

# **U.S. Army Corps of Engineers – Tennessee LiDAR-Appendix E: GPS Processing Report**

GPS Processing Report for the Original 2011  
Tennessee LiDAR Acquisition Produced for  
U.S. Army Corps of Engineers

USACE Contract: W912P9-10-D-0534

Task Order: 0001

Report Date: November 28, 2012

SUBMITTED BY:

**Dewberry**

1000 North Ashley Drive Suite 801  
Tampa, FL 33602  
813.225.1325

SUBMITTED TO:

**U.S. Army Corps of Engineers**

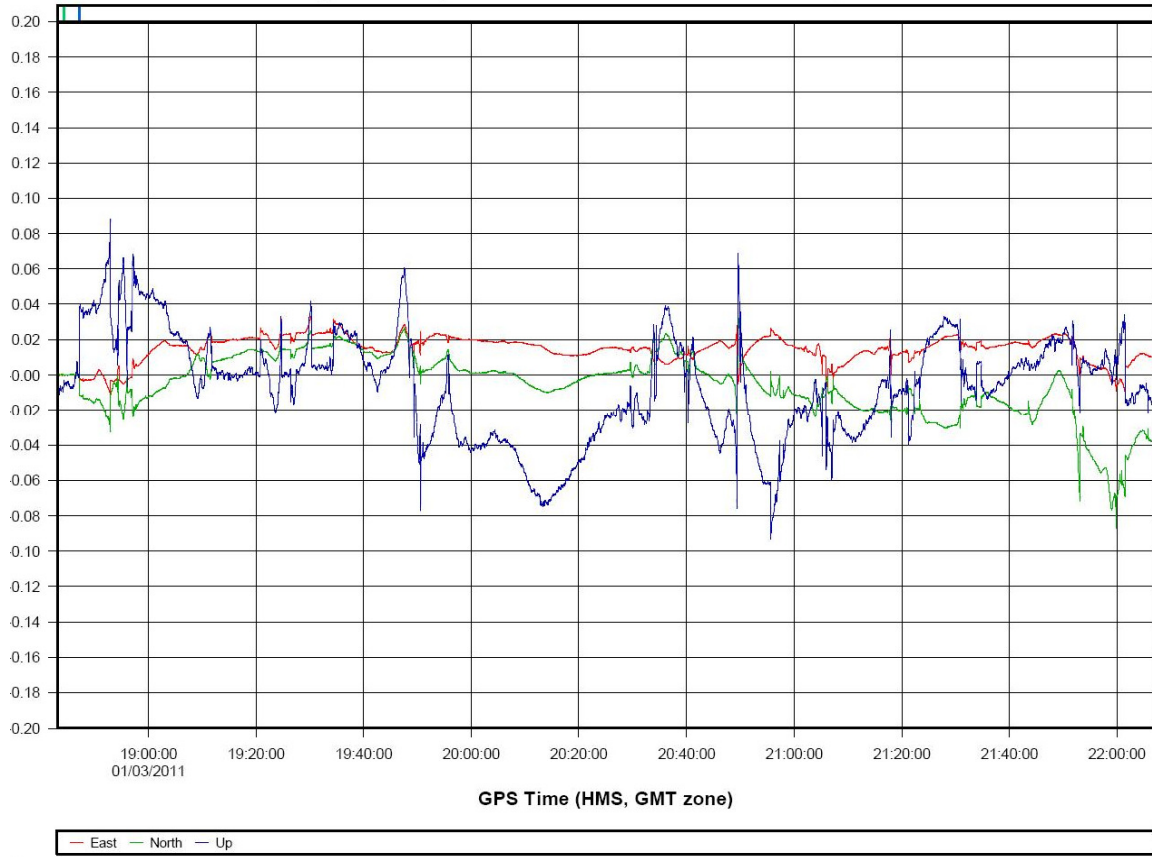
1222 Spruce St  
St. Louis, Missouri 63103  
314.331.8385

## GPS Processing Reports for Each Mission

The following graphs, tables, and images document the GPS processing performed by LMSI for use in the control of the Tennessee LiDAR data acquired between January 3, 2011 thru March 16, 2011 for the original LiDAR acquisition.

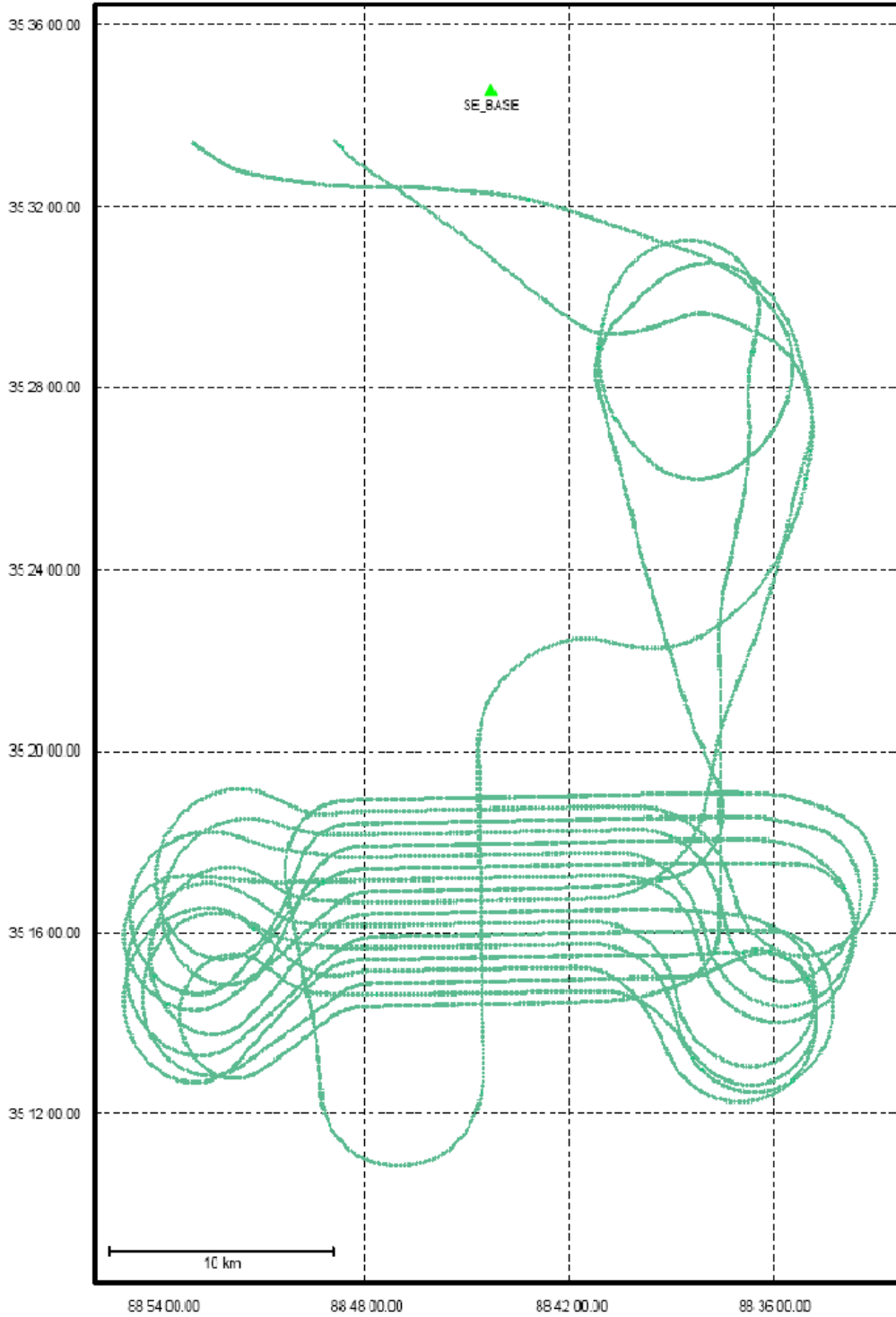
Flight Log												
-----												
Project Number: DyersburgTN												
S/N : 06sen187												
Operator : J.Stump												
Pilot(s) : R.Miller												
Aircraft : 435H												
Airport : MKN												
Mission : 11003A												
Wheels Up : 18:50												
Flight Length :												
HOBBBS Start : 48.8												
HOBBBS End :												
-----												
Weather												
-----												
Date : January 03, 2011												
Julian Day : 003												
Temperature : 04												
Visibility : 10												
Clouds : clr												
Precipitation : 0												
Wind Dir : 160												
Wind Speed : 3												
Pressure : 30.34												
-----												
Statistics												
-----												
Laser Time : 01:04:29												
-----												
START	STOP	LINE#	ALT	PRF	FREQ	ANGLE	MP	DIV	RC	HDG	Plan File	
18:28:09.492	18:28:19.392	1	97	70	38.00	23.00	OFF	NAR	OFF	0.00	269	
18:28:09.492	18:28:19.692	1	97	70	38.00	23.00	OFF	NAR	OFF	0.00	269	
18:38:49.202	18:38:57.002	305	97	70	38.00	23.00	OFF	NAR	OFF	0.00	269	
18:42:30.105	18:42:44.305	305	661	70	38.00	23.00	OFF	NAR	OFF	0.00	269	
18:44:50.007	18:44:58.208	305	1120	70	38.00	23.00	OFF	NAR	OFF	0.00	269	
18:46:20.609	18:46:36.409	305	1375	70	38.00	23.00	OFF	NAR	OFF	0.00	269	
18:58:57.321	18:59:05.021	305	1360	70	38.00	23.00	OFF	NAR	OFF	0.00	269	
19:03:23.125	19:06:48.328	304	1333	70	38.00	23.00	OFF	NAR	OFF	0.00	269	
19:11:02.732	19:13:37.335	304	1311	70	38.00	23.00	OFF	NAR	OFF	0.00	89	
19:18:25.24	19:21:44.743	302	1340	70	38.00	23.00	OFF	NAR	OFF	0.00	269	
19:27:12.448	19:29:36.951	301	1337	70	38.00	23.00	OFF	NAR	OFF	0.00	269	
19:34:41.656	19:38:06.559	300	1312	70	38.00	23.00	OFF	NAR	OFF	0.00	89	
19:43:59.665	19:46:28.367	299	1327	70	38.00	23.00	OFF	NAR	OFF	0.00	269	
19:51:45.273	19:55:29.477	298	1341	70	38.00	23.00	OFF	NAR	OFF	0.00	269	
20:01:02.482	20:03:43.485	297	1321	70	38.00	23.00	OFF	NAR	OFF	0.00	89	
20:08:46.19	20:12:16.694	296	1301	70	38.00	23.00	OFF	NAR	OFF	0.00	269	
20:17:45.399	20:20:10.202	296	1311	70	38.00	23.00	OFF	NAR	OFF	0.00	89	
20:34:47.217	20:37:35.62	294	1349	70	38.00	23.00	OFF	NAR	OFF	0.00	269	
20:42:46.025	20:45:47.828	293	1310	70	38.00	23.00	OFF	NAR	OFF	0.00	89	
20:50:57.033	20:54:59.538	292	1320	70	38.00	23.00	OFF	NAR	OFF	0.00	269	
21:00:49.144	21:03:27.246	291	1364	70	38.00	23.00	OFF	NAR	OFF	0.00	89	
21:08:27.452	21:12:44.756	290	1343	70	38.00	23.00	OFF	NAR	OFF	0.00	269	
21:17:29.961	21:20:53.464	289	1348	70	38.00	23.00	OFF	NAR	OFF	0.00	89	
21:25:40.469	21:30:10.274	288	1356	70	38.00	23.00	OFF	NAR	OFF	0.00	269	
21:35:33.18	21:38:19.883	287	1319	70	38.00	23.00	OFF	NAR	OFF	0.00	269	
21:43:15.588	21:47:58.793	287	1289	70	38.00	23.00	OFF	NAR	OFF	0.00	269	
21:53:49.699	21:56:31.301	287	1384	70	38.00	23.00	OFF	NAR	OFF	0.00	269	

11003a [Combined] - Forward/Reverse or Combined Separation Plot



# Combined - Map Run (3)

Geographic, DMS





Processing Summary Information

Program: GrafNav  
Version: 7.80.2517  
Project: C:\Documents and Settings\adrian.camungol\Desktop\10152U Tenn\2\_Operations\6\_Missions\11003A\3\_Processed\GPS\11003a.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:  
Total in GPB file: 165377  
No processed position: 153135  
Missing Fwd or Rev: 4  
With bad C/A code: 0  
With bad L1 Phase: 0

Measurement RMS Values:  
L1 Phase: 0.0233 (m)  
C/A Code: 1.04 (m)  
L1 Doppler: 0.016 (m/s)

Fwd/Rev Separation RMS Values:  
East: 0.017 (m)  
North: 0.020 (m)  
Height: 0.032 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (12236 occurrences):  
East: 0.016 (m)  
North: 0.019 (m)  
Height: 0.030 (m)

Quality Number Percentages:  
Q 1: 99.6 %  
Q 2: 0.4 %  
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: 92.0 %  
0.10 - 0.30 m: 8.0 %  
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: 44.072 (km)  
Minimum: 4.371 (km)  
Average: 31.690 (km)  
First Epoch: 13.481 (km)  
Last Epoch: 7.266 (km)

```

; PROJECT:      C:\Documents and Settings\adrian.camungol\Desktop\10152U
Tenn\2_Operations\6_Missions\11003A\3_Processed\GPS\11003a.cfg
;
; DATE:         Jan. 27/11 (date/time of processing)
; TIME:         14:26:16
; CREATED BY:   GrafNav Version 7.80.2517
;
VERSION = 7.80.2517
PROCUSER = Unknown
PRODESC = Run*(4)
PROCTIME = 14:20:25 01/27/2011

; Master station # 1 information
MB_MASTER_INDEX = 0
MB_MASTER_NAME = SE_BASE
MB_MASTER_FILE =
C:\Documents*and*Settings\adrian.camungol\Desktop\10152U*Tenn\2_Operations\6_Mis
sions\11003a\1_RawData\offset*SEBASE\SE-BASE_log20110103_143142.gpb
MB_MASTER_POS = 35 34 34.17344 -88 44 17.15714 112.9020
MB_MASTER_ANT = 2.234 -0.009 2.000 0 TFSGR3 0
MB_MASTER_DISABLE = OFF

; Remote station information
REMOTE_FILE =
C:\Documents*and*Settings\adrian.camungol\Desktop\10152U*Tenn\2_Operations\6_Mis
sions\11003a\1_RawData\mgps_11003a.gpb
REMOTE_POS = 35 36 12.41689 -88 55 15.84247 98.4929
REMOTE_ANT = 0.000

; General settings
PROCESS_MODE = 105 108 111 126 ; Processing modes (GrafNav only)

DATUM = NAD83 AUTO ; Processing Datum
INPDATUM = ON NAD83 AUTO ; Input Datum (ON=Use processing datum)
ELEV_MASK = 13.0 ; 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

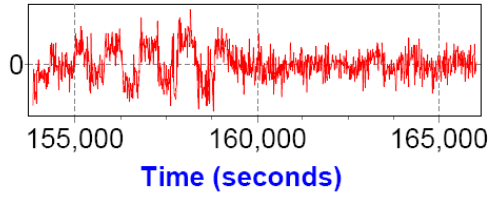
BASE_SAT = 99 ; Base satellite (99-default)

TIMERANGE = RANGE 978115377.0 978127618.0 2 0 ; Processing time range
INTERVAL = 0.10 ; Processing time interval (seconds)

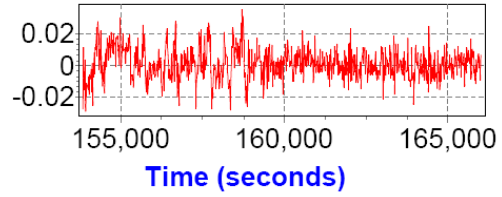
PROCESS_DIR = FORWARD ; Process direction (FORWARD/REVERSE)
BOTH_DIR = ON ; True for processing both directions
WRITE_BAD_EPOCHS = OFF ; Save bad data to .fwd/rev file (ON/OFF)
NOWRITE_HIGH = OFF 6 20.000 ; Don't write epoch with high statistics (q, stdev-
m)
OUTPUT_MODE = EXTENDED ; Format for .fwd/rev 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 save

```

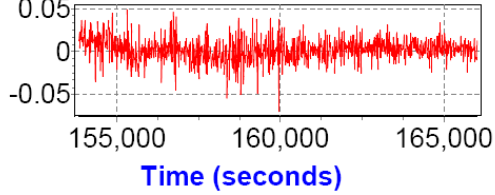
S/D Navigator X Position Error (meters)



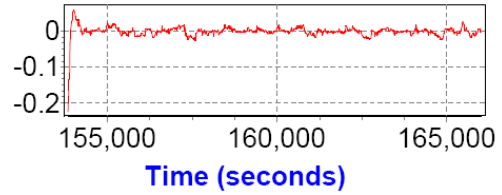
S/D Navigator Y Position Error (meters)



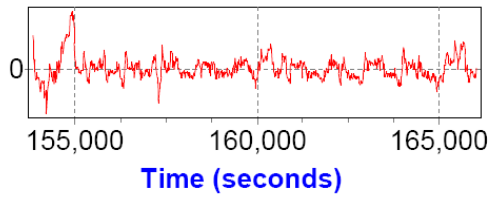
S/D Navigator Z Position Error (meters)



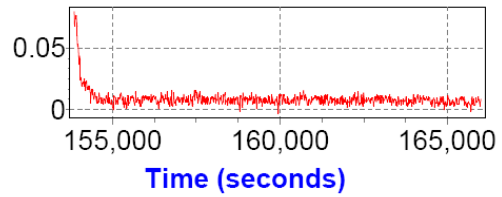
Navigator X Velocity Error (meters/second)



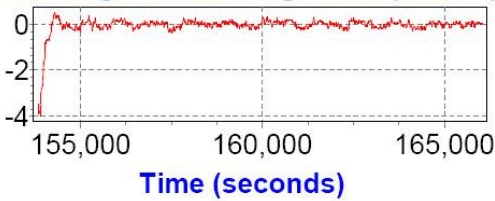
Navigator Y Velocity Error (meters/second)



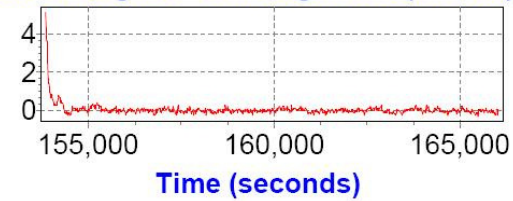
Navigator Z Velocity Error (meters/second)



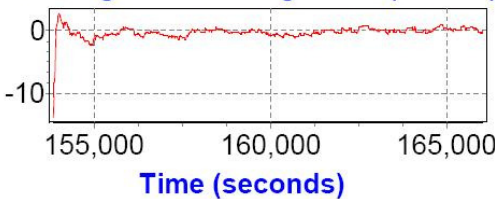
S/D Navigator X Misalignment (arcmin)



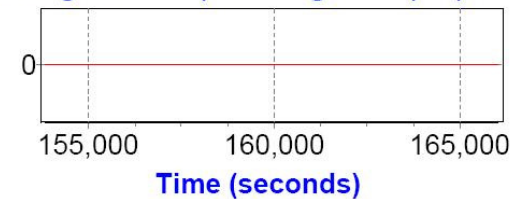
S/D Navigator Y Misalignment (arcmin)

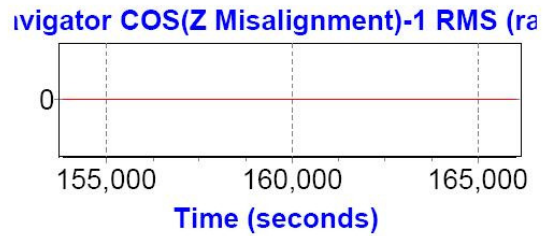
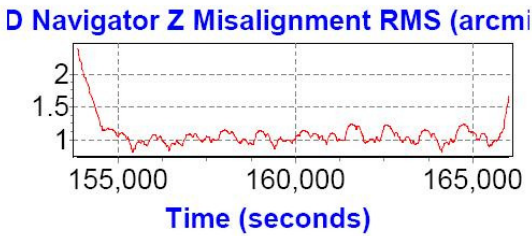
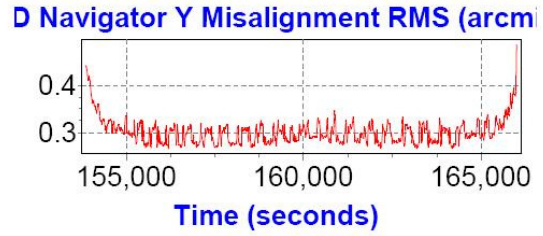
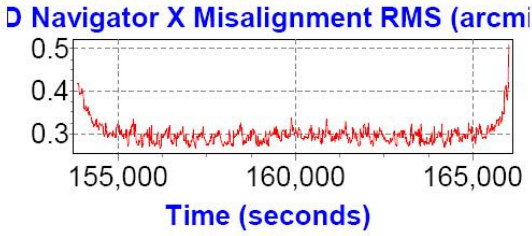
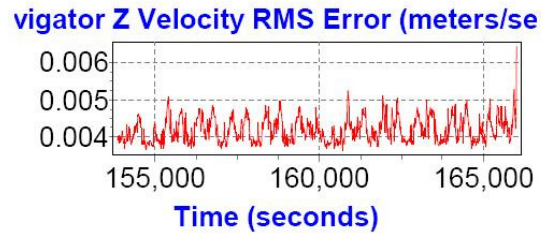
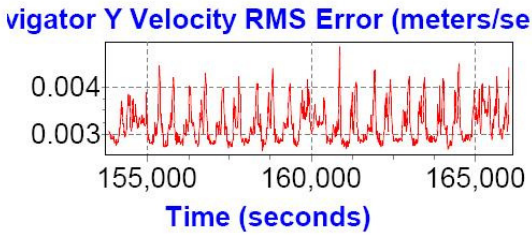
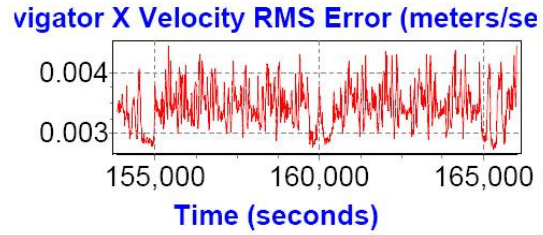
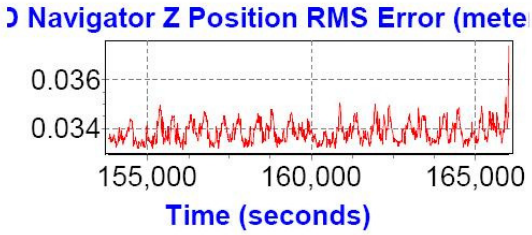
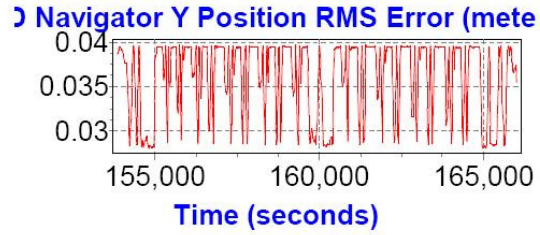
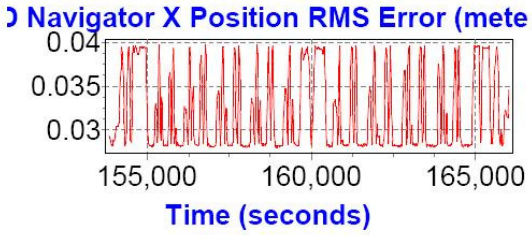


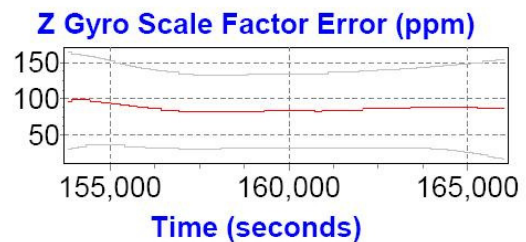
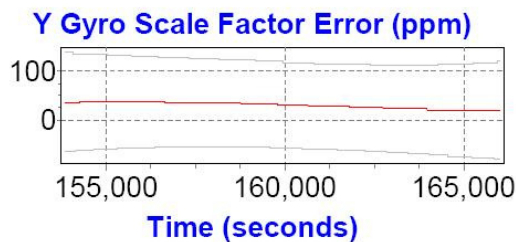
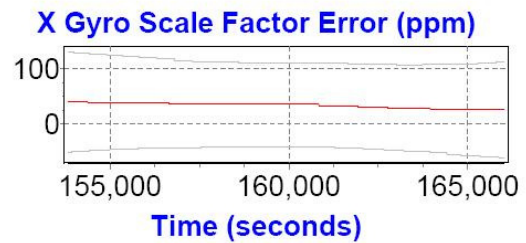
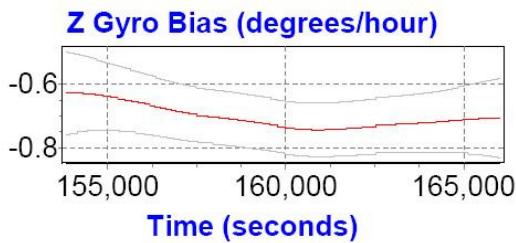
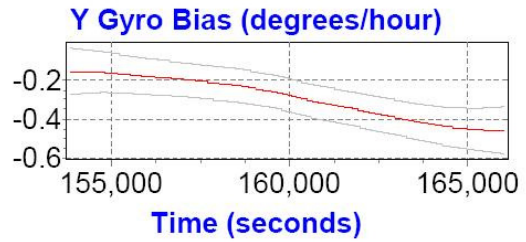
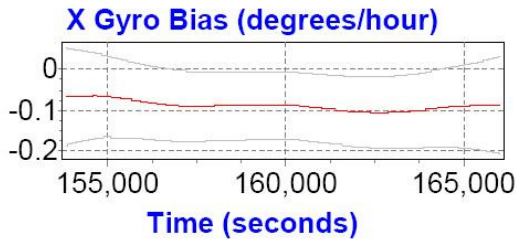
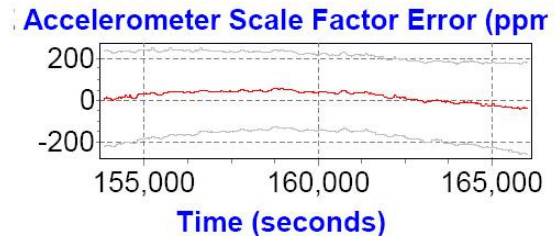
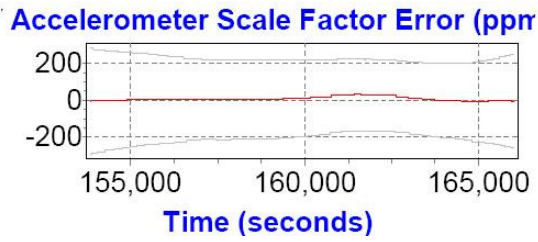
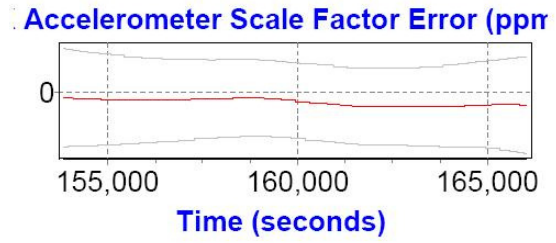
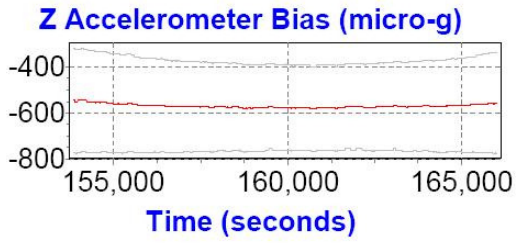
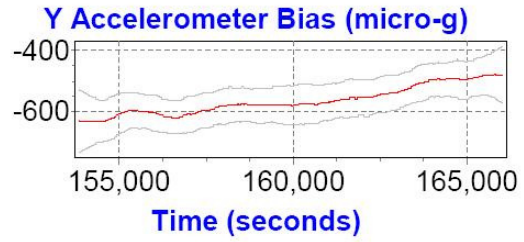
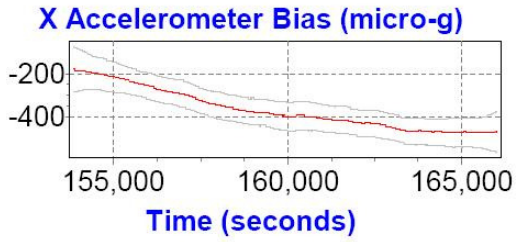
S/D Navigator Z Misalignment (arcmin)



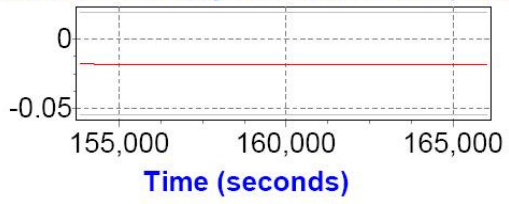
Navigator COS(Z Misalignment)-1 (radians)



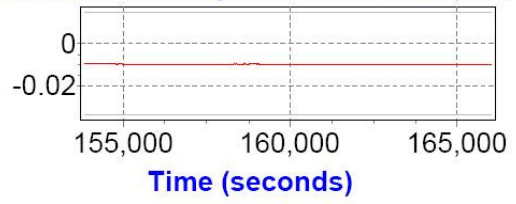




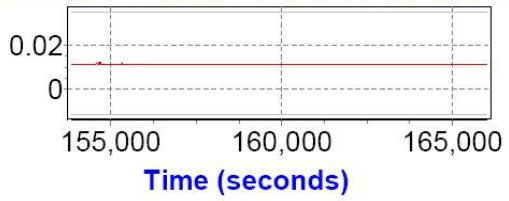
eference->Primary GPS Lever Arm (met



eference->Primary GPS Lever Arm (met



eference->Primary GPS Lever Arm (met



# Flight Log/Base Station/GPS Processing – 01.03.2011

```

-----
Flight Log
-----
Project Number: Dyersburg,TN
S/N           : 06sen187
Operator      : J.Stump
Pilot(s)     : R.Miller
Aircraft     : 435H
Airport      : MKN
Mission      : 11004A
Wheels Up   : 18.25
Flight Length :
HOBBBS Start : 53.8
HOBBBS End   :
    
```

```

-----
Weather
-----
Date          : January 03, 2011
Julian Day    : 004
Temperature   : 6
Visibility    : 10
Clouds       : clr
Precipitation : 0
Wind Dir     : 170
Wind Speed   : 3
Pressure     : 30.17
    
```

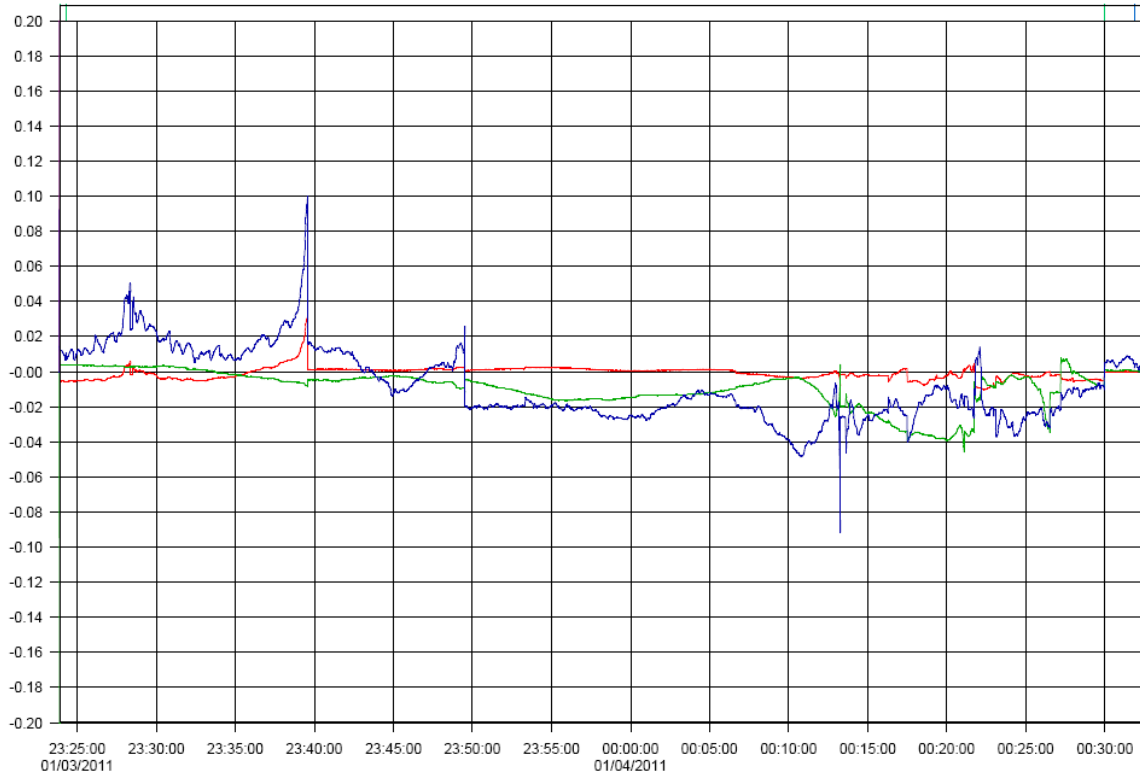
```

-----
Statistics
-----
Laser Time   : 00:08:44
    
```

START	STOP	LINE#	ALT	PRF	FREQ	ANGLE	MP	DIV	RC	HDG	Plan File
23:16:56.682	23:17:04.482	286	95	70	38.00	23.00	OFF	NAR	OFF	0.00	89
23:21:41.786	23:21:51.886	286	538	70	38.00	23.00	OFF	NAR	OFF	0.00	89
23:21:41.786	23:21:51.886	286	542	70	38.00	23.00	OFF	NAR	OFF	0.00	89
23:26:21.791	23:26:29.591	286	1348	70	38.00	23.00	OFF	NAR	OFF	0.00	89
23:36:48.502	23:36:56.902	286	1361	70	38.00	23.00	OFF	NAR	OFF	0.00	89
23:40:52.106	23:44:26.009	285	1338	70	38.00	23.00	OFF	NAR	OFF	0.00	269
23:50:06.815	23:55:02.22	284	1362	70	38.00	23.00	OFF	NAR	OFF	0.00	89



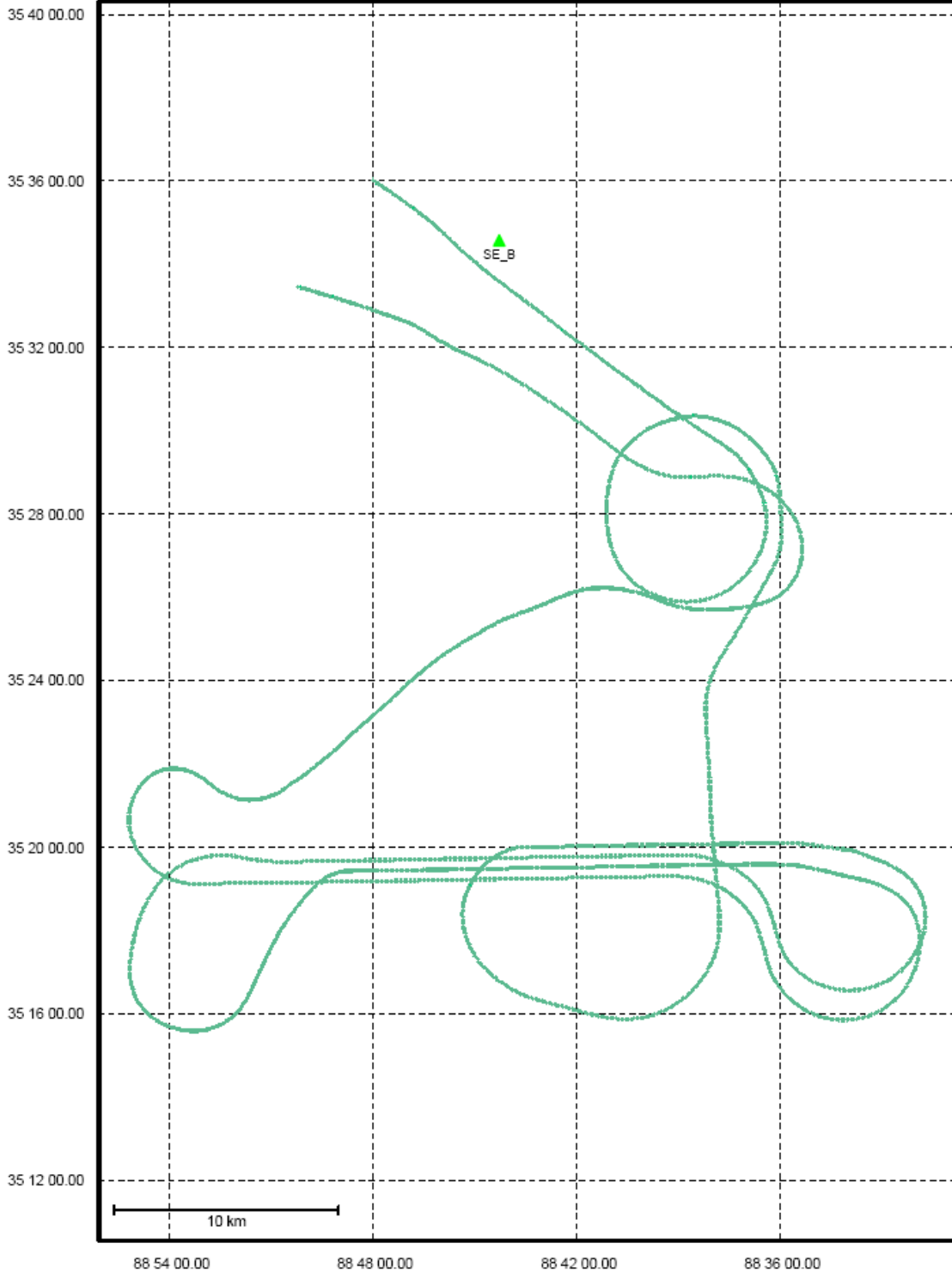
11003b [Combined] - Forward/Reverse or Combined Separation Plot





# Combined - Map Run (5)

Geographic, DMS



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

Processing Summary Information

Program: GrafNav  
Version: 7.80.2517  
Project: C:\Documents and Settings\adrian.camungol\Desktop\10152U Tenn\2\_Operations\6\_Missions\11003B\3\_Processed\GPS\11003b.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:

Total in GPB file: 61971  
No processed position: 57856  
Missing Fwd or Rev: 4  
With bad C/A code: 0  
With bad L1 Phase: 0

Measurement RMS Values:

L1 Phase: 0.0212 (m)  
C/A Code: 1.14 (m)  
L1 Doppler: 0.017 (m/s)

Fwd/Rev Separation RMS Values:

East: 0.017 (m)  
North: 0.017 (m)  
Height: 0.032 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (4109 occurrences):

East: 0.004 (m)  
North: 0.014 (m)  
Height: 0.021 (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: 38.232 (km)  
Minimum: 1.524 (km)  
Average: 24.339 (km)  
First Epoch: 9.262 (km)  
Last Epoch: 6.254 (km)

```

; PROJECT:      C:\Documents and Settings\adrian.camungol\Desktop\10152U
Tenn\2_Operations\6_Missions\11003B\3_Processed\GPS\11003b.cfg
;
; DATE:         Jan. 27/11   (date/time of processing)
; TIME:         14:46:14
; CREATED BY:   GrafNav Version 7.80.2517
;
VERSION = 7.80.2517
PROCUSE = Unknown
PROCDESC = Run*(6)
PROCTIME = 14:43:34 01/27/2011

; Master station # 1 information
MB_MASTER_INDEX = 0
MB_MASTER_NAME = SE_B
MB_MASTER_FILE =
C:\Documents*and*Settings\adrian.camungol\Desktop\10152U*Tenn\2_Operations\6_Mis
sions\11003b\1_RawData\offset*SEBASE\SE-BASE_log20110103_143142.gpb
MB_MASTER_POS = 35 34 34.17344 -88 44 17.15714 112.9020
MB_MASTER_ANT = 2.234 -0.009 2.000 0 TPSGR3 0
MB_MASTER_DISABLE = OFF

; Remote station information
REMOTE_FILE =
C:\Documents*and*Settings\adrian.camungol\Desktop\10152U*Tenn\2_Operations\6_Mis
sions\11003b\1_RawData\mgps_11003b.gpb
REMOTE_POS = 35 36 12.25679 -88 55 15.82187 103.4654
REMOTE_ANT = 0.000

; General settings
PROCESS_MODE = 105 108 111 126 ; 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

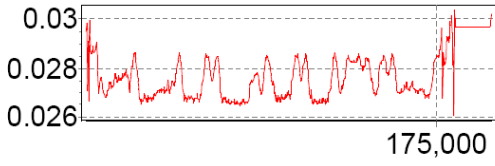
BASE_SAT = 99 ; Base satellite (99-default)

TIMERANGE = RANGE 978132231.0 978136345.0 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

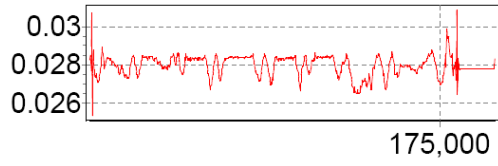
```

D Navigator X Position RMS Error (mete



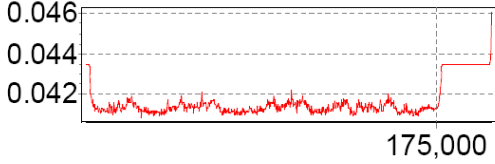
Time (seconds)

D Navigator Y Position RMS Error (mete



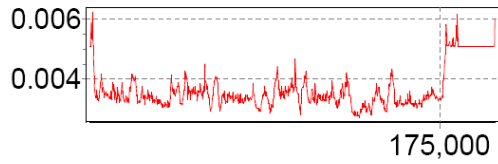
Time (seconds)

D Navigator Z Position RMS Error (mete



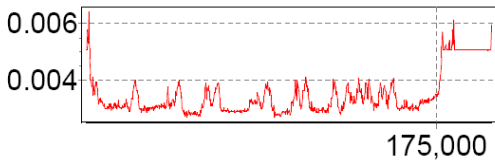
Time (seconds)

D Navigator X Velocity RMS Error (meters/se



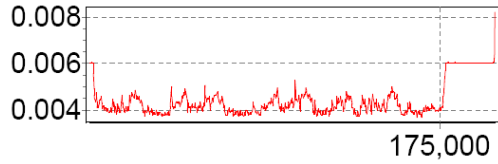
Time (seconds)

D Navigator Y Velocity RMS Error (meters/se



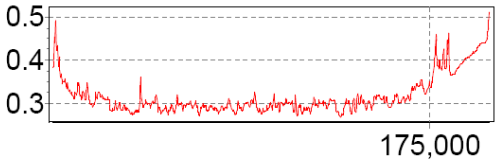
Time (seconds)

D Navigator Z Velocity RMS Error (meters/se



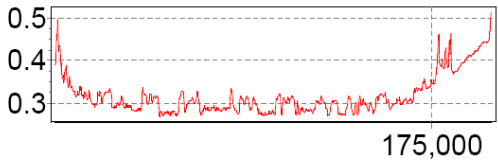
Time (seconds)

D Navigator X Misalignment RMS (arcmi



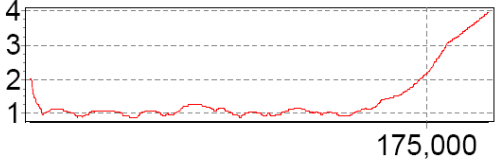
Time (seconds)

D Navigator Y Misalignment RMS (arcmi



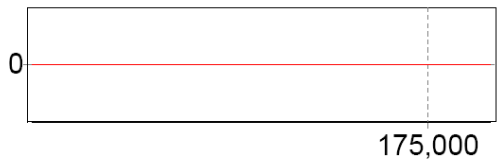
Time (seconds)

D Navigator Z Misalignment RMS (arcmi



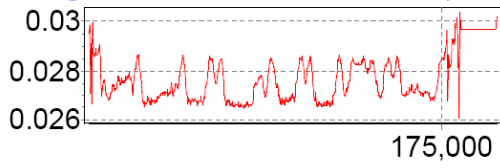
Time (seconds)

D Navigator COS(Z Misalignment)-1 RMS (ra



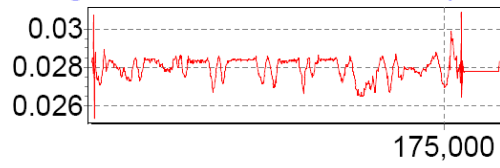
Time (seconds)

D Navigator X Position RMS Error (mete



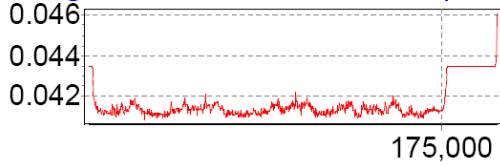
Time (seconds)

D Navigator Y Position RMS Error (mete



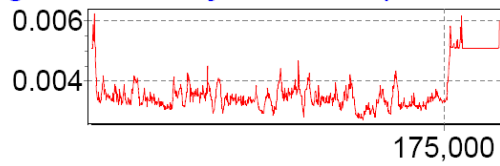
Time (seconds)

D Navigator Z Position RMS Error (mete



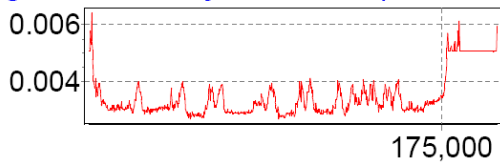
Time (seconds)

Navigator X Velocity RMS Error (meters/se



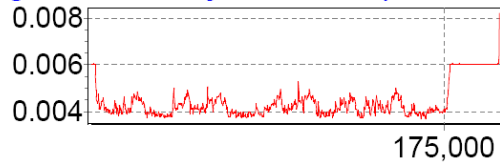
Time (seconds)

Navigator Y Velocity RMS Error (meters/se



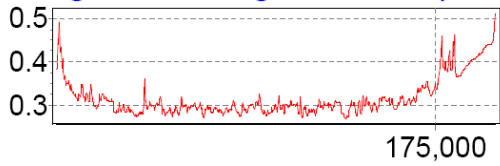
Time (seconds)

Navigator Z Velocity RMS Error (meters/se



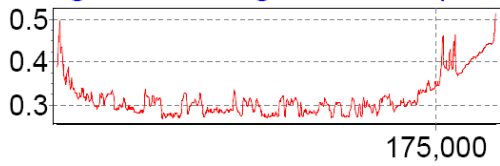
Time (seconds)

D Navigator X Misalignment RMS (arcmi



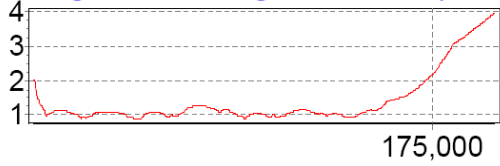
Time (seconds)

D Navigator Y Misalignment RMS (arcmi



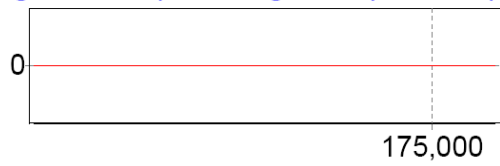
Time (seconds)

D Navigator Z Misalignment RMS (arcmi

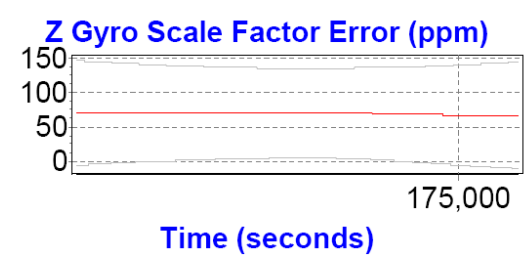
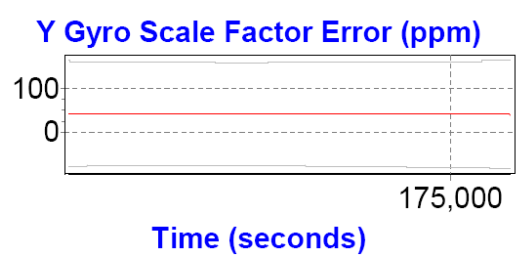
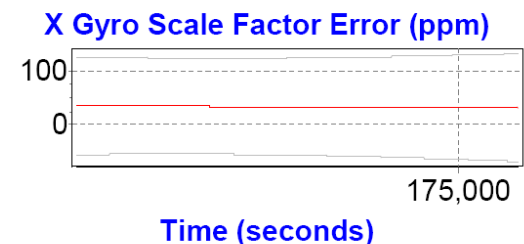
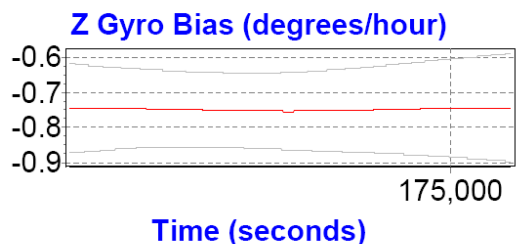
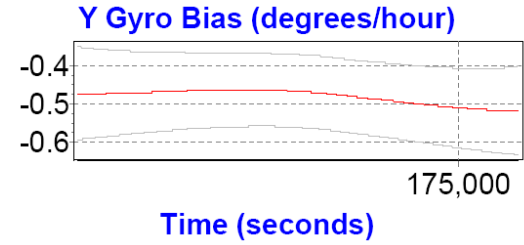
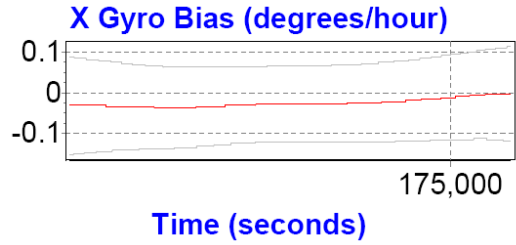
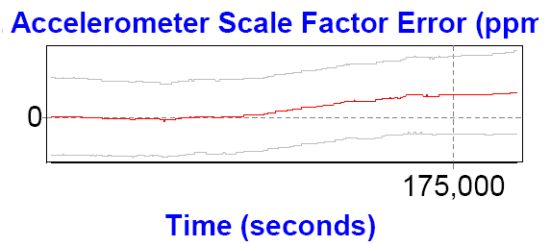
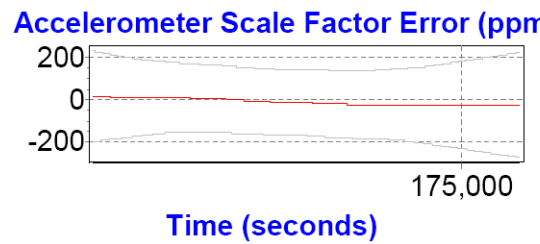
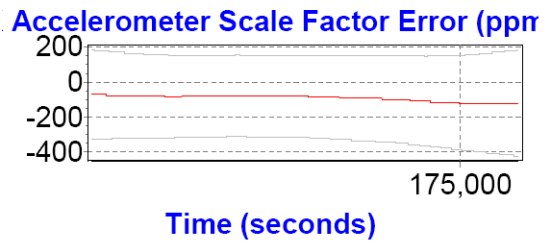
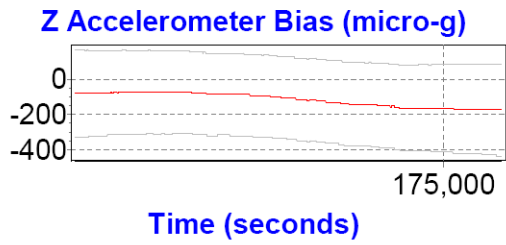
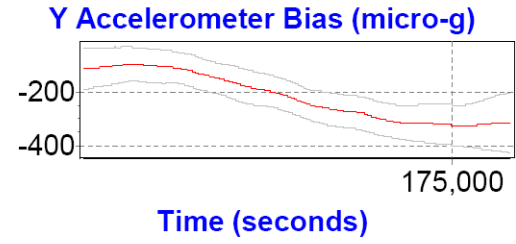
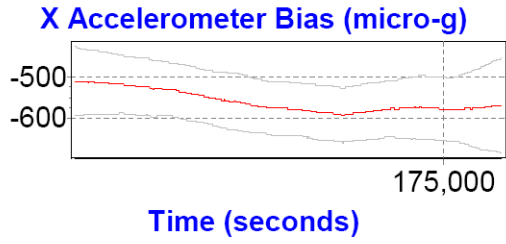


Time (seconds)

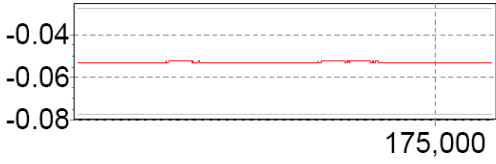
Navigator COS(Z Misalignment)-1 RMS (ra



Time (seconds)

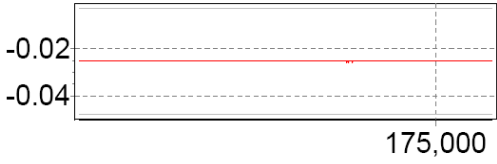


Reference->Primary GPS Lever Arm (metr



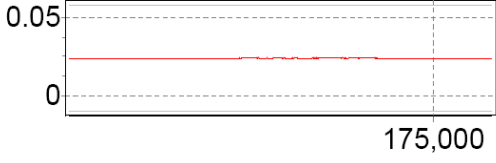
Time (seconds)

Reference->Primary GPS Lever Arm (metr



Time (seconds)

Reference->Primary GPS Lever Arm (metr



Time (seconds)

# Flight Log/Base Station/GPS Processing – 01.04.2011

```

|
| Flight Log
|-----
Project Number: Tn army corp
S/N           : 06 Sen 187
Operator      : Burn
Pilot(s)     : Crash
Aircraft     : N435H
Airport      : KMKL
Mission      : 11004b
Wheels Up    : 0945
Flight Length: 5.0
HOBBS Start  : 2155.7
HOBBS End    : 2160.6
    
```

```

-----
Weather
-----
Date       : January 04, 2011
Julian Day : 004
Temperature: 46 f
Visibility  : 10 SM
Clouds     : CLR
Precipitation: NONE
Wind Dir   : 270
Wind Speed : 7 KTS
Pressure   : 30.13
    
```

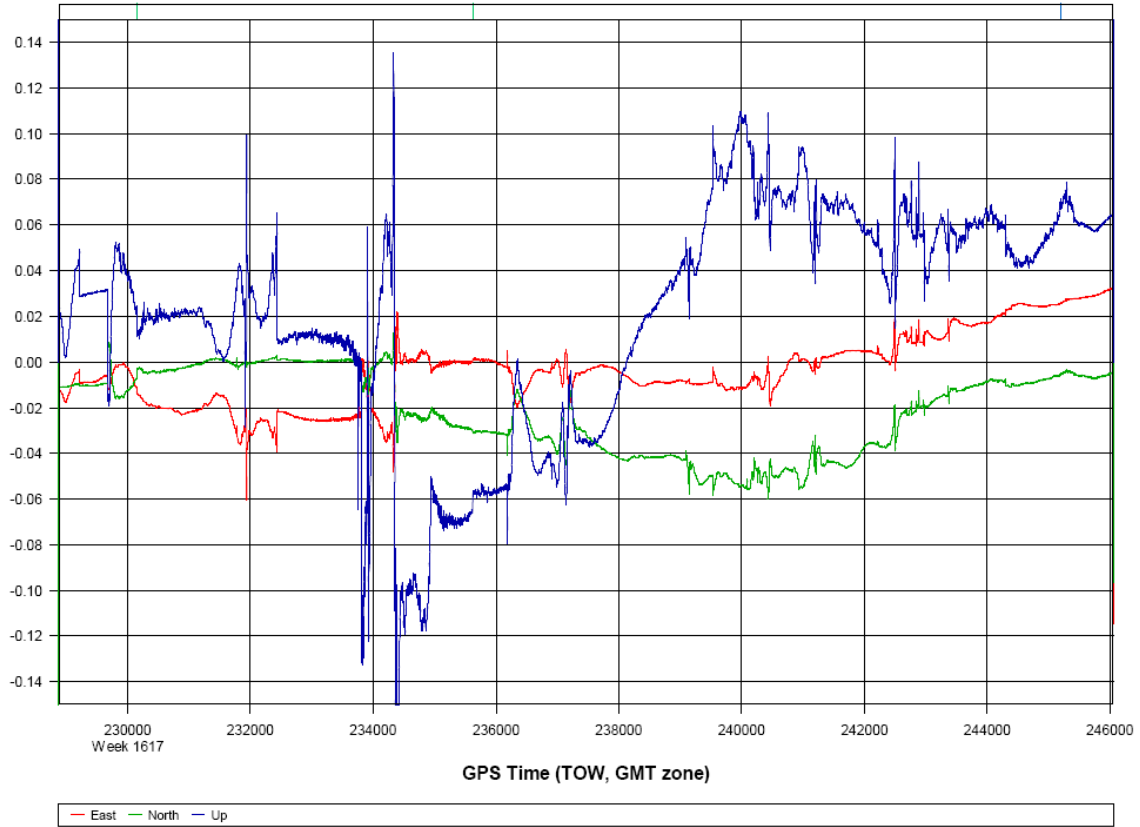
```

-----
Statistics
-----
Laser Time : 02:18:44
    
```

START	STOP	LINE#	ALT	PRF	FREQ	ANGLE	MP	DIV	RC	HDG	Plan File
15:37:52.168	15:37:55.769	1	99	70	38.00	23.00	OFF	NAR	OFF	0.00	269
15:53:45.283	15:57:17.686	283	1394	70	38.00	23.00	OFF	NAR	OFF	0.00	269
15:57:33.287	16:00:11.689	283	1381	70	38.00	23.00	OFF	NAR	OFF	0.00	269
16:07:24.296	16:12:27.101	283	1414	70	38.00	23.00	OFF	NAR	OFF	0.00	269
16:16:56.805	16:21:27.01	281	1331	70	38.00	23.00	OFF	NAR	OFF	0.00	269
16:27:01.715	16:32:38.921	281	1327	70	38.00	23.00	OFF	NAR	OFF	0.00	269
16:37:53.626	16:42:08.33	280	1393	70	38.00	23.00	OFF	NAR	OFF	0.00	89
16:47:18.535	16:53:54.942	278	1348	70	38.00	23.00	OFF	NAR	OFF	0.00	89
16:59:14.147	17:04:05.152	275	1313	70	38.00	23.00	OFF	NAR	OFF	0.00	89
16:59:14.147	17:04:05.152	275	1313	70	38.00	23.00	OFF	NAR	OFF	0.00	89
16:59:14.147	17:04:05.152	275	1313	70	38.00	23.00	OFF	NAR	OFF	0.00	89
16:59:14.147	17:04:05.152	275	1313	70	38.00	23.00	OFF	NAR	OFF	0.00	89
16:59:14.147	17:04:05.152	275	1313	70	38.00	23.00	OFF	NAR	OFF	0.00	89
17:09:26.558	17:16:46.465	276	1382	70	38.00	23.00	OFF	NAR	OFF	0.00	89
17:39:30.288	17:49:16.998	276	1381	70	38.00	23.00	OFF	NAR	OFF	0.00	89
17:55:01.604	18:08:34.618	274	1309	70	38.00	23.00	OFF	NAR	OFF	0.00	89
18:13:52.124	18:23:05.533	273	1300	70	38.00	23.00	OFF	NAR	OFF	0.00	269
18:29:12.839	18:42:46.753	272	1316	70	38.00	23.00	OFF	NAR	OFF	0.00	89
18:49:18.56	18:58:13.669	272	1347	70	38.00	23.00	OFF	NAR	OFF	0.00	89
19:03:08.474	19:03:21.875	271	1326	70	38.00	23.00	OFF	NAR	OFF	0.00	269
19:04:54.676	19:18:26.09	270	1308	70	38.00	23.00	OFF	NAR	OFF	0.00	89
19:22:58.895	19:32:38.105	269	1366	70	38.00	23.00	OFF	NAR	OFF	0.00	269
19:37:22.41	19:51:36.324	268	1315	70	38.00	23.00	OFF	NAR	OFF	0.00	89
19:57:34.831	20:00:14.433	268	1323	70	38.00	23.00	OFF	NAR	OFF	0.00	89
19:57:34.831	20:00:14.833	268	1324	70	38.00	23.00	OFF	NAR	OFF	0.00	89
19:57:34.831	20:00:14.833	268	1324	70	38.00	23.00	OFF	NAR	OFF	0.00	89

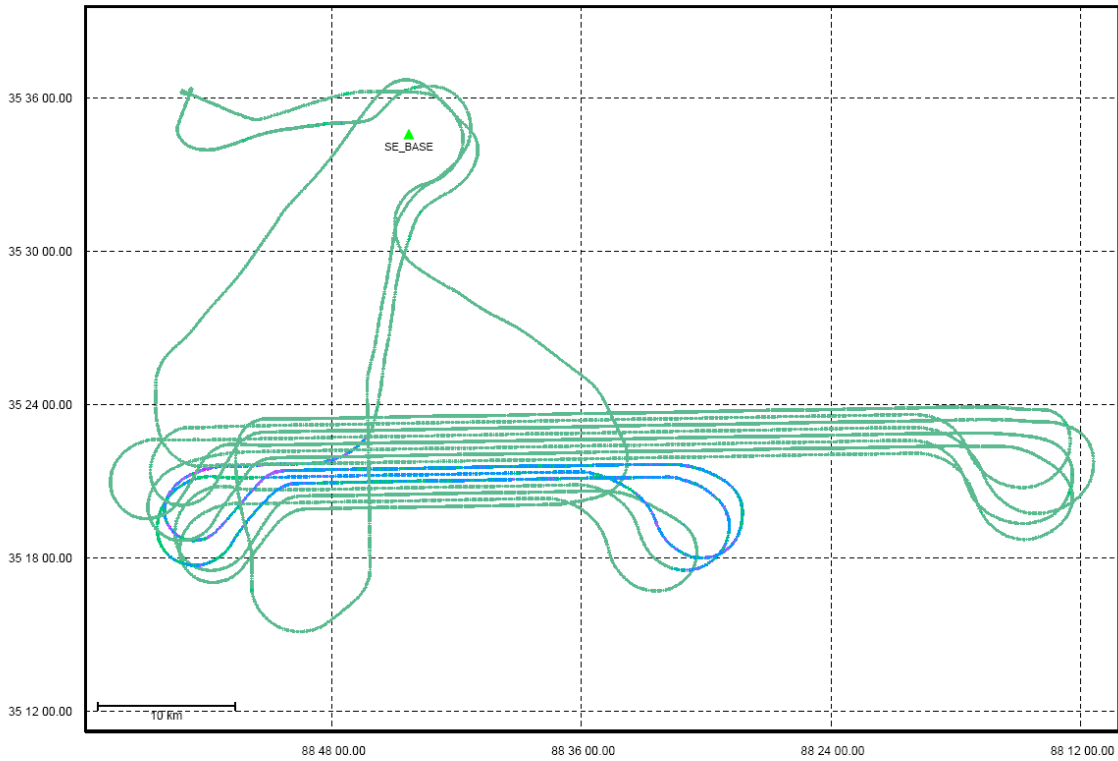


11004a [Combined] - Forward/Reverse or Combined Separation Plot



# Combined - Map Run (3)

Geographic, DMS



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

Processing Summary Information

Program: GrafNav  
Version: 7.80.2517  
Project: E:\10152U Tenn\2\_Operations\6\_Missions\11004A\3\_Processed\GPS\11004a.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:  
Total in GPB file: 172027  
No processed position: 154836  
Missing Fwd or Rev: 4  
With bad C/A code: 0  
With bad L1 Phase: 0

Measurement RMS Values:  
L1 Phase: 0.0213 (m)  
C/A Code: 1.14 (m)  
L1 Doppler: 0.017 (m/s)

Fwd/Rev Separation RMS Values:  
East: 0.016 (m)  
North: 0.028 (m)  
Height: 0.054 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (11387 occurrences):  
East: 0.015 (m)  
North: 0.033 (m)  
Height: 0.056 (m)

Quality Number Percentages:  
Q 1: 85.9 %  
Q 2: 4.2 %  
Q 3: 8.1 %  
Q 4: 1.7 %  
Q 5: 0.0 %  
Q 6: 0.0 %

Position Standard Deviation Percentages:  
0.00 - 0.10 m: 78.0 %  
0.10 - 0.30 m: 22.0 %  
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: 20.9 %

Baseline Distances:  
Maximum: 55.524 (km)  
Minimum: 2.890 (km)  
Average: 27.038 (km)  
First Epoch: 16.857 (km)  
Last Epoch: 16.857 (km)

<Insert Posproc Graphs>

# Flight Log/Base Station/GPS Processing – 01.06.2011

## Flight Log

```

-----
Project Number: Dyersburg TN
S/N           : 06 SEN 187
Operator      : BURN
Pilot(s)     : CRASH
Aircraft     : KMKL
Airport      : N435H
Mission      : 11006A
Wheels Up   : 1000
Flight Length: 4.3
HOBBBS Start : 2161.6
HOBBBS End  : 2165.9
    
```

## Weather

```

-----
Date          : January 06, 2011
Julian Day    : 006
Temperature   : 35 f
Visibility    : 10 sm
Clouds        : clr
Precipitation : none
Wind Dir     : 270
Wind Speed   : 5 kts
Pressure     : 29.91
    
```

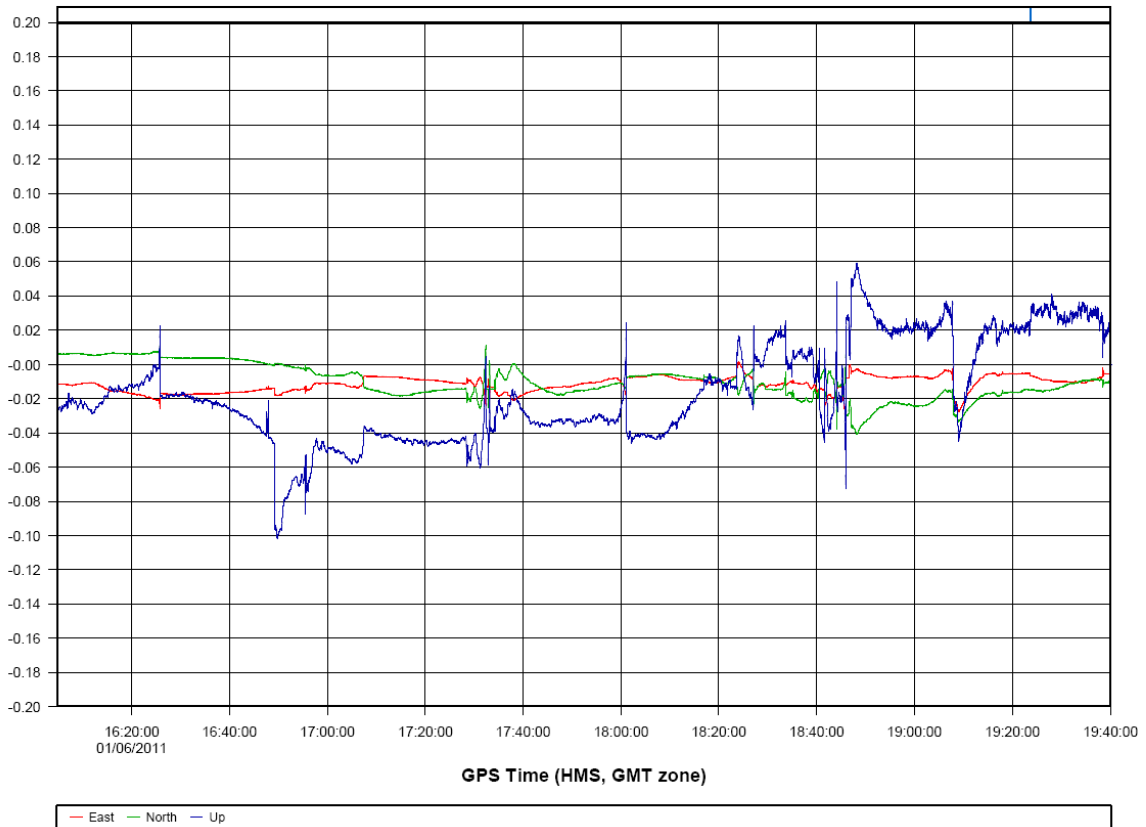
## Statistics

```

-----
Laser Time   : 02:20:02
    
```

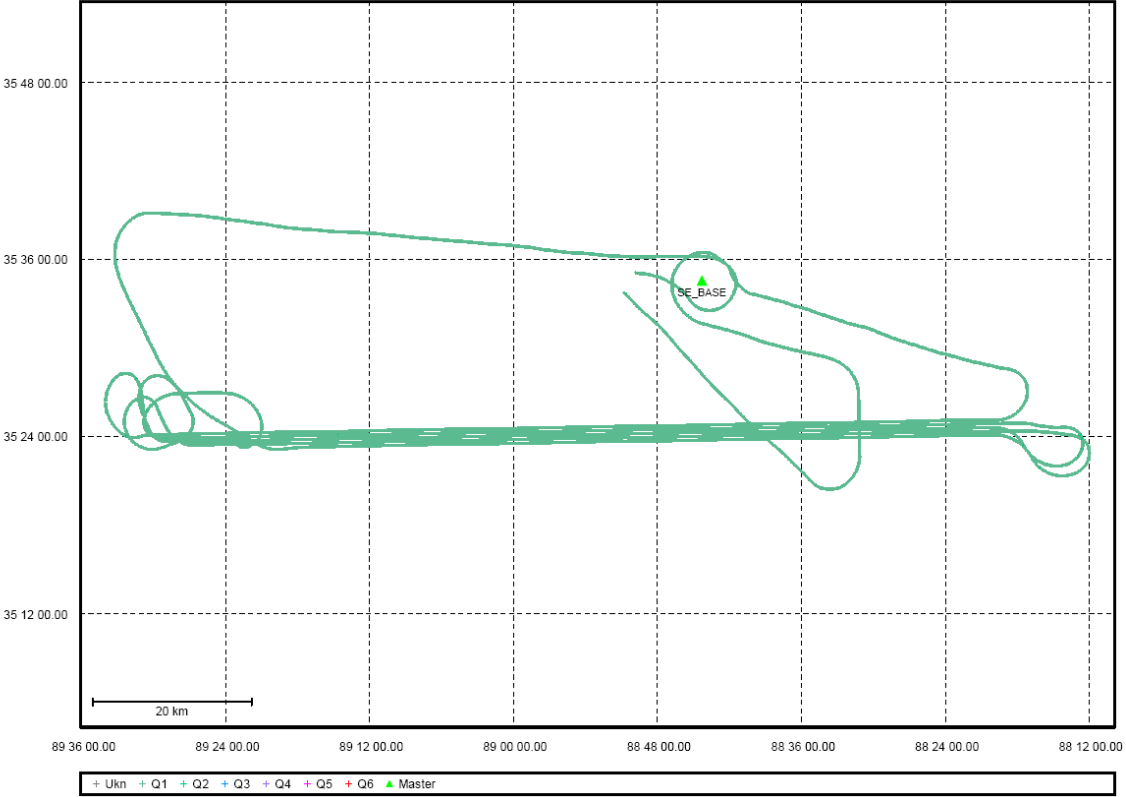
START	STOP	LINE#	ALT	PRF	FREQ	ANGLE	MP	DIV	RC	HDG	Plan File
16:03:50.427	16:09:29.532	268	1417	70	34.90	23.00	OFF	NAR	OFF	0.00	89
16:10:16.633	16:13:30.035	268	1347	70	34.90	23.00	OFF	NAR	OFF	0.00	89
16:13:35.336	16:20:04.541	268	1354	70	34.90	23.00	OFF	NAR	OFF	0.00	89
16:20:11.042	16:28:41.549	268	1349	70	34.90	23.00	OFF	NAR	OFF	0.00	89
16:37:32.758	16:54:15.674	267	1342	70	34.90	23.00	OFF	NAR	OFF	0.00	269
16:59:53.48	17:27:45.008	267	1356	70	34.90	23.00	OFF	NAR	OFF	0.00	269
17:32:50.913	17:33:07.713	266	1383	70	34.90	23.00	OFF	NAR	OFF	0.00	89
17:38:15.918	17:58:18.839	266	1320	70	34.90	23.00	OFF	NAR	OFF	0.00	89
18:04:06.345	18:33:13.875	265	1290	70	34.90	23.00	OFF	NAR	OFF	0.00	269
18:40:03.582	18:41:37.084	264	1285	70	34.90	23.00	OFF	NAR	OFF	0.00	89
18:47:19.59	19:07:19.61	264	1327	70	34.90	23.00	OFF	NAR	OFF	0.00	89
19:28:27.132	19:29:45.234	263	1258	70	34.90	23.00	OFF	NAR	OFF	0.00	269

11006a [Combined] - Forward/Reverse or Combined Separation Plot



Combined - Map Run (4)

Geographic, DMS



Processing Summary Information

Program: GrafNav  
Version: 7.80.2517  
Project: C:\Documents and Settings\adrian.camungol\Desktop\10152U Tenn\2\_Operations\6\_Missions\11006A\3\_Processed\GPS\11006a.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:  
Total in GPB file: 148647  
No processed position: 135716  
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: 1.11 (m)  
L1 Doppler: 0.019 (m/s)

Fwd/Rev Separation RMS Values:  
East: 0.012 (m)  
North: 0.015 (m)  
Height: 0.039 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (12925 occurrences):  
East: 0.012 (m)  
North: 0.014 (m)  
Height: 0.034 (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: 89.8 %  
0.10 - 0.30 m: 10.2 %  
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: 76.880 (km)  
Minimum: 2.897 (km)  
Average: 37.961 (km)  
First Epoch: 8.469 (km)  
Last Epoch: 9.958 (km)



```

; PROJECT: C:\Documents and Settings\adrian.camungol\Desktop\10152U
Tenn\2_Operations\6_Missions\11006A\3_Processed\GPS\11006a.cfg
;
; DATE: Jan. 28/11 (date/time of processing)
; TIME: 9:53:28
; CREATED BY: GrafNav Version 7.80.2517
;

VERSION = 7.80.2517
PROCUSER = Unknown
PROCDISC = Run*(5)
PROCTIME = 09:51:20 01/28/2011

; Master station # 1 information
MB_MASTER_INDEX = 0
MB_MASTER_NAME = SE_BASE
MB_MASTER_FILE =
C:\Documents*and*Settings\adrian.camungol\Desktop\10152U*Tenn\2_Operations\6_Mis
sions\11006A\1_RawData\GroundGPS\SE*Base\SE-BASE_log20110106_150059.gpb
MB_MASTER_POS = 35 34 34.17344 -88 44 17.15714 112.9020
MB_MASTER_ANT = 2.234 -0.009 2.000 0 TPSGR3 0
MB_MASTER_DISABLE = OFF

; Remote station information
REMOTE_FILE =
C:\Documents*and*Settings\adrian.camungol\Desktop\10152U*Tenn\2_Operations\6_Mis
sions\11006A\3_Processed\Extract\mgps_11006a.gpb
REMOTE_POS = 35 36 12.44245 -88 55 15.85713 97.7902
REMOTE_ANT = 0.000

; General settings
PROCESS_MODE = 105 108 111 126 ; 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

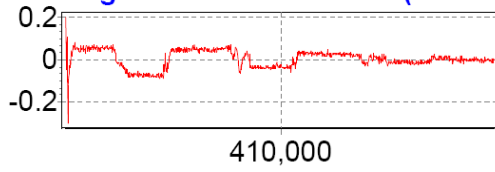
BASE_SAT = 99 ; Base satellite (99-default)

TIMERANGE = RANGE 978365080.0 978378010.0 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

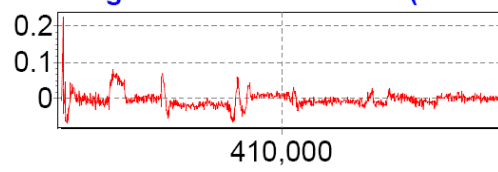
```

S/D Navigator X Position Error (meters)



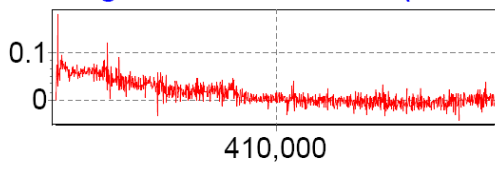
Time (seconds)

S/D Navigator Y Position Error (meters)



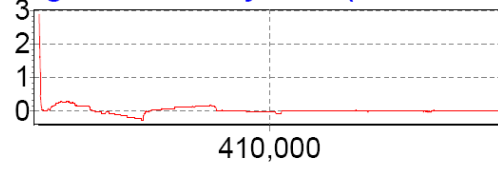
Time (seconds)

S/D Navigator Z Position Error (meters)



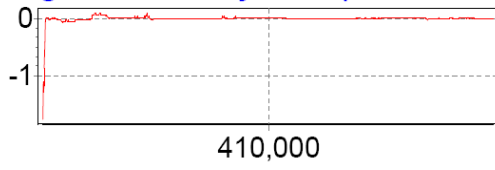
Time (seconds)

Navigator X Velocity Error (meters/second)



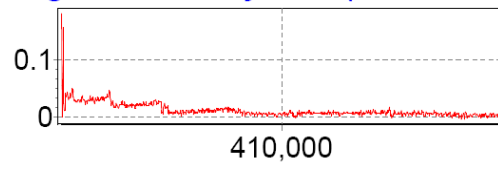
Time (seconds)

Navigator Y Velocity Error (meters/second)



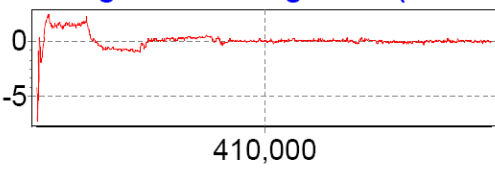
Time (seconds)

Navigator Z Velocity Error (meters/second)



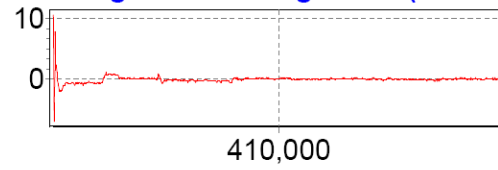
Time (seconds)

S/D Navigator X Misalignment (arcmin)



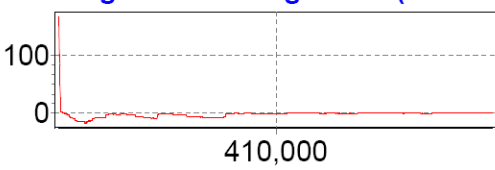
Time (seconds)

S/D Navigator Y Misalignment (arcmin)



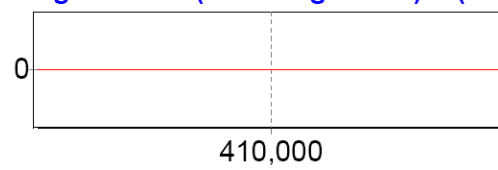
Time (seconds)

S/D Navigator Z Misalignment (arcmin)



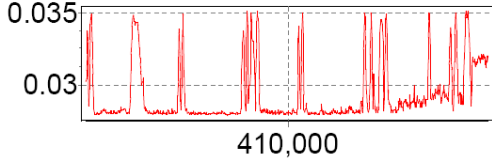
Time (seconds)

Navigator COS(Z Misalignment)-1 (radians)



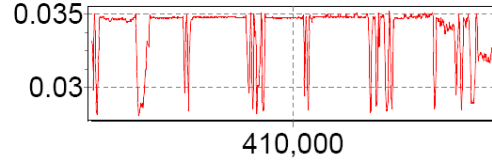
Time (seconds)

D Navigator X Position RMS Error (mete



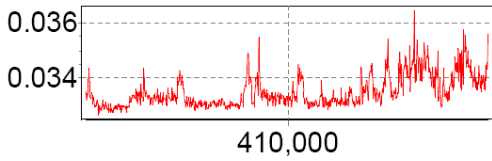
Time (seconds)

D Navigator Y Position RMS Error (mete



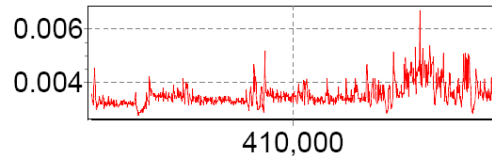
Time (seconds)

D Navigator Z Position RMS Error (mete



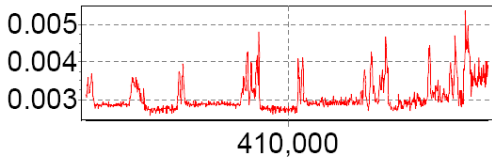
Time (seconds)

Navigator X Velocity RMS Error (meters/se



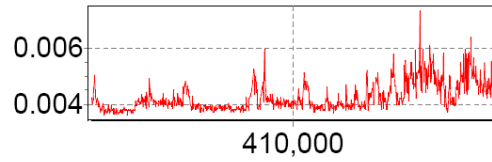
Time (seconds)

Navigator Y Velocity RMS Error (meters/se



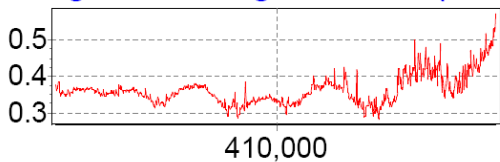
Time (seconds)

Navigator Z Velocity RMS Error (meters/se



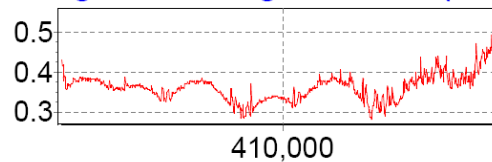
Time (seconds)

D Navigator X Misalignment RMS (arcmi



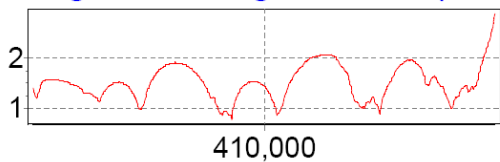
Time (seconds)

D Navigator Y Misalignment RMS (arcmi



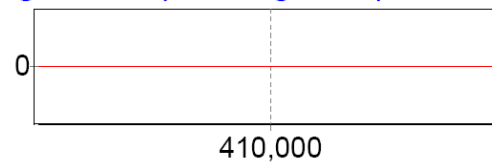
Time (seconds)

D Navigator Z Misalignment RMS (arcmi

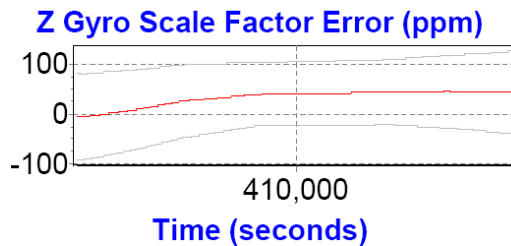
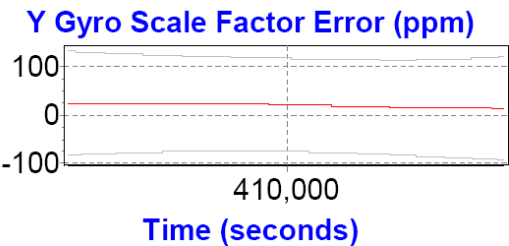
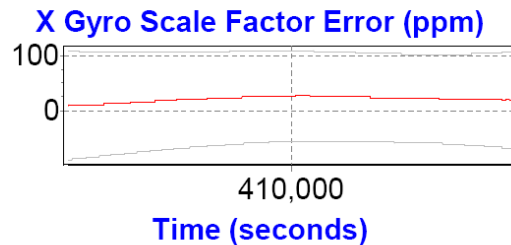
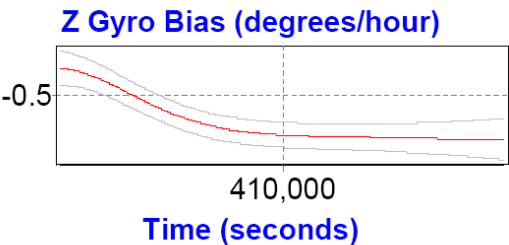
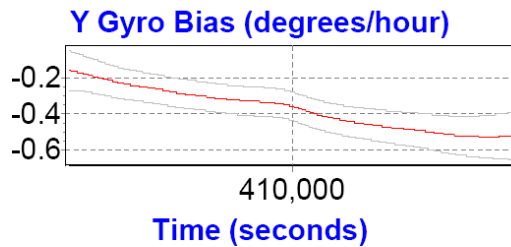
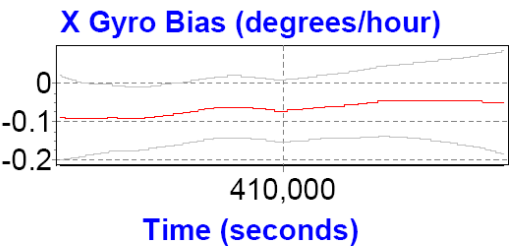
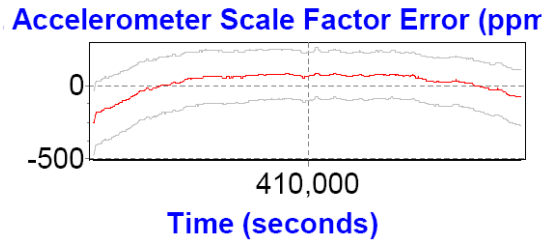
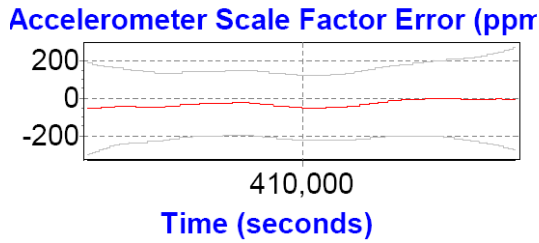
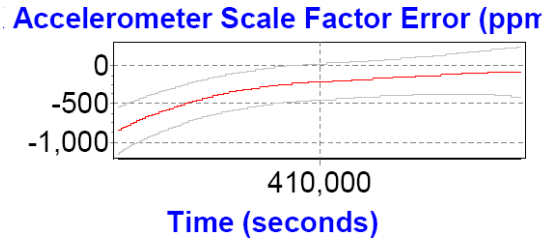
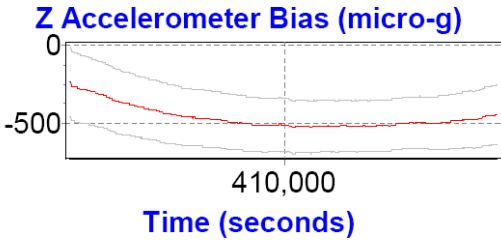
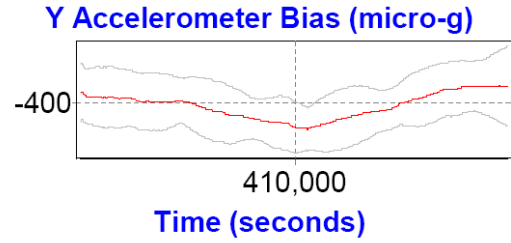
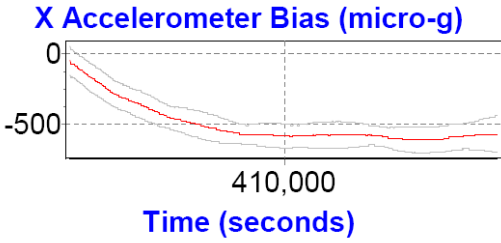


Time (seconds)

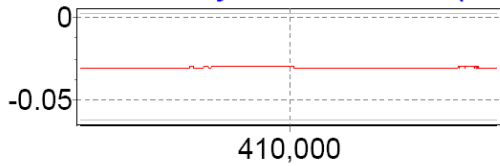
Navigator COS(Z Misalignment)-1 RMS (ra



Time (seconds)

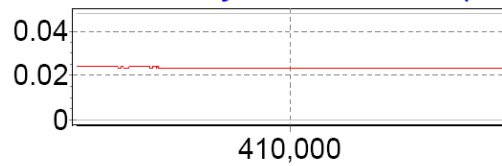


Reference->Primary GPS Lever Arm (met



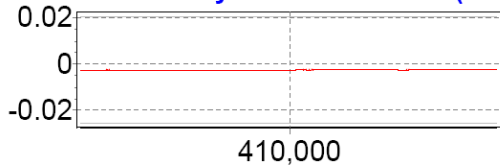
Time (seconds)

Reference->Primary GPS Lever Arm (met



Time (seconds)

Reference->Primary GPS Lever Arm (met



Time (seconds)

# Flight Log/Base Station/GPS Processing – 01.06.2011

```

-----
Flight Log
-----
Project Number: Dyersburg TN Army Corp
S/N           : 06 Sen 187
Operator      : Burn
Pilot(s)     : Crash
Aircraft     : N435H
Airport      : KMKL
Mission      : 11006B
Wheels Up    : 1500
Flight Length: 4.5
HOBBBS Start : 2170.3
HOBBBS End   : 2165.4
    
```

```

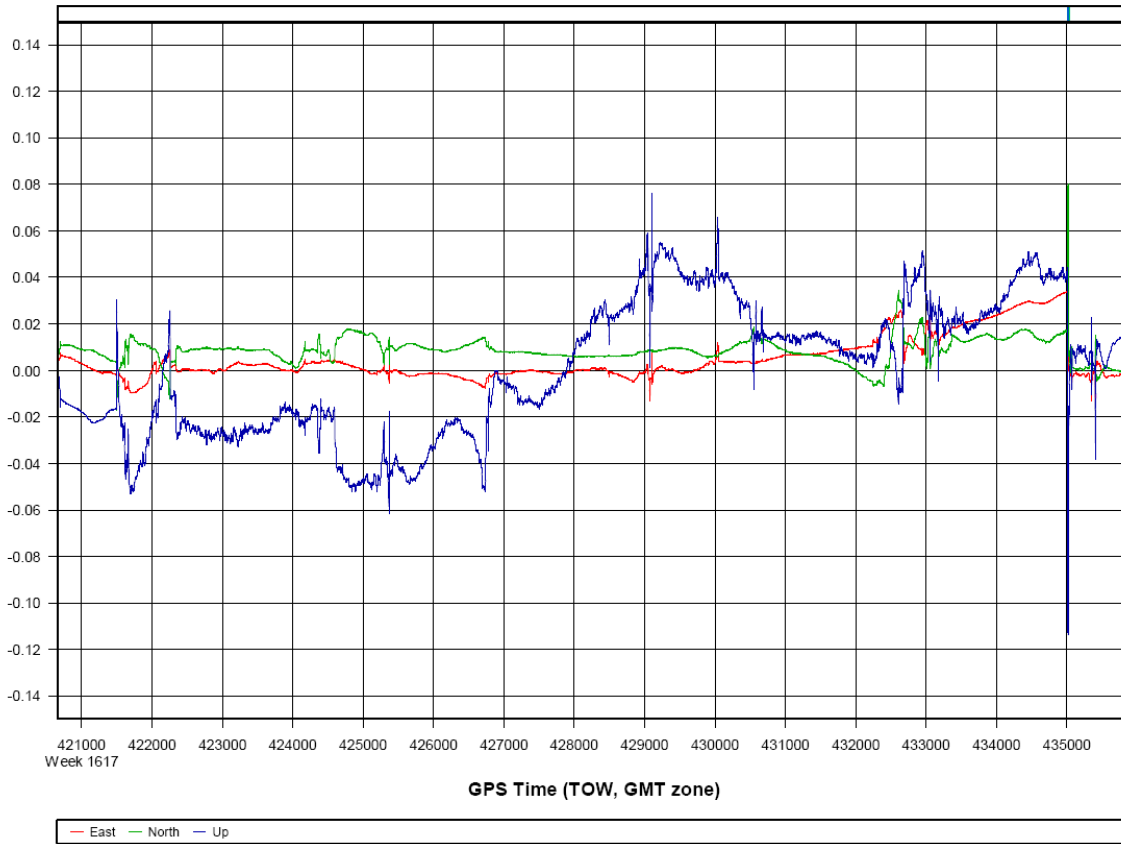
-----
Weather
-----
Date          : January 06, 2011
Julian Day    : 006
Temperature   : 48 F
Visibility    : 10 sm
Clouds        : clr
Precipitation : none
Wind Dir      : 270
Wind Speed    : 14 g 18
Pressure      : 29.81
    
```

```

-----
Statistics
-----
Laser Time    : 01:54:59
    
```

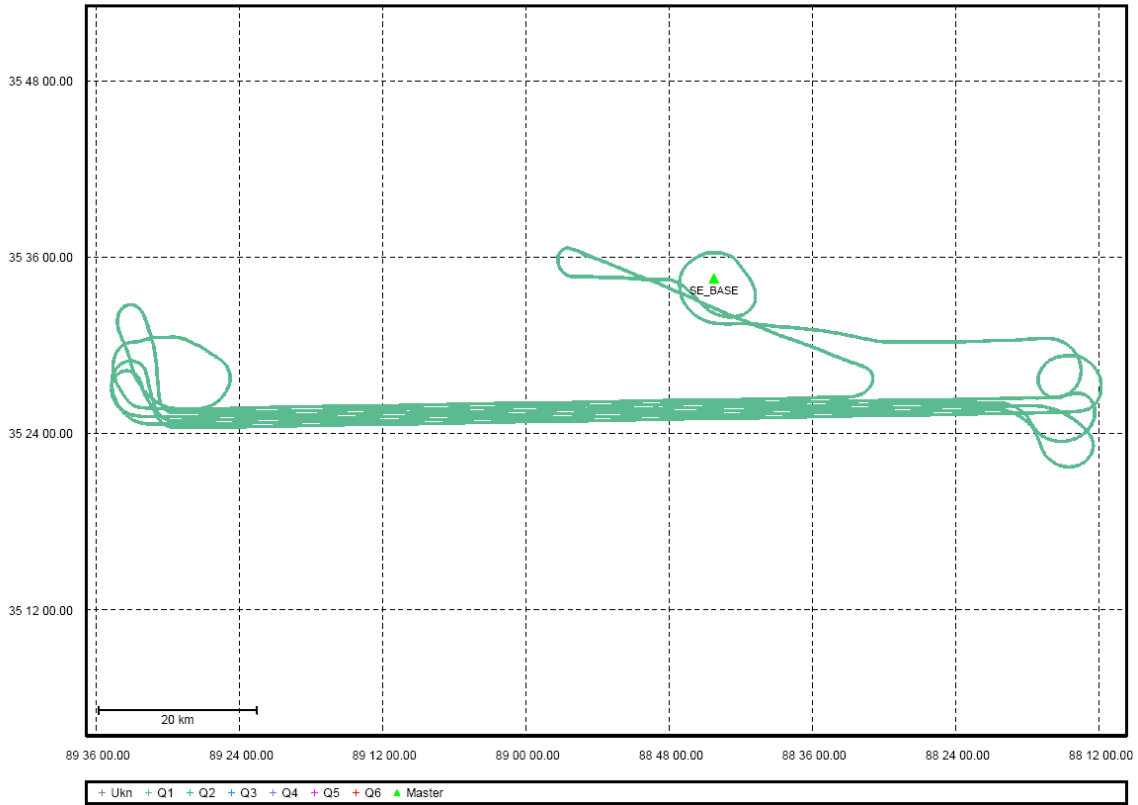
START	STOP	LINE#	ALT	PRF	FREQ	ANGLE	MP	DIV	RC	HDG	Plan File
21:34:15.881	21:34:22.982	263	1392	70	34.90	23.00	OFF	NAR	OFF	0.00	269
21:35:56.283	22:04:58.312	263	1359	70	34.90	23.00	OFF	NAR	OFF	0.00	269
22:10:14.518	22:30:56.139	261	1367	70	34.90	23.00	OFF	NAR	OFF	0.00	269
22:37:20.446	23:06:43.376	260	1386	70	34.90	23.00	OFF	NAR	OFF	0.00	89
23:11:53.882	23:31:42.902	259	1336	70	34.90	23.00	OFF	NAR	OFF	0.00	269
23:37:23.608	00:07:38.54	258	1309	70	34.90	23.00	OFF	NAR	OFF	0.00	89
00:24:04.157	00:40:15.774	258	1328	70	34.90	23.00	OFF	NAR	OFF	0.00	89

11006b [Combined] - Forward/Reverse or Combined Separation Plot



# Combined - Map Run (2)

Geographic, DMS





Processing Summary Information

Program: GrafNav  
Version: 7.80.2517  
Project: E:\10152U Tenn\2\_Operations\6\_Missions\11006B\3\_Processed\GPS\11006b.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:

Total in GPB file:	152816
No processed position:	137546
Missing Fwd or Rev:	3
With bad C/A code:	0
With bad L1 Phase:	0

Measurement RMS Values:

L1 Phase:	0.0197 (m)
C/A Code:	1.10 (m)
L1 Doppler:	0.018 (m/s)

Fwd/Rev Separation RMS Values:

East:	0.011 (m)
North:	0.013 (m)
Height:	0.031 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (15265 occurrences):

East:	0.010 (m)
North:	0.010 (m)
Height:	0.028 (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:	77.588 (km)
Minimum:	3.421 (km)
Average:	35.185 (km)
First Epoch:	16.857 (km)
Last Epoch:	16.844 (km)

```

; PROJECT:   E:\10152U Tenn\2_Operations\6_Missions\11006B\3_Processed\GPS\11006b.cfg
;
; DATE:     Jan. 29/11 (date/time of processing)
; TIME:     17:01:58
; CREATED BY: GrafNav Version 7.80.2517
;
VERSION = 7.80.2517
PROCUSER = jcr
PRODESC = Run*(3)
PROCTIME = 16:57:14 01/29/2011

; Master station # 1 information
MB_MASTER_INDEX = 0
MB_MASTER_NAME = SE_BASE
MB_MASTER_FILE = E:\10152U*Tenn\2_Operations\6_Missions\11006B\1_RawData\GroundGPS\SE*Base\SE-BASE_log20110106_150059.gpb
MB_MASTER_POS = 35 34 34.17344 -88 44 17.15714 112.9020
MB_MASTER_ANT = 2.234 -0.009 2.000 0 TPSGR3 0
MB_MASTER_DISABLE = OFF

; Remote station information
REMOTE_FILE = E:\10152U*Tenn\2_Operations\6_Missions\11006B\1_RawData\mgps_11006b.gpb
REMOTE_POS = 35 36 12.42948 -88 55 15.87341 96.4008
REMOTE_ANT = 0.000

; General settings
PROCESS_MODE = 105 108 111 126 ; 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

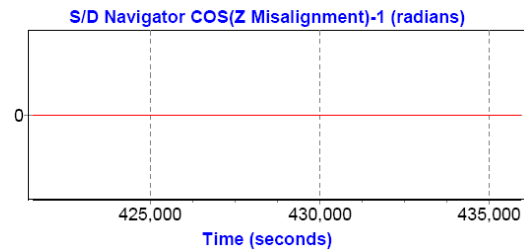
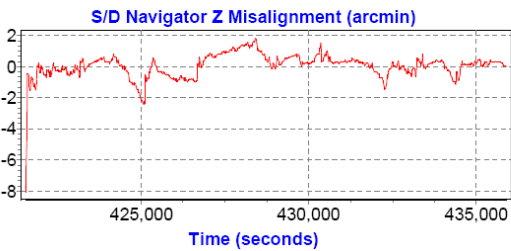
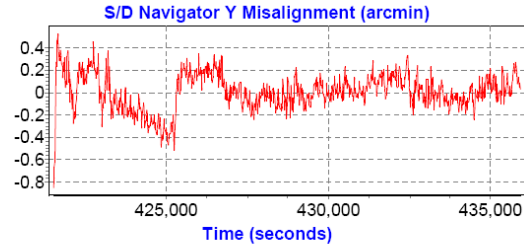
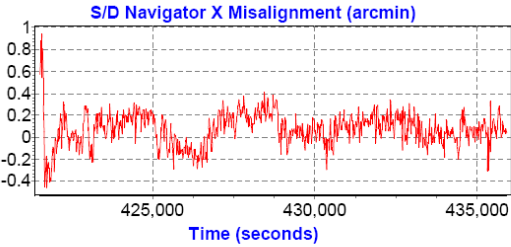
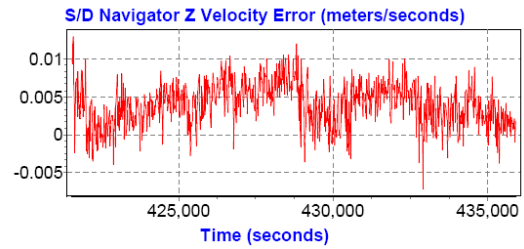
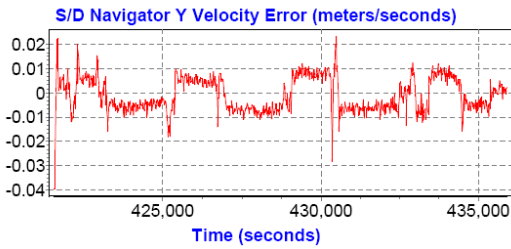
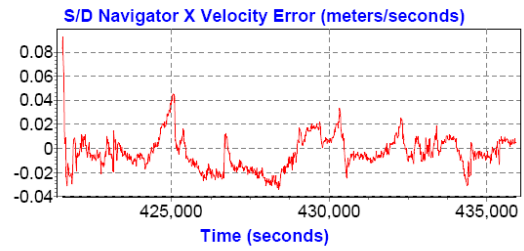
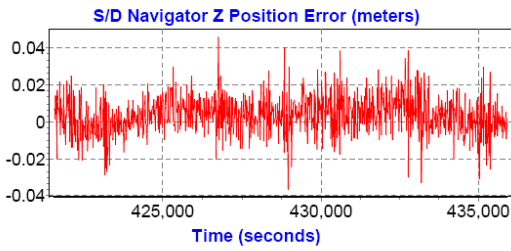
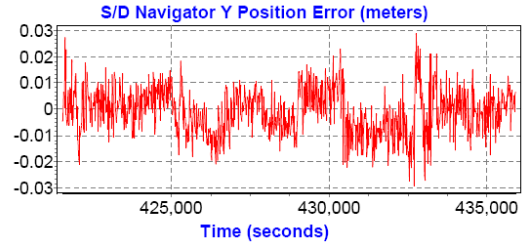
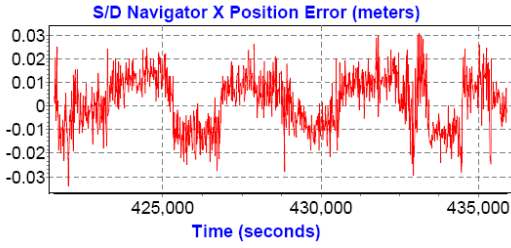
CYCLE_TEST = BOTH ; Cycle slip test method
STATIC_SLIP_TOL = 0.40 ; slip tolerance in static mode (cycles)
USE_DOPPLER = ON OFF ; Use doppler meas. for phase, for code-only

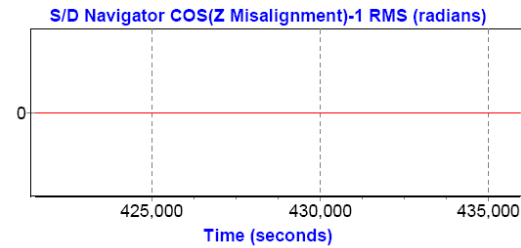
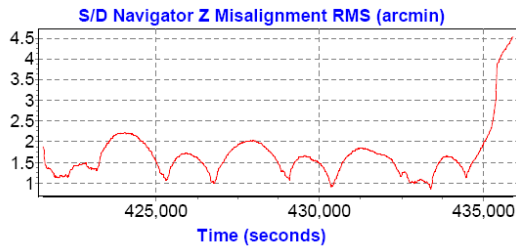
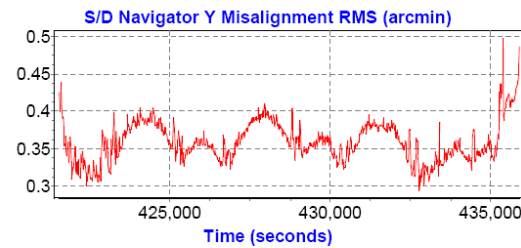
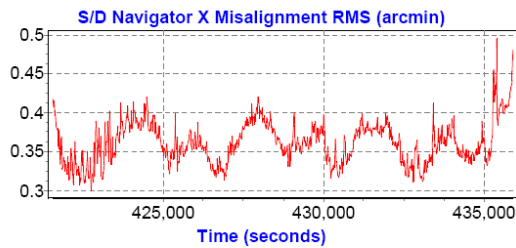
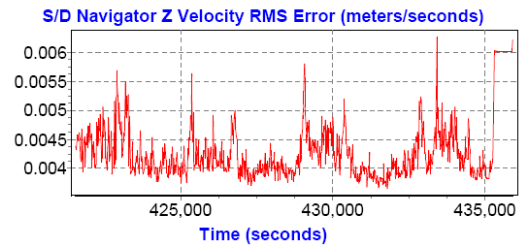
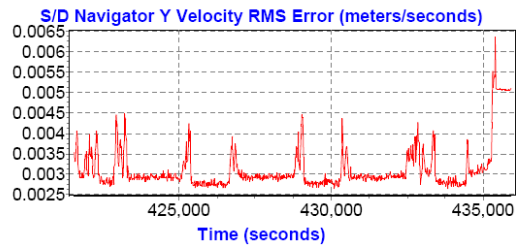
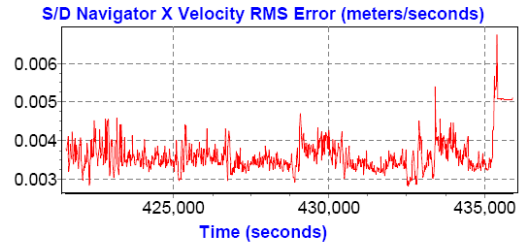
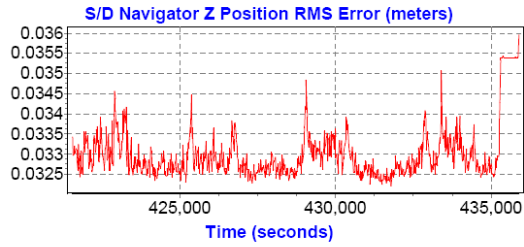
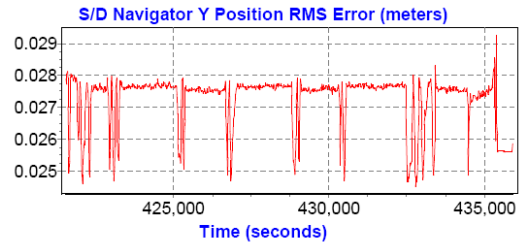
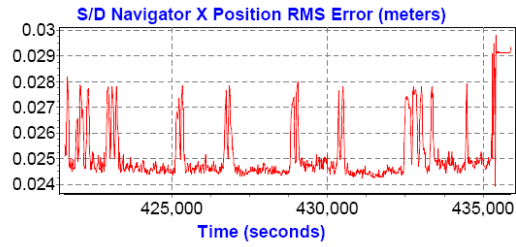
BASE_SAT = 99 ; Base satellite (99-default)

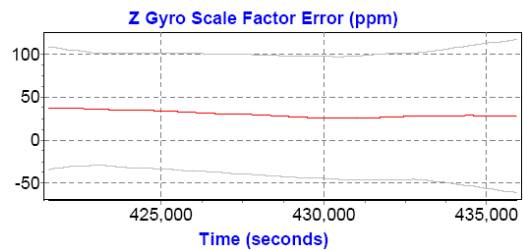
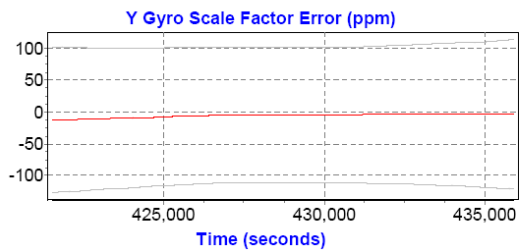
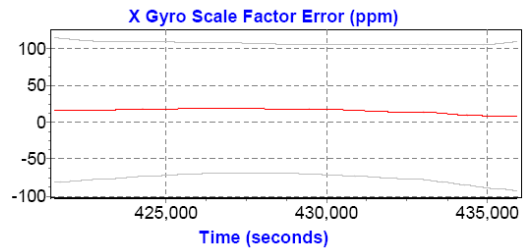
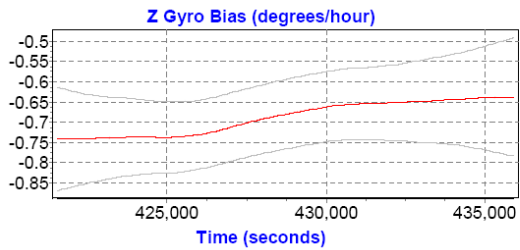
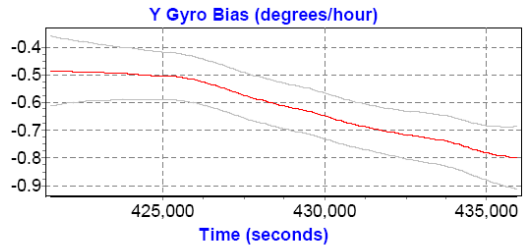
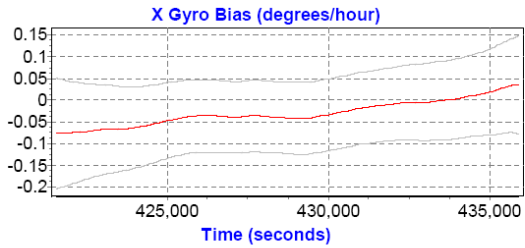
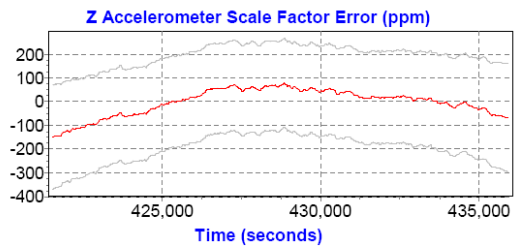
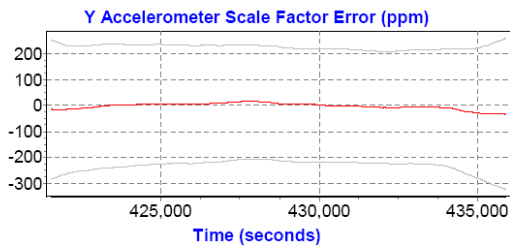
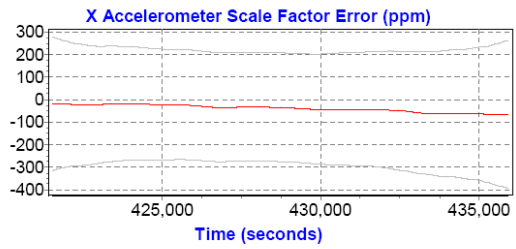
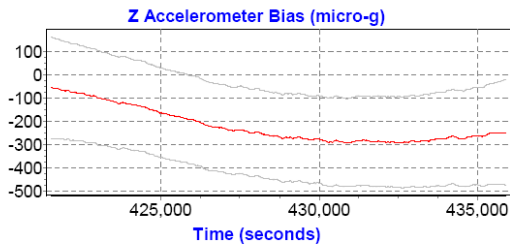
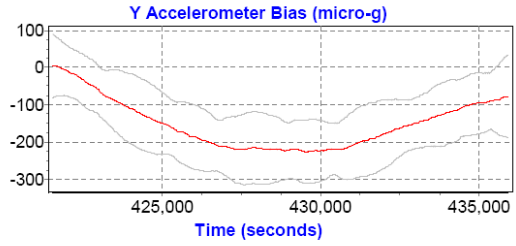
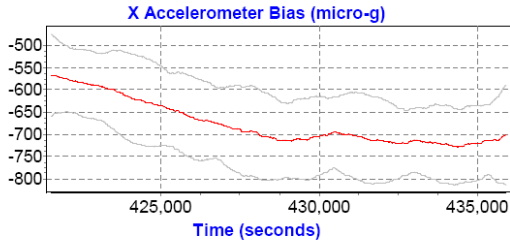
TIMERANGE = ALL 978382235.6 978397517.1 2 0 ; Processing time range
INTERVAL = 0.10 ; Processing time interval (seconds)

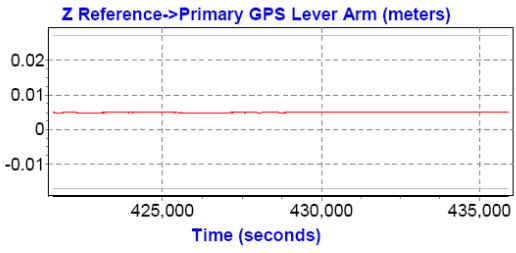
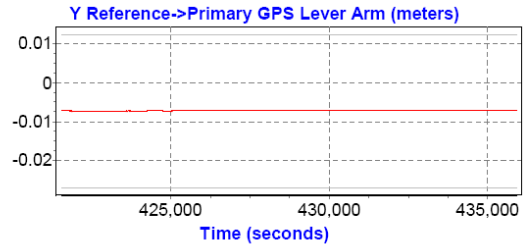
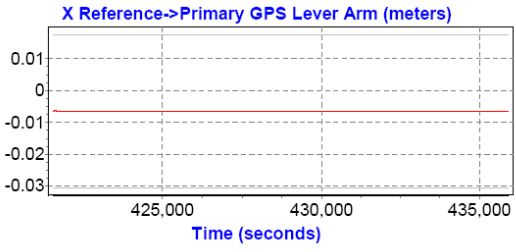
PROCESS_DIR = FORWARD ; Process direction (FORWARD/REVERSE)
BOTH_DIR = ON ; True for processing both directions
WRITE_BAD_EPOCHS = OFF ; Save bad data to .fwd/rev file (ON/OFF)
NOWRITE_HIGH = OFF 6 20.000 ; Don't write epoch with high statistics (q, stdev-m)
OUTPUT_MODE = EXTENDED ; Format for .fwd/rev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

```









Flight Log

```

-----
Project Number: Dyersburg,TN
S/N           : 06sen187
Operator      : J.Stump
Pilot(s)     : J.Melton
Aircraft     : 435H
Airport      : MKL
Mission      : 11008B
Wheels Up   : ???
Flight Length :
HOBBBS Start : 71.9|
HOBBBS End   :
  
```

Weather

```

-----
Date          : January 08, 2011
Julian Day    : 008
Temperature   : 02
Visibility    : 10
Clouds       : Fw040
Precipitation : 0
Wind Dir     : 350
Wind Speed   : 17
Pressure     : 29.96
  
```

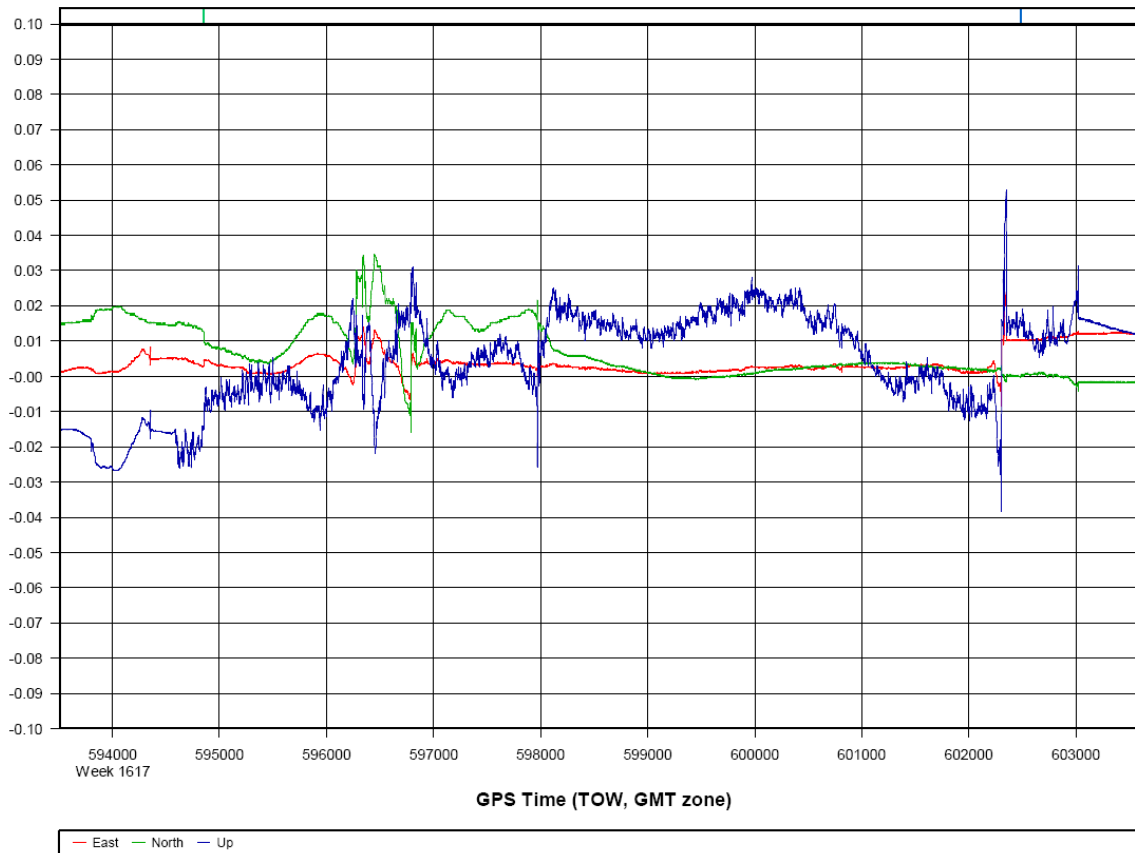
Statistics

```

-----
Laser Time   : 01:06:19
  
```

START	STOP	LINE#	ALT	PRF	FREQ	ANGLE	MP	DIV	RC	HDG	Plan File
21:20:52.546	21:21:01.646	392	1100	70	43.00	23.00	OFF	NAR	OFF	0.00	89
21:20:52.546	21:21:03.046	392	1105	70	43.00	23.00	OFF	NAR	OFF	0.00	89
21:24:47.549	21:25:06.05	392	948	70	43.00	23.00	OFF	NAR	OFF	0.00	89
21:32:40.957	21:32:55.557	392	977	70	43.00	23.00	OFF	NAR	OFF	0.00	89
21:34:46.259	21:35:12.559	392	995	70	43.00	23.00	OFF	NAR	OFF	0.00	89
21:48:50.672	22:04:29.288	391	1017	70	43.00	23.00	OFF	NAR	OFF	0.00	89
22:09:36.393	22:35:31.719	390	994	70	43.00	23.00	OFF	NAR	OFF	0.00	269
22:40:20.424	23:04:22.249	390	1016	70	43.00	23.00	OFF	NAR	OFF	0.00	89

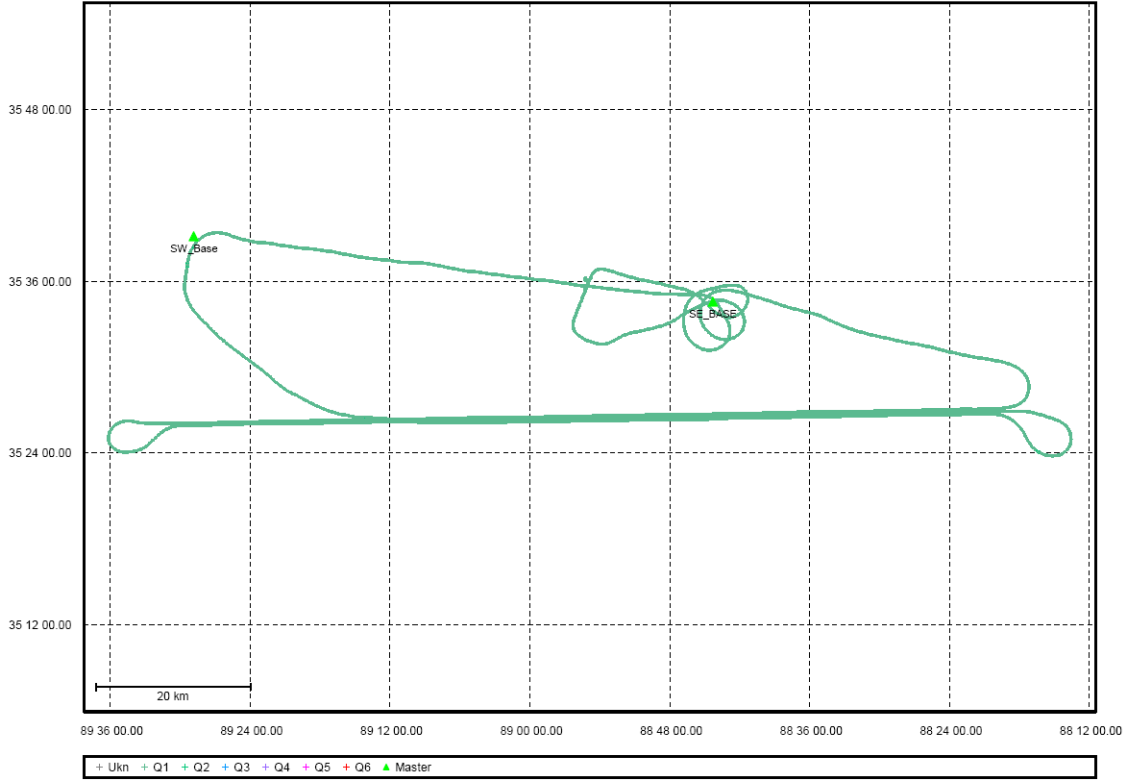
11008a [Combined] - Forward/Reverse or Combined Separation Plot





# Combined - Map Run (2)

Geographic, DMS



Processing Summary Information

Program: GrafNav  
Version: 7.80.2517  
Project: E:\10152U Tenn\2\_Operations\6\_Missions\11008A\3\_Processed\GPS\11008a.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:  
Total in GPB file: 101926  
No processed position: 91745  
Missing Fwd or Rev: 4  
With bad C/A code: 0  
With bad L1 Phase: 0

Measurement RMS Values:  
L1 Phase: 0.0207 (m)  
C/A Code: 1.00 (m)  
L1 Doppler: 0.019 (m/s)

Fwd/Rev Separation RMS Values:  
East: 0.007 (m)  
North: 0.011 (m)  
Height: 0.014 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (10175 occurrences):  
East: 0.005 (m)  
North: 0.010 (m)  
Height: 0.014 (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: 80.474 (km)  
Minimum: 0.632 (km)  
Average: 28.413 (km)  
First Epoch: 16.829 (km)  
Last Epoch: 16.844 (km)

```

; PROJECT: E:\10152U Tenn\2_Operations\6_Missions\11008A\3_Processed\GPS\11008a.cfg
;
; DATE: Jan. 29/11 (date/time of processing)
; TIME: 17:22:57
; CREATED BY: GrafNav Version 7.80.2517
;
VERSION = 7.80.2517
PROCUSER = jcr
PROCDISC = Run*(3)
PROCTIME = 17:18:07 01/29/2011

; Master station # 1 information
MB_MASTER_INDEX = 0
MB_MASTER_NAME = SE_Base
MB_MASTER_FILE = E:\10152U*Tenn\2_Operations\6_Missions\11008A\1_RawData\ground_gps\SE_Base\SE-BASE_log20110108_142126.gpb
MB_MASTER_POS = 35 34 34.17344 -88 44 17.15714 112.9020
MB_MASTER_ANT = 2.234 -0.009 2.000 0 TPSGR3 0
MB_MASTER_DISABLE = OFF

; Master station # 2 information
MB_MASTER_INDEX = 1
MB_MASTER_NAME = SW_Base
MB_MASTER_FILE = E:\10152U*Tenn\2_Operations\6_Missions\11008A\1_RawData\ground_gps\SW_Base\SW-BASE_log20110108_152850.gpb
MB_MASTER_POS = 35 39 07.19941 -89 28 50.54551 70.4660
MB_MASTER_ANT = 2.234 -0.009 2.000 0 TPSGR3 0
MB_MASTER_DISABLE = ON

; Remote station information
REMOTE_FILE = E:\10152U*Tenn\2_Operations\6_Missions\11008A\1_RawData\mgps_11008a.gpb
REMOTE_POS = 35 36 12.65936 -88 55 14.70109 99.4625
REMOTE_ANT = 0.000

; General settings
PROCESS_MODE = 105 108 111 126 ; 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 978555087.5 978565280.0 2 0 ; Processing time range

```

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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

; KAR settings--second values for dual frequency/widelane
KAR_MIN_TIME = 8.00 2.00     ; Min. time for KAR, L1 and L2 (minutes)
KAR_MIN_ADD = 0.00           ; 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 = OFF 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 = IONO          ; 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
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 30.000  ; 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 = ON 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 = ON 2.5 250.0 ; 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 = ON                 ; Refine L1/L2 fixed solution
FIX_STRICT = OFF OFF           ; Stricter RMS and reliability tolerances
FIX_CORRECT_SLIP = OFF         ; Correct integer cycle slips
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 25.000 600.0 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

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```

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
CORR_L2C = ALL ; ALL, OFF to correct for L2C
CORR_L2C_VALUE = FILE ; FILE or correction value in L2 cycles

; Differential measurement standard deviation (weighting) settings
STD_MODE = ELEV ; Measurement weighting mode (ELEV/CNO/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 = 1.0000 ON ; Doppler meas stddev (m/s) (ON/OFF referes to auto-doppler setting)
STD_REJECT = NORMAL 3.0 2.5 3.0 6.0 4.5 ; LevelStr CodeRej PhaseRej DopplerRej CodeReset PhaseReset
STD_SKIP = 15.0 5 1 ; dMaxRejSec, nSkipCodeEpochs, nSkipPhaseEpochs
STD_DIST = LOW 1.00 7.50 ; Distance effects (OFF/HIGH/MEDIUM/LOW/MANUAL) ManHzPPM ManVtPPM
STD_BL = SE_Base ON ; BLName UseMain(ON/OFF)
STD_SW = SW_Base 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 MEDIUM ; constraint on vehicle dynamics

; Single poing/PPP settings
PPP_SP3_DATUM = WGS84 AUTOMATIC
PPP_ELEV_MASK = 0.00
PPP_PROCUSE = TMitchell
PPP_PROCDISC = PPP*(1)
PPP_PROCESS_MODE = AUTO ; PPP, SFCA, DFCA, AUTO processing modes
PPP_USEPIOVERCA = ON ; Use P1 instad of c/a (on/off)
PPP_USESOLVEDCLOCK = ON ; ON-use receiver time corrected by clock, off-use corr_time directly
PPP_SEPARATECLKS = ON ; ON-use separate code and carrier clock (needed for some Trimble receivers), OFF-disables
PPP_PRECISEONLY = ON ; ON-only satellite with precise eph+clock to be used, OFF use all including broadcast
PPP_PROCESS_DIR = FORWARD BOTH ; Direction (FORWARD/REVERSE), Directions to process (SINGLE/BOTH)
PPP_SLIP_TOL = 20.00 0.500 ; Coarse and fine carrier cycle slip tolerances (cycles)
PPP_LOCKTIME = ON OFF ; Use L1 and L2 locktime counters to detecting slips
PPP_USE_DOPPLER = OFF ; ON if doppler to be used for velocity computation
PPP_DYN_MODE = MEDIUM ; Dynamics mode: AUTO, OFF, LOW, MEDIUM, HIGH
PPP_OUTPUT = NORMAL OFF ; Output modes(first: Normal/extended, second: ON-output even if bad)
PPP_TROPO = ON 5.0000e-011 ; Enable Tropo state (ON/OFF) and tropo state spectral density
PPP_SAT_RESID = OFF ; Output binary satellite residuals to .FBP/RBP (ON/OFF)
; Single point/PPP measurement standard deviation (weighting) settings
PPP_STD_MODE = ELEV ; Measurement weighting mode (ELEV/CNO/STANDARD/ADAPTIVE)
PPP_STD_CODE = 7.0000 ; Code measurement standard deviation (m)
PPP_STD_PHASE = 0.0200 ON ; Carrier meas SD (m) (ON/OFF refers to adjustment for L3)
PPP_STD_DOPPLER = 1.0000 ON ; Doppler meas stddev (m/s) (ON/OFF referes to auto-doppler setting)
PPP_STD_REJECT = NORMAL 3.0 2.5 3.0 6.0 4.5 ; LevelStr CodeRej PhaseRej DopplerRej CodeReset PhaseReset
PPP_STD_SKIP = 15.0 5 1 ; dMaxRejSec, nSkipCodeEpochs, nSkipPhaseEpochs
PPP_STD_RELTOL = 4.00 ; Reliability tolerance for rejecting outliers

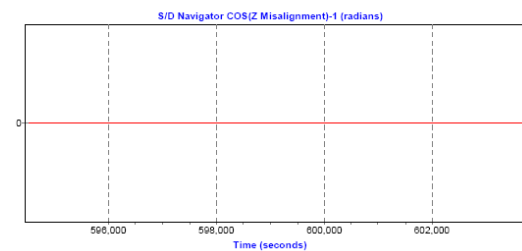
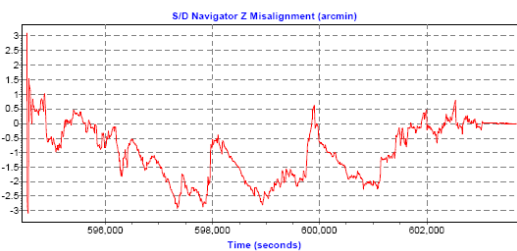
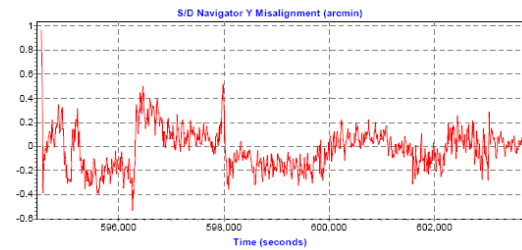
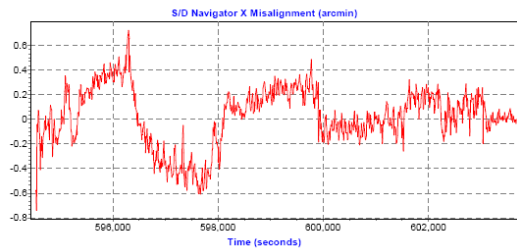
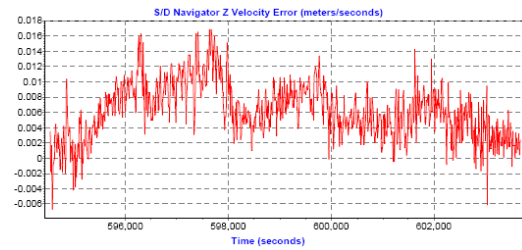
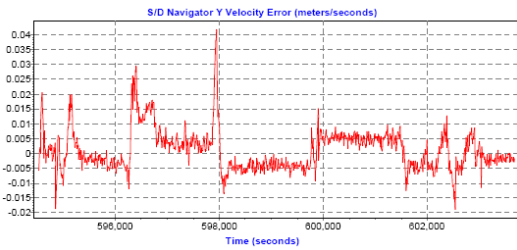
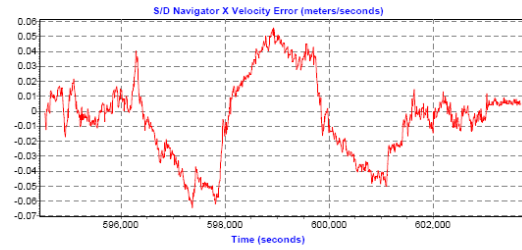
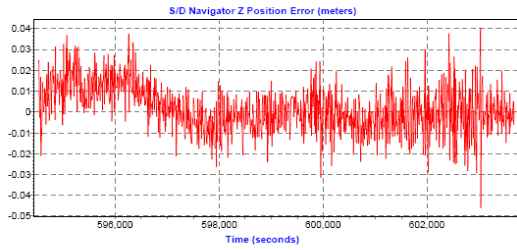
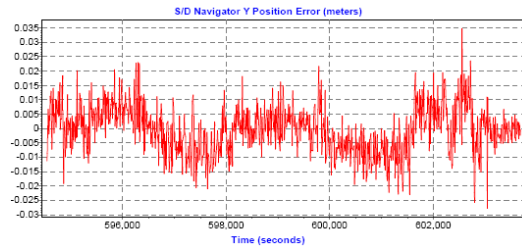
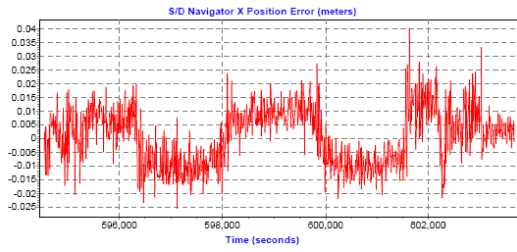
; Combine settings (only used in API)

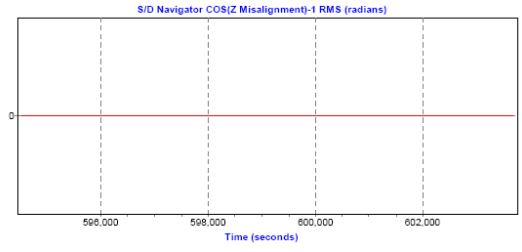
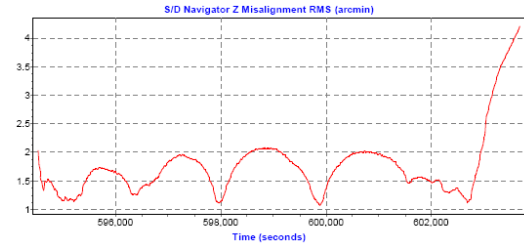
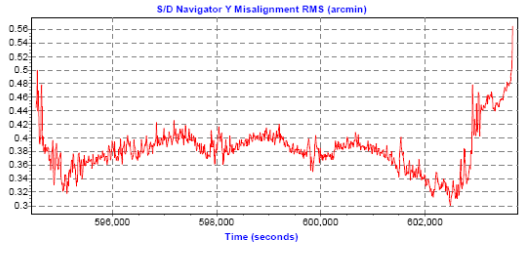
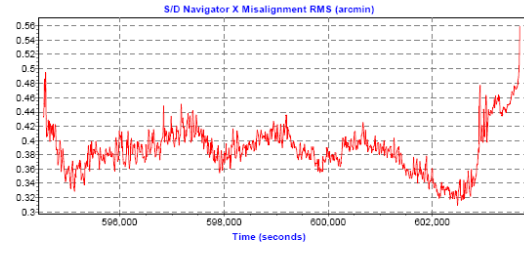
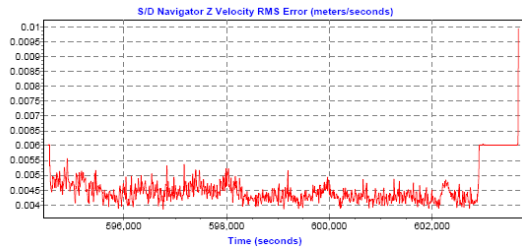
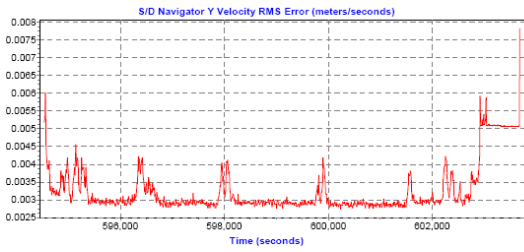
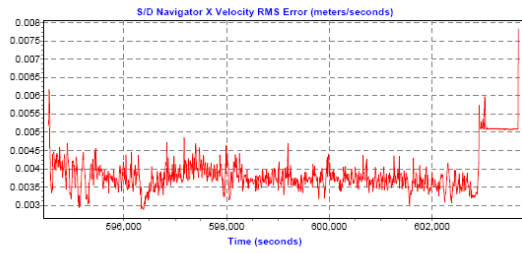
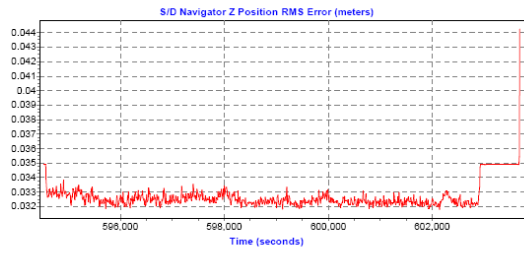
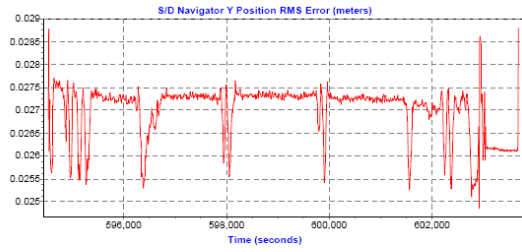
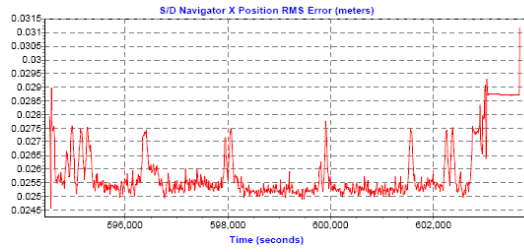
; Glonass Options
GLN_TOFF = ON 0.0000 1000.0000 0.000000
GLN_SOLVE_INT = ON ON OFF ; GLN-Base, Use-GLN-in-KAR, Do-GPSONLY-if-kar-fails

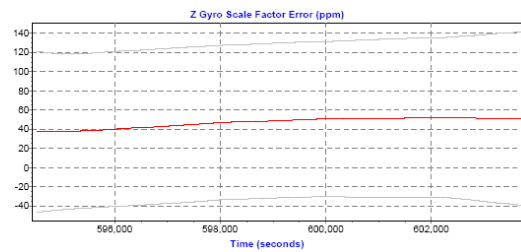
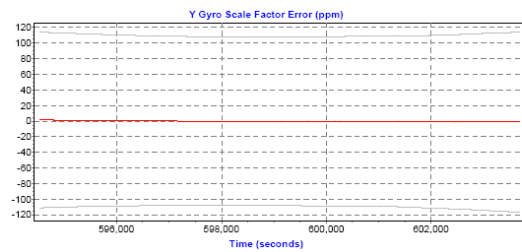
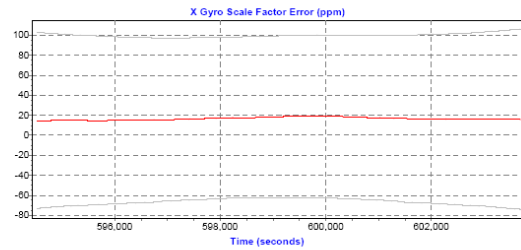
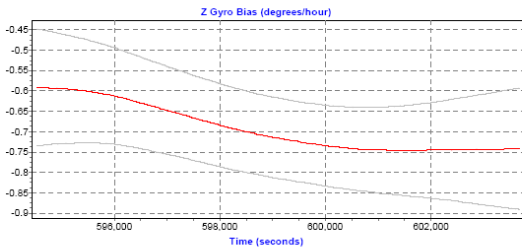
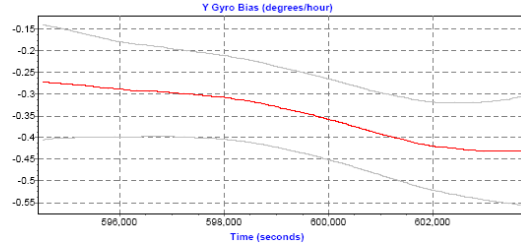
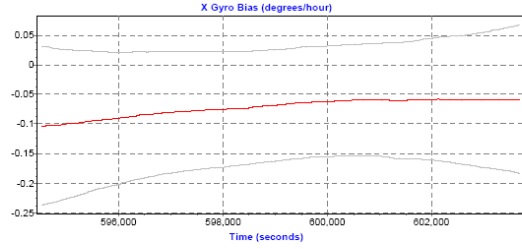
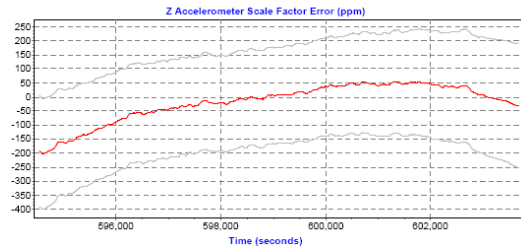
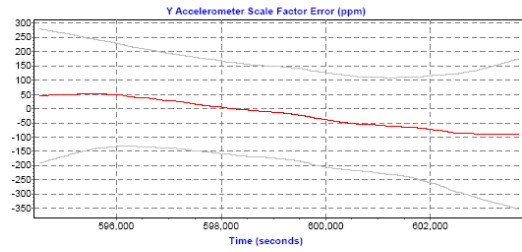
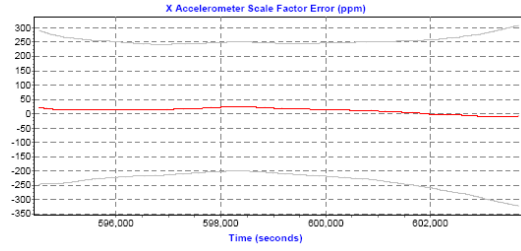
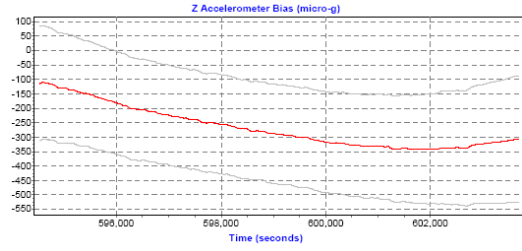
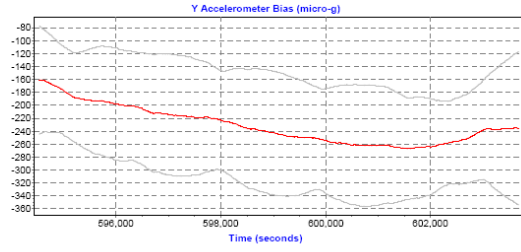
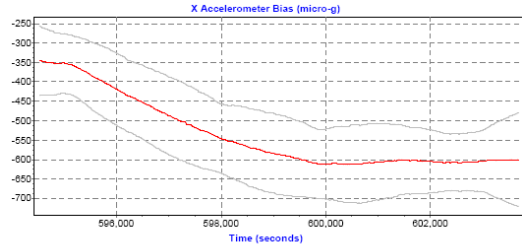
; The following are Additional (user) items

; End-of-file

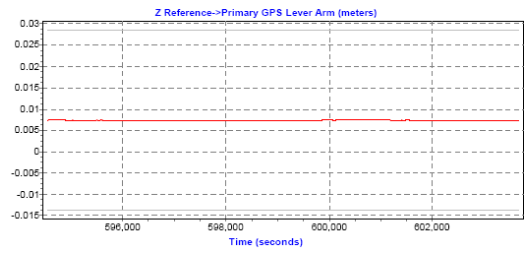
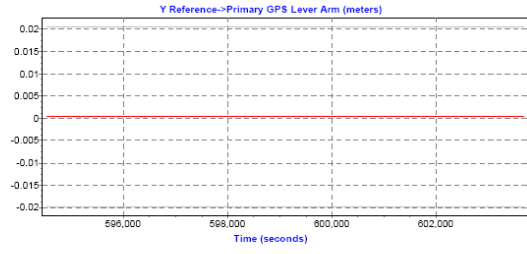
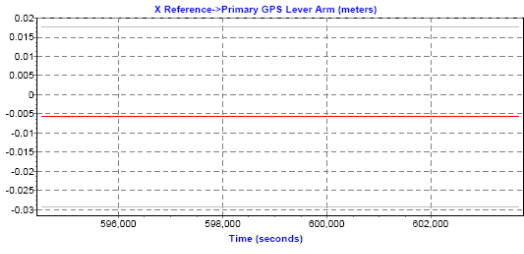
```











# Flight Log/Base Station/GPS Processing – 01.09.2011

## Flight Log

```

-----
Project Number: Dyersburg,TN
S/N           : 06sen187
Operator      : J.Stump
Pilot(s)     : J.Melton
Aircraft     : 435H
Airport      : MKL
Mission      : 11009A
Wheels Up    : 0930
Flight Length : |
HOBBBS Start : 74.8
HOBBBS End   :
    
```

## Weather

```

-----
Date          : January 09, 2011
Julian Day    : 009
Temperature   : -07
Visibility     : 10
Clouds        : clr
Precipitation : 0
Wind Dir      : 110
Wind Speed    : 8
Pressure      : 30.26
    
```

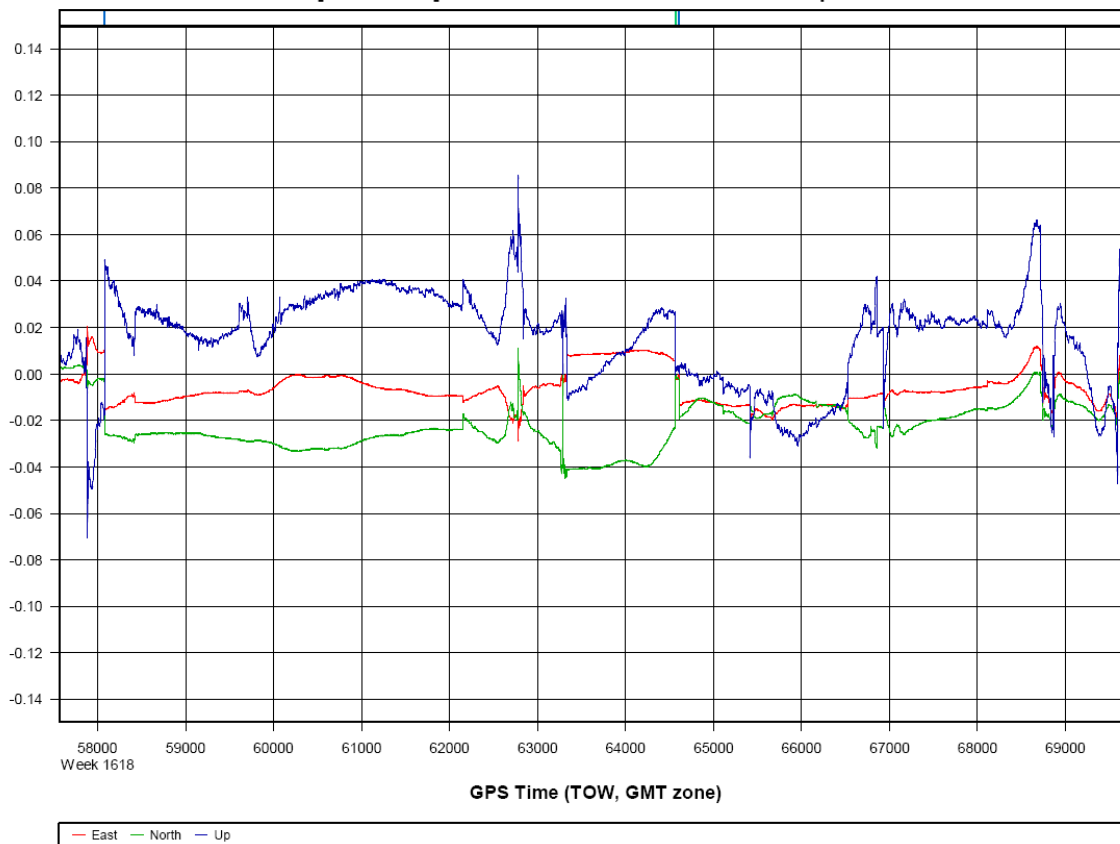
## Statistics

```

-----
Laser Time    : 02:05:16
    
```

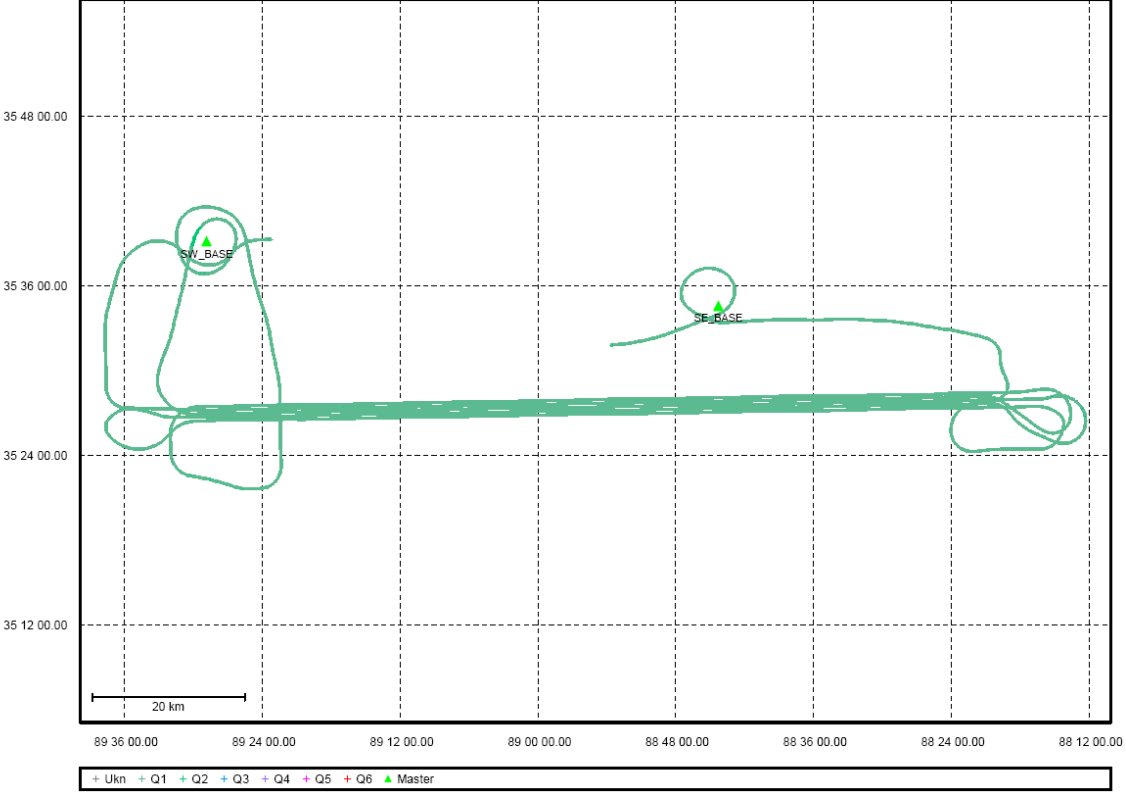
START	STOP	LINE#	ALT	PRF	FREQ	ANGLE	MP	DIV	RC	HDG	Plan File
15:31:15.932	15:33:57.434	256	994	70	34.90	23.00	OFF	NAR	OFF	0.00	269
16:27:06.481	16:49:12.303	254	1313	70	34.90	23.00	OFF	NAR	OFF	0.00	89
16:54:50.409	17:21:58.137	253	1391	70	34.90	23.00	OFF	NAR	OFF	0.00	269
17:27:57.543	17:50:27.966	252	1363	70	34.90	23.00	OFF	NAR	OFF	0.00	89
18:08:33.485	18:35:16.513	251	1339	70	34.90	23.00	OFF	NAR	OFF	0.00	89
18:40:24.818	19:03:03.342	251	1376	70	34.90	23.00	OFF	NAR	OFF	0.00	269
19:09:21.348	19:11:18.85	251	1320	70	34.90	23.00	OFF	NAR	OFF	0.00	269

11009a [Combined] - Forward/Reverse or Combined Separation Plot



Combined - Map Run (3)

Geographic, DMS



Processing Summary Information

Program: GrafNav  
Version: 7.80.2517  
Project: E:\10152U Tenn\2\_Operations\6\_Missions\11009A\3\_Processed\GPS\11009a.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:  
Total in GPB file: 161691  
No processed position: 149490  
Missing Fwd or Rev: 5  
With bad C/A code: 0  
With bad L1 Phase: 0

Measurement RMS Values:  
L1 Phase: 0.0195 (m)  
C/A Code: 0.90 (m)  
L1 Doppler: 0.014 (m/s)

Fwd/Rev Separation RMS Values:  
East: 0.010 (m)  
North: 0.024 (m)  
Height: 0.026 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (12194 occurrences):  
East: 0.010 (m)  
North: 0.024 (m)  
Height: 0.025 (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: 99.4 %  
0.10 - 0.30 m: 0.6 %  
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: 0.0 %

Baseline Distances:  
Maximum: 76.007 (km)  
Minimum: 14.359 (km)  
Average: 37.202 (km)  
First Epoch: 18.933 (km)  
Last Epoch: 22.064 (km)

```
; PROJECT: E:\10152U Tenn\2_Operations\6_Missions\11009A\3_Processed\GPS\11009a.cfg
;
; DATE: Jan. 29/11 (date/time of processing)
; TIME: 18:25:30
; CREATED BY: GrafNav Version 7.80.2517
;
VERSION = 7.80.2517
PROCUSER = jcr
PRODESC = Run*(4)
PROCTIME = 18:24:52 01/29/2011

; Master station # 1 information
ME_MASTER_INDEX = 0
ME_MASTER_NAME = SW_BASE
ME_MASTER_FILE = E:\10152U*Tenn\2_Operations\6_Missions\11009A\1_RawData\ground_gps\SW_Base\SW-BASE_log20110109_151602.gpb
ME_MASTER_POS = 35 39 07.19941 -89 28 50.54551 70.4660
ME_MASTER_ANT = 2.234 -0.009 2.000 0 TPSCR3 0
ME_MASTER_DISABLE = OFF

; Master station # 2 information
ME_MASTER_INDEX = 1
ME_MASTER_NAME = SE_BASE
ME_MASTER_FILE = E:\10152U*Tenn\2_Operations\6_Missions\11009A\1_RawData\ground_gps\SE_Base\SE-BASE_log20110109_140548.gpb
ME_MASTER_POS = 35 34 34.17344 -88 44 17.15714 112.9020
ME_MASTER_ANT = 2.234 -0.009 2.000 0 TPSCR3 0
ME_MASTER_DISABLE = OFF

; Remote station information
REMOTE_FILE = E:\10152U*Tenn\2_Operations\6_Missions\11009A\1_RawData\mgps_11009a.gpb
REMOTE_POS = 35 36 12.23010 -88 55 14.96990 98.4769
REMOTE_ANT = 0.000

; General settings
PROCESS_MODE = 105 108 111 126 ; 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 978623960.0 978636160.0 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

; KAR settings--second values for dual frequency/widelane
KAR_MIN_TIME = 8.00 2.00     ; Min. time for KAR, L1 and L2 (minutes)
KAR_MIN_ADD = 0.00           ; 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 = OFF 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 = IONO          ; 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
KAR_EPOCH_SIZE = 30.0 15.0  ; Computation interval for KAR
KAR_EPOCH_FILTER = 5.0       ; KAR data storage interval
KAR_DISTANCE = 7.500 30.000  ; 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 = ON 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 = ON 2.5 250.0 ; 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 = ON                ; Refine L1/L2 fixed solution
FIX_STRICT = OFF OFF           ; Stricter RMS and reliability tolerances
FIX_CORRECT_SLIP = OFF        ; Correct integer cycle slips
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 25.000 600.0 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
CORR_L2C = ALL ; ALL, OFF to correct for L2C
CORR_L2C_VALUE = FILE ; FILE or correction value in L2 cycles

; Differential measurement standard deviation (weighting) settings
STD_MODE = ELEV ; Measurement weighting mode (ELEV/CNO/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 = 1.0000 ON ; Doppler meas stddev (m/s) (ON/OFF refers to auto-doppler setting)
STD_REJECT = NORMAL 3.0 2.5 3.0 6.0 4.5 ; LevelStr CodeRej PhaseRej DopplerRej CodeReset PhaseReset
STD_SKIP = 15.0 5 1 ; dMaxRejSec, nSkipCodeEpochs, nSkipPhaseEpochs
STD_DIST = LOW 1.00 7.50 ; Distance effects (OFF/HIGH/MEDIUM/LOW/MANUAL) ManHzPPM ManVtPPM
STD_BL = SW_BASE ON ; BLName UseMain(ON/OFF)
STD_BL = SE_BASE 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 MEDIUM ; constraint on vehicle dynamics

; Single point/PPP settings
PPP_SP3_DATUM = WGS84 AUTOMATIC
PPP_ELEV_MASK = 0.00
PPP_PROCUSER = TMitchell
PPP_PROCDISC = PPP*(1)
PPP_PROCESS_MODE = AUTO ; PPP, SFCA, DFCA, AUTO processing modes
PPP_USEP1OVERCA = ON ; Use P1 instad of c/a (on/off)
PPP_USESOLVEDCLOCK = ON ; ON-use receiver time corrected by clock, off-use corr_time directly
PPP_SEPARATECLKS = ON ; ON-use separate code and carrier clock (needed for some Trimble receivers), OFF-disables
PPP_PRECISEONLY = ON ; ON-only satellite with precise eph+clock to be used, OFF use all including broadcast
PPP_PROCESS_DIR = FORWARD BOTH ; Direction (FORWARD/REVERSE), Directions to process (SINGLE/BOTH)
PPP_SLIP_TOL = 20.00 0.500 ; Coarse and fine carrier cycle slip tolerances (cycles)
PPP_LOCKTIME = ON OFF ; Use L1 and L2 locktime counters to detecting slips
PPP_USE_DOPPLER = OFF ; ON if doppler to be used for velocity computation
PPP_DYN_MODE = MEDIUM ; Dynamics mode: AUTO, OFF, LOW, MEDIUM, HIGH
PPP_OUTPUT = NORMAL OFF ; Output modes(first: Normal/extended, second: ON-output even if bad)
PPP_TROPO = ON 5.0000e-011 ; Enable Tropo state (ON/OFF) and tropo state spectral density
PPP_SAT_RESID = OFF ; Output binary satellite residuals to .FBP/RBP (ON/OFF)
; Single point/PPP measurement standard deviation (weighting) settings
PPP_STD_MODE = ELEV ; Measurement weighting mode (ELEV/CNO/STANDARD/ADAPTIVE)
PPP_STD_CODE = 7.0000 ; Code measurement standard deviation (m)
PPP_STD_PHASE = 0.0200 ON ; Carrier meas SD (m) (ON/OFF refers to adjustment for L3)
PPP_STD_DOPPLER = 1.0000 ON ; Doppler meas stddev (m/s) (ON/OFF refers to auto-doppler setting)
PPP_STD_REJECT = NORMAL 3.0 2.5 3.0 6.0 4.5 ; LevelStr CodeRej PhaseRej DopplerRej CodeReset PhaseReset
PPP_STD_SKIP = 15.0 5 1 ; dMaxRejSec, nSkipCodeEpochs, nSkipPhaseEpochs
PPP_STD_RELTOL = 4.00 ; Reliability tolerance for rejecting outliers

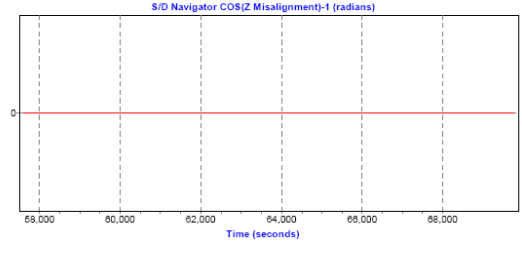
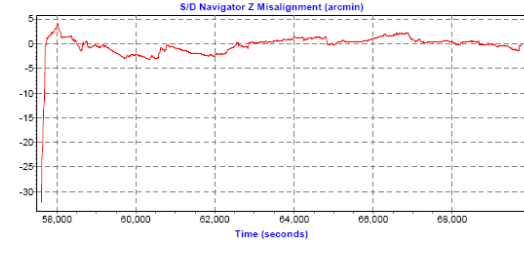
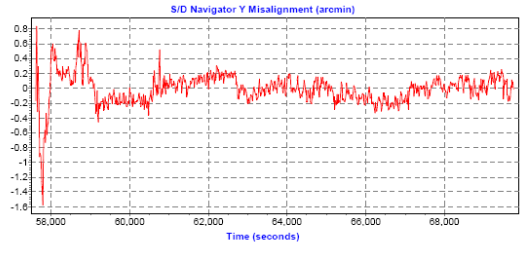
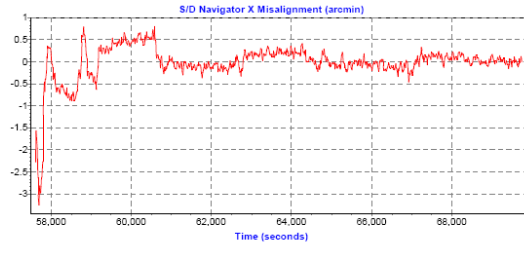
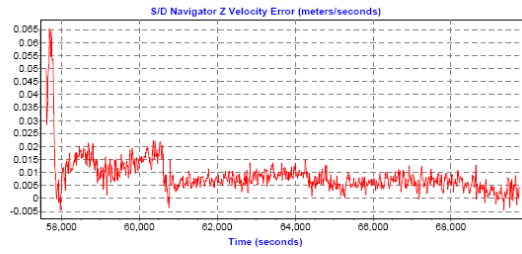
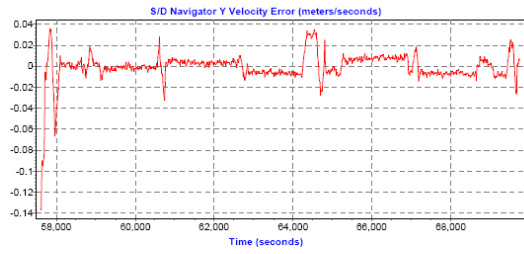
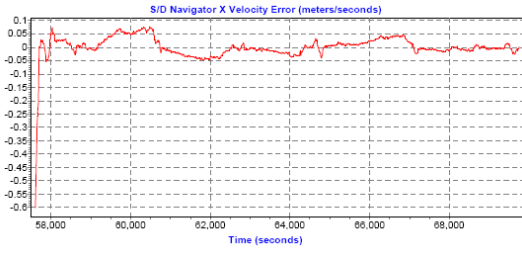
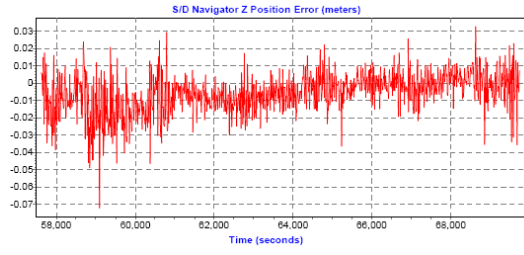
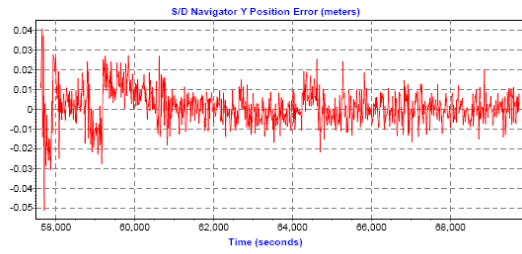
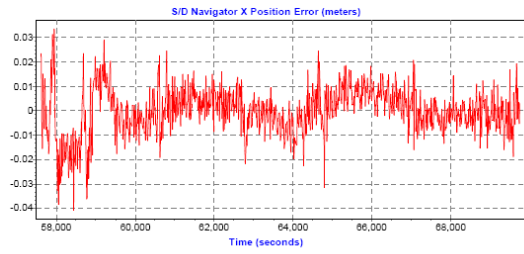
; Combine settings (only used in API)

; Glonass Options
GLN_TOFF = ON 0.0000 1000.0000 0.000000
GLN_SOLVIE_INT = ON ON OFF ; GLN-Base, Use-GLN-in-KAR, Do-GPSONLY-if-kar-fails

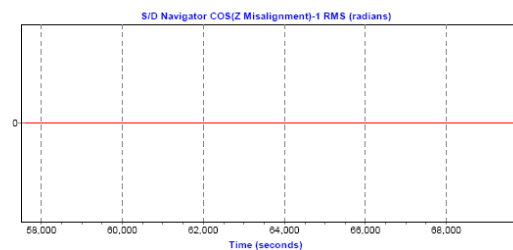
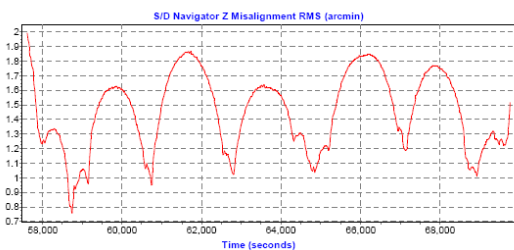
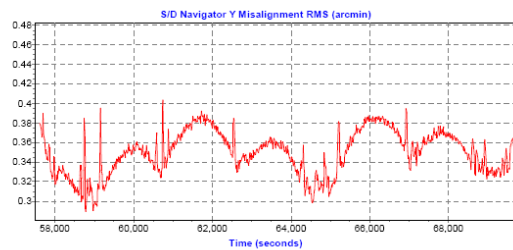
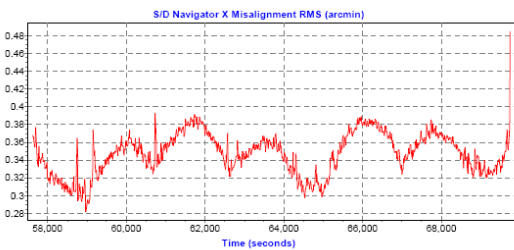
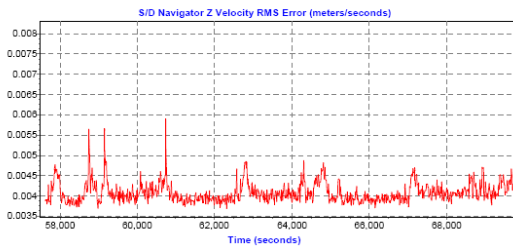
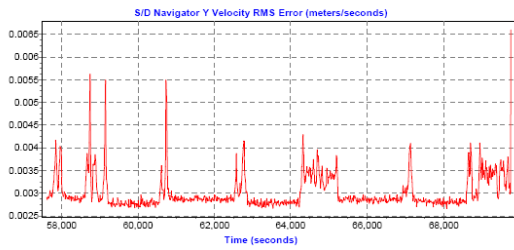
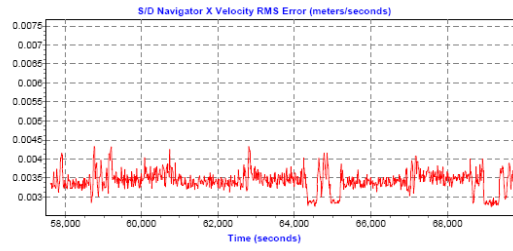
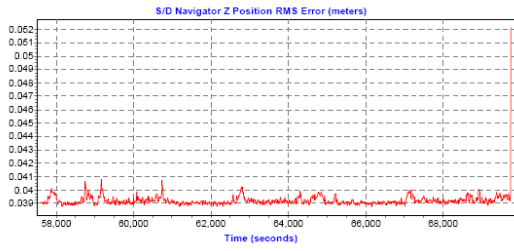
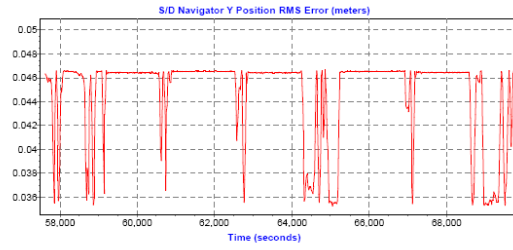
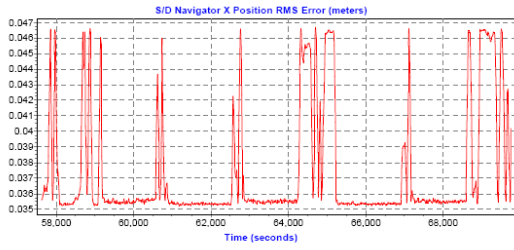
; The following are Additional (user) items

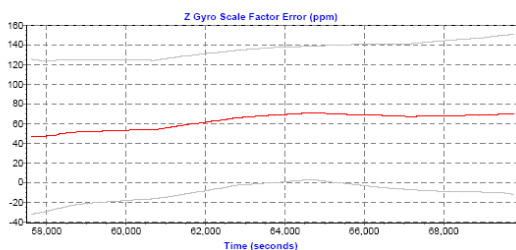
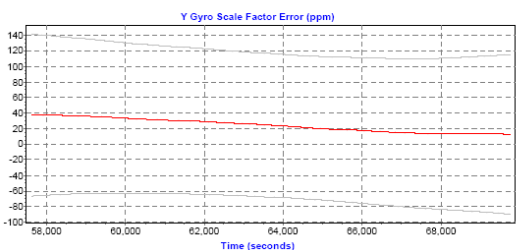
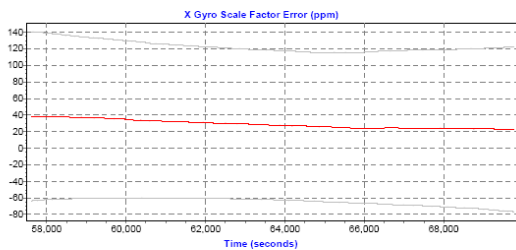
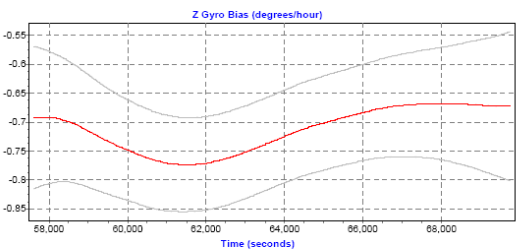
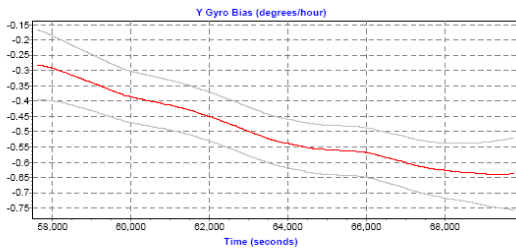
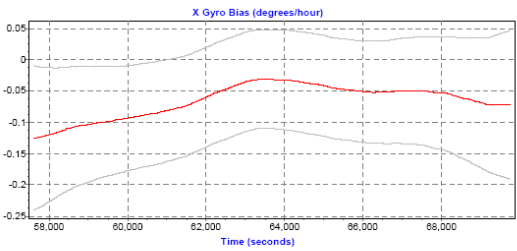
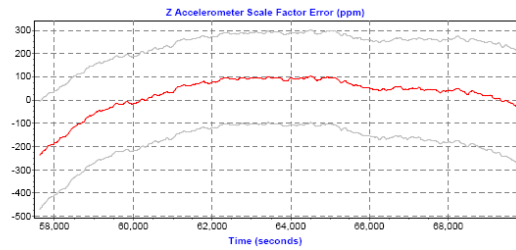
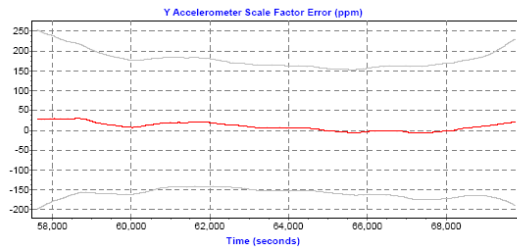
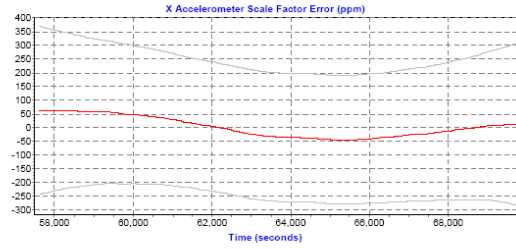
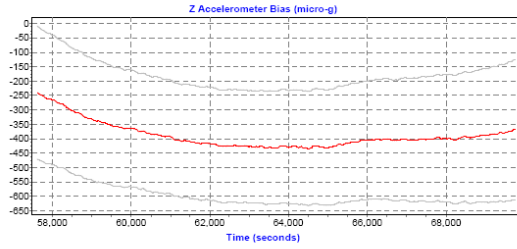
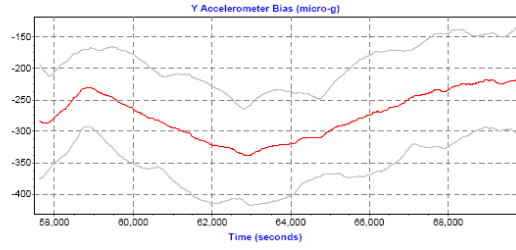
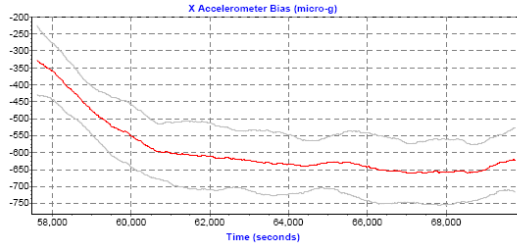
; End-of-file

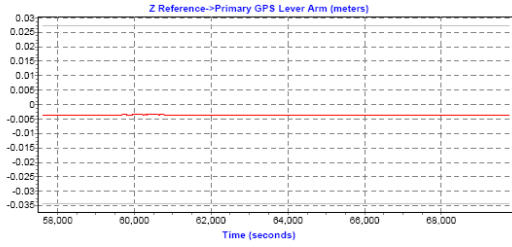
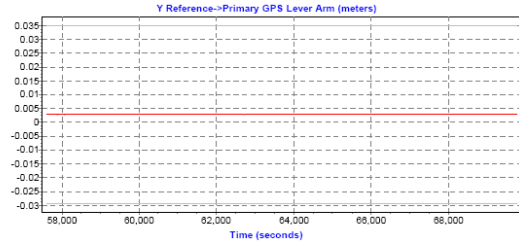
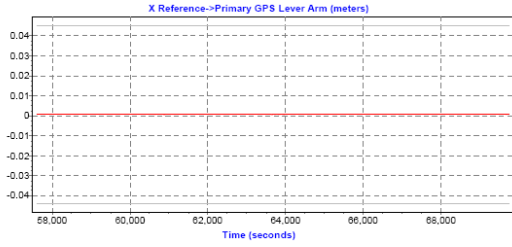
```



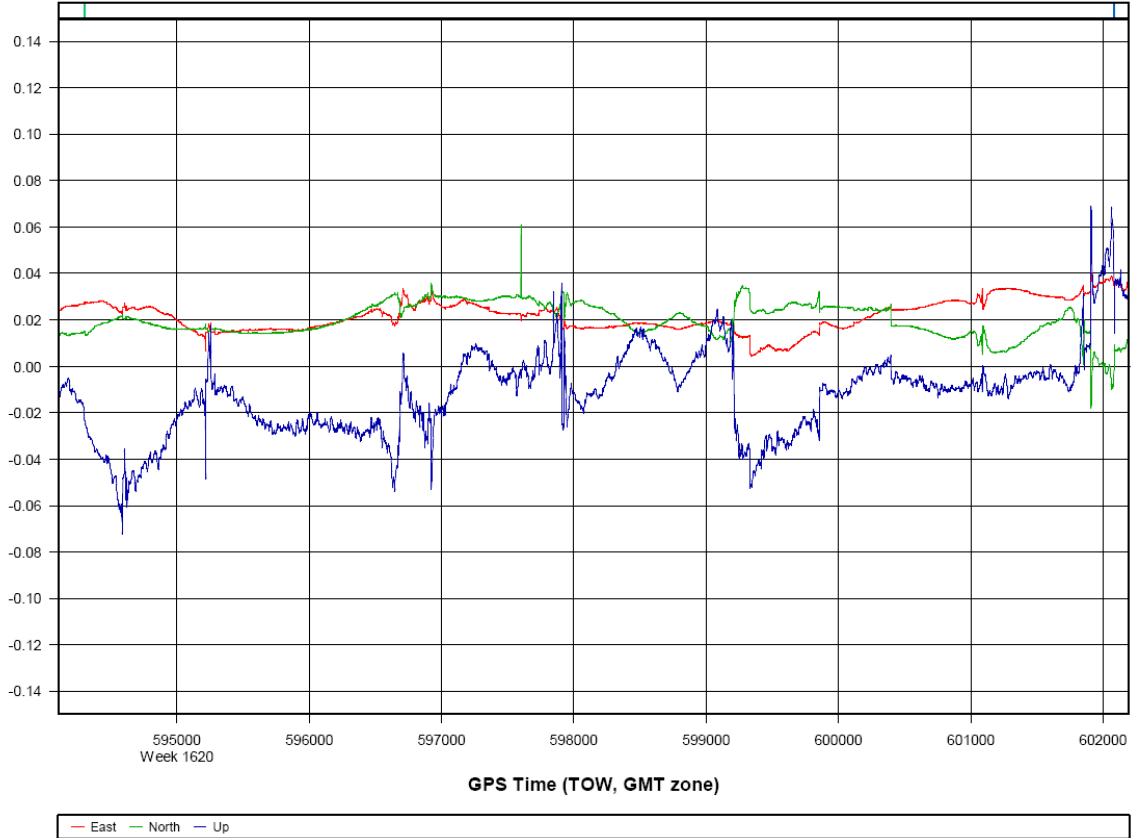






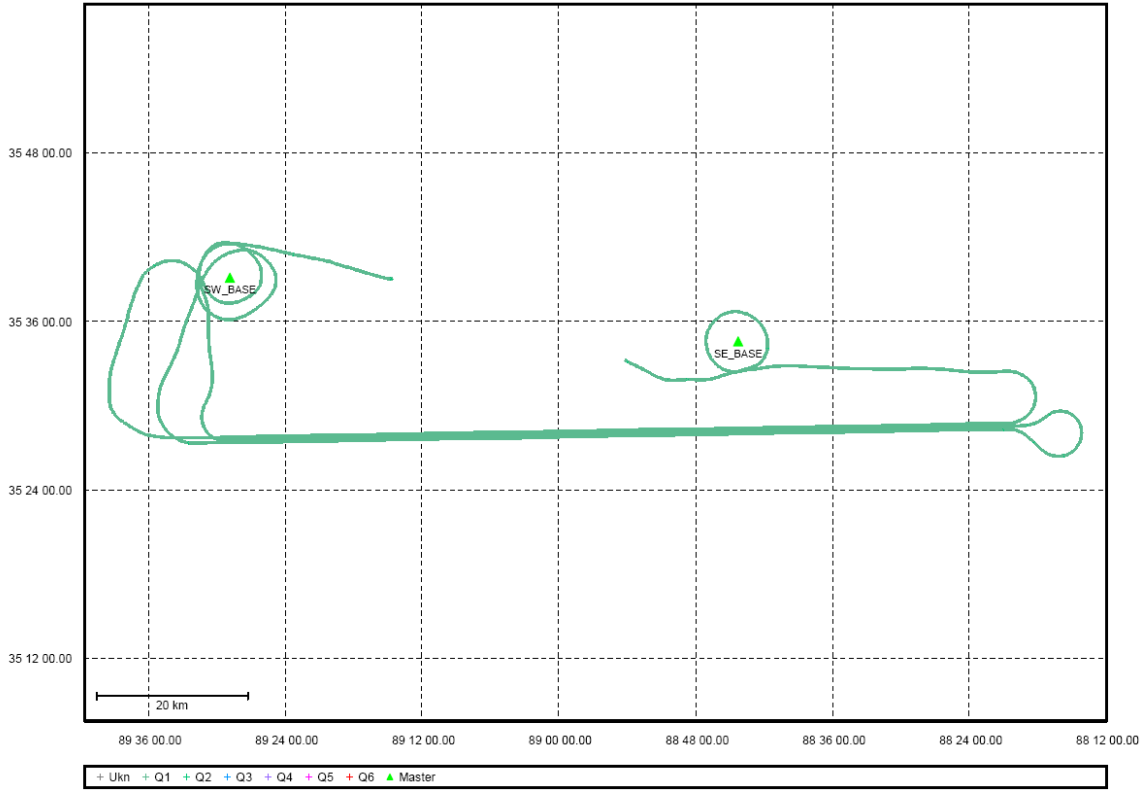


11029a [Combined] - Forward/Reverse or Combined Separation Plot



# Combined - Map Run (2)

Geographic, DMS



Processing Summary Information

Program: GrafNav  
Version: 7.80.2517  
Project: C:\Projects\10152U Tenn\2\_Operations\6\_Missions\11029a\3\_Processed\GPS\11029  
a.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:

Total in GPB file: 109300  
No processed position: 101199  
Missing Fwd or Rev: 4  
With bad C/A code: 0  
With bad L1 Phase: 0

Measurement RMS Values:

L1 Phase: 0.0179 (m)  
C/A Code: 0.84 (m)  
L1 Doppler: 0.016 (m/s)

Fwd/Rev Separation RMS Values:

East: 0.024 (m)  
North: 0.023 (m)  
Height: 0.024 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (8095 occurrences):

East: 0.023 (m)  
North: 0.021 (m)  
Height: 0.022 (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: 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: 0.2 %

Baseline Distances:

Maximum: 79.186 (km)  
Minimum: 6.392 (km)  
Average: 36.152 (km)  
First Epoch: 11.070 (km)  
Last Epoch: 17.117 (km)

```

; PROJECT: C:\Projects\10152U Tenn\2_Operations\6_Missions\11029a\3_Processed\GPS\11029a.cfg
;
; DATE: Jan. 30/11 (date/time of processing)
; TIME: 20:07:19
; CREATED BY: GrafNav Version 7.80.2517
;
VERSION = 7.80.2517
PROCUSER = jcr
PRODESC = Run*(3)
PROCTIME = 20:06:51 01/30/2011

; Master station # 1 information
MB_MASTER_INDEX = 0
MB_MASTER_NAME = SE_BASE
MB_MASTER_FILE = C:\Projects\10152U*Tenn\2_Operations\6_Missions\11029a\1_RawData\SE_Base\SE-BASE_log20110129_154622.gpb
MB_MASTER_POS = 35 34 34.17344 -88 44 17.15714 112.9020
MB_MASTER_ANT = 2.234 -0.009 2.000 0 TPGSR3 0
MB_MASTER_DISABLE = OFF

; Master station # 2 information
MB_MASTER_INDEX = 1
MB_MASTER_NAME = SW_BASE
MB_MASTER_FILE = C:\Projects\10152U*Tenn\2_Operations\6_Missions\11029a\1_RawData\SW_Base\SW-BASE_log20110129_165418.gpb
MB_MASTER_POS = 35 39 07.19941 -89 28 50.54551 70.4660
MB_MASTER_ANT = 2.234 -0.009 2.000 0 TPGSR3 0
MB_MASTER_DISABLE = OFF

; Remote station information
REMOTE_FILE = C:\Projects\10152U*Tenn\2_Operations\6_Missions\11029a\1_RawData\mgps_11029_06sen187_435H.gpb
REMOTE_POS = 35 36 12.42813 -88 55 15.86898 98.3994
REMOTE_ANT = 0.000

; General settings
PROCESS_MODE = 105 108 111 126 ; 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 980370100.0 980378200.0 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

; KAR settings--second values for dual frequency/widelane
KAR_MIN_TIME = 8.00 2.00    ; Min. time for KAR, L1 and L2 (minutes)
KAR_MIN_ADD = 0.00          ; 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 = OFF 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 = IONO         ; 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
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 30.000 ; 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 = ON 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 = ON 2.5 250.0 ; Engage KAR if <dist1, reset if >dist2 (km)
USERKAR = 594298.0 FORWARD NORESET ; Engage KAR at this time
USERKAR = 602085.0 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 = ON ; Refine L1/L2 fixed solution
FIX_STRICT = OFF OFF ; Stricter RMS and reliability tolerances
FIX_CORRECT_SLIP = OFF ; Correct integer cycle slips
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 25.000 600.0 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
CORR_L2C = ALL ; ALL, OFF to correct for L2C
CORR_L2C_VALUE = FILE ; FILE or correction value in L2 cycles

; Differential 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 = 1.0000 ON ; Doppler meas stddev (m/s) (ON/OFF referes to auto-doppler setting)
STD_REJECT = NORMAL 3.0 2.5 3.0 6.0 4.5 ; LevelStr CodeRej PhaseRej DopplerRej CodeReset PhaseReset
STD_SKIP = 15.0 5 1 ; dMaxRejSec, nSkipCodeEpochs, nSkipPhaseEpochs
STD_DIST = LOW 1.00 7.50 ; Distance effects (OFF/HIGH/MEDIUM/LOW/MANUAL) ManHzPPM ManVtPPM
STD_BL = SE_BASE ON ; BLName UseMain(ON/OFF)
STD_BL = SW_BASE 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 MEDIUM ; constraint on vehicle dynamics

; Single poing/PPP settings
PPP_SP3_DATUM = WGS84 AUTOMATIC
PPP_ELEV_MASK = 0.00
PPP_PROCUSE = Tmitchell
PPP_PROCDESC = PPP*(1)
PPP_PROCESS_MODE = AUTO ; PPP, SFCA, DFCA, AUTO processing modes
PPP_USEP1OVERCA = ON ; Use P1 instad of c/a (on/off)
PPP_USESOLVEDCLOCK = ON ; ON-use receiver time corrected by clock, off-use corr_time directly
PPP_SEPARATECLKS = ON ; ON-use separate code and carrier clock (needed for some Trimble receivers), OFF-disables
PPP_PRECISEONLY = ON ; ON-only satellite with precise eph+clock to be used, OFF use all including broadcast
PPP_PROCESS_DIR = FORWARD BOTH ; Direction (FORWARD/REVERSE), Directions to process (SINGLE/BOTH)
PPP_SLIP_TOL = 20.00 0.500 ; Coarse and fine carrier cycle slip tolerances (cycles)
PPP_LOCKTIME = ON OFF ; Use L1 and L2 locktime counters to detecting slips
PPP_USE_DOPPLER = OFF ; ON if doppler to be used for velocity computation
PPP_DYN_MODE = MEDIUM ; Dynamics mode: AUTO, OFF, LOW, MEDIUM, HIGH
PPP_OUTPUT = NORMAL OFF ; Output modes(first: Normal/extended, second: ON-output even if bad)
PPP_TROPO = ON 5.0000e-011 ; Enable Tropo state (ON/OFF) and tropo state spectral density
PPP_SAT_RESID = OFF ; Output binary satellite residuals to .FBP/RBP (ON/OFF)
; Single point/PPP measurement standard deviation (weighting) settings
PPP_STD_MODE = ELEV ; Measurement weighting mode (ELEV/CN0/STANDARD/ADAPTIVE)

PPP_STD_CODE = 7.0000 ; Code measurement standard deviation (m)
PPP_STD_PHASE = 0.0200 ON ; Carrier meas SD (m) (ON/OFF refers to adjustment for L3)
PPP_STD_DOPPLER = 1.0000 ON ; Doppler meas stddev (m/s) (ON/OFF referes to auto-doppler setting)
PPP_STD_REJECT = NORMAL 3.0 2.5 3.0 6.0 4.5 ; LevelStr CodeRej PhaseRej DopplerRej CodeReset PhaseReset
PPP_STD_SKIP = 15.0 5 1 ; dMaxRejSec, nSkipCodeEpochs, nSkipPhaseEpochs
PPP_STD_RELTOL = 4.00 ; Reliability tolerance for rejecting outliers

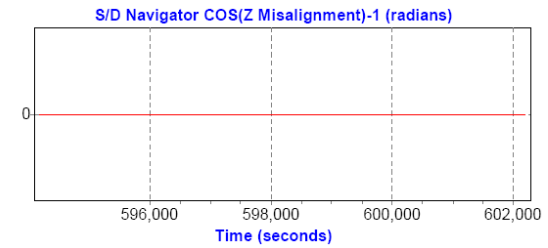
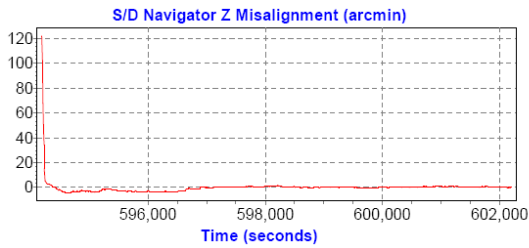
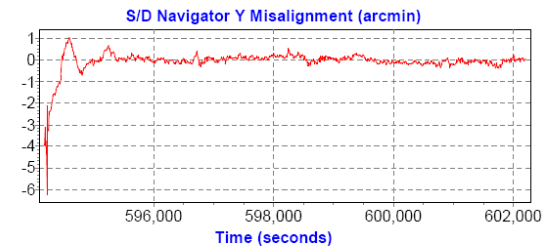
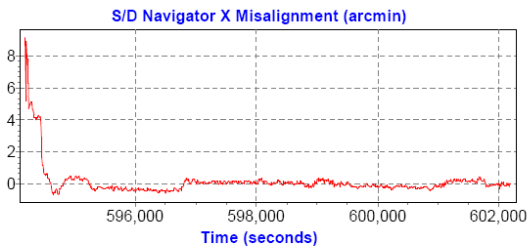
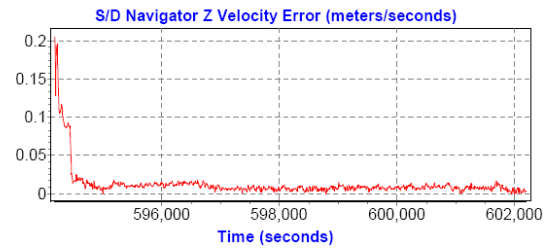
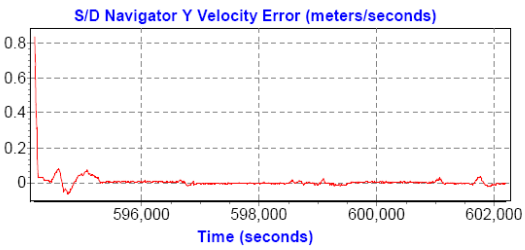
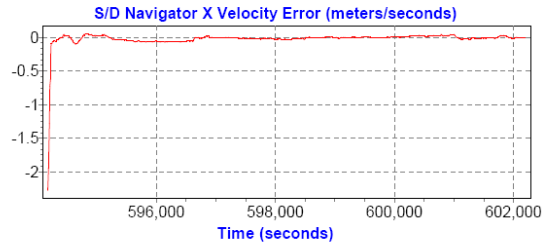
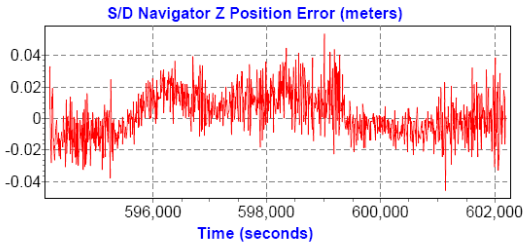
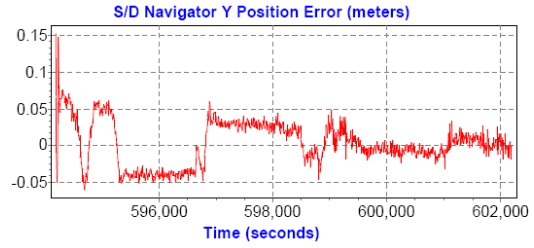
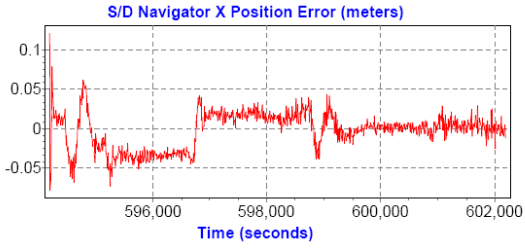
; Combine settings (only used in API)

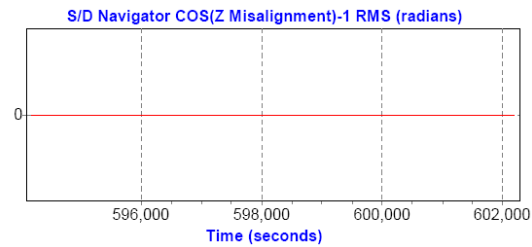
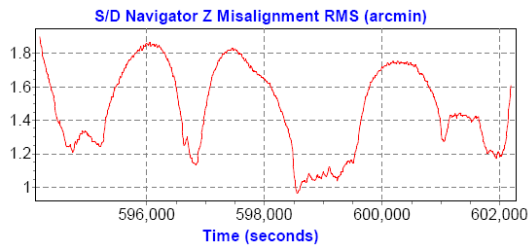
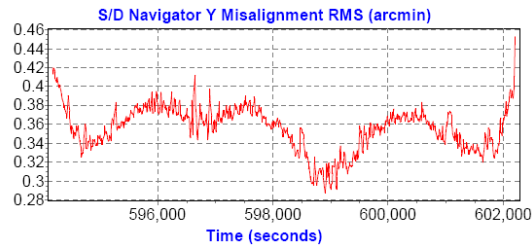
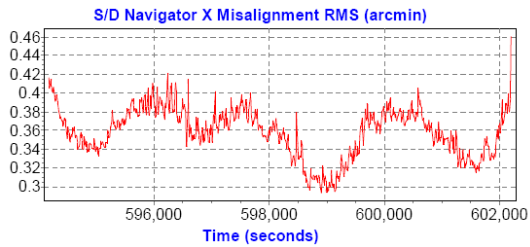
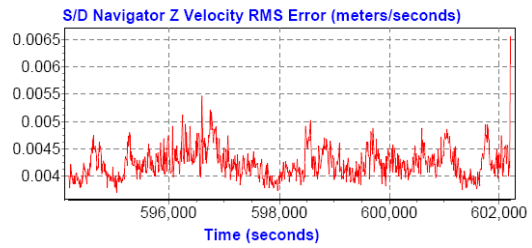
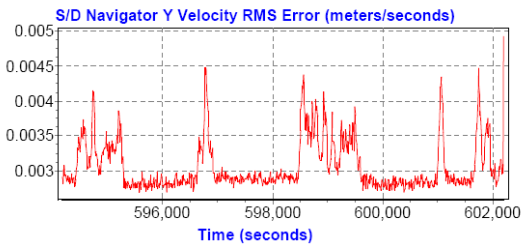
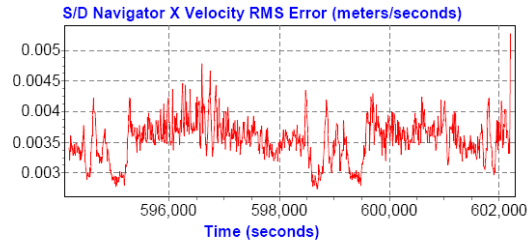
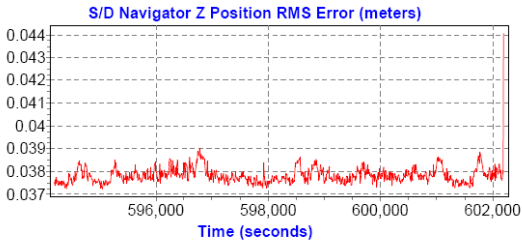
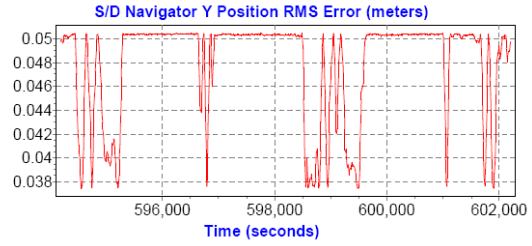
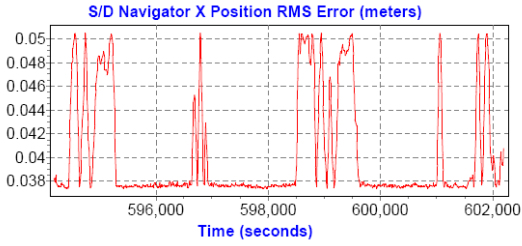
; Glonass Options
GLN_TOFF = ON 0.0000 1000.0000 0.000000
GLN_SOLVE_INT = ON ON OFF ; GLN-Base, Use-GLN-in-KAR, Do-GPSONLY-if-kar-fails

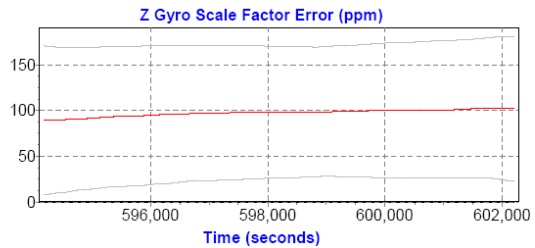
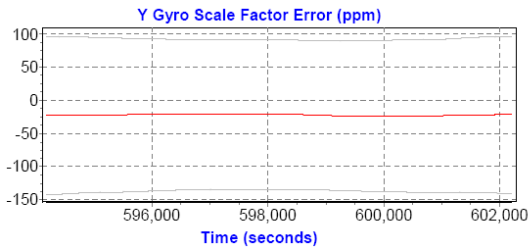
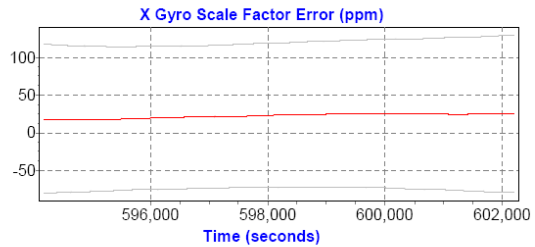
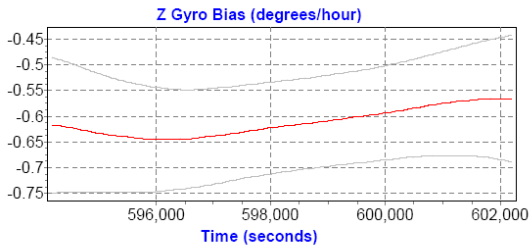
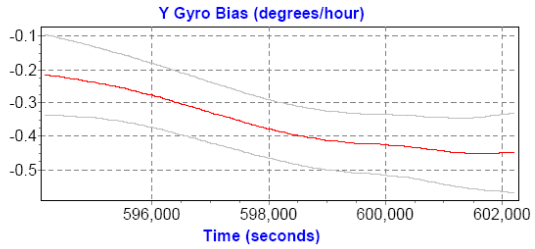
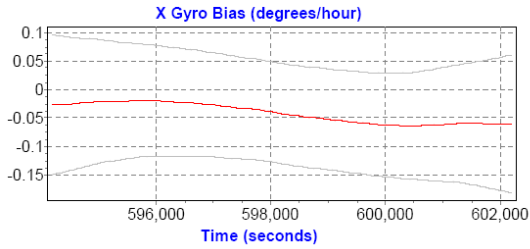
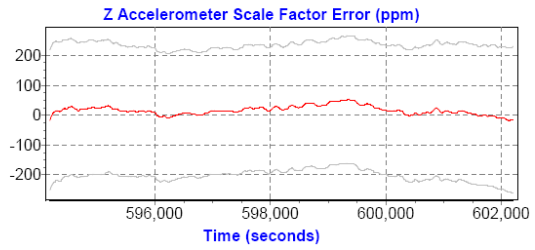
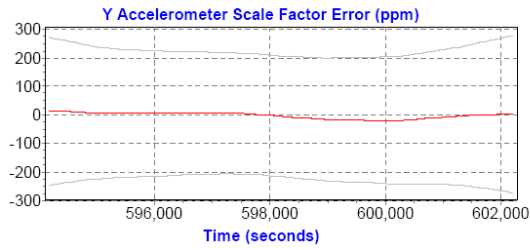
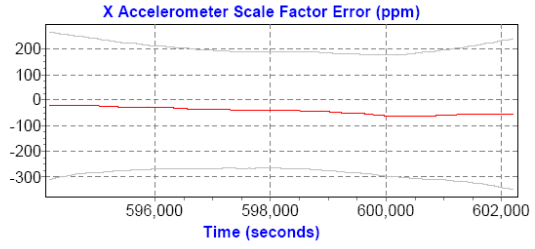
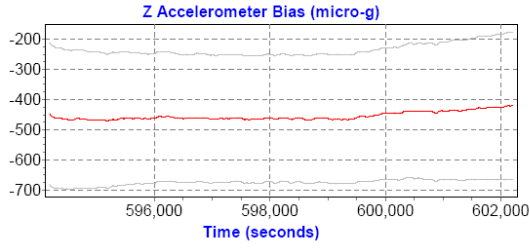
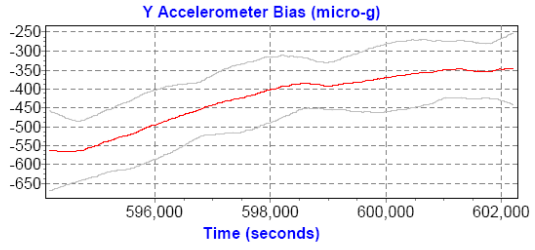
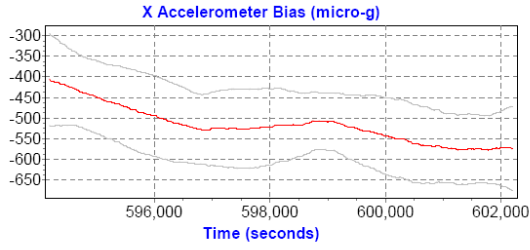
; The following are Additional (user) items

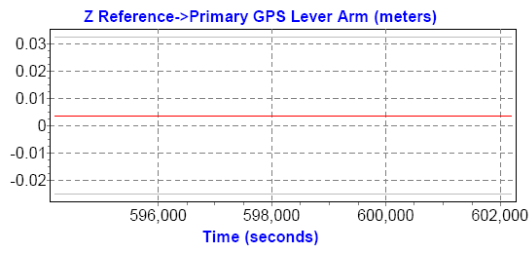
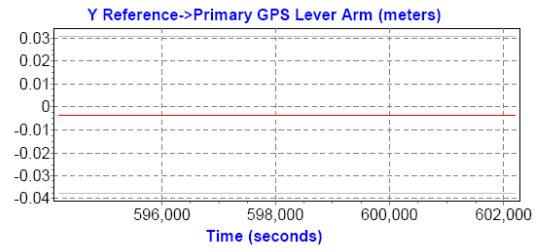
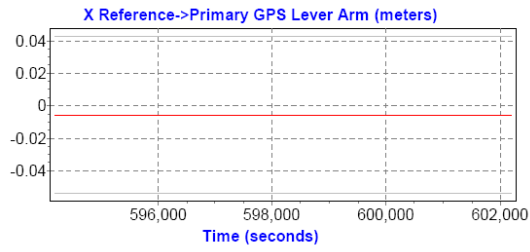
; End-of-file

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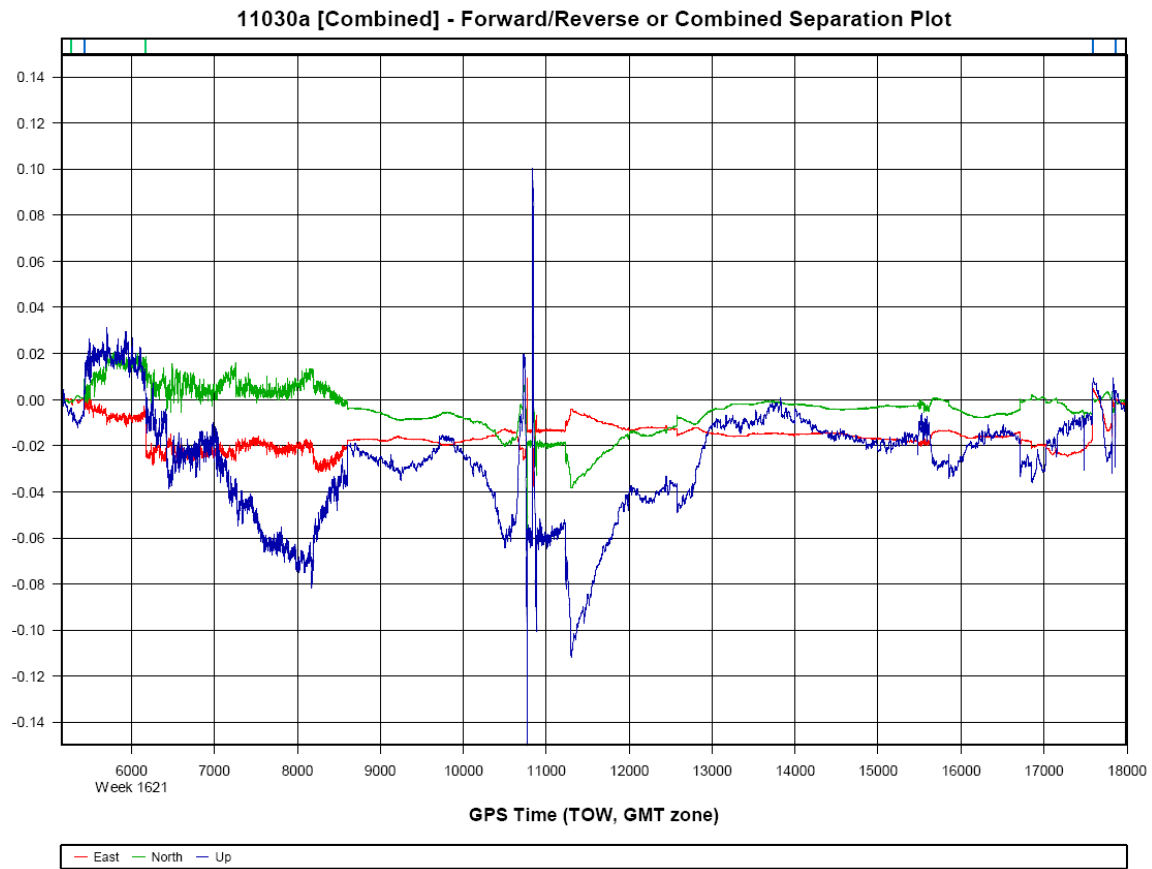






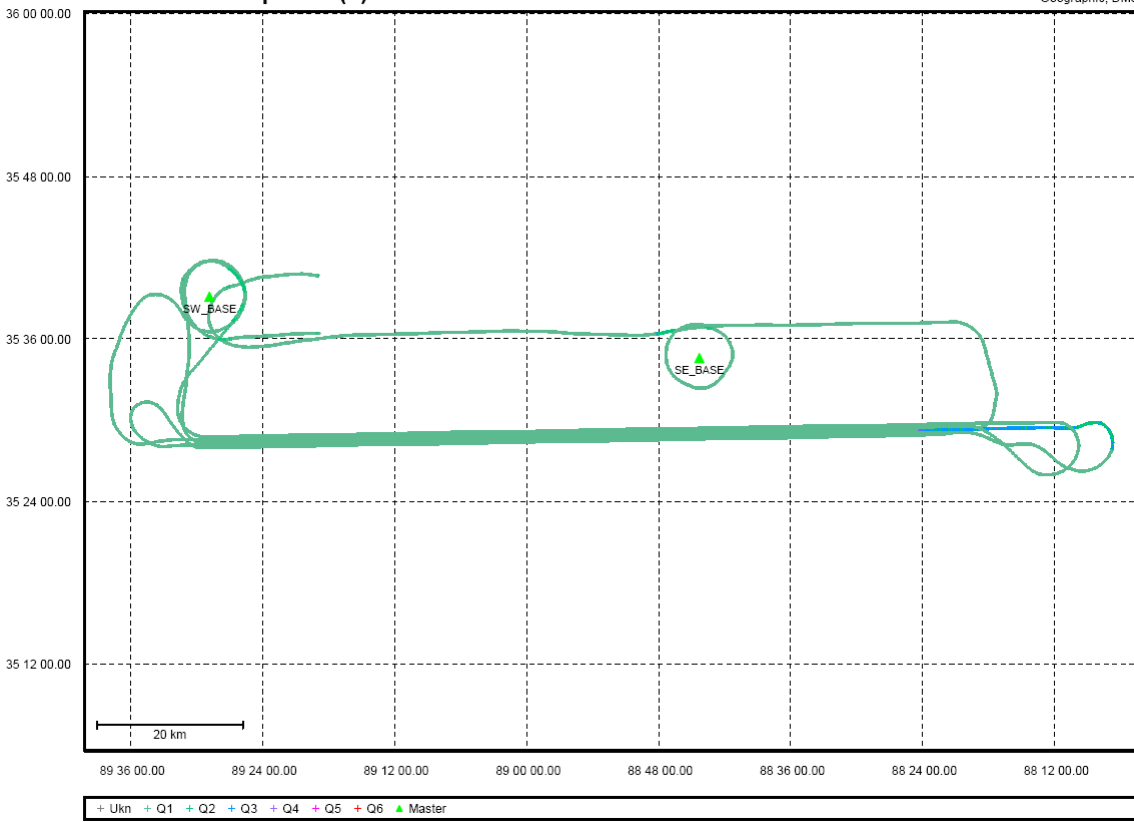


Flight Log/Base Station/GPS Processing – 01.30.2011



# Combined - Map Run (3)

Geographic, DMS



Processing Summary Information

Program: GrafNav  
Version: 7.80.2517  
Project: C:\Projects\10152U Tenn\2\_Operations\6\_Missions\11030a\3\_Processed\GPS\11030  
a.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:

Total in GPB file:	158690
No processed position:	145839
Missing Fwd or Rev:	4
With bad C/A code:	0
With bad L1 Phase:	0

Measurement RMS Values:

L1 Phase:	0.0161 (m)
C/A Code:	0.84 (m)
L1 Doppler:	0.014 (m/s)

Fwd/Rev Separation RMS Values:

East:	0.017 (m)
North:	0.012 (m)
Height:	0.038 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (1124 occurrences):

East:	0.010 (m)
North:	0.012 (m)
Height:	0.038 (m)

Quality Number Percentages:

Q 1:	95.2 %
Q 2:	2.5 %
Q 3:	2.3 %
Q 4:	0.1 %
Q 5:	0.0 %
Q 6:	0.0 %

Position Standard Deviation Percentages:

0.00 - 0.10 m:	96.8 %
0.10 - 0.30 m:	3.2 %
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:	3.1 %
---------------	-------

Baseline Distances:

Maximum:	83.154 (km)
Minimum:	1.367 (km)
Average:	34.908 (km)
First Epoch:	17.252 (km)
Last Epoch:	15.877 (km)



```

; PROJECT: C:\Projects\10152U Tenn\2_Operations\6_Missions\11030a\3_Processed\GPS\11030a.cfg
;
; DATE: Jan. 30/11 (date/time of processing)
; TIME: 20:38:37
; CREATED BY: GrafNav Version 7.80.2517
;

VERSION = 7.80.2517
PROCUSER = jcr
PRODESC = Run*(4)
PROCTIME = 20:34:49 01/30/2011

; Master station # 1 information
MB_MASTER_INDEX = 0
MB_MASTER_NAME = SE_BASE
MB_MASTER_FILE = C:\Projects\10152U*Tenn\2_Operations\6_Missions\11030a\1_RawData\SE_Base\SE-BASE_log20110129_154622.gpb
MB_MASTER_POS = 35 34 34.17344 -88 44 17.15714 112.9020
MB_MASTER_ANT = 2.234 -0.009 2.000 0 TP8GR3 0
MB_MASTER_DISABLE = OFF

; Master station # 2 information
MB_MASTER_INDEX = 1
MB_MASTER_NAME = SW_BASE
MB_MASTER_FILE = C:\Projects\10152U*Tenn\2_Operations\6_Missions\11030a\1_RawData\SW_Base\SW-BASE_log20110129_165418.gpb
MB_MASTER_POS = 35 39 07.19941 -89 28 50.54551 70.4660
MB_MASTER_ANT = 2.234 -0.009 2.000 0 TP8GR3 0
MB_MASTER_DISABLE = OFF

; Remote station information
REMOTE_FILE = C:\Projects\10152U*Tenn\2_Operations\6_Missions\11030a\1_RawData\mgps_11030_06sen187_435H.gpb
REMOTE_POS = 35 36 12.47614 -88 55 15.89464 99.8927
REMOTE_ANT = 0.000

; General settings
PROCESS_MODE = 105 108 111 126 ; Processing modes (GrafNav only)

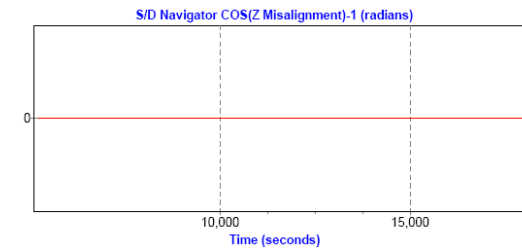
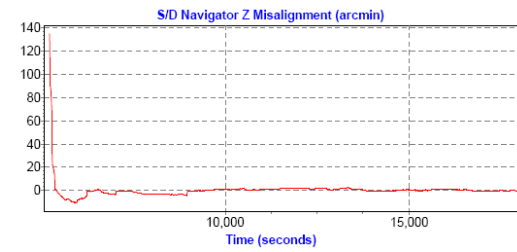
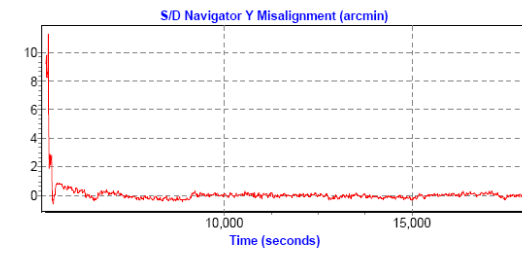
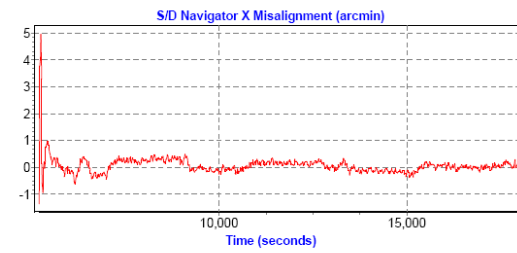
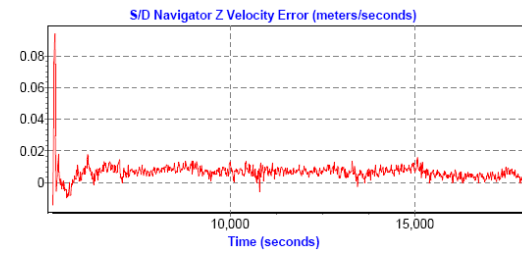
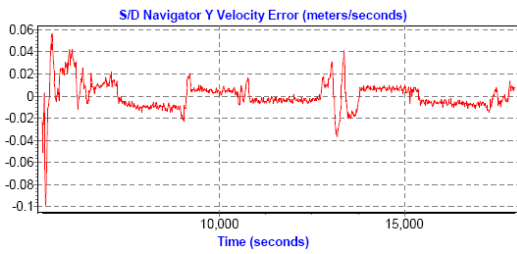
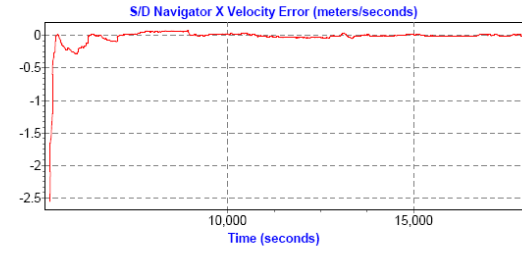
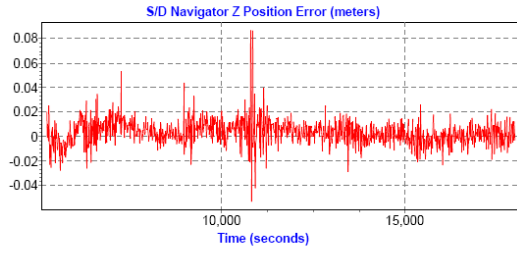
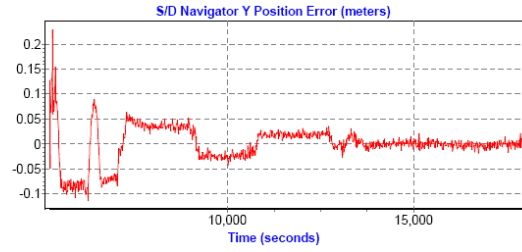
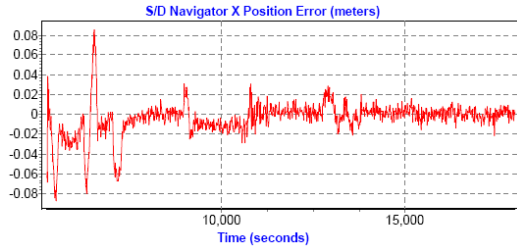
DATUM = NAD83 AUTO ; Processing Datum
INPDATUM = ON NAD83 AUTO ; Input Datum (ON=Use processing datum)
ELEV_MASK = 10.0 ; Elevation mask (deg)
GRID = UTM 15 31 ; Grid info

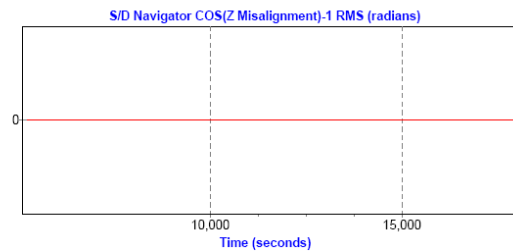
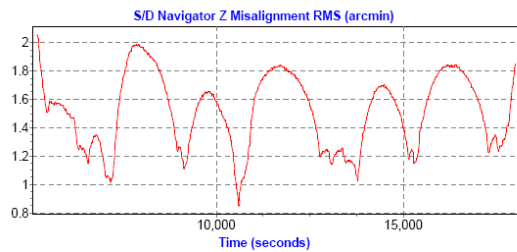
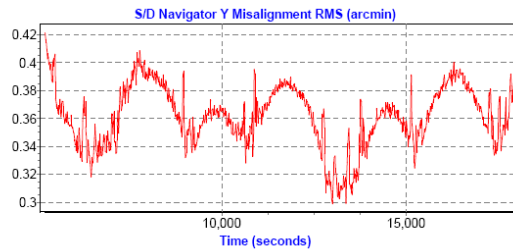
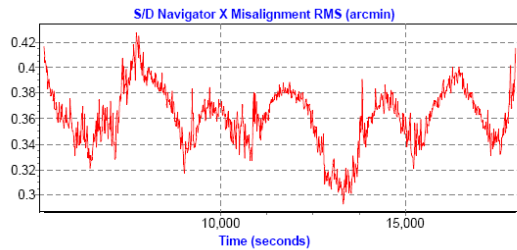
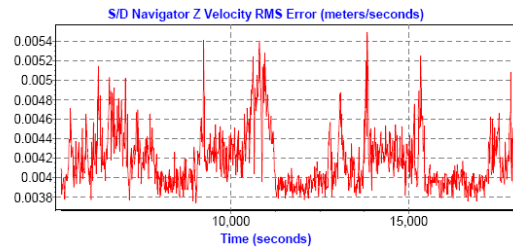
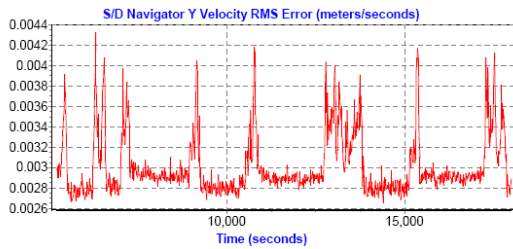
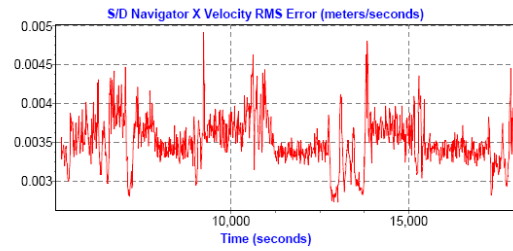
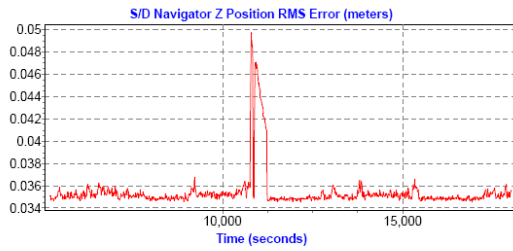
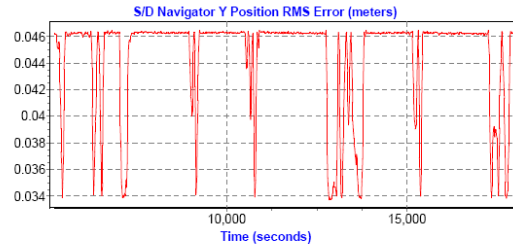
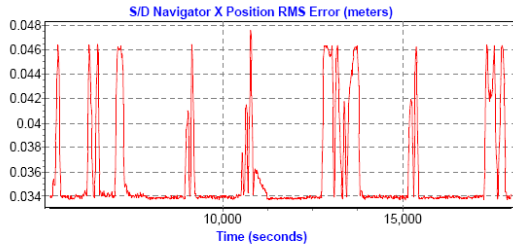
CYCLE_TEST = BOTH ; Cycle slip test method
STATIC_SLIP_TOL = 0.40 ; slip tolerance in static mode (cycles)
USE_DOPPLER = ON OFF ; Use doppler meas. for phase, for code-only

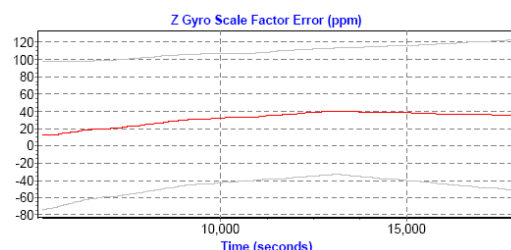
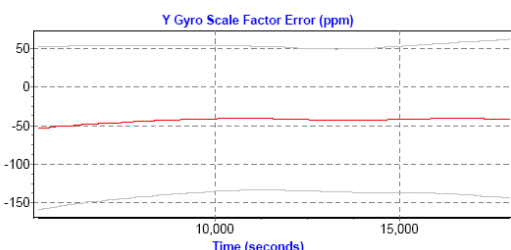
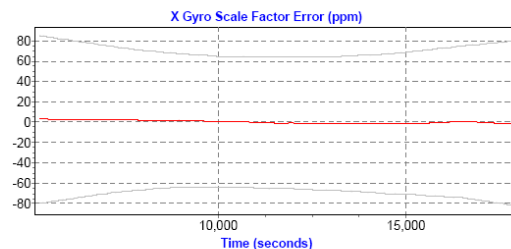
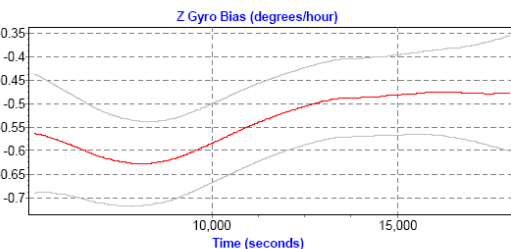
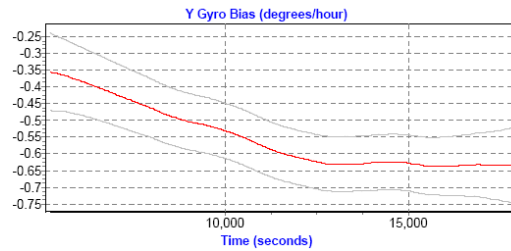
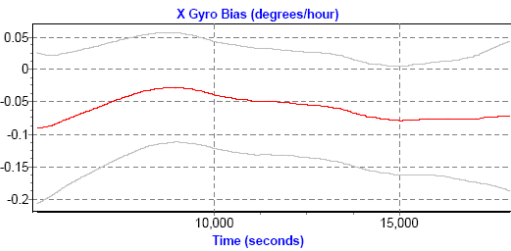
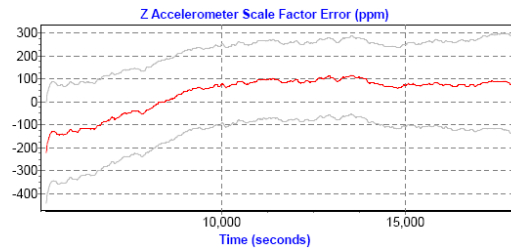
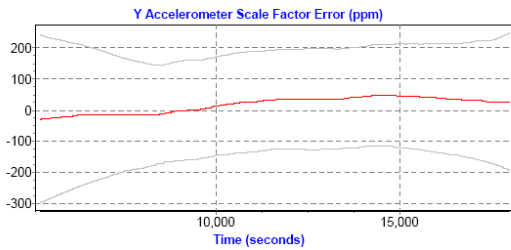
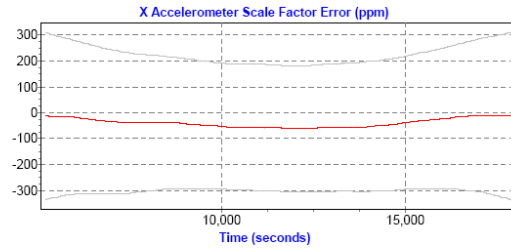
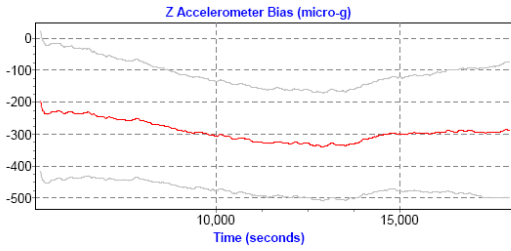
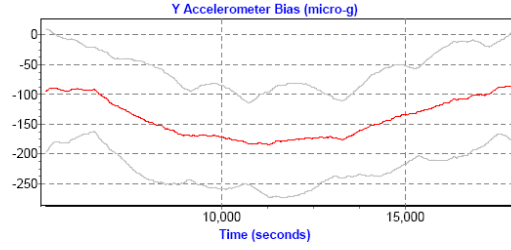
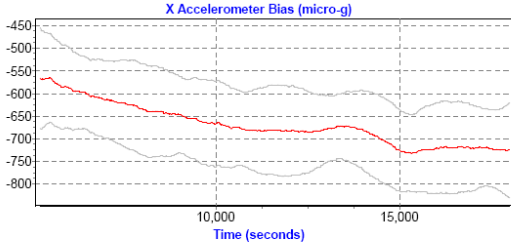
BASE_SAT = 99 ; Base satellite (99-default)

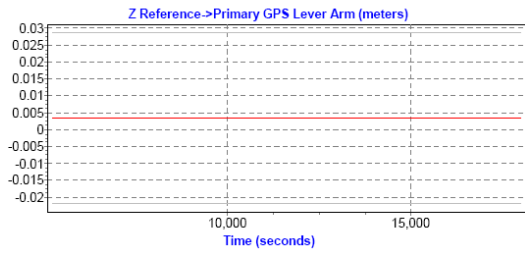
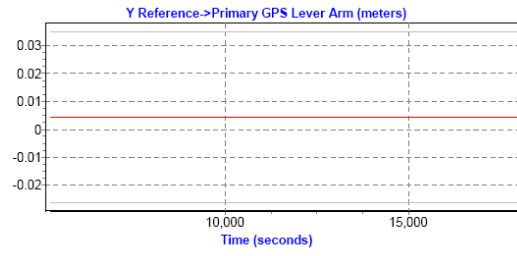
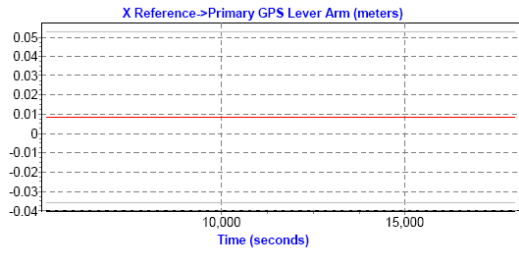
TIMERANGE = RANGE 980385950.0 980398800.0 2 0 ; Processing time range

```









# Flight Log/Base Station/GPS Processing – 02.04.2011

```

-----
Flight Log
-----
Project Number: Dyersburg,TN
S/N           : 06sen187
Operator      : J.Stump
Pilot(s)     : J.Melton
Aircraft     : 435H
Airport      : KMKL
Mission      : 11035A
Wheels Up    : 20:30
Flight Length:
HOBBES Start : 88.8
HOBBES End   :
  
```

```

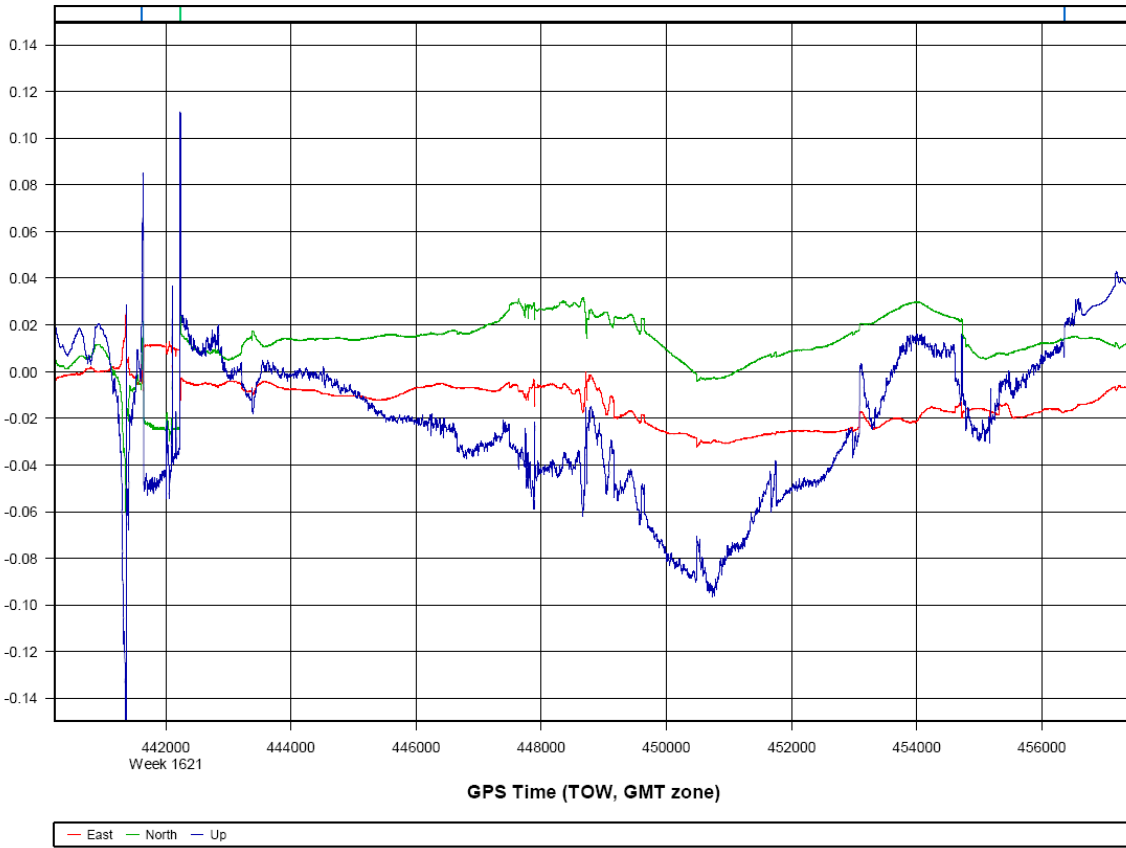
-----
Weather
-----
Date          : February 03, 2011
Julian Day    : 034
Temperature   : -2
Visibility    : 10
Clouds        : ovc100
Precipitation : 0
Wind Dir      : 030
Wind Speed    : 6
Pressure      : 30.43
  
```

```

-----
Statistics
-----
Laser Time   : 02:30:46
  
```

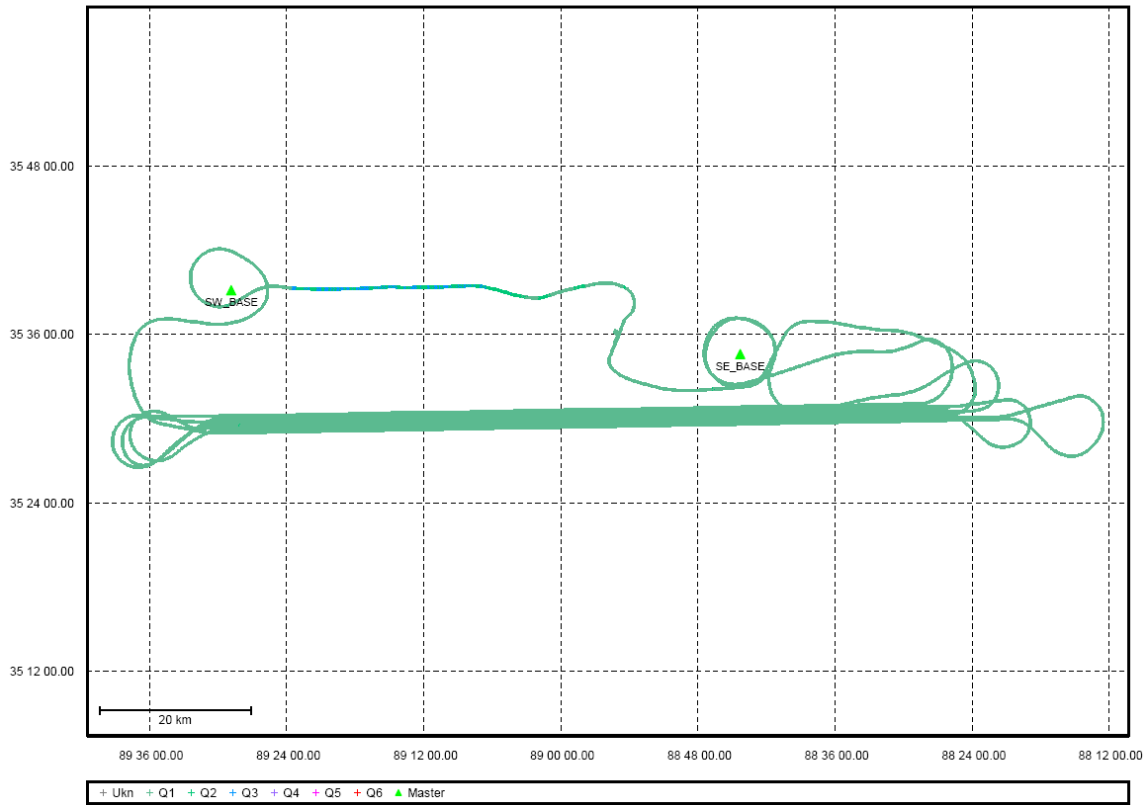
START	STOP	LINE#	ALT	PRF	FREQ	ANGLE	MP	DIV	RC	HDG	Plan File
02:40:23.581	02:41:04.282	308	1151	70	40.00	21.50	OFF	NAR	OFF	0.00	89
02:41:42.082	02:41:58.882	308	1117	70	40.00	21.50	OFF	NAR	OFF	0.00	89
02:57:27.396	02:57:40.496	308	1124	70	40.00	21.50	OFF	NAR	OFF	0.00	89
03:01:49.1	03:24:39.022	307	1184	70	40.00	21.50	OFF	NAR	OFF	0.00	89
03:32:15.729	03:54:52.952	307	1150	70	40.00	21.50	OFF	NAR	OFF	0.00	269
04:00:46.358	04:21:47.679	306	1190	70	40.00	21.50	OFF	NAR	OFF	0.00	89
04:46:32.505	05:08:50.428	305	1087	70	40.00	21.50	OFF	NAR	OFF	0.00	269
05:14:54.634	05:35:21.855	304	1206	70	40.00	21.50	OFF	NAR	OFF	0.00	89
05:41:35.162	06:03:12.085	302	1119	70	40.00	21.50	OFF	NAR	OFF	0.00	269
06:11:05.093	06:30:27.413	302	1183	70	40.00	21.50	OFF	NAR	OFF	0.00	89

11035a [Combined] - Forward/Reverse or Combined Separation Plot



# Combined - Map Run (2)

Geographic, DMS





Processing Summary Information

Program: GrafNav  
Version: 7.80.2517  
Project: C:\Projects\10152U Tenn\2\_Operations\6\_Missions\11035a\3\_Processed\GPS\11035  
a.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:

Total in GPB file:	172643
No processed position:	155391
Missing Fwd or Rev:	3
With bad C/A code:	0
With bad L1 Phase:	0

Measurement RMS Values:

L1 Phase:	0.0198 (m)
C/A Code:	0.85 (m)
L1 Doppler:	0.014 (m/s)

Fwd/Rev Separation RMS Values:

East:	0.018 (m)
North:	0.021 (m)
Height:	0.040 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (15601 occurrences):

East:	0.017 (m)
North:	0.017 (m)
Height:	0.038 (m)

Quality Number Percentages:

Q 1:	97.1 %
Q 2:	2.1 %
Q 3:	0.9 %
Q 4:	0.0 %
Q 5:	0.0 %
Q 6:	0.0 %

Position Standard Deviation Percentages:

0.00 - 0.10 m:	97.2 %
0.10 - 0.30 m:	2.8 %
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:	2.8 %
---------------	-------

Baseline Distances:

Maximum:	74.422 (km)
Minimum:	4.426 (km)
Average:	30.473 (km)
First Epoch:	14.557 (km)
Last Epoch:	14.600 (km)

```
; PROJECT: C:\Projects\10152U Tenn\2_Operations\6_Missions\11035a\3_Processed\GPS\11035a.cfg
;
; DATE: Feb. 4/11 (date/time of processing)
; TIME: 16:05:12
; CREATED BY: GrafNav Version 7.80.2517
;
VERSION = 7.80.2517
PROCUSER = jcr
PRODESC = Run*(3)
PROCTIME = 15:56:20 02/04/2011

; Master station # 1 information
MB_MASTER_INDEX = 0
MB_MASTER_NAME = SE_BASE
MB_MASTER_FILE =
C:\Projects\10152U*Tenn\2_Operations\6_Missions\11035a\1_RawData\ground_gps\SE_Base\log20110204_004445.gpb
MB_MASTER_POS = 35 34 34.17344 -88 44 17.15714 112.9020
MB_MASTER_ANT = 2.234 -0.009 2.000 0 TPSSGR3 0
MB_MASTER_DISABLE = OFF

; Master station # 2 information
MB_MASTER_INDEX = 1
MB_MASTER_NAME = SW_BASE
MB_MASTER_FILE =
C:\Projects\10152U*Tenn\2_Operations\6_Missions\11035a\1_RawData\ground_gps\SW_Base\log20110204_015712.gpb
MB_MASTER_POS = 35 39 07.19941 -89 28 50.54551 70.4660
MB_MASTER_ANT = 2.234 -0.009 2.000 0 TPSSGR3 0
MB_MASTER_DISABLE = OFF

; Remote station information
REMOTE_FILE = C:\Projects\10152U*Tenn\2_Operations\6_Missions\11035a\1_RawData\mgps_11035A_06sen187_435H.gpb
REMOTE_POS = 35 36 12.52031 -88 55 15.82968 100.4972
REMOTE_ANT = 0.000

; General settings
PROCESS_MODE = 105 108 111 126 ; 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)
```

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TIMERANGE = ALL 980820999.1 980838263.3 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

; KAR settings--second values for dual frequency/widelane
KAR_MIN_TIME = 8.00 2.00 ; Min. time for KAR, L1 and L2 (minutes)
KAR_MIN_ADD = 0.00 ; 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 = OFF 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 = IONO ; 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
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 30.000 ; 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 = ON 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 = ON 2.5 250.0 ; Engage KAR if <dist1, reset if >dist2 (km)
USERKAR = 456361.0 REVERSE NORESET ; Engage KAR at this time
USERKAR = 441993.0 FORWARD 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 = ON ; Refine L1/L2 fixed solution
FIX_STRICT = OFF OFF ; Stricter RMS and reliability tolerances
FIX_CORRECT_SLIP = OFF ; Correct integer cycle slips
FIX_INTERVAL = 15.0 ; Fixed static interval (s)
SPLIT_SS = OFF 120.0 ; Break static sessions if gap larger than value (s)

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FIX_AUTO = 180.0 25.000 600.0 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
CORR_L2C = ALL ; ALL, OFF to correct for L2C
CORR_L2C_VALUE = FILE ; FILE or correction value in L2 cycles

; Differential measurement standard deviation (weighting) settings
STD_MODE = ELEV ; Measurement weighting mode (ELEV/CNO/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 = 1.0000 ON ; Doppler meas stddev (m/s) (ON/OFF referes to auto-doppler setting)
STD_REJECT = NORMAL 3.0 2.5 3.0 6.0 4.5 ; LevelStr CodeRej PhaseRej DopplerRej CodeReset PhaseReset
STD_SKIP = 15.0 5 1 ; dMaxRejSec, nSkipCodeEpochs, nSkipPhaseEpochs
STD_DIST = LOW 1.00 7.50 ; Distance effects (OFF/HIGH/MEDIUM/LOW/MANUAL) ManHzPPM ManVtPPM
STD_BL = SE_BASE ON ; BLName UseMain(ON/OFF)
STD_BL = SW_BASE ON ; BLName UseMain(ON/OFF)
STD_RELTOL = 4.00 ; Reliability tolerance for rejecting outliers

;Miscellaneous options
WRITE_RESIDUALS = ON ; Create binary value file (.fbv,.rbv)
LOCKTIME_CUTOFF = 12.0 ; Carrier Locktime cutoff (seconds)
DYNAMICS = AUTO MEDIUM ; constraint on vehicle dynamics

; Single poing/PPP settings
PPP_SP3_DATUM = WGS84 AUTOMATIC
PPP_ELEV_MASK = 0.00
PPP_PROCUSER = T Mitchell
PPP_PRODESC = PPP*(1)
PPP_PROCESS_MODE = AUTO ; PPP, SFCA, DFCA, AUTO processing modes
PPP_USEP1OVERCA = ON ; Use P1 instad of c/a (on/off)
PPP_USESOLVEDCLOCK = ON ; ON-use receiver time corrected by clock, off-use corr_time directly
PPP_SEPARATECLKS = ON ; ON-use separate code and carrier clock (needed for some Trimble receivers), OFF-disables
PPP_PRECISEONLY = ON ; ON-only satellite with precise eph+clock to be used, OFF use all including broadcast
PPP_PROCESS_DIR = FORWARD BOTH ; Direction (FORWARD/REVERSE), Directions to process (SINGLE/BOTH)
PPP_SLIP_TOL = 20.00 0.500 ; Coarse and fine carrier cycle slip tolerances (cycles)
PPP_LOCKTIME = ON OFF ; Use L1 and L2 locktime counters to detecting slips
PPP_USE_DOPPLER = OFF ; ON if doppler to be used for velocity computation
PPP_DYN_MODE = MEDIUM ; Dynamics mode: AUTO, OFF, LOW, MEDIUM, HIGH
PPP_OUTPUT = NORMAL OFF ; Output modes(first: Normal/extended, second: ON-output even if bad)
PPP_TROPO = ON 5.0000e-011 ; Enable Tropo state (ON/OFF) and tropo state spectral density
PPP_SAT_RESID = OFF ; Output binary satellite residuals to .FBP/RBP (ON/OFF)
; Single point/PPP measurement standard deviation (weighting) settings
PPP_STD_MODE = ELEV ; Measurement weighting mode (ELEV/CNO/STANDARD/ADAPTIVE)
PPP_STD_CODE = 7.0000 ; Code measurement standard deviation (m)
PPP_STD_PHASE = 0.0200 ON ; Carrier meas SD (m) (ON/OFF refers to adjustment for L3)
PPP_STD_DOPPLER = 1.0000 ON ; Doppler meas stddev (m/s) (ON/OFF referes to auto-doppler setting)
PPP_STD_REJECT = NORMAL 3.0 2.5 3.0 6.0 4.5 ; LevelStr CodeRej PhaseRej DopplerRej CodeReset PhaseReset
PPP_STD_SKIP = 15.0 5 1 ; dMaxRejSec, nSkipCodeEpochs, nSkipPhaseEpochs
PPP_STD_RELTOL = 4.00 ; Reliability tolerance for rejecting outliers

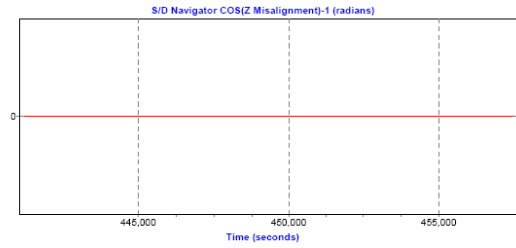
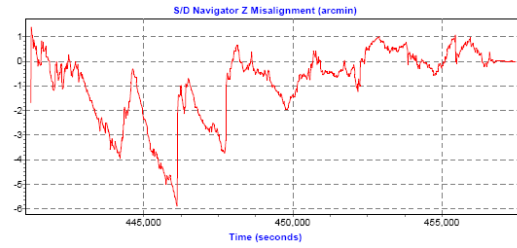
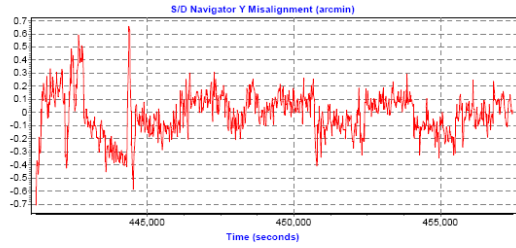
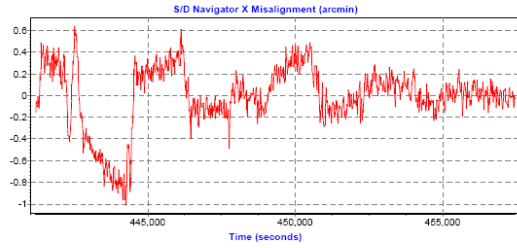
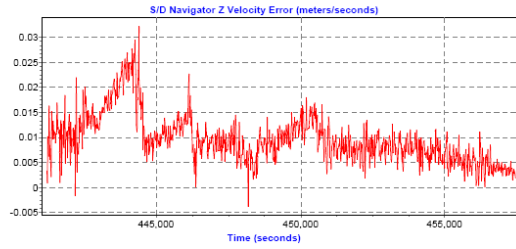
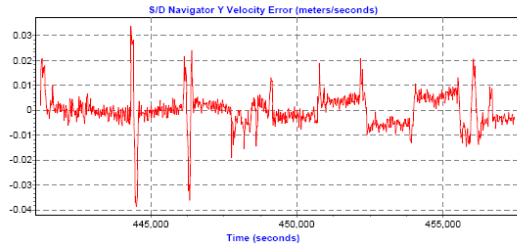
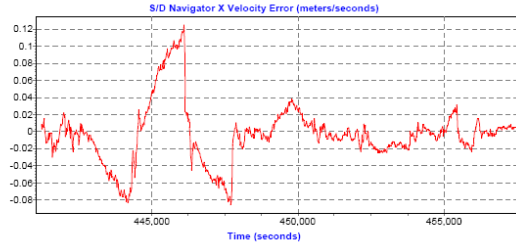
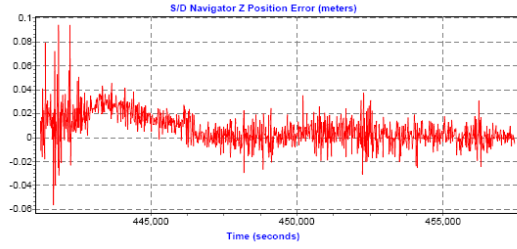
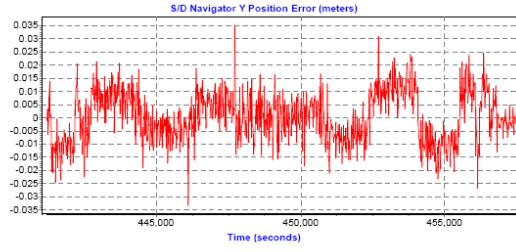
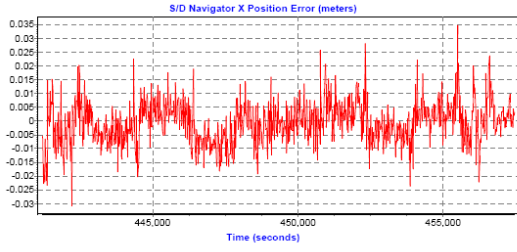
; Combine settings (only used in API)

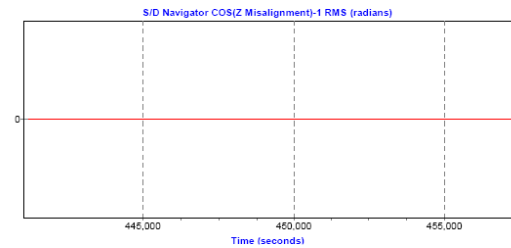
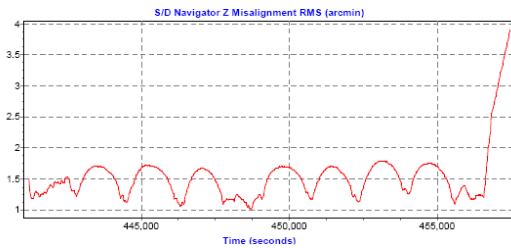
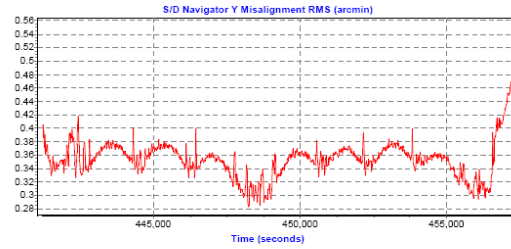
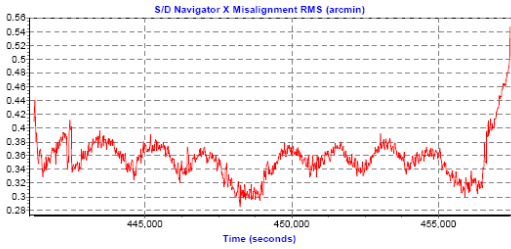
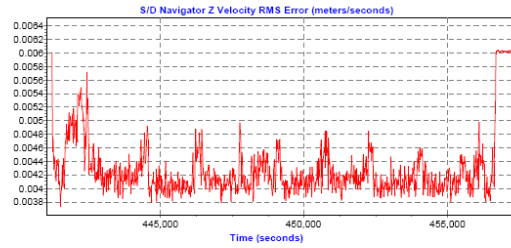
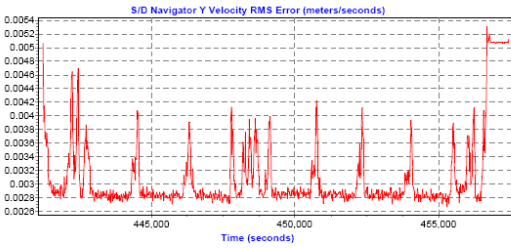
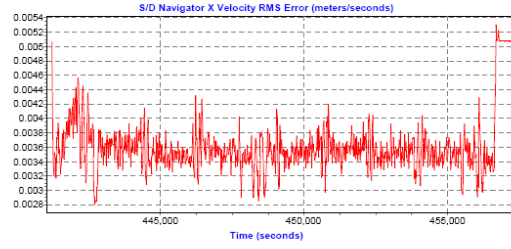
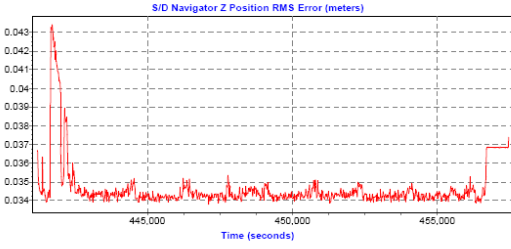
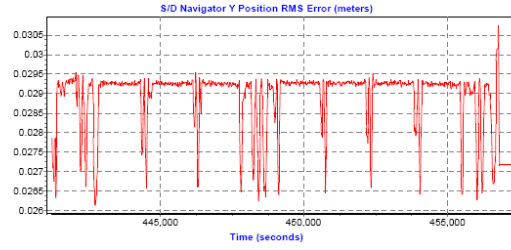
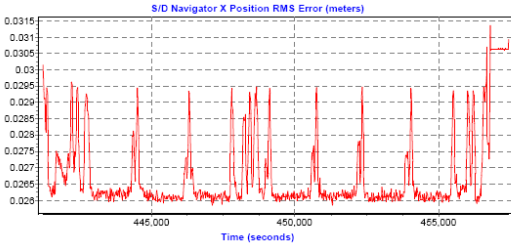
; Glonass Options
GLN_TOFF = ON 0.0000 1000.0000 0.000000
GLN_SOLVE_INT = ON ON OFF ; GLN-Base, Use-GLN-in-KAR, Do-GPSONLY-if-kar-fails

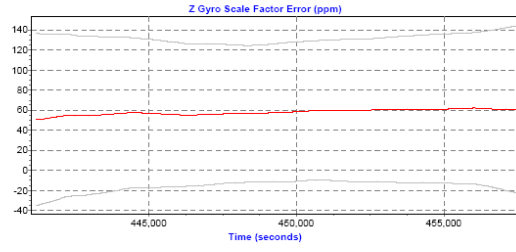
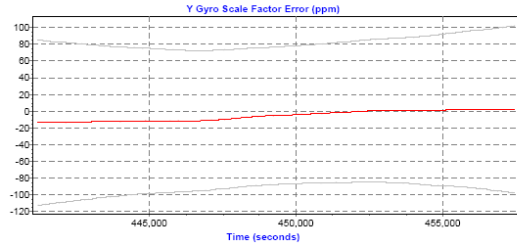
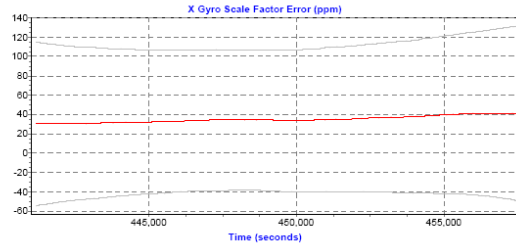
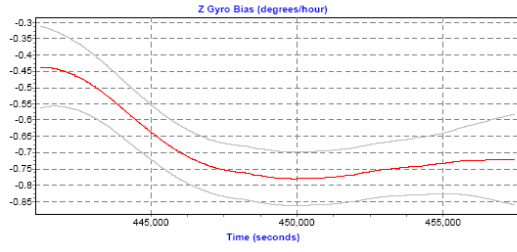
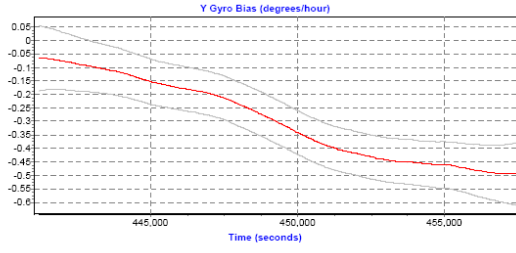
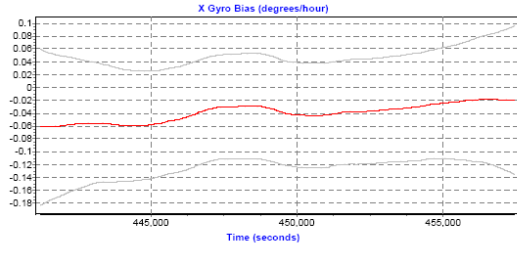
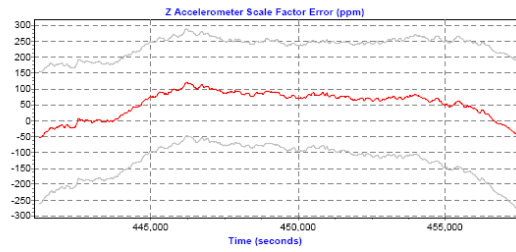
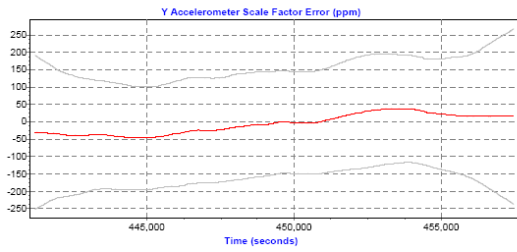
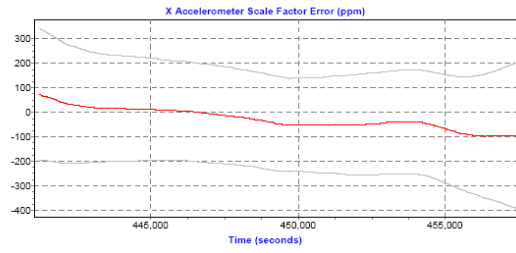
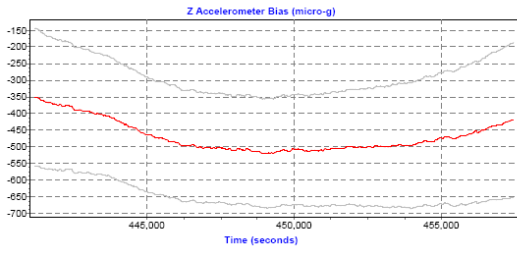
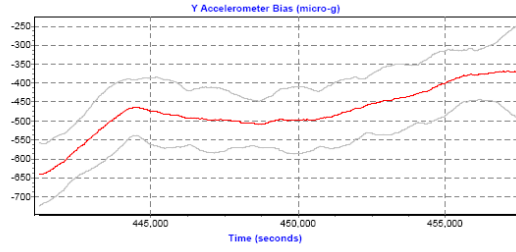
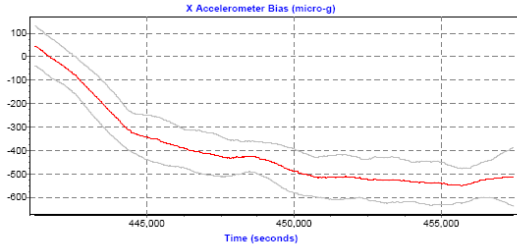
; The following are Additional (user) items

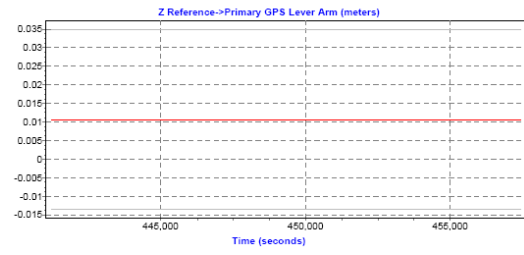
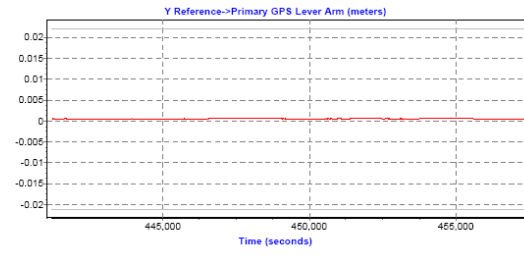
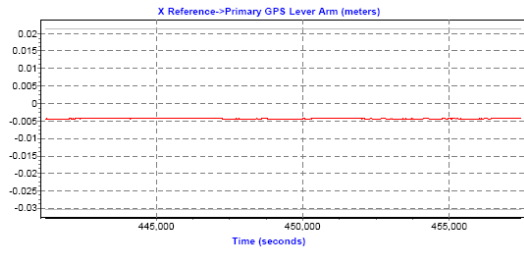
; End-of-file

```











# Flight Log/Base Station/GPS Processing – 02.04.2011

```

-----
Flight Log
-----
Project Number: Dyersburg,TN
S/N           : 06sen187
Operator      : J.Stump
Pilot(s)     : J.Melton
Aircraft     : 435H
Airport      : MKL
Mission      : 11037A
Wheels Up    : 8:25
Flight Length:
HOBBS Start  : 98.9
HOBBS End    :
    
```

```

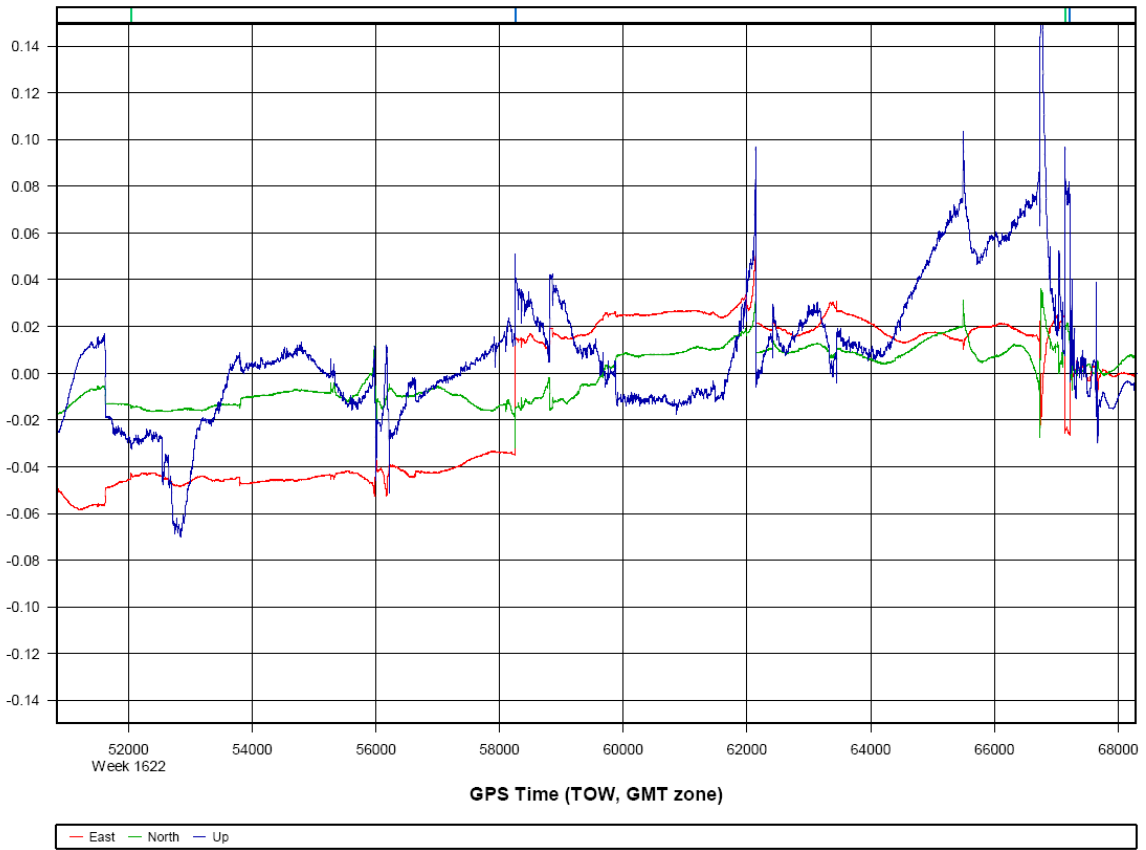
-----
Weather
-----
Date          : February 06, 2011
Julian Day    : 037
Temperature   : 01
Visibility    : 10
Clouds        : clr
Precipitation : 0
Wind Dir      : 190
Wind Speed    : 5
Pressure      : 29.95
    
```

```

-----
Statistics
-----
Laser Time   : 02:56:43
    
```

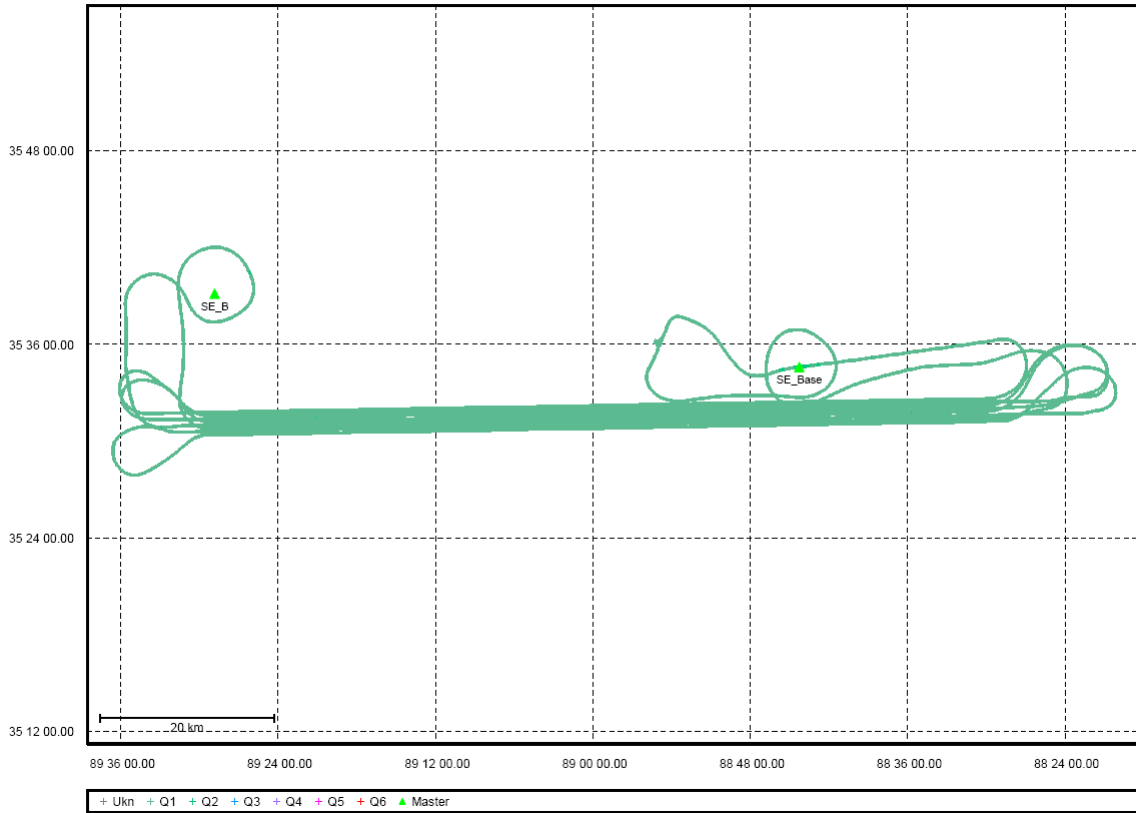
START	STOP	LINE#	ALT	PRF	FREQ	ANGLE	MP	DIV	RC	HDG	Plan File
14:23:37.962	14:23:51.863	301	367	70	40.00	21.50	OFF	NAR	OFF	0.00	269
14:24:10.463	14:24:34.163	301	450	70	40.00	21.50	OFF	NAR	OFF	0.00	269
14:25:11.064	14:28:16.866	301	1008	70	40.00	21.50	OFF	NAR	OFF	0.00	269
14:43:26.08	15:08:14.103	301	1145	70	40.00	21.50	OFF	NAR	OFF	0.00	269
15:14:21.809	15:32:25.927	299	1199	70	40.00	21.50	OFF	NAR	OFF	0.00	269
15:39:00.634	16:04:25.06	298	1118	70	40.00	21.50	OFF	NAR	OFF	0.00	89
16:21:16.478	16:39:38.597	297	1190	70	40.00	21.50	OFF	NAR	OFF	0.00	269
16:46:47.004	17:12:04.031	296	1083	70	40.00	21.50	OFF	NAR	OFF	0.00	89
17:16:50.236	17:35:17.855	295	1185	70	40.00	21.50	OFF	NAR	OFF	0.00	269
17:42:31.863	18:07:41.189	294	1142	70	40.00	21.50	OFF	NAR	OFF	0.00	89
18:12:36.494	18:30:44.013	294	1184	70	40.00	21.50	OFF	NAR	OFF	0.00	89

11037a [Combined] - Forward/Reverse or Combined Separation Plot



# Combined - Map Run (2)

Geographic, DMS



Processing Summary Information

Program: GrafNav  
Version: 7.80.2517  
Project: C:\Projects\10152U Tenn\2\_Operations\6\_Missions\11037A\3\_Processed\GPS\11037  
a.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:

Total in GPB file:	174759
No processed position:	157295
Missing Fwd or Rev:	3
With bad C/A code:	0
With bad L1 Phase:	0

Measurement RMS Values:

L1 Phase:	0.0183 (m)
C/A Code:	0.93 (m)
L1 Doppler:	0.014 (m/s)

Fwd/Rev Separation RMS Values:

East:	0.033 (m)
North:	0.012 (m)
Height:	0.032 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (17459 occurrences):

East:	0.033 (m)
North:	0.011 (m)
Height:	0.030 (m)

Quality Number Percentages:

Q 1:	99.6 %
Q 2:	0.4 %
Q 3:	0.0 %
Q 4:	0.0 %
Q 5:	0.0 %
Q 6:	0.0 %

Position Standard Deviation Percentages:

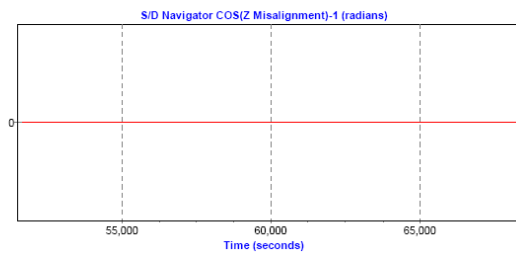
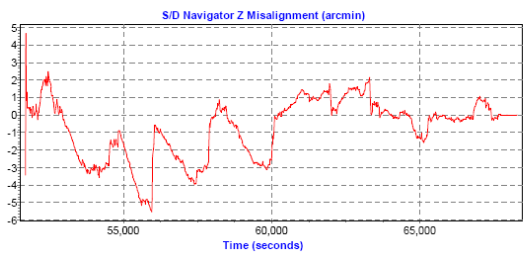
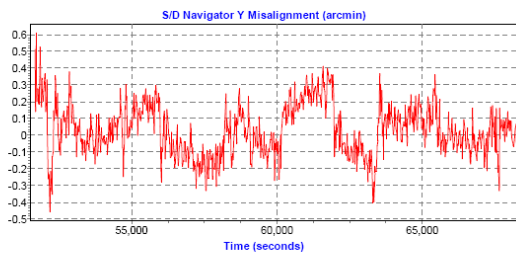
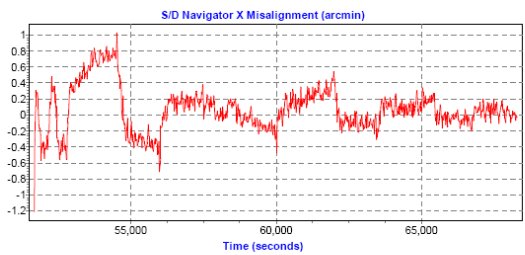
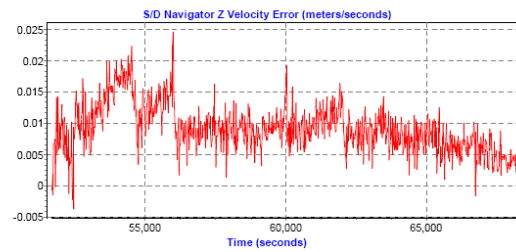
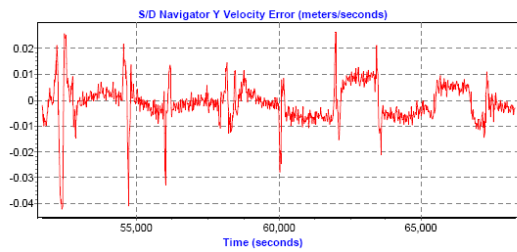
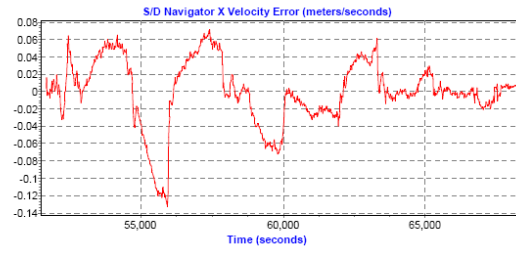
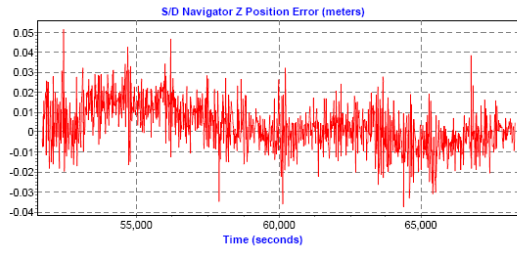
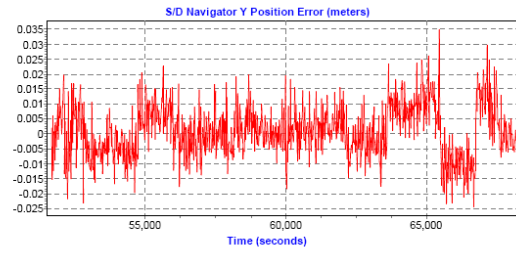
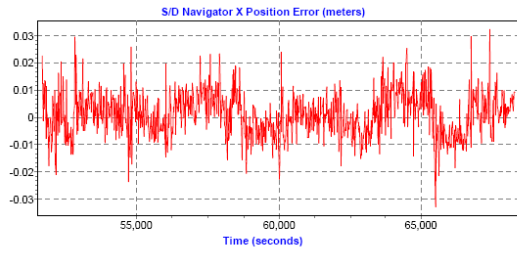
0.00 - 0.10 m:	100.0 %
0.10 - 0.30 m:	0.0 %
0.30 - 1.00 m:	0.0 %
1.00 - 5.00 m:	0.0 %
5.00 m + over:	0.0 %

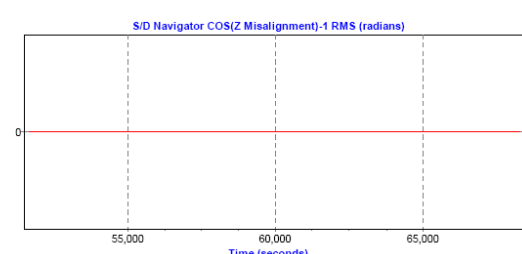
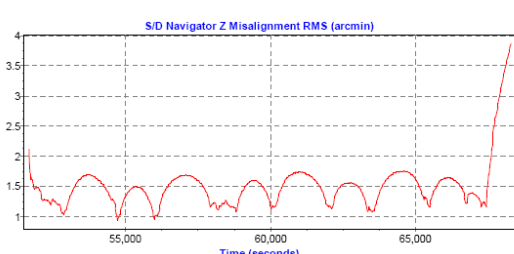
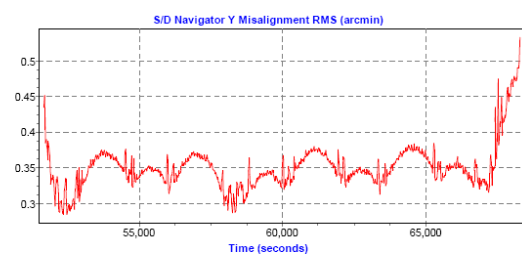
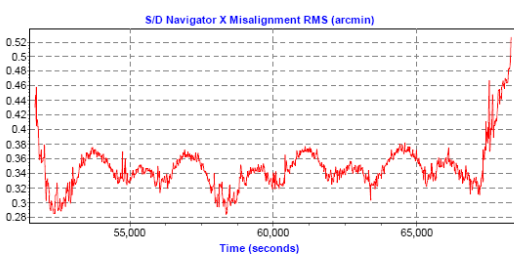
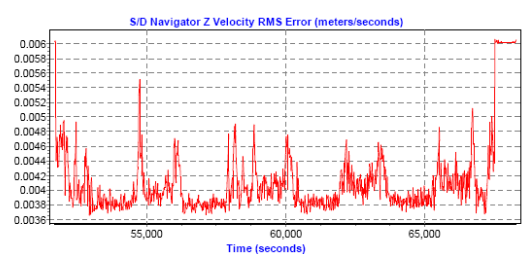
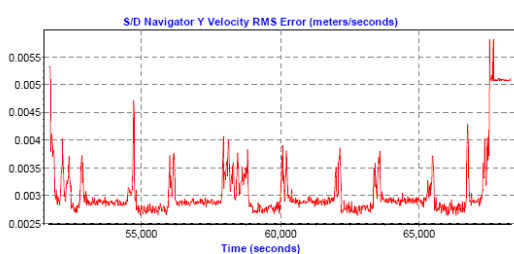
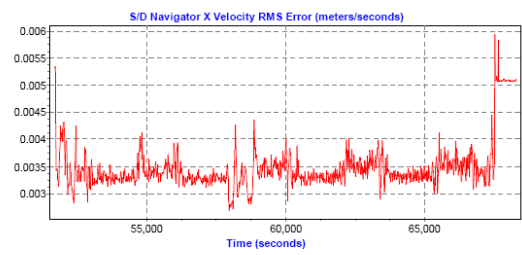
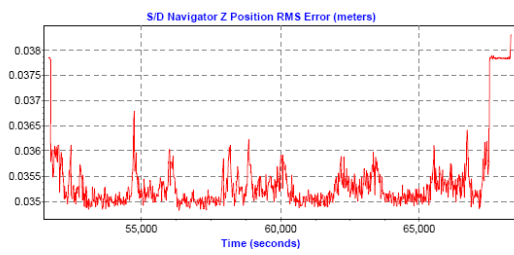
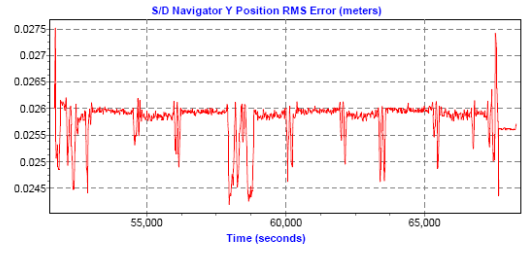
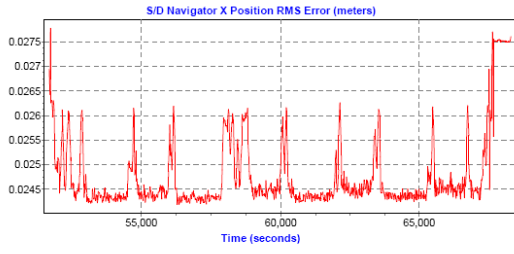
Percentages of epochs with DD\_DOP over 10.00:

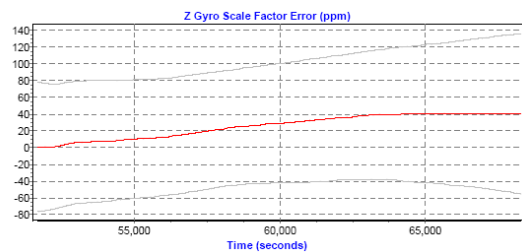
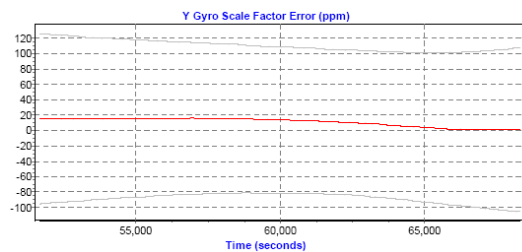
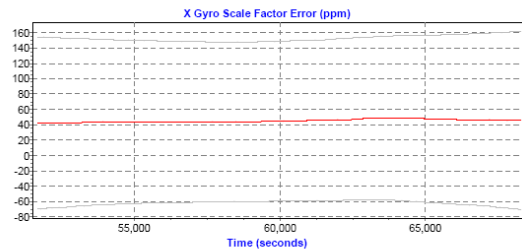
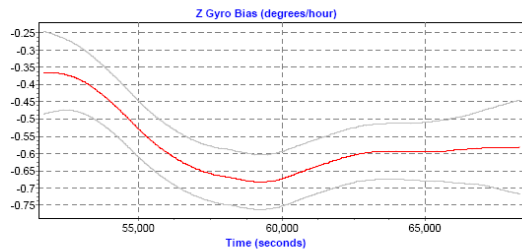
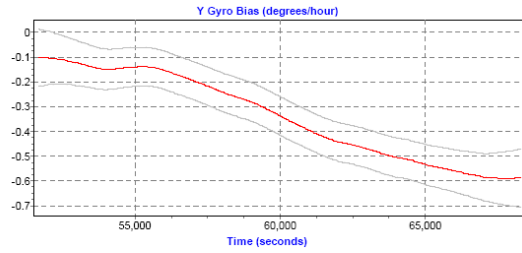
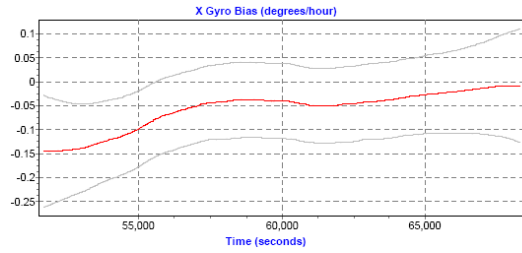
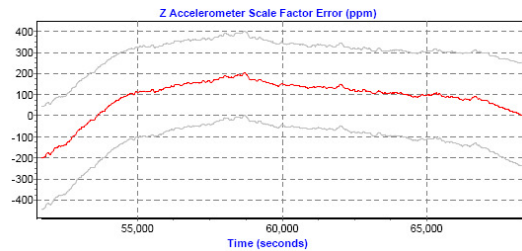
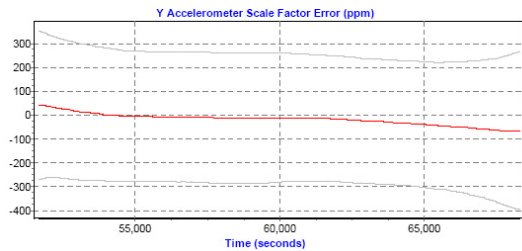
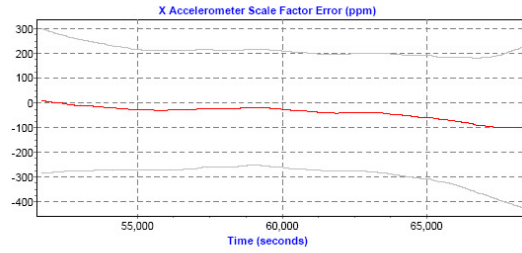
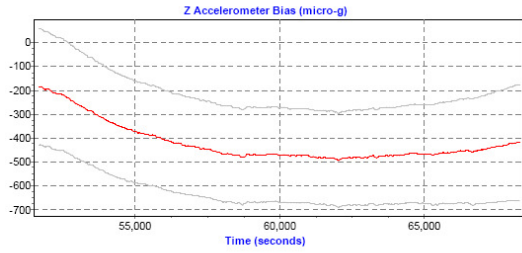
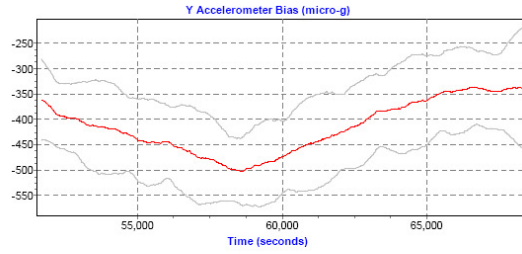
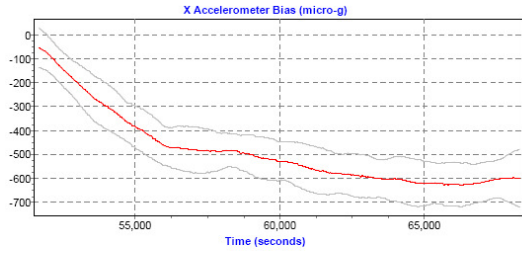
DOP over Tol:	0.0 %
---------------	-------

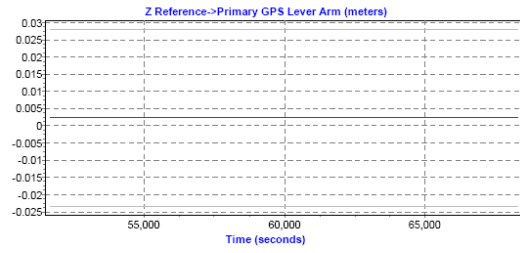
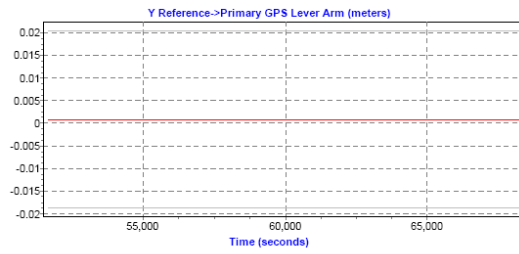
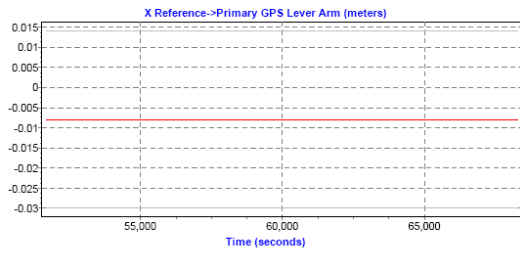
Baseline Distances:

Maximum:	62.676 (km)
Minimum:	5.242 (km)
Average:	28.189 (km)
First Epoch:	14.602 (km)
Last Epoch:	14.639 (km)











Flight Log

-----  
 Project Number: DyersburgTN  
 S/N : 06sen187  
 Operator : J.Stump  
 Pilot(s) : J.Melton  
 Aircraft : 435H  
 Airport : MQA  
 Mission : 11037B  
 Wheels Up : 1745  
 Flight Length :  
 HOBBS Start : 04.6  
 HOBBS End :  
 -----

Weather

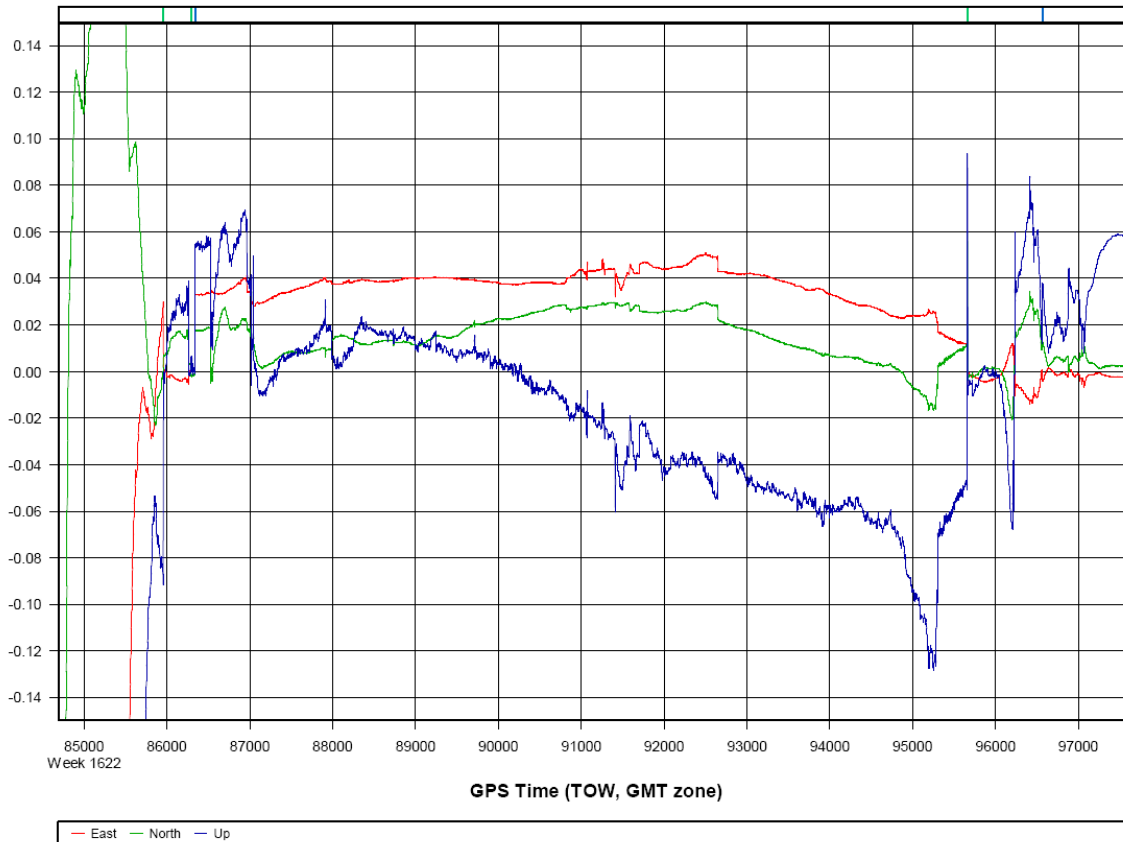
-----  
 Date : February 06, 2011  
 Julian Day : 037  
 Temperature : 7  
 Visibility : 10  
 Clouds : BKN110  
 Precipitation : 0  
 Wind Dir : 010  
 Wind Speed : 3  
 Pressure : 29.95  
 -----

Statistics

-----  
 Laser Time : 02:03:01  
 -----

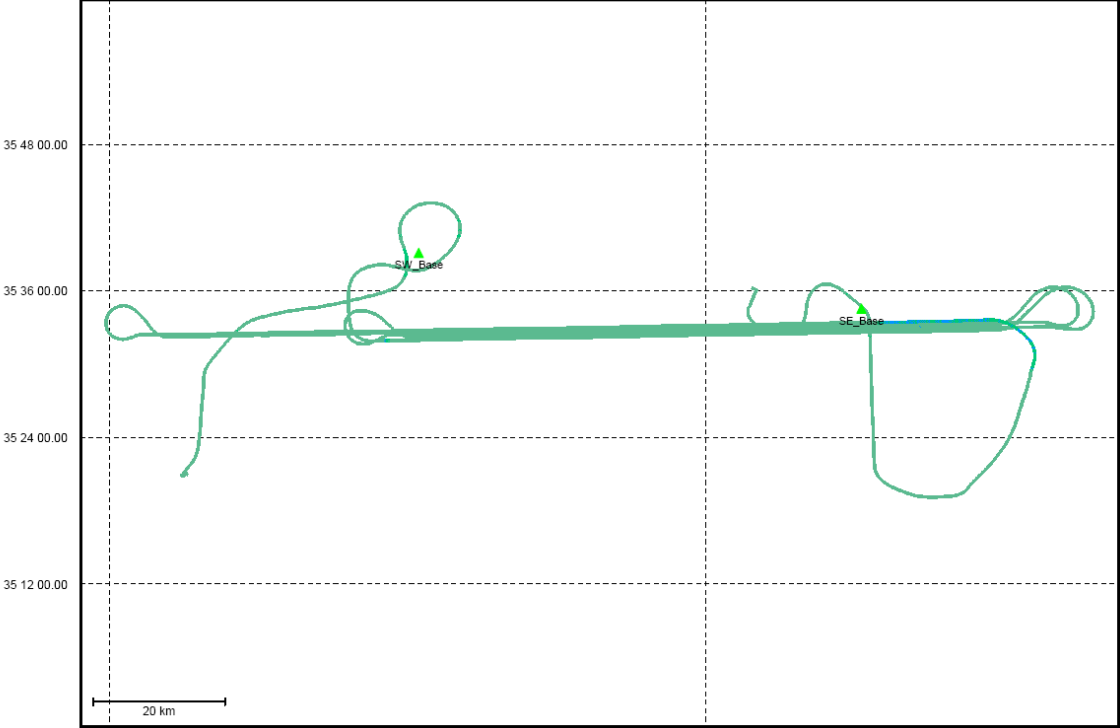
START	STOP	LINE#	ALT	PRF	FREQ	ANGLE	MP	DIV	RC	HDG	Plan File
23:48:42.142	23:49:04.442	293	580	70	40.00	21.50	OFF	NAR	OFF	0.00	89
23:49:19.042	23:49:34.842	293	671	70	40.00	21.50	OFF	NAR	OFF	0.00	89
23:55:17.848	23:55:31.348	293	1202	70	40.00	21.50	OFF	NAR	OFF	0.00	89
00:10:37.263	00:29:43.482	292	1178	70	40.00	21.50	OFF	NAR	OFF	0.00	89
00:36:51.489	00:59:06.612	291	1148	70	40.00	21.50	OFF	NAR	OFF	0.00	269
01:04:17.818	01:22:58.537	290	1169	70	40.00	21.50	OFF	NAR	OFF	0.00	89
01:30:08.645	02:00:45.777	289	1130	70	40.00	21.50	OFF	NAR	OFF	0.00	269
02:05:32.781	02:31:36.508	289	1198	70	40.00	21.50	OFF	NAR	OFF	0.00	89
02:43:19.72	02:49:14.326	350	1103	70	40.00	21.50	OFF	NAR	OFF	0.00	89

11037b [Combined] - Forward/Reverse or Combined Separation Plot



Combined - Map Run (2)

Geographic, DMS



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

Processing Summary Information

Program: GrafNav  
Version: 7.80.2517  
Project: C:\Projects\10152U Tenn\2\_Operations\6\_Missions\11037B\3\_Processed\GPS\11037  
b.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:

Total in GPB file:	130032
No processed position:	117041
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:	0.81 (m)
L1 Doppler:	0.014 (m/s)

Fwd/Rev Separation RMS Values:

East:	0.085 (m)
North:	0.059 (m)
Height:	0.181 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (2726 occurrences):

East:	0.006 (m)
North:	0.011 (m)
Height:	0.041 (m)

Quality Number Percentages:

Q 1:	96.5 %
Q 2:	2.5 %
Q 3:	1.0 %
Q 4:	0.0 %
Q 5:	0.0 %
Q 6:	0.0 %

Position Standard Deviation Percentages:

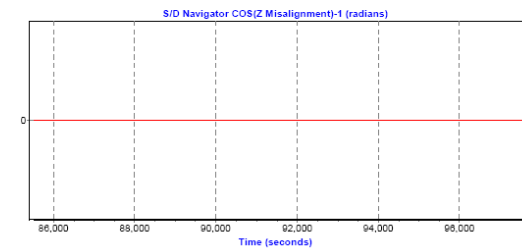
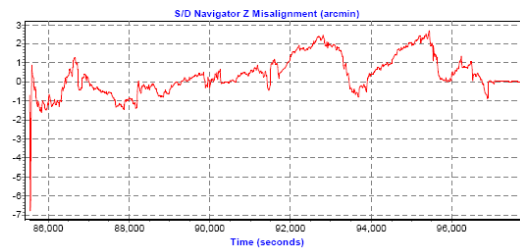
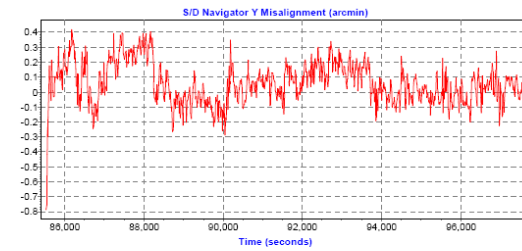
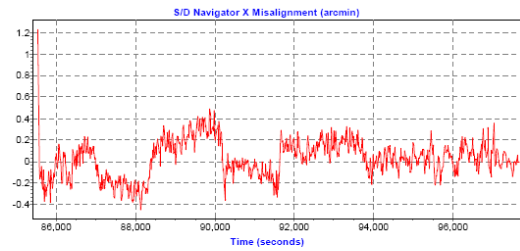
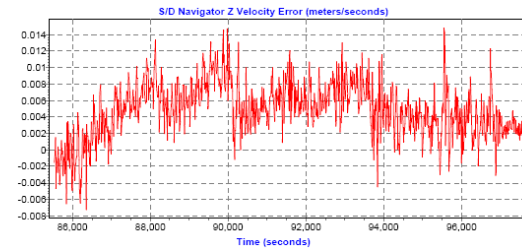
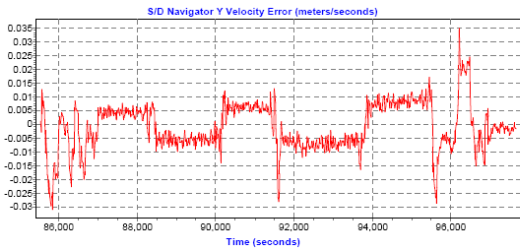
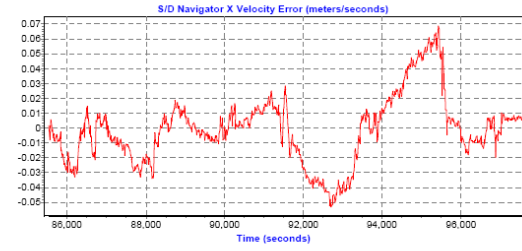
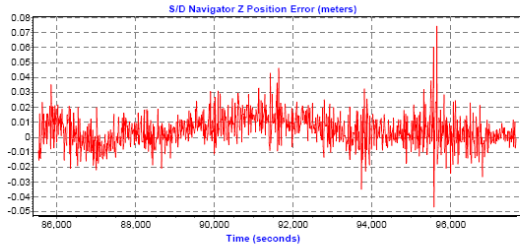
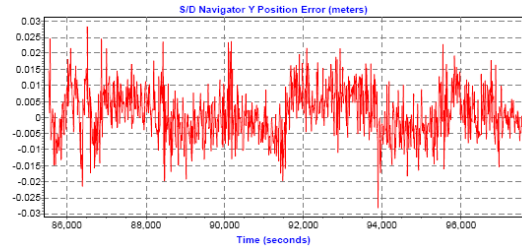
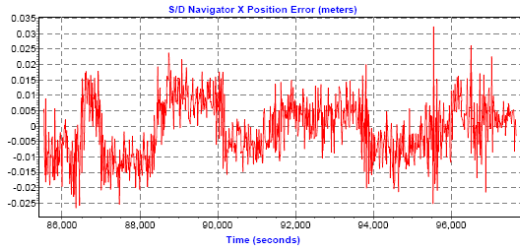
0.00 - 0.10 m:	97.2 %
0.10 - 0.30 m:	2.6 %
0.30 - 1.00 m:	0.0 %
1.00 - 5.00 m:	0.0 %
5.00 m + over:	0.0 %

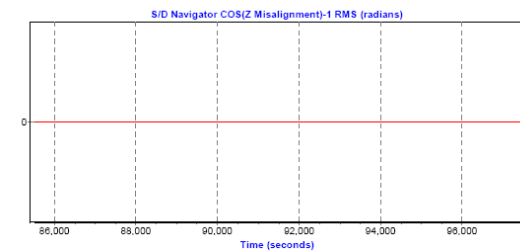
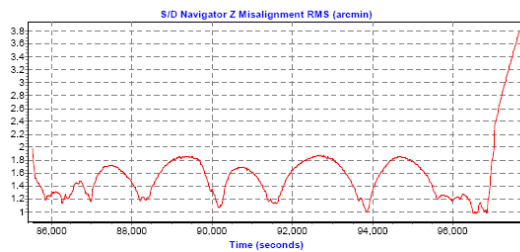
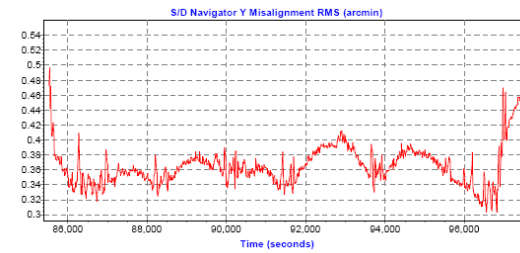
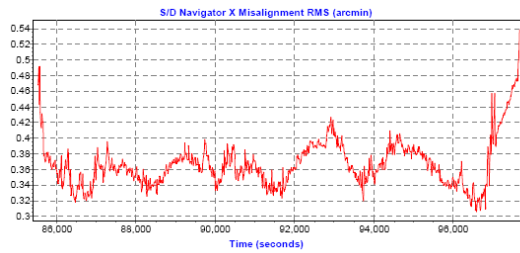
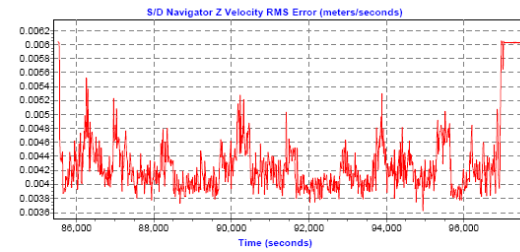
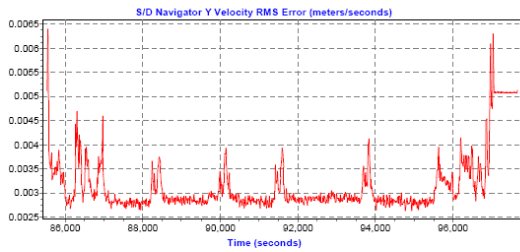
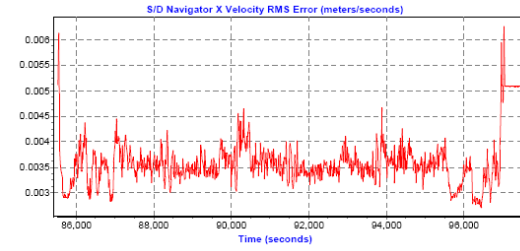
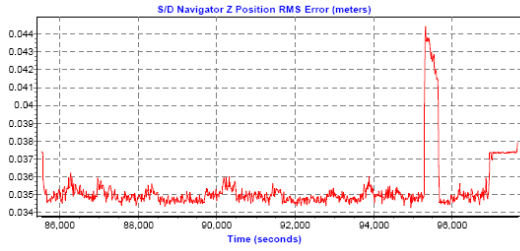
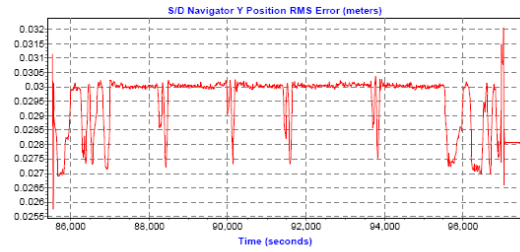
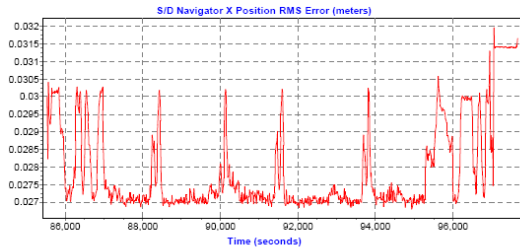
Percentages of epochs with DD\_DOP over 10.00:

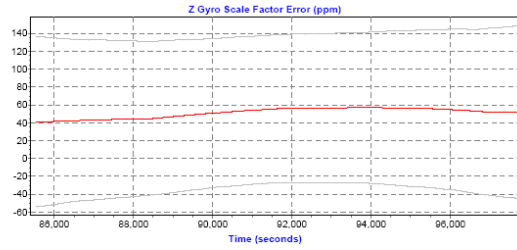
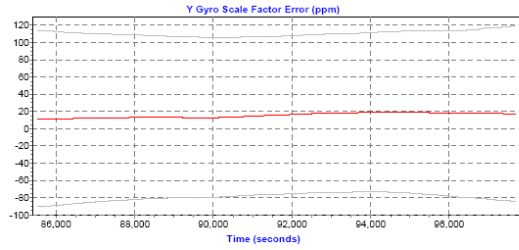
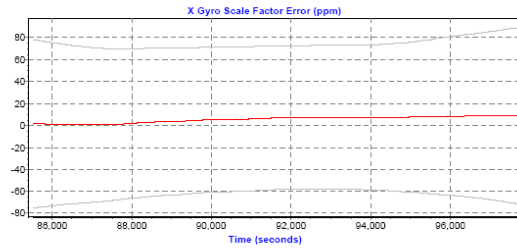
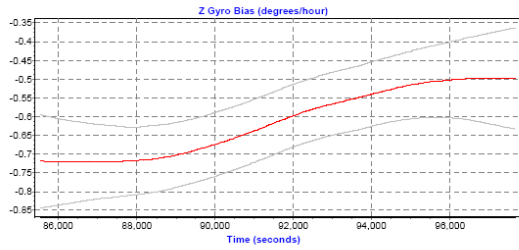
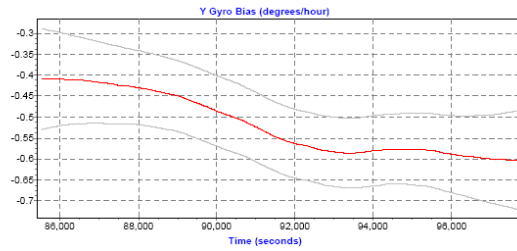
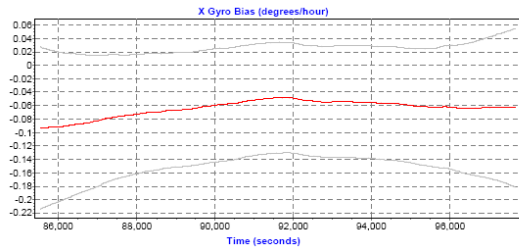
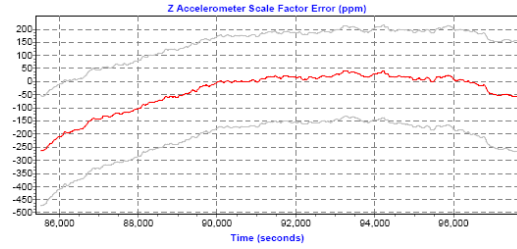
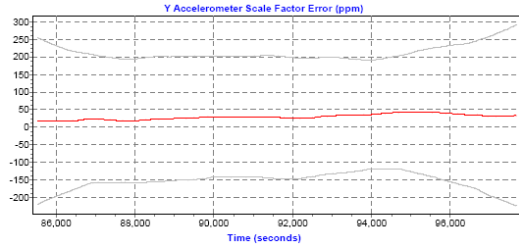
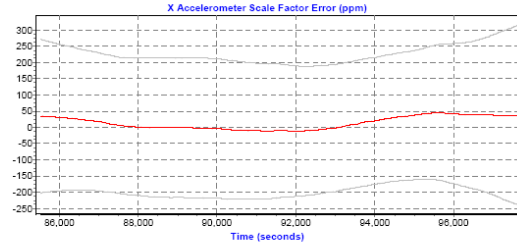
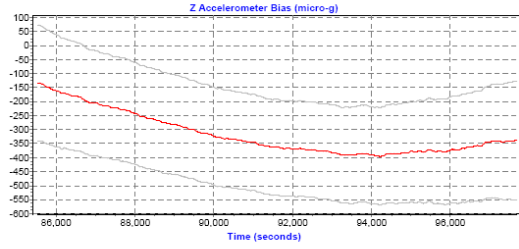
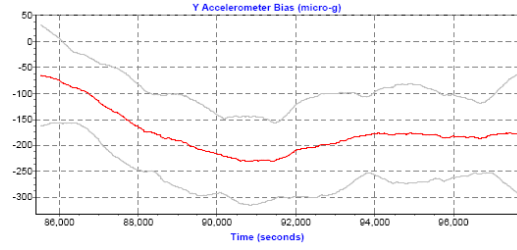
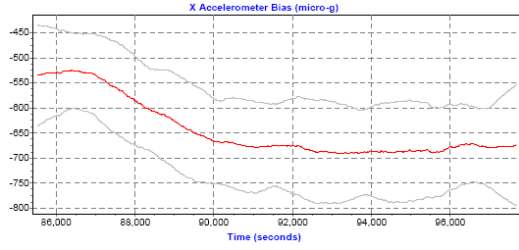
DOP over Tol:	2.8 %
---------------	-------

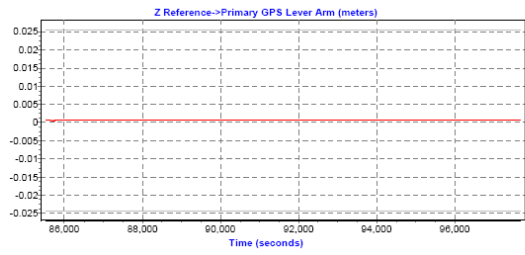
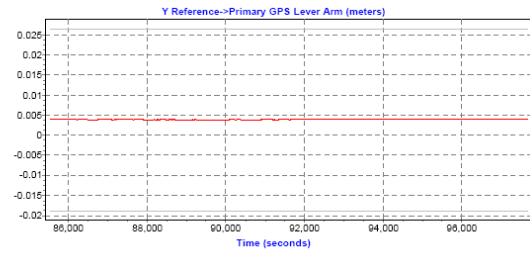
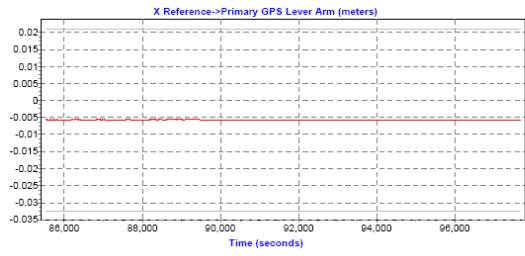
Baseline Distances:

Maximum:	73.630 (km)
Minimum:	3.141 (km)
Average:	34.771 (km)
First Epoch:	68.998 (km)
Last Epoch:	14.640 (km)









# Flight Log/Base Station/GPS Processing – 02.14.2011

```

-----
Flight Log
-----
Project Number: Dyersburg,TN
S/N           : 06sen187
Operator      : J.Stump
Pilot(s)     : J.Melton
Aircraft     : 435H
Airport      : MKL
Mission      : 11045A
Wheels Up   : 14:45
Flight Length :
HOBBBS Start : 08.4
HOBBBS End   :
    
```

```

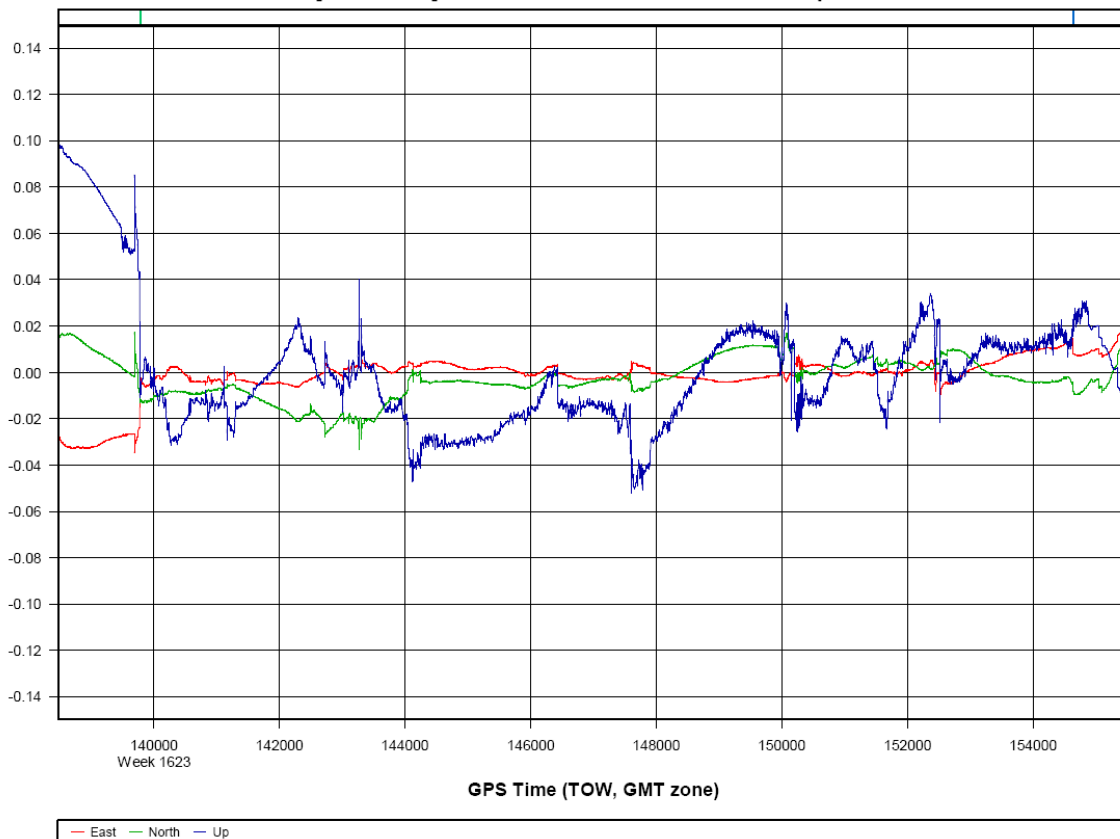
-----
Weather
-----
Date          : February 14, 2011
Julian Day    : 045
Temperature   : 9
Visibility    : 10
Clouds       : clr
Precipitation : 0
Wind Dir     : 240
Wind Speed   : 9
Pressure     : 30.17
    
```

```

-----
Statistics
-----
Laser Time   : 03:00:41
    
```

START	STOP	LINE#	ALT	PRF	FREQ	ANGLE	MP	DIV	RC	HDG	Plan File
14:45:37.787	14:45:53.287	283	388	70	40.00	21.50	OFF	NAR	OFF	0.00	269
14:47:01.788	14:47:35.788	283	818	70	40.00	21.50	OFF	NAR	OFF	0.00	269
14:48:22.089	14:50:47.591	288	1222	70	40.00	21.50	OFF	NAR	OFF	0.00	269
14:58:26.198	15:31:11.228	287	1131	70	40.00	21.50	OFF	NAR	OFF	0.00	269
15:36:54.134	16:05:07.863	287	1213	70	40.00	21.50	OFF	NAR	OFF	0.00	89
16:10:24.668	16:41:39.601	285	1091	70	40.00	21.50	OFF	NAR	OFF	0.00	89
17:12:08.132	17:39:36.461	285	1202	70	40.00	21.50	OFF	NAR	OFF	0.00	89
17:45:53.668	18:16:29.399	283	1106	70	40.00	21.50	OFF	NAR	OFF	0.00	89
18:22:17.805	18:49:59.334	283	1131	70	40.00	21.50	OFF	NAR	OFF	0.00	89

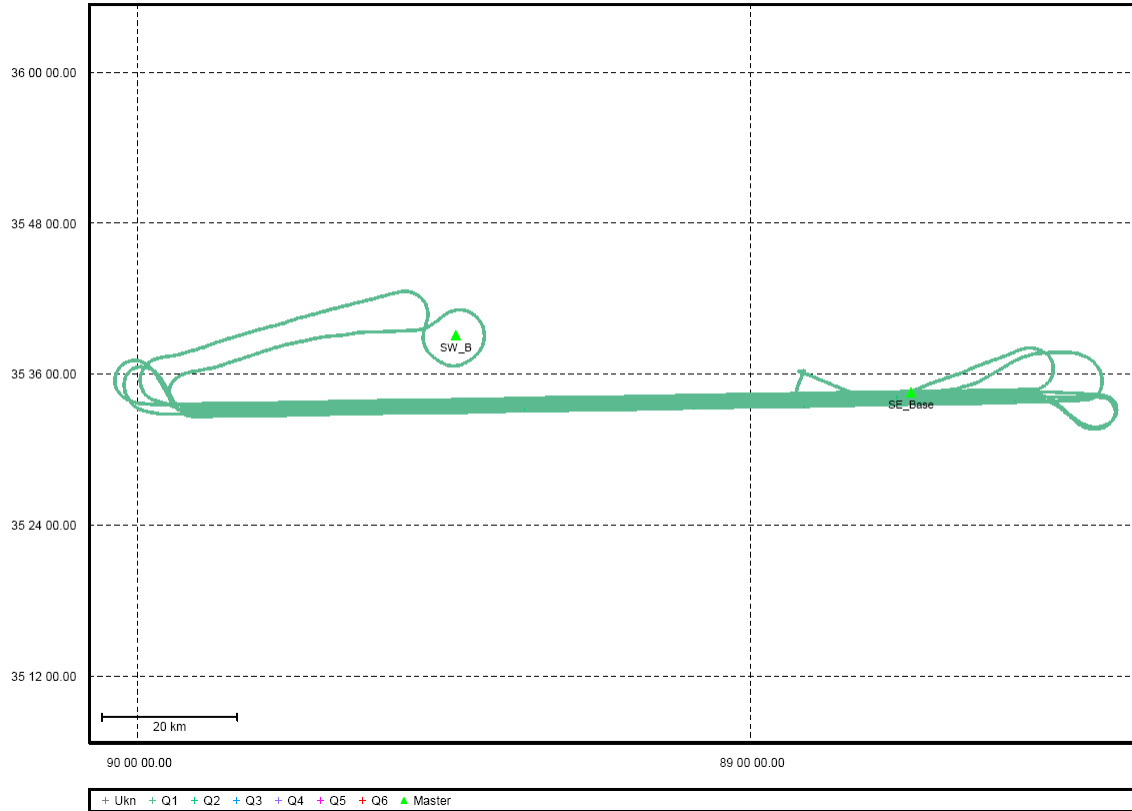
11045a [Combined] - Forward/Reverse or Combined Separation Plot





# Combined - Map Run (1)

Geographic, DMS



Processing Summary Information

Program: GrafNav  
Version: 7.80.2517  
Project: E:\11045A\pospac\GPS\11045a.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:  
Total in GPB file: 170761  
No processed position: 153697  
Missing Fwd or Rev: 3  
With bad C/A code: 0  
With bad L1 Phase: 0

Measurement RMS Values:  
L1 Phase: 0.0176 (m)  
C/A Code: 0.85 (m)  
L1 Doppler: 0.015 (m/s)

Fwd/Rev Separation RMS Values:  
East: 0.013 (m)  
North: 0.014 (m)  
Height: 0.032 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (17059 occurrences):  
East: 0.009 (m)  
North: 0.009 (m)  
Height: 0.027 (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: 75.891 (km)  
Minimum: 4.877 (km)  
Average: 33.202 (km)  
First Epoch: 14.574 (km)  
Last Epoch: 17.697 (km)

```

; PROJECT:      E:\11045A\pospac\GPS\11045a.cfg
;
; DATE:         Feb. 15/11 (date/time of processing)
; TIME:         20:12:29
; CREATED BY:   GrafNav Version 7.80.2517
;
VERSION = 7.80.2517
PROCUSER = jcr
PROCDESC = Run*(2)
PROCTIME = 20:08:45 02/15/2011

; Master station # 1 information
MB_MASTER_INDEX = 0
MB_MASTER_NAME = SE_Base
MB_MASTER_FILE = E:\11045A\ground_gps\SE_Base\log20110214_125513.gpb
MB_MASTER_POS = 35 34 34.17344 -88 44 17.15714 112.9020
MB_MASTER_ANT = 2.234 -0.009 2.000 0 TPSGR3 0
MB_MASTER_DISABLE = OFF

; Master station # 2 information
MB_MASTER_INDEX = 1
MB_MASTER_NAME = SW_B
MB_MASTER_FILE = E:\11045A\ground_gps\SW_Base\log20110214_140238.gpb
MB_MASTER_POS = 35 39 07.19941 -89 28 50.54551 70.4660
MB_MASTER_ANT = 2.234 -0.009 2.000 0 TPSGR3 0
MB_MASTER_DISABLE = OFF

; Remote station information
REMOTE_FILE = E:\11045A\pospac\Extract\mgps_11045A_06sen187_435H.gpb
REMOTE_POS = 35 36 12.36679 -88 55 15.85620 96.5241
REMOTE_ANT = 0.000

; General settings
PROCESS_MODE = 105 108 111 126 ; Processing modes (GrafNav only)

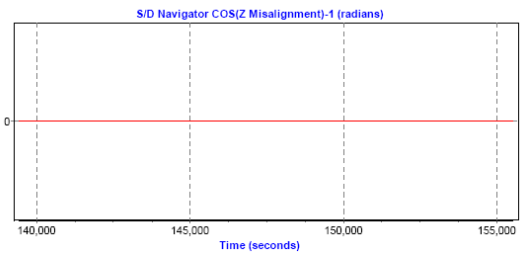
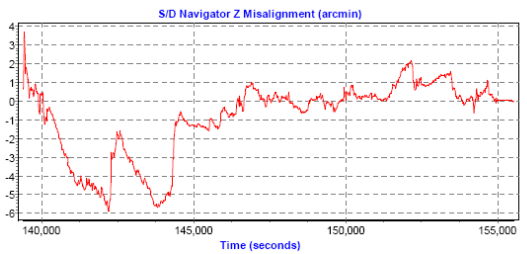
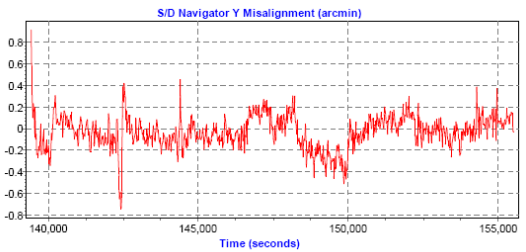
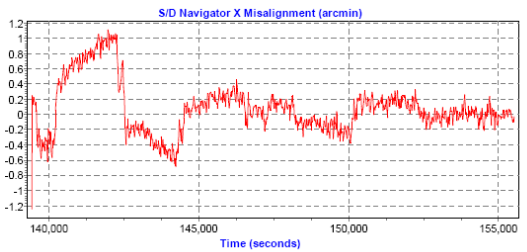
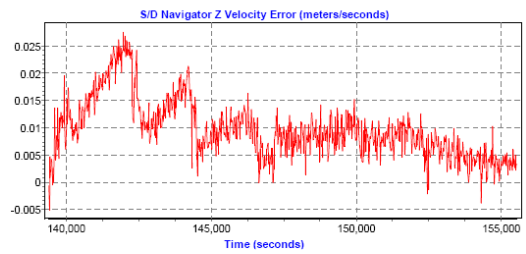
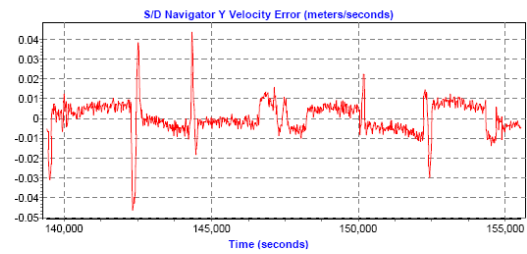
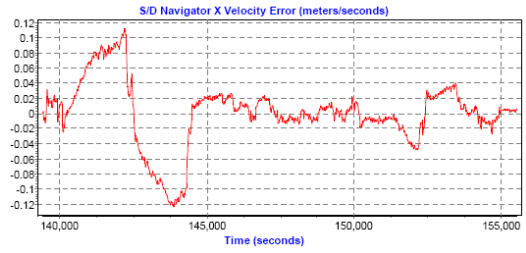
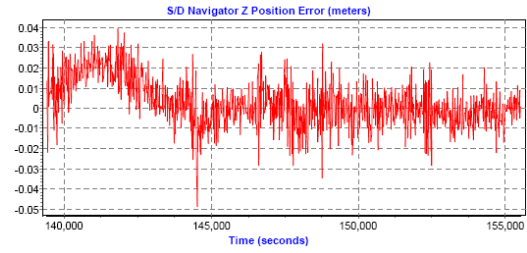
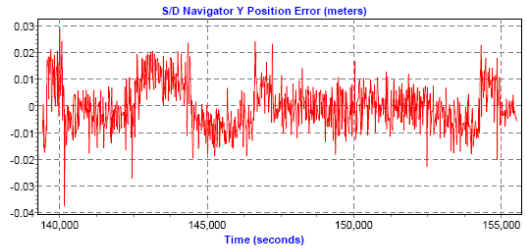
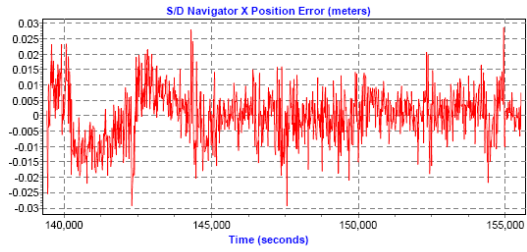
DATUM = NAD83 AUTO ; Processing Datum
INPDATUM = ON NAD83 AUTO ; Input Datum (ON=Use processing datum)
ELEV_MASK = 10.0 ; Elevation mask (deg)
GRID = UTM 15 31 ; Grid info

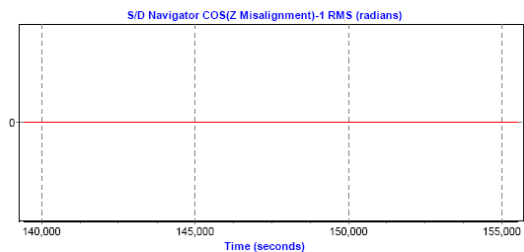
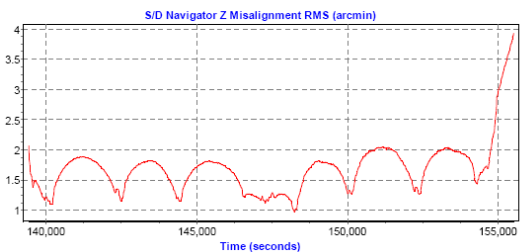
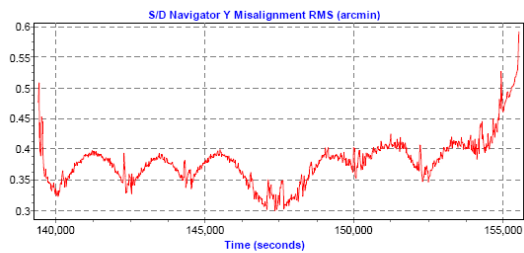
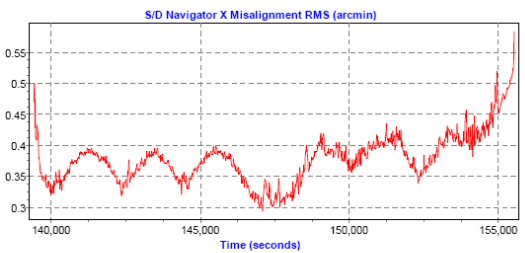
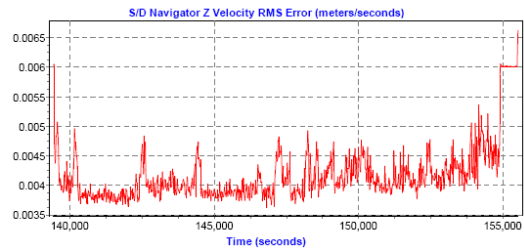
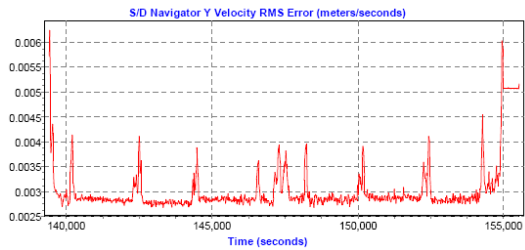
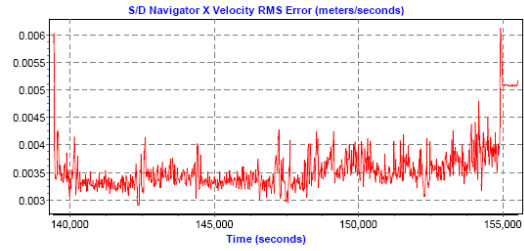
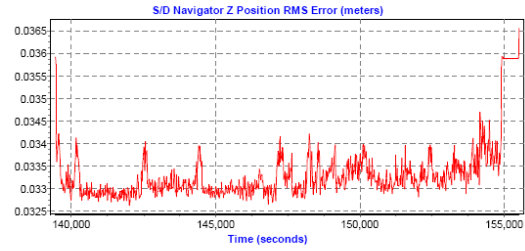
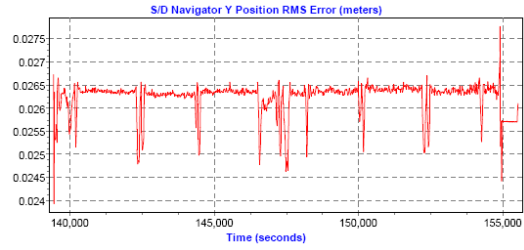
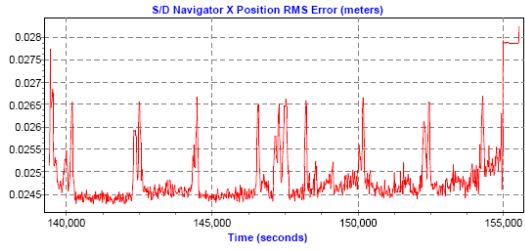
CYCLE_TEST = BOTH ; Cycle slip test method
STATIC_SLIP_TOL = 0.40 ; slip tolerance in static mode (cycles)
USE_DOPPLER = ON OFF ; Use doppler meas. for phase, for code-only

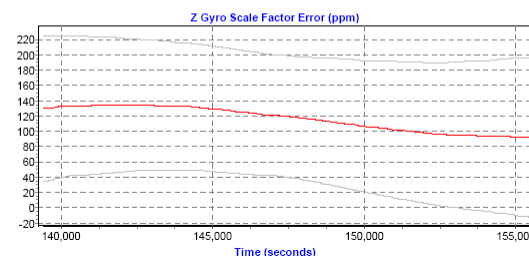
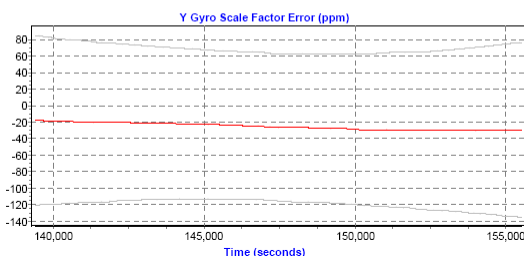
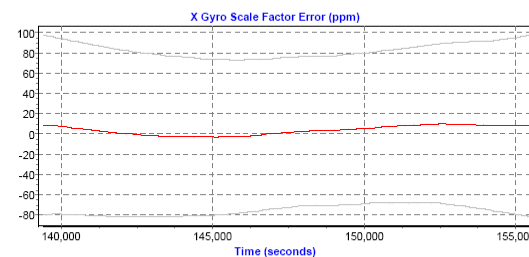
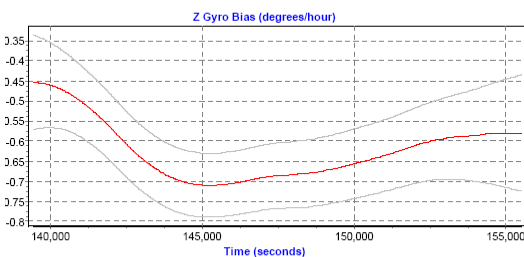
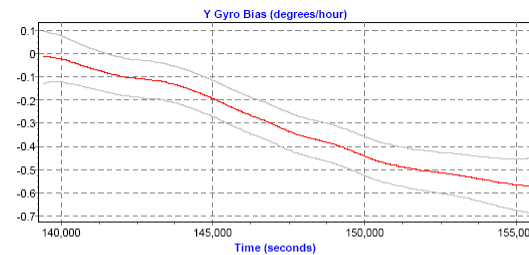
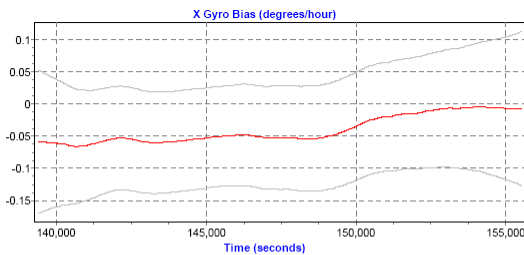
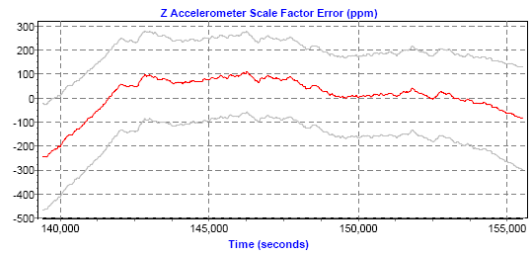
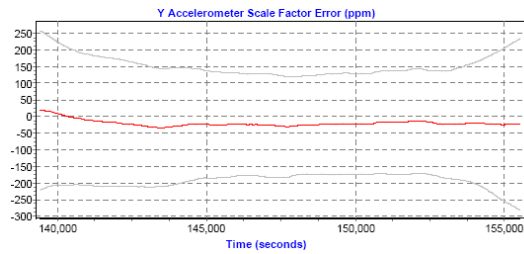
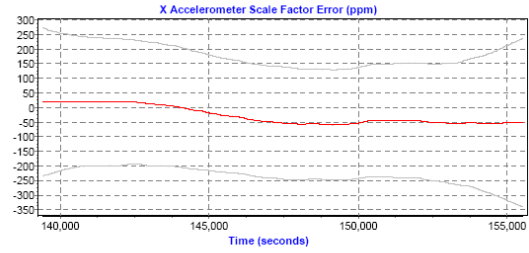
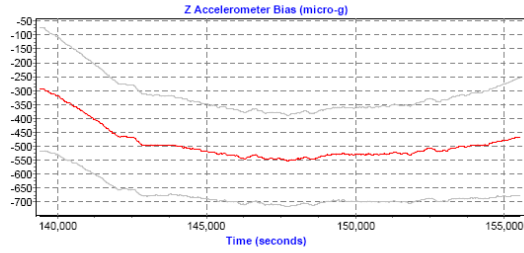
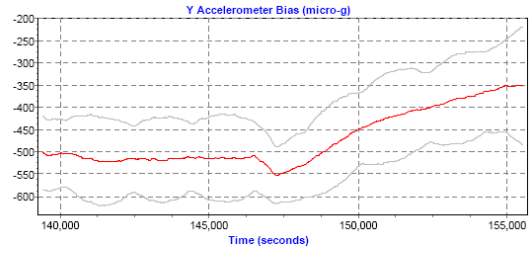
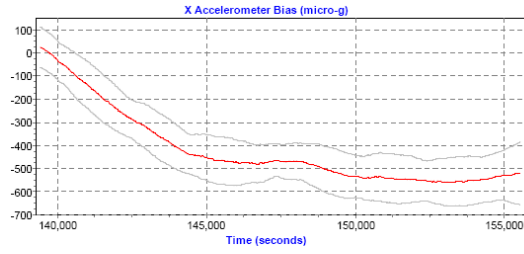
BASE_SAT = 99 ; Base satellite (99-default)

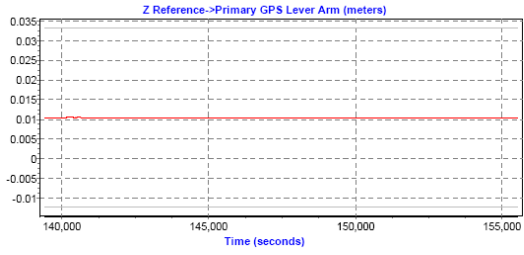
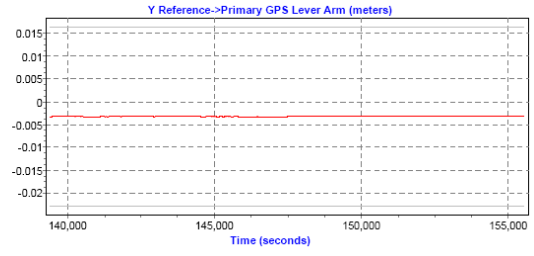
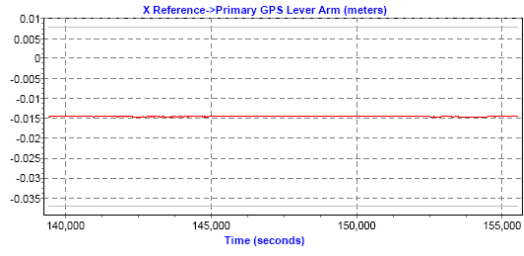
TIMERANGE = ALL 981728857.8 981745933.8 2 0 ; Processing time range

```









# Flight Log/Base Station/GPS Processing – 02.14.2011

## Flight Log

```

-----
Project Number: 0
S/N           : 0
Operator      : ???
Pilot(s)     : ???
Aircraft     : ???
Airport      : ???
Mission      : ???
Wheels Up   : ???
Flight Length:
HOBBS Start  :
HOBBS End    :
    
```

## Weather

```

-----
Date          : February 14, 2011
Julian Day    : 045
Temperature   : ???
Visibility    : ???
Clouds       : ???
Precipitation : ???
Wind Dir     : ???
Wind Speed   : ???
Pressure     : ???
    
```

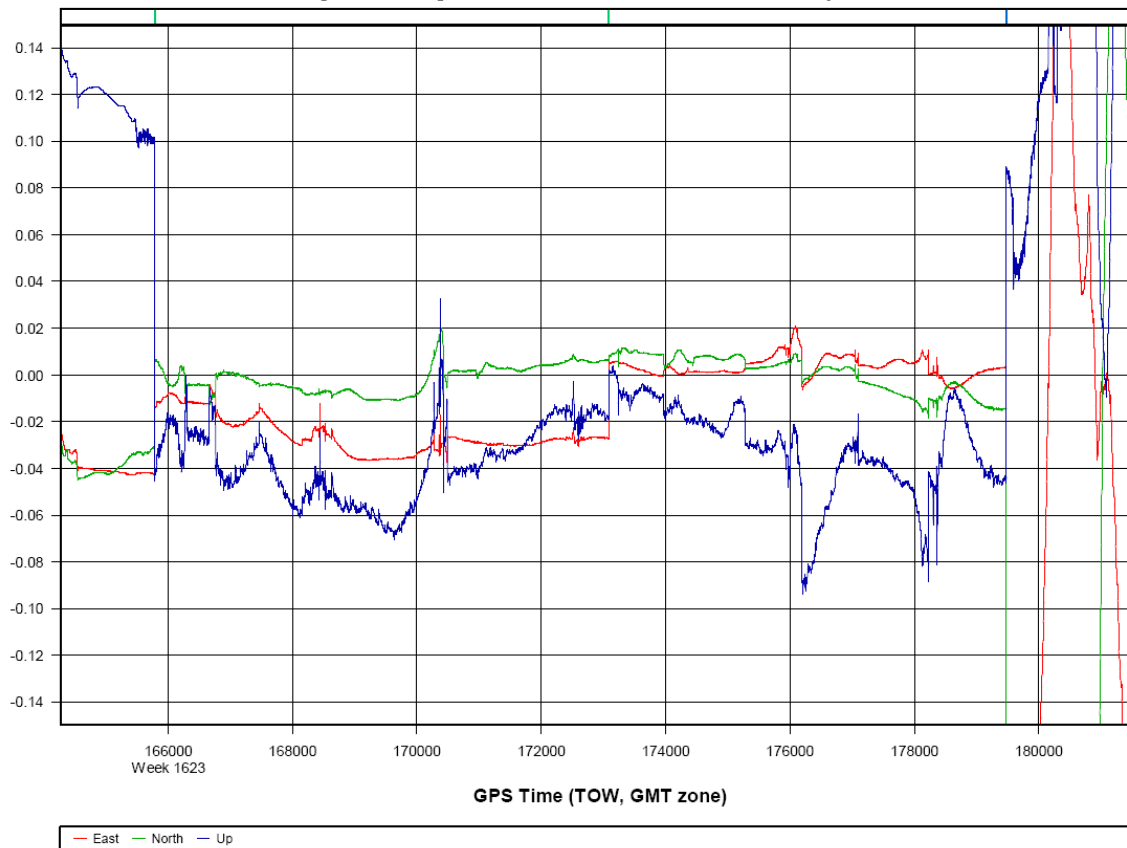
## Statistics

```

-----
Laser Time   : 02:59:02
    
```

START	STOP	LINE#	ALT	PRF	FREQ	ANGLE	MP	DIV	RC	HDG	Plan File
21:59:54.082	22:00:08.882	282	584	70	40.00	21.50	OFF	NAR	OFF	0.00	269
22:01:23.884	22:03:44.286	282	1161	70	40.00	21.50	OFF	NAR	OFF	0.00	269
22:13:02.595	22:44:07.827	281	1091	70	40.00	21.50	OFF	NAR	OFF	0.00	89
22:49:24.033	23:17:19.362	280	1154	70	40.00	21.50	OFF	NAR	OFF	0.00	269
23:23:40.269	23:54:30.601	279	1120	70	40.00	21.50	OFF	NAR	OFF	0.00	269
00:24:32.832	00:52:42.761	278	1145	70	40.00	21.50	OFF	NAR	OFF	0.00	269
00:59:15.068	01:28:45.399	277	1092	70	40.00	21.50	OFF	NAR	OFF	0.00	89
01:34:07.004	02:03:31.235	277	1159	70	40.00	21.50	OFF	NAR	OFF	0.00	89

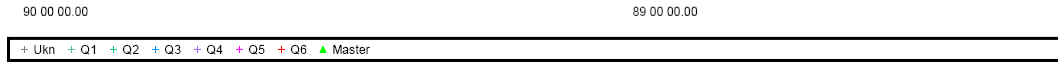
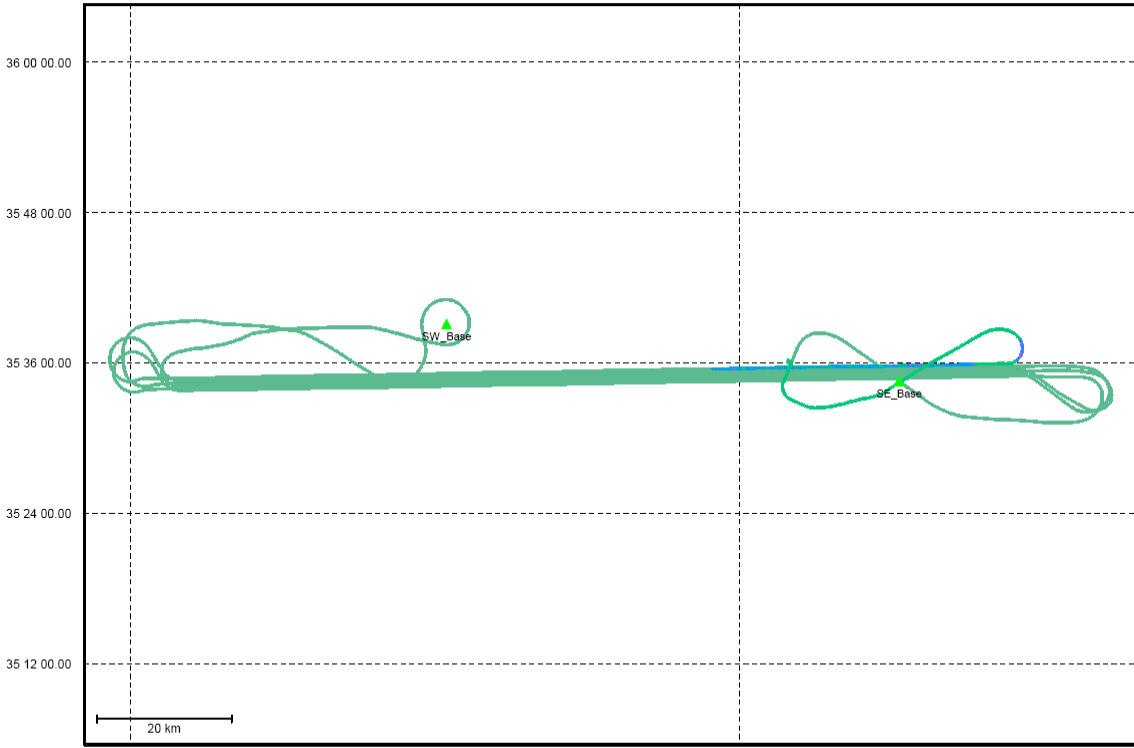
11045b [Combined] - Forward/Reverse or Combined Separation Plot





# Combined - Map Run (6)

Geographic, DMS



Processing Summary Information

Program: GrafNav  
Version: 7.80.2517  
Project: E:\11045B\pospac\GPS\11045b.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:  
Total in GPB file: 173832  
No processed position: 156461  
Missing Fwd or Rev: 3  
With bad C/A code: 0  
With bad L1 Phase: 0

Measurement RMS Values:  
L1 Phase: 0.0184 (m)  
C/A Code: 0.85 (m)  
L1 Doppler: 0.015 (m/s)

Fwd/Rev Separation RMS Values:  
East: 0.052 (m)  
North: 0.109 (m)  
Height: 0.089 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (16319 occurrences):  
East: 0.046 (m)  
North: 0.100 (m)  
Height: 0.065 (m)

Quality Number Percentages:  
Q 1: 88.2 %  
Q 2: 9.2 %  
Q 3: 2.4 %  
Q 4: 0.2 %  
Q 5: 0.0 %  
Q 6: 0.0 %

Position Standard Deviation Percentages:  
0.00 - 0.10 m: 95.7 %  
0.10 - 0.30 m: 4.3 %  
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: 3.8 %

Baseline Distances:  
Maximum: 99.508 (km)  
Minimum: 3.849 (km)  
Average: 38.812 (km)  
First Epoch: 14.091 (km)  
Last Epoch: 50.980 (km)

```

; PROJECT:      E:\11045B\pospac\GPS\11045b.cfg
;
; DATE:        Feb. 16/11 (date/time of processing)
; TIME:        0:19:15
; CREATED BY:  GrafNav Version 7.80.2517
;
VERSION = 7.80.2517
PROCUSER = jcr
PROCDISC = Run*(7)
PROCTIME = 00:17:27 02/16/2011

; Master station # 1 information
MB_MASTER_INDEX = 0
MB_MASTER_NAME = SE_Base
MB_MASTER_FILE = E:\11045B\ground_gps\SE_Base\log20110214_125513.gpb
MB_MASTER_POS = 35 34 34.17344 -88 44 17.15714 112.9020
MB_MASTER_ANT = 2.234 -0.009 2.000 0 TPSGR3 0
MB_MASTER_DISABLE = OFF

; Master station # 2 information
MB_MASTER_INDEX = 1
MB_MASTER_NAME = SW_Base
MB_MASTER_FILE = E:\11045B\ground_gps\SW_Base\log20110214_140238.gpb
MB_MASTER_POS = 35 39 07.19941 -89 28 50.54551 70.4660
MB_MASTER_ANT = 2.234 -0.009 2.000 0 TPSGR3 0
MB_MASTER_DISABLE = OFF

; Remote station information
REMOTE_FILE = E:\11045B\pospac\Extract\mgps_11045B_06sen187_435H.gpb
REMOTE_POS = 35 36 12.41268 -88 55 15.90740 97.1603
REMOTE_ANT = 0.000

; General settings
PROCESS_MODE = 105 108 111 126 ; Processing modes (GrafNav only)

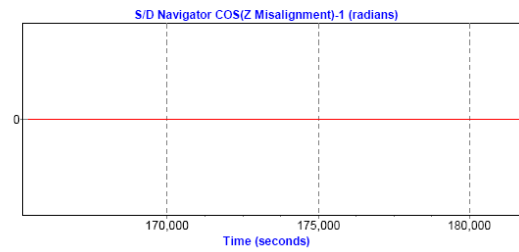
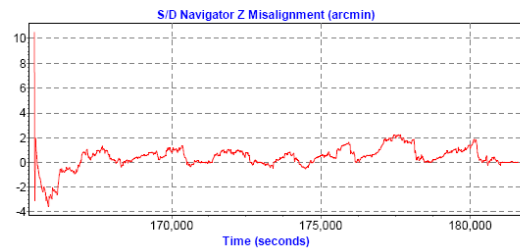
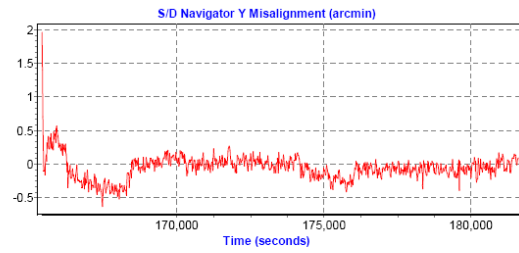
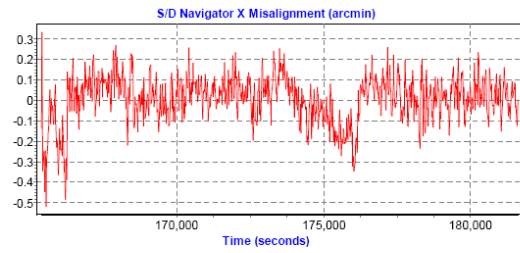
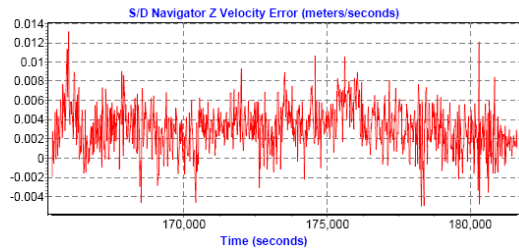
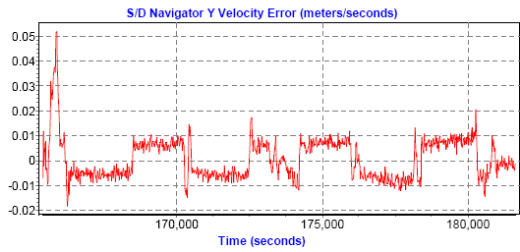
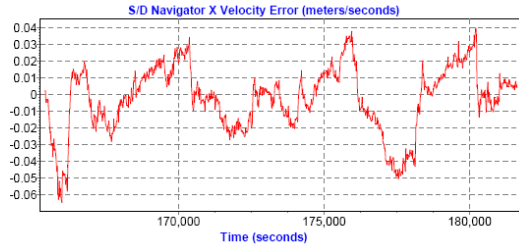
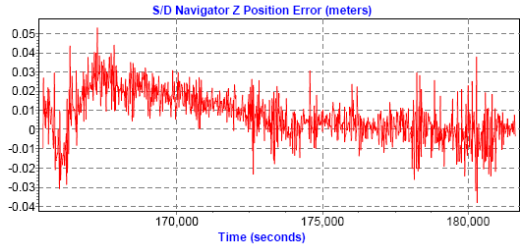
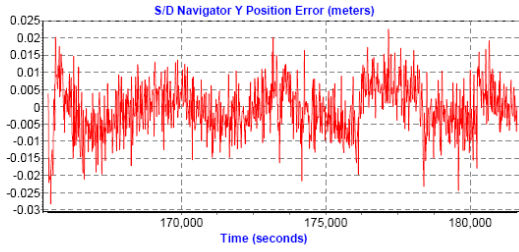
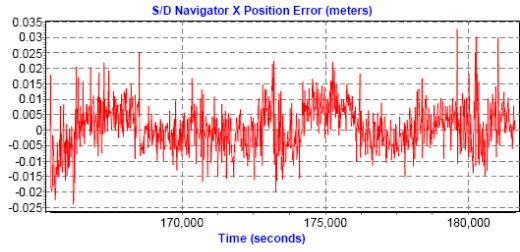
DATUM = NAD83 AUTO ; Processing Datum
INPDATUM = ON NAD83 AUTO ; Input Datum (ON=Use processing datum)
ELEV_MASK = 12.0 ; Elevation mask (deg)
GRID = UTM 15 31 ; Grid info

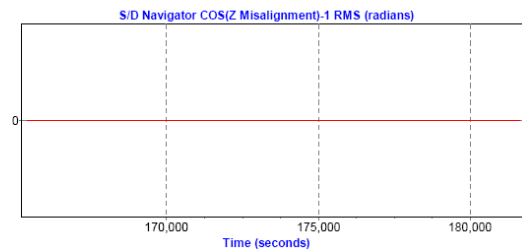
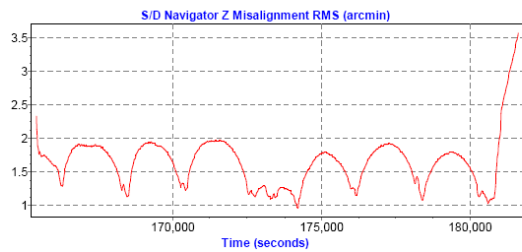
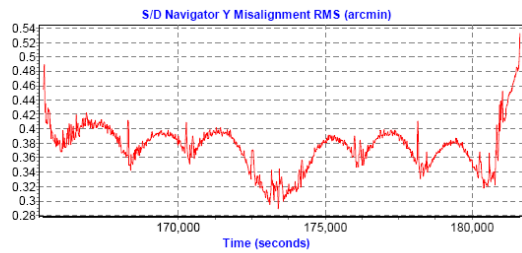
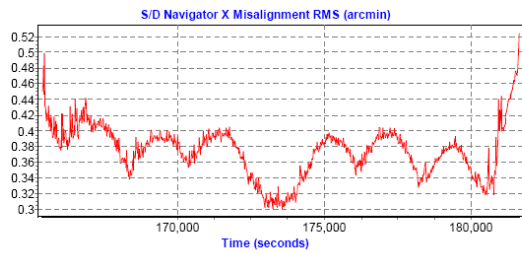
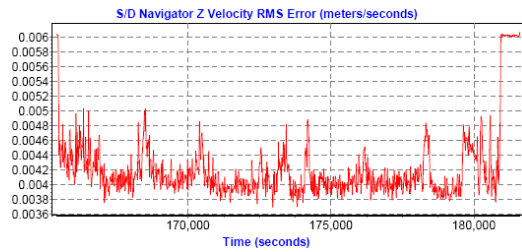
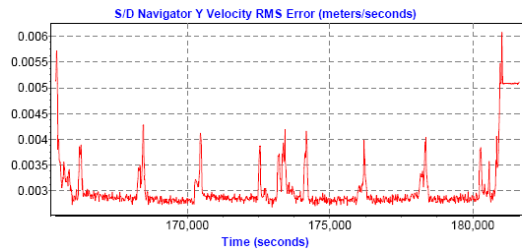
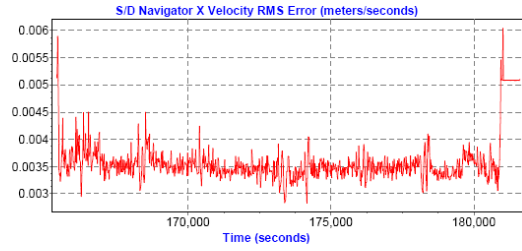
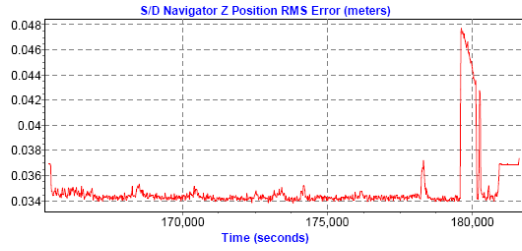
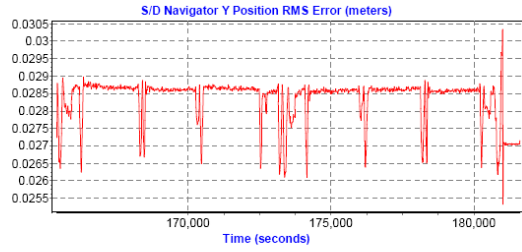
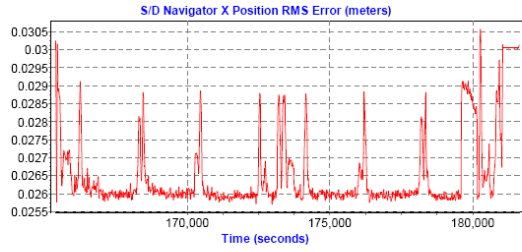
CYCLE_TEST = BOTH ; Cycle slip test method
STATIC_SLIP_TOL = 0.40 ; slip tolerance in static mode (cycles)
USE_DOPPLER = ON OFF ; Use doppler meas. for phase, for code-only

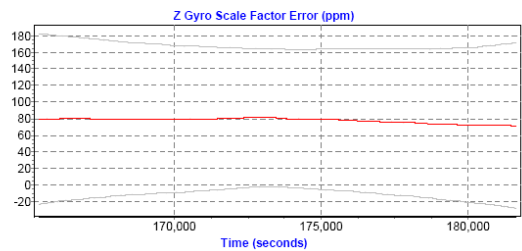
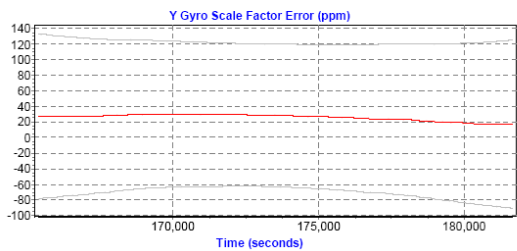
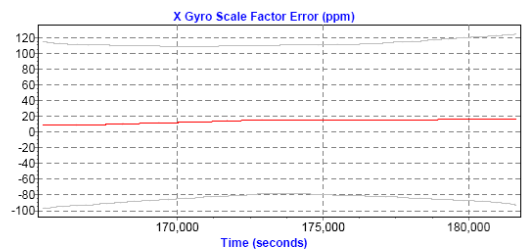
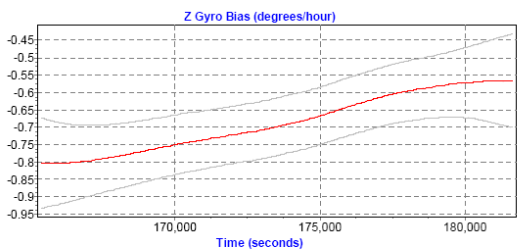
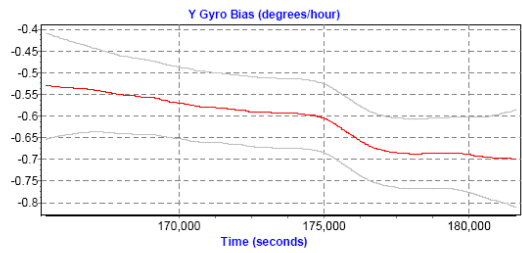
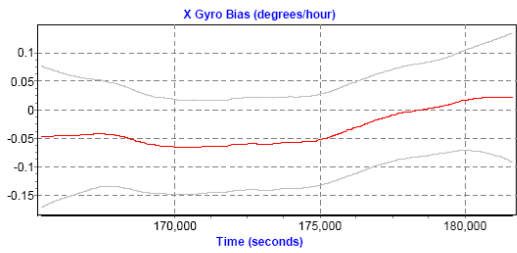
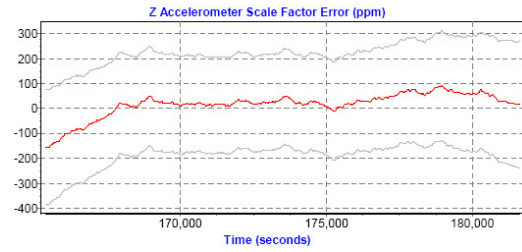
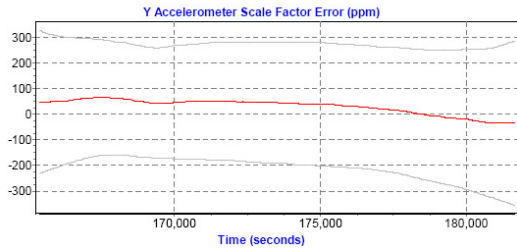
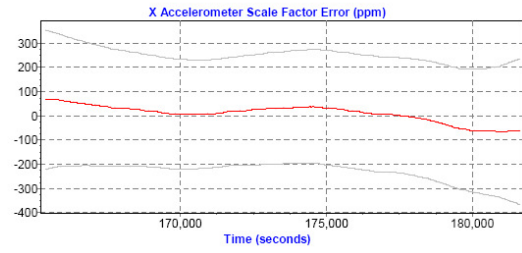
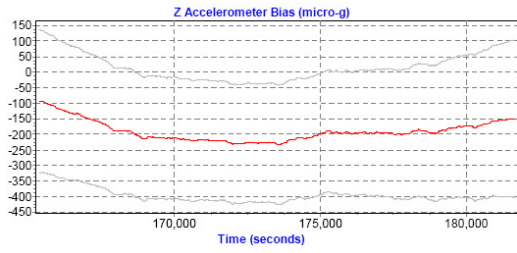
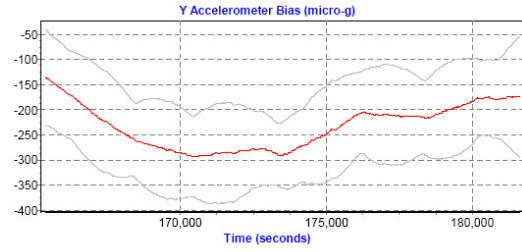
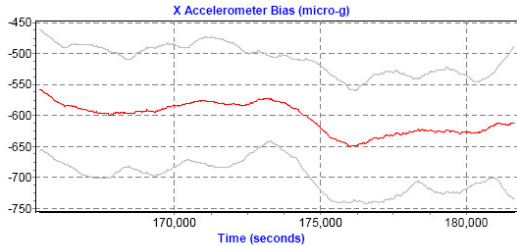
BASE_SAT = 99 ; Base satellite (99-default)

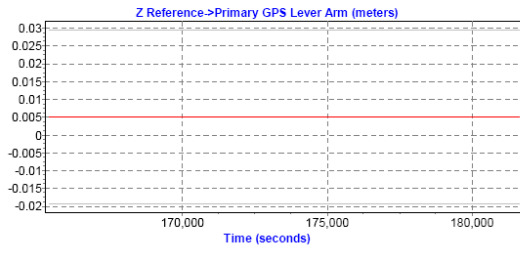
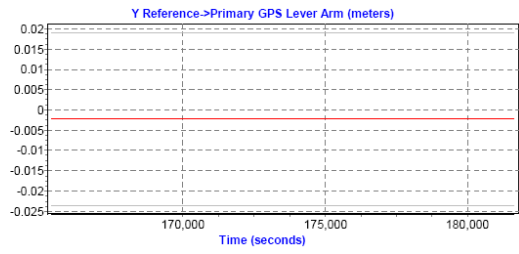
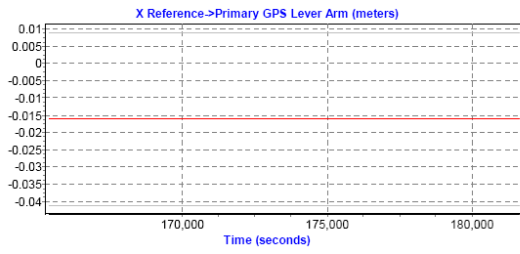
TIMERANGE = ALL 981754649.3 981771120.0 2 0 ; Processing time range

```









# Flight Log/Base Station/GPS Processing – 02.20.2011

```

-----
Flight Log
-----
Project Number: Dyersburg,TN
S/N           : 06sen187
Operator      : J.Stump
Pilot(s)     : J.Pitts
Aircraft     : 435H
Airport      : MKL
Mission      : 11047A
Wheels Up    : ???
Flight Length:
HOBBS Start  : 20.6
HOBBS End    :
    
```

```

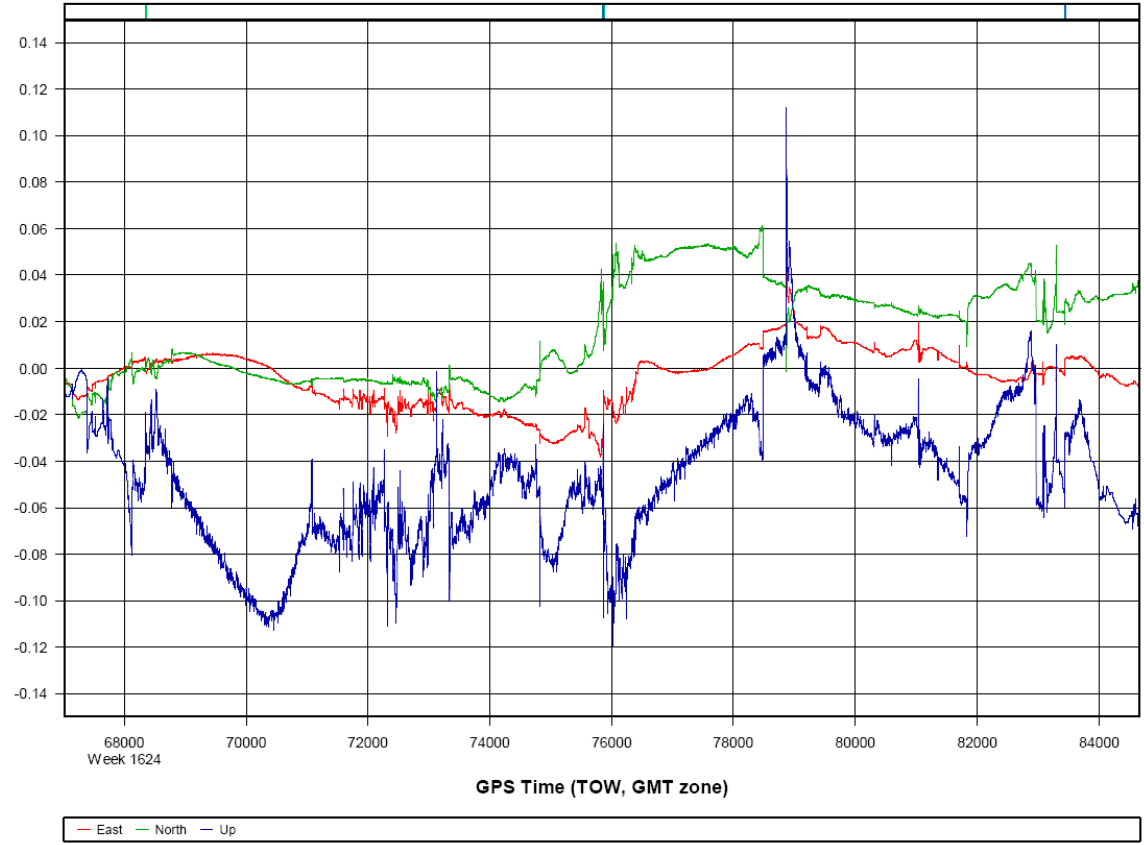
-----
Weather
-----
Date          : February 20, 2011
Julian Day    : 23
Temperature   : 11
Visibility    : 10
Clouds       : sct048
Precipitation : 0
Wind Dir      : 210
Wind Speed    : 13g21
Pressure     : 29.94
    
```

```

-----
Statistics
-----
Laser Time   : 02:59:34
    
```

START	STOP	LINE#	ALT	PRF	FREQ	ANGLE	MP	DIV	RC	HDG	Plan File
19:00:34.163	19:02:03.165	276	1210	70	40.00	21.50	OFF	NAR	OFF	0.00	269
19:09:19.772	19:41:54.205	275	1074	70	40.00	21.50	OFF	NAR	OFF	0.00	89
19:47:24.411	20:14:52.639	274	1091	70	40.00	21.50	OFF	NAR	OFF	0.00	89
20:20:33.545	20:52:15.778	273	1024	70	40.00	21.50	OFF	NAR	OFF	0.00	89
21:24:27.111	21:50:59.938	272	1150	70	40.00	21.50	OFF	NAR	OFF	0.00	269
21:55:59.343	22:27:37.874	271	1094	70	40.00	21.50	OFF	NAR	OFF	0.00	89
22:33:47.981	23:00:32.607	271	1076	70	40.00	21.50	OFF	NAR	OFF	0.00	89
23:09:02.716	23:10:41.517	271	888	70	40.00	21.50	OFF	NAR	OFF	0.00	89

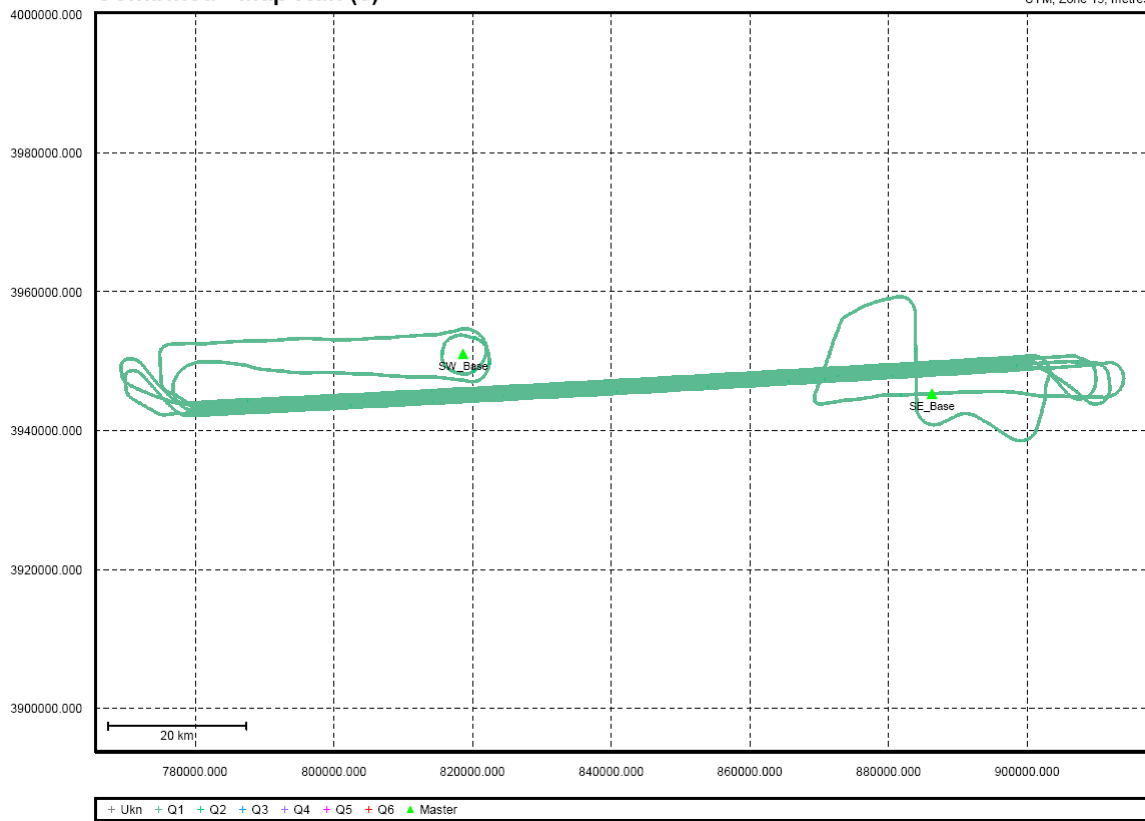
11051a [Combined] - Forward/Reverse or Combined Separation Plot





### Combined - Map Run (3)

UTM, Zone 15, metres



Processing Summary Information

Program: GrafNav  
Version: 7.80.2517  
Project: E:\11051A\pospac\GPS\11051a.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:  
Total in GPB file: 176782  
No processed position: 159116  
Missing Fwd or Rev: 3  
With bad C/A code: 0  
With bad L1 Phase: 0

Measurement RMS Values:  
L1 Phase: 0.0196 (m)  
C/A Code: 0.80 (m)  
L1 Doppler: 0.019 (m/s)

Fwd/Rev Separation RMS Values:  
East: 0.013 (m)  
North: 0.026 (m)  
Height: 0.056 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (17661 occurrences):  
East: 0.013 (m)  
North: 0.026 (m)  
Height: 0.055 (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: 99.6 %  
0.10 - 0.30 m: 0.4 %  
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: 0.0 %

Baseline Distances:  
Maximum: 74.848 (km)  
Minimum: 1.131 (km)  
Average: 32.424 (km)  
First Epoch: 14.604 (km)  
Last Epoch: 16.298 (km)

```

; PROJECT:      E:\11051A\pospac\GPS\11051a.cfg
;
; DATE:        Feb. 25/11  (date/time of processing)
; TIME:        10:56:10
; CREATED BY:  GrafNav Version 7.80.2517
;
VERSION = 7.80.2517
PROCUSER = jcr
PROCDISC = Run*(4)
PROCTIME = 21:16:12 02/23/2011

; Master station # 1 information
MB_MASTER_INDEX = 0
MB_MASTER_NAME = SE_Base
MB_MASTER_FILE = E:\11051A\ground_gps\SE_Base\log20110220_162816.gpb
MB_MASTER_POS = 35 34 34.17344 -88 44 17.15714 112.9020
MB_MASTER_ANT = 2.234 -0.009 2.000 0 TPSGR3 0
MB_MASTER_DISABLE = OFF

; Master station # 2 information
MB_MASTER_INDEX = 1
MB_MASTER_NAME = SW_Base
MB_MASTER_FILE = E:\11051A\ground_gps\SW_Base\log20110220_174015.gpb
MB_MASTER_POS = 35 39 07.19941 -89 28 50.54551 70.4660
MB_MASTER_ANT = 2.234 -0.009 2.000 0 TPSGR3 0
MB_MASTER_DISABLE = OFF

; Remote station information
REMOTE_FILE = E:\11051A\pospac\GPS\mgps_11051a.gpb
REMOTE_POS = 35 36 12.50509 -88 55 15.89947 96.9202
REMOTE_ANT = 0.000

; General settings
PROCESS_MODE = 105 108 111 126 ; Processing modes (GrafNav only)

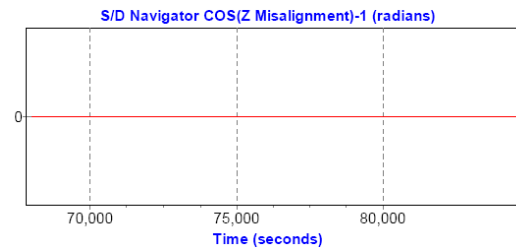
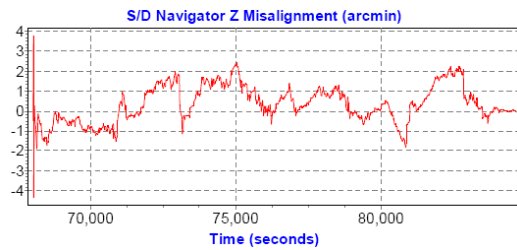
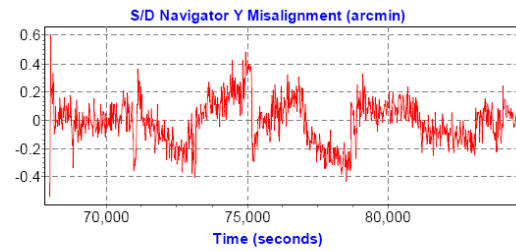
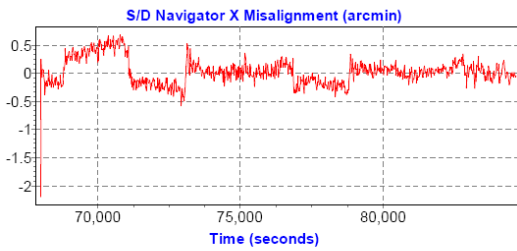
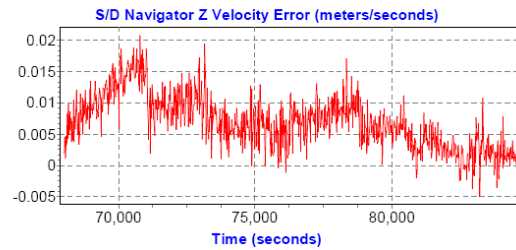
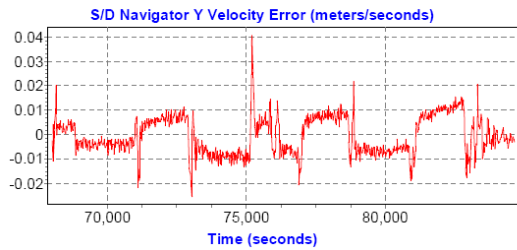
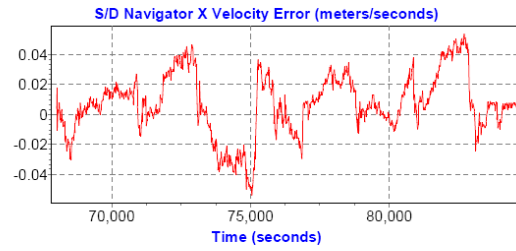
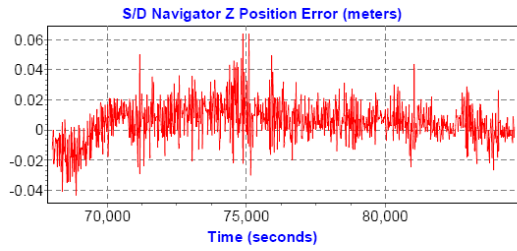
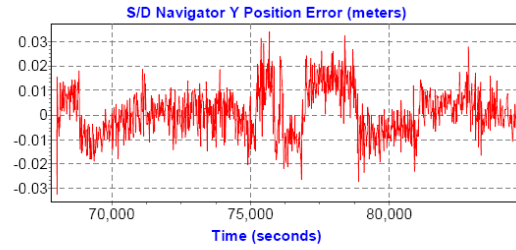
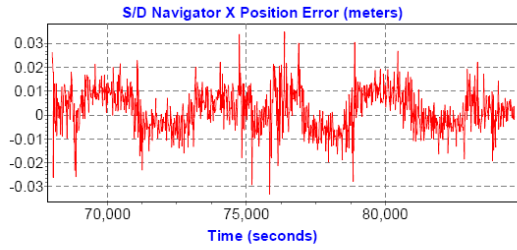
DATUM = NAD83 AUTO ; Processing Datum
INPDATUM = ON NAD83 AUTO ; Input Datum (ON=Use processing datum)
ELEV_MASK = 10.0 ; Elevation mask (deg)
GRID = UTM 15 31 ; Grid info

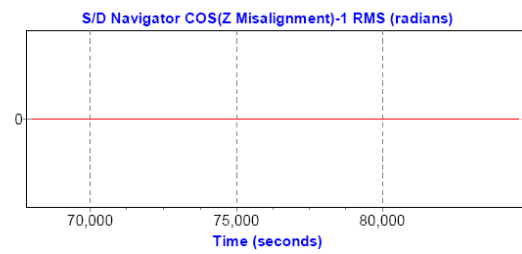
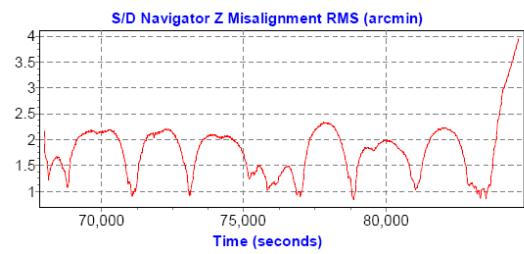
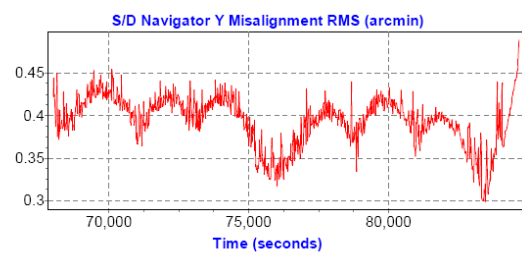
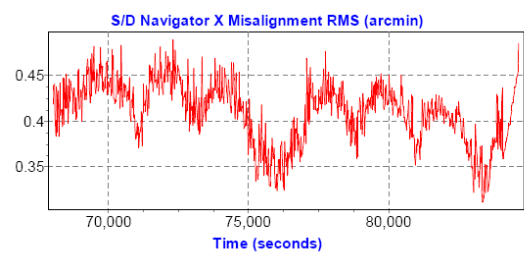
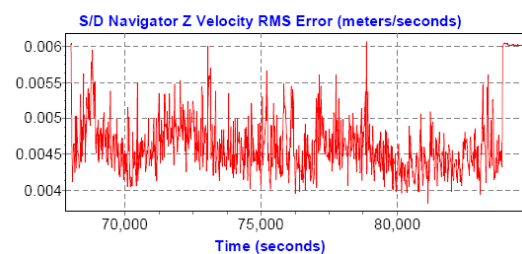
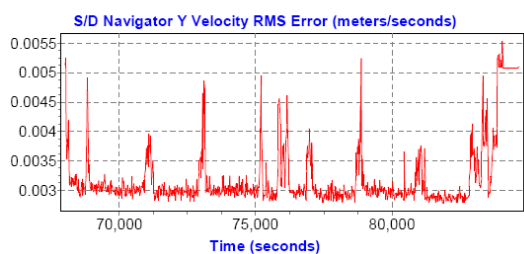
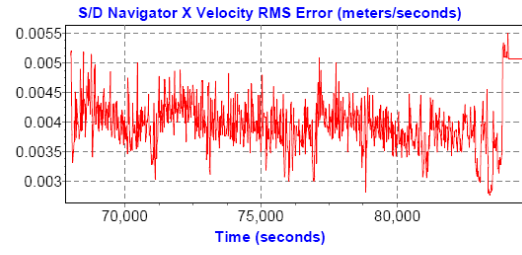
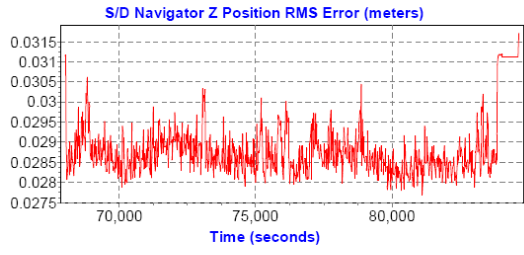
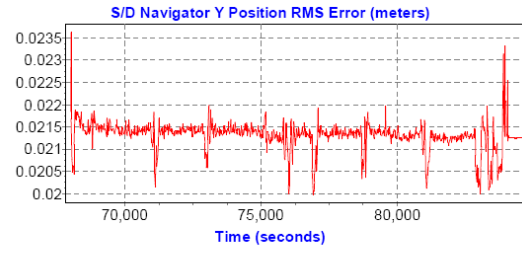
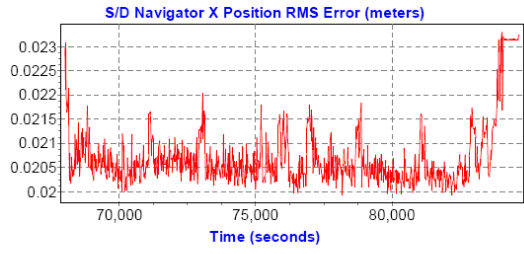
CYCLE_TEST = BOTH ; Cycle slip test method
STATIC_SLIP_TOL = 0.40 ; slip tolerance in static mode (cycles)
USE_DOPPLER = ON OFF ; Use doppler meas. for phase, for code-only

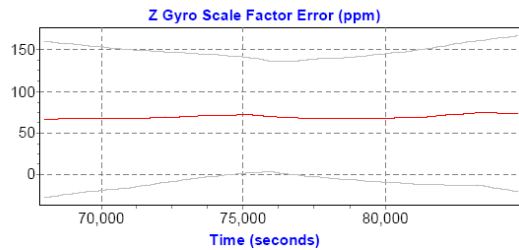
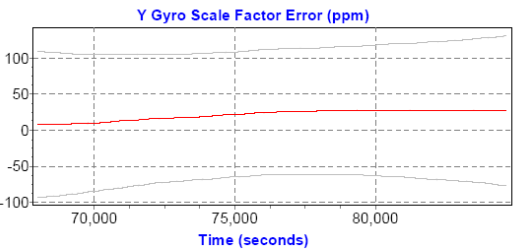
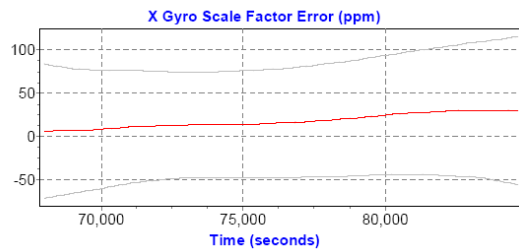
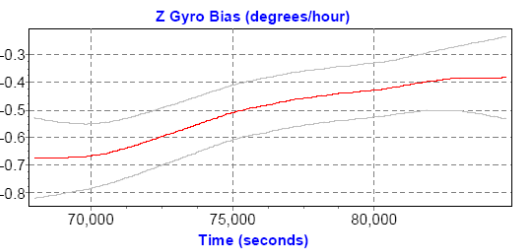
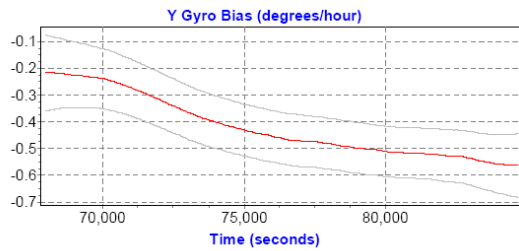
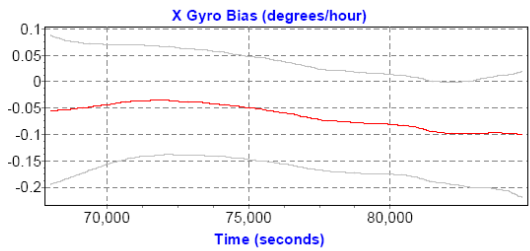
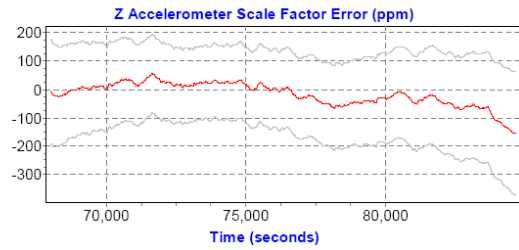
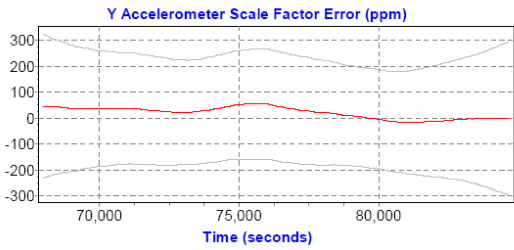
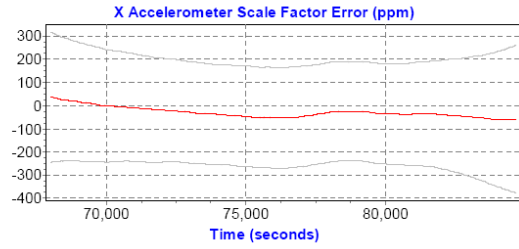
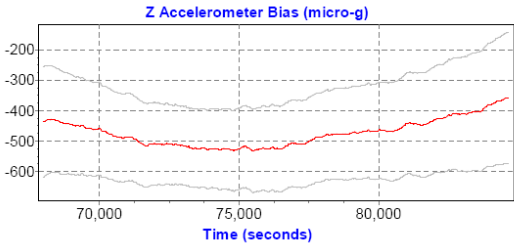
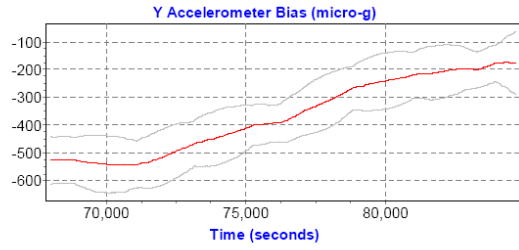
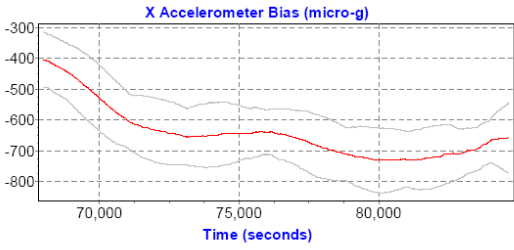
BASE_SAT = 99 ; Base satellite (99-default)

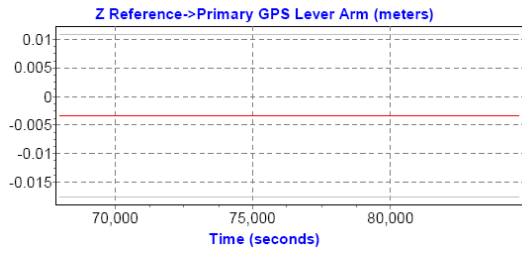
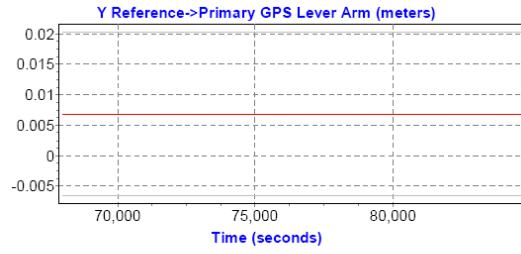
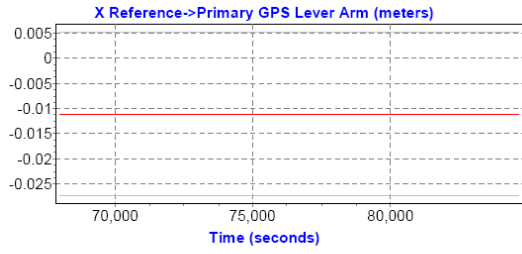
TIMERANGE = ALL 982262195.2 982279873.3 2 0 ; Processing time range

```









# Flight Log/Base Station/GPS Processing – 02.21.2011

```

-----
Flight Log
-----
Project Number: Dyersburg, TN
S/N           : 06sen187
Operator      : J.Stump
Pilot(s)     : J.Pitts
Aircraft     : 435H
Airport      : MKL
Mission      : 11052A
Wheels Up    : ???
Flight Length:
HOBBS Start  : 25.7
HOBBS End    :
    
```

```

-----
Weather
-----
Date          : February 20, 2011
Julian Day    : 052
Temperature   : 18
Visibility    : 10
Clouds       : clr
Precipitation : 0
Wind Dir      : 210
Wind Speed    : 7
Pressure     : 29.82
    
```

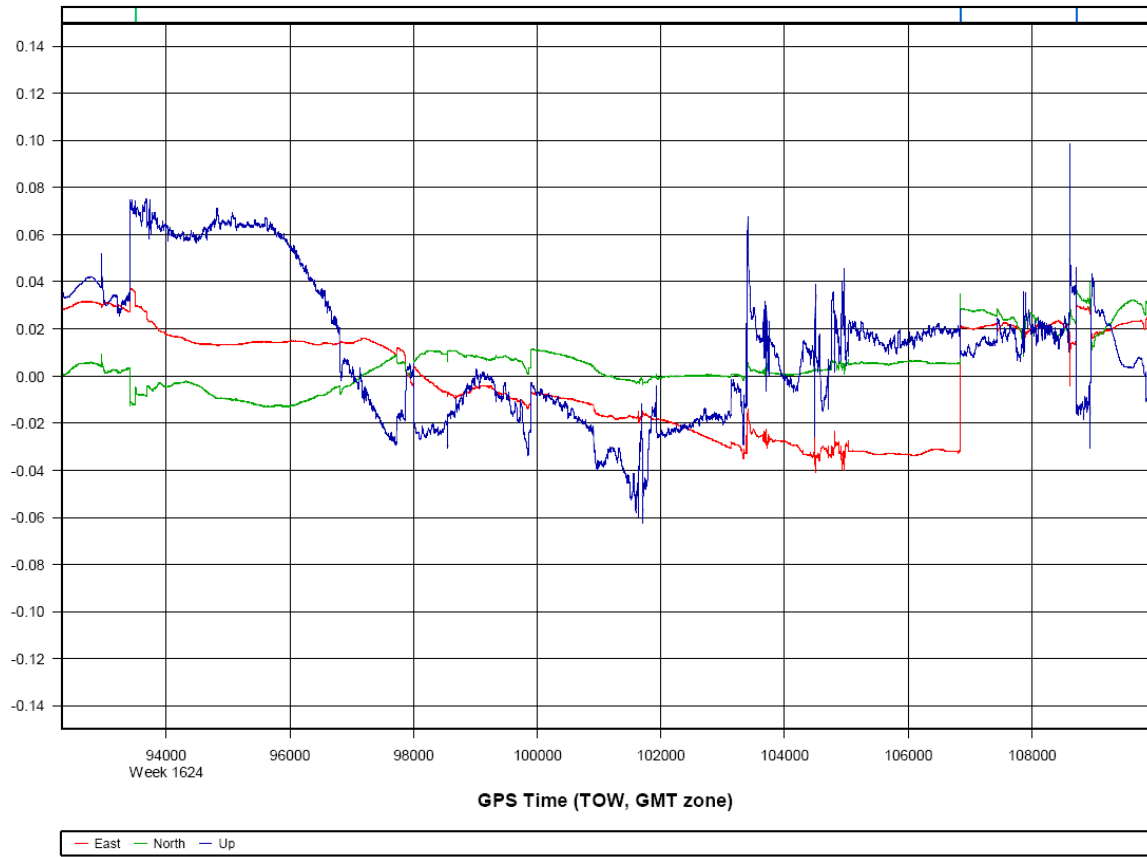
```

-----
Statistics
-----
Laser Time   : 03:07:26
    
```

START	STOP	LINE#	ALT	PRF	FREQ	ANGLE	MP	DIV	RC	HDG	Plan File
01:56:21.878	01:56:34.978	270	673	70	40.00	21.50	OFF	NAR	OFF	0.00	269
01:58:24.98	01:58:37.88	270	970	70	40.00	21.50	OFF	NAR	OFF	0.00	269
02:07:31.089	02:46:32.33	269	1153	70	40.00	21.50	OFF	NAR	OFF	0.00	89
03:00:52.445	03:24:25.969	268	1153	70	40.00	21.50	OFF	NAR	OFF	0.00	89
03:32:20.077	04:11:03.017	267	1149	70	40.00	21.50	OFF	NAR	OFF	0.00	269
04:17:23.124	04:41:30.048	266	1175	70	40.00	21.50	OFF	NAR	OFF	0.00	89
04:47:30.855	05:26:59.195	265	1121	70	40.00	21.50	OFF	NAR	OFF	0.00	269
05:33:04.101	05:55:37.425	265	1172	70	40.00	21.50	OFF	NAR	OFF	0.00	89

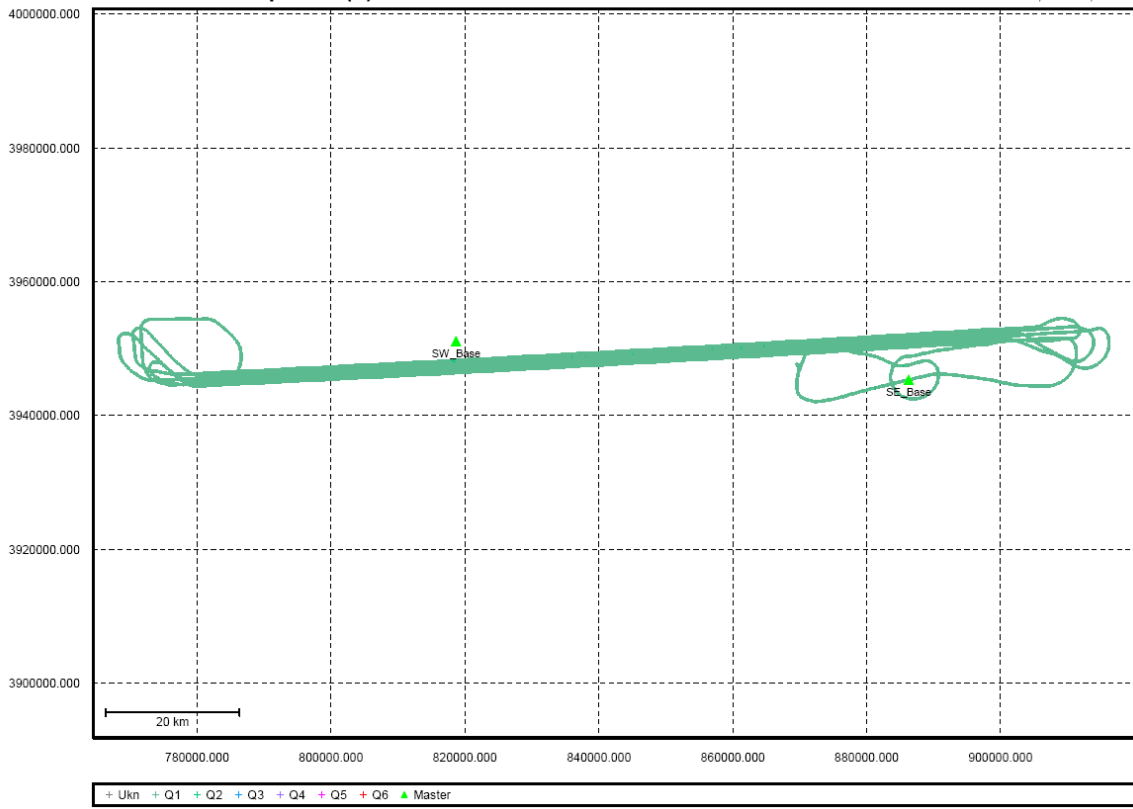


11052a [Combined] - Forward/Reverse or Combined Separation Plot



# Combined - Map Run (2)

UTM, Zone 15, metres



Processing Summary Information

Program: GrafNav  
Version: 7.80.2517  
Project: E:\11052A\pospac\GPS\11052a.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:  
Total in GPB file: 175987  
No processed position: 158401  
Missing Fwd or Rev: 3  
With bad C/A code: 0  
With bad L1 Phase: 0

Measurement RMS Values:  
L1 Phase: 0.0199 (m)  
C/A Code: 0.88 (m)  
L1 Doppler: 0.016 (m/s)

Fwd/Rev Separation RMS Values:  
East: 0.022 (m)  
North: 0.012 (m)  
Height: 0.034 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (17581 occurrences):  
East: 0.022 (m)  
North: 0.012 (m)  
Height: 0.032 (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: 75.987 (km)  
Minimum: 1.185 (km)  
Average: 32.311 (km)  
First Epoch: 14.519 (km)  
Last Epoch: 7.177 (km)

```

; PROJECT:      E:\11052A\pospac\GPS\11052a.cfg
;
; DATE:         Feb. 25/11 (date/time of processing)
; TIME:         11:47:13
; CREATED BY:   GrafNav Version 7.80.2517
;
VERSION = 7.80.2517
PROCUSER = jcr
PROCDISC = Run*(3)
PROCTIME = 11:42:39 02/25/2011

; Master station # 1 information
MB_MASTER_INDEX = 0
MB_MASTER_NAME = SE_Base
MB_MASTER_FILE = E:\11052A\ground_gps\SE_Base\log20110220_162816.gpb
MB_MASTER_POS = 35 34 34.17344 -88 44 17.15714 112.9020
MB_MASTER_ANT = 2.234 -0.009 2.000 0 TPSGR3 0
MB_MASTER_DISABLE = OFF

; Master station # 2 information
MB_MASTER_INDEX = 1
MB_MASTER_NAME = SW_Base
MB_MASTER_FILE = E:\11052A\ground_gps\SW_Base\log20110220_174015.gpb
MB_MASTER_POS = 35 39 07.19941 -89 28 50.54551 70.4660
MB_MASTER_ANT = 2.234 -0.009 2.000 0 TPSGR3 0
MB_MASTER_DISABLE = OFF

; Remote station information
REMOTE_FILE = E:\11052A\pospac\GPS\mgps_11052a.gpb
REMOTE_POS = 35 36 12.46328 -88 55 15.90186 98.6904
REMOTE_ANT = 0.000

; General settings
PROCESS_MODE = 105 108 111 126 ; Processing modes (GrafNav only)

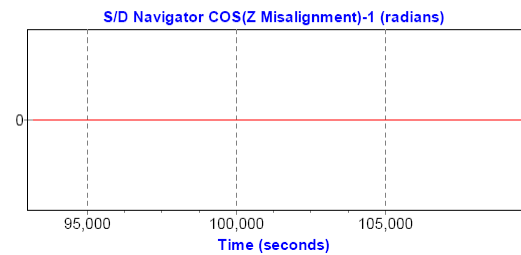
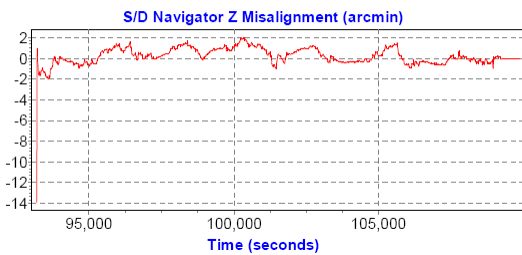
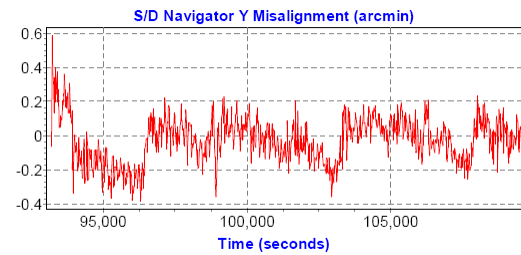
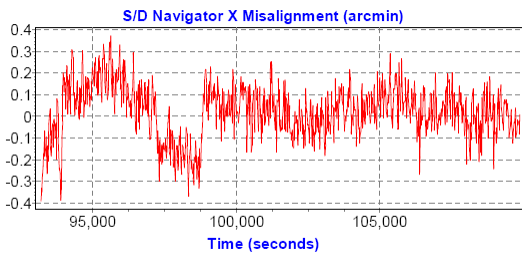
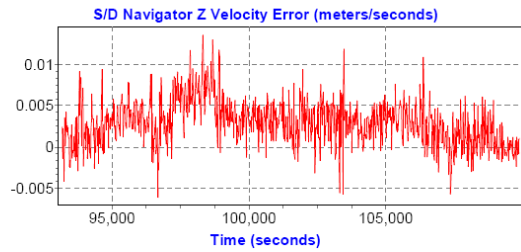
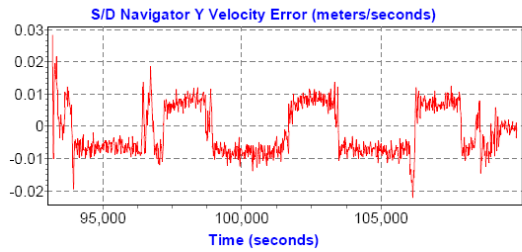
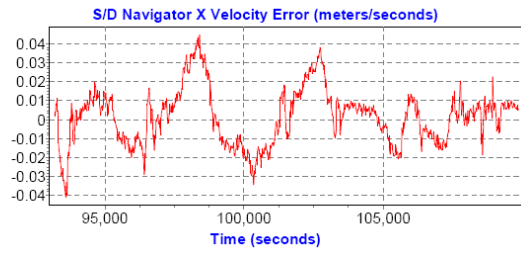
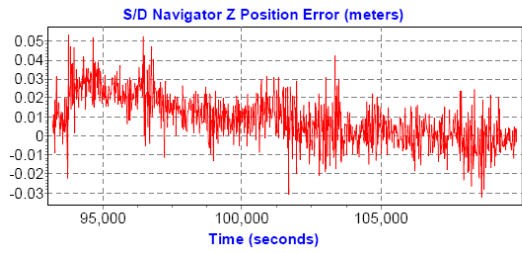
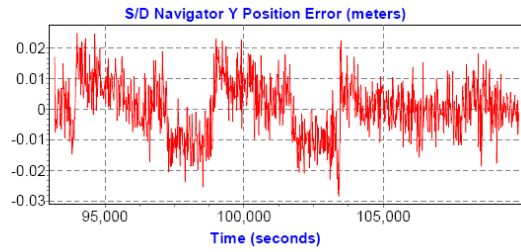
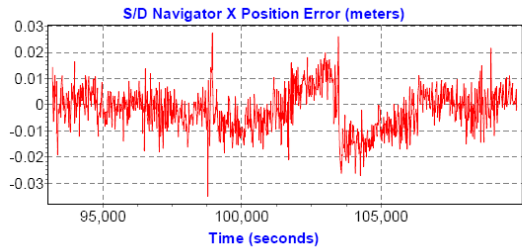
DATUM = NAD83 AUTO ; Processing Datum
INPDATUM = ON NAD83 AUTO ; Input Datum (ON=Use processing datum)
ELEV_MASK = 10.0 ; Elevation mask (deg)
GRID = UTM 15 31 ; Grid info

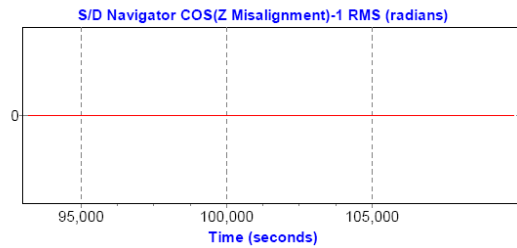
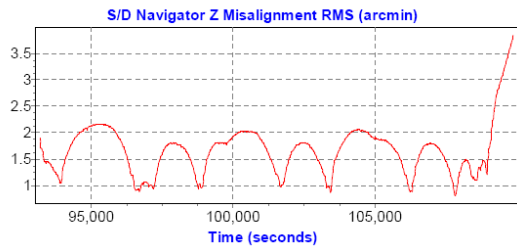
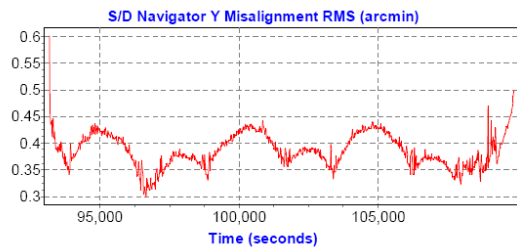
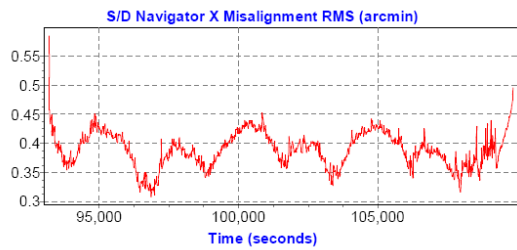
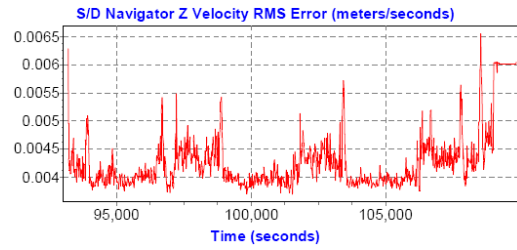
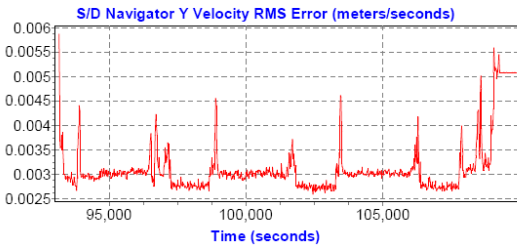
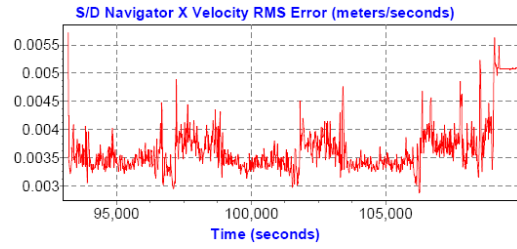
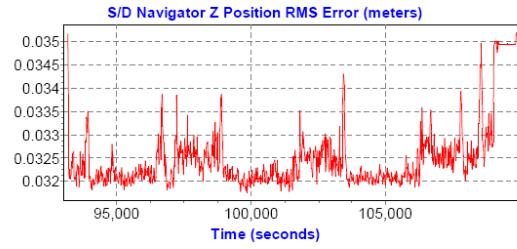
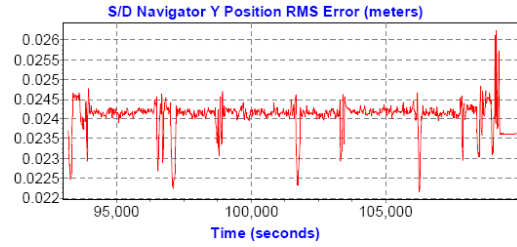
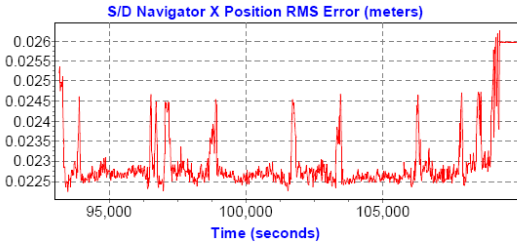
CYCLE_TEST = BOTH ; Cycle slip test method
STATIC_SLIP_TOL = 0.40 ; slip tolerance in static mode (cycles)
USE_DOPPLER = ON OFF ; Use doppler meas. for phase, for code-only

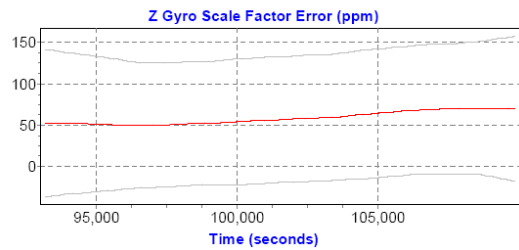
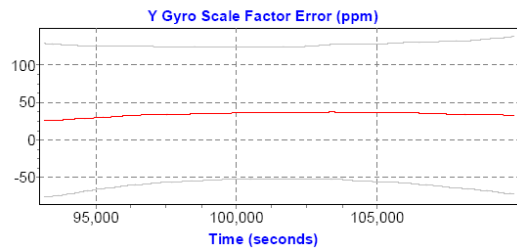
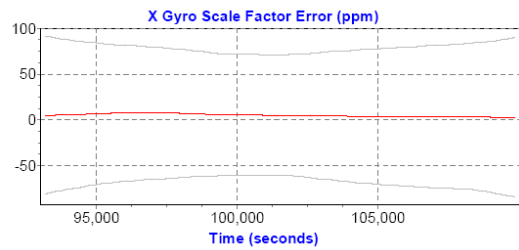
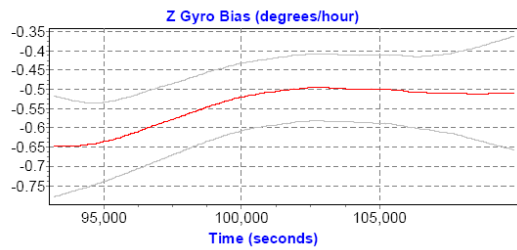
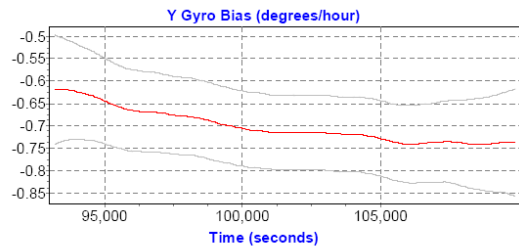
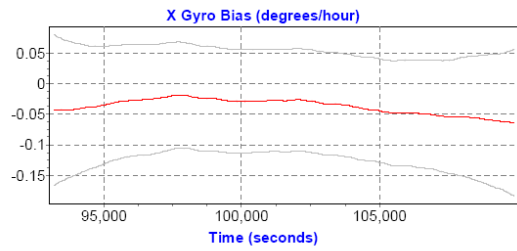
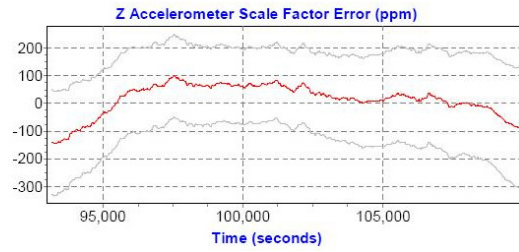
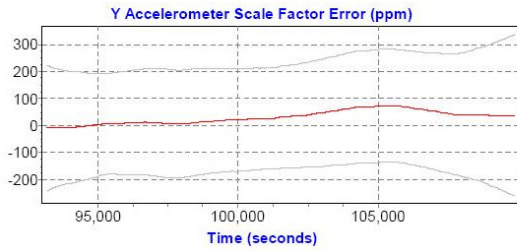
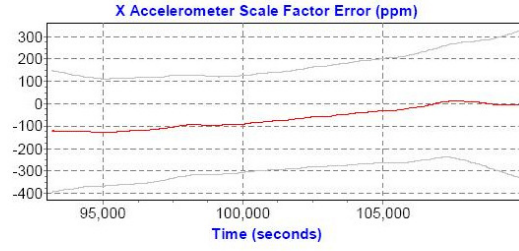
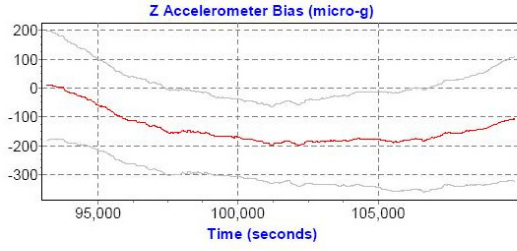
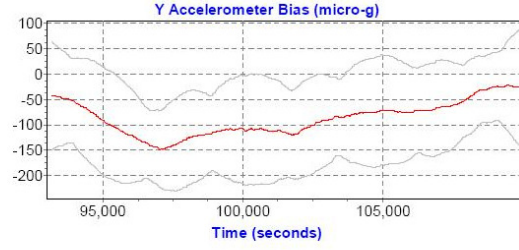
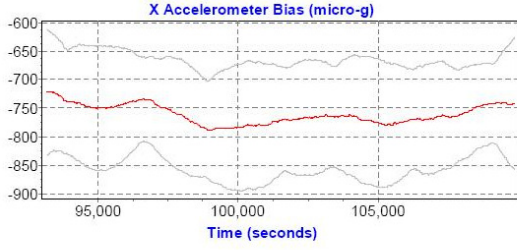
BASE_SAT = 99 ; Base satellite (99-default)

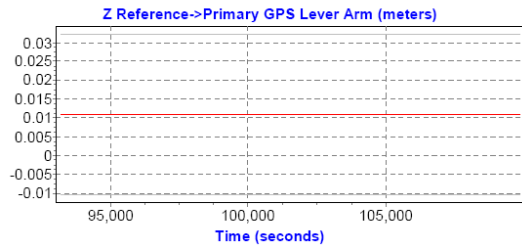
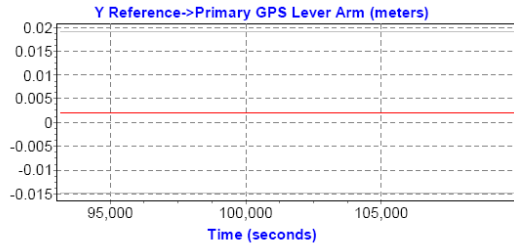
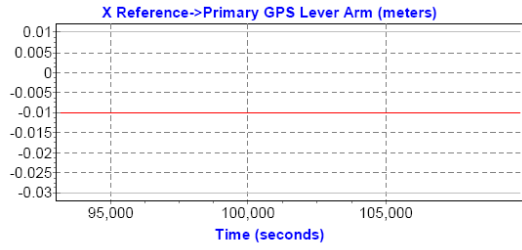
TIMERANGE = ALL 982287493.3 982305091.9 2 0 ; Processing time range

```











Flight Log

-----  
 Project Number: 0  
 S/N : 0  
 Operator : ???  
 Pilot(s) : ???  
 Aircraft : ???  
 Airport : ???  
 Mission : ???  
 Wheels Up : ???  
 Flight Length :  
 HOBBS Start :  
 HOBBS End :

Weather

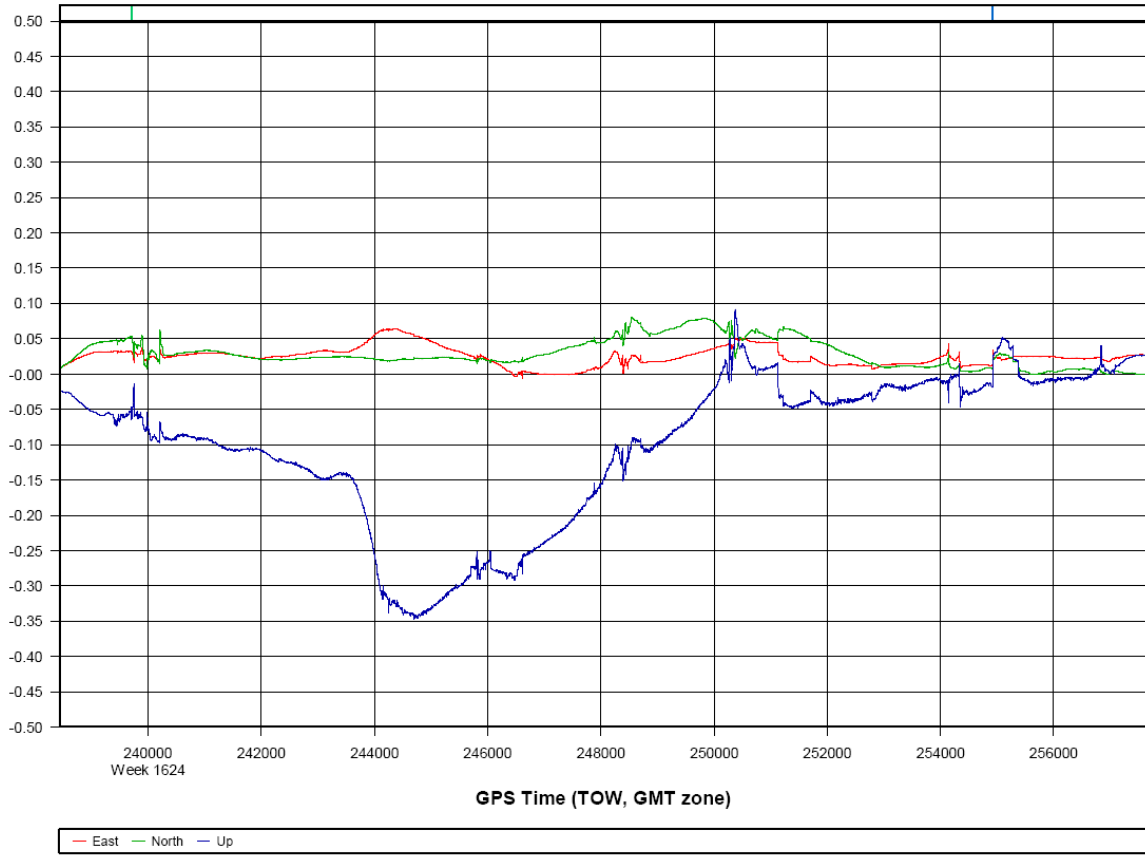
-----  
 Date : February 22, 2011  
 Julian Day : 053  
 Temperature : ???  
 Visibility : ???  
 Clouds : ???  
 Precipitation : ???  
 Wind Dir : ???  
 Wind Speed : ???  
 Pressure : ???

Statistics

-----  
 Laser Time : 03:40:36

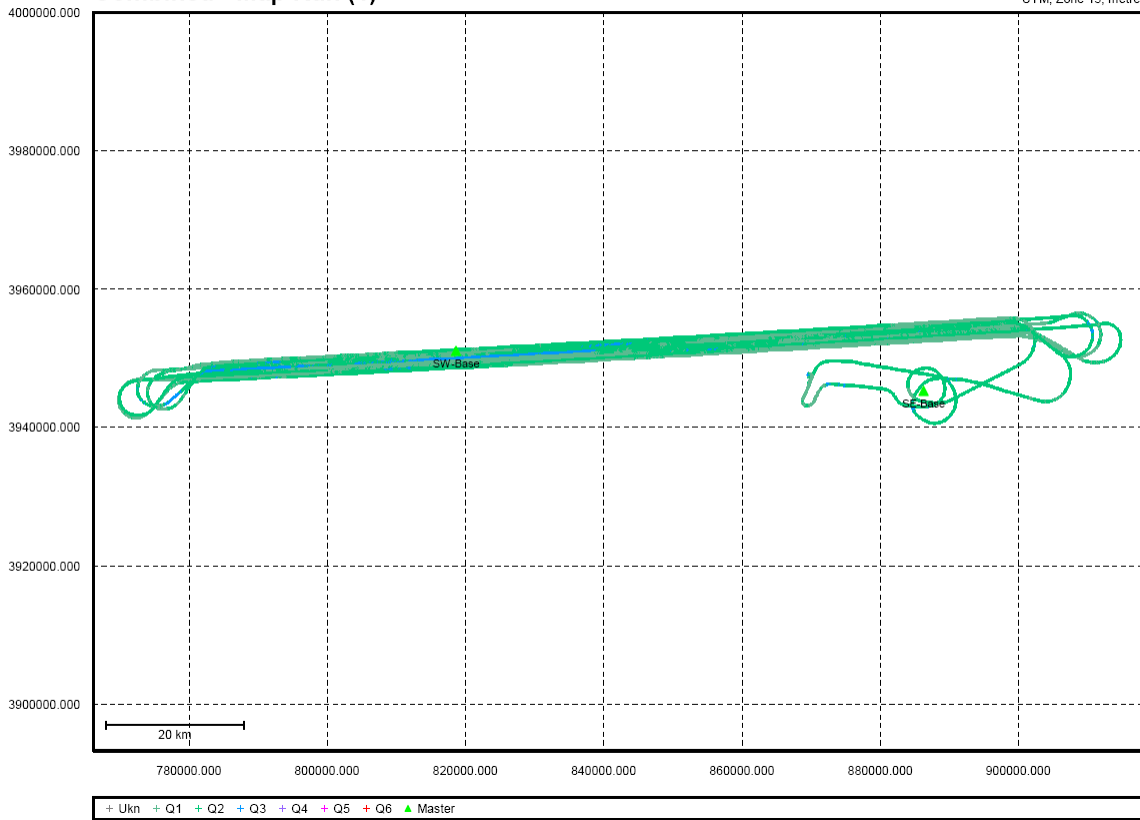
START	STOP	LINE#	ALT	PRF	FREQ	ANGLE	MP	DIV	RC	HDG	Plan File
18:20:45.373	18:21:04.674	264	97	70	40.00	21.50	OFF	NAR	OFF	0.00	269
18:20:45.373	18:21:04.674	264	98	70	40.00	21.50	OFF	NAR	OFF	0.00	269
18:31:40.483	18:34:40.985	264	1161	70	40.00	21.50	OFF	NAR	OFF	0.00	269
18:47:11.897	19:17:17.025	264	1131	70	40.00	21.50	OFF	NAR	OFF	0.00	269
19:22:29.43	19:48:22.256	262	1136	70	40.00	21.50	OFF	NAR	OFF	0.00	269
19:54:51.263	20:25:07.094	261	1160	70	40.00	21.50	OFF	NAR	OFF	0.00	89
20:31:27.1	20:56:50.726	260	1159	70	40.00	21.50	OFF	NAR	OFF	0.00	269
21:02:53.733	21:30:55.562	259	1143	70	40.00	21.50	OFF	NAR	OFF	0.00	269
21:35:54.567	22:01:41.194	258	1147	70	40.00	21.50	OFF	NAR	OFF	0.00	269
22:07:04.099	22:35:04.428	257	1136	70	40.00	21.50	OFF	NAR	OFF	0.00	89
22:41:41.535	23:06:02.76	257	1172	70	40.00	21.50	OFF	NAR	OFF	0.00	89

11053a [Combined] - Forward/Reverse or Combined Separation Plot



# Combined - Map Run (1)

UTM, Zone 15, metres



Processing Summary Information

Program: GrafNav  
Version: 7.80.2517  
Project: E:\11053A\pospac\GPS\11053a.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:

Total in GPB file:	192356
No processed position:	173133
Missing Fwd or Rev:	3
With bad C/A code:	0
With bad L1 Phase:	0

Measurement RMS Values:

L1 Phase:	0.0190 (m)
C/A Code:	0.85 (m)
L1 Doppler:	0.015 (m/s)

Fwd/Rev Separation RMS Values:

East:	0.028 (m)
North:	0.035 (m)
Height:	0.144 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (19217 occurrences):

East:	0.028 (m)
North:	0.035 (m)
Height:	0.144 (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:	74.432 (km)
Minimum:	2.528 (km)
Average:	30.483 (km)
First Epoch:	14.648 (km)
Last Epoch:	14.677 (km)

```

; PROJECT:      E:\11053A\pospac\GPS\11053a.cfg
;
; DATE:        Feb. 25/11 (date/time of processing)
; TIME:        12:16:32
; CREATED BY:  GrafNav Version 7.80.2517
;
VERSION = 7.80.2517
PROCUSER = jcr
PROCDISC = Run*(4)
PROCTIME = 12:12:51 02/25/2011

; Master station # 1 information
MB_MASTER_INDEX = 0
MB_MASTER_NAME = SE-Base
MB_MASTER_FILE = E:\11053A\ground_gps\SE_Base\log0222m.gpb
MB_MASTER_POS = 35 34 34.17344 -88 44 17.15714 112.9020
MB_MASTER_ANT = 2.234 -0.009 2.000 0 TPSGR3 0
MB_MASTER_DISABLE = OFF

; Master station # 2 information
MB_MASTER_INDEX = 1
MB_MASTER_NAME = SW-Base
MB_MASTER_FILE = E:\11053A\ground_gps\SW_Base\log0222n.gpb
MB_MASTER_POS = 35 39 07.19941 -89 28 50.54551 70.4660
MB_MASTER_ANT = 2.234 -0.009 2.000 0 TPSGR3 0
MB_MASTER_DISABLE = OFF

; Remote station information
REMOTE_FILE = E:\11053A\pospac\GPS\mgps_11053a.gpb
REMOTE_POS = 35 36 12.28458 -88 55 15.79448 105.9294
REMOTE_ANT = 0.000

; General settings
PROCESS_MODE = 105 108 111 126 ; 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 982433617.1 982452852.6 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

; KAR settings--second values for dual frequency/widelane
KAR_MIN_TIME = 8.00 2.00     ; Min. time for KAR, L1 and L2 (minutes)
KAR_MIN_ADD  = 0.00          ; 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   = OFF 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 = IONO          ; 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
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 30.000  ; 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 = ON 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 2.5 250.0 ; Engage KAR if <dist1, reset if >dist2 (km)
USERKAR = 254918.0 BOTH NORESET ; Engage KAR at this time
USERKAR = 239708.0 FORWARD 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 = ON ; Refine L1/L2 fixed solution
FIX_STRICT = OFF OFF ; Stricter RMS and reliability tolerances
FIX_CORRECT_SLIP = OFF ; Correct integer cycle slips
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 25.000 600.0 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
CORR_L2C = ALL ; ALL, OFF to correct for L2C
CORR_L2C_VALUE = FILE ; FILE or correction value in L2 cycles

; Differential 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 = 1.0000 ON ; Doppler meas stddev (m/s) (ON/OFF refers to auto-doppler setting)
STD_REJECT = NORMAL 3.0 2.5 3.0 6.0 4.5 ; LevelStr CodeRej PhaseRej DopplerRej CodeReset PhaseReset
STD_SKIP = 15.0 5 1 ; dMaxRejSec, nSkipCodeEpochs, nSkipPhaseEpochs
STD_DIST = LOW 1.00 7.50 ; Distance effects (OFF/HIGH/MEDIUM/LOW/MANUAL) ManHzPPM ManVtPPM
STD_BL = SE-Base ON ; BLName UseMain(ON/OFF)
STD_BL = SW-Base 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 MEDIUM ; constraint on vehicle dynamics

; Single point/PPP settings
PPP_SP3_DATUM = WGS84 AUTOMATIC
PPP_ELEV_MASK = 0.00
PPP_PROCUSE = TMitchell
PPP_PROCDISC = PPP*(1)
PPP_PROCESS_MODE = AUTO ; PPP, SFCA, DFCA, AUTO processing modes
PPP_USEP1OVERCA = ON ; Use P1 instad of c/a (on/off)
PPP_USESOLVEDCLOCK = ON ; ON-use receiver time corrected by clock, off-use corr_time directly
PPP_SEPARATECLKS = ON ; ON-use separate code and carrier clock (needed for some Trimble receivers), OFF-disables
PPP_PRECISEONLY = ON ; ON-only satellite with precise eph+clock to be used, OFF use all including broadcast
PPP_PROCESS_DIR = FORWARD BOTH ; Direction (FORWARD/REVERSE), Directions to process (SINGLE/BOTH)
PPP_SLIP_TOL = 20.00 0.500 ; Coarse and fine carrier cycle slip tolerances (cycles)
PPP_LOCKTIME = ON OFF ; Use L1 and L2 locktime counters to detecting slips
PPP_USE_DOPPLER = OFF ; ON if doppler to be used for velocity computation
PPP_DYN_MODE = MEDIUM ; Dynamics mode: AUTO, OFF, LOW, MEDIUM, HIGH
PPP_OUTPUT = NORMAL OFF ; Output modes(first: Normal/extended, second: ON-output even if bad)
PPP_TROPO = ON 5.0000e-011 ; Enable Tropo state (ON/OFF) and tropo state spectral density
PPP_SAT_RESID = OFF ; Output binary satellite residuals to .FBP/RBP (ON/OFF)
; Single point/PPP measurement standard deviation (weighting) settings
PPP_STD_MODE = ELEV ; Measurement weighting mode (ELEV/CN0/STANDARD/ADAPTIVE)

PPP_STD_CODE = 7.0000 ; Code measurement standard deviation (m)
PPP_STD_PHASE = 0.0200 ON ; Carrier meas SD (m) (ON/OFF refers to adjustment for L3)
PPP_STD_DOPPLER = 1.0000 ON ; Doppler meas stddev (m/s) (ON/OFF refers to auto-doppler setting)
PPP_STD_REJECT = NORMAL 3.0 2.5 3.0 6.0 4.5 ; LevelStr CodeRej PhaseRej DopplerRej CodeReset PhaseReset
PPP_STD_SKIP = 15.0 5 1 ; dMaxRejSec, nSkipCodeEpochs, nSkipPhaseEpochs
PPP_STD_RELTOL = 4.00 ; Reliability tolerance for rejecting outliers

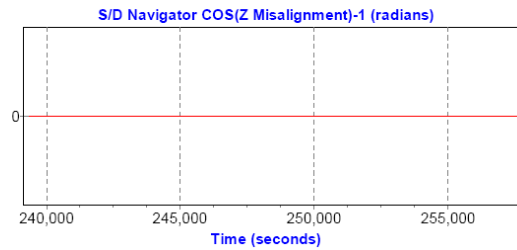
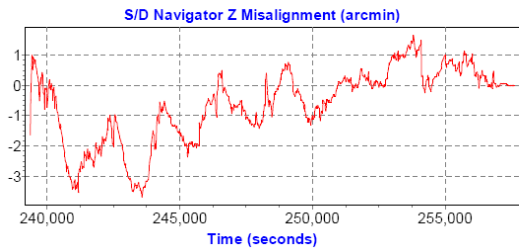
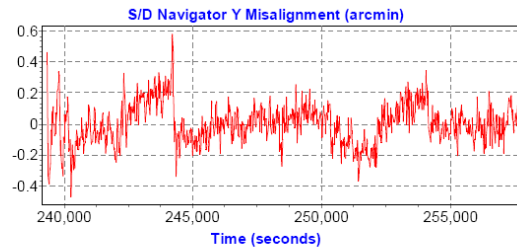
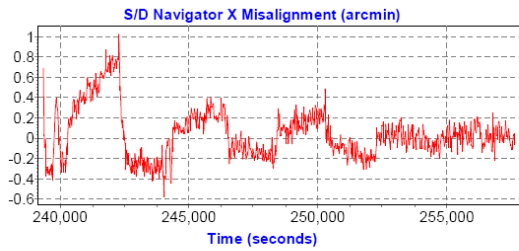
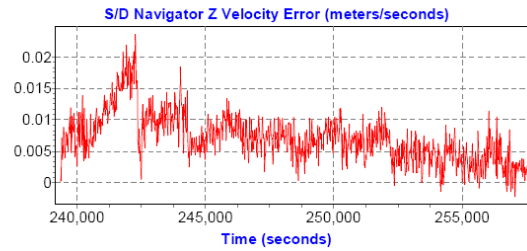
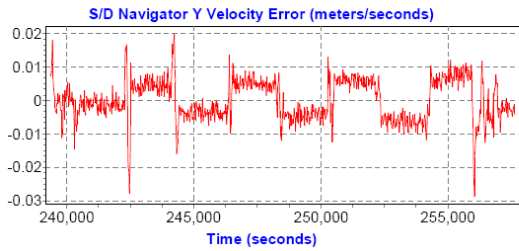
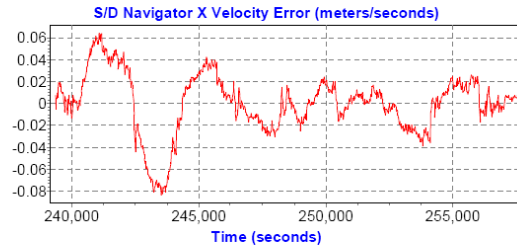
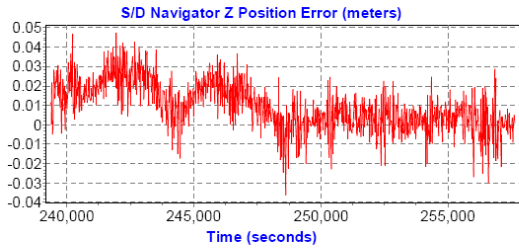
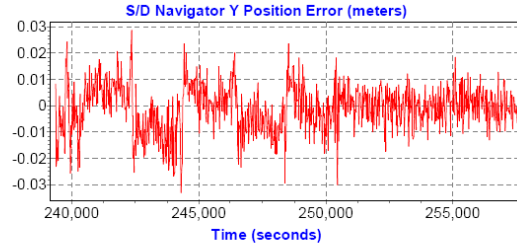
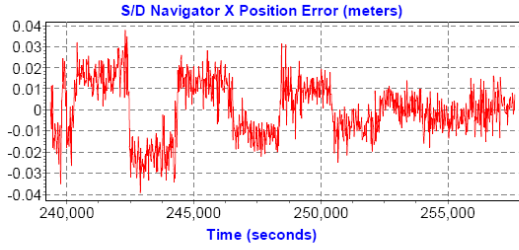
; Combine settings (only used in API)

; Glonass Options
GLN_TOFF = ON 0.0000 1000.0000 0.000000
GLN_SOLVE_INT = ON ON OFF ; GLN-Base, Use-GLN-in-KAR, Do-GPSONLY-if-kar-fails

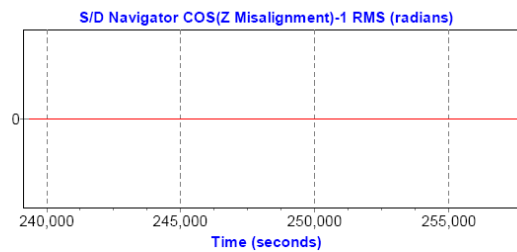
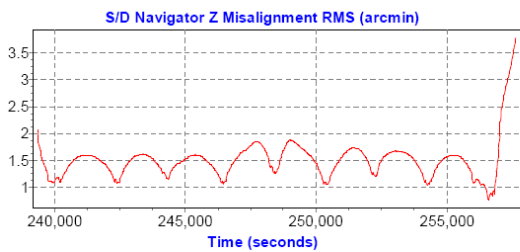
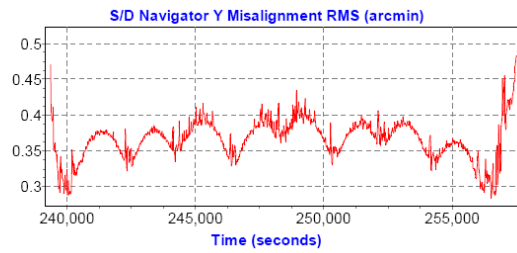
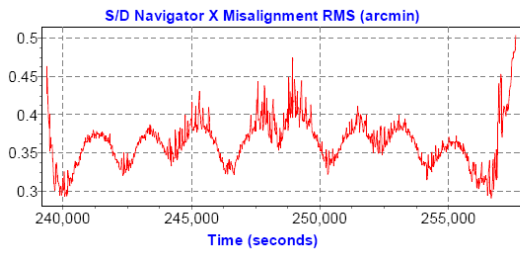
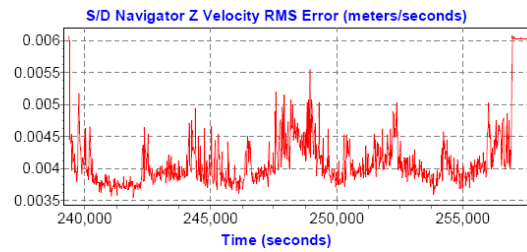
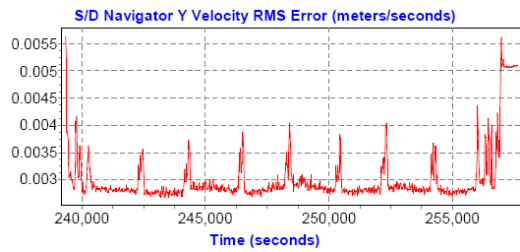
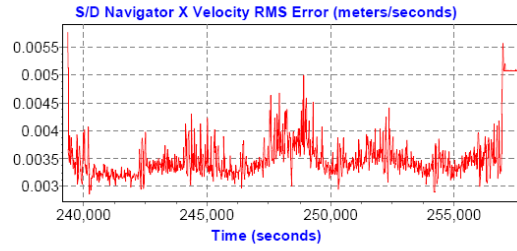
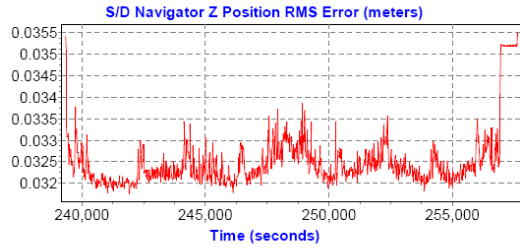
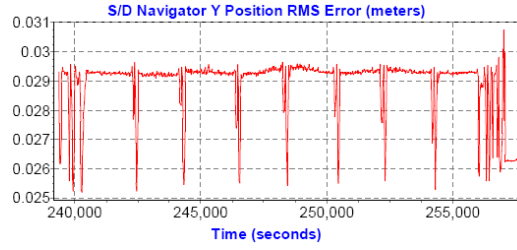
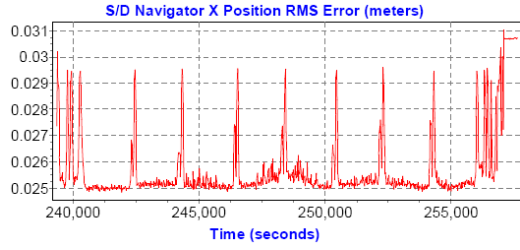
; The following are Additional (user) items

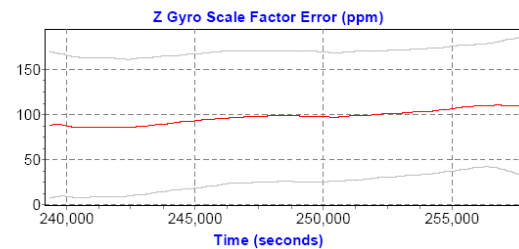
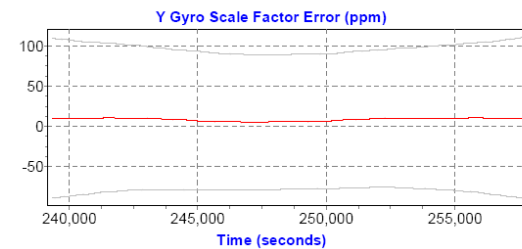
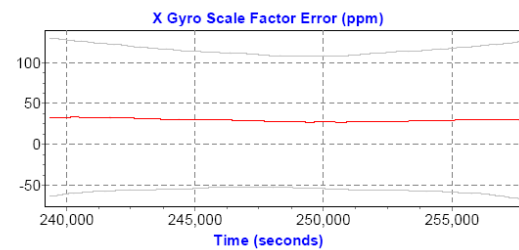
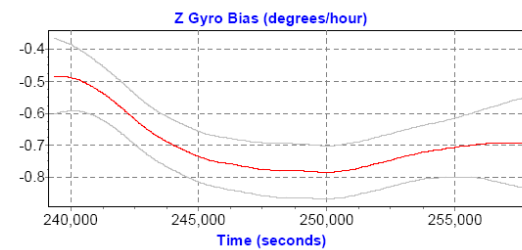
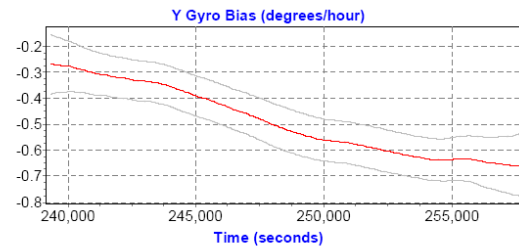
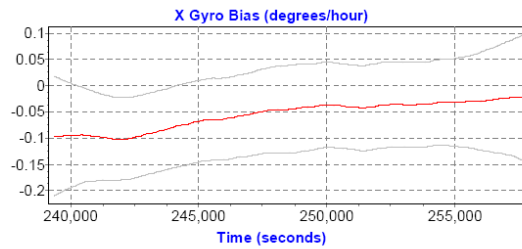
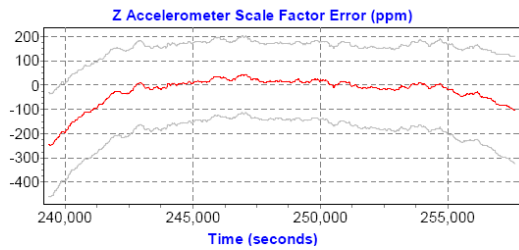
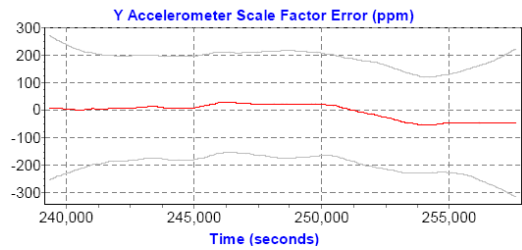
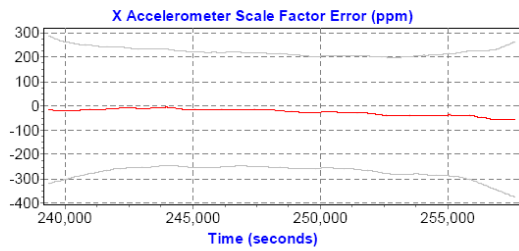
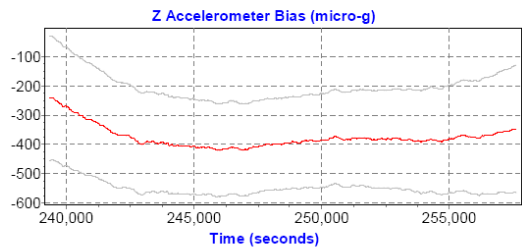
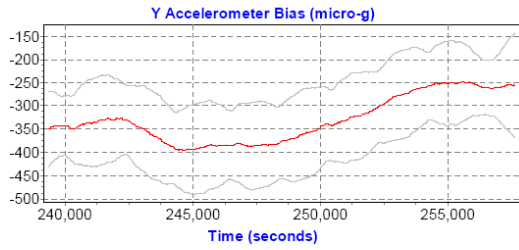
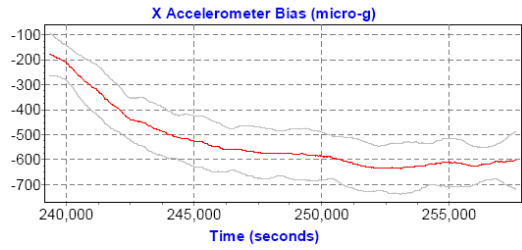
; End-of-file

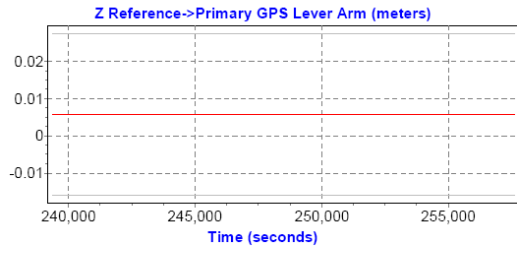
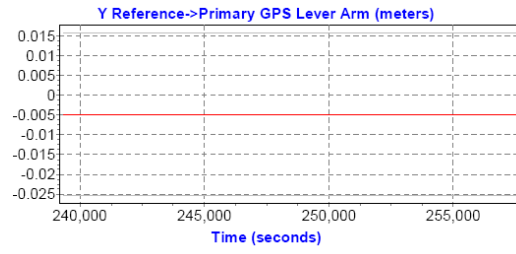
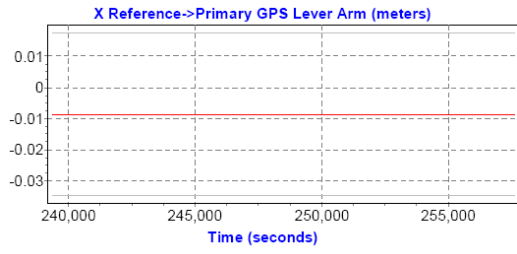
```











# Flight Log/Base Station/GPS Processing – 02.23.2011

## Flight Log

```

-----
Project Number: Dyersburg, TN
S/N           : 06sen187
Operator      : J. Stump
Pilot(s)     : M. Nassour
Aircraft     : 435H
Airport      : MKL
Mission      : 11054A
Wheels Up   : ???
Flight Length:
HOBBBS Start : 36.2
HOBBBS End   :
  
```

## Weather

```

-----
Date          : February 22, 2011
Julian Day    : 054
Temperature   : 6
Visibility    : 10
Clouds       : clr
Precipitation : 0
Wind Dir     : 010
Wind Speed   : 6
Pressure     : 30.19
  
```

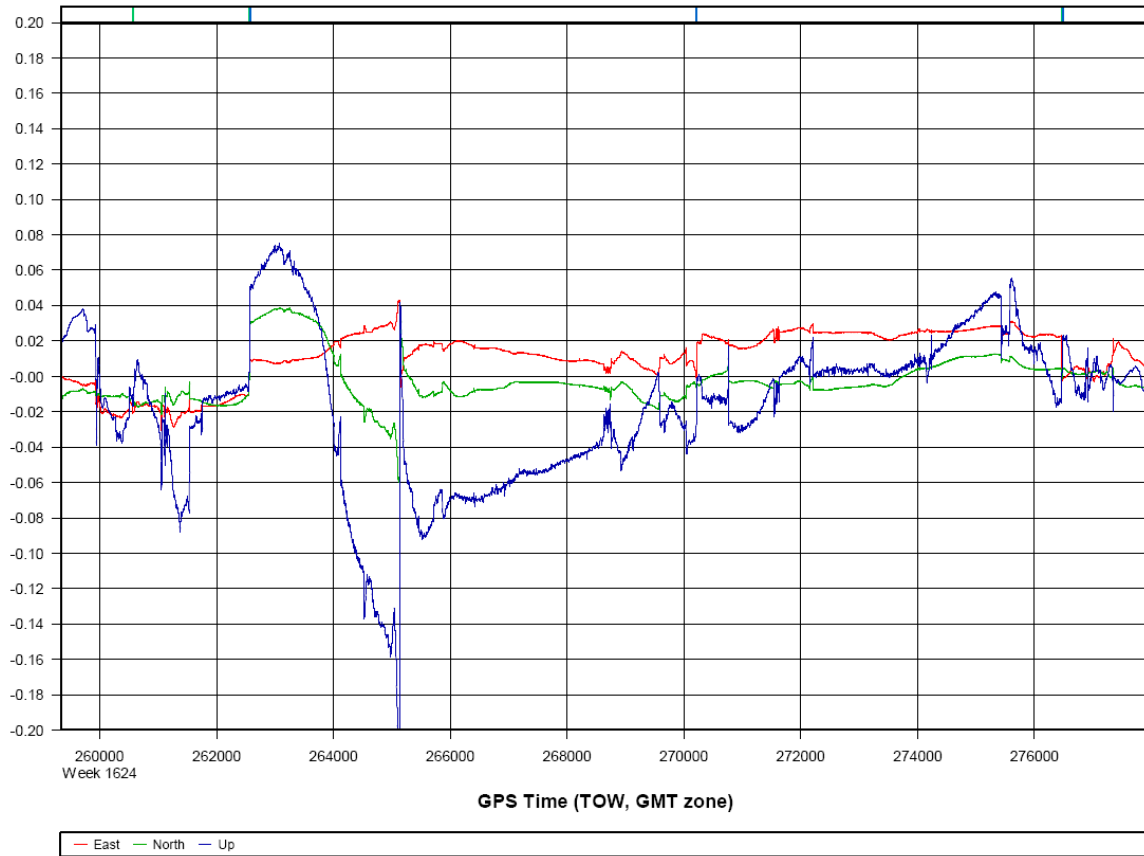
## Statistics

```

-----
Laser Time   : 03:22:25
  
```

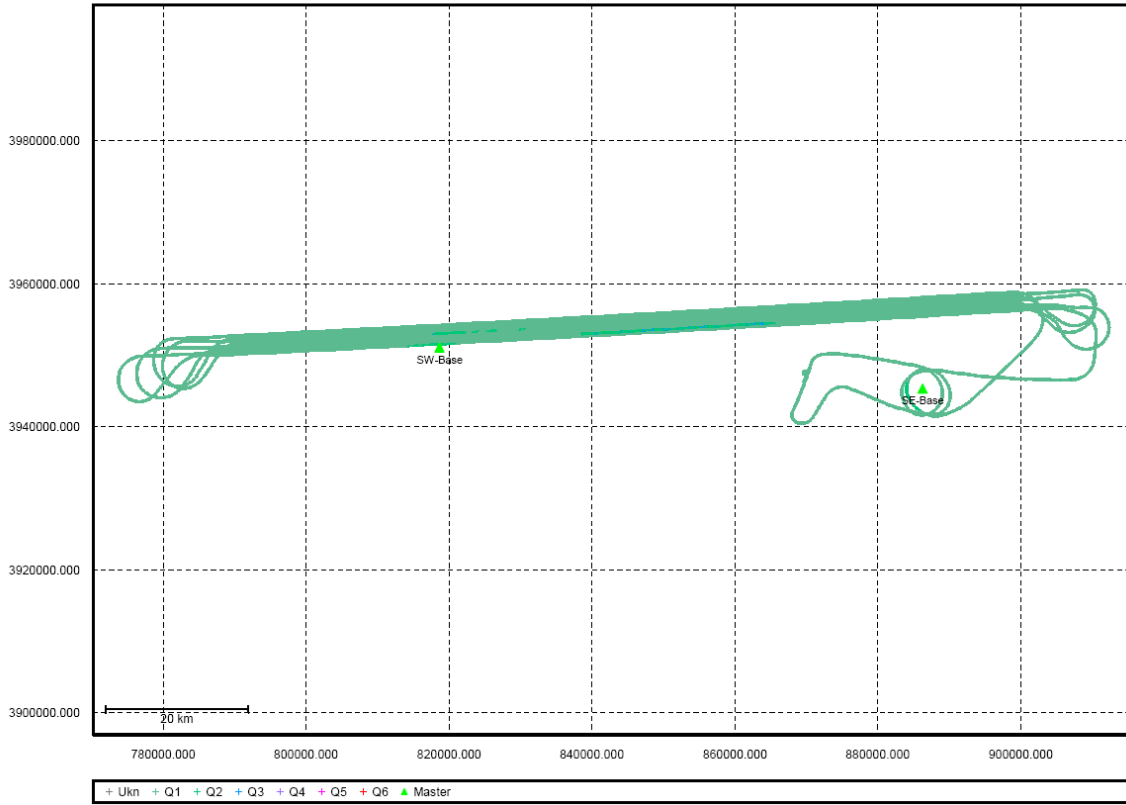
START	STOP	LINE#	ALT	PRF	FREQ	ANGLE	MP	DIV	RC	HDG	Plan File
00:10:39.822	00:10:52.122	256	95	70	40.00	21.50	OFF	NAR	OFF	0.00	269
00:18:57.831	00:19:14.031	256	451	70	40.00	21.50	OFF	NAR	OFF	0.00	269
00:36:23.748	01:03:39.076	255	1148	70	40.00	21.50	OFF	NAR	OFF	0.00	269
01:09:55.383	01:35:15.609	254	1170	70	40.00	21.50	OFF	NAR	OFF	0.00	89
01:42:18.317	02:08:05.443	253	1134	70	40.00	21.50	OFF	NAR	OFF	0.00	89
02:14:12.65	02:38:48.375	252	1180	70	40.00	21.50	OFF	NAR	OFF	0.00	269
02:43:37.78	03:09:59.307	251	1153	70	40.00	21.50	OFF	NAR	OFF	0.00	269
03:15:34.213	03:39:37.238	250	1173	70	40.00	21.50	OFF	NAR	OFF	0.00	89
03:44:18.443	04:10:22.77	249	1128	70	40.00	21.50	OFF	NAR	OFF	0.00	269
04:17:06.076	04:40:12.7	249	1195	70	40.00	21.50	OFF	NAR	OFF	0.00	89

11054a [Combined] - Forward/Reverse or Combined Separation Plot



# Combined - Map Run (2)

UTM, Zone 15, metres



Processing Summary Information

Program: GrafNav  
Version: 7.80.2517  
Project: E:\11054A\pospac\GPS\11054a.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:  
Total in GPB file: 186759  
No processed position: 168095  
Missing Fwd or Rev: 3  
With bad C/A code: 0  
With bad L1 Phase: 0

Measurement RMS Values:  
L1 Phase: 0.0169 (m)  
C/A Code: 0.88 (m)  
L1 Doppler: 0.014 (m/s)

Fwd/Rev Separation RMS Values:  
East: 0.018 (m)  
North: 0.014 (m)  
Height: 0.047 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (5130 occurrences):  
East: 0.015 (m)  
North: 0.011 (m)  
Height: 0.034 (m)

Quality Number Percentages:  
Q 1: 96.7 %  
Q 2: 3.0 %  
Q 3: 0.3 %  
Q 4: 0.0 %  
Q 5: 0.0 %  
Q 6: 0.0 %

Position Standard Deviation Percentages:  
0.00 - 0.10 m: 97.9 %  
0.10 - 0.30 m: 2.1 %  
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: 2.1 %

Baseline Distances:  
Maximum: 70.707 (km)  
Minimum: 5.349 (km)  
Average: 30.233 (km)  
First Epoch: 14.644 (km)  
Last Epoch: 14.632 (km)

```

; PROJECT:      E:\11054A\pospac\GPS\11054a.cfg
;
; DATE:        Feb. 25/11  (date/time of processing)
; TIME:        14:18:45
; CREATED BY:  GrafNav Version 7.80.2517
;
VERSION = 7.80.2517
PROCUSER = jcr
PROCDISC = Run*(3)
PROCTIME = 12:31:06 02/25/2011

; Master station # 1 information
MB_MASTER_INDEX = 0
MB_MASTER_NAME = SE-Base
MB_MASTER_FILE = E:\11054A\ground_gps\SE_Base\log0222m.gpb
MB_MASTER_POS = 35 34 34.17344 -88 44 17.15714 112.9020
MB_MASTER_ANT = 2.234 -0.009 2.000 0 TPSGR3 0
MB_MASTER_DISABLE = OFF

; Master station # 2 information
MB_MASTER_INDEX = 1
MB_MASTER_NAME = SW-Base
MB_MASTER_FILE = E:\11054A\ground_gps\SW_Base\log0222n.gpb
MB_MASTER_POS = 35 39 07.19941 -89 28 50.54551 70.4660
MB_MASTER_ANT = 2.234 -0.009 2.000 0 TPSGR3 0
MB_MASTER_DISABLE = OFF

; Remote station information
REMOTE_FILE = E:\11054A\pospac\GPS\mgps_11054a.gpb
REMOTE_POS = 35 36 12.46548 -88 55 15.90630 96.1908
REMOTE_ANT = 0.000

; General settings
PROCESS_MODE = 105 108 111 126 ; 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

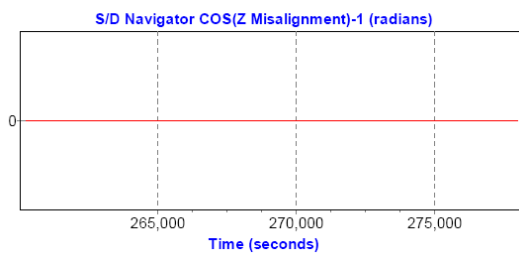
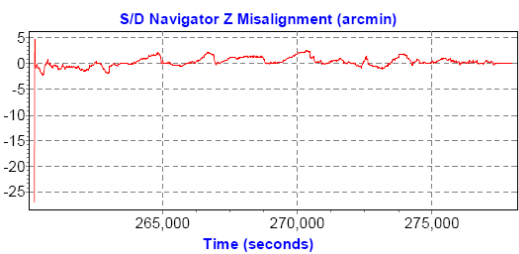
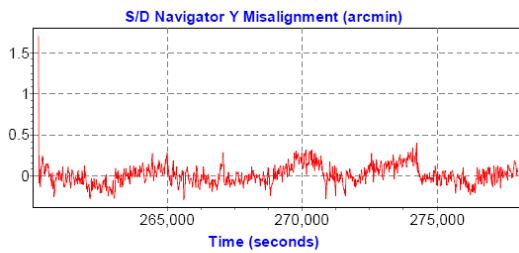
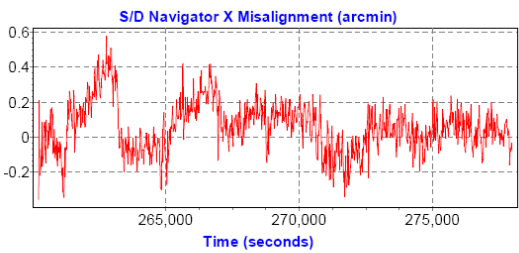
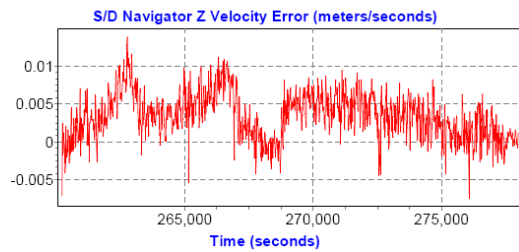
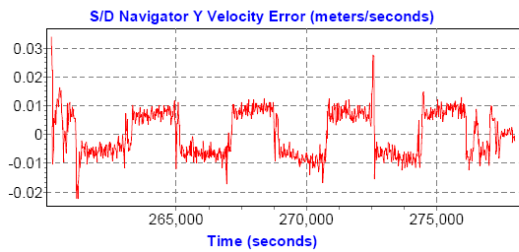
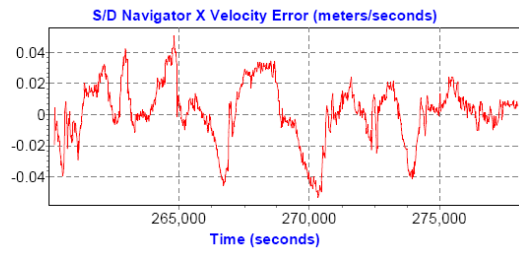
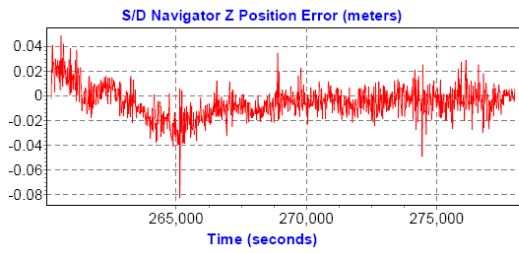
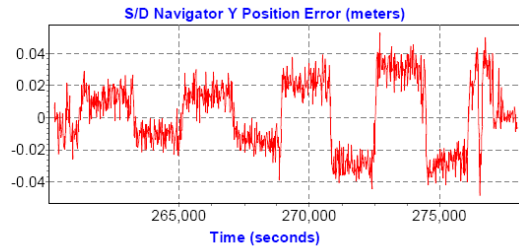
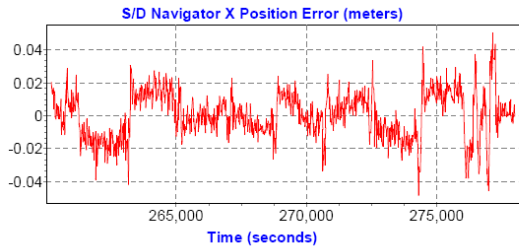
CYCLE_TEST = BOTH ; Cycle slip test method
STATIC_SLIP_TOL = 0.40 ; slip tolerance in static mode (cycles)
USE_DOPPLER = ON OFF ; Use doppler meas. for phase, for code-only

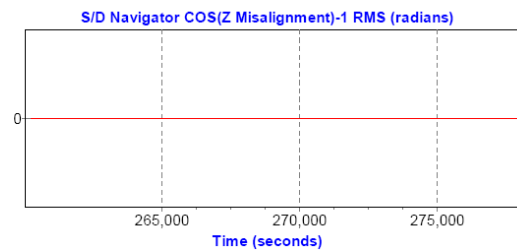
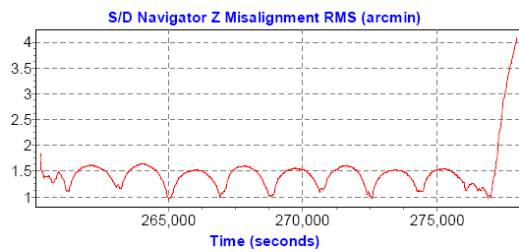
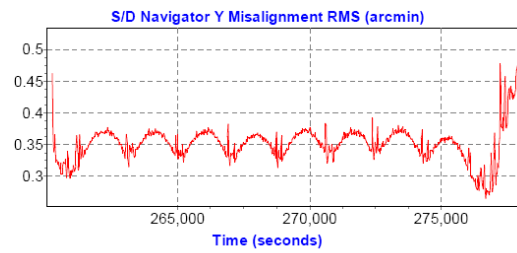
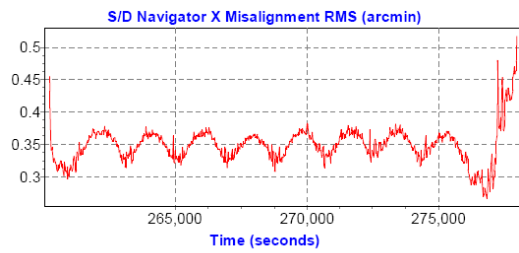
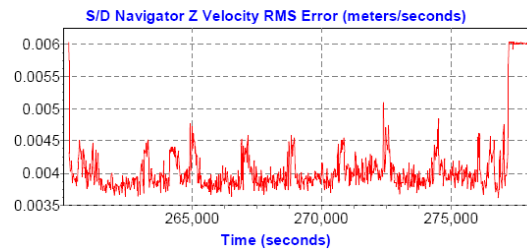
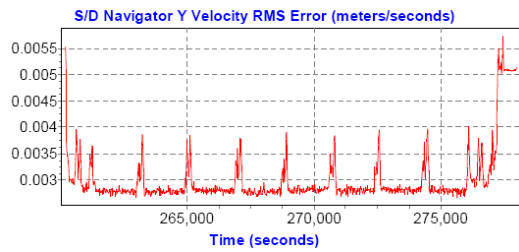
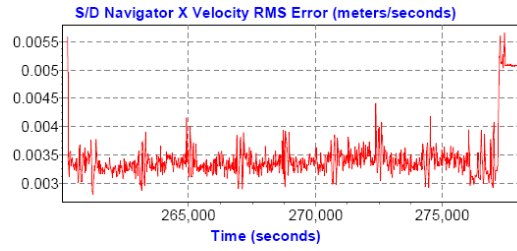
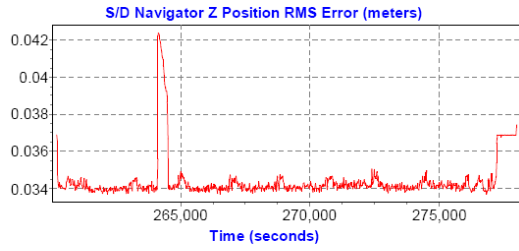
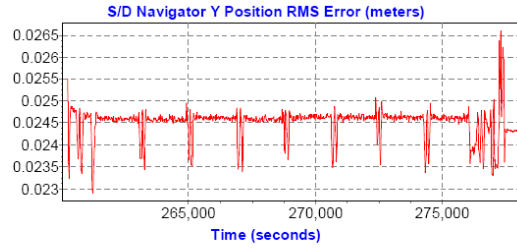
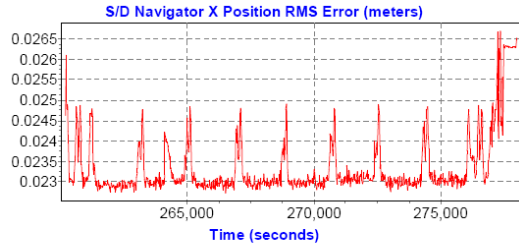
BASE_SAT = 99 ; Base satellite (99-default)

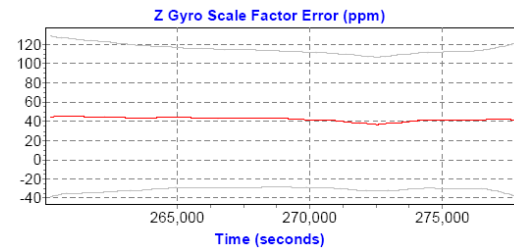
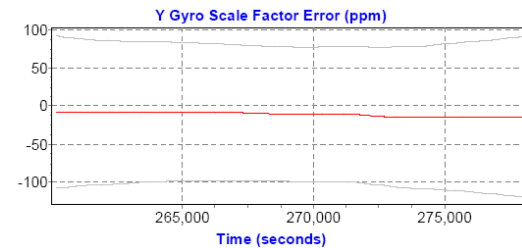
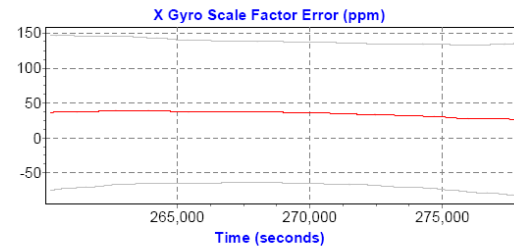
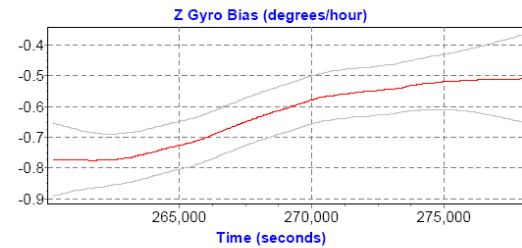
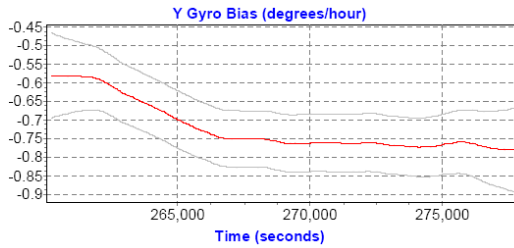
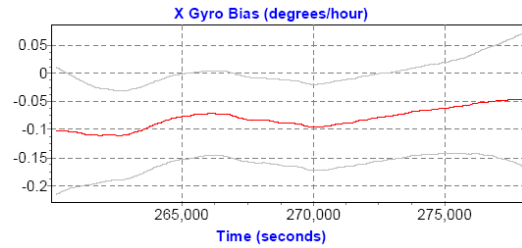
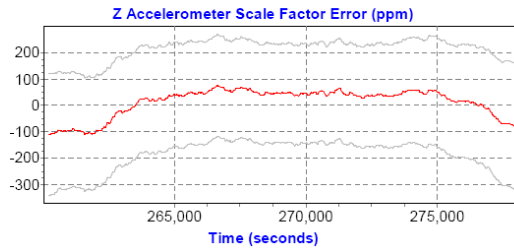
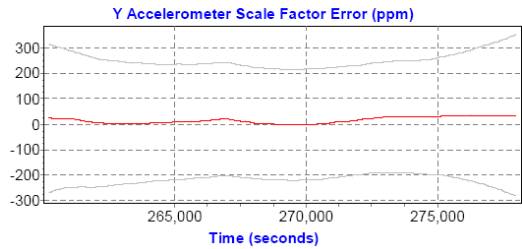
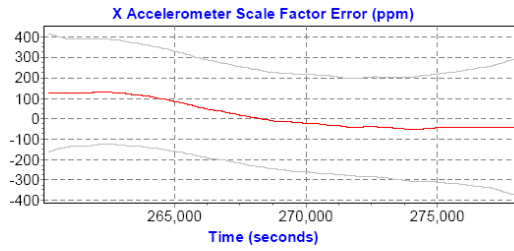
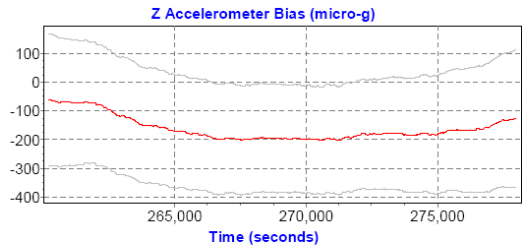
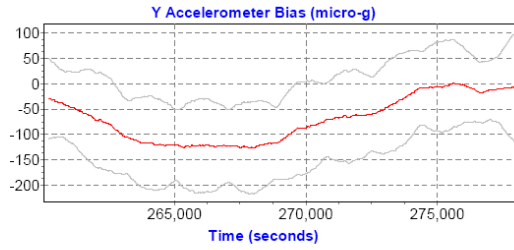
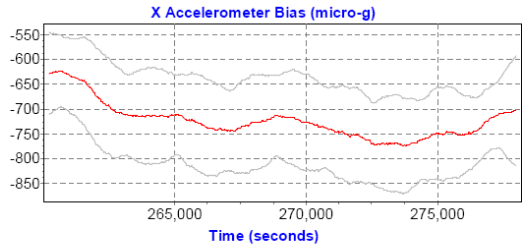
TIMERANGE = ALL 982454514.0 982473189.8 2 0 ; Processing time range

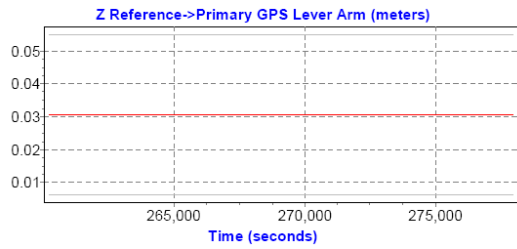
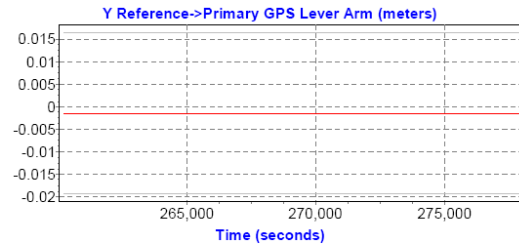
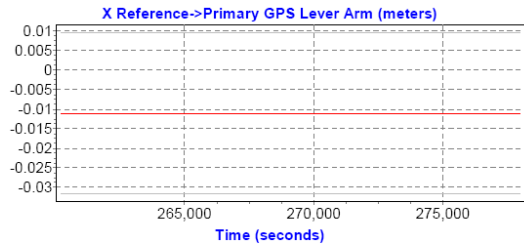
```











Flight Log

-----  
 Project Number: Dyersburg, TN  
 S/N : 06sen187  
 Operator : J.Stump  
 Pilot(s) : M.Nassour  
 Aircraft : 435H  
 Airport : MKL  
 Mission : 11057A  
 Wheels Up : ???  
 Flight Length :  
 HOBBS Start : 41.5  
 HOBBS End :  
 -----

Weather

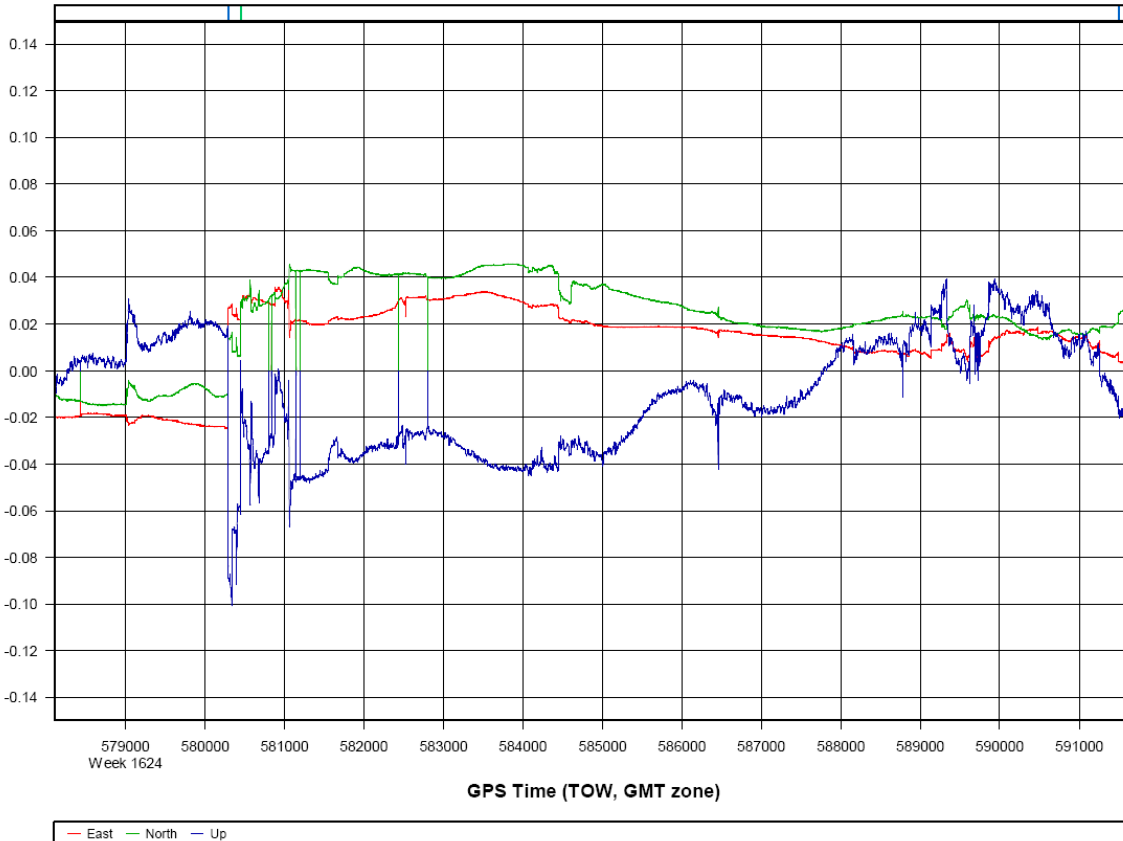
-----  
 Date : February 26, 2011  
 Julian Day : 057  
 Temperature : 7  
 Visibility : 10  
 Clouds : clr  
 Precipitation : 0  
 Wind Dir : vrb  
 Wind Speed : 4  
 Pressure : 30.11  
 -----

Statistics

-----  
 Laser Time : 02:33:40  
 -----

START	STOP	LINE#	ALT	PRF	FREQ	ANGLE	MP	DIV	RC	HDG	Plan File
16:27:19.146	16:27:33.647	249	95	70	40.00	21.50	OFF	NAR	OFF	0.00	269
16:34:13.252	16:35:13.053	249	752	70	40.00	21.50	OFF	NAR	OFF	0.00	269
16:49:22.465	17:18:43.992	248	1125	70	40.00	21.50	OFF	NAR	OFF	0.00	89
17:24:36.497	17:44:51.017	247	1176	70	40.00	21.50	OFF	NAR	OFF	0.00	269
17:51:05.723	18:20:53.954	246	1111	70	40.00	21.50	OFF	NAR	OFF	0.00	89
18:32:49.566	18:52:12.486	245	1203	70	40.00	21.50	OFF	NAR	OFF	0.00	269
18:58:37.493	19:29:16.625	244	1137	70	40.00	21.50	OFF	NAR	OFF	0.00	89
19:47:51.844	20:07:20.664	244	1181	70	40.00	21.50	OFF	NAR	OFF	0.00	89
20:17:05.575	20:21:08.079	244	1152	70	40.00	21.50	OFF	NAR	OFF	0.00	89

11057a [Combined] - Forward/Reverse or Combined Separation Plot



### Processing Summary Information

Program: GrafNav  
Version: 7.80.2517  
Project: E:\11057A\pospac\GPS\11057a.cfg

Solution Type: Combined Fwd/Rev

#### Number of Epochs:

Total in GPB file:	158975
No processed position:	145394
Missing Fwd or Rev:	11
With bad C/A code:	0
With bad L1 Phase:	0

#### Measurement RMS Values:

L1 Phase:	0.0198 (m)
C/A Code:	0.82 (m)
L1 Doppler:	0.015 (m/s)

#### Fwd/Rev Separation RMS Values:

East:	0.021 (m)
North:	0.031 (m)
Height:	0.041 (m)

#### Fwd/Rev Sep. RMS for 25%-75% weighting (13568 occurrences):

East:	0.021 (m)
North:	0.029 (m)
Height:	0.026 (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:	60.217 (km)
Minimum:	7.572 (km)
Average:	33.495 (km)
First Epoch:	22.977 (km)
Last Epoch:	32.587 (km)

```

; PROJECT:      E:\11057A\pospac\GPS\11057a.cfg
;
; DATE:         Feb. 27/11 (date/time of processing)
; TIME:         18:35:30
; CREATED BY:   GrafNav Version 7.80.2517
;
VERSION = 7.80.2517
PROCUSER = jcr
PROCDISC = Run*(4)
PROCTIME = 18:32:32 02/27/2011

; Master station # 1 information
MB_MASTER_INDEX = 0
MB_MASTER_NAME = SE_Base
MB_MASTER_FILE = E:\11057A\ground_gps\SE_Base\log20110226_150836.gpb
MB_MASTER_POS = 35 34 34.17344 -88 44 17.15714 112.9020
MB_MASTER_ANT = 2.234 -0.009 2.000 0 TPSGR3 0
MB_MASTER_DISABLE = OFF

; Master station # 2 information
MB_MASTER_INDEX = 1
MB_MASTER_NAME = SW_Base
MB_MASTER_FILE = E:\11057A\ground_gps\SW_Base\log20110226_161458.gpb
MB_MASTER_POS = 35 39 07.19941 -89 28 50.54551 70.4660
MB_MASTER_ANT = 2.234 -0.009 2.000 0 TPSGR3 0
MB_MASTER_DISABLE = OFF

; Remote station information
REMOTE_FILE = E:\11057A\pospac\GPS\mgps_11057a.gpb
REMOTE_POS = 35 36 11.62886 -88 55 16.12737 96.1851
REMOTE_ANT = 0.000

; General settings
PROCESS_MODE = 105 108 111 126 ; 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 982773300.0 982786880.0 2 0 ; Processing time range

```

Flight Log/Base Station/GPS Processing – 02.26.2011

Flight Log

```

-----
Project Number: Dyersburg,TN
S/N           : 06sen187
Operator      : J.Stump
Pilot(s)     : M.Nassour
Aircraft     : 435H
Airport      : MKL
Mission      : 11057B
Wheels Up    : ???
Flight Length :
HOBBBS Start : 46.0
HOBBBS End   :
    
```

Weather

```

-----
Date          : February 26, 2011
Julian Day    : 057
Temperature   : 18
Visibility    : 10
Clouds       : clr
Precipitation : 0
Wind Dir     : 200
Wind Speed   : 7
Pressure     : 29.90
    
```

Statistics

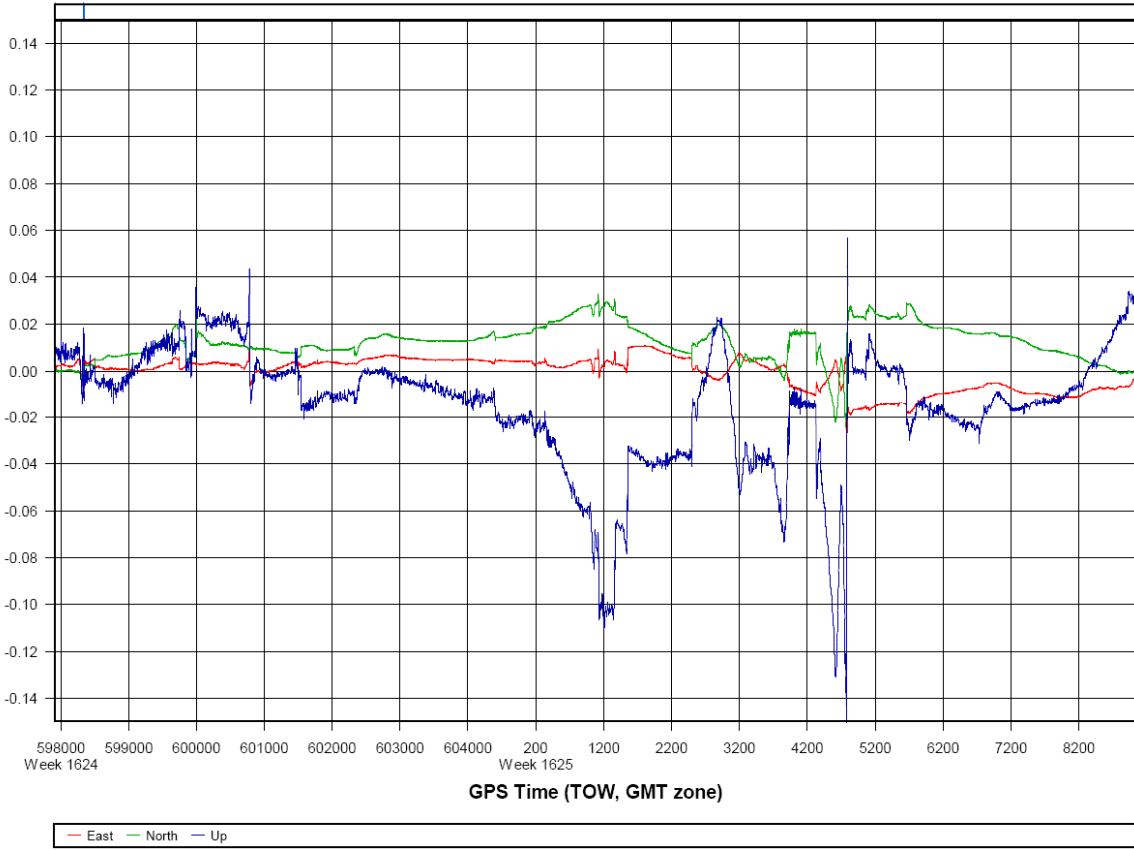
```

-----
Laser Time   : 02:54:42
    
```

START	STOP	LINE#	ALT	PRF	FREQ	ANGLE	MP	DIV	RC	HDG	Plan File
21:51:20.662	21:51:38.162	243	96	70	40.00	21.50	OFF	NAR	OFF	0.00	269
22:04:49.275	22:05:07.076	243	889	70	40.00	21.50	OFF	NAR	OFF	0.00	269
22:20:02.291	22:48:30.821	242	1139	70	40.00	21.50	OFF	NAR	OFF	0.00	89
22:54:36.527	23:15:11.948	242	1191	70	40.00	21.50	OFF	NAR	OFF	0.00	89
23:20:08.854	23:20:21.654	241	1201	70	40.00	21.50	OFF	NAR	OFF	0.00	269
23:20:08.854	23:20:21.654	241	1200	70	40.00	21.50	OFF	NAR	OFF	0.00	269
23:21:34.255	23:49:38.084	240	1147	70	40.00	21.50	OFF	NAR	OFF	0.00	89
23:55:24.29	00:15:59.011	239	1199	70	40.00	21.50	OFF	NAR	OFF	0.00	269
00:21:19.917	00:50:00.047	238	1143	70	40.00	21.50	OFF	NAR	OFF	0.00	269
00:56:35.553	01:16:24.574	237	1198	70	40.00	21.50	OFF	NAR	OFF	0.00	269
01:22:14.38	01:51:37.01	236	1140	70	40.00	21.50	OFF	NAR	OFF	0.00	269
01:57:19.516	02:16:46.036	236	1174	70	40.00	21.50	OFF	NAR	OFF	0.00	89

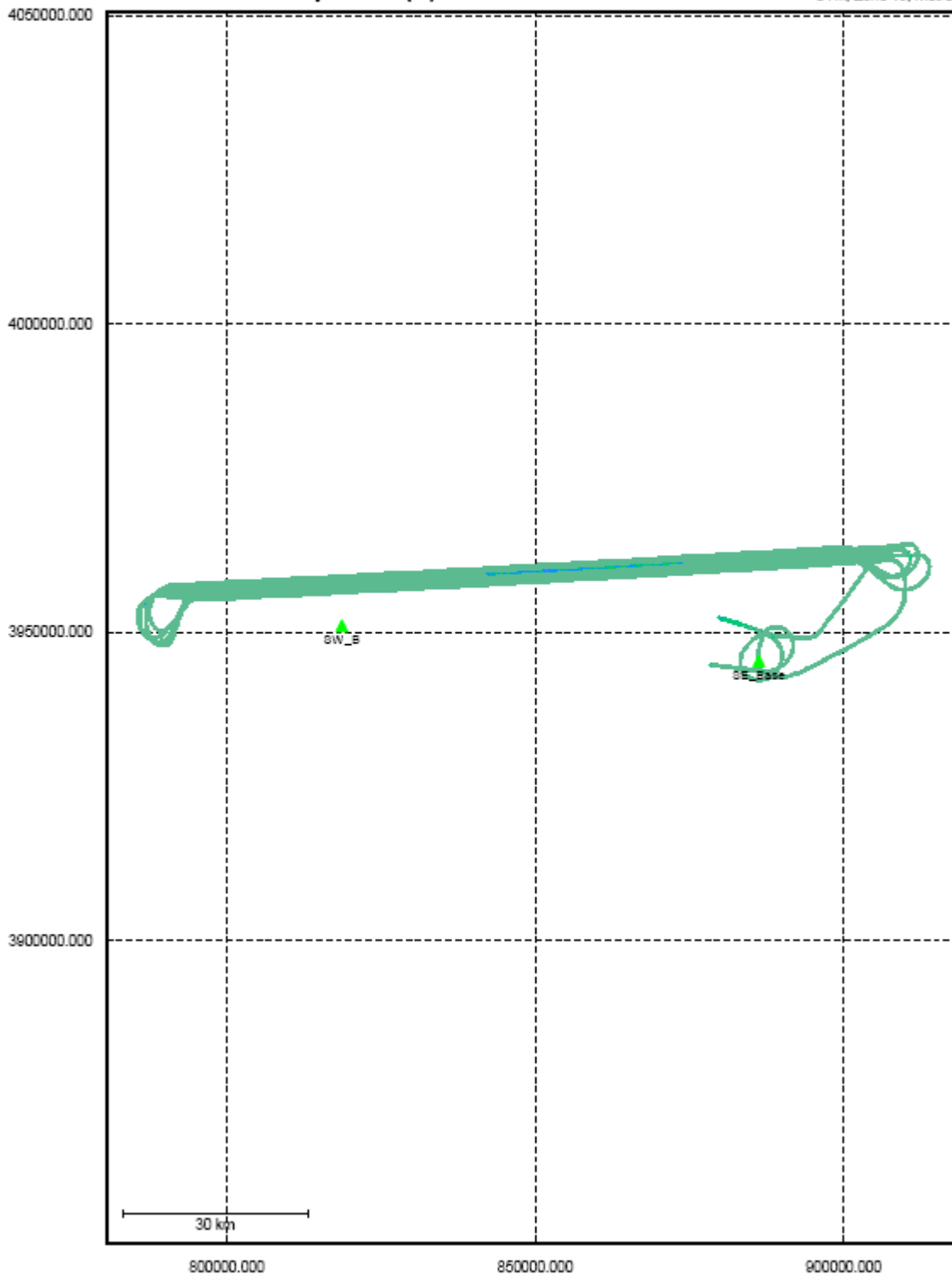


11057b [Combined] - Forward/Reverse or Combined Separation Plot



# Combined - Map Run (2)

UTM, Zone 15, metres



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

Processing Summary Information

Program: GrafNav  
Version: 7.80.2517  
Project: E:\11057B\pospac\GPS\11057b.cfg

Solution Type: Combined Fwd/Rev

Number of Epochs:

Total in GPB file:	181836
No processed position:	165874
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:	0.83 (m)
L1 Doppler:	0.016 (m/s)

Fwd/Rev Separation RMS Values:

East:	0.007 (m)
North:	0.015 (m)
Height:	0.030 (m)

Fwd/Rev Sep. RMS for 25%-75% weighting (789 occurrences):

East:	0.006 (m)
North:	0.011 (m)
Height:	0.011 (m)

Quality Number Percentages:

Q 1:	97.0 %
Q 2:	1.6 %
Q 3:	1.4 %
Q 4:	0.0 %
Q 5:	0.0 %
Q 6:	0.0 %

Position Standard Deviation Percentages:

0.00 - 0.10 m:	97.4 %
0.10 - 0.30 m:	2.6 %
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:	2.6 %
---------------	-------

Baseline Distances:

Maximum:	60.037 (km)
Minimum:	9.828 (km)
Average:	32.294 (km)
First Epoch:	22.385 (km)
Last Epoch:	23.869 (km)

```

; PROJECT:      E:\11057B\pospac\GPS\11057b.cfg
;
; DATE:         Feb. 27/11 (date/time of processing)
; TIME:         18:54:51
; CREATED BY:   GrafNav Version 7.80.2517
;
VERSION = 7.80.2517
PROCUSER = jcr
PROCDISC = Run*(3)
PROCTIME = 18:50:57 02/27/2011

; Master station # 1 information
MB_MASTER_INDEX = 0
MB_MASTER_NAME = SE Base
MB_MASTER_FILE = E:\11057B\ground_gps\SE_Base\log20110226_150836.gpb
MB_MASTER_POS = 35 34 34.17344 -88 44 17.15714 112.9020
MB_MASTER_ANT = 2.234 -0.009 2.000 0 TPSGR3 0
MB_MASTER_DISABLE = OFF

; Master station # 2 information
MB_MASTER_INDEX = 1
MB_MASTER_NAME = SW B
MB_MASTER_FILE = E:\11057B\ground_gps\SW_Base\log20110226_161458.gpb
MB_MASTER_POS = 35 39 07.19941 -89 28 50.54551 70.4660
MB_MASTER_ANT = 2.234 -0.009 2.000 0 TPSGR3 0
MB_MASTER_DISABLE = OFF

; Remote station information
REMOTE_FILE = E:\11057B\pospac\GPS\mgps_11057b.gpb
REMOTE_POS = 35 36 11.52947 -88 55 15.61869 96.2764
REMOTE_ANT = 0.000

; General settings
PROCESS_MODE = 105 108 111 126 ; 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 982793100.0 982809061.0 2 0 ; Processing time range

```