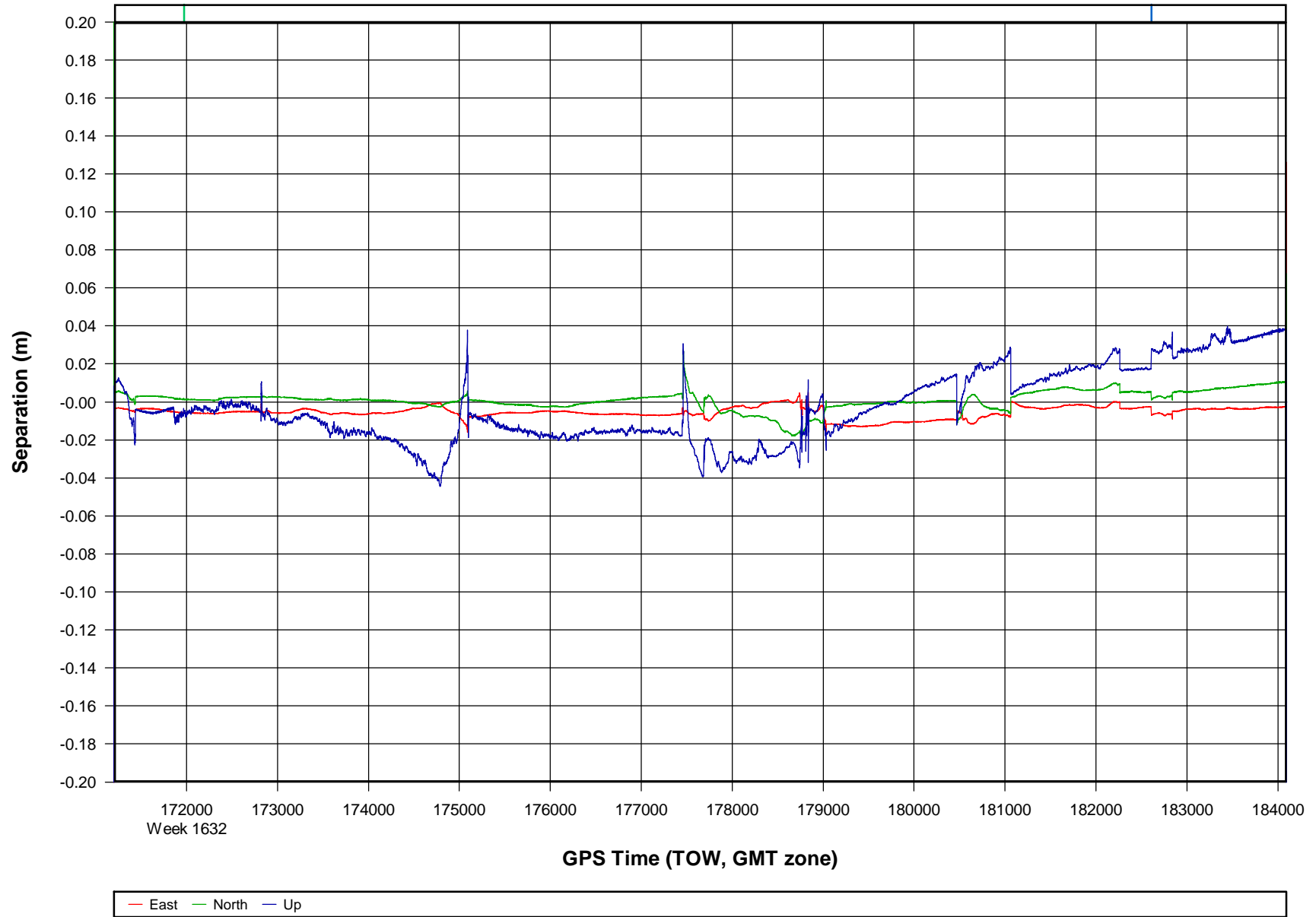
Quality Number Percentages:
Q 1: 99.8 %
Q 2: 0.2 %
Q 3: 0.0 %
Q 4: 0.0 %
Q 5: 0.0 %
Q 6: 0.0 %

Position Standard Deviation Percentages:
0.00 - 0.10 m: 100.0 %
0.10 - 0.30 m: 0.0 %
0.30 - 1.00 m: 0.0 %
1.00 - 5.00 m: 0.0 %
5.00 m + over: 0.0 %

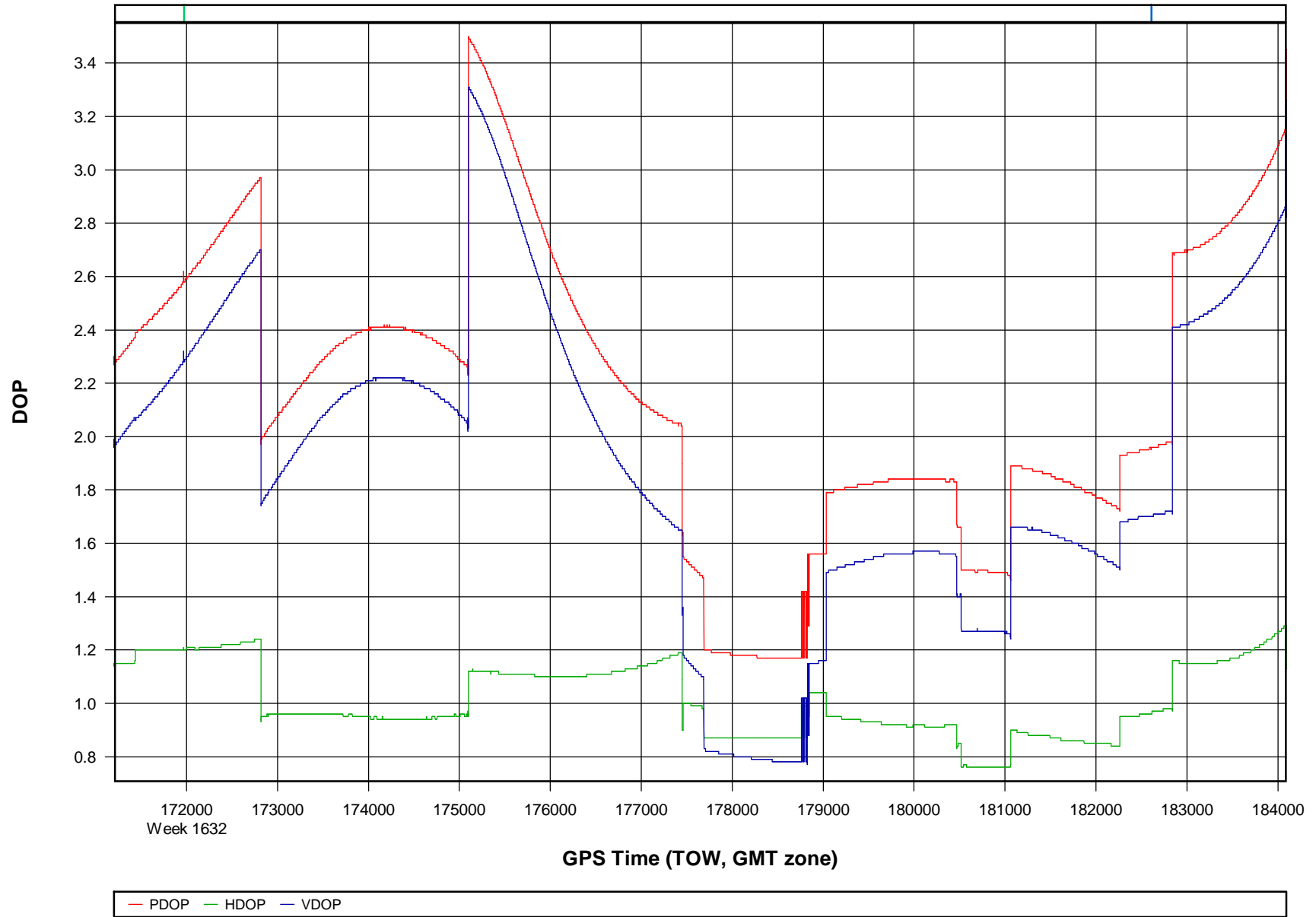
Percentages of epochs with DD_DOP over 10.00:
DOP over Tol: 0.0 %

Baseline Distances:
Maximum: 46.768 (km)
Minimum: 1.005 (km)
Average: 19.939 (km)
First Epoch: 16.104 (km)
Last Epoch: 16.045 (km)

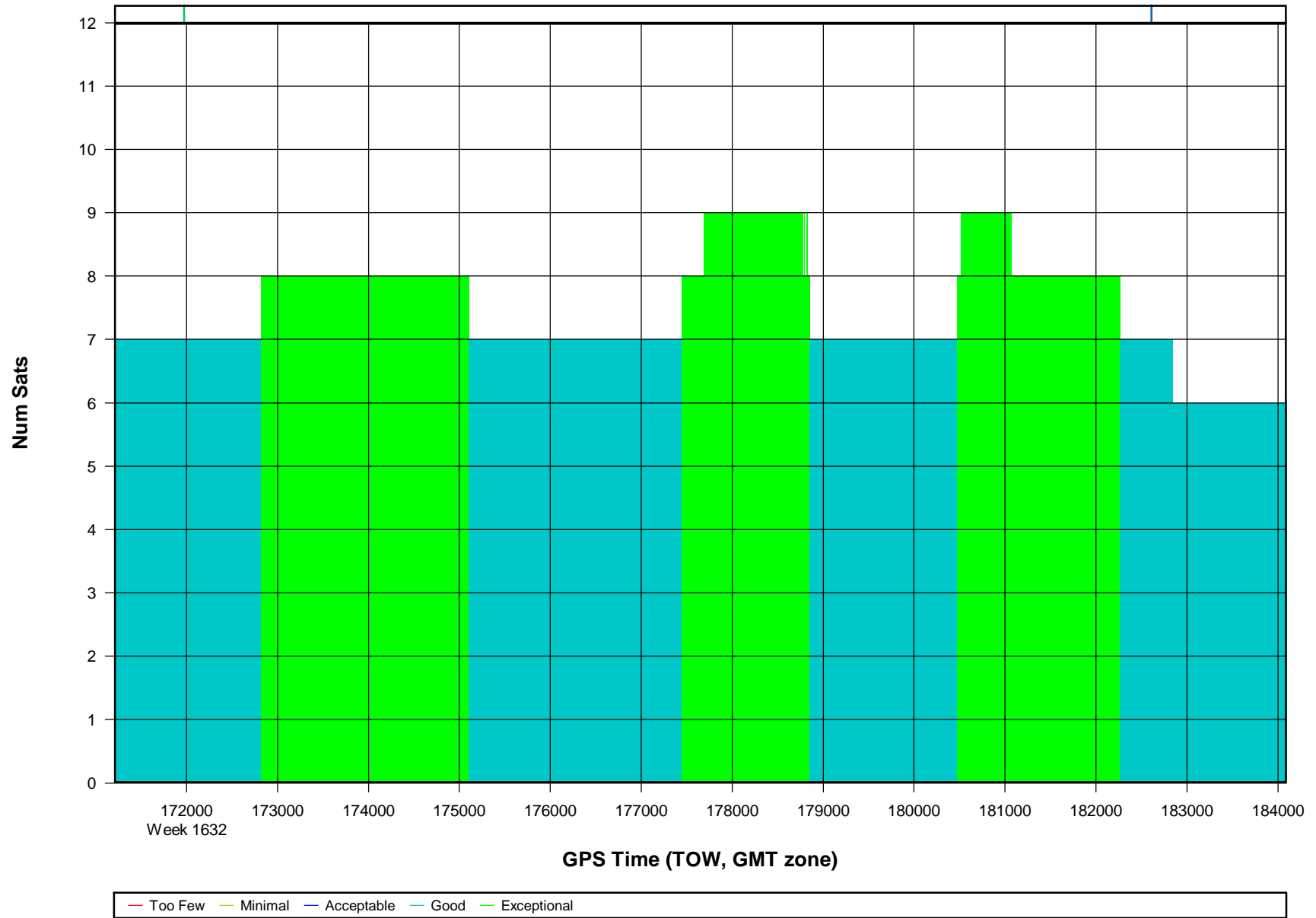
o211108b [Combined] - Forward/Reverse or Combined Separation Plot



o211108b [Combined] - PDOP, HDOP, VDOP Plots



o211108b [Combined] - Number of Satellites Bar Plot



```

                                o211108b
; PROJECT:      E:\11103U_Fema VA\o211108b\3_Processed\GPS\o211108b.cfg
;
; DATE:        April 23/11 (date/time of processing)
; TIME:        10:27:48
; CREATED BY:  GrafNav Version 7.80.2517
;
VERSION = 7.80.2517
PROCUSER = Unknown
PROCDESC = Run*(12)
PROCTIME = 10:26:12 04/23/2011

; Master station # 1 information
MB_MASTER_INDEX = 0
MB_MASTER_NAME = 1110302
MB_MASTER_FILE =
E:\11103U_Fema*VA\o211108b\1_RawData\original_PDC_files\00081080_1110302.gpb
MB_MASTER_POS = 38 17 51.99406 -77 18 55.26399 29.0380
MB_MASTER_ANT = 1.483 0.001 1.449 1 _TP_SOK600 0
MB_MASTER_DI_SABLE = OFF

; Remote station information
REMOTE_FILE = E:\11103U_Fema*VA\o211108b\3_Processed\Extract\mgps_o211108b.gpb
REMOTE_POS = 38 23 48.02441 -77 27 00.60137 23.3292
REMOTE_ANT = 0.000

; General settings
PROCESS_MODE = 103 108 113 126 ; Processing modes (GrafNav only)

DATUM = NAD83 AUTO ; Processing Datum
INPDATUM = ON NAD83 AUTO ; Input Datum (ON=Use processing datum)
ELEV_MASK = 18.0 ; Elevation mask (deg)
GRID = UTM 15 31 ; Grid info

CYCLE_TEST = BOTH ; Cycle slip test method
STATIC_SLIP_TOL = 0.40 ; slip tolerance in static mode (cycles)
USE_DOPPLER = ON OFF ; Use doppler meas. for phase, for code-only

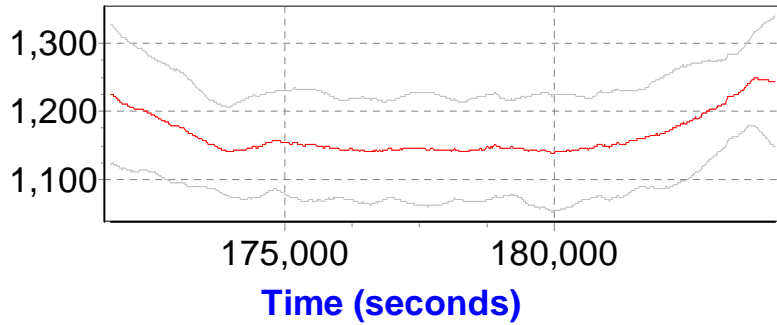
BASE_SAT = 99 ; Base satellite (99-default)

TIMERANGE = ALL 987205645.0 987216905.0 2 0 ; Processing time range
INTERVAL = 0.10 ; Processing time interval (seconds)

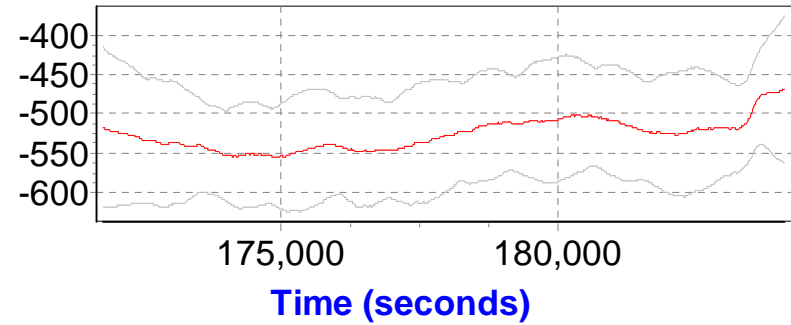
PROCESS_DIR = FORWARD ; Process direction (FORWARD/REVERSE)
BOTH_DIR = ON ; True for processing both directions
WRITE_BAD_EPOCHS = OFF ; Save bad data to .fwd/rev file (ON/OFF)
NOWRITE_HIGH = OFF 6 20.000 ; Don't write epoch with high statistics (q, stdev-m)
OUTPUT_MODE = EXTENDED ; Format for .fwd/rev file
DETAILED_SUM = ON ; Detailed Static/KAR Summary header
WRITE_SLIP_MSG = ON ; Print cycle slips to message log
SAVE_AMB = ON ; Should ambiguities be saved

```

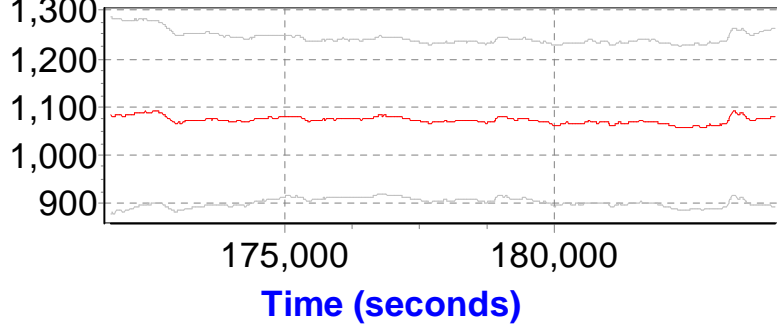
X Accelerometer Bias (micro-g)



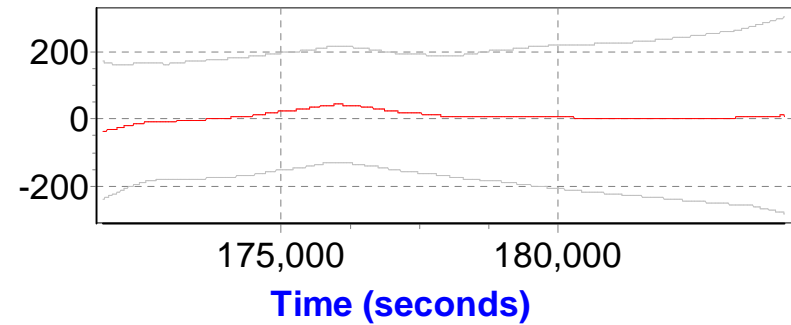
Y Accelerometer Bias (micro-g)



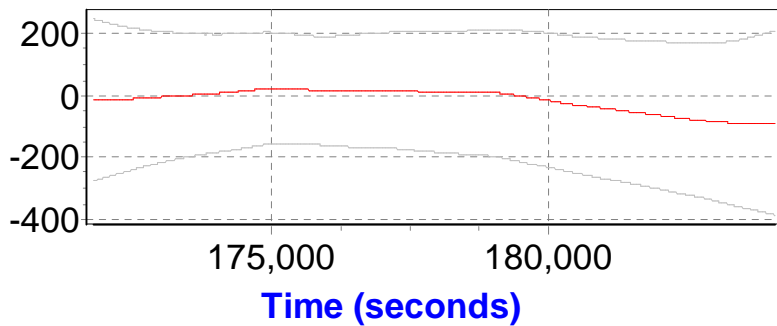
Z Accelerometer Bias (micro-g)



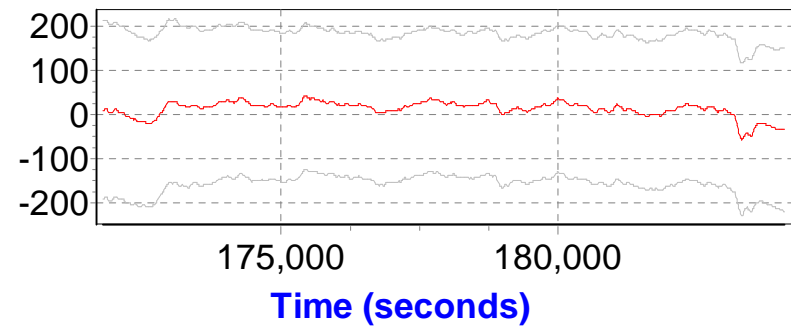
X Accelerometer Scale Factor Error (ppm)



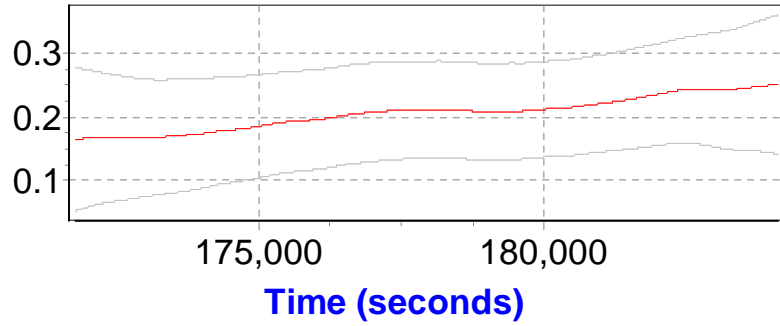
Y Accelerometer Scale Factor Error (ppm)



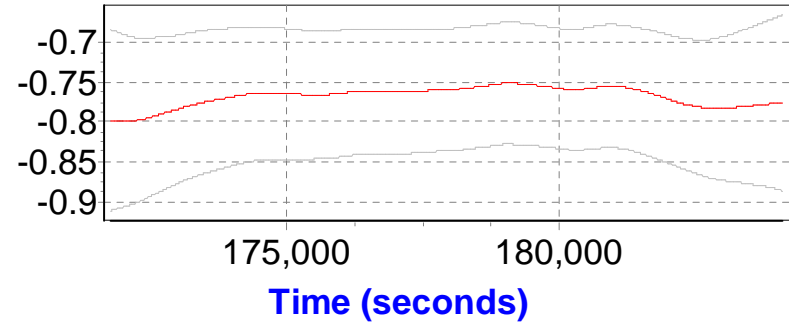
Z Accelerometer Scale Factor Error (ppm)



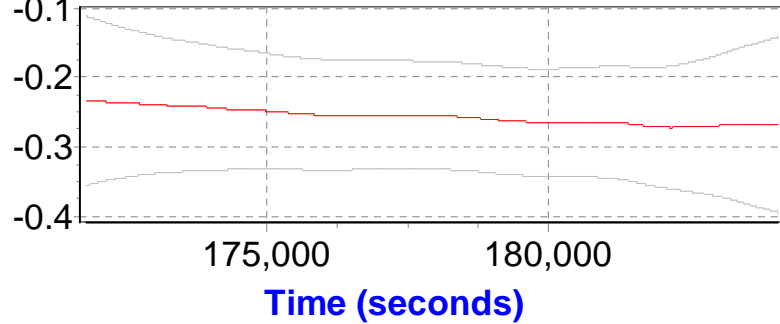
X Gyro Bias (degrees/hour)



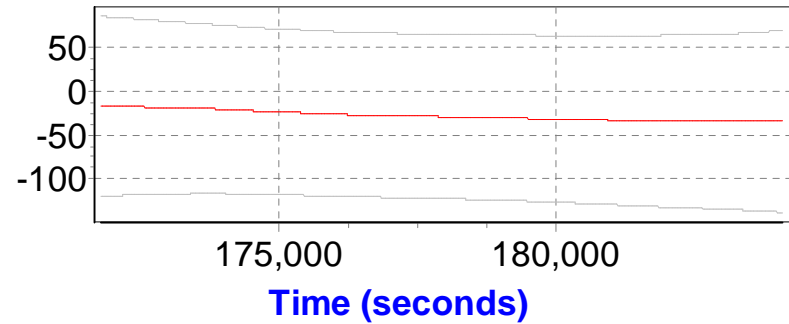
Y Gyro Bias (degrees/hour)



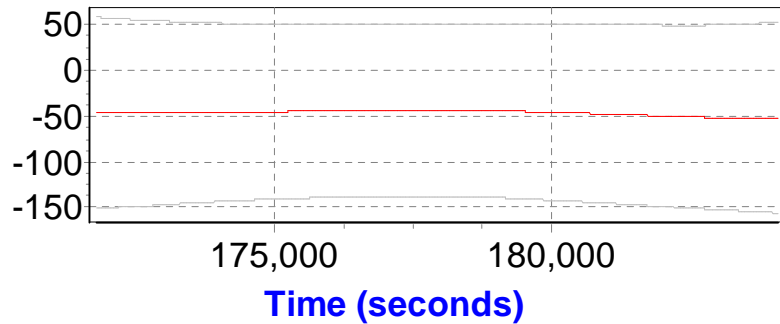
Z Gyro Bias (degrees/hour)



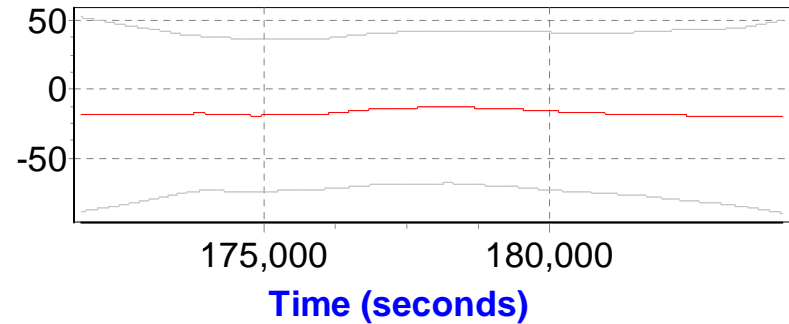
X Gyro Scale Factor Error (ppm)



Y Gyro Scale Factor Error (ppm)



Z Gyro Scale Factor Error (ppm)



Project # 111 030 Session 02111085

Flight Log



Date: Aug 14 Altitude: 207E (Fuel)

Project: Stallone

Survey Block: 1

System # 02

Camera/Lens SN 1234

Shutter Speed 1/2000

Focal Length 28mm

APU 02

GPS RX 02

GPS Time 02:15

Mission Objective: Stallone

Mission Plan

Temp @ TO: 207E

Temp LA: 23E

Outside @ 21

Outside Pressure @ TO: 207E

Outside Pressure @ LA: 23E

Static & KAR GPS # 2998

Altitude Block Time Times corrected with pilot

Engine On (secs)	Engine Off (secs)	Total Time	Altitude
175	176	177	178
179	180	181	182
183	184	185	186
187	188	189	190

Flying Height (AGL)	Scan Rate (Optical)
2000	22
Ground Speed	Micro-Scan Rate
150	40
Roll/Yaw/Pitching Return	Laser Pulse Rate
GPS / UTC Time	Photo Events / Comment
	Please use numerical record

Pre Mission	Time
KAR Base	
KAR Base	
Post Mission	
Photo Events / Comment	

Start	End	Time	NM to End	Outside Temp	Cabin Temp
175	176	177	178	179	180
181	182	183	184	185	186
187	188	189	190	191	192
193	194	195	196	197	198
199	200	201	202	203	204
205	206	207	208	209	210
211	212	213	214	215	216
217	218	219	220	221	222
223	224	225	226	227	228
229	230	231	232	233	234
235	236	237	238	239	240
241	242	243	244	245	246
247	248	249	250	251	252
253	254	255	256	257	258
259	260	261	262	263	264
265	266	267	268	269	270
271	272	273	274	275	276
277	278	279	280	281	282
283	284	285	286	287	288
289	290	291	292	293	294
295	296	297	298	299	300
301	302	303	304	305	306
307	308	309	310	311	312
313	314	315	316	317	318
319	320	321	322	323	324
325	326	327	328	329	330
331	332	333	334	335	336
337	338	339	340	341	342
343	344	345	346	347	348
349	350	351	352	353	354
355	356	357	358	359	360
361	362	363	364	365	366
367	368	369	370	371	372
373	374	375	376	377	378
379	380	381	382	383	384
385	386	387	388	389	390
391	392	393	394	395	396
397	398	399	400	401	402
403	404	405	406	407	408
409	410	411	412	413	414
415	416	417	418	419	420
421	422	423	424	425	426
427	428	429	430	431	432
433	434	435	436	437	438
439	440	441	442	443	444
445	446	447	448	449	450
451	452	453	454	455	456
457	458	459	460	461	462
463	464	465	466	467	468
469	470	471	472	473	474
475	476	477	478	479	480
481	482	483	484	485	486
487	488	489	490	491	492
493	494	495	496	497	498
499	500	501	502	503	504
505	506	507	508	509	510
511	512	513	514	515	516
517	518	519	520	521	522
523	524	525	526	527	528
529	530	531	532	533	534
535	536	537	538	539	540
541	542	543	544	545	546
547	548	549	550	551	552
553	554	555	556	557	558
559	560	561	562	563	564
565	566	567	568	569	570
571	572	573	574	575	576
577	578	579	580	581	582
583	584	585	586	587	588
589	590	591	592	593	594
595	596	597	598	599	600
601	602	603	604	605	606
607	608	609	610	611	612
613	614	615	616	617	618
619	620	621	622	623	624
625	626	627	628	629	630
631	632	633	634	635	636
637	638	639	640	641	642
643	644	645	646	647	648
649	650	651	652	653	654
655	656	657	658	659	660
661	662	663	664	665	666
667	668	669	670	671	672
673	674	675	676	677	678
679	680	681	682	683	684
685	686	687	688	689	690
691	692	693	694	695	696
697	698	699	700	701	702
703	704	705	706	707	708
709	710	711	712	713	714
715	716	717	718	719	720
721	722	723	724	725	726
727	728	729	730	731	732
733	734	735	736	737	738
739	740	741	742	743	744
745	746	747	748	749	750
751	752	753	754	755	756
757	758	759	760	761	762
763	764	765	766	767	768
769	770	771	772	773	774
775	776	777	778	779	780
781	782	783	784	785	786
787	788	789	790	791	792
793	794	795	796	797	798
799	800	801	802	803	804
805	806	807	808	809	810
811	812	813	814	815	816
817	818	819	820	821	822
823	824	825	826	827	828
829	830	831	832	833	834
835	836	837	838	839	840
841	842	843	844	845	846
847	848	849	850	851	852
853	854	855	856	857	858
859	860	861	862	863	864
865	866	867	868	869	870
871	872	873	874	875	876
877	878	879	880	881	882
883	884	885	886	887	888
889	890	891	892	893	894
895	896	897	898	899	900
901	902	903	904	905	906
907	908	909	910	911	912
913	914	915	916	917	918
919	920	921	922	923	924
925	926	927	928	929	930
931	932	933	934	935	936
937	938	939	940	941	942
943	944	945	946	947	948
949	950	951	952	953	954
955	956	957	958	959	960
961	962	963	964	965	966
967	968	969	970	971	972
973	974	975	976	977	978
979	980	981	982	983	984
985	986	987	988	989	990
991	992	993	994	995	996
997	998	999	1000	1001	1002

GPS Base Log Sheet



1110302

Station ID: 2008 Project #: 1110302 Missions: 103a 1b

Project Name: _____ Station Day: _____
 Approx. Coordinates WGS 84: N 38 17 52 W 71 18 55
 Description of Mark (Take Photos): metal base of fence
 Monument is: Flush with ground Above ground Below ground _____ cm
 Location & Access: Chisholm cemetery

Observations & Additional Notes:
2nd Base At Airport had 2 Sessions

GPS Observation - MAIN

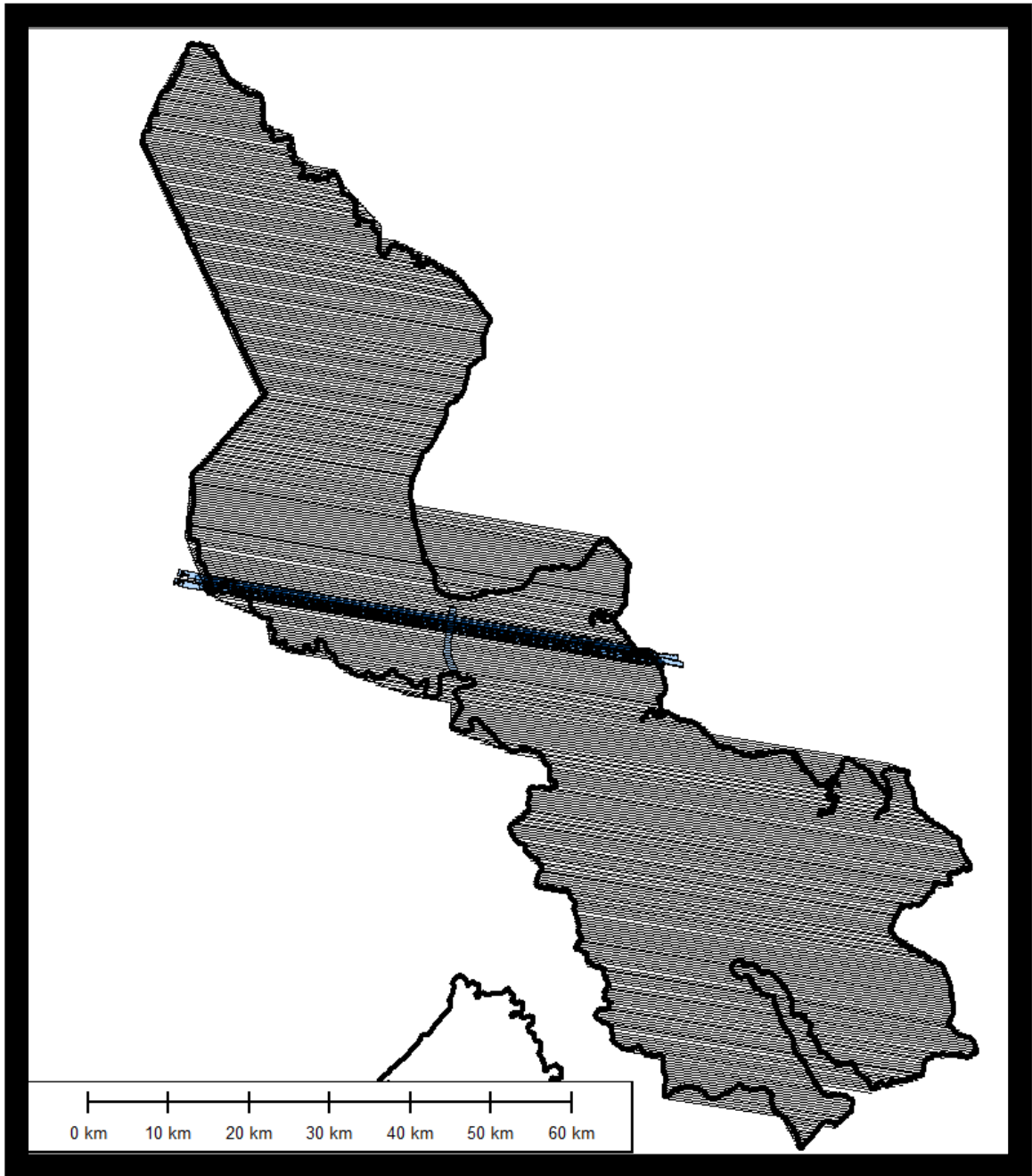
Model: 605 2600 Serial #: 0008
 Ant. Make/Model: Staco Serial #: 0007
 Operator: Eric Sams
 Session Start: 11:56
 Time (GPS) End: 01:00
 Slant HI Before: A: 1414.4 B: 1414.4
 Slant HI After: A: 1414.4 B: 1414.4
 Correction: _____
 Phase Center: _____
 Data File Name: 2008-01-03-0008-030

GPS Back-Up

Model: 605 2600 Serial #: 0090
 Ant. Make/Model: Staco Serial #: _____
 Operator: Eric Sams
 Session Start: 11:56
 Time (GPS) End: 01:00
 Slant HI Before: A: 1408.1 B: 1408.1
 Slant HI After: A: 1408.1 B: 1408.1
 Correction: _____
 Phase Center: _____
 Data File Name: 2008-01-03-0090-030

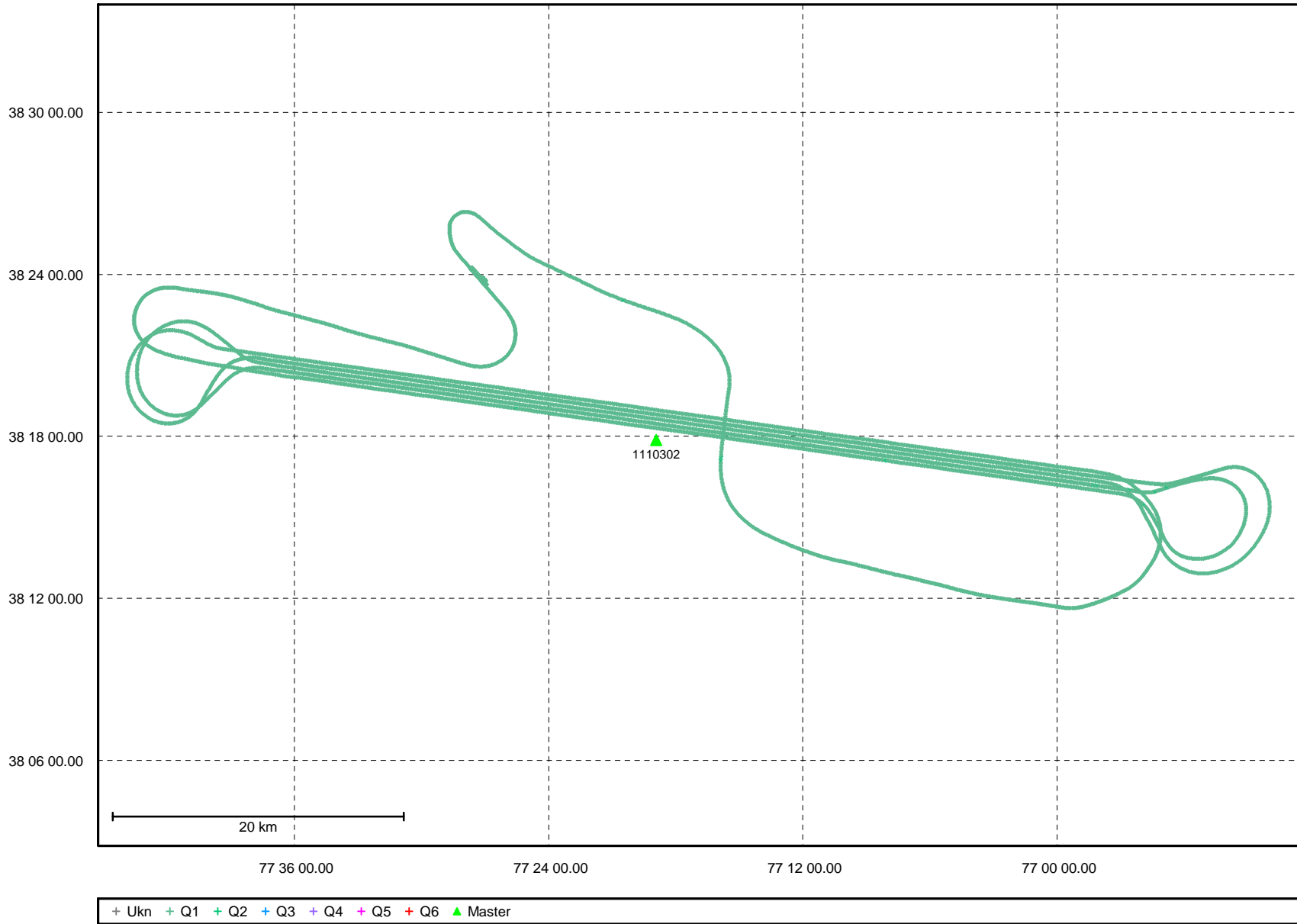
Mission: o211109a

2011 04 19



Combined - Map Run (6)

Geographic, DMS



Processing Summary Information

Program: GrafNav
Version: 7.80.2517
Project: E:\Matt_Weller\o211109a_3_Processed\GPS\o211109a.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:
Total in GPB file: 82152
No processed position: 74433
Missing Fwd or Rev: 4
With bad C/A code: 0
With bad L1 Phase: 0

Measurement RMS Values:
L1 Phase: 0.0151 (m)
C/A Code: 0.89 (m)
L1 Doppler: 0.024 (m/s)

Fwd/Rev Separation RMS Values:
East: 0.008 (m)
North: 0.006 (m)
Height: 0.018 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (7713 occurrences):
East: 0.005 (m)
North: 0.004 (m)
Height: 0.017 (m)

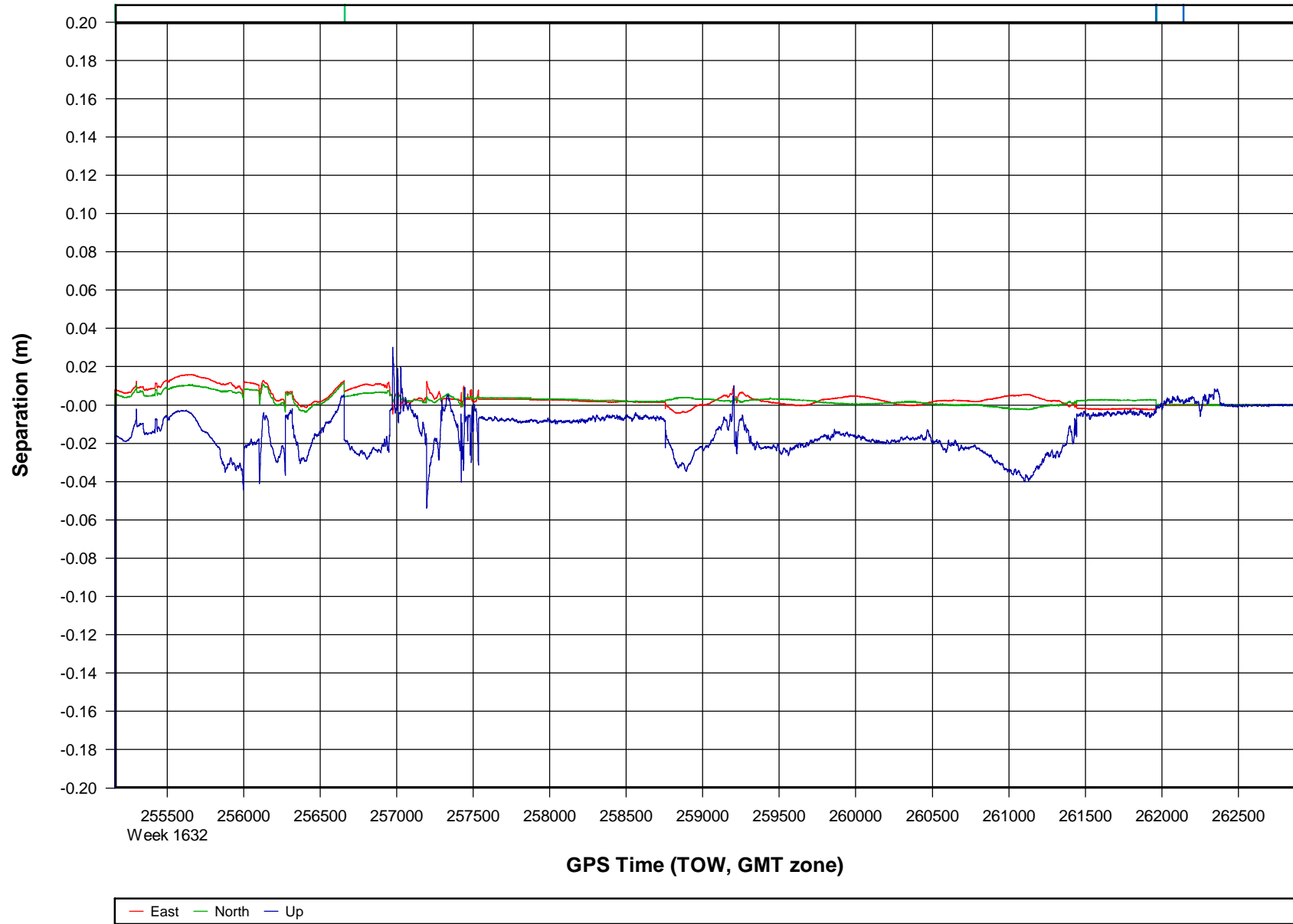
Quality Number Percentages:
Q 1: 99.8 %
Q 2: 0.2 %
Q 3: 0.0 %
Q 4: 0.0 %
Q 5: 0.0 %
Q 6: 0.0 %

Position Standard Deviation Percentages:
0.00 - 0.10 m: 100.0 %
0.10 - 0.30 m: 0.0 %
0.30 - 1.00 m: 0.0 %
1.00 - 5.00 m: 0.0 %
5.00 m + over: 0.0 %

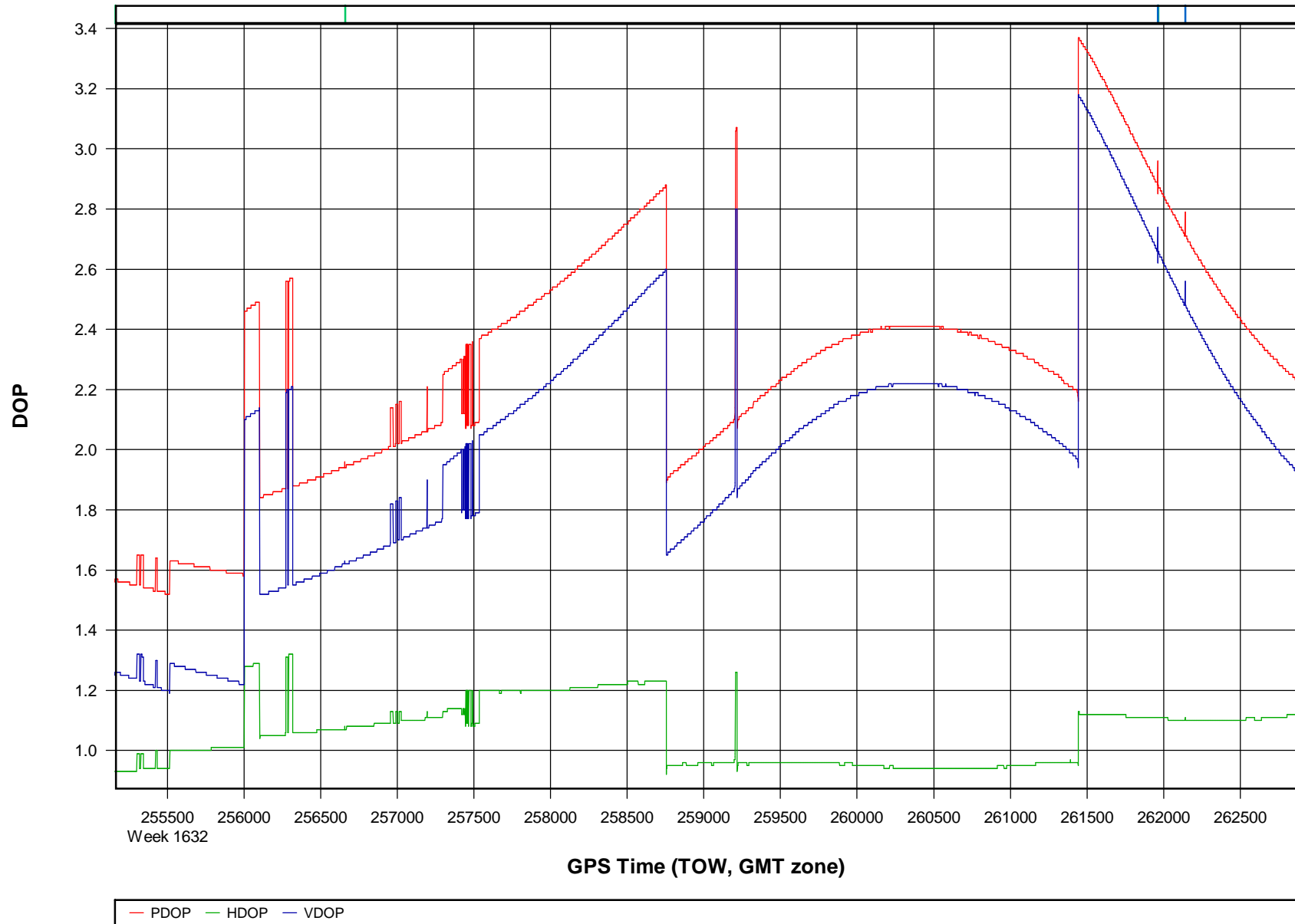
Percentages of epochs with DD_DOP over 10.00:
DOP over Tol: 0.0 %

Baseline Distances:
Maximum: 42.532 (km)
Minimum: 1.249 (km)
Average: 19.732 (km)
First Epoch: 16.172 (km)
Last Epoch: 16.055 (km)

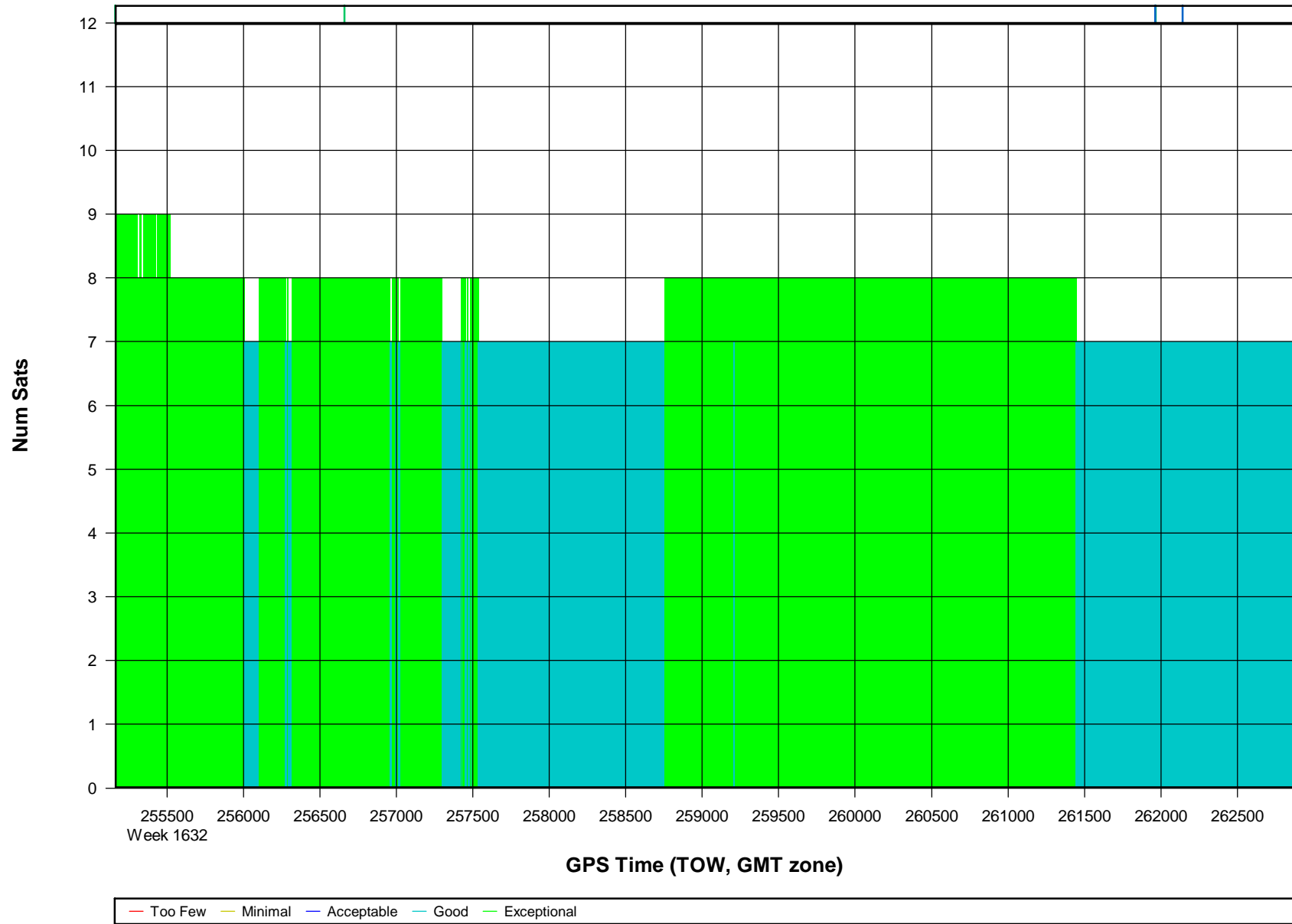
o211109a [Combined] - Forward/Reverse or Combined Separation Plot



o211109a [Combined] - PDOP, HDOP, VDOP Plots



o211109a [Combined] - Number of Satellites Bar Plot



```

                                o211109a
; PROJECT:      E: \11103U_Fema VA\o211109a\3_Processed\GPS\o211109a. cfg
;
; DATE:        April 23/11 (date/time of processing)
; TIME:        11: 37: 56
; CREATED BY:  GrafNav Versi on 7. 80. 2517
;
VERSION = 7. 80. 2517
PROCUSER = Unknown
PROCDESC = Run*(7)
PROCTIME = 11: 34: 45 04/23/2011

; Master station # 1 information
MB_MASTER_INDEX = 0
MB_MASTER_NAME = 1110302
MB_MASTER_FILE =
E: \11103U_Fema*VA\o211109a\1_RawData\original_PDC_files\00081090_1110302. gpb
MB_MASTER_POS = 38 17 51. 99406 -77 18 55. 26399 29. 0380
MB_MASTER_ANT = 1. 614 0. 001 1. 580 1 _TP_SOK600 0
MB_MASTER_DI SABLE = OFF

; Remote station information
REMOTE_FILE = E: \11103U_Fema*VA\o211109a\3_Processed\Extract\mgps_o211109a. gpb
REMOTE_POS = 38 23 49. 80540 -77 27 02. 30686 22. 8467
REMOTE_ANT = 0. 000

; General settings
PROCESS_MODE = 103 108 113 126 ; Processing modes (GrafNav only)

DATUM = NAD83 AUTO ; Processing Datum
INPDATUM = ON NAD83 AUTO ; Input Datum (ON=Use processing datum)
ELEV_MASK = 17. 0 ; Elevation mask (deg)
GRID = UTM 15 31 ; Grid info

CYCLE_TEST = BOTH ; Cycle slip test method
STATIC_SLIP_TOL = 0. 40 ; slip tolerance in static mode (cycles)
USE_DOPPLER = ON OFF ; Use doppler meas. for phase, for code-only

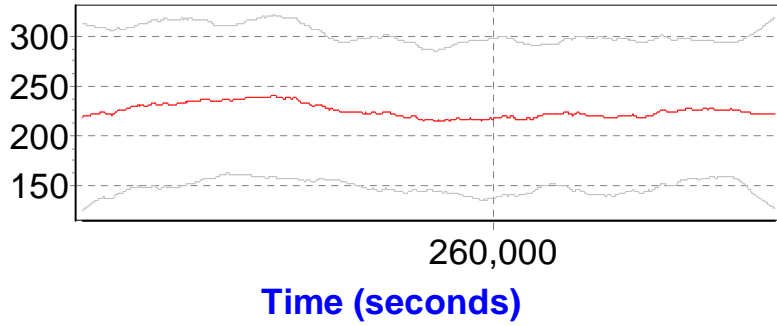
BASE_SAT = 99 ; Base satellite (99-default)

TIMERANGE = RANGE 987288756. 0 987296474. 0 2 0 ; Processing time range
INTERVAL = 0. 10 ; Processing time interval (seconds)

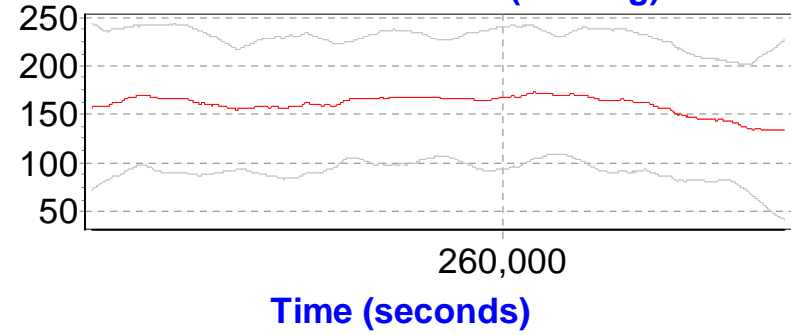
PROCESS_DIR = FORWARD ; Process direction (FORWARD/REVERSE)
BOTH_DIR = ON ; True for processing both directions
WRITE_BAD_EPOCHS = OFF ; Save bad data to .fwd/rev file (ON/OFF)
NOWRITE_HIGH = OFF 6 20. 000 ; Don't write epoch with high statistics (q, stdev-m)
OUTPUT_MODE = EXTENDED ; Format for .fwd/rev file
DETAILED_SUM = ON ; Detailed Static/KAR Summary header
WRITE_SLIP_MSG = ON ; Print cycle slips to message log
SAVE_AMB = ON ; Should ambiguities be saved

```

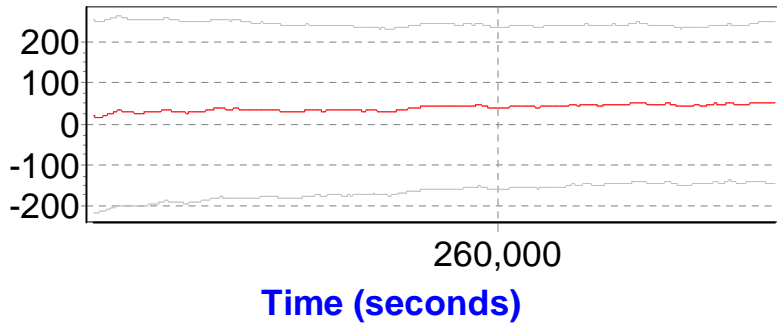
X Accelerometer Bias (micro-g)



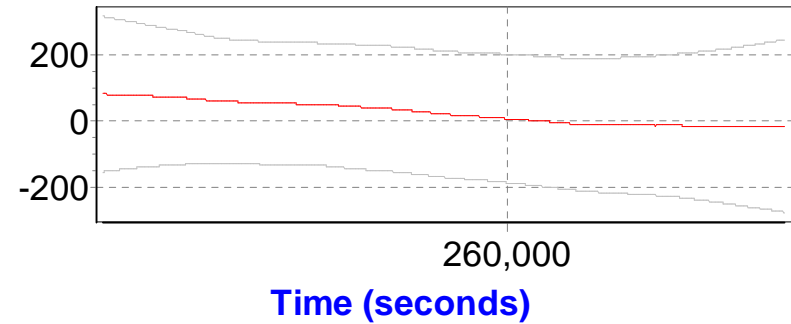
Y Accelerometer Bias (micro-g)



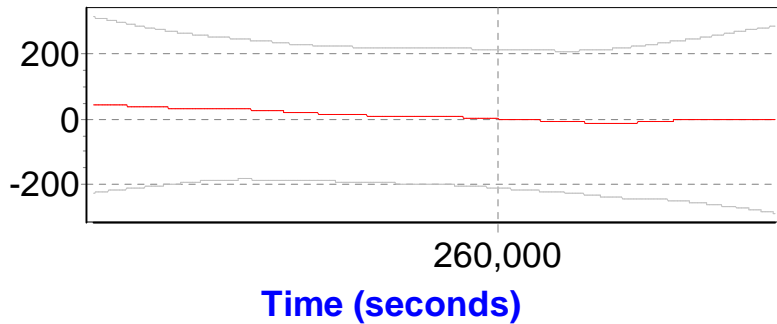
Z Accelerometer Bias (micro-g)



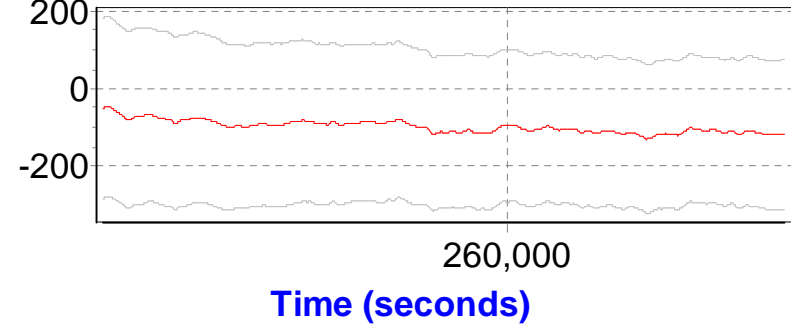
X Accelerometer Scale Factor Error (ppm)

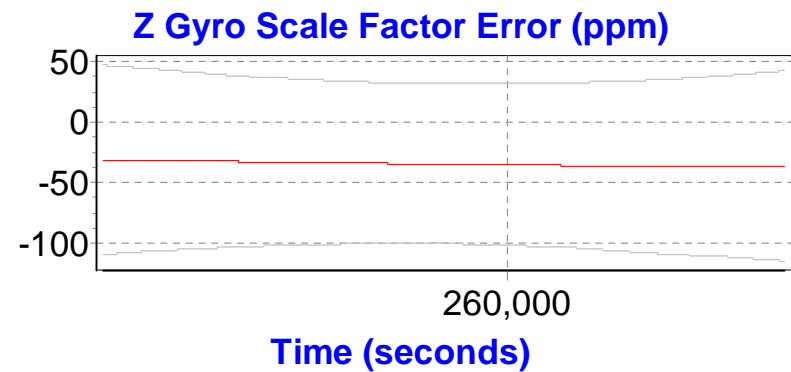
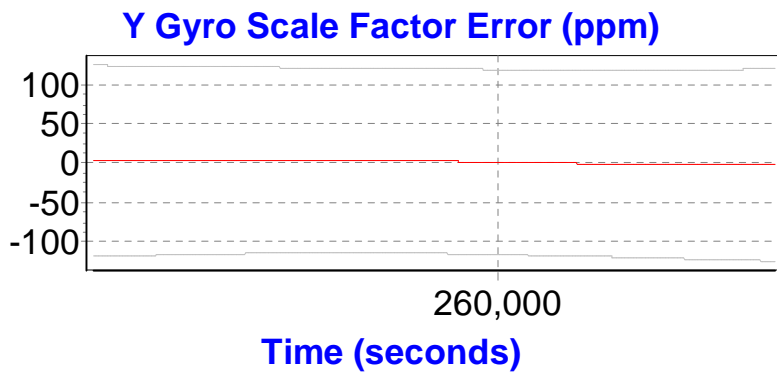
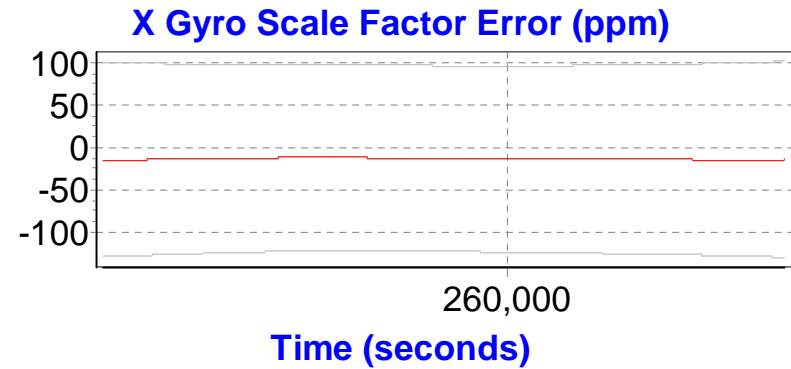
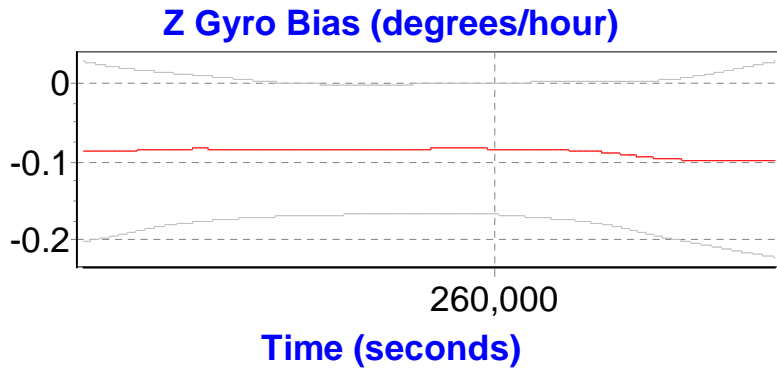
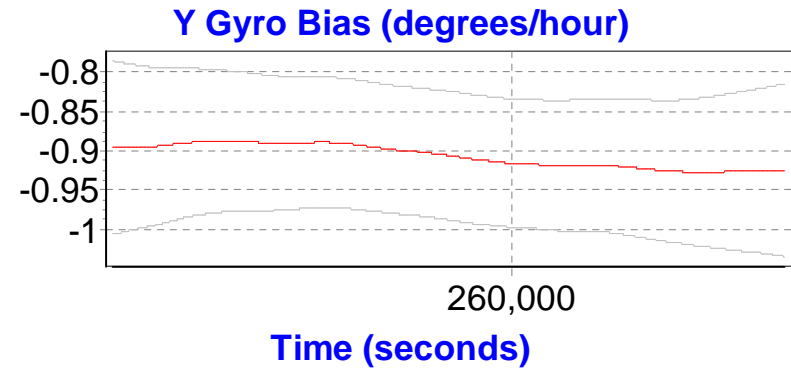
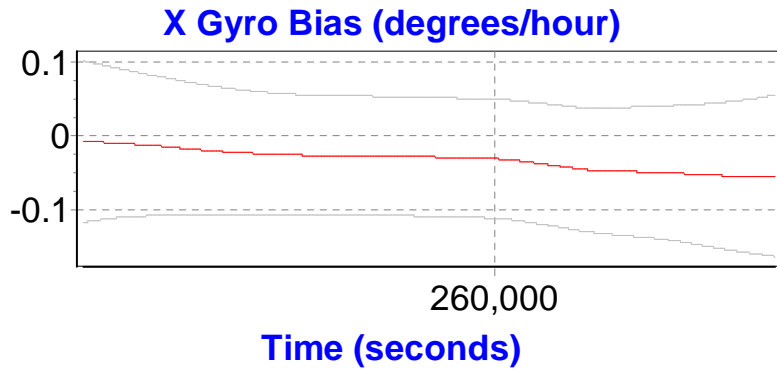


Y Accelerometer Scale Factor Error (ppm)



Z Accelerometer Scale Factor Error (ppm)





Project# 11031 Session 04/08/14 Flight Log



Altitude	Altitude	Altitude	Altitude	Altitude
1000	1000	1000	1000	1000
2000	2000	2000	2000	2000
3000	3000	3000	3000	3000
4000	4000	4000	4000	4000
5000	5000	5000	5000	5000

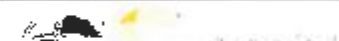
Start	End	Notes
18:43		
2:25		

Mission Plan	Start	End
3000	32	
150	40	
	70	

GPS FMS Alignment	Time	Status

Flight Plan Line #	UDAR File Name	Flight Direction	GPS/UTC Time		Flight Started			Photo Events / Comments	
			Start	End	Time	Min to End	Type	Photo	Comments
184		E	25:13	25:20					
185		W	25:20	25:43					
186		E	25:43	25:46					
187		W	00:06	00:08					
188		E	00:15	00:26					
189		N	00:25	00:47					

Project# Session Flight Log



Flight Plan Line #	UDAR File Name	Flight Direction	GPS/UTC Time		Flight Started			Photo Events / Comments	
			Start	End	Time	Min to End	Type	Photo	Comments

GPS Base Log Sheet



1110302

Station ID:	150602	Project #:	109A	Missions:	109A
Project					
Name:	Cementer Date: 19				
Approx. Coordinates	WGS 84	N	3817.54	W	77.865
Description of Mark (Take Photos)	About 100 yds. at Cemetery				
Mounting is	<input type="checkbox"/> Flush with ground	<input type="checkbox"/> Above ground	am	<input type="checkbox"/> Below ground	m
Location & Access	Cemetery Near Church				

Obstructions & Additional Notes

GPS Observation - Back-Up

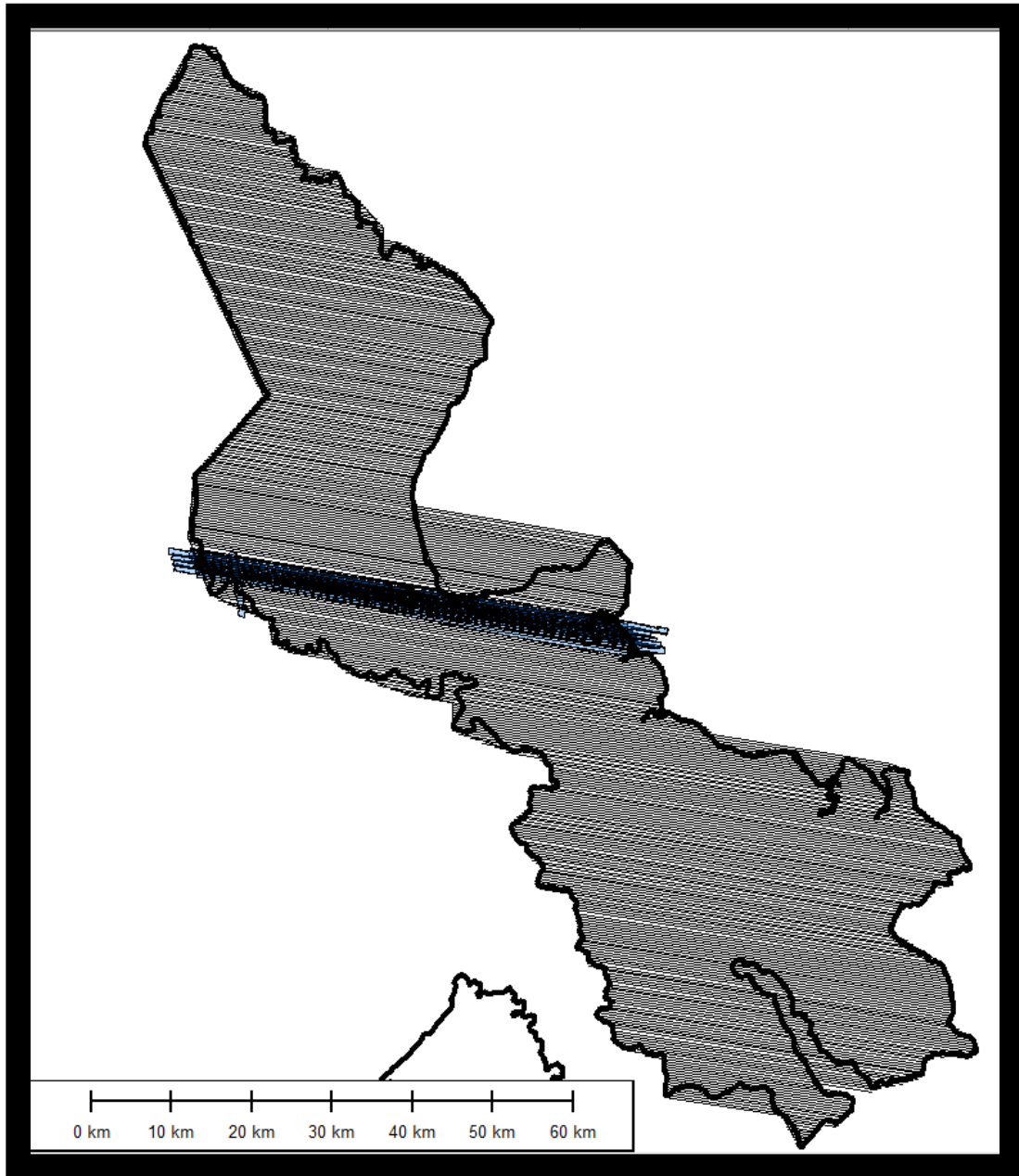
Dr. Make:	2600	Serial #	0008
Model	1660		
Ant. Make:	GPS	Serial #	0007
Model	EVS-06		
Operator	EVS-06		
Session	1505		
Time (GPS) End	3:05		
Slant HI Before:	A: 158.0	B: 158.0	
Slant HI After:	A: 158.0	B: 158.0	
Connector			
Phase Center	<input type="checkbox"/> m	<input type="checkbox"/> in	<input type="checkbox"/> use GrafNav Profile
Data File Name	0008 109A		

Dr. Make:	7220	Serial #	0020
Model	7220		
Ant. Make:	5660	Serial #	0011
Model	EVS-06		
Operator	EVS-06		
Session	22:07		
Time (GPS) End	12:13		
Slant HI Before:	A: 156.6	B: 156.7	
Slant HI After:	A: 156.6	B: 156.6	
Connector			
Phase Center	<input type="checkbox"/> m	<input type="checkbox"/> in	<input type="checkbox"/> use GrafNav Profile
Data File Name	0020 109A		

7786367

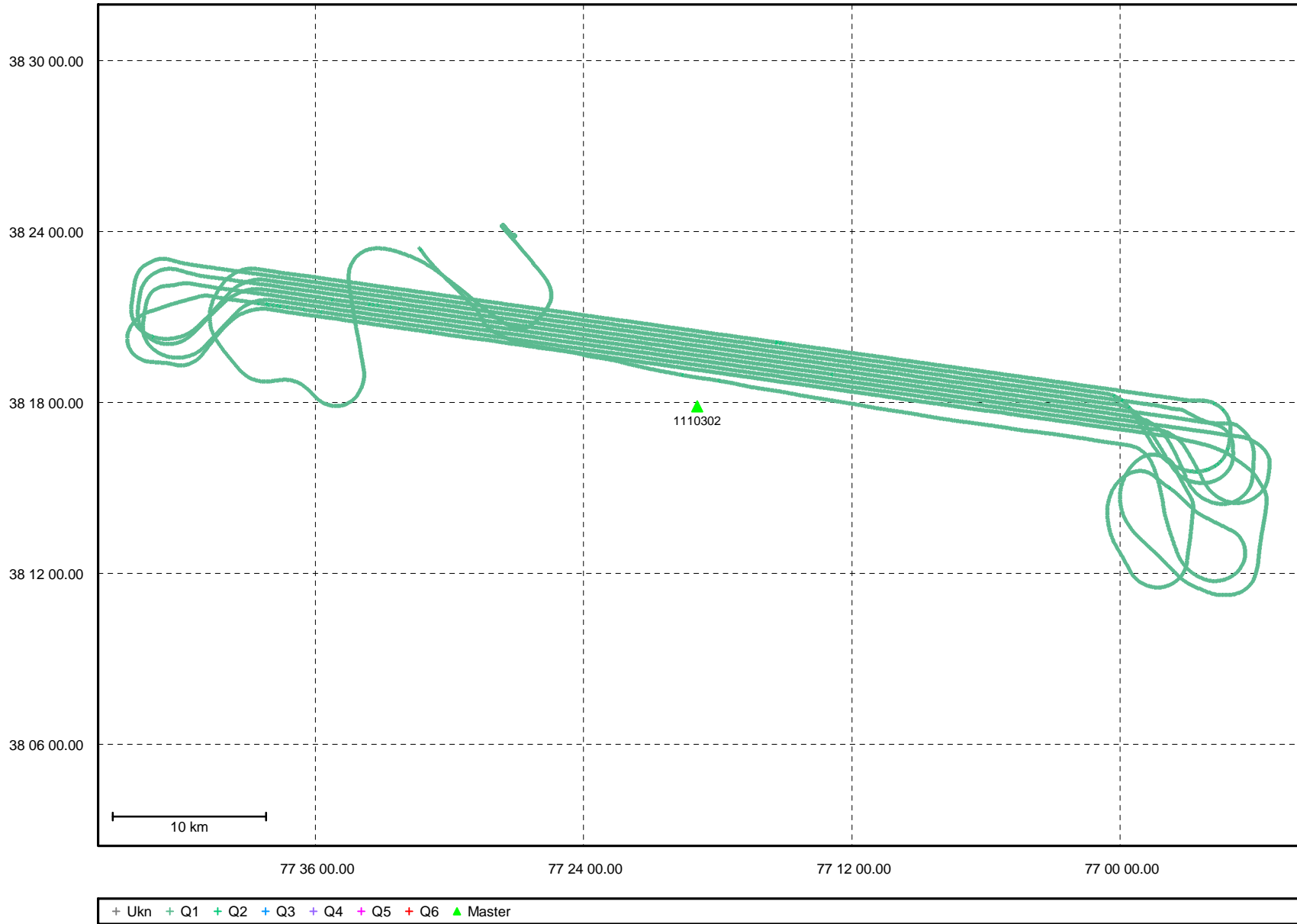
Mission: o211111a

2011 04 21



Combined - Map Run (7)

Geographic, DMS



Processing Summary Information

Program: GrafNav
Version: 7.80.2517
Project: E:\Matt_Weller\o211111a_3_Processed\GPS\o211111a.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:
Total in GPB file: 140026
No processed position: 127166
Missing Fwd or Rev: 4
With bad C/A code: 0
With bad L1 Phase: 0

Measurement RMS Values:
L1 Phase: 0.0162 (m)
C/A Code: 0.84 (m)
L1 Doppler: 0.026 (m/s)

Fwd/Rev Separation RMS Values:
East: 0.006 (m)
North: 0.007 (m)
Height: 0.018 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (12854 occurrences):
East: 0.004 (m)
North: 0.004 (m)
Height: 0.018 (m)

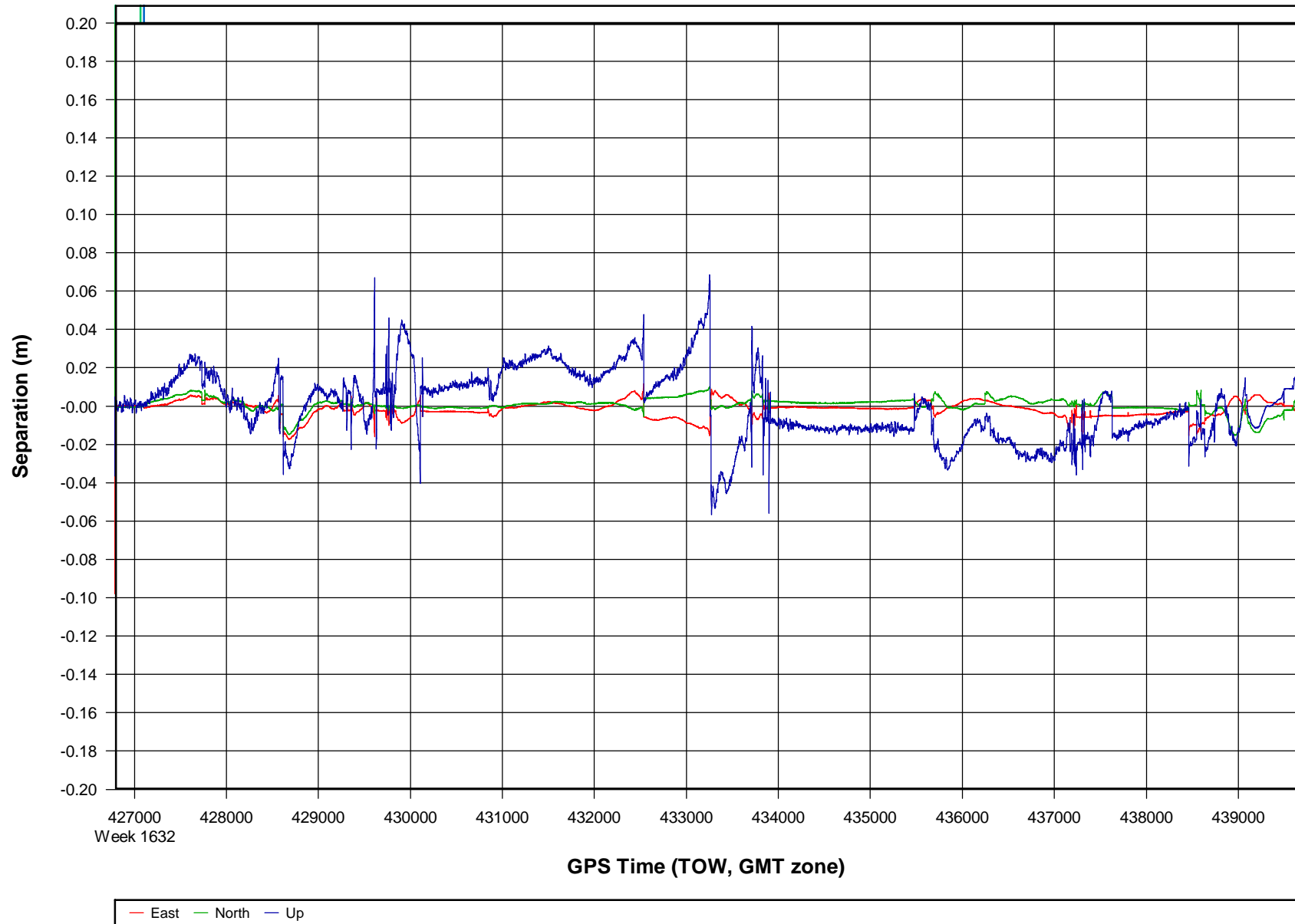
Quality Number Percentages:
Q 1: 99.7 %
Q 2: 0.3 %
Q 3: 0.0 %
Q 4: 0.0 %
Q 5: 0.0 %
Q 6: 0.0 %

Position Standard Deviation Percentages:
0.00 - 0.10 m: 100.0 %
0.10 - 0.30 m: 0.0 %
0.30 - 1.00 m: 0.0 %
1.00 - 5.00 m: 0.0 %
5.00 m + over: 0.0 %

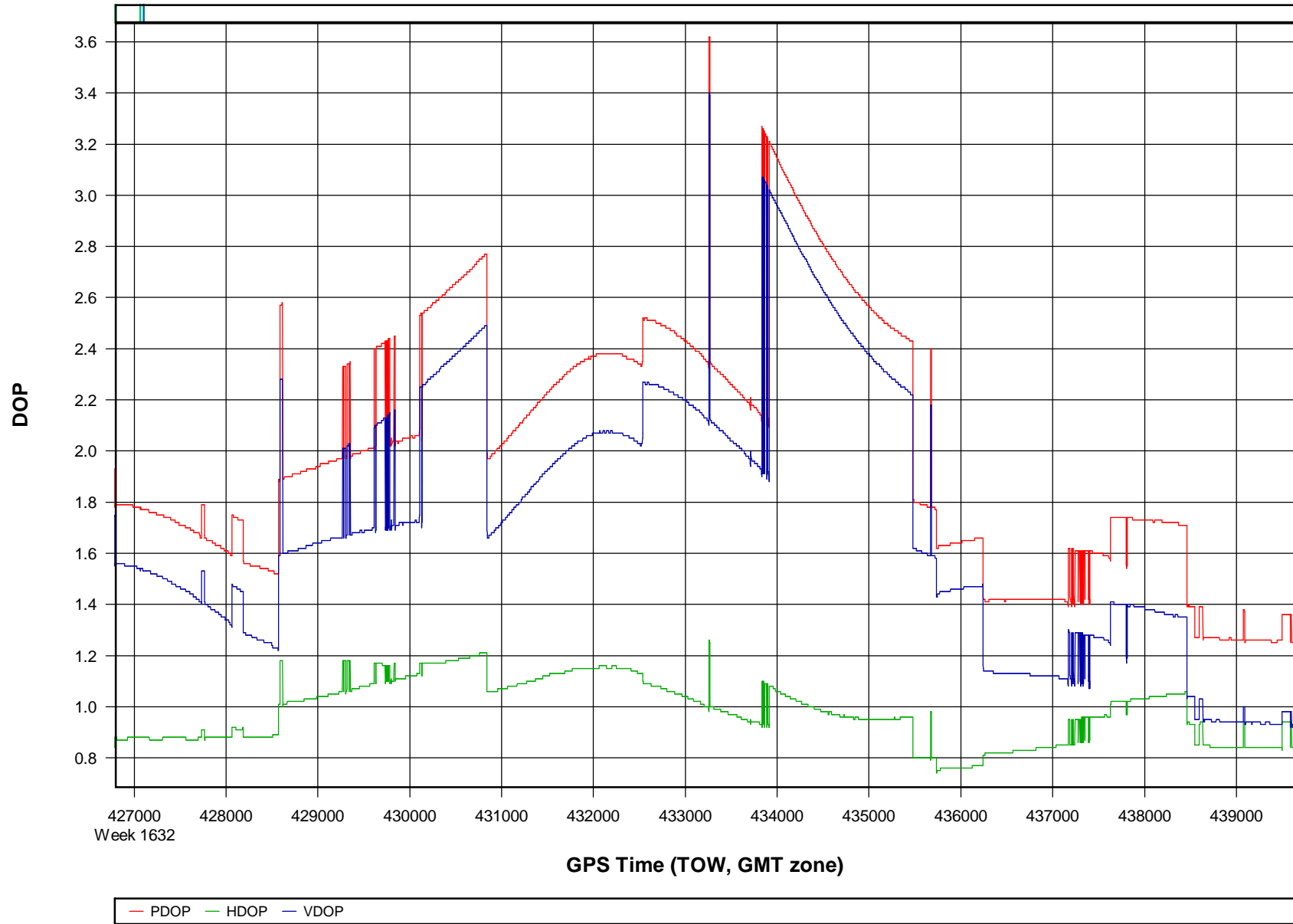
Percentages of epochs with DD_DOP over 10.00:
DOP over Tol: 0.0 %

Baseline Distances:
Maximum: 38.042 (km)
Minimum: 2.107 (km)
Average: 20.275 (km)
First Epoch: 20.830 (km)
Last Epoch: 16.229 (km)

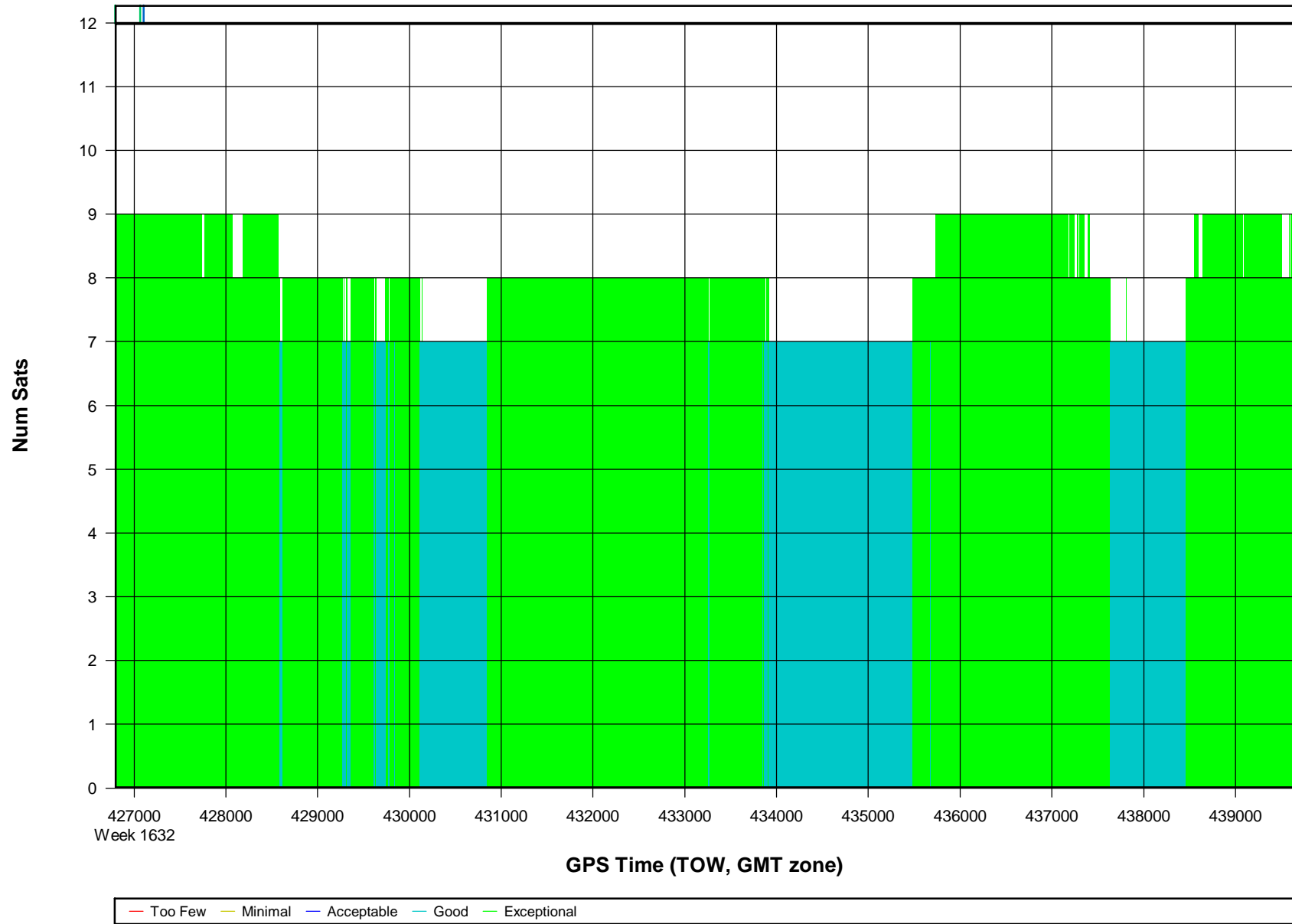
o211111a [Combined] - Forward/Reverse or Combined Separation Plot



o211111a [Combined] - PDOP, HDOP, VDOP Plots



o211111a [Combined] - Number of Satellites Bar Plot



```

                                o211111a
; PROJECT:      E:\11103U_Fema VA\o211111a\3_Processed\GPS\o211111a.cfg
;
; DATE:        April 22/11 (date/time of processing)
; TIME:        22:48:37
; CREATED BY:  GrafNav Version 7.80.2517
;
VERSION = 7.80.2517
PROCUSER = Unknown
PROCDESC = Run*(8)
PROCTIME = 22:47:47 04/22/2011

; Master station # 1 information
MB_MASTER_INDEX = 0
MB_MASTER_NAME = 1110302
MB_MASTER_FILE =
E:\11103U_Fema*VA\o211111a\1_RawData\original_PDC_files\1110302_00081110.gpb
MB_MASTER_POS = 38 17 51.99406 -77 18 55.26399 29.0380
MB_MASTER_ANT = 1.613 0.001 1.579 1 _TP_SOK600 0
MB_MASTER_DI_SABLE = OFF

; Remote station information
REMOTE_FILE = E:\11103U_Fema*VA\o211111a\3_Processed\Extract\mgps_o211111a.gpb
REMOTE_POS = 38 23 48.70127 -77 27 01.49030 22.9167
REMOTE_ANT = 0.000

; General settings
PROCESS_MODE = 103 108 113 126 ; Processing modes (GrafNav only)

DATUM = NAD83 AUTO ; Processing Datum
INPDATUM = ON NAD83 AUTO ; Input Datum (ON=Use processing datum)
ELEV_MASK = 15.5 ; Elevation mask (deg)
GRID = UTM 15 31 ; Grid info

CYCLE_TEST = BOTH ; Cycle slip test method
STATIC_SLIP_TOL = 0.40 ; slip tolerance in static mode (cycles)
USE_DOPPLER = ON OFF ; Use doppler meas. for phase, for code-only

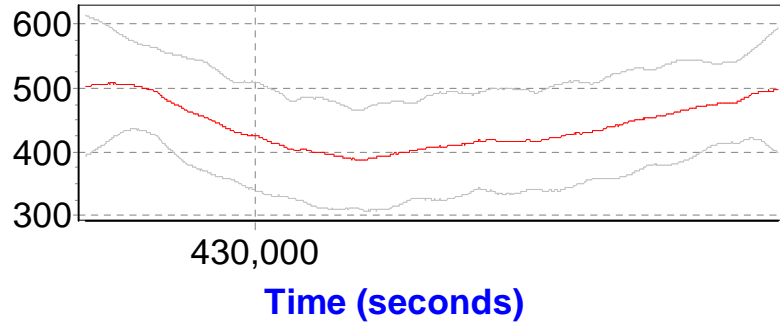
BASE_SAT = 99 ; Base satellite (99-default)

TIMERANGE = RANGE 987460385.0 987473244.0 2 0 ; Processing time range
INTERVAL = 0.10 ; Processing time interval (seconds)

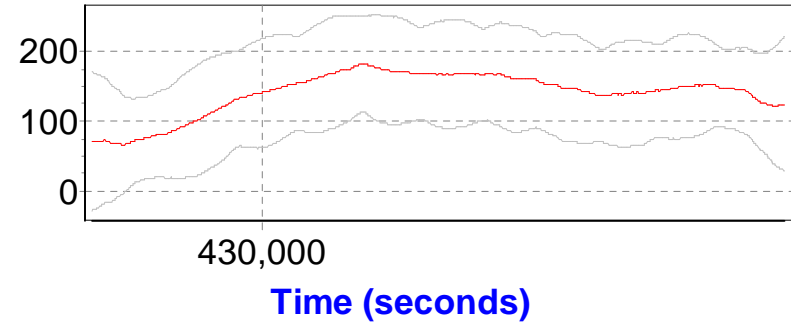
PROCESS_DIR = FORWARD ; Process direction (FORWARD/REVERSE)
BOTH_DIR = ON ; True for processing both directions
WRITE_BAD_EPOCHS = OFF ; Save bad data to .fwd/rev file (ON/OFF)
NOWRITE_HIGH = OFF 6 20.000 ; Don't write epoch with high statistics (q, stdev-m)
OUTPUT_MODE = EXTENDED ; Format for .fwd/rev file
DETAILED_SUM = ON ; Detailed Static/KAR Summary header
WRITE_SLIP_MSG = ON ; Print cycle slips to message log
SAVE_AMB = ON ; Should ambiguities be saved

```

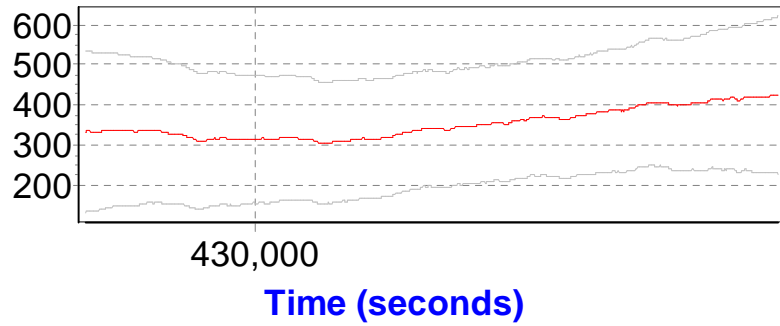
X Accelerometer Bias (micro-g)



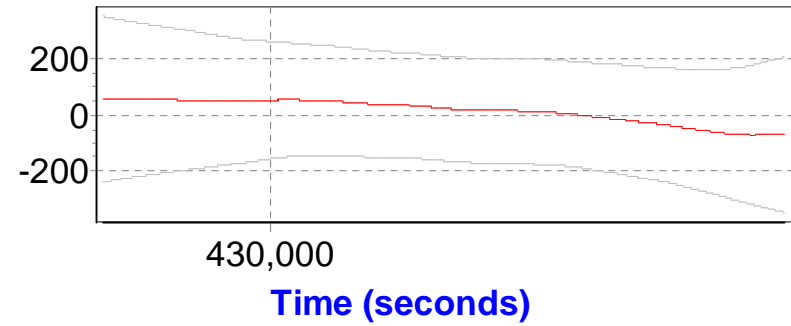
Y Accelerometer Bias (micro-g)



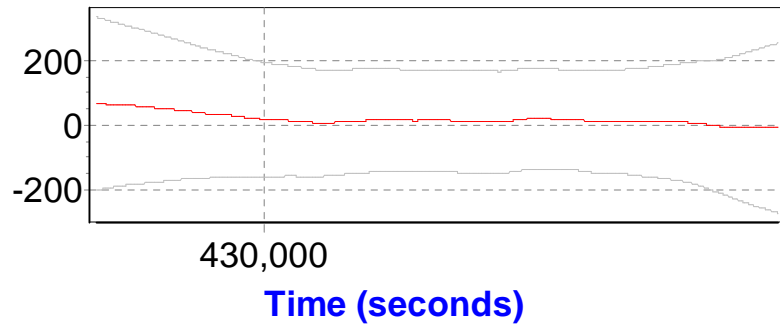
Z Accelerometer Bias (micro-g)



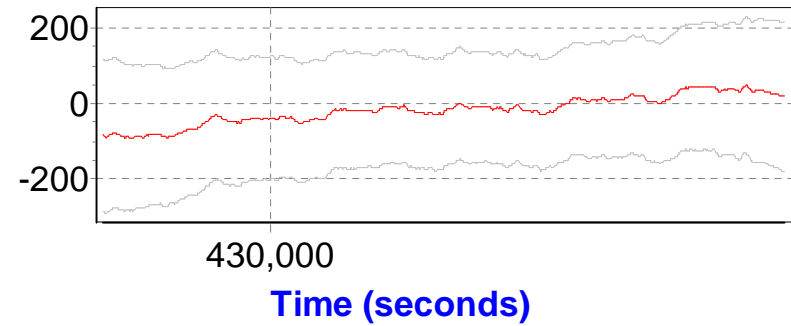
X Accelerometer Scale Factor Error (ppm)



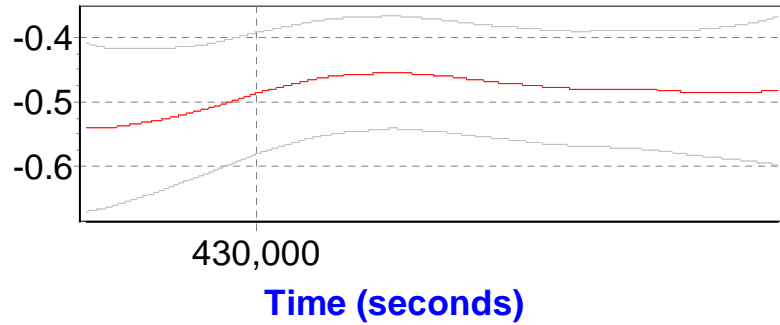
Y Accelerometer Scale Factor Error (ppm)



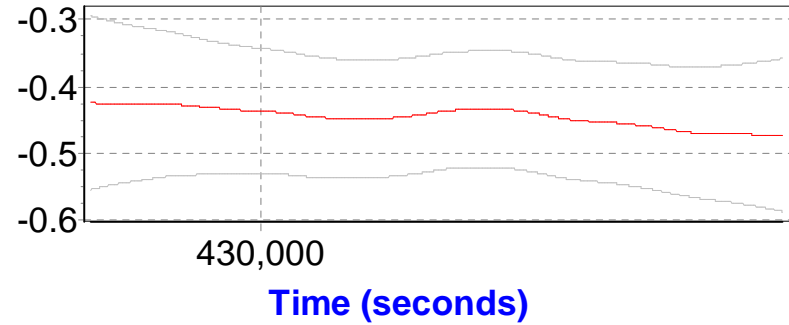
Z Accelerometer Scale Factor Error (ppm)



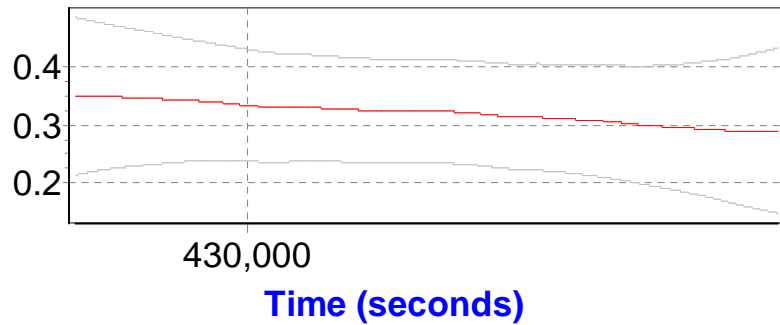
X Gyro Bias (degrees/hour)



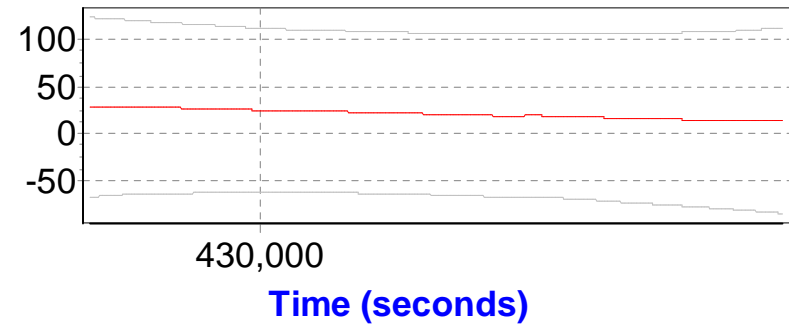
Y Gyro Bias (degrees/hour)



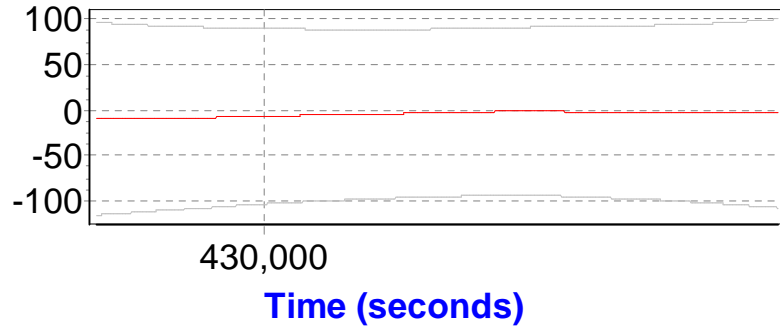
Z Gyro Bias (degrees/hour)



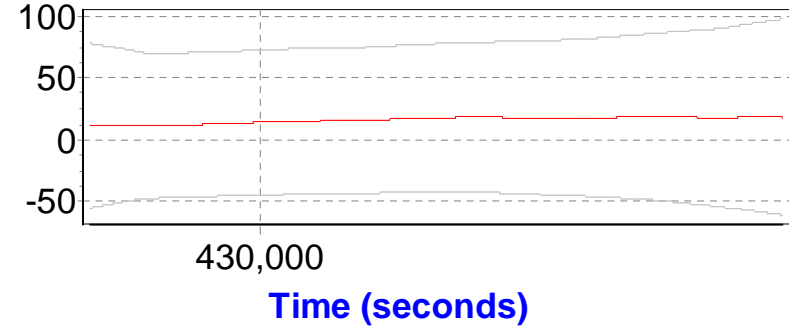
X Gyro Scale Factor Error (ppm)



Y Gyro Scale Factor Error (ppm)



Z Gyro Scale Factor Error (ppm)



GPS Base Log Sheet



1110302

Station ID: 130002	Project #: 111a	Missions:
Project Name: <u>Apr 23</u>		
Approx. Coordinates: WGS 84	N <u>381752</u> W <u>771855</u>	Calendar Date: <u>Apr 23</u>
Description of Mark: <u>Flatt top</u>	<u>as</u>	
Monument is: <input type="checkbox"/> Flush with ground <input type="checkbox"/> Above ground <input type="checkbox"/> Below ground		
Location & Access: <u>Country Near Church</u>		

Obstructions & Additional Notes

GPS Observation - Back-Up

GPS Observation - MAIN

Rx. Make/Model: <u>GPS 2600</u>	Serial #: <u>0008</u>
Rx. Make/Model: <u>GPS 2600</u>	Serial #: <u>0007</u>
Operator: <u>Byron</u>	
Session: <u>Next</u>	
Start Time (GPS): <u>2227</u>	
Slant HI Before: <u>157.9</u>	B: <u>157.9</u>
Slant HI After: <u>157.9</u>	B: <u>157.9</u>
Correction:	
Phase Center:	<input type="checkbox"/> m <input type="checkbox"/> n <input type="checkbox"/> Use GrafNav Profile
Data File Name: <u>00051110</u>	

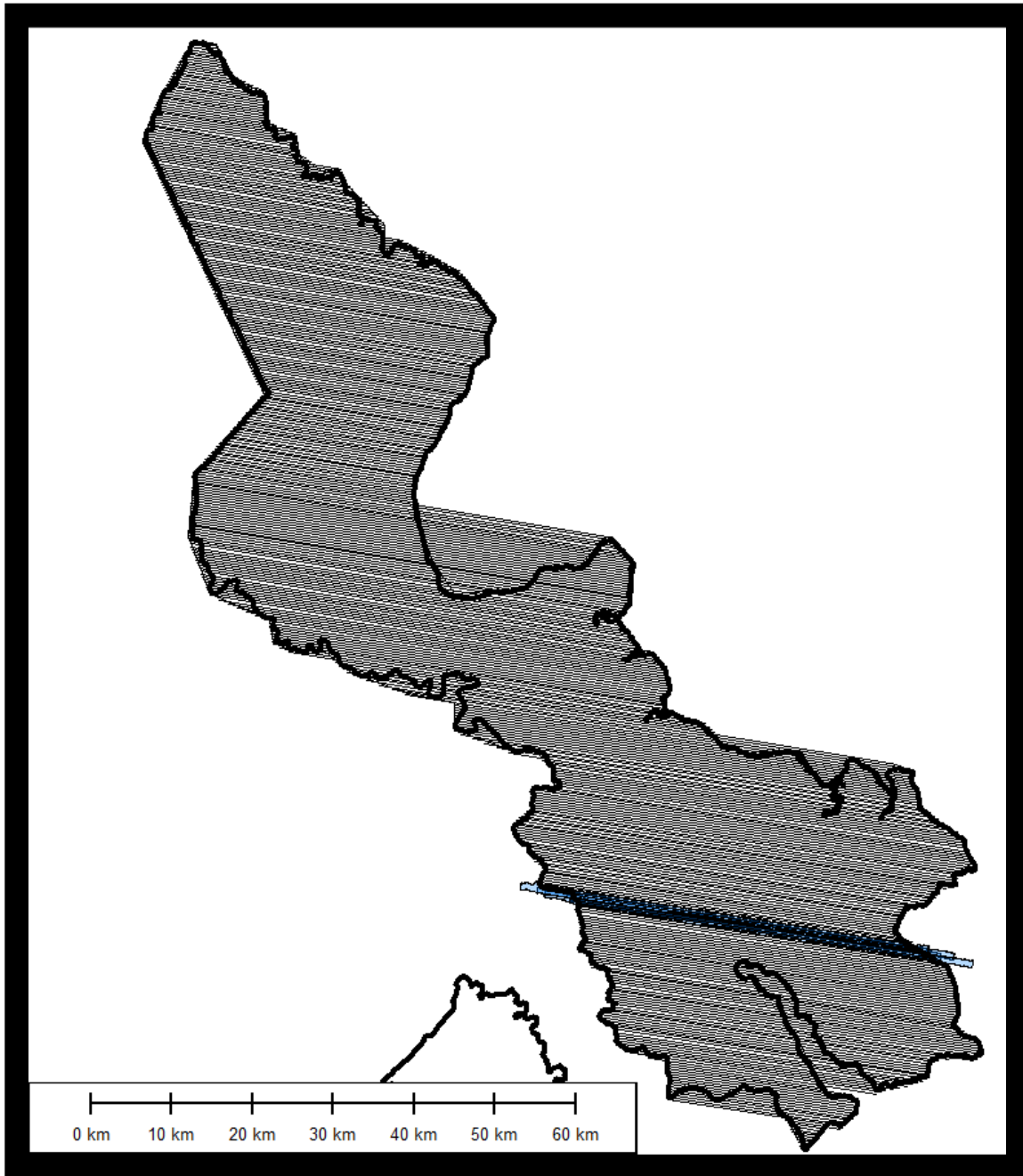
Rx. Make/Model: <u>GPS 2600</u>	Serial #: <u>0008</u>
Rx. Make/Model: <u>GPS 2600</u>	Serial #: <u>0007</u>
Operator: <u>Byron</u>	
Session: <u>Next</u>	
Start Time (GPS): <u>2227</u>	
Slant HI Before: <u>157.9</u>	B: <u>157.9</u>
Slant HI After: <u>157.9</u>	B: <u>157.9</u>
Correction:	
Phase Center:	<input type="checkbox"/> m <input type="checkbox"/> n <input type="checkbox"/> Use GrafNav Profile
Data File Name: <u>00051110</u>	

382348 7746 567



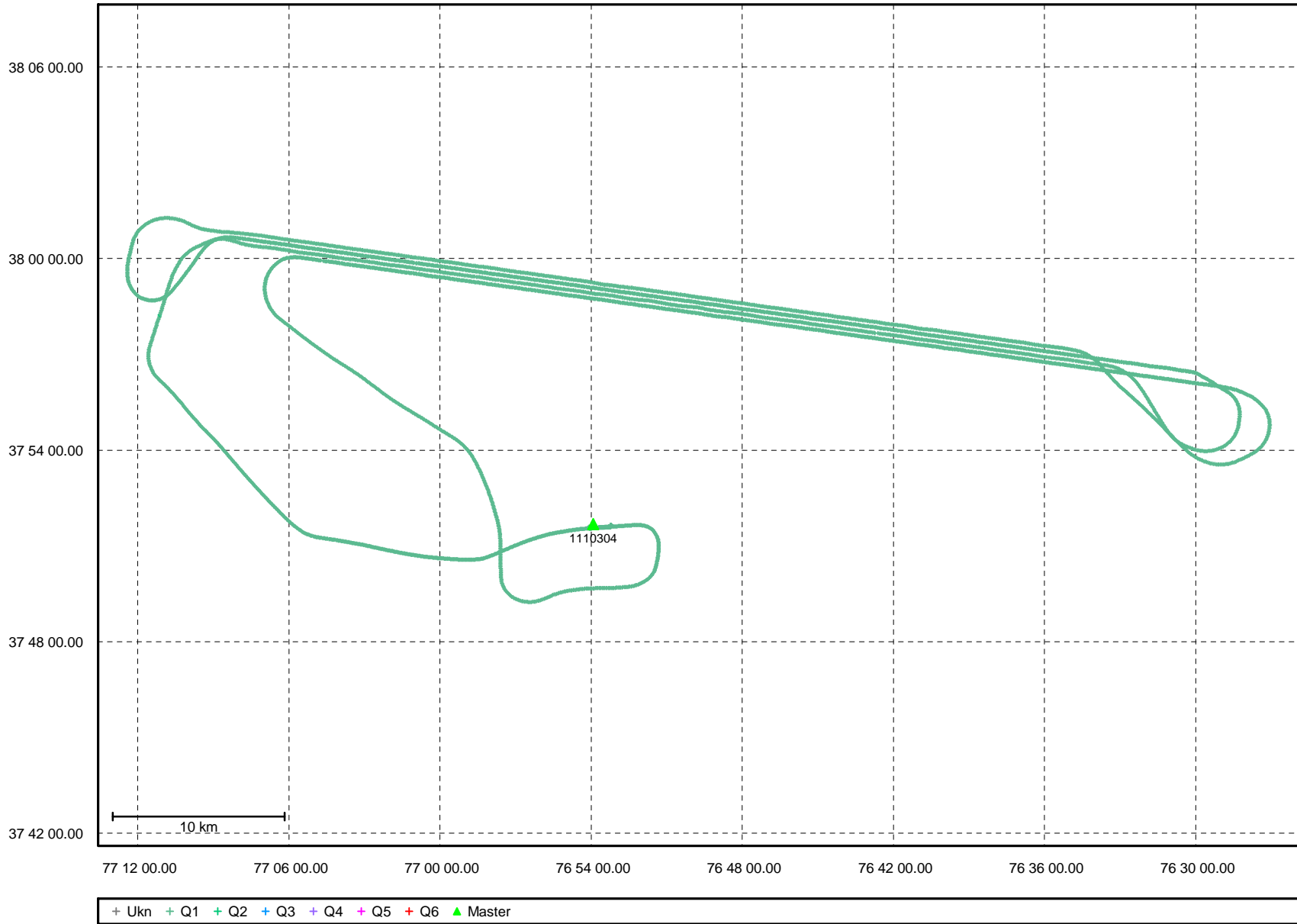
Mission: o211119a

2011 04 29



Combined - Map Run (1)

Geographic, DMS



Processing Summary Information

Program: GrafNav
Version: 7.80.2517
Project: G:\range back va\o211119a\3_Processed\GPS\o211119a.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:
Total in GPB file: 61665
No processed position: 55514
Missing Fwd or Rev: 3
With bad C/A code: 0
With bad L1 Phase: 0

Measurement RMS Values:
L1 Phase: 0.0114 (m)
C/A Code: 0.71 (m)
L1 Doppler: 0.025 (m/s)

Fwd/Rev Separation RMS Values:
East: 0.007 (m)
North: 0.005 (m)
Height: 0.017 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (6146 occurrences):
East: 0.003 (m)
North: 0.005 (m)
Height: 0.010 (m)

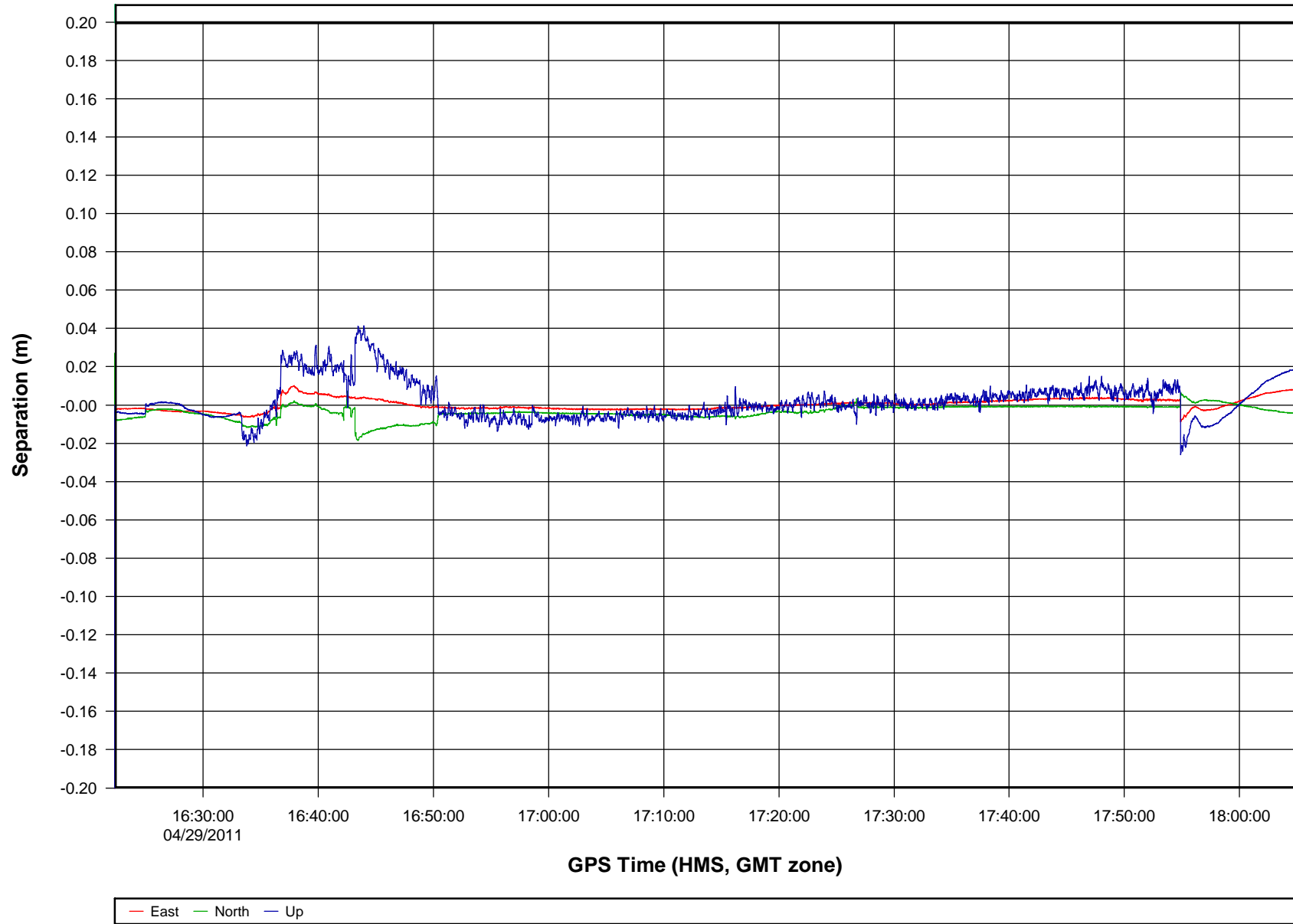
Quality Number Percentages:
Q 1: 100.0 %
Q 2: 0.0 %
Q 3: 0.0 %
Q 4: 0.0 %
Q 5: 0.0 %
Q 6: 0.0 %

Position Standard Deviation Percentages:
0.00 - 0.10 m: 100.0 %
0.10 - 0.30 m: 0.0 %
0.30 - 1.00 m: 0.0 %
1.00 - 5.00 m: 0.0 %
5.00 m + over: 0.0 %

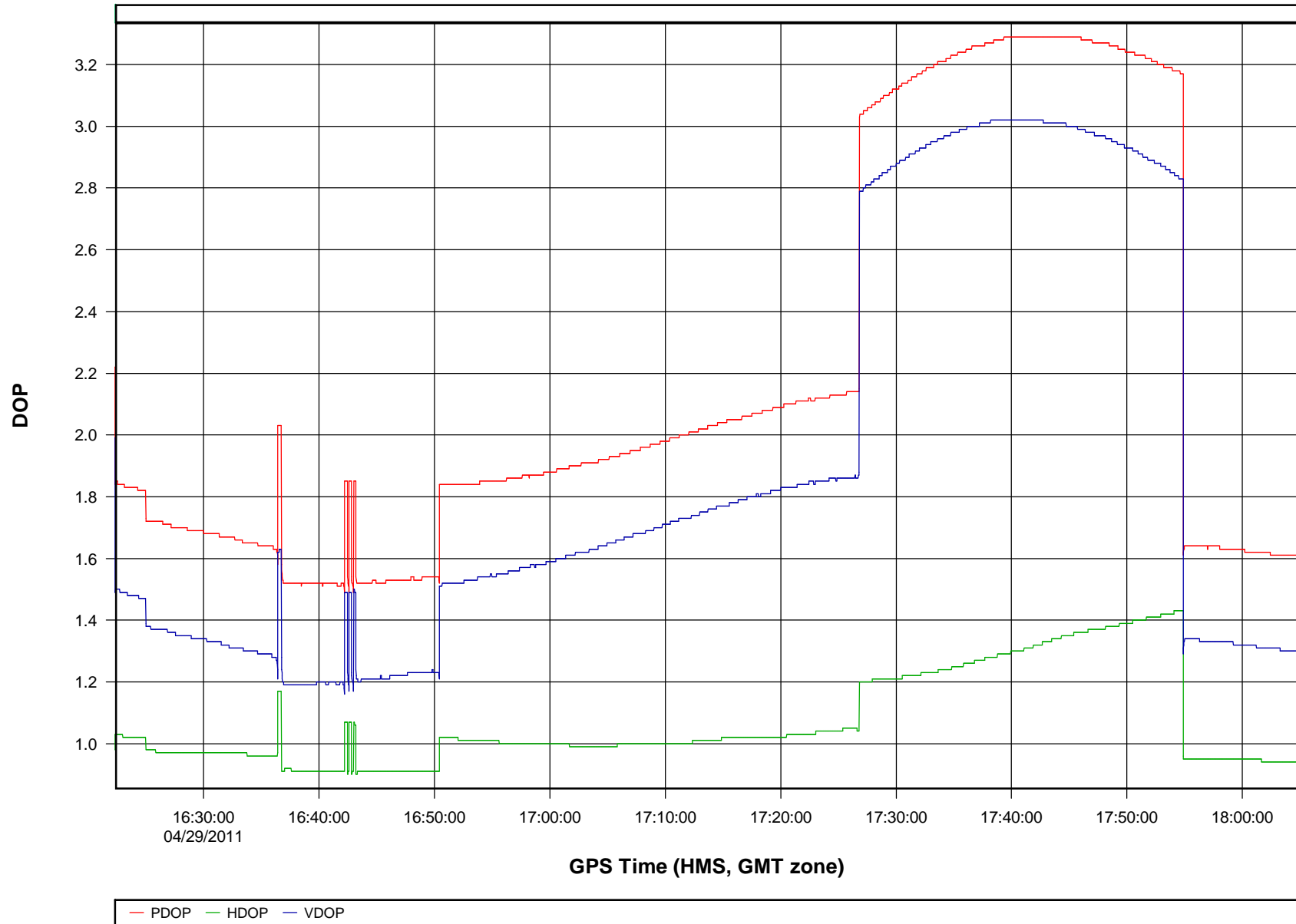
Percentages of epochs with DD_DOP over 10.00:
DOP over Tol: 0.0 %

Baseline Distances:
Maximum: 39.832 (km)
Minimum: 0.045 (km)
Average: 16.318 (km)
First Epoch: 0.082 (km)
Last Epoch: 0.065 (km)

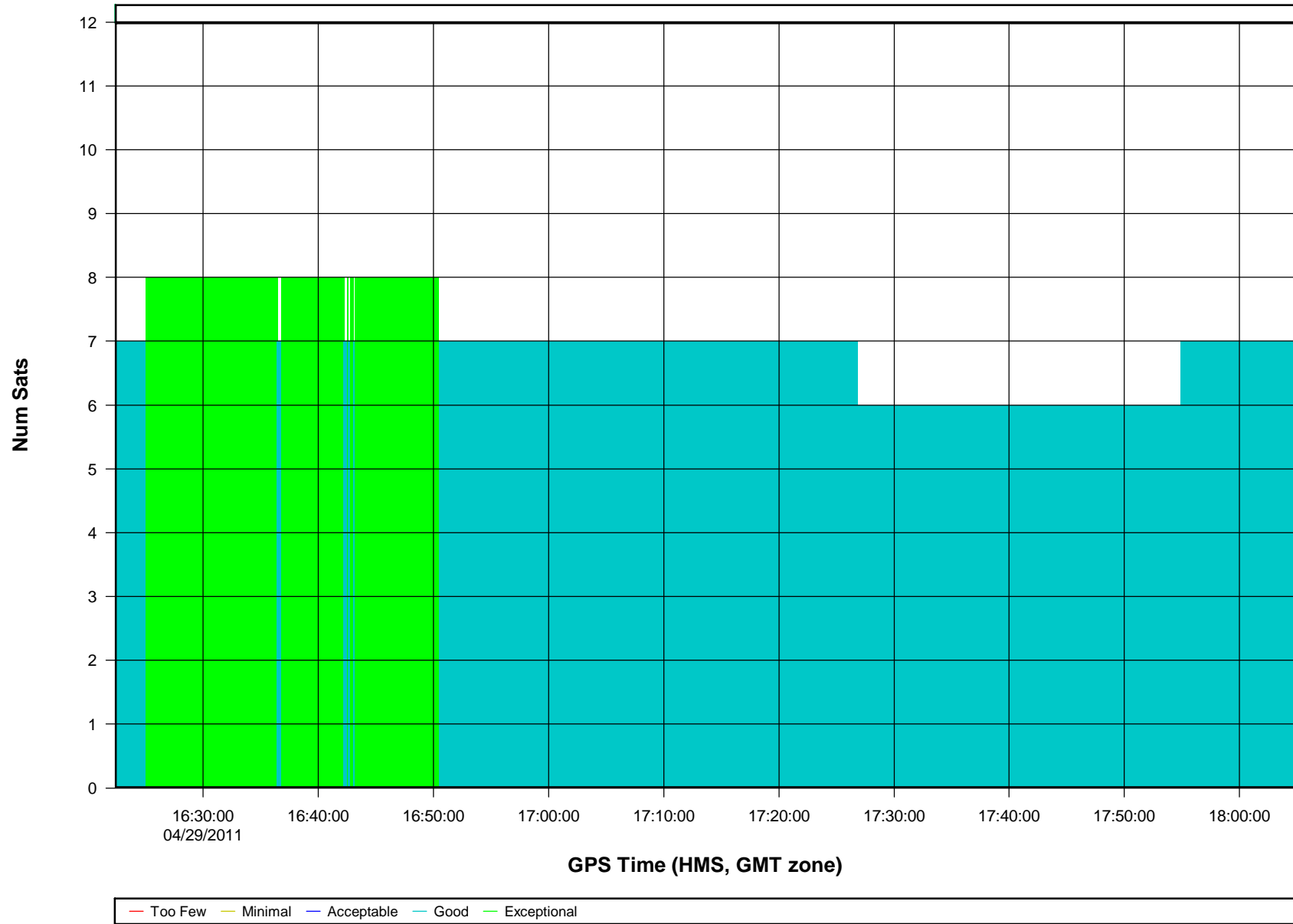
o211119a [Combined] - Forward/Reverse or Combined Separation Plot



o211119a [Combined] - PDOP, HDOP, VDOP Plots



o211119a [Combined] - Number of Satellites Bar Plot



o211119a. cfg

```
; PROJECT:
E: \11103U_VA\2_Operations\6_Missions\o211119a\3_Processed\GPS\o211119a. cfg
;
; DATE:      May 2/11 (date/time of processing)
; TIME:      14: 48: 20
; CREATED BY: GrafNav Version 7. 80. 2517
;
VERSION = 7. 80. 2517
PROCUSER = Unknown
PROCDESC = Run*(2)
PROCTIME = 14: 24: 44 05/02/2011

; Master station # 1 information
MB_MASTER_INDEX = 0
MB_MASTER_NAME = 1110304
MB_MASTER_FILE =
E: \11103U_VA\2_Operations\6_Missions\o211119a\1_RawData\original_PDC_files\1110304_0
0161190. gpb
MB_MASTER_POS = 37 51 41. 39611 -76 53 55. 13346 5. 1620
MB_MASTER_ANT = 1. 247 0. 001 1. 214 1 _TP_SOK600 0
MB_MASTER_DISABLE = OFF

; Remote station information
REMOTE_FILE =
E: \11103U_VA\2_Operations\6_Missions\o211119a\3_Processed\Extract\mgps_o211119a. gpb
REMOTE_POS = 37 51 39. 27706 -76 53 57. 03253 6. 3145
REMOTE_ANT = 0. 000

; General settings
PROCESS_MODE = 103 108 113 126 ; Processing modes (GrafNav only)

DATUM = NAD83 AUTO ; Processing Datum
INPDATUM = ON NAD83 AUTO ; Input Datum (ON=Use processing datum)
ELEV_MASK = 15. 0 ; Elevation mask (deg)
GRID = UTM 15 31 ; Grid info

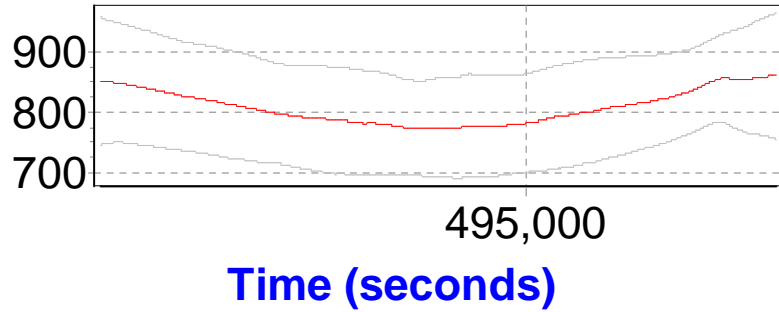
CYCLE_TEST = BOTH ; Cycle slip test method
STATIC_SLIP_TOL = 0. 40 ; slip tolerance in static mode (cycles)
USE_DOPPLER = ON OFF ; Use doppler meas. for phase, for code-only

BASE_SAT = 99 ; Base satellite (99-default)

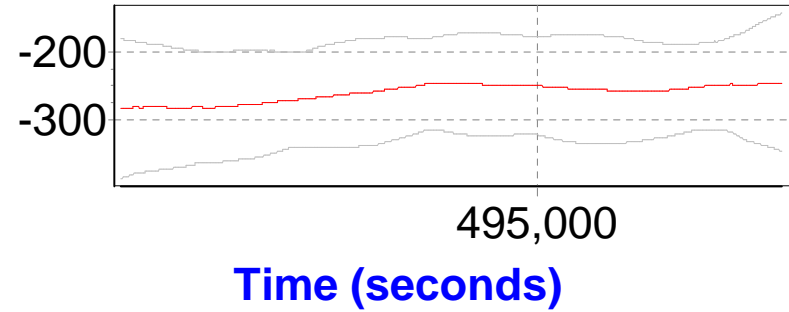
TIMERANGE = ALL 988129326. 0 988135492. 4 2 0 ; Processing time range
INTERVAL = 0. 10 ; Processing time interval (seconds)

PROCESS_DIR = FORWARD ; Process direction (FORWARD/REVERSE)
BOTH_DIR = ON ; True for processing both directions
WRITE_BAD_EPOCHS = OFF ; Save bad data to .fwd/rev file (ON/OFF)
NOWRITE_HIGH = OFF 6 20. 000 ; Don't write epoch with high statistics (q, stdev-m)
OUTPUT_MODE = EXTENDED ; Format for .fwd/rev file
DETAILED_SUM = ON ; Detailed Static/KAR Summary header
WRITE_SLIP_MSG = ON ; Print cycle slips to message log
SAVE_AMB = ON ; Should ambiguities be saved
```

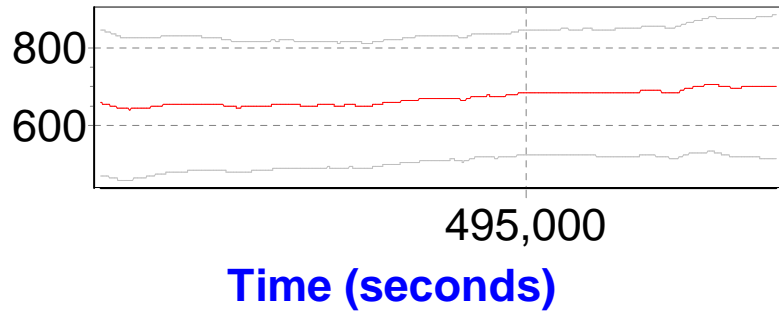
X Accelerometer Bias (micro-g)



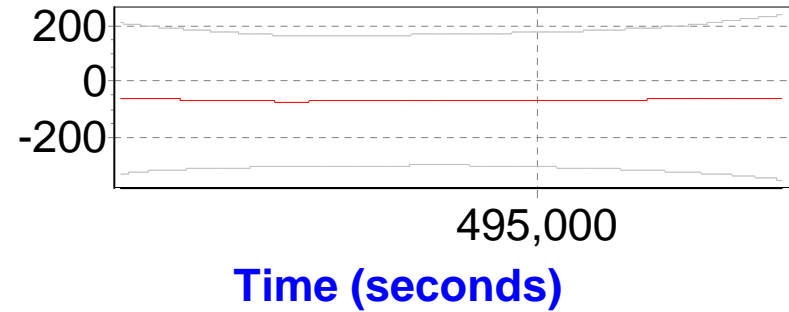
Y Accelerometer Bias (micro-g)



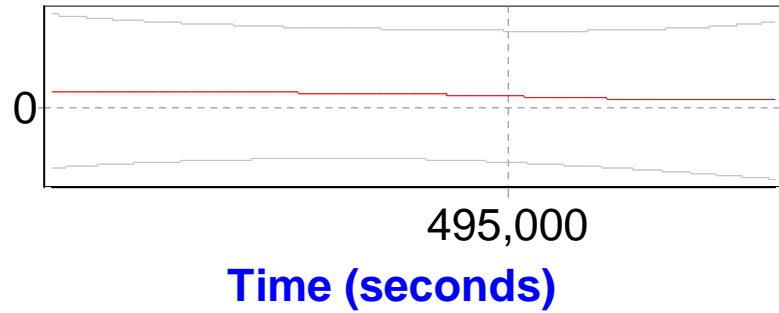
Z Accelerometer Bias (micro-g)



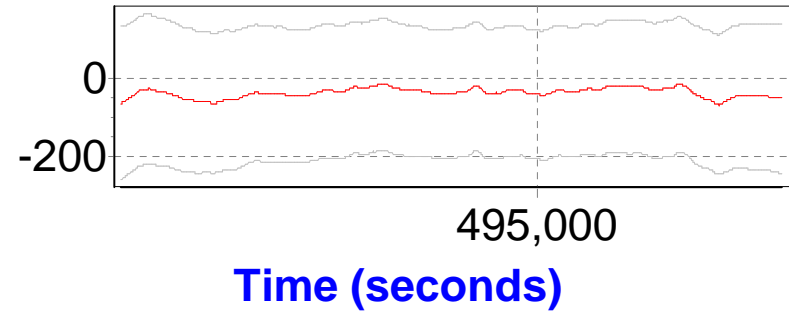
Accelerometer Scale Factor Error (ppr)



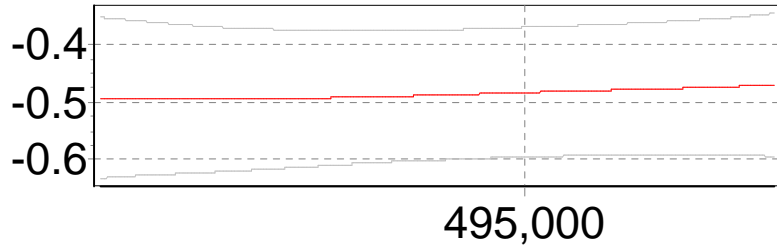
Accelerometer Scale Factor Error (ppr)



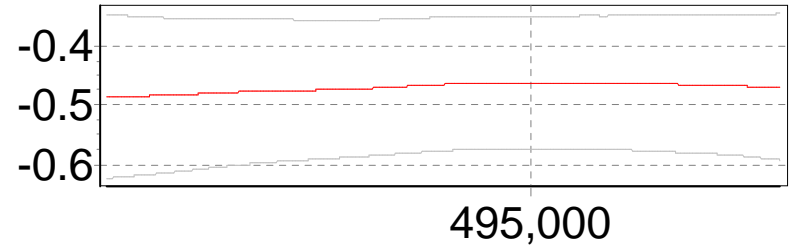
Accelerometer Scale Factor Error (ppr)



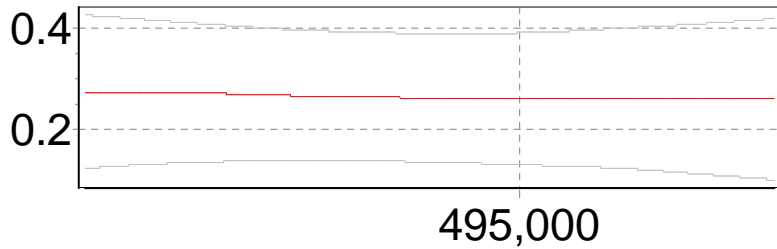
X Gyro Bias (degrees/hour)



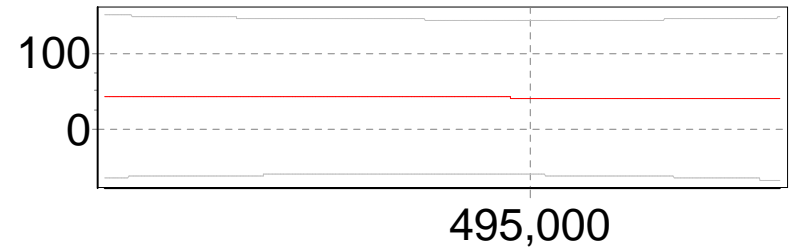
Y Gyro Bias (degrees/hour)



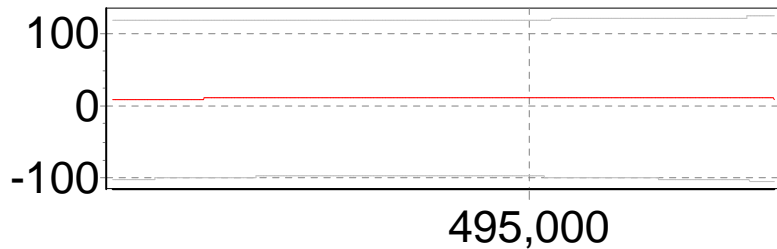
Z Gyro Bias (degrees/hour)



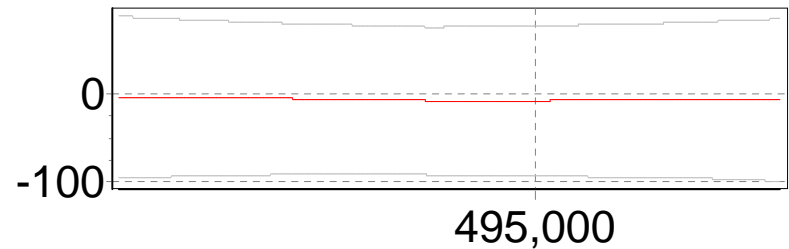
X Gyro Scale Factor Error (ppm)



Y Gyro Scale Factor Error (ppm)



Z Gyro Scale Factor Error (ppm)



GPS Base Log Sheet



TAPPANANNOCK AIRPORT

Station ID: 110304 Project #: 1110304 Missions: 01, 11, 19A, B

Project Name: WSSS/Femo VA Calendar Date: 21 April 11 Julian Day: 119?

Approx. Coordinates: WGS 84 N

Description of Mark (Take Photos):

Monument is: Flush with ground Above ground 3 cm Below ground _____ cm

Location & Access:

Obstructions & Additional Notes

GPS Observation - MAIN

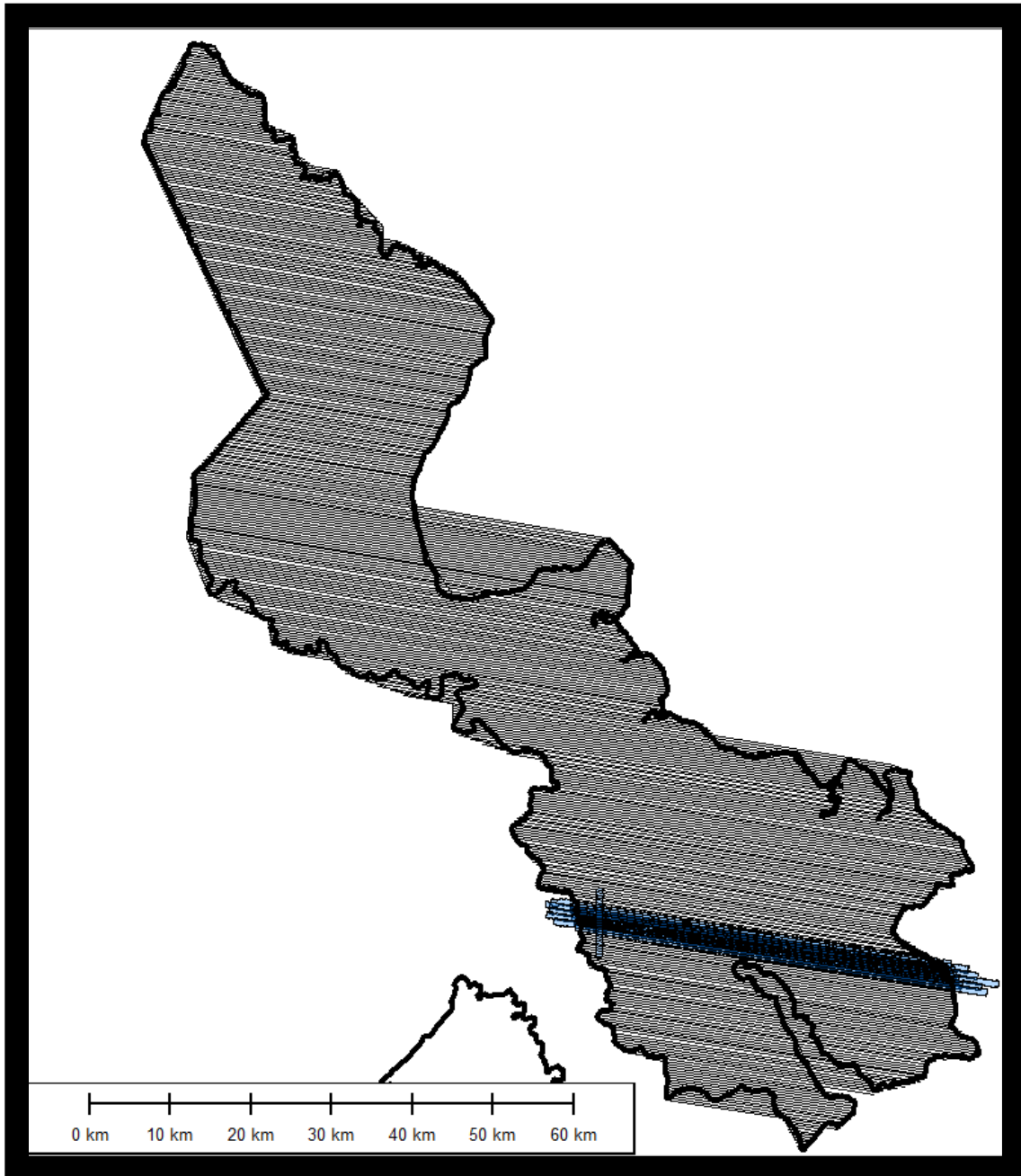
Rx Make / Model	Serial #	
Ant Make / Model	Serial #	
Operator	Doug AJ	
Session Start	1247 ATC	
Time (GPS) End		
Slant HI Before:	A: 1.214	B: 1.214
Slant HI After:	A: 1.214	B: 1.214
Correction		
Phase Center	Xm <input type="checkbox"/> in <input type="checkbox"/> use GrafNav Profile	
Data File Name		

GPS Observation - Back-Up

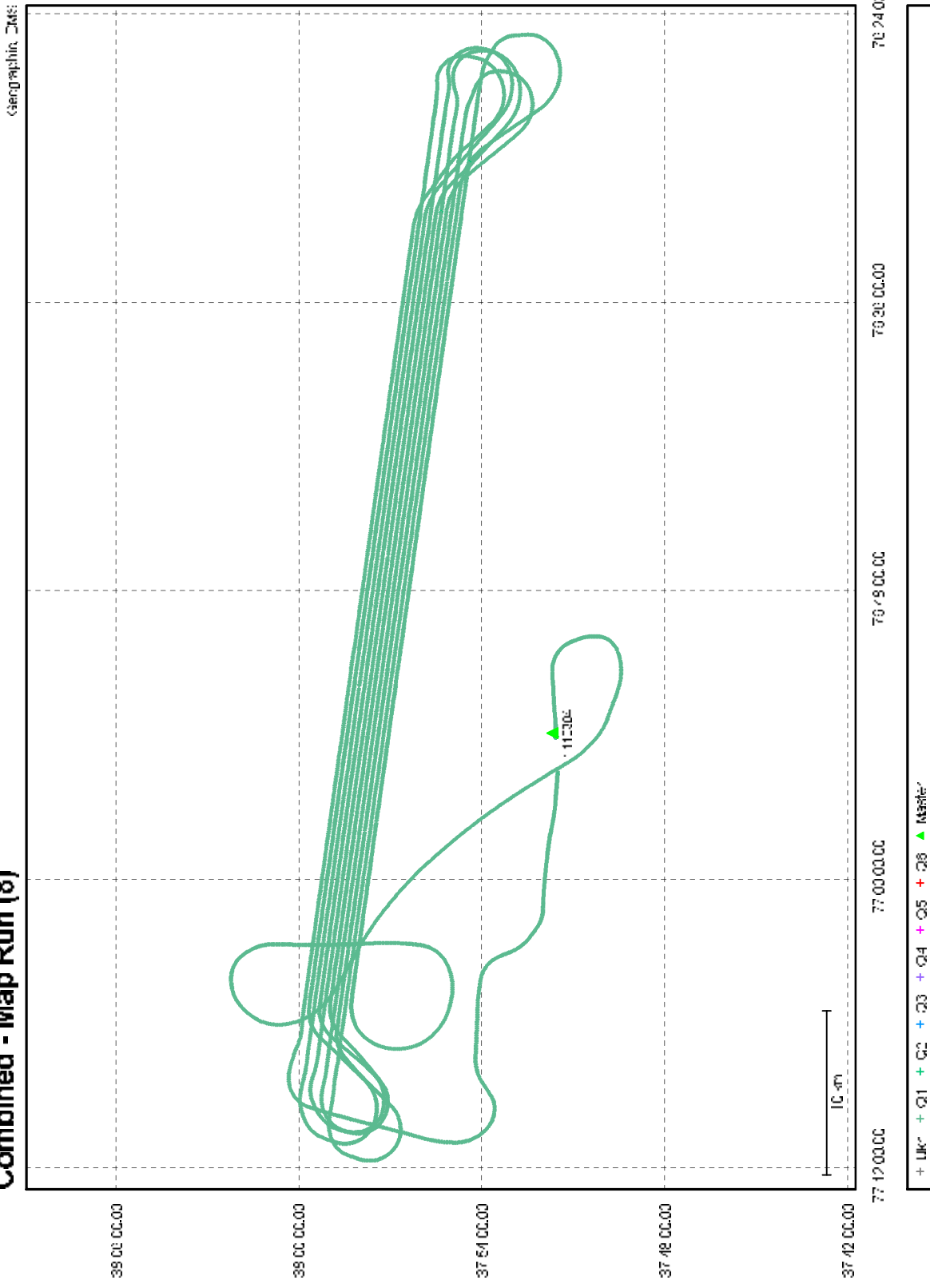
Rx Make / Model	Serial #	
Ant Make / Model	Serial #	
Operator		
Session Start		
Time (GPS) End		
Slant HI Before:	A:	B:
Slant HI After:	A:	B:
Correction		
Phase Center	m <input type="checkbox"/> in <input type="checkbox"/> use GrafNav Profile	
Data File Name		

Mission: o211119b

2011 04 29



Combined - Map Run (8)



Processing Summary Information

Program: GrafNav
Version: 7.80.2517
Project: G:\range back va\o211119b\3_Processed\GPS\o211119b.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:
Total in GPB file: 124333
No processed position: 113022
Missing Fwd or Rev: 4
With bad C/A code: 0
With bad L1 Phase: 0

Measurement RMS Values:
L1 Phase: 0.0110 (m)
C/A Code: 0.66 (m)
L1 Doppler: 0.026 (m/s)

Fwd/Rev Separation RMS Values:
East: 0.004 (m)
North: 0.004 (m)
Height: 0.016 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (11305 occurrences):
East: 0.003 (m)
North: 0.003 (m)
Height: 0.014 (m)

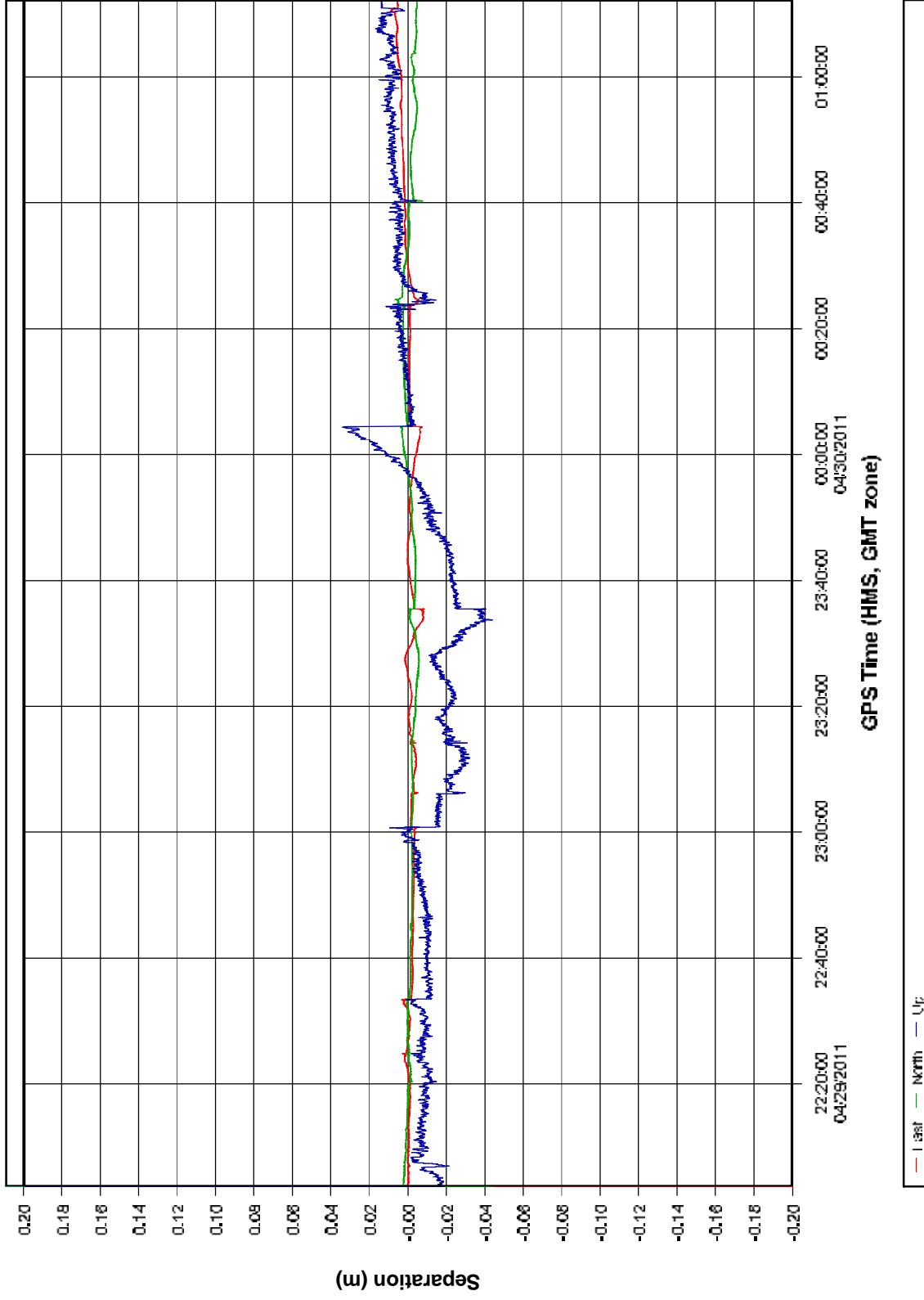
Quality Number Percentages:
Q 1: 100.0 %
Q 2: 0.0 %
Q 3: 0.0 %
Q 4: 0.0 %
Q 5: 0.0 %
Q 6: 0.0 %

Position Standard Deviation Percentages:
0.00 - 0.10 m: 100.0 %
0.10 - 0.30 m: 0.0 %
0.30 - 1.00 m: 0.0 %
1.00 - 5.00 m: 0.0 %
5.00 m + over: 0.0 %

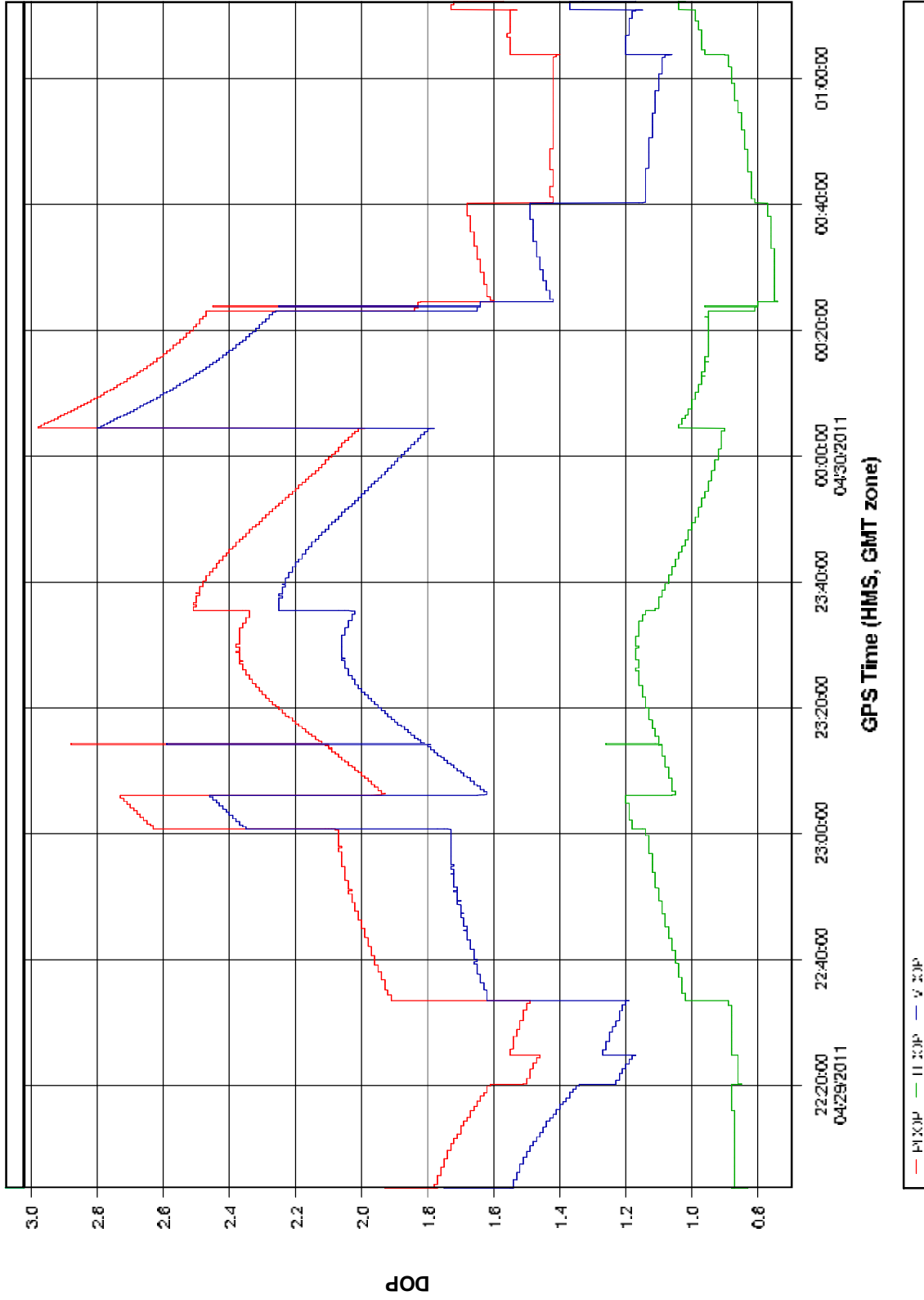
Percentages of epochs with DD_DOP over 10.00:
DOP over Tol: 0.0 %

Baseline Distances:
Maximum: 42.645 (km)
Minimum: 0.220 (km)
Average: 21.037 (km)
First Epoch: 2.388 (km)
Last Epoch: 0.220 (km)

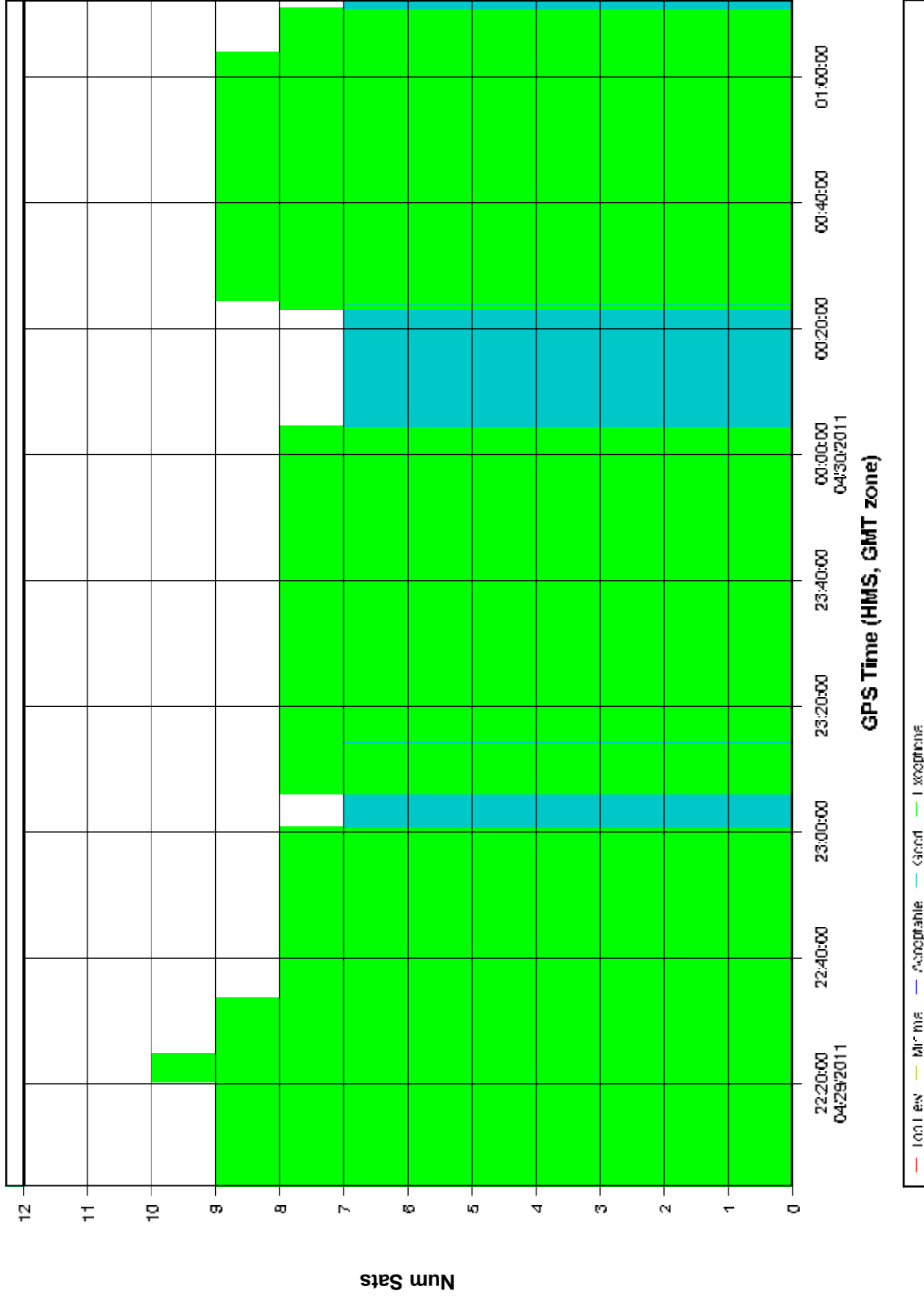
o211119b [Combined] - Forward/Reverse or Combined Separation Plot



o211119b [Combined] - PDOP, HDOP, VDOP Plots



o211119b [Combined] - Number of Satellites Bar Plot



```

                                o211119b. cfg
:   PROJECT:
E:\11103U_VA\2_Operations\6_Missions\o211119b\3_Processed\GPS\o211119b. cfg
:
:   DATE:           May 2/11   (date/time of processing)
:   TIME:           17:23:55
:   CREATED BY:    GrafNav Version 7.80.2517
:
VERSION = 7.80.2517
PROCUSER = Unknown
PROCDISC = Run*(9)
PROCTIME = 17:23:27 05/02/2011

; Master station # 1 information
MB_MASTER_INDEX = 0
MB_MASTER_NAME = 1110304
MB_MASTER_FILE =
E:\11103U_VA\2_Operations\6_Missions\o211119b\1_RawData\original_PDC_files\1110304_0
0161190.gpb
MB_MASTER_POS = 37 51 41.39611 -76 53 55.13346 5.1620
MB_MASTER_ANT = 1.247 0.001 1.214 1 _TP_SOK600 0
MB_MASTER_DISABLE = OFF

; Remote station information
REMOTE_FILE =
E:\11103U_VA\2_Operations\6_Missions\o211119b\3_Processed\Extract\mgps_o211119b.gpb
REMOTE_POS = 37 51 38.11111 -76 53 54.89672 7.0616
REMOTE_ANT = 0.000

; General settings
PROCESS_MODE = 103 108 113 126 ; Processing modes (GrafNav only)

DATUM = NAD83 AUTO ; Processing Datum
INPDATUM = ON NAD83 AUTO ; Input Datum (ON=Use processing datum)
ELEV_MASK = 14.5 ; Elevation mask (deg)
GRID = UTM 15 31 ; Grid info

CYCLE_TEST = BOTH ; Cycle slip test method
STATIC_SLIP_TOL = 0.40 ; slip tolerance in static mode (cycles)
USE_DOPPLER = ON OFF ; Use doppler meas. for phase, for code-only

BASE_SAT = 99 ; Base satellite (99-default)

TIMERANGE = RANGE 988149817.0 988161135.0 2 0 ; Processing time range
INTERVAL = 0.10 ; Processing time interval (seconds)

PROCESS_DIR = FORWARD ; Process direction (FORWARD/REVERSE)
BOTH_DIR = ON ; True for processing both directions
WRITE_BAD_EPOCHS = OFF ; Save bad data to .fwd/rev file (ON/OFF)
NOWRITE_HIGH = OFF 6 20.000 ; Don't write epoch with high statistics (q, stdev-m)
OUTPUT_MODE = EXTENDED ; Format for .fwd/rev file
DETAILED_SUM = ON ; Detailed Static/KAR Summary header
WRITE_SLIP_MSG = ON ; Print cycle slips to message log
SAVE_AMB = ON ; Should ambiguities be saved

```



Flight Log

Project# 0211196 **Session** Apr 29

Date	Apr 29	Julian Day	119
Project		Aircraft	215A
Staging		Call Sign	SISA
Survey Block		Pilot	Wilkins
Lines Complete		Operator	Esteban
Mission Objective			

ALMISOzech	
System #	22
Laser Scanner	
Camera/Lens SN	
Shutter Speed	
Photo Freq.	
IML	
GPS Rx	
Data Drive	

Additional Notes

Outside Temp @ TC: 21 Outside Pressure @ TC: 2985
 Outside Temp @ LA: Outside Pressure @ LA:

Aircraft: Block Time	<input type="checkbox"/> Times confirmed w/ta pilot
Engine On (-hobbs)	Taxiout (120L) x (Total fit hrs)
1745	1601
Engine Off (Hobbs)	Landing FBO \$ / Litre
2130	2114
Total hrs (-cbbbs)	Approx. Fuel Cost
	3.2

Mission Plan	
Flying Height AGL	Scan Angle (Optically)
300	22
Ground Speed	Mirror Scan Rate
150	40
First/Last/Alternating Return	Laser Pulse Rate
	70

Static & KAR GPS / INS Alignment	
Time	Start
Pre Mission	
KAR Base	
KAR Base	
Post Mission	

Flight Plan Line #	LIDAR File Name	Flight Direction	GPS / UTC Time		Flight Abort	Photo Events / Comments
			Start	End		
84		E	22:14	22:24		
83		W	22:29	22:42		
82		E	22:46	22:57		
81		W	22:57	23:15		
80		E	23:20	23:30		
79		W	23:34	23:47		Run 2.5mi from East
78		E	23:51	00:02		Run 2.5mi from E
77		W	00:06	00:20		
76		E	00:25	00:35		
75		W	00:39	00:53		

0055 0059

GPS Base Log Sheet



TAPPANANOCK AIRPORT

Station ID: 110304 Project #: 110304 Missions: 01 11/19/16

Project Name: WGS/Fama VA Calendar Date: 21 April 15?

Approx. Coordinates: WGS 84 N W

Description of Mark (Take Photos)

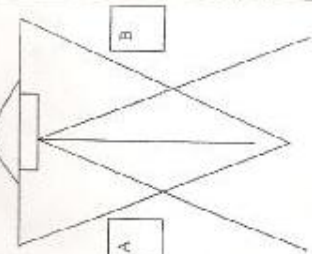
Monument is: Flush with ground Above ground 3 cm Below ground ___ cm

Location & Access

Obstructions & Additional Notes

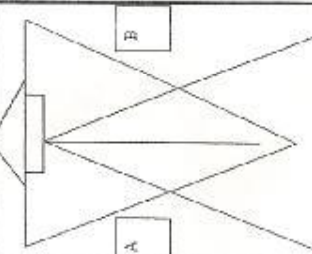
GPS Observation - MAIN

Rx Make / Model	Serial #	
GPS 2000	0016	
Ant Make / Model	Serial #	
SK601	0035	
Operator	Douglas	
Session Time (GPS)	Start	End
	1247	ATC
Slant HI Before:	A: 1.214	B: 1.214
Slant HI After:	A: 1.214	B: 1.214
Correction		
Phase Center	X ^m <input type="checkbox"/> m <input type="checkbox"/> in <input type="checkbox"/> use GrafNav Profile	
Data File Name		

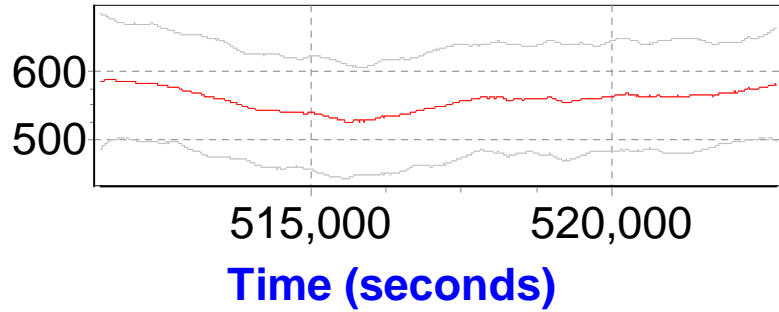


GPS Observation - Back-Up

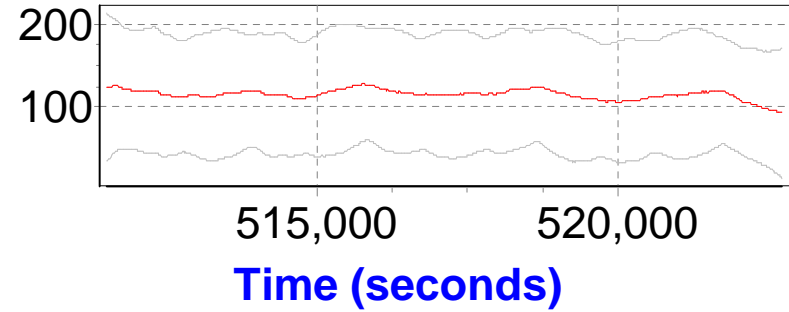
Rx Make / Model	Serial #	
Ant Make / Model	Serial #	
Operator		
Session Time (GPS)	Start	End
Slant HI Before:	A:	B:
Slant HI After:	A:	B:
Correction		
Phase Center	___ m ___ in <input type="checkbox"/> use GrafNav Profile	
Data File Name		



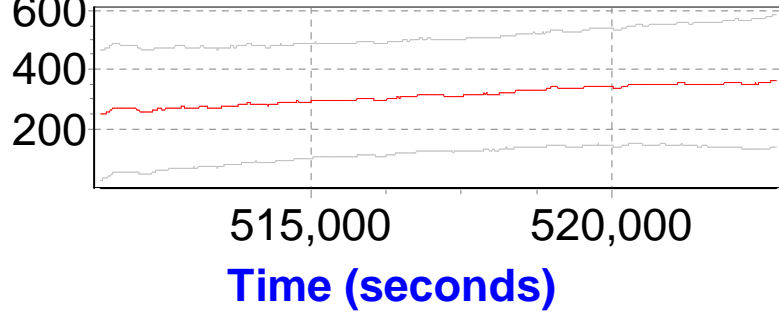
X Accelerometer Bias (micro-g)



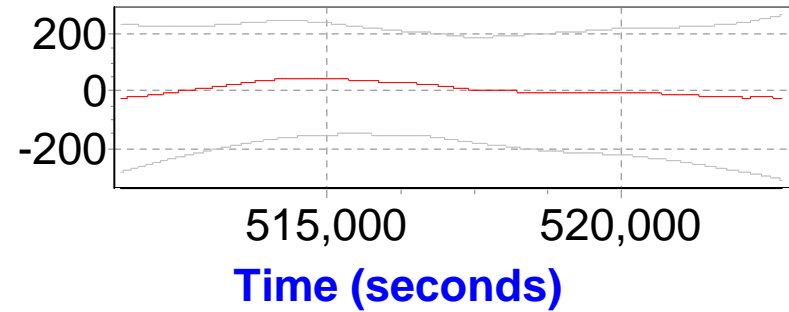
Y Accelerometer Bias (micro-g)



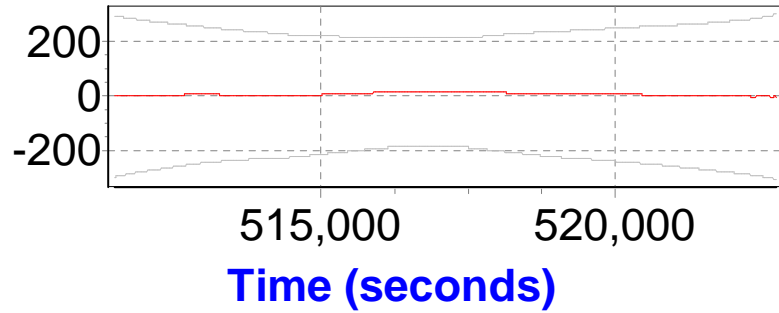
Z Accelerometer Bias (micro-g)



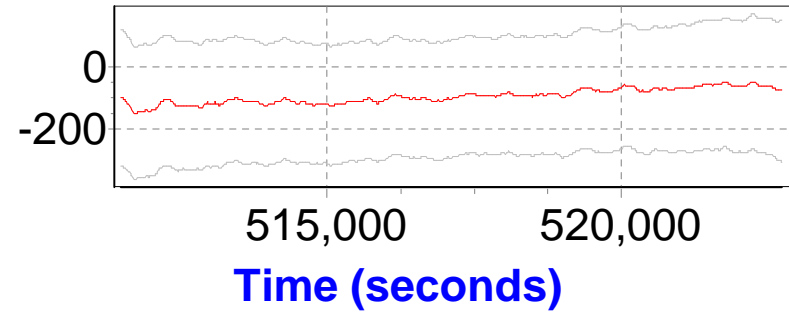
Accelerometer Scale Factor Error (ppr)

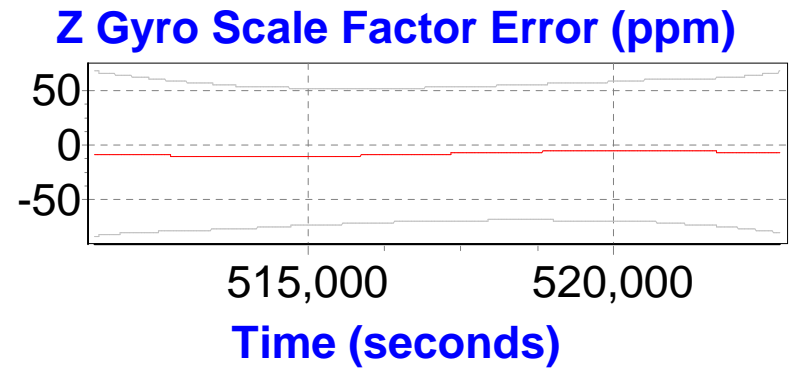
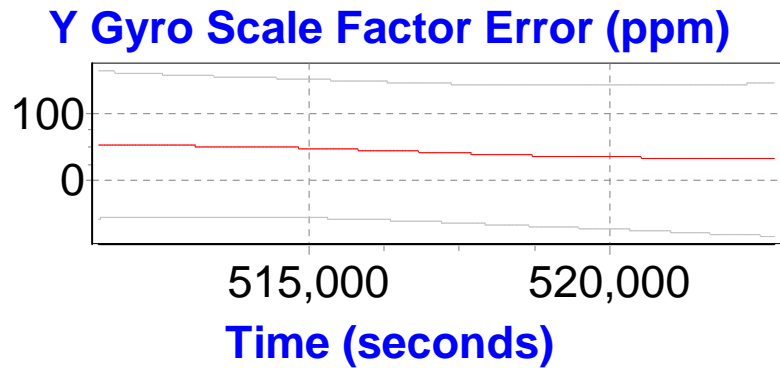
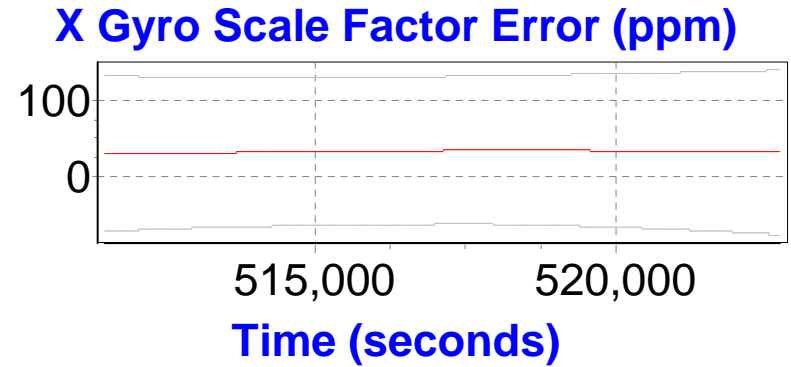
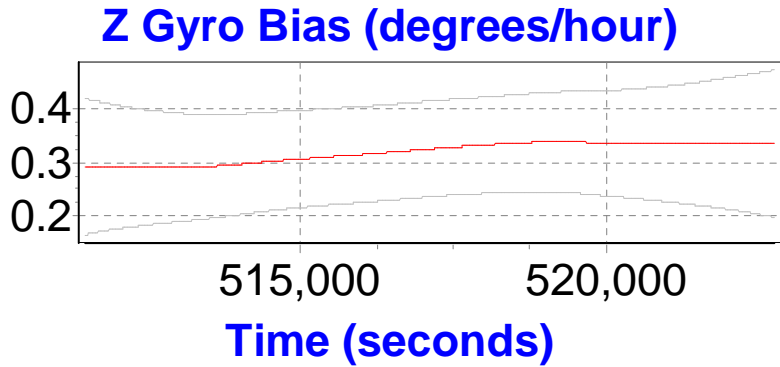
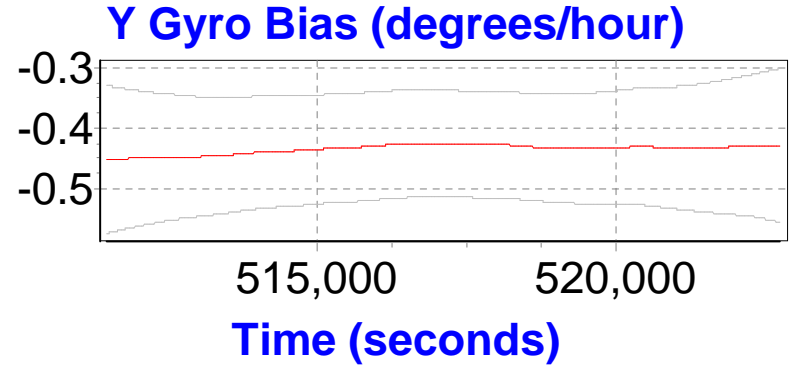
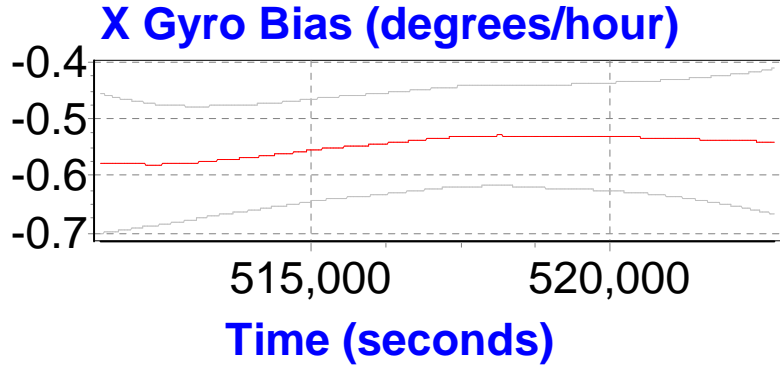


Accelerometer Scale Factor Error (ppr)



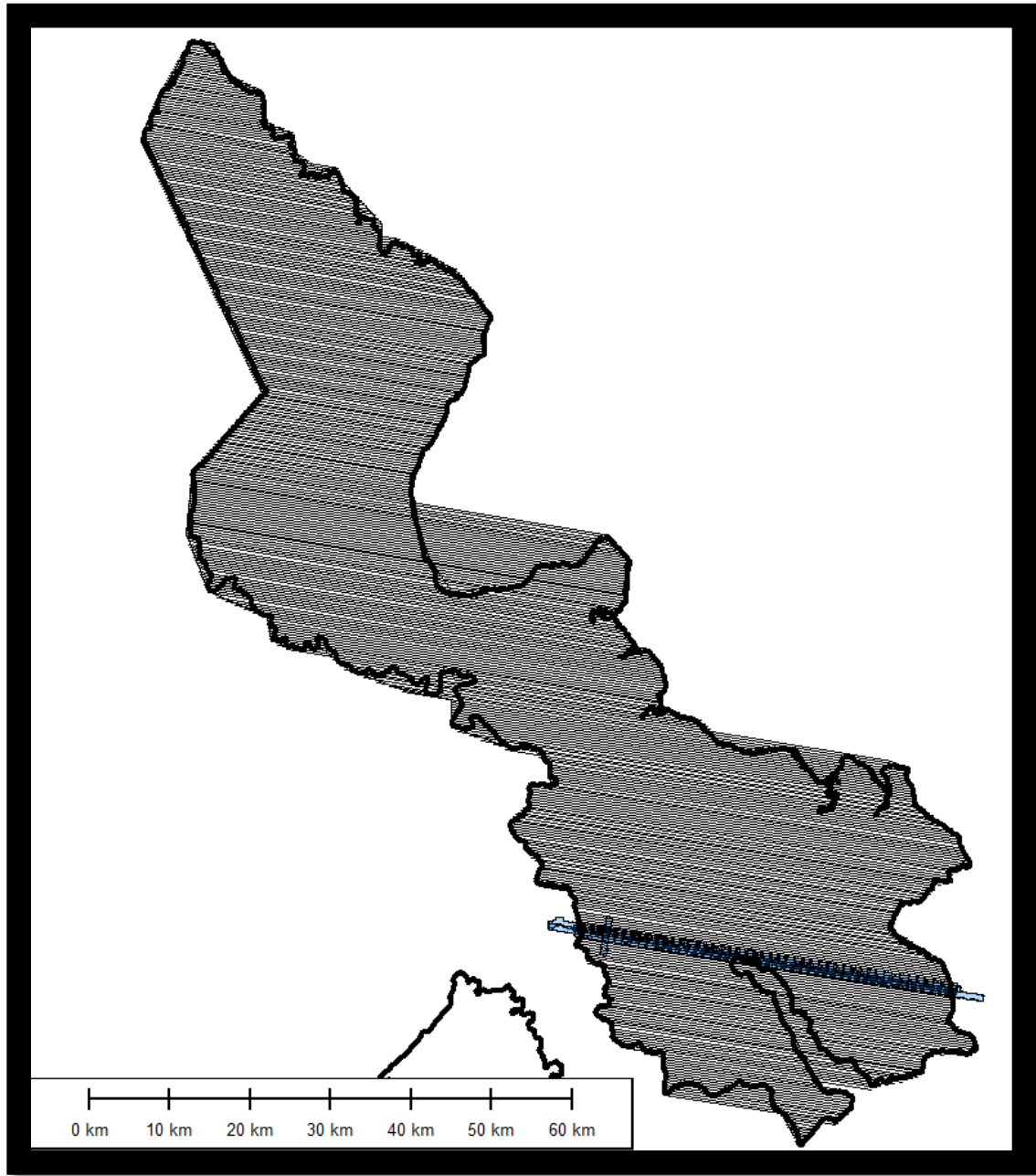
Accelerometer Scale Factor Error (ppr)



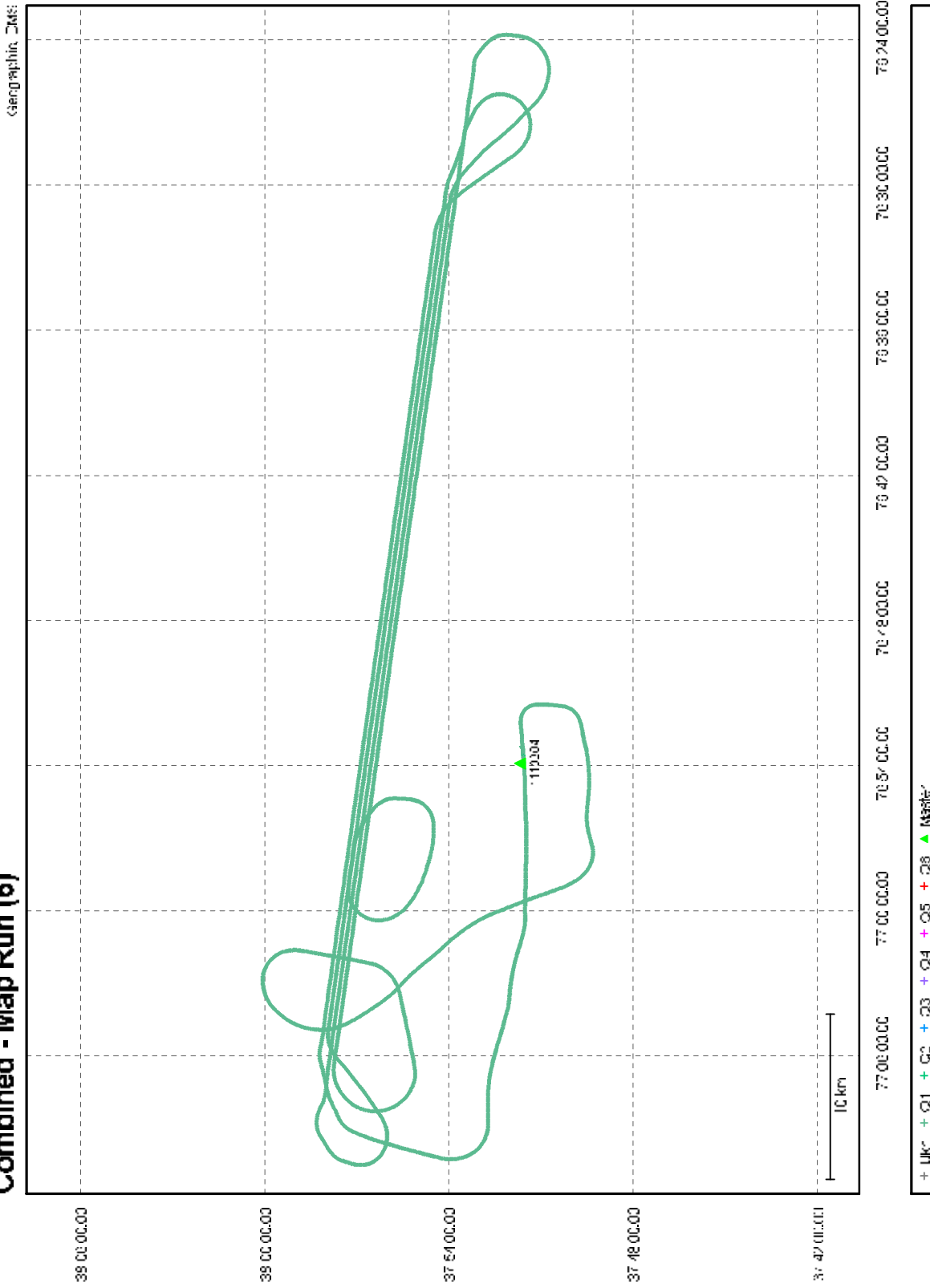


Mission: o211120a

2011 04 30



Combined - Map Run (6)



Processing Summary Information

Program: GrafNav
Version: 7.80.2517
Project: G:\range back va\o211120a\3_Processed\GPS\o211120a.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:
Total in GPB file: 69264
No processed position: 63627
Missing Fwd or Rev: 4
With bad C/A code: 0
With bad L1 Phase: 0

Measurement RMS Values:
L1 Phase: 0.0102 (m)
C/A Code: 0.68 (m)
L1 Doppler: 0.025 (m/s)

Fwd/Rev Separation RMS Values:
East: 0.005 (m)
North: 0.009 (m)
Height: 0.016 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (5631 occurrences):
East: 0.002 (m)
North: 0.002 (m)
Height: 0.010 (m)

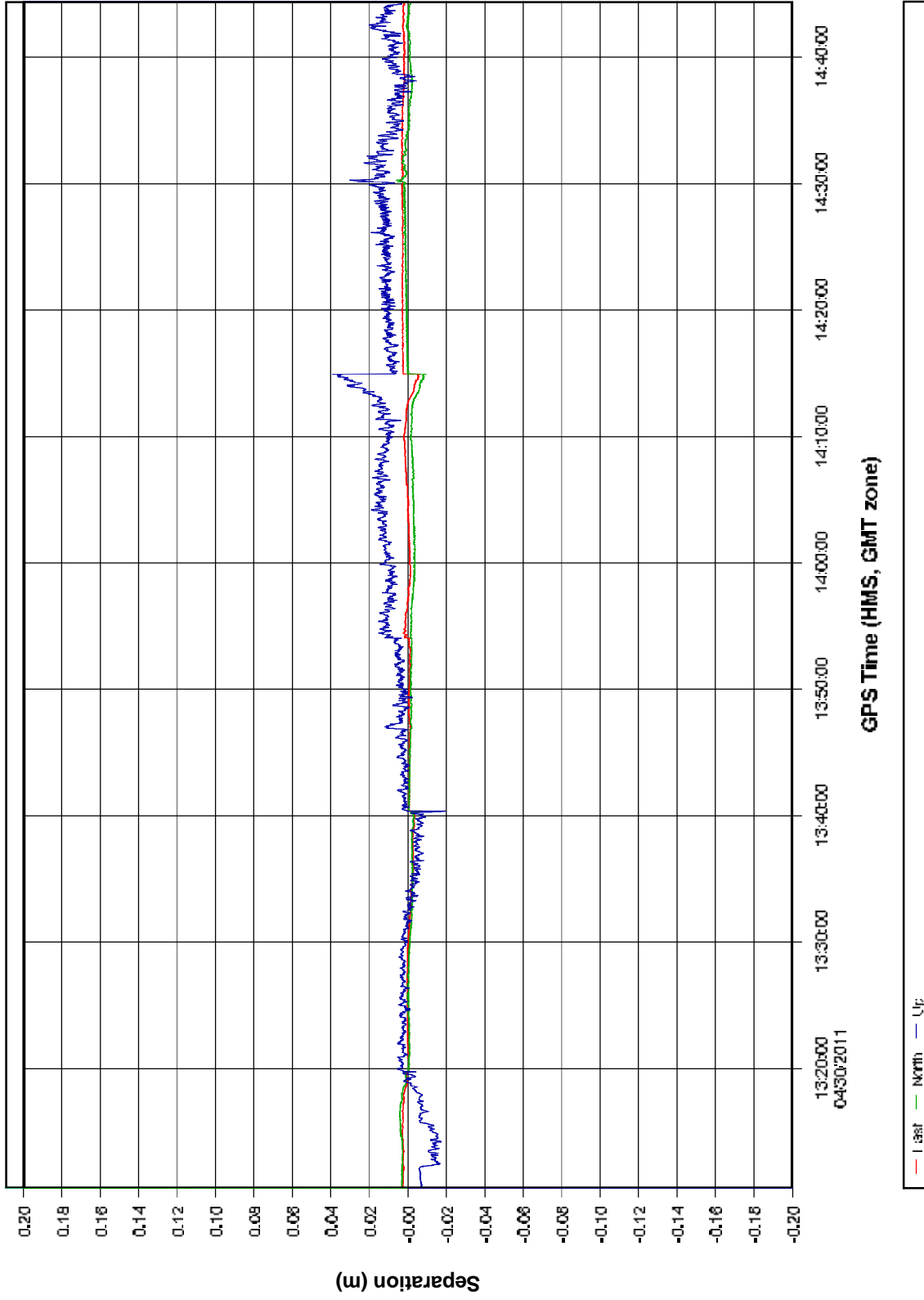
Quality Number Percentages:
Q 1: 100.0 %
Q 2: 0.0 %
Q 3: 0.0 %
Q 4: 0.0 %
Q 5: 0.0 %
Q 6: 0.0 %

Position Standard Deviation Percentages:
0.00 - 0.10 m: 100.0 %
0.10 - 0.30 m: 0.0 %
0.30 - 1.00 m: 0.0 %
1.00 - 5.00 m: 0.0 %
5.00 m + over: 0.0 %

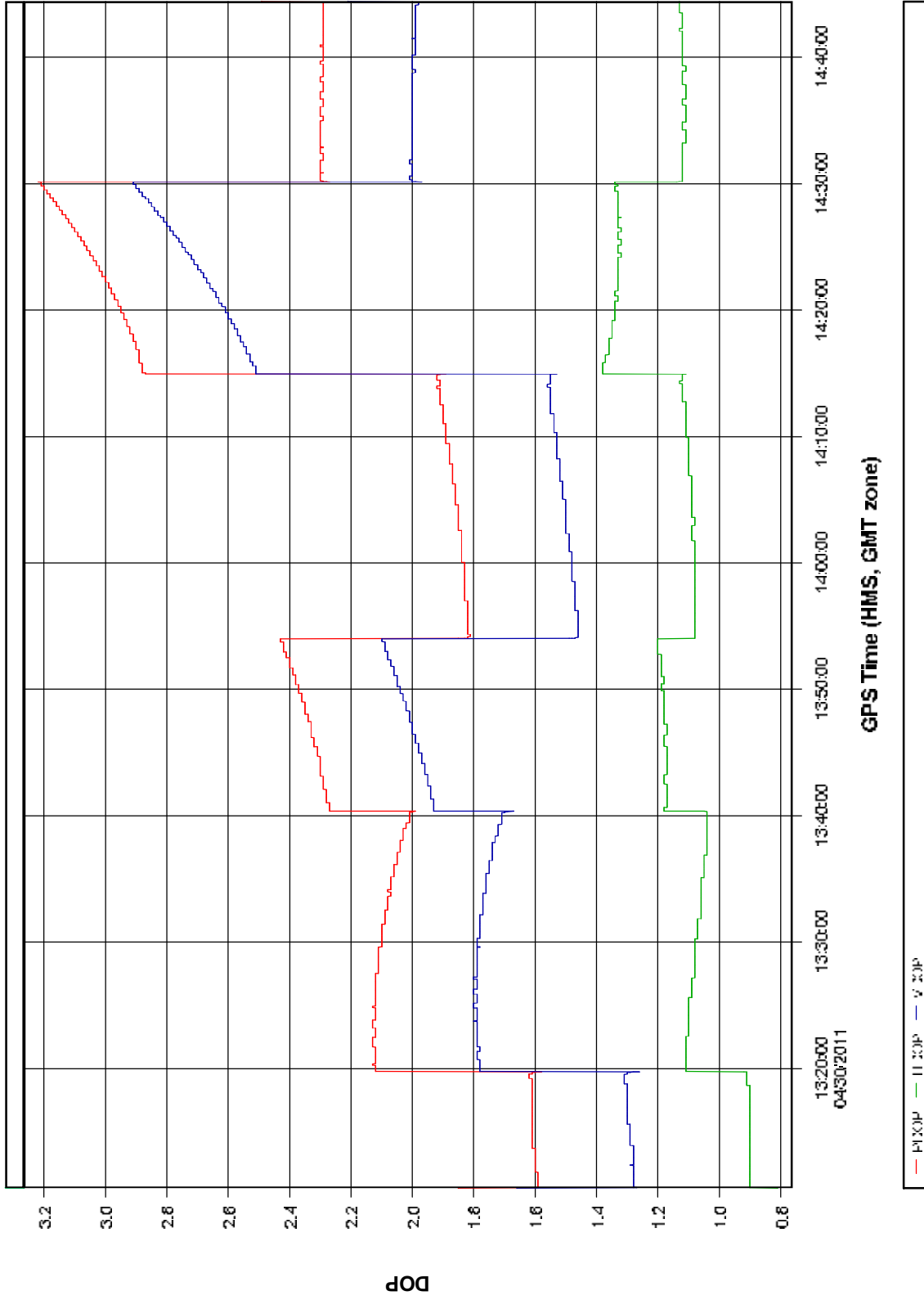
Percentages of epochs with DD_DOP over 10.00:
DOP over Tol: 0.0 %

Baseline Distances:
Maximum: 44.213 (km)
Minimum: 0.240 (km)
Average: 18.378 (km)
First Epoch: 1.045 (km)
Last Epoch: 0.429 (km)

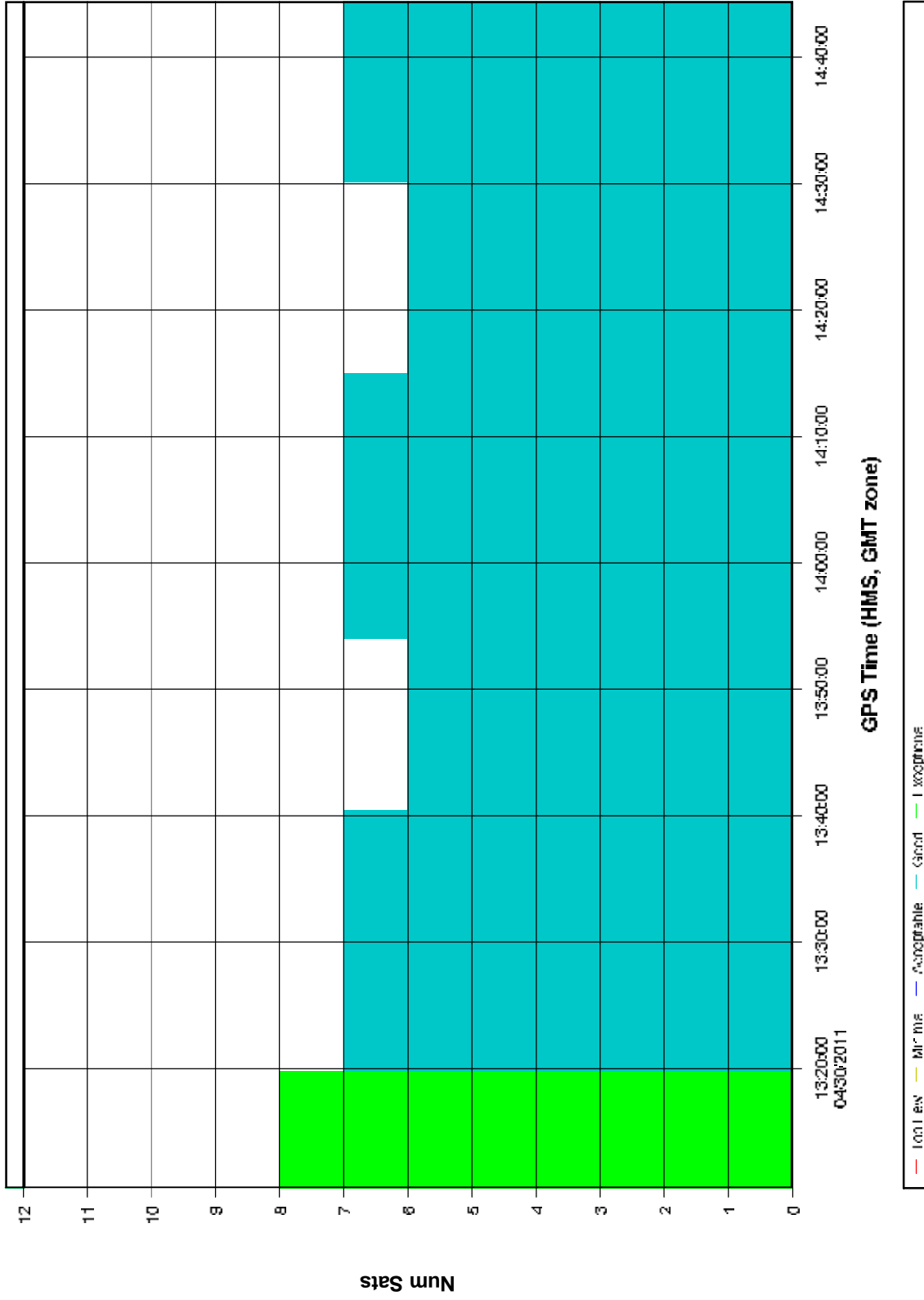
o211120a [Combined] - Forward/Reverse or Combined Separation Plot



o211120a [Combined] - PDOP, HDOP, VDOP Plots



o211120a [Combined] - Number of Satellites Bar Plot



```

                                o211120a. cfg
; PROJECT:
E:\11103U_VA\2_Operations\6_Missions\o211120a\3_Processed\GPS\o211120a. cfg
;
; DATE:           May 2/11  (date/time of processing)
; TIME:           23:05:41
; CREATED BY:     GrafNav Version 7.80.2517
;
VERSION = 7.80.2517
PROCUSER = Unknown
PROCDISC = Run*(7)
PROCTIME = 23:04:55 05/02/2011

; Master station # 1 information
MB_MASTER_INDEX = 0
MB_MASTER_NAME = 1110304
MB_MASTER_FILE =
E:\11103U_VA\2_Operations\6_Missions\o211120a\1_RawData\original_PDC_files\1110304_0
0161200. gpb
MB_MASTER_POS = 37 51 41.39611 -76 53 55.13346 5.1620
MB_MASTER_ANT = 1.247 0.001 1.214 1 _TP_SOK600 0
MB_MASTER_DISABLE = OFF

; Remote station information
REMOTE_FILE =
E:\11103U_VA\2_Operations\6_Missions\o211120a\3_Processed\Extract\mgps_o211120a. gpb
REMOTE_POS = 37 51 38.09228 -76 53 56.29701 6.3203
REMOTE_ANT = 0.000

; General settings
PROCESS_MODE = 103 108 113 126 ; Processing modes (GrafNav only)

DATUM = NAD83 AUTO ; Processing Datum
INPDATUM = ON NAD83 AUTO ; Input Datum (ON=Use processing datum)
ELEV_MASK = 16.5 ; Elevation mask (deg)
GRID = UTM 15 31 ; Grid info

CYCLE_TEST = BOTH ; Cycle slip test method
STATIC_SLIP_TOL = 0.40 ; slip tolerance in static mode (cycles)
USE_DOPPLER = ON OFF ; Use doppler meas. for phase, for code-only

BASE_SAT = 99 ; Base satellite (99-default)

TIMERANGE = RANGE 988204230.0 988209866.0 2 0 ; Processing time range
INTERVAL = 0.10 ; Processing time interval (seconds)

PROCESS_DIR = FORWARD ; Process direction (FORWARD/REVERSE)
BOTH_DIR = ON ; True for processing both directions
WRITE_BAD_EPOCHS = OFF ; Save bad data to .fwd/rev file (ON/OFF)
NOWRITE_HIGH = OFF 6 20.000 ; Don't write epoch with high statistics (q, stdev-m)
OUTPUT_MODE = EXTENDED ; Format for .fwd/rev file
DETAILED_SUM = ON ; Detailed Static/KAR Summary header
WRITE_SLIP_MSG = ON ; Print cycle slips to message log
SAVE_AMB = ON ; Should ambiguities be saved

```


GPS Base Log Sheet



Station ID: 110304

Project #: 11030

Missions: 1120a

Project #: 11030

Missions: 1120a

Project Name: Ferry VA

Approx. Coordinates: WGS 84 N

Description of Mark (Take Photos)

Monument is: Flush with ground Above ground 3 cm Below ground cm

Location & Access

Calendar Date: 30/4/2013 Julian Day 120

W

Obstructions & Additional Notes

GPS Observation - MAIN

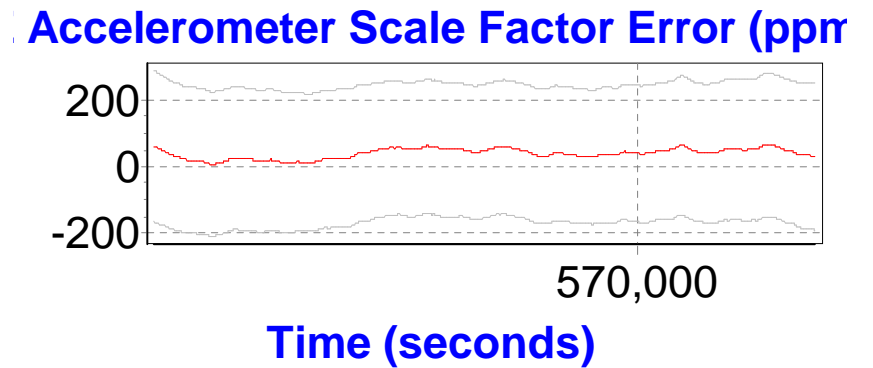
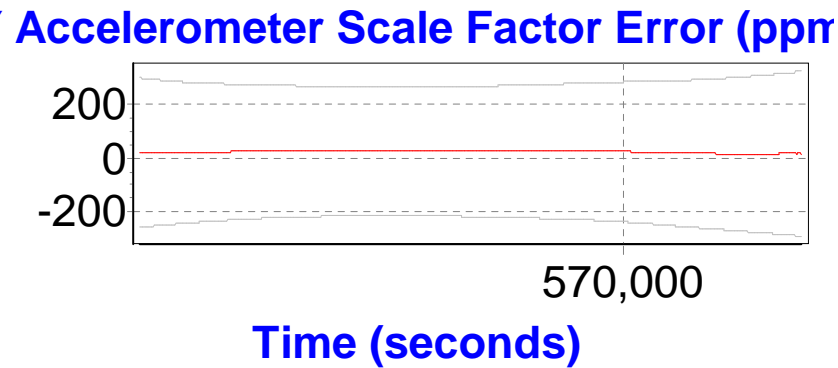
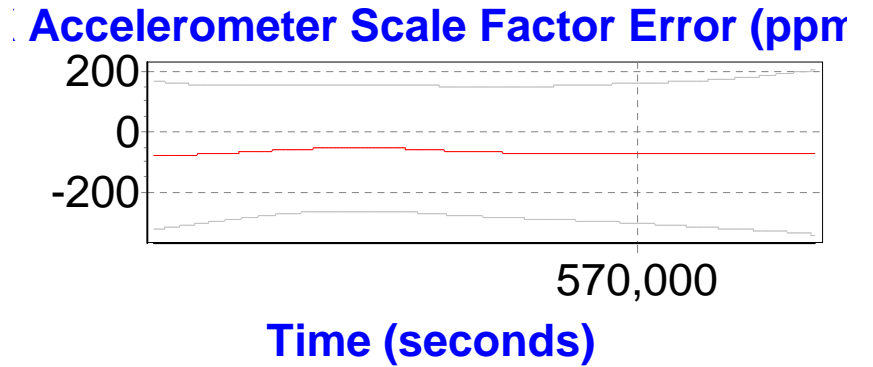
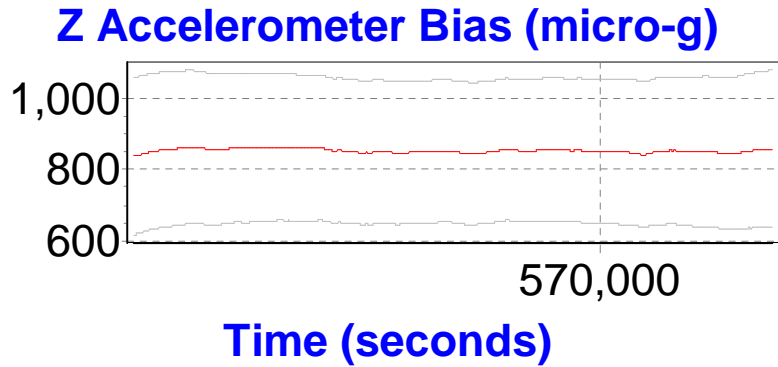
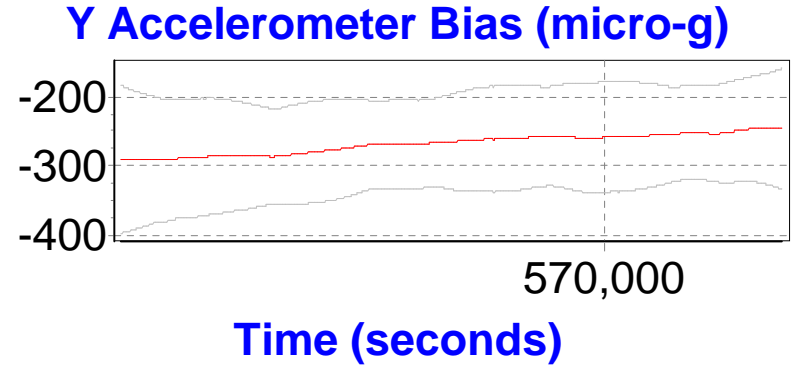
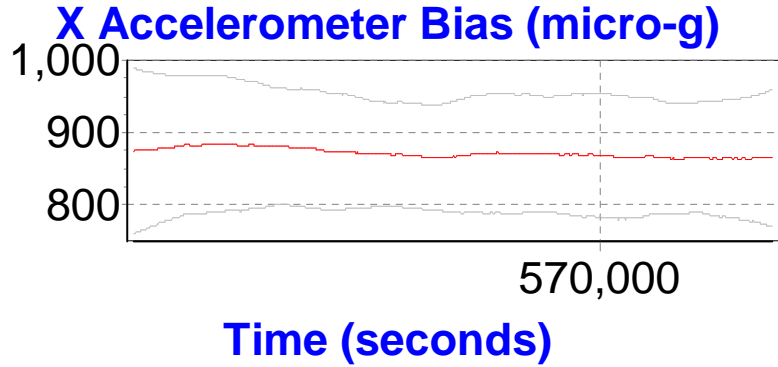
Rx Make / Model	GSR2600	Serial #	0016
Ant Make / Model	SK600	Serial #	0035
Operator	AC		
Session Start	12-22-00		
Session End	130000		
Slant HI Before:	A: 12-13	B: 1214	
Slant HI After:	A: 1213	B: 1213	
Correction			
Phase Center			
Data File Name			

m in use GrafNav Profile

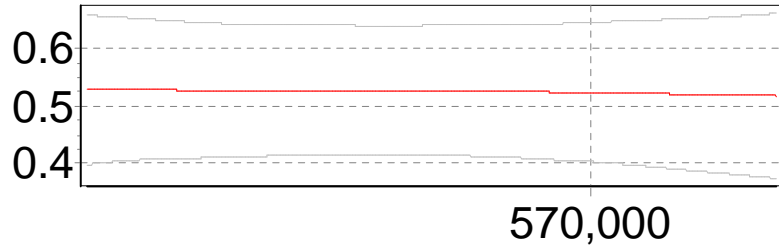
GPS Observation - Back-Up

Rx Make / Model		Serial #	
Ant Make / Model		Serial #	
Operator			
Session Start	12-24		
Session End			
Slant HI Before:	A:	B:	
Slant HI After:	A:	B:	
Correction			
Phase Center			
Data File Name			

m in use GrafNav Profile

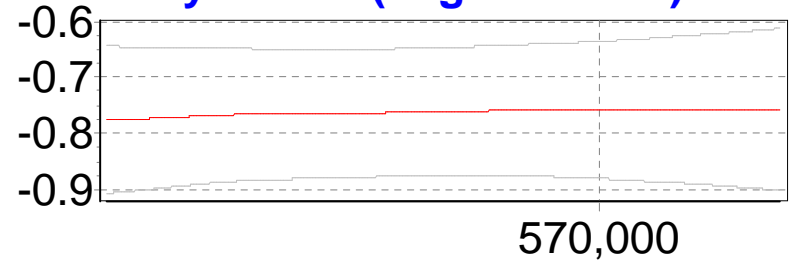


X Gyro Bias (degrees/hour)



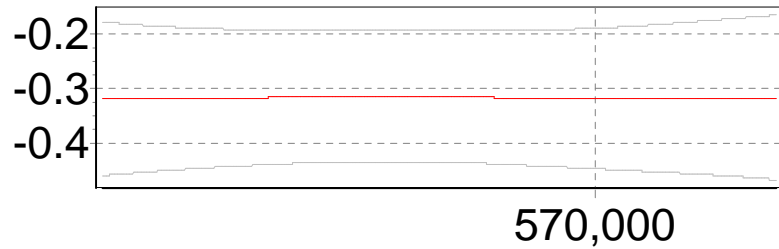
Time (seconds)

Y Gyro Bias (degrees/hour)



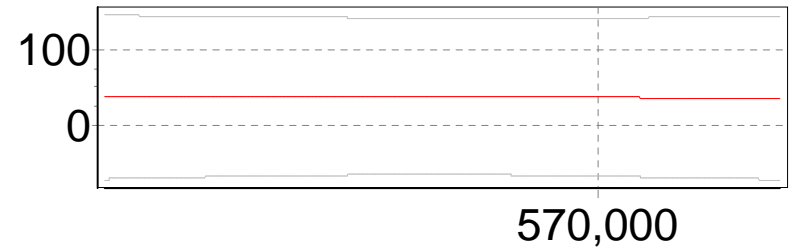
Time (seconds)

Z Gyro Bias (degrees/hour)



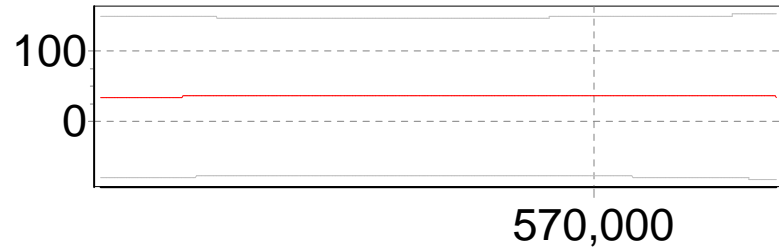
Time (seconds)

X Gyro Scale Factor Error (ppm)



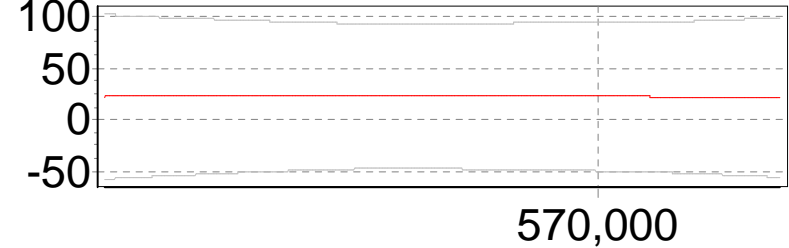
Time (seconds)

Y Gyro Scale Factor Error (ppm)



Time (seconds)

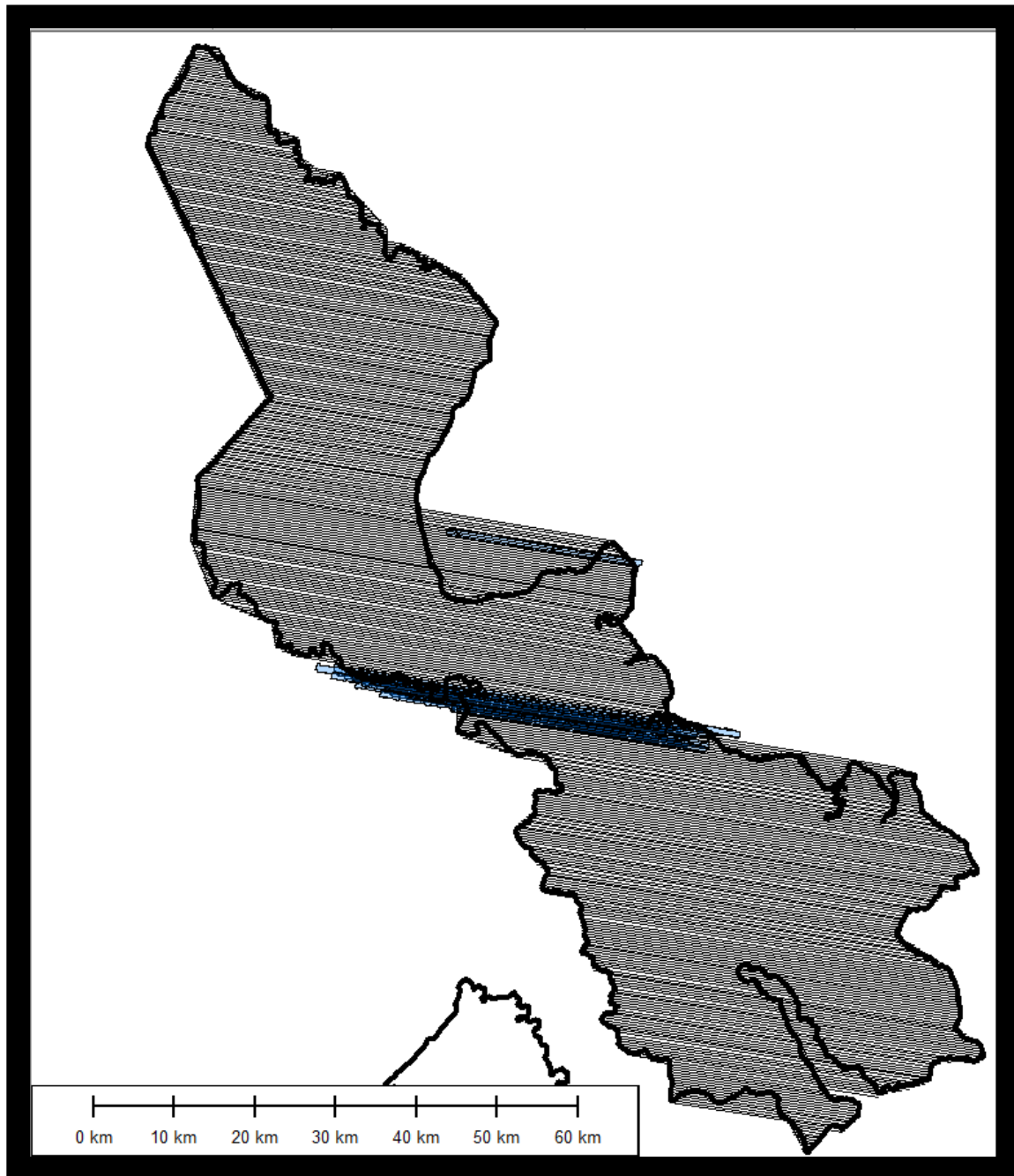
Z Gyro Scale Factor Error (ppm)



Time (seconds)

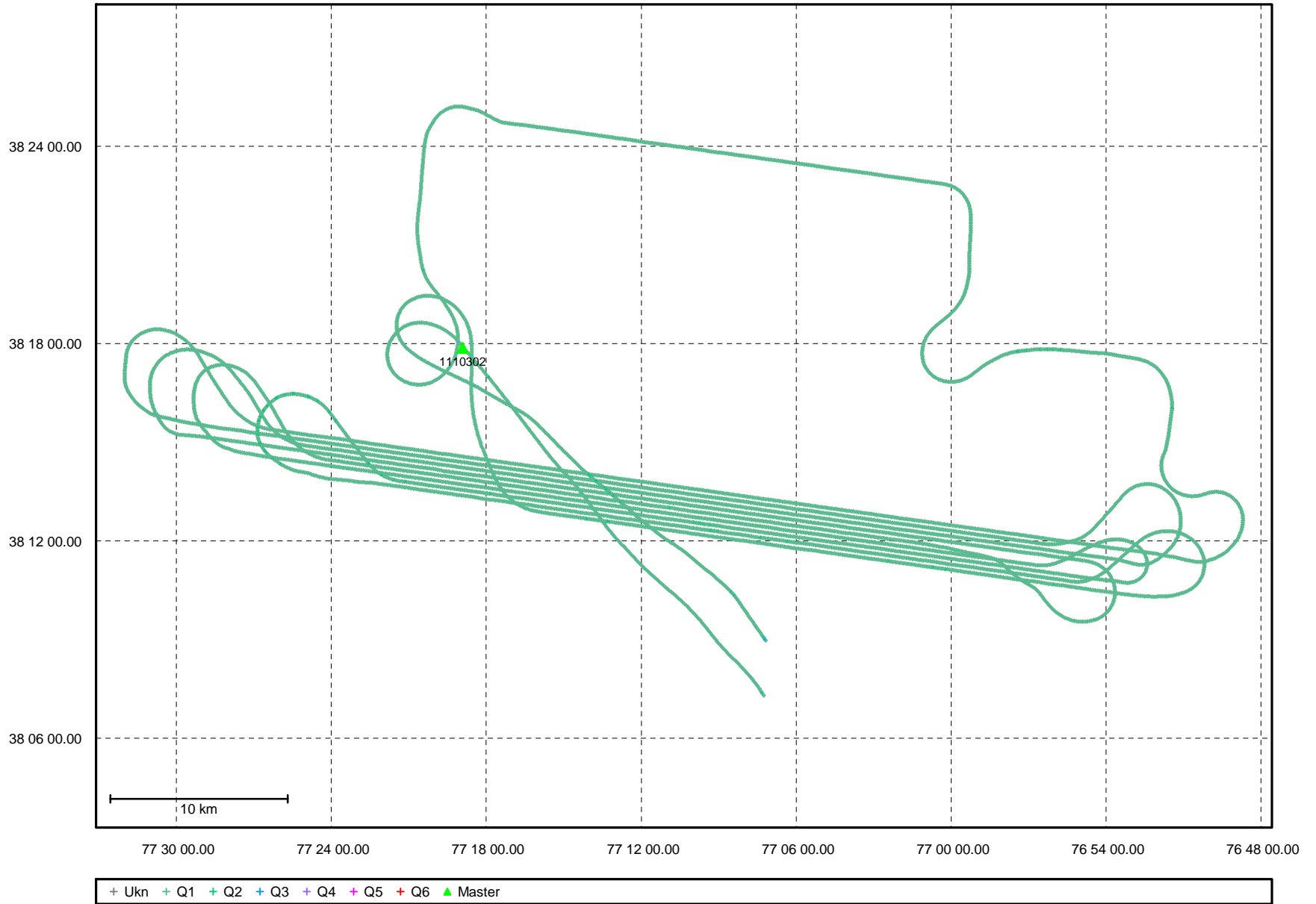
Mission: o211121a

2011 05 01



Combined - Map Run (3)

Geographic, DMS



Processing Summary Information

Program: GrafNav
Version: 7.80.2517
Project: G:\range back va\o211121a\3_Processed\GPS\o211121a.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:
Total in GPB file: 122256
No processed position: 112768
Missing Fwd or Rev: 4
With bad C/A code: 0
With bad L1 Phase: 0

Measurement RMS Values:
L1 Phase: 0.0187 (m)
C/A Code: 0.91 (m)
L1 Doppler: 0.032 (m/s)

Fwd/Rev Separation RMS Values:
East: 0.008 (m)
North: 0.013 (m)
Height: 0.022 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (9482 occurances):
East: 0.007 (m)
North: 0.009 (m)
Height: 0.021 (m)

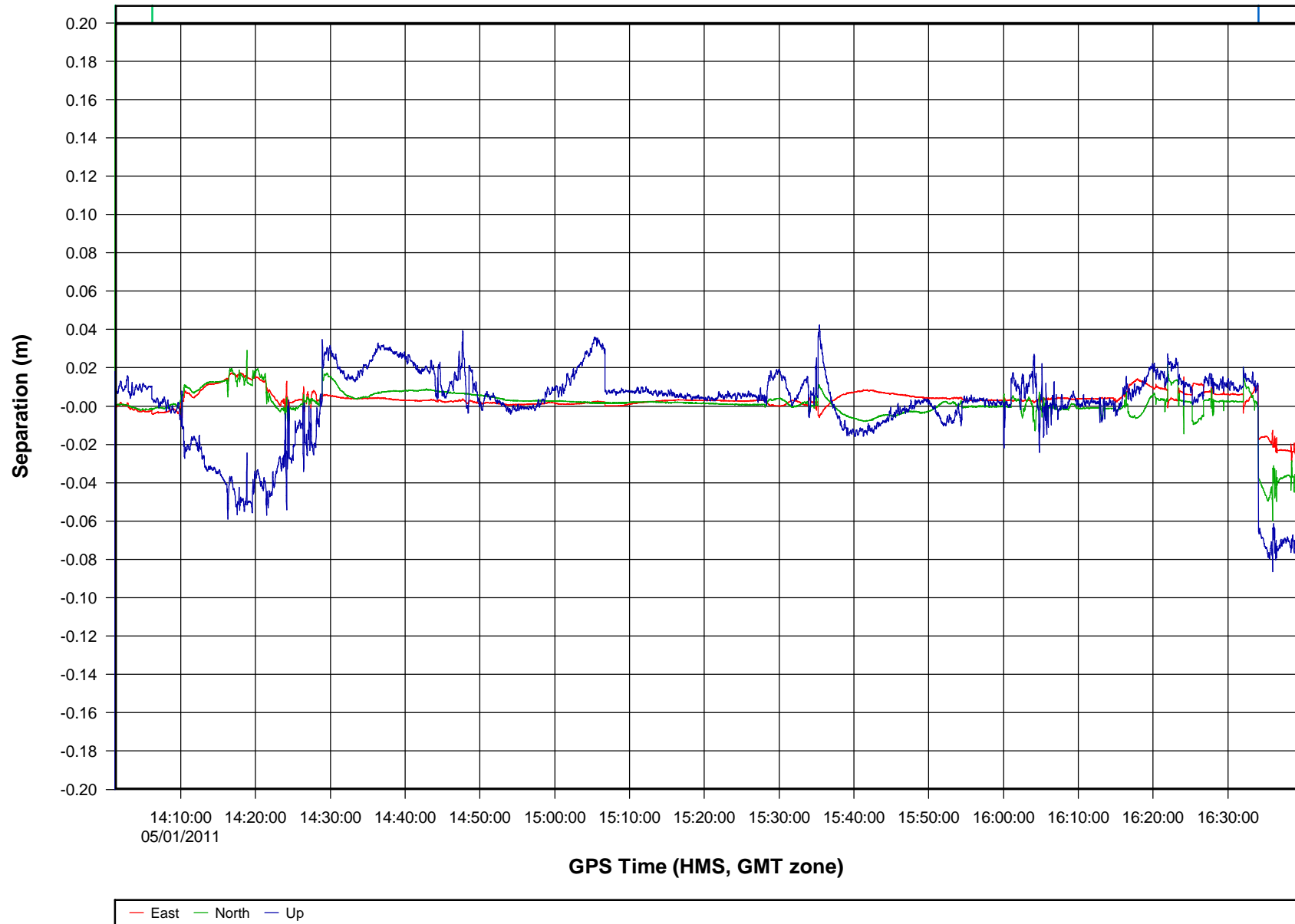
Quality Number Percentages:
Q 1: 99.3 %
Q 2: 0.7 %
Q 3: 0.0 %
Q 4: 0.0 %
Q 5: 0.0 %
Q 6: 0.0 %

Position Standard Deviation Percentages:
0.00 - 0.10 m: 100.0 %
0.10 - 0.30 m: 0.0 %
0.30 - 1.00 m: 0.0 %
1.00 - 5.00 m: 0.0 %
5.00 m + over: 0.0 %

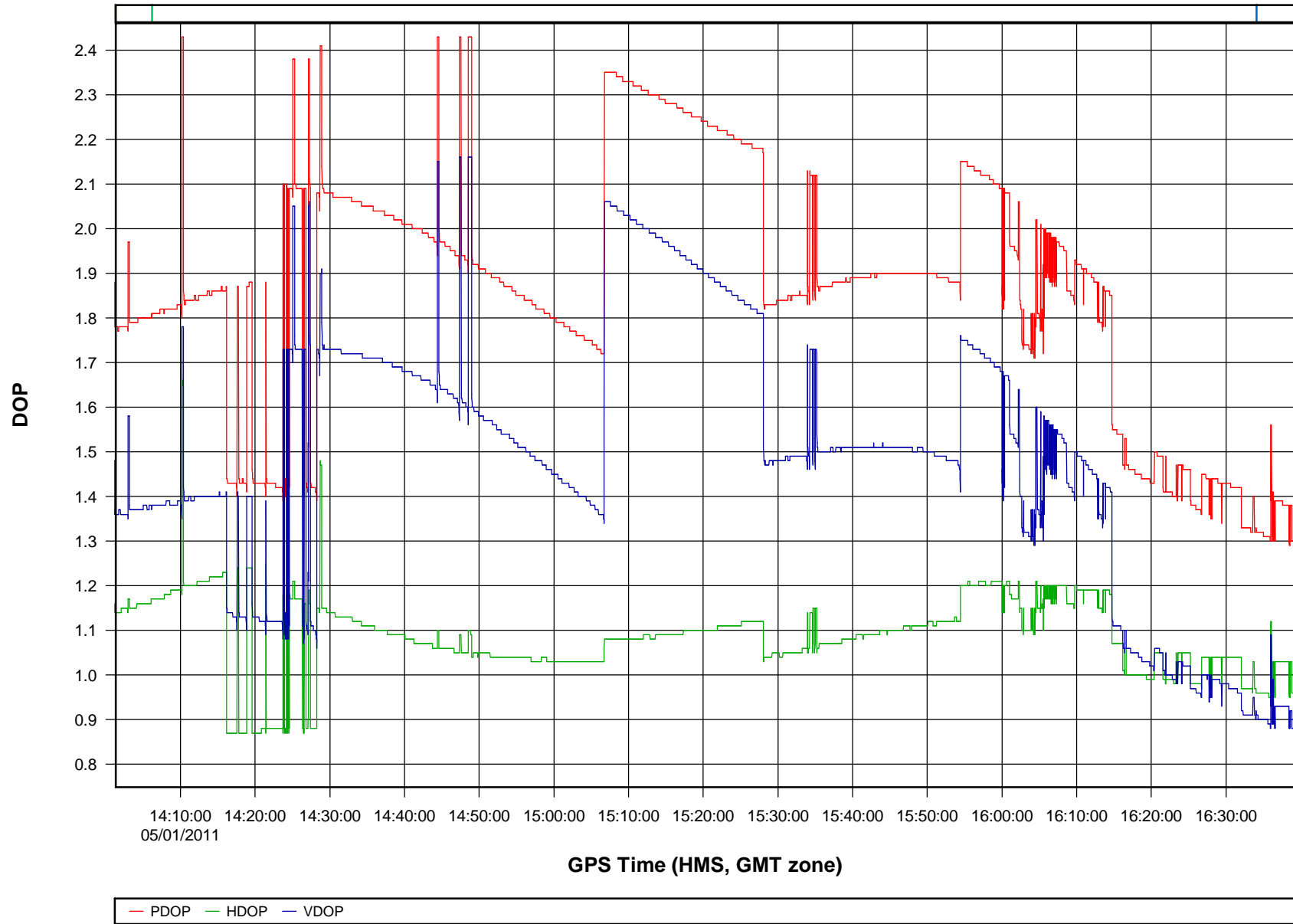
Percentages of epochs with DD_DOP over 10.00:
DOP over Tol: 0.0 %

Baseline Distances:
Maximum: 45.190 (km)
Minimum: 1.012 (km)
Average: 19.375 (km)
First Epoch: 25.960 (km)
Last Epoch: 23.794 (km)

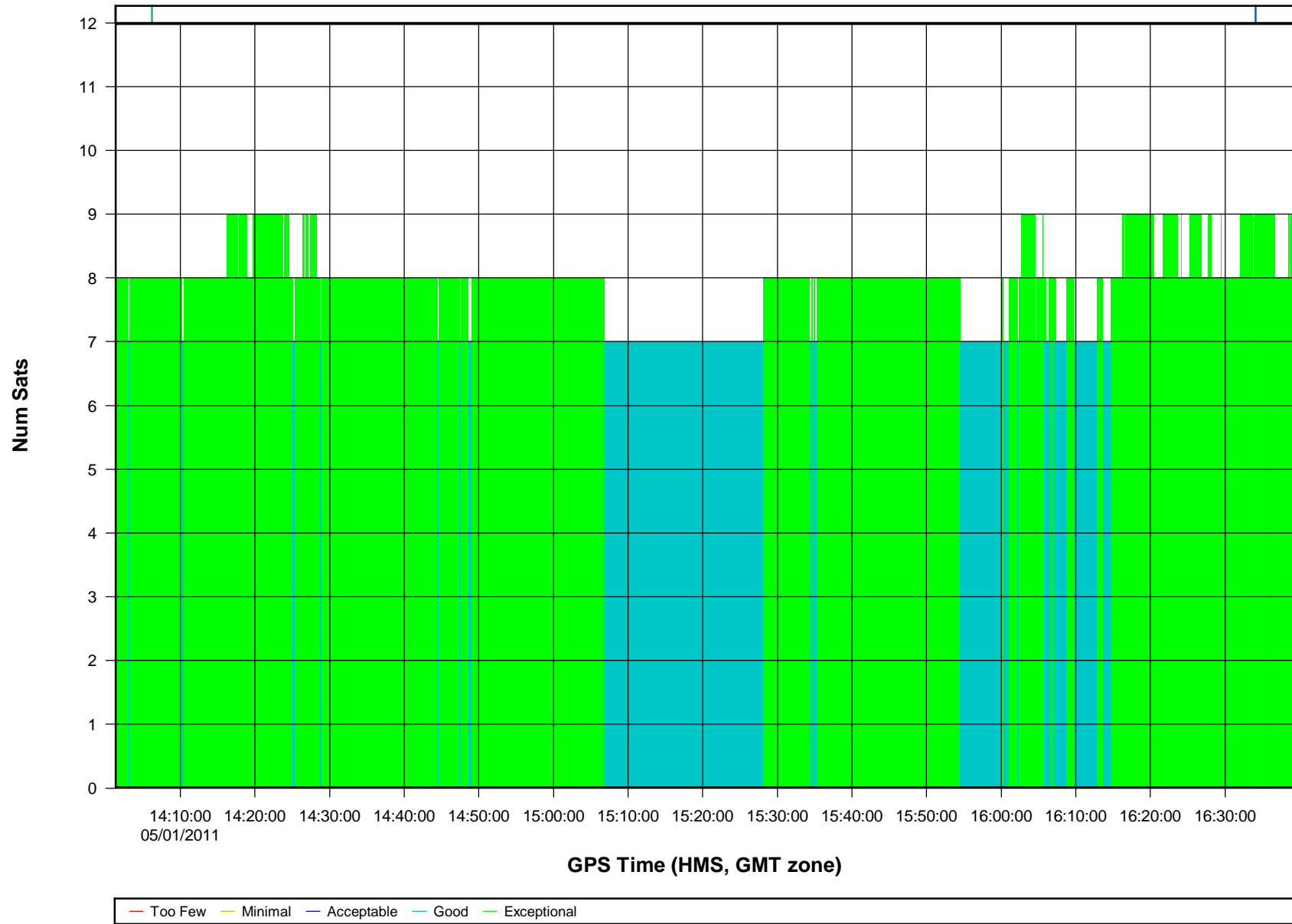
o211121a [Combined] - Forward/Reverse or Combined Separation Plot



o211121a [Combined] - PDOP, HDOP, VDOP Plots



o211121a [Combined] - Number of Satellites Bar Plot



o211121a. cfg

```
; PROJECT:
E: \11103U_VA\2_Operations\6_Missions\o211121a\3_Processed\GPS\o211121a. cfg
;
; DATE:      May 2/11 (date/time of processing)
; TIME:      18: 13: 19
; CREATED BY: GrafNav Version 7. 80. 2517
;
VERSION = 7. 80. 2517
PROCUSER = Unknown
PROCDESC = Run*(4)
PROCTIME = 18: 12: 10 05/02/2011

; Master station # 1 information
MB_MASTER_INDEX = 0
MB_MASTER_NAME = 1110302
MB_MASTER_FILE =
E: \11103U_VA\2_Operations\6_Missions\o211121a\1_RawData\original_PDC_files\1110302_0
0081210. gpb
MB_MASTER_POS = 38 17 51. 99406 -77 18 55. 26399 29. 0380
MB_MASTER_ANT = 1. 604 0. 001 1. 570 1 _TP_SOK600 0
MB_MASTER_DISABLE = OFF

; Remote station information
REMOTE_FILE =
E: \11103U_VA\2_Operations\6_Missions\o211121a\3_Processed\Extract\mgps_o211121a. . gpb
REMOTE_POS = 37 51 39. 18769 -76 53 58. 22972 5. 9852
REMOTE_ANT = 0. 000

; General settings
PROCESS_MODE = 103 108 113 126 ; Processing modes (GrafNav only)

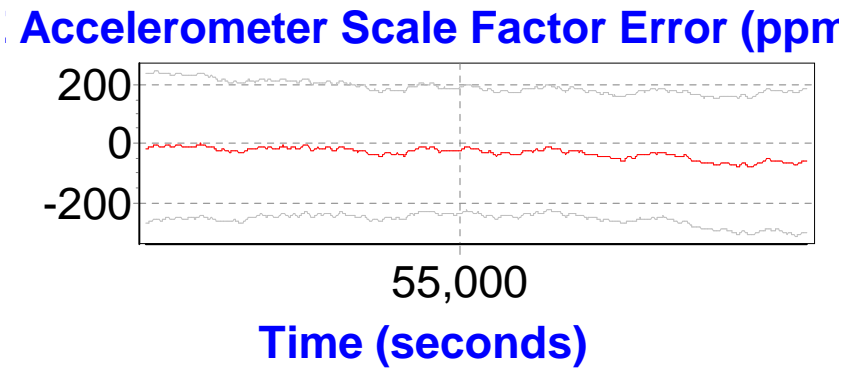
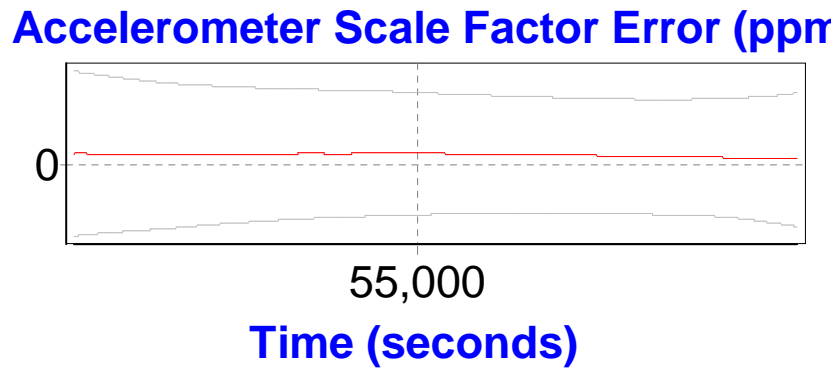
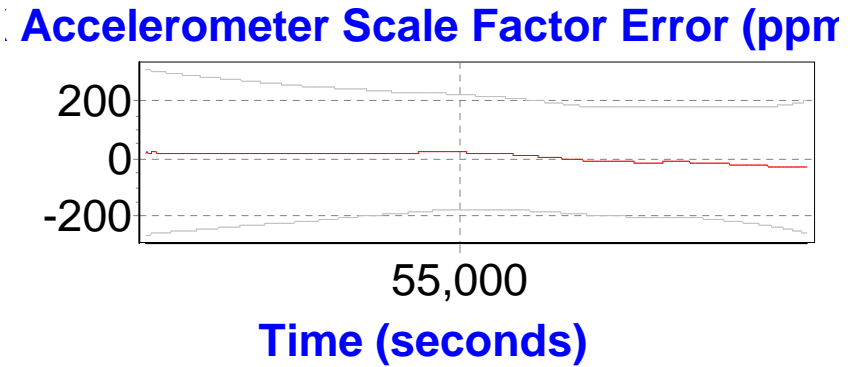
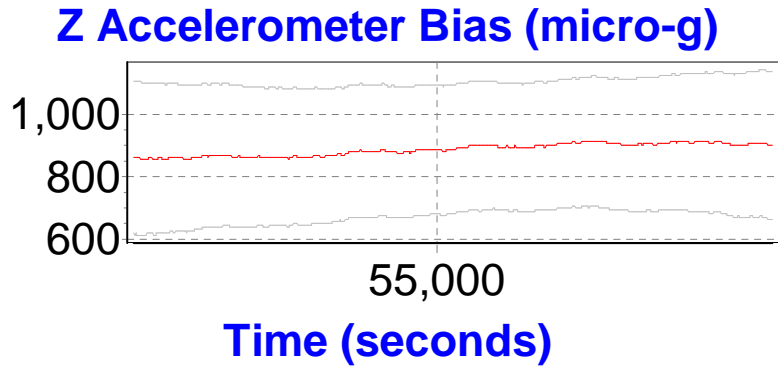
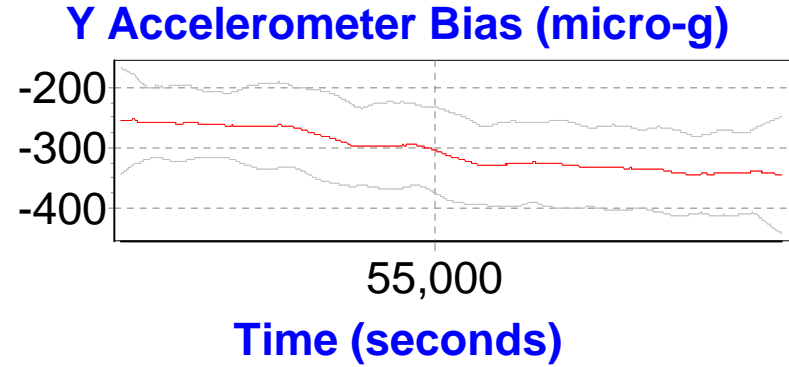
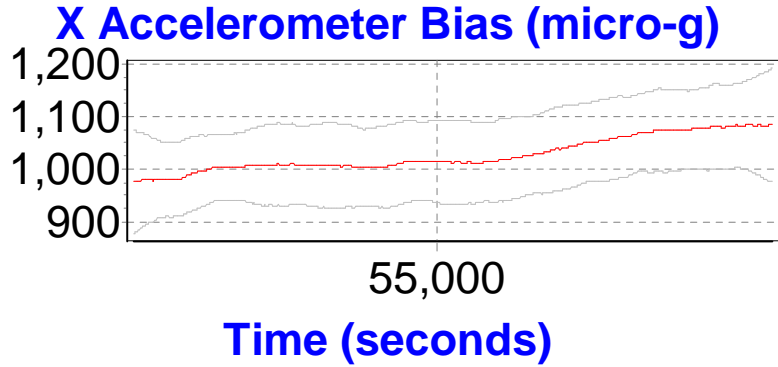
DATUM = NAD83 AUTO ; Processing Datum
INPDATUM = ON NAD83 AUTO ; Input Datum (ON=Use processing datum)
ELEV_MASK = 9. 0 ; Elevation mask (deg)
GRID = UTM 15 31 ; Grid info

CYCLE_TEST = BOTH ; Cycle slip test method
STATIC_SLIP_TOL = 0. 40 ; slip tolerance in static mode (cycles)
USE_DOPPLER = ON OFF ; Use doppler meas. for phase, for code-only

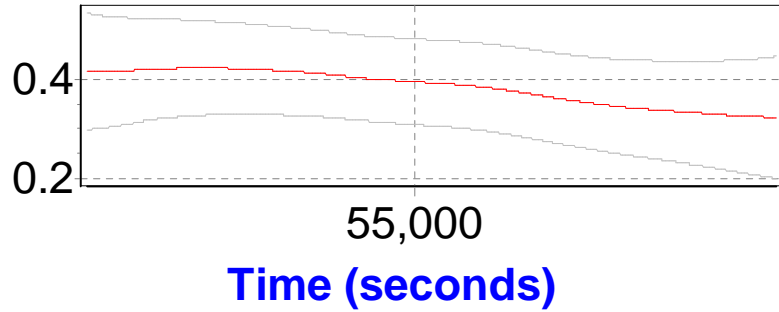
BASE_SAT = 99 ; Base satellite (99-default)

TIMERANGE = RANGE 988293671. 0 988303158. 0 2 0 ; Processing time range
INTERVAL = 0. 10 ; Processing time interval (seconds)

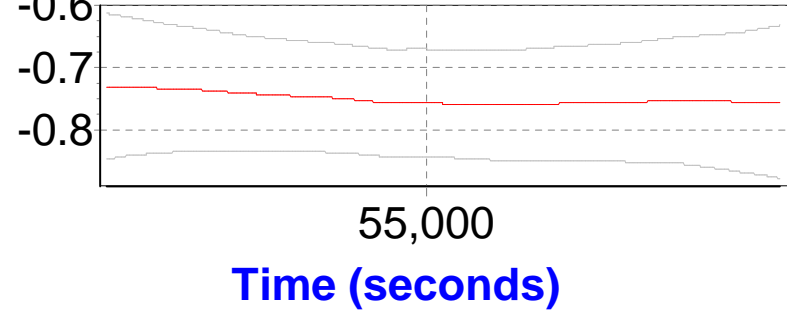
PROCESS_DIR = FORWARD ; Process direction (FORWARD/REVERSE)
BOTH_DIR = ON ; True for processing both directions
WRITE_BAD_EPOCHS = OFF ; Save bad data to .fwd/rev file (ON/OFF)
NOWRITE_HIGH = OFF 6 20. 000 ; Don't write epoch with high statistics (q, stdev-m)
OUTPUT_MODE = EXTENDED ; Format for .fwd/rev file
DETAILED_SUM = ON ; Detailed Static/KAR Summary header
WRITE_SLIP_MSG = ON ; Print cycle slips to message log
SAVE_AMB = ON ; Should ambiguities be saved
```



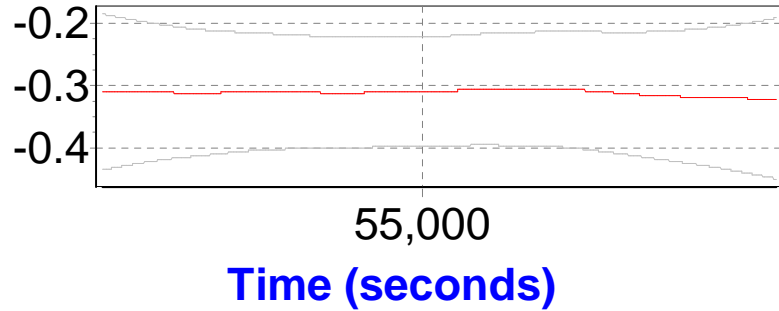
X Gyro Bias (degrees/hour)



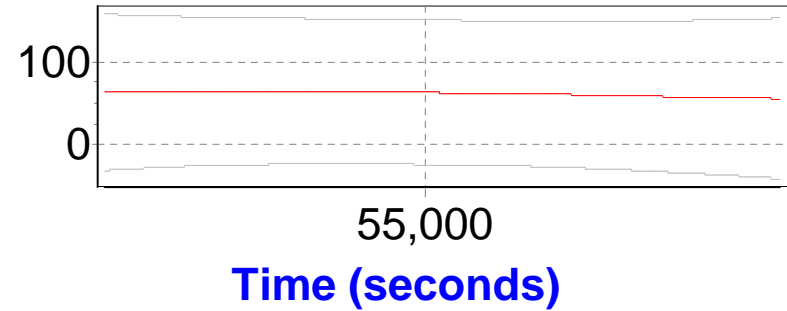
Y Gyro Bias (degrees/hour)



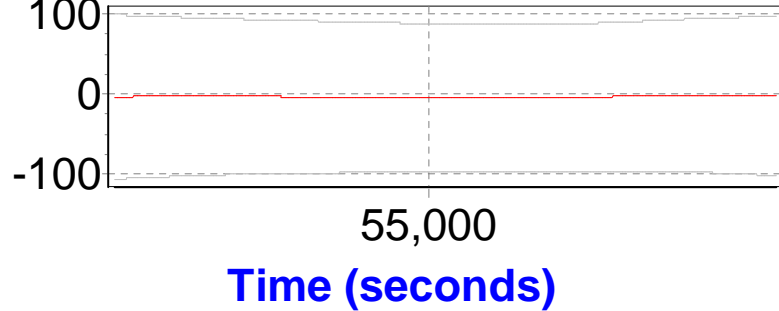
Z Gyro Bias (degrees/hour)



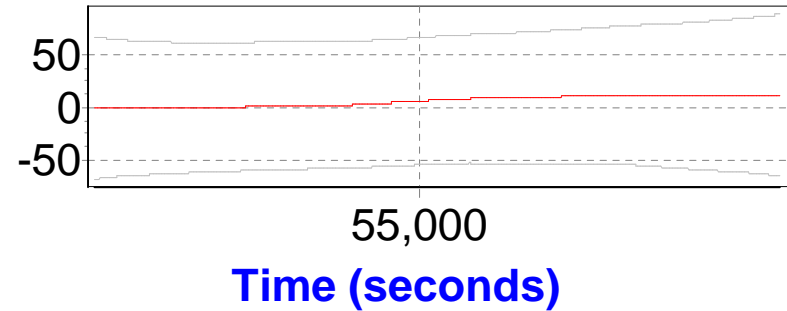
X Gyro Scale Factor Error (ppm)



Y Gyro Scale Factor Error (ppm)



Z Gyro Scale Factor Error (ppm)



Project# [] Session 0211121a

Flight Log



113

Date	May 2	Pilot	Juan Liu
Project		Altitude	3000
Station		Call Sign	3030
Survey Block		Pilot	Juan Liu
Lead Complete		Observer	Wesley

LiDAR Catch	
System #	
Laser Scanner	
Camera/Lens SH	
Shutter Speed	
Photo #s	
IMU	
GPS Fix	
Data Drive	

Additional Notes	16	3030
	20	3021
Outside Temp @ TO		
Outside Temp @ LA		

Overall Block Time <input type="checkbox"/> Times confirmed with pilot		
Engine On (Block)	Takeoff	(TO) + Total # hrs
2:00	7:15	
Engine Off (Block)	Landing	FBO # / Line
Total # Blocks	Total hrs	Average Fuel Cost
3.5		

Mission Plan	
Plane Height AGL	Scan Angle (Degrees)
3000	200
Ground Speed	Max Fuel Burn
150	40
Fuel/Land/Maneuver/Fuel	Land Fuel Burn
	70

State & KAR			GPS / INS Alignment		
Time	Stat	Est			
Pre-Mission					
KAR Base					
KAR Base					
Post-Mission					

9:30
12:50
2:00
9:30

Stop
13:00

Flight Plan Line #	LiDAR File Name	Flight Direction	GPS / UTC Time		Flight Aborted		Photo Events / Comments	
			Start	End	Time	NM to End	Outside Temp Laser Temp	Gain Temp Output (m/s)
223		E	14:14	14:25				
167		W	14:30	14:41				
165		E	14:45	14:57				
160		W	15:00	15:16				
159		E	15:16	15:27				
158		W	15:30	15:40				Ap Hill is hot
157		R	15:42	15:52				
156		W	15:55	16:04				
155		E	16:09	16:19				
154		W	16:21	16:30				

Ap Hill
Lwe
158
Culvert
Ap Hill is hot



GPS Base Log Sheet

Station ID:	110302	Project #:	111030	Missions:	021120a
--------------------	--------	-------------------	--------	------------------	---------

Project Name:	Ferry VA	Calendar Date:	015/2011	Julian Day	120
Approx. Coordinates WGS 84	N		W		
Description of Mark (Take Photos)					
Monument is:	<input type="checkbox"/> Flush with ground <input checked="" type="checkbox"/> Above ground <input type="checkbox"/> Below ground _____ cm				
Location & Access					

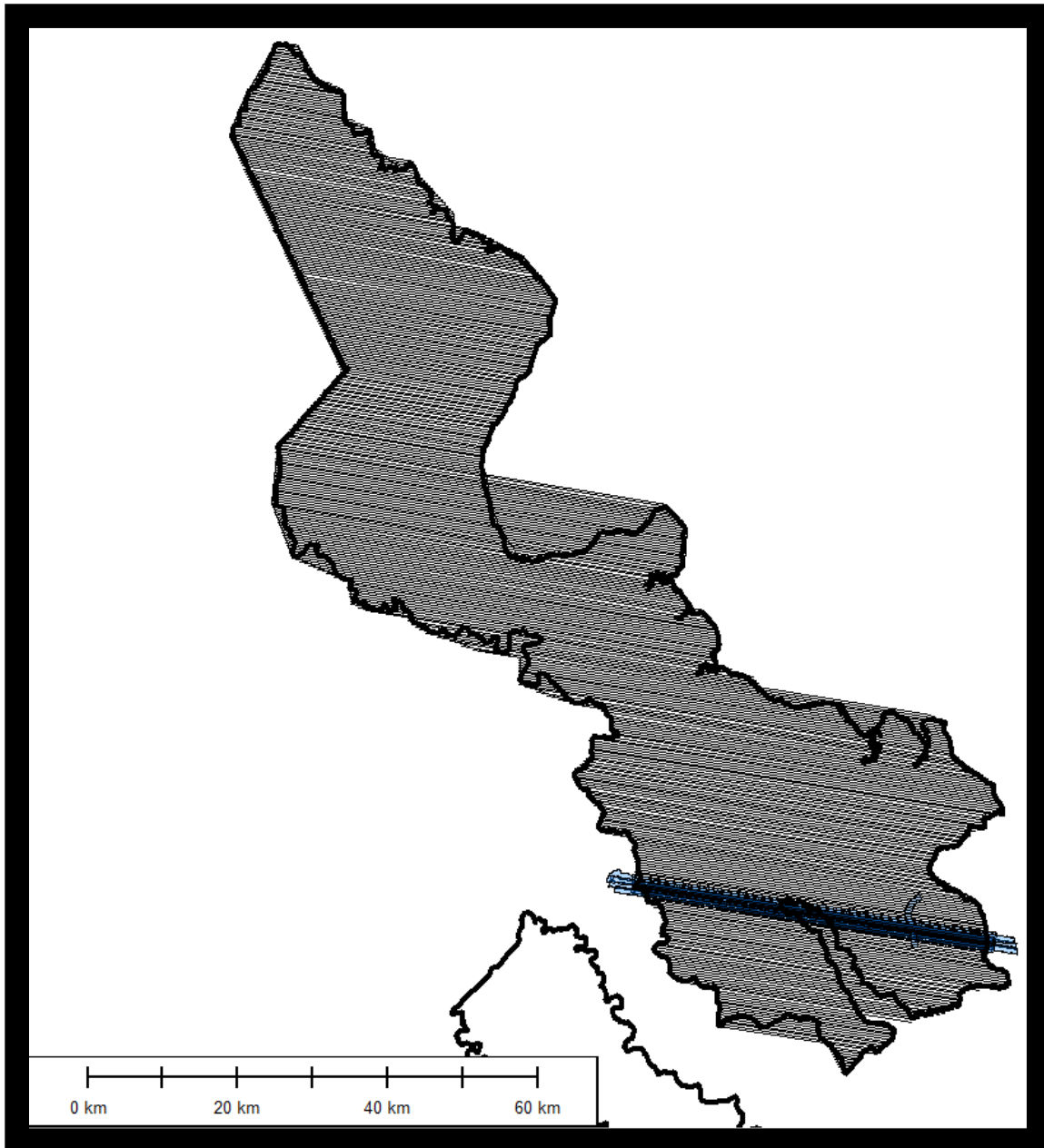
Obstructions & Additional Notes

GPS Observation - MAIN					
Rx Make / Model	658-2800	Serial #	0008		
Ant Make / Model	SAK600	Serial #	0007		
Operator	AC				
Session Time (GPS)	Start	134500			
	End				
Slant HI Before:	A:	1.570	B:	1.570	
Slant HI After:	A:	1.570	B:	1.570	
Correction					
Phase Center	<input checked="" type="checkbox"/> m <input type="checkbox"/> in <input type="checkbox"/> use GrafNav Profile				
Data File Name					

GPS Observation - Back-Up					
Rx Make / Model		Serial #			
Ant Make / Model		Serial #			
Operator					
Session Time (GPS)	Start				
	End				
Slant HI Before:	A:	B:			
Slant HI After:	A:	B:			
Correction					
Phase Center	<input type="checkbox"/> m <input type="checkbox"/> in <input type="checkbox"/> use GrafNav Profile				
Data File Name					

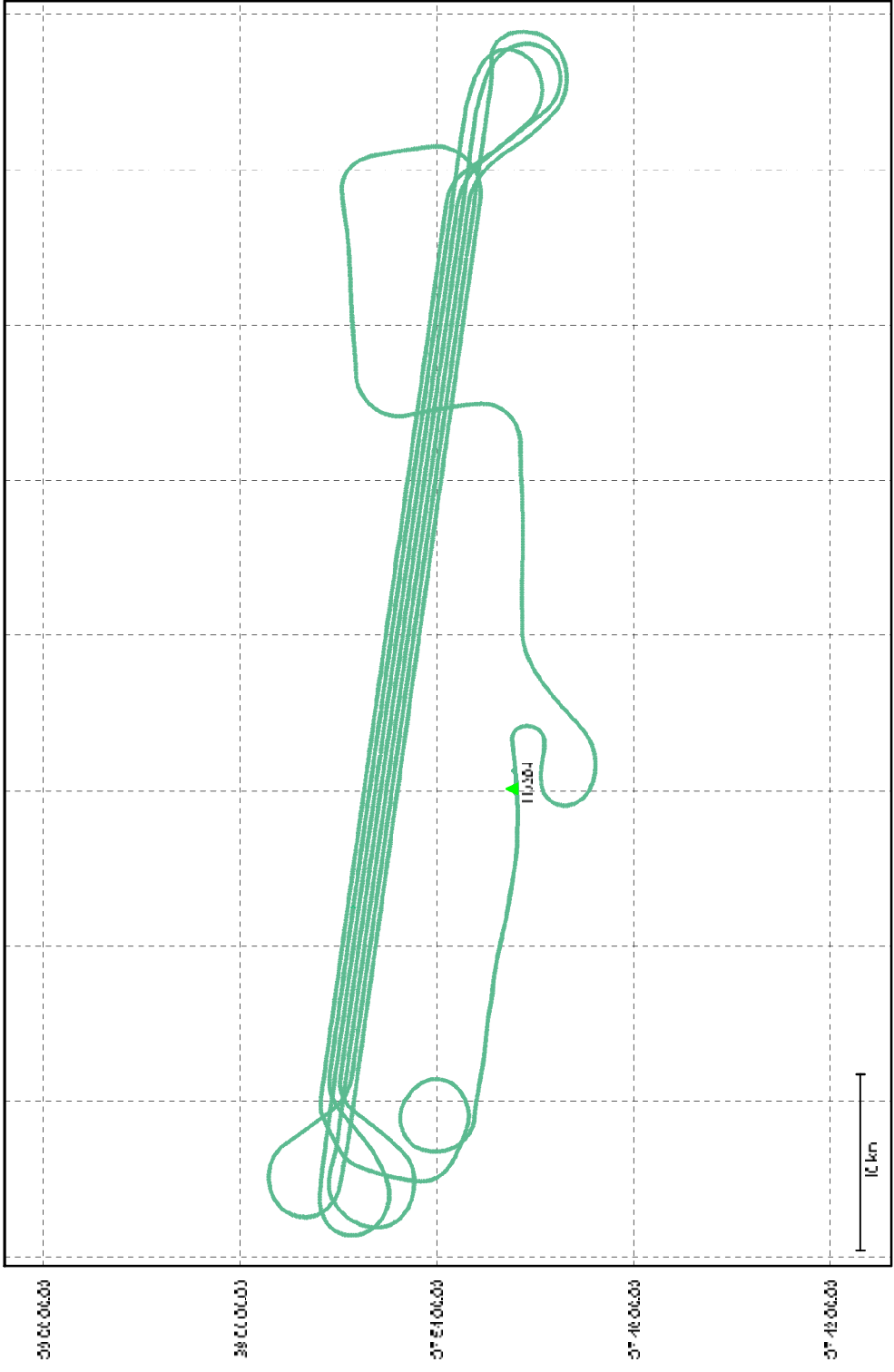
Mission: o211122a

2011 05 02



Combined - Map Run (1)

Legend: UTM



77 43 00.00 77 00 00.00 77 00 00.00 79 51 00.00 79 20 00.00 79 30 00.00 79 30 00.00 79 30 00.00

+ JK + KI + LJ + LI + MI + MJ + NK + NL + OL + OM + PN + PO + QN + QO + RN + RO + SN + SO + TN + TO + UN + UO + VN + VO + WN + WO + XN + XO + YN + YO + ZN + ZO

Processing Summary Information

Program: GrafNav
Version: 7.80.2517
Project: G:\range back va\o211122a\3_Processed\GPS\o211122a.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:
Total in GPB file: 93032
No processed position: 83747
Missing Fwd or Rev: 3
With bad C/A code: 0
With bad L1 Phase: 0

Measurement RMS Values:
L1 Phase: 0.0138 (m)
C/A Code: 0.67 (m)
L1 Doppler: 0.028 (m/s)

Fwd/Rev Separation RMS Values:
East: 0.016 (m)
North: 0.020 (m)
Height: 0.023 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (9280 occurrences):
East: 0.016 (m)
North: 0.020 (m)
Height: 0.018 (m)

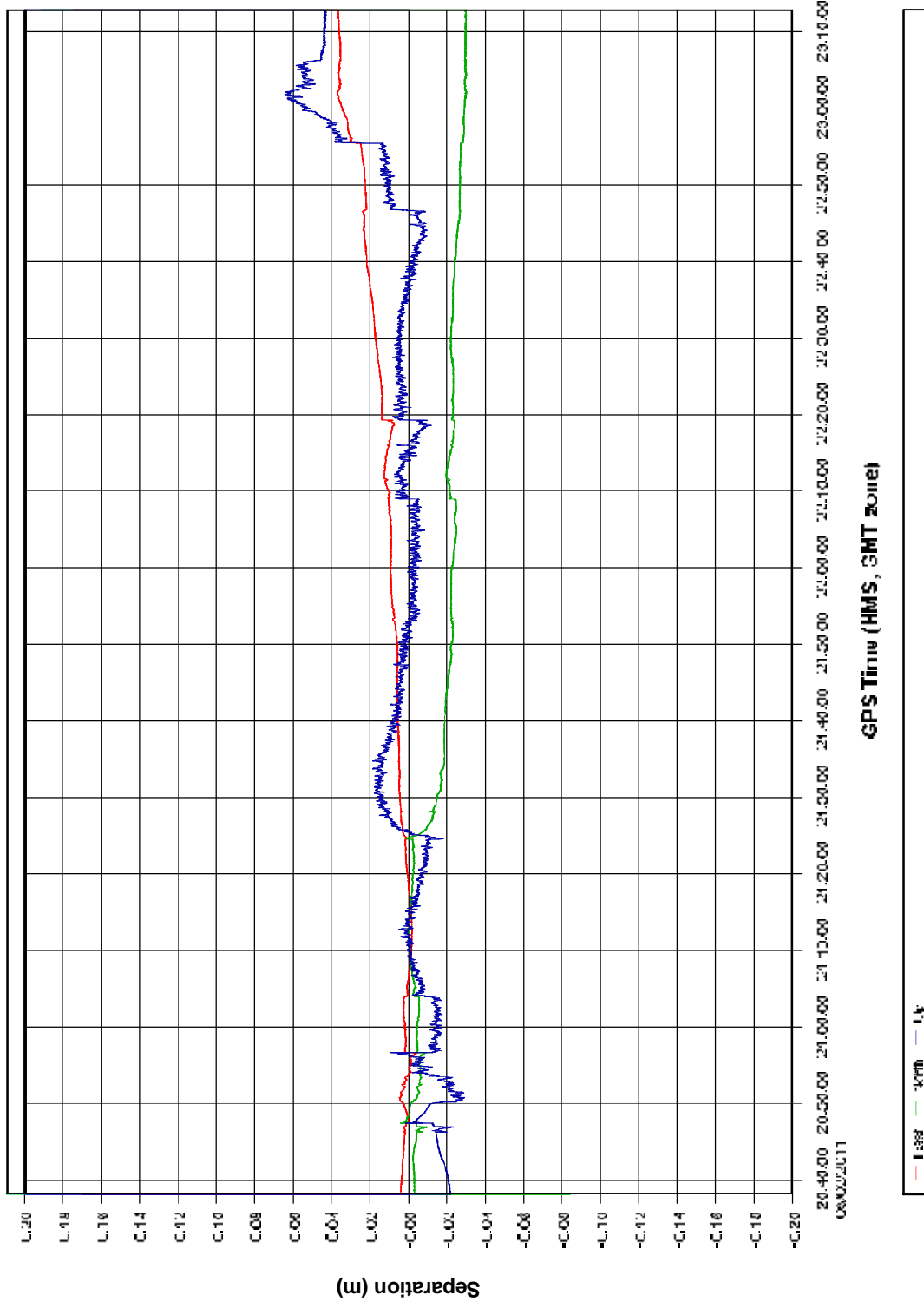
Quality Number Percentages:
Q 1: 100.0 %
Q 2: 0.0 %
Q 3: 0.0 %
Q 4: 0.0 %
Q 5: 0.0 %
Q 6: 0.0 %

Position Standard Deviation Percentages:
0.00 - 0.10 m: 100.0 %
0.10 - 0.30 m: 0.0 %
0.30 - 1.00 m: 0.0 %
1.00 - 5.00 m: 0.0 %
5.00 m + over: 0.0 %

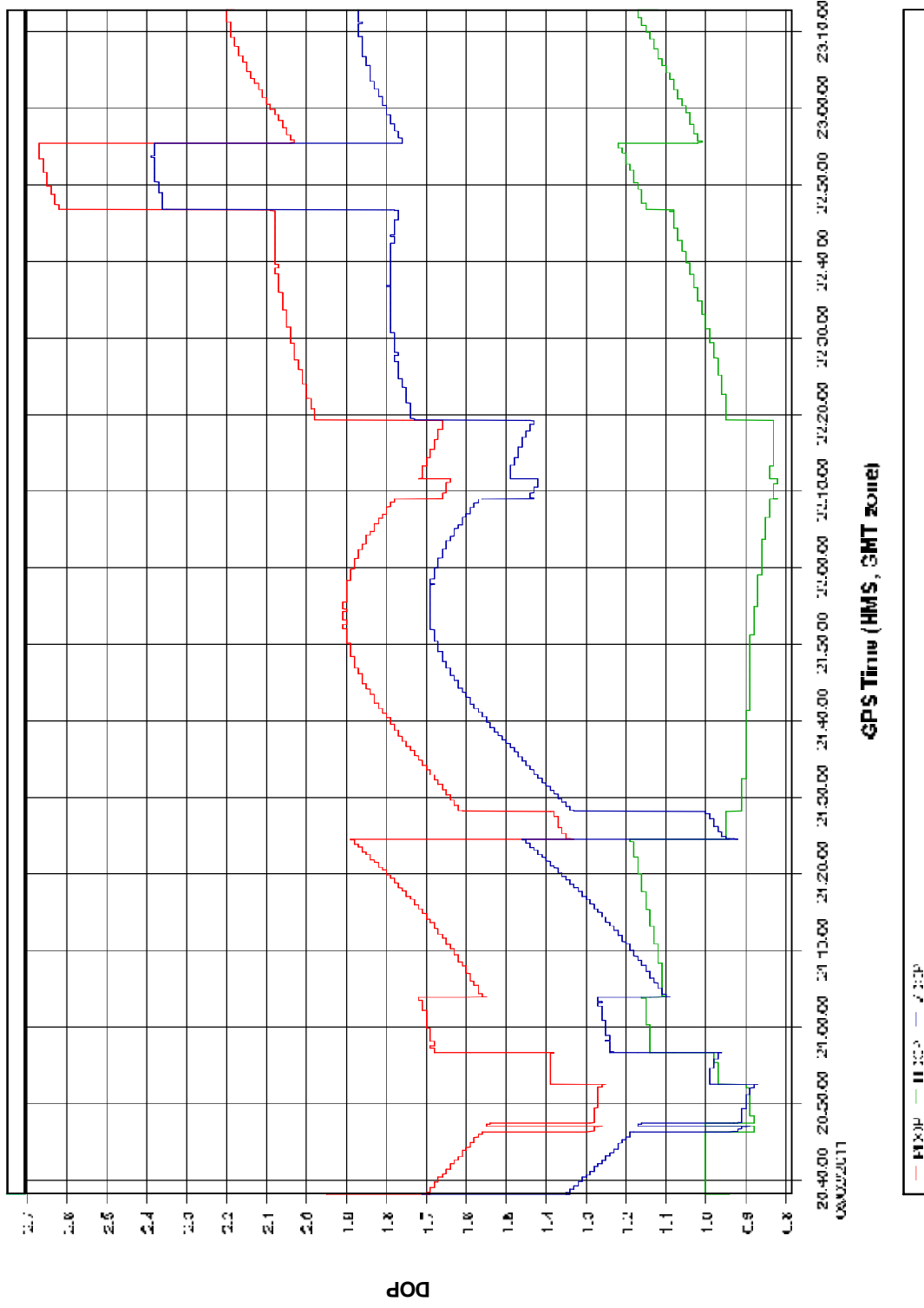
Percentages of epochs with DD_DOP over 10.00:
DOP over Tol: 0.0 %

Baseline Distances:
Maximum: 42.930 (km)
Minimum: 0.088 (km)
Average: 17.345 (km)
First Epoch: 0.088 (km)
Last Epoch: 0.126 (km)

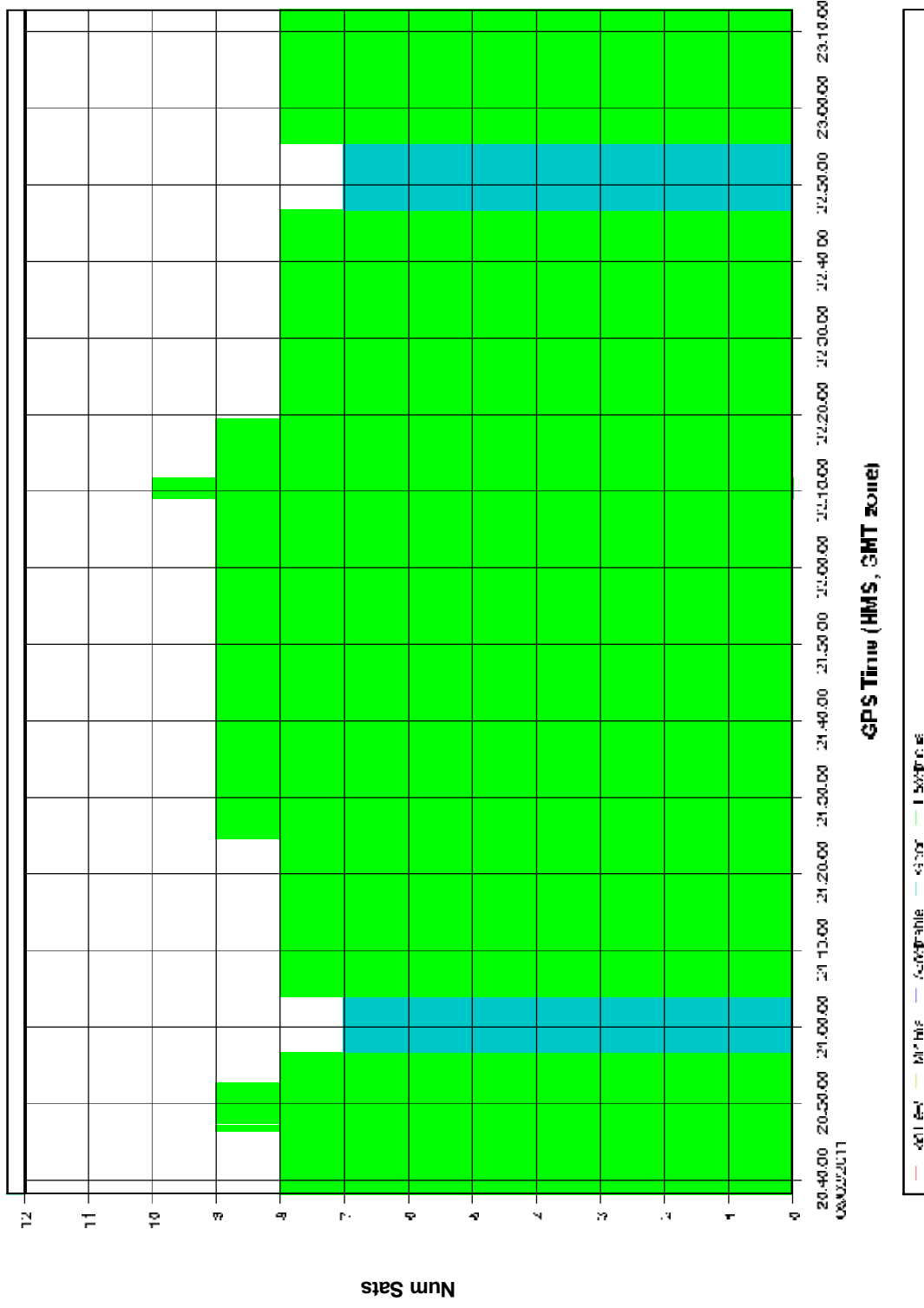
0211122a [Combined] - Forward/Reverse or Combined Separation Plot



0211122a [Combined] - PDOP, HDOP, VDOP Plots



o211122a [Combined] - Number of Satellites Bar Plot



```

                                o211122a.cfg
: PROJECT:      G:\range back va\o211122a\3_Processed\GPS\o211122a.cfg
:
: DATE:         May 3/11 (date/time of processing)
: TIME:         19:42:01
: CREATED BY:   GrafNav Version 7.80.2517
:
VERSION = 7.80.2517
PROCUSER = Unknown
PRODESC = Run*(3)
PROCTIME = 19:40:20 05/03/2011

: Master station # 1 information
MB_MASTER_INDEX = 0
MB_MASTER_NAME = 1110304
MB_MASTER_FILE = G:\range*back*va\o211122a\original_PDC_files\1110304_00161220.gpb
MB_MASTER_POS = 37 51 41.39611 -76 53 55.13346 5.1620
MB_MASTER_ANT = 1.248 0.001 1.215 1 _TP_SOK600 0
MB_MASTER_DISABLE = OFF

: Remote station information
REMOTE_FILE = G:\range*back*va\o211122a\3_Processed\Extract\mgps_o211122a.gpb
REMOTE_POS = 37 51 38.99566 -76 53 56.90726 8.0628
REMOTE_ANT = 0.000

: General settings
PROCESS_MODE = 103 108 113 126 ; Processing modes (GrafNav only)

DATUM = NAD83 AUTO ; Processing Datum
INPDATUM = ON NAD83 AUTO ; Input Datum (ON=Use processing datum)
ELEV_MASK = 15.0 ; Elevation mask (deg)
GRID = UTM 15 31 ; Grid info

CYCLE_TEST = BOTH ; Cycle slip test method
STATIC_SLIP_TOL = 0.40 ; slip tolerance in static mode (cycles)
USE_DOPPLER = ON OFF ; Use doppler meas. for phase, for code-only

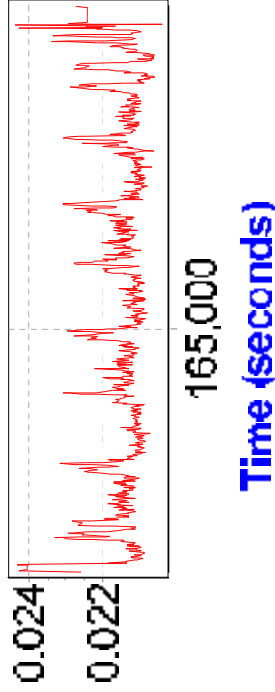
BASE_SAT = 99 ; Base satellite (99-default)

TIMERANGE = ALL 988403872.2 988413175.3 2 0 ; Processing time range
INTERVAL = 0.10 ; Processing time interval (seconds)

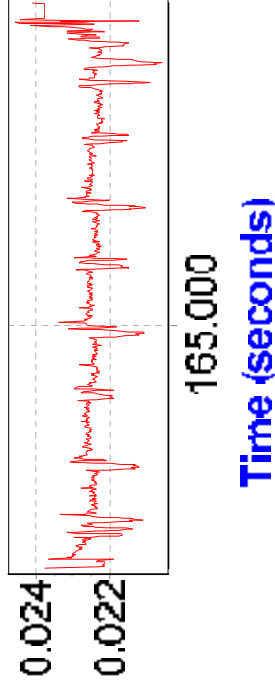
PROCESS_DIR = FORWARD ; Process direction (FORWARD/REVERSE)
BOTH_DIR = ON ; True for processing both directions
WRITE_BAD_EPOCHS = OFF ; Save bad data to .fwd/rev file (ON/OFF)
NOWRITE_HIGH = OFF 6 20.000 ; Don't write epoch with high statistics (q, stdev-m)
OUTPUT_MODE = EXTENDED ; Format for .fwd/rev file
DETAILED_SUM = ON ; Detailed Static/KAR Summary header
WRITE_SLIP_MSG = ON ; Print cycle slips to message log
SAVE_AMB = ON ; Should ambiguities be saved

```

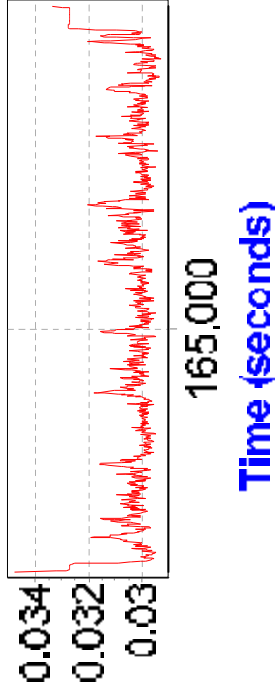
Navigator X Position RMS Error (mete)



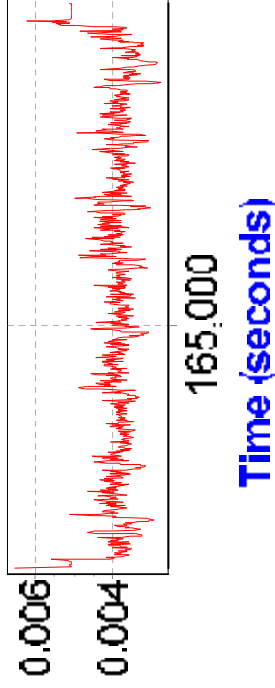
Navigator Y Position RMS Error (mete)



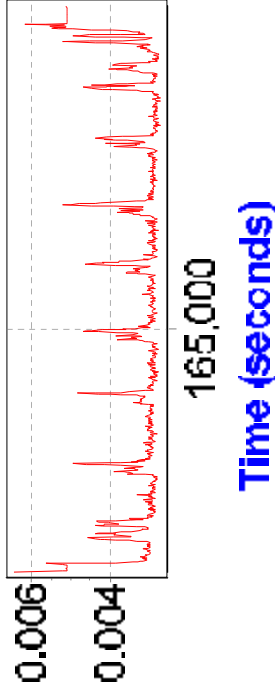
Navigator Z Position RMS Error (mete)



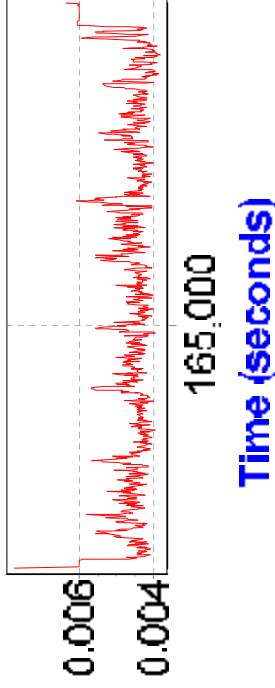
Navigator X Velocity RMS Error (meters/se)



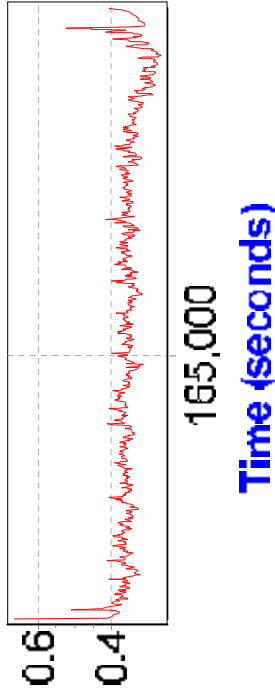
Navigator Y Velocity RMS Error (meters/se)



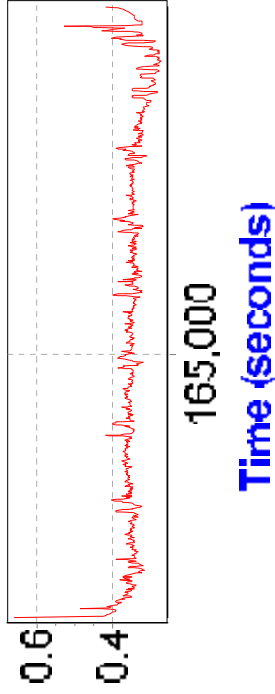
Navigator Z Velocity RMS Error (meters/se)



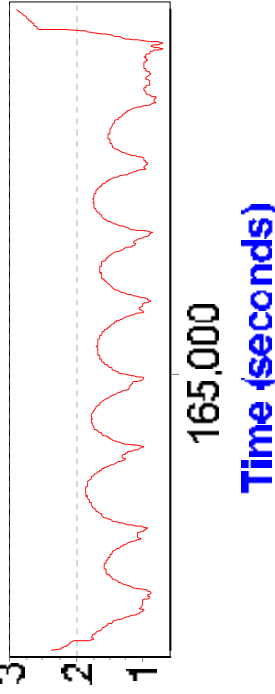
D Navigator X Misalignment RMS (arcmin)



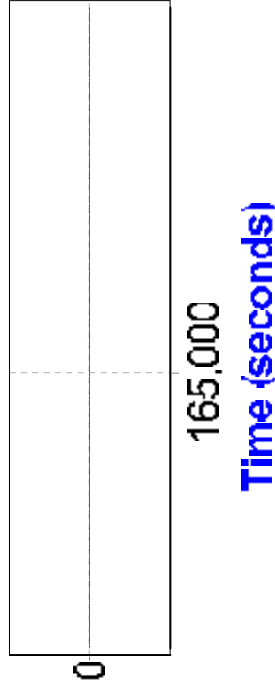
D Navigator Y Misalignment RMS (arcmin)



D Navigator Z Misalignment RMS (arcmin)



D Navigator COS(Z Misalignment)-1 RMS (arcmin)



Project: 11103V Session 02/1/22a

Flight Log



Date	May 2	Julian Day	122
Project	Farmer VA	Aircraft	23 SA
Seating		Call Sign	23 SA
Survey Block		Pilot	Wyllie
Lines Complete		Operator	Swanson
Mission Objective		Crewmember	

ALMIS/Orbiter	02
System #	02
Laser Scanner	
Corner/Axis SN	
Scrubber Speed	
Predict Freq.	
IMU	
GPS Rx	
Data Drive	

Additional Notes:

Outside Temp @ TO: 23 Outside Pressure @ TO: 30.11
 Outside Temp @ LA: Outside Pressure @ LA:

Aircraft Block Time <input type="checkbox"/> Times confirmed with pilot	
Engine On (Hobbs)	Takeoff 1630 :1200.1 x (Total fit hrs)
Engine Off (Hobbs)	Landing 1916 FBO \$ / Liter
Total hrs (Hobbs)	Total hrs Approx. Fuel Cost

Mission Plan	
Flying Height AGL	Spec. Angle (Orbit)
300	22
Ground Speed	Mirror Scan Rate
180	40
First/Last/Alternating Return	Laser Pulse Rate
	70

Static & KAR GPS / INS Alignment		
Time	Start	End
Pre Mission		
KAR Base		
KAR Base		
Post Mission		

Flight Plan Line #	LIDAR File Name	Flight Direction	GPS / UTC Time		Flight Aborted		Photo Events / Comments Please periodically record: Outside Temp: Cabin Temp: Output/Water: Laser Temp:
			Start	End	Time	NM to End	
70		E	2100	2112			
69		W	2117	2130			
68		E	2133	2146			
67		W	2152	2204			
66		E	2208	2214			
65		W	2225	2235			
64		E	2240	2251			
63		S	2258	2258			



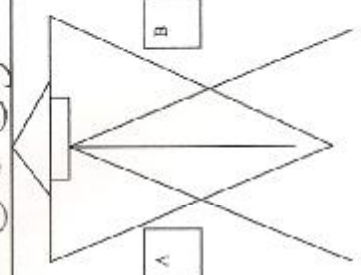
GPS Base Log Sheet

Station ID:	1110304	Project #:	11103V	Missions:	011122a
-------------	---------	------------	--------	-----------	---------

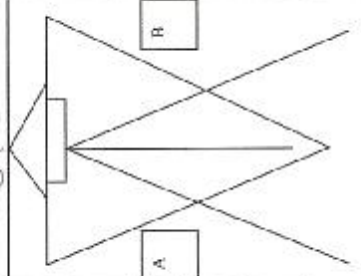
Project Name:	Fern VA	Calendar Date:	2/5/2011	Julian Day	122
Approx. Coordinates WGS 84	N		W		
Description of Mark (Take Photos)					
Monument is:	<input type="checkbox"/> Flush with ground <input checked="" type="checkbox"/> Above ground <u>3</u> cm <input type="checkbox"/> Below ground ___ cm				
Location & Access					

Obstructions & Additional Notes

GPS Observation - MAIN					
Rx Make / Model	GS82600	Serial #	0016		
Ant Make / Model	SK600	Serial #	0035		
Operator	AC				
Session Time (GPS)	Start	End			
	15	1500			
Slant HI Before:	A: 1.215	B: 1.215			
Slant HI After:	A: 1.215	B: 1.215			
Correction					
Phase Center	<input checked="" type="checkbox"/> <input type="checkbox"/> in <input type="checkbox"/> use GrafNav Profile				
Data File Name					

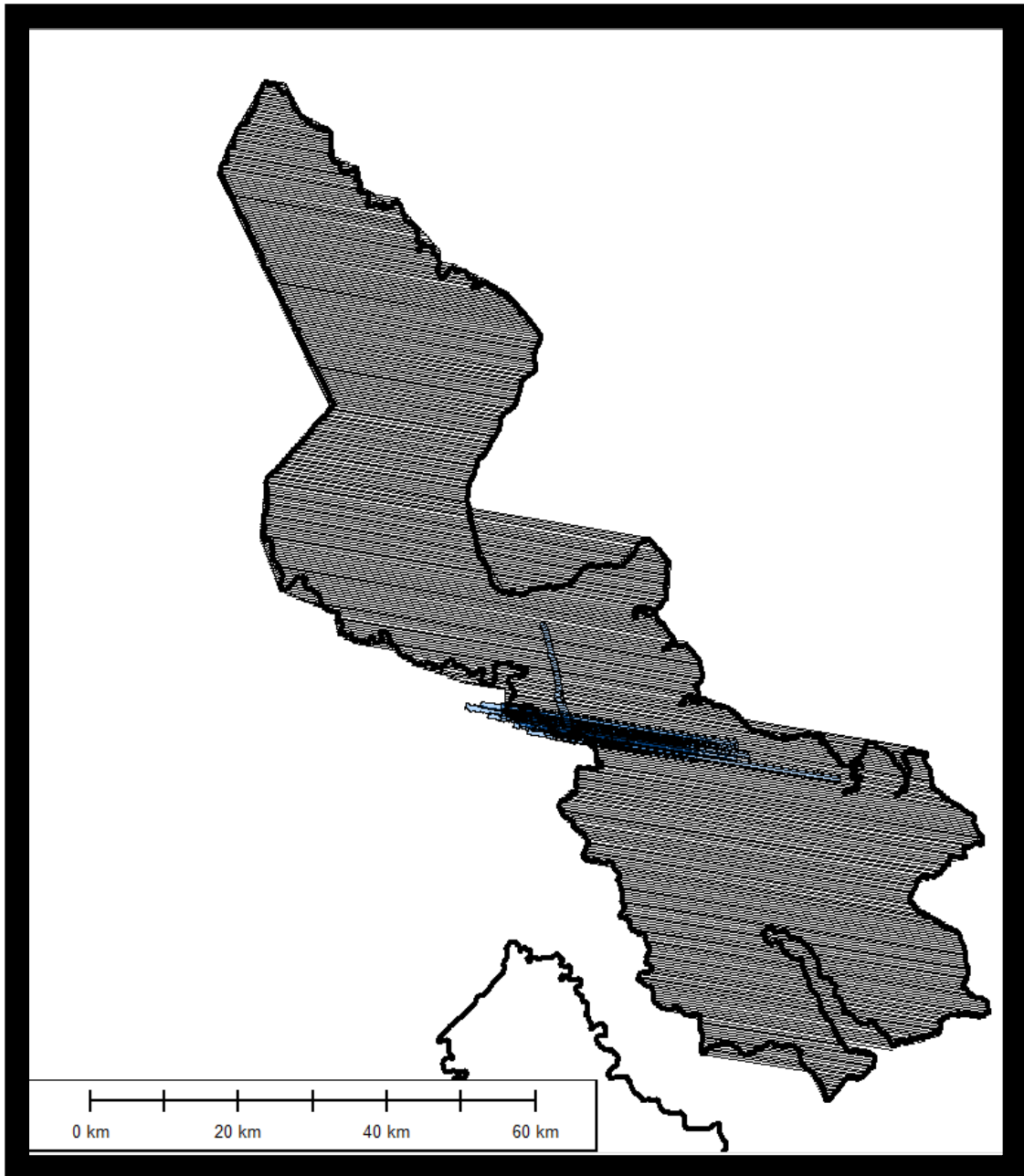


GPS Observation - Back-Up					
Rx Make / Model	GS82600	Serial #	0002		
Ant Make / Model	SK600	Serial #	0010		
Operator	AC				
Session Time (GPS)	Start	End			
Slant HI Before:	A: 1.227	B: 1.227			
Slant HI After:	A: 1.222	B: 1.227			
Correction					
Phase Center	<input checked="" type="checkbox"/> <input type="checkbox"/> in <input type="checkbox"/> use GrafNav Profile				
Data File Name					



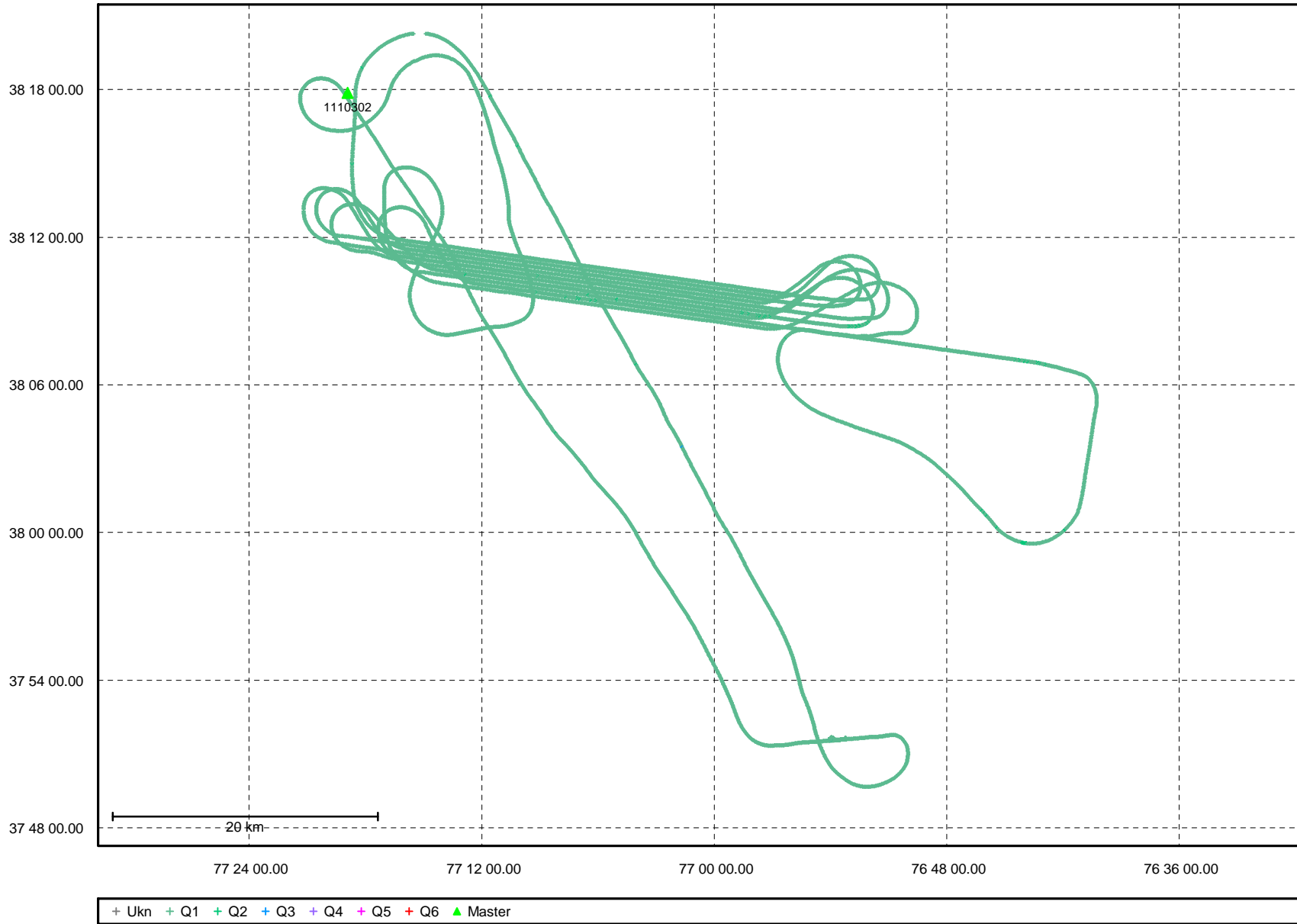
Mission: o211122b

2011 05 02



Combined - Map Run (15)

Geographic, DMS



Processing Summary Information

Program: GrafNav
Version: 7.80.2517
Project: G:\range back va\o211122b\3_Processed\GPS\o211122b.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:
Total in GPB file: 115432
No processed position: 106541
Missing Fwd or Rev: 4
With bad C/A code: 0
With bad L1 Phase: 0

Measurement RMS Values:
L1 Phase: 0.0185 (m)
C/A Code: 0.90 (m)
L1 Doppler: 0.029 (m/s)

Fwd/Rev Separation RMS Values:
East: 0.008 (m)
North: 0.009 (m)
Height: 0.021 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (8885 occurrences):
East: 0.006 (m)
North: 0.009 (m)
Height: 0.018 (m)

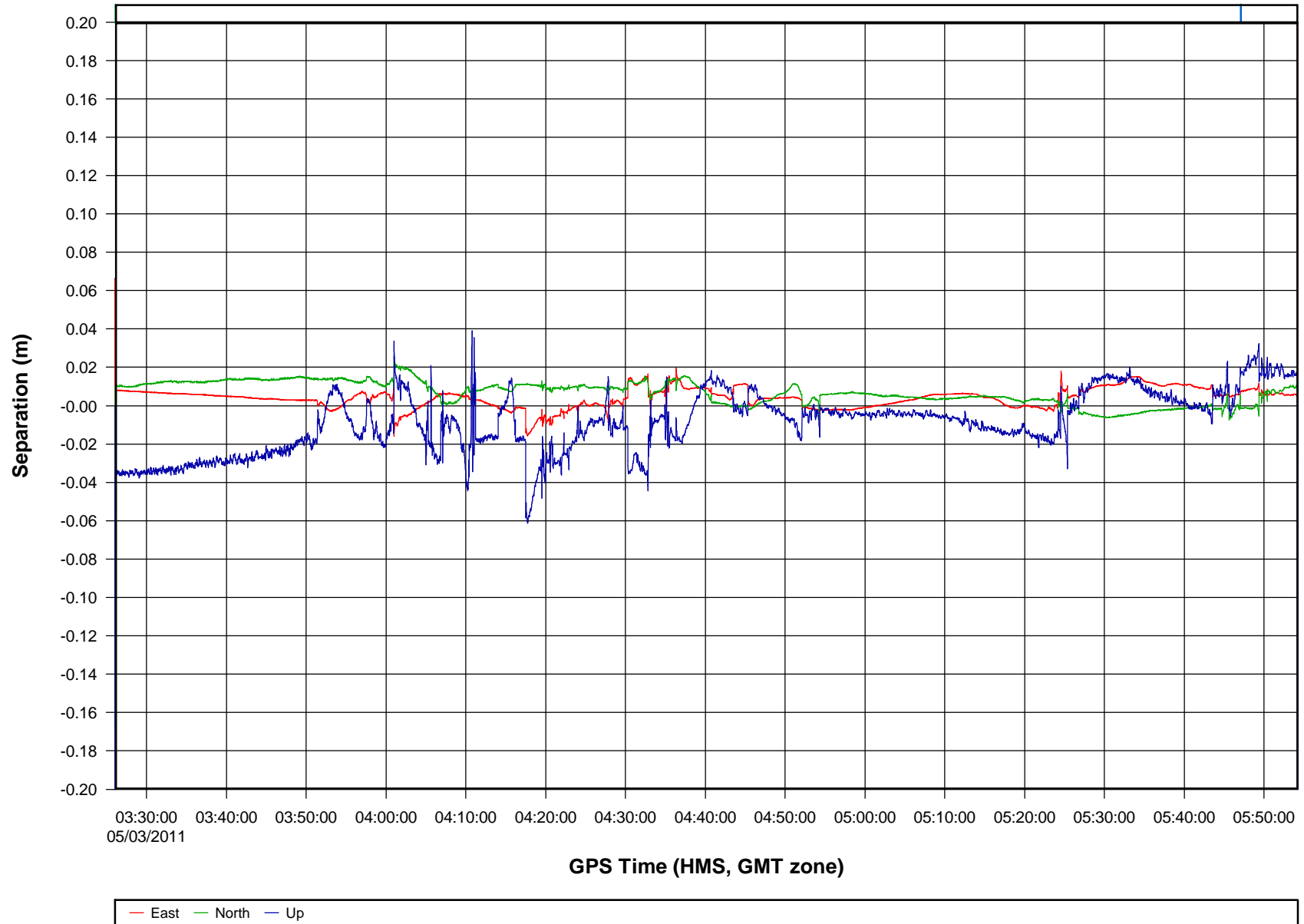
Quality Number Percentages:
Q 1: 99.3 %
Q 2: 0.7 %
Q 3: 0.0 %
Q 4: 0.0 %
Q 5: 0.0 %
Q 6: 0.0 %

Position Standard Deviation Percentages:
0.00 - 0.10 m: 69.6 %
0.10 - 0.30 m: 30.4 %
0.30 - 1.00 m: 0.0 %
1.00 - 5.00 m: 0.0 %
5.00 m + over: 0.0 %

Percentages of epochs with DD_DOP over 10.00:
DOP over Tol: 5.8 %

Baseline Distances:
Maximum: 63.468 (km)
Minimum: 0.995 (km)
Average: 24.965 (km)
First Epoch: 28.102 (km)
Last Epoch: 27.111 (km)

o211122b [Combined] - Forward/Reverse or Combined Separation Plot



Processing Summary Information

Program: GrafNav
Version: 7.80.2517
Project: G:\range back va\o211122b\3_Processed\GPS\o211122b.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:
Total in GPB file: 115432
No processed position: 103904
Missing Fwd or Rev: 3
With bad C/A code: 0
With bad L1 Phase: 0

Measurement RMS Values:
L1 Phase: 0.0185 (m)
C/A Code: 0.92 (m)
L1 Doppler: 0.029 (m/s)

Fwd/Rev Separation RMS Values:
East: 0.038 (m)
North: 0.046 (m)
Height: 0.163 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (8956 occurrences):
East: 0.006 (m)
North: 0.009 (m)
Height: 0.019 (m)

Quality Number Percentages:
Q 1: 99.5 %
Q 2: 0.5 %
Q 3: 0.0 %
Q 4: 0.0 %
Q 5: 0.0 %
Q 6: 0.0 %

Position Standard Deviation Percentages:
0.00 - 0.10 m: 66.3 %
0.10 - 0.30 m: 33.7 %
0.30 - 1.00 m: 0.0 %
1.00 - 5.00 m: 0.0 %
5.00 m + over: 0.0 %

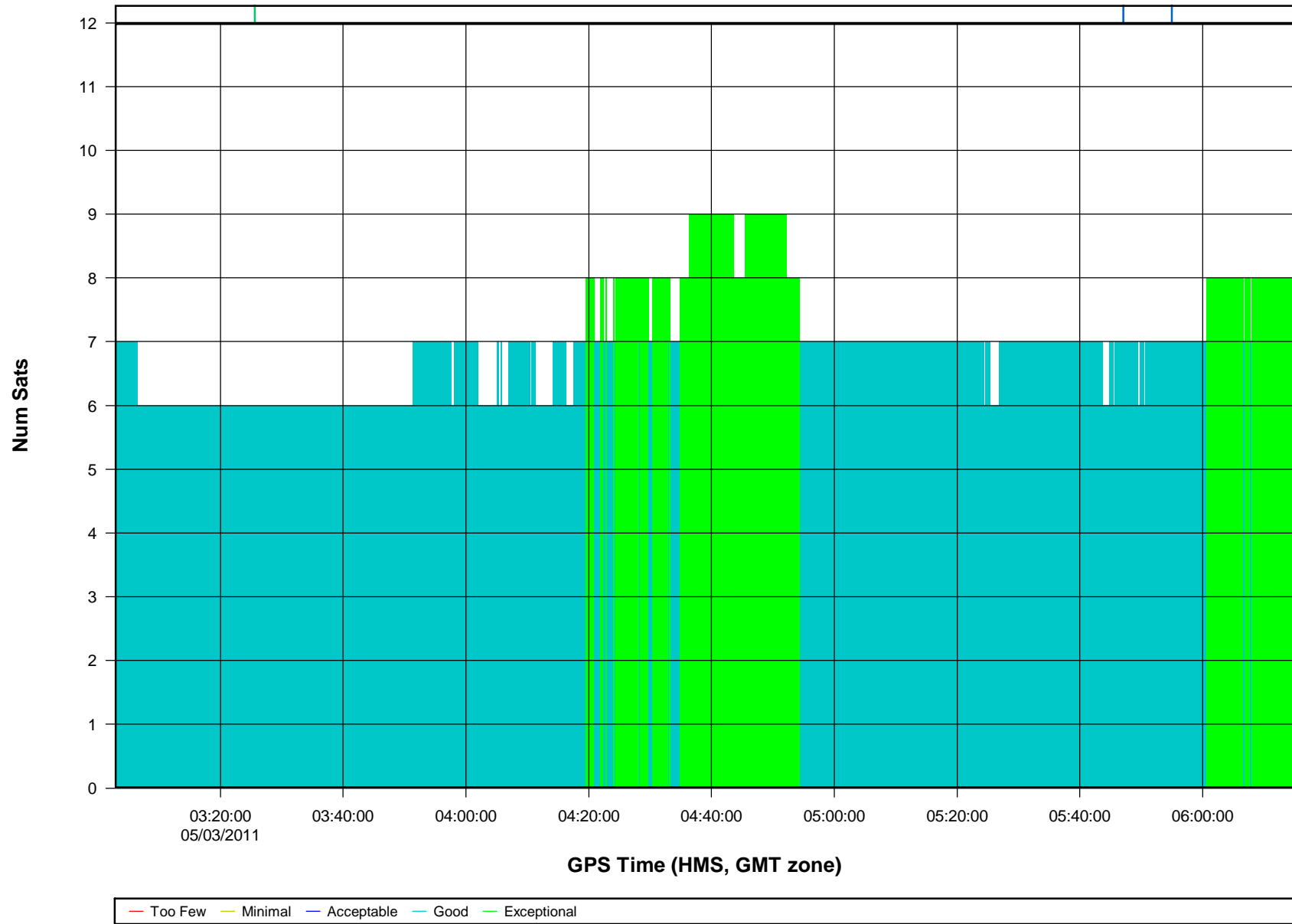
Percentages of epochs with DD_DOP over 10.00:
DOP over Tol: 14.7 %

Baseline Distances:
Maximum: 65.997 (km)
Minimum: 0.995 (km)
Average: 31.846 (km)
First Epoch: 60.703 (km)
Last Epoch: 60.703 (km)

o211122b [Combined] - PDOP, HDOP, VDOP Plots



o211122b [Combined] - Number of Satellites Bar Plot




```

                                o211122b. cfg
; PROJECT:      G: \range back va\o211122b\3_Processed\GPS\o211122b. cfg
;
; DATE:         May 4/11 (date/time of processing)
; TIME:         13: 08: 07
; CREATED BY:   GrafNav Version 7. 80. 2517
;
VERSION = 7. 80. 2517
PROCUSER = Unknown
PROCDESC = Run*(17)
PROCTIME = 13: 07: 47 05/04/2011

; Master station # 1 information
MB_MASTER_INDEX = 0
MB_MASTER_NAME = 1110302
MB_MASTER_FILE = G: \range*back*va\o211122b\original_PDC_files\1110302_00081222. gpb
MB_MASTER_POS = 38 17 51. 99406 -77 18 55. 26399 29. 0380
MB_MASTER_ANT = 1. 604 0. 001 1. 570 1 _TP_S0K600 0
MB_MASTER_DISABLER = OFF

; Remote station information
REMOTE_FILE = G: \range*back*va\o211122b\3_Processed\Extract\mgps_o211122b. gpb
REMOTE_POS = 37 51 39. 26611 -76 53 57. 07091 9. 6003
REMOTE_ANT = 0. 000

; General settings
PROCESS_MODE = 103 108 113 126 ; Processing modes (GrafNav only)

DATUM = NAD83 AUTO ; Processing Datum
INPDATUM = ON NAD83 AUTO ; Input Datum (ON=Use processing datum)
ELEV_MASK = 18. 0 ; Elevation mask (deg)
GRID = UTM 15 31 ; Grid info

CYCLE_TEST = BOTH ; Cycle slip test method
STATIC_SLIP_TOL = 0. 40 ; slip tolerance in static mode (cycles)
USE_DOPPLER = ON OFF ; Use doppler meas. for phase, for code-only

BASE_SAT = 99 ; Base satellite (99-default)

TIMERANGE = RANGE 988428362. 0 988437255. 0 2 0 ; Processing time range
INTERVAL = 0. 10 ; Processing time interval (seconds)

PROCESS_DIR = FORWARD ; Process direction (FORWARD/REVERSE)
BOTH_DIR = ON ; True for processing both directions
WRITE_BAD_EPOCHS = OFF ; Save bad data to .fwd/rev file (ON/OFF)
NOWRITE_HIGH = OFF 6 20. 000 ; Don't write epoch with high statistics (q, stdev-m)
OUTPUT_MODE = EXTENDED ; Format for .fwd/rev file
DETAILED_SUM = ON ; Detailed Static/KAR Summary header
WRITE_SLIP_MSG = ON ; Print cycle slips to message log
SAVE_AMB = ON ; Should ambiguities be saved

```

Project 1 11 1030 Session 0211 1226

Flight Log



Date	Muyl 2	Altitude Day	022
Project	Exam VA	Aircraft	314C
Stringing		Call Sign	314C
Survey Block		File	314C
Lines Complete		Operator	Evans
Mission Objective		Observer	

ALV/SC/MS/Ch	
System #	02
Asset Name	02
Camera/LENS SN	
Shutter Speed	
Photo Freq.	
IMU	
GPS Fix	
Data Drive	

Additional Notes:

Cutside Temp @ TO: 21 Outside Pressure @ TO: 3013

Cutside Temp @ LA: Outside Pressure @ LA:

Aircraft Block Time	<input type="checkbox"/> Times confirmed with pilot
Engines On (Hours)	23 10
Engines Off (Hours)	2:00
Total hrs (Hours)	Approx. Fuel Cost

Mission Plan	Seen Again (CP/MS)	22
Flying Height AGL	Ground Speed	150
200	First Last/Altitude/Range Return	40
	Altitude Scan Rate	70
	Laser Pulse Rate	

Shell: & KAR	GPS / INS Alignment
Time: D/GPS	Start
Pre-Mission	End
KAR Base	
KAR Base	
Post-Mission	

Flight Plan Line #	LIDAR File Name	Flight Direction	GPS / UTC Time		Flight Aborted		Photo Events / Comments	
			Start	End	Time	NM to End	Outside Temp: Laser Temp:	Cabin Temp: O2/Alt/MS/MS
1095		S	03 04	03 47				
139		E	3 50	3 55				
140		W	4 10	4 21				
141		E	4 26	4 30				
142		W	4 38	4 50				
143		E	4 46	4 50				
144		W	4 51	5 02				
145		E	5 06	5 12				
146		W	5 16	5 23				
147		E	5 26	5 32				
148		W	5 35	5 44				

GPS Base Log Sheet



Station ID:	1110309	Project #:	111030	Missions:	021122b
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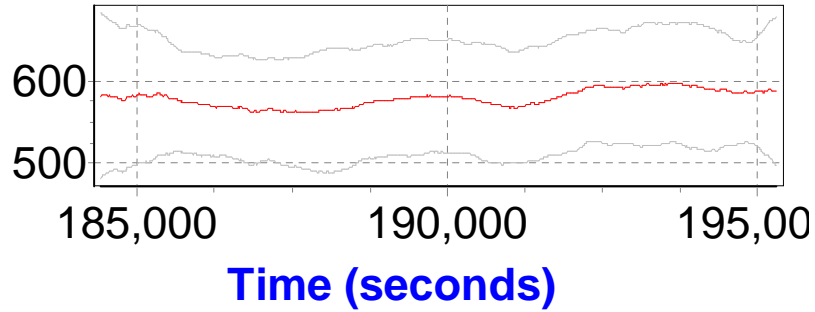
Project Name:	Fena VA	Calendar Date:	May 2/2011	Julian Day	122
Approx. Coordinates	WGS 84		N	W	
Description of Mark (Take Photos)					
Monument is: <input type="checkbox"/> Flush with ground <input checked="" type="checkbox"/> Above ground <u>3</u> cm <input type="checkbox"/> Below ground <u> </u> cm					
Location & Access					

Obstructions & Additional Notes

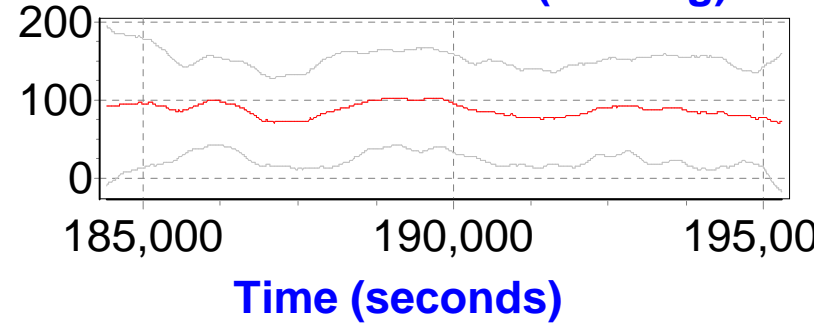
GPS Observation - MAIN					
Rx Make / Model	GS R2600	Serial #	0008		
Ant Make / Model	SK 600	Serial #	0008		
Operator	AC				
Session	Start	162000			
Time (GPS)	End				
Slant HI Before:	A	1.570	B:	1.570	
Slant HI After:	A:	1.570	B:	1.570	
Correction					
Phase Center	A				
Data File Name					

GPS Observation - Back-Up					
Rx Make / Model		Serial #			
Ant Make / Model		Serial #			
Operator					
Session	Start				
Time (GPS)	End				
Slant HI Before:	A:		B:		
Slant HI After:	A:		B:		
Correction					
Phase Center	<input type="checkbox"/> m <input type="checkbox"/> in <input type="checkbox"/> use GrafNav Profile				
Data File Name					

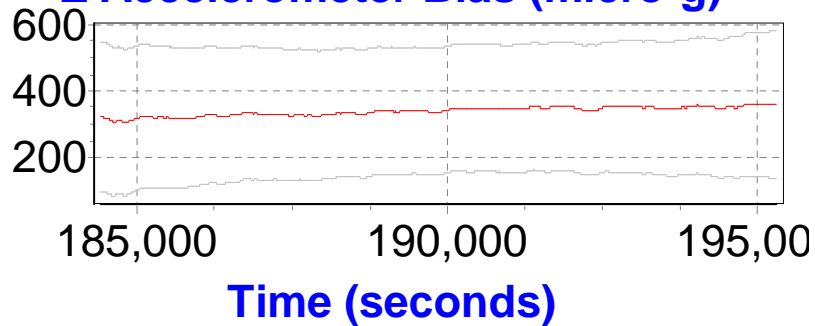
X Accelerometer Bias (micro-g)



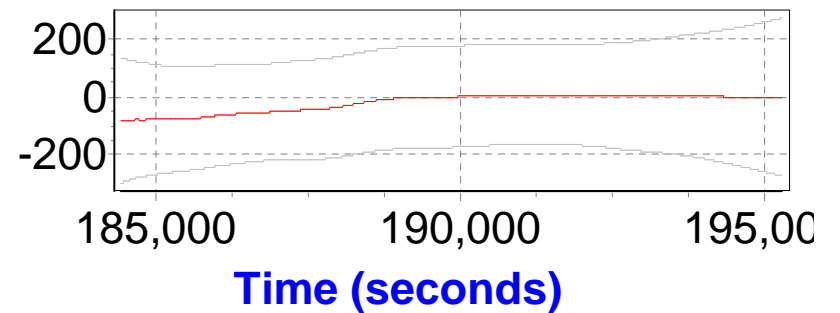
Y Accelerometer Bias (micro-g)



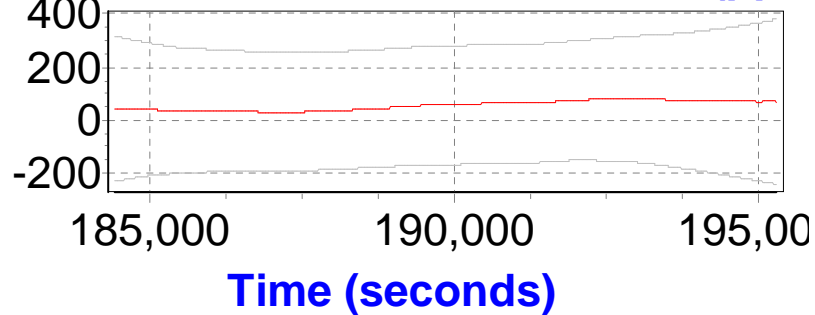
Z Accelerometer Bias (micro-g)



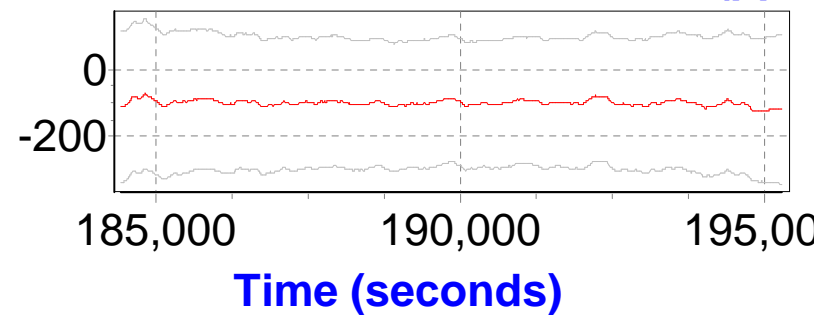
Accelerometer Scale Factor Error (ppr)



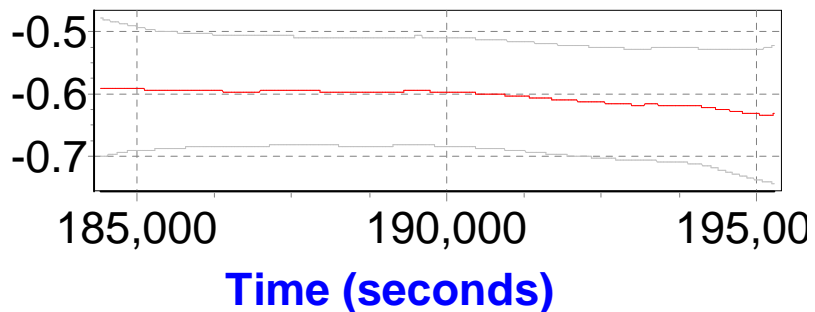
Accelerometer Scale Factor Error (ppr)



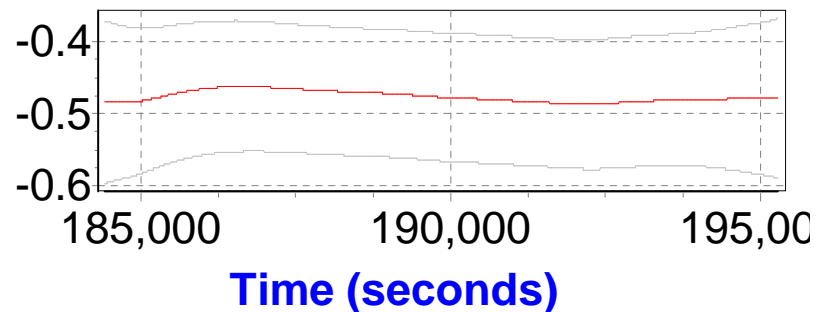
Accelerometer Scale Factor Error (ppr)



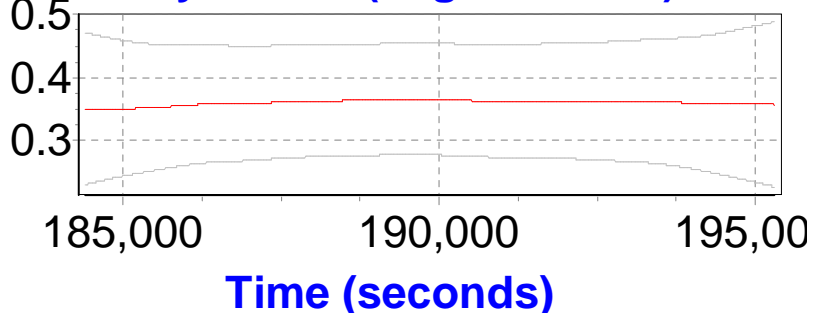
X Gyro Bias (degrees/hour)



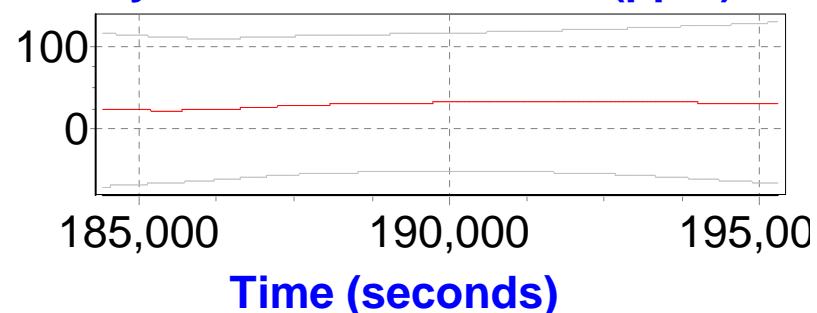
Y Gyro Bias (degrees/hour)



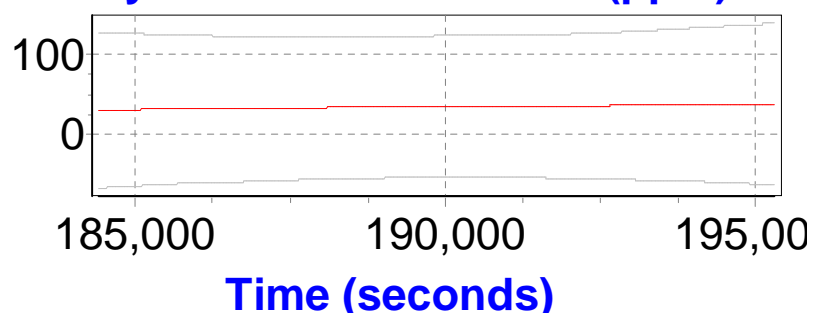
Z Gyro Bias (degrees/hour)



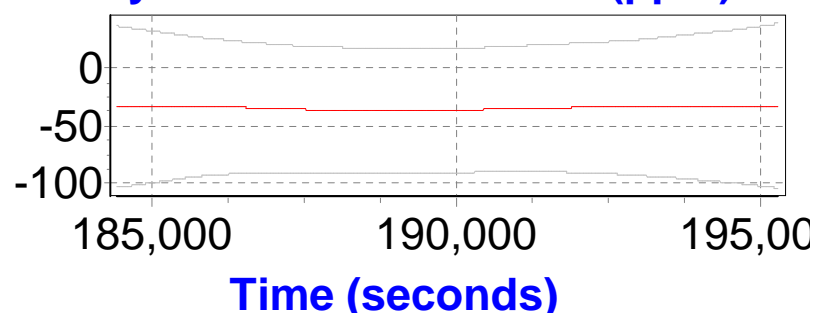
X Gyro Scale Factor Error (ppm)



Y Gyro Scale Factor Error (ppm)

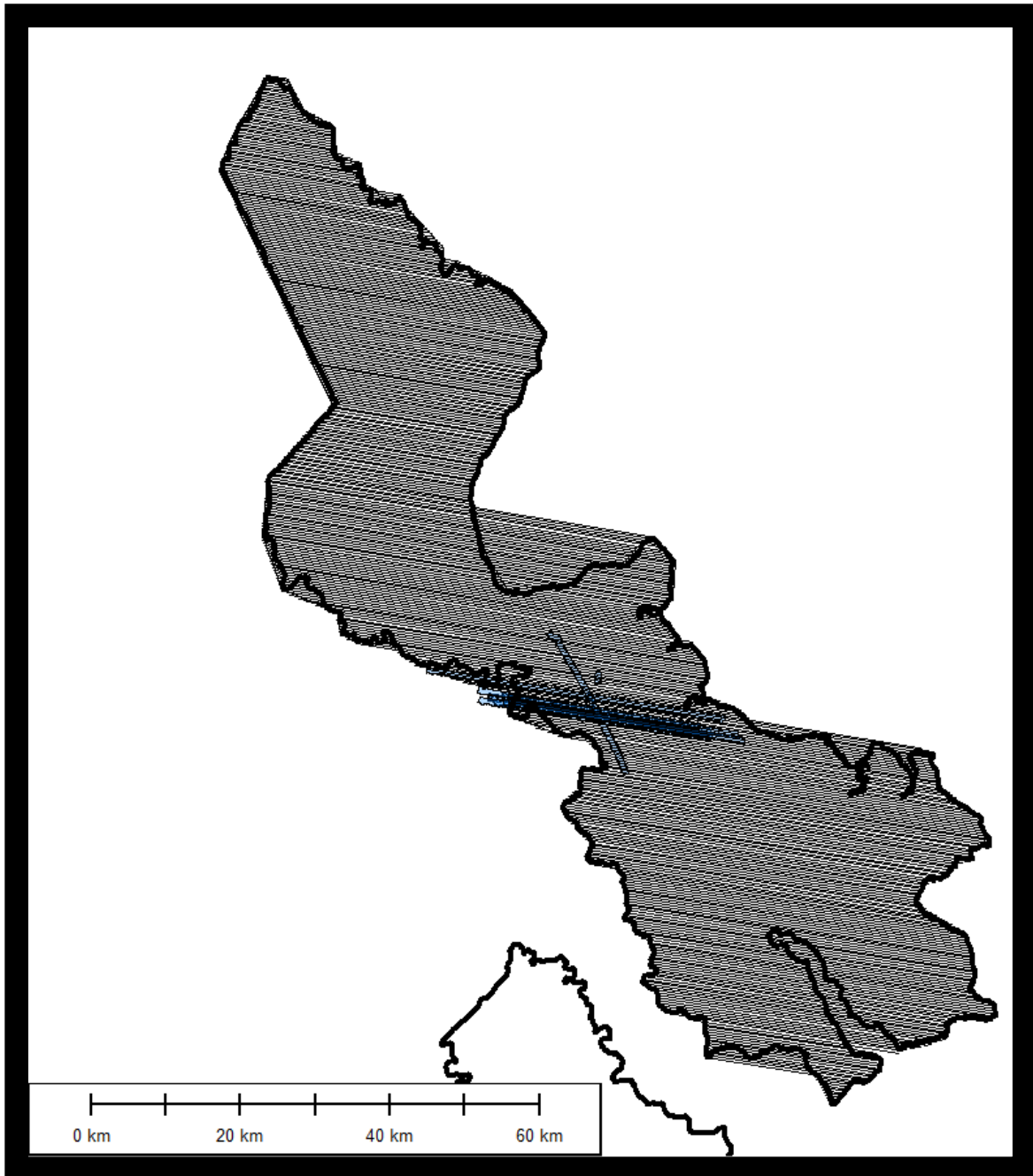


Z Gyro Scale Factor Error (ppm)

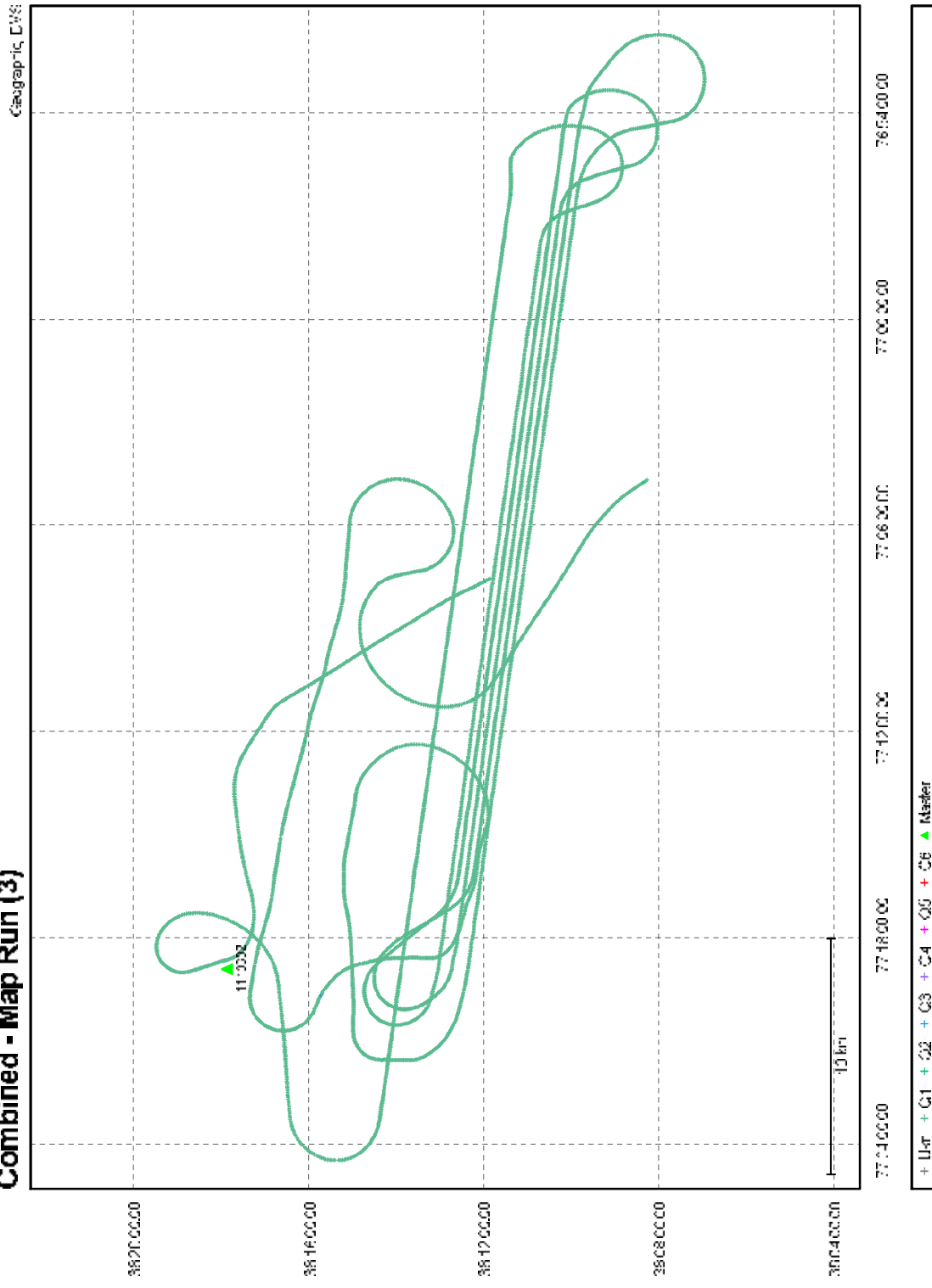


Mission: o211123a

2011 05 03



Combined - Map Run (3)



Processing Summary Information

Program: GrafNav
Version: 7.80.2517
Project: G:\range back va\o211123a\3_Processed\GPS\o211123a.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:
Total in GPB file: 85779
No processed position: 79815
Missing Fwd or Rev: 4
With bad C/A code: 0
With bad L1 Phase: 0

Measurement RMS Values:
L1 Phase: 0.0197 (m)
C/A Code: 0.92 (m)
L1 Doppler: 0.033 (m/s)

Fwd/Rev Separation RMS Values:
East: 0.010 (m)
North: 0.012 (m)
Height: 0.025 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (5958 occurrences):
East: 0.007 (m)
North: 0.009 (m)
Height: 0.024 (m)

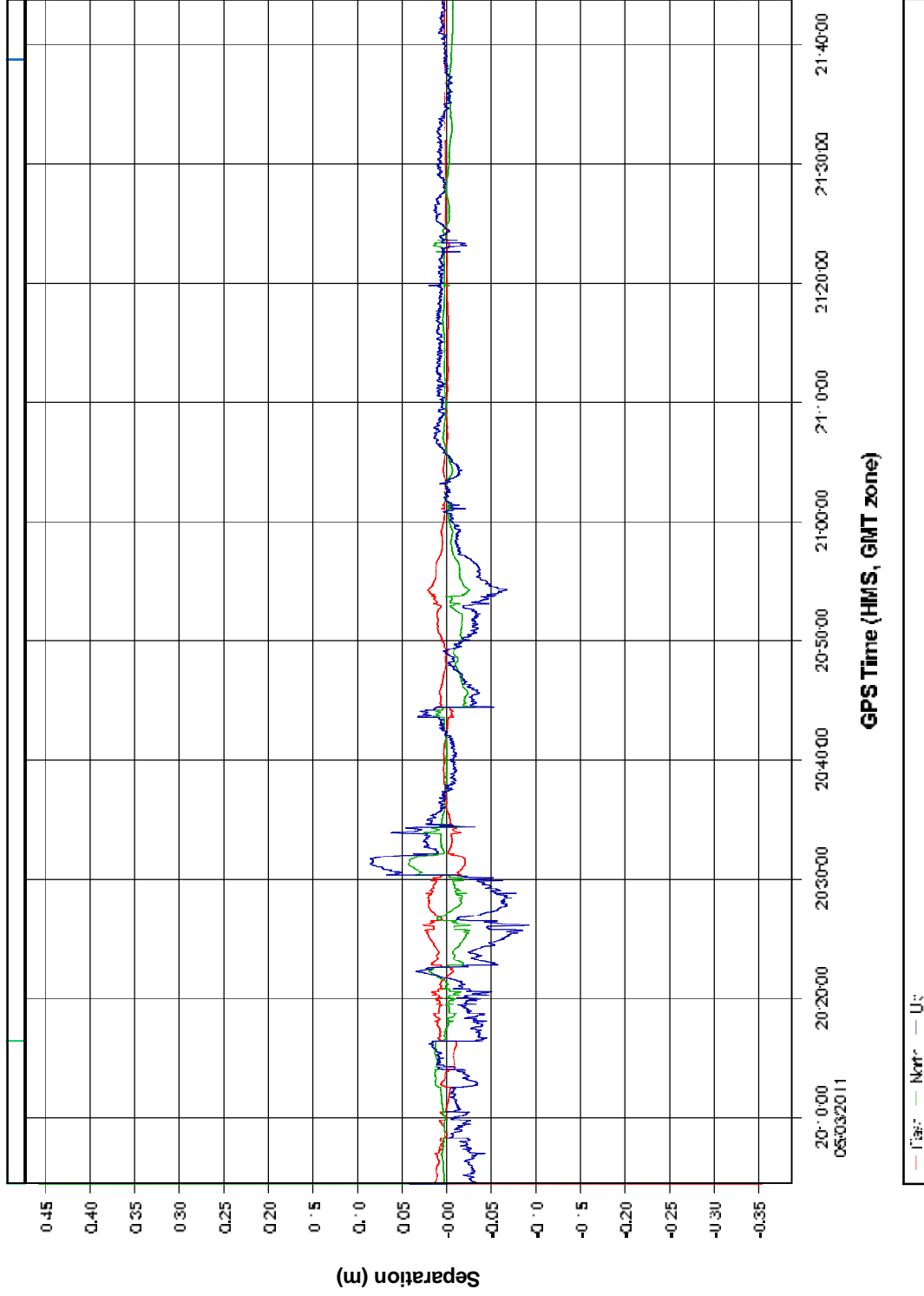
Quality Number Percentages:
Q 1: 99.7 %
Q 2: 0.3 %
Q 3: 0.0 %
Q 4: 0.0 %
Q 5: 0.0 %
Q 6: 0.0 %

Position Standard Deviation Percentages:
0.00 - 0.10 m: 100.0 %
0.10 - 0.30 m: 0.0 %
0.30 - 1.00 m: 0.0 %
1.00 - 5.00 m: 0.0 %
5.00 m + over: 0.0 %

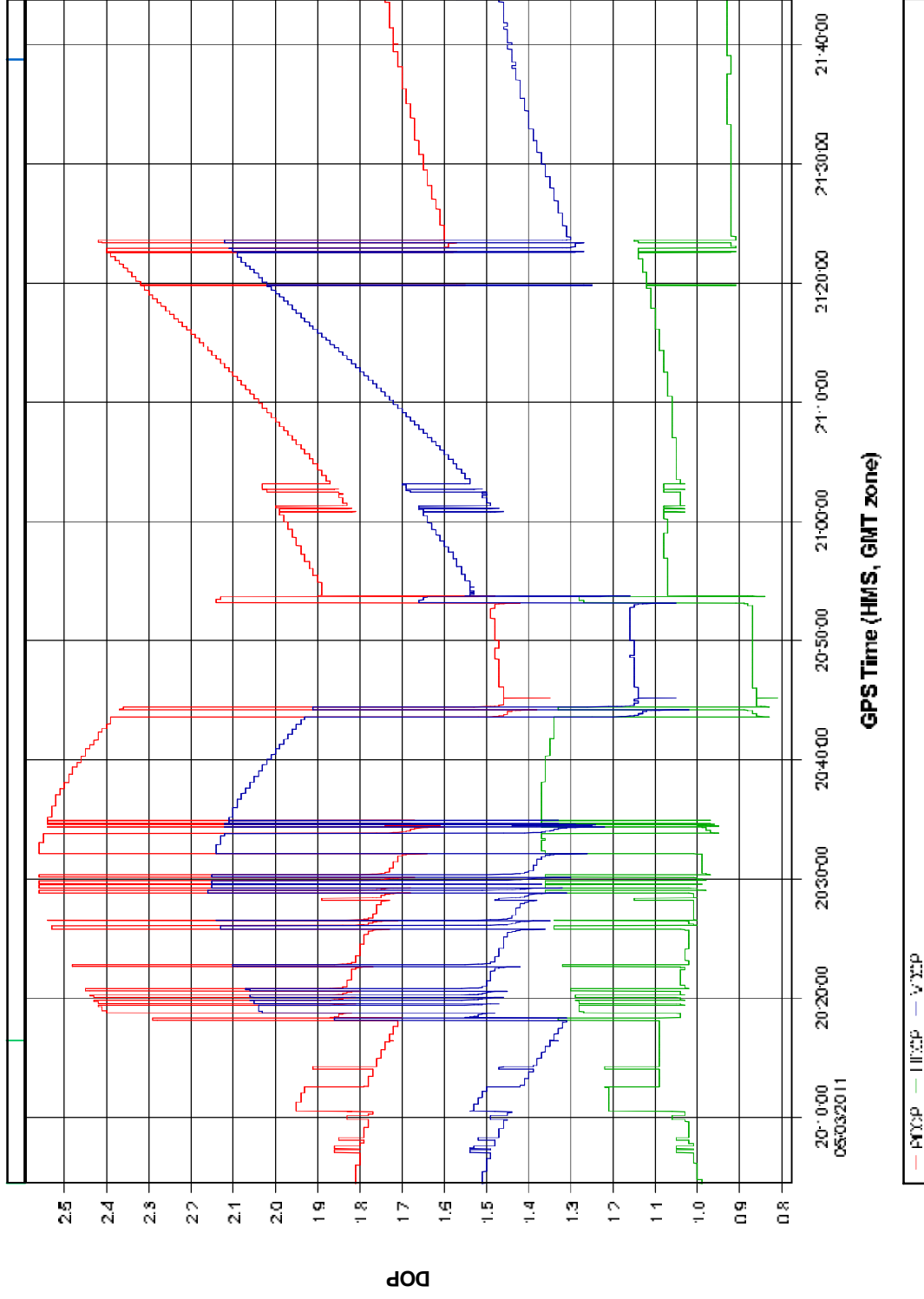
Percentages of epochs with DD_DOP over 10.00:
DOP over Tol: 0.0 %

Baseline Distances:
Maximum: 43.901 (km)
Minimum: 1.008 (km)
Average: 18.534 (km)
First Epoch: 27.361 (km)
Last Epoch: 19.981 (km)

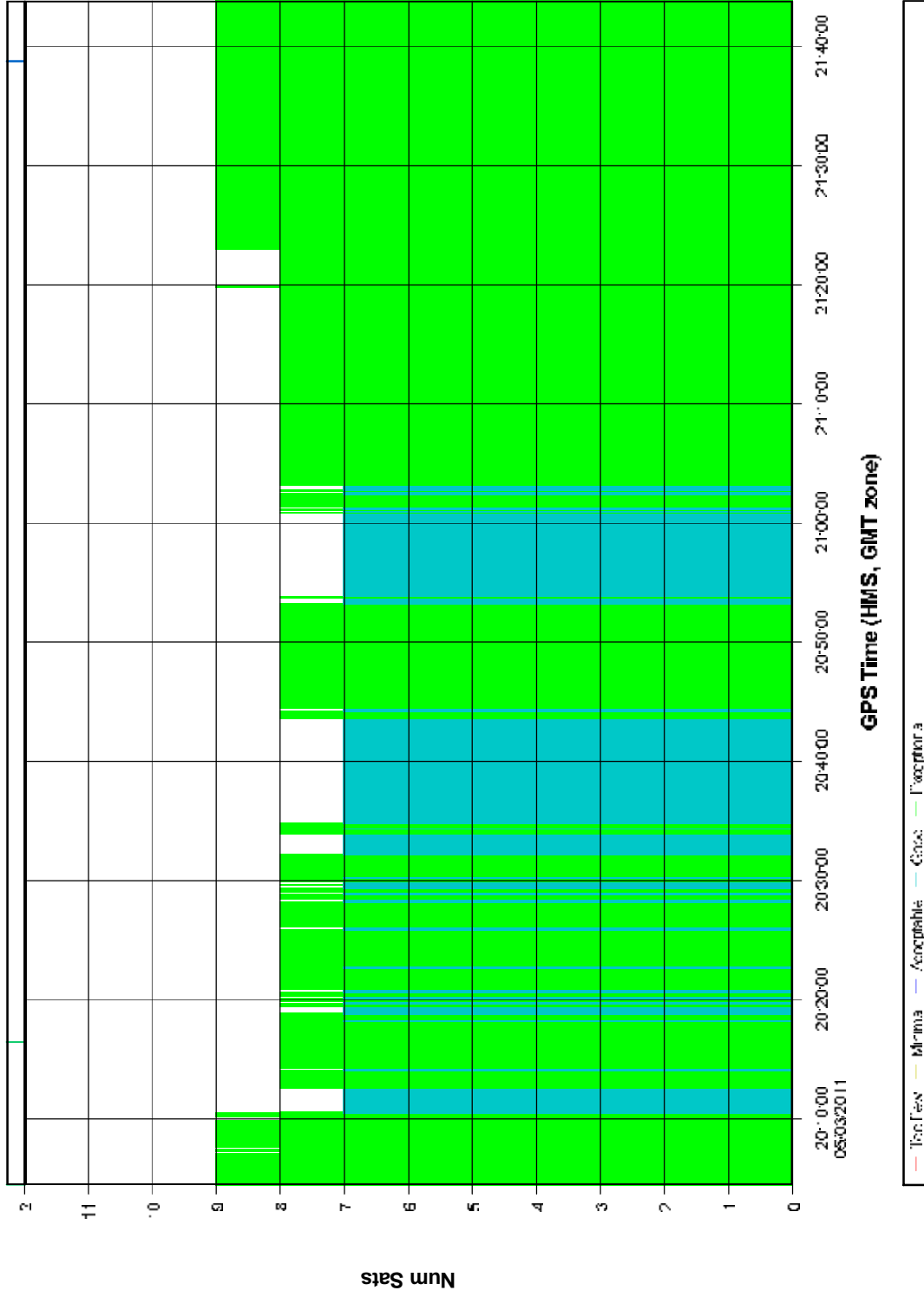
o211123a [Combined] - Forward/Reverse or Combined Separation Plot



o21123a [Combined] - PDOP, HDOP, VDOP Plots



o211123a [Combined] - Number of Satellites Bar Plot



```

o211123a.cfg
: PROJECT:      G:\range back va\o211123a\3_Processed\GPS\o211123a.cfg
:
: DATE:        May 4/11 (date/time of processing)
: TIME:        12: 20: 49
: CREATED BY:  GrafNav Version 7. 80. 2517
:
VERSION = 7. 80. 2517
PROCUSER = Unknown
PRODESC = Run*(5)
PROCTIME = 12: 20: 32 05/04/2011

: Master station # 1 information
MB_MASTER_INDEX = 0
MB_MASTER_NAME = 1110302
MB_MASTER_FILE =
G:\range*back*va\o211123a\1_RawData\original_PDC_files\1110302_00081231.gpb
MB_MASTER_POS = 38 17 51.99406 -77 18 55.26399 29.0380
MB_MASTER_ANT = 1.604 0.001 1.570 1 _TP_SOK600 0
MB_MASTER_DISABLE = OFF

: Remote station information
REMOTE_FILE = G:\range*back*va\o211123a\3_Processed\Extract\mgps_o211123a.gpb
REMOTE_POS = 37 51 39.24248 -76 53 55.91153 4.0380
REMOTE_ANT = 0.000

: General settings
PROCESS_MODE = 103 108 113 126 ; Processing modes (GrafNav only)

DATUM = NAD83 AUTO ; Processing Datum
INPDATUM = ON NAD83 AUTO ; Input Datum (ON=Use processing datum)
ELEV_MASK = 15.0 ; Elevation mask (deg)
GRID = UTM 15 31 ; Grid info

CYCLE_TEST = BOTH ; Cycle slip test method
STATIC_SLIP_TOL = 0.40 ; slip tolerance in static mode (cycles)
USE_DOPPLER = ON OFF ; Use doppler meas. for phase, for code-only

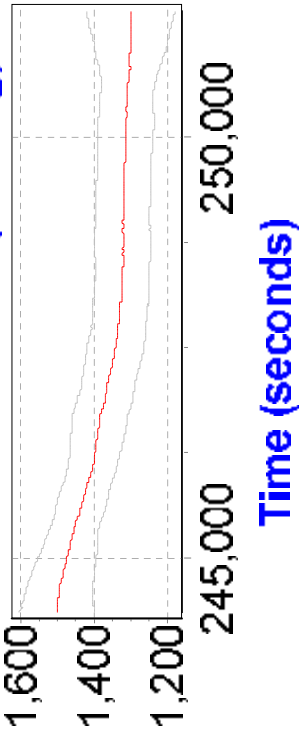
BASE_SAT = 99 ; Base satellite (99-default)

TIMERANGE = ALL 988488264.0 988494231.0 2 0 ; Processing time range
INTERVAL = 0.10 ; Processing time interval (seconds)

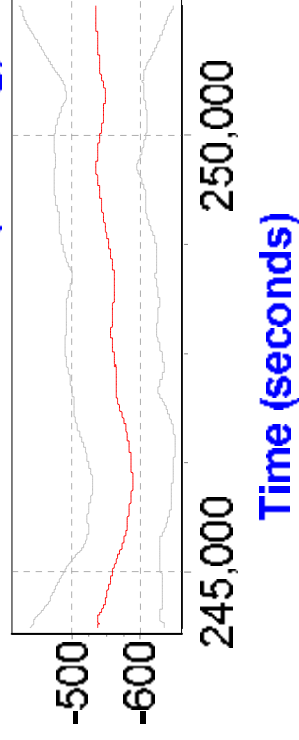
PROCESS_DIR = FORWARD ; Process direction (FORWARD/REVERSE)
BOTH_DIR = ON ; True for processing both directions
WRITE_BAD_EPOCHS = OFF ; Save bad data to .fwd/rev file (ON/OFF)
NOWRITE_HIGH = OFF 6 20.000 ; Don't write epoch with high statistics (q, stdev-m)
OUTPUT_MODE = EXTENDED ; Format for .fwd/rev file
DETAILED_SUM = ON ; Detailed Static/KAR Summary header
WRITE_SLIP_MSG = ON ; Print cycle slips to message log
SAVE_AMB = ON ; Should ambiguities be saved

```

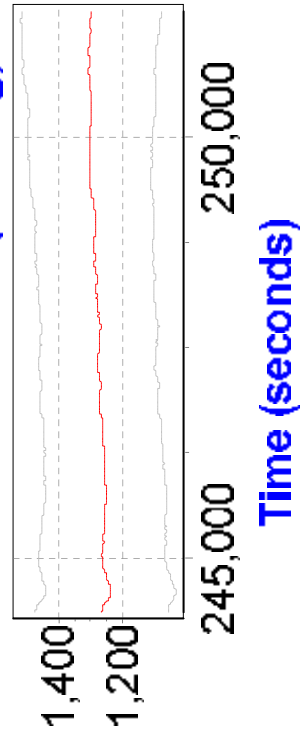
X Accelerometer Bias (micro-g)



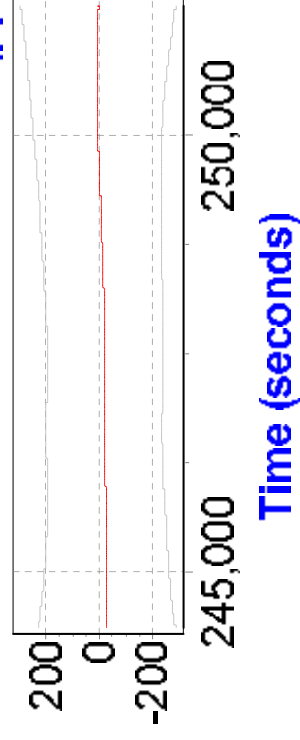
Y Accelerometer Bias (micro-g)



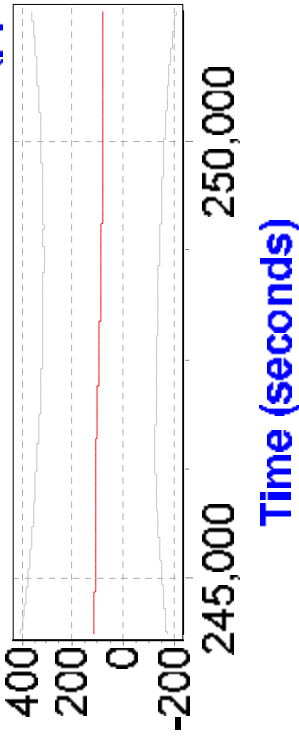
Z Accelerometer Bias (micro-g)



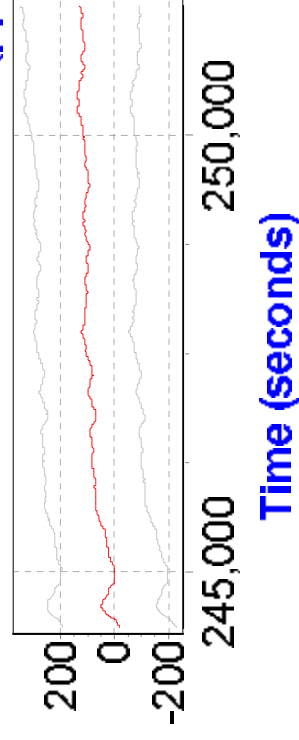
X Accelerometer Scale Factor Error (ppm)

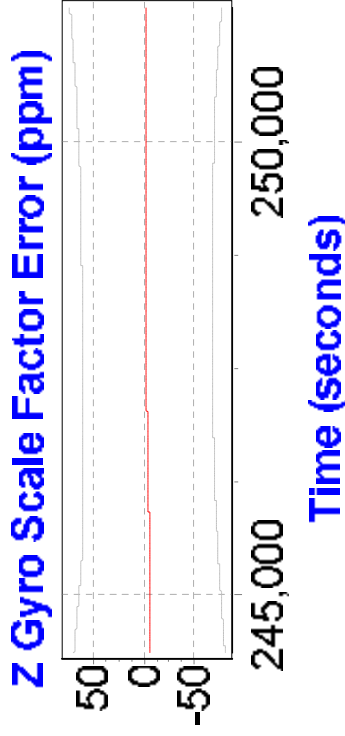
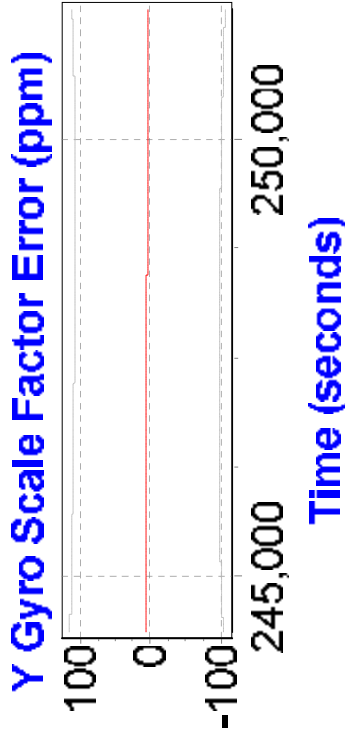
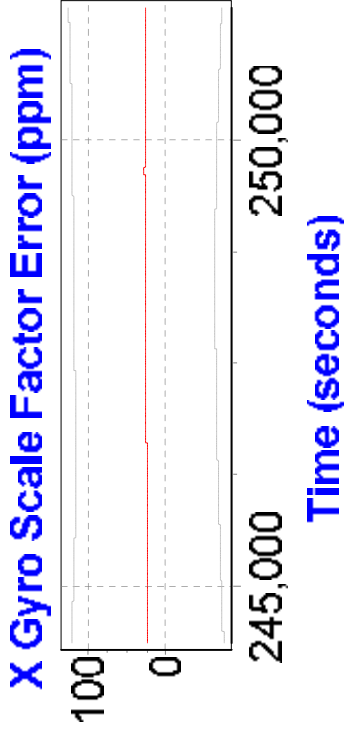
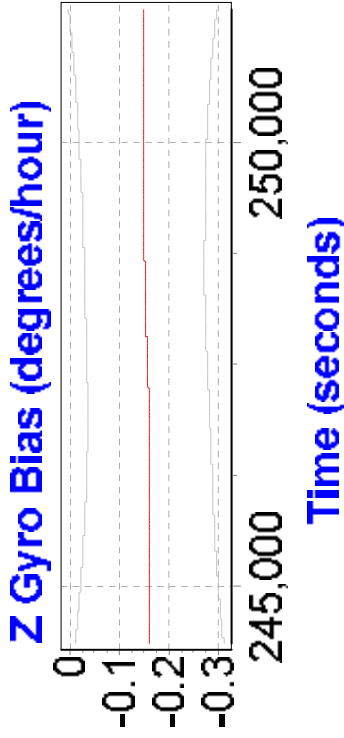
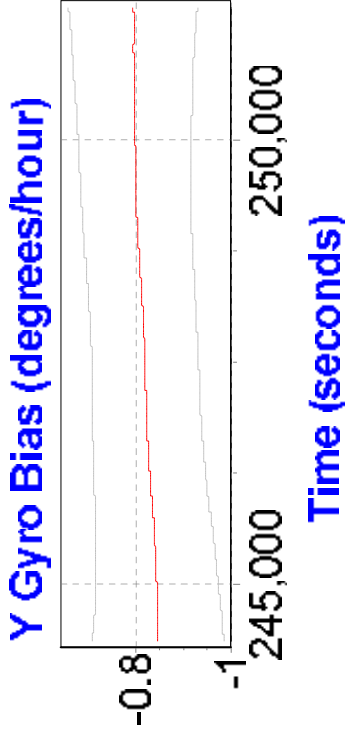
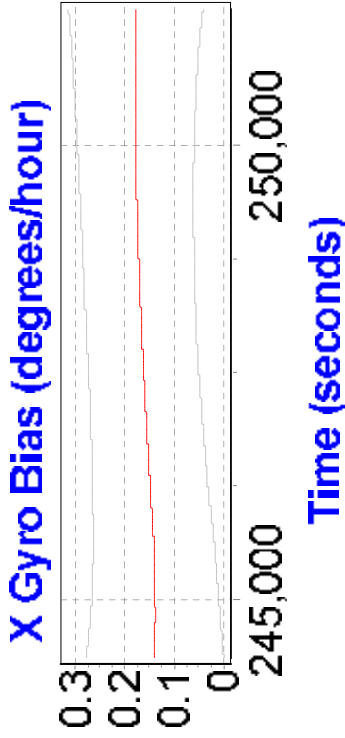


Y Accelerometer Scale Factor Error (ppm)



Z Accelerometer Scale Factor Error (ppm)





Project# **111030** Session **02/11/23a**

Flight Log



Date	July 3	Altitude	127
Project	Forman VA	Average	31.34
Survey	Topographic	Dist/Ship	51.94
Survey/Eject	PLM	PLM	By Miller
Line Complete		Operator	R. Green
Mission Objective		Operator	

Altitude	02
Station	02
Level Station	02
Current Eject SV	
End of Mission	
Field Note	
IN	
GPS IN	
Control	

Additional Notes:	
Control Temp @ TO	21
Control Pressure @ TO	29.90
Control Temp @ LW	
Control Pressure @ LW	

Aircraft	Block Time	<input type="checkbox"/> Time coordinated alt. given
Engine On/Power	1533	1550
Engine Off/Power	1801	FBO 3/1/18
Altitude (ft/des)	1801	Aspen, Fuel/Gas
ICAO/ILS	2.2	

Mission	22
Target Height AGL	3400
Ground Speed	180
Horizontal/Vertical Acft	40
Altitude/Barometric Acft	28

Station & Equip	GPS / INS Alignment
Time	1:17
GPS	30
Pre Mission	
GPS Base	
GPS Base	
Goal Vehicle	

Flight Plan / Alt	LEADER FILE NAME	Flight Checklist	GPS / UTC Time		Flight Altitude		Photo Events / Comments
			Start	End	Time	IM W. End	
US05			20 21	20 37	2022		
149			20 34	20 48			Bad spot (cross wind)
150			20 51	20 58			
151			21 01	21 09			
152			21 11	21 20			
153			21 26	21 35			Reds for spots caps.
158			21 38	21 46			
169							



GPS Base Log Sheet

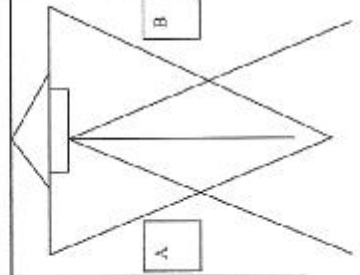
Station ID:	1110302	Project #:	111030	Missions:	021123a
--------------------	---------	-------------------	--------	------------------	---------

Project Name:	Fernal VA		Calendar Date:	3/5/2011		Julian Day	123
Approx. Coordinates	WGS 84	N		W			
Description of Mark (Take Photos)							
Monument is:	<input type="checkbox"/> Flush with ground <input type="checkbox"/> Above ground _____ cm <input type="checkbox"/> Below ground _____ cm						
Location & Access							

Obstructions & Additional Notes

GPS Observation - MAIN							
Rx Make / Model	GSR2600		Serial #	0008			
Ant Make / Model	SK600		Serial #	0007			
Operator	AC						
Session	Start:	163006					
Time (GPS) End							
Slant HI Before:	A:	1.570	B:	1.570			
Slant HI After:	A:	1.570	B:	1.570			
Correction							
Phase Center			<input checked="" type="checkbox"/> m	<input type="checkbox"/> in	<input type="checkbox"/> use GrafNav Profile		
Data File Name							

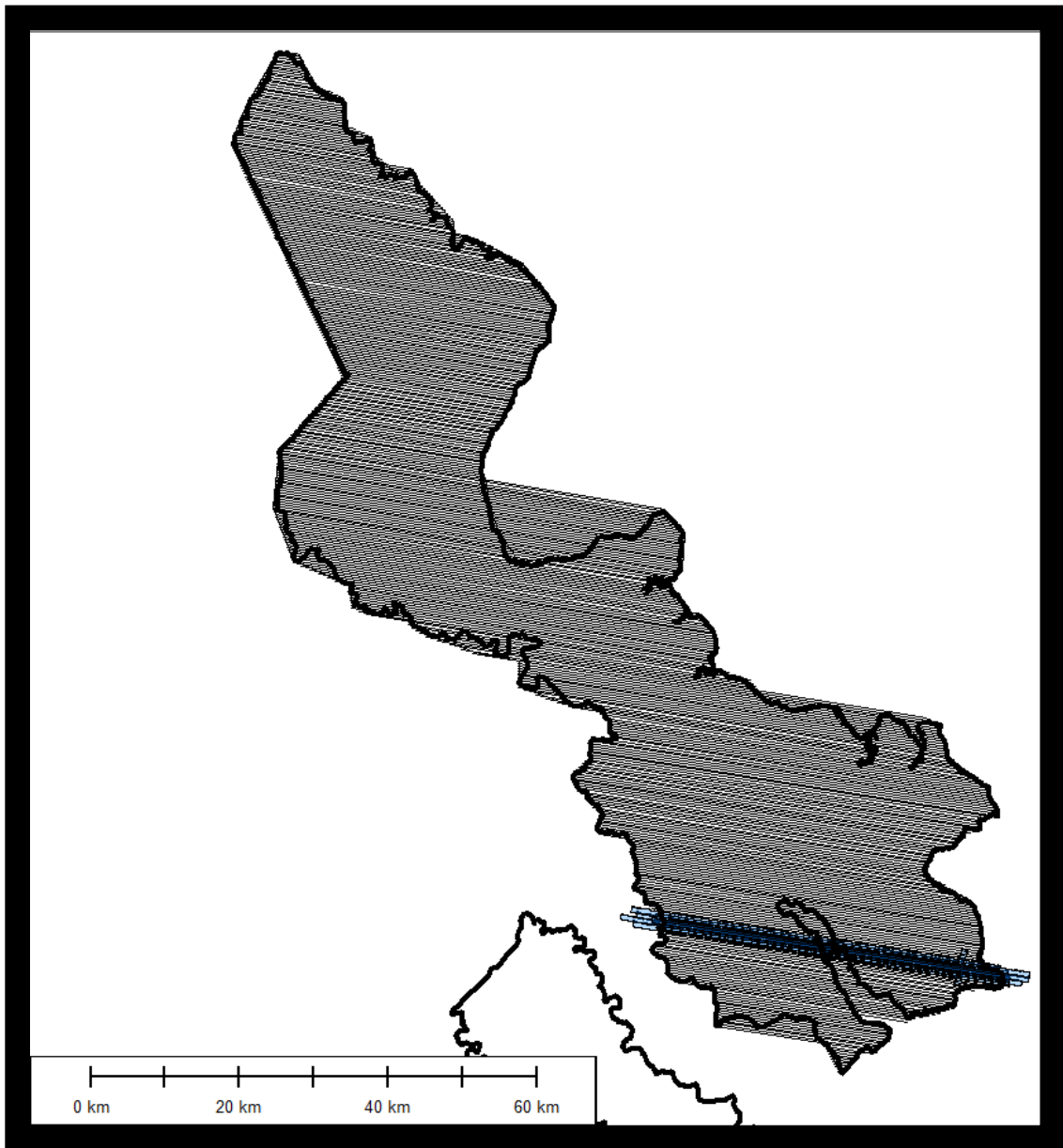
GPS Observation - Back-Up							
Rx Make / Model			Serial #				
Ant Make / Model			Serial #				
Operator							
Session	Start:						
Time (GPS) End							
Slant HI Before:	A:		B:				
Slant HI After:	A:		B:				
Correction							
Phase Center			<input type="checkbox"/> m	<input type="checkbox"/> in	<input type="checkbox"/> use GrafNav Profile		
Data File Name							



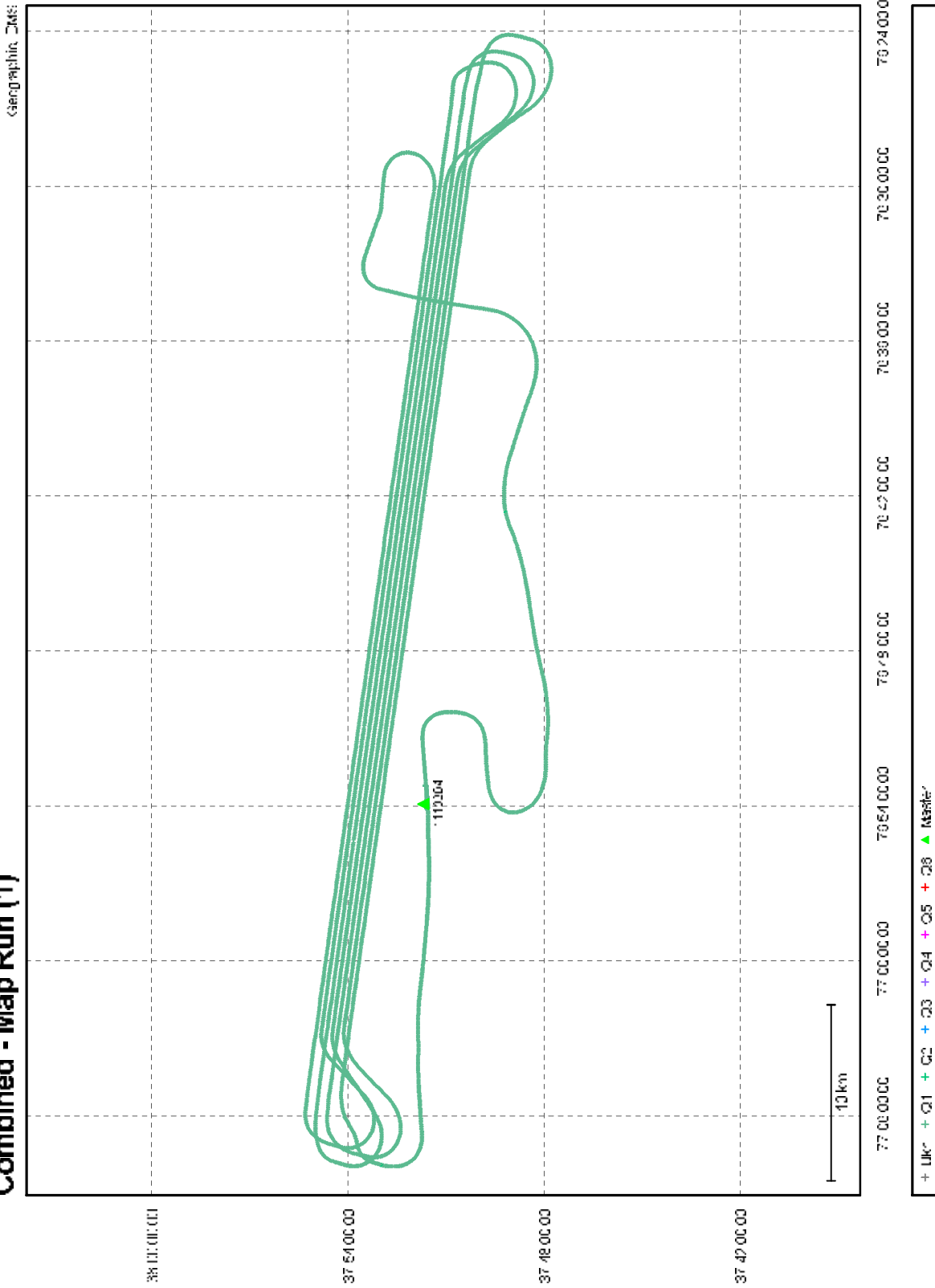


Mission: o211125a

2011 05 05



Combined - Map Run (1)



Processing Summary Information

Program: GrafNav
Version: 7.80.2517
Project: H:\range back va\o211125a\3_Processed\GPS\o211125a.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:
Total in GPB file: 87864
No processed position: 79093
Missing Fwd or Rev: 89
With bad C/A code: 0
With bad L1 Phase: 0

Measurement RMS Values:
L1 Phase: 0.0112 (m)
C/A Code: 0.66 (m)
L1 Doppler: 0.025 (m/s)

Fwd/Rev Separation RMS Values:
East: 0.005 (m)
North: 0.006 (m)
Height: 0.016 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (8678 occurrences):
East: 0.004 (m)
North: 0.004 (m)
Height: 0.013 (m)

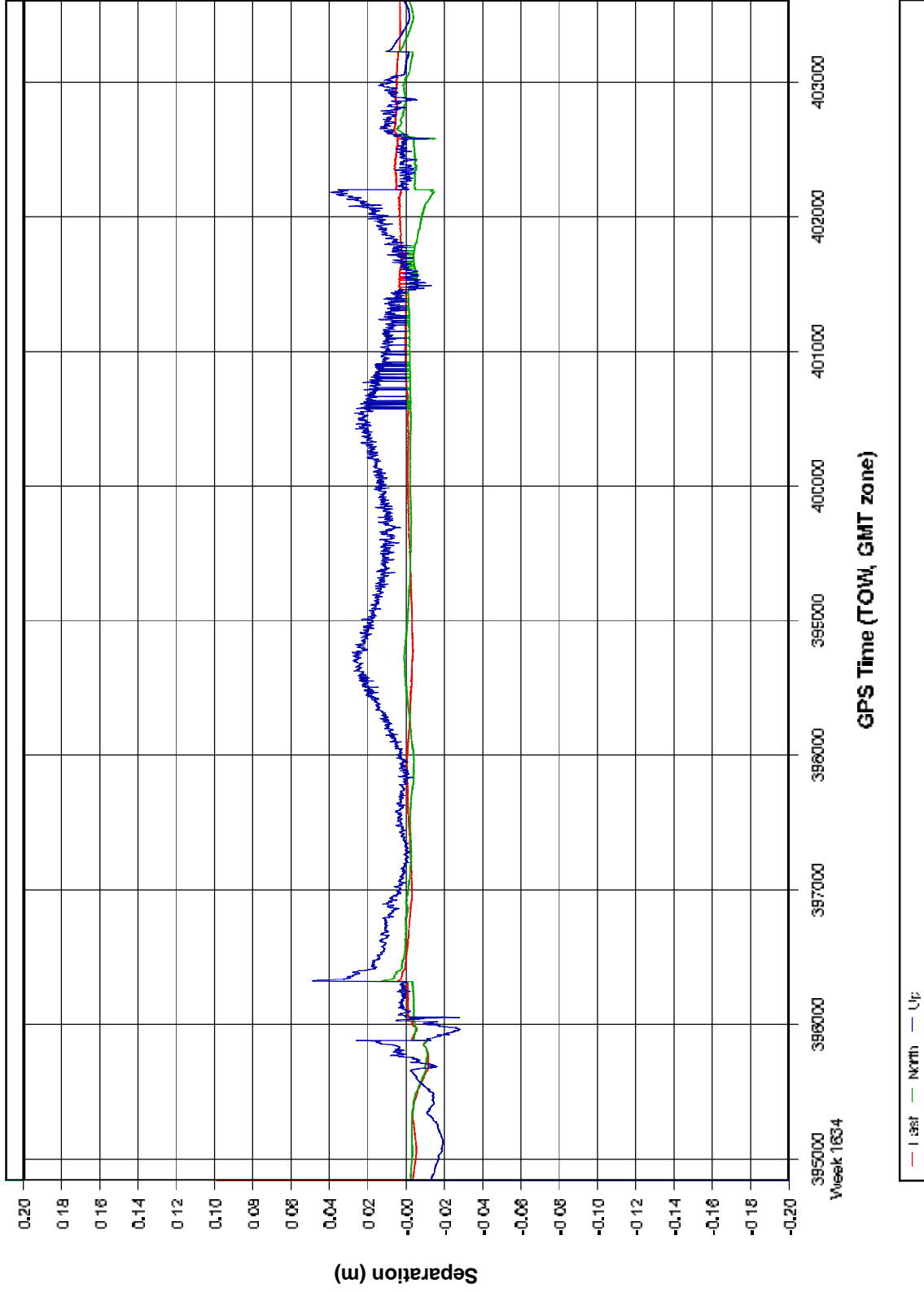
Quality Number Percentages:
Q 1: 100.0 %
Q 2: 0.0 %
Q 3: 0.0 %
Q 4: 0.0 %
Q 5: 0.0 %
Q 6: 0.0 %

Position Standard Deviation Percentages:
0.00 - 0.10 m: 99.9 %
0.10 - 0.30 m: 0.1 %
0.30 - 1.00 m: 0.0 %
1.00 - 5.00 m: 0.0 %
5.00 m + over: 0.0 %

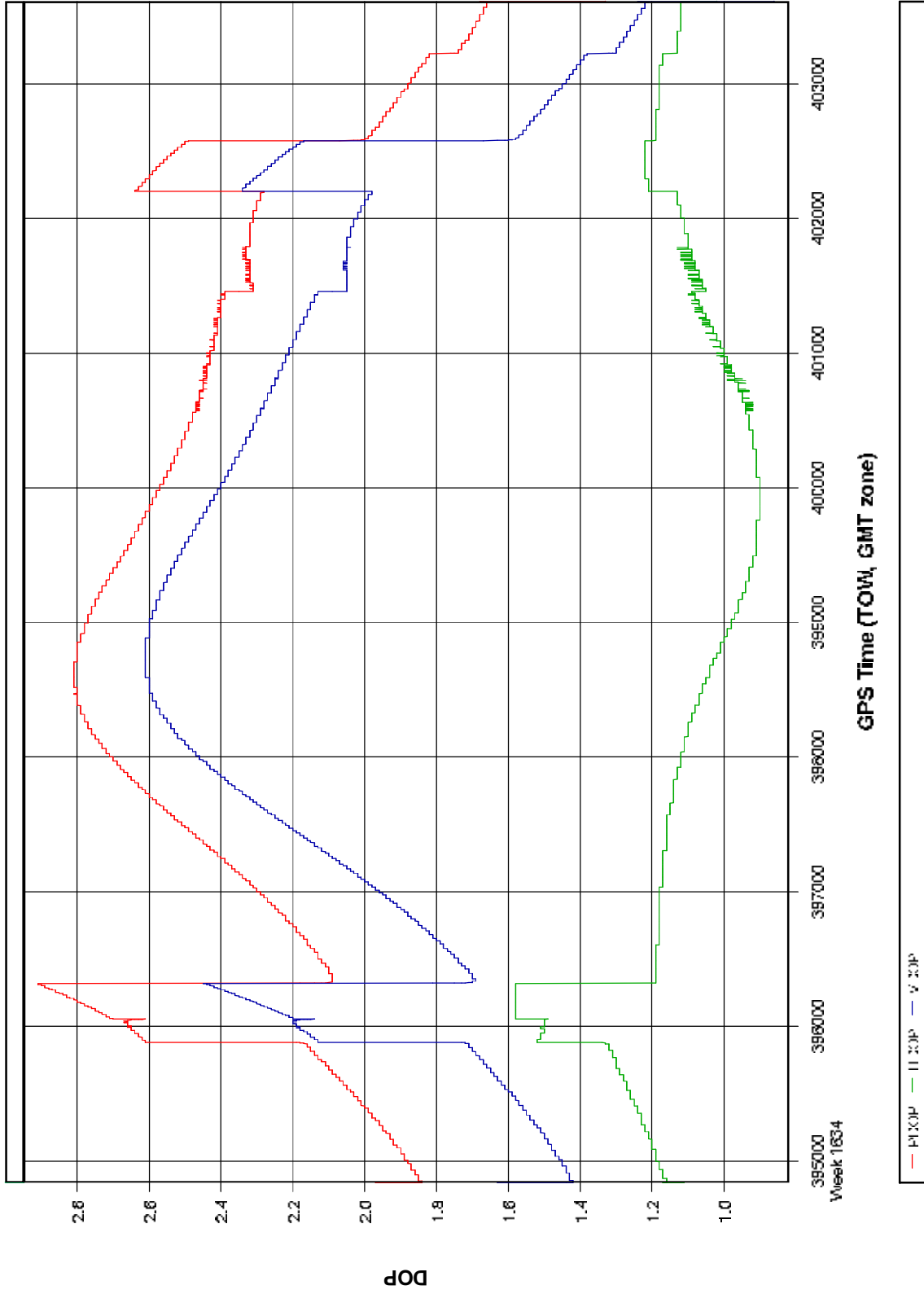
Percentages of epochs with DD_DOP over 10.00:
DOP over Tol: 0.0 %

Baseline Distances:
Maximum: 43.980 (km)
Minimum: 0.072 (km)
Average: 15.339 (km)
First Epoch: 0.072 (km)
Last Epoch: 0.099 (km)

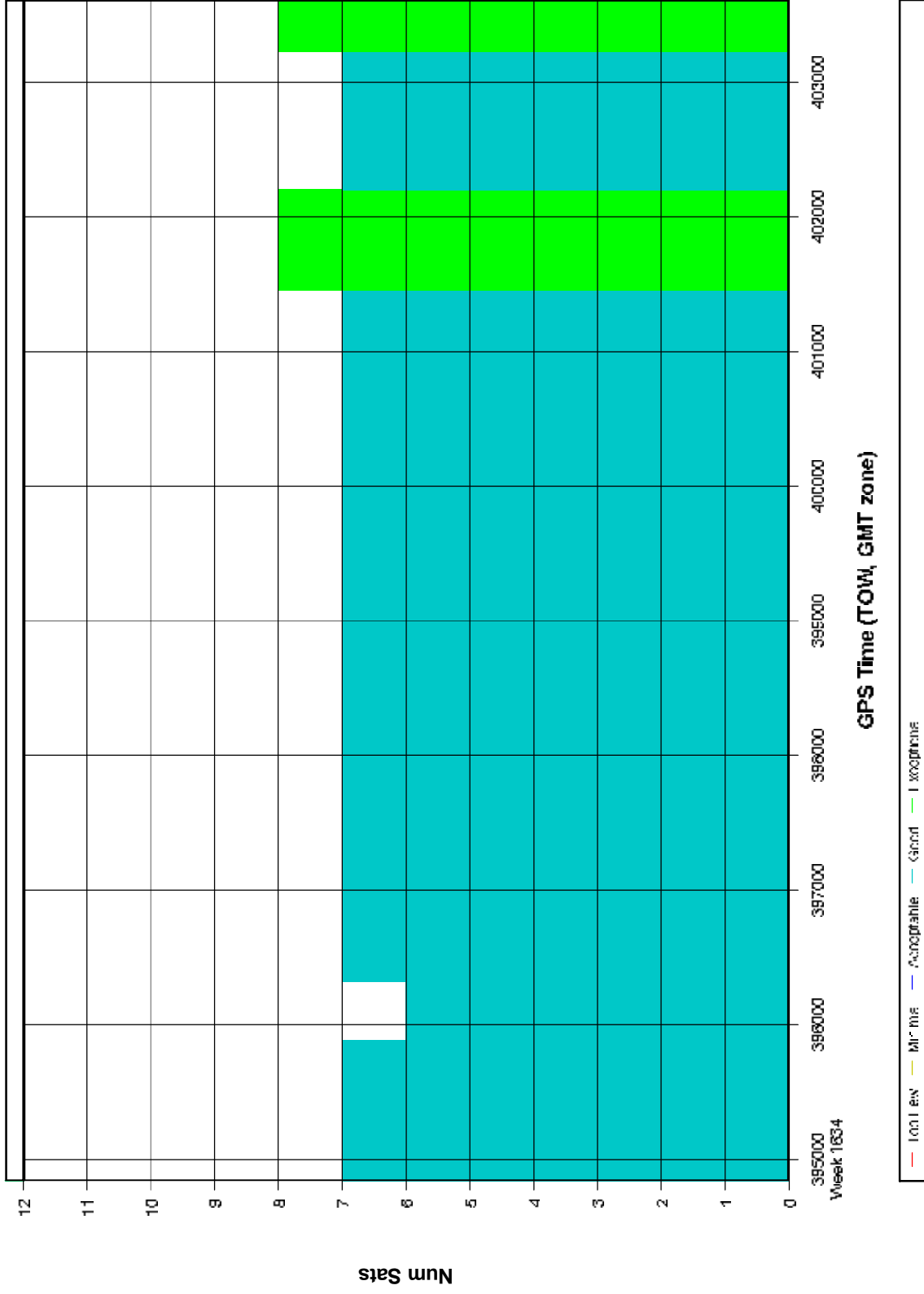
o211125a [Combined] - Forward/Reverse or Combined Separation Plot



o211125a [Combined] - PDOP, HDOP, VDOP Plots



o211125a [Combined] - Number of Satellites Bar Plot



```

; PROJECT:      H:\range back va\o211125a\3_Processed\GPS\o211125a.cfg
;
; DATE:        May 6/11 (date/time of processing)
; TIME:        20:29:32
; CREATED BY:  GrafNav Version 7.80.2517
;
VERSION = 7.80.2517
PROCUSER = Unknown
PROCDISC = Run*(2)
PROCTIME = 20:22:22 05/06/2011

; Master station # 1 information
MB_MASTER_INDEX = 0
MB_MASTER_NAME = 1110304
MB_MASTER_FILE =
H:\range*back*va\o211125a\1_RawData\original_PDC_files\1110304_00161250.gpb
MB_MASTER_POS = 37 51 41.39611 -76 53 55.13346 5.1620
MB_MASTER_ANT = 1.248 0.001 1.215 1 _TP_S0K600 0
MB_MASTER_DISABLE = OFF

; Remote station information
REMOTE_FILE = H:\range*back*va\o211125a\3_Processed\Extract\mgps_o211125a.gpb
REMOTE_POS = 37 51 39.10404 -76 53 55.39588 6.6558
REMOTE_ANT = 0.000

; General settings
PROCESS_MODE = 105 108 113 126 ; Processing modes (GrafNav only)

DATUM = NAD83 AUTO ; Processing Datum
INPDATUM = ON NAD83 AUTO ; Input Datum (ON=Use processing datum)
ELEV_MASK = 15.0 ; Elevation mask (deg)
GRID = UTM 15 31 ; Grid info

CYCLE_TEST = BOTH ; Cycle slip test method
STATIC_SLIP_TOL = 0.40 ; slip tolerance in static mode (cycles)
USE_DOPPLER = ON OFF ; Use doppler meas. for phase, for code-only

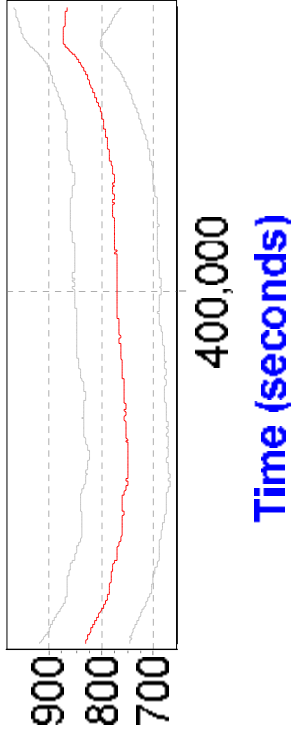
BASE_SAT = 99 ; Base satellite (99-default)

TIMERANGE = ALL 988638025.9 988646812.2 2 0 ; Processing time range
INTERVAL = 0.10 ; Processing time interval (seconds)

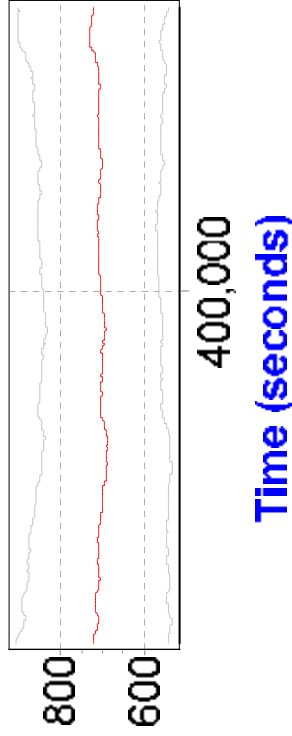
PROCESS_DIR = FORWARD ; Process direction (FORWARD/REVERSE)
BOTH_DIR = ON ; True for processing both directions
WRITE_BAD_EPOCHS = OFF ; Save bad data to .fwd/rev file (ON/OFF)
NOWRITE_HIGH = OFF 6 20.000 ; Don't write epoch with high statistics (q, stdev-m)
OUTPUT_MODE = EXTENDED ; Format for .fwd/rev file
DETAILED_SUM = ON ; Detailed Static/KAR Summary header
WRITE_SLIP_MSG = ON ; Print cycle slips to message log
SAVE_AMB = ON ; Should ambiguities be saved

```

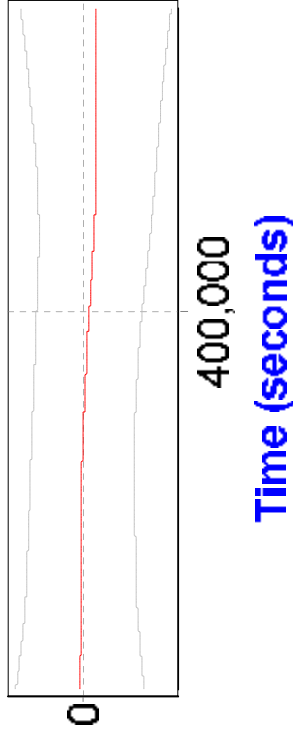
X Accelerometer Bias (micro-g)



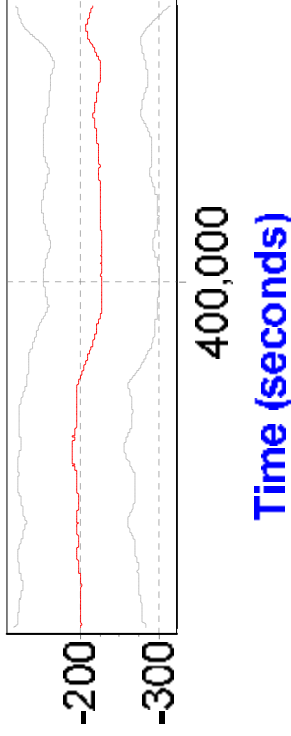
Z Accelerometer Bias (micro-g)



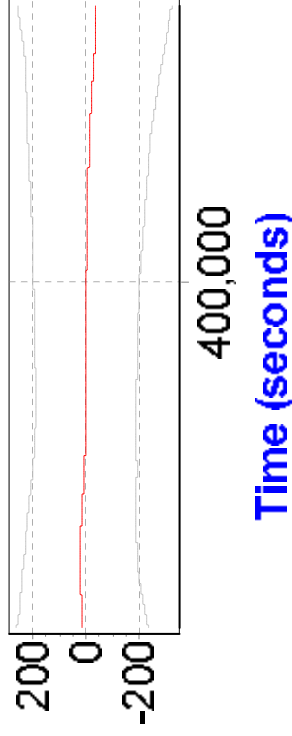
Accelerometer Scale Factor Error (ppm)



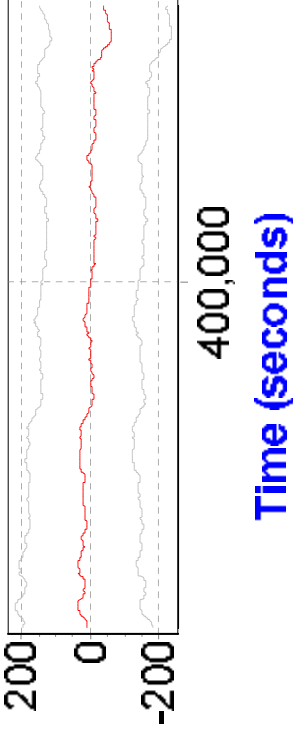
Y Accelerometer Bias (micro-g)

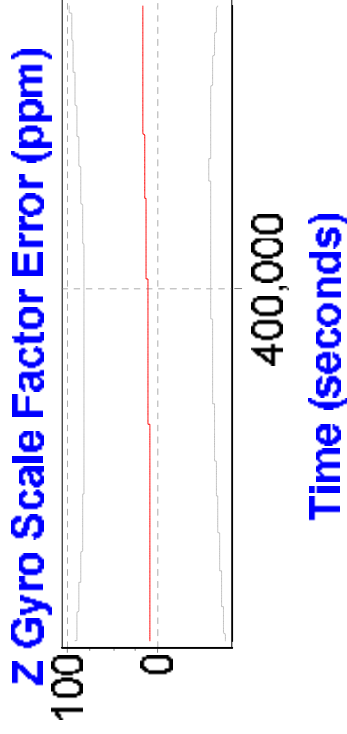
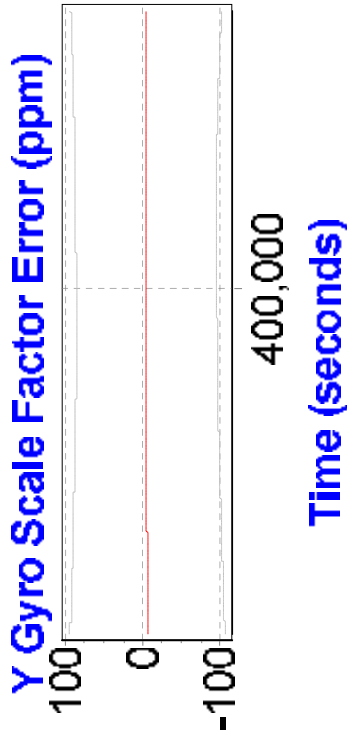
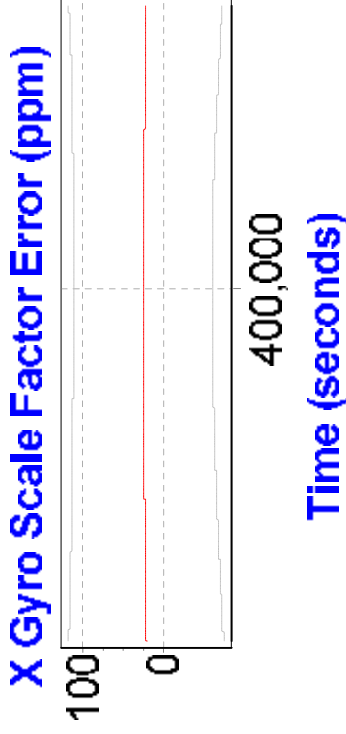
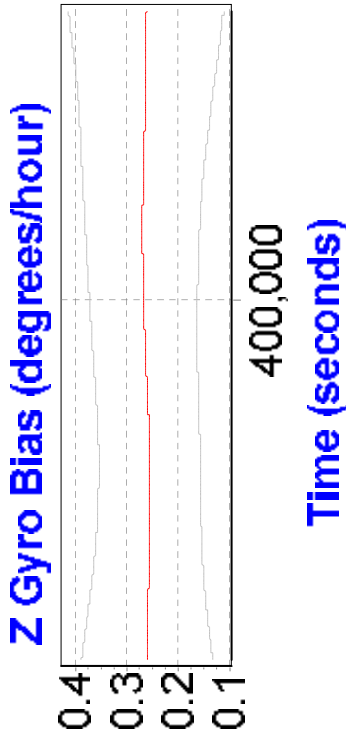
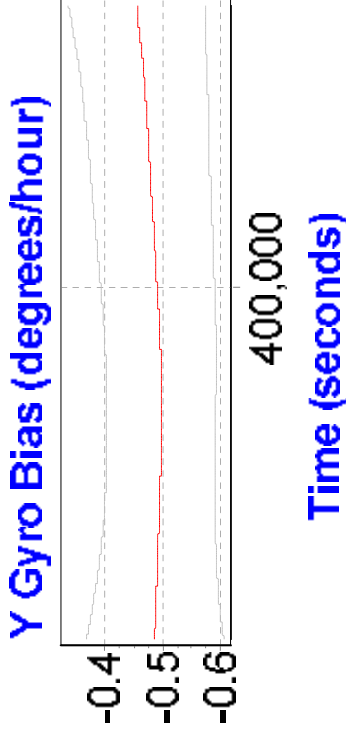
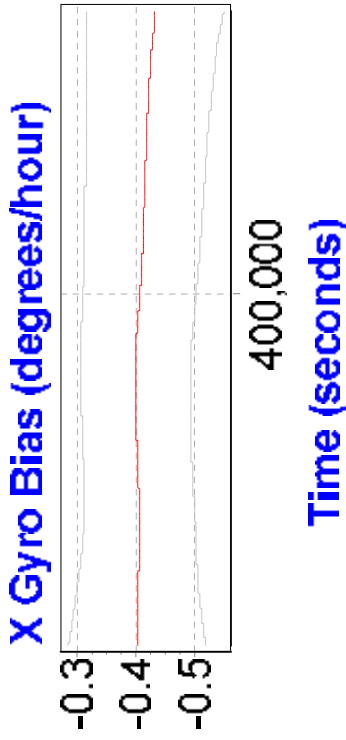


Accelerometer Scale Factor Error (ppm)



Accelerometer Scale Factor Error (ppm)





GPS Base Log Sheet



Terrapoint

Station ID:	1110304	Project #:	111030	Missions:	21125aP 011125
--------------------	---------	-------------------	--------	------------------	-------------------

Project Name:	KennaVA	Calendar Date:	5/5/2011	Julian Day	125
Approx. Coordinates	WGS 84	N		W	

Description of Mark
(Take Photos)

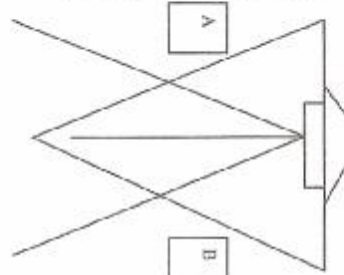
Monument is: Flush with ground Above ground 3 cm Below ground ___ cm

Location & Access

Obstructions & Additional Notes

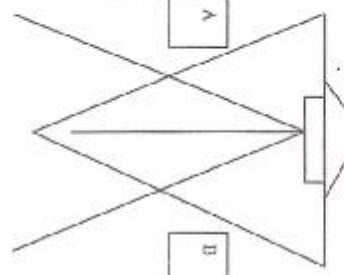
GPS Observation - MAIN

Rx Make / Model	GS82600	Serial #	0016
Ant Make / Model	SVC 600	Serial #	0035
Operator	AC		
Session Time (GPS)	Start: 11 15 00		
Slant HI Before:	A: 1.215	B:	1.215
Slant HI After:	A: 1.215	B:	1.215
Correction			
Phase Center	<input checked="" type="checkbox"/> m <input type="checkbox"/> in <input type="checkbox"/> use GrafNav Profile		
Data File Name			



GPS Observation - Back-Up

Rx Make / Model		Serial #	
Ant Make / Model		Serial #	
Operator			
Session Time (GPS)	Start:		
Slant HI Before:	A:	B:	
Slant HI After:	A:	B:	
Correction			
Phase Center	<input type="checkbox"/> m <input type="checkbox"/> in <input type="checkbox"/> use GrafNav Profile		
Data File Name			





Flight Log

Project # 1103U Session 21125a

Date	Aug 15	Julian Day	241	175
Project	Ferran VA	Aircraft	DS 315A	
Staging		Call Sign	DS 315A	
Survey Block		Pilot	William	
Lines Complete		Operator	Busson	
Observer				
Mission Objective				

ALNIS/OpTech	OL
System #	OL
Laser Scanner	OL
Camera/Lens SN	
Shutter Speed	
Photo Freq.	
IMU	
GPS Rx	
Data Drive	

Additional Notes:
154

Outside Temp @ TO: 20.14 Outside Pressure @ TO: 3021
Outside Temp @ LA: Outside Pressure @ LA:

Aircraft	Block Time	<input type="checkbox"/> Times confirmed with pilot
Engine On (Hobbs)	Takeoff 030	(120L) x (Total flt hrs)
9:30/450	150	
Engine Off (Hobbs)	Landing 12:00	FBO \$/Litre
12:00/500		
Total hrs (Hobbs)	Total hrs 2.8	Approx. Fuel Coe:

Mission Plan	
Flying Height AGL	Scan Angle (Opsect)
300	22
Ground Speed	Minor Scan Rate
150	40
First/Last/Alternating Return	Laser Pulse Rate
	70

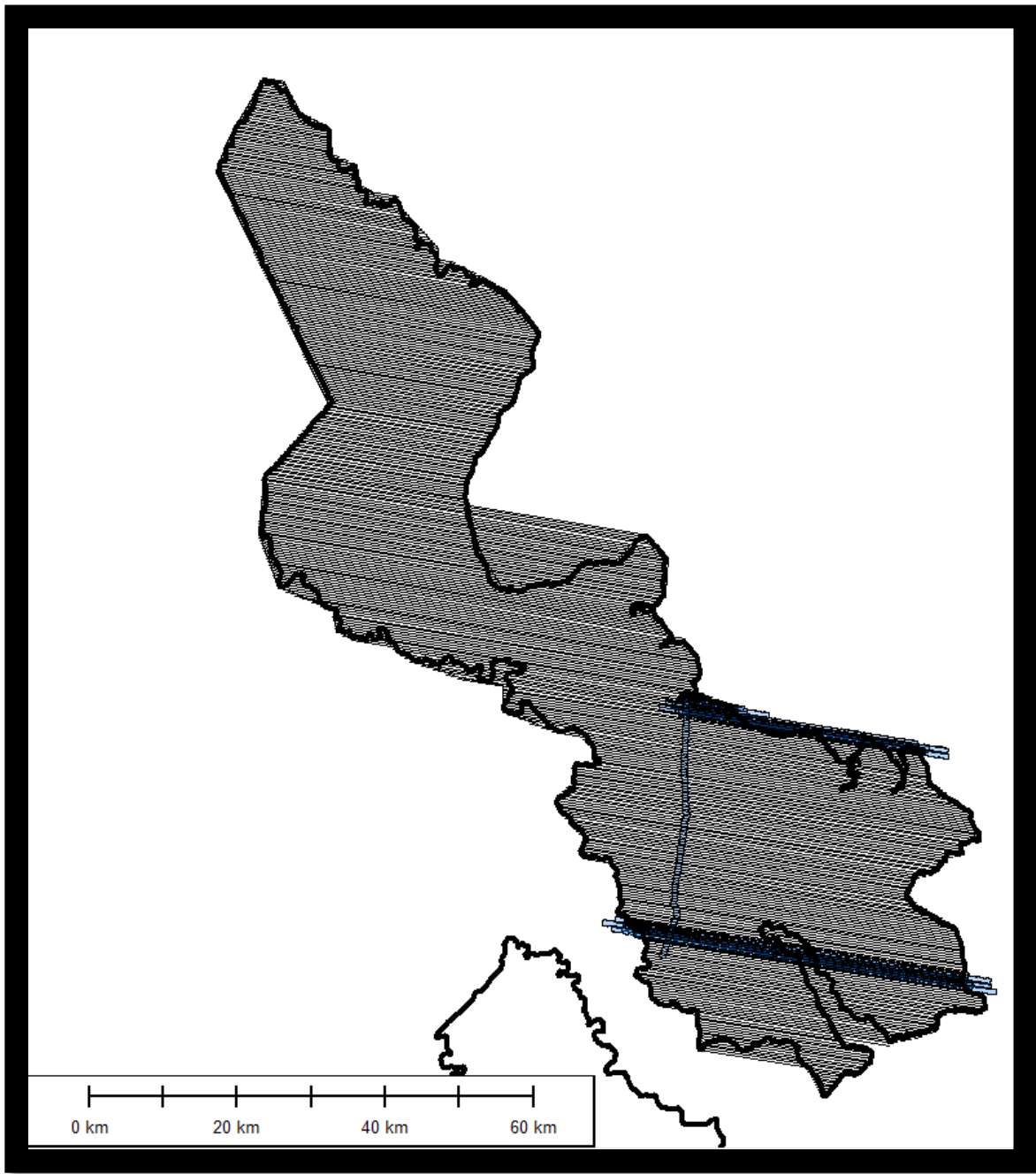
Static & KAR GPS // INS Alignment	
Time	Start
Pre Mission	
KAR Base	
KAR Base	
Post Mission	

Flight Plan Line #	LIDAR File Name	Flight Direction	GPS / UTC Time		Flight Aborted		Photo Events / Comments Please periodically record: Cable Temp: Quartz Watch:
			Start	End	Time	NM to End	
51		E	14 10	14 13			
52		W	14 17	14 29			
53		E	14 32	14 43			
54		W	14 48	14 59			
55		E	15 03	15 13			
56		W	15 17	15 29			
57		E	15 33	15 42			
Cross		S	15 45	15 48			

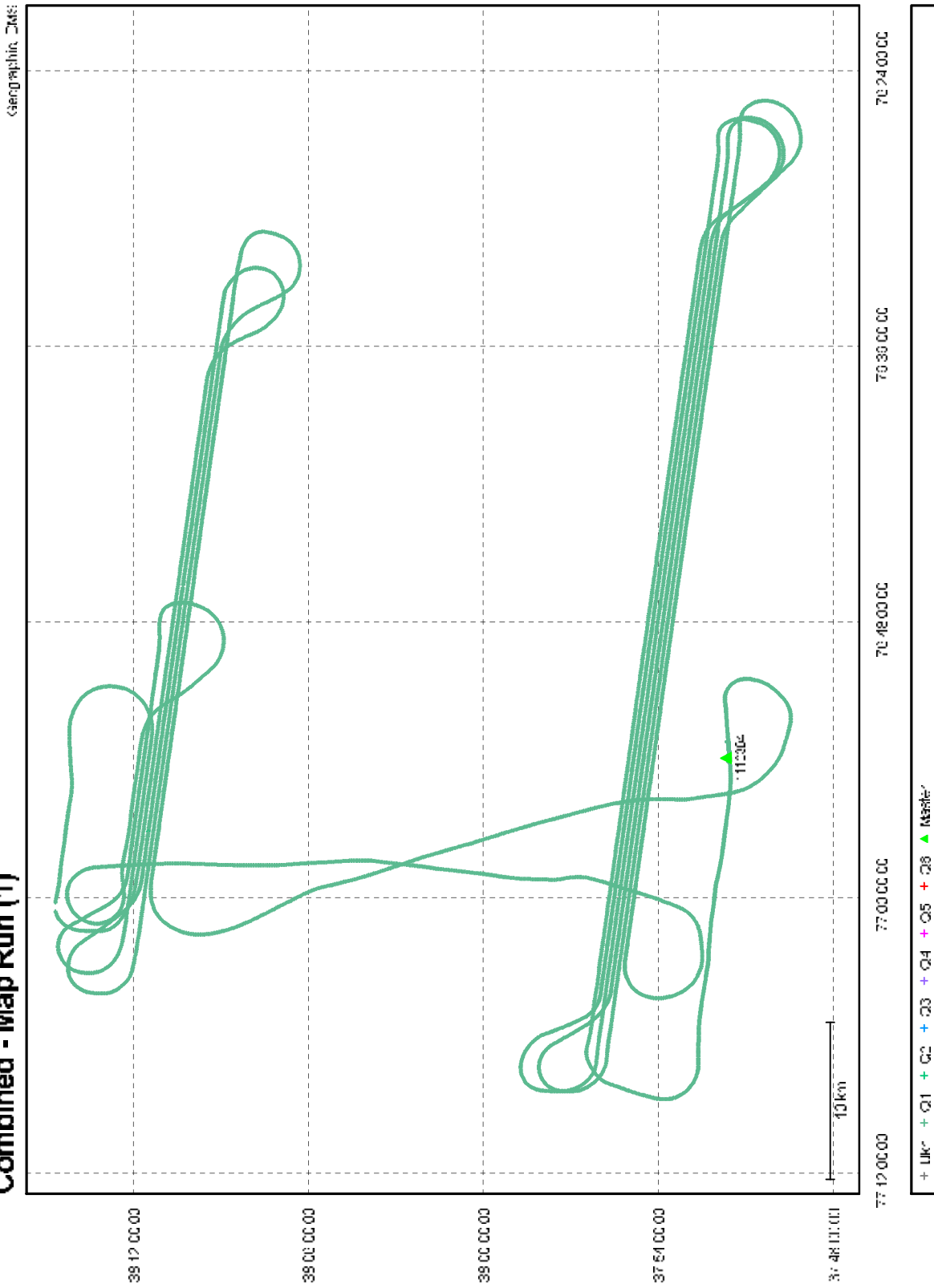
001103U

Mission: o211125b

2011 05 05



Combined - Map Run (1)



Processing Summary Information

Program: GrafNav
Version: 7.80.2517
Project: H:\range back va\o211125b\3_Processed\GPS\o211125b.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:
Total in GPB file: 124224
No processed position: 111818
Missing Fwd or Rev: 3
With bad C/A code: 0
With bad L1 Phase: 0

Measurement RMS Values:
L1 Phase: 0.0127 (m)
C/A Code: 0.67 (m)
L1 Doppler: 0.027 (m/s)

Fwd/Rev Separation RMS Values:
East: 0.010 (m)
North: 0.006 (m)
Height: 0.015 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (12401 occurrences):
East: 0.009 (m)
North: 0.006 (m)
Height: 0.014 (m)

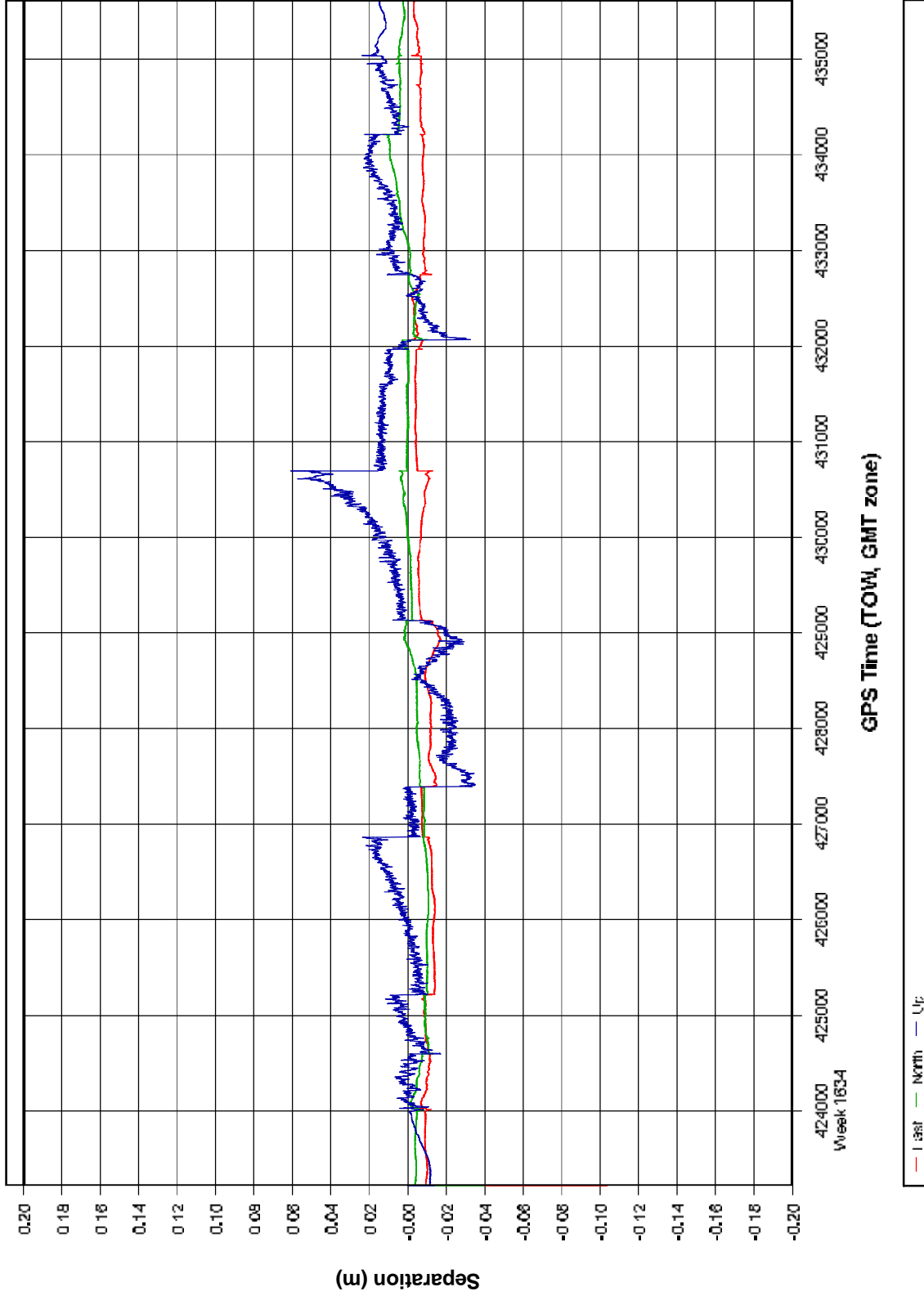
Quality Number Percentages:
Q 1: 100.0 %
Q 2: 0.0 %
Q 3: 0.0 %
Q 4: 0.0 %
Q 5: 0.0 %
Q 6: 0.0 %

Position Standard Deviation Percentages:
0.00 - 0.10 m: 100.0 %
0.10 - 0.30 m: 0.0 %
0.30 - 1.00 m: 0.0 %
1.00 - 5.00 m: 0.0 %
5.00 m + over: 0.0 %

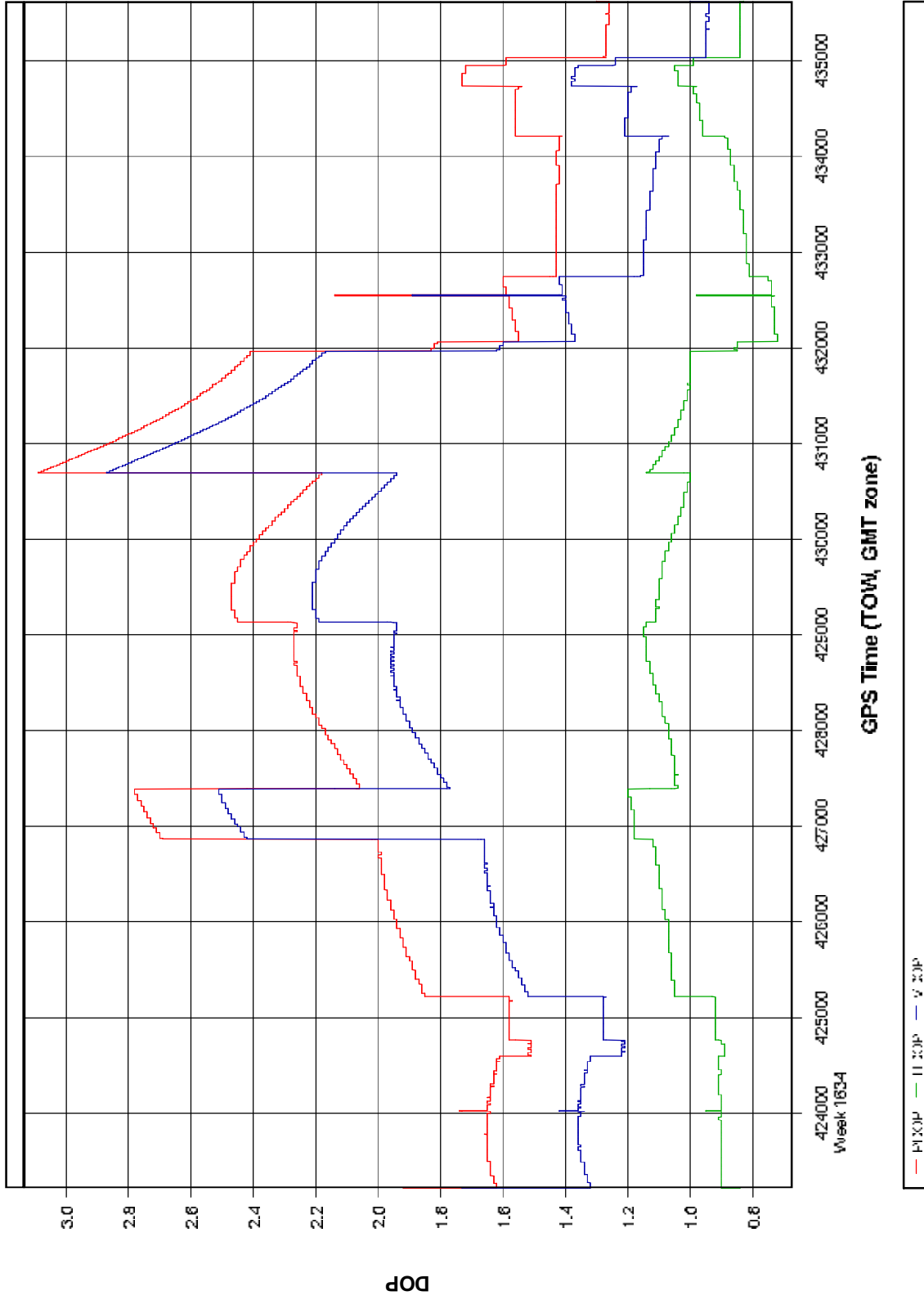
Percentages of epochs with DD_DOP over 10.00:
DOP over Tol: 0.0 %

Baseline Distances:
Maximum: 44.893 (km)
Minimum: 0.024 (km)
Average: 22.540 (km)
First Epoch: 0.040 (km)
Last Epoch: 0.025 (km)

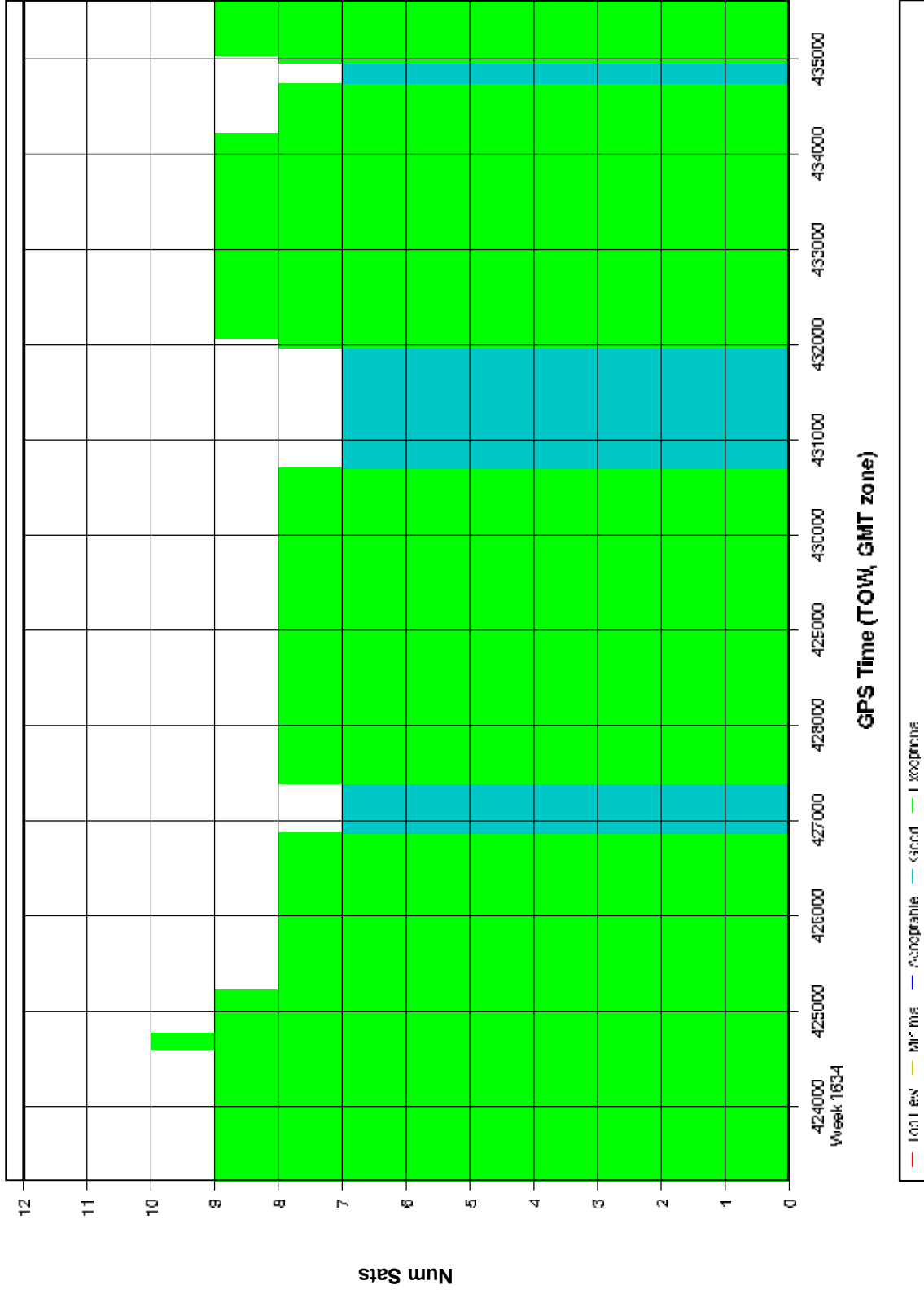
o211125b [Combined] - Forward/Reverse or Combined Separation Plot



o211125b [Combined] - PDOP, HDOP, VDOP Plots



o211125b [Combined] - Number of Satellites Bar Plot



```

; PROJECT:      H:\range back va\o211125b\3_Processed\GPS\o211125b.cfg
;
; DATE:        May 6/11 (date/time of processing)
; TIME:        20:38:48
; CREATED BY:  GrafNav Version 7.80.2517
;
VERSION = 7.80.2517
PROCUSER = Unknown
PROCDISC = Run*(2)
PROCTIME = 20:31:25 05/06/2011

; Master station # 1 information
MB_MASTER_INDEX = 0
MB_MASTER_NAME = 1110304
MB_MASTER_FILE =
H:\range*back*va\o211125b\1_RawData\original_PDC_files\1110304_00161250.gpb
MB_MASTER_POS = 37 51 41.39611 -76 53 55.13346 5.1620
MB_MASTER_ANT = 1.248 0.001 1.215 1 _TP_SOK600 0
MB_MASTER_DISABLE = OFF

; Remote station information
REMOTE_FILE = H:\range*back*va\o211125b\3_Processed\Extract\mgps_o211125b.gpb
REMOTE_POS = 37 51 40.21970 -76 53 54.38759 3.9162
REMOTE_ANT = 0.000

; General settings
PROCESS_MODE = 105 108 113 126 ; Processing modes (GrafNav only)

DATUM = NAD83 AUTO ; Processing Datum
INPDATUM = ON NAD83 AUTO ; Input Datum (ON=Use processing datum)
ELEV_MASK = 15.0 ; Elevation mask (deg)
GRID = UTM 15 31 ; Grid info

CYCLE_TEST = BOTH ; Cycle slip test method
STATIC_SLIP_TOL = 0.40 ; slip tolerance in static mode (cycles)
USE_DOPPLER = ON OFF ; Use doppler meas. for phase, for code-only

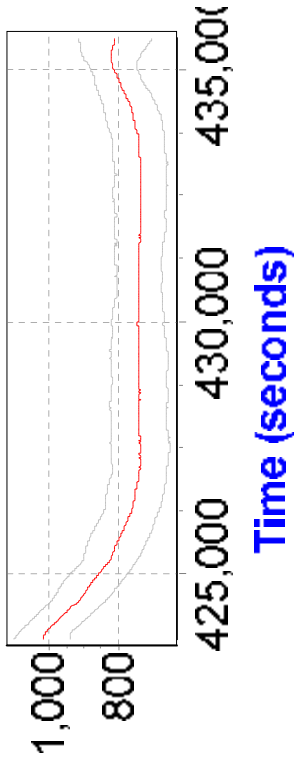
BASE_SAT = 99 ; Base satellite (99-default)

TIMERANGE = ALL 988666400.2 988678822.5 2 0 ; Processing time range
INTERVAL = 0.10 ; Processing time interval (seconds)

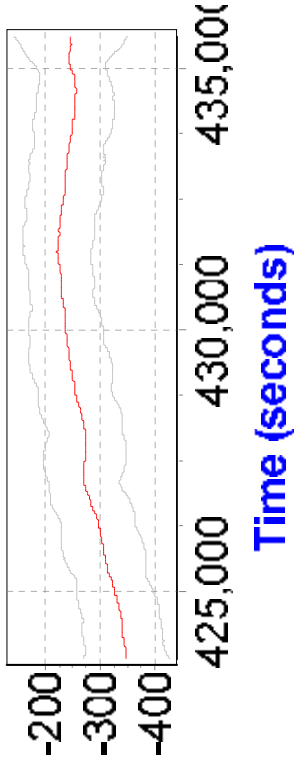
PROCESS_DIR = FORWARD ; Process direction (FORWARD/REVERSE)
BOTH_DIR = ON ; True for processing both directions
WRITE_BAD_EPOCHS = OFF ; Save bad data to .fwd/rev file (ON/OFF)
NOWRITE_HIGH = OFF 6 20.000 ; Don't write epoch with high statistics (q, stdev-m)
OUTPUT_MODE = EXTENDED ; Format for .fwd/rev file
DETAILED_SUM = ON ; Detailed Static/KAR Summary header
WRITE_SLIP_MSG = ON ; Print cycle slips to message log
SAVE_AMB = ON ; Should ambiguities be saved

```

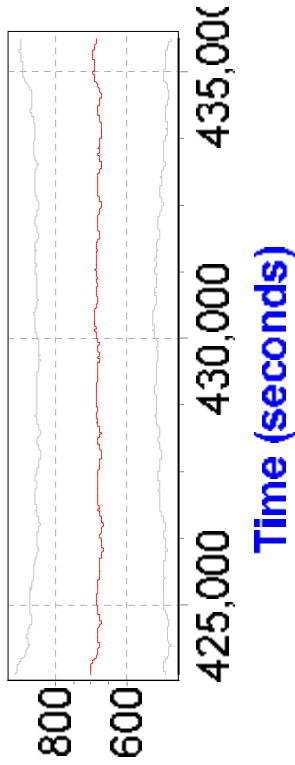
X Accelerometer Bias (micro-g)



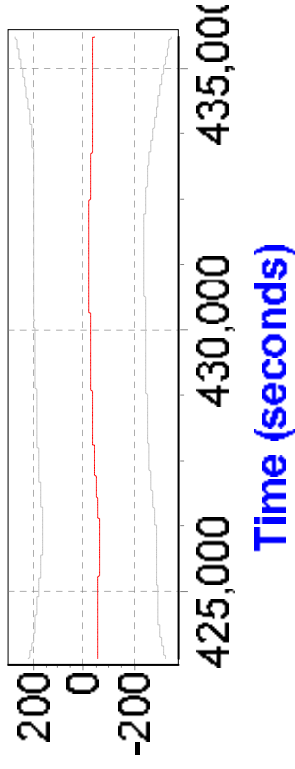
Y Accelerometer Bias (micro-g)



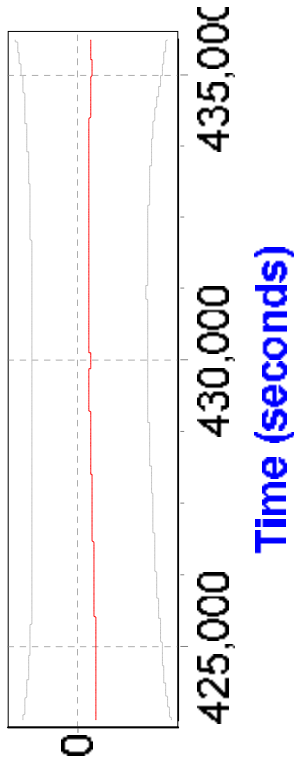
Z Accelerometer Bias (micro-g)



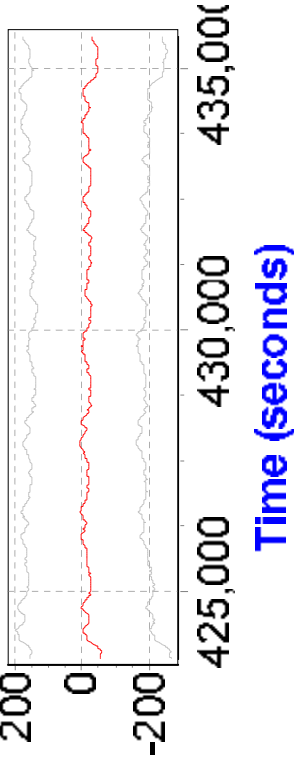
X Accelerometer Scale Factor Error (ppm)



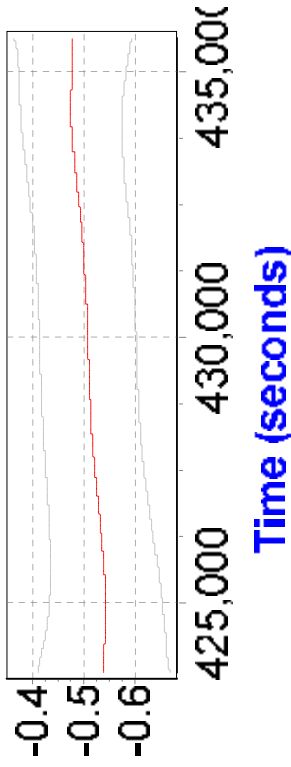
Y Accelerometer Scale Factor Error (ppm)



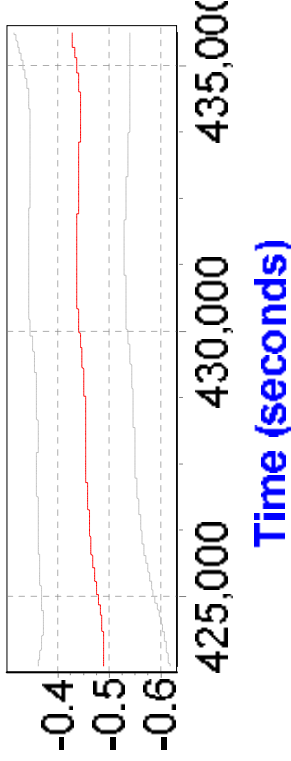
Z Accelerometer Scale Factor Error (ppm)



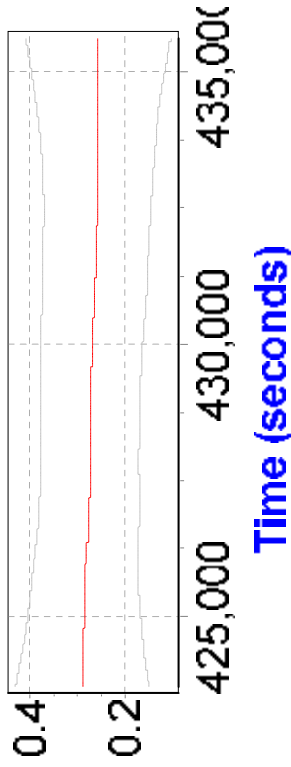
X Gyro Bias (degrees/hour)



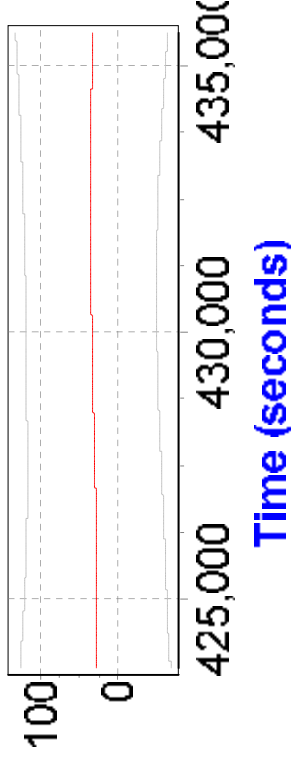
Y Gyro Bias (degrees/hour)



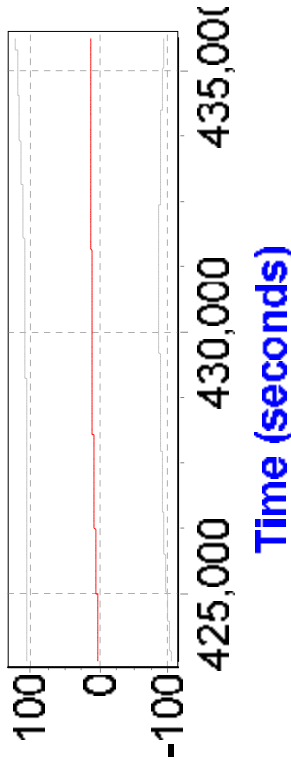
Z Gyro Bias (degrees/hour)



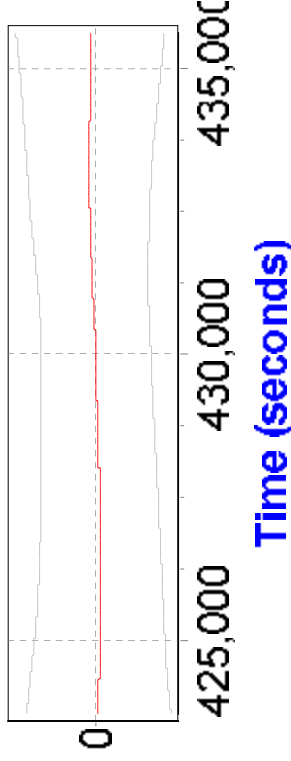
X Gyro Scale Factor Error (ppm)



Y Gyro Scale Factor Error (ppm)



Z Gyro Scale Factor Error (ppm)



GPS Base Log Sheet



Terrapoint

Station ID:	1110304	Project #:	111030	Missions:	02112501 01112502
-------------	---------	------------	--------	-----------	----------------------

Project Name:	Kema VA	Calendar Date:	5/5/2011	Julian Day	125
Approx. Coordinates WGS 84	N		W		
Description of Mark (Take Photos)					
Monument is:	<input checked="" type="checkbox"/> Flush with ground	<input checked="" type="checkbox"/> Above ground	3	cm	<input type="checkbox"/> Below ground _____ cm
Location & Access					

Obstructions & Additional Notes

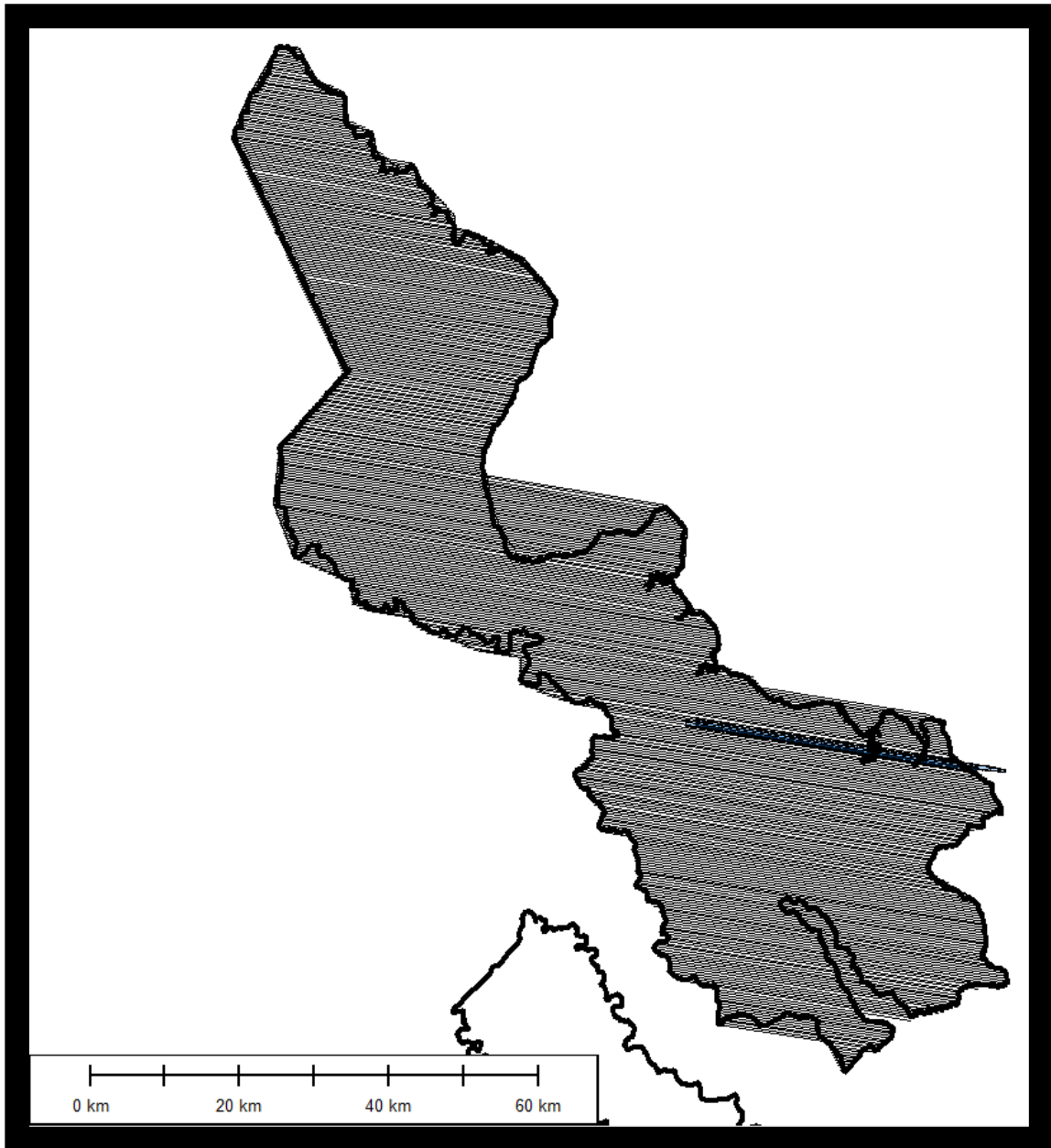
GPS Observation - MAIN					
Rx Make / Model	GSR2600	Serial #	0016		
Ant Make / Model	Sbc 600	Serial #	0035		
Operator	AC				
Session Time (GPS)	Start	11 15 00	End		
Slant HI Before:	A:	1.215	B:	1.215	
Slant HI After:	A:	1.215	B:	1.215	
Correction					
Phase Center	K m <input type="checkbox"/> in <input type="checkbox"/> use GrafNav Profile				
Data File Name					

GPS Observation - Back-Up					
Rx Make / Model		Serial #			
Ant Make / Model		Serial #			
Operator					
Session Time (GPS)	Start				
Slant HI Before:	A:		B:		
Slant HI After:	A:		B:		
Correction					
Phase Center	<input type="checkbox"/> m <input type="checkbox"/> in <input type="checkbox"/> use GrafNav Profile				
Data File Name					

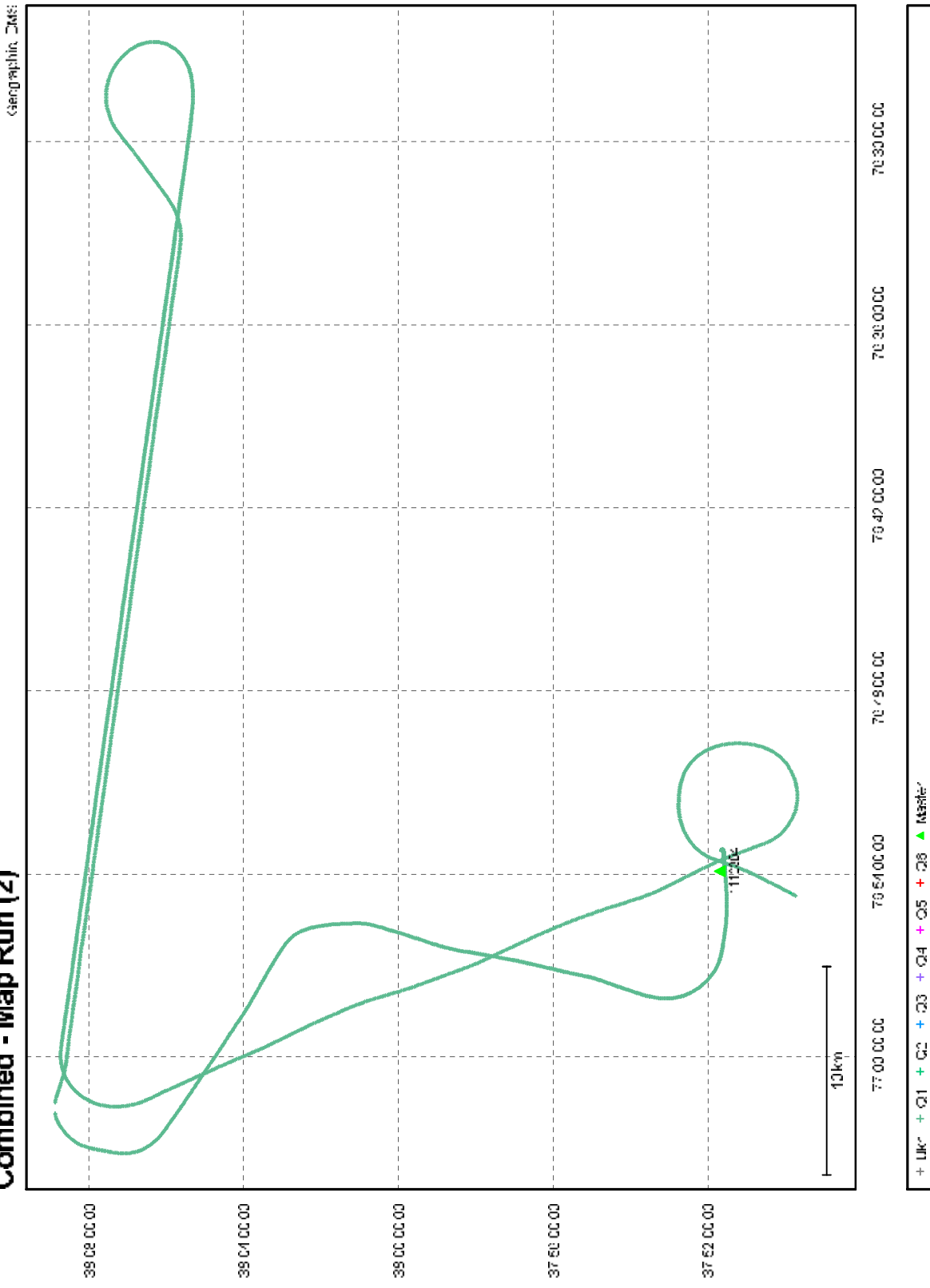


Mission: o211127b

2011 05 07



Combined - Map Run (2)



Processing Summary Information

Program: GrafNav
Version: 7.80.2517
Project: H:\range back va\o211127b\3_Processed for o211127b\GPS\o211127b.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:
Total in GPB file: 119016
No processed position: 115373
Missing Fwd or Rev: 3
With bad C/A code: 0
With bad L1 Phase: 0

Measurement RMS Values:
L1 Phase: 0.0134 (m)
C/A Code: 0.69 (m)
L1 Doppler: 0.027 (m/s)

Fwd/Rev Separation RMS Values:
East: 0.006 (m)
North: 0.015 (m)
Height: 0.015 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (3638 occurrences):
East: 0.003 (m)
North: 0.006 (m)
Height: 0.010 (m)

Quality Number Percentages:
Q 1: 99.9 %
Q 2: 0.1 %
Q 3: 0.0 %
Q 4: 0.0 %
Q 5: 0.0 %
Q 6: 0.0 %

Position Standard Deviation Percentages:
0.00 - 0.10 m: 100.0 %
0.10 - 0.30 m: 0.0 %
0.30 - 1.00 m: 0.0 %
1.00 - 5.00 m: 0.0 %
5.00 m + over: 0.0 %

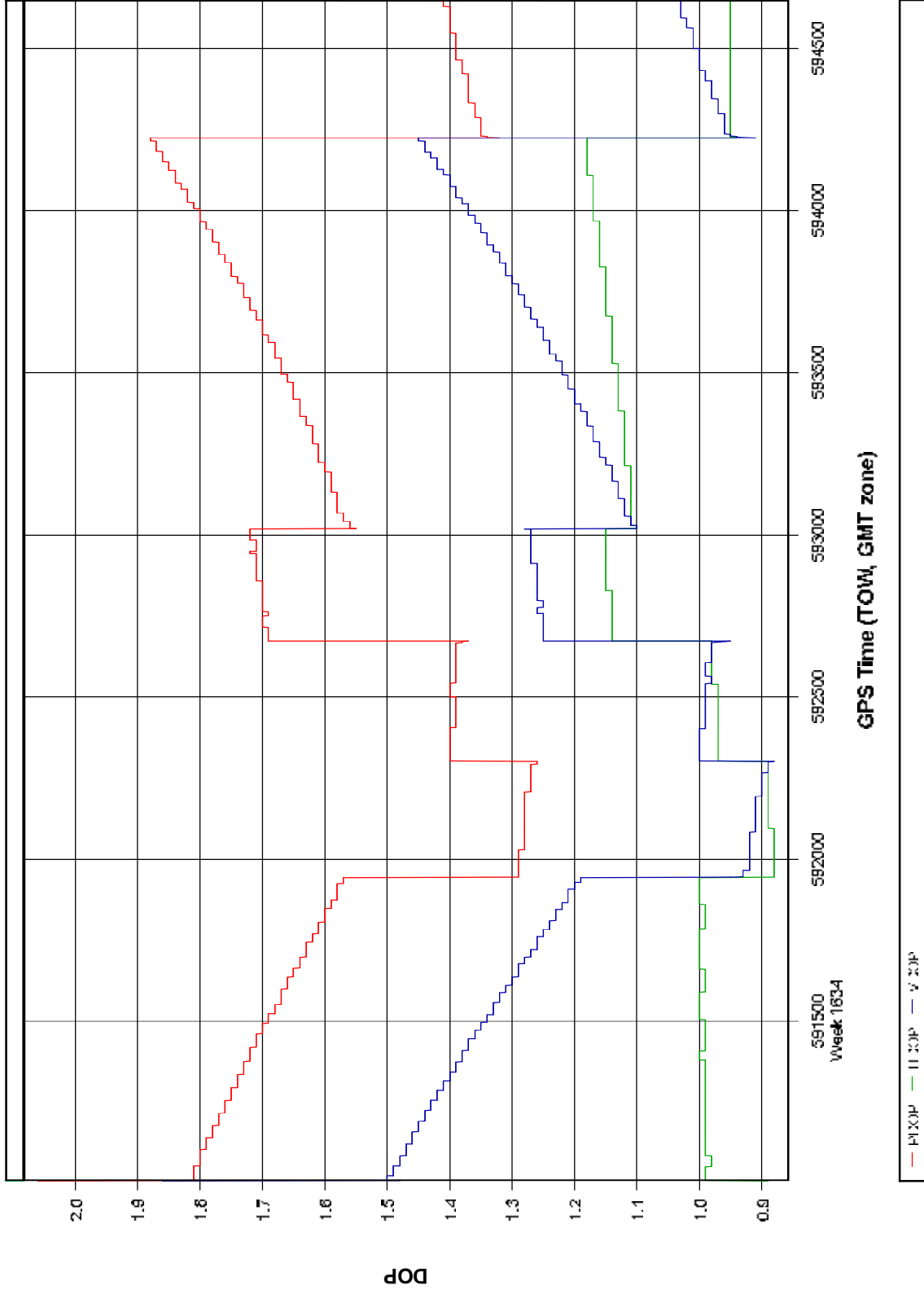
Percentages of epochs with DD_DOP over 10.00:
DOP over Tol: 0.0 %

Baseline Distances:
Maximum: 48.486 (km)
Minimum: 0.044 (km)
Average: 19.207 (km)
First Epoch: 0.054 (km)
Last Epoch: 3.913 (km)

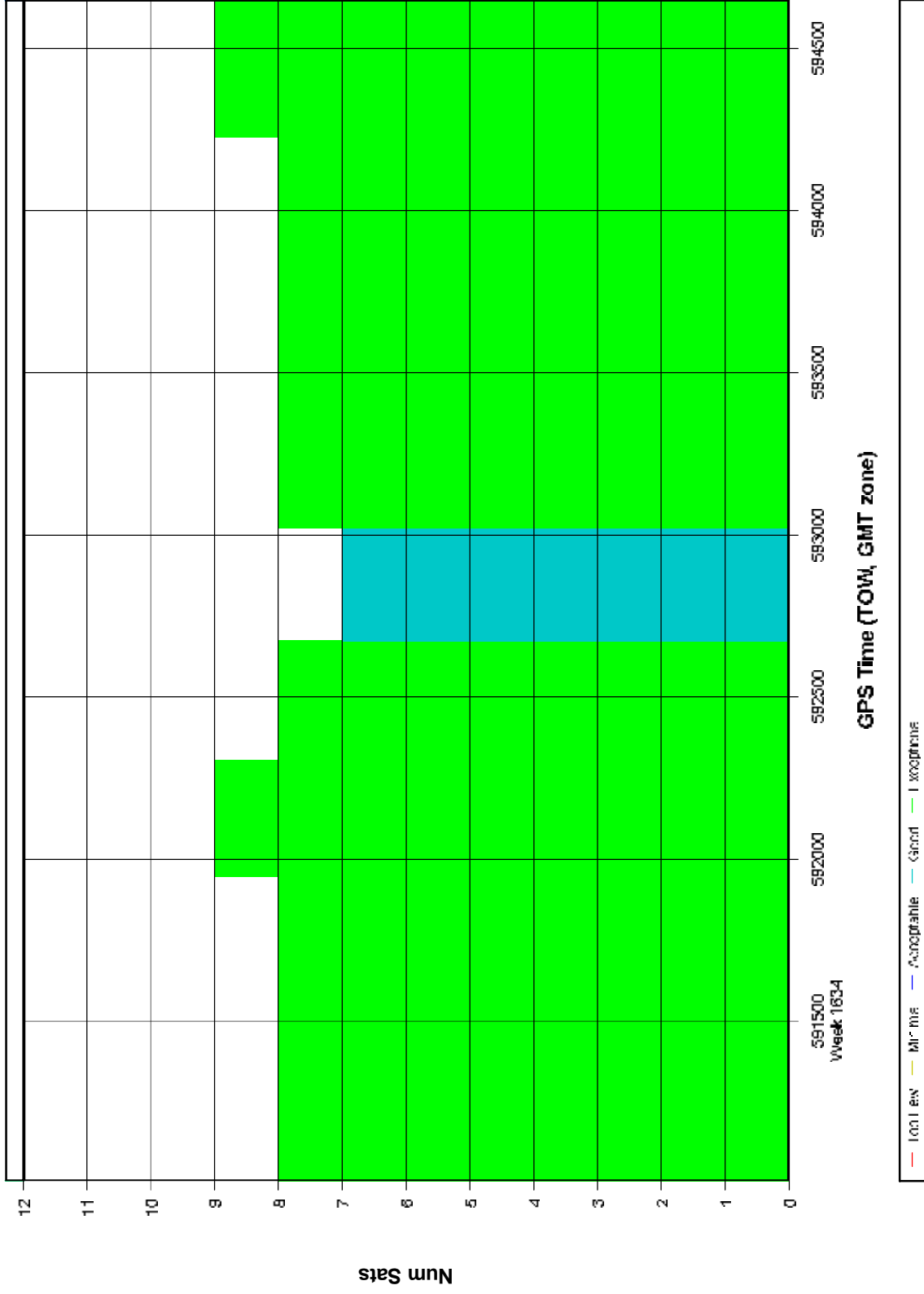
o211127b [Combined] - Forward/Reverse or Combined Separation Plot



o211127b [Combined] - PDOP, HDOP, VDOP Plots



o211127b [Combined] - Number of Satellites Bar Plot



```

; PROJECT:      H:\range back va\o211127b\3_Processed for o211127b\GPS\o211127b.cfg
;
; DATE:        May 8/11 (date/time of processing)
; TIME:        21:08:27
; CREATED BY:  GrafNav Version 7.80.2517
;

```

```

VERSION = 7.80.2517
PROCUSER = Unknown
PROCDISC = Run*(3)
PROCTIME = 21:06:07 05/08/2011

```

```

; Master station # 1 information

```

```

MB_MASTER_INDEX = 0
MB_MASTER_NAME = 1110304
MB_MASTER_FILE =
H:\range*back*va\o211127b\1_RawData\original_PDC_files\1110304_00161270.gpb
MB_MASTER_POS = 37 51 41.39611 -76 53 55.13346 5.1620
MB_MASTER_ANT = 1.248 0.001 1.215 1 _TP_SOK600 0
MB_MASTER_DISABLE = OFF

```

```

; Remote station information

```

```

REMOTE_FILE =
H:\range*back*va\o211127b\3_Processed*for*o211127b\Extract\mgps_o211127b.gpb
REMOTE_POS = 37 51 39.75385 -76 53 55.14738 9.3343
REMOTE_ANT = 0.000

```

```

; General settings

```

```

PROCESS_MODE = 103 108 113 126 ; Processing modes (GrafNav only)

```

```

DATUM = NAD83 AUTO ; Processing Datum
INPDATUM = ON NAD83 AUTO ; Input Datum (ON=Use processing datum)
ELEV_MASK = 15.0 ; Elevation mask (deg)
GRID = UTM 15 31 ; Grid info

```

```

CYCLE_TEST = BOTH ; Cycle slip test method
STATIC_SLIP_TOL = 0.40 ; slip tolerance in static mode (cycles)
USE_DOPPLER = ON OFF ; Use doppler meas. for phase, for code-only

```

```

BASE_SAT = 99 ; Base satellite (99-default)

```

```

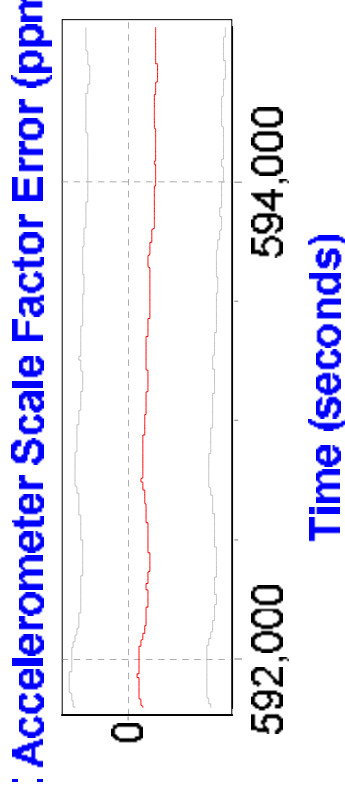
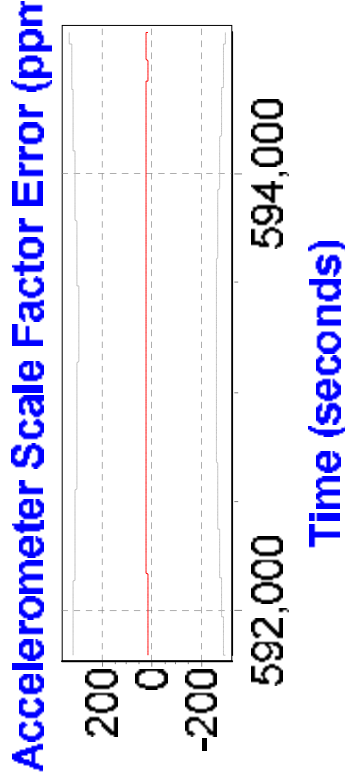
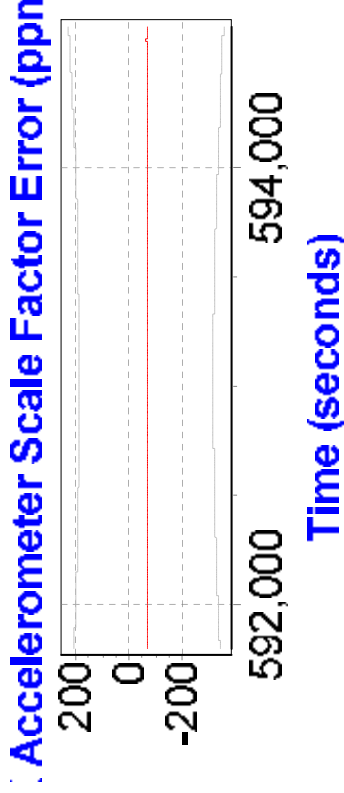
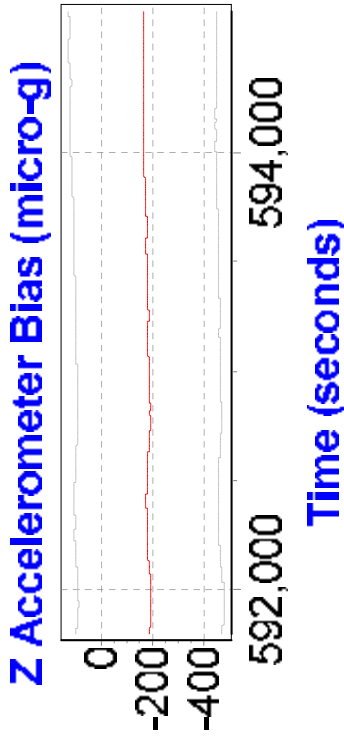
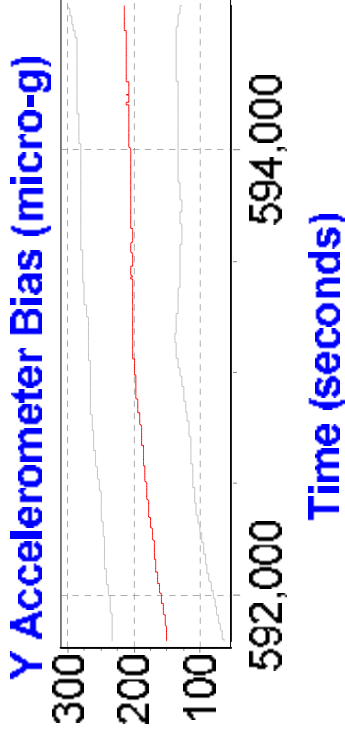
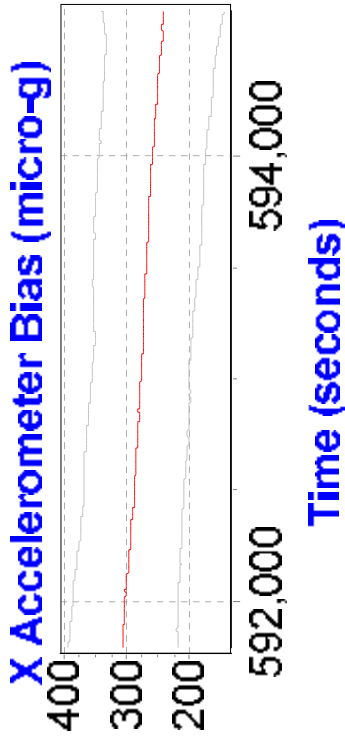
TIMERANGE = RANGE 988834194.8 988837850.0 2 0 ; Processing time range
INTERVAL = 0.10 ; Processing time interval (seconds)

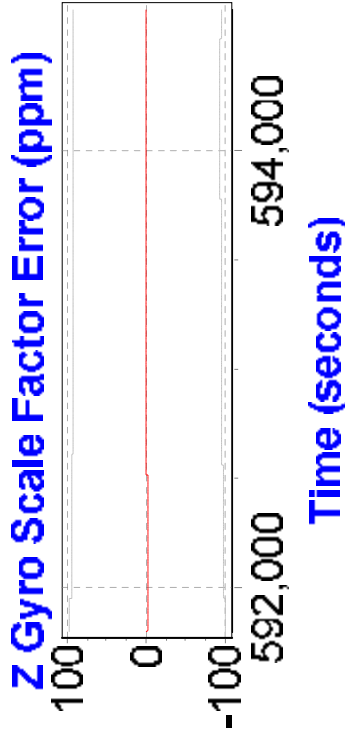
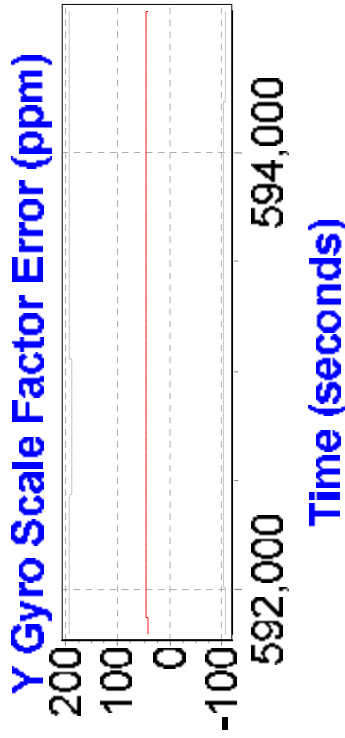
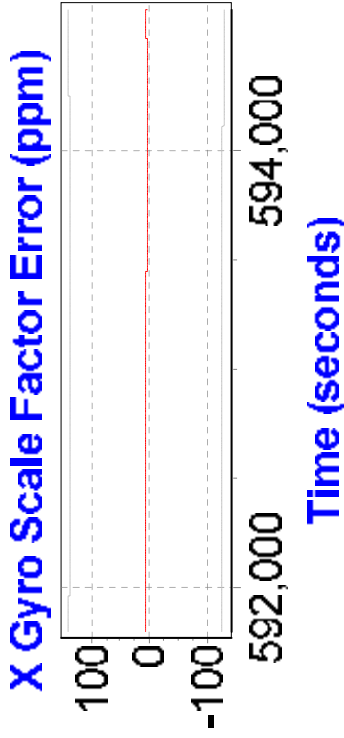
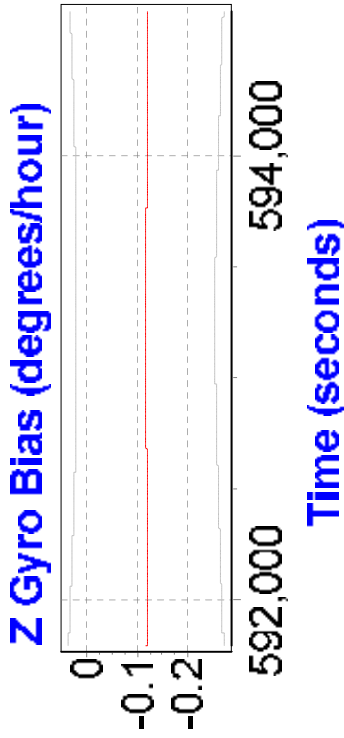
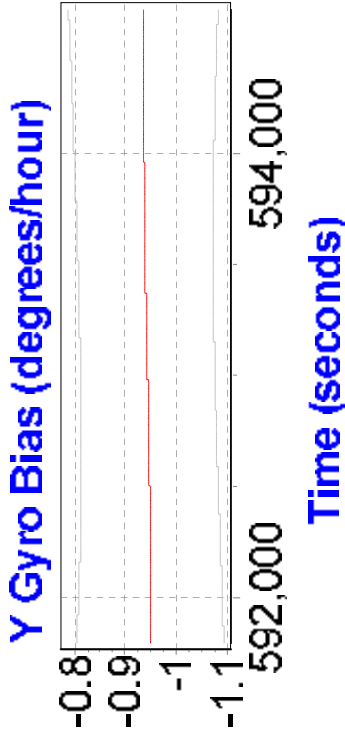
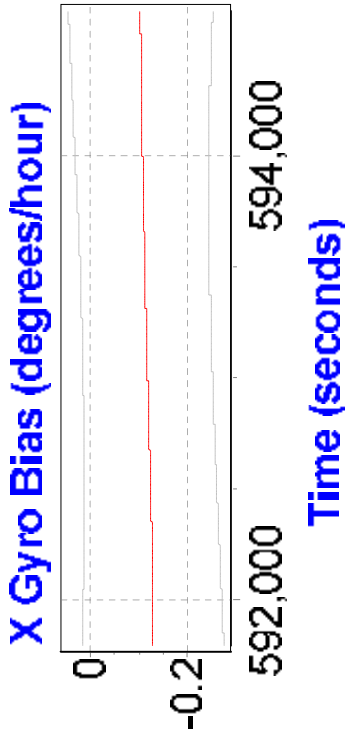
```

```

PROCESS_DIR = FORWARD ; Process direction (FORWARD/REVERSE)
BOTH_DIR = ON ; True for processing both directions
WRITE_BAD_EPOCHS = OFF ; Save bad data to .fwd/rev file (ON/OFF)
NOWRITE_HIGH = OFF 6 20.000 ; Don't write epoch with high statistics (q, stdev-m)
OUTPUT_MODE = EXTENDED ; Format for .fwd/rev file
DETAILED_SUM = ON ; Detailed Static/KAR Summary header
WRITE_SLIP_MSG = ON ; Print cycle slips to message log
SAVE_AMB = ON ; Should ambiguities be saved

```







Flight Log

Prop # 0211216 / C Session 0211216 / C

Date	Julian Day
Engine	Aircraft
Staging	Cal. Sign
Survey Block	Pilot
Lines Complete	Operator
Mission Objective	Observer

Scanner #	Scan Angle (Optical)
Laser Scans/Min	Mirror Scan Rate
Frame Bulbs/Min	Laser Pulse Rate
Shutter Speed	
Photo Filter	
IMU	
GPS Rx	
Data Drive	

Additional Notes:
 Outside Temp @ TC: 24
 Outside Pressure @ TC: 26.07
 Outside Temp @ LA:
 Outside Pressure @ LA:
 Status @ NAR: GPS/INS Alignment

Engine Off (Hobbs)	1630	15:10	123.0 x Total Alt. Hts.
Engine On (Hobbs)	1630	15:10	
Landing	17:00	16:00	
Total hrs (Hobbs)	0:30	0:30	
FSC \$/Litre			
Approx. Fuel Cost			

Ground Speed	2000
First Use (Remaining Return)	150
GPS / UTC Time	
Flight Aborted	

Time Pre Mission	10:35	10:35
NAR Base		
NAR 3286		
Post-Mission		
Events / Comments		

Flight Plan Line #	LIDAR File Name	Direction	Start	End	Time	NM to End	Photo
140	11-11-11	E	20:34	20:44			
200	11-11-11	E	20:50	20:58			
201	11-11-11	E	21:20	21:30			
202	11-11-11	E	21:35	21:45			
203	11-11-11	E	21:50	21:59			
204	11-11-11	E	22:00	22:07			
205	11-11-11	E	22:11	22:19			
206	11-11-11	E	22:26	22:32			
207	11-11-11	E	22:38	22:43			
208	11-11-11	E	22:47	22:53			

Outside Laser Temp	20.07
Photo	Abnt Right Line



GPS Base Log Sheet

Station ID: 110306 Project #: 11030 Missions:

Project Name: Cona VA Calendar Order: 7/5/2011 Julian Day: 127

Approx Coordinates WGS 84 N W

Description of Mark (Take Photos)

is: with ground Above ground cm Below ground cm

Location & Access Monument Flush

Obstructions Additional Notes

GPS Observation - Back-Up

By: Make: Model Serial #

Ant. Make: Model Serial #

Operator AC Start 112000

Session Time (GPS) End

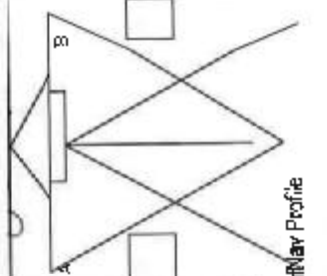
Slant H Before: A: 17

Slant H After: A: 1,522.3 B: 1,52

Correction

Phase Center m in use GrafNav Profile

Data File Name



By: Make: Model Serial #

Ant. Make: Model Serial #

Operator

Session Time (GPS) End

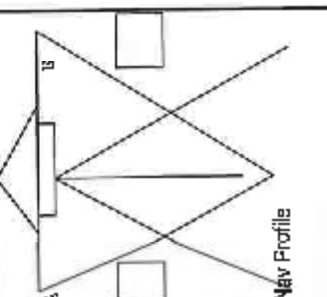
Slant H Before: A: B:

Slant H After: A: B:

Correction

Phase Center m in use GrafNav Profile

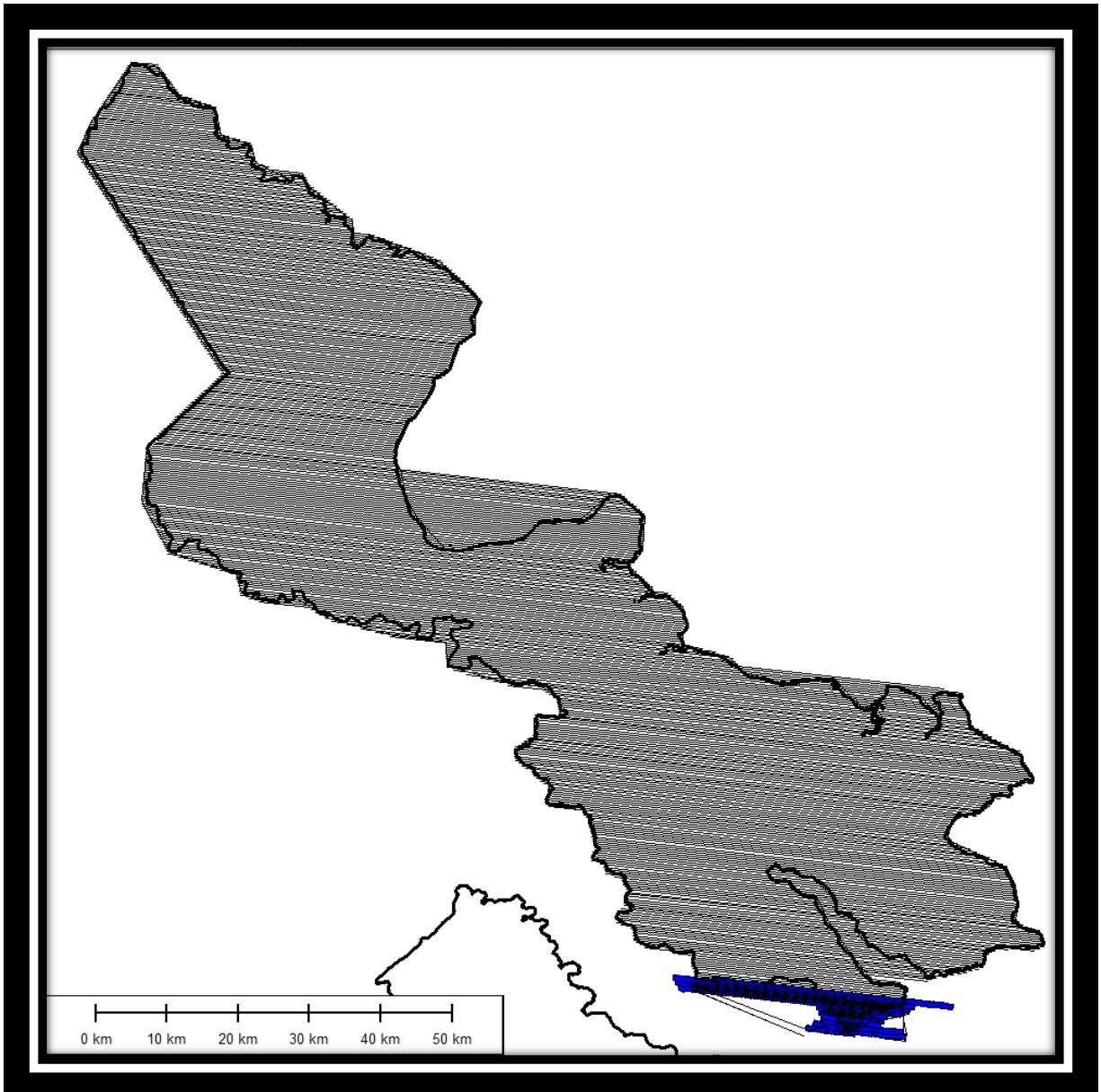
Data File Name





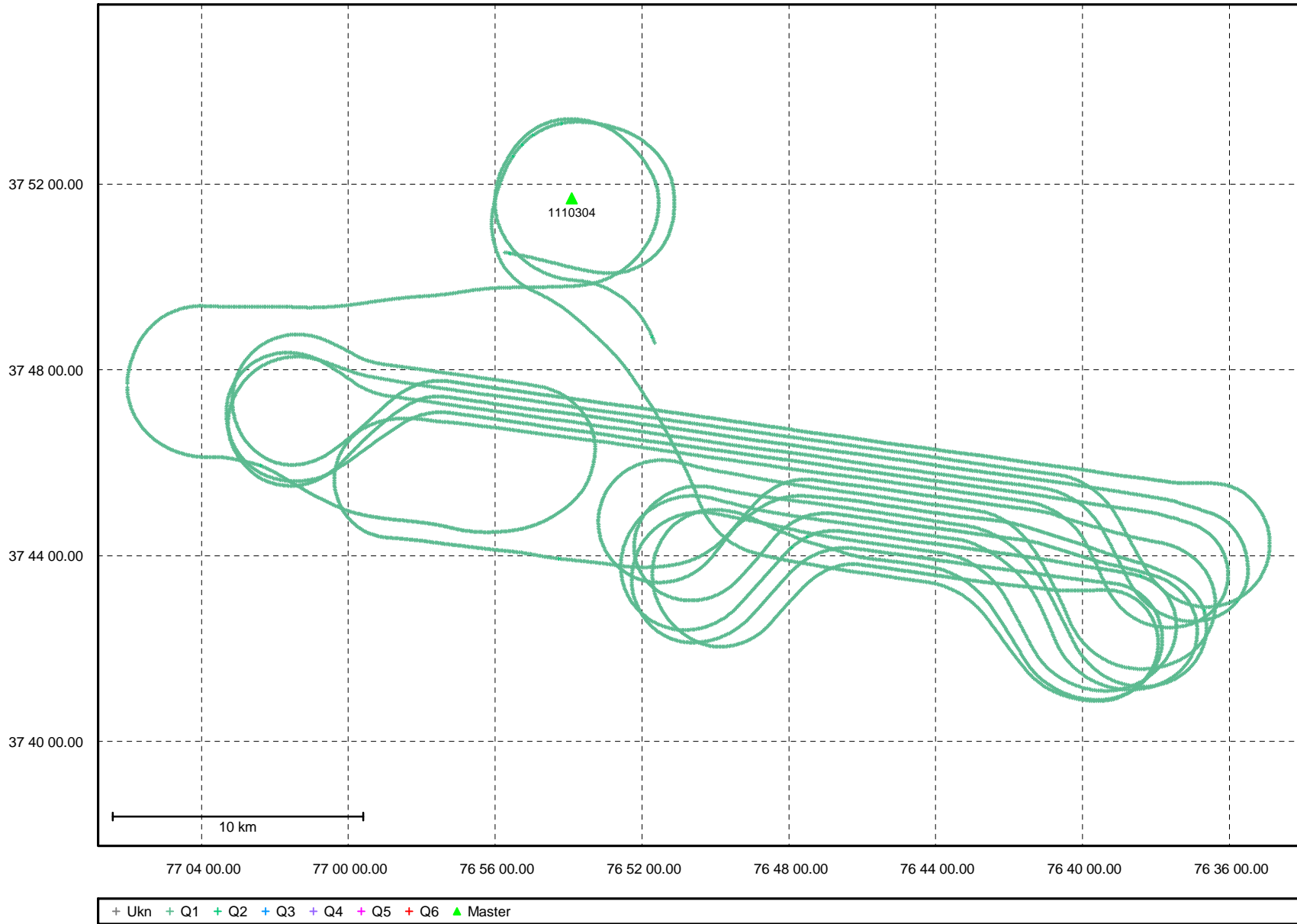
Mission: o511120a

2011 04 30



Combined - Map Run (15)

Geographic, DMS



Processing Summary Information

Program: GrafNav
Version: 7.80.2517
Project: H:\11120A\3_Processed\GPS\o511120a.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:
Total in GPB file: 124932
No processed position: 114619
Missing Fwd or Rev: 4
With bad C/A code: 0
With bad L1 Phase: 0

Measurement RMS Values:
L1 Phase: 0.0186 (m)
C/A Code: 0.83 (m)
L1 Doppler: 0.027 (m/s)

Fwd/Rev Separation RMS Values:
East: 0.009 (m)
North: 0.018 (m)
Height: 0.042 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (10307 occurrences):
East: 0.009 (m)
North: 0.017 (m)
Height: 0.040 (m)

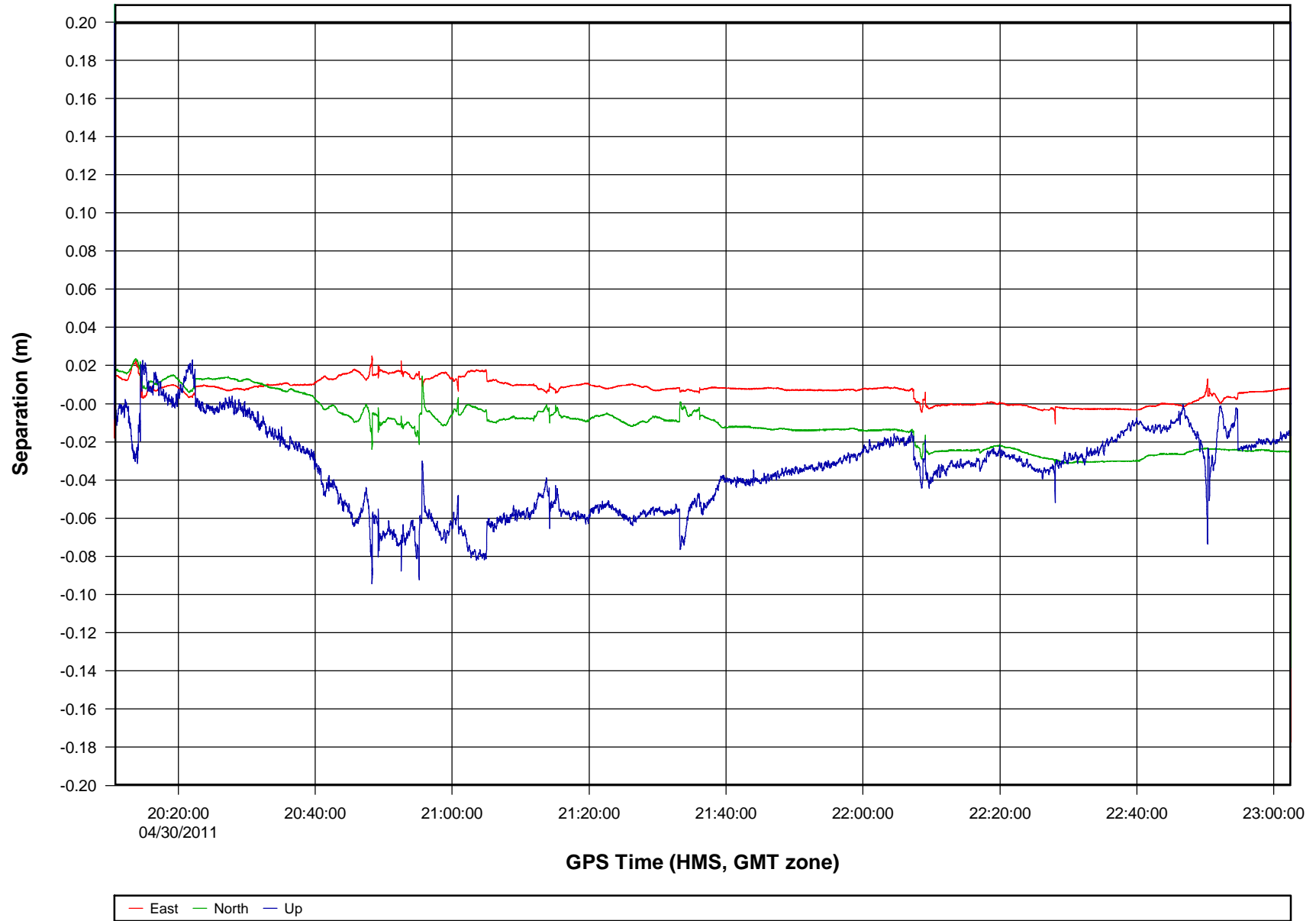
Quality Number Percentages:
Q 1: 99.9 %
Q 2: 0.1 %
Q 3: 0.0 %
Q 4: 0.0 %
Q 5: 0.0 %
Q 6: 0.0 %

Position Standard Deviation Percentages:
0.00 - 0.10 m: 100.0 %
0.10 - 0.30 m: 0.0 %
0.30 - 1.00 m: 0.0 %
1.00 - 5.00 m: 0.0 %
5.00 m + over: 0.0 %

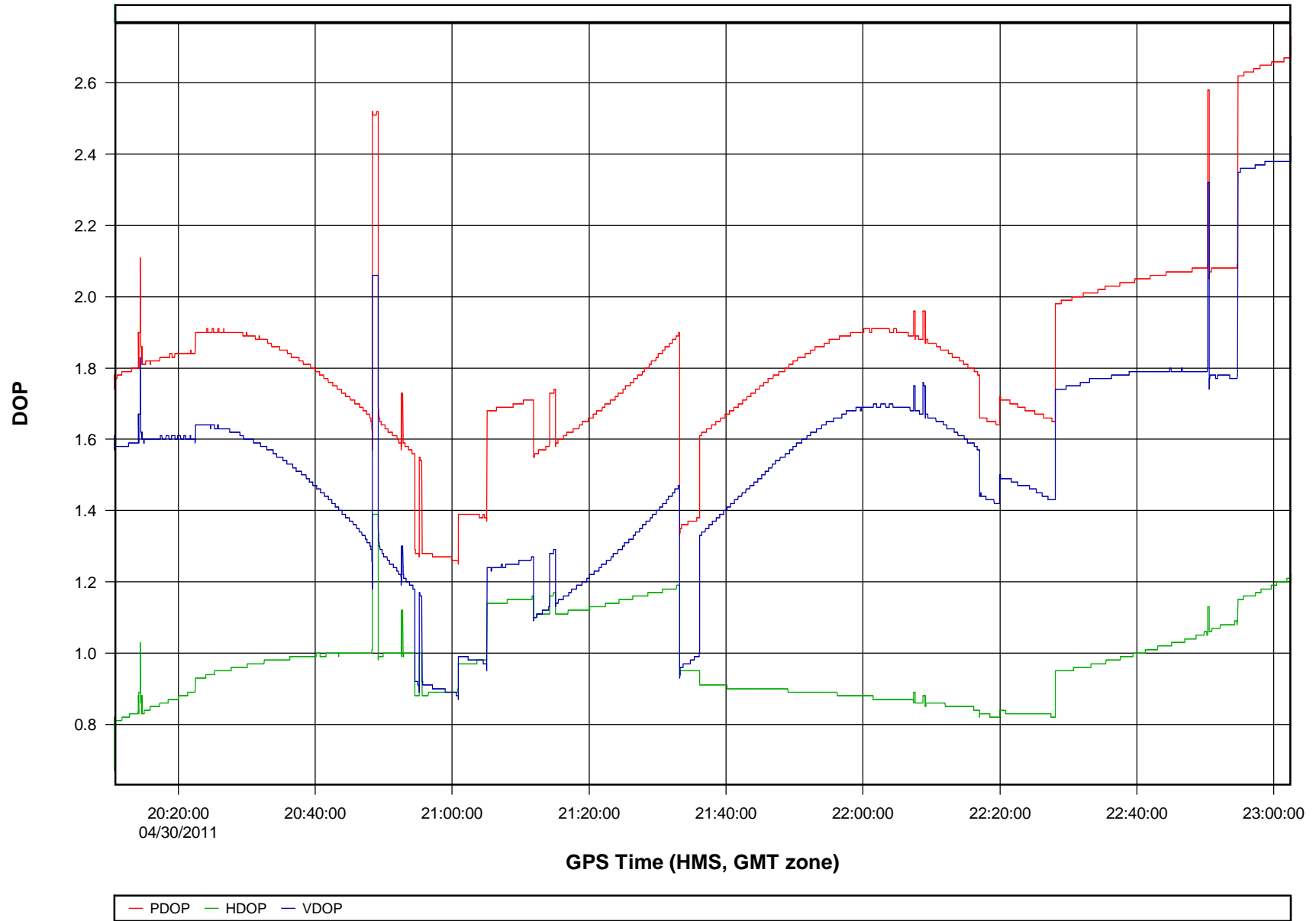
Percentages of epochs with DD_DOP over 10.00:
DOP over Tol: 0.0 %

Baseline Distances:
Maximum: 31.432 (km)
Minimum: 2.824 (km)
Average: 17.053 (km)
First Epoch: 3.535 (km)
Last Epoch: 6.708 (km)

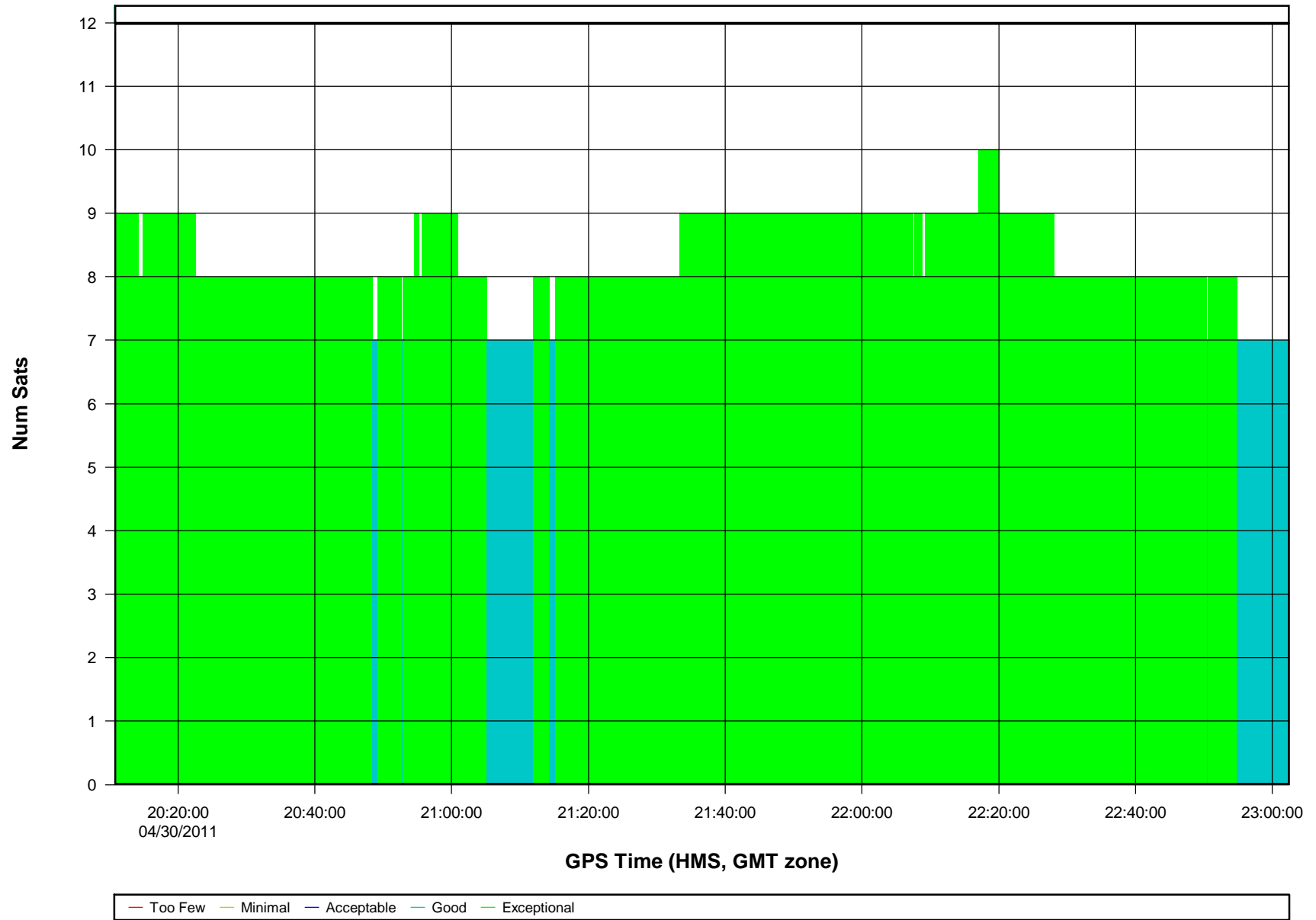
o511120a [Combined] - Forward/Reverse or Combined Separation Plot



o511120a [Combined] - PDOP, HDOP, VDOP Plots



o511120a [Combined] - Number of Satellites Bar Plot



```

; PROJECT:      H: \11120A\3_Processed\GPS\o511120a. cfg
;
; DATE:        May 5/11 (date/time of processing)
; TIME:        14: 54: 34
; CREATED BY:  GrafNav Version 7. 80. 2517
;

```

```

VERSION = 7. 80. 2517
PROCUSER = Unknown
PROCDESC = Run*(16)
PROCTIME = 12: 26: 10 05/05/2011

```

```

; Master station # 1 information

```

```

MB_MASTER_INDEX = 0
MB_MASTER_NAME = 1110304
MB_MASTER_FILE = H: \11120A\1_RawData\original_PDC_files\1110304_00161200. gpb
MB_MASTER_POS = 37 51 41. 39611 -76 53 55. 13346 5. 1620
MB_MASTER_ANT = 1. 246 0. 001 1. 213 1 _TP_S0K600 0
MB_MASTER_DISABLER = OFF

```

```

; Remote station information

```

```

REMOTE_FILE = H: \11120A\3_Processed\Extract\mgps_o511120a. gpb
REMOTE_POS = 37 42 27. 25046 -77 26 16. 33314 29. 5451
REMOTE_ANT = 0. 000

```

```

; General settings

```

```

PROCESS_MODE = 103 108 113 126 ; Processing modes (GrafNav only)

```

```

DATUM = NAD83 AUTO ; Processing Datum
INPDATUM = ON NAD83 AUTO ; Input Datum (ON=Use processing datum)
ELEV_MASK = 15. 0 ; Elevation mask (deg)
GRID = UTM 15 31 ; Grid info

```

```

CYCLE_TEST = BOTH ; Cycle slip test method
STATIC_SLIP_TOL = 0. 40 ; slip tolerance in static mode (cycles)
USE_DOPPLER = ON OFF ; Use doppler meas. for phase, for code-only

```

```

BASE_SAT = 99 ; Base satellite (99-default)

```

```

TIMERANGE = RANGE 988229439. 0 988239751. 0 2 0 ; Processing time range
INTERVAL = 0. 10 ; Processing time interval (seconds)

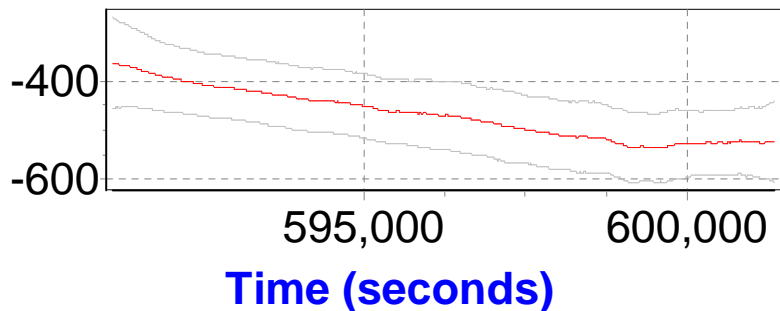
```

```

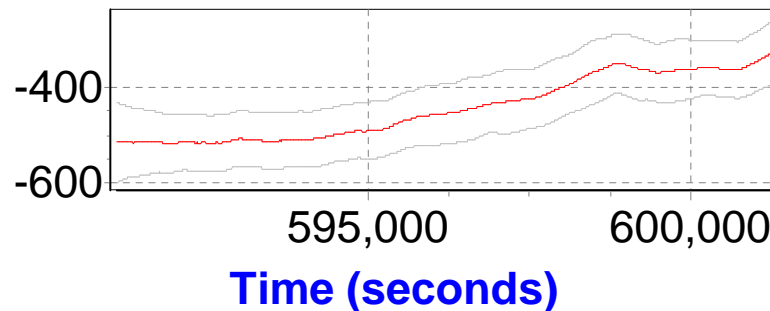
PROCESS_DIR = FORWARD ; Process direction (FORWARD/REVERSE)
BOTH_DIR = ON ; True for processing both directions
WRITE_BAD_EPOCHS = OFF ; Save bad data to .fwd/rev file (ON/OFF)
NOWRITE_HIGH = OFF 6 20. 000 ; Don't write epoch with high statistics (q, stdev-m)
OUTPUT_MODE = EXTENDED ; Format for .fwd/rev file
DETAILED_SUM = ON ; Detailed Static/KAR Summary header
WRITE_SLIP_MSG = ON ; Print cycle slips to message log
SAVE_AMB = ON ; Should ambiguities be saved

```

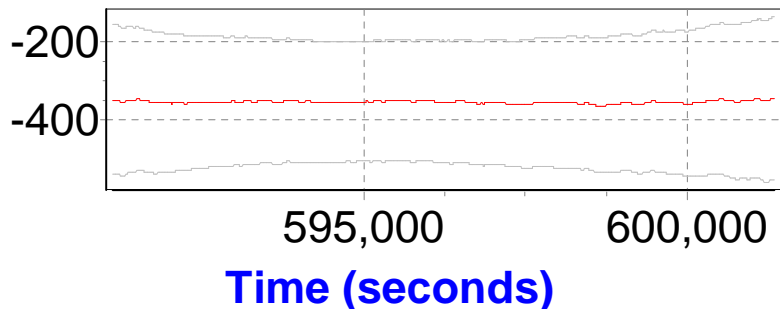

X Accelerometer Bias (micro-g)



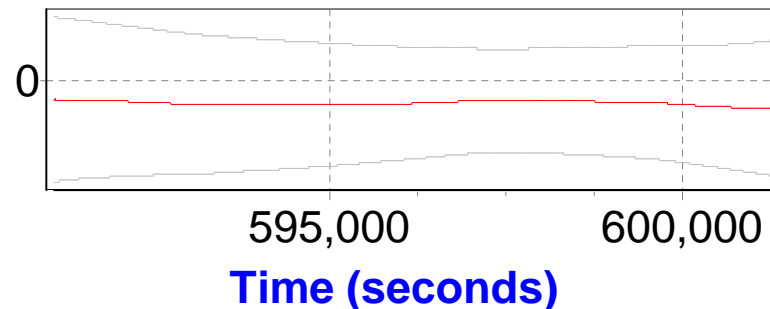
Y Accelerometer Bias (micro-g)



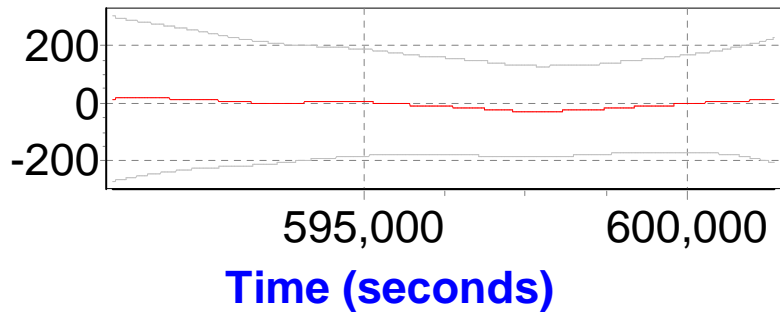
Z Accelerometer Bias (micro-g)



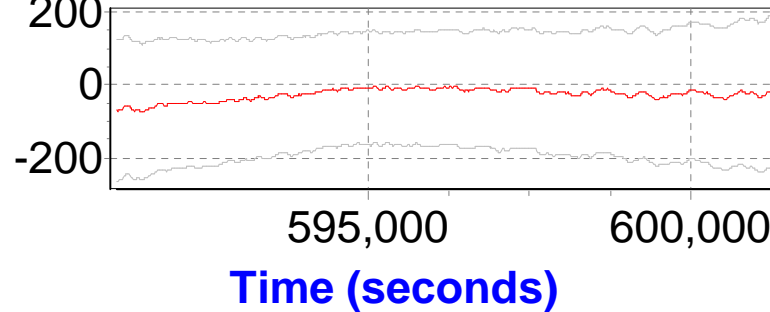
Accelerometer Scale Factor Error (ppr)



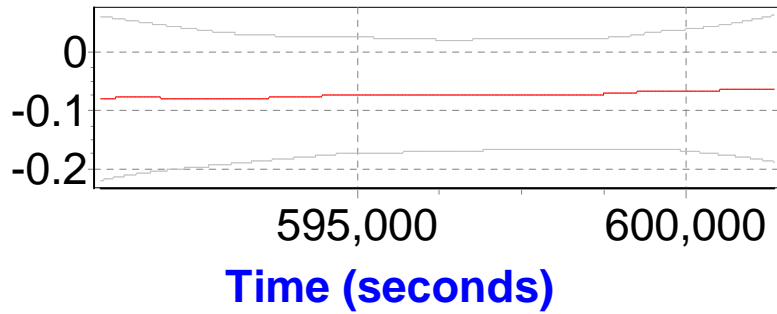
Accelerometer Scale Factor Error (ppr)



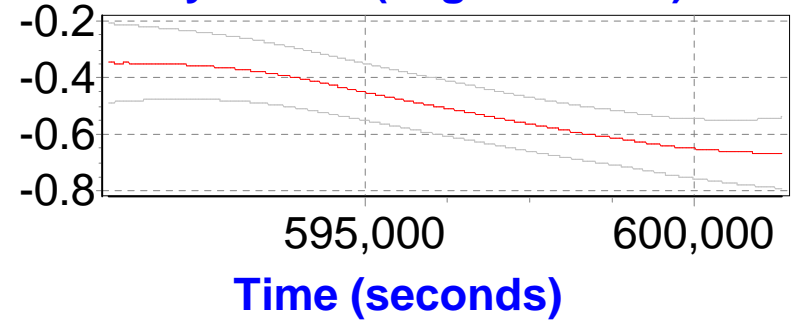
Accelerometer Scale Factor Error (ppr)



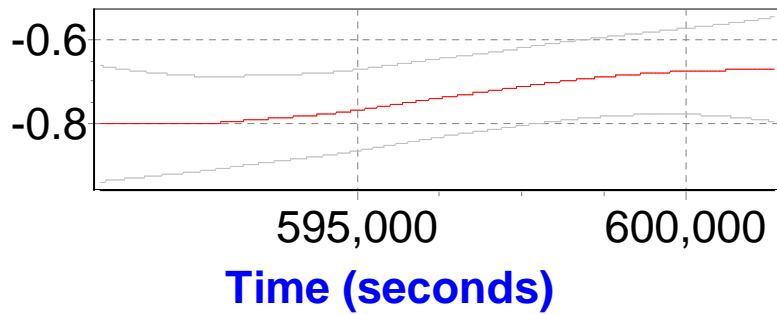
X Gyro Bias (degrees/hour)



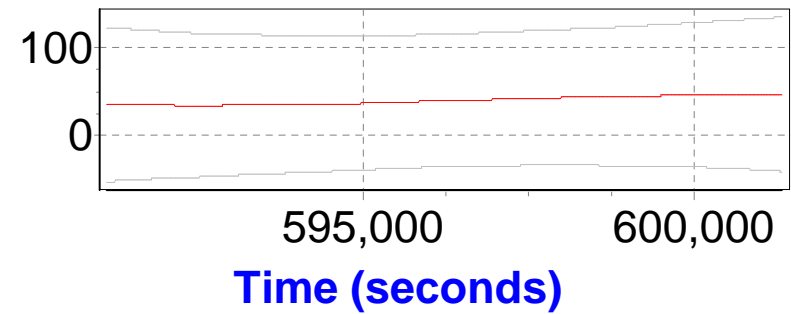
Y Gyro Bias (degrees/hour)



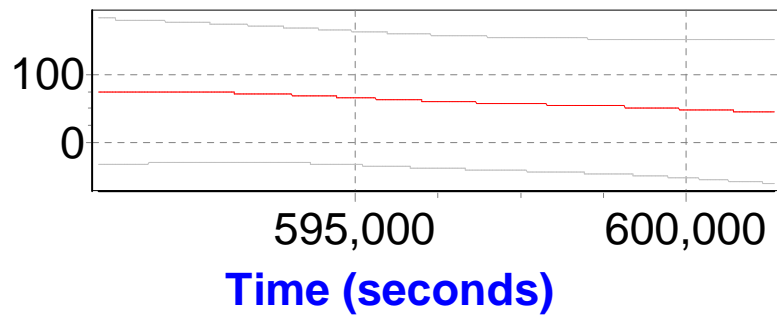
Z Gyro Bias (degrees/hour)



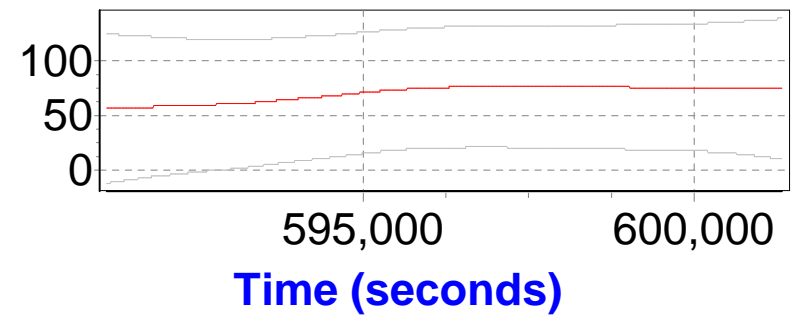
X Gyro Scale Factor Error (ppm)



Y Gyro Scale Factor Error (ppm)

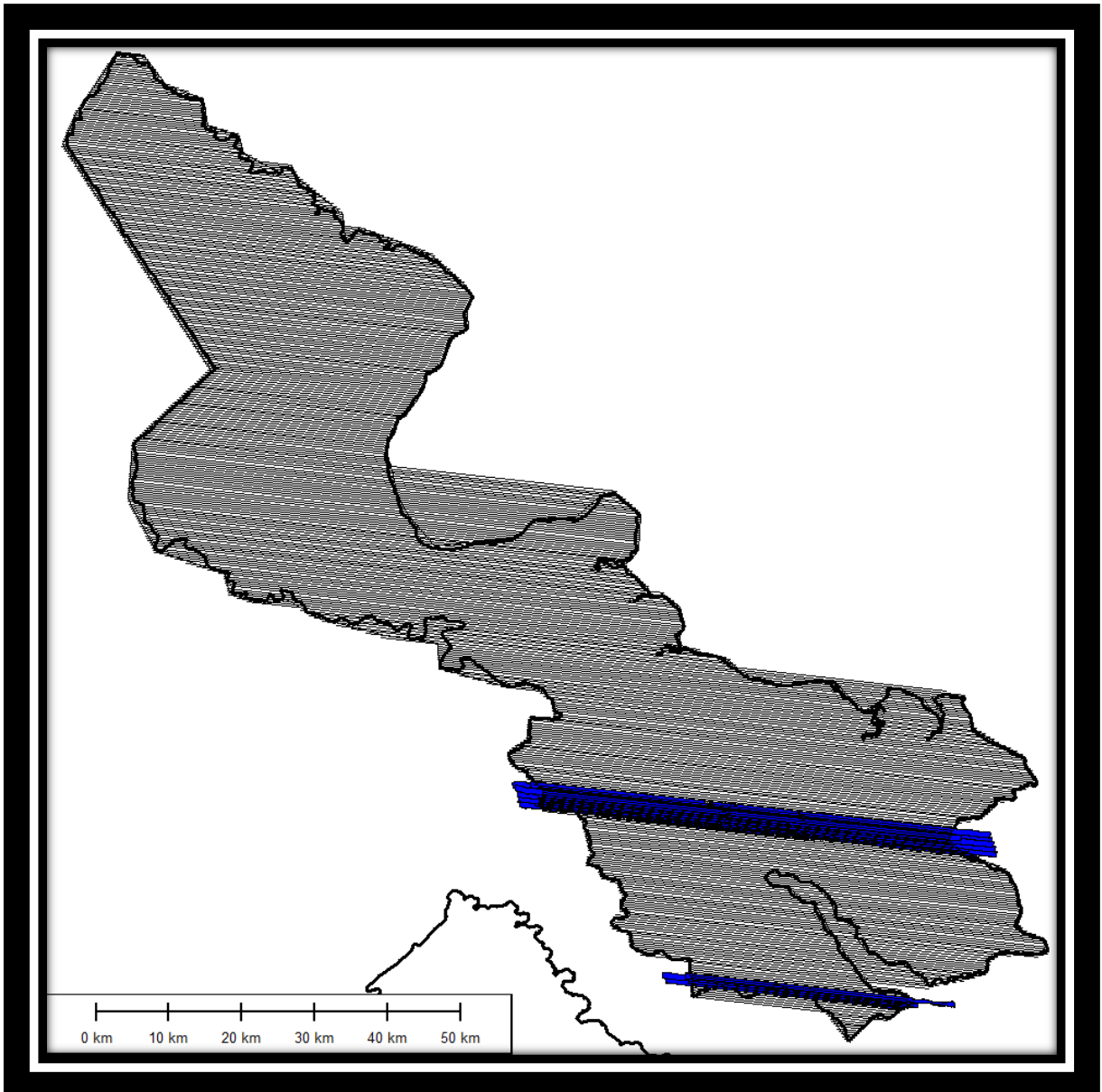


Z Gyro Scale Factor Error (ppm)



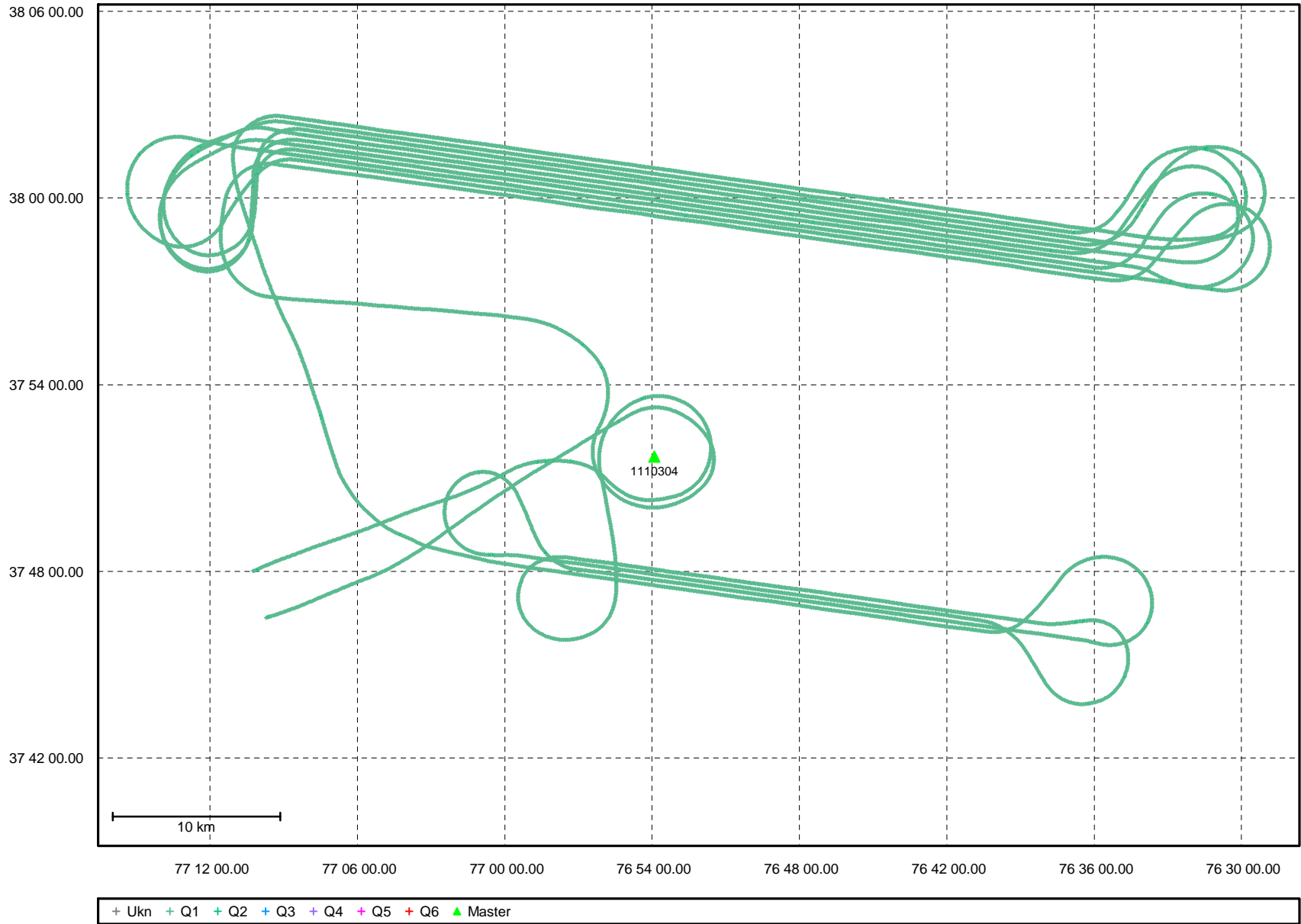
Mission: o51121a

2011 05 01



Combined - Map Run (16)

Geographic, DMS



Processing Summary Information

Program: GrafNav
Version: 7.80.2517
Project: H:\11121a\3_Processed\GPS\o511121a.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:

Total in GPB file: 165667
No processed position: 150595
Missing Fwd or Rev: 4
With bad C/A code: 0
With bad L1 Phase: 0

Measurement RMS Values:

L1 Phase: 0.0243 (m)
C/A Code: 0.88 (m)
L1 Doppler: 0.031 (m/s)

Fwd/Rev Separation RMS Values:

East: 0.024 (m)
North: 0.012 (m)
Height: 0.033 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (15066 occurrences):

East: 0.024 (m)
North: 0.012 (m)
Height: 0.031 (m)

Quality Number Percentages:

Q 1: 99.5 %
Q 2: 0.5 %
Q 3: 0.0 %
Q 4: 0.0 %
Q 5: 0.0 %
Q 6: 0.0 %

Position Standard Deviation Percentages:

0.00 - 0.10 m: 100.0 %
0.10 - 0.30 m: 0.0 %
0.30 - 1.00 m: 0.0 %
1.00 - 5.00 m: 0.0 %
5.00 m + over: 0.0 %

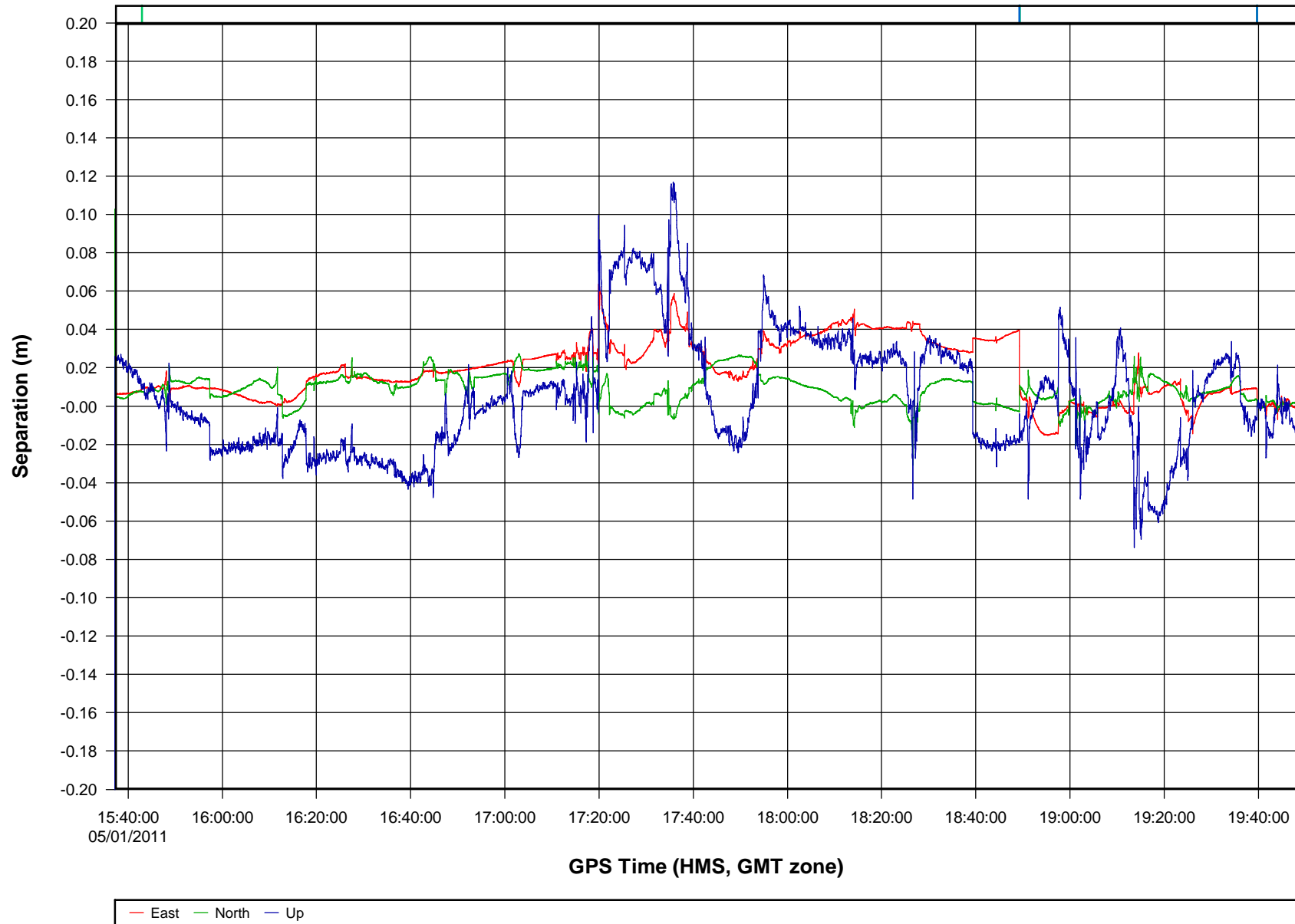
Percentages of epochs with DD_DOP over 10.00:

DOP over Tol: 0.0 %

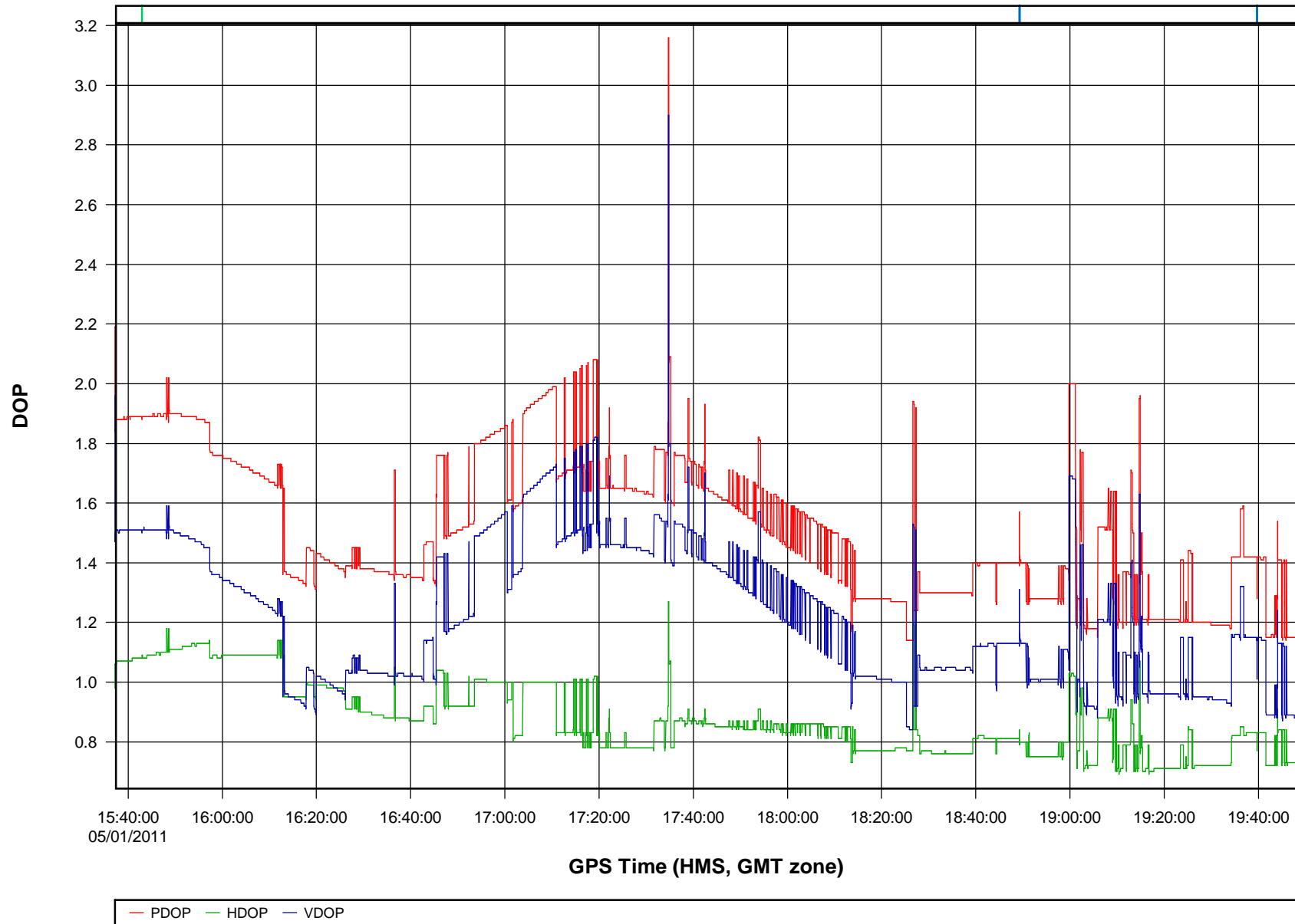
Baseline Distances:

Maximum: 39.910 (km)
Minimum: 2.733 (km)
Average: 21.218 (km)
First Epoch: 25.118 (km)
Last Epoch: 24.929 (km)

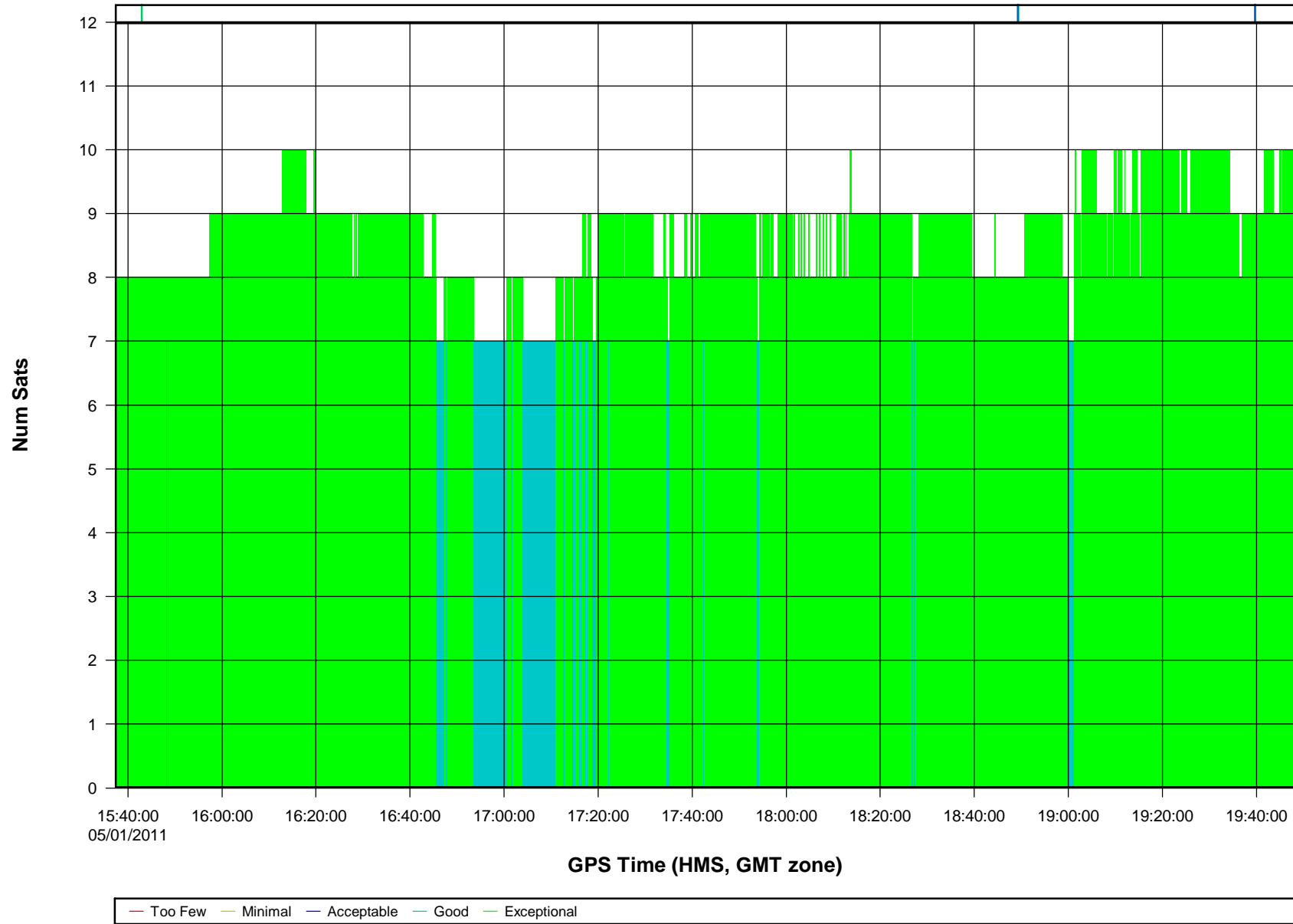
o511121a [Combined] - Forward/Reverse or Combined Separation Plot



o511121a [Combined] - PDOP, HDOP, VDOP Plots



o511121a [Combined] - Number of Satellites Bar Plot




```

                                o511121a. cfg
; PROJECT:      H: \11121a\3_Processed\GPS\o511121a. cfg
;
; DATE:         May 5/11 (date/time of processing)
; TIME:         14: 34: 48
; CREATED BY:   GrafNav Version 7. 80. 2517
;
VERSION = 7. 80. 2517
PROCUSER = Unknown
PROCDESC = Run*(17)
PROCTIME = 14: 29: 40 05/05/2011

; Master station # 1 information
MB_MASTER_INDEX = 0
MB_MASTER_NAME = 1110304
MB_MASTER_FILE = H: \11121a\1_RawData\original_PDC_files\1110304_00161210. gpb
MB_MASTER_POS = 37 51 41. 39611 -76 53 55. 13346 5. 1620
MB_MASTER_ANT = 1. 246 0. 001 1. 213 1 _TP_S0K600 0
MB_MASTER_DISABLER = OFF

; Remote station information
REMOTE_FILE = H: \11121a\3_Processed\Extract\mgps_o511121a. gpb
REMOTE_POS = 37 42 27. 25802 -77 26 16. 27633 29. 8636
REMOTE_ANT = 0. 000

; General settings
PROCESS_MODE = 103 108 113 126 ; Processing modes (GrafNav only)

DATUM = NAD83 AUTO ; Processing Datum
INPDATUM = ON NAD83 AUTO ; Input Datum (ON=Use processing datum)
ELEV_MASK = 4. 0 ; Elevation mask (deg)
GRID = UTM 15 31 ; Grid info

CYCLE_TEST = BOTH ; Cycle slip test method
STATIC_SLIP_TOL = 0. 40 ; slip tolerance in static mode (cycles)
USE_DOPPLER = ON OFF ; Use doppler meas. for phase, for code-only

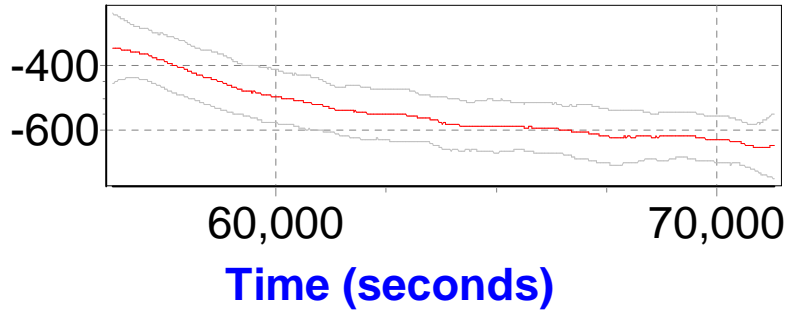
BASE_SAT = 99 ; Base satellite (99-default)

TIMERANGE = RANGE 988299429. 0 988314500. 0 2 0 ; Processing time range
INTERVAL = 0. 10 ; Processing time interval (seconds)

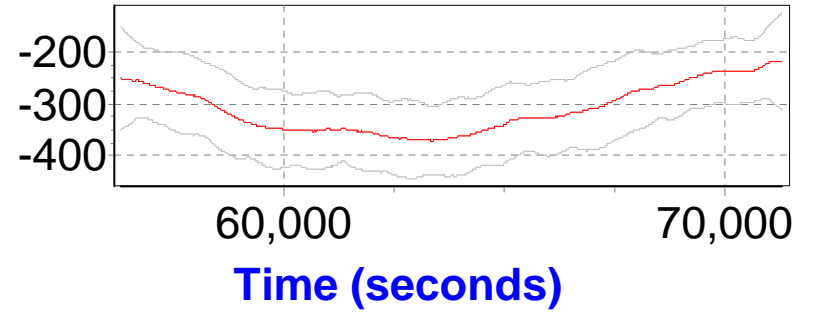
PROCESS_DIR = FORWARD ; Process direction (FORWARD/REVERSE)
BOTH_DIR = ON ; True for processing both directions
WRITE_BAD_EPOCHS = OFF ; Save bad data to .fwd/rev file (ON/OFF)
NOWRITE_HIGH = OFF 6 20. 000 ; Don't write epoch with high statistics (q, stdev-m)
OUTPUT_MODE = EXTENDED ; Format for .fwd/rev file
DETAILED_SUM = ON ; Detailed Static/KAR Summary header
WRITE_SLIP_MSG = ON ; Print cycle slips to message log
SAVE_AMB = ON ; Should ambiguities be saved

```

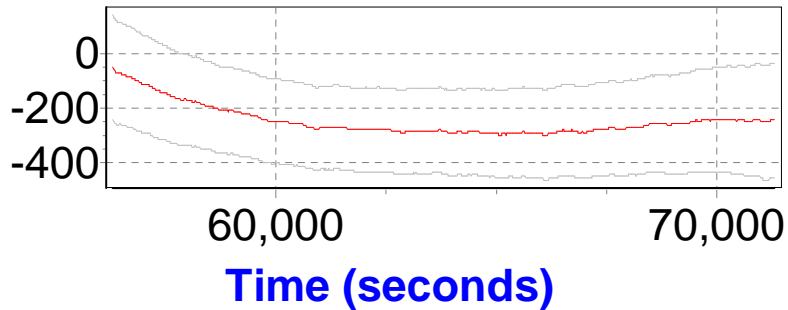
X Accelerometer Bias (micro-g)



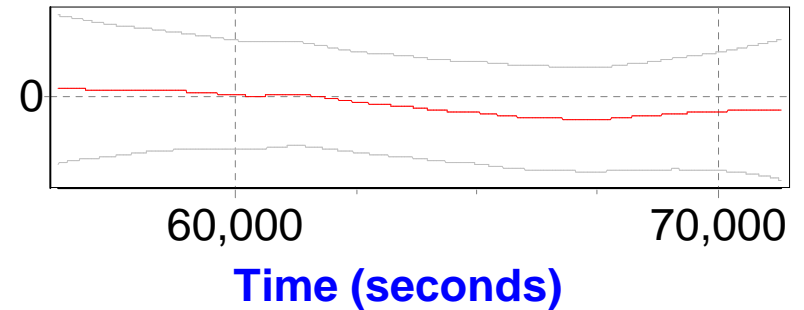
Y Accelerometer Bias (micro-g)



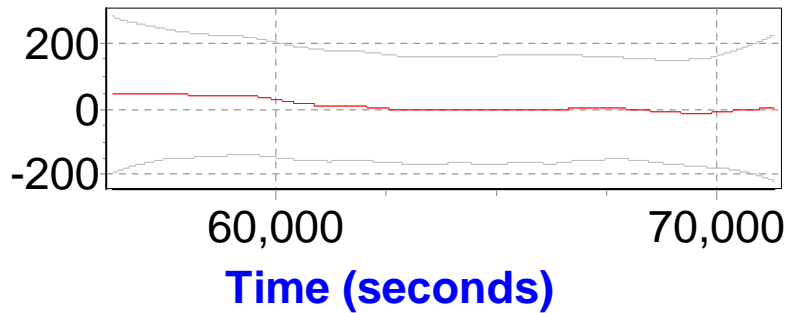
Z Accelerometer Bias (micro-g)



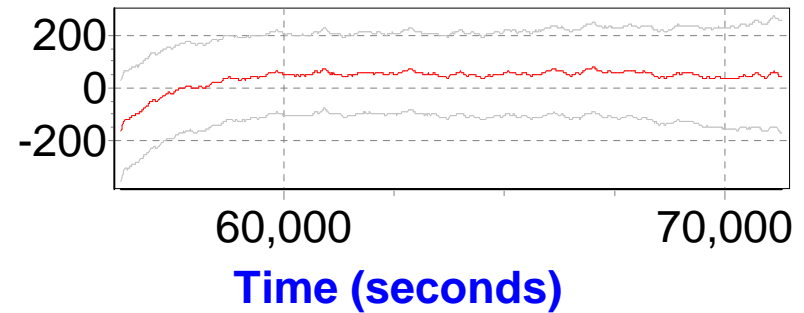
Accelerometer Scale Factor Error (ppr)



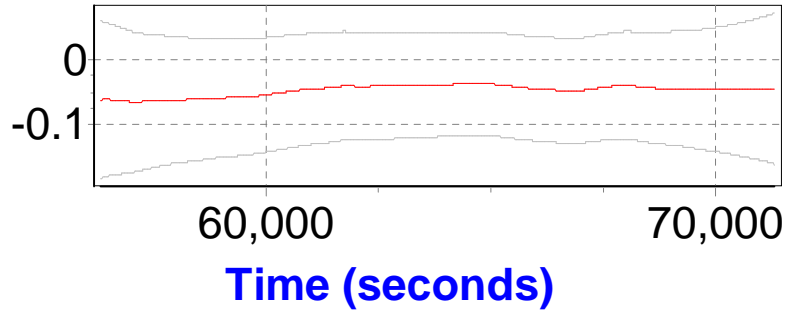
Accelerometer Scale Factor Error (ppr)



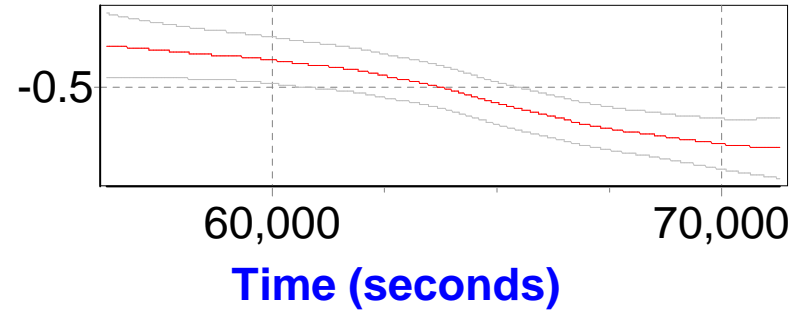
Accelerometer Scale Factor Error (ppr)



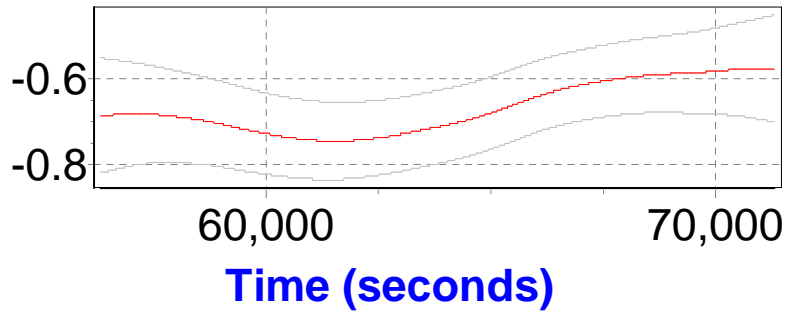
X Gyro Bias (degrees/hour)



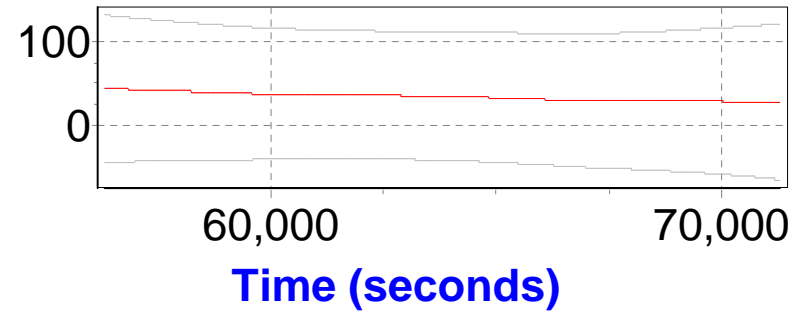
Y Gyro Bias (degrees/hour)



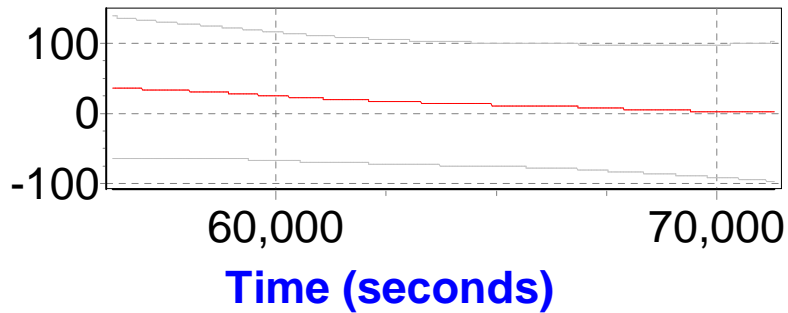
Z Gyro Bias (degrees/hour)



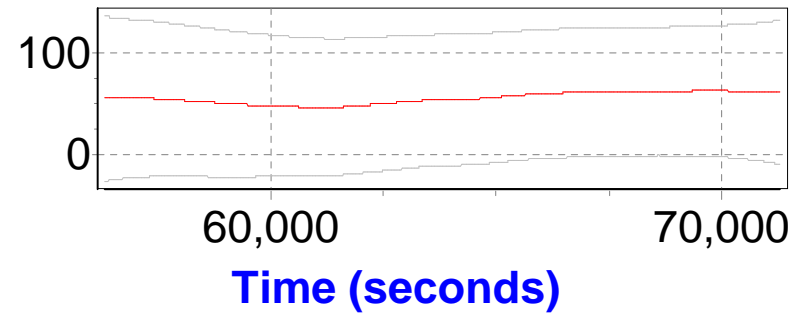
X Gyro Scale Factor Error (ppm)



Y Gyro Scale Factor Error (ppm)



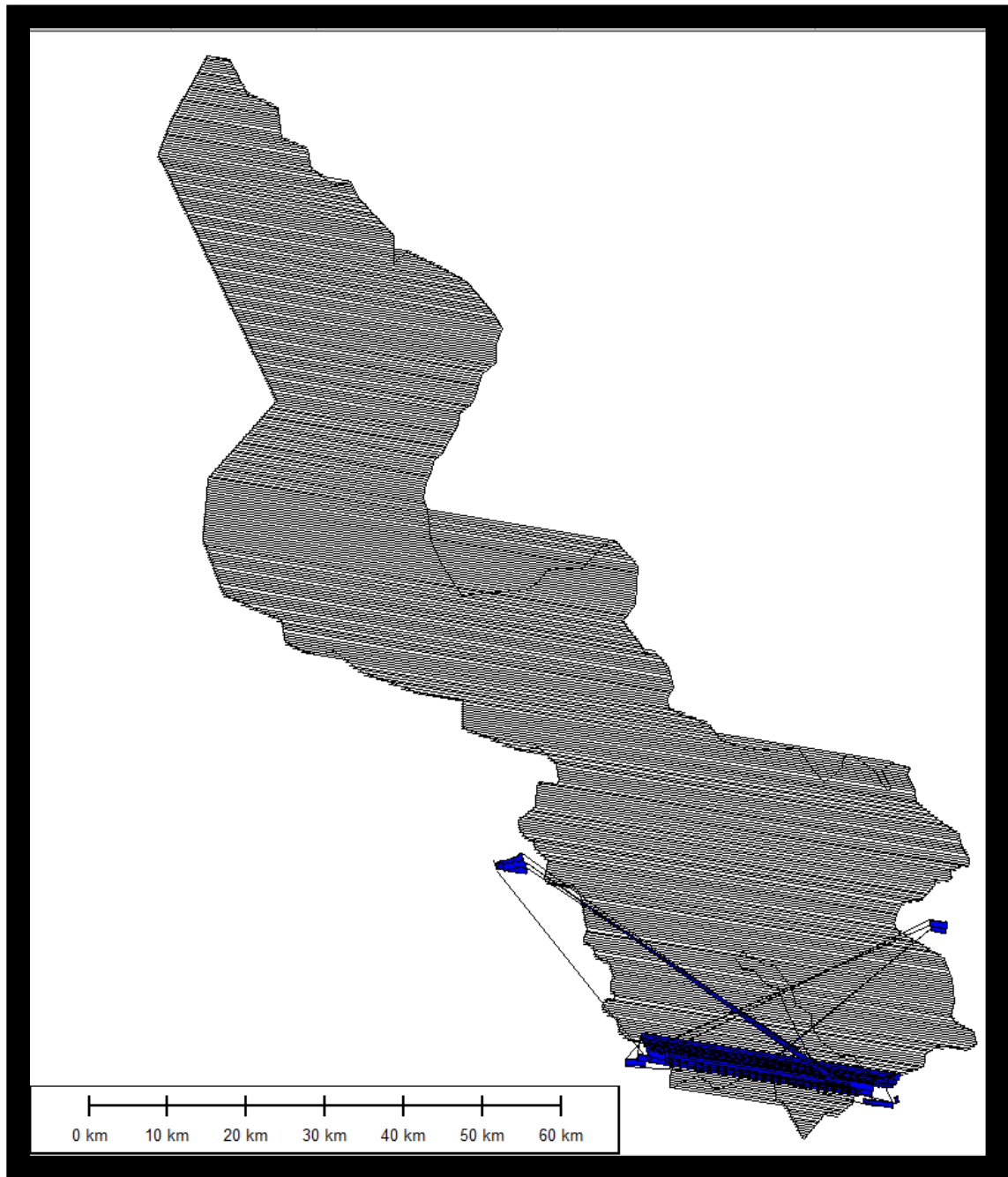
Z Gyro Scale Factor Error (ppm)





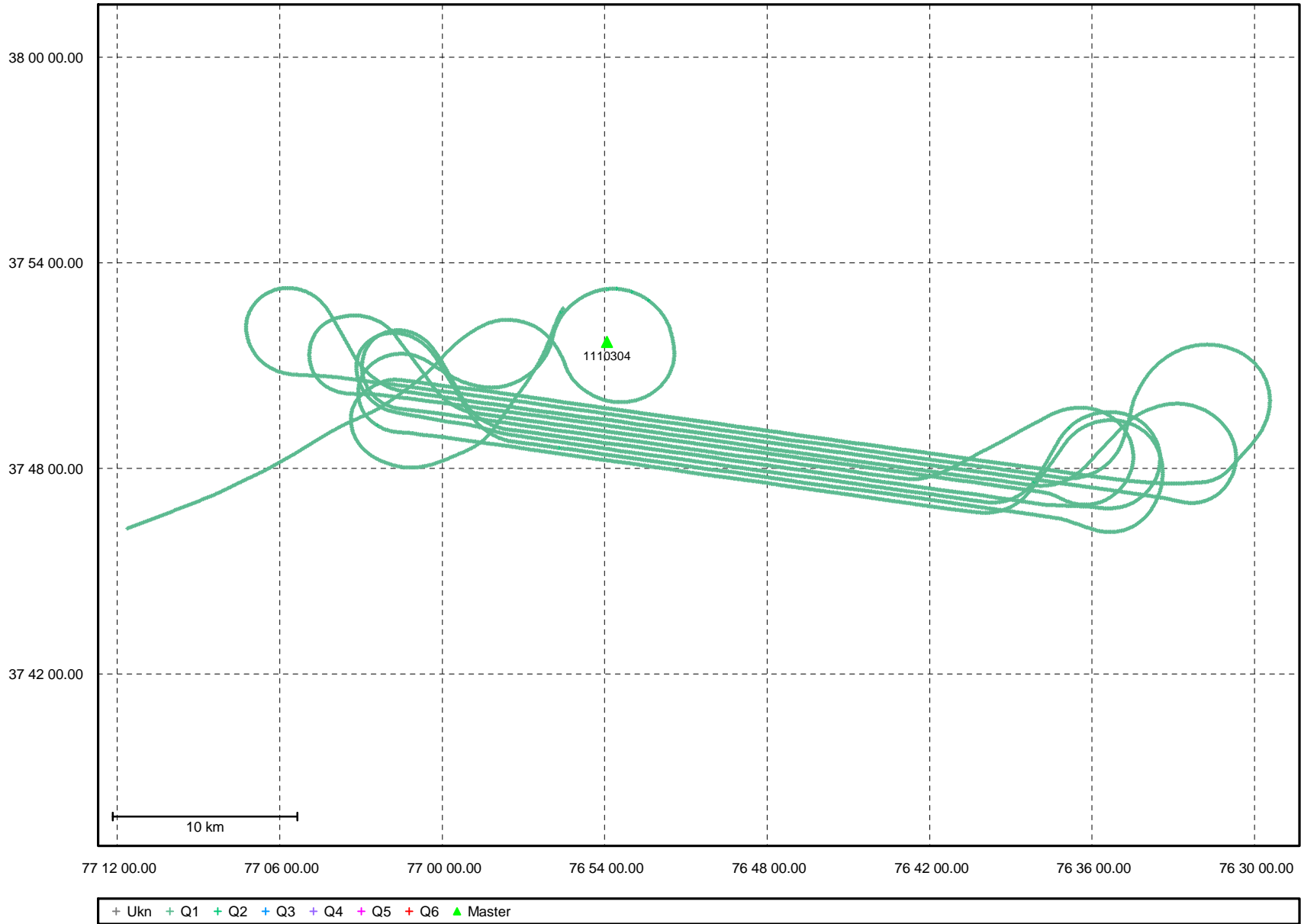
Mission: o51121b

2011 05 01



Combined - Map Run (2)

Geographic, DMS



Processing Summary Information

Program: GrafNav
Version: 7.80.2517
Project: F:\11121B\3_Processed\GPS\o511121b.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:
Total in GPB file: 106782
No processed position: 98279
Missing Fwd or Rev: 4
With bad C/A code: 0
With bad L1 Phase: 0

Measurement RMS Values:
L1 Phase: 0.0178 (m)
C/A Code: 0.87 (m)
L1 Doppler: 0.024 (m/s)

Fwd/Rev Separation RMS Values:
East: 0.012 (m)
North: 0.009 (m)
Height: 0.029 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (8497 occurrences):
East: 0.012 (m)
North: 0.007 (m)
Height: 0.029 (m)

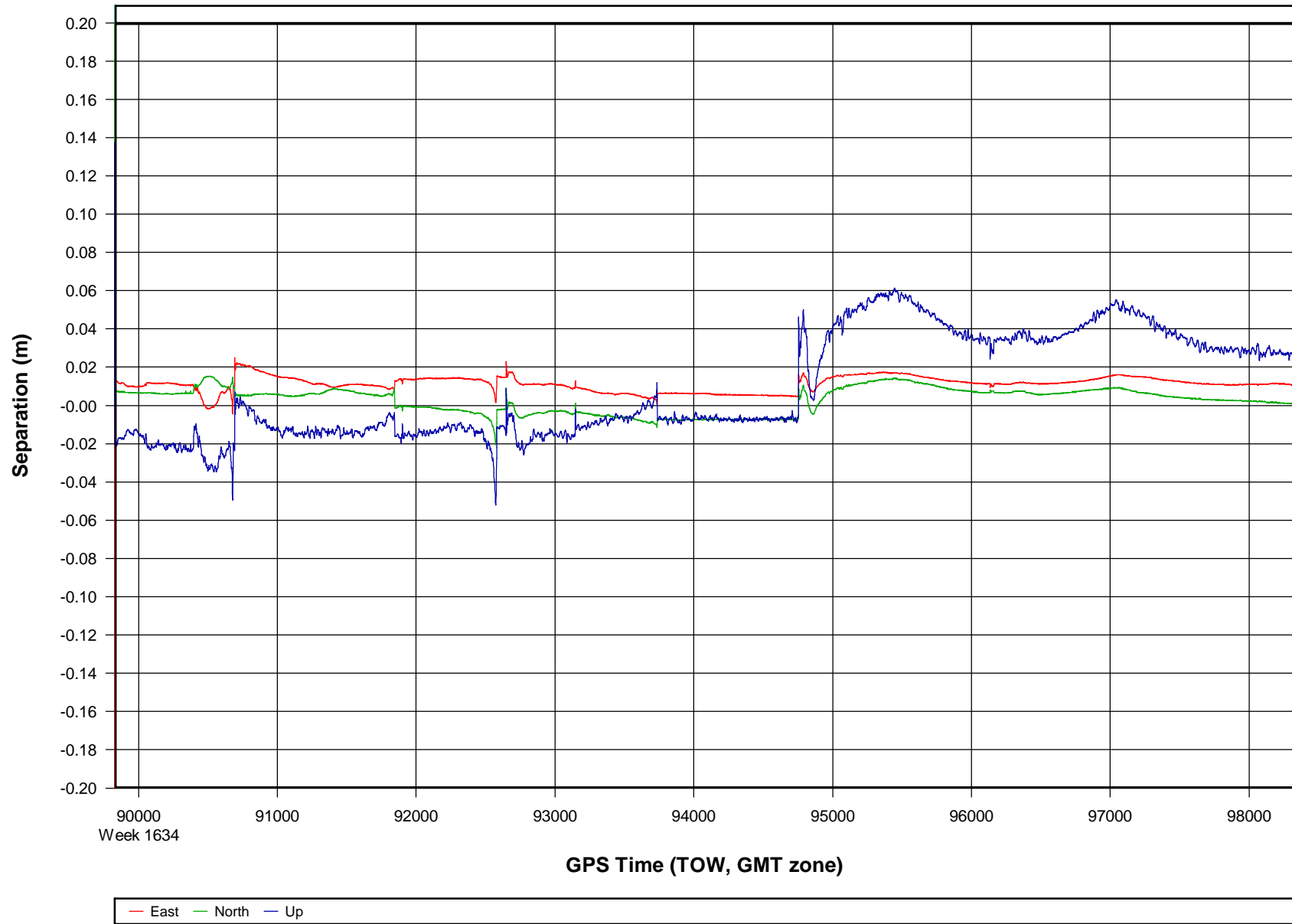
Quality Number Percentages:
Q 1: 99.9 %
Q 2: 0.1 %
Q 3: 0.0 %
Q 4: 0.0 %
Q 5: 0.0 %
Q 6: 0.0 %

Position Standard Deviation Percentages:
0.00 - 0.10 m: 100.0 %
0.10 - 0.30 m: 0.0 %
0.30 - 1.00 m: 0.0 %
1.00 - 5.00 m: 0.0 %
5.00 m + over: 0.0 %

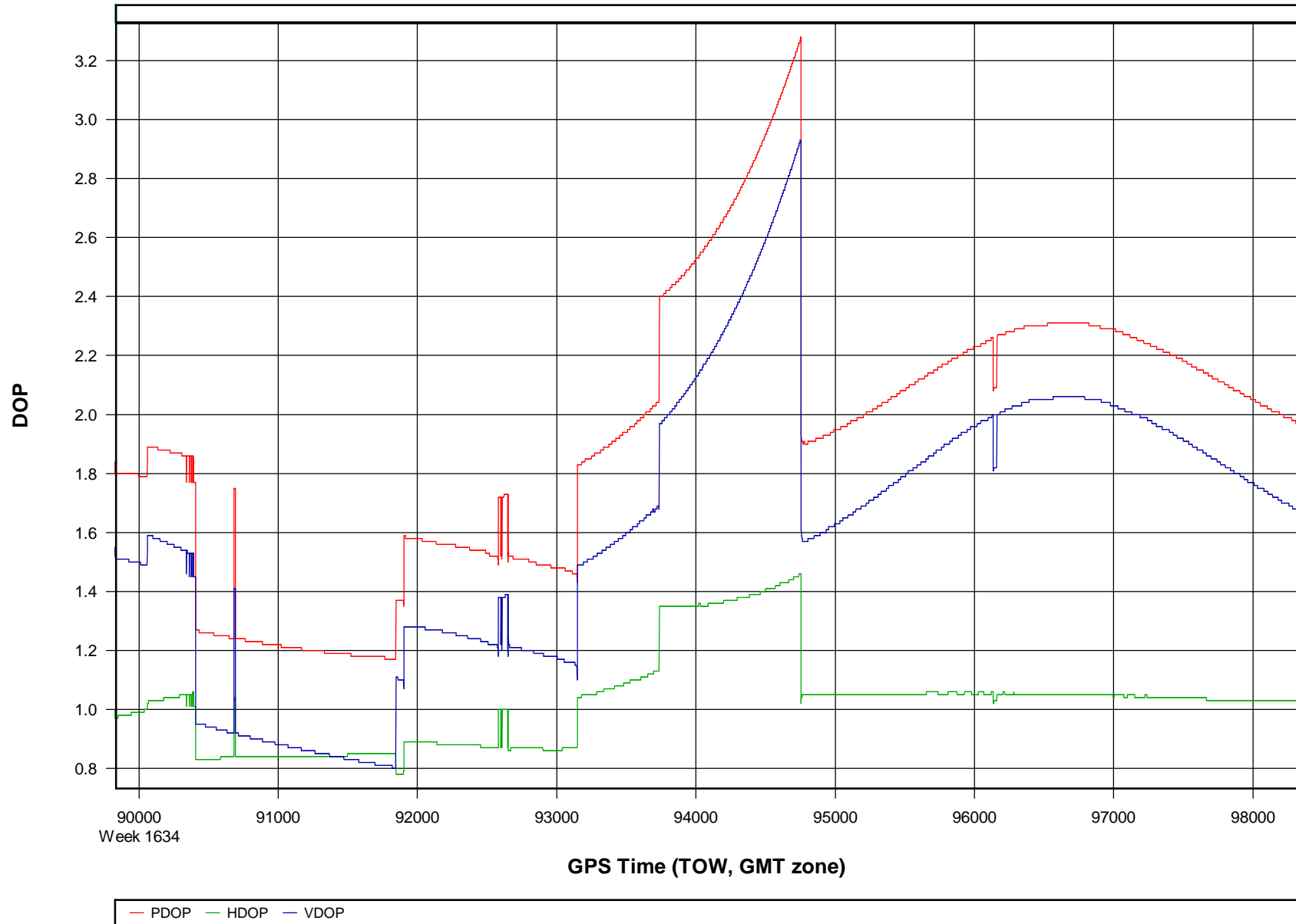
Percentages of epochs with DD_DOP over 10.00:
DOP over Tol: 0.0 %

Baseline Distances:
Maximum: 36.089 (km)
Minimum: 2.763 (km)
Average: 14.888 (km)
First Epoch: 28.197 (km)
Last Epoch: 3.158 (km)

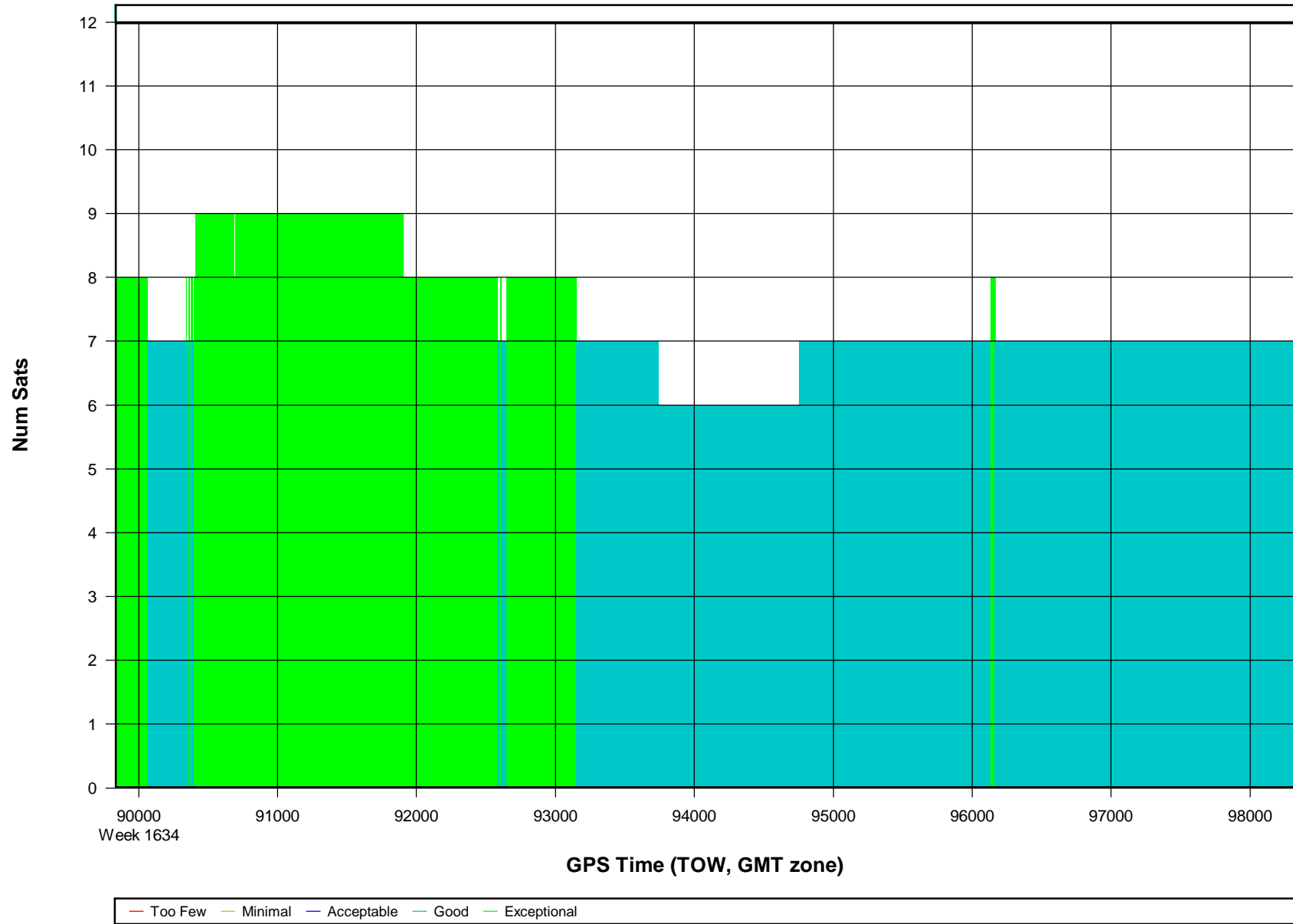
o511121b [Combined] - Forward/Reverse or Combined Separation Plot



o511121b [Combined] - PDOP, HDOP, VDOP Plots



o511121b [Combined] - Number of Satellites Bar Plot



```

; PROJECT:      F: \11121B\3_Processed\GPS\o511121b. cfg
;
; DATE:        May 7/11 (date/time of processing)
; TIME:        11: 09: 35
; CREATED BY:  GrafNav Version 7. 80. 2517
;

```

```

VERSION = 7. 80. 2517
PROCUSER = Unknown
PROCDESC = Run*(3)
PROCTIME = 11: 07: 23 05/07/2011

```

```

; Master station # 1 information

```

```

MB_MASTER_INDEX = 0
MB_MASTER_NAME = 1110304
MB_MASTER_FILE = F: \11121B\Ground_Gps\1110304_00161210. gpb
MB_MASTER_POS = 37 51 41. 39611 -76 53 55. 13346 5. 1620
MB_MASTER_ANT = 1. 246 0. 001 1. 213 1 _TP_SOK600 0
MB_MASTER_DISABLER = OFF

```

```

; Remote station information

```

```

REMOTE_FILE = F: \11121B\3_Processed\Extract\mgps_o511121b. gpb
REMOTE_POS = 37 42 25. 93644 -77 26 13. 65610 29. 1850
REMOTE_ANT = 0. 000

```

```

; General settings

```

```

PROCESS_MODE = 105 108 113 126 ; Processing modes (GrafNav only)

```

```

DATUM = NAD83 AUTO ; Processing Datum
INPDATUM = ON NAD83 AUTO ; Input Datum (ON=Use processing datum)
ELEV_MASK = 15. 0 ; Elevation mask (deg)
GRID = UTM 15 31 ; Grid info

```

```

CYCLE_TEST = BOTH ; Cycle slip test method
STATIC_SLIP_TOL = 0. 40 ; slip tolerance in static mode (cycles)
USE_DOPPLER = ON OFF ; Use doppler meas. for phase, for code-only

```

```

BASE_SAT = 99 ; Base satellite (99-default)

```

```

TIMERANGE = RANGE 988333026. 0 988341528. 0 2 0 ; Processing time range
INTERVAL = 0. 10 ; Processing time interval (seconds)

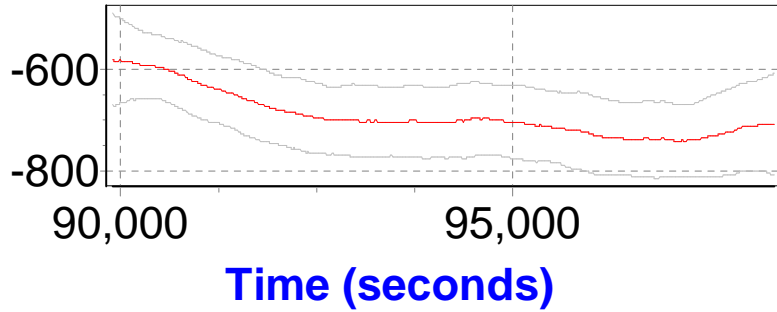
```

```

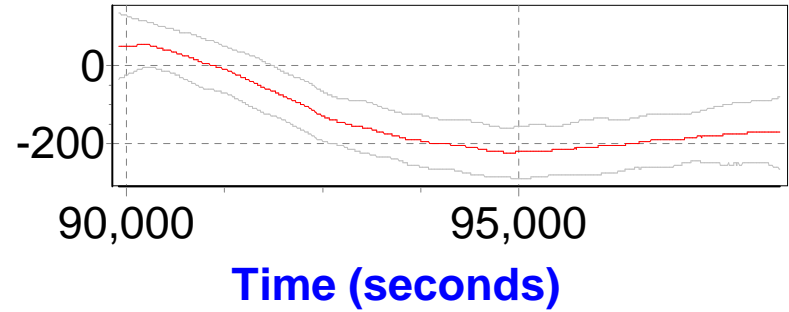
PROCESS_DIR = FORWARD ; Process direction (FORWARD/REVERSE)
BOTH_DIR = ON ; True for processing both directions
WRITE_BAD_EPOCHS = OFF ; Save bad data to .fwd/rev file (ON/OFF)
NOWRITE_HIGH = OFF 6 20. 000 ; Don't write epoch with high statistics (q, stdev-m)
OUTPUT_MODE = EXTENDED ; Format for .fwd/rev file
DETAILED_SUM = ON ; Detailed Static/KAR Summary header
WRITE_SLIP_MSG = ON ; Print cycle slips to message log
SAVE_AMB = ON ; Should ambiguities be saved

```

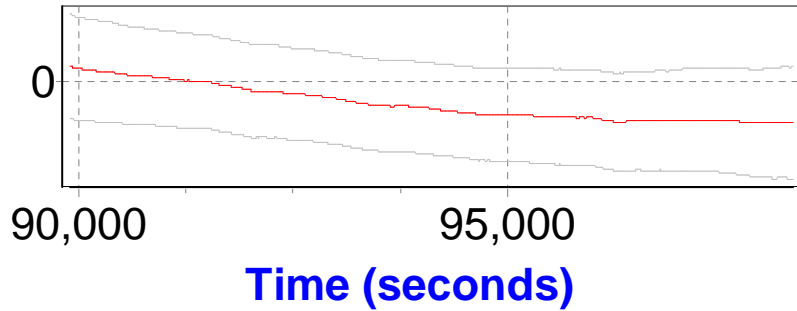
X Accelerometer Bias (micro-g)



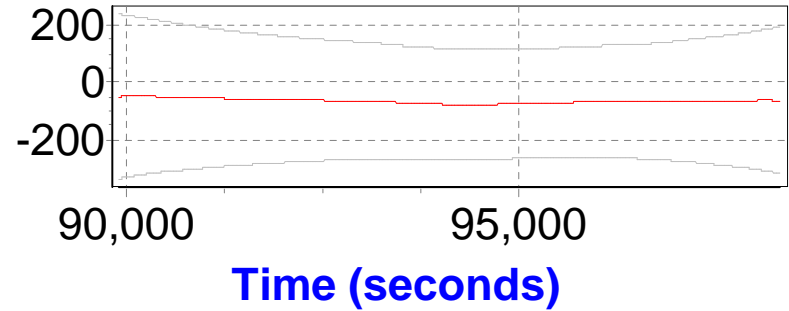
Y Accelerometer Bias (micro-g)



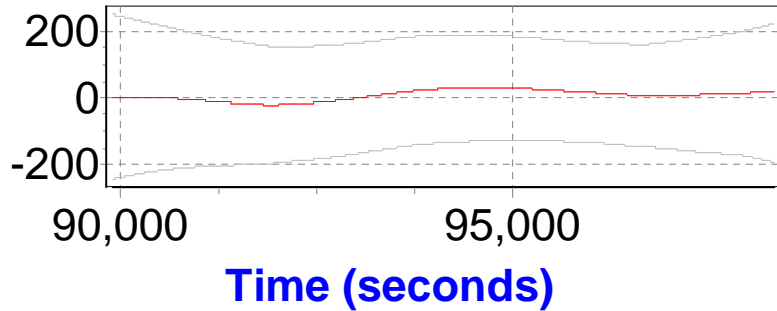
Z Accelerometer Bias (micro-g)



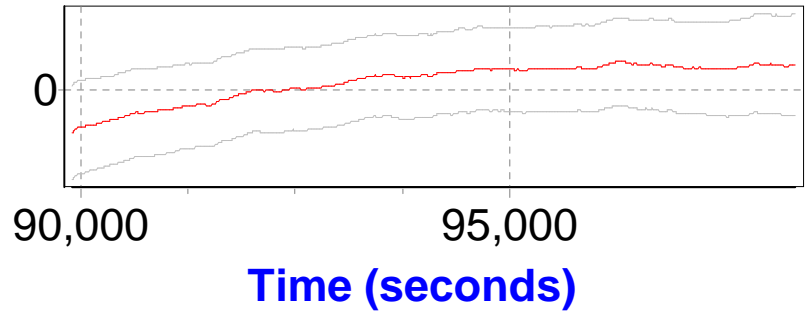
Accelerometer Scale Factor Error (ppr)



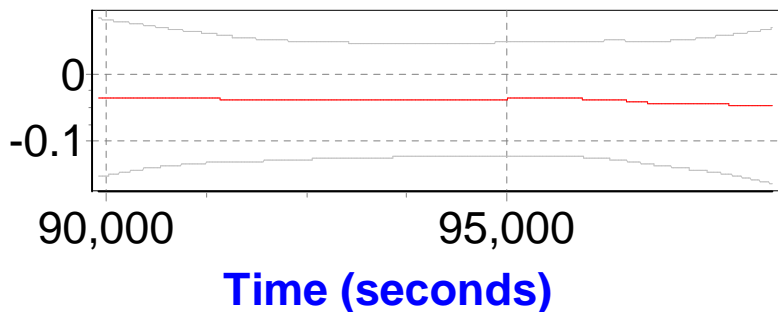
Accelerometer Scale Factor Error (ppr)



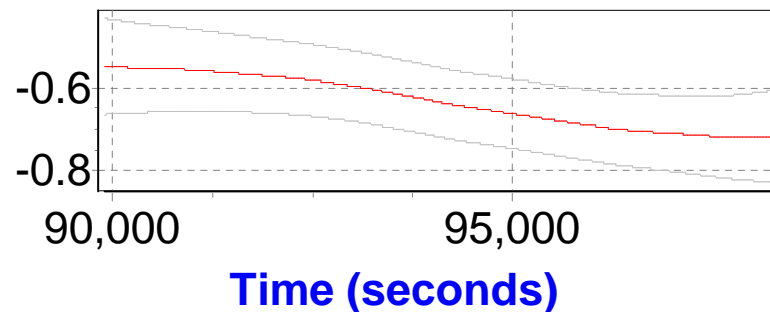
Accelerometer Scale Factor Error (ppr)



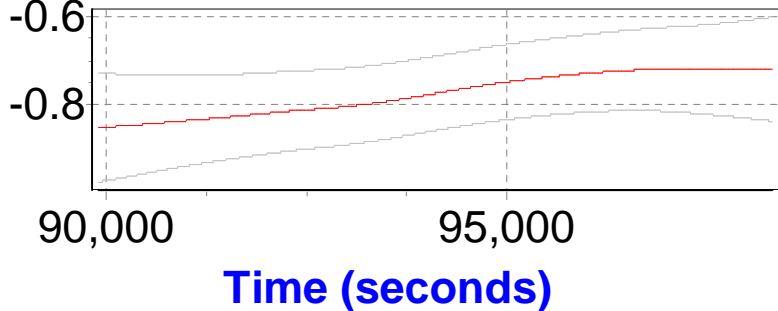
X Gyro Bias (degrees/hour)



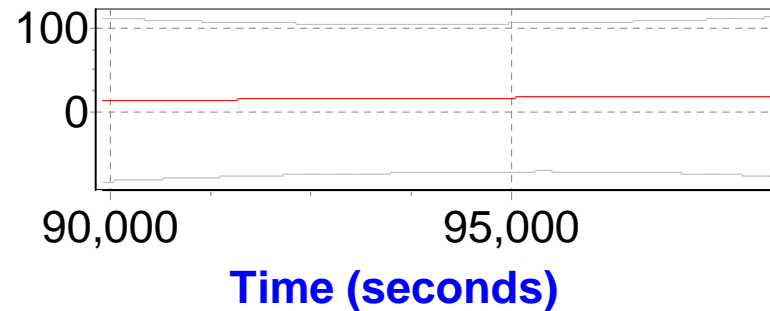
Y Gyro Bias (degrees/hour)



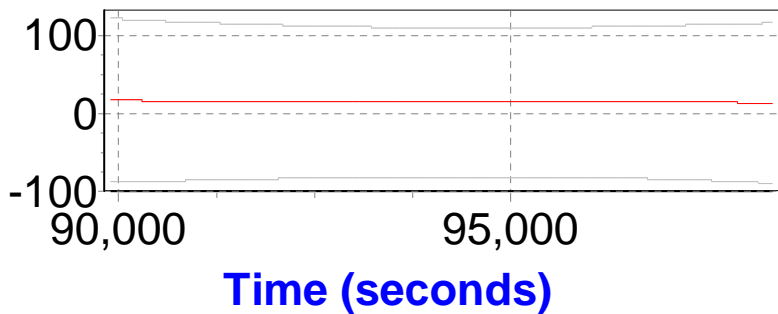
Z Gyro Bias (degrees/hour)



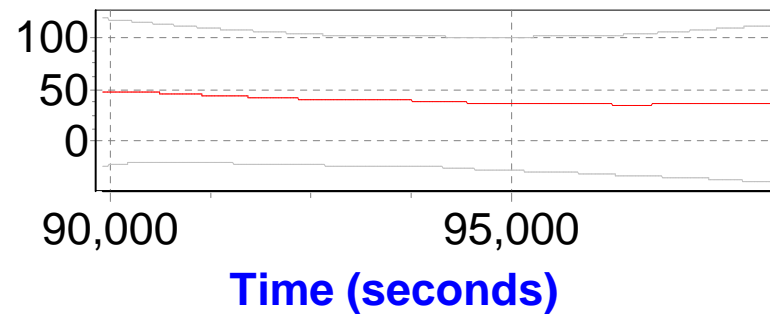
X Gyro Scale Factor Error (ppm)



Y Gyro Scale Factor Error (ppm)

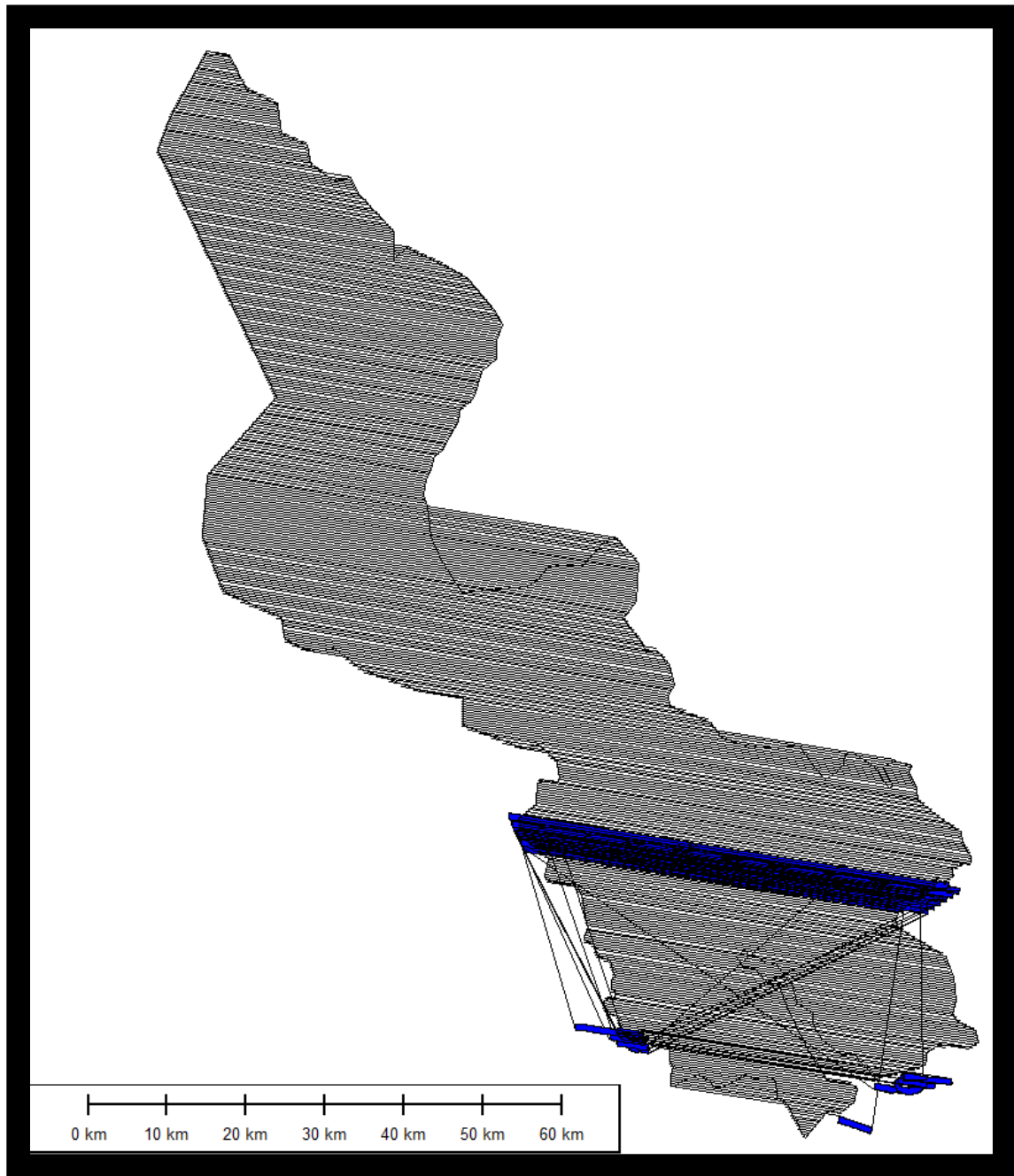


Z Gyro Scale Factor Error (ppm)

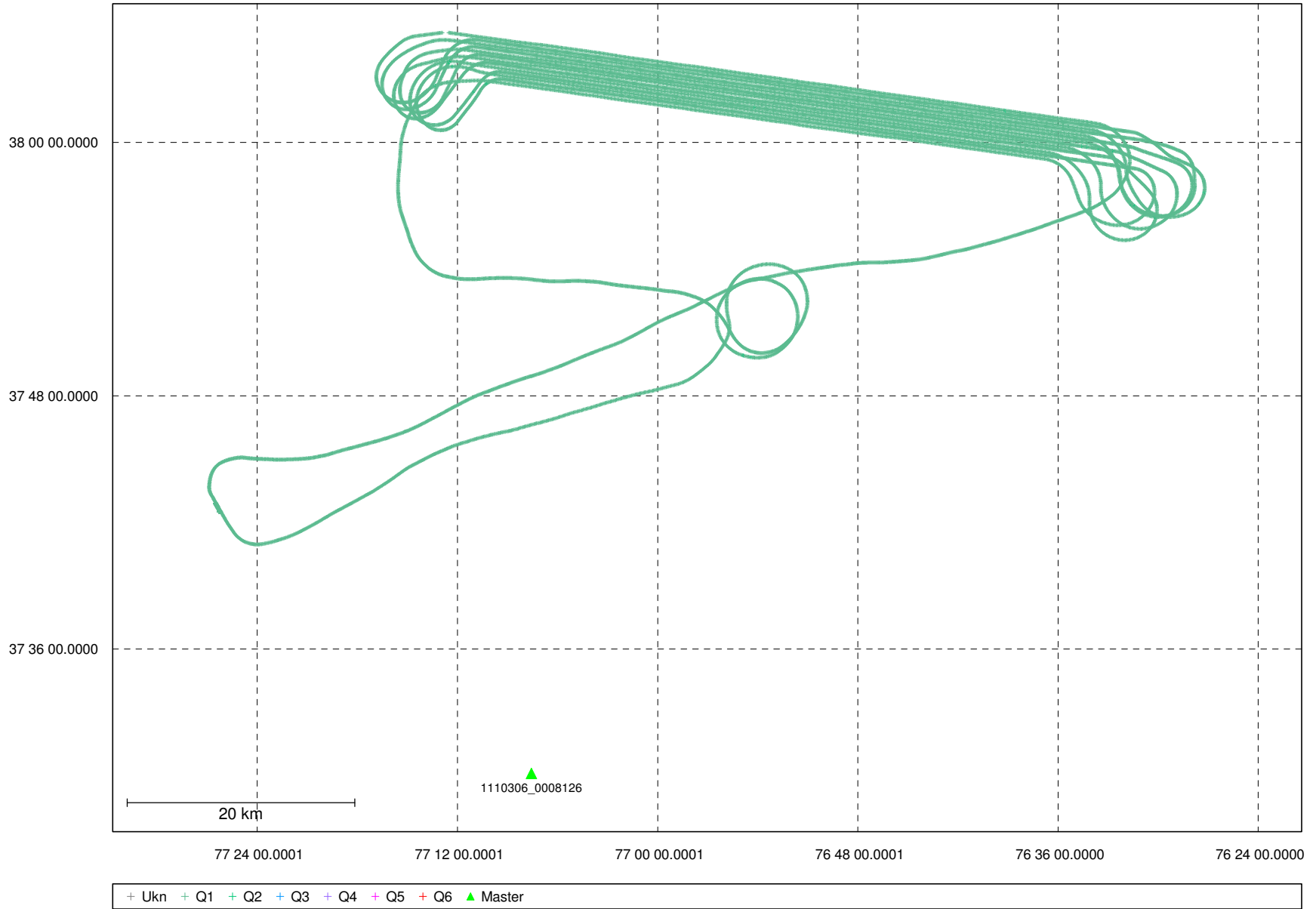


Mission: o511127a

2011 05 07



Combined - Map Run (4)



proc.txt
Processing Summary Information

Program: POSGPS
Version: 4.30.3108
Project: D:\Projects\Va\Tpoint_bases\127a\GPS\127.gnv

Solution Type: Combined Fwd/Rev

Number of Epochs:

Total in GPB file:	178689
No processed position:	160832
Missing Fwd or Rev:	3
with bad C/A code:	0
with bad L1 Phase:	0

Measurement RMS Values:

L1 Phase:	0.0195 (m)
C/A Code:	1.04 (m)
L1 Doppler:	0.029 (m/s)

Fwd/Rev Separation RMS Values:

East:	0.028 (m)
North:	0.016 (m)
Height:	0.039 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (17852 occurrences):

East:	0.028 (m)
North:	0.015 (m)
Height:	0.038 (m)

Quality Number Percentages:

Q 1:	99.8 %
Q 2:	0.2 %
Q 3:	0.0 %
Q 4:	0.0 %

proc.txt

Q 5: 0.0 %

Q 6: 0.0 %

Position Standard Deviation Percentages:

0.00 - 0.10 m: 97.7 %

0.10 - 0.30 m: 2.3 %

0.30 - 1.00 m: 0.0 %

1.00 - 5.00 m: 0.0 %

5.00 m + over: 0.0 %

Percentages of epochs with DD_DOP over 10.00:

DOP over Tol: 2.3 %

Baseline Distances:

Maximum: 79.133 (km)

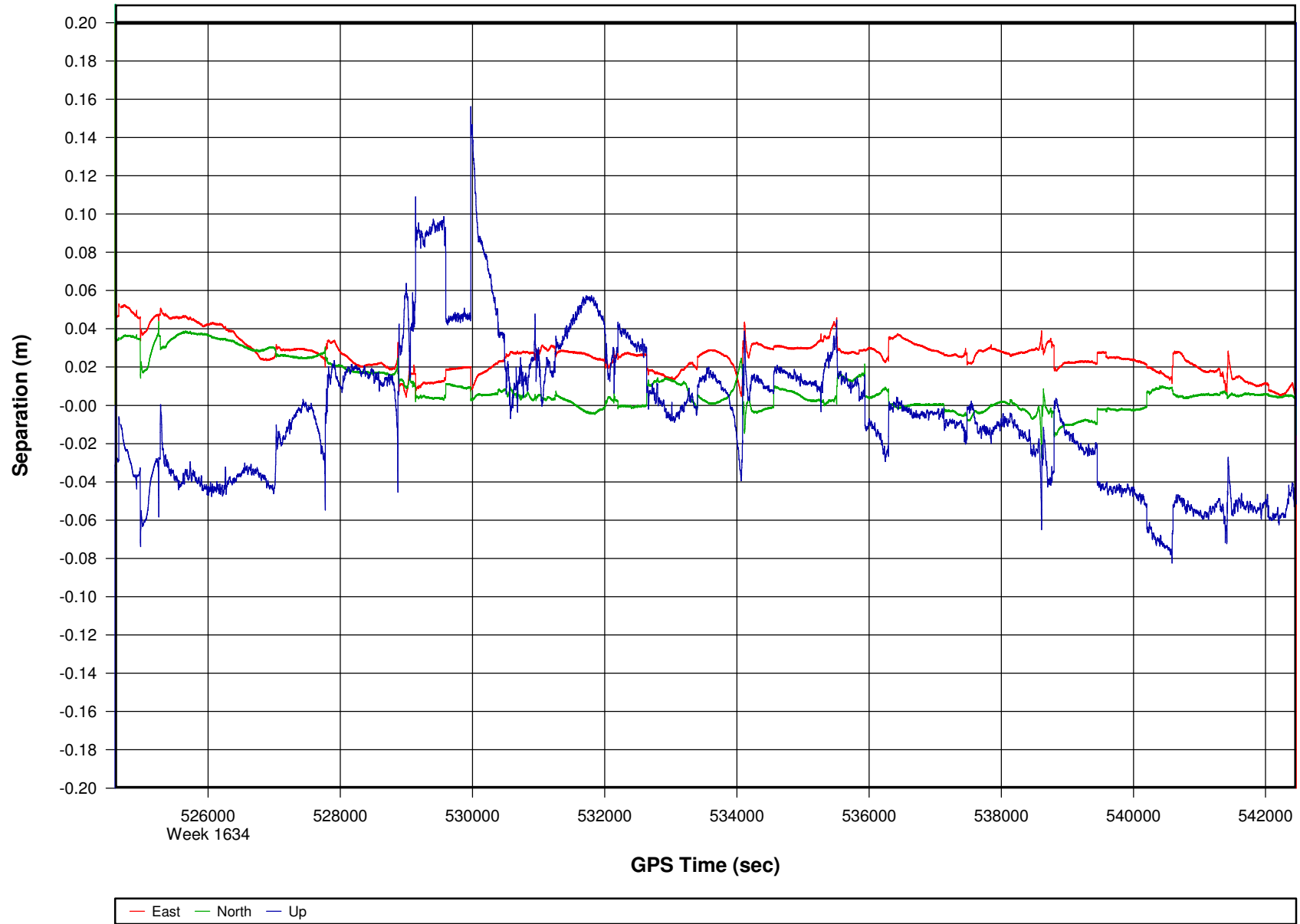
Minimum: 28.411 (km)

Average: 60.310 (km)

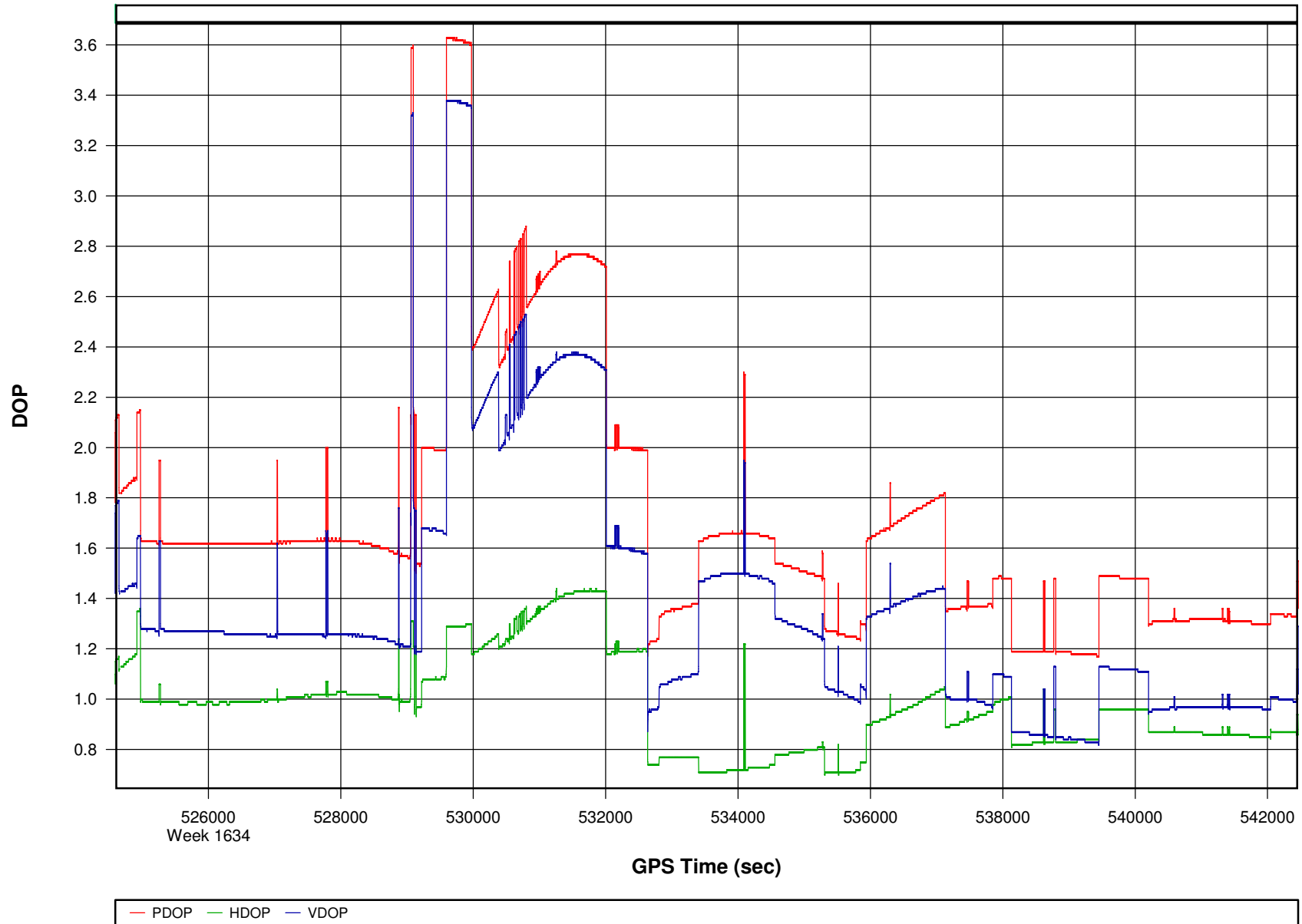
First Epoch: 35.813 (km)

Last Epoch: 36.223 (km)

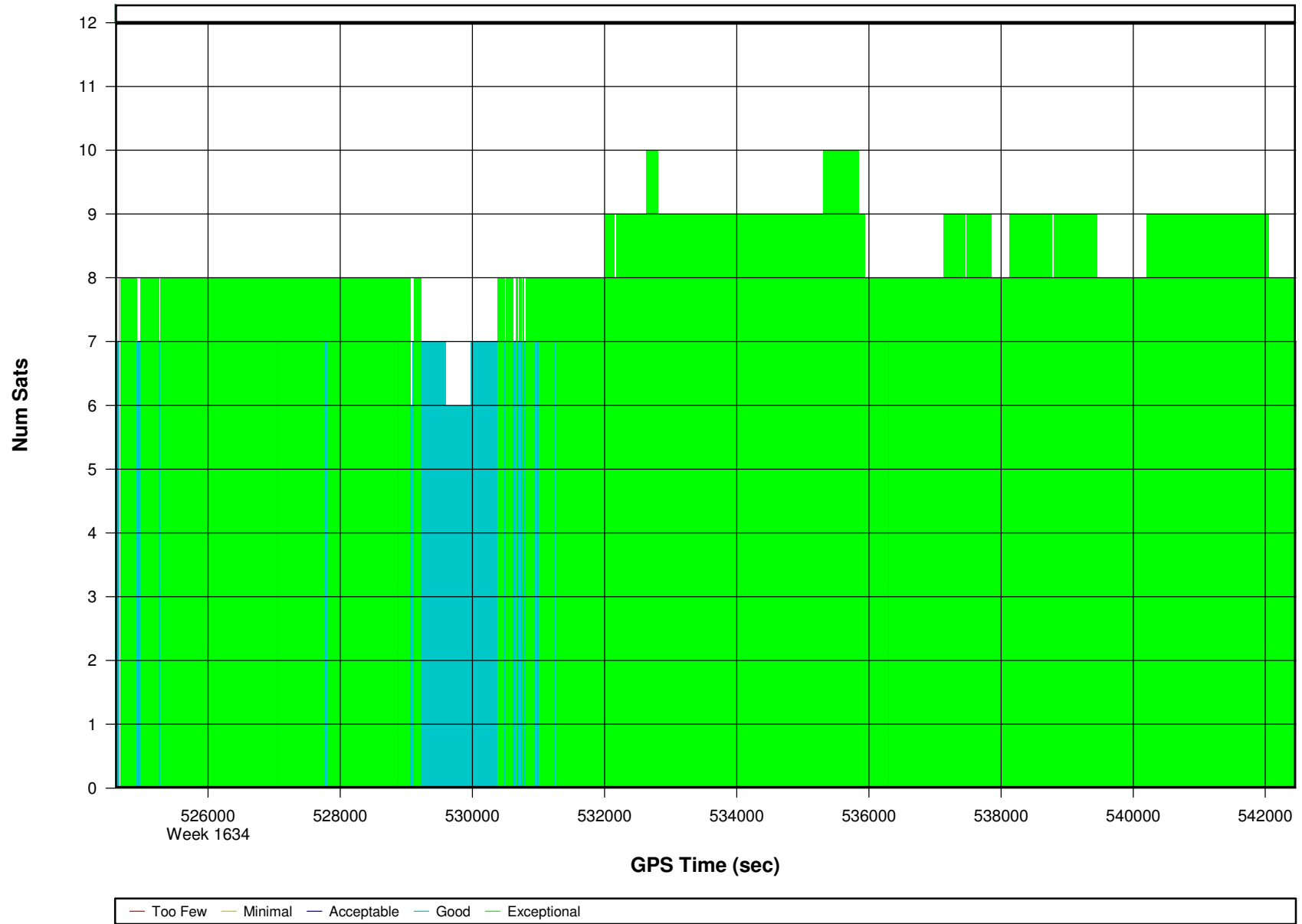
127 [Combined] - Forward/Reverse or Combined Separation Plot



127 [Combined] - PDOP, HDOP, VDOP Plots



127 [Combined] - Number of Satellites Bar Plot



```

                                127.txt
; PROJECT:      D:\Projects\Va\Tpoint_bases\127a\GPS\127.gnv
;
; DATE:         July 26/11 (date/time of processing)
; TIME:         13:01:29
; CREATED BY:   POSGPS Version 4.30.3108
;
VERSION = 4.30.3108
PROCUSER = Unknown
PROCDESC = Run*(6)
PROCTIME = 12:59:55 07/26/2011

; Master station # 1 information
MB_MASTER_INDEX = 0
MB_MASTER_NAME = 1110306_0008126
MB_MASTER_FILE =
D:\Projects\Va\Tpoint_bases\125a\ground-gps\KentCo\1110306_00081260.gpb
MB_MASTER_POS = 37 30 06.65193 -77 07 33.81068 -0.1040
MB_MASTER_ANT = 1.527
MB_MASTER_DISABLE = OFF

; Remote station information
REMOTE_FILE = D:\Projects\Va\Tpoint_bases\127a\Extract\mgps_01.gpb
REMOTE_POS = 37 42 29.61615 -77 26 16.28052 29.3126
REMOTE_ANT = 0.000

; General settings
PROCESS_MODE = 105 108 111 126 ; Processing modes (POSGPS only)

DATUM = WGS84 AUTO ; Processing Datum
INPDATUM = ON WGS84 AUTO ; Input Datum (ON=Use processing datum)
ELEV_MASK = 12.0 ; Elevation mask (deg)
GRID = UTM 17 0 ; Grid info

CYCLE_TEST = BOTH ; Cycle slip test method
STATIC_SLIP_TOL = 0.40 ; slip tolerance in static mode (cycles)
USE_DOPPLER = ON OFF ; Use doppler meas. for phase, for code-only

BASE_SAT = 99 ; Base satellite (99-default)

TIMERANGE = ALL 988767777.5 988785664.9 2 0 ; Processing time range
INTERVAL = 0.10 ; Processing time interval (seconds)

PROCESS_DIR = FORWARD ; Process direction (FORWARD/REVERSE)
BOTH_DIR = ON ; True for processing both directions
WRITE_BAD_EPOCHS = OFF ; Save bad data to .fwd/rev file (ON/OFF)
NOWRITE_HIGH = OFF 6 20.000 ; Don't write epoch with high statistics (q, stdev-m)
OUTPUT_MODE = NORMAL ; Format for .fwd/rev file
DETAILED_SUM = ON ; Detailed Static/KAR Summary header
WRITE_SLIP_MSG = ON ; Print cycle slips to message log
SAVE_AMB = ON ; should ambiguities be saved

; KAR settings--second values for dual frequency/widelane
KAR_MIN_TIME = 8.00 1.00 ; Min. time for KAR, L1 and L2 (minutes)
KAR_MIN_ADD = 1.50 ; minutes/10-km added to KAR_MIN_TIME
KAR_MAX_TIME = 30 ; Time before Float KAR soln used (minutes)
KAR_CUBE = 1.00 4.00 ; KAR cube size (m)
KAR_COV_L2 = ON 3.000 0.2 ; Use covariance for L2 KAR, StdDev factor, offset(m)
KAR_MAX_DOP = 9.0 ; Cutoff DD_DOP value for KAR to work
KAR_L2_NOISE = AUTO ; L2 noise model: AUTO, IONO, HIGH MEDIUM or LOW
KAR_IONO_DIST = 5.0000 ; Distance for choosing between HIGH and IONO noise (AUTO
noise only) - km
KAR_STATIC = ON ; Engage KAR while in static mode

```

127.txt

```

KAR_USE_FAR = ON ; Allow KAR to go back in time past max. distances
KAR_EPOCH_SIZE = 30.0 15.0 AUTO ; Computation interval for KAR
KAR_EPOCH_FILTER = 5.0 ; KAR data storage interval
KAR_DISTANCE = 7.500 75.000 ; KAR cutoff distance (km)
KAR_EXACT_INTERVAL = OFF ; ON if KAR to restrict data to KAR_EPOCH_FILTER
ISSUE_KAR_DOP = OFF 25.0 ; Issue KAR when DOP drops below value
ISSUE_KAR_TIME = OFF 15.000 ; Issue KAR when DOP drops below value
KAR_DIST_WEIGHT = ON ; ON if distance weighting to be used
KAR_STRICT_TOL = OFF ON ; RMS(ON/OFF), REL(ON/OFF) -- ON if stricter tolerances
to be used
KAR_FAST = OFF OFF ; Fast KAR search, second param for 5 satellites
KAR_REFINE = ON ; Refine L1/L2 KAR search
KAR_MB_NEAREST = ON ; ON if only nearest b/l to be searched (MB mode only)
ISSUE_KAR_DIST = OFF 5.0 60.0 ; Engage KAR if <dist1, reset if >dist2 (km)

```

;Fixed static solution options

```

FIX_CUBE = AUTOREDUCE 0.500 1.500 -1 ; Fixed solution search area options
FIX_L2_NOISE = AUTO -1 ; Fixed solution L2 noise model
FIX_IONO_DIST = 5.000 -1 ; Distance for switching to Iono model for AUTO L2 noise
FIX_REFINE = OFF ; Refine L1/L2 fixed solution
FIX_STRICT = OFF OFF ; Stricter RMS and reliability tolerances
FIX_INTERVAL = 15.0 ; Fixed static interval (s)
SPLIT_SS = OFF 120.0 ; Break static sessions if gap larger than value (s)
FIX_AUTO = 180.0 40.000 600.0 12.000 ON ; DFminT(s), DFMaxD(km) SFminT(s) SFMaxD(km)
ON/OFF

```

```

; use PCODE, L2 for amb. res., L2 for iono.(OFF/RELATIVE/FREE), correct C/A for
iono.

```

```

DUAL_FREQUENCY = OFF ON FREE OFF
IONO_DIST = 4.0 ; Engage Relative iono. after this dist. (km)
L2_SLIP_TOL = 0.400 ; Small cycle slip tolerance on L2 (cycles)
L2_LOCKTIME = OFF ; ON if L2 locktime variable to be used
USE_PCODE = OFF OFF ; Use P1 and use P2 flags (ON/OFF)
SF_IONO_MODE = OFF ; ON if IONEX or ICD iono model to be used fo SF
L2MAIN = OFF ; Enable L2 as primary frequency

```

; New measurement standard deviation (weighting) settings

```

STD_MODE = ELEV ; Measurement weighting mode
(ELEV/CN0/STANDARD/ADAPTIVE)
STD_CODE = 3.0000 ; Code measurement standard deviation (m)
STD_PHASE = 0.0150 ON ; Carrier meas SD (m) (ON/OFF refers to adjustment for
L3)
STD_DOPPLER = 0.2500 ON ; Doppler meas stddev (m/s) (ON/OFF referes to
auto-doppler setting)
STD_REJECT = NORMAL 3.0 3.0 3.0 6.0 4.5 ; LevelStr CodeRej PhaseRej DopplerRej
CodeReset PhaseReset
STD_SKIP = 15.0 5 1 ; dMaxRejSec, nSkipCodeEpochs, nSkipPhaseEpochs
STD_DIST = LOW 1.0 7.5 ; Distance effects (OFF/HIGH/MEDIUM/LOW/MANUAL)
ManHzPPM ManVtPPM
STD_BL = 1110306_0008126 ON ; BLName UseMain(ON/OFF)
STD_RELTOL = 4.00 ; Reliability tolerance for rejecting outliers

```

;Miscellaneous options

```

WRITE_RESIDUALS = OFF ; Create binary value file (.fbv,.rbv)
LOCKTIME_CUTOFF = 12.0 ; Carrier Locktime cutoff (seconds)
DYNAMICS = AUTO HIGH ; constraint on vehicle dynamics

```

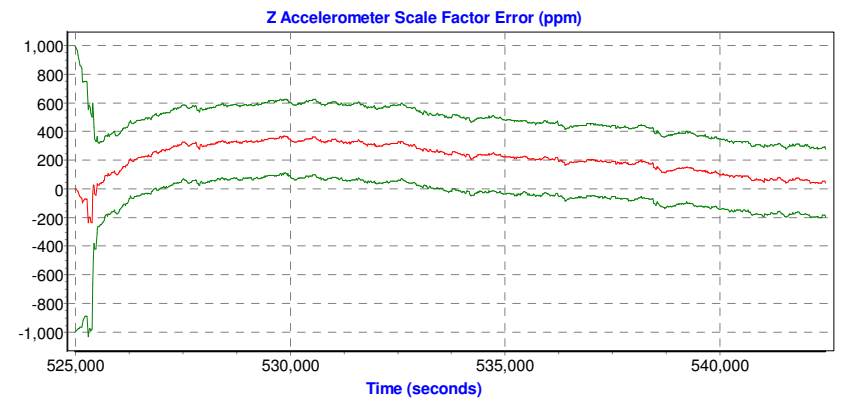
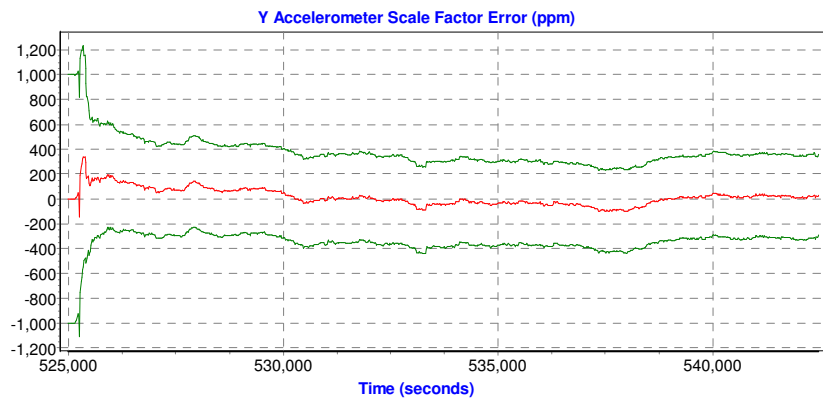
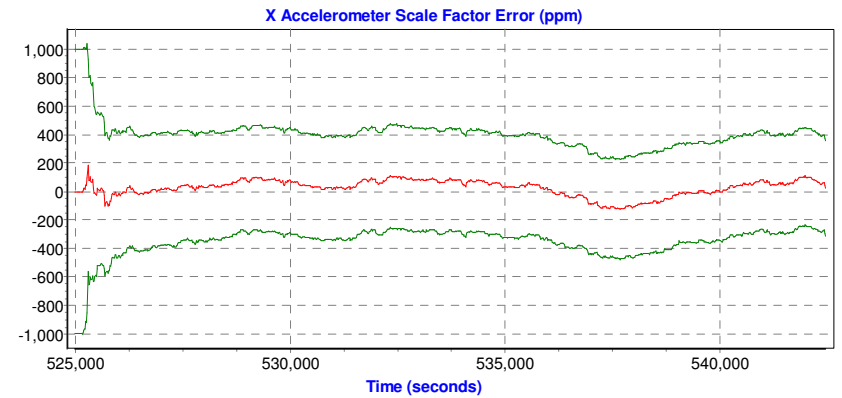
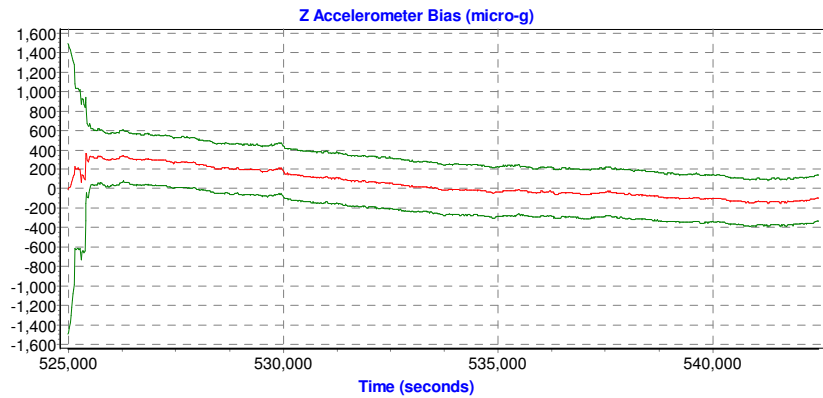
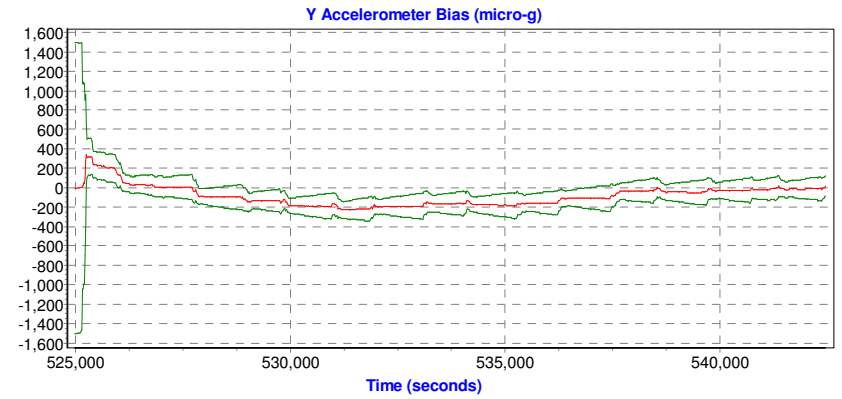
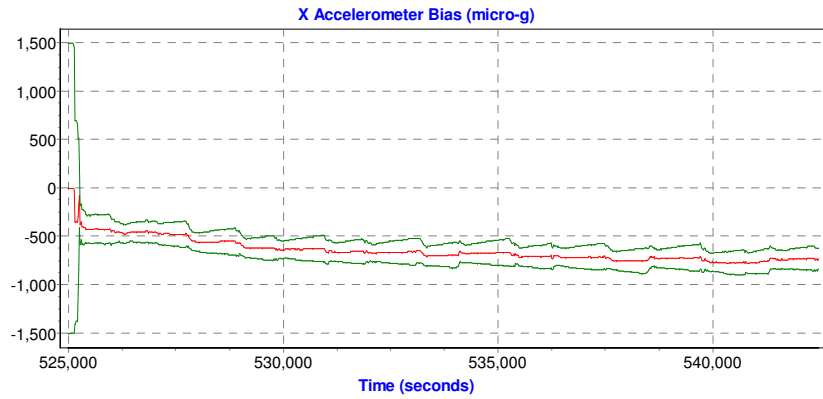
; Single point processing options

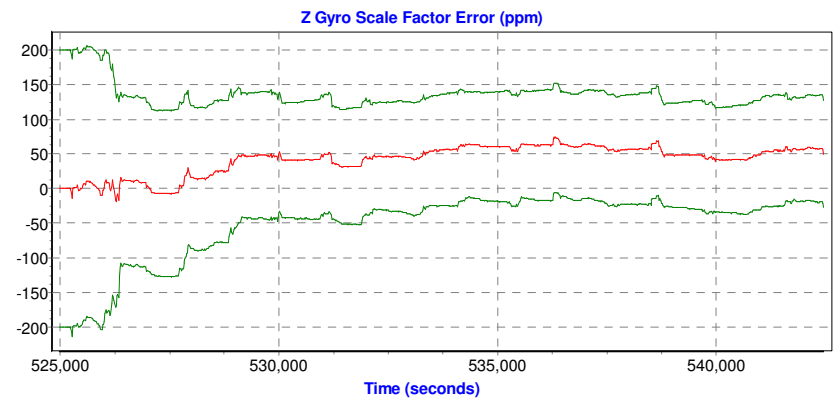
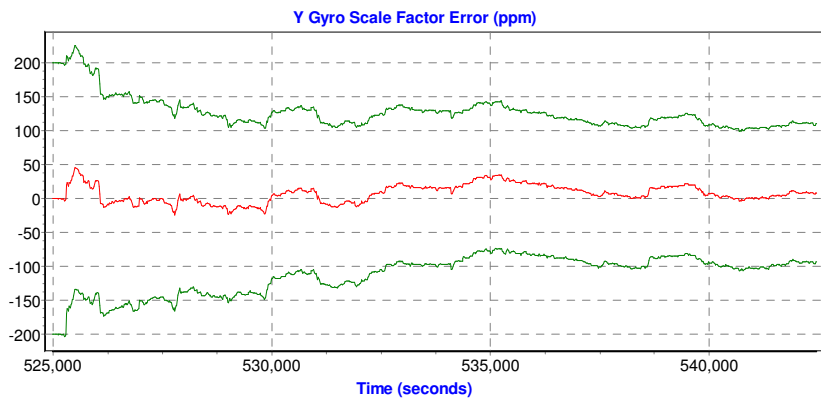
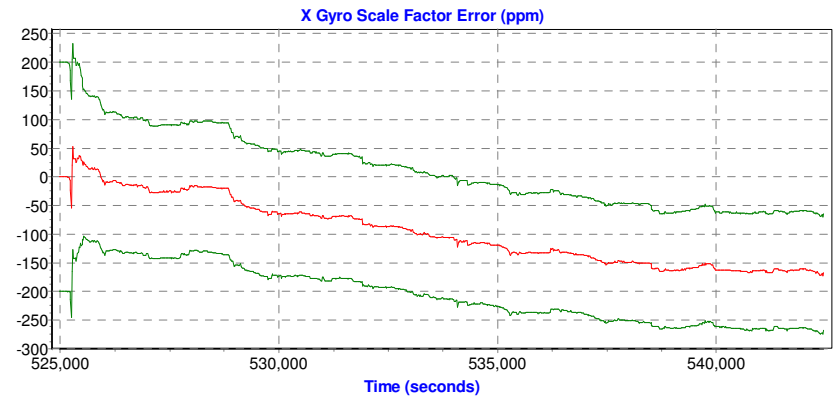
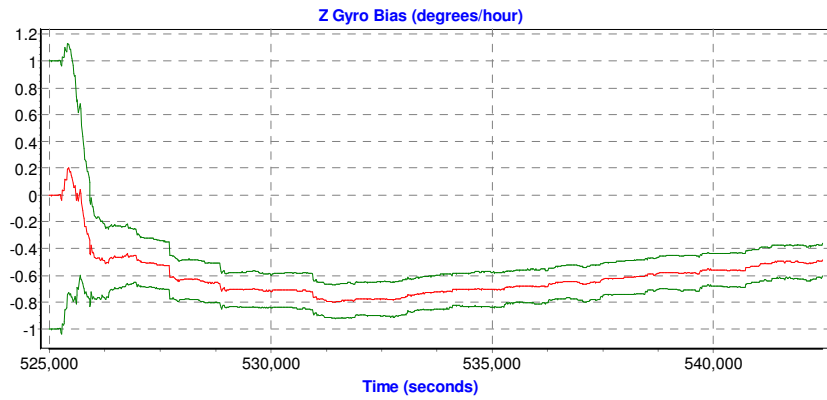
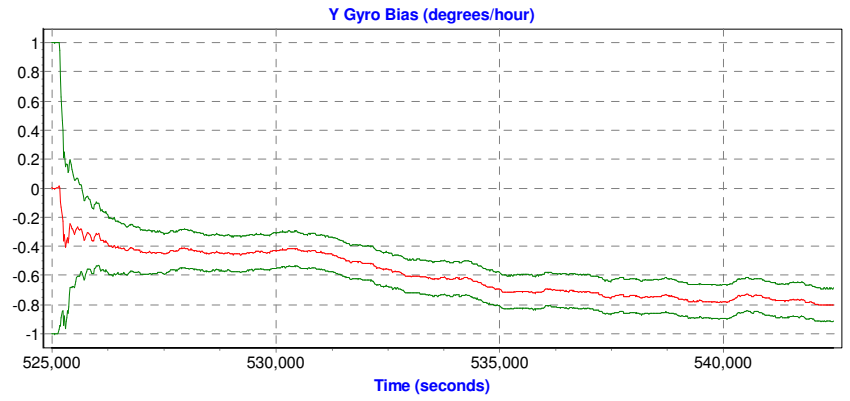
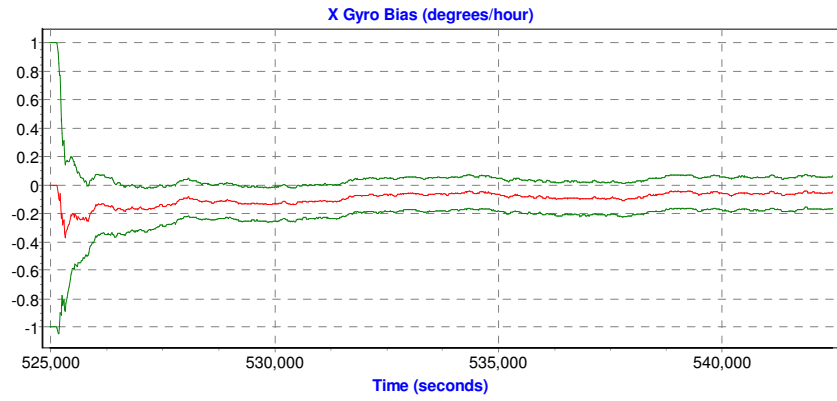
```

SP_PROC_MODE = 0 ; 0-auto, 1-sf, 2-df
SP_CA_VALUES = 3.00 15.00 ; C/A Sd (m), C/A Rej Tol (m)
SP_AVG_STATIC = ON ; ON/OFF
SP_SF_IONO = 1 ; SF iono mode 0-off, 1-broadcast
SP_OTH_ERRORS = ON ; Increase meas. stdev for other errors (ON/OFF)

```

127.txt
SP_P1_OVER_CA = OFF ; ON if P1 to be used instead of CA (if availble)
SP_CLK_MODE = OFF ; ON=Use ClockShift for time, OFF=use corrtime





Julian Date: 11127
 Local Date: May 7
 Local Time: 4:13
 Time Zone: EDT

Aircraft Tail #: 438H
 Pilot: S. Mellon
 Airport ID: KOTF
 Operator: S. Hunter

POS/AV File Name: 111274
 ALTM-Logfile Name: ALTM-Logfile Name

POS/AV File Transfers
 1st File
 Last File

Weather
 Wind: 27005
 Visibility: 10
 Sky Cond.: CLR
 Temp: 23c
 Dew Pt: 03c
 Alt: 2989

Flight Plan

Plans Flown
 Client
 Laser Pulse
 Scan Rate
 Scan Angle
 Desired Range
 Speed KTS

Start	Stop	Flight Line	HDG	Range	PDOP	SV	Speed (kts)	Comments
20:48	20:56	2586	91	227	1.34	11	143.0	
21:01	21:10	255	271	256	1.48	10	124.3	
21:14	21:23	254	91	249	1.42	9	129.2	
21:26	21:36	253	271	241	2.00	9	136.9	
21:41	21:48	252	91	279	1.85	10	147.5	
21:53	22:02	251	271	243	1.81	10	138.7	
22:06	22:15	250	91	265	1.76	10	145.9	
22:19	22:28	249	271	233	1.49	10	137.3	
22:32	22:40	248	91	222	1.66	9	147.5	
22:45	22:53	247	271	250	1.68	6	140.2	
22:58	23:05	246	91	242	2.65	8	156.5	
23:10	23:16	245	271	242	2.64	8	135.7	stop ped half way
23:20	23:27	245	271	267	2.49	8	133.2	

Daily Activity/Comments

Temp/Pressure (GND)

1

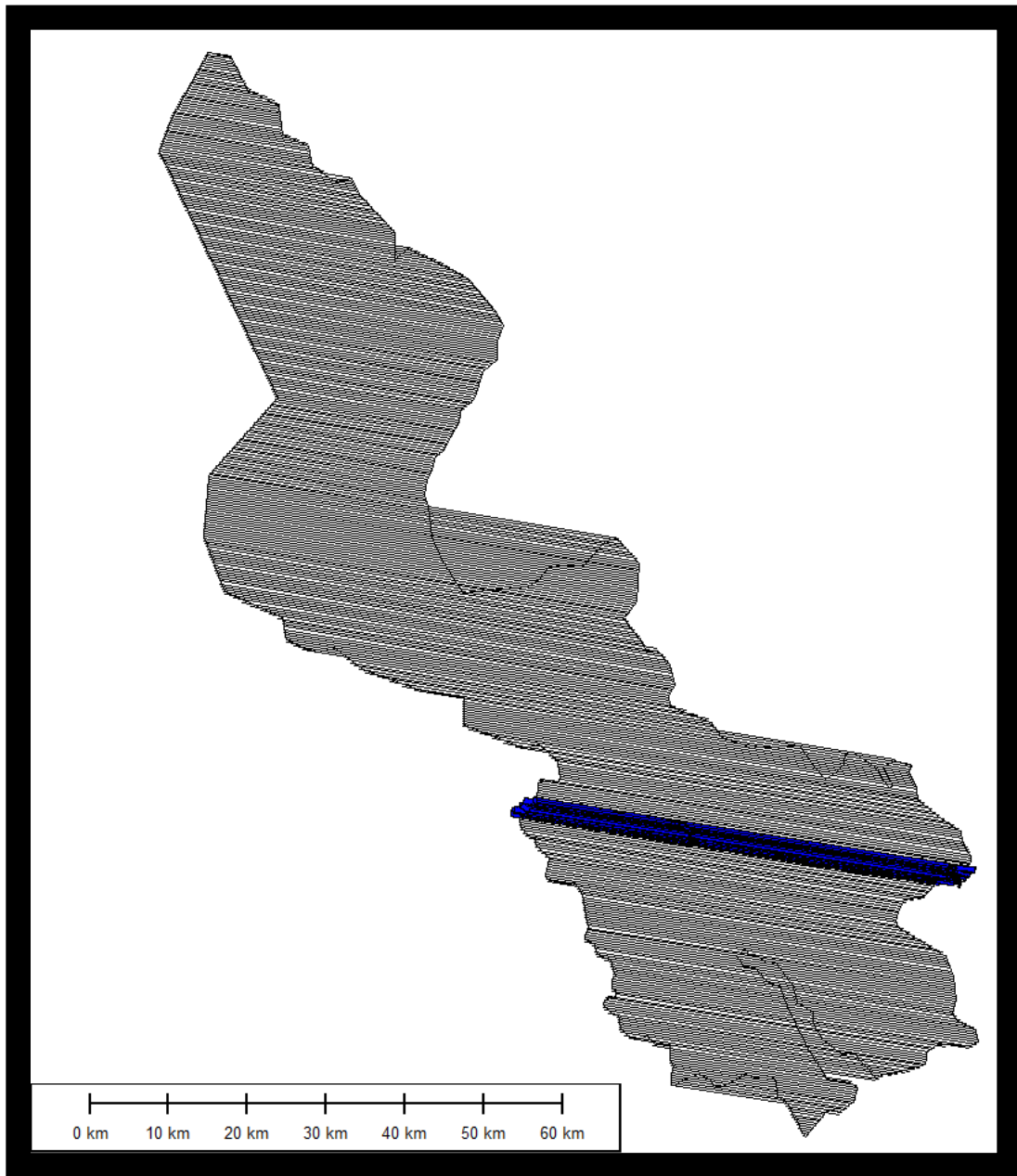
Check-off When Complete

- Power up ALTM Laser Syst
- Boot Laptop/Open Program
- POS/AV
- ALTM/NAV
- Internet Explorer FTP:
- Delete old POS/AV files from PC
- Achieve fine alignment
- Start logging to pc card
- Collect 5-min Static
- Configure ALTM
- Verify Full NAV
- Shutters open at 2000ft A
- Two 10-second Test Fir
- Roll Comp Line
- Flight-lines flown
- Roll Comp Line
- Copy all but last 2 POS/AV to C
- Close Shutters
- Collect 5 min. Static
- Stop Logging to PC Card
- Copy Remaining POS/AV Files to C
- Power-down ALTM Syst

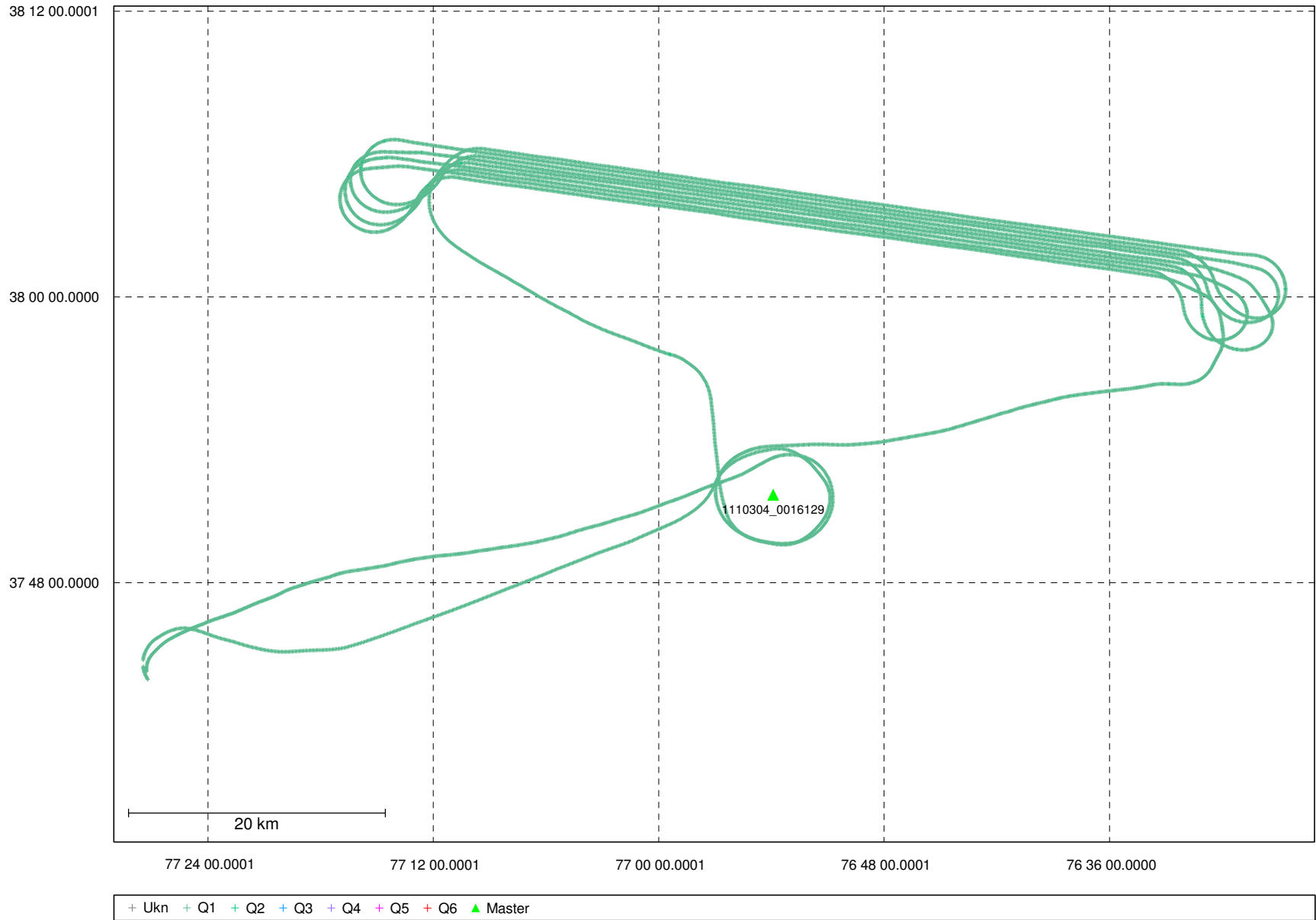
129-118
 657-230

Mission: o511130a

2011 05 10



Combined - Map Run (15)



proc.txt
Processing Summary Information

Program: POSGPS
Version: 4.30.3108
Project: D:\Projects\Va\Tpoint_bases\130a\GPS\130.gnv

Solution Type: Combined Fwd/Rev

Number of Epochs:

Total in GPB file:	136094
No processed position:	123183
Missing Fwd or Rev:	4
with bad C/A code:	0
with bad L1 Phase:	0

Measurement RMS Values:

L1 Phase:	0.0203 (m)
C/A Code:	0.95 (m)
L1 Doppler:	0.030 (m/s)

Fwd/Rev Separation RMS Values:

East:	0.057 (m)
North:	0.026 (m)
Height:	0.058 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (12905 occurrences):

East:	0.056 (m)
North:	0.025 (m)
Height:	0.057 (m)

Quality Number Percentages:

Q 1:	99.7 %
Q 2:	0.3 %
Q 3:	0.0 %
Q 4:	0.0 %

proc.txt

Q 5: 0.0 %

Q 6: 0.0 %

Position Standard Deviation Percentages:

0.00 - 0.10 m: 90.4 %

0.10 - 0.30 m: 9.6 %

0.30 - 1.00 m: 0.0 %

1.00 - 5.00 m: 0.0 %

5.00 m + over: 0.0 %

Percentages of epochs with DD_DOP over 10.00:

DOP over Tol: 3.9 %

Baseline Distances:

Maximum: 51.031 (km)

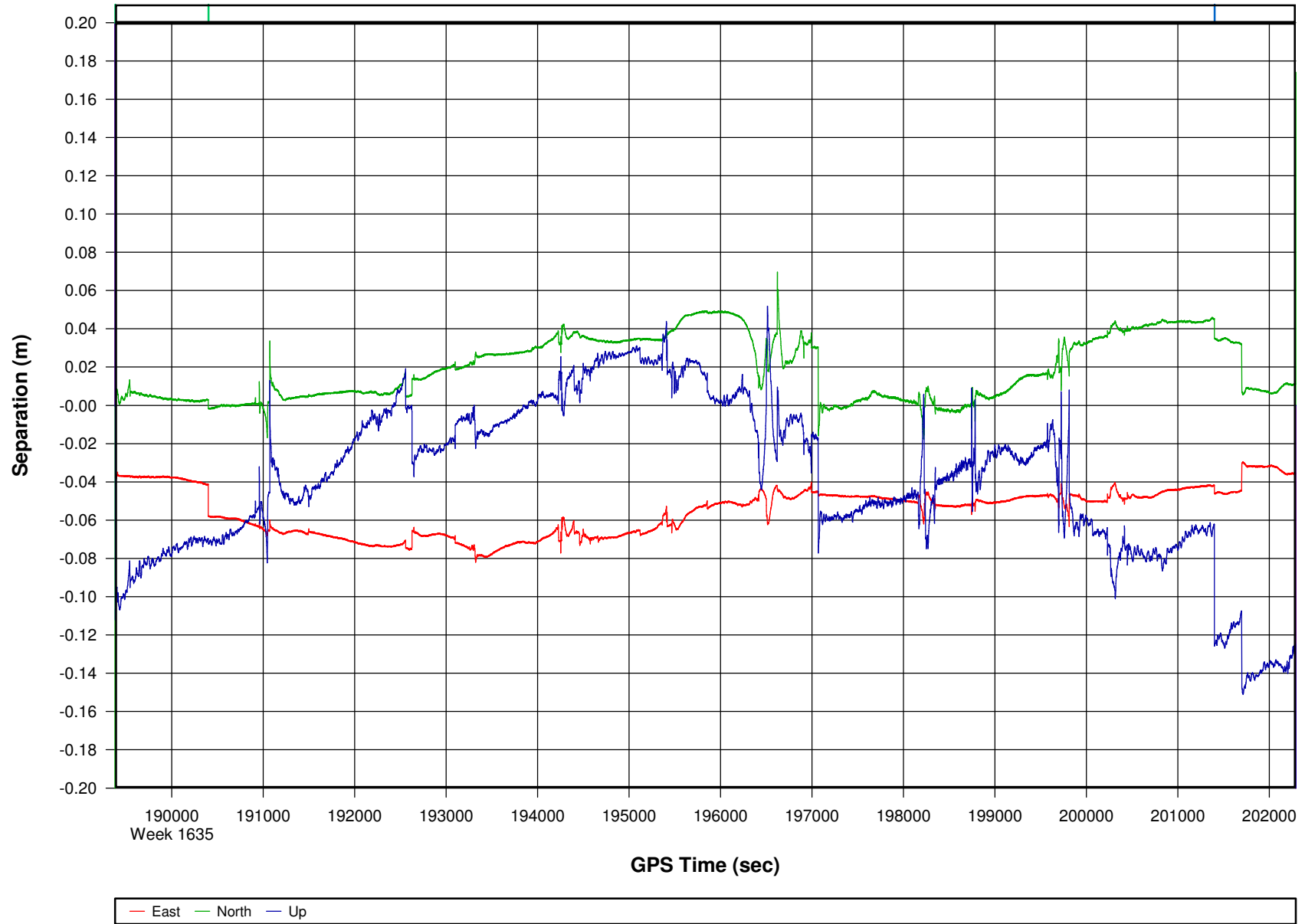
Minimum: 2.723 (km)

Average: 27.609 (km)

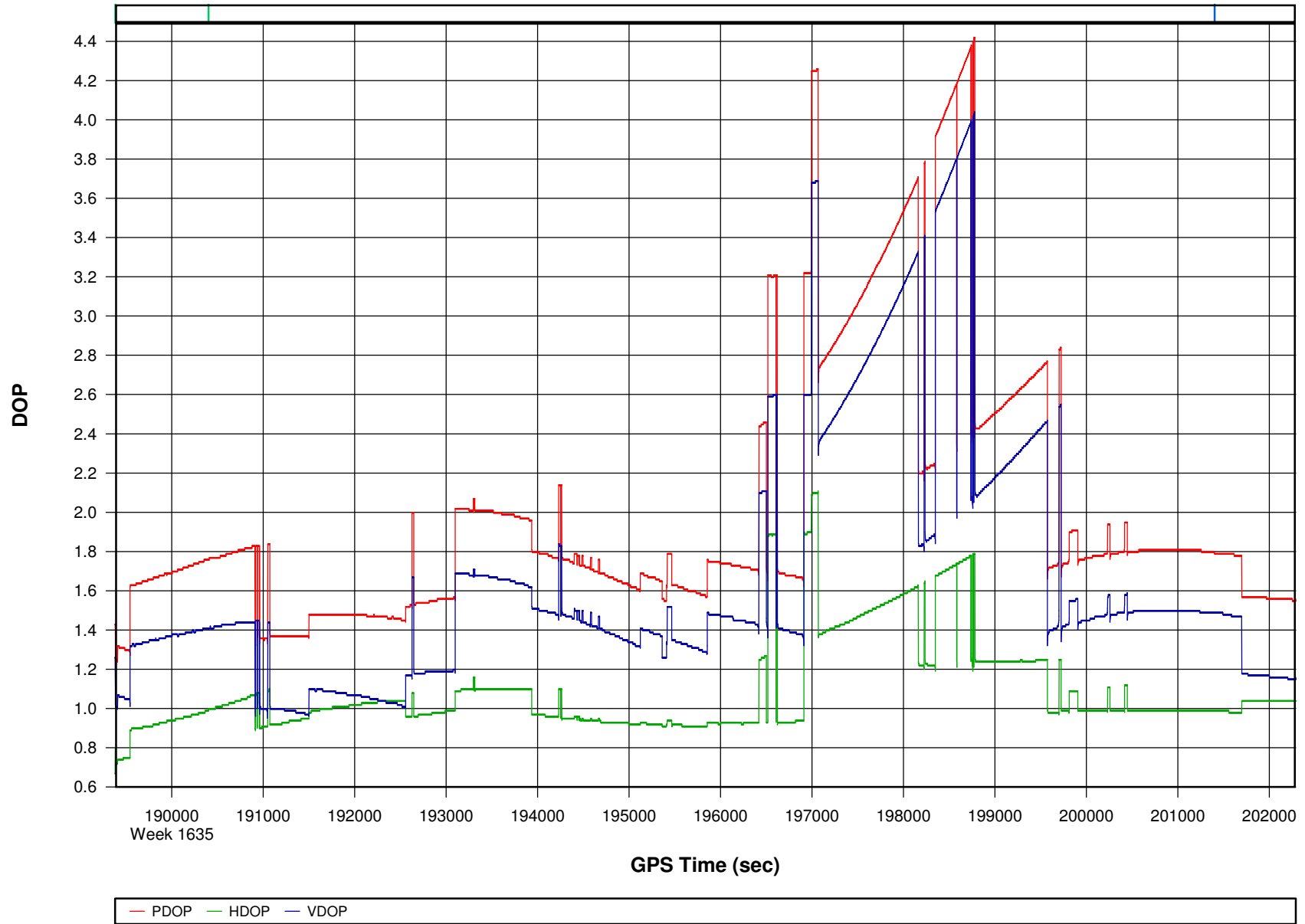
First Epoch: 50.865 (km)

Last Epoch: 50.933 (km)

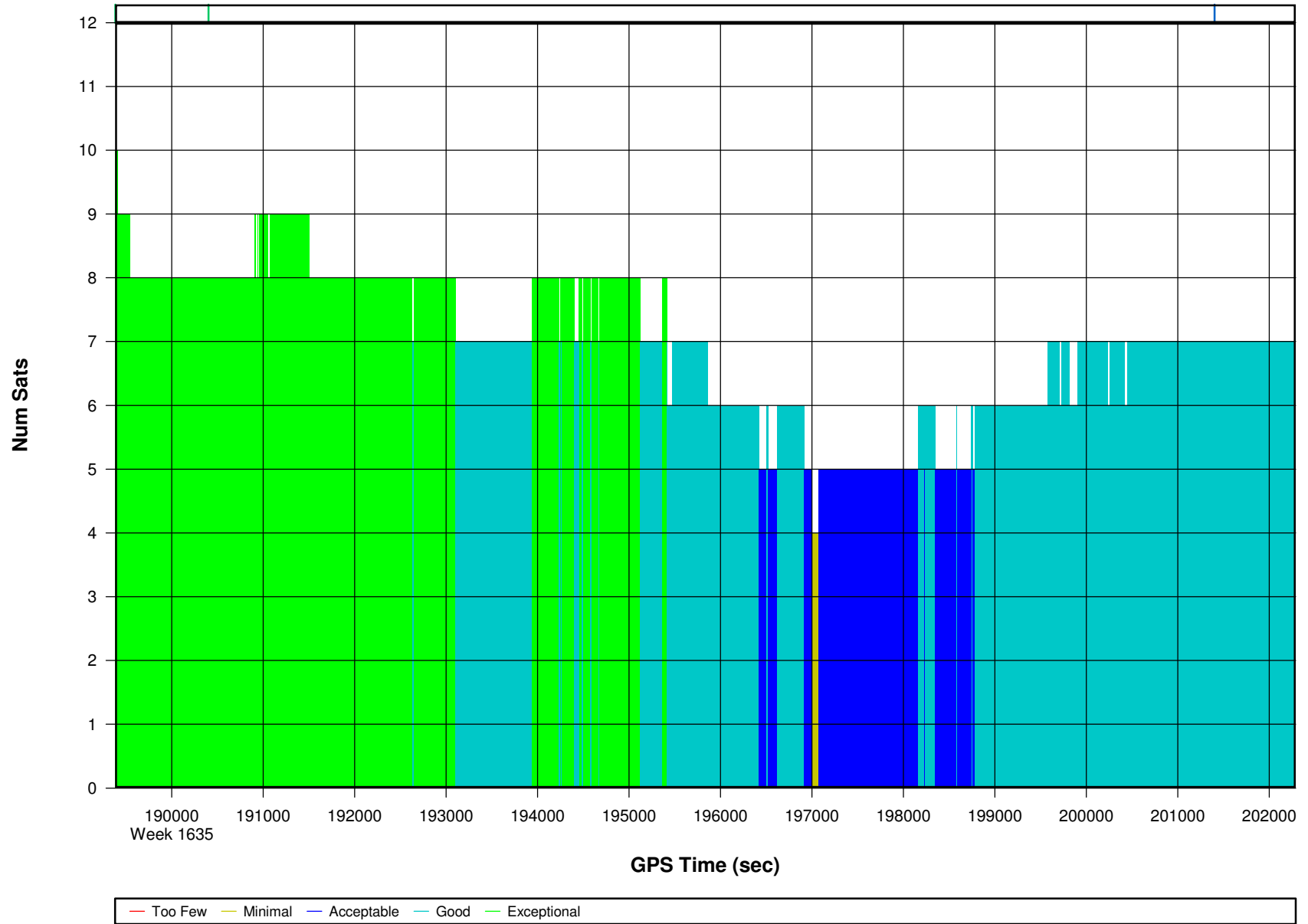
130 [Combined] - Forward/Reverse or Combined Separation Plot



130 [Combined] - PDOP, HDOP, VDOP Plots



130 [Combined] - Number of Satellites Bar Plot




```

proc.txt
; PROJECT: D:\Projects\Va\Tpoint_bases\130a\GPS\130.gnv
;
; DATE: July 26/11 (date/time of processing)
; TIME: 13:49:10
; CREATED BY: POSGPS Version 4.30.3108
;

```

```

VERSION = 4.30.3108
PROCUSER = Unknown
PROCDISC = Run*(17)
PROCTIME = 13:48:02 07/26/2011

```

```

; Master station # 1 information

```

```

MB_MASTER_INDEX = 0
MB_MASTER_NAME = 1110304_0016129
MB_MASTER_FILE = D:\Projects\Va\Tpoint_bases\130a\1110304_00161291.gpb
MB_MASTER_POS = 37 51 41.39611 -76 53 55.13346 5.1620
MB_MASTER_ANT = 1.527
MB_MASTER_DISABLE = OFF

```

```

; Remote station information

```

```

REMOTE_FILE = D:\Projects\Va\Tpoint_bases\130a\Extract\mgps_01.gpb
REMOTE_POS = 37 42 27.66170 -77 26 16.62830 31.6740
REMOTE_ANT = 0.000

```

```

; General settings

```

```

PROCESS_MODE = 105 108 111 126 ; Processing modes (POSGPS only)

```

```

DATUM = WGS84 AUTO ; Processing Datum
INPDATUM = ON WGS84 AUTO ; Input Datum (ON=Use processing datum)
ELEV_MASK = 12.5 ; Elevation mask (deg)
GRID = UTM 17 0 ; Grid info

```

```

CYCLE_TEST = BOTH ; cycle slip test method
STATIC_SLIP_TOL = 0.40 ; slip tolerance in static mode (cycles)
USE_DOPPLER = ON OFF ; Use doppler meas. for phase, for code-only

```

```

BASE_SAT = 99 ; Base satellite (99-default)

```

```

TIMERANGE = RANGE 989037380.0 989050290.0 2 0 ; Processing time range
INTERVAL = 0.10 ; Processing time interval (seconds)

```

```

PROCESS_DIR = FORWARD ; Process direction (FORWARD/REVERSE)
BOTH_DIR = ON ; True for processing both directions
WRITE_BAD_EPOCHS = OFF ; Save bad data to .fwd/rev file (ON/OFF)
NOWRITE_HIGH = OFF 6 20.000 ; Don't write epoch with high statistics (q, stdev-m)
OUTPUT_MODE = NORMAL ; Format for .fwd/rev file
DETAILED_SUM = ON ; Detailed Static/KAR Summary header
WRITE_SLIP_MSG = ON ; Print cycle slips to message log
SAVE_AMB = ON ; should ambiguities be saved

```

```

; KAR settings--second values for dual frequency/widelane

```

```

KAR_MIN_TIME = 8.00 1.00 ; Min. time for KAR, L1 and L2 (minutes)
KAR_MIN_ADD = 1.50 ; minutes/10-km added to KAR_MIN_TIME
KAR_MAX_TIME = 30 ; Time before Float KAR soln used (minutes)
KAR_CUBE = 1.00 4.00 ; KAR cube size (m)
KAR_COV_L2 = ON 3.000 0.2 ; Use covariance for L2 KAR, StdDev factor, offset(m)
KAR_MAX_DOP = 9.0 ; Cutoff DD_DOP value for KAR to work
KAR_L2_NOISE = AUTO ; L2 noise model: AUTO, IONO, HIGH MEDIUM or LOW
KAR_IONO_DIST = 5.0000 ; Distance for choosing between HIGH and IONO noise (AUTO
noise only) - km
KAR_STATIC = ON ; Engage KAR while in static mode
KAR_USE_FAR = ON ; Allow KAR to go back in time past max. distances

```

```

proc.txt
KAR_EPOCH_SIZE = 30.0 15.0 AUTO ; Computation interval for KAR
KAR_EPOCH_FILTER = 5.0 ; KAR data storage interval
KAR_DISTANCE = 7.500 60.000 ; KAR cutoff distance (km)
KAR_EXACT_INTERVAL = OFF ; ON if KAR to restrict data to KAR_EPOCH_FILTER
ISSUE_KAR_DOP = OFF 25.0 ; Issue KAR when DOP drops below value
ISSUE_KAR_TIME = OFF 15.000 ; Issue KAR when DOP drops below value
KAR_DIST_WEIGHT = ON ; ON if distance weighting to be used
KAR_STRICT_TOL = OFF ON ; RMS(ON/OFF), REL(ON/OFF) -- ON if stricter tolerances
to be used
KAR_FAST = OFF OFF ; Fast KAR search, second param for 5 satellites
KAR_REFINE = ON ; Refine L1/L2 KAR search
KAR_MB_NEAREST = ON ; ON if only nearest b/l to be searched (MB mode only)
ISSUE_KAR_DIST = OFF 5.0 60.0 ; Engage KAR if <dist1, reset if >dist2 (km)
USERKAR = 190400.0 FORWARD NORESET ; Engage KAR at this time
USERKAR = 201400.0 REVERSE NORESET ; Engage KAR at this time

```

```

;Fixed static solution options
FIX_CUBE = AUTOREDUCE 0.500 1.500 -1 ; Fixed solution search area options
FIX_L2_NOISE = AUTO -1 ; Fixed solution L2 noise model
FIX_IONO_DIST = 5.000 -1 ; Distance for switching to Iono model for AUTO L2 noise
FIX_REFINE = OFF ; Refine L1/L2 fixed solution
FIX_STRICT = OFF OFF ; Stricter RMS and reliability tolerances
FIX_INTERVAL = 15.0 ; Fixed static interval (s)
SPLIT_SS = OFF 120.0 ; Break static sessions if gap larger than value (s)
FIX_AUTO = 180.0 40.000 600.0 12.000 ON ; DFMinT(s), DFMaxD(km) SFMinT(s) SFMaxD(km)
ON/OFF

```

```

; use PCODE, L2 for amb. res., L2 for iono.(OFF/RELATIVE/FREE), correct C/A for
iono.

```

```

DUAL_FREQUENCY = OFF ON FREE OFF
IONO_DIST = 4.0 ; Engage Relative iono. after this dist. (km)
L2_SLIP_TOL = 0.400 ; Small cycle slip tolerance on L2 (cycles)
L2_LOCKTIME = OFF ; ON if L2 locktime variable to be used
USE_PCODE = OFF OFF ; Use P1 and use P2 flags (ON/OFF)
SF_IONO_MODE = OFF ; ON if IONEX or ICD iono model to be used fo SF
L2MAIN = OFF ; Enable L2 as primary frequency

```

```

; New measurement standard deviation (weighting) settings
STD_MODE = ELEV ; Measurement weighting mode
(ELEV/CN0/STANDARD/ADAPTIVE)
STD_CODE = 4.0000 ; Code measurement standard deviation (m)
STD_PHASE = 0.0200 ON ; Carrier meas SD (m) (ON/OFF refers to adjustment for
L3)
STD_DOPPLER = 0.2500 ON ; Doppler meas stddev (m/s) (ON/OFF referes to
auto-doppler setting)
STD_REJECT = NORMAL 3.0 3.0 3.0 6.0 4.5 ; LevelStr CodeRej PhaseRej DopplerRej
CodeReset PhaseReset
STD_SKIP = 15.0 5 1 ; dMaxRejSec, nSkipCodeEpochs, nSkipPhaseEpochs
STD_DIST = LOW 1.0 7.5 ; Distance effects (OFF/HIGH/MEDIUM/LOW/MANUAL)
ManHzPPM ManVtPPM
STD_BL = 1110304_0016129 ON ; BLName UseMain(ON/OFF)
STD_RELTOL = 4.00 ; Reliability tolerance for rejecting outliers

```

```

;Miscellaneous options
WRITE_RESIDUALS = OFF ; Create binary value file (.fbv,.rbv)
LOCKTIME_CUTOFF = 12.0 ; Carrier Locktime cutoff (seconds)
DYNAMICS = AUTO HIGH ; constraint on vehicle dynamics

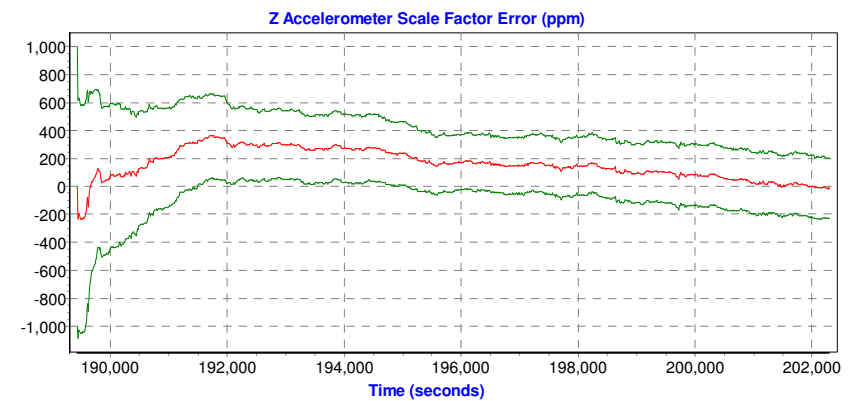
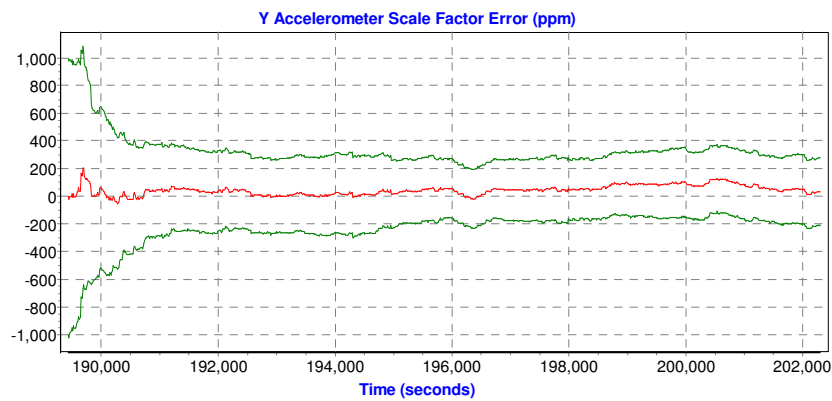
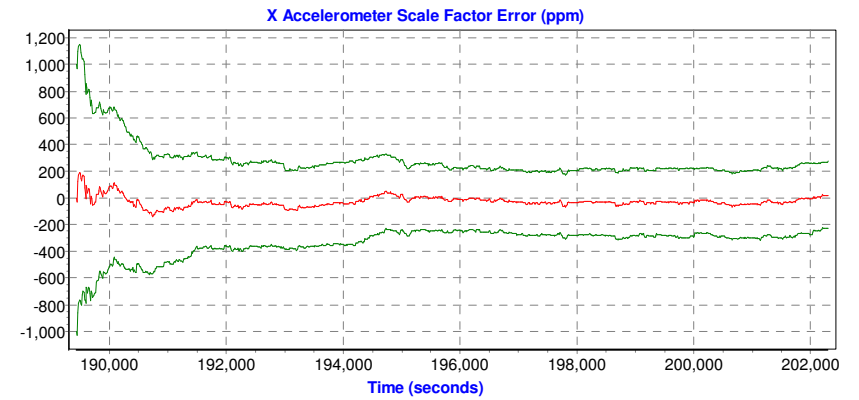
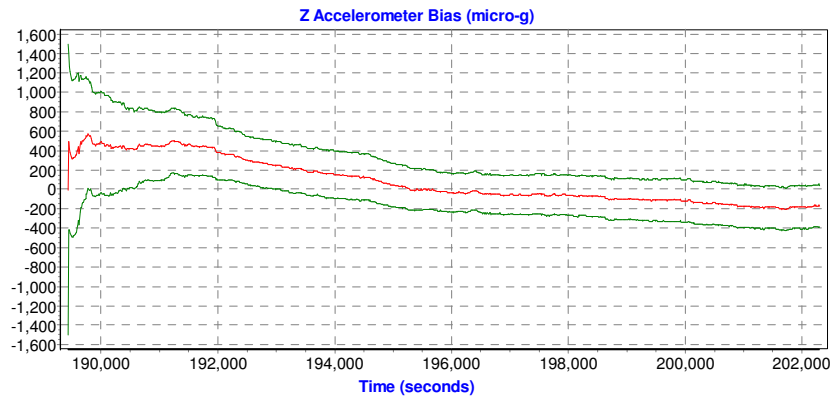
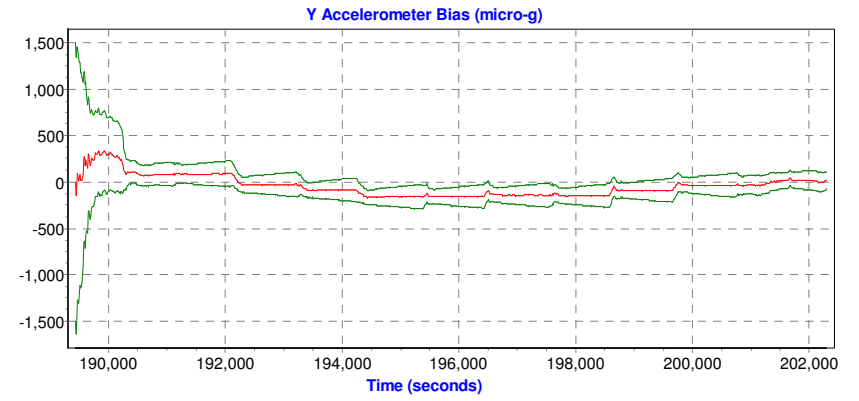
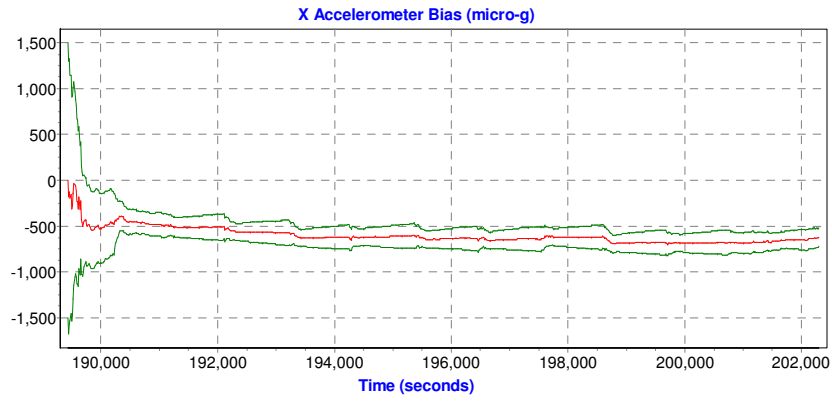
```

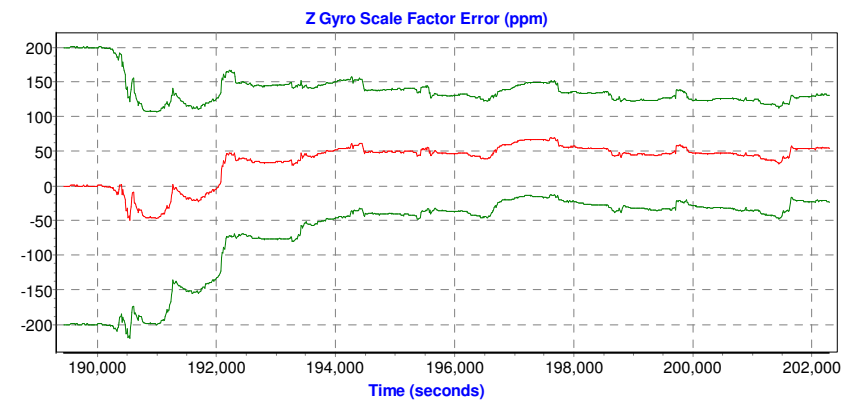
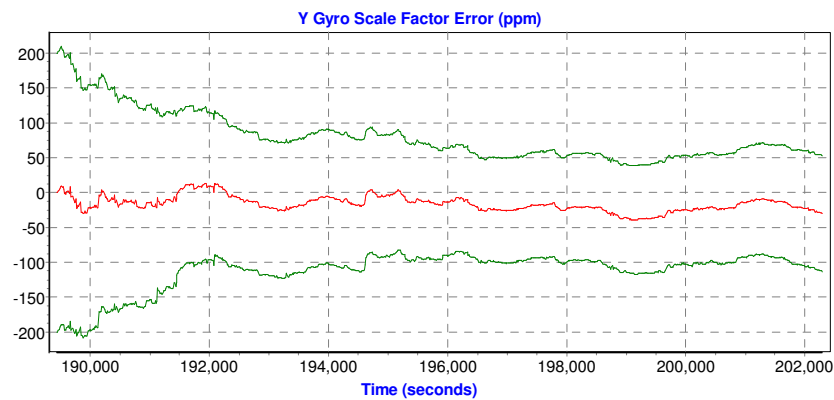
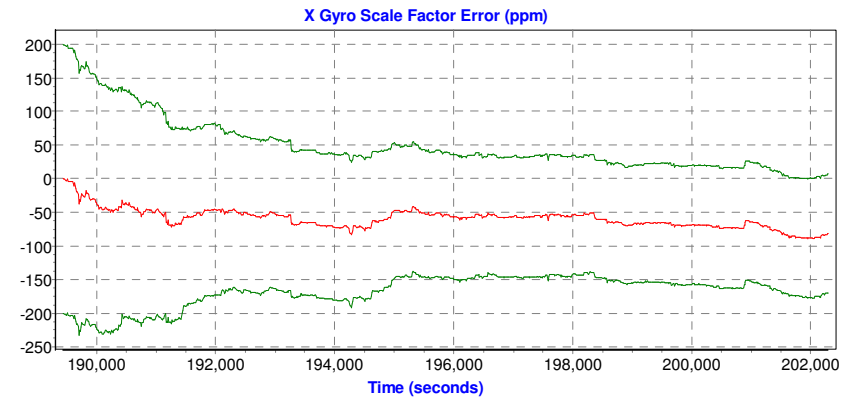
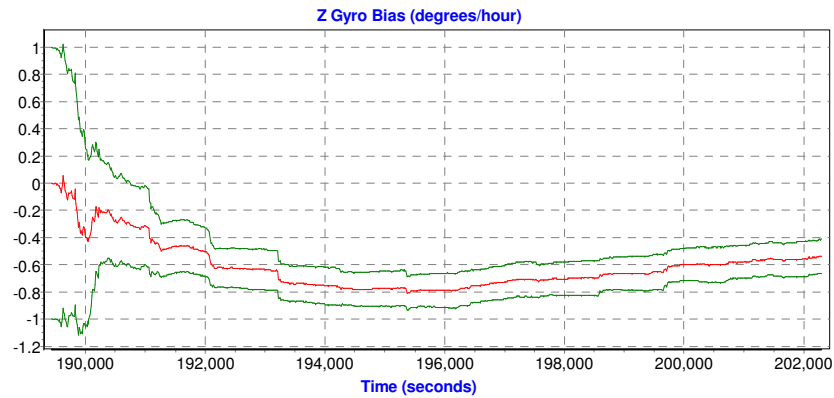
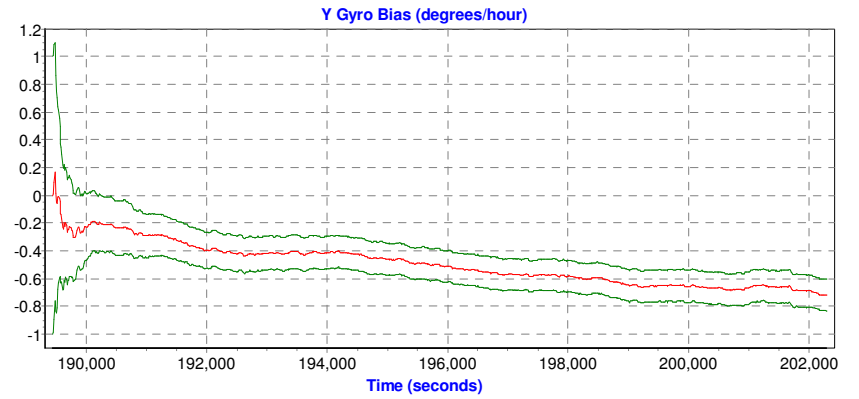
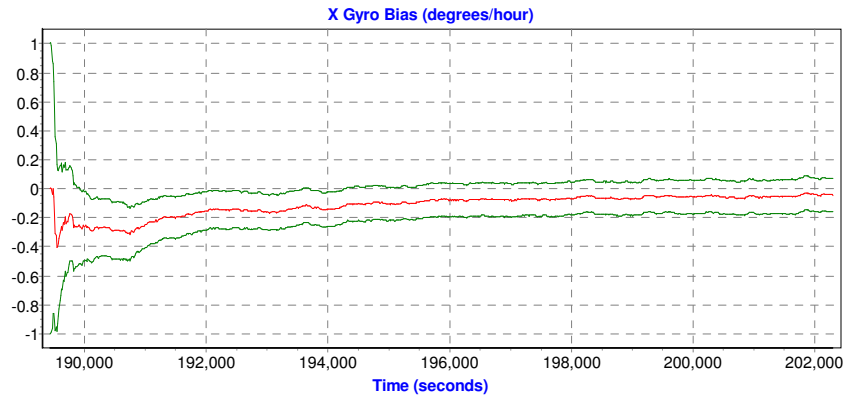
```

; Single point processing options
SP_PROC_MODE = 0 ; 0-auto, 1-sf, 2-df
SP_CA_VALUES = 3.00 15.00 ; C/A Sd (m), C/A Rej Tol (m)
SP_AVG_STATIC = ON ; ON/OFF
SP_SF_IONO = 1 ; SF iono mode 0-off, 1-broadcast

```

```
proc.txt
SP_OTH_ERRORS = ON      ; Increase meas. stdev for other errors (ON/OFF)
SP_P1_OVER_CA = OFF    ; ON if P1 to be used instead of CA (if availble)
SP_CLK_MODE   = OFF    ; ON=Use ClockShift for time, OFF=use corrtime
```





Daily Flight Log

Julian Date: 1136
 Local Date: May 10
 Local Time: 12:19
 Time Zone: EDT

Aircraft Tail #: 4354
 Pilot: S. Melton
 Airport ID: KDFP
 Operator: S. Hunter

POS/AV File Name: 111304
 ALTM-Logfile Name
 Ground Station Data

Weather
 Time: 07009
 Wind: 10
 Visibility: CLR
 Sky Cond: 05c
 Dew Pt: 07c
 Alt: 3000

Begin Static 1
 End Static 1

POS/AV File Transfers
 1st File Last File

Flight Plan

Plans Flown: Client Laser Pulse Scan Rate Scan Angle Desired Range Speed KTS

Begin Static 2
 End Static 2
 Temp/Pressure (GND)
 09c / 3000

Start	Stop	Flight Line	HDG	Range	PDOP	SV	Speed (kts)	Comments
05:07	05:21	111	278	986	1.76	4	145.5	
05:25	05:40	112	278	929	2.00	8	136.0	
05:33	05:57	113	278	920	1.87	8	147.0	
06:01	06:15	114	278	920	1.21	8	139.5	
06:14	06:33	115	278	970	1.73	8	138.6	
06:37	06:52	116	278	975	1.43	7	136.3	
06:56	07:09	117	278	964	1.41	8	133.8	
07:13	07:27	118	278	972	1.66	8	143.6	
07:30	07:44	119	278	956	1.85	8	142.1	

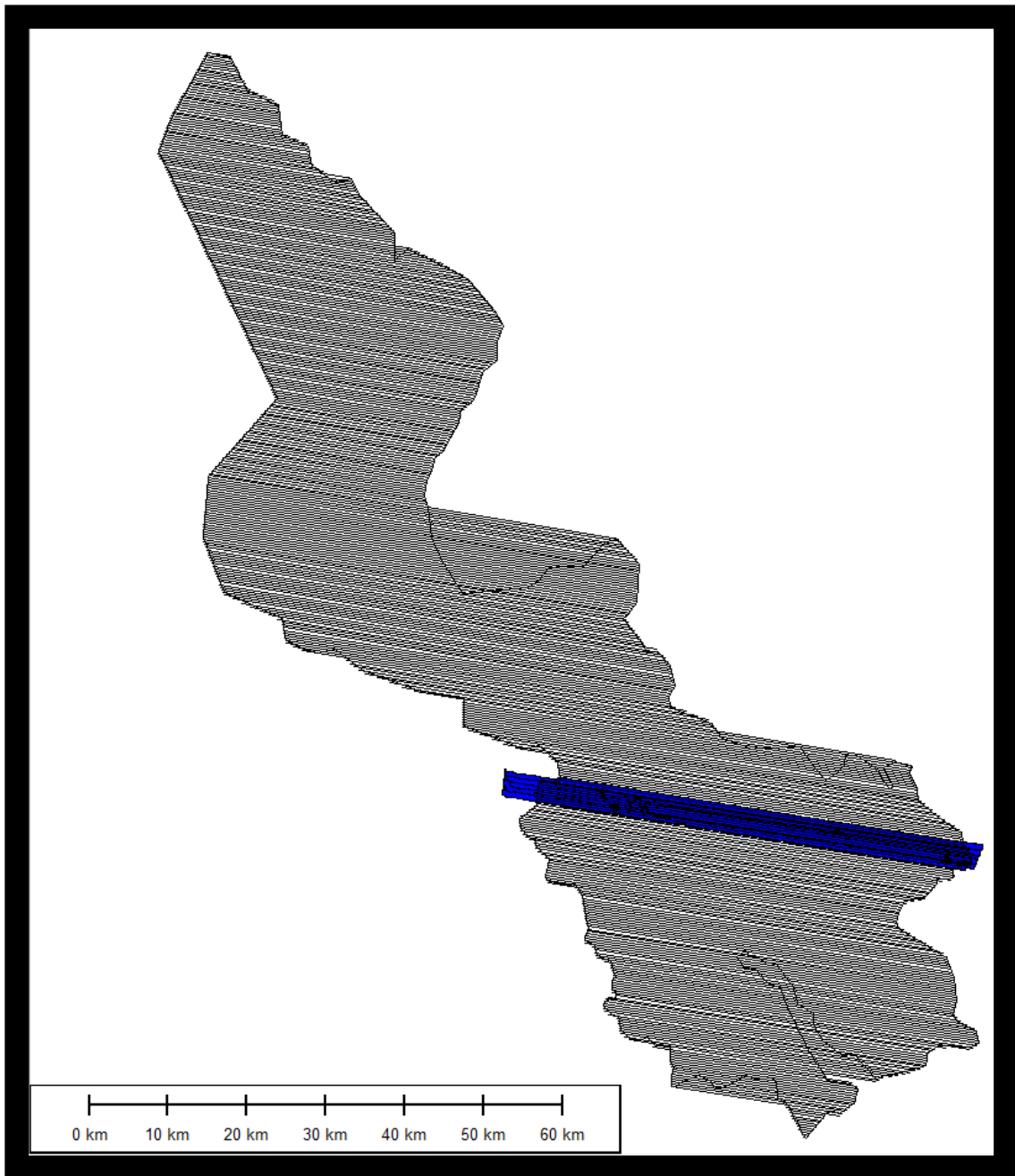
Begin Static 2
 End Static 2
 Temp/Pressure (GND)
 09c / 3000

Check-off When Complete
 Power up ALTM Laser Syst
 Boot Laptop/Open Program
 POS/AV
 ALTM/NAV
 Internet Explorer FTP:
 Delete old POS/AV files from PC
 Achieve fine alignment
 Start logging to pc card
 Collect 5-min Static
 Configure ALTM
 Verify Full NAV
 Shutters open at 2000ft A
 Two 10-second Test Fir
 Roll Comp Line
 Flight-lines flown
 Roll Comp Line
 Copy all but last 2 POS/AV to C
 Close Shutters
 Collect 5 min. Static
 Stop Logging to PC Card
 Copy Remaining POS/AV Files to C
 Power-down ALTM Syst

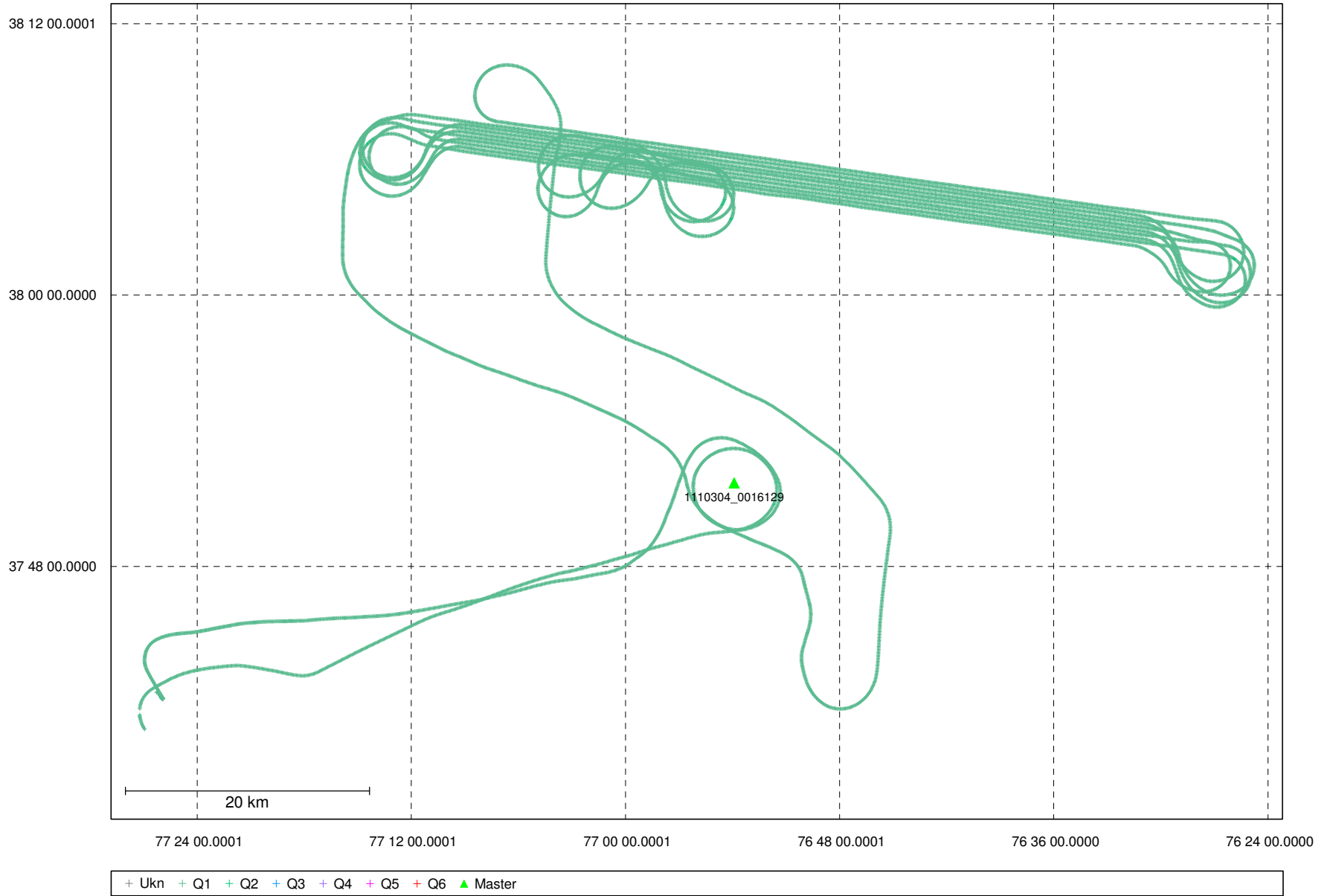
Daily Activity/Comments

Mission: o511130b

2011 05 10



Combined - Map Run (17)



proc.txt
Processing Summary Information

Program: POSGPS
Version: 4.30.3108
Project: D:\Projects\Va\Tpoint_bases\130b\GPS\130b.gnv

Solution Type: Combined Fwd/Rev

Number of Epochs:

Total in GPB file:	167997
No processed position:	151396
Missing Fwd or Rev:	7
with bad C/A code:	0
with bad L1 Phase:	0

Measurement RMS Values:

L1 Phase:	0.0184 (m)
C/A Code:	0.95 (m)
L1 Doppler:	0.026 (m/s)

Fwd/Rev Separation RMS Values:

East:	0.015 (m)
North:	0.024 (m)
Height:	0.032 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (16567 occurrences):

East:	0.012 (m)
North:	0.022 (m)
Height:	0.027 (m)

Quality Number Percentages:

Q 1:	99.8 %
Q 2:	0.2 %
Q 3:	0.0 %
Q 4:	0.0 %

proc.txt

Q 5: 0.0 %

Q 6: 0.0 %

Position Standard Deviation Percentages:

0.00 - 0.10 m: 98.2 %

0.10 - 0.30 m: 1.8 %

0.30 - 1.00 m: 0.0 %

1.00 - 5.00 m: 0.0 %

5.00 m + over: 0.0 %

Percentages of epochs with DD_DOP over 10.00:

DOP over Tol: 10.7 %

Baseline Distances:

Maximum: 52.569 (km)

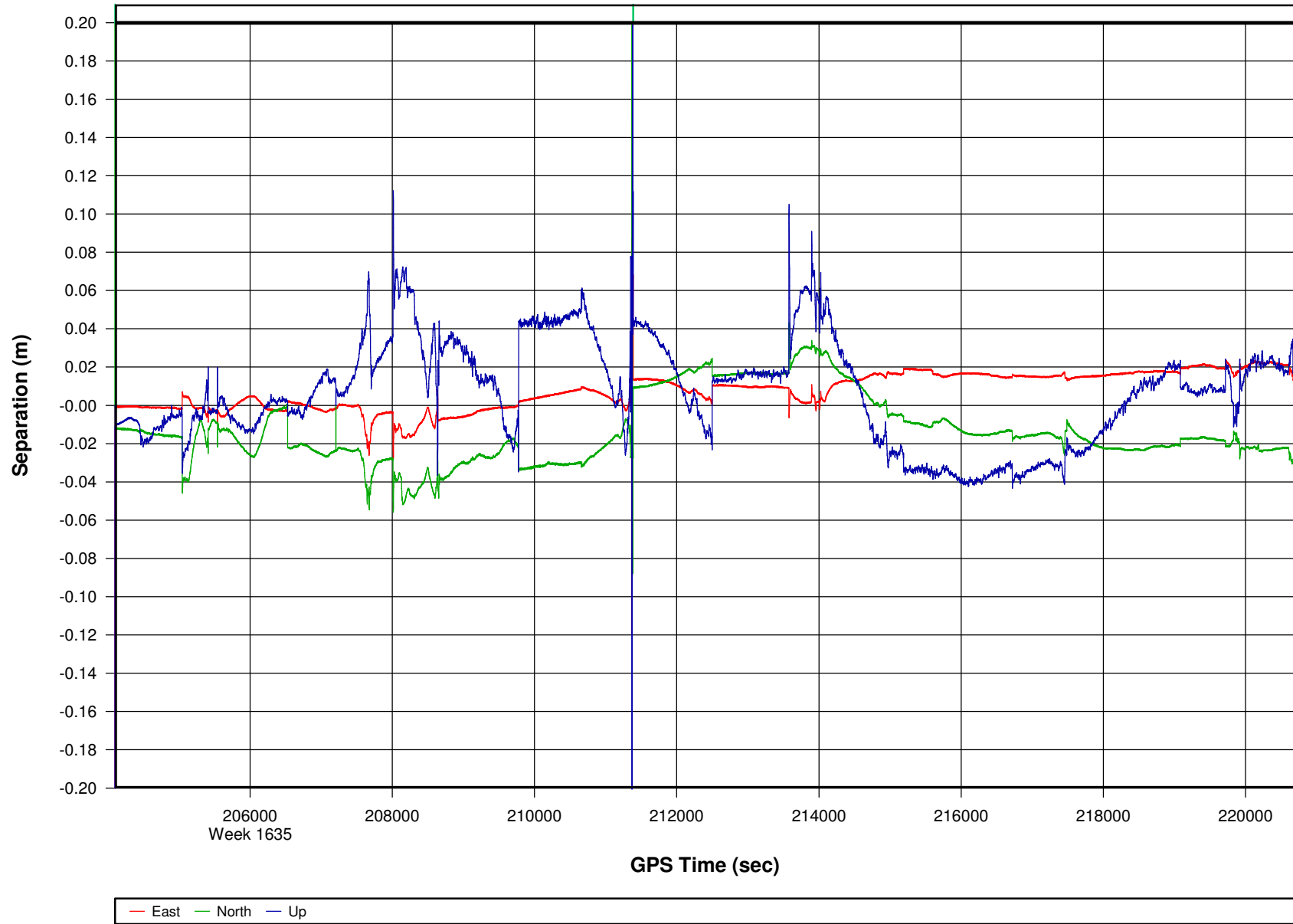
Minimum: 2.973 (km)

Average: 29.574 (km)

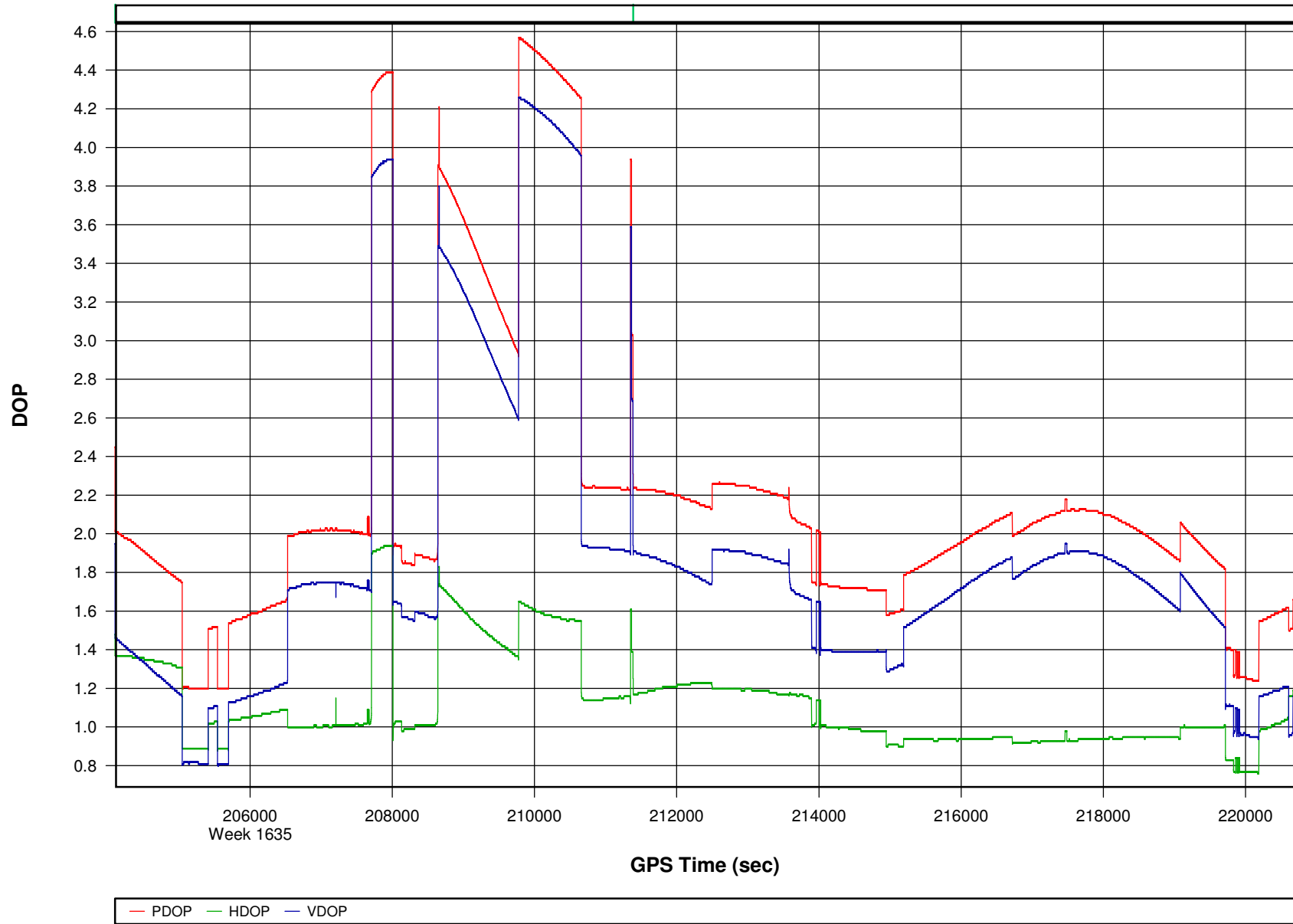
First Epoch: 50.478 (km)

Last Epoch: 52.519 (km)

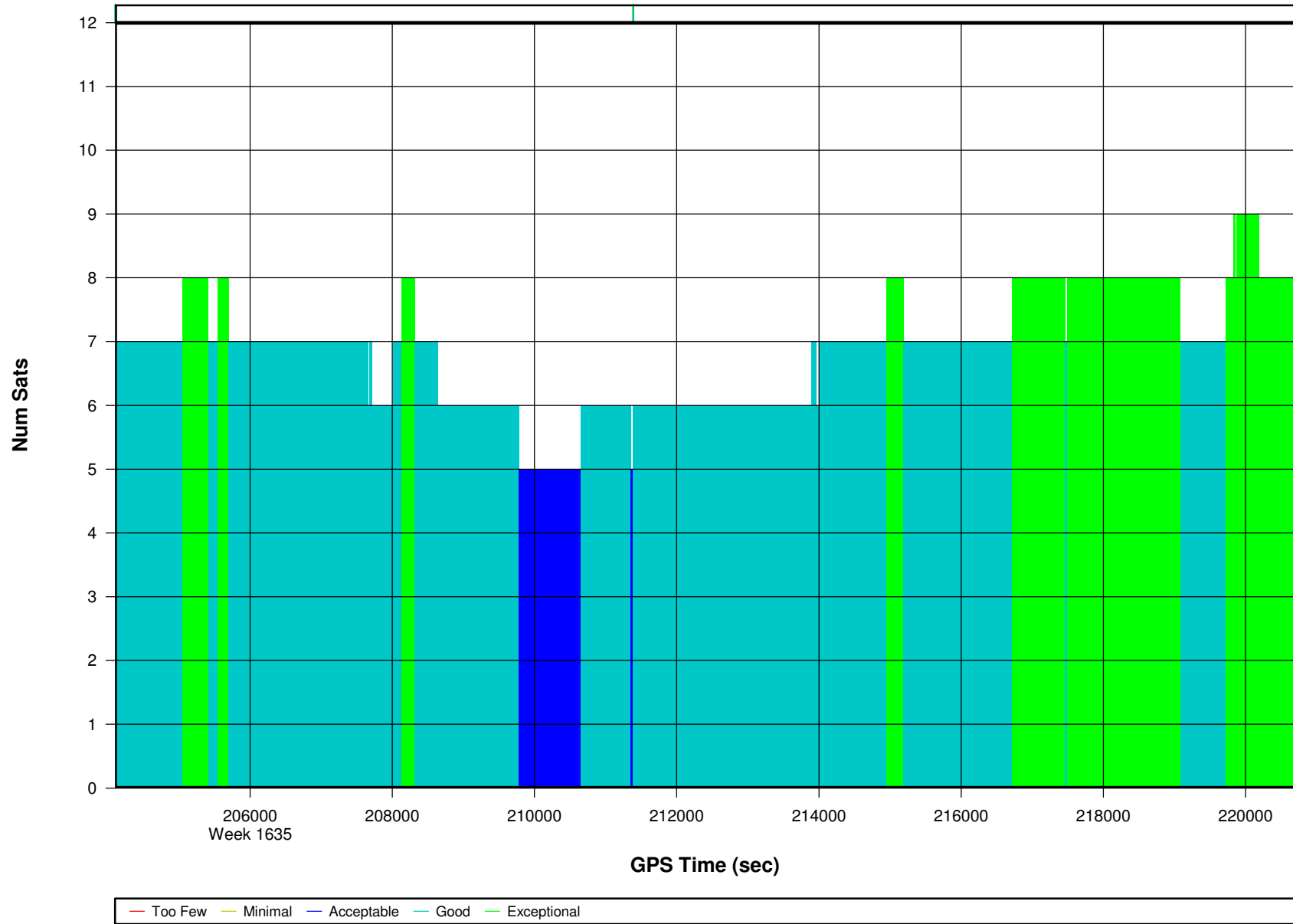
130b [Combined] - Forward/Reverse or Combined Separation Plot



130b [Combined] - PDOP, HDOP, VDOP Plots



130b [Combined] - Number of Satellites Bar Plot



```
proc.txt
; PROJECT: D:\Projects\Va\Tpoint_bases\130b\GPS\130b.gnv
;
; DATE: July 26/11 (date/time of processing)
; TIME: 14:11:29
; CREATED BY: POSGPS Version 4.30.3108
;
```

```
VERSION = 4.30.3108
PROCUSER = Unknown
PROCDISC = Run*(19)
PROCTIME = 14:10:04 07/26/2011
```

```
; Master station # 1 information
```

```
MB_MASTER_INDEX = 0
MB_MASTER_NAME = 1110304_0016129
MB_MASTER_FILE = D:\Projects\Va\Tpoint_bases\130b\1110304_00161291.gpb
MB_MASTER_POS = 37 51 41.39611 -76 53 55.13346 5.1620
MB_MASTER_ANT = 1.527
MB_MASTER_DISABLE = OFF
```

```
; Remote station information
```

```
REMOTE_FILE = D:\Projects\Va\Tpoint_bases\130b\Extract\mgps_01.gpb
REMOTE_POS = 37 42 27.29408 -77 26 16.33159 28.5865
REMOTE_ANT = 0.000
```

```
; General settings
```

```
PROCESS_MODE = 105 108 111 126 ; Processing modes (POSGPS only)
```

```
DATUM = WGS84 AUTO ; Processing Datum
INPDATUM = ON WGS84 AUTO ; Input Datum (ON=Use processing datum)
ELEV_MASK = 13.0 ; Elevation mask (deg)
GRID = UTM 17 0 ; Grid info
```

```
CYCLE_TEST = BOTH ; cycle slip test method
STATIC_SLIP_TOL = 0.40 ; slip tolerance in static mode (cycles)
USE_DOPPLER = ON OFF ; Use doppler meas. for phase, for code-only
```

```
BASE_SAT = 99 ; Base satellite (99-default)
```

```
TIMERANGE = RANGE 989052100.0 989068700.0 2 0 ; Processing time range
INTERVAL = 0.10 ; Processing time interval (seconds)
```

```
PROCESS_DIR = FORWARD ; Process direction (FORWARD/REVERSE)
BOTH_DIR = ON ; True for processing both directions
WRITE_BAD_EPOCHS = OFF ; Save bad data to .fwd/rev file (ON/OFF)
NOWRITE_HIGH = OFF 6 20.000 ; Don't write epoch with high statistics (q, stdev-m)
OUTPUT_MODE = NORMAL ; Format for .fwd/rev file
DETAILED_SUM = ON ; Detailed Static/KAR Summary header
WRITE_SLIP_MSG = ON ; Print cycle slips to message log
SAVE_AMB = ON ; should ambiguities be saved
```

```
; KAR settings--second values for dual frequency/widelane
```

```
KAR_MIN_TIME = 8.00 1.00 ; Min. time for KAR, L1 and L2 (minutes)
KAR_MIN_ADD = 1.50 ; minutes/10-km added to KAR_MIN_TIME
KAR_MAX_TIME = 30 ; Time before Float KAR soln used (minutes)
KAR_CUBE = 1.00 4.00 ; KAR cube size (m)
KAR_COV_L2 = ON 3.000 0.2 ; Use covariance for L2 KAR, StdDev factor, offset(m)
KAR_MAX_DOP = 9.0 ; Cutoff DD_DOP value for KAR to work
KAR_L2_NOISE = AUTO ; L2 noise model: AUTO, IONO, HIGH MEDIUM or LOW
KAR_IONO_DIST = 5.0000 ; Distance for choosing between HIGH and IONO noise (AUTO
noise only) - km
KAR_STATIC = ON ; Engage KAR while in static mode
KAR_USE_FAR = ON ; Allow KAR to go back in time past max. distances
```

```

proc.txt
KAR_EPOCH_SIZE = 30.0 15.0 AUTO ; Computation interval for KAR
KAR_EPOCH_FILTER = 5.0 ; KAR data storage interval
KAR_DISTANCE = 7.500 60.000 ; KAR cutoff distance (km)
KAR_EXACT_INTERVAL = OFF ; ON if KAR to restrict data to KAR_EPOCH_FILTER
ISSUE_KAR_DOP = OFF 25.0 ; Issue KAR when DOP drops below value
ISSUE_KAR_TIME = OFF 15.000 ; Issue KAR when DOP drops below value
KAR_DIST_WEIGHT = ON ; ON if distance weighting to be used
KAR_STRICT_TOL = OFF ON ; RMS(ON/OFF), REL(ON/OFF) -- ON if stricter tolerances
to be used
KAR_FAST = OFF OFF ; Fast KAR search, second param for 5 satellites
KAR_REFINE = ON ; Refine L1/L2 KAR search
KAR_MB_NEAREST = ON ; ON if only nearest b/l to be searched (MB mode only)
ISSUE_KAR_DIST = OFF 5.0 60.0 ; Engage KAR if <dist1, reset if >dist2 (km)

;Fixed static solution options
FIX_CUBE = AUTOREDUCE 0.500 1.500 -1 ; Fixed solution search area options
FIX_L2_NOISE = AUTO -1 ; Fixed solution L2 noise model
FIX_IONO_DIST = 5.000 -1 ; Distance for switching to Iono model for AUTO L2 noise
FIX_REFINE = OFF ; Refine L1/L2 fixed solution
FIX_STRICT = OFF OFF ; Stricter RMS and reliability tolerances
FIX_INTERVAL = 15.0 ; Fixed static interval (s)
SPLIT_SS = OFF 120.0 ; Break static sessions if gap larger than value (s)
FIX_AUTO = 180.0 40.000 600.0 12.000 ON ; DFminT(s), DFMaxD(km) SFminT(s) SFMaxD(km)
ON/OFF

; use PCODE, L2 for amb. res., L2 for iono.(OFF/RELATIVE/FREE), correct C/A for
iono.
DUAL_FREQUENCY = OFF ON FREE OFF
IONO_DIST = 4.0 ; Engage Relative iono. after this dist. (km)
L2_SLIP_TOL = 0.400 ; Small cycle slip tolerance on L2 (cycles)
L2_LOCKTIME = OFF ; ON if L2 locktime variable to be used
USE_PCODE = OFF OFF ; Use P1 and use P2 flags (ON/OFF)
SF_IONO_MODE = OFF ; ON if IONEX or ICD iono model to be used fo SF
L2MAIN = OFF ; Enable L2 as primary frequency

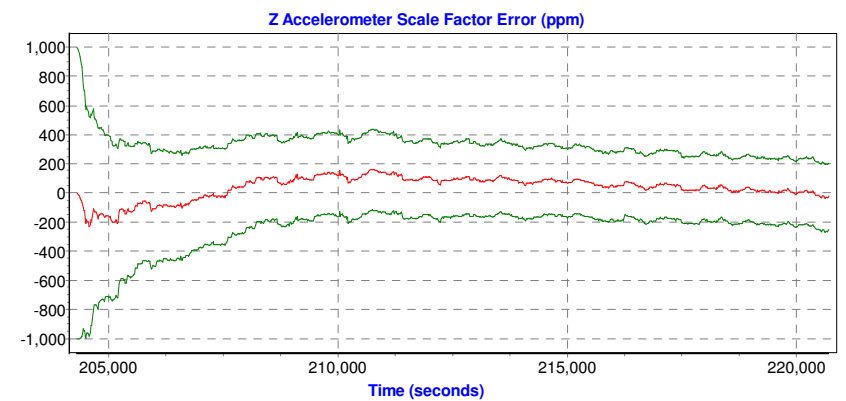
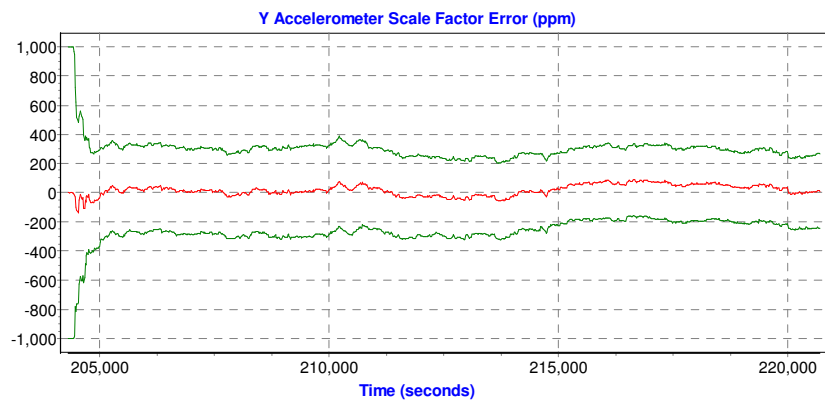
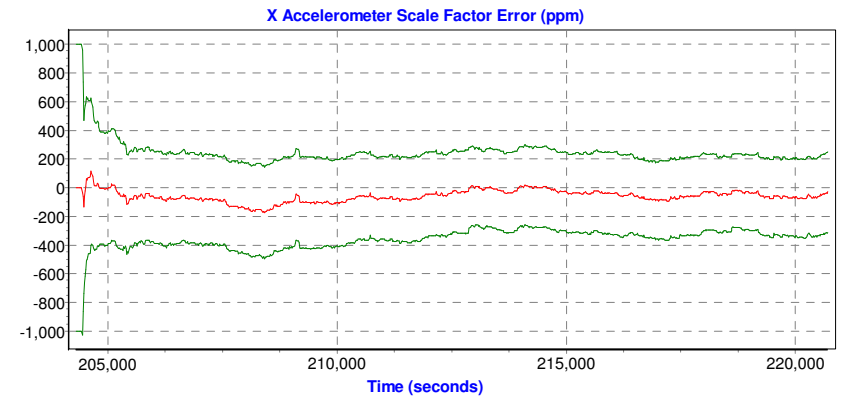
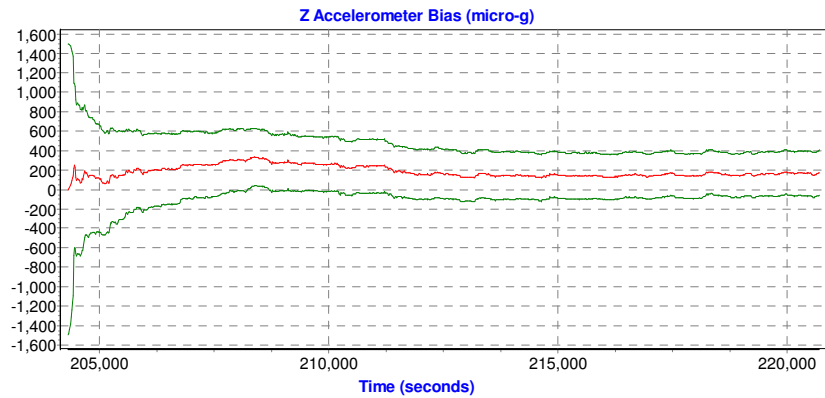
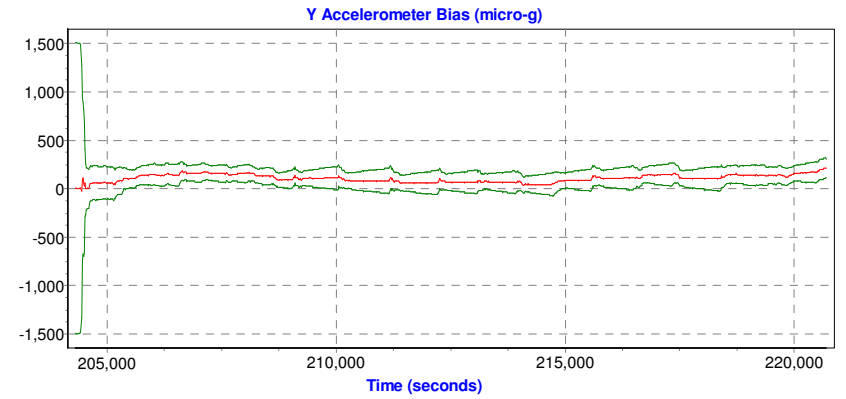
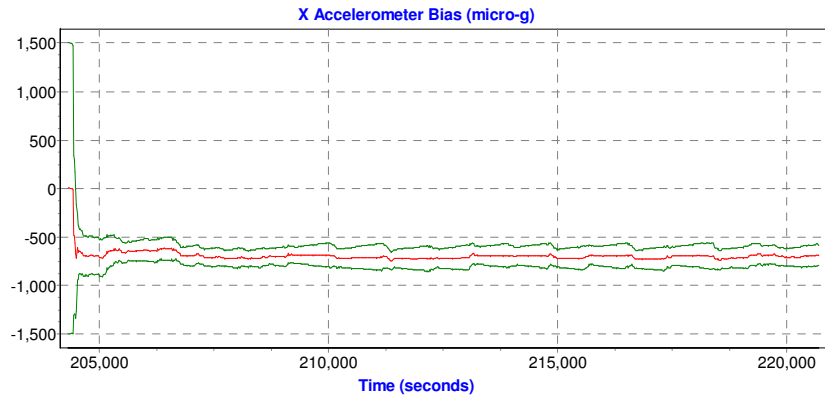
; New measurement standard deviation (weighting) settings
STD_MODE = ELEV ; Measurement weighting mode
(ELEV/CNO/STANDARD/ADAPTIVE)
STD_CODE = 3.0000 ; Code measurement standard deviation (m)
STD_PHASE = 0.0110 ON ; Carrier meas SD (m) (ON/OFF refers to adjustment for
L3)
STD_DOPPLER = 0.2500 ON ; Doppler meas stddev (m/s) (ON/OFF referes to
auto-doppler setting)
STD_REJECT = NORMAL 3.0 3.0 3.0 6.0 4.5 ; LevelStr CodeRej PhaseRej DopplerRej
CodeReset PhaseReset
STD_SKIP = 15.0 5 1 ; dMaxRejSec, nSkipCodeEpochs, nSkipPhaseEpochs
STD_DIST = LOW 1.0 7.5 ; Distance effects (OFF/HIGH/MEDIUM/LOW/MANUAL)
ManHzPPM ManVtPPM
STD_BL = 1110304_0016129 ON ; BLName UseMain(ON/OFF)
STD_RELTOL = 4.00 ; Reliability tolerance for rejecting outliers

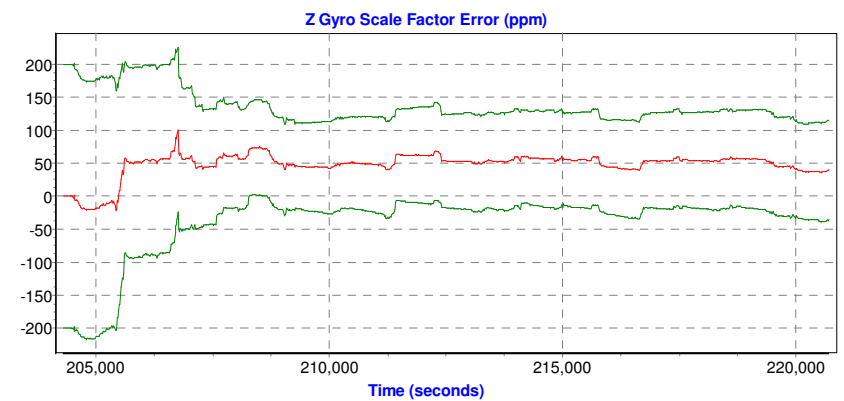
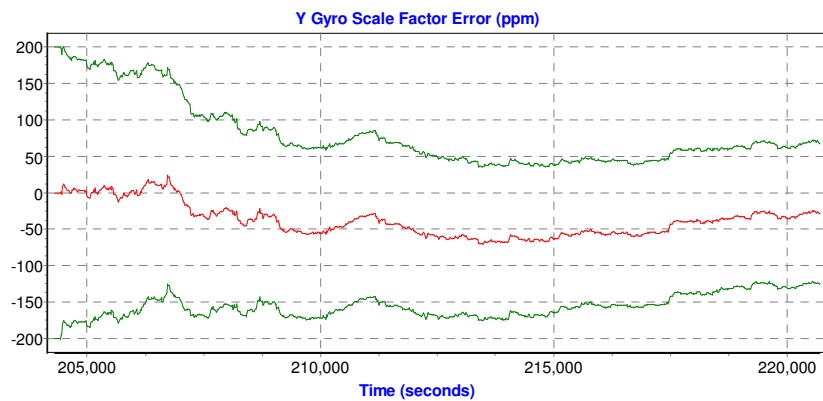
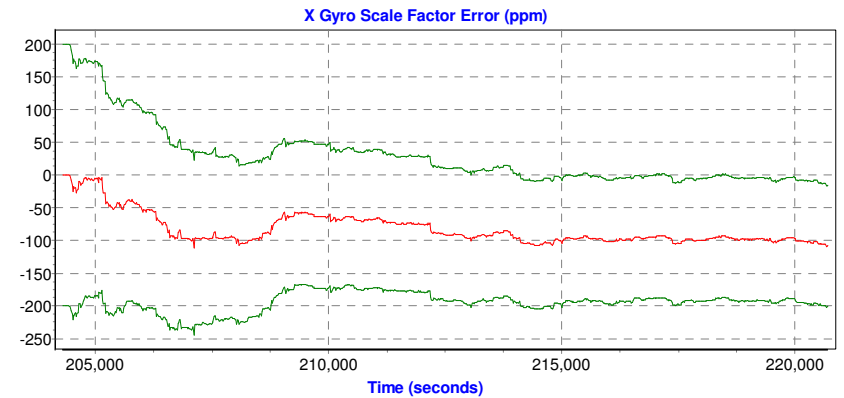
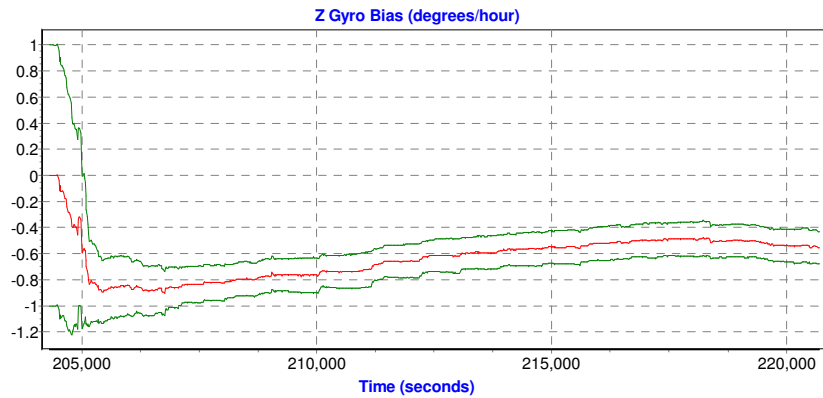
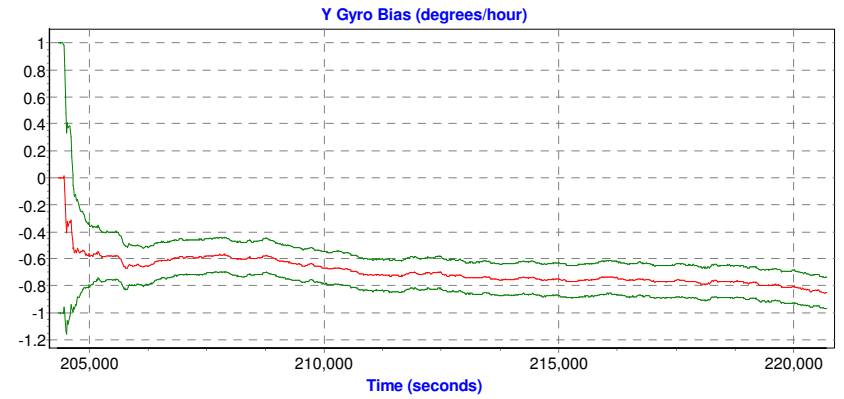
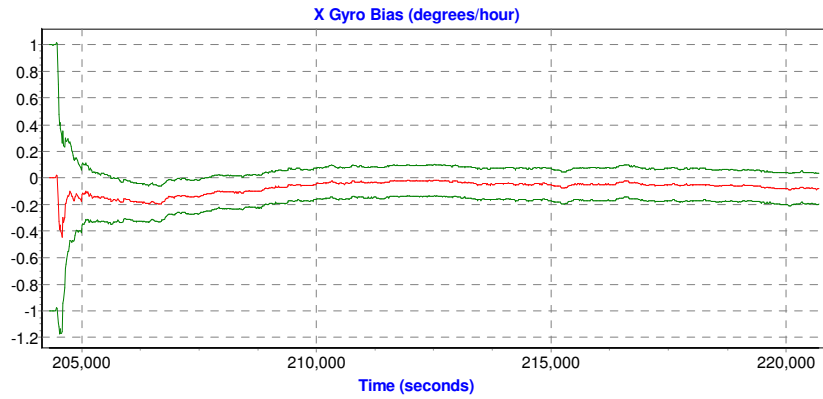
;Miscellaneous options
WRITE_RESIDUALS = OFF ; Create binary value file (.fbv,.rbv)
LOCKTIME_CUTOFF = 12.0 ; Carrier Locktime cutoff (seconds)
DYNAMICS = AUTO HIGH ; constraint on vehicle dynamics

; Single point processing options
SP_PROC_MODE = 0 ; 0-auto, 1-sf, 2-df
SP_CA_VALUES = 3.00 15.00 ; C/A Sd (m), C/A Rej Tol (m)
SP_AVG_STATIC = ON ; ON/OFF
SP_SF_IONO = 1 ; SF iono mode 0-off, 1-broadcast
SP_OTH_ERRORS = ON ; Increase meas. stdev for other errors (ON/OFF)
SP_P1_OVER_CA = OFF ; ON if P1 to be used instead of CA (if availble)

```

SP_CLK_MODE = OFF ; ON=Use ClockShift for time, OFF=use corrtime
proc.txt





Daily Flight Log

Julian Date: 11/30
 Local Date: May 10
 Local Time: 4:43
 Time Zone: EDT

Aircraft Tail #: 4354
 Pilot: J. Melton
 Airport ID: KO FP
 Operator: S. Hentner

POS/AV File Name: 11130B
 ALTM-Logfile Name

POS/AV Transfers
 1st File Last File

Time: 0844z
 Wind: CLM
 Visibility: 10
 Sky Cond: CLR
 Temp: 08c
 Dew Pt: 07c
 Alt: 3000

Weather

Ground Station Data
 Begin Static 1
 End Static 1
 Begin Static 2
 End Static 2

Temp/Pressure (GND)
 08.1 3000

Plans Flown: Client Laser Pulse Scan Rate Scan Angle Desired Range Speed KTS

Start	Stop	Flight Line	HDG	Range	PDOP	SV	Speed (kts)	Comments
09:17	09:32	128	98	1000	1.66	8	143.5	Remainder 7miles
09:36	09:30	127	278	935	1.62	8	141.5	Remainder 7miles
09:34	09:38	126	98	947	0.22	7	151.2	Remainder 7miles
09:42	09:46	125	278	901	2.17	8	136.4	Remainder 7miles
09:56	09:54	124	98	928	2.12	8	148.6	7miles
09:58	10:03	123	278	963	2.04	8	134.4	7miles
10:06	10:20	122	98	977	2.08	7	153.9	
10:24	10:39	121	278	951	2.43	7	137.0	
10:42	10:50	120	98	904	2.56	7	154.2	
10:59	11:10	123	278	945	2.21	7	143.9	Finishing
11:15	11:24	124	98	973	1.26	8	148.9	Finishing
11:28	11:38	125	278	965	1.54	9	147.9	Finishing
11:43	11:52	126	98	998	1.55	9	149.1	Finishing
11:56	12:07	127	278	980	1.59	9	141.8	Finishing
12:11	12:21	128	98	927	1.63	9	147.2	Finishing
12:25	12:41	129	278	961	2.21	8	143.1	
12:41	12:44	Crossline	185	907	1.58	9	156.2	North crossline
12:52	12:57	Crossline	185	993	1.44	10	164.3	1-33 crossline

Daily Activity/Comments

- Check-off When Complete
- Power up ALTM Laser Syst
- Boot Laptop/Open Program POS/AV
- AI TM/NAV
- Internet Explorer FTP:
- Delete old POS/AV files from PC
- Achieve fine alignment
- Start logging to pc card
- Collect 5-min Static
- Configure ALTM
- Verify Full NAV
- Shutters open at 2000ft A
- Two 10-second Test Fir
- Roll Comp Line
- Flight-lines flown
- Roll Comp Line
- Copy all but last 2 POS/AV to C
- Close Shutters
- Collect 5 min. Static
- Stop Logging to PC Card
- Copy Remaining POS/AV Files to C
- Power-down AI TM Syst